

Department of Conservation and Recreation

PART I

INSTRUCTIONS TO BIDDERS

CONTRACTS FOR PUBLIC WORKS PROJECTS
AND
FOR BUILDING PROJECTS ESTIMATED TO
COST MORE THAN \$25,000 BUT NOT MORE THAN \$100,000
SUBJECT TO THE PROVISIONS OF M.G.L. CH. 30 SEC. 39M

**NOTICE TO CONTRACTORS – M.G.L. C. 30, sec. 39M CONSTRUCTION
ADVERTISEMENT OF INVITATION FOR BIDS
COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION AND RECREATION
10 PARK PLAZA, SUITE 6620, BOSTON, MA 02116
PHONE: 617-626-1250
www.mass.gov/dcr**

Contract No. P19-3295-C1A
Title: Mass Central Rail Trail: Sudbury to Hudson
Location: Wayside, Sudbury, Stow, and Hudson, MA

GENERAL BID proposals shall be submitted on a form furnished by the Department and will be received until **12:00 PM on Thursday, January 23, 2025** through DCR's E-bid room at www.bidexpress.com/businesses/36765/home.

Individual sets of contract documents will only be available on DCR's E-bid room at www.bidexpress.com/businesses/36765/home.

If any addenda are issued throughout the open period for this project, DCR will distribute these addenda via Bid Express, which will also email identified prospective at the time plans and specifications are issued.

A pre-bidding conference for prospective bidders will be held on Monday, January 6, 2025 at 1:00 pm. The meeting location is MCRT, South Sudbury Train Station. Meet in the parking area at 37 Union Ave, Sudbury, MA 01776. Should there be a weather emergency or severe weather event, an alternative meeting date/location will be announced via an addendum through Bid Express.

Questions are due at 4:00 p.m. on Wednesday, January 8, 2025. Questions received after this date will not be answered. Questions must be sent via email to amber.christoffersen@mass.gov.

The project is the construction a 10-ft wide paved, shared-use path along 7.5 miles of the Mass Central Rail Trail (MCRT) Wayside corridor from the Eversource Driveway approximately 900 feet east of Landham Road in Sudbury to the Assabet River Rail Trail off Wilkins Street in Hudson. The project includes installation of facilities for road crossings, paving, fencing/ railing installation, landscaping, hardscape, site amenities, pavement markings, signage and final restoration of all areas within the work zone.

The estimated project cost is **\$ 7,000,000**

The work is to be accomplished within 730 calendar days of a notice to proceed. Liquidated damages in the amount of \$1,000.00 per day will be assessed if the work has not been completed in accordance with the provisions of the contract within the time specified (as extended by any authorized extension of time granted in accordance with the contract provisions).

Bidders must be pre-qualified by the Massachusetts Dept. of Transportation (MassDOT) Highway Division in **HIGHWAY - BIKE PATHS** to bid on the above project. An award will not be made to a Contractor who is not pre-qualified by MassDOT prior to the opening of Proposals.

The proposed contract includes a combined requirement of 10.4% of the bid price for minority-owned business enterprises and women-owned business enterprises. Proposed MBE/WBE plans that include solely MBE or solely WBE, or do not include a reasonable amount by both MBE and WBE firms to meet the combined requirements, will not be considered responsive.

The applicable local minority workforce utilization percentage is a minimum goal of 15.3%. The applicable local women workforce utilization percentage is a minimum goal of 6.9%.

The Commonwealth requires participation of Veteran-Owned Business Enterprises (“VOBE”) on its construction projects. The Veteran-Owned Business Enterprise participation benchmark for this contract is 3.0%.

Each bid must be accompanied by a bid deposit, in the form of a bid bond, cash, certified check, or a treasurer's or cashier's check issued by a responsible bank or trust company, payable to the Department of Conservation and Recreation in the amount of 5% of the bid.

Each bid must be submitted through DCR's E-Bid room at www.bidexpress.com/businesses/36765/home. Please ensure that your bid is complete and marked as responsive when submitting through DCR's Bid room. Any bids found to be incomplete and/or marked unresponsive will be rejected by DCR and will not be considered when awarding the project.

Bids are subject to the provisions of M.G.L. Ch. 30, Sect. 39F, G, H and M inclusive. Wages are subject to minimum wage rates as per M.G.L. Ch. 149, sections 26 to 27D inclusive. The Department reserves the right to waive any informalities in or to reject any and all bids if it be in the public interest to do so.

Brian M. Arrigo, Commissioner
Massachusetts Department of Conservation and Recreation



**COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION AND RECREATION**

**PART I
INSTRUCTIONS TO BIDDERS**

**CONTRACTS FOR PUBLIC WORKS PROJECTS
SUBJECT TO THE PROVISIONS OF M.G.L. C. 30. SEC. 39M**

Awarding Authority:

Department of Conservation and Recreation
10 Park Plaza, Suite 6620,
Boston, MA 02116
Telephone: 617-626-1250

DCR Contract No.: P19-3295-C1A

Title: MCRT Sudbury to Hudson

Project Scope: The project is the construction a 10-ft wide paved, shared-use path along 7.5 miles of the Mass Central Rail Trail (MCRT) Wayside corridor from the Eversource Driveway approximately 900 feet east of Landham Road in Sudbury to the Assabet River Rail Trail off Wilkins Street in Hudson. The project includes installation of facilities for road crossings, paving, fencing/ railing installation, landscaping, hardscape, site amenities, pavement markings, signage and final restoration of all areas within the work zone.

Deadline for filing general bids is **Thursday, January 23, 2025, at 12:00 p.m.**

The minimum wage rate and truck rate requirements for this Contract are located www.bidexpress.com/businesses/36765/home.

Bid forms for this Contract are located @ www.bidexpress.com/businesses/36765/home.

The Minority and Women Business Enterprise participation for this Contract are to be found in the Notice to Contractors section (Part I - Page 2/3).

The time for completion of the Work is specified in Article 2 of the Department of Conservation and Recreation - Contractor Agreement. Liquidated damages for failure to complete on time are as stated in Article 8 of the Department of Conservation and Recreation - Contractor Agreement.

As used herein, capitalized terms shall have the meaning assigned to them in the General Conditions of the Contract and the Department of Conservation and Recreation - Contractor Agreement unless the context clearly indicates otherwise.

SECTION 1 - BIDDER'S REPRESENTATION

1.1 Each bidder (hereinafter sometimes referred to as "Bidder") by making a bid (hereinafter sometimes referred to as "Bid") represents and warrants that Bidder has visited and examined the Site and the Contract Documents; that Bidder is familiar with the local conditions under which the Work is to be performed; that Bidder has correlated personal observations with the requirements of the Contract Documents; and that where the Contract Documents require, in any part of the Work, a given result to be produced, the Contract Documents are adequate and that Bidder will produce the required result within the Bid price and that the Bid is made in accordance therewith.

1.2 FAILURE TO EXAMINE THE CONTRACT DOCUMENTS AND THE SITE WILL NOT RELIEVE ANY BIDDER FROM ANY OBLIGATION UNDER THE BID AS SUBMITTED. NEITHER THE COMMONWEALTH NOR THE DESIGNER WILL BE RESPONSIBLE FOR ERRORS, OMISSIONS AND/OR CHARGES FOR EXTRA WORK ARISING FROM BIDDER'S FAILURE TO FAMILIARIZE ITSELF WITH THE CONTRACT DOCUMENTS OR EXISTING CONDITIONS.

1.3 Pre-Bidding Conference

- A. If applicable, a pre-bidding conference for prospective bidders will be held at the date, time and location as specified in the Notice to Contractors section (Part I – page 2).
- B. At the conference, the project will be discussed in general. It is desirable that all prospective bidders attend. The Contract, Specifications, Drawings, and any other aspects of this project will be explained in response to questions by those attending. For interpretations of questions requiring legal, administrative, or engineering decision, prospective bidders shall comply with Section 3 herein.

SECTION 2 - GENERAL BIDDERS - QUALIFICATION

2.1 Every Bidder must submit the following documents, as required:

Special certification may be required as required by the Department on a contract-specific basis.

Refer to the Notice to Contractors for the specific qualification requirements of this contract.

SECTION 3 - REQUESTS FOR INTERPRETATION

3.1 Interpretation

A. The Plans and Specifications and other Contract Documents are to be considered together and are intended to be mutually complementary, so that any work shown on the Plans though not specified in the Specifications, and any work specified in the Specifications though not shown on the Plans, is to be executed by the Contractor as a part of this Contract.

B. All things that in the opinion of the Awarding Authority may be reasonably inferred from the Plans, Specifications and other Contract Documents are to be executed by the Contractor. The Awarding Authority shall determine whether the detail Plans conform to the general Plans and Contract Documents.

C. The tables of contents, titles, headings and marginal notes or sub-scripts contained herein are solely to facilitate references, are not intended to be construed as provisions of the Contract, and in no way affect the interpretation of the provisions to which they refer.

D. Where reference is made in the Contract Documents to publications, standards, or codes issued by associations or societies, such reference shall be interpreted to mean the current edition of such publications, standards, or codes, including revisions in effect on the date of the Advertisement, notwithstanding any reference to a particular date. The foregoing sentence shall not apply to the dates, if any, specified with respect to insurance policy endorsement forms.

E. In case of any conflict among the Contract Documents, unless the context clearly otherwise requires, the Contract Documents shall be construed according to the following priorities:

- First Priority: Contract Modifications
- Second Priority: Department of Conservation and Recreation - Contractor Agreement
- Third Priority: General Conditions of the Contract
- Fourth Priority: Drawings - Schedules take precedence over enlarged detail Drawings and enlarged Detail Drawings take precedence over reduced scale Drawings; figured dimensions shall prevail over scale.
- Fifth Priority: Specifications

3.2 Any questions by prospective Bidders concerning interpretation of the Contract Documents must be submitted in writing to the Awarding Authority and should be in its possession at least five working days before the date set for the receipt of Bids. The

Awarding Authority will post to Bid Express any addenda or written interpretations that it deems necessary to Bidders who have taken out plans at the address given by them before the date set for the receipt of affected Bids. Bidders may not rely upon oral communications or interpretations from the Awarding Authority or the Designer, and the Awarding Authority shall not be bound by them.

Written Questions shall be submitted to:

Attn: Amber Christoffersen, Project Manager
Department of Conservation and Recreation
10 Park Plaza, Suite 6620
Boston, MA 02116

Email: Amber.Christoffersen@mass.gov

3.3 It is the sole responsibility of the Bidder to ascertain the existence of any addenda issued by the Awarding Authority, all addendums are posted on Bid Express- www.bidexpress.com/businesses/36765/home. Copies of addenda will be made available for inspection at the locations listed in the Advertisement where the Contract Documents are on file.

3.4 Wherever in the Contract Documents reference is made to Massachusetts General Laws, it shall be construed to include all amendments thereto effective as of the date of the issuance of the invitation to bid on the proposed work.

SECTION 4 - PREPARATION OF BIDS; ALTERNATES

4.1 Bids shall be submitted through the DCR E-Bid room at www.bidexpress.com/businesses/36765/home?agency=true.

4.2 All Bids submitted thru Bid Express must be deemed responsive by Bid Express to be considered.

4.3 Where so indicated on the Bid Form, sums shall be expressed in both words and numerals. Where there is a discrepancy between the Bid sum expressed in words and the Bid sum expressed in figures, the Bid sum expressed in words shall control unless the intention of the Bidder clearly is otherwise as determined by the Awarding Authority in its sole discretion.

4.4 Each Bidder shall acknowledge all required alternates in Section C on the Bid Express by entering the dollar amount of addition or subtraction necessitated by the alternate(s).

4.5 If an alternate includes work within the Bidder's scope of work and does not involve a change in the cost of the Bid, the Bidder shall so indicate by writing "No Change" or "N/C" or "0" in the space provided for that alternate.

4.6 The lowest Bidder will be determined based on the sum of the base Bid and the accepted alternates.

4.7 Each bid must be accompanied by a bid deposit, payable to the Department of Conservation and Recreation in the amount of 5% of the bid. Bid Bonds must be submitted electronically, please ensure your company and your bonding agent's company register with one of the Bid Bond agencies affiliated with Bid Express: If you need additional assistance, please call the Bid Express Customer Support Team at [888-352-2439](tel:888-352-2439), available Monday - Friday from 7:00am – 8:00pm (EST). You can also email the team at support@bidexpress.com

4.8 The amount of such bid deposit shall be **5% five per cent** of the value of the Bid.

SECTION 5 - SUBMISSION OF BIDS

5.1 Each bid, **including the bid deposit**, shall be submitted via DCR's Bid room at www.bidexpress.com/businesses/36765/home?agency=true

5.2 All Bids must be received by the Awarding Authority no later than the applicable date and time specified on page 1 of these Instructions to Bidders. Any Bid not received by the applicable deadline will not be accepted.

SECTION 6 - WITHDRAWAL OF BIDS; REJECTION OF BIDS

6.1 Any Bid may be withdrawn prior to the specified deadline for the receipt of Bids provided that the withdrawal shall be made by a written request signed by a person having the authority to bind the Bidder. The written request must be hand delivered or otherwise delivered to Robert Boncore, Director of Contracts and Procurement, at 251 Causeway St., 6th Floor, Boston, MA 02114 or through email at Robert.Boncore@Mass.Gov, and must be received on or before the date and time appointed as the deadline for the receipt of Bids.

6.2 A Bidder may withdraw its Bid without penalty at any time up to the time of Award as defined below in subsection 9.1 only upon demonstrating to the satisfaction of the Awarding Authority that a death or disability has occurred, or a bona fide clerical error or mechanical error of a substantial nature was made during the preparation of the bid. Failure to demonstrate conclusively that a bona fide clerical error or mechanical error of a substantial nature was made may result in forfeiture of the Bid deposit

6.3 The Awarding Authority reserves the right to waive any informality in or to reject any and all Bids if it is in the public interest to do so. Without limiting the foregoing, the Awarding Authority reserves the right to reject unit prices which it deems unduly high or unduly low as unbalanced.

SECTION 7 – INSURANCE

7.1 Insurance Generally

A. The Contractor shall take out and maintain the insurance coverages listed in this Section with respect to the operations as well as the completed operations of this Contract. The insurance requirements stipulated shall cover all damage to property,

whether above or below ground, and shall apply to all the Work to be performed under this Contract. This insurance shall be provided at the Contractor's expense and shall be in full force and effect for the full term of the Contract or for such longer period as this Article requires.

B. All policies shall be written on an occurrence basis and be issued by companies authorized to write that type of insurance under the laws of the Commonwealth and rated in Best's Insurance Guide (or any successor thereto or replacement thereof) as having a general policy holder rating of "A" or better and a financial rating of at least "9" or otherwise acceptable to the DCR.

C. The Contractor shall submit two (2) originals of each certificate of insurance, acceptable to the DCR, simultaneously with the execution of this Contract. Certificates shall include: **DCR Contract Number and state DCR as an additional insured as to all policies of liability insurance and shall state that the Contractor has paid all premiums and that none of the coverages shall be cancelled, terminated, or materially modified unless and until ten (10) days prior notice is given in writing to the DCR.** The Contractor shall submit updated certificates prior to the expiration of any of the policies referenced in the certificates so that the DCR shall at all times possess certificates indicating current coverage. Certificates shall indicate the contractual liability coverage, and the Contractor's Protective Liability coverage is in force. Certificates shall include specific acknowledgment that the coverages set forth in this Section 7 are included in the policies.

7.2 Types and Amounts of Insurance

Contractor's Commercial General Liability

Bodily Injury &	<u>500,000.00</u> each occurrence
Property Damage	<u>1,000,000.00</u> general aggregate, per project

This policy shall include coverage relating to explosion, collapse, and underground property damage if blasting operations constitute part of the Work to be performed under this Contract.

If the Contract work includes work to be performed within fifty feet of a railroad, any exclusion for liability assumed under contract for work within fifty feet of a railroad shall be deleted.

Vehicle Liability

The Contractor shall provide the following minimum coverage with respect to the operations of any employee, including coverage for owned, non-owned, and hired vehicles:

Combined Single Limit: 1,000,000.00

Worker's Compensation

The Contractor shall provide the following coverage in accordance with M.G.L. c. 149, sec. 34A and M.G.L. c. 152 as amended, unless a higher coverage is specified below:

Part One	Provide Statutory Minimum
Employer's Liability	\$500,000.00 each accident
Part Two	\$500,000.00 disease per employee
	\$500,000.00 disease policy aggregate

SECTION 8 – MBE, WBE AND VOB PARTICIPATION

8.1 The apparent low Bidder's compliance with the requirements of this Section 8 is a prerequisite for receiving the Award of the Contract. The MBE, WBE and VOB participation for this Contract are as set forth on the first page of these Instructions to Bidders

8.2. The Awarding Authority reserves the right to reduce or waive the MBE or WBE participation established for this Contract upon written request made by a Bidder. Requests to reduce or waive the M/WBE participation for this Contract should be received by the Awarding Authority no later than Ten (10) working days before the date set for the receipt of general Bids. **THE AWARDING AUTHORITY RESERVES THE RIGHT TO REJECT ANY REQUEST TO REDUCE OR WAIVE THE M/WBE REQUIREMENTS FOR THIS CONTRACT THAT IS RECEIVED AFTER THESE DEADLINES.** Such written request must demonstrate to the satisfaction of the Awarding Authority that it is not feasible for a non-MBE or non-WBE general Bidder to meet the percentage established for this Contract based upon any or all of the following: (i) actual M/WBE availability, (ii) the geographic location of the project to the extent related to M/WBE availability, (iii) the scope of the work, (iv) the percentage of work available for subcontracting to M/WBEs and/or (v) other relevant factors, including a **documented** inability by the prospective Bidder to obtain commitments from M/WBE subcontractors sufficient to meet the M/WBE requirements after having made a diligent, good faith effort to do so. All the foregoing documentation shall accompany the Bidder's request for a reduction or waiver of the M/WBE participation requirements. Such documentation shall include, at a minimum, the following:

-- A list of all items of work under the Contract that the Bidder made available for subcontracting to M/WBEs. The Bidder shall identify all items of work that the Bidder did not make so available and shall state the reasons for not making such work available for subcontracting to M/WBEs. The Bidder shall also demonstrate that, where commercially reasonable, subcontracts were divided into units capable of being performed by M/WBEs.

-- Evidence that the Bidder sent written notices soliciting Bids or proposals to perform the items of work made available by the Bidder for subcontracting to M/WBEs to all M/WBEs qualified to perform such work. The Bidder shall identify (i) each M/WBE solicited, and (ii) each M/WBE listed in the Massachusetts Supplier Diversity Office ("SDO" formerly "SOMWBA") directory under the applicable trade category that was not solicited and reasons, therefore. The Bidder shall also state the dates that notices were mailed and provide a copy of the written notice(s) sent.

-- Evidence that the Bidder made reasonable efforts to follow up the written notices sent to M/WBEs with telephone calls or personal visits to determine with certainty

whether the M/WBEs were interested in performing the work. Phone logs or other documentation must be submitted.

-- A statement of the response received from each M/WBE solicited, including the reason for rejecting any M/WBE who submitted a bid or proposal.

-- Evidence of efforts made to assist M/WBEs that needed assistance in obtaining bonding or insurance, or lines of credit with suppliers if the inability of M/WBEs to obtain bonding, insurance, or lines of credit is the reason given for the Bidder's inability to meet the M/WBE requirements.

The Bidder may also submit any other information supporting its request for a waiver or reduction in the M/WBE participation, including without limitation evidence that the Bidder placed advertisements in appropriate media and trade association publications announcing the Bidder's interest in obtaining bids or proposals from M/WBEs, and/or sent written notification to M/WBE economic development assistance agencies, trade groups and other organizations notifying them of the Contract and the work to be subcontracted by the Bidder to M/WBEs. The Bidder shall also submit any other information requested by the Awarding Authority to show that the Bidder has taken all actions that could be expected to achieve the M/WBE participation.

8.3 Any reduction or waiver of the M/WBE participation for this Contract will be made by written addendum mailed to all persons who have taken out plans for the project.

8.4 No later than five (5) working days after the opening of Bids, the apparent low Bidder shall submit the following documents to the Awarding Authority's Contract Officer listed in subsection 5.1: (i) a completed Schedule for Participation by Minority/Women Business Enterprises ("Schedule for Participation") in the form provided by the Awarding Authority showing M/ WBE participation in amounts equal to or exceeding the M/WBE requirements for this Contract, (ii) a completed Letter of Intent in the form provided by the Awarding Authority for each M/WBE listed in the Schedule for Participation, and (iii) a current SDO certification letter for each M/WBE listed in the Schedule of M/WBE Participation showing that the M/WBE is certified in the area of work for which it is listed on the Letter of Intent.

8.5 Each Letter of Intent shall identify and describe the work to be performed by the named M/WBE (the "M/WBE Work") with enough specificity to permit the Awarding Authority to identify the items of contract work that the M/WBE will perform for M/WBE participation credit. The Awarding Authority reserves the right to reject any Letter of Intent if the price to be paid for the M/WBE Work does not bear a reasonable relationship to the value of such work under the Contract as determined by the Awarding Authority.

8.6 Within five (5) working days after receipt of the Schedule For M/WBE Participation, Letters of Intent, and SDO certification letters, the Awarding Authority shall review and either approve or disapprove the apparent low Bidder's submissions. If the apparent low Bidder has not submitted an appropriate Schedule For M/WBE and appropriate Letters of Intent and SDO certification letters establishing that the M/WBE participation for the project will be met, the apparent low Bidder may be considered ineligible for

Award of the Contract and the Awarding Authority will Award the Contract to the second lowest Bidder, subject to said Bidder's compliance with these conditions.

8.7 The Contractor is required to submit to the Awarding Authority signed subcontracts with all subcontractors prior to the commencement of work to be performed under these contracts, and/or a purchase order or invoice from each material supplier and/or manufacturer listed on the Schedule For M/WBE Participation within thirty (30) days of the issuance of the Notice to Proceed by the Awarding Authority.

8.8. VOB Participation and Program Operation

- 8.8.1 In order to be an eligible VOB for this Contract, the business enterprise must be listed as a veteran-owned business within the VetBiz database, located at www.VetBiz.gov, at the time of the bid submission deadline. Only a VOB identified as a veteran-owned small business via the VetBiz database shall count towards meeting the Program requirements.
- 8.8.2 The Contractor must demonstrate that VOBs are eligible for the following participation via its listing as a veteran-owned small business within the VetBiz database, located at www.VetBiz.gov, at the time said VOB seeks to participate in business provided under this Contract; provided, that it shall also be the responsibility of the Awarding Authority to verify the status of the VOB via said VetBiz database prior to the awarding of the Contract.

8.8.3 VOB Reduction/Waiver

8.8.3.1 The Awarding Authority reserves the right to reduce or waive the VOB participation established for this Contract upon written request made by a Bidder using their Letterhead and addressed to Procurement Director Robert.Boncore@mass.gov

8.8.3.2 If filed Sub-Bids are solicited for this Contract, requests from prospective general Bidders to reduce or waive the VOB participation for this Contract should be received by the Awarding Authority no later than four (4) working days after the list of filed Sub-Bidders is mailed by the Awarding Authority to persons who have taken out plans for the Contract, using their Letterhead and addressed to Procurement Director Robert.Boncore@mass.gov

8.8.3.3 If there are no filed sub-Bids solicited for this Contract, requests to reduce or waive the VOB participation for this Contract should be received by the Awarding Authority no later than five (10) working days before the date set for the receipt of general Bids. **THE AWARDING AUTHORITY RESERVES THE RIGHT TO REJECT ANY REQUEST TO REDUCE OR WAIVE THE VOB REQUIREMENTS FOR THIS CONTRACT THAT IS RECEIVED AFTER THESE DEADLINES.** Such written request must demonstrate to the satisfaction of the Awarding Authority that it is not feasible for a non- VOB or non- VOB general Bidder to meet the percentage established for this Contract based upon any or all the following:

- i. actual VOB availability.
- ii. the geographic location of the project to the extent related to VOB availability.
- iii. the scope of the work.
- iv. the percentage of work available for subcontracting to VOBs; and/or
- v. Other relevant factors, including a **documented** inability by the prospective Bidder to obtain commitments from VOB subcontractors sufficient to meet the VOB requirements after having made a diligent, good faith effort to do so. All the foregoing documentation shall accompany the completed Waiver Request Form. Such documentation shall include, at a minimum, the following:
 - of efforts made to assist VOB's that needed assistance in obtaining bonding or insurance, or lines of credit with suppliers if the inability of VOB to obtain bonding, insurance, or lines of credit is the reason given for the Bidder's inability to meet the VOB requirements.

8.8.3.4 The Bidder may also submit any other information supporting its request for a waiver or reduction in the VOB requirements, including without limitation

evidence that the Bidder placed advertisements in appropriate media and trade association publications announcing the Bidder's interest in obtaining bids or proposals from VOBES, and/or sent written notification to VOBES economic development assistance agencies, trade groups and other organizations notifying them of the Contract and the work to be subcontracted by the Bidder to VOBES. The Bidder shall also submit any other information requested by the Awarding Authority to show that the Bidder has taken all actions that could be expected to achieve the VOBES requirements.

8.8.3.5 No later than five (5) working days after the opening of general Bids, the apparent low Bidder shall submit the following documents to the Awarding Authority's Contract Officer:

- (i) a completed Schedule for Participation by VOBES ("Schedule for Participation") in the form provided by the Awarding Authority showing VOBES participation in amounts equal to or exceeding the VOBES requirements for this Contract; and
- (ii) a completed Letter of Intent in the form provided by the Awarding Authority for each VOBES listed in the Schedule for Participation.

Each Letter of Intent shall identify and describe the work to be performed by the named VOBES (the "VOBES Work") with enough specificity to permit the Awarding Authority to identify the items of contract work that the VOBES will perform for VOBES participation credit. The Awarding Authority reserves the right to reject any Letter of Intent if the price to be paid for the VOBES Work does not bear a reasonable relationship to the value of such work under the Contract as determined by the Awarding Authority.

8.8.3.6 Within five (5) working days after receipt of the Schedule for VOBES Participation and Letters of Intent, the Awarding Authority shall review and either approve or disapprove the apparent low Bidder's submissions. If the apparent low Bidder has not submitted an appropriate Schedule for VOBES Participation and appropriate Letters of Intent establishing that the VOBES requirements for the project will be met, the apparent low Bidder will be considered ineligible for Award of the Contract and the Awarding Authority will Award the Contract to the second lowest Bidder, subject to said Bidder's compliance with these conditions.

8.8.3.7 The Contractor is required to submit to the Awarding Authority signed subcontracts with all subcontractors prior to the commencement of work to be performed under these contracts, and/or a purchase order or invoice from each material supplier and/or manufacturer listed on the Schedule for VOBES Participation within thirty (30) days of the issuance of the Notice to Proceed by the Awarding Authority.

8.8.3.8 A filed Sub-Bidder is not required to submit a Schedule for VOBES Participation with its Bid. A filed Sub-Bidder may, at its option, submit a Letter of Intent with its Bid if it is a VOBES. If a filed sub-Bidder intends to sub-subcontract work to a VOBES, and the filed sub-Bidder wishes that sub-subcontract to be credited toward the requirements for this Contract, the filed sub-Bidder should submit a Letter of Intent from that VOBES with its Bid. A filed sub-Bidder can subcontract out up to 20% of its work to VOBES, unless

such work is designated as sub-subcontract Paragraph E work in the Bid Documents, in which case the 20% cap does not apply.

SECTION 9 - CONTRACT AWARD

9.1 "Award" means the determination, selection, and notification of the lowest, responsible, and eligible Bidder by the Awarding Authority.

9.2 The Contract will be awarded to the lowest responsible and eligible Bidder as determined by the Awarding Authority. Bidders will be required to hold firm their respective bids for thirty (30) days, Saturdays, Sundays, and legal holidays excluded, after the opening of the Bids.

9.3 As used herein, the term "lowest responsible and eligible Bidder" shall mean the Bidder whose Bid is the lowest of those Bidders who, in the Awarding Authority's opinion, are ready, willing and able to comply with all requirements of the Contract Documents and demonstrably possess the skill, ability, and integrity necessary for the faithful performance of the Work, based on the determination of past performance and financial soundness under M.G.L. c. 30, sec. 39M, (ii) the rules, regulations, orders, guidelines and policies promulgated from time to time by the Commissioner of the Department of Conservation and Recreation and (iii) any other relevant criteria that the Awarding Authority may prescribe.

9.4 The Bid price shall be the price set forth in paragraph C of the Bid Form.

9.5 Should the Contract Documents require submission of special data to accompany the Bid, the Awarding Authority reserves the right to rule the Bidder's failure to submit such data an informality and to receive said data subsequently within a reasonable time as set by the Awarding Authority, provided that no such ruling shall result in an unfair advantage to the Bidder.

9.6 Should the Contract Documents require submission of special data to accompany the Bid, the Awarding Authority reserves the right to rule the Bidder's failure to submit such data an informality and to receive said data subsequently within a reasonable time as set by the Awarding Authority, provided that no such ruling shall result in an unfair advantage to the Bidder. **In addition**, the Department reserves the right to waive minor defects in documents or time limits.

SECTION 10 - EXECUTION OF CONTRACTS

10.1 Upon receipt of the Award, the Bidder awarded the Contract shall submit two (2) properly executed originals of each of the following documents prior to execution of the Contract by the Awarding Authority. All such documents shall be in the form prescribed by the Awarding Authority and received within five working days from receipt of the Award.

- Department of Conservation and Recreation-Contractor Agreement
- Certificate of Corporate Vote
- Joint Venture Authorization (if appropriate)

- Performance and Payment Bonds with power of attorney
- Certificates of Insurance evidencing coverages in amounts required by the Contract Documents.
- Any other documents that the Awarding Authority may require in connection with the Contractor's execution of the Contract.

10.2 Please note that no part of the Contractor's work may be subcontracted without the prior written approval of the Awarding Authority. The Contractor must complete a minimum of 51% of the scope of this contract by his own work force. If the Contractor desires to subcontract any part of the Work, the Contractor must promptly forward to the Awarding Authority a list in duplicate designating the work to be performed and the name of each proposed subcontractor. Approved subcontractors are eligible for direct payments under M.G.L. 30, sec. 39F, as amended. Material suppliers not involving site labor need not be submitted for approval.

SECTION 11 - RETURN OF BID DEPOSITS

11.1 All Bid deposits of Bidders, except those of the three (3) lowest responsible and eligible general Bidders, shall be returned within five days, Saturdays, Sundays, and legal holidays excluded, after the opening of the Bids. The Bid deposits of the three (3) lowest responsible and eligible Bidders shall be returned upon the execution and delivery of the Contract, or if no award is made; except that, if any Bidder fails to perform its agreement to execute the Contract and furnish performance and payment bonds as stated in its Bid, then said Bidder's Bid deposit shall become the property of the Commonwealth as liquidated damages; provided that the amount of the Bid deposit that becomes the property of the Commonwealth shall not exceed the difference between the Contractor's Bid price and the Bid price of the next lowest responsible and eligible Bidder; and provided further that, in the case of death, disability, bona fide clerical or mechanical error of a substantial nature, or other similar unforeseen circumstances affecting the Bidder, such Bidder's Bid deposit shall be returned.

11.2 In addition to the provisions for the return of Bid deposits as provided above, upon receipt of a Bid Bond in an amount not less than the amount of the required Bid deposit, the Awarding Authority shall return any Bid deposit of a Bidder forthwith after the public opening of Bids.



**COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION & RECREATION
STANDARD CONSTRUCTION CONTRACT
For Projects Subject to M.G.L. c. 149 or M.G.L. c. 30, sec. 39M**

PART II

**DEPARTMENT OF CONSERVATION AND RECREATION -
CONTRACTOR AGREEMENT**

Awarding Authority: The Massachusetts Department of Conservation and Recreation

Department Code: DCR

This agreement ("Contract") is made by and between the Commonwealth of Massachusetts acting by and through the Awarding Authority identified above with a principal place of business at 10 Park Plaza, Suite 6620, Boston, MA 02116, and hereinafter called the "Contractor".

Terms used in this Department of Conservation and Recreation - Contractor Agreement, which are defined in the General Conditions of the Contract shall have the meanings designated therein.

The Awarding Authority and the Contractor agree as follows:

Article 1. Scope of Work. The Work under this Contract is defined as all work required by the Contract Documents for the construction of, Contract No:P2 in accordance with and as described in the Plans and Specifications prepared by and as modified by Addenda () included herein.

Article 2. Time for Completion. The Contractor shall commence the Work under this Contract on the date specified in the written "Notice to Proceed," and shall within Days after such date, bring the Work to Substantial Completion and to the point at which a Certificate of Agency Use and Occupancy may be issued, and shall bring the Work to Final Acceptance within 10 days after the date specified for Substantial Completion.

Article 3. Contract Price. The Awarding Authority shall pay the Contractor, in current funds, for the performance of the Work, subject to additions and deductions by Approved Change Order(s), the Contract Price of Dollars and Zero Cents (\$.00). The Unit Prices, if any, approved by the Awarding Authority are those included in the Contractor's General Bid. The following Alternates have been accepted and their costs are included in the Contract Price:

Article 4. Approved Subcontractors. The filed Subcontractors listed in the Contractor's General Bid submitted by the Contractor have been approved for the performance of the specified portions of the Work subject to the Commonwealth's verification that they have complied with state corporation and partnership registration laws. No other filed Subcontractors and no non-filed Subcontractors shall be used for these or any other portions of the Work without the prior written approval of the Awarding Authority.

Article 5. Certifications. Pursuant to M.G.L. c. 62C, sec. 49A, the individual signing this Contract on behalf of the Contractor hereby certifies, under the penalties of perjury, that to the best of his or her knowledge and belief the Contractor has complied with any and all applicable state and federal tax laws. The individual signing this Contract on behalf of the Contractor further certifies under penalties of perjury that the Contractor is not presently debarred from doing public construction work in the Commonwealth under the provisions of M.G.L. c. 29, sec. 29F, or any other applicable debarment provisions of any other chapter of the General Laws or any rule or regulation promulgated thereunder and is not presently debarred from doing public construction work by any agency of the United States.

Article 6. The Contract Documents: The following documents form the Contract, are incorporated by reference herein, and are referred to as the "Contract Documents:"

- The Instructions to Bidders
- The General Bid submitted by the Contractor
- This Department of Conservation and Recreation – Contractor Agreement
- The General Conditions of the Contract
- The Special Conditions [Note: the term "Special Conditions" may also refer to Division 1 of the Specifications.]
- The Plans and Specifications, including Addenda identified in Article 1 above
- All Approved Change Orders issued after execution of this Department of Conservation and Recreation - Contractor Agreement

Article 7. Minority Business Enterprise, Women Business Enterprise and Veteran-Owned Business Enterprises Participation Goals and Minority/Women and Veteran-Owned Business Enterprises Workforce Utilization Percentages: The applicable goals, if any, for minority business enterprise and women business enterprise participation, as well as those for minority and women workforce utilization percentages established for this Contract are to be found at the Notice to Contractors for this project, at Part I – Instructions to Bidders, and are incorporated by reference herein.

Article 8. Liquidated Damages. For the purposes of Article VI of the General Conditions of the Contract, liquidated damages for delay are to be found at the Notice to Contractors for this project at Part I – Instructions to Bidders and are incorporated by reference herein.

Article 9. Insurance Requirements. The insurance requirements are set forth in the Instructions to Bidders and are incorporated herein.

In witness whereof, the parties hereto have caused this instrument to be executed in duplicate under seal as of the date set forth above.

Forms Used During Contract Award and Execution

PAYMENT BOND

PERFORMANCE BOND

CERTIFICATE OF CORPORATE VOTE OF AUTHORITY

CERTIFICATE OF COMPLIANCE WITH STATE TAX LAWS AND WITH UNEMPLOYMENT

COMPENSATION CONTRIBUTION REQUIREMENTS

CERTIFICATE OF LIABILITY INSURANCE

A. SEE PART I, SECTION 7 – ARTICLE 7.1 C.

B. ADDING IN THE DESCRIPTION **DCR AS ADDITIONAL INSURED.**

SCHEDULE FOR WOMEN AND MINORITY BUSINESS ENTERPRISE

LETTER OF INTENT – MINORITY AND WOMEN BUSINESS PARTICIPATION

SCHEDULE FOR VETERAN-OWNED BUSINESS ENTERPRISE

LETTER OF INTENT – VETERAN-OWNED BUSINESS ENTERPRISE

EXECUTIVE ORDER 546 – CONTRACTOR CERTIFICATION - VOB POLICY OF THE COMMONWEALTH

EXECUTIVE ORDER 481 – CONTRACTOR CERTIFICATION - UNDOCUMENTED WORKERS POLICY OF THE COMMONWEALTH

EQUAL EMPLOYMENT OPPORTUNITY COMPLIANCE FORM

IF APPLICABLE FORM OF SUBCONTRACTOR(S)

IN WITNESS WHEREOF, said Contractor has caused these presents to be signed in its name and its behalf under seal by its officers, duly authorized to do so, and the said Commonwealth has executed these presents by the Commissioner of said Department, or its authorized agent, as prescribed by law, who shall not incur any personal liability by reason of the execution of these presents or of anything herein contained, and who hereby certifies under penalties of perjury that all applicable provisions of M.G.L. c. 149, sec. 44J, have been complied with.

(Executed in duplicate under Seal)

CONTRACTOR:

By: _____ SIGNATURE & SEAL

Name: _____

Title: _____

Date: _____

**COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION AND RECREATION**

By: _____

Name: Brian M. Arrigo

Title: Commissioner

Date: _____

PAYMENT BOND

BOND No. _____

Know all men by these presents, that

_____ as principal and _____ as surety are held and firmly bound unto the Commonwealth of Massachusetts in the sum of Dollars and Zero Cents (\$.00) in lawful money of the United States of America, to be paid to the Commonwealth of Massachusetts, for which payments, well and truly to be made, we bind ourselves, our respective heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

Whereas the said principal has made a Contract with the Commonwealth acting through its Department of Conservation and Recreation ("Awarding Authority") the construction of _____.

Now the condition of this obligation is such that if the principal shall pay for all labor performed or furnished and for all materials used or employed in said Contract and in any and all duly authorized modifications, alterations, extensions of time, changes or additions to said Contract that may hereafter be made, notice to the surety of such modifications, alterations, extensions of time, changes or additions being hereby waived, the foregoing to include any other purposes or items set out in, and to be subject to, the provisions of Massachusetts General Laws, Chapter 30, Section 39A, and Chapter 149, Section 29, as amended, then this obligation shall become null and void; otherwise it shall remain in full force and virtue.

In witness whereof we hereunto set our hand and seals this ___ day of _____, _____

(Seal)
(Print Name of General Contractor)

(Seal)
(Print Name of Surety)

By _____
(Signature – Title)

By _____
(Signature – Title)

Surety Address _____

PERFORMANCE BOND

BOND No. _____

Know all men by these presents, that

_____ as principal and _____ as surety are held and firmly bound unto the Commonwealth of Massachusetts in the sum of Dollars and Zero Cents (\$.00) in lawful money of the United States of America, to be paid to the Commonwealth of Massachusetts, for which payments, well and truly to be made, we bind ourselves, our respective heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

Whereas the said principal has made a Contract with the Commonwealth acting through its Department of Conservation and Recreation ("Awarding Authority") the construction of .

Now the condition of this obligation is such that if the principal shall well and truly keep and perform all the undertakings, covenants, agreements, terms and conditions of said Contract and any extensions thereof that may be granted by the Commonwealth, with or without notice to the surety, and during the life of any guarantee required under the Contract, and shall also well and truly keep and perform all the undertakings, covenants, agreements, terms and conditions of any and all duly authorized modifications, alterations, changes or additions to said Contract that may hereafter be made, notice to the surety of such modifications, alterations, changes or additions being hereby waived, then this obligation shall become null and void; otherwise it shall remain in full force and virtue.

In the event that the Contract is abandoned by the Contractor or is terminated by the Commonwealth under the provisions of said Contract, said surety shall, if requested in writing by the Commonwealth, take such action as is necessary to complete the Contract.

In witness whereof we hereunto set our hand and seals this ____ day of _____, _____

_____ (Seal)
(Print Name of General Contractor)

_____ (Seal)
(Print Name of Surety)

By _____
(Signature – Title)

By _____
(Signature – Title)

Surety Address _____

CERTIFICATE OF CORPORATE VOTE

I hereby certify that I am the ___ clerk, ___ assistant clerk, of

_____ (the "Corporation") and that at a
(Name of Corporation)

duly authorized meeting of the Board of Directors of the Corporation held on

_____ in _____ at which a quorum was
(Date) (Location)

present and voting it was voted to authorize _____
(Name)

_____ of the Corporation to execute
(Officer Title)

and deliver on behalf of the Corporation Contract, and to act as principal to execute bonds in connection therewith,

I further certify that _____ is the duly qualified and acting
(Name of Corporate Officer)

_____ of the Corporation and that said vote has not been
(Officer Title)

Repealed, rescinded, or amended.

Name

Print Name

Date

(CORPORATE SEAL)

SUBSCRIBED AND SWORN TO THIS ___ DAY OF _____, 20___ BEFORE ME

Notary Public

My Commission Expires: _____

CERTIFICATE OF COMPLIANCE WITH STATE TAX LAWS AND WITH UNEMPLOYMENT
COMPENSATION CONTRIBUTION REQUIREMENTS

Pursuant to MGL, c. 62C, s. 49A and MGL, c. 515A, s. 29A, I,

_____ authorized signatory for
_____ whose principal place of business is at
_____ do hereby certify
under penalties of perjury that _____ has filed all
state tax returns and paid all taxes as required by law and has complied with all state laws
pertaining to contributions to the unemployment compensation fund and to payments
in lieu of contributions.

The Business Organization Social Security Number or Federal Identification Number is

_____.

Signed under the penalties of perjury the _____ day of _____ 20 _____

Signature: _____

Name and Title: _____

Schedule for Participation by Women and Minority Business Enterprise

(To be completed and submitted within five calendar days from bid opening)

NOTE I: Participation of a Woman-owned or Minority-owned enterprise may be counted in only one category; the same participation cannot be used in computing the percentage of Minority participation and again of Women participation.

Minority Business Enterprise Participation in the work

Name & address of MBE	Dollar Value of Participation	Nature of Participation
1. _____		

2. _____		

3. _____		

Total MBE Commitment: _____

Participation (divide Total Commitment by Total Bid Price) = _____ Percentage MBE

ITEM II - Women Business Enterprise Participation in the work

Name & address of WBE	Dollar Value of Participation	Nature of Participation
1. _____		

2. _____		

3. _____		

Total WBE Commitment: _____

Percentage WBE Participation (divide Total Commitment by Total Bid Price) = _____

The bidder agrees to furnish implementation reports as required by the Department to indicate the M/WBE(s) which it has used or intends to use. Breach of this commitment constitutes a breach of the contract.

Name of bidder: _____

Date: _____ By: _____

Letter of Intent – Women/Minority Business Enterprise Participation

(To be completed by W or MBE and Submitted by the Low Bidder within five calendar days of bid opening)

Project Number: _____
 Project Location: _____
 To: _____
Name of General Bidder

Circle one
 WBE MBE

1. My company has been certified by SDO (Supplier Diversity Office) and it has not changed its women or minority ownership, control, or management without notifying SDO within thirty (30) calendar days of such a change.
2. My company understands that if your company is awarded the contract, your company intends to enter into an agreement with my company to perform the activity described below for the prices indicated. My firm also understands that your firm, as General Bidder, will make substitutions and quantity changes as allowed or required by the provisions of the contract with the Commonwealth.
3. This firm understands that under the terms of Article XIII of the contract, only work **actually performed** by an MBE/WBE will be credited toward MBE/WBE participation goals, and this firm **cannot assign or subcontract out any of its work** without prior written approval of the DCR Compliance Office, and that any such assignment or subcontracting will not be credited toward MBE/WBE participation goals.

W or MBE PARTICIPATION

Contract Item	Description of Activity (with Notation such as "Labor Only", "Material Only", etc.)	Quantity	Unit Price	Total Amount
---------------	---	----------	------------	--------------

Total Dollar Value: _____

(Additional copies of this form shall be prepared by the Contractor in the quantity necessary to comply with the contract.)

Name of MBE or WBE Firm _____ Authorized Signature _____

Business Address _____

Print Name _____ Title _____

Telephone No. _____ Cell: _____ Date _____

**COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION AND RECREATION
VETERAN OWNED BUSINESS ENTERPRISE POLICY
AND CONTRACTOR CERTIFICATION**

In accordance with Executive Order No. 546, it is the policy of the Commonwealth and its executive agencies to promote self-reliance among veterans by offering such veterans who own and control business enterprises the opportunity to participate in state contracting activity, as well as to assist and encourage the participation of businesses owned and controlled by veterans in all areas of state procurement contracting, including contracts for public construction, design services, and commodities and services.

The Massachusetts Executive Office of Administration and Finance has therefore established the Veteran-Owned Business Enterprise (VOBE) Program (the "Program") to oversee the inclusion of business enterprises owned and controlled by veterans in all areas of state procurement contracting, including contracts for construction, design and professional services, and commodities and services. For more information on this Order, see: <http://www.mass.gov/governor/legislation/eexecorder/executiveorder/executive-order-no-546.html>.

DCR Requires Contractors to acknowledge this policy and the requirements as provided in the contract by signing this certification as well as the Contract Documents.

CONTRACTOR CERTIFICATION

As evidence by the signature of the Contractor's Authorized Signatory below, the Contractor certifies under the pains and penalties of perjury that the Contractor acknowledges the above-referenced policy as set forth in Executive Order 546, has read Executive Order 546, and will abide the requirements concerning the policy and order as set forth in the referenced Contract. The Contractor acknowledges that if the Contractor has not submitted an appropriate Schedule for VOB Participation and appropriate Letters of Intent establishing that the VOB participation goal for the project will be met, the Contractor may not be considered eligible for Award of the Contract unless he/she requests a waiver by completing and submitting the waiver form to the Contracts Administrator/DCR and that request is approved. The Contractor also understands and agrees that a breach of any of these terms during the period of the Contract may be regarded as a material breach, subjecting the Contractor to sanctions, including but not limited to monetary penalties, withholding of payments, contract suspension and /or termination.

Contractor Authorizing Signature

Date: _____

Print Name

Title: _____

Telephone: _____

Cell: _____

Email: _____

Schedule for Participation by Veteran-Owned Business Enterprise

(To be completed and submitted within five (5) calendar days from bid opening)

NOTE: Participation of a Veteran-Owned Enterprise may be counted in only one category; the same participation cannot be used in computing the percentage of DBE/M/WBE participation.

Veteran-Owned Business Enterprise Participation in the work

Name & address of VOB	Dollar Value of Participation	Nature of Participation
1. _____		

2. _____		

3. _____		

Total VOB Commitment: _____

Percent VOB Participation (divide Total Commitment by Total Bid Price)= _____

The bidder agrees to furnish implementation reports as required by the Department to indicate the VOB(s) which it has used or intends to use. Breach of this commitment constitutes a breach of the contract.

Name of bidder: _____

Date: _____ By: _____

Letter of Intent – Veteran-Owned Business Enterprise Participation

(To be completed by VOB and Submitted by the Low Bidder within five (5) calendar days of bid opening; use and prepare extra forms as needed)

DCR Contract/ Project Number: _____

Project Location: _____

To: _____

VOBE

Name of General Bidder

My company has been certified by the Department of Veterans Affairs (VetBiz.gov) and or Supplier Diversity Office (SDO). it has not changed its veteran ownership, control, or management without notifying the Department of Veterans Affairs (VetBiz.gov) within thirty (30) calendar days of such a change.

1. My company understands that if your company is awarded the contract, your company intends to enter into an agreement with my company to perform the activity described below for the prices indicated. My firm also understands that your firm, as General Bidder, will make substitutions and quantity changes as allowed or required by the provisions of the contract with the Commonwealth.
2. This firm understands that under all relevant terms of the contract, only work **actually performed** by an VOB will be credited toward VOB participation goals, and this firm **cannot assign or subcontract out any of its work** without prior written approval of the DCR Compliance Office, and that any such assignment or subcontracting will not be credited toward SDVOBE participation goals.

VOBE PARTICIPATION

Contract **Description of Activity** (with Item Notation such as “Labor Only”, Quantity, Unit Price, Total Amount, “Material Only”, etc.):

Activity	Labor or Material Only?	Quantity Unit Price	Total Dollar Value

VOBE Firm Name _____

Authorized Signature _____

Printed Name _____ Title _____

Telephone No. _____ Cell No. _____

E-mail: _____@_____ ; Date _____

INSTRUCTIONS:

Executive Order 481 applies to all state agencies in the Executive Branch, including all executive offices, boards, commissions, agencies, departments, divisions, councils, bureaus, and offices, now existing and hereafter established. As it is the policy of the Executive Branch to prohibit the use of undocumented workers in connection with the performance of state contracts, all contracts entered after February 23, 2007, require that contractors, as a condition of receiving Commonwealth funds under any Executive Branch contract, make the following certification:

CONTRACTOR CERTIFICATION:

As evidenced by the signature of the Contractor's Authorized Signatory below, the Contractor certifies under the pains and penalties of perjury that the Contractor shall not knowingly use undocumented workers in connection with the performance of all Executive Branch contracts; that pursuant to federal requirements, the Contractor shall verify the immigration status of all workers assigned to such contracts without engaging in unlawful discrimination; and that the Contractor shall not knowingly or recklessly alter, falsify, or accept altered or falsified documents from any such worker(s). The Contractor understands and agrees that breach of any of these terms during the period of each contract may be regarded as a material breach, subjecting the Contractor to sanctions, including but not limited to monetary penalties, withholding of payments, contract suspension or termination.

Date: _____

Contractor Authorizing Signature

Print Name

Title: _____

Telephone: _____

Cell: _____

Email: _____

EQUAL EMPLOYMENT OPPORTUNITY COMPLIANCE FORM

Contractor's Certificate

A contractor shall not be eligible for award of a contract unless such contractor has submitted the following certification to the Awarding Authority, said certification shall be deemed a part of the resulting contract:

Contractor's Certification

X

(Contractor)

certifies that it intends to use the following listed **certification trades** in the work subject to this contract.

X

and, further, that it will comply with the minority manpower ratio and specific affirmative action steps contained herein; and will obtain from each of its subcontractors and submit to the Awarding Authority prior to the award of any subcontract under this contract, the subcontractor certification required by these bid conditions.

X

(Signature of authorized representative of contractor)

Subcontractor's Certification

Prior to the award of any subcontract, regardless of tier, the prospective subcontractor must execute and submit to the general contractor the following certification, which shall be deemed a part of the resulting subcontract:

(Subcontractor)

certifies that: it intends to use the following listed construction trades in the work under the subcontract

and, further, it will comply with the manpower ratio and specific affirmative action steps contained herein and will obtain from each of the subcontractors prior to the award of any subcontract under this subcontract, the subcontractor certification required by these bid conditions.

(Signature of authorized representative of subcontractor)

In order to ensure that said subcontractor's certification becomes a part of all subcontracts under the general contract, no subcontract shall be executed unless or until an authorized representative of the Awarding Authority administering this contract has determined, in writing, that said certification has been incorporated in such subcontract, regardless of tier. Any subcontract executed without such written approval shall be void.

Exhibit A
Executive Order 504 Contractor Certification Form

BIDDER/CONTRACTOR LEGAL NAME:

BIDDER/CONTRACTOR VENDOR/CUSTOMER CODE: VC

Executive Order 504: For all Contracts involving the Contractor’s access to personal information, as defined in M.G.L. c. 93H, and personal data, as defined in M.G.L. c. 66A, owned or controlled by Executive Department agencies, or access to agency systems containing such information or data (herein collectively “personal information”), Contractor certifies under the pains and penalties of perjury that the Contractor (1) has read Commonwealth of Massachusetts Executive Order 504 and agrees to protect any and all personal information; and (2) has reviewed all of the Commonwealth of Massachusetts Information Technology Division’s Security Policies available at www.mass.gov/ITD under Policies and Standards.

Notwithstanding any contractual provision to the contrary, in connection with the Contractor’s performance under this Contract, for all state agencies in the Executive Department, including all executive offices, boards, commissions, agencies, departments, divisions, councils, bureaus, and offices, now existing and hereafter established, the Contractor shall:

(1) obtain a copy, review, and comply with the contracting agency’s Information Security Program (ISP) and any pertinent security guidelines, standards, and policies; (2) comply with all of the Commonwealth of Massachusetts Information Technology Division’s Security Policies (“Security Policies”) available at www.mass.gov/ITD under Policies and Standards.

(2) communicate and enforce the contracting agency’s ISP and such Security Policies against all employees (whether such employees are direct or contracted) and subcontractors.

(3) implement and maintain any other reasonable appropriate security procedures and practices necessary to protect personal information to which the Contractor is given access by the contracting agency from the unauthorized access, destruction, use, modification, disclosure, or loss.

(4) be responsible for the full or partial breach of any of these terms by its employees (whether such employees are direct or contracted) or subcontractors during or after the term of this Contract, and any breach of these terms may be regarded as a material breach of this Contract.

(5) in the event of any unauthorized access, destruction, use, modification, disclosure or loss of the personal information (collectively referred to as the “unauthorized use”): (a) immediately notify the contracting agency if the Contractor becomes aware of the unauthorized use; (b) provide full cooperation and access to information necessary for the contracting agency to determine the scope of the unauthorized use; and (c) provide full cooperation and access to information necessary for the contracting agency and the Contractor to fulfill any notification requirements.

Breach of these terms may be regarded as a material breach of this Contract, such that the Commonwealth may exercise any and all contractual rights and remedies, including without limitation indemnification under Section 11 of the Commonwealth’s Terms and Conditions, withholding of payments, contract suspension, or termination. In addition, the Contractor may be subject to applicable statutory or regulatory penalties, including and without limitation, those imposed pursuant to M.G.L. c. 93H and under M.G.L. c. 214, § 3B for violations under M.G.L. c. 66A.

Bidder/Contractor Name: _____

Bidder/Contractor Authorized Signature: _____

Print Name and Title of Authorized Signatory: _____

Date: _____

This Certification may be signed once and photocopied to be attached to any Commonwealth Contract that does not already contain this Certification Language and shall be interpreted to be incorporated by reference into any applicable contract subject to Executive Order 504 for this Contractor.



COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION & RECREATION
STANDARD CONSTRUCTION CONTRACT

PART III

GENERAL CONDITIONS OF THE CONTRACT

FOR PROJECTS SUBJECT TO M.G.L. CH. 149 OR
M.G.L. CH. 30, SEC. 39M

TABLE OF CONTENTS

ARTICLE I: DEFINITION OF TERMS 5

ARTICLE II: EXECUTION OF THE CONTRACT, SCOPE OF WORK, INTERPRETATION OF CONTRACT DOCUMENTS 7

1. ***Execution.*** 7
2. ***Scope of Work.*** 7
3. ***Interpretation.*** 7
4. ***Distribution of Work.*** 8
5. ***Contract Price.*** 8

ARTICLE III: CONTROL OF WORK/ADMINISTRATION OF THE CONTRACT 8

1. ***DCR.*** 8
2. ***Right of Access to Work.*** 8
3. ***Inspection No Waiver.*** 8

ARTICLE IV: GENERAL PERFORMANCE OBLIGATIONS OF THE CONTRACTOR 8

1. ***Review of Contract Documents and Field Conditions.*** 8
2. ***Supervision and Construction Procedures; Coordination; Cutting, and Patching.*** 9
3. ***Superintendent.*** 9
4. ***Labor.*** 10
5. ***Notices and Permits.*** 10
6. ***Lines, Marks etc.*** 10

7. **Excavation.** 10
8. **Dewatering/Hoisting/Staging.** 10
9. **Corrections to the Work; Inspection No Bar to Subsequent Corrections.** 11
10. **Sanitary Facilities.** 11
11. **Temporary Offices.** 11
12. **Telephones.** 11
13. **Project Sign.** 11
14. **Contract Documents and Samples at the Site.** 12
15. **Safety Laws, Regulations, and Practices.** 12
16. **Environmental Protection** 14
2. **Dust Control.** 16
17. **Debris, Excavated Material and Chemical Waste.** 16
18. **Nuisances.** 16
19. **Weather Protection (M.G.L. c. 149, sec. 44G and 44F(1)).** 17
20. **Furnishings and Equipment.** 17
21. **Form for Sub-contract.** 17
22. **Sales Tax Exemption and Other Taxes.** 18
23. **Final Cleaning.** 18
24. **Maintenance Data.** 18
25. **Drainage Specifications.** 18
26. **Closeout Procedures.** 18
27. **Risk of Loss.** 18
28. **Photographs.** 18

ARTICLE V: _____ MATERIALS AND EQUIPMENT 19

1. **Materials Generally.** 19
2. **Shop Drawings, Product Data, and Samples.** 19
3. **Tests.** 20
4. **"Or Equal" Submissions.** 21
5. **Delivery and Storage of Materials; Inspection.** 21
6. **Defective, Damaged, or Deteriorated Materials and Rejection Thereof.** 23
7. **Measurement** 23

ARTICLE VI: PROSECUTION AND PROGRESS 24

1. **Beginning, Progress Schedule, and Completion of Work.** 24
2. **Failure to Complete Work on Time - Liquidated Damages.** 25
3. **Delays; Statutory Provisions (M.G.L. c. 30, sec. 39O).** 25
4. **Occupancy and/or Use of Project Prior to Final Acceptance.** 26
5. **Substantial Completion – Punch List.** 26
6. **Final Acceptance of the Work.** 27
7. **One-Year Warranty Repair List and Inspection.** 27

ARTICLE VII: CHANGES IN THE WORK 28

- 1. *Change Orders Generally.* 28**
- 2. *Methods of Computing Equitable Adjustments.* 28**
- 3. *Work Performed Under Protest.* 29**
- 4. *False Claims, Statutory Provisions Regarding Changes.* 30**
- 5. *Mediation.* 31**

ARTICLE VIII: PAYMENT PROVISIONS 31

- 1. *Schedule of Values.* 31**
- 2. *Payment Liabilities of Contractor.* 31**
- 3. *Retention of Moneys by the DCR.* 32**
- 4. *Applications for Payment.* 32**
- 5. *Periodic Payments (M.G. L. c. 30, sec. 39K) for Building Projects.* 33**
- 6. *Payment of Subcontractors (M.G.L. c. 30, sec. 39F).* 34**
- 7. *Contracts for Public Works Governed by M.G.L. c. 30, sec. 39G:* 37**
- 8. *Liens* 38**
- 9. *Final Payment; Release of Claims by Contractor.* 38**

ARTICLE IX. GUARANTEES AND WARRANTIES 39

- 1. *General Warranty.* 39**
- 2. *Special Guarantees and Warrantees.* 39**

ARTICLE X: MISCELLANEOUS LEGAL REQUIREMENTS. 39

- 1. *Contractor to be Informed.* 39**
- 2. *Compliance with all Laws.* 39**

ARTICLE XI: CONTRACTOR'S ACCOUNTING METHOD REQUIREMENTS (M.G.L. c. 30, sec. 39R) 41

- 1. *Definitions.* 41**
- 2. *Record Keeping.* 42**
- 3. *Statement of Management Controls.* 42**
- 4. *Annual Financial Statement.* 42**
- 5. *Bid Pricing Materials.* 42**

ARTICLE XII: EQUAL EMPLOYMENT OPPORTUNITY, NON-DISCRIMINATION, AND AFFIRMATIVE ACTION PROGRAM. 43

ARTICLE XIII: GOALS FOR PARTICIPATION BY MINORITY BUSINESS ENTERPRISES AND WOMEN BUSINESS ENTERPRISES 43

ARTICLE XIV: INSURANCE REQUIREMENTS 43

ARTICLE XV: INDEMNIFICATION 43

- 1. *Generally.* 43**
- 2. *DCR's Actions.* 43**
- 3. *Survival.* 43**

ARTICLE XVI: PERFORMANCE AND PAYMENT BONDS 44

- 1. *Contractor Bonds.* 44**
- 2. *Subcontractor Bonds.* 44**

ARTICLE XVII: TERMINATION OF CONTRACT 44

1. **Termination for Cause. 44**
2. **Termination For Convenience. 45**
3. **Contractor's Duties Upon Termination for Convenience. 45**

ARTICLE XVIII: MISCELLANEOUS PROVISIONS 45

1. **No Assignment by Contractor. 45**
2. **___ Non-Appropriation. 46**
3. **___ Claims by Others Not Valid. 46**
4. **___ No Personal Liability of Public Officials. 46**
5. **Severability. 46**
6. **Choice of Laws. 46**
7. **Standard Forms. 46**
8. **No Waiver of Subsequent Breach. 46**
9. **Remedies Cumulative. 46**
10. **Notices. 46**

APPENDIX A to General Conditions of the Contract 47

1. **Compliance Generally. 47**
2. **Non-Discrimination and Affirmative Action. 47**
3. **Liaison Committee, Reports and Records. 48**
4. **Sanctions. 48**

APPENDIX B to General Conditions of the Contract 50

1. **Goals. 50**
2. **M/WBE Participation Credit. 50**
3. **Establishing M/WBE Status. 50**
4. **Subcontracts with M/WBEs. 50**
5. **Performance of Contract Work by M/WBEs. 51**
6. **Notification of Changes in M/WBE Work. 51**
7. **Actions Required if there is a Reduction in M/WBE Participation. 51**
8. **Suspension of Payment and/or Performance for Noncompliance. 52**
9. **Liquidated Damages; Termination. 52**
10. **Reporting Requirements. 53**
11. **Awarding Authority's Right to Waive Provisions of this Article in Whole or in Part. 53**
12. **Performance of contract work by SDVOBE 54-57**

APPENDIX C to the General Conditions of the Contract 54

INDEX OF THE COMMONLY USED FORMS 57

CONTRACTOR'S WEEKLY WORKFORCE REPORT - 59 -
MINORITIES/WOMEN IN CONTRACTOR'S WEEKLY WORKFORCE REPORT - 60 -
WEEKLY PAYROLL REPORT FORM - 61 -
WEEKLY PAYROLL RECORDS REPORT & STATEMENT OF COMPLIANCE - 62 -
CERTIFICATE OF PAYMENT - 63 - 03/2019
INSTRUCTIONS FOR COMPLETING CERTIFICATE OF PAYMENT BY CONTRACTOR/DESIGNER TO MINORITY & WOMEN
BUSINESS ENTERPRISES - 64 - 03/2019
CERTIFICATE OF COMPLETION - 65 - 03/2019
E-2 Final Acceptance - 66 -

ARTICLE I: DEFINITION OF TERMS

The following words shall have the following meanings as used in this Contract:

Advertisement: The Advertisement or Notice Inviting Bids or Proposals for the Work identified in Article 1 of the Department of Conservation and Recreation - Contractor Agreement.

Approval: (or approved): An approval in writing signed by the authorized signatory of the Awarding Authority.

As directed (As permitted, as required, as determined or words of like effect): The direction, permission, requirement, or determination of the Awarding Authority. Similarly, *approved, acceptable, satisfactory* or words of like import shall mean approved by or acceptable or satisfactory to the Awarding Authority.

Awarding Authority: The Department of Conservation and Recreation, the public agency awarding and administering this Contract, as identified in the Department of Conservation and Recreation - Contractor Agreement. Where the Awarding Authority is an agency of the Commonwealth, references to the Awarding Authority shall also include the Commonwealth and its agencies.

Building Code: All applicable rules and regulations to which the Awarding Authority is subject, and which are contained or referenced in the code authorized by M.G.L. c. 143, sec. 93 et seq., including all amendments thereto.

Change Order: (1) A written order not requiring the consent of the Contractor, signed by the Project Engineer, and designated as a Change Order, directing the Contractor to make changes in the Work within the general scope of the Contract, or (2) any written or oral order from the Project Engineer that causes any change in the Work, provided that the Contractor has given the Awarding Authority written notice stating the date, circumstances, and source of the order and that the Contractor regards the order as a Change Order.

Contract: The Contract formed by the Contract Documents as defined in Article 6 of the Department of Conservation and Recreation - Contractor Agreement.

Contract Documents: The documents listed in Article 6 of the Department of Conservation and Recreation - Contractor Agreement.

Contract Modification: Any alteration of the Contract Documents accomplished by a written agreement properly executed by the parties to this Contract.

Contract Price: The Contract Price stated in Article 3 of the Department of Conservation and Recreation - Contractor Agreement, which is the total sum, owed to the Contractor for all the Work.

DCR: The Department of Conservation and Recreation, the public agency awarding and administering this Contract.

Designer: The architect or engineer who prepared the plans and specifications for the work, identified as the Designer in Article 1 of the Department of Conservation and Recreation – Contractor Agreement.

Dispute Review Board: A panel of three experienced impartial reviewers organized and agreed upon by the DCR and Contractor. The Board members are provided with project plans and Specifications and become familiar with project procedures and participants. The Board meets on the job site regularly to encourage the resolution of disputes at the job level and renders non-binding recommendations on the resolution of the dispute.

Drawings: The Drawings are the graphic and pictorial portions of the Contract Documents, wherever located and whenever issued, showing the design, location, and dimensions of the Work, generally including Plans, elevations, sections, details, schedules, and diagrams.

Engineer: The Project Engineer, except that the term "Resident Engineer" shall have the meaning otherwise specified herein.

Final Acceptance: The written determination by the Awarding Authority that the Work has been 100% completed, except for the Contractor's indemnification obligations, warranty obligations, obligations to continue to maintain insurance coverage for the time periods provided in the Contract Documents, and any other obligations which are intended to survive Final Acceptance and/or the termination of the Contract.

General Bid: The completed bid form submitted by the Contractor in accordance with the requirements of either M.G.L. c. 149 or M.G.L. c. 30, sec. 39M.

Laws: All applicable statutes, regulations, ordinances, codes, laws, orders, decrees, approvals, certificates, and requirements of governmental and quasi-governmental authorities.

Neutral: An impartial third party not having an interest in the Owner, DCR, the Contractor or the Project.

Notice to Proceed: The written notice provided by the Awarding Authority to the Contractor which authorizes the Contractor to commence the Work as of a date specified therein and complete the entire Work of the Contract by a date specified therein.

Or equal (or words of like import): Equal in the opinion of the Awarding Authority, determined pursuant to the provisions of M.G.L. c. 30, sec. 39M and the provisions of these General Conditions of the Contract.

Owner: The Commonwealth of Massachusetts or political subdivision thereof, authority, or other instrumentality that will own the Work.

Plan(s): Drawing(s).

Product Data: Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor or its Subcontractors and suppliers to illustrate materials or equipment for some portion of the Work. Product data also include any such information or instructions produced by the manufacturer or distributor of such materials or equipment and made readily available by said manufacturer or distributor.

Progress Schedule: The progress schedule Approved by the Awarding Authority in accordance with Article VI of these General Conditions of the Contract.

Project: The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner, the Department of Conservation and Recreation, or by separate contractors.

Project Engineer: The Awarding Authority's representative assigned to the Project.

Punch List: A list of items determined by the Awarding Authority to be minor incomplete or unsatisfactory work items that do not materially impair the usefulness of the Work for its intended purpose.

Resident Engineer: The On-Site representative of the Awarding Authority.

Samples: Samples are physical examples that illustrate materials, equipment, or workmanship and establish standards by which the Work will be judged.

Schedule of Values: The schedule Approved by the DCR pursuant to Article VIII of these General Conditions of the Contract which allocates the Contract Price to the various portions of the Work and is used as a basis for payments to the Contractor.

Shop Drawings: Drawings, diagrams, details, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate a portion of the Work.

Site: The land and, if any, building(s), space within any such building(s), or other structures on which or in which the Contractor is to perform the Work.

Specifications: The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, construction systems, standards, and workmanship for the Work and performance of related services.

Subcontractor: Person or entity with whom the Contractor contracts to perform the Work, except as otherwise specifically provided or required herein or by Law.

Substantial Completion: For work subject to M.G.L. c. 30 sec. 39K, "substantial completion" shall occur when (1) the Contractor fully completes the Work or substantially completes the Work so that the value of the Work remaining to be done is, in the estimate of the DCR, less than one percent of the original contract price, or (2) the Contractor substantially completes the Work and the DCR takes possession for occupancy, whichever occurs first. For work subject to M.G.L. c. 30 sec. 39G, "substantial completion" shall mean either that the work required by the Contract has been fully completed, completed except for work having a Contract Price of less than one percent of the then adjusted total Contract Price, or substantially all of the Work has been completed and opened to public use except for minor incomplete or unsatisfactory work items that do not materially impair the usefulness of the Work.

Superintendent: The licensed construction supervisor who is an employee of the Contractor designated to be in full-time attendance at the Site throughout the prosecution and progress of the Work and who shall have complete authority to act for the Contractor.

Work: The Work defined in Article 1 of the Department of Conservation and Recreation - Contractor Agreement, Article II, Section 2 of these General Conditions of the Contract and otherwise in the Contract Documents.

Working Hours: 7:00 a.m. to 5:00 p.m., but not more than eight hours per day, Monday through Friday, unless otherwise specified by applicable Laws or deemed necessary by the DCR for traffic considerations or to minimize another contract impacts to the public.

All terms that this Contract defines may be used with or without initial capital letters. Other terms, abbreviations and references are defined as they appear herein. Words and abbreviations that are not defined in the Contract Documents, but which have recognized technical, or trade meanings are used in accordance with those meanings. For additional definitions of terms, abbreviations and references refer to the *Special Conditions or Specifications*.

ARTICLE II: EXECUTION OF THE CONTRACT, SCOPE OF WORK, INTERPRETATION OF CONTRACT DOCUMENTS

1. Execution.

The execution of the Department of Conservation and Recreation – Contractor Agreement by the Contractor is a representation that the Contractor has visited the Site, has become familiar with local conditions under which the Work is to be performed and has correlated personal observations with requirements of the Contract Documents.

2. Scope of Work.

The Work consists of the Work identified in the Contract Documents. The Work comprises the completed construction required by the Contract Documents and includes all labor, tools, materials, supplies, equipment, permits, approvals, paperwork, calculations, submittals, and certificates necessary to develop, construct and complete the Work in accordance with all Laws, and all construction and other services required to be supervised, overseen, performed or furnished by the Contractor or that the Contract Documents require the Contractor to cause to be supervised, overseen, performed or furnished. The Contractor shall provide and perform for the Contract Price all the duties and obligations set forth in the Contract Documents.

3. Interpretation.

A. The Plans and Specifications and other Contract Documents are to be considered together and are intended to be mutually complementary, so that any work shown on the Plans though not specified in the Specifications, and any work specified in the Specifications though not shown on the Plans, is to be executed by the Contractor as a part of this Contract.

B. All things that in the opinion of the Project Engineer may be reasonably inferred from the Plans, Specifications and other Contract Documents are to be executed by the Contractor. The Project Engineer shall determine whether the detail Plans conform to the general Plans and Contract Documents, except as may be otherwise determined by the DCR.

C. The tables of contents, titles, headings and marginal notes or sub-scripts contained herein are solely to facilitate references, are not intended to be construed as provisions of the Contract, and in no way affect the interpretation of the provisions to which they refer.

D. Where reference is made in the Contract Documents to publications, standards, or codes issued by associations or societies, such reference shall be interpreted to mean the current edition of such publications, standards, or codes, including revisions in effect on the date of the Advertisement, notwithstanding any reference to a particular date. The foregoing sentence shall not apply to the dates, if any, specified with respect to insurance policy endorsement forms.

E. In case of any conflict among the Contract Documents, unless the context clearly otherwise requires, the Contract Documents shall be construed according to the following priorities:

- Priority: Contract Modifications
- Second Priority: Department of Conservation and Recreation - Contractor Agreement
- Third Priority: General Conditions of the Contract
- Fourth Priority: Special Conditions of the Contract
- Fifth Priority: Drawings -- Schedules take precedence over enlarged detail Drawings, and enlarged Detail Drawings take precedence over reduced scale Drawings; figured dimensions shall prevail over scale.
- Sixth Priority: Specifications

4. Distribution of Work.

The distribution of the Work is intended to be described under the appropriate trades and, except for filed sub-bid work, may be redistributed, except as directed herein, provided that such redistribution shall cause no controversy among the trades and no delay in the progress of the Work.

5. Contract Price.

The Contract Price constitutes full compensation to the Contractor for everything to be performed and furnished in connection with the Work and for all damages arising out of the performance of the Work and/or the action of the elements and constitutes the maximum compensation regardless of any difficulty incurred by the Contractor in connection with the Work or in consequence of any suspension or discontinuance of the Work. The costs associated with the requirements of the General Conditions and any required in the Special Conditions or Specifications shall be included in the Contract Price and no direct or separate payment shall be made to the Contractor.

ARTICLE III: CONTROL OF WORK/ADMINISTRATION OF THE CONTRACT

1. DCR.

The Project Engineer shall be responsible for the general administration of the Contract. Except as otherwise specifically provided herein, the Project Engineer shall decide all questions which may arise as to the conduct, quantity, quality, equality, acceptability, fitness, and rate of progress of the several kinds of work and materials to be performed and furnished under this Contract and shall decide all questions which may arise as to the interpretation of the Plans and Specifications and as to the fulfillment of this Contract on the part of the Contractor.

2. Right of Access to Work.

The DCR, and persons designated by it, may for any purpose enter upon the Work, the Site, and premises used by the Contractor, and the Contractor shall provide safe facilities therefor. Other contractors of the DCR may also enter upon the same for the purposes which may be required by their contracts or work. Any differences or conflicts which may arise between the Contractor and other contractors of the DCR with respect to their work shall be initially resolved by the DCR.

3. Inspection No Waiver.

No inspection by the DCR or its employees or agents, and no order, measurement, certificate, approval, payment order, payment, acceptance or any other action or inaction of any of them, shall operate as a waiver by the DCR of any provision of this Contract.

ARTICLE IV: GENERAL PERFORMANCE OBLIGATIONS OF THE CONTRACTOR

The Contractor shall complete for the Contract Price all the Work in a proper, thorough, and workmanlike manner in accordance with the Contract Documents. Without limiting the foregoing and without limiting the Contractor's obligations under any other provision of the Contract Documents, the Contractor shall for the Contract Price perform the following general obligations:

1. Review of Contract Documents and Field Conditions.

A. Before commencing the Work, the Contractor shall carefully study the Contract Documents and carefully compare all Specifications, Plans, Drawings, figures, dimensions, lines, marks, scales, directions of the Project Engineer, and any other information provided by the DCR and shall at once report to the Project Engineer in writing any questions, errors, inconsistencies, or omissions.

B. Before commencing the Work, the Contractor shall take field measurements and verify field conditions and shall carefully compare such field measurements and conditions and other information known to the Contractor with the Contract Documents and shall at once report to the Project Engineer in writing any questions, errors, inconsistencies, or omissions.

C. Any work performed by the Contractor after the discovery of said discrepancies without the written approval of the DCR shall be at the Contractor's risk and expense.

D. The Contractor shall be responsible for all errors in the Work arising from the Contractor's failure to comply with any of the requirements set forth in this section. The Contractor shall not be entitled to any extra compensation for any work or expense arising from or caused by his/her failure to comply with said requirements.

2. Supervision and Construction Procedures; Coordination; Cutting, and Patching.

A. The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and shall have control over, construction means, methods, techniques, sequences, and procedures, and shall be responsible for coordinating all portions of the Work under the Contract.

B. The Contractor shall be responsible for the proper fitting of all work and the coordination of the operations of all trades, subcontractors, and material suppliers engaged upon the Work. The Contractor shall guarantee to each of its subcontractors all dimensions which they may require for the fitting of their work to all surrounding work. Where equipment and lines of piping are shown diagrammatically, the Contractor shall be responsible for the coordination and orderly arrangement of the various lines of embedded piping and conduit included in the Work. The Contractor shall coordinate the work of any Subcontractor and prevent all interferences between the equipment, lines of piping or structural and architectural features, and avoid any unsightly arrangements in exposed work.

C. The Contractor should note that other contractors may be working on or near the Site where the Contractor's Work is being performed. The Contractor shall coordinate his/her work and the operations of all trades, subcontractors, and material suppliers engaged upon the Work so as not to interfere with or hinder the progress or completion of work being performed under another DCR contract.

D. All necessary cutting, coring, drilling, grouting, and patching required to fit together the several parts of the Work shall be done by the Contractor, except as may be specifically noted otherwise under any filed sub-bid section of the Specifications.

E. The Contractor shall be responsible to the DCR for the acts and omissions of the Contractor's employees, agents and Subcontractors, and their agents and respective contractors' employees, and other persons performing portions of the Work or supplying materials therefor.

F. The Contractor shall be responsible for the inspection of portions of the Work already performed under this Contract to determine that such portions are in proper condition to receive subsequent Work.

G. The Contractor shall employ a registered land surveyor to perform any engineering required for establishing grades, lines, levels, dimensions, layouts, and reference points for the trades. The Contractor shall be responsible for maintaining benchmarks and other survey marks and shall replace any benchmarks or survey marks that may have become disturbed or destroyed. The Contractor shall verify the materials shown on the Drawings before laying out the Work and shall be responsible for any error resulting from its failure to exercise this precaution.

H. Unless otherwise required by the Plans and Specifications, or directed in writing by the DCR, Work shall be performed during regular Working Hours. However, if the Contractor desires to carry on the Work outside of regular working hours or on Saturdays, Sundays, or Massachusetts or federal holidays, then the Contractor shall allow ample time to allow satisfactory arrangements to be made for inspecting Work in progress and shall bear the costs of such inspection. The DCR shall bill the Contractor directly for such costs.

I. Work performed outside of regular Working Hours without the consent or knowledge of the DCR shall be subject to additional inspection and testing as directed by the DCR. The cost of this inspection and testing shall be borne by the Contractor whether the Work is found to be acceptable or not. The DCR at its election shall be entitled either to issue a credit Change Order to cover such cost or to withhold such cost from any further payments due the Contractor and/or to receive a payment from the Contractor of the amount of such cost.

3. Superintendent.

A. The Contractor shall employ a Superintendent whose appointment shall be subject to the Approval of the DCR. The Superintendent shall attend the Site full-time during the performance of the Work. The Superintendent shall represent the Contractor. Communications given to and from the Superintendent shall be deemed given to and from the Contractor. Important communications shall be confirmed in writing. Other communications shall be similarly confirmed upon written request in each case. The Superintendent shall attend each job meeting. The Superintendent shall be responsible for coordinating all the Work of the Contractor and the Subcontractors.

B. The Superintendent shall be a competent employee regularly employed by the Contractor. The Superintendent shall be licensed in accordance with the Building Code, if applicable, and shall have satisfactorily performed similar duties on previous construction projects similar in type, complexity, and scale to the Project. The Superintendent's resume shall be submitted to the DCR prior to commencement of construction together with such other information as the DCR may reasonably require determining whether to Approve of his or her appointment. Any change in the Superintendent shall require the prior consent of the DCR. The Contractor shall establish an emergency telephone line by which the DCR or its agents may contact the Superintendent during non-working hours.

4. Labor.

A. The Contractor shall employ only competent workers. The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them. Whenever the DCR shall notify the Contractor in writing that any worker is, in the DCR's opinion, incompetent, unfaithful, disorderly, or otherwise unsatisfactory, such employee shall be discharged from the Work and shall not again be employed on the Project except with the consent of the DCR.

B. The Contractor shall employ enough workers to carry on the Work with all proper speed in accordance with Laws, the requirements of the Contract Documents, and the Progress Schedule.

C. The Contractor shall procure materials from such sources and shall manage its own forces and the forces of its Subcontractors and any sub-subcontractors in such a manner as will result in harmonious labor relations on the Project Site. If union and nonunion workers are employed to perform any part of the Work, the Contractor shall establish and maintain separate entrances to the Site for the use of union and nonunion workers. The Contractor shall cause persons to be employed in the Work who will work in harmony with others so employed. Should the Work be stopped or materially delayed in the DCR's reasonable judgment due to a labor dispute, the DCR shall have the right to require the Contractor to employ substitutes acceptable to the DCR.

D. The Contractor shall bear the entire expense, and no separate or direct payment shall be made by the DCR, because of extra work which may be necessary because of inferior workmanship, or for specific items of work which are normally considered a part of good workmanship in completing any phase of the work.

5. Notices and Permits.

A. The Contractor at its sole cost shall take out and pay for all approvals, permits, certificates and licenses required by Laws, pay all charges and fees, and pay for (or cause the appropriate Subcontractor to pay for) all utilities required for the proper execution of the Work. All permits secured by the Contractor, complete with the application and orders of conditions, shall be kept on file in the Contractor's office and field office with copies submitted to the Project Engineer.

B. The Contractor shall comply with all Laws and shall give all notices required thereby.

C. Except as otherwise specified in this Contract, it is not the Contractor's responsibility to ascertain that the Contract Documents are in accordance with applicable Laws. However, if the Contractor observes that portions of the Contract Documents are at variance with the requirements of Laws, the Contractor shall promptly notify the DCR in writing, and necessary changes shall be accomplished by an appropriate Contract Modification.

D. If the Contractor performs work knowing it to be contrary to Laws without giving such notice to the DCR, the Contractor shall bear full responsibility for such Work and all costs attributable thereto, including, without limitation, corrections to the Work.

6. Lines, Marks etc.

The Contractor shall furnish batter boards and stakes and shall cause to be placed and maintained thereon to be easily read, such lines, marks and directions relating to the Work as the Project Engineer shall from time to time direct. The Project Engineer shall establish base lines and benchmarks on the Drawings for the locations of the Work but all other lines and grades in the field shall be determined by the Contractor.

7. Excavation.

The Contractor shall prevent by sheeting and shoring or bracing, if necessary, any caving or bulging of the sides of any excavation made by the Contractor, leaving sheeting, and shoring in place, or if any is removed, filling solid the spaces left thereby.

8. Dewatering/Hoisting/Staging.

The Contractor shall provide pumping, drainage, and disposal of all water and other flows so that no puddle, nuisance, or damage will be caused by water or flooding. If pumping results in contaminated water the Contractor shall take appropriate measures to treat this water prior to discharge and shall seek appropriate permits for discharge of water. The Contractor shall provide all hoisting equipment and machinery required for the proper execution of the Work. The Contractor shall provide all exterior and interior staging required to be over eight feet in height, except as may be otherwise provided in the Contract Documents.

9. Corrections to the Work: Inspection No Bar to Subsequent Corrections.

The DCR's inspection of the Work shall not relieve the Contractor of its responsibilities to fulfill the Contract obligations. Defective work may be rejected by the DCR whether such work and/or materials have been previously overlooked or misjudged by the Resident Engineer or Project Engineer and accepted for payment. If the Work or any part thereof shall be found defective at any time before the Final Acceptance of the whole Work, the Contractor shall forthwith cease the performance of any defective work in progress and, whether such work is still in progress, shall forthwith correct such defect in a manner satisfactory to the Project Engineer. If any material brought upon the Site for use in the Work, or selected for the same, shall be rejected by the Project Engineer as unsuitable or not in conformity with the Contract Documents, or as damaged by casualty or deteriorated due to improper storage at the Site or to any other factor, the Contractor shall forthwith remove such materials from the Site. The Contractor shall pay for the cost of making good all work or property of other contractors, the Owner or of the Department of Conservation and Recreation destroyed or damaged by such removal or replacement; repair any injury, defect, omission, or mistake in the Work as soon as it is discovered; finish and immediately make good any defect, omission, or mistake in the Work; and complete and leave the Work in perfect condition.

10. Sanitary Facilities.

The Contractor shall provide and maintain sanitary facilities for all persons employed on the Work, beginning with the first worker at the Site. Said facilities shall meet the following requirements unless otherwise specified in the Special Conditions or Specifications.

A. There shall be no fewer facilities than the number required by applicable Laws.

B. Facilities shall be always kept in a clean sanitary condition and shall be adequately screened to be inaccessible to flies. (**Note:** If existing sanitary facilities at the Site are to be used by the Contractor, this requirement will be modified accordingly in the Special Conditions or Specifications.)

11. Temporary Offices.

A. Contractor's Field office. The Contractor shall erect a temporary field office at or near the Site of the Work at which the Contractor's authorized representative shall be always present while the Work is in progress. Instructions, notices, and other communications delivered there by the DCR shall be deemed delivered to the Contractor. The Contractor shall adequately furnish and maintain this office in a clean, orderly condition.

B. Resident Engineer's Office. The Contractor shall erect an Office for the Resident Engineer if, and as required by the Special Conditions or Specifications of the Contract.

12. Telephones.

A. The Contractor shall provide and maintain telephone service in the Contractor's field office. The Contractor shall pay for all calls and costs relating to this service. The DCR and its employees and authorized agents shall always be allowed the use of this telephone service without charge. Telephone service and equipment shall meet the requirements, if any, of the Special Conditions or Specifications.

B. The Contractor shall also provide and maintain telephone service in the Resident Engineer's Office, when the Contractor is required to erect such office, for the use of the DCR and its employees and authorized agents. The Contractor shall pay for all calls and costs relating to this service. Telephone service and equipment shall meet the requirements, if any, of the Special Conditions or Specifications.

13. Project Sign.

A. The Contractor shall furnish and erect at a suitable location, Approved by the Project Engineer, at the start of the work, a sign having dimensions of at least eight (8) feet long by four (4) feet high, bearing the words: Massachusetts Department of Conservation and Recreation. Also included may be the project title, expected completion date, and facility name.

B. The Contractor shall submit the design of the sign to the Project Engineer for review and approval prior to posting.

14. Contract Documents and Samples at the Site.

The Contractor shall maintain at the Site for the use and information of the DCR one record copy of the Drawings, Specifications, Addenda, Change Orders, Approved Shop Drawings, Product Data, Samples, updated Progress Schedule, and all other submittals, all in good order and marked currently to record changes and selections made during construction. These shall be available to the DCR and shall be delivered to the DCR upon completion of the Work.

15. Safety Laws, Regulations, and Practices.

A. The Contractor shall comply with all health and safety Laws applicable to the Work. Without limitation,

(1) If the Contractor uses or stores toxic or hazardous substances it shall comply with M.G.L. c. 111F, sec. 2, the "Right to Know" law and regulations promulgated by the Department of Public Health, 105 CMR 670, the Department of Environmental Protection, 310 CMR 33, and the Department of Labor and Workforce Development, 441 CMR 21; and shall post a Workplace Notice obtainable from the Department of Labor and Workforce Development.

(2) The Contractor shall comply with the Federal Resource Conservation and Recovery Act, the Federal Comprehensive Environmental Response, Compensation and Liability Act, M.G.L. c. 21C, M.G. L. c. 21E, and any other Laws affecting toxic or hazardous materials, solid, special, or hazardous waste (collectively "Hazardous Materials Laws"). Should the Contractor discover unforeseen materials subject to Hazardous Materials Laws at the Site, the Contractor shall immediately notify the DCR of such discovery.

(3) The Contractor shall be responsible for the location of all utilities in connection with the Work. Without limiting the foregoing, the Contractor shall comply with Dig Safe Laws. Dig Safe is the Utility Underground Plant Damage Prevention System established pursuant to M.G.L. c. 164, sec. 76D. This System is operated by Dig Safe Systems, Inc., located at 331 Montvale Avenue, Woburn, MA 01801, whose toll-free telephone number is 1-888-DIG-SAFE (1-888-344-7233). The Contractor shall notify Dig Safe of contemplated excavation, demolition, or explosive work in public or private ways, and in any utility company right of way or easement, by certified mail, with a copy to Department of Environmental Protection (DEP). This notice shall be given at least 72 hours prior to the work, but not more than sixty days before the work is to be done. Such notice shall state the name of the street or the route number of the way and shall include an accurate description of the location and nature of the proposed work. Dig-Safe is required to respond to the notice within 72 hours of receipt by designating the location of pipes, mains, wires, or conduits at the Site. The Contractor shall not commence work until Dig-Safe has responded. The work shall be performed in such manner and with reasonable precautions taken to avoid damage to utilities under the surface at the work location. The Contractor shall provide the Superintendent with current Dig-Safe regulations, and a copy of M.G.L. c. 82, sec. 40. Any costs related to the services performed by Dig-Safe shall be borne by the Contractor.

(4) The Contractor shall comply with Public Law 92-596, "Occupational Safety and Health Act of 1970" (OSHA), with respect to all rules and regulations pertaining to construction, U.S. Code Title 29, sections 651 et seq. including Volume 36, numbers 75 and 105 of the Federal Register as amended, and as published by the U.S. Department of Labor.

(5) The Contractor shall comply with M.G.L. c. 149, sec. 129A, relative to shoring and bracing of trenches.

B. The Contractor shall take reasonable precautions to prevent damage, injury, or loss to persons (whether under his management, DCR staff, or the public) or property. Nothing herein shall relieve Subcontractors of their responsibility for the safety of persons and property, and for compliance with all Laws applicable to the Work and their activities in connection therewith. Without limitation, the Contractor shall take all reasonable precautions for the safety of, and the prevention of injury or damage to (1) all agents and employees and contractors on the Work and all other persons who may be affected thereby including the general public, (2) all the Work and all materials and equipment to be incorporated therein, whether in storage on or off the Site, under the care custody or control of the Contractor or any of its Subcontractors or any contractors directly or indirectly contracting through any of them, and (3) other property at the Site or adjacent thereto, including but not limited to trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of the Work. The Contractor shall promptly remedy all damage or loss to any such property caused in whole or in part by the Contractor, any Subcontractor, or anyone directly or indirectly contracted or employed by any of them or by anyone for whose acts any of them may be liable. Without limiting the foregoing, the Contractor shall:

(1) post and maintain adequate danger signs and other warnings against hazards.

(2) promulgate safety regulations and give appropriate notices to the DCR and users of adjacent utilities and property.

- (3) ensure the adequate strength and safety of all scaffolding, staging and hoisting equipment, temporary shoring, bracing, and tying.
- (4) protect adjoining private or public property.
- (5) provide barricades, temporary fences, and covered walkways required by prudent construction practices, Laws and/or the Contract Documents.
- (6) furnish approved hard hats and other personal protective equipment, furnish approved first aid supplies, furnish the name of the first aid attendant, and maintain a posted list of emergency facilities.
- (7) provide proper means of access to property where the existing access is cut off by the Contractor, including maintaining traffic over, through or around the Work included in this contract, with the maximum safety, and practicable convenience to such traffic suspended temporarily.
- (8) maintain from the beginning of any darkness or twilight through the whole of every night sufficient lights on or near any obstruction to guard or protect travelers from injury from such obstruction.
- (9) maintain adequate security at the Site so as not to expose the Work, the materials to be incorporated in the Work, DCR's materials stored or otherwise located upon the Site, and surrounding property to vandalism or malicious mischief.
- (10) provide adequate fire protection procedures during the use of cutting torches, welding equipment, plumbers' torches and other flame and spark producing apparatus.
- (11) take prompt action to correct any dangerous or hazardous conditions.

C. Use of Explosives: The use of explosives will not be permitted in the Work unless specifically authorized in the technical Specifications, Special Conditions and/or Drawings or approved by the DCR in writing. If such approval is given, the Contractor shall comply with all Laws and obtain all permits, approvals, and certificates required in connection with the same and shall exercise best efforts, including but not limited to the employment and supervision of properly qualified personnel, to prevent damage, injuries, and accidents involving said explosives.

D. Written notice shall be given by the Contractor to all public service corporations or officials owning or having charge of public or private utilities of his/her intention to commence operations affecting such utilities at least seventy-two (72) hours exclusive of Saturdays, Sundays, and legal Holidays in advance of the start of such operations, and the Contractor shall at the same time file a copy of said notice with the DCR.

E. When necessary, the Contractor shall cooperate with representatives of public service companies to avoid damage to their structures by furnishing and erecting suitable supports, props, shoring or other means of protection. Fire hydrants adjacent to the work always shall be readily accessible to fire apparatus and no materials or other obstructions shall be placed within a radius of 10 feet of a fire hydrant.

F. Although the drawings may indicate the approximate location of existing subsurface utilities in the vicinity of the work, the accuracy and completeness of the information is not guaranteed by the DCR. Before commencing any work, or operations which may endanger or damage any subsurface structures, the Contractor shall carefully locate all such structures and conduct his/her operations in such manner as to avoid damage thereto. He/she shall not interrupt live services until new services have been provided. All abandoned services shall be plugged or otherwise made secure.

G. If the Contractor wishes to have any utilities temporarily relocated for his/her convenience, other than those specified by DCR, he/she shall submit such a request in writing to the Project Engineer. If the DCR approves this request, the Contractor shall pay for the cost of the relocation at his/her sole expense.

H. Land monuments and property markers shall be carefully protected. If is necessary to remove land monuments and/or property markers to perform the contract Work, the Contractor shall do so only at the DCR's direction and after an authorized agent of the DCR has referenced their location.

I. The Contractor shall not injure or remove trees or shrubs without authorization from the DCR.

J. Disturbance or damage to any above- or below-ground structures, conduits, cables, or the like, caused by any act of omission, neglect or misconduct in the execution or non-execution of work thereof by the Contractor shall be repaired, and/or replaced by the Contractor to the satisfaction of the DCR and at no additional expense to the DCR.

K. Disturbance or damage to any structure shall be replaced or repaired by the Contractor to the satisfaction of the DCR and at no additional expense to the DCR.

L. The Contractor shall receive no extra compensation for protection and restoration of property unless said compensation is authorized in writing by the DCR, as specified under Article VI I of the Contract General Conditions.

M. The Contractor shall not permit cutting or welding in or immediately adjacent to existing property of the Department of Conservation and Recreation or of anyone else without the DCR's prior approval in each instance.

N. The Contractor shall designate by notice to the DCR a responsible member of its organization at the Site whose duties shall include preventing accidents.

O. The Contractor shall submit to the DCR without delay verbal and written reports of all accidents involving bodily injury or property damage arising in connection with the Work.

P. In any emergency affecting the safety of persons or property the Contractor shall immediately act in the exercise of reasonable judgment to prevent threatened damage, injury, or loss. The Contractor shall immediately notify the DCR of such emergency.

16. Environmental Protection

A. The DCR shall secure the required environmental permits required under M.G.L. Chapters 131 and 91, including the National Pollutant Discharges Elimination System (NPDES) Construction General Permit and those issued by the Army Corps of Engineers under Section 404 of the Clean Water Act (33 U.S.C. 1344) and Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403). The Contractor is obligated to conform to all the requirements of the permits and subsequent requirements issued by the governing agencies.

B. Contractors operating under a DEP permit shall post on the Site a sign in a format consistent with that enclosed.

C. Prevention of Water Pollution:

1. The Contractor shall take such precautions in the conduct of the Work as may be necessary to avoid contaminating water in adjacent watercourses, water resources or wetlands. All earthwork, moving of equipment, water control for excavation or foundation areas, and other operations likely to create silting shall be conducted to avoid pollution of watercourses, water resources and wetlands.

2. Erosion Control: The Contractor shall utilize such methods as may be necessary to effectively prevent erosion and sediment from entering nearby waterways.

3. Control of Surface Water Runoff: The Contractor shall keep the rate of runoff from the Site at a minimum, and control it by constructing diversion ditches, trenches, and berms, and taking any other necessary action to retard and divert runoff to protect watercourses. The Contractor shall inspect said Site controls regularly, after significant storm events (greater than one-half inch over a 24-hour period) and in accordance with a site-specific storm water pollution prevention plan (SWPPP) prepared by the Contractor. The Contractor shall repair any damage to Site controls to prevent discharge of sediments or pollutants.

4. The Contractor shall construct silt retention basins in areas of the Work adjacent to streams, or rivers, as directed by the DCR. These basins shall be removed upon completion of the Work. Water used during the Work which has become contaminated with oil, bitumen, harmful or objectionable chemicals, sewage or other pollutants shall be discharged in accordance with all Laws to avoid affecting nearby waters.

5. Under no circumstances shall the Contractor discharge pollutants into any watercourse, water resource, or wetland. When water from adjacent natural sources is used in the contract work, intake methods shall be such as to avoid contaminating the source of supply.

D. Protection of Land Resources

1. Prevention of Landscape Defacement: The Contractor shall not deface, injure, remove, cut, or destroy trees or shrubs, without authority from the DCR. No ropes, cables, or guys shall be fastened to or attached to any existing nearby trees for anchorages unless specifically approved by the DCR. Where such activity is permitted, the Contractor shall adequately wrap the tree with burlap or rags over which softwood slats shall be tied. The Contractor shall be responsible for any damage resulting from such use. Where trees may possibly be defaced, bruised, injured, or otherwise damaged by equipment, dumping, or other operations, the Contractor shall protect such trees by placing boards, planks or approved protective fencing around them.

2. Restoration of Landscape Damage: Any trees or other landscape feature scarred or damaged by equipment or operations shall be restored as nearly as possible to the original condition, as approved by DCR. All trimming or pruning shall be performed in an approved manner by licensed arborists with saws or pruning shears. Trimming with axes will not be permitted.

3. Plant Pest Control: If the Work under this contract requires the use of soil moving equipment in an area with plant infestation, the Contractor shall be subject to applicable plant quarantine regulations. In general, these regulations require the thorough cleaning of soil from equipment before such equipment is moved from regulated areas to area's noninfected

E. Noise Control: The Contractor shall use every effort and every means possible to minimize noise caused by his/her operations which the DCR may consider objectionable. Each Contractor shall provide working machinery and equipment designed to operate with the least possible noise, and when gearing is used, such gearing shall be of a type designed to reduce noise to a minimum. Compressors shall be equipped with silencers on intake lines. All gas or oil operated equipment shall be equipped with silencers or mufflers on intake and exhaust lines. Electricity shall be used for power to reduce noise. Dumping bins, hoppers and trucks used for disposal of excavated materials shall be lined with wood or other sound-deadening material if required. Where required by agencies having jurisdiction, certain noise-producing work may have to be performed during specified periods only.

E. Air Pollution Control: The Contractor shall conduct his/her operations to comply with all Laws pertaining to air pollution, including Section 142B of Chapter 111 of the Massachusetts General Laws.

1. Diesel Equipment Emission Controls

a.) All motor vehicles and construction equipment shall comply with all pertinent local, state, and federal regulations covering exhaust emission controls and safety.

b.) All Contractor and Sub-Contractor diesel-powered non-road construction equipment with engine horsepower (HP) ratings of 50 and above, which are used on the Project Site for a period more than 30 calendar days over the course of the construction period on the Project Site, shall be retrofitted with Emission Control Devices to reduce diesel emissions.

c.) The reduction of emissions of volatile organic compounds (VOCs); carbon monoxide (CO) and particulate matter (PM) from diesel-powered equipment shall be accomplished by installing Retrofit Emission Control Devices.

d.) Acceptable Retrofit Emission Control Devices for the Project shall consist of oxidation catalysts that are (1) included on the US Environmental Protection Agency (EPA) *Verified Retrofit Technology List* and/or the California Air Resources Board (CARB) *Currently Verified Technologies List*; and (2) are verified by EPA, CARB, or certified by the manufacturer to provide a minimum emissions reduction of 50 percent for VOCs, 40 percent for CO and 20 percent for PM. Attainment of the required reduction in PM emissions can also be accomplished by using less polluting Clean Fuels. Verified technologies can be identified on the following websites:

EPA: <http://www.epa.gov/otaq/retrofit/retroverifiedlist.htm>

CARB: <http://www.arb.ca.gov/diesel/verdev/verifiedtechnologies/cvt.htm>

e.) The emission control equipment can be procured through the Statewide Contract #VEH71 that has fixed costs associated with retrofitting of diesel emission control devices.

f.) Construction shall not proceed until the Contractor has submitted a certified list of the non-road diesel-powered construction equipment subject to this provision which either are or will be retrofitted with emission control devices. The list shall include (1) the equipment number, type, make, and Contractor/Sub-Contractor name; and the emission control device make, model, and EPA verification number. Contractors shall also submit a receipt or other documentation from a manufacturer or installer that verifies that appropriate equipment has been installed. The Contractor shall also identify any vehicles that will use Clean Fuels. Equipment that has been retrofitted with an emission control device shall be stenciled or otherwise clearly marked as "Low Emission Equipment".

g.) The Contractor shall submit monthly reports, updating the same information stated in Paragraph f above, including the quantity of Clean Fuel utilized. The addition or deletion of non-road diesel equipment shall be indicated in the report.

h.) The Contractor shall use methods to control nuisance odors associated with diesel emissions from construction equipment including but not limited to the following: (1) turning off diesel combustion engines on construction equipment not in active use and on trucks that are idling for five minutes or more; and (2) locating diesel equipment away from the public and sensitive receptors.

i.) All costs associated with implementation of the diesel equipment emissions control shall be borne by the respective Contractor or subcontractor and included in their cost for performing the work of the Contract.

2. Dust Control.

A. The Contractor is placed on notice that blowing dust from un-stabilized earth areas of the work under his/her control will be considered a nuisance. He/she shall, by spraying with water or by other approved means, dampen the soil to hold down the dust. The use of calcium chloride as a wetting agent will not be permitted. During working hours and before leaving the work for the evening, for weekends, or for a more extended period, the Contractor shall assess the moisture content of the soil and dampen it to the extent necessary to hold down the dust. While work is suspended, he/she shall return to work, if so, directed by the DCR, to maintain the dust control.

17. Debris, Excavated Material and Chemical Waste.

A. The Contractor shall not permit the accumulation of interior or exterior debris. The Contractor shall always keep the Work area clean. Without limitation, garbage shall be removed daily. Where no disposal area is shown on the Drawings, the Contractor shall remove and legally dispose of all materials off land owned by the Commonwealth to a location approved by the DCR. Documentation certifying proper disposal shall be submitted to the DCR.

B. The Contractor shall, at his/her own expense, and in accordance with all Laws, arrange for the waste of materials from excavations that are unacceptable for use in the refill or that are more than the refill materials required, in spoil banks off the lands owned by the Commonwealth of Massachusetts. Materials, if any, which cannot be placed at once in permanent positions may be deposited in storage piles at locations designated, but materials re-excavated from such storage piles shall not again be paid for as excavation.

C. The Contractor shall properly classify and remove debris and waste from the Site and transport and dispose of it, all in accordance with Laws, employing a qualified and properly licensed transporter, at any landfill, disposal or recycling facility licensed under applicable Laws, including without limitation, hazardous materials laws. The Contractor shall make all arrangements and give and obtain all notices, communications, documentation, permits, certificates, and approvals necessary for said disposal from the owner or officials in charge of such landfills, disposal, or recycling facilities. The Contractor shall bear all fees and costs in connection with such classification, removal, transportation, disposal, and storage, except as otherwise specifically provided or required by the Special Conditions or other Contract Document. The Contractor shall not permit any storage of debris or waste except in accordance with Laws.

D. The Contractor shall not permit any open fire on the Site.

E. Chemical Waste: Chemical waste shall be identified and labeled properly, stored in appropriate Department of Transportation approved containers in a secure location, removed from the Site, and disposed of not less frequently than monthly unless more frequently required by Laws, including without limitation hazardous materials laws, or by the Special Conditions or Specifications. Disposal of chemical waste shall be performed in accordance with requirements of the U.S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (DEP). Stockpiles of contaminated soils will be placed on a protective surface and covered to prevent migration or erosive loss by wind or water. Fueling and lubricating of vehicles and equipment shall be conducted in a manner that affords the maximum protection against spills and evaporation. Lubricants shall be disposed of in accordance with procedures meeting all applicable Laws. The Contractor shall immediately notify the DCR of any hazardous materials release large enough to require reporting under applicable Laws. The Contractor shall be responsible for immediately containing and cleaning up in accordance with Laws any oil or hazardous materials releases resulting from his/her operations. Any costs incurred in cleaning up any such releases shall be borne by the Contractor.

18. Nuisances.

The Contractor shall strictly prohibit and take all necessary measures to prevent the committing of nuisances on the land of the Commonwealth and adjacent properties.

19. Weather Protection (M.G.L. c. 149, sec. 44G and 44F(1)).

A. For all building projects, the Contractor shall furnish and install "weather protection," which means temporary protection of that Work adversely affected by moisture, wind and cold. Weather protection shall be achieved by covering, enclosing and/or heating working areas such that a minimum temperature of 40 degrees Fahrenheit is maintained at the working surface during the months of November through March to permit construction to be carried on during such period in accordance with the Progress Schedule. After the building or portion thereof is completely enclosed by either permanent construction or substantial temporary materials having a resistance comparable to the specified permanent construction, the Contractor shall provide heat therein of not less than 55 degrees Fahrenheit nor more than 75 degrees Fahrenheit. The foregoing provisions do not supersede any specific requirements for methods of construction, curing of materials and the like. Concrete, masonry, plaster, and all other materials that require special considerations in temperatures below 40 degrees Fahrenheit shall be installed, applied, and cured in accordance with the specific requirements for cold weather protection as defined in the project specifications.

B. The general contractor may, with the approval of the Engineer, elect to utilize the permanent heating system for temporary heat after the building is enclosed and after it has been tested and ready to operate. It shall, however, be his responsibility to thoroughly clean and restore to first-class condition any portion of the permanent heating system used for heating during construction to the satisfaction of the Engineer.

C. The Contractor shall furnish and install one thermometer for every 2,000 square feet of floor space or fraction thereof.

D. Installation of weather protection and heating devices shall comply with all safety regulations including provisions for adequate fire protection devices. Approved methods of heating should also provide for adequate ventilation to prevent exposing people and materials to carbon monoxide, carbon dioxide and other noxious fumes.

E. Within 30 calendar days after the award of this contract, the general contractor shall submit in writing to the Engineer three (3) copies of his proposed methods for "Weather Protection" for approval.

F. The Contractor shall give adequate notification to the Engineer and all subcontractors prior to the erection and removal of temporary protective enclosures.

G. Such weather protection shall be consistent with the Progress Schedule, shall permit the continuous progress of the Work necessary to maintain an orderly and efficient sequence of construction operations and shall meet such additional requirements as may be specified by the Special Conditions or Specifications.

20. Furnishings and Equipment.

When, in the opinion of the DCR, any portion of the Work is in a reasonable condition to receive fittings, furniture, or other property of the Department of Conservation and Recreation not covered by this Contract, the Contractor shall allow the DCR to bring such fittings, furniture, and/or other property into such portions of the Work and shall provide all reasonable facilities and protection thereof. No such occupancy shall be construed as interfering with the provisions relating to time of completion, or as constituting an acceptance of the whole or any part of the Work. Any furniture or fittings so installed shall be placed in the Work at the risk of the DCR except that the Contractor shall be liable for damages or losses to such furniture or fittings to the extent such damages or losses arise in whole or in part from the negligence or intentional misconduct of Contractor, Subcontractors, their agents and/or employees, or anyone for whose acts the Contractor is responsible.

21. Form for Sub-contract.

The Contractor when subcontracting with sub-bidders filed pursuant to M.G.L. c. 149, sec. 44F shall use the form for sub-Contract in M.G.L. c. 149, sec. 44F(4)(c). The Contractor shall not interpret paragraph 3 of the statutory form of Subcontract to require such sub-bidders to provide insurance with limits higher than the limits that are required by the Contract Documents, if the term "Contractor" refers to the sub-bidder and that the term "Contract Price" refers to the sub-bidder's price stated in paragraph 1 of the statutory form of Subcontract.

22. Sales Tax Exemption and Other Taxes.

All building materials and supplies as well as the rental charges for construction vehicles, equipment and machinery rented exclusively for use on the Site, or while being used exclusively for the transportation of materials for the Work are entitled to an exemption from sales taxes under M.G.L. c. 64H, sec. 6(f). The Contractor shall take all action required to obtain the benefit of such sales tax exemption. The Contractor shall bear the cost of any sales taxes that the Contractor incurs in connection with the Work and the DCR shall not reimburse the Contractor for any such taxes. The exemption number assigned to the Contractor as an exempt purchaser shall be provided to the Contractor by the DCR upon the written request of the Contractor.

23. Final Cleaning.

At the completion of the Work, the Contractor shall remove all waste materials, rubbish, tools, equipment, machinery, and surplus materials, and professionally clean all sight-exposed surfaces so that the Work is clean and ready for occupancy and/or use. After installation of DCR furniture, telephones, and equipment, the Contractor shall provide such additional cleaning as may be necessary to remove any soil resulting from installation of such furniture, telephones, and equipment. The costs of the required cleaning are included in the Contract price.

All permanent drainage structures such as catch basins, permanent detention or retention basins, drainage conveyances, piping, sumps, and particle separators will be cleaned of sediments and debris prior to acceptance of the Work. Any sediments or debris accumulated during construction shall be removed and disposed in accordance with local and state requirements.

24. Maintenance Data.

Subject to such additional requirements as may be provided in the Special Conditions or Specifications, the Contractor shall compile 3 complete and identical binders of operating and maintenance data for the entire Work. The Contractor shall submit record maintenance data to the DCR for approval and shall instruct and train the DCR's personnel in proper inspection and maintenance procedures.

25. Drainage Specifications.

Subject to such additional requirements as may be provided in the Special Conditions or Specifications, where construction involves replacement or construction of new storm water drainage systems including but not limited to catch basins, roof drains, recharge to groundwater systems and outfall structures, the Contractor shall provide drawings and electronic records in a form acceptable to the DCR that provides specifications and a site plan that identifies locations of the drainage system components and cleanout, if applicable.

26. Closeout Procedures.

The Contractor shall take all actions and submit all items required for Final Acceptance as specified in the Contract Documents.

27. Risk of Loss.

The Contractor shall bear all risk of loss to the Work during the term of the Contract except for any portion of the Work as to which the DCR has given final acceptance. Nothing herein shall limit the Contractor's responsibilities under Article IX or XV of these General Conditions of the Contract.

28. Photographs.

A. At the request of the DCR, the Contractor shall furnish the DCR suitable 4" X 6" color photographs and/or digital image files of the construction area, and any related work areas.

B. If the DCR requires the Contractor to provide photographs of the Work, the areas to be photographed and the locational reference point from which they are to be taken will be designated by the DCR, and shall be taken according to the following schedule:

- a. Before construction operations have been started.
- b. Each month during the performance of the Work.
- c. After construction has been completed.

C. Each photograph shall have permanently written on its face a legible description or title indicating date, location, direction from which taken, project title and item of work photographed.

D. Upon completion of all work under this contract, the Contractor shall deliver all negatives, clearly identified, to the DCR. Photographs will be placed in acetate sleeves and bound in three booklet form.

E. The cost of furnishing photographs shall be included in the prices bid for the various items scheduled in the Proposal.

ARTICLE V: MATERIALS AND EQUIPMENT

1. Materials Generally.

A. Unless otherwise specifically provided in the Contract Documents, the Contractor shall provide and pay for materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether incorporated or to be incorporated in the Work.

B. Materials and equipment to be installed as part of the Work (both or either of which are hereinafter referred to as "materials") shall be new, unused, of recent manufacture, assembled, and used in accordance with the best construction practices. The Contractor shall inform himself/herself as to, and shall comply with, the provisions of M.G.L. c. 7, sec. 23A, as amended, and shall abide by the same and all applicable rules, regulations, and orders made thereunder in relation to the purchase of supplies and materials in the execution of the Work, including the provisions of M.G.L. c. 7, sec. 22, paragraph 17, which provides that there be *"a preference in the purchase of supplies and materials, other considerations being equal, in favor, first, of supplies and materials manufactured and sold within the Commonwealth, and, second, of supplies and materials manufactured and sold elsewhere within the United States."*

C. All materials furnished by the DCR to the Contractor for installation in the work will be delivered by freight train, truck, or other means of common carrier to the nearest convenient public railroad siding, freight station, trucking terminal or such other designated delivery point of which he will receive due notification. The Contractor, at his/her own expense, shall do all handling and conveying of such materials at and from the noted deliver site. He shall unload and remove them promptly from the cars, trucks, or terminals upon notification of their arrival and he shall be responsible for any demurrage, delay charges, damage done or loss of materials from the time of delivery to the final acceptance of the work. Materials previously delivered shall be turned over to the Contractor as soon as possible after the date ordered to begin work. He shall make a complete inventory with the Resident Engineer as to content and condition; thereafter he shall be responsible for the care, custody, and handling until the final acceptance of the work.

2. Shop Drawings, Product Data, and Samples.

A. The Contractor shall furnish to the Project Engineer all samples of the materials to be used in the execution of the Work as required by the Contract Documents. The Contractor shall furnish to the DCR in a timely manner all coordination Drawings, shop details, Shop Drawings, and setting diagrams which may be necessary for acquiring and installing materials. These shall be reviewed as required by the DCR. A minimum of six (6) copies shall be submitted for final approval, one of which shall be returned to the Contractor, one given to the Resident Engineer, and four maintained by the DCR. The inspection and approval by the DCR of Shop Drawings, etc. shall be general and shall in no way relieve the Contractor from responsibility for proper fitting, coordinating, construction, and construction sequencing. The Contractor shall furnish to the DCR such information and vouchers relative to the Work, the materials therefore, and the persons employed thereon, as the DCR shall from time-to-time request.

B. Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. The purpose of their submission is to demonstrate for those portions of the Work for which submittals are required the way the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents.

C. The Contractor shall review, approve, and submit to the DCR, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the DCR or of separate contractors. Submittals made by the Contractor which are not required by the Contract Documents, or which do not comply with the Contract Documents may be returned without action. The Contractor's attention is directed to the provisions of Section 4 of this Article V and to the Specifications.

D. The Contractor shall prepare and keep current for the DCR's approval a schedule of submittals which is coordinated with the Progress Schedule and allows the DCR reasonable time to review submittals.

E. The Contractor shall perform no portion of the Work requiring submittal and review of Shop Drawings, Product Data, Samples, or similar submittals until the respective submittal has been approved by the DCR. Such Work shall be in accordance with Approved submittals.

F. By submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents that the Contractor has determined and verified materials, field measurements, and field construction criteria related thereto and has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

G. The Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the DCR's approval of Shop Drawings, Product Data, Samples, or similar submittals unless the Contractor has specifically informed the DCR in writing of such deviation at the time of submittal and the DCR has given explicit written approval to the specific deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals by the DCR's actions.

H. The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by the DCR on previous submittals.

I. Informational submittals upon which the DCR is not expected to take responsive action may be so identified in the Contract Documents.

J. When professional certification of performance criteria of materials, systems or equipment is required by the Contract Documents, such certification must be stamped by a registered Massachusetts professional in the discipline required. The DCR shall be entitled to rely upon the accuracy and completeness of such calculations and certifications.

K. Materials furnished or used or employed under the Contract must be equal in quality to the samples furnished and be satisfactory to the DCR.

3. Tests.

A. Any material to be used in the Work may be tested or inspected at any time, on or off Site, by or under direction of the DCR, and may be rejected if it fails to comply with specified tests. The Contractor shall test all materials unless specified otherwise in the Special Conditions or Specifications. The Contractor shall also pay for all testing of specified material unless specified otherwise in the Special Conditions or Specifications. If the Contractor requests permission to use a material that was not specified, then the Contractor in all cases shall pay for such testing. The cost of testing of materials that fail the testing criteria shall be borne by the Contractor

B. The Contractor shall notify the DCR of the proposed sources of materials in time to permit all required testing and inspection before the material is needed for incorporation into the Work. The Contractor shall have no claim arising from the Contractor's failure to designate the proposed source or to order the material in time for adequate testing and inspection. Necessary arrangements shall be made to permit the DCR to make factory, shop or other inspection of materials or equipment ordered for the Work in the process of manufacture or fabrication, as required by the Contract Documents. The DCR will not assume any obligation for the sampling and testing of materials other than on the Site, unless so required by the Specifications.

C. Where tests of materials will be made by the DCR or under its direction, the Contractor or his/her suppliers shall furnish such facilities as the DCR may require for collecting and forwarding samples and shall not make use of, nor incorporate into the Work, any material represented by the samples until the required tests have been made and the material accepted, unless otherwise directed. The Contractor in all cases shall furnish the required samples without charge. In the event of failure of materials to meet the Contract Documents, any retesting of new materials or of the same materials after reworking, shall be paid for by the Contractor.

D. The testing of the Work shall not relieve the Contractor of any of his/her obligations to fulfill the terms of the Contract as herein prescribed by the Contract Documents. Failure to reject any defective work or materials shall in no way prevent later rejection when such defect is discovered, notwithstanding that such defective work or materials had been previously overlooked or misjudged by the DCR and accepted or estimated for payment, nor shall such obligate the DCR to make final acceptance thereof. If sampling and testing reveal that the material is unsatisfactory, it will then be the responsibility of the Contractor to remove it from the Work, replace it, or blend it with such other material so that an acceptable material will be produced. The removal, replacement and blending of such material shall be done by the Contractor without additional compensation.

4. "Or Equal" Submissions.

A. Where products or materials are prescribed by manufacturer name, trade name, or catalog reference, the words "or Approved equal" shall be understood to follow. An item shall be considered equal to the item so named or described if in the opinion of the DCR (a) it is at least equal in quality, durability, appearance, strength, and design, (b) it performs at least equally the function imposed in the general design for the Work, and (c) it conforms substantially, even with deviations, to the detailed requirements for the items as indicated by the Specifications. Any structural or mechanical changes made necessary to accommodate products or materials substituted as an "or equal" shall be at the expense of the Contractor. If the cost of the material substituted as an "or equal" is less than the cost of the material specified, such savings in cost shall be credited to the DCR and deducted from the price. "Approved equal" shall mean an item with respect to which the DCR shall have issued a written statement to the Contractor to the effect that the item is, in the DCR's opinion, equal within the meaning of this paragraph to that prescribed in the Contract Documents.

B. The Contractor shall be responsible for providing the DCR with any information and test results that the DCR reasonably requires to determine whether a material is equal to a material named or described in the Contract Documents.

C. The Contractor shall make all requests for substitution of a material named or described in the Contract Documents in writing, and at least thirty (30) days prior to the date the materials will be used in the Work, or immediately upon becoming aware of the following exigencies: (1) the non-availability of the specified material, (2) delay of the delivery of the specified material that will preclude the completion of the Work or any part thereof within the time specified in the Contract or (3) unforeseen field conditions that necessitate the substitution of the specified material. In no event shall the Contractor maintain a claim for delays based upon the DCR's review of such substituted materials if the Contractor failed to submit a written request for such substitution in accordance with the provisions of this paragraph. A written request for a material substitution due to an exigency set forth above shall be accompanied with documentation of the exigency, including but not limited to, a photocopy of a letter from the supplier or manufacturer stating that he/she is unable to furnish the specified materials and the reasons that he/she is unable to furnish the materials, as required by the DCR. If the Contractor's proposed substitution due to an exigency is declined, the DCR shall, at its discretion, specify an "or equal" substitution.

D. The Contractor shall have the burden of proof with respect to any claimed increases in the Contract Price resulting from the improper rejection by the DCR of any material proposed by the Contractor as an equal. No increase in the Contract Price shall be permitted unless the Contractor submits documentary evidence sufficient to prove to the reasonable satisfaction of the DCR that the rejection increased the Contractor's costs over the costs provided for in the Bid pricing documents, net of all savings the Contractor obtained by substituting other "or equal" items. The Contractor shall submit copies of all pricing materials, calculations, plans, Specifications, Drawings, and other design documents that the DCR deems necessary or desirable to evidence such increased costs. In calculating the Contractor's increased costs, a deduction shall be made for all costs that the Contractor would have incurred making structural or mechanical changes to include within the Work the item later found to have been improperly rejected.

5. Delivery and Storage of Materials: Inspection.

A. Materials and equipment shall be progressively delivered to the Site so that there will be neither delay in the progress of the Work nor an undue accumulation of materials that are not to be used within a reasonable time, and stored so that their security, quality, and fitness of the materials for the Work is preserved.

B. Vehicle Weight Limits

1. The Contractor's attention is directed to Chapter 90, Section 19A of the General Laws as amended concerning the weight limits for construction type motor vehicles.
2. No materials supplied for the project shall be accepted in vehicles whose gross weight exceed the legal load limits as determined by the regulatory agencies of the Commonwealth and Federal Government
3. Weight slips that indicate the load exceeding the legal load limit will not be countersigned by the DCR.

C. If the Engineer so requests, the Contractor, at any time before final acceptance of the work, shall remove or uncover such portions of the finished work as may be directed. After examination, the Contractor shall restore said portions of the work to the standard required by the specifications. Should the work thus exposed or examined prove acceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed will be paid for as extra work; but should the work so exposed or examined prove unacceptable, the uncovering or removing and the replacing of the covering or making good of the parts removed, will be at the Contractor's expense.

D. Necessary arrangements shall be made to permit the DCR to perform all required inspection and testing of materials or equipment ordered for the Work at the factory or shop during the process of manufacture or fabrication, or in storage on or off Site. The Contractor shall have no claims because of his/her failure to designate the proposed source of the material in time for adequate testing and inspection.

E. Materials stored off Site shall be insured and stored at the expense of the Contractor to guarantee the preservation of their security, quality, and fitness for the Work. Without derogating from the Contractor's responsibilities in the previous sentence, when necessary to avoid deterioration or damage, material (on or off Site) shall be placed on wooden platforms or other hard clean surfaces and not on the ground and shall be properly protected.

F. Expenses for inspection of material by DCR personnel including travel, quarters, and subsistence shall be borne by the Contractor requesting the inspection of material stored outside the Commonwealth of Massachusetts as part of the Contract Price. The policy of the DCR precludes the payment for material stored outside the boundaries of Massachusetts except in extremely limited circumstances with the express written consent of the DCR. If the Contractor requests an inspection of material stored outside the Commonwealth of Massachusetts, the DCR will initially pay for all expenses of inspecting the material incurred by DCR's personnel including travel, quarters, and subsistence. The DCR will then give Contractor an invoice for those costs and the Contractor shall submit a credit Change Order for those expenses.

G. Stored materials either at the Site or at some other location agreed upon in writing shall be so located as to facilitate prompt inspection and even though approved before storage, may again be inspected prior to their use in the Work.

H. Where no inspection of materials is arranged by the DCR and before such materials are incorporated into the work, the Contractor shall be required to submit to the DCR for approval, three copies of the Manufacturer's or Supplier's statement for each kind of material furnished, which shall contain the following information:

1. Work for which the material is consigned.
2. Name of the Contractor to which the material is supplied.
3. Description of material supplied.
4. Quantity of material supplied.
5. Means of identifying the consignment, such as label, marking, seal number, etc.
6. Date and method of shipment.
7. Statement to the effect that the material has been tested and found in conformance with the Contract Documents.
8. Results of all required tests, or in lieu of said results, the Manufacturer's, or Supplier's guarantee that he/she shall maintain said results, and make them available to the DCR for a period of not less than three years from the date of final acceptance of final payment by the Commonwealth.
9. Signature of a person duly authorized to bind the Manufacturer or Supplier.

I. All storage sites shall be restored to their original condition by the Contractor at the Contractor's expense. This shall not apply to the stripping and storing of topsoil, or to other materials salvaged from the work.

J. The Contractor shall take charge of and be liable for any loss of or injury to the materials for his/her use delivered to or in the vicinity of the place where the Work is being done, whether furnished by the DCR or otherwise. The Contractor shall notify the DCR as soon as any such materials are so delivered, allow them to be examined by the DCR, and furnish workers to assist therewith.

K. Private property shall not be used for storage purpose without the written permission of the property owner, and if requested by the DCR copies of such written permission shall be furnished by the Contractor.

6. Defective, Damaged, or Deteriorated Materials and Rejection Thereof.

The DCR may reject materials if the DCR reasonably determines that such materials do not conform to the Contract Documents in any manner, including but not limited to materials that have become damaged or deteriorated from improper storage whether such materials have previously been accepted. The Contractor at its own expense shall remove rejected materials from the Work. No rejected material, the defects of which have been subsequently corrected, shall be used except with the written permission of the DCR. Should the Contractor fail to remove rejected material within a reasonable time, the DCR may, in addition to any other available remedies, remove and/or replace the rejected material, and deduct the cost of such removal and/or replacement from any moneys due or to become due the Contractor. No extra time shall be allowed for completion of Work by reason of such rejection. The inspection of the Work shall not relieve the Contractor of any of its obligations herein prescribed, and any defective Work shall be corrected. Work not conforming to the Contract Documents may be rejected notwithstanding that such Work and materials have been previously overlooked or misjudged by the DCR and accepted for payment. If the Work or any part thereof shall be found defective at any time before Final Acceptance of the whole Work, the Contractor shall forthwith make good such defect in a manner satisfactory to the DCR. Nothing in the Contract shall be construed as vesting in the Contractor any property rights in the materials used after they have been attached or affixed to the Work or the Site; but all such materials shall upon being so attached or affixed become a property of the DCR.

7. Measurement

A. The method of measurement for materials necessary for the proper execution of the Work is set forth at the end of each Section of these Specifications. The computations to be used in determination of quantities of material furnished and of work performed under the Contract shall be selected by the DCR.

B. For the estimating of quantities in which the computations or areas by analytic and geometric methods would be comparatively laborious, it is stipulated and agreed that the planimeter shall be considered an instrument of precision adapted to the measurement of such area.

C. To aid the Resident Engineer in determining the quantities and weights of cement and other materials to be paid for, the Contractor shall, whenever so required, give him access to the proper invoices, bills of lading, etc., and shall provide scales and assistance for weighing, or assistance for measuring, any of the materials.

D. All measurements shall be confirmed by the DCR as they are made to determine the quantities of the various items of work performed. All measurements shall be made according to the United States Standard Units of Measurement.

E. Unless otherwise specified, longitudinal measurements for area computations will be made horizontally. Unless otherwise specified transverse measures for area computations will be the dimensions shown on the Drawings or in writing by the DCR.

F. All items which are measured by the linear foot, including, but not limited to pipe, culverts, guardrail, curbing, will be measured parallel to the base or foundation upon which such structures are placed, unless otherwise shown on the Drawings.

G. In computing volumes of excavation, the average end area method, or other methods acceptable to the DCR will be used.

H. A sworn weigher shall weigh all materials required to be weighed. The weighing of such materials may be witnessed by the DCR.

I. If materials are shipped by rail or trucks, the car weights or quarry weights may be accepted. Weight slips shall be provided for each shipment of material weighed. Each weight slip shall be signed by the sworn weigher, and countersigned, on delivery, by the DCR. Material listed on weight slips that are not countersigned by the DCR shall not be included for payment under the Contract.

J. When requested by the Contractor and approved by the DCR in writing, material specified to be measured in weight may be weighed and converted to volume measurement for payment purposes.

ARTICLE VI: PROSECUTION AND PROGRESS

1. Beginning, Progress Schedule, and Completion of Work.

A. The Contract time shall commence the work upon the date specified in the Notice to Proceed. The Contractor shall begin Work at the Site within ten (10) days of said date unless otherwise ordered in writing by the DCR.

B. Within seven (7) days after the issuance of the Notice to Proceed, Saturdays, Sundays and legal holidays excluded, the Contractor shall submit to the DCR a progress schedule for the term of the Contract as required by the Contract Documents, showing in detail his/her proposed progress for the construction of the various parts of the Work and the proposed times for receiving required materials. Upon approval by the DCR, said schedule shall constitute the Progress Schedule. The Contractor shall at the end of each month, or more often if required, furnish to the DCR a schedule meeting the requirements of the Specifications showing the actual progress of the parts of the Work in comparison with the Progress Schedule.

C. Time is of the essence of this Contract. The Work shall be completed within the time specified in Article 2 of the Department of Conservation and Recreation - Contractor Agreement. Should the Contractor require additional time to complete the Work, the Contractor shall document the reasons therefor and submit a written request for an extension of time within 20 days of the occurrence of the event alleged to be the cause of the delay, as provided in this Article and in Article VII of these General Conditions of the Contract. Failure to submit said written request within the time required by the preceding sentence shall preclude the Contractor from subsequently claiming any time extension due to said delay.

D. If, in the opinion of the DCR, the Contractor fails to comply with the construction schedule as set forth in the Contractor's bid or the Project specifications, the DCR may give the Contractor a notice specifying the time limits and performance standards that the Contractor is failing to meet whereupon (1) the Contractor shall, if the notice requires, discontinue all or any portion of the Work (which discontinuance shall neither terminate the Contract nor give the Contractor any claim for an increase in the Contract Price, damages, or an extension of any completion deadlines); or (2) at Contractor's sole cost increase the work force, equipment and plant, or any of them, employed on the whole or any part of the Work, to the extent required by such notice, and employ the same from day to day until the completion of the Work or such part thereof, or until the failure regarding the rate of progress, in the opinion of the DCR, shall have been sufficiently corrected.

E. If, in the opinion of the DCR, the Contractor fails to comply with the construction schedule, and whether the DCR shall have given the Contractor a notice described in D above, the DCR may (but shall not be required to) give the Contractor notice of such failure and five (5) days to cure the same. Unless the Contractor shall within that five days take all necessary steps to do so (including, if the DCR requires, increasing its forces, equipment and plant) and continue to do so until in the opinion of the DCR the failure is corrected, the DCR may at the Contractor's expense and without terminating this Contract take exclusive or joint possession of all or a portion of the Site and employ and direct the labors of existing or such additional forces, equipment and plant as may in the DCR's opinion be necessary to insure the completion of the Work or such part thereof within the time specified in the Contract Documents or at the earliest possible date thereafter. The DCR may exercise its rights under this Article at any time and from time to time without waiving any of its rights under this Contract, at law or in equity, including, without limitation, the right to deem this Contract terminated or to order the Contractor to discontinue the Work at any time thereafter. The Contractor shall continue to perform the remaining Work under this Contract even if the DCR elects to have another contractor perform a portion of the Work under this Article.

F. The DCR shall deduct the cost of any actions the DCR takes under this Article from any amount then due or which might have become due to the Contractor under this Contract had the Contractor performed as required. On demand, the Contractor shall pay the DCR any amount by which the cost of completing all or any portion of the Work exceeds the amount attributable to that Work under the Contract Documents. The DCR's sole goal will be to complete the Work that it elects to complete within the time limits stated in the Contract or soon thereafter. Consequently, the DCR shall have no obligation to obtain competitive bids or the lowest cost for completing the Work or any part thereof, except when it is required by law. The DCR's election to complete all or part of the Work shall not release the Contractor from any liability for failure to complete the Work as the Contract Documents require and shall not entitle the Contractor to a claim for an increase in the Contract Price or an extension of the time for completing the Work. If the cost that the DCR incurs in completing all or any portion of the Work is less than the amount that the Contract Documents attribute to that Work, the DCR will pay or credit the difference to the Contractor, less any other costs and expenses that the DCR incurs, including the cost of supervision, and attorneys' fees and costs.

2. Failure to Complete Work on Time - Liquidated Damages.

A. If liquidated damages are specified in the Department of Conservation and Recreation - Contractor Agreement, the DCR has determined that its damages because of Contractor's failure to complete the Work fully within the time specified will be difficult or impracticable to ascertain. Accordingly, if the Work is not completed to such point by the date specified in this Contract, the Contractor shall pay to the DCR the sum designated as liquidated damages in the Contract for each calendar day that the Contractor is in default in completing the Work to such point. Such moneys shall be paid as liquidated damages, not as a penalty, to cover losses and expenses to the DCR resulting solely from the fact that the Work is not completed on time.

B. Similarly, if the Contract states that by a specified date a designated portion of the Work shall be fully completed, and if such portion has not been prosecuted to such point by said date, the Contractor shall pay to the DCR the sum designated in the Contract for each calendar day that the Contractor is in default in completing such portion of the Work to such point. Such moneys shall also be paid as liquidated damages, not as a penalty, to cover losses and expenses to the Department of Conservation and Recreation resulting solely from the fact that the Work is not completed on time.

C. The DCR may recover such liquidated damages by deducting the amount thereof from any moneys due or that might become due the Contractor, and if such moneys shall be insufficient to cover the liquidated damages, then the Contractor or the Surety shall pay to the DCR the amount due.

D. Permitting the Contractor to continue and finish the Work or any portion of it after the time fixed in the Contract for its completion shall not be deemed as a waiver of any of the DCR's rights hereunder, at law or in equity.

E. Liquidated damages or a portion thereof may be waived by the DCR if the Contractor submits evidence satisfactory to the DCR that the delay was caused solely by conditions beyond the control of the Contractor and that the DCR has not suffered any damages because of said delay.

F. Failure by the DCR to specify a sum as liquidated damages in the Department of Conservation and Recreation - Contractor Agreement, or the insertion of "N/A" or "none" in the space provided therein for liquidated damages, shall not be deemed a waiver of the DCR's right to recover actual damages arising from the Contractor's failure to complete the Work on time.

3. Delays: Statutory Provisions (M.G.L. c. 30, sec. 39O).

A. Notwithstanding any provision of this Contract to the contrary, except as otherwise provided by law as set forth in paragraph B below, the Contractor shall not be entitled to increase the Contract Price or to receive damages on account of any hindrances or delays, avoidable or unavoidable; but if any delay is caused in the opinion of the DCR, the Contractor shall be entitled to an extension of time. The length of the extension shall be sufficient in the opinion of the DCR for the Contractor to complete the Work. Although no delay shall increase the Contract Price, the DCR may require that any change in the date by which the Contractor must complete all or any part of the Work be processed on a Change Order form.

B. If a suspension, delay, interruption or failure to act of the DCR increases the cost of performance to any Subcontractor, that Subcontractor shall have the same rights against the Contractor with respect to such increase as the Contractor shall have against the DCR by virtue of (a) and (b) of M.G.L. c. 30, s. 39O set forth below, but nothing in provisions (a) and (b) shall alter any other rights which the Contractor or the subcontractor may have against each other. As used in the statutory language of (a) and (b) below, "contract" means this Contract, "general contractor" means the Contractor and "awarding authority" means the DCR:

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

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

4. Occupancy and/or Use of Project Prior to Final Acceptance.

A. The Contractor agrees to the occupancy and/or use of the Project or any portion thereof before Final Acceptance of the Work by the DCR.

B. The DCR will cooperate with the Contractor with respect to the completion of the Work by taking such reasonable steps as may be possible to avoid interference with the Contractor's Work if they do not interfere with the proper functioning of the facility.

C. The Contractor shall not be responsible for wear and tear or damage resulting solely from temporary occupancy.

D. Occupancy and/or use of any part of the Work prior to Final Acceptance by the DCR shall not relieve the Contractor from maintaining the required payment and performance bonds and insurance (to the extent that insurance is required to be maintained after Substantial Completion) required by this Contract.

5. Substantial Completion – Punch List.

A. When the Work, or portion thereof which the DCR agrees to accept separately has reached the state of Substantial Completion as shown on an Approved payment request, the Contractor shall develop, with the participation of the DCR, the Punch List identifying those items of unfinished or unacceptable Work that remain to be performed or corrected under the Contract.

B. Before the Work shall be deemed completed to the point where it is ready for the issuance of Final Acceptance, the Contractor shall:

- (1) Provide Contractor's proposed Punch List containing a statement of the reason for each item listed thereon.
- (2) Advise the DCR of proposed changes in insurance in accordance with the provisions of this Contract, and provide to the DCR evidence of the Contractor's Completed Operations insurance coverage to the extent required by the Contract Documents.
- (3) Execute and submit a notarized warranty on a form provided by the DCR meeting the requirements of Article IX of these General Conditions of the Contract, to commence upon the date of the Certificate of Final Acceptance, unless otherwise provided in the Certificate of Final Acceptance.
- (4) Submit signed special warranties and warranties of longer than one year as required by the Contract Documents.
- (5) Submit signed maintenance agreements for all portions of the Work specified to receive maintenance after the issuance of the Certificate of Final Acceptance.
- (6) Submit all preliminary record Drawings to the DCR and documents and framed data in the forms required by the Contract Documents.
- (7) Complete all items required to be completed by the Department of Public Safety and obtain a Certificate of Occupancy from the Department of Public Safety and similar releases which permit the full and unrestricted use of the areas claimed to be ready for occupancy.
- (8) Deliver specified maintenance stocks of materials, required spare parts, and all special tools furnished by manufacturers to persons designated by the DCR and obtain written receipts for same.
- (9) Make final changes of lock cylinders or cores and advise the DCR of the change of project security responsibility.
- (10) Complete start-up of systems, and instruct DCR personnel on proper operation and routine maintenance of all systems and equipment.
- (11) Remove all remaining temporary facilities that are no longer needed, surplus materials, and debris; (the Contractor shall not remove construction offices and trailers without the prior Approval of the DCR).
- (12) Submit final utility meter readings and similar information and advise the DCR of the change of responsibility for utility charges and payments upon occupancy and/or use,
- (13) Complete final clean-up of all Work, restoration of damaged land and property, including finishes, and replacement of all damaged and broken glass not listed on the Contractor's Punch List.
- (14) Complete such other items as may be called for in the Special Conditions, if any, or Specifications.

C. After completing the items specified in subsection A above, the Contractor shall make a written request for the DCR's inspection for a Certificate of Final Acceptance in accordance with the Contract Documents. The DCR shall review the submittals and the Work and shall either 1) sign a Certificate of Final Acceptance or 2) notify the Contractor of incomplete and/or incorrect Work that must be completed and corrected prior to the issuance of the Certificate of Final Acceptance. The DCR shall notify the Contractor of any additions to the Punch List. In connection with the execution of the Certificate of Final Acceptance, the DCR shall assign dollar values to each item on the Punch List. Failure to include any incomplete or defective item on the Punch List shall not relieve the Contractor of the obligation to complete all Work in accordance with the Contract Documents.

6. Final Acceptance of the Work.

A. Prerequisites for Final Acceptance. After the Contractor has completed all the Work required by this Contract, including Change Orders and Punch List Items, the Contractor shall submit the following completed items to the DCR together with such additional items as may be specified in the Contract Documents:

- (1) A final request for payment showing a final accounting of all changes in the Work.
- (2) Certification and satisfactory evidence that all taxes, fees, and similar obligations have been paid.
- (3) Consent of the Surety to Final Payment executed by applicable bonding companies.
- (4) Certified copy of the Punch List stating that the Contractor has completed or corrected every item listed.
- (5) Evidence of the Contractor's continuing Completed Operations Insurance coverage to the extent required by the Contract Documents.
- (6) All final record Drawings and documents in the forms specified by the Contract Documents.
- (7) A notarized certification that all purchases made under the tax exemption certificate were legitimate and entitled to exemption.
- (8) Written certifications from the Department of Public Safety and/or the DCR, where required, to the effect that: a) the Work has been inspected for compliance with the Contract Documents and has satisfied the Department of Public Safety; b) all equipment and systems included in the Work have been tested in the presence of the DCR and are operational and satisfactory; c) the Work is completed and ready for final inspection.
- (9) Such other items as may be required by the Contract Documents.

B. Reinspection; Final Acceptance. After notification from the Contractor that all remaining contract exceptions, omissions, and incompletions have been completed (except for the Contractor's continuing warranty, insurance, indemnification, and such other obligations as are intended by the terms of the Contract Documents to extend beyond the date of Final Acceptance), the DCR shall inspect the Work to verify the completion of the same. If the Work is satisfactory, the DCR shall prepare a Certificate of Final Acceptance or shall notify Contractor of items which remain to be completed prior to Final Acceptance.

7. One-Year Warranty Repair List and Inspection.

Approximately 30 days prior to the expiration of the comprehensive one-year warranty period, the Contractor shall schedule an appointment with the DCR for a re-inspection of the Work with the DCR and shall thereafter inspect the Work at the time scheduled. Based on this inspection and on prior inspections, the DCR shall issue a "Warranty Repair List" of items to be corrected by the Contractor. The Contractor shall make the repairs and/or replacements listed within 30 days of the issuance of the Warranty Repair List unless otherwise agreed by the DCR in writing.

ARTICLE VII: CHANGES IN THE WORK

1. Change Orders Generally.

A. The DCR may, pursuant to the provisions of M.G.L. c. 30, sec. 39K, authorize in writing, alterations in the line, grade, plans, form, dimensions or materials of the work, or any part thereof, either before, or after the commencement of construction. If such alterations diminish or increase the quantity included to be done and paid for at a unit price, or work substituted for the work specified is of a different cost and quality, the parties shall be governed by the aforesaid provisions of Law. No changes in the Work shall be made in absence of a Change Order defined in Article I of these General Conditions of the Contract, directing the Contractor to perform such changes. A request for a change in the provisions of this Contract may be submitted to the DCR by the Contractor, Project Engineer or Resident Engineer. The request must be made in writing and in accordance with the provisions of this Contract, Laws, and the procedures of the DCR. The DCR reserves the right to increase or decrease quantities, to eliminate portions of the work or add work of similar nature, and to direct the commencement and order of prosecution of various portions of the work.

B. A Change Order may be issued by the DCR for changes in the Work within the scope of the Contract, including but not limited to, changes in: (1) the Plans and Specifications; (2) the method or manner of performance of the Work; (3) the DCR-furnished facilities, equipment, materials, services, or Site; (4) the schedule for performance of the Work.

C. The Contractor shall immediately perform any Change Order work that is ordered by the DCR.

D. Whenever a Change Order is issued and said Change Order will cause a change in the Contractor's cost, the Contractor or the DCR may request an equitable adjustment in the Contract Price. A request for such an adjustment shall be in writing and shall be submitted by the party making such claim to the other party before commencement of the pertinent work or as soon thereafter as possible.

E. The DCR and the Contractor shall negotiate in good faith an agreement on an equitable adjustment in the Contract Price, and/or time if appropriate, before commencement of the pertinent work or as soon thereafter as is possible. In the absence of an agreement for an equitable adjustment, the DCR shall unilaterally determine the costs attributable to the change and provide the Contractor with a written notice to that effect. The determination of the DCR shall be final as to all questions of the amount and value of extra work, where the Contractor does not appeal said decision pursuant to the process set forth in this paragraph. The Contractor may appeal the decision of the DCR within thirty days of receipt of said notice, to the Commissioner of the DCR or his designee. The Contractor shall have the right to such further appeal as is provided in M.G.L. c. 30, sec. 39Q set forth in Section 4.D of this Article VII. However, if the Contractor shall exercise its rights to appeal the decision of the DCR as aforesaid, the Contractor shall be required to engage in the mediation procedures set forth in Section 5 of this Article VII, should the DCR require such mediation.

F. During the negotiation of an equitable adjustment in the Contract Price, the Contractor shall, if requested, provide the DCR with all cost and pricing data used by him in computing the amount of the equitable adjustment, and the Contractor shall certify that the pricing data used was accurate, complete, and current. If the DCR subsequently determines that the data submitted by the Contractor was incomplete, incorrect, or not current, the DCR may exclude such data from consideration under the equitable adjustment request.

2. Methods of Computing Equitable Adjustments.

A. Equitable adjustments in the Contract Price shall be determined according to one of the following methods, or a combination thereof, as determined by the DCR: (1) fixed price basis, provided that the fixed price shall be inclusive of items (a) through (e) below and shall be computed in accordance with those provisions; (2) estimated lump sum basis to be adjusted in accordance with Contract unit prices or other agreed upon unit prices provided that the unit prices shall be inclusive of all costs related to such equitable adjustment; (3) time and materials basis to be subsequently adjusted on the basis of actual costs (but subject to a predetermined "not to exceed limit") calculated as follows:

(a) the direct cost (or credit) for labor at the minimum wage rates established for this Contract pursuant to M.G.L. c. 149, sections 26-27H, and the direct cost for material and use of equipment.

(b) plus (or minus) the cost of Workmen's Compensation Insurance, Liability Insurance, Federal Social Security and Massachusetts Unemployment Compensation, or as an alternative the Contractor may elect to use a flat 30% of the total labor rate computed in accordance with subparagraph (a) above.

(c) plus, an allowance equal to 20% of the amount of (a) above for overhead, superintendence, and profit; (In the case of Item 1 work, which is the work of the Contractor and all his non-filed Subcontractors, said 20% allowance shall be paid to the Contractor and the Contractor and said non-filed Subcontractors shall agree upon the distribution of this amount as a matter of contract between them. In the case of Item 2 work, which is work performed by a Subcontractor filed pursuant to M.G.L. c. 149, sec. 44F, said 20% allowance shall be paid to the filed Subcontractor, it being understood that this provision does not apply to other Subcontractors including sub-Subcontractors listed under paragraph E of the form for sub-Bid).

(d) plus, for work performed by a Subcontractor filed pursuant to M.G.L. c. 149, sec. 44F, an additional allowance equal to 7% of the sum of (a) through (c) above as full compensation to the Contractor for processing forms and assuming full responsibility for the faithful performance of such work by said filed Subcontractor(s).

(e) plus (or minus) the actual direct additional premium costs and expenses incurred because of collective bargaining agreements or other agreements between organized labor and employers, and plus (or minus) the actual direct premium cost of payment and performance bonds required of the Contractor and filed Subcontractors for this Contract.

B. If the net change is an addition to the Contract Price, it shall include the Contractor's overhead, superintendence, and profit. On any change that involves a net credit, no allowance for overhead, superintendence and profits shall be included. For any change that does not include labor performed or materials installed in the Project, there will be no markup for the Contractor's overhead, superintendence, and profit, even though there may be a net increase in the Contract Price. Charges for small tools known as "tools of the trade" are not to be computed in the amount of any change in the Contract Price.

C. Statutory Contract adjustments made under the provisions of M.G.L. c. 149, sec. 44F shall not be considered Change Orders and shall not entitle the Contractor to any adjustments for overhead, profit, and superintendence, although the DCR may require that such Contract adjustments be processed on standard Change Order and equitable adjustment forms.

3. Work Performed Under Protest.

The Contractor agrees to perform all Work as directed by the DCR, and if the Project Engineer determines that certain Work that the Contractor believes to be or to warrant a Change Order under this Article does not represent a change in the Work, the Contractor shall perform said Work. The Contractor shall be deemed to have concurred with the Project Engineer's determination as aforesaid unless the Contractor shall perform Work under protest in compliance with the following sub-paragraphs (1) and (2) below:

(1) If the Contractor claims compensation for a change in the Work that is not deemed by the Project Engineer to be a change or to warrant additional compensation as claimed by the Contractor, the Contractor shall within one week after the commencement of any such work or the sustaining of any such damage submit to the Resident Engineer a written statement of the nature of such work or claim. The Contractor shall not be entitled to additional compensation for any work performed or damage sustained for which written notice is not given within the time limit specified in the preceding sentence, even though similar in character to work or damage with respect to which notice is timely given.

(2) On or before the fifteenth day of the month succeeding that in which any such extra work shall have been done or any such damage shall have been sustained, the Contractor shall file to the extent possible with the Resident Engineer, itemized statements of the details and costs of such work performed, or damage sustained. If the Contractor shall fail to make such statement to the extent possible, then the Contractor shall not be entitled to additional compensation for any such work or damages.

4. False Claims. Statutory Provisions Regarding Changes.

A. Criminal Penalties: The Contractor's attention is directed to M.G.L. c. 30, sec. 39I which provides criminal penalties for unauthorized deviations from the Plans and Specifications, and to M.G.L. c. 30, sec. 39J, and if performing work on a capital facility project, M.G.L. c. 7, sec. 42E-42I. The Contractor's attention is also directed to M.G.L. c. 266, sec. 67B which provides criminal penalties for false claims by Contractor under this Contract: *"Whoever makes or presents to any employee, department, agency or public instrumentality of the commonwealth, or of any political subdivision thereof, any claim upon or against any department, agency, or public instrumentality of the commonwealth, or any political subdivision thereof, knowing such claim to be false, fictitious, or fraudulent, shall be punished by a fine of not more than ten thousand dollars or by imprisonment in the state prison for not more than five years, or in the house of correction for not more than two and one-half years, or both."*

B. Differing Site Conditions (M.G.L. c. 30, sec. 39N): *"If, during the progress of the work, the contractor or the awarding authority discovers that the actual subsurface or latent physical conditions encountered at the Site differ substantially or materially from those shown on the plans or indicated in the contract documents either the contractor or the contracting authority may request an equitable adjustment in the contract price of the contract applying to work affected by the differing Site conditions. A request for such an adjustment shall be in writing and shall be delivered by the party making such claim to the other party as soon as possible after such conditions are discovered. Upon receipt of such a claim from a contractor, or upon its own initiative, the contracting authority shall make an investigation of such physical conditions, and, if they differ substantially or materially from those shown on the plans or indicated in the contract documents or from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the plans and contract documents and are of such a nature as to cause an increase or decrease in the cost of performance of the work or a change in the construction methods required for the performance of the work which results in an increase or decrease in the cost of the work, the contracting authority shall make an equitable adjustment in the contract price and the contract shall be modified in writing accordingly."*

C. Timely Decision by Awarding Authority. (M.G.L. c. 30, sec. 39P): *"Every contract subject to section thirty-nine M of this chapter or section forty-four A of chapter one hundred forty-nine which requires the awarding authority, any official, its architect or engineer to make a decision on interpretation of the specifications, approval of equipment, material or any other approval, or progress of the work, shall require that the decision be made promptly and, in any event, no later than thirty days after the written submission for decision; but if such decision requires extended investigation and study, the awarding authority, the official, architect or engineer shall, within thirty days after the receipt of the submission, give the party making the submission written notice of the reasons why the decision cannot be made within the thirty day period and the date by which the decision will be made."*

D. Change Order / Contract Interpretation Appeal Procedure (M.G.L. c. 30, sec. 39Q): The following provisions apply to every contract awarded by any state agency as defined by M.G.L. c. 7, sec. 39A for the construction, reconstruction, alteration, remodeling, repair, or demolition of any capital facility as defined by the aforesaid section 39A:

"(a) Disputes regarding changes in and interpretations of the terms or scope of the contract and denials of or failures to act upon claims for payment for extra work or materials shall be resolved according to the following procedures, which shall constitute the exclusive method for resolving such disputes. Written notice of the matter in dispute shall be submitted promptly by the claimant to the chief executive official of the state agency which awarded the contract or his designee. No person or business entity having a contract with a state agency shall delay, suspend, or curtail performance under that contract because of any dispute subject to this section. Any disputed order, decision or action by the agency or its authorized representative shall be fully performed or complied with pending resolution of the dispute.

"(b) Within thirty days of submission of the dispute to the chief executive official of the state agency or his designee, he shall issue a written decision stating the reasons therefore and shall notify the parties of their right of appeal under this section. If the official or his designee is unable to issue a decision within thirty days, he shall notify the parties to the dispute in writing of the reasons why a decision cannot be issued within thirty days and of the date by which the decision shall issue. Failure to issue a decision within the thirty-day period or within the additional time specified in such written notice shall be deemed to constitute a denial of the claim and shall authorize resort to the appeal procedure described below. The decision of the chief executive official or his/her designee shall be final and conclusive unless an appeal is taken as provided below.

"(c) Within twenty-one calendar days of the receipt of a written decision or of the failure to issue a decision as stated in the preceding subparagraph, any aggrieved party may file a notice of claim for an adjudicatory hearing with the division of hearing officers or the aggrieved party may file an action directly in a court of competent jurisdiction and shall serve copies thereof upon all other parties in the form and manner prescribed by the rules governing the conduct of adjudicatory proceedings of the division of hearing officers. In the event an aggrieved party exercises his option to file an action directly in court as provided in the previous sentence, the twenty-one-day period shall not apply to such filing and the period of filing such action shall be the same period otherwise applicable for filing a civil action in superior court. The appeal shall be referred to a hearing officer experienced in construction law and shall be prosecuted in accordance with the formal rules of procedure for the conduct of adjudicatory hearings of the division of hearing officers, except as provided below. The hearing officer shall issue a final decision as expeditiously as possible, but in no event more than one hundred and twenty calendar days after conclusion of the adjudicatory hearing, unless the decision is delayed by a request for extension of time for filing post-hearing briefs or other submissions assented to by all parties. Whenever, because an extension of time has been granted, the hearing officer is unable to issue a decision within one hundred and twenty days, he shall notify all parties of the reasons for the delay and the date when the decision will issue. Failure to issue a decision within the one-hundred-and-twenty-day period or within the additional period specified in such written notice shall give the petitioner the right to pursue any legal remedies available to him without further delay.

"(d) When the amount in dispute is less than ten thousand dollars, a contractor who is party to the dispute may elect to submit the appeal to a hearing officer experienced in construction law for expedited hearing in accordance with the informal rules of practice and procedure of the division of hearing officers. An expedited hearing under this subparagraph shall be available at the sole option of the contractor. The hearing officer shall issue a decision no later than sixty days following the conclusion of any hearing conducted pursuant to this subparagraph. The hearing officer's decision shall be final and conclusive and shall not be set aside except in cases of fraud."

5. Mediation.

In the case of every dispute where the dollar amount in dispute (or the estimated dollar value of the extension of time in dispute) is \$50,000 or more and the Contractor appeals the decision of the DCR or his designee described in Section 4.B above, the DCR shall retain the option at its sole discretion of initiating a process whereby the DCR and the Contractor shall engage in good faith in a non-binding mediation process, which process shall be concluded within sixty days from the date that the Contractor files an appeal from said decision as provided in Section 4.B above.

ARTICLE VIII: PAYMENT PROVISIONS

1. Schedule of Values.

Before the first application for payment the Contractor shall submit to the DCR a schedule of values allocated to various portions of the Work in sufficient detail to reflect the various major components of each trade (with filed Subcontractors as well as MBE/WBE noted), including quantities when requested, aggregating the total Contract Price, and divided so as to facilitate payments for work under each section of the Specifications. The schedule shall be prepared in such form and supported by such data to substantiate its accuracy as the DCR may require. Each item in the schedule shall include its proper share of overhead and profit. When approved by the DCR, it shall constitute the Schedule of Values and shall be used only as a basis for the Contractor's requests for payments.

2. Payment Liabilities of Contractor.

A. The Contractor shall pay to the DCR all expenses, losses, and damages, as determined by the DCR, incurred in consequence of any default, defect, omission or mistake of the Contractor or his/her employees or Subcontractors or the making good thereof.

B. If the Work (or a portion thereof) is not completed to Substantial Completion and the Contractor has not fully completed the Work by the date specified in Article 2 of the Department of Conservation and Recreation - Contractor Agreement, the Contractor shall pay to the DCR liquidated damages as provided in Article VI, Section 2 of these General Conditions of the Contract.

3. Retention of Moneys by the DCR.

A. The DCR may keep any moneys which would otherwise be payable at any time hereunder, and apply the same, or so much as may be necessary therefor, to (1) the DCR's expenditures for the Contractor's account, (2) to secure the DCR's remedies against the Contractor for the Contractor's breach of its obligations under this Contract or the breach of any person performing any part of the Work and (3) the payment of any expenses, losses or damages incurred by the DCR as a result of the failure of the Contractor to perform its obligations hereunder. The DCR may retain, until all claims are settled, such moneys as the DCR estimates to be the fair value of the DCR's claims against the Contractor, and of all claims for labor performed or furnished and for materials used or employed in or in connection with the Work and for the rental of vehicles, appliances and equipment employed and for the employment of substitute contractors and labor in connection with the Work, in accordance with M.G.L. c. 30, sections 39A and 39F. The DCR may make such settlements and apply thereto any moneys retained under this Contract.

B. The Contractor shall each week examine all claims so filed, and if the same are in any respect incorrect or do not correctly show the amount due from the Contractor to the claimant for such labor and materials, the Contractor shall forthwith file with the DCR a separate written statement of all inaccuracies in each claim and of the correct amount due from the Contractor to each claimant therefor, and shall immediately file a statement of all payments thereafter made to such claimants. Each such statement shall be sworn to and contain a detailed breakdown as required by M.G.L. c. 30 s. 39F(d). Unless such statements are so filed by the Contractor the amount shown by the claims filed shall at the option of the DCR be conclusively deemed to be the accurate amount due from the Contractor therefor in all accounting with the DCR. If the moneys retained under this Contract are insufficient to pay the sums found by the DCR to be due under the claims for labor and materials filed as aforesaid, the DCR may, at its discretion, pay the same, and the Contractor shall repay to the DCR all sums paid out. The DCR may also at its discretion use any moneys retained, due or to become due under this Contract, for the purpose of paying for both labor and materials used or employed in the Work for which claims have not been filed with the DCR.

C. No moneys retained under the provisions of this Article shall be held to be statutory security for the payment of claims filed in accordance with the provisions of M.G.L. c. 149, sec. 29, as amended, for which security is provided by bond.

4. Applications for Payment.

A. The Contractor shall, once in each month on the day of the month corresponding to the day of the month specified in the Notice to Proceed referenced in Article 2 of the Department of Conservation and Recreation - Contractor Agreement, in writing and in the manner prescribed by the DCR, submit to the Resident Engineer a statement showing the total amount of Work done to the time of such estimate and the value thereof as approved by the Resident Engineer and the Project Engineer. It shall be the sole responsibility of the Contractor to deliver or cause to be delivered to the Resident Engineer said periodic estimate in proper form, approved as provided above and arithmetically correct. All periodic estimates shall contain such certifications and other evidence supporting the Contractor's right to payment as the DCR may require, including without limitation, lien waivers and other evidence, on such forms as the DCR may require, establishing that title to the equipment or materials is unencumbered and has been transferred to the Department of Conservation and Recreation. If there is no Resident Engineer assigned to the Contract, the DCR shall designate a person at the project field office or alternatively the home office of the DCR. The Contractor shall include in such periodic estimate only such materials as are incorporated in the Work, except as provided in paragraph C below. The DCR shall retain no more than five percent of such estimated value as part security for the completion of the Work and shall pay to the Contractor while carrying on the Work the balance not retained as aforesaid, subject to the approval of the DCR after deducting therefrom all previous payments and all sums to be kept under the provisions of this Contract.

B. Each periodic estimate shall constitute the Contractor's representation that (1) the payment then requested to be disbursed has been incurred by the Contractor on account of the Work and is justly due to Subcontractors or, to the Contractor in the case of other Work performed by the Contractor on account thereof, (2) the materials, supplies and equipment for which Application for Payment is being submitted have been installed or incorporated into the Work or have been stored at the Site or at such off Site storage locations as the DCR shall have Approved, (3) the materials, supplies and equipment are insured in accordance with the provisions of this Contract, (4) the materials, supplies and equipment are owned by the Department of Conservation and Recreation and are not subject to any liens or encumbrances, (5) the Work which is the subject of such periodic estimate has been performed in accordance with the Contract Documents and (6) that all due and payable bills with respect to the Work have been paid to date or shall be paid from the proceeds of such periodic estimate. The Contractor's attention is directed to the criminal penalties for false claims referenced in paragraph A above.

C. The Contractor may include in a periodic estimate the value of materials or equipment delivered at the Site (or at some location agreed to in writing) only upon delivery to the DCR of: (1) an acceptable transfer of title on the form provided by the DCR; (2) written certification by the Contractor (or applicable subcontractor) on the form provided by the DCR that the Contractor (or the Subcontractor which executed the transfer of title) is the lawful owner and that the materials or equipment are free from all encumbrances, accompanied by receipted invoices or other acceptable proof of encumbrance-free ownership if such proof is deemed necessary by the DCR; (3) a stored materials insurance binder that covers the materials for which payment is requested, that names the Department of Conservation and Recreation as an insured party should the stored materials be subjected to any casualty, loss, or theft prior to their inclusion in the Work. The material(s) or equipment must, in the judgment of the DCR (1) meet the requirements of the Contract, including prior drawing, product data, and sample approval, (2) be ready for use, and (3) be properly stored by the Contractor and be adequately protected until incorporated into the Work. See also Article V.5.C of these General Conditions of the Contract concerning the cost of inspections.

D. The DCR may make changes in any periodic estimate submitted by the Contractor in accordance with M.G.L. c. 30, sec. 39K for building projects (see below), and in accordance with M.G.L. c. 30, sec. 39G for public works projects (see below), and the payment due shall be computed in accordance with the changes so made. The provisions of said section 39K shall govern payments for building projects on which the DCR has made changes, and the provisions of said section 39G shall govern payments for public works projects on which the DCR has made changes.

E. No certificate for payment and no progress payment shall constitute acceptance of Work that is not in accordance with the Contract Documents.

F. The Contractor and all Subcontractors furnishing labor on this Contract agree to furnish certified payroll reports if requested to do so, at no additional expense to the DCR. The DCR may at all reasonable times audit such reports.

5. Periodic Payments (M.G.L. c. 30, sec. 39K) for Building Projects.

For building contracts, the DCR shall make payment to the Contractor in accordance with M.G.L. c. 30, sec. 39K, which provides as follows:

" Within fifteen days (30 days in the case of the commonwealth, including local housing authorities) after receipt from the contractor, at the place designated by the awarding authority if such a place is so designated, of a periodic estimate requesting payment of the amount due for the preceding month, the awarding authority will make a periodic payment to the contractor for the work performed during the preceding month and for the materials not incorporated in the work but delivered and suitably stored at the site (or at some location agreed upon in writing) to which the contractor has title or to which a subcontractor has title and has authorized the contractor to transfer title to the awarding authority upon certification by the contractor that he is the lawful awarding authority and that the materials are free from all encumbrances, but less (1) a retention based on its estimate of the fair value of its claims against the contractor and less (2) a retention for direct payments to subcontractors based on demands for same in accordance with the provisions of section thirty-nine F, and less (3) a retention not exceeding five percent of the approved amount of the periodic payment. After the receipt of a periodic estimate requesting final payment and within sixty-five days after (a) the contractor fully completes the work or substantially completes the work so that the value of the work remaining to be done is, in the estimate of the awarding authority, less than one percent of the original contract price, or (b) the contractor substantially completes the work and the awarding authority takes possession for occupancy, whichever occurs first, the awarding authority shall pay the contractor the entire balance due on the Contract less (1) a retention based on its estimate of the fair value of its claims against the contractor and of the cost of completing the incomplete and unsatisfactory items of work and less (2) a retention for direct payments to subcontractors based on demands for same in accordance with the provisions of section thirty-nine F, or based on the record of payments by the contractor to the subcontractors under this contract if such record of payment indicates that the contractor has not paid subcontractors as provided in section thirty-nine F. If the awarding authority fails to make payment as herein provided, there shall be added to each such payment daily interest at the rate of three percentage points above the rediscount rate then charged by the Federal Reserve Bank of Boston commencing on the first day after said payment is due and continuing until the payment is delivered or mailed to the contractor; provided, that no interest shall be due, in any event, on the amount due on a periodic estimate for final payment until fifteen days (twenty-four days in the case of the commonwealth) after receipt of such period estimate from the contractor, at the place designated by the awarding authority if such a place is so designated. The contractor agrees to pay to each subcontractor a portion of any such interest paid in accordance with the amount due each subcontractor.

The awarding authority may make changes in any periodic estimate submitted by the contractor and the payment due on said periodic estimate shall be computed in accordance with the change so made, but such changes or any requirement for a corrected periodic estimate shall not affect the due date for the periodic payment or the date for the commencement of interest charges on the amount of the periodic payment computed in accordance with the changes made, as provided herein; provided, that the awarding authority may, within seven days after receipt, return to the contractor for correction, any periodic estimate which is not in the required form or which contains computations not arithmetically correct and, in that event, the date of receipt of such periodic estimate shall be the date of receipt of the corrected periodic estimate in proper form and with arithmetically correct computations. The date of receipt of a periodic estimate received on a Saturday shall be the first working day thereafter. The provisions of section thirty-nine G shall not apply to any contract for the construction, reconstruction, alteration, remodeling, repair, or demolition of any public building to which this section applies.

All periodic estimates shall be submitted to the awarding authority, or to its designee as set forth in writing to the contractor, and the date of receipt by the awarding authority or its designee shall be marked on the estimate. All periodic estimates shall contain a separate item for each filed sub-trade and each sub-sub-trade listed in sub-bid form as required by specifications and column listing the amount paid to each filed subcontractor as of the date of the periodic estimate is filed. The person making payment for the awarding authority shall add the daily interest provided for herein to each payment for each day beyond the due date of receipt marked on the estimate.

A certificate of the architect to the effect that the contractor has fully or substantially completed the work shall, subject to the provisions of section thirty-nine J, be conclusive for the purposes of this section.

Notwithstanding the provisions of this section, at any time after the value of the work remaining to be done is, in the estimation of the awarding authority, less than 1 per cent of the adjusted contract price, or the awarding authority has determined that the contractor has substantially completed the work and the awarding authority has taken possession for occupancy, the awarding authority may send to the general contractor by certified mail, return receipt requested, a complete and final list of all incomplete and unsatisfactory work items, including, for each item on the list, a good faith estimate of the fair and reasonable cost of completing such item. The general contractor shall then complete all such work items within 30 days of receipt of such list or before the contract completion date, whichever is later. If the general contractor fails to complete all incomplete and unsatisfactory work items within 45 days after receipt of such items furnished by the awarding authority or before the contract completion date, whichever is later, subsequent to an additional 14 days' written notice to the general contractor by certified mail, return receipt requested, the awarding authority may terminate the contract and complete the incomplete and unsatisfactory work items and charge the cost of same to the general contractor and such termination shall be without prejudice to any other rights or remedies the awarding authority may have under the contract. The awarding authority shall note any such termination in the evaluation form to be filed by the awarding authority pursuant to the provisions of section 44D of chapter 149."

6. Payment of Subcontractors (M.G.L. c. 30, sec. 39F).

The Contractor shall make payments to Subcontractors in accordance with the provisions of M.G.L. c. 30, sec. 39F, which is quoted in this section below, where applicable. (M.G.L. c. 30, sec. 39F requires that subparagraphs (a) through (h) be set forth in contracts awarded under M.G.L. c. 30, sec. 39M and M.G.L. c. 149, sections 44A-44H; said statute requires that subparagraph (i) be set forth in contracts awarded under M.G.L. c. 149, sections 44A-44H).

"1(a) Forthwith after the general contractor receives payment on account of a periodic estimate, the general Contractor shall pay to each subcontractor the amount paid for the labor performed and the materials furnished by that subcontractor, less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the subcontractor by the general contractor.

(b) Not later than the sixty-fifth day after each subcontractor substantially completes his work in accordance with the Plans and Specifications, the entire balance due under the subcontract less amounts retained by the awarding authority as the estimated cost of completing the incomplete and unsatisfactory items of work, shall be due the subcontractor; and the awarding authority shall pay that amount to the general contractor. The general contractor shall forthwith pay to the subcontractor the full amount received from the awarding authority less any amount specified in any court proceedings barring such payment and less any amount claimed due from the subcontractor by the general contractor.

(c) Each payment made by the awarding authority to the general contractor pursuant to subparagraphs (a) and (b) of this paragraph for the labor performed and the materials furnished by a subcontractor shall be made to the general contractor for the account of that subcontractor; and the awarding authority shall take reasonable steps to compel the general contractor to make each such payment to each such subcontractor. If the awarding authority has received a demand for direct payment from a subcontractor for any amount which has already been included in a payment to the general contractor or which is to be included in a payment to the general contractor for payment to the subcontractor as provided in subparagraphs (1) and (2) the awarding authority shall act upon the demand as provided in this section.

(d) If, within seventy days after the subcontractor has substantially completed the subcontract work, the subcontractor has not received from the general contractor the balance due under the subcontract including any amount due for extra labor and materials furnished to the general contractor, less any amount retained by the awarding authority as the estimated cost of completing the incomplete and unsatisfactory items of work, the subcontractor may demand direct payment of that balance from the awarding authority. The demand shall be by a sworn statement delivered to or sent by certified mail to the awarding authority, and a copy shall be delivered to or sent by certified mail to the general contractor at the same time. The reply shall contain a detailed breakdown of the balance due under the subcontract and a statement of the status of completion of the subcontract work. Any demand made after substantial completion of the subcontract work shall be valid even if delivered or mailed prior to the seventieth day after the subcontractor has substantially completed the subcontract work. Within ten days after the subcontractor has delivered or so mailed the demand to the awarding authority and delivered or so mailed a copy to the general contractor, the general contractor may reply to the demand. The reply shall be by a sworn statement to or sent by certified mail to the awarding authority and a copy shall be delivered to or sent by certified mail to the subcontractor at the same time. The reply shall contain a detailed breakdown of the balance due under the subcontract including any amount due for extra labor and materials furnished to the general contractor and of the amount due for each claim made by the general contractor against the subcontractor.

(e) Within fifteen days after receipt of the demand by the awarding authority, but in no event prior to the seventieth day after substantial completion of the subcontract work, the awarding authority shall make direct payment to the subcontractor of the balance due under the subcontract including any amount due for extra labor and materials furnished to the general contractor, less any amount (i) retained by the awarding authority as the estimated cost of completing the incomplete or unsatisfactory items of work, (ii) specified in any court proceedings barring such payment, or (iii) disputed by the general contractor in the sworn reply; provided that the awarding authority shall not deduct from a direct payment any amount as provided in part (iii) if the reply is not sworn to, or for which the sworn reply does not contain the detailed breakdown required by subparagraph (d). The awarding authority shall make further direct payments to the subcontractor forthwith after the removal of the basis for deduction from direct payments made as provided in parts (i) and (ii) of this subparagraph.

(f) The awarding authority shall forthwith deposit the amount deducted from a direct payment as provided in part (iii) of subparagraph (5) in an interest-bearing joint account in the names of the general contractor and the subcontractor in a bank in Massachusetts selected by the awarding authority or agreed upon by the general contractor and the subcontractor and shall notify the general contractor and the subcontractor of the date of the deposit and the bank receiving the deposit. The bank shall pay the amount in the account, including accrued interest, as provided in an agreement between the general contractor and the subcontractor or as determined by decree of a court of competent jurisdiction.

(g) All direct payments and all deductions from demand for direct payments deposited in an interest-bearing account or accounts in a bank pursuant to subparagraph (6) shall be made out of amounts payable to the general contractor at the time of receipt of a demand for direct payment from a subcontractor and out of amounts which later become payable to the General contractor and in the order of receipt of such demands from subcontractors. All direct payments shall discharge the obligation of the awarding authority to the general contractor to the extent of such payment.

(h) The awarding authority shall deduct from payments to a General contractor amounts which, together with the deposits in interest bearing accounts pursuant to subparagraph (6) are sufficient to satisfy all unpaid balances of demands for direct payment received from subcontractors. All such amounts shall be earmarked for such direct payments, and the subcontractors shall have a right in such deductions prior to any claims against such amounts by creditors of the general contractor.

(i) If the subcontractor does not receive payment as provided in subparagraph (1) or if the general contractor does not submit a periodic estimate for the value of the labor or materials performed or furnished by the subcontractor and the subcontractor does not receive payment for same when due less the deductions provided for in subparagraph (1), the subcontractor may demand direct payment by following the procedure in subparagraph (4) and the general contractor may file a sworn reply as provided in that same subparagraph. A demand made after the first day of the month following that for which the subcontractor performed or furnished the labor and materials for which the subcontractor seeks payment shall be valid even if delivered or mailed prior to the time payment was due on a periodic estimate from the general contractor. Thereafter the awarding authority shall proceed as provided in subparagraph (e), (f), (g) and (h).

(2) Any assignment by a subcontractor of the rights under this section to a surety company furnishing a bond under the provisions of section twenty-nine of chapter one hundred forty-nine shall be invalid. The assignment and subrogation rights of the surety to amounts included in a demand for direct payment which are in the possession of the awarding authority, or which are on deposit pursuant to subparagraph (6) shall be subordinate to the rights of all subcontractors who are entitled to be paid under this section and who have not been paid in full.

(3) "subcontractor" as used in this section (l) for contracts awarded as provided in sections forty-four A to forty-four L, inclusive, of chapter one hundred forty-nine shall mean a person who files a sub-bid and received a subcontract as a result of that filed sub-bid or who is approved by the awarding authority in writing as a person performing labor or both performing labor and furnishing materials pursuant to a contract with the general contractor, (ii) for contracts awarded as provided in paragraph (1) of section thirty-nine M of chapter thirty shall mean a person approved by the awarding authority in writing as a person performing labor or both performing labor and furnishing materials pursuant to a contract with the general contractor, and (iii) for contracts with the commonwealth not awarded as provided in sections forty-four A to forty-four L, inclusive, of chapter one hundred forty-nine shall also mean a person contracting with the general contractor to supply materials used or employed in a public works project for a price in excess of five thousand dollars.

(4) A general contractor or a subcontractor shall enforce a claim to any portion of the amount of a demand for direct payment deposit as provided in subparagraph (6) by a petition in equity in the superior court against the other and the bank shall not be a necessary party. A subcontractor shall enforce a claim for direct payment or a right to require a deposit as provided in subparagraph (6) by a petition in equity in the superior court against the awarding authority and the general contractor shall not be a necessary party. Upon motion of any party the court shall advance for speedy trial any petition filed as provided in this paragraph. Sections fifty-nine and fifty-nine B of chapter two hundred thirty-one shall apply to such petitions. The court shall enter an interlocutory decree upon which execution shall issue for any part of a claim found due pursuant to sections fifty-nine and fifty-nine B and, upon motion of any party, shall advance for speedy trial the petition to collect the remainder of the claim. Any party aggrieved by such interlocutory decree shall have the right to appeal therefrom as from a final decree. The court shall not consolidate for trial the petition of any subcontractor with the petition of one or more subcontractors or the same general Contract unless the court finds that a substantial portion of the evidence of the same events during the course of construction (other than the fact that the claims sought to be consolidated arise under the same general contract) is applicable to the petitions sought to be consolidated and that such consolidation will prevent unnecessary duplication of evidence. A decree in any such proceeding shall not include interest on the disputed amount deposited more than the interest earned for the period of any such deposit. No person except a subcontractor filing a demand for direct payment for which no funds due the general contractor are available for direct payment shall have a right to file a petition in court of equity against the awarding authority claiming a demand for direct payment is premature and such subcontractor must file the petition before the awarding authority has made a direct payment to the subcontractor and has made a deposit of the disputed portion as provided in part (iii) of subparagraph (5) and in subparagraph (6).

(5) In any petition to collect any claim for which a subcontractor has filed a demand for direct payment the court shall, upon motion of the general contractor, reduce by the amount of any deposit of a disputed amount by the awarding authority as provided in part (iii) of subparagraph (5) and in subparagraph (6) any amount held under a trustee writ or pursuant to a restraining order or injunction."

7. Contracts for Public Works Governed by M.G.L. c. 30, sec. 39G:

The following statutory provision applies only to contracts for public works governed by M.G.L. c. 30, sec. 39G: *"Upon substantial completion of the work required by a Contract with the Owner, or any agency or political subdivision thereof, for the construction, reconstruction, alteration, remodeling, repair or improvement of public ways, including bridges, and other highway structures, sewers and water mains, airports and other public works, the contractor shall present in writing to the awarding authority its certification that the work has been substantially completed. Within twenty-one days thereafter, the awarding authority shall present to the contractor either a written declaration that the work has been substantially completed or an itemized list of incomplete or unsatisfactory work items required by the Contract sufficient to demonstrate that the work has not been substantially completed. The awarding authority may include with such a list a notice setting forth a reasonable time, which shall not in any event be prior to the Contract completion date, within which the contractor must achieve substantial completion of the work. If the awarding authority fails to respond, by presentation of a written declaration or itemized list as aforesaid, to the contractor's certification within the twenty- one-day period, the contractor's certification shall take effect as the awarding authority's declaration that the work has been substantially completed.*

Within sixty-five days after the effective date of a declaration of a substantial completion, the awarding authority shall prepare and forthwith send to the contractor for acceptance a substantial completion estimate for the quantity and price of the work done and all but one percent retainage of that undisputed part of each work item and extra work item in dispute but excluding the disputed part thereof, less the estimated cost of completing all incomplete and unsatisfactory work items and less the total periodic payments made to date for the work. The awarding authority also shall deduct from the substantial completion estimate an amount equal to the sum of all demands for direct payments filed by subcontractors and not yet paid to subcontractors or deposited in joint accounts pursuant to section thirty-nine F, but no Contract subject to said section thirty-nine F shall contain any other provision authorizing the awarding authority to deduct any amount by virtue of claims asserted against the Contract by subcontractors, material suppliers or others.

If the awarding authority fails to prepare and send to the contractor any substantial completion estimate required by this section on or before the date herein above set forth, the awarding authority shall pay to the contractor interest on the amount which would have been due to the contractor pursuant to such substantial completion estimate at the rate of three percentage points above the rediscount rate then charged by the Federal Reserve Bank of Boston from such date to the date on which the awarding authority sends that substantial completion estimate to the contractor for acceptance or to the date of payment therefor, whichever occurs first. The awarding authority shall include the amount of such interest in the substantial completion estimate.

Within fifteen days after the effective date of the declaration of substantial completion, the awarding authority shall send to the contractor by certified mail, return receipt requested, a complete list of all incomplete or unsatisfactory work items, and, unless delayed by causes beyond his control, the contractor shall complete all such work items within forty-five days after the receipt of such list or before the then Contract completion date, whichever is later. If the contractor fails to complete such work within such time, the awarding authority may, after seven days' written notice to the contractor by certified mail, return receipt requested, terminate the Contract, and complete the incomplete or unsatisfactory work items and charge the cost of same to the contractor.

Within thirty days after receipt by the awarding authority of a notice from the contractor stating that all of the work required by the Contract has been completed, the awarding authority shall prepare and forthwith send to the contractor for acceptance a final estimate for the quantity and price of the work done and all retainage on that work less all payments made to date, unless the awarding authority's inspection shows that work items required by the Contract remain incomplete or unsatisfactory, or that documentation required by the Contract has not been completed. If the awarding authority fails to prepare and send to the contractor the final estimate within thirty days after receipt of notice of completion, the awarding authority shall pay to the contractor interest on the amount which would have been due to the contractor pursuant to such final estimate at the rate hereinabove provided from the thirtieth day after such completion until the date on which the awarding authority sends the final estimate to the contractor for acceptance or the date of payment therefore, whichever occurs first, provided that the awarding authority's inspection shows that no work items required by the Contract remain incomplete or unsatisfactory. Interest shall not be paid hereunder on amounts for which interest is required to be paid in connection with the substantial completion estimate as hereinabove provided. The awarding authority shall include the amount of the interest required to be paid hereunder in the final estimate.

The awarding authority shall pay the amount due pursuant to any substantial completion or final estimate within thirty-five days after receipt of written acceptance for such estimate from the contractor and shall pay interest on the amount due pursuant to such estimate at the rate hereinabove provided from that thirty-fifth day to the date of payment. Within 15 days, 30 days in the case of the commonwealth, after receipt from the contractor, at the place designated by the awarding authority, if such place is designated, of a periodic estimate requesting payment of the amount due for the preceding periodic estimate period, the awarding authority shall make a periodic payment to the contractor for the work performed during the preceding periodic estimate period and for the materials not incorporated in the work but delivered and suitably stored at the Site, or at some location agreed upon in writing, to which the contractor has title or to which a subcontractor has title and authorized the contractor to transfer title to the awarding authority, upon certification by the contractor that he is the lawful owner and that the materials are free from all encumbrances. The awarding authority shall include with each such payment interest on the amount due pursuant to such periodic estimate at the rate herein above provided from the due date. In the case of periodic payments, the contracting authority may deduct from its payment a retention based on the estimate of the fair value of its claims against the contractor, a retention for direct payments to subcontractors based on demands for same in accordance with the provisions of section thirty-nine F, and a retention to secure satisfactory performance of the contractual work not exceeding five per cent of the approved amount of any periodic payment, and the same right to retention shall apply to bonded subcontractors entitled to direct payment under section thirty-nine F of chapter thirty; provided that a five per cent value of all items that are planted in the ground shall be deducted from the periodic payments until final acceptance.

No periodic, substantial completion or final estimate or acceptance or payment thereof shall bar a contractor from reserving all rights to dispute the quantity and amount of, or the failure of the awarding authority to approve a quantity and amount of, all or part of any work item or extra work item.

Substantial completion, for the purposes of this section, shall mean either that the work required by the Contract has been completed except for work having a Contract Price of less than one percent of the then adjusted total Contract Price, or substantially all of the work has been completed and opened to public use except for minor incomplete or unsatisfactory work items that do not materially impair the usefulness of the work required by the contract”

8. Liens

Neither the final payment nor any part of the retained percentage shall become due until the Contractor, if required, delivers to the DCR a complete release of all liens arising out of this Contract, or receipts in full in lieu thereof and, if required in either case, an affidavit that so far as he/she has knowledge or information, the releases and receipts include all labor and material for which a lien could be filed; but the Contractor may, if any Subcontractor refuses to furnish a release or receipt in full, furnish a bond satisfactory to the DCR, to indemnify him against any lien. If any lien remains unsatisfied after all payments are made, the Contractor shall refund to the DCR, all moneys that the latter may be compelled to pay in discharging such a lien, including all costs and a reasonable attorney's fee.

9. Final Payment: Release of Claims by Contractor.

Upon Final Acceptance of the Work the Contractor shall be entitled to payment of the balance of the Contract Price. Final payment shall be as provided in this Article above and in accordance with any process set forth in the Special Conditions. The Contractor agrees to execute a Certificate of Final Inspection, Release (with Contractor's own exceptions listed thereon) and Acceptance as a condition precedent to Final Payment. The acceptance by the Contractor of the Final Payment made as aforesaid, or the execution of the Certificate of Final Acceptance by the Contractor, shall constitute a release of the Department of Conservation and Recreation, and every member and agent of it, from all claims of and liability to the Contractor for anything done or furnished for or relating to the Work, or for any act or neglect of the Department of Conservation and Recreation, or of any person relating to or affecting the Work, except the claim against the Department of Conservation and Recreation for the remainder, if any there be, of the amounts set forth by the Contractor in the Certificate of Final Inspection, Release and Acceptance. Final Acceptance shall not relieve the Contractor of the requirements of Articles IX, XIV, and XV of these General Conditions of the Contract, or of other provisions of this Contract, to the extent that the same are intended to survive Final Acceptance.

ARTICLE IX. GUARANTEES AND WARRANTIES

1. General Warranty.

If at any time during the period of one (1) year from the date of Final Acceptance, any part of such Work shall in the reasonable opinion of the DCR be defective or require replacing or repairing, or damage to other property of the DCR is caused by any defect in the Work, the DCR shall notify the Contractor in writing to make the required repairs or replacements and repair such damage. If the Contractor shall neglect to commence such repairs or replacements to the satisfaction of the DCR within ten (10) days from the date of the giving of such notice, then the DCR may employ other persons to make the same. The Contractor agrees, upon demand, to pay to the DCR all amounts which it expends for such repairs, replacements, and/or damages. During this one-year guarantee period any corrective work shall be performed under all the applicable terms of this Contract, and if Change Orders are issued in accordance with the terms of this Contract, the Contractor shall be entitled to compensation for special insurance, as required. This one-year guarantee shall not limit any express guaranty or warranty provided elsewhere in the Contract.

2. Special Guarantees and Warrantees.

A. The Contractor's obligation to correct Work as set forth in paragraph 1 above is in addition to, and not in substitution of, such guarantees or warranties as may be required in the various sections of the Specifications.

B. Guarantees and warranties required in the various sections of the Specifications must be delivered to the DCR before final payment to the Contractor may be made, or in the case of guarantees and warranties which originate with a subcontractor's section of the Work, before final payment for that sub-trade or for the phase of Work to which the guarantee or warranty relates.

C. The failure to deliver a required guarantee or warranty shall constitute a failure to fully complete the Work in accordance with the Contract Documents.

ARTICLE X: MISCELLANEOUS LEGAL REQUIREMENTS.

1. Contractor to be Informed.

The Contractor shall inform itself of all existing and future Laws in any manner affecting those engaged or employed in the Work, or the materials used or employed in the Work, or in any way affecting the conduct of the Work, and of all orders and decrees of bodies or tribunals having any applicable jurisdiction or authority over the Work.

2. Compliance with all Laws.

The Contractor shall cause all persons employed in the performance of the Work to comply with all existing and future Laws, including but not limited to those set forth below:

A. Corporate Disclosures. The Contractor if a foreign corporation, shall comply with M.G.L. c. 30, sec. 39L.

B. Veterans Preference. In the employment of mechanics and apprentices, teamsters, chauffeurs, and laborers in the performance of Work in the Commonwealth, preference shall first be given to citizens of the Commonwealth who have been residents of the Commonwealth for at least six months at the commencement of their employment and who are veterans as defined M.G.L. c. 4, sec. 7(43), and who are qualified to perform the work to which the employment relates; and secondly, to citizens of the Commonwealth generally who have been residents of the Commonwealth for at least six months at the commencement of their employment, and if they cannot be obtained in sufficient numbers, then to citizens of the United States.

C. Prevailing Wages. The Contractor shall comply with M.G.L. c. 149, sections 26- 27H. The prevailing wage schedule is found in Exhibit A to the Instructions to Bidders, listing the prevailing minimum wage rates that must be paid to all workers employed in the Work. The DCR is not responsible for any errors, omissions, or misprints in said schedule. Such Schedule shall continue to be the minimum rate of wages payable to workers employed in the Work throughout the term of this Contract, subject to the exceptions provided in M.G.L. c. 149, sections 26-27H. The Contractor shall not have any claim for extra compensation from the Department of Conservation and Recreation if the actual wages paid to workers employed in the Work exceeds the rates listed on the schedule or as otherwise provided by law. The Contractor shall cause a copy of said Schedule to be kept in a conspicuous place at the Site during the term of the Contract. If reserve police officers are employed by the Contractor, they shall be paid the prevailing wage of regular police officers. (See M.G.L. c.149, sec. 34B).

D. Payroll Records and Statement of Compliance. The Contractor shall comply and shall cause its Subcontractors to comply with Massachusetts General Law c. 149, sec. 27B, which requires that a true and accurate record be kept of all persons employed on a project for which the prevailing wage rates have been provided. The Contractor and all Subcontractors shall keep these records and preserve them for a period of three years from the date of completion of the Contract. Such records shall be open to inspection by any authorized representative of the Department of Conservation and Recreation at any reasonable time, and as often as may be necessary. The Contractor shall, and shall cause its subcontractors to, submit weekly copies of their weekly payroll records to the DCR. In addition, the Contractor and each Subcontractor shall furnish to the Executive Department of Labor within fifteen days after completion of its portion of the Work a signed statement in the form required by the DCR.

E. Vehicle operators. If the Director of the Department of Labor and Workforce Development has established a Schedule of wage rates to be paid to the operators of trucks, vehicles or equipment for the Work, the Contractor shall be obligated to pay such operators at least the minimum wage rate contained on such Schedule. (See M.G.L. c.149, sections 26-27H).

F. Eight Hour Day. The Contractor shall comply with M.G.L. c. 149, sections 30 and 34, which provide that no laborer, workman, mechanic, foreman or inspector working within the Commonwealth in the employ of the Contractor, subcontractor or other person doing or contracting to do the whole or part of the Work shall be required or permitted to work more than eight hours in any one day or more than forty-eight hours in any one week, or more than six days in any one week, except in cases of extraordinary emergency.

G. Timely Payment of Wages. The Contractor shall comply with and shall cause its Subcontractors to comply with M.G.L. c. 149, sec. 148 which requires the weekly or biweekly payment of employees within six days of the end of the pay period during which wages were earned if employed for five or six days of a calendar week, and within other periods of time under certain circumstances as set forth therein.

H. Lodging, etc. The Contractor shall comply with, and shall cause its Subcontractors to comply with, M.G.L. c. 149, sec. 25 which provides that every employee under this Contract shall lodge, board, and trade where and with whom he elects, and neither the Contractor nor his agents or employees shall, either directly or indirectly, require as a condition of the employment of any person that the employee shall lodge, board, or trade at a particular place or with a particular person.

I. Truck Rates. The use by the Contractor of trucks or other motor vehicles hired from either common or contract motor carriers in the course of performance of this Contract is subject to such minimum rates and charges, and rules and regulations as may from time to time be promulgated by the Department of Public Utilities of the Commonwealth of Massachusetts or other agency of the State or Federal government which may be authorized by law to set rates or otherwise regulate the use of such vehicles. The Contractor expressly assumes the risk of any additional expense that may arise by reason of any change in such minimum rates and charges, and rules and regulations, and shall be entitled to no additional compensation or reimbursement by reason thereof.

J. Anti-Boycott Covenant (Executive Order #130). The Contractor warrants, represents and agrees that during the time this Contract is in effect, neither it nor any affiliated company, as hereafter defined, participates in or cooperates with an international boycott, as defined in Section 999(b) (3) and (4) of the Internal Revenue Code of 1954, as amended, or engages in conduct declared to be unlawful by M.G.L. c. 151E, sec. 2. If there shall be a breach in the warranty, representation or agreement contained in this paragraph, then without limiting such other rights as it may have the DCR shall be entitled to rescind this contract. As used herein, an affiliated company shall be any business entity of which at least 51% of the ownership interests are directly or indirectly owned by the Contractor or by a person or persons or business entity or entities directly or indirectly owning at least 51% of the ownership interests of the Contractor; or which directly or indirectly owns at least 51% of the ownership interests of the Contractor.

K. Contractor's Agreements with Suppliers--Anti-Boycott and Anti-Discrimination Provisions.

(1) The Contractor shall not purchase or rent any materials, equipment, machinery, vehicles or supplies for or in connection with the Work from any person or entity who does not sign, under pains and penalties of perjury, a certificate that recites: "the undersigned warrants, represents and agrees that during the time its agreement with (insert contractor's name) is in effect for materials, supplies or equipment to be used in connection with the Department of Conservation and Recreation Contract No. (insert contract number), neither the undersigned or any affiliated company, as hereafter defined, participates in or cooperates with an international boycott, as defined in Section 999(b)(3) and (4) of the Internal Revenue Code of 1954, as amended, or engages in conduct declared to be unlawful by Section 2 of Chapter 151E of the Massachusetts General Laws. As used herein, an affiliated company shall be any business entity of which at least 51% of the ownership interests are directly or indirectly owned by the undersigned or by a person or persons or business entity or entities directly or indirectly owning at least 51% of the ownership interests of the undersigned; or which directly or indirectly owns at least 51% of the ownership interests of the undersigned."

(2) The DCR shall not be obligated to pay the Contractor for the cost of any materials, supplies, or equipment purchased or rented from any individual or entity from whom the Contractor has not previously obtained and delivered to the DCR the certificate that the previous paragraph requires. The Contractor will immediately terminate its contract with any supplier who breaches the warranty, representation and agreement contained in the previous paragraph.

(3) The Contractor shall include in the Contractor's agreement with any person or entity from whom the Contractor intends to purchase or rent any materials, equipment, machinery, vehicles or supplies for or in connection with the Work, (a) a notice that this Contract obligates the Contractor to terminate the supply contract upon discovery of such breach of the sworn certificate delivered under subparagraph (1) and such termination shall be without liability to the Contractor or the DCR and (b) a provision which states: "The Governor or his designee, the secretary of administration and finance, and the state auditor or his designee shall have the right at reasonable times and upon reasonable notice to examine the books, records and other compilations of the undersigned vendor which pertain to the performance and requirements of this agreement to provide materials of any nature to the undersigned contractor in connection with DCR Contract No. (insert contract number)."

L. Access to Contractor's Records (Executive Order #195). The Governor or his/her designee, the secretary of administration and finance, and the state auditor or his/her designee shall have the right at reasonable times and upon reasonable notice to examine the books, records, and other compilations of data of the Contractor which pertain to the performance and requirements of this Contract.

ARTICLE XI: CONTRACTOR'S ACCOUNTING METHOD REQUIREMENTS (M.G.L. c. 30, sec. 39R)

1. Definitions.

The words defined herein shall have the meaning stated below whenever they appear in this Article XI:

--"Contractor" means any person, corporation, partnership, joint venture, sole proprietorship, or other entity awarded a Contract pursuant to M.G.L. c. 30, sec. 39M, and M.G.L. c. 149, sections 44A-H.

--"Contract" means any Contract awarded or executed pursuant to M.G.L. c. 30, sec. 39M, M.G.L. c. 149, sections 44A-H.

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

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

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

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

2. Record Keeping.

A. The Contractor shall make, and keep for at least six years after final payment, books, records, and accounts that in reasonable detail accurately and fairly reflect the transactions and dispositions of the Contractor.

B. Until the expiration of six years after final payment, the Inspector General and the DCR shall have the right to examine any books, documents, papers or records of the Contractor and Subcontractors that directly pertain to and involve transactions relating to the Contractor and Subcontractors.

C. The Contractor shall describe any change in the method of maintaining records or recording transactions which materially affects any statements filed with the DCR including the date of the change and reasons therefor and shall accompany said description with a letter from the Contractor's independent certified public accountant approving or otherwise commenting on the changes.

D. The Contractor represents that it has, prior to the execution of the Contract, filed a statement of management on internal accounting controls as set forth in Section 3 below.

E. The Contractor represents that it has, prior to the execution of the Contract, filed an audited financial statement for the most recent completed fiscal year as set forth in section 4 below and will continue to file such statement annually during the term of the Contract.

3. Statement of Management Controls.

A. The Contractor shall file with the DCR a statement of management as to whether the system of internal accounting controls of the Contractor and its subsidiaries reasonably assures that:

- (1) transactions are executed in accordance with management's general and specific authorization.
- (2) transactions are recorded as necessary: (a) to permit preparation of financial statements in conformity with generally accepted accounting principles, and (b) to maintain accountability for assets.
- (3) access to assets is permitted only in accordance with management's general or specific authorization; and
- (4) the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action was taken with respect to any difference.

B. The Contractor shall file with the DCR a statement prepared and signed by an independent certified public accountant, stating that the accountant has examined the statement of management on internal accounting controls, and expressing an opinion as to:

- (1) whether the representations of management in response to subparagraph 3 above are consistent with the results of management's evaluation of the system of internal accounting controls; and
- (2) whether such representations of management are reasonable with respect to transactions and assets in amounts which would be material when measured in relation to the applicant's financial statement.

4. Annual Financial Statement.

A. Every Contractor awarded a contract under M.G.L. c. 30, sec. 39M or M.G.L. c. 149, sections 44A-44H shall annually file with the Commissioner of the Division of Capital Asset Management and Maintenance during the term of the Contract a financial statement prepared by an independent certified public accountant based on an audit by such accountant. The final statement filed shall include the date of final payment. All statements shall be accompanied by an accountant's report. Such statements shall be made available to the DCR upon request.

B. The office of Inspector General and the DCR shall have the right to enforce the provisions of this Article. A Contractor's failure to satisfy any of the requirements of this section may be grounds for debarment pursuant to M.G.L. c. 149, sec. 44C.

5. Bid Pricing Materials.

The Contractor shall save the written calculations, pricing information, and other data that the Contractor used to calculate the bid that induced the DCR to enter this Contract (the "Bid Pricing Materials") for at least six years after the DCR makes final payment under this Contract.

ARTICLE XII: EQUAL EMPLOYMENT OPPORTUNITY, NON-DISCRIMINATION, AND AFFIRMATIVE ACTION PROGRAM.

This Contract includes the provisions of the DCR's "Equal Employment Opportunity, Non-Discrimination, and Affirmative Action Program," attached as Appendix A to these General Conditions of the Contract and incorporated herein by reference.

ARTICLE XIII: GOALS FOR PARTICIPATION BY MINORITY BUSINESS ENTERPRISES AND WOMEN BUSINESS ENTERPRISES

This Contract includes the provisions of the DCR's "Goals for Participation by Minority Business Enterprises and Women Business Enterprises (Executive Order 390), attached as Appendix B to these General Conditions, and as set forth in Section 8 of the Instructions to Bidders, and incorporates same herein by reference.

ARTICLE XIV: INSURANCE REQUIREMENTS

The Contractor shall carry insurance, in the amounts and types specified in Section 7 of the Instructions for Bidders for this Contract and shall comply with all provisions relating to insurance set forth in said Section 7.

ARTICLE XV: INDEMNIFICATION

1. Generally.

To the fullest extent permitted by law, the Contractor shall indemnify, defend (with counsel subject to the supervision of the Attorney General of the Commonwealth of Massachusetts as required by M.G.L. c. 12, sec. 3) and hold harmless the Commonwealth of Massachusetts, its Department of Conservation and Recreation, and its officers, agents, divisions, employees, representatives, successors and assigns from and against all claims, damages, losses and expenses, including but not limited to court costs and attorneys' fees, arising out of or resulting from the performance of the Work, including but not limited to those arising or resulting from:

- labor performed or furnished and/or materials used or employed in the performance of the Work.
- violations by the Contractor, any subcontractor, or by any person directly or indirectly employed or used by any of them in the performance of the Work or anyone for whose acts any of them may be liable (Contractor, subcontractor and all such persons herein collectively called "Contractor's Personnel") of any Laws.
- violations of any provision of this Contract by any of Contractor's Personnel.
- injuries to any persons or damage to any property in connection with the Work.
- any act, omission, or neglect of Contractor's Personnel.

The Contractor shall be obligated as provided above, regardless of whether such claims, damages, losses and/or expenses are caused in whole or in part by the actions or inactions of a party indemnified hereunder. In all claims by Contractor's Personnel against parties indemnified hereunder, the Contractor's indemnification obligation set forth above shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any subcontractor under workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts. Such obligation shall not be construed to negate, abridge, or otherwise reduce any other right or obligation of indemnity which would otherwise exist as to any party or person described in this Article XV.

2. DCR's Actions.

The obligations of the Contractor under Section 1 above shall not extend to the liability of the DCR, its agents or employees, arising out of (i) the preparation or approval of maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications by the DCR, or (ii) the giving of or the failure to give directions or instructions by the DCR, its agents or employees provided such giving or failure to give is the primary cause of the injury or damage.

3. Survival.

The provisions of this Article XV are intended to survive Final Acceptance and/or any termination of this Contract.

ARTICLE XVI: PERFORMANCE AND PAYMENT BONDS

1. Contractor Bonds.

A. The Contractor shall provide performance and payment (labor and materials) bonds in the form provided by the DCR, executed by a surety licensed by the Commonwealth of Massachusetts Division of Insurance. Each such bond shall be in the amount of the Contract Price.

B. If at any time prior to final payment to the Contractor, the Surety:

- is adjudged bankrupt or has made a general assignment for the benefit of its creditors.
- has liquidated all assets and/or has made a general assignment for the benefit of its creditors.
- is placed in receivership.
- otherwise petitions a state or federal court for protection from its creditors; or
- allows its license to do business in Massachusetts to lapse or be revoked.

then the Contractor shall, within 21 days of any such action listed above, provide the DCR with new performance and payment bonds as described in Paragraph A above. Such bonds shall be provided solely at the Contractor's expense.

2. Subcontractor Bonds.

The Contractor is responsible for the costs of the payment and performance bonds of the sub-contractors for the full amount of their respective Subcontracts.

ARTICLE XVII: TERMINATION OF CONTRACT

1. Termination for Cause.

A. The DCR may without prejudice to any other right or remedy deem this Contract terminated for cause if any of the following defaults shall occur and not be cured within five days (5) days after the giving of notice thereof by the DCR to the Contractor and any surety that has given bonds in connection with this Contract:

- (1) The Contractor has filed a petition, or a petition has been filed against the Contractor with its consent, under any federal or state law concerning bankruptcy, reorganization, insolvency or relief from creditors, or if such a petition is filed against the Contractor without its consent and is not dismissed within sixty (60) days; or if the Contractor is generally not paying its debts as they become due; or if the Contractor becomes insolvent; or if the Contractor consents to the appointment of a receiver, trustee, liquidator, custodian or the like of the Contractor or of all or any substantial portion of its assets and such appointment or possession is not terminated within sixty (60) days; or if the Contractor makes an assignment for the benefit of creditors;
- (2) The Contractor refuses or fails, except in cases for which extension of time is provided under this Contract's express terms, to supply enough properly skilled workers or proper materials to perform its obligations under this Contract, or the DCR has determined that the rate of progress required for the timely completion of the Work is not being met.
- (3) The Contractor fails to make prompt payment to Subcontractors or for materials, equipment, or labor.
- (4) All or a part of the Work has been abandoned.
- (5) The Contractor has sublet or assigned all or any portion of the Work, the Contract, or claims thereunder, without the prior written consent of the Department of Conservation and Recreation, except as expressly permitted in this Contract.
- (6) The Contractor has failed to comply with Laws.
- (7) The Contractor fails to maintain, or provide to the DCR evidence of the insurance or bonds required by this Contract, or
- (8) The Contractor has failed to prosecute the Work or any portion thereof to the standards required under this Contract or has otherwise breached any material provision of this Contract.

B. The DCR shall give the Contractor, and any surety notice of such termination for cause, but the giving of notice of such termination shall not be a condition precedent or after the termination's effectiveness. In the event of such termination, and without limiting any other available remedies, the DCR may, at its option:

- (1) hold the Contractor and its sureties liable in damages for a breach of Contract.
- (2) notify the Contractor to discontinue all work, or any part thereof, and the Contractor shall discontinue all work, or any part thereof, as the Department of Conservation and Recreation may designate.
- (3) complete the Work, or any part thereof, and charge the expense of completing the Work or part thereof, to the Contractor.

(4) require the surety or sureties to complete the Work and perform all the Contractor's obligations under this Contract.

If the DCR elects to complete all or any portion of the Work as specified in (3) above, it may take possession of all materials, equipment, tools, machinery, implements owned by the Contractor at or near the Site and finish the Work at the Contractor's expense by whatever means the DCR may deem expedient; and the Contractor shall cooperate at its expense in the orderly transfer of the same to a new contractor or to the DCR as directed by the DCR. In such case the DCR shall not make any further payments to the Contractor until the Work is finished. The Department of Conservation and Recreation shall not be liable for any depreciation, loss, or damage to said materials, machinery, implements or tools during said use and the Contractor shall be solely responsible for their removal from the Site after the Department of Conservation and Recreation has no further use for them. Unless so removed within fifteen days after notice to the Contractor to do so, they may be sold at public auction, after publication of notice thereof at least twice in any newspaper published in the county where the Work is being performed, and the proceeds credited to the Contractor's account; or they may, at the option of the DCR, be stored at the Contractor's expense subject to a lien for the storage charges.

C. Damages and expenses incurred under paragraph B above shall include, but not be limited to, costs for the DCR's extra services and Project representative services required, in the opinion of the DCR, to successfully inspect and administer the construction contract through final completion of the Work.

D. Expenses charged under paragraph B above may be deducted and paid by the DCR out of any moneys then due or to become due the Contractor under this Contract.

E. All sums, damages, and expenses incurred by the Department of Conservation and Recreation to complete the Work shall be charged to the Contractor. In case the damages and expenses charged are less than the sum that would have been payable under this Contract if the same had been completed by the Contractor, the Contractor shall be entitled to receive the difference. In case such expenses shall exceed the said sum, the Contractor shall pay the amount of the excess to the Department of Conservation and Recreation.

2. Termination For Convenience.

A. The DCR may terminate this Contract for convenience even though the Contractor is not in default by giving notice to the Contractor specifying in said notice the date of termination.

B. In case of such termination without cause, the Contractor shall be paid:
(1) all sums due and owing under this Contract through the date of termination, including any retainage withheld to the date of termination, less any amount which the DCR determines is necessary to correct or complete the Work performed to the date of termination; plus (2) a reasonable sum to cover the expenses which the Contractor would not have incurred but for the early termination of the Contract, such as demobilization of the work force, restocking charges, and termination fees payable to Subcontractors.

C. The payment provided in paragraph B above shall be considered to fully compensate the Contractor, and any consultants, Subcontractors, and suppliers, for all claims and expenses directly or indirectly attributable to the termination, including any claims for lost profits.

3. Contractor's Duties Upon Termination for Convenience.

Upon termination of this Contract for convenience as provided in Section 2 of this Article, the Contractor shall: (1) stop the Work; (2) stop placing orders and Subcontracts in connection with this Contract; (3) cancel all existing orders and Subcontracts; (4) surrender the Site to the DCR in a safe condition; (5) transfer to the DCR all materials, supplies, work in process, appliances, facilities, equipment and machinery of this Contract, and all plans, Drawings, Specifications and other information and documents used in connection with this Contract.

ARTICLE XVIII: MISCELLANEOUS PROVISIONS

1. No Assignment by Contractor.

The Contractor shall not assign by power of attorney or otherwise, or sublet or subcontract, the Work, or any part thereof, without the previous written consent of the DCR and shall not, either legally or equitably, assign any of the moneys payable under this Contract, or Contractor's claims hereunder, unless with the like consent of the DCR, whether said assignment is made before, at the time of, or after the execution of the Contract. The Contractor shall remain responsible for satisfactory performance of all Work sublet or assigned. Consent of the DCR shall not be deemed to constitute a representation or waiver of any right hereunder by the DCR as to the qualifications or the responsibility of the Contractor or Subcontractor(s).

2. Non-Appropriation.

The Commonwealth certifies that at the time of the execution of this Contract, sufficient appropriations exist and shall be encumbered to fund the Contract Price. Payments are subject to appropriation and shall be made only for work performed in accordance with the terms of this Contract. The Contractor shall not be obligated to perform, and shall not perform, work outside the scope of this Contract without an appropriate amendment to this Contract, and a sufficient appropriation(s) to support such additional work. The Commonwealth may immediately terminate or suspend this Contract if the appropriation(s) funding this Contract is eliminated or reduced to an amount which will be insufficient to support anticipated future obligations under this Contract. Such termination shall be deemed a termination for convenience subject to the provisions of paragraph 2 of Article XVII of this Contract.

3. Claims by Others Not Valid.

No person other than the Contractor and the surety on any bond given pursuant to the terms of this Contract shall acquire any interest in this Contract or any claim against the DCR hereunder, and no claim by any other person shall be valid except as provided in M.G.L. c. 30, sec. 39F of the General Laws.

4. No Personal Liability of Public Officials.

No public official, employee, or agent of the DCR shall have any personal liability for the obligations of the DCR set forth in this Contract.

5. Severability.

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

6. Choice of Laws.

This Contract shall be governed by the laws of the Commonwealth of Massachusetts for all purposes, without regard to its laws on choice of law. All proceedings under this Contract or related to the Project shall be brought in the courts of the Commonwealth of Massachusetts.

7. Standard Forms.

Unless directed otherwise in writing by the DCR, the Contractor shall use the standard forms in use by the Department of Conservation and Recreation.

8. No Waiver of Subsequent Breach.

No waiver of any breach or obligation of this Contract shall constitute a waiver of any other or subsequent breach or obligation.

9. Remedies Cumulative.

All remedies of the DCR provided in this Contract shall be construed as cumulative and may be exercised simultaneously or in any order as determined by the DCR in its sole discretion. The DCR shall also be entitled as of right to specific performance and equitable relief including the right to an injunction against any breach of any of the provisions of this Contract

10. Notices.

Notices to the Contractor shall be deemed given when hand delivered to the Contractor's temporary field office at or near the Site, or when deposited in the U.S. mail addressed to the Contractor at the Contractor's address specified in the Department of Conservation and Recreation - Contractor Agreement, or when delivered by courier to either location. Unless otherwise specified in writing by the DCR, notices and deliveries to the DCR shall be effective only when delivered to the DCR at the address specified in the Department of Conservation and Recreation - Contractor Agreement and date-stamped at the reception desk or for which a receipt has been signed by the agent or employee designated by the DCR to receive official notices.

APPENDIX A to General Conditions of the Contract

The following provisions from Article XII of the General Conditions of the Contract where DCR is the Awarding Authority.

EQUAL EMPLOYMENT OPPORTUNITY, NON-DISCRIMINATION, AND AFFIRMATIVE ACTION PROGRAM.

1. Compliance Generally.

For purpose of this Article, “minority” refers to Asians, Blacks, Western Hemisphere Hispanics, Native Americans, and Cape Verdeans; “Commission” refers to the Massachusetts Commission Against Discrimination. During the performance of this Contract, the Contractor and all its Subcontractors (hereinafter collectively referred to as the Contractor) shall comply with all applicable equal employment opportunity, non-discrimination and affirmative action requirements, including but not limited to the following:

2. Non-Discrimination and Affirmative Action.

A. The Contractor shall not discriminate against any employee or applicant for employment because of race, color, religious creed, national origin, age, handicap, sexual orientation, or sex. The aforesaid provision shall include, but not be limited to, the following: employment rates of pay or other forms of compensation; conditions or privileges of employment; and selection for apprenticeship. The Contractor shall comply with the provisions of MGL, c. 151B and all other applicable anti-discrimination and equal opportunity laws.

B. The Contractor shall comply with the provisions of Executive Order No. 478 entitled Revoking and Superseding Executive Orders Numbers 253 and 452, with respect to affirmative action programs for handicapped individuals, which is herein incorporated by reference and made a part of this Contract.

C. In connection with the performance of the Work, the Contractor shall undertake in good faith affirmative action measures designed to eliminate any discriminatory religious creed, national origin, age, sexual orientation, or sex and to eliminate and remedy any effects of such discrimination in the past. Such affirmative action shall entail positive and aggressive measures to ensure equal opportunity in the areas of hiring, upgrading, demotion or transfer, recruitment, layoff or termination, rate of compensation, and in-service or apprenticeship training programs. This affirmative action shall include all action required to guarantee equal employment opportunity for all persons, regardless of race, color, religious creed, national origin, age, sexual orientation, or sex. A purpose of this provision is to fully ensure possible an adequate supply of skilled tradesmen for future public construction projects.

D. If the Contractor shall use any subcontractor on any work performed under this Contract, the Contractor shall take affirmative steps to negotiate with qualified minority and women subcontractors. These affirmative steps shall cover both pre-bid and post-bid periods. It shall include notification to the State Office of Minority and Women Business Assistance or its designee, while bids are in preparation, of all products, work, or services for which the Contractor intends to negotiate bids. In all solicitations either by competitive bidding or negotiation made by the Contractor either for work to be performed under a subcontract or for the procurement of materials or equipment, each potential subcontractor or supplier shall be notified in writing by the Contractor of the Contractor’s obligations under this Contract relative to non-discrimination and affirmative action.

E. As part of its obligation of remedial action under this Article, the Contractor shall maintain on this project not less than the percent ratio set forth in the Owner – Contractor Agreement of minority employee worker hours to total worker hours in each job category including but not limited to bricklayers, carpenters, cement masons, electricians, ironworkers, operating engineers, and those “classes of work” enumerated in MGL, c. 149, Sec. 44F.

F. In the hiring of minority journeypersons, apprentices, trainees and advanced trainees, the Contractor shall rely on referrals from a multi-employer affirmative action program approved by the Commission, traditional referral methods utilized by the construction industry, and referrals from agencies, not more than three in number at any one time, designated by the Liaison Committee or the Awarding Authority.

3. Liaison Committee, Reports and Records.

A. At the option of the Awarding Authority, there may be established for the term of this Contract a body to be known as the Liaison Committee. The Liaison Committee shall be composed of one representative each from the Awarding Authority, the Commission and such other representatives as may be designated by the Commission in conjunction with the Awarding Authority. The Contractor (or his agent, if any, designated by him as the on-site equal employment opportunity officer) shall recognize the Liaison Committee as an affirmative action body, and shall establish a continuing working relationship with the Liaison Committee, consulting with the Liaison Committee on all matters related to minority recruitment, referral, employment and training.

B. The Contractor shall prepare projected staffing tables on a quarterly basis. These shall be broken down into projections, by week, of workers required in each trade. Copies shall be furnished one week in advance of the commencement of the period covered, and when updated, to the Awarding Authority and Liaison Committee. The Contractor shall prepare weekly reports in a form approved by the Awarding Authority of hours worked in each trade by each employee, identified as minority or non-minority. Copies of these shall be provided at the end of each such week to the Awarding Authority and to the Liaison Committee.

C. Records of employment referral orders, prepared by the Contractor, shall be made available to the Awarding Authority and to the Liaison Committee on request.

D. A designee of the Awarding Authority and a designee of the Liaison Committee shall each have right to access to the Site.

E. The Contractor shall comply with the provisions of MGL, c. 151B as amended, of the Massachusetts General Laws, both of which are herein incorporated by reference and made a part of this Contract.

F. The Contractor shall provide all information and reports required by the Awarding Authority or the Commission on forms and in accordance with instructions issued by either of them and will permit access to its facilities and any books, records, accounts, and other sources of information which may be determined by the Awarding Authority or the Commission to affect the employment of personnel. This provision shall apply only to information pertinent to the Owner's supplementary affirmative action Contract requirements. Where information required is in the exclusive possession of another who fails or refuses to furnish this information, the Contractor shall so certify to the Awarding Authority or the Commission as appropriate and shall set forth what efforts he has made to obtain the information.

4. Sanctions.

A. Whenever the Awarding Authority, the Commission, or the Liaison Committee believes the Contractor, or any Subcontractor may not be operating in compliance with the terms of this Article, the Commission shall directly, or through its designated agent, conduct an appropriate investigation, and may confer with the parties to determine if such Contractor is operating in compliance with the terms of this Article. If the Commission or its agent finds the Contractor or any Subcontractor not in compliance, it may make a preliminary report on non-compliance and notify such Contractor in writing of such steps as will in the judgment of the Commission or its agent bring such Contractor into compliance. If such Contractor fails or refuses to fully perform such steps, the Commission may make a final report of non-compliance and recommend to the Awarding Authority the imposition of one or more of the sanctions listed below. If, however, the Commission believes the Contractor or any Subcontractor has taken or is taking every possible measure to achieve compliance, it shall not make a final report of non-compliance. Within fourteen days of the receipt of the recommendations of the Commission, the Awarding Authority shall move to impose one or more of the following sanctions, as it may deem appropriate to attain full and effective enforcement:

(1) The recovery by the Awarding Authority from the Contractor of 1/100 of 1% of the Contract award price or \$1,000 whichever sum is greater, in the nature of liquidated damages or, if a Subcontractor is in non-compliance, the recovery by the Awarding Authority from the Contractor, to be assessed by the Contractor as a back charge against the subcontractor, of 1/10 of 1% of the sub-contract price, or \$400 whichever sum is greater, in the nature of liquidated damages, for each week that such party fails or refuses to comply.

(2) The suspension of any payment or part thereof due under the Contract until such time as the Contractor or any subcontractor can demonstrate his compliance with the terms of the Contract.

(3) The termination, or cancellation, of the Contract, in whole or in part, unless the Contractor or any Subcontractor can demonstrate within a specified times his compliance with the terms of the contract.

(4) The denial to the Contractor or any subcontractor of the right to participate in any future contracts awarded by the Awarding Authority for a period of up to three years.

B. If any time after the imposition of one or more of the above sanctions a Contractor can demonstrate that it follows this Article, the Contractor may request the Awarding Authority, in consultation with the Commission, to suspend the sanctions conditionally, pending a final determination by the Commission as to whether the Contractor complies. Upon final determination of the Commission, the Awarding Authority, based on the recommendation of the Commission, shall either lift the sanctions or reimpose them.

C. Sanctions recommended by the Commission and enumerated under Section 4 above shall not be imposed by the Awarding Authority except after an adjudicatory proceeding, as that term is used in MGL, c. 30A, has been conducted. No investigation by the Commission or its agent shall be initiated without prior notice to the Contractor.

D. Notwithstanding the provisions of 4A-4C above, if the Awarding Authority determines after investigation that the Contractor or any Subcontractor is not in compliance with the terms of this Article, it may suspend any payment or portion thereof due under the Contract until the contractor demonstrates to the satisfaction of the Awarding Authority compliance with the terms of this Article. This temporary suspension of payments by the Awarding Authority is separate from the sanctions set forth in Section 4A-4C of this Article above, which are determined by MCAD and recommend to the Awarding Authority. Payment may be suspended only after the Contractor and any other interested party shall have been given the opportunity to present evidence in support of its position at an informal hearing held by the Awarding Authority, and the Awarding Authority has concluded upon review of all the evidence that such penalty is justified. Payment shall not be suspended if the Awarding Authority finds that the Contractor made its best efforts to comply with this Article, or that some other justifiable reason exists for waiving the provisions of this Article in whole or in part.

APPENDIX B to General Conditions of the Contract

The following provisions from Article XIII of the General Conditions of the Contract where DCR is the Awarding Authority.

GOALS FOR PARTICIPATION BY MINORITY BUSINESS ENTERPRISES AND WOMEN BUSINESS ENTERPRISES (EXECUTIVE ORDER 390, MGL, c. 7, s. 40N)

1. Goals.

A. The goals for minority business enterprise and women business enterprise participation established for this Contracts are as set forth in the Owner – Contractor Agreement.

B. The Contractor and all Subcontractors, sub-subcontractors, and materials suppliers shall comply with all the terms and conditions of this Article, which include the provisions pertaining to M/WBE participation set forth in the Owner – Contractor Agreement to meet the M/WBE participation goals established for this Contract.

2. M/WBE Participation Credit.

A. If the Contractor is itself an MBE or WBE, M/WBE participation credit will be given in an amount equal to the entire Contract Price. If the Contractor is not an MBE or WBE then M/WBE participation credit will be given for the value of the Work that is performed by each MBE or WBE subcontractor or subcontractor.

B. If the Contractor is a joint venture with one or more M/WBE joint venturers, M/WBE participation credit shall be given to the joint venture as follows:

(1) If the joint venture is certified by SOMBWA as an MBE or WBE, M/WBE participation credit shall be given in an amount equal to the Contract Price.

(2) If the joint venture is not certified as an MBE or WBE by SOMWBA, M/WBE participation credit shall be given to the joint venture for the value of the Work that is performed by the M/WBE joint ventures(s), and for the value of the Work that is performed by each MBE or WBE subcontractor or sub-subcontractor.

C. MBE participation credit shall be given for the work performed by MBEs only, and WBE participation credit shall be given for the work performed by WBEs only. MBE participation may not be substituted for WBE participation, nor may WBE participation be substituted for MBE participation.

3. Establishing M/WBE Status.

A. A minority-owned business shall be considered an MBE only if it has been certified as a minority business enterprise by the State Office of Minority and Women Business Assistance (“SOMWBE”).

B. A woman-owned business shall be considered a WBE only if it has been certified as a woman business enterprise by SOMWBA.

C. Certification as a disadvantaged business enterprise (“DBE”), certification as an M/WBE by any agency other than SOMWBA, or submission of an application to SOMWBA for certification as an M/WBE shall not confer M/WBE status on a firm for the purposes of this Contract.

4. Subcontracts with M/WBEs.

Within thirty (30) days after the award of this Contract, the Contractor shall (i) execute a subcontract with each M/WBE Subcontractor which has executed a Letter of Intent approved by the Awarding Authority, (ii) cause its Subcontractors to execute a sub-subcontract with each M/WBE sub-subcontractor, and (iii) furnish the Awarding Authority with a signed copy of each such subcontract and sub-subcontract.

5. Performance of Contract Work by M/WBEs.

A. The Contractor shall not perform with its own organization or subcontract or assign to any other firm work designated to be performed by any W/MBE in the Letters of Intent or Schedule of M/WBE Participation without the prior Approval of the Awarding Authority, nor shall any M/WBE assign or subcontract to any other firm or permit any other firm to perform any of its M/WBE Work without the prior Approval of the Awarding Authority. Any such unapproved assignment, subcontracting, sub-subcontracting, or performances of M/WBE Work by others shall be a change in the M/WBE Work for the purposes of this Contract. The Awarding Authority WILL NOT APPLY TO THE M/WBE PARTICIPATION GOALS(S) ANY SUMS ATTRIBUTABLE TO SUCH UNAPPROVED ASSIGNMENTS, SUB-CONTRACTS, SUB-SUBCONTRACTS, OR PERFORMANCE OF M/WBE WORK BY OTHERS.

B. The Contractor shall be responsible for monitoring the performance of M/WBE Work to ensure that each scheduled M/WBE performs its own M/WBE Work with its own workforce.

C. The Contractor and each M/WBE shall provide the Awarding Authority with all information and documentation that the Awarding Authority determines is necessary to ascertain whether an M/WBE has performed its own M/WBE Work. At the discretion of the Awarding Authority, failure to submit such documentation to the Awarding Authority shall establish conclusively for the purpose of giving M/WBE participation credit under this Contract that such M/WBE did not perform such work.

6. Notification of Changes in M/WBE Work.

A. If any time during the performance of the Contract the Contractor determines or has reason to believe that a scheduled M/WMBE is unable to unwilling to perform its M/WBE Work, or that there has been or will be a change in any M/WMBE Work, or that the Contractor will be unable to meet the M/WBE participation goal(s) for this Contract for any reason, the Contractor shall immediately notify the Awarding Authority Contract Compliance Office in writing of such circumstances.

B. Any notice of a change in M/WBE Work pursuant to subparagraph "A: above shall include a revised Schedule of M/WBE Participation, and additional or amended Letters of Intent and subcontracts.

7. Actions Required if there is a Reduction in M/WBE Participation.

A. In the event there is a change or reduction in any M/WBE Work which will result in the Contractor failing to meet the M/WBE participation goal(s) for this Contract, other than a reduction in M/WBE Work resulting from a Change Order initiated by the Awarding Authority, then the Contractor shall immediately undertake a diligent, good faith effort to make up the shortfall in M/WBE participation as follows:

(1) The Contractor shall identify all items of the Work remaining to be performed under the Contract that may be made available for subcontracting to W/MBEs. The Contractor shall send a list of such items of work to the Awarding Authority, together with a list of the remaining items of the Work that was not made available to M/WBEs and the reason for not making such work available for subcontracting to M/WBEs.

(2) The Contractor shall send written notices soliciting proposals to perform the items of the Work that may be made available for subcontracting to W/MBEs to all W/MBEs qualified to perform such work. The Contractor shall advise the Awarding Authority of (i) each W/MBE solicited, and (ii) each W/MBE listed in the SOMWBA directory under the applicable trade category who was not solicited and the reasons, therefore. The Contractor shall also advise the Awarding Authority of the dates notices were mailed and provide a copy of the written notice(s) sent.

(3) The Contractor shall make reasonable efforts to follow up the written notices sent to M/WBEs with telephone calls or personal visits to determine with certainty whether the M/WBEs were interested in performing the work. Phone logs or other documentation must be submitted to the Awarding Authority evidencing this effort.

(4) The Contractor shall make reasonable efforts to assist M/WBEs that need assistance in obtaining insurance, bonds, or lines of credit to perform work under the Contract and shall provide the Awarding Authority with evidence that such efforts were made.

(5) The Contractor shall provide the Awarding Authority with a statement of the response received from each M/WBE solicited, including the reason for rejecting any M/WBE who submitted a proposal.

(6) The Contractor shall take any additional measures reasonably requested by the Awarding Authority to meet the M/WBE participation goal(s) established for this Contract, including, without limitation, placing advertisements in appropriate media and trade association publications announcing the Contractor's interest in obtaining proposals from M/WBEs, and/or sending written notification to M/WBE economic development assistance agencies, trade groups and other organizations notifying them of the project and of the work available to be subcontracted by the Contractor to M/WBEs.

B. If the Contractor is unable to meet the M/WBE participation goals for this Contract after complying fully with each of the requirements of paragraph "A" above, and the Contractor is otherwise in full compliance with the terms of this Article, the Awarding Authority may reduce the M/WBE participation goals for this Contract to the extent that such goals cannot be achieved.

8. Suspension of Payment and/or Performance for Noncompliance.

A. If at any time during the performance of this Contract, the Awarding Authority determines or has reason to believe that (1) there has been a change or reduction in any M/WBE Work which will result in the Contractor failing to meet the M/WBE participation goal(s) for this Contract, other than a reduction in M/WBE Work resulting from a change in the Contract work ordered by the Awarding Authority, and (2) the Contractor has failed to comply fully with all of the terms and conditions of paragraphs 1 through 7 above, the Awarding Authority may:

(1) suspend payment to the Contractor of an amount equal to the value of the work which was to have been performed by an M/WBE pursuant to the Contractor's Schedule of M/WBE Participation, but which was not so

performed, to ensure that sufficient Contract funds will be available if liquidated damages are assessed pursuant to paragraph 9 and/or

(2) suspend the Contractor's performance of this Contract in whole or in part.

B. The Awarding Authority shall give the Contractor prompt written notice of any action taken pursuant to paragraph A above and shall give the Contractor and any other interested party, including any M/WBEs, an opportunity to present evidence to the Awarding Authority that the Contractor is in compliance with the requirements of this Article, or that there is some justifiable reason for waiving the requirements of this Article in whole, or in part. The Awarding Authority may invite SOMWBA and the Massachusetts Commission Against Discrimination to participate in any proceedings undertaken pursuant to this paragraph.

C. Upon a showing that the Contractor is in full compliance with the requirements of this Article, or that the Contractor has met or will meet the M/WBE participation goals for this Contract, the Awarding Authority shall release any funds withheld pursuant to clause A(1) above and lift any suspension of the Contractor's performance under clause A(2) above.

9. Liquidated Damages: Termination.

A. If payment by the Awarding Authority or performance by the Contractor is suspended by the Awarding Authority as provided in paragraph 8 above, the Awarding Authority shall have the following rights and remedies if the Contractor thereafter fails to take all action necessary to bring the Contractor into full compliance with the requirements of this Article, or if full compliance is no longer possible because the default of the Contractor is no longer susceptible to cure, if the Contractor fails to take such other action as may be required by the Awarding Authority to meet the M/WBE participation goals set forth in this Contract:

(1) the Awarding Authority may terminate this Contract, and/or

(2) the Awarding Authority may retain from final payment to the Contractor, as liquidated damages, an amount equal to the difference between (x) the total of the M/WBE participation goals set forth in this Contract, and (y) the amount of M/WBE participation credit earned by the Contractor for M/WBE Work performed under this Contract as determined by the Awarding Authority, the parties agreeing that the damages for failure to meet the M/WBE participation goals are difficult to determine and that the foregoing amount to be retained by the Awarding Authority represents the parties' best estimate of such damages. Any liquidated damages will be assessed separately for MBE and WBE participation.

B. Before exercising its rights and remedies hereunder, the Awarding Authority may, but the Awarding Authority shall not be obligated to, give the Contractor and any other interested party another opportunity to present evidence to the Awarding Authority that the Contractor is in compliance with the requirements of this Article or that there is some justifiable reason for waiving the requirements of this Article in whole or in part. The Awarding Authority may invite SOMWBA and the Massachusetts Commission Against Discrimination to participate in any proceedings undertaken hereunder.

10. Reporting Requirements.

The Contractor shall submit to the Awarding Authority all information or documentation that is necessary in the judgment of the Awarding Authority to ascertain whether the Contractor has complied with any of the provisions of this Article.

11. Awarding Authority's Right to Waive Provisions of this Article in Whole or in Part.

The Awarding Authority reserves the right to waive any provision or requirement of this Article if the Awarding Authority determines that such waiver is justified and in the public interest. No such waiver shall be effective unless in writing and signed by a representative of the Awarding Authority's Compliance Office or the office of its General Counsel. No other action or inaction by the Awarding Authority shall be construed as a waiver of any provision of this Article.

**COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION AND RECREATION**

**SPECIAL GOOD FAITH REQUIREMENTS FOR PARTICIPATION BY VETERAN OWNED
BUSINESS ENTERPRISES**

**(Implementing Executive Order No. 546, Establishing the Veteran Owned Business
Enterprise Program).**

BIDDER'S INSTRUCTIONS

THE APPARENT LOW BIDDER'S COMPLIANCE WITH THE REQUIREMENTS OF THIS SECTION IS A PREREQUISITE FOR RECEIVING THE AWARD OF THE CONTRACT.

1) Participation Goals and Program Operation

In order to be an eligible VOB for the participation goals of this Contract, the business enterprise must be listed as a veteran-owned business within the VetBiz database, located at www.VetBiz.gov, at the time of the bid submission deadline. Only a VOB identified as a veteran-owned small business via the VetBiz database shall count towards meeting the Program participation goal.

The Contractor must demonstrate that VOBs are eligible for the following participation goals via its listing as a veteran-owned small business within the VetBiz database, located at www.VetBiz.gov, at the time said VOB seeks to participate in business provided under this Contract; provided, that it shall also be the responsibility of the Awarding Authority to verify the status of the SDVOB via said VetBiz database prior to the awarding of the Contract.

a) Design Services Contracts – In furtherance of the goals and objectives of the program, commencing July 1, 2013 until such time as the Secretary for Administration and Finance has adopted a new participation goal, the participation goal, which shall be expressed in the form of a benchmark for each design services contract, shall be three (3) percent; provided, that said participation goal may be met by the veteran-owned business enterprise performing as either a general or prime contractor, a subcontractor, or both; provided further, that the awarding agency shall verify the status of business enterprise participation on a design services contract.

b) Public Construction Contracts – In furtherance of the goals and objectives of the Program, commencing July 1, 2013 until such time as the Secretary of Administration and Finance has adopted a new participation goal, the participation goal, which shall be expressed in the form of a benchmark for each public construction contract, shall be three (3) percent; provided, that said participation goal may be met by the veteran-owned business enterprise performing as either a general or prime contractor, a subcontractor, or both; provided further, that the awarding agency shall verify the status of a service veteran-owned business enterprise prior to said business enterprise participation on a public construction contract.

2) Goal Reduction/Waiver

- A) The Awarding Authority reserves the right to reduce or waive the SDVOBE participation goals established for this Contract upon written request made by a Bidder using the VOB E Waiver Request Form provided by the Awarding Authority.
- B) If filed Sub-Bids are solicited for this Contract, requests from prospective general Bidders to reduce or waive the VOB E participation goals for this Contract should be received by the Awarding Authority no later than four (4) working days after the list of filed Sub- Bidders is mailed by the Awarding Authority to persons who have taken out plans for the Contract, using the VOB E Waiver Request Form provided by the Awarding Authority.
- C) If there are no filed sub-Bids solicited for this Contract, requests to reduce or waive the SDVOBE participation goals for this Contract should be received by the Awarding Authority no later than five (5) working days before the date set for the receipt of general Bids. **THE AWARDING AUTHORITY RESERVES THE RIGHT TO REJECT ANY REQUEST TO REDUCE OR WAIVE THE VOB E PARTICIPATION GOALS FOR THIS CONTRACT THAT IS RECEIVED AFTER THESE DEADLINES.** Such written request must demonstrate to the satisfaction of the Awarding Authority that it is not feasible for a non- VOB E or non- VOB E general Bidder to meet the goals established for this Contract based upon any or all the following:
- a) actual VOB E availability.
 - b) the geographic location of the project to the extent related to SDVOBE availability.
 - c) the scope of the work.
 - d) the percentage of work available for subcontracting to VOB Es; and/or
 - e) other relevant factors, including a **documented** inability by the prospective Bidder to obtain commitments from VOB E subcontractors sufficient to meet the VOB E goals after having made a diligent, good faith effort to do so. All the foregoing documentation shall accompany the completed Waiver Request Form. Such documentation shall include, at a minimum, the following:
 - A list of all items of work under the Contract that the Bidder made available for subcontracting to VOB Es. The Bidder shall identify all items of work, other than work to be performed by filed sub-Bidders, that the Bidder did not make so available and shall state the reasons for not making such work available for subcontracting to VOB Es. The Bidder shall also demonstrate that, where commercially reasonable, subcontracts were divided into units capable of being performed by VOB Es.
 - Evidence that the Bidder sent written notices soliciting Bids or proposals to perform the items of work made available by the Bidder for subcontracting to all available VOB Es qualified to perform such work. The Bidder shall identify each VOB E solicited, state the dates that notices were mailed, provide a copy of the written notice(s) sent, and provide a copy of any statement or response received from each VOB E solicited, including the reason for rejecting and VOB E who submitted a bid or proposal.
 - Evidence that the Bidder made reasonable efforts to follow up on the written notices sent to VOB Es with telephone calls or personal visits to determine with certainty whether the VOB Es were interested in performing the work. Phone logs or other documentation must be submitted.

- Evidence of efforts made to assist VOBES that needed assistance in obtaining bonding or insurance, or lines of credit with suppliers if the inability of SDVOBE to obtain bonding, insurance, or lines of credit is the reason given for the Bidder's inability to meet the VOBES goals.

- D) The Bidder may also submit any other information supporting its request for a waiver or reduction in the VOBES participation goals, including without limitation evidence that the Bidder placed advertisements in appropriate media and trade association publications announcing the Bidder's interest in obtaining bids or proposals from VOBES, and/or sent written notification to VOBES economic development assistance agencies, trade groups and other organizations notifying them of the Contract and the work to be subcontracted by the Bidder to VOBES. The Bidder shall also submit any other information reasonably requested by the Awarding Authority to show that the Bidder has taken all actions that could reasonably be expected to achieve the VOBES participation goals.
- 3) No later than five (5) working days after the opening of general Bids, the apparent low Bidder shall submit the following documents to the Awarding Authority's Contract Officer:
- (i) a completed Schedule for Participation by VOBES ("Schedule for Participation") in the form provided by the Awarding Authority showing VOBES participation in amounts equal to or exceeding the VOBES participation goals for this Contract; and
 - (ii) a completed Letter of Intent in the form provided by the Awarding Authority for each SDVOBE listed in the Schedule for Participation.
- 4) Each Letter of Intent shall identify and describe the work to be performed by the named VOBES (the "VOBES Work") with enough specificity to permit the Awarding Authority to identify the items of contract work that the VOBES will perform for VOBES participation credit. The Awarding Authority reserves the right to reject any Letter of Intent if the price to be paid for the VOBES Work does not bear a reasonable relationship to the value of such work under the Contract as determined by the Awarding Authority.
- 5) Within five (5) working days after receipt of the Schedule for VOBES Participation and Letters of Intent, the Awarding Authority shall review and either approve or disapprove the apparent low Bidder's submissions. If the apparent low Bidder has not submitted an appropriate Schedule for VOBES Participation and appropriate Letters of Intent establishing that the VOBES participation goal for the project will be met, the apparent low Bidder will be considered ineligible for Award of the Contract and the Awarding Authority will Award the Contract to the second lowest Bidder, subject to said Bidder's compliance with these conditions.
- 6) The Contractor is required to submit to the Awarding Authority signed subcontracts with all subcontractors prior to the commencement of work to be performed under these contracts, and/or a purchase order or invoice from each material supplier and/or manufacturer listed on the Schedule for VOBES Participation within thirty (30) days of the issuance of the Notice to Proceed by the Awarding Authority.
- 7) A filed Sub-Bidder is not required to submit a Schedule for VOBES Participation with its Bid. A filed Sub-Bidder may, at its option, submit a Letter of Intent with its Bid if it is a VOBES. If a filed sub-Bidder intends to sub-subcontract work to a VOBES, and the filed sub-Bidder wishes that sub-subcontract to be credited toward the participation goals for this Contract, the filed sub-Bidder should submit a Letter of Intent from that VOBES with its Bid. A filed sub-Bidder can subcontract out up to 20% of its work to VOBES, unless such work is designated as sub-subcontract Paragraph E work in the Bid Documents, in which case the 20% cap does not apply.

This is a:

- Design Contract**
- Construction contract**

The goal for this contract is Three (3 %) percent of the value of the contract unless waived in part or whole by DCR in writing.

APPENDIX C to the General Conditions of the Contract

INDEX OF THE COMMONLY USED FORMS

(Forms used during bidding are in Attachment B to the Instructions to Bidders)

Contractor's Weekly Workforce Report

Minorities/Women in Contractor's Weekly Workforce Report

Weekly Payroll Report Form and Statement of Compliance

Certification of Payment by Contractor to MBE/WBE and Instructions

Certificate of Completion by Minority/Women Business Enterprise

Certificate of Final Inspection, Release and Acceptance – E-2

CONTRACTOR'S WEEKLY WORKFORCE REPORT
 THE COMMONWEALTH OF MASSACHUSETTS
 DEPARTMENT OF CONSERVATION AND RECREATION

DCR Project No. _____ Project Name _____ Project Location _____

Name of General Contractor _____ Minority Goal % _____ Women Goal %

Name of Contractor Filing Report _____ Address _____

Week Ending _____ Report No. _____ Date Work Began _____ Date work completed _____

NOTE: Min. = Minority Wom. = Women Check here if this is a final report

Job Category	Number of Employees	Number of Employees Who Are		Total Weekly Workforce Hours	Total Weekly Workforce Hours		Weekly % Workforce Hours		Total Workforce Hours To Date	Total Workforce Hours to Date		% Of Workforce Hours to Date	
		Min.	Wom.		Min.	Wom.	Min.	Wom.		Min.	Wom.	Min.	Wom.
TOTALS:													

Mail with Weekly Payroll report to the assigned Project Manager at: Department of Conservation & Recreation
 Project Manager Name
 10 Park Plaza
 Boston, MA 02116

The undersigned hereby certifies under pains and penalties of perjury that the above information is true and accurate.

Authorized Signature _____ Date _____

Print Name _____ Title _____

Telephone No. _____ FAX No. _____

MINORITIES/WOMEN IN CONTRACTOR'S WEEKLY WORKFORCE REPORT
THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION AND RECREATION

DCR Project No. _____ Project Name _____

Name of General Contractor _____

Project Location _____

Name of Contractor Filing Report _____

Address _____

Week Ending _____ Report No. _____

JOB CATEGORY	NAME OF EMPLOYEE	MINORITY GROUP	GENDER

In contract Article XII, "Minority" refers to: Asian-Americans, Blacks, Western Hemisphere Hispanics, Native Americans, and Cape Verdeans

WEEKLY PAYROLL REPORT FORM
 THE COMMONWEALTH OF MASSACHUSETTS
 DEPARTMENT OF CONSERVATION AND RECREATION

DCR Project No. _____ Project Name _____

Project Location _____

Name of General Contractor _____

Name of Contractor Filing Report _____

Address _____

Week Ending _____ Date Work Began _____ Date work completed _____

Report No. _____ Check here if this is a final report

Employee Name & Address	Work Classification	Hours Worked							(A)	(B)	Employer Contributions			(F)	(G)
		S	M	T	W	T	F	S	Total Hours	Hourly Base Wage	(C) Health & Welfare	(D) Pension	(E) Supp. unemplo yed	[B+C+D+E] Hourly Total Wage (prev.	[A*F] Weekly Total Amount

NOTE: Every contractor and subcontractor are required to submit a copy of their weekly payroll records to DCR. The undersigned states under the pains & penalties of perjury that the above provided and attached information is a true and accurate record of each person employed on the project and the hours worked and wages paid to each such employee, including payments to the referenced benefits. M.G.L. c. 149 §27B.

Authorized signature _____ Print Name _____

Print Title _____

Mail to: Department of Conservation and Recreation
 Project Manager Name
 10 Park Plaza
 Suite 6620
 Boston, MA 02116

**WEEKLY PAYROLL RECORDS REPORT
& STATEMENT OF COMPLIANCE**

In accordance with Massachusetts General Law c. 149, §27B, a true and accurate record must be kept of all persons employed on the public works construction project for which the enclosed rates have been provided. The **Weekly Payroll Report Form** includes all the information required to be kept by law. Every contractor or subcontractor is required to keep these records and preserve them for a period of three years from the date of completion of the project.

In addition, every contractor and subcontractor are required to submit a copy of their weekly payroll records to the awarding authority. This is required to be done on a weekly basis. Once collected, the awarding authority is also required to preserve those records for three years.

In addition, each such contractor, subcontractor, or public body shall furnish to the **Executive Office of Labor**, within fifteen days after completion of its portion of the work, a statement, executed by the contractor, subcontractor or public body who supervises the payment of wages, in the following form:

STATEMENT OF COMPLIANCE

Date: _____/_____/_____

I, _____, _____
(Name of signatory party) (Title)

do hereby state:

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

_____ on the _____
(Contractor, subcontractor, or public body) (Building or project)

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

Signature _____

Title _____

CERTIFICATE OF PAYMENT
 BY CONTRACTOR/DESIGNER TO MINORITY, WOMEN BUSINESS
 & VETERAN OWNED BUSINESS ENTERPRISES

TO: Supplier Diversity Reports
 Department of Conservation and
 Recreation ,10 Park Plaza
 Suite 6620,Boston,MA 02116

Reporting Period: Fiscal Year 20__

RE: Project:
 Project Number:

Contract Start Date:

The undersigned hereby certifies under the pains and penalties of perjury that the vendor named below has made the following payments to the named Minority, Women Business and Veteran Owned Enterprises for work performed on the above project:

Firm Name of General Contractor:

Authorized Signature

Date

Print Name

Print Title

Phone Number

Email address

Work performed/payments made (use additional pages if needed):

	Firm Name	Work Performed	Subcontract Amount	Payments This Quarter	FY Payments to date (This fiscal year)	Cumulative Payments (Total payments over the life of the contract)
<input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> VOB			\$	\$	\$	\$
<input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> VOB			\$	\$	\$	\$
<input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> VOB			\$	\$	\$	\$
<input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> VOB			\$	\$	\$	\$
<input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> VOB			\$	\$	\$	\$
<input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> VOB			\$	\$	\$	\$
<input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> VOB			\$	\$	\$	\$

* MBE, WBE and VOB payment reports are required for each quarter of the fiscal year for each of your DCR projects. Reports are to cover the following three-month periods: 1st quarter, July 1st – September 30th; 2nd quarter, October 1st – December 31st; 3rd quarter, January 1st – March 31st; 4th quarter, April 1st – June 30th. Reports must be submitted within 10 business days of your receipt of this form.

NOTICE: Intentionally submitting false information in this document may subject the contractor/ designer to criminal prosecution and/ or debarment from public contracting.

INSTRUCTIONS FOR COMPLETING CERTIFICATE OF PAYMENT

As part of its effort to ensure reliable, up-to-date information concerning the actual payments made to certified MBE, WBE and VOB E subcontractors on all DCR projects, we have prepared these instructions to assist you in completing the enclosed form. **PLEASE READ THESE INSTRUCTIONS CAREFULLY. DCR WILL RETURN ANY CERTIFICATION OF PAYMENT THAT IS INCOMPLETE OR INACCURATE.**

PLEASE NOTE: IF THIS PROJECT IS COMPLETE, ON HOLD, OR YOUR FIRM PREVIOUSLY SUBMITTED A **FINAL** CERTIFICATION OF M/WBE/VOBE PAYMENT FOR THIS PROJECT, PLEASE SO, INDICATE ON THE FORM AND RETURN IT TO: SUPPLIER DIVERSITY REPORTS, DEPARTMENT OF CONSERVATION AND RECREATION, 10 Park Plaza, Suite 6620 Boston, MA 02116

PLEASE INCLUDE THE FOLLOWING INFORMATION IN THE DESIGNATED SECTIONS OF THE FORM:

FIRM NAME: Include the M/WBE/VOBEs listed on the project's approved Schedule for Participation and any additional M/WBE/VOBEs that worked on the project. Be sure to check M/WBE/VOBE category for which they are certified. Note that any change in M/WBE/VOBEs participation used to meet the project goals must be pre-approved by the Project Manager or Engineer responsible for this project and a revised M/WBE/VOBE Schedule of Participation will be required. Contact the DCR Supplier Diversity coordinator immediately if you anticipate or have any changes in M/WBE/VOBE participation on this project.

WORK PERFORMED: Include a brief description of the work performed by each subcontractor listed. The description should match the M/WBE/VOBE Letter of Intent and approved Schedule of Participation. M/WBE/VOBEs must be certified in the category of work performed on this project for firms used to meet the project M/WBE/VOBE goals.

SUBCONTRACT AMOUNT: Include the contract or subcontract amounts listed on the M/WBE/VOBE Letters of Intent and approved Schedule of Participation. If the value of an MBE/WBE/VOBE contract or subcontract has decreased or increased for any reason, you must contact the Project Manager or Engineer responsible for this project immediately. If additional M/WBE/VOBE firms not listed on the Schedule for Participation worked on this project list the amount of their subcontracts.

PAYMENTS THIS QUARTER: Include the amount you paid the M/WBE/VOBE subcontractor, either directly or indirectly, for work performed on this project during the three-month period covered by this Certification of Payment. If the amount paid was zero, please indicate that. Do not include payments from previous periods or estimated future payments in this column. Please note that you may be required to submit copies of cancelled checks to verify the amounts reported for firms used to meet the project's M/WBE/VOBE goals.

FY PAYMENTS TO DATE: Include the total amount you paid the M/WBE/VOBE subcontractor, either directly or indirectly, for work performed on this project for all quarters in **this fiscal year.** To ensure accurate reporting, please review the prior Certifications of Payments previously submitted for this project. Where necessary, correct any earlier mathematical or reporting errors and submit revised Certifications of Payment.

CUMULATIVE PAYMENTS: Include the total amount you paid the M/WBE/VOBE subcontractor, either directly or indirectly, for work performed over the entire life of this project (all quarters).

IF YOU HAVE ANY QUESTIONS, CONTACT DCR Supplier Diversity coordinator at 617.626.4925

CERTIFICATE OF COMPLETION
BY MINORITY/WOMEN BUSINESS/VETERAN OWNED BUSINESS ENTERPRISE
DEPARTMENT OF CONSERVATION AND RECREATION

TO: Supplier Diversity Reports
 Department of Conservation and
 Recreation 10 Park Plaza
 Suite 6620, Boston, MA 02116

Reporting Period: Fiscal Year

RE: Project:
 Project Number:
 General Contractor:

Contract Start Date:

The undersigned hereby certifies under the pains and penalties of perjury that the vendor named below has received the payments to the named Minority, Women Business and Veteran Owned Enterprises for work performed on the above project:

Firm Name of Subcontractor:

Print Name	Print Title
Phone Number	Email address

DESCRIPTION OF WORK (AS SHOWN IN LETTER OF INTENT)

BRIEF DESCRIPTION OF ACTIVITY: (Note "Labor Only," "Material Only," "Material and Labor," "Complete")

Original Subcontract Amount	\$ _____
Adjusted Subcontract Amount (Change Orders, etc.)	\$ _____
Total Payments Received to Date from Prime Contractor	\$ _____
Balance Due from Prime Contractor	\$ _____

If the completed activity is different from that listed on the Letter of Intent, please explain: _____

(If more space is needed, continue back of sheet)

The individuals signing below hereby certify under the pains and penalties of perjury that all work listed on the Contract Letter of Intent (or approved changes thereto as explained above) was completed by the MBE/WBE/VOBE firm on _____, 20____ and the above amounts listed for these services are true and accurate.

FOR CONTRACTOR

FOR MBE/WBE/VOBE FIRM

 Authorized Signature

 Authorized Signature

 Print Name

 Print Name

NOTE: To be submitted to the DCR Compliance Office within ten (10) days after completion of work by MBE/WBE/VOBE.

**E-2 Final Acceptance
Certificate of Final Inspection, Release and Acceptance**

Title: _____

Location: _____

Contractor: _____

This is to certify that a complete inspection of the above-referenced project was made on _____ by the undersigned, and that the entire work was completed in accordance with the plans and specifications. The undersigned recommends acceptance of the project.

_____ by: _____ Title: _____ Date: _____
 _____ Designer Authorized
 Signature

Resident Engineer	Date	Project Manager	Date
Project Engineer	Date		

CERTIFICATE OF RELEASE

1.) The undersigned hereby certifies that all work has been completed in accordance with the plans, specifications, and contract documents and that all change orders have been supported pursuant to Article VII of the General Conditions of the Contract.

2.) Contract Award Price: \$	Adjusted Contract Price: \$
Authorized Additions: \$	Paid to Date:\$
Authorized Deductions:\$	Balance Due: \$

3.) The undersigned further certifies that in addition to the amount set forth above, there are outstanding and unsettled the following change orders as submitted to the DCR.

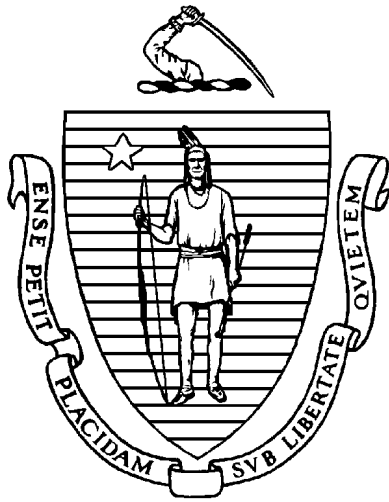
Request No.	Date:	Amount:
Request No.	Date:	Amount:
Request No.	Date:	Amount:

Subject to satisfactory disposition of change orders listed in Item 3 above, the undersigned releases the Commonwealth of Massachusetts from all further claims for wages or payments to subcontractors or suppliers except: (list on attached sheet).

_____ by: _____
 Contractor Authorized Signature

The above-referenced project is accepted as of _____
 Date

Deputy Commissioner, Engineering
 Deputy Director
 Project Manager
 Resident Engineer
 Office of Contract Administration
 Contractor



BID PACKAGE

PART IV

SPECIAL CONDITIONS OF THE CONTRACT

**MASS CENTRAL RAIL TRAIL-Sudbury to Hudson
CONTRACT NO. P19-3295-C1A**

PART IV – SPECIAL CONDITIONS

SCOPE OF WORK

Approximately 7.5 miles of Eversource transmission line is to be installed within an inactive Massachusetts Bay Transportation Authority (MBTA) railroad right-of-way (ROW) between Wilkins Street in Hudson, MA to the Eversource Driveway approximately 900 feet east of Landham Road in Sudbury, MA.

Eversource has collaborated with the DCR to develop a two-phased project in which a portion of the Massachusetts Central Rail Trail (MCRT) will be co-located with the proposed underground transmission line.

Phase I of the project was completed by Eversource which includes all major earthwork, bridge rehabilitation and bridge reconstruction, the installation of the underground transmission line, and the installation of a 14' wide, eight-inch (8") thick gravel surface to be used as the subbase for the Phase 2 work.

Work under Phase 2, is the responsibility of DCR and consists of the completion of this section of the MCRT within the project limits and as further defined by the scope of work under this contract.

The limits of work under this contract are from Wilkins Street in Hudson, MA to the Eversource Driveway approximately 900 feet east of Landham Road in Sudbury, MA

The work under this contract consists of the construction of approximately 7.5 miles of a ten-foot-wide hot mix asphalt multi-use path including installation of facilities for road crossings, paving, fencing/railing installation, landscaping, hardscape, site amenities, pavement markings, signage and final restoration of all areas within the work zone.

PLAN INDEX

SHEET NO.	DESCRIPTION
G-01	Title Sheet & Index
L-01	Legend Abbreviations & General Notes
K-01 - K-04	Key Plan
BL-01 - BL-07	Baseline & Traverse Data
TS-01 - TS-02	Typical Sections & Pavement Notes
C-01 - C-46	Construction Plans
PR-01	Profiles
TR-01 - TR-14	Traffic Plans
TM-01 - TM-05	Temporary Traffic Control Plans
SS-01 - SS-02	Traffic Sign Summary
D-01- D-10	Construction Details
GW-01 - GW-07	Gateway Details
XS-01 - XS-03	Cross Sections

STANDARD SPECIFICATIONS

All work under this Contract shall be done in conformance with the DCR standards, including the most recent DCR Trails Guidelines Manual; *2024 Standard Specifications for Highways and Bridges*, the *Supplemental Specifications* contained in this book, the *2017 Construction Standard Details*, the *Traffic Management Plans and Detail Drawings*, *MassDOT Work Zone Safety Temporary Traffic Control*, the *1990 Standard Drawings for Signs and Supports*; the *2015 Overhead Signal Structure and Foundation Standard Drawings*, the *2009 Manual on Uniform Traffic Control Devices (MUTCD) with Revisions 1, 2, and 3 and the November 2022 Massachusetts Amendments to the MUTCD*; the *1968 Standard Drawings for Traffic Signals and Highway Lighting*; *The American Standard for Nursery Stock*; the Plans and these Special Provisions.

The words “Standard Specifications” as used in these Specifications refer to the “Massachusetts Department of Transportation – Highway Division, 2024 Standard Specifications for Highways and Bridges,” including all supplemental specifications and addenda thereto. These Standard Specifications are herein incorporated by reference for materials and/or procedures, unless superseded, altered, or amended by these Specifications. Also incorporated by reference herein are the “Construction and Traffic Standard Details” of the same state agency.

The Standard Specifications, and/or other referenced standards, are referenced for materials, testing, and/or procedures only. **Payments will be as specified under “Basis of Payment” as determined under “Method of Measurement” of the appropriate items included in these Specifications.**

The General Conditions, Special Conditions and Technical Specifications shall take precedence over the General Requirements of the Massachusetts Department of Transportation Standard Specifications for Highways and Bridges.

The work is to be constructed in accordance with said Plans and supplemental working detail plans and/or sketches as developed from time to time by the Engineer and Designer. Details shown on said Plans are indicative of the types of structures required and are subject to revision, alteration, modification, and variation. Such revisions, alterations, modifications, and variations in said Plans as desirable in the opinion of the Engineer and Designer, on account of conditions encountered or for other reasons, shall not be considered a variation of term of this contract, and the assent of the surety on the bond accompanying this contract to such revisions, alterations, modifications, or variations shall not be required.

All said Plans, general and detail, and the Specifications shall be considered together so that any work shown on the Plans, though not mentioned in the Specifications, and any work mentioned in the Specifications, though not shown on the Plans, is to be executed by the Contractor as part of the performance of this Contract. Figured dimensions shall prevail over scale. All things, which in the opinion of the Engineer and Designer inferred from the Plans, shall be executed by the Contractor as part of the Contract, and the Engineer and Designer shall be the sole judge as to whether the detail plans conform to the general plans.

All work requested and approved to be done by DCR will be paid for at the contract item unit bid prices for this contract. Requests for payment will be prepared and submitted on a monthly basis.

PROTECTION OF UNDERGROUND FACILITIES

The locations of utilities shown on the Plans are approximate and have been plotted from field survey and record plan information. The Contractor's attention is directed to the necessity of making his own investigation in order to assure that no damage to existing structures, drainage lines, water or sewer lines, traffic signal conduits, etcetera, will occur.

The Contractor shall notify Massachusetts DIG SAFE and procure a Dig Safe Number for each location prior to disturbing existing ground in any way. The telephone number of the Dig Safe Call Center is 1-888-344-7233.

QUANTITIES OF WORK

The quantities of the various classes of work to be done and materials to be furnished under this Contract, as shown on the Plans or as given on the bid sheets, are approximate and only for the purpose of comparing on a uniform basis the bids for this Contract; and the Department is not to be held responsible if any of the said estimated quantities shall be found to be not even approximately correct; and the Contractor shall make no claim for damages or for anticipated profits or for loss of profits because of a difference between the estimated quantities and the materials actually delivered or used.

The Contractor agrees that the Contractor has made the Contractor's own examination and shall make no claim for damages on account of any errors, inaccuracies, or omissions found. The Contractor shall not take any advantage or have any claim for damages on account of any discrepancy, error, or omission in any Plans, calculations, estimates of quantities, or any statements made in the bid sheets or otherwise as to the conditions under which the work is to be performed, and he/she shall report such discrepancy, error, or omission to the Engineer and Designer in writing as soon as it comes to the Contractor's knowledge, and before proceeding with work relating to such discrepancy, error, or omission.

The Department reserves the right to delete any item, portion, or phase of the work. The contract bid price for all other work items shall remain unchanged.

WORK SCHEDULE – CONTRACTOR PLEASE NOTE

The work under this Contract shall be planned and organized in such a manner that the work can begin as early in spring 2025 as possible and with the path substantially complete by June 30, 2025 (e.g., paving complete, fencing complete or materials on-hand, etc.).

The Contractor shall be required to submit to the Engineer, for approval, a schedule of operations by means of the Critical Path Method, or other approved method, of the proposed construction schedule within ten calendar days after Notice-to-Proceed. Approval of the Contractor's schedule of operations

by the Engineer does not relieve the Contractor from the responsibility of completing the work within the time specified. It is assumed that the Contractor has the required means to perform the specified work within the specified time frame.

The Contractor is to prosecute construction during Daytime hours as defined below.

Daytime – refers to the period from 7:00 a.m. to 5:00 p.m., but not more than eight hours per day, Monday through Friday, unless otherwise specified by the applicable Laws or deemed necessary by the DCR for traffic considerations or to minimize other contract impacts to the public.

No work outside the above listed hours will be permitted except upon express written permission by the Engineer.

TIME-OF-YEAR RESTRICTIONS

The work shall be completed in compliance with the following time-of-year restrictions and in coordination with DCR’s Environmental Monitor (EM):

- **Wilkins Street, Hudson, to Parmenter Road:** No restrictions.
- **Parmenter Road to White Pond Road:**
 - o *March through May:* DCR’s EM must conduct visual sweeps for vernal pool species ahead of vehicle traffic within 450 feet of Vernal Pools (STA 333+25 eastward).
 - o *June through October:* DCR’s EM must conduct visual sweeps for turtles ahead of vehicle traffic.
- **White Pond Road to Bridge 128:**
 - o *Begin construction prior to April 15.*
 - o *March through May:* DCR’s EM must conduct visual sweeps for vernal pool species ahead of vehicle traffic within 450 feet of Vernal Pools (up to STA 380+50).
 - o *June through October:* DCR’s EM must conduct visual sweeps for turtles ahead of vehicle traffic.
- **Bridge 128 to Union Avenue, Sudbury:**
 - o *March through May:* DCR’s EM must conduct visual sweeps for vernal pool species ahead of vehicle traffic within 450 feet of Vernal Pools:
 - Bridge 128 to Dutton Road
 - Dutton Road up to STA 503 and 519+50 eastward
 - Peakham Road up to STA 534
 - Horse Pond Road up to STA 565 and 591+75 eastward
- **Union Avenue to Bridge 127:** No restrictions.
- **Bridge 127 to Eversource Sudbury Substation:**
 - o *March through May:* DCR’s EM must conduct visual sweeps for vernal pool species ahead of vehicle traffic within 450 feet of Vernal Pools (STA 739+25 - 751+50, and Landham Road to Substation)

HOLIDAY WORK RESTRICTIONS

(Supplementing Subsection 7.09)

DCR may authorize work to continue during these specified time periods if it is determined by DCR that the work will not negatively impact the traveling public. DCR may allow work in those areas on a case by case basis and where work is behind barrier and will not impact traffic

Below are the holiday work restrictions:

New Years Day (Federal Holiday)

No work on major arterial roadways from 5:00 AM on the day before until the normal start of business on the next subsequent business day. No work on local roadways on the holiday without permission by the DCR and the local police chief.

Martin Luther King's Birthday (Federal Holiday)

No work restrictions due to traffic concerns, however work on local roadways requires permission by the DCR and local police chief.

President's Day (Federal Holiday)

No work restrictions due to traffic concerns, however work on local roadways requires permission by the DCR and local police chief.

Patriot's Day (State Holiday)

Work restrictions will be in place for Districts 3 and 6 along the entire Boston Marathon route and any other locations that the DCR in those districts determine are warranted so as to not to impact the marathon.

Memorial Day (Federal Holiday)

No work on major arterial roadways from 5:00 AM on the Friday before, until the normal start of business on the following day.

Juneteenth

No work restrictions due to traffic concerns, however work on local roadways requires permission by the DCR and local police chief.

Independence Day (Federal Holiday)

No work on major arterial roadways from 5:00 AM on the day before until the normal start of business on the next subsequent business day. No work on local roadways on the holiday without permission by the DCR and the local police chief.

Labor Day (Federal Holiday)

No work on major arterial roadways from 5:00 AM on the Friday before, until the normal start of business on the following day.

Columbus Day (Federal Holiday)

No work on major arterials from 5:00 AM on the Friday before, until the normal start of business on the following day

Veterans' Day (Federal Holiday)

No work restrictions due to traffic concerns.

Thanksgiving Day (Federal Holiday)

No work on major arterials from 5:00 AM two days before until the normal start of business on the following Monday.

Christmas Day (Federal Holiday)

No work on major arterial roadways from 5:00 AM on the day before until the normal start of business on the next subsequent business day.

Written requests to work on any State Holiday shall be submitted fifteen days in advance to the Engineer for approval.

MANDATORY MEETINGS

As part of this Contract, the Contractor and subcontractors working at the site shall attend one site meeting with each Town prior to the start of work. These meetings shall be utilized to coordinate the proposed work and subcontractor, to review the project scope and to delineate sensitive (environmental and historical) work areas. In addition, the Contractor and subcontractors shall attend weekly construction meetings, as determined to be needed by the Department throughout the duration of the contract. There will be **NO** additional compensation for attendance at these meetings, it will be considered incidental to all construction items.

PROVISIONS FOR TRAVEL AND PROSECUTION OF WORK

Before starting any work under this Contract, the Contractor shall prepare, and submit to the Engineer and Town a plan that indicates the traffic routing proposed by the Contractor during the various stages, time periods of the work, and the temporary traffic control devices to be employed during each stage and time period of the work to maintain traffic and access to abutting properties.

Particular care shall be taken to establish and maintain methods and procedures that will not create unnecessary or unusual hazards to public safety. Traffic control devices required only during working hour operations shall be removed at the end of each working day.

Safety devices and sign placement shall conform to the applicable sketches shown in the standard Temporary Traffic Control Plan (TTCP), conforming to the MUTCD, available at the MassDOT's website: www.massdot.state.ma.us/highway.

Under no circumstance should a Contractor close a travel lane or in any way affect traffic outside the specified work hours without approval from the Town. Travel lanes of the roadway must be fully open to traffic prior to the start and after the end of the approved work schedule. In no case will operations commence prior to specified work hours without approval from the Town. This includes traffic set-ups that restrict the flow of traffic.

The number of simultaneous work locations that the Contractor will be permitted to work is subject to the approval of the Engineer. If more than two (2) work locations are proposed at any time, a request must be submitted for approval to the Engineer which must include the proposed daily work activities and locations, along with the proposed limits of the work zone setups.

The Contractor shall notify the Engineer in writing two (2) weeks in advance of any proposed temporary roadway closures necessary to complete the work. Work on roadways shall proceed only on such sections and widths thereof as will be approved by the Engineer.

The Contractor shall serve written notice to all abutters two weeks in advance of any reconstruction work adjacent to their property, and during such time that construction is in progress, provide safe access to

the abutting properties. The Contractor shall always schedule his operations to minimize interruption to the normal flow of traffic.

The Contractor shall provide safe and ready means of ingress and egress to all stores and shops, public and private and professional offices, and any other businesses or residences within the project limits, both day and night, for the duration of the project. Any temporary access disruption during business hours shall be coordinated with the owner prior to scheduling the work.

The Contractor shall also prepare and submit a three (3) week schedule of activities and locations to the Engineer and the Town for posting on the Town's Website for public information.

All sidewalks shall be safe and open to pedestrians by the end of each work shift of the approved work hours. Temporary pedestrian curb ramps may be needed to maintain access at driveways and intersections.

The Contractor is responsible for sweeping and cleaning of surfaces beyond the limits of the project required to clean up material caused by spillage or vehicular tracking during the various phases of the work. The Contractor is responsible for repairing roadways damaged by construction vehicles. Payment for maintenance and cleaning of roads will not be paid for separately but shall be considered as incidental to the work being performed under the Contract and there will be no additional compensation.

Signs having messages that are irrelevant to normal traffic conditions shall be removed or properly covered at the end of each work period. Signs shall be kept clean at all times and legends shall be distinctive and unmarred.

PHOTOGRAPHING PRIOR TO CONSTRUCTION

It shall be the Contractor's responsibility to photograph trails, including those sections to be rehabilitated and those used for site access, and sites of the trail crossings in advance of the start of work. It is of utmost importance to show any defects to minimize any claims of damage, either at the project site, along the access route or on adjacent properties. It shall be the Contractor's responsibility to prove that such a defect existed prior to the start of the work. If the Contractor cannot prove damage to be a pre-existing condition, the necessary repairs shall be made at the expense of the Contractor.

Photography/videography shall be considered as incidental to the work being performed under the Contract and there will be no additional compensation. A copy of the photos / videotape must be conveyed to the Department of Conservation and Recreation, Project Manager upon request

CORRESPONDENCE

All correspondence shall be delivered to the Resident Engineer for distribution and addressed to the Chief Engineer with copies to the Resident Engineer, Project Engineer, District Supervisor, and Designer.

SHOP DRAWING SUBMITTALS

(Supplementing Subsection 5.02)

The Contractor shall submit a submittals schedule for all materials and equipment required for this Project. Submittals schedule shall indicate required dates for submitting shop drawings, samples, and product data for materials to meet project schedule.

No changes shall be made to the approved drawings without the written consent of the Engineer.

SOURCES OF MATERIALS

All sources of materials shall be submitted at least thirty days before anticipated use to allow for testing by the Department. A schedule of anticipated use for each material shall also be submitted. The Department reserves the right to reject any source which it believes is incapable of meeting the Contract Specifications.

Unless otherwise stipulated in the Contract Specifications, furnish all materials required for the Work specified in the Contract, and said materials shall meet the requirements of the Specifications for the kind of Work involving their use.

Unless otherwise provided, only new and first quality materials conforming to the requirements of the Specifications and approved by the Department shall be used in the work, except for material used by the Contractor for his convenience and which is not to be permanently incorporated in the work.

If after testing, it is found that sources of supply which have been approved do not furnish a uniform product, or if the product from such source proves unacceptable at any time, the Contractor shall, at no additional expense to the Department, take any and all steps necessary to furnish acceptable materials.

LOCAL MATERIALS

Materials such as crushed stone, gravel borrow, or ordinary borrow, shall be sampled at the source and, if satisfactory, given preliminary approval for use.. Samples shall be taken by or in the presence of the Department. The Contractor shall furnish such facilities as the Department may require for collecting and forwarding samples to the Department. Samples shall be furnished without charge and with any shipping charges prepaid. However, preliminary approval by the Department does not relieve the Contractor of the responsibility for placing satisfactory material in the Work as determined by subsequent samples taken at the source, prior to the material being incorporated into the Work and if the Contract site samples test satisfactorily the material will be considered to meet the Contract requirements as to quality. If such sampling and testing reveal that the material is unsatisfactory it shall be removed from the Work or blended in with such other materials so that an acceptable material will be produced. Removal and blending of such material shall be done by the Contractor without additional compensation.

BRAND NAMES

When a particular brand name is specified, another brand name that is equivalent is allowed to be used, only with the approval of the Engineer and Designer. The judgment of the Engineer and Designer will be final as to whether any product constitutes an “equivalent” to a specified brand.

EARLY SUBMITTALS

Within fourteen (14) days after the date of the Notice to Proceed, the Contractor shall submit for approval of the Engineer Early Submittals.

Early Submittals as follows:

- Leaching Basin
- Traffic Signal/Pedestrian Hybrid Beacon Equipment

COOPERATION OF THE CONTRACTOR

(Supplementing MassDOT Subsections 5.05 and 5.06)

Agents of various public service agencies, municipal and State Departments, utility companies, and private site contractors may be entering on the work site to remove existing utilities, to construct or place new facilities or to make alterations to existing facilities.

The Contractor shall perform the work in cooperation with the various agencies in a manner which causes the least interference with the operations of the aforementioned agencies and shall have no claim for delay which may be due, or result, from said work of these agents.

Any member of the Conservation Commissions, or their respective agents, MassDEP, or its agents, and Army Corps of Engineers, or its agents shall have the right to enter and conduct site inspections throughout the construction process to evaluate compliance with the conditions of MassDEP Variance. Such visits may be scheduled with the Engineer, or other individual designated by Applicant.

ENGINEER’S FIELD OFFICE, STAGING AREAS AND PARKING

The Contractor shall submit a plan indicating the location of laydown and storage areas, worker parking, the Resident Engineer’s field office, and all such areas to the Department for review and approval.

Staging areas will be limited to those areas identified by the Department. Stockpiling of materials shall be within the limit of work and located as far from resource areas as possible. Staging areas shall be **restored at the Contractors expense**. The Contractor shall restore all disturbed areas and restoration will consist of four (4) inches of loam borrow and seed mixtures as specified under Item 765. Seeding

Prior to usage of all staging areas the contractor must perform the following:

- Delineate the extent of the staging area on the ground with temporary markings for review by the Department. Submit to the Department a schedule of time usage, materials to be stockpiled and a restoration (of the staging area) schedule.
- Receive written approval from the Department as to the extents of the area and other aforementioned questions.
- Install sedimentation barrier, if required, and temporary construction fence along the entire perimeter of the staging area save the entrance. The installation and removal of temporary fence for staging areas shall be considered as incidental to the work being performed under the Contract and there will be **NO** additional compensation. Temporary construction fence shall consist of 6' high chain link supported by surface footers.

The Contractor shall perform the following **during and after** the usage of designated staging areas:

- During - Monitor sedimentation barrier.
- After - Restore staging area to pre-construction conditions.
- Contractor shall keep Staging Area clear of trash and debris and in neat order. Contractor shall be responsible for cleanliness and order of assigned Staging Areas, as acceptable to the Department's Representative.
- Unless otherwise mutually agreed by Department's Representative and Contractor, Contractor shall remove temporary materials, equipment, and services prior to Contract Completion review.
- Contractor shall clean and repair damage caused by installation or use of temporary facilities on public and private rights-of-way.

SITE MAINTENANCE

The Contractor shall conduct his work in a neat, orderly manner and shall cooperate with maintenance forces of the Department of Conservation and Recreation by keeping the site of the work and adjoining area(s) usable and in a neat condition. Debris from construction operations shall be removed on a daily basis. Compensation for this service, unless otherwise stipulated in these specifications, will not be made as a separate item in the contract but will be considered as operating overhead included in the total contract bid price.

PROTECTION OF THE SITE

The Contractor shall protect the site and prevent unauthorized access to the site both during and between construction shifts by installing temporary construction fencing to sufficient limits to completely enclose each work area. Laydown and storage of materials and equipment, which is interpreted as a hazard to the public, shall be similarly protected. The cost for protecting the work site is considered incidental to the various items of work.

CONSTRUCTION STAKING

(Supplementing MassDOT Subsection 5.07)

The Contractor will be furnished information and ties for the survey baseline and benchmarks. The Contractor shall perform all survey required for the work. This work shall be considered incidental and no separate payment will be made.

The Contractor shall be responsible for establishing baselines from traverse and benchmark control data provided in the Plans. The Contractor shall re-establish any bench marks and traverse points disrupted by construction activities, and provide updated information to the Designer and the Engineer prior to construction completion. All work associated with the establishment of baselines and re-establishment of bench mark controls shall be incidental to the Contract, and as such no additional payment will be paid for the work.

PUBLIC SAFETY AND CONVENIENCE

(Supplementing MassDOT Subsection 7.09)

The Contractor shall provide necessary access for fire apparatus and other emergency vehicles through the work zones to abutting properties at all times.

Sweeping and cleaning of surfaces beyond the limits of the project required to clean up material caused by spillage or vehicular tracking during the various phases of the work shall be considered as incidental to the work being performed under the Contract and there will be no additional compensation.

NOTICE TO OWNERS OF UTILITIES

(Supplementing MassDOT Subsection 7.13)

Written notice shall be given by the Contractor to all public service corporations or municipal and State officials owning or having charge of publicly or privately owned utilities at least one week in advance of the commencement of operations that will affect the utilities. The Contractor shall, at the same time, file a copy of such notice with the Engineer.

Before commencing work on service connections, the Contractor shall be responsible for contacting the Electric Company servicing the area to obtain construction requirements, standards, and to give adequate notice of commencement of work. The Contractor's attention is further directed to the requirements of

Work in the Immediate Vicinity of Certain Underground Structures and Poles herein included in these Special Provisions.

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

TOWN OF HUDSON

Hudson Fire Department
296 Cox Street
Hudson, MA 01749

Chief Jamie Desautels
Phone: (978) 562-5565
Fax: (978) 568-9609

Hudson Police Department
911 Municipal Drive
Hudson, MA 01749

Chief Richard P. DiPersio
Phone: (978) 562-7122
Fax: (978) 568-9660

Hudson Department of Public Works
1 Municipal Drive
Hudson, MA 01749

Eric Ryder
Director
Phone: (978) 562-9333
Fax: (978) 568-9612

NOTICE TO OWNERS OF UTILITIES (Continued)

TOWN OF STOW

Stow Fire Department
511 Great Road
Stow, MA 01775

Interim Fire Chief Barry Evers
Phone: (978) 897-4537
Fax: (978) 461-1400

Stow Police Department
305 Great Road
Stow, MA 01775

Acting Chief Michael Sallese
Phone: (978) 897-45454
Fax: (978) 897-3692

Stow Public Works Department
88 South Acton Road
Stow, MA 01775

Brian Hatch
DPW Director
Phone: (978) 897-8071
Fax: (978) 897-5682

CITY OF MARLBOROUGH

Marlborough Fire Department
215 Maple Street
Marlborough, MA 01752

Chief Kevin Breen
Phone: (508) 624-6986
Fax: (508) 460-3795

Marlborough Police Department
355 Bolton Street
Marlborough, MA 01752

Chief David Giorgi
Phone: (508) 485-1212
Fax: (508) 624-6949

NOTICE TO OWNERS OF UTILITIES (Continued)

Marlborough Department of Public Works
135 Neil Street
Marlborough, MA 01752

Theodore Scott
Interim Commissioner of Public Works
Phone: (508) 624-6910, ext. 33300

Marlborough Engineering Department
135 Neil Street
Marlborough, MA 01752

Thomas DiPersio, Jr.
City Engineer
Phone: (508) 624-6910
Fax: (508) 393-6996

TOWN OF SUDBURY

Sudbury Fire Department
77 Hudson Road
Sudbury, MA 01776

Chief John Whalen
Phone: (978) 440-5301
Fax: (978) 440-5305

Sudbury Police Department
75 Hudson Road
Sudbury, MA 01776

Chief Scott Nix
Phone: (978) 443-1042
Fax: (978) 443-1045

Sudbury Department of Public Works
275 Old Lancaster Road
Sudbury, MA 01776

Tina Rivard
Director
Phone: (978) 440-5421
Fax: (978) 440-5404

Sudbury Engineering Department
275 Old Landcaster Road
Sudbury, MA 01776

Philip Salamon
Assistant Town Engineer
Phone: (978) 440-5421
Fax: (978) 440-5404

ELECTRIC

Eversource Electric
1165 Massachusetts Avenue
Dorchester, MA 02125

Ned Sadowski
ned.sadowski@eversource.com

Hudson Light & Power Department
49 Forest Avenue
Hudson, MA 01749

Justin Connell
Phone: (978) 568-8736
Fax: (978) 562-1389

National Grid
55 Bearfoot Road
Northborough, MA 01532

Manny Munoz
Phone: (401) 895-9726
manuel.munoz@nationalgrid.com

NOTICE TO OWNERS OF UTILITIES (Continued)

TELEPHONE

Verizon
385 Myles Standish Blvd.
Taunton, MA 02780

Karen Mealey
Phone: (774) 409-3160
karen.m.mealey@verizon.com

GAS

Tennessee Gas Pipeline Company
8 Anngina Drive
Enfield, CT 06082

David Wood
Phone: (860) 763-6005
KMEncroachmentsNorth@kindermorgan.com

Eversource Gas
157 Cordaville Road
Southborough, MA 01772

Jeffrey Evans-Mongeon
Phone: (508) 305-6970
Jeffrey.Evans-Mongeon@eversource.com

National Grid Gas
170 Data Drive
Waltham, MA 02451

Melissa Owens
Phone: (781) 907-2845
Melissa.Owens@nationalgrid.com

WATER

MWRA
2 Griffin Way
Chelsea, MA 02150

Ralph Francesconi
Phone: (617) 461-3573
Ralph.Francesconi@mwra.state.ma.us

CABLE

AT&T/Teleport Communications America
c/o Siena Engineering Group
50 Mall Road, Suite 203
Burlington, MA 01803

Erica Hudson
Phone: (781) 221-8400, ext. 7041
erica.hudson@sienaengineeringgroup.com

Comcast Cable Corporation
PO Box 6505
5 Omni Way
Chelmsford, MA 01824

Wendy Brown
Phone: (978) 848-5163
Wendy_Brown@comcast.com

CenturyLink
6800 Jericho Turnpike, Suite 107W
Syosset, NY 11791

David Vega
Phone: (516) 712-3041
CenturyLinkNationalOspRelocations@centurylink.com

Crown Castle
80 Central Street
Boxborough, MA 01719

Mark Bonanno
Phone: (508) 616-7818
mark.bonanno@crowncastle.com

Eversource Fiber, SUM SE 320
247 Station Drive
Westwood, MA 02090

Bechir Khoury
Phone: (781) 441-3864
bechir.khoury@eversource.com

NOTICE TO OWNERS OF UTILITIES (Continued)

MCI-Verizon Business
P.O. Box 600
Charlton, MA 01507

Stephen Parretti
Phone: (508) 248-1305
stephen.parretti@verizon.com

Lumen
1025 Eldorado Boulevard
Broomfield, CO 80021

Renoy Thomas
(516) 712-3041
relocations@lumen.com

Astound
956 Massachusetts Avenue
Arlington, MA 02476

Alex Ortiz
Phone: (781) 316-8878
alex.ortiz@astound.com

FIRE ALARM

Hudson Fire Alarm
296 Cox Street
Hudson, MA 01749

John Blood
Phone: (978) 562-5565

The Contractor shall make his own investigation to assure that no damage to existing structures, drainage lines, traffic signal conduits, and other utilities will occur as a result of construction operations.

The Contractor shall notify "Mass. DIG SAFE" and procure a DIG SAFE number of each location prior to disturbing ground in any way.

"DIG-SAFE" Call Center: Telephone 1-888-344-7233

NATIONAL GRID EMERGENCY TELEPHONE NUMBERS

GAS:

Emergency: 1-800-233-5325

New Service: 1- 877-696-4743

Customer Support: 1-800-732-3400

PROTECTION OF UTILITIES AND PROPERTY

(Supplementing MassDOT Subsection 7.13)

The Contractor, in constructing or installing facilities alongside or near sewers, drains, water or gas pipes, electric or telephone conduits, poles, sidewalks, walls, vaults or other structures shall sustain them securely in place. The Contractor shall coordinate with the officers and agents of the various utility companies and municipal departments to assure that the services of these structures are maintained. The Contractor shall also be responsible for the repair or replacement, at no additional cost to the Town, of any damage to such structures caused by construction operations. The Contractor is responsible to leave them in the same condition as they existed prior to commencement of the work. In case of damage to utilities, the Contractor shall promptly notify the utility owner and shall, if requested by the Engineer,

furnish labor and equipment to work temporarily under the utility owner's direction. Pipes or other structures damaged by the operation of the Contractor may be repaired by the Town or by the utility

owner which suffers the loss. The cost of such repairs shall be borne by the Contractor, without compensation therefor.

If during construction there is an existing utility and/ or structure found to be in conflict with the proposed work under this Contract, the Contractor shall protect and maintain the services to the utilities and structures and promptly notify the Town and the Engineer. The Engineer will, as soon as possible identify the utilities to be relocated or other such activities deemed suitable for resolution.

If live service connections are to be interrupted by excavations of any kind, the Contractor shall not break the service until new services are provided. Abandoned services shall be plugged off or otherwise made secure.

Full compensation for furnishing all labor, materials, tools, equipment and incidentals for doing all the work involved in protecting or repairing property as specified in this Section, shall be considered included in the prices paid for the various Contract items of work and no additional compensation will be allowed therefor.

WORK IN THE IMMEDIATE VICINITY OF CERTAIN UNDERGROUND STRUCTURES AND UTILITY POLES

For overhead connections, the Electric Company servicing the area will make the connection from the top of the riser on the utility pole to the power source. The Contractor shall supply all labor, materials and equipment to install the service connection, complete in place and in accordance with the Electric Company procedures, from the controller to and including the riser with enough wire coiled above the riser to permit the Electric Company servicing the area to make the final connection.

For underground connections, the Electric Company servicing the area will perform the actual wiring of the service connections from its power source to the sweep at the local controllers, but all steel sweeps, ducts, entrance holes into manholes, patching and all other necessary labor, materials and equipment required to install the electric service, complete in place, shall be furnished by the Contractor.

The Contractor shall pay the Electric Company servicing the area for their services rendered for the connection of overhead and underground service connections.

Before starting work at existing manholes, the Contractor shall test for gas and blow out the manholes.

TEMPORARY ACCESS TO AREA MERCHANTS AND BUSINESSES

(Supplementing MassDOT Subsections 8.02 and 8.06)

The work is in a predominantly residential, retail and commercial business section of the Towns and access to all properties must be maintained at all times.

TEMPORARY ACCESS TO AREA MERCHANTS AND BUSINESSES (Continued)

The Contractor shall provide safe and ready means of ingress and egress to all stores and shops, public and private and professional offices and any other businesses or residences in the project area, both day and night, for the duration of the project.

The Contractor shall prepare and submit to the Town a Maintenance of Pedestrian Access Plan outlining procedures and measures taken in maintaining safe pedestrian access through the work zone, safe means of access and egress to adjacent buildings and businesses in conformance to ADA/AAB regulations.

NOTIFICATION TO ABUTTERS

The Contractor shall hand deliver notices to abutting properties at least 24 hours before the start of construction. The notice will indicate the timing of the construction and any access restrictions or other inconveniences that may result.

SAFETY CONTROLS FOR CONSTRUCTION OPERATIONS

(Supplementing MassDOT Subsection 850.21 and 850.61)

Safety controls for construction operations shall be done in accordance with the relevant provisions of Section 850 of the Standard Specifications, the Manual on Uniform Traffic Control Devices, the Traffic Management Plan and the following:

The providing of safety controls for construction operations shall be considered incidental to this contract and the costs for safety controls shall be included in the unit bid price for those contract items requiring such controls.

Positioning, adjusting and re-positioning of all devices such as traffic cones, high level warning devices, etc., not otherwise classified and paid for under other items in this contract, is considered incidental and no separate payment will be made.

PREVIOUSLY OBTAINED PERMITS

The Contractor shall comply with all conditions set forth in all previously obtained permits as listed below.

- Massachusetts Wetlands Protection Act Orders of Conditions from the Hudson Conservation Commission, Stow Conservation Commission, and Sudbury Conservation Commission
- Town of Sudbury Stormwater Management Bylaw Permit
- Massachusetts Endangered Species Act Conditional No-Take Determination

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION FILE NUMBER SIGN

This project is subject to Massachusetts General Laws, Chapter 131, Section 40 as amended. Signs shall be in accordance with the latest MassDOT Construction Standards. All costs for the manufacture, erection, maintenance, moving, and removal of the signs shall be absorbed by the contractor with no additional compensation other than the contract unit prices.

For this project the Massachusetts Department of Environmental Protection File Numbers are:

- **Hudson: 190-0647**
- **Stow: 299-677**
- **Sudbury: 301-1287.**

ORDERS OF CONDITIONS

The Contractor is advised that the Order of Conditions (MassDEP File No. **190-0647**) issued by the Town of Hudson on August 24, 2020, and extended on August 10, 2023, is part of this contract. A copy of this order is included within these special provisions.

The Contractor is advised that the Order of Conditions (MassDEP File No. **299-677**) issued by the Town of Stow on July 10, 2020, and extended on August 8, 2023, is part of this Contract. A copy of this Order is included within these special provisions.

The Contractor is advised that the Order of Conditions (MassDEP File No. **301-1287**) issued by the Town of Sudbury on February 4, 2021, and extended on December 28, 2023, is part of this contract. A copy of this order is included within these special provisions.

The Contractor shall be responsible for meeting the orders for conditions attached. No separate payment shall be made for complying with the Order of Conditions, except as noted in the Special Provisions, but all costs in connection therewith shall be included in the unit prices bid for the various contract items.

TOWN OF SUDBURY STORMWATER MANAGEMENT BYLAW PERMIT

The Contractor is advised that the Town of Sudbury has issued a Stormwater Management Permit on January 27, 2021, and is part of this contract. A copy of this Permit is included within these special provisions.

MASSACHUSETTS ENDANGERED SPECIES ACT

The Massachusetts Endangered Species Act (M.G.L. c. 131A), referred to as MESA, prohibits the taking of any plant or animal listed as Endangered, Threatened, or Special Concern. Due to unique ecological settings of the Project, state-listed rare species may occur within the project areas. The Contractor shall take all necessary precautions to avoid unauthorized impacts to known locations of listed species, as well

as those which may be discovered during project construction. Penalties for the illegal taking of state-listed rare species include fines of not less than \$500 per individual plant or animal, or part thereof, and/or up to 90 days in jail. Locations of endangered species habitats are identified in the Contract Documents.

The Contractor is advised that the Natural Heritage & Endangered Species Program (NHESP) has issued a conditional no-take determination (15-34327) on May 17, 2019. The Contractor shall be responsible for complying with the Time-of-Year Restrictions on Page 6 for required protection of state-listed species.

U.S. ARMY CORPS OF ENGINEERS (USACE) CLEAN WATER ACT SECTION 404 PERMIT

The Contractor is advised that the USACE has issued a letter (NAE-2017-01406) on October 31, 2022, verifying that the Project is authorized under General Permit #10 of the April 16, 2018, federal permit known as the Massachusetts General Permits (GPs). The Contractor shall be responsible for meeting all special conditions within the verification letter, including compliance with the Memorandum of Agreement Between the U.S. Army Corps of Engineers and the Massachusetts Historical Commission, NSTAR d/b/a Eversource Energy, and the Massachusetts Department of Conservation and Recreation (the “MOA”); as well as the General Conditions for the attached April 2018 Massachusetts GPs. The applicable stipulations of the MOA for which the Contractor will be responsible include I.A, II.E, II.F, II.G, II.H, II.I, II.K, and IV.

STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

The Contractor shall prepare the necessary documents, notices and reports to serve as the required Storm Water Pollution Prevention Plan (SWPPP) in compliance with the National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP), issued by the U.S. Environmental Protection Agency (USEPA). These documents, notices and reports shall be available on the construction site until all construction involving land disturbance is completed and the site is permanently stabilized against erosion and sediment discharge to waters of the United States. Under this contract the Contractor shall be the responsible party on site for protection of water quality in adjacent receiving water during construction of the projects.

PROJECT OPERATOR AND RESPONSIBILITIES:

The responsible “operator”, as designated by the Contractor, is that party that has day-to-day operational control of all site work activities necessary to comply with the above SWPPP. The operator for this project shall be designated on the USEPA form 3510-9 “Notice of Intent”, to be submitted to the USEPA at least 14 days before any disturbance of the land surface.

The Operator shall install, maintain, and replace as necessary all measures for erosion control, sediment control, wetland protection, and water quality protection, throughout the site as is outlined in the environmental permits in accordance with local, state, and federal wetlands and environmental regulations and permits. The Operator shall execute all work in such a manner as to prevent alteration or degradation of wetlands or buffer zones beyond designated work limit lines, including taking temporary or emergency measures as necessary.

The Operator shall comply with the NPDES CGP, issued by USEPA, under this contract.

ENVIRONMENTAL MONITOR

This section of the Special Conditions is for informational purposes only, to inform the Contractor that environmental monitoring will be on-going on the construction site during the entire construction period by Department, State, and municipal employees. DCR’s Environmental Monitor will be responsible for SWPPP inspections and reporting and all permit conditions which specify an Environmental Monitor, and will provide the following assistance and guidance to the Department:

1. Oversee implementation of mitigation measures prior to, during and after construction.
2. Observe construction activities in the vicinity of wetlands, vernal pools, and rare species habitat.
3. Work with Department and Contractor to modify the design, if necessary, of the mitigation measures as needed to avoid and mitigate disturbance to wetlands, vernal pools, and rare species.
4. Recommend to the Engineer to stop any work that may result in impacts to wetlands, vernal pools, or rare species that have not been previously identified in permitting.

Contractor is responsible reading, understanding and complying with all components of the Orders of Conditions (OOCs) that were issued for the project locations (Hudson, Stow, Marlborough and Sudbury); the Sudbury Stormwater Permit; the Clean Water Act Section 404 Massachusetts General Permit, including compliance with the Memorandum of Agreement Between the U.S. Army Corps of Engineers and the Massachusetts Historical Commission, NSTAR d/b/a Eversource Energy, and the Massachusetts Department of Conservation and Recreation; the conditions of the No-Take Determination from the Natural Heritage & Endangered Species Program for the Massachusetts Endangered Species Act; and the NPDES CGP. Copies of these permits are attached to Part 4 of the Contract Specifications.

WORK DONE BY OTHERS

Relocation and/or resetting to new grades of all private utilities, including utility poles, gas gates, telephone and electric manholes, made necessary by the construction of this project, will be accomplished by the respective utility companies.

The Contractor must prosecute the work efficiently and with the least possible delay. Immediately after award of the Contract, the Contractor shall confer with the owners of all utilities to assure that relocations of facilities and services may be made at times consistent with operations under this Contract.

MATERIAL REMOVED AND STACKED

The Contractor shall carefully remove, transport and stack all material that, in the opinion of the Engineer, is salvageable, but that is not required as part of the proposed work. The Contractor shall coordinate with the applicable Town to schedule drop-off time and location.

PROPERTY BOUNDS

The Contractor shall exercise due care when working around all property bounds which are to remain. Should any damage to a bound result from the actions of the Contractor, the bound shall be replaced and/or realigned by the Contractor as required by the Engineer at no cost to the Owner.

MAINTENANCE OF TRAFFIC SIGNALS AND RECTANGULAR RAPID FLASHING BEACON (RRFB) SYSTEM

It shall be the responsibility of the Contractor to provide all labor, equipment and material required for the total maintenance and repair of all proposed traffic signal control equipment, including damage by automobile accidents until final completion and acceptance of the project, unless otherwise specified under Subsection 7.17 "Traffic Accommodation: of the Standard Specifications as amended, in which case Subsection 7.17 will govern. These provisions will apply to the signalized location included as part of this construction Contract from the date of written notice given to the Engineer that the Contractor will work on or adjacent to an existing signal until the date when DCR and MassDOT accepts the complete project. This written notice must be given before the Contractor may proceed with any work on a specified traffic signal location. For the purpose of these Special Provisions, the phrase "Traffic Signal Control Equipment" is intended to include, but is not limited to, controllers, signal housings, supporting structures, cabinet accessories and panels, wires, conduit and all other ancillary electrical equipment used for traffic control.

The cost of the maintenance of signals and RRFB system shall be deemed to be included in the various traffic signal Contract items and no additional payments will be made.

FINE TUNING, ADJUSTMENT, AND TESTING PERIOD

After the Contractor has finished installing the controller and all other associated signal equipment and after the Contractor has set the signal equipment to operate as specified in the Contract documents, the fine tuning, adjusting and testing period shall begin. The Contractor shall advise the Engineer, in

writing, of the date of the beginning of the fine tuning and testing period. This period shall not start until the work at the intersection is complete. During this period, the Contractor, under the direction of the Engineer, shall make necessary adjustments and tests to insure safe and efficient operation of the equipment. This period shall last for 30 days and the Contract completion date has taken this testing period into consideration. No request for final acceptance will be considered until successful completion of the testing period.

The Contractor shall notify the Engineer in writing of the starting date of the fine tuning period prior to the starting date.

FINAL INSPECTION AND ACCEPTANCE

Upon successful completion of the 30-day testing period wherein the traffic signals have operated for 30 days without failure, the Contractor shall notify MassDOT. The Engineer will make a final inspection of the installation in the presence of DCR, MassDOT and the Contractor. An inspection check will be made to ensure that all equipment, materials, installations and operations are in accordance with the construction contract, plans and specifications. Items to be checked will include, but not be limited to, traffic signal systems and flashing warning beacon operation, cabinet equipment, documents (wiring diagrams, as-built plans, instruction manuals, parts list, warranties, grounding resistivity test report, etc.), signs, and pavement markings, and street hardware (posts, bases, housings, brackets, etc.).

The Engineer will notify the Contractor in writing of any items in which the inspection reveals that the work is incomplete, defective, or does not otherwise meet the project specifications. The Contractor shall perform the corrective actions necessary to achieve final acceptance by MassDOT and DCR. These corrective actions shall be done by and at the expense of the Contractor and within 15 days of the date of the inspection report, unless otherwise approved in writing by MassDOT and DCR.

GUARANTEE AFTER FINAL ACCEPTANCE

The Contractor shall diagnose (troubleshoot) the system and replace any part of the traffic signal systems and flashing warning beacon found to be defective in workmanship, material or manner of functioning within six months from date of final acceptance of all the installations under this Contract. This requirement does not affect the one-year warranty period on equipment specified in Subsection 815.20 of the Standard Specifications.

Upon the date of acceptance of the project by DCR, the Contractor shall turn over all guarantees and warranties to the DCR and MassDOT.

QUALIFIED ELECTRICIANS

Within 10 days after opening of bids, the low bidder shall submit a list of the Journeyman Electricians (Massachusetts License) who will perform the electrical work in this contract.

Also, the low bidder shall submit copies of each Journeyman Electrician's current Massachusetts License.

PROMPT PAYMENT

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

ARCHITECTURAL ACCESS BOARD TOLERANCES

The Contractor is hereby notified that they are ultimately responsible for constructing all project elements in strict compliance with the current AAB/ADA rules, regulations and standards.

All construction elements in this project associated with sidewalks, walkways, pedestrian curb ramps and curb cuts are controlled by 521CMR – Rules and Regulations of the Architectural Access Board.

The AAB Rules and Regulations specify maximum slopes and minimum dimensions required for construction acceptance. There is no tolerance allowed for slopes greater than the maximum slope nor for dimensions less than the minimum dimensions.

Contractors shall establish grade elevations at all pedestrian curb ramp locations, and shall set transition lengths according to the appropriate table in the Construction Standards (or to the details shown on the plans).

All pedestrian curb ramp joints and transition sections which define grade changes shall be formed, staked and checked prior to placing cement concrete. All grade changes are to be made at joints.

ACCESS TO UTILITIES

The Contractor shall provide access to the Owner of any private or publicly owned utility in the event of an emergency. The Contractor shall accurately locate any structures whenever the structures are to be lowered below grade. The Contractor shall be available to access any buried structure 24 hours a day with a minimum 1 hour response time.

SAWCUTS

Existing pavements to remain shall be sawcut at all openings for utility work, for new or reset curb and at all joints with proposed full-depth hot mix asphalt pavement, as shown on the plans and as directed by the Engineer.

All sawcuts will be incidental to the various work items.

NEW INTRODUCTIONS OF INVASIVE PLANTS INTO OR AROUND THE SITE

(Supplementing MassDOT Subsections 7.01(D) Plant Pest Control and 7.13 Protection and Restoration of Property)

The Contractor shall ensure that no invasive plant species, as defined and listed as Invasive, Likely Invasive, or Potentially Invasive, by the Massachusetts Invasive Plant Advisory Group <http://www.massnrc.org/MIPAG>, are introduced or spread around the site by construction activities including but not limited to improperly cleaned construction equipment and importation of infected materials such as borrow, compost, nursery stock, seed, or hay bales. Corrective measures, if necessary, shall be made by the Contractor as directed by the Engineer.

The Contractor shall be solely responsible for all costs associated with ensuring that invasive species are not introduced or spread around the site by construction activities and for all corrective measures required for as long as necessary to eliminate the introduced invasive plant species and prevent re-establishment of same.

DUST CONTROL

The Contractor is advised that dust control is a concern of the Town. The Contractor shall apply approved dust control material as directed by the Engineer.

At the end of every construction day, the Town will review the condition of the construction site and the Contractor shall street sweep the project area as necessary. The Town shall approve the method. All costs in connection therewith street sweeping shall be included in the unit prices bid for the various contract items.

WEATHER CONDITIONS

In the event of temporary suspension of work or during inclement weather, or as the Engineer or Designer requires, the Contractor shall be responsible for the protection of the work and all subcontractors and their work and materials against damage or injury from the weather. If, in the opinion of the Engineer or Designer, any work or materials have been damaged or injured by reason of failure on the part of the Contractor or any of the subcontractors to protect the work, such work and materials shall be removed and replaced at the expense of the Contractor.

PERMITS AND FEES

All necessary construction permits and permit fees from the Towns of Hudson and Sudbury are the responsibility of the Contractor. All requirements, Town ordinances, laws and rules as outlined in the permits issued by the Town shall be strictly adhered to.

STATE HIGHWAY ACCESS PERMIT

The Contractor is advised that a State Highway access permit will be issued by the Massachusetts Department of Transportation (MassDOT) District 3 permit section for:

- Paving under the Landham Rd Bridge
- Installation of the HAWK on Rte 20 in Sudbury

The work shall be as shown on the plans.

The Contractor shall be responsible for meeting all requirements of the Access permit. No separate payment shall be made for complying with the permit, except as noted in the Special Provisions, but all costs in connection therewith shall be included in the unit prices bid for the various contract items. In the event that the access permit is not issued prior to project award any permit construction scope not identified on the plans will be subject to negotiation with DCR.

CULVERTS

The contractor is alerted that they are required to alert the Engineer and Designer a minimum of 48 hours prior to construction activities over Culverts 127F and Culvert 132A in Sudbury. The Designer will provide inspections prior to, during and after construction activities are complete, as required by the Environmental Permits.

DAMAGES

All structures, property, and areas, whether within or beyond the site of the Work, that are damaged by the Contractor shall be restored to their original condition at no cost to the Owner.

PROJECT SIGNS

The Contractor shall manufacture and install two 4-foot by 2-foot signs prior to construction activities. The signs shall describe the project and have the Department of Conservation and Recreation's logo. See special provision for Item 837.1 for additional information. Signs will be field located with the Engineer and the Owner.

FINE GRADING AND COMPACTING

The work shall conform to the provisions of Sections 150 and 170 of the standard Specifications and the following:

Compaction shall not be less than 95 percent of the maximum dry density of the material. Compaction testing shall be required every 800 feet and shall be conducted by and independent lab that is paid for by the contractor.

FINAL INSPECTION

When, in the opinion of the Contractor, the Work is complete and ready for final inspection, he/she shall notify the Engineer and Designer in writing, and the Engineer and Designer will arrange to give the entire Work a thorough inspection. Before final payment will be made, any defects or omissions noted by this inspection shall be completed by the Contractor without additional compensation.



BID PACKAGE

PART V

TECHNICAL SPECIFICATIONS

TECHNICAL SPECIFICATIONS

TABLE OF CONTENTS

SECTION		PAGE
Item 102.1	Tree Trimming	1-2
Item 103.	Tree Removed – Diameter Under 24 Inches	1-2
Item 120.	Earth Excavation	3-4
Item 121.	Class A Rock Excavation	5
Item 146.	Drainage Structure Removed	6
Item 151.	Gravel Borrow	7
Item 156.	Crushed Stone	7
Item 170.	Fine Grading and Compacting	8
Item 180.01	Environmental Health and Safety Program	9-10
Item 180.02	Personal Protection Level C Upgrade	11
Item 180.03	Licensed Site Professional Services	12-15
Item 191.	Drive Sample Boring	16-18
Item 191.10	Hollow Stem Auger Boring	16-18
Item 191.11	Core Boring	16-18

Item 193.	Mobilization and Dismantling of Boring Equipment	16-18
Item 205.	Leaching Basin	19
Item 220.	Drainage Structure Adjusted	20
Item 252.12	12 Inch Corrugated Plastic Pipe	21
Item 450.22	Superpave Surface Course – 9.5 (SSC-9.5)	22
Item 450.32	Superpave Intermediate Course – 19.0 (SIC – 19.0	22
Item 451.	HMA For Patching	22
Item 452.	Asphalt Emulsion For Tack Coat	22
Item 453.	HMA Joint Adhesive	22
Item 482.3	Sawcutting Asphalt Pavement	23
Item 504.	Granite Curp Type VA4 – Straight	24-25
Item 504.1	Granite Curp Type VA4 – Curved	24-25
Item 507.	Inlaid Granite Town Line Marker	24-25
Item 509.	Granite Transition Curb for Pedestrian Curb Ramps - Straight	24-25
Item 509.1	Granite Transition Curb for Pedestrian Curb Ramps - Curved	24-25
Item 570.3	Hot Mix Asphalt Curb Type 3	24-25
Item 602.15	Steel-Backed Timber Guardrail	26-28
Item 602.16	Steel-Backed Timber Guardrail Terminal Section Type SBT-FAT	26-28
Item 655.4	Split Rail Wood Fence	29

Item 655.5	Wood Railing	30-31
Item 673.	Fence Removed and Discarded	32
Item 695.	Transporting and Placing Granite Blocks	33
Item 697.1	Silt Sack	34-35
Item 701.	Concrete Sidewalk	36
Item 701.2	Cement Concrete Pedestrian Curb Ramp	37
Item 702.	Hot Mix Asphalt Sidewalk Or Driveway	38
Item 707.	Site Bench	39-42
Item 708.10	Roundabout Gateway	43-49
Item 716.30	Historic Sign	50-53
Item 724.1	Granite Station Pillar	54-55
Item 724.2	Granite Lettered Post	54-55
Item 724.3	Granite Mile Post	54-55
Item 724.4	Engraved Boulder	56-65
Item 724.5	Engraved Boulder - Habitat Management	56-65
Item 724.6	Boulder	56-65
Item 734.1	Private Sign Removed and Reset	66
Item 740.	Engineers Field Office and Equipment (Type A)	67
Item 748.	Mobilization	68

Item 751.	Loam Borrow	69
Item 756.	NPDES Stormwater Pollution Prevention Plan	70-72
Item 765.41	Seed Corridor Mix	73-77
Item 766.	Trail Maintenance Equipment	78-82
Item 767.121	Sediment Control Barrier	83-86
Item 767.122	Sediment Control Barrier Maintenance	83-86
Item 775.141	American Hazelnut 2-3 Feet	87-99
Item 777.329	Scrub Oak 12-18 Inch	87-99
Item 778.443	Tulip Tree 2.5-3 Inch	87-99
Item 789.333	Bayberry Shrub – Northern 2-3 Feet / #3	87-99
Item 790.633	Dogwood – Redosier 2-3 Feet / #3	87-99
Item 794.735	Summersweet Shrub 2-3 Feet	87-99
Item 804.3	3 Inch Electrical Conduit Type NM – Plastic (UL)	100
Item 824.01	Pedestrian Hybrid Beacons (Location No. 1)	101-114
Item 824.02	Pedestrian Hybrid Beacons (Location No. 2)	101-114
Item 825.21	Rectangular Rapid Flashing Beacon (AC Power) Location No. 1	115-119
Item 825.22	Rectangular Rapid Flashing Beacon (AC Power) Location No. 2	115-119
Item 832.	Warning- Regulatory and Route Marker- Alum Panel (Type A)	120
Item 847.1	Sign SUP (N/Guide)+RTE MKR W/1 Alum. Panel (Type A)	120

Item 832.2	Destination and Distance Sign	121
Item 837.1	MASS Central Rail Trail Construction Sign	122-124
Item 847.2	Sign Support – Round Post – Steel	125
Item 852.	Safety Signing for Traffic Management	126
Item 852.11	Temporary Pedestrian Barricade	127-128
Item 852.12	Temporary Pedestrian Curb Ramp	127-128
Item 853.1	Portable Breakaway Barricade Type III	129
Item 853.8	Temporary Illumination For Work Zone	130
Item 854.1	Pavement Marking Removal	131
Item 856.12	Portable Changeable Message Sign	132
Item 859.	Reflectorized Drum	133-134
Item 859.1	Reflectorized Drum With Sequential Flashing Warning Lights	133-134
Item 860.112	12 Inch Reflectorized White Line (Painted)	135-136
Item 861.104	4 Inch Reflectorized Yellow Line (Painted)	135-136
Item 864.	Pavement Arrow Reflectorized White (Painted)	135-136
Item 864.04	Pavement Arrows And Legends Refl. White (Thermoplastic)	135-136
Item 866.104	4 Inch Reflectorized White Line (Thermoplastic)	135-136
Item 866.112	12 Inch Reflectorized White Line (Thermoplastic)	135-136
Item 867.104	4 Inch Reflectorized Yellow Line (Thermoplastic)	135-136

Item 865.2	Pavement Surface Coating	137-141
Item 874.	Street Name Sign	142
Item 874.2	Traffic Sign Removed and Reset	143
Item 874.4	Traffic Sign Removed and Stacked	143
Item 878.	Trail Identification Sign	144
Item 999.001	Traffic Police	145

ITEM 102.1

TREE TRIMMING

FOOT

ITEM 103.

TREE REMOVED – DIAMETER UNDER 24 INCHES

EACH

The work under these items shall conform to the relevant provisions of Section 101 of the Standard Specifications and the following:

This work shall consist of cutting, removal and disposal of all vegetation and debris from areas either within or outside of the Right-of-Way as shown on the plans or designated by the Engineer. The work shall include the trimming of low hanging tree limbs in areas adjacent to the work zone, which may conflict with construction operations.

Method of Measurement and Basis of Payment

Tree trimming will be paid for at the contract unit price per foot, which price shall include all labor, materials, equipment and incidental costs required for the work.

Only trees that have a shortest diameter of at least 9 in. and less than 2 ft shall be included in Item 103. Trees Removed (Diameter Under 2 feet).

Trees or stumps to be removed which have the shortest diameter specified for payment will be measured in place by the following procedure:

Where the tree consists of a single trunk extending more than a 3 ft vertical height above the average natural ground line, the shortest diameter shall be measured at the 3-ft level above the average elevation of the original ground.

Any tree whose main trunk separates into multiple trunks or which has limbs or branches growing out from the main trunk below the 3-ft level defined hereinbefore shall have its shortest diameter measured at the lowest point on the main trunk where multiple growth or branching out begins.

The shortest diameter of a stump shall be measured at the cutoff except that where multiple growth begins below cutoff, the shortest diameter shall be measured at the main trunk where multiple growth begins.

Measurement for payment under the respective items shall be such that any individual growth to be classed as a tree stump shall be measured in a manner to limit payment to one single tree or stump at each particular location of the individual growth. When multiple trunks with a common root system are separated at ground level each separate trunk shall be considered as an individual growth under these specifications.

The quantity of trees or stumps to be paid for will be the number actually removed by the Contractor in the completed and accepted work as determined by count.

ITEM 102.1 & 103. (Continued)

Individual trees to be removed will be paid for at the contract unit price per each and shall include the stump and major root systems. Only trees having a shortest diameter of 9 in. and over as defined in 101.80: Method of Measurement shall be measured for payment.

The method of disposal of all materials shall be the responsibility of the Contractor and shall be approved by the Engineer. All methods of disposal shall be accomplished in accordance with all applicable Federal, State and local ordinances.

ITEM 120.

EARTH EXCAVATION

CUBIC YARD

The work under this item shall conform to the relevant provisions of Section 120 of the Standard Specifications and the following:

The work to be done under this item shall consist of excavation, stock piling and the reuse of or removal and legal disposal of any materials not being removed under some other item which is encountered within the limits of the Contract in accordance with the specifications and in close conformity with the lines, grades, thickness and cross sections shown on the contract drawings or established by the Engineer.

Earth excavation shall include any materials not included as Class A Rock Excavation or excavation which is otherwise classified and paid for.

Earth excavation shall also include as incidental to the general work the removal and disposal of material such as clay, bituminous concrete, sand, gravel, topsoil, muck, boulders less than 1 cubic yard, existing roadway surfaces, sidewalks, guardrails, fences and gates, anchors, steel bearings, steel posts and existing signs, including foundations and supports, not paid for under other contract items.

Disposal Of Excavated Materials

No excavated material shall be placed on DCR property without the approval of the Engineer or placed adjacent to DCR property without the approval of the Engineer and the property owner. All slopes shall be left with neat even surfaces, according to the lines, grades and directions given.

All unsuitable materials and surplus materials which cannot be used within the limits of the work shall be legally disposed of by the Contractor outside the limits of DCR property without additional compensation and in such a manner as to not obstruct streams or otherwise impair the drainage, appearance, safety or efficiency of any structure or any other part of the roadway.

No materials from the excavation, nor from construction, shall be deposited in flood plains nor within 100 feet of any body of water without compliance under the applicable provisions of the Massachusetts Wetlands Protection Act. Notification to the Engineer, in writing, will be required where such work has been authorized by the local Conservation Commission.

Replacement Of Excavated Material

If the Contractor wastes any excavated materials which are suitable and required as embankment material, select material or gravel sub-base, he shall furnish, at his own expense, similar materials obtained from borrow. Borrow materials shall be of satisfactory quality, in an amount equal to the amount of such materials wasted.

Method of Measurement and Basis of Payment

Earth Excavation will be measured in units of cubic yards in its original position by the cross section method or, only if not feasible, by the truckload or some other practicable method designated by the Engineer.

Part V

Page 3 of 145

ITEM 120. (Continued)

Earth Excavation will be paid for at the contract bid price per cubic yard, which price shall be full compensation for all materials, tools, equipment, removal off of Commonwealth property, storage of material, rehandling of material and labor incidental to and necessary for the completion of the work to the satisfaction of the Engineer.

No separate payment will be made for the off-site disposal of excavated material unsuitable for reuse in the proposed work, but all costs in connection therewith shall be included in the price bid for unclassified excavation.

ITEM 121.

CLASS A ROCK EXCAVATION

CUBIC YARD

The work under this item shall conform to the relevant provisions of Section 120 of the Standard Specifications and the following:

Method of Measurement and Basis of Payment

Rock Excavation will be measured to subgrade an allowance of a depth of 6 inches below the proposed excavation. Boulders which are to be included in the item for rock excavation will be measured at the point of removal.

ITEM 146.

DRAINAGE STRUCTURE REMOVED

EACH

The work under this item shall conform to the relevant provisions of Section 140 of the Standard Specifications and the following:

The work shall consist of the removal and stacking of iron castings. The plugging of inlets and outlets and the filling of all drainage structures designated to be abandoned and the removal of all masonry and filling the cavity of the drainage structures designated to be removed.

Method of Measurement and Basis of Payment

The unit of measurement for drainage structure removed will be each structure for each structure removed, complete.

Drainage Structures Removed will be paid for at the contract unit price each.

ITEM 151.

GRAVEL BORROW

CUBIC YARD

ITEM 156.

CRUSHED STONE

TON

The work under this item shall conform to the relevant provisions of Sections 150 and 170 of the Standard Specifications and the following:

Method of Measurement and Basis of Payment

Gravel Borrow will be measured for at the contract unit price per cubic yard, complete in place.

When measured by the cross-section method, borrow will be paid for as measured in place plus 25%.

No overhaul allowance will be made for any kind of borrow.

Crushed stone for drainage work complete in place will be measured by the ton.

Payment for the formation of embankments as specified will be included in the items of excavation or borrow. Excavated material used with the permission of the Engineer for other than the formation of embankments will be paid for as specified in Subsection 120.81 and such payment shall include full compensation for the formation of the required embankments. The contract unit prices for the aforesaid items shall constitute full compensation for the satisfactory performance and completion of the entire work.

Gravel borrow will be paid for at the contract unit price per cubic yard, which price shall include all labor, materials, equipment and incidental costs required for the work.

Crushed stone will be paid for at the contract unit price per ton, complete in place.

ITEM 170.

FINE GRADING AND COMPACTING

SQUARE YARD

The work under this item shall conform to the relevant provisions of Section 170 of the Standard Specifications and the following:

Method of Measurement and Basis of Payment

Fine grading and compacting of the subgrade will be measured by the horizontal square yard at the plane at the bottom of the subgrade in all areas where a subgrade was placed.

Payment for the shaping and compacting of the subgrade as specified herein shall be included in the item for Fine Grading and Compacting.

ITEM 180.01 ENVIRONMENTAL HEALTH AND SAFETY PROGRAM LUMP SUM

The work shall consist of ensuring the health and safety of the Contractor's employees and subcontracting personnel, the Engineer, their representatives, the environment, and public welfare from any on-site chemical contamination present in air, soil, water and sediment.

The Contractor shall prepare and implement a site-specific Environmental Health and Safety Plan (EHASP) which has been approved and stamped by a Certified Industrial Hygienist (CIH) and includes the preparer's name and work experience. The EHASP shall include appropriate components required by OSHA Standard 29 CFR 1910.120(b) and the Massachusetts Contingency plan (MCP) 310 CMR 40.0018 and must comply with all applicable state and federal laws, regulations, standards and guidelines, and provide a degree of protection and training appropriate for implementation on the project. The EHASP shall be a dynamic document with provision for change to reflect new information, new practices or procedures, changing site environmental conditions or other situations which may affect site workers and the public. The EHASP shall be developed and implemented independently from the standard construction HASP required to work on all MassDOT construction projects.

Health and safety procedures provided by the Contractor shall comply with all the appropriate regulations that address employee working conditions, including but not limited to standards established by OSHA and National Institute for Occupational Safety and Health (NIOSH). Equipment used for the purpose of health and safety shall be approved by and meet pertinent standards and specifications of the appropriate regulatory agencies.

A copy of the most up-to-date version of the EHASP shall be maintained on-site at all times by the Contractor. The on-site copy shall contain the signature of the Engineer and each on-site employee of the DCR, Contractor, and Subcontractors involved with on-site activities. The employee's signature on the EHASP shall be deemed prima facie evidence that the employee has read and understands the plan. Updated copies of signature sheets shall be submitted to the Engineer.

The EHASP shall specify a Contractor Site Safety and Health Officer responsible for implementation of the EHASP and to oversee all construction activities, including handling, storage, sampling and transport, which require contact with or exposure to potentially hazardous materials.

The level of protection, required to ensure the health and safety of on-site personnel will be stipulated in the EHASP. The Site Safety and Health Officer shall implement the EHASP based on changing site and weather conditions, type of operation or activity, chemical compounds identified on-site, concentration of the chemicals, air monitoring data, physical state of the hazardous materials, potential duration of exposure to hazardous materials, dexterity required to perform work, decontamination procedures, necessary personnel and type of equipment to be utilized.

ITEM 180.01 (Continued)

During implementation of the EHASP, a daily log shall be kept by the Site Safety and Health Officer and a copy shall be provided weekly to the Engineer. This log shall be used to record a description of the weather conditions, levels of personal protection being employed, screening data and any other information relevant to on-site environmental safety conditions. The Site Safety and Health Officer shall sign and date the daily log.

Method of Measurement and Basis of Payment

Preparation and implementation of the Environmental Health and Safety Program, including the monitoring, protection and storage of all contaminated materials, as well as subsequent modifications to the EHASP, will be measured and paid for at the Lump Sum Bid Price.

Payment of 50% of the Environmental Health and Safety Program contract price will be made upon the initial acceptance of the EHASP by the Engineer. Payment of the remaining 50% of the Environmental Health and Safety Program contract price will be made upon completion of the work. The bid price shall include preparation and implementation of the EHASP as well as the cost for its enforcement by the Site Safety and Health Officer along with any necessary revisions and updates. The work of implementing the Environmental Health and Safety Program includes work involving, but not limited to, the monitoring, protection, and storage of all contaminated materials.

ITEM 180.02**PERSONAL PROTECTION LEVEL C UPGRADE****HOUR**

The work shall consist of providing appropriate personal protective equipment (PPE) for all personnel in an area either containing or suspected of containing a hazardous environment.

Contingencies for upgrading the level of protection for on-site workers will be identified in the EHASP and the Contractor shall have the capability to implement the personal protection upgrade in a timely manner. The protective equipment and its use shall be in compliance with the EHASP and all appropriate regulations and/or standards for employee working conditions.

Method of Measurement and Basis of Payment

Personal Protection Level C Upgrade will be measured and paid only upon upgrade to Level C and will be at the contract unit price, per hour, per worker, required in Level C personal protection. No payment will be made to the Contractor to provide Level D PPE.

ITEM 180.03**LICENSED SITE PROFESSIONAL SERVICES****HOUR**

Within limited areas of the project site, soils, sediments and/or groundwater may be contaminated. A Licensed Site Professional (LSP) shall be required to provide the services necessary to comply with the requirements of the MCP. These services may include sampling, analysis and characterization of potentially contaminated media, preparation of Immediate Response Action (IRA) Plans, Utility-Related Abatement Measure (URAM) and Release Abatement Measure (RAM) Plans, Imminent Hazard Evaluations, status reports, transmittal forms, release notification forms, risk assessments, completion statements, and related documents required pursuant to the Massachusetts Contingency Plan (MCP). LSP hours related to the characterization and disposal of contaminated soil and/or sediment are incidental to the disposal items. An estimate of LSP services to be provided shall be submitted to the Engineer for approval before any LSP activity begins.

The name and qualifications of the LSP and all environmental technicians to be assigned to the project shall be submitted to the Engineer for approval at least four weeks prior to initial site activities. The LSP shall have a current, valid license issued by the Massachusetts Board of Registration of Hazardous Waste Site Cleanup Professionals. The LSP shall have significant experience in the oversight of MCP activities at active construction sites. Qualification packages for the LSP and each technician shall include a resume, all recent work assignments with responsibilities identified (previous 5 years), and applicable training and certifications. A list of all Notices of Noncompliance, Notice of Audit Findings and Enforcement Orders issued by the DEP shall be submitted for all work assignments listed for the LSP and environmental technicians.

The LSP shall evaluate soil and/or sediment with discoloration, odor, and presence of petroleum liquid or sheening on the groundwater surface, or any abnormal gas or materials in the ground which are known or suspected to be oil or hazardous materials. Excavated soil and sediment which is suspected of petroleum contamination shall be field screened using the jar headspace procedures according to established DEP Guidance. All field screening equipment must be pre-approved by the Engineer. The LSP shall ensure proper on site calibration of all field screening instrumentation.

The Engineer shall be contacted immediately when observations or any field screening results verify contamination requiring further analysis, and/or enhanced management of suspect soil and/or sediment. Any enhanced management of contaminated soil to ensure proper stockpiling and storage is incidental to the LSP Services item. The LSP shall adequately characterize subsurface conditions prior to backfill in areas where contaminated material has been excavated. The Engineer shall approve the locations of the testing sites prior to the sampling.

ITEM 180.03 (Continued)

Contaminated soil, sediment and/or groundwater shall be handled in accordance with all applicable state and federal statutes, regulations and policies. The LSP shall adequately characterize contaminated media for comparison to the requirements of the MCP. The Contractor and the LSP shall be aware of the reporting requirements for releases of oil and/or other hazardous material (OHM) as set forth in federal and state laws and regulations, and shall both be held responsible for performing the work in accordance with all applicable Federal and State laws and regulations. The LSP shall maintain written records in a clear and concise format which tracks the excavation, stockpiling, analysis and reuse/disposal of all suspect contaminated soils, sediments and groundwater. These records shall be up-to-date and available to the Engineer on a bi-weekly basis. The LSP shall review and summarize the laboratory data from any analyses performed on contaminated media. A report shall be delivered to the Engineer outlining the material sampling methods, laboratory analysis results and proposed course of action. The laboratory report together with Chain of Custody forms for all analytical results shall be submitted to the Engineer within 14 days after completion of such analyses.

The LSP and Contractor shall be held responsible for the submission of all MCP-related documents to the Engineer at least 14 days in advance of any timeframe specified in the MCP and for the timely submission of data and tracking information as noted within this Item. All documents prepared under this Item must be reviewed and signed by the approved LSP. The Contractor and LSP shall be responsible for all fines, penalties and enforcement requirements imposed by applicable regulatory agencies for failure to meet regulatory and contract timeframes. No compensation will be provided for such fines, penalties and enforcement actions.

The Contractor and the LSP shall be aware of the reporting requirements for releases of oil and/or other hazardous material (OHM) as set forth in federal and state laws and regulations, and shall both be held responsible for performing the work in accordance with all applicable Federal and State laws and regulations.

If the Contractor causes a release of OHM, the Contractor shall be responsible for assessing and remediating the release in accordance with all pertinent State and Federal regulations, including securing the services of a LSP, at his own expense.

The LSP shall coordinate all activities involving both MassDOT and the DEP through the Engineer. Any notification of release shall be approved by the Department before submittal to the DEP, except if an imminent hazard condition exists as defined in 309 CMR 4.03(4)(b).

Laboratory Testing in Support of LSP Services

Laboratory testing provides for analytical testing in support of LSP services related to maintaining MCP compliance, such as delineating the extent and type of contamination present. Sampling and testing for disposal purposes are not included.

ITEM 180.03 (Continued)

In order to maintain compliance with the MCP or other regulatory requirements, the LSP shall request approval from the Engineer to obtain samples from various locations and depths within the project area and to perform laboratory analyses on those samples. The samples shall be delivered to a DEP-

ITEM 180.03 (Continued)

certified laboratory using proper chain-of-custody documentation for analyses which, depending upon site conditions and suspected and/or identified contaminants of concern, may include, but are not limited to, metals, polychlorinated biphenyls (PCBs), volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, polycyclic aromatic hydrocarbons (PAHs), extractable petroleum hydrocarbons (EPHs) and volatile petroleum hydrocarbons (VPHs). Subsequent testing, depending upon initial results, may be required for Toxicity Characteristic Leaching Procedure (TCLP) analyses (EPA Method 1311) for metals.

Method of Measurement and Basis of Payment

LSP Services for work under this item will be measured per person, per hour of service provided by LSP, Environmental Technicians and other approved personnel. Travel time shall not be included in the billable hours. LSP hours related to soil/sediment disposal (disposal characterization, landfill acceptance, disposal package preparation, etc.) shall be incidental to disposal items.

The quantity and type of laboratory tests must be approved by the Engineer beforehand. The contractor will be reimbursed upon satisfactory written evidence of payment. The contractor may be required to obtain cost estimates from three DEP certified laboratories for the Engineer to choose the service provider. Laboratory testing related to soil/sediment disposal (disposal characterization, landfill acceptance, disposal package preparation, etc.) shall be incidental to disposal items.

LSP Services will be paid at the Contractor bid price for each hour, or fraction thereof, spent to perform the work as described above. The bid price shall be a blended rate that includes the cost of the LSP, environmental technicians and other personnel, the performance of all work tasks and field screening, including required equipment, materials and instrumentation, and production of all documentation described above. All requests for payment must be accompanied by the following information: the names of the personnel associated with the work charged under LSP Services, dates and hours worked, work conducted, including, where appropriate, locations as identified on the construction plans, and a copy of the field diary for the dates submitted.

Laboratory Testing will be reimbursed upon receipt of paid invoices for testing approved by the Engineer.

ITEM 191.
ITEM 191.10
ITEM 191.11
ITEM 193.

DRIVE SAMPLE BORING
HOLLOW STEM AUGER BORING
CORE BORING
MOBILIZATION AND DISMANTLING OF
BORING EQUIPMENT

FOOT
FOOT
FOOT
LUMP SUM

The work under these items shall conform to the relevant provisions of Section 190 of the Standard Specifications and the following:

The work under these items shall include mobilization and set-up of boring equipment, the drilling of hollow stem auger borings, drive sample borings and rock core borings, the retrieval of soil samples, the visual classification of the soil, the recording of boring logs and samples, and the dismantling and transporting of the equipment to and from each site.

Borings are required at two locations for proposed traffic signal mast arms. Locations are as follows:

- Main Street, Hudson south of Kane Industrial Drive, approx. STA 81+68, 11' RT
- Boston Post Road, Sudbury between Station Avenue and Maple Avenue, approx. STA 711+23, 09'RT

General

Hollow stem auger borings shall be taken at the locations of the proposed traffic signal foundations as shown on the plans and as directed by the Engineer. The Engineer shall be notified a minimum of 72 hours before borings are taken.

Two types of samples will be required in vertical soil borings:

1. Standard Sample. A standard penetration test using a split spoon sampler shall be made at the ground surface and at every change in soil stratum, but the sampling intervals shall not exceed 5 feet in a continuous stratum. The auger hole shall terminate at the required bottom elevation and a split spoon sample shall be taken at the bottom of the hole.
2. Supplement Sample. A volume sample shall be taken at 5-foot intervals in order to classify the subsurface soils with respect to grain size and visual classification as required. Each sample shall consist of the remainder of the spoon sample and shall be contained in quart jars appropriately labeled.

The purpose of this method along with its sampling procedure is to determine the visual properties, arrangement and thickness of the various soil strata as they exist in the ground. The elevations/depths at which any change in stratification occurs shall be located and recorded on the log by the driller. Detection of stratum changes should be made by careful observation of the soil as it exists in the augered hole and by the rate of penetration of the auger during drilling.

The auger casing I.D. shall be a minimum of 2-3/4 inches for all holes in which split spoon samples are required. The O.D. shall be a maximum of 7 inches to limit the size of the resulting hole.

Part V

ITEMS 191. THROUGH 193. (Continued)

Supplement Samples

The quart jar samples shall have positive identification of the contents by typewritten glued-on label.

The following information shall be shown:

1. Name and address of boring contractor
2. Date sample was taken
3. Location and name of project.
4. Location of borehole by station and offset or identifying number of borehole, if so identified on the plan.
5. Depth below ground surface at which sample was obtained and recorded blow counts of 6 inches of penetration of the sampler.

Upon completion of all borings, the Contractor shall submit two copies of the typewritten boring logs to the Engineer.

Obstructions

Obstructions other than ledge shall be considered in accordance with Sub-section 190.60E of the Standard Specifications. The actual location of the additional boring will be specified by the Engineer. When ledge is encountered, a rock core boring will be made in accordance with Sub-section 190.63 of the Standard Specifications.

Rock Core

If rock is encountered at an elevation above the specified highest bottom elevation, then a rock core boring will be made in accordance with Sub-section 190.63 of the Standard Specification. The core hole shall be large enough to accommodate the required auger casing so that sampling may be continued past the rock obstruction. The minimum cored depth shall be 10 feet.

Practical Refusal

Practical refusal of the sample spoon or "refusal" is as defined by Sub-section 190.60F of the Standard Specifications.

Due to the size of the resulting auger hole, it is particularly important that upon completion, all borings shall be backfilled with clean, well-graded sand and tamped to fill all voids created during the augering procedure.

ITEMS 191. THROUGH 193. (Continued)

Advancing the Boring for Soil Sampling

As the boring is advanced, care shall be taken to note and record the depth where wet soil is encountered if this should occur.

If groundwater is encountered then the water level in the hollow stem shall be maintained at the top of the casing at all times during the sampling operation to avoid unequal hydrostatic pressure that could result in blow-in of fine-granular soils and inaccurate blow counts.

In each boring the driller shall record the water level prior to backfilling and whenever possible, prior to the start of each day's work.

Each boring shall be advanced by using a hollow stem auger with cutting head and center rod and plug assembly. The hollow stem auger will advance and case the hole simultaneously to the required sampling levels. The center rod and plug assembly is held in place by the cap and inside drill rod connecting the auger and its assembly to the rotating spindle on the drilling machine to prevent soil from entering the mouth of the auger. Upon reaching the sampling level, the plug is to be retreated by withdrawing the center rod to permit lowering of the sampler through the auger.

The sample shall be obtained by driving the sampler 18 inches into the undisturbed material below the bottom of the auger. The sampling and handling procedure shall be as specified under Subsection 190.61 of the Standard Specifications.

After the sampling operations are completed and the sampler has been retracted, the plug is reinserted and held in place by the center rod; another auger section is connected to the first, together with one additional center rod section to secure the plug to the cap and the hole is advanced.

This procedure shall be repeated until the required bottom elevation is reached. The auger shall be stopped at any depth level to allow normal sampling practices upon request by the Engineer.

If, in the judgment of the Engineer, the borehole cannot be advanced by the hollow stem auger method due to the material encountered (with the exception of bedrock) and every attempt has been made by the driller to complete the boring using the conventionally cased, drive sample, wash boring method as specified in Section 190 of the Standard Specifications, then the borehole shall be cored.

Method of Measurement and Basis of Payment

Item 191., Item 191.10, Item 191.11, and Item 193. will be measured and paid per Subsections 190.80 and 190.81, respectively.

ITEM 205.

LEACHING BASIN

EACH

The work under this item shall conform to the relevant provisions of Section 200 of the Standard Specifications and the following:

Basins and inlets shall be built to the lines, grades, dimensions and design shown on the plans and as directed with the necessary frames, gratings, covers, hoods, etc., and in accordance with these specifications. The existing leaching basin frame and grate removed and stacked under Item 146. shall be set on the new leaching basin.

Frame castings for basins shall be set in full mortar beds true to the lines and grades as directed

Method of Measurement and Basis of Payment

Measurement for leaching basins will be based on a standard unit having a depth of 6.5 ft.

The accepted quantities of basins will be paid for at the contract unit price each, complete in place, which shall include crushed stone for weep holes and installation of the frame and grate. Payment for the concrete collars shall be included in the contract unit price of the structure involved.

ITEM 220.

DRAINAGE STRUCTURE ADJUSTED

EACH

The work under this item shall conform to the relevant provisions of Section 220 of the Standard Specifications and the following:

The work shall consist of rebuilding, removing, replacing, discarding and adjusting the masonry and castings of present structures, as required, to conform to newly proposed line and grade changes in accordance with these specifications and in close conformity with the lines and grades shown on the plans or established by the Engineer.

Method of Measurement and Basis of Payment

Drainage Structure Adjusted will be measured in place by the unit each, complete and approved.

Drainage Structure Adjusted will be paid for at the contract unit price each.

ITEM 252.12**12 INCH CORRUGATED PLASTIC PIPE****FOOT**

The work under this item shall conform to the relevant provisions of Section 230 of the Standard Specifications and the following:

This work shall consist of the construction of culvert storm drains, hereinafter referred to as “Pipe”, in accordance with these specifications and in close conformity with the lines and grades shown on the plans or established by the Engineer.

Method of Measurement and Basis of Payment

Pipes shall be measured in place and the quantity to be paid for shall be the length actually constructed as directed within the limits specified below.

For measurement purposes the end of pipe in closed structures shall be considered at the inside face of the wall and at masonry headwalls it shall be considered to be at the face of the headwall.

Corrugated Plastic Pipe includes testing and all other incidentals necessary to complete the work. All costs incurred by the Contractor attributable to testing and corrective action, including any delays, shall be borne by the Contractor at no cost to the DCR.

Pipe drains will be paid for at the contract unit price per lineal foot of the kind of pipe required, installed and complete in place. Corrugated plastic pipe shall include Gravel Borrow Type d backfill material.

Trench excavation and backfill for trenches 5 ft or less in depth for pipe drains shall be included in the various pipe items.

Gravel Borrow will be paid in accordance with Subsection 150: Embankment.

<u>ITEM 450.22</u>	<u>SUPERPAVE SURFACE COURSE – 9.5 (SSC-9.5)</u>	<u>TON</u>
<u>ITEM 450.32</u>	<u>SUPERPAVE INTERMEDIATE COURSE – 19.0 (SIC – 19.0)</u>	<u>TON</u>
<u>ITEM 451.</u>	<u>HMA FOR PATCHING</u>	<u>TON</u>
<u>ITEM 452.</u>	<u>ASPHALT EMULSION FOR TACK COAT</u>	<u>GALLON</u>
<u>ITEM 453.</u>	<u>HMA JOINT ADHESIVE</u>	<u>FOOT</u>

Work under these Items shall conform to the relevant provisions of Document 00717 SUPERPAVE REQUIREMENT, Section 450 of the SUPPLEMENTAL SPECIFICATIONS dated March 1, 2019 and the following:

Surface paving to be completed at the end of the project and as directed when it can be placed in its entirety.

Method of Measurement and Basis of Payment

Superpave surface course, superpave intermediate course and HMA for patching will be measured by the ton and shall be the actual pavement course quantity complete, in place and accepted by the Engineer. The quantity shall be determined by weight slips countersigned by the Engineer at the time of delivery.

Asphalt Emulsion for tack coat will be measured by the gallon.

HMA Joint Adhesive used for sealing all longitudinal joints and transverse joints in HMA pavement courses will be used by the foot.

Superpave surface course, superpave intermediate course and HMA for patching will be paid for at the contract unit price per ton of in-place mixture. Payment shall include transportation, delivery, placement and compaction of each HMA pavement course.

Asphalt Emulsion for tack coat will be paid for at the contract unit price per gallon of applied tack coat.

HMA Joint Adhesive will be paid for at the contract int price per foot of joint sealed.

ITEM 482.3**SAWCUTTING ASPHALT PAVEMENT****FOOT**

The work under this item shall conform to the relevant provisions of Section 120 of the Standard Specifications and the following:

The work shall include the sawcutting of existing asphalt pavements. Existing pavements to remain shall be sawcut at all project limits, openings for utility work, for new or reset curb and at all joints with proposed full-depth hot mix asphalt pavement, as shown on the plans and as directed by the Engineer.

Sawcut equipment shall be approved by the Engineer prior to commencing work.

The existing pavement shall be sawcut through its full depth, or to the elevation of the abutting proposed pavement subgrade, whichever is lesser, at all joints between existing and proposed pavements, and at all utility trenches through existing pavement to remain, to provide a uniform, vertical surface for the proposed pavement joint with the existing pavement.

Sawcut edges which become broken, ragged or undermined as a result of the Contractor's operations shall be re-sawcut prior to the placement of abutting proposed pavement at no additional cost to the Owner.

Sawcut surfaces in asphalt pavement shall be sprayed or painted with a uniform, thin coat of RS-1 asphalt emulsion immediately before placement of hot mix asphalt material against the surfaces. Sawcut surfaces abutting the proposed pavement top course shall be coated with hot-poured rubberized asphalt sealer.

Method of Measurement and Basis of Payment

Sawing asphalt pavement will be measured for payment by the foot on the pavement surface complete in place.

Sawing asphalt pavement shall be measured only once and shall be paid for under Item 482.4.

Sawing asphalt pavement will be paid for at the respective Contract unit prices per foot, which prices shall include all labor, materials, equipment, and incidental costs required to complete the work.

No separate payment will be made for tack coat, but all costs in connection therewith shall be included in the unit price bid.

Hot-poured rubberized asphalt sealer will be paid for under Item 464.5.

<u>ITEM 504.</u>	<u>GRANITE CURB TYPE VA4 – STRAIGHT</u>	<u>FOOT</u>
<u>ITEM 504.1</u>	<u>GRANITE CURB TYPE VA4 – CURVED</u>	<u>FOOT</u>
<u>ITEM 507.</u>	<u>INLAID GRANITE TOWN LINE MARKER</u>	<u>EACH</u>
<u>ITEM 509.</u>	<u>GRANITE TRANSITION CURB FOR</u>	<u>FOOT</u>
	<u>PEDESTRIAN CURB RAMPS – STRAIGHT</u>	
<u>ITEM 509.1</u>	<u>GRANITE TRANSITION CURB FOR</u>	<u>FOOT</u>
	<u>PEDESTRIAN CURB RAMPS - CURVED</u>	
<u>ITEM 570.3</u>	<u>HOT MIX ASPHALT CURB TYPE 3</u>	<u>FOOT</u>

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

This item of work shall consist of furnishing and setting curb on a gravel foundation and hot mix asphalt curb which is placed on a hot mix asphalt base, in accordance with these specifications and in close conformity with the lines and grades shown on the plans or established by the Engineer.

Inlaid Granite Town Marker shall be constructed in conformance with the details and dimensions and at the locations shown on the plans. Granite shall be carefully handled to prevent chipping, breakage, soiling or other damage. Pinch or wrecking bars shall not be used without the protecting edges of granite with wood or other rigid materials. Granite shall be lifted with wide-belt type slings; wire rope or other materials that may cause staining or damage to the granite finish will not be permitted.

Hot mix asphalt curb type 3, shall be constructed by means of an approved extrusion machine in conformance with the dimensions and at the locations shown on the plans.

Prior to placing the HMA curb, the surface shall be swept clean and RS-1 asphalt emulsion shall be applied to the surface.

Method of Measurement and Basis of Payment

The length of curb (except hot mix asphalt curb) shall be as measured along the front arris of the curb.

The quantity of hot mix asphalt curb to be paid for will be the length actually measured along curb at its lowest exposed edge.

Curb will be paid for at the contract unit price per foot, complete in place which shall include sawcuts made in existing pavement, cement concrete placed to set the curb or edging and all other work necessary to complete the installation. Curved granite curb shall include all curb cut to specified radius and set on curve.

ITEMS 504. THROUGH 570. (Continued)

Hot mix asphalt curb type 3 will be paid for at the Contract unit price per foot, which price shall include all labor, materials, equipment, and incidental costs required to complete the work.

Gravel borrow for the foundations and backfilling will be paid for at the contract unit price per cubic yard under the item for Gravel Borrow

ITEM 602.15
ITEM 602.16

STEEL-BACKED TIMBER GUARDRAIL
STEEL-BACKED TIMBER GUARDRAIL
TERMINAL SECTION TYPE SBT-FAT

FOOT
EACH

The work under these items shall conform to the relevant provisions of Section 600 of the Standard Specifications and the following:

The Timber guardrail terminal sections Type SBT-FAT located at the Assabet River Trail parking lot shall be ten (10) feet in length, all other details shall be constructed in conformance to the details on the plans.

The Contractor shall submit to the Engineer for approval, complete sets of shop drawings for materials. No materials shall be fabricated or shipped prior to approval of the shop drawings by the Engineer.

Product Information. Paint for wood guardrail graphic.

One full size sample of the wood guardrail carving and graphic, complete.

The work under this item shall conform to the relevant provisions of Section 600 of the Standard Specifications and the following:

The Contractor shall submit to the Engineer for approval, complete sets of shop drawings for materials. No materials shall be fabricated or shipped prior to approval of the shop drawings by the Engineer.

A Certificate of wood treatment shall be furnished to the Engineer upon delivery of the treated wood products. Treated wood shall bear the appropriate American Wood Preserves Bureau (AWPB) quality mark for the treatment employed. The certificate shall indicate acceptability of treated wood to receive field-applied stain.

Posts and offset blocks that contain unsound knots and shakes, excessive checking or other defects that may be detrimental to the structural integrity of the posts and offset blocks will be rejected and shall not be used in the proposed work.

Existing utility locations shall be verified in the field prior to starting this work. The Contractor shall provide the Engineer with a plan showing existing utility locations and elevations prior to undertaking this work. Post holes located within 24 inches of an underground utility measure from the bottom of post embedment shall be hand dug.

Materials

Wood Guardrail

Rails and posts shall be of the same timber species as the post, and shall be stress grade 1,000 psi or more, extreme fiber in bending.

ITEMS 602.15 & 602.16 (Continued)

Work under these items consist of constructing a timber post guardrail and terminal section guardrail at the locations specified on the drawings and as directed. Posts and rails shall be #2 southern yellow pine sawn lumber, cut to the dimensions shown on the drawings. Lumber shall be pretreated with the combination of ACQ preservative treatment and a built-in water repellent.

(Pretreatment with 0.40 CCA Salt Treatment will not be an acceptable pretreatment.) Hot-Dip Galvanized requirements for use with treated wood shall conform to the following ASTM Standards: ASTM-A153 (for Hot-Dip fastener products) and ASTM-A653 (Coating Designation G-185 for Hot-Dip connector and sheet products). Stainless steel hardware may be used in lieu of hot-dipped galvanized hardware

Posts and rails shall be predrilled and cut to the required dimensions prior to treatment.

Bolt holes shall be 1/16 inch larger than bolt thread diameter.

All treated posts shall be marked in accordance with AWWA Standards M1 and M6. The posts shall also be stamped with the Inspector's identification in accordance with AWWA Standard M2.

Steel Backing

Steel rails and splice plates shall be A709 Grade 36 steel and shall be zinc coated by the hot dip process. The zinc coating shall not be less than 2 ounces per square foot of surface area. Holes shall be drilled before application of the zinc coating. All hardware shall also be zinc coated.

Construction Methods

Installation

Posts shall be set in excavated holes at the required spacing. The spacing of posts shall be laid out in the field prior to excavating post holes. End and closure posts at bends shall be spaced a maximum distance of eight feet and a minimum of four feet.

The bottom of post holes shall be tamped to grade. Post shall be set plumb at the required location.

Post holes shall be backfilled with suitable material placed in layers and compacted.

Wood rails shall be erected to form a smooth continuous rail conforming to the required line and grade. Butt adjoining rail sections with a maximum separation between adjoining rail section of 1/4 inch.

Rails shall be butt jointed at alternate posts or as directed, and shall be securely attached with galvanized carriage bolts, at least two per rail per post, of sufficient length to secure with washer and nut. Hammering or other forceful method of inserting bolt shall not be used. Rail splices and terminal section connections shall occur only at posts.

Part V

Page 27 of 145

P19-3295-C1A – MCRT Sudbury to Hudson

ITEMS 602.15 & 602.16 (Continued)

Wood surfaces, cut or injured, and field boxed in wood posts or rails shall be brush treated with two applications of wood preservative using material of the same specifications as that used in the preservative treatment.

Method of Measurement and Basis of Payment

Steel backed timber guardrail will be measured for payment by the foot along the top rail from center to center of end posts, complete in place.

Steel backed timber guardrail will be paid for at the Contract unit price per foot, which price shall include all labor, materials, equipment and incidental costs required to complete the work.

Steel backed timber guardrail terminal section Type SBT-FAT will be measured and paid for at the contract unit price per each, which price shall include all labor, materials, equipment and incidental costs required to complete the work.

No separate payment will be paid for guardrail constructed on a radius, short guardrail post concrete anchors or terminal section concrete anchors, but all costs in connection therewith shall be included in the price bid.

The Contractor's attention is noted the steel plate is subject to the Steel Price Adjustment Clause as specified in Documents 00104 and 00813.

ITEM 655.4

SPLIT RAIL WOOD FENCE

FOOT

The work under this item shall conform to the relevant provisions of Section 600 of the Standard Specifications and the following:

This work of this item shall consist of the furnishing and installing split rail wood fence at the locations indicated on the plans or as directed by the Engineer.

Existing utility locations shall be verified in the field prior to starting this work. The Contractor shall provide the Engineer with a plan showing existing utility locations and elevations prior to undertaking this work. Post holes located within 24 inches of an underground utility measured from the bottom of post embedment shall be hand dug.

The post shall be red pine, treated in accordance with the requirements of AASHTO M133-86. The post shall have a diameter between five and six inches, a length of seven feet and have three openings, to receive the treated rails. The rails shall be southern yellow pine or poplar, treated in accordance with the requirements of AASHTO M133-86. The dimensions of the rails shall be eight feet long with paddle board end detail. The shape of the rails shall vary, with an average girth of fourteen inches.

The Contractor shall install split rail wood fence at the locations as shown on the plans or as directed by the Engineer. The split rail wood fence shall be installed conforming to the contour of the finished ground surface. Posts shall be installed plumb. Backfill around posts shall be thoroughly tamped and compacted. Rails shall be secured in place by toe nailing through the paddle board section of the rail into the post with a galvanized nail at each end.

Method of Measurement and Basis of Payment

Split rail wood fence will be measured per foot, end-to-end along the top of fence, of continuous sections installed in accordance with the plans, details and/or as directed by the Engineer.

Split rail wood fence will be paid for at the contract unit price per foot, complete in place which price shall include all labor, materials, equipment, excavation and backfill, posts, rails and incidental costs required to complete the work.

ITEM 655.5

WOOD RAILING

FOOT

The work under this item shall conform to the relevant provisions of Section 600 of the Standard Specifications and the following:

The work under this item shall consist of the installation of wood railing, as shown on the plans and as directed by the Engineer.

Submittals

The Contractor shall submit to the Engineer for approval a complete set of shop drawings, showing the layout of all fencing, including bolt holes.

Quality Assurance

Beams that contain unsound knots and shakes, excessive checking or other defects that may be detrimental to their structural integrity will be rejected and shall not be used in the proposed work.

Materials

Wood posts and rails shall be Eastern Spruce, 1450 grade or better, or other approved species. Wood shall be paintable pressure treated lumber in accordance with the requirements of the Standard Specifications of the American Wood Preservers Association (AWPA) and shall be marked to indicate the wood grade and preservative standard.

Rail and posts shall be cut to length and have bolt holes drilled before pressure treatment is applied. Precutting shall be accurately done as enlarging of the pre-drilled holes, or the boring of new holes, or the re-cutting of post and rail lengths, will not be permitted.

The lumber shall be in sound condition, free from worm holes, knots, longitudinal heart cracks, soft sap wood, fungus, and deformation (twisting or cupping) that cannot be removed during installation using normal installation methods and tools. Natural drying checks to a maximum of 1/8 inch width will be acceptable.

All connectors, fasteners, and hardware shall be either stainless steel type 304 or 316 alloy or shall be Hot-dip galvanized meeting the requirements of ASTM A153 and A123, with 2 ounces of zinc coating per square foot minimum. Fasteners, connectors, and hardware used together shall be of the same type.

Execution

Posts shall be set plumb in excavated holes at the line and grade shown on the plans. Post holes shall be backfilled with suitable material and thoroughly compacted in layers not exceeding 12 inches in depth.

The Contractor shall take care in the handling of the rails. Any damaged timbers shall be replaced by the Contractor at the discretion of the Engineer and at no additional cost.

ITEM 655.5 (Continued)

Wood rails shall be erected to form a smooth continuous rail conforming to the required line and grade. Butt adjoining rail sections with a maximum separation between adjoining rail sections of 1/16 inch.

Rails shall be butt jointed at alternate posts or as directed. Hammering or other forceful method of inserting bolt shall not be used.

Method of Measurement and Basis of Payment Wood Railing will be measured for payment by the foot along the top rail from center to center of end posts, complete in place.

Wood Railing will be paid for at the contract unit bid price per foot complete in place, which price and payment shall be full compensation for providing, cutting, installing the timber, excavation and back fill, all labor, materials, transportation, equipment and all other work and expense incidental thereto and necessary to complete the work and to the satisfaction of the Engineer.

ITEM 673.

FENCE REMOVED AND DISCARDED

FOOT

The work under these items shall conform to the relevant provisions of Sections 120 and 665 of the Standard Specifications and the following:

Work under these items shall involve removing existing fence, gates and gate posts as shown on the Plans and as directed by the Engineer. The work shall include the removal of all fence posts, foundations and appurtenances. Fence and fence features shall become the property of the Contractor.

Method of Measurement and Basis of Payment

Fence removed and discarded will be paid for at the Contract unit price per foot, which price shall include all labor, materials, equipment and incidental costs required to complete the work.

ITEM 695.

**TRANSPORTING AND PLACING
GRANITE BLOCKS**

EACH

The work under this Item shall conform to the applicable provisions of the Standard Specifications and the specific requirements stipulated below.

Work under this Item shall include all materials, equipment and labor needed for the removal, transporting and placement of historic granite block abutment/wall units located at the Eversource Substation property in Sudbury

Several 3-5ft long granite block units have been identified for reused within the project limits. The granite blocks shall be placed in the vicinity of Bridge 127. The final locations and orientation will be determined by DCR staff at the time of placement.

The contractor shall provide at least 48 hours advanced notice to ensure the proper staff is available the help direct the placement. The stones shall be set on a 4 in minimum compacted gravel base

The Contractor is required to protect all blocks within the work zone until such time they are properly set and approved by the Engineer. Any blocks damaged through lack of protection or carelessness by the Contractor shall be replaced at their expense.

METHOD OF MEASUREMENT

Item 695. Transporting and Placing Granite Blocks shall be measured for each individual granite block removed, transported and installed complete in place the designated location.

BASIS OF PAYMENT

Item 695. will be paid for at the Contract unit price per Each, which price shall include all labor, materials, equipment, and incidental costs required to complete the work.

Any gravel required for the compacted base will be paid for under Item 151.

ITEM 697.1**SILT SACK****EACH**

Work under this item shall conform to the relevant provisions of Section 227 and 670 of the Supplemental Specifications and the following:

The work under this item includes the furnishing, installation, maintenance and removal of a reusable fabric sack to be installed in drainage structures for the protection of wetlands and other resource areas and the prevention of silt and sediment from the construction site from entering the storm water collection system. Devices shall be ACF Environmental (800)-448-3636; Reed & Graham, Inc. Geosynthetics (888)-381-0800; The BMP Store (800)-644-9223; or approved equal.

Construction

Silt sacks shall be installed in retained existing and proposed catch basins and drop inlets within the project limits and as required by the Resident Engineer.

The silt sack shall be as manufactured to fit the opening of the drainage structure under regular flow conditions, and shall be mounted under the grate. The insert shall be secured from the surface such that the grate can be removed without the insert discharging into the structure. The filter material shall be installed and maintained in accordance with the manufacturer's written literature and as directed by the Engineer.

Silt sacks shall remain in place until the placement of the pavement overlay or top course and the graded areas have become permanently stabilized by vegetative growth. All materials used for the filter fabric will become the property of the Contractor and shall be removed from the site.

The Contractor shall inspect the condition of silt sacks after each rainstorm and during major rain events. Silt sacks shall be cleaned periodically to remove and dispose accumulated debris as required. Silt sacks, which become damaged during construction operations, shall be repaired or replaced immediately at no additional cost to the Department.

When emptying the silt sack, the contractor shall take all due care to prevent sediment from entering the structure. Any silt or other debris found in the drainage system at the end of construction shall be removed at the Contractors expense. The silt and sediment from the silt sack shall be legally disposed of offsite. Under no condition shall silt and sediment from the insert be deposited on site and used in construction.

All curb openings shall be blocked to prevent stormwater from bypassing the device.

All debris accumulated in silt sacks shall be handled and disposed of as described in Section 227 of the Standard Specifications.

ITEM 697.1 (Continued)

Method of Measurement and Basis of Payment

Silt sacks will be measured and paid at the Contract unit price per each, complete in place, which price shall include all labor, materials, equipment and incidental costs required to complete the work.

No separate payment will be made for removal and disposal of the sediment from the insert, but all costs in connection therewith shall be included in the Contract unit price bid.

ITEM 701.**CONCRETE SIDEWALK****SQUARE YARD**

The work under this item shall conform to the relevant provisions of Section 701 of the Standard Specifications and the following:

Concrete sidewalk shall be 6” thick, reinforced air-entrained concrete with minimum 28-day compressive strength of 4,000 pounds per square inch, conforming to the requirements and applicable provisions of M4.02. Concrete shall be air-entrained 7 percent minimum +/-1 percent, by volume. Concrete shall have a slump of 2 inches to 4 inches. Aggregate size shall be a maximum of 3/4 inches

Welded wire fabric (WWF) reinforcement shall conform to the applicable requirements of ASTM A 185. Fabric reinforcement shall be furnished in flat sheets. Fabric reinforcement in rolls will not be permitted. Provide 6 inches x 6 inches W2.9 x W2.9.

Method of Measurement and Basis of Payment

Item 701. will be measured and paid as per Subsections 701.80 and 701.81.

ITEM 701.2 CEMENT CONCRETE PEDESTRIAN CURB RAMP SQUARE YARD

The work under this item shall conform to the relevant provisions of Section 701 of the Standard Specifications and the following:

Concrete score lines as specified in Section 701 shall be continuous throughout the pedestrian curb ramps.

Detectable warning panels shall be yellow in color.

Method of Measurement and Basis of Payment

Item 701.2 will be measured and paid as per Subsections 701.80 and 701.81.

No separate payment will be made for the detectable warning panels, but all costs in connection therewith shall be included in the unit price bid.

ITEM 702.**HOT MIX ASPHALT SIDEWALK OR DRIVEWAY****TON**

The work under this Item shall conform to the relevant provisions of Section 701, and Sections 450 and 455 of Document 00717 and to the following:

For sidewalks, the surface course shall be a compacted thickness of 1-1/4 inch Superpave Surface Course - 9.5 (SSC-9.5). The intermediate course shall be a compacted thickness of 1-3/4 inches Superpave Intermediate Course - 12.5 (SIC-12.5).

All Superpave HMA mixtures under this item shall be either 50 or 65 gyration mixtures. This item shall not be subject to the Quality Assurance requirements of Section 450 Hot Mix Asphalt Pavement.

Existing pavements shall be sawcut in accordance with the requirements of Subsection 450.57 as shown on the plans and as required by the engineer.

Method of Measurement and Basis of Payment

Item 702. will be measured and paid as per Subsections 701.80 and 701.81 including all sawcutting.

ITEM 707.

SITE BENCH

EACH

The work under this item shall conform to the relevant provisions of Sections 150 and 170 of the Standard Specifications and the following:

Description

The work of this section consists of furnishing and installing wood benches at the locations shown on the Plans and/or as directed by the Engineer.

Materials: All Materials shall be in accordance with the applicable sections of the Standard Specifications, unless otherwise specified below.

Submittals: Submit manufacturers' product data and written instructions for each type of item describing dimensions, materials, color, finish, handling and installation procedures.

Products: Benches shall be 6' long with wood slats and shall include backs.

Manufacturer: DuMor, Inc. (or approved equal),

Style: Park Bench with Back. To match the design of the bench as shown on the bench detail and the DCR Site Furnishing Standards "Oceanfront Reservations"

Part No.: Model 121 Series

601 Back option: Backed

Seat and Back: Wood: Slats shall be Douglas Fir.

Framework: 1-1/2" x 6" steel bar support. All welds shall be continuous and ground smooth.

Anchoring: Mounting hardware shall be 1/2" x 3 3/4" PLTD. galvanized expansion anchor. Four (4) per

bench. Finish

on Metal

Primer: Zinc-rich epoxy

Baked on polyester powder

coating. Color shall be "BLACK"

color.

ITEM 707. (Continued)

Finish on Wood:

Stained Mounting:

Surface mount

Construction Methods: Install per the manufacturer's instructions for surface mounting.

Quality Assurance

Grading Agency: National Lumber Grading Authority. Identify lumber by official grade mark.

Lumber: Grade stamp containing symbol of NLGA, rules under which graded, mill number or name, grade of lumber, species or species grouping, and condition of seasoning.

Submittals

Submit complete Shop Drawings of wood benches for approval by the Engineer.

Submit certification that the lumber for the bench seat is Forest Stewardship Council certified.

Samples: 12 inch long sample of bench seat lumber with specified finish for review and approval.

References and Standards

The following standards shall apply to the work of this Section: Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.

1. SSPC Steel Structures Painting Council (SSPC):

2. Federal Standards

Standard No. 595B, Colors Volume 1

3. ASTM American Society for Testing and Materials

D523-89 Standard Test Method for Specular Gloss

D4541-95e1 Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers

D4285-83 Standard Test Method for Indicating Oil or Water in Compressed Air

D3359 Standard Test Method for Measuring Adhesion by Tape Test

D3363 Standard Test Method for Film Hardness by Pencil Test

ITEM 707. (Continued)

Project Conditions

The complete coating system shall be applied in an enclosed shop except for field touch-up painting which shall be applied after items have been installed in accordance with the requirements of the various Sections of this Specification. The enclosed shop shall be a permanent facility with outside walls to grade and a roof where surface preparation and coating activities are normally conducted in an environment not subject to outdoor weather conditions and/or blowing dust.

Quality Assurance Source:

The same coating material manufacturer shall furnish all materials for the complete coating system. Intermixing of materials within and between coating systems will not be permitted. Thinning of paint shall conform to the manufacturer's written instructions.

Where manufacturer makes more than one grade of any material specified, use the highest grade of each type, whether or not the material is mentioned by trade name in this Section.

Include on labels of all containers the manufacturer's name, the product name and number, the color and batch number.

Closeout Submittals

Furnish one quart of finish coat of paint used. Manufacturer's cleaning instructions for thermoplastic surfaces.

Bench Installation

Bench locations shown on the plans are approximate only. All final locations shall be approved in the field by the DCR Landscape Architect prior to fastening to the concrete sidewalk. Install benches plumb, and square. Anchor benches to cement concrete base with stainless steel anchor bolts.

Field Touch Up

Outdoor Temperature and Conditions: Air and surface temperature shall be between 50 degrees Fahrenheit and 90 degrees Fahrenheit. Surfaces shall be dry within limits of finish system manufacturer.

Do not paint exterior surfaces while surfaces are exposed to the hot sun.

Final Inspection: Protect painted surfaces against damage until date of Substantial Completion. Engineer will conduct final inspection of painting work. Areas that do not comply with

ITEM 707. (Continued)

requirements of these Specifications shall be re-thermoplastic or retouched to satisfaction of Engineer at no additional cost to Owner.

Measurement and Payment

Site bench shall be measured by each, complete in place.

Site bench will be paid for at the contract unit price per each unit, which price shall include all labor, material, equipment and incidental costs required to complete the work.

No separate payment will be made for lumber, bench hardware, steel components, galvanizing, paint and finish products, adhesive, anchors or field touch ups, but all costs in connection therewith shall be included in the contract unit price bid.

ITEM 708.10**ROUNABOUT GATEWAY****LUMP SUM**

The work under this item shall conform to the relevant provisions of Sections 685 and 690 of the Standard Specifications and the following:

The work under this Item shall consist of the construction of a Roundabout Gateway feature comprised of Engraved Granite Block Walls, Timber Railroad Ties, Reset “diamond crossing” Rail Artifact, Railroad Ballast Stone, Concrete Footings and Subgrade Materials.

The Granite Block Wall masonry consisting of granite blocks with a thermal finish on all exposed faces and bullnose radius on all exposed edge. The seat wall segments of granite are to be curved and as dimensioned on the plans.

Submittals

The Contractor shall submit the following Shop Drawings, samples, and manufacturers information to the Engineer for approval:

Manufacturer’s information: submit manufacturer’s literature, brochures and/or specifications for the following:

- Granite
- Anchoring hardware
- Grout for joints
- Timber Railroad Ties
- Railroad Ballast Stone
- Lithochrome color agent for engravings

Shop Drawings:

Submit detailed shop drawings and fabrication details for Granite block wall with engraving. Provide plans, sections, and details as required to completely show materials, layout, jointing, clearances and connections for all items required for each type of granite installation.

Submit detailed shop drawings and fabrication details for the Timber Railroad Ties and reset “Diamond Crossing” Rail Artifact assembly.

Shop drawings shall include details of each stone piece, cross sections, elevations showing layout of all pieces, sizes, dimensions, finishes, arrangement and provisions for jointing.

Shop drawings shall indicate the setting number of each piece, and each piece shall bear the corresponding number in a non-staining paint.

ITEM 708.10 (Continued)

Shop Drawings for items requiring accurate dimensional relationships to as-built construction, shall be prepared following a review and confirmation of as-built measurements and conditions for areas scheduled to receive site improvements.

Samples:

- Surface Finish and Stone samples: Prior to the submission of any fabricated sample, submit one (1) stone with each type of surface finish and stone color sample for approval by the Engineer. The sample shall be 1 foot square of the specified granite, which shall meet all of the finish requirements as described in the Construction portion of this specification.
- Samples shall fully demonstrate color, shade, veining, texture, range, and dimensional cut.
- Submit color samples for grouted joints.
- Submit 1 Gallon bucket of Railroad Ballast for approval

Materials

Granite for Granite Seat Wall and Granite Steps shall be sized as indicated on the Drawings.

Granite shall be 'Saint Sebastien' Provide samples for DCR to confirm selection.

Granite shall be obtained from one of the following sources or approved equivalent:

- Fletcher Granite, 1-800-253-8168
- Williams Stone Company, East Otis, MA 01029, 800-832-2052, www.WilliamsStone.com
- Swenson Granite Works, 603-225-4322

Use only one source for each type of granite throughout the entire Project.

All granite shall be structural granite, Engineering Grade, hard, and durable and shall conform to the requirements of ASTM C119 and C 615, Architectural Grade and NBGQA Specifications, possess physical characteristics as specified under C615 (Table 1) except as modified herein Test samples of granite shall conform to the following requirements:

Abrasion: 86.0 Ha

Absorption: 0.31% (average)

Compressive strength:23,100 psi (average)

ITEM 708.10 (Continued)

Modulus of rupture: 2,800 psi (average)

Granite shall be standard grade, free of cracks, seams, starts, or other defects which may impair its structural integrity, strength, durability or appearance, and shall be of smooth splitting character. Natural variations characteristic of the deposit will be permitted for granite pieces. Exposed surfaces shall be free from spots, spalls, chips, stains, discoloration, or other defects which would affect its appearance.

All granite for the Block Wall shall be from the same quarry and fabricated by the same fabricator.

Sawn faces shall be sawn to true planes. Maximum variation in thickness shall be 3/8 in. Sawn surfaces shall be cleaned of markings, rust stains and iron particles prior to installation. All sides shall be sawn. All exposed surface of granite shall have a thermal finish and bullnose radius on all exposed edges.

Granite shall be cut accurately to required shapes and dimensions as shown on the plans. Individual units shall be of lengths generally as indicated on the Drawings. All radii shall be true. Arises shall be cut sharp and true to square, and continuous with adjoining arises. Where exposed, arises shall be eased.

Timber Railroad Ties shall be 8'-6" x 9" x 7" untreated rot resistant tropical hardwood to be Mora, Azobe (Ecki) or Greenheart species

Salvaged "Diamond Crossing" rail is stockpiled on site and is provided as is by DCR.

Bolts, nuts, cut spikes, steel tie plates furnished by the Contractor shall conform to the material, size and dimension requirements consistent with the "Diamond Crossing" age and standard historical rail system.

Rail shall be fully box anchored as shown on the plans.

Ballast for the diamond crossing shall be furnished and installed by the Contractor and shall be either traprock or granite and shall be broken into angular fragments in accordance with these Specifications. The percentage, by weight, of ballast finer than each sieve shall be within the following limits:

ITEM 708.10 (Continued)

Nominal Sieve Size Square Opening	Percent Passing
2"	100
1-1/2"	90-100
1"	20-55
3/4"	0-15
3/8"	0-5

Ballast shall be washed and be free from dirt, loam, dust, or rubbish before delivery to site.

INSTALLATION

Erect all stone masonry work in compliance with line and level tolerances indicated on the Drawings.

Lay no exposed unit having chipped edges or face defects. Remove any such unit, if installed, and replace with an undamaged unit, and bear all costs of this Work.

No visible cutting and patching will be accepted in the finished work. Deliver inserts and other anchorage items required to be cast into concrete.

Provide protection against breakage and weather damage to all stone masonry work.

Take special care to avoid soiling or staining masonry that is to remain exposed in finish work.

Stonework

Clean stone before setting by scrubbing with fiber brushes followed by a thorough drenching with clear water. Use only mild cleaning compounds that contain no caustic or harsh fillers or abrasives.

Dress joints straight and at 90-degree angle to face unless otherwise shown or required.

Cut stonework to provide uniform joint widths. Cut stonework to allow for uniform 3/8-inch wide joints, unless otherwise shown.

ITEM 708.10 (Continued)

Rake out joints to a depth as noted on the drawings, or 0.25 inch deep if not otherwise indicated, before mortar sets to allow for mortar pointing. Clean face of stone after raking. After mortar is set, wet raked joints thoroughly and force pointing mortar into joints. Tool joints slightly concave. Provide pointing mortar using specified materials in colors approved by Engineer.

Stone Repair and Cleaning

Remove and replace stone units that are broken, chipped, stained or otherwise damaged. Where directed, remove and replace units that do not match adjoining stonework. Provide new matching units, install as specified and point-up joints to eliminate evidence of replacement.

All stone work shall be cleaned thoroughly to remove stains, excess mortar, dirt and other discoloration or blemishes.

Prepare an approximately 2 square foot sample area for each cleaning application for approval by Engineer prior to proceeding with the balance of cleaning work.

Tolerances for Installation of Stone

Variation from Plumb: Do not exceed 1/8 inch in 10 feet or more.

Variation from Level: Do not exceed 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 3/8 inch.

Variation in Joint Width: Do not vary joint thickness more than 1/8 inch in 36 inches or one-fourth of nominal joint width, whichever is less.

Variation in Plane between Adjacent Surfaces (Lipping): Do not exceed 1/16-inch difference between planes of adjacent units or adjacent surfaces indicated to be flush with units.

Mortar Proportioning and Mixing

Mortar grout for pointing of joints shall be proportioned and mixed in conformance with M4.02.15 of the Standard Specifications.

Install stonework using skilled workmen. Stone work shall be installed by a single contractor or sub-contractor.

Unless otherwise noted, joints between stones, and joints between stones and other materials shall be 3/8 inch wide. Tool exposed joints when thumbprint hard with a sled-type concave stainless steel jointer at least 16 inches long. At completion of work, cut out and repoint all holes and defective joints.

Cushions or pads used in the setting of the stone shall be 1/2 inch thick or as otherwise noted to maintain joint widths and kept back 1/2 inch from the stone faces. Under no circumstances shall stone bear on stone directly.

ITEM 708.10 (Continued)

Keep face of stone work free of mortar and protected against damage at all times. Remove excess mortar promptly.

Mortar Set Horizontal Bedding

Place the properly prepared relatively dry mix mortar bed over the concrete slab to the approved thickness. Lay the stone on the dry mix, mallet the top and lift the stone. Fill voids and other irregular surfaces and screen the surface to the proper elevation.

Just prior to the final setting, cover the mortar bed with a thin uniform layer of the slurry bond coat.

Each stone shall then be lowered on to the bed in such a manner to eliminate entrapped air. After seating, tap the stone with the rubber mallet to its final location and elevation. Remove mortar dropping on the stone as it occurs with a clean sponge and water. Allow a 3/8" caulking space between stones and adjacent butting materials or surfaces.

Anchor granite units to concrete as detailed. Install granite units in sequence fashion with dowels as detailed. Maintain joint widths. Set buttons under and between stones to maintain joint widths.

Grouting

Grout metal items embedded or built into masonry work solidly with grout or mortar materials.

Adjusting Stone Pieces

Remove and replace stained and otherwise damaged stone units and stone units not matching approved Samples. Stone pieces may be repaired if methods and results are approved by the Engineer.

Replace units in a manner that results in stone pieces matching approved Samples, complying with other requirements, and showing no evidence of replacement.

Cleaning of Work

During the progress of the Work, keep the exposed surfaces of stone masonry clean at all times and protected against damage. As each segment of the new masonry is erected, dry-brush the surfaces free of mortar spots and dropping. Remove mortar fins and smears from masonry before tooling joints.

Final Cleaning

Submit proposed cleaning procedures and cleaning materials to the Engineer for approval before commencing work. Test cleaning methods on sample wall panel; leave 1/2 panel uncleaned for

ITEM 708.10 (Continued)

comparison purposes. Obtain the Engineer approval of sample cleaning before proceeding with cleaning of masonry. General cleaning shall not commence until the test area has been approved by the Engineer.

All cleaning operations shall proceed from the top down.

Railroad “Diamond Crossing” Artifact

Railroad artifact to be cleaned and cut / ground to size / form as shown on Drawings. All sharp edges shall be made smooth.

METHOD OF MEASUREMENT

Item 708.10. will be measured for payment by Each roundabout gateway feature complete in place.

BASIS OF PAYMENT

Item 708.10. will be paid for at the Contract unit price per Each, which price shall include all labor, materials, equipment, and all incidental costs required to complete the work

ITEM 716.30

HISTORIC SIGN

EACH

DESCRIPTION

The work performed under this Item shall conform to the relevant provisions of Section 700 of the MassDOT Standard Specifications and the following:

GENERAL

The Contractor shall furnish all labor, materials, and equipment necessary or required to furnish and install HISTORIC SIGN in accordance with the plans, specifications, and directions of the Engineer.

MATERIALS

Signs shall be of a single model supplied by a single manufacturer and shall be powder-coated steel with Custom High-Pressure Laminate panel. Signs shall be installed as shown on the drawings. Manufacturers of HISTORIC SIGNs submitted that are not as listed in this specification shall meet the character, material, durability and accessibility requirements of the specified sign.

The Contractor shall note that the sign listed below has been specifically selected for quality of workmanship and appropriateness of style to the project. Any product submitted as an “equal” must be reviewed and accepted by the Owner.

Quality Assurance

Manufacturer

Qualifications:

Minimum 10 years’ experience in the manufacture of signage.

Submittals: The Contractor shall submit a completely dimensioned Shop Drawing for the sign for approval a minimum of twelve (12) weeks prior to proposed installation showing details of fabrication, construction, etc., including specifications for panel and steel material. Shop drawings shall indicate mounting method and detail describing all hardware and/or other required installation materials.

The Contractor shall submit Manufacturer’s literature indicating material specifications including color samples for supports and finish samples of panel.

The Contractor shall submit a 12”x12” square sample of panel illustrating image and indicating finish. Submit sample of steel frame with selected finish.

The Contractor shall submit the Manufacturer’s standard warranty.

ITEM 716.30 (Continued)

DELIVERY, STORAGE, AND HANDLING

Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.

Storage: Store materials in clean, dry area in accordance with manufacturer's instructions. Keep materials in manufacturer's original, unopened containers and packaging until installation.

Handling: Protect materials and finish during handling and installation to prevent damage.

WARRANTY

Products will be free from defects in material and/or workmanship for a period of three years from the date of invoice.

MATERIALS

Shall be the NPS Style Double Traditional (Cantilever) Pedestal as manufactured by the following, or approved equal:

Fossil Industries,
Inc. 44 Jefryn
Boulevard Deer
Park, NY 11729
Tel: (631) 254-9200 ext.319
Fax: (631) 254-4172
Email: LindaP@FossilGraphics.com
Website: www.FossilGraphics.com

Panel Size:

1. Length:36 inches
2. Width:24 inches
3. Thickness: ¼ inch
4. Angle: 45 degrees

Graphic Panel

1. Graphics must be manufactured as Custom High Pressure Laminate (CHPL). CHPL graphic sign material is composed of several layers of phenolic resin impregnated kraft filler paper, a custom imaged graphic, a layer of melamine resin, surfaced by a layer of translucent exterior UV / graffiti overlay protection. The entire panel, including exterior overlay, must be bonded under heat and extreme pressure to form a composite panel. The finish must be smoothly textured with reflectivity of 25 + or - 5 gloss units. The CHPL graphics must be warranted for a minimum of 10 years against fading, de-lamination and weather deterioration. There should be no warranty

Part V

ITEM 716.30 (Continued)

requirements for an annual application of water sealant, no exclusions for panels used in “extreme temperatures” and no clause that warranties can be denied due to “improper maintenance”. Panels must be able to be cleaned with any solvent and not restrict use of products containing lacquer thinner or acetone. All cutting and finishing to be done using a CNC router. Graphics must be made using 12-Color High Definition printing technology. Vendor shall provide a sample from a supplied file to confirm quality. Panels must be entirely made in the U.S.A.

2. Color Sample/Proofs of graphic panel to be provided to Owner/Landscape Architect for approval.
3. Graphic shall be supplied by Owner. Graphics for all signs shall be identical except that Owner may include a “You Are Here” location marker.

Frame and supports:

Galvanized structural steel tubing as per ASTM
A500 2”x 2” x 1/4” thickness for mid-rail and
top rail
2” x 4” x 5/16” thickness for vertical supports

1. Height: 30 inch legs
2. Angle: 45 degrees

Mounting Plate: Galvanized steel plate – 7” x 9” x 1/2”

Finish: Powder-coat. Color: Black.

Mounting: Sign to be surface-mounted as per detail

Mounting Hardware: Stainless Steel Expansion Anchors. Hardware shall be painted to match steel powder-coat finish after installation.

CONSTRUCTION METHODS

EXAMINATION

Examine areas to receive signs.

Notify Engineer of conditions that would adversely affect installation or subsequent use. Do not begin installation until unacceptable conditions are corrected.

ITEM 716.30 (Continued)

INSTALLATION

Install signs in accordance with manufacturer's instructions at locations indicated on the Drawings and as directed by the Resident Engineer and the Landscape Architect.
Install signs plumb and vertical on concrete foundations. Anchor securely in place.

ADJUSTING

Finish Damage: Repair minor damages to finish in accordance with manufacturer's instructions and as approved by Engineer.

Component Damage: Remove and replace damaged components that cannot be successfully repaired as determined by Engineer.

CLEANING

Clean signs promptly after installation in accordance with manufacturer's instructions. Do not use harsh cleaning materials or methods that could damage finish.

PROTECTION

Protect installed signs to ensure that, except for normal weathering, signs will be without damage or deterioration at time of Substantial Completion.

COMPENSATION

Method of Measurement

Measurement for HISTORIC SIGN shall be by the unit EACH, furnished and installed, including footings in accordance with the plans, specifications, and directions of the Engineer.

Basis of Payment

Payment shall be per the unit price for each HISTORIC SIGN and shall include the cost of all labor, materials, equipment, and all incidental expenses necessary to complete the work, including frames, hardware, powder-coating, foundation and installation hardware, fully installed, all in accordance with the plans and specifications, to the satisfaction of the Engineer.

<u>ITEM 724.1</u>	<u>GRANITE STATION PILLAR</u>	<u>EACH</u>
<u>ITEM 724.2</u>	<u>GRANITE LETTERED POST</u>	<u>EACH</u>
<u>ITEM 724.3</u>	<u>GRANITE MILE POST</u>	<u>EACH</u>

The work under these items shall include the furnishing and installation of granite station pillars, granite lettered posts and granite mile posts as shown on the plans and as directed by the Engineer.

Materials

- a. Granite shall conform to the requirements of ASTM C-615.
- b. Granite shall be standard grade, free of flaws, reeds, rifts, laminations, cracks, seams, starts or other defects which may impair its strength, durability or function. Exposed surfaces shall be free from spots, spalls, chips, stains, discoloration or other defects which are not within the approved sample range and would affect its appearance.
- c. Granite shall be color Chelmsford Grey or approved equal, as approved by DCR landscape architect. Granite shall be cut to the dimensions and with finishes as indicated on the plans.
- d. Granite Station Pillars shall be lettered on two opposite sides. Text shall be 2-1/2” high. Font shall be “Mrs. Eaves” or approved equal, as approved by DCR landscape architect, painted black.
- e. Granite Lettered Posts shall be lettered on one side only facing street. Text shall be 3” high. Font shall be “Mrs. Eaves” or approved equal, as approved by DCR landscape architect, painted black.
- f. Granite mile posts shall be equipped with a removable granite tile containing the mile number. The granite tile shall match the color and texture of the granite mile post and shall be free from veins to prevent splitting. The tile shall be recessed into the granite mile post. The tile shall be attached to the granite mile post in a manner that will deter removal of the tile by vandals.

Layout

The Contractor shall stake the locations of the proposed granite pillars and posts for review by DCR landscape architect and approval of the Engineer, prior to installation.

Construction Methods

Prior to installation, granite shall be stored on wood skids or pallets, covered with non-staining, waterproof membrane and protected from the weather. Granite shall be stored to allow air to circulate around the material and shall not be permitted to be in direct contact with the ground at any time during storage.

Granite shall be carefully handled to prevent chipping, breakage, soiling or other damage. Pinch or wrecking bars shall not be used without the protecting edges of granite with wood or other rigid materials. Granite shall be lifted with wide-belt type slings; wire rope or other materials that may cause staining or damage to the granite finish will not be permitted.

ITEMS 724.1 724.2 & 724.3 (Continued)

Damaged granite shall be replaced with new stone at no additional cost.

The contractor shall excavate a hole to the lines and grades necessary to install the granite mile posts to the depth as indicated on the drawings. Granite mile posts shall be set plumb with lettered markings facing north/south parallel to the bikeway as indicated on the drawings. After setting the granite mile post, the contractor shall backfill the hole with gravel borrow in six-inch lifts, compacting the gravel with each lift. The contractor shall take precautions to keep the granite mile post plumb during backfill and to avoid damaging the granite at all times.

Granite posts and pillars shall be set to the lines and grades as indicated on the drawings.

Submittals

Prior to ordering granite posts and pillars, the contractor shall provide the Engineer with sample pieces of granite and shop drawings, that demonstrate the color, shade, veining, texture, finish, text font and size to be used for approval. No granite shall be ordered prior to receiving material approval from the Engineer.

Method of Measurement and Basis of Payment

This work will be paid for at the contract unit price each for Granite Station Pillar, Granite Lettered Post and Granite Mile Post complete in place which price shall include all labor, material, equipment and incidental costs required to complete the work.

No separate payment will be made for removable granite tile, excavation, backfill and cleaning granite surfaces, but all costs in connection therewith shall be included in the unit price bid.

<u>ITEM 724.4</u>	<u>ENGRAVED BOULDER</u>	<u>EACH</u>
<u>ITEM 724.5</u>	<u>ENGRAVED BOULDER - HABITAT MANAGEMENT</u>	<u>EACH</u>
<u>ITEM 724.6</u>	<u>BOULDER</u>	<u>EACH</u>

The work under this item shall conform to the relevant provisions of Sections 150 and 170 of the MassDOT Standard Specifications and the following:

The work consists of furnishing and installing all granite landscape features, engraving recessed lettering and graphics into select boulders, lithichrome staining of engravings, and related items as indicated on the Drawings and/or as specified herein.

REFERENCES

Unless otherwise specified or indicated, materials and workmanship shall conform with the latest edition of the following standards, codes, specifications, requirements and regulations:

1. ASTM: American Society for Testing and Materials.
 - C 97 Test Methods for Absorption and Bulk Specific Gravity of Dimension Stone
 - C 99 Test Methods for Modulus of Rupture of Dimension Stone
 - C 170 Test Method for Compressive Strength of Dimension Stone
 - C 615 Specification for Granite Dimension Stone
 - C 880 Test Method for Flexural Strength of Dimension Stone

2. SSPC: Steel Structures Painting Council.

3. NBGQA Specifications: National Building Granite Quarries Association
 Specifications, latest edition.

SUBMITTALS

At least thirty (30) days prior to intended use, the Contractor shall provide the following samples and submittals for approval. Do not order materials until Engineer’s approval of samples, certifications and/or test results has been obtained. Delivered materials shall closely match the approved samples. Samples and Approvals which are not obtained prior to the ordering of materials or the completion of work shall result in possible disapproval of obtained materials or completed work. Take measurements and verify dimensions at site before submitting Shop Drawings and constructing samples.

Shop Drawings: Submit black line copies of each of detailed Shop Drawings for each item required to be fabricated or installed under this Section. Include plans, sections and details as required to

ITEMS 724.4 724.5 & 724.6 (Continued)

show all materials, layout, dimensions, jointing and connections for all items required. Shop drawings required for template for engravings for interpretive boulder.

Material Samples: Submit representative samples of the following materials:

1. **Boulders:** Photographs of boulders proposed for use on this project showing typical shape, form and scaled size. In the event that the Engineer does not accept photographic samples provide photographs from other sources until Engineer is satisfied. Provide name and address of sources supplying accepted boulders. Engineer reserves the right to reject boulder source upon inspection of source.
2. **Engraved Boulder:** Provide 12” by 24” by 4”-sized, irregular surfaced sample representing shape, form and surface texture of interpretive boulder, showing sandblasted and lithichromed graphic and text.
3. **Manufacturer's Literature:** Submit manufacturer's material descriptions, color chips and/or installation instructions lithichrome stone paint for engraving

Quality Standards

Workmanship and finish shall be equal to the best practice of modern shops for each item of work. Exposed surfaces shall have a smooth finish and sharp, well defined lines and arises. Sections shall be well formed to shape and size with sharp lines and angles; curved work shall be sprung evenly to curves.

Delivery, Storage and Handling

Deliver and store work under this Section in a manner to prevent wracking or stress of components, and to prevent mechanical damage or damage by the elements.

Deliver work to the site in sufficient time to avoid delay in job progress and at such times as to permit proper coordination of the various parts.

Guarantee

Furnish and deliver standard written manufacturer's guarantee in Owner's name covering all materials and workmanship under these Items.

Supplier shall pay for repairs of any damage to any part of the project caused by defects in his work and for any repair to the materials or equipment caused by replacement. All repairs are to be done to the satisfaction of the Engineer.

Any part of the work installed under this contract requiring excessive maintenance shall be considered as being defective, and shall be replaced by the Supplier during the one year period at no cost to the Owner.

ITEMS 724.4 724.5 & 724.6 (Continued)

MATERIALS

Engraved Boulder

Boulder's size and material shall be as indicated on the Drawings, with a reasonably flat top surface to receive the interpretive image and text.

A full-size original drawing of the interpretive image and text will be supplied by Owner. Image and text are to be heavily sandblasted into the top surface of the boulder. Both image and text shall receive a "Lithichrome" coating as specified above in this Section under "Engraving and Lithichrome Painting". Color shall be black.

Protective Anti-Graffiti Sealer

Engraved boulder shall be treated with anti-graffiti, protective sealer.

Clear, penetrating protective anti-graffiti sealer shall be a clear, ready to use micro-emulsion concentrate of silanes and oligomeric alkyl alkoxysiloxanes. The protective anti-graffiti sealer shall comply with all known regulations limiting Volatile Organic Compounds (VOC) content. Upon reaction with the surface and humidity, it shall be chemically bonded into the substrate. Properly applied, it shall not produce a surface build-up, darkening or other effect on the natural color or texture of the surface.

Sealer and anti-graffiti coating shall exhibit the following physical properties or equivalents:

1. Form: Clear amber liquid
2. Specific Gravity: 1.000
3. Flash Point: 77 degrees F.
4. VOC: 318 grams/liter (ASTM D5095)
5. Solids: 100% concentrate.

CONSTRUCTION METHODS

Engraved Boulder

Boulders shall be placed as indicated on drawings and as directed by Engineer and DCR. Boulders shall be placed using approved small machinery.

Engraving on engraved boulders shall be approximately 15 inches by 15 inches, not including font.

Protective Anti-Graffiti Sealer

Protective anti-graffiti sealer shall be applied to all engraved boulders.

Surface Preparation: All caulking, patching and joint sealants shall be installed prior to application of the sealer. Surfaces shall be cleaned free of dust, surface dirt, efflorescence and contaminants. Surfaces to be treated shall be dry and absorbent to assure good penetration of the sealer.

ITEMS 724.4 724.5 & 724.6 (Continued)

Test each type of surface before overall application to ensure suitability and desired results. Apply anti-graffiti sealer in accordance with the manufacturer's instructions. Preferred method of application shall be with low pressure (20 PSI) airless spray equipment or with a heavily saturated brush or roller. Set sprayer to produce a wet stream. Avoid atomization of the material. When using brushes or rollers, care shall be taken to assure that enough solution is applied. Apply sufficient material to thoroughly saturate the surface, making sure to brush out excess material that does not penetrate. Apply solution of anti-graffiti sealer within eight hours of dilution. Dilution ratios shall be in accordance with the manufacturer's instructions.

1. Flat Surfaces: When applying to flat surfaces, sealer shall be applied in a single saturating application with sufficient material applied so that the surface remains wet for three minutes before penetration into the granite and concrete. Surface residues, pools and puddles shall be broomed out thoroughly until they completely penetrate into the surface. Excess material should be picked up within a few minutes to avoid a surface buildup. Protect surfaces from rainfall for a minimum of four hours. Sealer requires 72 hours to develop its full water repellent effectiveness.
2. Vertical Surfaces: When applying by spray, apply in a saturating application from the bottom up. Apply sufficient material to create a 4 inch to 8 inch rundown below the spray contact point. Allow the first application to penetrate the masonry surface for three minutes and then re-apply in the same saturating manner. Less material will be required for the second application. When using a brush or roller, apply uniformly using sufficient material to saturate the surface. Allow the sealer to penetrate the masonry surface for three minutes. Brush out heavy runs and drips that do not penetrate.

Coverage Rates: Porosity and texture of the masonry surfaces will affect the amount of material necessary for effective treatment. Always test on actual surface to get precise consumption rates. Actual application rates will be based on approved sample tests.

Limitations: Surface and air temperatures should be a minimum of 40° F. during application and expected to remain so for eight hours following. Surface and air temperatures shall not exceed 95° F. If cleaning is necessary, the surface should be thoroughly rinsed of cleaning compounds and residues and allowed to dry for a minimum of 24 hours.

Test application: A test application is necessary on each surface to be treated to insure compatibility and desired results. Tests shall be applied using the same equipment as for job application. Test areas shall be available for inspection by the Landscape Architect throughout the job application.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Engraved Boulder will be paid for at the contract unit price per each unit, which price shall include all labor, material, equipment and incidental costs required to complete the work.

Part V

Page 59 of 145

P19-3295-C1A – MCRT Sudbury to Hudson

ITEMS 724.4 724.5 & 724.6 (Continued)

No separate payment will be made for excavation, backfill, gravel borrow, crushed stone, concrete footings, anti-graffiti sealer, granite fabrication, boulder, engraving and lithichrome painting or fine grading and compacting, but all costs in connection therewith shall be included in the Contract unit price bid.

ITEMS 724.4 724.5 & 724.6 (Continued)

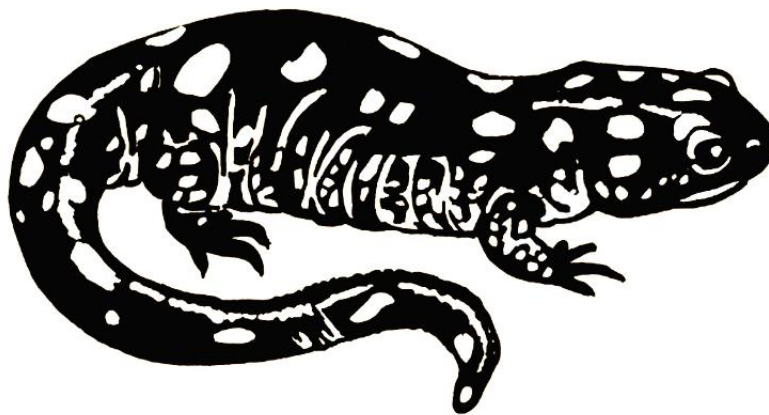
ENGRAVED BOULDER



Red tail hawk
Buteo jamaicensis

ITEMS 724.4 724.5 & 724.6 (Continued)

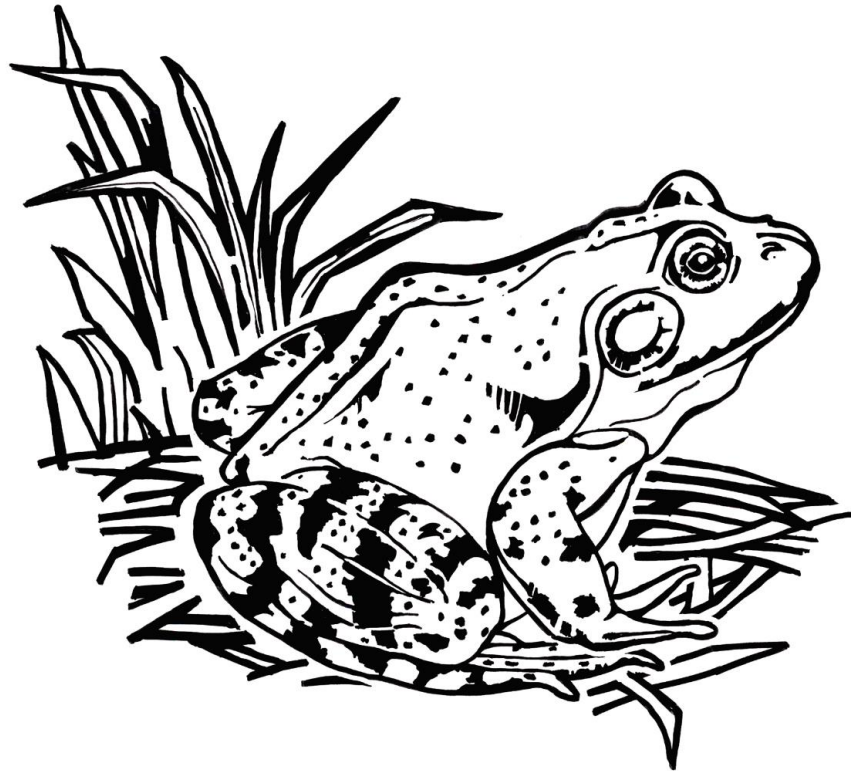
ENGRAVED BOULDER



Spotted Salamander
Ambystoma maculatum

ITEMS 724.4 724.5 & 724.6 (Continued)

ENGRAVED BOULDER



American Bull Frog
Rana catesbeiana

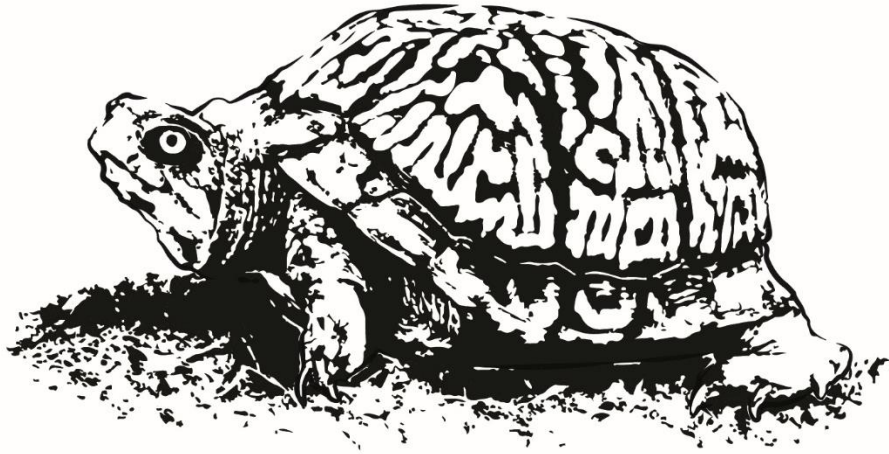
ENGRAVED BOULDER



Eastern Chipmunk
Tamias striatus

ITEMS 724.4 724.5 & 724.6 (Continued)

ENGRAVED BOULDER – HABITATE MANAGEMENT



Eastern Box Turtle
Terrapene carolina

ITEM 734.1**PRIVATE SIGN REMOVED AND RESET****EACH**

The work under this item shall conform to the relevant provisions of Section 828 of the Standard Specifications and the following:

The work shall include the careful removal and resetting of an existing commercial sign and associated hardware, at the locations shown on the plans.

Any sign damage or hardware damaged or lost either directly or indirectly as a result of the Contractor's operations shall be replaced by the Contractor at his own expense. The Contractor is responsible for any electrical work required in order to remove the connections to the site.

The Contractor shall coordinate the removal of the sign with the owner by notifying the owner prior to and at the completion of the above work. The Contractor shall reset the sign on the owner's property as shown on the plans. The location of the reset sign within the owner's property shall be agreed upon by the property owner. If the owner of the sign does not want the sign located as shown on the plans, the contractor, owner and the Engineer shall determine an acceptable location for the sign.

Method of Measurement and Basis of Payment

Private Sign Removed and Reset will be paid for at the Contract unit price per each, which price shall include all labor, materials, equipment and incidental costs required to complete the work.

ITEM 740. ENGINEERS FIELD OFFICE AND EQUIPMENT (TYPE A) MONTH

The work under this item shall conform to the relevant provisions of Section 740. of the Standard Specifications. The field office/trailer shall be equipped according to Subsection 740.41 of the Standard Specifications and the following:

Two computer systems meeting the requirements set forth below including installation, maintenance, power, paper and other supplies shall be provided at the Resident Engineer's Office:

The Computer Systems shall meet the following minimum criteria or better:

Case:	Small form factor
RAM:	4 GB
Hard disk:	500GB, 7200RPM
Monitor:	24" LCD with Built-in speakers
DVD-RW/CD-RW:	Combo drive including DVD ± RW
Network Adapter:	10/100 Mbit/s
USB Ports:	8 high-speed USB ports
Mouse:	Optical mouse with scroll, mouse pad included
OS:	Windows with all security updates
Web Browser:	Internet Explorer with all security updates
Applications:	Latest MS Office Professional with all security updates Latest Adobe Acrobat Professional with all security updates Antivirus software with all current security updates.
Internet access:	High speed internet access.
Flash drives:	2 (two) – 8 GB USB
Multifunctional Printer:	Color laserjet printer, fax, scanner, and copier

The Engineer's Field Office and the equipment included herein including the computer systems shall remain the property of the Contractor at the completion of the project.

Disks, flash drives, and card readers with cards shall become the property of the Department.

Method of Measurement and Basis of Payment

Compensation for this work will be made at the contract unit price per month which price includes full compensation for all services and equipment, and incidentals necessary to provide equipment, maintenance, insurance as specified and as directed by the Engineer.

ITEM 748.

MOBILIZATION

LUMP SUM

The work under this item shall conform to the relevant provisions of Section 748 of the Standard Specifications.

ITEM 751.

LOAM BORROW

CUBIC YARD

The work under this item shall conform to the relevant provisions of Section 751 of the Standard Specifications and the following:

The work shall include the furnishing and placing loam borrow on each side of the full depth pavement and at all location shown on the plans and as directed by the Engineer.

Method of Measurement and Basis of Payment

Loam borrow will be measured and paid for at the contract unit price per cubic yard, complete in place, which price shall include all labor, materials, equipment and incidental cost required to complete the work. No overhaul allowance will be made for any kind of borrow.

Seed Corridor Mix will be paid for under item 765.41.

ITEM 756. NPDES STORMWATER POLLUTION PREVENTION PLAN LUMP SUM

This Item addresses the preparation and implementation of a Stormwater Pollution Prevention Plan required by the National Pollutant Discharge Elimination System (NPDES) and applicable Construction General Permit (CGP) issued by the U.S. Environmental Protection Agency (EPA).

Pursuant to the Federal Clean Water Act, construction activities which disturb one acre or more are required to apply to the EPA for coverage under the NPDES General Permit for Stormwater Discharges from Construction Activities. On February 16, 2012 (77 FR 12286), EPA issued the final NPDES Construction General Permit (CGP) for construction activity. The Contractor shall be fully responsible for compliance with the CGP. Should a fine or penalty be assessed against it, or MassDOT, as a result of a local, state, or federal enforcement action due to non-compliance with the CGP, the Contractor shall take full responsibility.

The NPDES CGP requires the submission of a Notice of Intent (NOI) to the EPA prior to the start of construction (defined as any activity which disturbs land, including clearing and grubbing). There is a fourteen (14) day review period commencing from the date on which EPA enters the Notice into their database. The Contractor is advised that, based on the review of the NOI, EPA may require additional information, including but not limited to, the submission of the Stormwater Pollution Prevention Plan (SWPPP) for review. Work may not commence on the project until final authorization has been granted by EPA. Any additional time required by EPA for review of submittals will not constitute a basis for claim of delay.

In addition, if the project discharges to an Outstanding Resource Water, vernal pool, or is within a coastal ACEC as identified by the Massachusetts Department of Environmental Protection (DEP), a separate notification to DEP is required. DEP may also require submission of the Stormwater Pollution Prevention Plan for review and approval. Filing fees associated with the notification to DEP and, if required, the SWPPP filing to DEP shall be paid by the Contractor.

The CGP also requires the preparation and implementation of a SWPPP in accordance with the afore-mentioned statutes and regulations. The Plan will include the CGP conditions and detailed descriptions of controls of erosion and sedimentation to be implemented during construction. It is the responsibility of the Contractor to prepare the SWPPP to meet the requirements of the most recently issued CGP. The Contractor shall submit the Plan to the Engineer for approval at least four (4) weeks prior to any site activities. It is the responsibility of the Contractor to comply with the CGP conditions and the conditions of any state Wetlands Protection Act Order, Water Quality Certification, Corps of Engineers Section 404 Permit and other environmental permits applicable to the project and to include in the SWPPP the methods and means necessary to comply with applicable conditions of said permits (reference to Part 9.1.1 of the 2012 CGP).

It is the responsibility of the Contractor to complete the SWPPP in accordance with the EPA CGP, provide all information required, and obtain any and all certifications as required by the CGP. Any amendments to the SWPPP required by site conditions, schedule changes, revised work, construction methodologies, and the like are the responsibility of the Contractor. Amendments will require the approval of the Engineer prior to implementation.

Part V

ITEM 756. (Continued)

Included in the CGP conditions is the requirement for inspection of all erosion controls and site conditions on a weekly basis as well as after each incidence of rainfall exceeding 0.25 inches in twenty-four hours. For multi-day storms, EPA requires that an inspection must be performed during or after the first day of the event and after the end of the event. The CGP requires that inspections be performed by a qualified individual. MassDOT requires proof of completion of a 4 hour minimum sedimentation and erosion control training class current to the latest CGP. This individual can be, but not limited to, someone that is either a certified inspector, certified professional, or certified stormwater inspector. The documentation shall be included as an appendix in the SWPPP. The Engineer must approve the contractor's inspector. This individual shall be on-site during construction to perform these inspections. In addition, if the Engineer determines at any time that the inspector's performance is inadequate, the Contractor shall provide an alternate inspector. Written weekly inspection forms, storm event inspection forms, and Monthly Summary Reports must be completed and provided to the Engineer. Monthly Summary Reports must include a summary of construction activities undertaken during the reporting period, general site conditions, erosion control maintenance and corrective actions taken, the anticipated schedule of construction activities for the next reporting period, any SWPPP amendments, and representative photographs.

The Contractor is responsible for preparation of the Plan, all SWPPP certifications, inspections, reports and any and all corrective actions necessary to comply with the provisions of the CGP. Work associated with performance of inspections is not included under this Item. The Standard Specifications require adequate erosion control for the duration of the Contract. All Control measures must be properly selected, installed, and maintained in accordance with manufacturer specifications and good engineering practices. If periodic inspections or other information indicates a control has been used inappropriately or is no longer adequate, it is the responsibility of the Contractor to replace or modify the control for site conditions at no additional cost to the Department. Contractor must maintain all control measures and other protective measures in effective operating condition and shall consider replacement of erosion controls for each construction season.

This Item addresses acceptable completion of the SWPPP, any revisions/amendments required during construction, and preparation of monthly reports. In addition, any erosion controls beyond those specified in bid items elsewhere in this contract which are selected by the Contractor to facilitate and/or address the Contractor's schedule, methods and prosecution of the work shall be considered incidental to this item.

The Contractor is advised The CGP provides specific requirements for temporary and final stabilization. This shall be incorporated into the project schedule. The permit defines specific deadline requirements for Initial Stabilization ("immediately", i.e., no later than the end of the next work day following the day when earth-disturbing activities have temporarily or permanently ceased) and for Complete Stabilization Activities (no later than 14 calendar days after the initiation of stabilization). Stabilization criteria for vegetative and non-vegetative measures are provided in the CGP.

Part V

Page 71 of 145

P19-3295-C1A – MCRT Sudbury to Hudson

ITEM 756. (Continued)

The CGP requires the submission of a Notice of Termination (NOT) from all operators when final stabilization has been achieved, as well as removal and proper disposal of all construction materials, waste and waste handling devices, removal of all equipment and construction vehicles, removal of all temporary stormwater controls, etc. . Approval of final stabilization by the Engineer and confirmation of submission of the NOT will be required prior to submission of the Resident Engineer’s Final Estimate. The permittee is required to use EPA’s electronic NOI system or “eNOI system” to prepare and submit NOT. The electronic NOT form can be found at <https://www.epa.gov/npdes/stormwater-discharges-construction-activities#ereporting> . If you are given approval by the EPA Regional Office to use a paper NOT, you must complete the form in Appendix K of the 2012 CGP.

Method of Measurement and Basis of Payment

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

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

ITEM 765.41

SEED CORRIDOR MIX

SQUARE YARD

The work under this item shall conform to the relevant provisions of Section 765 of the Standard Specifications and the following:

The work shall consist of seeding areas designated for loam and seeding, as shown on the plans. The work shall also include seeding previously cleared and grubbed areas as directed by the Engineer.

Seeding shall be done within 7 days of placement of loam and final grading.

Seeding seasons shall be April 1 through May 15 and October 1 through December 1 for dormant seeding.

Seed Samples and Submittals

Certificate of Materials. 90 days prior to ordering, the Contractor shall submit to the Engineer the manufacturer or supplier's notarized Certificate of Materials. This document shall not be used as proof of purchase, proof of material delivered, or proof of material seeded, but simply to verify supplier availability of seed listed on the date certified. The species listed shall match those specified on the plans or herein, however, cultivars may vary due to availability. Substantial substitutions or changes in the mix from that specified on the plans or herein shall be approved by the Engineer.

Seed Tag Certification. All seed lots have a seed analysis tag as required by State and Federal law. The contractor shall submit seed tags for each bag of seed used on the project site or ensure that each tag is photo documented by the Engineer. Number of tags shall match number of bags sent by the supplier to meet rate of Pure Live Seed specified on the plans. Tag must include: kind and variety of seed; lot number; origin of seed; net weight; % purity; germination; dormant seed; germination test date; inert matter; weed, noxious and other crop seed; and name and address of company responsible for the analysis. Seeding may be considered unacceptable for payment if no tags are submitted.

Certificate of Compliance. Contractor shall submit a bill of lading or a signed, dated and notarized Certificate of Compliance from the Supplier that serves as proof of purchase. This document shall include kind and variety of seed, lot number, net weight shipped, date of sale, invoice number under which seed was purchased, and name and address of Supplier or Manufacturer. All information must be included on the notarized form, including lot number and net weight shipped for specified job. This information shall match Seed Tag Certification and quantity of seed applied on the job. Seeding may be considered unacceptable for payment if information is incomplete.

Seed Sample. Contractor may be asked, prior to seeding, to submit a seed sample for testing.

Quantities specified are Pure Live Seed (PLS). Greater quantities of ordered seed may be required to achieve actual specified seeding rates. Pure Live Seed is defined as the fraction of pure seed

ITEM 765.41 (Continued)

species within the mix that, by standard seed testing practices, will germinate. This is determined by multiplying the percent of seed purity by the percent of seed germination.

Seed mix shall be a custom blend as shown on the plans or shall be as specified below. Seed cultivars shall be those that are as regional to New England or the local ecotype as possible.

Any species substitutions shall be with a species having similar characteristics and native to New England. Substantial changes in the mix shall be approved by the Engineer.

The following herbaceous and shrub seed mixes shall be mixed together and used in all areas designated for loam and seeding for which an alternative seed mix is not specified.

HERBACEOUS SEED MIX		
BOTANICAL NAME	COMMON NAME	PERCENTAGE
<i>Elymus virginicus</i>	Virginia Wild Rye	25%
<i>Elymus canadensis</i>	Canada Wild Rye	25%
<i>Schizachyrium scoparium</i>	Little Bluestem	25%
<i>Dichanthelium clandestinum</i>	Deer-Tongue Grass	8%
<i>Agrostis perennans</i>	Upland Bentgrass	8%
<i>Carex vulpinoidea</i>	Fox Sedge	2%
<i>Juncus tenuis</i>	Path Rush	2%
<i>Juncus effusus</i>	Soft Rush	0.1%
<i>Penstemon digitalis</i>	Beard-Tongue	2%
<i>Symphyotrichum novae-angliae</i>	New England Aster	1%
<i>Solidago caesia</i>	Woodland Goldenrod	0.5%
<i>Symphyotrichum cordifolium</i>	Blue Wood Aster	0.5%
<i>Eutrochium maculatum</i>	Joe-Pye Weed	0.3%
<i>Geum canadense</i>	White Avens	0.3%
<i>Oligoneuron rigidum</i>	Rigid Goldenrod	0.3%
	Total:	100%

ITEM 765.41 (Continued)

Herbaceous seeding shall be applied at a rate recommended by the supplier.

SHRUB SEED MIX		
BOTANICAL NAME	COMMON NAME	PERCENTAGE
<i>Cornus alternifolia</i>	Alternate-Leaved	33%
<i>Viburnum dentatum</i>	Arrowwood	33%
<i>Viburnum Lentago</i>	Nannyberry	33%
	Total:	100%

The above shrub seeding rate is 2 lbs per acre, per species. Total seed mix application rate therefore is 6 lbs per acre and shall be added to the appropriate per acre quantity of herbaceous seed mix before applying.

BOTANICAL NAME	COMMON NAME	PERCENTAGE
<i>Corylus Americana</i>	Hazelnut	100%

Hazelnut seed is too large to apply with the same equipment with other seed mixes. This seed must be applied separately at a rate of 2 lbs. per acre in all areas designated for loam and seeding for which an alternative seed mix is not specified.

Methods of Construction

Surface Preparation. Soil preparation and seeding shall occur only when the bed is in a friable condition, not muddy or hard. Bare soils shall be raked to remove large stiff clods, lumps, brush, roots, stumps, litter and other foreign matter. All ruts and any depressions caused by settlement, erosion or rolling shall be filled with additional loam or compost and the soil shall be re-graded to a smooth and even finish corresponding to the required grades.

Unless seeding over newly placed planting soil, prior to seeding and prior to compost topdressing, soil will be prepared by raking or tracking to a depth of 2 inches.

Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other. No seeding shall be done if soils are muddy or dry and compacted.

Do not use wet seed or seed that is moldy or otherwise damaged.

The herbaceous and shrub seed mixes shall be applied at application rates recommended by the suppliers.

ITEM 765.41 (Continued)

Do not seed against existing trees. Limit extent of seed to outside edge of planting saucer.

Lightly rake or roll to ensure proper soil-seed contact. Best results are obtained with a Spring or late Summer seeding. Late Spring through Mid-Summer seeding will benefit from a light mulching of weed-free straw to conserve moisture. Take particular care to cover or bury the hazelnut seed to prevent being eaten by squirrels and deer. If conditions are drier than usual, additional watering will be required.

Lightly water all areas during the first 2 (two) weeks of establishment. Do not disturb the soil or wash out seeding. Any such disturbances shall be repaired by the Contractor at no additional cost.

Fertilizer shall not be used. Preparation of a clean weed free seed bed is necessary for optimal results.

Protect seeded areas with slopes exceeding a 3:1 with erosion-control fiber mesh installed and stapled according to manufacturer's written instructions.

Protect seeded areas with slopes not exceeding 5:1 by spreading straw mulch. Spread uniformly at a minimum rate of 2 tons/acre to form a continuous blanket 1-1/2 inches in loose depth over seeded areas.

Spread mulch by hand, blower, or other suitable equipment.

Bond straw mulch by spraying with a Guar tackifier or other approved plant-based tackifier, at a rate of 10 to 12 gal./1000 sq. ft. Take precautions to prevent damage or staining of structures or other plantings adjacent to mulched areas. Immediately clean damaged or stained areas.

Over-seeding. If there are numerous areas of bare ground greater than 10-12 inches, these areas shall be over-seeded with the specified mix. Areas that are invaded by weeds shall be mowed as low as possible and over-seeded as directed. Soil that is compacted shall be raked or roughened prior to seeding. Following over-seeding, soil shall be lightly tamped to ensure seed to soil contact.

Over-seeding application rates and methods shall be the same as those listed above. After seeding, areas shall be mulched with straw mulch or ¼ - ½ inch compost topsoil and watered with a fine mist to moisten soil to a depth of at least 2 inches.

Over-seeding and mulch for over-seeding shall be incidental to this item.

ITEM 765.41 (Continued)

Care during Grass Establishment

Following germination of seeded species, the contractor shall maintain the stand of grasses to ensure healthy growth. Work shall include mowing or weed-whacking for weed control, irrigation if necessary, and monitoring for invasive plants. Mowing if needed shall only be within 2 feet of the gravel pad or the 5 feet over the duct bank. All other seeded areas shall be allowed to grow without maintenance. Watering shall provide uniform coverage without eroding soil or grassed surfaces. Treatment of invasive plants shall be per the requirements of the Engineer.

Contractor shall water all seeded areas as necessary to a depth of 2 inches or greater.

MEASUREMENT AND PAYMENT

Measurement for ITEM 765.41 SEED CORRIDOR MIX will be on a square yard basis.

Payment shall include all fine grading, amendments, seeding, reseeding, irrigating, maintenance, fiber mesh, straw mulch, tackifier, labor, materials, equipment, and all incidental work, including any necessary straw mulch that needs to be applied, to complete these items in accordance with these Specifications and as directed by the Engineer.

Loam Borrow will be paid for under item 751.

ITEM 766

TRAIL MAINTENANCE EQUIPMENT

ALLOWANCE

The work shall consist of supplying the necessary maintenance equipment to meet the conditions of the project permitting and maintain the trail post construction.

Maintenance of the MCRT will primarily consist of vegetation removal that interferes with the use of the trail including removal of hazard trees or branches, removal of downed trees or branches, shrub and branch trimming, litter pick up, and periodic mowing grass along the bike path shoulders and yearly mowing of grass over the Eversource duct bank. Within the Priority Habitat 1040 / Estimated Habitat 1440 (PH 1040 / EH 1440) in Hudson, Marlborough, and Sudbury periodic mowing will be conducted in accordance with the Long-Term Pollution Prevention Plan and Operations and Maintenance Plan (LTPPP-OMP) and the DCR Trails Guidelines and Best Practices Manual. During the active turtle season (between April 1 and October 31), the shoulders of the bike path or the Eversource duct bank will be swept by qualified staff to locate any EBT or WT prior to any mowing. In addition, the mower for any areas beyond the 2-foot wide bike path shoulders (Eversource duct bank) will be set at least 10 inches above the ground. A boulder marked by etching with a note and the appropriate mowing height is located at either end of the priority habitat polygon.

In order to meet the above conditions, the following specialty equipment has been identified for purchase to properly maintain the path.

The contractor shall work with DCR and a local vender to purchase the listed equipment or submit an alternative to DCR for approval.

The contractor shall work with DCR and the vendor to provide a designated delivery location for the equipment.

Zero Turn Riding Lawnmower

Furnish a professional grade zero turn riding lawn mower meeting the following specifications:

Manufacturer: Gravely USA

Model Number 992527 Pro-Turn 348 48 in. Kawasaki FX801V 25.5 hp (or approved equal),

Body

- Seat: Suspension plush seat with armrests
- Rollover Protection (ROPS): Foldable – Standard

Drivetrain

- Drive system: Parker HTJ transmission
- Travel speed forward: 11 mph (6.8 km/h)
- Travel speed reverse: 5 mph (3.1 km/h)
- Drive tires: 24 x 12-16 bias ply turf
- Steering tires: smooth 15 x 6-6 pneumatic

Part V

Page 78 of 145

ITEM 766. (Continued)

- Axles: front - fixed, greaseable caster fork tubes

Engine

- Engine make: Kawasaki
- Engine model: fx801v
- Horsepower: 25.5 hp
- Displacement: 852 cc
- Fuel capacity: 12.5 gal. (47.3 l)

Measurements

- Length: 83 In.
- Width: Without Chute - 51 In., With Chute - 63 In.
- Height: With ROPS Ext - 76 In., With ROPS Down - 47.8 In.
- Weight: 1,235 Lb.
- Cutting Width: 48 In.
- Mowing Height Range: 1.0 - 5.5 In
- Mowing Height Adjustments: 19 Positions

Operational

- Deck Construction: X-Factor® 3
- Deck Material: 7 Ga. Steel With 0.25 In. Spindle Reinforcement
- Deck Engagement: Ogura® Gt2.75 Spindles
- Housing Material: Forged Aluminum
- Bearing - Ball
- Number Of Spindles: 3
- Blade Tip Speed: 18,000 Fpm
- WARRANTY
- Unit - 5 Year / 1250 Hour Commercial / No Hour Limit First 2 Years
- Deck Shell and Frame - Limited Lifetime

Stand on Debris Blower

Furnish a professional grade Stand-on Debris Blower meeting the following specifications:

Manufacturer: Buffalo Turbine

Model Number: BT-SB40 Stand On Debris Blower, 40hp EFI, Zero Turn, Lights,
Quick Nozzle Rotation 4200rpm (or Approved equal)

Specifications

- Fuel Capacity 16 gallons
- Overall Length with Nozzle 95 inches
- Width (Including Wheels) 48 inches
- Height 50 inches

Part V

Page 79 of 145

P19-3295-C1A – MCRT Sudbury to Hudson

ITEM 766. (Continued)

- Weight 800 lbs
- Outlet Size Approx. 12 inches
- Nozzle Material Aerospace Polymer
- Front Tires 13 x 6.50-6
- Rear Tires 22 x 11.00-10
- Shipping Weight 1114 lbs
- Shipping Box Size 73" x 49"
- 12V Battery (350 CCA)
- LED Work Lights

Telescopic Battery Powered Pole Saw

Furnish a professional grade Battery powered pole saw complete with battery and charger. meeting the following specifications:

Manufacturer: Husqvarna

Model: 530iPT5 (or approved equal)

Engine

- Oil tank volume 0.32 US pint
- Motor type BLDC (brushless)
- Battery type Li-Ion
- Battery voltage 36 V

Equipment

- Pitch 3/8"
- Recommended bar length, max 12 in
- Recommended bar length, min 10 in
- Bar length (inch) 10 in
- Nose type Sprocket nose
- Chain type H37
- Harness Single harness

Battery

- Manufacturer: Husqvarna
- Description: 36V 5-amp Lithium Iron
- Model Number: BLi200X
- Quantity – 1

Battery Charger

- Manufacturer: Husqvarna
- Description: 36V Lithium Iron rapid charge

Part V

Page 80 of 145

ITEM 766. (Continued)

- Model Number: QC500
- Charger input Voltage: 100- 240V

Dimensions

- Weight (excl. cutting equipment) 11 lbs
- Weight (excl. battery and cutting equipment) 11.02 lbs
- Full length, including cutting equipment 157.48
- Length, extended, including cutting equipment 157.5 in
- Length, transportation mode - imperial 102.362

Sound and noise

- Sound pressure level at operators ear 83 dB(A)
- Sound power level, guaranteed (LWA) 98 dB(A)
- Sound power level, measured 98 dB(A)
- Vibration
- Equivalent vibration level rear handle 1.2 m/s²

Gas Powered Trimmer

Furnish a professional Gas powered bike handle trimmer meeting the following specifications:

Manufacturer: Stihl Inc.

Model Number: FS131 Bike Handled Trimmer (or approved equal),

Specifications

- Displacement: 36.3 cc (2.2 cu. in.)
- Engine power: 1.4 kw (1.9 bhp)
- Weight: 5.8 kg (12.8 lbs.)
- Fuel capacity: 710 cc (24.0 oz.)
- Cutting swath: 16.5"
- Power source: gas

Tie Down Straps

Furnish two (2) commercial grade 2in x 27 ft ratchet tie-down straps meeting the following specifications:

Manufacturer: Ultra-Tow (or approved equal)

Model Number: 5686152

ITEM 766. (Continued)

Specifications

Part V

Page 81 of 145

P19-3295-C1A – MCRT Sudbury to Hudson

- Breaking Strength: 10,000-lb
- Working load: 3300 lbs
- Quantity-2

MEASUREMENT AND PAYMENT

The quantity to be paid for under this item shall be the actual invoice amount paid by the Contractor to provide the requested maintenance equipment or their approved equal. An allowance of Thirty Thousand Dollars (\$30,000.00) for the furnishing of trail maintenance equipment has been included in all bids.

Any transportation or overhead costs shall be considered incidental and included in the bid prices bid for the other items of the Contract.

ITEM 767.121

SEDIMENT CONTROL BARRIER

FOOT

ITEM 767.122

SEDIMENT CONTROL BARRIER MAINTENANCE

FOOT

The work under these items shall conform to the relevant provisions of Sections 751 and 767 of the Standard Specifications and Section 670 of the Standard Supplemental Specifications and shall include the furnishing and placement of a sediment control barrier and maintaining and final removal of existing Sediment Control Barrier from Phase 1 construction activities. Sediment Control Barrier shall be installed prior to disturbing upslope soil.

The purpose of the sediment control barrier is to slow runoff velocity and filter suspended sediments from storm water flow. Sediment barrier may be used to contain stockpile sediments, to break slope length, and to slow or prevent upgradient water or water off road surfaces from flowing into a work zone. Contractor shall be responsible for ensuring that barriers fulfill the intent of adequately controlling siltation and runoff.

Twelve-inch diameter (after installation) compost filter tubes are intended to be the primary sedimentation control barrier.

For small areas of disturbance with minimal slope and slope length, the Engineer may approve the following sediment control methods;

- Straw tubes/wattles which shall be trenched
- Straw bales which shall be trenched

Additional barriers (adding depth or height) shall be used at specific locations of concentrated flow such as at gully points, steep slopes, or identified failure points in the sediment capture line.

Where specified on the plans, silt fence shall be used in addition to compost filter tubes or straw bales as a turtle exclusion fence, and shall be incidental to the item.

Materials and Construction

Prior to placing new Sediment Control Barrier the contractor shall inspect the remaining sediment barrier from the Phase 1 construction to determine if removal and replacement is required

Prior to any placement of barriers, the Contractor and the Engineer shall review locations specified on the plans to ensure that the placement will provide maximum effectiveness.

Barriers shall be staked, trenched and/or wedged as specified herein and shall be securely in contact with existing soil such that there is no flow beneath the barrier.

Compost Filter Tube

Compost material inside the filter tube shall meet M1.06.0, except for the following: no manure or bio-solids shall be used; no kiln-dried wood or construction debris shall be allowed; material shall pass through a 2-inch sieve; and the C:N ratio shall be disregarded.

ITEM 767.121 & 767.122 (Continued)

Outer tube fabric shall be a knitted mesh with 1/8 - 3/8" openings and made of 100% biodegradable materials (i.e., cotton, hemp or jute).

Compost filter tubes shall be a minimum of 12 inches in diameter installed. Tubes shall be placed, filled, and staked in place as required to ensure stability against water flows. All tubes shall be tamped, but not trenched, to ensure good contact with soil.

Where reinforcement is necessary, additional tubes shall be installed as shown on the plans.

Straw Bales

Straw bales shall conform to the requirements of Section M6.04.3 of the Standard Specifications and the following:

Bales should be a minimum size of 12 x 16 x 36 inches and shall be placed in a single row, lengthwise on the contour, with ends of adjacent bales tightly abutting one another.

The bales shall be trenched and backfilled. The trench shall be excavated the width of the bale and the length of the proposed barrier to a depth of 4 inches. After the bales are staked the excavated soil shall be backfilled against the barrier. Backfill soil shall conform to the ground level on the downhill side and shall be built up to 4 inches against the uphill side of the barrier.

Straw Wattle

Straw wattle shall be a minimum of 12 inches in diameter. Straw filling shall conform to the requirements of Section M6.04.3, shall be encased in durable netting, and shall have a density of 3 lb/foot.

Straw wattle shall be trenched in 3 inches deep and staked according to the plans. The wattles shall be sufficiently secure on the upstream side to prevent water flowing underneath the wattle.

Silt Fence

Materials and Installation shall be per Section 670.40 of the Standard Supplemental Specifications and the following:

Silt fence shall be used when specified by Orders of Condition or other permitting.

When used with compost filter tubes, the tube shall be placed on a minimum of 8 inches of folded fabric on the upslope side of the fence. Fabric does not need to be trenched.

ITEM 767.121 & 767.122 (Continued)

When used with straw bales, an 8-inch deep and 4-inch wide trench or V-trench shall be dug on the upslope side of the fence line. One foot of fabric shall be placed in the bottom of the trench followed by backfilling with compacted earth or gravel. Stakes shall be driven 16 inches into the ground on the down slope side of the trench and shall be spaced such that the fence remains vertical and effective.

Width of fabric shall be sufficient to provide a 36-inch high barrier after fabric is folded or trenched. Sagging fabric will require additional staking or other anchoring.

Stakes

Stakes for anchoring Compost Filter Tubes, Straw Wattles, and Straw Bales shall be as shown on the plans and shall be a minimum of 1x1 inch diameter x 4 feet hardwood stakes.

When used with Silt Fence, stakes for Compost Filter Tubes shall be driven 12 inches into the ground, Stakes for Straw Bales shall be driven 16 inches into the ground.

Stakes of other material of equivalent strength may be used if approved by the Engineer.

MAINTENANCE

Maintenance of Sediment Control Barriers shall be per Section 670.40 of the Standard Supplemental Specifications or per the Stormwater Pollution Prevention Plan (SWPPP).

The contractor shall inspect all Sediment Barrier after each rain event and as specified in relevant permits to ensure that they are working effectively and as intended. Contractor shall be responsible for ensuring that an effective barrier is in place for all phases of the contract.

Barriers that decompose naturally due to weatherization over time such that they no longer provide the function required shall be repaired or replaced as directed. If the resulting berm of compost within the fabric tube is sufficiently intact and continues to provide water and sediment control, barrier does not necessarily require replacement.

DISMANTLING & REMOVING

Barriers shall be dismantled and/or removed when construction work is complete and when site conditions are sufficiently stable to prevent surface erosion and after receiving permission to do so from the Engineer.

For all instances, all nonbiodegradable material, including photo-biodegradable fabric, plastic netting, nylon twine, and silt fence, shall be removed and disposed off-site by the Contractor regardless of site context.

ITEM 767.121 & 767.122 (Continued)

For naturalized areas, biodegradable, natural fabric and material may be left in place to decompose on-site. Compost filter tubes may be left as they are with stakes removed. Straw bales shall be broken down and spread evenly. All nylon or nonbiodegradable twine shall be removed along with silt fence. Wooden stakes may be left on site, placed neatly and discretely.

In urban, residential, and other locations where aesthetics is a concern, the following shall apply:

- Filter tube fabric shall be cut and removed, and compost shall be raked to blend evenly (similar to a soil amendment or mulch). Not more than a 2-inch depth shall be left on soil substrate.
- Straw bales shall be removed and disposed off-site by the Contractor. Areas of trenching shall be raked smooth and disturbed soils stabilized with a seed mix matching adjacent grasses (i.e., lawn or native grass mix).
- Silt fence, stakes, and other debris shall be removed and disposed off-site. Site shall look neat and clean upon completion.

Method of Measurement and Basis of Payment

Item 767.121 will be measured and paid for at the contract unit price per foot of sediment control barrier which price shall include all labor, equipment, materials, maintenance, dismantling, removal, restoration of soil, and all incidental costs required to complete the work.

Item 767.122 will be measured and paid for at the contract unit price per foot of existing sediment control barrier removal which price shall include all labor, equipment, materials, maintenance, dismantling, removal, restoration of soil, and all incidental costs required to complete the work.

Silt fence, when used in conjunction with compost filter tubes or straw bales, will be incidental to this item.

Additional barrier, such as double or triple stacking of compost filter tubes, shall be paid for per foot of tube installed.

Barriers that have been driven over or otherwise damaged by construction activities shall be repaired or replaced as directed by the Engineer at the Contractor's expense.

<u>ITEM 775.141</u>	<u>AMERICAN HAZELNUT 2-3 FEET</u>	<u>EACH</u>
<u>ITEM 777.329</u>	<u>SCRUB OAK 12-18 INCH</u>	<u>EACH</u>
<u>ITEM 778.443</u>	<u>TULIP TREE 2.5-3 INCH</u>	<u>EACH</u>
<u>ITEM 789.333</u>	<u>BAYBERRY SHRUB – NORTHERN 2-3 FEET / #3</u>	<u>EACH</u>
<u>ITEM 790.633</u>	<u>DOGWOOD – REDOSIER 2-3 FEET / #3</u>	<u>EACH</u>
<u>ITEM 794.735</u>	<u>SUMMERSWEET SHRUB 2-3 FEET</u>	<u>EACH</u>

The work of this Section consists of amendment of soils, planting mix, staking and guying, planting trees, shrubs, ornamental grasses, guarantee of plants and related items as indicated on the Drawings or specified herein.

References and Standards

The following related terms are used herein and shall mean:

1. Standard Specification: State of Massachusetts, City of Public Works Standard Specification for Highways and Bridges, latest edition.
2. ASNS: "American Standard for Nursery Stock," ASNS 260.1, latest edition, published by the American Association of Nurserymen, (AAN).
3. SPN: "Standardized Plant Names," latest edition, by the American Joint Committee on Horticultural Nomenclature.
4. AOAC: Association of Official Agricultural Chemists.
5. Pruning Standards: The "Standards for Pruning Shade Trees" of the National Arborist Association, 174 Route 101, Bedford, NH 03102.

Samples and Submittals

At least 30 days prior to ordering the below listed materials, submit certified testing results and representative samples to Engineer for selection. No materials shall be ordered or delivered until required samples, certifications, manufacturer's literature and test results have been reviewed by Engineer. Delivered materials shall closely match the approved samples.

Fertilizer

Submit one sample packet of planting fertilizer
Ant desiccant: Submit manufacturer's literature.

Examination of Conditions

All areas to be planted, shall be inspected by the Contractor before starting work and any defect such as incorrect grading shall be reported to the Engineer prior to beginning this work.

ITEMS 775.141 – 794.735 (Continued)

The Contractor shall be solely responsible for judging the full extent of work requirements involved, including but not limited to the potential need for storing and maintaining plants temporarily and re-handling plants prior to final installation.

Materials

Plant Materials

The Contractor shall furnish all plants shown on the Drawings, as specified, and in quantities listed on the PLANT SCHEDULE. Substitutions will be permitted only after all options for proving the specified material have been exhausted and the substitutions have been approved by DCR representative Landscape Architect. All plants shall be nursery grown.

The Contractor shall arrange a nursery visit for the DCR representative Landscape Architect to tag nursery materials at the a local nursery.

Plants shall be in accordance with the ASNS Standards of the American Association of Nurserymen (AAN) as a minimum requirement for acceptance. Plants designated as "Specimen Quality" on the Drawings shall have a form of higher quality (as determined by the DCR Representative Landscape Architect), than typical plants of their species and shall be selected in the nursery by the Engineer. Botanical plant names shall be in accordance with plant designations included in Standardized Plant Names.

All plants other than those designated on the Drawings as "Specimen Quality" shall be typical of their species or variety and have a normal habit of growth. All plants including "Specimen Quality" shall be legibly tagged with the proper name. Only plant stock grown within hardiness Zones 1 through 5, as established by the Arnold Arboretum, Jamaica Plain, Massachusetts, will be accepted. The Contractor's suppliers must certify in writing that the stock has actually been grown under Zone 5 or hardier conditions. Plants not so certified will not be accepted.

The root system of each plant shall be well provided with fibrous roots. All parts shall be moist and show active green cambium when cut. They shall be sound, healthy, and vigorous, well-branched and densely foliated when in leaf. They shall be free of disease, insect pests, eggs, or larvae.

All plants must be moved with the root systems as solid units with balls of earth firmly wrapped with untreated 8 ounce burlap, firmly held in place by a stout cord or wire in containers of a size as specified or of adequate size to allow root development for the plant size as per ASNS requirements. Plants prepared with plastic or other non-biodegradable wrappings will not be accepted. The diameter and depth of the balls of earth on balled and burlapped plants must be sufficient to encompass the fibrous root feeding system necessary for the healthy development of the plant. No plant will be accepted when the ball of earth surrounding its roots has been badly cracked or broken prior to, or during the process of planting or after the burlap, staves, ropes, container or platform required in connection with its transplanting have been removed. The plants and balls shall remain intact during all operation. All

ITEMS 775.141 – 794.735 (Continued)

balled and burlapped plants that cannot be planted at once must be heeled in by setting in the ground and covering the balls with soil and watering.

Deciduous Trees

All deciduous trees shall meet the following standards:

Trees shall have a single, straight trunk, well formed, and sturdy. No part of the trunk shall be conspicuously crooked as compared with normal trees of the same variety.

Trees with multiple leaders shall conform to all standards noted in this Section, for single leader trees and shall be accepted only as noted on the PLANT SCHEDULE.

All pruning wounds shall show vigorous bark on all edges at the time of harvest. Trees shall be free from all signs of pest and disease damage. The trunk shall be free from sun scald, frost cracks, and wounds resulting from abrasions, fire, animal damage, or other causes. Pruning scars within the crown of any tree shall be clean cut and shall leave no protrusion beyond the branch collar.

All trees shall have healthy, vigorous leaves or needles of normal size, color, shape, and texture for the particular species and variety.

Deciduous shade trees and deciduous flowering trees shall have fall color typical for their species and variety.

Unless otherwise indicated on the PLANT SCHEDULE, the height and spread of deciduous shade trees shall be the minimum requirements.

Take caliper measurements for deciduous trees 6 inches above ground level up to and including 4 inches caliper size and 12 inches above ground for larger sizes.

No deciduous tree shall be pruned after the Engineer has tagged the plant in the nursery except as directed by the Engineer.

Unless otherwise noted on the PLANT SCHEDULE, shade trees for use in paved areas shall have no branches lower than 6.5 feet from finish grade and no higher than 7.5 feet from finish grade. Flowering trees for use in areas away from pedestrian traffic shall have the first branch of their crowns no higher than 4 feet from finish grade.

Branching of all deciduous trees shall be best quality representatives of the species, cultivar or variety with lateral branching around the entire trunk to form a symmetrical tree for 80 percent to 100 percent of the tree's outer perimeter. All branches on deciduous trees shall meet the trunk at angles no less than 30 degrees and no greater than 90 degrees from the vertical.

ITEMS 775.141 – 794.735 (Continued)

Evergreen Trees

Evergreen trees shall meet the following standards:

The height of the evergreen trees (measured from the trunk flair at the natural ground line of the tree to the midpoint of the terminal leader) shall be not less than the minimum size designated on the PLANT SCHEDULE.

No trees with double-leaders or twin-heads will be permitted.

Evergreen trees shall be of specified height with spread in proportion to height, as designated in ASNS Standards, and shall be well-branched to the ground.

All pruning wounds shall show vigorous bark on all edges at the time of harvest.

Terminal and top whorl buds of all evergreen trees shall be in healthy and whole condition at the time of harvest.

No evergreen tree shall be pruned after the Engineer has tagged the tree in the nursery except as directed by the Engineer.

All trees shall have healthy, vigorous leaves or needles of normal size, color, shape, and texture for the particular species and variety.

Shrubs

All shrubs shall meet the following standards:

All shrubs shall be healthy and vigorous plants which are very well shaped, heavily branched, densely foliated, and true to form for the variety.

Canes or Trunk(s) and Branches:

1. Well formed and sturdy.
2. Branching shall be uniformly distributed close to the ground.
3. Scars shall be free of rot and not exceed 1/4 the diameter of the wood beneath in greatest dimension unless completely healed (except pruning scars).
4. Pruning scars shall be clean cut and shall leave little or no protrusion from the trunk or branch.
5. Graft unions shall be completely healed.
6. No suckers or water sprouts.
7. Contain no dead wood.
8. Free of cracks, splits, or cambium peeling.

No shrub with pest or mechanical damage will be accepted.

Part V

Page 90 of 145

P19-3295-C1A – MCRT Sudbury to Hudson

ITEMS 775.141 – 794.735 (Continued)

Shrubs shall show no signs of frost or winter damage to the foliage. Foliage shall not be in a state of drought stress. Leaves or needles shall show no signs of wilt or desiccation due to weather stress at any season of the year.

Perennials

All perennials shall meet the following standards:

Perennials shall be potted 3 year stock, field grown clumps, and all clumps shall have not less than 6 buds, eyes or crowns.

Perennials shall be healthy and well cared for, with no evidence of insects or diseases present. Insect-ridden or diseased plants shall be rejected. Plants shall have a deep green foliage and dense, compact growth. Perennials shall have multi-stemmed bases and shall be two year potted stock minimum, one year in cutting bench and one year in pots.

Container Grown Stock

Each plant shall have an extensive, symmetrically balanced fibrous root system. Any root ball which shows signs of asymmetry, injury, or damage to the root system shall be rejected.

Curling or spiraling of the roots along the walls of rigid containers will not be accepted.

All parts of the fibrous root system of all plants shall be moist and fresh with a white color when washed of soil. When the plant is removed from the container, the visible root mass shall be healthy with white root tips. The root systems of all plants shall be free of disease, insect pests, eggs, or larvae.

All trees, and all shrubs which are not grown in containers must be moved with the root systems as solid units with balls of earth firmly wrapped with untreated 8 ounce natural, biodegradable fabric burlap, firmly laced with stout, natural biodegradable cord or twine. The base of the tree trunks shall be wrapped with a protective burlap layer, surrounded by a cardboard trunk protector, and loosely tied with twine.

The diameter and depth of the balls of earth must encompass the fibrous and root feeding system necessary for the healthy recovery of the plant. Minimum root ball diameters and depths shall be in accordance with ASNS standards.

No plants shall be loose in the container.

Container grown plants which have roots growing out of the container will be rejected.

Plants delivered by truck and plants requiring storage on site shall be properly wrapped and covered to prevent wind-drying and desiccation of branches, leaves or buds; plant balls shall be firmly bound, unbroken, reasonably moist to indicate watering prior to delivery and during storage and tree trunks

Part V

ITEMS 775.141 – 794.735 (Continued)

shall be free from fresh scars and damage in handling. No trees with double-leaders or twin-heads will be acceptable without the written approval of the Engineer. No plant material from cold storage will be accepted.

Planting Fertilizer

Fertilizer shall be provided for each plant through the use of slow-release fertilizer packets which are designed and certified by the manufacturer to provide controlled release of fertilizer over a minimum 3 year period. Each packet shall consist of 4 ounces of water soluble fertilizer with a minimum guaranteed analysis of available elements as follows:

16% Nitrogen, 8% Phosphoric Acid, and 16% Potash

Bone meal shall be fine ground, steam-cooked, packing house bone with a minimum analysis of 23 percent phosphoric acid and 1.0 percent of nitrogen.

Planting Mix

Planting mix shall be approved loam which has been pH adjusted according to particular planting applications and improved through the addition of organic matter as directed below. Planting loam shall conform to the following pH levels:

1. For ericaceous plants and broad-leaved evergreens requiring an acid soil, planting loam shall have a true pH of 4.5 to 5.5. If it does not, it shall be amended by the Contractor to the proper pH range by mixing with sulfur as specified herein.
2. Planting loam for general planting of non-acid loving plants shall have a true pH value of 5.5 to 6.5. If it does not, it shall be amended by the Contractor to the proper pH range by mixing with dolomitic limestone as specified herein.
3. The amount of either sulfur or limestone required to adjust the planting loam to the proper pH range (above) shall be approved by the Engineer on the basis of soil tests as specified herein. It is not possible to safely add more than two hundred pounds (200 lbs.) of limestone/one thousand (1,000) square feet of loam, incorporated into the soil, or fifty pounds (50 lbs.) of limestone/one thousand (1,000) square feet of loam, surface application, within a single season. Therefore loam shall have a starting pH of no lower than 4.2 for ericaceous plants and broad-leaved evergreens, and a starting pH of no lower than 5.0 for general planting of non-acid loving plants.

Planting mix shall consist of pH adjusted loam which has been thoroughly premixed with organic material in the proportions of one (1) part organic matter, (leaf compost or peat), with five (5) parts of approved loam.

ITEMS 775.141 – 794.735 (Continued)

Aged Pine Bark Mulch

Aged Pine Bark Mulch shall be pine bark mulch aged a minimum of six (6) months and not longer than two (2) years. The mulch shall be dark brown in color, free of pieces of wood thicker than one-quarter inch. Mulch must be free of stringy material over 4 inches in length, free of pieces over 3 inches in width and shall not contain, in the judgment of the Engineer, an excess of fine particles.

Anti-desiccants

Anti-desiccants shall be emulsions or other materials which will provide a protective film over plant surfaces permeable enough to permit transpiration and specifically manufactured for that purpose. Manufacturer of anti-desiccant shall be subject to the Engineer's approval. Anti-desiccant shall be delivered in containers of the manufacturer and shall be mixed according to the manufacturer's instructions.

Water

The Contractor shall be responsible to furnish his own supply of water to the site at no extra cost. If possible, the Owner shall furnish the Contractor upon request with an adequate source and supply of water at no charge. However, if the Owner's water supply is not available or not functioning, the Contractor shall be responsible to furnish adequate supplies at his own cost. All work injured or damaged due to the lack of water, or the use of too much water, shall be the Contractor's responsibility to correct. Water shall be free from impurities injurious to vegetation.

Tree Staking

Tree staking: Tree stakes shall be a below-grade stabilizing system designed to secure root balls into subsoil, structural planting medium and planting soil back fill without use of above ground components.

1. Wooden Stakes shall be fabricated from Hardwood.
2. Stakes shall be as shown on the Contract Documents.
3. Stakes shall be sized to accommodate tree sizes noted herein. At a minimum below-grade stakes shall have long prong 42 inches in length, short prong 12 inches in length and connecting bar stock 12 inches in length.
4. Provide a minimum of three stakes per tree.

Construction Methods

Planting

Furnishing and planting of plant material shall include, but shall not be limited to, the digging of the pits and plant beds, amendment of loam as required to produce planting soil mix, provision of soil additives required to adjust for pH requirements of specific plants, furnishing the plants as specified as well as the labor of planting, fertilizing, mulching, guying, and maintenance.

The Contractor shall locate plant material sources and ensure that plants are shipped in timely fashion for installation.

ITEMS 775.141 – 794.735 (Continued)

Contractor shall locate all underground utilities within 10 feet of the proposed planting pits and notify the Engineer of any conflicts prior to digging plant pits.

Location for all trees and shrubs and outlines for groundcover and bulb planting areas shall be staked on the ground by the Contractor for approval by the Engineer before any plant pits or plant beds are dug. Notify the Engineer no less than 5 days prior to desired date of inspection of staking to schedule site visit.

Seasons for Planting:

Spring: Deciduous materials - March 21 through May 1
 Evergreen materials - April 15 through June 1

Fall: Deciduous materials - Oct. 1 through Dec. 1
 Evergreen materials - Aug. 15 through October 15

Certain trees, as shown on the Plant List on the Drawings, shall only be dug in the spring. Contractor shall arrange project schedule as necessary to allow for spring digging of these trees.

Substitutions of other plants for the trees specified in order to perform fall planting will not be accepted.

Planting

Loam fill shall be installed as per requirements of Section 751.

At least one month prior to the expected planting date, the Contractor shall request that the Engineer provide a representative to select and tag stock to be planted under this Section. The Contractor shall pay for the transportation, subsistence, and overnight accommodations, if necessary, for the Engineer's representative during the period of time required to select and tag the plant material. Time spent to locate plant material shall be paid for by Contractor only if Engineer is sent to site where materials were not satisfactory to Engineer or cannot be located.

A representative of the Contractor shall accompany the Engineer on all plant material selection field trips, unless otherwise ordered by the Engineer.

All trees, a representative sample of each shrub species, and all plants designated as "specimen quality" on the Plant List shall be selected by the Engineer at the place of growth prior to digging for conformity to specification requirements as to quality, size, and variety. Such approval shall not impair the right of inspection and rejection upon delivery at the site or during the progress of the work. Cost of replacement of materials rejected by the engineer at the site shall be borne by the Contractor.

All plants for the project shall be individually tagged prior to digging with the Engineer's seals. No plants shall be accepted for delivery to the site without such seals.

Part V

ITEMS 775.141 – 794.735 (Continued)

Tree trunks shall be protected during shipping by a heavy walled cardboard sleeve or other suitable material, then unwrapped for inspection by Engineer after installation. Trees shall then be rewrapped as specified herein unless instructed otherwise by Engineer.

All trees and shrubs shall be planted within 5 working days of arrival on site or shall be rejected by the Engineer. Container grown shrubs stored on site shall be shaded from direct sunlight at all times and shall not be stored on paved surfaces.

Keeping Trees Plumb: Contractor shall keep trees plumb and upright at all times. Monitor plants on a regular basis and, if a tree is moved out of plumb, then straighten the tree to a vertical, upright condition.

All trees shall be firmly staked with approved below-grade stabilizing system at the time of planting. Stakes shall be installed as follows:

1. After trees have been backfilled but prior to forming saucer install below-grade staking system.
2. Place stakes so that the long prongs are set at 120 degree points around root ball. Long prongs shall be set against edge of rootballs but shall not pierce burlap of ball's vertical face.
3. Short prongs shall be placed in a counter clockwise rotation around top of rootball. Horizontal bar stock and short prongs shall be placed no closer than 4 inches from the trunk of the tree. In no circumstances shall horizontal bar stock press against visible root flares.
4. Drive long prongs into the subsoil, planting soil, structural planting medium to full depth so that horizontal bar is pressed firmly into burlap and top surface of rootball. Short prongs shall driven into rootball so that top of short prongs will not protrude above bark mulch.
5. Do not penetrate aeration piping with filter fabric sleeves when driving below-grade stakes.
6. Rake out planting soil around and above rootball to ensure a smooth surface with intact saucer.

Plant pits shall be excavated as shown on Drawings. Holes for trees and planting mix backfill shall be at least 4 feet greater in diameter than the ball and one foot deeper than the ball. Tree planting excavations shall extend a total of 6 feet from the center of each tree. The area greater than 2 feet from the tree's rootball shall be 18 inches deep. Shrub planting beds shall be excavated 2 feet below proposed finish grade and shall extend a minimum of 1 foot beyond the rootball of shrubs placed at the edge of the planting bed.

Loosen the perimeter roots on the rootball of all container-grown shrubs, groundcovers and perennials prior to planting, as directed by the Engineer.

Remove groundcovers and perennials from their pots immediately before planting. Handle plants carefully to prevent damaging roots. Place each plant in individual hole and firm the loam around the

ITEMS 775.141 – 794.735 (Continued)

roots. Water thoroughly and mulch as shown on the Drawings. Groundcover plants may be planted after the bark mulch is placed.

All plant roots and earth balls must be damp and thoroughly protected from sun and wind from the beginning of the digging operation, during transportation and at the site until the final planting. Remove container plants from containers prior to planting. Trees and shrubs shall be placed in the center of plant pits, plumb with the crown of their roots exposed and located above the surrounding finish grade. After completion of planting installations, remove rope, burlap and wire baskets from the root balls. Loam shall be backfilled in layers of not more than 6 inches and each layer watered sufficiently to settle before the next layer is put in place. Enough loam shall be used to bring the surface to finished grade when settled. A saucer shall be formed around each plant at a depth of 6 inches for trees and 4 inches for shrubs.

At the time of planting, install fertilizer packets at a depth of 6 to 8 inches equally spaced around the plant as it is being backfilled. Packets shall be placed approximately 3 inches away from the plant roots or plant ball. Packets shall not be cut, ripped or damaged. If it becomes necessary to remove and replace dead or unhealthy plants, any damaged or broken packets shall be replaced with new packets.

The application rates for fertilizer packets shall be as follows:

<u>Type of Plant</u>	<u>Rate</u>
Deciduous Shade Trees	One packet for each inch of caliper
Evergreen and Small Flowering Trees	One packet for each 18 inches of height
Shrubs	One packet for each 12 inches of height or spread

All plants shall be watered immediately following planting as necessary to thoroughly moisten rootball and plant pit loam and thereafter shall be inspected frequently for watering needs and watered, as required, to provide adequate moisture in the planting pit. The Contractor shall inspect tree pits 24 hours after initial watering to confirm that they are draining properly. If surface water or excessively saturated plant pit soils exist, the Contractor shall immediately notify the Engineer. The Engineer shall recommend remedial measures based upon site conditions which shall be paid for as an extra to the contract.

ITEMS 775.141 – 794.735 (Continued)

Aged Pine Bark Mulch shall be placed in tree and shrub planting beds to a depth shown on the drawings, after settlement, no later than one week after planting. No pine bark mulch shall be placed in contact with tree trunks or shrub stems. No mulch shall be applied prior to the first watering of the plant materials.

Pruning

1. Trees and shrubs shall be pruned following planting in accordance with the American Nurserymen's Association Standards for Class I, fine pruning, to preserve the natural character of the plant, as directed by the Engineer.
2. Tree pruning as required, shall be undertaken to the full height of affected trees.
3. All dead wood or suckers and all broken or badly bruised branches shall be removed. Never cut a leader.

Anti-desiccant shall be applied to all evergreen and other plants in the late fall as directed by the Engineer.

All trees shall be firmly guyed or anchored at the time of planting, unless otherwise approved or directed by the Engineer. Cables used for guying shall be secured to the tree by passing through an approved hose or nylon webbing to prevent chafing and injury to the trees. All cable ends at stakes, webbing, deadmen, turnbuckles, hose or anchor connections shall be formed with a looped connection secured with compressed malleable fittings as specified.

Absolutely no debris may be left on the site. Excavated material shall be removed as directed. Repair any damage to site or structures to restore them to their original condition as directed by the Engineer, at no cost to the Department.

Plant Maintenance

Contractor shall maintain all new plantings as indicated below. Maintenance shall begin immediately after each plant is planted and shall continue until the final acceptance and as described in Sections 771.72 and 771.73 of the Standard Specifications except that the time period for each shall be one (1) year (365 days) prior to Final Acceptance in place of the sixty (60) days noted in the Standard Specifications.

Maintenance of new plantings shall consist of keeping the plants in a healthy growing condition and shall include but is not limited to watering, weeding, cultivating, pruning, re-mulching, tightening and repairing of guys, removal of dead material, resetting plants to proper grades or upright position, and maintaining the planting saucer.

1. Plants shall be inspected for watering needs at least twice each week and watered as necessary to promote plant growth and vitality.

ITEMS 775.141 – 794.735 (Continued)

2. Planting beds shall be kept free of weeds, and mulch shall be maintained at the required depth. Beds and individual pits shall be neat in appearance with clearly defined edges and maintained to the designed layout.
3. Plants that die during the maintenance period shall be removed by the Contractor within one week of notification and replaced during that growing season.
4. Guy wires and anchoring cables shall be tightened and repaired weekly. Guys wires and anchoring cable to be removed at completion of maintenance period.

Work of pruning, fertilizing, spraying, and similar activities shall be undertaken only by certified arborists and chemical applicators, as pertinent to the work being performed.

During the maintenance period, any decline in the condition of existing trees and new plantings shall require the Contractor to take immediate action to identify potential problems and undertake corrective measures. If required, the Contractor shall engage professional arborists and/or horticulturalists to inspect plant materials and to identify problems and recommend corrective procedures. The Engineer shall be immediately advised of such actions. Inspection and recommendation reports shall be submitted to the Engineer.

Clean Up

Absolutely no debris may be left on the site. Repair any damage to site or structures to restore them to their original condition, as directed, at no cost to the Department.

Acceptable Standards

General:

1. The Engineer will inspect the work upon the request of the Contractor. Requests for inspection shall be received by the Engineer at least ten days before the anticipated date of inspection.
2. The inspection dates shall follow the minimum maintenance periods called out for respective work items.
3. Upon acceptance of the work, the Engineer shall issue a written Certificate of Acceptance notice to the Contractor.

Planting:

1. At the time of inspection, if the plant materials and workmanship are acceptable by the Engineer, the date of the inspection shall establish the end of the maintenance period and the commencement of the required guarantee period for planting work.
2. At the time of inspection or if, in the Engineer's opinion plant materials and/or workmanship is deficient, acceptance will not be granted, and the Contractor's responsibility for deficiencies are corrected. All dead and unsatisfactory plants shall be removed promptly from the project.

Part V

ITEMS 775.141 – 794.735 (Continued)

Replacement plants shall conform in all respects to the Specifications for the original plants and shall be planted in the same manner.

Plant Material Replacements

All shrubs, vines, groundcovers, and trees shall be inspected by the Engineer two years after acceptance and shall be alive and in satisfactory growth at the end of that time.

Each plant shall show at least 75 percent healthy growth and shall have the natural character of a plant of its species as determined by the Engineer. Plants found to be unacceptable shall be removed promptly from the site and replaced immediately or during the next normal planting season, as permitted by the specifications, until the replaced plants live for two full years. A final replacement inspection will be made after the replacement plantings have lived through two full years.

All replacements shall be plants of the species, variety and size specified in the PLANT LIST. The cost shall be borne by the Contractor, except for possible replacements due to vandalism or neglect on the part of others.

Method of Measurement and Basis of Payment

The quantity of trees, shrubs, and ground covers shall be measured by each, as specified on the PLANT SCHEDULES on the Contract Documents, complete in place.

Planting of trees, shrubs and ground covers will be paid for at the contract unit price per each, which price shall include all labor, plant materials, equipment and incidental cost required to complete the work.

Planting will be 50% paid at time of planting, and the rest paid at completion of project once plants have been maintained and accepted.

For plants that do not show at least 75 percent healthy growth and that do not have the natural character of a plant of its species at the time of acceptance, no payment for planting shall be allowed at the time of acceptance. At the time the final estimate is ready to be forwarded to the Contractor the plantings will again be inspected by the Engineer and if replacement plants have been satisfactorily established, the plantings will be included for payment.

No separate payment will be made for fine grading and compacting, soil amendments, water, staking, or aged pine bark mulch, but all costs in connection therewith shall be included in the Contract unit price bid.

ITEM 804.3

**3 INCH ELECTRICAL CONDUIT
TYPE NM - PLASTIC -(UL)**

FOOT

The work under this Item shall conform to the relevant provisions of Section 801 of the Standard Specifications and the following:

The work shall include the furnishing and installation of 3-inch non-metallic conduit for the traffic pedestrian hybrid beacon and rectangular rapid flashing beacon systems in accordance with the plans and as directed by the Engineer.

The conduit material shall be Schedule 80 polyvinyl chloride (PVC) plastic conduit.

The length of conduit estimated under this Item is not guaranteed by the Engineer; it may be increased or decreased by the Engineer depending upon actual conditions encountered as provided for in Section 4.06 of the Standard Specifications.

Where new conduits are installed in existing grass areas outside the limits of grading, the work shall include the placement of a minimum of 4 inches of topsoil and sod to restore the disturbed areas to their original condition. No separate payment will be made for this work, but all costs in connection therewith shall be included in the unit price bid.

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

Metallic warning tape shall be placed above the conduit as shown on the Construction Details.

Method of Measurement and Basis of Payment

Electrical Conduit will be paid for at the Contract unit price per foot, which price shall include sawcutting, excavation, ordinary borrow, gravel borrow, metallic warning tape, sand bedding, all labor, materials, equipment and incidental costs required to complete the work.

Controlled Density Fill-excavatable shall be paid for under Item 153.

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

ITEM 824.01 **PEDESTRIAN HYBRID BEACONS** **LUMP SUM**
(LOCATION NO. 1)

ITEM 824.02 **PEDESTRIAN HYBRID BEACONS** **LUMP SUM**
(LOCATION NO. 2)

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

The work shall include the furnishing and installation of part or all of the following items: local traffic signal controllers; cabinets and foundations with concrete pads; signal posts and foundations; mast arm assemblies with anchor bolts and foundations; signal heads; backplates; pull boxes; pedestrian signals with countdown timer units; accessible pedestrian signal (APS) pushbuttons; all cable and wiring; ground rods, equipment grounding and bonding; service connections; and all other equipment, materials and incidental costs necessary to provide complete, fully operational pedestrian hybrid beacons (a.k.a. HAWK) systems as specific herein and as shown on the plans. The locations are as follows:

Hudson
Main Street at Mass Central Rail Trail (Item 824.01)

Sudbury
Boston Post Road (Route 20) at Mass Central Rail Trail (Item 824.02)

A list of major traffic signal items required at these locations are included on the plans.

Shop Drawings

Following execution of the Contract, the Contractor shall submit shop drawings for signal supports, a list of equipment, and manufacturer's equipment specifications to the Engineer in accordance with the relevant provisions of Section 815.20.

No work shall be commenced by the Contractor until approval of the shop drawings and manufacturer's data has been received in writing from the Engineer. Approval of these drawings will be general in character and shall not relieve the Contractor from the responsibility of, or the necessity of, furnishing materials and workmanship conforming to the plans and specifications.

The Contractor shall deliver to the Engineer a certificate of compliance with the manufacturer for all materials purchased from the manufacturer.

ITEMS 824.01 & 824.02 (Continued)

Signal Turn-on

Prior to initial turn-on of the pedestrian hybrid beacons, equipment, and signal displays as shown on the plans and called for in these special provisions, shall be installed and operable. Applicable signs and pavement markings shall also be in place when the signals are put into operation.

Service Connections

The service connections shown on the plans are approximate only. The Contractor shall determine exact locations from the servicing utility, arrange to complete the service connections, and be responsible for all charges incidental thereto.

The respective utility company is responsible for making the connection from the respective riser to the overhead wires.

Testing of Grounding System

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

Traffic Signal Equipment

The controllers, malfunction management units, bus interface unit and all other ancillary traffic signal control component included in the traffic control cabinet shall comply with the National Electrical Manufacturers Association (NEMA) Standard No. TS 2, Traffic Controller Assemblies with National Transportation Communications for ITS Protocol (NTCIP) Requirements.

Traffic Signal Controllers and Cabinets

The controllers and cabinet assemblies shall be supplied in a 8-phase TS 2 Type 1 configuration, with a Type 5 (56”H x 30”W x 18”D) ground mounted cabinet, as required in the list of major traffic signal items included on the plans.

TS 2 Type 1 Controllers and Cabinet Assemblies: The Controllers shall conform to Section 3, Controller Units of NEMA No. TS 2, Traffic Controller Assemblies. Controllers shall utilize an input/output interface conforming to Section 3.3.1 of the NEMA TS 2 Standard for all input/output functions with the backpanel terminals and facilities, the malfunction management unit, and auxiliary devices. The controller unit shall be configured to support the operation of the pedestrian hybrid beacons as defined in Section 4F.03 of the 2009 Manual on Uniform Traffic Control Devices.

The controllers shall be a keyboard-entry menu-driven units.

ITEMS 824.01 & 824.02 (Continued)

Note: The controller units shall be supplied with software necessary to support Hawk operation and be tagged on the front panel with a label “Controller HAWK Unit”.

The TS 2 Type 1 cabinets shall meet the requirements of configuration 2 as defined in Table 5-2, “Type 1 Configurations” of the NEMA TS 2 Standard.

The controller cabinets shall be made of aluminum. For painting requirements refer to the section titled “Painting”.

A slide-out document tray shall be mounted below the bottom shelf. The tray shall be of sufficient size to hold cabinet wiring diagrams and two manuals. The tray shall operate by sliding out on nylon rollers or ball bearings and opening a hinged cover to remove documents.

The closed cover shall provide a suitable support for resting documents or a laptop computer. All cables shall be tied away to allow the tray to be opened and closed smoothly without any obstructions.

The Contractor shall supply an 8½”x17” laminated copy of the traffic signal design plans and sequence and timing chart to be left in the cabinet’s documentation envelope mounted on the inside of the cabinet door.

Controller cabinet foundations shall not obstruct a sidewalk or crosswalk so that passage by physically-challenged persons is impaired.

GFI Duplex Outlet

A second separate GFI protected duplex outlet shall be supplied in the controller cabinets, and mounted on the side wall of the cabinets for servicing other devices.

Bus Interface Units

The Bus Interface Units (BIU) shall comply with Section 8 of the NEMA TS 2 Standard. The BIU shall be fully interchangeable with any other manufacturer’s unit and interchangeable in a NEMA TS 2 Type 1 cabinet assembly.

The BIU shall perform the interface function between port 1 at the controller unit, the malfunction management unit, and the backpanel terminal and facilities.

As a minimum, two LED indicators shall be provided on the BIU front panel. One indicator shall serve a dual use; as a power on indication and as a diagnostic indicator for proper operation of the device. The second indicator shall serve as a transmit indicator illuminating each time data is transmitted.

ITEMS 824.01 & 824.02 (Continued)

Surge Suppression

The Contractor shall supply and install surge suppression in the controller cabinet in accordance with the manufacturer's recommendations.

Load Switches

Load switches shall comply with Subsection 6.2 of the NEMA TS 2 standard. All load switches shall utilize optically isolated encapsulated modular solid state relays. Discrete components on circuit boards are not acceptable.

Load switch indicator lights shall be LED-type and wired on the input side of the device.

Flasher

Flashers shall comply with Subsection 6.3 of the NEMA TS 2 standard and be equipped with two output indicator lights which will show flashing power out to the cabinet assembly.

Flash Transfer Relays

Flash transfer relays shall comply with Subsection 6.4 of the NEMA TS 2 standard.

The field electrical loading for flash operation shall be wired through the transfer relays such that the load on the 2-circuit flasher is as balanced as possible within the limitations of the signal phasing.

Cabinet Power Supply

Separate power supply shall be supplied and installed in the TS 2 cabinet. As a minimum, the power supply shall meet all requirements of Paragraph 5.3.5 of the NEMA TS 2 Standard. The unit shall be AC line powered and provide regulated DC power, unregulated AC power, a line frequency reference for the load switches and other auxiliary cabinet equipment as required.

The power supply shall be either rack or shelf mounted.

The unit shall contain four LED indicators on the front panel to indicate the four outputs;

- + 12 VDC +/- 1 VDC @ 2.0 amps,
- + 24 VDC +/- 2 VDC @ 2.0 amps,
- 12 VAC @ 250 milliamps, and
- 60 Hz line frequency reference.

ITEMS 824.01 & 824.02 (Continued)

A test point terminal shall also be located on the unit front panel for + 24VDC and logic ground testing.

Malfunction Management Units

The malfunction management units (MMUs) shall comply with Section 4 of the NEMA TS 2 standard. The MMUs shall be capable of operating as either a Type 16 with 16 channels (8 vehicle, 4 pedestrian, 4 overlap) or a Type 12 with 12 channels (8 vehicle, 4 overlap). The MMUs supplied shall be configured to operate as Type 16 unit.

The MMUs shall be capable of operating in a NEMA TS 2 Type 1 cabinet or a NEMA TS 1 cabinet without loss of functionality.

The MMUs shall be capable of operating in a “HAWK” traffic signal control assembly.

Note: The MMUs shall be tagged on the front panel with a label stating “MMU HAWK Unit”.

Spare Equipment

The Contractor shall provide the following spare signal equipment in the proposed traffic signal controller cabinets:

- A full complement of load switches to accommodate each available position of the back panel.
- A full complement of flash transfer relays to accommodate each available position of the back panel.
- Two (2) Bus Interface Units.
- A 25-foot RS-232 cable for communication function with a laptop computer.

Mast Arms, Poles and Foundations

Mast arm poles shall be fabricated and constructed in conformance with the 2015 *MassDOT Overhead Signal Structure and Foundation Standard Drawings* and as stated below.

Acceptance of Type 2 mast arm poles and luminaire arms will be contingent upon review and approval of shop drawings submitted by the Contractor. Longhand design calculations shall be submitted by the Contractor with the shop drawings for the Type 2 mast arms, and poles.

The Contractor shall provide a set of calculations, stamped by a Structural Engineer registered in the Commonwealth of Massachusetts, along with plans and specifications for review by the Engineer.

ITEMS 824.01 & 824.02 (Continued)

The Contractor shall be responsible for performing all soil borings and soil classifications associated with the mast arms and poles. Reference is made to Items 191, 191.10, 191.11, and 193 for more information.

All mast arm pole foundations shall be a cored pier foundation and constructed in conformance with MassDOT Standard Drawings. Foundation sizes and depths shall be selected from the foundation design charts shown in MassDOT's Standard Drawings.

Prior to installation, the Contractor shall notify the Engineer in writing of his selection of all foundation footing sizes.

For painting requirements refer to the section titled "Equipment Finish and Color".

If ledge or unsuitable soil is encountered (i.e. on which does not apply to the design tables shown in MassDOT's standard drawings), an alternative design shall be provided by the Design Engineer. If utilities or other underground obstructions are encountered, the Contractor shall backfill the area to its original condition until an alternate design has been provided by the Design Engineer and approved by the Owner.

No separate payment will be made for work considered incidental to the excavation, including but not limited to, mast arm foundations, dewatering, etc. but all costs in connection therewith shall be included in the Contract lump sum prices bid.

Foundations shall not obstruct a sidewalk or crosswalk so that passage by physically-challenged persons is impaired.

Sign Mounting

Proposed signs on mast arm poles and mast arm shafts shall be bolt mounted through the sign face. Hanging or swinging sign mountings are not allowed. Sign mounts shall be for the same design wind load required for the signal installation.

Signal Housing Brackets

All signal housing brackets must be installed to manufacturer's specifications and must be properly torqued.

Signal Heads

Signal heads mounted on mast arms shall be rigidly attached to the mast arms. Signal heads attached on mast arms shall be mounted in such a way that the bottom of all signal heads are at the same height. All traffic signal lenses shall be 12 inches in diameter.

ITEMS 824.01 & 824.02 (Continued)

All signal heads shall be equipped with ball and/or arrow light emitting diode (LED) modules.

Five (5) inch non-louvered backplates and tunnel visors shall be provided on all signal heads.

All backplates shall include 3-inch wide, yellow reflective micro-prismatic retroreflective sheeting conforming to ASTM D4956 Type VIII or better on the outside edge of the backplates.

Traffic Signal Led Module

All signal and pedestrian displays shall be equipped with LED signal modules. All red, amber, green, and pedestrian signal housings with the exception of optically programmed and fiber optic housings and shall conform to the following where applicable:

- ITE's Vehicle Traffic Control Signal Heads – Light Emitting Diode (LED) Arrow Traffic Signal Supplement, Dated July 1, 2007
- ITE's Vehicle Traffic Control Signal Heads – Light Emitting Diode (LED) Circular Signal Supplement, Dated June 27, 2005.
- ITE's Pedestrian and Countdown Signal Modules Compliant to PTCSI - Part 2 Light Emitting Diode (LED), Dated, February 2011
- On the MassDOT Traffic Signal Approved Equipment List

For an LED module to be installed on this project, the LED module shall have approval from the MassDOT Traffic Control Products Approved Equipment Committee and be included on the Traffic Control Products List prior to the date of this proposal

To prevent the LED module warranty from being voided, the connecting leads on the module shall not be cut. The original LED module leads shall be connected to the signal head terminal block as continuous wire without splices.

The LED signal module will be replaced or repaired by the manufacturer if it exhibits one of the following:

- A failure due to workmanship or material defects within the first 60 months of field operation.

A greater than 40 percent light output degradation or a fall below the minimum intensity levels (as defined by the latest ITE performance specifications) within the first 36 months of field operation

Warranty: The LED signal module will be replaced or repaired by the manufacturer if it exhibits a failure due to workmanship or material defects within the first 60 months of field operation.

ITEMS 824.01 & 824.02 (Continued)

The LED signal module will be replaced or repaired by the manufacturer if it exhibits either a greater than 40 percent light output degradation or a fall below the minimum intensity levels within the first 36 months of field operation.

Pedestrian Heads with Countdown Timers

All pedestrian heads shall be 16-inch pedestrian signal with countdown timer and cap visors. Pedestrian head indications shall be illuminated LED type displaying the graphical symbols of a walking person and/or upraised hand. The internal countdown module shall consist of two 7-segment digits, 8 inch high and made of 88 LEDs. The display of the number of remaining second shall begin only at the beginning of the alternating red flashing interval. After the countdown displays zero, the display shall remain dark until the beginning of the next countdown. **The countdown display shall only be displayed during the alternating red flashing interval.** The countdown module shall be automatically set by the intersection controller based upon alternating red flashing interval signal timing. The countdown module shall continuously monitor the intersection controller for any changes to the alternating red flashing interval timing and reprogram itself automatically.

All LED indications on the pedestrian signal shall have an automatic dimming circuit for night illumination to reduce long-term degradation to the LEDs.

The pedestrian signal housings shall be made of aluminum with cap visors.

Accessible Pedestrian Signal Pushbuttons

The Accessible Pedestrian Signal (APS) pushbuttons shall provide information in non-visual formats (such as audible tones, speech messages, and/or vibrating surfaces). The APS pushbuttons shall be compliant with the 2009 MUTCD. At a minimum the APS pushbuttons shall be provide with the following features:

- Pushbutton locator tone
- A visible and audible indicator that the button press has occurred
- A vibro-tactile arrow
- A speech walk message for the “WALKING PERSON” indication

The APS pushbuttons shall provide visually disabled pedestrians with a locator tone that will allow them to find the pushbutton to activate the walk signal. Once the pushbutton call has been placed, the signal will provide both an audible and tactile response during the related “WALK” portion of the cycle. A sunlight visible LED latches “ON” to confirm the button has been pushed. The audible response shall be a speech message, indicating the name of the street crossing, and when the phase is started.

ITEMS 824.01 & 824.02 (Continued)

Housing and Pushbutton Unit – Shall meet the following minimum requirements:

- Constructed of cast aluminum with a powder coated finish.
- Highly vandal resistant and pressure activated with essentially no moving parts.
- Pushbutton must be able to withstand an impact from a baseball bat or hammer.
- Operating temperature range -34 degrees Celsius to 65 degrees Celsius.
- Operating voltage range 12 to 36 VDC.
- Button cap must be made of solid 316 stainless steel.
- Pushbutton must activate with 5 lbs. of force or less.
- Unit must have an LED display to give indication that of pushbutton being pushed.
- Pushbutton must fully operate immediately after being completely immersed in water for 5 minutes (electrical terminals isolated from water).
- Pushbutton must not allow ice to form such that it would impede function of pushbutton or pushbutton cap.
- All switch electronics must be sealed within the housing.
- All sounds shall emanate from the back of the of the APS pushbutton unit via a weatherproof speaker that is protected by a vandal resistant screen.

Tactile Arrows and Locator Tones – Shall meet the following minimum requirements:

- APS pushbuttons shall incorporate a locator tone at the pushbutton the locator tone, measured at 3 feet from the APS pushbutton, shall be 2dB minimum and 5dB maximum above ambient noise level in standard operation and shall be responsive to ambient noise level changes. Tones shall consist of multiple frequencies with a dominant component of 880Hz. The duration of the locator tone shall be 0.15s and shall repeat at intervals of 0.15s.
- APS pushbuttons shall be a minimum of 2 inches across in diameter and shall contract visually with their housing and mounting.
- APS pushbuttons shall include a vibro-tactile arrow aligned parallel to the crosswalk direction. The arrow shall be raised 0.03 inches minimum and shall be 1.5 inches minimum in length. The arrow head shall be open at 45 degrees to the shaft and shall be 33 percent of the length of the shaft. Stroke width shall be 10 percent minimum and 15 percent maximum of arrow length. The arrow shall contrast with the background.
- The arrow shall vibrate during the “WALK” portion of the cycle.

Speech Walk Message – The speech walk message shall be audible from the beginning of the associated crosswalk. The speech walk message and associate APS pushbuttons shall be as follows:

ITEMS 824.01 & 824.02 (Continued)

TABLE 1

PEDESTRIAN PUSHBUTTONS	SPEECH WALK MESSAGE
ALL	Walk sign is on to cross street

Mounting Requirements - A maximum mounting height of 42 inches above the finish sidewalk grade shall be used for APS pedestrian pushbuttons. If required pushbutton extension brackets shall be used to meet this mounting height and lateral offset.

The Contractor is hereby notified that they are ultimately responsible for constructing all pedestrian push button elements (clear ground space, forward and side arm reaches) in strict compliance with the current AAB rules, regulations and standards.

All construction elements in this project associated with pedestrian push buttons are controlled by 521CMR – Rules and Regulations of the Architectural Access Board.

The Contractor shall establish clear ground space at all pedestrian push button locations and shall set arm reach lengths according to the AAB rules (or to the details shown on the plans).

The project has been designed to conform to all AAB rules, and the Engineer is not aware of any required variances for the work presented on the design plans. The Contractor shall notify the Engineer of any project element related to the pedestrian push buttons that will not comply with 521 CMR prior to constructing said pedestrian push button elements.

Installation - The APS pushbuttons shall be installed by Contractor and as recommended by the manufacturer and documented in installation materials provided by the manufacturer. The Contractor shall be responsible for the proper programming of the APS pushbuttons, orientation of the pushbuttons, and all other work necessary to provide a complete and operational APS pushbutton system. The Contractor may be required to adjust volume levels as directed by the Engineer. When the setup is complete and the APS pushbuttons are ready for operation, the values of all parameters that were set during the process shall be delivered to the Engineer in printed and computer-readable form.

Warranty - Each APS pushbutton shall be warranted free from defects in material and workmanship for a period of at least 2 years from the date of installation by the Contractor and acceptance from the owner.

ITEMS 824.01 & 824.02 (Continued)

During the warranty period, technical support shall be available from the supplier to owner via telephone within 4 hours of the time a call is made by a user, and this support shall be available from factory-certified personnel without charge.

Posts and Bases

Signal posts and bases shall be steel shafts with transformer bases. For painting requirements refer to the section titled "Equipment Finish and Color".

Signal base foundations shall not obstruct a sidewalk or crosswalk so that passage by physically challenged persons is impaired.

Software

The local controller, and malfunction management unit software shall be supplied with the latest available revision. Any software upgrades released by the manufacturer shall be supplied at no charge to the Owner for a period of five years after acceptance of the installation on the pedestrian hybrid beacons.

Data Base Programming & Documentation

Each programmable local hardware component (controller and malfunction management unit) shall be initially programmed by the Contractor based on information contained on the plans. Three sets of hard copy programming per device shall be supplied to the Owner.

The Contractor shall supply an 8½"x17" laminated copy of the traffic signal design plans and sequence and timing chart to be left in the cabinet's documentation envelope mounted on the inside each of the cabinet doors.

Equipment Finish and Color

All proposed traffic signal equipment including but not limited to mast arm assemblies, signal posts, bases, signal heads, visors (outside), doors, pushbutton saddles, service meter socket box, optical preemption detectors, hardware, and rigid mounting brackets for signals and signs shall be colored **FLAT BLACK**. Mast arms and poles shall be colored **FLAT BLACK** and subject to the approval of the Town of Hudson and the Town of Sudbury. The Contractor shall submit to the Engineer, and towns for approval, paint chips and sample finishes on steel and aluminum of the intended color prior to any work being done under this heading.

Signal heads, doors, visors, mounting brackets, and hardware supplied direct from the manufacturer in the color stipulated above may be acceptable provided it meets or exceeds the finish process for the material indicated below.

ITEMS 824.01 & 824.02 (Continued)

Steel Equipment

Galvanizing

All bolts, screws, nuts, rods and washers shall be galvanized in accordance with AASHTO M232 and the Standard Specifications. The hardened machine screws may be electroplate galvanized. Stainless steel studs, bolts, screws, nuts, straps and washers shall not be galvanized. Galvanized hardware need not be painted; however, the ends of bolts, nuts, and washers shall be painted in the field according to section "Touch-up and Repairs." Immediately prior to galvanizing, the steel shall be immersed in a bath of zinc ammonium chloride. The dry kettle galvanizing process shall be used.

All steel components, other than above, shall be galvanized after fabrication in accordance with AASHTO M111. The galvanizing bath shall contain nickel (0.05% to 0.09% by weight).

Galvanized members requiring shop assembly shall be welded and drilled prior to galvanizing.

Coating Over Galvanized Steel

Prior to painting, the applicator shall ensure that all components are smooth and without sharp protrusions that would present an injury hazard to pedestrians. Also, the fabricator shall ensure that all welds shall be cleaned thoroughly in accordance with good practice and according to AWD D1.5 and ASTM A123-89a and shall have a suitable surface to accept the galvanizing.

In preparation for the two-coat painting system, the surface shall be blast cleaned in accordance with the requirements of SSPC SP7 "Brush-Off Blast Cleaning" or other method producing equivalent results and uniform profile, to achieve a 1.0 to 1.5 mils anchor profile as indicated by a Keane Tator profile comparator or similar device. The creation of the anchor profile shall be performed prior to the formation of "white rust" on the galvanized surface.

Following blast cleaning, the zinc coating thickness shall be measured to verify that the coating thickness is in accordance with AASHTO M111.

A two-coat painting system shall be applied by the Galvanizer in his own facility within twelve hours of galvanizing the steel components.

The prime coat material shall be a polyamide epoxy applied to minimum dry film thickness of 2.0 to 4.0 mils (0.002-0.004 in.) and force cured as given below for the finish coat.

The finish coat material shall be a two component, catalyzed aliphatic urethane applied by airless spray to a minimum dry film thickness of 4.0 mils.

ITEMS 824.01 & 824.02 (Continued)

The color shall be **FLAT BLACK** as noted above. The fabricator shall submit to the Engineer for approval, paint chips of the intended color prior to any work being done under this heading.

All finish coat material shall be applied under conditions within the following tolerances:

Air Temperature 50°F min., 90°F max.

Surface Temperature 50°F min., 100°F max.

Surface temperature must be at least 5°F above the dew point.

The finish coat shall be cured in a booth capable of maintaining 150°F for 2-4 hours.

Touch-up and Repairs

Should any damage occur to the galvanized coating during shipping or handling at the job site, the Contractor shall repair and touch-up any damaged areas to the satisfaction of the Engineer and the following:

Touch-up of galvanizing before the finish coat is applied shall be accomplished by applying galvanizing repair paint. The dry film thickness of the applied repair paint shall not be less than 4.0 mils.

Applications shall be in accordance with the manufacturer's instruction.

Field touch-up procedures shall conform to the recommendations of the Galvanizer. Touch-up of the finish coat shall be by applying a coating of a two-part urethane, as supplied by the Galvanizer, to achieve a dry film thickness of at least 4.0 mils. Prior to the application of the paint, remove all damaged coatings down to a solidly adhered coating and apply galvanizing repair paint as primer.

Allow the primer to dry for at least 4 hours prior to top coating.

The Contractor shall also use the touch-up paint material and procedures to paint the galvanized hardware used in field erection that has not been finish coated previously.

Aluminum Equipment

All aluminum equipment called for shall have a powder coat finish **BLACK**, as noted above, in color. The coating shall be a polyester-TGIC (triglycidyl isocyanurat) resin system conforming to the following:

ITEMS 824.01 & 824.02 (Continued)

Quality	Test	Limits
Abrasion	Taber abraser CS-10, 1000 gram load, 1000 cycle, ASTM D4060	100 mg. Maximum weight loss
Adhesion	ASTM D .59 Initial 1000 hours	5A 5A
Gloss	ASTM D 523 60° - 600 hours 60° - 1000 hours	82% retention 90% retention (washed)
Hardness	ASTM D 3363	2H – No Gouge
Impact	ASTM D 2794 Direct	Pass 80 inch-lb.
Salt Spray Resistance	ASTM B 177 ASTM D 1654 1000 hours unscribed 400 hours scribed	Table 2-10 Table 1-10
Weather Resistant	ASTM G 23, 1000 hours, 18 min. waterspray, 102 min. light	No film failure
Color	FLAT Black	
Identify	Infrared fingerprint	Match
Flexibility	180° bend; ½” dia, mandrel within 10 seconds	No breaks, flaking or cracks. Tested with a Q-panel with 2 mils or less of coating
Humidity	ASTM D 2247, 1000 hours	No blister or film failure
Thickness		4 mils +/- 1 mils
Mar Resistance		Good

A Certificate of Compliance of the powder coating system is required for the Engineer’s approval

Method of Measurement and Basis of Payment

The work under Items 824.01 and 824.02 will be measured and paid for at the Contract lump sum prices, which prices shall include all labor, material, equipment and incidental costs required to complete the work.

No separate payment will be made for work considered incidental to the excavation, including but not limited to, mast arm foundations, dewatering, etc., but all costs in connection therewith shall be included in the lump sum prices bid.

Conduit will be paid for separately under Item 804.3, 3 Inch Electrical Conduit Type NM Plastic (UL).

ITEM 825.21 **RECTANGULAR RAPID FLASHING BEACON** **LUMP SUM**
(AC POWER) LOCATION NO. 1

ITEM 825.22 **RECTANGULAR RAPID FLASHING BEACON** **LUMP SUM**
(AC POWER) LOCATION NO. 2

Work under these items shall conform to the relevant provisions of Section 800 of the Standard Specifications, the 2009 Manual on Uniform Traffic Control Devices (MUTCD), and the following:

The work shall include the furnishing and installation of part or all of the following items: side-of-post mounted control cabinets; signal posts and foundations; dual rectangular rapid flashing beacons; APS pedestrian push buttons; service connections; pull boxes; all cable and wiring; ground rods, equipment grounding and bonding; and all other equipment, materials and incidental costs necessary to provide complete, fully operational, pedestrian actuated, rectangular rapid flashing beacon (RRFB) systems as specific herein and as shown on the plans. The locations are as follows:

Hudson

- Wilkins Street at Mass Central Rail Trail (Item 825.21)

Sudbury

- Union Avenue at Mass Central Rail Trail (Item 825.22)

A list of major items required at these locations are included on the plans.

Shop Drawings

Within 30 days following execution of the Contract, the Contractor shall submit shop drawings for beacon supports, signs, a list of equipment, and manufacturer's equipment specifications to the Engineer in accordance with the relevant provisions of Section 815.20.

No work shall be commenced by the Contractor until approval of the shop drawings and manufacturer's data has been received in writing from the Engineer. Approval of these drawings will be general in character and shall not relieve the Contractor from the responsibility of, or the necessity of, furnishing materials and workmanship conforming to the plans and specifications.

The Design Consultant shall return the shop drawings within 15 days from the date of receipt from the Engineer.

The Contractor shall deliver to the Engineer a certificate of compliance with the manufacturer for all materials purchased from the manufacturer.

ITEMS 825.21 & 825.22 (Continued)

Service Connections

The service connection shown on the plans areas approximate only. The Contractor shall determine exact locations from the servicing utility, arrange to complete the service connections, and be responsible for all charges incidental thereto.

The respective utility company is responsible for making the connections from the respective riser to the overhead wires.

Equipment Bonding

Special purpose bonding wire shall be No. 8 AWG or larger conforming to the requirements of ASTM B-3.

Materials

Each RRFB system shall, at a minimum, consist of the following items, which shall be included in the lump sum bid:

- (2) concrete foundations;
- (2) 12' traffic signal posts and pedestals;
- (2) APS pushbutton systems;
- (4) dual rectangular yellow LED beacons in NEMA enclosures;
- (2) 9"x12" R10-25 (PUSH BUTTON TO TURN ON WARNING LIGHTS) signs;
- (2) 9"x12" SP-1 (WAIT FOR VEHICLES TO STOP BEFORE CROSSING) signs;
- (1) service connection;
- (1) NEMA Type 3R or higher enclosure to house:
 - Electrical components, including wiring and solid-state circuit boards;
 - On-board user interface;
- All mounting and supporting hardware and wiring necessary to complete a working system.

RRFB controller and LED beacons, APS pushbutton systems, and traffic signal posts and pedestals shall be listed on the MassDOT Qualified Traffic Control Equipment List. Pedestals shall be cast iron.

The light intensity of the LED beacons during daytime conditions shall meet the minimum specifications for Class 1 yellow peak luminous intensity in the Society of Automotive Engineers (SAE) Standard J595 (Directional Flashing Optical Warning Devices for Authorized Emergency, Maintenance, and Service Vehicles) dated January 2005. An automatic signal dimming device shall be included to reduce the brilliance of the LED beacons during nighttime conditions.

A pilot light shall be integrated into the housing of the dual rectangular yellow LED beacons, facing pedestrians in the crosswalk, to provide confirmation that the RRFB is in operation.

All signs shall be MUTCD-compliant. R10-25 signs shall have a black border and legend on a white background. SP-1 signs shall have black border and legend on a yellow background. All sign sheeting materials shall be per Subsection 828.41.

ITEMS 825.21 & 825.22 (Continued)

R10-25 signs may be integrated into the APS pushbutton system as a single unit or mounted separately on Type A aluminum.

SP-1 signs shall be Type A aluminum per Subsection 828.42.

Any proprietary software required for the programming and/or operation of the system shall be included at no additional cost.

Functional Requirements

The RRFB system shall remain dark until pedestrian actuation.

Upon actuation, all LED beacons shall activate and flash in a rapidly flashing sequence. Each sequence shall last 800 milliseconds and there shall be 75 sequences per minute. The sequence shall be the same for each pair of LED beacons in an enclosure and shall be as follows:

1. The RRFB indication on the left-hand side shall be illuminated for approximately 50 milliseconds.
2. Both RRFB indications shall be dark for approximately 50 milliseconds.
3. The RRFB indication on the right-hand side shall be illuminated for approximately 50 milliseconds.
4. Both RRFB indications shall be dark for approximately 50 milliseconds.
5. The RRFB indication on the left-hand side shall be illuminated for approximately 50 milliseconds.
6. Both RRFB indications shall be dark for approximately 50 milliseconds.
7. The RRFB indication on the right-hand side shall be illuminated for approximately 50 milliseconds.
8. Both RRFB indications shall be dark for approximately 50 milliseconds.
9. Both RRFB indications shall be illuminated for approximately 50 milliseconds.
10. Both RRFB indications shall be dark for approximately 50 milliseconds.
11. Both RRFB indications shall be illuminated for approximately 50 milliseconds.
12. Both RRFB indications shall be dark for approximately 250 milliseconds.

The flash rate of each individual RRFB indication, as applied over the full flashing sequence, shall not be between 5 and 30 flashes per second.

All RRFBs within the system shall commence and cease operation simultaneously.

The length of the flashing cycle upon actuation and the minimum allowable time between actuations shall be per the plans. These settings shall be user-programmable through the on-board user interface. No-fee wireless (Wi-Fi, Bluetooth®, etc.) may be used as an alternative programming method.

ITEMS 825.21 & 825.22 (Continued)

APS Pedestrian Push Buttons

Each APS pushbutton shall have a tactile arrow and locator tone. The tactile arrow shall be oriented to point in the direction of the crosswalk. The locator tone shall have a duration of 0.15 seconds or less and shall repeat at 1-second intervals. The locator tone shall be set 2 to 5 dBA above ambient sound, shall automatically adjust intensity, but cap at a maximum volume of 100 dBA. The tone shall be audible whenever the LED modules are not active.

Upon activation of the LED modules, a speech message shall state, "Yellow lights are flashing." This message shall be stated twice. No vibrotactile or percussive indications shall be used.

A maximum mounting height of 42 inches above the finish sidewalk grade shall be used for pedestrian push buttons.

If a pushbutton is pressed before the minimum time between actuation intervals is met, a speech message shall state, "Wait," and the locator tone shall resume until the LED modules activate.

Posts and Bases

Signal posts and bases shall be steel shafts with transformer bases. All posts and bases shall have a **FLAT BLACK** powder coated finish.

Post shall be of sufficient length to provide a distance of six (6) feet between the finish grade and the bottom of the supplemental downward diagonal arrow sign (W16-7p).

Base foundations shall not obstruct a sidewalk or crosswalk so that passage by physically-challenged persons is impaired.

Construction Methods

No work shall commence until the shop drawings for the RRFB system are approved.

Layout and design of the RRFB system shall conform to the plans.

Foundation installations shall be per Subsection 801.62. The top of the foundation shall be ¼" to 1" proud of the sidewalk and chamfered at 45 degrees. Gaps between the sidewalk and foundation shall be no larger than ¼" and grouted with preformed joint filler.

The Contractor shall diagnose and replace any part of the pedestrian activated warning system that is found to be defective in workmanship, material, or manner of functioning within six months of final acceptance by the Engineer. This requirement does not supersede the one-year warranty period on materials specified in Subsection 815.20.

ITEMS 825.21 & 825.22 (Continued)

System Documentation and Keys

The Contractor shall submit to the Engineer/ Owner two (2) copies of the operating and maintenance instructions for all equipment installed.

Two sets of wiring diagrams with both internal and external wiring for the control cabinet and all accessories as actually used in the field shall be furnished to the Engineer/ Owner by the Contractor. All actual and potential terminal strip connections shall be shown. All identification on the wiring diagrams shall be as installed, and all field labeling shall be consistent with the diagram.

The Contractor shall also supply two (2) sets of cabinet keys to the Owner.

Method of Measurement and Basis of Payment

The work under Items 825.21 and 825.22 will be measured and paid for at the Contract lump sum prices, which price shall include all labor, material, equipment and incidental costs required to complete the work.

Conduit will be paid for separately under Item 804.3, 3 Inch Electrical Conduit Type NM Plastic (UL).

Warning signs (W11-15, W16-7p) mounted on the signal posts with the RRFB will be paid for separately under item 832. Warning, Regulatory and Route Marker, Aluminum Panel (Type A).

**ITEM 832. WARNING-REGULATORY AND ROUTE MARKER - SQUARE FOOT
ALUM. PANEL (TYPE A)**

**ITEM 847.1 SIGN SUP (N/GUIDE)+RTE MKR W/1 EACH
ALUM. PANEL (TYPE A)**

The work under these items shall conform to the relevant provisions of Sections 828 and 840 of the Standard Specifications and the following:

The work shall consist of fabricating, furnishing and erecting warning, regulatory and route signs on steel breakaway posts.

High intensity reflective sheeting shall be used for all signs. The Contractor shall refer to the FHWA "Standard Highway Signs, 2004 Edition" for text dimensions, as amended; the 1977 Department Construction and Traffic Standard Details, as amended, for signs and supports; and the Masshighway Department sign listings 1993 edition, as amended.

Method of Measurement and Basis of Payment

Warning-Regulatory and Route Marker – Alum. Panel (Type A) shall be measured by the square foot, complete in place.

Warning-Regulatory and Route Marker – Alum. Panel (Type A) will be paid for at the contract unit price per square foot, which price shall include all labor, materials, equipment and incidental costs required to complete the work.

Sign Sup (N/guide) + Rte Mkr W/1 Alum. Panel (TYPE A) shall be measured by each complete and in place.

Sign Sup (N/guide) + Rte Mkr W/1 Alum. Panel (TYPE A) will be paid for at the contract unit price per each, which price shall include all labor, materials, equipment and incidental costs required to complete work.

ITEM 832.2**DESTINATION AND DISTANCE SIGN****EACH**

Work under this item consists of furnishing and installing arrow shaped destination and distance signs as shown on the plans. Aluminum sign panels (Type A, 0.08” thickness), hardware, and reflectorized sheeting shall conform to applicable provisions of Section 828 of the standard specifications.

Supports for destination and distance signs shall be round steel posts and will be paid separately under item 847.2.

Each sign panel shall be mounted to its round support post with two pipe post brackets. The tip and corners of all sign panels shall be rounded to a 0.75” radius.

Colors: The sign legend shall be reflectorized with white letters on brown background.

Shop drawings shall be submitted to the Engineer for approval before fabrication.

Destination and distance signs will be measured by the unit each for each sign panel. Where legends are required on both sides of a sign it will be considered incidental to the item and no additional compensation will be made.

Payment for this item will be made at the contract unit price each and will include all mounting hardware, pipe post brackets, equipment, material and labor.

Sign supports will be paid separately under item 847.2.

ITEM 837.1 **MASS CENTRAL RAIL TRAIL CONSTRUCTION SIGN** **EACH**

The work under these items shall conform to the relevant provisions of Sections 120, 150, 828 and 840 of the Standard Specifications and the following.

The work shall include providing new wood posts, sign panel(s), new galvanized steel bolts, nuts and washers; and installation of signs.

The Contractor is responsible for the proper engineering of all items. The internal structure, dimensions and specifications for all items shall be indicated in the Contractor's shop drawings.

SUBMITTALS

Manufacturer's Product Data: Manufacturer's product data shall be submitted for the following items:

1. Galvanized bolts, nuts and washers
2. Pressure treated wood timbers

MATERIALS

Signs

Sudbury-Hudson Mass Central Rail Trail sign shall be standard DCR sign.

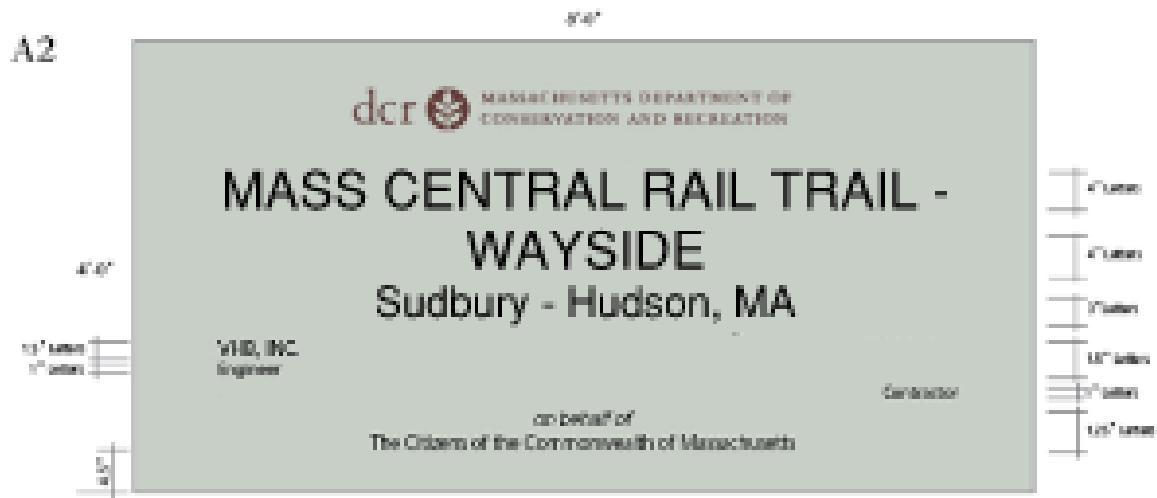
1. Wood sign posts shall be pressure-treated southern yellow pine, No.1 or Better grade.
2. Horizontal members of entry sign shall be same material as posts.
3. The sign panel for entry and regulatory signs shall be 3/4" medium density overlay plywood to conform with the U.S. Product Standard PS1, C-D, exterior glue, double faced. All edges shall be sealed prior to application of finish.
4. The sign posts and structure shall be finished with green solid color exterior stain, oil based. Color shall conform to Federal Standard 595a. The sign panels shall be finished with grey/green solid color exterior stain, oil-based.
5. All sign hardware shall be hot-dip galvanized steel in conformance with ASTM 123 or 153 as applicable.

Graphics

Colors: The message text is black letters on a 'sage' background (to match PMS 5665). Logotype is DCR burgundy.

Typography: Message in Frutiger 65 bold and Frutiger 55 Roman, as shown.

ITEMS 837.1 (Continued)



Hardware

Galvanized Steel Hardware: Bolts, Nuts and Washers shall match diameter size of original hardware and shall be fully compatible with existing frame and mounting components in accordance with the requirements of Specification Section A2-15.11, DCR Standard Specifications. Length of bolts suitable for countersunk nuts without field cutting of bolts. Bolts, Nuts and Washers used for anchoring sign structures shall conform to ASTM-A572 with a minimum yield strength of 50,000 p.s.i. All bolts, nuts and washers shall be galvanized in accordance with ASTM-A153.

Posts

Mass Central Rail Trail sign: Southern Yellow Pine shall be shortleaf, longleaf, loblolly or slash pine and shall be graded #2 and Better, S4S, in accordance with requirements of SPIB, Southern Pine Inspection Bureau. All timbers shall bear SPIB Quality Mark. All timbers shall be 6-inches square to lengths as shown on the detailed Drawings in accordance with specification Section A2-15.11, DCR Standard Specifications, and as required to meet design intent during field installation. All timbers shall be ACQ, Alkaline Copper Quat, pressure treated, minimum retention requirement of 0.40 pounds per cubic foot. Dimensions of timbers shall be shown on the detailed drawings in accordance with specification Section A2-15.11, DCR Standard Specifications.

CONSTRUCTION METHODS

Sign Installation

Mounting Instructions: Sign substrate 3/4” MDO plywood mounted on wood posts Use stainless steel hex head bolts to attach sign to posts. Posts should be installed 4’ below grade. Bottom of sign 4’ above grade.

ITEMS 837.1 (Continued)

Sign Installation: Install sign level and plumb in configuration to match original installation. Draw nuts hand tight and counter sunk within face of wood posts. Final tightening shall provide high torque to prevent vandalism and removal of hardware.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Mass Central Rail Trail Construction sign shall be measured by each, complete in place.

Mass Central Rail Trail Construction sign will be paid for at the contract unit price per each, which price shall include all labor, materials, equipment and incidental costs required to complete the work.

No separate payment will be made for manufacture, erection, removal, excavation, backfill materials, posts or hardware, but all costs in connection therewith shall be included in the unit price bid.

ITEM 847.2

SIGN SUPPORT – ROUND POST - STEEL

EACH

Work under this item shall conform to the applicable provisions of Section 840 and the following:

Work consists of furnishing and installing round steel posts for use with destination and distance signs as shown on the plans.

The post shall be galvanized steel with an outside diameter of 2 3/8 inches. Posts shall be furnished with a galvanized acorn shape cap.

Method Of Measurement

Item 847.2 will be measured by the unit complete in place.

Basis Of Payment

Item 847.2 will be paid for at the contract unit price per each, which price shall include all labor, materials, equipment, cap, and incidental cost required to complete the work.

Sign panels will be paid separately under item 832.2.

ITEM 852. SAFETY SIGNING FOR TRAFFIC MANAGEMENT SQUARE FOOT

The work under this item shall conform to the relevant provisions of Section 850 of the Standard Specifications and the following:

Materials

Materials required under this Item need not be new but must be in first class condition and acceptable to the Engineer. Any materials that in judgment of the Engineer are unsatisfactory in appearance and/or performance shall be removed and immediately replaced by acceptable units.

All materials provided by the Contractor under this Item shall remain the property of the Contractor upon completion of the project.

Method of Measurement and Basis of Payment

Safety signing for construction operations shall be measured and paid for by the square foot, which price shall include all labor, materials, equipment and incidental costs required to complete the work.

<u>ITEM 852.11</u>	<u>TEMPORARY PEDESTRIAN BARRICADE</u>	<u>FOOT</u>
<u>ITEM 852.12</u>	<u>TEMPORARY PEDESTRIAN CURB RAMP</u>	<u>EACH</u>

The work under these items shall conform to the relevant provisions of Section 850 of the Standard Specifications and the following:

Work under these items consist of furnishing, deploying, maintaining in proper operating conditions, and removing temporary pedestrian barricades and temporary pedestrian ramps as part of a Temporary Pedestrian Access Route (TPAR) in order to guide pedestrians around a fully- or partially-closed sidewalk. These devices are intended to prevent pedestrians from entering the work area and to prevent pedestrians from inadvertently entering the vehicle travel lane by providing visual and physical separation between each space.

Materials

The Temporary Pedestrian Barricade shall have a continuous bottom rail or edge no more than two (2) inches above the ground and eight (8) inches in height (minimum) to accommodate cane users, have a smooth and continuous hand railing along the top edge no less than 32 inches above the ground and not obstruct or project into the pedestrian path of travel. Barricade walls shall be nearly vertical and generally within the same plane.

The Temporary Pedestrian Curb Ramp shall provide a 48-inch minimum width, with a firm, stable, and non-slip surface. Protective edging with a two (2) inch minimum height shall be installed when the curb ramp or landing platform has a vertical drop of six (6) inches or greater.

The Temporary Pedestrian Curb Ramp walkway and landing area surface shall be of a solid, continuous, contrasting color abutting up to the existing sidewalk.

If a Temporary Pedestrian Curb Ramp leads to a crosswalk, a detectable warning pad must be used at the base of the ramp; if it leads to a protected path that does not conflict with vehicular traffic then a detectable pad shall not be used.

Construction Methods

The Temporary Pedestrian Barricade shall be placed in an area that will provide pedestrians with a TPAR on a smooth, continuous hard surface for its entirety. The geometry and alignment of the facility shall meet the applicable requirements of the “Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities” and the Massachusetts Architectural Access Board.

The recommended width of the TPAR is 60 inches, but if constraints exist a minimum clear width of 48 inches shall be provided along its entirety. If a 60 inch width cannot be accommodated in full, a 60 inch by 60 inch passing space shall be provided every 200 feet or less along the TPAR. Turning areas shall be 60 inches by 60 inches minimum.

ITEMS 852.11 & 852.12 (Continued)

Lateral joints between any surfaces shall not exceed 0.5 inches. Lateral edges may be vertical up to 0.25 inches high and shall be beveled at 1V:2H between 0.25 inches and 0.5 inches.

The TPAR shall be kept clear of debris, snow, and ice and the Temporary Pedestrian Barricades and Temporary Pedestrian Curb Ramps shall not obstruct drainage.

Removal and/or resetting of Temporary Pedestrian Barricades and Temporary Pedestrian Curb Ramps shall be considered incidental.

Method of Measurement and Basis of Payment

Payment for Temporary Pedestrian Barricades will be made at the contract price per foot installed in place, including all incidental items. This price shall include the cost of furnishing, installing, resetting, removal, and maintaining in good working condition for the duration of the project.

Payment for Temporary Pedestrian Curb Ramps will be made at the contract price per each unit installed in place, including all incidental items. This price shall include the cost of furnishing, installing, resetting, removal, and maintaining in good working condition for the duration of the project.

ITEM 853.1**PORTABLE BREAKAWAY BARRICADE TYPE III****EACH**

The work under this item shall conform to the relevant provisions of Section 850 of the Standard Specifications and the following:

Materials

Materials required under this item need not be new but must be in first class condition and acceptable to the Engineer. Any materials that in judgment of the Engineer are unsatisfactory in appearance and/or performance shall be removed and immediately replaced by acceptable units.

All materials provided by the Contractor under these items shall remain the property of the Contractor upon completion of the project.

Method of Measurement and Basis of Payment

Portable Breakaway Barricade Type III shall be measured and paid for per each, which price shall include all labor, materials, equipment, moving, removing and incidental costs required to complete the work.

ITEM 853.8**TEMPORARY ILLUMINATION FOR WORK ZONE****DAY**

The work under this item shall conform to the relevant provisions of Section 850 of the Standard Specifications and the following:

The use of temporary portable light towers shall be limited to balloon diffuser or anti-glare systems.

These portable light towers shall be used throughout the project area for temporary work zone lighting. The use of unshielded high wattage flood lights shall not be permitted.

The portable light tower shall be used, relocated, and adjusted to meet the criteria in Section 850 of the Standard Specifications.

A detailed lighting plan with photometrics detailing the lighting levels to be provided. Said plan shall include types, locations and mounting heights and directionality of all lighting provided and utilized (any existing). Plan shall be designed by a registered professional engineer registered in Massachusetts and submitted to the Engineer for approval prior to any operations within the right of way.

Method of Measurement and Basis of Payment

Item 853.8 will be measured and paid for at the contract unit price per Day. This cost shall include all labor, materials, equipment, tools, and all incidentals required for the design and installation of work zone lighting equipment. This shall include, but not limited to, lighting plan preparation, wiring connections, equipment relocations and include all material and labor incidental to meet a complete and functional and operational system. The price of this item shall include any possible fabrication, modification and installation of anti-glare luminaires or diffusers.

The per day price shall be full compensation for all “Temporary Illumination of Work Zone” regardless of the number of concurrent work areas, amount of equipment concurrently in use, or the durations of or changes of the work shifts per day.

Installation and modifying the existing setup shall be incidental to Item 853.8

ITEM 854.1**PAVEMENT MARKING REMOVAL****SQUARE FOOT**

The work under this Item shall conform to the relevant provisions of Sections 850 of the Standard Specifications and the following:

The work shall consist of removing existing pavement markings by an approved method.

Pavement marking removal methods shall not cause damage to the pavement or cause drastic change in texture, which could be construed as delineation at night, and shall be approved by the engineer.

Method of Measurement and Basis of Payment

Pavement Marking Removal - shall be measured by square foot of pavement marking actually removed. Price shall include all labor, materials, equipment, and incidental costs required to complete the work.

ITEM 856.12

PORTABLE CHANGEABLE MESSAGE SIGN

DAY

The work under this item shall conform to the relevant provisions of Section 850 of the Standard Specifications and the following:

Materials

Materials required under this item need not be new but must be in first class condition and acceptable to the Engineer. Any materials that in judgment of the Engineer are unsatisfactory in appearance and/or performance shall be removed and immediately replaced by acceptable units.

All materials provided by the Contractor under these items shall remain the property of the Contractor upon completion of the project.

Method of Measurement and Basis of Payment

Portable changeable message sign will be measured and paid for at the contract unit price per unit day, which price shall include all labor, materials, equipment, moving, removing and incidental cost required to complete the work.

ITEM 859.

REFLECTORIZED DRUM

UNIT DAY

ITEM 859.1

**REFLECTORIZED DRUM WITH SEQUENTIAL
FLASHING WARNING LIGHTS**

UNIT DAY

The work under these items shall conform to the relevant provisions of Section 850 of the Standard Specifications and the following:

Work under these Items consists of furnishing, installing, maintaining in proper operating conditions, and removing reflectORIZED drums, and any necessary ballast, equipped with sequential flashing warning lights.

Materials

ReflectORIZED drums shall be listed on the MassDOT Qualified Traffic Control Equipment List. Reflective sheeting on drums shall meet or exceed ASTM D4956 Type VIII. All drums shall be maintained in a satisfactory manner including the removal of oils, dirt, and debris that may cause reduced retroreflectivity.

The Contractor shall use one of the following sequential flashing warning light systems unless otherwise approved by the Engineer:

1. Empco-Lite LWCSO.
2. pi-Lit® Sequential Barricade-Style Lamp; or
3. Unipart Dorman SynchroGUIDE.

Sequential flashing warning lights shall be secured to reflectORIZED drums per the light manufacturer's specifications.

Construction Methods

The first ten (10) drums in any merging or shifting taper as designated in the Temporary Traffic Control Plan shall be equipped with sequential flashing warning lights. These lights shall be operating, at a minimum, between dusk and dawn when the taper is deployed.

The successive flashing of the sequential warning lights shall occur from the upstream end of the merging or shifting taper to the downstream end of the taper in order to identify the desired vehicle path. Each warning light in the sequence shall be flashed at a rate of not less than 55, nor more than 75 times per minute.

Warning lights shall be powered off when drums are not deployed in a taper.

ITEM 859. & 859.1 (Continued)

Method of Measurement and Basis of Payment

A group of ten (10) reflectorized drums with sequential flashing warning lights is considered one (1) unit and will be measured by the day. Each period of up to 24 hours during which this unit is in use will be measured as one day regardless of the number of times that the drums are positioned, repositioned, removed, or returned to service.

Reflectorized Drums with Sequential Flashing Warning Lights will be paid for at the contract unit price per day, which shall include full compensation for furnishing, positioning, repositioning, and removing the group of ten (10) drums as directed by the Engineer.

<u>ITEM 860.112</u>	<u>12 INCH REFLECTORIZED WHITE LINE (PAINTED)</u>	<u>FOOT</u>
<u>ITEM 861.104</u>	<u>4 INCH REFLECTORIZED YELLOW LINE (PAINTED)</u>	<u>FOOT</u>
<u>ITEM 864.</u>	<u>PAVEMENT ARROW REFLECTORIZED WHITE (PAINTED)</u>	<u>SQUARE FOOT</u>
<u>ITEM 864.04</u>	<u>PAVEMENT ARROWS AND LEGENDS REFL. WHITE (THERMOPLASTIC)</u>	<u>SQUARE FOOT</u>
<u>ITEM 866.104</u>	<u>4 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)</u>	<u>FOOT</u>
<u>ITEM 866.112</u>	<u>12 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)</u>	<u>FOOT</u>
<u>ITEM 867.104</u>	<u>4 INCH REFLECTORIZED YELLOW LINE (THERMOPLASTIC)</u>	<u>FOOT</u>

The work under these items shall conform to the relevant provisions of Section 860 of the Standard Specifications and the following:

The work shall consist of the furnishing and application of 12 inch reflectorized white (painted) lines for the stop lines on the Mass Central Rail Trail for roadway crossings.

The work shall also consist of the furnishing and application of 4 inch reflectorized yellow (painted) lines for the single yellow center lines on the Mass Central Rail Trail near the roadway crossings.

The work shall consist of the furnishing and application of reflectorized white (painted) pavement legends on the Mass Central Rail Trail near the roadway crossings.

The work shall consist of the furnishing and application of reflectorized white (thermoplastic) pavement symbols and legends on the roadways leading up Mass Central Rail Trail crossings.

The work shall also consist of the furnishing and application of 4 inch reflectorized white (thermoplastic) lines for the solid white edge lines on Main Street, Union Avenue and Route 20 near the Mass Central Rail Trail.

The work shall consist of the furnishing and application of 12 inch reflectorized white (thermoplastic) lines for the cross walks and stop lines on the roadways at the Mass Central Rail Trail crossings.

ITEM 860.112, 861.104, 864., 864.04, 866.104, 866.112, 867.104 (Continued)

The work shall also consist of the furnishing and application of 4 inch reflectorized yellow (thermoplastic) lines for the single yellow center lines on the Mass Central Rail Trail near the roadway crossings.

Method of Measurement and Basis of Payment

4 inch reflectorized yellow line (painted), 12 inch reflectorized white line (painted), 4 inch reflectorized white line (thermoplastic), 12 inch reflectorized white line (thermoplastic), and 4 inch reflectorized yellow line (thermoplastic) shall be measured and paid for by the foot, which price shall include all labor, materials, equipment and incidental costs required to complete the work.

Pavement arrow reflectorized white (painted) and pavement arrows and legends refl. white (thermoplastic) shall be measured and paid for by the square foot, which price shall include all labor, materials, equipment and incidental costs required to complete the work.

ITEM 865.2**PAVEMENT SURFACE COATING****SQUARE FOOT**

The work under this Item shall be in accordance with Subsection 860 of Standard Specifications and the following:

The work under this Item shall include preparation of the paved surfaces in conjunction with the application of one or more courses of a polymer modified flexible cement surfacing material that may be used as a complete light, durable, skid resistant, composite wearing surface, or textured and colored on sections of pavement to simulate hand laid brick and/or conventional masonry where shown on the plans or as required by the Engineer.

This work shall be for the proposed splitter islands and for surface areas labeled as “texturized decorative pavement” on the plans. The color shall be brick red and pattern shall be standard size brick arranged in a running bond, brick orientation.

Preparation

The areas to be surfaced with the specified material(s) must be structurally sound and may consist of either asphalt or cement concrete. When these material(s) are intended for application on a newly paved asphalt surface a curing period will be required to ensure that no concentration of oils are present. A suitable approved pavement heater may be employed to expedite curing when a delayed work schedule is not advisable.

Surface preparation will then be performed in the following general manner:

The pavement surface is to be thoroughly cleaned by approved methods removing all contaminants that may prevent proper adhesion of the new surfacing material(s). A suitable approved pavement heater shall be employed where surface oils, fuel and the like exist on the surface, to remove these incompatible materials. New bituminous concrete shall be added as necessary, thermally bonded to the pavement and compacted to achieve a density equal to the surrounding or adjacent pavement. No work shall be initiated until the surface condition conforms to manufacturer recommended standards for both structure and cleanliness.

All applications shall be installed in a neat and uniform manner by approved methods. The Contractor will be responsible for furnishing and placing a sufficient number of safety cones together with caution tape to adequately protect all work zones, and to insure the orderly flow of vehicular and pedestrian traffic.

Residues resulting from this element of the work shall be immediately removed from the jobsite(s) and must be disposed of in a proper manner. There will be no additional compensation for the disposal of excess or unused materials. Pavement sections where the surfacing work is incomplete must be left in a neat and clean condition, satisfactory to the Engineer at the end of each workday.

ITEM 865.2 (Continued)

Installation

Contractor shall be responsible for the preparation, placement and patterning of the polymer modified flexible concrete surfacing material(s) for all applications according to the manufacturer's guidelines and subject to the approval of the Engineer. When required, this composite paving material shall be uniformly and homogeneously formulated with color stable pigments and surface textured to simulate hand laid brick and/or masonry.

A simulated mockup consisting of the color(s) and pattern(s) as selected by the Engineer and the Town, will be constructed, within a designated section of the overall work area, at least five working (5) days prior to the initiation of this phase of construction. The mockup site will be determined by the Engineer. Weather permitting and only with approval of the completed sample section, the work shall begin. The cost of the mockup shall be included in the unit price for this item and shall encompass a minimum surface area of 3'x3'.

A working knowledge of the specialized technology contained within these specifications is required. Only certified applicators may be employed for this work. In the event that this material and/or surfacing system constitutes, or is claimed to constitute proprietary technology subject to U.S. Patent protection, the Contractor will be required to furnish written evidence satisfactory to the Owner that he/she is an accredited, authorized and/or licensed installer of the patented material/process.

The installation phase of this work shall be performed in the following general manner:

Using manufacturer prescribed methods and equipment as described herein, the Contractor shall properly blend and mix the water, polymer modified cement, aggregate and pigments (color will be selected by the Town) to achieve the desired consistency. The polymer shall be an acrylic based material furnished in an aqueous emulsified state to prevent the loss of internal strength and bond which may result in cohesive and adhesive failure. The measuring and mixing operation shall be capable of producing a workable, consistent, homogeneous mixture for the intended application. Only then shall the Contractor apply the composite to the surface of a hardened, structurally sound bituminous concrete pavement as directed.

Using specialized equipment and tools as necessary the desired ultra-thin composite mixture shall be sufficiently and uniformly applied to the surface. The finished material must be capable of being spread to a consistent build thickness of as little as .0625 inches per layer. Segregation of the mixed material shall be avoided. Should this condition present itself the material and/or application must be corrected immediately or replaced, as determined by the Engineer. When this newly constructed ultra-thin finish is applied over bituminous concrete it shall provide a flexible, fuel, skid and UV resistant surface, which results in a reduction of susceptibility to natural oxidation.

No material shall be applied when precipitation is present or imminent inclement weather will prevent proper curing. No material may be allowed to exceed the workability limitations of the composite mixture.

Part V

Page 138 of 145

P19-3295-C1A – MCRT Sudbury to Hudson

ITEM 865.2 (Continued)

Hand applications will be utilized for smaller sections when a color distinction and/or surface pattern is required. Patterned applications intended to resemble masonry will be constructed in two (2) layers and colors in accordance with the design drawings or as otherwise directed by the Town. Finish patterns and colors may only be applied after the first course has adequately cured.

Once the newly finished surfaces have cured sufficiently, the application area may be opened to vehicular and/or pedestrian traffic. Any residue resulting from this work shall be removed and disposed of in a proper manner. The completed work area is to be left in a neat and clean condition, satisfactory to the Engineer.

The Contractor shall take reasonable precautions and steps during construction to prevent bodily harm or injury or damage to adjacent structures such as curbing, sidewalks, drainage, or water supply facilities. If during the execution of the work, the Contractor, through willfulness or carelessness, permits or causes any damage to public or private property, the cost of repair or replacement shall be the responsibility of the Contractor at no expense to the Town.

The Contractor shall maintain minimum eleven (11) foot vehicular travel lanes at all times during this operation unless otherwise approved.

MATERIALS

The composite material(s) used for this polymer modified thin surfacing system must support a documented performance history satisfactory to the Towns and DCR that is compatible with the functions and characteristics detailed within these specifications. This material must also be able to demonstrate long term adhesion, flexibility and abrasion resistance characteristics, scrub ability, as well as color stability, chemical and fuel resistance.

The Contractor will be required to furnish to the Engineer five (5) applications that have been placed on main thoroughfares, complete with contact information and locations using the material(s) as specified herein. The ultra-thin layer polymer composite(s) used on these projects must support a documented history of field performance and integrity for the type of work described herein for a minimum period of five (5) years. No waiver of this condition will be allowed.

The composite material shall be flexible with form stability which is compatible with existing bituminous pavements and be formulated using polymer modifications as necessary to suit local traffic and climate conditions. The specified polymer modified composite material(s) when mixed and cured in accordance with manufacturer's guidelines shall demonstrate the physical properties outlined in the following table.

ITEM 865.2 (Continued)

MATERIAL PROPERTIES

<u>Physical Properties</u>	<u>Test Method</u>	<u>Minimum Test Value</u>
Compressive Strength	ASTM C 39	3,100 PSI
Solar Reflectivity Index	ASTM EI918 ASTM C 1549	>29
Shear Bond Adhesion	ASTM C 1583	>250 PSI
Skid Resistance (mixed)	ASTM E-274	>40
Tensile Strength	ASTM C 190	615 PSI (3.9 MPa)
Freeze-Thaw Scaling Resistance	ASTM C672-98	0

MATERIAL COMPONENTS

Water. The water used in mixing these composite(s) shall be of potable quality and free from soluble salts.

Chemical Admixtures/pigments. All chemical admixtures shall be introduced during the manufacturing process. Pigments may only be added on site to achieve a particular color quality or tint preference as directed.

Surface Sealer. A suitable approved surface sealer, if required, may be applied to the polymer modified composite(s) to provide additional protection in fueling areas, or to prevent surface efflorescence when colors are utilized.

Material Verification. Upon request the Contractor shall provide a Certificate of Analysis (COA) for the polymer emulsion, aggregate and aggregate dry blend verifying that the materials meet the specific requirements outlined herein.

Questionable product with just cause may be subjected to all of the specified testing procedures. All material testing will be conducted by a third party independent certified laboratory acceptable to the Engineer, and will be the financial responsibility of the Contractor. Samples failing in any test category will result in immediate rejection of the material from further consideration or use and may disqualify the contractor from this phase of the work.

Material(s) furnished pursuant to this work shall not be harmful to humans or the environment and must possess a Design for the Environment (DfE) as designated by the United States Environmental Protection Agency (EPA).

No payment will be rendered for any work until a manufacturer's certificate of compliance has been furnished by the Contractor. A Material Safety Data Sheet (MSDS) will also be required before any work is initiated.

ITEM 865.2 (Continued)

EQUIPMENT

Contractor must have access to and be familiar with the specialized machinery and tools necessary to perform the procedures as outlined and contained within these technical specifications. These items shall include but not be limited to dedicated surfacing equipment designed exclusively for use in applying thin layer polymer modified composite(s), appropriate trucks, air compressors, miscellaneous dispensers, mixers, applicators, heaters, cutters and/or specialized tools etc.

To ensure optimum work site efficiency and project safety considerations, multiple crews may be required when hand applications or custom patterns as described previously are necessary.

MOBILIZATION

Construction of these flexible ultra-thin surfaces shall commence within twenty-four (24) hours of written notification to proceed as issued by the Contractor. Work shall commence within this timeframe without regard to the number of mobilizations that may be required by the Engineer to complete this work.

Due to the logistical complications inherent to this type of specialized construction, and given the general project size, scope, schedule and public safety concerns, the Contractor may not assume that a single mobilization will be sufficient to complete this entire phase of the work required in a safe and orderly fashion. No separate payment will be made for any additional mobilization or demobilization as may be necessary to complete the project.

GUARANTEE / WARRANTY

The Contractor shall warranty all applications from defects resulting from improper workmanship and faulty or inferior materials for a minimum period of three (3) years. All defective materials and/or substandard work will be corrected or replaced within the warranty period as directed by the Engineer.

METHOD OF MEASUREMENT

Item 865.2 will be measured for payment by the SQUARE FOOT of pavement surface coating installed, completed in place.

BASIS OF PAYMENT

Item 865.2 will be paid for at the Contract unit price per SQUARE FOOT, which price shall include all labor, materials, equipment, mobilization, expansion joint filler, mockup and incidental costs required to complete this work including ancillary preparation of the pavement. No payment deductions will be made for structures within the work area such as light foundations, pull boxes, manholes, catch basins or water covers.

Part V

Page 141 of 145

P19-3295-C1A – MCRT Sudbury to Hudson

ITEM 874.**STREET NAME SIGN****EACH**

The work under this item shall conform to the relevant provisions of Sections 828 and 840 of the Standard Specifications and the following:

The work shall consist of fabricating, furnishing and erecting street name signs on steel breakaway posts.

High intensity reflective sheeting shall be used for all signs. The Contractor shall refer to the FHWA "Standard Highway Signs, 2004 Edition" for text dimensions, as amended; the 1977 Massachusetts Department Construction and Traffic Standard Details, as amended, for signs and supports; and the Department sign listings 1993 edition, as amended.

Method of Measurement and Basis of Payment

Street Name Signs shall be measured by each.

Street Name Signs will be paid for at the contract unit price per each, which price shall include all labor, materials, equipment and incidental costs required to complete work.

Sign supports shall be paid for under Item 847.1 - Sign Sup (N/guide) + Rte Mkr W/1 Alum. Panel (TYPE A).

ITEM 874.2 **TRAFFIC SIGN REMOVED AND RESET** **EACH**

ITEM 874.4 **TRAFFIC SIGN REMOVED AND STACKED** **EACH**

The work under these items shall conform to the relevant provisions of Section 828 of the Standard Specifications and the following:

The Contractor shall carefully remove and reset at new locations all existing signs, attachment hardware and sign support posts not included under other sign items as shown on the drawings and as directed by the Engineer.

Signs, attachment hardware and sign support posts shall be satisfactorily stored and protected until reset in the proposed work.

Signs, attachment hardware and sign support posts lost, damaged or otherwise made unsuitable for reuse while being removed, transported, stored or reset shall be replaced with new materials at no additional cost to the Owner. New attachment hardware shall be furnished and installed as necessary to replace any missing or unusable existing hardware.

Method of Measurement and Basis of Payment

Street sign and traffic signs removed and reset will be paid for at the respective Contract unit price per each, which price shall include all labor, material, equipment and incidental costs required to complete the work.

Street sign and traffic signs removed and stacked will be paid for at the respective Contract unit price per each, which price shall include all labor, material, equipment and incidental costs required to complete the work.

ITEM 878.**TRAIL IDENTIFICATION SIGN****EACH**

Work under this item involves furnishing and installing cantilever identification signs as shown on the plans. The sign mounting structure shall be a decorative wood post with cantilever arm as specified by the Department of Conservation and Recreation (DCR). All wood shall be pressure treated southern pine No. 1 and painted dark green. All steel hardware and fasteners shall be galvanized in accordance with AASHTO M 232. DCR legend and symbols may be obtained from existing DCR signs as a guide and approved via shop drawing submittals. Final details for the sign will be provided during construction. Whenever graphic standards are mentioned on the plans, it shall be understood the standards will be provided during construction.

Sign Panel: The sign panel shall be an aluminum panel pre-coated with DCR “sage” color background (vinyl or painted). The aluminum panel shall be fitted within a wood frame according to DCR specifications

Letters: The sign message shall be black letters. Logotype shall be “DCR burgundy”.

Typography: The name of the facility shall be in “Frutiger 65 Bold” and the reservation or park shall be “Frutiger 55 Roman”.

The legend shall appear on both sides of the sign.

Shop drawings and paint color samples shall be submitted to the Engineer for approval before fabrication.

Cantilever identification signs shall be measured and paid at the contract unit bid price per each sign, complete in place, which price shall include equipment, material and labor required.

ITEM 999.001

TRAFFIC POLICE

ALLOWANCE

The Contractor shall furnish police services required to direct traffic on existing roadways where traffic is maintained.

The Contractor shall provide such police officers as may be deemed necessary by either the Engineer or the Town for the direction and control of all traffic traveling within and through the project area. The police officers shall be obtained from the Town Police Department as applicable. The police officers shall be paid by the Contractor at the prevailing rate of wages established by the Town.

Police employed by the Contractor on a temporary basis are considered to be employees of the Contractor, and the Contractor shall issue W-2 "Statements of Earnings and Taxes Withheld" to the employees and must submit copies thereof to the Massachusetts Department of Taxation and Corporations in the usual manner prescribed by law.

Allowance for Police Services

An allowance of One Hundred Twenty-Thousand Dollars (\$120,000.00) for the furnishing of police services has been included in all bids. This allowance is determined by multiplying the number of hours estimated as necessary by the prevailing hourly rate of wages established for such services. The Contractor shall submit certified copies of itemized bills of services rendered for review and approval by the Engineer. The allowance will be adjusted to the actual amount paid for authorized and approved police services as stipulated and shall include other payments due to any legal requirements of the State and Federal governments.

Method of Measurement and Basis of Payment

The quantity to be paid for under this item shall be the actual amount paid by the Contractor to provide satisfactory police services as stipulated and required. Any overhead costs shall be considered to be included in the prices bid for the other items of the Contract.



BID PACKAGE

ORDER OF CONDITIONS

**Hudson Conservation Commission Order of Conditions
(24 pages)**



CONSERVATION COMMISSION

78 Main Street, Hudson, MA 01749
(978) 562-2948

David Mercer, Chair

Emilie Wilder, Vice Chair

Brandon Parker

Heidi Graf

James Martin

Debbi Edelstein

Paul Osbornee

August 24, 2020

Denise Bartone
NSTAR Electric Company d/b/a Eversource Energy
247 Station Drive, SE270
Westwood, MA 02090

Priscilla Geigis
Department of Conservation and Recreation
251 Causeway Street Suite 600
Boston, MA 02114

Re: Order of Conditions - MA DEP #190-0647, MBTA ROW

Dear Ms. Bartone and Ms. Geigis:

Please find enclosed an original signed Order of Conditions for the above referenced project, 190-0647. There is a ten business day period in which you or other persons may file an appeal on this Order of Conditions to the Department of Environmental Protection. Once the appeal period has elapsed and no appeal has been filed, this document must be recorded at the Southern Middlesex County Registry of Deeds and evidence of the recording must be submitted to the Hudson Conservation Commission.

Please read the document carefully as there are a number of conditions that must be adhered to before, during and after work on your project. If you need to make any changes from the approved project, even if they are small, please contact me in advance. Please contact me for a pre-construction site inspection after your erosion controls have been installed and your DEP sign posted at the site.

If you have any questions, please feel free to contact our office.

For the Commission,

Pam Helinek
Conservation Agent, Town of Hudson

Cc: MA Department of Environmental Protection, Central Regional Office (EDEP)
Massachusetts Bay Transit Authority, 10 Park Plaza, Boston, MA 02116

A21

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 - Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
MassDEP File #:190-0647
eDEP Transaction #:1218293
City/Town:HUDSON



Bk: 76079 Pg: 130 Doc: ORD
Page: 1 of 21 11/04/2020 08:48 AM

A. General Information

1. Conservation Commission HUDSON
2. Issuance a. OOC b. Amended OOC

3. Applicant Details

a. First Name N/A b. Last Name N/A
c. Organization NSTAR ELECTRIC COMPANY D/B/A EVERSOURCE ENERGY AND DEPT OF CONSERVATION AND RECREATION
d. Mailing Address SEE ATTACHED
e. City/Town f. State MA g. Zip Code

4. Property Owner

a. First Name N/A b. Last Name
c. Organization MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
d. Mailing Address 10 PARK PLAZA
e. City/Town BOSTON f. State MA g. Zip Code 02116

5. Project Location

a. Street Address N/A MBTA ROW/CENTRAL MASS LINE RAILROAD
b. City/Town HUDSON c. Zip Code 01749
d. Assessors Map/Plat# 16-23 e. Parcel/Lot# MULTIPLE
f. Latitude 42.39629N g. Longitude 71.52249W

6. Property recorded at the Registry of Deed for:

a. County b. Certificate c. Book d. Page
SOUTHERN MIDDLESEX ~~13156~~ 13117 34 113

7. Dates

a. Date NOI Filed : 1/2/2020 b. Date Public Hearing Closed: 8/6/2020 c. Date Of Issuance: 8/24/2020

8. Final Approved Plans and Other Documents

a. Plan Title: b. Plan Prepared by: c. Plan Signed/Stamped by: d. Revised Final Date: e. Scale:
SEE ATTACHED

B. Findings

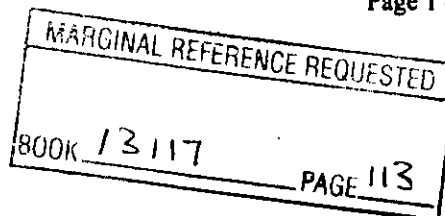
1. Findings pursuant to the Massachusetts Wetlands Protection Act

Following the review of the the above-referenced Notice of Intent and based on the information provided in this application and presented at the public hearing, this Commission finds that the areas in which work is proposed is significant to the following interests of the Wetlands Protection Act.

Check all that apply:

<input checked="" type="checkbox"/> Public Water Supply	<input checked="" type="checkbox"/> Land Containing Shellfish	<input checked="" type="checkbox"/> Prevention of Pollution
<input checked="" type="checkbox"/> Private Water Supply	<input checked="" type="checkbox"/> Fisheries	<input checked="" type="checkbox"/> Protection of Wildlife Habitat
<input checked="" type="checkbox"/> Ground Water Supply	<input checked="" type="checkbox"/> Storm Damage Prevention	<input checked="" type="checkbox"/> Flood Control

2. Commission hereby finds the project, as proposed, is:



Vivian Kumball
101 Walnut St
PO Box 9151
Watertown, Ma. 02472

Massachusetts Department of Environmental Protection

Bureau of Resource Protection - Wetlands

WPA Form 5 - Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File #:190-0647

eDEP Transaction #:1218293

City/Town:HUDSON

Approved subject to:

a. The following conditions which are necessary in accordance with the performance standards set forth in the wetlands regulations. This Commission orders that all work shall be performed in accordance with the Notice of Intent referenced above, the following General Conditions, and any other special conditions attached to this Order. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, these conditions shall control.

Denied because:

b. The proposed work cannot be conditioned to meet the performance standards set forth in the wetland regulations. Therefore, work on this project may not go forward unless and until a new Notice of Intent is submitted which provides measures which are adequate to protect interests of the Act, and a final Order of Conditions is issued. **A description of the performance standards which the proposed work cannot meet is attached to this Order.**

c. The information submitted by the applicant is not sufficient to describe the site, the work or the effect of the work on the interests identified in the Wetlands Protection Act. Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides sufficient information and includes measures which are adequate to protect the interests of the Act, and a final Order of Conditions is issued. **A description of the specific information which is lacking and why it is necessary is attached to this Order as per 310 CMR 10.05(6)(c).**

3. Buffer Zone Impacts: Shortest distance between limit of project disturbance and the wetland resource area specified in 310CMR10.02(1)(a).

a. linear feet

Inland Resource Area Impacts:(For Approvals Only):

Resource Area	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
4. <input type="checkbox"/> Bank	<u> </u> a. linear feet	<u> </u> b. linear feet	<u> </u> c. linear feet	<u> </u> d. linear feet
5. <input checked="" type="checkbox"/> Bordering Vegetated Wetland	1936 <u> </u> a. square feet	<u> </u> b. square feet	1936 <u> </u> c. square feet	<u> </u> d. square feet
6. <input type="checkbox"/> Land under Waterbodies and Waterways	<u> </u> a. square feet	<u> </u> b. square feet	<u> </u> c. square feet	<u> </u> d. square feet
	<u> </u> e. c/y dredged	<u> </u> f. c/y dredged		
7. <input checked="" type="checkbox"/> Bordering Land Subject to Flooding	16400 <u> </u> a. square feet	<u> </u> b. square feet	11208 <u> </u> c. square feet	<u> </u> d. square feet
Cubic Feet Flood Storage	0 <u> </u> e. cubic feet	<u> </u> f. cubic feet	435.5 <u> </u> g. cubic feet	<u> </u> h. cubic feet
8. <input checked="" type="checkbox"/> Isolated Land Subject to Flooding	760 <u> </u> a. square feet	<u> </u> b. square feet		
Cubic Feet Flood Storage	0 <u> </u> c. cubic feet	<u> </u> d. cubic feet	99.07 <u> </u> e. cubic feet	<u> </u> f. cubic feet
9. <input checked="" type="checkbox"/> Riverfront Area	64790 <u> </u>	<u> </u>		

Massachusetts Department of Environmental Protection

Bureau of Resource Protection - Wetlands

WPA Form 5 - Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File #:190-0647

eDEP Transaction #:1218293

City/Town:HUDSON

	a. total sq. feet	b. total sq. feet		
Sq ft within 100 ft	<u> </u>	<u> </u>	<u> </u>	<u> </u>
	c. square feet	d. square feet	e. square feet	f. square feet
Sq ft between 100-200 ft	<u> </u>	<u> </u>	<u> </u>	<u> </u>
	g. square feet	h. square feet	i. square feet	j. square feet

Coastal Resource Area Impacts:

Resource Area	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
---------------	---------------------	----------------------	----------------------	-----------------------

- 10. Designated Port Areas Indicate size under Land Under the Ocean, below
- 11. Land Under the Ocean
 - a. square feet b. square feet
 - c. c/y dredged d. c/y dredged
- 12. Barrier Beaches Indicate size under Coastal Beaches and/or Coastal Dunes below
- 13. Coastal Beaches
 - a. square feet b. square feet c. c/y nourishment d. c/y nourishment
- 14. Coastal Dunes
 - a. square feet b. square feet c. c/y nourishment d. c/y nourishment
- 15. Coastal Banks
 - a. linear feet b. linear feet
- 16. Rocky Intertidal Shores
 - a. square feet b. square feet
- 17. Salt Marshes
 - a. square feet b. square feet c. square feet d. square feet
- 18. Land Under Salt Ponds
 - a. square feet b. square feet
 - c. c/y dredged d. c/y dredged
- 19. Land Containing Shellfish
 - a. square feet b. square feet c. square feet d. square feet
- 20. Fish Runs Indicate size under Coastal Banks, inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above
 - c. c/y dredged d. c/y dredged
- 21. Land Subject to Coastal Storm Flowage
 - a. square feet b. square feet

22. Restoration/Enhancement (For Approvals Only)

Massachusetts Department of Environmental Protection

Bureau of Resource Protection - Wetlands

WPA Form 5 - Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File #:190-0647

eDEP Transaction #:1218293

City/Town:HUDSON

If the project is for the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.5.c & d or B.17.c & d above, please entered the additional amount here.

_____ a. square feet of BVW

_____ b. square feet of Salt Marsh

23.

Streams Crossing(s)

If the project involves Stream Crossings, please enter the number of new stream crossings/number of replacement stream crossings.

_____ a. number of new stream crossings

_____ b. number of replacement stream crossings

C. General Conditions Under Massachusetts Wetlands Protection Act

The following conditions are only applicable to Approved projects

1. Failure to comply with all conditions stated herein, and with all related statutes and other regulatory measures, shall be deemed cause to revoke or modify this Order.
2. The Order does not grant any property rights or any exclusive privileges; it does not authorize any injury to private property or invasion of private rights.
3. This Order does not relieve the permittee or any other person of the necessity of complying with all other applicable federal, state, or local statutes, ordinances, bylaws, or regulations.
4. The work authorized hereunder shall be completed within three years from the date of this Order unless either of the following apply:
 - a. the work is a maintenance dredging project as provided for in the Act; or
 - b. the time for completion has been extended to a specified date more than three years, but less than five years, from the date of issuance. If this Order is intended to be valid for more than three years, the extension date and the special circumstances warranting the extended time period are set forth as a special condition in this Order.
5. This Order may be extended by the issuing authority for one or more periods of up to three years each upon application to the issuing authority at least 30 days prior to the expiration date of the Order.
6. If this Order constitutes an Amended Order of Conditions, this Amended Order of Conditions does not exceed the issuance date of the original Final Order of Conditions.
7. Any fill used in connection with this project shall be clean fill. Any fill shall contain no trash, refuse, rubbish, or debris, including but not limited to lumber, bricks, plaster, wire, lath, paper, cardboard, pipe, tires, ashes, refrigerators, motor vehicles, or parts of any of the foregoing.
8. This Order is not final until all administrative appeal periods from this Order have elapsed, or if such an appeal has been taken, until all proceedings before the Department have been completed.
9. No work shall be undertaken until the Order has become final and then has been recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land upon which the proposed work is to be done. In the case of the registered land, the Final Order shall also be noted on the Land Court Certificate of Title of the owner of the land upon which the proposed work is done. The recording information shall be submitted to the Conservation Commission on the form at the end of this Order, which form must be stamped by the Registry of Deeds, prior to the commencement of work..
10. A sign shall be displayed at the site not less than two square feet or more than three square feet in size bearing the words,

" Massachusetts Department of Environmental Protection"

Massachusetts Department of Environmental Protection

Bureau of Resource Protection - Wetlands

WPA Form 5 - Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File #:190-0647

eDEP Transaction #:1218293

City/Town:HUDSON

[or 'MassDEP']

File Number : "190-0647"

11. Where the Department of Environmental Protection is requested to issue a Superseding Order, the Conservation Commission shall be a party to all agency proceedings and hearings before Mass DEP.
12. Upon completion of the work described herein, the applicant shall submit a Request for Certificate of Compliance (WPA Form 8A) to the Conservation Commission.
13. The work shall conform to the plans and special conditions referenced in this order.
14. Any change to the plans identified in Condition #13 above shall require the applicant to inquire of the Conservation Commission in writing whether the change is significant enough to require the filing of a new Notice of Intent.
15. The Agent or members of the Conservation Commission and the Department of Environmental Protection shall have the right to enter and inspect the area subject to this Order at reasonable hours to evaluate compliance with the conditions stated in this Order, and may require the submittal of any data deemed necessary by the Conservation Commission or Department for that evaluation.
16. This Order of Conditions shall apply to any successor in interest or successor in control of the property subject to this Order and to any contractor or other person performing work conditioned by this Order.
17. Prior to the start of work, and if the project involves work adjacent to a Bordering Vegetated Wetland, the boundary of the wetland in the vicinity of the proposed work area shall be marked by wooden stakes or flagging. Once in place, the wetland boundary markers shall be maintained until a Certificate of Compliance has been issued by the Conservation Commission.
18. All sedimentation barriers shall be maintained in good repair until all disturbed areas have been fully stabilized with vegetation or other means. At no time shall sediments be deposited in a wetland or water body. During construction, the applicant or his/her designee shall inspect the erosion controls on a daily basis and shall remove accumulated sediments as needed. The applicant shall immediately control any erosion problems that occur at the site and shall also immediately notify the Conservation Commission, which reserves the right to require additional erosion and/or damage prevention controls it may deem necessary. Sedimentation barriers shall serve as the limit of work unless another limit of work line has been approved by this Order.

NOTICE OF STORMWATER CONTROL AND MAINTENANCE REQUIREMENTS

19. The work associated with this Order (the "Project") is (1) is not (2) subject to the Massachusetts Stormwater Standards. If the work is subject to Stormwater Standards, then the project is subject to the following conditions;
 - a) All work, including site preparation, land disturbance, construction and redevelopment, shall be implemented in accordance with the construction period pollution prevention and erosion and sedimentation control plan and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollutant Discharge Elimination System Construction General Permit as required by Stormwater Standard 8. Construction period erosion, sedimentation and pollution control measures and best management practices (BMPs) shall remain in place until the site is fully stabilized.
 - b) No stormwater runoff may be discharged to the post-construction stormwater BMPs unless and until a Registered Professional Engineer provides a Certification that: *i.* all construction period BMPs have been removed or will be removed by a date certain specified in the Certification. For any construction period BMPs intended to be converted to post construction operation for stormwater attenuation, recharge, and/or treatment, the conversion is allowed by the MassDEP Stormwater Handbook BMP specifications and that the BMP has been properly cleaned or prepared for post construction operation, including removal of all construction period sediment trapped in inlet and outlet control structures; *ii.* as-built final construction BMP plans are included, signed and stamped by a Registered Professional Engineer, certifying the site is fully stabilized; *iii.* any illicit discharges to the stormwater management system have been removed, as per

Massachusetts Department of Environmental Protection

Bureau of Resource Protection - Wetlands

WPA Form 5 - Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File #:190-0647

eDEP Transaction #:1218293

City/Town:HUDSON

- the requirements of Stormwater Standard 10; *iv.* all post-construction stormwater BMPs are installed in accordance with the plans (including all planting plans) approved by the issuing authority, and have been inspected to ensure that they are not damaged and that they are in proper working condition; *v.* any vegetation associated with post-construction BMPs is suitably established to withstand erosion.
- c) The landowner is responsible for BMP maintenance until the issuing authority is notified that another party has legally assumed responsibility for BMP maintenance. Prior to requesting a Certificate of Compliance, or Partial Certificate of Compliance, the responsible party (defined in General Condition 19(e)) shall execute and submit to the issuing authority an Operation and Maintenance Compliance Statement ("O&M Statement") for the Stormwater BMPs identifying the party responsible for implementing the stormwater BMP Operation and Maintenance Plan ("O&M Plan") and certifying the following: *i.*) the O&M Plan is complete and will be implemented upon receipt of the Certificate of Compliance, and *ii.*) the future responsible parties shall be notified in writing of their ongoing legal responsibility to operate and maintain the stormwater management BMPs and implement the Stormwater Pollution Prevention Plan.
- d) Post-construction pollution prevention and source control shall be implemented in accordance with the long-term pollution prevention plan section of the approved Stormwater Report and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollutant Discharge Elimination System Multi-Sector General Permit.
- e) Unless and until another party accepts responsibility, the landowner, or owner of any drainage easement, assumes responsibility for maintaining each BMP. To overcome this presumption, the landowner of the property must submit to the issuing authority a legally binding agreement of record, acceptable to the issuing authority, evidencing that another entity has accepted responsibility for maintaining the BMP, and that the proposed responsible party shall be treated as a permittee for purposes of implementing the requirements of Conditions 19(f) through 19(k) with respect to that BMP. Any failure of the proposed responsible party to implement the requirements of Conditions 19(f) through 19(k) with respect to that BMP shall be a violation of the Order of Conditions or Certificate of Compliance. In the case of stormwater BMPs that are serving more than one lot, the legally binding agreement shall also identify the lots that will be serviced by the stormwater BMPs. A plan and easement deed that grants the responsible party access to perform the required operation and maintenance must be submitted along with the legally binding agreement.
- f) The responsible party shall operate and maintain all stormwater BMPs in accordance with the design plans, the O&M Plan, and the requirements of the Massachusetts Stormwater Handbook.
- g) The responsible party shall:
1. Maintain an operation and maintenance log for the last three (3) consecutive calendar years of inspections, repairs, maintenance and/or replacement of the stormwater management system or any part thereof, and disposal (for disposal the log shall indicate the type of material and the disposal location);
 2. Make the maintenance log available to MassDEP and the Conservation Commission ("Commission") upon request; and
 3. Allow members and agents of the MassDEP and the Commission to enter and inspect the site to evaluate and ensure that the responsible party is in compliance with the requirements for each BMP established in the O&M Plan approved by the issuing authority.
- h) All sediment or other contaminants removed from stormwater BMPs shall be disposed of in accordance with all applicable federal, state, and local laws and regulations.
- i) Illicit discharges to the stormwater management system as defined in 310 CMR 10.04 are prohibited.
- j) The stormwater management system approved in the Order of Conditions shall not be changed without the prior written approval of the issuing authority.
- k) Areas designated as qualifying pervious areas for the purpose of the Low Impact Site Design Credit (as

**Massachusetts Department of Environmental
Protection**

Bureau of Resource Protection - Wetlands

WPA Form 5 - Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File #:190-0647

eDEP Transaction #:1218293

City/Town:HUDSON

defined in the MassDEP Stormwater Handbook, Volume 3, Chapter 1, Low Impact Development Site Design Credits) shall not be altered without the prior written approval of the issuing authority.

- 1) Access for maintenance, repair, and/or replacement of BMPs shall not be withheld. Any fencing constructed around stormwater BMPs shall include access gates and shall be at least six inches above grade to allow for wildlife passage.

Special Conditions:

SEE ATTACHED

Massachusetts Department of Environmental Protection

Bureau of Resource Protection - Wetlands

WPA Form 5 - Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File #:190-0647

eDEP Transaction #:1218293

City/Town:HUDSON

D. Findings Under Municipal Wetlands Bylaw or Ordinance

1. Is a municipal wetlands bylaw or ordinance applicable? Yes No

2. The Conservation Commission hereby (check one that applies):

a. DENIES the proposed work which cannot be conditioned to meet the standards set forth in a municipal ordinance or bylaw specifically:

1. Municipal Ordinance or Bylaw _____

2. Citation _____

Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides measures which are adequate to meet these standards, and a final Order or Conditions is issued. Which are necessary to comply with a municipal ordinance or bylaw:

b. APPROVES the proposed work, subject to the following additional conditions.

1. Municipal Ordinance or Bylaw _____

2. Citation _____

3. The Commission orders that all work shall be performed in accordance with the following conditions and with the Notice of Intent referenced above. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, the conditions shall control.

The special conditions relating to municipal ordinance or bylaw are as follows:



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 – Order of Conditions
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
190-0647
 MassDEP File #
1218293
 eDEP Transaction #
HUDSON
 City/Town

E. Signatures

This Order is valid for three years, unless otherwise specified as a special condition pursuant to General Conditions #4, from the date of issuance.

8/24/2020
1. Date of Issuance

Please indicate the number of members who will sign this form.

5

This Order must be signed by a majority of the Conservation Commission.

2. Number of Signers

The Order must be mailed by certified mail (return receipt requested) or hand delivered to the applicant. A copy also must be mailed or hand delivered at the same time to the appropriate Department of Environmental Protection Regional Office, if not filing electronically, and the property owner, if different from applicant.

By vote on April 2, 2020 the individuals listed below have authorized the Conservation Agent to sign on their behalf pursuant to the signature authorization recorded with the Middlesex South Registry of Deeds Book 74456 Page 40. They also intend for the typed names below to serve as their electronic signature for any entity (MassDEP) that accepts electronic signatures.

Signatures:

David Mercer

James Martin

Debbi Edelstein

Emilie Wilder

Brandon Parker

by hand delivery on

by certified mail, return receipt requested, on

Date

8/24/2020
Date

Handwritten signature and date: 8/24/2020



Massachusetts Department of Environmental Protection
 Bureau of Resource Protection - Wetlands
WPA Form 5 – Order of Conditions
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

190-0647
 MassDEP File #
1218293
 eDEP Transaction #
HUDSON
 City/Town

F. Appeals

The applicant, the owner, any person aggrieved by this Order, any owner of land abutting the land subject to this Order, or any ten residents of the city or town in which such land is located, are hereby notified of their right to request the appropriate MassDEP Regional Office to issue a Superseding Order of Conditions. The request must be made by certified mail or hand delivery to the Department, with the appropriate filing fee and a completed Request for Departmental Action Fee Transmittal Form, as provided in 310 CMR 10.03(7) within ten business days from the date of issuance of this Order. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant, if he/she is not the appellant.

Any appellants seeking to appeal the Department's Superseding Order associated with this appeal will be required to demonstrate prior participation in the review of this project. Previous participation in the permit proceeding means the submission of written information to the Conservation Commission prior to the close of the public hearing, requesting a Superseding Order, or providing written information to the Department prior to issuance of a Superseding Order.

The request shall state clearly and concisely the objections to the Order which is being appealed and how the Order does not contribute to the protection of the interests identified in the Massachusetts Wetlands Protection Act (M.G.L. c. 131, § 40), and is inconsistent with the wetlands regulations (310 CMR 10.00). To the extent that the Order is based on a municipal ordinance or bylaw, and not on the Massachusetts Wetlands Protection Act or regulations, the Department has no appellate jurisdiction.

Massachusetts Department of Environmental Protection

Bureau of Resource Protection - Wetlands

WPA Form 5 - Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File #:190-0647

eDEP Transaction #:1218293

City/Town:HUDSON

(M.G.L. c. 131, § 40), and is inconsistent with the wetlands regulations (310 CMR 10.00). To the extent that the Order is based on a municipal ordinance or bylaw, and not on the Massachusetts Wetlands Protection Act or regulations, the Department has no appellate jurisdiction.

G. Recording Information

This Order of Conditions must be recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land subject to the Order. In the case of registered land, this Order shall also be noted on the Land Court Certificate of Title of the owner of the land subject to the Order of Conditions. The recording information on this page shall be submitted to the Conservation Commission listed below.

HUDSON

Conservation Commission

Detach on dotted line, have stamped by the Registry of Deeds and submit to the Conservation Commission.

To:

HUDSON

Conservation Commission

Please be advised that the Order of Conditions for the Project at:

N/A MBTA ROW/CENTRAL MASS LINE RAILROAD

Project Location

190-0647

MassDEP File Number

Has been recorded at the Registry of Deeds of:

County

Book

Page

for:

Property Owner N/A

and has been noted in the chain of title of the affected property in:

Book

Page

In accordance with the Order of Conditions issued on:

Date

If recorded land, the instrument number identifying this transaction is:

Instrument Number

If registered land, the document number identifying this transaction is:

Document Number

**Massachusetts Department of Environmental
Protection**
Bureau of Resource Protection - Wetlands
WPA Form 5 - Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
MassDEP File #:190-0647
eDEP Transaction #:1218293
City/Town:HUDSON

Signature of Applicant

Rev. 4/1/2010

**MBTA ROW/Central Mass Line Railroad
MassDEP File #190-0647
Applicants and Property Owners**

Applicants:

**Denise Bartone
NSTAR Electric Company d/b/a Eversource Energy
247 Station Drive, SE270
Westwood MA 02090**

**Priscilla Geigis
Department of Conservation and Recreation
251 Causeway Street, Suite 600
Boston MA 02114**

Property Owners:

**Massachusetts Bay Transit Authority
10 Park Plaza
Boston MA 02116**

**Town of Hudson
78 Main Street
Hudson MA 01749**

Special Conditions Under Massachusetts Wetlands Protection Act
MBTA ROW/Central Mass Line Railroad
MassDEP File #190-0647

Findings of Fact

Existing Conditions

The Project extends from Sudbury, through small portions of Stow and Marlborough, and into Hudson. The site within Hudson is 4.7 miles in length, of which 3.3 miles is along the existing inactive MBTA ROW from the Hudson/Sudbury municipal border to Wilkins Street. Crossing Wilkins Street, it continues within Town of Hudson-owned property for approximately 230 feet, to connect to the existing Assabet River Rail Trail (ARRT). It also continues southwest within Wilkins Street and Forest Avenue for approximately 1.4 miles to the Hudson Light and Power Substation, which is exempt pursuant to 310 CMR 10.02(2)(b)1.

The following freshwater wetland resource areas are present within or proximate to the Project Site: Bank, LUWW, BVW, BLSF, ILSF, and RFA. Major features consist of wetlands associated with the Assabet River and Fort Meadow Brook. In addition, there are two certified vernal pools within the site and the project passes through a Zone II Wellhead Protection Area associated with Hudson's public water supply. A portion of the Project Site within the MBTA ROW east of White Pond Road to the Hudson/Sudbury town line is within Priority and Estimated Habitat of rare species.

All wetland resource areas within the Project Site, except for the MCRT Connection to the ARRT, were reviewed and approved in an ORAD, 190-0611, issued February 6, 2018. The additional Resource Areas near the MCRT Connection to the ARRT are approved as part of this Order of Conditions.

The bridge spanning Fort Meadow Brook within the Project Site is severely damaged and is a historic location of beaver dams. Two streams, one perennial (Stream 1) and one intermittent (Stream 3), cross beneath the Project Site through stone and clay culverts, both of which are over 100 years old.

Proposed Conditions

The Project includes installation of a 115 kilovolt underground electric transmission line (Phase 1), followed by completion of a portion of the regional Massachusetts Central Rail Trail (MCRT) (Phase 2) in the same footprint. In addition to the work in the MBTA ROW, the project will include a connection to the existing ARRT alongside the existing parking lot on Wilkins Street and installation of underground transmission line within public roadways for connection to the Hudson Light and Power substation.

Phase 1 of the Project will be implemented by Eversource and will include all major earthwork, bridge reconstruction, construction of the Chestnut Street underpass, installation of the underground transmission line, and the majority of the restoration work. Phase 2 of the Project will be under the control and responsibility of DCR and will include installation of road crossings, paving the MCRT, and final restoration. Long-term, ongoing maintenance shall be the responsibility of DCR.

The limits of work will mostly be 22 feet in width. The final paved bike path will be 10 feet wide. The graded platform will also contain a 5-foot corridor that contains the

Special Conditions Under Massachusetts Wetlands Protection Act
MBTA ROW/Central Mass Line Railroad
MassDEP File #190-0647

underground duct bank. Two-foot shoulders on either side of the path will be loamed and seeded. The remainder of the 22-foot work area will be restored to a naturally vegetated state. In some sensitive environmental areas the work area will be reduced to 18 feet in width, with the duct bank beneath the paved bike path. There will be an access manhole approximately every 1500 feet, which will require a work area 40 feet wide by 50 feet in length. There will be ten such manholes in Hudson, three of which are in jurisdictional areas: one in River Front Area and two in Buffer Zone.

The only BVW disturbance will be at Fort Meadow Brook. The existing bridge is burned and badly damaged and must be replaced. Crane mats will be used to allow cranes to remove the old bridge and install a new single span bridge in its place. Areas disturbed by the crane mats will be restored.

There are some Time-Of-Year (TOY) restrictions set by Natural Heritage and Endangered Species Program (NHESP). Wildlife habitat in critical areas will be restored by replacing dead snags and brush piles that are removed for construction and revegetating the areas. TOY restrictions within Vernal Pool migration areas have been extended to include March 1 through June 1.

Storm water management on the bike path will mostly rely on sheet flow through a vegetated filter strip. There will be some drainage swales with check dams, one leaching catch basin and an infiltration basin at the ARRT trail head.

Maintenance of the bike path will include mowing or weed-whacking the 2-foot shoulders biweekly during the growing season, or as needed, and mowing the 5-foot corridor over the duct bank once a year. Invasive species removal will be by mechanical means when possible and spot treatments of herbicide by a licensed applicator when other approaches are not effective. Trash on the bike path shall be removed and disposed of. Natural debris such as leaves and twigs may be blown off the sides of the bike path except in areas near vernal pools.

Mitigation Plantings

There will be significant reseeded of disturbed Riverfront Area with a seed mix containing both herbaceous and woody vegetation. In addition, 600 woody plantings shall be installed in five areas along the Project corridor. In the Riverfront Area associated with Fort Meadow Brook, approximately 19 trees and 122 shrubs shall be planted in addition to the seed mix, and 40 aquatic plugs shall be installed in the area of BVW disturbed by the crane mats. Shrubs shall also be planted along the 2500 linear feet of Priority Habitat Areas.

Compliance with Applicable Performance Standards:

Both the transmission line and the rail trail qualify as Limited Projects under the Wetlands Protection Act Regulations. The Project complies with all applicable performance standards for BVW, BLSF, and ILSF, but exceeds the 10 percent threshold in the RFA performance standards due to the long, linear nature of the project and disturbs vegetation within the inner 100-foot RFA. This is permitted for Limited Projects if the applicant meets the Performance Standards to the maximum extent practicable. The Commission

Special Conditions Under Massachusetts Wetlands Protection Act
MBTA ROW/Central Mass Line Railroad
MassDEP File #190-0647

was satisfied that this requirement has been met and that mitigation has been provided in the form of restoration plantings in Riverfront Area. There will be no permanent impact to BVW and there will be a minimal increase in flood storage area.

Documents:

- Notice of Intent: Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project, Hudson, MA; prepared by VHB; dated January 2020
- Stormwater Report: Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project, Hudson, MA; prepared by VHB; dated January 2020
- Wildlife Habitat Evaluation: Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project, Hudson, MA; prepared by VHB; dated January 2020
- Eversource Sudbury-Hudson Transmission Reliability Project: Hudson Notice of Intent Plans; prepared by VHB; dated January 2020; revised July 24, 2020; signed and stamped by Mark Edward Shamon, PE# 35329; scale 1"=20'
- Commonwealth of Massachusetts Department of Conservation and Recreation, Division of Planning and Engineering; Mass Central Rail Trail in the towns of Hudson, Stow, Marlborough & Sudbury; prepared by VHB; dated Jan 2020; signed and stamped by Trace A. Lenhardt, PE# 47612; scale 1"=20'
- NSTAR Electric Company d/b/a Eversource Energy Sudbury to Hudson 115kV Underground Transmission Line; prepared by Power Engineers; dated 12/30/2020; signed and stamped by Todd S. Goyette PE#45181; scale 1"=20'
- Wetland Peer Review – Notice of Intent Sudbury-Hudson Transmission Reliability and MA Central Rail Trail Project; prepared by WDA Design Group; dated 3/11/2020
- Questions for Hearing on 6-4; submitted by Hudson Conservation Commission
- Hudson ConCom_RTC_6-11-20; submitted by VHB Associates
- Letter from WDA Design Group dated July 14, 2020
- WDA Design Group Peer Review – Applicants' Response to Additional Comments Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project; prepared by VHB; dated July 27, 2020
- Peer Review – Notice of Intent (DEP File #190-0647) Sudbury-Hudson Transmission Reliability and MA Central Rail Trail Project Eversource and DCR - Hudson, Massachusetts; prepared by WDA; dated 8/3/2020
- Corridor Management Plan for Massachusetts Central Rail Trail-Wayside Section and Sudbury-Hudson Transmission Reliability Project

Special Conditions

GENERAL:

19. The Findings of Fact are incorporated as a special condition and given equal status as a special condition of this Order.

Special Conditions Under Massachusetts Wetlands Protection Act
MBTA ROW/Central Mass Line Railroad
MassDEP File #190-0647

20. No excavated material shall be disposed of in violation of any local, state, or federal laws. All stumps must be removed from the site; no burying of stumps on site is permitted.
21. Plantings must be native plants or substitutions only as identified on the approved plans. No invasive vegetation shall be planted.

PRECONSTRUCTION:

22. Within thirty (30) days of the issuance of this Order of Conditions, the applicant, property owner, project representative, or other applicable party must record the original copy of the Order with the Registry of Deeds. Proof of recording is required to be submitted to the Commission or Conservation Agent prior to the pre-construction site visit and commencement of work.
23. Erosion controls shall consist of (a) silt fence or (b) silt fence with compost filter tubes, double-staked straw bales, or wattles, as shown on the plans. Only invasive seed free erosion controls shall be used. Syncopated fencing shall be used within 450 feet of vernal pools. A silt curtain shall be used in Fort Meadow Brook near the bridge if conditions warrant.
24. Prior to the beginning of each Phase, the applicant shall:
 - a. Provide the Conservation Commission with the name and telephone number in writing, of the person who will be immediately responsible for supervision of all work on the project site and compliance with this Order of Conditions. The Conservation Commission shall be notified in the event that the site supervisor or contractor is changed.
 - b. Clearly mark the limits of work in the field and instruct all workers not to work beyond the limits.
 - c. Notify Conservation Commission of the date upon which work will commence and provide the commission with the most up-to-date project timeline and project workflow.
 - d. Properly install all siltation controls according to the plans approved by the Conservation Commission and arrange with the Commission to have a site visit after installation, before work begins.
25. Environmental Monitoring:
 - a. Resumes of Environmental Monitors being considered for the project shall be submitted to the Commission for review.
 - b. If the chosen Environmental Monitor does not have a qualified Vernal Pool Biologist or equivalent, a separate Vernal Pool Specialist shall be hired by the applicant to approve and supervise work within 450 feet of Vernal Pools during the TOY restriction of March 1 to June 1. A qualified Vernal Pool Specialist will have at least three years of experience

Special Conditions Under Massachusetts Wetlands Protection Act
MBTA ROW/Central Mass Line Railroad
MassDEP File #190-0647

conducting vernal pool assessments or surveys in the northeastern United States.

26. A structural engineer shall inspect the culverts conveying Streams 1 and 3 beneath the MBTA ROW within the Project Site to determine whether they are structurally sound to (a) function hydrologically and (b) withstand the planned construction activities, and shall provide a report of the findings to the Commission. If either culvert does not meet these requirements or is damaged during construction, it shall be replaced with a culvert that meets current MA Stream Crossing Standards to the maximum extent practicable, as determined by the Commission or its Agent, during construction.
27. The following final documents shall be provided for review and comment by the Conservation Commission:
 - a. Final Stormwater O&M Plan
 - b. Final Stormwater Pollution Prevention Plan
 - c. Final MOU between Eversource and DCR on Corridor Maintenance and Management
 - d. Soil and Groundwater Management Plan
 - e. Structural Engineer report on culvert conditions

DURING CONSTRUCTION

28. All Time-Of-Year (TOY) construction restrictions and sweeps required by the Natural Heritage and Endangered Species Program shall be followed. Time-of-Year restrictions for work within 450 feet of vernal pools shall be March 1 through June 1. Between March 1 and June 1, the Environmental Monitor shall conduct sweeps prior to vehicles traveling down the Project Site within vernal pool buffers. Between April 1 and Oct 31, the Environmental Monitor shall conduct turtle sweeps prior to initiating work in, or prior to vehicles traveling through, the Box Turtle Protection Area.
29. There shall be a qualified Environmental Monitor on site at all times that work is being performed in jurisdictional wetland areas. The Environmental Monitor shall send weekly reports and reports following any storm events of ½ inch or greater electronically to the Conservation Agent.
30. Detailed construction sequencing and schedules shall be submitted to the Commission electronically, as they are completed or whenever they are revised.
31. The applicant shall endeavor to locate a supplier of pesticide-free seed mixes. All restoration seed mixes shall be pesticide-free if practicable. Documentation of seed sources shall be provided to the Commission, prior to purchase if practicable.
32. Detailed sequencing of the bridge removal work based on water levels and other conditions at the time of removal shall be provided to the Commission prior to commencement of work in this area. A silt curtain shall be used if conditions

Special Conditions Under Massachusetts Wetlands Protection Act
MBTA ROW/Central Mass Line Railroad
MassDEP File #190-0647

warrant. The Conservation Agent shall be notified when bridge removal is to begin and perform a site inspection before work commences. The Conservation Agent shall be kept informed on a daily basis of bridge work to be performed and when the work is complete, and shall perform site inspections before any phase of work as the Commission or Agent deems appropriate.

33. Trash removal shall be performed along the ROW, even outside the limits of work, as practicable. Locations of trash removal shall be determined by a site walk of the applicant and Conservation Agent and/or Commissioner.
34. If dewatering is necessary, water will not be discharged directly into any waterbodies, BVW, or inner 100' of RFA. The Conservation Commission shall be notified in advance if dewatering is required within jurisdictional areas and shall inspect the work site before dewatering commences if such inspection can occur within 24 hours of notification.
35. If on-site excavation or other work reveals any soil contamination in reportable concentrations or quantities, the Conservation Commission shall be notified and shall be copied on all related correspondence.
36. The Conservation Commission shall be notified of any remedial activities or changes to the work plans required due to the potential presence of PFAS in the Zone II wellhead area or other jurisdictional areas.
37. The catch basin at stations 119 shall be a leaching catch basin.
38. All equipment and timber mats shall be cleaned prior to use on the site to prevent the introduction of invasive species. If it is necessary to clean construction equipment while on site, it must be cleaned outside of the 100-foot Buffer Zone, Riverfront Area, or any other Resource Area.

CONSTRUCTION GAP BETWEEN PHASE 1 PHASE II

39. If there is a gap between Phase 1 and Phase 2, erosion controls shall be maintained by Eversource. Erosion control in Priority and Estimated Habitat of Rare Species and within 450 feet of Vernal Pools may require removal. This shall be determined by a site walk with the applicant and Conservation Agent.
40. If there is a gap between Phase 1 and Phase 2, Eversource shall be responsible for the health of the restoration areas and the control of invasive species in these areas.

POSTCONSTRUCTION

41. Prior to the issuance of a Certificate of Compliance the site shall be stabilized with vegetation or other measures approved by the Conservation Commission.
42. Prior to the issuance of a Certificate of Compliance and after the site has been stabilized, all erosion controls shall be removed from the site.
43. Two (2) full growing seasons shall be required to determine that any plantings within buffer zones and/or resource areas or as part of any mitigation plan have successfully

Special Conditions Under Massachusetts Wetlands Protection Act
MBTA ROW/Central Mass Line Railroad
MassDEP File #190-0647

established or may require replanting in case of significant failure.

- a. During this 2-year period, the applicant/property owner shall submit a report from a qualified wetlands scientist or landscape specialist at the end of each growing season describing the condition of the plantings following installation. If greater than 25% of plantings are not in good health then replacement plantings are required.
 - b. The consultant shall prepare a final report on the status of the plantings as part of the Request for a Certificate of Compliance. Successful establishment of the plantings will mean that at least 75% of the plantings have survived and are in good health and that the planting is free of invasive species. Successful establishment is a requirement for the issuance of a Certificate of Compliance.
44. Prior to the issuance of a Certificate of Compliance, the applicant shall submit to the Conservation Commission for review and approval an as-built plan and a letter of compliance stamped by a registered professional engineer. Said plan and letter shall show that all conditions of this Order have been complied with in substantial compliance with the Order and explain any differences from the approved plans.

CONDITIONS IN PERPETUITY

45. When maintaining the path, no debris including natural debris such as leaves and twigs shall be blown or swept from the bike path into areas within 25 feet of vernal pools. The boundaries of these areas shall be indicated with a method to be determined before the Certificate of Compliance is granted. This Condition is ongoing and does not expire with the expiration of the Order of Conditions or the issuance of a Certificate of Compliance.
46. The culverts beneath the ROW shall be inspected and cleared of debris at least annually. If the culverts become damaged or no longer function as required, they shall be replaced according to the most current MA Stream Crossing Standards. This Condition is ongoing and does not expire with the expiration of the Order of Conditions or the issuance of a Certificate of Compliance.
47. DCR shall notify the Commission in advance if herbicides are to be used for vegetation control within wetland jurisdictional areas, indicating the target control species, the type(s) of herbicide to be used, and the on-going maintenance plan for the targeted area. This Condition is ongoing and does not expire with the expiration of the Order of Conditions or the issuance of a Certificate of Compliance.



WPA Form 7 – Extension Permit for Orders of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

190-0647

Provided by DEP

A. General Information

Important:
When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



1. Applicant:
 Eversource Energy and Dept of Conservation and Recreation
 c/o Marc Bergeron, Epsilon Associates
 3 Mill & Main Place, Suite 250
 Mailing Address
 Maynard MA 01754
 City/Town State Zip Code

2. Property Owner (if different):
 Massachusetts Bay Transportation Authority
 Name
 10 Park Plaza
 Mailing Address
 Boston MA 02116
 City/Town State Zip Code

B. Authorization

The Order of Conditions (or Extension Permit) issued to the applicant or property owner listed above on:

8/24/2020 Issued by: Hudson Conservation Commission
 Date Conservation Commission

for work at: MBTA ROW/Central Mass Line 16-23 multiple
 Railroad Assessor's Map/Plat Number Parcel/Lot Number

recorded at the Registry of Deeds for:

Southern Middlesex 76079 130
 County Book Page

Certificate (if registered land)
 is hereby extended until: 8/24/2026
 Date Date the Order was last extended (if applicable)

This date can be no more than 3 years from the expiration date of the Order of Conditions or the latest extension. Only unexpired Orders of Conditions or Extension may be extended.

This Extension Permit must be signed by a majority of the Conservation Commission and a copy sent to the applicant and the appropriate DEP Regional Office (<https://www.mass.gov/service-details/massdep-regional-offices-by-community>).



WPA Form 7 – Extension Permit for Orders of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

B. Authorization (cont.)

By vote on April 2, 2020 the individuals listed below have authorized the Conservation Agent to sign on their behalf pursuant to the signature authorization recorded with the Middlesex South Registry of Deeds Book 74456 Page 40. They also intend for the typed names below to serve as their electronic signature for any entity (MassDEP) that accepts electronic signatures.

Signatures:

Signature

James Martin

Printed Name

Signature

Heidi Graf

Printed Name

Signature

Brandon Parker

Printed Name

Signature

Debbi Edelstein

Printed Name

Signature

Brooke Warrington

Printed Name

Signature

Paul Osborne

Printed Name

Signature

Jacob Millette

Printed Name

Signature

Printed Name

*Paul
Conservation
8/10/23
Agent.*



Massachusetts Department of Environmental Protection

Bureau of Resource Protection - Wetlands

WPA Form 7 – Extension Permit for Orders of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

DEP File Number:

190-0647

Provided by DEP

C. Recording Confirmation

The applicant shall record this document in accordance with General Condition 8 of the Order of Conditions (see below), complete the form attached to this Extension Permit, have it stamped by the Registry of Deeds, and return it to the Conservation Commission.

Note: General Condition 8 of the Order of Conditions requires the applicant, prior to commencement of work, to record the final Order (or in this case, the Extension Permit for the Order of Conditions) in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, it shall be noted in the Registry's Granter Index under the name of the owner of the land upon which the proposed work is to be done. In the case of registered land, it shall also be noted on the Land Court Certificate of Title of the owner of the land upon which the proposed work is done.

Detach this page and submit it to the Conservation Commission prior to the expiration of the Order of Conditions subject to this Extension Permit.

To:

Conservation Commission

Please be advised that the Extension Permit to the Order of Conditions for the project at:

Project Location

DEP File Number

has been recorded at the Registry of Deeds of:

County

for:

Property Owner

and has been noted in the chain of title of the affected property in accordance with General Condition 8 of the original Order of Conditions on:

Date

Book

Page

If recorded land the instrument number which identifies this transaction is:

Instrument Number

If registered land, the document number which identifies this transaction is:

Document Number

Signature of Applicant

**Stow Conservation Commission Order of Conditions
(24 pages)**



Town of Stow Conservation Commission

380 Great Road
Stow, Massachusetts 01775
(978) 897-8615
FAX (978) 897-4534
conservation@stow-ma.gov

July 10, 2020

Denise Bartone
NSTAR Electric Company d/b/a Eversource Energy
247 Station Drive
Westwood, Massachusetts 02090

RE: Order of Conditions and Certificate of Understanding – DEP #299-677 - MBTA ROW/Central Mass Line Railroad, Stow, MA 01775

Dear Ms. Bartone:

Enclosed please find the Order of Conditions (the Order) issued pursuant to the Wetlands Protection Act, General Laws, Ch. 131, Sec. 40 and the Town of Stow Wetlands Bylaw for the above-referenced project.

No work on the project may begin until the following requirements have been satisfied:

You have signed and returned to the Conservation Department the attached Certificate of Understanding. (this **DOES NOT** need to be recorded at the Registry of Deeds)

The 10-business day appeal period had elapsed. The appeal period begins on the date of issuance (pages 2 and 11 of the Order). Please be aware that the Governor's emergency Order allows DEP to appeal a particular decision up to 45 days after the Emergency Order is lifted. **Applicants who wish to proceed on a project, for which no appeal was received within the 10-day appeal, may request a letter from MassDEP indicating whether DEP plans to intervene. Requests for such letter should be sent to: CERO_NOI@mass.gov with the subject line: STOW-NO_SOC-K Andrew & Tania Borg-MassDEP 299-679. MassDEP requests that letters also be mailed to the regional office (DEP Central Regional Office, 8 New Bond Street, Worcester, MA 01606). Please copy us on the email.**

You have the original Order recorded at the Middlesex South Registry of Deeds and have forwarded proof of recording to the Conservation Department (as required in General Condition 9 of the Order). The Order is not valid until it is properly recorded. *PLEASE NOTE: The Middlesex South Registry is currently not open to the public but is accepting recordings by mail. Please see the attached recording instructions

The DEP file number sign has been erected at the project entrance (as required in General Condition 10 of the Order).

You have read and understand the enclosed Order of Conditions. It is the responsibility of the owner/applicant to ensure that all conditions and approved plans are complied with. Deviation from the approved plans or conditions may result in a stop work order or further enforcement, as well as the inability to obtain a Certificate of Compliance at project completion.

Please note that there may be other requirements in your Order of Conditions that must occur before work may be initiated on the site. Please be sure to read the whole Order (**especially the attached Stow Findings and Conditions**) before beginning work. It is your responsibility to comply with all aspects of the Order.

If you have any questions, please don't hesitate to contact the office at 978-897-8615.

Sincerely,


Kathy Sferra, Conservation Coordinator

21 B

Vivian Kimball
101 Walnut Street
PO Box 9151
Watertown, MA 02472



Bk: 75824 Pg: 448 Doc: OFD
Page: 1 of 21 10/06/2020 03:33 PM



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 – Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

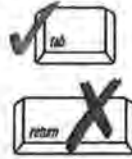
Provided by MassDEP:
299-677
MassDEP File #
eDEP Transaction #
Stow
City/Town

A. General Information

Please note:
this form has been modified with added space to accommodate the Registry of Deeds Requirements

- 1. From: Stow
Conservation Commission
- 2. This issuance is for (check one):
a. Order of Conditions b. Amended Order of Conditions
- 3. To: Applicant:

Important:
When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



a. First Name Eversource / MA DCR b. Last Name _____
 c. Organization NSTAR Electric Company d/b/a Eversource Energy, 247 Station Drive / Massachusetts Department of Conservation and Recreation, 251 Causeway St, 9th Floor
 d. Mailing Address Westwood / Boston e. City/Town MA / MA f. State 02090/02114 g. Zip Code

4. Property Owner (if different from applicant):

a. First Name _____ b. Last Name _____
 c. Organization Massachusetts Bay Transportation Authority
 d. Mailing Address 10 Park Plaza
 e. City/Town Boston f. State MA g. Zip Code 02116

5. Project Location:

MBTA ROW/Central Mass Line Railroad a. Street Address Stow b. City/Town
U7 c. Assessors Map/Plat Number 3 d. Parcel/Lot Number

ORIGINAL REFERENCE REQUESTED
BOOK 13117 PAGE 113



Massachusetts Department of Environmental Protection
 Bureau of Resource Protection - Wetlands
WPA Form 5 – Order of Conditions
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
 299-677
 MassDEP File # _____
 eDEP Transaction # _____
Stow
 City/Town

B. Findings (cont.)

Denied because:

- b. the proposed work cannot be conditioned to meet the performance standards set forth in the wetland regulations. Therefore, work on this project may not go forward unless and until a new Notice of Intent is submitted which provides measures which are adequate to protect the interests of the Act, and a final Order of Conditions is issued. **A description of the performance standards which the proposed work cannot meet is attached to this Order.**
- c. the information submitted by the applicant is not sufficient to describe the site, the work, or the effect of the work on the interests identified in the Wetlands Protection Act. Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides sufficient information and includes measures which are adequate to protect the Act's interests, and a final Order of Conditions is issued. **A description of the specific information which is lacking and why it is necessary is attached to this Order as per 310 CMR 10.05(6)(c).**
3. Buffer Zone Impacts: Shortest distance between limit of project disturbance and the wetland resource area specified in 310 CMR 10.02(1)(a) >35
 a. linear feet

Inland Resource Area Impacts: Check all that apply below. (For Approvals Only)

Resource Area	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
4. <input type="checkbox"/> Bank	<u> </u> a. linear feet	<u> </u> b. linear feet	<u> </u> c. linear feet	<u> </u> d. linear feet
5. <input type="checkbox"/> Bordering Vegetated Wetland	<u> </u> a. square feet	<u> </u> b. square feet	<u> </u> c. square feet	<u> </u> d. square feet
6. <input type="checkbox"/> Land Under Waterbodies and Waterways	<u> </u> a. square feet <u> </u> e. c/y dredged	<u> </u> b. square feet <u> </u> f. c/y dredged	<u> </u> c. square feet	<u> </u> d. square feet
7. <input type="checkbox"/> Bordering Land Subject to Flooding	<u> </u> a. square feet <u> </u> Cubic Feet Flood Storage	<u> </u> b. square feet <u> </u> f. cubic feet	<u> </u> c. square feet <u> </u> g. cubic feet	<u> </u> d. square feet <u> </u> h. cubic feet
8. <input type="checkbox"/> Isolated Land Subject to Flooding	<u> </u> a. square feet <u> </u> Cubic Feet Flood Storage	<u> </u> b. square feet <u> </u> d. cubic feet	<u> </u> e. cubic feet	<u> </u> f. cubic feet
9. <input checked="" type="checkbox"/> Riverfront Area	<u>5,111</u> a. total sq. feet <u>0</u> Sq ft within 100 ft <u> </u> c. square feet	<u>5,111</u> b. total sq. feet <u>0</u> <u> </u> d. square feet	<u> </u> e. square feet	<u> </u> f. square feet



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 – Order of Conditions
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
 299-677
 MassDEP File #

eDEP Transaction #
 Stow
 City/Town

Sq ft between 100-200 ft	3,240 temp/1,751	3,240 temp/1,751	1,489 i. square feet	1,489 j. square feet
--------------------------	---------------------	---------------------	-------------------------	-------------------------

B. Findings (cont.)

Coastal Resource Area Impacts: Check all that apply below. (For Approvals Only)

- | | Proposed Alteration | Permitted Alteration | Proposed Replacement | Permitted Replacement |
|--|---|---|---|---|
| 10. <input type="checkbox"/> Designated Port Areas | Indicate size under Land Under the Ocean, below | | | |
| 11. <input type="checkbox"/> Land Under the Ocean | <u> </u>
a. square feet | <u> </u>
b. square feet | | |
| | <u> </u>
c. c/y dredged | <u> </u>
d. c/y dredged | | |
| 12. <input type="checkbox"/> Barrier Beaches | Indicate size under Coastal Beaches and/or Coastal Dunes below | | | |
| 13. <input type="checkbox"/> Coastal Beaches | <u> </u>
a. square feet | <u> </u>
b. square feet | <u> </u>
c. nourishment | <u> </u>
d. nourishment |
| 14. <input type="checkbox"/> Coastal Dunes | <u> </u>
a. square feet | <u> </u>
b. square feet | <u> </u>
c. nourishment | <u> </u>
d. nourishment |
| 15. <input type="checkbox"/> Coastal Banks | <u> </u>
a. linear feet | <u> </u>
b. linear feet | | |
| 16. <input type="checkbox"/> Rocky Intertidal Shores | <u> </u>
a. square feet | <u> </u>
b. square feet | | |
| 17. <input type="checkbox"/> Salt Marshes | <u> </u>
a. square feet | <u> </u>
b. square feet | <u> </u>
c. square feet | <u> </u>
d. square feet |
| 18. <input type="checkbox"/> Land Under Salt Ponds | <u> </u>
a. square feet | <u> </u>
b. square feet | | |
| | <u> </u>
c. c/y dredged | <u> </u>
d. c/y dredged | | |
| 19. <input type="checkbox"/> Land Containing Shellfish | <u> </u>
a. square feet | <u> </u>
b. square feet | <u> </u>
c. square feet | <u> </u>
d. square feet |
| 20. <input type="checkbox"/> Fish Runs | Indicate size under Coastal Banks, Inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above | | | |
| | <u> </u>
a. c/y dredged | <u> </u>
b. c/y dredged | | |
| 21. <input type="checkbox"/> Land Subject to Coastal Storm Flowage | <u> </u>
a. square feet | <u> </u>
b. square feet | | |



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 – Order of Conditions
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
 299-677
 MassDEP File # _____
 eDEP Transaction # _____
 Stow
 City/Town

B. Findings (cont.)

* #22. If the project is for the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.5.c (BWV) or B.17.c (Salt Marsh) above, please enter the additional amount here.

22. Restoration/Enhancement *:

a. square feet of BWV _____

b. square feet of salt marsh _____

23. Stream Crossing(s):

a. number of new stream crossings _____

b. number of replacement stream crossings _____

C. General Conditions Under Massachusetts Wetlands Protection Act

The following conditions are only applicable to Approved projects.

1. Failure to comply with all conditions stated herein, and with all related statutes and other regulatory measures, shall be deemed cause to revoke or modify this Order.
2. The Order does not grant any property rights or any exclusive privileges; it does not authorize any injury to private property or invasion of private rights.
3. This Order does not relieve the permittee or any other person of the necessity of complying with all other applicable federal, state, or local statutes, ordinances, bylaws, or regulations.
4. The work authorized hereunder shall be completed within three years from the date of this Order unless either of the following apply:
 - a. the work is a maintenance dredging project as provided for in the Act; or
 - b. the time for completion has been extended to a specified date more than three years, but less than five years, from the date of issuance. If this Order is intended to be valid for more than three years, the extension date and the special circumstances warranting the extended time period are set forth as a special condition in this Order.
5. This Order may be extended by the issuing authority for one or more periods of up to three years each upon application to the issuing authority at least 30 days prior to the expiration date of the Order.
6. If this Order constitutes an Amended Order of Conditions, this Amended Order of Conditions does not extend the issuance date of the original Final Order of Conditions and the Order will expire on 7/10/2023 unless extended in writing by the Department.
7. Any fill used in connection with this project shall be clean fill. Any fill shall contain no trash, refuse, rubbish, or debris, including but not limited to lumber, bricks, plaster, wire, lath, paper, cardboard, pipe, tires, ashes, refrigerators, motor vehicles, or parts of any of the foregoing.
8. This Order is not final until all administrative appeal periods from this Order have elapsed, or if such an appeal has been taken, until all proceedings before the Department have been completed.



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 – Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
299-677
MassDEP File #
eDEP Transaction #
Stow
City/Town

C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

9. No work shall be undertaken until the Order has become final and then has been recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land upon which the proposed work is to be done. In the case of the registered land, the Final Order shall also be noted on the Land Court Certificate of Title of the owner of the land upon which the proposed work is done. The recording information shall be submitted to the Conservation Commission on the form at the end of this Order, which form must be stamped by the Registry of Deeds, prior to the commencement of work.
10. A sign shall be displayed at the site not less than two square feet or more than three square feet in size bearing the words,

"Massachusetts Department of Environmental Protection" [or, "MassDEP"]
"File Number 299-677 "
11. Where the Department of Environmental Protection is requested to issue a Superseding Order, the Conservation Commission shall be a party to all agency proceedings and hearings before MassDEP.
12. Upon completion of the work described herein, the applicant shall submit a Request for Certificate of Compliance (WPA Form 8A) to the Conservation Commission.
13. The work shall conform to the plans and special conditions referenced in this order.
14. Any change to the plans identified in Condition #13 above shall require the applicant to inquire of the Conservation Commission in writing whether the change is significant enough to require the filing of a new Notice of Intent.
15. The Agent or members of the Conservation Commission and the Department of Environmental Protection shall have the right to enter and inspect the area subject to this Order at reasonable hours to evaluate compliance with the conditions stated in this Order, and may require the submittal of any data deemed necessary by the Conservation Commission or Department for that evaluation.
16. This Order of Conditions shall apply to any successor in interest or successor in control of the property subject to this Order and to any contractor or other person performing work conditioned by this Order.
17. Prior to the start of work, and if the project involves work adjacent to a Bordering Vegetated Wetland, the boundary of the wetland in the vicinity of the proposed work area shall be marked by wooden stakes or flagging. Once in place, the wetland boundary markers shall be maintained until a Certificate of Compliance has been issued by the Conservation



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 – Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
299-677
MassDEP File #
eDEP Transaction #
Stow
City/Town

Commission.

C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

18. All sedimentation barriers shall be maintained in good repair until all disturbed areas have been fully stabilized with vegetation or other means. At no time shall sediments be deposited in a wetland or water body. During construction, the applicant or his/her designee shall inspect the erosion controls on a daily basis and shall remove accumulated sediments as needed. The applicant shall immediately control any erosion problems that occur at the site and shall also immediately notify the Conservation Commission, which reserves the right to require additional erosion and/or damage prevention controls it may deem necessary. Sedimentation barriers shall serve as the limit of work unless another limit of work line has been approved by this Order.

NOTICE OF STORMWATER CONTROL AND MAINTENANCE REQUIREMENTS

19. **The work associated with this Order (the "Project") is (1) is not (2) subject to the Massachusetts Stormwater Standards. If the work is subject to the Stormwater Standards, then the project is subject to the following conditions:**

- a) All work, including site preparation, land disturbance, construction and redevelopment, shall be implemented in accordance with the construction period pollution prevention and erosion and sedimentation control plan and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollution Discharge Elimination System Construction General Permit as required by Stormwater Condition 8. Construction period erosion, sedimentation and pollution control measures and best management practices (BMPs) shall remain in place until the site is fully stabilized.
- b) No stormwater runoff may be discharged to the post-construction stormwater BMPs unless and until a Registered Professional Engineer provides a Certification that:
- i.* all construction period BMPs have been removed or will be removed by a date certain specified in the Certification. For any construction period BMPs intended to be converted to post construction operation for stormwater attenuation, recharge, and/or treatment, the conversion is allowed by the MassDEP Stormwater Handbook BMP specifications and that the BMP has been properly cleaned or prepared for post construction operation, including removal of all construction period sediment trapped in inlet and outlet control structures;
 - ii.* as-built final construction BMP plans are included, signed and stamped by a Registered Professional Engineer, certifying the site is fully stabilized;
 - iii.* any illicit discharges to the stormwater management system have been removed, as per the requirements of Stormwater Standard 10;
 - iv.* all post-construction stormwater BMPs are installed in accordance with the plans (including all planting plans) approved by the issuing authority, and have been inspected to ensure that they are not damaged and that they are in proper working condition;
 - v.* any vegetation associated with post-construction BMPs is suitably established to withstand erosion.



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 – Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
299-677
MassDEP File #
eDEP Transaction #
Stow
City/Town

C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

- c) The landowner is responsible for BMP maintenance until the issuing authority is notified that another party has legally assumed responsibility for BMP maintenance. Prior to requesting a Certificate of Compliance, or Partial Certificate of Compliance, the responsible party (defined in General Condition 18(e)) shall execute and submit to the issuing authority an Operation and Maintenance Compliance Statement ("O&M Statement") for the Stormwater BMPs identifying the party responsible for implementing the stormwater BMP Operation and Maintenance Plan ("O&M Plan") and certifying the following: *i.*) the O&M Plan is complete and will be implemented upon receipt of the Certificate of Compliance, and *ii.*) the future responsible parties shall be notified in writing of their ongoing legal responsibility to operate and maintain the stormwater management BMPs and implement the Stormwater Pollution Prevention Plan.
- d) Post-construction pollution prevention and source control shall be implemented in accordance with the long-term pollution prevention plan section of the approved Stormwater Report and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollution Discharge Elimination System Multi-Sector General Permit.
- e) Unless and until another party accepts responsibility, the landowner, or owner of any drainage easement, assumes responsibility for maintaining each BMP. To overcome this presumption, the landowner of the property must submit to the issuing authority a legally binding agreement of record, acceptable to the issuing authority, evidencing that another entity has accepted responsibility for maintaining the BMP, and that the proposed responsible party shall be treated as a permittee for purposes of implementing the requirements of Conditions 18(f) through 18(k) with respect to that BMP. Any failure of the proposed responsible party to implement the requirements of Conditions 18(f) through 18(k) with respect to that BMP shall be a violation of the Order of Conditions or Certificate of Compliance. In the case of stormwater BMPs that are serving more than one lot, the legally binding agreement shall also identify the lots that will be serviced by the stormwater BMPs. A plan and easement deed that grants the responsible party access to perform the required operation and maintenance must be submitted along with the legally binding agreement.
- f) The responsible party shall operate and maintain all stormwater BMPs in accordance with the design plans, the O&M Plan, and the requirements of the Massachusetts Stormwater Handbook.



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 – Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
299-677
MassDEP File #
eDEP Transaction #
Stow
City/Town

C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

- g) The responsible party shall:
1. Maintain an operation and maintenance log for the last three (3) consecutive calendar years of inspections, repairs, maintenance and/or replacement of the stormwater management system or any part thereof, and disposal (for disposal the log shall indicate the type of material and the disposal location);
 2. Make the maintenance log available to MassDEP and the Conservation Commission ("Commission") upon request; and
 3. Allow members and agents of the MassDEP and the Commission to enter and inspect the site to evaluate and ensure that the responsible party is in compliance with the requirements for each BMP established in the O&M Plan approved by the issuing authority.
- h) All sediment or other contaminants removed from stormwater BMPs shall be disposed of in accordance with all applicable federal, state, and local laws and regulations.
- i) Illicit discharges to the stormwater management system as defined in 310 CMR 10.04 are prohibited.
- j) The stormwater management system approved in the Order of Conditions shall not be changed without the prior written approval of the issuing authority.
- k) Areas designated as qualifying pervious areas for the purpose of the Low Impact Site Design Credit (as defined in the MassDEP Stormwater Handbook, Volume 3, Chapter 1, Low Impact Development Site Design Credits) shall not be altered without the prior written approval of the issuing authority.
- l) Access for maintenance, repair, and/or replacement of BMPs shall not be withheld. Any fencing constructed around stormwater BMPs shall include access gates and shall be at least six inches above grade to allow for wildlife passage.

Special Conditions (if you need more space for additional conditions, please attach a text document):
see attached



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 – Order of Conditions
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
 299-677
 MassDEP File # _____
 eDEP Transaction # _____
 Stow
 City/Town

D. Findings Under Municipal Wetlands Bylaw or Ordinance

1. Is a municipal wetlands bylaw or ordinance applicable? Yes No

2. The Stow Conservation Commission hereby finds (check one that applies):

a. that the proposed work cannot be conditioned to meet the standards set forth in a municipal ordinance or bylaw, specifically:

1. Municipal Ordinance or Bylaw _____ 2. Citation _____

Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides measures which are adequate to meet these standards, and a final Order of Conditions is issued.

b. that the following additional conditions are necessary to comply with a municipal ordinance or bylaw:

Stow Wetlands Bylaw
 1. Municipal Ordinance or Bylaw _____ 2. Citation _____

3. The Commission orders that all work shall be performed in accordance with the following conditions and with the Notice of Intent referenced above. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, the conditions shall control.

The special conditions relating to municipal ordinance or bylaw are as follows (if you need more space for additional conditions, attach a text document):
see attached

ORDER OF CONDITIONS #299-677

Massachusetts Wetlands Protection Act and Town of Stow Wetland Bylaw

Off Marlboro Road, Stow, MA

Assessors Map U7, Parcel 3

List of Submittals for the Record

From the Applicant:

- Notice of Intent with Stormwater Management Report
- Mass Central Rail Trail Plans, last revised 3/4/20, 9 sheets
- Transmission Line Plans along MTBA Right of Way, last revised 3/4/20, 19 sheets
- Cover Letter and Supplemental Riverfront Area Narrative Submitted for Eversource by VHB dated 3/4/20
- Memo from VHB re: Sudbury-Hudson Soil and Groundwater Analytical Results, dated 3/18/20
- Email from VHB re Soil and Groundwater Sampling Results dated 3/23/20
- Response to Questions about Soil and Groundwater Sampling Results, dated 3/30/20

From Members of the Public, Organizations and Officials

- Email from Laurel Cohen dated 2/28/20 re project concerns
- Email from Laurel and Steve Cohen dated 4/7/20 re project concerns
- Email from Margaret Costello with attached public hearing statement dated 3/6/20
- Email from Rebecca Cutting (Sudbury) dated 3/5/20
- Email from David Gray regarding project hearing dated 3/4/20
- Email with letter from Bhaird Campbell dated 4/6/20 re procedural questions
- Copy of Letter from Sen. James Eldridge, Rep. Kate Hogan, Rep Carmine Gentile to Jim Montgomery, Commission of Department of Conservation and Recreation re project concerns, dated 5/14/20 and email transmitting letter
- Email/Letter from Bhaird Campbell dated 4/6/20 re procedural concerns.
- Letter from Sudbury Valley Trustees dated 4/2/20 re project concerns
- Letter from Protect Sudbury Inc. dated 4/2/20 re project concerns with seven attachments
- Email from Gleasondale Steering Committee dated 5/28/20 re project concerns
- Statement from Margaret Costello for the record, dated 6/2/20
- Email and List of Questions from Rebecca Cutting of Sudbury dated 6/2/20

From Regional Conservation Commissions

- Peer Review for the Town of Hudson Conservation Commission by WDA Design Group, dated 3/11/20
- Letter from VHB responding to Hudson Peer Review on behalf of Applicants, dated 3/13/20
- Follow up Peer Review Letter from the Town of Hudson Conservation Commission by WDA Design Group, dated 4/9/20
- Peer Review for the Town of Sudbury Conservation Commission by BETA, dated 5/11/20

- "Conservation Commission and Public Comments on the Eversource/DCR Notice of Intent Application", undated, from the Sudbury Conservation Commission

Other Materials

- DEP Best Management Practices for Controlling Exposure to Soil during the Development of Rail Trails, undated.
- Energy Facilities Siting Board Decision, dated 12/18/19
- Letter from Mass DEP to MEPA Commenting on Draft EIR, dated 12/8/17

Conservation Commission Findings:

1. The applicants have filed a Notice of Intent for work proposed within an area subject to regulation under the Massachusetts Wetlands Protection Act and the Town of Stow Wetlands Protection Bylaw and Regulations.
2. NSTAR Electric Company d/b/a Eversource Energy ("Eversource") and the Mass Department of Conservation and Recreation ("DCR") are applying jointly for Eversource to install a 115 kV underground electric transmission line and for DCR to complete construction of a 10 foot wide multi-use path along a portion of the Massachusetts Bay Transportation Authority right-of-way, an inactive railroad right of way. The stated goal of the transmission line is to improve reliability of electric service in the region and the goal of the multi-use path is to advance a regional multi-use trail project. The construction would extend from Sudbury, through Stow and Marlboro and into Hudson. The portion of the project in Stow is approximately 350 feet long and entirely within the railroad right of way between Wilkins Street and Chestnut Street.
3. The project will be built in two phases: Phase 1 will be completed by Eversource and will entail vegetation clearing, installation of erosion controls, removal of existing railroad track and ties, site preparation, installation of the underground transmission line, grading, stormwater controls, installation of a final gravel base and site stabilization. Eversource will be responsible for the property until Phase 2 commences. Phase 2 will be completed by the MA Department of Conservation and Recreation and would entail paving of the multi-use recreational path, grading, final seeding, signage and access controls. The timing of commencement of both phases is unclear at this time, given pending appeals and funding issues.
4. The Eversource portion of the project has received approval from the Energy Facilities Siting Board in a decision dated 12/18/19.
5. Riverfront Area Impacts: Portions of the proposed work are within the Riverfront Area to an unnamed perennial stream which flows into the Assabet River, the 100' buffer zone to Bordering Vegetated Wetlands (BVW), and within the 100' buffer zone to Bordering Land Subject to Flooding under the Town of Stow Wetlands Protection Bylaw. The total Riverfront Area alteration is 5,111 square feet, all of which is in the Outer Riparian Zone. Of this, 1,751 sq. ft. is permanent disturbance and 3,360 sq. ft. is temporary disturbance. There is a total of 13,925 square feet of Riverfront Area on the property. This means that the amount of total alteration (and permanent alteration) is greater than the 10% performance standard in the Wetlands Protection Act.

6. Buffer Zone Impacts: The amount of disturbance to the 100' buffer to BVW is a total of 3,602 sq. ft. of which 1,357 sq. ft. is permanent disturbance and 2,245 sq. ft. is temporary disturbance.
7. BLSF Buffer Zone Impacts (Bylaw): The amount of disturbance to the 100' buffer to BLSF is a total of 9,246 sq. ft., of which 3,399 sq.ft. is permanent disturbance and 5,847 sq. ft. is temporary disturbance. The Town of Stow Wetlands Bylaw and Regulations contain no performance standards for this resource area. No work will occur within Bordering Land Subject to Flooding.
8. Both the underground transmission line and the rail trail qualify as limited projects under the Wetlands Protection Act Regulations. Reference is made to Sections 310 CMR 10.53(3)(d) [Construction of underground and overhead public utilities] and 10.53 (6) [bikepaths to or along Riverfront Areas]. The Commission has the authority to waive strict compliance with the performance standards and require compliance to the maximum extent feasible for such limited projects.
9. The Commission finds that the two phases of the project as proposed are limited projects and that the applicant has complied with the Riverfront Area performance standards to the maximum extent feasible.
10. The applicant has also argued that portions of the Riverfront Area are previously developed pursuant to the meaning of that term in 310 CMR 10.58(5) of the Wetlands Protection Act regulations. The Commission makes no finding as to whether the Riverfront Area on the project site is "previously developed" within the meaning of the regulations, as no such finding is needed to allow the project to proceed in Stow given the previous finding relative to limited projects.
11. There is no Estimated Habitat of Rare Species within the project locus in Stow and no certified or potential vernal pools.
12. No work will occur within the 35' undisturbed buffer area required by the Town of Stow Wetlands Protection Bylaw and Regulations.
13. Concern was expressed at the public hearing by members of the public that contaminated soils may be disturbed during project construction. No documentation was provided as to actual contamination at the project locus and none are listed on DEP's online inventory of waste sites in Massachusetts. Eversource performed limited soil testing, however none of this testing was completed in Stow. The applicant is required to comply with DEP's Massachusetts Contingency Plan requirements, where applicable, as well as DEP Best Management Practices for Controlling Exposure to Soil during the Development of Rail Trails (undated).
14. Information submitted by the applicant indicates that groundwater flow in the area is roughly from north to south. No evidence was provided at the public hearings to the contrary.

15. Concern has been expressed by some members of the public about the use of herbicides for vegetation management along the right of way. In Phase 1, and until the initiation of Phase 2, no herbicides will be used, and all vegetation removal will be strictly mechanical. The Department of Conservation and Recreation will be responsible for long-term vegetation management along the rail trail right of way following the Completion of Phase 2. They have indicated that most vegetation management along the right of way will be done mechanically, but are seeking to use herbicides selectively, as a tool of last resort to address difficult to manage species such as bittersweet in tree canopies, poison ivy and Japanese knotweed. All herbicide application would be by a licensed pesticide applicator using commonly available general (not restricted) use pesticides and in accordance with a Vegetation Management Plan.
16. The Commission held a duly noticed public hearing on March 4, 2020 at which testimony was taken on the project. The hearing was subsequently continued without further testimony to April 7, 2020, April 21, 2020, and May 19, 2020. On May 19, 2020, the hearing was continued to June 2, 2020 at which time a second public hearing was held. The hearing was held by remote participation pursuant to Governor Baker's March 12, 2020 Order Suspending Certain Provisions of the Open Meeting Law, Chapter 53 of the Acts of 2020, G.L. c. 30A, §18, and the Governor's March 15, 2020 Order imposing strict limitation on the number of people that may gather in one place. The hearing was closed on June 2, 2020. Interested parties were given ample opportunities for written and verbal comments on the project.
17. The Commission has voted to issue an Order of Conditions with the above findings and the following special conditions, together with DEP's general conditions, all of which are necessary to enable the project to be in compliance with the Wetlands Protection Act and regulations and the Town of Stow Wetlands Bylaw and regulations.

Special Conditions for Phases 1 and 2

Pre-Construction Conditions – Phases 1 and 2

21. The form provided at the end of this Order shall be completed and stamped at the Middlesex Registry of Deeds. This form shall be returned to the Commission in accordance with General Condition #8, and prior to the commencement of Phase 1.
22. All work shall be performed in accordance with the final plans as described in the Notice of Intent or as specified in this Order of Conditions. No filling or excavating of land beyond the limits or above the grades on the submitted plans is authorized. Any deviation from the approved plans shall require prior approval from the Stow Conservation Commission. This may require resubmission or modification of the Notice of Intent.
23. At least 45 days prior to the anticipated start of Phase 1 construction, the following final documents shall be provided for review and approval of the Stow Conservation Commission or their designee:

- a) Two copies of the final dated and stamped construction plans (all pages shall be stamped) for the Stow portion of the Eversource transmission line with the following revisions made to the plans:
 - i) The location of any construction stockpiles shall be shown on the plans along with a detail for protecting stockpiles from erosion by water and wind at the end of each workday. All stockpiles shall be within the limit of work.
 - ii) A note shall be added to the dewatering detail indicating that the Conservation Commission shall be notified in advance of any planned dewatering and must approve this work in the field prior to commencing dewatering.
 - iii) Erosion control barriers shall either be shown as continuous, with straw wattle used to demarcate the limit of work in all areas where the plans do not show erosion controls, or plastic construction fencing shall be used to mark the limit of work in these areas. The plans shall show a continuous physical barrier along the right of way which shall serve as a limit of work.
 - iv) A note shall be added indicating that the Conservation Commission shall be notified in the event that dust controls beyond water spraying is required on the project site.
- b) Two copies of the final stamped plans (all pages shall be stamped) of the DCR Rail Trail construction plans. If these plans are subsequently modified, updated plans shall be provided at least 45 days prior to the start of Phase 2 for the Commission's review and approval.
 - i) The location of any construction stockpiles shall be shown on the plans along with a spec for stockpile management.
 - ii) Erosion control barriers shall either be continuous, with straw wattle used to demarcate the limit of work in all areas where the plans do not show erosion controls or plastic construction fencing shall be used to mark the limit of work in these areas.
- c) A copy of the final Stormwater O&M Plan.
- d) A copy of the final Soil and Groundwater Management Plan.
- e) A copy of the MOU between Eversource and DCR on Corridor Maintenance and Management.

The review of these plans and documents shall be limited to a determination of consistency with prior submittals and the conditions of this decision.

24. At least one week prior to the anticipated start of Phase 1 construction by Eversource, the Stow Conservation Commission shall be notified and given the opportunity to inspect the erosion controls and participate in a pre-construction site meeting. The following shall be provided at or prior to the pre-construction meeting:

- a) The applicant shall advise the Commission of the name(s) and contact numbers(s) of the person(s) responsible on site for compliance with this Order, including the on-site Environmental Monitor.
- b) A copy of this Order including final plans shall be on the site upon commencement and during any site work for contractors to view and adhere to.

- c) The Certificate of Understanding for this project must be signed by Eversource and the on-site supervisor responsible for the project(s).
- d) A project schedule must be provided to the Commission.
- e) If wetland flagging is no longer obvious in the field, these flags shall be replaced prior to the pre-construction site meeting.
- f) The DEP file number sign shall be posted as required by the general conditions.

25. **At least one week prior to the anticipated start of Phase 2 construction by the Department of Conservation and Recreation (DCR), the Stow Conservation Commission shall be notified and given the opportunity to inspect the erosion controls and participate in a Phase 2 pre-construction site meeting. The following shall be provided at or prior to the pre-construction meeting:**

- a) The applicant shall advise the Commission of the name(s) and contact numbers(s) of the person(s) responsible on site for compliance with this Order, including the on-site Environmental Monitor.
- b) A copy of this Order including final plans shall be on the site upon commencement and during any site work for contractors to view and adhere to.
- c) The Certificate of Understanding for this project must be signed by DCR and the on-site supervisor responsible for the project(s).
- d) A project schedule must be provided to the Commission.
- e) If wetland flagging is no longer obvious in the field, these flags shall be replaced prior to the pre-construction site meeting.
- f) The DEP file number sign shall be posted as required by the general conditions.

During Construction Conditions – Phases 1 and 2

- 26. The Stow Conservation Commission shall be notified of the time and location of regular project meetings relative to construction within the Town of Stow and provided with copies of meeting notes as applicable.
- 27. Sediment and erosion control devices shall be installed in accordance with the final plan by Eversource prior to the beginning of Phase 1 construction, and shall be maintained for the duration of construction on the site. **If there is a gap between Phase 1 and Phase 2, Eversource shall be responsible for monitoring and maintaining erosion controls and site stabilization until Phase 2 commences or until a Partial Certificate of Compliance is issued for Phase 1 in accordance with the condition below. A second erosion control barrier inspection shall be required prior to the commencement of Phase 2, and the Commission may require that erosion controls be replaced or repaired by the Department of Conservation and Recreation at this time in order to maintain their full functionality.**
- 28. The erosion controls shall serve as a limit of work and no activity, including stockpiling or storage of material, is permitted beyond the sediment controls. The sediment and erosion control specifications in this Order and on the final plans will be the minimum standards for this project; the Commission may require additional measures. These will be maintained in good repair until the disturbed area is re-vegetated and stabilized to the

satisfaction of the Stow Conservation Commission at which time they must be removed. **The Stow Conservation Commission shall be contacted and approval obtained prior to removal of sediment and erosion controls.**

29. The areas of construction shall remain in a stable condition at the close of each construction day. All trenches shall be backfilled or secured at the completion of each work day. Sediment and erosion controls shall be inspected daily and repaired or reinforced or replaced as necessary, with any accumulated sediments removed as needed. A stockpile of additional sediment and erosion controls shall be maintained on the site for this purpose.
30. The Commission shall be notified if dewatering is deemed necessary during construction activities and given an opportunity to review the proposed location and method of dewatering prior to the commencement of dewatering activities. No direct discharge to a waterbody is permitted. No overland discharge of water is allowed within 100 feet of vegetated wetlands.
31. Concrete wash-out water shall not be discarded within the 100' buffer or within 100' of any drainage system that may discharge to wetlands or outside of the limit of work. All washout materials will be managed with an appropriate BMP. If concrete is spilled during construction, spilled materials shall be removed from the buffer zone and disposed of properly.
32. SWPPP Inspection reports shall be provided to the Commission electronically within 48 hours of completion. The Commission shall be kept apprised of any corrective actions needed and taken.
33. If on-site excavation or other site work during Phase 1 or Phase 2 reveals any soil contamination in reportable concentrations or quantities, the Stow Conservation Commission shall receive notification concurrent with Mass DEP and shall be copied on all correspondence relating to site investigation and remedial actions. Remedial activities may require filing of an additional Notice of Intent in accordance with the Wetlands Protection Act and Stow Wetlands Bylaw.
34. If disturbed areas are not permanently stabilized by the end of the growing season, the owner must monitor the area and install or repair sediment and erosion controls to protect the resource area until the site is stabilized.
35. There shall be no outside storage of chemicals, oil, fuel, fertilizer, or other potentially hazardous materials within the limit of work. No refueling shall occur within the 100' buffer. A spill containment kit shall be kept on site at all times.
36. All waste and excavated material including railroad ties and tracks shall be disposed of in accordance with applicable laws. Any fill or borrow material brought onto the project site in Stow from outside of Stow shall be 1) re-located from qualified immediately adjacent residential areas per DEP's *Best Management Practices for Controlling Exposure to soil during the Development of Rail Trails*; 2) certified as clean fill by the supplier; or 3) subject to analytical testing.

37. All imported soils shall be clean and reasonably free of invasive species. No soil contaminated with Japanese knotweed and/or knotweed rhizomes may be reused in Stow. The Environmental Monitor shall identify and document any areas contaminated with Japanese knotweed within 500' of the eastern and western Town of Stow line prior to commencing construction.

Closing the Project

38. Eversource shall notify the Commission upon the completion of the work in Phase 1. Eversource shall be required to maintain erosion controls and site stabilization until a Phase 1 Partial Certificate of Compliance is received by Eversource or the Conservation Commission receives formal notification via DCR that they are commencing Phase 2 and a Certificate of Understanding is received from DCR per Condition #25.

39. **Certificates of Compliance:**

Phase 1:

If Eversource desires a Partial Certificate of Compliance, it may submit the following to the Stow Conservation Commission:

- a. A letter from the applicant requesting a Partial Certificate of Compliance.
- b. A written statement from a registered professional engineer of the Commonwealth and as-built plan signed and stamped by a registered professional engineer or land surveyor certifying that the project has been constructed as shown on the plan(s) and documents referenced above, and as conditioned by the Commission.
- c. A letter from the Department of Conservation and Recreation assuming responsibility for the management of the site beginning on the date of issuance of the Partial Certificate of Compliance.

Phase 2:

At time that the Department of Conservation and Recreation desires to receive a final Certificate of Compliance, the following must be submitted:

- a. A letter from the applicant requesting a Final Certificate of Compliance.
- b. A written statement from a registered professional engineer of the Commonwealth and as-built plan signed and stamped by a registered professional engineer or land surveyor certifying that the project has been constructed as shown on the plan(s) and documents referenced above, and as conditioned by the Commission.
- c. A plan for the long-term maintenance and vegetation management of the project site consistent with the Perpetual Conditions in this Order of Conditions.

Alternatively, if Phase 2 is abandoned, and the site is fully stabilized, Eversource may submit a request for a Final Certificate of Compliance at the conclusion of Phase 1 with the following:

- a. A letter from the Department of Conservation and Recreation indicating that Phase 2 has been abandoned
- b. A plan for the long-term maintenance and vegetation management of the project site consistent with the Perpetual Conditions in this Order of Conditions and any other restrictions applicable.

Perpetual Conditions

The following conditions will be included in the Certificate of Compliance and will continue in perpetuity:

40. No dumping of leaves, woody debris, dog waste, excessive snow and any other materials is permitted in or within 100' of wetland resource areas, including the Riverfront Area.

41. Herbicide may be applied by the owner/operator or its agents and contractors under an approved Vegetation Management Plan and annual Yearly Operating Plan authorized by the Massachusetts Department of Agricultural Resources. The Stow Conservation Commission shall be provided a copy of these Plans. Mechanical treatment shall be preferred with herbicide used only to control difficult species such as bittersweet, Japanese knotweed, poison ivy or other similar species which may occur along the recreational trail. Any herbicide use shall be limited to general use herbicides applied by a licensed pesticide applicator. If the Town of Hudson restricts the use of herbicides within the Zone 2 of the Cranberry water supply well, these restrictions shall also apply within the Stow portion of the Zone 2.



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 – Order of Conditions
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
 299-677
 MassDEP File # _____
 eDEP Transaction # _____
 Stow _____
 City/Town _____

E. Signatures

This Order is valid for three years, unless otherwise specified as a special condition pursuant to General Conditions #4, from the date of issuance.

7/10/2020

1. Date of Issuance

Please indicate the number of members who will sign this form.

4

This Order must be signed by a majority of the Conservation Commission.

2. Number of Signers

The Order must be mailed by certified mail (return receipt requested) or hand delivered to the applicant. A copy also must be mailed or hand delivered at the same time to the appropriate Department of Environmental Protection Regional Office, if not filing electronically, and the property owner, if different from applicant.

Signatures:

[Signature]
[Signature]
[Signature]

[Signature]

by hand delivery on

by certified mail, return receipt requested, on

Date

Date

7-10-2020

F. Appeals

The applicant, the owner, any person aggrieved by this Order, any owner of land abutting the land subject to this Order, or any ten residents of the city or town in which such land is located, are hereby notified of their right to request the appropriate MassDEP Regional Office to issue a Superseding Order of Conditions. The request must be made by certified mail or hand delivery to the Department, with the appropriate filing fee and a completed Request of Departmental Action Fee Transmittal Form, as provided in 310 CMR 10.03(7) within ten business days from the date of issuance of this Order. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant, if he/she is not the appellant.

Any appellants seeking to appeal the Department's Superseding Order associated with this appeal will be required to demonstrate prior participation in the review of this project. Previous participation in the permit proceeding means the submission of written information to the Conservation Commission prior to the close of the public hearing, requesting a Superseding Order, or providing written information to the Department prior to issuance of a Superseding Order.

The request shall state clearly and concisely the objections to the Order which is being appealed and how the Order does not contribute to the protection of the interests identified in the Massachusetts Wetlands Protection Act (M.G.L. c. 131, § 40), and is inconsistent with the wetlands regulations (310 CMR 10.00). To the extent that the Order is based on a municipal



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 – Order of Conditions
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
 299-677
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 eDEP Transaction # _____
 Stow
 City/Town

ordinance or bylaw, and not on the Massachusetts Wetlands Protection Act or regulations, the Department has no appellate jurisdiction.

G. Recording Information

Prior to commencement of work, this Order of Conditions must be recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land subject to the Order. In the case of registered land, this Order shall also be noted on the Land Court Certificate of Title of the owner of the land subject to the Order of Conditions. The recording information on this page shall be submitted to the Conservation Commission listed below.

Stow
 Conservation Commission

Detach on dotted line, have stamped by the Registry of Deeds and submit to the Conservation Commission.

To:

Stow
 Conservation Commission

Please be advised that the Order of Conditions for the Project at:

N/A MBTA ROW/Central Mass Line 299-677
 Railroad MassDEP File Number

Has been recorded at the Registry of Deeds of:

Middlesex	NA	NA
County	Book	Page

for: Property Owner

and has been noted in the chain of title of the affected property in:

Book _____ Page _____

In accordance with the Order of Conditions issued on:

7-10-2020
 Date

If recorded land, the instrument number identifying this transaction is:

Instrument Number _____

If registered land, the document number identifying this transaction is:

Document Number _____

STOW CONSERVATION COMMISSION

TOWN BUILDING
380 GREAT ROAD
STOW MA 01775
TELEPHONE: 978-897-8615
CONSERVATION@STOW-MA.GOV

Certificate of Understanding

Street Address: MBTA ROW/Central Mass Line Railroad

ORDER OF CONDITIONS # 299-677 DATE: 7/1/2020

Owner: Massachusetts Bay Transportation Authority

I, _____, do hereby acknowledge and certify that:

<ul style="list-style-type: none">• All or a portion of my property lies within areas where work is subject to review and approval by the Conservation Commission,	<i>initials</i> _____
<ul style="list-style-type: none">• As property owner, I am responsible for all work on my property even if it is conducted by private contractors.	<i>initials</i> _____
<ul style="list-style-type: none">• I have received, read, and understand all the conditions in my Order of Conditions and that any work beyond what was approved in this permit and shown on the record plan may result in a stop work order, fines, or other enforcement action.	<i>initials</i> _____
<ul style="list-style-type: none">• I am responsible for ensuring that there are no off site erosion/sedimentation issues for the duration of my project.	<i>initials</i> _____
<ul style="list-style-type: none">• There are specific requirements for getting a Certificate of Compliance and closing out my permit once all work is complete.	<i>initials</i> _____
<ul style="list-style-type: none">• There may be ongoing/perpetual conditions in my permit that restrict the kind of landscaping and maintenance activities allowed on my property.	<i>initials</i> _____

I have carefully reviewed and understand all these requirements and agree to adhere to them.

(Signature)

(Printed Name)

(Date)

Please complete this form and return it to:

Stow Conservation Commission, 380 Great Road, Stow MA 01775
conservation@stow-ma.gov



Massachusetts Department of Environmental Protection

Bureau of Resource Protection - Wetlands

WPA Form 7 – Extension Permit for Orders of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

DEP File Number:

299-677

Provided by DEP

yz

A. General Information



Bk: 81915 Pg: 500 Doc: EXT
Page: 1 of 2 08/22/2023 01:54 PM

Important:
When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



1. Applicant:

Eversource / MA DCR

Name

NSTAR Electric Company d/b/a Eversource Energy, 247 Station Drive /
Massachusetts Department of Conservation and Recreation, 251 Causeway St, 9th Floor

Westwood / Boston

City/Town

MA / MA

State

02090/0211

4

2. Property Owner (if different):

Massachusetts Bay Transportation Authority

Name

10 Park Plaza

Mailing Address

Boston

City/Town

MA

State

02116

Zip Code

B. Authorization

The Order of Conditions (or Extension Permit) issued to the applicant or property owner listed above on:

7/10/2020

Date

Issued by:

Stow

Conservation Commission

for work at:

MBTA ROW/Central Mass Line
Railroad

U7

Assessor's Map/Plat Number

3

Parcel/Lot Number

recorded at the Registry of Deeds for:

Middlesex South

County

75824

Book

448

Page

Certificate (if registered land)

is hereby extended until:

07/10/2026

Date

Date the Order was last extended (if applicable)

This date can be no more than 3 years from the expiration date of the Order of Conditions or the latest extension. Only unexpired Orders of Conditions or Extension may be extended.

This Extension Permit must be signed by a majority of the Conservation Commission and a copy sent to the applicant and the appropriate DEP Regional Office (<http://www.mass.gov/dep/about/region/findyour.htm>)

Signatures:

8/8/23

Date

[Handwritten signatures: Matthew Spawey, Serena Funnari, Holly Clack]

**Sudbury Conservation Commission Order of Conditions
(32 pages)**

Middlesex South Registry of Deeds
Electronically Recorded Document

This is the first page of the document - Do not remove

Recording Information

Document Number	: 60475
Document Type	: ORD
Recorded Date	: March 18, 2021
Recorded Time	: 11:27:54 AM
Recorded Book and Page	: 77261 / 300
Number of Pages(including cover sheet)	: 28
Receipt Number	: 2625822
Recording Fee	: \$105.00

Middlesex South Registry of Deeds
Maria C. Curtatone, Register
208 Cambridge Street
Cambridge, MA 02141
617-679-6300
www.middlesexsouthregistry.com

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 - Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
MassDEP File #:301-1287
eDEP Transaction #:1188427
City/Town:SUDBURY

A. General Information

- 1. Conservation Commission SUDBURY
- 2. Issuance a. OOC b. Amended OOC
- 3. Applicant Details
 - a. First Name
 - b. Last Name
 - c. Organization NSTAR ELECTRIC COMPANY D/B/A EVERSOURCE ENERGY / DEPARTMENT OF CONSERVATION AND RECREATION
 - d. Mailing Address 247 STATION DRIVE, SE270 / 251 CAUSEWAY STREET, SUITE 600
 - e. City/Town WESTWOOD/BOSTON f. State MA g. Zip Code 02090/02114
- 4. Property Owner
 - a. First Name
 - b. Last Name
 - c. Organization MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
 - d. Mailing Address 10 PARK PLAZA
 - e. City/Town BOSTON f. State MA g. Zip Code 02116
- 5. Project Location
 - a. Street Address MBTA ROW FROM TOWN OF HUDSON TO 183 BOSTON POST ROAD (SUDBURY SUBSTATION)
 - b. City/Town SUDBURY c. Zip Code 01776 5000;
 - d. Assessors Map/Plat# H03, J05, J06, K07, K08, K09 K11; K08; K10; K11 e. Parcel/Lot#5100; 0014; 0402
 - f. Latitude 42.36001N g. Longitude 71.39733W
- 6. Property recorded at the Registry of Deed for:

a. County	b. Certificate	c. Book	d. Page
SOUTHERN MIDDLESEX		11317 / 7734	113 / 426

7. Dates

- a. Date NOI Filed : 3/9/2020
- b. Date Public Hearing Closed: 2/3/2021
- c. Date Of Issuance: 2/4/2021

8. Final Approved Plans and Other Documents

a. Plan Title:	b. Plan Prepared by:	c. Plan Signed/Stamped by:	d. Revised Final Date:	e. Scale:
EVERSOURCE SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT SUDBURY NOTICE OF INTENT PLANS (205 PAGES)	VANASSE HANGEN BRUSTLIN, INC.	KENNETH STAFFIER, P.E.	JAN 2021	1 INCH = 20 FEET

**Massachusetts Department of Environmental
Protection**
Bureau of Resource Protection - Wetlands
WPA Form 5 - Order of Conditions
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eDEP Transaction #:1188427
City/Town:SUDBURY

MASS CENTRAL RAIL TRAIL IN THE TOWNS OF HUDSON, STOW, MARLBOROUGH & SUDBURY (41 PAGES) DRAFT SUDBURY- HUDSON TRANSMISSION RELIABILITY PROJECT STORMWATER POLLUTION PREVENTION PLAN	VANASSE HANGEN BRUSTLIN, INC.	JOSHUA C. CONE- RODDY P.E.	JANUARY 7, 2021	1 INCH = 20 FEET
DRAFT MASSCENTRALRAIL TRAIL - WAYSIDE STORMWATER POLLUTION PREVENTION PLAN	VANASSE HANGEN BRUSTLIN, INC.		MAY 2020	N/A
TIME OF YEAR (TOY)RESTRICTIONS AND GUIDELINES FIGURES (SHEETS 1- 10)	VANASSE HANGEN BRUSTLIN, INC.		OCTOBER 14, 2020	1 INCH = 200 FEET
EASTERN BOX TURTLE PROTECTION PLAN DRAFT CORRIDOR MANAGEMENT PLAN FOR MASS CENTRAL RAIL TRAIL - WAYSIDE SECTION AND THE SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT	VANASSE HANGEN BRUSTLIN, INC.		Undated	N/A
	DEPARTMENT OF CONSERVATION AND RECREATION		AUGUST 7, 2020	N/A

Massachusetts Department of Environmental Protection
 Bureau of Resource Protection - Wetlands
WPA Form 5 - Order of Conditions
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

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 MassDEP File #:301-1287
 eDEP Transaction #:1188427
 City/Town:SUDBURY

MASSCENTRAL RAIL
 TRAIL (MCRT) -
 WAYSIDE SECTION
 STORMWATER
 MANAGEMENT
 SYSTEM OPERATION
 AND MAINTENANCE
 PLAN

DEPARTMENT OF
 CONSERVATION
 AND RECREATION

JUNE 2020 N/A

LONG TERM
 POLLUTION
 PREVENTION PLAN

DEPARTMENT OF
 CONSERVATION
 AND RECREATION

JUNE 2020 N/A

B. Findings

1. Findings pursuant to the Massachusetts Wetlands Protection Act

Following the review of the the above-referenced Notice of Intent and based on the information provided in this application and presented at the public hearing, this Commission finds that the areas in which work is proposed is significant to the following interests of the Wetlands Protection Act.

Check all that apply:

<input checked="" type="checkbox"/> a. Public Water Supply	<input checked="" type="checkbox"/> b. Land Containing Shellfish	<input checked="" type="checkbox"/> c. Prevention of Pollution
<input checked="" type="checkbox"/> d. Private Water Supply	<input checked="" type="checkbox"/> e. Fisheries	<input checked="" type="checkbox"/> f. Protection of Wildlife Habitat
<input checked="" type="checkbox"/> g. Ground Water Supply	<input checked="" type="checkbox"/> h. Storm Damage Prevention	<input checked="" type="checkbox"/> i. Flood Control

2. Commission hereby finds the project, as proposed, is:

Approved subject to:

a. The following conditions which are necessary in accordance with the performance standards set forth in the wetlands regulations. This Commission orders that all work shall be performed in accordance with the Notice of Intent referenced above, the following General Conditions, and any other special conditions attached to this Order. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, these conditions shall control.

Denied because:

b. The proposed work cannot be conditioned to meet the performance standards set forth in the wetland regulations. Therefore, work on this project may not go forward unless and until a new Notice of Intent is submitted which provides measures which are adequate to protect interests of the Act, and a final Order of Conditions is issued. A description of the performance standards which the proposed work cannot meet is attached to this Order.

c. The information submitted by the applicant is not sufficient to describe the site, the work or the effect of the work on the interests identified in the Wetlands Protection Act. Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides sufficient information and includes measures which are adequate to protect the interests of the Act, and a final Order of Conditions is issued. A description of the specific information which is lacking and why it is necessary is attached to this Order as per 310 CMR 10.05(6)(c).

3. Buffer Zone Impacts: Shortest distance between limit of project disturbance and the wetland resource area specified in 310CMR10.02(1)(a).

 a. linear feet

Massachusetts Department of Environmental Protection
 Bureau of Resource Protection - Wetlands
WPA Form 5 - Order of Conditions
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
 MassDEP File #:301-1287
 eDEP Transaction #:1188427
 City/Town:SUDBURY

Inland Resource Area Impacts:(For Approvals Only):

Resource Area	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
4. <input checked="" type="checkbox"/> Bank	<u>246</u> a. linear feet	<u>246</u> b. linear feet	<u>246</u> c. linear feet	<u>246</u> d. linear feet
5. <input checked="" type="checkbox"/> Bordering Vegetated Wetland	<u>613</u> a. square feet	<u>613</u> b. square feet	<u>784</u> c. square feet	<u>784</u> d. square feet
6. <input checked="" type="checkbox"/> Land under Waterbodies and Waterways	<u>1146</u> a. square feet <u>0</u> e. c/y dredged	<u>1146</u> b. square feet <u>0</u> f. c/y dredged	<u>1146</u> c. square feet	<u>1146</u> d. square feet
7. <input checked="" type="checkbox"/> Bordering Land Subject to Flooding	<u>10435</u> a. square feet	<u>10435</u> b. square feet	<u>7749</u> c. square feet	<u>7749</u> d. square feet
Cubic Feet Flood Storage	<u>54.43</u> e. cubic feet	<u>54.43</u> f. cubic feet	<u>136.88</u> g. cubic feet	<u>136.88</u> h. cubic feet
8. <input type="checkbox"/> Isolated Land Subject to Flooding	<u> </u> a. square feet	<u> </u> b. square feet	<u> </u> c. square feet	<u> </u> d. square feet
Cubic Feet Flood Storage	<u> </u> e. cubic feet	<u> </u> f. cubic feet	<u> </u> g. cubic feet	<u> </u> h. cubic feet
9. <input checked="" type="checkbox"/> Riverfront Area	<u>235668</u> a. total sq. feet	<u>235668</u> b. total sq. feet	<u> </u> c. square feet	<u> </u> d. square feet
Sq ft within 100 ft	<u>181600</u> c. square feet	<u>181600</u> d. square feet	<u>110020</u> e. square feet	<u>110020</u> f. square feet
Sq ft between 100-200 ft	<u>54054</u> g. square feet	<u>54054</u> h. square feet	<u>32385</u> i. square feet	<u>32385</u> j. square feet

Coastal Resource Area Impacts:

Resource Area	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
10. <input type="checkbox"/> Designated Port Areas	Indicate size under Land Under the Ocean, below			
11. <input type="checkbox"/> Land Under the Ocean	<u> </u> a. square feet	<u> </u> b. square feet	<u> </u> c. c/y dredged	<u> </u> d. c/y dredged
12. <input type="checkbox"/> Barrier Beaches	Indicate size under Coastal Beaches and/or Coastal Dunes below			
13. <input type="checkbox"/> Coastal Beaches	<u> </u> a. square feet	<u> </u> b. square feet	<u> </u> c. c/y nourishment	<u> </u> d. c/y nourishment
14. <input type="checkbox"/> Coastal Dunes	<u> </u> a. square feet	<u> </u> b. square feet	<u> </u> c. c/y nourishment	<u> </u> d. c/y nourishment

Massachusetts Department of Environmental**Protection**

Bureau of Resource Protection - Wetlands

WPA Form 5 - Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File #:301-1287

eDEP Transaction #:1188427

City/Town:SUDBURY

-
- a. the work is a maintenance dredging project as provided for in the Act; or
 - b. the time for completion has been extended to a specified date more than three years, but less than five years, from the date of issuance. If this Order is intended to be valid for more than three years, the extension date and the special circumstances warranting the extended time period are set forth as a special condition in this Order.
5. This Order may be extended by the issuing authority for one or more periods of up to three years each upon application to the issuing authority at least 30 days prior to the expiration date of the Order.
 6. If this Order constitutes an Amended Order of Conditions, this Amended Order of Conditions does not exceed the issuance date of the original Final Order of Conditions.
 7. Any fill used in connection with this project shall be clean fill. Any fill shall contain no trash, refuse, rubbish, or debris, including but not limited to lumber, bricks, plaster, wire, lath, paper, cardboard, pipe, tires, ashes, refrigerators, motor vehicles, or parts of any of the foregoing.
 8. This Order is not final until all administrative appeal periods from this Order have elapsed, or if such an appeal has been taken, until all proceedings before the Department have been completed.
 9. No work shall be undertaken until the Order has become final and then has been recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land upon which the proposed work is to be done. In the case of the registered land, the Final Order shall also be noted on the Land Court Certificate of Title of the owner of the land upon which the proposed work is done. The recording information shall be submitted to the Conservation Commission on the form at the end of this Order, which form must be stamped by the Registry of Deeds, prior to the commencement of work..
 10. A sign shall be displayed at the site not less than two square feet or more than three square feet in size bearing the words,

" Massachusetts Department of Environmental Protection"
[or 'MassDEP']
File Number : "301-1287"
 11. Where the Department of Environmental Protection is requested to issue a Superseding Order, the Conservation Commission shall be a party to all agency proceedings and hearings before Mass DEP.
 12. Upon completion of the work described herein, the applicant shall submit a Request for Certificate of Compliance (WPA Form 8A) to the Conservation Commission.
 13. The work shall conform to the plans and special conditions referenced in this order.
 14. Any change to the plans identified in Condition #13 above shall require the applicant to inquire of the Conservation Commission in writing whether the change is significant enough to require the filing of a new Notice of Intent.
 15. The Agent or members of the Conservation Commission and the Department of Environmental Protection shall have the right to enter and inspect the area subject to this Order at reasonable hours to evaluate compliance with the conditions stated in this Order, and may require the submittal of any data deemed necessary by the Conservation Commission or Department for that evaluation.
 16. This Order of Conditions shall apply to any successor in interest or successor in control of the property subject to this Order and to any contractor or other person performing work conditioned by this Order.
 17. Prior to the start of work, and if the project involves work adjacent to a Bordering Vegetated Wetland, the boundary of the wetland in the vicinity of the proposed work area shall be marked by wooden stakes or flagging. Once in place, the wetland boundary markers shall be maintained until a Certificate of Compliance has been issued by the Conservation Commission.
 18. All sedimentation barriers shall be maintained in good repair until all disturbed areas have been fully stabilized with vegetation or other means. At no time shall sediments be deposited in a wetland or water body. During

Massachusetts Department of Environmental**Protection**

Bureau of Resource Protection - Wetlands

WPA Form 5 - Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File #:301-1287

eDEP Transaction #:1188427

City/Town:SUDBURY

construction, the applicant or his/her designee shall inspect the erosion controls on a daily basis and shall remove accumulated sediments as needed. The applicant shall immediately control any erosion problems that occur at the site and shall also immediately notify the Conservation Commission, which reserves the right to require additional erosion and/or damage prevention controls it may deem necessary. Sedimentation barriers shall serve as the limit of work unless another limit of work line has been approved by this Order.

NOTICE OF STORMWATER CONTROL AND MAINTENANCE REQUIREMENTS

19. The work associated with this Order (the "Project") is (1) is not (2) subject to the Massachusetts Stormwater Standards. If the work is subject to Stormwater Standards, then the project is subject to the following conditions;
- a) All work, including site preparation, land disturbance, construction and redevelopment, shall be implemented in accordance with the construction period pollution prevention and erosion and sedimentation control plan and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollutant Discharge Elimination System Construction General Permit as required by Stormwater Standard 8. Construction period erosion, sedimentation and pollution control measures and best management practices (BMPs) shall remain in place until the site is fully stabilized.
 - b) No stormwater runoff may be discharged to the post-construction stormwater BMPs unless and until a Registered Professional Engineer provides a Certification that: *i.* all construction period BMPs have been removed or will be removed by a date certain specified in the Certification. For any construction period BMPs intended to be converted to post construction operation for stormwater attenuation, recharge, and/or treatment, the conversion is allowed by the MassDEP Stormwater Handbook BMP specifications and that the BMP has been properly cleaned or prepared for post construction operation, including removal of all construction period sediment trapped in inlet and outlet control structures; *ii.* as-built final construction BMP plans are included, signed and stamped by a Registered Professional Engineer, certifying the site is fully stabilized; *iii.* any illicit discharges to the stormwater management system have been removed, as per the requirements of Stormwater Standard 10; *iv.* all post-construction stormwater BMPs are installed in accordance with the plans (including all planting plans) approved by the issuing authority, and have been inspected to ensure that they are not damaged and that they are in proper working condition; *v.* any vegetation associated with post-construction BMPs is suitably established to withstand erosion.
 - c) The landowner is responsible for BMP maintenance until the issuing authority is notified that another party has legally assumed responsibility for BMP maintenance. Prior to requesting a Certificate of Compliance, or Partial Certificate of Compliance, the responsible party (defined in General Condition 19(e)) shall execute and submit to the issuing authority an Operation and Maintenance Compliance Statement ("O&M Statement") for the Stormwater BMPs identifying the party responsible for implementing the stormwater BMP Operation and Maintenance Plan ("O&M Plan") and certifying the following: *i.*) the O&M Plan is complete and will be implemented upon receipt of the Certificate of Compliance, and *ii.*) the future responsible parties shall be notified in writing of their ongoing legal responsibility to operate and maintain the stormwater management BMPs and implement the Stormwater Pollution Prevention Plan.
 - d) Post-construction pollution prevention and source control shall be implemented in accordance with the long-term pollution prevention plan section of the approved Stormwater Report and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollutant Discharge Elimination System Multi-Sector General Permit.
 - e) Unless and until another party accepts responsibility, the landowner, or owner of any drainage easement, assumes responsibility for maintaining each BMP. To overcome this presumption, the landowner of the property must submit to the issuing authority a legally binding agreement of record, acceptable to the issuing authority, evidencing that another entity has accepted responsibility for maintaining the BMP, and that the

**Massachusetts Department of Environmental
Protection**
Bureau of Resource Protection - Wetlands
WPA Form 5 - Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
MassDEP File #:301-1287
eDEP Transaction #:1188427
City/Town:SUDBURY

proposed responsible party shall be treated as a permittee for purposes of implementing the requirements of Conditions 19(f) through 19(k) with respect to that BMP. Any failure of the proposed responsible party to implement the requirements of Conditions 19(f) through 19(k) with respect to that BMP shall be a violation of the Order of Conditions or Certificate of Compliance. In the case of stormwater BMPs that are serving more than one lot, the legally binding agreement shall also identify the lots that will be serviced by the stormwater BMPs. A plan and easement deed that grants the responsible party access to perform the required operation and maintenance must be submitted along with the legally binding agreement.

- f) The responsible party shall operate and maintain all stormwater BMPs in accordance with the design plans, the O&M Plan, and the requirements of the Massachusetts Stormwater Handbook.
- g) The responsible party shall:
 - 1. Maintain an operation and maintenance log for the last three (3) consecutive calendar years of inspections, repairs, maintenance and/or replacement of the stormwater management system or any part thereof, and disposal (for disposal the log shall indicate the type of material and the disposal location);
 - 2. Make the maintenance log available to MassDEP and the Conservation Commission ("Commission") upon request; and
 - 3. Allow members and agents of the MassDEP and the Commission to enter and inspect the site to evaluate and ensure that the responsible party is in compliance with the requirements for each BMP established in the O&M Plan approved by the issuing authority.
- h) All sediment or other contaminants removed from stormwater BMPs shall be disposed of in accordance with all applicable federal, state, and local laws and regulations.
- i) Illicit discharges to the stormwater management system as defined in 310 CMR 10.04 are prohibited.
- j) The stormwater management system approved in the Order of Conditions shall not be changed without the prior written approval of the issuing authority.
- k) Areas designated as qualifying pervious areas for the purpose of the Low Impact Site Design Credit (as defined in the MassDEP Stormwater Handbook, Volume 3, Chapter 1, Low Impact Development Site Design Credits) shall not be altered without the prior written approval of the issuing authority.
- l) Access for maintenance, repair, and/or replacement of BMPs shall not be withheld. Any fencing constructed around stormwater BMPs shall include access gates and shall be at least six inches above grade to allow for wildlife passage.

Special Conditions:
SEE ATTACHED

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 - Order of Conditions
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MassDEP File #:301-1287
eDEP Transaction #:1188427
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D. Findings Under Municipal Wetlands Bylaw or Ordinance

1. Is a municipal wetlands bylaw or ordinance applicable? Yes No

2. The Conservation Commission hereby (check one that applies):

a. DENIES the proposed work which cannot be conditioned to meet the standards set forth in a municipal ordinance or bylaw specifically:

1. Municipal Ordinance or Bylaw _____ 2. Citation _____

Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides measures which are adequate to meet these standards, and a final Order or Conditions is issued. Which are necessary to comply with a municipal ordinance or bylaw:

b. APPROVES the proposed work, subject to the following additional conditions.

1. Municipal Ordinance or Bylaw SUDBURY ADMINISTRATIVE WETLAND BYLAW 2. Citation XXII

3. The Commission orders that all work shall be performed in accordance with the following conditions and with the Notice of Intent referenced above. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, the conditions shall control.

The special conditions relating to municipal ordinance or bylaw are as follows:
SEE ATTACHED

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 - Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

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MassDEP File #:301-1287
eDEP Transaction#:1188427
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E. Signatures

This Order is valid for three years from the date of issuance, unless otherwise specified pursuant to General Condition #4. If this is an Amended Order of Conditions, the Amended Order expires on the same date as the original Order of Conditions.

February 4, 2021

1. Date of Original Order

Please indicate the number of members who will sign this form. This Order must be signed by a majority of the Conservation Commission.

4
2. Number of Signers

The Order must be mailed by certified mail (return receipt requested) or hand delivered to the applicant. A copy also must be mailed or hand delivered at the same time to the appropriate Department of Environmental Protection Regional Office, if not filing electronically, and the property owner, if different from applicant.

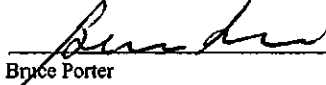
Signatures:


Thomas R. Friedlander-Chairman


Dave Henkel- Vice Chairman

Kenneth Holtz


Richard Morse


Bruce Porter

Kasey Rogers

Mark Sevier

by hand delivery on

by certified mail, return receipt requested, on

Date

February 4, 2021
Date

F. Appeals

The applicant, the owner, any person aggrieved by this Order, any owner of land abutting the land subject to this Order, or any ten residents of the city or town in which such land is located, are hereby notified of their right to request the appropriate MassDEP Regional Office to issue a Superseding Order of Conditions. The request must be made by certified mail or hand delivery to the Department, with the appropriate filing fee and a completed Request for Departmental Action Fee Transmittal Form, as provided in 310 CMR 10.03(7) within ten business days from the date of issuance of this Order. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant, if he/she is not the appellant.

Any appellants seeking to appeal the Department's Superseding Order associated with this appeal will be required to demonstrate prior participation in the review of this project. Previous participation in the permit proceeding means the submission of written information to the Conservation Commission prior to the close of the public hearing, requesting a Superseding Order, or providing written information to the Department prior to issuance of a Superseding Order.

The request shall state clearly and concisely the objections to the Order which is being appealed and how the Order does not contribute to the protection of the interests identified in the Massachusetts Wetlands Protection Act (M.G.L. c. 131, § 40), and is inconsistent with the wetlands regulations (310 CMR 10.00). To the extent that the Order is based on a municipal ordinance or bylaw, and not on the Massachusetts Wetlands Protection Act or regulations, the Department has no appellate jurisdiction.

Massachusetts Department of Environmental Protection

Bureau of Resource Protection - Wetlands

WPA Form 5 - Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
MassDEP File #:301-1287
eDEP Transaction #:1188427
City/Town:SUDBURY

(M.G.L. c. 131, § 40), and is inconsistent with the wetlands regulations (310 CMR 10.00). To the extent that the Order is based on a municipal ordinance or bylaw, and not on the Massachusetts Wetlands Protection Act or regulations, the Department has no appellate jurisdiction.

G. Recording Information

This Order of Conditions must be recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land subject to the Order. In the case of registered land, this Order shall also be noted on the Land Court Certificate of Title of the owner of the land subject to the Order of Conditions. The recording information on this page shall be submitted to the Conservation Commission listed below.

SUDBURY
Conservation Commission

Detach on dotted line, have stamped by the Registry of Deeds and submit to the Conservation Commission.

To:
SUDBURY
Conservation Commission

Please be advised that the Order of Conditions for the Project at:

MBTA ROW FROM TOWN OF HUDSON TO 183
BOSTON POST ROAD (SUDBURY SUBSTATION)
Project Location 301-1287
MassDEP File Number

Has been recorded at the Registry of Deeds of:

County Book Page

for: _____
Property Owner

and has been noted in the chain of title of the affected property in:

Book Page

In accordance with the Order of Conditions issued on:

Date

If recorded land, the instrument number identifying this transaction is:

Instrument Number

If registered land, the document number identifying this transaction is:

**Massachusetts Department of Environmental
Protection**
Bureau of Resource Protection - Wetlands
WPA Form 5 - Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

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Document Number

Signature of Applicant

Rev. 4/1/2010



ORDER OF CONDITIONS
State Wetlands Protection Act &
Sudbury Wetlands Administration Bylaw

DEP FILE #301-1287

Address: MBTA ROW and 183 Boston Post Road

Applicants: Eversource and Department of Conservation and Recreation

Issued: February 4, 2021

The Sudbury Conservation Commission hereby finds that the following conditions are necessary, in accordance with the Performance Standards set forth in the Wetlands Protection Act, its corresponding regulations, and the Sudbury Wetlands Administration Bylaw to protect those interests checked above. To aid in implementation, compliance, and enforcement the specific conditions are divided into several broad categories for reference.

The Sudbury Conservation Commission orders that all work shall be performed in accordance with said conditions and with the Notice of Intent referenced. To the extent that the following conditions modify or differ from the plans, specifications or other proposals submitted with the Notice of Intent, the conditions shall control.

This Decision of the Sudbury Conservation Commission under the Wetlands Protection Act may be appealed to the MA Department of Environmental Protection, Northeast Region.

This Decision of the Sudbury Conservation Commission under the Sudbury Wetlands Administrative Bylaw may be appealed to the Superior Court in accordance with G.L. Ch. 249 §4.

Findings:

The Notice of Intent was filed for the installation of a new 115kV underground electrical transmission line and the construction of a portion of the Mass Central Rail Trail, from the existing Sudbury Substation to the Hudson town line, along the inactive Massachusetts Bay Transportation Authority Right-of-Way, in Sudbury, MA, under the State Wetlands Protection Act and the Sudbury Wetlands Administrative Bylaw.

The Commission finds that portions of the project, as designed and mitigated for, qualifies as a limited project under 310CMR 10.53(3)(d) for Phase I and under 310CMR 10.53(6) for Phase II.

The Commission finds that the stormwater management has been designed in accordance with 310CMR 10.05 (m), as the end use is a non-motorized multi-use trail and Eversource inspection vehicles only need to access the transmission line facility once every three years.

The Commission finds that alternative routes with fewer adverse environmental impacts may exist. However, given the Energy Facilities Siting Board (EFSB) Decision (EFSB 17-02/D.P.U. 17/82/17/83) the Commission was not permitted to evaluate alternative routes under the Wetlands Protection Act. Since this EFSB Decision is currently under Appeal by the Town of Sudbury, if there is a change in the route for the Eversource transmission line as a result of the appeal process, the Applicants shall return to the Commission for further review of any changes to either phase of the project and a determination of the need for potential modifications of this Order.

All wetland resource areas within the Project Locus were reviewed and approved as part of the Abbreviated Notice of Resource Area Delineation (ANRAD) process with the Sudbury Conservation Commission in 2018 through the Order of Resource Area Delineation (ORAD) issued on August 27, 2018. The ORAD included Bordering Vegetated Wetland (BVW), Bank, Land Under Water Bodies and Waterways (LUWW), Bordering Land Subject to Flooding (BLSF), Riverfront Area (RA), and vernal pools, in



ORDER OF CONDITIONS
State Wetlands Protection Act &
Sudbury Wetlands Administration Bylaw

accordance with Wetlands Protection Act and Sudbury Wetland Bylaw definitions. During the ANRAD review process, the BLSF boundary was established in the field by ground survey by using the 100-year floodplain (i.e., BLSF) base flood elevation. Under the Act, Hop Brook and Dudley Brook are considered perennial and have an associated 200-foot Riverfront Areas. Under the Sudbury Bylaw, all remaining streams on the Project Locus are defined to be perennial and their associated 200-foot Riverfront Area are jurisdictional under the Bylaw Regulations only. In addition, the Sudbury Bylaw regulates activities within the Adjacent Upland Resource Area (AURA), which generally consists of land within 100 feet of wetland resource areas and land within 200 feet from the top of bank of perennial streams and rivers. The AURA for vernal pools, or Vernal Pool Habitat, extends 100 feet from the mean annual high-water line defining the depression. There are also isolated wetlands on the Project Locus that are subject to local and federal jurisdiction. Portions of the project site are also located within Estimated and Priority Habitat for Rare Species, within Coldwater Fishery Resources, and within a Zone II Wellhead Protection Zone. There are 13 wetland areas that would qualify as vernal pools under the state regulations (one is currently certified and 12 contain biological criteria for certification). There are an additional seven wetland areas that are presumed to be vernal pools under the local bylaw only.

The project and conditions and requirements set forth in this Order of Conditions are specific for each phase of construction: Phase I being under the responsibility of Eversource for the installation of the underground transmission line, all major earthwork, installation of the stormwater management system, construction of a 14-foot gravel road, construction/renovation of Bridges 128 and 127, site restoration, and implementation of all mitigation; and Phase II being under the responsibility of the Department of Conservation and Recreation for the paving of the Mass Central Rail Trail, installation of safety plantings and other trail amenities, and long-term maintenance of the corridor, including culverts and drainage structures.

The project proposes disturbance to four acres of land within estimated and priority habitat for four species: Eastern Box Turtle, Eastern Whip-poor-will, Gerhard's Underwing Moth, and Coastal Swamp Metarranthus Moth. As such, the Natural Heritage and Endangered Species Program has reviewed the project and imposed conditions to prevent the "take" of state-listed species in determination letters to the Applicants dated October 19, 2018, and May 17, 2019. These conditions are incorporated herewith.

The Commission finds that this project is designed to meet the performance standards of the Wetlands Protection Act and the Sudbury Wetlands Administration Bylaw. Mitigation under the Bylaw for the proposed project actions within the locally regulated Adjacent Upland Resource Area, will be achieved by installation of restoration and mitigation plantings within the limits of work (total of 0.9 acres), debris removal outside the limit of work, creation of strategic brush piles for wildlife habitat, installation of an osprey platform at the existing substation off Boston Post Road, and implementation of a 3.3-acre invasive species management program within the MBTA ROW but outside the limits of work proposed for the Project. The Commission finds the Project, as conditioned in this Order is sufficient to meet the requirements of the state and local wetland regulations.

Final Record Documents:

1. Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project Notice of Intent dated March 2020.
2. Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project Wildlife Habitat Evaluation, dated March 2020, with supplemental Wildlife Habitat Evaluation Summary dated October 15, 2020.
3. Eversource Sudbury Notice of Intent Plans March 5, 2020, as revised through January 2021
4. Mass Central Rail Trail Notice of Intent Plan March 5, 2020, as revised through January 7, 2021
5. Draft Eversource Stormwater Pollution Prevention Plan dated May 2020
6. Draft DCR Stormwater Pollution Prevention Plan dated May 2020
7. Sudbury – Soil and Groundwater Analytical Memo dated June 12, 2020



ORDER OF CONDITIONS
State Wetlands Protection Act &
Sudbury Wetlands Administration Bylaw

8. Time of Year Restrictions Figures June 24, 2020
9. Draft Turtle Protection Plan (undated)
10. Draft Corridor Management Plan dated August 7, 2020
11. MCRT Operation and Maintenance June 2020
12. Long Term Pollution Prevention Plan June 2020

All work must conform to the plans referenced, the Notice of Intent, and this Order. In case of conflict, the requirements in this Order shall prevail. By accepting this Order, the Applicants confirms submission all relevant documentation, reports, and information available to Applicants, in the application submitted and that this information is true and valid to the best of the Applicants' knowledge.

SPECIAL CONDITIONS:

PART I: GENERAL PROJECT CONDITIONS:

For Phase I and Phase II

These conditions apply to all projects permitted by the Sudbury Conservation Commission. They shall remain in force until issuance of a Certificate of Compliance by the Commission. A violation of any of these conditions shall constitute reason for enforcement action by the issuing authority:

- a. Failure to comply with all conditions stated herein, and with all related statutes and other regulatory measures, shall be deemed cause to revoke or modify this Order.
- b. This Order does not grant any property rights or any exclusive privileges; it does not authorize any injury to private property or invasion of private rights.
- c. This Order does not relieve the permittee or any other person of the necessity of complying with all other applicable federal, state, or local statutes, ordinances, by-laws, or regulations.
- d. The work authorized hereunder, except for that work which has specific timeframes indicated, shall be completed within three years from the date of issuance of this Order unless either of the following apply:
 - 1) the work is a maintenance dredging project as provided for in the Act; or
 - 2) the time for completion has been extended to a specified date more than three years, but less than five years, from the date of issuance and both that date and the special circumstances warranting the extended time period are set forth in this Order.
- e. This Order may be extended by the issuing authority for one or more periods of up to one year upon application to the issuing authority at least thirty days prior to the expiration date of this Order. In determining whether or not to grant an Extension Permit, the Sudbury Conservation Commission shall review and apply the criteria for extensions of time as set forth in the Regulations.
- f. No work shall be undertaken until all administrative appeal periods from the date of issuance of this Order have elapsed or, if such an appeal has been filed, until all proceedings have been completed.
- g. **No work shall be undertaken until the Final Order has been recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property.** In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor index under the name of the owner of the land upon which the proposed



ORDER OF CONDITIONS
State Wetlands Protection Act &
Sudbury Wetlands Administration Bylaw

work is to be done. In the case of registered land, the final Order shall also be noted on the Land Court Certificate of title of the owner of the land upon which the proposed work is to be done.

- h. The recording information shall be submitted to the Commission on the form at the end of the Order, or other form acceptable to the Commission, within thirty days of the issuance of this Order or prior to the start of construction, whichever is sooner.
- i. Where the Department of Environmental Protection is requested to make a determination and to issue a Superseding Order, the Sudbury Conservation Commission shall be party to all agency proceedings and hearings before the Department.
- j. The work shall conform to the plans and special conditions incorporated in this document.
- k. The project engineer, contractors, and all subcontractors must be informed of the conditions in this Order.
- l. The Applicants are held responsible for compliance with this Order of Conditions. The Sudbury Conservation Commission shall be notified, in writing, within forty-eight hours of any transfers of title on this property.
- m. This Order of Conditions shall apply to any successor in control, or successor in interest, of the property described in the Notice of Intent and accompanying plans.
- n. Members and agents of the Sudbury Conservation Commission shall have the right to enter and inspect the property to evaluate compliance with the conditions stated in this Order. When possible prior to project site access, reasonable advance notice will be made. Compliance with health and safety protocols for the project site will be followed.
- o. Prior to commencement of work, the Applicants shall provide the executed Memorandum of Understanding between Eversource and the Department of Conservation and Recreation and the agreements between the Massachusetts Bay Transportation Authority and the Applicants, to ensure the obligations of the project are fulfilled.
- p. All Time-of-Year restrictions and sweeps required by the Natural Heritage and Endangered Species Program shall be followed. Time-of-Year restrictions for work within 450 feet of all vernal pools shall be March 1 through June 1. Between March 1 and June 1, the Applicants' Environmental Monitor shall conduct sweeps prior to vehicles traveling down the project site within vernal pool buffers (including certified, certifiable, and presumed vernal pools). Between April 1 and October 31, the Applicants' environmental monitor shall conduct turtle sweeps prior to initiation of work each day, or prior to vehicles travelling through the Box Turtle Protection Area.
- q. The baseflow and baseline water quality of all Cold Water Fisheries shall be established pre-construction. Baseline monitoring shall be accomplished to ensure there is no degradation of water quality over time from this project. The Applicants shall submit a detailed plan, subject to the Commission's approval, to specify water quality monitoring parameters, including times, methodology, analyses and reporting. Post construction, monitoring may be required and may continue in the Certificate of Compliance based on monitoring result up to that time.
- r. Prior to commencement of each Phase, the Conservation Commission or its Agent shall map the corridor for the presence of invasive species within and adjacent to the limit of work. The



ORDER OF CONDITIONS
State Wetlands Protection Act &
Sudbury Wetlands Administration Bylaw

information generated from this mapping shall be used to identify any new invasive species populations or significant expansions of invasive species that are a direct result from the Project. Mapping shall be used by the Applicants to implement a program to control invasive species populations to ensure the functions of wetland resource areas in the limits of work that have been restored with native vegetation are not subject to degradation by expansion of invasive species. If the Commission or its agent determines that the Project resulted in new or significantly expanded invasive populations, the Applicants shall implement a program to control these populations to ensure the project does not result in additional degradation of wetland resource areas.

- s. The site shall be accessed predominantly from public ways. If alternative access points are needed, the Applicants will first direct the contractor to use previously disturbed areas outside wetlands jurisdiction. If alternative access is found to be needed within wetlands jurisdiction, access may be permitted within previously disturbed areas that will not require additional vegetation removal or additional impacts to wetland resource areas, with approval from the Commission's representative. No equipment turnaround locations outside the limit of work are permitted.
- t. Laydown areas shall be located predominantly outside resource areas subject to the Commission's jurisdiction. If any construction laydown area is proposed outside of the currently proposed work limits and in an area subject to the Commission's jurisdiction, an erosion control plan shall be submitted in advance to the Commission's representative for review and approval.
- u. Any fill used in connection with this project shall be clean fill, containing no trash, refuse, rubbish or debris, including but not limited to lumber, bricks, plaster, wire, lath, paper, cardboard, pipe, tires, ashes, refrigerators, motor vehicles or parts of any of the foregoing.
- v. No equipment cleaning or refueling may occur within a wetland or upland resource area, with the exception of the crane. For cranes positioned within wetland jurisdiction for more than one day, the Applicant shall provide secondary containment to contain any leaks that may emanate from equipment.
- w. All equipment, including timber mats, shall be cleaned and certified invasive species free, prior to entering the site. Such certification shall be provided to the Commission prior to commencement of mobilization into the site and when remobilized within the project site.
- x. Heavy mechanical equipment (exerting a ground pressure of 3 psi or greater) will not be allowed in areas where final grading, aeration, and vegetation restoration/mitigation have been completed, including restored and replicated wetland resource areas. Following completion of restoration areas, erosion controls or other method of demarcation shall be implemented to prevent further alteration of restoration areas.
- y. All areas of disturbance shall be monitored for invasive species, which shall be manually removed if encountered, for the duration of the project and until such time as a minimum of 90% native vegetative cover is established.
- z. The wetland replication area and land adjacent thereto shall be monitored for invasive species, and manually removed when found, for the life of the Order. The wetland replication area shall be considered substantially restored when it contains a minimum of 90% cover with native species. Replications that do not properly restore the functions and values of altered resource areas will not be deemed acceptable no matter how closely they adhere to approved engineered plans.



ORDER OF CONDITIONS
State Wetlands Protection Act &
Sudbury Wetlands Administration Bylaw

- aa. There shall be no drafting of water from wetland resource areas for dust control, for watering plantings, or any other activity.
- bb. Every effort shall be made to reduce soil compaction. Compacted soils shall be aerated prior to being revegetated.
- cc. Upon completion of the work associated within each phase, the Applicants shall forthwith request in writing that a Certificate of Compliance be issued stating that the work has been satisfactorily completed and clearly documenting any deviations or deficiencies from the approved plans.

CONDITIONS RELATED TO ENDANGERED SPECIES MANAGEMENT
For Phase I and Phase II

- a. Prior to implementation, the Final Corridor Management Plan for Massachusetts Central Rail Trail and Sudbury-Hudson Transmission Reliability Project that will be provided to the Division of the Fisheries and Wildlife ("the Division") shall be provided to the Commission for review and approval and must be implemented as approved. If changes to said Plan are proposed, the revised Plan to be submitted to the Division shall be submitted to the Commission for review and approval. Vegetated areas over the duct bank and water quality swales (within wetland jurisdictional areas) shall not be mown between April 1 and November 1, unless needed for safety purposes, without prior approval of the Conservation Commission.
- b. Prior to the start of work, the Applicants must submit to the Division and the Commission, for review and approval, a signage plan for the shoulder and duct bank mowing areas, which must describe sensitive dates for the Eastern Box Turtle.
- c. Measures shall be implemented to protect Eastern Box Turtles during construction. Prior to the start of work, a final Eastern Box Turtle Protection Plan must be submitted to the Division and Commission for review and approval, and must be implemented as approved. Said Plan must include detailed turtle protection measures to be implemented by the Applicants. If changes to said Plan are proposed, a revised Plan must be submitted to the Division for review and prior written approval. The Commission shall be provided a copy of the final Eastern Box Turtle Protection Plan along with any modifications thereto.
- d. Prior to the start of work, the Applicants must submit to the Division and Commission, for review and approval, a native seed mix proposed for any planting or loam and seed activities.
- e. Unless otherwise approved by the Division and Commission, proposed wood railings must leave, at a minimum, a 10-inch space beneath the lowest rail for wildlife passage.
- f. Unless otherwise approved by the Division, construction activities within Priority Habitat must not occur during the Eastern Whip-poor-will breeding season (May 1 – August 1), as proposed. The Applicants shall endeavor to refrain from construction activities within Priority Habitat from April 15 to August 1.
- g. Within thirty (30) days of the completion of work, or as otherwise approved by the Division, the Applicants shall submit a compliance report to the Division and Commission documenting the completion of the project and compliance with all conditions herein, including a summary of construction timelines and photographs.



ORDER OF CONDITIONS
State Wetlands Protection Act &
Sudbury Wetlands Administration Bylaw

- h. Work within 450 feet of vernal pools is prohibited between March 1 and June 1. The Applicants shall have a qualified Environmental Monitor on site to monitor vehicular traffic during this Time of Year restriction, should a suitable alternative route not be available.

PART II: CONDITIONS SPECIFIC TO

Phase I: Eversource Underground Transmission Line

- a. An independent Environmental Monitor, hired by the Conservation Commission and paid for by the Applicant, shall be provided to oversee the following activities:
1. Review the erosion control barrier following installation but prior to any land disturbance and each year prior to vernal pool species migration. Conduct spot inspections of vernal pools during construction and/or review reports provided by the Applicant's environmental monitor to ensure no negative impact to vernal pools during construction.
 2. Be on site during initial tree removal and invasive species clearing activities, within the limit of work.
 3. Review and ensure appropriate reporting of all activities associated with construction scheduling, erosion control monitoring, compliance with the project's SWPPP, and environmental monitoring activities including ensuring adherence to time of year restrictions.
 4. Be on site during bridge platform installation and spot inspections during bridge construction.
 5. Be notified of all dewatering activities and be on site during dewatering in sensitive locations, i.e. whenever excavation is proposed within 50 feet of a wetland, or when extensive dewatering will be needed. Specific oversight locations will be determined with the contractor, prior to commencement of work.
 6. Review restoration/mitigation areas including being on site during the construction of the wetland replication area.
 7. Be on site to oversee excavation/construction activities over culverts and drainage structures.
 8. Be available to respond to emergency situations, should they arise.
- b. At least four weeks prior to any land disturbance, an Invasive Species Management Plan shall be developed and submitted to the Conservation Commission for review and approval. Said Management Plan shall involve removal of invasive species and revegetation with native species for a period of five (5) years from a minimum of 3.3 acres of land within the MBTA Right-of-Way, but outside the proposed limit of work, and shall focus efforts on improving wildlife habitat in areas identified through the Wildlife Habitat Evaluation and peer review thereof as being most impacted from proposed work. Following implementation, the Invasive Species Management Area shall be managed in accordance with Perpetual Condition b. contained within this Order.
- c. At least two weeks prior to any land disturbance, a Soil and Groundwater Management Plan (SGMP) prepared in conjunction with the selected contractor shall be submitted to the Conservation Commission for review and comment. The Applicant shall give due consideration to address comments received from the Commission that are needed to protect wetland resource areas functions and values. The SGMP will develop means and methods to manage soils and groundwater encountered during project construction activities including soil excavation, groundwater dewatering, and railroad tie and track removal. If conditions are encountered that suggest soil may require additional evaluation or special handling based on visual, olfactory, or field screening results, excavation activities in that area will immediately be stopped and Eversource, their Licensed Site Professional, and the Conservation Commission will be contacted immediately to evaluate the observations and recommend requirements for proper handling. The Commission shall be copied on all related correspondence.



ORDER OF CONDITIONS
State Wetlands Protection Act &
Sudbury Wetlands Administration Bylaw

- d. At least two weeks prior to any land disturbance, a structural engineer and wildlife biologist shall inspect the culverts and drainage structures within the Project Site to determine whether they are structurally sound to (a) function hydrologically, (b) withstand the planned construction activities, and (c) evaluate their wildlife migration functions, and shall provide a report of the finding to the Commission. If any culverts do not meet these requirements or is damaged during construction, it shall be repaired or replaced with a culvert that meets current MA Stream Crossing Standards to the maximum extent practicable, as determined by the Commission or its Agent. Any recommended improvements to these structures, not included in this Notice, shall be required to submit a separate Notice of Intent and/or an Amendment to this Order to the Commission for further evaluation. Following completion of Phase I and Phase II a similar structural evaluation shall be conducted to confirm work did not affect culverts and drainage structures.
- e. At least three weeks prior to any land disturbance, a Project Compliance Manual that includes the requirements from compliance from the various permits for the Project, including this Order and Conditions herein, shall be submitted to the Conservation Commission for review to confirm that the requirements of this Order are accurately stated.
- f. At least two weeks prior to the start of Phase I, the Applicant shall provide a construction schedule detailing construction activities and sequencing. This shall be amended as necessary throughout construction. Weekly reports shall be submitted to the Commission that details work completed each week and anticipated work for the coming week, including identifying when work is located in areas of potential elevated levels of soil and groundwater contamination. These reports shall include anticipated dewatering activities so that oversight can be provided by the Commission or its Agent, if found necessary, and include the location of active stockpiles with confirmation that appropriate erosion control measures are being implemented.
- g. At least two weeks prior to the start of Phase I, the Applicant shall provide the final Stormwater Pollution Prevention Plan (SWPPP) to the Commission for review and approval. Any use of permanent infiltration BMPs for temporary construction-related stormwater management shall be specifically addressed in the SWPPP and protocol for removal of fine silt and sediment from these BMPs shall be conducted at the completion of Phase I. If a response is not received by the Conservation Commission within 10 days of receipt, the SWPPP shall be deemed approved. Any changes made to the SWPPP during the course of the project shall be submitted and approved by the Commission prior to implementation.
- h. Prior to land disturbance, the Applicant shall provide a signed illicit discharge statement.
- i. The Applicant shall ensure there is a qualified Environmental Monitor(s) on site at all times overseeing work that is subject to this Order. The Environmental Monitor(s) shall send weekly erosion control inspection reports and reports following any storm event of ½ inch of rain or greater, to the Conservation Commission.
- j. The Limit of Work/erosion control location shall be survey located in the field and certified by a Mass Registered Professional Land Surveyor, installed under the oversight of the Applicant's Environmental Monitor, and reviewed by the Commission and/or its Agent prior to commencement of any site work.
- k. Prior to any site disturbance, with the exception of the installation of the erosion control barrier, the Applicant shall schedule a pre-construction site visit with the Conservation Coordinator as least one week prior to commencement of work. At a minimum, those in attendance at this site visit should include the Applicant, construction supervisor, and environmental monitors involved in the project.



ORDER OF CONDITIONS
State Wetlands Protection Act &
Sudbury Wetlands Administration Bylaw

- l. The Applicant's wildlife biologist or other qualified individual shall document the location of all important habitat features that will be removed (such as brush piles, snags, overhanging trees, logs within or near the water, large woody debris, etc.) to quantify the number of features removed and provide confirmation that work did not result in the loss of important wildlife habitat features. Brush, large woody debris, and logs shall be replaced within or near the water, generally in the location of where they were removed. Reports shall be provided to the Conservation Commission at least every six (6) months, for the life of the Order, documenting wildlife habitat removal and restoration efforts implemented, including monitoring of vernal pools.
- m. During initial vegetation removal, trunks shall be retained but cut as close to the ground as possible. Following installation and approval of erosion controls, stumps and roots may be grubbed, if necessary. Stumping and grubbing activities shall not adversely affect woody vegetation or soils outside the erosion control barrier. Logs, stumps, and other large woody debris in and/or overhanging the resource areas shall be left undisturbed to maximize food source and habitat.
- n. Tree/limb clearing shall be minimized to only that which is required to access the project site with equipment and to conduct the approved work. Equipment shall be chosen which minimizes required clearing to the maximum extent practicable. The Applicant shall retain as many limbs overhanging the limit of work as possible. Prior to tree felling, the Applicant shall walk the corridor with the Commission or its Agent to determine the extent of canopy that can be retained.
- o. Vegetation removed from the site shall be chipped directly into a truck and removed from the project site. Woody material for reuse on site for the creation of wildlife habitat features shall be identified and retained.
- p. The contractor shall provide detailed plans of the crane mat location and installation a minimum of one week prior to installation. All work and impacts associated with installation, removal, and stabilization of the crane areas shall be conducted in strict compliance with the Project Plans and Details and shall be reviewed and approved by the Commission and/or its Agent prior to installation and shall be installed under the supervision of the independent Environmental Monitor.
- q. Dewatering activities shall be located as far as possible from wetland resource areas and shall be prohibited from discharging to Bordering Vegetated Wetlands, Isolated Vegetated Wetlands, Land Under Water Bodies and Waterways, or within the inner Riverfront Area. Dewatering may only occur in other upland resource areas provided adequate control measures are implemented and locations are identified by the contractor and review and approved by the Commission and/or its agent prior to implementation.
- r. The Conservation Commission and their representative shall be notified at least three (3) business days in advance of the removal of the crane mats at Bridge 127.
- s. Other than the grading of minor amounts of soil within the immediate vicinity of the Hudson/Sudbury town boundary, no soil excavated from Hudson may be used in Sudbury. The Sudbury Conservation Commission shall be copied if the Hudson Conservation Commission is notified of any remedial activities or changes to the work plans required due to the potential presence of PFAS in jurisdictional areas in Hudson.
- t. The Applicant shall ensure that any reuse of on-site soils shall not result in the degradation of soil or groundwater in the area.



ORDER OF CONDITIONS
State Wetlands Protection Act &
Sudbury Wetlands Administration Bylaw

- u. Stockpiling of materials within the ROW shall be limited in size and duration (one-week maximum) and shall be located as far from sensitive areas as possible. Soil stockpiles shall be covered with tarp or plastic sheet and surrounded by erosion controls. Excess soil not reused within the Project site shall be stockpiled outside the ROW and wetland jurisdiction. Weekly reports prepared by the Environmental Monitors throughout construction will identify the locations of active stockpiles and will confirm that the appropriate erosion control measures are being implemented
- v. Additional test pits/borings at the location of each proposed "area of increase infiltration" shall be conducted during construction to verify soil conditions, infiltration rates, and groundwater levels, and provided to the Conservation Commission for review. At a minimum, soil tests shall be conducted in the vicinity of Stations 502+00, 511+00, 570+00, and 579+00. A report of the findings, comparison with expectations, and a statement on the appropriateness of the design shall be provided to the Conservation Commission for review. If findings are not consistent with the assumptions made for the stormwater management design, revisions to the design and approval of modifications to the Plan may be required.
- w. Infiltration basins shall not be used as sediment basins during construction. Additional erosion controls shall be installed to protect infiltration basins from sedimentation until contributing areas are stable.
- x. The Conservation Commission and/or their agent shall inspect all permanent stormwater infiltration BMPs for acceptance prior to construction demobilization to a new location within the ROW.
- y. Mitigation, and restoration efforts within the limit of work, shall be implemented during the first growing season following commencement of work. Written reports shall be submitted by December 1 of each year the Order is active that details mitigation efforts that have been implemented, success of implementation, and anticipated activities the following growing season. Mitigation and Restoration areas shall be deemed substantially in compliance when there is a minimum of 90% cover with native species and free of invasive species.
- z. Areas adjacent to vernal pools shall be revegetated immediately following the completion of all necessary grading in these area, and the revegetation in these areas shall be monitored so erosion controls can be removed as soon as field conditions allow. Mitigation plantings around the vernal pool margins shall be monitored for successful establishment for a minimum of two growing seasons and annual reports documenting establishment shall be submitted to the Commission.
- aa. Prior to planting, the Applicant's Environmental Monitor shall inspect, approve, and provide photo documentation of all plant stock. Any species substitutions must be provided to the Commission, in writing, including a justification for substitution, for review and approval prior to implementation.
- bb. The wetland replication area shall be constructed during vegetation removal in the vicinity of the replication area and prior to the construction of structures in that vicinity.
- cc. All plantings must survive for at least two growing seasons or be replaced at the expense of the Applicant.
- dd. Loam borrow brought to the site to stabilize the work area after completing Phase 1 shall be sourced appropriately. Use of impacted soils (from contamination or invasive seed) shall be prohibited.
- ee. No spoils of construction, construction material, or equipment shall be stored, placed or operated in the wetland resource areas or the wetland buffer zone except as may be permitted by this Order for



ORDER OF CONDITIONS
State Wetlands Protection Act &
Sudbury Wetlands Administration Bylaw

work in the riverfront and upland resource area. These activities may not occur within the bordering vegetated wetland or within bordering land subject to flooding.

- ff. In any part of the Project work limits within 200 feet of a road crossing where the MBTA ROW crosses a Zone II for the Sudbury Water District supply wells, if a clay layer is encountered in the excavation for the transmission line and the excavation will extend below the bottom of the clay layer, the clay shall be stockpiled and reused to backfill and line the excavation before the transmission line duct bank is placed in that location.
- gg. There shall be no disturbance beyond the limits of activities permitted as part of this Order.
- hh. Every effort shall be made to restore disturbed area with a similar soil composition to that which is was removed.
- ii. No deicing products shall be used within the project site. Snow may be stockpiled within the limit of work only or shall be removed from the site to an appropriate facility outside wetlands resource areas.
- jj. Should Phase II not commence within three years of completion of Phase I, the Applicant shall file an Amendment to bring the stormwater management into full compliance with the Town of Sudbury Stormwater Regulations.
- kk. All wildlife habitat replication and restoration shall be completed during the first growing season of Phase I to avoid a significant adverse project/site-specific impact or an adverse cumulative impact on wildlife for more than two growing seasons. Should Phase II not commence within two years of completion of Phase I, erosion controls or other methods of demarcation shall be implemented to prevent further alteration of restored areas. No important wildlife habitat features restored during Phase I shall be removed during Phase II.

PART II CONDITIONS SPECIFIC TO
Phase II: DCR Mass Central Rail Trail

- a. Prior to commencement of Phase II, erosion controls shall be inspected. Erosion controls shall be removed from all areas that have stabilized from Phase I and will not be re-disturbed as part of Phase II. All degraded erosion controls shall be replaced. Areas requiring re-installation of erosion controls for Phase II shall be installed at the limit of work for Phase II.
- b. At least two weeks prior to the start of Phase II, the Applicant shall provide a construction schedule detailing construction activities and sequencing. This shall be amended as necessary throughout construction. Weekly reports shall be submitted to the Commission that details work completed each week and anticipated work for the coming week.
- c. At least two weeks prior to the start of Phase II, the Applicant shall provide the final Stormwater Pollution Prevention Plan (SWPPP) to the Commission for review and approval. Any changes made to the SWPPP during the course of the project shall be submitted and approved by the Commission prior to implementation. If a response is not received by the Conservation Commission within 10 days of receipt, the SWPPP shall be deemed approved.
- d. The Applicant shall ensure there is a qualified Environmental Monitor(s) on site at all times overseeing work that is subject to this Order. The Environmental Monitor(s) shall send weekly erosion control reports and reports following any storm event of ½ inch of rain or greater, to the Conservation Commission.



ORDER OF CONDITIONS
State Wetlands Protection Act &
Sudbury Wetlands Administration Bylaw

- e. The Phase II limit of work/erosion control location shall be located in the field with survey grade equipment that produces sub-foot accuracy installed under the oversight of the Applicant's Environmental Monitor, and reviewed by the Commission and/or its Agent prior to commencement of any site work.
- f. Prior to any site disturbance, with the exception of the installation of the erosion control barrier, the Applicant shall schedule a pre-construction site visit with the Conservation Coordinator as least one week prior to commencement of work. At a minimum, those in attendance at this site visit should include the Applicant, construction supervisor, and environmental monitors involved in the project.
- g. There shall be no disturbance beyond the limits of activities permitted as part of this Order.
- h. Other than road crossings and pullouts, the paved multi-use trail shall not exceed ten (10) feet in width. Any pavement that exceed 10 feet in width shall be required to be removed.
- i. Stockpiling of materials shall be within the Phase II limit of work and shall be located as far from sensitive areas as possible.
- j. No spoils of construction, construction material, or equipment shall be stored, placed or operated in the wetland resource areas or the wetland buffer zone except as may be permitted by this Order for work in the riverfront and upland resource area. These activities may not occur within the bordering vegetated wetland or within bordering land subject to flooding.
- k. The corridor shall be maintained in compliance with the MassCentral Rail Trail (MCRT) – Wayside Section Stormwater Management System Operation and Maintenance Plan (O&M) and the Long Term Pollution Prevention Plan.
- l. Japanese knotweed shall be managed within the limit of work. Chemical treatment, via spot treatment, may be permitted as a last measure to manage knotweed. Herbicide use shall be prohibited within any certified, certifiable, or presumed vernal pool, vegetated wetlands or waterways.
- m. DCR shall notify the Commission in advance if herbicides are to be used for vegetation control within jurisdictional areas, indicating the target control species, the type(s) of herbicide to be used, the proposed application rate, and the on-going maintenance plan for the targeted area for review and approval. This Condition is ongoing and does not expire with the expiration of the Order of Conditions or the issuance of a Certificate of Compliance.

PART III: EROSION, SEDIMENTATION, STABILIZATION CONDITIONS
For Phase I and Phase II

- a. Erosion control shall be installed per the approved plan and maintained as necessary to prevent erosion and sedimentation from entering the resource areas. It is the Applicants' responsibility to take appropriate measures to control sedimentation into the wetland resource areas.
- b. Perimeter erosion controls shall be installed along the down gradient side of disturbed areas where topography is directed towards other portions of the existing/proposed trail work area.
- c. Stabilization of slopes shall be accomplished as soon as possible. Biodegradable jute netting shall be properly anchored in place, secured with non-chemically treated biodegradable materials. Should non-biodegradable fasteners be needed, with prior approval by the Commission and/or its agent, the



ORDER OF CONDITIONS
State Wetlands Protection Act &
Sudbury Wetlands Administration Bylaw

Applicants may use non-biodegradable fasteners with the condition that the Applicants shall provide confirmation that all fasteners have been removed once the area is deemed fully stabilized by the Commission and/or its representative.

- d. Appropriate netting shall be installed under the bridge 128 during bridge work to prevent debris from entering the stream. The Applicants shall contact the Conservation Office once installed for review prior to commencement of bridge work.
- e. Following Land Under Water Restoration, erosion controls shall be removed once fully stabilized and the Conservation Commission or its representative has confirmed stabilization, to protect the long-term water quality of the adjacent wetland waterways.
- f. During Phase I, Eversource shall be responsible for installing and maintaining erosion controls within the project site. Following completion of Phase I, Eversource shall continue to maintain erosion controls until DCR commences Phase II, provided that Eversource shall remove erosion controls from areas stabilized at the completion of Phase I, as confirmed by the Commission or its agent. Every effort shall be made during Phase I to stabilize areas within vernal pool habitat immediately following final grade.
- g. During Phase II, DCR shall be responsible for installing and maintaining erosion controls on the project site. Following completion of Phase II and inspection by the Commission or its Agent, DCR shall be responsible to remove all erosion control barriers.
- h. Should the time between Phase I and Phase II exceed one year, the site shall be assessed every six months, in the presence of the Commission or its Agent, to determine if erosion controls containing areas that are stable which will not be destabilized during Phase II, can be removed.

PART IV: PLAN MODIFICATIONS:

- a. Any changes during construction due to soil types found or other conditions discovered during construction shall require immediate notification of the Conservation Commission for a determination if the changes require revisions to this Order or the filing of a new Notice of Intent. Any modifications or revisions to the plans referenced, or any new plans, must be submitted to the Commission for review and a determination as to whether a new Notice of Intent is required. If this procedure is not followed, this Order may not be amended. No additional work not specifically allowed by this Order shall be accomplished on the site without the approval of the Sudbury Conservation Commission and the appropriate new filings or amendment requests are approved. Amendment procedures as described in the Wetlands Protection Act, the regulations, and the Department of Environmental Protection's Wetlands Program Policies shall be followed.
- b. No additional new construction or disturbance of a wetland resource area, as defined in the Wetlands Protection Act and its regulations, or within the 100' wetland resource area buffer zone, not covered by this Order of Conditions, shall be permitted on this site until a determination has been made by the Commission as to whether a new Notice of Intent is required, and the new work or disturbance is incorporated into a new or amended Order of Conditions. An adequate stockpile of unused erosion controls shall be available at or near the site.
- c. Should the Sudbury Conservation Commission become aware of work on site being accomplished that was not approved as part of the Order of Conditions or subsequent amendments, the Commission reserves the right to require a new Notice of Intent. The plan filed with the new Notice of Intent must be based on an interim as-built plan prepared by a registered engineer. The new Notice must provide



ORDER OF CONDITIONS
State Wetlands Protection Act &
Sudbury Wetlands Administration Bylaw

a detailed description of the discrepancies between the approved plan and the site conditions to date. The Commission reserves the right to require as part of the interim as-built plan, but not be limited to requiring, new topography survey, new drainage calculations, and details or all disturbance within the wetland resource and the 100' wetland buffer zone.

PART V: CERTIFICATE OF COMPLIANCE REQUIREMENTS:

- a. Following completion of Phase I, Eversource shall request a Partial Certificate of Compliance. This Request shall be accompanied by as-built plans, stamped by a professional land surveyor or other qualified professional, detailing all elements of Phase I including all restoration plantings, wetlands replication, all stormwater management elements, post construction structural report, provide a cut/fill analysis for the project by stream reach and elevations to confirm adequate compensatory storage is provided and affidavit from all site professionals that all aspects of this Order were adhered to, along with reports associated with mitigation activities. Any deviations from the approved plans shall be specifically called out on the as-built plan. A report on the restoration/mitigation plantings and invasive species management program shall be provided that includes an assessment of the plant community composition in the context of the wildlife habitat restoration. Vegetation outside the limit of work shall also be evaluated to confirm no negative impacts occurred outside the limit of work.
- b. Following completion of Phase II and full stabilization of the site, a full Certificate of Compliance shall be requested, accompanied by an as-built plan of Phase II elements overlain the Phase I as-built plan, final report on restoration/mitigation efforts, and post construction structural report. Any deviations from the approved plans shall be specifically called out on the as-built plan.

PART VI: CONDITIONS IN PERPETUITY:

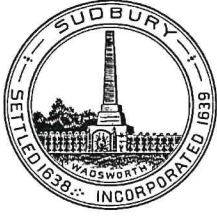
The following conditions shall be recorded at the Registry of Deeds as part of this Order of Conditions and shall continue in perpetuity and be included on the Certificate of Compliance. Owners of this property shall be made aware of restrictions in perpetuity on the activities allowed on this property. If the property owner has good cause to request an amendment to the conditions in perpetuity, he/she shall have the right to make a request for an amendment to the issuing authority. If, in the judgment of the issuing authority, the proposed activities will not detrimentally impact the wetland resource area functions, this Order, or the Certificate of Compliance shall be amended.

- a. Wetlands are located on this property that are subject of the Massachusetts Protection Act (Chapter 131, section 40) and the Sudbury Wetlands Administration Bylaw. Any work within a wetland resource area (including the 200' riverfront area) or within 100' of a wetland resource area requires review and approval by the Sudbury Conservation Commission prior to the commencement of such work.
- b. To ensure the environmental integrity of the site is maintained to offset the permitted activity, after the initial management period of five (5) years, the 3.3-acre invasive species management areas shall be monitored annually for the presence of invasive species and annual reports shall be submitted to the Conservation Office. Any areas found to contain concentrations of invasive species and/or should the plant community within the management area exceed 10% invasive species, the management area shall be managed by DCR in accordance with a program developed in consultation with the Commission's representative.
- c. Fertilizers shall not be used within jurisdictional areas.



ORDER OF CONDITIONS
State Wetlands Protection Act &
Sudbury Wetlands Administration Bylaw

-
- d. No pesticides or herbicides are allowed within a wetland resource area, including the 200-foot riverfront area, or within 100-foot of a wetland resource area (the adjacent upland resource area under the local bylaw), except for spot treatment of Japanese knotweed, without additional review by the Conservation Commission.
 - e. Underground storage of petroleum products is prohibited within a wetland resource area and within the 100' buffer zone of a wetland resource area.
 - f. No coal tar-based sealants may be applied to any area draining into the upland or wetland resource areas of the property.
 - g. All components of the stormwater management system shall be maintained in accordance with the MassCentral Rail Trail (MCRT) – Wayside Section Stormwater Management System Operation and Maintenance Plan (O&M) and the Long Term Pollution Prevention Plan, and as necessary to function as designed. Inspection checklists shall be maintained and be made available for review by the Conservation Commission or staff on request.
 - h. There shall be no snow removal activities or de-icing products used on site, except as required for emergency situations.
 - i. The five-foot maintained area over the transmission line, outside the two-foot shoulders that will be regularly maintained, may be mown once per year, before April 1 or after November 1. Mowing outside this timeframe may be allowed in accordance with the Final Corridor Management Plan, with the objective of allowing vegetation to go to seed and propagate.
 - j. When maintaining the rail trail, no debris, including natural debris such as leaves, shall be blown or swept into areas within 25 feet of vernal pools. Signage or other means of demarcating this management requirement shall be provided to and approved by the Conservation Commission prior to issuance of a Certificate of Compliance.
 - k. The culverts and drainage structures shall be inspected at least annually and cleared of debris as needed. If culverts become damaged or no longer function as required, they shall be repaired or replaced according to most current MA Stream Crossing Standards. This work will require review and approval by the Conservation Commission under a Notice of Intent.
 - l. If herbicide use by DCR is permitted under a future Vegetation Management Plan, as approved by the Department of Agricultural Resources, herbicide use shall be prohibited within any certified or certifiable vernal pool, vegetated wetlands or waterways. Invasive species removal by DCR will be by mechanical means when possible and spot treatment of herbicide by a licensed herbicide applicator when other approaches are ineffective. DCR shall notify the Commission in advance, if herbicides are to be used within wetland jurisdictional areas, indicating the target control species, the type(s) of herbicide to be used, and the on-going maintenance plan for the targeted area.
 - m. All trail amenities, such as benches and kiosks, shall be located outside wetland jurisdictional areas, except as shown on the approved plans.



Town of Sudbury

Conservation Commission

Conservation Department
275 Old Lancaster Rd.
Sudbury MA 01776
978-440-5472
ConCom@sudbury.ma.us

CERTIFIED MAIL

December 28, 2023

Marc Bergeron
Epsilon Associates, Inc.
3 Mill & Main Place, Suite 250
Maynard, MA 01754

Dear Mr. Bergeron,

Enclosed please find an original Extension Permit for the Order of Conditions for the project located at MBTA Row from Town of Hudson to 183 Boston Post Road (Sudbury Substation), Sudbury, MA, DEP File #301-1287, voted by the Commissioners at the December 18, 2023 meeting of the Sudbury Conservation Commission.

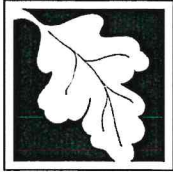
Before your project may begin, you will need to complete the following steps:

- **Record your Extension Permit.** Due to COVID-19, the Middlesex South Registry of Deeds is open for customer for drop-off only. The Registry is accepting e-recordings for Recorded Land and mail-in recordings for Registered Land, Recorded Land and Plans. You can also mail the original Order of Conditions to the Middlesex South Registry of Deeds, 208 Cambridge Street, East Cambridge, MA 02141, along with the recording fee of \$105.00, accompanied by a stamped, return addressed envelope. For more information go to: <http://www.middlesexsouthregistry.com/>. **Please provide the recording Book and Page to the Sudbury Conservation Department**, you may either email, mail or scan to ConCom@sudbury.ma.us

If you have any questions, please do not hesitate to give our office a call at 978-440-5472.

Sincerely,

Lori Capone
Conservation Coordinator
Town of Sudbury



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

DEP File Number:

WPA Form 7 – Extension Permit for Orders of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

301-1287
Provided by DEP

A. General Information

Important:
When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



- Applicant:
 NStar Electric Company D/B/A Eversource Energy / Department Of Conservation and Recreation
 247 Station Drive, SE270 / 251 Causeway Street, Suite 600
 Mailing Address
 Westwood/ Boston MA 02090/02114
 City/Town State Zip Code
- Property Owner (if different):
 Massachusetts Bay Transportation Authority
 Name
 10 Park Plaza
 Mailing Address
 Boston MA 02116
 City/Town State Zip Code

B. Authorization

The Order of Conditions (or Extension Permit) issued to the applicant or property owner listed above on:

2/4/2021 Issued by: Sudbury Conservation Commission
 Date

for work at: MBTA Row from Town of Hudson to 183 H03, J05, J06, K07, K08, 5000; 5100; 0014; 0402
 Boston Post Road (Sudbury Substation) K09 K11; K08; K10; K11 Parcel/Lot Number
 Street Address Assessor's Map/Plat Number

recorded at the Registry of Deeds for:

Middlesex South 11317/ 7734 113/ 426
 County Book Page

Certificate (if registered land)

is hereby extended until: 2/4/25 Date Date the Order was last extended (if applicable)

This date can be no more than 3 years from the expiration date of the Order of Conditions or the latest extension. Only unexpired Orders of Conditions or Extension may be extended.

This Extension Permit must be signed by a majority of the Conservation Commission and a copy sent to the applicant and the appropriate DEP Regional Office (<https://www.mass.gov/service-details/massdep-regional-offices-by-community>).



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

DEP File Number:

WPA Form 7 – Extension Permit for Orders of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

301-1287
Provided by DEP

B. Authorization (cont.)

12/28/2023

Issue Date (mm/dd/yyyy)

Signatures:

Dave Henkels

Dave Henkels

Signature

Printed Name

Ken Holtz

Ken Holtz

Signature

Printed Name

Luke Faust

Luke Faust

Signature

Printed Name

Mark Sevier

Mark Sevier

Signature

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Printed Name

A TRUE COPY, ATTEST:

Ann Dumb
ASSISTANT TOWN CLERK 12/21/23



WPA Form 7 – Extension Permit for Orders of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

C. Recording Confirmation

The applicant shall record this document in accordance with General Condition 8 of the Order of Conditions (see below), complete the form attached to this Extension Permit, have it stamped by the Registry of Deeds, and return it to the Conservation Commission.

Note: General Condition 8 of the Order of Conditions requires the applicant, prior to commencement of work, to record the final Order (or in this case, the Extension Permit for the Order of Conditions) in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, it shall be noted in the Registry's Granter Index under the name of the owner of the land upon which the proposed work is to be done. In the case of registered land, it shall also be noted on the Land Court Certificate of Title of the owner of the land upon which the proposed work is done.

Detach this page and submit it to the Conservation Commission prior to the expiration of the Order of Conditions subject to this Extension Permit.

To:

Sudbury
Conservation Commission

Please be advised that the Extension Permit to the Order of Conditions for the project at:

MBTA Row from Town of Hudson to 183 Boston 301-1287
Post Road (Sudbury Substation) DEP File Number
Project Location

has been recorded at the Registry of Deeds of:

County

for:

Property Owner

and has been noted in the chain of title of the affected property in accordance with General Condition 8 of the original Order of Conditions on:

Date Book Page

If recorded land the instrument number which identifies this transaction is:

Instrument Number

If registered land, the document number which identifies this transaction is:

Document Number

Signature of Applicant



BID PACKAGE

MASSACHUSETTS ENGANGERED SPECIES ACT



MASSWILDLIFE

DIVISION OF FISHERIES & WILDLIFE

1 Rabbit Hill Road, Westborough, MA 01581

p: (508) 389-6300 | f: (508) 389-7890

MASS.GOV/MASSWILDLIFE

May 17, 2019

Priscilla Geigis
Massachusetts Dept. of Conservation & Recreation
251 Causeway Street
Boston, MA 02114

RE: Applicant: Priscilla Geigis, Massachusetts Dept. of Conservation & Recreation (DCR)
Project Location: MBTA Right of Way- Sudbury, Marlborough, Hudson, Stow
East of Wilkins St, Hudson to Eversource Substation, Rte. 20, Sudbury
Project Description: Phase 2 of Sudbury–Hudson Transmission Reliability: Mass Central Rail
Trail (MCRT) Segment
NHESP File No.: 15-34327

Dear Applicant:

The Natural Heritage & Endangered Species Program of the Massachusetts Division of Fisheries & Wildlife (the “Division”) received the MESA Project Review Checklist (dated April 2019) with project plans (dated March 2019, prepared by VHB), a Corridor Management Plan (dated 5/31/2018), a draft Turtle Protection Plan (dated 5/31/2018, prepared by VHB), and other required materials for review pursuant to the Massachusetts Endangered Species Act (MESA) (MGL c.131A) and its implementing regulations (321 CMR 10.00).

The MESA is administered by the Division, and prohibits the Take of state-listed species. The Take of state-listed species is defined as “in reference to animals...harm...kill...disrupt the nesting, breeding, feeding or migratory activity...and in reference to plants...collect, pick, kill, transplant, cut or process...Disruption of nesting, breeding, feeding, or migratory activity may result from, but is not limited to, the modification, degradation, or destruction of Habitat” of state-listed species (321 CMR 10.02).

The Division has determined that this Project, as currently proposed, will occur **within** the actual habitat of the following state listed species. These species and their habitats are protected in accordance with the MESA. Fact sheets for state-listed species can be found at www.mass.gov/nhesp.

<u>Scientific Name</u>	<u>Common Name</u>	<u>Taxonomic Group</u>	<u>State Status</u>
<i>Terrapene carolina</i>	Eastern Box Turtle	Reptile	Special Concern
<i>Caprimulgus vociferous</i>	Eastern Whip-poor-will	Bird	Special Concern
<i>Catocala herodias gerhardi</i>	Gerhard’s Underwing	Butterflies and Moths	Special Concern
<i>Metarranthis pilosaria</i>	Coastal Swamp Metarranthis	Butterflies and Moths	Special Concern

MASSWILDLIFE

Phase 1 of this project consists of the installation of an underground electrical transmission line. The Division determined that Phase 1 would not result in a Take of rare species (determination letter dated 10/19/2018). The current proposal, which constitutes Phase 2 of the overall project, is for a 7.7 mile segment of shared-use path within the final construction platform layout of Phase 1. The shared-used path, a segment of the Mass. Central Rail Trail (MCRT), is proposed as a maintained 14 ft. wide corridor within the existing MBTA right-of-way and limits of work established by the Eversource transmission line project (Phase 1). An approximately 210 ft. extension at the western end of the shared-use path will be constructed to connect to the Assabet River Rail Trail. Work proposed within Priority Habitat consists of a 1.2 mile portion of the MCRT with one pull-off area (approx. 65 ft x 10 ft).

Phase 2 will result in 2.1 acres of disturbance within Priority Habitat, which will occur entirely within the previously-approved Limit of Work for Phase 1. This segment of the MCRT will be constructed using the gravel roadway installed by Eversource during Phase 1 construction. Ongoing maintenance of the MCRT shoulders and transmission line duct bank will be conducted by DCR.

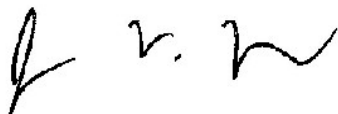
Based on the information provided and the information contained in our database, the Division finds that Phase 2 of this project, as currently proposed, **must be conditioned in order to avoid a prohibited Take of state-listed species (321 CMR 10.18(2)(a))**. To avoid a prohibited Take of state-listed species, the following conditions must be met:

1. The Corridor Management Plan for Massachusetts Central Rail Trail and Sudbury-Hudson Transmission Reliability Project (dated 5/31/2018) must be implemented as proposed. If changes to said Plan are proposed, a revised Plan must be submitted to the Division for review and prior written approval.
2. Prior to the start of work, the Applicant must submit to the Division, for review and approval, a signage plan for the shoulder and duct bank mowing areas, which must describe sensitive dates for the Eastern Box Turtle.
3. Measures must be implemented to protect Eastern Box Turtles during construction. Prior to the start of work a final Eastern Box Turtle Protection Plan must be submitted to the Division for review and approval, and must be implemented as approved. Said Plan must include detailed turtle protection measures to be implemented by DCR. If changes to said Plan are proposed, a revised Plan must be submitted to the Division for review and prior written approval.
4. Prior to the start of work the Applicant must submit to the Division, for review and approval, a native seed mix proposed for any planting or loam and seed activities.
5. Unless otherwise approved by the Division, proposed wood railings must leave, at minimum, a 10 in. space beneath the lowest rail for wildlife passage.
6. Unless otherwise approved by the Division, construction activities within Priority Habitat must not occur during the Eastern Whip-poor-will breeding season (May 1 – August 1), as proposed.
7. Within thirty (30) days of the completion of Work, or as otherwise approved by the Division, the Applicant shall submit a compliance report to the Division documenting the completion of the project and compliance with all conditions herein, including a summary of construction timelines and photographs.

Provided the above-noted conditions are fully implemented and there are no changes to the transmission line project plans, this project will not result in a Take of state-listed species. We note that all work is subject to the anti-segmentation provisions (321 CMR 10.16) of the MESA. This determination is a final decision of the Division of Fisheries and Wildlife pursuant to 321 CMR 10.18. Any changes to the proposed project or any additional work beyond that shown on the site plans may require an additional filing with the Division pursuant to the MESA. This project may be subject to further review if no physical work is commenced within five years from the date of issuance of this determination, or if there is a change to the project.

Please note that this determination addresses only the matter of state-listed species and their habitats. If you have any questions regarding this letter please contact Lauren Glorioso, Endangered Species Review Biologist, at 508-389-6361.

Sincerely,



Jonathan V. Regosin, Ph.D.
Deputy Director

cc: Gene Crouch, VHB
MBTA
Sudbury Conservation Commission
Hudson Conservation Commission
Marlborough Conservation Commission
Stow Conservation Commission



September 30, 2021

Ref: 14424

Ms. Lauren Glorioso
Massachusetts Natural Heritage and Endangered Species Program
1 Rabbit Hill Road
Westborough, MA 01581

Re: Phase 2 of Sudbury–Hudson Transmission Reliability – Mass Central Rail Trail,
NHESP File No.: 15-34327

Dear Ms. Glorioso:

The Department's determination that the Phase 2 portion of the Sudbury-Hudson Transmission Reliability Project, which consists of the MassCentral Rail Trail (MCRT) to be constructed by the Department of Conservation and Recreation (DCR), will not result in a Take of a state-listed species, provided there are no design changes and Conditions 1 through 7 are implemented. On behalf of the DCR, the attached documents have been prepared to address Conditions 1 through 6 (attached) for your review to demonstrate compliance with the Conditions. It is DCR's intent to implement these construction measures and design requirements during construction of the MCRT and the long-term maintenance measures during operation of the public rail trail facility. Once you determine these documents adequately address the requirements of the Conditions, they will be provided to the Sudbury and Hudson Conservation Commissions. Condition 7 will be addressed at the completion of the Project construction.

If you have any questions or comments regarding the attached materials, please contact me at your convenience at 617-607-2961 or by email at tlenhardt@vhb.com.

Sincerely,

VHB

A handwritten signature in blue ink that reads "Tracie Lenhardt".

Tracie Lenhardt, P. E.
Senior Project Manager

cc: Paul Jahnige – DCR
Denise Bartone – Eversource
Gene Crouch - VHB

Attachments

Engineers | Scientists | Planners | Designers

101 Walnut Street, PO Box 9151, Watertown, Massachusetts 02471

P 617.924.1770 F 617.924.2286 www.vhb.com

Attachment A

Corridor Management Plan for Massachusetts Central Rail Trail-Wayside Section and Sudbury-Hudson Transmission Reliability Project

Corridor Management Plan for Massachusetts Central Rail Trail-Wayside Section and Sudbury-Hudson Transmission Reliability Project

This Corridor Management Plan (CMP) is consistent with DCR's standard operations and maintenance plan for shared use pathway / rail trails. This plan has been developed specifically for those portions of the existing MBTA corridor where DCR's proposed Massachusetts Central Rail Trail Project will be located along Eversource's proposed Sudbury-Hudson Transmission Reliability Project in the towns of Sudbury, Marlborough, Stow, and Hudson. This CMP will be shared with DCR and Eversource staff engaged in management activities.

The construction of the MCRT is anticipated to begin within one year of the completion of the Sudbury to Hudson Transmission Reliability Project and as such, DCR plans to take responsibility for the following along this corridor following construction of both the Sudbury to Hudson Transmission Reliability Project and the MCRT:

Every two weeks, or as needed, between Memorial Day and Columbus Day DCR will:

- Pick up trash along the multi-use path.
- Mow the 2-foot wide shoulders on each side of the paved multi-use trail.
- Blow plant debris (leaves, branches, etc.) from paved shared use path (avoid blowing directly into vernal pools).
- Inspect for and remove fallen or immediate hazard trees and limbs that impede safe use of the multi-use trail.
- Remove graffiti and illegal dumping, if it has occurred.

Once a year (typically following Columbus Day weekend) DCR will:

- Mow the areas over the Eversource duct bank and stormwater swales (if mowing occurs between April 1 and November 1, then areas within mapped habitat for state-listed turtles will require "turtle sweeps" by trained individuals ahead of the mower and mower deck heights shall be set higher than 10 inches above the ground).
- Follow its best management practices for managing terrestrial invasive plants.

Annually DCR will:

- Inspect culverts, swales and other drainage structures and clean as needed (see O&M/LTPPP below).
- Inspect existing paved surfaces of the multi-use trail to identify areas where root damage to pavement is beginning to occur. As appropriate pick / dig / remove roots causing the damage.
- Trim/remove potential hazard trees and those that appear to be causing root damage to the existing pavement of the multi-use trail.
- Inspect trail signs and replace as needed, avoid "sign clutter" and remove excess /old signage.

***Every 10-15 years, depending on resources, DCR plans to:**

- Saw-cut, excavate and repave targeted areas of root damage or cracks.
- Consider mill and overlay to extend pathway life (no expansion or widening of multi-use trail; these activities require agency consultations and potential permitting).

- Repair deteriorated decking on bridges as needed.
- Re-loam and re-seed shoulders to address edge issues.

**If heavy equipment is used for any of these activities between April 1 and November 1 then “turtle sweeps” by trained individuals are required immediately ahead of any equipment. Conservation Commission will be contacted for activities that may be jurisdictional.*

Every 25-35 years, depending on resources, DCR plans to:

- Design and implement full pathway reconstruction (if required). This requires agency consultations and permitting and would require the development of turtle protection measures specific to the proposed reconstruction activities.

In the absence of Phase 2 Initiation:

If DCR’s MCRT is not constructed, then every four years from completion of Eversource’s transmission line project, Eversource plans to:

- Manage the herbaceous community over the duct bank only. All other previously disturbed areas, outside of the 14-foot-wide gravel access road associated with the Project will be allowed to revegetate with woody species.
 - Vegetation management will be conducted as part of the Company’s Vegetation Management Plan that is approved by the Massachusetts Department of Agricultural Resources in compliance with 333 CMR 11.00. In accordance with the EFSB’s Final Decision issued December 18, 2019, Eversource will utilize mechanical vegetation management within this corridor.
 - The Company is required to present annual Vegetation Management Plans (VMP) to the NHESP for review and approval as per 321 CMR 10.14 (16). MNHESP sends a formal written response and attaches management guidelines that the Company must follow when performing routine vegetation management activities. Routine vegetation management will be completed by mechanical means only. As per past management guidelines related to state-listed turtle species imposed by NHESP along other utility corridors, the Company will avoid mowing between April 1 and November 1, conduct turtle sweeps prior to mowing, and set mower blades 10 inches above the ground.

Attachment: MassCentral Rail Trail – Wayside Section, Operations and Management Plan and Long Term Pollution Prevention Plan

**MassCentral Rail Trail (MCRT) – Wayside Section
Stormwater Management System
Operation and Maintenance Plan (O&M)
and
Long Term Pollution Prevention Plan (LTPPP)**

**June 2020
(Revised April 2021)**

This Stormwater Management System Operation and Maintenance Plan provides for the inspection and maintenance of structural Best Management Practices (BMPs) and for measures to prevent pollution associated with the Stormwater Management System on the MassCentral Rail Trail Wayside Section (in Hudson, Stow and Sudbury).

This document has been prepared in accordance with the requirements of the Stormwater Regulations included in the Massachusetts Wetlands Protection Act Regulations (310 CMR 10.05(6)(k)).

Figure of stormwater management features is attached.

Responsible Party

Department of Conservation and Recreation (DCR) office will be responsible for the maintenance of the shared-use facility and associated stormwater management features, in accordance with DCR standards. The facility will be maintained by DCR maintenance staff from:

DCR's Maintenance Facility
Hopkinton Complex
164 Cedar St,
Hopkinton MA 01748
Jeff Cate
Field Operation Team Leader
(508) 435-4303

Maintenance Measures

The stormwater management system covered by this Operation and Maintenance Plan consists of the following components:

- Swales – Dry with check dams
- Areas of increased infiltration
- Drainage structures
 - Hudson
 - Sta. 119+25 LT – Catch basin (Str 3)
 - Sta. 119+25 RT – Headwall (Str 4)
 - Sta. 119+25 – 18" RCP - New crossing drainage pipe

- Sta. 119+45 - 6' by 6' Conc. Box - Cattle Crossing
- Sta. 126+70 RT – Catch basin (Str 5)
- Sta. 126+70 LT – Headwall (Str 6)
- Sta. 126+70 – 24" DIP – New crossing drainage pipe
- Sta. 182+55 RT – Catch basin (Str 8)

Sudbury

- Sta. 368+84 - 2' by 2.5' Stone Box (Drainage Structure 129A)
- Sta. 410+25 - 2' by 2' Stone Box (Drainage Structure 127J)
- Sta. 517+96 - 1' by 2' Stone Box (Drainage Structure 127I)
- Sta. 521+64 - 1.5' by 3' Stone Box (Drainage Structure 127H)
- Sta. 527+30 - 2' by 2' Stone Box (Drainage Structure 127G)
- Sta. 530+80 RT – Catch basin (Str 9)
- Sta. 533+46 RT – Flared End Section (Str 10)
- Sta. 713+63 LT – Headwall (Str 12)
- Sta. 713+63 RT – Headwall (Str 13)
- Sta. 577+31 - 1' by 2' Stone Box (Drainage Structure 127D)
- Sta. 704+56 - 24" Cast Iron (Drainage Pipe 127B)
- Sta. 713+63 - 24" Cast Iron (Drainage Pipe 127A)
- Sta. 738+77 - 18" Cast Iron (Drainage Pipe 126D)
- Sta. 752+17 - 12" Corrugated Metal (Drainage Pipe 126A)

DCR Operations to maintain swales and the drainage pipes.

DCR Engineering to maintain listed catch basins, flared end section, headwalls, drainage pipes. Engineering can assist with blocked culverts if major blockage or structural concern.

Maintenance of these components will be conducted biannually at a minimum in accordance with DCR standard maintenance practices, as noted in the attached Operation and Maintenance table summarizing the pertinent inspection and maintenance activities.

DCR Operations will also inspect and clear culverts conveying streams as needed. Inspection will identify any deterioration of headwalls, culverts, bridge structures, abutments and erosion. Any identified issues will be immediately brought to the attention of DCR Engineering.

- Stream culverts/bridges

Hudson

- Sta. 107+92 – 2' by 3' stone box (Culvert 132A)
- Sta. 148+81 – Fort Meadow Brook Bridge (Bridge 132)
- Sta. 206+10 – 24" Clay Culvert (Culvert 129C)

Sudbury

- Sta. 400+31 – Hop Brook Bridge (Bridge 132)
- Sta. 539+40 – Twin 36" Corrugated Metal – Dudley Brook (Culverts 127F)
- Sta. 560+82 - 3'x2' Concrete Box (Culvert 127E)
- Sta. 593+18 - 2'x2' Stone Box (Culvert 127C)
- Sta. 747+39 - 2.5'x2' Stone Box (Culvert 126B)

- Sta. 764+60 - 12" Reinforced Concrete (Culvert 125B)
- Sta. 725+31 – Hop Brook Bridge (Bridge 130)

If inspection indicates the need for major repairs of structural components, the inspector should contact the DCR maintenance supervisor to initiate procedures to effect repairs in accordance with DCR standard construction practices.

Practices for Long Term Pollution Prevention

In general, long term pollution prevention and related maintenance activities will be conducted consistent with DCR's NPDES Stormwater MS4 Permit(s), and the measures outlined in the Stormwater Management Plans (SWMP). Information about the DCR permit and the SWMP are available at the following website:

<http://www.mass.gov/eea/agencies/dcr/conservation/stormwater-mgmt/>

For the facilities covered by this Operation and Maintenance Plan, long term pollution prevention includes the following measures:

Litter Pick-up

DCR will conduct litter pick-up from the stormwater management facilities in conjunction with routine maintenance activities.

Routine Inspection and Maintenance of Stormwater BMPs

DCR will conduct inspection and maintenance of the stormwater management practices in accordance with the guidelines discussed above.

Spill Prevention and Response

DCR will implement its standard response procedures in the unlikely event of releases of significant materials such as fuels, oils, or chemical materials onto the ground or other areas that could reasonably be expected to discharge to surface or groundwater.

- Reportable quantities will immediately be reported to the applicable Federal, State, and local agencies as required by law. The applicable DCR office should also be notified.
- Applicable containment and cleanup procedures will be performed immediately. Impacted material collected during the response must be removed promptly and disposed of in accordance with Federal, State, and local requirements. A licensed emergency response contractor may be required to assist in cleanup of releases depending on the amount of the release and the ability of the responsible party to perform the required response.
- Reportable quantities of chemical, fuels, or oils are established under the Massachusetts Contingency Plan (MCP) and enforced through MassDEP.

Maintenance of Landscaped Areas

DCR will mow and/or weed whack the shoulders adjacent to the rail trail bi-weekly or as needed between Memorial Day and Columbus Day. Outside of the 2-foot shoulders, DCR will mow the 5-foot herbaceous area over the duct bank no more than once annually. Outside of the 19-foot

maintained area (paved rail trail, 2-foot shoulders on either side and 5-foot area over the duct bank) woody vegetation will be allowed to naturally revegetate and DCR will not implement vegetation management unless it poses a risk to MCRT users. The vegetated shoulders/slopes outside the maintained area will help to disperse and infiltrate disconnected drainage although no stormwater management benefit is identified. The swales and areas of increased infiltration outside of the 19-foot area will be inspected and mowed as needed or biannually at a minimum to maintain proper water quality treatment function. If maintenance activities anywhere disturb the ground and removes the vegetated surface, the disturbed area will be restored with loam and seed to reestablish a vegetated surface.

Per the Sudbury Order of Conditions, Condition VI j, in Sudbury grass cuttings, leaves or twigs and sticks will not be blown off the paved path within 25 feet of a vernal pool. Pavement markers have been installed to indicate the 25-foot offset from a vernal pool.

Eversource inspection vehicles will use the paved MCRT to access the transmission line facility approximately once every three years, or as needed for maintenance of the transmission line.

Within the Priority Habitat areas, the vegetation will not be trimmed lower than 10 inches along the shoulders or over the duct bank.

Fertilizers will not be used.

If DCR finds it necessary to use chemical treatment for invasive species vegetation control, this work will be done in compliance with MDAR regulations at 333 CMR 11.00, which will limit impacts to sensitive areas such as groundwater and drinking water wells. If needed in the future, the DCR will develop a Yearly Operational Plan regarding vegetation maintenance along their bike path and recreational corridors, which will include the MCRT.

Erosion Control

Portions of the MCRT are on elevated former railroad embankment with steep side slopes. Review the MCRT alignment for any evidence of erosion on slopes, within swales, at check dams or at inlets and outlets of drainage pipes or stream culverts during the biannual inspection of the corridor and the stormwater BMPs. If erosion is observed, note on the inspection form. Include the location and extent of erosion (width and length), which side of the path or pipe/culvert, if the erosion is toward or away from the path, and if any resource areas are at risk of impact. Include photographs if possible. Note location on the attached figure as accurately as possible. Notify the Field Operations Team Leader.

Any observed erosion will be repaired, and reseeded or otherwise stabilized as needed to prevent continued erosion. Notify the local conservation commission if erosion impacts a resource area or requires reconstruction within a resource area or within 100 feet of a resource area. A regulatory filing may be required.

Snow and Ice Management

There are no plans for snow and ice removal, nor de-icing (i.e., sanding, salting) of the bike path surface during winter months.

Prohibition of Illicit Discharges

The DEP Stormwater Management Standards prohibit illicit discharges to the storm water management system. Illicit discharges are discharges that do not entirely consist of stormwater, except for certain specified non-stormwater discharges.

Discharges from the following activities are not considered illicit discharges:

firefighting	foundation drains
water line flushing	footing drains
landscape irrigation	individual resident car washing
untamminated groundwater	flows from riparian habitats and wetlands
potable water sources	dechlorinated water from swimming pools
water used to clean residential buildings	water used for street washing
without detergents	air conditioning condensation

There are no known or proposed illicit connections associated with this project. If a potential illicit discharge to the facilities covered by this plan is detected (e.g., dry weather flows at any pipe outlet, evidence of contamination of surface water discharge by non-stormwater sources), the DCR shall be notified for assistance in determining the nature and source of the discharge, and for resolution through DCR's IDDE program.

Public Access

The MCRT Wayside Section is a public access facility. The facility is typically open dawn to dusk every day. Members of the Sudbury Planning Board or Conservation Commission are free to access the rail trail at any time the facility is open. Periodically the facility may be closed for maintenance construction (repairs, resurfacing, etc.) and for the safety of the public, access to the rail trail will be restricted.

Lease/Easements

The DCR holds a lease for construction and operation of the MCRT over the Massachusetts Department of Transportation – MBTA rail corridor. Within the rail corridor there are the following existing easements or license agreements by others:

- NSTAR Electric Company d/b/a Eversource Energy ("Eversource") to construct and operate the transmission powerline.
- Sudbury Lumber for access and storage of materials (off Union Avenue).
- Tennessee Gas Transmission Company to install and operate an underground natural gas transmission pipeline (east of Marlborough/Hudson town line).
- Town of Sudbury (east of Route 20 – building license).
- Douglas P. Webb lease for South Sudbury Station (off Union Avenue).

Record Keeping

The DCR shall maintain an operation and maintenance log for the inspections, repairs, maintenance and/or replacement of the stormwater management system or any part thereof, and disposal (for disposal the log shall indicate the type of material and the disposal location). The maintenance Inspection checklists shall be maintained and be made available for review by the MassDEP or Conservation Commissions or staff on request

Appendix: MCRT Maintenance and Best Management Practices: Operation & Maintenance Measures Schedule

Maintenance Practice or Best Management Practice¹	Sweep	Mow	Inspect	Clean	Repair
Shoulder Maintenance (2-foot area either side of pavement)	As needed	Biweekly or as needed during growing season	Biweekly	As needed	As needed
Over duct bank ¹ (5-foot area outside shoulders)	N/A	Once yearly in fall	Yearly	As needed	As needed
Pavement Surface	As needed ²	N/A	Biweekly	As needed ^{2,3}	As needed
Swales ¹	N/A	Mow swales as needed or biannually (minimum)	Biannually at a minimum	As needed	As needed
Check Dams ¹	N/A	String trim as needed (Not to be mowed) or biannually (minimum)	After every significant rainfall event	As needed	As needed
Areas of increased infiltration ¹	N/A	Mow or string trim as needed or biannually (minimum)	Biannually at a minimum	As needed	As needed
Drainage structures	N/A	NA	Biannually at a minimum	As needed	As needed

¹If mowing occurs between April 1 and November 1, then areas within mapped priority habitat for state-listed turtles will require "turtle sweeps" by trained individuals ahead of the mower and mower deck heights shall be set lower than 10 inches above the ground or string trimmers can be used.

²No blowing of grass clippings, leaves or twigs and sticks within 25 feet of a vernal pool. Pavement markers indicate 25 feet from a vernal pool.

³Snow removal will not be conducted.

MCRT Best Management Practices – Inspection and Maintenance/ Evaluation Checklist

Best Management Practice	Inspection Frequency	Date Inspected	Inspector	Minimum Maintenance and Key Items to Check	Cleaning/Repair Needed	Date of Cleaning/Repair	Performed by
Swales	Biannually at a minimum			<ul style="list-style-type: none"> Accumulated sand and sediment Accumulated debris Erosion of swale Mow biannually (minimum) 	<input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> yes <input type="checkbox"/> no		
Check Dams	After significant rain fall events			<ul style="list-style-type: none"> Accumulated sand and sediment Accumulated debris Erosion of surface Cut grass biannually (minimum) (string trimmer) 	<input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> yes <input type="checkbox"/> no		
Areas of increased infiltration	Biannually at a minimum			<ul style="list-style-type: none"> Accumulated sand and sediment Mow as needed or biannually (minimum) 	<input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> yes <input type="checkbox"/> no		
Drainage structures, drainage pipes and stream culverts	Biannually at a minimum			<ul style="list-style-type: none"> Accumulated sand and sediment Floatable/Trash Inlets free of debris Damage to headwalls or wingwalls 	<input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> yes <input type="checkbox"/> no		
Erosion (Provide location and detailed description in notes below. Include photographs)	Biannually at a minimum			<ul style="list-style-type: none"> Slope erosion observed Erosion within a swale or at check dam Erosion/Siltation onto the path surface Erosion/Siltation away from the path surface Erosion at a drainage pipe or stream culvert 	<input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> yes <input type="checkbox"/> no		

Notes on Stormwater / Drainage / Erosion Issues:

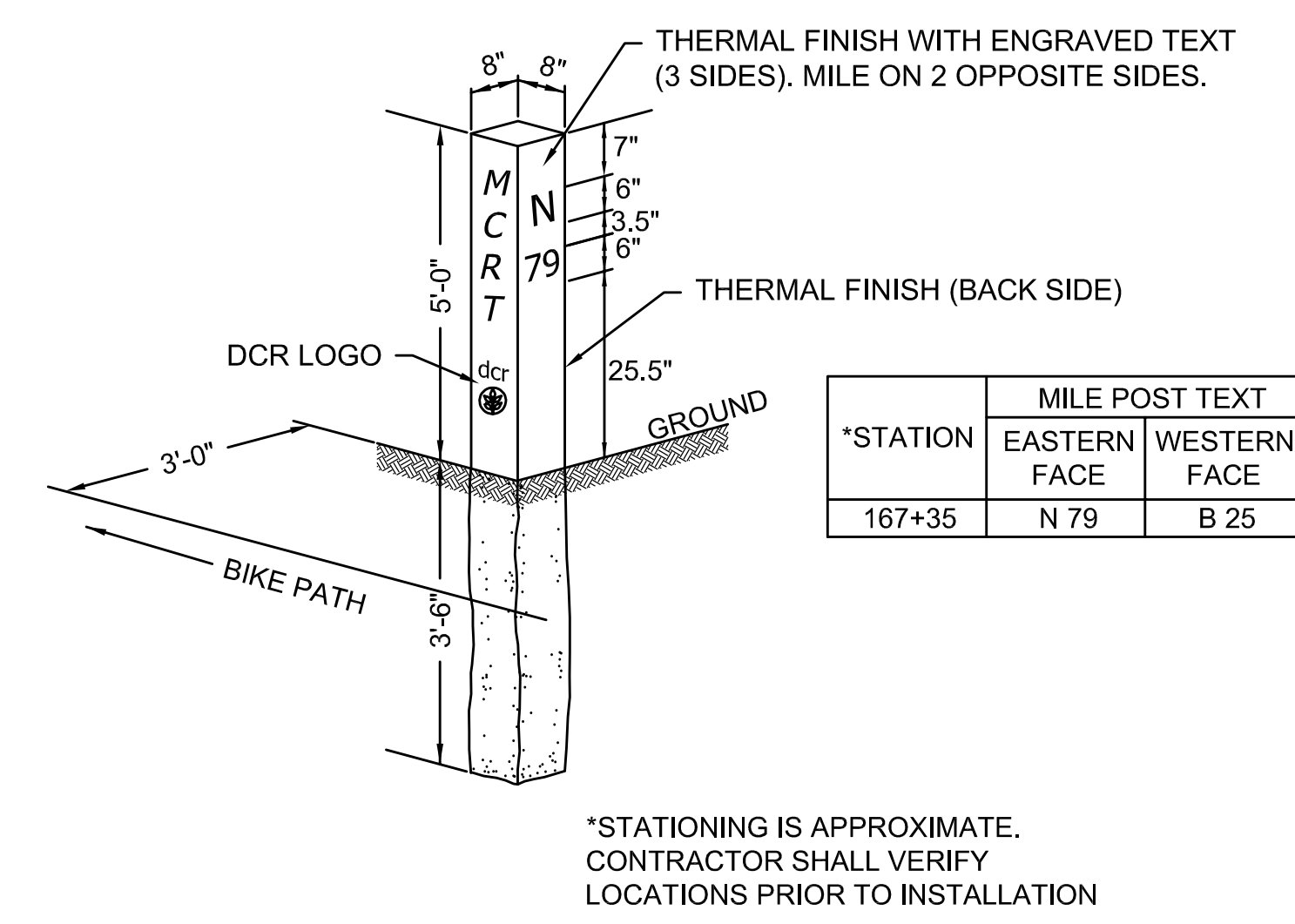
Stormwater Control Manager _____

Figure of Stormwater BMPs Attached

Attachment B

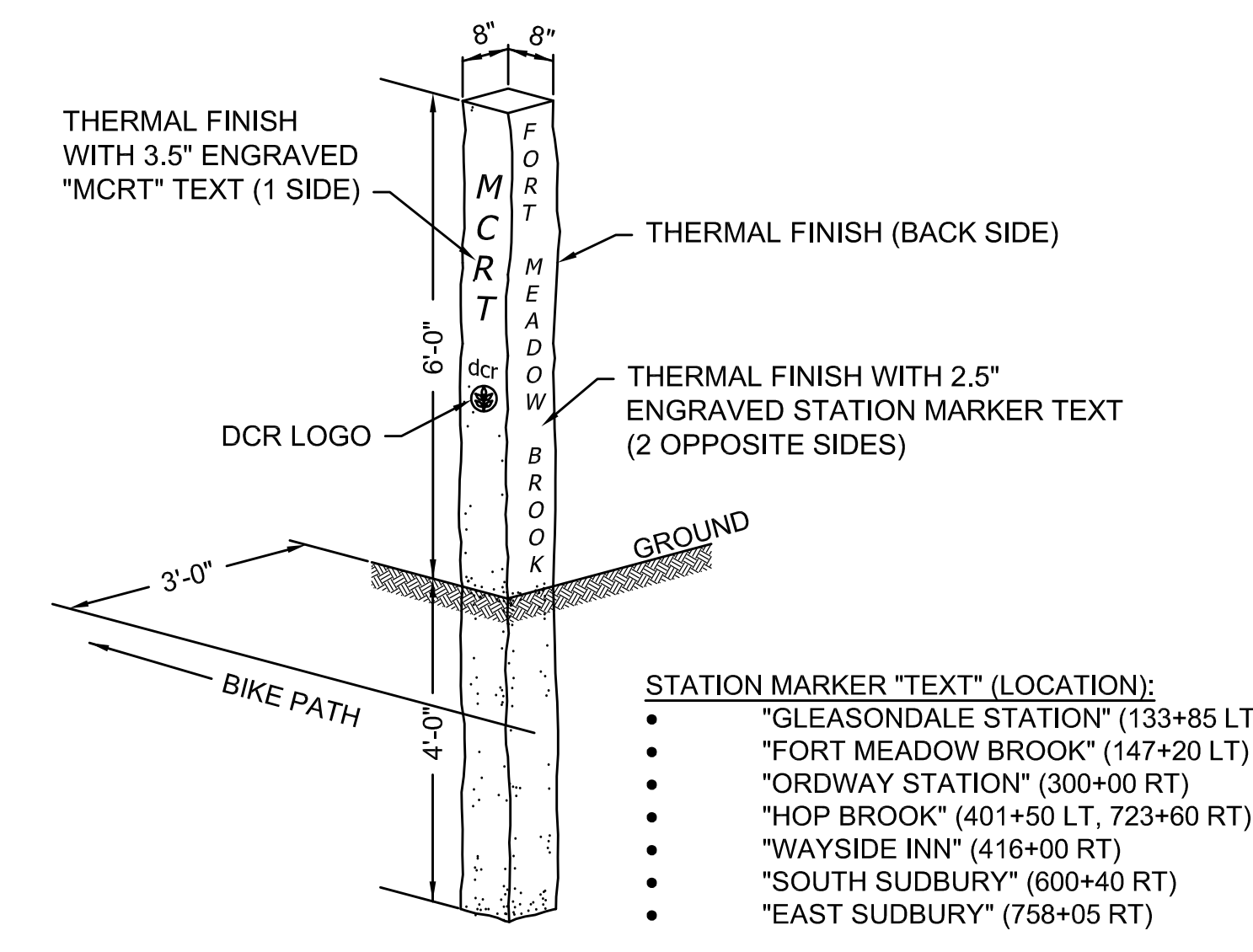
Mowing Height Signage

NOTE:
 ALL LETTERING TO BE 1/2" "V"
 SUNK LETTER IN TACOMA TEXT



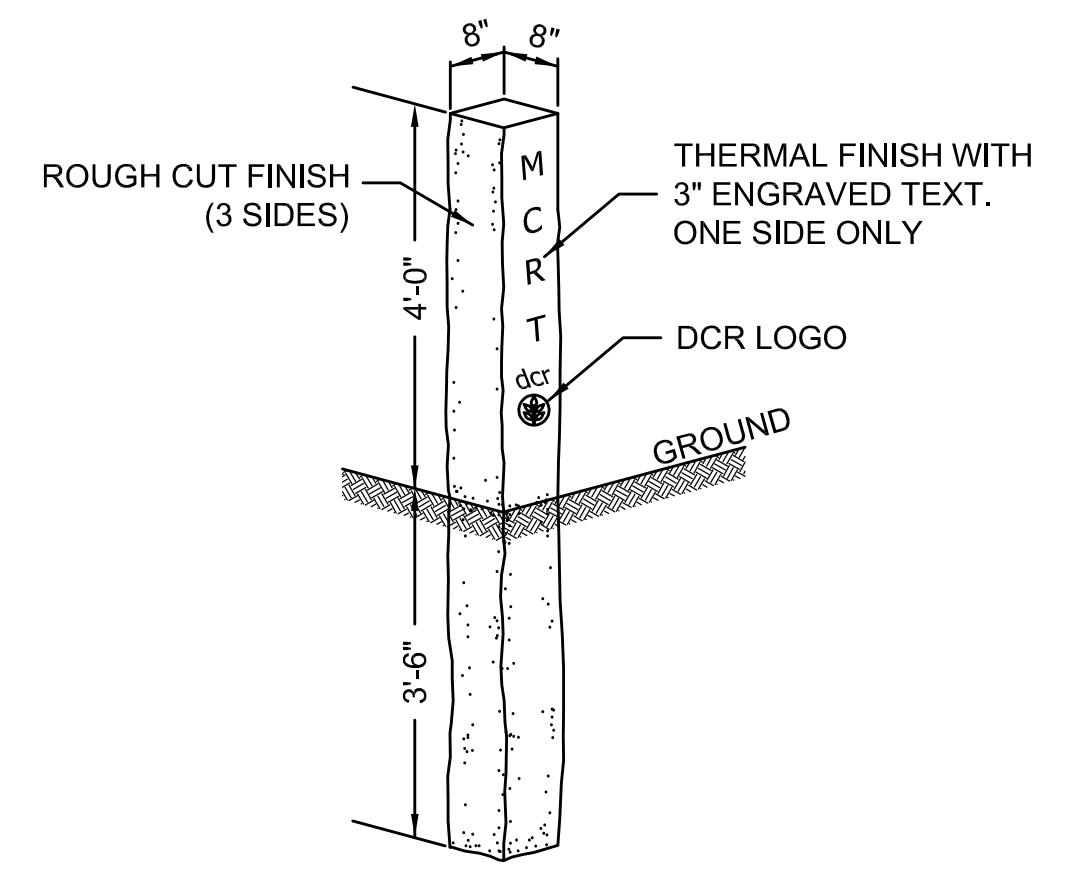
GRANITE MILE POST

SCALE: N.T.S.



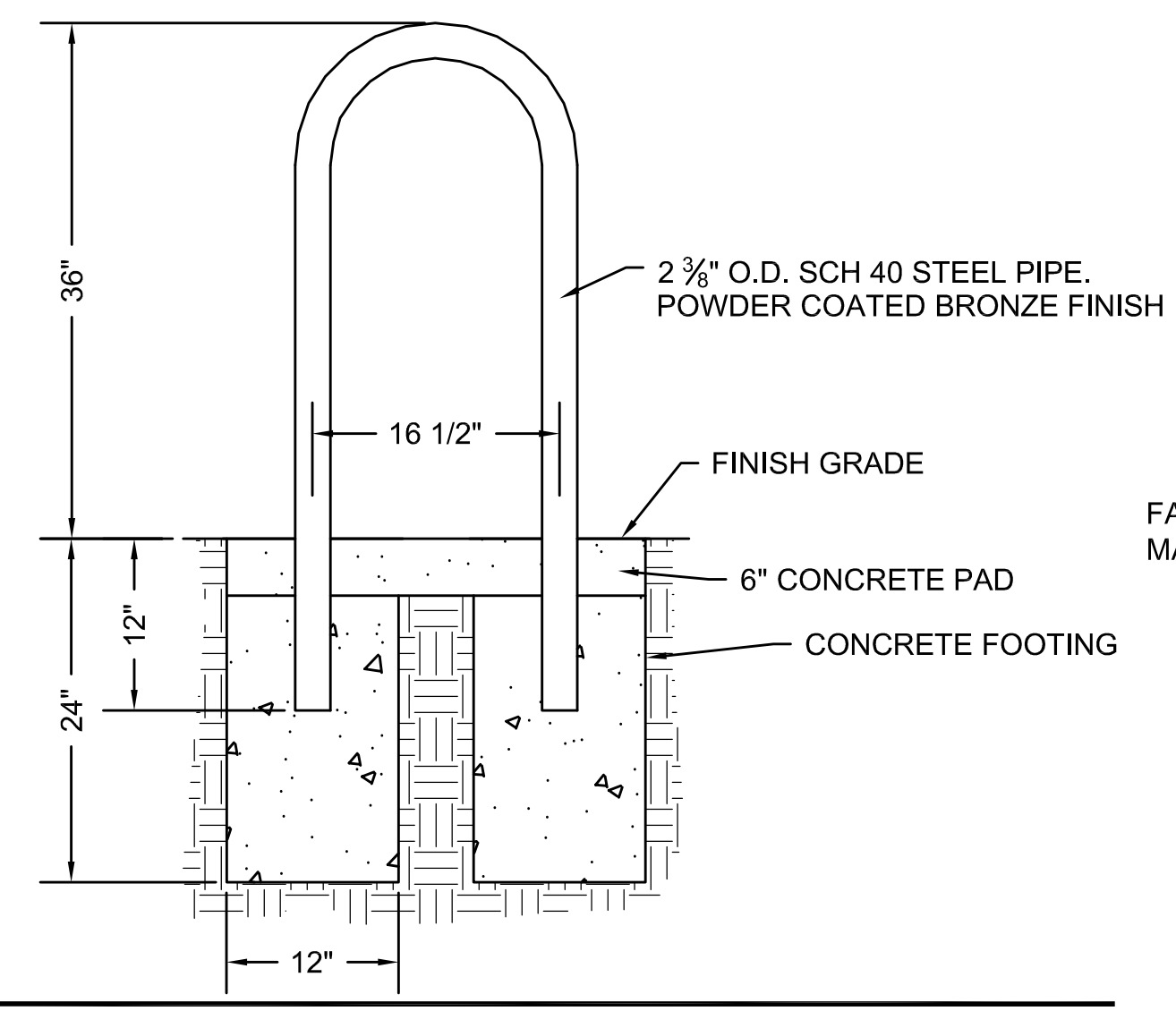
GRANITE STATION PILLAR

SCALE: N.T.S.



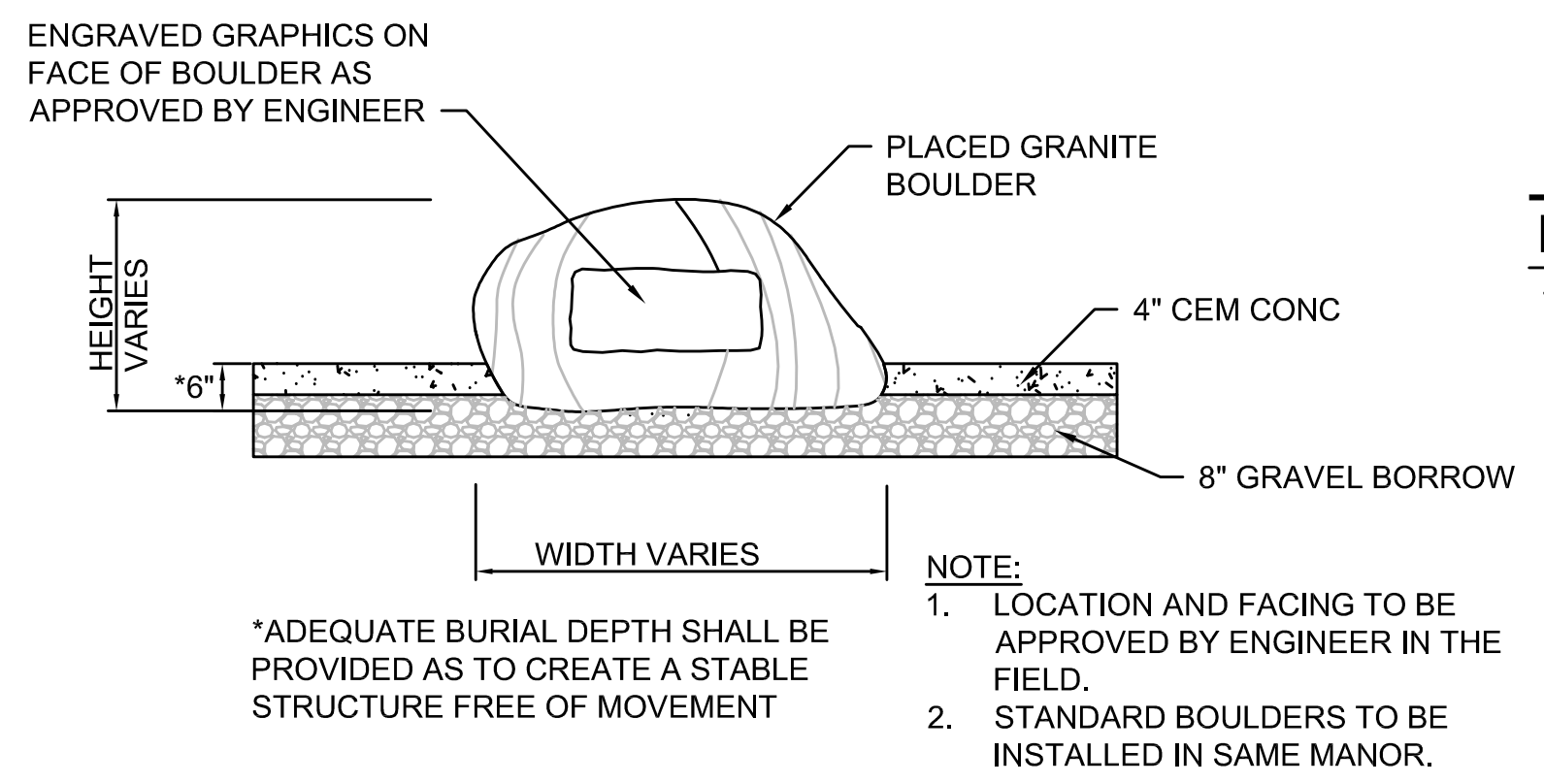
GRANITE LETTERED POST

SCALE: N.T.S.



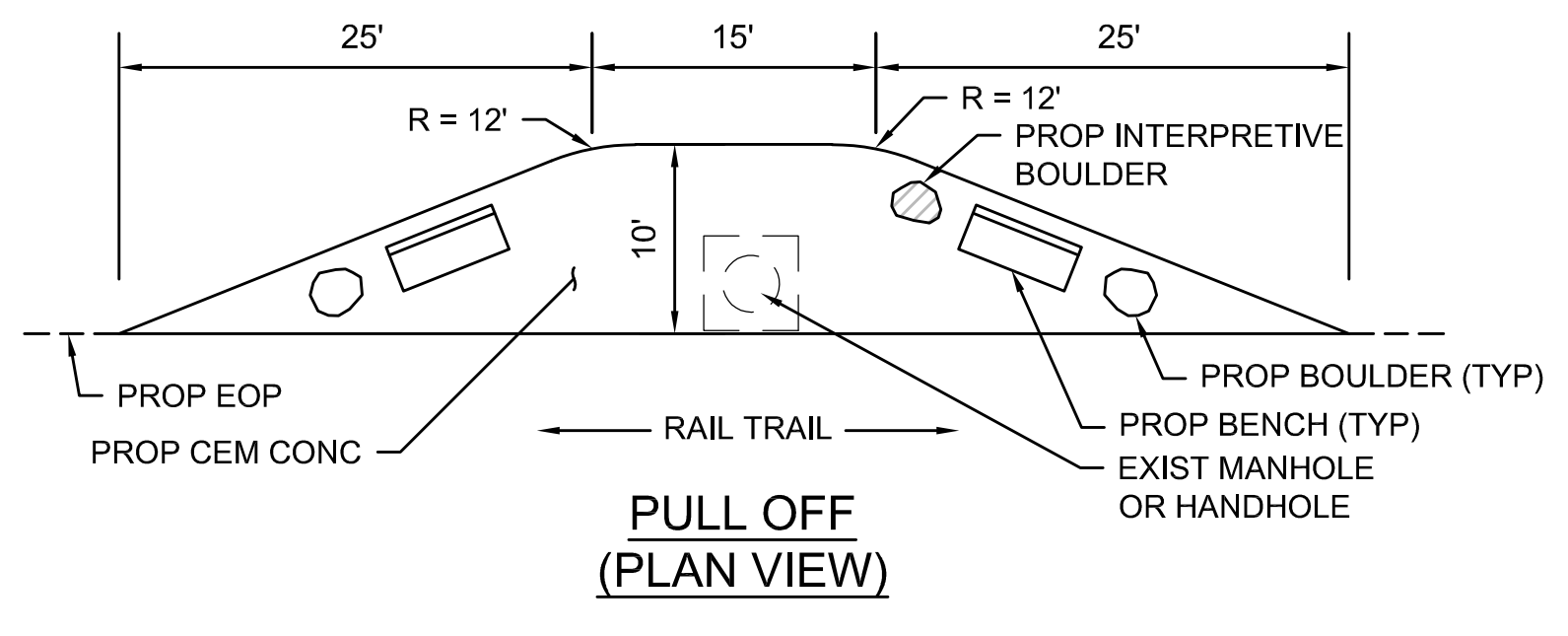
BICYCLE RACK

SCALE: N.T.S.



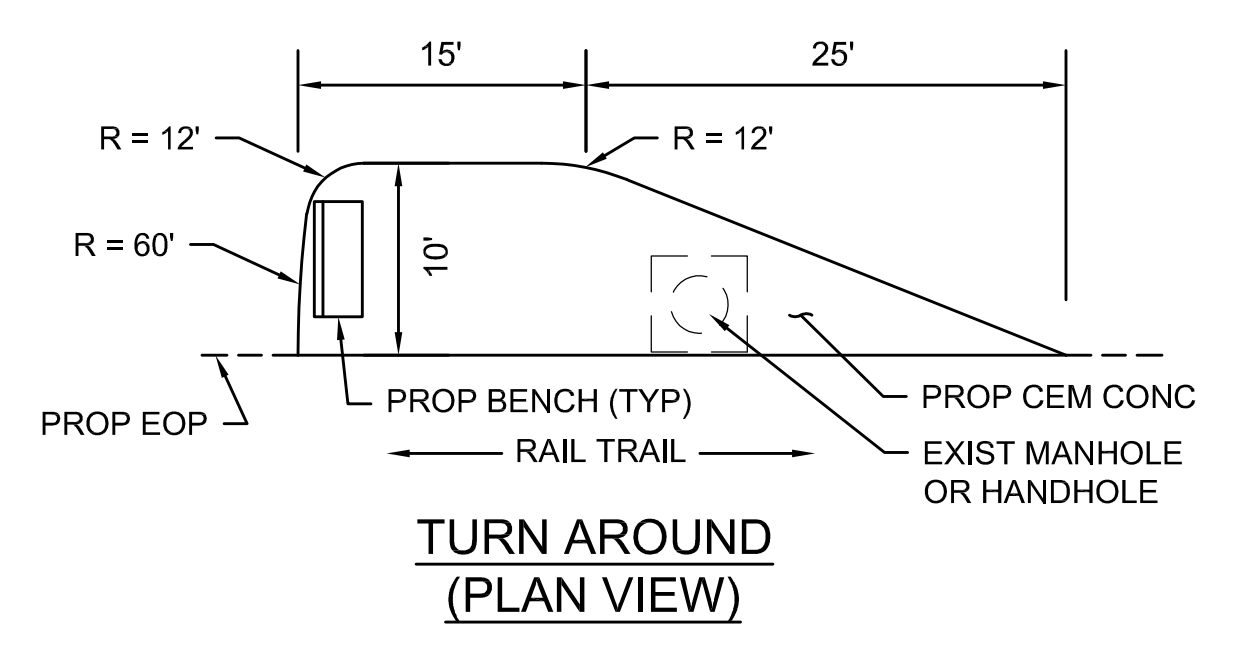
ENGRAVED BOULDER

SCALE: N.T.S.



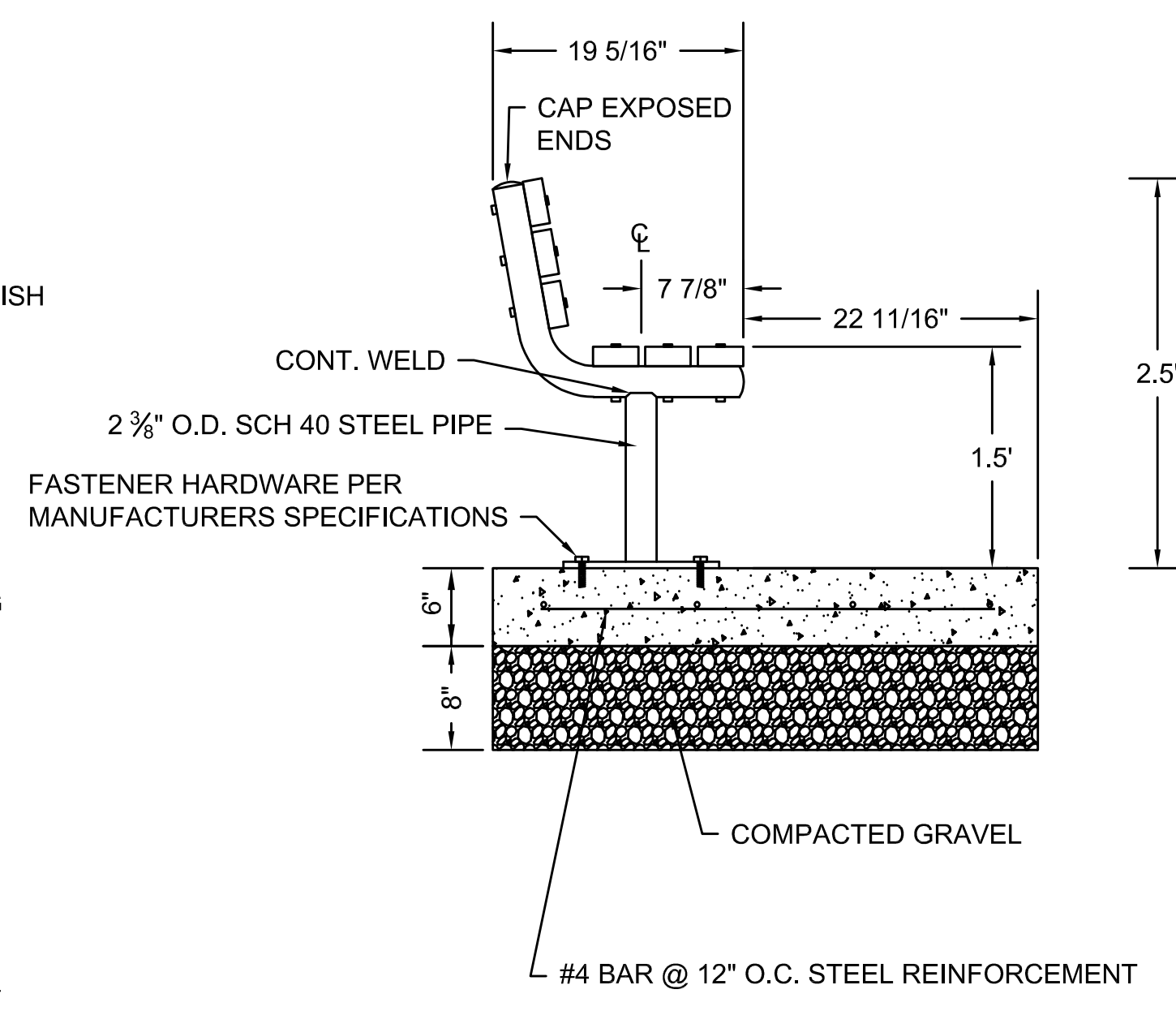
CEMENT CONCRETE PULL OFF

SCALE: N.T.S.



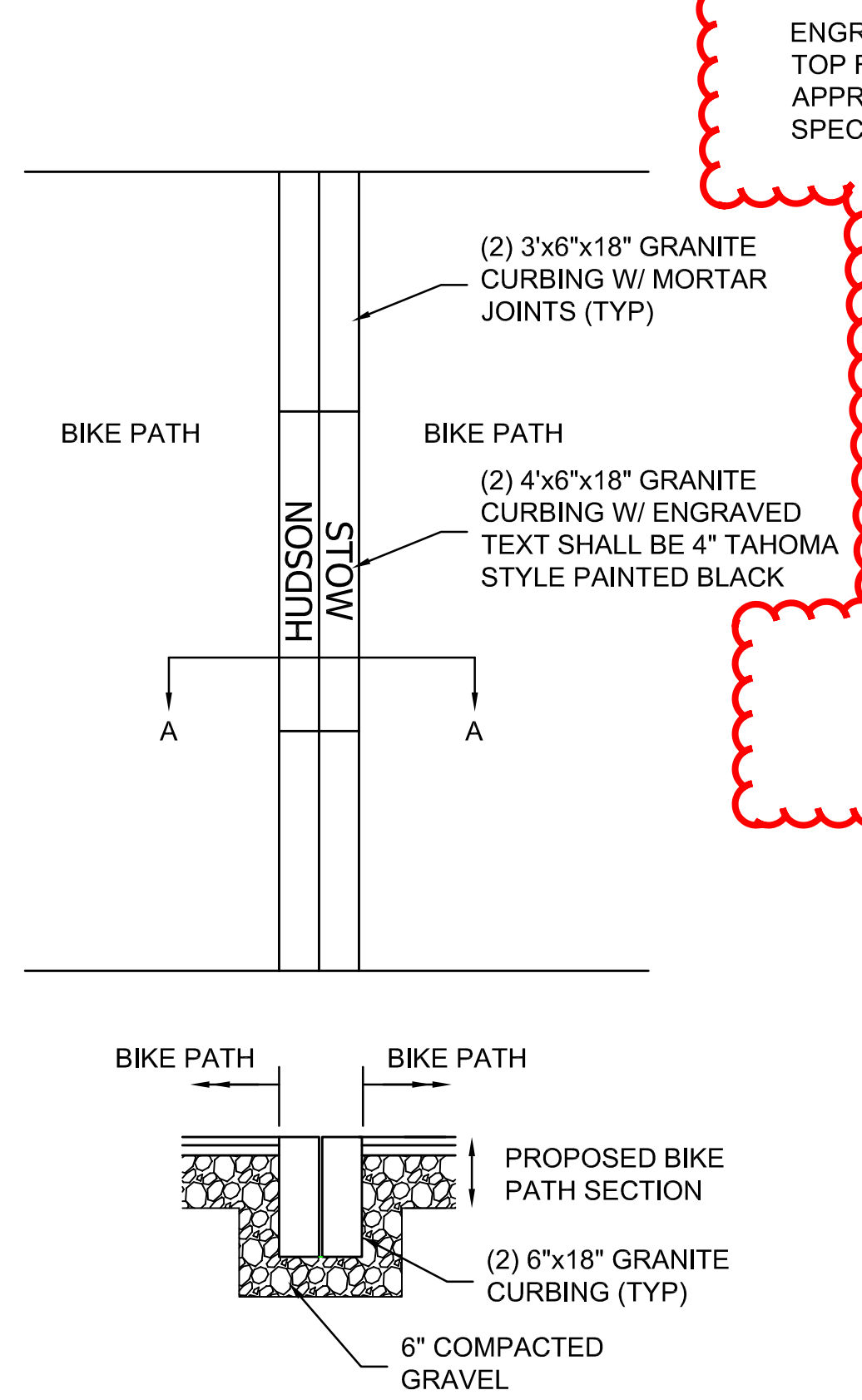
CEMENT CONCRETE TURN AROUND

SCALE: N.T.S.



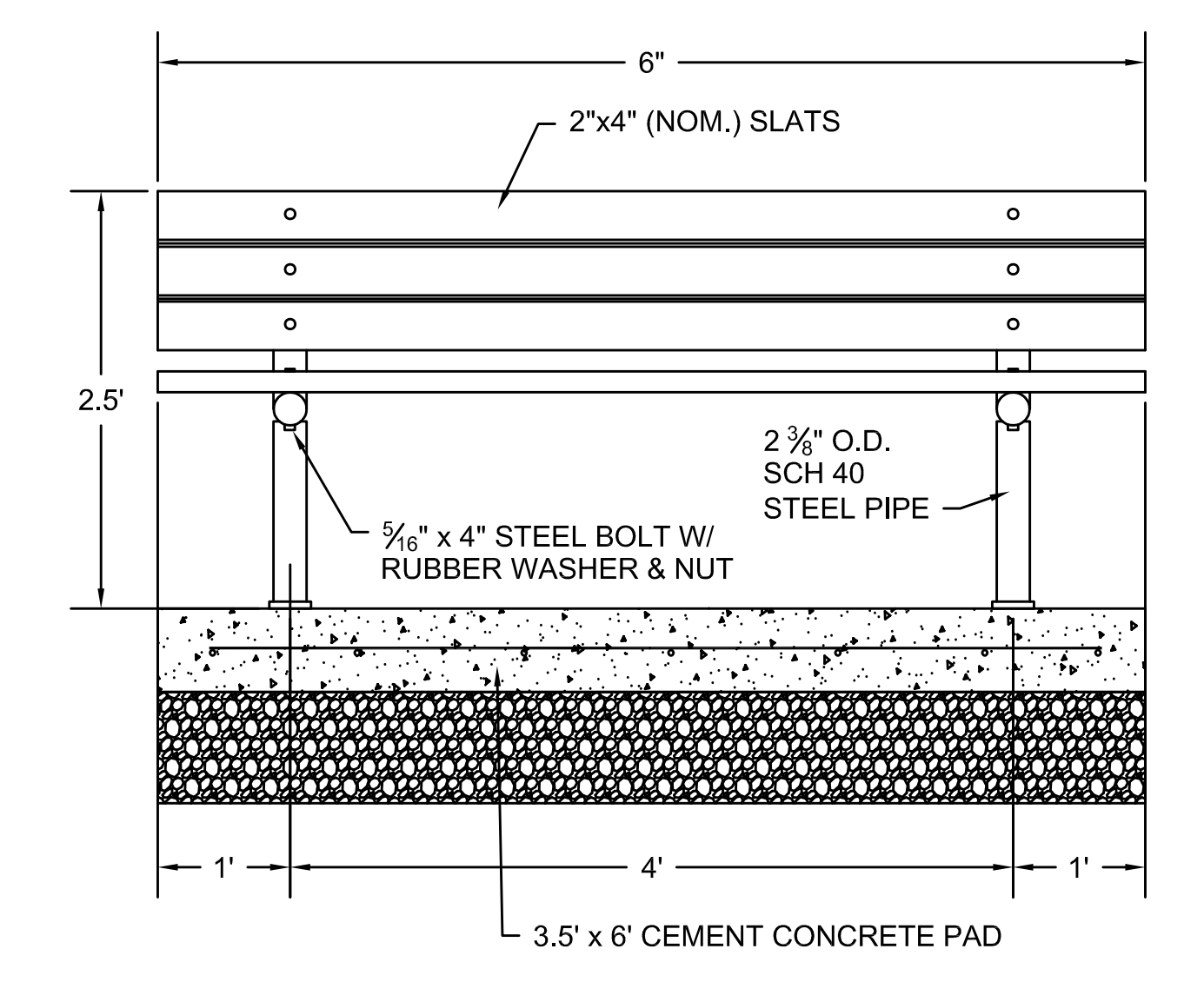
BENCH

SCALE: N.T.S.

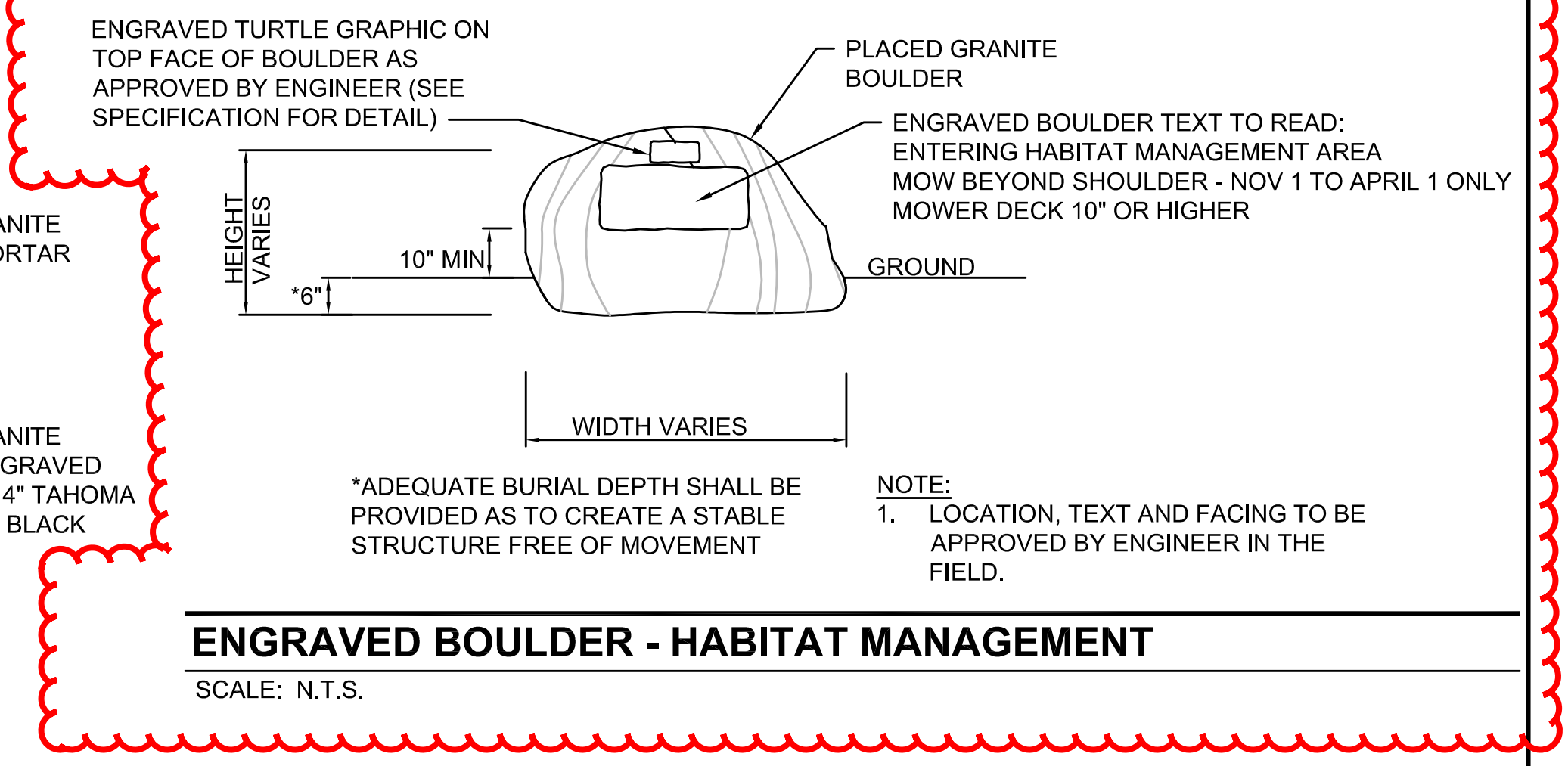


INLAID GRANITE TOWN LINE MARKER

SCALE: N.T.S.

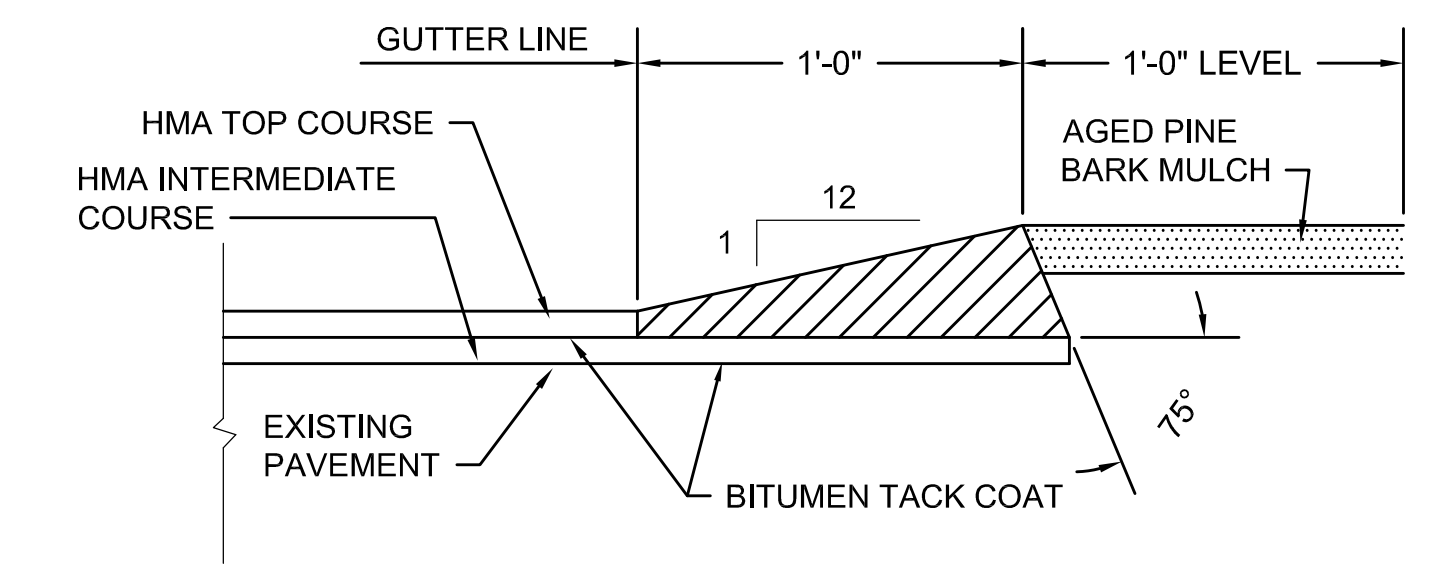


- BENCH NOTES:**
1. STEEL PIPING SHALL BE POWDER COATED BRONZE FINISH
 2. SLATS SHALL BE 2x4 (NOM.). MATERIAL AND FINISH TO BE PER SPECIAL PROVISIONS.
 3. ALL HARDWARE SHALL BE STAINLESS STEEL UNLESS OTHERWISE NOTED.



ENGRAVED BOULDER - HABITAT MANAGEMENT

SCALE: N.T.S.



HMA BERM TYPE A-MODIFIED

SCALE: N.T.S.

REV.	DATE	DESCRIPTION	BY



COMMONWEALTH OF MASSACHUSETTS
 DEPARTMENT OF CONSERVATION AND RECREATION
 DIVISION OF PLANNING AND ENGINEERING

MASS CENTRAL RAIL TRAIL - WAYSIDE
 MASS CENTRAL RAIL TRAIL
 HUDSON, STOW, MARLBOROUGH & SUDBURY, MA

CONSTRUCTION DETAILS

DESIGNER: JCR
 CHECKED: SHK
 DRAWN: JCR
 CHECKED: TAL

CONT. P19-3295-D1A
 ACC. XXXXXXXX

SCALE: 1" = 20'-0"
 DATE: FEB 2021

SHEET NO. D-03
 3 OF 8

Attachment C

Turtle Protection Plan for Massachusetts Central Rail Trail- Wayside Section and Sudbury- Hudson Transmission Reliability Project - Phase 2

Turtle Protection Plan
MassCentral Rail Trail – Wayside Section

NHESP File No. 15-34327

August 30, 2021

Project Overview/Background

The Massachusetts Department of Conservation and Recreation (“DCR”) and NSTAR Electric Company d/b/a Eversource Energy (“Eversource”) will be constructing a portion of the Massachusetts Central Rail Trail (“MCRT”) and installing an underground electric transmission line within an inactive Massachusetts Bay Transportation Authority (“MBTA”) railroad right-of-way (“ROW”) within the limits of the towns of Sudbury, Marlborough, Stow, and Hudson, Massachusetts. As proposed, the MCRT and the underground electric transmission line, referred to as “the Sudbury-Hudson Transmission Reliability Project” is a joint project (the “Project”) to be constructed in a two-phased approach.

Phase 1 of the Project will be under the control and responsibility of Eversource and will include vegetation removal, all major earthwork, bridge reconstruction, installing the underground electric transmission line, upgrading the existing Sudbury substation, installing stormwater management features, creating a 14-foot-wide gravel access road, and revegetate disturbed areas. The 14-foot-wide gravel access road will be created by Eversource as the base for the MCRT Rail Trail to be constructed in Phase 2 by DCR. Phase 2 of the Project will be under the control of DCR and will include grading of the 14-foot-wide gravel access road, as needed, paving a 10-foot-wide bike path surface within the gravel access road, placing loam and seeding the 2-foot shoulders on either side of the trail, installing benches and bike racks, crossing facilities at road crossings, planting shrubs, installing bike railings adding pavement markings and signage and final restoration.

Both phases of this Project are associated with NHESP File No. 15-34327, however, each phase of the Project was issued a separate No Take Determination letter from the Natural Heritage & Endangered Species Program (“NHESP”) of the Massachusetts Division of Fisheries & Wildlife (the “Division”). Eversource received a No Take Determination letter for the Sudbury-Hudson Transmission Reliability Project on October 19, 2018. DCR received a No Take Determination letter for the MCRT on May 17, 2019.

Condition 1 of the No Take Determination letter for the Sudbury-Hudson Transmission Reliability Project identified that the Eastern Box Turtle Protection Plan (“TPP”), dated 5/31/2018 must be implemented as proposed. The 2018 TPP was developed to protect both Eastern Box Turtle (EBT: *Terrapene Carolina*) and Wood Turtle (WT: *Glyptemys insculpta*) and was based upon field data collected through 2018. This updated Plan addresses Condition 3 of the No Take Determination Letter requiring submission of a final version of the Eastern Box Turtle Protection Plan for review and approval.

Since the approval of the 2018 TPP, Eversource has continued to collect field data related to the presence and movement of EBT and WT. Eversource and DCR have developed specific contractor training and responsibilities throughout the permitting of the Project. DCR is submitting this updated TPP to NHESP for their review and approval for the Phase 2 portion of the Project. This updated TPP contains all the same

elements approved in the 2018 TPP, but, is updated based on the most current field data and expectations for Contractor Training and environmental monitor oversight during the construction of Phase 2 of the Project.

EBT and WT are listed and protected by the NHESP as “Species of Special Concern”. Both EBT and WT are known to occur in Priority Habitat 1040 / Estimated Habitat 1440 (PH 1040 / EH 1440) in Hudson, Marlborough, and Sudbury generally located between Dutton Road in Sudbury and White Pond Road in Hudson. Since 2017 and up to the present, an ongoing field survey by Eversource for EBT and WT has been completed on the MBTA corridor in Sudbury, Marlborough and Hudson and lands adjacent to it within the mapped Priority Habitat. As part of this survey, a number of EBT and one WT have been captured and fitted with radio transmitters by Eversource. Using radio telemetry techniques, the movements of these animals have been closely followed during their active periods. Based on the observations made during this survey, it is now known that there are turtle movements beyond the mapped Priority Habitat. **Based on survey efforts, the TPP applies to areas along and within the construction corridor between Dutton Road in Sudbury, west to Parmenter Road in Hudson.**

The TPP consists of rigorous measures that will be taken to protect turtles from unintentional injury or death during the construction of DCR’s portion of the Project (Phase 2). The TPP also describes measures that are intended to protect their nests and overwintering locations.

Following construction, rare turtle protective measures will be implemented by Eversource as part of their yearly Operation and Maintenance Plan (OMP) for maintenance and operational work on electric transmission line rights-of-way (ROW). Similarly, DCR will follow their trail Guidelines and Best Management Practices Manual.

The TPP consists of several important components that will work effectively to protect EBT, WT, and other turtle species that may be encountered during construction both within Priority Habitat and elsewhere on the project corridor.

It is the intent that this TPP not be a static document. As construction and on-going turtle survey efforts proceed beyond the construction corridor, changes may be made to the TPP. These changes will be made should new information regarding turtle movements and / or behavior indicate necessary changes to protect turtles during construction activities.

Protective measures that DCR will follow during construction are as follows:

Pre-Construction

Contractor Education and Awareness Program

Prior to construction, Project construction plans have been developed clearly identifying the locations of sensitive rare turtle habitats. These plans will clearly and concisely identify rare turtle work restrictions and requirements that will be implemented while working within rare turtle habitat.

Prior to construction, all workers who will be working on the Project will be required to attend a rare turtle training session. The session will be conducted by a qualified biologist knowledgeable with EBT and WT biology and behavior. The session will include discussions on rare turtle identification, biology, habitat preferences, natural history, and mandatory work requirements and practices within designated rare turtle habitats. The session will make use of a PowerPoint presentation and handout materials that workers can refer to while working on the Project Site. All attendees of the training session will be required

to sign an attendance sheet. **Workers not trained will not be allowed on the Project ROW in areas identified as turtle habitat in this TPP (i.e., from Dutton Road to Parmenter Road).** Additional training sessions will be given as new contractors or crews are added to the workforce. Refresher training sessions will be given on as need basis should non-compliance activities occur on the Project site.

Environmental Inspectors

Qualified Environmental Inspectors (EI) will be assigned to the section of the construction corridor where the TPP applies, should be familiar with the biology and behavior of rare turtles and the measures that are necessary to protect them during construction. The EI(s) shall also be required to either obtain a Scientific Collection or be listed as a sub-permittees on such a permit obtained for the Project by a qualified individual.

During Construction

Construction Inspections and Treatment of Animals

Prior to daily work activities within rare turtle habitat between April 1 and October 31, a qualified EI or trained staff will visibly search (sweep) access roads, work areas in the construction corridor and occasionally in areas adjacent to the construction corridor on the MBTA corridor for rare turtles.

Turtles observed within Limits of Work will be photographed, and the location, direction of travel and any designating numbers or notches on the carapace will be recorded. The individual will then be relocated greater than 500 horizontal feet from their capture points. Attempts will be made to relocate turtles in their perceived direction of travel, avoiding areas of private/no-access properties. In some circumstances it may be necessary to temporarily detain captured turtles and relocate them at the end of the workday. **Should any rare turtle be located within the construction corridor or the MBTA ROW, proper handling, care, and relocation must follow the “Rare Turtle Capture and Handling Protocol” provided in Attachment A.**

While work is occurring, the area surrounding the work area will also be inspected periodically to ensure that any turtle(s) that may wander into the area will be located and properly moved from harm. If a contractor employee locates a rare turtle in the absence of an EI, he or she will be required to notify the EI as soon as possible for directions on how to proceed.

Rare turtle sweeps and construction oversight for rare turtles will not be required during the dormant season, between November 1 and March 31, when turtles are presumed to be hibernating in locations away from the work area (see circumstances described below in “Protection of Turtle Hibernacula” for exceptions to this). However, other wildlife time of year restrictions may apply.

Protection of Turtle Hibernacula

Based on the current data for known hibernacula conducted by Eversource, since 2017 no tracked rare turtle has hibernated within 100 feet of the Project Site. If, based on ongoing Phase 1 studies, a hibernaculum is identified within 50 feet of the Project Limit of Work for any Project related activities NHESP will be contacted to schedule a site visit. During the site visit, potential risks to the hibernaculum and turtle will be determined and if necessary protective measures to be followed during construction will be established. If a hibernaculum is located between 30 and 50 feet of the Limits of Work and Project activities are allowed to continue following NHESP site walk. Special attention needs to be paid to hibernacula relatively close to the construction Limit of Work during the month of March. If a

hibernaculum is located closer than 30 feet from the Construction Limit of Work during the overwintering period, construction activity may be limited to only of driving equipment along the construction corridor. If this situation occurs, special attention must be paid to monitoring possible turtle movements from their hibernaculum. If a turtle is found overwintering within 30 feet of the Construction Limits of Work, under limited and rare circumstances, it may be relocated from its hibernaculum but only with direct input from NHESP.

Protection of Turtle Nests

Rare turtles typically nest within well-drained, open areas during evening hours typically between May 25 and July 5. Turtle nests incubate through the summer and hatchlings typically emerge and migrate away from the nest by early October. Based on Eversource's rare turtle survey efforts completed to date, there have been no turtle nesting areas identified within the project construction corridor. If, based on the rare turtle survey conducted during Phase 1, work will occur within potential nesting habitat in June through early July, the following protection measures will be implemented.

If there appears to be a rare turtle nesting conflict during construction, the EI will be notified. Searches will be completed within the identified potential nesting habitat areas between May 25 and July 5 to locate females in search of suitable nest locations. Observed state-listed female turtles will be watched from a distance to identify nest locations. After females have completed nesting, the nest locations will be flagged for avoidance to prevent destruction of incubating eggs. Efforts will be made to pinpoint the precise nest location.

If nest avoidance is not possible during construction, nests may be excavated by the survey biologists and relocated to a suitable incubation area beyond the limits of work. The biologist will confer with NHESP prior to relocating state-listed turtle nests. Any nest enclosures left from Phase 1 construction will be removed during early September to allow hatchlings unhindered egress unless directed otherwise by NHESP.

Other Protective Measures

Erosion control barriers and soil erosion blankets containing plastic or wire mesh can ensnare turtles and other animals resulting in mortality. Therefore, erosion control and stabilization measures containing such mesh (straw wattles, mesh-backed silt fence, and open mesh blankets) is prohibited within mapped rare turtle habitat. As such, syncopated erosion control barriers and other erosion control devices that will be used within Priority Habitat areas as shown on Project plans and designed to allow for the passage certain wildlife species across the corridor, will not contain plastic or wire mesh as part of their installation. Any area containing erosion control protective measures or syncopated barriers should be inspected regularly for any turtle that may have entered the construction corridor and detained within it. Any turtle found in any such area should be relocated or handled as prescribed in the "Rare Turtle Capture and Handling Protocol" provided in Attachment A. Materials used for erosion barriers or soil erosion blankets within turtle habitat areas must be approved by the EI. Any such measure that is employed within mapped rare turtle habitat will be removed as soon as site stabilization has occurred.

EIs will coordinate with contractors in the field to effectively prevent turtles from falling into open excavated areas such as post holes or plant holes. The EI will be responsible for approving and inspecting protective measures designed to prevent turtles from falling into open excavations during non-work hours. During the rare turtle active season (April 1 through October 31), excavations will be filled in at the end of each workday. The EI will ensure no excavations are left open at the end of the workday.

Within the area covered by this TPP, signs shall be placed in strategic locations notifying contractors that the area they are entering and/or working in is subject to special requirements designed to protect wildlife. Any such sign shall meet the requirements of the NHESP.

Post Construction

Post-construction maintenance of the MCRT will primarily consist vegetation removal that interferes with the use of the trail including removal of hazard trees or branches, removal of downed trees or branches, shrub and branch trimming, litter pick up, and periodic mowing grass along the bike path shoulders and yearly mowing of grass over the Eversource duct bank. Within the Priority Habitat 1040 / Estimated Habitat 1440 (PH 1040 / EH 1440) in Hudson, Marlborough, and Sudbury periodic mowing will be conducted in accordance with the Long-Term Pollution Prevention Plan and Operations and Maintenance Plan (LTPPP-OMP) and the DCR Trails Guidelines and Best Practices Manual. During the active turtle season (between April 1 and October 31), the shoulders of the bike path or the Eversource duct bank will be swept by qualified staff to locate any EBT or WT prior to any mowing. In addition, the mower for any areas beyond the 2-foot wide bike path shoulders (Eversource duct bank) will be set at least 10 inches above the ground. A boulder marked by etching with a note and the appropriate mowing height is located at either end of the priority habitat polygon.

Alteration of Turtle Protection Plan Elements

The TPP detailed above is designed to avoid direct mortality to any turtles that are known to use the work area or by chance are found during construction activities. Because work plans may change or weather conditions may necessitate changes in schedules, the TPP offers a certain amount of flexibility to accommodate any such schedule or program change. It is the intention of the TPP to respond to any such change to assure that resident turtles in the planned work area will not be directly harmed by construction equipment or activities. If it is necessary to modify the protective approaches detailed herein, NHESP Staff will be consulted in the development of a modified protective approach.

Data Recording and Reporting

All rare turtle observations will be reported online using the NHESP's Heritage Hub reporting portal. That report will include a summary of turtle observation made by the EI for completeness of annual rare turtle observations as part of the overall survey.

Attachment A
Rare Turtle Handling Procedures

Rare turtle Capture and Handling Protocol

Purpose

Eastern Box Turtle (EBT) (*Terrapene carolina*) and the Wood Turtle (WT) (*Glyptemys insculpta*) are state listed in Massachusetts as Species Special Concern. As such, they are protected against direct harm to the individual and protected against destruction or disturbance of their habitats. The purpose of this document is to provide construction personnel with important information that will help reduce the potential for direct harm to individual turtles should they be encountered during construction activities. This document includes information about general habitat use, proper turtle handling procedures, relocation information, contact information of qualified Environmental Inspectors (EI) / Biologists, and representative photographs of both species to assist in proper identification.

General Overview of Eastern Box Turtle Habitat Use

EBTs in the northeast use a variety of habitats over the course of the year based on seasonal availability of food items, life cycle requirements (e.g., nesting and hibernating) and body temperature regulation. A generalized breakdown of this seasonal habitat use is provided below to give contractors an idea of where chance encounters are most likely given the time of year.

- *April through June.* EBTs are typically observed in open fields, early successional scrub-shrub/sapling areas and forest-field edges but may be observed in forested habitats as well. In June, female box turtle may be in open sandy areas with sparse vegetation for nesting.
- *July through September.* EBTs are typically observed in forested uplands and forested wetlands but will sometimes use forest-field edges or dense shrubby areas.
- *October through March.* EBTs use forested habitats almost exclusively but are difficult or impossible to find because they are buried under root/duff layer of the forest floor.

General Overview of Wood Turtle Habitat Use

WT preferred habitat is riparian areas that include slow moving mid-sized streams with sandy bottoms and densely vegetated banks. When not located in riparian habitats they can be found in forests, early successional fields and/or hayfields sometimes great distances from streams.

- *April through June.* WT are found either within slow moving stream or within several hundred meters of them in dense vegetation. They are sometimes found basking in sunlight on stream banks or in areas nearby. In June, female WT may be in open sandy areas with sparse vegetation for nesting.
- *June through early to mid-September.* WT move from riparian habitats into forests, early successional fields and/or hayfields to feed.
- *Mid-September to March.* WT move back into streams or stream banks where they will overwinter.

Methods

Below is a step-by-step process that shall be followed in the event of a rare turtle observation.

- 1) If an EBT or WT is observed, first determine if the individual is within harm's way. If the individual is observed outside of the exclusion zones (i.e., outside of the work area), then it should not be

handled to minimize disturbance and prevent altering their behavior. Report the observation to the EI as soon as possible. If the EI is not immediately available report the observation to a Biologist.

- 2) When an EBT or WT is determined to be within harm’s way, it should be captured and temporarily detained until the designated EI, or Biologist has been notified and can arrive onsite to perform standard data collection and turtle relocation. Contact the EI or as soon as possible. If the EI is not immediately available report the observation to a Biologist.
- 3) To properly detain a turtle, place the turtle into a plastic tub. Turtles can easily die from overheating. Therefore, this tub **MUST** be placed in a cool shaded area out of direct sunlight, indoors or out. Outdoor shaded areas must be persistent, that is, make sure that the tub is not in an area that will **BECOME** sunny later in the day. In addition, fresh vegetation (e.g., leaves, tall grass cuttings) and water **SHALL** be placed into the tub for cover and hydration.
- 4) When handling an EBT or WT grasp it firmly by the sides of the carapace (top shell). These turtles are typically very shy and will usually retract their head and legs into the shell. If the turtle does not retreat into its shell, be cautious of the turtle’s head, mouth, and feet. Although these turtles typically do not bite, they are certainly capable of doing so. In addition, they have very sharp claws and powerful legs for digging, which can scratch the skin.
- 5) As soon as possible and no greater than one (1) hour of either observing or capturing an EBT or WT, contact the EI for direction. If the EI is not present, contact one of the qualified biologists listed below. Turtles shall not be detained for more than four hours at any time.
- 6) If an injured EBT or WT is seen or captured, contact the EI or a Biologist as soon as possible. If it is possible to detain the injured turtle, detain it as described in item 3 above.

Contact Information for Environmental Inspectors

Name:	TBI	Name:	TBI
Cell No:	TBI	Cell No:	TBI
Email:	TBI	Email:	TBI

Contact Information for Qualified Biologists

Name:	TBI	Name:	TBI
Cell No:	TBI	Cell No:	TBI
Email:	TBI	Email:	TBI

Eastern Box Turtle Photographs



Plastron of female



Plastron of male



Variation in turtle carapace patterns



Turtle under old hay bale



Partially buried turtle in forested area



2-year old juvenile

Wood Turtle Photographs



Wood Turtle Plastron (bottom shell)



Wood Turtle Carapace (top shell)



Wood Turtle Front View (note bright orange limbs)

Attachment D

Seeding Specification

Seeding Specification

Part 1 – General

1.01 General

- A. The work under this item shall conform to the relevant provisions of Section 765 of the Standard Specifications and the following:
- 1) The work shall consist of seeding areas designated for loam and seeding, as shown on the plans. The work shall also include seeding previously cleared and grubbed areas as directed by the Engineer.
 - 2) Seeding shall be done within 7 days of placement of loam and final grading.
 - 3) Seeding seasons shall be April 1 through May 15 and October 1 through December 1 for dormant seeding.

Part 2 – Products

2.01 Materials

Seed Samples and Submittals

- A. Certificate of Materials. 90 days prior to ordering, the Contractor shall submit to the Engineer the manufacturer or supplier's notarized Certificate of Materials. This document shall not be used as proof of purchase, proof of material delivered, or proof of material seeded, but simply to verify supplier availability of seed listed on the date certified. The species listed shall match those specified on the plans or herein, however, cultivars may vary due to availability. Substantial substitutions or changes in the mix from that specified on the plans or herein shall be approved by the Engineer.
- B. Seed Tag Certification. All seed lots have a seed analysis tag as required by State and Federal law. The contractor shall submit seed tags for each bag of seed used on the project site or ensure that each tag is photo documented by the Engineer. Number of tags shall match number of bags sent by the supplier to meet rate of Pure Live Seed specified on the plans. Tag must include: kind and variety of seed; lot number; origin of seed; net weight; % purity; germination; dormant seed; germination test date; inert matter; weed, noxious and other crop seed; and name and address of company responsible for the analysis. Seeding may be considered unacceptable for payment if no tags are submitted.
- C. Certificate of Compliance. Contractor shall submit a bill of lading or a signed, dated and notarized Certificate of Compliance from the Supplier that serves as proof of purchase. This document shall include kind and variety of seed, lot number, net weight shipped, date of sale, invoice number under which seed was purchased, and name and address of Supplier or Manufacturer. All information must be included on the notarized form, including lot number and net weight shipped for specified job. This information shall match Seed Tag Certification

and quantity of seed applied on the job. Seeding may be considered unacceptable for payment if information is incomplete.

D. Seed Sample. Contractor may be asked, prior to seeding, to submit a seed sample for testing.

1. Quantities specified are Pure Live Seed (PLS). Greater quantities of ordered seed may be required to achieve actual specified seeding rates. Pure Live Seed is defined as the fraction of pure seed species within the mix that, by standard seed testing practices, will germinate. This is determined by multiplying the percent of seed purity by the percent of seed germination.
2. Seed mix shall be a custom blend as shown on the plans or shall be as specified below. Seed cultivars shall be those that are as regional to New England or the local ecotype as possible.
3. Any species substitutions shall be with a species having similar characteristics and native to New England. Substantial changes in the mix shall be approved by the Engineer.
4. The following herbaceous and shrub seed mixes shall be mixed together and used in all areas designated for loam and seeding for which an alternative seed mix is not specified.

HERBACEOUS SEED MIX		
BOTANICAL NAME	COMMON NAME	PERCENTAGE
<i>Elymus virginicus</i>	Virginia Wild Rye	25%
<i>Elymus canadensis</i>	Canada Wild Rye	25%
<i>Schizachyrium scoparium</i>	Little Bluestem	25%
<i>Dichanthelium clandestinum</i>	Deer-Tongue Grass	8%
<i>Agrostis perennans</i>	Upland Bentgrass	8%
<i>Carex vulpinoidea</i>	Fox Sedge	2%
<i>Juncus tenuis</i>	Path Rush	2%
<i>Juncus effusus</i>	Soft Rush	0.1%
<i>Penstemon digitalis</i>	Beard-Tongue	2%
<i>Symphotrichum novae-angliae</i>	New England Aster	1%
<i>Solidago caesia</i>	Woodland Goldenrod	0.5%
<i>Symphotrichum cordifolium</i>	Blue Wood Aster	0.5%
<i>Eutrochium maculatum</i>	Joe-Pye Weed	0.3%
<i>Geum canadense</i>	White Avens	0.3%
<i>Oligoneuron rigidum</i>	Rigid Goldenrod	0.3%
	Total:	100%

Herbaceous seeding shall be applied at a rate recommended by the supplier.

SHRUB SEED MIX		
BOTANICAL NAME	COMMON NAME	PERCENTAGE
<i>Cornus alternifolia</i>	Alternate-Leaved Dogwood	33%
<i>Viburnum dentatum</i>	Arrowwood	33%
<i>Viburnum Lentago</i>	Nannyberry	33%
	Total:	100%

The above shrub seeding rate is 2 lbs per acre, per species. Total seed mix application rate therefore is 6 lbs per acre and shall be added to the appropriate per acre quantity of herbaceous seed mix before applying.

BOTANICAL NAME	COMMON NAME	PERCENTAGE
<i>Corylus Americana</i>	Hazelnut	100%

Hazelnut seed is too large to apply with the same equipment with other seed mixes. This seed must be applied separately at a rate of 2 lbs. per acre in all areas designated for loam and seeding for which an alternative seed mix is not specified.

Part 3 – Execution

3.01 Methods of Construction

- A. Surface Preparation. Soil preparation and seeding shall occur only when the bed is in a friable condition, not muddy or hard. Bare soils shall be raked to remove large stiff clods, lumps, brush, roots, stumps, litter and other foreign matter. All ruts and any depressions caused by settlement, erosion or rolling shall be filled with additional loam or compost and the soil shall be re-graded to a smooth and even finish corresponding to the required grades.
- B. Unless seeding over newly placed planting soil, prior to seeding and prior to compost topdressing, soil will be prepared by raking or tracking to a depth of 2 inches.
- C. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other. No seeding shall be done if soils are muddy or dry and compacted.
- D. Do not use wet seed or seed that is moldy or otherwise damaged.

- E. The herbaceous and shrub seed mixes shall be applied at application rates recommended by the suppliers.
- F. Do not seed against existing trees. Limit extent of seed to outside edge of planting saucer.
- G. Lightly rake or roll to ensure proper soil-seed contact. Best results are obtained with a Spring or late Summer seeding. Late Spring through Mid-Summer seeding will benefit from a light mulching of weed-free straw to conserve moisture. Take particular care to cover or bury the hazelnut seed to prevent being eaten by squirrels and deer. If conditions are drier than usual, additional watering will be required.
- H. Lightly water all areas during the first 2 (two) weeks of establishment. Do not disturb the soil or wash out seeding. Any such disturbances shall be repaired by the Contractor at no additional cost.
- I. Fertilizer shall not be used. Preparation of a clean weed free seed bed is necessary for optimal results.
- J. Protect seeded areas with slopes exceeding a 3:1 with erosion-control fiber mesh installed and stapled according to manufacturer's written instructions.
- K. Protect seeded areas with slopes not exceeding 5:1 by spreading straw mulch. Spread uniformly at a minimum rate of 2 tons/acre to form a continuous blanket 1-1/2 inches in loose depth over seeded areas.
- L. Spread mulch by hand, blower, or other suitable equipment.
- M. Bond straw mulch by spraying with a guar tackifier or other approved plant-based tackifier, at a rate of 10 to 12 gal./1000 sq. ft. Take precautions to prevent damage or staining of structures or other plantings adjacent to mulched areas. Immediately clean damaged or stained areas.
- N. Over-seeding. If there are numerous areas of bare ground greater than 10-12 inches, these areas shall be over-seeded with the specified mix. Areas that are invaded by weeds shall be mowed as low as possible and over-seeded as directed. Soil that is compacted shall be raked or roughened prior to seeding. Following over-seeding, soil shall be lightly tamped to ensure seed to soil contact.
- O. Over-seeding application rates and methods shall be the same as those listed above. After seeding, areas shall be mulched with straw mulch or 1/4 - 1/2 inch

compost topsoil and watered with a fine mist to moisten soil to a depth of at least 2 inches.

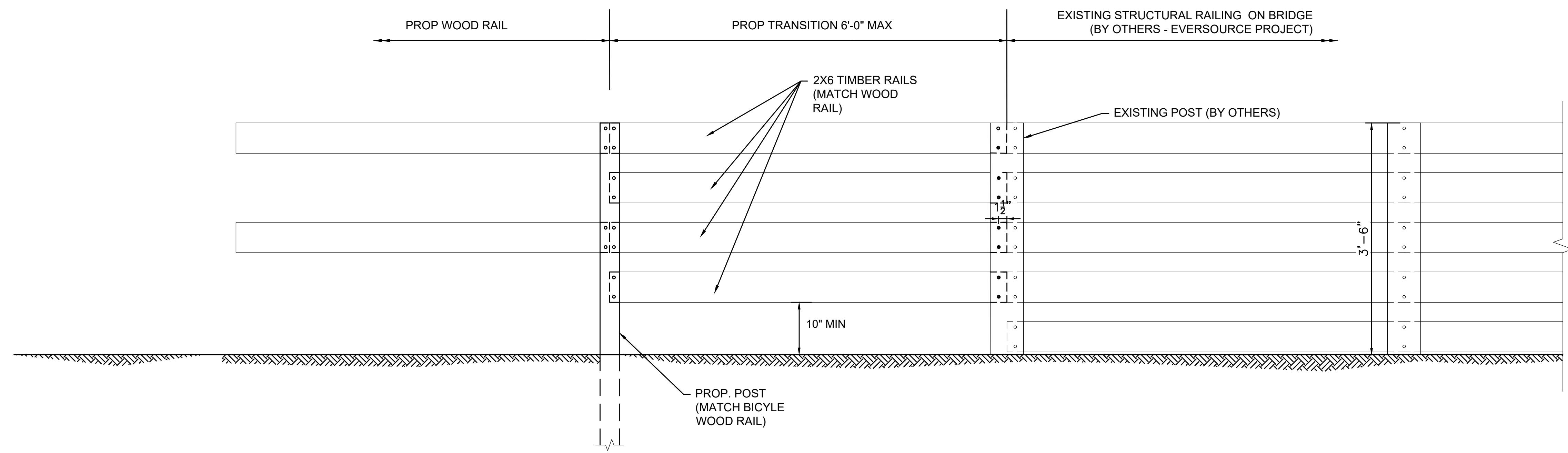
- P. Over-seeding and mulch for over-seeding shall be incidental to this item.

3.02 Care during Grass Establishment

- A. Following germination of seeded species, the contractor shall maintain the stand of grasses to ensure healthy growth. Work shall include mowing or weed-whacking for weed control, irrigation if necessary, and monitoring for invasive plants. Mowing if needed shall only be within 2 feet of the gravel pad or the 5 feet over the duct bank. All other seeded areas shall be allowed to grow without maintenance. Watering shall provide uniform coverage without eroding soil or grassed surfaces. Treatment of invasive plants shall be per the requirements of the Engineer.
- B. The Contractor shall provide all labor, equipment, materials, and water required for establishment. Contractor shall water all seeded areas as necessary to a depth of 2 inches or greater.

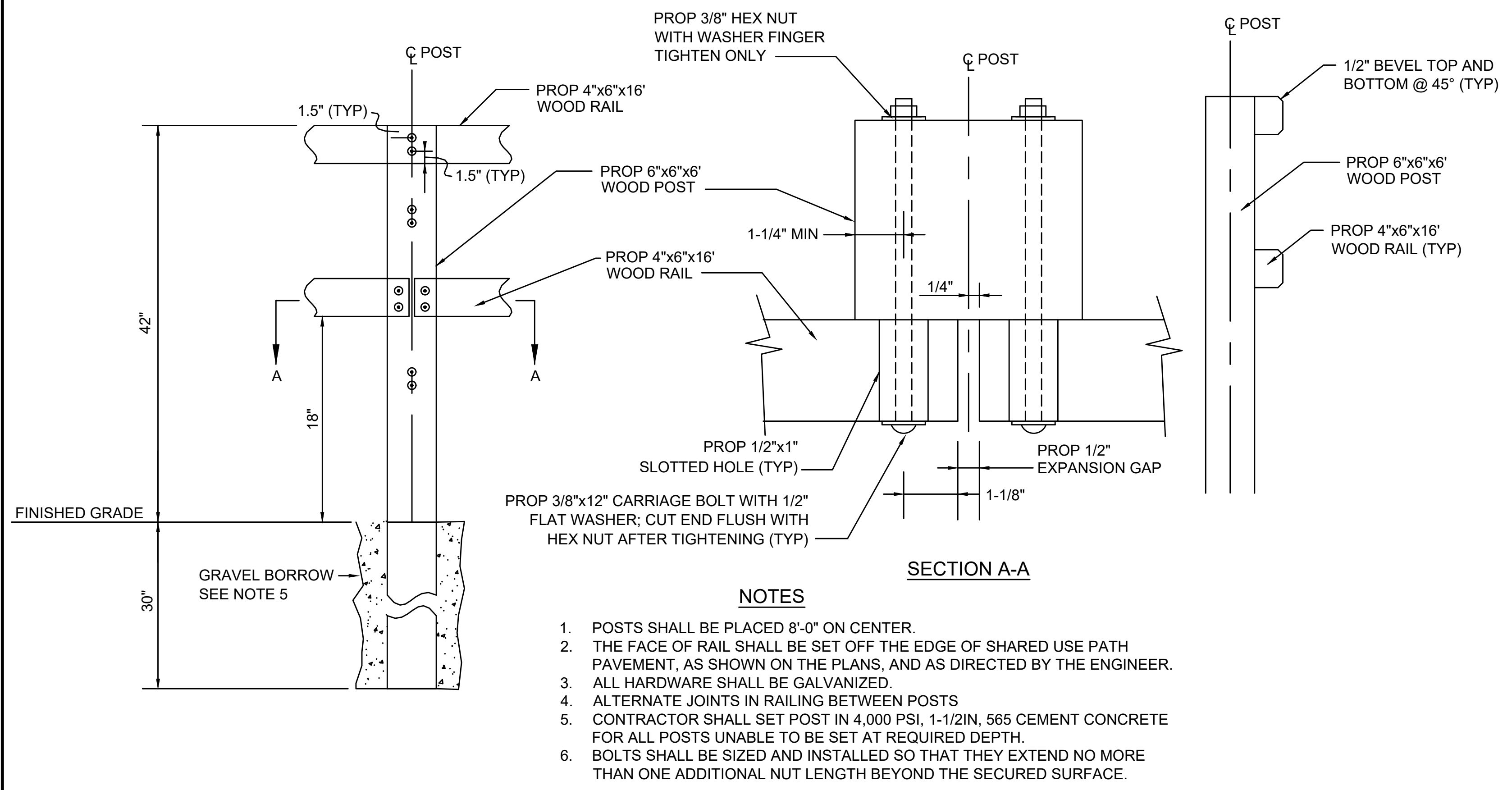
Attachment E

Railing Detail



WOOD RAIL TRANSITION DETAIL AT EXISTING STRUCTURAL RAILING

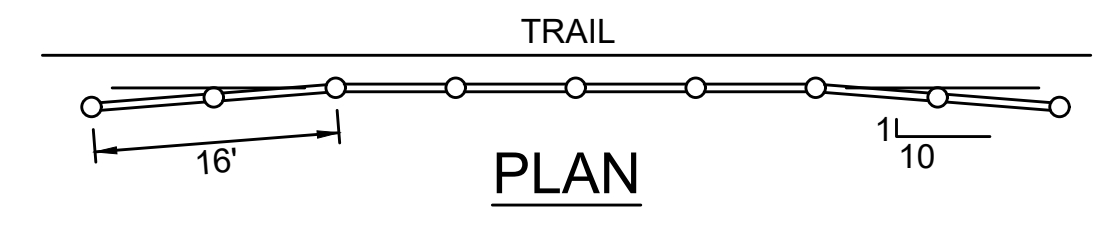
SCALE: NTS



- NOTES**
1. POSTS SHALL BE PLACED 8'-0" ON CENTER.
 2. THE FACE OF RAIL SHALL BE SET OFF THE EDGE OF SHARED USE PATH PAVEMENT, AS SHOWN ON THE PLANS, AND AS DIRECTED BY THE ENGINEER.
 3. ALL HARDWARE SHALL BE GALVANIZED.
 4. ALTERNATE JOINTS IN RAILING BETWEEN POSTS
 5. CONTRACTOR SHALL SET POST IN 4,000 PSI, 1-1/2IN, 565 CEMENT CONCRETE FOR ALL POSTS UNABLE TO BE SET AT REQUIRED DEPTH.
 6. BOLTS SHALL BE SIZED AND INSTALLED SO THAT THEY EXTEND NO MORE THAN ONE ADDITIONAL NUT LENGTH BEYOND THE SECURED SURFACE.

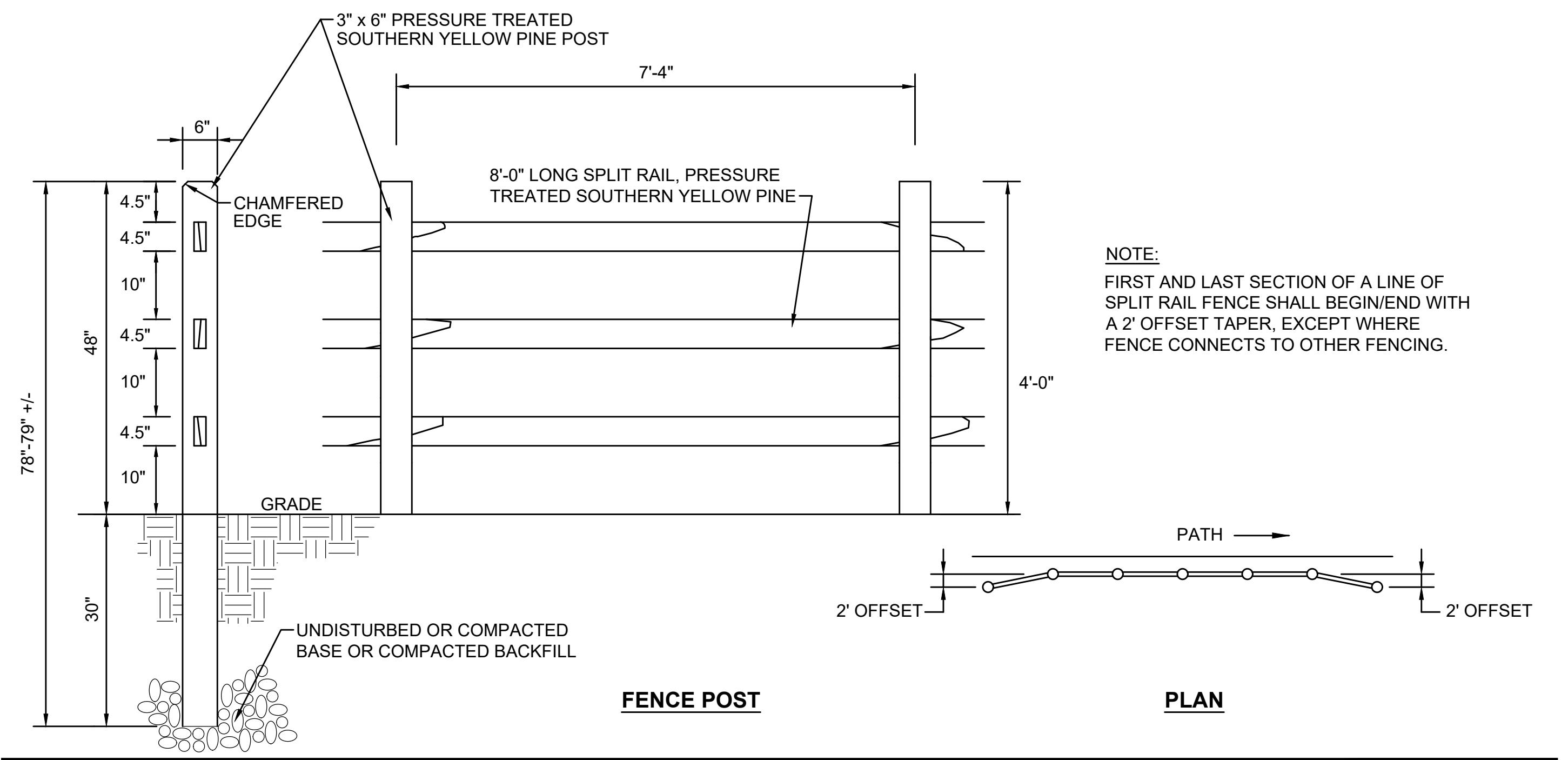
WOOD RAIL - ELEVATION AND SECTION VIEWS

SCALE: NTS



WOOD RAIL TERMINAL END - PLAN VIEW

SCALE: NTS



NOTE:
FIRST AND LAST SECTION OF A LINE OF SPLIT RAIL FENCE SHALL BEGIN/END WITH A 2' OFFSET TAPER, EXCEPT WHERE FENCE CONNECTS TO OTHER FENCING.

SPLIT RAIL WOOD FENCE

SCALE: NTS

REV.	DATE	DESCRIPTION	BY



**COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION AND RECREATION
DIVISION OF PLANNING AND ENGINEERING**

MASS CENTRAL RAIL TRAIL - WAYSIDE

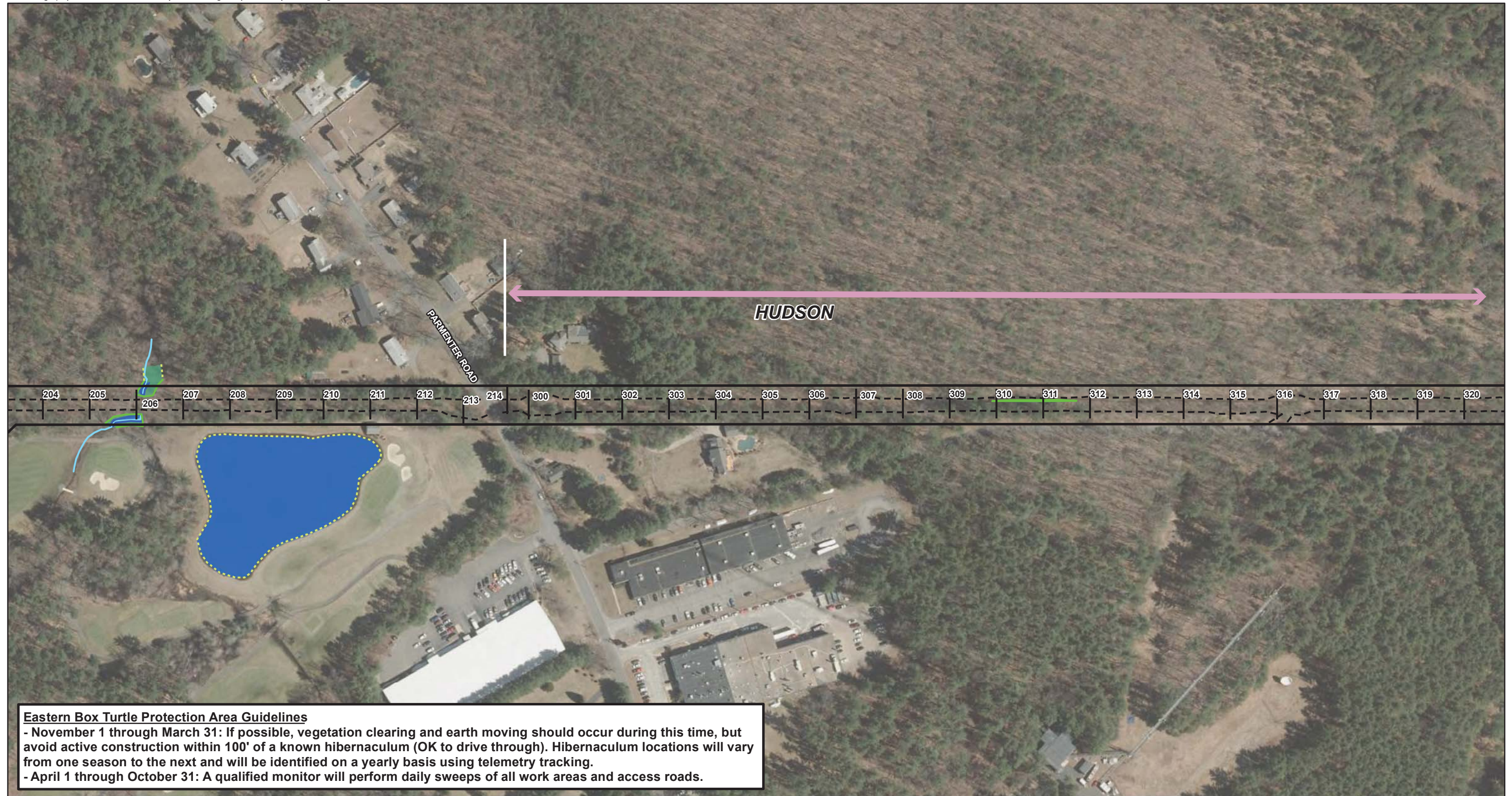
**MASS CENTRAL RAIL TRAIL
HUDSON, STOW, MARLBOROUGH & SUDBURY, MA**

DESIGNER: JCR	CONSTRUCTION DETAILS	SHEET NO. D-04
CHECKED: SHK		
DRAWN: JCR	CONT: P19-3295-D1A	SCALE: 1" = 20'-0"
CHECKED: TAL	ACC: XXXXXXXX	DATE: FEB 2021

4 OF 8

Attachment F

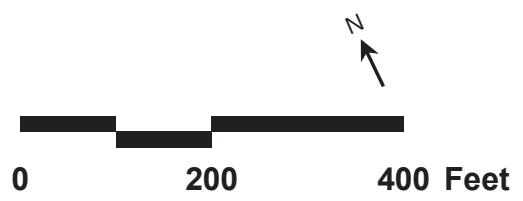
Construction Time of Year Restrictions



Eastern Box Turtle Protection Area Guidelines
 - November 1 through March 31: If possible, vegetation clearing and earth moving should occur during this time, but avoid active construction within 100' of a known hibernaculum (OK to drive through). Hibernaculum locations will vary from one season to the next and will be identified on a yearly basis using telemetry tracking.
 - April 1 through October 31: A qualified monitor will perform daily sweeps of all work areas and access roads.

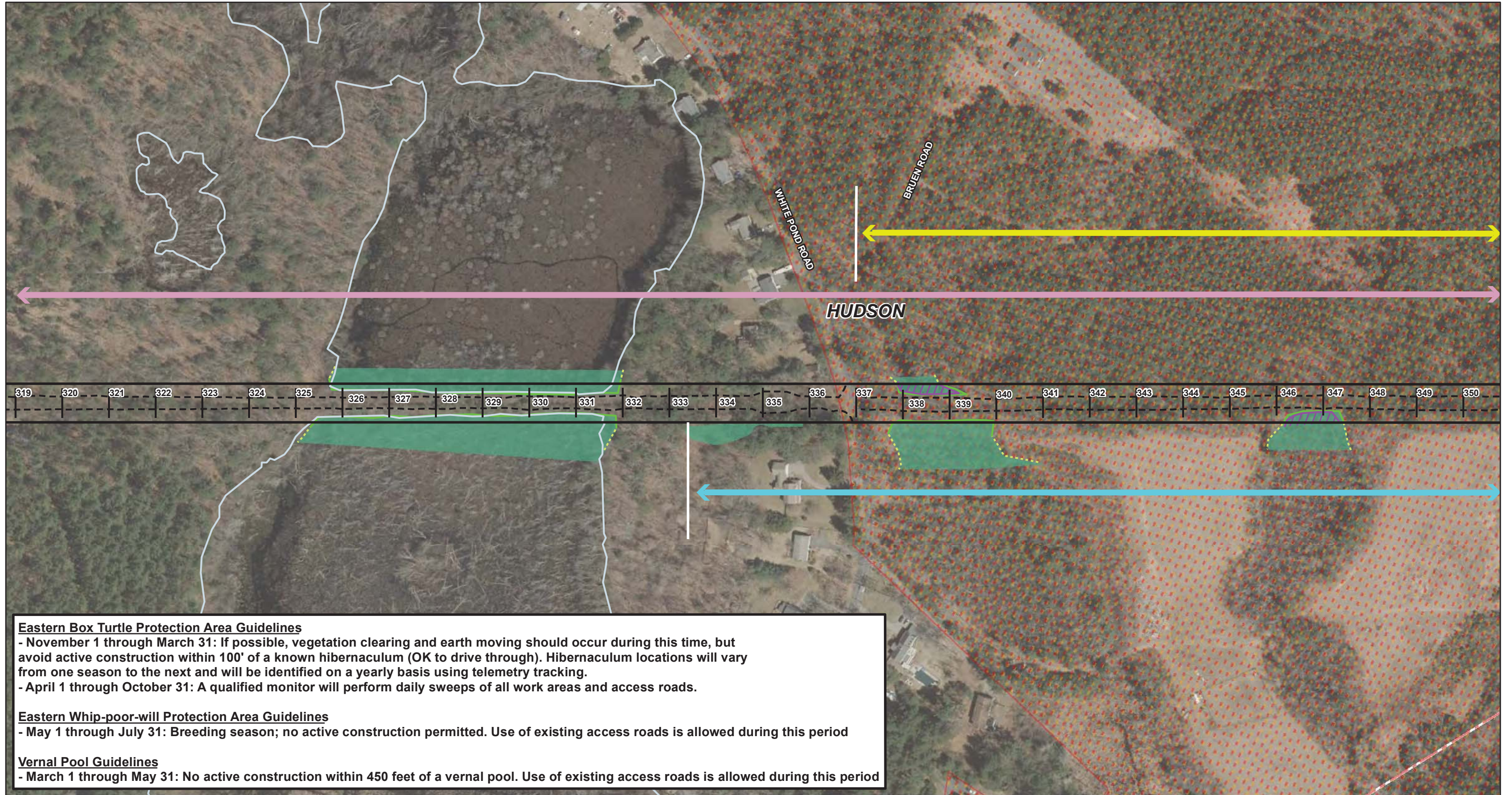
<ul style="list-style-type: none"> Stationing Locations Limit of Grading MBTA ROW Boundary Town Boundaries 	<ul style="list-style-type: none"> Approximate Wetland Edge Delineated Wetland Edge Delineated Vernal Pool Edge Delineated Top of Bank Land Under Water 	<ul style="list-style-type: none"> 10-year Floodplain Bordering Land Subject to Flooding Wetland Area Vernal Pool Area Land Under Water NHESP Priority Habitat NHESP Estimated Habitat 	<p>Time-of-Year (TOY) Restrictions</p> <ul style="list-style-type: none"> Black Racer Eastern Box Turtle Eastern Whip-Poor-Will Vernal Pool
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Source:
MassGIS, VHB
3/25/2021



EVERSOURCE ENERGY
 Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project
 Time-of-Year (TOY) Restrictions and Guidelines

Sheet 1 of 11



Eastern Box Turtle Protection Area Guidelines
 - November 1 through March 31: If possible, vegetation clearing and earth moving should occur during this time, but avoid active construction within 100' of a known hibernaculum (OK to drive through). Hibernaculum locations will vary from one season to the next and will be identified on a yearly basis using telemetry tracking.
 - April 1 through October 31: A qualified monitor will perform daily sweeps of all work areas and access roads.

Eastern Whip-poor-will Protection Area Guidelines
 - May 1 through July 31: Breeding season; no active construction permitted. Use of existing access roads is allowed during this period

Vernal Pool Guidelines
 - March 1 through May 31: No active construction within 450 feet of a vernal pool. Use of existing access roads is allowed during this period

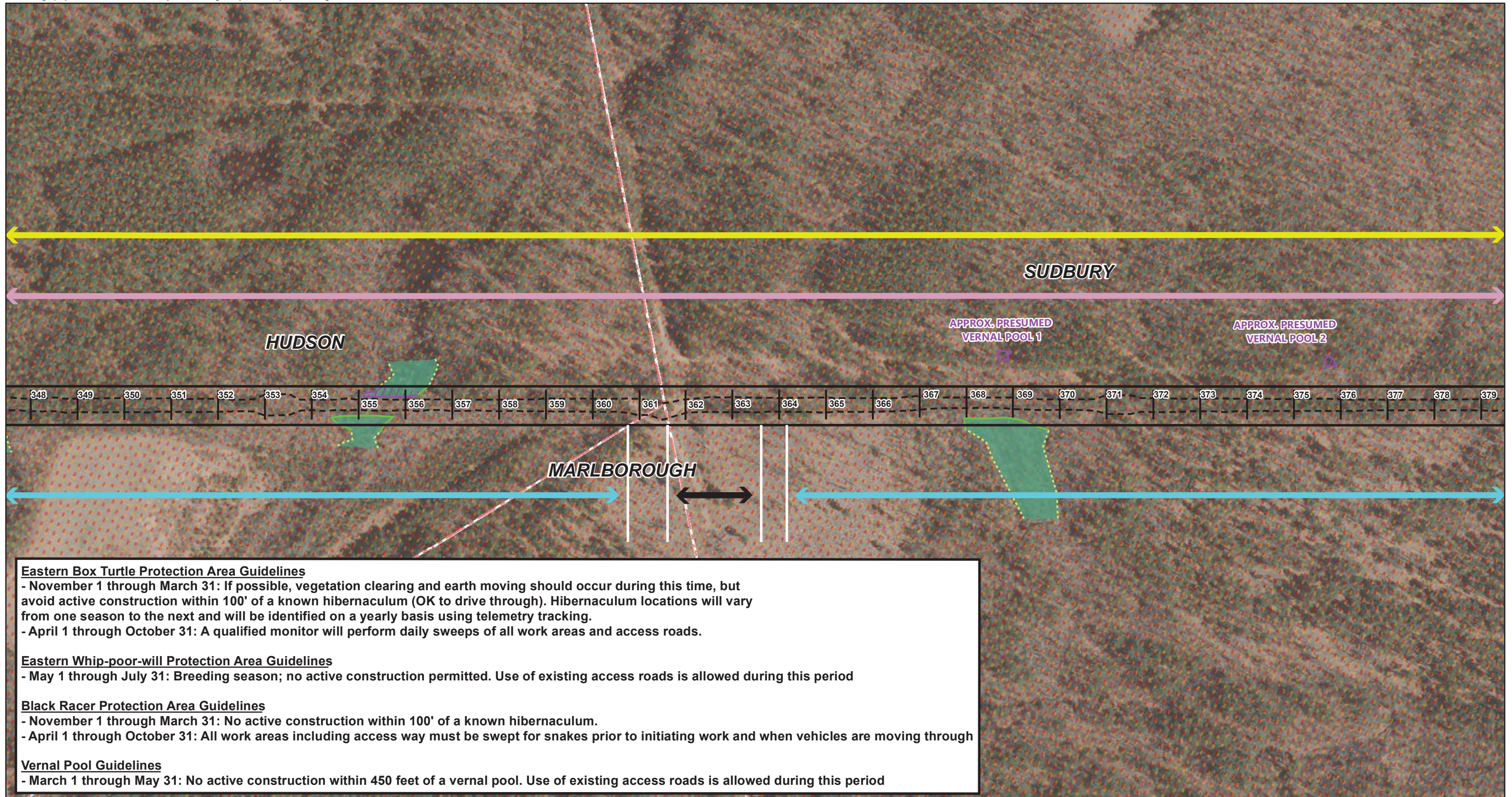
Stationing Locations	Approximate Wetland Edge	10-year Floodplain	Time-of-Year (TOY) Restrictions
Limit of Grading	Delineated Wetland Edge	Bordering Land Subject to Flooding	Black Racer
MBTA ROW Boundary	Delineated Vernal Pool Edge	Wetland Area	Eastern Box Turtle
Town Boundaries	Delineated Top of Bank	Vernal Pool Area	Eastern Whip-Poor-Will
	Land Under Water	Land Under Water	Vernal Pool
		NHESP Priority Habitat	
		NHESP Estimated Habitat	

Source: MassGIS, VHB
3/25/2021

0 200 400 Feet

EVERSOURCE ENERGY
 Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project
 Time-of-Year (TOY) Restrictions and Guidelines

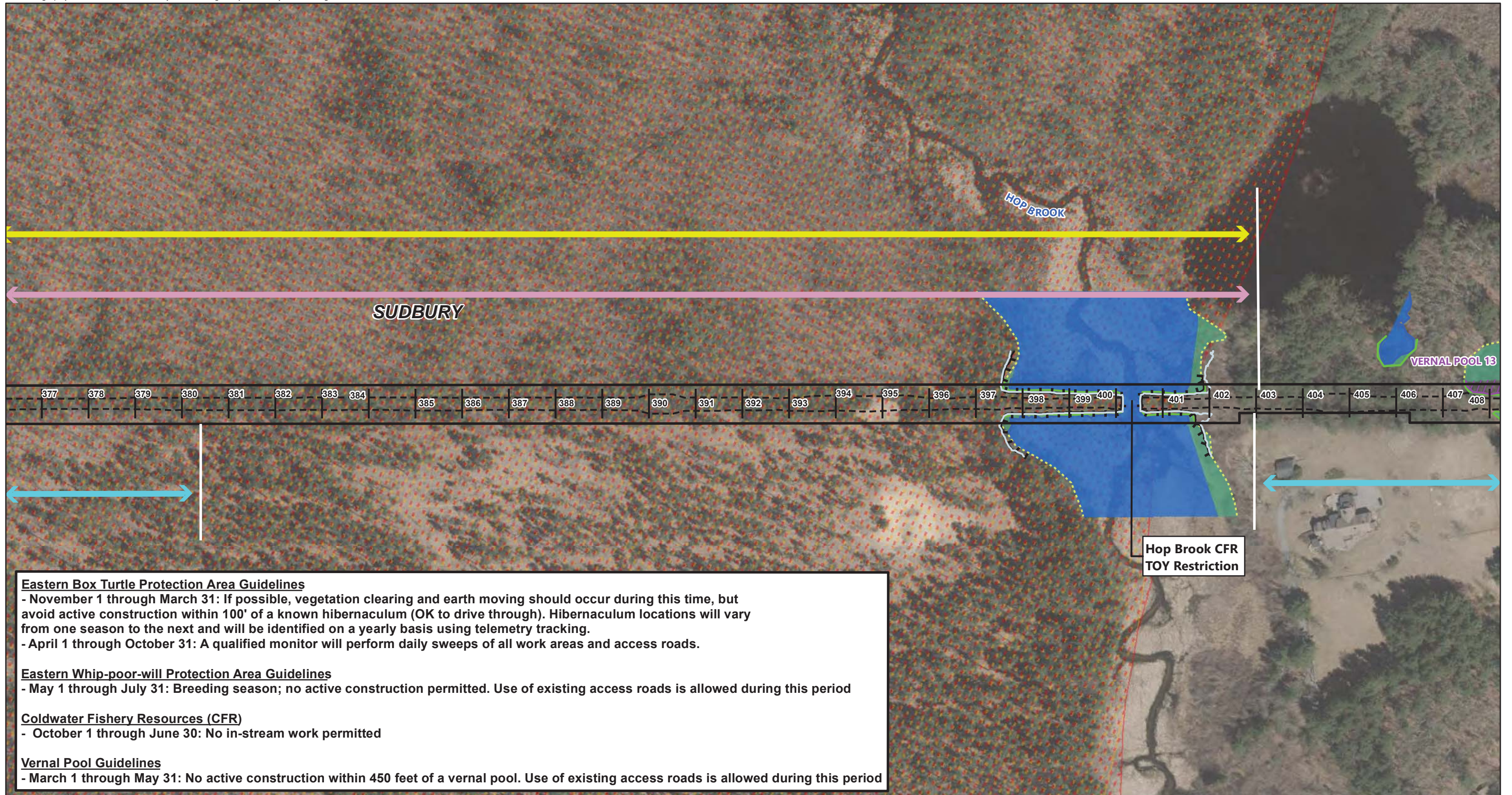
Sheet 2 of 11



Stationing Locations	Approximate Wetland Edge	10-year Floodplain	Time-of-Year (TOY) Restrictions
Limit of Grading	Delineated Wetland Edge	Bordering Land Subject to Flooding	Black Racer
MBTA ROW Boundary	Delineated Vernal Pool Edge	Wetland Area	Eastern Box Turtle
Town Boundaries	Delineated Top of Bank	Vernal Pool Area	Eastern Whip-Poor-Will
	Land Under Water	Land Under Water	Vernal Pool
		NHESP Priority Habitat	
		NHESP Estimated Habitat	

Source:
MassGIS, VHB
3/25/2021





Stationing Locations	Approximate Wetland Edge	10-year Floodplain	Time-of-Year (TOY) Restrictions
Limit of Grading	Delineated Wetland Edge	Bordering Land Subject to Flooding	Black Racer
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Town Boundaries	Delineated Top of Bank	Vernal Pool Area	Eastern Whip-Poor-Will
	Land Under Water	Land Under Water	Vernal Pool
		NHESP Priority Habitat	
		NHESP Estimated Habitat	

Source:
MassGIS, VHB
3/25/2021



EVERSOURCE ENERGY

Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project

Time-of-Year (TOY) Restrictions and Guidelines

Sheet 4 of 11





Vernal Pool Guidelines
 - March 1 through May 31: No active construction within 450 feet of a vernal pool. Use of existing access roads is allowed during this period

<ul style="list-style-type: none"> Stationing Locations Limit of Grading MBTA ROW Boundary Town Boundaries 	<ul style="list-style-type: none"> Approximate Wetland Edge Delineated Wetland Edge Delineated Vernal Pool Edge Delineated Top of Bank Land Under Water 	<ul style="list-style-type: none"> 10-year Floodplain Bordering Land Subject to Flooding Wetland Area Vernal Pool Area Land Under Water NHESP Priority Habitat NHESP Estimated Habitat 	<p>Time-of-Year (TOY) Restrictions</p> <ul style="list-style-type: none"> Black Racer Eastern Box Turtle Eastern Whip-Poor-Will Vernal Pool
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Source:
 MassGIS, VHB
 3/25/2021



EVERSOURCE ENERGY
 Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project
 Time-of-Year (TOY) Restrictions and Guidelines

Sheet 5 of 11



Vernal Pool Guidelines
 - March 1 through May 31: No active construction within 450 feet of a vernal pool. Use of existing access roads is allowed during this period

- | | | | |
|----------------------|-----------------------------|------------------------------------|---------------------------------|
| Stationing Locations | Approximate Wetland Edge | 10-year Floodplain | Time-of-Year (TOY) Restrictions |
| Limit of Grading | Delineated Wetland Edge | Bordering Land Subject to Flooding | Black Racer |
| MBTA ROW Boundary | Delineated Vernal Pool Edge | Wetland Area | Eastern Box Turtle |
| Town Boundaries | Delineated Top of Bank | Vernal Pool Area | Eastern Whip-Poor-Will |
| | Land Under Water | Land Under Water | Vernal Pool |
| | | NHESP Priority Habitat | |
| | | NHESP Estimated Habitat | |

Source:
 MassGIS, VHB
 3/25/2021



Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project

Time-of-Year (TOY) Restrictions and Guidelines



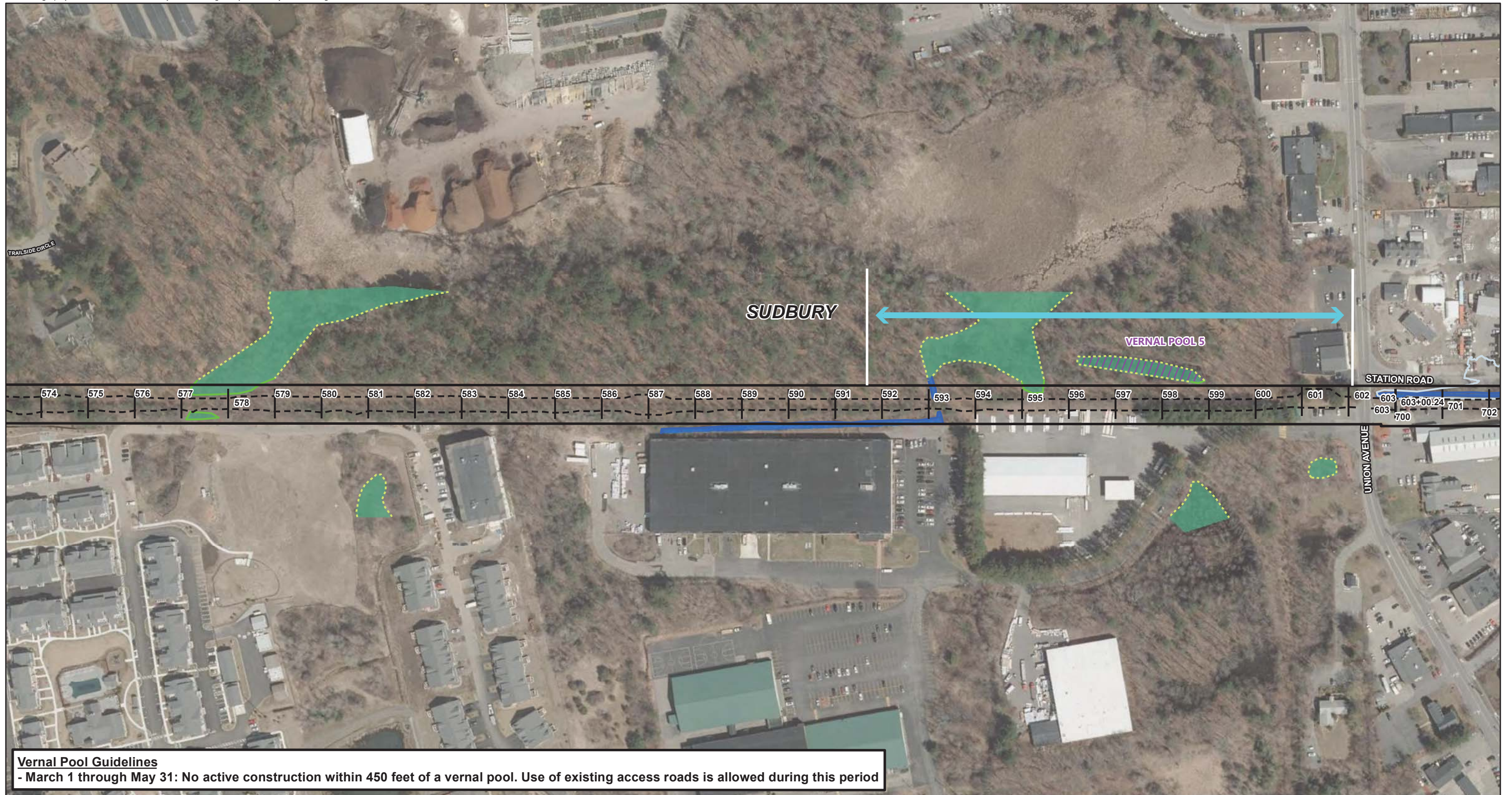


Vernal Pool Guidelines
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- | | | | |
|----------------------|-----------------------------|------------------------------------|---------------------------------|
| Stationing Locations | Approximate Wetland Edge | 10-year Floodplain | Time-of-Year (TOY) Restrictions |
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| | | NHESP Priority Habitat | |
| | | NHESP Estimated Habitat | |

Source:
 MassGIS, VHB
 3/25/2021





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- | | | | |
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| Stationing Locations | Approximate Wetland Edge | 10-year Floodplain | Time-of-Year (TOY) Restrictions |
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| | | NHESP Priority Habitat | |
| | | NHESP Estimated Habitat | |

Source:
 MassGIS, VHB
 3/25/2021

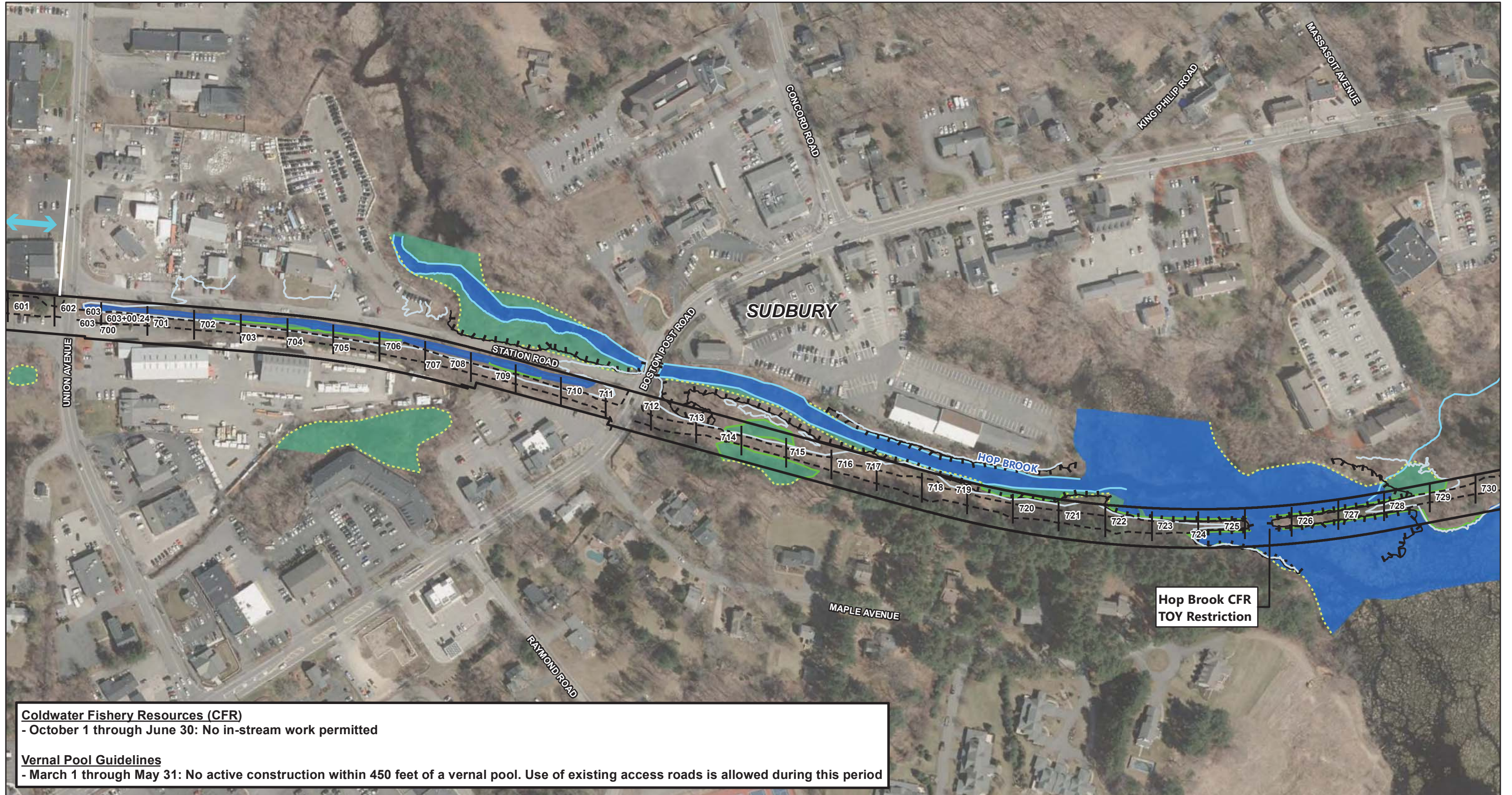


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**Sudbury-Hudson Transmission Reliability
 and Mass Central Rail Trail Project**

Time-of-Year (TOY) Restrictions and Guidelines





Coldwater Fishery Resources (CFR)
 - October 1 through June 30: No in-stream work permitted

Vernal Pool Guidelines
 - March 1 through May 31: No active construction within 450 feet of a vernal pool. Use of existing access roads is allowed during this period

- | | | | |
|----------------------|-----------------------------|------------------------------------|---------------------------------|
| Stationing Locations | Approximate Wetland Edge | 10-year Floodplain | Time-of-Year (TOY) Restrictions |
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| | | NHESP Priority Habitat | |
| | | NHESP Estimated Habitat | |

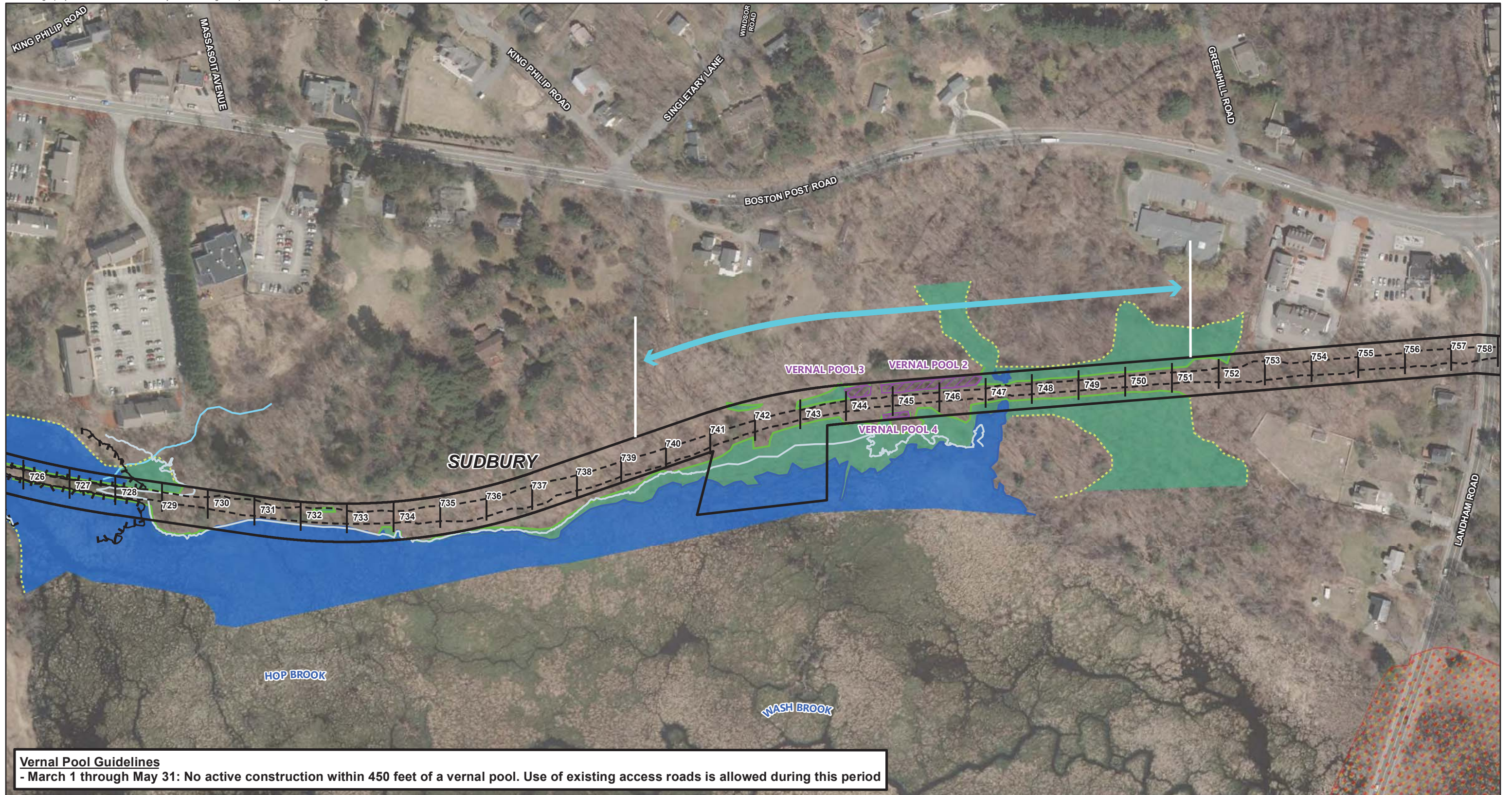
Source:
 MassGIS, VHB
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Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project

Time-of-Year (TOY) Restrictions and Guidelines





Vernal Pool Guidelines
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		NHESP Estimated Habitat	

Source: MassGIS, VHB
3/25/2021

0 200 400 Feet

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EVERSOURCE
ENERGY

Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project

Time-of-Year (TOY) Restrictions and Guidelines

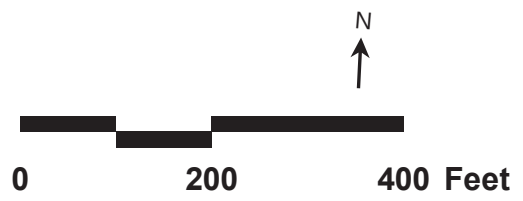
Sheet 10 of 11



Vernal Pool Guidelines
 - March 1 through May 31: No active construction within 450 feet of a vernal pool. Use of existing access roads is allowed during this period

- | | | | |
|----------------------|-----------------------------|------------------------------------|---------------------------------|
| Stationing Locations | Approximate Wetland Edge | 10-year Floodplain | Time-of-Year (TOY) Restrictions |
| Limit of Grading | Delineated Wetland Edge | Bordering Land Subject to Flooding | Black Racer |
| MBTA ROW Boundary | Delineated Vernal Pool Edge | Wetland Area | Eastern Box Turtle |
| Town Boundaries | Delineated Top of Bank | Vernal Pool Area | Eastern Whip-Poor-Will |
| | Land Under Water | Land Under Water | Vernal Pool |
| | | NHESP Priority Habitat | |
| | | NHESP Estimated Habitat | |

Source:
 MassGIS, VHB
 3/25/2021

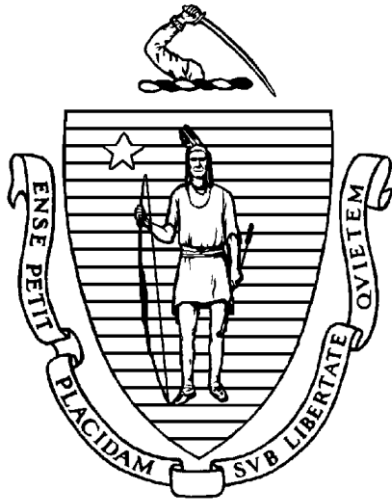


EVERSOURCE
 ENERGY

Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project

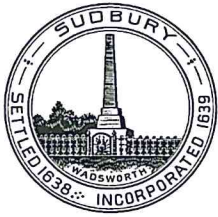
Time-of-Year (TOY) Restrictions and Guidelines

Sheet 11 of 11



BID PACKAGE

SUDBURY STORMWATER PERMIT



Town of Sudbury

Planning Board

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278 Old Sudbury Road
Sudbury, MA 01776
978-639-3387
Fax: 978-639-3314

PlanningBoard@sudbury.ma.us

A TRUE COPY, ATTEST: www.sudbury.ma.us/planning

Bett R. Ke
TOWN CLERK

January 27, 2021

TOWN CLERK
SUDBURY, MASS.
2021 FEB -3 PH 2:58

DECISION

STORMWATER MANAGEMENT PERMIT

Eversource Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project
183 Boston Post Road, Sudbury, MA
SWMP #20-07

DECISION of the Planning Board of the Town of Sudbury, Massachusetts (the "Board") on the petition of NSTAR Electric Company d/b/a Eversource of 247 Station Drive, SE270 Westwood, MA 02090 and Department of Conservation and Recreation (DCR) of 251 Causeway Street, Suite 600, Boston, MA 02114 ("Applicants") and Massachusetts Bay Transportation Authority (MBTA) of 10 Park Plaza, Boston, MA 02116 ("Owner") for approval of a Stormwater Management Permit to construct a new 115-kV underground transmission line and a multi-use path within an existing inactive railroad right-of-way, which will require removal of the existing rails and ties; vegetation clearing; grading; installation of the underground transmission line, duct bank, and manholes; installing a 14-foot-wide gravel base; paving of the 10-foot-wide rail trail, multi-use path; installation of stormwater management features; and site restoration, (the "Project") on the property (the "Property") located at 183 Boston Post Road and within the 4.3 mile long MBTA Right-of-Way subject to a lease agreement with the DCR in Sudbury, MA. The Project proposes alteration of approximately 643,985 sq. ft. (14.8 acres) of land, including approximately 221,410 sq. ft. of land area on slopes greater than 10% and a total increase in impervious area of 226,556 sq. ft., on a 54.4 acre parcel located at 183 Boston Post Road and the MBTA Right-of-Way, Sudbury, MA, Town Assessor Maps K10-0014, K11-5000, K09-5000, K08-5000, K07-5000, J06-5000, J05-5000, and H03-5000, zoned Residential A, Residential C, Business, and Limited Industrial, Water Resource Protection Overlay District Zone II and III, and Flood Plain Overlay District.

This Decision is issued in response to an application submitted to the Board on July 15, 2020 by the Applicants for a Stormwater Management Permit (the "Permit") under Article V (F), Section 5.C of the Town of Sudbury Bylaws (the "Bylaw") and the Town of Sudbury Stormwater Management Bylaw Regulations (the "Regulations").

After causing notice of the time and place of the public hearing and of the subject matter thereof to be published, posted, and mailed to the Applicants, Owners, abutters, and other parties in interest, as required by law, the public hearing was opened on August 12, 2020 and continued on September 9, 2020, September 23, 2020, October 28, 2020, November 18, 2020, December 9, 2020, January 13, 2021, and January 27, 2021, when it was closed. The project was deliberated on August 12, 2020, October 28, 2020, November 18, 2020, December 9, 2020, January 13, 2021, and January 27, 2021. The following members of the Board were present throughout the proceedings: Stephen Garvin, Charles Karustis, John Hincks, Justin Finnicum, and John Sugrue. The record of the proceedings and submissions upon which this Decision is based may be referred to in the office of the Town Clerk or the Planning and Community Development Department.

Documents submitted for the Board’s consideration and collectively referenced as the “Plan”, include:

- 1) Sudbury Stormwater Bylaw Permit Application for the Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project, issued to Sudbury Planning Board, prepared by VHB, dated July 15, 2020 (1,356 pages).
- 2) Sudbury Stormwater Management Plan Narrative for the Sudbury Hudson Transmission Reliability Project and Mass Central Rail Trail Project, Sudbury Massachusetts (Stormwater Management Report), dated March 7, 2018, last revised October 21, 2020, received January 13, 2021 (1,349 pages).
- 3) Site Plans Eversource, Sudbury-Hudson Transmission Reliability Project, Sudbury Stormwater Permit Plans, prepared by VHB, dated July 2020, (181 pages), last revised January 13, 2020, received January 13, 2021 (206 pages). This Plan set represents Project Phase I.
- 4) Site Plans Commonwealth of Massachusetts, Department of Conservation and Recreation, Division of Planning and Engineering, prepared by VHB, dated July 2020, (52 pages), last revised January 13, 2020, received January 13, 2021 (52 pages). This Plan set represents Project Phase II.
- 5) Stormwater Pollution Prevention Plan (SWPPP) Manual Sudbury-Hudson Transmission Reliability Project, Sudbury, Marlborough, Stow, Hudson, prepared by VHB and dated May 2020
- 6) Stormwater Pollution Prevention Plan (SWPPP) Manual Mass Central Rail Trail – Wayside, Sudbury, Marlborough, Stow, Hudson, prepared by VHB and dated May 2020.
- 7) Letter to the Sudbury Conservation Commission, regarding the Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project, prepared by BETA Group, Inc., dated May 11, 2020 (27 pages).
- 8) Letter to the Sudbury Conservation Commission, in response to BETA’s stormwater peer review, prepared by VHB, dated July 30, 2020 (11 pages).
- 9) Letter to the Sudbury Conservation Commission, regarding the Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project, prepared by BETA Group, Inc., dated August 31, 2020 (20 pages).
- 10) Peer Review Memo from Horsley Witten, dated September 18, 2020.
- 11) Memorandum regarding the Underground Transmission Line Stormwater Management Standards Compliance for Hypothetical Development Scenario, prepared by VHB, dated November 10, 2020 (5 pages).
- 12) Memorandum regarding the response to comments from Horsley Witten Peer Review of the Stormwater Management, prepared by VHB, dated November 10, 2020 (10 pages).
- 13) Letter to the Sudbury Planning Board, in response to HW’s Comment Letter, prepared by VHB, dated October 21, 2020 (14 pages).
- 14) MassCentral Rail Trail (MCRT) – Wayside Section Stormwater Management System Operation and Maintenance (O&M) Plan and Long-Term Pollution Prevention Plan (LTPPP), dated June 2020.
- 15) Stormwater Pollution Prevention Plan (SWPPP) Construction Site Inspection Report – form template (5 pages).
- 16) Email from Lori Capone, Sudbury Conservation Coordinator regarding Conservation Commission review of the Stormwater Standards, dated November 3, 2020.
- 17) Peer Review Memo (#2) from Horsley Witten, dated November 23, 2020.
- 18) Letter to the Sudbury Planning Board, Supplemental Submission, in response to HW’s Comment Letter, prepared by VHB, dated December 2, 2020 (67 pages).
- 19) Peer Review Memo (#3) from Horsley Witten, dated December 4, 2020.
- 20) Corridor Management Plan for Massachusetts Central Rail Trail and Sudbury-Hudson Transmission Reliability Project, dated August 7, 2020, received January 26, 2021.

I. BASIS FOR DECISION

The Board bases its Decision on the following:

- A. The Applicants filed for approval of a Stormwater Management Permit to construct a new 115-kV underground transmission line and a multi-use path within an existing inactive railroad right-of-way, which will require removal of the existing rails and ties; vegetation clearing; grading; installation of the underground transmission line, duct bank, and manholes; installing a 14-foot-wide gravel base; paving of the 10-foot-wide rail trail; installation of stormwater management features; and site restoration, (the "Project") which will disturb on the property (the "Property") located at 183 Boston Post Road and within the 4.3 mile long MBTA Right-of-Way, in Sudbury, MA on a 54.4 acre parcel located at Boston Post Road and the MBTA Right-of-Way, Sudbury, MA, Town Assessor Maps K10-0014, K11-5000, K09-5000, K08-5000, K07-5000, J06-5000, J05-5000, and H03-5000.
- B. Granting the Permit is in harmony with the general purpose and intent of the Bylaw in that the proposed drainage system design and controls will protect and maintain the public health, safety, environment and general welfare by controlling the adverse effects of increased post-development stormwater runoff and nonpoint source pollution associated with the proposed development; and shall protect the health, safety, environment and general welfare by controlling runoff and preventing soil erosion and sediment resulting from construction/alteration and development.
- C. The Project complies with the applicable regulations and performance standards of the most recent version of the Massachusetts Department of Environmental Protection (DEP) Stormwater Management Policy and Standards.
- D. The development and related activities shall maintain the after-development runoff characteristics as equal to or less than the pre-development runoff characteristics from the site in order to avoid flooding, stream bank erosion, siltation, nonpoint source pollution, property damage and to maintain the integrity of stream channels and aquatic habitats.
- E. The Project is designed to minimize or avoid damages due to increases in volume, velocity, frequency, duration and peak flow rate of stormwater runoff. The project conforms to the general criteria of the Bylaw and Regulations to the maximum extent feasible.
- F. The Plan establishes provisions for the long-term responsibility for and maintenance of structural stormwater control facilities and nonstructural stormwater management practices to ensure that they continue to function as designed, are maintained, and pose no threat to public safety.
- G. In addition to structural components, the Project design uses nonstructural stormwater management, stormwater better site design practices, and/or "low impact development practices", such as the use of bio-retention basins, to the maximum extent practicable.
- H. The Project represents a two-phased project with Phase I the Eversource Transmission Reliability Project and Phase II the DCR Mass Central Rail Trail. Additional development upon the Project Site and Property that does not relate to the Project or the Plan may require separate approval and is not subject to this Permit.
- I. The Stormwater Management Standards shall apply to the maximum extent practicable to footpaths, bike paths and other paths for pedestrian and/or nonmotorized vehicle access. The

Planning Board finds the completed Project as presented will meet the Stormwater Management Standards to the maximum extent practicable. After construction is complete, the 14-foot wide gravel path will be utilized by Eversource once every three years and the primary purpose of the path will be for a multi-use rail trail.

- J. The proposed design will include best management practices and pre-treatment of runoff for water quality improvement. Erosion and sedimentation control are proposed on the Plan. Long term maintenance, operation and reporting will be required.
- K. The Applicants have submitted a Stormwater Management and Erosion Control Plan and project description and Operation and Maintenance Plan, which are satisfactory.

THEREFORE, the Board hereby GRANTS the requested Stormwater Management Permit, as requested in the application and shown on the Plan, located in Sudbury, Middlesex County, Massachusetts, with the benefit of the following Plan modifications, conditions and limitations. The approval herein granted is based on the Plan as described above.

II. CONDITIONS AND REQUIREMENTS

The following conditions of this approval shall be strictly adhered to. Failure to adhere to these conditions or to comply with all applicable laws and Permit conditions shall give the Town the rights and remedies set forth in Section 12 of the Regulations.

- A. Conformity: All construction at the Project Site shall be in substantial conformity with the Plan, which is on file with the Board, and representations made by the Applicant during the public hearing.
- B. Access During Construction: The Applicant shall ensure safe and convenient vehicular access to the Project Site during the entire duration of the construction period. The Board and its representatives shall be permitted access to the Project Site to observe and inspect the site and construction progress until such time as the Project has been completed. When possible prior to Project Site access, reasonable advance notice will be made. Compliance with health and safety protocols for the Project Site will be followed.
- C. Conditions prior to any vegetation removal, site disturbance, or construction activities:
 - 1) The Applicant shall submit \$10,000.00 for the purpose of the Town hiring a construction monitor to perform the inspections set forth in Section II. R. below for compliance with the stormwater management permit, design, and plans. If prior to completion of the Project, the Board finds that this initial deposit is not sufficient to cover actual costs incurred by the Town for these purposes, the Applicant shall be required to submit forthwith such additional amount as is deemed required by the Board to cover such costs. If the actual cost incurred by the Town for such purposes is less than the amount on deposit as specified above, the Board shall authorize that such excess amount be refunded to the Applicant concurrently upon issuance of a Certificate of Completion.
 - 2) The Project will disturb more than one acre of land and is therefore required to obtain coverage under the Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) Construction General Permit. Draft Stormwater Pollution Prevention Plans (SWPPP) have been included in the application. The draft SWPPP includes recommended construction period pollution prevention and erosion and sedimentation

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controls. For each Project Phase, the final SWPPPs with all applicable attachments shall be submitted to the Board for review and approval prior to commencement of any work in connection with the Project. If a response is not received within 10 days of receipt, the Plan shall be deemed approved. All work on the Project Site shall be conducted in accordance with the requirements of those permits and plans. Any changes made to the SWPPP during the course of the project shall be submitted and approved by the Planning Board or its representative prior to implementation.

- 3) Erosion control methods shall be installed as shown on the Plan and any updates shall be provided to the Planning Board's representative as work progresses on the Project Site.
- 4) A performance bond shall be submitted and held by the Planning Board until the paved rail trail, multi-use path is constructed, the Premises are fully stabilized with vegetation, and the stormwater structures have been cleaned and deemed functional by the Director of Public Works. The initial bond amount shall be established by the Town Engineer and may be adjusted at the discretion of the Town Engineer based on a detailed estimate provided by the Applicant. The bond amount may be reduced as progress is made during construction subject to review by the Town Engineer and approval of the Planning Board
- 5) The Applicant shall provide for review and approval by the Planning Board or a representative a construction schedule detailing construction activities and sequencing, that limits the area of the Site disturbed at any one time to the extent possible to mitigate environmental impacts and risk of erosion. If a response is not received within 10 days of receipt, the Schedule shall be deemed approved. The schedule shall be updated as necessary throughout construction and provided to the Planning Board.
- 6) At least two weeks prior to any land disturbance, a structural engineer shall inspect the culverts and drainage structures within the Project Site to determine whether they are structurally sound to (a) function hydrologically and (b) withstand the planned construction activities and shall provide a report of the findings to the Planning Board. If any culvert does not meet these requirements or is damaged during construction, it shall be replaced with a culvert that meets current MA Stream Crossing Standards to the maximum extent practicable, as determined by the Sudbury Conservation Commission or its Agent. Any recommended improvements to these structures, not included in this Permit, shall be required to submit a separate permit application and/or permit amendments for further evaluation.
- 7) This Decision and the Operations and Maintenance Plan shall be recorded in the Middlesex South District Registry of Deeds, within the chain of title of the affected property. The recording information shall be submitted to the Planning Board.
- 8) An Illicit Discharge Compliance Statement, signed by the Applicant, shall be submitted to the Planning Board.
- 9) The Soil and Groundwater Management Plan (SGMP) prepared in conjunction with the selected contractor and meeting the requirements of the Sudbury Conservation Commission as conditioned in the Order of Conditions shall be submitted to the Planning Board.
- 10) A Project Compliance Manual shall be submitted to the Planning Board for review and approval. The document shall include the requirements for compliance with the various permits for the Project, including this Decision and Conditions herein. If a response is not received from the Planning Board or its representative within 10 days of receipt, the Project

Compliance Manual shall be deemed approved.

- 11) The Applicant shall provide to the Planning Board copies of both the executed Memorandum of Understanding between Eversource and Department of Conservation and Recreation and the lease agreement between Eversource and the MBTA to ensure the obligations of the project are fulfilled.
 - 12) The project engineer, contractors, and all subcontractors must be informed of the conditions in this Decision.
- D. A Stormwater Construction Site Inspection Report (Stormwater Pollution and Prevention Plan Inspection Report) shall be generated by the Applicant or its representative for this Project, at a minimum, every two weeks during construction, and after every major storm event.
 - E. Access to the drainage structures for inspection and maintenance shall be kept clear of obstruction.
 - F. Additional soil testing shall be conducted during construction in the vicinity of “areas of increased infiltration” to verify soil conditions, infiltration rates, and groundwater levels. At a minimum, soil tests shall be conducted in the vicinity of Station 502+00, Station 511+00, Station 570+00, and Station 579+00. A report of the findings, comparison with expectations, and a statement on the appropriateness of the design shall be provided to the Planning Board by the design engineer for review. If findings are not consistent with the assumptions made for the stormwater management design, revisions to the design and approval of modifications to the Plan may be required.
 - G. Construction reports with a summary of past week activities and look ahead at anticipated activities with advanced notification of anticipated phasing transitions shall be provided to Planning and Community Development on a weekly basis. On-site meetings shall be provided throughout construction, as needed and indicated by the Planning and Community Development Environmental Planner. Site stabilization measures should be reviewed for adequacy and adjustments to the sediment and erosion control plan may be considered to optimize site stabilization. Reports shall include the location of active stockpiles with confirmation that appropriate erosion control measures are being implemented.
 - H. Soil stockpiles shall be covered with tarp or plastic sheet and surrounded by erosion controls.
 - I. Responsibility of sediment and erosion control will depend on project phasing.
 - 1) During Phase I, Eversource shall be responsible for installing and maintaining erosion controls within the project site. Eversource may remove erosion controls from areas restored and revegetated as part of Phase I work if the Planning Board representative has inspected those areas and confirmed they are stabilized sufficiently. In the period between Phase I and Phase II, any erosion controls removed in areas that have been properly stabilized shall be reinstalled prior to commencement of Phase II.
 - 2) During Phase II, DCR shall be responsible for installing and maintaining erosion controls on the Project Site during the performance of all Phase II construction activities, which may include utilizing erosion controls that were installed and maintained by Eversource if those erosion controls remain in proper condition and demarcate the limit of Phase II work. Otherwise, DCR shall install new erosion controls as required for Phase II, including in any restored and revegetated areas where Eversource was authorized to remove erosion controls.
 - 3) Following completion of Phase II and inspection by a Planning Board representative, DCR shall be responsible for removal of all erosion control barriers.

- J. Proposed infiltration basins shall not be used as sediment basins during construction. Additional erosion controls shall be installed to protect infiltration basins from sedimentation until contributing areas are stable.
- K. Evaluation of appropriate screening for adjacent properties has not been completed. Alterations to the Landscape Plan shall be submitted to Planning and Community Development for review and approval. If a response is not received within 10 days of receipt, the Plan shall be deemed approved.
- L. Native plants should be used for plantings throughout the site.
- M. All equipment, including timber mats, shall be cleaned and certified invasive species free, prior to entering the site. Such certification shall occur prior to commencement of mobilization into the site and when remobilized within the project site. All areas of disturbance shall be monitored for invasive species, which shall be manually removed if encountered.
- N. The Applicant, DCR, and its successors and assigns shall be responsible for maintaining the stormwater management system for the development in accordance with the Operation and Maintenance (O&M) Plan submitted and applicable DEP regulations. An annual Operation and Maintenance inspection shall be conducted by a certified inspector who will prepare an annual status report for delivery to the Board demonstrating compliance with the O&M Plan. Revisions to the O&M Plan may be proposed to and accepted by the Planning Board or its representative.
- O. The following source control and pollution prevention measures shall be employed on the site to prevent contamination of stormwater runoff:
 - 1) Debris shall be removed from the paved path regularly, ideally swept with a vacuum or regenerative air sweeper.
 - 2) Measures shall be taken to control litter on the site.
 - 3) No chemicals or hazardous wastes shall be stored on the property.
 - 4) Slow release nitrogen and low phosphorus fertilizers shall be applied sparingly to prevent wash off.
 - 5) No fertilization, herbicide, or pesticide application shall occur within any vernal pool, vegetated wetland or waterway. Eversource, as part of their operations, shall not conduct fertilization, herbicide, or pesticide application. DCR shall not use herbicides within any vernal pool, vegetated wetland or waterway. Invasive species removal by DCR will be by mechanical means when possible and spot treatments of herbicide by a licensed applicator when other approaches are not effective. This Condition is ongoing and does not expire with the expiration of the Order of Conditions or the issuance of a Certificate of Compliance.
 - 6) Hazardous wastes shall be used and disposed of properly.
 - 7) No vehicle washing shall be allowed on the property.
 - 8) Vehicles shall be maintained and clean up fluid spills/drips shall occur with absorbent materials immediately.
 - 9) Personnel shall be educated on implementation of spill abatement and containment procedures.
 - 10) No de-icing products shall be used on the site.
 - 11) No coal tar-based pavement sealants are to be used on site.

- P. If developed by DCR, and as approved by the Department of Agricultural Resources, any Vegetation Management Plan/Integrated Pest Management Plan shall be submitted to the Planning Board annually, and if chemicals will be used, the Board shall be notified in advance.
- Q. The Applicant, DCR, has indicated no snow and ice management will occur on the multi-use path and such operations are not included in this permit. Any change to snow and ice operations shall require a modification to the permit. As needed during construction, the Applicant shall designate areas for snow storage in upland locations where meltwater can drain onto pervious surfaces away from water resources, infiltration BMPs, bio-retention areas, and wells.
- R. Inspections: In accordance with Section 9.B of the Regulations, the Board, or its designee, may inspect the Project Site at the following stages, at a minimum. The Applicant shall inform the Board of these stages in construction at least two days prior to commencement or completion, whichever is applicable, for scheduling of an inspection:
- 1) Pre-Construction Site Inspection – prior to commencement of construction for each Project phase, during which the construction schedule and acceptance of erosion control barriers can be finalized.
 - 2) Erosion and Sediment Control Inspection – to ensure erosion control practices during and after construction are in accordance with the approved Plan.
 - 3) Construction Inspection – multiple inspections will be made of the stormwater management system facilities, including but not limited to infiltration systems, BMPs, and connections to existing pipes, prior to backfilling of underground drainage or stormwater conveyance structures. It is recommended the Planning Boards designee inspect all permanent stormwater infiltration BMPs for acceptance prior to construction demobilization to a new location within the ROW. The Applicant and Planning Board designee will develop and agree to an inspection plan at the Pre-Construction Site Inspection.
 - 4) Phase I Completion Inspection - after Phase I has been constructed, once the as built plan is prepared, and before partial Certification of Completion is issued.
 - 5) Final Inspection – after the Phase II has been constructed, once the final as built plan is prepared, and before the final Certificate of Completion has been issued.
- S. As-built Plan: The Applicant shall submit an as-built plan, containing all elements listed in Section 11.A.2 of the Regulations, to the Board upon completion of this Project and prior to the issuance of the Certificate of Occupancy. The plan shall be signed by a land surveyor or other qualified professional. A registered engineer shall certify that the work has been completed in accordance with the approved Plan and the Stormwater Management Permit.
- 1) Since the project is phased, the submission of current status, as-built plans shall be presented at the phasing transition
 - 2) Following completion of Phase I, Eversource shall request a Partial Certificate of Completion. This Request shall be accompanied by as-built plans, stamped by a professional land surveyor or other qualified professional, detailing all elements of Phase I including all stormwater management elements, post construction structural report, and affidavit from all site professionals that all aspects of this Decision were adhered to. Any deviations from the approved plans shall be specifically called out on the as-built plan. Vegetation outside the limit of work shall also be evaluated to confirm no negative impacts occurred outside the limit of work.
- T. No use or occupancy (except in connection with the construction activity authorized by this Permit) shall be conducted on the Project Site until a Certificate of Completion is issued by the Board in accordance with Section 11.0 of the Regulations. A Partial Certificate of Completion will be issued

upon the satisfactory completion of Phase I. To the extent that the requirements of this Permit have been met with respect to such completed phase of the Project on the Project Site, the Board may permit the use and occupancy of the completed phase in accordance with Section 11.0 of the Regulations.

- U. It is DCR's intention to initiate Phase II as soon as possible following completion of Phase I. Should Phase II not commence within three years of completion of Phase I, the Applicant shall file an Amendment to bring the stormwater management into full compliance with the Town of Sudbury Stormwater Regulations.
- V. The Planning Board shall be notified, in writing, within forty-eight hours of any transfers of title on this property. In the event the Property ownership or trail, multi-use path management transfers to a non-public entity, a covenant requiring maintenance of the stormwater management system in accordance with Best Management Practices and the Operation and Maintenance Plan shall be recorded on the Project Site. This covenant shall allow for the placement of municipal liens on the Project Site if the Applicant fails to maintain the system and the Town needs to do so. The Town shall be granted an easement to access the site in case emergency maintenance is needed. The Applicant shall submit the covenant for review and approval of the Select Board prior to recording at the Middlesex South District Registry of Deeds. A template will be provided by the Town.
- W. The culverts and drainage structures shall be inspected at least annually and cleared of debris as needed. If culverts become damaged or no longer function as required, they shall be replaced according to most current MA Stream Crossing Standards to the maximum extent practicable, as determined by the Sudbury Conservation Commission or its Agent. Any recommended improvements to these structures, not included in the application for this Permit, shall be subject to a separate permit application and/or permit amendments for further evaluation.
- X. The corridor and all components of the stormwater management system shall be maintained in compliance with the Mass Central Rail Trail (MCRT) – Wayside Section Stormwater Management System Operation and Maintenance Pan (O&M) and the Long Term Pollution Prevention Plan.
- Y. The Project is subject to an Energy Facility Site Board (EFSB) Decision (EFSB 17-02/D.P.U. 17/82/17/83). Since this EFSB Decision is currently under Appeal by the Town of Sudbury, any changes to the project as a result of the appeal process may cause the need for project modifications to undergo further review by the Planning Board, in which case the applicant shall return to the Board to seek the necessary modifications.
- Z. Violation of Conditions: Violation of any of the conditions of this Stormwater Management Permit may be grounds for revocation of this Permit, or of any building or occupancy permit granted hereunder, or both. In the case of violation of the continuing obligations of this Permit, the Town shall notify the Owner and Applicant of such violation and give the Owner and Applicant reasonable time, not to exceed thirty days, to cure the violation. If at the end of said thirty-day period, the Applicant has not cured the violation, or, in the case of violations requiring more than thirty days to cure, has not commenced the cure and prosecuted the cure expeditiously, the Board may, after notice to the Applicant or owner of the Project Site, conduct a hearing in order to determine whether the failure to abide by the conditions contained herein should result in revocation of the Permit. As an alternative, the Town may enforce compliance with the conditions of this Permit by an action for injunctive relief before any court of competent jurisdiction. The Applicant agrees to reimburse the Town for its reasonable costs in connection with the enforcement of the conditions of this Permit.

- AA. The Applicant by accepting this Permit warrants that the Applicant has included all relevant documentation, reports, and information available to Applicant, in the application submitted and that this information is true and valid to the best of the Applicant's knowledge.
- BB. If the project requires an Earth Removal Permit, an application should be submitted to and permit issued by the Earth Removal Board prior to any site disturbance. The project also requires an Order of Conditions from the Sudbury Conservation Commission. Inconsistencies between plans approved by and conditions issued by other permitting authorities may require the Applicant to return to the Planning Board to review and approve the modifications.

III. LIMITATIONS

The authority granted to the Applicant by this Permit is limited as follows:

- A. **Applicability of Permit:** This Permit applies only to the proposed construction of a new 115-kV underground transmission line and a multi-use path within an existing inactive railroad right-of-way, which will require removal of the existing rails and ties; vegetation clearing; grading; installation of the underground transmission line, duct bank, and manholes; installing a 14-foot-wide gravel base; paving of the 10-foot-wide rail trail, multi-use path; installation of stormwater management features; and site restoration, on the Project Site, as shown on the Plan. This Permit does not apply to other portions of the Property. Construction of the Project shall be conducted in accordance with the terms of this Permit and shall be limited to improvements shown on the Plan referenced above as amended by the conditions of this Decision. Any change of use for the Project or change to the Plans shall require notice to the Board and may require a new or amended Stormwater Management Permit from the Board.
- B. **Limitations of Further Development:** There shall be no further development, material increase in intensity of use, change in use as per the Sudbury Zoning Bylaw, modification of the approved development plan of the Project without either a new Permit or the written consent of this Board. This does not absolve the Applicant from securing any permits required by other governmental boards, agencies or bodies having jurisdiction related to water quality or quantity.
- C. **Other Permits or Approvals:** This decision applies only to the requested Stormwater Management Permit. Other permits or approvals required by the Bylaw, other governmental boards, agencies or bodies having jurisdiction shall not be assumed or implied by this decision.
- D. **Bylaw Compliance:** The foregoing restrictions are stated for the purpose of emphasizing their importance but are not intended to be all inclusive or to negate the remainder of the Bylaw.
- E. **Lapse of Permit:** Should the land-disturbing activity approved under this Permit not begin within 12 months following Permit issuance, the Board may evaluate the existing stormwater management plan to determine whether the plan still satisfies local program requirements and to verify that all design factors are still valid. If the Board finds the previously filed plan to be inadequate, a modified plan shall be submitted and approved prior to the commencement of land-disturbing activities. If the Project associated with an approved Stormwater Management Permit granted under the Bylaw has not been substantially completed within three years of Permit issuance, a new Permit or a Permit extension will be required by the Board.


F. Appeals: Any person aggrieved by this decision may appeal pursuant to the General Laws, Chapter 249, Section 4.

The provisions of this Permit shall be binding upon every owner or owners of the lots and the executors, administrators, heirs, successors and assigns of such owners, and the obligations and restrictions herein set forth shall run with the land, as shown as the Property on the Subdivision Plan, in full force and effect for the benefit of and enforceable by the Town of Sudbury.

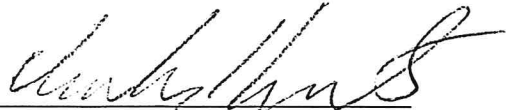
This Permit shall not take effect until a copy of this Decision has been recorded with the Middlesex South District Registry of Deeds and until a certified copy of the recorded document is submitted to the Board.

Witness our hands this 27th day of January, 2021.

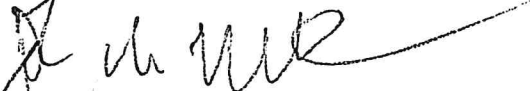
SUDBURY PLANNING BOARD



Stephen Garvin, Chair




Charles Karustis, Vice Chair



John Hincks, Clerk



Justin Finnicum



John Sugrue

A TRUE COPY, ATTEST:


TOWN CLERK

TOWN CLERK
SUDBURY, MASS

2021 FEB -3 PM 2:59



BID PACKAGE

PART X

SECTION 404 CLEAN WATER ACT (U.S. ARMY CORPS OF ENGINEERS)



DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
696 VIRGINIA ROAD
CONCORD MA 01742-2751

October 31, 2022

Regulatory Division
File No. NAE-2017-01406

Denise Bartone
Eversource Energy
247 Station Drive, SE270
Westwood, Massachusetts 02090
(via email: denise.bartone@eversource.com)

Paul Jahnige
Department of Conservation and Recreation
136 Damon Road
Northampton, Massachusetts 01060
(via email: paul.jahnige@state.ma.us)

Dear Ms. Bartone & Mr. Jahnige:

This regards your joint application submitted to the U.S. Army Corps of Engineers (USACE) to install a new 9-mile 115-kilovolt ("kV") underground electric transmission line and construct a portion of the Mass Central Rail Trail (MCRT) above the new underground transmission line. Activities under this authorization include the discharge of 60 cubic yards of fill material within freshwater wetlands (1,014 square feet permanent impacts, 2,487 square feet temporary impacts) and open water (1,146 square feet temporary impacts) to replace Bridge #127, Bridge #130, two culverts, and grade discrete sections of the existing right-of-way (ROW) to support the electric transmission line and rail trail. The project is located within freshwater wetlands, Fort Meadow Brook and Hop Brook along the MBTA ROW in Sudbury, Hudson and Stowe, Massachusetts (Latitude: 42.3807 °, Longitude: -71.4757 °). The work is shown on the enclosed plans titled "EVERSOURCE SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT", on 349 sheets, dated "DEC 2021", and revised on "08/19/2022". The work is also shown on the enclosed plans titled "MASS CENTRAL RAIL TRAIL HUDSON, STOW, MARLBOROUGH & SUDBURY, MA", on 54 sheets, and dated "02/08/2022".

Based on the information that you have provided, we verify that the activity is authorized under General Permit # 10 of the April 16, 2018 Federal permit known as the Massachusetts General Permits (GPs). A copy of these permits can be found at: <https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/>

Please review the enclosed GPs carefully, including the general conditions beginning on page 19, to be sure that you and whoever does the work understand its

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 or failing to comply with any special condition(s) provided below and all of the terms and conditions of the GPs may subject you to the enforcement provisions of our regulations. You must perform this work in compliance with the terms and conditions of the GPs and also in compliance with the following special conditions:

1. Eversource and DCR must maintain the activity authorized herein in good condition and in conformance with the terms and conditions of this authorization. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 37 on page 32 of the GPs. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this authorization from this office, which may require restoration of the area.
2. Eversource and DCR shall comply with the Memorandum of Agreement titled "MEMORANDUM OF AGREEMENT BETWEEN THE U.S. ARMY CORPS OF ENGINEERS AND THE MASSACHUSETTS HISTORICAL COMMISSION, NSTAR d/b/a EVERSOURCE ENERGY AND THE MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION REGARDING THE SUDBURY-HUDSON TRANSMISSION RELIABILITY AND MASS CENTRAL RAIL TRAIL PROJECT, HUDSON, STOW, MARLBOROUGH, AND SUDBURY, MASSACHUSETTS". This is to mitigate for adverse effects to historic properties, pursuant to Section 106 of the National Historic Preservation Act.
3. Eversource and DCR shall comply with the Historic Properties Avoidance & Protection Plan (HPAPP) titled "EVERSOURCE ENERGY/ MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION'S SUDBURY-HUDSON TRANSMISSION RELIABILITY AND MASS CENTRAL RAIL TRAIL PROJECT TOWNS OF HUDSON, MARLBOROUGH, SUDBURY, AND STOW, MIDDLESEX COUNTY, MASSACHUSETTS MHC #RC.62384, EEA #15703.", dated February 11, 2022, and revised on August 23, 2022. This is to avoid and minimize adverse effects to historic properties, pursuant to Section 106 of the National Historic Preservation Act.
4. Eversource and DCR shall comply with the Post Review Discoveries Plan (PRDP) titled "POST-REVIEW DISCOVERIES PLAN FOR THE EVERSOURCE ENERGY/MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION'S SUDBURY-HUDSON RELIABILITY AND MCRT PROJECT TOWNS OF HUDSON, MARLBOROUGH, SUDBURY, AND STOW MIDDLESEX COUNTY, MASSACHUSETTS", and dated February 11, 2022. This is to avoid and minimize adverse effects to historic properties, pursuant to Section 106 of the

National Historic Preservation Act.

5. To satisfy the 401 WQC requirement, Eversource and DCR shall comply with the Order of Conditions granted by the Towns of Sudbury and Hudson when completing the activities authorized herein.
6. Eversource and DCR shall complete and return the enclosed Compliance Certification Form to this office at least 30 days after the completion of activities authorized herein.
7. Eversource and DCR shall complete and return the enclosed Work Start Notification Form to this office at least two weeks before the anticipated starting date.

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 April 5, 2023. You must commence or be under contract to commence the work authorized herein by April 5, 2023, and complete the work by April 5, 2024. 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 authorization expires to discuss reissuance. Please contact us immediately if you change the plans or construction methods for work within our jurisdiction. We 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.

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/ords/f?p=136:4>.

Please contact Katelyn Rainville of my staff at Katelyn.M.Rainville@usace.army.mil, (978) 318-8677 or (978) 318-8338 if you have any questions.

Sincerely,

Paul Maniccia

Paul M. Maniccia
Chief, Permits & Enforcement Branch
Regulatory Division

Enclosures

cc:

Vivian Kimball, VHB, VKimball@VHB.com

Ed Reiner, U.S. EPA, Region 1, Boston, Massachusetts, reiner.ed@epa.gov

David Simmons, USFWS; david_simmons@fws.gov

DEP CERO, Wetlands and Waterways, Worcester, Massachusetts, zero_noi@mass.gov

Sudbury Conservation Commission, concom@sudbury.ma.us

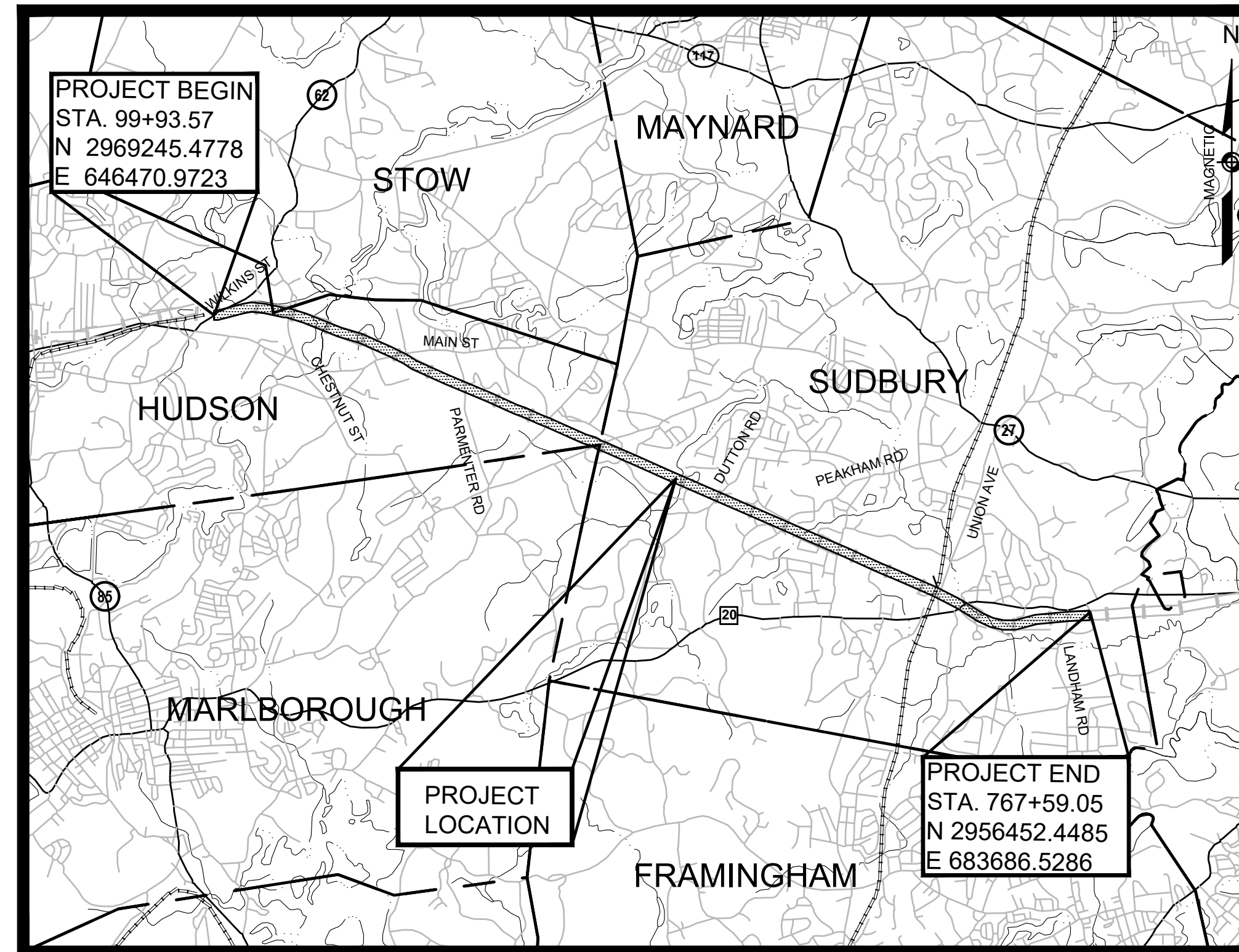
Hudson Conservation Commission, phelinek@townofhudson.org

EVERSOURCE

SUDBURY-HUDSON

TRANSMISSION RELIABILITY PROJECT

INDEX	
SHEET NO.	DESCRIPTION
1	TITLE SHEET & INDEX
2	LEGEND & ABBREVIATIONS
3-6	KEY PLAN
7-13	SURVEY TIE-IN PLANS
14-23	TYPICAL SECTIONS
24-70	CONSTRUCTION PLANS
71-74	CONSTRUCTION BASELINE DATA
75-95	PROFILE
96-125	LANDSCAPE PLANS
126-151	TEMPORARY TRAFFIC CONTROL PLANS
152-166	CONSTRUCTION DETAILS
167-168	WETLAND REPLICATION
169-201	BRIDGE PLANS
202-349	CROSS SECTIONS



REFERENCE MANUALS
 THESE PLANS ARE SUPPLEMENTED BY THE OCTOBER 2017 CONSTRUCTION STANDARD DETAILS, THE 2015 OVERHEAD SIGNAL STRUCTURE AND FOUNDATION STANDARD DRAWINGS, MASSDOT TRAFFIC MANAGEMENT PLANS AND DETAIL DRAWINGS, THE 1990 STANDARD DRAWINGS FOR SIGNS AND SUPPORTS, THE 1968 STANDARD DRAWINGS FOR TRAFFIC SIGNALS AND HIGHWAY LIGHTING, AND THE LATEST EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK.

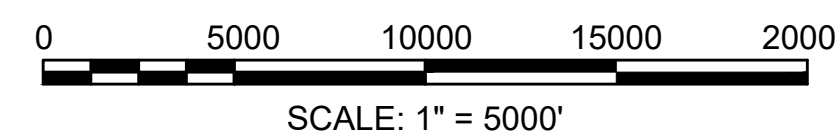
JOSHUA C. CONE-RODDY
 CIVIL
 No. 54514
 REGISTERED PROFESSIONAL ENGINEER
Joshua Cone-Roddy 12-20-2021
 ENGINEER DATE

MARK A. COSTA
 CIVIL
 No. 49941
 REGISTERED PROFESSIONAL ENGINEER
Mark Costa 12/21/2021
 ENGINEER DATE
 SHEETS 167-168

SHANTA B. KELLER
 STRUCTURAL
 No. 51381
 REGISTERED PROFESSIONAL ENGINEER
Shanta B. Keller 12/20/21
 ENGINEER DATE
 SHEETS 164-166, 169-201



VANASSE HANGEN BRUSTLIN, INC.
 WATERTOWN, MASSACHUSETTS



REVISION			
N.O.	DESCRIPTION	BY	DATE
1	HISTORIC FEATURE DISPOSITIONS		02/03/2022

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 TITLE SHEET & INDEX

PLAN 1 OF 349

SCALE: unless noted 1"=5000'	DATE DEC 2021	DRAWN MS	CHK'D. SK	A.P.P.R. MS	DRAWING NO. .	REV. .
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GENERAL SYMBOLS		GENERAL SYMBOLS (cont.)		PAVEMENT MARKINGS SYMBOLS		GENERAL NOTES:	
EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING	PROPOSED
						1.	THE PROPERTY LINES SHOWN ON THIS PLAN OF THE PARCELS AT 44 FOREST AVENUE IN HUDSON, 163 BOSTON POST ROAD IN SUDBURY AND THE FORMER RAILROAD RIGHT-OF-WAY ARE BASED UPON AN ACTUAL FIELD SURVEY CONDUCTED BY VHB, INC. IN 2015 AND FROM DEEDS AND PLANS OF RECORD.
						2.	THE EXISTING CONDITIONS SHOWN ON THIS PLAN WERE DEVELOPED FROM A COMBINED EFFORT OF AERIAL PHOTOGRAMMETRIC MAPPING BY EASTERN TOPOGRAPHICS, INC., BASED ON AERIAL PHOTOGRAPHS TAKEN ON FEBRUARY 22, 2013, AND AUGMENTED BY AN ON-THE-GROUND SURVEY PERFORMED BY VHB DURING 2015 AND 2017.
						3.	THE HORIZONTAL CONTROL IS BASED ON THE MASSACHUSETTS MAINLAND STATE PLANE COORDINATE SYSTEM AND THE NATIONAL GEODETIC SURVEY (NAD83). ALL ELEVATION IS US FEET, REFERENCED TO THE NORTH AMERICA VERTICAL DATUM OF 1988 (NAVD88).
						4.	THE CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND GRADES IN THE FIELD BEFORE COMMENCING WORK AND PROMPTLY NOTIFY THE ENGINEER OF ANY DISCREPANCIES.
						5.	THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES SHOWN ON THIS PLAN ARE BASED ON FIELD OBSERVATIONS AND INFORMATION OF RECORD. THEY HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.
						6.	THE DELINEATED WETLANDS SHOWN ON THIS PLAN WERE FLAGGED BY THE VHB ENVIRONMENTAL DEPARTMENT AND FIELD SURVEYED BY THE VHB SURVEY DEPARTMENT IN SEPTEMBER AND OCTOBER 2017 AND WERE UPDATED IN MAY 2018 (SUDBURY ONLY).
						7.	THE APPROXIMATE WETLANDS AND STREAMS, AND THEIR ASSOCIATED BUFFERS AND RIVERFRONT AREAS, WHERE APPLICABLE, WERE TAKEN FROM AVAILABLE MASSGIS DATA. THESE WERE NOT FIELD DELINEATED OR FIELD VERIFIED.
						8.	THE CONTRACTOR SHALL VERIFY BY TEST PIT, THE LOCATIONS OF EXISTING UTILITIES THAT MAY CONFLICT WITH PROPOSED TRANSMISSION LINE. ANY FIELD ADJUSTMENTS WILL BE MADE AS APPROVED OR DIRECTED BY THE ENGINEER.
						9.	WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE ENGINEER FOR RESOLUTION OF THE CONFLICT.
						10.	THE CONTRACTOR SHALL ALTER THE MASONRY OF THE TOP SECTION OF ALL EXISTING DRAINAGE AND SEWER STRUCTURES AS NECESSARY FOR CHANGES IN GRADE, AND RESET ALL WATER AND DRAINAGE FRAMES, GRATES AND BOXES TO THE PROPOSED FINISH SURFACE GRADE. REQUIRED NEW MASONRY SHALL BE CLAY BRICK.
						11.	THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANIES.
						12.	EXISTING UTILITY POLES WILL BE RELOCATED BY OTHERS IF REQUIRED.
						13.	TREES AND SHRUBS WITHIN THE LIMITS OF GRADING SHALL BE REMOVED ONLY UPON APPROVAL OF THE ENGINEER.
						14.	AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT NO EXPENSE TO THE OWNER.
						15.	THE TERM "PROPOSED" (PROP) MEANS WORK TO BE CONSTRUCTED USING NEW MATERIALS OR, WHERE APPLICABLE, RE-USING EXISTING MATERIALS IDENTIFIED AS "REMOVE AND RESET" (R&R).
						16.	ALL PROP LOAM AND SEED CALLED OUT ON THE CONSTRUCTION PLANS TO ADHERE TO PLANTING SCHEDULE A PROVIDED ON DETAIL SHEET 161 UNLESS NOTED OTHERWISE.
						17.	JOINTS BETWEEN NEW ASPHALT CONCRETE ROADWAY PAVEMENT AND SAWCUT EXISTING PAVEMENT SHALL BE SEALED WITH BITUMEN AND BACKSANDS.
						18.	EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE RETAINED UNLESS INDICATED OTHERWISE ON THE DRAWINGS.
						19.	IF SUITABLE, ALL EXISTING GRANITE CURB & EDGING SHALL BE RE-USED IN THE PROPOSED WORK, EXCEPT CURVED STONES OF A DIFFERENT RADIUS THAN PROPOSED CURB.
						20.	ALL PROPOSED HOT MIX ASPHALT CURB SHALL BE MASSDOT TYPE 2.
						21.	ALL EXISTING STATE, COUNTY, CITY, AND TOWN LOCATION LINES AND PRIVATE PROPERTY LINES HAVE BEEN ESTABLISHED FROM AVAILABLE INFORMATION AND THEIR EXACT LOCATIONS ARE NOT GUARANTEED.
						22.	ALL PROPOSED BOUNDS SHALL BE PLACED BY A LICENSED PROFESSIONAL SURVEYOR. THE CONTRACTOR SHALL EXERCISE DUE CARE WHEN WORKING AROUND ALL PROPERTY BOUNDS WHICH ARE TO REMAIN. SHOULD ANY DAMAGE TO A BOUND RESULT FROM THE ACTIONS OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE THE BOUND REPLACED AND/OR REALIGNED BY A LICENSED PROFESSIONAL SURVEYOR AS DIRECTED BY THE ENGINEER AT NO ADDITIONAL COST.
						23.	DISPOSAL OF ALL SURPLUS MATERIAL SHALL BE AS APPROVED BY THE ENGINEER AND OWNER AND IN ACCORDANCE WITH ALL PERMITS AND LAWS REGULATING SOIL DISPOSAL.
						24.	LATERAL DRAIN PIPES SHALL BE INSTALLED WITH A PITCH OF 0.01 FOOT PER FOOT (MINIMUM) UNLESS NOTED OTHERWISE ON THE PLANS.
						25.	WHERE DEWATERING IS REQUIRED, CONTRACTOR SHALL TREAT WATER WITH DEWATERING BASIN OR DEWATERING FILTER BAGS BASED ON INPUT FROM LOCAL CONSERVATION COMMISSIONS.
						26.	SYNCPATED SILT FENCE TO BE USED AS AN EROSION CONTROL BARRIER WITHIN 450' OF VERNAL POOLS AND PRIORITY HABITAT AREAS.
						27.	THE LOCATIONS OF ALL EROSION CONTROL BARRIER SHALL BE ESTABLISHED BY SURVEY-GRADE EQUIPMENT AND ARE SUBJECT TO CHANGE BASED ON FIELD CONDITIONS.
						28.	ALL HISTORIC RAILROAD FEATURES LOCATED WITHIN THE LIMIT OF WORK AND OUTSIDE THE LIMITS OF THE 14' GRAVEL SUB-BASE SHALL BE RETAINED AND PROTECTED UNLESS OTHERWISE NOTED. CONSTRUCTION FENCING AND SIGNAGE SHALL BE INSTALLED AROUND THE FEATURE IN CONSULTATION WITH THE CULTURAL RESOURCES CONSULTANT. 24 HOURS ADVANCED NOTICE SHALL BE GIVEN TO THE CULTURAL RESOURCES CONSULTANT BEFORE ANY CONSTRUCTION WITHIN THE IMMEDIATE VICINITY OF THE FEATURE OCCURS. IF IT IS NOT POSSIBLE TO RETAIN THE FEATURE, IT SHALL BE CAREFULLY REMOVED AND RESET AS CLOSE AS POSSIBLE TO THE ORIGINAL LOCATION. THE REMOVAL AND RESETTING OF ANY HISTORIC RAILROAD FEATURE SHALL ONLY BE DONE WITH CONSULTATION OF THE CULTURAL RESOURCES CONSULTANT.

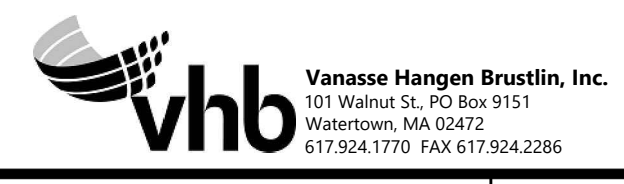
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HISTORIC FEATURE DISPOSITIONS		02/03/2022	
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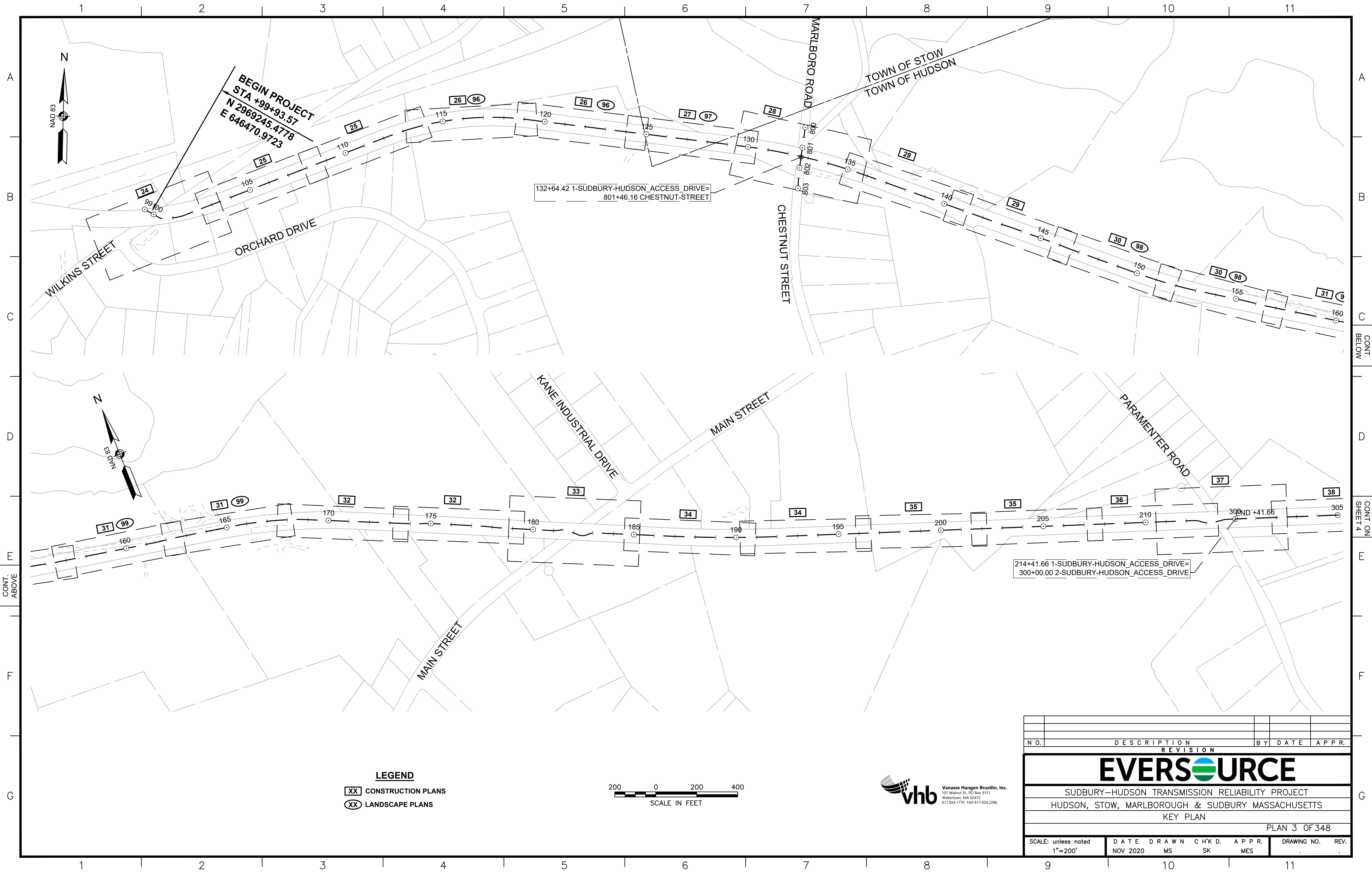
EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
LEGEND, ABBREVIATIONS, & GENERAL NOTES
PLAN 2 OF 349

SCALE: unless noted	DATE	DRAWN	CHECKED	APP'R.	DRAWING NO.	REV.
NTS	DEC 2021	MS	SK	MS		



Vannase Hangan Brustlin, Inc.
101 Walnut St., PO Box 9151
Watertown, MA 02472
617.924.1770 FAX 617.924.2286



BEGIN PROJECT
 STA +99+93.57
 N 2969245.4778
 E 646470.9723

132+64.42 1-SUDBURY-HUDSON_ACCESS_DRIVE=
 801+46.16 CHESTNUT-STREET

214+41.66 1-SUDBURY-HUDSON_ACCESS_DRIVE=
 300+00.00 2-SUDBURY-HUDSON_ACCESS_DRIVE

END +41.66

LEGEND

- XX CONSTRUCTION PLANS
- XX LANDSCAPE PLANS



NO.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
KEY PLAN				
PLAN 3 OF 348				
SCALE: unless noted 1"=200'	DATE NOV 2020	DRAWN MS	C'H'K D. SK	A.P.P.R. MES
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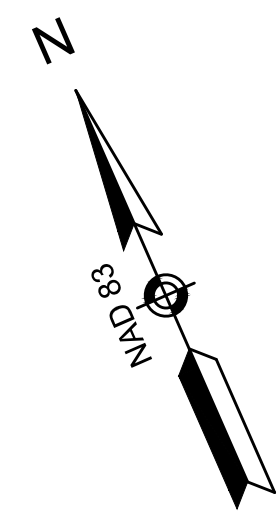
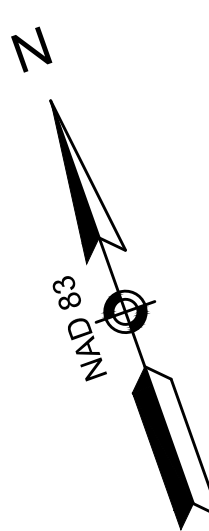
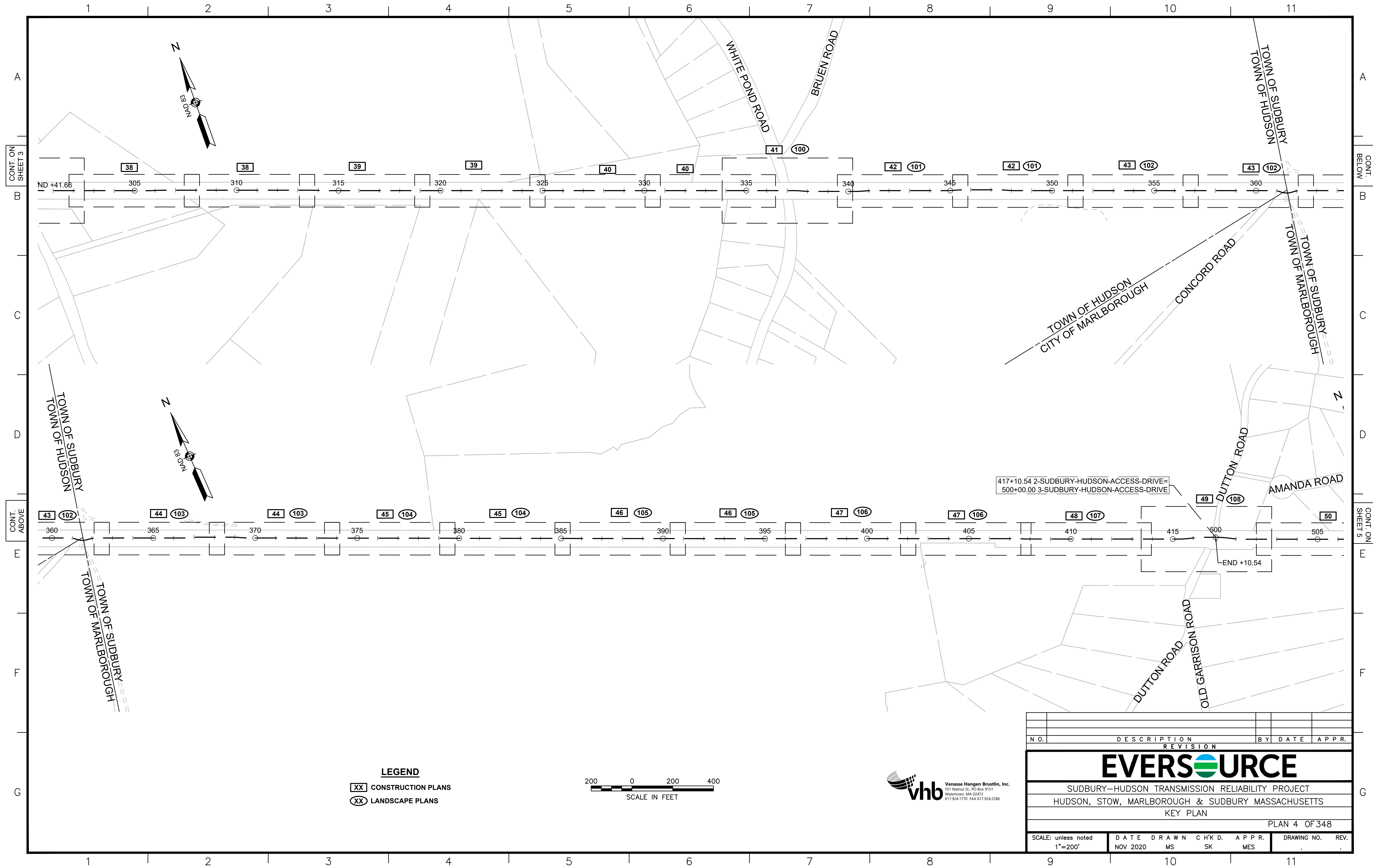
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LEGEND

- XX CONSTRUCTION PLANS
- XX LANDSCAPE PLANS



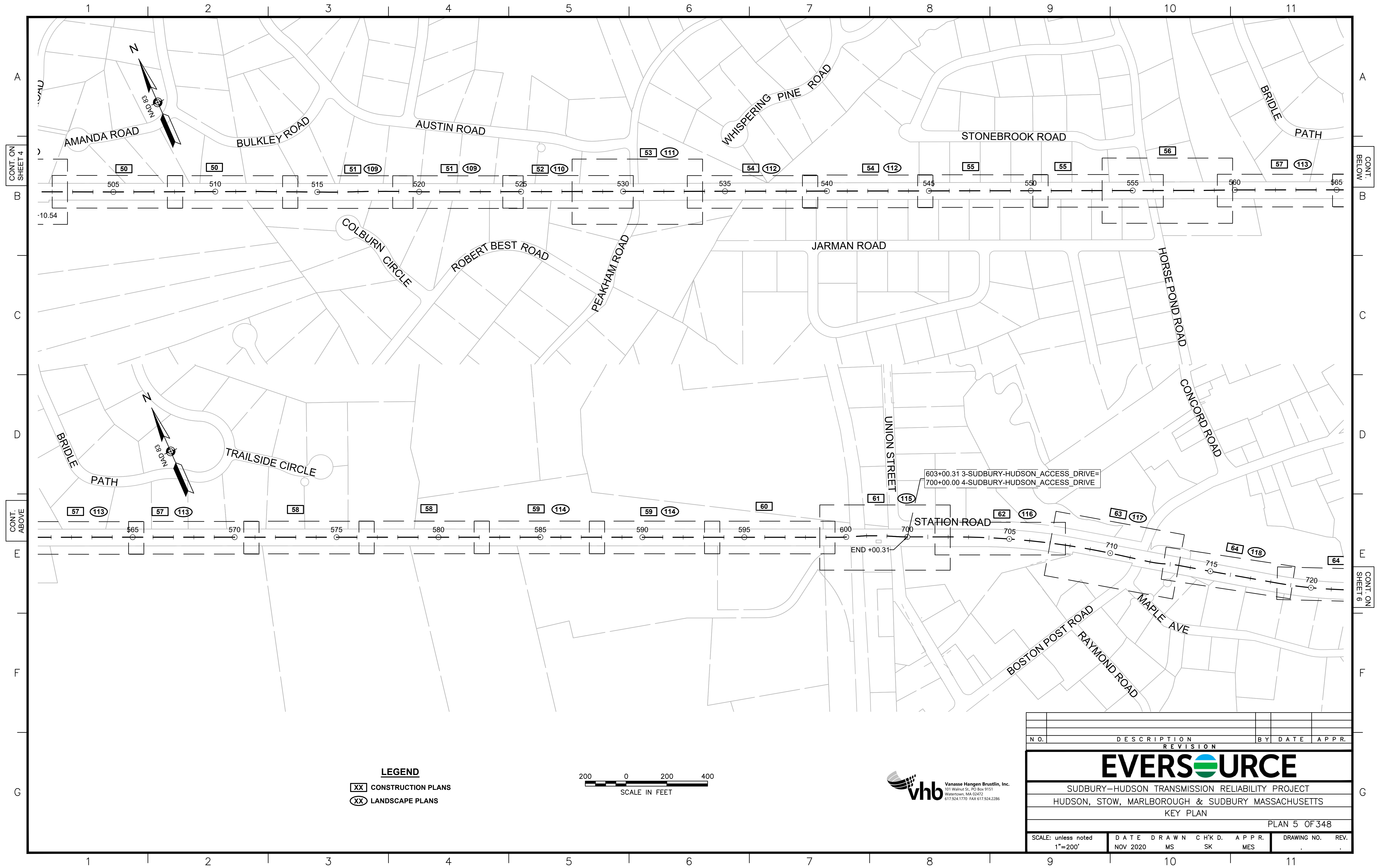
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EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
KEY PLAN				
PLAN 4 OF 348				
SCALE: unless noted 1"=200'	DATE NOV 2020	DRAWN MS	C'H'K D. SK	A P P R. MES
DRAWING NO.		REV.		

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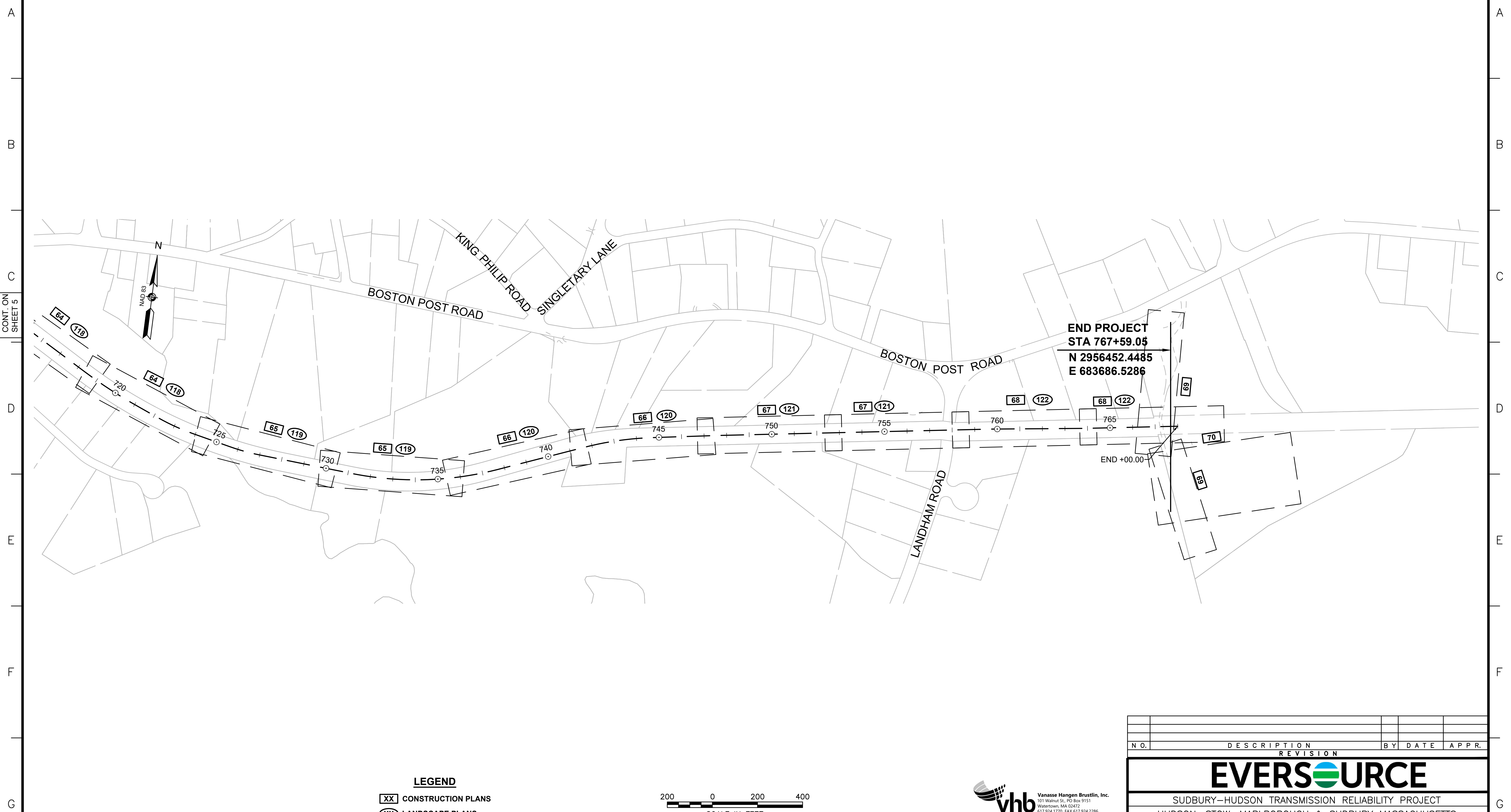
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- XX CONSTRUCTION PLANS
- XX LANDSCAPE PLANS



N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
KEY PLAN				
PLAN 5 OF 348				
SCALE: unless noted 1"=200'	DATE NOV 2020	DRAWN MS	C'H'K D. SK	APPR. MES
DRAWING NO.		REV.		

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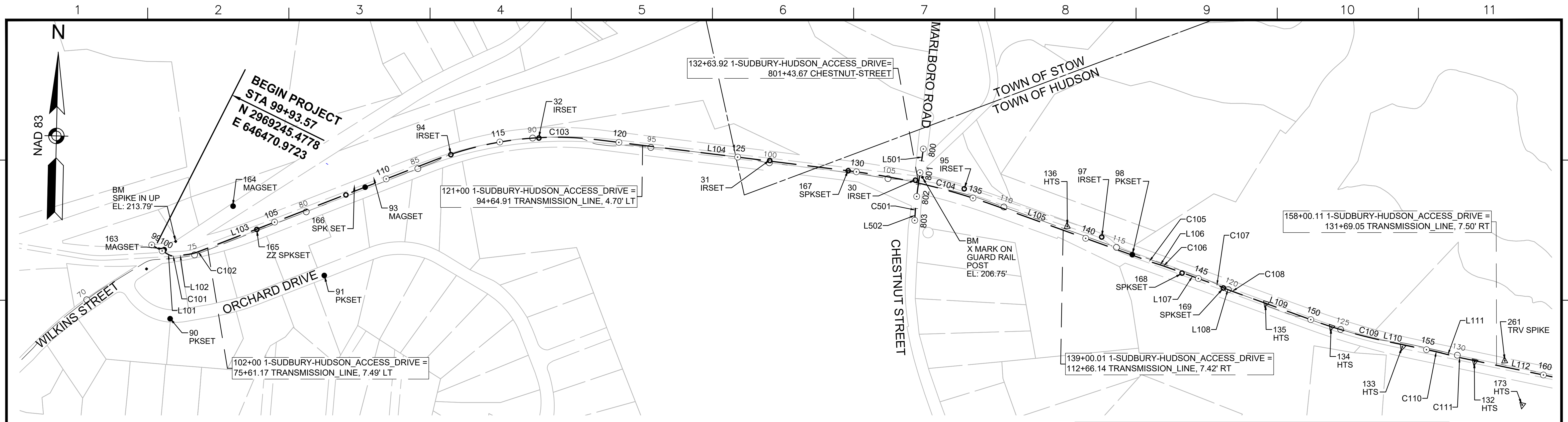
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- XX CONSTRUCTION PLANS
- XX LANDSCAPE PLANS



NO.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
KEY PLAN				
PLAN 6 OF 348				
SCALE: unless noted 1"=200'	DATE NOV 2020	DRAWN MS	C'H'K D. SK	A P P R. MES
DRAWING NO.	REV.			11

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CONT. ON SHEET 8

1-SUDBURY-HUDSON_ACCESS_DRIVE CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L101	99+50.00	2969274.969	646438.132		S57°19'07"E 81.72'	100+31.72	2969230.845	646506.912
C101	100+31.72	2969230.845	646506.912	R=40.00' Δ=35°52'18" L=25.04' T=12.95'		100+56.76	2969224.574	646530.737
L102	100+56.76	2969224.574	646530.737		N86°48'34"E 48.81'	101+05.57	2969227.291	646579.472
C102	101+05.57	2969227.291	646579.472	R=200.00' Δ=15°02'47" L=52.52' T=26.41'		101+58.09	2969237.027	646630.930
L103	101+58.09	2969237.027	646630.930		N71°45'47"E 1063.15'	112+21.25	2969569.737	647640.682
C103	112+21.25	2969569.737	647640.682	R=1400.00' Δ=28°11'56" L=689.03' T=351.64'		119+10.28	2969618.950	648321.003
L104	119+10.28	2969618.950	648321.003		S80°02'16"E 1065.88'	129+76.16	2969434.556	649370.812
C104	129+76.16	2969434.556	649370.812	R=2800.00' Δ=12°47'24" L=625.04' T=313.83'		136+01.20	2969258.894	649969.313
L105	136+01.20	2969258.894	649969.313		S67°14'52"E 680.66'	142+81.86	2968995.652	650597.005
C105	142+81.86	2968995.652	650597.005	R=500.00' Δ=2°17'26" L=19.99' T=10.00'		143+01.85	2968988.291	650615.589
L106	143+01.85	2968988.291	650615.589		S69°32'18"E 30.05'	143+31.90	2968977.787	650643.741
C106	143+31.90	2968977.787	650643.741	R=500.00' Δ=2°17'26" L=19.99' T=10.00'		143+51.89	2968970.427	650662.324
L107	143+51.89	2968970.427	650662.324		S67°14'52"E 230.01'	145+81.89	2968881.472	650874.434
C107	145+81.89	2968881.472	650874.434	R=500.00' Δ=2°17'26" L=19.99' T=10.00'		146+01.88	2968873.375	650892.709
L108	146+01.88	2968873.375	650892.709		S64°57'26"E 30.05'	146+31.93	2968860.656	650919.932
C108	146+31.93	2968860.656	650919.932	R=500.00' Δ=2°17'26" L=19.99' T=10.00'		146+51.92	2968852.559	650938.207
L109	146+51.92	2968852.559	650938.207		S67°14'52"E 358.25'	150+10.17	2968714.005	651268.583
C109	150+10.17	2968714.005	651268.583	R=2300.00' Δ=8°06'43" L=325.63' T=163.09'		153+35.80	2968609.711	651576.773
L110	153+35.80	2968609.711	651576.773		S75°21'35"E 196.11'	155+31.91	2968560.145	651766.511
C110	155+31.91	2968560.145	651766.511	R=500.00' Δ=2°17'05" L=19.94' T=9.97'		155+51.85	2968554.722	651785.695
L111	155+51.85	2968554.722	651785.695		S73°04'30"E 80.40'	156+32.25	2968531.316	651862.614
C111	156+32.25	2968531.316	651862.614	R=500.00' Δ=2°17'05" L=19.94' T=9.97'		156+52.19	2968525.894	651881.798
L112	156+52.19	2968525.894	651881.798		S75°21'35"E 494.94'	161+47.12	2968400.798	652360.665

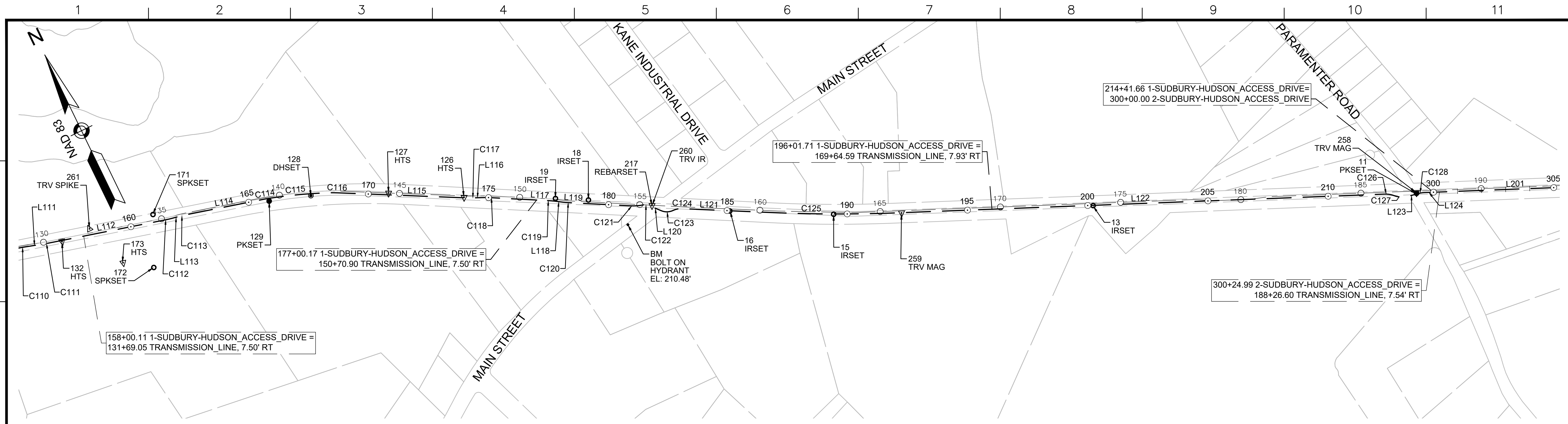
CHESTNUT-STREET CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L501	800+00.00	2969511.351	649678.545		S10°58'48"W 181.91'	801+81.91	2969332.767	649643.897
C501	801+81.91	2969332.767	649643.897	R=1000.00' Δ=4°22'21" L=76.32' T=38.18'		802+58.23	2969257.368	649632.233
L502	802+58.23	2969257.368	649632.233		S6°36'27"W 41.77'	803+00.00	2969215.874	649627.426

BENCHMARK TABLE				
NORTHING	EASTING	ELEV	DESCRIPTION	
2969284.465	646538.668	213.79	SPIKE IN UP	
2969393.797	649668.675	206.75	X MARK ON GUARD RAIL	

SURVEY TRAVERSE TABLE						
POINT #	NORTHING	EASTING	ELEV	RAW DESCRIPTION	STATION CONSTR @	OFFSET CONSTR @
30	2969383.123	649638.659	207.19	IRSET	132+48.42	8.95 LT
31	2969495.867	649035.098	201.05	IRSET	126+34.90	2.31 LT
32	2969638.584	648076.375	210.48	IRSET	116+64.42	1.47 RT
90	2968963.680	646499.149	216.98	PKSET	100+50.64	262.26 RT
91	2969111.213	647151.661	215.67	PKSET	106+13.29	282.46 RT
93	2969470.486	647340.975	217.16	MAGSET	109+05.53	0.47 RT
94	2969587.905	647705.522	213.86	IRSET	112+88.61	1.42 RT
95	2969336.631	649840.683	190.48	IRSET	134+53.81	25.86 LT
97	2969106.552	650404.209	184.67	IRSET	140+61.17	27.71 LT
98	2969026.596	650528.120	186.44	PKSET	142+06.37	1.89 LT
132	2968507.785	651933.720	182.93	HTS	157+07.00	4.40 RT
133	2968584.874	651635.344	182.80	HTS	153+98.75	9.23 RT
134	2968682.452	651343.328	181.85	HTS	150+91.27	1.62 RT
135	2968795.126	651074.622	182.33	HTS	147+99.93	0.21 RT
136	2969158.609	650262.853	186.14	HTS	139+10.69	21.04 LT
138	2968498.335	646029.886	221.73	MAGSET	100+25.74	874.12 RT
163	2969252.795	646488.992	212.74	MAGSET	100+04.78	8.80 LT
164	2969419.359	646785.783	210.55	MAGSET	103+62.23	124.71 LT
165	2969317.327	646879.836	222.40	ZZ SPKSET	104+19.63	1.63 RT
166	2969442.345	647259.123	218.01	SPKSET	108+18.99	1.59 RT
167	2969436.517	649360.132	197.07	SPKSET	129+65.30	0.08 LT
168	2968939.346	650731.741	182.59	SPKSET	144+27.92	1.82 RT
169	2968868.325	650900.999	182.20	SPKSET	146+11.53	1.07 RT
172	2968243.951	652229.807	182.24	SPKSET	160+60.16	184.83 RT
173	2968317.552	652123.483	180.88	HTS	159+38.68	140.49 RT
261	2968504.964	652060.065	184.37	TRV SPIKE	158+29.95	24.81 LT



NO.		DESCRIPTION		BY	DATE	APPR.
REVISION						
EVERSOURCE						
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT						
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS						
SURVEY TIE-IN PLANS						
PLAN 7 OF 348						
SCALE: unless noted 1"=200'	DATE	DRAWN	CHK'D.	APPR.	DRAWING NO.	REV.
	FEB 2021	MS	SK	MES		



1-SUDBURY-HUDSON_ACCESS_DRIVE CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
C110	155+31.91	2968560.145	651786.511	R=500.00' Δ=2°17'05" L=19.94' T=9.97'		155+51.85	2968554.722	651785.695
L111	155+51.85	2968554.722	651785.695		S73°04'30"E 80.40'	156+32.25	2968531.316	651862.614
C111	156+32.25	2968531.316	651862.614	R=500.00' Δ=2°17'05" L=19.94' T=9.97'		156+52.19	2968525.894	651881.798
L112	156+52.19	2968525.894	651881.798		S75°21'35"E 494.94'	161+47.12	2968400.798	652360.665
C112	161+47.12	2968400.798	652360.665	R=500.00' Δ=4°34'26" L=39.91' T=19.97'		161+87.04	2968392.260	652399.645
L113	161+87.04	2968392.260	652399.645		S79°56'01"E 10.22'	161+97.26	2968381.936	652448.692
C113	161+97.26	2968381.936	652448.692	R=500.00' Δ=4°34'26" L=39.91' T=19.97'		162+37.18	2968311.936	652448.692
L114	162+37.18	2968311.936	652448.692		S75°21'35"E 325.80'	165+62.97	2968299.591	652763.911
C114	165+62.97	2968299.591	652763.911	R=500.00' Δ=2°17'07" L=19.94' T=9.97'		165+82.92	2968294.166	652783.101
C115	165+82.92	2968294.166	652783.101	R=2000.00' Δ=7°17'45" L=254.67' T=127.51'		168+37.59	2968204.731	653021.372
C116	168+37.59	2968204.731	653021.372	R=500.00' Δ=3°55'20" L=34.23' T=17.12'		168+71.82	2968189.631	653052.082
L115	168+71.82	2968189.631	653052.082		S61°51'22"E 529.98'	174+01.80	2967939.647	653519.398
C117	174+01.80	2967939.647	653519.398	R=500.00' Δ=3°54'19" L=34.08' T=17.05'		174+35.88	2967924.608	653549.974
L116	174+35.88	2967924.608	653549.974		S65°45'41"E 36.37'	174+72.25	2967909.677	653583.135
C118	174+72.25	2967909.677	653583.135	R=500.00' Δ=4°35'46" L=40.11' T=20.07'		175+12.35	2967891.763	653619.009
L117	175+12.35	2967891.763	653619.009		S61°09'55"E 234.86'	177+47.22	2967778.491	653824.754
C119	177+47.22	2967778.491	653824.754	R=500.00' Δ=4°34'29" L=39.92' T=19.97'		177+87.14	2967757.862	653858.921
L118	177+87.14	2967757.862	653858.921		S56°35'26"E 10.72'	177+97.86	2967751.962	653867.866
C120	177+97.86	2967751.962	653867.866	R=500.00' Δ=4°35'18" L=40.04' T=20.03'		178+37.90	2967731.276	653902.137
L119	178+37.90	2967731.276	653902.137		S61°10'44"E 255.16'	180+93.06	2967608.269	654125.690
C121	180+93.06	2967608.269	654125.690	R=200.00' Δ=13°48'39" L=48.21' T=24.22'		181+41.27	2967590.318	654170.307
C122	181+41.27	2967590.318	654170.307	R=50.00' Δ=33°35'20" L=29.31' T=15.09'		181+70.58	2967575.091	654194.862
L120	181+70.58	2967575.091	654194.862		S41°24'03"E 53.66'	182+24.24	2967534.839	654230.350

1-SUDBURY-HUDSON_ACCESS_DRIVE CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
C123	182+24.24	2967534.839	654230.350	R=60.00' Δ=47°56'15" L=50.20' T=26.67'		182+74.44	2967514.523	654274.663
C124	182+74.44	2967514.523	654274.663	R=80.00' Δ=27°43'21" L=38.71' T=19.74'		183+13.15	2967504.910	654311.769
L121	183+13.15	2967504.910	654311.769		S61°36'57"E 368.60'	186+81.74	2967329.686	654636.052
C125	186+81.74	2967329.686	654636.052	R=6500.00' Δ=4°41'05" L=531.46' T=265.88'		192+13.21	2967096.424	655113.425
L122	192+13.21	2967096.424	655113.425		S66°18'02"E 2021.93'	212+35.14	2966283.729	656964.841
C126	212+35.14	2966283.729	656964.841	R=100.00' Δ=22°30'52" L=39.30' T=19.90'		212+74.44	2966261.359	656996.840
C127	212+74.44	2966261.359	656996.840	R=100.00' Δ=35°52'08" L=62.60' T=32.37'		213+37.04	2966232.181	657051.075
L123	213+37.04	2966232.181	657051.075		S79°39'18"E 42.56"	213+79.60	2966224.538	657092.945
C128	213+79.60	2966224.538	657092.945	R=100.00' Δ=13°22'03" L=23.33' T=11.72'		214+02.93	2966217.721	657115.202
L124	214+02.93	2966217.721	657115.202		S66°17'15"E 38.73"	214+41.66	2966202.144	657150.666

2-SUDBURY-HUDSON_ACCESS_DRIVE CONSTRUCTION BASELINE DATA

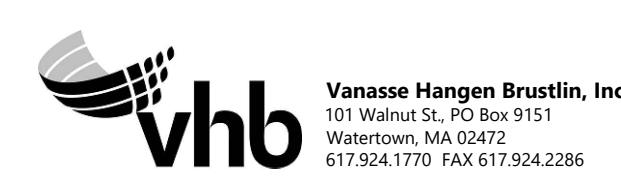
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L201	300+00.00	2966202.144	657150.666		S66°17'15"E 569.94'	305+69.94	2965972.944	657672.488

SURVEY TRAVERSE TABLE

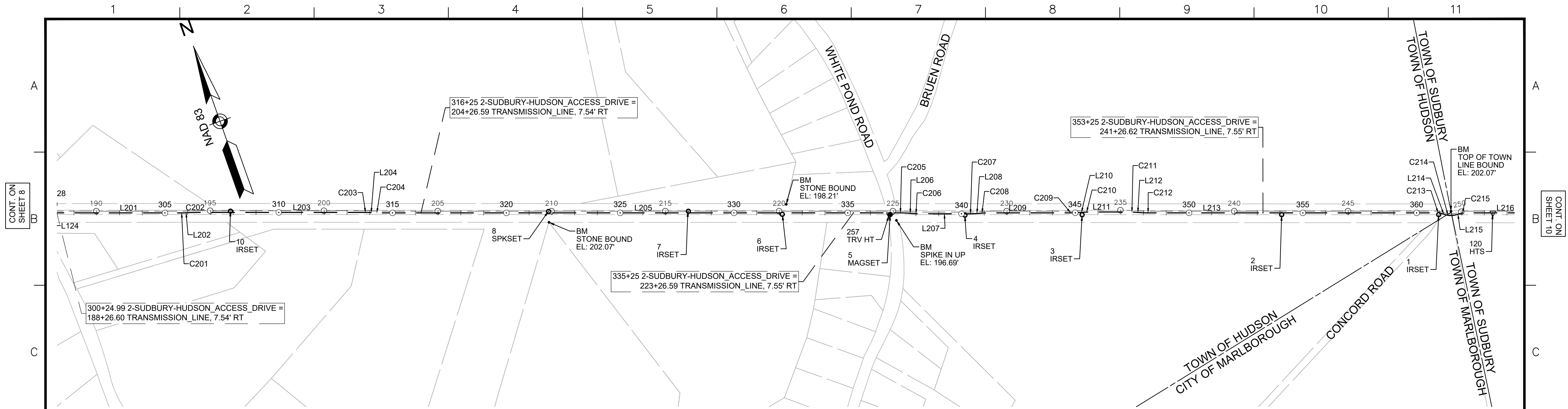
POINT #	NORTHING	EASTING	ELEV	RAW DESCRIPTION	STATION CONSTR	OFFSET CONSTR
11	2966228.778	657085.109	211.30	PKSET	213+69.42	8.35 RT
13	2966770.040	655853.843	210.87	IRSET	200+22.37	1.26 RT
15	2967208.662	654868.078	210.94	IRSET	189+43.42	1.44 RT
16	2967409.645	654485.745	208.26	IRSET	185+11.50	1.11 RT
18	2967707.243	653977.303	201.79	IRSET	179+15.34	15.18 LT
19	2967772.642	653856.653	200.61	IRSET	177+77.33	11.19 LT
126	2967942.886	653516.846	197.05	HTS	173+98.02	1.65 LT
127	2968096.028	653242.036	194.38	HTS	170+83.47	7.06 LT
128	2968227.438	652947.502	191.56	DHSET	167+60.58	8.12 RT
129	2968282.714	652781.651	190.10	PKSET	165+84.87	11.38 RT
132	2968507.785	651933.720	182.93	HTS	157+07.00	4.40 RT
171	2968443.448	652323.126	185.42	SPKSET	161+00.02	31.78 LT
172	2968243.951	652229.807	182.24	SPKSET	160+60.16	184.83 RT
173	2968317.552	652123.483	180.88	HTS	159+38.68	140.49 RT
217	2967571.162	654204.653	206.60	REBARSET	181+80.00	4.75 LT
258	2966231.436	657085.443	210.53	TRV MAG	213+69.97	5.73 RT
259	2967090.494	655124.057	211.25	TRV MAG	192+25.33	1.16 RT
260	2967571.196	654204.425	206.63	TRV IR	181+79.82	4.60 LT
261	2968504.964	652060.065	184.37	TRV SPIKE	158+29.95	24.81 LT

BENCHMARK TABLE

NORTHING	EASTING	ELEV	DESCRIPTION
2967543.215	654080.038	210.48	BOLT ON HYDRANT



NO.		DESCRIPTION		BY	DATE	APPR.
		REVISION				
EVERSOURCE						
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT						
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS						
SURVEY TIE-IN PLANS						
PLAN 8 OF 348						
SCALE: unless noted 1"=200'	DATE FEB 2021	DRAWN MS	C.H.K.D. SK	APPR. MES	DRAWING NO.	REV.



CONT. ON SHEET 8

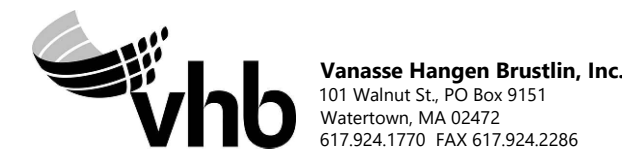
CONT. ON SHEET 10

2-SUDBURY-HUDSON_ACCESS_DRIVE CONSTRUCTION BASELINE DATA							
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	EASTING
L201	300+00.00	2966202.144	657150.666		S66°17'15"E 569.94'	305+69.94	657672.488
C201	305+69.94	2965972.944	657672.488	R=500.00' L=20.25' Δ=2°19'14" T=10.13'		305+90.19	657691.189
L202	305+90.19	2965965.177	657691.189		S68°36'29"E 31.19'	306+21.38	2965953.800
C202	306+21.38	2965953.800	657720.233	R=500.00' L=19.99' Δ=2°17'26" T=10.00'		306+41.37	2965946.138
L203	306+41.37	2965946.138	657738.695		S66°19'03"E 730.01'	313+71.38	2965652.916
C203	313+71.38	2965652.916	658407.225	R=500.00' L=19.99' Δ=2°17'26" T=10.00'		313+91.37	2965644.523
L204	313+91.37	2965644.523	658425.365		S64°01'36"E 29.68'	314+21.05	2965631.525
C204	314+21.05	2965631.525	658452.047	R=500.00' L=19.94' Δ=2°17'04" T=9.97'		314+40.99	2965623.153
L205	314+40.99	2965623.153	658470.139		S66°18'41"E 2288.82'	337+29.81	2964703.581
C205	337+29.81	2964703.581	660566.109	R=500.00' L=39.49' Δ=4°31'29" T=19.75'		337+69.29	2964686.306
L206	337+69.29	2964686.306	660601.604		S61°47'12"E 11.20'	337+80.49	2964681.012
C206	337+80.49	2964681.012	660611.471	R=500.00' L=39.49' Δ=4°31'29" T=19.75'		338+19.98	2964663.738
L207	338+19.98	2964663.738	660646.966		S66°18'41"E 209.72'	340+29.70	2964579.477
C207	340+29.70	2964579.477	660839.020	R=500.00' L=37.52' Δ=4°17'58" T=18.77'		340+67.22	2964565.706
L208	340+67.22	2964565.706	660873.911		S70°36'39"E 15.82'	340+83.04	2964560.454
C208	340+83.04	2964560.454	660888.833	R=500.00' L=37.52' Δ=4°17'58" T=18.77'		341+20.56	2964546.683
L209	341+20.56	2964546.683	660923.724		S66°18'41"E 359.47'	344+80.03	2964402.259
C209	344+80.03	2964402.259	661252.908	R=500.00' L=39.91' Δ=4°34'26" T=19.97'		345+19.95	2964387.697
L210	345+19.95	2964387.697	661290.061		S70°53'07"E 10.12'	345+30.07	2964384.383
C210	345+30.07	2964384.383	661299.625	R=500.00' L=39.89' Δ=4°34'16" T=19.96'		345+69.96	2964369.832
L211	345+69.96	2964369.832	661336.754		S66°18'51"E 159.98'	347+29.94	2964305.565
C211	347+29.94	2964305.565	661483.256	R=500.00' L=38.39' Δ=4°23'59" T=19.21'		347+68.33	2964288.808

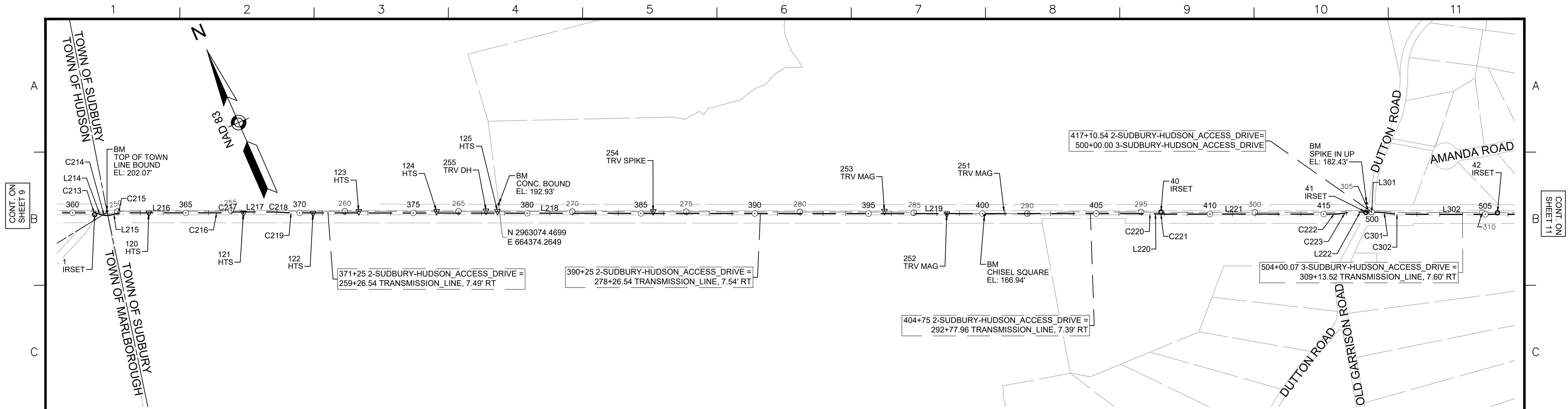
2-SUDBURY-HUDSON_ACCESS_DRIVE CONSTRUCTION BASELINE DATA							
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	EASTING
L212	347+68.33	2964288.808	661517.789		S61°54'53"E 13.79'	347+82.12	2964282.316
C212	347+82.12	2964282.316	661529.955	R=500.00' L=38.37' Δ=4°23'48" T=19.19'		348+20.49	2964265.568
L213	348+20.49	2964265.568	661564.465		S66°18'41"E 1267.77'	360+88.26	2963756.220
C213	360+88.26	2963756.220	662725.416	R=80.00' L=23.32' Δ=16°41'57" T=11.74'		361+11.58	2963743.895
L214	361+11.58	2963743.895	662745.111		S49°36'43"E 16.84'	361+28.41	2963732.985
C214	361+28.41	2963732.985	662757.935	R=80.00' L=45.94' Δ=32°54'10" T=23.62'		361+74.35	2963714.601
L215	361+74.35	2963714.601	662799.350		S82°30'53"E 18.74'	361+93.10	2963712.159
C215	361+93.10	2963712.159	662817.933	R=80.00' L=22.62' Δ=16°12'13" T=11.39'		362+15.72	2963706.100
L216	362+15.72	2963706.100	662839.653		S66°18'41"E 417.03'	366+32.74	2963538.553

SURVEY TRAVERSE TABLE						
POINT #	NORTHING	EASTING	ELEV	RAW DESCRIPTION	STATION CONSTR	OFFSET CONSTR
1	2963745.726	662730.239	198.48	IRSET	360+96.89	7.67 RT
2	2964022.713	662098.499	192.67	IRSET	354+07.10	7.84 RT
3	2964374.403	661295.377	190.95	IRSET	345+29.32	10.82 RT
4	2964579.876	660823.257	192.72	IRSET	340+15.11	5.97 RT
5	2964714.175	660523.283	194.29	MAGSET	336+86.33	7.50 RT
6	2964905.564	660089.787	194.56	IRSET	332+12.47	6.41 RT
7	2965083.764	659717.177	195.49	IRSET	327+99.66	7.08 LT
8	2965329.485	659154.249	203.44	SPKSET	321+85.44	5.93 LT
10	2965892.249	657875.010	214.54	IRSET	307+87.85	5.40 LT
120	2963656.875	662950.210	197.18	HTS	363+34.03	0.66 RT
257	2964715.397	660518.603	194.24	TRV HT	336+81.56	8.27 RT

BENCHMARK TABLE			
NORTHING	EASTING	ELEV	DESCRIPTION
2965285.239	659136.888	202.07	STONE BOUND
2964938.646	660123.237	198.21	STONE BOUND
2964679.970	660538.355	196.69	SPIKE IN UP
2963737.068	662785.722	202.07	TOP OF TOWN LINE BOUND



NO.				DESCRIPTION				BY DATE				APP R.			
				REVISION											
EVERSOURCE															
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT															
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS															
SURVEY TIE-IN PLANS															
PLAN 9 OF 348															
SCALE: unless noted 1"=200'				DATE DRAWN FEB 2021				C H'K D. MS				APP R. SK			
DRAWING NO.				REV.											



2-SUDBURY-HUDSON_ACCESS_DRIVE CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
C213	360+88.26	2963756.220	662725.416	R=80.00' Δ=16°41'57" L=23.32' T=11.74'		361+11.58	2963743.895	662745.111
L214	361+11.58	2963743.895	662745.111		S49°36'43"E 16.84'	361+28.41	2963732.985	662757.935
C214	361+28.41	2963732.985	662757.935	R=80.00' Δ=32°54'10" L=45.94' T=23.62'		361+74.35	2963714.601	662799.350
L215	361+74.35	2963714.601	662799.350		S82°30'53"E 18.74'	361+93.10	2963712.159	662817.933
C215	361+93.10	2963712.159	662817.933	R=80.00' Δ=16°12'13" L=22.62' T=11.39'		362+15.72	2963706.100	662839.653
L216	362+15.72	2963706.100	662839.653		S66°18'41"E 417.03'	366+32.74	2963538.553	663221.540
C216	366+32.74	2963538.553	663221.540	R=500.00' Δ=5°07'35" L=44.74' T=22.38'		366+77.48	2963522.435	663263.256
C217	366+77.48	2963522.435	663263.256	R=500.00' Δ=5°07'35" L=44.74' T=22.38'		367+22.22	2963506.317	663304.972
L217	367+22.22	2963506.317	663304.972		S66°18'41"E 162.17'	368+84.39	2963441.162	663453.479
C218	368+84.39	2963441.162	663453.479	R=500.00' Δ=5°03'10" L=44.09' T=22.06'		369+28.48	2963421.691	663493.024
C219	369+28.48	2963421.691	663493.024	R=500.00' Δ=4°58'12" L=43.37' T=21.70'		369+71.85	2963402.510	663531.908
L218	369+71.85	2963402.510	663531.908		S66°13'43"E 2255.15'	392+27.00	2962493.483	665595.730
L219	392+27.00	2962493.483	665595.730		S66°18'55"E 1499.60'	407+26.60	2961891.088	666969.015
C220	407+26.60	2961891.088	666969.015	R=500.00' Δ=2°19'04" L=20.23' T=10.11'		407+46.82	2961882.591	666987.368
L220	407+46.82	2961882.591	666987.368		S63°59'51"E 27.94'	407+74.76	2961870.342	667012.481
C221	407+74.76	2961870.342	667012.481	R=500.00' Δ=2°17'42" L=20.03' T=10.01'		407+94.79	2961861.924	667030.651
L221	407+94.79	2961861.924	667030.651		S66°17'33"E 730.94'	415+25.73	2961568.037	667699.907
C222	415+25.73	2961568.037	667699.907	R=499.59' Δ=7°40'18" L=66.89' T=33.50'		415+92.62	2961545.316	667762.771
C223	415+92.62	2961545.316	667762.771	R=500.00' Δ=7°45'40" L=67.73' T=33.92'		416+60.35	2961522.262	667826.400
L222	416+60.35	2961522.262	667826.400		S66°12'11"E 50.19'	417+10.54	2961502.012	667872.321

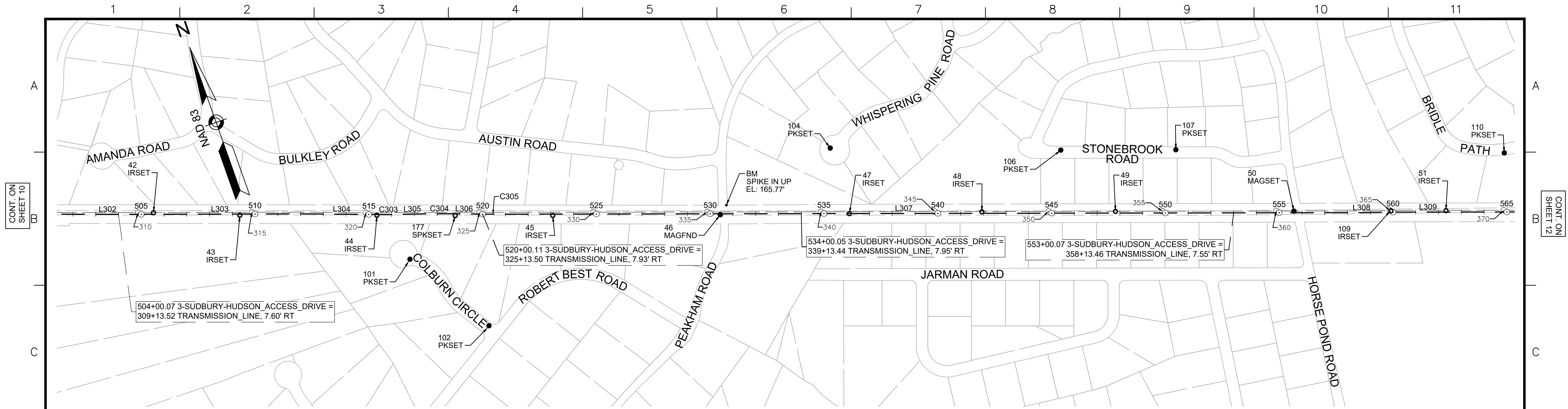
3-SUDBURY-HUDSON_ACCESS_DRIVE CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L301	500+00.00	2961502.012	667872.321		S66°12'11"E 2.28'	500+02.28	2961501.092	667874.407
C301	500+02.28	2961501.092	667874.407	R=500.00' Δ=7°41'35" L=67.14' T=33.62'		500+69.41	2961469.967	667933.834
C302	500+69.41	2961469.967	667933.834	R=500.00' Δ=7°41'34" L=67.13' T=33.62'		501+36.55	2961438.842	667993.259
L302	501+36.55	2961438.842	667993.259		S66°12'10"E 352.24'	504+88.78	2961296.716	668315.548

BENCHMARK TABLE			
NORTHING	EASTING	ELEV	DESCRIPTION
2963737.068	662785.722	202.07	TOP OF TOWN LINE BOUND
2963074.470	664374.265	192.93	CONC. BOUND
2962172.866	666309.477	166.94	CHISEL SQUARE
2961546.450	667868.173	182.43	SPIKE IN UP

SURVEY TRAVERSE TABLE						
POINT #	NORTHING	EASTING	ELEV	RAW DESCRIPTION	STATION CONSTR	OFFSET CONSTR
1	2963745.726	662730.239	198.48	IRSET	360+96.89	7.67 RT
40	2961873.800	667025.482	171.31	IRSET	407+82.40	8.70 LT
41	2961510.586	667848.645	181.70	IRSET	416+82.29	7.29 LT
42	2961276.984	668377.806	188.16	IRSET	505+53.68	6.74 LT
120	2963656.875	662950.210	197.18	HTS	363+34.03	0.66 RT
121	2963489.402	663331.297	194.65	HTS	367+50.41	4.91 RT
122	2963365.831	663611.237	193.31	HTS	370+56.52	1.59 RT
123	2963292.393	663798.336	191.85	HTS	372+57.35	6.62 LT
124	2963155.264	664111.471	190.70	HTS	375+99.20	7.35 LT
125	2963048.085	664356.309	188.72	HTS	378+66.46	7.95 LT
252	2962245.033	666160.019	168.98	TRV MAG	398+40.85	0.85 RT
253	2962365.661	665913.641	171.64	TRV MAG	395+66.77	10.65 LT
254	2962773.106	664982.657	181.84	TRV SPIKE	385+50.51	8.78 LT
255	2963070.212	664310.860	189.64	TRV DH	378+15.95	9.88 LT
18000	2962245.042	666159.997	169.01	ZZ	398+40.83	0.85 RT
18044	2962245.028	666160.012	168.98	ZZ	398+40.85	0.85 RT
18045	2962245.041	666159.998	168.99	ZZ	398+40.83	0.85 RT
18115	2962244.993	666159.978	169.01	ZZ	398+40.83	0.90 RT



NO.	DESCRIPTION	BY	DATE	APP.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
SURVEY TIE-IN PLANS				
PLAN 10 OF 348				
SCALE: unless noted 1"=200'	DATE FEB 2021	DRAWN MS	CHECKED SK	APP. MES
DRAWING NO.	REV.			



CONT. ON SHEET 10

CONT. ON SHEET 12

3-SUDBURY-HUDSON_ACCESS_DRIVE CONSTRUCTION BASELINE DATA							
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	EASTING
L302	501+36.55	2961438.842	667993.259		S66°12'10"E 352.24'	504+88.78	2961296.716
L303	504+88.78	2961296.716	668315.548		S66°29'41"E 714.53'	512+03.31	2961011.736
L304	512+03.31	2961011.736	668970.789		S65°47'36"E 355.56'	515+58.87	2960865.948
C303	515+58.87	2960865.948	669295.083	R=2000.00' Δ=2°02'02" L=70.99' T=35.50'		516+29.86	2960837.994
L305	516+29.86	2960837.994	669360.337		S67°49'38"E 62.53'	516+92.40	2960814.394
C304	516+92.40	2960814.394	669418.247	R=5000.00' Δ=2°28'08" L=215.46' T=107.75'		519+07.86	2960728.805
L306	519+07.86	2960728.805	669615.962		S65°21'30"E 56.37'	519+64.23	2960705.304
C305	519+64.23	2960705.304	669667.194	R=5000.00' Δ=1°03'24" L=92.20' T=46.10'		520+56.43	2960667.637
L307	520+56.43	2960667.637	669751.349		S66°24'53"E 3804.53'	558+60.96	2959145.398
L308	558+60.96	2959145.398	673238.076		S67°25'05"E 114.60'	559+75.56	2959101.392
L309	559+75.56	2959101.392	673343.887		S66°25'05"E 324.74'	563+00.30	2958971.476

SURVEY TRAVERSE TABLE						
POINT #	NORTHING	EASTING	ELEV	RAW DESCRIPTION	STATION CONSTR	OFFSET CONSTR
42	2961276.984	668377.806	188.16	IRSET	505+53.68	6.74 LT
43	2961114.242	668720.884	186.90	IRSET	509+33.20	5.67 RT
44	2960872.290	669272.068	179.54	IRSET	515+35.16	5.71 RT
45	2960561.109	669979.507	170.77	IRSET	523+08.08	6.11 RT
46	2960268.559	670655.156	164.98	MAGFND	530+44.34	3.24 RT
47	2960044.841	671176.622	158.38	IRSET	536+11.75	0.17 LT
48	2959818.439	671712.628	158.76	IRSET	541+93.58	6.87 LT
49	2959584.190	672250.787	164.97	IRSET	547+80.51	7.26 LT
50	2959270.319	672969.429	166.74	MAGSET	555+64.70	7.01 LT
51	2959003.971	673581.771	161.78	IRSET	562+32.47	5.88 LT
101	2960637.452	669327.889	173.64	PKSET	516+80.03	200.80 RT
102	2960230.460	669528.351	161.76	PKSET	520+29.54	489.96 RT
104	2960342.456	671214.805	164.86	PKSET	535+27.81	288.24 LT
106	2959927.516	672139.020	156.93	PKSET	545+40.82	277.29 LT
107	2959725.836	672602.609	167.23	PKSET	550+46.28	277.74 LT
109	2959100.366	673360.157	163.15	IRSET	559+90.81	5.57 LT
110	2959133.231	673918.507	165.88	PKSET	564+88.88	259.43 LT
177	2960732.743	669586.484	175.07	SPKSET	518+79.35	8.71 RT

BENCHMARK TABLE			
NORTHING	EASTING	ELEV	DESCRIPTION
2960296.323	670696.507	165.77	SPIKE IN UP



REVISION			
NO.	DESCRIPTION	BY	DATE

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
SURVEY TIE-IN PLANS

PLAN 11 OF 348

SCALE: unless noted 1"=200'	DATE FEB 2021	DRAWN MS	CHECKED SK	APPROVED MES	DRAWING NO. 	REV.
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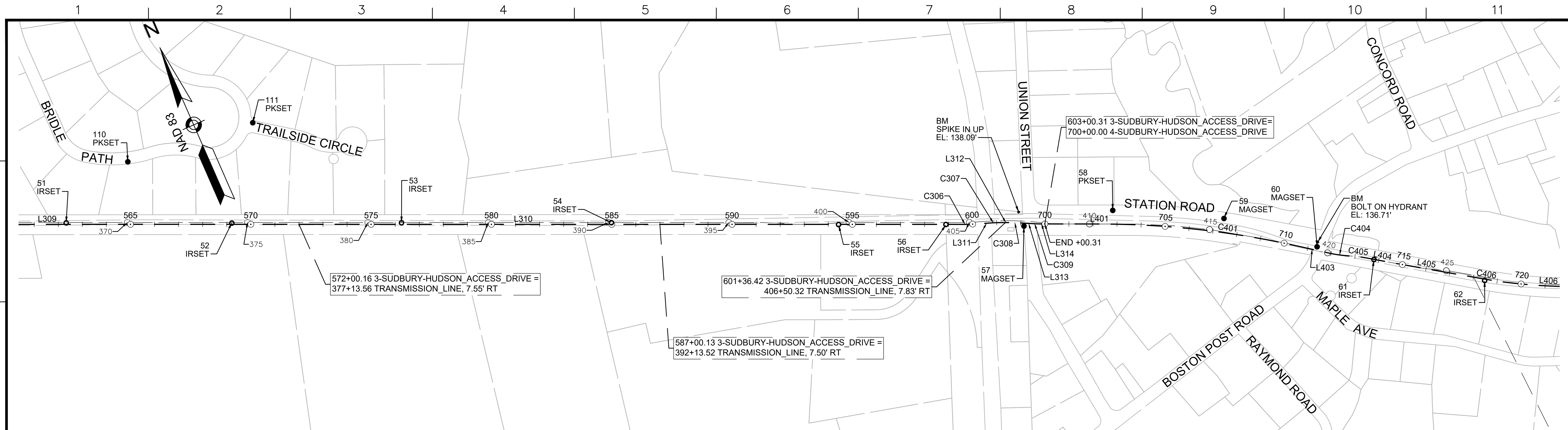
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3-SUDBURY-HUDSON_ACCESS_DRIVE CONSTRUCTION BASELINE DATA							
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	EASTING
L309	559+75.56	2959101.392	673343.887		S66°25'05"E 324.74'	563+00.30	2958971.476 673641.508
L310	563+00.30	2958971.476	673641.508		S66°18'26"E 3665.57'	599+65.87	2957498.529 676998.123
C306	599+65.87	2957498.529	676998.123	R = 500.00' L=31.71' T=15.86'	Δ=3°38'00"	599+97.58	2957486.717 677027.541
L311	599+97.58	2957486.717	677027.541		S69°56'26"E 84.99'	600+82.57	2957457.567 677107.371
C307	600+82.57	2957457.567	677107.371	R = 500.00' L=31.81' T=15.91'	Δ=3°38'42"	601+14.37	2957445.714 677136.884
L312	601+14.37	2957445.714	677136.884		S66°17'43"E 47.14'	601+61.52	2957426.761 677180.049
C308	601+61.52	2957426.761	677180.049	R = 500.00' L=28.08' T=14.05'	Δ=3°13'05"	601+89.60	2957414.756 677205.432
L313	601+89.60	2957414.756	677205.432		S63°04'38"E 68.56'	602+58.16	2957383.711 677266.565
C309	602+58.16	2957383.711	677266.565	R = 500.00' L=28.08' T=14.05'	Δ=3°13'05"	602+86.25	2957371.705 677291.948
L314	602+86.25	2957371.705	677291.948		S66°17'43"E 14.06'	603+00.31	2957366.053 677304.821

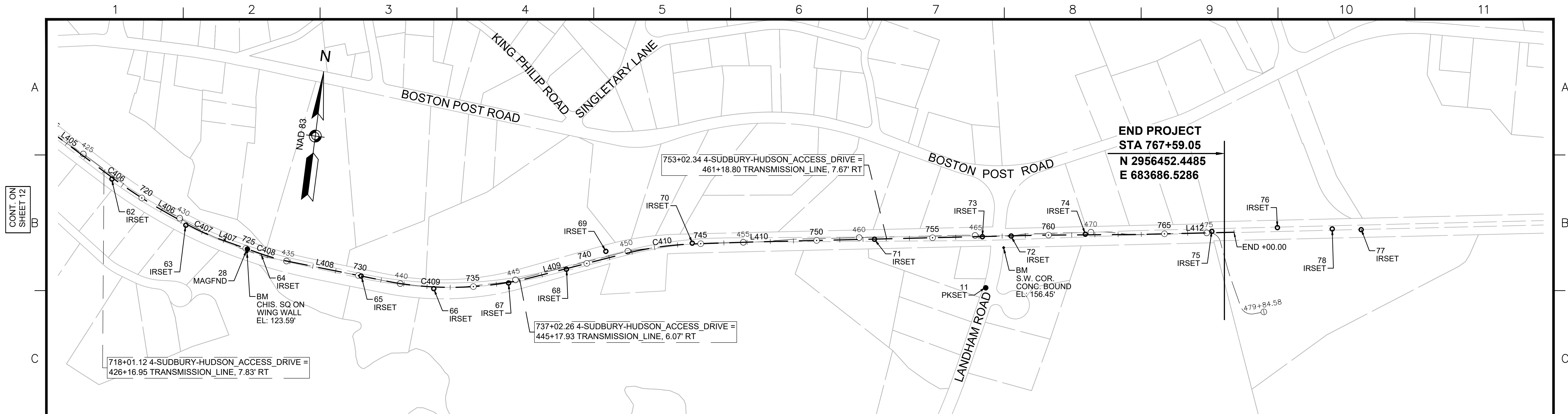
4-SUDBURY-HUDSON_ACCESS_DRIVE CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L401	700+00.00	2957366.053	677304.821		S66°14'03"E 231.13'	702+31.13	2957272.909	677516.349
C401	702+31.13	2957272.909	677516.349	R = 3750.00' L=813.02' T=408.11'	Δ=12°25'19"	710+44.14	2956867.482	678219.228
L403	710+44.14	2956867.482	678219.228		S53°48'44"E 149.49'	711+93.63	2956779.221	678339.877
C404	711+93.63	2956779.221	678339.877	R = 500.00' L=84.03' T=42.12'	Δ=9°37'46"	712+77.66	2956735.524	678411.539
C405	712+77.66	2956735.524	678411.539	R = 500.00' L=66.80' T=33.45'	Δ=7°39'17"	713+44.46	2956701.760	678469.121
L404	713+44.46	2956701.760	678469.121		S55°47'13"E 137.37'	714+81.84	2956624.519	678582.722
L405	714+81.84	2956624.519	678582.722		S56°18'15"E 352.06'	718+33.90	2956429.201	678875.635
C406	718+33.90	2956429.201	678875.635	R = 2150.00' L=279.56' T=139.98'	Δ=7°27'00"	721+13.46	2956289.642	679117.643
L406	721+13.46	2956289.642	679117.643		S63°45'15"E 104.16'	722+17.62	2956243.579	679211.069

SURVEY TRAVERSE TABLE						
POINT #	NORTHING	EASTING	ELEV	RAW DESCRIPTION	STATION CONSTR	OFFSET CONSTR
51	2959003.971	673581.771	161.78	IRSET	562+32.47	5.88 LT
52	2958726.419	674211.952	162.45	IRSET	569+21.06	4.82 LT
53	2958444.371	674858.194	159.51	IRSET	576+26.17	6.23 LT
54	2958094.408	675657.138	150.43	IRSET	584+98.40	6.80 LT
55	2957707.933	676518.674	141.46	IRSET	594+42.61	0.90 RT
56	2957528.922	676927.440	137.87	IRSET	598+88.86	0.57 RT
57	2957392.601	677221.786	136.73	MAGSET	602+14.14	12.35 RT
58	2957304.172	677585.894	133.06	PKSET	702+82.18	56.64 LT
59	2957087.530	677995.592	132.68	MAGSET	707+37.83	54.69 LT
60	2956824.551	678302.748	134.41	MAGSET	711+37.94	8.24 LT
61	2956680.926	678497.843	132.30	IRSET	713+80.00	1.09 RT
62	2956416.645	678884.311	130.43	IRSET	718+48.12	5.68 RT
110	2959133.231	673918.507	165.88	PKSET	564+88.88	259.43 LT
111	2959073.271	674459.148	167.27	PKSET	570+08.04	421.77 LT

BENCHMARK TABLE			
NORTHING	EASTING	ELEV	DESCRIPTION
2957455.231	677224.797	138.09	SPIKE IN UP
2956841.239	678313.243	136.71	BOLT ON HYDRANT



NO.				DESCRIPTION				BY DATE		APPR.				
REVISION														
EVERSOURCE														
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT														
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS														
SURVEY TIE-IN PLANS														
PLAN 12 OF 348														
SCALE: unless noted 1"=200'			DATE FEB 2021			DRAWN MS			CHK'D. SK			APPR. MES		
DRAWING NO.				REV.										



4-SUDBURY-HUDSON_ACCESS_DRIVE CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L405	714+81.84	2956624.519	678582.722		S66°18'15"E 352.06'	718+33.90	2956429.201	678875.635
C406	718+33.90	2956429.201	678875.635	R=2150.00' L=279.96' Δ=7°27'00" T=139.98'		721+13.46	2956289.642	679117.643
L406	721+13.46	2956289.642	679117.643		S63°45'15"E 104.16'	722+17.62	2956243.579	679211.069
C407	722+17.62	2956243.579	679211.069	R=1000.00' L=172.63' Δ=9°53'27" T=86.53'		723+90.25	2956180.949	679371.703
L407	723+90.25	2956180.949	679371.703		S73°38'42"E 171.77'	725+62.02	2956132.580	679536.524
C408	725+62.02	2956132.580	679536.524	R=975.00' L=138.56' Δ=8°08'34" T=69.40'		727+00.58	2956103.125	679671.802
L408	727+00.58	2956103.125	679671.802		S81°47'16"E 414.21'	731+14.79	2956043.959	680081.760
C409	731+14.79	2956043.959	680081.760	R=1450.00' L=651.62' Δ=25°44'54" T=331.41'		737+66.41	2956096.475	680725.774
L409	737+66.41	2956096.475	680725.774		N72°27'50"E 398.71'	741+65.12	2956216.609	681105.957
C410	741+65.12	2956216.609	681105.957	R=1400.00' L=304.86' Δ=12°28'35" T=153.03'		744+69.98	2956276.216	681404.316
L410	744+69.98	2956276.216	681404.316		N84°56'25"E 284.93'	747+54.91	2956301.344	681688.134
L412	763+88.36	2956423.284	683316.984		N85°29'15"E 411.64'	768+00.00	2956455.670	683727.352

SURVEY TRAVERSE TABLE						
POINT #	NORTHING	EASTING	ELEV	RAW DESCRIPTION	STATION CONSTR	OFFSET CONSTR
28	2956147.431	679484.162		MAGFND	725+07.67	0.49 RT
62	2956416.645	678884.311	130.43	IRSET	718+48.12	5.68 RT
63	2956235.685	679213.375	127.74	IRSET	722+23.22	6.08 RT
65	2956058.540	679980.234	127.40	IRSET	730+12.41	0.07 RT
66	2956021.600	680295.859	127.83	IRSET	733+29.75	7.51 RT
67	2956063.791	680616.525	128.45	IRSET	736+52.67	2.73 RT
68	2956136.912	680862.069	128.00	IRSET	739+08.74	2.51 RT
69	2956223.381	681027.685	126.87	IRSET	740+92.72	30.04 LT
70	2956279.196	681397.664	129.15	IRSET	744+63.82	3.57 LT
71	2956339.379	682181.246	134.16	IRSET	752+49.67	0.88 RT
72	2956386.005	682768.909	139.33	IRSET	758+39.18	0.63 RT
73	2956376.175	682645.008	138.67	IRSET	757+14.89	0.68 RT
74	2956411.369	683087.697	139.08	IRSET	761+58.97	0.43 RT
75	2956454.066	683631.453	134.33	IRSET	767+04.66	5.95 LT
76	2956485.859	683912.993	130.20	IRSET		
77	2956496.909	684274.024	126.21	IRSET		
78	2956493.088	684149.188	128.48	IRSET		
115	2956157.017	682671.760	146.93	PKSET	757+24.32	221.27 RT
18116	2956182.184	679384.347	126.53	ZZ		
18212	2956182.152	679384.358	126.52	ZZ		

BENCHMARK TABLE			
NORTHING	EASTING	ELEV	DESCRIPTION
2956134.680	679483.085	123.59	CHIS. SQ ON WING WALL
2956334.172	682739.230	156.45	S.W. COR. CONC. BOUND



N.O.	DESCRIPTION	BY	DATE	APP.R.
	REVISION			

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 SURVEY TIE-IN PLANS

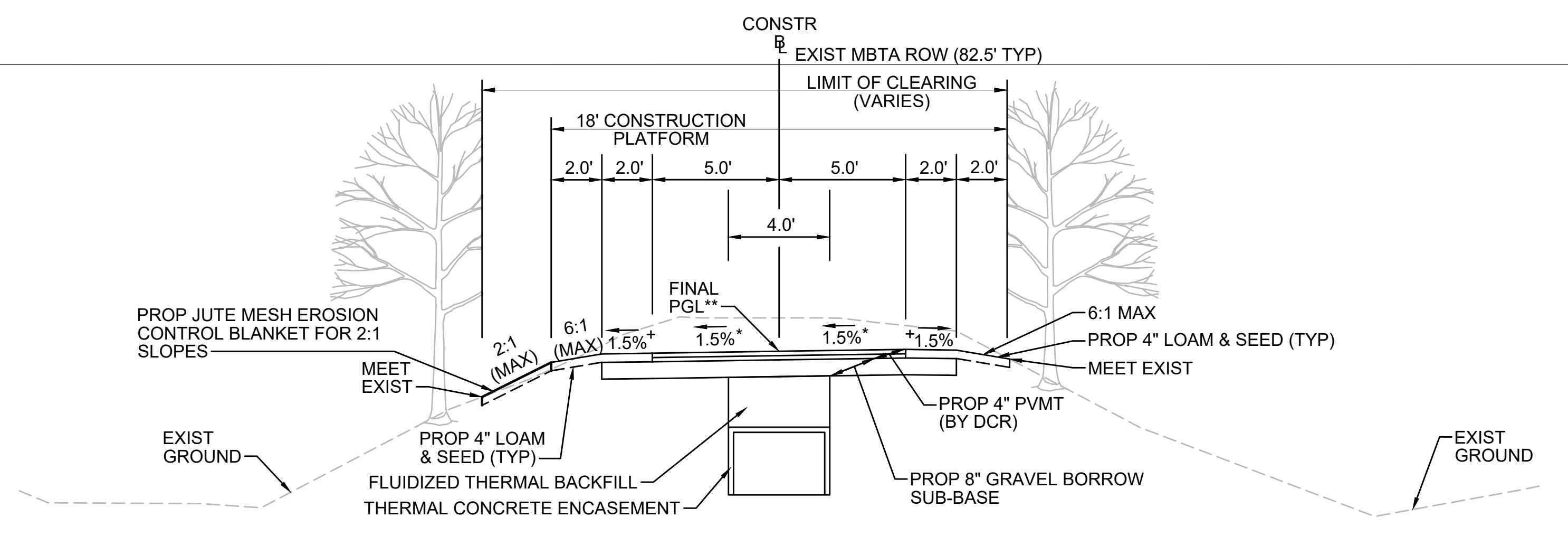
PLAN 13 OF 348

SCALE: unless noted 1"=200'	DATE FEB 2021	DRAWN MS	C'H'K D. SK	A P P R. MES	DRAWING NO.	REV.
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CONT. ON SHEET 12

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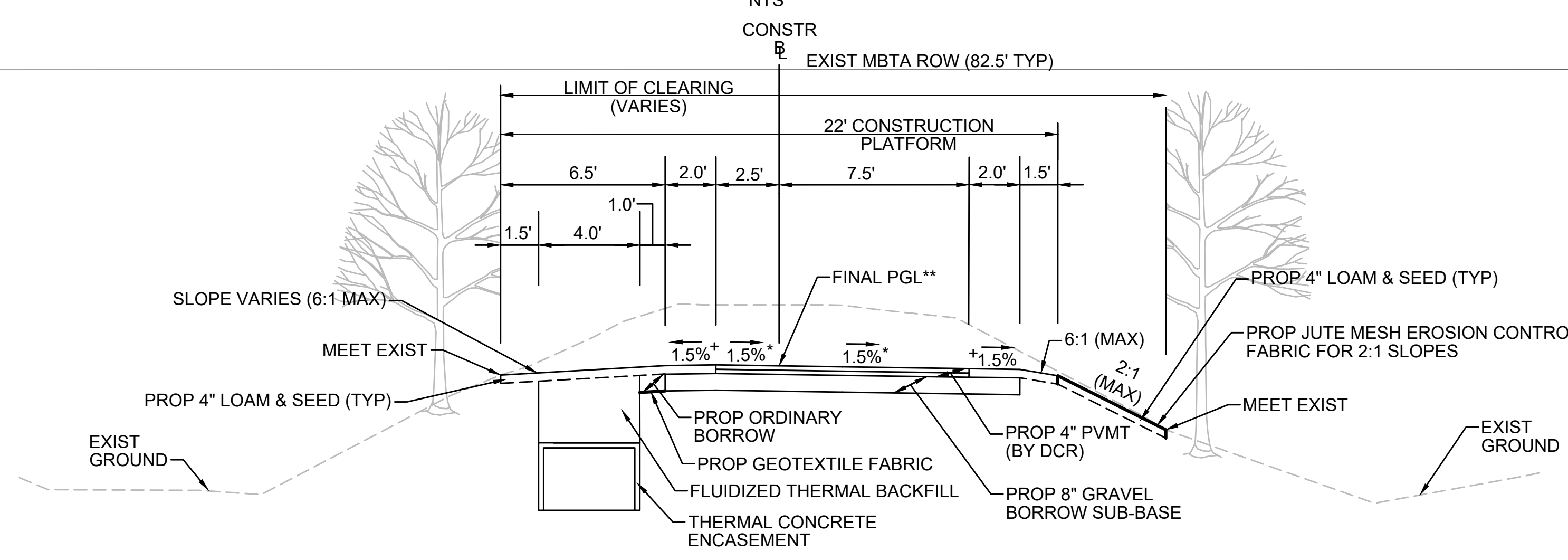


* TOLERANCE FOR CONSTRUCTION ±0.5%
 ** CONTRACTOR TO BUILD TO INTERIM PGL, WHICH IS 4" BELOW FINAL PGL SHOWN HERE. FINAL GRADING TO BE PERFORMED UNDER SEPARATE CONTRACT. SEE DETAIL FOR INTERIM TYPICAL SECTION ON SHEET 157 FOR ADDITIONAL INFORMATION.
 + SHOULDERS CAN BE UP TO 6:1 SLOPE TO AVOID CHASING SLOPES
 SEE CROSS SECTIONS FOR MORE INFORMATION

TYPICAL SECTION - CUT INTO EMBANKMENT - TRANSMISSION LINE IN CENTER

STA 112+50± TO STA 113+00±, STA 131+50± TO STA 131+75±, STA 145+75± TO STA 148+25±, STA 149+50± TO STA 153+00±, STA 397+25± TO STA 400+09±, STA 400+56± TO STA 402+50±, STA 592+00± TO STA 593+25±, STA 712+00± TO STA 715+75±, STA 723+25± TO STA 724+95±, STA 725+76± TO STA 730+00±, STA 732+00± TO STA 733+00±, STA 743+75± TO STA 747+16±, STA 747+50± TO STA 748+25±
 NTS

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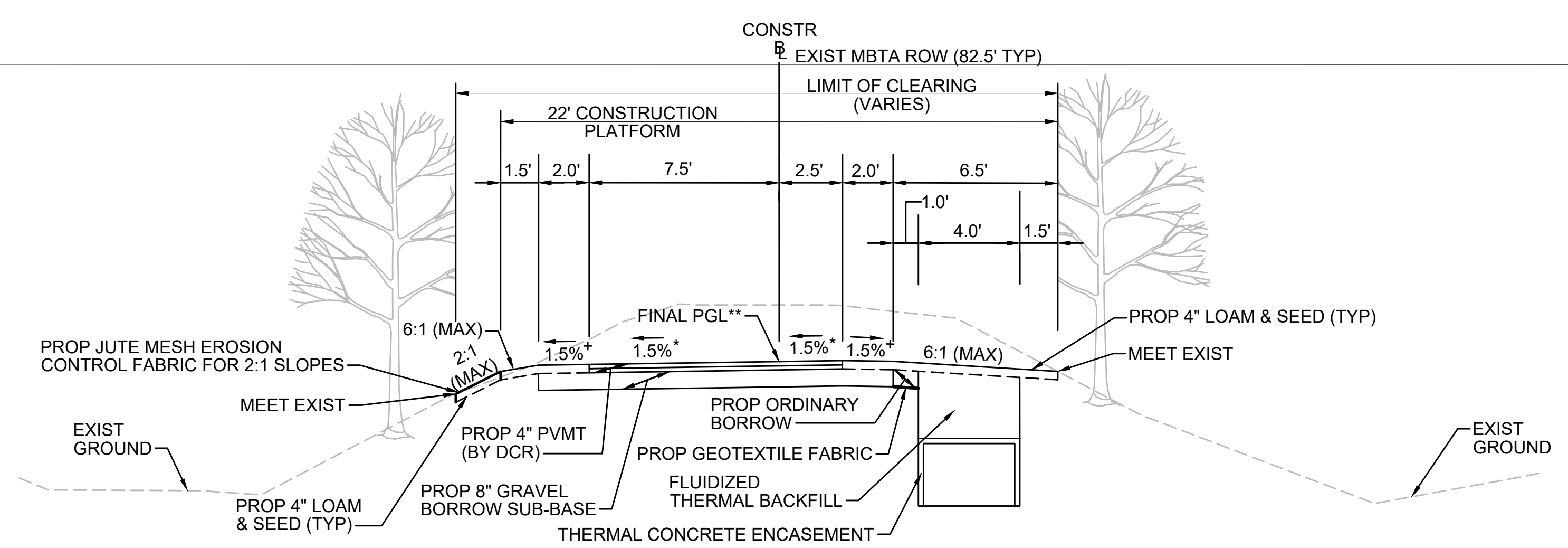


* TOLERANCE FOR CONSTRUCTION ±0.5%
 ** CONTRACTOR TO BUILD TO INTERIM PGL, WHICH IS 4" BELOW FINAL PGL SHOWN HERE. FINAL GRADING TO BE PERFORMED UNDER SEPARATE CONTRACT. SEE DETAIL FOR INTERIM TYPICAL SECTION ON SHEET 157 FOR ADDITIONAL INFORMATION.
 + SHOULDERS CAN BE UP TO 6:1 SLOPE TO AVOID CHASING SLOPES
 SEE CROSS SECTIONS FOR MORE INFORMATION

TYPICAL SECTION - CUT INTO EMBANKMENT - TRANSMISSION LINE ON LEFT

STA 142+25± TO STA 145+75±, STA 168+25± TO STA 171+00±, STA 350+25 TO STA 353+00±, STA 353+50± TO STA 357+00±, STA 368+00± TO STA 371+00±, STA 407+75± TO STA 409+25±, STA 409+75± TO STA 415+25±, STA 516+25± TO STA 519+75±, STA 520+25± TO STA 530+48±, STA 533+87± TO STA 534+00±, STA 534+00± TO STA 544+25±, STA 558+50± TO STA 563+75±, STA 576+75± TO STA 578+25±, STA 718+00± TO STA 721+25±, STA 748+25± TO STA 752+75±
 NTS

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* TOLERANCE FOR CONSTRUCTION ±0.5%
 ** CONTRACTOR TO BUILD TO INTERIM PGL, WHICH IS 4" BELOW FINAL PGL SHOWN HERE. FINAL GRADING TO BE PERFORMED UNDER SEPARATE CONTRACT. SEE DETAIL FOR INTERIM TYPICAL SECTION ON SHEET 157 FOR ADDITIONAL INFORMATION.
 + SHOULDERS CAN BE UP TO 6:1 SLOPE TO AVOID CHASING SLOPES
 SEE CROSS SECTIONS FOR MORE INFORMATION

TYPICAL SECTION - CUT INTO EMBANKMENT - TRANSMISSION LINE ON RIGHT

STA 102+25± TO STA 112+50±, STA 128+50± TO STA 131+50±, STA 148+25± TO STA 148+43±, STA 149+20± TO STA 149+50±
 NTS

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N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
TYPICAL SECTIONS				
PLAN 14 OF 349				
SCALE: unless noted NTS	DATE FEB 2021	DRAWN MS	CHK'D. SK	APP'R. MES
DRAWING NO.	REV.			



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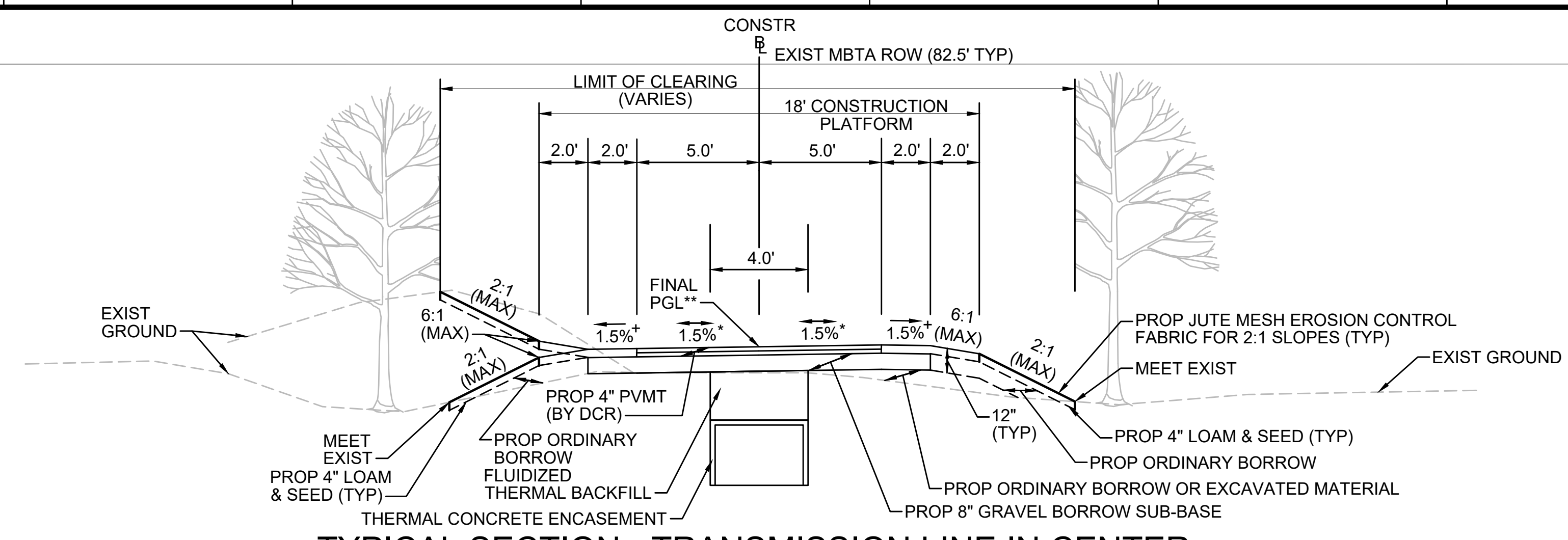
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TYPICAL SECTION - TRANSMISSION LINE IN CENTER

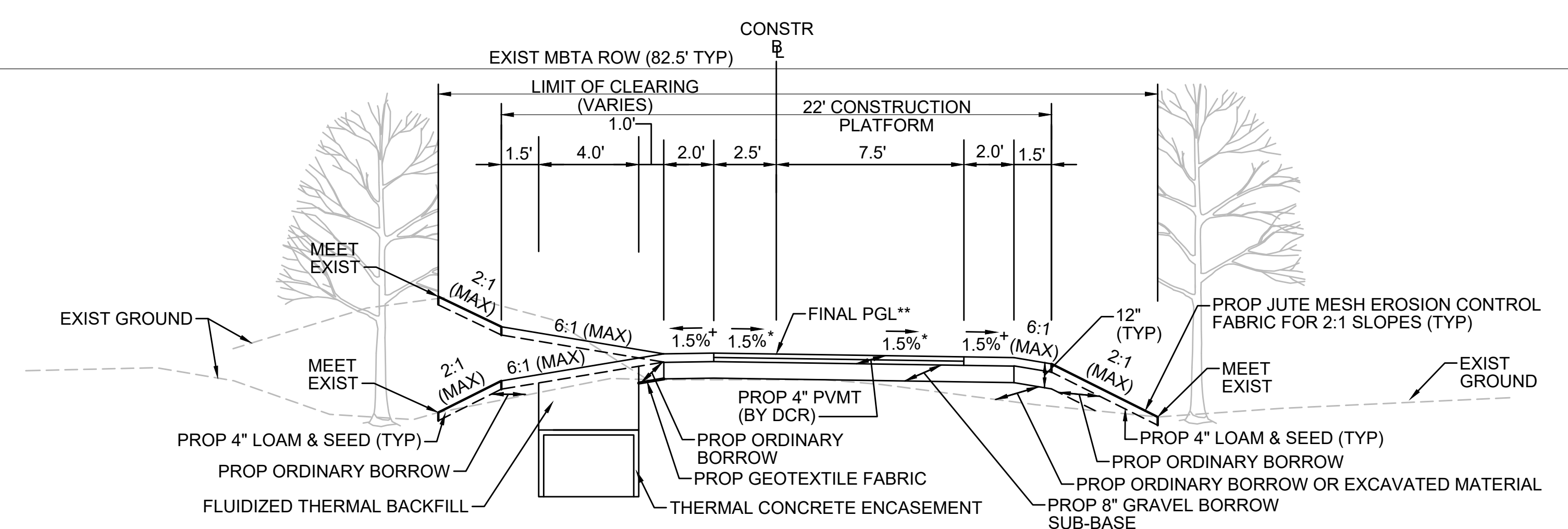
STA 131+75± TO STA 132+44±, STA 132+84± TO STA 134+25±, STA 153+00± TO STA 153+50±, STA 204+75± TO STA 207+25±, STA 213+68± TO STA 214+00±, STA 397+00± TO STA 397+25±, STA 402+50± TO STA 403+25±, STA 516+00± TO STA 516+25±, STA 593+25± TO STA 594+00±, STA 700+25± TO STA 711+41±, STA 711+67± TO STA 712+00±, STA 715+75± TO STA 717+75±, STA 742+25± TO STA 743+75±, STA 757+50± TO STA 758+13±, STA 763+20± TO STA 767+21±
NTS

* TOLERANCE FOR CONSTRUCTION ±0.5%

** CONTRACTOR TO BUILD TO INTERIM PGL, WHICH IS 4" BELOW FINAL PGL SHOWN HERE. FINAL GRADING TO BE PERFORMED UNDER SEPARATE CONTRACT. SEE DETAIL FOR INTERIM TYPICAL SECTION ON SHEET 157 FOR ADDITIONAL INFORMATION.

+ SHOULDERS CAN BE UP TO 6:1 SLOPE TO AVOID CHASING SLOPES

SEE CROSS SECTIONS FOR MORE INFORMATION



TYPICAL SECTION - TRANSMISSION LINE ON LEFT

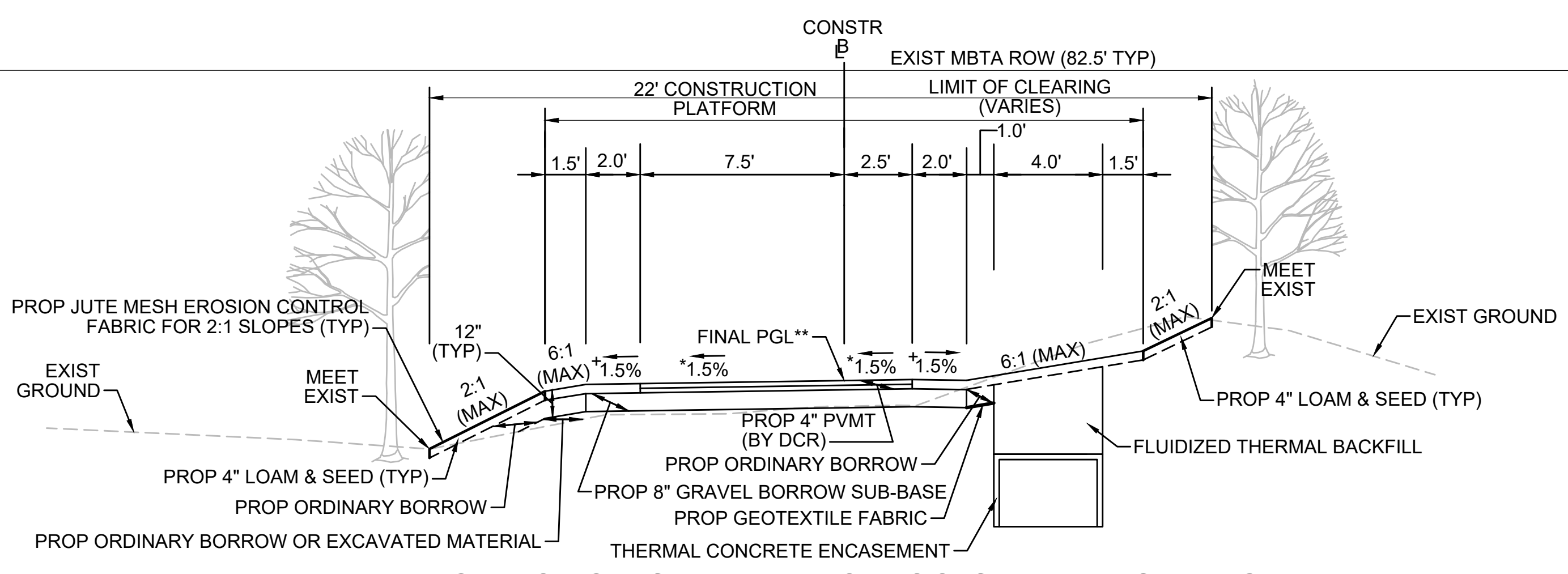
STA 134+75± TO STA 142+25±, STA 153+50± TO STA 157+75±, STA 158+25± TO STA 168+25±, STA 171+00± TO STA 175+00±, STA 180+25± TO STA 181+86±, STA 182+19± TO STA 182+50±, STA 185+00± TO STA 195+75±, STA 196+25± TO STA 204+75±, STA 207+25± TO STA 213+49±, STA 214+00± TO STA 300+00±, STA 300+50± TO STA 304+00±, STA 316+50± TO STA 335+00±, STA 335+50± TO STA 336+86±, STA 337+08± TO STA 348+75±, STA 357+00± TO STA 360+25±, STA 365+00± TO STA 368+00, STA 371+50± TO STA 375+50±, STA 378+75± TO STA 390+00±, STA 390+50± TO STA 393+00±, STA 403+25± TO STA 404+50±, STA 407+50± TO STA 407+75±, STA 409+25± TO STA 409+75±, STA 415+25± TO STA 416+83±, STA 417+08± TO STA 500+21±, STA 533+00± TO STA 533+48±, STA 544+25± TO STA 552+75±, STA 553+25± TO STA 555+77±, STA 555+96± TO STA 558+50±, STA 563+75± TO STA 565+00±, STA 578+25± TO STA 579+00±, STA 588+25± TO STA 592+00±, STA 594+00± TO STA 601+09±, STA 601+59± TO STA 602+18±, STA 602+47± TO STA 700+25±, STA 722+25± TO STA 723+25±, STA 738+25± TO STA 742+25±, STA 753+00± TO STA 753+48±
NTS

* TOLERANCE FOR CONSTRUCTION ±0.5%

** CONTRACTOR TO BUILD TO INTERIM PGL, WHICH IS 4" BELOW FINAL PGL SHOWN HERE. FINAL GRADING TO BE PERFORMED UNDER SEPARATE CONTRACT. SEE DETAIL FOR INTERIM TYPICAL SECTION ON SHEET 157 FOR ADDITIONAL INFORMATION.

+ SHOULDERS CAN BE UP TO 6:1 SLOPE TO AVOID CHASING SLOPES

SEE CROSS SECTIONS FOR MORE INFORMATION



TYPICAL SECTION - TRANSMISSION LINE ON RIGHT

STA 100+31.46± TO STA 101+00±
NTS

* TOLERANCE FOR CONSTRUCTION ±0.5%

** CONTRACTOR TO BUILD TO INTERIM PGL, WHICH IS 4" BELOW FINAL PGL SHOWN HERE. FINAL GRADING TO BE PERFORMED UNDER SEPARATE CONTRACT. SEE DETAIL FOR INTERIM TYPICAL SECTION ON SHEET 157 FOR ADDITIONAL INFORMATION.

+ SHOULDERS CAN BE UP TO 6:1 SLOPE TO AVOID CHASING SLOPES

SEE CROSS SECTIONS FOR MORE INFORMATION

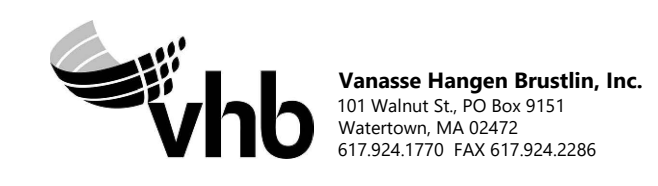
REVISION			
NO.	DESCRIPTION	BY	DATE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

TYPICAL SECTIONS

PLAN 15 OF 349

SCALE: unless noted NTS	DATE FEB 2021	DRAWN MS	CHK'D. SK	APP'R. MES	DRAWING NO.	REV.
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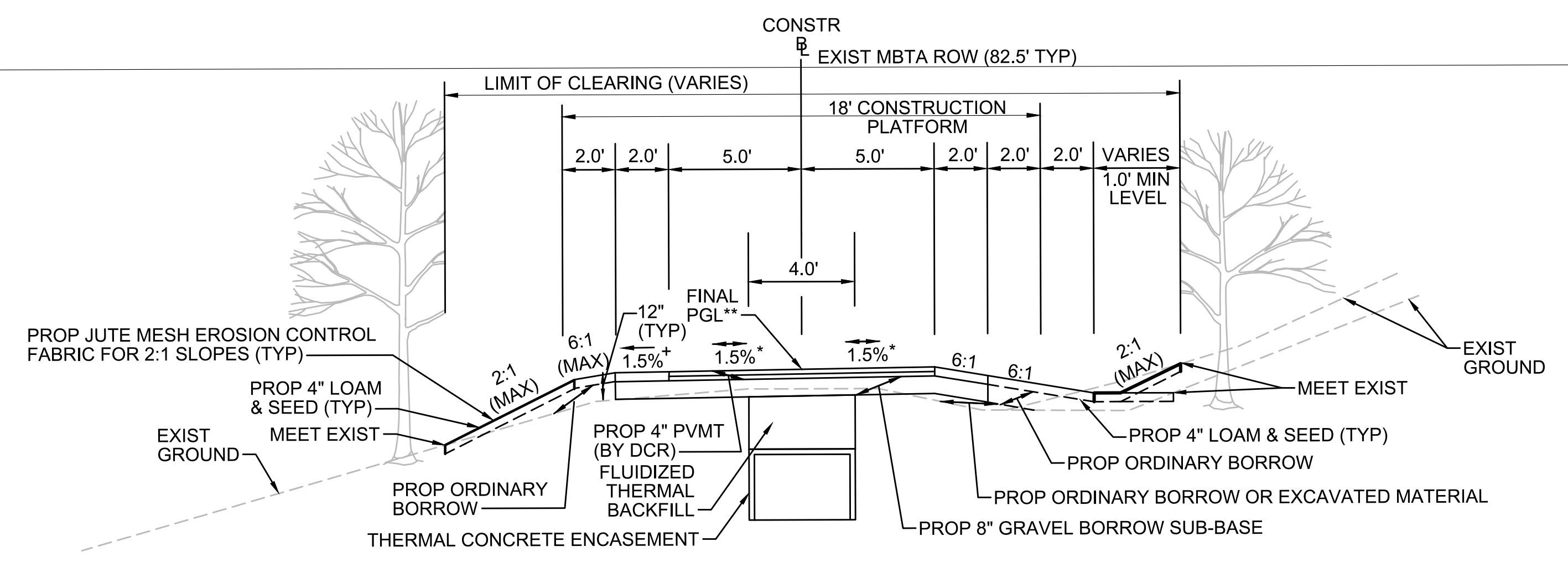
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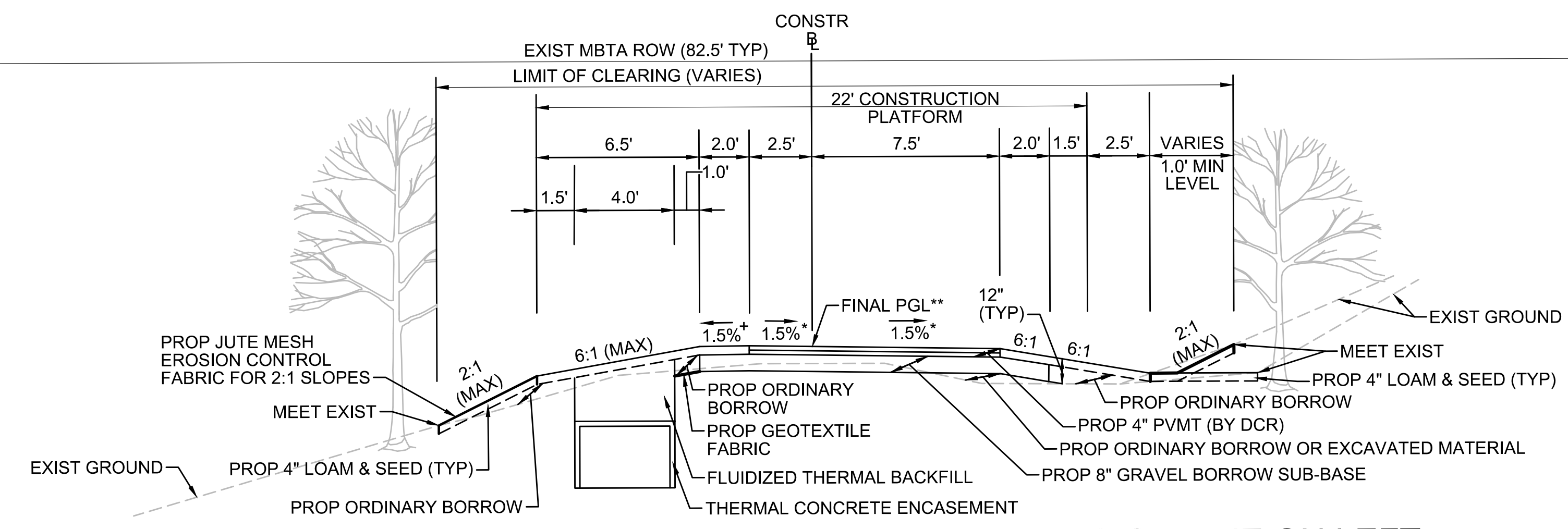
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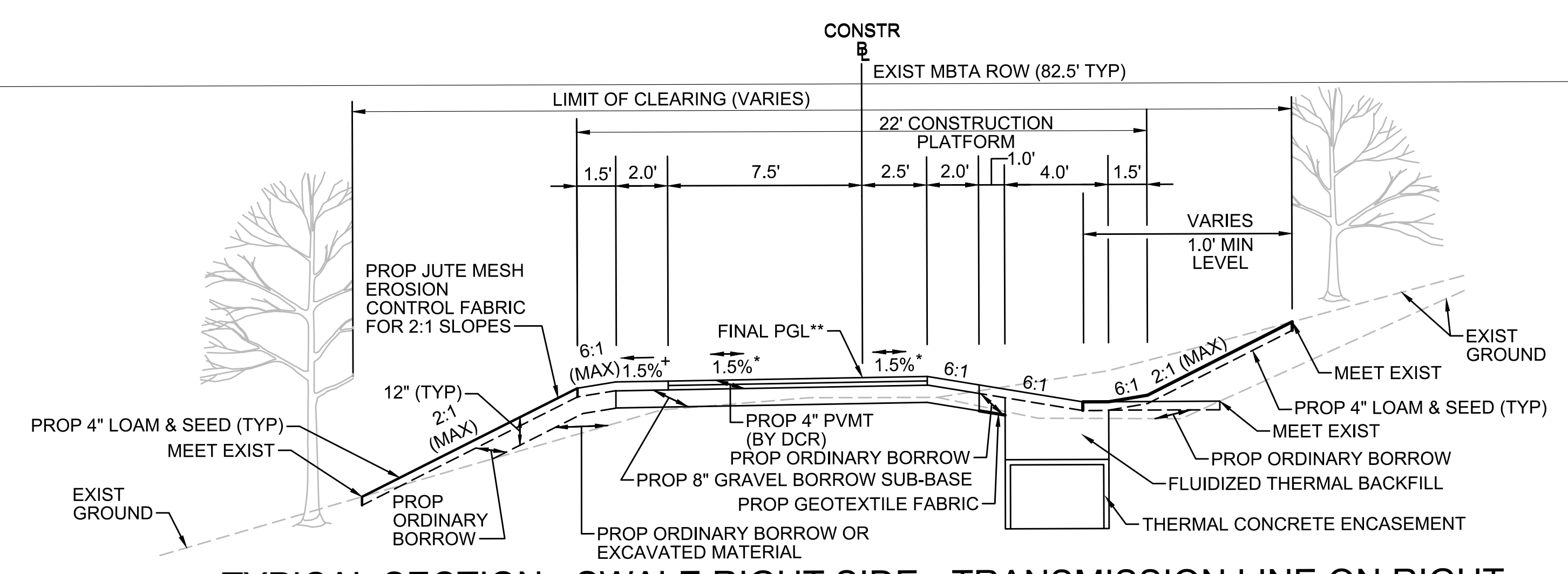
TYPICAL SECTION - SWALE RIGHT SIDE - TRANSMISSION LINE IN CENTER
 STA 113+00± TO STA 118+50±, STA 121+50± TO STA 126+25±
 NTS

* TOLERANCE FOR CONSTRUCTION ±0.5%
 ** CONTRACTOR TO BUILD TO INTERIM PGL, WHICH IS 4" BELOW FINAL PGL SHOWN HERE. FINAL GRADING TO BE PERFORMED UNDER SEPARATE CONTRACT. SEE DETAIL FOR INTERIM TYPICAL SECTION ON SHEET 157 FOR ADDITIONAL INFORMATION.
 + SHOULDERS CAN BE UP TO 6:1 SLOPE TO AVOID CHASING SLOPES
 SEE CROSS SECTIONS FOR MORE INFORMATION



TYPICAL SECTION - SWALE RIGHT SIDE - TRANSMISSION LINE ON LEFT
 STA 134+25± TO STA 134+75±, STA 175+00± TO STA 175+50±, STA 304+00± TO STA 305+50±, STA 350+25± TO STA 350+50±,
 STA 360+25± TO STA 362+50±, STA 405+00± TO STA 407+50±, STA 500+21± TO STA 500+25±, STA 512+50± TO STA 513+25±,
 STA 533+48± TO STA 533+75±, STA 565+00± TO STA 569+00±, STA 579+00± TO STA 586+75±,
 STA 587+25± TO STA 588+25±, STA 721+25± TO STA 722+25±
 NTS

* TOLERANCE FOR CONSTRUCTION ±0.5%
 ** CONTRACTOR TO BUILD TO INTERIM PGL, WHICH IS 4" BELOW FINAL PGL SHOWN HERE. FINAL GRADING TO BE PERFORMED UNDER SEPARATE CONTRACT. SEE DETAIL FOR INTERIM TYPICAL SECTION ON SHEET 157 FOR ADDITIONAL INFORMATION.
 + SHOULDERS CAN BE UP TO 6:1 SLOPE TO AVOID CHASING SLOPES
 SEE CROSS SECTIONS FOR MORE INFORMATION



TYPICAL SECTION - SWALE RIGHT SIDE - TRANSMISSION LINE ON RIGHT
 STA 118+50± TO STA 120+75±, STA 121+25± TO STA 121+50±, STA 126+25± TO STA 128+50±
 NTS

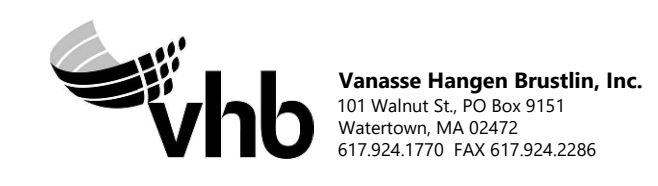
* TOLERANCE FOR CONSTRUCTION ±0.5%
 ** CONTRACTOR TO BUILD TO INTERIM PGL, WHICH IS 4" BELOW FINAL PGL SHOWN HERE. FINAL GRADING TO BE PERFORMED UNDER SEPARATE CONTRACT. SEE DETAIL FOR INTERIM TYPICAL SECTION ON SHEET 157 FOR ADDITIONAL INFORMATION.
 + SHOULDERS CAN BE UP TO 6:1 SLOPE TO AVOID CHASING SLOPES
 SEE CROSS SECTIONS FOR MORE INFORMATION

REVISION			
NO.	DESCRIPTION	BY	DATE

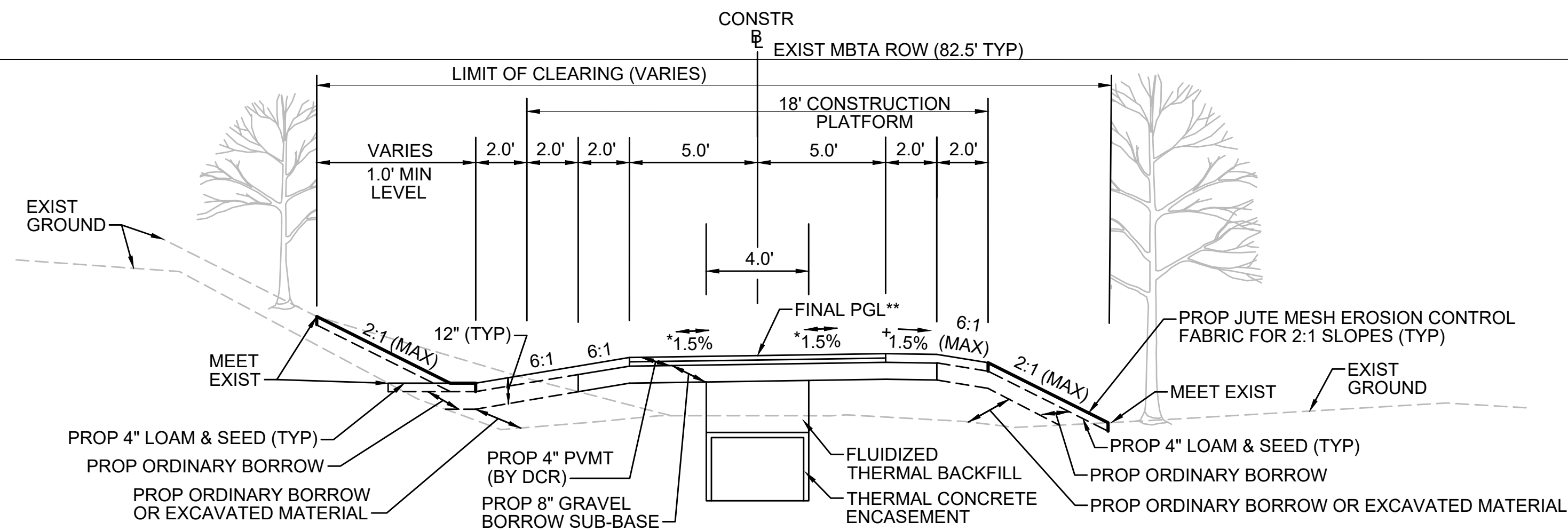
EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 TYPICAL SECTIONS
 PLAN 16 OF 349

SCALE: unless noted NTS	DATE FEB 2021	DRAWN MS	CHK'D. SK	APPR. MES	DRAWING NO. 	REV.
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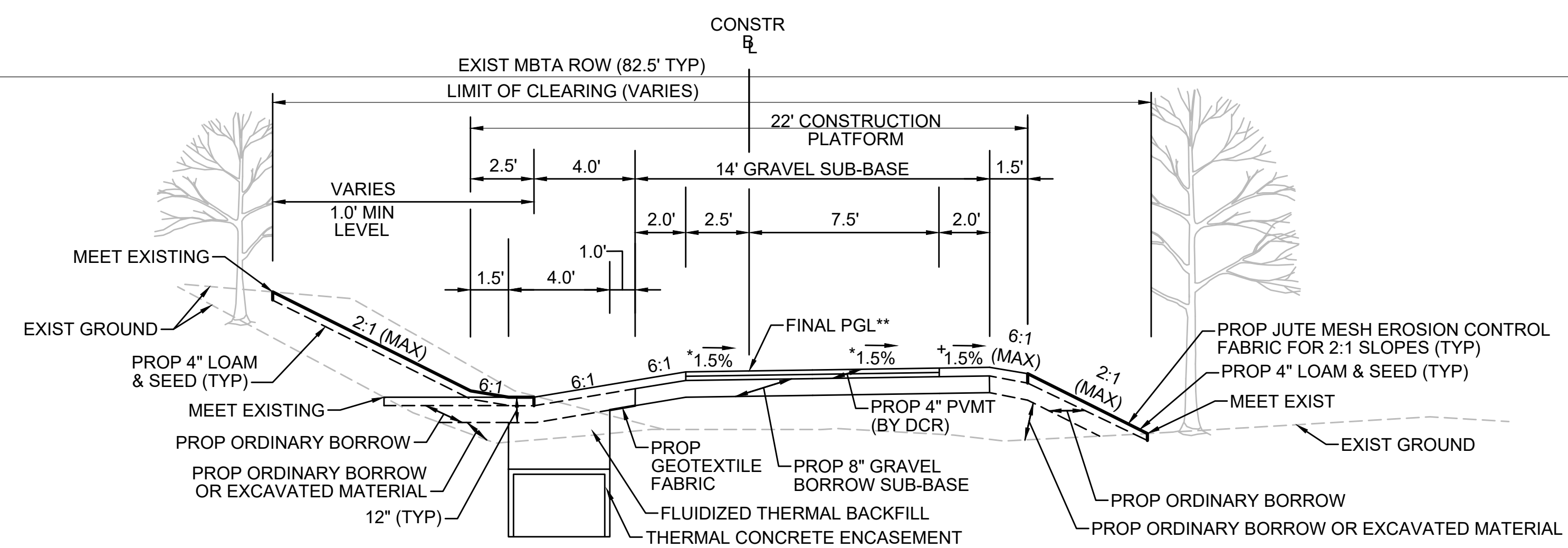
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TYPICAL SECTION - SWALE LEFT SIDE - TRANSMISSION LINE IN CENTER

STA 730+00± TO STA 732+00±, STA 733+00± TO STA 735+00±, STA 758+13± TO STA 558+50±, STA 762+75± TO STA 763+20±
NTS

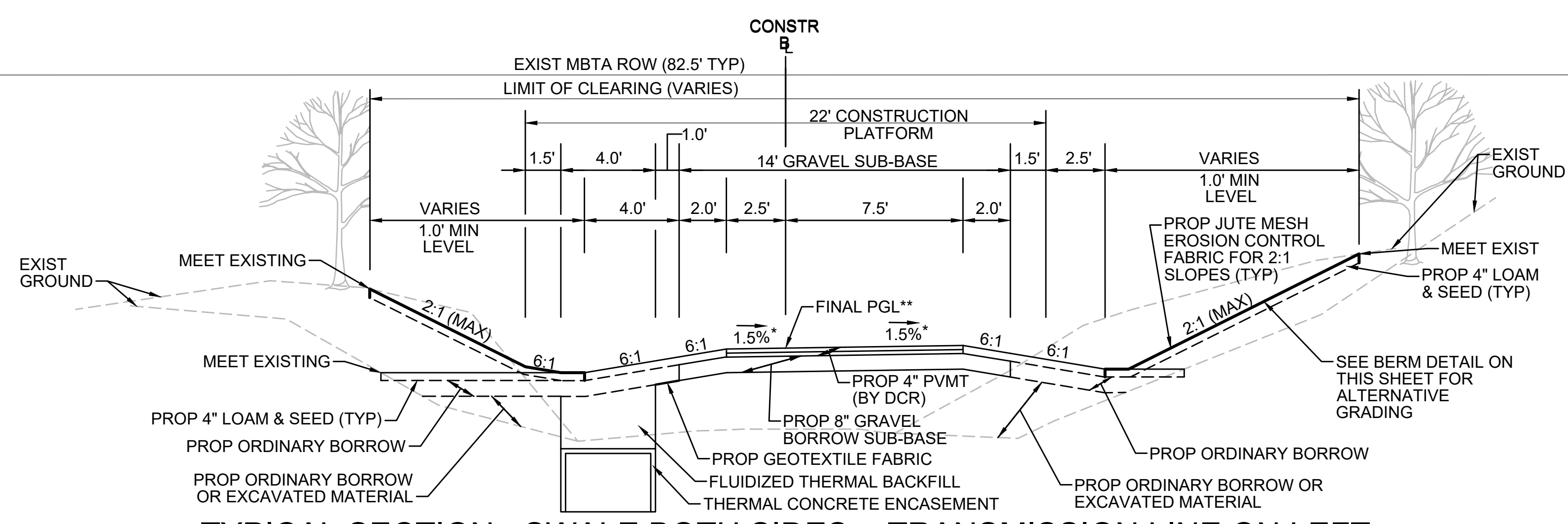
* TOLERANCE FOR CONSTRUCTION ±0.5%
** CONTRACTOR TO BUILD TO INTERIM PGL, WHICH IS 4" BELOW FINAL PGL SHOWN HERE. FINAL GRADING TO BE PERFORMED UNDER SEPARATE CONTRACT. SEE DETAIL FOR INTERIM TYPICAL SECTION ON SHEET 157 FOR ADDITIONAL INFORMATION.
+ SHOULDERS CAN BE UP TO 6:1 SLOPE TO AVOID CHASING SLOPES
SEE CROSS SECTIONS FOR MORE INFORMATION



TYPICAL SECTION - SWALE LEFT SIDE - TRANSMISSION LINE ON LEFT

STA 179+75± TO STA 180+25±, STA 184+50± TO STA 185+00±, STA 315+75± TO STA 316+14±, STA 375+50± TO STA 378+75±, STA 395+50± TO STA 397+00±, STA 530+71± TO STA 533+00±, STA 576+50± TO STA 576+75±, STA 735+00± TO STA 736+90±, STA 737+13± TO STA 738+25±, STA 758+50± TO STA 762+75±
NTS

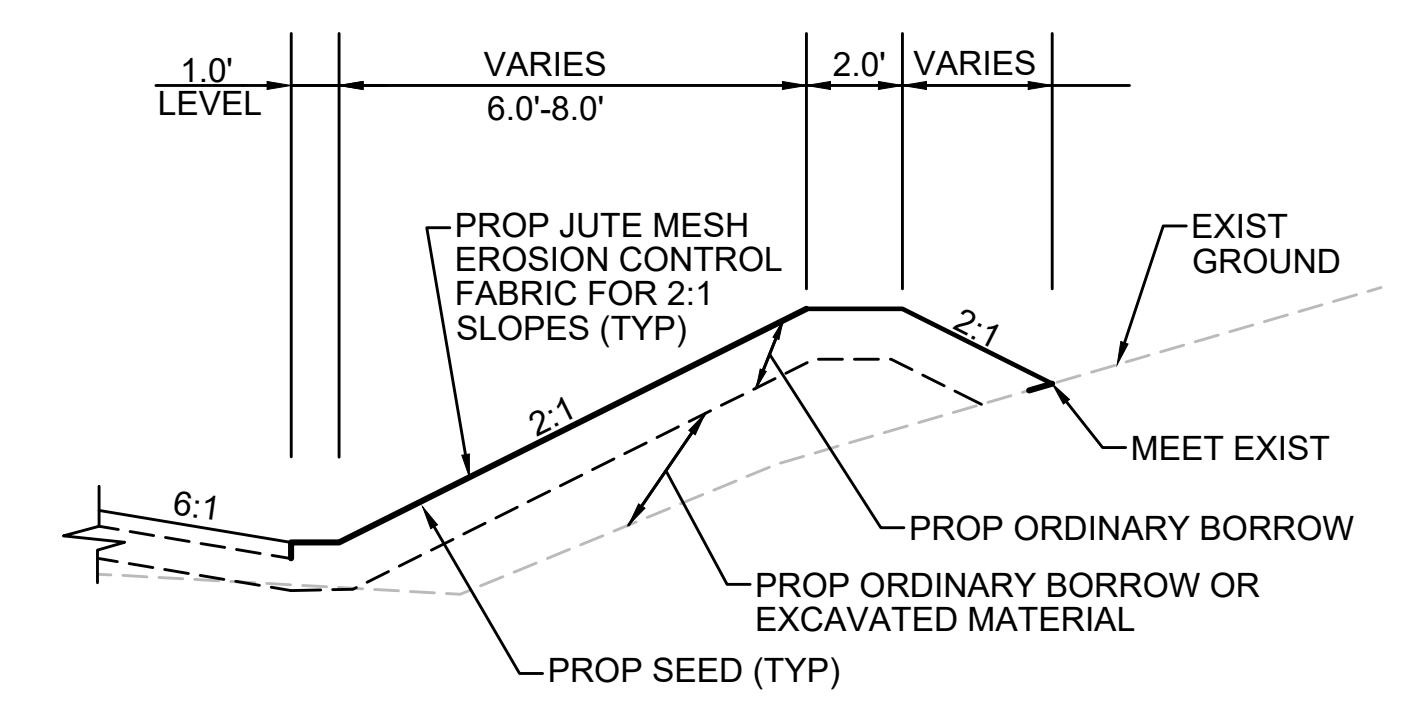
* TOLERANCE FOR CONSTRUCTION ±0.5%
** CONTRACTOR TO BUILD TO INTERIM PGL, WHICH IS 4" BELOW FINAL PGL SHOWN HERE. FINAL GRADING TO BE PERFORMED UNDER SEPARATE CONTRACT. SEE DETAIL FOR INTERIM TYPICAL SECTION ON SHEET 157 FOR ADDITIONAL INFORMATION.
+ SHOULDERS CAN BE UP TO 6:1 SLOPE TO AVOID CHASING SLOPES
SEE CROSS SECTIONS FOR MORE INFORMATION



TYPICAL SECTION - SWALE BOTH SIDES - TRANSMISSION LINE ON LEFT

STA 175+50± TO STA 176+75±, STA 177+25± TO STA 179+75±, STA 182+50± TO STA 184+50±, STA 305+50± TO STA 315+75±, STA 348+75± TO STA 350+25±, STA 362+50± TO STA 365+00±, STA 393+00± TO STA 395+50±, STA 500+25± TO STA 503+75±, STA 504+25± TO STA 512+50±, STA 513+25± TO STA 516+00±, STA 569+00± TO STA 571+75±, STA 572+25± TO STA 576+50±, STA 753+48± TO STA 757+50±
NTS

* TOLERANCE FOR CONSTRUCTION ±0.5%
** CONTRACTOR TO BUILD TO INTERIM PGL, WHICH IS 4" BELOW FINAL PGL SHOWN HERE. FINAL GRADING TO BE PERFORMED UNDER SEPARATE CONTRACT. SEE DETAIL FOR INTERIM TYPICAL SECTION ON SHEET 157 FOR ADDITIONAL INFORMATION.
SEE CROSS SECTIONS FOR MORE INFORMATION



BERM DETAIL
STA 394+50 TO STA 395+50



NO.		DESCRIPTION	BY	DATE	APPR.
REVISION					
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
TYPICAL SECTIONS					
PLAN 17 OF 349					
SCALE: unless noted NTS	DATE FEB 2021	DRAWN MS	CHK'D. SK	APPR. MES	DRAWING NO. REV.

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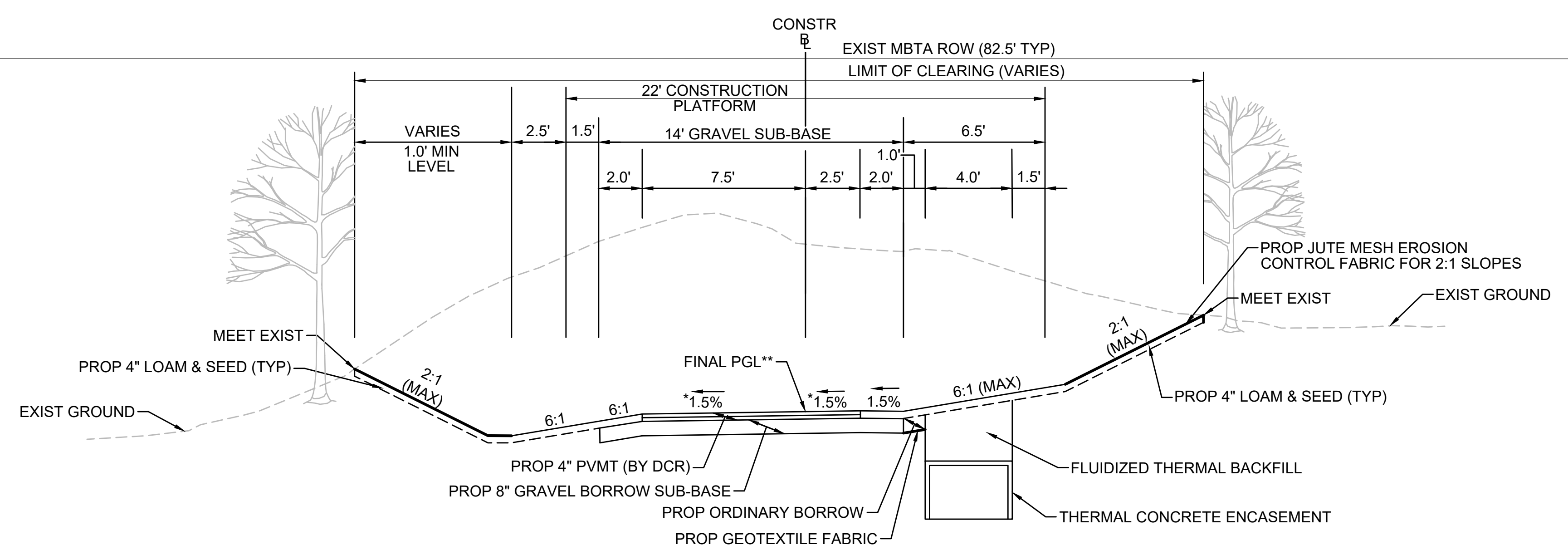
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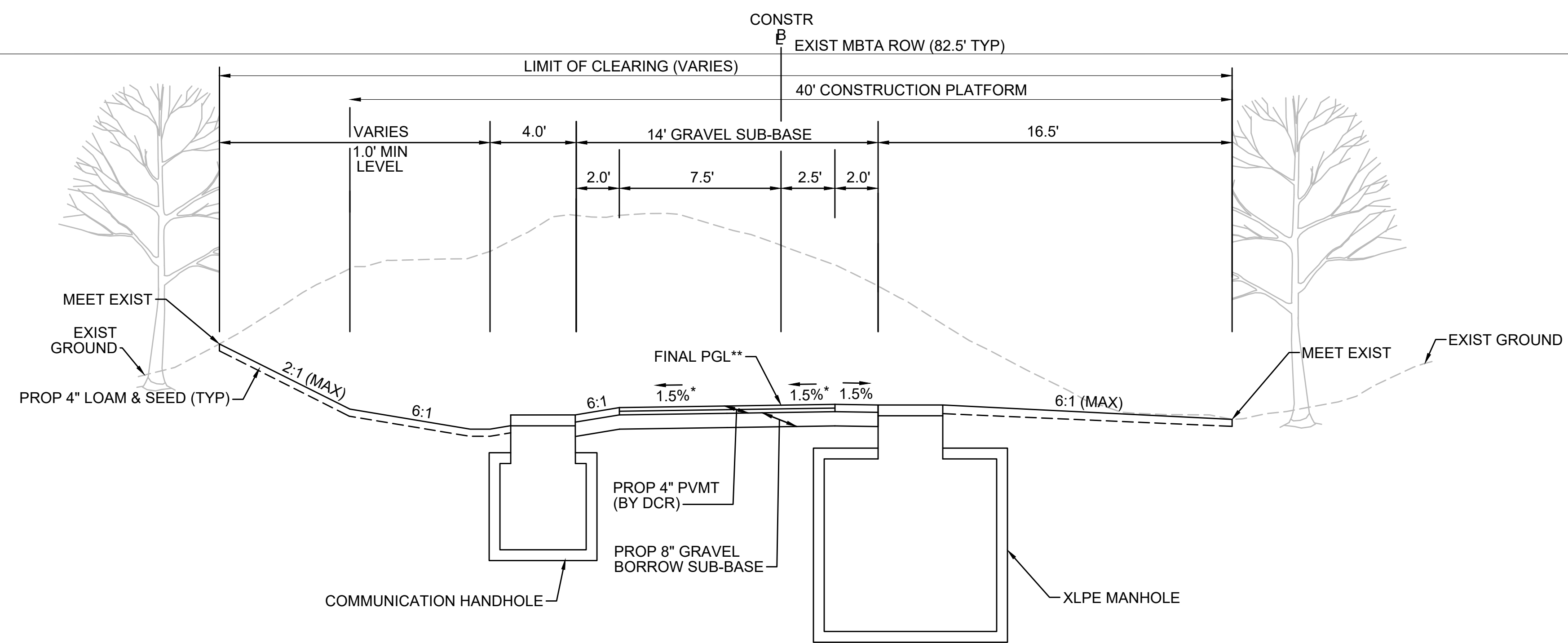
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TYPICAL SECTION - SWALE LEFT SIDE - TRANSMISSION LINE ON RIGHT

STA 101+00± TO STA 101+75±
NTS

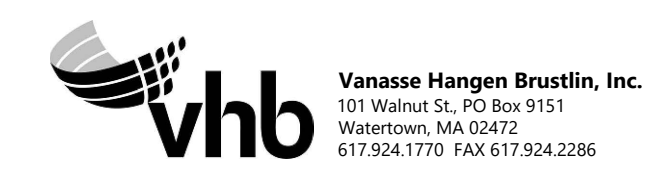
* TOLERANCE FOR CONSTRUCTION ±0.5%
** CONTRACTOR TO BUILD TO INTERIM PGL, WHICH IS 4" BELOW FINAL PGL SHOWN HERE. FINAL GRADING TO BE PERFORMED UNDER SEPARATE CONTRACT. SEE DETAIL FOR INTERIM TYPICAL SECTION ON SHEET 157 FOR ADDITIONAL INFORMATION.
SEE CROSS SECTIONS FOR MORE INFORMATION



TYPICAL SECTION - SWALE LEFT SIDE - MANHOLE ON RIGHT

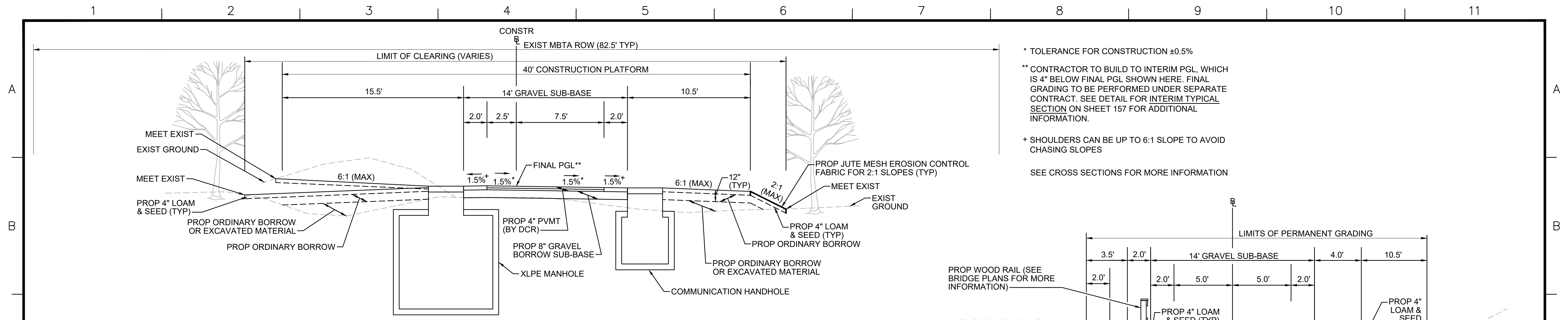
STA 101+75± TO STA 102+25±
NTS

* TOLERANCE FOR CONSTRUCTION ±0.5%
** CONTRACTOR TO BUILD TO INTERIM PGL, WHICH IS 4" BELOW FINAL PGL SHOWN HERE. FINAL GRADING TO BE PERFORMED UNDER SEPARATE CONTRACT. SEE DETAIL FOR INTERIM TYPICAL SECTION ON SHEET 157 FOR ADDITIONAL INFORMATION.
SEE CROSS SECTIONS FOR MORE INFORMATION



N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
TYPICAL SECTIONS				
PLAN 18 OF 349				
SCALE: unless noted NTS	DATE FEB 2021	DRAWN MS	CHK'D. SK	APPR. MES
DRAWING NO.	REV.			

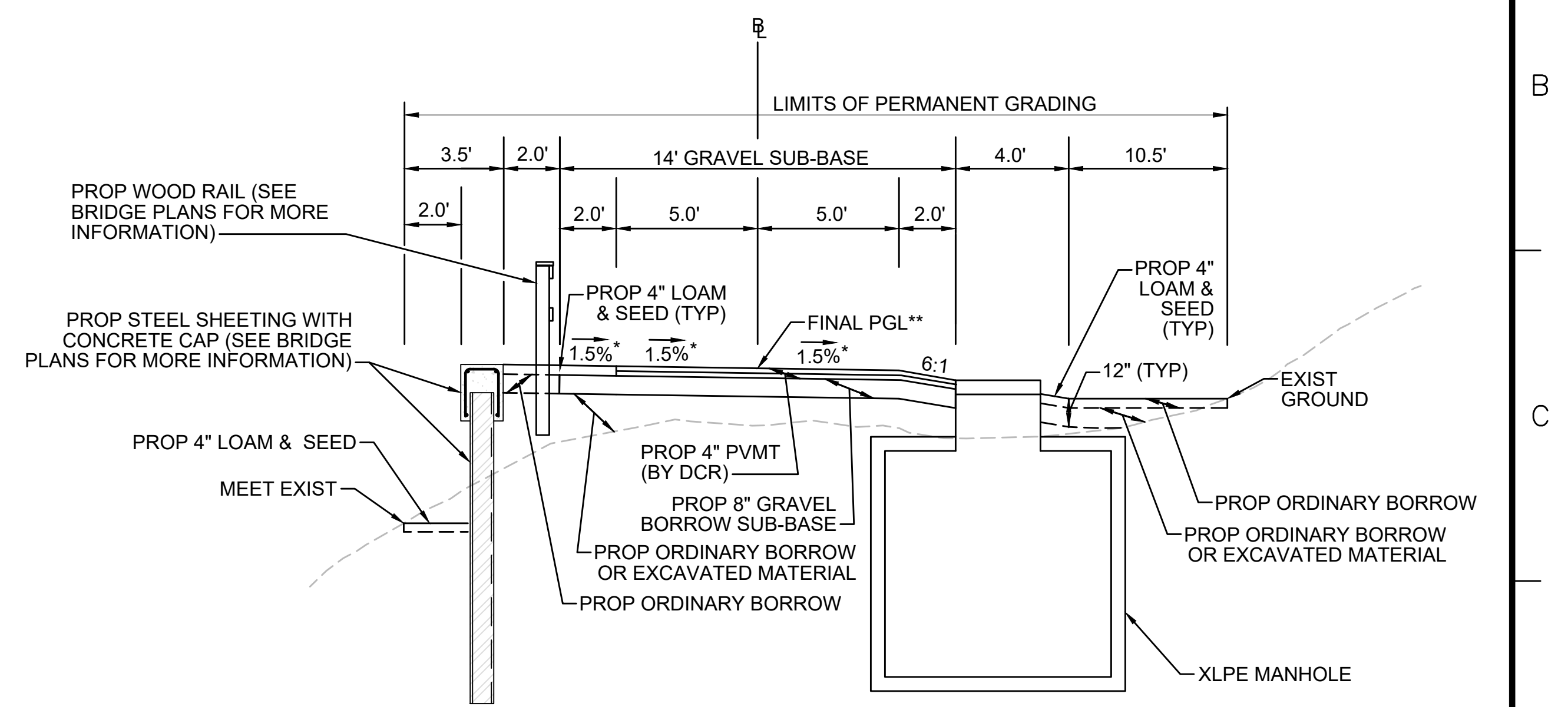
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TYPICAL SECTION - MANHOLE ON LEFT

STA 157+75± TO STA 158+25±, STA 195+75± TO STA 196+25±, STA 300+00± TO STA 300+50±, STA 335+00± TO STA 335+50±, STA 353+00± TO STA 353+50±, STA 371+00± TO STA 371+50±, STA 390+00± TO STA 390+50±, STA 519+75± TO STA 520+25±, STA 533+75± TO STA 534+25±, STA 552+75± TO STA 553+25±, STA 717+75± TO STA 718+25±, STA 752+75± TO STA 753+25± NTS

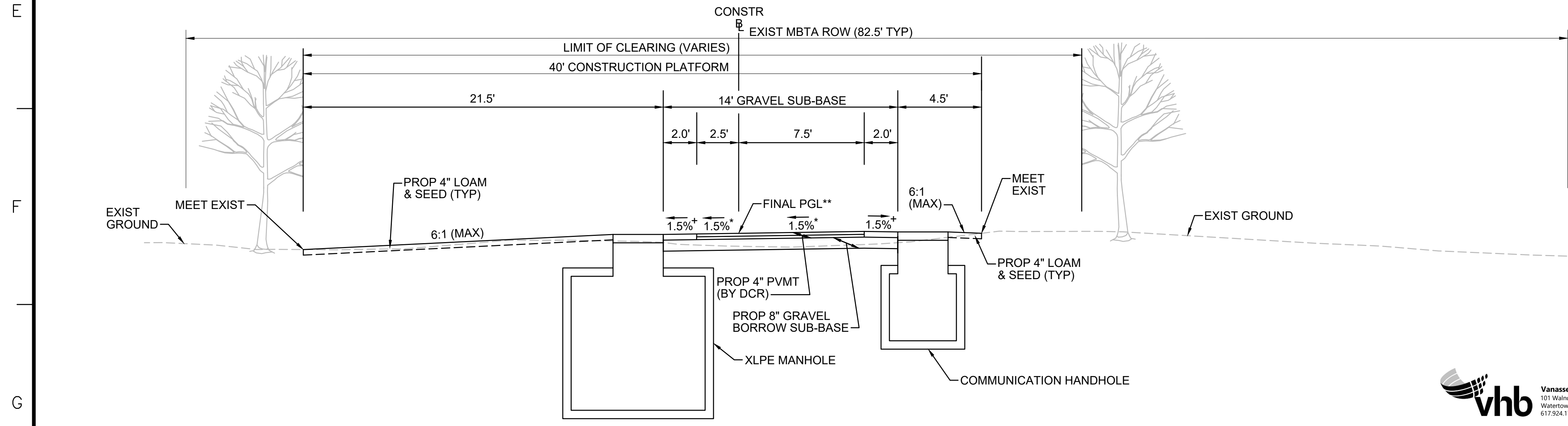
* TOLERANCE FOR CONSTRUCTION ±0.5%
 ** CONTRACTOR TO BUILD TO INTERIM PGL, WHICH IS 4" BELOW FINAL PGL SHOWN HERE. FINAL GRADING TO BE PERFORMED UNDER SEPARATE CONTRACT. SEE DETAIL FOR INTERIM TYPICAL SECTION ON SHEET 157 FOR ADDITIONAL INFORMATION.
 + SHOULDERS CAN BE UP TO 6:1 SLOPE TO AVOID CHASING SLOPES
 SEE CROSS SECTIONS FOR MORE INFORMATION



TYPICAL SECTION - SWALE RIGHT SIDE - MANHOLE ON RIGHT

STA 120+75± TO STA 121+25± NTS

* TOLERANCE FOR CONSTRUCTION ±0.5%
 ** CONTRACTOR TO BUILD TO INTERIM PGL, WHICH IS 4" BELOW FINAL PGL SHOWN HERE. FINAL GRADING TO BE PERFORMED UNDER SEPARATE CONTRACT. SEE DETAIL FOR INTERIM TYPICAL SECTION ON SHEET 157 FOR ADDITIONAL INFORMATION.
 + SHOULDERS CAN BE UP TO 6:1 SLOPE TO AVOID CHASING SLOPES
 SEE CROSS SECTIONS FOR MORE INFORMATION



TYPICAL SECTION - MANHOLE ON LEFT - OFF-CENTER CONSTRUCTION PLATFORM

STA 601+09± TO STA 601+59± NTS



N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
TYPICAL SECTIONS				
PLAN 19 OF 349				
SCALE: unless noted NTS	DATE FEB 2021	DRAWN MS	CHK'D. SK	APPR. MES
DRAWING NO.	REV.			

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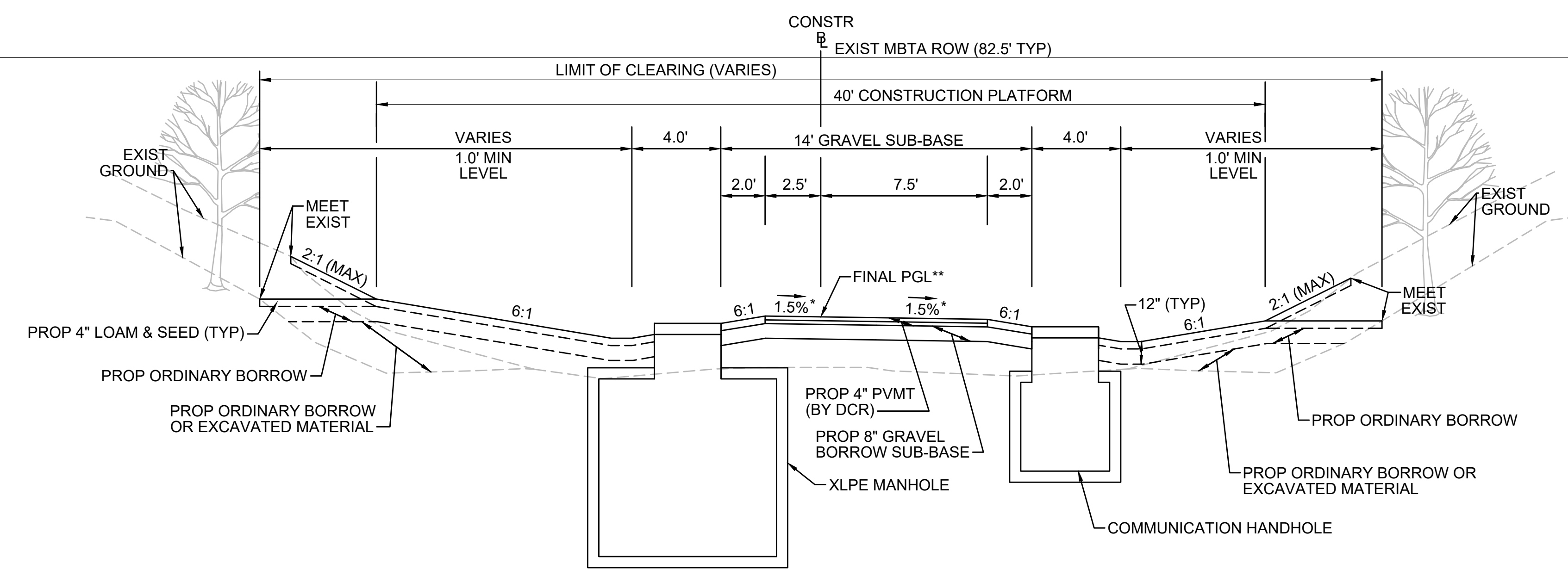
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TYPICAL SECTION - SWALE BOTH SIDES - MANHOLE ON LEFT

STA 176+75± TO STA 177+25±, STA 503+75± TO STA 504+25±, STA 571+75± TO STA 572+25±
NTS



* TOLERANCE FOR CONSTRUCTION ±0.5%
** CONTRACTOR TO BUILD TO INTERIM PGL, WHICH IS 4" BELOW FINAL PGL SHOWN HERE. FINAL GRADING TO BE PERFORMED UNDER SEPARATE CONTRACT. SEE DETAIL FOR INTERIM TYPICAL SECTION ON SHEET 157 FOR ADDITIONAL INFORMATION.
+ SHOULDERS CAN BE UP TO 6:1 SLOPE TO AVOID CHASING SLOPES
SEE CROSS SECTIONS FOR MORE INFORMATION

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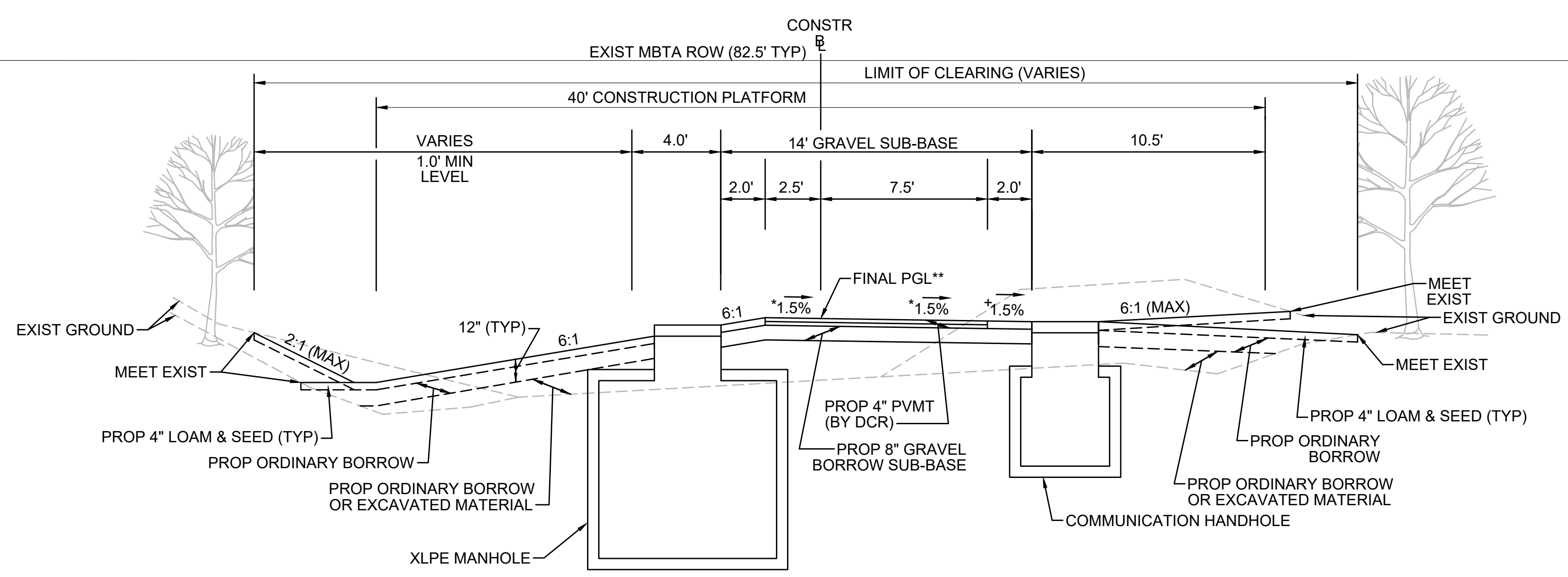
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TYPICAL SECTION - SWALE LEFT SIDE - MANHOLE ON LEFT

STA 316+00± TO STA 316+50±, STA 736+75± TO STA 737+25±
NTS



* TOLERANCE FOR CONSTRUCTION ±0.5%
** CONTRACTOR TO BUILD TO INTERIM PGL, WHICH IS 4" BELOW FINAL PGL SHOWN HERE. FINAL GRADING TO BE PERFORMED UNDER SEPARATE CONTRACT. SEE DETAIL FOR INTERIM TYPICAL SECTION ON SHEET 157 FOR ADDITIONAL INFORMATION.
+ SHOULDERS CAN BE UP TO 6:1 SLOPE TO AVOID CHASING SLOPES
SEE CROSS SECTIONS FOR MORE INFORMATION

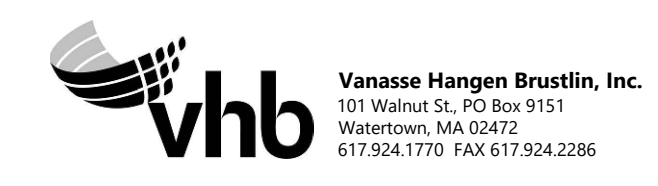
* TOLERANCE FOR CONSTRUCTION ±0.5%
** CONTRACTOR TO BUILD TO INTERIM PGL, WHICH IS 4" BELOW FINAL PGL SHOWN HERE. FINAL GRADING TO BE PERFORMED UNDER SEPARATE CONTRACT. SEE DETAIL FOR INTERIM TYPICAL SECTION ON SHEET 157 FOR ADDITIONAL INFORMATION.
+ SHOULDERS CAN BE UP TO 6:1 SLOPE TO AVOID CHASING SLOPES
SEE CROSS SECTIONS FOR MORE INFORMATION

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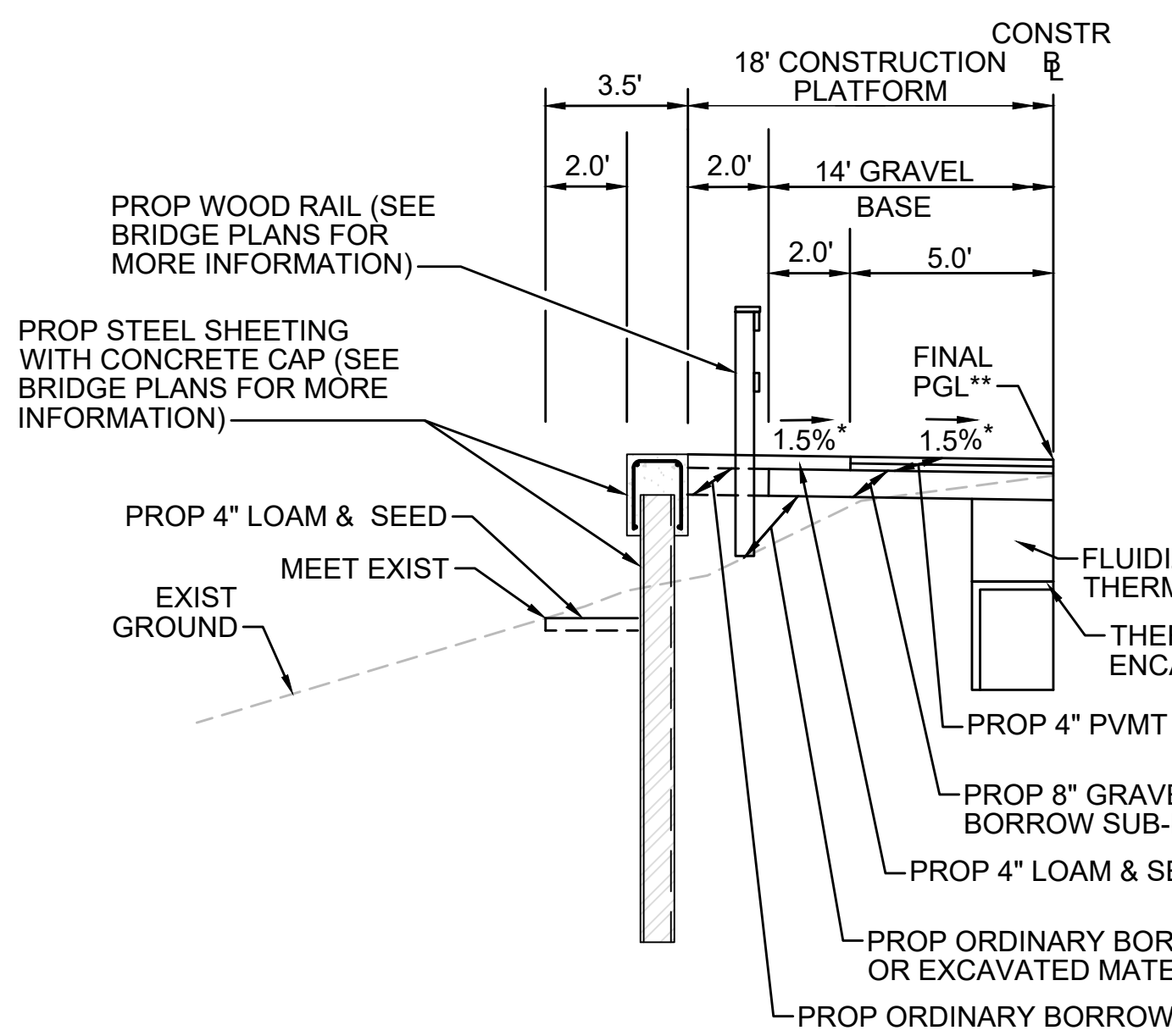


N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
TYPICAL SECTIONS				
PLAN 20 OF 349				
SCALE: unless noted NTS	DATE FEB 2021	DRAWN MS	CHK'D. SK	APPR. MES
DRAWING NO.	REV.			

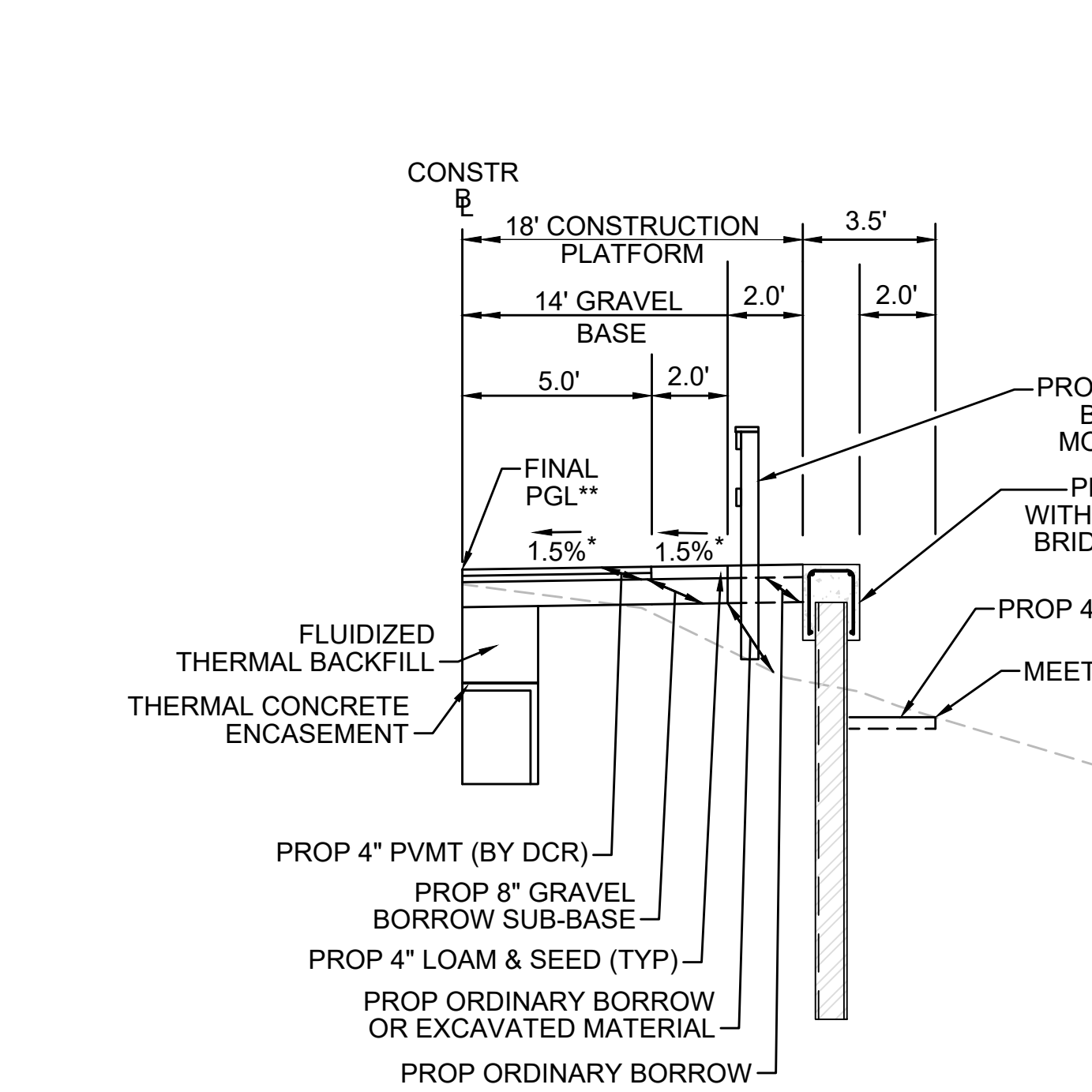
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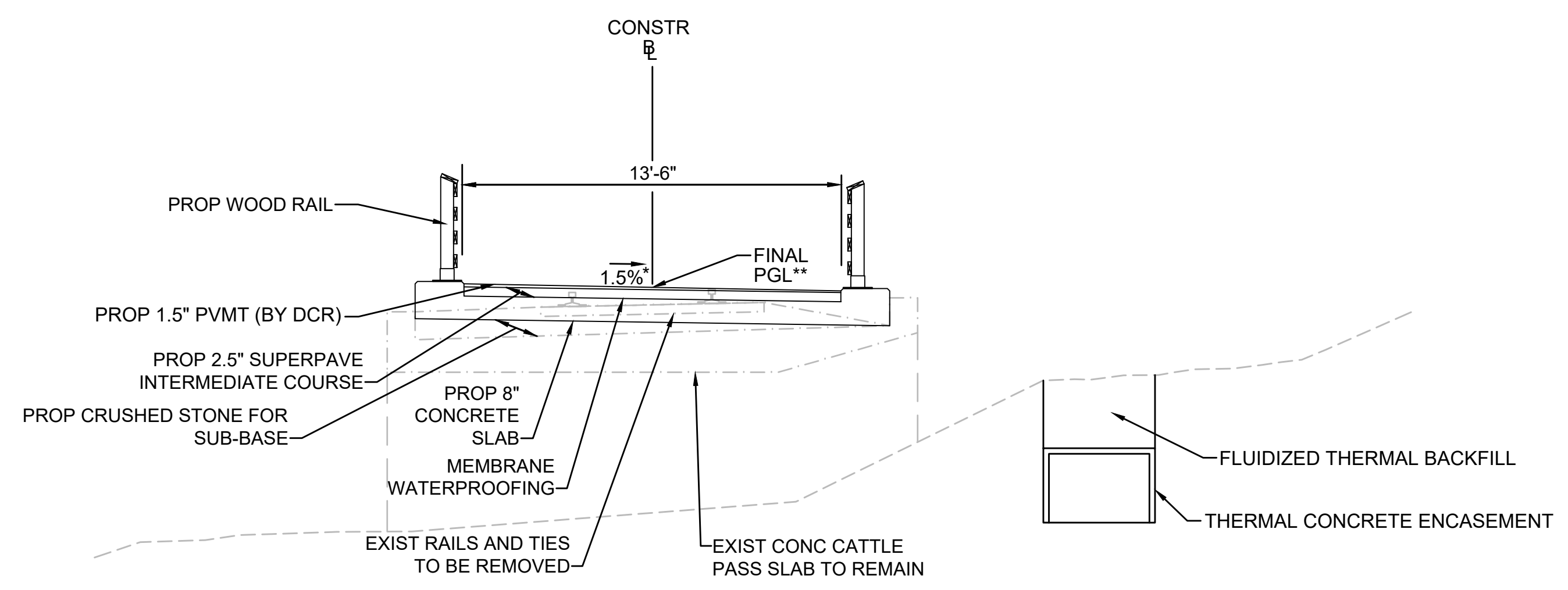
SHEETING SECTION LT
STA 119+00± TO STA 119+38±, STA 119+52± TO STA 125+00±, STA 148+25± TO STA 148+49±, STA 149+13± TO STA 149+75±, STA 300+50± TO STA 400+07±, STA 400+58± TO STA 401+25±, STA 724+73± TO STA 725+03±, STA 725+59± TO STA 725+96± NTS



SHEETING SECTION RT
STA 148+25± TO STA 148+49±, STA 149+13± TO STA 149+75±, STA 399+91± TO STA 400+07±, STA 400+58± TO STA 401+25±, STA 724+73± TO STA 725+03±, STA 725+59± TO STA 725+96±, STA 731+00± TO STA 734+25± NTS

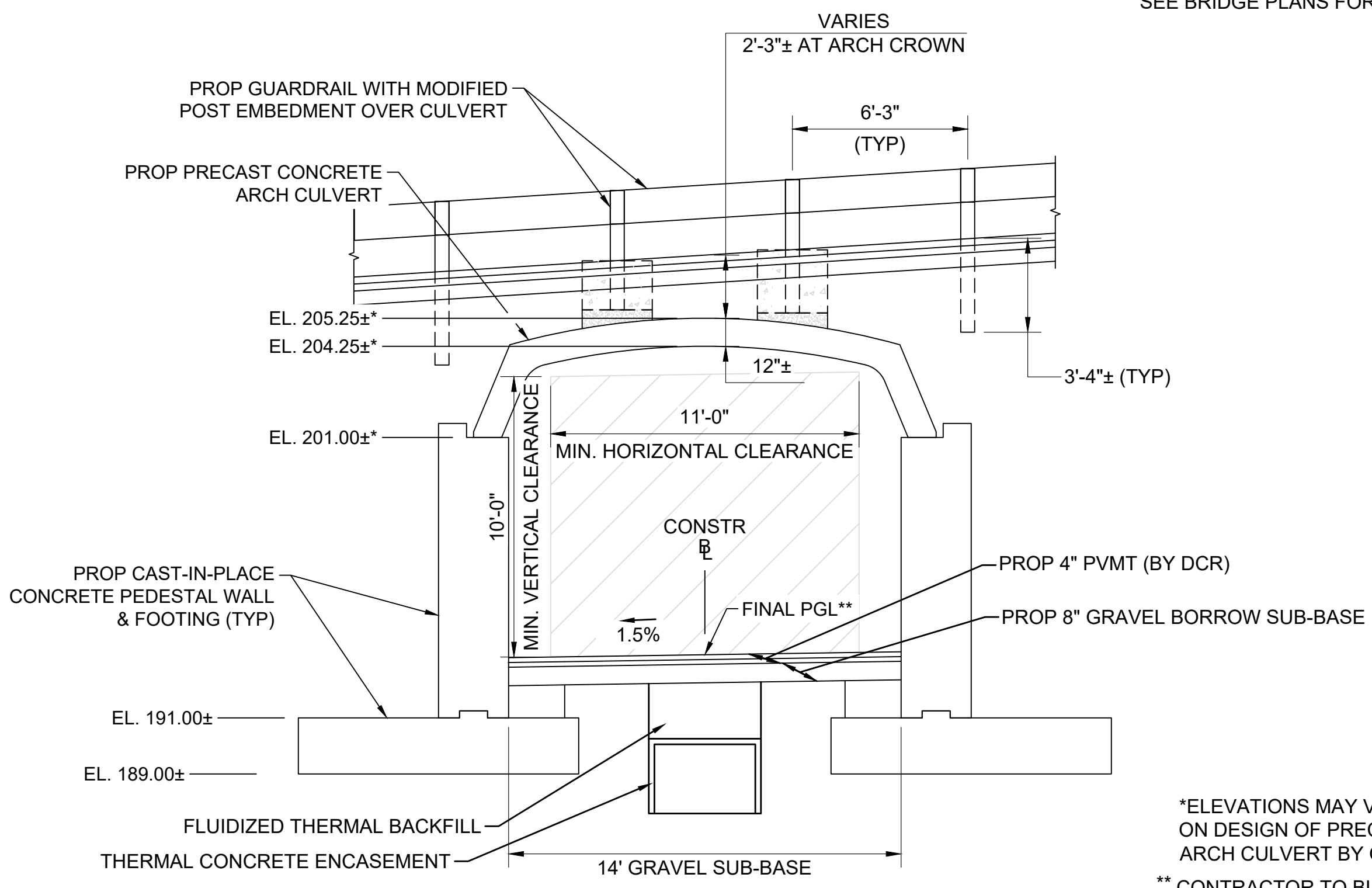
* TOLERANCE FOR CONSTRUCTION ±0.5%
** CONTRACTOR TO BUILD TO INTERIM PGL, WHICH IS 4" BELOW FINAL PGL SHOWN HERE. FINAL GRADING TO BE PERFORMED UNDER SEPARATE CONTRACT. SEE DETAIL FOR INTERIM TYPICAL SECTION ON SHEET 157 FOR ADDITIONAL INFORMATION.
SEE CROSS SECTIONS FOR MORE INFORMATION

* TOLERANCE FOR CONSTRUCTION ±0.5%
** CONTRACTOR TO BUILD TO INTERIM PGL, WHICH IS 4" BELOW FINAL PGL SHOWN HERE. FINAL GRADING TO BE PERFORMED UNDER SEPARATE CONTRACT. SEE DETAIL FOR INTERIM TYPICAL SECTION ON SHEET 157 FOR ADDITIONAL INFORMATION.
SEE CROSS SECTIONS FOR MORE INFORMATION



CATTLE CROSSING
STA 119+38± TO STA 119+52± NTS

*TOLERANCE FOR CONSTRUCTION ±0.5%
** CONTRACTOR TO BUILD TO INTERIM PGL, WHICH IS 1.5" BELOW FINAL PGL SHOWN HERE. FINAL GRADING TO BE PERFORMED UNDER SEPARATE CONTRACT. SEE DETAIL ON SHEET 158 FOR ADDITIONAL INFORMATION.



CHESTNUT STREET CULVERT
STA 132+44± TO STA 132+84± NTS

*ELEVATIONS MAY VARY DEPENDING ON DESIGN OF PRECAST CONCRETE ARCH CULVERT BY OTHERS.
** CONTRACTOR TO BUILD TO INTERIM PGL, WHICH IS 4" BELOW FINAL PGL SHOWN HERE. FINAL GRADING TO BE PERFORMED UNDER SEPARATE CONTRACT. SEE DETAIL FOR INTERIM TYPICAL SECTION ON SHEET 157 FOR ADDITIONAL INFORMATION.
SEE BRIDGE PLANS FOR MORE INFORMATION

REVISION			
N.O.	DESCRIPTION	BY	DATE

EVERSOURCE

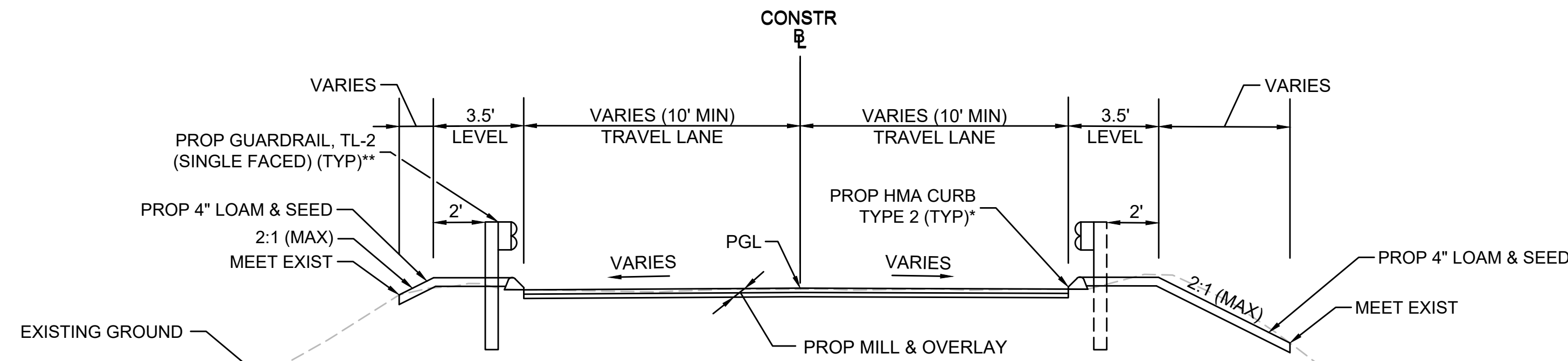
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
TYPICAL SECTIONS
PLAN 22 OF 349

SCALE: unless noted NTS	DATE: DEC 2021	DRAWN: MS	CHK'D: SK	APP'R: MES	DRAWING NO.:	REV.:
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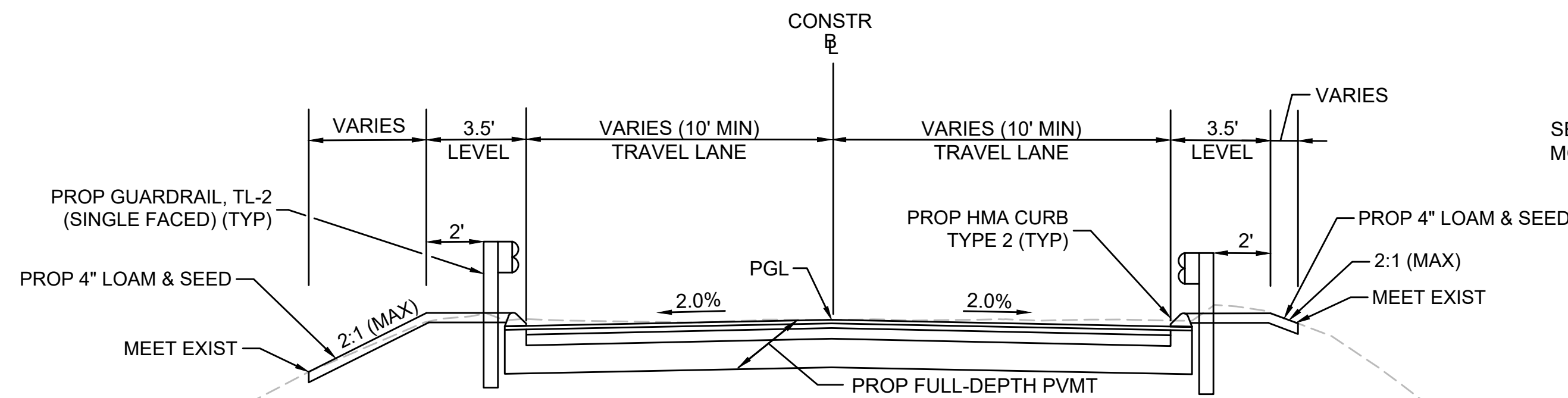
1 2 3 4 5 6 7 8 9 10 11

* FULL-DEPTH BERM PAD REQUIRED IF EXISTING PAVEMENT NOT SUITABLE
 ** TL-2 GUARDRAIL PROPOSED FROM STA 800+99 TO STA 802+12 (LT) AND STA 801+06 TO STA 802+24 (RT)
 SEE CROSS SECTIONS FOR MORE INFORMATION



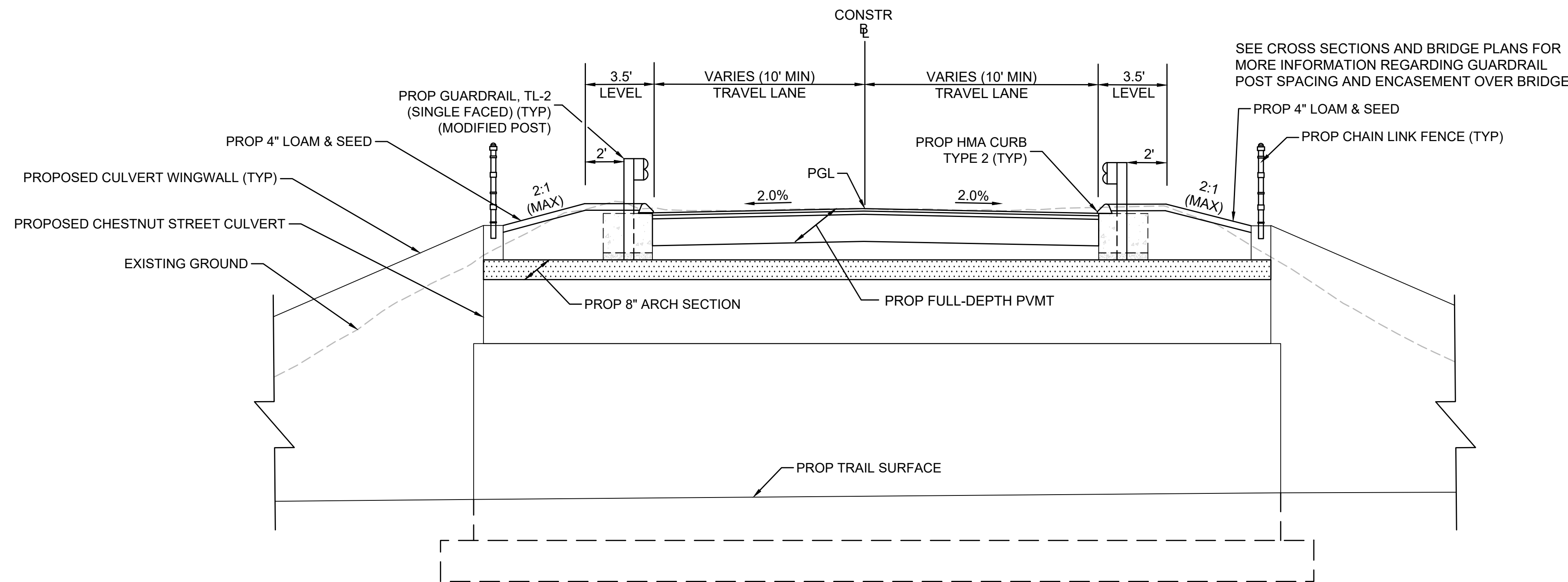
TYPICAL SECTION - CHESTNUT ST PVMT TRANSITION

STA 800+85 TO STA 801+05
 STA 801+80 TO STA 802+00
 NTS



TYPICAL SECTION - CHESTNUT ST FULL-DEPTH PVMT

STA 801+05 TO STA 801+80
 NTS



TYPICAL SECTION - CHESTNUT ST FULL-DEPTH PVMT OVER CHESTNUT STREET CULVERT

STA 801+28 TO STA 801+58
 NTS

PAVEMENT NOTES

PROPOSED FULL-DEPTH PAVEMENT

SURFACE: 1.75" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER 1.75" SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC-12.5) OVER
BASE: 4.5" SUPERPAVE BASE COURSE 37.5 (SBC-37.5) OVER
SUBBASE: 4" DENSE GRADED CRUSHED STONE OVER 8" GRAVEL BORROW (TYPE b)

PROPOSED PAVEMENT MILLING & OVERLAY

SURFACE: 1.75" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER 1.75" PAVEMENT MICROMILLING

PROPOSED HOT MIX ASPHALT WALK

SURFACE: 1.25" SUPERPAVE SURFACE COURSE 9.5 (SSC-9.5) OVER 1.5" SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC-12.5) OVER
FOUNDATION: 8" GRAVEL BORROW (TYPE b)

PROPOSED HOT MIX ASPHALT DRIVEWAY/WALK AT DRIVEWAY

SURFACE: 1.5" SUPERPAVE SURFACE COURSE 9.5 (SSC-9.5) OVER 2" SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC-12.5) OVER
FOUNDATION: 8" GRAVEL BORROW (TYPE b)

PROPOSED CEMENT CONCRETE WALK

SURFACE: 6" CEMENT CONCRETE AIR ENTRAINED 4000 PSI, 3/4", 610 OVER
FOUNDATION: 8" GRAVEL BORROW (TYPE b)

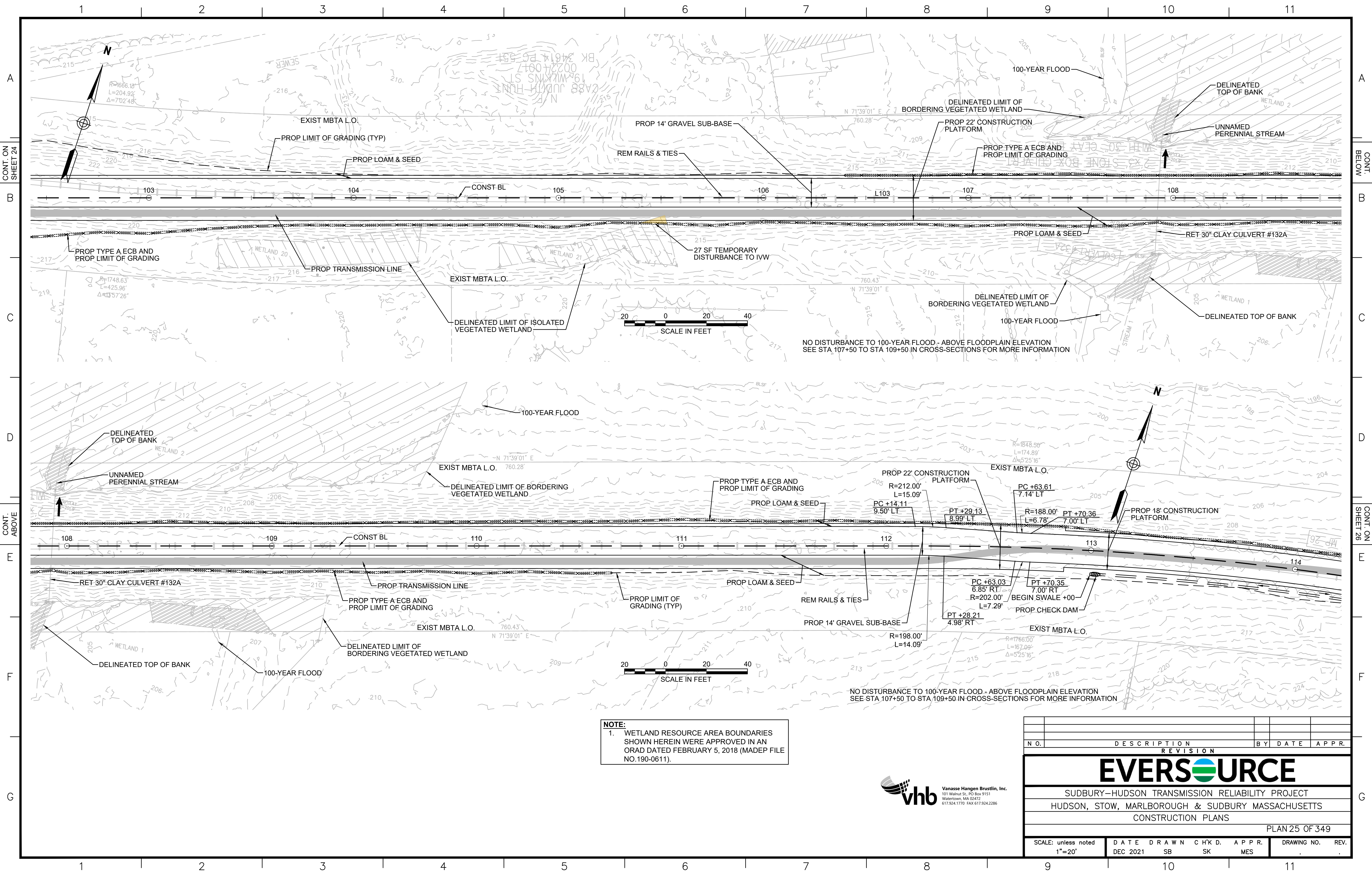
NOTES:

- TACK COAT TO BE APPLIED AT 0.05 GAL/SY OVER SMOOTH PAVEMENT (BASE AND INTERMEDIATE COURSES) AND 0.07 GAL/SY OVER MILLED SURFACE.
- ASPHALT EMULSION FOR TACK COAT SHALL BE (RS-1H) TO RESIST TRACKING BY HAUL VEHICLES AND BOND HMA LAYERS FOR FLEXURAL STRENGTH.
- HMA WALKS AND DRIVEWAYS SHALL BE IN ACCORDANCE WITH SECTION 702. AND 703. AND SHALL BE 50 GYRATION MIXTURES.



N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
TYPICAL SECTIONS				
PLAN 23 OF 349				
SCALE: unless noted NTS	DATE: DEC 2021	DRAWN: MS	CHK'D: SK	APPR: MES
DRAWING NO.	REV.			

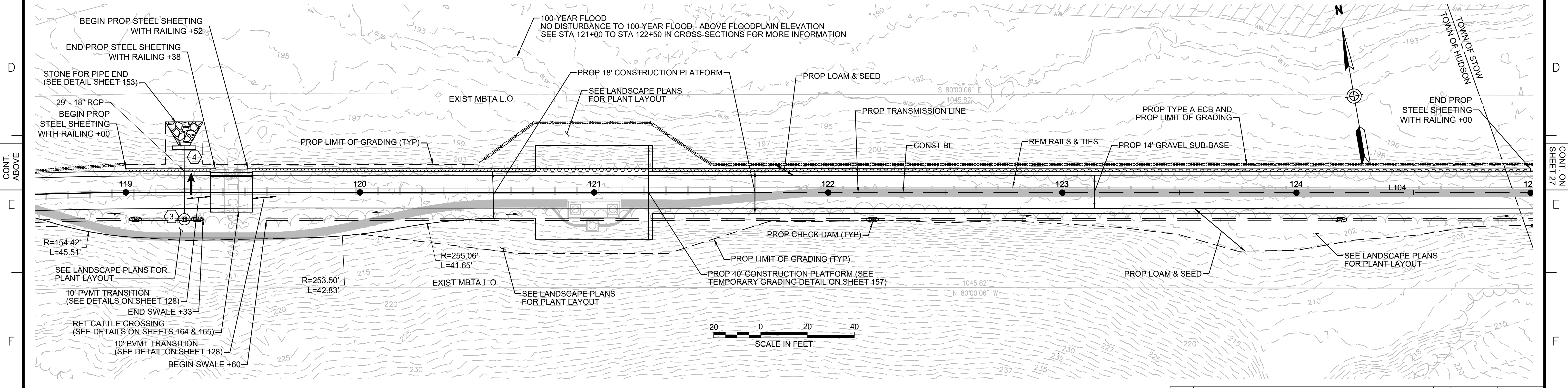
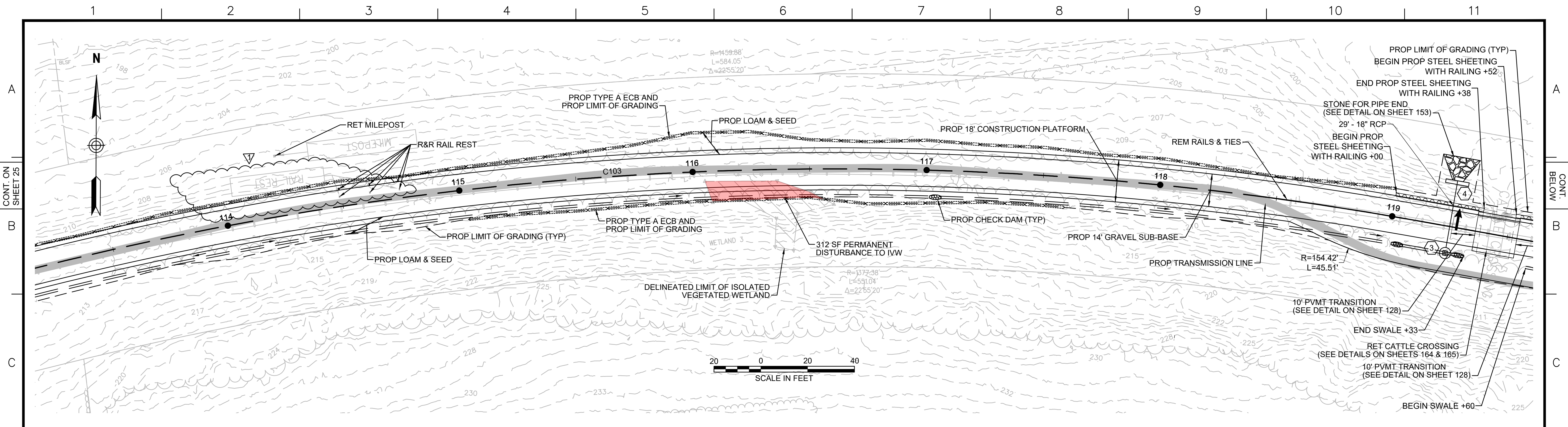
1 2 3 4 5 6 7 8 9 10 11



NOTE:
 1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).



NO.		DESCRIPTION	BY	DATE	APPR.
REVISION					
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CONSTRUCTION PLANS					
PLAN 25 OF 349					
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN SB	CHK'D. SK	APPR. MES	DRAWING NO. REV.

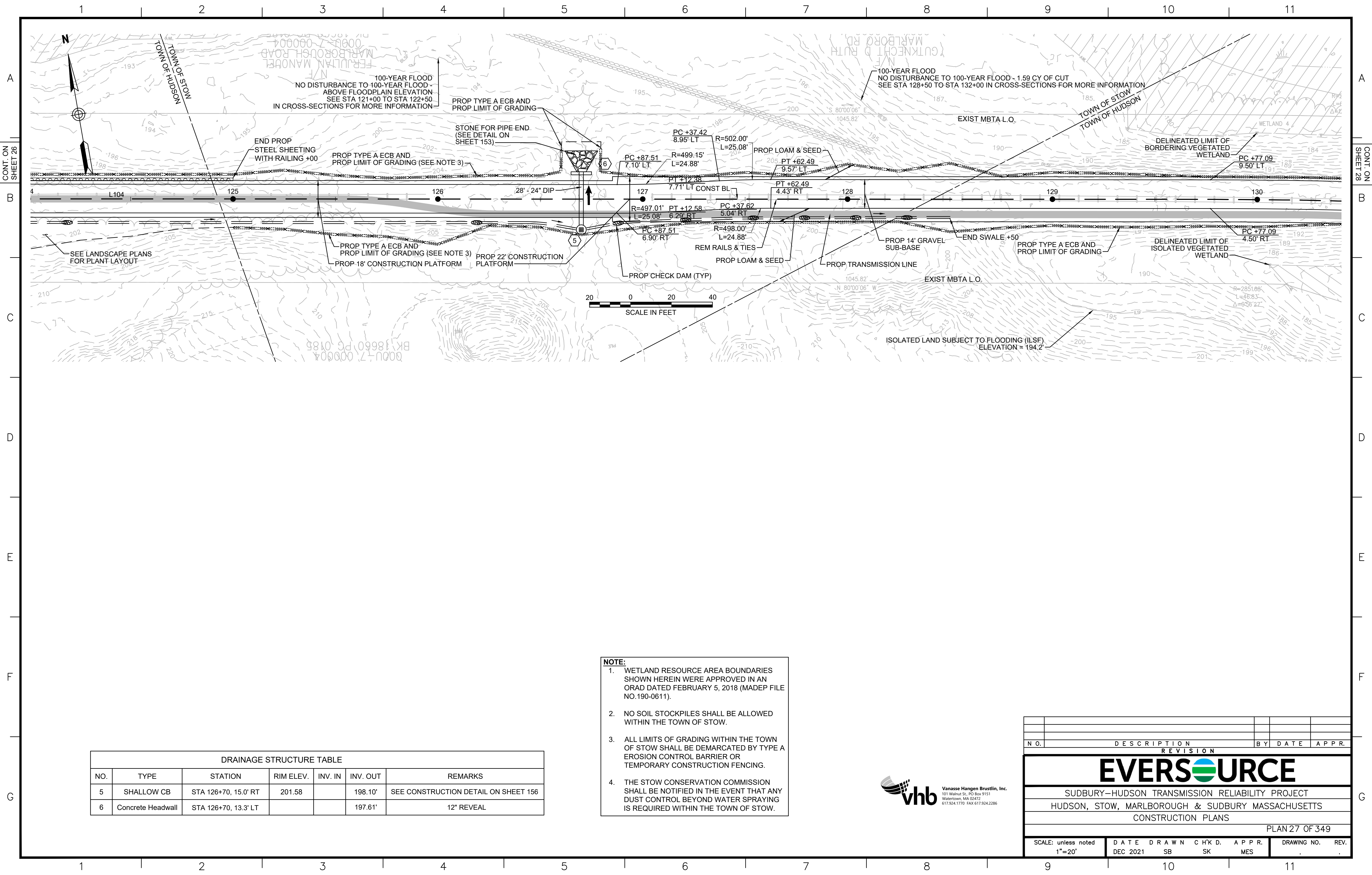


DRAINAGE STRUCTURE TABLE						
NO.	TYPE	STATION	RIM ELEV.	INV. IN	INV. OUT	REMARKS
3	Leaching Catch Basin	STA 119+25, 11.5' RT	207.24		199.17'	CONTRACTOR TO PROVIDE
4	Concrete Headwall	STA 119+25, 19.1' LT			197.91'	12" REVEAL

NOTE:
 1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).



1		HISTORIC FEATURE DISPOSITIONS		02/03/2022	
N.O.	DESCRIPTION	BY	DATE	APPR.	
REVISION					
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CONSTRUCTION PLANS					
PLAN 26 OF 349					
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN SB	CHK'D. SK	APPR. MES	DRAWING NO. REV.



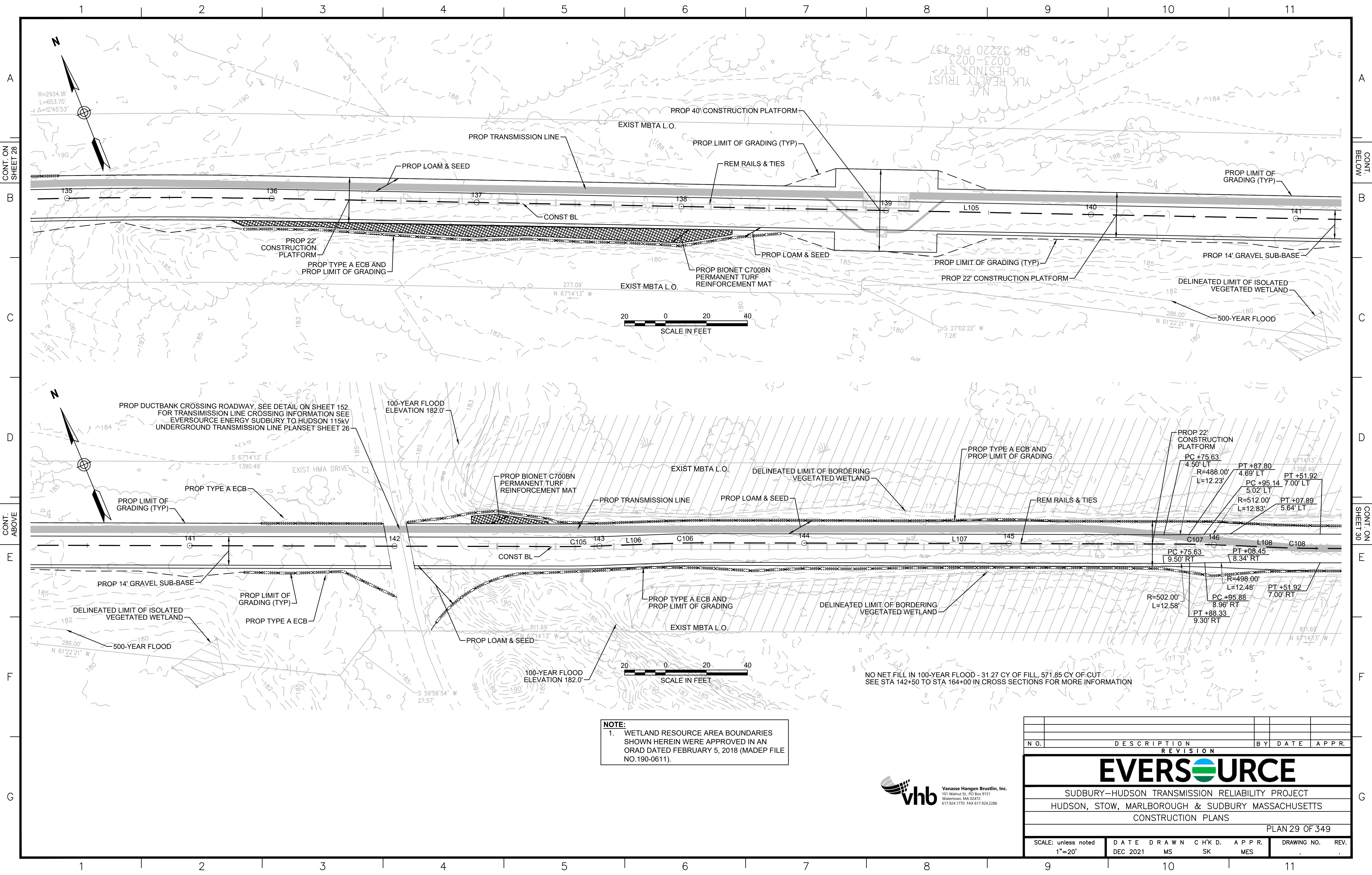
DRAINAGE STRUCTURE TABLE

NO.	TYPE	STATION	RIM ELEV.	INV. IN	INV. OUT	REMARKS
5	SHALLOW CB	STA 126+70, 15.0' RT	201.58		198.10'	SEE CONSTRUCTION DETAIL ON SHEET 156
6	Concrete Headwall	STA 126+70, 13.3' LT			197.61'	12" REVEAL

- NOTE:**
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).
 2. NO SOIL STOCKPILES SHALL BE ALLOWED WITHIN THE TOWN OF STOW.
 3. ALL LIMITS OF GRADING WITHIN THE TOWN OF STOW SHALL BE DEMARCATED BY TYPE A EROSION CONTROL BARRIER OR TEMPORARY CONSTRUCTION FENCING.
 4. THE STOW CONSERVATION COMMISSION SHALL BE NOTIFIED IN THE EVENT THAT ANY DUST CONTROL BEYOND WATER SPRAYING IS REQUIRED WITHIN THE TOWN OF STOW.



NO.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CONSTRUCTION PLANS				
PLAN 27 OF 349				
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN SB	CHK'D. SK	APPR. MES
DRAWING NO.	REV.			



NOTE:
 1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).



REVISION			
N.O.	DESCRIPTION	BY	DATE

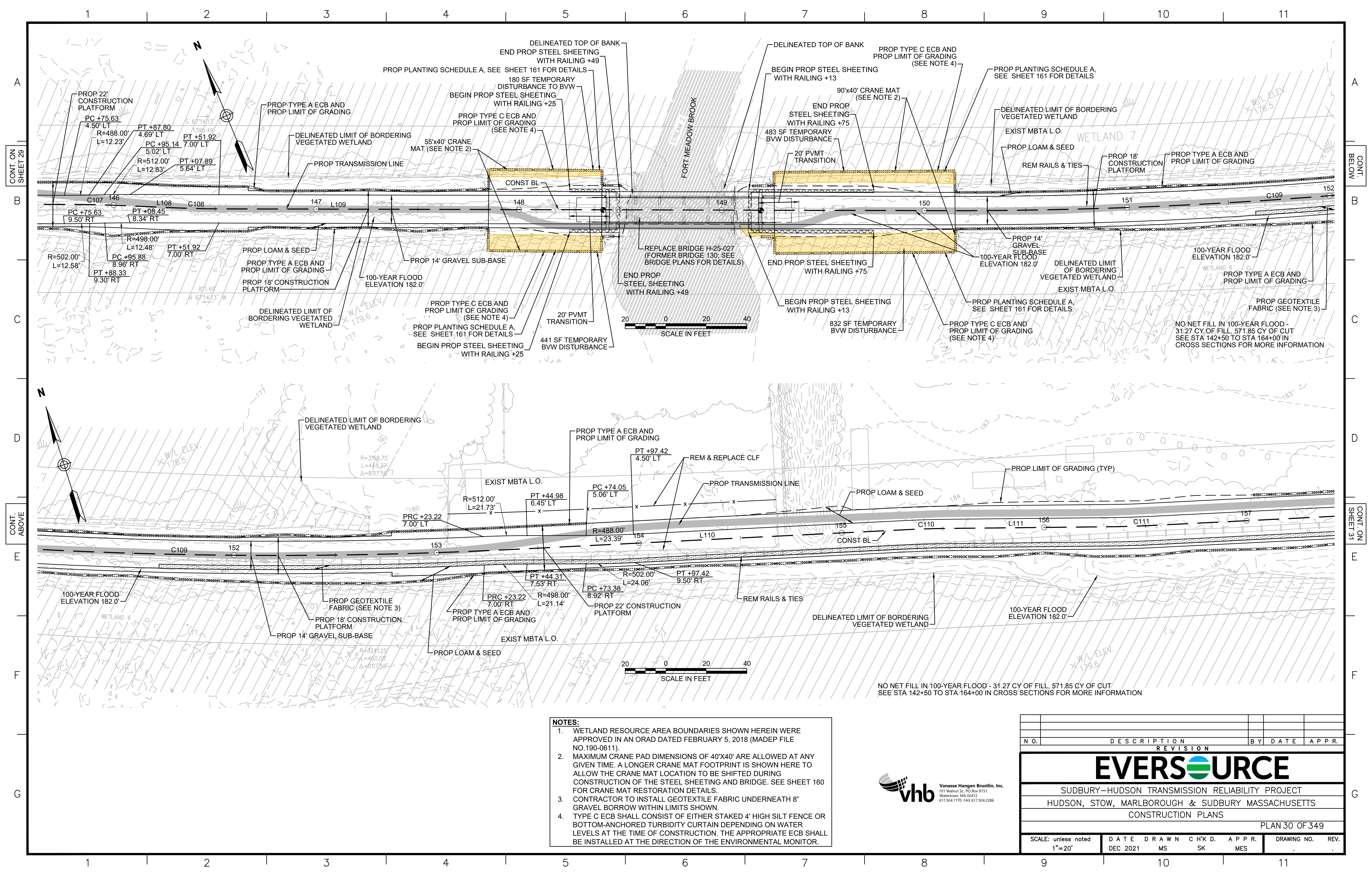
EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 CONSTRUCTION PLANS

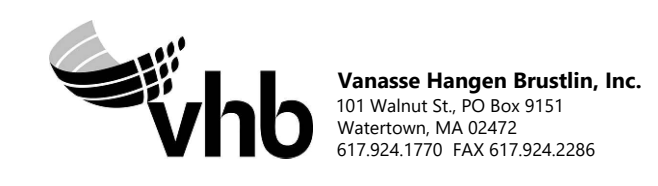
PLAN 29 OF 349

SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES	DRAWING NO.	REV.
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NO NET FILL IN 100-YEAR FLOOD - 31.27 CY OF FILL, 571.85 CY OF CUT
 SEE STA 142+50 TO STA 164+00 IN CROSS SECTIONS FOR MORE INFORMATION



- NOTES:**
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).
 2. MAXIMUM CRANE PAD DIMENSIONS OF 40'X40' ARE ALLOWED AT ANY GIVEN TIME. A LONGER CRANE MAT FOOTPRINT IS SHOWN HERE TO ALLOW THE CRANE MAT LOCATION TO BE SHIFTED DURING CONSTRUCTION OF THE STEEL SHEETING AND BRIDGE. SEE SHEET 160 FOR CRANE MAT RESTORATION DETAILS.
 3. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 8" GRAVEL BORROW WITHIN LIMITS SHOWN.
 4. TYPE C ECB SHALL CONSIST OF EITHER STAKED 4' HIGH SILT FENCE OR BOTTOM-ANCHORED TURBIDITY CURTAIN DEPENDING ON WATER LEVELS AT THE TIME OF CONSTRUCTION. THE APPROPRIATE ECB SHALL BE INSTALLED AT THE DIRECTION OF THE ENVIRONMENTAL MONITOR.



REVISION			
N.O.	DESCRIPTION	BY	DATE

EVERSOURCE

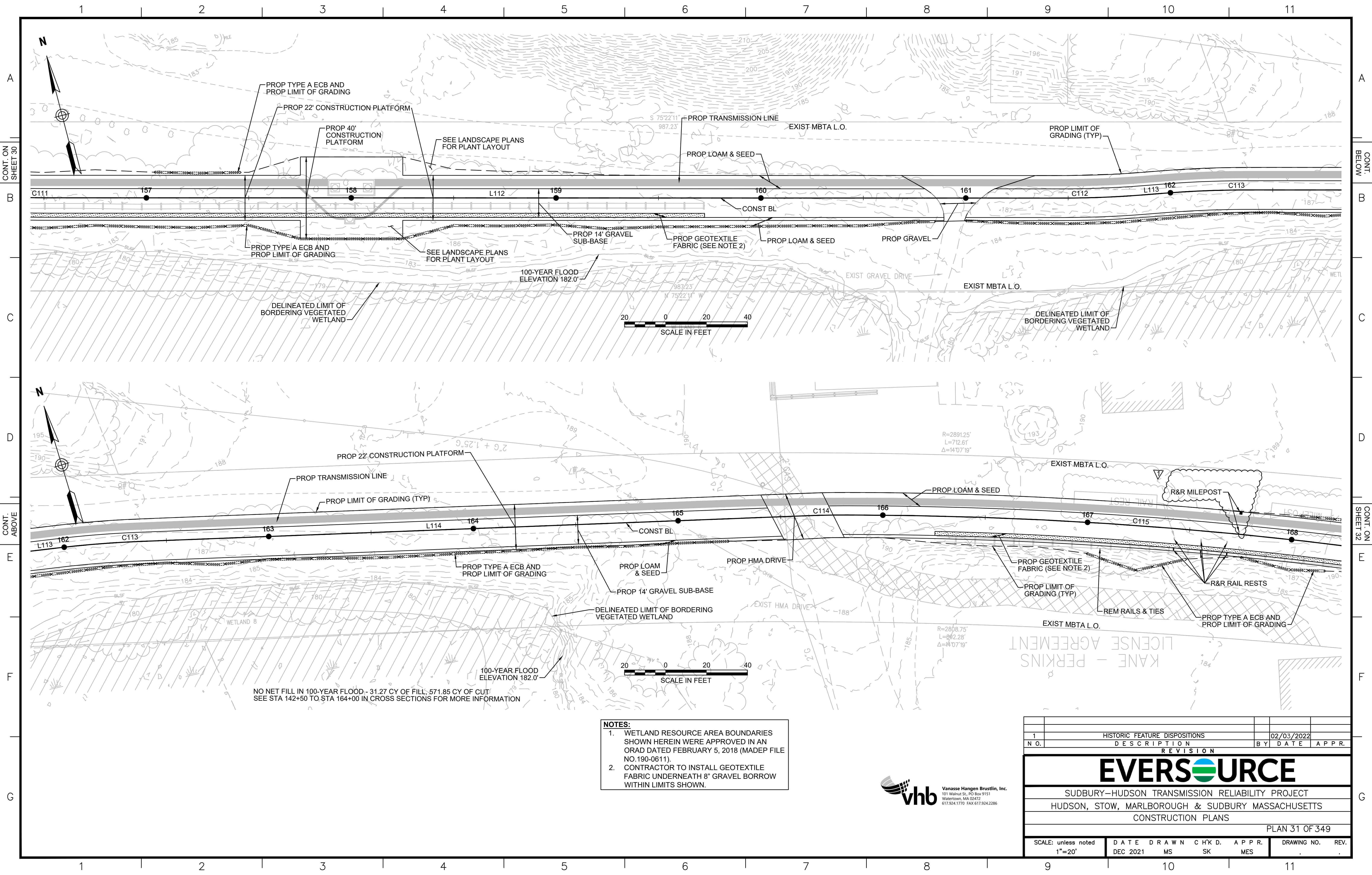
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
CONSTRUCTION PLANS

PLAN 30 OF 349

SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES	DRAWING NO.	REV.
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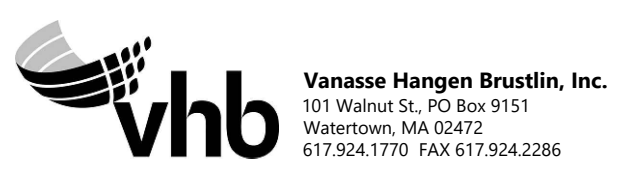
NO NET FILL IN 100-YEAR FLOOD - 31.27 CY OF FILL, 571.85 CY OF CUT
SEE STA 142+50 TO STA 164+00 IN CROSS SECTIONS FOR MORE INFORMATION





NO NET FILL IN 100-YEAR FLOOD - 31.27 CY OF FILL, 571.85 CY OF CUT
 SEE STA 142+50 TO STA 164+00 IN CROSS SECTIONS FOR MORE INFORMATION

- NOTES:**
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).
 2. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 8" GRAVEL BORROW WITHIN LIMITS SHOWN.



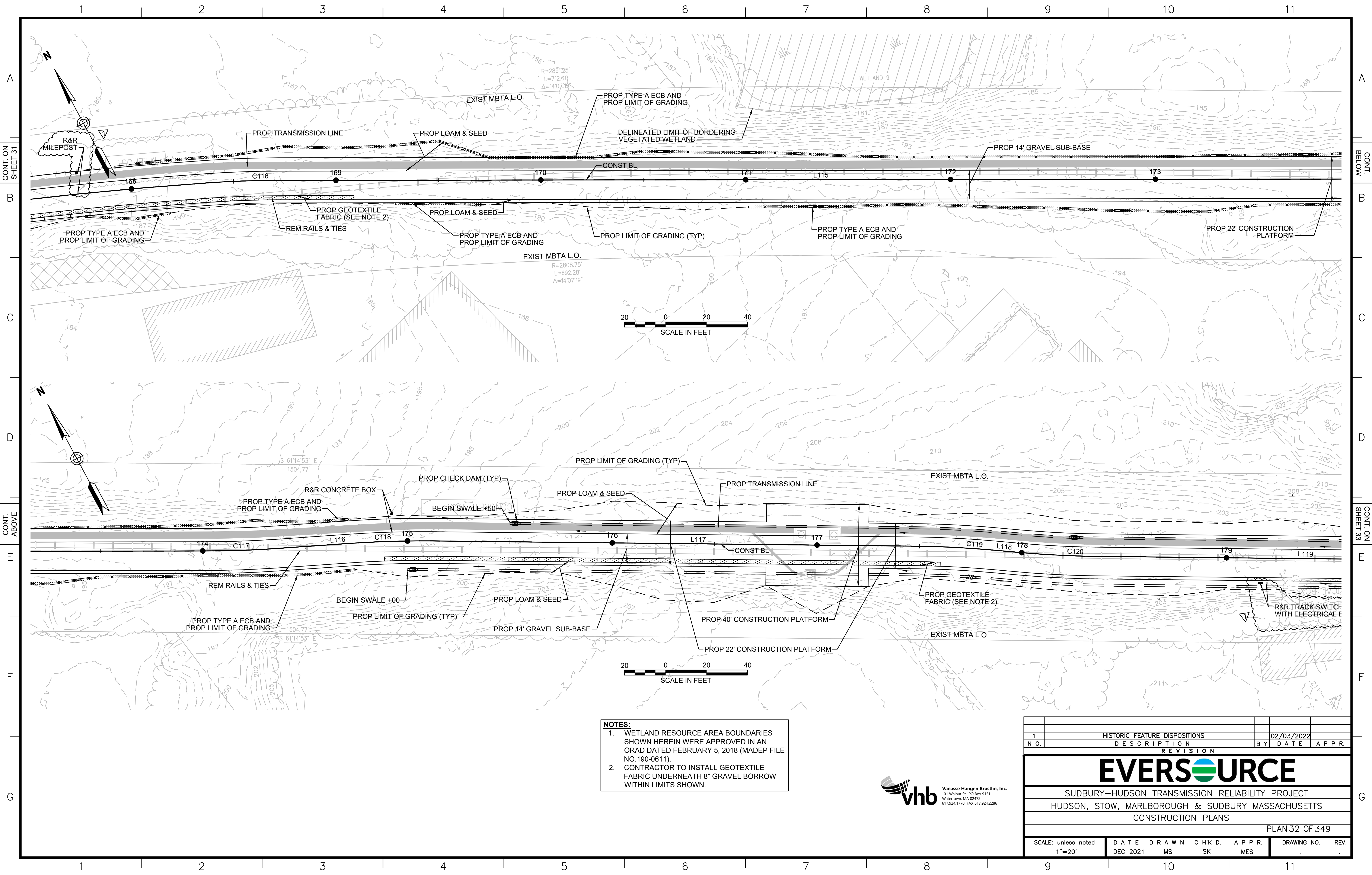
1		HISTORIC FEATURE DISPOSITIONS		02/03/2022	
N.O.	DESCRIPTION	BY	DATE	APPR.	
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CONSTRUCTION PLANS					
PLAN 31 OF 349					
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES	DRAWING NO. REV.

CONT. ON SHEET 30

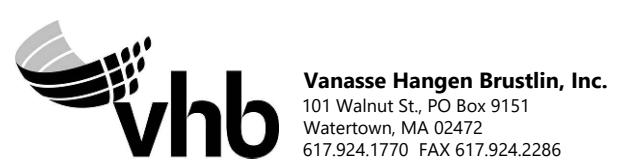
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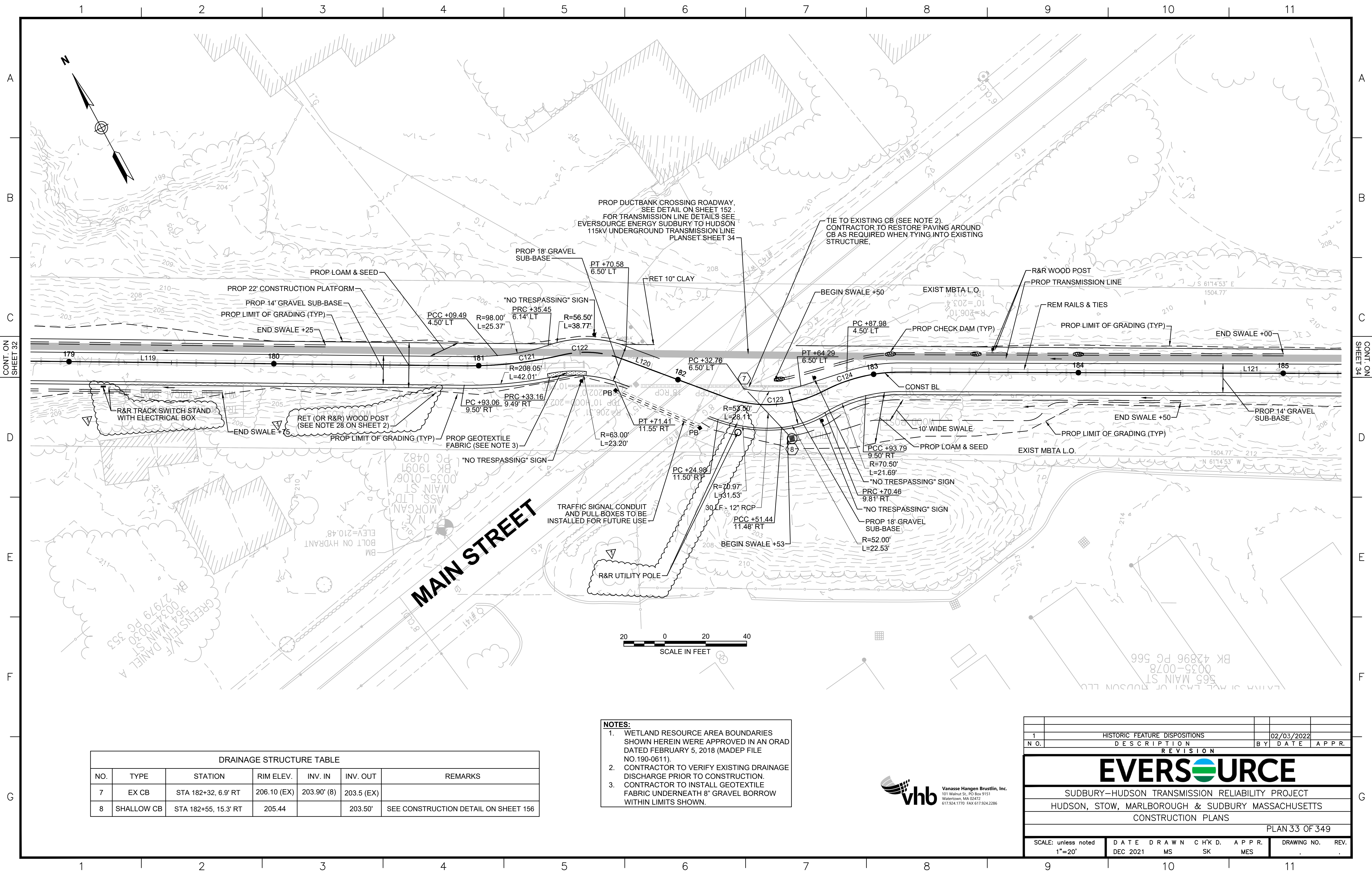
CONT. ON SHEET 32



- NOTES:**
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).
 2. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 8" GRAVEL BORROW WITHIN LIMITS SHOWN.



1		HISTORIC FEATURE DISPOSITIONS		02/03/2022	
N.O.	DESCRIPTION	BY	DATE	APPR.	
REVISION					
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CONSTRUCTION PLANS					
PLAN 32 OF 349					
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES	DRAWING NO. REV.



CONT. ON SHEET 32

CONT. ON SHEET 34

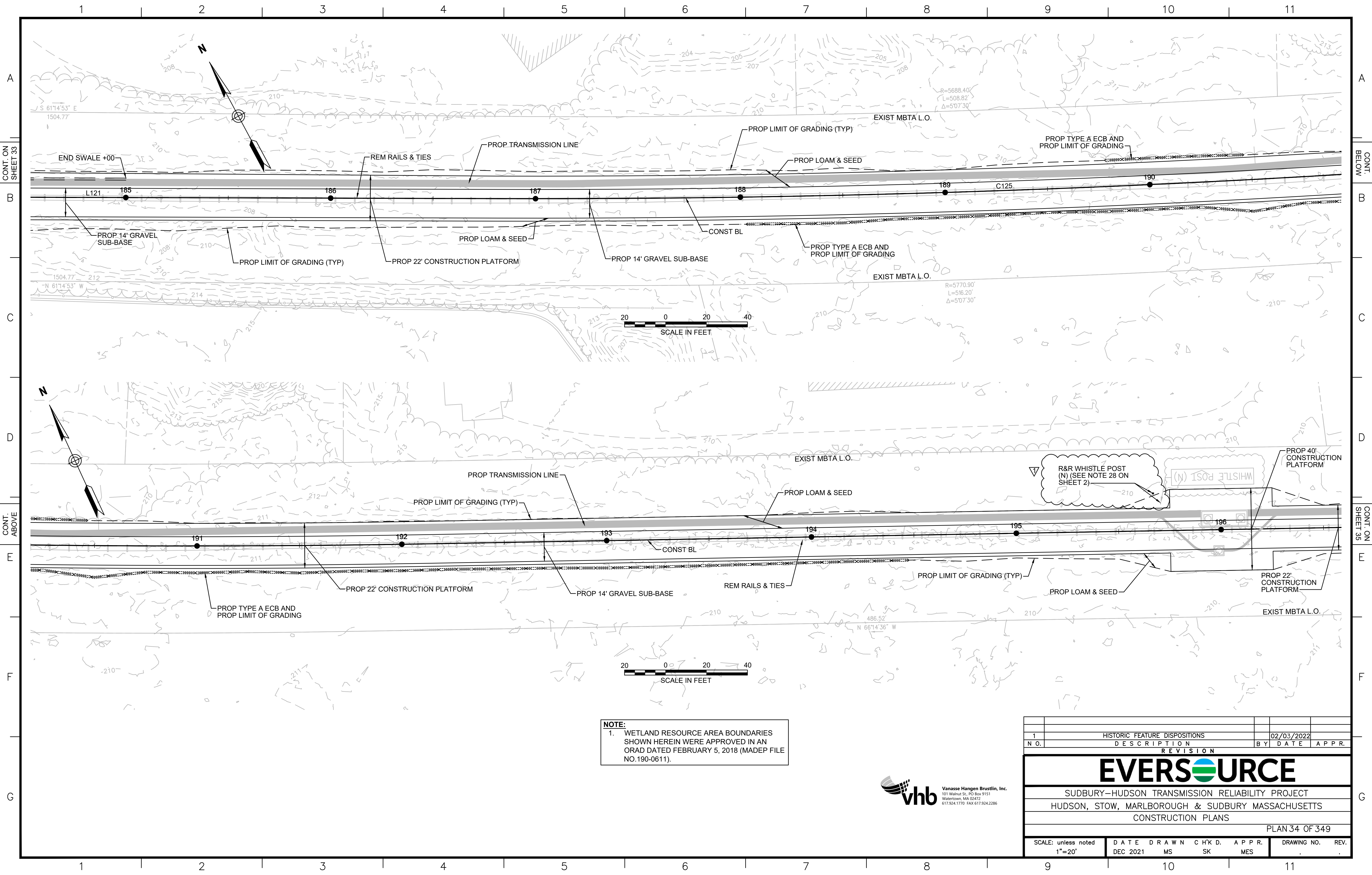
DRAINAGE STRUCTURE TABLE						
NO.	TYPE	STATION	RIM ELEV.	INV. IN	INV. OUT	REMARKS
7	EX CB	STA 182+32, 6.9' RT	206.10 (EX)	203.90' (8)	203.5 (EX)	
8	SHALLOW CB	STA 182+55, 15.3' RT	205.44		203.50'	SEE CONSTRUCTION DETAIL ON SHEET 156

- NOTES:**
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).
 2. CONTRACTOR TO VERIFY EXISTING DRAINAGE DISCHARGE PRIOR TO CONSTRUCTION.
 3. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 8" GRAVEL BORROW WITHIN LIMITS SHOWN.

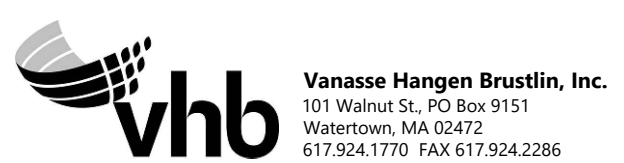


1		HISTORIC FEATURE DISPOSITIONS		02/03/2022	
N.O.	DESCRIPTION	BY	DATE	APPR.	
REVISION					
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CONSTRUCTION PLANS					
PLAN 33 OF 349					
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES	DRAWING NO. REV.

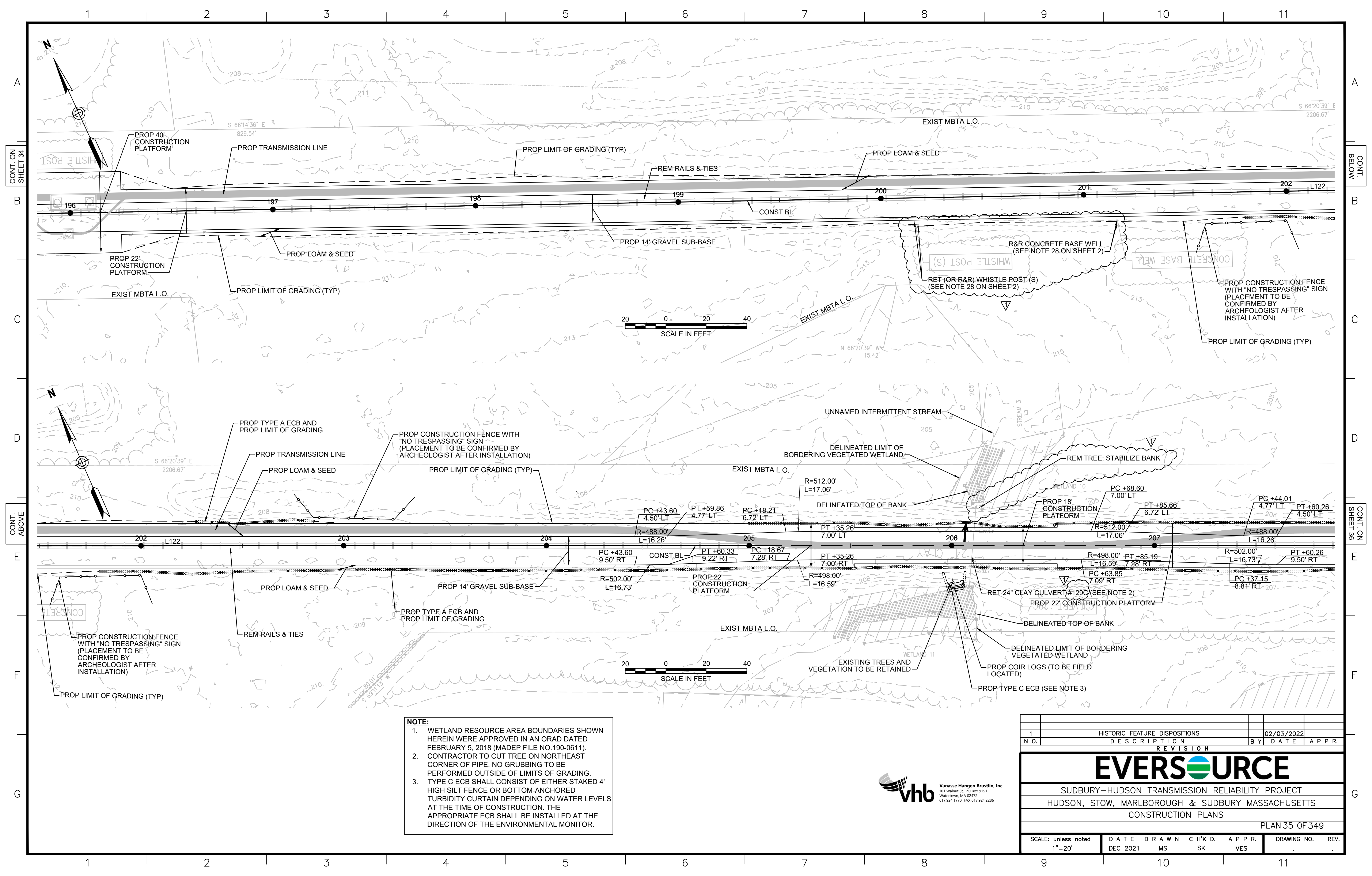




NOTE:
 1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).

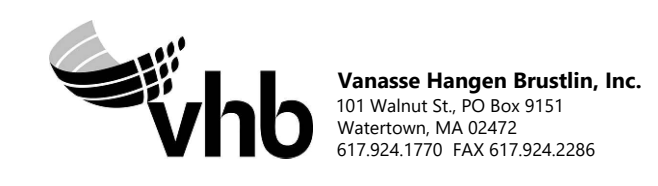


1	HISTORIC FEATURE DISPOSITIONS	02/03/2022		
N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CONSTRUCTION PLANS				
PLAN 34 OF 349				
SCALE: unless noted 1"=20'	DATE	DRAWN	CHK'D.	APPR.
	DEC 2021	MS	SK	MES
DRAWING NO.	REV.			

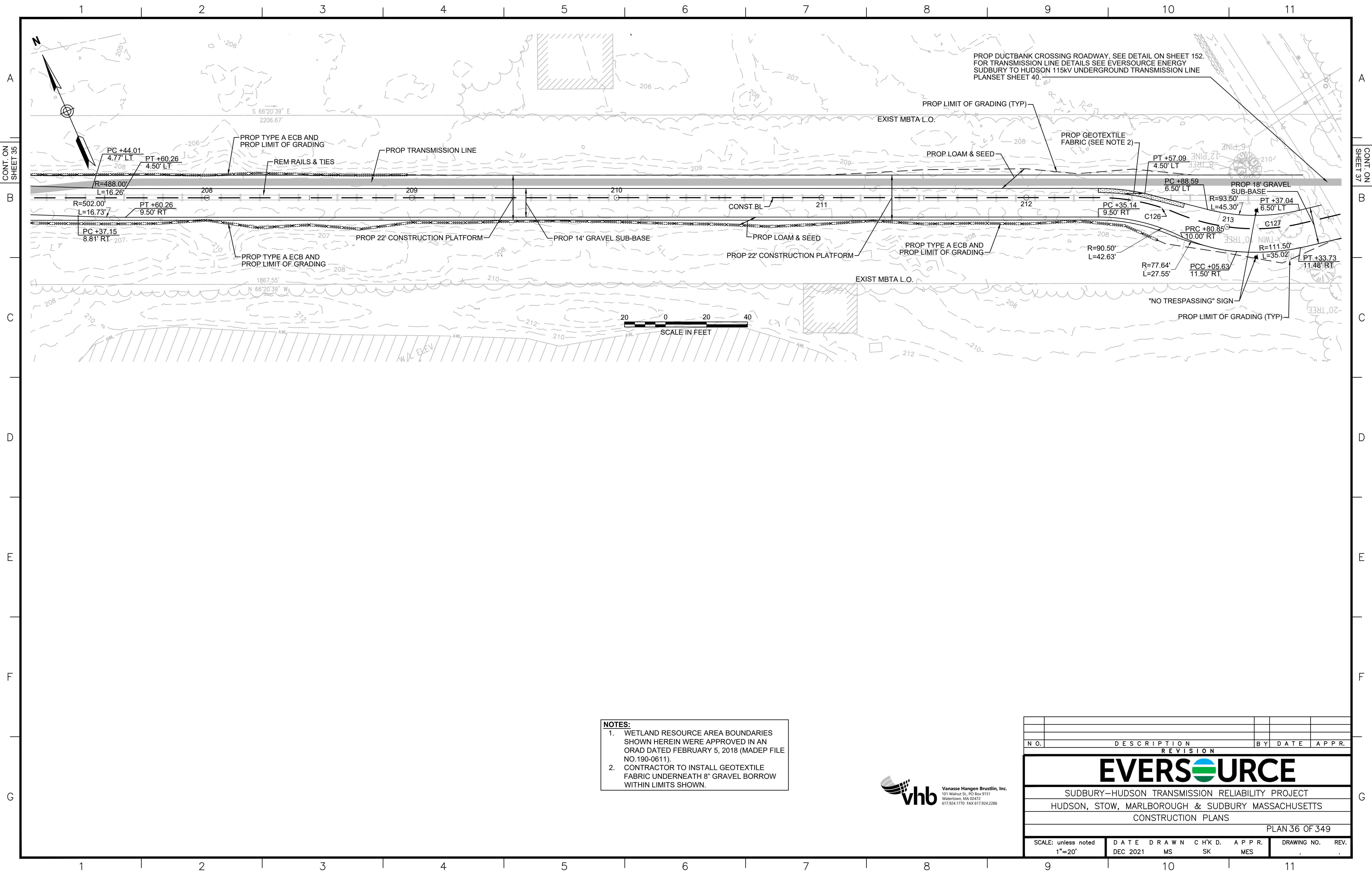


NOTE:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).
2. CONTRACTOR TO CUT TREE ON NORTHEAST CORNER OF PIPE. NO GRUBBING TO BE PERFORMED OUTSIDE OF LIMITS OF GRADING.
3. TYPE C ECB SHALL CONSIST OF EITHER STAKED 4' HIGH SILT FENCE OR BOTTOM-ANCHORED TURBIDITY CURTAIN DEPENDING ON WATER LEVELS AT THE TIME OF CONSTRUCTION. THE APPROPRIATE ECB SHALL BE INSTALLED AT THE DIRECTION OF THE ENVIRONMENTAL MONITOR.



1		HISTORIC FEATURE DISPOSITIONS		02/03/2022	
N.O.	DESCRIPTION	BY	DATE	APPR.	
REVISION					
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CONSTRUCTION PLANS					
PLAN 35 OF 349					
SCALE: unless noted 1"=20'	DATE	DRAWN	CHK'D.	APPR.	DRAWING NO. REV.
	DEC 2021	MS	SK	MES	



PROP DUCTBANK CROSSING ROADWAY. SEE DETAIL ON SHEET 152.
 FOR TRANSMISSION LINE DETAILS SEE EVERSOURCE ENERGY
 SUDBURY TO HUDSON 115KV UNDERGROUND TRANSMISSION LINE
 PLANSET SHEET 40.

- NOTES:**
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).
 2. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 8" GRAVEL BORROW WITHIN LIMITS SHOWN.



REVISION			
N.O.	DESCRIPTION	BY	DATE

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 CONSTRUCTION PLANS

PLAN 36 OF 349

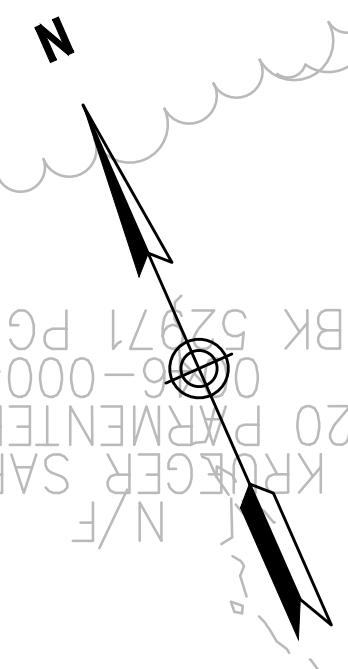
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES	DRAWING NO.	REV.
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PARMENTER ROAD

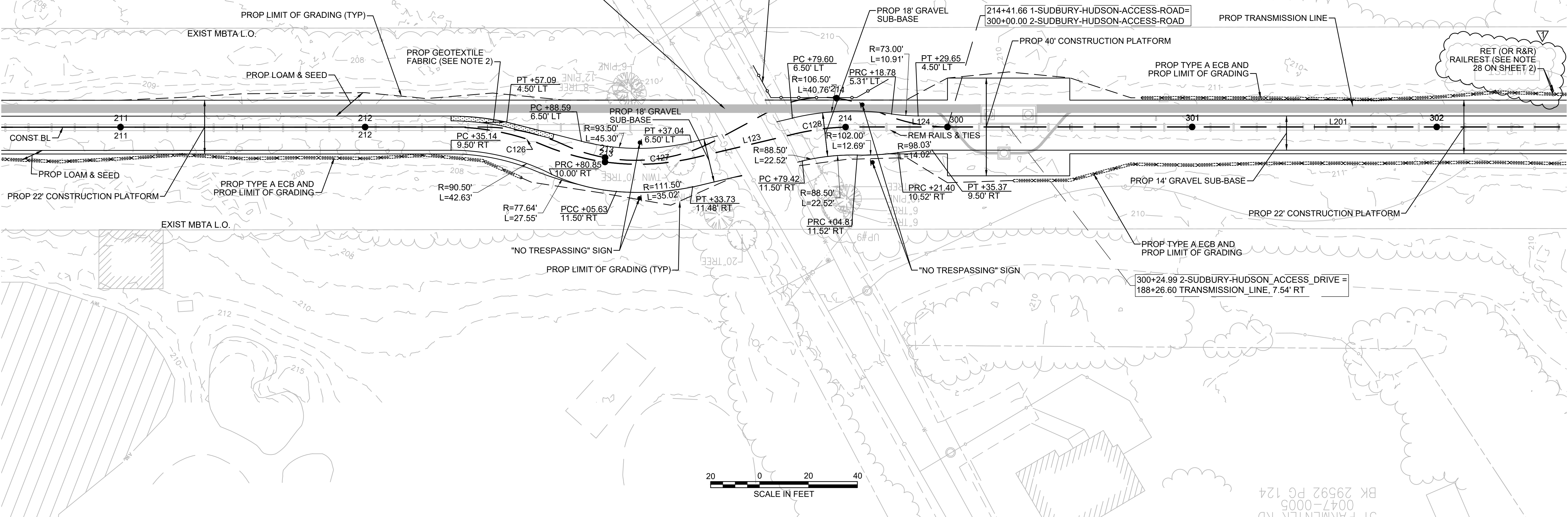


PG 327
004
INTER RD
EVEN W

BK 5271 PG 515
004
20 PARMENTER RD
KRAEGER SARAH
N/F

PROP DUCTBANK CROSSING ROADWAY. SEE DETAIL ON SHEET 152.
FOR TRANSMISSION LINE DETAILS SEE EVERSOURCE ENERGY
SUDBURY TO HUDSON 115KV UNDERGROUND TRANSMISSION LINE
PLANSET SHEET 40.

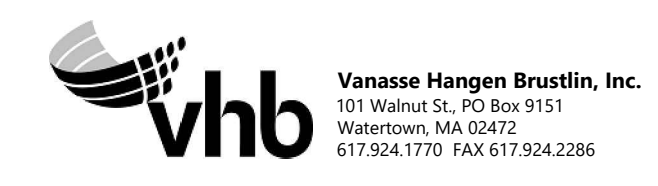
PROP CONSTRUCTION FENCE WITH
"NO TRESPASSING" SIGN
(PLACEMENT TO BE CONFIRMED BY
ARCHEOLOGIST AFTER
INSTALLATION)



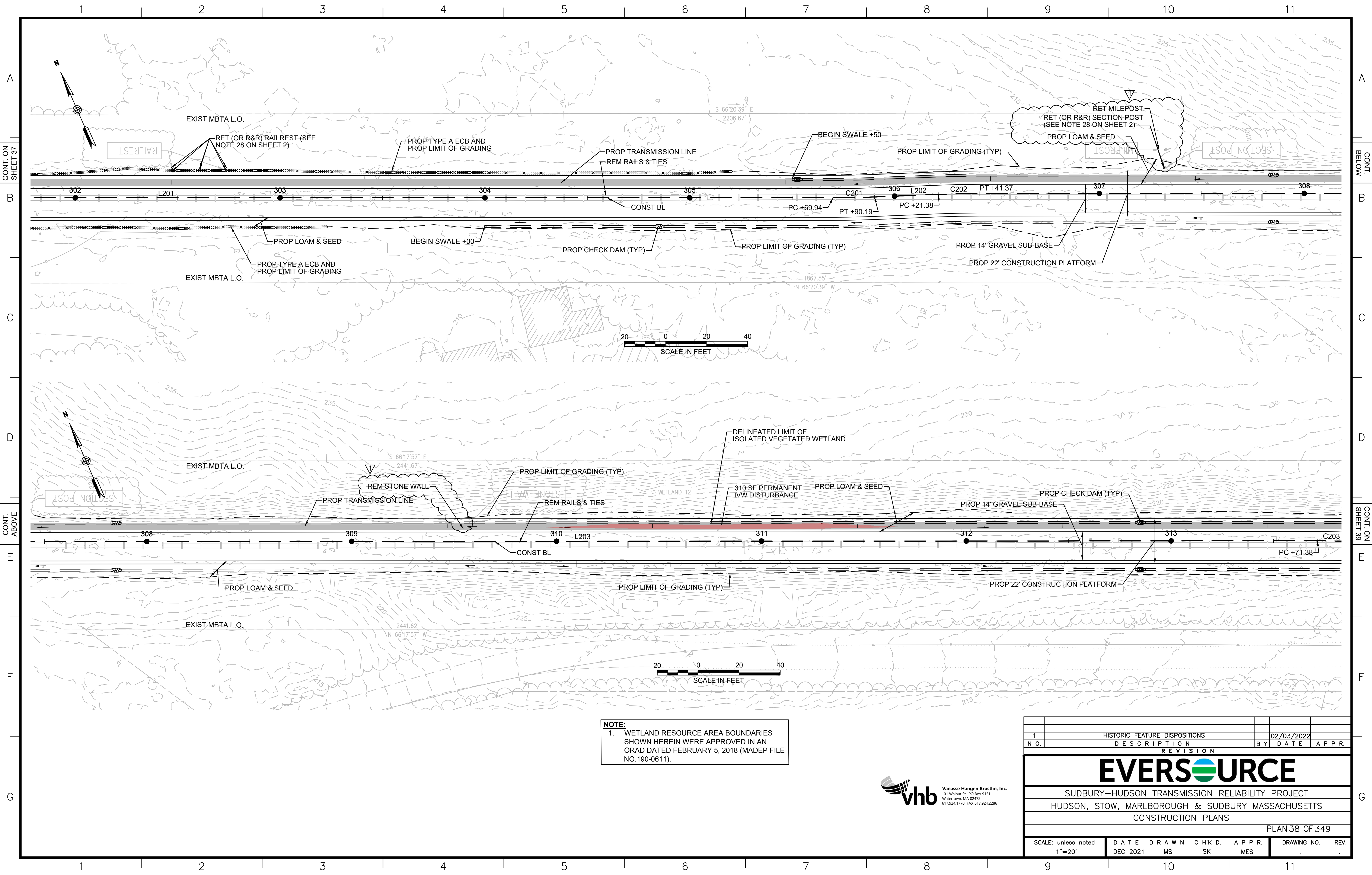
- NOTES:**
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).
 2. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 8" GRAVEL BORROW WITHIN LIMITS SHOWN.

BK 29592 PG 124
0047-0005
01 PARMENTER RD

HISTORIC FEATURE DISPOSITIONS		02/03/2022	
N.O.	DESCRIPTION	BY	DATE
1			
REVISION			
EVERSOURCE			
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT			
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS			
CONSTRUCTION PLANS			
PLAN 37 OF 349			
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN MS	CHK'D. SK
		APPR. MES	DRAWING NO. REV.



1 2 3 4 5 6 7 8 9 10 11



NOTE:
 1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).



1		HISTORIC FEATURE DISPOSITIONS		02/03/2022	
N.O.	DESCRIPTION	BY	DATE	APPR.	
REVISION					
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CONSTRUCTION PLANS					
PLAN 38 OF 349					
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES	DRAWING NO. REV.

1 2 3 4 5 6 7 8 9 10 11

CONT. ON SHEET 38

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CONT. ON SHEET 40

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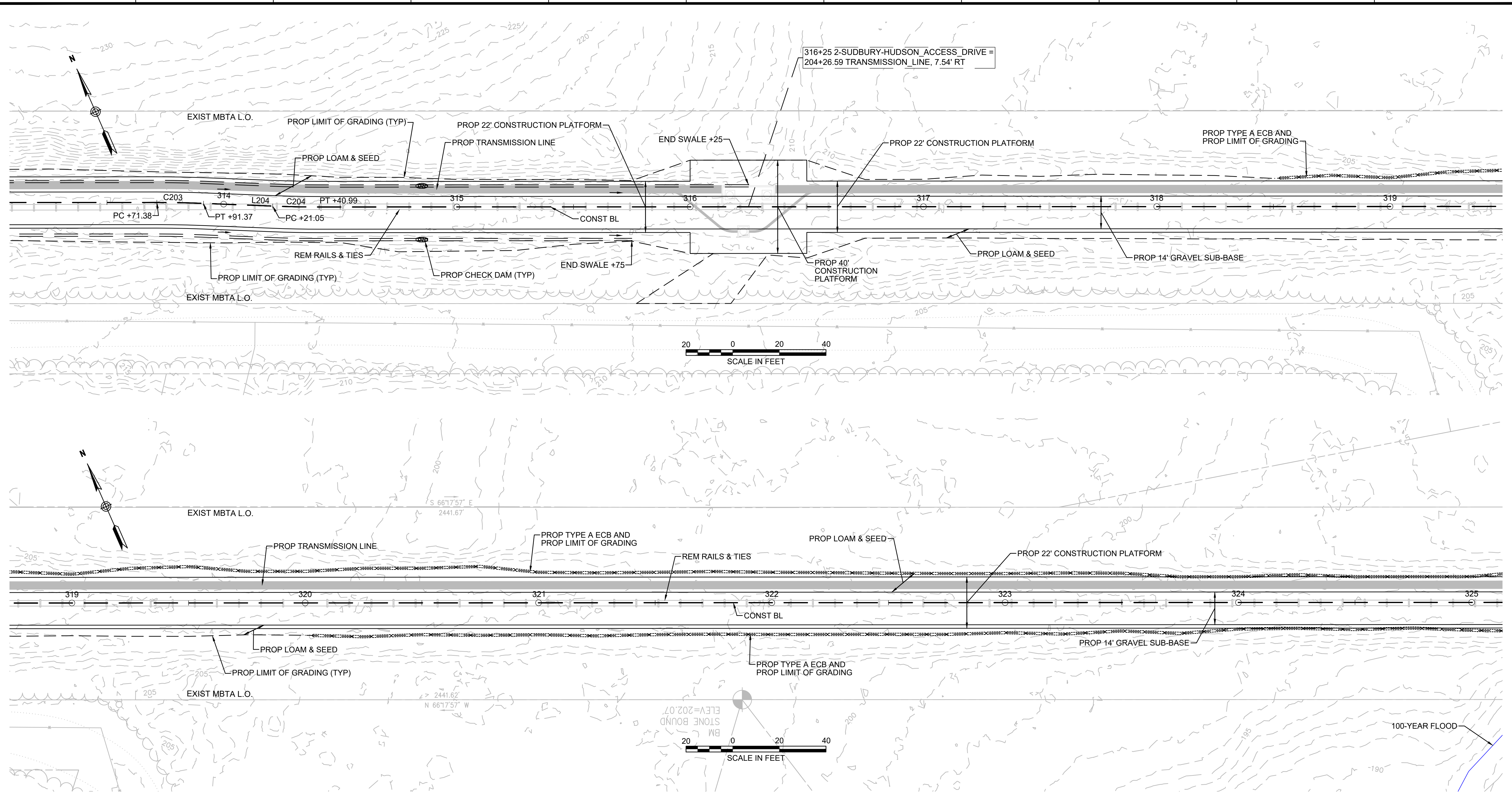
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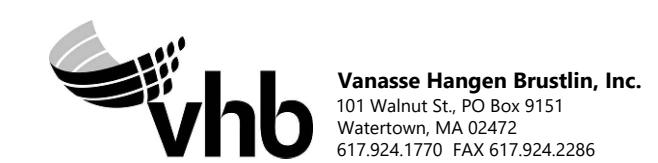
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1 2 3 4 5 6 7 8 9 10 11



NOTE:
 1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).



NO.		DESCRIPTION	BY	DATE	APPR.
REVISION					
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CONSTRUCTION PLANS					
PLAN 39 OF 349					
SCALE: unless noted 1"=20'	DATE	DRAWN	CHK'D.	APPR.	DRAWING NO. REV.
	DEC 2021	MS	SK	MES	

1 2 3 4 5 6 7 8 9 10 11

CONT. ON SHEET 39

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CONT. BELOW

B

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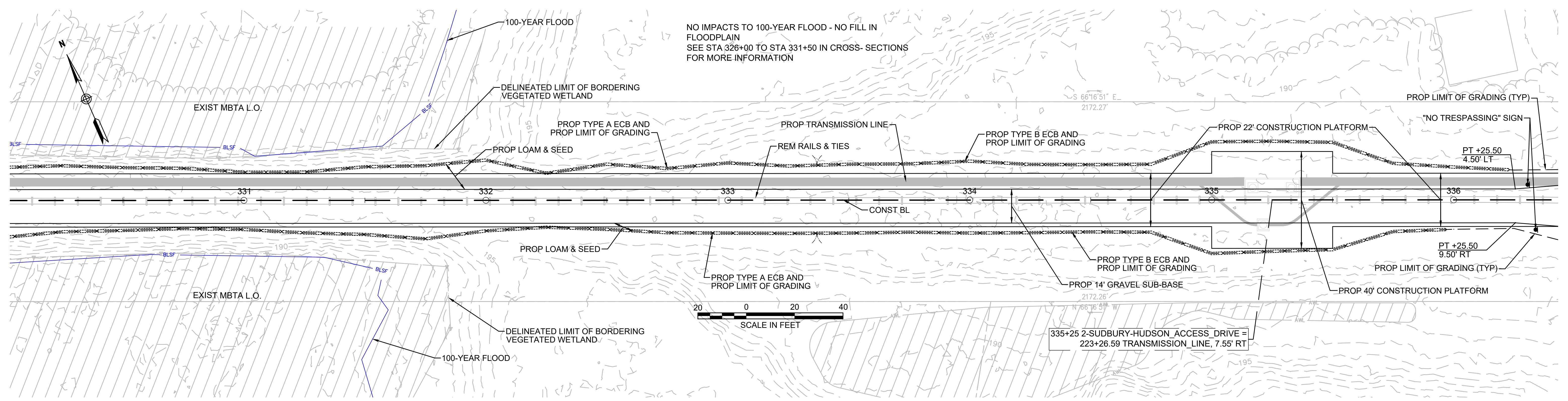
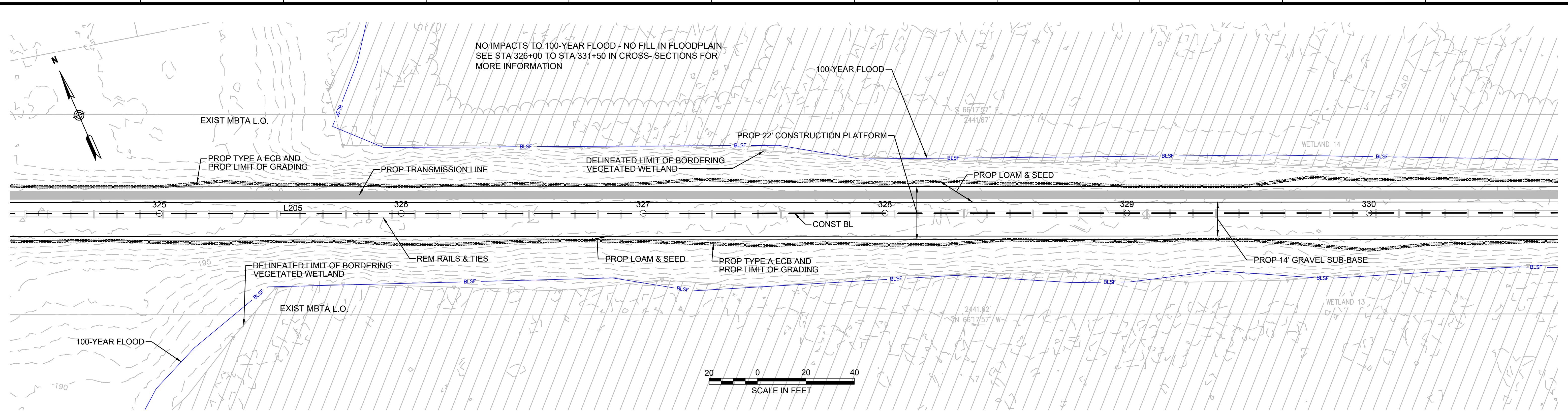
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CONT. ON SHEET 41

F

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NOTE:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).
2. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND WITHIN 450' OF VERNAL POOLS. SEE DETAIL ON SHEET 154.



REVISION			
N.O.	DESCRIPTION	BY	DATE

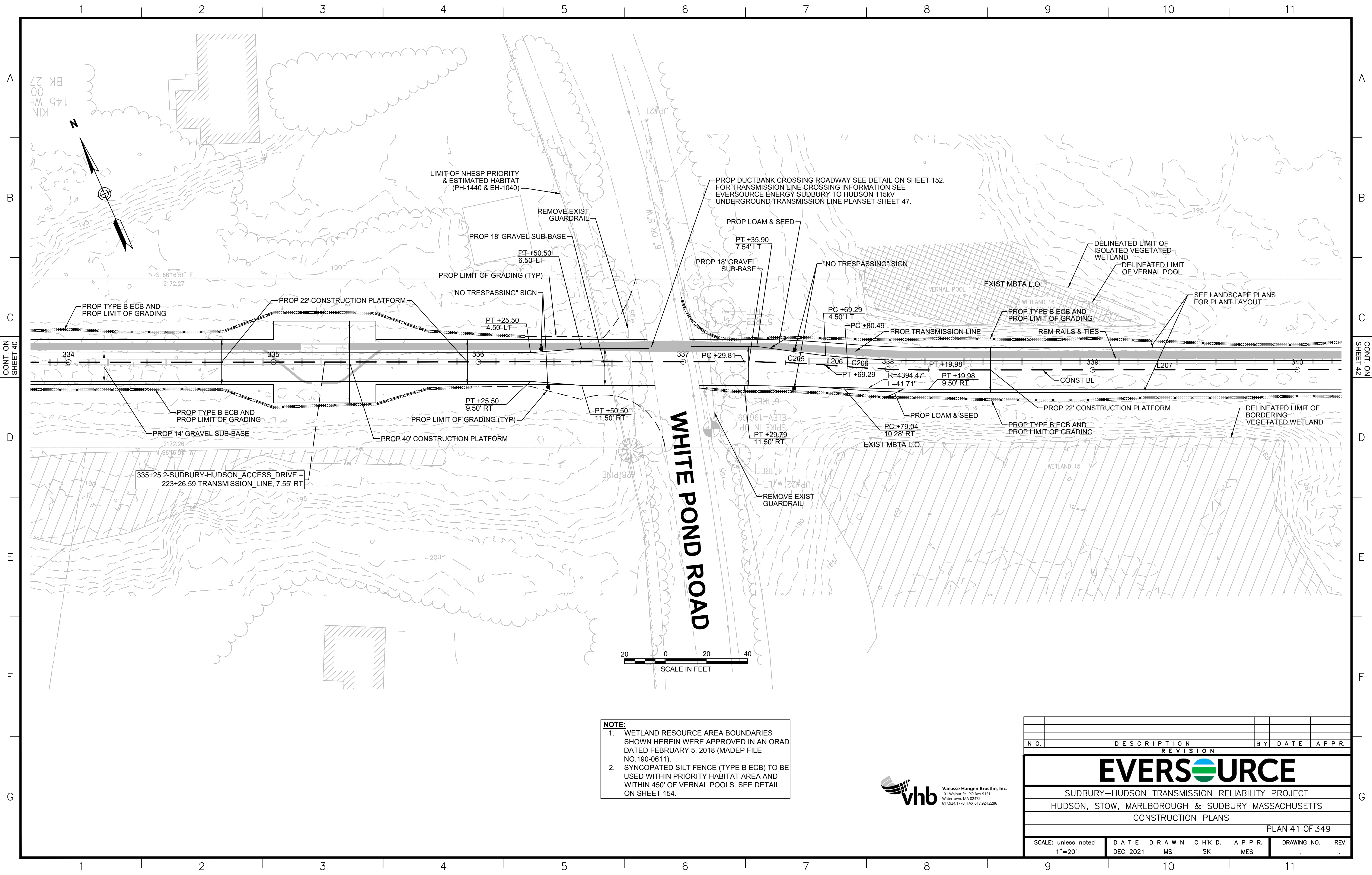
EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
CONSTRUCTION PLANS

PLAN 40 OF 349

SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES	DRAWING NO.	REV.
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1 2 3 4 5 6 7 8 9 10 11

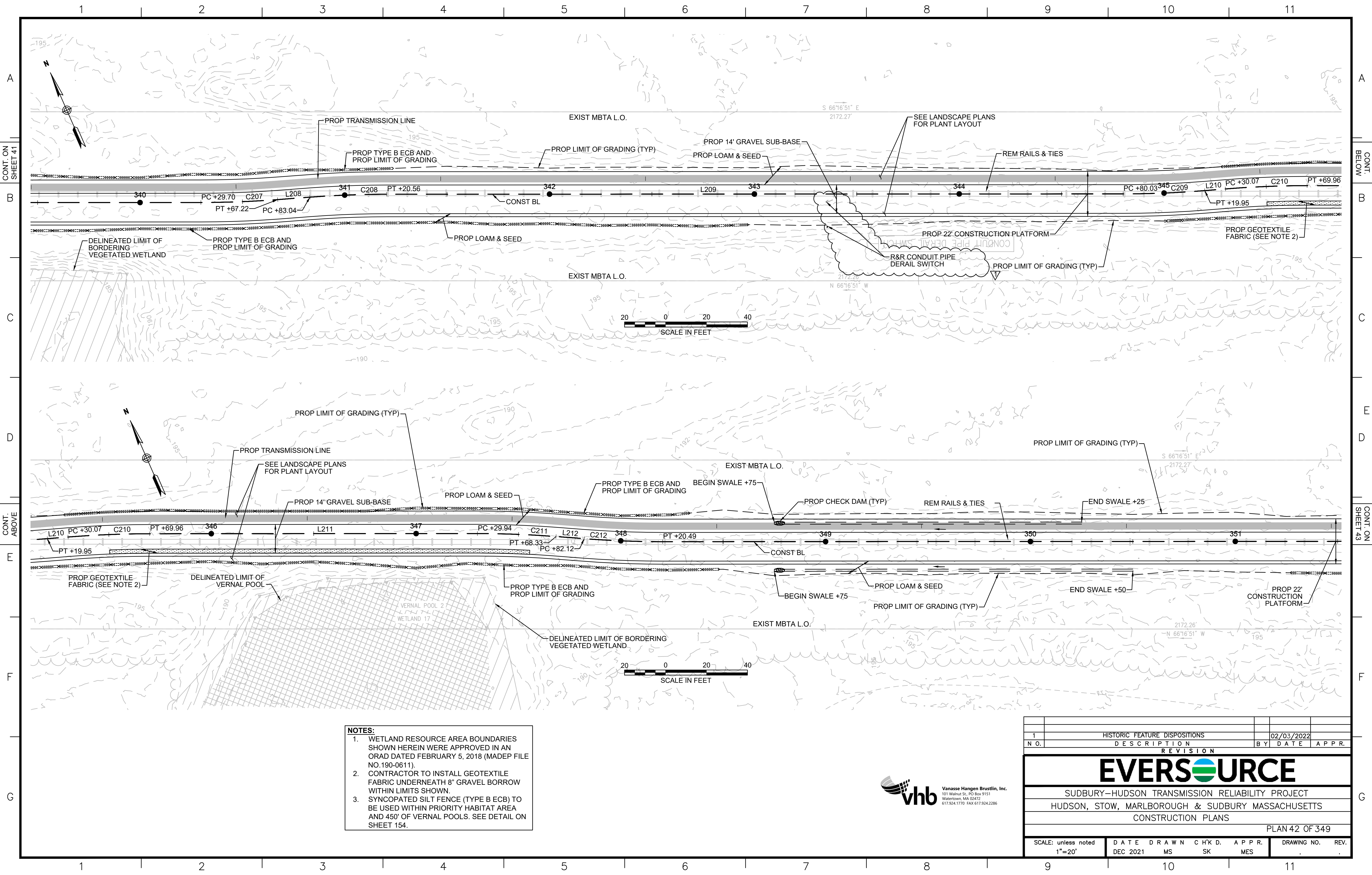


NOTE:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).
2. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND WITHIN 450' OF VERNAL POOLS. SEE DETAIL ON SHEET 154.



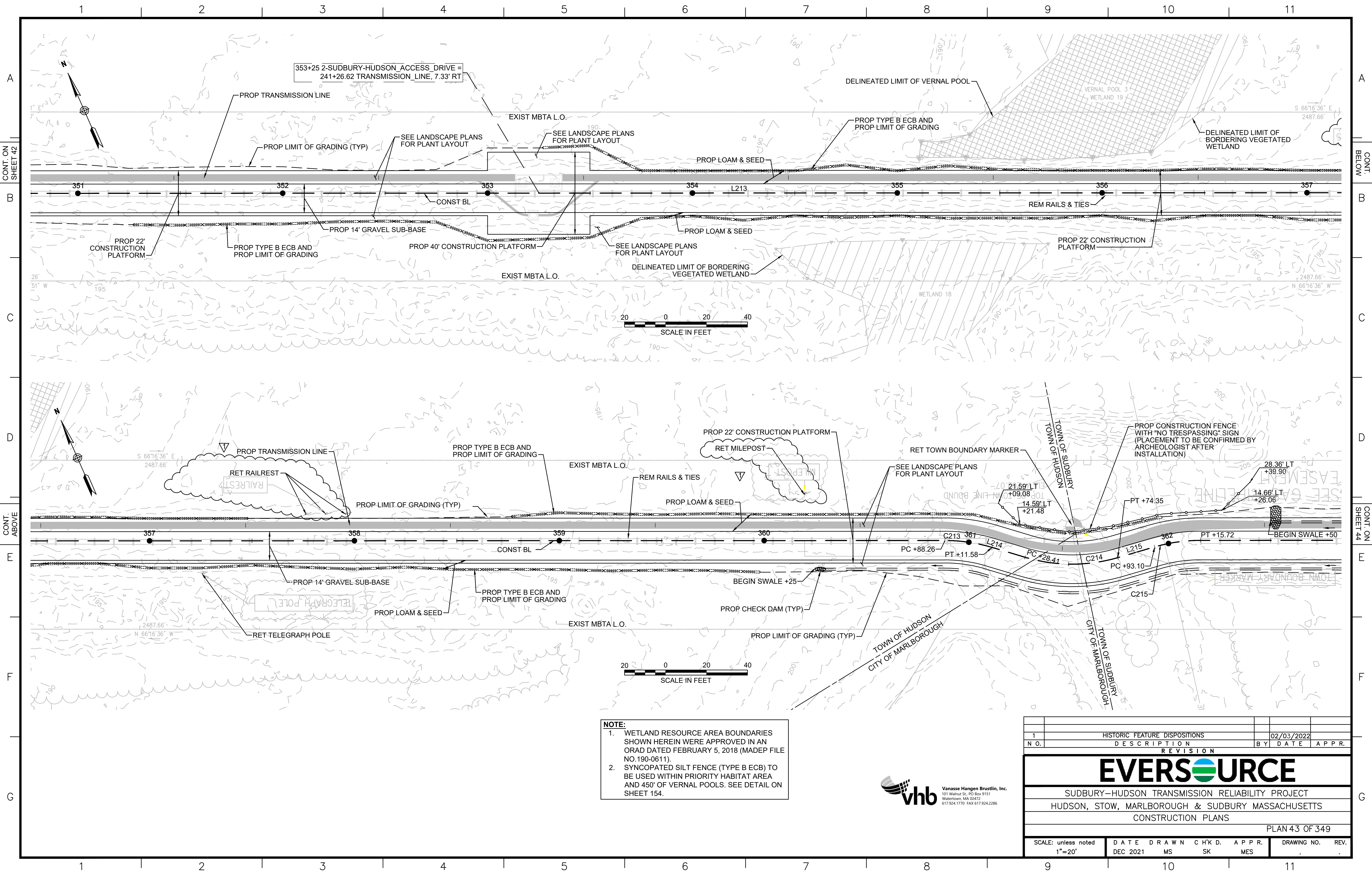
NO.		DESCRIPTION	BY	DATE	APPR.
REVISION					
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CONSTRUCTION PLANS					
PLAN 41 OF 349					
SCALE: unless noted 1"=20'	DATE	DRAWN	CHK'D.	APPR.	DRAWING NO.
	DEC 2021	MS	SK	MES	REV.



- NOTES:**
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).
 2. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 8" GRAVEL BORROW WITHIN LIMITS SHOWN.
 3. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 450' OF VERNAL POOLS. SEE DETAIL ON SHEET 154.



1		HISTORIC FEATURE DISPOSITIONS	02/03/2022
N.O.	DESCRIPTION	BY	DATE
REVISION			
EVERSOURCE			
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT			
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS			
CONSTRUCTION PLANS			
PLAN 42 OF 349			
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN MS	CHK'D. SK
		APPR. MES	REV.

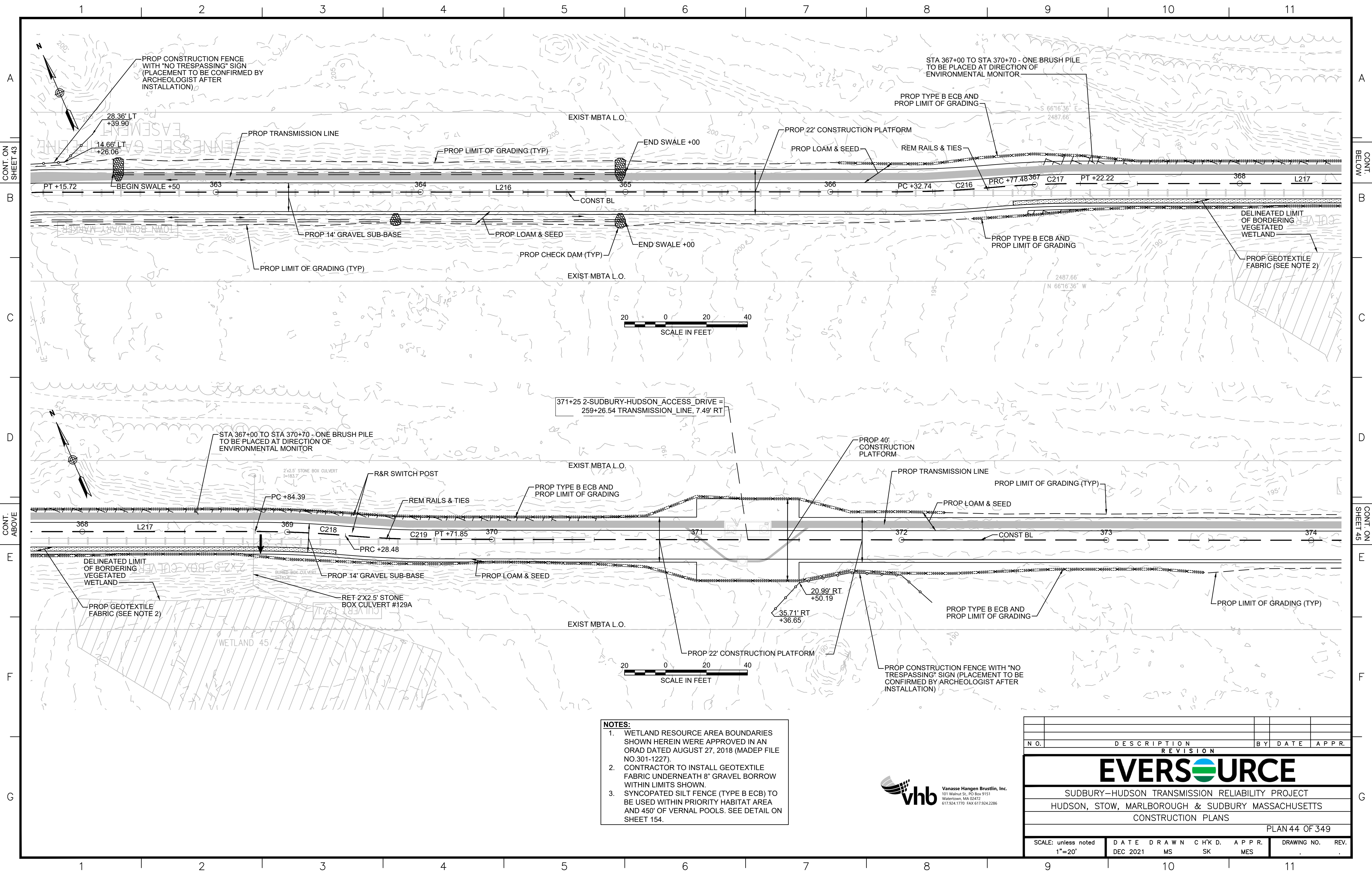


NOTE:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).
2. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 450' OF VERNAL POOLS. SEE DETAIL ON SHEET 154.



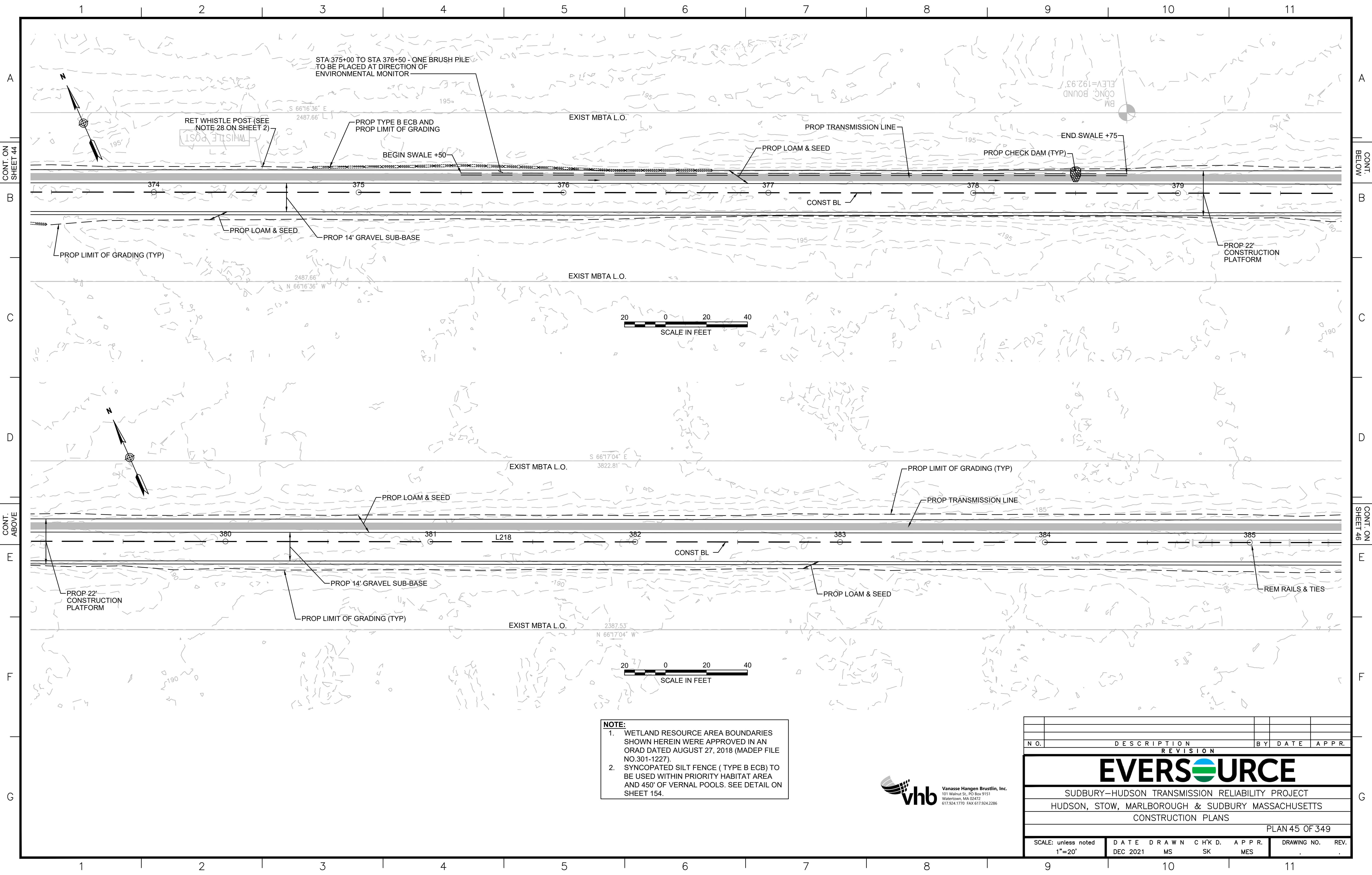
1	HISTORIC FEATURE DISPOSITIONS	02/03/2022	
N.O.	DESCRIPTION	BY	DATE
REVISION			
EVERSOURCE			
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT			
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS			
CONSTRUCTION PLANS			
PLAN 43 OF 349			
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN MS	CHK'D. SK
		APPR. MES	REV.



- NOTES:**
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO.301-1227).
 2. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 8" GRAVEL BORROW WITHIN LIMITS SHOWN.
 3. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 450' OF VERNAL POOLS. SEE DETAIL ON SHEET 154.



NO.		DESCRIPTION	BY	DATE	APPR.
REVISION					
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CONSTRUCTION PLANS					
PLAN 44 OF 349					
SCALE: unless noted 1"=20'	DATE	DRAWN	CHK'D.	APPR.	DRAWING NO. REV.
	DEC 2021	MS	SK	MES	

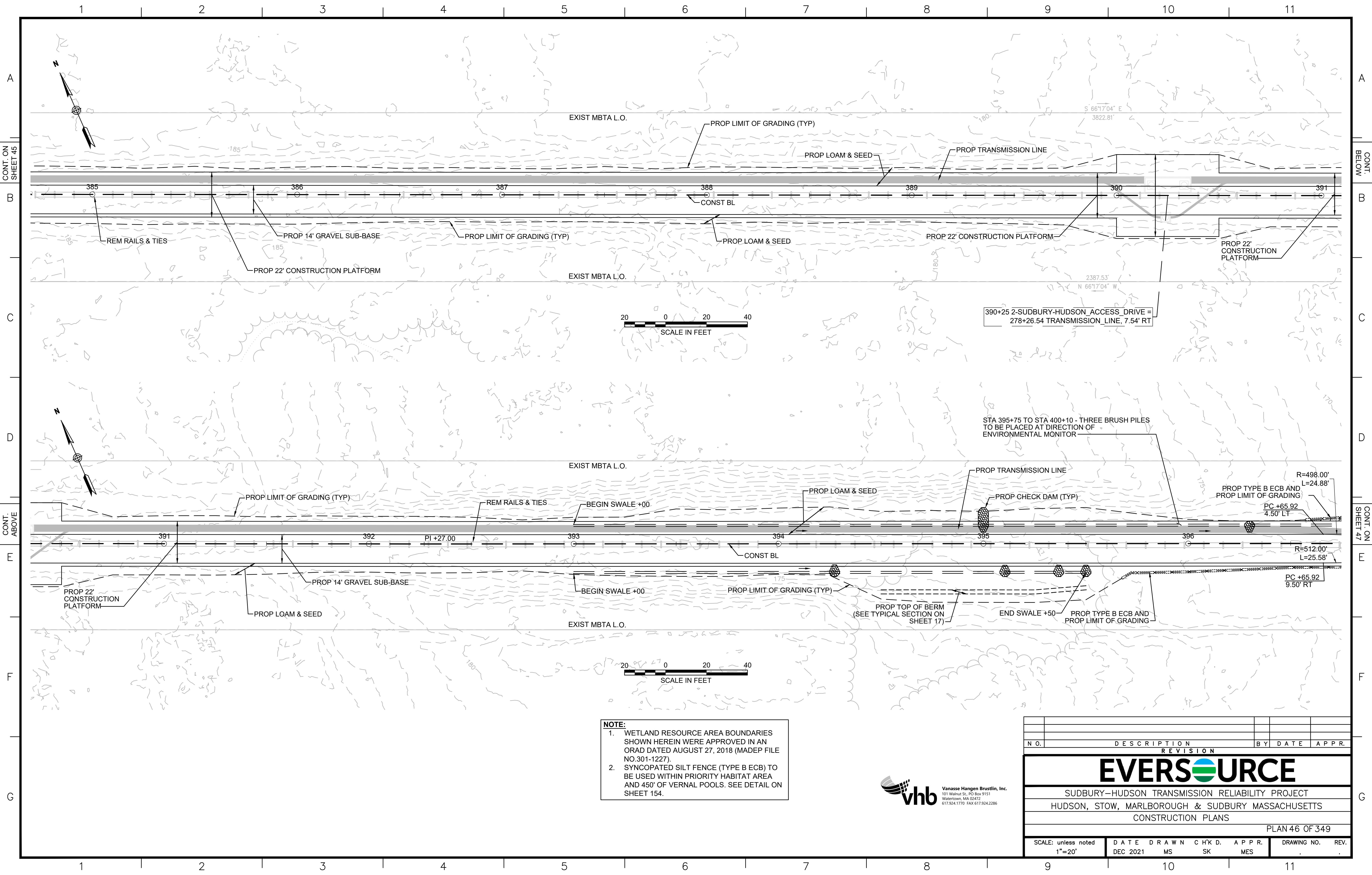


NOTE:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).
2. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 450' OF VERNAL POOLS. SEE DETAIL ON SHEET 154.



NO.		DESCRIPTION	BY	DATE	APPR.
REVISION					
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CONSTRUCTION PLANS					
PLAN 45 OF 349					
SCALE: unless noted 1"=20'	DATE	DRAWN	CHK'D.	APPR.	DRAWING NO.
	DEC 2021	MS	SK	MES	REV.



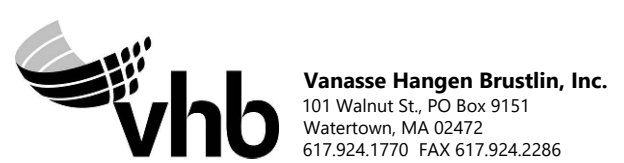
CONT. ON SHEET 45

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CONT. ON SHEET 47

NOTE:
 1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).
 2. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 450' OF VERNAL POOLS. SEE DETAIL ON SHEET 154.



REVISION			
N.O.	DESCRIPTION	BY	DATE

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 CONSTRUCTION PLANS

PLAN 46 OF 349

SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES	DRAWING NO.	REV.
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390+25 2-SUDBURY-HUDSON ACCESS DRIVE =
278+26.54 TRANSMISSION LINE, 7.54' RT

STA 395+75 TO STA 400+10 - THREE BRUSH PILES
TO BE PLACED AT DIRECTION OF
ENVIRONMENTAL MONITOR

R=498.00'
L=24.88'

R=512.00'
L=25.58'

20 0 20 40
SCALE IN FEET

20 0 20 40
SCALE IN FEET

1 2 3 4 5 6 7 8 9 10 11

CONT. ON SHEET 47

CONT. ON SHEET 49

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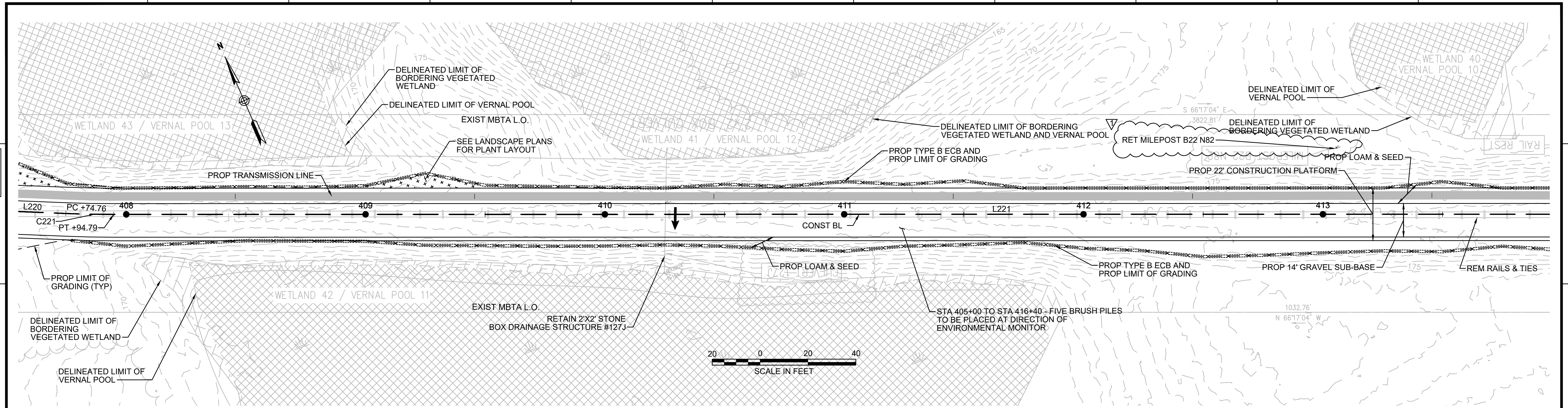
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1 2 3 4 5 6 7 8 9 10 11

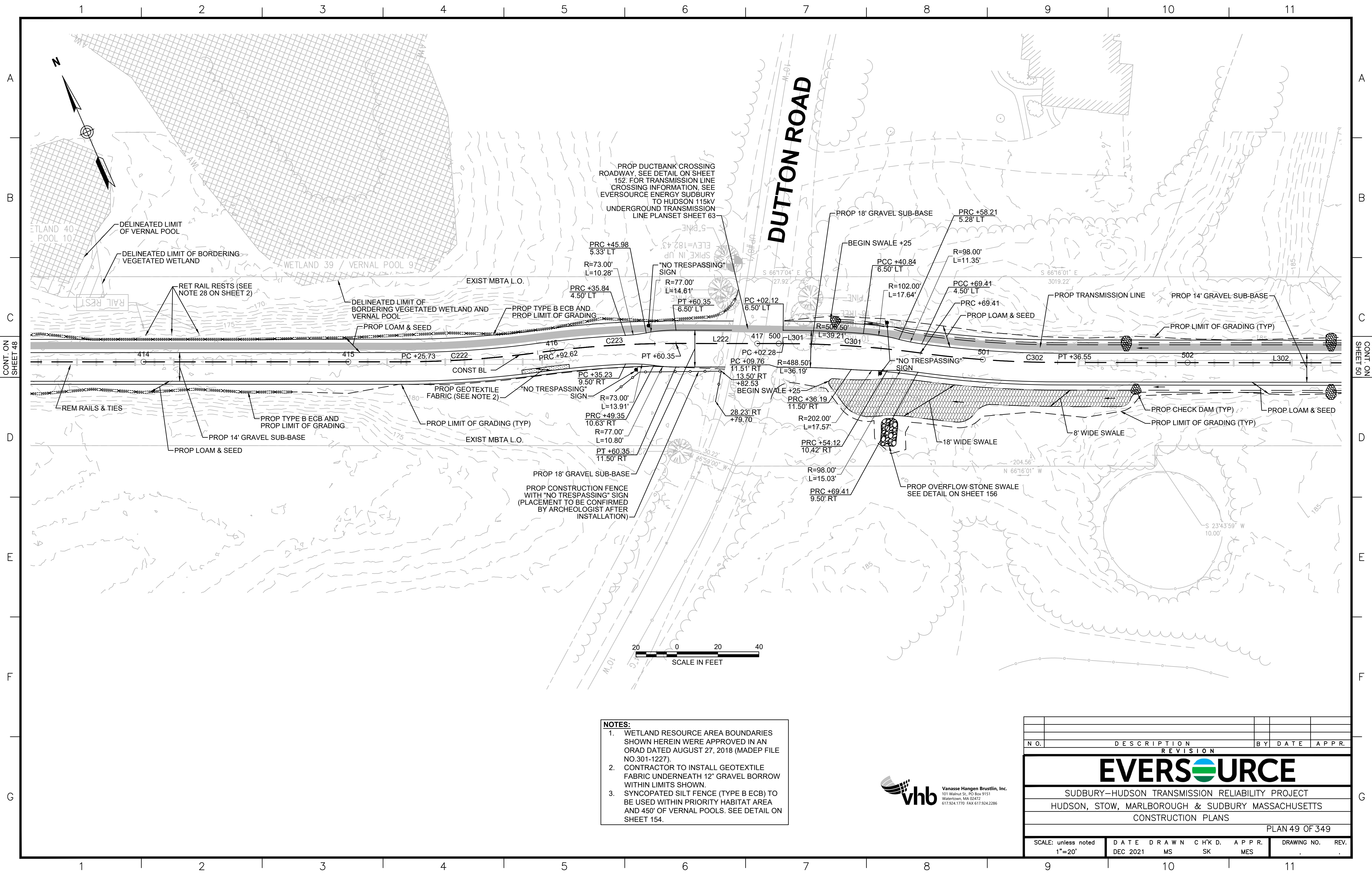


NOTE:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO.301-1227).
2. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 450' OF VERNAL POOLS. SEE DETAIL ON SHEET 154.



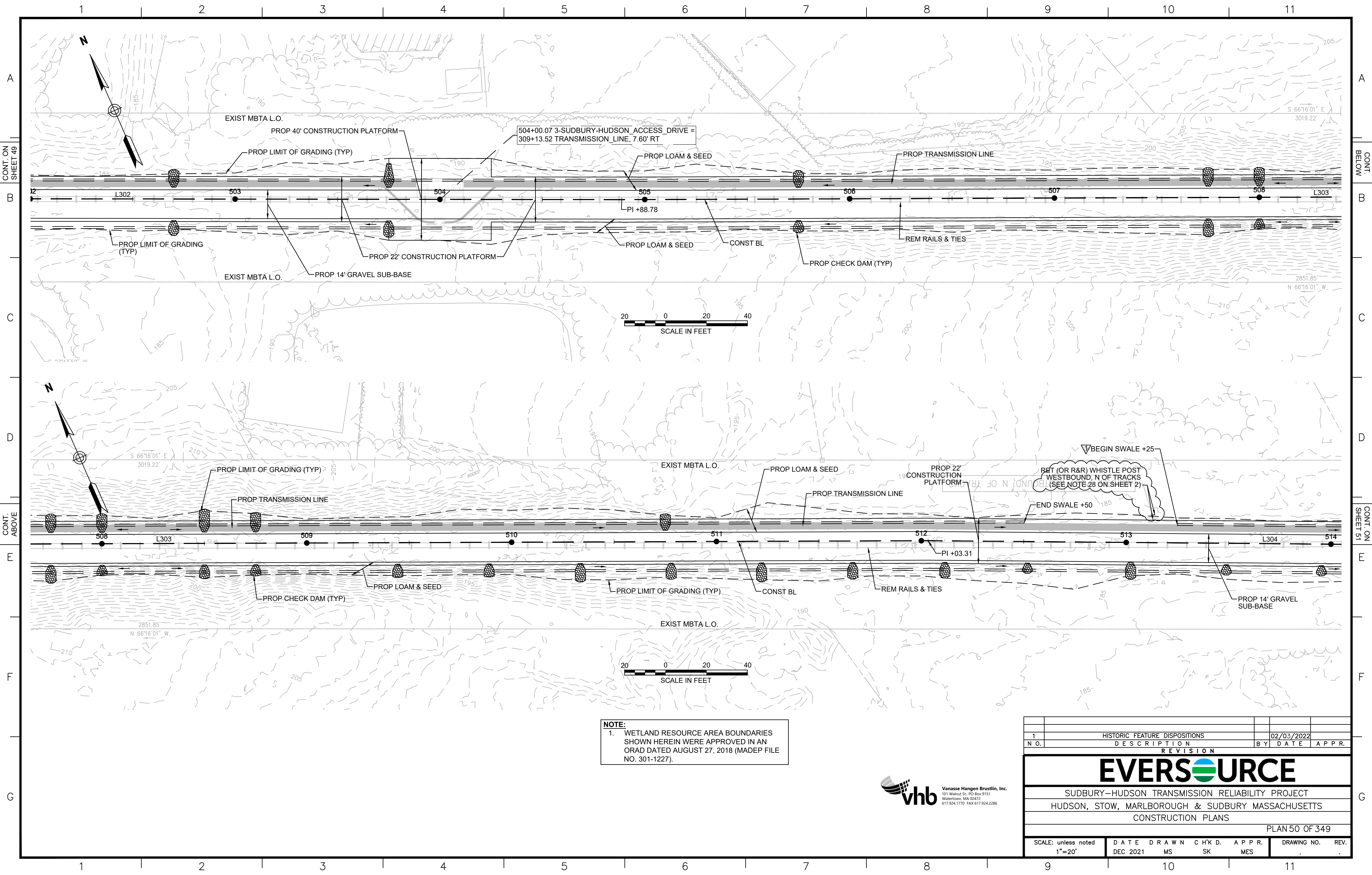
HISTORIC FEATURE DISPOSITIONS		02/03/2022		
N.O.	DESCRIPTION	BY	DATE	APP.R.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CONSTRUCTION PLANS				
PLAN 48 OF 349				
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APP.R. MES
DRAWING NO.	REV.			



- NOTES:**
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).
 2. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 12" GRAVEL BORROW WITHIN LIMITS SHOWN.
 3. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 450' OF VERNAL POOLS. SEE DETAIL ON SHEET 154.



NO.		DESCRIPTION	BY	DATE	APPR.
REVISION					
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CONSTRUCTION PLANS					
PLAN 49 OF 349					
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES	DRAWING NO. REV.



NOTE:
 1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).

N.O.	DESCRIPTION	BY	DATE	APPR.
1	HISTORIC FEATURE DISPOSITIONS		02/03/2022	

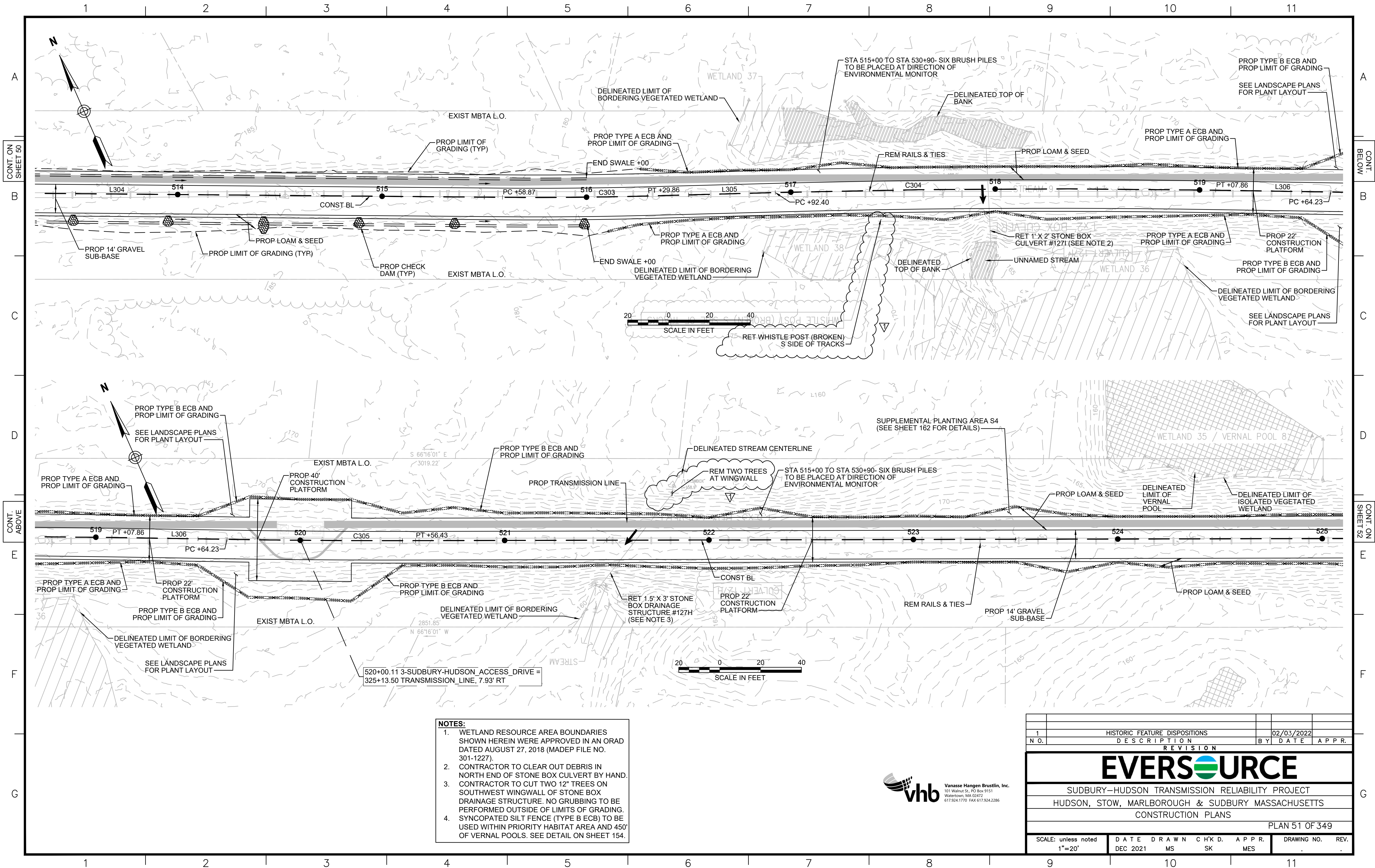
EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 CONSTRUCTION PLANS

PLAN 50 OF 349

SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES	DRAWING NO.	REV.
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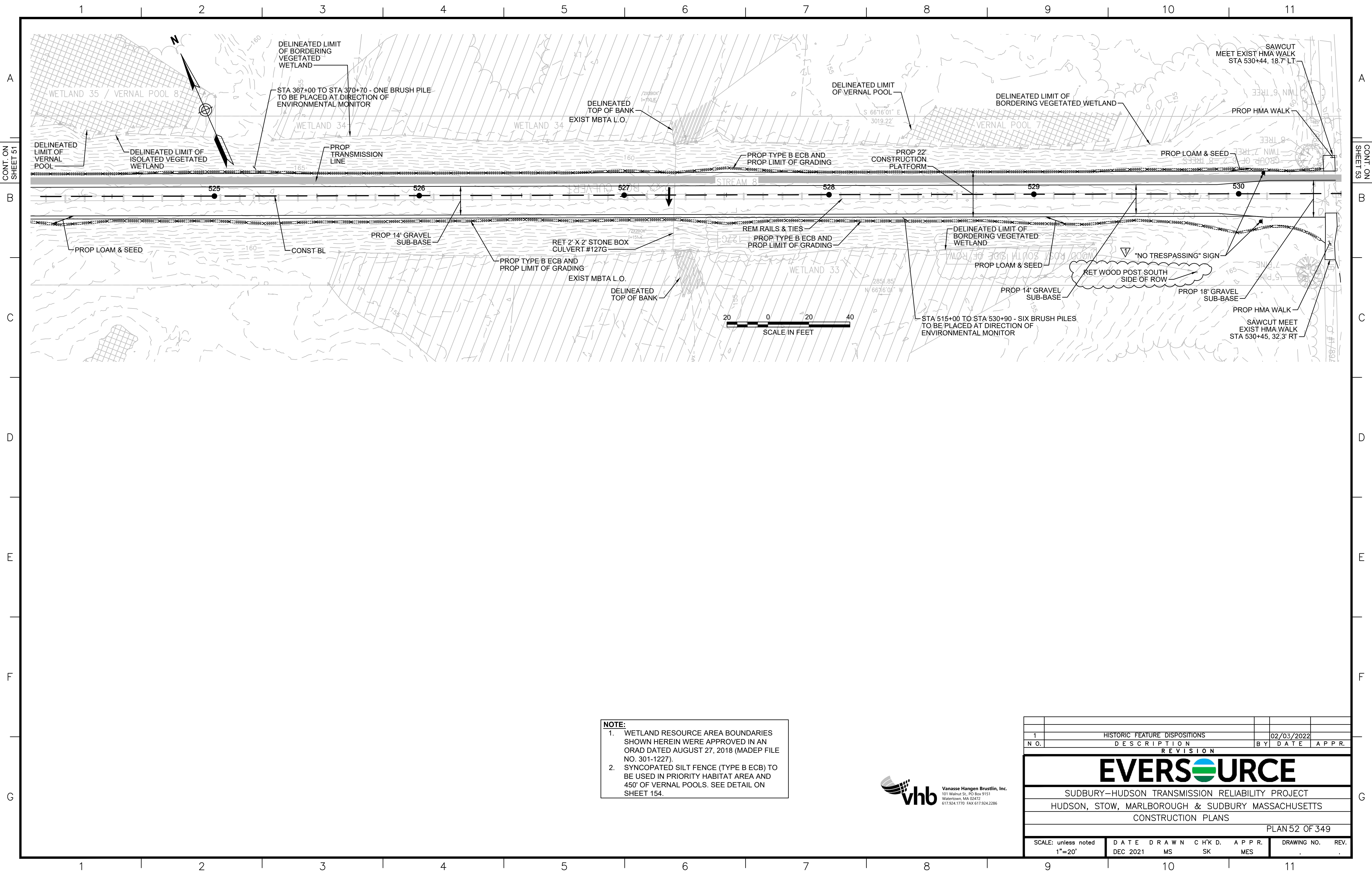




- NOTES:**
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).
 2. CONTRACTOR TO CLEAR OUT DEBRIS IN NORTH END OF STONE BOX CULVERT BY HAND.
 3. CONTRACTOR TO CUT TWO 12" TREES ON SOUTHWEST WINGWALL OF STONE BOX DRAINAGE STRUCTURE. NO GRUBBING TO BE PERFORMED OUTSIDE OF LIMITS OF GRADING. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 450' OF VERNAL POOLS. SEE DETAIL ON SHEET 154.
 - 4.



1	HISTORIC FEATURE DISPOSITIONS	02/03/2022	
N.O.	DESCRIPTION	BY	DATE APPR.
REVISION			
EVERSOURCE			
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT			
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS			
CONSTRUCTION PLANS			
PLAN 51 OF 349			
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN MS	CHK'D. SK
		APPR. MES	DRAWING NO. REV.

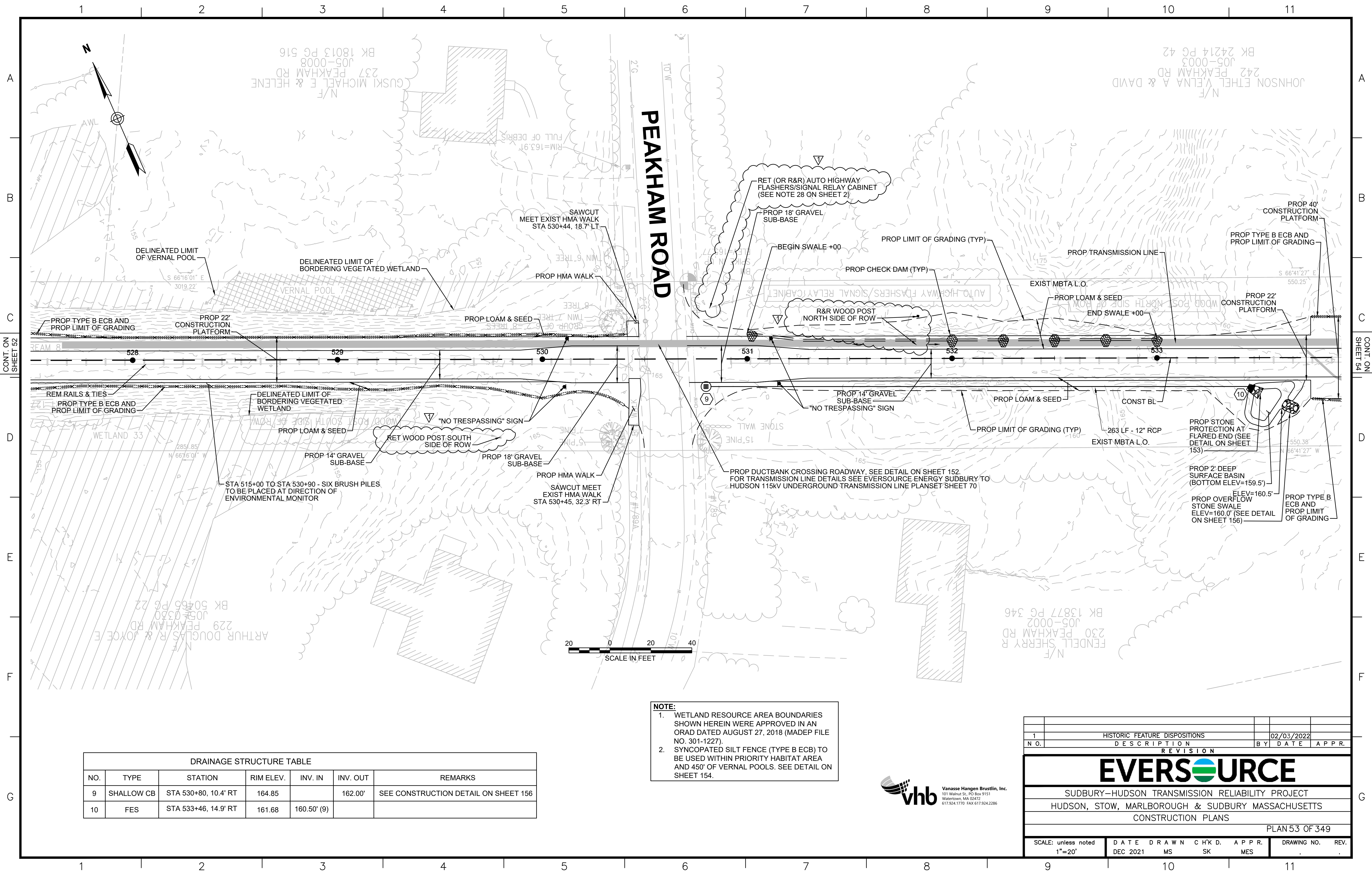


NOTE:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).
2. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED IN PRIORITY HABITAT AREA AND 450' OF VERNAL POOLS. SEE DETAIL ON SHEET 154.



1	HISTORIC FEATURE DISPOSITIONS	02/03/2022	
N.O.	DESCRIPTION	BY	DATE
REVISION			
EVERSOURCE			
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT			
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS			
CONSTRUCTION PLANS			
PLAN 52 OF 349			
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN MS	CH'K D. SK
	A.P.P.R. MES	DRAWING NO.	REV.



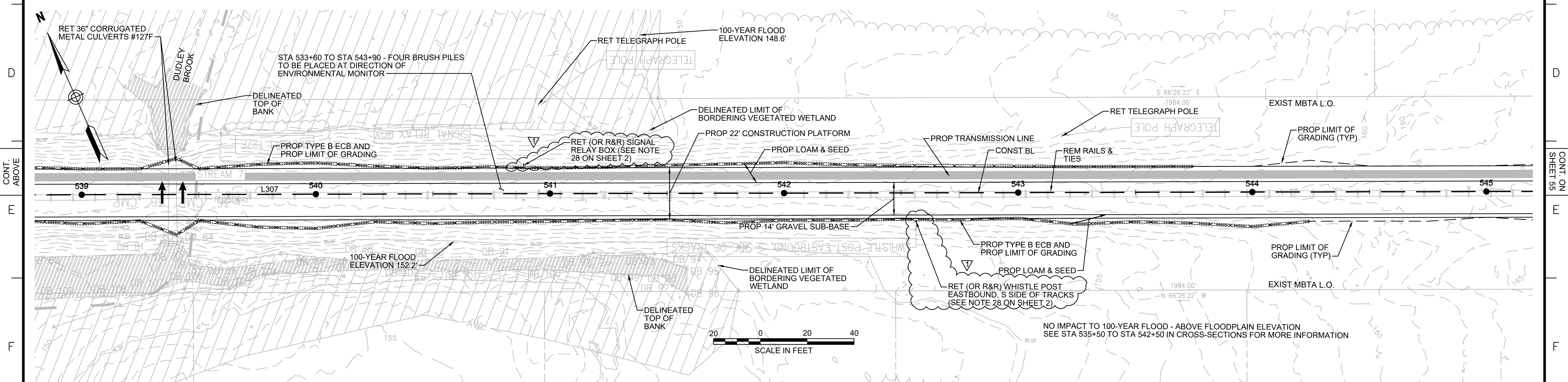
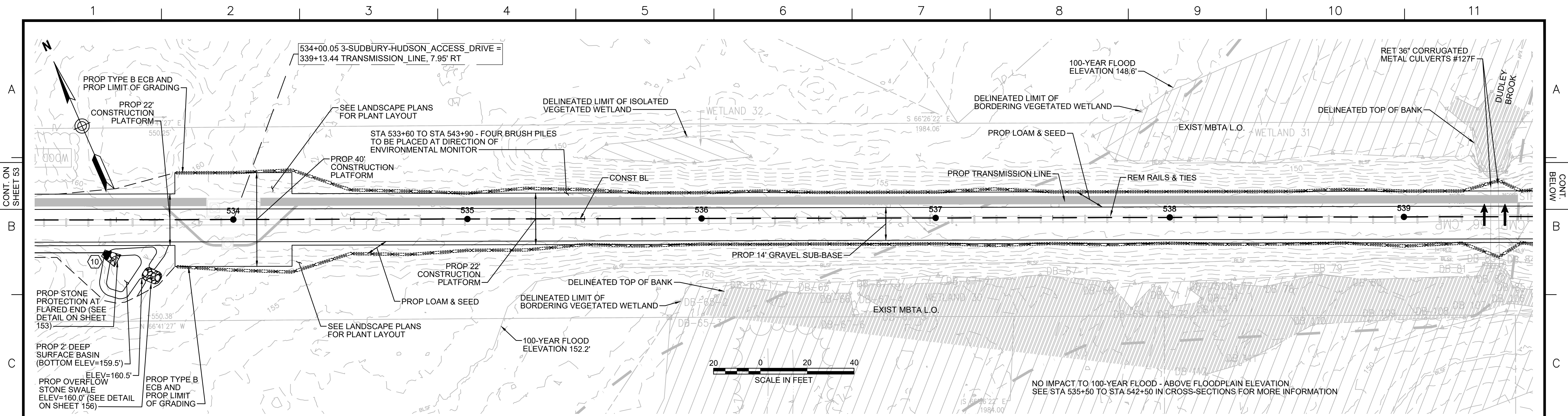
NOTE:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).
2. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 450' OF VERNAL POOLS. SEE DETAIL ON SHEET 154.

DRAINAGE STRUCTURE TABLE						
NO.	TYPE	STATION	RIM ELEV.	INV. IN	INV. OUT	REMARKS
9	SHALLOW CB	STA 530+80, 10.4' RT	164.85		162.00'	SEE CONSTRUCTION DETAIL ON SHEET 156
10	FES	STA 533+46, 14.9' RT	161.68	160.50' (9)		

1	HISTORIC FEATURE DISPOSITIONS	02/03/2022	
N.O.	DESCRIPTION	BY	DATE
REVISION			
EVERSOURCE			
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT			
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS			
CONSTRUCTION PLANS			
PLAN 53 OF 349			
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN MS	CHK'D. SK
	APPR. MES	DRAWING NO.	REV.



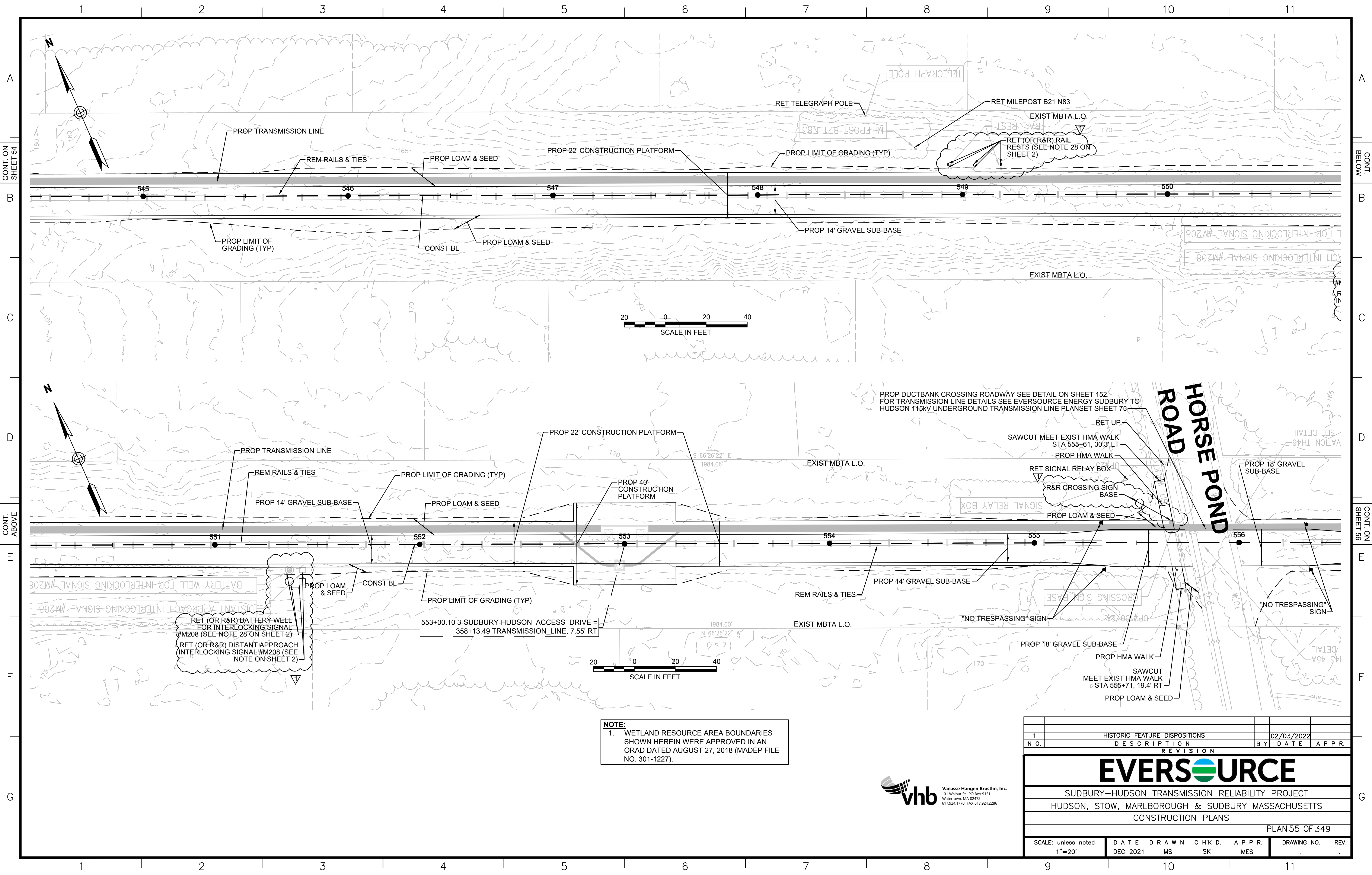


NOTE:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).
2. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 450' OF VERNAL POOLS. SEE DETAIL ON SHEET 154.



1	HISTORIC FEATURE DISPOSITIONS	02/03/2022	
N.O.	DESCRIPTION	BY	DATE APPR.
REVISION			
EVERSOURCE			
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT			
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS			
CONSTRUCTION PLANS			
PLAN 54 OF 349			
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN MS	CHK'D. SK
		APPR. MES	DRAWING NO. REV.
			11



CONT. ON SHEET 54

CONT. BELOW

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CONT. ON SHEET 56

NOTE:
 1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).

1	HISTORIC FEATURE DISPOSITIONS	02/03/2022	
N.O.	DESCRIPTION	BY	DATE
REVISION			
			APPR.

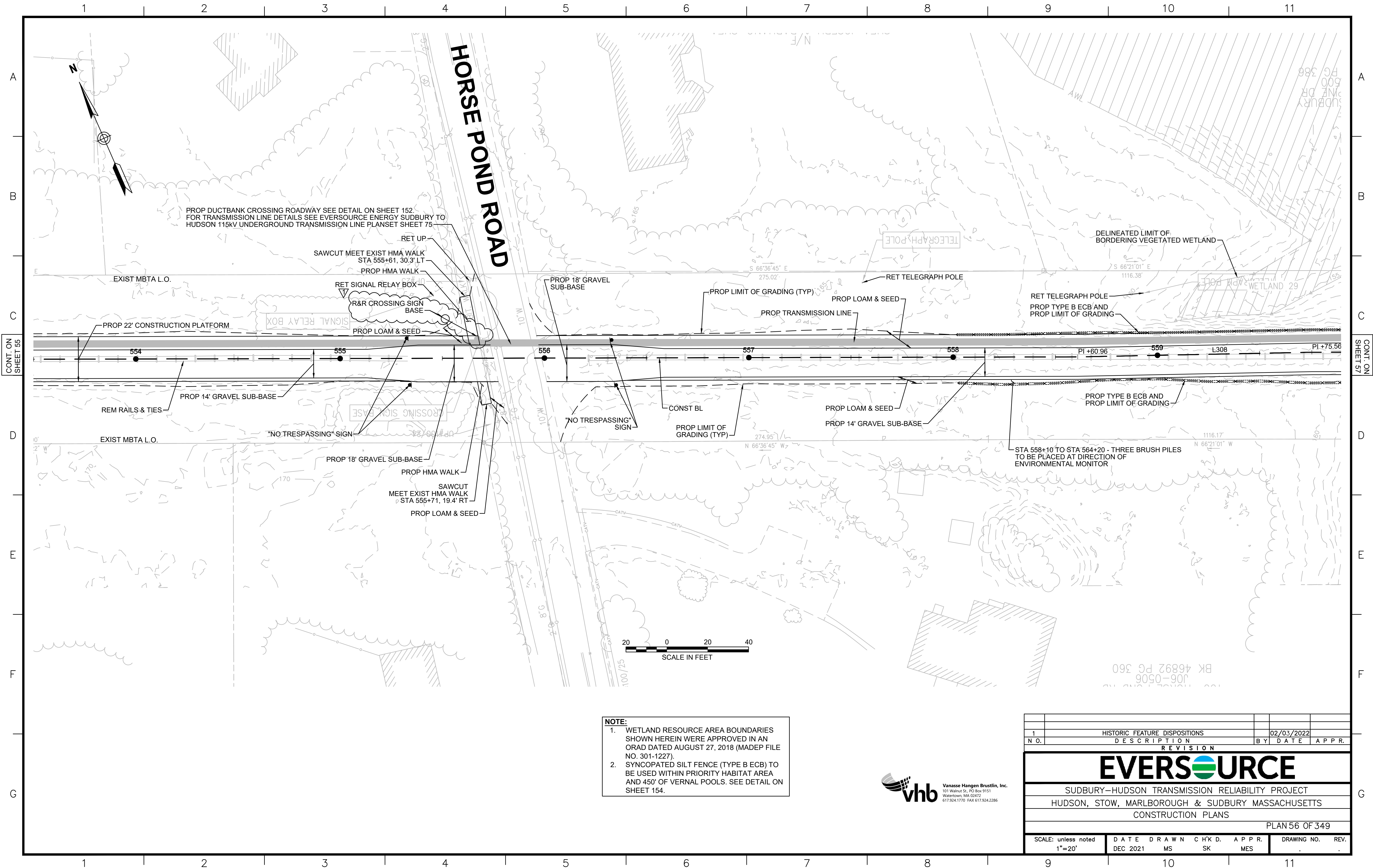


EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 CONSTRUCTION PLANS

PLAN 55 OF 349

SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES	DRAWING NO.	REV.
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PROP DUCTBANK CROSSING ROADWAY SEE DETAIL ON SHEET 152.
FOR TRANSMISSION LINE DETAILS SEE EVERSOURCE ENERGY SUDBURY TO
HUDSON 115KV UNDERGROUND TRANSMISSION LINE PLANSET SHEET 75

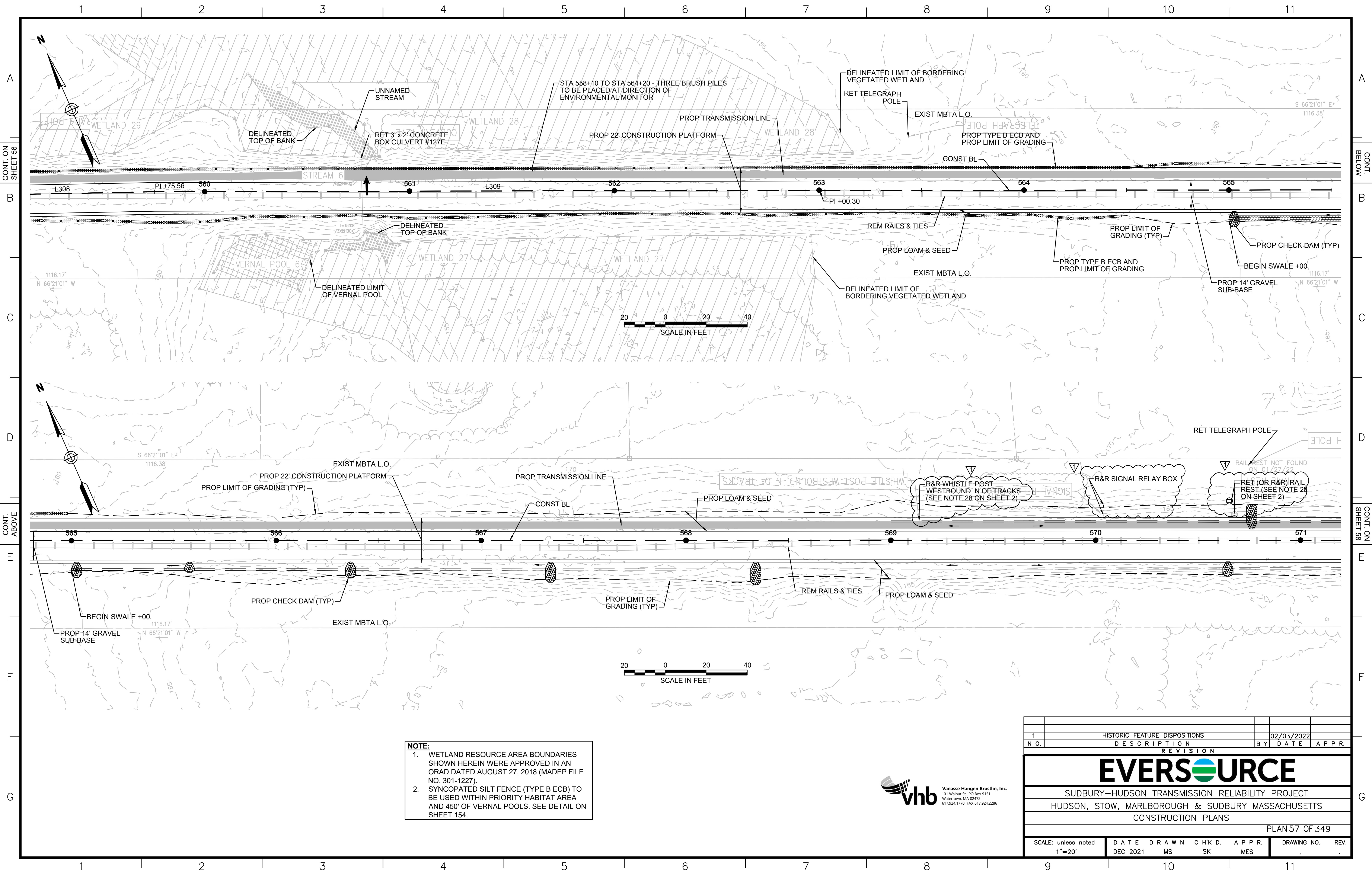
NOTE:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).
2. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 450' OF VERNAL POOLS. SEE DETAIL ON SHEET 154.



1		HISTORIC FEATURE DISPOSITIONS		02/03/2022	
N.O.	DESCRIPTION	BY	DATE	APPR.	
REVISION					
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CONSTRUCTION PLANS					
PLAN 56 OF 349					
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES	DRAWING NO. REV.

BK 46892 PG 360
J06-0506

SUDBURY
J06-0506
PG 386

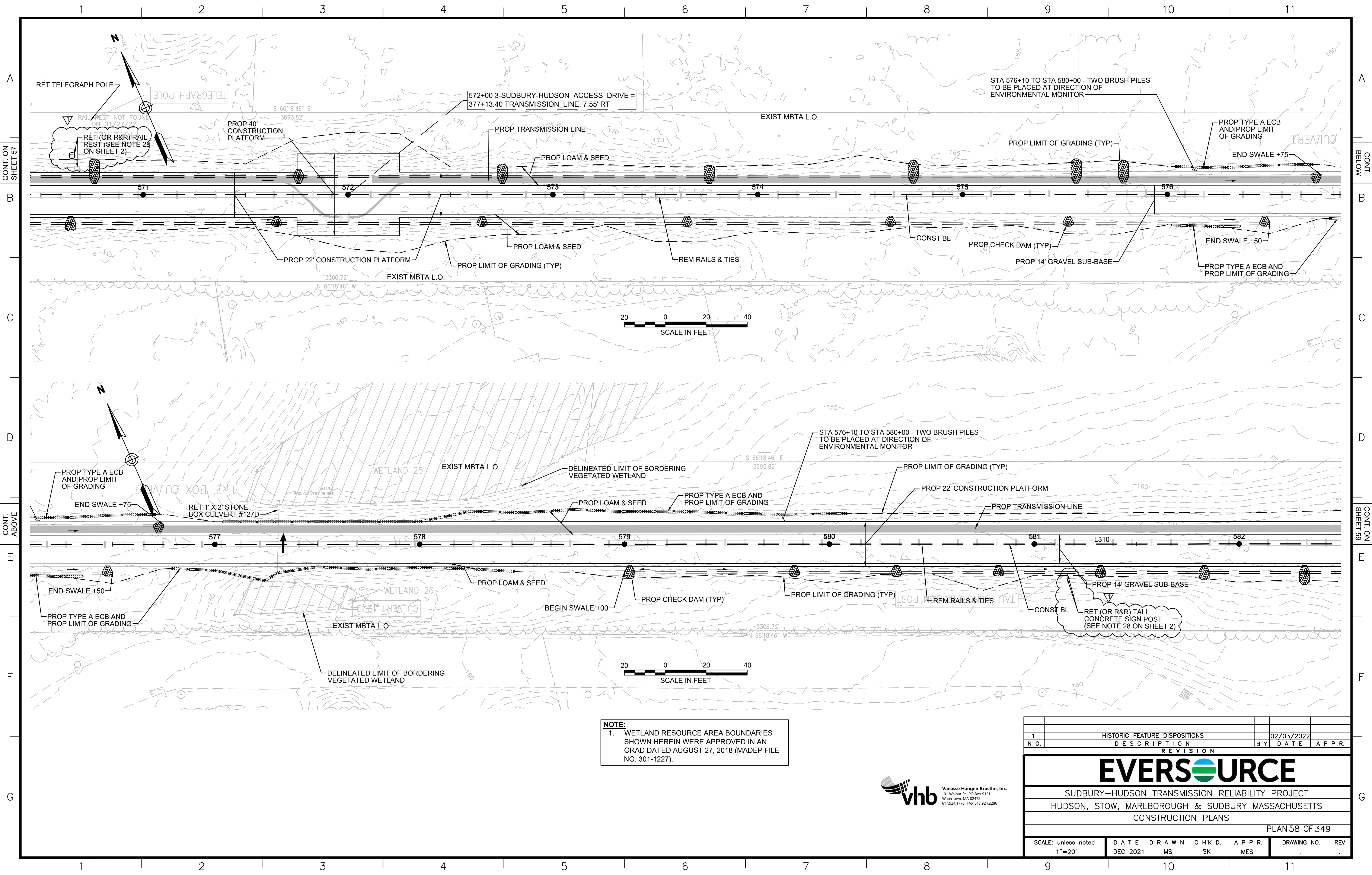


NOTE:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).
2. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 450' OF VERNAL POOLS. SEE DETAIL ON SHEET 154.



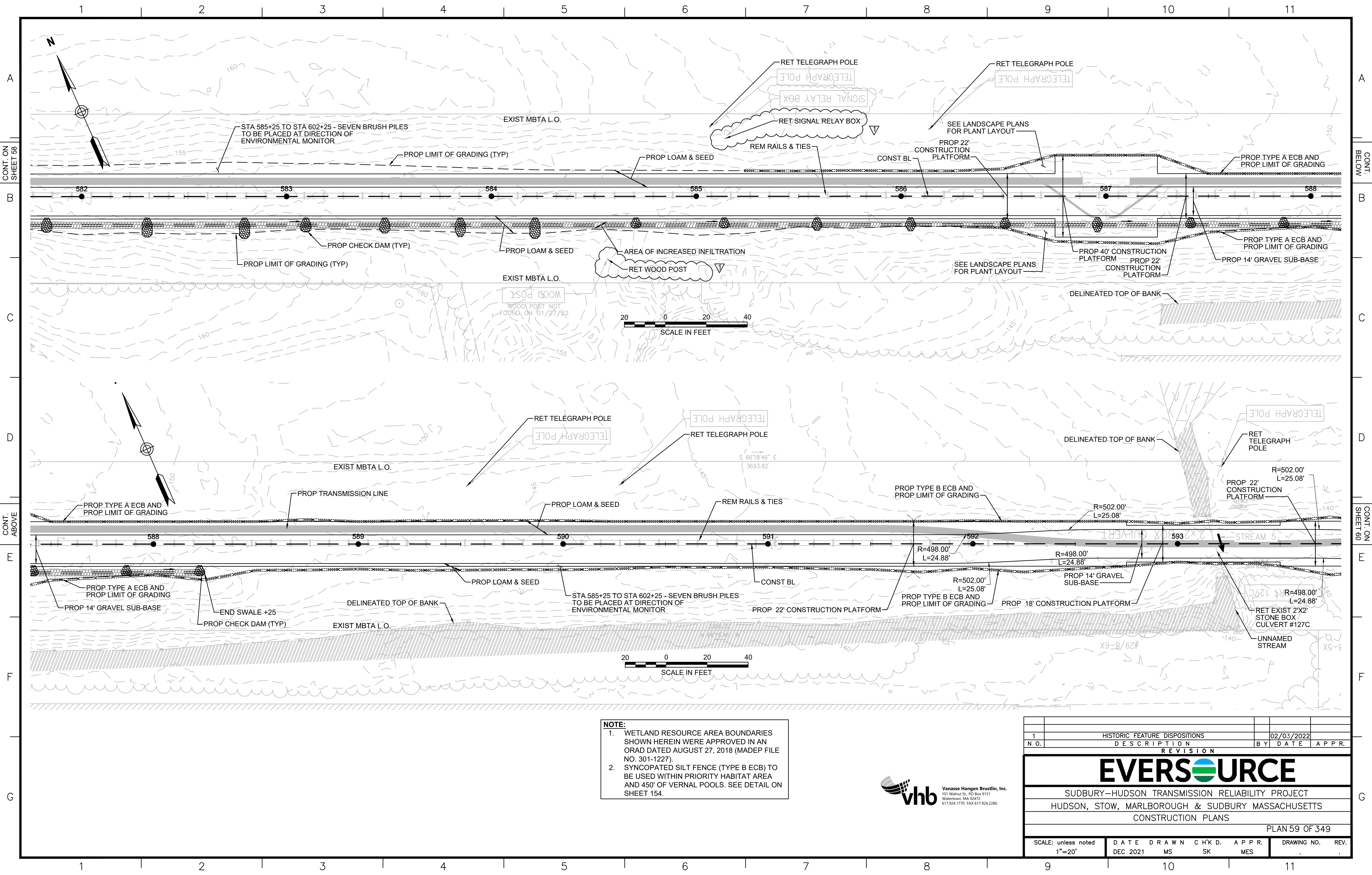
HISTORIC FEATURE DISPOSITIONS		02/03/2022		
N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CONSTRUCTION PLANS				
PLAN 57 OF 349				
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES
DRAWING NO.		REV.		



NOTE:
 1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).



1		HISTORIC FEATURE DISPOSITIONS		02/03/2022	
N.O.	DESCRIPTION	BY	DATE	APPR.	
REVISION					
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CONSTRUCTION PLANS					
PLAN 58 OF 349					
SCALE: unless noted 1"=20'	DATE	DRAWN	CHK'D.	APPR.	DRAWING NO. REV.
	DEC 2021	MS	SK	MES	

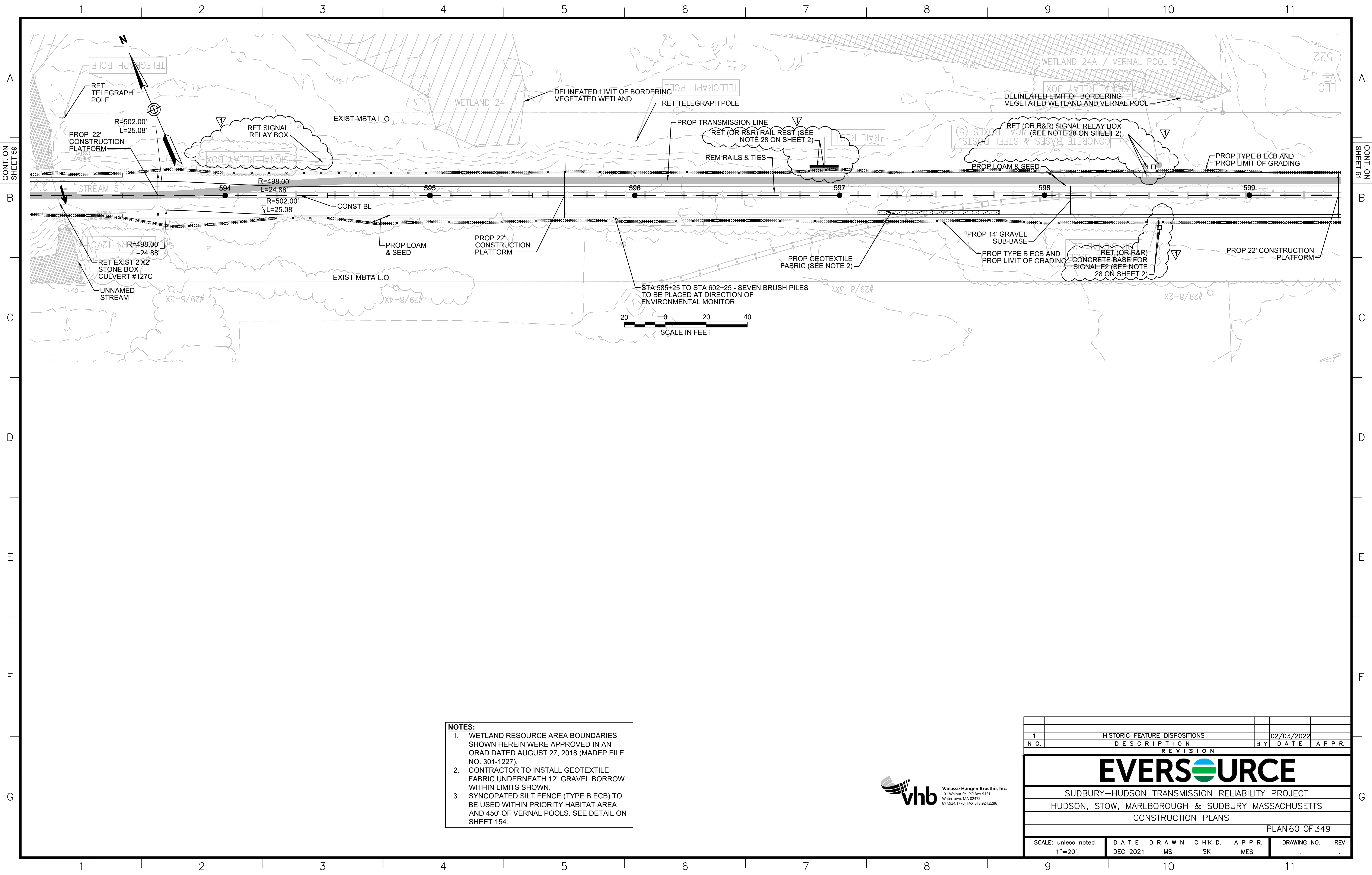


NOTE:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).
2. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 450' OF VERNAL POOLS. SEE DETAIL ON SHEET 154.



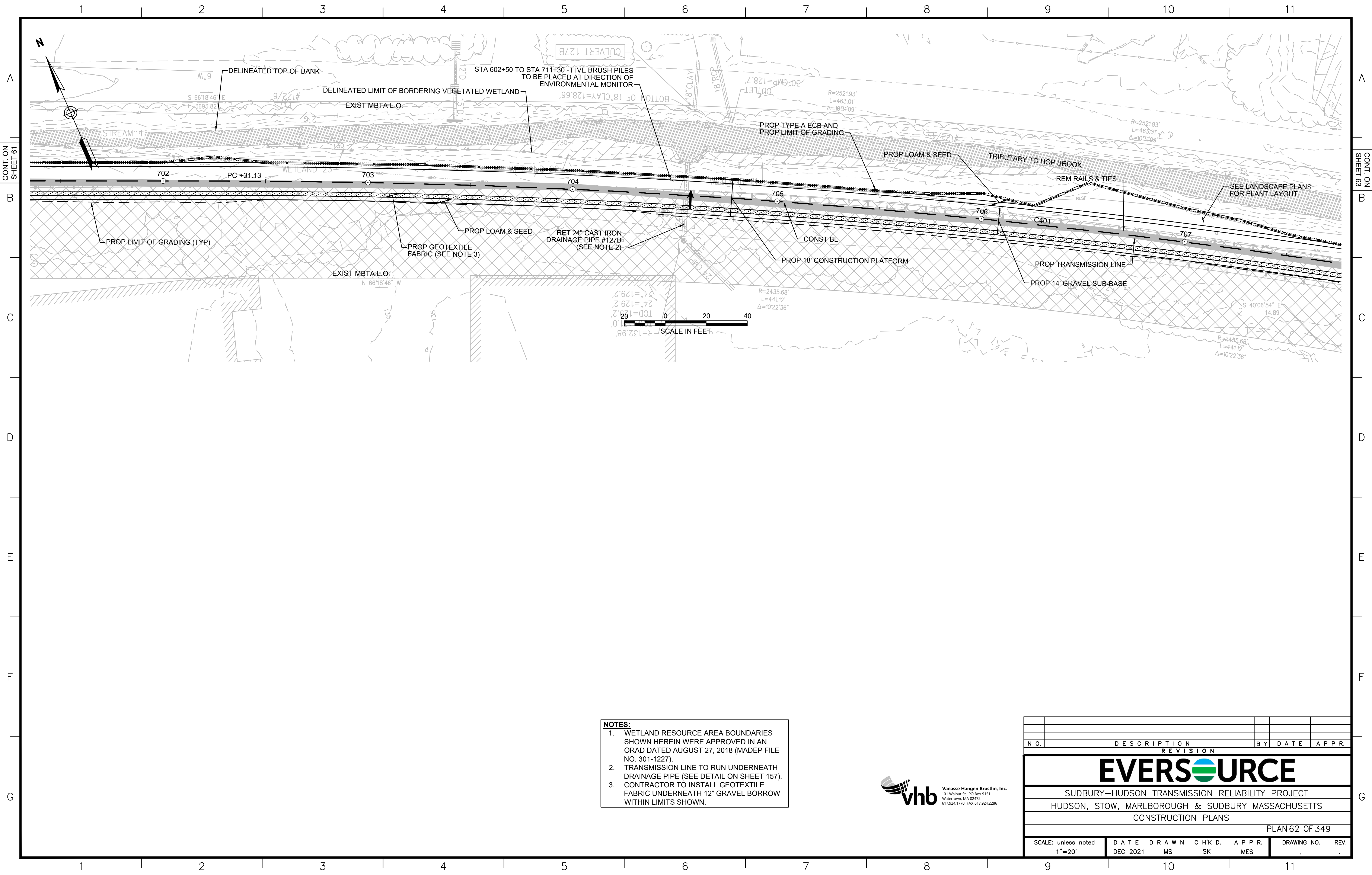
1	HISTORIC FEATURE DISPOSITIONS	02/03/2022		
N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CONSTRUCTION PLANS				
PLAN 59 OF 349				
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES
DRAWING NO.	REV.			



- NOTES:**
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).
 2. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 12" GRAVEL BORROW WITHIN LIMITS SHOWN.
 3. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 450' OF VERNAL POOLS. SEE DETAIL ON SHEET 154.



1		HISTORIC FEATURE DISPOSITIONS		02/03/2022	
N.O.	DESCRIPTION	BY	DATE	APPR.	
REVISION					
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CONSTRUCTION PLANS					
PLAN 60 OF 349					
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN MS	CH'K'D. SK	APPR. MES	DRAWING NO. REV.



- NOTES:**
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).
 2. TRANSMISSION LINE TO RUN UNDERNEATH DRAINAGE PIPE (SEE DETAIL ON SHEET 157).
 3. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 12" GRAVEL BORROW WITHIN LIMITS SHOWN.

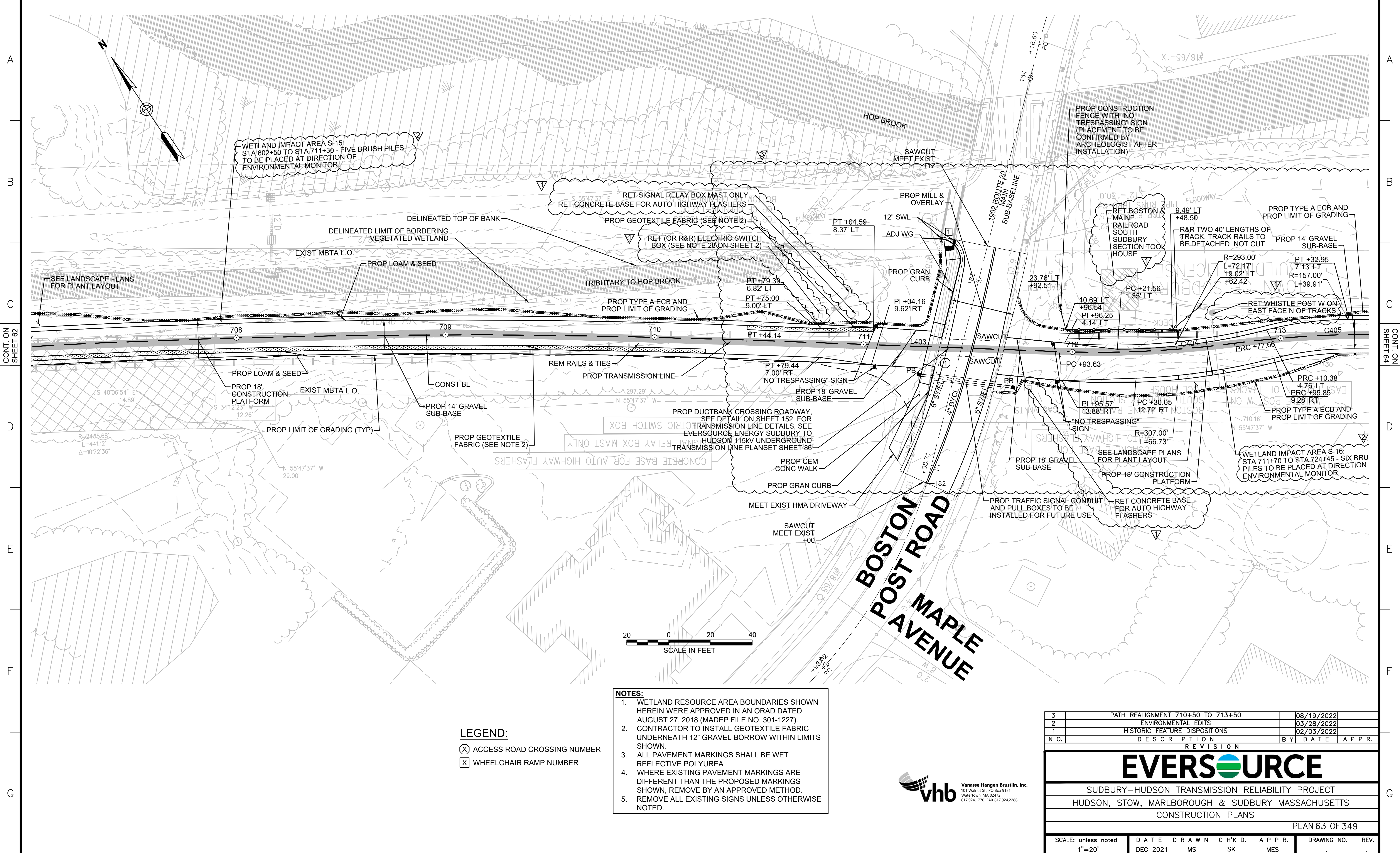


N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CONSTRUCTION PLANS				
PLAN 62 OF 349				
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES
DRAWING NO.	REV.			

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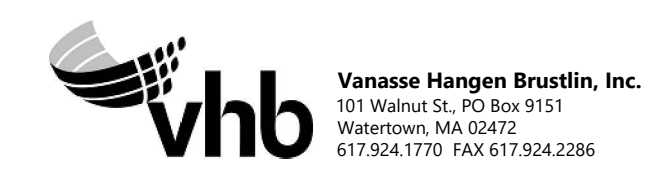


- NOTES:**
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).
 2. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 12" GRAVEL BORROW WITHIN LIMITS SHOWN.
 3. ALL PAVEMENT MARKINGS SHALL BE WET REFLECTIVE POLYUREA
 4. WHERE EXISTING PAVEMENT MARKINGS ARE DIFFERENT THAN THE PROPOSED MARKINGS SHOWN, REMOVE BY AN APPROVED METHOD.
 5. REMOVE ALL EXISTING SIGNS UNLESS OTHERWISE NOTED.

LEGEND:

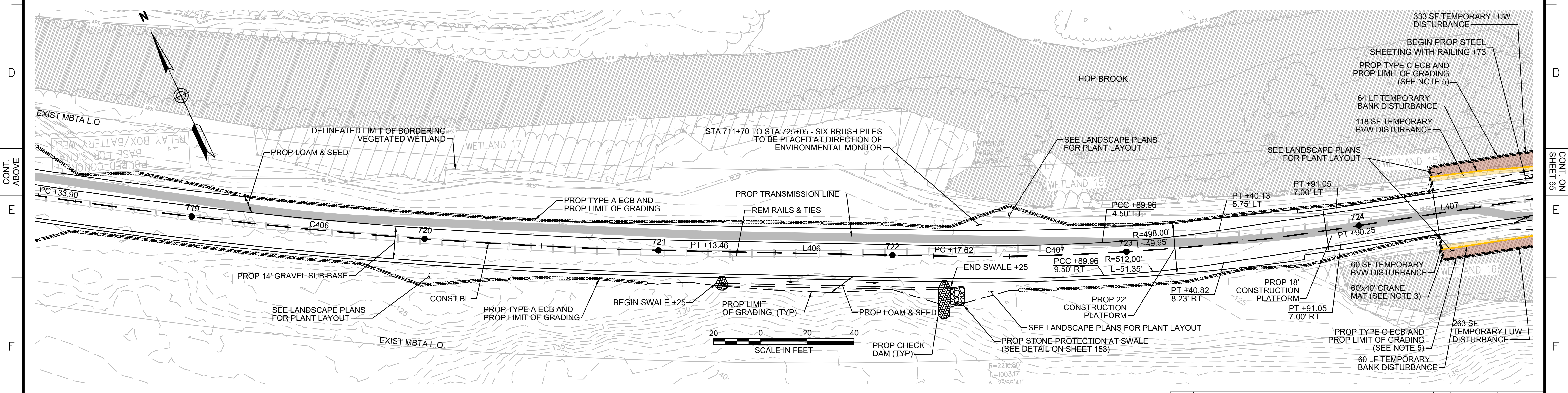
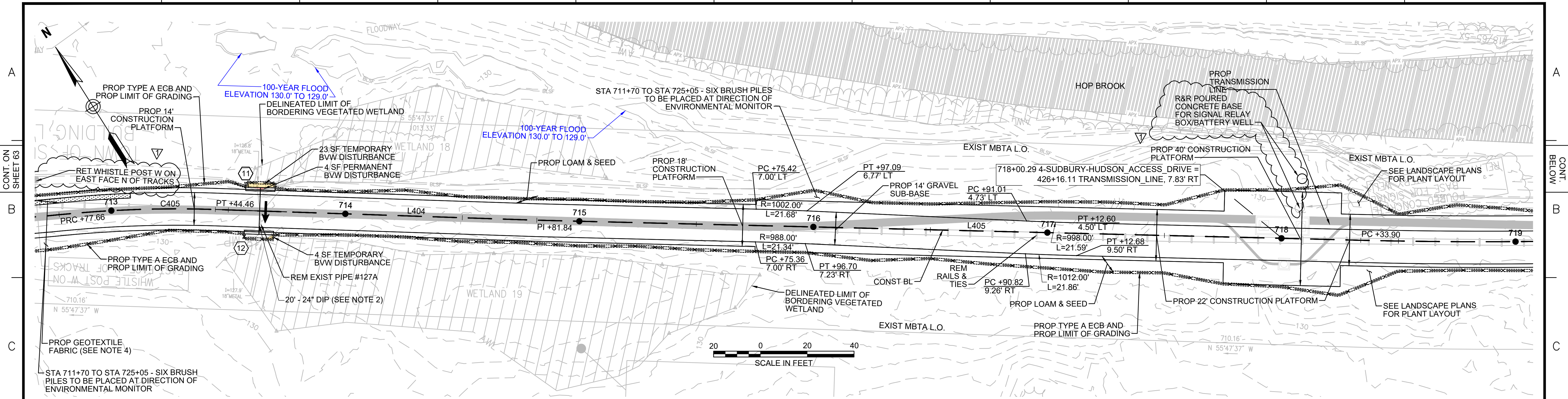
(X) ACCESS ROAD CROSSING NUMBER

(X) WHEELCHAIR RAMP NUMBER



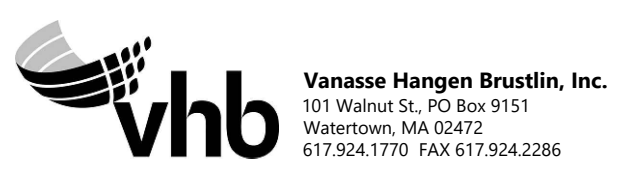
3	PATH REALIGNMENT 710+50 TO 713+50	08/19/2022		
2	ENVIRONMENTAL EDITS	03/28/2022		
1	HISTORIC FEATURE DISPOSITIONS	02/03/2022		
N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CONSTRUCTION PLANS				
PLAN 63 OF 349				
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES
DRAWING NO.	REV.			

1 2 3 4 5 6 7 8 9 10 11

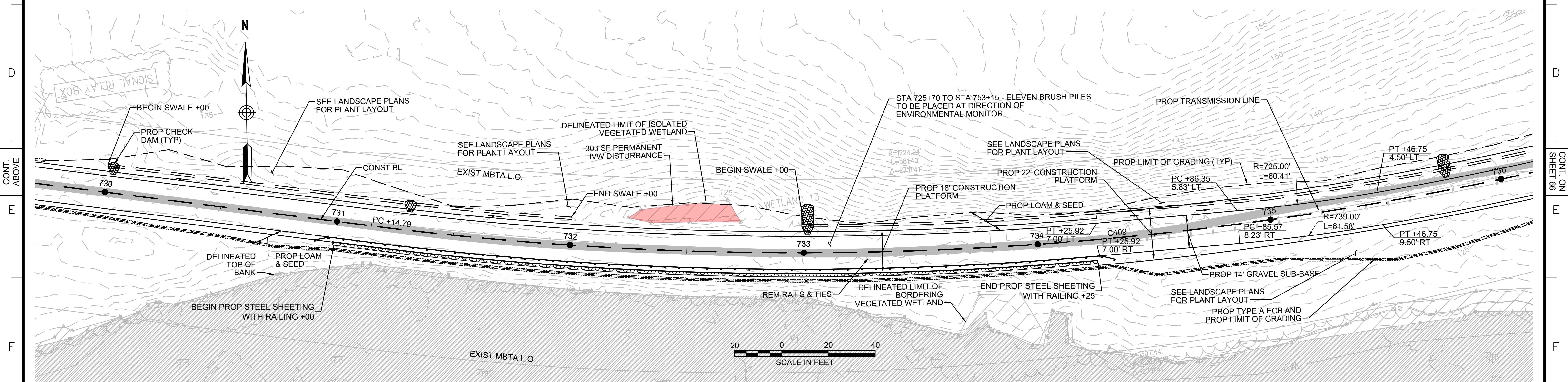
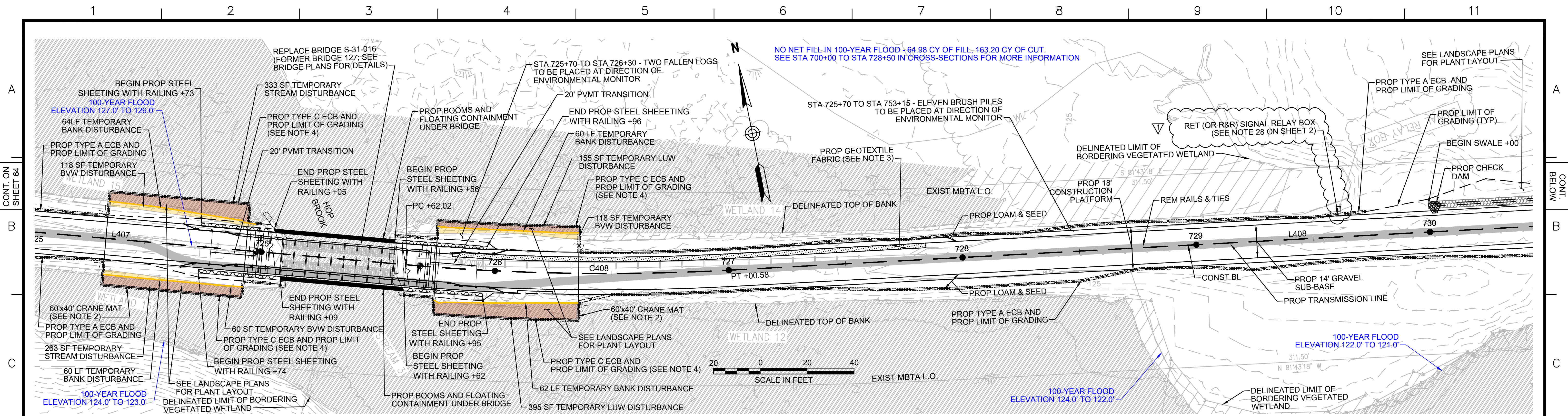


DRAINAGE STRUCTURE TABLE						
NO.	TYPE	STATION	RIM ELEV.	INV. IN	INV. OUT	REMARKS
11	Concrete Headwall	713+63, 10.0' LT		128.81'		18" REVEAL
12	Concrete Headwall	713+63, 10.0' RT		128.55'		18" REVEAL

- NOTES:**
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).
 2. TRANSMISSION LINE TO RUN UNDERNEATH DRAINAGE PIPE.
 3. MAXIMUM CRANE PAD DIMENSIONS OF 40'X40' ARE ALLOWED AT ANY GIVEN TIME. A LONGER CRANE MAT FOOTPRINT IS SHOWN HERE TO ALLOW THE CRANE MAT LOCATION TO BE SHIFTED DURING CONSTRUCTION OF THE STEEL SHEETING AND BRIDGE.
 4. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 12" GRAVEL BORROW WITHIN LIMITS SHOWN.
 5. TYPE C ECB SHALL CONSIST OF EITHER STAKED 4' HIGH SILT FENCE OR BOTTOM-ANCHORED TURBIDITY CURTAIN DEPENDING ON WATER LEVELS AT THE TIME OF CONSTRUCTION. THE APPROPRIATE ECB SHALL BE INSTALLED AT THE DIRECTION OF THE ENVIRONMENTAL MONITOR.



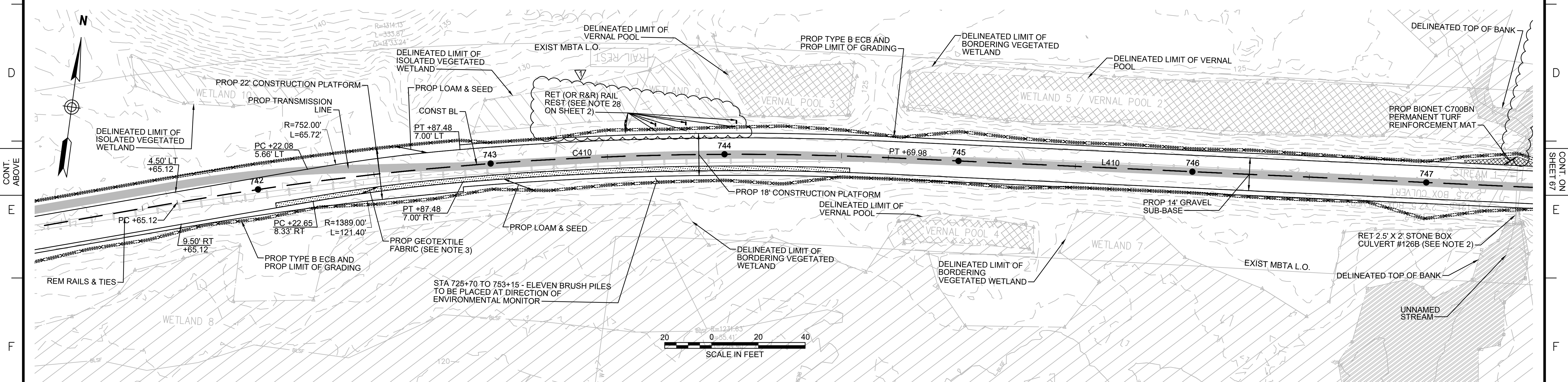
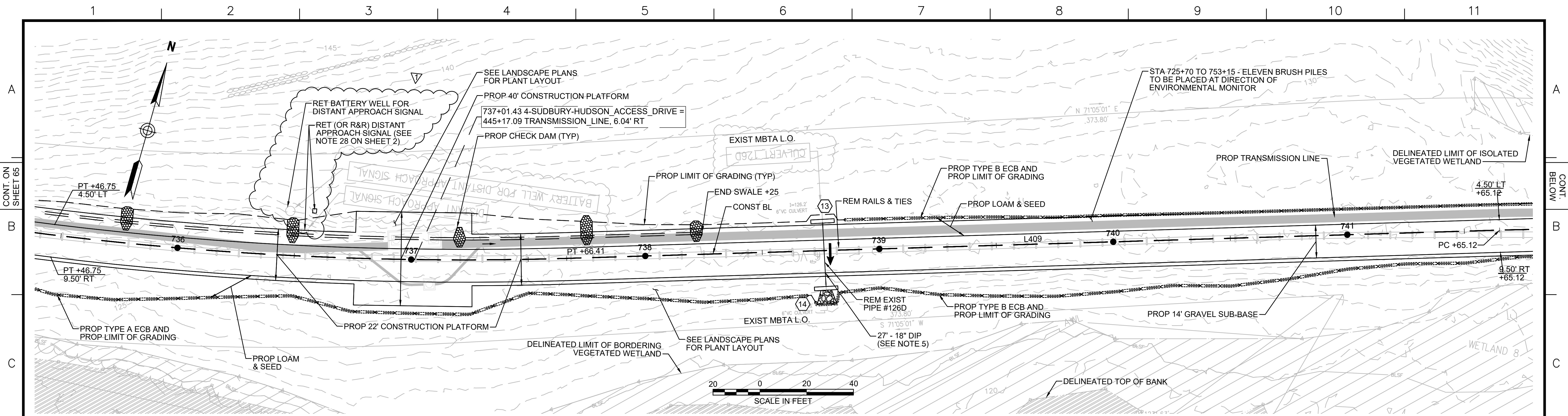
HISTORIC FEATURE DISPOSITIONS		02/03/2022
N.O.	DESCRIPTION	BY DATE APPR.
REVISION		
EVERSOURCE		
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT		
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS		
CONSTRUCTION PLANS		
PLAN 64 OF 349		
SCALE: unless noted 1"=20'	DATE DRAWN DEC 2021	CHK'D. APPR. MS SK MES
DRAWING NO.	REV.	



- NOTES:**
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).
 2. MAXIMUM CRANE PAD DIMENSIONS OF 40'X40' ARE ALLOWED AT ANY GIVEN TIME. A LONGER CRANE MAT FOOTPRINT IS SHOWN HERE TO ALLOW THE CRANE MAT LOCATION TO BE SHIFTED DURING CONSTRUCTION OF THE STEEL SHEETING AND BRIDGE.
 3. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 12" GRAVEL BORROW WITHIN LIMITS SHOWN.
 4. TYPE C ECB SHALL CONSIST OF EITHER STAKE 4' HIGH SILT FENCE OR BOTTOM-ANCHORED TURBIDITY CURTAIN DEPENDING ON WATER LEVELS AT THE TIME OF CONSTRUCTION. THE APPROPRIATE ECB SHALL BE INSTALLED AT THE DIRECTION OF THE ENVIRONMENTAL MONITOR.



1		HISTORIC FEATURE DISPOSITIONS		02/03/2022	
N.O.	DESCRIPTION	BY	DATE	APPR.	
REVISION					
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CONSTRUCTION PLANS					
PLAN 65 OF 349					
SCALE: unless noted 1"=20'	DATE	DRAWN	CHK'D.	APPR.	DRAWING NO. REV.
	DEC 2021	MS	SK	MES	



NO.	TYPE	STATION	RIM ELEV.	INV. IN	INV. OUT	REMARKS
13	Concrete Headwall	738+77, 12.0' LT			127.10'	
14	Concrete Headwall	738+77, 15.4' RT		125.07'		

- NOTES:**
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).
 2. CONTRACTOR TO CUT VEGETATION ON NORTHEAST WINGWALL OF STONE BOX CULVERT. NO GRUBBING SHALL BE PERFORMED OUTSIDE LIMITS OF GRADING.
 3. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 12" GRAVEL BORROW WITHIN LIMITS SHOWN.
 4. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 450' OF VERNAL POOLS. SEE DETAIL ON SHEET 154.
 5. TRANSMISSION LINE TO RUN UNDERNEATH DRAINAGE PIPE. SEE DETAIL ON SHEET 157.



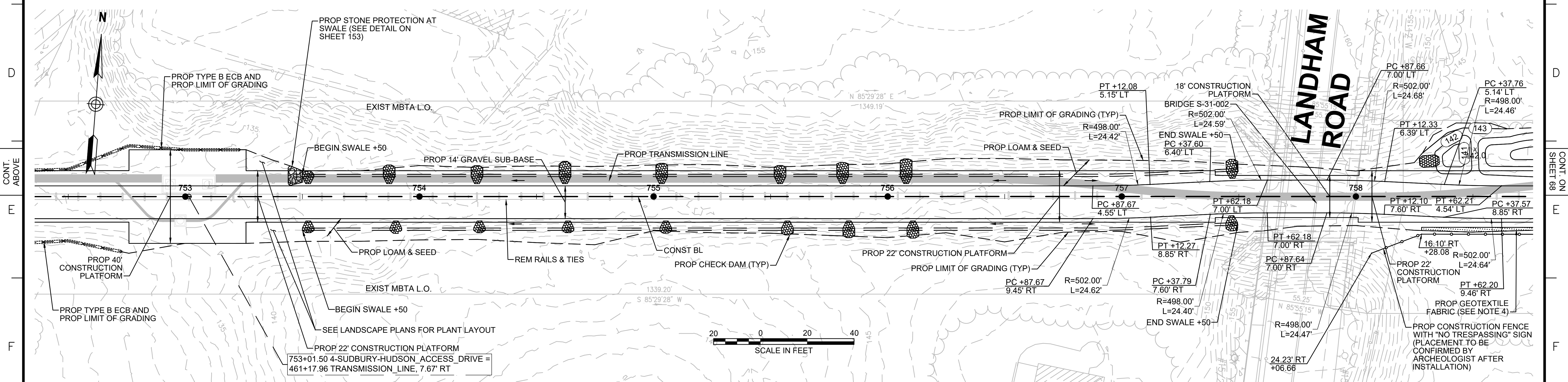
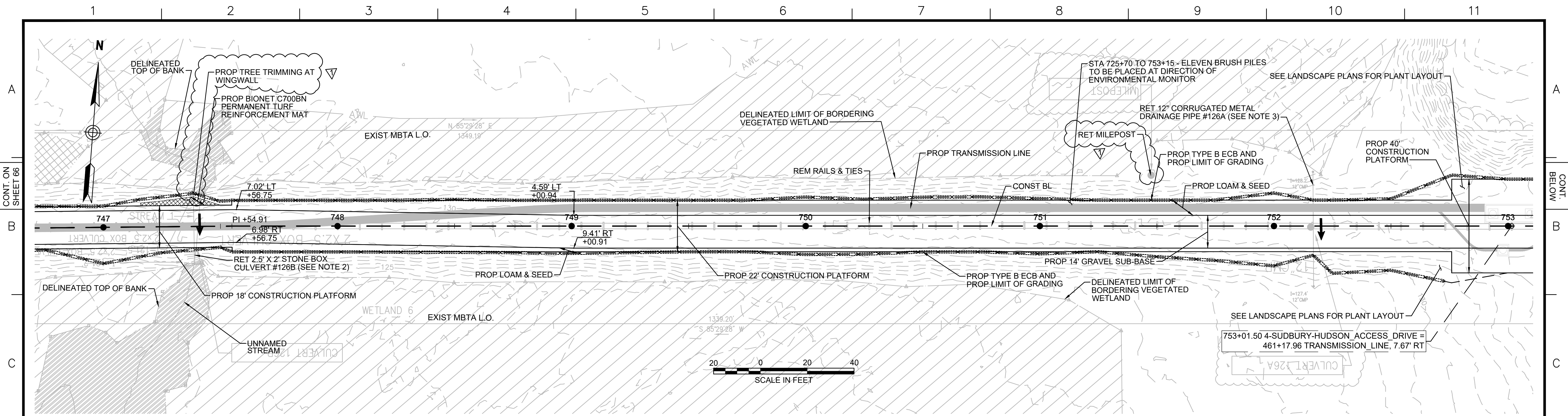
1		HISTORIC FEATURE DISPOSITIONS	02/03/2022	
N.O.		DESCRIPTION	BY	DATE
		REVISION	APPR.	

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 CONSTRUCTION PLANS

PLAN 66 OF 349

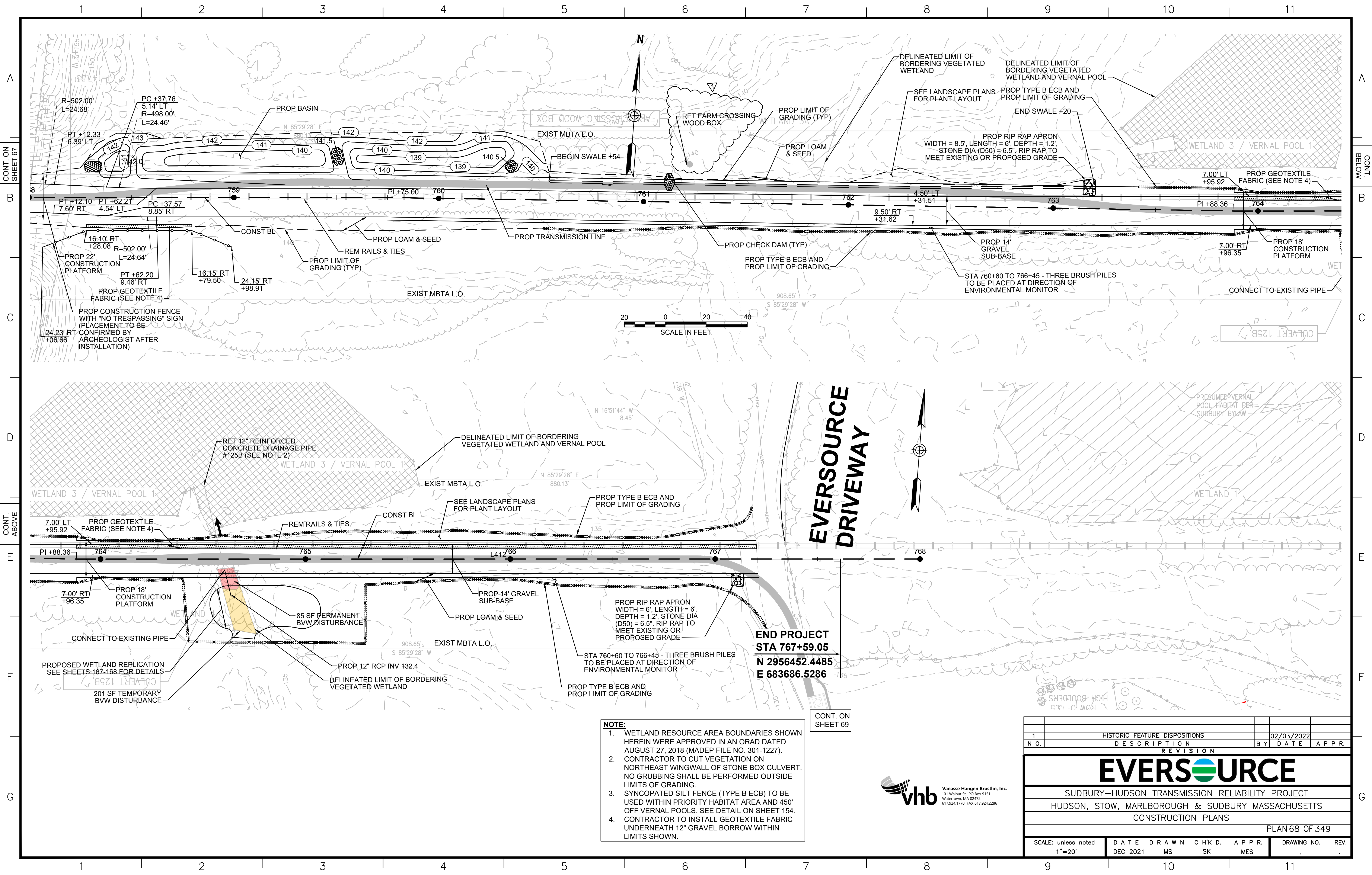
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN MS	CHK'D. SK	A.P.P.R. MES	DRAWING NO.	REV.
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- NOTES:**
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).
 2. CONTRACTOR TO CUT VEGETATION ON NORTHEAST WINGWALL OF STONE BOX CULVERT. NO GRUBBING SHALL BE PERFORMED OUTSIDE LIMITS OF GRADING.
 3. CONTRACTOR TO CLEAR SEDIMENT IN DRAINAGE PIPE BY HAND.
 4. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 450' OF VERNAL POOLS. SEE DETAIL ON SHEET 154.



1	HISTORIC FEATURE DISPOSITIONS	02/03/2022	
N.O.	DESCRIPTION	BY DATE	APPR.
REVISION			
EVERSOURCE			
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT			
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS			
CONSTRUCTION PLANS			
PLAN 67 OF 349			
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN MS	CHK'D. SK
		APPR. MES	REV.



- NOTE:**
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).
 2. CONTRACTOR TO CUT VEGETATION ON NORTHEAST WINGWALL OF STONE BOX CULVERT. NO GRUBBING SHALL BE PERFORMED OUTSIDE LIMITS OF GRADING.
 3. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 450' OFF VERNAL POOLS. SEE DETAIL ON SHEET 154.
 4. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 12" GRAVEL BORROW WITHIN LIMITS SHOWN.

**END PROJECT
STA 767+59.05
N 2956452.4485
E 683686.5286**



HISTORIC FEATURE DISPOSITIONS		02/03/2022	
N.O.	DESCRIPTION	BY	DATE APPR.
REVISION			
EVERSOURCE			
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT			
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS			
CONSTRUCTION PLANS			
PLAN 68 OF 349			
SCALE: unless noted 1"=20'	DATE	DRAWN	CHK'D. APPR.
	DEC 2021	MS	SK MES
DRAWING NO.	REV.		

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CONT. ON SHEET 68

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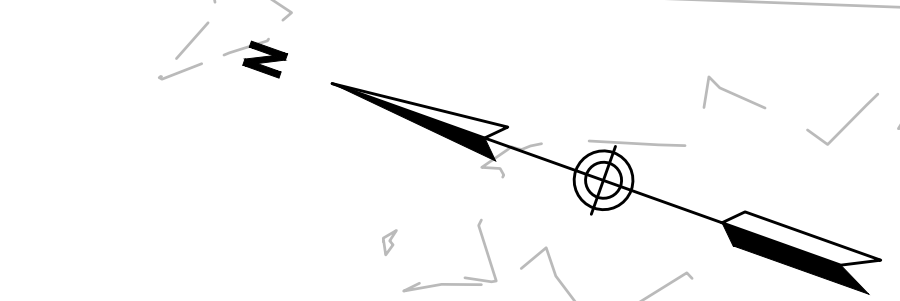
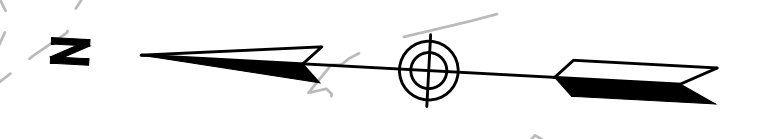
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EVERSOURCE DRIVEWAY

EVERSOURCE DRIVEWAY



END PROJECT
STA 767+59.05
N 2956452.4485
E 683686.5286



- NOTES:**
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).
 2. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 12" GRAVEL BORROW WITHIN LIMITS SHOWN.
 3. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 450' OF VERNAL POOL. SEE DETAIL ON SHEET 154.



NO.		DESCRIPTION	BY	DATE	APPR.
REVISION					
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CONSTRUCTION PLANS					
PLAN 69 OF 349					
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES	DRAWING NO. REV.

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1-SUDBURY-HUDSON-ACCESS-ROAD CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L101	99+50.00	2969274.969	646438.132		S57° 19' 07"E 81.72'	100+31.72	2969230.845	646506.912
C101	100+31.72	2969230.845	646506.912	R = 40.00' Δ= 35°52'18" L=25.04' T=12.95'		100+56.76	2969224.574	646530.737
L102	100+56.76	2969224.574	646530.737		N86° 48' 34"E 48.81'	101+05.57	2969227.291	646579.472
C102	101+05.57	2969227.291	646579.472	R = 200.00' Δ= 15°02'47" L=52.52' T=26.41'		101+58.09	2969237.027	646630.930
L103	101+58.09	2969237.027	646630.930		N71° 45' 47"E 1063.15'	112+21.25	2969569.737	647640.682
C103	112+21.25	2969569.737	647640.682	R = 1400.00' Δ= 28°11'56" L=689.03' T=351.64'		119+10.28	2969618.950	648321.003
L104	119+10.28	2969618.950	648321.003		S80° 02' 16"E 1065.88'	129+76.16	2969434.556	649370.812
C104	129+76.16	2969434.556	649370.812	R = 2800.00' Δ= 12°47'24" L=625.04' T=313.83'		136+01.20	2969258.894	649969.313
L105	136+01.20	2969258.894	649969.313		S67° 14' 52"E 680.66'	142+81.86	2968995.652	650597.005
C105	142+81.86	2968995.652	650597.005	R = 500.00' Δ= 2°17'26" L=19.99' T=10.00'		143+01.85	2968988.291	650615.589
L106	143+01.85	2968988.291	650615.589		S69° 32' 18"E 30.05'	143+31.90	2968977.787	650643.741
C106	143+31.90	2968977.787	650643.741	R = 500.00' Δ= 2°17'26" L=19.99' T=10.00'		143+51.89	2968970.427	650662.324
L107	143+51.89	2968970.427	650662.324		S67° 14' 52"E 230.01'	145+81.89	2968881.472	650874.434
C107	145+81.89	2968881.472	650874.434	R = 500.00' Δ= 2°17'26" L=19.99' T=10.00'		146+01.88	2968873.375	650892.709
L108	146+01.88	2968873.375	650892.709		S64° 57' 26"E 30.05'	146+31.93	2968860.656	650919.932
C108	146+31.93	2968860.656	650919.932	R = 500.00' Δ= 2°17'26" L=19.99' T=10.00'		146+51.92	2968852.559	650938.207
L109	146+51.92	2968852.559	650938.207		S67° 14' 52"E 358.25'	150+10.17	2968714.005	651268.583
C109	150+10.17	2968714.005	651268.583	R = 2300.00' Δ= 8°06'43" L=325.63' T=163.09'		153+35.80	2968609.711	651576.773
L110	153+35.80	2968609.711	651576.773		S75° 21' 35"E 196.11'	155+31.91	2968560.145	651766.511
C110	155+31.91	2968560.145	651766.511	R = 500.00' Δ= 2°17'05" L=19.94' T=9.97'		155+51.85	2968554.722	651785.695
L111	155+51.85	2968554.722	651785.695		S73° 04' 30"E 80.40'	156+32.25	2968531.316	651862.614
C111	156+32.25	2968531.316	651862.614	R = 500.00' Δ= 2°17'05" L=19.94' T=9.97'		156+52.19	2968525.894	651881.798
L112	156+52.19	2968525.894	651881.798		S75° 21' 35"E 494.94'	161+47.12	2968400.798	652360.665
C112	161+47.12	2968400.798	652360.665	R = 500.00' Δ= 4°34'26" L=39.91' T=19.97'		161+87.04	2968392.260	652399.645
L113	161+87.04	2968392.260	652399.645		S79° 56' 01"E 10.22'	161+97.26	2968390.473	652409.711
C113	161+97.26	2968390.473	652409.711	R = 500.00' Δ= 4°34'26" L=39.91' T=19.97'		162+37.18	2968381.936	652448.692
L114	162+37.18	2968381.936	652448.692		S75° 21' 35"E 325.80'	165+62.97	2968299.591	652763.911
C114	165+62.97	2968299.591	652763.911	R = 500.00' Δ= 2°17'07" L=19.94' T=9.97'		165+82.92	2968294.166	652783.101
C115	165+82.92	2968294.166	652783.101	R = 2000.00' Δ= 7°17'45" L=254.67' T=127.51'		168+37.59	2968204.731	653021.372
C116	168+37.59	2968204.731	653021.372	R = 500.00' Δ= 3°55'20" L=34.23' T=17.12'		168+71.82	2968189.631	653052.082

1-SUDBURY-HUDSON-ACCESS-ROAD CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L115	168+71.82	2968189.631	653052.082		S61° 51' 22"E 529.98'	174+01.80	2967939.647	653519.398
C117	174+01.80	2967939.647	653519.398	R = 500.00' Δ= 3°54'19" L=34.08' T=17.05'		174+35.88	2967924.608	653549.974
L116	174+35.88	2967924.608	653549.974		S65° 45' 41"E 36.37'	174+72.25	2967909.677	653583.135
C118	174+72.25	2967909.677	653583.135	R = 500.00' Δ= 4°35'46" L=40.11' T=20.07'		175+12.35	2967891.763	653619.009
L117	175+12.35	2967891.763	653619.009		S61° 09' 55"E 234.86'	177+47.22	2967778.491	653824.754
C119	177+47.22	2967778.491	653824.754	R = 500.00' Δ= 4°34'29" L=39.92' T=19.97'		177+87.14	2967757.862	653858.921
L118	177+87.14	2967757.862	653858.921		S56° 35' 26"E 10.72'	177+97.86	2967751.962	653867.866
C120	177+97.86	2967751.962	653867.866	R = 500.00' Δ= 4°35'18" L=40.04' T=20.03'		178+37.90	2967731.276	653902.137
L119	178+37.90	2967731.276	653902.137		S61° 10' 44"E 255.16'	180+93.06	2967608.269	654125.690
C121	180+93.06	2967608.269	654125.690	R = 200.00' Δ= 13°48'39" L=48.21' T=24.22'		181+41.27	2967590.318	654170.307
C122	181+41.27	2967590.318	654170.307	R = 50.00' Δ= 33°35'20" L=29.31' T=15.09'		181+70.58	2967575.091	654194.862
L120	181+70.58	2967575.091	654194.862		S41° 24' 03"E 53.66'	182+24.24	2967534.839	654230.350
C123	182+24.24	2967534.839	654230.350	R = 60.00' Δ= 47°56'15" L=50.20' T=26.67'		182+74.44	2967514.523	654274.663
C124	182+74.44	2967514.523	654274.663	R = 80.00' Δ= 27°43'21" L=38.71' T=19.74'		183+13.15	2967504.910	654311.769
L121	183+13.15	2967504.910	654311.769		S61° 36' 57"E 368.60'	186+81.74	2967329.686	654636.052
C125	186+81.74	2967329.686	654636.052	R = 6500.00' Δ= 4°41'05" L=531.46' T=265.88'		192+13.21	2967096.424	655113.425
L122	192+13.21	2967096.424	655113.425		S66° 18' 02"E 2021.93'	212+35.14	2966283.729	656964.841
C126	212+35.14	2966283.729	656964.841	R = 100.00' Δ= 22°30'52" L=39.30' T=19.90'		212+74.44	2966261.359	656996.840
C127	212+74.44	2966261.359	656996.840	R = 100.00' Δ= 35°52'08" L=62.60' T=32.37'		213+37.04	2966232.181	657051.075
L123	213+37.04	2966232.181	657051.075		S79° 39' 18"E 42.56'	213+79.60	2966224.538	657092.945
C128	213+79.60	2966224.538	657092.945	R = 100.00' Δ= 13°22'03" L=23.33' T=11.72'		214+02.93	2966217.721	657115.202
L124	214+02.93	2966217.721	657115.202		S66° 17' 15"E 38.73'	214+41.66	2966202.144	657150.666

CHESTNUT-STREET CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L501	800+00.00	2969511.351	649678.545		S10° 58' 48"W 181.91'	801+81.91	2969332.767	649643.897
C501	801+81.91	2969332.767	649643.897	R = 1000.00' Δ= 4°22'21" L=76.32' T=38.18'		802+58.23	2969257.368	649632.233
L502	802+58.23	2969257.368	649632.233		S6° 36' 27"W 41.77'	803+00.00	2969215.874	649627.426



NO.		DESCRIPTION		BY	DATE	APPR.
REVISION						
EVERSOURCE						
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT						
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS						
CONSTRUCTION BASELINE DATA						
PLAN 71 OF 349						
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES	DRAWING NO.	REV.

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3-SUDBURY-HUDSON_ACCESS_DRIVE CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L301	500+00.00	2961502.012	667872.321		S66° 12' 11"E 2.28'	500+02.28	2961501.092	667874.407
C301	500+02.28	2961501.092	667874.407	R=500.00' Δ=7°41'35" L=67.14' T=33.62'		500+69.41	2961469.967	667933.834
C302	500+69.41	2961469.967	667933.834	R=500.00' Δ=7°41'34" L=67.13' T=33.62'		501+36.55	2961438.842	667993.259
L302	501+36.55	2961438.842	667993.259		S66° 12' 10"E 352.24'	504+88.78	2961296.716	668315.548
L303	504+88.78	2961296.716	668315.548		S66° 29' 41"E 714.53'	512+03.31	2961011.736	668970.789
L304	512+03.31	2961011.736	668970.789		S65° 47' 36"E 355.56'	515+58.87	2960865.948	669295.083
C303	515+58.87	2960865.948	669295.083	R=2000.00' Δ=2°02'02" L=70.99' T=35.50'		516+29.86	2960837.994	669360.337
L305	516+29.86	2960837.994	669360.337		S67° 49' 38"E 62.53'	516+92.40	2960814.394	669418.247
C304	516+92.40	2960814.394	669418.247	R=5000.00' Δ=2°28'08" L=215.46' T=107.75'		519+07.86	2960728.805	669615.962
L306	519+07.86	2960728.805	669615.962		S65° 21' 30"E 56.37'	519+64.23	2960705.304	669667.194
C305	519+64.23	2960705.304	669667.194	R=5000.00' Δ=1°03'24" L=92.20' T=46.10'		520+56.43	2960667.637	669751.349
L307	520+56.43	2960667.637	669751.349		S66° 24' 53"E 3804.53'	558+60.96	2959145.398	673238.076
L308	558+60.96	2959145.398	673238.076		S67° 25' 05"E 114.60'	559+75.56	2959101.392	673343.887
L309	559+75.56	2959101.392	673343.887		S66° 25' 05"E 324.74'	563+00.30	2958971.476	673641.508
L310	563+00.30	2958971.476	673641.508		S66° 18' 26"E 3665.57'	599+65.87	2957498.529	676998.123
C306	599+65.87	2957498.529	676998.123	R=500.00' Δ=3°38'00" L=31.71' T=15.86'		599+97.58	2957486.717	677027.541
L311	599+97.58	2957486.717	677027.541		S69° 56' 26"E 84.99'	600+82.57	2957457.567	677107.371
C307	600+82.57	2957457.567	677107.371	R=500.00' Δ=3°38'42" L=31.81' T=15.91'		601+14.37	2957445.714	677136.884
L312	601+14.37	2957445.714	677136.884		S66° 17' 43"E 47.14'	601+61.52	2957426.761	677180.049
C308	601+61.52	2957426.761	677180.049	R=500.00' Δ=3°13'05" L=28.08' T=14.05'		601+89.60	2957414.756	677205.432
L313	601+89.60	2957414.756	677205.432		S63° 04' 38"E 68.56'	602+58.16	2957383.711	677266.565
C309	602+58.16	2957383.711	677266.565	R=500.00' Δ=3°13'05" L=28.08' T=14.05'		602+86.25	2957371.705	677291.948
L314	602+86.25	2957371.705	677291.948		S66° 17' 43"E 14.06'	603+00.31	2957366.053	677304.821



N O.	DESCRIPTION	BY	DATE	APP R.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CONSTRUCTION BASELINE DATA				
PLAN 73 OF 349				
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APP R. MES
DRAWING NO.	REV.			

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4-SUDBURY-HUDSON_ACCESS_DRIVE CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L401	700+00.00	2957366.0527	677304.8213		S66°14'03"E 231.13'	702+31.13	2957272.9091	677516.3488
C401	702+31.13	2957272.9091	677516.3488	R=3750.00' Δ=12°25'19" L=813.02' T=408.11'		710+44.14	2956867.4824	678219.2284
L403	710+44.14	2956867.4824	678219.2284		S53°48'44"E 149.49'	711+93.63	2956779.2208	678339.8770
C404	711+93.63	2956779.2208	678339.8770	R=500.00' Δ=9°37'46" L=84.03' T=42.12'		712+77.66	2956735.5245	678411.5389
C405	712+77.66	2956735.5245	678411.5389	R=500.00' Δ=7°39'17" L=66.80' T=33.45'		713+44.46	2956701.7603	678469.1214
L404	713+44.46	2956701.7603	678469.1214		S55°47'13"E 137.37'	714+81.84	2956624.5189	678582.7225
L405	714+81.84	2956624.5189	678582.7225		S56°18'15"E 352.06'	718+33.90	2956429.2013	678875.6350
C406	718+33.90	2956429.2013	678875.6350	R=2150.00' Δ=7°27'00" L=279.56' T=139.98'		721+13.46	2956289.6424	679117.6429
L406	721+13.46	2956289.6424	679117.6429		S63°45'15"E 104.16'	722+17.62	2956243.5785	679211.0686
C407	722+17.62	2956243.5785	679211.0686	R=1000.00' Δ=9°53'27" L=172.63' T=86.53'		723+90.25	2956180.9486	679371.7031
L407	723+90.25	2956180.9486	679371.7031		S73°38'42"E 171.77'	725+62.02	2956132.5797	679536.5242
C408	725+62.02	2956132.5797	679536.5242	R=975.00' Δ=8°08'34" L=138.56' T=69.40'		727+00.58	2956103.1249	679671.8017
L408	727+00.58	2956103.1249	679671.8017		S81°47'16"E 414.21'	731+14.79	2956043.9591	680081.7601
C409	731+14.79	2956043.9591	680081.7601	R=1450.00' Δ=25°44'54" L=651.62' T=331.41'		737+66.41	2956096.4751	680725.7736
L409	737+66.41	2956096.4751	680725.7736		N72°27'50"E 398.71'	741+65.12	2956216.6094	681105.9571
C410	741+65.12	2956216.6094	681105.9571	R=1400.00' Δ=12°28'35" L=304.86' T=153.03'		744+69.98	2956276.2156	681404.3155
L410	744+69.98	2956276.2156	681404.3155		N84°56'25"E 284.93'	747+54.91	2956301.3441	681688.1339
L412	763+88.36	2956423.2838	683316.9838		N85°29'15"E 411.64'	768+00.00	2956455.6704	683727.3522

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N O.	DESCRIPTION	BY	DATE	APP R.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CONSTRUCTION BASELINE DATA				
PLAN 74 OF 349				
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APP R. MES
DRAWING NO.	REV.			

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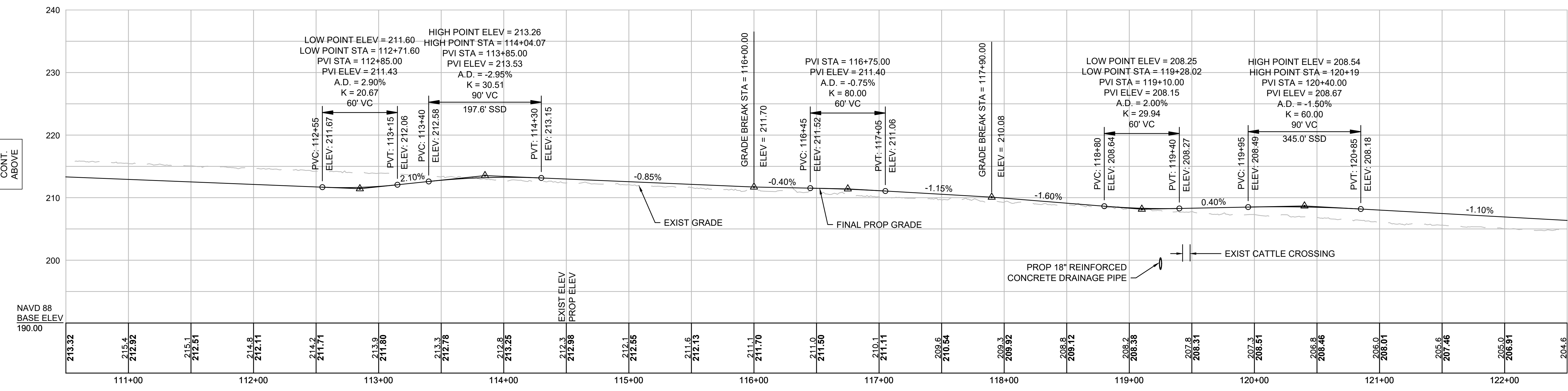
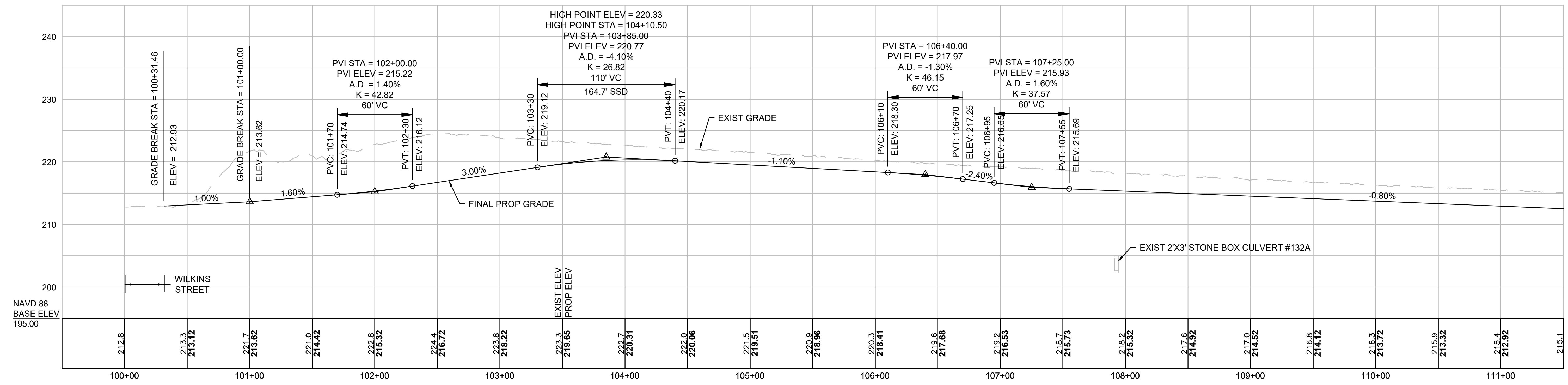
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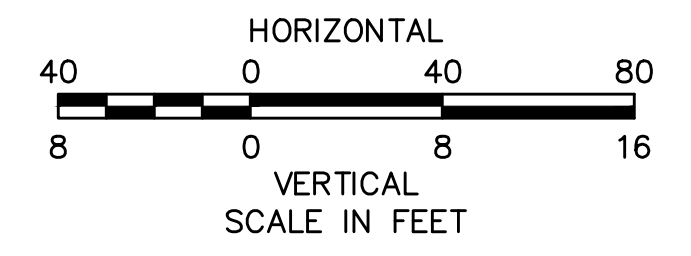
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NOTE:
 CONTRACTOR TO BUILD TO INTERIM PGL,
 WHICH IS 4" BELOW FINAL PGL SHOWN HERE.
 FINAL GRADING TO BE PERFORMED UNDER
 SEPARATE CONTRACT. SEE DETAIL FOR
 INTERIM TYPICAL SECTION ON SHEET 157 FOR
 ADDITIONAL INFORMATION.

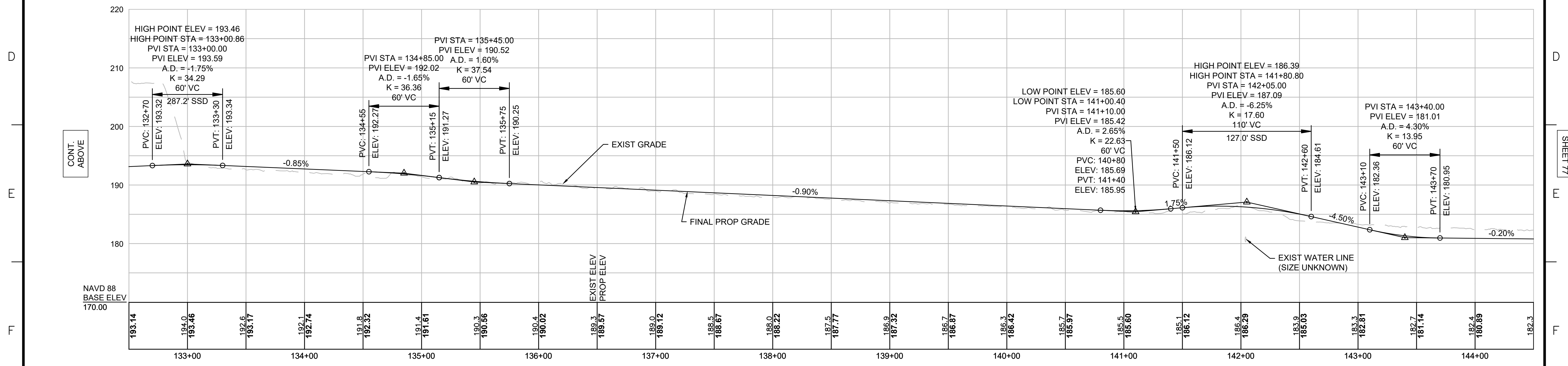
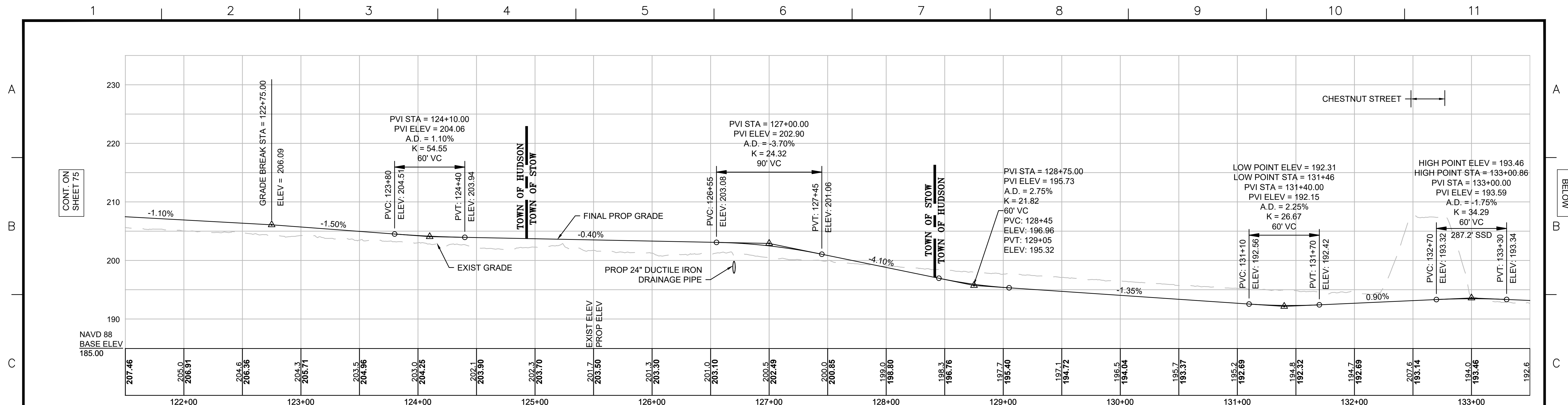


NO.		DESCRIPTION	BY	DATE	APPR.
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
PROFILE					
PLAN 75 OF 349					
SCALE: unless noted H: 1"=40' V: 1"=8'		DATE DRAWN DEC 2021 MS		CHK'D. APPR. SK MES	
DRAWING NO.		REV.			

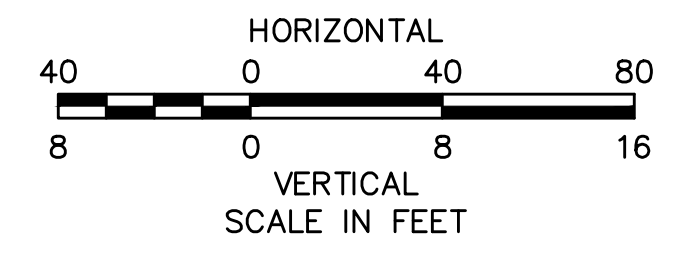
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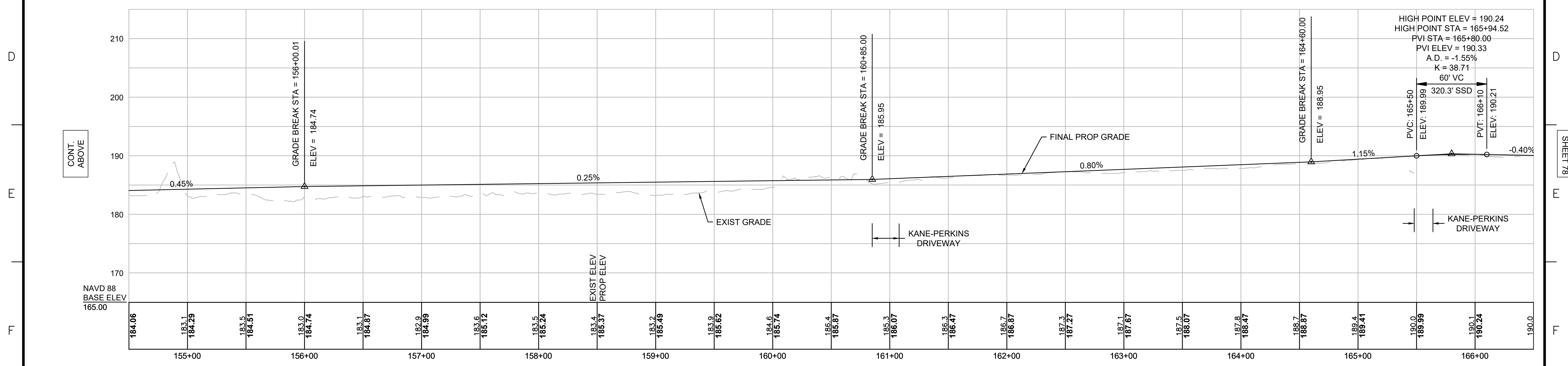
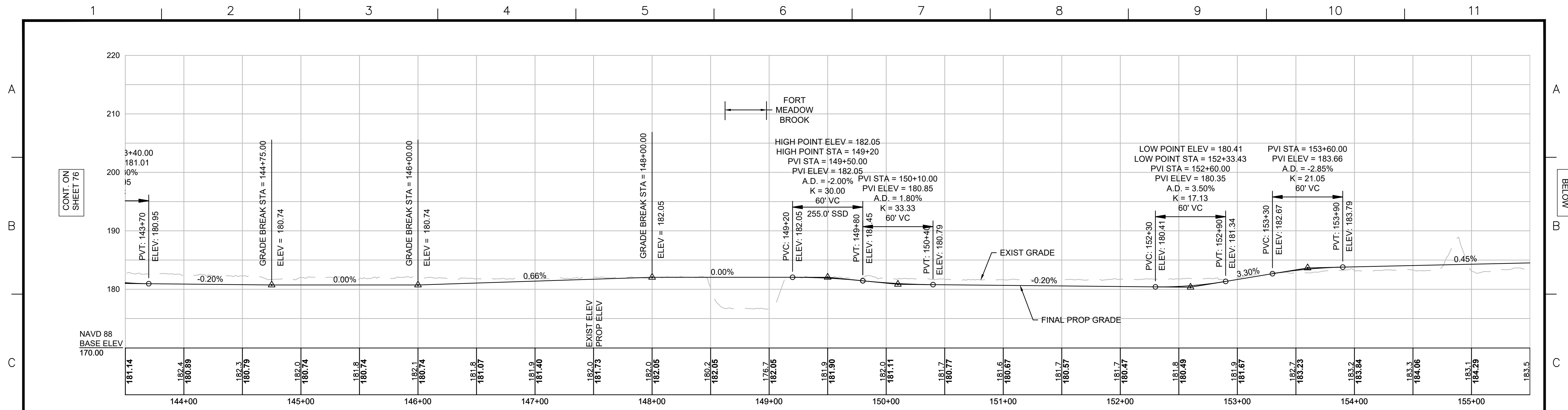
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SHEET 76



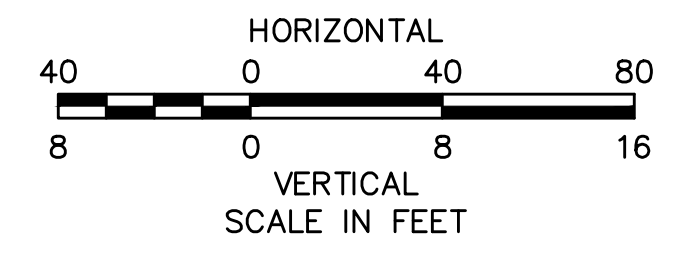
NOTE:
 CONTRACTOR TO BUILD TO INTERIM PGL,
 WHICH IS 4" BELOW FINAL PGL SHOWN HERE.
 FINAL GRADING TO BE PERFORMED UNDER
 SEPARATE CONTRACT. SEE DETAIL FOR
 INTERIM TYPICAL SECTION ON SHEET 157 FOR
 ADDITIONAL INFORMATION.



N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
PROFILE				
PLAN 76 OF 349				
SCALE: unless noted H: 1"=40' V: 1"=8'		DATE DEC 2021	DRAWN MS	CHK'D. SK
			APPR. MES	DRAWING NO. REV.



NOTE:
 CONTRACTOR TO BUILD TO INTERIM PGL,
 WHICH IS 4" BELOW FINAL PGL SHOWN HERE.
 FINAL GRADING TO BE PERFORMED UNDER
 SEPARATE CONTRACT. SEE DETAIL FOR
 INTERIM TYPICAL SECTION ON SHEET 157 FOR
 ADDITIONAL INFORMATION.

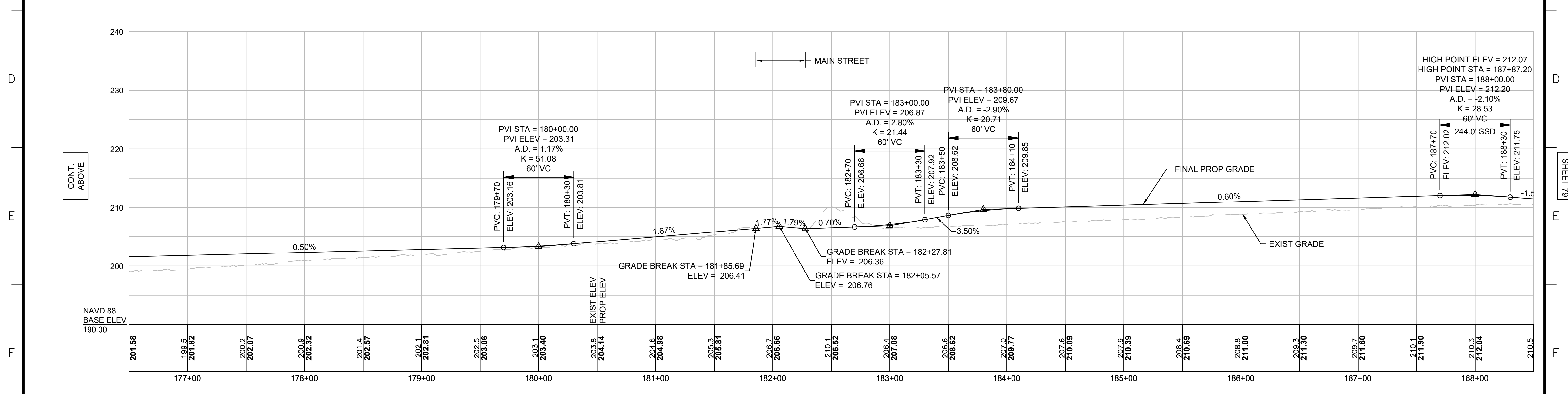
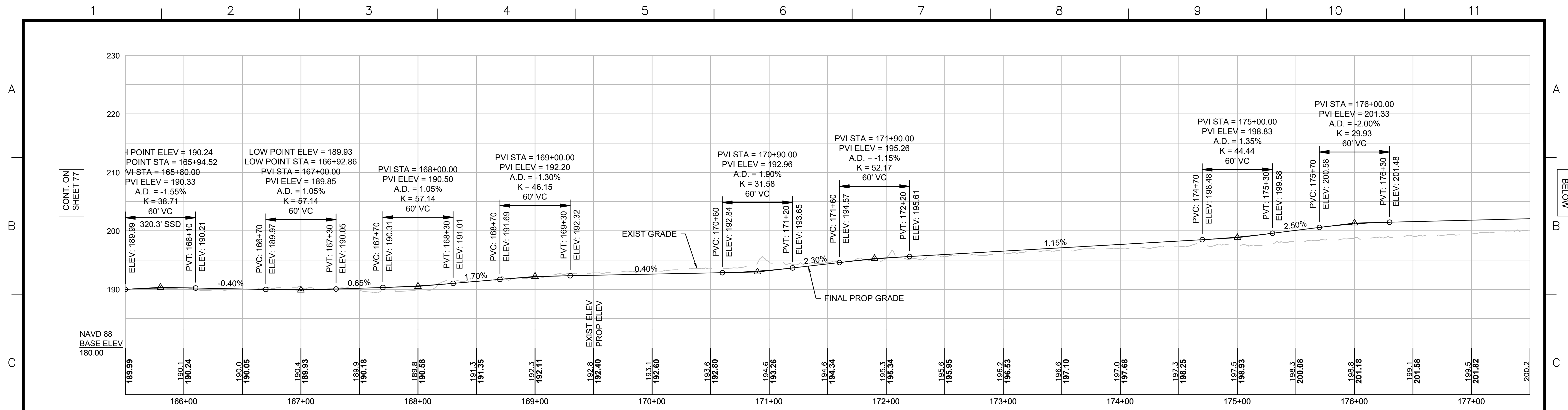


N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

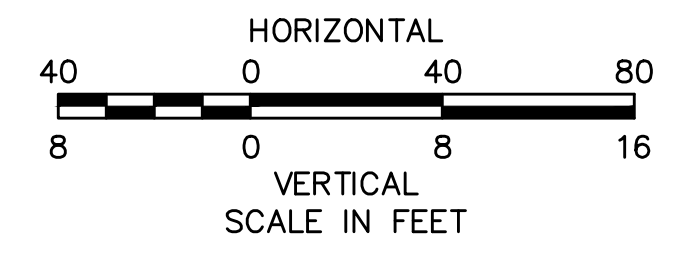
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SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 PROFILE
 PLAN 77 OF 349

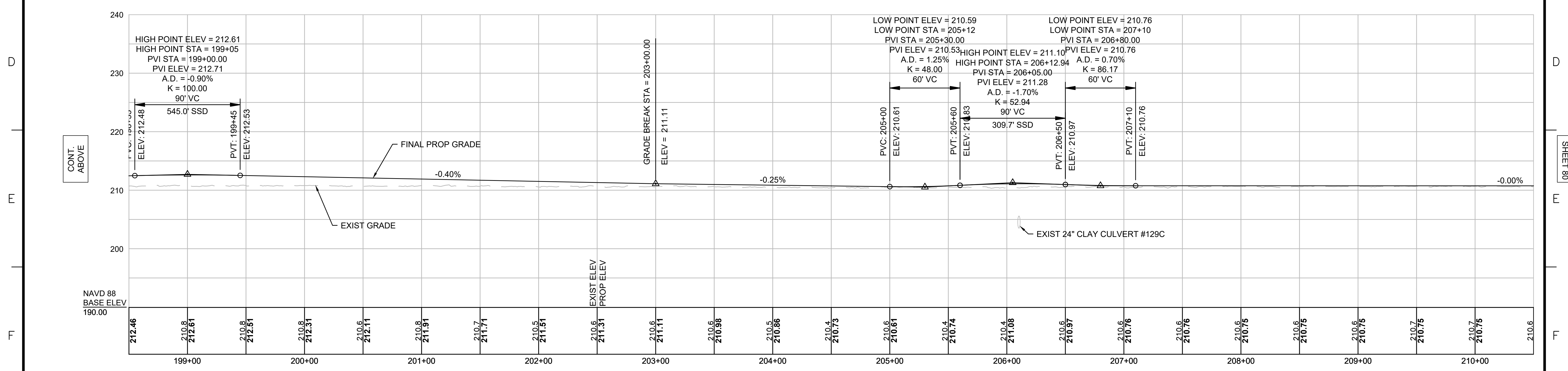
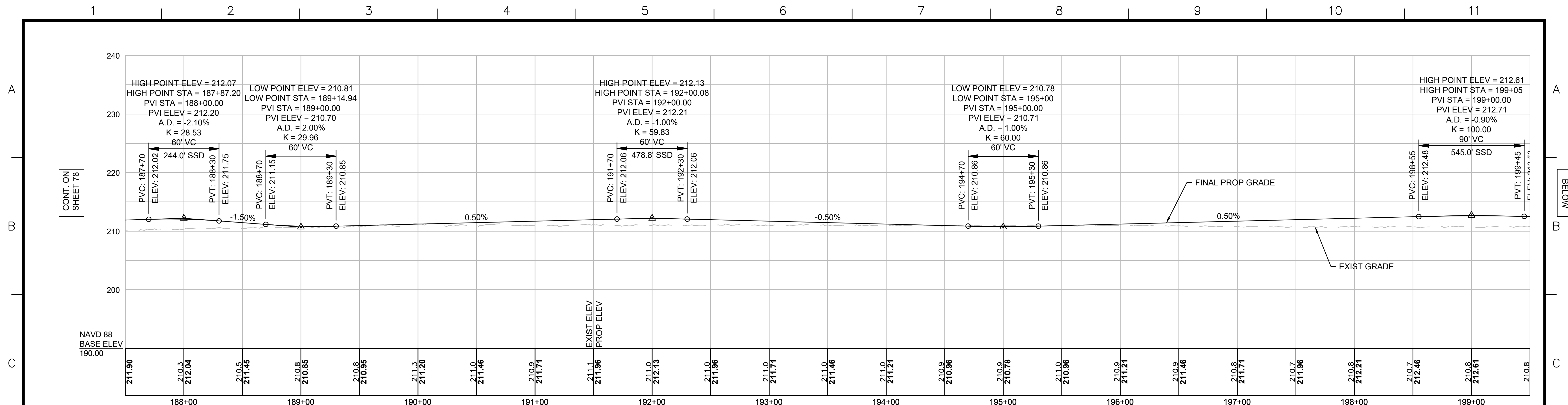
SCALE: unless noted H: 1"=40' V: 1"=8'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES	DRAWING NO.	REV.
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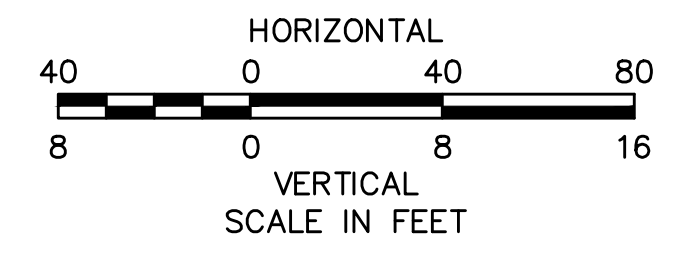
NOTE:
 CONTRACTOR TO BUILD TO INTERIM PGL,
 WHICH IS 4" BELOW FINAL PGL SHOWN HERE.
 FINAL GRADING TO BE PERFORMED UNDER
 SEPARATE CONTRACT. SEE DETAIL FOR
 INTERIM TYPICAL SECTION ON SHEET 157 FOR
 ADDITIONAL INFORMATION.



N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
PROFILE				
PLAN 78 OF 349				
SCALE: unless noted H: 1"=40' V: 1"=8'		DATE DRAWN DEC 2021 MS		CHK'D. APPR. SK MES
DRAWING NO.			REV.	



NOTE:
 CONTRACTOR TO BUILD TO INTERIM PGL,
 WHICH IS 4" BELOW FINAL PGL SHOWN HERE.
 FINAL GRADING TO BE PERFORMED UNDER
 SEPARATE CONTRACT. SEE DETAIL FOR
 INTERIM TYPICAL SECTION ON SHEET 157 FOR
 ADDITIONAL INFORMATION.



REVISION			
NO.	DESCRIPTION	BY	DATE

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 PROFILE

PLAN 79 OF 349

SCALE: unless noted H: 1"=40' V: 1"=8'	DATE DRAWN DEC 2021	CHK'D. MS	APP'R. SK	DRAWING NO. MES	REV.
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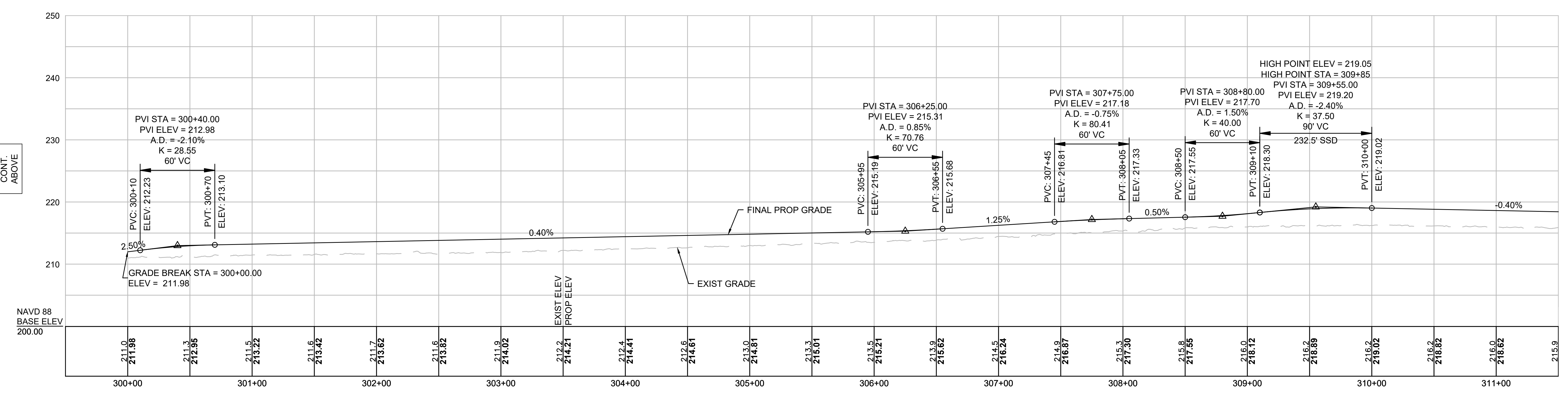
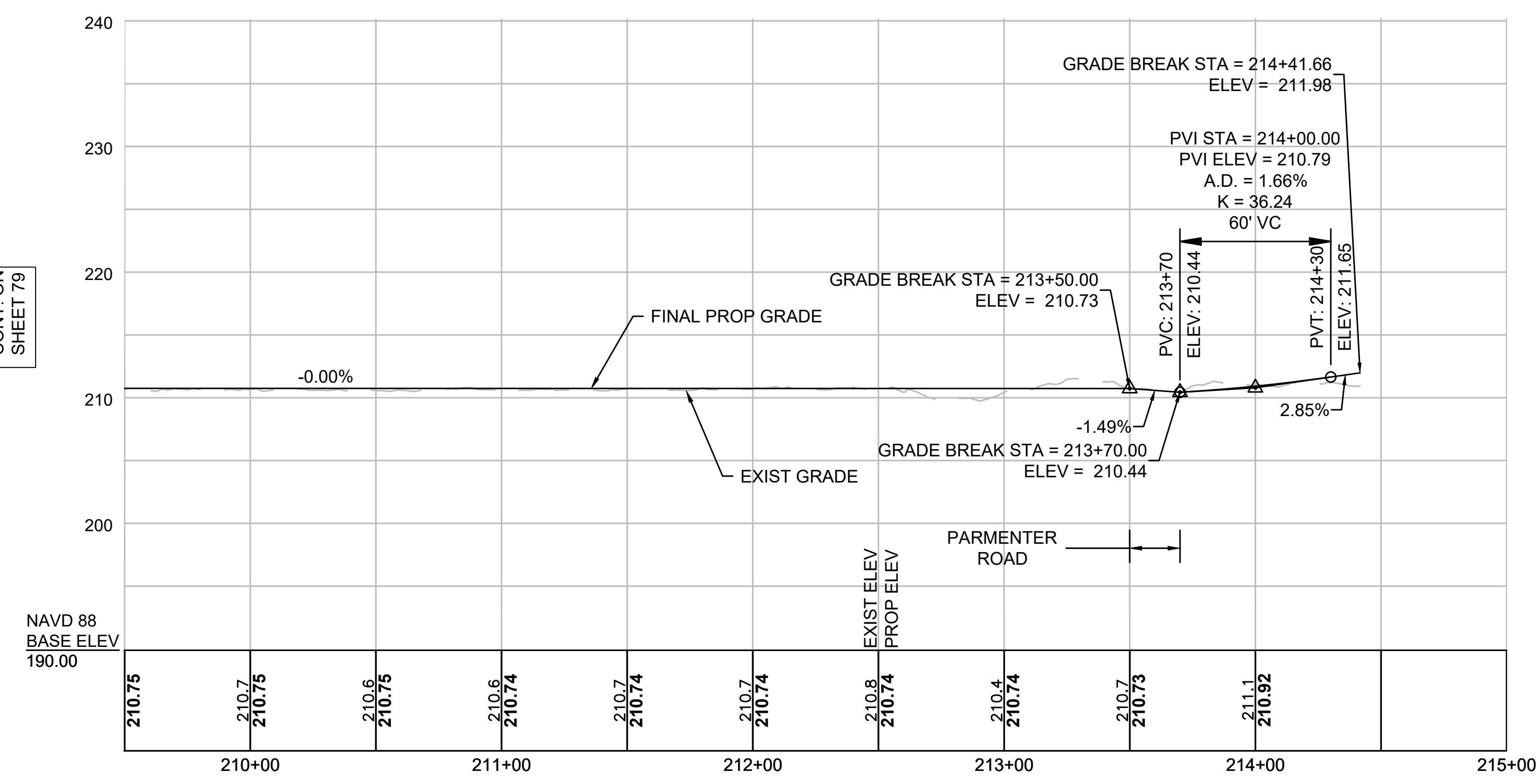
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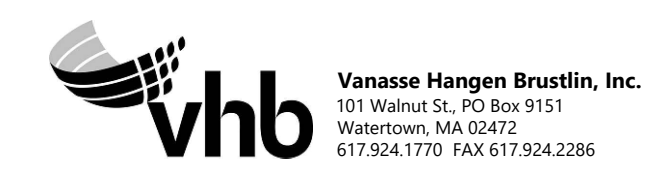
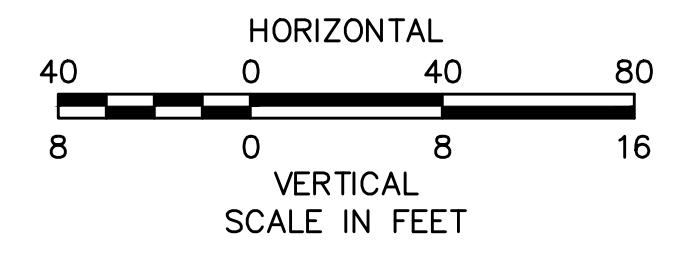
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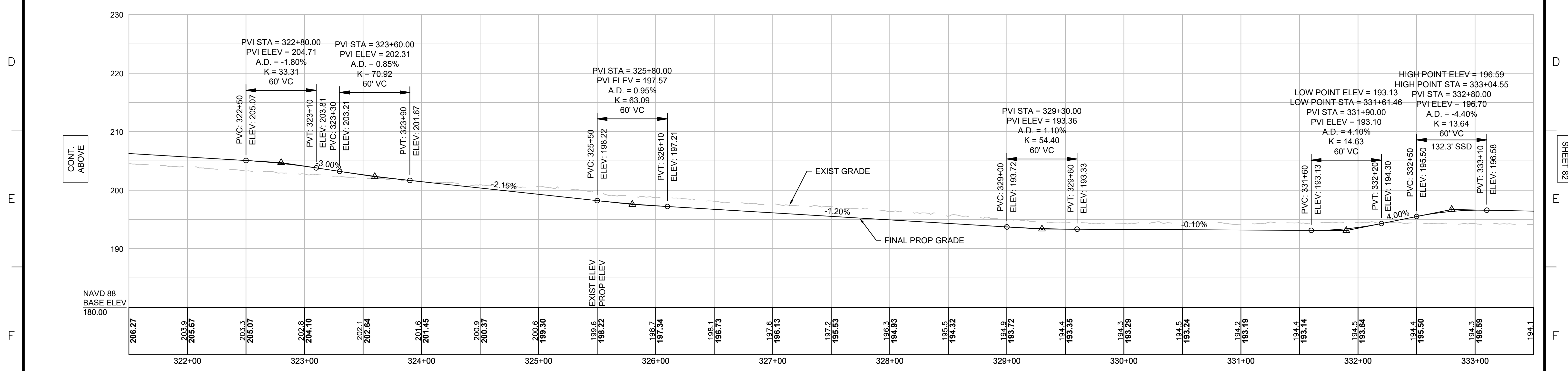
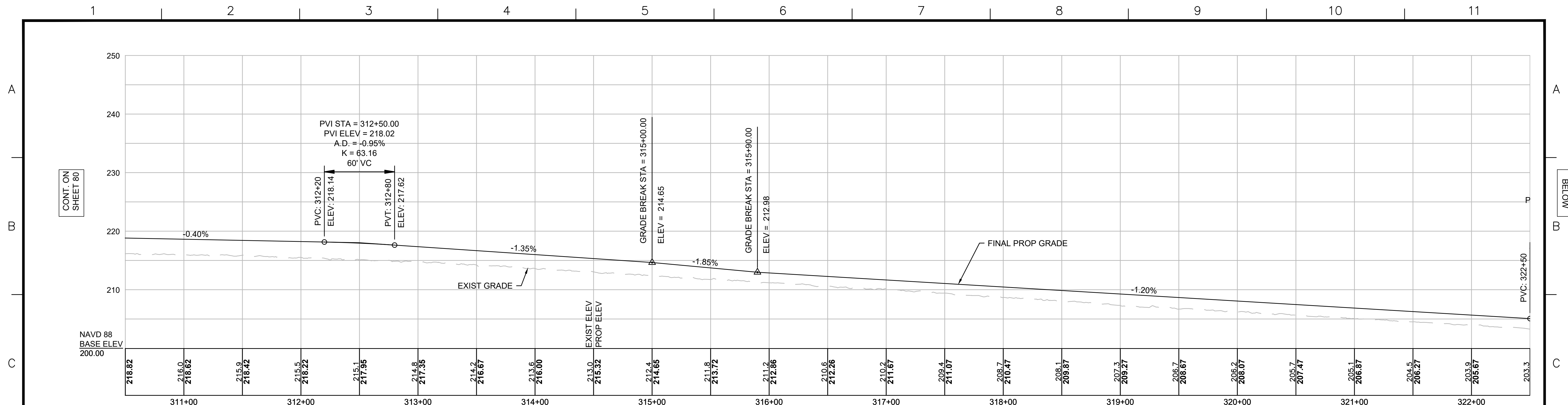


NOTE:
 CONTRACTOR TO BUILD TO INTERIM PGL, WHICH IS 4" BELOW FINAL PGL SHOWN HERE. FINAL GRADING TO BE PERFORMED UNDER SEPARATE CONTRACT. SEE DETAIL FOR INTERIM TYPICAL SECTION ON SHEET 157 FOR ADDITIONAL INFORMATION.

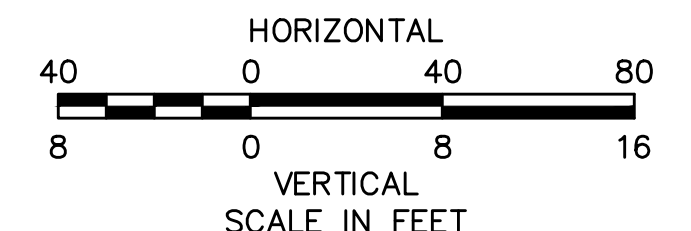


N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
PROFILE				
PLAN 80 OF 349				
SCALE: unless noted H: 1"=40' V: 1"=8'		DATE DRAWN DEC 2021 MS		CHK'D. APPR. SK MES
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NOTE:
 CONTRACTOR TO BUILD TO INTERIM PGL,
 WHICH IS 4" BELOW FINAL PGL SHOWN HERE.
 FINAL GRADING TO BE PERFORMED UNDER
 SEPARATE CONTRACT. SEE DETAIL FOR
 INTERIM TYPICAL SECTION ON SHEET 157 FOR
 ADDITIONAL INFORMATION.



NO.		DESCRIPTION	BY	DATE	APPR.
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
PROFILE					
PLAN 81 OF 349					
SCALE: unless noted H: 1"=40' V: 1"=8'		DATE	DRAWN	CHK'D	APPR.
		DEC 2021	MS	SK	MES
DRAWING NO.					REV.
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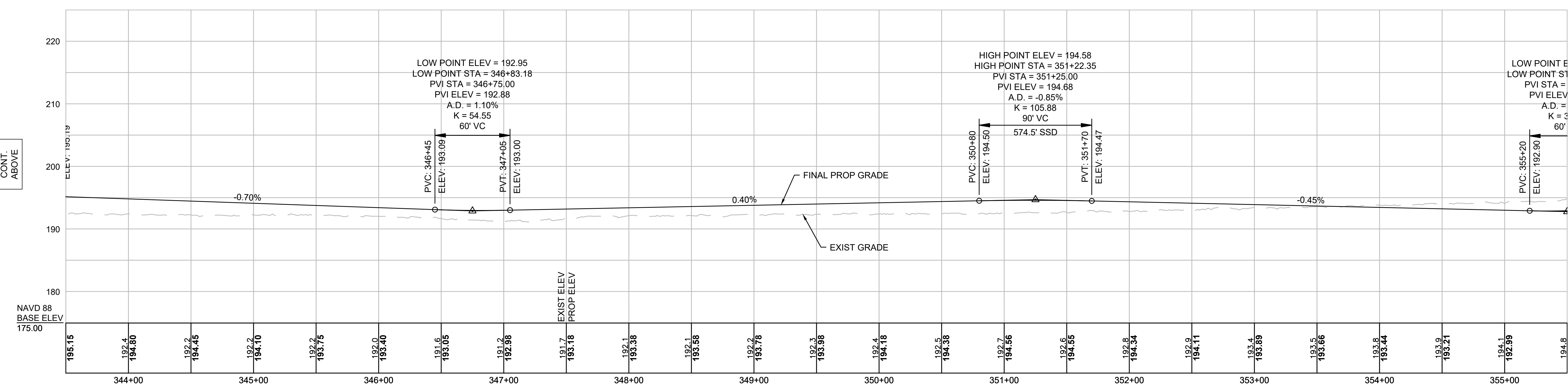
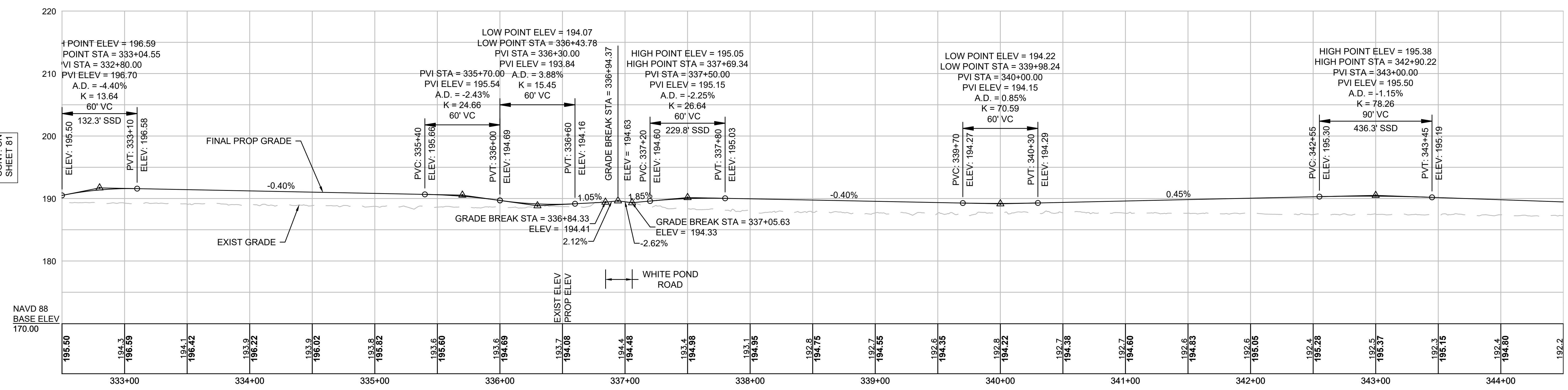
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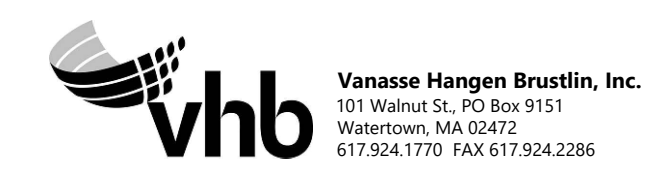
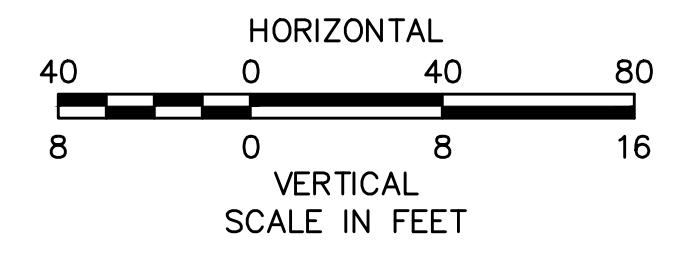
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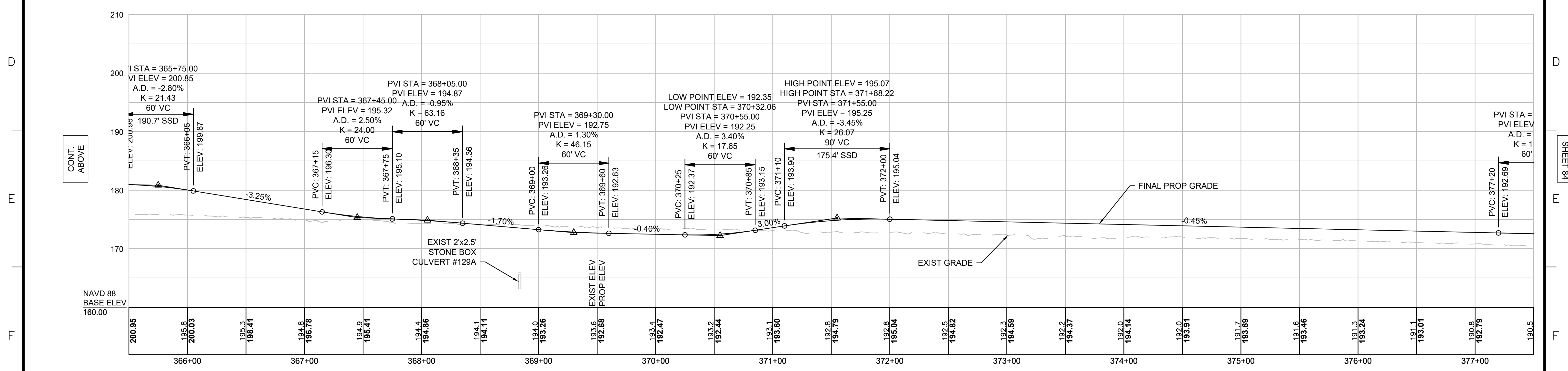
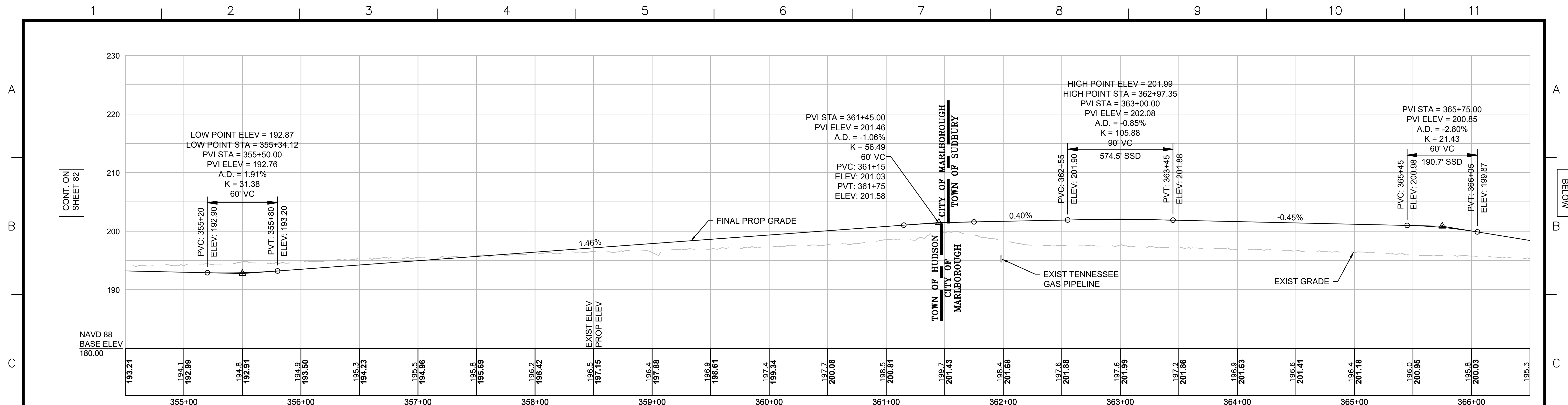


NOTE:
 CONTRACTOR TO BUILD TO INTERIM PGL, WHICH IS 4" BELOW FINAL PGL SHOWN HERE. FINAL GRADING TO BE PERFORMED UNDER SEPARATE CONTRACT. SEE DETAIL FOR INTERIM TYPICAL SECTION ON SHEET 157 FOR ADDITIONAL INFORMATION.

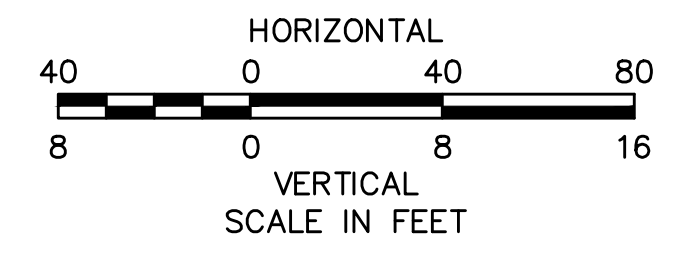


NO.		DESCRIPTION	BY	DATE	APPR.
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
PROFILE					
PLAN 82 OF 349					
SCALE: unless noted H: 1"=40' V: 1"=8'		DATE	DRAWN	CHK'D	APPR.
		DEC 2021	MS	SK	MES
DRAWING NO.	REV.				

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NOTE:
 CONTRACTOR TO BUILD TO INTERIM PGL,
 WHICH IS 4" BELOW FINAL PGL SHOWN HERE.
 FINAL GRADING TO BE PERFORMED UNDER
 SEPARATE CONTRACT. SEE DETAIL FOR
 INTERIM TYPICAL SECTION ON SHEET 157 FOR
 ADDITIONAL INFORMATION.



N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
PROFILE				
PLAN 83 OF 349				
SCALE: unless noted H: 1"=40' V: 1"=8'		DATE DEC 2021	DRAWN MS	CHK'D. SK
		APPR. MES	DRAWING NO. REV.	

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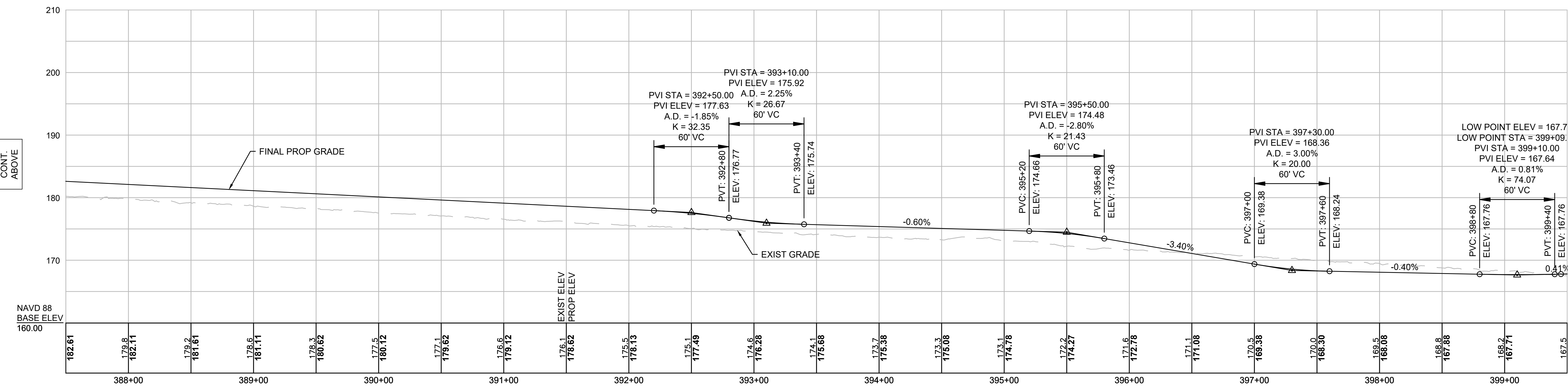
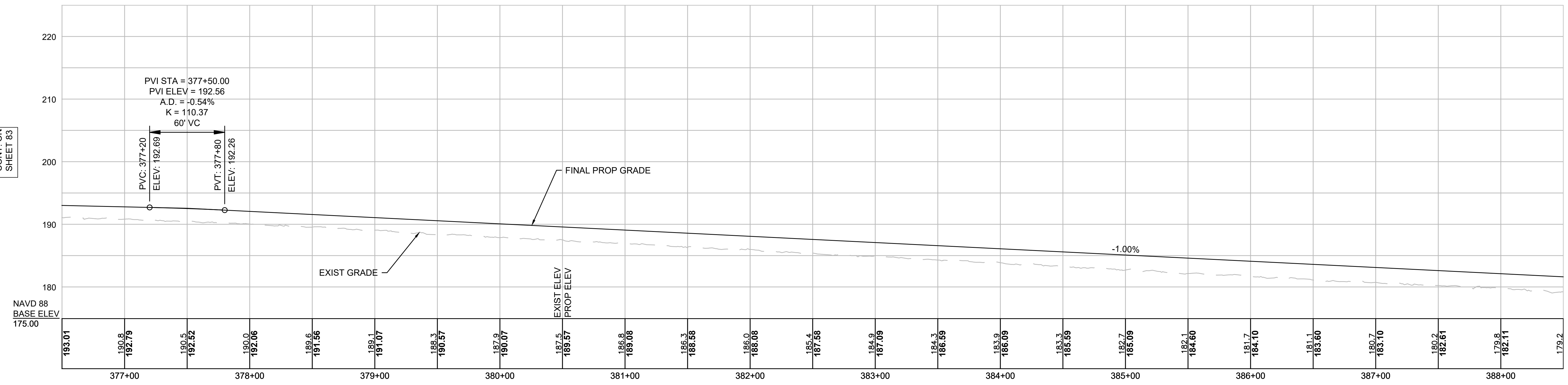
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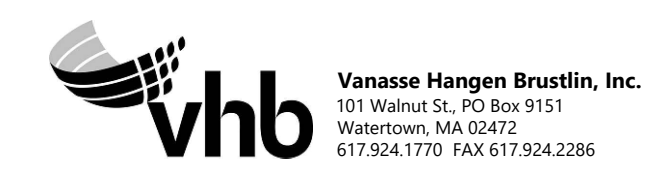
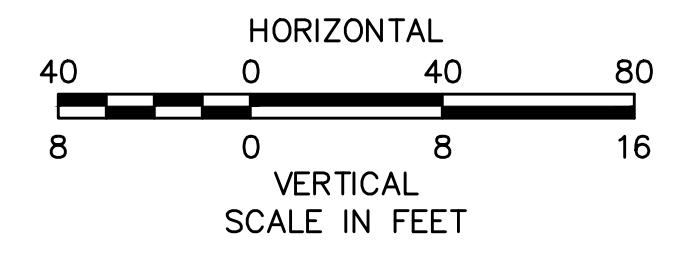
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NOTE:
CONTRACTOR TO BUILD TO INTERIM PGL, WHICH IS 4" BELOW FINAL PGL SHOWN HERE. FINAL GRADING TO BE PERFORMED UNDER SEPARATE CONTRACT. SEE DETAIL FOR INTERIM TYPICAL SECTION ON SHEET 157 FOR ADDITIONAL INFORMATION.



N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
PROFILE				
PLAN 84 OF 349				
SCALE: unless noted H: 1"=40' V: 1"=8'		DATE	DRAWN	CHK'D
		DEC 2021	MS	SK
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DRAWING NO.			REV.	

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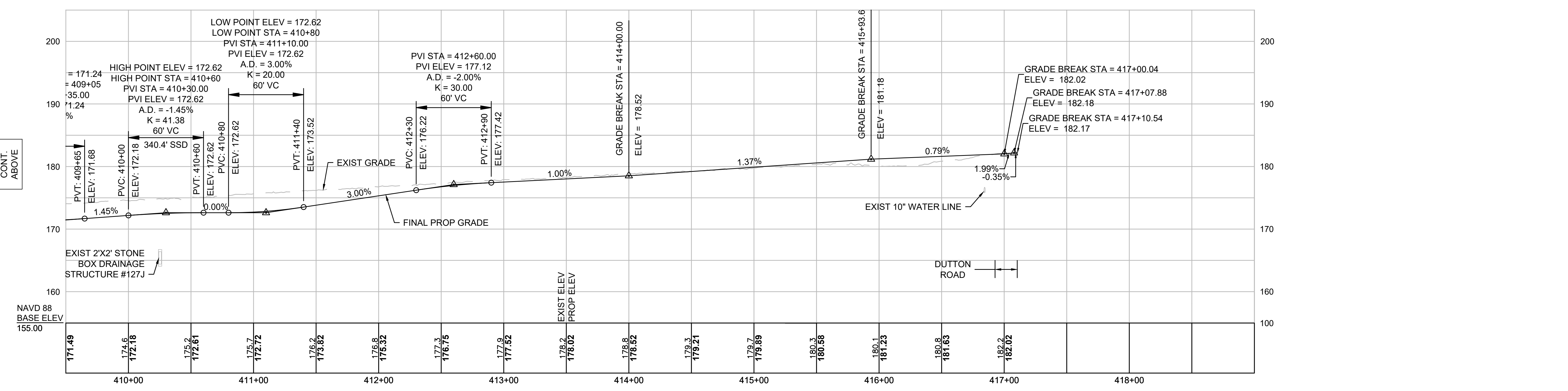
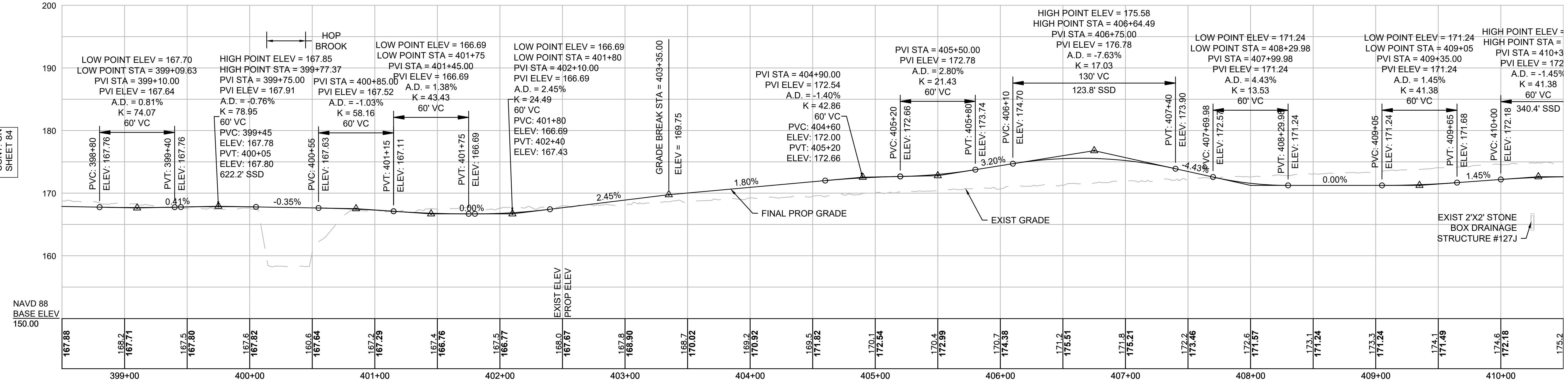
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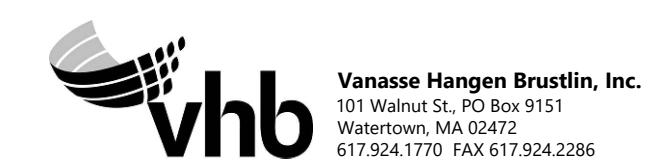
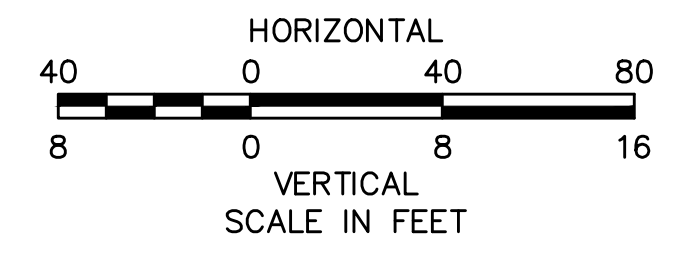
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NOTE:
CONTRACTOR TO BUILD TO INTERIM PGL, WHICH IS 4" BELOW FINAL PGL SHOWN HERE. FINAL GRADING TO BE PERFORMED UNDER SEPARATE CONTRACT. SEE DETAIL FOR INTERIM TYPICAL SECTION ON SHEET 157 FOR ADDITIONAL INFORMATION.



REVISION			
N.O.	DESCRIPTION	BY	DATE

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
PROFILE

PLAN 85 OF 349

SCALE: unless noted H: 1"=40' V: 1"=8'	DATE DRAWN DEC 2021 MS	CHK'D. SK	APPR. MS	DRAWING NO. 	REV.
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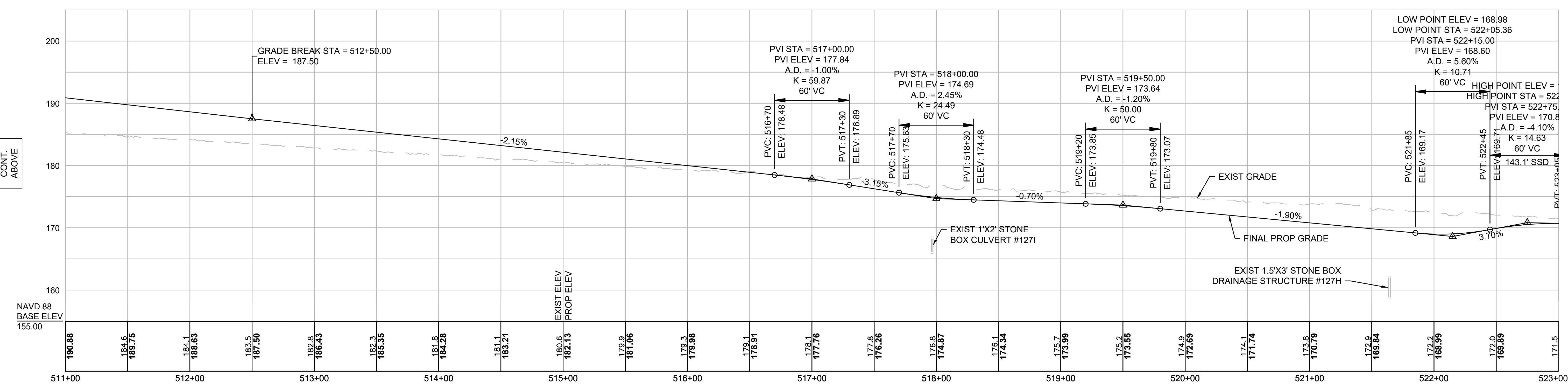
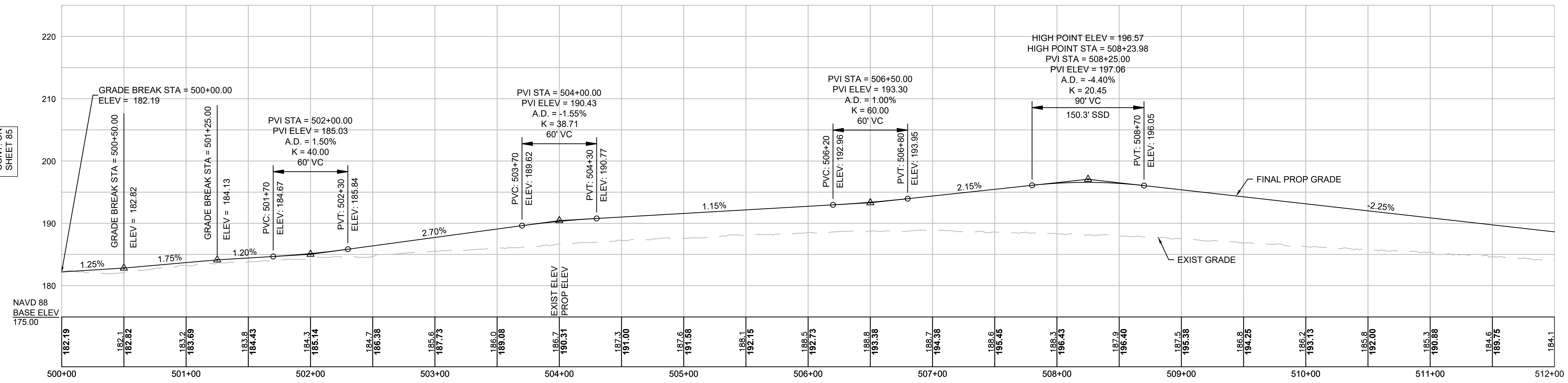
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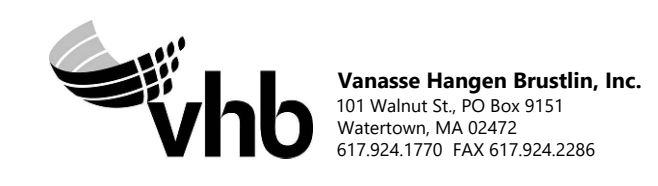
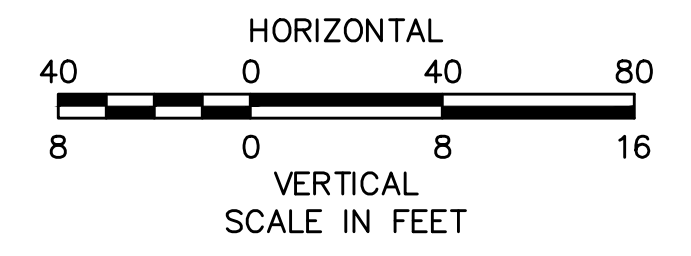
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NOTE:
CONTRACTOR TO BUILD TO INTERIM PGL, WHICH IS 4" BELOW FINAL PGL SHOWN HERE. FINAL GRADING TO BE PERFORMED UNDER SEPARATE CONTRACT. SEE DETAIL FOR INTERIM TYPICAL SECTION ON SHEET 157 FOR ADDITIONAL INFORMATION.



REVISION			
N.O.	DESCRIPTION	BY	DATE

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
PROFILE

PLAN 86 OF 349

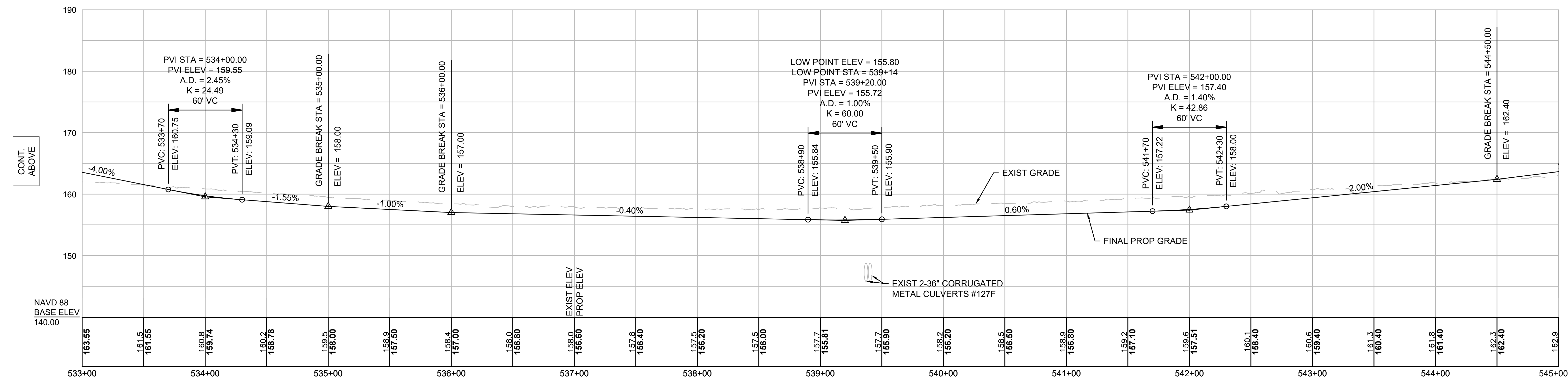
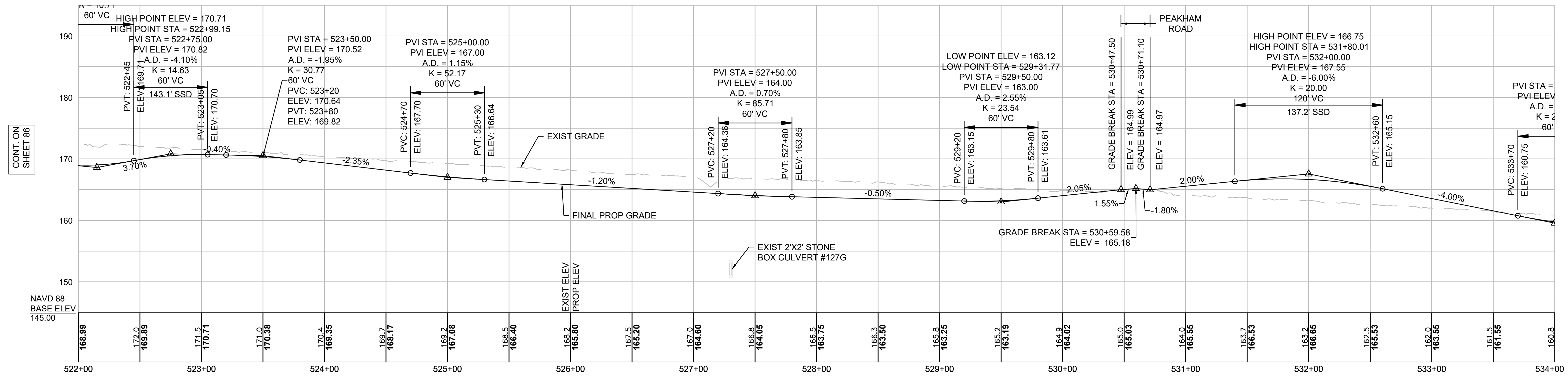
SCALE: unless noted H: 1"=40' V: 1"=8'	DATE DRAWN DEC 2021	CHK'D. MS	APPR. SK	DRAWING NO. 	REV.
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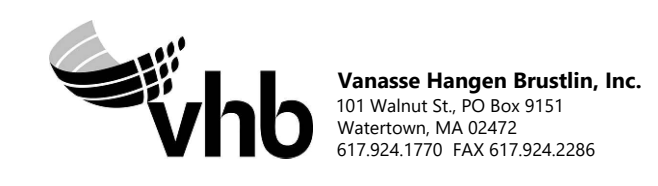
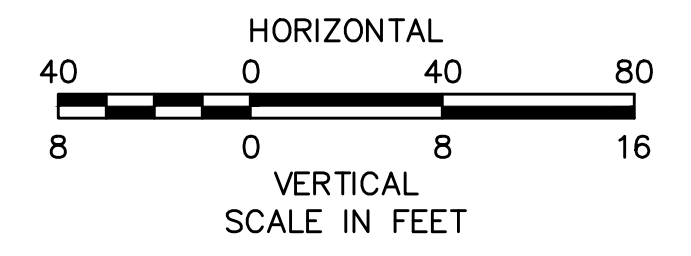
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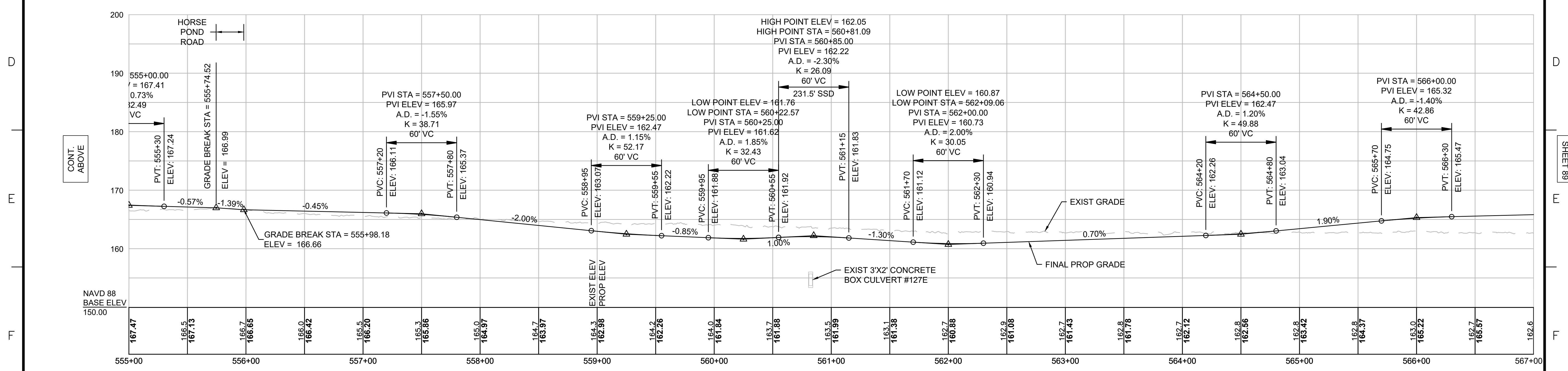
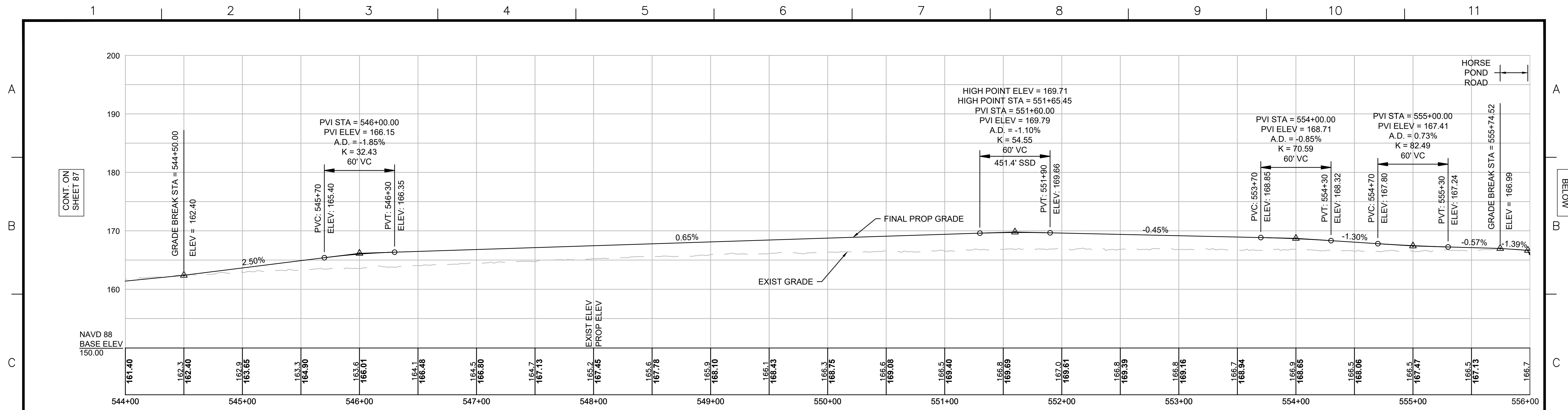


NOTE:
CONTRACTOR TO BUILD TO INTERIM PGL, WHICH IS 4" BELOW FINAL PGL SHOWN HERE. FINAL GRADING TO BE PERFORMED UNDER SEPARATE CONTRACT. SEE DETAIL FOR INTERIM TYPICAL SECTION ON SHEET 157 FOR ADDITIONAL INFORMATION.

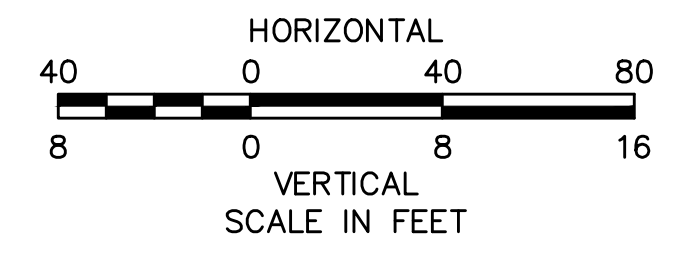


NO.		DESCRIPTION	BY	DATE	APPR.
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
PROFILE					
PLAN 87 OF 349					
SCALE: unless noted H: 1"=40' V: 1"=8'	DATE DEC 2021	DRAWN MS	CHK'D SK	APPR. MES	DRAWING NO. REV.

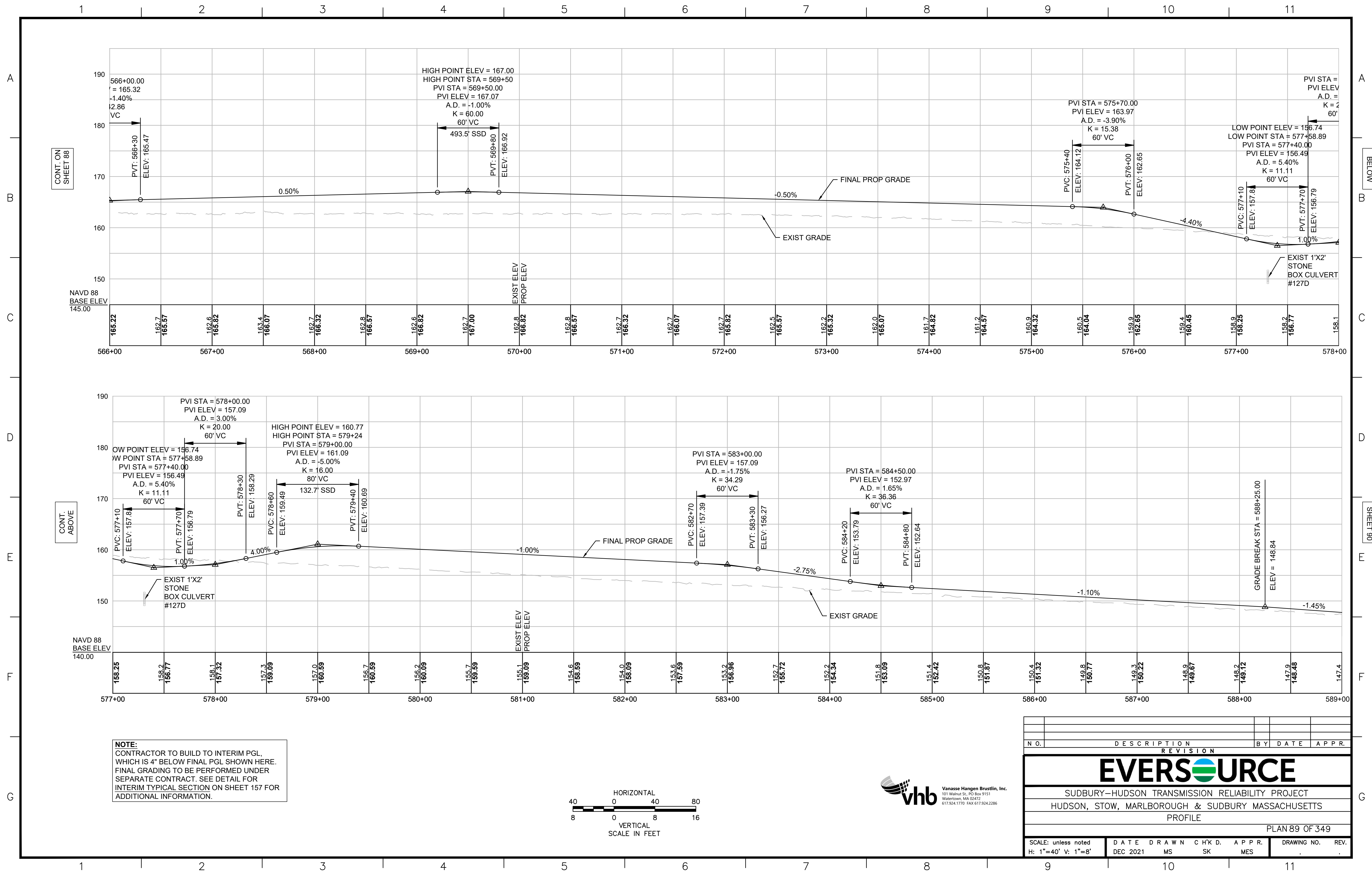
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NOTE:
 CONTRACTOR TO BUILD TO INTERIM PGL,
 WHICH IS 4" BELOW FINAL PGL SHOWN HERE.
 FINAL GRADING TO BE PERFORMED UNDER
 SEPARATE CONTRACT. SEE DETAIL FOR
 INTERIM TYPICAL SECTION ON SHEET 157 FOR
 ADDITIONAL INFORMATION.



N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
PROFILE				
PLAN 88 OF 349				
SCALE: unless noted H: 1"=40' V: 1"=8'		DATE DRAWN DEC 2021 MS		CHK'D. APPR. SK MES
DRAWING NO.			REV.	



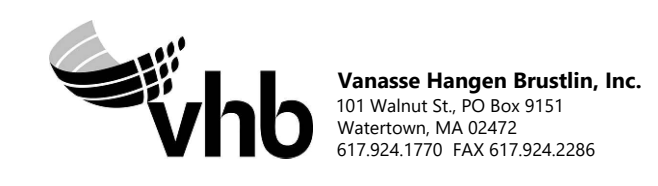
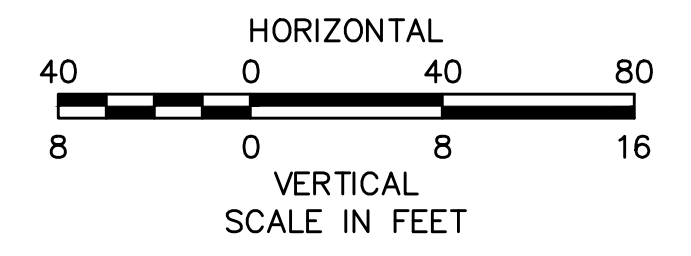
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NOTE:
 CONTRACTOR TO BUILD TO INTERIM PGL, WHICH IS 4" BELOW FINAL PGL SHOWN HERE. FINAL GRADING TO BE PERFORMED UNDER SEPARATE CONTRACT. SEE DETAIL FOR INTERIM TYPICAL SECTION ON SHEET 157 FOR ADDITIONAL INFORMATION.



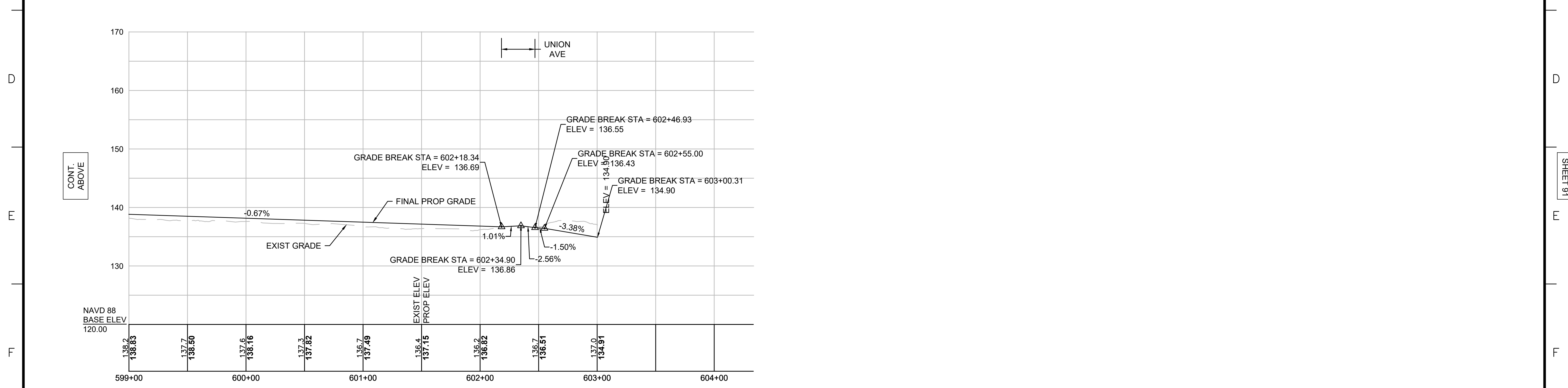
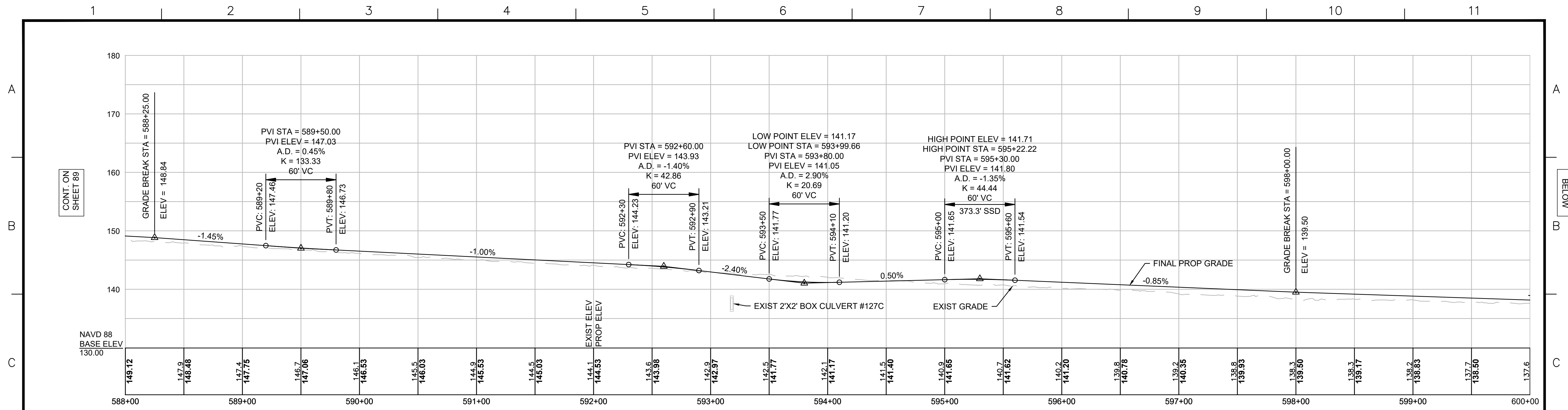
N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

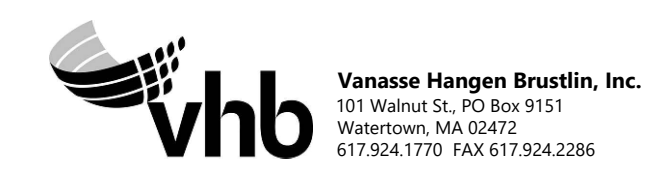
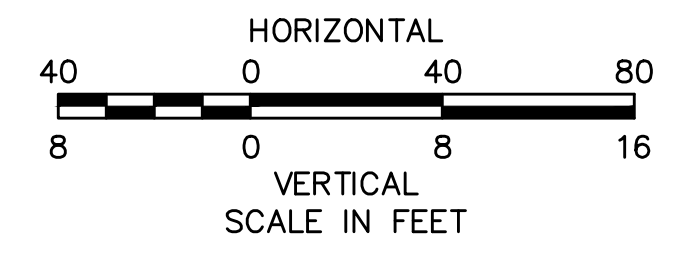
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 PROFILE

PLAN 89 OF 349

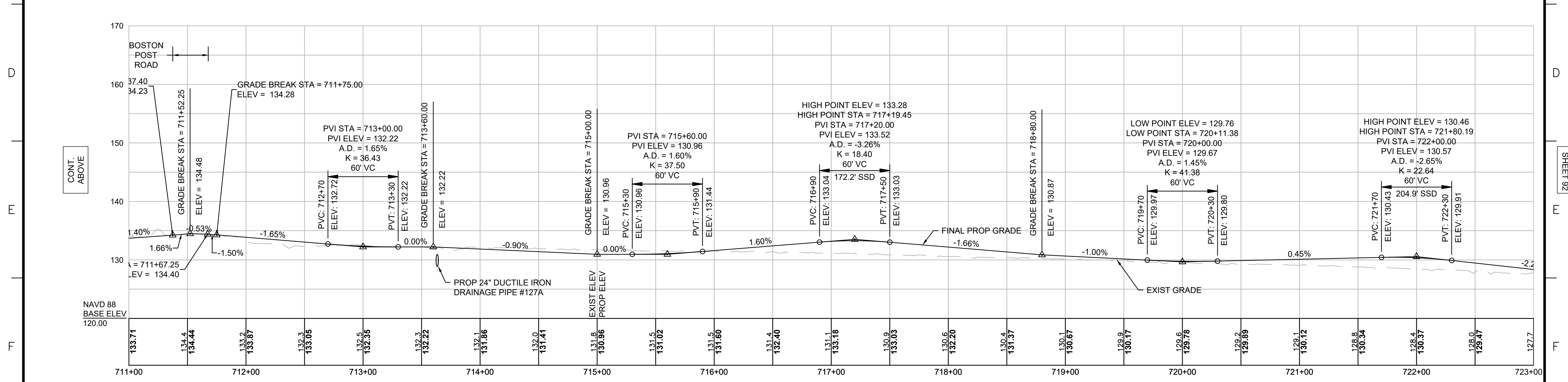
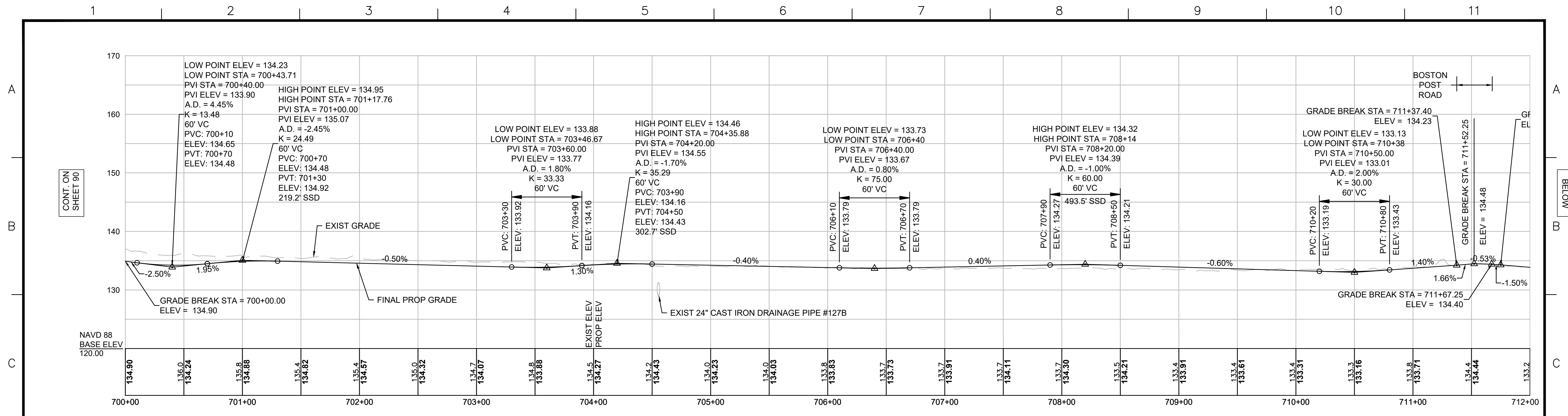
SCALE: unless noted H: 1"=40' V: 1"=8'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES	DRAWING NO.	REV.
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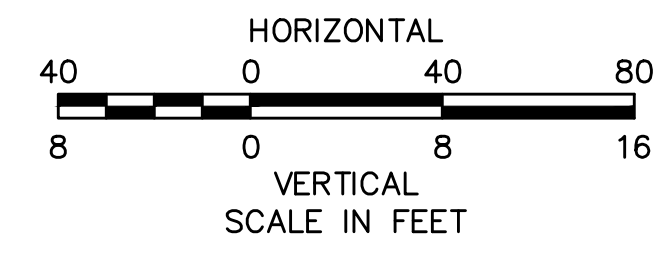
NOTE:
 CONTRACTOR TO BUILD TO INTERIM PGL,
 WHICH IS 4" BELOW FINAL PGL SHOWN HERE.
 FINAL GRADING TO BE PERFORMED UNDER
 SEPARATE CONTRACT. SEE DETAIL FOR
 INTERIM TYPICAL SECTION ON SHEET 157 FOR
 ADDITIONAL INFORMATION.



N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
PROFILE				
PLAN 90 OF 349				
SCALE: unless noted H: 1"=40' V: 1"=8'		DATE DRAWN DEC 2021 MS		CH'K D. APPR. SK MES
DRAWING NO.			REV.	



NOTE:
 CONTRACTOR TO BUILD TO INTERIM PGL,
 WHICH IS 4" BELOW FINAL PGL SHOWN HERE.
 FINAL GRADING TO BE PERFORMED UNDER
 SEPARATE CONTRACT. SEE DETAIL FOR
 INTERIM TYPICAL SECTION ON SHEET 157 FOR
 ADDITIONAL INFORMATION.



N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 PROFILE

PLAN 91 OF 349

SCALE: unless noted H: 1"=40' V: 1"=8'	DATE DRAWN DEC 2021	CHK'D. MS	APPR. SK	MES
DRAWING NO.	REV.			

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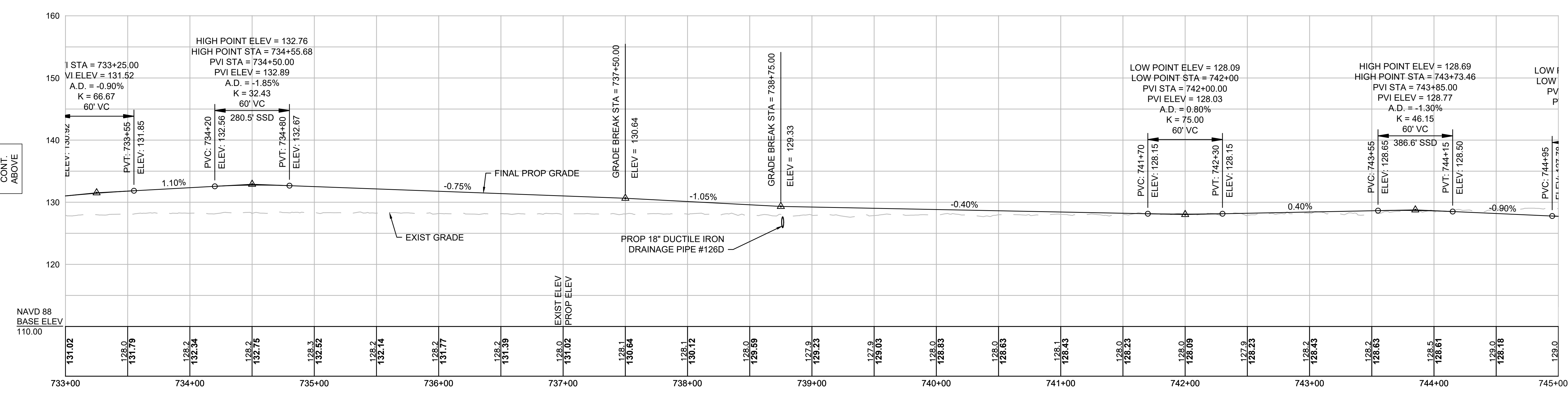
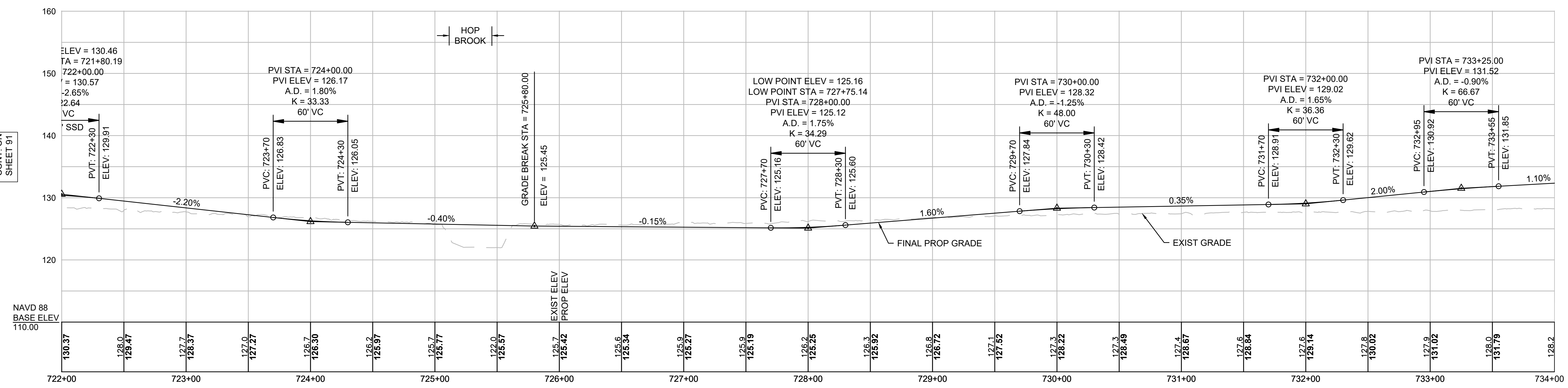
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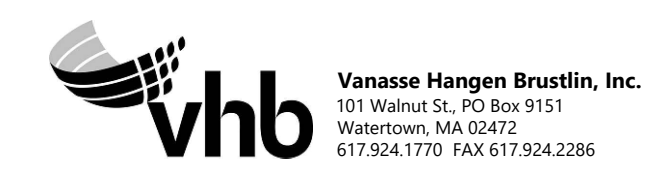
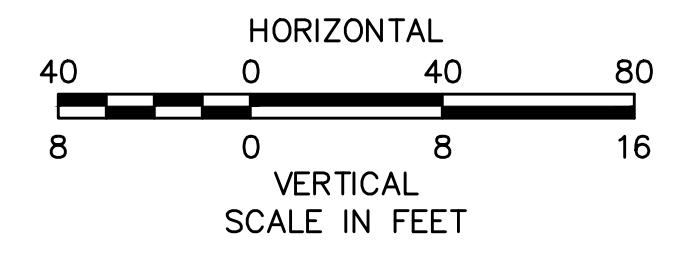
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NOTE:
 CONTRACTOR TO BUILD TO INTERIM PGL, WHICH IS 4" BELOW FINAL PGL SHOWN HERE. FINAL GRADING TO BE PERFORMED UNDER SEPARATE CONTRACT. SEE DETAIL FOR INTERIM TYPICAL SECTION ON SHEET 157 FOR ADDITIONAL INFORMATION.



N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
PROFILE				
PLAN 92 OF 349				
SCALE: unless noted H: 1"=40' V: 1"=8'		DATE DRAWN DEC 2021 MS		CH'K D. APPR. SK MES
DRAWING NO.			REV.	

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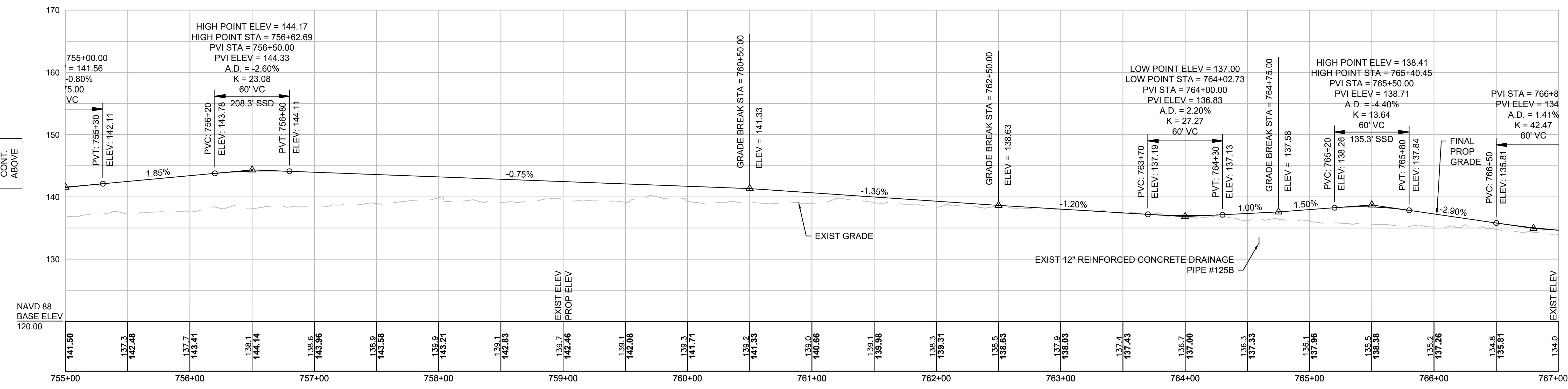
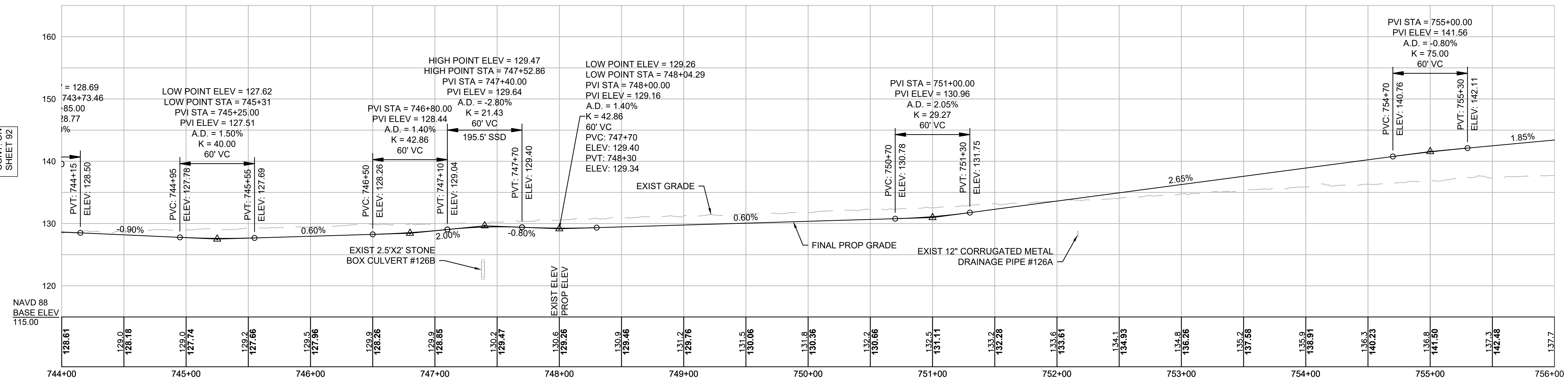
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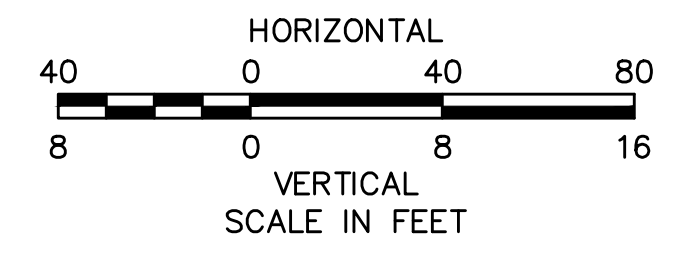
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NOTE:
CONTRACTOR TO BUILD TO INTERIM PGL, WHICH IS 4" BELOW FINAL PGL SHOWN HERE. FINAL GRADING TO BE PERFORMED UNDER SEPARATE CONTRACT. SEE DETAIL FOR INTERIM TYPICAL SECTION ON SHEET 157 FOR ADDITIONAL INFORMATION.

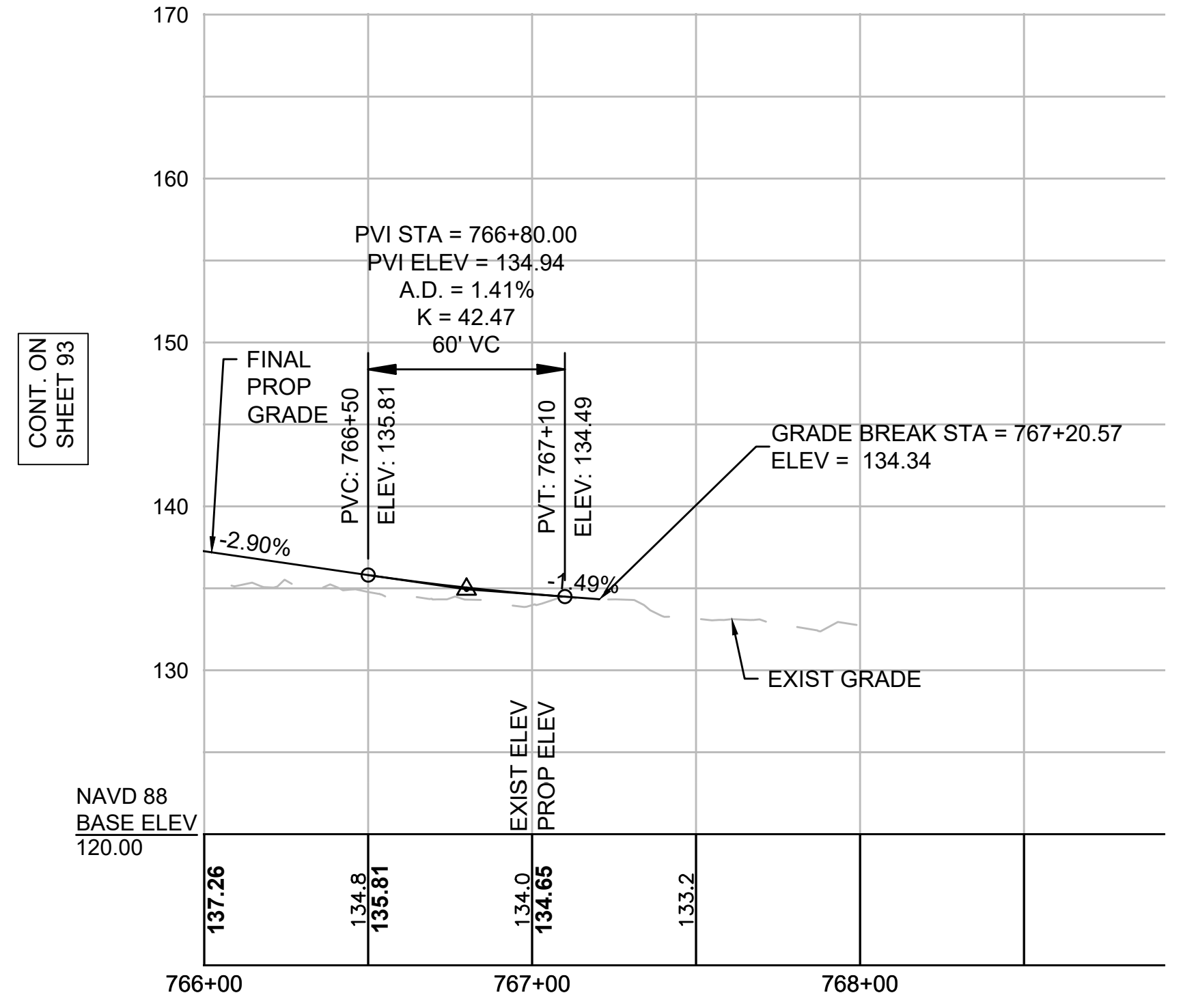


N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
PROFILE				
PLAN 93 OF 349				
SCALE: unless noted H: 1"=40' V: 1"=8'		DATE DRAWN DEC 2021 MS		CHK'D. APPR. SK MES
DRAWING NO.			REV.	

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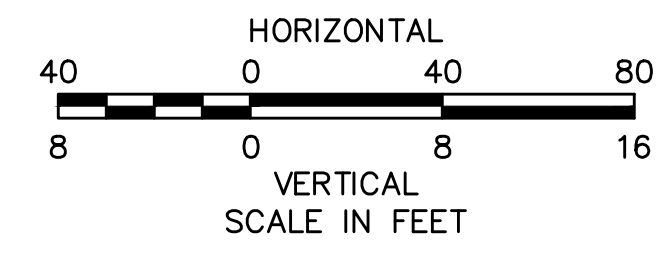
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NOTE:
CONTRACTOR TO BUILD TO INTERIM PGL, WHICH IS 4" BELOW FINAL PGL SHOWN HERE. FINAL GRADING TO BE PERFORMED UNDER SEPARATE CONTRACT. SEE DETAIL FOR INTERIM TYPICAL SECTION ON SHEET 157 FOR ADDITIONAL INFORMATION.



N O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
PROFILE				
PLAN 94 OF 349				
SCALE: unless noted H: 1"=40' V: 1"=8'		DATE	DRAWN	CHK'D
		DEC 2021	MS	SK
		APPR.	MES	
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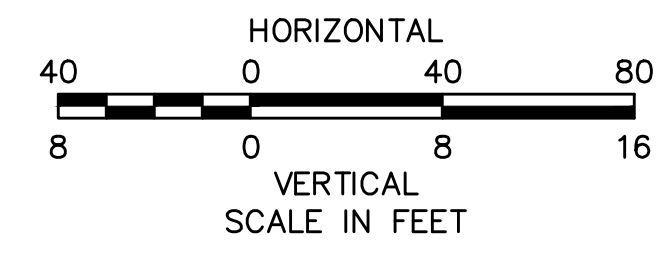
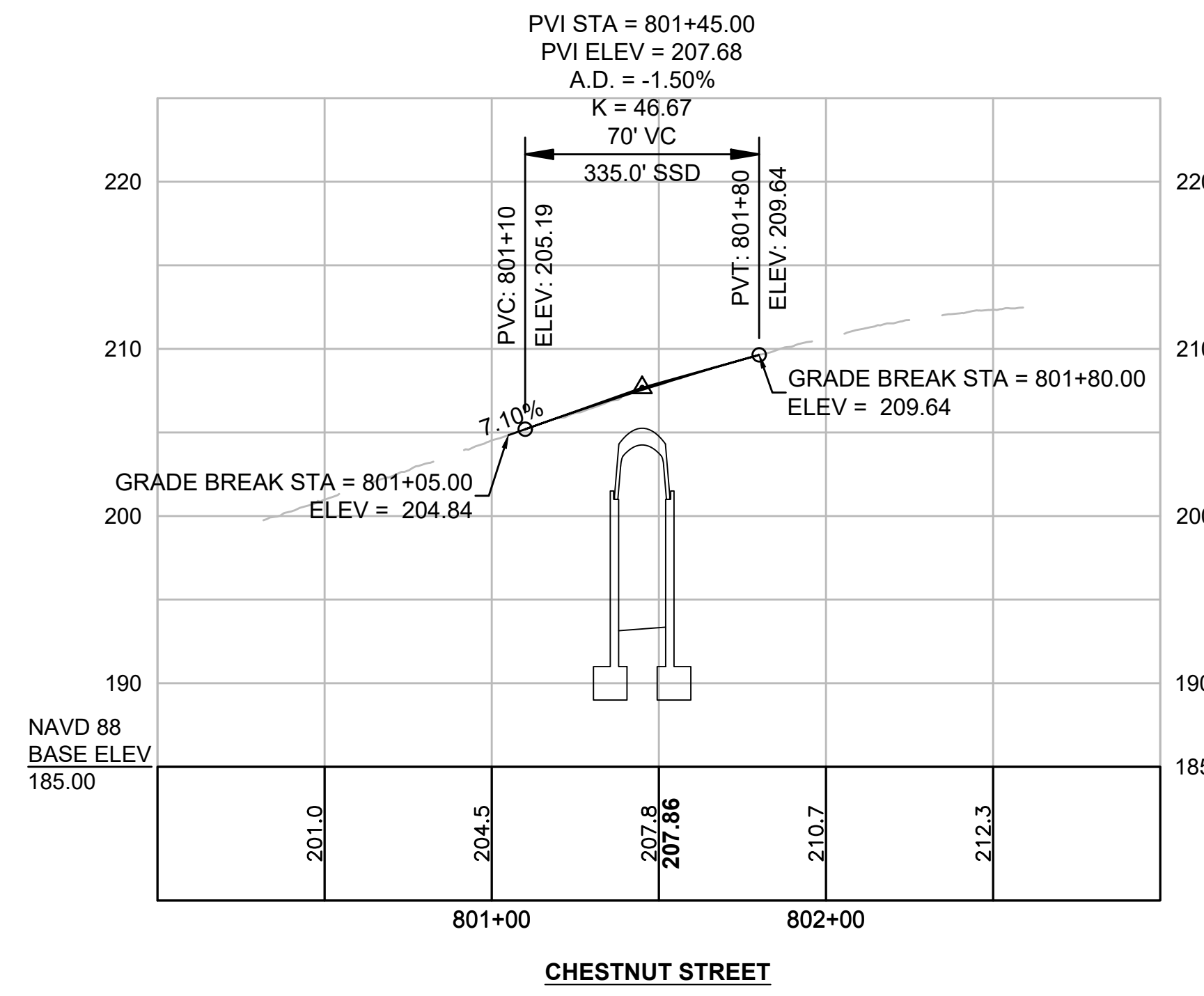
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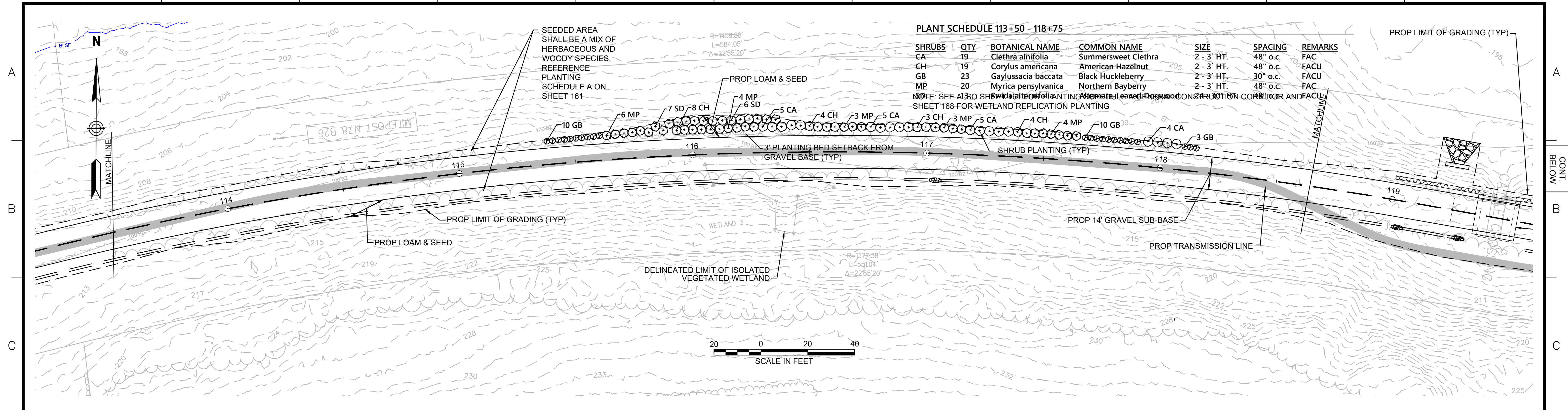
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N O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
PROFILE				
PLAN 95 OF 349				
SCALE: unless noted H: 1"=40' V: 1"=8'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MS
DRAWING NO.	REV.			

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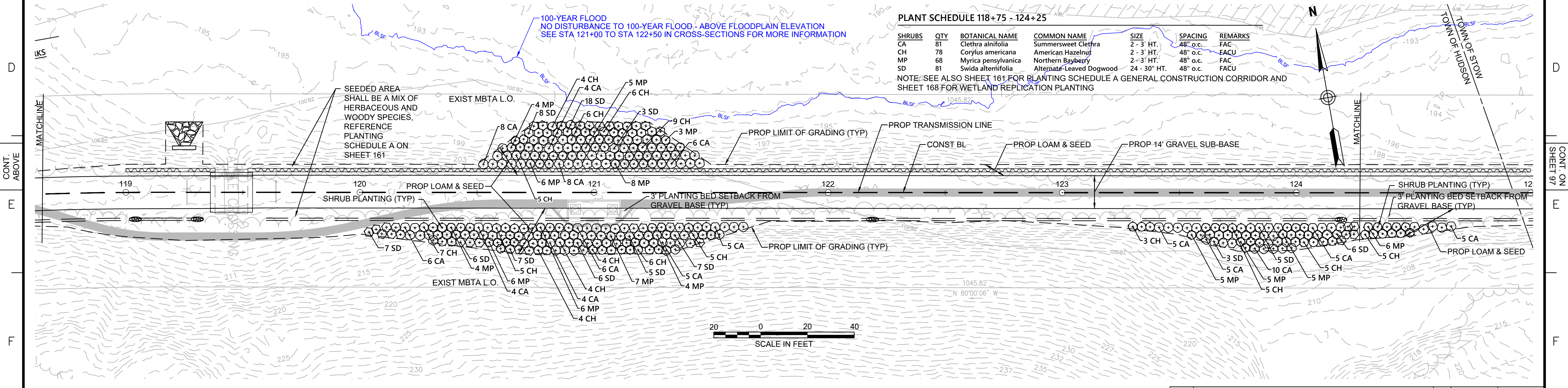
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PLANT SCHEDULE 113+50 - 118+75

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CA	19	Clethra alnifolia	Summersweet Clethra	2 - 3' HT.	48" o.c.	FAC
CH	19	Corylus americana	American Hazelnut	2 - 3' HT.	48" o.c.	FACU
GB	23	Gaylussacia baccata	Black Huckleberry	2 - 3' HT.	30" o.c.	FACU
MP	20	Myrica pensylvanica	Northern Bayberry	2 - 3' HT.	48" o.c.	FAC

NOTE: SEE ALSO SHEET 161 FOR PLANTING SCHEDULE A GENERAL CONSTRUCTION CORRIDOR AND SHEET 168 FOR WETLAND REPLICATION PLANTING



PLANT SCHEDULE 118+75 - 124+25

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CA	81	Clethra alnifolia	Summersweet Clethra	2 - 3' HT.	48" o.c.	FAC
CH	78	Corylus americana	American Hazelnut	2 - 3' HT.	48" o.c.	FACU
MP	68	Myrica pensylvanica	Northern Bayberry	2 - 3' HT.	48" o.c.	FACU
SD	81	Swida alternifolia	Alternate-Leaved Dogwood	24 - 30' HT.	48" o.c.	FACU

NOTE: SEE ALSO SHEET 161 FOR PLANTING SCHEDULE A GENERAL CONSTRUCTION CORRIDOR AND SHEET 168 FOR WETLAND REPLICATION PLANTING

NOTE:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).



N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
LANDSCAPE PLANS				
PLAN 96 OF 349				
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN CW	CHK'D. JG	APPR. JG
DRAWING NO.	REV.			

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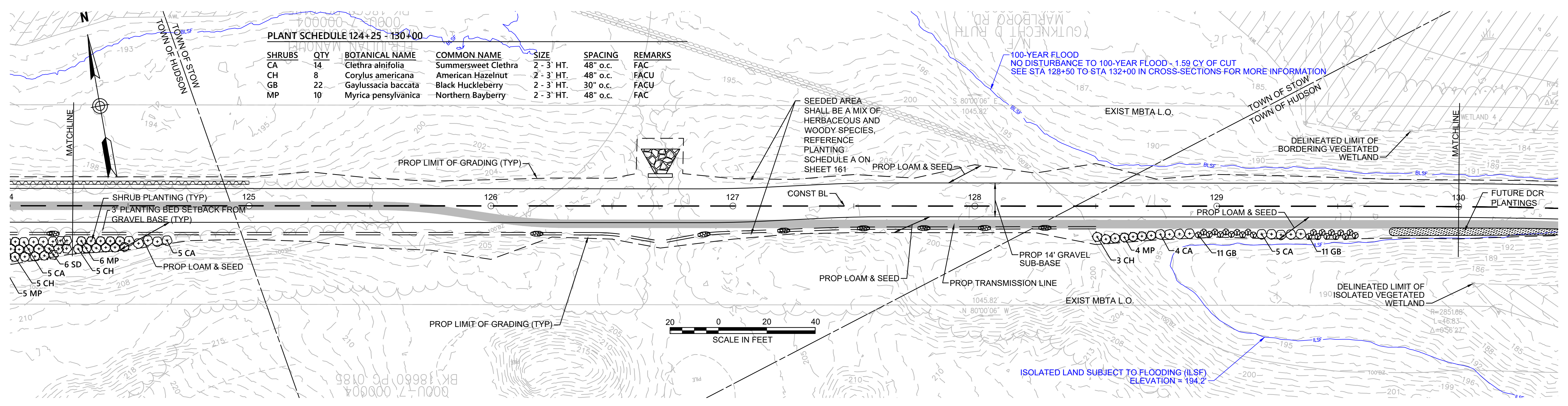
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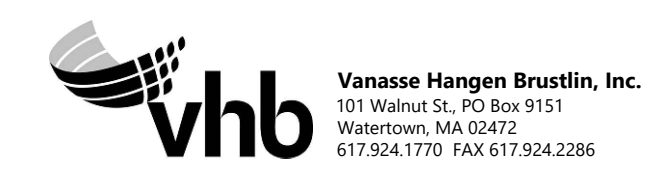
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PLANT SCHEDULE 124+25 - 130+00

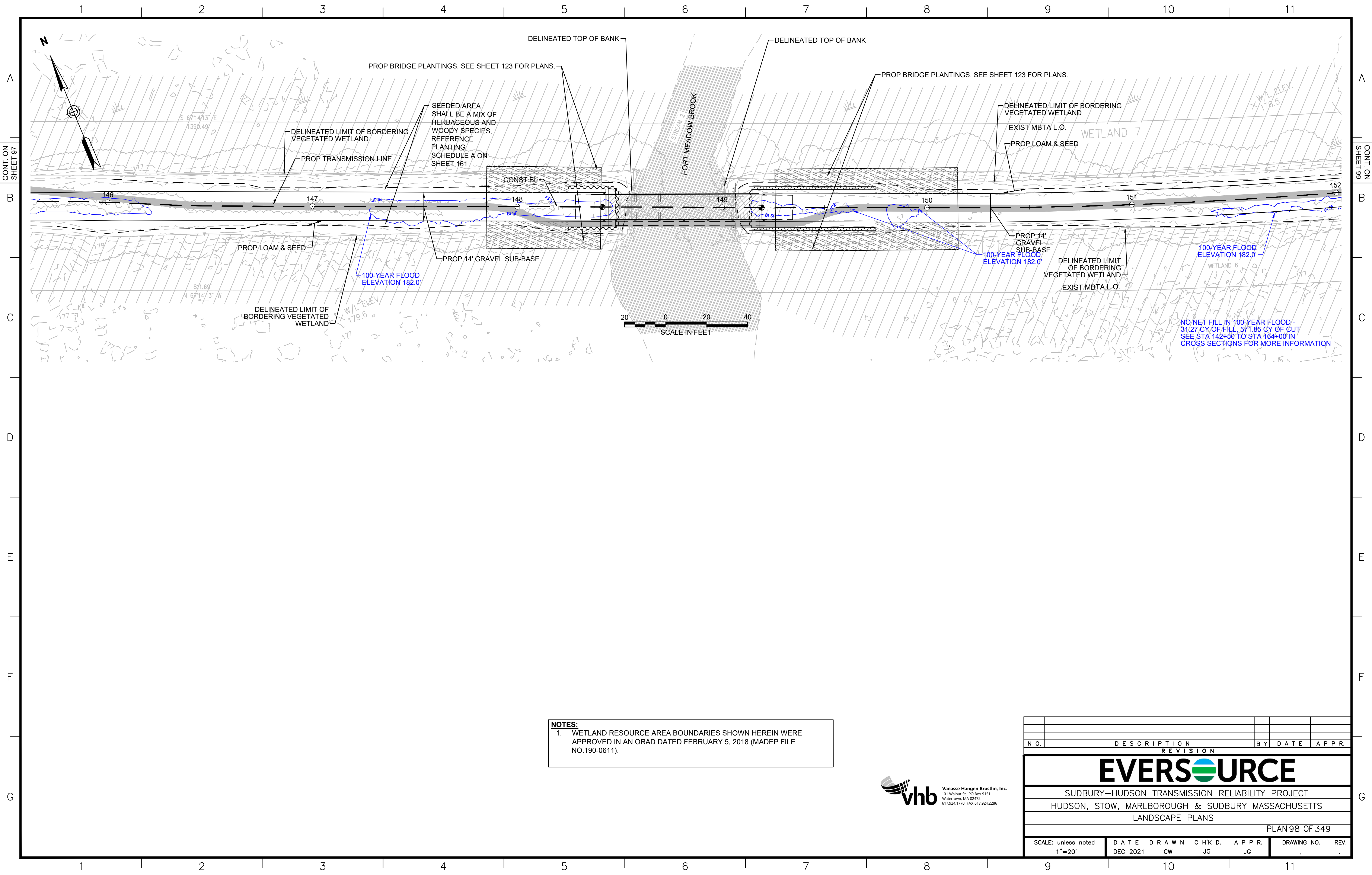
SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CA	14	Clethra alnifolia	Summersweet Clethra	2 - 3' HT.	48" o.c.	FAC
CH	8	Corylus americana	American Hazelnut	2 - 3' HT.	48" o.c.	FACU
GB	22	Gaylussacia baccata	Black Huckleberry	2 - 3' HT.	30" o.c.	FACU
MP	10	Myrica pensylvanica	Northern Bayberry	2 - 3' HT.	48" o.c.	FAC



NOTE:
 1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).



N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
LANDSCAPE PLANS				
PLAN 97 OF 349				
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN CW	CHK'D. JG	APPR. JG
DRAWING NO.				REV.



CONT. ON SHEET 97

CONT. ON SHEET 99

NOTES:
 1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).



N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
LANDSCAPE PLANS				
PLAN 98 OF 349				
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN CW	CH'K D. JG	APPR. JG
DRAWING NO.				REV.

NO NET FILL IN 100-YEAR FLOOD - 31.27 CY OF FILL, 571.85 CY OF CUT SEE STA. 142+50 TO STA 164+00 IN CROSS SECTIONS FOR MORE INFORMATION

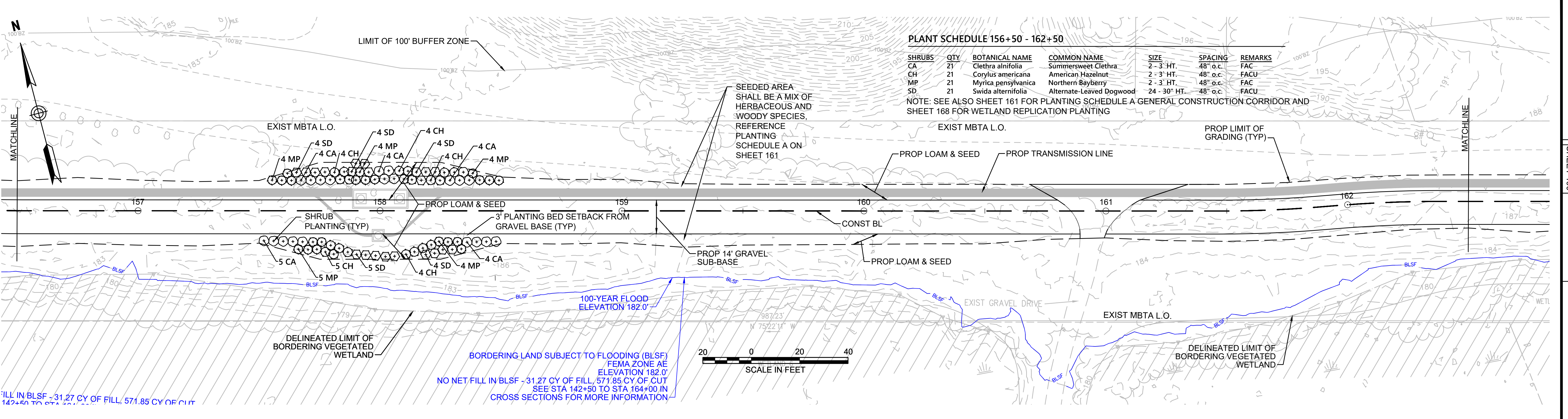
CONT. ON SHEET 98

CONT. ON SHEET 100

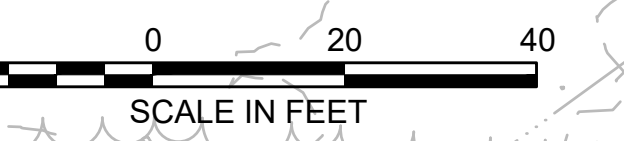
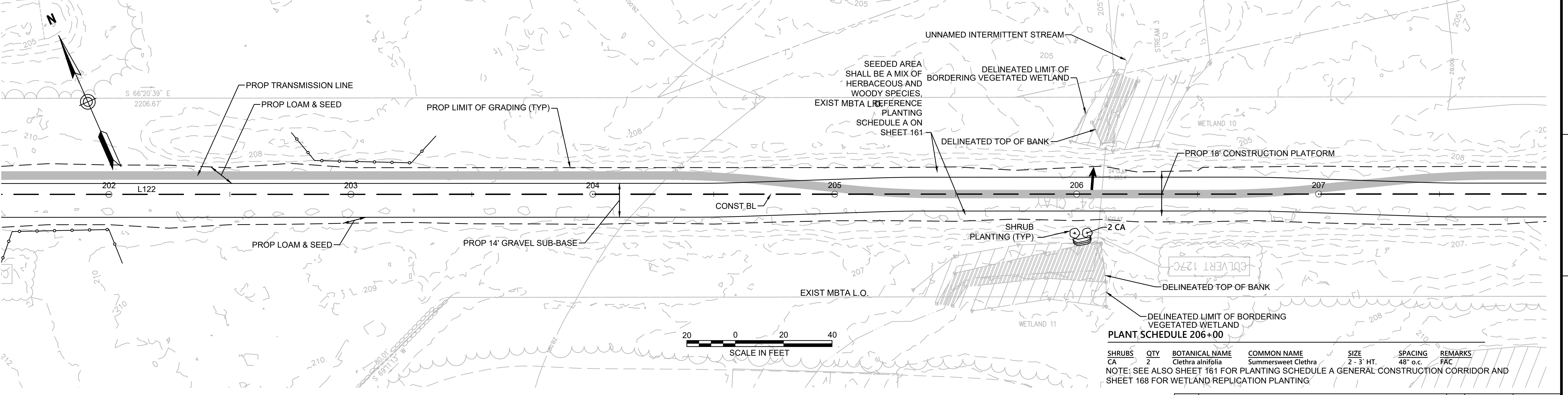
PLANT SCHEDULE 156+50 - 162+50

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CA	21	Clethra alnifolia	Summersweet Clethra	2 - 3' HT.	48" o.c.	FAC
CH	21	Corylus americana	American Hazelnut	2 - 3' HT.	48" o.c.	FACU
MP	21	Myrica pensylvanica	Northern Bayberry	2 - 3' HT.	48" o.c.	FAC
SD	21	Swida alternifolia	Alternate-Leaved Dogwood	24 - 30" HT.	48" o.c.	FAC

NOTE: SEE ALSO SHEET 161 FOR PLANTING SCHEDULE A GENERAL CONSTRUCTION CORRIDOR AND SHEET 168 FOR WETLAND REPLICATION PLANTING



BORDERING LAND SUBJECT TO FLOODING (BLSF) FEMA ZONE AE ELEVATION 182.0'
 NO NET FILL IN BLSF - 31.27 CY OF FILL, 571.85 CY OF CUT
 SEE STA 142+50 TO STA 164+00 IN CROSS SECTIONS FOR MORE INFORMATION

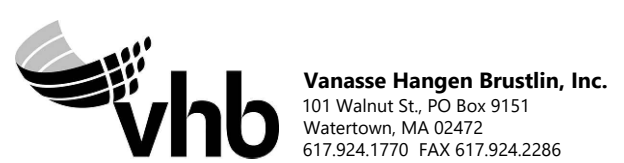


PLANT SCHEDULE 206+00

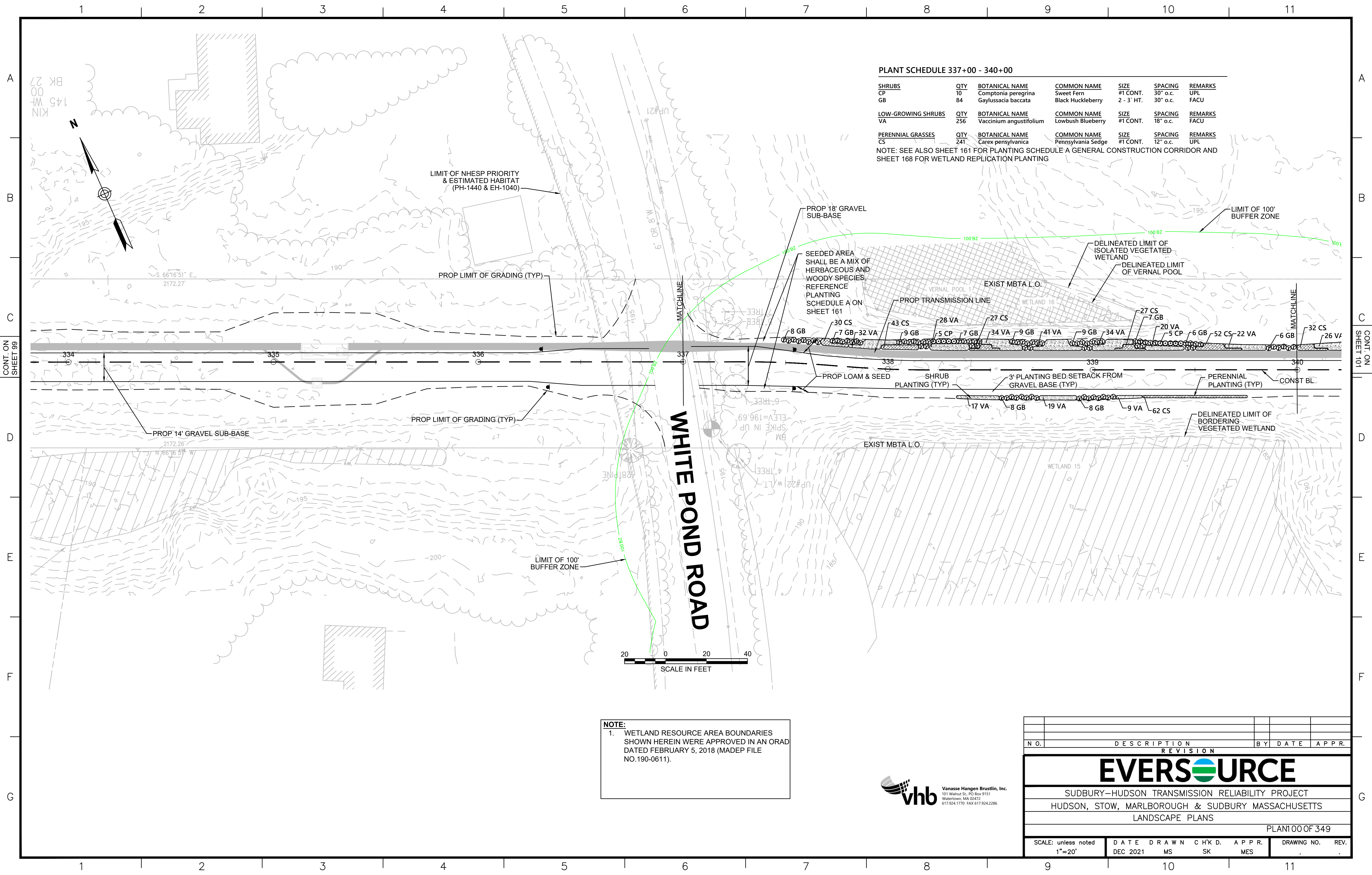
SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CA	2	Clethra alnifolia	Summersweet Clethra	2 - 3' HT.	48" o.c.	FAC

NOTE: SEE ALSO SHEET 161 FOR PLANTING SCHEDULE A GENERAL CONSTRUCTION CORRIDOR AND SHEET 168 FOR WETLAND REPLICATION PLANTING

NOTES:
 1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).



NO.		DESCRIPTION	BY	DATE	APPR.
REVISION					
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
LANDSCAPE PLANS					
PLAN 99 OF 349					
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN CW	CHK'D. JG	APPR. JG	DRAWING NO. REV.



PLANT SCHEDULE 337+00 - 340+00

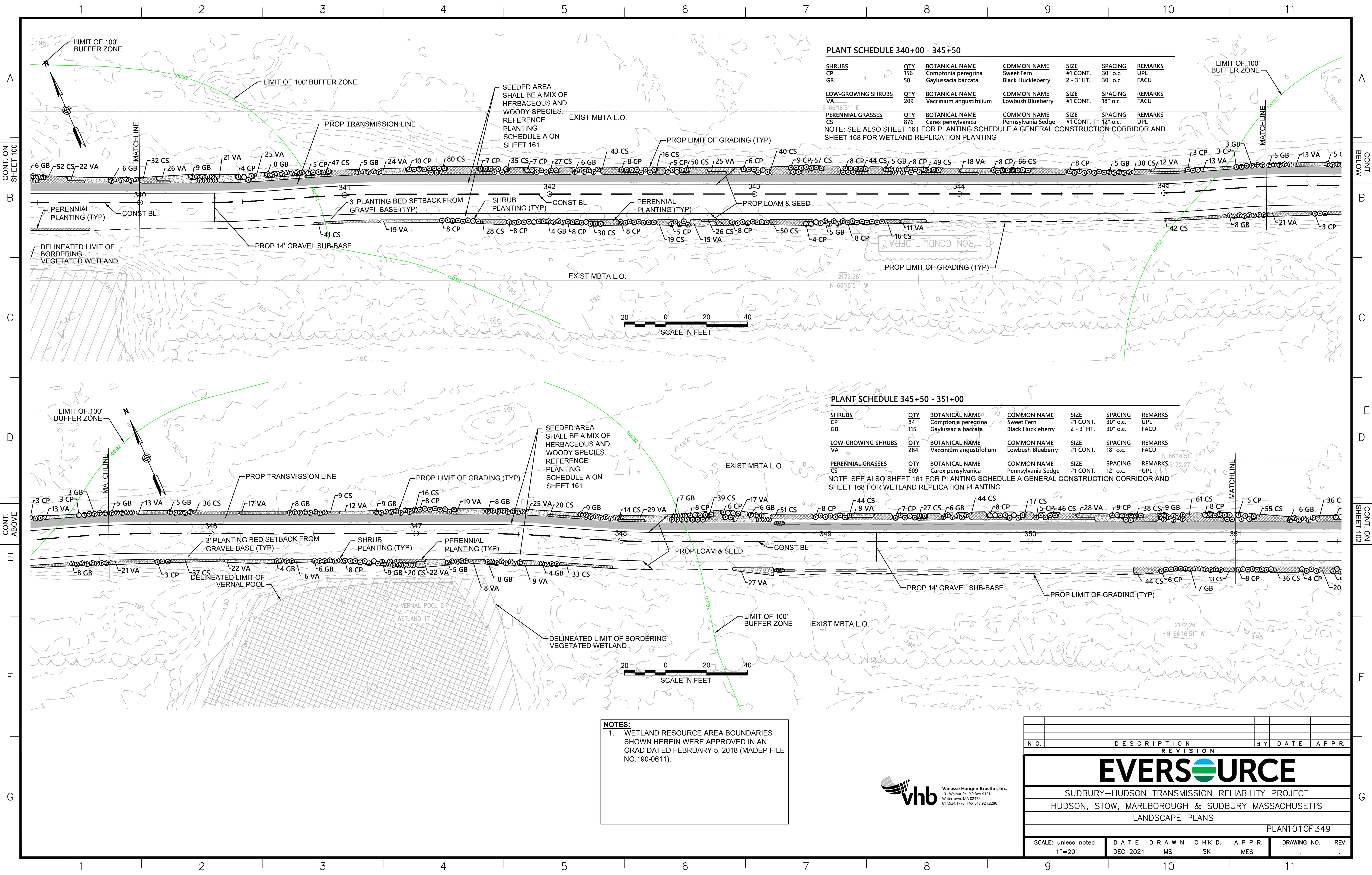
SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CP	10	Comptonia peregrina	Sweet Fern	#1 CONT.	30" o.c.	UPL
GB	84	Gaylussacia baccata	Black Huckleberry	2 - 3' HT.	30" o.c.	FACU
LOW-GROWING SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
VA	256	Vaccinium angustifolium	Lowbush Blueberry	#1 CONT.	18" o.c.	FACU
PERENNIAL GRASSES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CS	241	Carex pensylvanica	Pennsylvania Sedge	#1 CONT.	12" o.c.	UPL

NOTE: SEE ALSO SHEET 161 FOR PLANTING SCHEDULE A GENERAL CONSTRUCTION CORRIDOR AND SHEET 168 FOR WETLAND REPLICATION PLANTING

NOTE:
 1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).



NO.		DESCRIPTION	BY	DATE	APPR.
REVISION					
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
LANDSCAPE PLANS					
PLAN 100 OF 349					
SCALE: unless noted 1"=20'	DATE	DRAWN	CHK'D.	APPR.	DRAWING NO. REV.
	DEC 2021	MS	SK	MES	



PLANT SCHEDULE 340+00 - 345+50

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CP	156	Comptonia peregrina	Sweet Fern	#1 CONT.	30" o.c.	UPL
GB	58	Gaylussacia baccata	Black Huckleberry	2 - 3' HT.	30" o.c.	FACU
LOW-GROWING SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
VA	209	Vaccinium angustifolium	Lowbush Blueberry	#1 CONT.	18" o.c.	FACU
PERENNIAL GRASSES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CS	876	Carex pensylvanica	Pennsylvania Sedge	#1 CONT.	12" o.c.	UPL

NOTE: SEE ALSO SHEET 161 FOR PLANTING SCHEDULE A GENERAL CONSTRUCTION CORRIDOR AND SHEET 168 FOR WETLAND REPLICATION PLANTING

PLANT SCHEDULE 345+50 - 351+00

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CP	84	Comptonia peregrina	Sweet Fern	#1 CONT.	30" o.c.	UPL
GB	115	Gaylussacia baccata	Black Huckleberry	2 - 3' HT.	30" o.c.	FACU
LOW-GROWING SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
VA	284	Vaccinium angustifolium	Lowbush Blueberry	#1 CONT.	18" o.c.	FACU
PERENNIAL GRASSES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CS	609	Carex pensylvanica	Pennsylvania Sedge	#1 CONT.	12" o.c.	UPL

NOTE: SEE ALSO SHEET 161 FOR PLANTING SCHEDULE A GENERAL CONSTRUCTION CORRIDOR AND SHEET 168 FOR WETLAND REPLICATION PLANTING

NOTES:
 1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).



N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
LANDSCAPE PLANS				
PLAN101 OF 349				
SCALE: unless noted 1"=20'	DATE	DRAWN	CHK'D.	APPR.
	DEC 2021	MS	SK	MES
DRAWING NO.	REV.			

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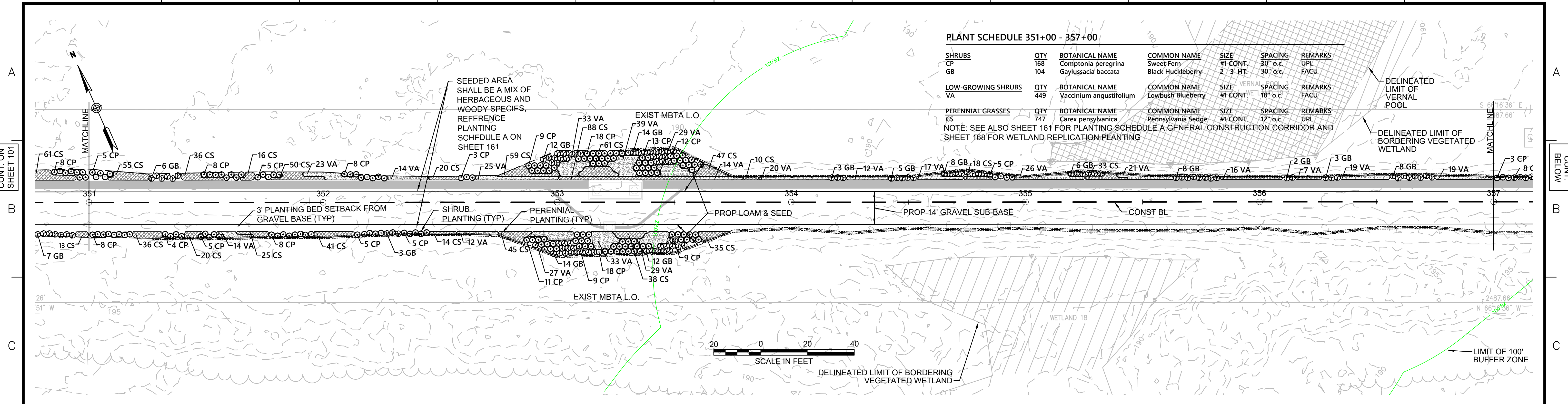
CONT. ON SHEET 101

CONT. BELOW

PLANT SCHEDULE 351+00 - 357+00

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CP	168	Comptonia peregrina	Sweet Fern	#1 CONT.	30" o.c.	UPL
GB	104	Gaylussacia baccata	Black Huckleberry	2 - 3' HT.	30" o.c.	FACU
LOW-GROWING SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
VA	449	Vaccinium angustifolium	Lowbush Blueberry	#1 CONT.	18" o.c.	FACU
PERENNIAL GRASSES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CS	747	Carex pensylvanica	Pennsylvania Sedge	#1 CONT.	12" o.c.	UPL

NOTE: SEE ALSO SHEET 161 FOR PLANTING SCHEDULE A GENERAL CONSTRUCTION CORRIDOR AND SHEET 168 FOR WETLAND REPLICATION PLANTING



PLANT SCHEDULE 357+00 - 361+60: HUDSON AND MARLBOROUGH

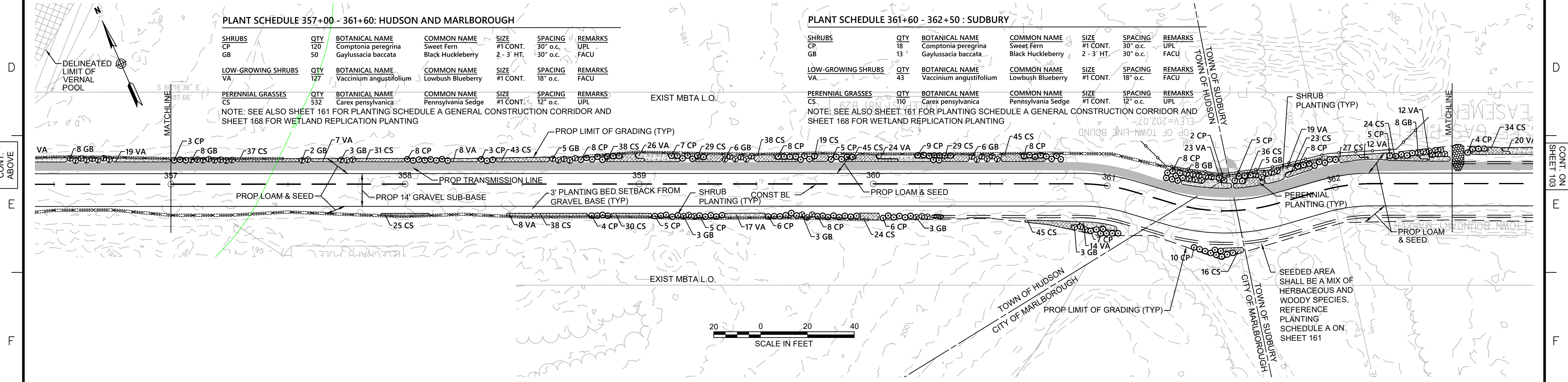
SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CP	120	Comptonia peregrina	Sweet Fern	#1 CONT.	30" o.c.	UPL
GB	50	Gaylussacia baccata	Black Huckleberry	2 - 3' HT.	30" o.c.	FACU
LOW-GROWING SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
VA	127	Vaccinium angustifolium	Lowbush Blueberry	#1 CONT.	18" o.c.	FACU
PERENNIAL GRASSES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CS	532	Carex pensylvanica	Pennsylvania Sedge	#1 CONT.	12" o.c.	UPL

NOTE: SEE ALSO SHEET 161 FOR PLANTING SCHEDULE A GENERAL CONSTRUCTION CORRIDOR AND SHEET 168 FOR WETLAND REPLICATION PLANTING

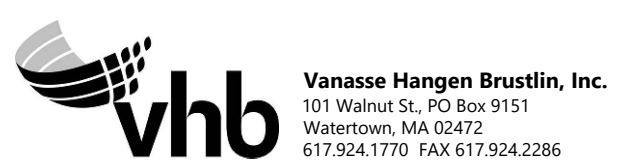
PLANT SCHEDULE 361+60 - 362+50 : SUDBURY

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CP	18	Comptonia peregrina	Sweet Fern	#1 CONT.	30" o.c.	UPL
GB	13	Gaylussacia baccata	Black Huckleberry	2 - 3' HT.	30" o.c.	FACU
LOW-GROWING SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
VA	43	Vaccinium angustifolium	Lowbush Blueberry	#1 CONT.	18" o.c.	FACU
PERENNIAL GRASSES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CS	110	Carex pensylvanica	Pennsylvania Sedge	#1 CONT.	12" o.c.	UPL

NOTE: SEE ALSO SHEET 161 FOR PLANTING SCHEDULE A GENERAL CONSTRUCTION CORRIDOR AND SHEET 168 FOR WETLAND REPLICATION PLANTING



NOTE:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).



N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
LANDSCAPE PLANS				
PLANT 02 OF 349				
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN CW	CHK'D. JG	APPR. JG
DRAWING NO.	REV.			

1 2 3 4 5 6 7 8 9 10 11

CONT. ABOVE

CONT. ON SHEET 103

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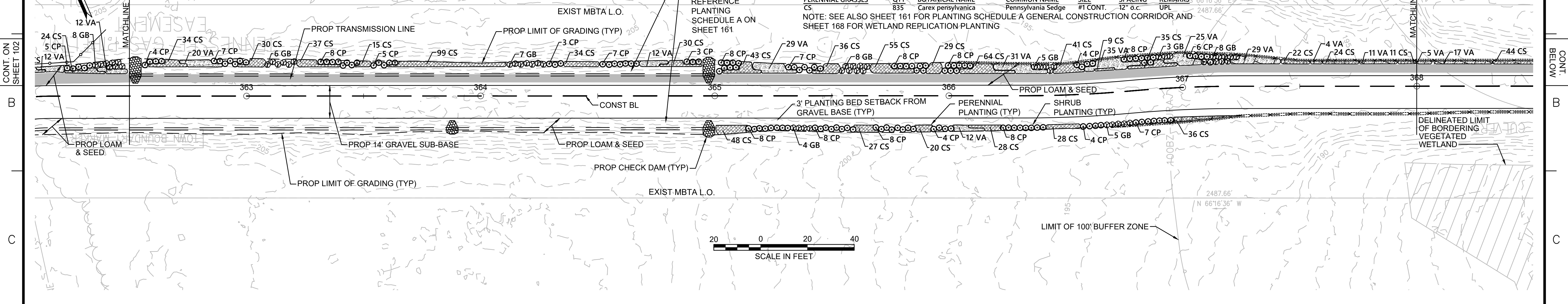
CONT. ON SHEET 102

CONT. BELOW

PLANT SCHEDULE 362+50 - 368+00

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CP	133	Comptonia peregrina	Sweet Fern	#1 CONT.	30" o.c.	UPL
GB	46	Gaylussacia baccata	Black Huckleberry	2 - 3' HT.	30" o.c.	FACU
LOW-GROWING SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
VA	208	Vaccinium angustifolium	Lowbush Blueberry	#1 CONT.	18" o.c.	FACU
PERENNIAL GRASSES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CS	835	Carex pensylvanica	Pennsylvania Sedge	#1 CONT.	12" o.c.	UPL

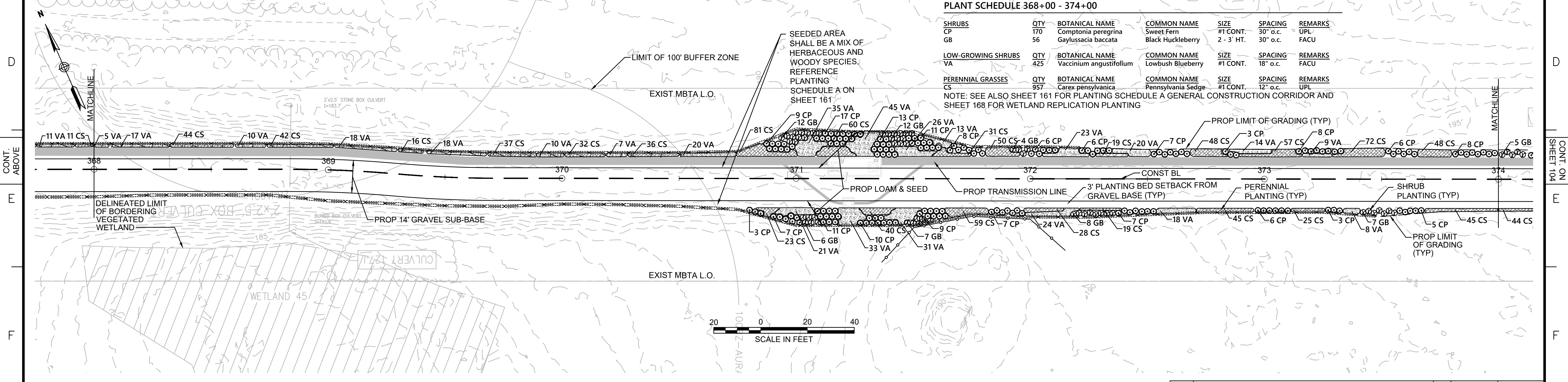
NOTE: SEE ALSO SHEET 161 FOR PLANTING SCHEDULE A GENERAL CONSTRUCTION CORRIDOR AND SHEET 168 FOR WETLAND REPLICATION PLANTING



PLANT SCHEDULE 368+00 - 374+00

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CP	170	Comptonia peregrina	Sweet Fern	#1 CONT.	30" o.c.	UPL
GB	56	Gaylussacia baccata	Black Huckleberry	2 - 3' HT.	30" o.c.	FACU
LOW-GROWING SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
VA	425	Vaccinium angustifolium	Lowbush Blueberry	#1 CONT.	18" o.c.	FACU
PERENNIAL GRASSES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CS	957	Carex pensylvanica	Pennsylvania Sedge	#1 CONT.	12" o.c.	UPL

NOTE: SEE ALSO SHEET 161 FOR PLANTING SCHEDULE A GENERAL CONSTRUCTION CORRIDOR AND SHEET 168 FOR WETLAND REPLICATION PLANTING



NOTES:
 1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO.301-1227).



N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 LANDSCAPE PLANS

PLAN 103 OF 349

SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN CW	CHK'D. JG	APPR. JG	DRAWING NO.	REV.
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CONT. ABOVE

CONT. ON SHEET 104

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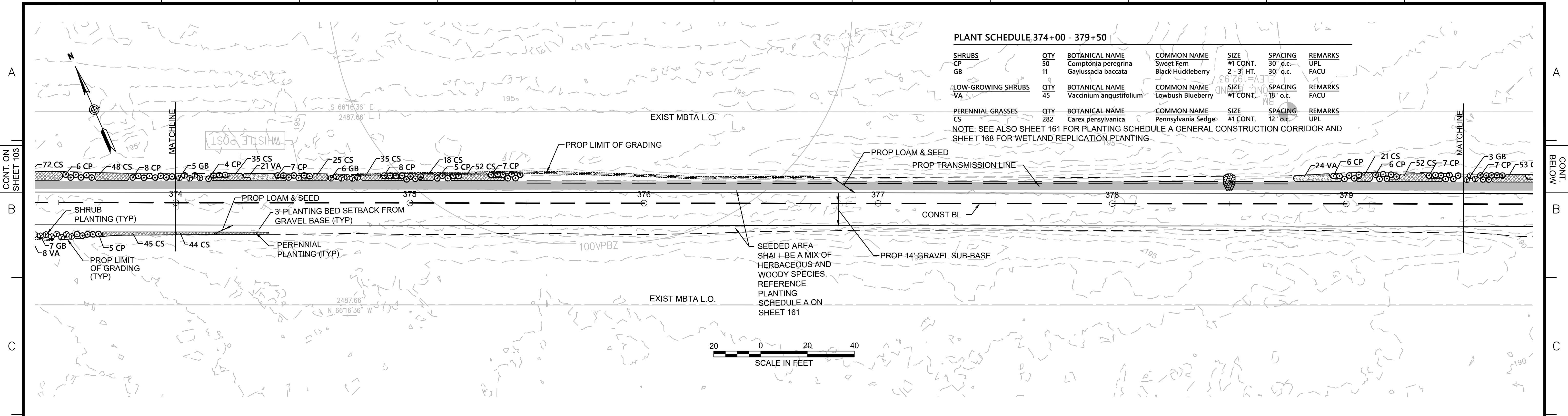
CONT. ON SHEET 103

CONT. BELOW SHEET 105

PLANT SCHEDULE 374+00 - 379+50

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CP	50	Comptonia peregrina	Sweet Fern	#1 CONT.	30" o.c.	UPL
GB	11	Gaylussacia baccata	Black Huckleberry	2 - 3' HT.	30" o.c.	FACU
LOW-GROWING SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
VA	45	Vaccinium angustifolium	Lowbush Blueberry	#1 CONT.	18" o.c.	FACU
PERENNIAL GRASSES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CS	282	Carex pensylvanica	Pennsylvania Sedge	#1 CONT.	12" o.c.	UPL

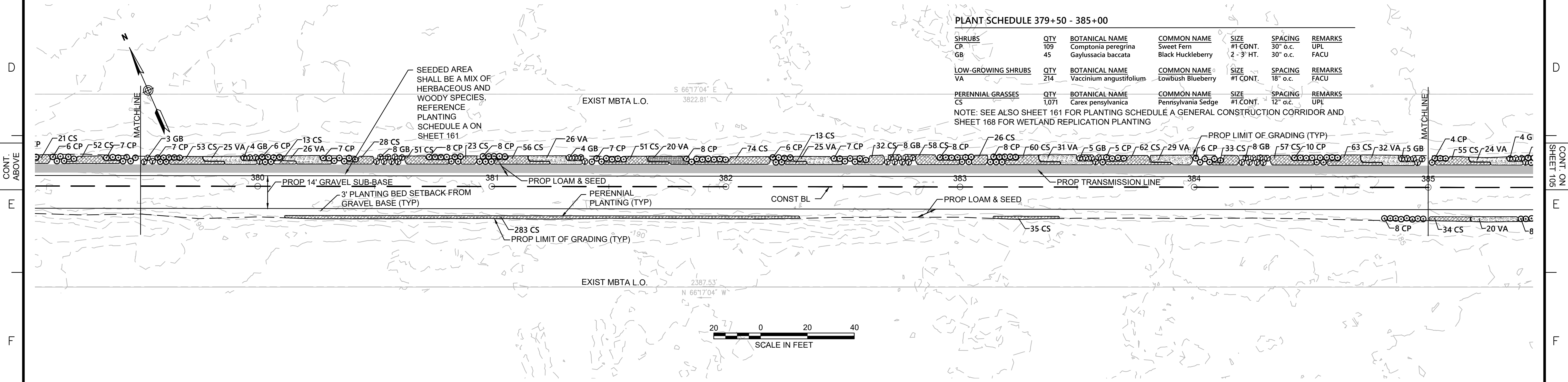
NOTE: SEE ALSO SHEET 161 FOR PLANTING SCHEDULE A GENERAL CONSTRUCTION CORRIDOR AND SHEET 168 FOR WETLAND REPLICATION PLANTING.



PLANT SCHEDULE 379+50 - 385+00

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CP	109	Comptonia peregrina	Sweet Fern	#1 CONT.	30" o.c.	UPL
GB	45	Gaylussacia baccata	Black Huckleberry	2 - 3' HT.	30" o.c.	FACU
LOW-GROWING SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
VA	214	Vaccinium angustifolium	Lowbush Blueberry	#1 CONT.	18" o.c.	FACU
PERENNIAL GRASSES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CS	1,071	Carex pensylvanica	Pennsylvania Sedge	#1 CONT.	12" o.c.	UPL

NOTE: SEE ALSO SHEET 161 FOR PLANTING SCHEDULE A GENERAL CONSTRUCTION CORRIDOR AND SHEET 168 FOR WETLAND REPLICATION PLANTING.



NOTE:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO.301-1227).



N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
LANDSCAPE PLANS				
PLANT 04 OF 349				
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN CW	CHK'D. JG	APPR. JG
DRAWING NO.		REV.		

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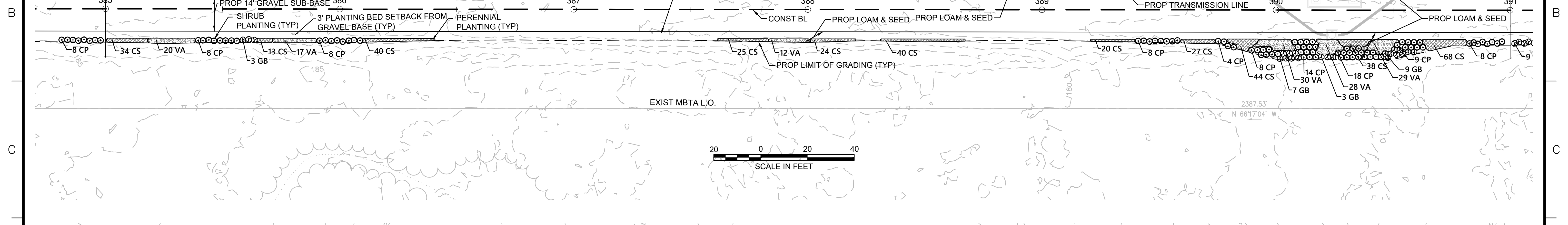
CONT. ABOVE SHEET 103

CONT. ON SHEET 105

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CONT. ON SHEET 104

CONT. BELOW



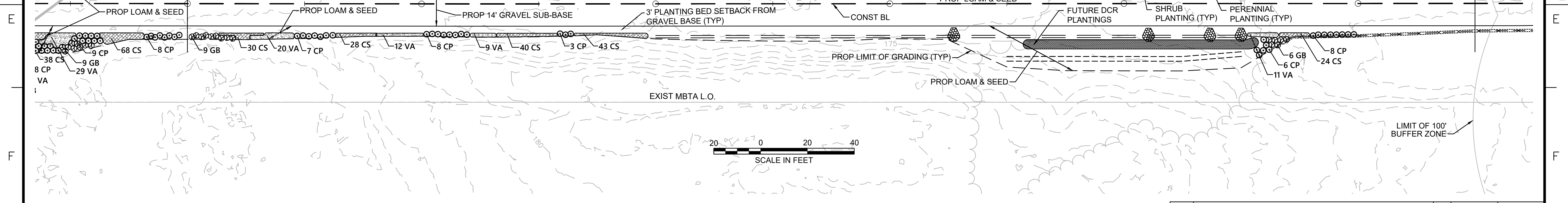
PLANT SCHEDULE 385+00 - 391+00

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CP	230	Comptonia peregrina	Sweet Fern	#1 CONT.	30' o.c.	UPL
GB	88	Gaylussacia baccata	Black Huckleberry	2 - 3' HT.	30' o.c.	FACU
LOW-GROWING SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
VA	421	Vaccinium angustifolium	Lowbush Blueberry	#1 CONT.	18" o.c.	FACU
PERENNIAL GRASSES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CS	1,280	Carex pennsylvanica	Pennsylvania Sedge	#1 CONT.	12" o.c.	UPL

NOTE: SEE ALSO SHEET 161 FOR PLANTING SCHEDULE A GENERAL CONSTRUCTION CORRIDOR AND SHEET 168 FOR WETLAND REPLICATION PLANTING

CONT. ABOVE

CONT. ON SHEET 106



PLANT SCHEDULE 391+00 - 396+50

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CP	113	Comptonia peregrina	Sweet Fern	#1 CONT.	30' o.c.	UPL
GB	49	Gaylussacia baccata	Black Huckleberry	2 - 3' HT.	30' o.c.	FACU
LOW-GROWING SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
VA	217	Vaccinium angustifolium	Lowbush Blueberry	#1 CONT.	18" o.c.	FACU
PERENNIAL GRASSES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CS	792	Carex pennsylvanica	Pennsylvania Sedge	#1 CONT.	12" o.c.	UPL

NOTE: SEE ALSO SHEET 161 FOR PLANTING SCHEDULE A GENERAL CONSTRUCTION CORRIDOR AND SHEET 168 FOR WETLAND REPLICATION PLANTING

NOTE:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO.301-1227).



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REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
LANDSCAPE PLANS				
PLANT 05 OF 349				
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN CW	CHK'D. JG	APPR. JG
DRAWING NO.	REV.			

1 2 3 4 5 6 7 8 9 10 11

1 2 3 4 5 6 7 8 9 10 11

CONT. ON SHEET 105

CONT. BELOW

PLANT SCHEDULE 396+50 - 402+00

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CP	5	Comptonia peregrina	Sweet Fern	#1 CONT.	30' o.c.	FACU
GB	42	Gaylussacia baccata	Black Huckleberry	2 - 3' HT.	30' o.c.	FACU
LOW-GROWING SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
VA	84	Vaccinium angustifolium	Lowbush Blueberry	#1 CONT.	18' o.c.	FACU
PERENNIAL GRASSES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CS	135	Carex pennsylvanica	Pennsylvania Sedge	#1 CONT.	12' o.c.	UPL

NOTE: SEE ALSO SHEET 161 FOR PLANTING SCHEDULE A GENERAL CONSTRUCTION CORRIDOR AND SHEET 168 FOR WETLAND REPLICATION PLANTING

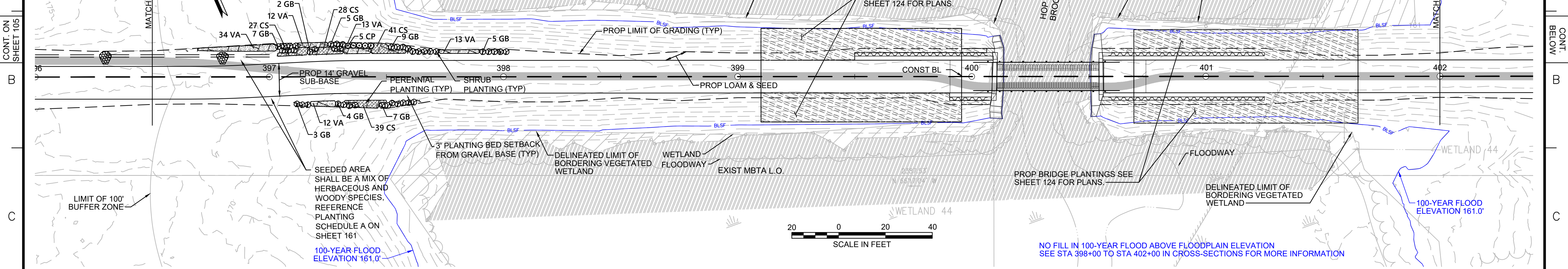
DELIMITED LIMIT OF BORDERING VEGETATED WETLAND

DELIMITED TOP OF BANK

DELIMITED LIMIT OF BORDERING VEGETATED WETLAND

LIMIT OF NHESP PRIORITY & ESTIMATED HABITAT (PH-1440 & EH-1040)

100-YEAR FLOOD ELEVATION 161.0'



PLANT SCHEDULE 402+00 - 408+00

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CH	10	Corylus americana	American Hazelnut	2 - 3' HT.	48" o.c.	FACU
MP	10	Myrica pensylvanica	Northern Bayberry	2 - 3' HT.	48" o.c.	FAC
SD	10	Swida alternifolia	Alternate-Leaved Dogwood	24 - 30" HT.	48" o.c.	FACU
VC	3	Vaccinium corymbosum	Highbush Blueberry	3 - 4' HT.	48" o.c.	FACW

NOTE: SEE ALSO SHEET 161 FOR PLANTING SCHEDULE A GENERAL CONSTRUCTION CORRIDOR AND SHEET 168 FOR WETLAND REPLICATION PLANTING

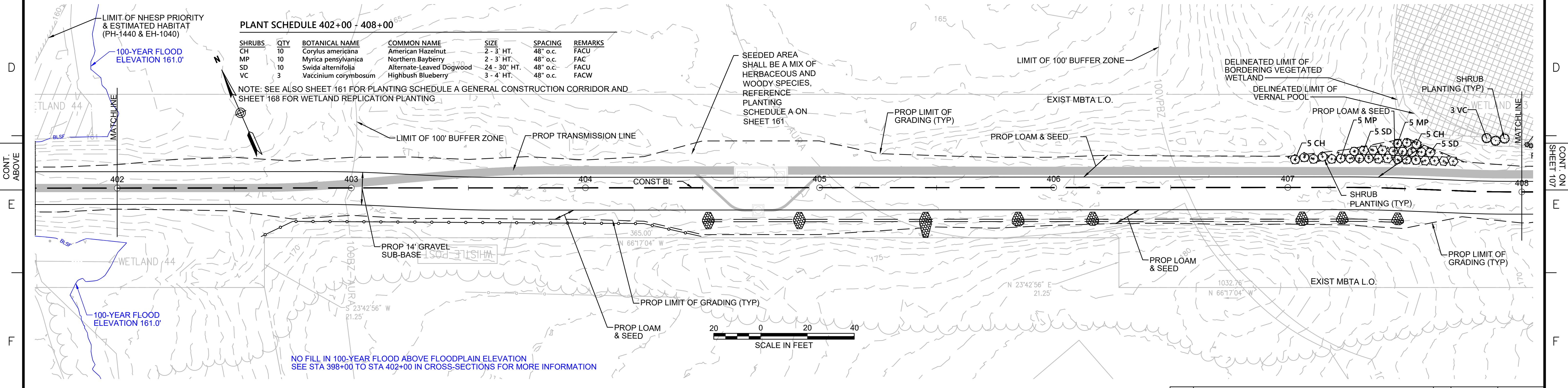
SEEDED AREA SHALL BE A MIX OF HERBACEOUS AND WOODY SPECIES, REFERENCE PLANTING SCHEDULE A ON SHEET 161

LIMIT OF 100' BUFFER ZONE

DELIMITED LIMIT OF BORDERING VEGETATED WETLAND

DELIMITED LIMIT OF VERNAL POOL

SHRUB PLANTING (TYP)



NOTES:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO.301-1227).



N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
LANDSCAPE PLANS				
PLAN 106 OF 349				
SCALE: unless noted 1"=20'	DATE	DRAWN	CHK'D	APPR.
	DEC 2021	CW	JG	JG
DRAWING NO.	REV.			

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CONT. ON SHEET 107

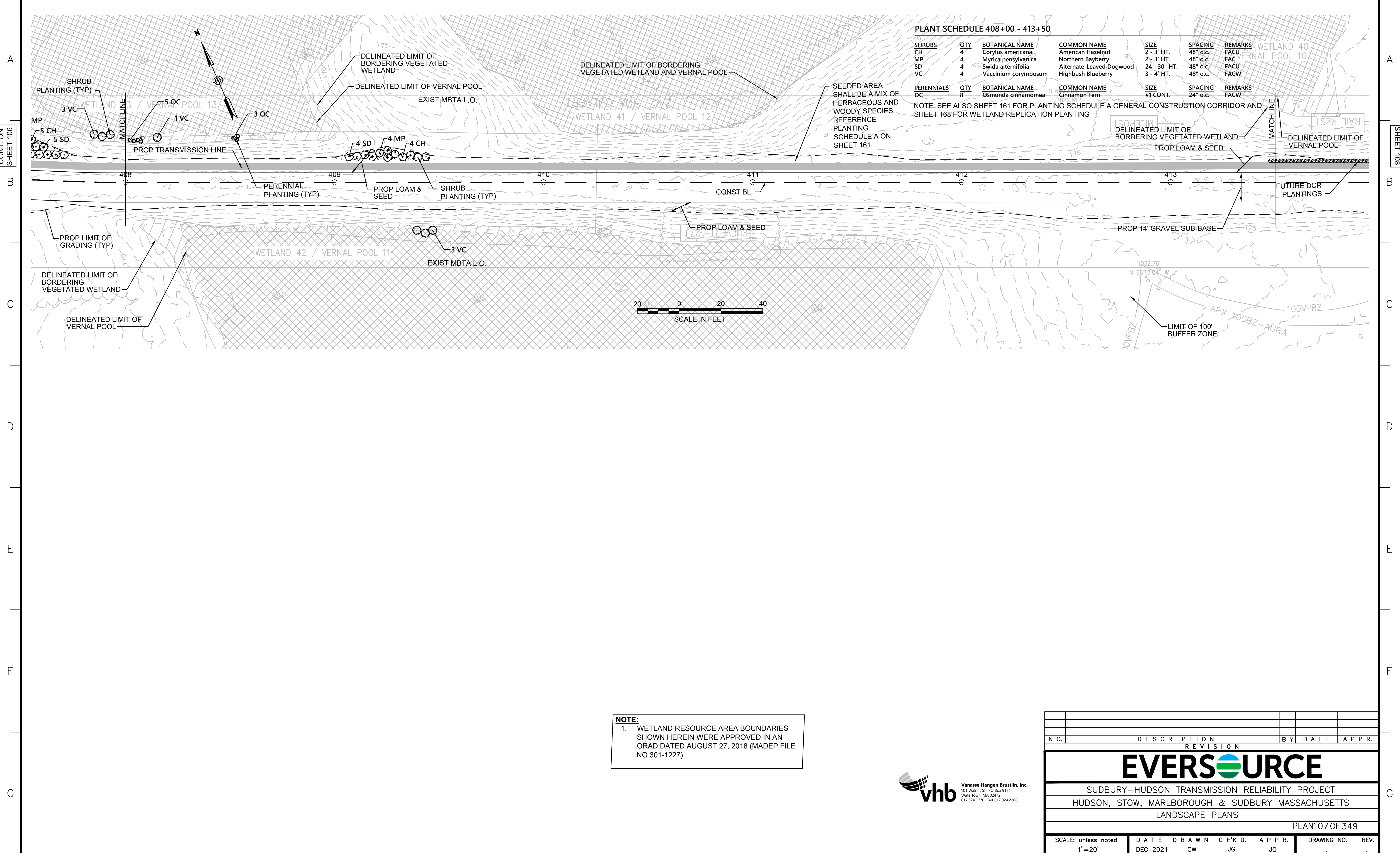
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CONT. ON SHEET 108



PLANT SCHEDULE 408+00 - 413+50

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CH	4	<i>Corylus americana</i>	American Hazelnut	2 - 3 HT.	48" o.c.	FACU
MP	4	<i>Myrica pensylvanica</i>	Northern Bayberry	2 - 3 HT.	48" o.c.	FACU
SD	4	<i>Swida alternifolia</i>	Alternate-Leaved Dogwood	24 - 30" HT.	48" o.c.	FACU
VC	4	<i>Vaccinium corymbosum</i>	Highbush Blueberry	3 - 4 HT.	48" o.c.	FACW

PERENNIALS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
OC	8	<i>Osmunda cinnamomea</i>	Cinnamon Fern	#1 CONT.	24" o.c.	FACW

NOTE: SEE ALSO SHEET 161 FOR PLANTING SCHEDULE A GENERAL CONSTRUCTION CORRIDOR AND SHEET 168 FOR WETLAND REPLICATION PLANTING

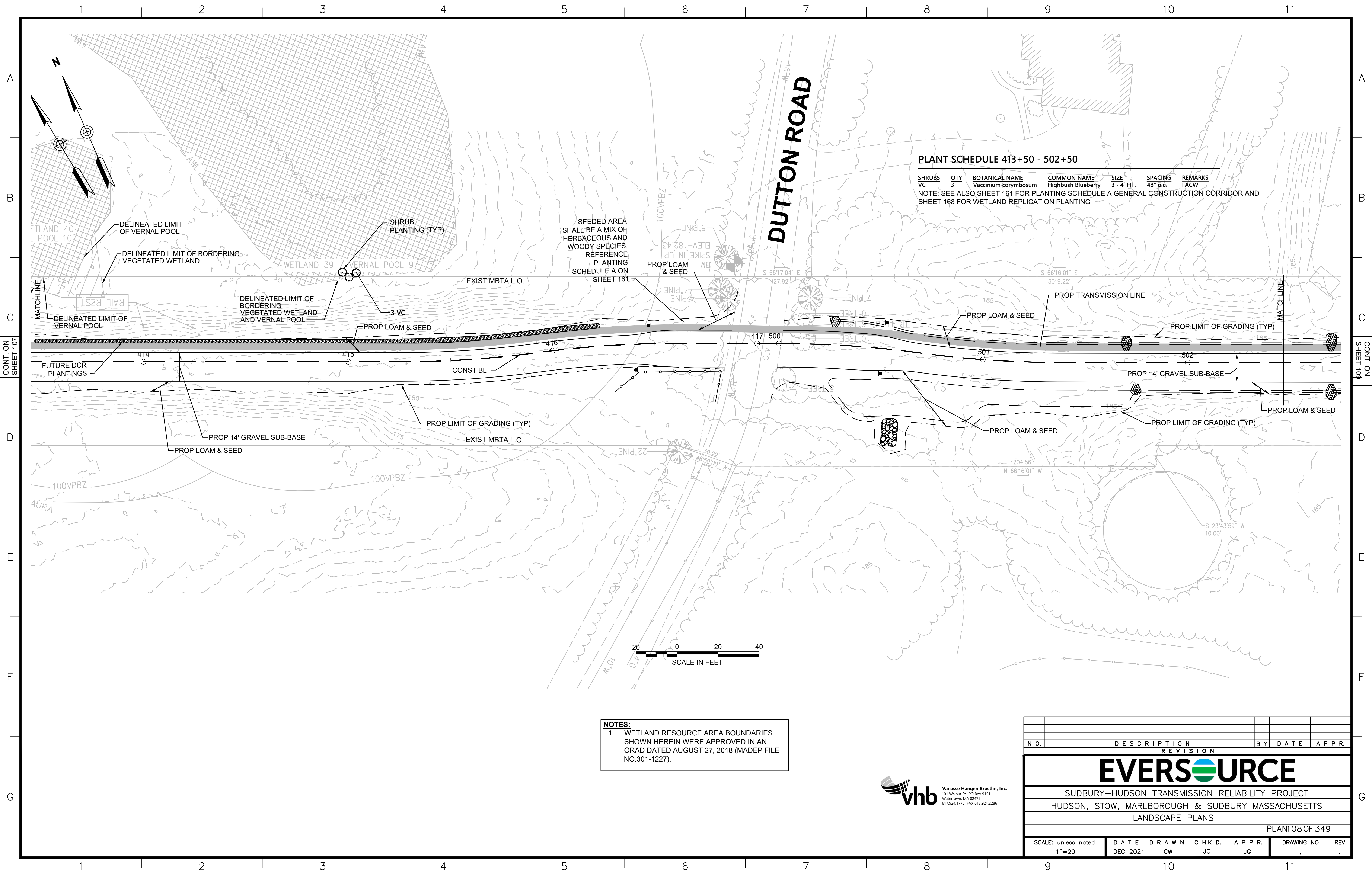
SEEDED AREA SHALL BE A MIX OF HERBACEOUS AND WOODY SPECIES. REFERENCE PLANTING SCHEDULE A ON SHEET 161

NOTE:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO.301-1227).



N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
LANDSCAPE PLANS				
PLAN 107 OF 349				
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN CW	CHK'D. JG	APPR. JG
DRAWING NO.				REV.

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PLANT SCHEDULE 413+50 - 502+50

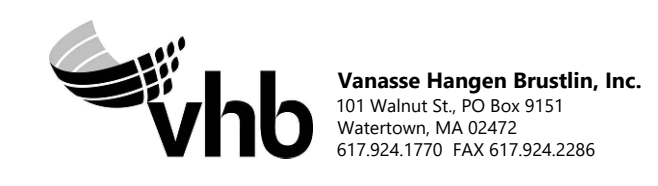
SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
VC	3	Vaccinium corymbosum	Highbush Blueberry	3'-4' HT.	48" o.c.	FACW

NOTE: SEE ALSO SHEET 161 FOR PLANTING SCHEDULE A GENERAL CONSTRUCTION CORRIDOR AND SHEET 168 FOR WETLAND REPLICATION PLANTING

NOTES:
 1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO.301-1227).



NO.	DESCRIPTION	BY	DATE	APPR.
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
LANDSCAPE PLANS				
PLAN 08 OF 349				
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN CW	CHK'D. JG	APPR. JG
DRAWING NO.				REV.



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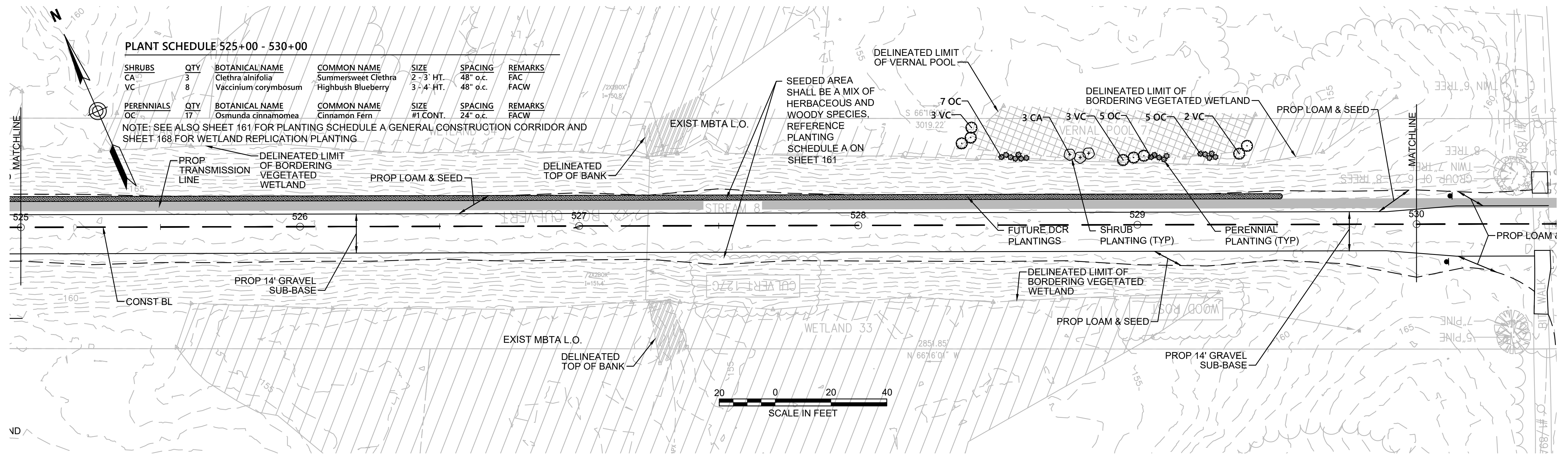
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PLANT SCHEDULE 525+00 - 530+00

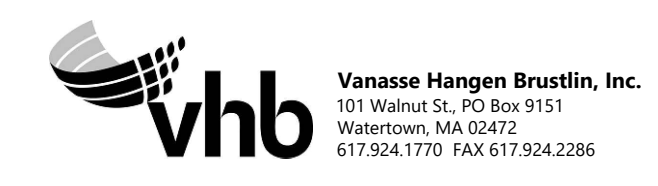
SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CA	3	Clethra alnifolia	Summersweet Clethra	2 - 3 HT.	48" o.c.	FAC
VC	8	Vaccinium corymbosum	Highbush Blueberry	3 - 4 HT.	48" o.c.	FACW

PERENNIALS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
OC	17	Osmunda cinnamomea	Cinnamon Fern	#1 CONT.	24" o.c.	FACW

NOTE: SEE ALSO SHEET 161 FOR PLANTING SCHEDULE A GENERAL CONSTRUCTION CORRIDOR AND SHEET 168 FOR WETLAND REPLICATION PLANTING



NOTE:
 1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).



N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
LANDSCAPE PLANS				
PLAN 10 OF 349				
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN CW	CH'K D. JG	APPR. JG
DRAWING NO.	REV.			

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CONT. ON SHEET 109

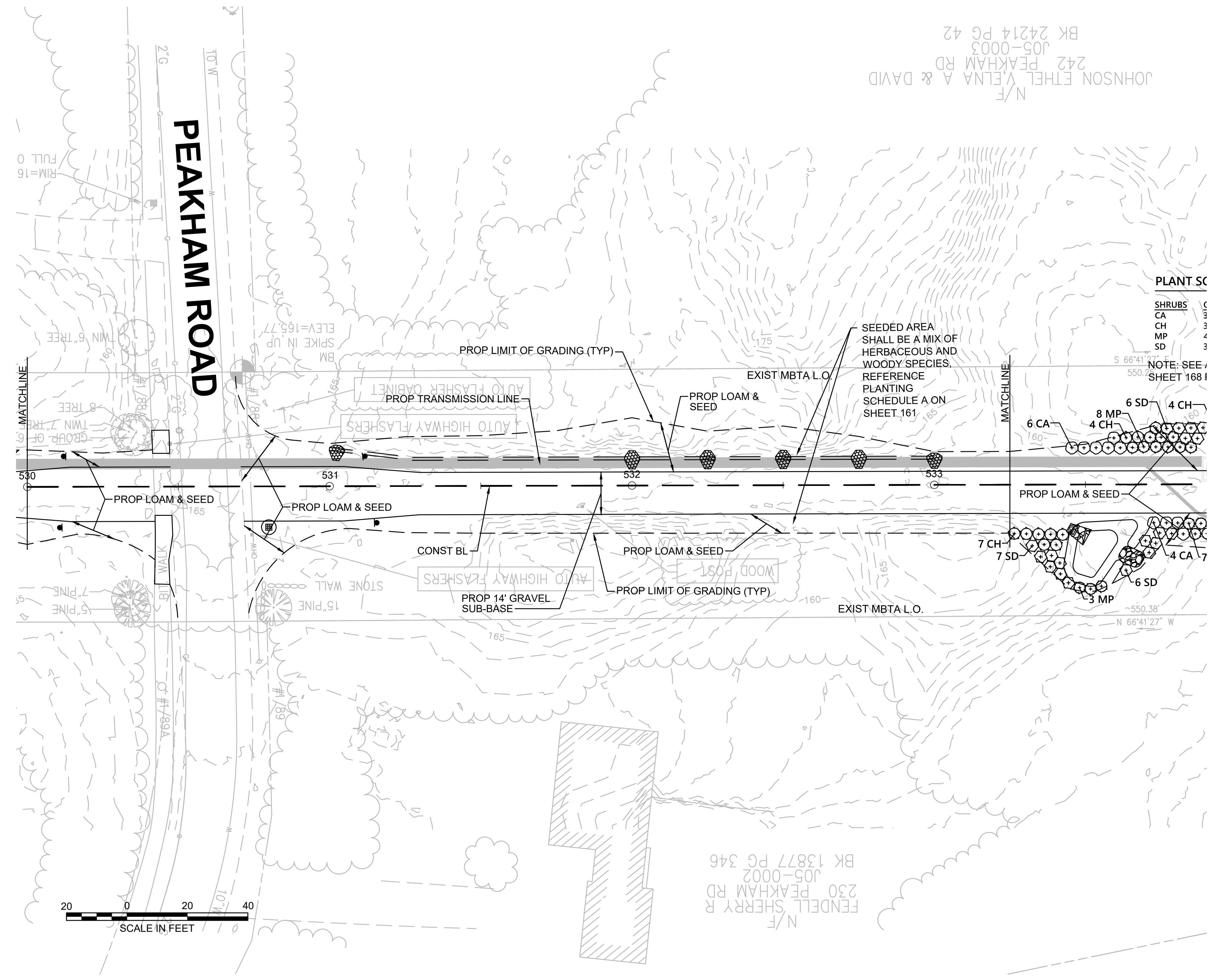
CONT. ON SHEET 111

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N/
JOHNSON ETHEL VELNA A & DAVID
242 PEAKHAM RD
J05-0003
BK 24214 PG 42



PLANT SC
SHRUBS C
CA 3
CH 4
MP 4
SD 4

NOTE: SEE SHEET 168 I

N/
FENDELL SHERRY R
230 PEAKHAM RD
J05-0002
BK 13877 PG 346

NOTE:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).



NO.		DESCRIPTION	BY	DATE	APPR.
REVISION					
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
LANDSCAPE PLANS					
PLAN 111 OF 349					
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN CW	CHK'D. JG	APPR. JG	DRAWING NO. REV.

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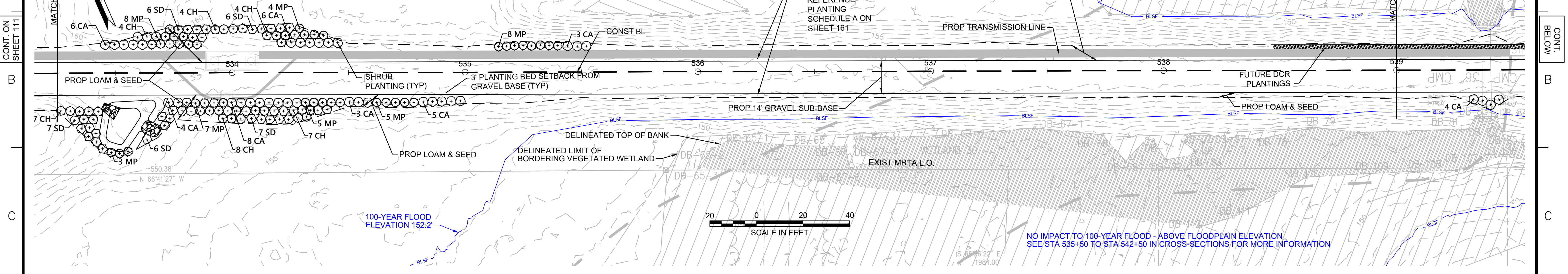
CONT. ON SHEET 111

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PLANT SCHEDULE 533+25 - 539+00

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CA	35	<i>Clethra alnifolia</i>	Summersweet Clethra	2 - 3' HT.	48" o.c.	FAC
CH	34	<i>Corylus americana</i>	American Hazelnut	2 - 3' HT.	48" o.c.	FACU
MP	40	<i>Myrica pensylvanica</i>	Northern Bayberry	2 - 3' HT.	48" o.c.	FAC
SD	32	<i>Swida alternifolia</i>	Alternate-Leaved Dogwood	24 - 30" HT.	48" o.c.	FACU

NOTE: SEE ALSO SHEET 161 FOR PLANTING SCHEDULE A GENERAL CONSTRUCTION CORRIDOR AND SHEET 168 FOR WETLAND REPLICATION PLANTING



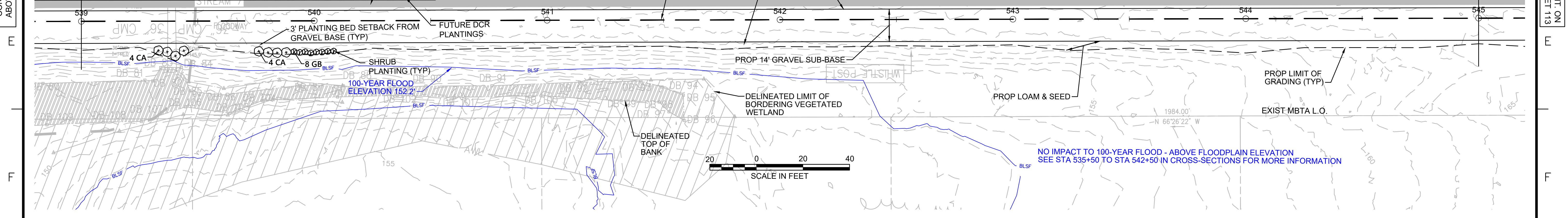
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PLANT SCHEDULE 539+00 - 545+00

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CA	8	<i>Clethra alnifolia</i>	Summersweet Clethra	2 - 3' HT.	48" o.c.	FAC
GB	8	<i>Gaylussacia baccata</i>	Black Huckleberry	2 - 3' HT.	30" o.c.	FACU

NOTE: SEE ALSO SHEET 161 FOR PLANTING SCHEDULE A GENERAL CONSTRUCTION CORRIDOR AND SHEET 168 FOR WETLAND REPLICATION PLANTING



NOTE:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).



NO.		DESCRIPTION	BY	DATE	APPR.
REVISION					
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
LANDSCAPE PLANS					
PLAN 112 OF 349					
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN CW	CHK'D. JG	APPR. JG	DRAWING NO. REV.

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CONT. ON SHEET 112

CONT. ON SHEET 114

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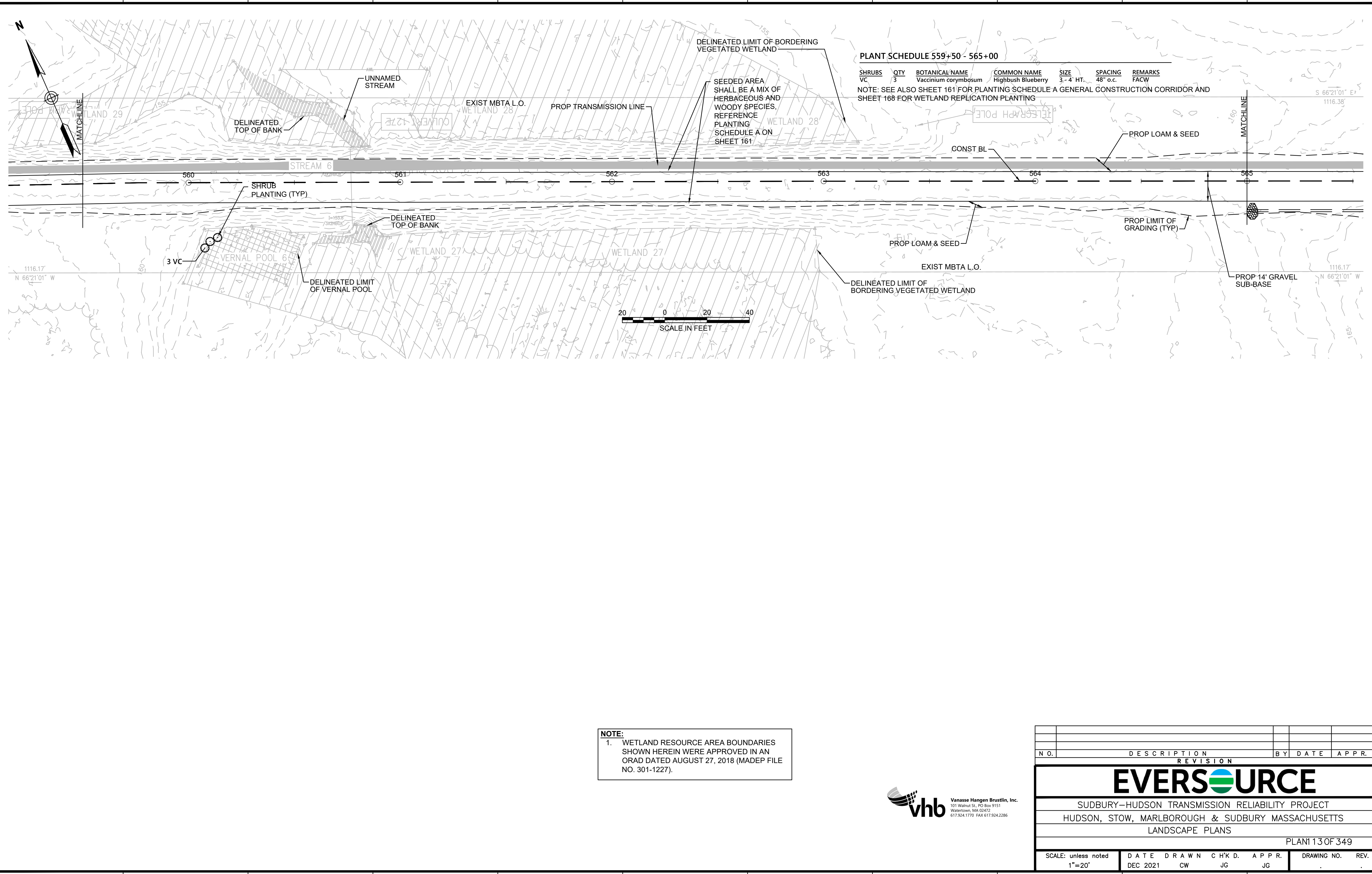
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PLANT SCHEDULE 559+50 - 565+00

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
VC	3	Vaccinium corymbosum	Highbush Blueberry	3'-4' HT.	48" o.c.	FACW

NOTE: SEE ALSO SHEET 161 FOR PLANTING SCHEDULE A GENERAL CONSTRUCTION CORRIDOR AND SHEET 168 FOR WETLAND REPLICATION PLANTING

NOTE:
 1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).



N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
LANDSCAPE PLANS				
PLAN 113 OF 349				
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN CW	CHK'D. JG	APPR. JG
DRAWING NO.	REV.			

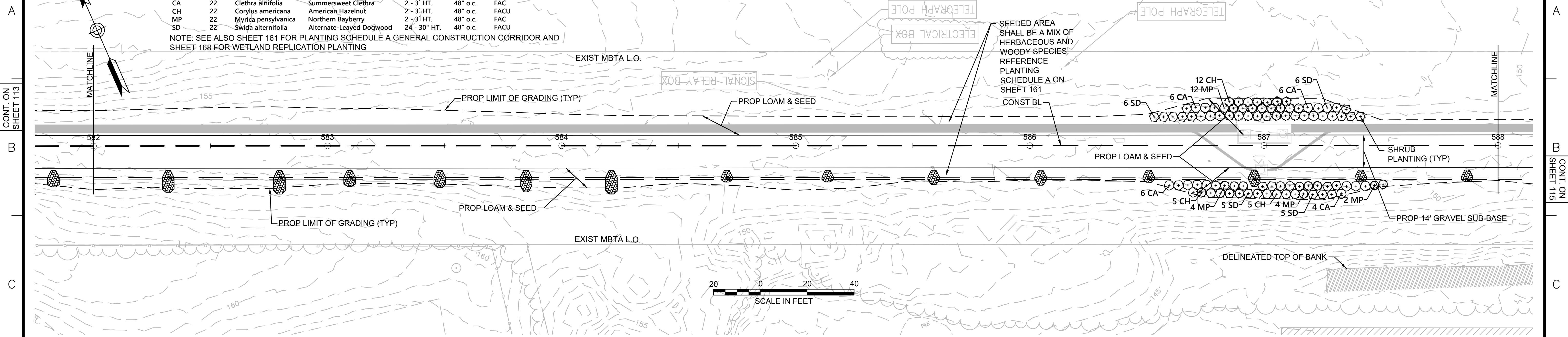
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PLANT SCHEDULE 582+00 - 588+00

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CA	22	Clethra alnifolia	Summersweet Clethra	2 - 3' HT.	48" o.c.	FAC
CH	22	Corylus americana	American Hazelnut	2 - 3' HT.	48" o.c.	FACU
MP	22	Myrica pensylvanica	Northern Bayberry	2 - 3' HT.	48" o.c.	FAC
SD	22	Swida alternifolia	Alternate-Leaved Dogwood	24" - 30" HT.	48" o.c.	FACU

NOTE: SEE ALSO SHEET 161 FOR PLANTING SCHEDULE A GENERAL CONSTRUCTION CORRIDOR AND SHEET 168 FOR WETLAND REPLICATION PLANTING



NOTE:
 1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).



N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
LANDSCAPE PLANS				
PLAN 14 OF 349				
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN CW	CHK'D. JG	APPR. JG
DRAWING NO.	REV.			

CONT. ON SHEET 113

CONT. ON SHEET 115

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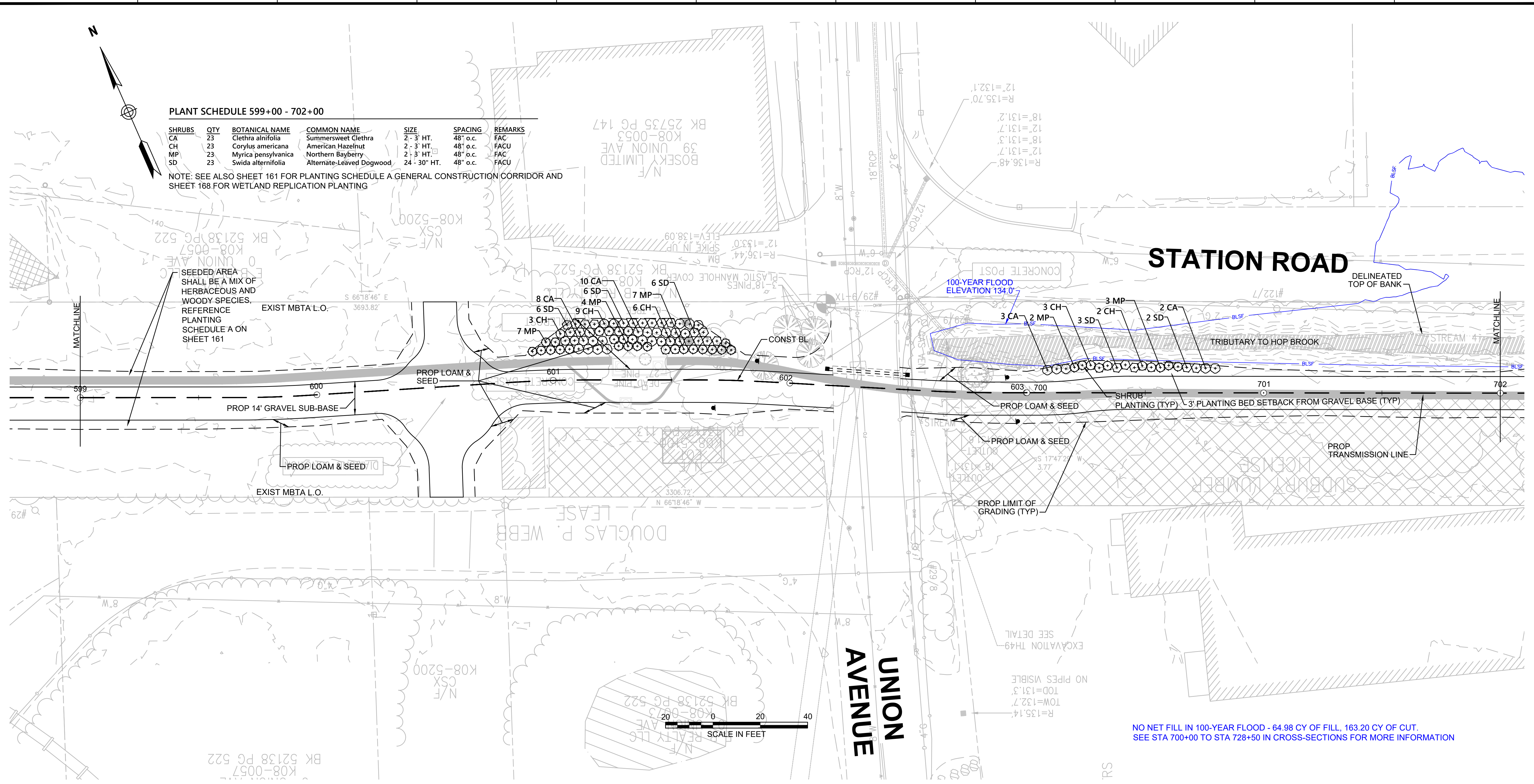
PLANT SCHEDULE 599+00 - 702+00

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CA	23	Clethra alnifolia	Summersweet Clethra	2 - 3' HT.	48" o.c.	FAC
CH	23	Corylus americana	American Hazelnut	2 - 3' HT.	48" o.c.	FACU
MP	23	Myrica pensylvanica	Northern Bayberry	2 - 3' HT.	48" o.c.	FAC
SD	23	Swida alternifolia	Alternate-Leaved Dogwood	24 - 30" HT.	48" o.c.	FACU

NOTE: SEE ALSO SHEET 161 FOR PLANTING SCHEDULE A GENERAL CONSTRUCTION CORRIDOR AND SHEET 168 FOR WETLAND REPLICATION PLANTING

SEEDED AREA SHALL BE A MIX OF HERBACEOUS AND WOODY SPECIES. REFERENCE PLANTING SCHEDULE A ON SHEET 161

STATION ROAD



CONT. ON SHEET 114

CONT. ON SHEET 116



NOTES:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).

NO NET FILL IN 100-YEAR FLOOD - 64.98 CY OF FILL, 163.20 CY OF CUT.
SEE STA 700+00 TO STA 728+50 IN CROSS-SECTIONS FOR MORE INFORMATION



NO.		DESCRIPTION	BY	DATE	APPR.
REVISION					
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
LANDSCAPE PLANS					
PLAN 115 OF 349					
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN CW	CHK'D. JG	APPR. JG	DRAWING NO. REV.

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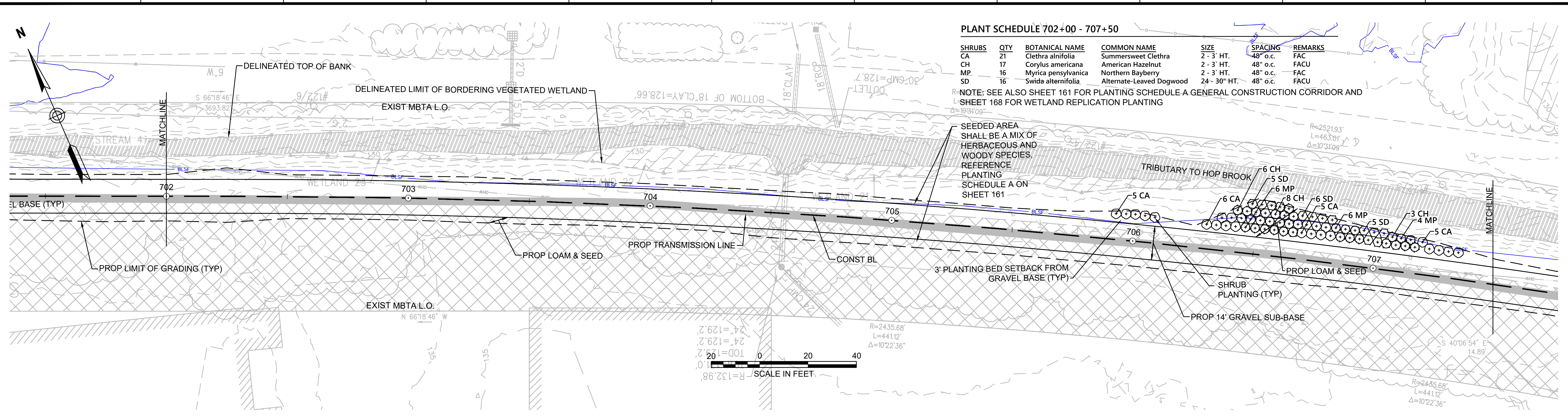
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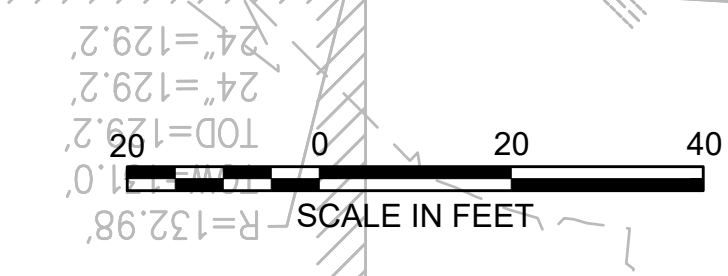


PLANT SCHEDULE 702+00 - 707+50

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CA	21	Clethra alnifolia	Summersweet Clethra	2 - 3' HT.	48" o.c.	FAC
CH	17	Corylus americana	American Hazelnut	2 - 3' HT.	48" o.c.	FACU
MP	16	Myrica pensylvanica	Northern Bayberry	2 - 3' HT.	48" o.c.	FAC
SD	16	Swida alternifolia	Alternate-Leaved Dogwood	24 - 30" HT.	48" o.c.	FACU

NOTE: SEE ALSO SHEET 161 FOR PLANTING SCHEDULE A GENERAL CONSTRUCTION CORRIDOR AND SHEET 168 FOR WETLAND REPLICATION PLANTING

SEEDED AREA SHALL BE A MIX OF HERBACEOUS AND WOODY SPECIES. REFERENCE PLANTING SCHEDULE A ON SHEET 161



NOTES:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).



N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
LANDSCAPE PLANS				
PLAN 116 OF 349				
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN CW	CHK'D. JG	APPR. JG
DRAWING NO.	REV.			

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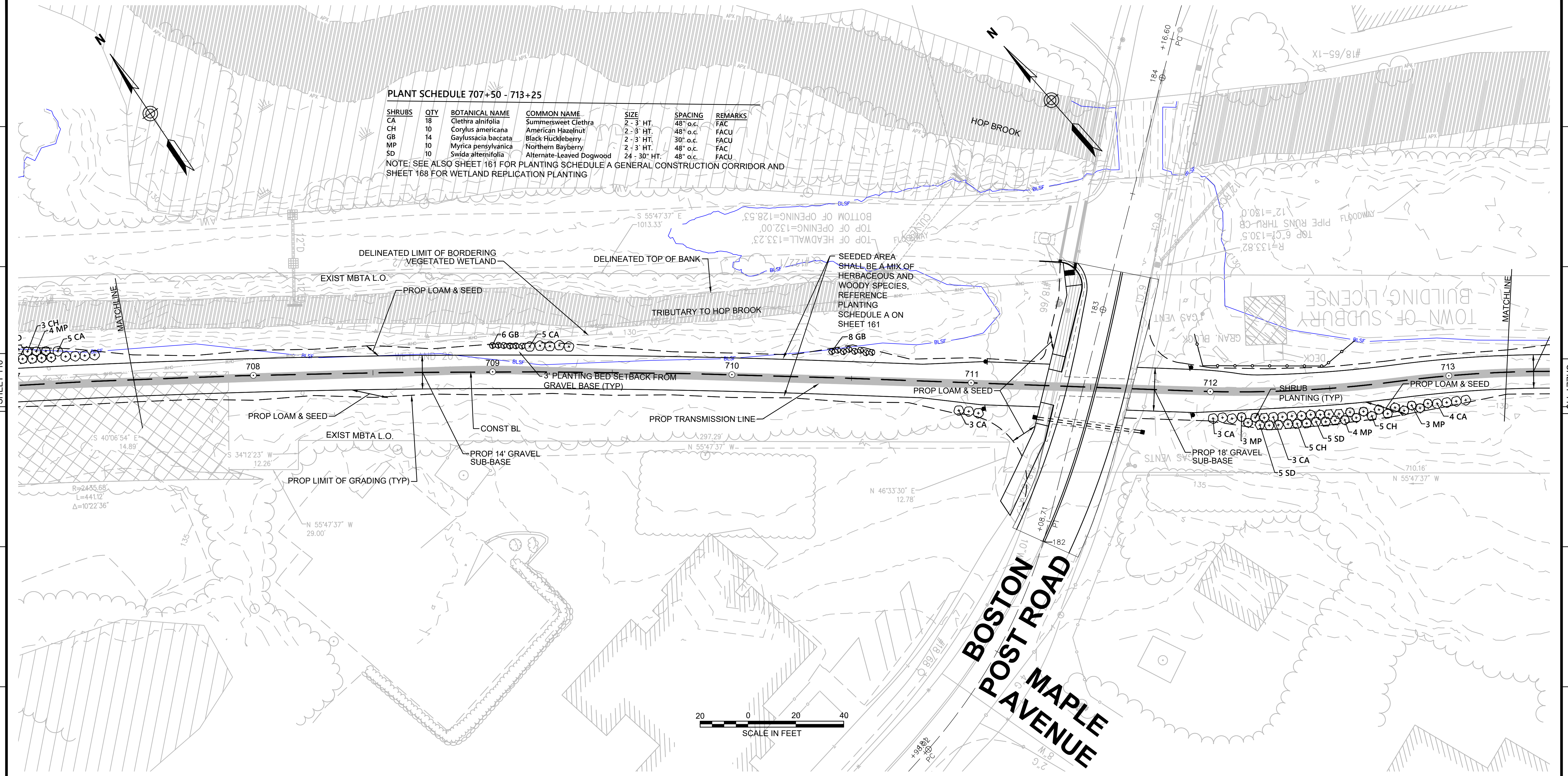
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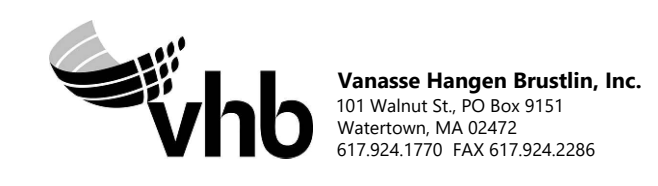
PLANT SCHEDULE 707+50 - 713+25

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CA	18	Clethra alnifolia	Summersweet Clethra	2 - 3' HT.	48" o.c.	FACU
CH	10	Corylus americana	American Hazelnut	2 - 3' HT.	48" o.c.	FACU
GB	14	Corylus americana	American Hazelnut	2 - 3' HT.	48" o.c.	FACU
MP	10	Myrica pensylvanica	Northern Bayberry	2 - 3' HT.	48" o.c.	FACU
SD	10	Swida alternifolia	Alternate-Leaved Dogwood	24 - 30" HT.	48" o.c.	FACU

NOTE: SEE ALSO SHEET 161 FOR PLANTING SCHEDULE A GENERAL CONSTRUCTION CORRIDOR AND SHEET 168 FOR WETLAND REPLICATION PLANTING



NOTES:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).



N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

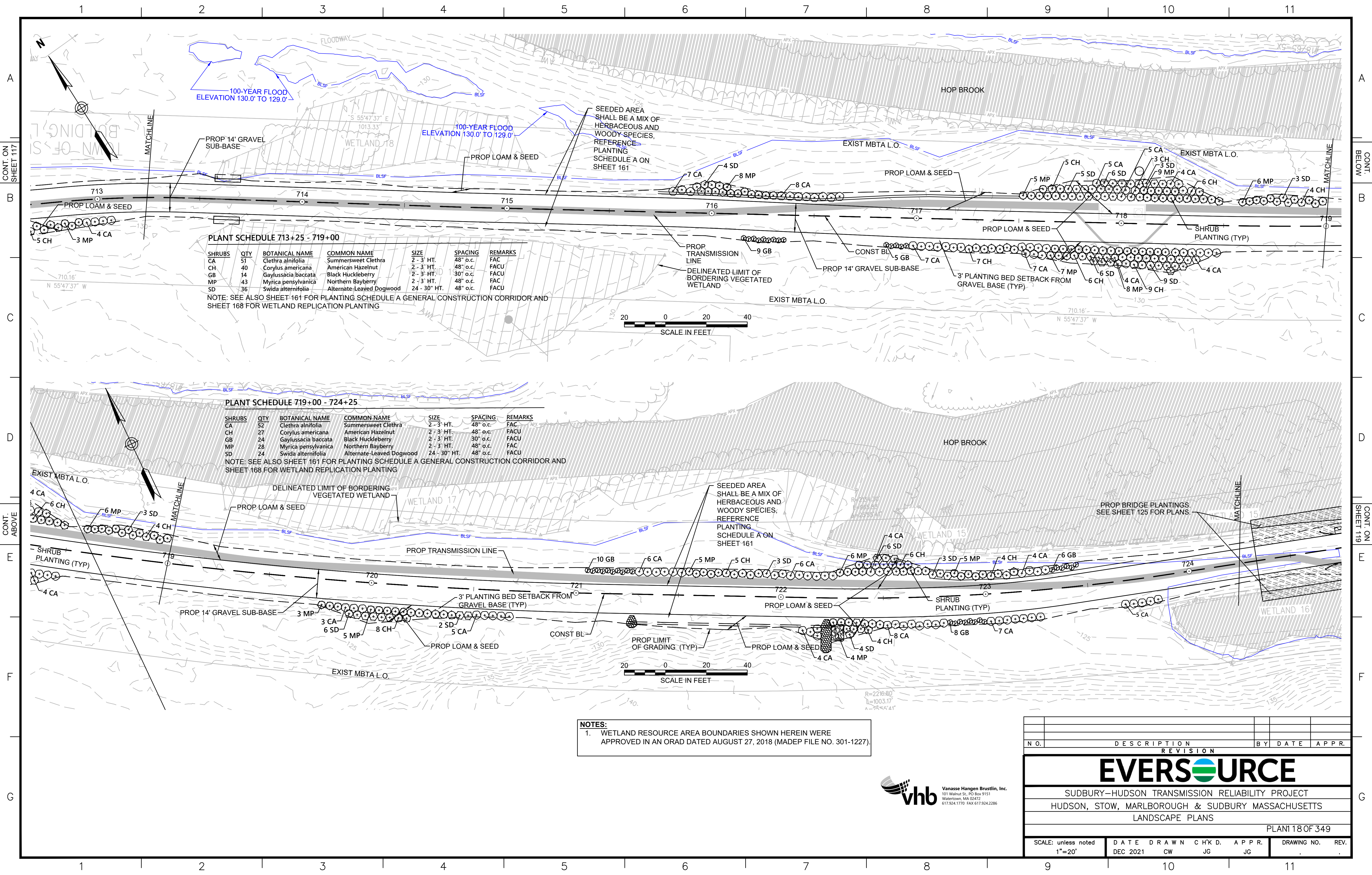
EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
LANDSCAPE PLANS

PLAN 117 OF 349

SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN CW	CHK'D. JG	APPR. JG	DRAWING NO.	REV.
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PLANT SCHEDULE 713+25 - 719+00

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CA	51	Clethra alnifolia	Summersweet Clethra	2 - 3' HT.	48" o.c.	FAC
CH	40	Corylus americana	American Hazelnut	2 - 3' HT.	48" o.c.	FACU
GB	14	Gaylussacia baccata	Black Huckleberry	2 - 3' HT.	30" o.c.	FACU
MP	43	Myrica pensylvanica	Northern Bayberry	2 - 3' HT.	48" o.c.	FAC
SD	36	Swida alternifolia	Alternate-Leaved Dogwood	24 - 30" HT.	48" o.c.	FACU

NOTE: SEE ALSO SHEET 161 FOR PLANTING SCHEDULE A GENERAL CONSTRUCTION CORRIDOR AND SHEET 168 FOR WETLAND REPLICATION PLANTING

PLANT SCHEDULE 719+00 - 724+25

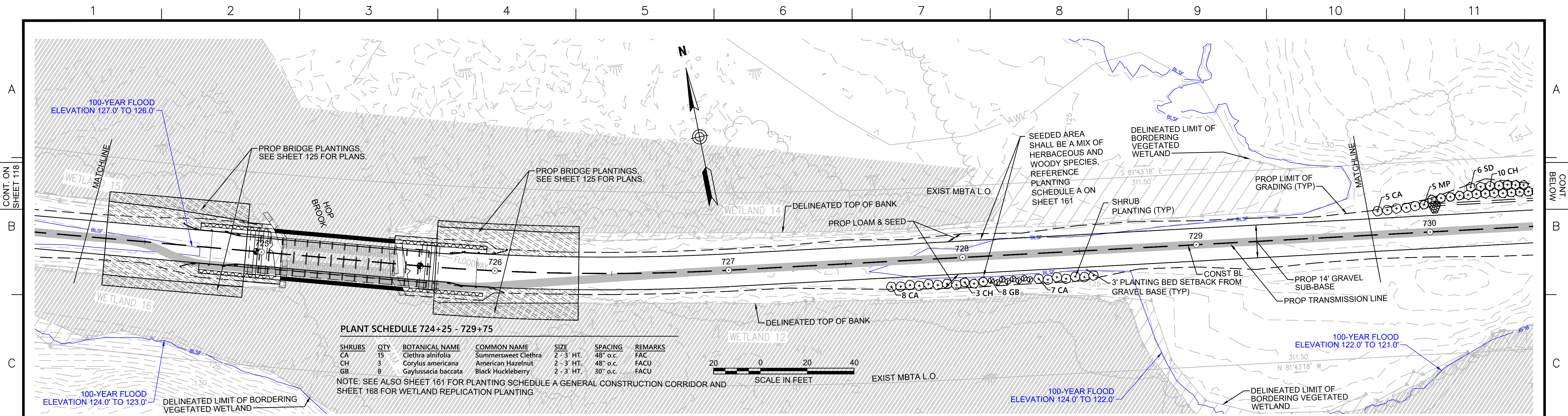
SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CA	52	Clethra alnifolia	Summersweet Clethra	2 - 3' HT.	48" o.c.	FAC
CH	27	Corylus americana	American Hazelnut	2 - 3' HT.	48" o.c.	FACU
GB	24	Gaylussacia baccata	Black Huckleberry	2 - 3' HT.	30" o.c.	FACU
MP	28	Myrica pensylvanica	Northern Bayberry	2 - 3' HT.	48" o.c.	FAC
SD	24	Swida alternifolia	Alternate-Leaved Dogwood	24 - 30" HT.	48" o.c.	FACU

NOTE: SEE ALSO SHEET 161 FOR PLANTING SCHEDULE A GENERAL CONSTRUCTION CORRIDOR AND SHEET 168 FOR WETLAND REPLICATION PLANTING

NOTES:
 1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).



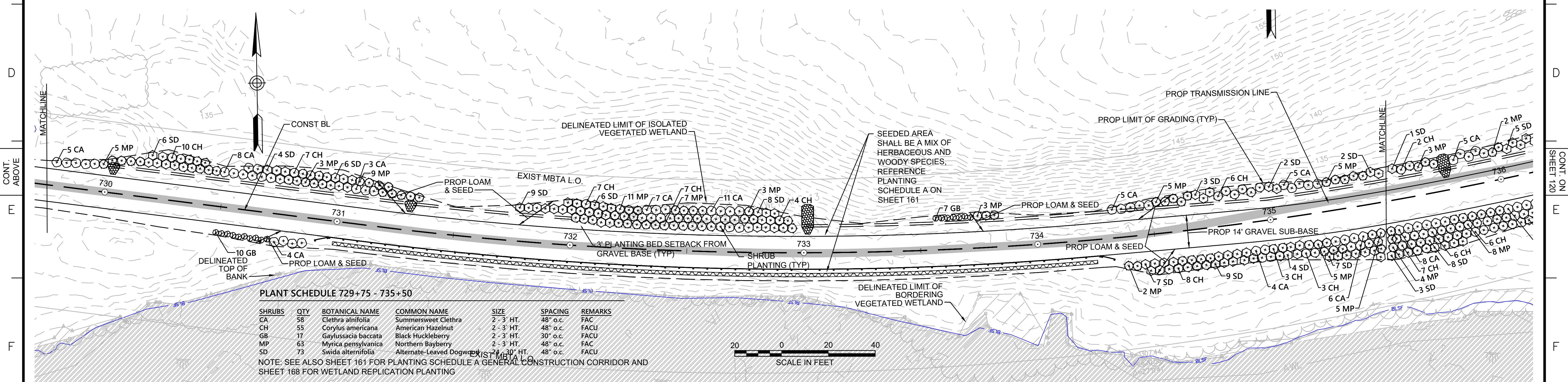
NO.		DESCRIPTION	BY	DATE	APPR.
REVISION					
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
LANDSCAPE PLANS					
PLAN 18 OF 349					
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN CW	CHK'D. JG	APPR. JG	DRAWING NO. REV.



PLANT SCHEDULE 724+25 - 729+75

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CA	15	<i>Clethra alnifolia</i>	Summersweet Clethra	2 - 3' HT.	48" o.c.	FAC
CH	3	<i>Corylus americana</i>	American Hazelnut	2 - 3' HT.	48" o.c.	FACU
GB	8	<i>Gaylussacia baccata</i>	Black Huckleberry	2 - 3' HT.	30" o.c.	FACU

NOTE: SEE ALSO SHEET 161 FOR PLANTING SCHEDULE A GENERAL CONSTRUCTION CORRIDOR AND SHEET 168 FOR WETLAND REPLICATION PLANTING



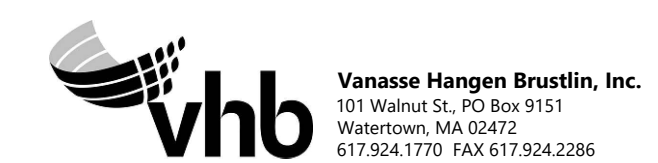
PLANT SCHEDULE 729+75 - 735+50

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CA	58	<i>Clethra alnifolia</i>	Summersweet Clethra	2 - 3' HT.	48" o.c.	FAC
CH	55	<i>Corylus americana</i>	American Hazelnut	2 - 3' HT.	48" o.c.	FACU
GB	17	<i>Gaylussacia baccata</i>	Black Huckleberry	2 - 3' HT.	30" o.c.	FACU
MP	63	<i>Myrica pensylvanica</i>	Northern Bayberry	2 - 3' HT.	48" o.c.	FAC
SD	73	<i>Swida alternifolia</i>	Alternate-Leaved Dogwood	2 - 3' HT.	48" o.c.	FACU

NOTE: SEE ALSO SHEET 161 FOR PLANTING SCHEDULE A GENERAL CONSTRUCTION CORRIDOR AND SHEET 168 FOR WETLAND REPLICATION PLANTING



NOTES:
 1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).



NO.	DESCRIPTION	BY	DATE	APPR.
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
LANDSCAPE PLANS				
PLAN 119 OF 349				
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN CW	CHK'D. JG	APPR. JG
DRAWING NO.	REV.			

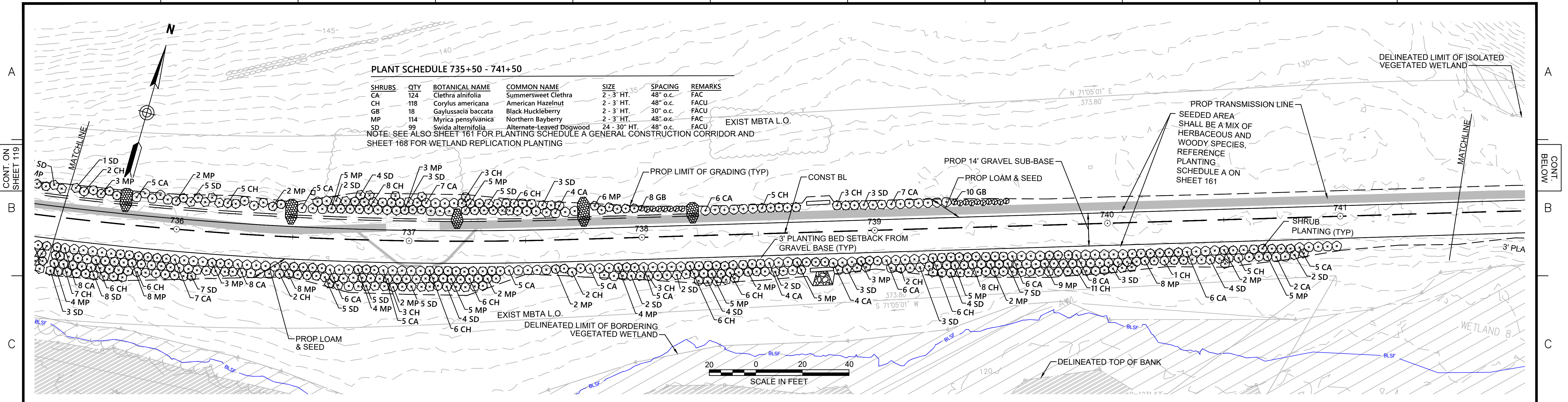
CONT. ON SHEET 119

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PLANT SCHEDULE 735+50 - 741+50

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CA	124	Clethra alnifolia	Summersweet Clethra	2 - 3' HT.	48" o.c.	FAC
CH	118	Corylus americana	American Hazelnut	2 - 3' HT.	48" o.c.	FACU
GB	18	Gaylussacia baccata	Black Huckleberry	2 - 3' HT.	30" o.c.	FACU
MP	114	Myrica pensylvanica	Northern Bayberry	2 - 3' HT.	48" o.c.	FAC
SD	99	Swida alternifolia	Alternate-Leaved Dogwood	24 - 30" HT.	48" o.c.	FACU

EXIST MBTA L.O.
NOTE: SEE ALSO SHEET 161 FOR PLANTING SCHEDULE A GENERAL CONSTRUCTION CORRIDOR AND SHEET 168 FOR WETLAND REPLICATION PLANTING



CONT. ABOVE

CONT. ON SHEET 121

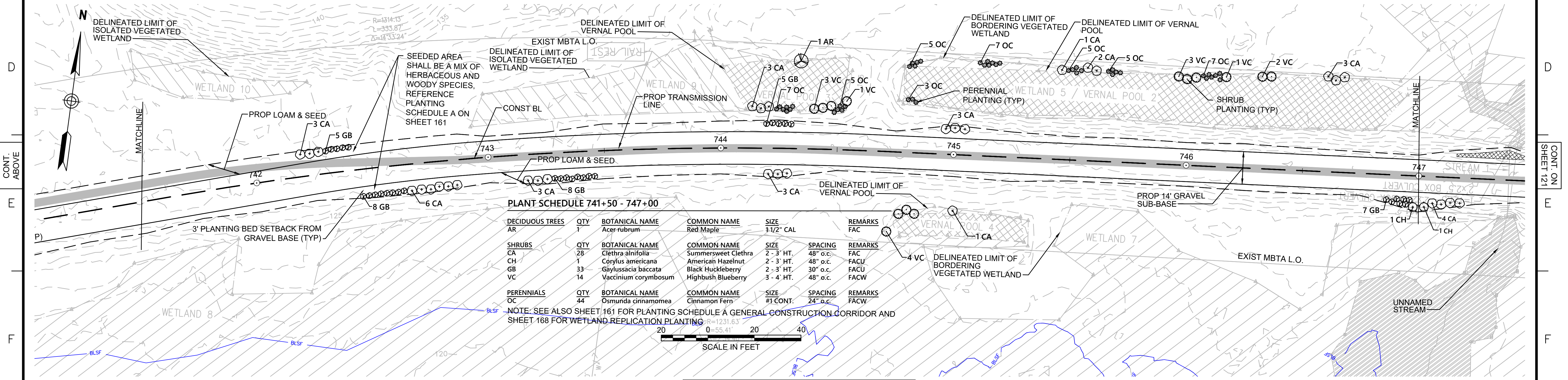
PLANT SCHEDULE 741+50 - 747+00

DECIDUOUS TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
AR	1	Acer rubrum	Red Maple	1 1/2" CAL	FAC

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CA	28	Clethra alnifolia	Summersweet Clethra	2 - 3' HT.	48" o.c.	FAC
CH	1	Corylus americana	American Hazelnut	2 - 3' HT.	48" o.c.	FACU
GB	33	Gaylussacia baccata	Black Huckleberry	2 - 3' HT.	30" o.c.	FACU
VC	14	Vaccinium corymbosum	Highbush Blueberry	3 - 4' HT.	48" o.c.	FACW

PERENNIALS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
OC	44	Osmunda cinnamomea	Cinnamon Fern	#1 CONT.	24" o.c.	FACW

NOTE: SEE ALSO SHEET 161 FOR PLANTING SCHEDULE A GENERAL CONSTRUCTION CORRIDOR AND SHEET 168 FOR WETLAND REPLICATION PLANTING



NOTES:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).



N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
LANDSCAPE PLANS

PLAN 120 OF 349

SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN CW	CHK'D. JG	APPR. JG	DRAWING NO.	REV.
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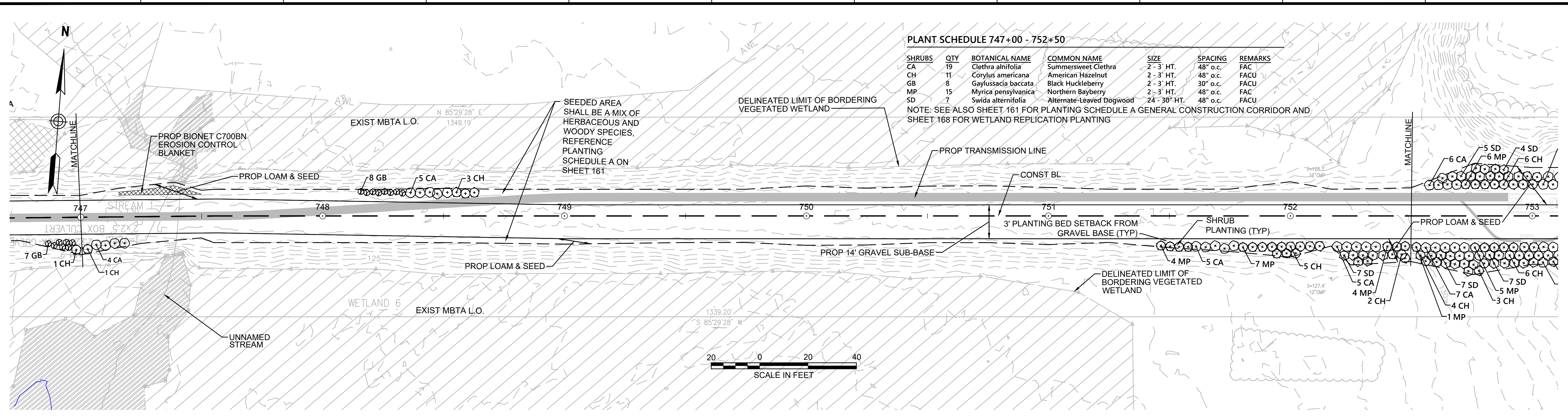
CONT. ON SHEET 120

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PLANT SCHEDULE 747+00 - 752+50

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CA	19	Clethra alnifolia	Summersweet Clethra	2 - 3' HT.	48" o.c.	FAC
CH	11	Corylus americana	American Hazelnut	2 - 3' HT.	48" o.c.	FACU
GB	8	Gaylussacia baccata	Black Huckleberry	2 - 3' HT.	30" o.c.	FACU
MP	15	Myrica pensylvanica	Northern Bayberry	2 - 3' HT.	48" o.c.	FAC
SD	7	Swida alternifolia	Alternate-Leaved Dogwood	24 - 30" HT.	48" o.c.	FACU

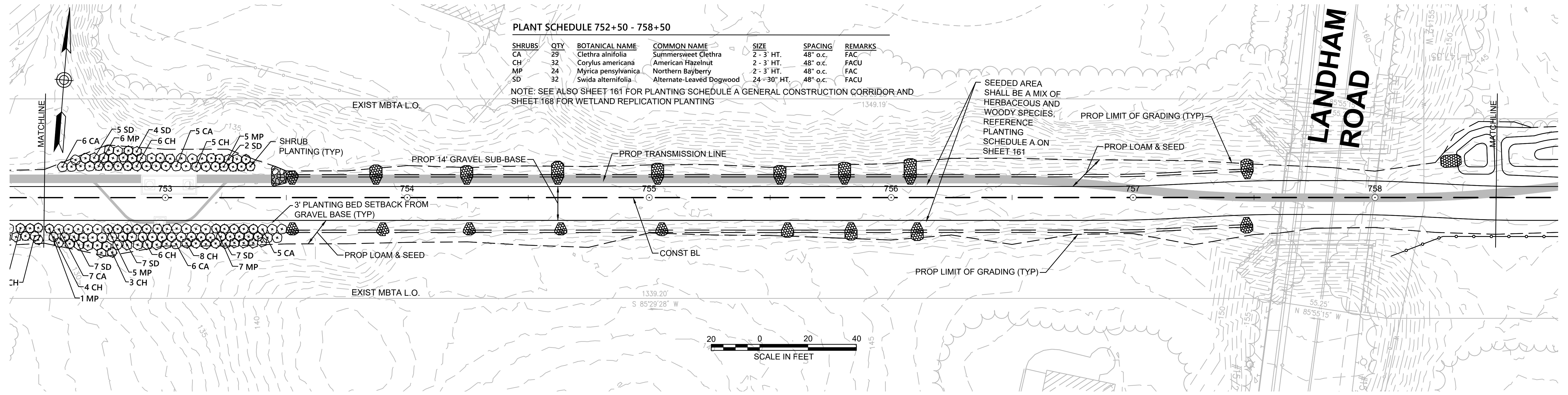
NOTE: SEE ALSO SHEET 161 FOR PLANTING SCHEDULE A GENERAL CONSTRUCTION CORRIDOR AND SHEET 168 FOR WETLAND REPLICATION PLANTING



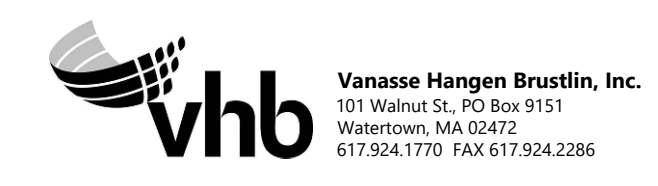
PLANT SCHEDULE 752+50 - 758+50

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CA	29	Clethra alnifolia	Summersweet Clethra	2 - 3' HT.	48" o.c.	FAC
CH	32	Corylus americana	American Hazelnut	2 - 3' HT.	48" o.c.	FACU
MP	24	Myrica pensylvanica	Northern Bayberry	2 - 3' HT.	48" o.c.	FAC
SD	32	Swida alternifolia	Alternate-Leaved Dogwood	24 - 30" HT.	48" o.c.	FACU

NOTE: SEE ALSO SHEET 161 FOR PLANTING SCHEDULE A GENERAL CONSTRUCTION CORRIDOR AND SHEET 168 FOR WETLAND REPLICATION PLANTING



NOTES:
 1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).



N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
LANDSCAPE PLANS				
PLAN 121 OF 349				
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN CW	CHK'D. JG	APPR. JG
DRAWING NO.	REV.			

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CONT. ON SHEET 122

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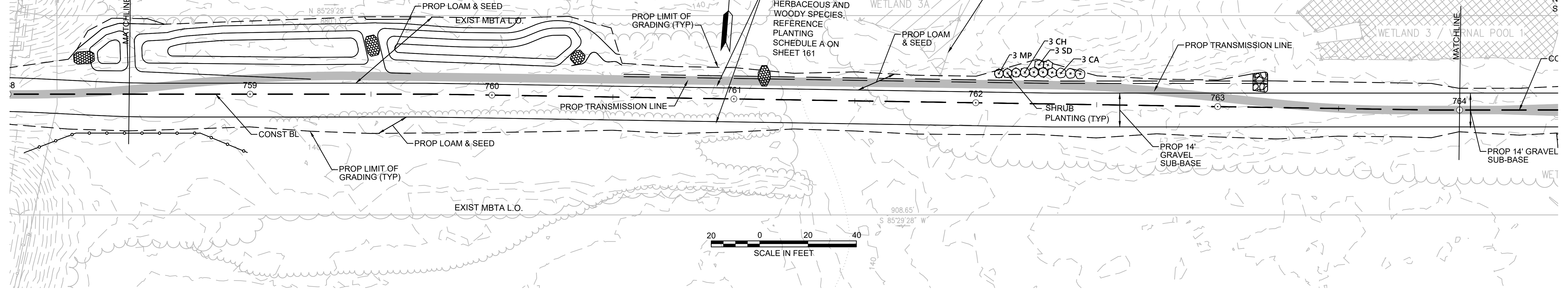
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PLANT SCHEDULE 758+50 - 764+00

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CA	3	Clethra alnifolia	Summersweet Clethra	2 - 3' HT.	48" o.c.	FAC
CH	3	Corylus americana	American Hazelnut	2 - 3' HT.	48" o.c.	FACU
MP	3	Myrica pensylvanica	Northern Bayberry	2 - 3' HT.	48" o.c.	FAC
SD	3	Swida alternifolia	Alternate-Leaved Dogwood	24 - 30" HT.	48" o.c.	FACU

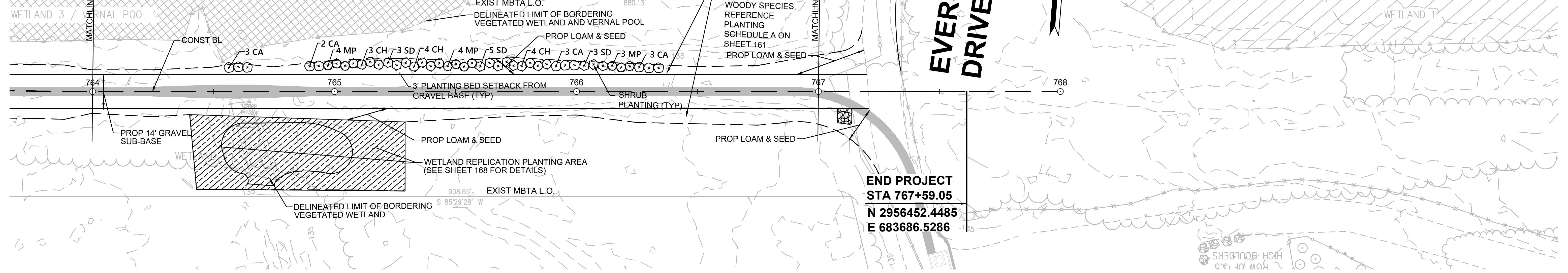
NOTE: SEE ALSO SHEET 161 FOR PLANTING SCHEDULE A GENERAL CONSTRUCTION CORRIDOR AND SHEET 168 FOR WETLAND REPLICATION PLANTING



PLANT SCHEDULE 764+00 - 767+00

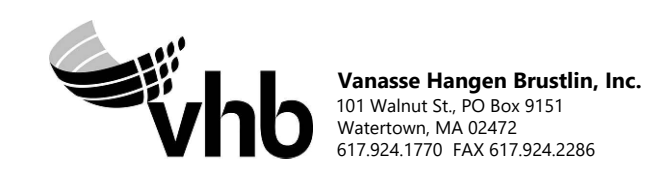
SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
CA	11	Clethra alnifolia	Summersweet Clethra	2 - 3' HT.	48" o.c.	FAC
CH	11	Corylus americana	American Hazelnut	2 - 3' HT.	48" o.c.	FACU
MP	11	Myrica pensylvanica	Northern Bayberry	2 - 3' HT.	48" o.c.	FAC
SD	11	Swida alternifolia	Alternate-Leaved Dogwood	24 - 30" HT.	48" o.c.	FACU

NOTE: SEE ALSO SHEET 161 FOR PLANTING SCHEDULE A GENERAL CONSTRUCTION CORRIDOR AND SHEET 168 FOR WETLAND REPLICATION PLANTING



**END PROJECT
STA 767+59.05
N 2956452.4485
E 683686.5286**

NOTE:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).



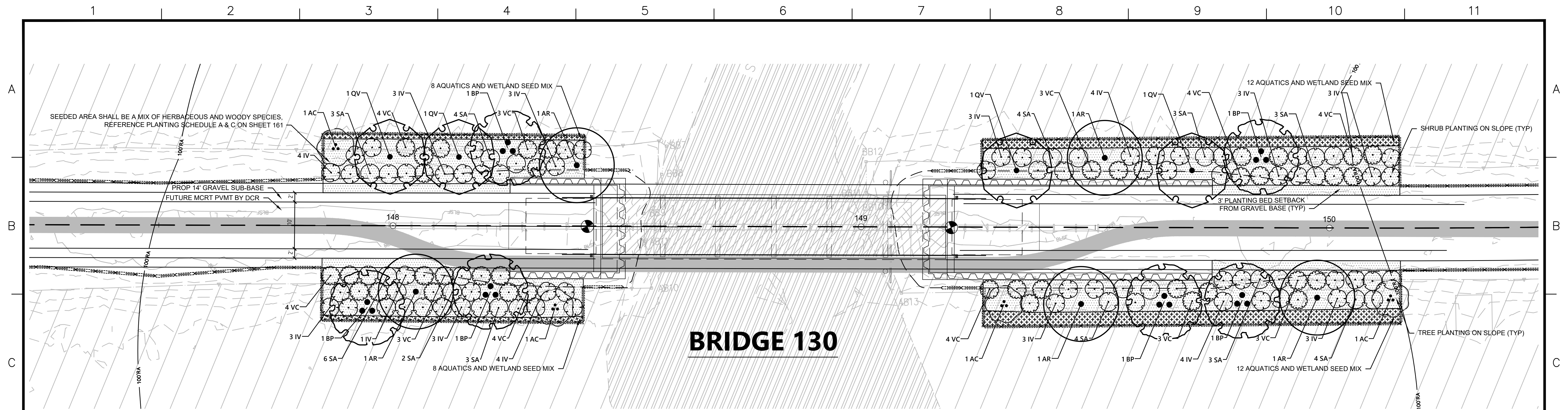
NO.		DESCRIPTION	BY	DATE	APPR.
REVISION					
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
LANDSCAPE PLANS					
PLAN 122 OF 349					
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN CW	CHK'D. JG	APPR. JG	DRAWING NO. REV.

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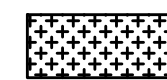

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BRIDGE 130



LEGEND

-  AQUATIC PLANTS AND WETLAND SEED MIX
-  SEEDED AREA

PLANT SCHEDULE WEST SIDE

DECIDUOUS TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	WETLAND STATUS
AR	2	Acer rubrum	Red Maple	1 1/2" CAL	FAC
AC	2	Amelanchier canadensis	Serviceberry	10 - 12' HT./Multi-Stem	FAC
BP	3	Betula populifolia	Gray Birch	10 - 12' HT./Multi-Stem	FAC
QV	2	Quercus velutina	Black Oak	1 1/2" CAL	UPL

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	FACW
IV	21	Ilex verticillata	Winterberry	3' - 4'	48" o.c.	FACW
SA	18	Swida amomum	Silky Dogwood	3' - 4'	48" o.c.	FACW
VC	18	Vaccinium corymbosum	Highbush Blueberry	3' - 4'	48" o.c.	FACW

AQUATICS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	WETLAND STATUS
	4	Alisma plantago-aquatica	Northern Water-Plantain	2" plug	OBL
	4	Peltandra virginica	Green Arrow-Arum	2" plug	OBL
	4	Pontederia cordata	Pickernelweed	2" plug	OBL
	4	Sagittaria latifolia	Common Arrowhead	2" plug	OBL

PLANT SCHEDULE EAST SIDE

DECIDUOUS TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	WETLAND STATUS
AR	3	Acer rubrum	Red Maple	1 1/2" CAL	FAC
AC	2	Amelanchier canadensis	Serviceberry	10 - 12' HT./Multi-Stem	FAC
BP	3	Betula populifolia	Gray Birch	10 - 12' HT./Multi-Stem	FAC
QV	2	Quercus velutina	Black Oak	1 1/2" CAL	UPL

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	FACW
IV	23	Ilex verticillata	Winterberry	3' - 4'	48" o.c.	FACW
SA	21	Swida amomum	Silky Dogwood	3' - 4'	48" o.c.	FACW
VC	21	Vaccinium corymbosum	Highbush Blueberry	3' - 4'	48" o.c.	FACW

AQUATICS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	WETLAND STATUS
	6	Alisma plantago-aquatica	Northern Water-Plantain	2" plug	OBL
	6	Peltandra virginica	Green Arrow-Arum	2" plug	OBL
	6	Pontederia cordata	Pickernelweed	2" plug	OBL
	6	Sagittaria latifolia	Common Arrowhead	2" plug	OBL

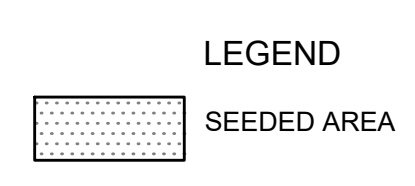
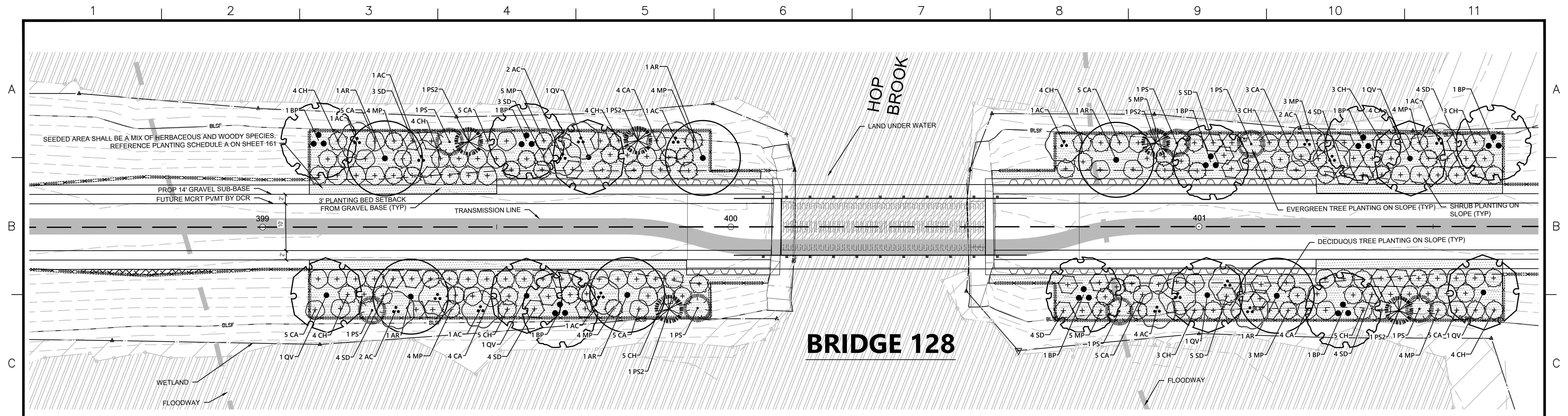
WETLAND SEED MIX

WETLAND SEED MIX SHALL BE APPLIED AT A DENSITY OF 18LB./AC.

Wetland seed mix "New England Wetmix" from New England Wetland Plants, Inc. or similar. Typical species: fox sedge (*Carex vulpinoidea*), sallow sedge (*Carex lurida*), broom sedge (*Carex scoparia*), sensitive fern (*Onoclea sensibilis*), blue vervain (*Verbena hastata*), hop sedge (*Carex lupulina*), dark-green bulrush (*Scirpus atrovirens*), nodding bur-marigold (*Bidens cernua*), bristly sedge (*Carex comosa*), fringed sedge (*Carex crinita*), tall mannagrass (*Glyceria grandis*), wool-grass (*Scirpus cyperinus*), soft rush (*Juncus effusus*), spotted Joe-Pye-weed (*Eutrochium maculatum*), boneset (*Eupatorium perfoliatum*), American water-plantain (*Alisma subcordatum*), New England aster (*Symphotrichum novae-angliae*), rattlesnake mannagrass (*Glyceria canadensis*), purple-stem aster (*Symphotrichum puniceum*), soft-stemmed bulrush (*Schoenoplectus tabernaemontani*), blueflag (*Iris versicolor*), swamp milkweed (*Asclepias incarnata*), and Allegheny monkey-flower (*Mimulus ringens*).



N. O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CONSTRUCTION DETAILS				
PLAN 123 OF 349				
SCALE: unless noted 1"=10'	DATE	DRAWN	CHK'D	APPR.
	DEC 2021	MS	SK	MES
DRAWING NO.	REV.			

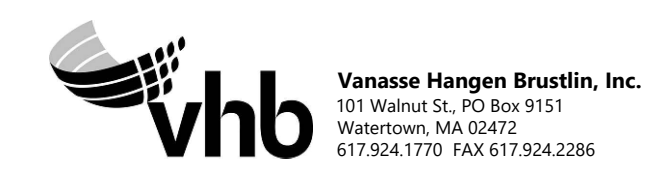


PLANT SCHEDULE WEST SIDE

DECIDUOUS TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	WETLAND STATUS
AR	4	Acer rubrum	Red Maple	1 1/2" CAL	FAC
AC	9	Amelanchier canadensis	Serviceberry	10 - 12' HT./Multi-Stem	FAC
BP	3	Betula populifolia	Gray Birch	10 - 12' HT./Multi-Stem	FAC
QV	3	Quercus velutina	Black Oak	1 1/2" CAL	UPL
EVERGREEN TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	WETLAND STATUS
PS	3	Pinus strobus	White Pine	6 - 8' HT.	FACU
PS2	3	Pinus strobus	White Pine	8 - 10' HT.	FACU
SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
CA	28	Clethra alnifolia	Summersweet Clethra	2 - 3' HT.	48" o.c. FAC
CH	26	Corylus americana	American Hazelnut	2 - 3' HT.	48" o.c. FACU
MP	21	Myrica pensylvanica	Northern Bayberry	2 - 3' HT.	48" o.c. FAC
SD	14	Swida alternifolia	Alternate-Leaved Dogwood	24 - 30" HT.	48" o.c. FACU

PLANT SCHEDULE EAST SIDE

DECIDUOUS TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	WETLAND STATUS
AR	2	Acer rubrum	Red Maple	1 1/2" CAL	FAC
AC	8	Amelanchier canadensis	Serviceberry	10 - 12' HT./Multi-Stem	FAC
BP	5	Betula populifolia	Gray Birch	10 - 12' HT./Multi-Stem	FAC
QV	3	Quercus velutina	Black Oak	1 1/2" CAL	UPL
EVERGREEN TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	WETLAND STATUS
PS	4	Pinus strobus	White Pine	6 - 8' HT.	FACU
PS2	2	Pinus strobus	White Pine	8 - 10' HT.	FACU
SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
CA	26	Clethra alnifolia	Summersweet Clethra	2 - 3' HT.	48" o.c. FAC
CH	25	Corylus americana	American Hazelnut	2 - 3' HT.	48" o.c. FACU
MP	24	Myrica pensylvanica	Northern Bayberry	2 - 3' HT.	48" o.c. FAC
SD	26	Swida alternifolia	Alternate-Leaved Dogwood	24 - 30" HT.	48" o.c. FACU



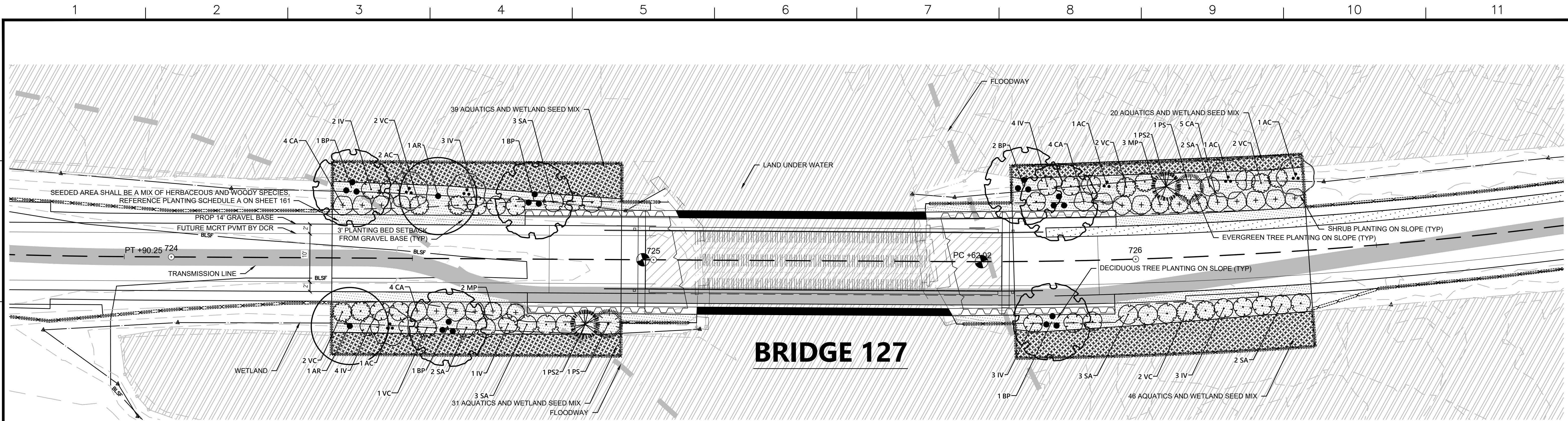
N. O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
LANDSCAPE PLANS

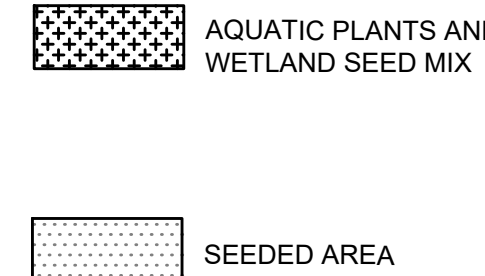
PLAN 24 OF 349

SCALE: unless noted 1"=10'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES	DRAWING NO.	REV.
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BRIDGE 127

LEGEND



PLANT SCHEDULE WEST SIDE

DECIDUOUS TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	WETLAND STATUS
AR	2	Acer rubrum	Red Maple	1 1/2" CAL	FAC
AC	3	Amelanchier canadensis	Serviceberry	10 - 12' HT./Multi-Stem	FAC
BP	3	Betula populifolia	Gray Birch	10 - 12' HT./Multi-Stem	FAC
EVERGREEN TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	WETLAND STATUS
PS	1	Pinus strobus	White Pine	6 - 8' HT.	FACU
PS2	1	Pinus strobus	White Pine	8 - 10' HT.	FACU
SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
CA	8	Clethra alnifolia	Summersweet Clethra	2 - 3' HT.	48" o.c. FAC
IV	10	Ilex verticillata	Winterberry	3 - 4' HT.	48" o.c. FACW
MP	2	Myrica pensylvanica	Northern Bayberry	2 - 3' HT.	48" o.c. FAC
SA	8	Swida amomum	Silky Dogwood	3 - 4' HT.	48" o.c. FACW
VC	5	Vaccinium corymbosum	Highbush Blueberry	3 - 4' HT.	48" o.c. FACW
AQUATICS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	WETLAND STATUS
	18	Alisma plantago-aquatica	Northern Water-Plantain	2" plug	36" o.c. OBL
	18	Peltandra virginica	Green Arrow-Arum	2" plug	36" o.c. OBL
	17	Pontederia cordata	Pickereelweed	2" plug	36" o.c. OBL
	17	Sagittaria latifolia	Common Arrowhead	2" plug	36" o.c. OBL

PLANT SCHEDULE EAST SIDE

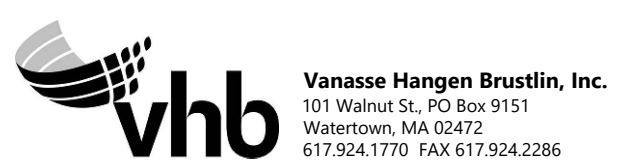
DECIDUOUS TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	WETLAND STATUS
AC	3	Amelanchier canadensis	Serviceberry	10 - 12' HT./Multi-Stem	FAC
BP	3	Betula populifolia	Gray Birch	10 - 12' HT./Multi-Stem	FAC
EVERGREEN TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	WETLAND STATUS
PS	1	Pinus strobus	White Pine	6 - 8' HT.	FACU
PS2	1	Pinus strobus	White Pine	8 - 10' HT.	FACU
SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
CA	9	Clethra alnifolia	Summersweet Clethra	2 - 3' HT.	48" o.c. FAC
IV	10	Ilex verticillata	Winterberry	3 - 4' HT.	48" o.c. FACW
MP	3	Myrica pensylvanica	Northern Bayberry	2 - 3' HT.	48" o.c. FAC
SA	7	Swida amomum	Silky Dogwood	3 - 4' HT.	48" o.c. FACW
VC	6	Vaccinium corymbosum	Highbush Blueberry	3 - 4' HT.	48" o.c. FACW
AQUATICS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	WETLAND STATUS
	17	Alisma plantago-aquatica	Northern Water-Plantain	2" plug	36" o.c. OBL
	17	Peltandra virginica	Green Arrow-Arum	2" plug	36" o.c. OBL
	16	Pontederia cordata	Pickereelweed	2" plug	36" o.c. OBL
	16	Sagittaria latifolia	Common Arrowhead	2" plug	36" o.c. OBL

WETLAND SEED MIX

WETLAND SEED MIX SHALL BE APPLIED AT A DENSITY OF 18LB./AC.

"Wetland seed mix "New England Wetmix" from New England Wetland Plants, Inc. or similar. Typical species: fox sedge (Carex vulpinoidea), sallow sedge (Carex lurida), broom sedge (Carex scoparia), sensitive fern (Onoclea sensibilis), blue vervain (Verbena hastata), hop sedge (Carex lupulina), dark-green bulrush (Scirpus atrovirens), nodding bur-marigold (Bidens cernua), bristly sedge (Carex comosa), fringed sedge (Carex crinita), tall manna-grass (Glyceria grandis), wool-grass (Scirpus cyperinus), soft rush (Juncus effusus), spotted Joe-Pye-weed (Eutrochium maculatum), boneset (Eupatorium perfoliatum), American water-plantain (Alisma subcordatum), New England aster (Symphyotrichum novae-angliae), rattlesnake manna-grass (Glyceria canadensis), purple-stem aster (Symphyotrichum puniceum), soft-stemmed bulrush (Schoenoplectus tabernaemontani), blueflag (Iris versicolor), swamp milkweed (Asclepias incarnata), and Allegheny monkey-flower (Mimulus ringens).

NO.		DESCRIPTION		BY	DATE	APPR.
REVISION						
EVERSOURCE						
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT						
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS						
LANDSCAPE PLANS						
PLAN 125 OF 349						
SCALE: unless noted 1"=10'	DATE	DRAWN	CHK'D.	APPR.	DRAWING NO.	REV.
	DEC 2021	MS	SK	MES		

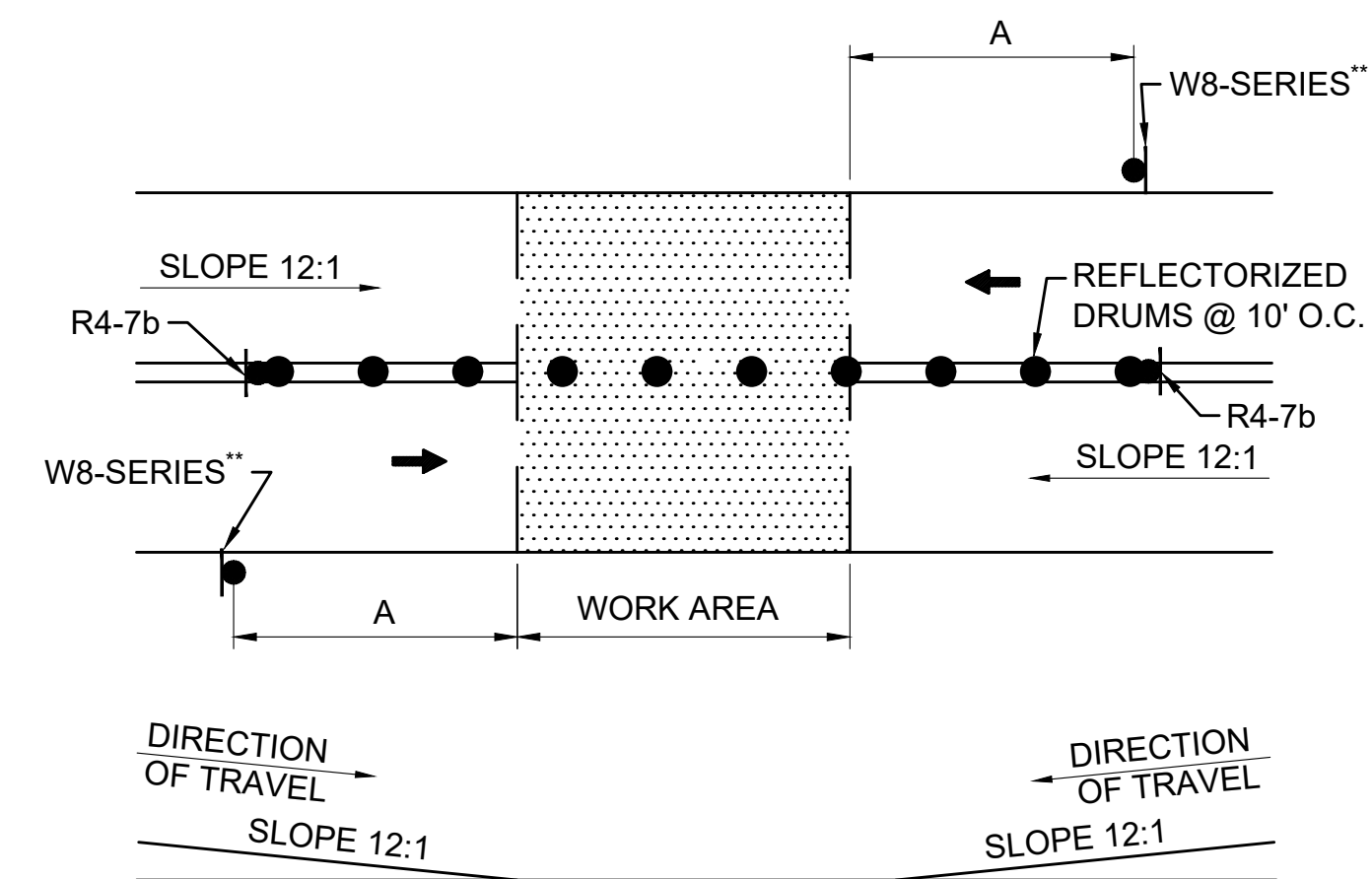


GENERAL NOTES

- ALL CONSTRUCTION SIGNING, TEMPORARY TRAFFIC CONTROL DEVICES, AND ROADSIDE ELEMENTS SHALL CONFORM WITH THE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AS AMENDED, THE MASSDOT STANDARD DETAILS AND DRAWINGS FOR THE DEVELOPMENT OF TEMPORARY TRAFFIC CONTROL PLANS, THE LATEST REVISIONS OF THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, (AASHTO) ROADSIDE DESIGN GUIDE, AASHTO POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS, AND NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (NCHRP) REPORT 350 OR THE AASHTO MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).
- THE ALLOWABLE WORK HOURS ARE IDENTIFIED IN THE ENERGY FACILITIES SITING BOARD FINAL DECISION. THE CONTRACTOR SHALL NOTE THAT THERE ARE FURTHER RESTRICTED WORKING HOURS WHILE WORKING IN MUNICIPAL AND MASSDOT RIGHTS OF WAY (ROWS) IN ACCORDANCE WITH THEIR RESPECTIVE PERMITS.

WORK HOURS WITHIN THE ROADWAY SHALL BE AS STATED IN THE STATE/LOCAL PERMIT ISSUED BY MASSDOT OR THE MUNICIPALITY WITH JURISDICTION OF THE ROADWAY. AT A MINIMUM, THE CONTRACTOR SHALL NOTE THE FOLLOWING POTENTIAL RESTRICTIONS:
 - TYPICALLY, MASSDOT OR LOCAL MUNICIPALITY WILL NOT ALLOW WORK THAT IMPACTS THE TRAVEL WAY DURING PEAK TRAFFIC PERIODS. FOR EXAMPLE, PEAK PERIODS ARE COMMONLY DEFINED AS MONDAY THRU FRIDAY, 7:00 AM TO 9:00 AM AND 3:00 PM TO 7:00 PM.
 - IN ORDER TO MINIMIZE IMPACTS TO TRAFFIC DURING CONSTRUCTION, IT IS SUGGESTED THAT WORK AT THE INTERSECTIONS OF FOREST AVENUE AT MARLBORO STREET AND MAIN STREET AT FOREST AVENUE/ WILKINS STREET WILL REQUIRE NIGHT WORK.
 - WORK IN THE PROXIMITY OF FOREST AVENUE ELEMENTARY SCHOOL AND CHAPS CHILD CARE WILL ALSO REQUIRE COORDINATION WITH THE TOWN OF HUDSON.
 - ROAD CLOSURE AND DETOUR OF CHESTNUT STREET SHALL BE COORDINATED WITH THE TOWN OF HUDSON AND THE TOWN OF STOW AND ANY IMPACTS TO SCHOOL BUS ROUTES SHALL BE CLOSELY COORDINATED WITH THE APPROPRIATE AGENCY.
- NO WORK SHALL OCCUR WITHIN THE PUBLIC WAY ON STATE RECOGNIZED HOLIDAYS UNLESS OTHERWISE APPROVED BY THE ENGINEER.
- ALL TEMPORARY PEDESTRIAN PATHWAYS SHALL COMPLY FULLY WITH ALL REQUIREMENTS OF THE MUTCD AND ALL APPLICABLE MASSACHUSETTS ARCHITECTURAL ACCESS BOARD (MAAB) AND AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES (ADAAG) REQUIREMENTS AND PUBLIC RIGHTS-OF WAY ACCESSIBILITY GUIDELINES (PROWAG).
- ALL DRUMS OUTSIDE TAPERS SHALL BE SET AT 20' ON CENTER MAX. UNLESS OTHERWISE NOTED OR ADJUSTED BY THE ENGINEER.
- ALL DRUMS SHALL BE APPROXIMATELY PLACED AND MOVED AS NECESSARY TO MAINTAIN SAFE AND REASONABLE ABUTTER ACCESS. WORK MAY REQUIRE ADDITIONAL SIGNS, DRUMS AND OTHER TRAFFIC CONTROL DEVICES, GRADING AND TEMPORARY PAVEMENT FOR PASSAGE OF PEDESTRIAN, VEHICULAR AND EMERGENCY TRAFFIC THROUGH THE WORK AREAS, BOTH DURING AND AFTER WORKING HOURS, TO MAINTAIN SUCH ACCESS.
- THE FIRST 10 DRUMS ON TAPERS SHALL BE REFLECTORIZED DRUMS WITH SEQUENTIAL FLASHING WARNING LIGHTS AND SHALL BE OPERATING, AT A MINIMUM, BETWEEN DUSK AND DAWN, WHEN TAPER IS DEPLOYED.
- REFLECTORIZED CONES SHALL BE A MINIMUM OF 36 INCHES IN HEIGHT.
- CONES MAY BE USED IN LIEU OF DRUMS OUTSIDE OF TAPER AREAS.
- THE CONTRACTOR SHALL NOTIFY EACH ABUTTER AT LEAST 2 WEEKS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE THE TEMPORARY CLOSURE OR RESTRICTION OF ACCESS.
- FOR DROP-OFFS 3" OR LESS WITHIN THE CLEAR ZONE, CONDITION MAY BE MITIGATED WITH W8-9 (LOW SHOULDER) SIGN OR TEMPORARY CHANNELIZATION DEVICES.
- CONTRACTOR SHALL STAGE WORK SUCH THAT A DROP-OFF OF NO MORE THAN 3" AT THE END OF EACH WORK DAY EXISTS WITHIN THE CLEAR ZONE AT ANY TIME AND ENSURE DROP-OFF IS MITIGATED WITHOUT BARRIER PER NOTE 11.
- CONSTRUCTION CLEAR ZONE SHALL BE IN ACCORDANCE WITH MASSDOT BOSTON TRAFFIC GUIDELINES AS FOLLOWS:
 - 4' IF POSTED SPEED IS LESS THAN 35 MPH
 - 8' IF POSTED SPEED IS 35 MPH
 - 15' IF POSTED SPEED IS 40 MPH
- 11' MINIMUM LANE WIDTHS SHALL BE MAINTAINED UNLESS OTHERWISE NOTED.
- NON-ESSENTIAL TRAFFIC CONTROL DEVICES AND SIGNS SHALL BE COVERED OR REMOVED DURING NON-WORKING HOURS WHEN NOT IN USE.
- SIGNS INSTALLED ON PORTABLE STANDS REQUIRE 12 INCH MINIMUM MOUNTING HEIGHT FROM THE ROADWAY SURFACE TO THE BOTTOM OF THE SIGN.
- SIGNS INSTALLED ON PORTABLE STANDS PLACED AMONG CHANNELIZATION DEVICES REQUIRE A 36 INCH MINIMUM MOUNTING HEIGHT FROM THE ROADWAY SURFACE TO THE BOTTOM OF THE SIGN.
- SIGNS MOUNTED ON POSTS REQUIRE A MINIMUM 84 INCH MOUNTING HEIGHT FROM THE ROADWAY OR SIDEWALK SURFACE TO THE BOTTOM OF THE SIGN.
- ALL SIGNS SHALL BE MOUNTED ON THEIR OWN NCHRP 350 AND/OR MASH CRASH TESTED SIGN SUPPORTS AND INSTALLED IN ACCORDANCE WITH THE MUTCD. SIGNS SHALL NOT BE MOUNTED TO OR LEANED AGAINST DRUMS OR CONES.
- CONTRACTOR SHALL SECURE WORK AREAS BY APPROPRIATE MEANS, TO PREVENT UNAUTHORIZED ACCESS AT ALL TIMES.
- THERE IS NO DESIGNATED BICYCLE LANE ON THE ROADWAY WITHIN THE PROJECT LIMITS. BICYCLES ARE EXPECTED TO SHARE THE ROAD WITH GENERAL VEHICULAR TRAFFIC.
- TEMPORARY CONSTRUCTION FENCING IS TO BE USED WHEN WORKING ADJACENT TO PRIVATE PROPERTY TO DELINEATE WORK ZONE LIMITS AND PREVENT UNAUTHORIZED ACCESS.
- WORK ZONE ACCESS POINTS ARE IDENTIFIED ON THE KEY PLAN AND WORK ZONE ACCESS PLAN ON SHEETS 127 - 129. CONTRACTOR SHALL SWEEP AREAS ADJACENT TO THE SITE ON A DAILY BASIS. CONTRACTOR SHALL REPAIR DAMAGED ROADWAYS AND SIDEWALKS AT THEIR OWN COST.

LANE TAPER LENGTH FORMULAS	
L=	TAPER LENGTH IN FEET
W=	WIDTH OF ROADWAY TO BE SHIFTED OR REDIRECTED IN FEET
S=	POSTED SPEED LIMIT IN MPH
	POSTED SPEED
	40 MPH OR LESS
	$L = \frac{WS^2}{60}$

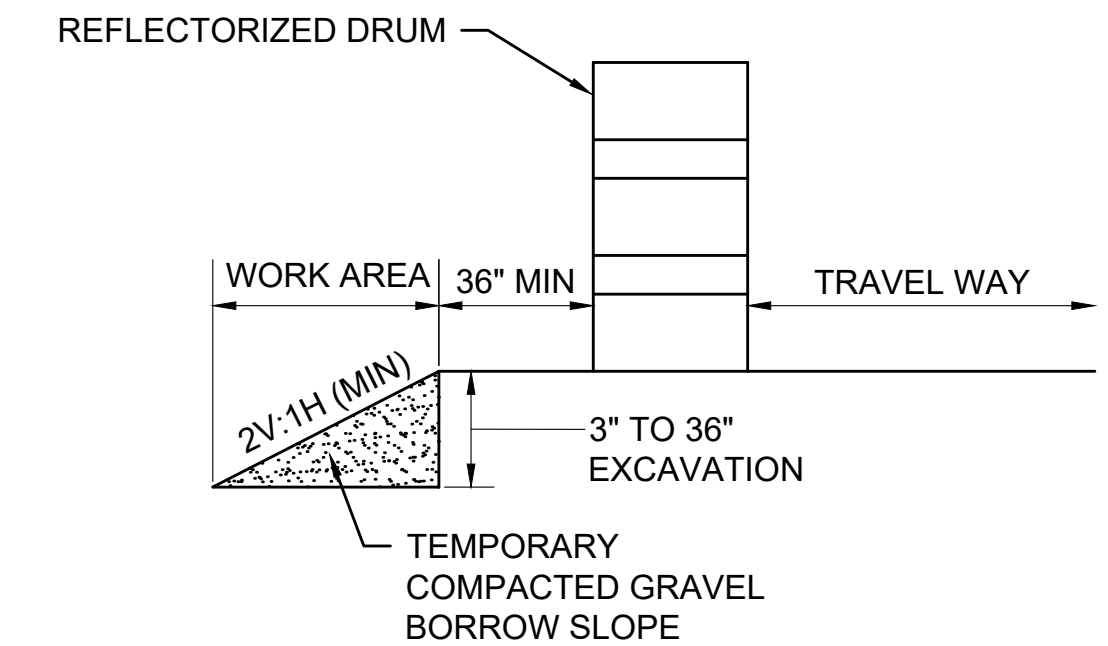


- NOTES:
- SQUARE OFF THE FULL WIDTH OF THE ROADWAY AT THE END OF WORK DAY
 - CONTRACTOR SHALL INSTALL W8-1 OR W8-8 SIGN, AS APPROPRIATE, ON ALL ROADWAYS IN ADVANCE OF THE TRANSITION UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

TEMPORARY PAVEMENT TRANSITION

SCALE: NTS

LEGEND	
	POLICE OFFICER
	TRAFFIC SIGNAL
	REFLECTORIZED DRUM
	REFLECTORIZED DRUMS WITH SEQUENTIAL FLASHING WARNING LIGHTS (SEE NOTE 7)
	TEMPORARY CONSTRUCTION SIGN
	TRAFFIC CONE
	TYPE III BARRICADE
	WORK AREA (PUBLIC ACCESS RESTRICTED)
	ROAD CLOSED, LOCAL ACCESS ONLY
	TRAFFIC FLOW
	PEDESTRIAN ROUTE
	CONSTRUCTION FENCE
	TEMPORARY PEDESTRIAN BARRICADE
	PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)
NTS	NOT TO SCALE



- NOTE:
- CONTRACTOR SHALL INSTALL W8-9 SIGN ON ALL ROADWAYS 350 FT IN ADVANCE OF THE START OF DROP-OFF CONDITION.

TYPICAL ROADWAY DROP-OFF PROTECTION

SCALE: NTS

ROADWAY	DISTANCE BETWEEN SIGNS (FEET)			
	A	B	C	D
BOSTON POST RD (ROUTE 20), FOREST AVE, WILKINS ST, MAIN ST, CONCORD RD, DUTTON RD, PEAKHAM RD, HORSE POND RD, UNION AVE, LANDHAM RD	350	150	350	350
ALL OTHERS	100	50	100	100

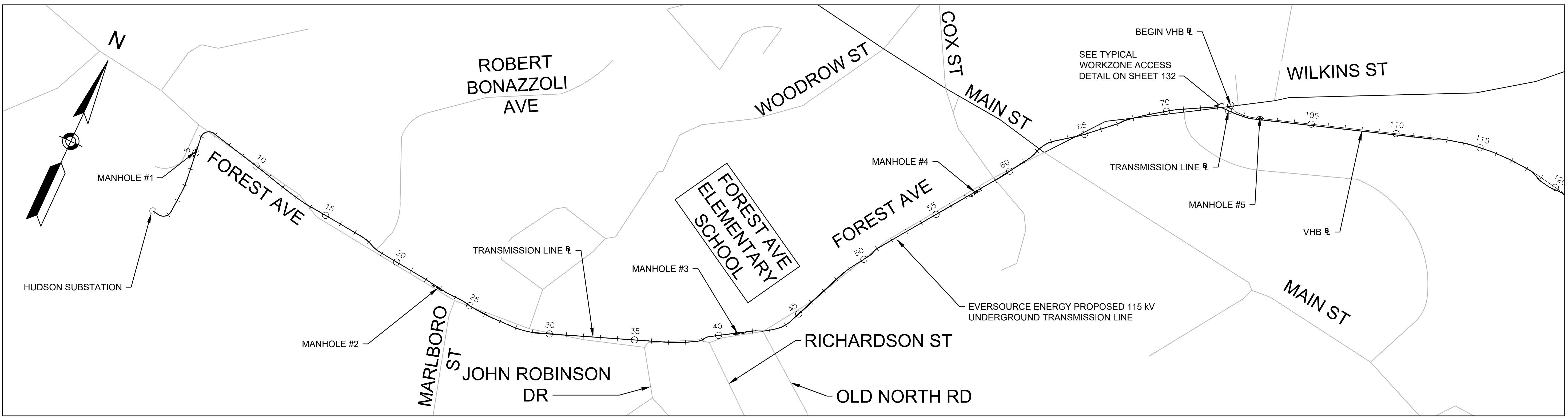
BUFFER SPACING	
SPEED (MPH)	DISTANCE (FEET)
15	80
20	115
25	155
30	200
35	250
40	305



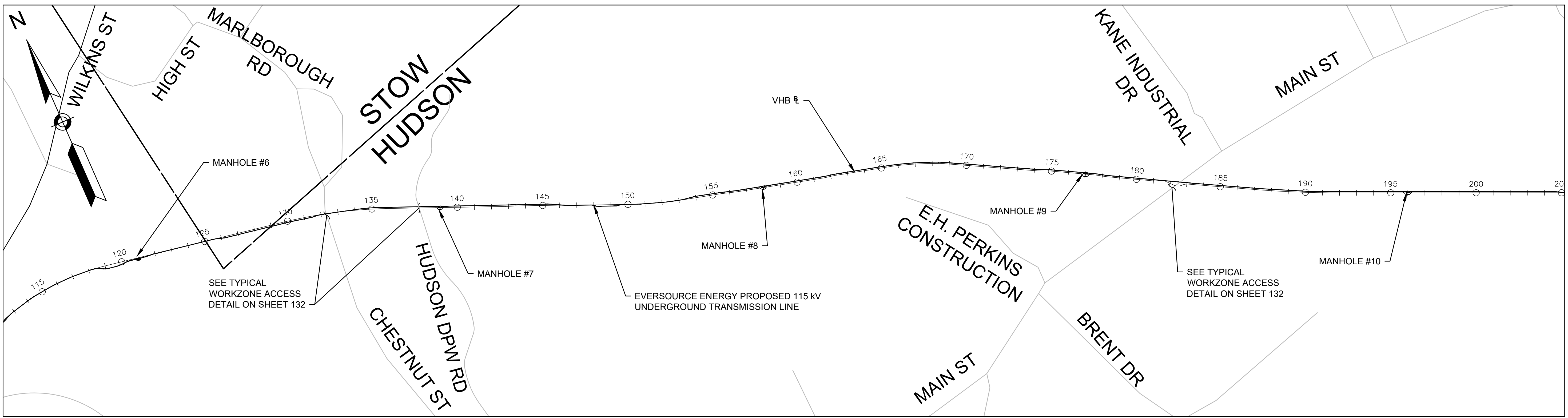
REVISION			
N O.	DESCRIPTION	BY	DATE
EVERSOURCE			
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT			
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS			
TEMPORARY TRAFFIC CONTROL PLANS			
GENERAL NOTES AND LEGEND			
SCALE: unless noted NTS	DATE DEC 2021	CHK'D. MM	APPR. KW
DRAWING NO. 126 OF 349	REV.	MES	

1 2 3 4 5 6 7 8 9 10 11

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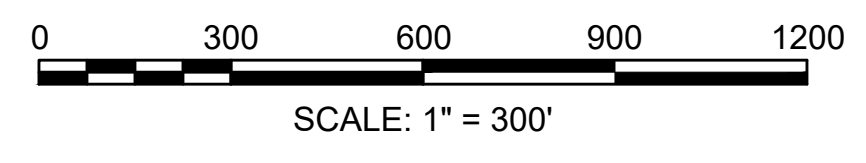


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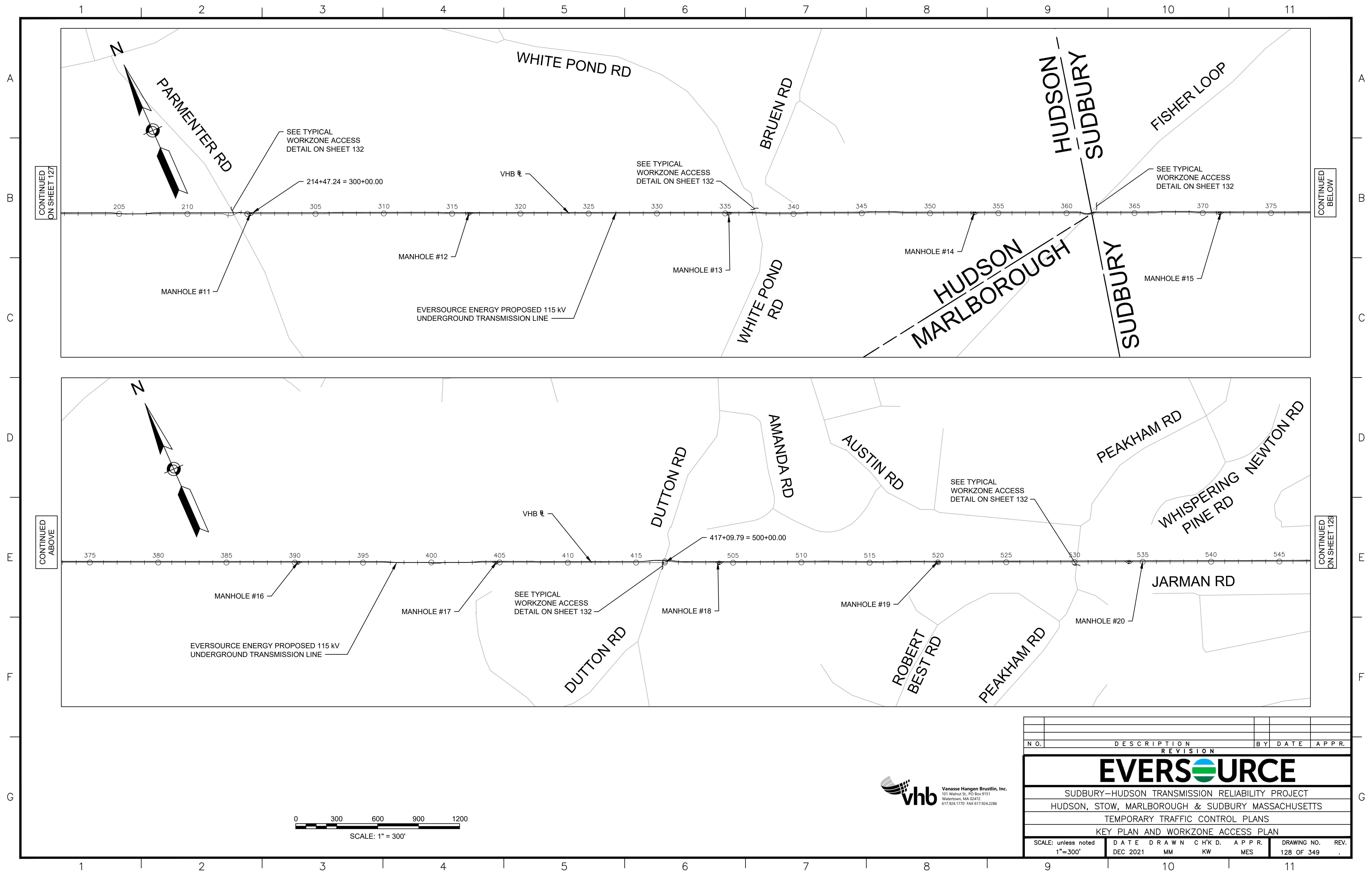
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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
TEMPORARY TRAFFIC CONTROL PLANS				
KEY PLAN AND WORKZONE ACCESS PLAN				
SCALE: unless noted 1"=300'	DATE DEC 2021	DRAWN MM	CHK'D. KW	APPR. MES
	DRAWING NO. 127 OF 349	REV.		

1 2 3 4 5 6 7 8 9 10 11

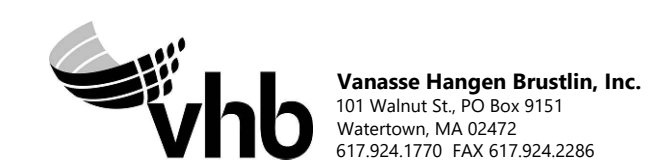
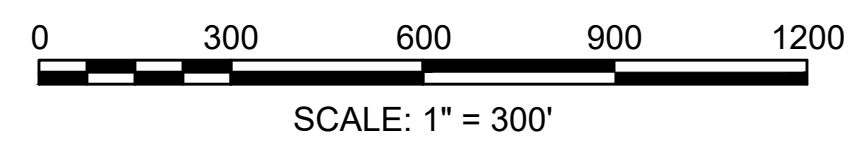


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ON SHEET 127

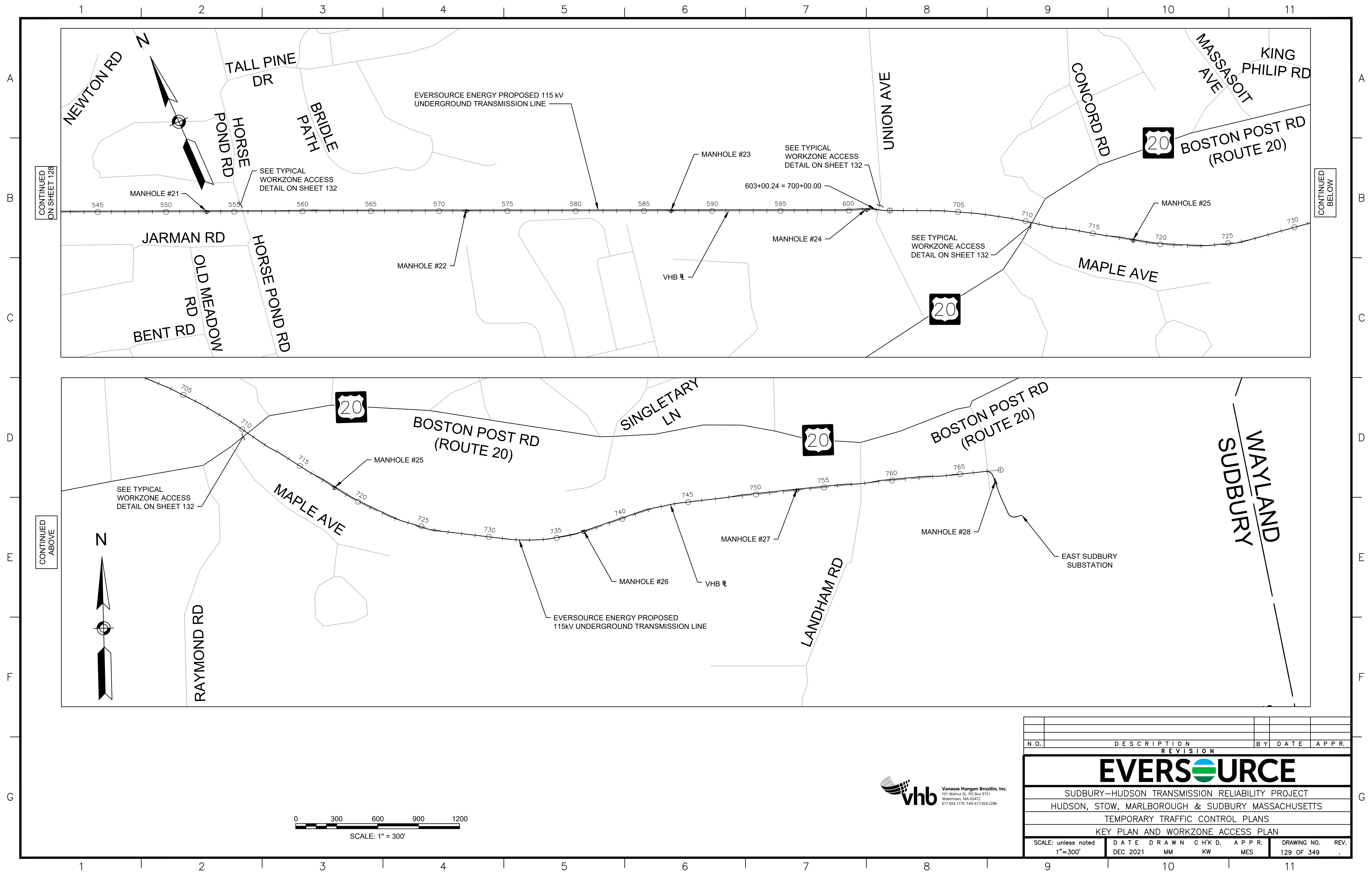
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ON SHEET 128



N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
TEMPORARY TRAFFIC CONTROL PLANS				
KEY PLAN AND WORKZONE ACCESS PLAN				
SCALE: unless noted 1"=300'	DATE DEC 2021	DRAWN MM	CHK'D. KW	APPR. MES
	DRAWING NO. 128 OF 349	REV.		



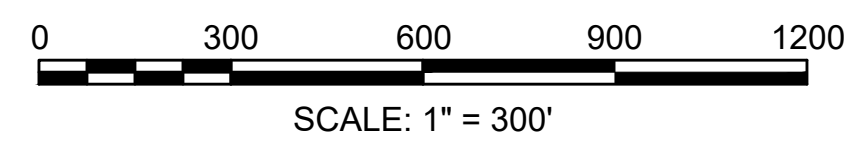
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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
TEMPORARY TRAFFIC CONTROL PLANS				
KEY PLAN AND WORKZONE ACCESS PLAN				
SCALE: unless noted 1"=300'	DATE DEC 2021	DRAWN MM	CHK'D. KW	APPR. MES
	DRAWING NO. 129 OF 349	REV.		



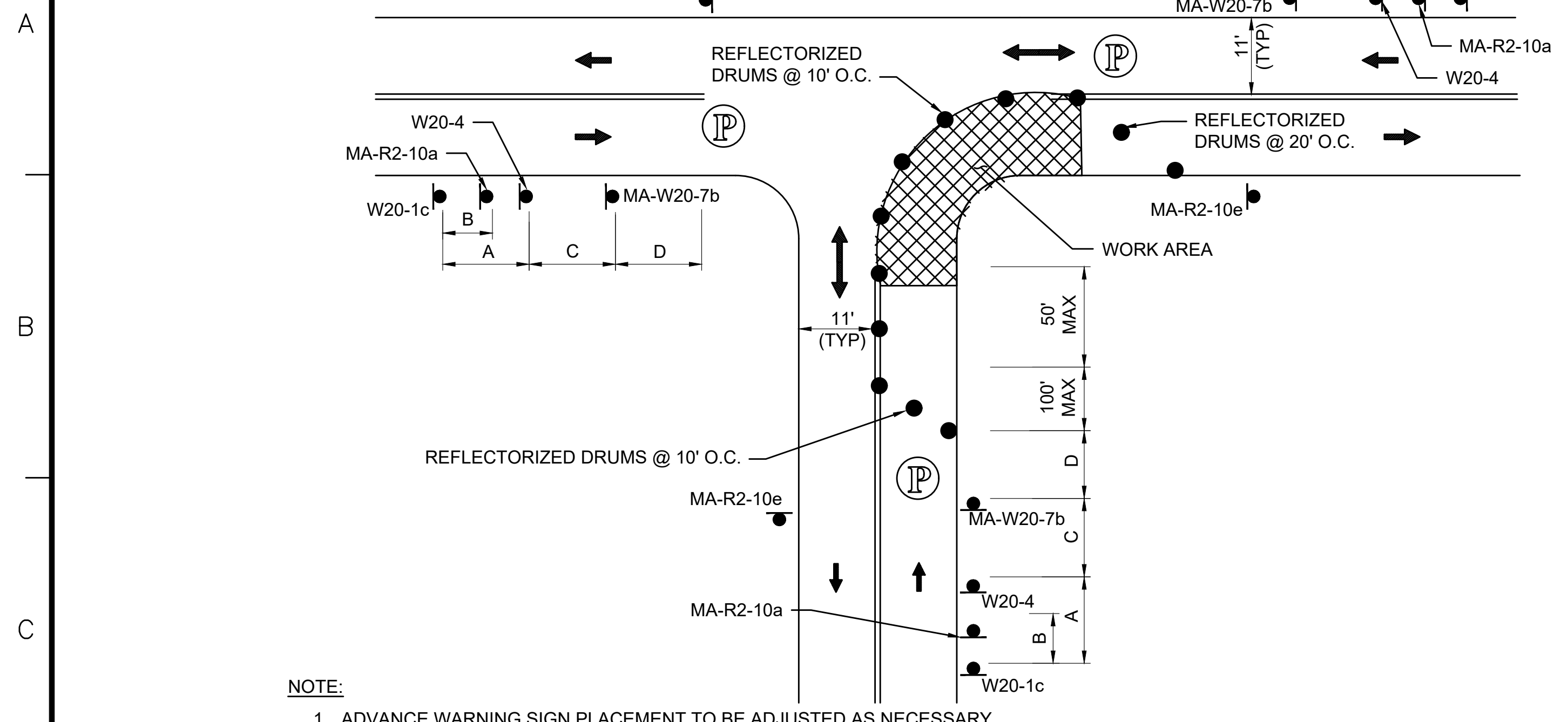
SUGGESTED TEMPORARY TRAFFIC CONTROL SETUP APPLICATION

TOWN	ROADWAY	TRANSMISSION \pm STATION (SEE NOTE 1)	VHB \pm STATION (SEE NOTE 2)	TEMPORARY TRAFFIC CONTROL SETUPS	SHEET NUMBER	NOTES
HUDSON	EVERSOURCE	0+00 \pm TO 6+20 \pm MANHOLE #1	--	OFF-ROAD	--	MANHOLE #4
	FOREST AVENUE	6+20 \pm TO 6+40 \pm	--	TYPICAL TWO-WAY STREET LANE CLOSURE ALTERNATING TRAFFIC PEDESTRIAN BYPASS TYPE II DETAIL	SHEET 131 SHEET 132	--
		6+40 \pm TO 22+20 \pm	--	TYPICAL TWO-WAY STREET LANE CLOSURE ALTERNATING TRAFFIC	SHEET 131	--
		22+20 \pm TO 24+00 \pm MANHOLE #2	--	TYPICAL TWO-WAY STREET LANE CLOSURE ALTERNATING TRAFFIC	SHEET 131	MANHOLE #2
		24+00 \pm TO 24+40 \pm	--	SITE SPECIFIC FOREST AVE AT MARLBORO ST STAGE 1	SHEET 133	AT MARLBORO ST
		24+40 \pm TO 24+80 \pm	--	SITE SPECIFIC FOREST AVE AT MARLBORO ST STAGE 2	SHEET 134	AT MARLBORO ST
		24+80 \pm TO 29+20 \pm	--	TYPICAL TWO-WAY STREET LANE CLOSURE ALTERNATING TRAFFIC	SHEET 131	--
		29+20 \pm TO 30+20 \pm	--	TYPICAL TWO-WAY STREET LANE CLOSURE ALTERNATING TRAFFIC	SHEET 131	AT WOODROW ST
		30+20 \pm TO 35+60 \pm	--	TYPICAL TWO-WAY STREET LANE CLOSURE ALTERNATING TRAFFIC	SHEET 131	--
		35+60 \pm TO 37+00 \pm	--	CLOSURE AND DETOUR PLAN - JOHN ROBINSON DR	SHEET 139	AT JOHN ROBINSON RD
		37+00 \pm TO 39+00 \pm	--	TYPICAL TWO-WAY STREET LANE CLOSURE ALTERNATING TRAFFIC	SHEET 131	--
		39+00 \pm TO 40+50 \pm	--	ONE LANE BI-DIRECTIONAL TRAFFIC AT INTERSECTIONS	SHEET 131	AT RICHARDSON ST
		40+50 \pm TO 41+80 \pm MANHOLE #3	--	CLOSURE AND DETOUR PLAN- FOREST AVENUE - MANHOLE #3	SHEET 140	MANHOLE #3
		41+80 \pm TO 42+50 \pm	--	TYPICAL TWO-WAY STREET LANE CLOSURE ALTERNATING TRAFFIC	SHEET 131	--
		42+50 \pm TO 44+00 \pm	--	ONE LANE BI-DIRECTIONAL TRAFFIC AT INTERSECTIONS	SHEET 131	AT OLD NORTH RD
		44+00 \pm TO 56+80 \pm	--	TYPICAL TWO-WAY STREET LANE CLOSURE ALTERNATING TRAFFIC	SHEET 131	--
	56+80 \pm TO 58+40 \pm MANHOLE #4	--	CLOSURE AND DETOUR PLAN- FOREST AVENUE - MANHOLE #4	SHEET 141	MANHOLE #4	
	58+40 \pm TO 61+40 \pm	--	TYPICAL TWO-WAY STREET LANE CLOSURE ALTERNATING TRAFFIC	SHEET 131	--	
	FOREST AVENUE / WILKINS ST	61+40 \pm TO 62+00 \pm	--	SITE SPECIFIC FOREST AVE AT MAIN ST STAGE 1 PCMS PLAN - FOREST AVE AT MAIN ST NIGHT WORK	SHEET 135 SHEET 149	AT MAIN / WILKINS ST
		62+00 \pm TO 62+30 \pm	--	SITE SPECIFIC FOREST AVE AT MAIN ST STAGE 2 CLOSURE AND DETOUR PLAN - FOREST AVENUE - MANHOLE #4	SHEET 136 SHEET 141	AT MAIN / WILKINS ST
		62+30 \pm TO 62+40 \pm	--	SITE SPECIFIC FOREST AVE AT MAIN ST STAGE 3 CLOSURE AND DETOUR PLAN - FOREST AVENUE - MANHOLE #4	SHEET 137 SHEET 141	AT MAIN / WILKINS ST
		62+40 \pm TO 63+30 \pm	--	SITE SPECIFIC FOREST AVE AT MAIN ST STAGE 4 PCMS PLAN - FOREST AVE AT MAIN ST NIGHT WORK	SHEET 138 SHEET 149	AT MAIN / WILKINS ST
	WILKINS ST	63+30 \pm TO 73+60 \pm	--	TYPICAL TWO-WAY STREET LANE CLOSURE ALTERNATING TRAFFIC	SHEET 131	--
STOW	MBTA ROW	--	100+31 \pm TO 124+95 \pm	OFF-ROAD	--	--
HUDSON	MBTA ROW	--	124+95 \pm TO 128+30 \pm	OFF-ROAD	--	--
	MBTA ROW	--	128+30 \pm TO 132+50 \pm	OFF-ROAD	--	--
	CHESTNUT ST	--	132+50 \pm TO 132+80 \pm	CLOSURE AND DETOUR PLAN- CHESTNUT ST AND MARLBORO RD	SHEET 143	AT CHESTNUT ST
	MBTA ROW	--	132+80 \pm TO 181+60 \pm	OFF-ROAD	--	--
	MAIN ST	--	181+60 \pm TO 182+30 \pm	TYPICAL TWO-WAY STREET LANE CLOSURE ALTERNATING TRAFFIC	SHEET 131	AT MAIN ST
	MBTA ROW	--	182+30 \pm TO 213+50 \pm	OFF-ROAD	--	--
	PARMENTER RD	--	213+50 \pm TO 213+70 \pm	TYPICAL TWO-WAY STREET LANE CLOSURE ALTERNATING TRAFFIC	SHEET 131	AT PARMENTER RD
	MBTA ROW	--	213+70 \pm TO 214+47 \pm 214+47 \pm = 300+00 \pm 300+00 \pm TO 336+90 \pm	OFF-ROAD	--	--
WHITE POND RD	--	336+90 \pm TO 337+10 \pm	CLOSURE AND DETOUR PLAN- WHITE POND RD	SHEET 144	AT WHITE POND RD	
MBTA ROW	--	337+10 \pm TO 361+40 \pm	OFF-ROAD	--	--	
MARLBOROUGH	MBTA ROW	--	361+40 \pm TO 361+55 \pm	OFF-ROAD	--	--
SUDBURY	MBTA ROW	--	361+55 \pm TO 416+85 \pm	OFF-ROAD	--	--
	DUTTON RD	--	416+85 \pm TO 417+10 \pm 417+10 \pm = 500+00 \pm	CLOSURE AND DETOUR PLAN- DUTTON RD	SHEET 145	AT DUTTON RD
	MBTA ROW	--	500+00 \pm TO 530+45 \pm	OFF-ROAD	--	--
	PEAKHAM RD	--	530+45 \pm TO 530+65 \pm	PEDESTRIAN BYPASS TYPE I DETAIL CLOSURE AND DETOUR- PEAKHAM RD	SHEET 132 SHEET 146	AT PEAKHAM RD
	MBTA ROW	--	530+65 \pm TO 555+75 \pm	OFF-ROAD	--	--
	HORSE POND RD	--	555+75 \pm TO 556+00 \pm	PEDESTRIAN BYPASS TYPE I DETAIL CLOSURE AND DETOUR- HORSE POND RD	SHEET 132 SHEET 147	AT HORSE POND RD
	MBTA ROW	--	556+00 \pm TO 602+35 \pm	OFF-ROAD	--	--
	UNION AVE	--	602+35 \pm TO 602+65 \pm	TYPICAL TWO-WAY STREET LANE CLOSURE ALTERNATING TRAFFIC	SHEET 131	AT UNION AVE
	MBTA ROW	--	602+65 \pm TO 603+00 \pm 603+00 \pm = 700+00 \pm 700+00 \pm TO 711+35 \pm	OFF-ROAD	--	--
	BOSTON POST RD (ROUTE 20)	--	711+35 \pm TO 711+65 \pm	SEE NOTE 4	--	AT BOSTON POST RD
MBTA ROW	--	711+65 \pm TO 757+65 \pm	OFF-ROAD	--	--	
LANDHAM RD	--	757+65 \pm TO 758+00 \pm	OFF-ROAD	--	BELOW LANDHAM RD	
MBTA ROW	--	758+00 \pm TO 767+30 \pm	OFF-ROAD	--	--	
SUDBURY	EVERSOURCE	475+40 \pm TO 479+85	--	OFF-ROAD	--	--

- NOTES:
 1. REFER TO KEY PLAN AND WORKZONE ACCESS PLAN ON SHEETS 128 & 129 FOR OVERVIEW. SEE EVERSOURCE ENERGY 115KV UNDERGROUND TRANSMISSION LINE PLAN AND PROFILE FOR ADDITIONAL INFORMATION.
 2. REFER TO VHB CONSTRUCTION PLANS ON SHEETS 24-74 FOR ADDITIONAL INFORMATION.
 3. REFER TO GENERAL NOTE 2 ON SHEET 126 REGARDING WORK HOURS.
 4. REFER TO APPROVED MASSDOT ACCESS PERMIT TTCP FOR WORK ALONG ROUTE 20.



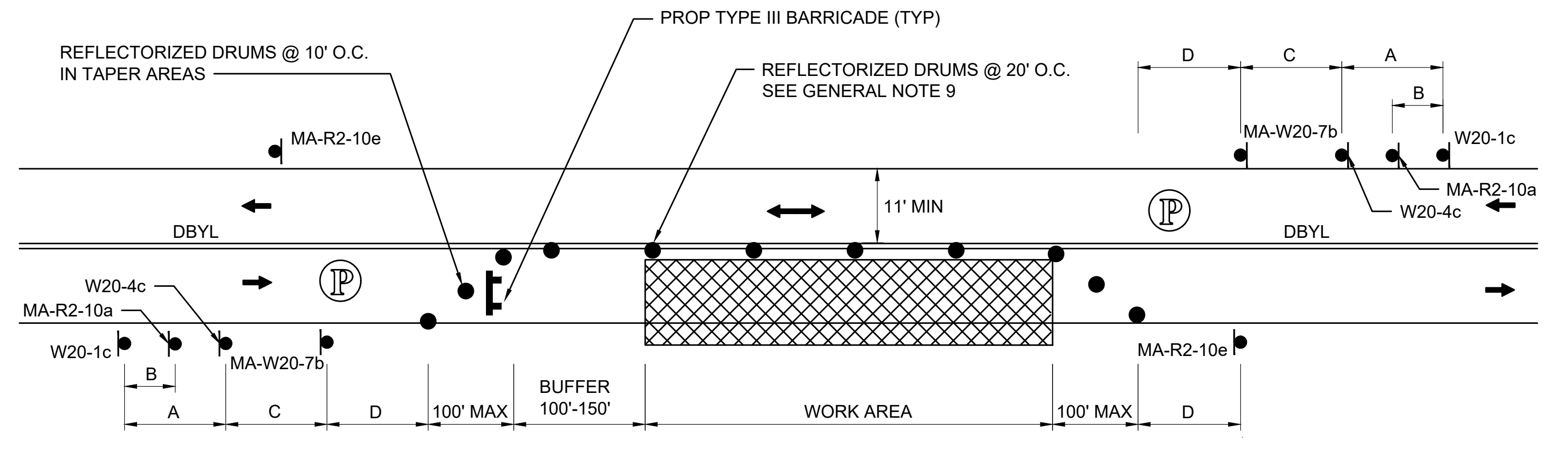
NO.		DESCRIPTION		BY	DATE	APPR.
REVISION						
EVERSOURCE						
SUDBURY--HUDSON TRANSMISSION RELIABILITY PROJECT						
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS						
TEMPORARY TRAFFIC CONTROL PLANS						
SUGGESTED TEMPORARY TRAFFIC CONTROL SETUP						
SCALE: unless noted NTS	DATE	DRAWN	CHK'D	A.P.P.R.	DRAWING NO.	REV.
	DEC 2021	MM	KW	MES	130 OF 349	.



NOTE:
1. ADVANCE WARNING SIGN PLACEMENT TO BE ADJUSTED AS NECESSARY.

ONE LANE BI-DIRECTIONAL TRAFFIC AT INTERSECTIONS

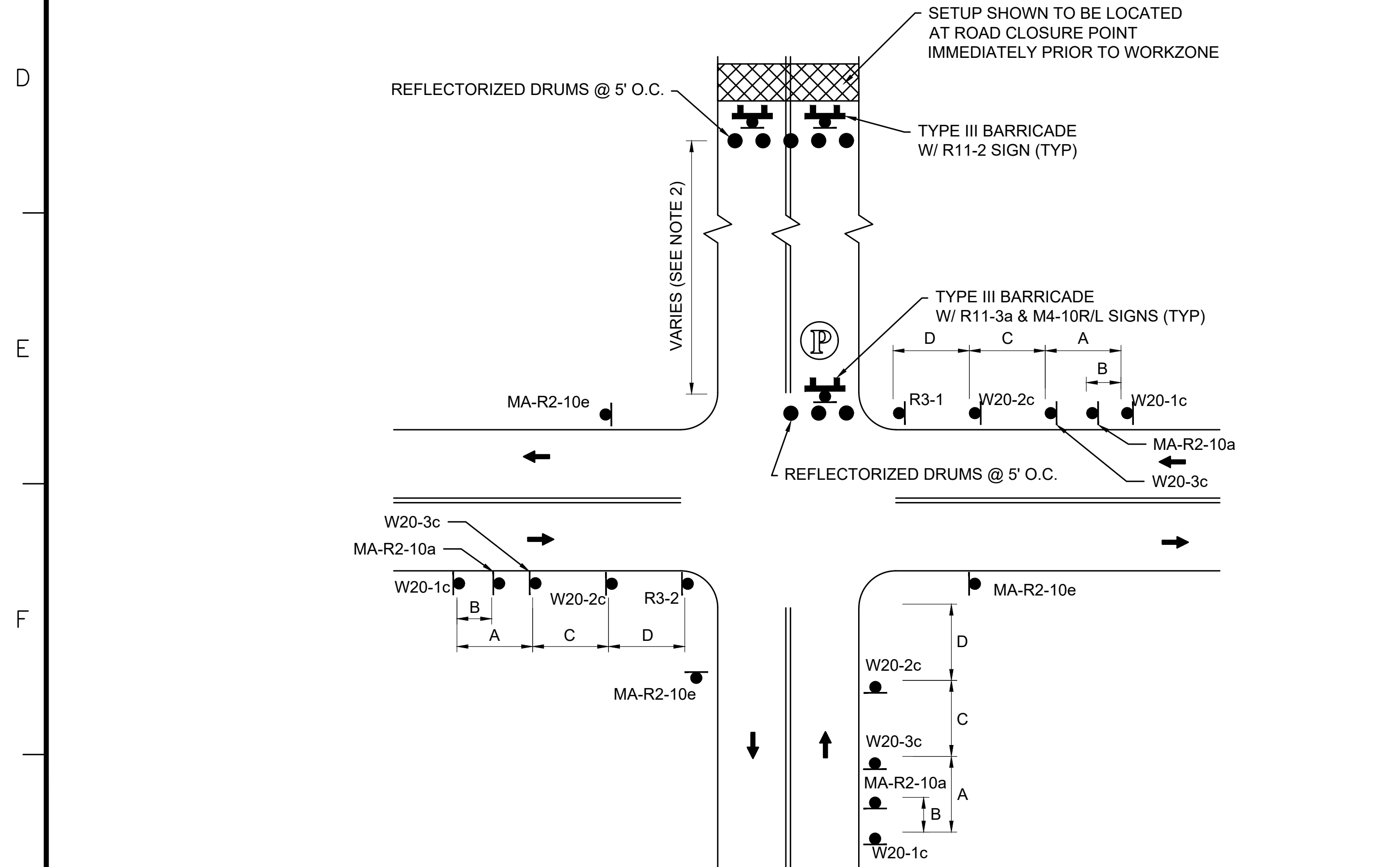
SCALE: NTS



NOTE:
1. REFER TO ADVANCE SIGN SPACING TABLE ON TTCP GENERAL NOTES & LEGEND SHEET.

TYPICAL TWO-WAY STREET LANE CLOSURE ALTERNATING TRAFFIC

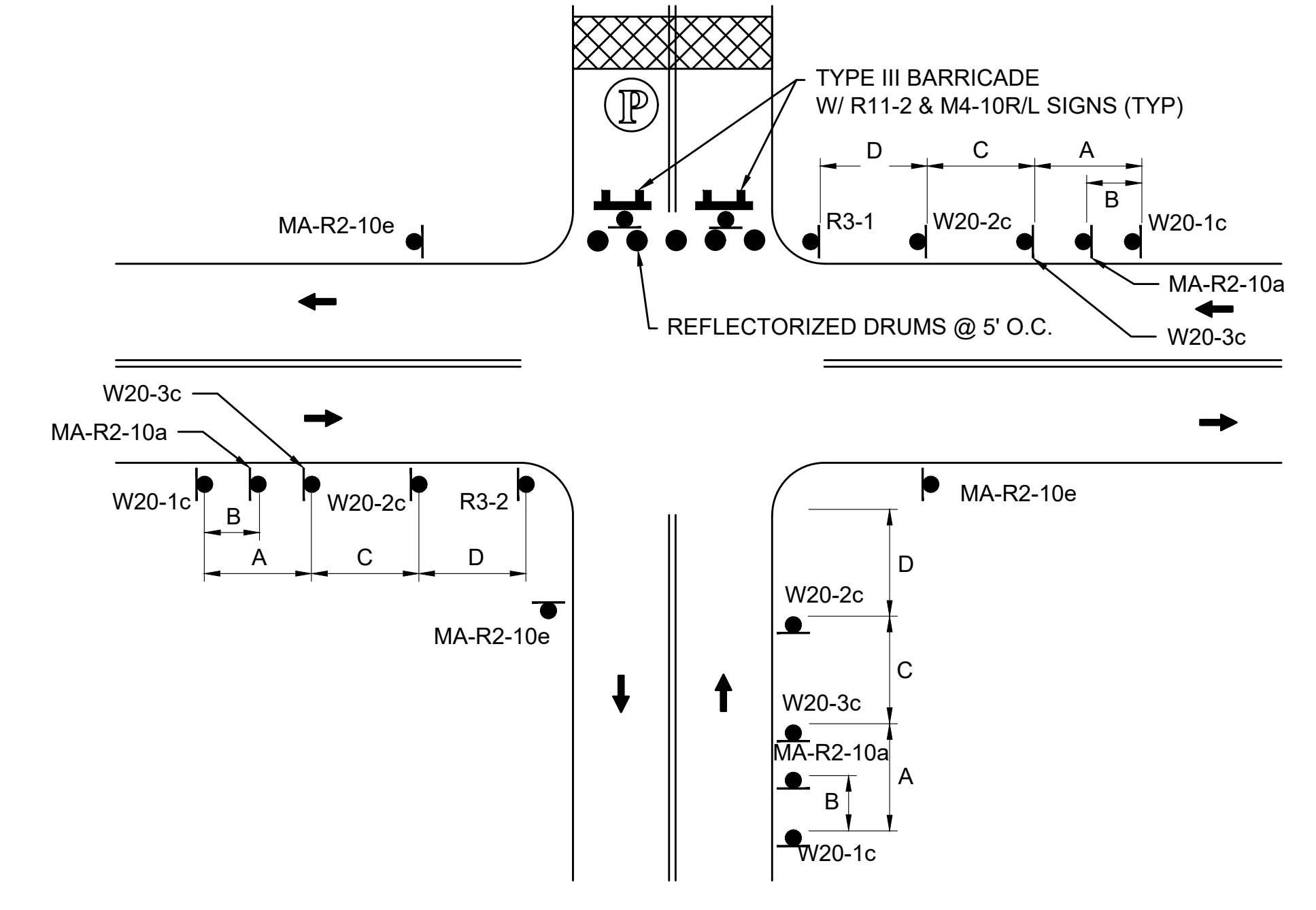
SCALE: NTS



NOTE:
1. REFER TO ADVANCE SIGN SPACING TABLE ON TTCP GENERAL NOTES & LEGEND SHEET.
2. SEE DETOUR PLAN FOR LOCATION OF ROAD CLOSURE WITH LOCAL ACCESS.

TYPICAL LOCAL ROAD CLOSURE WITH LOCAL ACCESS

SCALE: NTS



NOTE:
1. REFER TO ADVANCE SIGN SPACING TABLE ON TTCP GENERAL NOTES & LEGEND SHEET.

TYPICAL LOCAL ROAD CLOSURE

SCALE: NTS



N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
TEMPORARY TRAFFIC CONTROL PLANS				
TYPICAL DETAILS				
SCALE: unless noted NTS	DATE DEC 2021	DRAWN MM	CHK'D. KW	APPR. MES
	DRAWING NO. 131 OF 349	REV.		

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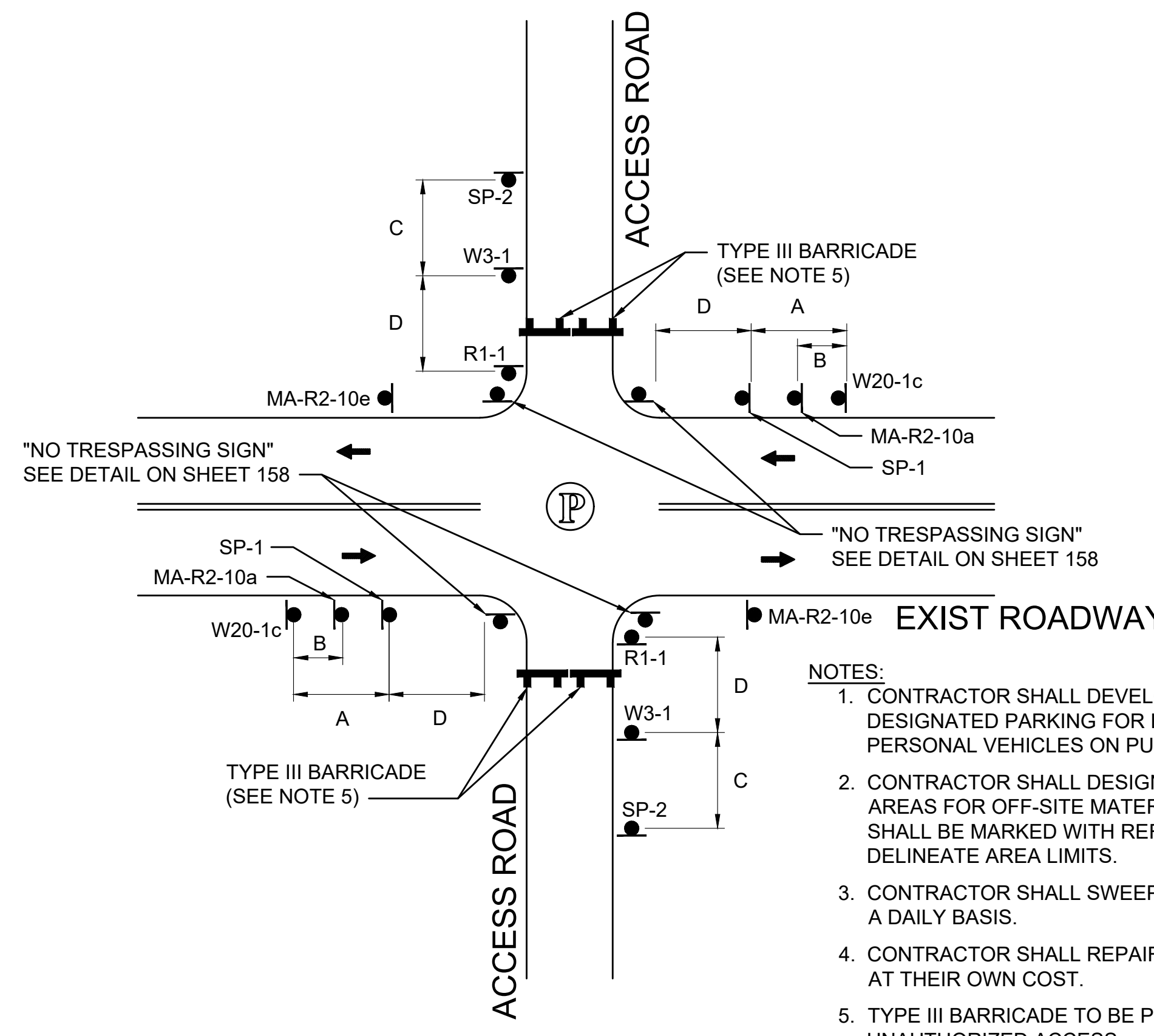
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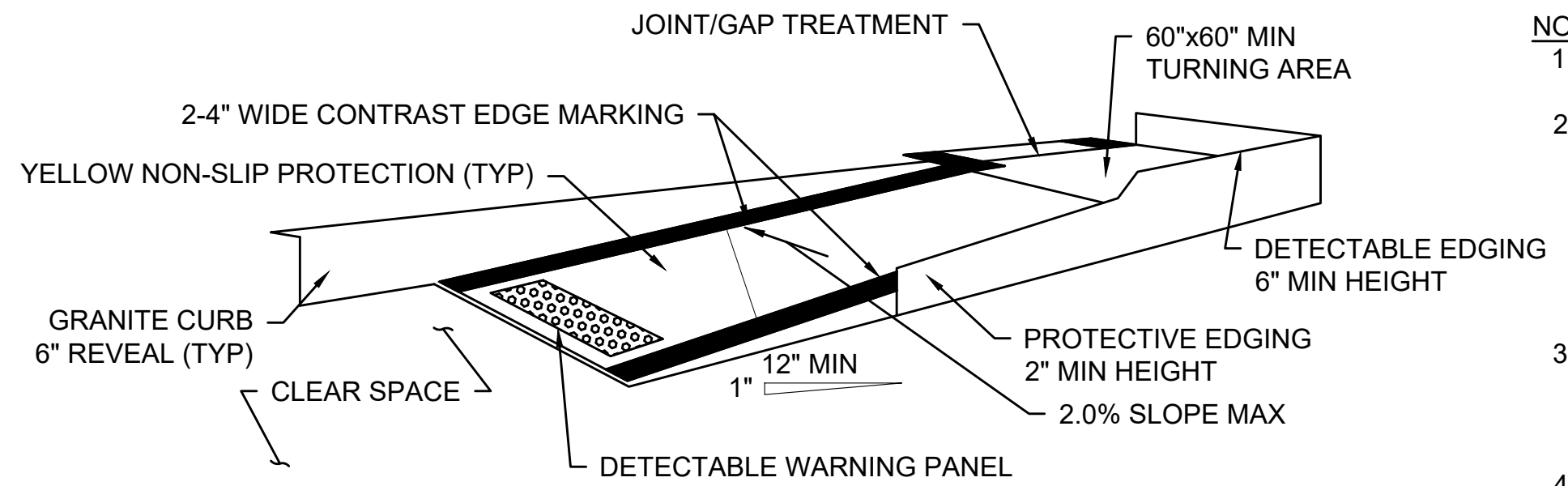
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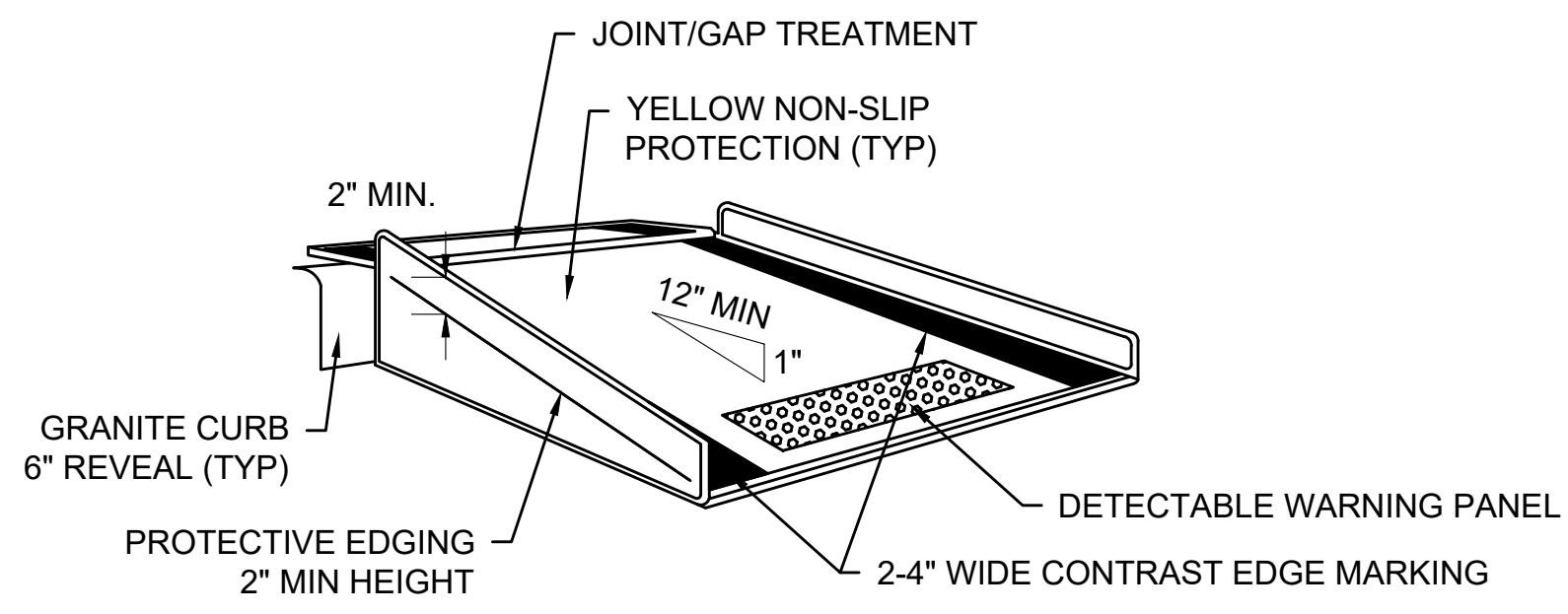
- NOTES:**
1. CONTRACTOR SHALL DEVELOP WORK ZONE STAGING AREAS WITH DESIGNATED PARKING FOR EMPLOYEES. PARKING OF WORKERS' PERSONAL VEHICLES ON PUBLIC PROPERTY IS STRICTLY PROHIBITED.
 2. CONTRACTOR SHALL DESIGNATE MATERIAL STORAGE AND STAGING AREAS FOR OFF-SITE MATERIAL STORAGE. OFF-SITE STORAGE AREAS SHALL BE MARKED WITH REFLECTORIZED DRUMS TO CLEARLY DELINEATE AREA LIMITS.
 3. CONTRACTOR SHALL SWEEP PAVED AREAS ADJACENT TO THE SITE ON A DAILY BASIS.
 4. CONTRACTOR SHALL REPAIR DAMAGED ROADWAYS AND SIDEWALKS AT THEIR OWN COST.
 5. TYPE III BARRICADE TO BE PLACED AT ALL TIMES TO PREVENT UNAUTHORIZED ACCESS.

TYPICAL WORKZONE ACCESS

SCALE: NTS



TEMPORARY CURB RAMP-PARALLEL TO CURB



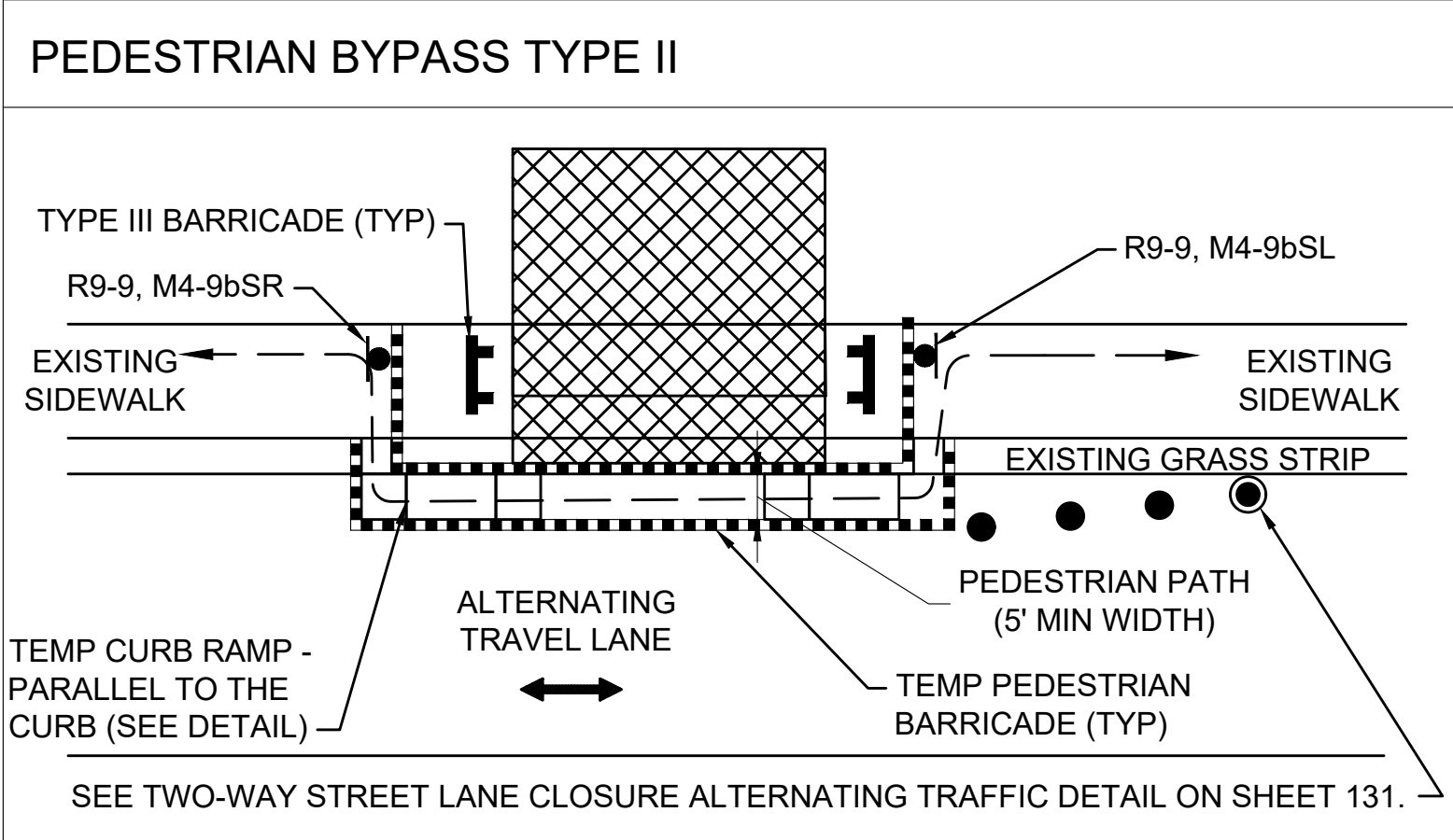
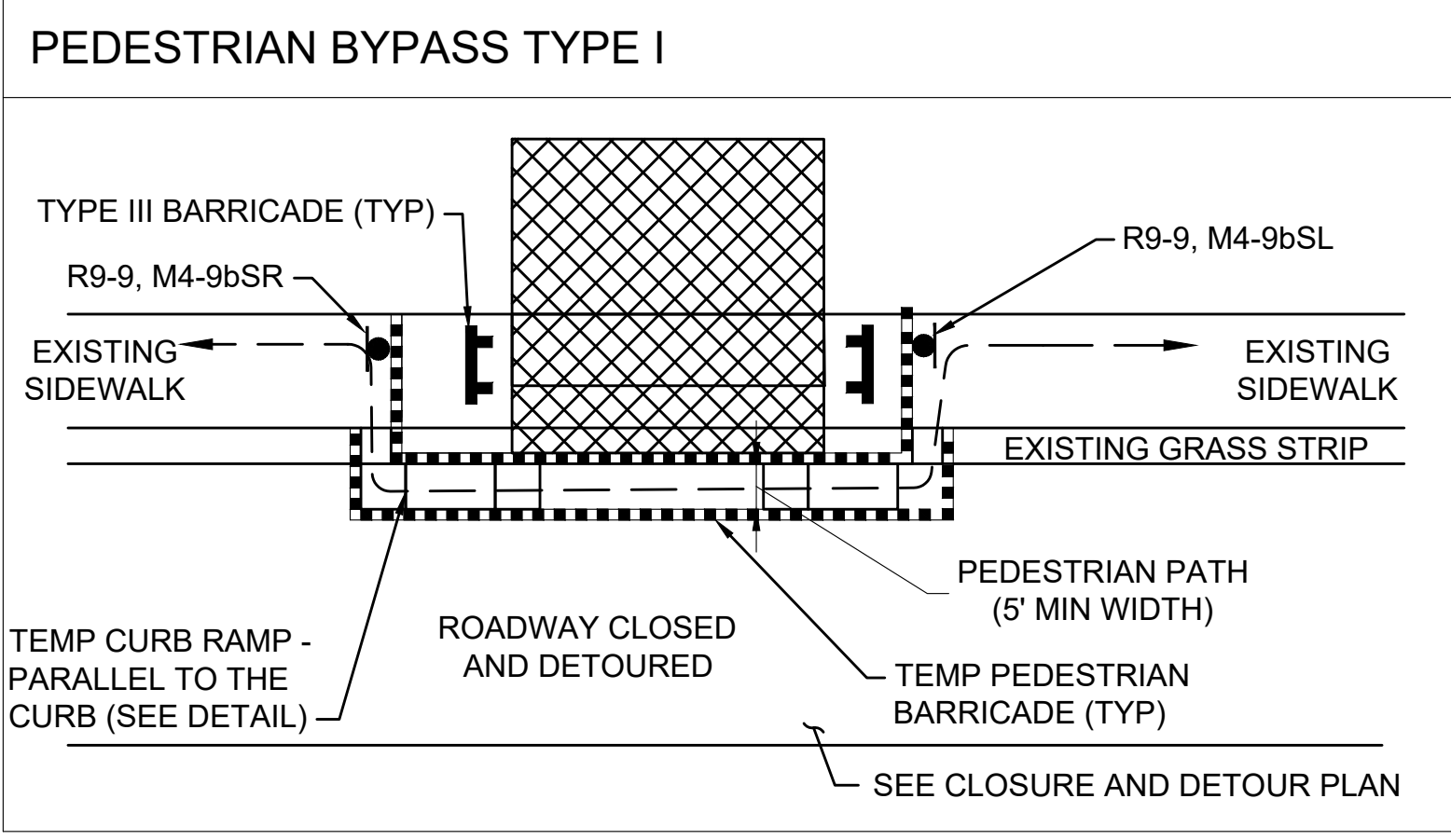
TEMPORARY CURB RAMP-PERPENDICULAR TO CURB

TEMPORARY CURB RAMPS

SCALE: NTS

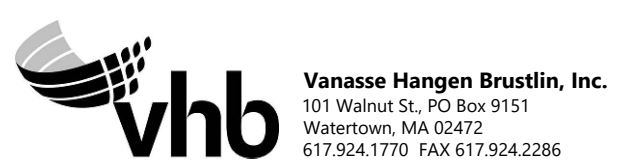
- NOTES:**
1. CURB RAMPS SHALL BE 60" MINIMUM WIDTH WITH A FIRM, STABLE AND NON-SLIP SURFACE.
 2. PROTECTIVE EDGING WITH A 2" MINIMUM HEIGHT SHALL BE INSTALLED WHEN THE CURB RAMP OR LANDING PLATFORM HAS A VERTICAL DROP OF 6" OR GREATER OR HAS A SIDE APRON SLOPE STEEPER THAN 1:3 (33%). PROTECTIVE EDGING SHOULD BE CONSIDERED WHEN THE CURB RAMPS OR LANDING PLATFORMS HAVE A VERTICAL DROP OF 3" OR MORE.
 3. DETECTABLE EDGING WITH 6" MINIMUM HEIGHT AND CONTRASTING COLOR SHALL BE INSTALLED ON ALL CURB RAMP LANDINGS WHERE THE WALKWAY CHANGES DIRECTION (TURNS).
 4. THE CURB RAMP WALKWAY AND LANDING AREA SURFACE SHALL BE OF A SOLID CONTINUOUS CONTRASTING COLOR ABUTTING UP TO THE EXISTING SIDEWALK.
 5. CURB RAMPS AND LANDINGS SHOULD HAVE A 1:50 (2%) MAX CROSS-SLOPE.
 6. CLEAR SPACE OF 48"x48" MINIMUM SHALL BE PROVIDED ABOVE AND BELOW THE CURB RAMP.
 7. WATER FLOW IN THE GUTTER SYSTEM SHALL HAVE MINIMAL RESTRICTION.
 8. LATERAL JOINTS OR GAPS BETWEEN SURFACES SHALL BE LESS THAN 0.5" WIDTH.
 9. CHANGES BETWEEN SURFACE HEIGHTS SHOULD NOT EXCEED 0.5" LATERAL EDGES SHOULD BE VERTICAL UP TO 0.25" HIGH, AND BEVELED AT 1:2 BETWEEN 0.25" AND 0.5" HEIGHT.
 10. IF A TEMPORARY PEDESTRIAN RAMP LEADS TO A CROSSWALK, THEN A DETECTABLE WARNING PAD MUST BE ADHERED TO THE BASE OF THE RAMP. IF IT LEADS TO A PROTECTED PEDESTRIAN BYPASS THAT DOES NOT CONFLICT WITH VEHICULAR TRAFFIC, THEN A PAD SHALL NOT BE INSTALLED ON THE RAMP.

- NOTES:**
1. ADDITIONAL ADVANCE WARNING SIGNS MAY BE NECESSARY AS DETERMINED BY THE ENGINEER.
 2. CONTROLS FOR PEDESTRIAN TRAFFIC ONLY, ARE SHOWN. VEHICULAR TRAFFIC SHALL BE MAINTAINED AS SHOWN ELSEWHERE.
 3. STREET LIGHTING SHOULD BE CONSIDERED WHEN LOCATING CONTROL DEVICES.
 4. — — — INDICATES DIRECTION OF PEDESTRIAN TRAVEL.
 5. ALL TEMPORARY PEDESTRIAN PATHWAYS SHALL COMPLY FULLY WITH ALL REQUIREMENTS OF THE MUTCD AND ALL APPLICABLE MAAB AND ADAAG REQUIREMENTS AND INCLUDE THE USE OF A COMPLIANT TEMPORARY PEDESTRIAN MANAGEMENT GUIDANCE SYSTEM AT ALL TIMES.
 6. CONTRACTOR SHALL MAINTAIN AS WIDE OF A PEDESTRIAN ACCESS AS POSSIBLE AT ALL TIMES. EXCEPT WHERE NECESSARY, THE CONTRACTOR MAY TEMPORARILY REDUCE PEDESTRIAN PATHWAYS TO 4 FEET IN WIDTH (EXCLUDING CURB) FOR NO MORE THAN 200 LINEAR FEET AT A TIME IN ACCORDANCE WITH ALL STANDARDS. A 5' x 5' PASSING AREA SHALL BE PROVIDED IN INTERVALS NOT EXCEEDING 200 FEET.
 7. TEMPORARY WHEELCHAIR RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH MASSDOT, MAAB, AND ADAAG REQUIREMENTS.

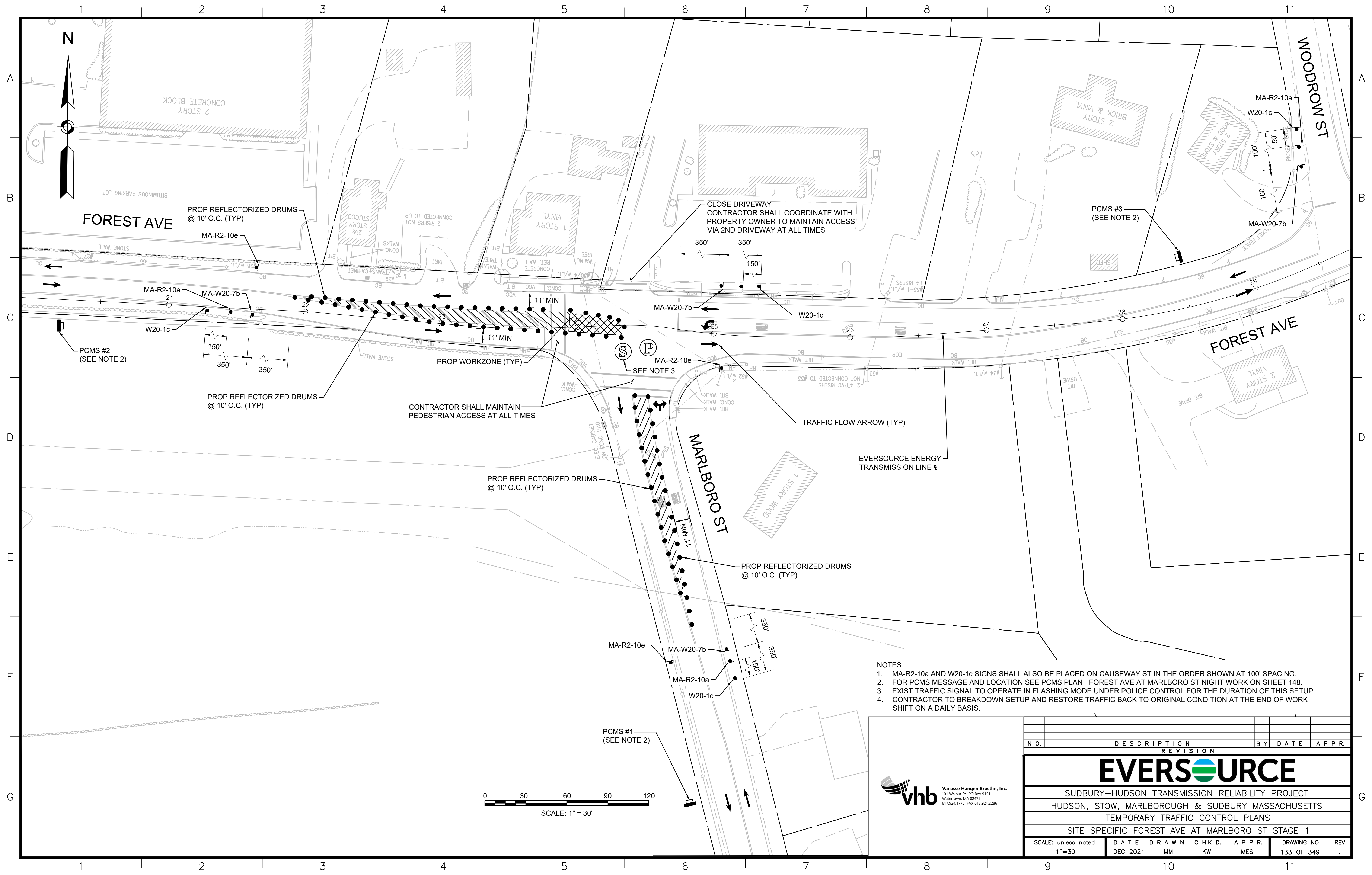


PEDESTRIAN BYPASS DETAIL

SCALE: NTS



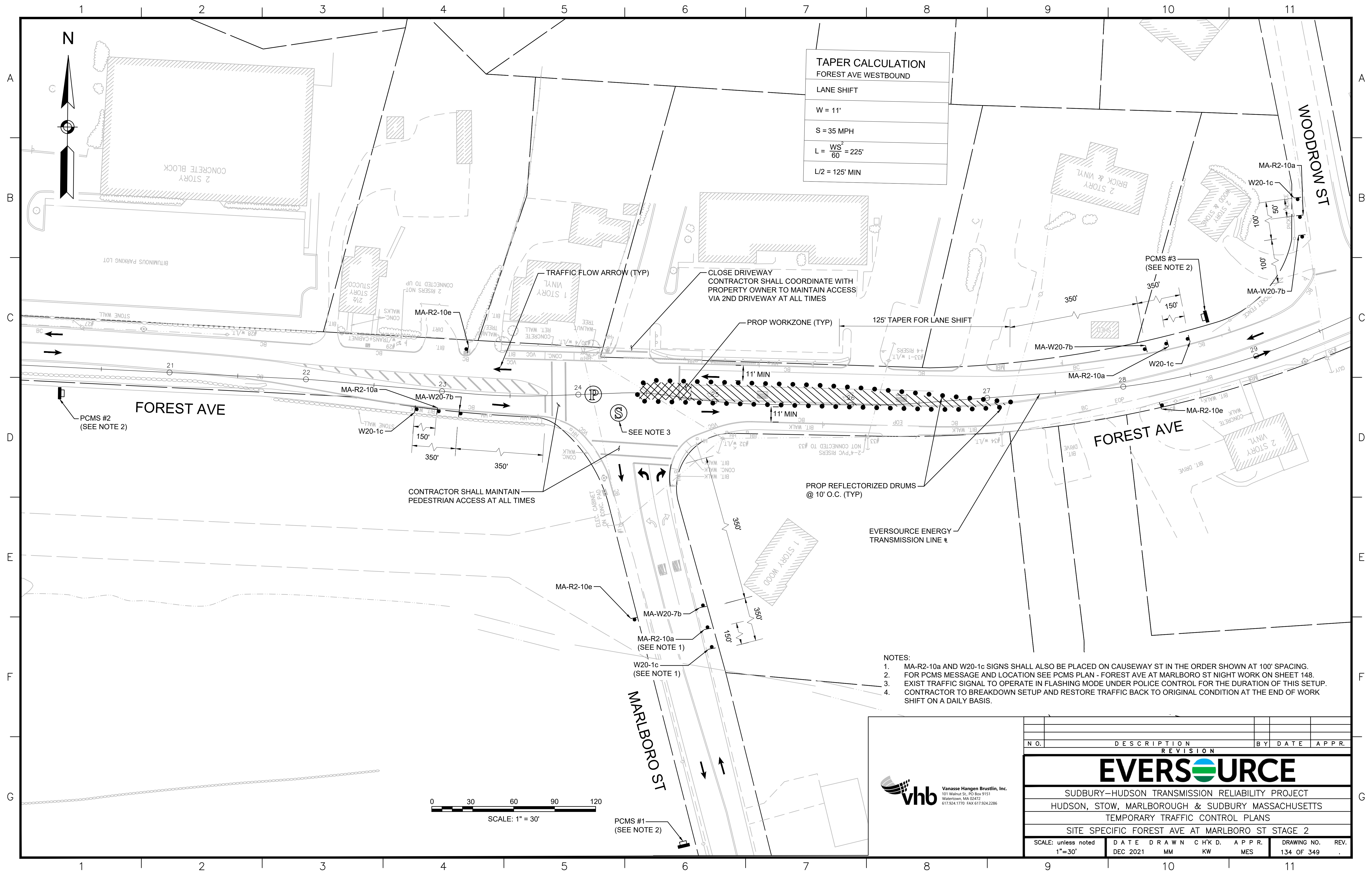
N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
TEMPORARY TRAFFIC CONTROL PLANS				
TYPICAL DETAILS				
SCALE: unless noted NTS	DATE DEC 2021	DRAWN MM	CHK'D. KW	APPR. MES
	DRAWING NO. 132 OF 349	REV.		



- NOTES:
1. MA-R2-10a AND W20-1c SIGNS SHALL ALSO BE PLACED ON CAUSEWAY ST IN THE ORDER SHOWN AT 100' SPACING.
 2. FOR PCMS MESSAGE AND LOCATION SEE PCMS PLAN - FOREST AVE AT MARLBORO ST NIGHT WORK ON SHEET 148.
 3. EXIST TRAFFIC SIGNAL TO OPERATE IN FLASHING MODE UNDER POLICE CONTROL FOR THE DURATION OF THIS SETUP.
 4. CONTRACTOR TO BREAKDOWN SETUP AND RESTORE TRAFFIC BACK TO ORIGINAL CONDITION AT THE END OF WORK SHIFT ON A DAILY BASIS.



N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
TEMPORARY TRAFFIC CONTROL PLANS				
SITE SPECIFIC FOREST AVE AT MARLBORO ST STAGE 1				
SCALE: unless noted 1"=30'	DATE	DRAWN	CHK'D.	APPR.
	DEC 2021	MM	KW	MES
DRAWING NO.	REV.			
133 OF 349				



TAPER CALCULATION
FOREST AVE WESTBOUND

LANE SHIFT

W = 11'

S = 35 MPH

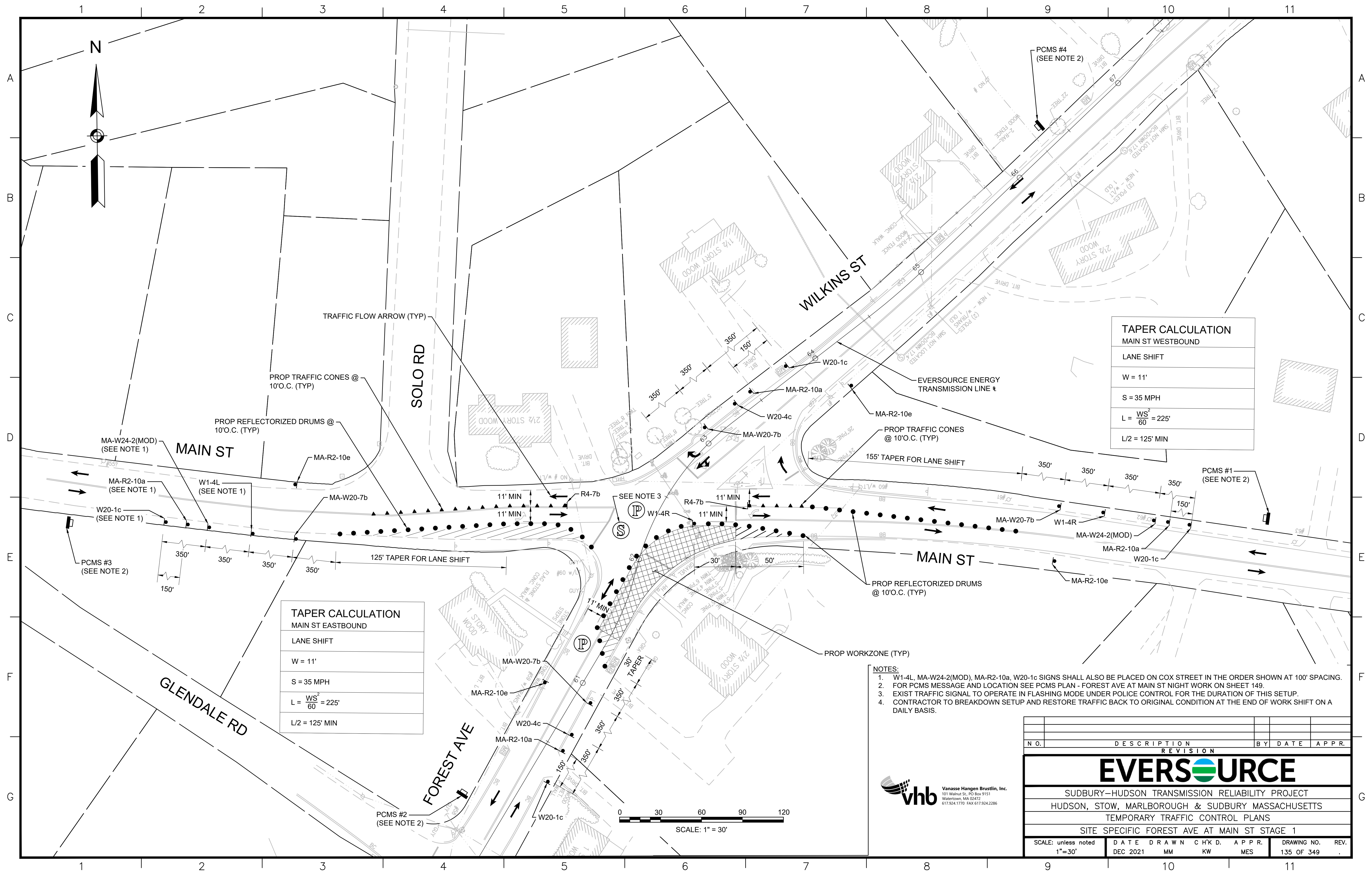
$L = \frac{WS^2}{60} = 225'$

L/2 = 125' MIN

- NOTES:**
1. MA-R2-10a AND W20-1c SIGNS SHALL ALSO BE PLACED ON CAUSEWAY ST IN THE ORDER SHOWN AT 100' SPACING.
 2. FOR PCMS MESSAGE AND LOCATION SEE PCMS PLAN - FOREST AVE AT MARLBORO ST NIGHT WORK ON SHEET 148.
 3. EXIST TRAFFIC SIGNAL TO OPERATE IN FLASHING MODE UNDER POLICE CONTROL FOR THE DURATION OF THIS SETUP.
 4. CONTRACTOR TO BREAKDOWN SETUP AND RESTORE TRAFFIC BACK TO ORIGINAL CONDITION AT THE END OF WORK SHIFT ON A DAILY BASIS.



N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
TEMPORARY TRAFFIC CONTROL PLANS				
SITE SPECIFIC FOREST AVE AT MARLBORO ST STAGE 2				
SCALE: unless noted 1"=30'	DATE	DRAWN	CHK'D.	APPR.
	DEC 2021	MM	KW	MES
DRAWING NO.	REV.			
134 OF 349				

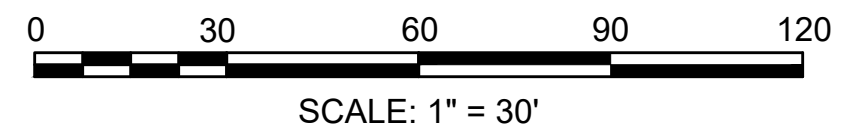
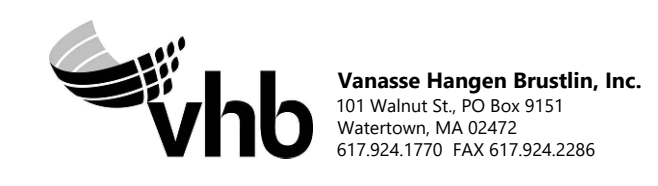


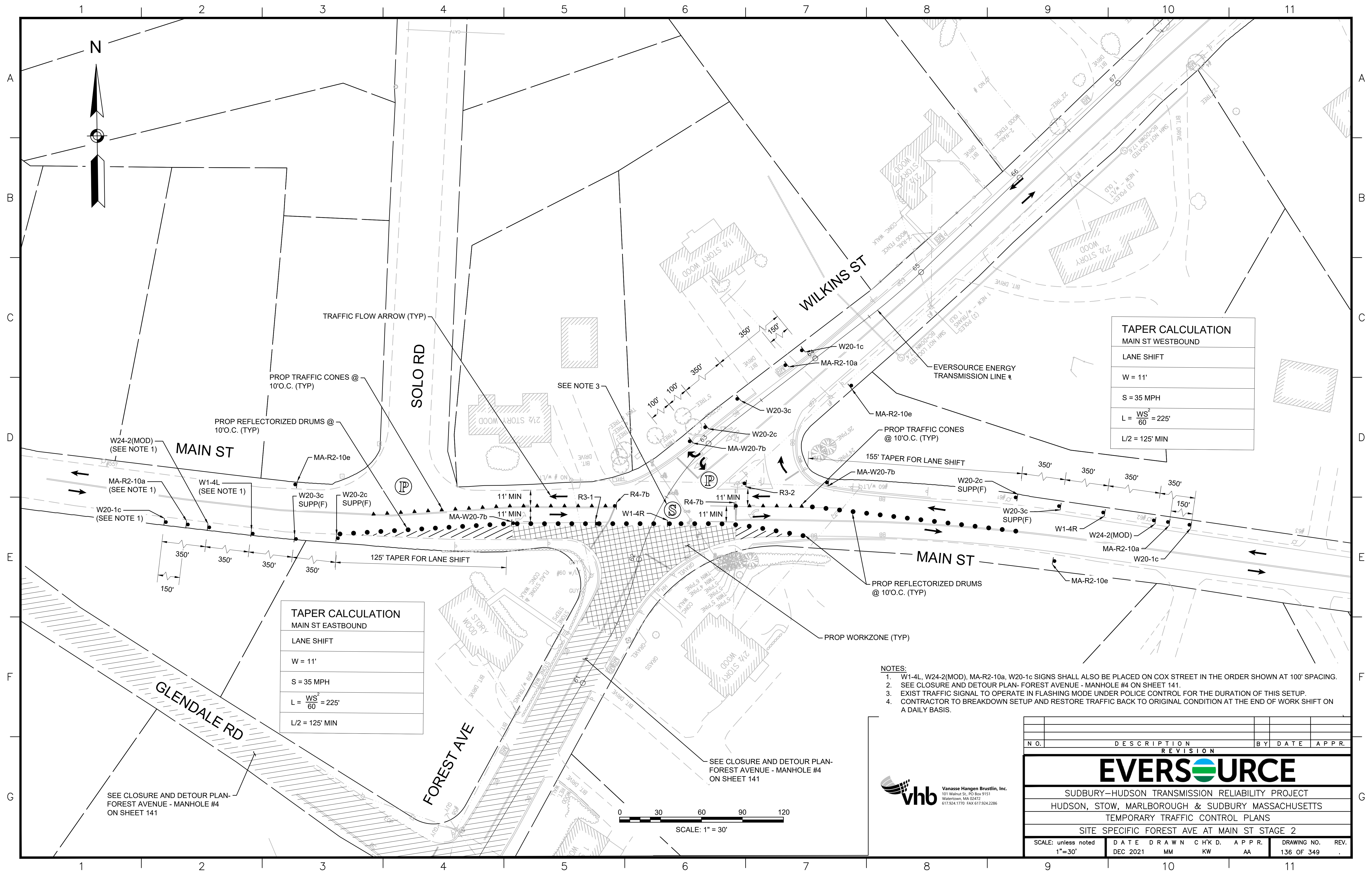
TAPER CALCULATION MAIN ST WESTBOUND	
LANE SHIFT	
W = 11'	
S = 35 MPH	
$L = \frac{WS^2}{60} = 225'$	
L/2 = 125' MIN	

TAPER CALCULATION MAIN ST EASTBOUND	
LANE SHIFT	
W = 11'	
S = 35 MPH	
$L = \frac{WS^2}{60} = 225'$	
L/2 = 125' MIN	

- NOTES:**
1. W1-4L, MA-W24-2(MOD), MA-R2-10a, W20-1c SIGNS SHALL ALSO BE PLACED ON COX STREET IN THE ORDER SHOWN AT 100' SPACING.
 2. FOR PCMS MESSAGE AND LOCATION SEE PCMS PLAN - FOREST AVE AT MAIN ST NIGHT WORK ON SHEET 149.
 3. EXIST TRAFFIC SIGNAL TO OPERATE IN FLASHING MODE UNDER POLICE CONTROL FOR THE DURATION OF THIS SETUP.
 4. CONTRACTOR TO BREAKDOWN SETUP AND RESTORE TRAFFIC BACK TO ORIGINAL CONDITION AT THE END OF WORK SHIFT ON A DAILY BASIS.

N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
TEMPORARY TRAFFIC CONTROL PLANS				
SITE SPECIFIC FOREST AVE AT MAIN ST STAGE 1				
SCALE: unless noted 1"=30'	DATE	DRAWN	CHK'D.	APPR.
	DEC 2021	MM	KW	MES
DRAWING NO.	REV.			
135 OF 349				



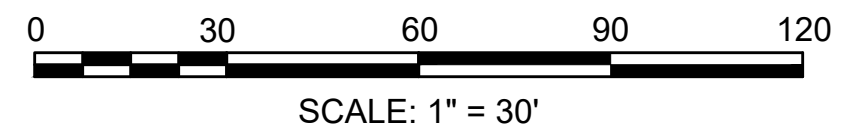
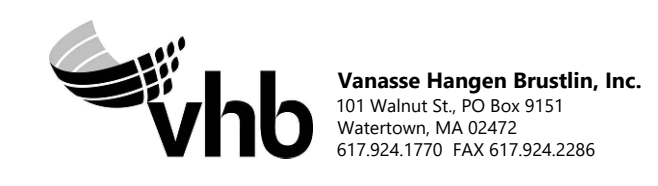


TAPER CALCULATION MAIN ST WESTBOUND	
LANE SHIFT	
W	= 11'
S	= 35 MPH
L	= $\frac{WS^2}{60} = 225'$
L/2	= 125' MIN

TAPER CALCULATION MAIN ST EASTBOUND	
LANE SHIFT	
W	= 11'
S	= 35 MPH
L	= $\frac{WS^2}{60} = 225'$
L/2	= 125' MIN

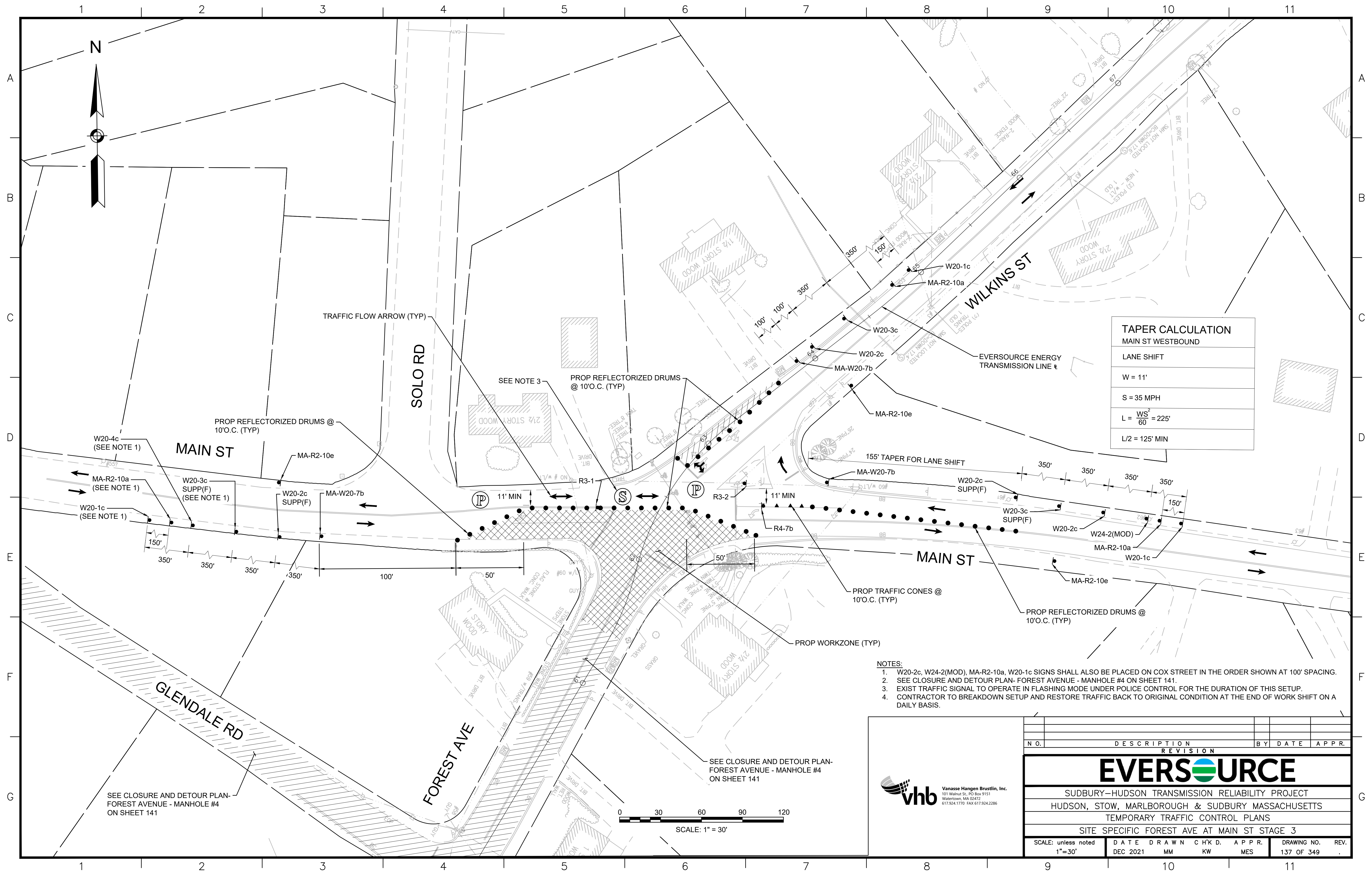
- NOTES:**
1. W1-4L, W24-2(MOD), MA-R2-10a, W20-1c SIGNS SHALL ALSO BE PLACED ON COX STREET IN THE ORDER SHOWN AT 100' SPACING.
 2. SEE CLOSURE AND DETOUR PLAN- FOREST AVENUE - MANHOLE #4 ON SHEET 141.
 3. EXIST TRAFFIC SIGNAL TO OPERATE IN FLASHING MODE UNDER POLICE CONTROL FOR THE DURATION OF THIS SETUP.
 4. CONTRACTOR TO BREAKDOWN SETUP AND RESTORE TRAFFIC BACK TO ORIGINAL CONDITION AT THE END OF WORK SHIFT ON A DAILY BASIS.

N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
TEMPORARY TRAFFIC CONTROL PLANS				
SITE SPECIFIC FOREST AVE AT MAIN ST STAGE 2				
SCALE: unless noted 1"=30'	DATE	DRAWN	CHK'D	APPR.
	DEC 2021	MM	KW	AA
DRAWING NO.	REV.			
136 OF 349				



SEE CLOSURE AND DETOUR PLAN-
FOREST AVENUE - MANHOLE #4
ON SHEET 141

SEE CLOSURE AND DETOUR PLAN-
FOREST AVENUE - MANHOLE #4
ON SHEET 141

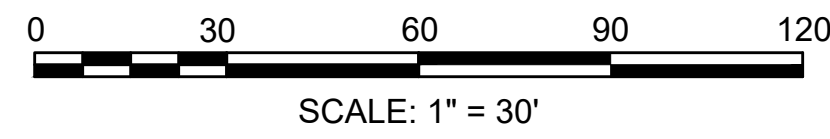


TAPER CALCULATION MAIN ST WESTBOUND	
LANE SHIFT	
W = 11'	
S = 35 MPH	
$L = \frac{WS^2}{60} = 225'$	
L/2 = 125' MIN	

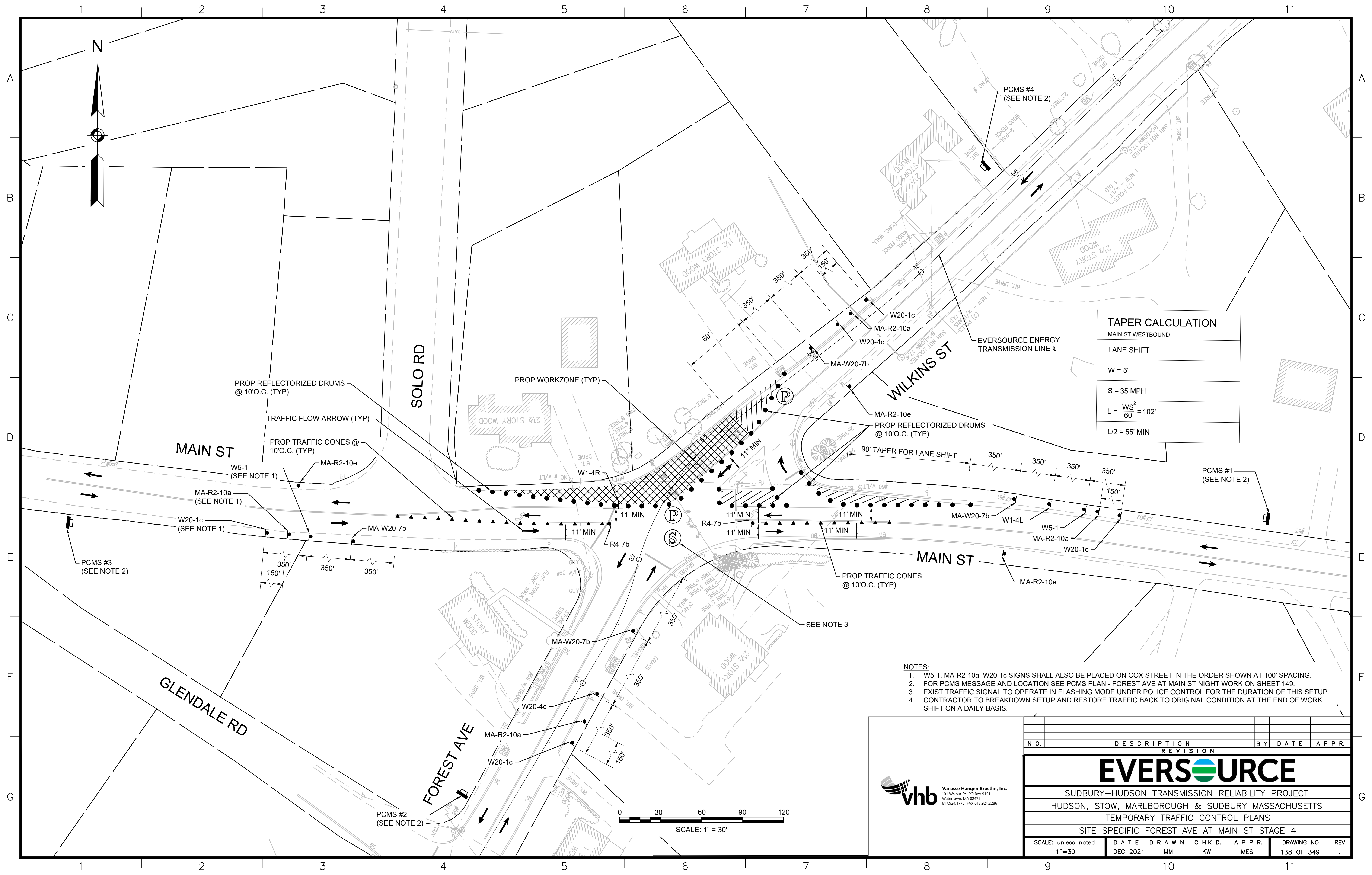
- NOTES:**
1. W20-2c, W24-2(MOD), MA-R2-10a, W20-1c SIGNS SHALL ALSO BE PLACED ON COX STREET IN THE ORDER SHOWN AT 100' SPACING.
 2. SEE CLOSURE AND DETOUR PLAN- FOREST AVENUE - MANHOLE #4 ON SHEET 141.
 3. EXIST TRAFFIC SIGNAL TO OPERATE IN FLASHING MODE UNDER POLICE CONTROL FOR THE DURATION OF THIS SETUP.
 4. CONTRACTOR TO BREAKDOWN SETUP AND RESTORE TRAFFIC BACK TO ORIGINAL CONDITION AT THE END OF WORK SHIFT ON A DAILY BASIS.

SEE CLOSURE AND DETOUR PLAN-
FOREST AVENUE - MANHOLE #4
ON SHEET 141

SEE CLOSURE AND DETOUR PLAN-
FOREST AVENUE - MANHOLE #4
ON SHEET 141



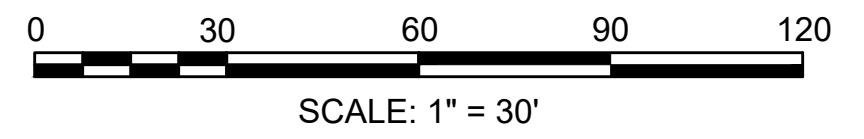
N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
TEMPORARY TRAFFIC CONTROL PLANS				
SITE SPECIFIC FOREST AVE AT MAIN ST STAGE 3				
SCALE: unless noted 1"=30'	DATE	DRAWN	CHK'D.	APPR.
	DEC 2021	MM	KW	MES
DRAWING NO.	REV.			
137 OF 349				



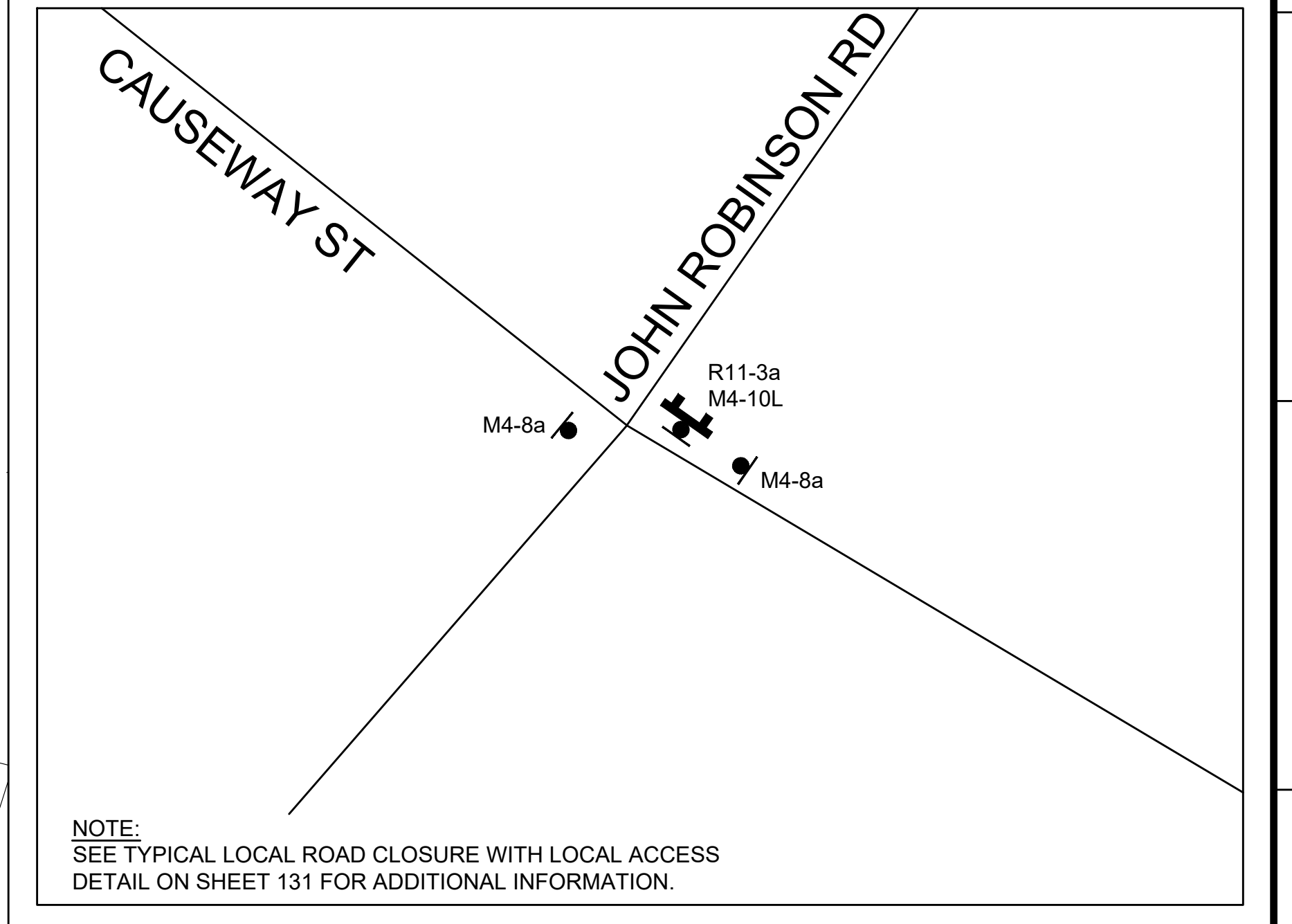
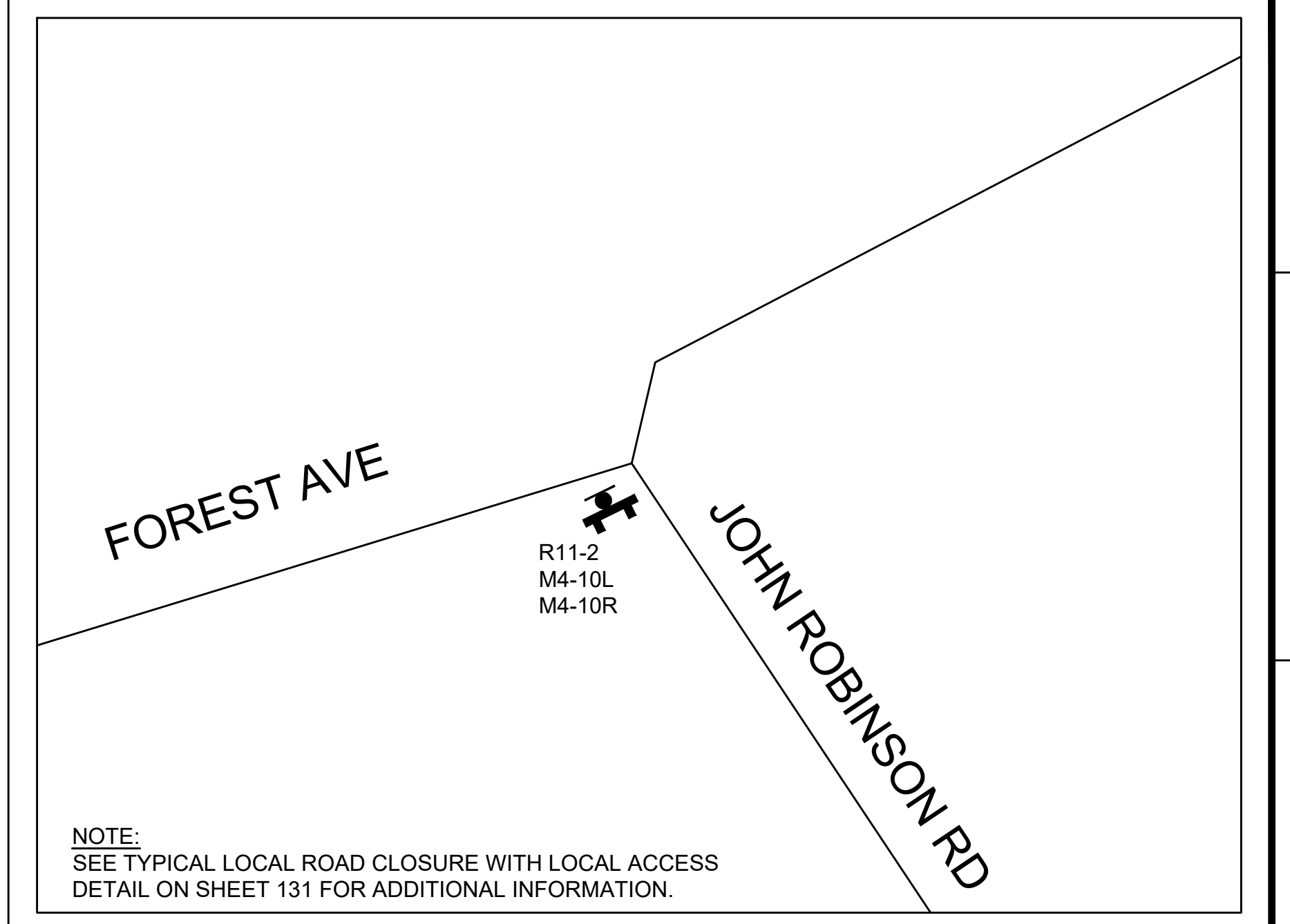
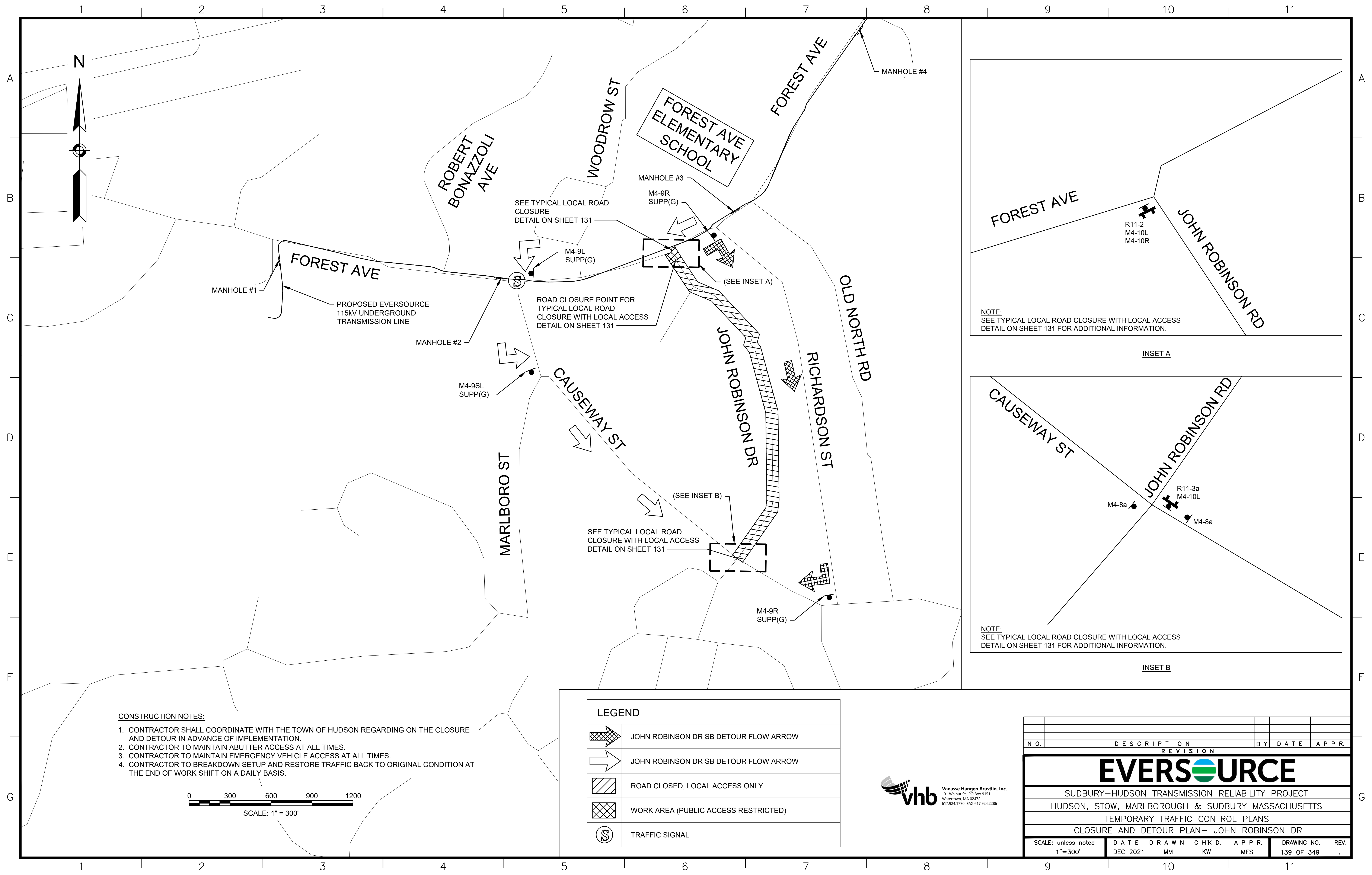
TAPER CALCULATION
MAIN ST WESTBOUND

LANE SHIFT
W = 5'
S = 35 MPH
$L = \frac{WS^2}{60} = 102'$
L/2 = 55' MIN

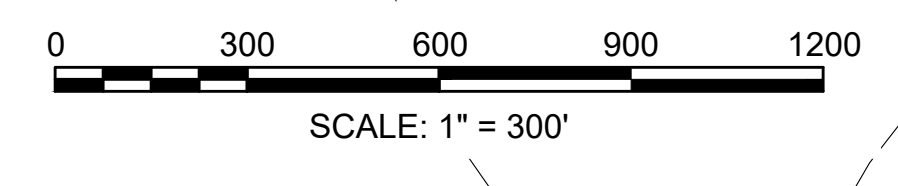
- NOTES:**
1. W5-1, MA-R2-10a, W20-1c SIGNS SHALL ALSO BE PLACED ON COX STREET IN THE ORDER SHOWN AT 100' SPACING.
 2. FOR PCMS MESSAGE AND LOCATION SEE PCMS PLAN - FOREST AVE AT MAIN ST NIGHT WORK ON SHEET 149.
 3. EXIST TRAFFIC SIGNAL TO OPERATE IN FLASHING MODE UNDER POLICE CONTROL FOR THE DURATION OF THIS SETUP.
 4. CONTRACTOR TO BREAKDOWN SETUP AND RESTORE TRAFFIC BACK TO ORIGINAL CONDITION AT THE END OF WORK SHIFT ON A DAILY BASIS.



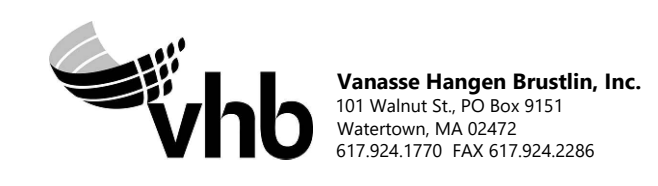
N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
TEMPORARY TRAFFIC CONTROL PLANS				
SITE SPECIFIC FOREST AVE AT MAIN ST STAGE 4				
SCALE: unless noted 1"=30'	DATE DEC 2021	DRAWN MM	CHK'D. KW	APPR. MES
	DRAWING NO. 138 OF 349	REV.		



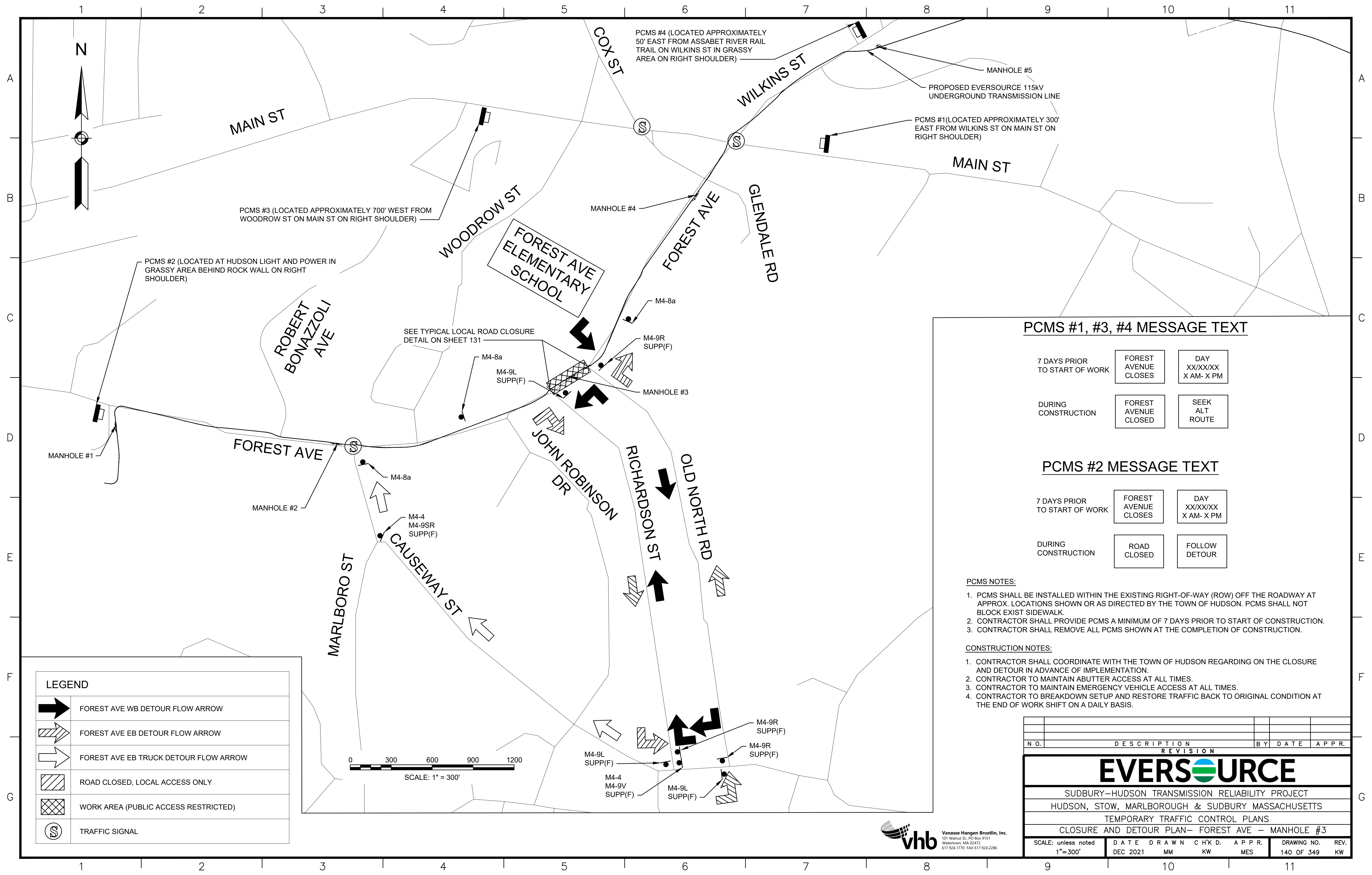
- CONSTRUCTION NOTES:**
1. CONTRACTOR SHALL COORDINATE WITH THE TOWN OF HUDSON REGARDING ON THE CLOSURE AND DETOUR IN ADVANCE OF IMPLEMENTATION.
 2. CONTRACTOR TO MAINTAIN ABUTTER ACCESS AT ALL TIMES.
 3. CONTRACTOR TO MAINTAIN EMERGENCY VEHICLE ACCESS AT ALL TIMES.
 4. CONTRACTOR TO BREAKDOWN SETUP AND RESTORE TRAFFIC BACK TO ORIGINAL CONDITION AT THE END OF WORK SHIFT ON A DAILY BASIS.



LEGEND	
	JOHN ROBINSON DR SB DETOUR FLOW ARROW
	JOHN ROBINSON DR SB DETOUR FLOW ARROW
	ROAD CLOSED, LOCAL ACCESS ONLY
	WORK AREA (PUBLIC ACCESS RESTRICTED)
	TRAFFIC SIGNAL



N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
TEMPORARY TRAFFIC CONTROL PLANS				
CLOSURE AND DETOUR PLAN- JOHN ROBINSON DR				
SCALE: unless noted 1"=300'	DATE	DRAWN	CHK'D	APPR.
	DEC 2021	MM	KW	MES
DRAWING NO.	REV.			
139 OF 349	.			



PCMS #4 (LOCATED APPROXIMATELY 50' EAST FROM ASSABET RIVER RAIL TRAIL ON WILKINS ST IN GRASSY AREA ON RIGHT SHOULDER)

MANHOLE #5

PROPOSED EVERSOURCE 115kV UNDERGROUND TRANSMISSION LINE

PCMS #1 (LOCATED APPROXIMATELY 300' EAST FROM WILKINS ST ON MAIN ST ON RIGHT SHOULDER)

MANHOLE #4

PCMS #3 (LOCATED APPROXIMATELY 700' WEST FROM WOODROW ST ON MAIN ST ON RIGHT SHOULDER)

MANHOLE #1

PCMS #2 (LOCATED AT HUDSON LIGHT AND POWER IN GRASSY AREA BEHIND ROCK WALL ON RIGHT SHOULDER)

SEE TYPICAL LOCAL ROAD CLOSURE DETAIL ON SHEET 131

MANHOLE #3

MANHOLE #2

PCMS #1, #3, #4 MESSAGE TEXT

7 DAYS PRIOR TO START OF WORK	FOREST AVENUE CLOSURES	DAY XX/XX/XX X AM- X PM
DURING CONSTRUCTION	FOREST AVENUE CLOSED	SEEK ALT ROUTE

PCMS #2 MESSAGE TEXT

7 DAYS PRIOR TO START OF WORK	FOREST AVENUE CLOSURES	DAY XX/XX/XX X AM- X PM
DURING CONSTRUCTION	ROAD CLOSED	FOLLOW DETOUR

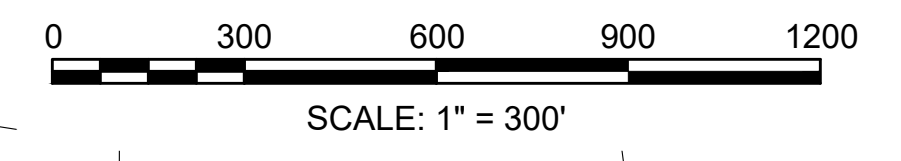
PCMS NOTES:

1. PCMS SHALL BE INSTALLED WITHIN THE EXISTING RIGHT-OF-WAY (ROW) OFF THE ROADWAY AT APPROX. LOCATIONS SHOWN OR AS DIRECTED BY THE TOWN OF HUDSON. PCMS SHALL NOT BLOCK EXIST SIDEWALK.
2. CONTRACTOR SHALL PROVIDE PCMS A MINIMUM OF 7 DAYS PRIOR TO START OF CONSTRUCTION.
3. CONTRACTOR SHALL REMOVE ALL PCMS SHOWN AT THE COMPLETION OF CONSTRUCTION.

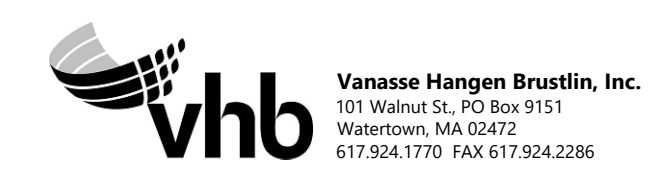
CONSTRUCTION NOTES:

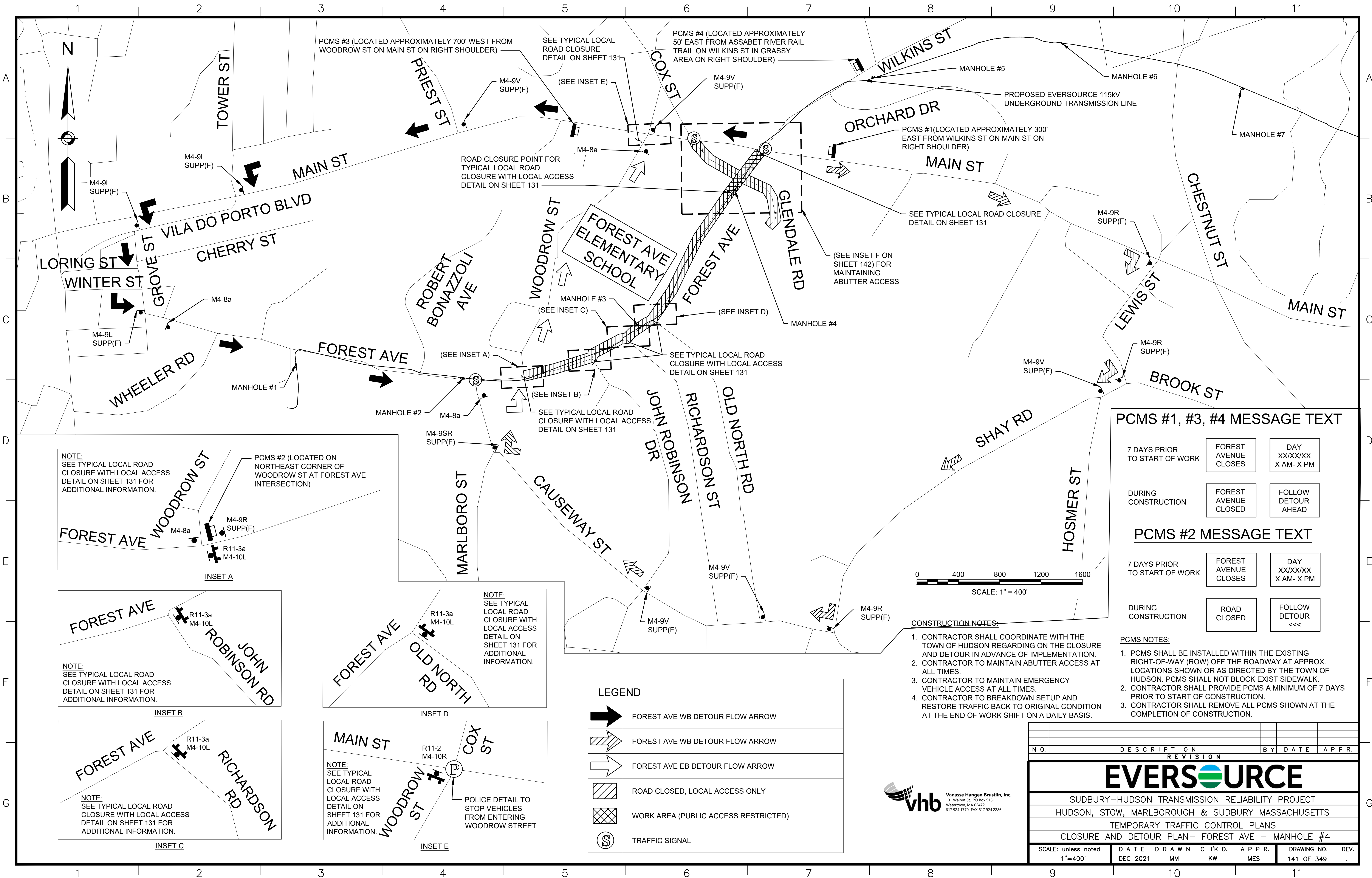
1. CONTRACTOR SHALL COORDINATE WITH THE TOWN OF HUDSON REGARDING ON THE CLOSURE AND DETOUR IN ADVANCE OF IMPLEMENTATION.
2. CONTRACTOR TO MAINTAIN ABUTTER ACCESS AT ALL TIMES.
3. CONTRACTOR TO MAINTAIN EMERGENCY VEHICLE ACCESS AT ALL TIMES.
4. CONTRACTOR TO BREAKDOWN SETUP AND RESTORE TRAFFIC BACK TO ORIGINAL CONDITION AT THE END OF WORK SHIFT ON A DAILY BASIS.

LEGEND	
	FOREST AVE WB DETOUR FLOW ARROW
	FOREST AVE EB DETOUR FLOW ARROW
	FOREST AVE EB TRUCK DETOUR FLOW ARROW
	ROAD CLOSED, LOCAL ACCESS ONLY
	WORK AREA (PUBLIC ACCESS RESTRICTED)
	TRAFFIC SIGNAL



NO.		DESCRIPTION		BY	DATE	APPR.
REVISION						
EVERSOURCE						
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT						
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS						
TEMPORARY TRAFFIC CONTROL PLANS						
CLOSURE AND DETOUR PLAN- FOREST AVE - MANHOLE #3						
SCALE: unless noted 1"=300'	DATE	DRAWN	CHK'D	A.P.P.R.	DRAWING NO.	REV.
	DEC 2021	MM	KW	MES	140 OF 349	KW





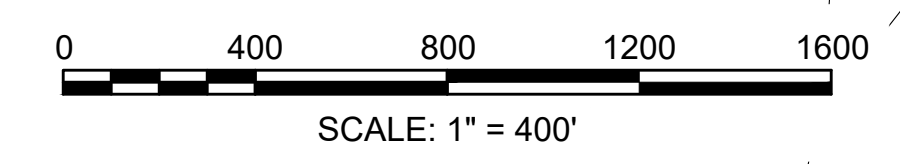
PCMS #1, #3, #4 MESSAGE TEXT

7 DAYS PRIOR TO START OF WORK	FOREST AVENUE CLOSURES	DAY XX/XX/XX X AM- X PM
DURING CONSTRUCTION	FOREST AVENUE CLOSED	FOLLOW DETOUR AHEAD

PCMS #2 MESSAGE TEXT

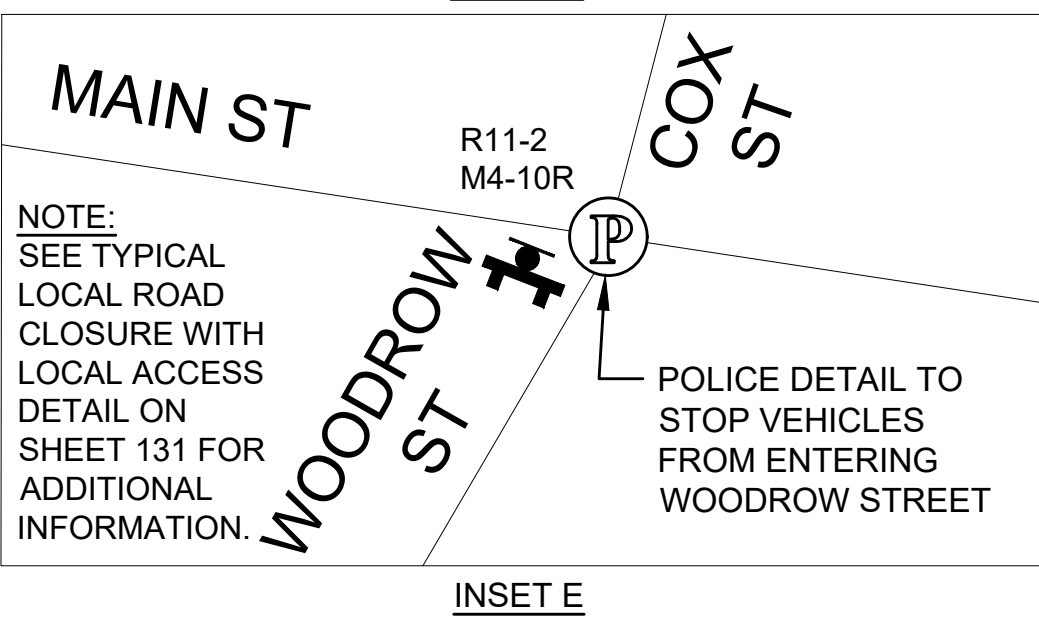
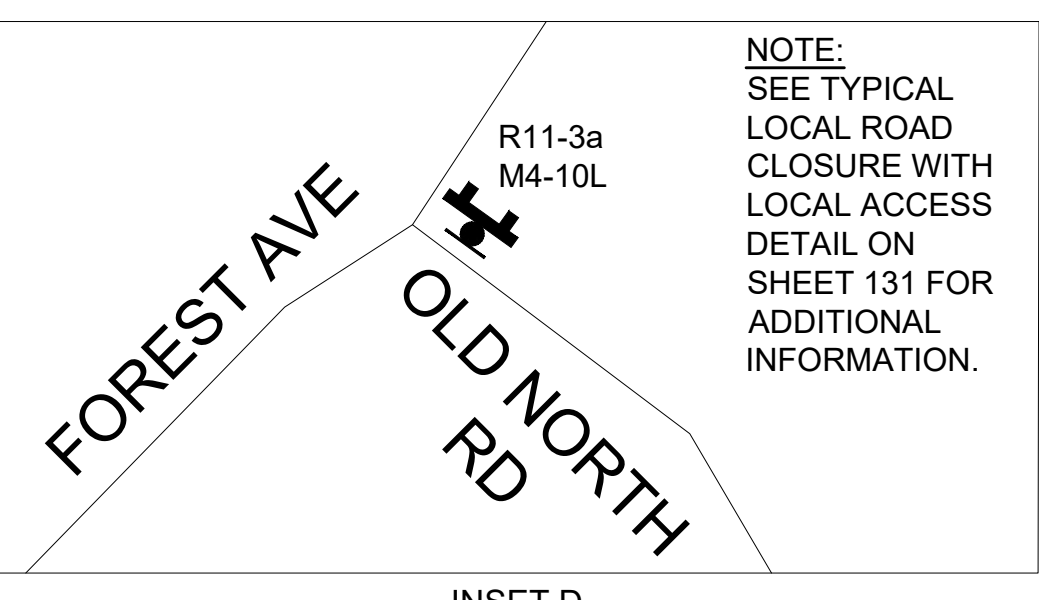
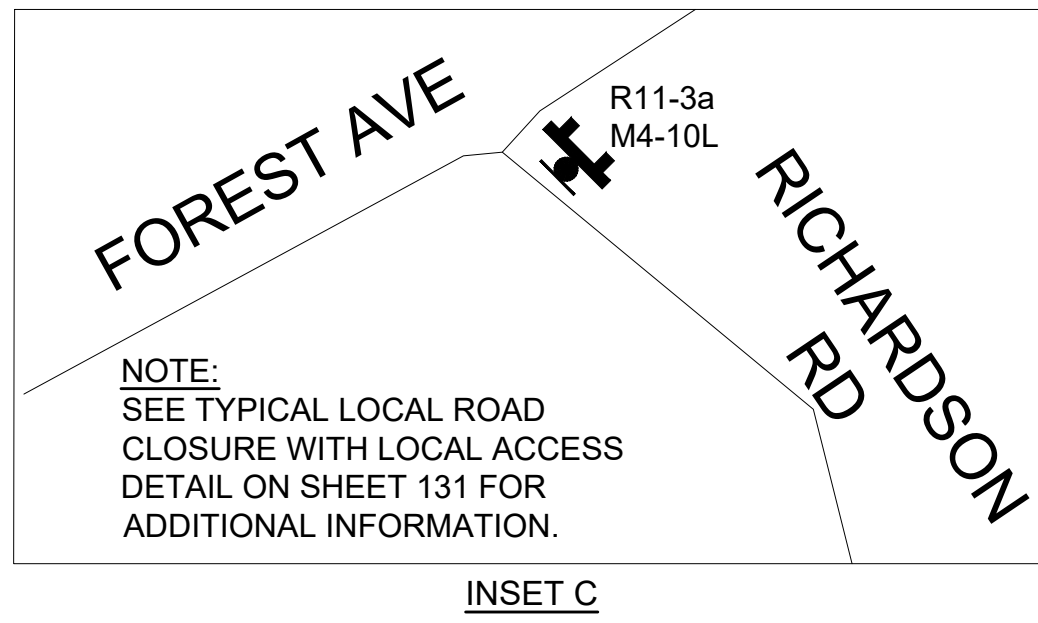
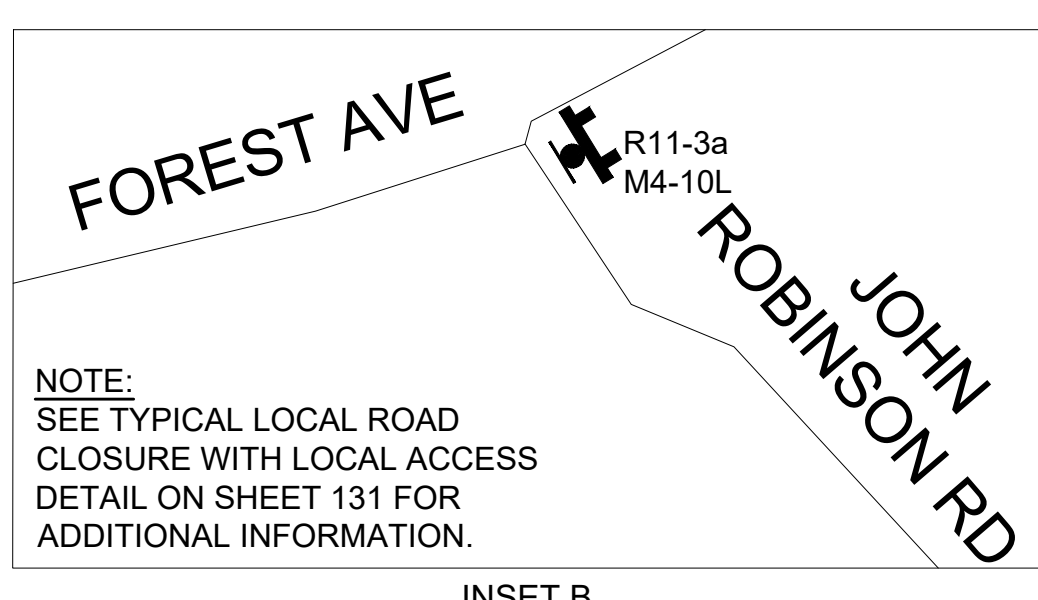
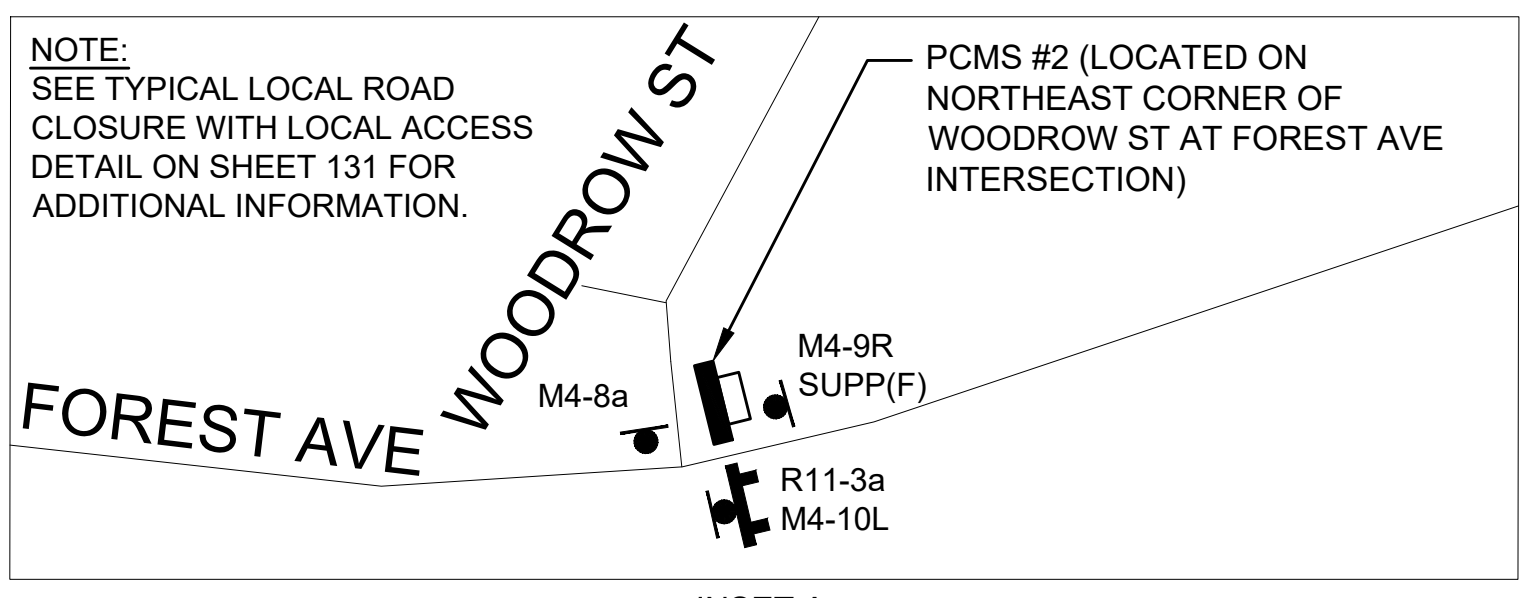
7 DAYS PRIOR TO START OF WORK	FOREST AVENUE CLOSURES	DAY XX/XX/XX X AM- X PM
DURING CONSTRUCTION	ROAD CLOSED	FOLLOW DETOUR <<<

- PCMS NOTES:**
1. PCMS SHALL BE INSTALLED WITHIN THE EXISTING RIGHT-OF-WAY (ROW) OFF THE ROADWAY AT APPROX. LOCATIONS SHOWN OR AS DIRECTED BY THE TOWN OF HUDSON. PCMS SHALL NOT BLOCK EXIST SIDEWALK.
 2. CONTRACTOR SHALL PROVIDE PCMS A MINIMUM OF 7 DAYS PRIOR TO START OF CONSTRUCTION.
 3. CONTRACTOR SHALL REMOVE ALL PCMS SHOWN AT THE COMPLETION OF CONSTRUCTION.



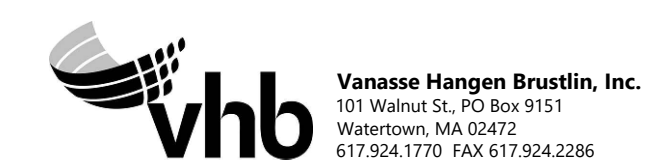
CONSTRUCTION NOTES:

1. CONTRACTOR SHALL COORDINATE WITH THE TOWN OF HUDSON REGARDING ON THE CLOSURE AND DETOUR IN ADVANCE OF IMPLEMENTATION.
2. CONTRACTOR TO MAINTAIN ABUTTER ACCESS AT ALL TIMES.
3. CONTRACTOR TO MAINTAIN EMERGENCY VEHICLE ACCESS AT ALL TIMES.
4. CONTRACTOR TO BREAKDOWN SETUP AND RESTORE TRAFFIC BACK TO ORIGINAL CONDITION AT THE END OF WORK SHIFT ON A DAILY BASIS.



LEGEND

	FOREST AVE WB DETOUR FLOW ARROW
	FOREST AVE WB DETOUR FLOW ARROW
	FOREST AVE EB DETOUR FLOW ARROW
	ROAD CLOSED, LOCAL ACCESS ONLY
	WORK AREA (PUBLIC ACCESS RESTRICTED)
	TRAFFIC SIGNAL

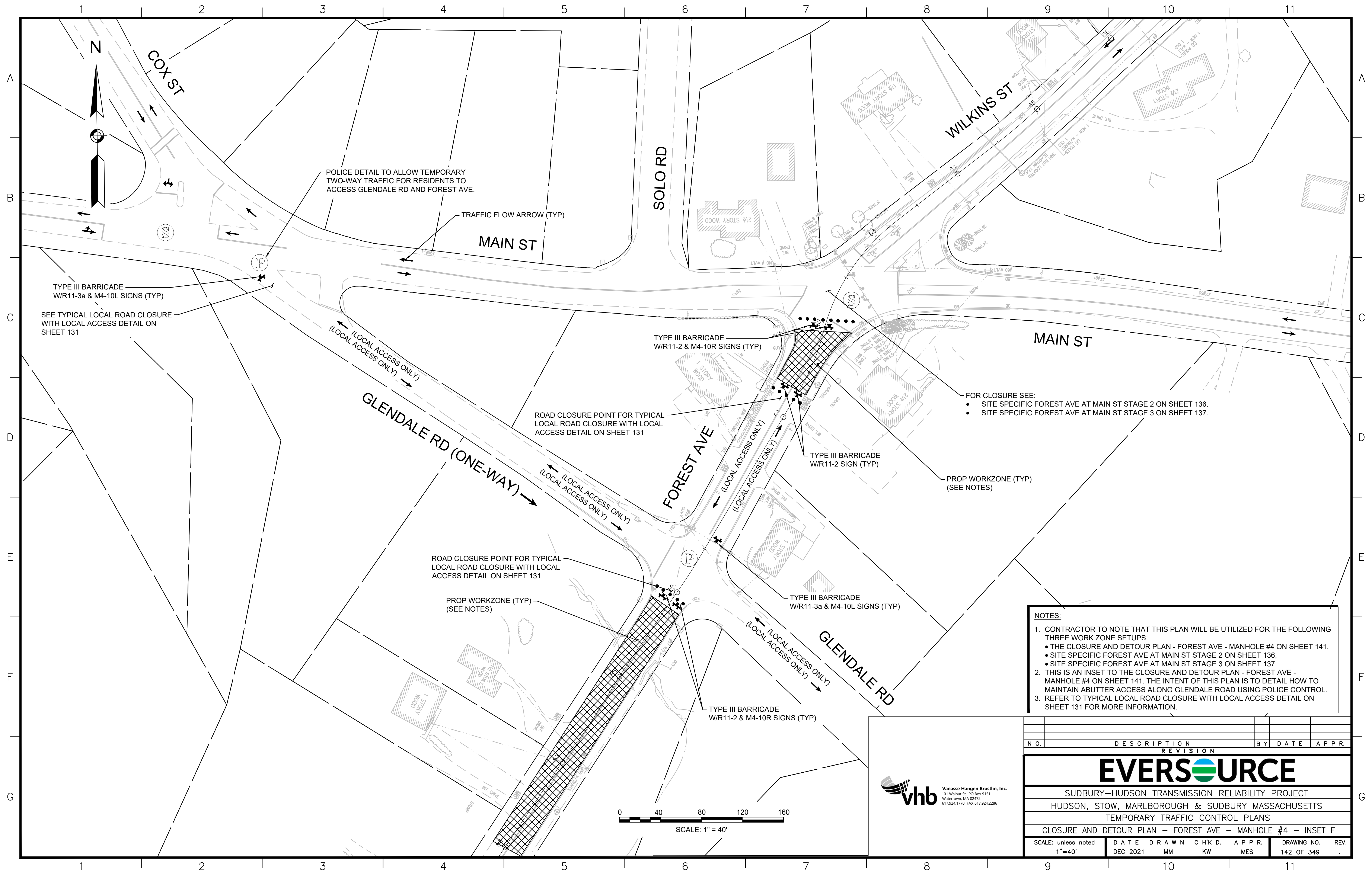


REVISION			
N.O.	DESCRIPTION	BY	DATE

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 TEMPORARY TRAFFIC CONTROL PLANS
 CLOSURE AND DETOUR PLAN- FOREST AVE - MANHOLE #4

SCALE: unless noted 1"=400'	DATE	DRAWN	CHK'D.	APPR.	DRAWING NO.	REV.
	DEC 2021	MM	KW	MES	141 OF 349	



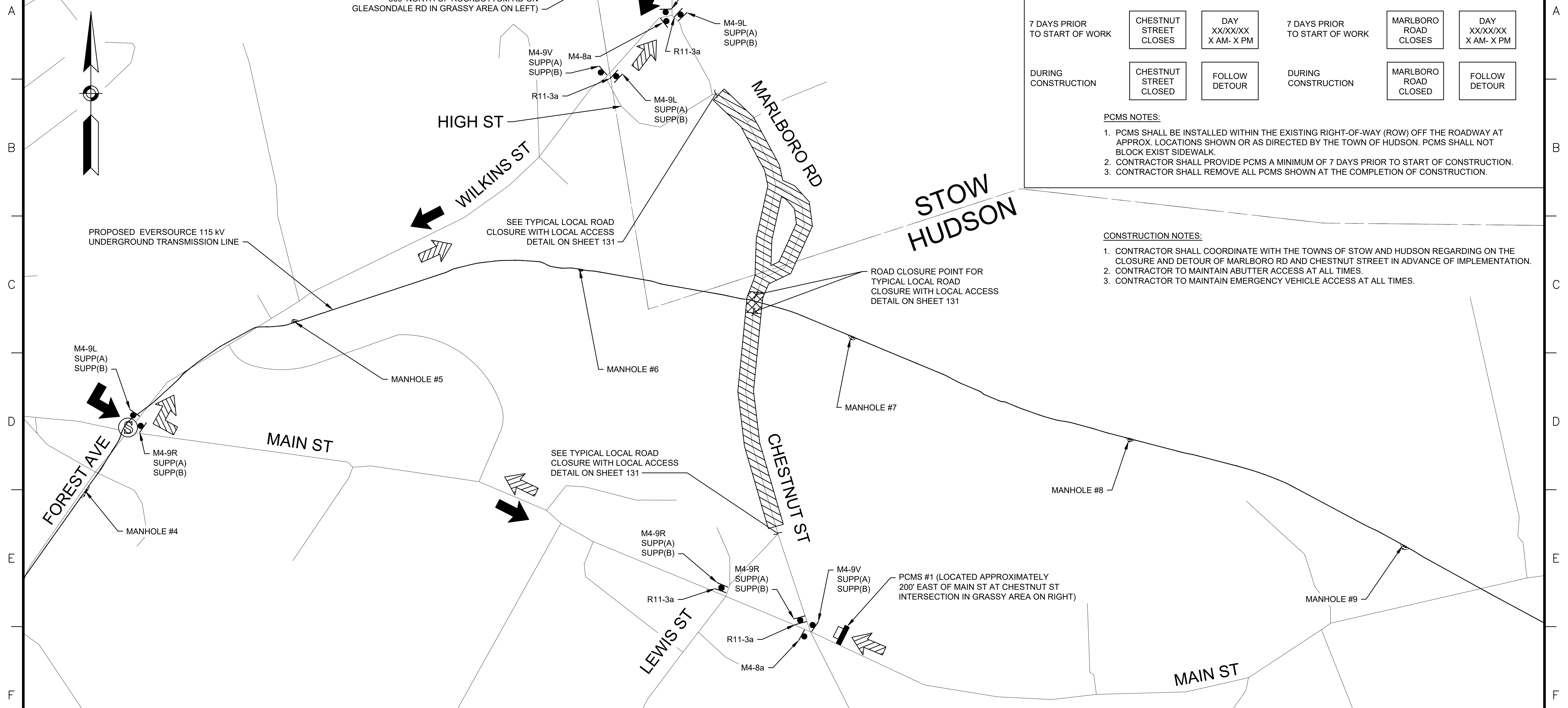
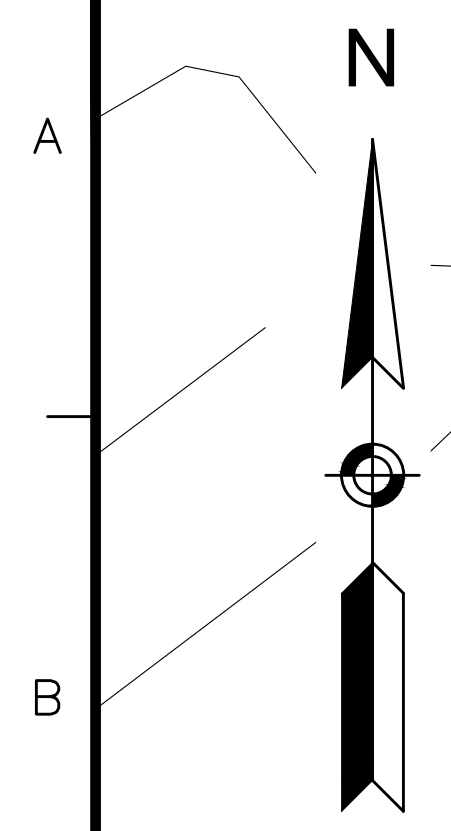
NOTES:

1. CONTRACTOR TO NOTE THAT THIS PLAN WILL BE UTILIZED FOR THE FOLLOWING THREE WORK ZONE SETUPS:
 - THE CLOSURE AND DETOUR PLAN - FOREST AVE - MANHOLE #4 ON SHEET 141.
 - SITE SPECIFIC FOREST AVE AT MAIN ST STAGE 2 ON SHEET 136.
 - SITE SPECIFIC FOREST AVE AT MAIN ST STAGE 3 ON SHEET 137
2. THIS IS AN INSET TO THE CLOSURE AND DETOUR PLAN - FOREST AVE - MANHOLE #4 ON SHEET 141. THE INTENT OF THIS PLAN IS TO DETAIL HOW TO MAINTAIN ABUTTER ACCESS ALONG GLENDALE ROAD USING POLICE CONTROL.
3. REFER TO TYPICAL LOCAL ROAD CLOSURE WITH LOCAL ACCESS DETAIL ON SHEET 131 FOR MORE INFORMATION.

Vanasse Hangen Brustlin, Inc.
101 Walnut St., PO Box 9151
Waltham, MA 02472
617.924.1770 FAX 617.924.2286

NO.	DESCRIPTION	BY	DATE	APPR.
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
TEMPORARY TRAFFIC CONTROL PLANS				
CLOSURE AND DETOUR PLAN - FOREST AVE - MANHOLE #4 - INSET F				
SCALE: unless noted 1"=40'	DATE	DRAWN	CHK'D.	APPR.
	DEC 2021	MM	KW	MES
DRAWING NO.	REV.			
142 OF 349				

1 2 3 4 5 6 7 8 9 10 11



PCMS #2 (LOCATED APPROXIMATELY 300' NORTH OF ROCKBOTTOM RD ON GLEASONDALE RD IN GRASSY AREA ON LEFT)

PCMS #1 MESSAGE TEXT

PCMS #2 MESSAGE TEXT

7 DAYS PRIOR TO START OF WORK

CHESTNUT STREET CLOSURES

DAY XX/XX/XX X AM- X PM

7 DAYS PRIOR TO START OF WORK

MARLBORO ROAD CLOSURES

DAY XX/XX/XX X AM- X PM

DURING CONSTRUCTION

CHESTNUT STREET CLOSED

FOLLOW DETOUR

DURING CONSTRUCTION

MARLBORO ROAD CLOSED

FOLLOW DETOUR

PCMS NOTES:

1. PCMS SHALL BE INSTALLED WITHIN THE EXISTING RIGHT-OF-WAY (ROW) OFF THE ROADWAY AT APPROX. LOCATIONS SHOWN OR AS DIRECTED BY THE TOWN OF HUDSON. PCMS SHALL NOT BLOCK EXIST SIDEWALK.
2. CONTRACTOR SHALL PROVIDE PCMS A MINIMUM OF 7 DAYS PRIOR TO START OF CONSTRUCTION.
3. CONTRACTOR SHALL REMOVE ALL PCMS SHOWN AT THE COMPLETION OF CONSTRUCTION.

CONSTRUCTION NOTES:

1. CONTRACTOR SHALL COORDINATE WITH THE TOWNS OF STOW AND HUDSON REGARDING ON THE CLOSURE AND DETOUR OF MARLBORO RD AND CHESTNUT STREET IN ADVANCE OF IMPLEMENTATION.
2. CONTRACTOR TO MAINTAIN ABUTTER ACCESS AT ALL TIMES.
3. CONTRACTOR TO MAINTAIN EMERGENCY VEHICLE ACCESS AT ALL TIMES.

PROPOSED EVERSOURCE 115 KV UNDERGROUND TRANSMISSION LINE

SEE TYPICAL LOCAL ROAD CLOSURE WITH LOCAL ACCESS DETAIL ON SHEET 131

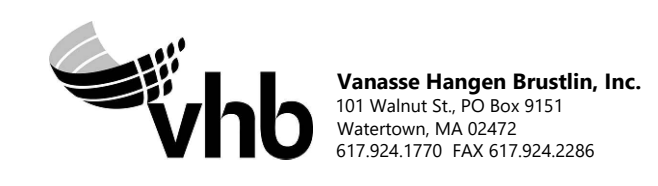
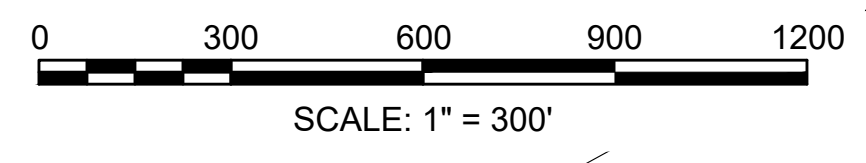
ROAD CLOSURE POINT FOR TYPICAL LOCAL ROAD CLOSURE WITH LOCAL ACCESS DETAIL ON SHEET 131

SEE TYPICAL LOCAL ROAD CLOSURE WITH LOCAL ACCESS DETAIL ON SHEET 131

PCMS #1 (LOCATED APPROXIMATELY 200' EAST OF MAIN ST AT CHESTNUT ST INTERSECTION IN GRASSY AREA ON RIGHT)

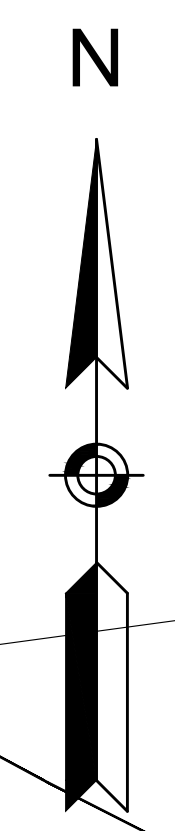
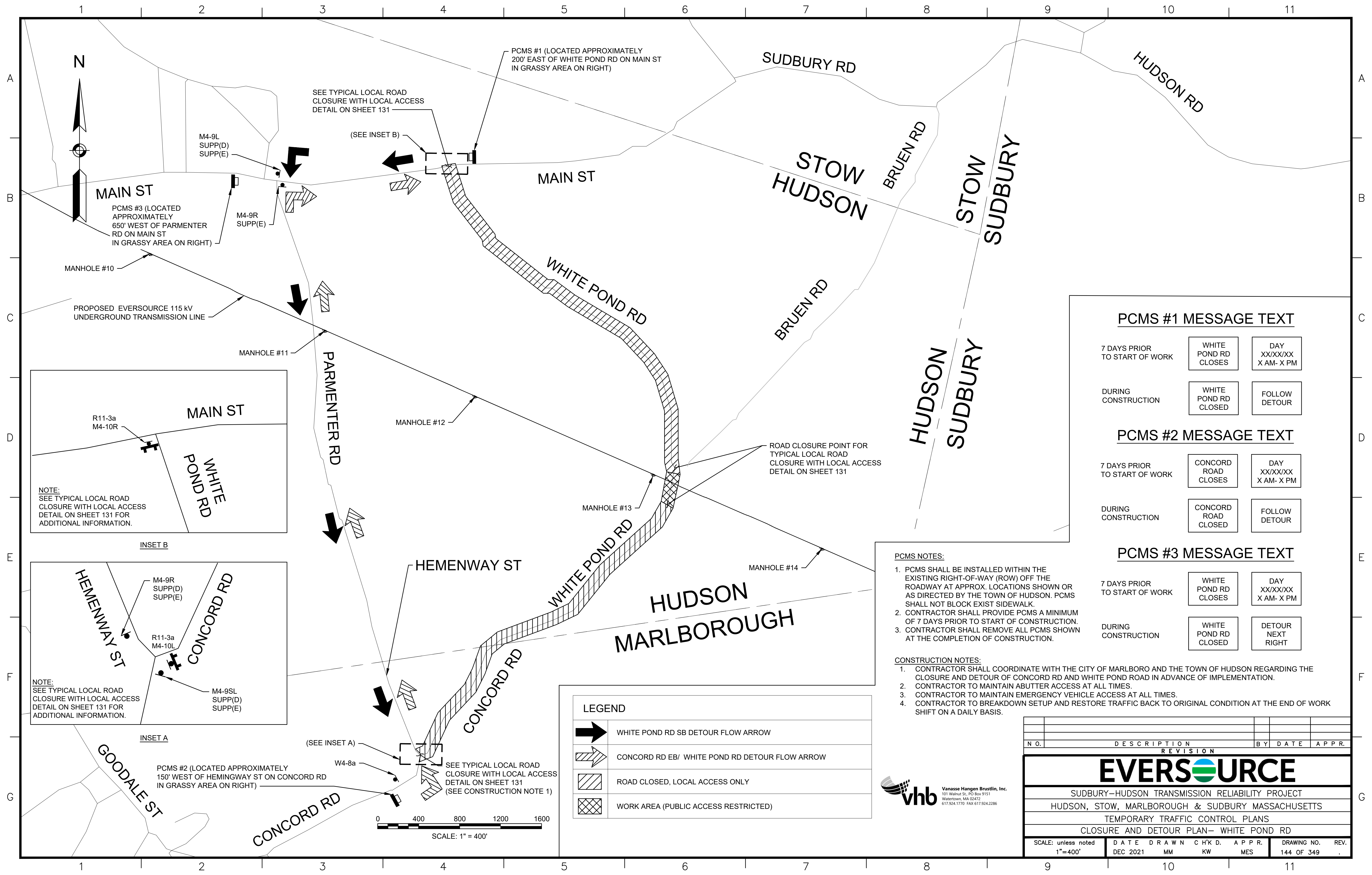
LEGEND

	MARLBOROUGH RD SB DETOUR FLOW ARROW
	CHESTNUT ST NB DETOUR FLOW ARROW
	ROAD CLOSED, LOCAL ACCESS ONLY
	WORK AREA (PUBLIC ACCESS RESTRICTED)
	TRAFFIC SIGNAL



N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
TEMPORARY TRAFFIC CONTROL PLANS				
CLOSURE AND DETOUR PLAN- CHESTNUT ST AND MARLBORO RD				
SCALE: unless noted 1"=300'	DATE	DRAWN	CHK'D	APPR.
	DEC 2021	MM	KW	MES
DRAWING NO.	REV.			
143 OF 349	.			

1 2 3 4 5 6 7 8 9 10 11



SEE TYPICAL LOCAL ROAD CLOSURE WITH LOCAL ACCESS DETAIL ON SHEET 131

(SEE INSET B)

PCMS #1 (LOCATED APPROXIMATELY 200' EAST OF WHITE POND RD ON MAIN ST IN GRASSY AREA ON RIGHT)

M4-9L SUPP(D) SUPP(E)

PCMS #3 (LOCATED APPROXIMATELY 650' WEST OF PARMENTER RD ON MAIN ST IN GRASSY AREA ON RIGHT)

M4-9R SUPP(E)

MANHOLE #10

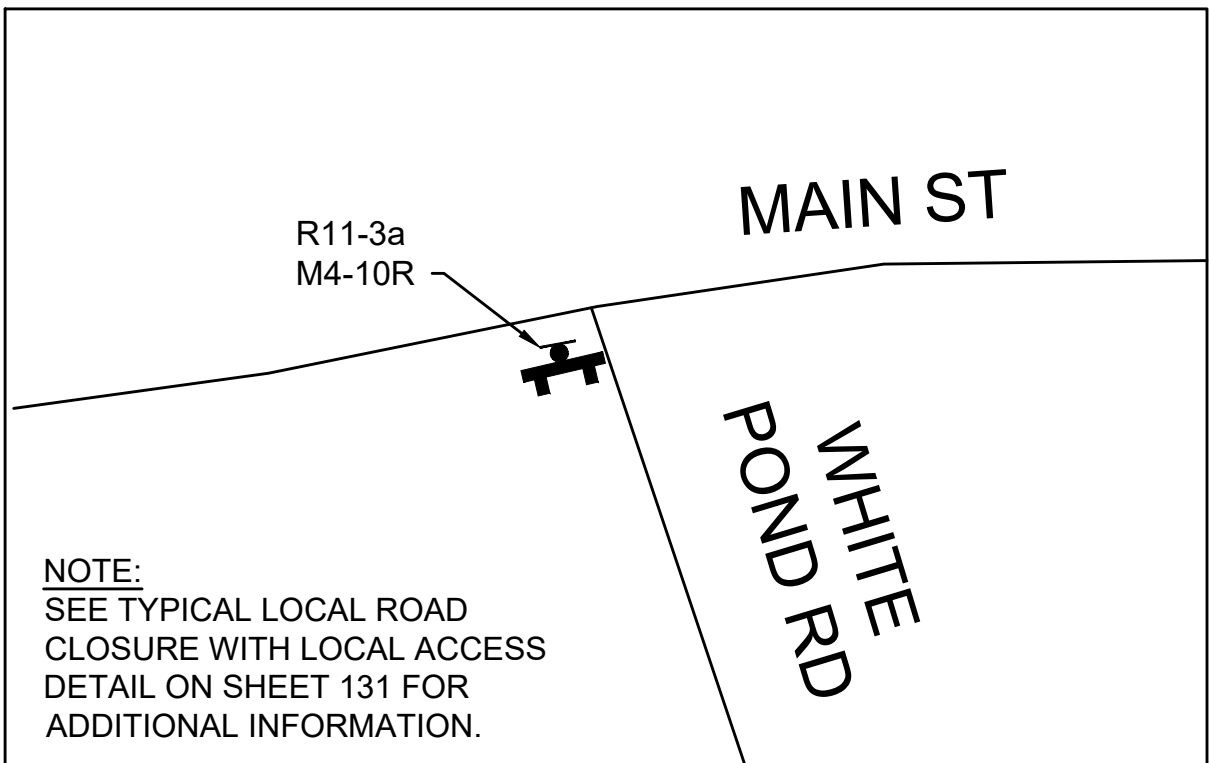
PROPOSED EVERSOURCE 115 KV UNDERGROUND TRANSMISSION LINE

MANHOLE #11

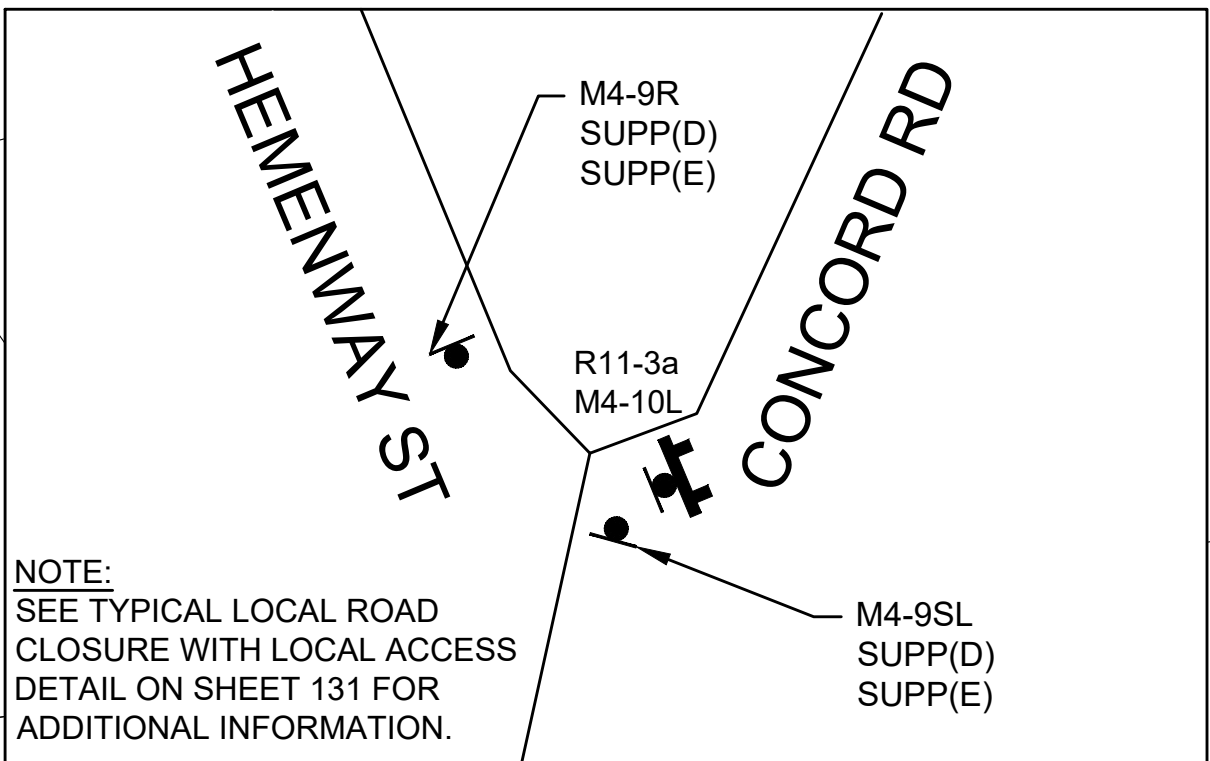
MANHOLE #12

MANHOLE #13

MANHOLE #14



INSET B

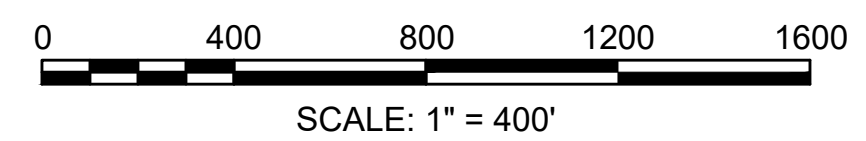


INSET A

PCMS #2 (LOCATED APPROXIMATELY 150' WEST OF HEMINGWAY ST ON CONCORD RD IN GRASSY AREA ON RIGHT)

W4-8a

SEE TYPICAL LOCAL ROAD CLOSURE WITH LOCAL ACCESS DETAIL ON SHEET 131 (SEE CONSTRUCTION NOTE 1)



LEGEND	
	WHITE POND RD SB DETOUR FLOW ARROW
	CONCORD RD EB/ WHITE POND RD DETOUR FLOW ARROW
	ROAD CLOSED, LOCAL ACCESS ONLY
	WORK AREA (PUBLIC ACCESS RESTRICTED)

ROAD CLOSURE POINT FOR TYPICAL LOCAL ROAD CLOSURE WITH LOCAL ACCESS DETAIL ON SHEET 131

PCMS #1 MESSAGE TEXT

7 DAYS PRIOR TO START OF WORK WHITE POND RD CLOSURES DAY XX/XX/XX X AM- X PM

DURING CONSTRUCTION WHITE POND RD CLOSED FOLLOW DETOUR

PCMS #2 MESSAGE TEXT

7 DAYS PRIOR TO START OF WORK CONCORD ROAD CLOSURES DAY XX/XX/XX X AM- X PM

DURING CONSTRUCTION CONCORD ROAD CLOSED FOLLOW DETOUR

PCMS #3 MESSAGE TEXT

7 DAYS PRIOR TO START OF WORK WHITE POND RD CLOSURES DAY XX/XX/XX X AM- X PM

DURING CONSTRUCTION WHITE POND RD CLOSED DETOUR NEXT RIGHT

PCMS NOTES:

1. PCMS SHALL BE INSTALLED WITHIN THE EXISTING RIGHT-OF-WAY (ROW) OFF THE ROADWAY AT APPROX. LOCATIONS SHOWN OR AS DIRECTED BY THE TOWN OF HUDSON. PCMS SHALL NOT BLOCK EXIST SIDEWALK.
2. CONTRACTOR SHALL PROVIDE PCMS A MINIMUM OF 7 DAYS PRIOR TO START OF CONSTRUCTION.
3. CONTRACTOR SHALL REMOVE ALL PCMS SHOWN AT THE COMPLETION OF CONSTRUCTION.

CONSTRUCTION NOTES:

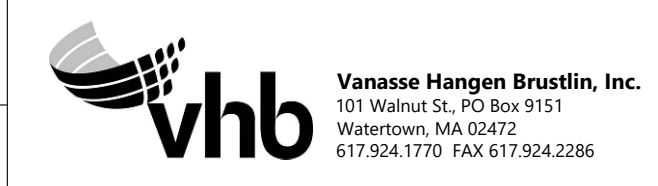
1. CONTRACTOR SHALL COORDINATE WITH THE CITY OF MARLBORO AND THE TOWN OF HUDSON REGARDING THE CLOSURE AND DETOUR OF CONCORD RD AND WHITE POND ROAD IN ADVANCE OF IMPLEMENTATION.
2. CONTRACTOR TO MAINTAIN ABUTTER ACCESS AT ALL TIMES.
3. CONTRACTOR TO MAINTAIN EMERGENCY VEHICLE ACCESS AT ALL TIMES.
4. CONTRACTOR TO BREAKDOWN SETUP AND RESTORE TRAFFIC BACK TO ORIGINAL CONDITION AT THE END OF WORK SHIFT ON A DAILY BASIS.

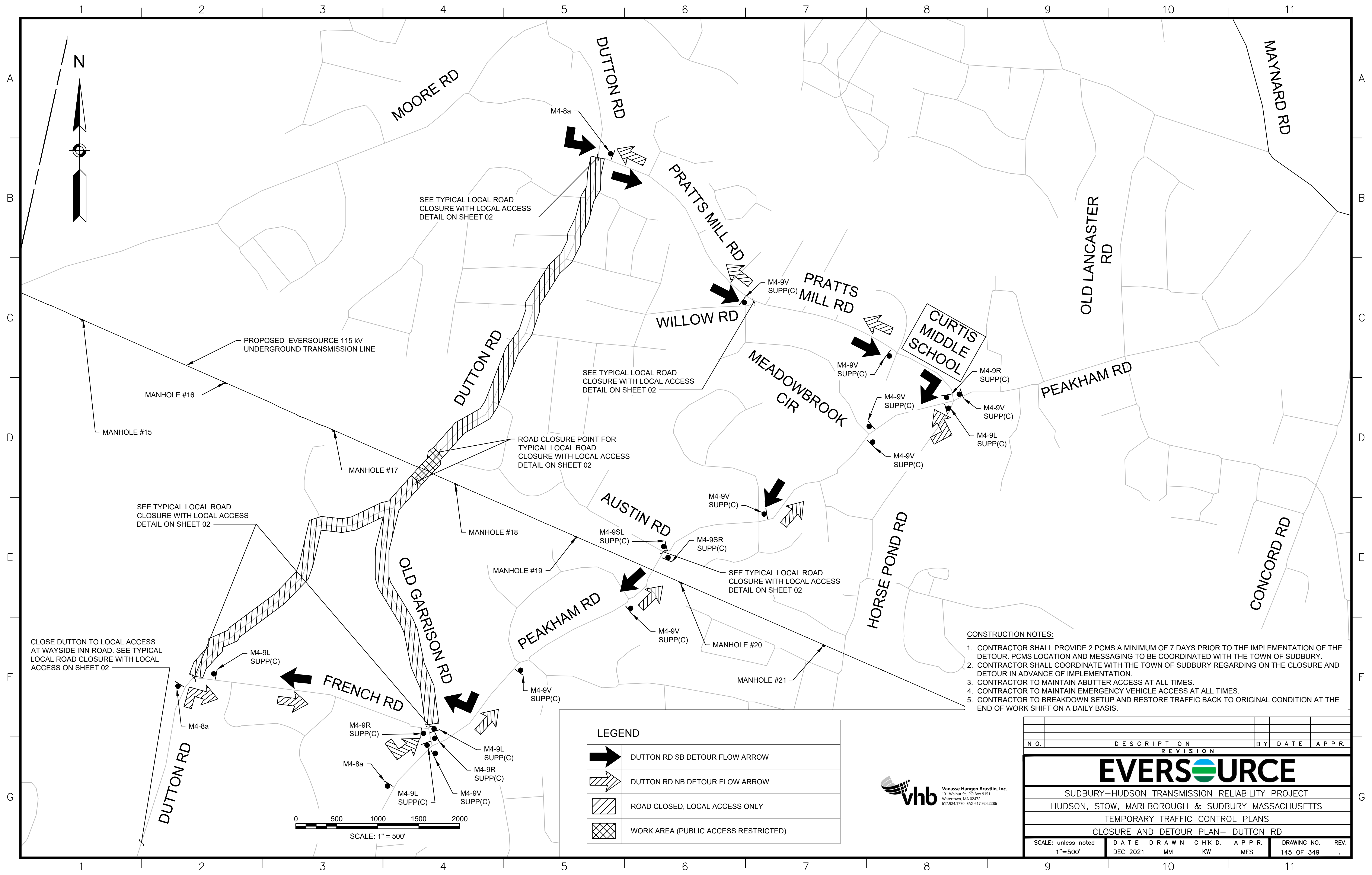
N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				



SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 TEMPORARY TRAFFIC CONTROL PLANS
 CLOSURE AND DETOUR PLAN- WHITE POND RD

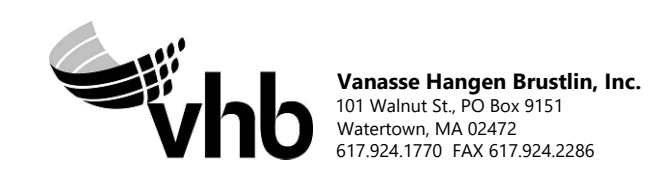
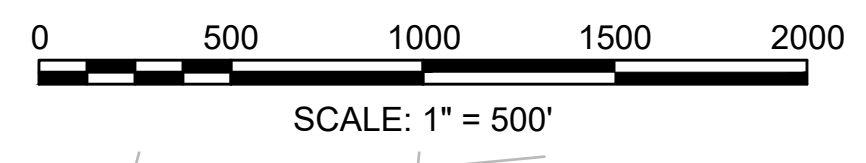
SCALE: unless noted 1"=400'	DATE DEC 2021	DRAWN MM	CHK'D. KW	APPR. MES	DRAWING NO. 144 OF 349	REV.
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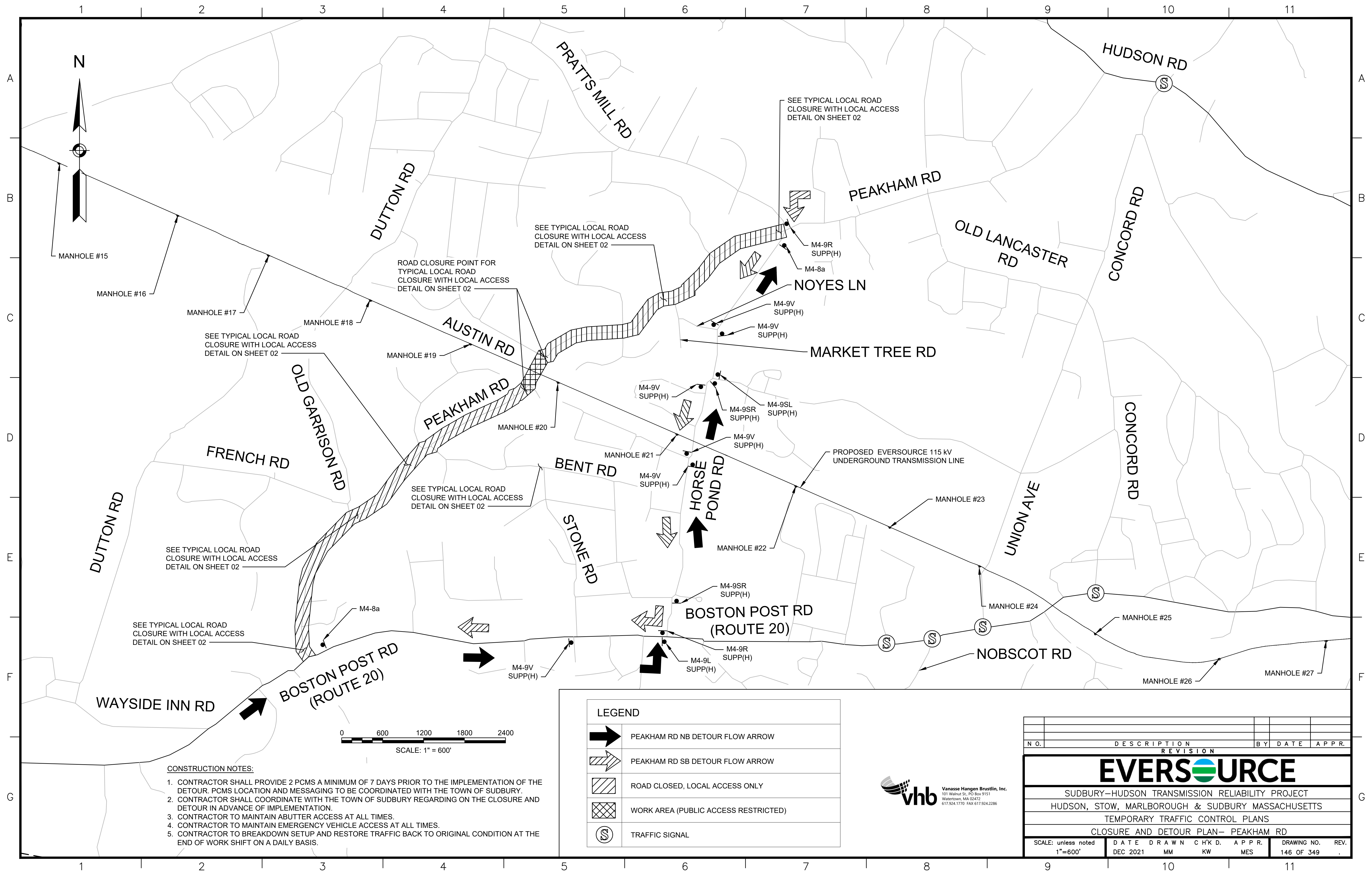


- CONSTRUCTION NOTES:**
1. CONTRACTOR SHALL PROVIDE 2 PCMS A MINIMUM OF 7 DAYS PRIOR TO THE IMPLEMENTATION OF THE DETOUR. PCMS LOCATION AND MESSAGING TO BE COORDINATED WITH THE TOWN OF SUDBURY.
 2. CONTRACTOR SHALL COORDINATE WITH THE TOWN OF SUDBURY REGARDING ON THE CLOSURE AND DETOUR IN ADVANCE OF IMPLEMENTATION.
 3. CONTRACTOR TO MAINTAIN ABUTTER ACCESS AT ALL TIMES.
 4. CONTRACTOR TO MAINTAIN EMERGENCY VEHICLE ACCESS AT ALL TIMES.
 5. CONTRACTOR TO BREAKDOWN SETUP AND RESTORE TRAFFIC BACK TO ORIGINAL CONDITION AT THE END OF WORK SHIFT ON A DAILY BASIS.

LEGEND	
	DUTTON RD SB DETOUR FLOW ARROW
	DUTTON RD NB DETOUR FLOW ARROW
	ROAD CLOSED, LOCAL ACCESS ONLY
	WORK AREA (PUBLIC ACCESS RESTRICTED)

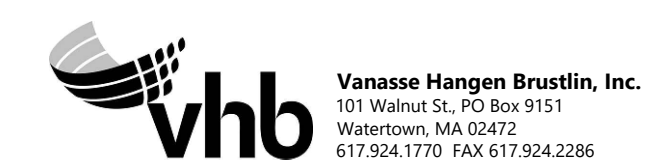


N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
TEMPORARY TRAFFIC CONTROL PLANS				
CLOSURE AND DETOUR PLAN- DUTTON RD				
SCALE: unless noted 1"=500'	DATE	DRAWN	CHK'D	APPR.
	DEC 2021	MM	KW	MES
DRAWING NO.	REV.			
145 OF 349				

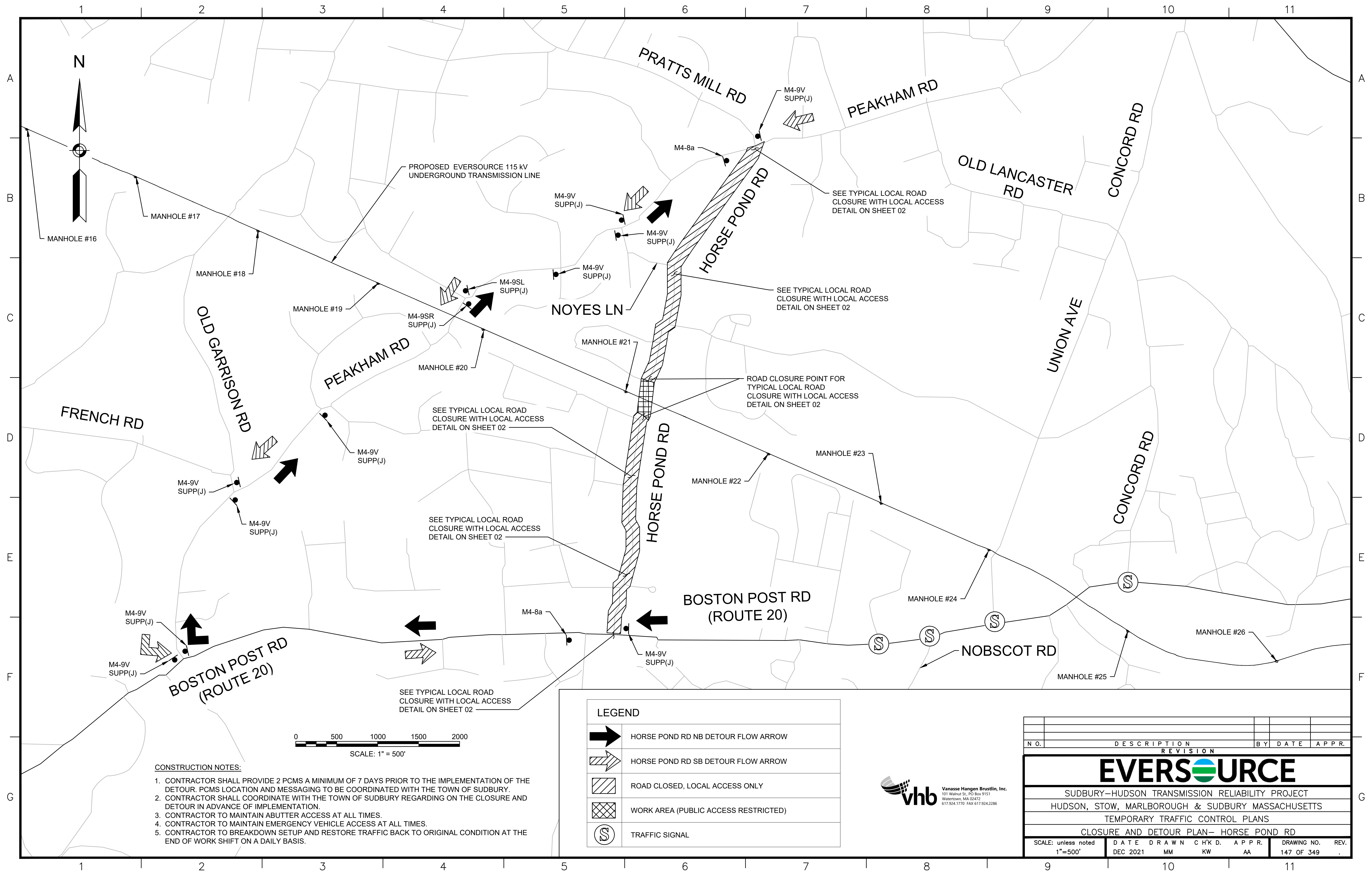


- CONSTRUCTION NOTES:**
1. CONTRACTOR SHALL PROVIDE 2 PCMS A MINIMUM OF 7 DAYS PRIOR TO THE IMPLEMENTATION OF THE DETOUR. PCMS LOCATION AND MESSAGING TO BE COORDINATED WITH THE TOWN OF SUDBURY.
 2. CONTRACTOR SHALL COORDINATE WITH THE TOWN OF SUDBURY REGARDING ON THE CLOSURE AND DETOUR IN ADVANCE OF IMPLEMENTATION.
 3. CONTRACTOR TO MAINTAIN ABUTTER ACCESS AT ALL TIMES.
 4. CONTRACTOR TO MAINTAIN EMERGENCY VEHICLE ACCESS AT ALL TIMES.
 5. CONTRACTOR TO BREAKDOWN SETUP AND RESTORE TRAFFIC BACK TO ORIGINAL CONDITION AT THE END OF WORK SHIFT ON A DAILY BASIS.

LEGEND	
	PEAKHAM RD NB DETOUR FLOW ARROW
	PEAKHAM RD SB DETOUR FLOW ARROW
	ROAD CLOSED, LOCAL ACCESS ONLY
	WORK AREA (PUBLIC ACCESS RESTRICTED)
	TRAFFIC SIGNAL

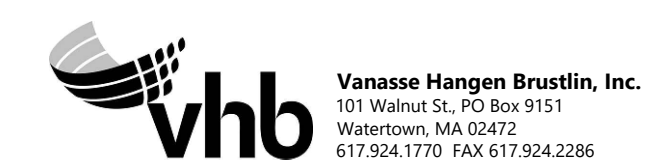


N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
TEMPORARY TRAFFIC CONTROL PLANS				
CLOSURE AND DETOUR PLAN- PEAKHAM RD				
SCALE: unless noted 1"=600'	DATE	DRAWN	CHK'D	APPR.
	DEC 2021	MM	KW	MES
DRAWING NO.	REV.			
146 OF 349				

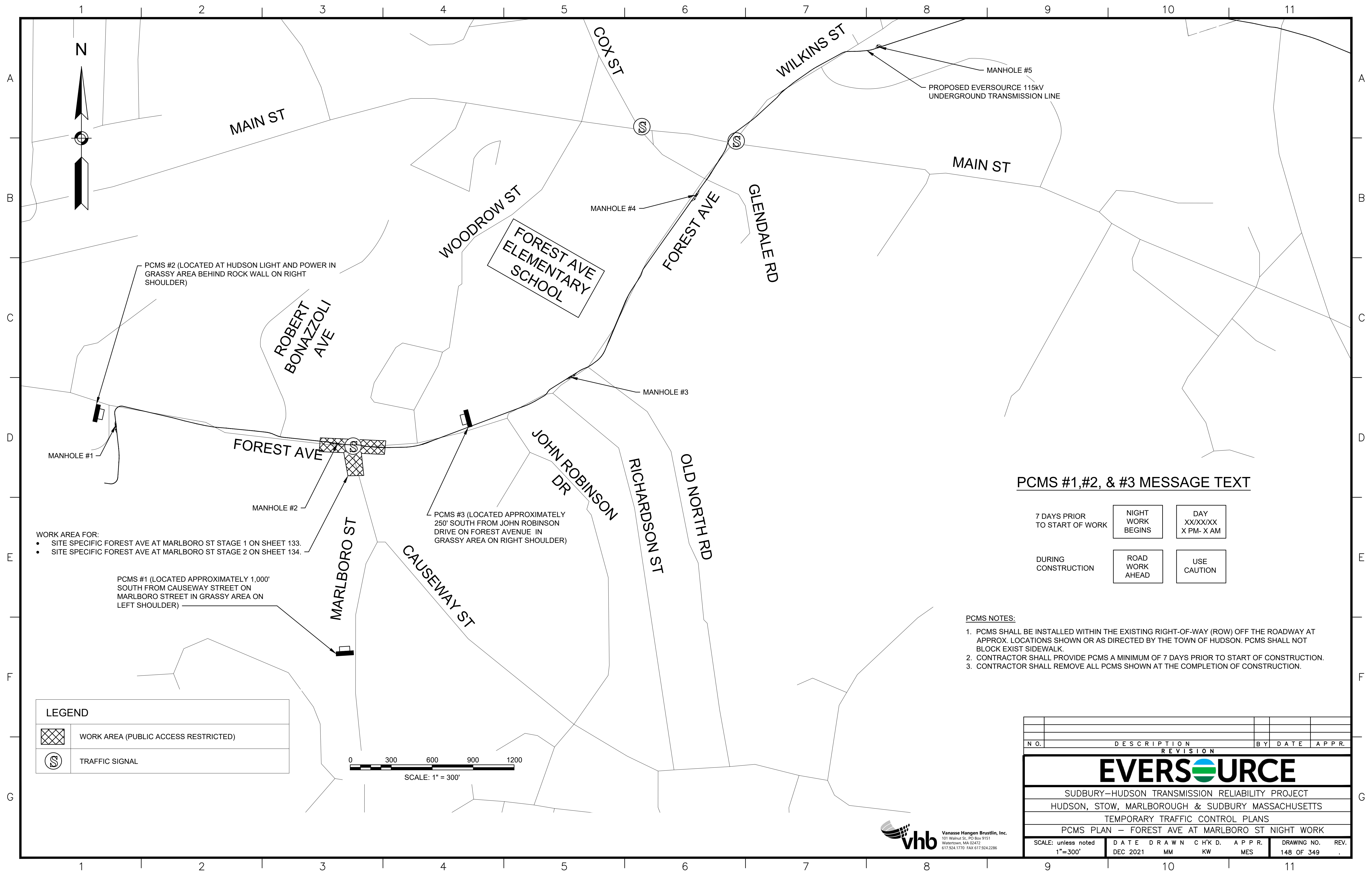


- CONSTRUCTION NOTES:**
1. CONTRACTOR SHALL PROVIDE 2 PCMS A MINIMUM OF 7 DAYS PRIOR TO THE IMPLEMENTATION OF THE DETOUR. PCMS LOCATION AND MESSAGING TO BE COORDINATED WITH THE TOWN OF SUDBURY.
 2. CONTRACTOR SHALL COORDINATE WITH THE TOWN OF SUDBURY REGARDING ON THE CLOSURE AND DETOUR IN ADVANCE OF IMPLEMENTATION.
 3. CONTRACTOR TO MAINTAIN ABUTTER ACCESS AT ALL TIMES.
 4. CONTRACTOR TO MAINTAIN EMERGENCY VEHICLE ACCESS AT ALL TIMES.
 5. CONTRACTOR TO BREAKDOWN SETUP AND RESTORE TRAFFIC BACK TO ORIGINAL CONDITION AT THE END OF WORK SHIFT ON A DAILY BASIS.

LEGEND	
	HORSE POND RD NB DETOUR FLOW ARROW
	HORSE POND RD SB DETOUR FLOW ARROW
	ROAD CLOSED, LOCAL ACCESS ONLY
	WORK AREA (PUBLIC ACCESS RESTRICTED)
	TRAFFIC SIGNAL



N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
TEMPORARY TRAFFIC CONTROL PLANS				
CLOSURE AND DETOUR PLAN- HORSE POND RD				
SCALE: unless noted 1"=500'	DATE	DRAWN	CHK'D	APPR.
	DEC 2021	MM	KW	AA
DRAWING NO.	REV.			
147 OF 349	.			



PCMS #2 (LOCATED AT HUDSON LIGHT AND POWER IN GRASSY AREA BEHIND ROCK WALL ON RIGHT SHOULDER)

ROBERT BONAZZOLI AVE

FOREST AVE ELEMENTARY SCHOOL

MANHOLE #5
PROPOSED EVERSOURCE 115kV UNDERGROUND TRANSMISSION LINE

MANHOLE #4

MANHOLE #3

MANHOLE #1

- WORK AREA FOR:
- SITE SPECIFIC FOREST AVE AT MARLBORO ST STAGE 1 ON SHEET 133.
 - SITE SPECIFIC FOREST AVE AT MARLBORO ST STAGE 2 ON SHEET 134.

PCMS #1 (LOCATED APPROXIMATELY 1,000' SOUTH FROM CAUSEWAY STREET ON MARLBORO STREET IN GRASSY AREA ON LEFT SHOULDER)

PCMS #3 (LOCATED APPROXIMATELY 250' SOUTH FROM JOHN ROBINSON DRIVE ON FOREST AVENUE IN GRASSY AREA ON RIGHT SHOULDER)

PCMS #1,#2, & #3 MESSAGE TEXT

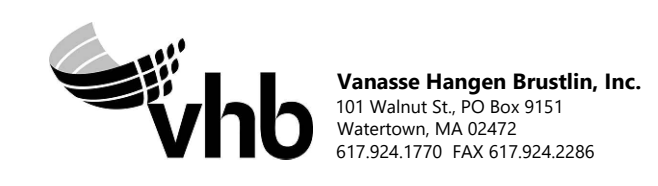
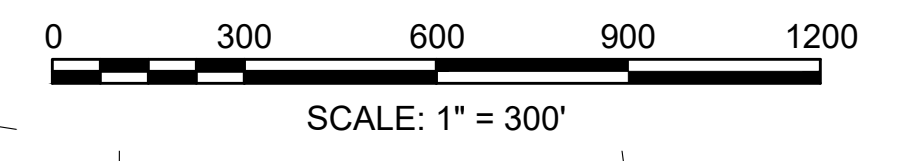
7 DAYS PRIOR TO START OF WORK	NIGHT WORK BEGINS	DAY XX/XX/XX X PM- X AM
DURING CONSTRUCTION	ROAD WORK AHEAD	USE CAUTION

PCMS NOTES:

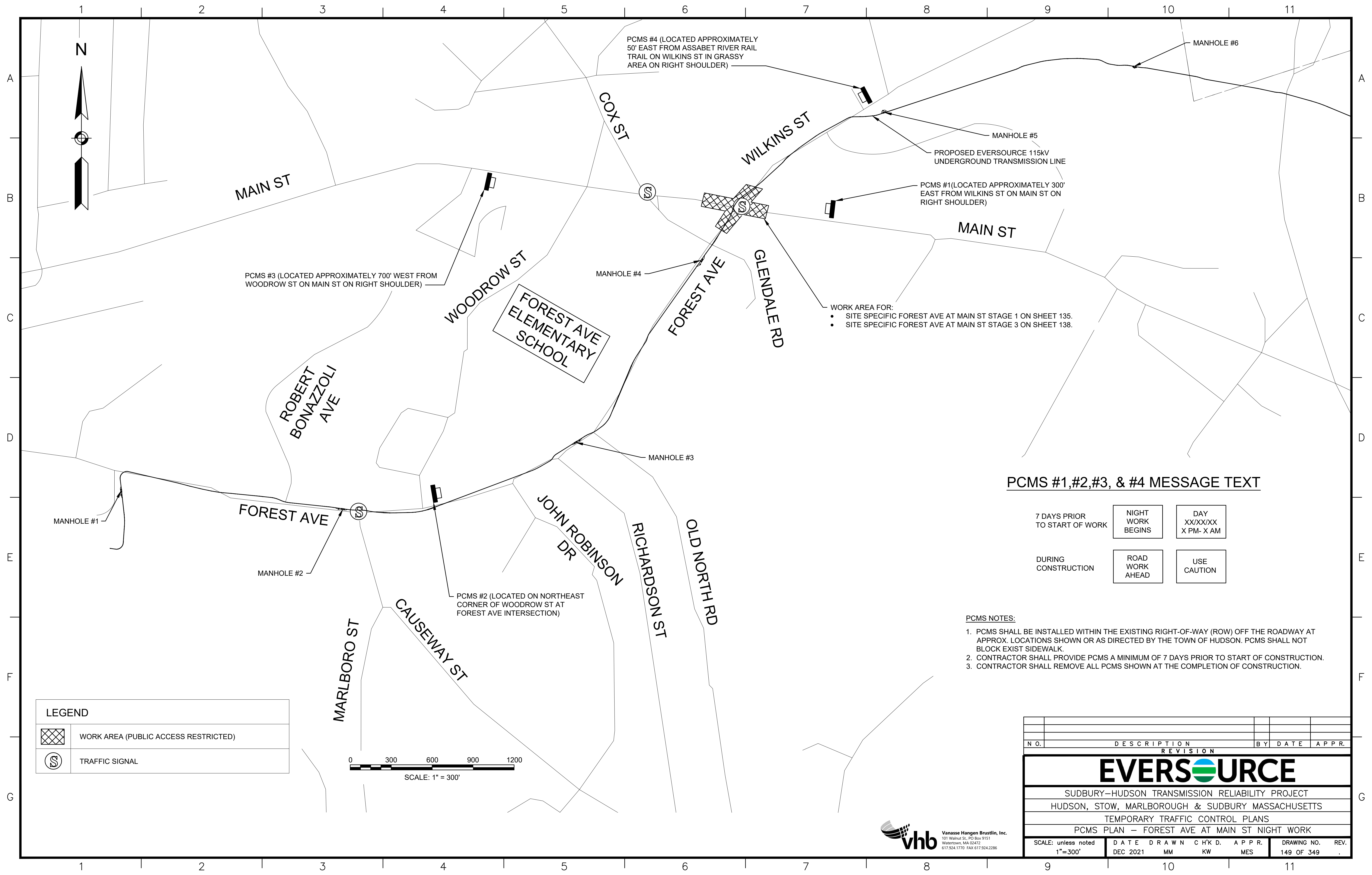
1. PCMS SHALL BE INSTALLED WITHIN THE EXISTING RIGHT-OF-WAY (ROW) OFF THE ROADWAY AT APPROX. LOCATIONS SHOWN OR AS DIRECTED BY THE TOWN OF HUDSON. PCMS SHALL NOT BLOCK EXIST SIDEWALK.
2. CONTRACTOR SHALL PROVIDE PCMS A MINIMUM OF 7 DAYS PRIOR TO START OF CONSTRUCTION.
3. CONTRACTOR SHALL REMOVE ALL PCMS SHOWN AT THE COMPLETION OF CONSTRUCTION.

LEGEND

	WORK AREA (PUBLIC ACCESS RESTRICTED)
	TRAFFIC SIGNAL



N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
TEMPORARY TRAFFIC CONTROL PLANS				
PCMS PLAN - FOREST AVE AT MARLBORO ST NIGHT WORK				
SCALE: unless noted 1"=300'	DATE	DRAWN	CHK'D	APPR.
	DEC 2021	MM	KW	MES
DRAWING NO.	REV.			
148 OF 349	.			



- WORK AREA FOR:
- SITE SPECIFIC FOREST AVE AT MAIN ST STAGE 1 ON SHEET 135.
 - SITE SPECIFIC FOREST AVE AT MAIN ST STAGE 3 ON SHEET 138.

PCMS #1,#2,#3, & #4 MESSAGE TEXT

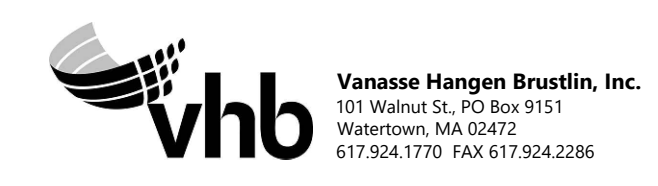
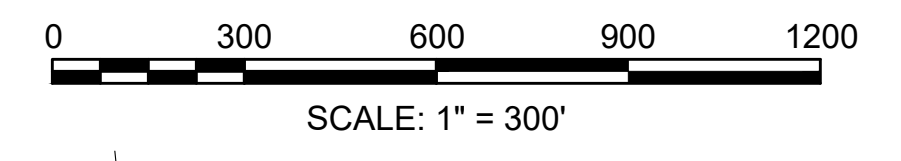
7 DAYS PRIOR TO START OF WORK	NIGHT WORK BEGINS	DAY XX/XX/XX X PM- X AM
DURING CONSTRUCTION	ROAD WORK AHEAD	USE CAUTION

PCMS NOTES:

1. PCMS SHALL BE INSTALLED WITHIN THE EXISTING RIGHT-OF-WAY (ROW) OFF THE ROADWAY AT APPROX. LOCATIONS SHOWN OR AS DIRECTED BY THE TOWN OF HUDSON. PCMS SHALL NOT BLOCK EXIST SIDEWALK.
2. CONTRACTOR SHALL PROVIDE PCMS A MINIMUM OF 7 DAYS PRIOR TO START OF CONSTRUCTION.
3. CONTRACTOR SHALL REMOVE ALL PCMS SHOWN AT THE COMPLETION OF CONSTRUCTION.

LEGEND

	WORK AREA (PUBLIC ACCESS RESTRICTED)
	TRAFFIC SIGNAL



N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
TEMPORARY TRAFFIC CONTROL PLANS				
PCMS PLAN - FOREST AVE AT MAIN ST NIGHT WORK				
SCALE: unless noted 1"=300'	DATE	DRAWN	CHK'D	APPR.
	DEC 2021	MM	KW	MES
DRAWING NO.	REV.			
149 OF 349	.			

TEMPORARY TRAFFIC CONTROL SIGN SUMMARY

IDENTIFICATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (INCHES)			COLOR		
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.	BACK-GROUND	LEGEND	BORDER
R1-1	36"	36"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			RED	WHITE	WHITE
MA-R2-10a	48"	36"		AS PER MASSDOT STANDARD			FLUOR-ESCENT ORANGE	BLACK	BLACK
MA-R2-10e	36"	48"		AS PER MASSDOT STANDARD			FLUOR-ESCENT ORANGE	BLACK	BLACK
R3-1	24"	24"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			WHITE	RED/BLACK	BLACK
R3-2	24"	24"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			WHITE	RED/BLACK	BLACK
R4-7b	24"	30"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			WHITE	BLACK	BLACK
R9-9	24"	12"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			WHITE	BLACK	BLACK
R11-2	48"	30"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			WHITE	BLACK	BLACK
R11-3a	60"	30"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			WHITE	BLACK	BLACK
W1-4L	36"	36"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			FLUOR-ESCENT ORANGE	BLACK	BLACK
W1-4R	36"	36"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			FLUOR-ESCENT ORANGE	BLACK	BLACK
W3-1	36"	36"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			FLUOR-ESCENT ORANGE	BLACK	BLACK
W5-1	36"	36"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			FLUOR-ESCENT ORANGE	BLACK	BLACK
W8-1	36"	36"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			FLUOR-ESCENT ORANGE	BLACK	BLACK
W8-8	36"	36"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			FLUOR-ESCENT ORANGE	BLACK	BLACK
W8-9	36"	36"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			FLUOR-ESCENT ORANGE	BLACK	BLACK
W20-1c	36"	36"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			FLUOR-ESCENT ORANGE	BLACK	BLACK

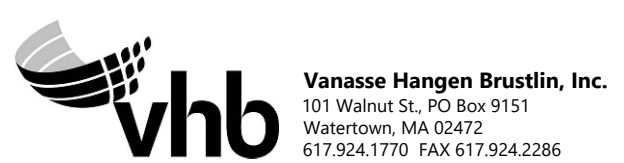
TEMPORARY TRAFFIC CONTROL SIGN SUMMARY (CONTINUED)

IDENTIFICATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (INCHES)			COLOR		
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.	BACK-GROUND	LEGEND	BORDER
W20-2c	36"	36"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			FLUOR-ESCENT ORANGE	BLACK	BLACK
W20-3c	36"	36"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			FLUOR-ESCENT ORANGE	BLACK	BLACK
W20-4c	36"	36"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			FLUOR-ESCENT ORANGE	BLACK	BLACK
MA-W20-7b	36"	36"		AS PER MASSDOT STANDARD			FLUOR-ESCENT ORANGE	BLACK	BLACK
W24-2 (MOD)	36"	36"		AS PER MASSDOT STANDARD			FLUOR-ESCENT ORANGE	BLACK	BLACK
M4-4	24"	12"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			WHITE	BLACK	BLACK
M4-8a	24"	18"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			FLUOR-ESCENT ORANGE	BLACK	BLACK
M4-9L	30"	24"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			FLUOR-ESCENT ORANGE	BLACK	BLACK
M4-9R	30"	24"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			FLUOR-ESCENT ORANGE	BLACK	BLACK
M4-9SL	30"	24"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			FLUOR-ESCENT ORANGE	BLACK	BLACK
M4-9SR	30"	24"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			FLUOR-ESCENT ORANGE	BLACK	BLACK
M4-9V	30"	24"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			FLUOR-ESCENT ORANGE	BLACK	BLACK
M4-10L	48"	18"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			FLUOR-ESCENT ORANGE	BLACK	---
M4-10R	48"	18"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			FLUOR-ESCENT ORANGE	BLACK	---

NOTES:
 1. HIGH INTENSITY REFLECTIVE SHEETING SHALL BE USED FOR ALL SIGNS. SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION" FOR TEXT DIMENSIONS, AS AMENDED; THE 1977 MASSHIGHWAY DEPARTMENT CONSTRUCTION AND TRAFFIC STANDARD DETAILS, AS AMENDED, FOR SIGNS AND SUPPORTS; THE MASSHIGHWAY DEPARTMENT SIGN LISTINGS 1993 EDITION, AS AMENDED; THE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR MOUNTING REQUIREMENTS; AND THE 2017 MassDOT STANDARD SIGNS BOOK, AS AMENDED.
 2. ALL SIGNS SHOWN GRAPHICALLY FOR INFORMATION ONLY. SIGN VENDOR SHALL FABRICATE ALL SIGNS IN ACCORDANCE WITH THE APPLICABLE STANDARDS.



A
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C
D
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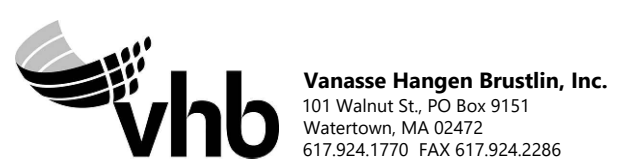


NO.		DESCRIPTION		BY	DATE	APPR.
REVISION						
EVERSOURCE						
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT						
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS						
TEMPORARY TRAFFIC CONTROL PLANS						
SIGN SUMMARY						
SCALE: unless noted NTS	DATE DEC 2021	DRAWN MM	CHK'D KW	A.P.P.R. MES	DRAWING NO. 150 OF 349	REV. .

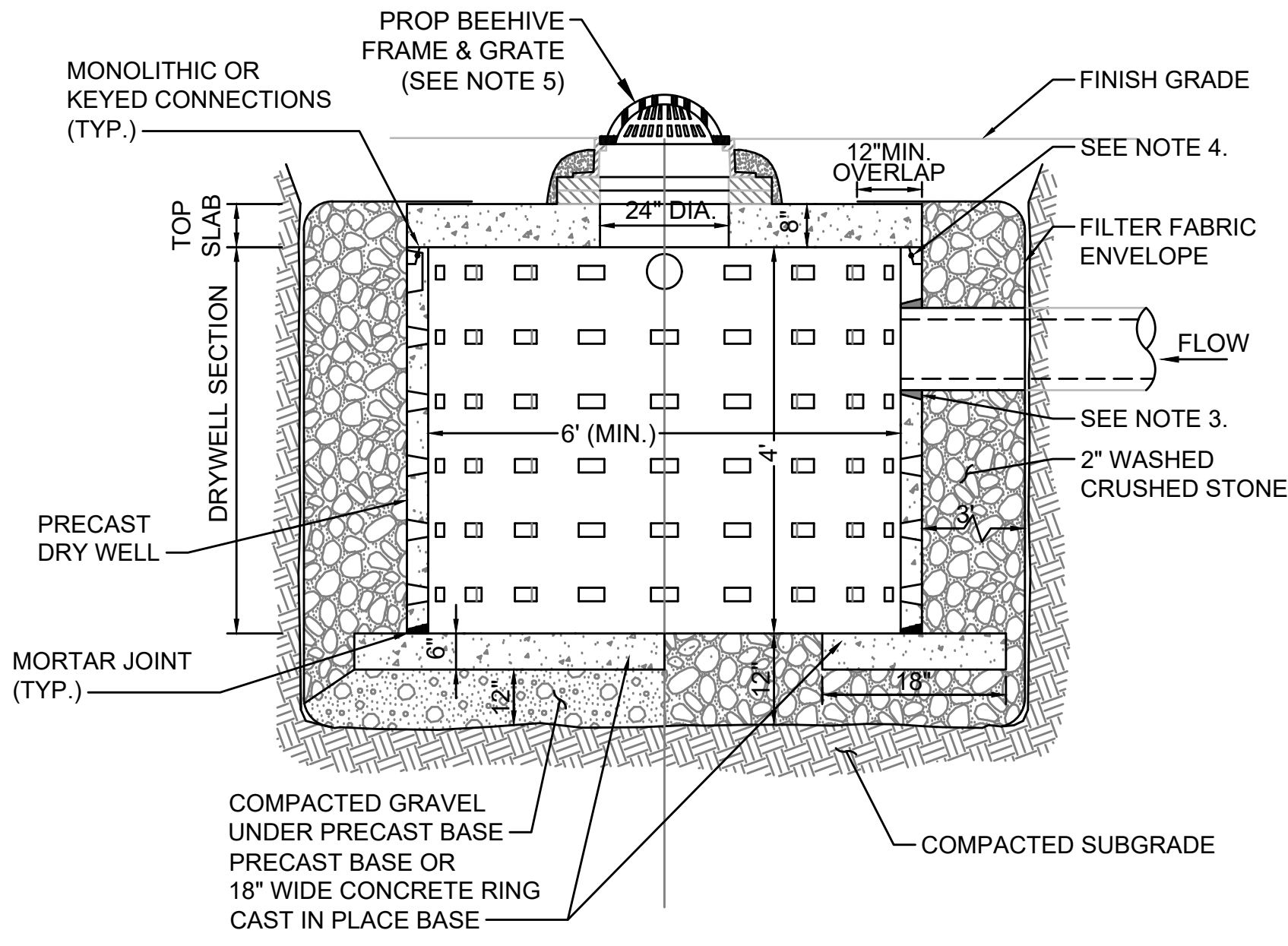
TEMPORARY TRAFFIC CONTROL SIGN SUMMARY (CONTINUED)

IDENTIFICATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (INCHES)			BACK-GROUND	COLOR	
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.		LEGEND	BORDER
SUPP(A)	48"	12"	MARLBORO RD	6"C	3" 3"	N/A	FLUOR-ESCENT ORANGE	BLACK	BLACK
SUPP(B)	48"	12"	CHESTNUT ST	6"C	3" 3"	N/A	FLUOR-ESCENT ORANGE	BLACK	BLACK
SUPP(C)	42"	12"	DUTTON RD	6"C	3" 3"	N/A	FLUOR-ESCENT ORANGE	BLACK	BLACK
SUPP(D)	36"	24"	WHITE POND RD	6"C 6"C	4" 4" 4"	N/A	FLUOR-ESCENT ORANGE	BLACK	BLACK
SUPP(E)	48"	12"	CONCORD RD	6"C	3" 3"	N/A	FLUOR-ESCENT ORANGE	BLACK	BLACK
SUPP(F)	42"	12"	FOREST AVE	6"C	3" 3"	N/A	FLUOR-ESCENT ORANGE	BLACK	BLACK
SUPP(G)	48"	24"	JOHN ROBINSON DR	6"C 6"C	4" 4" 4"	N/A	FLUOR-ESCENT ORANGE	BLACK	BLACK
SUPP(H)	48"	12"	PEAKHAM RD	6"C	3" 3"	N/A	FLUOR-ESCENT ORANGE	BLACK	BLACK
SUPP(J)	60"	12"	HORSE POND RD	6"C	3" 3"	N/A	FLUOR-ESCENT ORANGE	BLACK	BLACK
SP-1	36"	36"		6"C 6"C 6"C	3.5" 3.5"	N/A	FLUOR-ESCENT ORANGE	BLACK	BLACK
SP-2	36"	36"		6"C 6"C 6"C	3.5" 3.5"	N/A	FLUOR-ESCENT ORANGE	BLACK	BLACK

- NOTES:
- HIGH INTENSITY REFLECTIVE SHEETING SHALL BE USED FOR ALL SIGNS. SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION" FOR TEXT DIMENSIONS, AS AMENDED; THE 1977 MASSHIGHWAY DEPARTMENT CONSTRUCTION AND TRAFFIC STANDARD DETAILS, AS AMENDED, FOR SIGNS AND SUPPORTS; THE MASSHIGHWAY DEPARTMENT SIGN LISTINGS 1993 EDITION, AS AMENDED; THE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR MOUNTING REQUIREMENTS; AND THE 2017 MassDOT STANDARD SIGNS BOOK, AS AMENDED.
 - ALL SIGNS SHOWN GRAPHICALLY FOR INFORMATION ONLY. SIGN VENDOR SHALL FABRICATE ALL SIGNS IN ACCORDANCE WITH THE APPLICABLE STANDARDS.

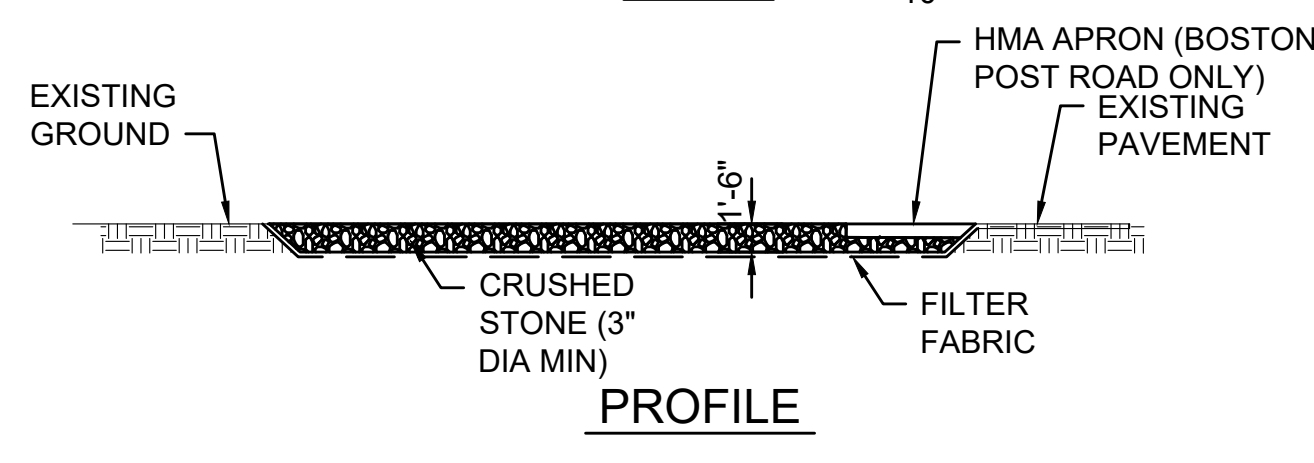
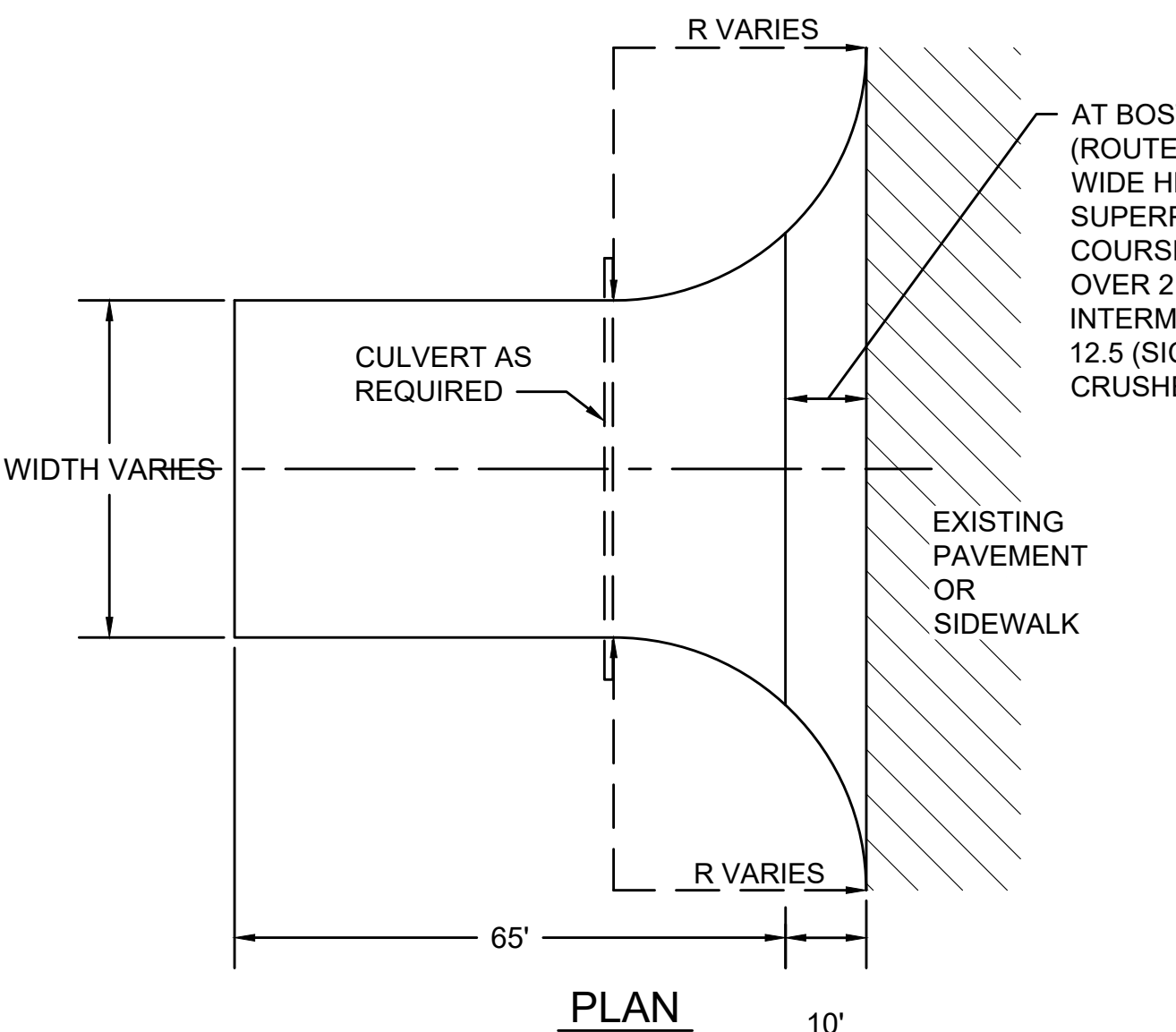


N O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
TEMPORARY TRAFFIC CONTROL PLANS				
SIGN SUMMARY				
SCALE: unless noted NTS	DATE DEC 2021	DRAWN MM	CHK'D. KW	APPR. MES
DRAWING NO. 151 OF 349	REV.			



- NOTES**
1. BASE SECTION SHALL BE PRECAST CONCRETE WITH MORTARED JOINTS OR CAST IN PLACE.
 2. ALL COMPONENTS SHALL BE DESIGNED FOR HS-20 LOADING.
 3. PROVIDE PRECAST OPENINGS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS.
 4. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
 5. BEEHIVE FRAME AND GRATE SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR (2 BRICK COURSE MINIMUM, 5 BRICK COURSE MAXIMUM)

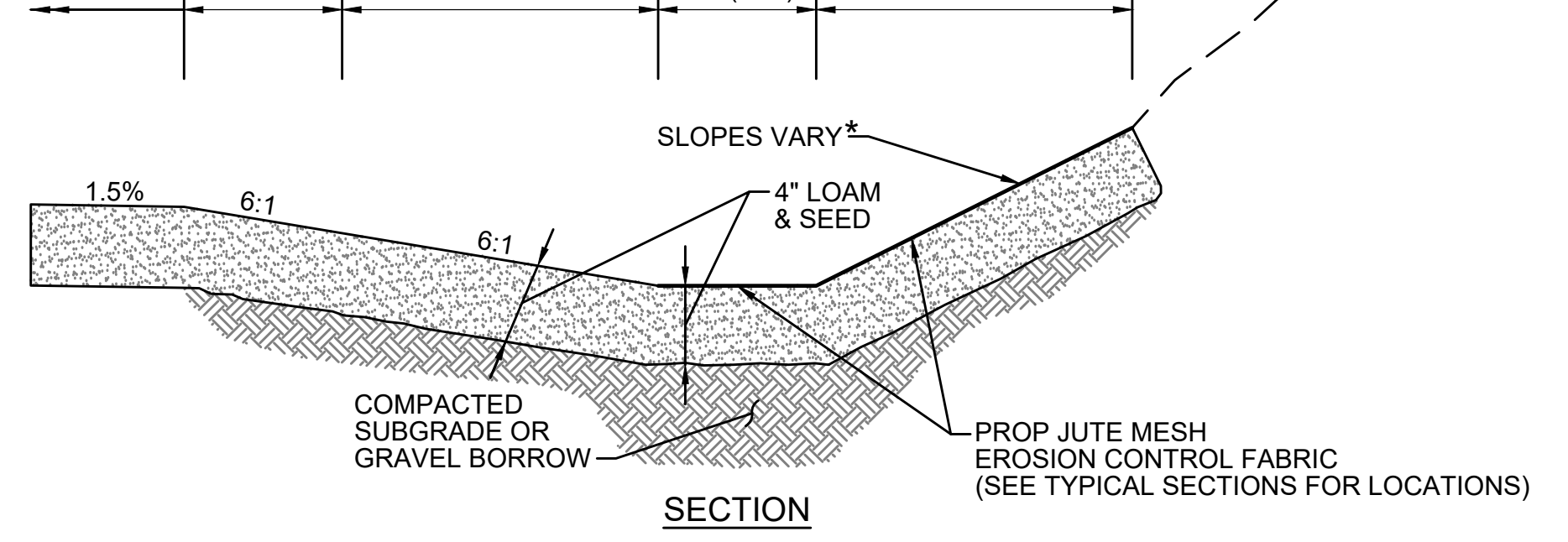
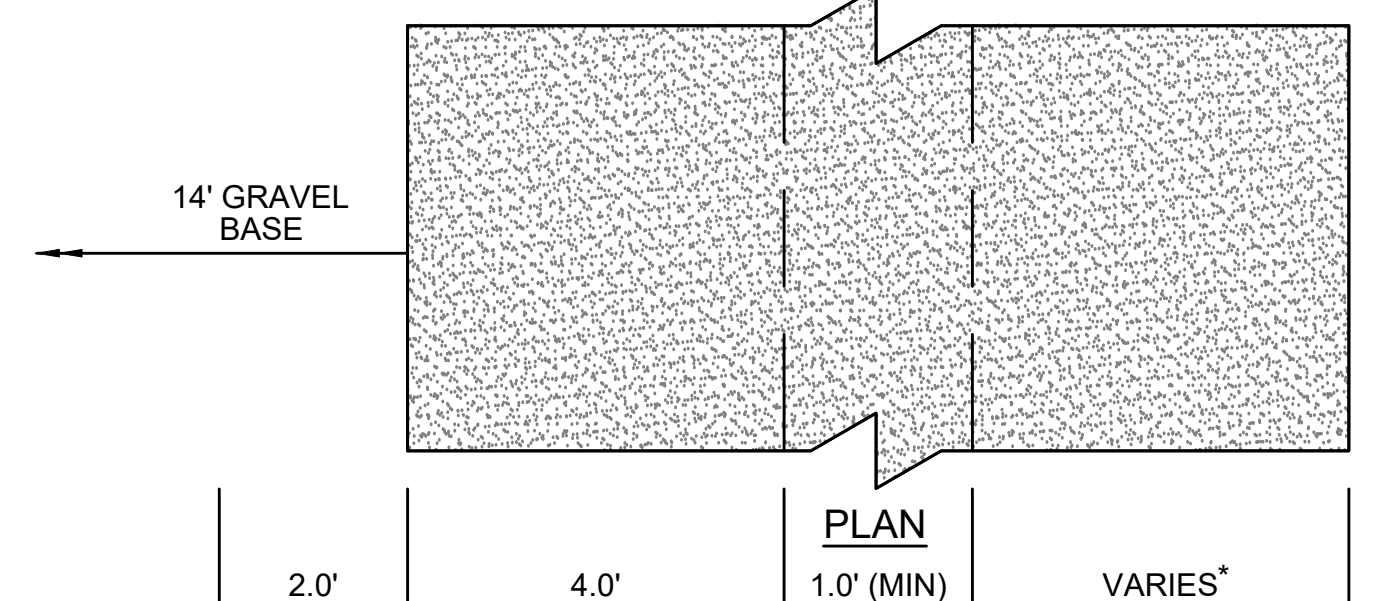
LEACHING CATCH BASIN
SCALE: N.T.S.



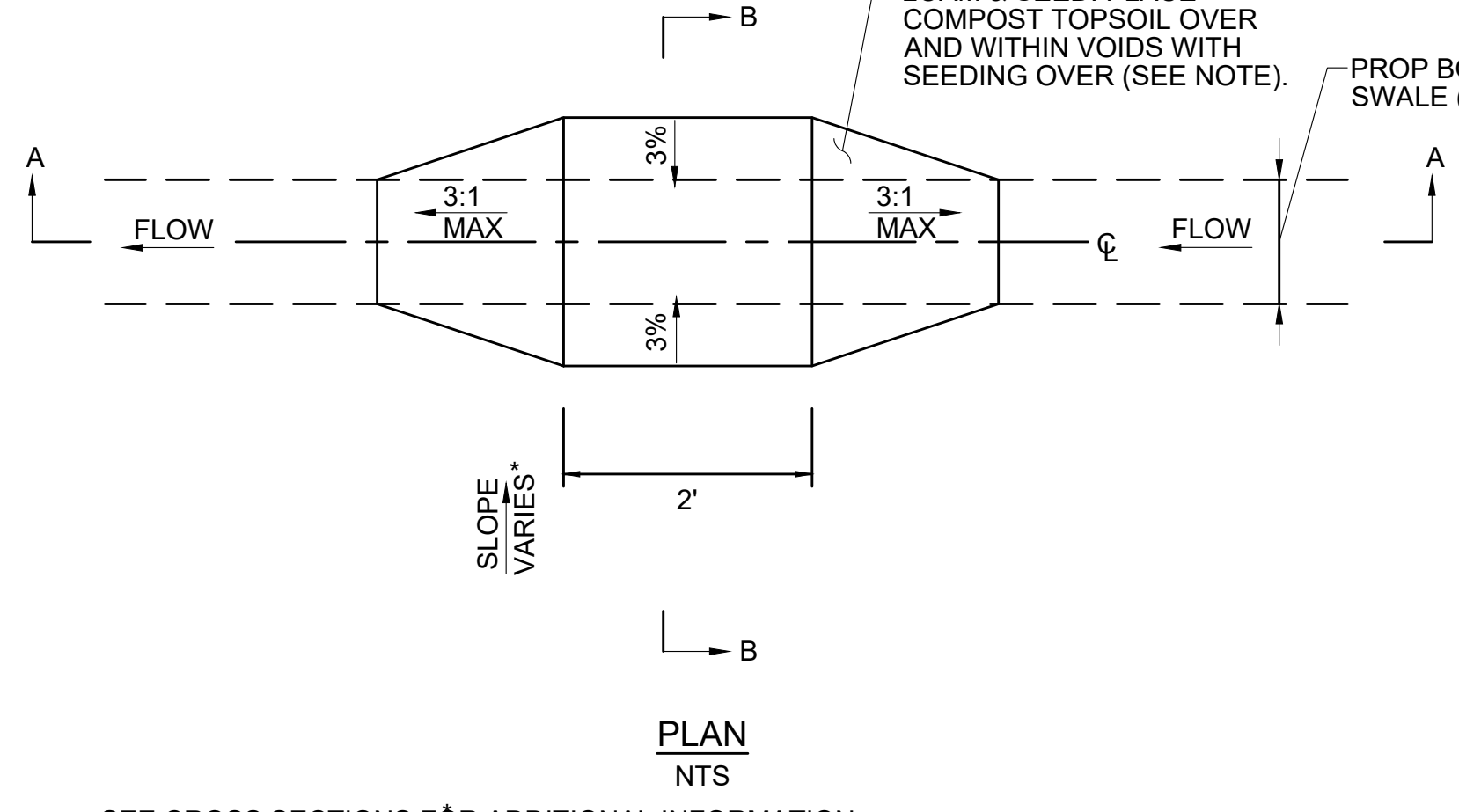
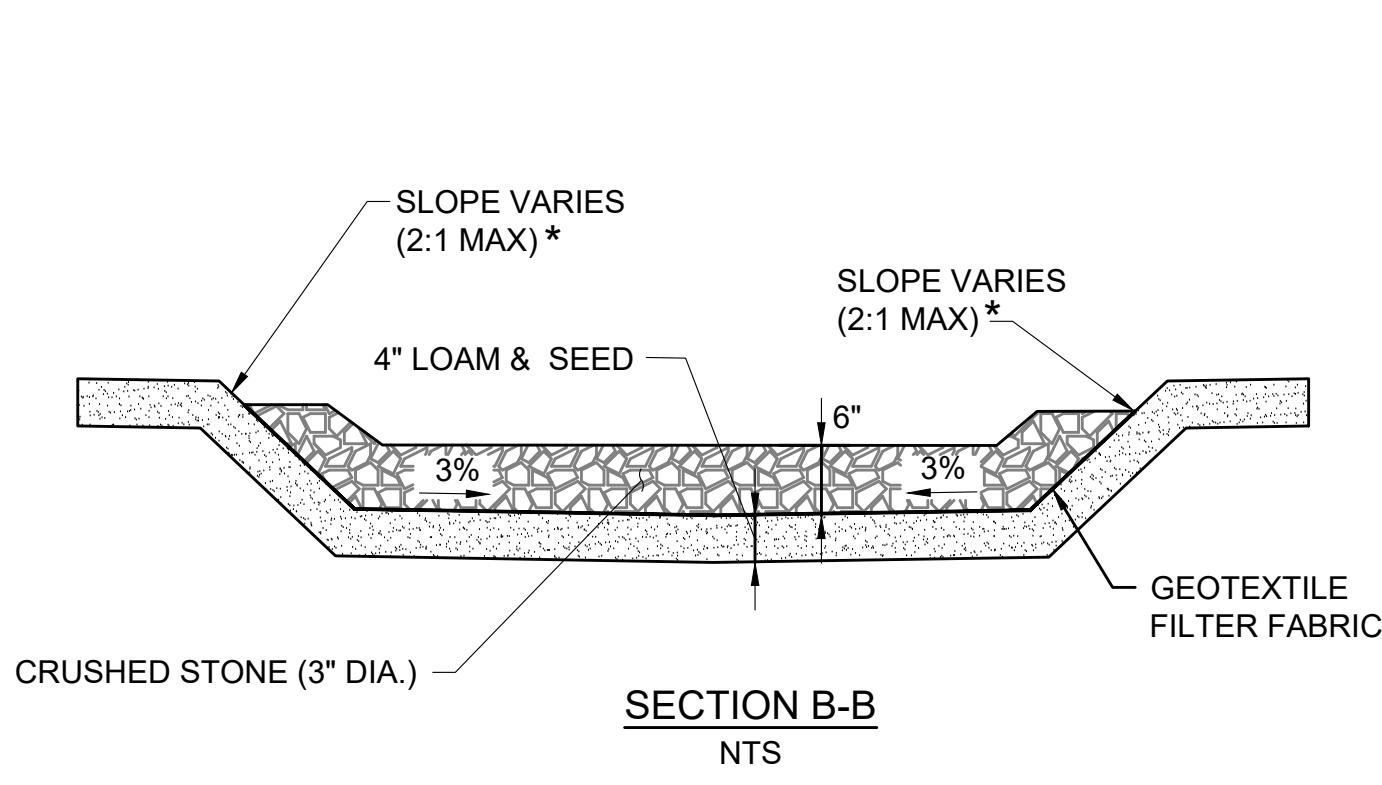
STABILIZED CONSTRUCTION ENTRANCE
SCALE: N.T.S.

- STABILIZED CONSTRUCTION ENTRANCE LOCATIONS**
- WILKINS STREET
 - MAIN STREET
 - PARMENTER ROAD
 - WHITE POND ROAD
 - DUTTON ROAD
 - PEAKHAM ROAD
 - HORSE POND ROAD
 - UNION AVENUE
 - BOSTON POST ROAD
 - SUDBURY SUBSTATION DRIVEWAY

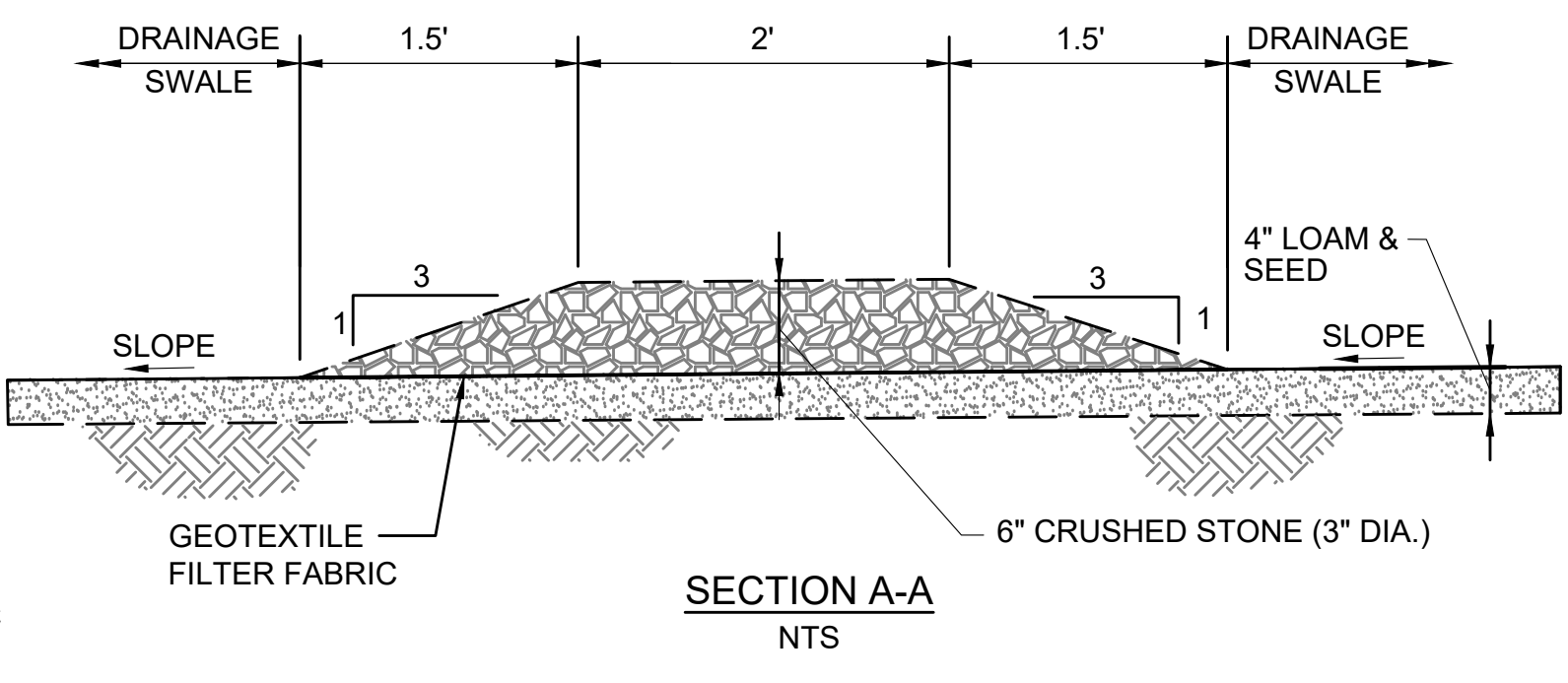
- NOTES:**
1. ALL STABILIZED CONSTRUCTION ENTRANCES SHALL BE WITHIN LIMITS OF GRADING SHOWN ON CONSTRUCTION PLANS.
 2. CONSTRUCTION ENTRANCES TO BE REMOVED AFTER CONSTRUCTION IS COMPLETED AND DISTURBED AREA OUTSIDE OF 14' GRAVEL BASE TO BE LOAMED AND SEED AS SHOWN ON CONSTRUCTION PLANS.
 3. CONTRACTOR SHALL SWEEP PAVED AREAS ADJACENT TO THE SITE ON A DAILY BASIS.
 4. ALL PEDESTRIAN CROSSINGS MUST BE MAINTAINED AT ALL TIMES.
 5. CONTRACTOR TO REPLACE CRUSHED STONE WITH CLEAN STONE AS REQUIRED.



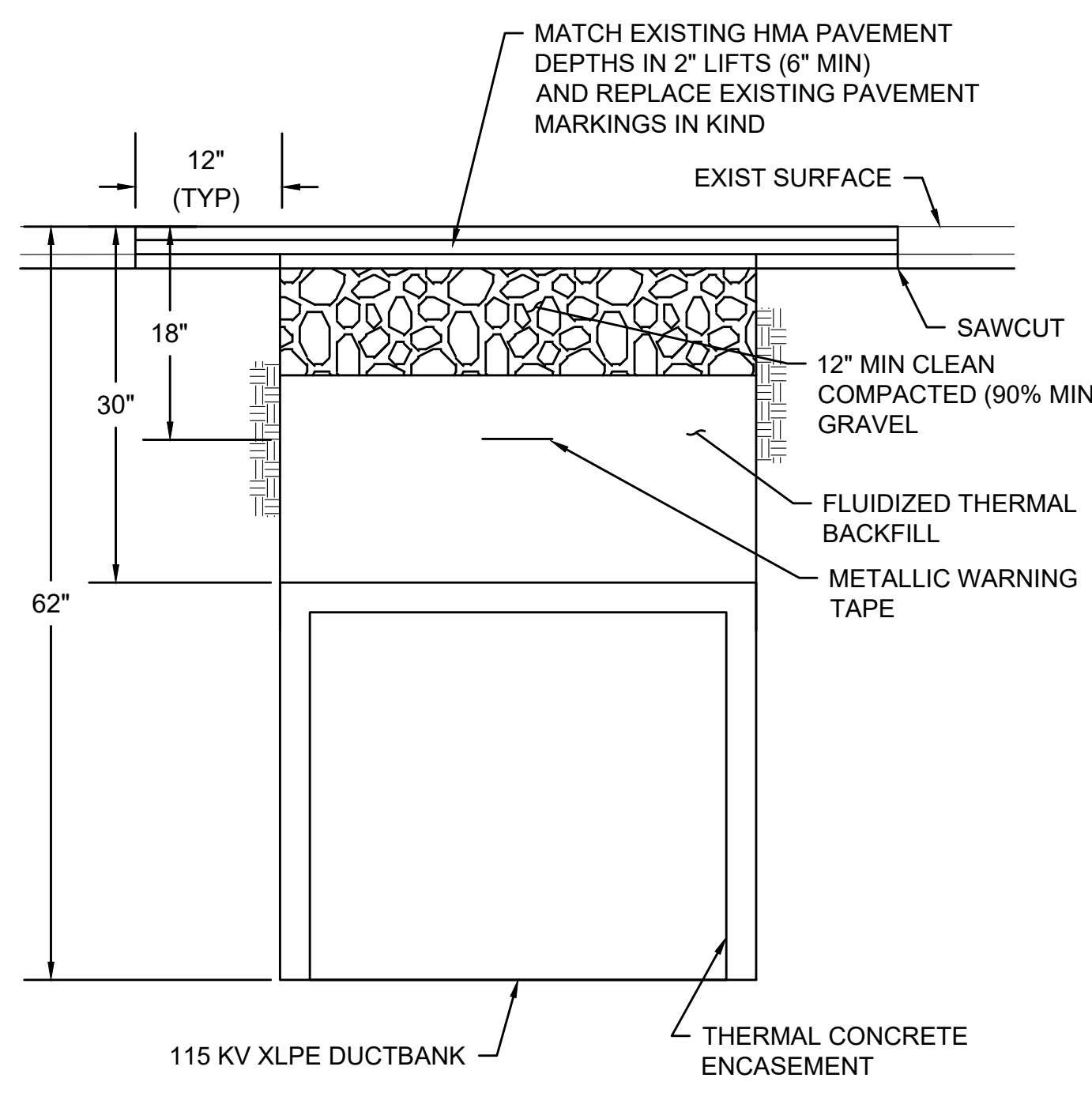
SWALE/AREA OF INCREASED INFILTRATION
SCALE: N.T.S.



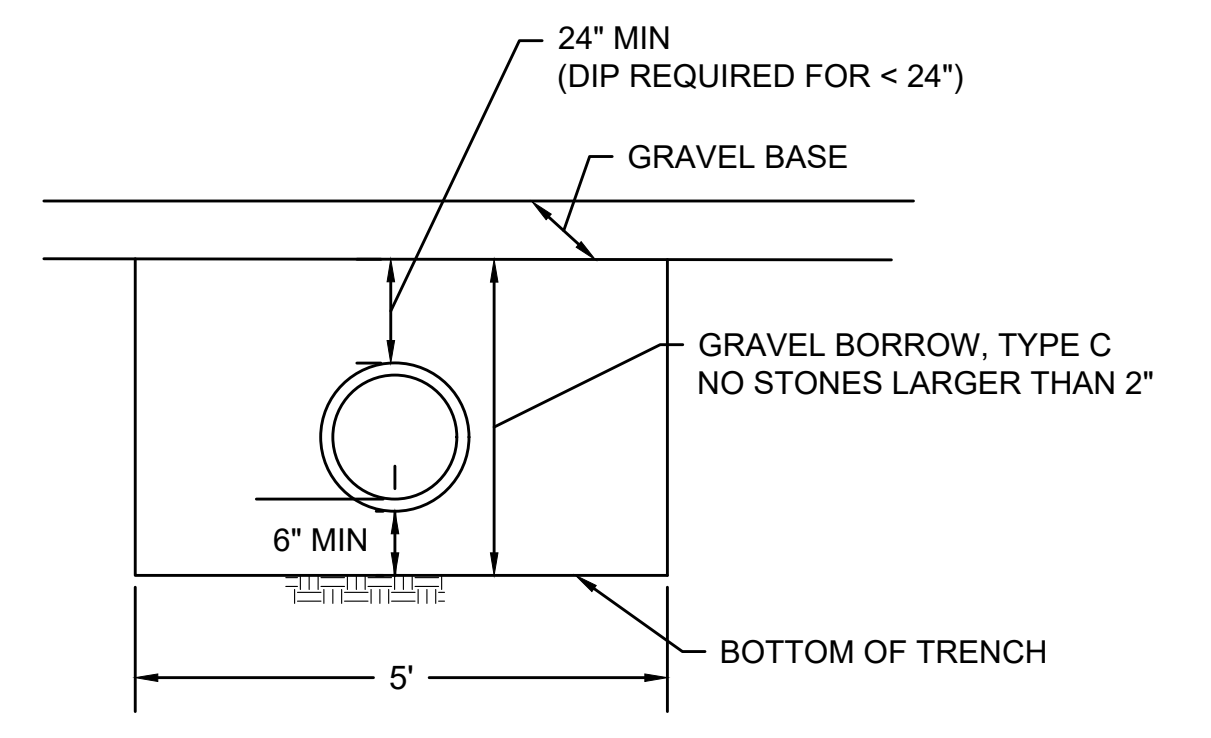
CHECK DAM
SCALE: N.T.S.



- NOTE:**
CRUSHED STONE TO BE PLACED IN TWO LIFTS TO ALLOW FOR THE APPLICATION OF COMPOST TOPSOIL. APPLY COMPOST TOPSOIL OVER AND WITHIN THE CRUSHED STONE. MATERIAL SHOULD BE PLACED SUCH THAT SETTLED MATERIAL IS AT OR SLIGHTLY BELOW SURFACE PLANE OF STONE AND SHALL BE WORKED INTO THE VOIDS OF THE CRUSHED STONE. COMPOST TOPSOIL SHALL BE RAKED BY HAND.



DUCTBANK CROSSING ROADWAY
SCALE: N.T.S.



TRENCH DETAIL
SCALE: N.T.S.

REVISION			
N.O.	DESCRIPTION	BY	DATE

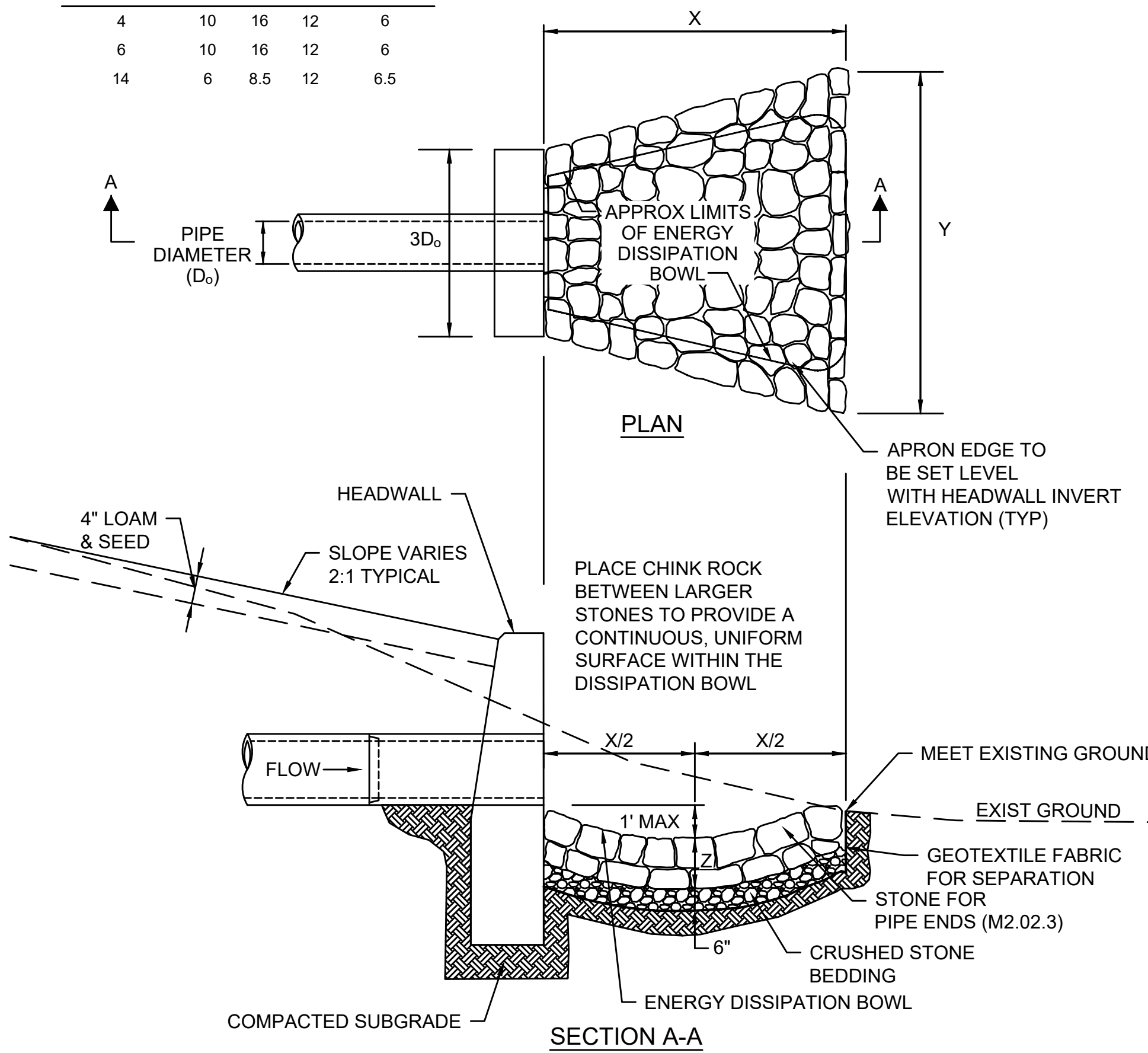
EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
CONSTRUCTION DETAILS

PLAN 152 OF 349

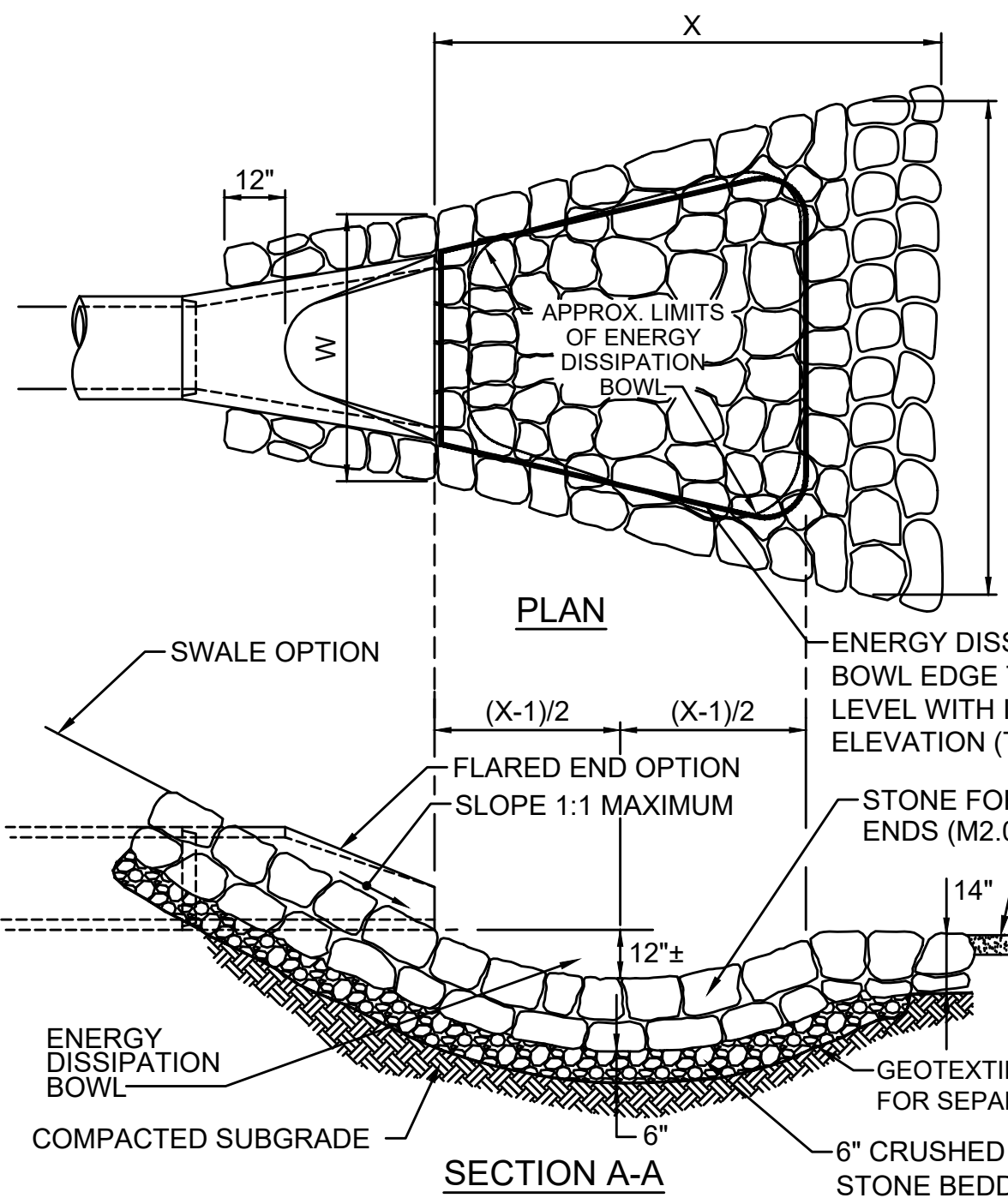
SCALE: unless noted N.T.S.	DATE: DEC 2021	DRAWN: MS	CHK'D: SK	APP'R: MES	DRAWING NO.:	REV.:
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RIPRAP STONE				
STRUCTURE NUMBER	X (FT)	Y (FT)	Z (IN)	STONE DIA. (D ₅₀) (IN)
4	10	16	12	6
6	10	16	12	6
14	6	8.5	12	6.5



STONE FOR PIPE ENDS

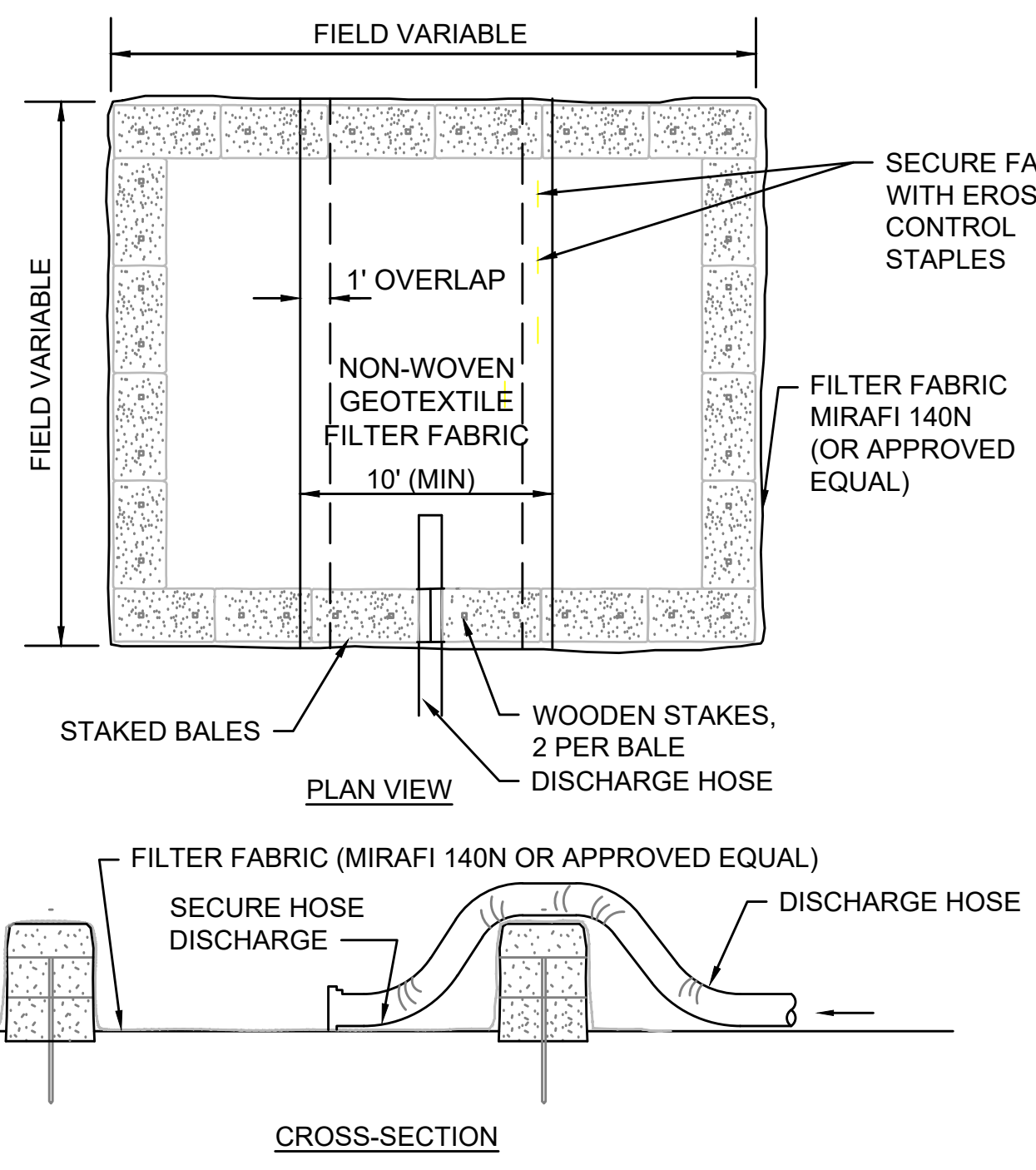
SCALE: N.T.S.



STONE PROTECTION AT SWALE/FLARED END (STRUCTURE NUMBER 10)

SCALE: N.T.S.

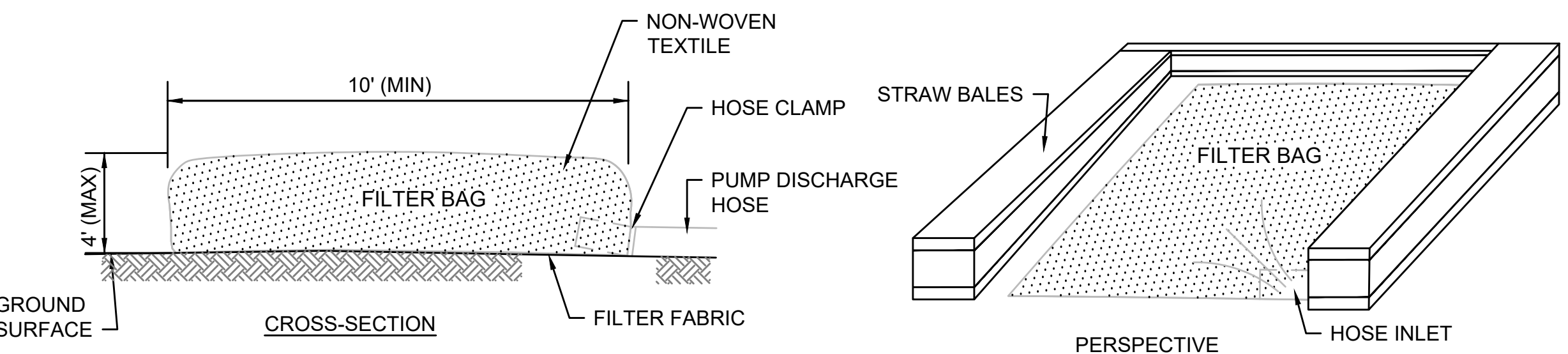
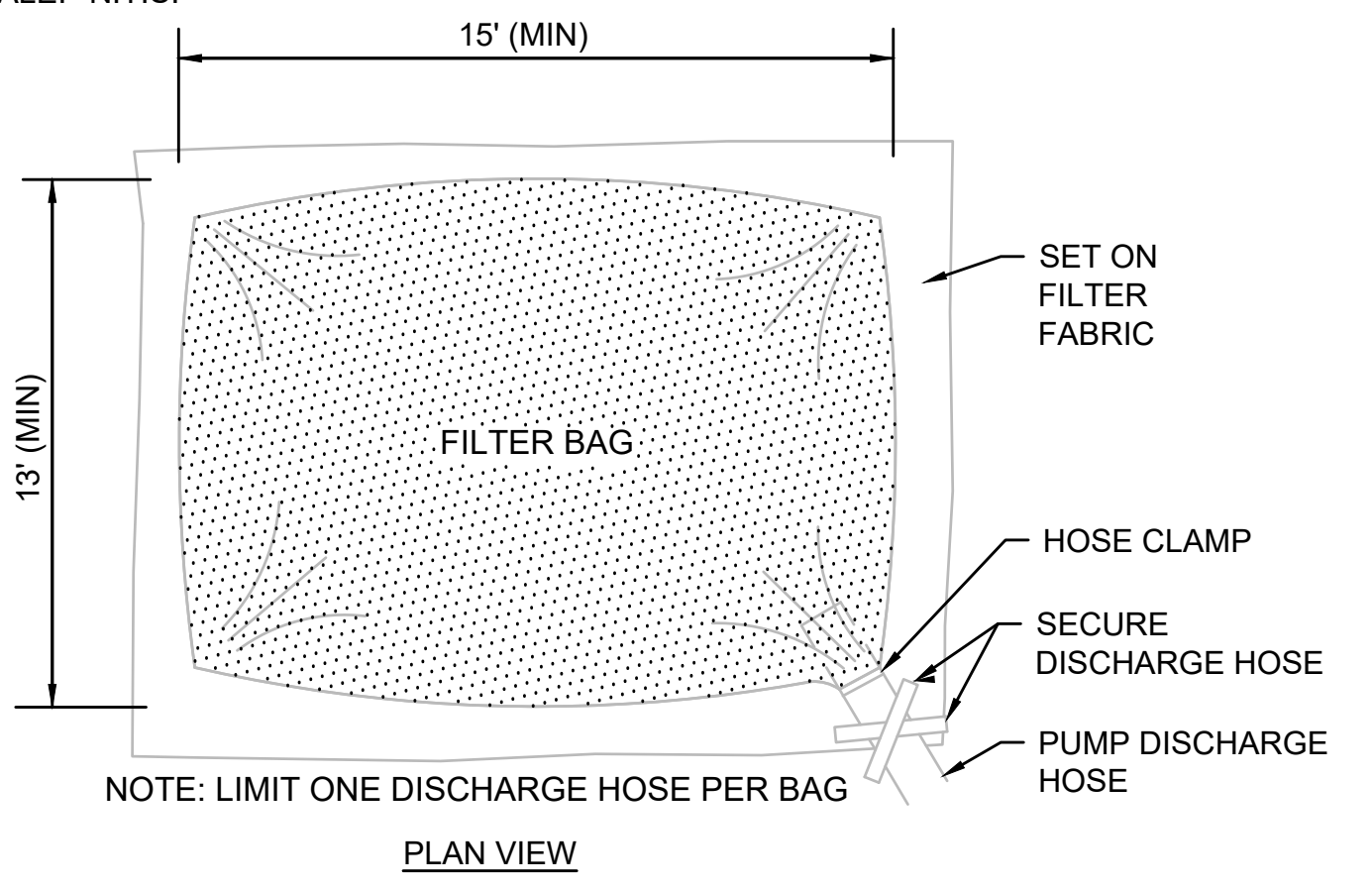
RIPRAP STONE				
DESIGN OPTION	W (FT)	X (FT)	Y (FT)	STONE DIA. (D ₅₀) (IN)
STRUCTURE 10	3	4	5	6.5
SWALE	7	6	8	6.5



- NOTES:**
1. NUMBER OF BALES MAY VARY DEPENDING ON SITE CONDITIONS.
 2. THE BASIN TO BE SIZED TO PREVENT DISCHARGE WATER FROM OVERTOPPING BASIN.
 3. WITHIN THE TOWN OF HUDSON, STOW AND SUDBURY, THE CONTRACTOR SHALL NOTIFY THE PROPER TOWN'S CONSERVATION COMMISSION PRIOR TO ANY PLANNED DEWATERING AND THE CONSERVATION COMMISSION MUST APPROVE THIS WORK IN THE FIELD PRIOR TO COMMENCEMENT.

DEWATERING STRAW BALE BASIN

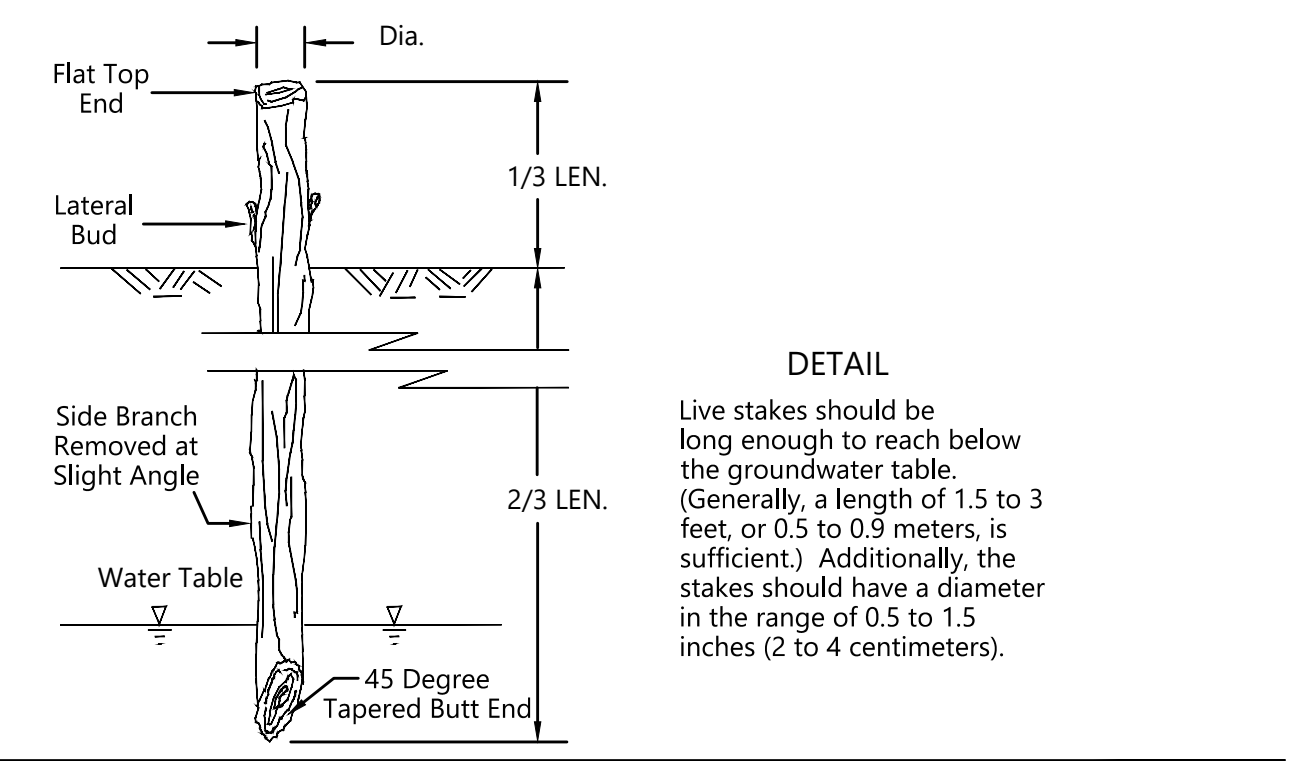
SCALE: N.T.S.



- NOTE:**
1. BAG TO BE USED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
 2. WITHIN THE TOWN OF HUDSON, STOW AND SUDBURY, THE CONTRACTOR SHALL NOTIFY THE PROPER TOWN'S CONSERVATION COMMISSION PRIOR TO ANY PLANNED DEWATERING AND THE CONSERVATION COMMISSION MUST APPROVE THIS WORK IN THE FIELD PRIOR TO COMMENCEMENT.

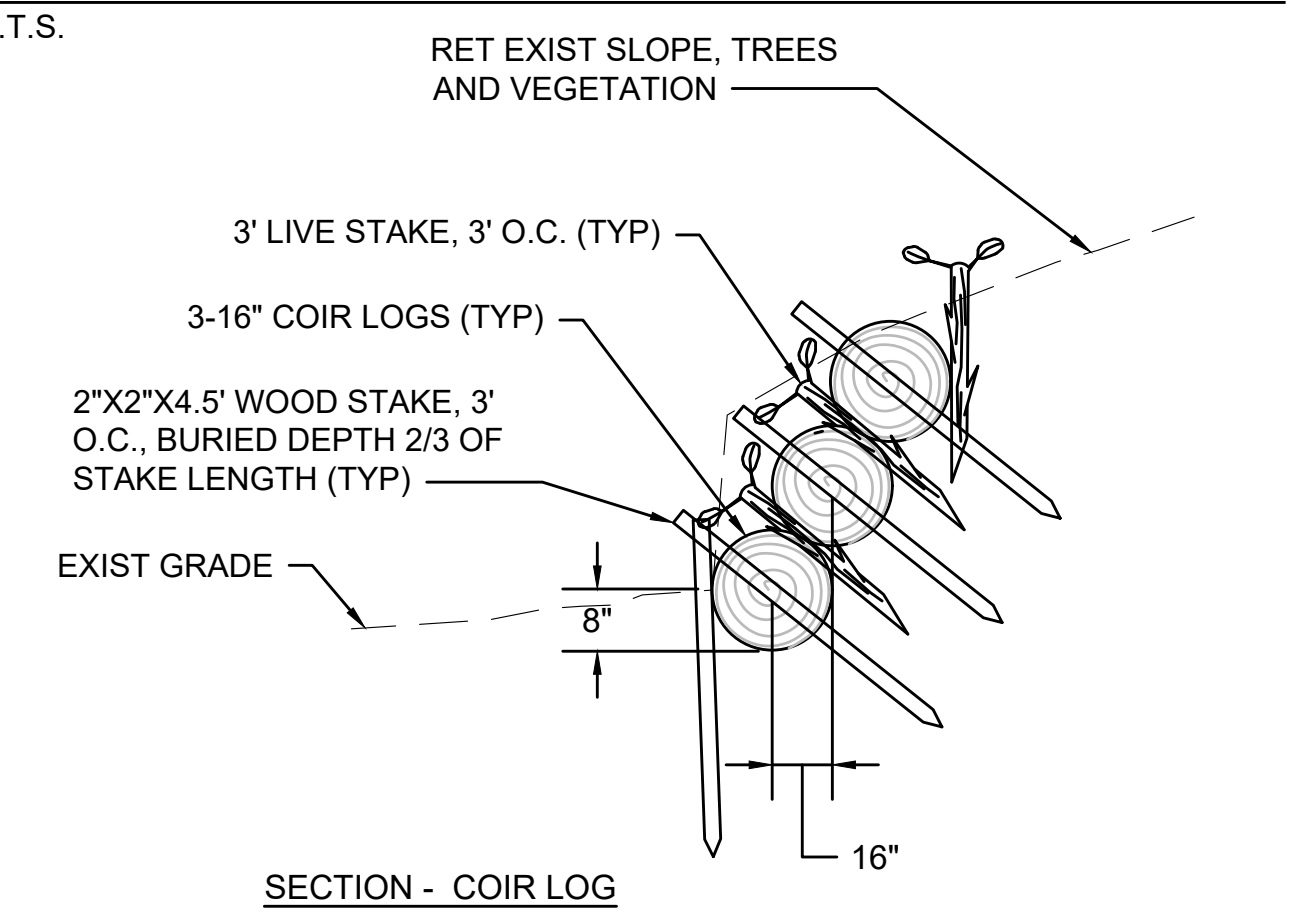
DEWATERING FILTER BAG

SCALE: N.T.S.



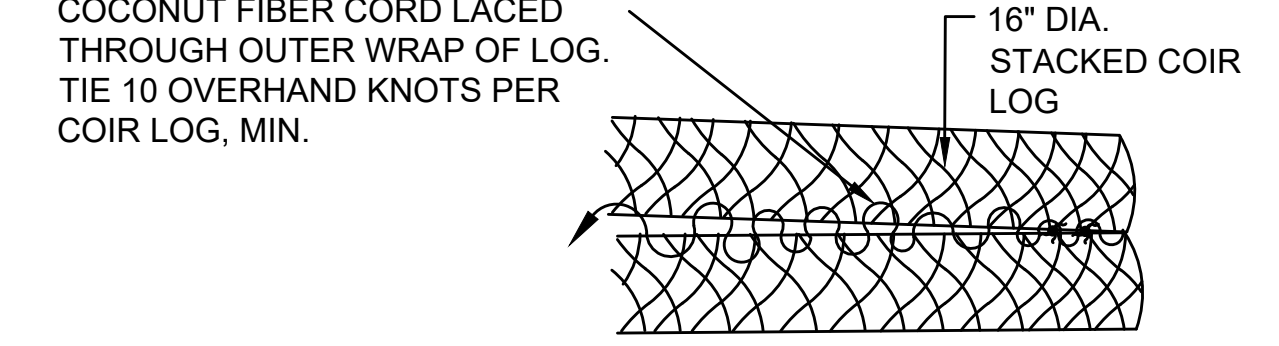
LIVE STAKE

SCALE: N.T.S.

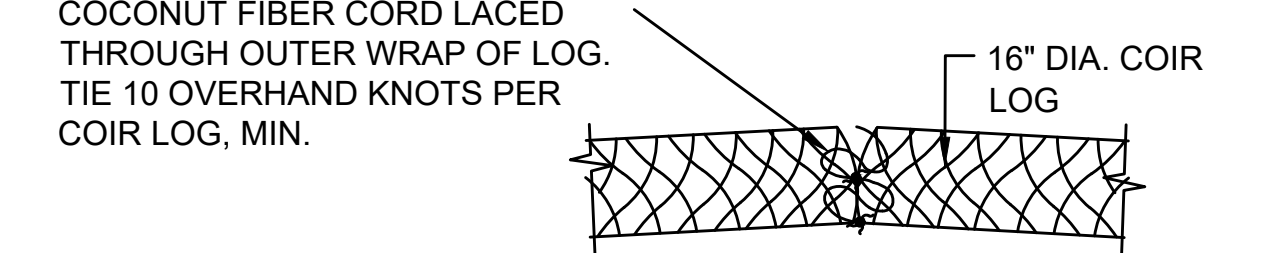


NOTE:
FIELD VERIFY THE EXISTING SLOPE AND INSTALL THE COIR LOG AS REQUIRED BASED ON THE EXISTING SLOPE. CONTRACTOR TO VERIFY SLOPE STABILITY WITH COIR LOG MANUFACTURER PRIOR TO INSTALLATION.

ELEVATION VIEW: LATERAL TYING



PLAN VIEW: END-TO-END TYING



COIR LOG NOTES:

1. DETAIL IS REPRESENTATIVE ONLY. PURPOSE IS TO SHOW DESIGN INTENT. PRIOR TO PLANT INSTALLATION PLANT LAYOUT SHALL BE STAKED OUT BY CONTRACTOR AND APPROVED BY OWNER'S REPRESENTATIVE.

COIR LOG

SCALE: N.T.S.

NO.	DESCRIPTION	BY	DATE	APPR.

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
CONSTRUCTION DETAILS

PLAN 153 OF 349

SCALE: unless noted	DATE	DRAWN	CHK'D.	APPR.	DRAWING NO.	REV.
N.T.S.	DEC 2021	MS	SK	MES		

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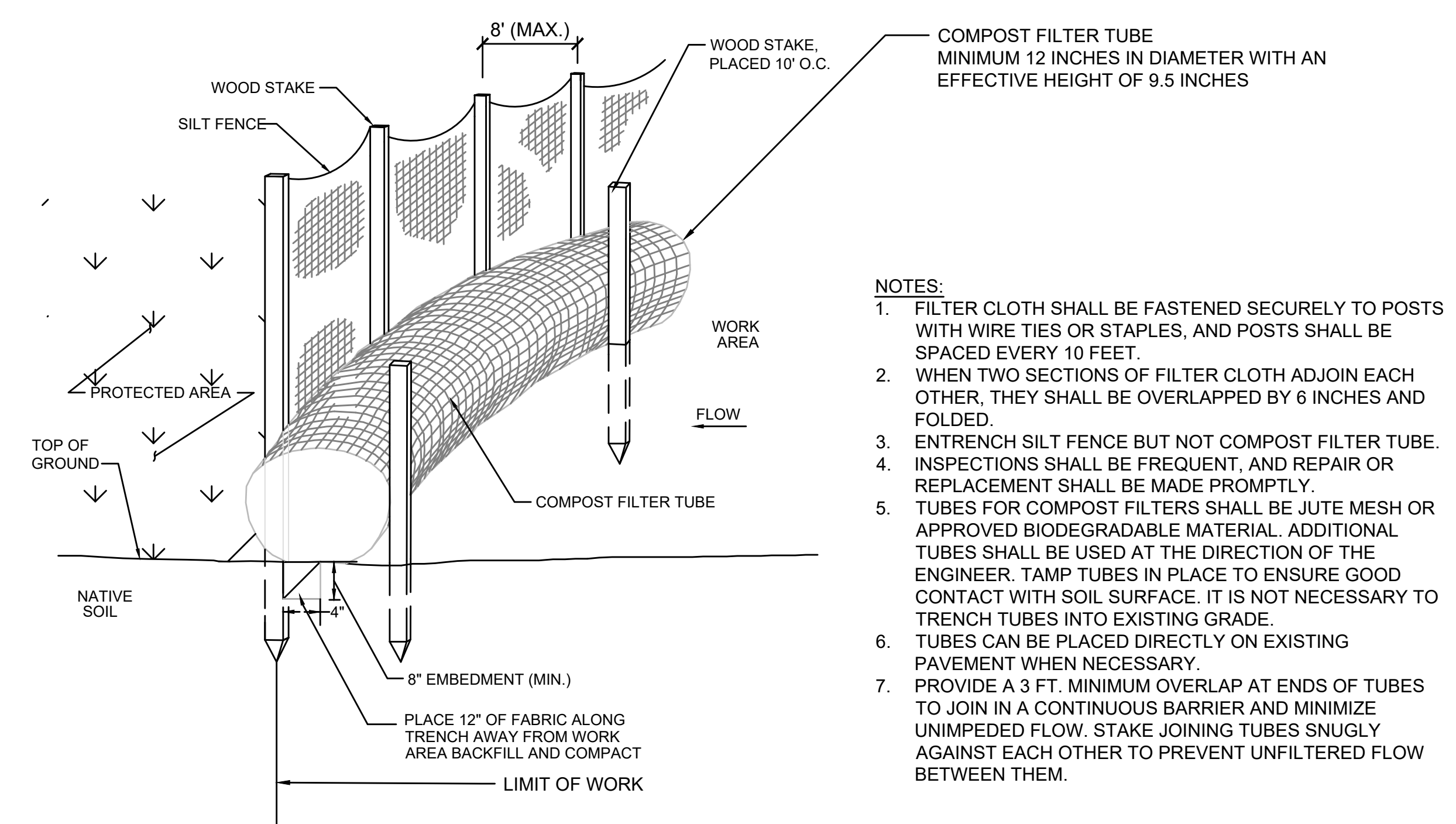
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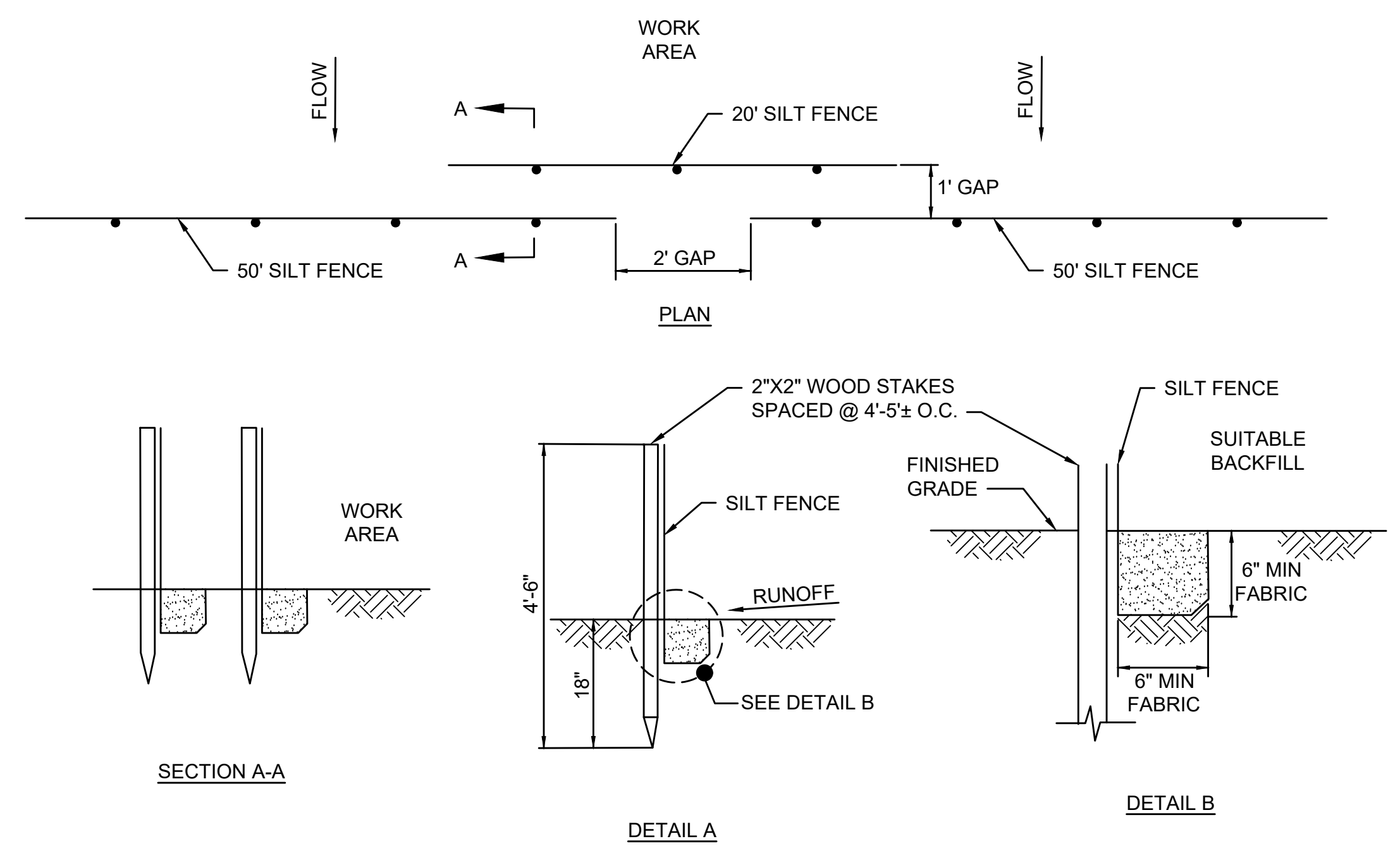
G



- NOTES:**
1. FILTER CLOTH SHALL BE FASTENED SECURELY TO POSTS WITH WIRE TIES OR STAPLES, AND POSTS SHALL BE SPACED EVERY 10 FEET.
 2. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY 6 INCHES AND FOLDED.
 3. ENTRENCH SILT FENCE BUT NOT COMPOST FILTER TUBE. INSPECTIONS SHALL BE FREQUENT, AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY.
 4. TUBES FOR COMPOST FILTERS SHALL BE JUTE MESH OR APPROVED BIODEGRADABLE MATERIAL. ADDITIONAL TUBES SHALL BE USED AT THE DIRECTION OF THE ENGINEER. TAMP TUBES IN PLACE TO ENSURE GOOD CONTACT WITH SOIL SURFACE. IT IS NOT NECESSARY TO TRENCH TUBES INTO EXISTING GRADE.
 5. TUBES CAN BE PLACED DIRECTLY ON EXISTING PAVEMENT WHEN NECESSARY.
 6. PROVIDE A 3 FT. MINIMUM OVERLAP AT ENDS OF TUBES TO JOIN IN A CONTINUOUS BARRIER AND MINIMIZE UNIMPEDED FLOW. STAKE JOINING TUBES SNUGLY AGAINST EACH OTHER TO PREVENT UNFILTERED FLOW BETWEEN THEM.

COMPOST FILTER TUBE AND SILT FENCE DETAIL - TYPE A EROSION CONTROL BARRIER

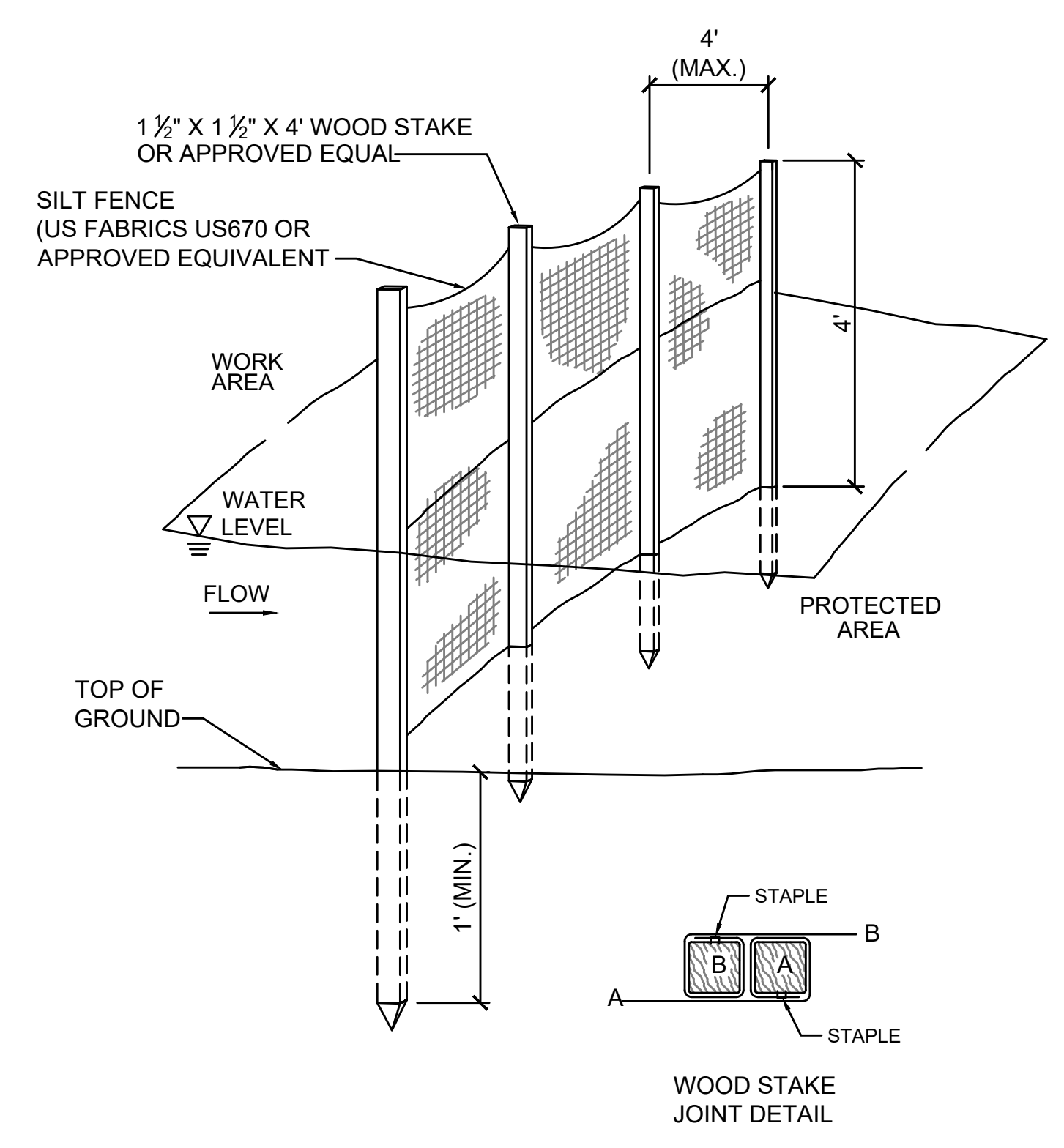
SCALE: N.T.S.



- NOTES:**
1. SYNCOPATED SILT FENCE SHALL BE USED WITHIN ALL PRIORITY HABITAT AREAS AND WITHIN 450' OF VERNAL POOLS.
 2. INSTALL GAP AFTER EVERY 50' OF EROSION CONTROL BARRIER.

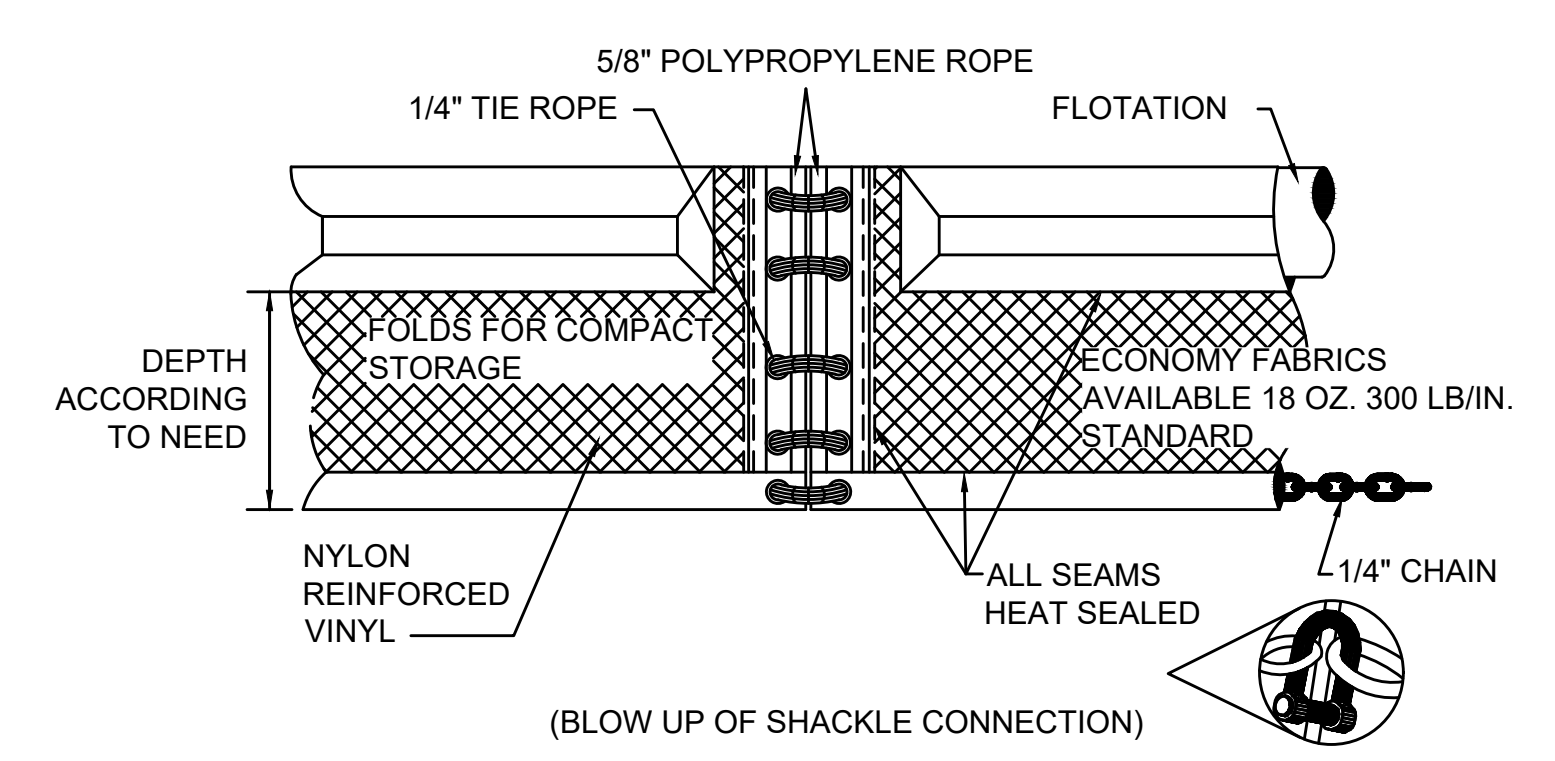
SYNCOPATED SILT FENCE DETAIL - TYPE B EROSION CONTROL BARRIER

SCALE: N.T.S.



4' HIGH SILT FENCE BARRIER DETAIL - EROSION CONTROL BARRIER TYPE C (OPTION 1)

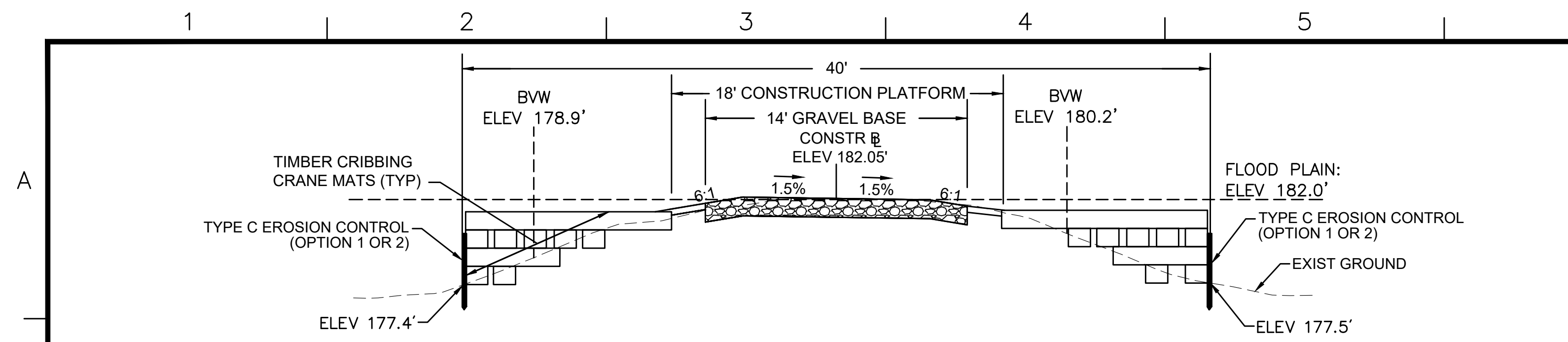
SCALE: N.T.S.



TURBIDITY CURTAIN DETAIL - EROSION CONTROL BARRIER TYPE C (OPTION 2)

SCALE: N.T.S.

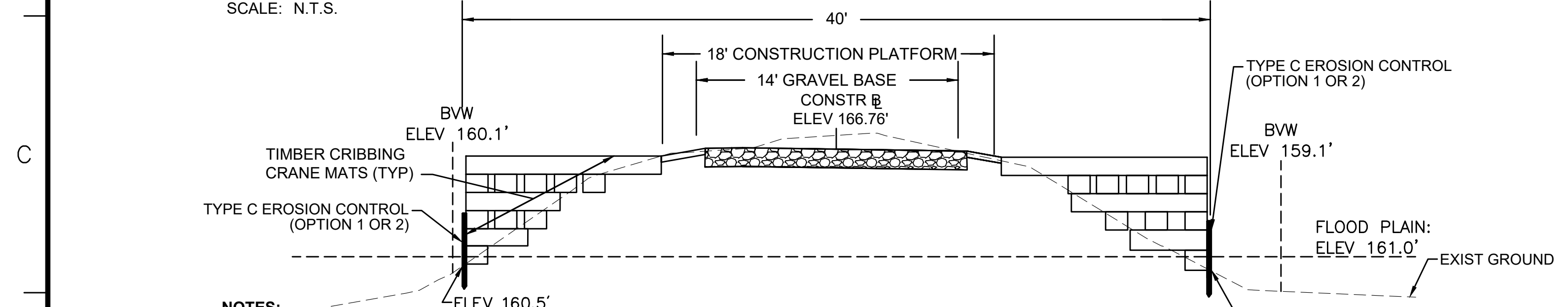
N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CONSTRUCTION DETAILS				
PLAN 154 OF 349				
SCALE: unless noted NTS	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES
DRAWING NO.	REV.			



- NOTES:**
1. ACTUAL CONFIGURATION OF CRANE MATS TO BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR'S TEMPORARY WORK LIMIT SHALL NOT EXTEND MORE THAN 20 FEET FROM THE CENTERLINE OF CONSTRUCTION TO THE OUTERMOST LIMIT ON EACH SIDE WHERE CRANE MATTING IS PERMITTED.
 2. AREA DISTURBED BY CRANE MATS OUTSIDE THE LIMITS OF THE 18' CONSTRUCTION PLATFORM TO BE RESTORED. SEE CRANE MAT RESTORATION DETAILS ON SHEET 130.
 3. GEOTEXTILE FABRIC TO BE INSTALLED UNDERNEATH AND WRAPPED AROUND CRANE MATS. GEOTEXTILE FABRIC MUST OVERLAP AT THE EDGES AND BE INSTALLED PER THE MANUFACTURER'S INSTRUCTIONS.
 4. THE CROSS-SECTION FOR STATION 148+00 IS USED AS A REPRESENTATIVE AREA FOR THE PURPOSES OF THIS DETAIL.

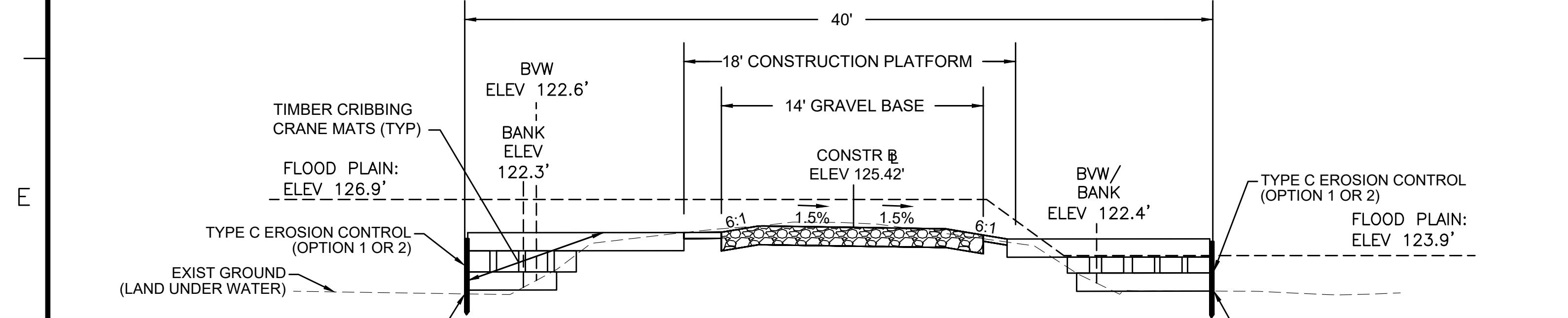
TYPICAL CRANE MAT CROSS-SECTION WITHOUT STEEL SHEETING - BRIDGE 130

SCALE: N.T.S.



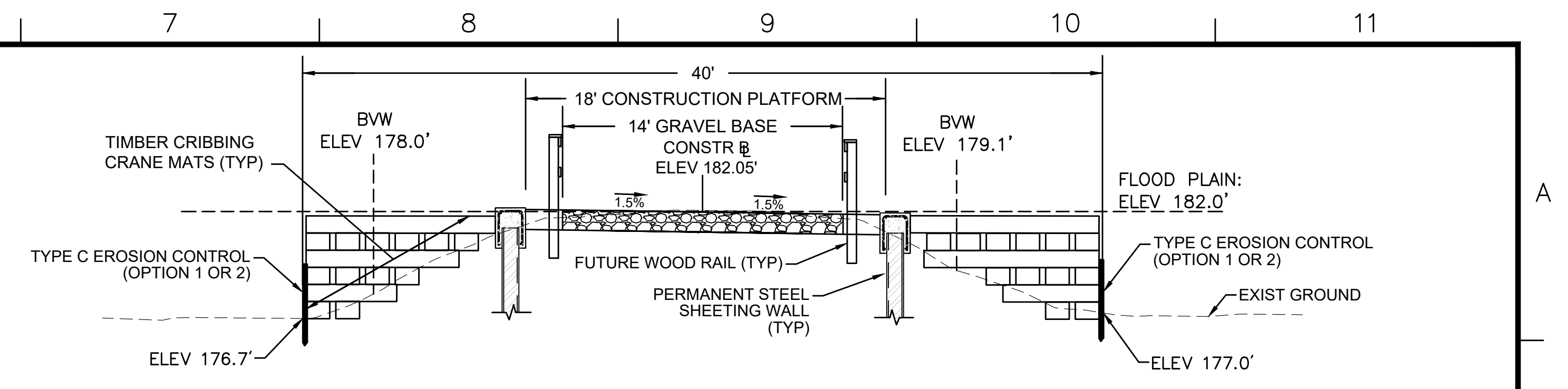
- NOTES:**
1. ACTUAL CONFIGURATION OF CRANE MATS TO BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR'S TEMPORARY WORK LIMIT SHALL NOT EXTEND MORE THAN 20 FEET FROM THE CENTERLINE OF CONSTRUCTION TO THE OUTERMOST LIMIT ON EACH SIDE WHERE CRANE MATTING IS PERMITTED.
 2. AREA DISTURBED BY CRANE MATS OUTSIDE THE LIMITS OF THE 18' CONSTRUCTION PLATFORM TO BE RESTORED. SEE CRANE MAT RESTORATION DETAILS ON SHEET 130.
 3. GEOTEXTILE FABRIC TO BE INSTALLED UNDERNEATH AND WRAPPED AROUND CRANE MATS. GEOTEXTILE FABRIC MUST OVERLAP AT THE EDGES AND BE INSTALLED PER THE MANUFACTURER'S INSTRUCTIONS.
 4. THE CROSS-SECTION FOR STATION 401+50 IS USED AS A REPRESENTATIVE AREA FOR THE PURPOSES OF THIS DETAIL.

TYPICAL CRANE MAT CROSS-SECTION WITHOUT STEEL SHEETING - BRIDGE 128



- NOTES:**
1. ACTUAL CONFIGURATION OF CRANE MATS TO BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR'S TEMPORARY WORK LIMIT SHALL NOT EXTEND MORE THAN 20 FEET FROM THE CENTERLINE OF CONSTRUCTION TO THE OUTERMOST LIMIT ON EACH SIDE WHERE CRANE MATTING IS PERMITTED.
 2. AREA DISTURBED BY CRANE MATS OUTSIDE THE LIMITS OF THE 18' CONSTRUCTION PLATFORM TO BE RESTORED. SEE CRANE MAT RESTORATION DETAILS ON SHEET 130.
 3. GEOTEXTILE FABRIC TO BE INSTALLED UNDERNEATH AND WRAPPED AROUND CRANE MATS. GEOTEXTILE FABRIC MUST OVERLAP AT THE EDGES AND BE INSTALLED PER THE MANUFACTURER'S INSTRUCTIONS.
 4. THE CROSS-SECTION FOR STATION 726+00 IS USED AS A REPRESENTATIVE AREA FOR THE PURPOSES OF THIS DETAIL.

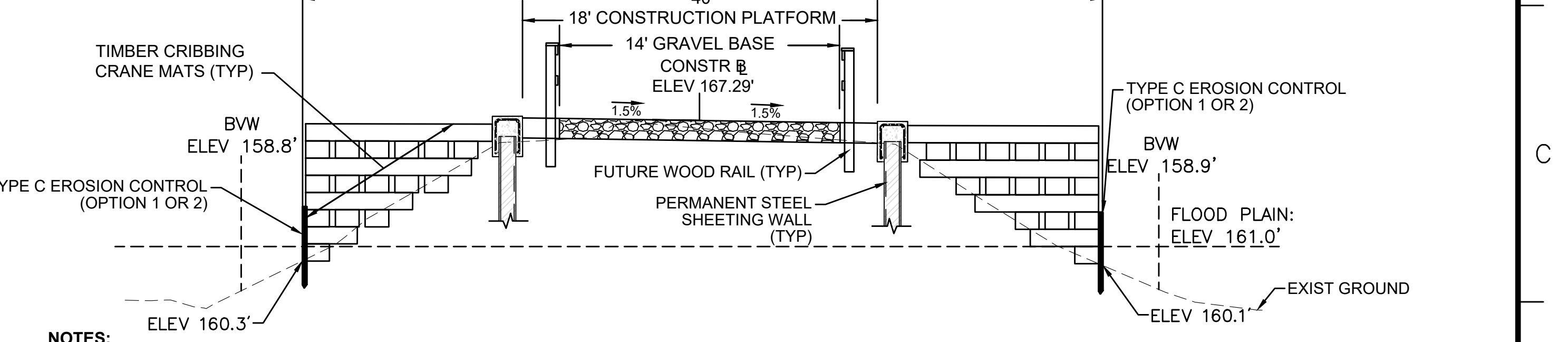
TYPICAL CRANE MAT CROSS-SECTION WITHOUT STEEL SHEETING - BRIDGE 127



- NOTES:**
1. ACTUAL CONFIGURATION OF CRANE MATS TO BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR'S TEMPORARY WORK LIMIT SHALL NOT EXTEND MORE THAN 20 FEET FROM THE CENTERLINE OF CONSTRUCTION TO THE OUTERMOST LIMIT ON EACH SIDE WHERE CRANE MATTING IS PERMITTED.
 2. AREA DISTURBED BY CRANE MATS OUTSIDE THE LIMITS OF THE 18' CONSTRUCTION PLATFORM TO BE RESTORED. SEE CRANE MAT RESTORATION DETAILS ON SHEET 130.
 3. GEOTEXTILE FABRIC TO BE INSTALLED UNDERNEATH AND WRAPPED AROUND CRANE MATS. GEOTEXTILE FABRIC MUST OVERLAP AT THE EDGES AND BE INSTALLED PER THE MANUFACTURER'S INSTRUCTIONS.
 4. THE CROSS-SECTION FOR STATION 148+25 IS USED AS A REPRESENTATIVE AREA FOR THE PURPOSES OF THIS DETAIL.

TYPICAL CRANE MAT CROSS-SECTION WITH STEEL SHEETING - BRIDGE 130

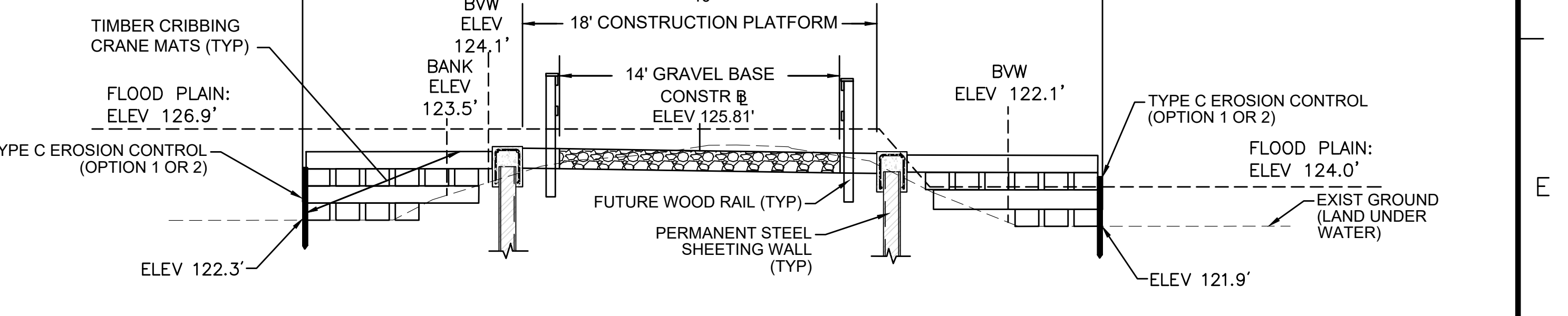
SCALE: N.T.S.



- NOTES:**
1. ACTUAL CONFIGURATION OF CRANE MATS TO BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR'S TEMPORARY WORK LIMIT SHALL NOT EXTEND MORE THAN 20 FEET FROM THE CENTERLINE OF CONSTRUCTION TO THE OUTERMOST LIMIT ON EACH SIDE WHERE CRANE MATTING IS PERMITTED.
 2. AREA DISTURBED BY CRANE MATS OUTSIDE THE LIMITS OF THE 18' CONSTRUCTION PLATFORM TO BE RESTORED. SEE CRANE MAT RESTORATION DETAILS ON SHEET 130.
 3. GEOTEXTILE FABRIC TO BE INSTALLED UNDERNEATH AND WRAPPED AROUND CRANE MATS. GEOTEXTILE FABRIC MUST OVERLAP AT THE EDGES AND BE INSTALLED PER THE MANUFACTURER'S INSTRUCTIONS.
 4. THE CROSS-SECTION FOR STATION 401+00 IS USED AS A REPRESENTATIVE AREA FOR THE PURPOSES OF THIS DETAIL.

TYPICAL CRANE MAT CROSS-SECTION WITH STEEL SHEETING - BRIDGE 128

SCALE: N.T.S.



- NOTES:**
1. ACTUAL CONFIGURATION OF CRANE MATS TO BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR'S TEMPORARY WORK LIMIT SHALL NOT EXTEND MORE THAN 20 FEET FROM THE CENTERLINE OF CONSTRUCTION TO THE OUTERMOST LIMIT ON EACH SIDE WHERE CRANE MATTING IS PERMITTED.
 2. AREA DISTURBED BY CRANE MATS OUTSIDE THE LIMITS OF THE 18' CONSTRUCTION PLATFORM TO BE RESTORED. SEE CRANE MAT RESTORATION DETAILS ON SHEET 130.
 3. GEOTEXTILE FABRIC TO BE INSTALLED UNDERNEATH AND WRAPPED AROUND CRANE MATS. GEOTEXTILE FABRIC MUST OVERLAP AT THE EDGES AND BE INSTALLED PER THE MANUFACTURER'S INSTRUCTIONS.
 4. THE CROSS-SECTION FOR STATION 724+90 IS USED AS A REPRESENTATIVE AREA FOR THE PURPOSES OF THIS DETAIL.

TYPICAL CRANE MAT CROSS-SECTION WITH STEEL SHEETING - BRIDGE 127

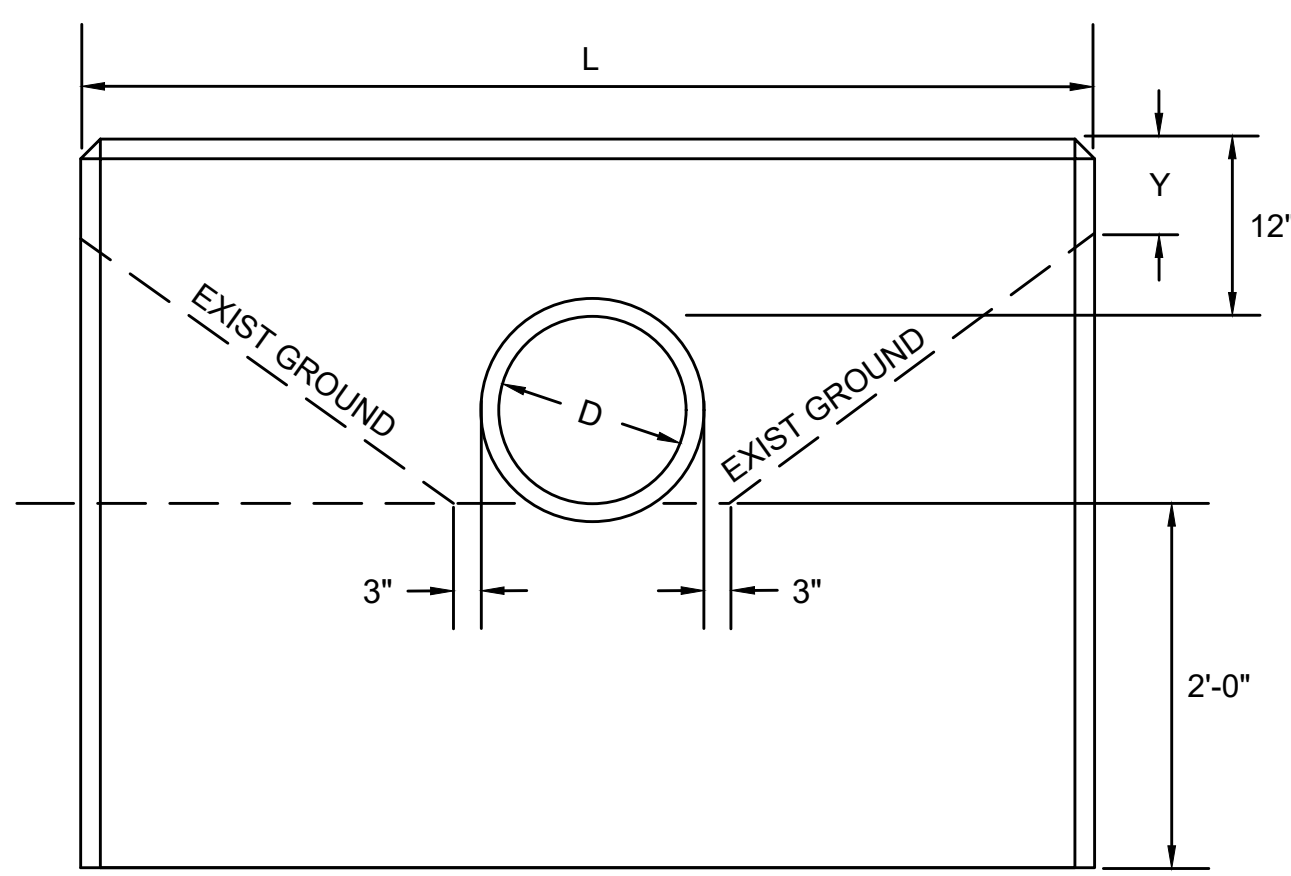
SCALE: N.T.S.

NO.		DESCRIPTION		BY	DATE	APPR.
REVISION						
EVERSOURCE						
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT						
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS						
CONSTRUCTION DETAILS						
PLAN 155 OF 349						
SCALE: unless noted NTS	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES	DRAWING NO.	REV.

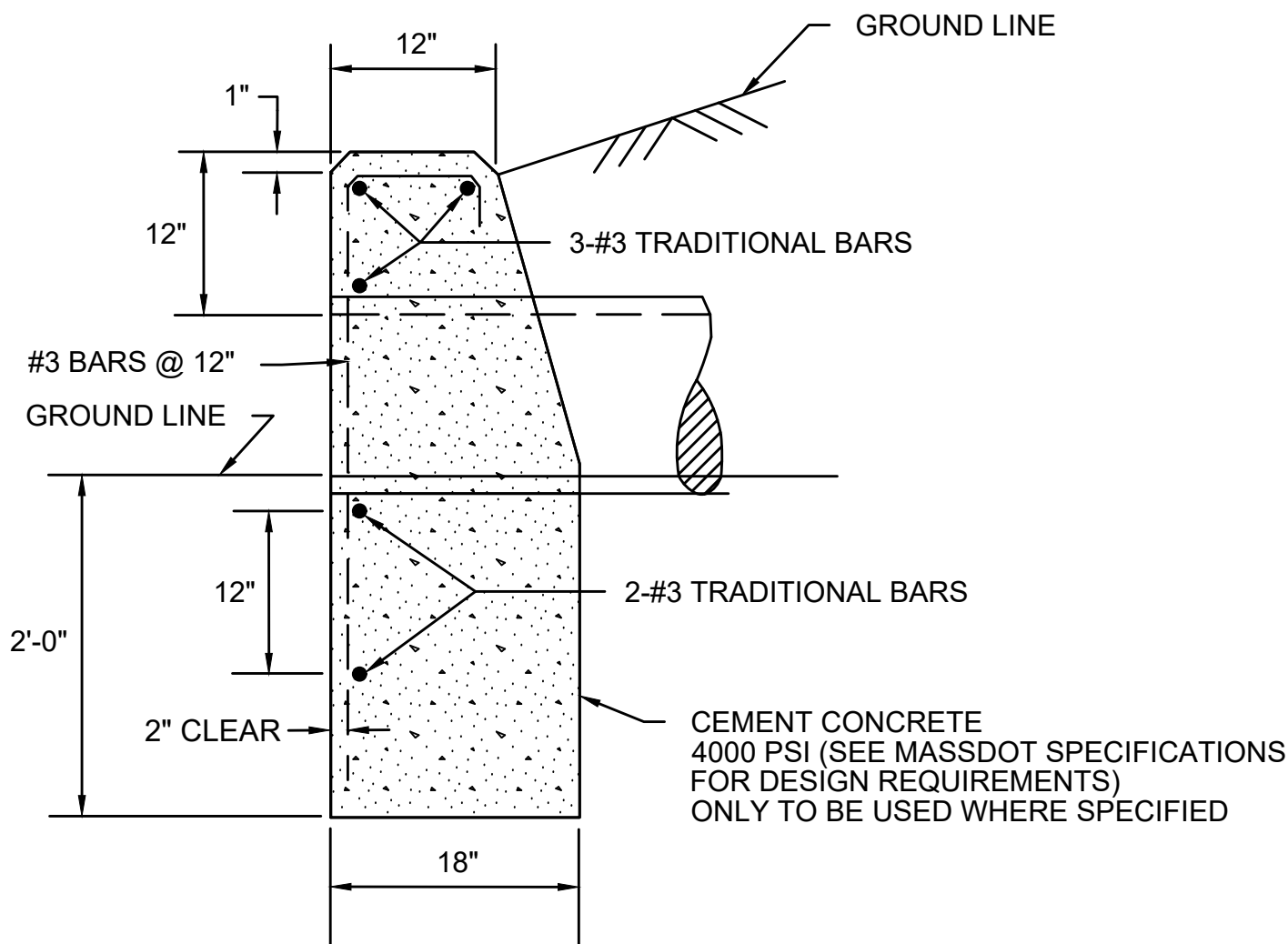
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FRONT ELEVATION

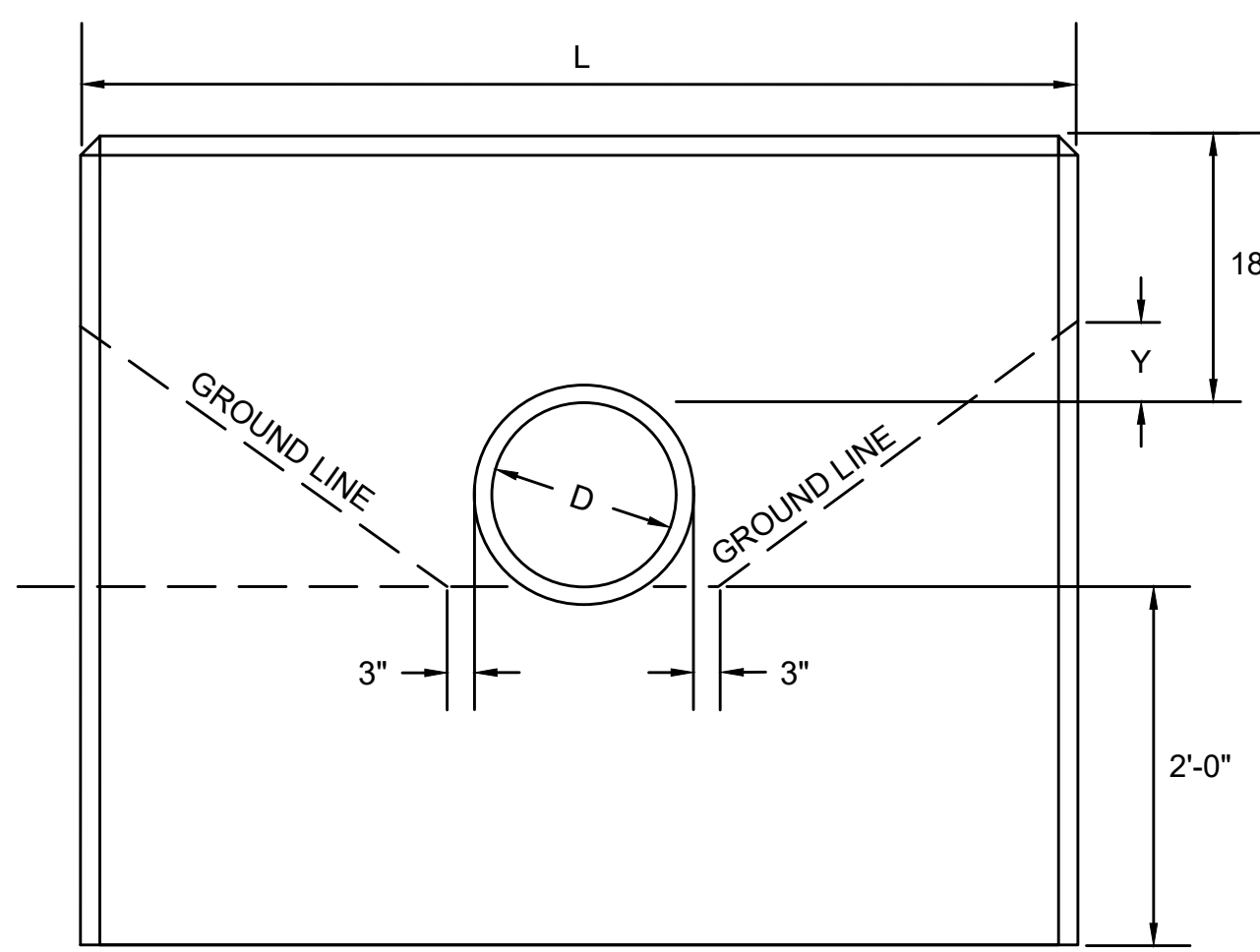


END ELEVATION

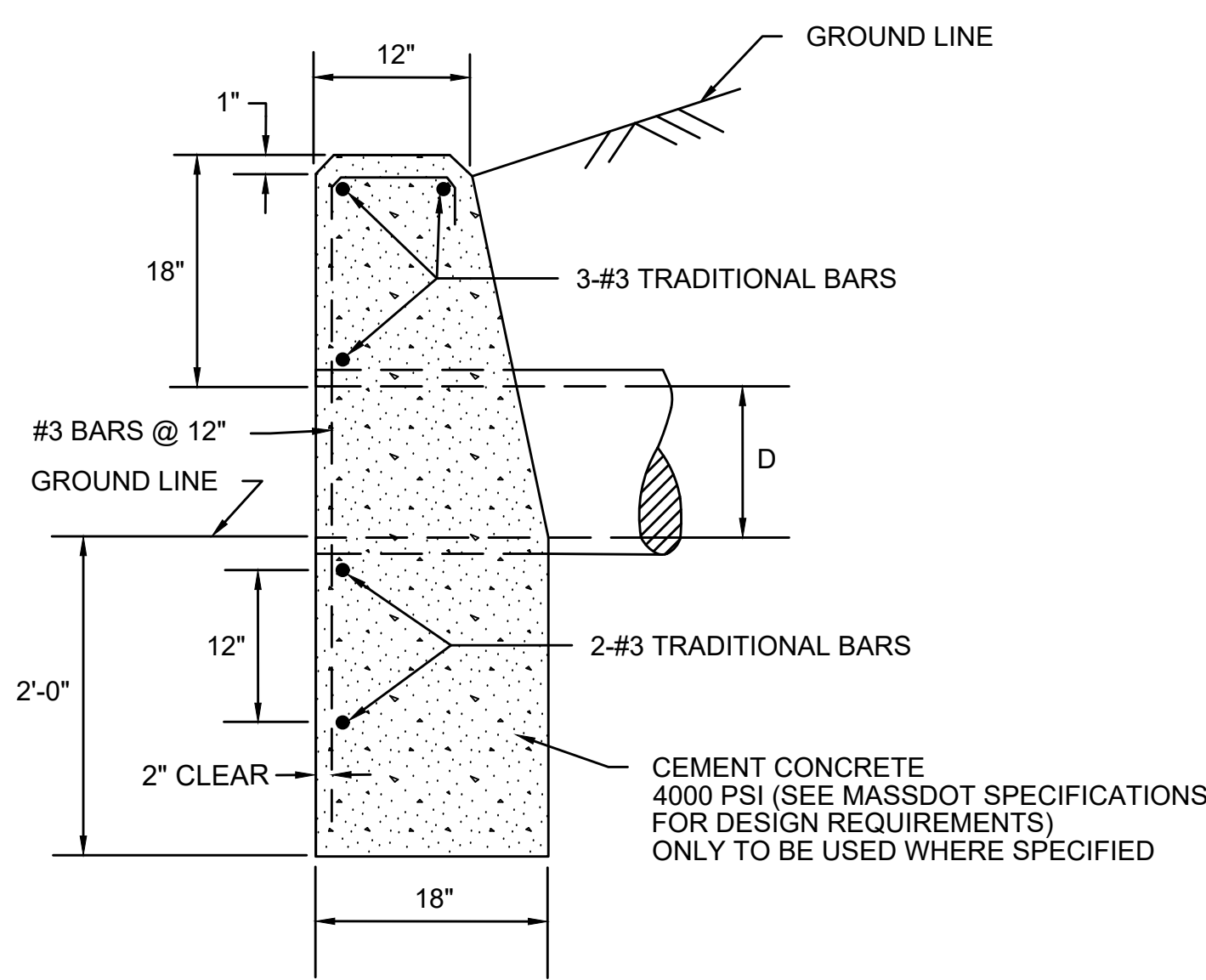
- NOTES:
- THIS DETAIL SHALL BE APPLIED TO THE PROPOSED 18" DRAINAGE PIPE AT STATION 738+77.
 - SEE MASSDOT CONST STD 206.4.1 FOR THE VALUES OF L AND Y FOR VARIOUS PIPE DIAMETERS.

HEADWALL WITH 12" REVEAL ABOVE PIPE

SCALE: N.T.S.



FRONT ELEVATION



END ELEVATION

- NOTES:
- THIS DETAIL SHALL BE APPLIED TO THE PROPOSED 24" DRAINAGE PIPE AT STATION 713+63.
 - SEE MASSDOT CONST STD 206.4.1 FOR THE VALUES OF L AND Y FOR VARIOUS PIPE DIAMETERS.

HEADWALL WITH 18" REVEAL ABOVE PIPE

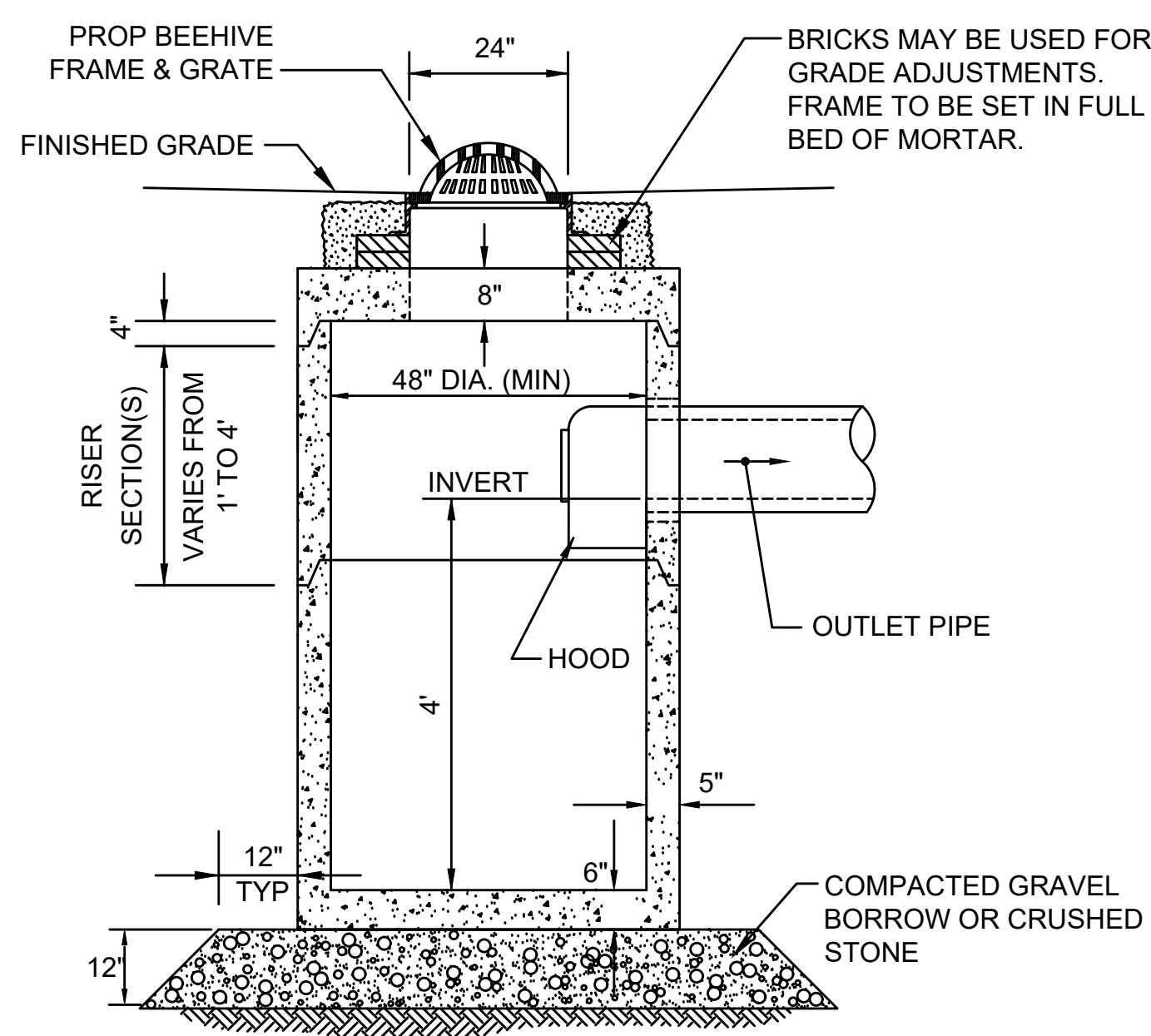
SCALE: N.T.S.

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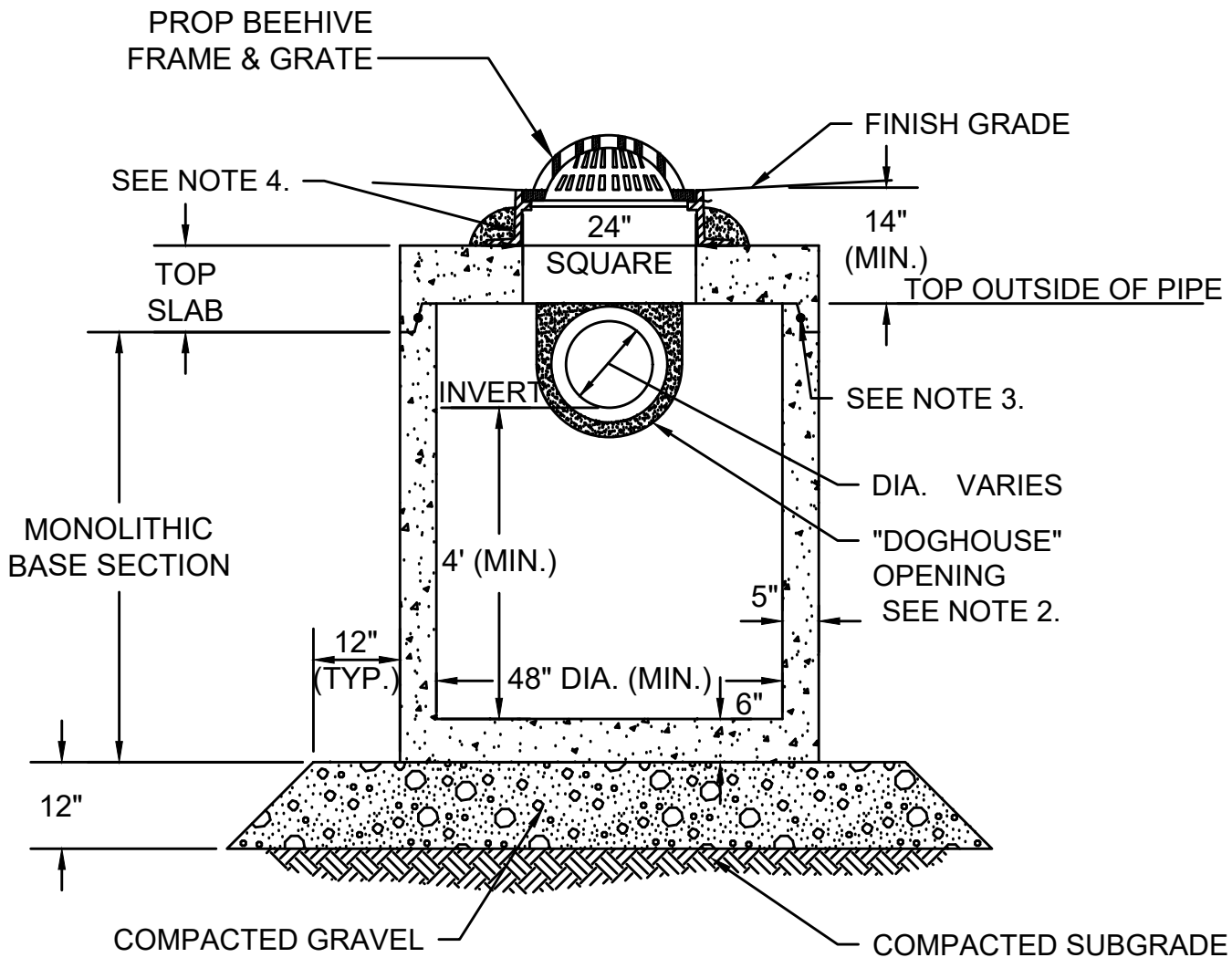
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NOTE:
6" MINIMUM SPACE FROM TOP OF KNOCKOUT TO BOTTOM OF ROOF SLAB JOINT REQUIRED WHEN USING HOODS.

DEEP SUMP CATCH BASIN WITH HOOD (CB)

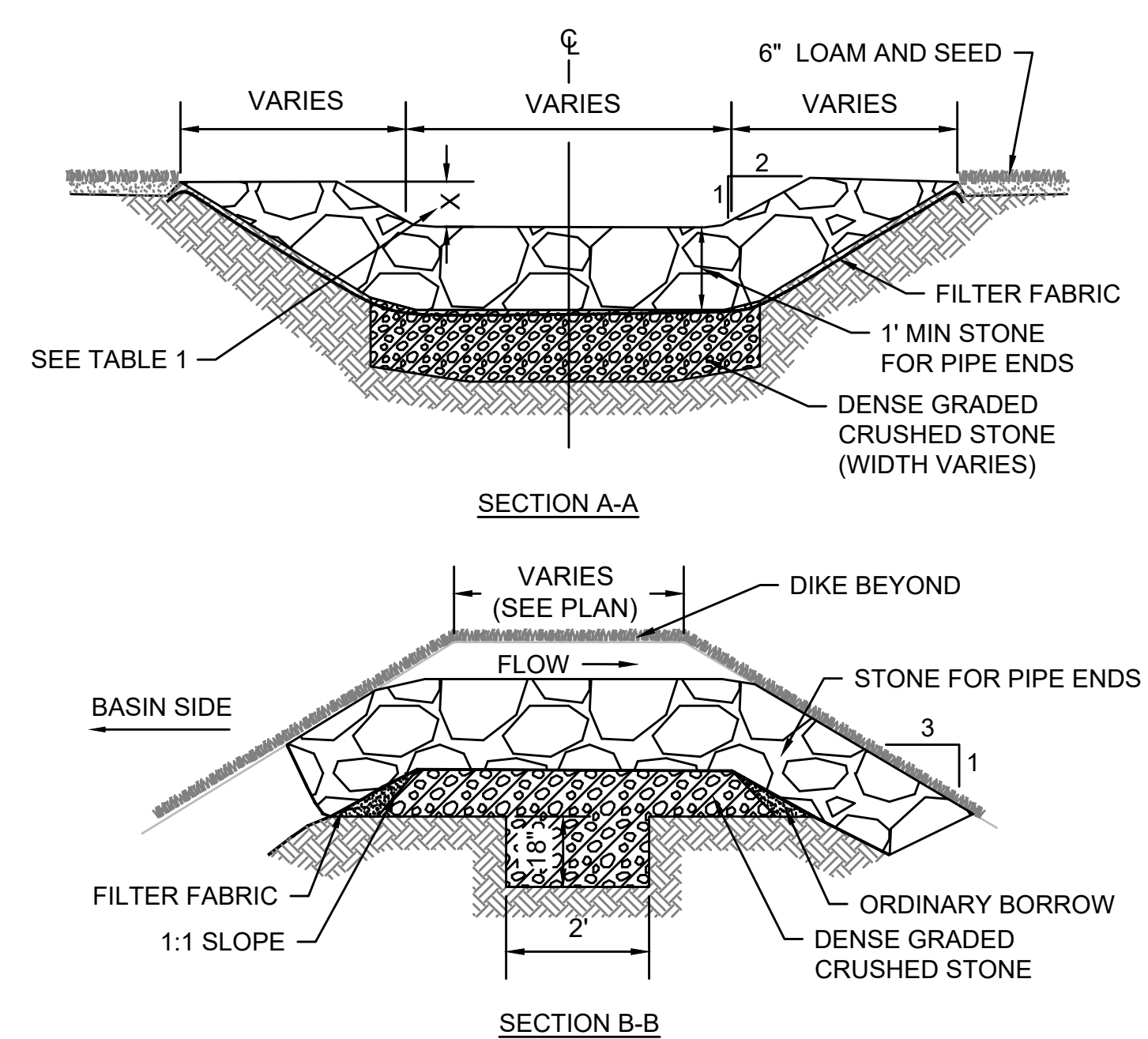
SCALE: N.T.S.



- NOTES:
- ALL SECTIONS SHALL BE DESIGNED FOR HS-10 LOADING.
 - PROVIDE DOGHOUSE OPENING FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. TOP SLAB SHALL NOT REST DIRECTLY ON PIPE. GROUT ALL PIPE CONNECTIONS (NON-SHRINK GROUT).
 - JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
 - CATCH BASIN FRAME (4" DEPTH) SHALL BE SET IN FULL MORTAR BED.
 - ADJUST TO FINISH GRADE WITH CLAY BRICK AND MORTAR AS REQUIRED.

CATCH BASIN WITH SHALLOW COVER (SHALLOW CB)

SCALE: N.T.S.

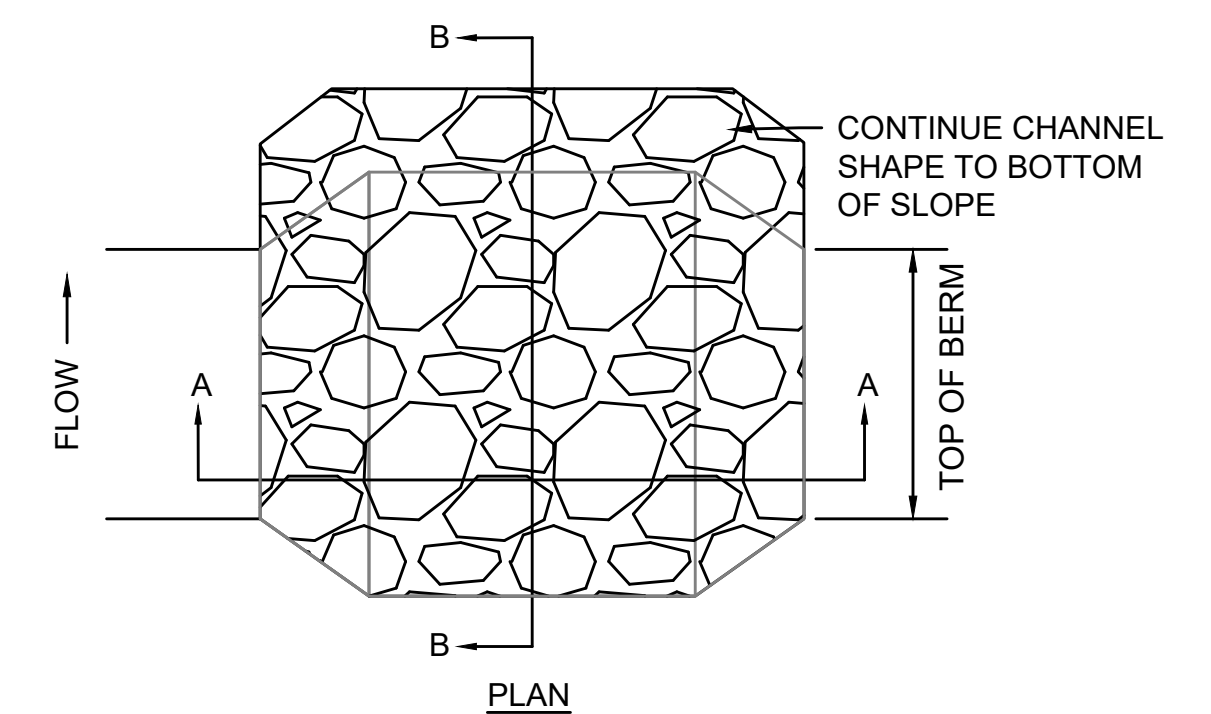


OVERFLOW STONE SWALE

SCALE: N.T.S.

TABLE 1

BMP NUMBER	X (FT)
P-6.2	0.2
P-7.1	0.5



REVISION			
N.O.	DESCRIPTION	BY	DATE

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
CONSTRUCTION DETAILS

PLAN 156 OF 349

SCALE: unless noted NTS	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES	DRAWING NO.	REV.
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1 2 3 4 5 6 7 8 9 10 11

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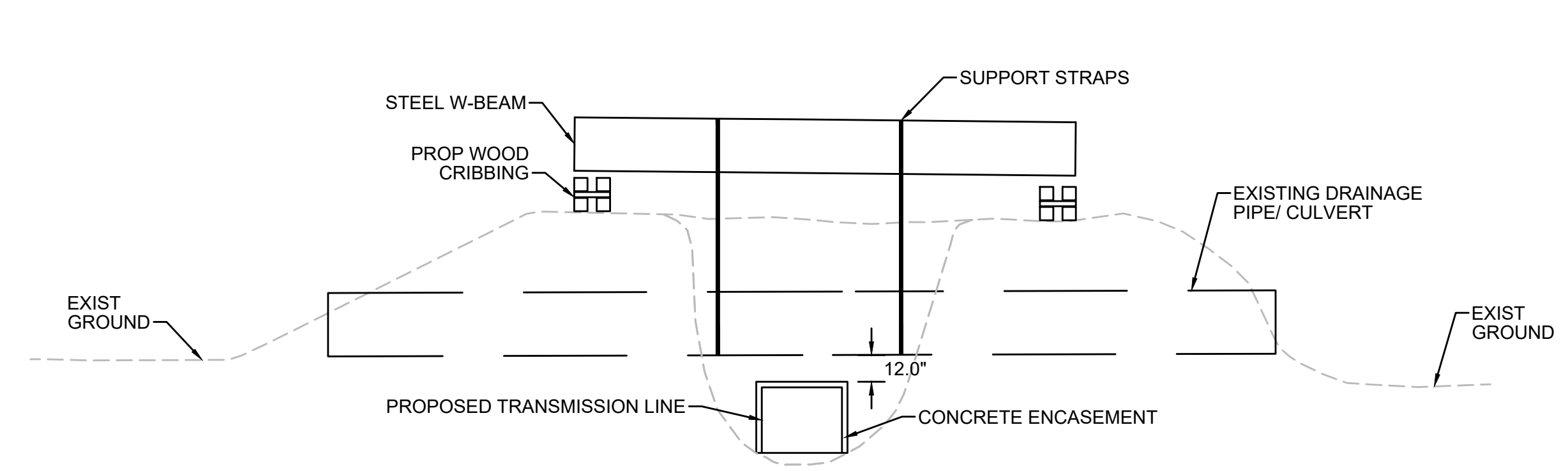
B

C

A

B

C

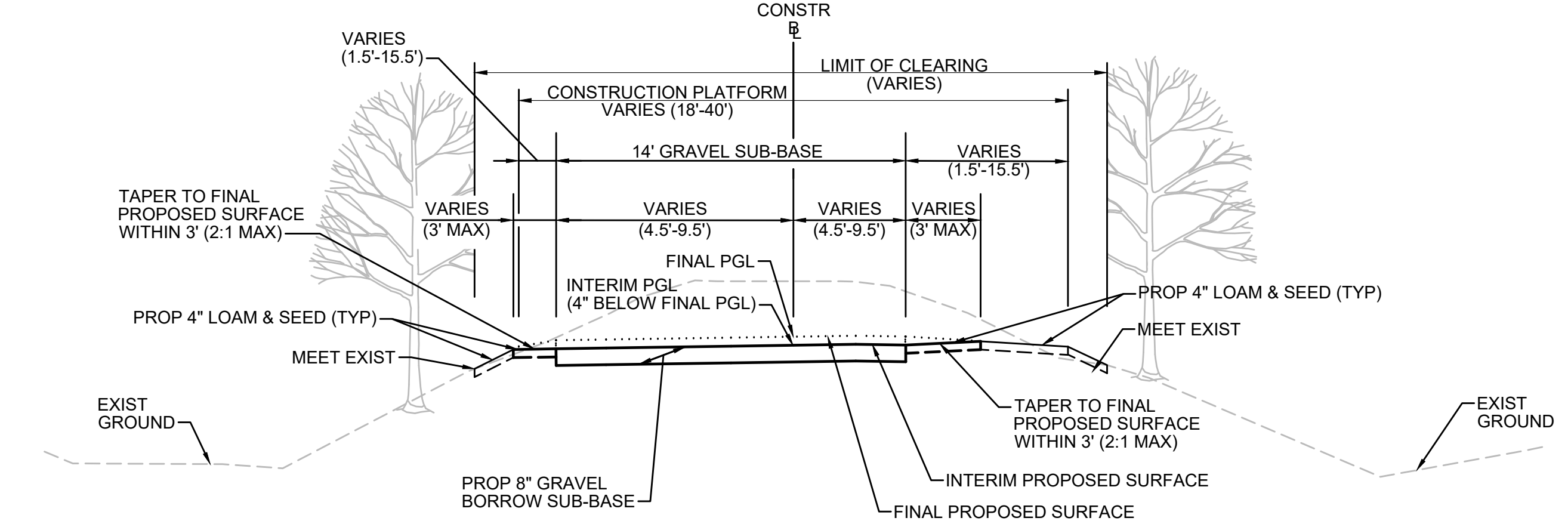


NOTES:

1. CONTRACTOR TO EXCAVATE GROUND SURROUNDING EXISTING PIPE SUCH THAT NO DAMAGE TO THE PIPE IS INCURRED.
2. EXISTING PIPE TO BE STABILIZED IN PLACE DURING CONSTRUCTION USING A STRAP SUPPORTED BY AN W-BEAM.
3. TRANSMISSION LINE TO BE INSTALLED UNDER EXISTING PIPE WITH A MINIMUM CLEARANCE OF 12".
4. AFTER INSTALLATION OF THE TRANSMISSION LINE IS COMPLETE, CONTRACTOR TO FILL IN THE EXCAVATED AREA WITH ORDINARY BORROW OR EXCAVATED MATERIAL AND CONSTRUCT ACCESS ROAD AS SHOWN ON THE PLANS AND CROSS-SECTIONS.

METHOD OF PIPE SUPPORT DURING CONSTRUCTION

SCALE: N.T.S.



NOTES:

1. THIS INTERIM TYPICAL SECTION SHOWS THE TAPERING TO BE PERFORMED TO CONNECT THE GRAVEL ACCESS ROAD BEING CONSTRUCTED BY EVERSOURCE TO THE FINAL PROPOSED SURFACE FOR THE DCR MASS CENTRAL RAIL TRAIL.
2. AT ALL ROADWAY CROSSINGS AND VEHICLE ACCESS POINTS, THE CONTRACTOR SHALL TAPER FROM 8" UP TO 12" OF GRAVEL BORROW SUB-BASE OVER A LENGTH OF 50' SUCH THAT THE INTERIM PGL MATCHES THE FINAL PGL.

INTERIM TYPICAL SECTION

SCALE: N.T.S.

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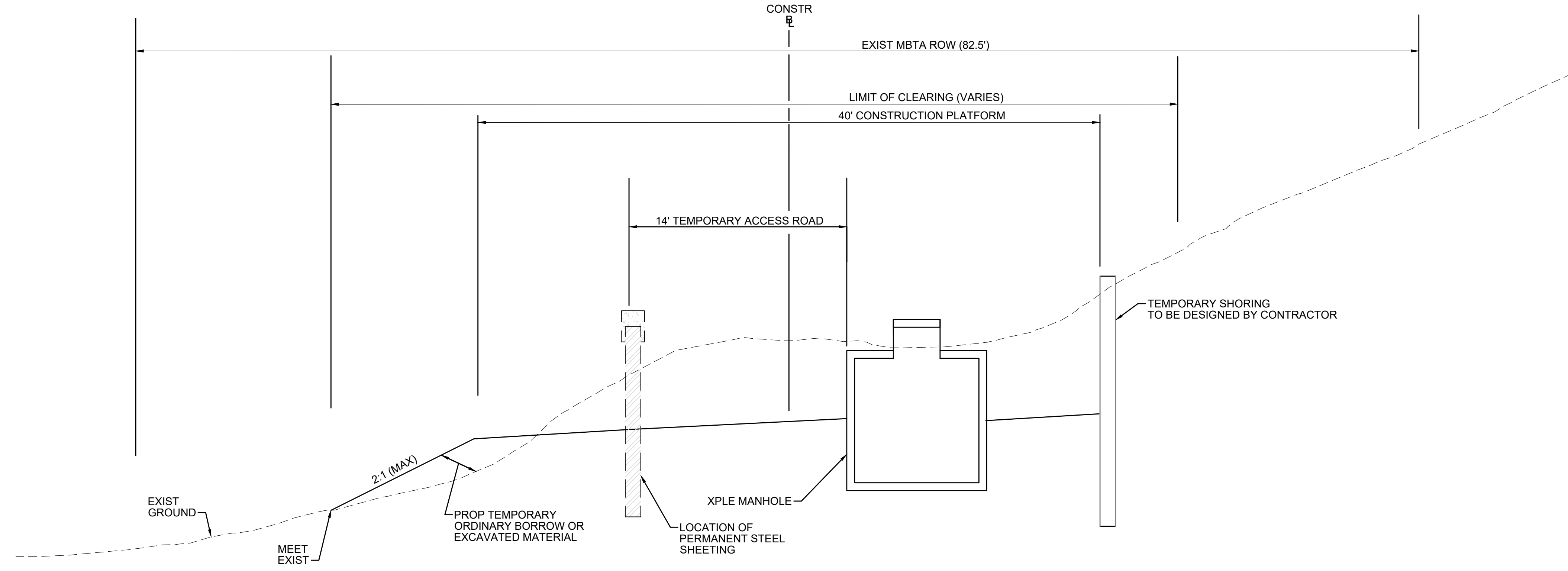
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NOTES:

1. THE LONGITUDINAL GRADIENT OF THE TEMPORARY ACCESS ROAD SHALL BE NO GREATER THAN 6%.
2. ALL TEMPORARY GRADING ACTIVITIES SHALL STAY WITHIN LIMITS OF GRADING SHOWN ON THE PLANS.
3. AFTER CONSTRUCTION OF THE TRANSMISSION LINE AND ACCESS ROAD IS COMPLETED, CONTRACTOR TO STOCKPILE ANY REMAINING TEMPORARY FILL MATERIAL AND REGRADE TO MATCH EXISTING CONDITIONS OUTSIDE OF THE PERMANENT LIMITS OF GRADING SHOWN ON THE PLANS AND CROSS-SECTIONS.
4. CONTRACTOR TO STABILIZE ANY EXPOSED SLOPES WITH JUTE MESH FABRIC UNTIL SUCH TIME THAT THEY CAN BE RESTORED.

TEMPORARY GRADING AT STA 120+75 TO STA 121+25

SCALE: N.T.S.

N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CONSTRUCTION DETAILS				
PLAN 157 OF 349				
SCALE: unless noted NTS	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES
DRAWING NO.	REV.			

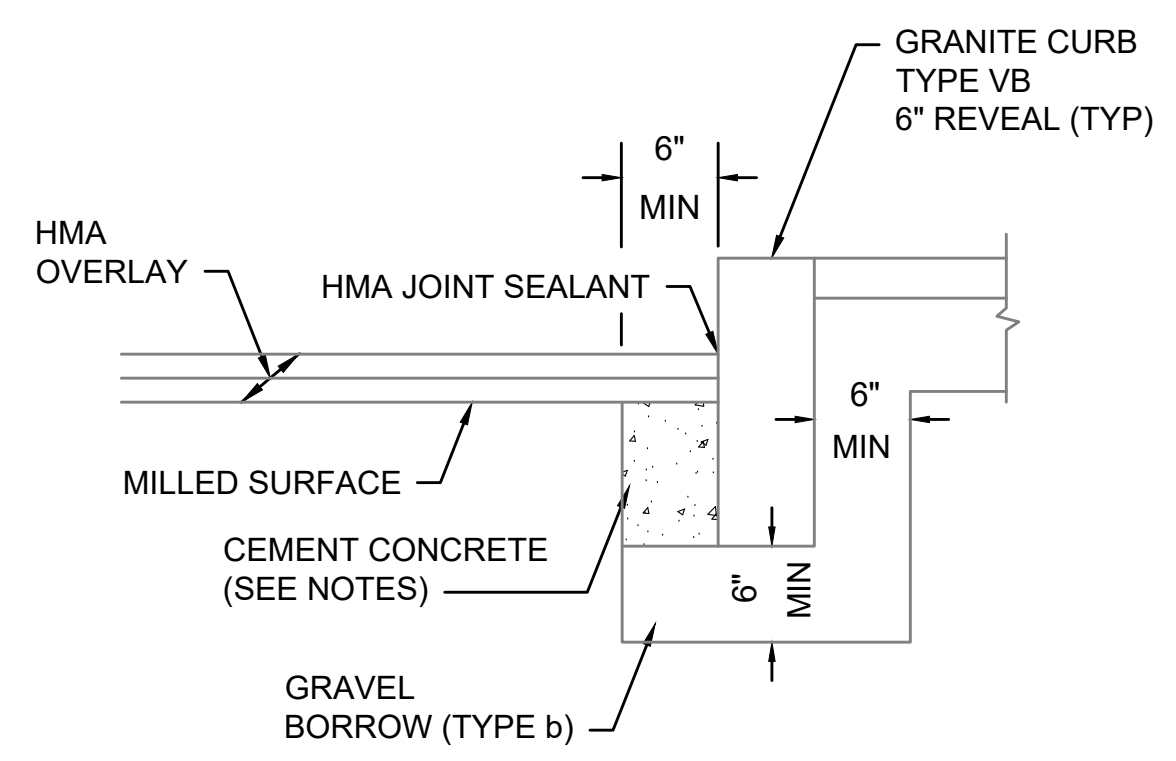
1 2 3 4 5 6 7 8 9 10 11

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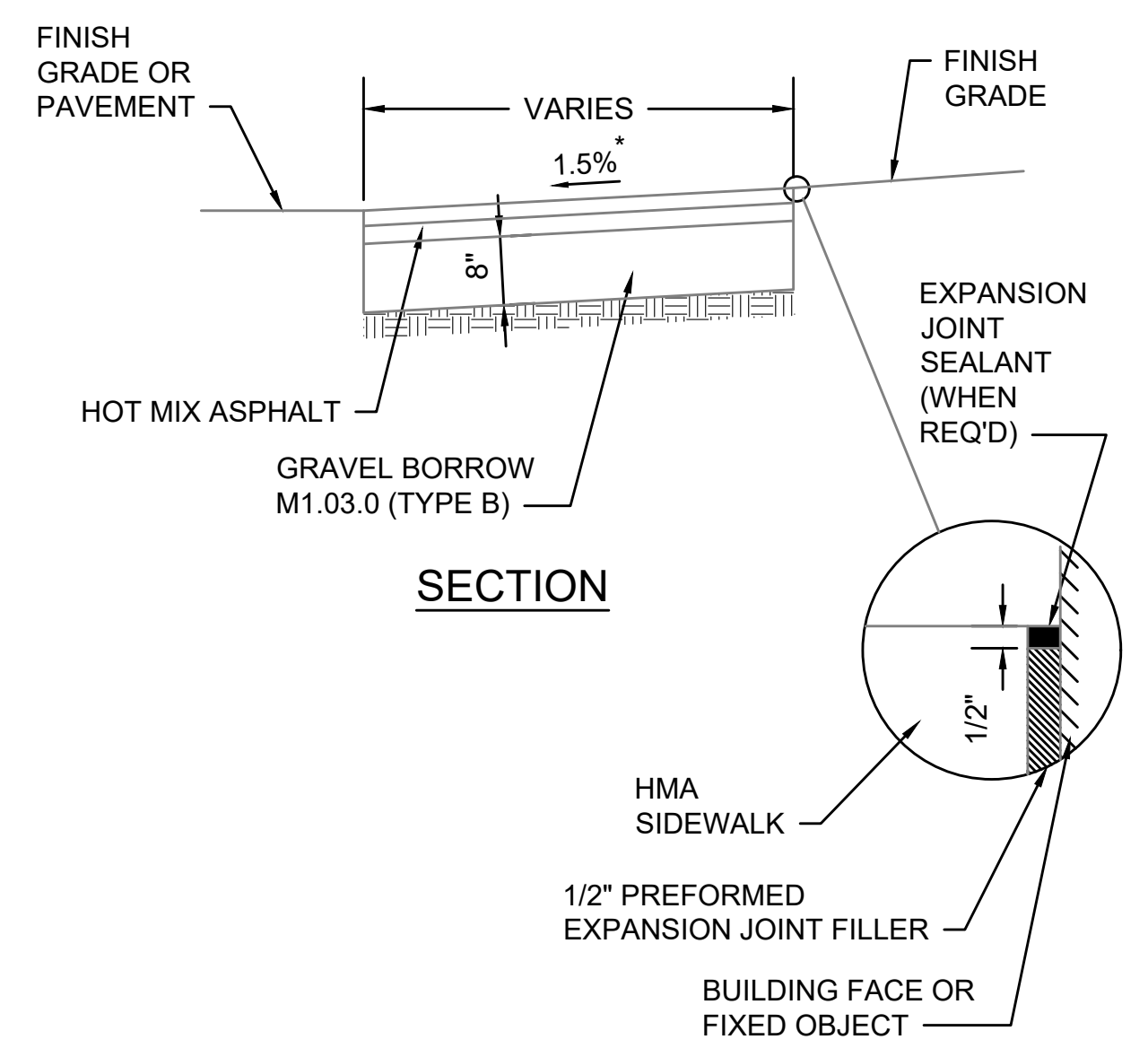
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- NOTES:**
1. CONCRETE SHALL BE INCLUDED IN PRICE BID FOR GRANITE CURB.
 2. ANY DESIGNATED CEMENT CONCRETE THAT IS ACCEPTABLE UNDER SECTION M4 OF THE STANDARD SPECIFICATIONS MAY BE USED. ALL TEST REQUIREMENTS ARE WAIVED. HOT MIX ASPHALT SHALL NOT BE USED AS A SUBSTITUTE.

GRANITE CURB IN MILL & OVERLAY

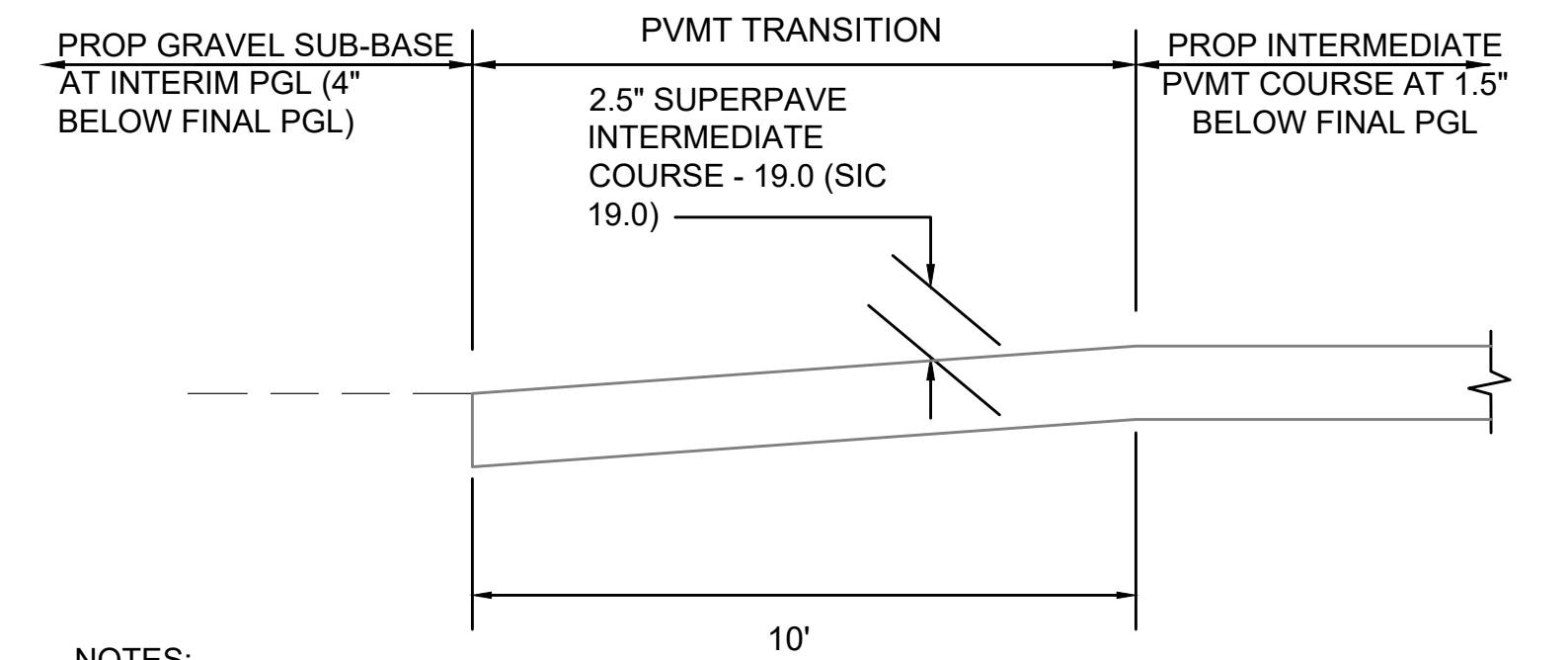
SCALE: N.T.S.



* TOLERANCE FOR CONSTRUCTION ±0.5%

HOT MIX ASPHALT SIDEWALK

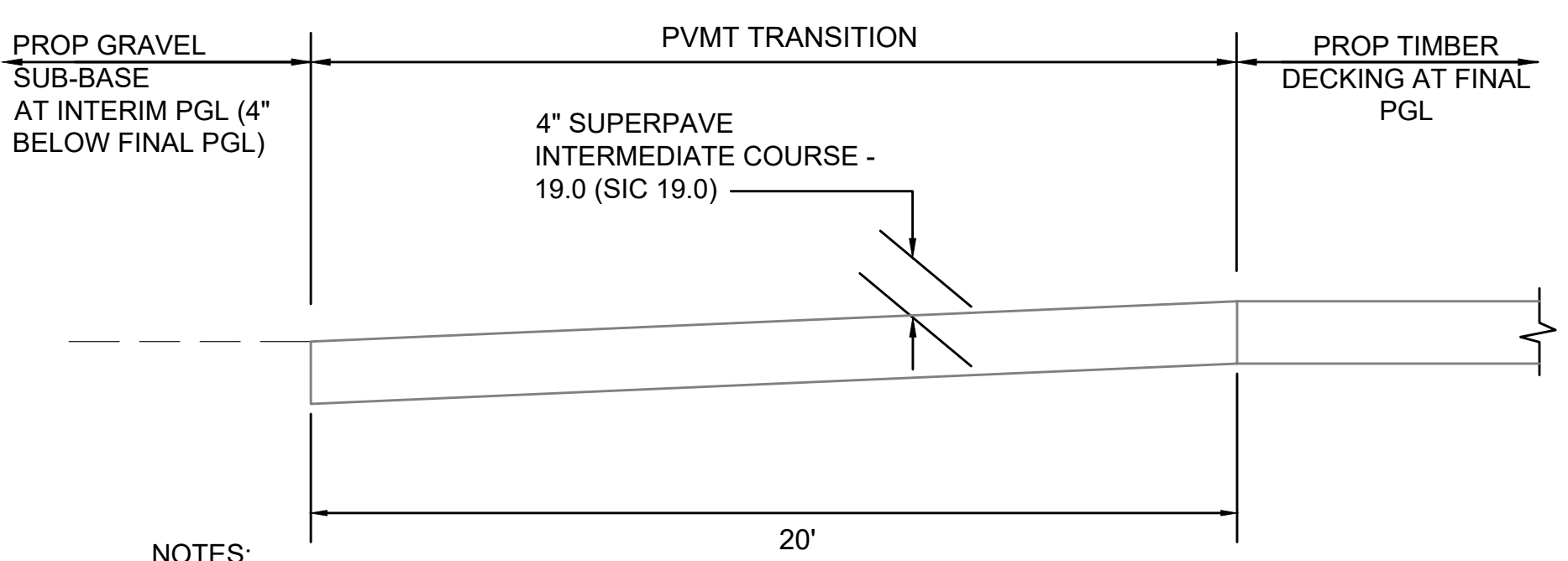
SCALE: N.T.S. DWG: WALK-01 DATE: MARCH 2013



- NOTES:**
1. DEPTH OF GRAVEL SUB-BASE UNDER PVMT TO BE ADJUSTED SUCH THAT DATUM SURFACE REMAINS AT 12" BELOW FINAL PGL THROUGH PVMT TRANSITION.

LONGITUDINAL SECTION OF PVMT TRANSITION AT CATTLE CROSSING

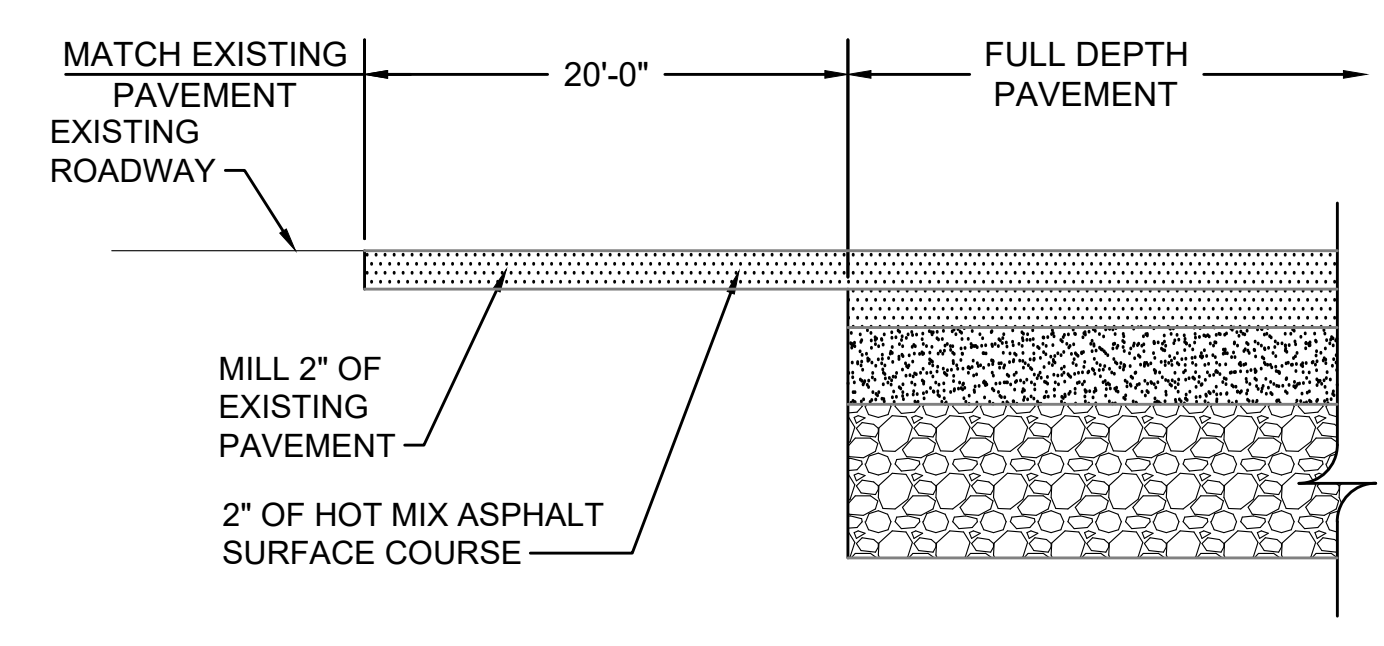
SCALE: N.T.S.



- NOTES:**
1. DEPTH OF GRAVEL SUB-BASE UNDER PVMT TO BE ADJUSTED SUCH THAT DATUM SURFACE REMAINS AT 12" BELOW FINAL PGL THROUGH PVMT TRANSITION.

LONGITUDINAL SECTION OF PVMT TRANSITION AT BRIDGES

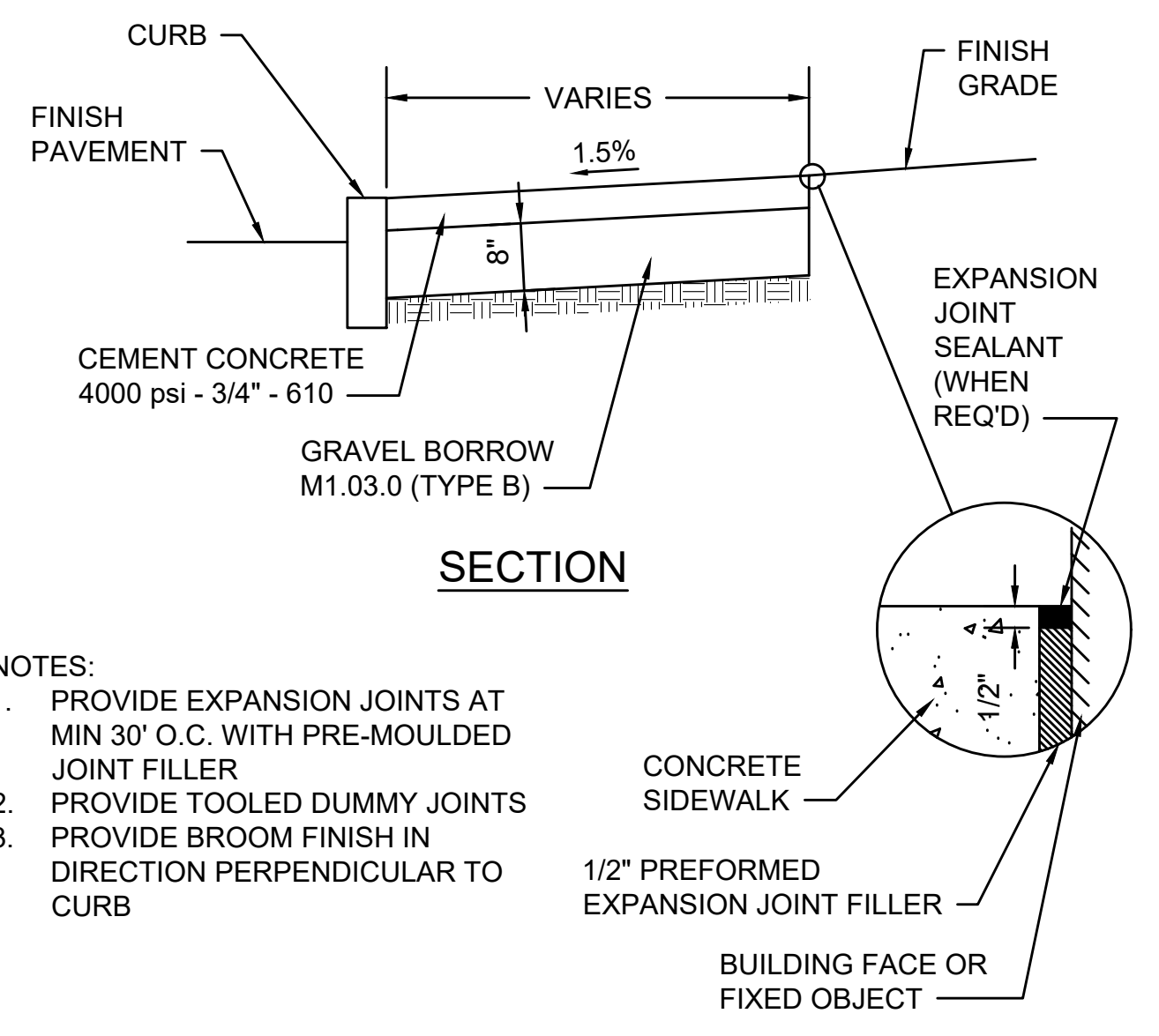
SCALE: N.T.S.



LONGITUDINAL SECTION

FULL DEPTH PAVEMENT TRANSITION

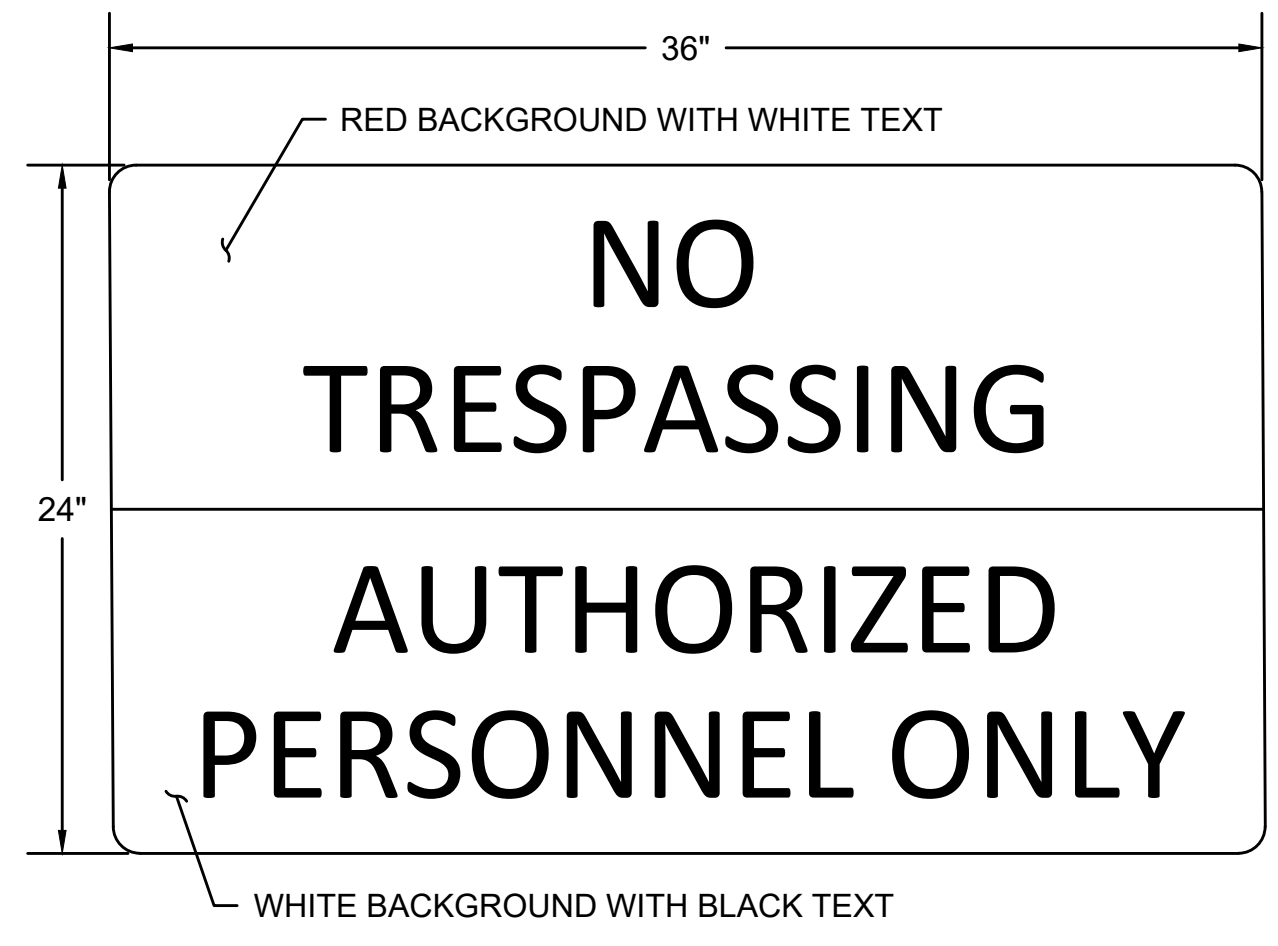
SCALE: N.T.S.



- NOTES:**
1. PROVIDE EXPANSION JOINTS AT MIN 30' O.C. WITH PRE-MOULDED JOINT FILLER
 2. PROVIDE TOOLED DUMMY JOINTS
 3. PROVIDE BROOM FINISH IN DIRECTION PERPENDICULAR TO CURB

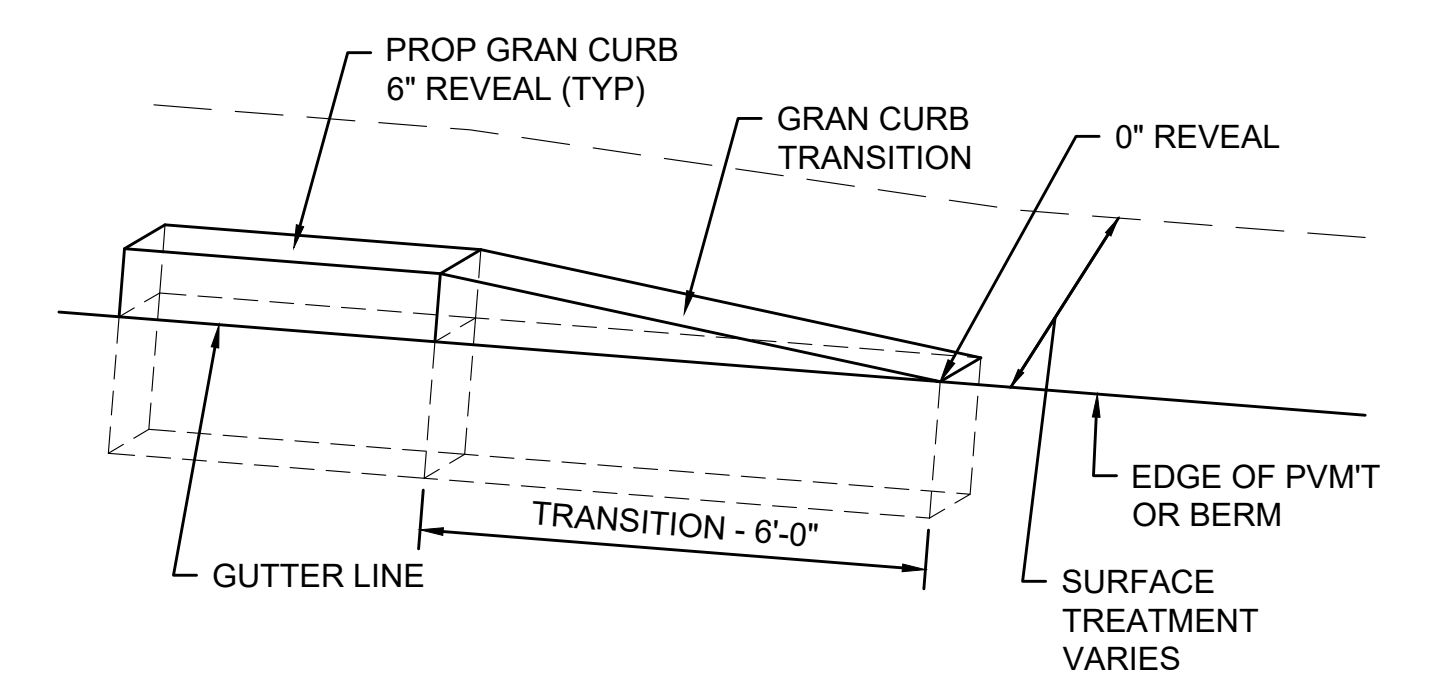
CEMENT CONCRETE SIDEWALK

SCALE: N.T.S.



- NO BORDER
- MATERIAL - FLAT SHEET ALUMINUM 0.08" INCHES THICK
- SIGN SHALL BE MOUNTED ON P5 POST AT ALL WORK ZONE ACCESS POINTS AND ON CONSTRUCTION FENCE FACING CONSTRUCTION PLATFORM AS NOTED ON THE PLANS.

NO TRESPASSING SIGN

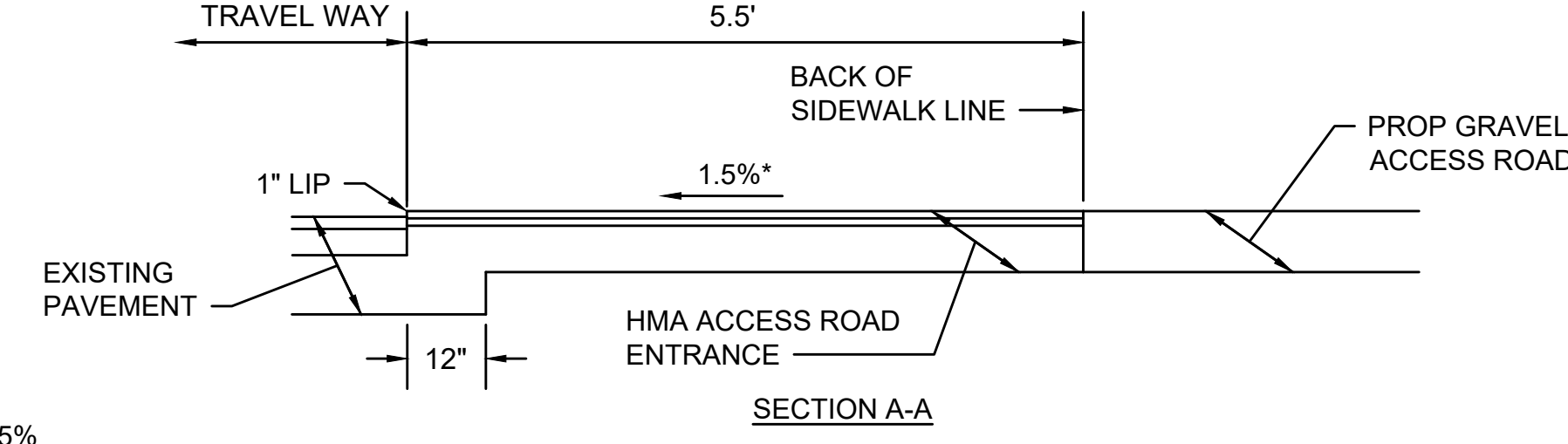
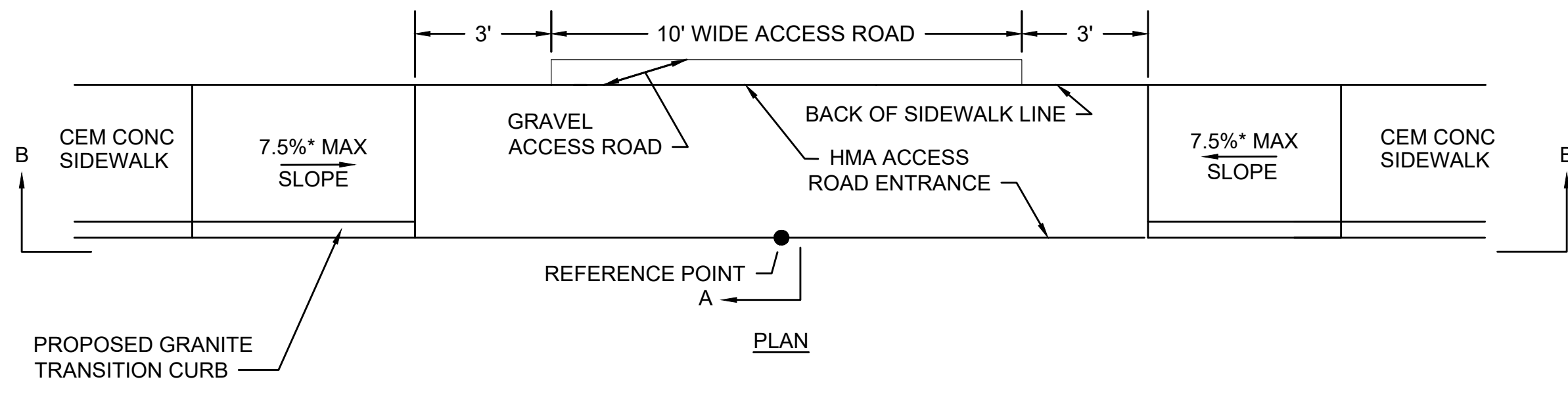
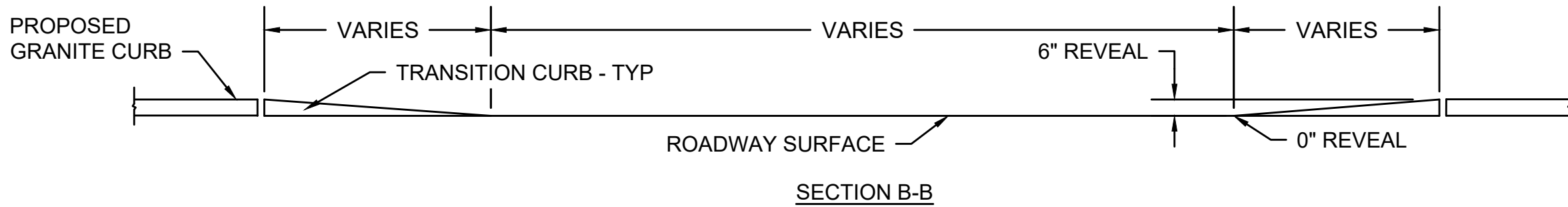


GRANITE CURB TRANSITION PIECE

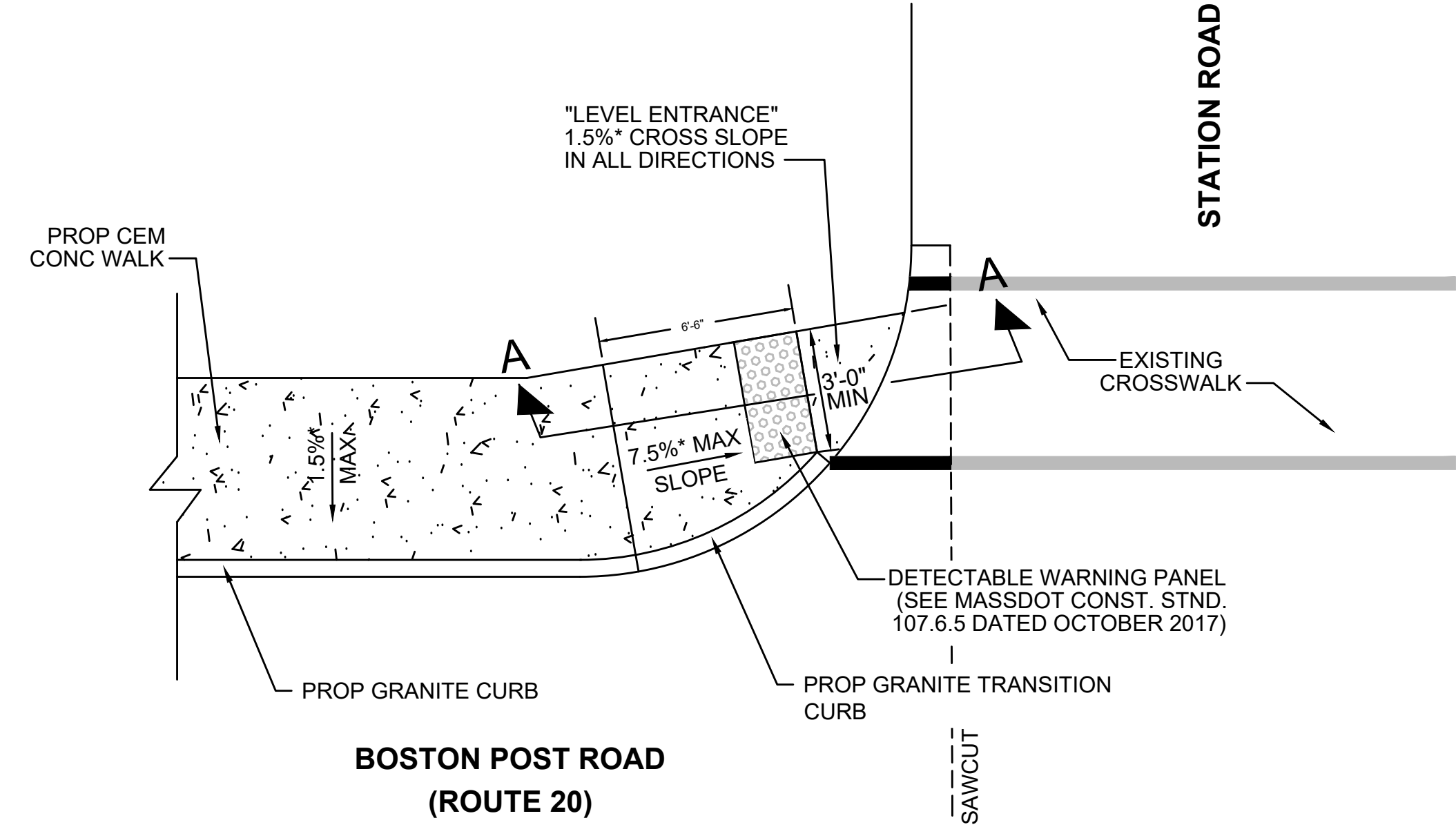
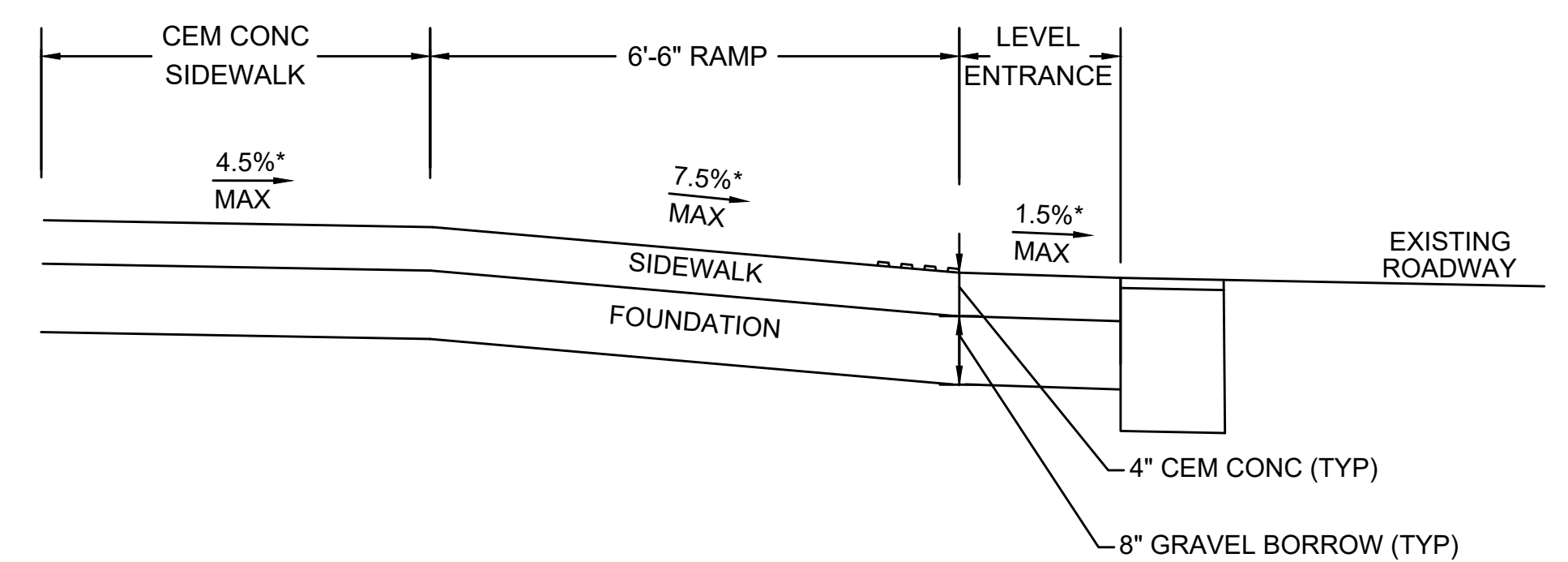
SCALE: N.T.S.

N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CONSTRUCTION DETAILS				
PLAN 158 OF 349				
SCALE: unless noted NTS	DATE DEC 2021	DRAWN MS	CHK'D. SK	APP.R. MES
DRAWING NO.	REV.			

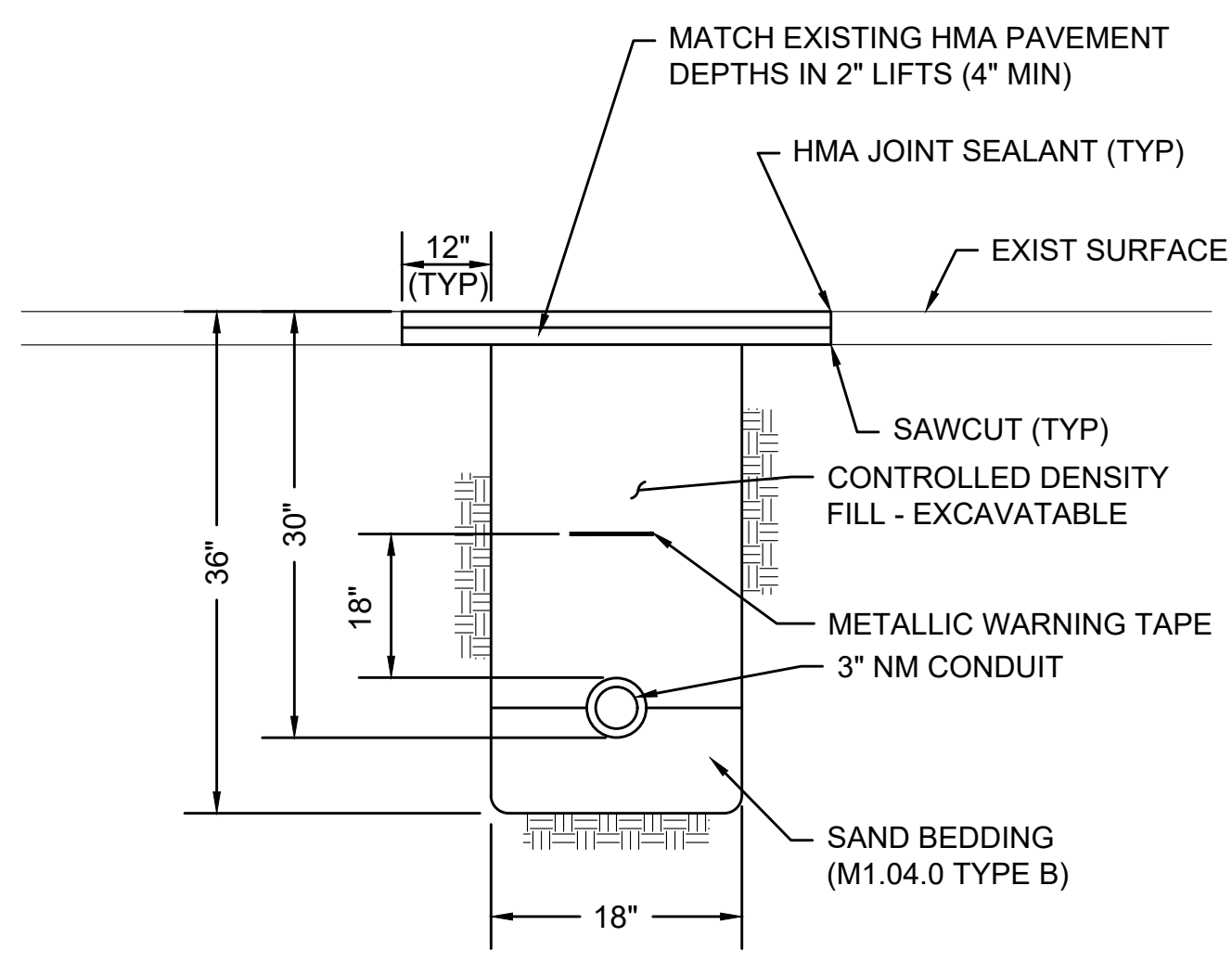
ACCESS ROAD CROSSING DATA									
NO.	LOCATION (REF POINT)	ROADWAY GUTTER	SIDEWALK WIDTH	LEFT SIDE		RIGHT SIDE		OPENING ELEVATION	COMMENTS
				REVEAL	TRANS	REVEAL	TRANS		
BOSTON POST ROAD (ROUTE 20) STATE HIGHWAY LAYOUT									
1	182+61.6, 9.6' LT	5.2%	5'-6"	6"	9'-0"	6"	7'-8"	134.31'	



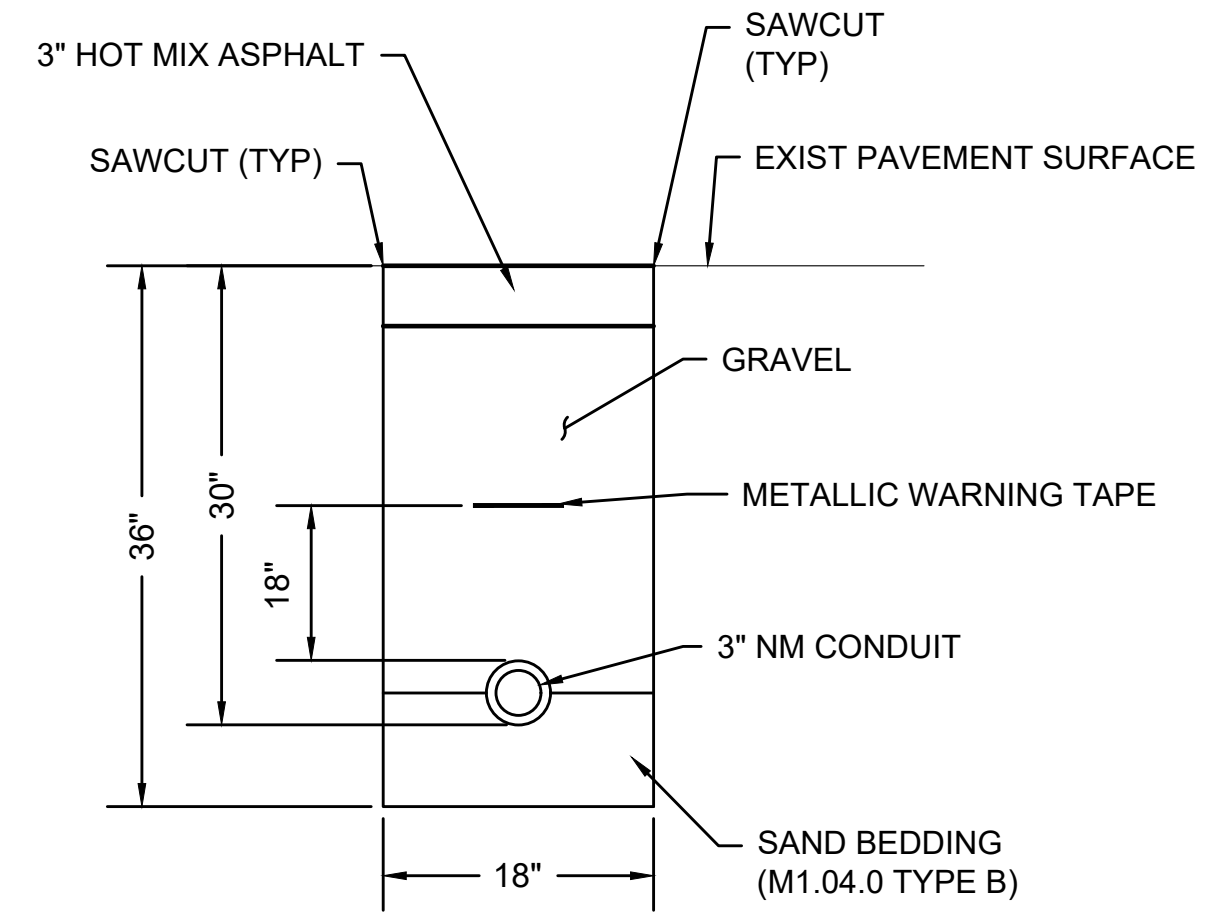
*TOLERANCE FOR CONSTRUCTION ±0.5%
TYPICAL ACCESS ROAD CROSSING WITH SIDEWALK AND WITHOUT CURB RETURNS
 SCALE: N.T.S.



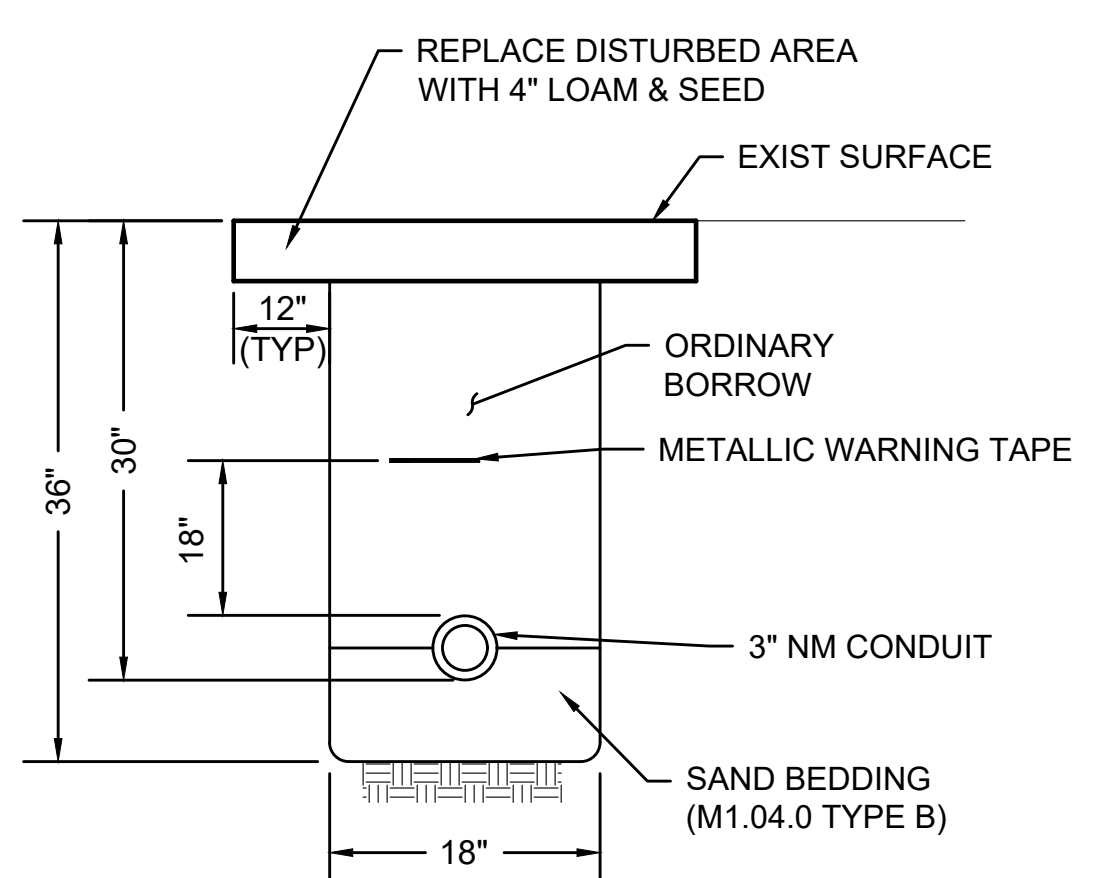
*TOLERANCE FOR CONSTRUCTION ±0.5%
WHEELCHAIR RAMP #1
 SCALE: N.T.S.



CONDUIT CROSSING ROADWAY/DRIVEWAY
 SCALE: N.T.S.



CONDUIT IN SIDEWALK
 SCALE: N.T.S.



CONDUIT IN GRASS
 SCALE: N.T.S.

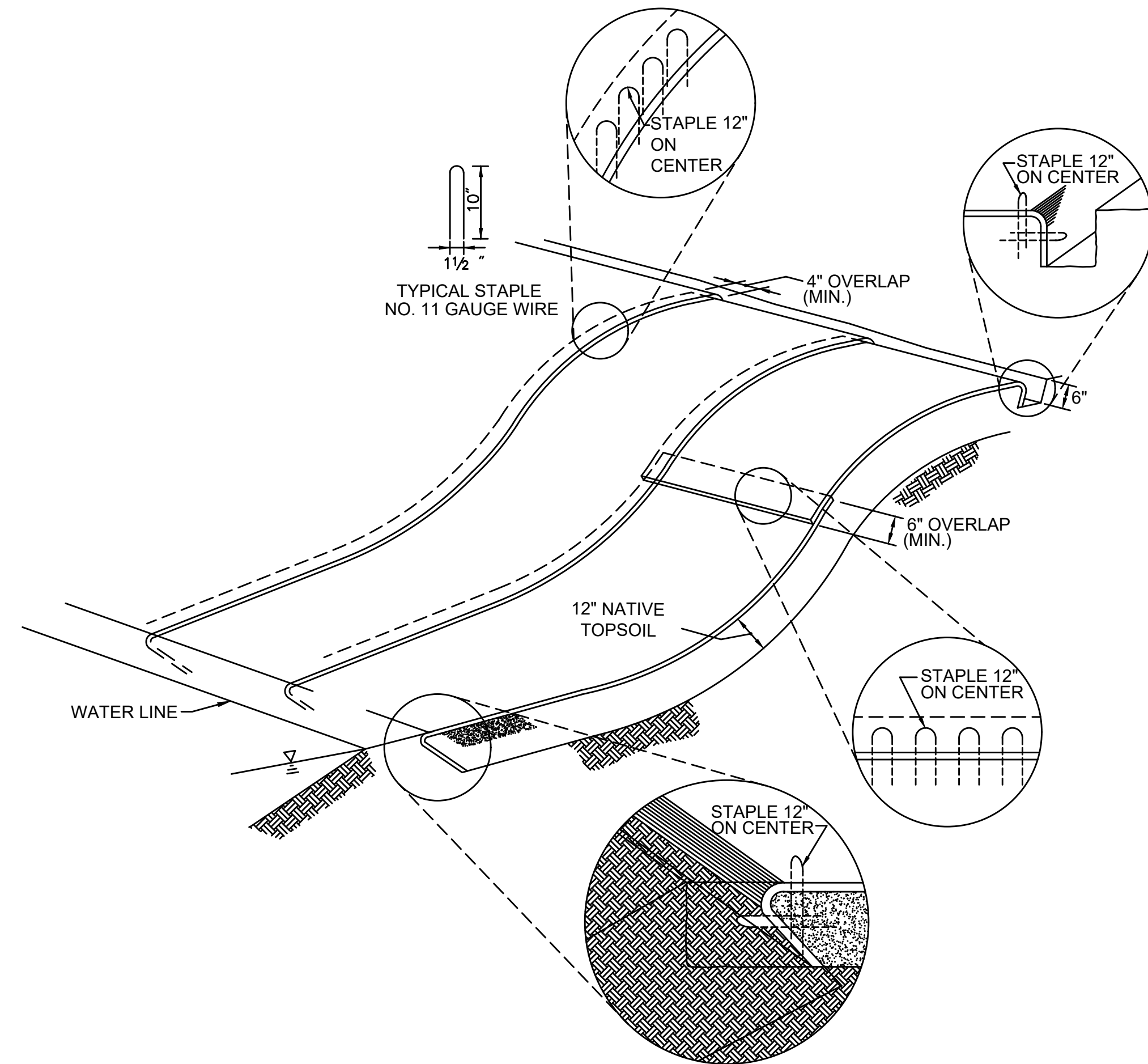
NO.	DESCRIPTION	BY	DATE	APPR.
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CONSTRUCTION DETAILS				
PLAN 159 OF 349				
SCALE: unless noted NTS	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES
DRAWING NO.	REV.			

NOTES FOR BIONET C700BN EROSION CONTROL BLANKET:

- METHOD OF INSTALLATION SHALL BE AS PER MANUFACTURER'S RECOMMENDATIONS.

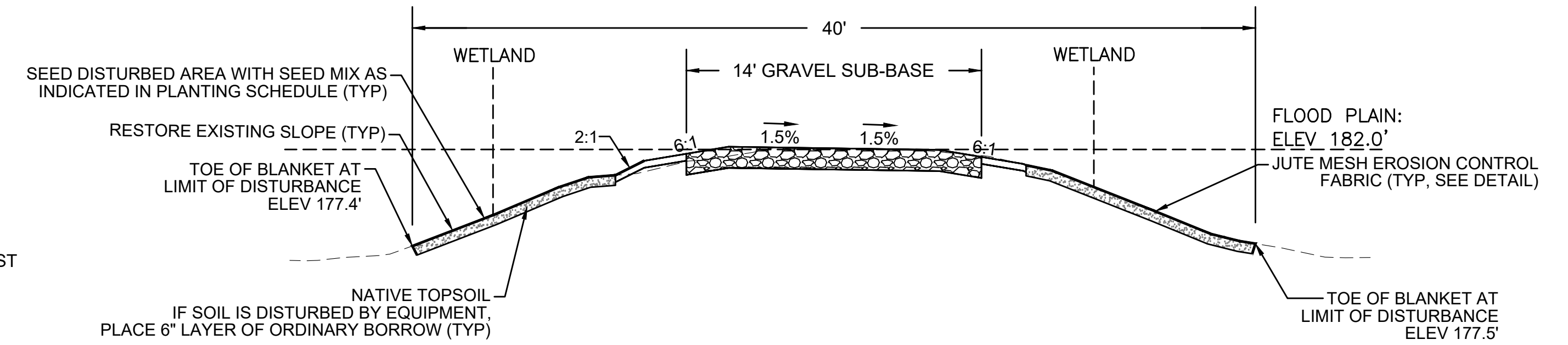
NOTES FOR JUTE MESH EROSION CONTROL FABRIC:

- EROSION CONTROL FABRIC SHALL BE WESTERN EXCELSIOR CC-4 ALL-NATURAL OR SIMILAR. FABRIC MUST BE COMPOSED OF 100% BIODEGRADABLE MATERIAL, WITH NO SYNTHETIC NETTING OR STITCHING. NETTING SHALL BE JUTE, MATRIX FILLING SHALL BE EXCELSIOR, STRAW, OR COCONUT, AND STITCHING SHALL BE BIODEGRADABLE. FABRIC SHOULD BE RATED FOR SLOPES OF AT LEAST 2:1 AND LONGEVITY OF AT LEAST 12 MONTHS.
- PREPARE SOIL BEFORE INSTALLING FABRIC, INCLUDING ANY NECESSARY APPLICATION OF LIME, AND SEED.
- BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE FABRIC IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF FABRIC EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE FABRIC WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF FABRIC BACK OVER SEED AND COMPACTED SOIL. SECURE FABRIC OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE FABRIC.
- ROLL FABRIC FROM TOP OF SLOPE TO BOTTOM. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE.
- INSTALL TREE, SHRUB, AND/OR PLUG PLANTINGS AT THE LOCATIONS INDICATED IN THE PLANTING SCHEDULE ON SHEET 161 OR AS DIRECTED BY THE WETLAND SCIENTIST AFTER UNROLLING FABRIC. LOCATE PLANTINGS AT ROLL SEAMS OR CUT SLIT IN BLANKET PERPENDICULAR TO ACCESS ROAD TO ACCOMMODATE PLANTING. PLANTING HOLES SHOULD BE HAND-DUG.
- SECURE FABRIC AFTER PLANTINGS ARE INSTALLED. ALL FABRIC MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. DO NOT PLACE STAPLES OR STAKES WITHIN 2 FEET OF PLANTINGS. WHEN USING OPTIONAL DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
- PLACE CONSECUTIVE FABRICS END OVER END (SHINGLE STYLE) WITH A 4"-6" OVERLAP. USE A DOUBLE ROW OF STAPLES STAGGERED 4" APART AND 4" ON CENTER TO SECURE FABRIC.
- FULL LENGTH EDGE OF FABRIC AT TOP OF SIDE SLOPES MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN A 6" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
- ADJACENT FABRICS MUST BE OVERLAPPED APPROXIMATELY 2"-5" (DEPENDING ON FABRIC TYPE) AND STAPLED. TO ENSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING FABRIC (FABRIC BEING INSTALLED ON TOP) EVEN WITH THE COLORED SEAM STITCH ON THE FABRIC BEING OVERLAPPED.
- FULL LENGTH EDGE OF FABRIC AT BOTTOM OF SIDE SLOPES MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART. FABRIC SHALL HAVE A MINIMUM 6" RUNOUT LENGTH UNDER GEOWEB.
- A MINIMUM OF 4 NOTCHED WOOD STAKES SHALL BE INSTALLED TO SECURE EACH FABRIC, ONE AT EACH CORNER.
- THE TERMINAL END OF THE FABRIC MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN A 6" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.



JUTE MESH EROSION CONTROL FABRIC & BIONET C700BN EROSION CONTROL BLANKET

SCALE: N.T.S.

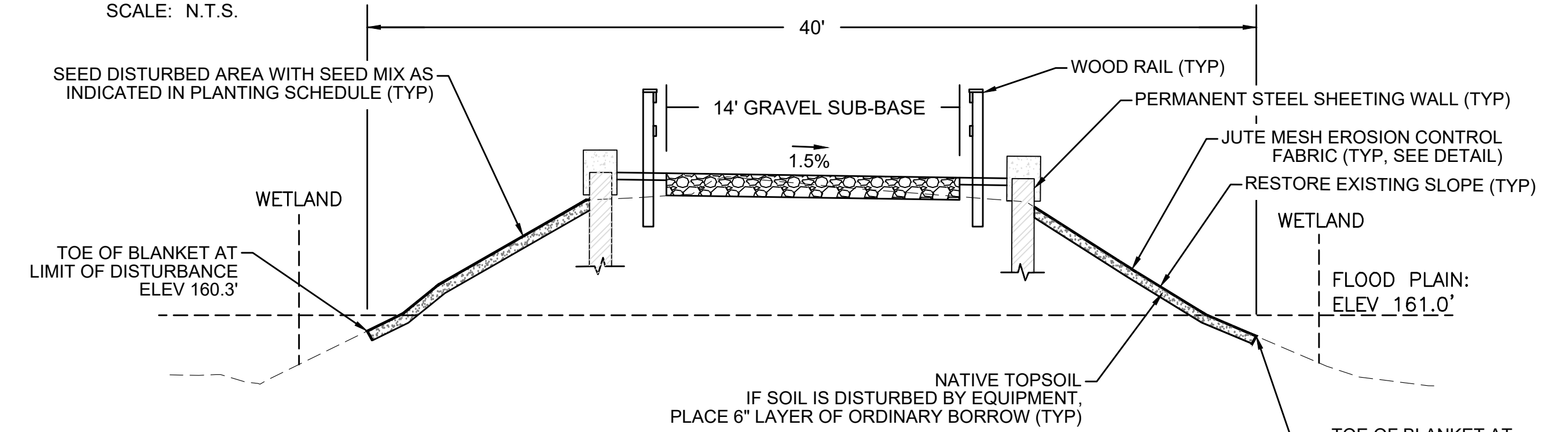


NOTES:

- THIS SECTION APPLIES ONLY TO THE FOLLOWING STATION RANGES:
STA 147+75 TO 148+50
STA 149+00 TO 150+25
- THE CROSS-SECTION FOR STATION 148+00 IS USED AS A REPRESENTATIVE AREA FOR THE PURPOSES OF THIS DETAIL.

TYPICAL CRANE MAT RESTORATION CROSS-SECTION - BRIDGE 130

SCALE: N.T.S.

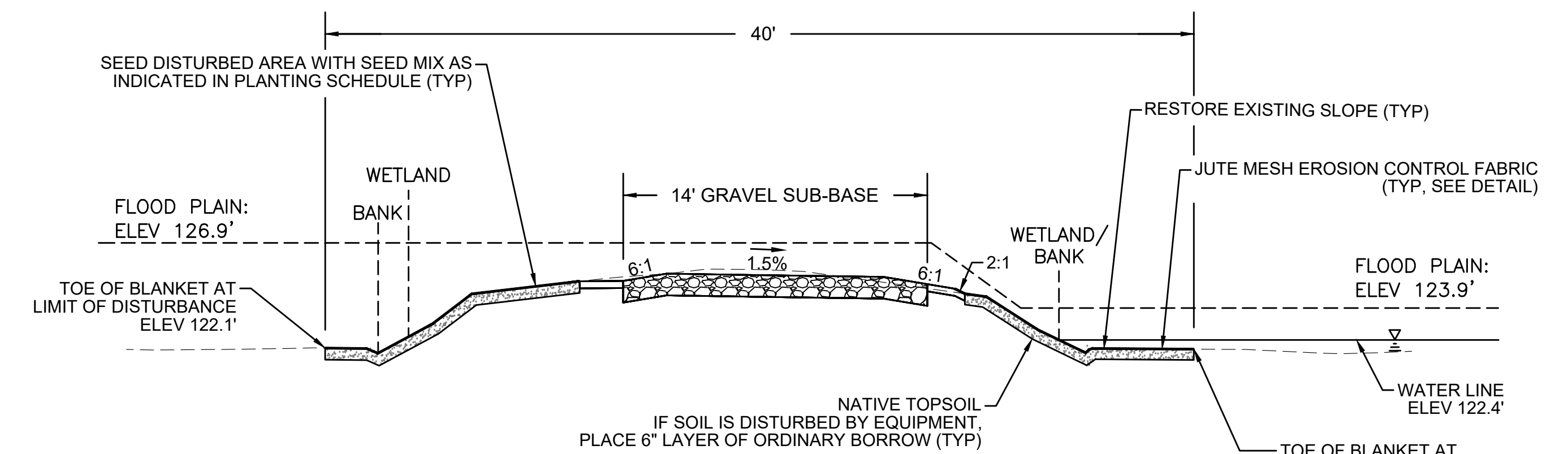


NOTES:

- THIS SECTION APPLIES ONLY TO THE FOLLOWING STATION RANGES:
STA 399+10 TO 400+20
STA 400+75 TO 401+75
- THE CROSS-SECTION FOR STATION 401+00 IS USED AS A REPRESENTATIVE AREA FOR THE PURPOSES OF THIS DETAIL.

TYPICAL CRANE MAT RESTORATION CROSS-SECTION - BRIDGE 128

SCALE: N.T.S.



NOTES:

- THIS SECTION APPLIES ONLY TO THE FOLLOWING STATION RANGES:
STA 724+40 TO 725+00
STA 725+70 TO 726+40
- THE CROSS-SECTION FOR STATION 726+00 IS USED AS A REPRESENTATIVE AREA FOR THE PURPOSES OF THIS DETAIL.

TYPICAL CRANE MAT RESTORATION CROSS-SECTION - BRIDGE 127

SCALE: N.T.S.

N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CONSTRUCTION DETAILS				
PLAN 160 OF 349				
SCALE: unless noted NTS	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES
DRAWING NO.	REV.			

PLANTING SCHEDULE A: GENERAL CONSTRUCTION CORRIDOR

HERBACEOUS SEED MIX		
SPECIES	WETLAND STATUS	%
VIRGINIA WILD RYE (<i>ELYMUS VIRGINICUS</i>)	FACW	25.00
CANADA WILD RYE (<i>ELYMUS CANADENSIS</i>)	FACU	25.00
LITTLE BLUESTEM (<i>SCHIZACHYRIUM SCOPARIUM</i>)	FACU	25.00
DEER-TONGUE GRASS (<i>DICHANTHELIUM CLANDESTINUM</i>)	FACW	8.00
UPLAND BENTGRASS (<i>AGROSTIS PERENNANS</i>)	FACU	8.00
FOX SEDGE (<i>CAREX VULPINOIDEA</i>)	OBL	2.00
PATH RUSH (<i>JUNCUS TENUIS</i>)	FAC	2.00
SOFT RUSH (<i>JUNCUS EFFUSUS</i>)	OBL	0.10
BEARD-TONGUE (<i>PENSTEMON DIGITALIS</i>)	FAC	2.00
NEW ENGLAND ASTER (<i>SYMPHYOTRICHUM NOVAE-ANGLIAE</i>)	FACW	1.00
WOODLAND GOLDENROD (<i>SOLIDAGO CAESIA</i>)	FACU	0.50
BLUE WOOD ASTER (<i>SYMPHYOTRICHUM CORDIFOLIUM</i>)	UPL	0.50
JOE-PYE WEED (<i>EUTROCHIUM MACULATUM</i>)	OBL	0.30
WHITE AVENS (<i>GEUM CANADENSE</i>)	FAC	0.30
RIGID GOLDENROD (<i>OLIGONEURON RIGIDUM</i>)	UPL	0.30

SHRUB SEED MIX		
SPECIES	WETLAND STATUS	LBS/AC
ALTERNATE-LEAVED DOGWOOD (<i>SWIDA ALTERNIFOLIA</i>)	FACU	2.00
AMERICAN HAZELNUT (<i>CORYLUS AMERICANA</i>)	FACU	2.00
ARROWWOOD (<i>VIBURNUM DENTATUM</i>)	FAC	2.00
NANNYBERRY (<i>VIBURNUM LENTAGO</i>)	FAC	2.00

NOTE: HERBACEOUS AND SHRUB SEED MIXES TO BE APPLIED AT AN APPLICATION RATE RECOMMENDED BY THE SUPPLIER

SOD SEED MIX	
SPECIES	%
KENTUCKY BLUEGRASS (<i>POA PRATENSIS</i>)	60-75
PERENNIAL RYEGRASS (<i>LOLIUM PERENNE</i>)	10-20
TALL FESCUE (<i>SCHEDONORUS ARUNDINACEUS</i>)	15

NOTE: SOD SEED MIX TO BE USED INSTEAD OF HERBACEOUS SEED MIX AND SHRUB SEED MIX FOR AREA OF INCREASED INFILTRATION P-10.13A (STA 753+50 TO STA 756+50)

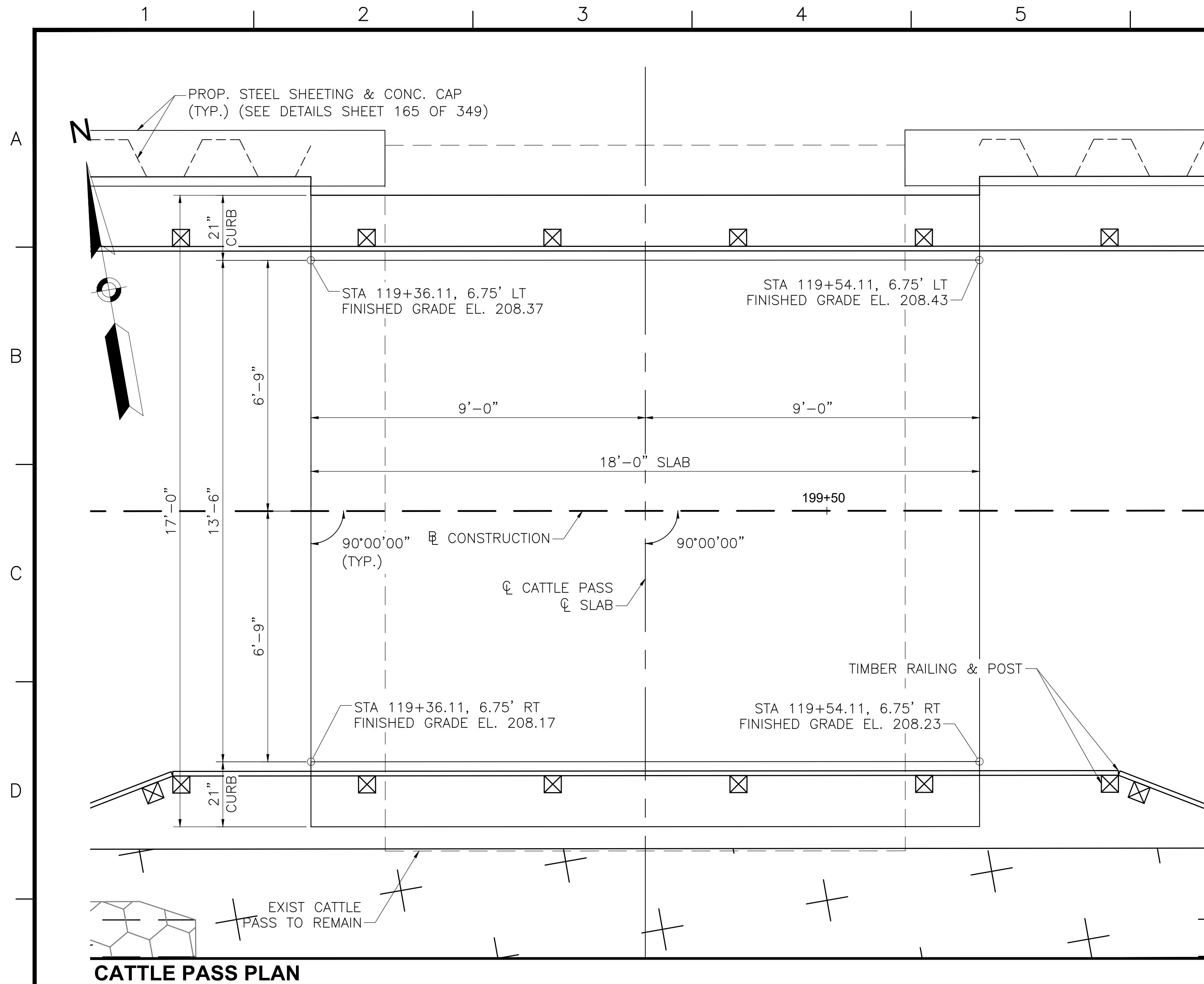
PLANTING NOTES:

- ALL PROPOSED PLANTING LOCATIONS SHALL BE STAKED AS SHOWN ON THE PLANS FOR FIELD REVIEW AND APPROVAL BY THE LANDSCAPE ARCHITECT OR ENVIRONMENTAL MONITOR PRIOR TO INSTALLATION.
- ANY PROPOSED PLANT SUBSTITUTIONS MUST BE REVIEWED BY LANDSCAPE ARCHITECT AND APPROVED IN WRITING BY THE ENVIRONMENTAL MONITOR.
- ONLY SPECIES ARE ALLOWED (NO HORTICULTURAL CULTIVARS OR VARIETIES).
- SEED MIX AND PLANT STOCK SHALL BE OBTAINED FROM A NURSERY THAT SPECIALIZES IN NATIVE ECOLOGICAL PLANTINGS. PLANT STOCK SHALL BE SUPPLIED IN A PLANTING-READY CONDITION. ALL MATERIALS MUST BE INSPECTED AND APPROVED BY THE ENVIRONMENTAL MONITOR PRIOR TO BEING PLANTED. IF NOT PLANTED WITHIN 12 HOURS FROM WHEN THEY WERE COLLECTED, PLANTS SHALL BE STORED IN ACCORDANCE WITH RECOMMENDATIONS PROVIDED BY THE NURSERY.
- PLANT STOCK WILL BE INSTALLED IN HAND-DUG HOLES IN LOCATIONS TO BE DETERMINED BY ENVIRONMENTAL MONITOR.
- A 3-INCH DEEP MULCH PER SPECIFICATION SHALL BE INSTALLED UNDER ALL TREES AND SHRUBS, AND IN ALL PLANTINGS BEDS, UNLESS OTHERWISE INDICATED ON THE PLANS, OR AS DIRECTED BY THE ENVIRONMENTAL MONITOR.
- NO FERTILIZERS SHALL BE APPLIED.
- NO PLANT MATERIALS SHALL BE INSTALLED UNTIL ALL GRADING AND CONSTRUCTION HAS BEEN COMPLETED IN THE IMMEDIATE AREA. CONTRACTOR SHALL NOTIFY THE ENVIRONMENTAL MONITOR OF ANY CONFLICT.
- ALL PLANT MATERIALS INSTALLED SHALL MEET THE SPECIFICATIONS OF THE "AMERICAN STANDARDS FOR NURSERY STOCK" BY THE AMERICAN ASSOCIATION OF NURSERYMEN AND CONTRACT DOCUMENTS.
- ALL PLANT MATERIALS SHALL BE GUARANTEED FOR ONE YEAR FOLLOWING DATE OF FINAL ACCEPTANCE.
- ALL TREES SHALL BE BALLED AND BURLAPPED, UNLESS OTHERWISE NOTED IN THE DRAWINGS OR SPECIFICATION, OR APPROVED BY THE ENVIRONMENTAL MONITOR.
- FINAL QUANTITY FOR EACH PLANT TYPE SHALL BE AS GRAPHICALLY SHOWN ON THE PLAN. THIS NUMBER SHALL TAKE PRECEDENCE IN CASE OF ANY DISCREPANCY BETWEEN QUANTITIES SHOWN ON THE PLANT LIST AND ON THE PLAN. THE CONTRACTOR SHALL REPORT ANY DISCREPANCIES BETWEEN THE NUMBER OF PLANS SHOWN ON THE PLANT LIST AND PLANT LABELS PRIOR TO BIDDING.
- AREAS DESIGNATED AS "LOAM & SEED" SHALL RECEIVE MINIMUM 4" OF LOAM AND SPECIFIED SEED MIX.
- THIS PLAN IS INTENDED FOR PLANTING PURPOSES. REFER TO SITE/CIVIL DRAWINGS FOR ALL OTHER SITE CONSTRUCTION INFORMATION.

PLANT MAINTENANCE NOTES:

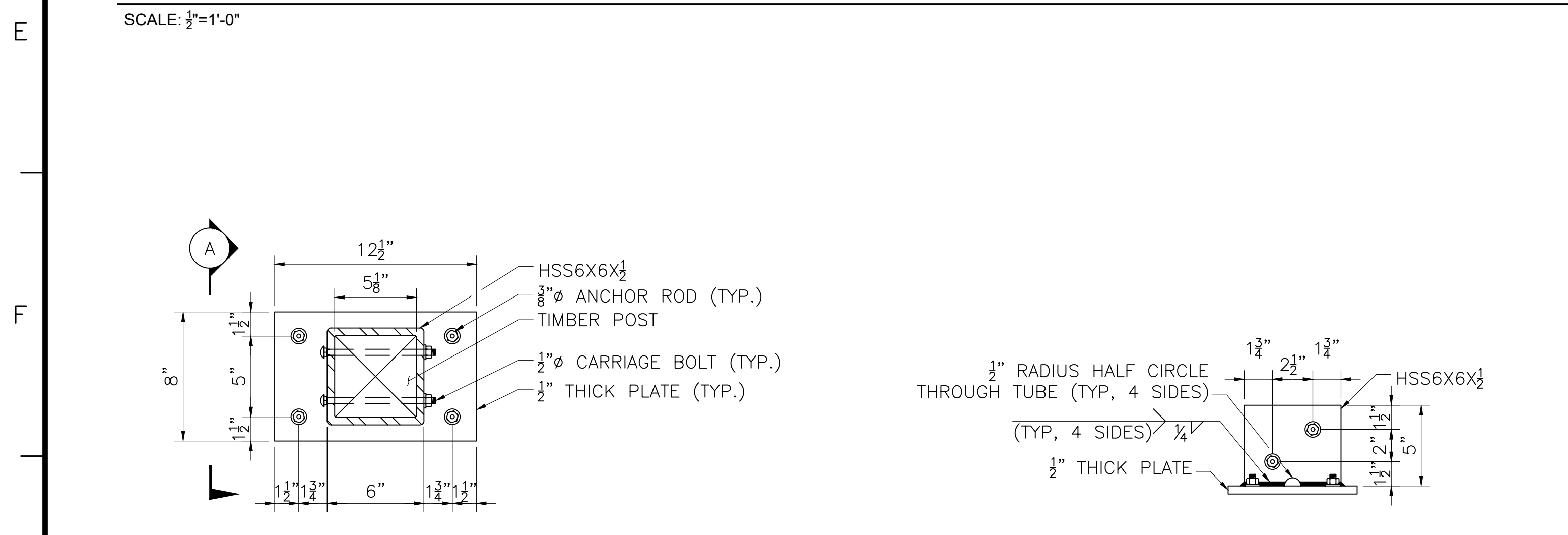
- CONTRACTOR SHALL PROVIDE COMPLETE MAINTENANCE OF SEEDED AREAS AND PLANTINGS. NO IRRIGATION IS PROPOSED FOR THIS SITE. THE CONTRACTOR SHALL SUPPLY SUPPLEMENTAL WATERING FOR SEEDED AREAS AND PLANTINGS DURING THE ONE YEAR PLANT GUARANTEE PERIOD.
- CONTRACTOR SHALL PROVIDE ALL MATERIALS, LABOR, AND EQUIPMENT FOR THE COMPLETE LANDSCAPE MAINTENANCE WORK. WATER SHALL BE PROVIDED BY THE CONTRACTOR.
- WATERING SHALL BE REQUIRED DURING THE GROWING SEASON, WHEN NATURAL RAINFALL IS BELOW ONE INCH PER WEEK.
- WATER SHALL BE APPLIED IN SUFFICIENT QUANTITY TO THOROUGHLY SATURATE THE SOIL IN THE ROOT ZONE OF EACH PLANT.
- PROTECT PLANTING AREAS AND PLANTS AGAINST TRESPASSING AND DAMAGE OF ALL KINDS FOR THE DURATION OF THE MAINTENANCE PERIOD. IF ANY PLANTS BECOME DAMAGED OR INJURED, THEY SHALL BE TREATED OR REPLACED AS REQUIRED.
- CONTRACTOR SHALL REPLACE DEAD OR DYING PLANTS AT THE END OF THE ONE YEAR GUARANTEE PERIOD. CONTRACTOR SHALL TURN OVER MAINTENANCE TO THE FACILITY MAINTENANCE STAFF AT THAT TIME.

N O.	DESCRIPTION	BY	DATE	APP.R.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CONSTRUCTION DETAILS				
PLAN 1610F 349				
SCALE: unless noted NTS	DATE DEC 2021	DRAWN MS	CHK'D. SK	APP.R. MES
DRAWING NO.	REV.			



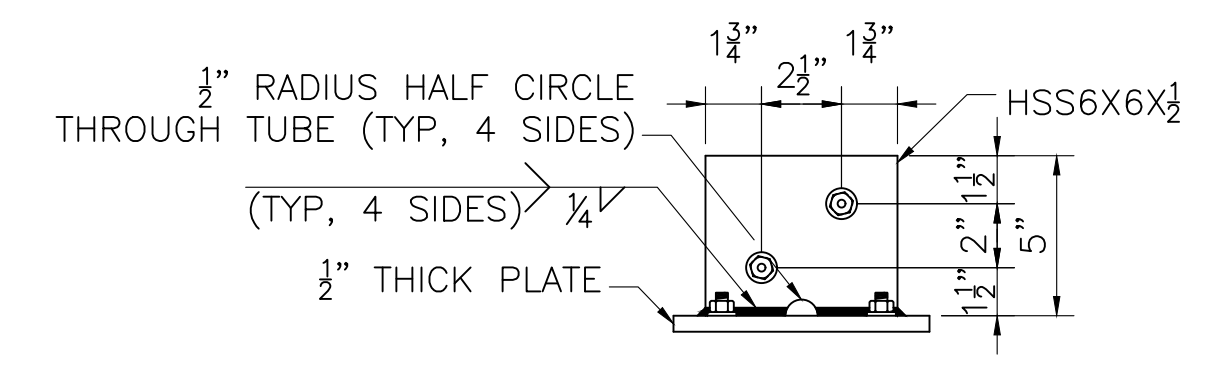
CATTLE PASS PLAN

SCALE: 1/2"=1'-0"



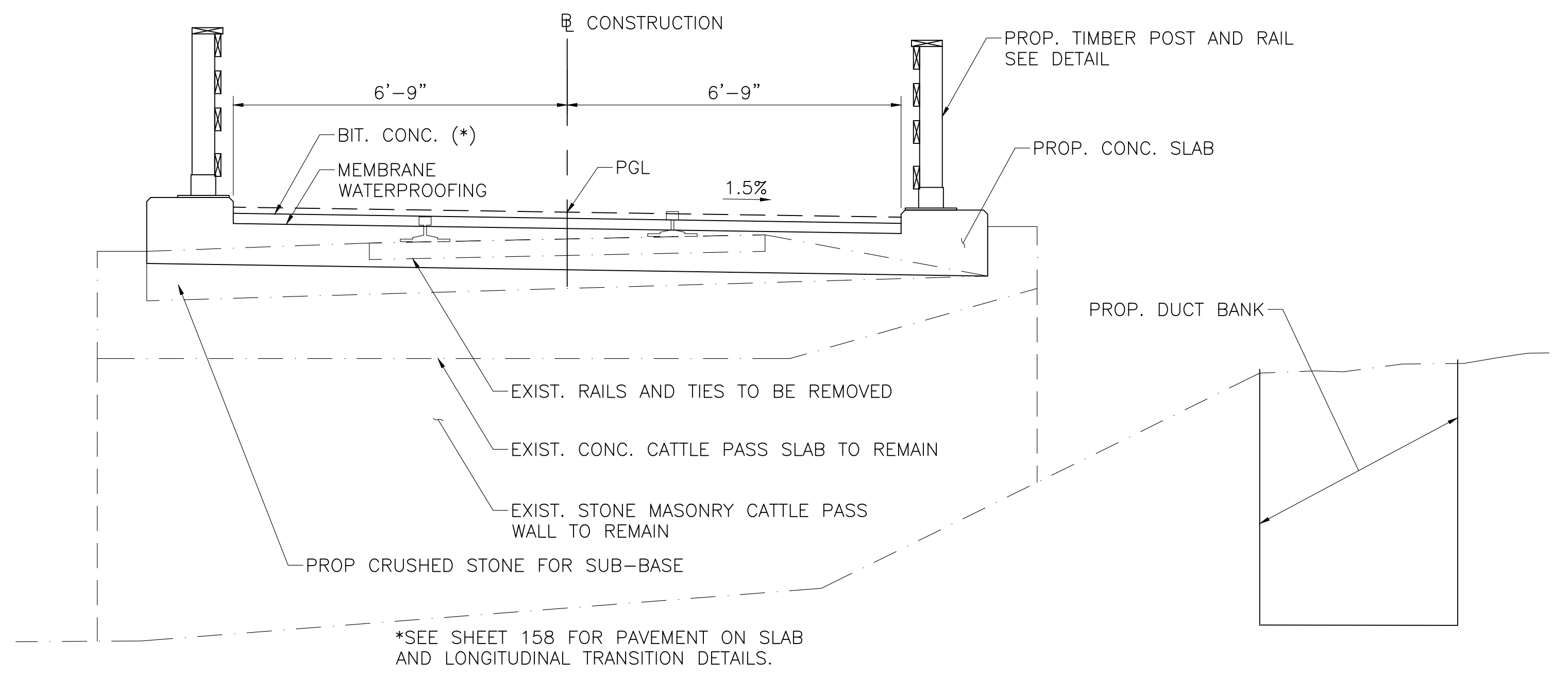
POST BASE DETAIL

SCALE: 1"=0'-6"



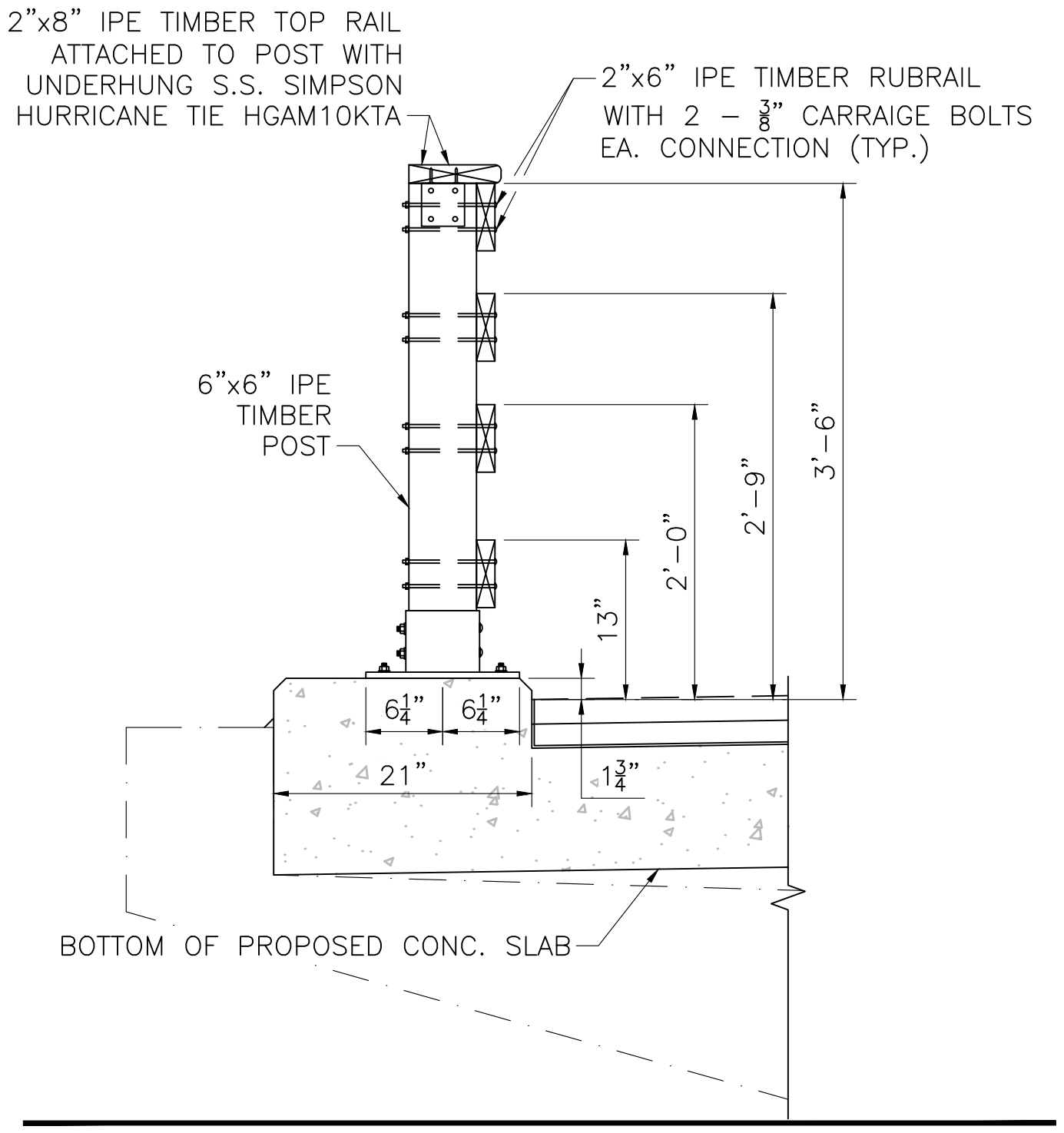
SECTION A

SCALE: 1"=0'-6"



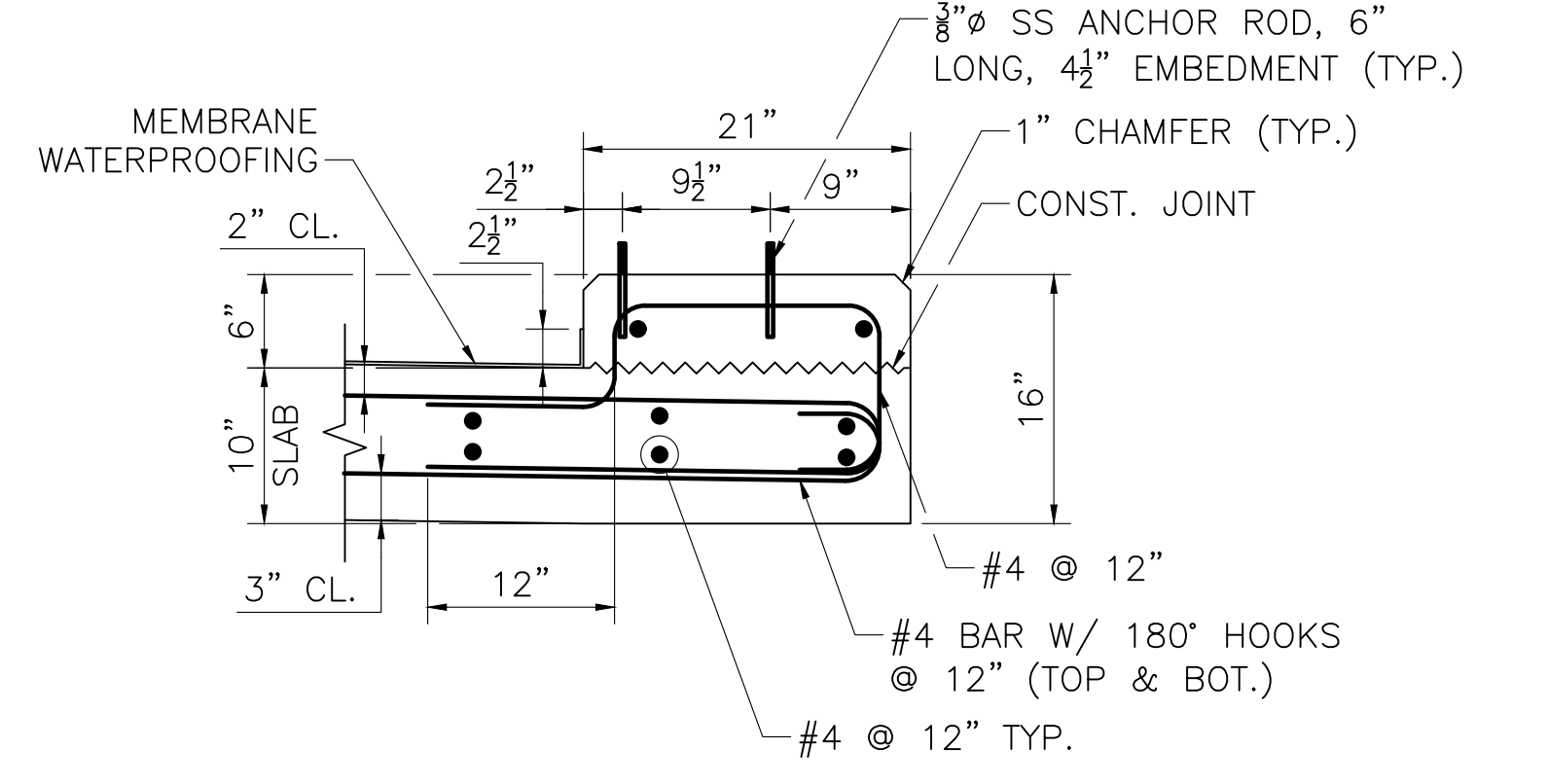
CATTLE PASS SECTION

SCALE: 1/2"=1'-0"



TIMBER RAILING & POST DETAIL

SCALE: 1/2"=1'-0"

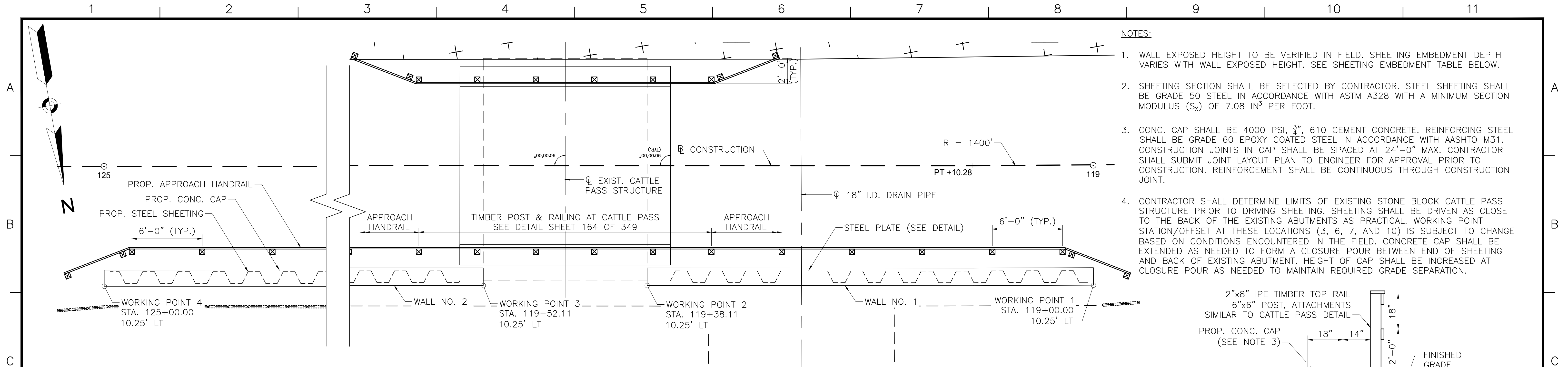


SLAB REINFORCING DETAIL

SCALE: 1/2"=1'-0"



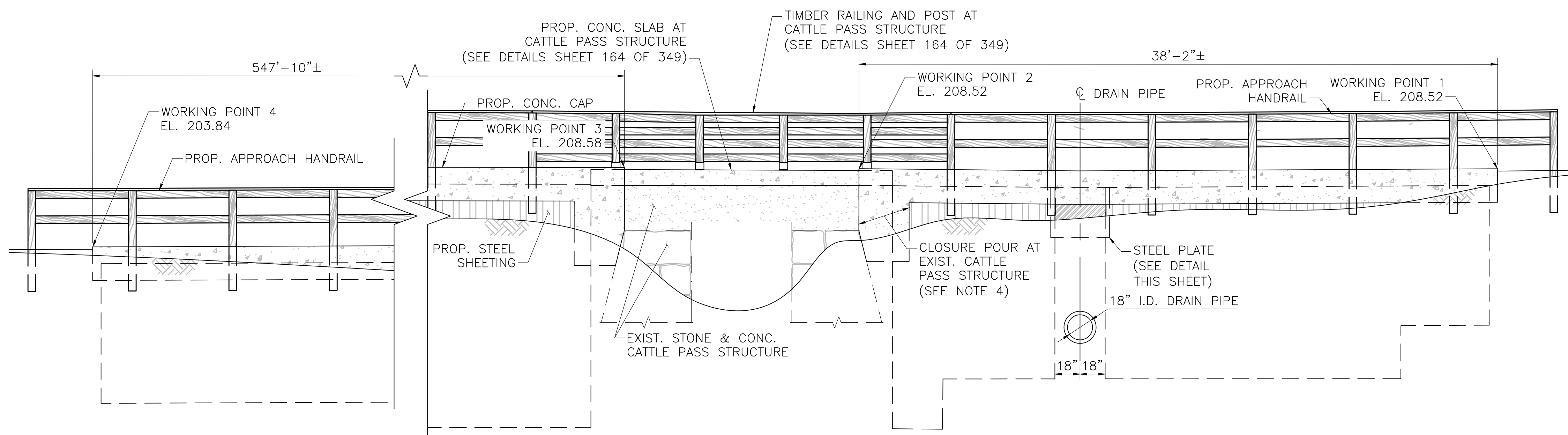
NO.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH, & SUDBURY MASSACHUSETTS				
CONSTRUCTION DETAILS				
PLAN 164 OF 349				
SCALE: unless noted VARIES	DATE DEC 2021	DRAWN AMS	CHECKED SBK	APPR. KGK
				DRAWING NO. REV.



- NOTES:**
1. WALL EXPOSED HEIGHT TO BE VERIFIED IN FIELD. SHEETING EMBEDMENT DEPTH VARIES WITH WALL EXPOSED HEIGHT. SEE SHEETING EMBEDMENT TABLE BELOW.
 2. SHEETING SECTION SHALL BE SELECTED BY CONTRACTOR. STEEL SHEETING SHALL BE GRADE 50 STEEL IN ACCORDANCE WITH ASTM A328 WITH A MINIMUM SECTION MODULUS (S_x) OF 7.08 IN³ PER FOOT.
 3. CONC. CAP SHALL BE 4000 PSI, 3/4", 610 CEMENT CONCRETE. REINFORCING STEEL SHALL BE GRADE 60 EPOXY COATED STEEL IN ACCORDANCE WITH AASHTO M31. CONSTRUCTION JOINTS IN CAP SHALL BE SPACED AT 24'-0" MAX. CONTRACTOR SHALL SUBMIT JOINT LAYOUT PLAN TO ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION. REINFORCEMENT SHALL BE CONTINUOUS THROUGH CONSTRUCTION JOINT.
 4. CONTRACTOR SHALL DETERMINE LIMITS OF EXISTING STONE BLOCK CATTLE PASS STRUCTURE PRIOR TO DRIVING SHEETING. SHEETING SHALL BE DRIVEN AS CLOSE TO THE BACK OF THE EXISTING ABUTMENTS AS PRACTICAL. WORKING POINT STATION/OFFSET AT THESE LOCATIONS (3, 6, 7, AND 10) IS SUBJECT TO CHANGE BASED ON CONDITIONS ENCOUNTERED IN THE FIELD. CONCRETE CAP SHALL BE EXTENDED AS NEEDED TO FORM A CLOSURE POUR BETWEEN END OF SHEETING AND BACK OF EXISTING ABUTMENT. HEIGHT OF CAP SHALL BE INCREASED AT CLOSURE POUR AS NEEDED TO MAINTAIN REQUIRED GRADE SEPARATION.

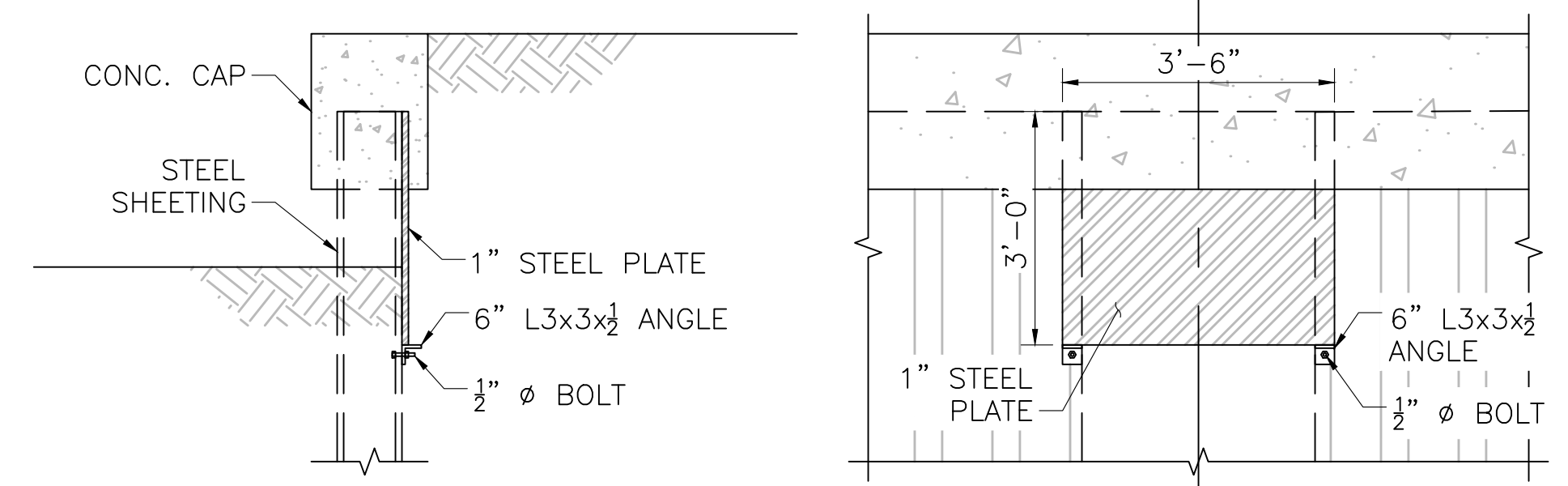
WALL 1 & 2 SHEETING PLAN (AT CATTLE PASS)

SCALE: 3/4"=1'-0"



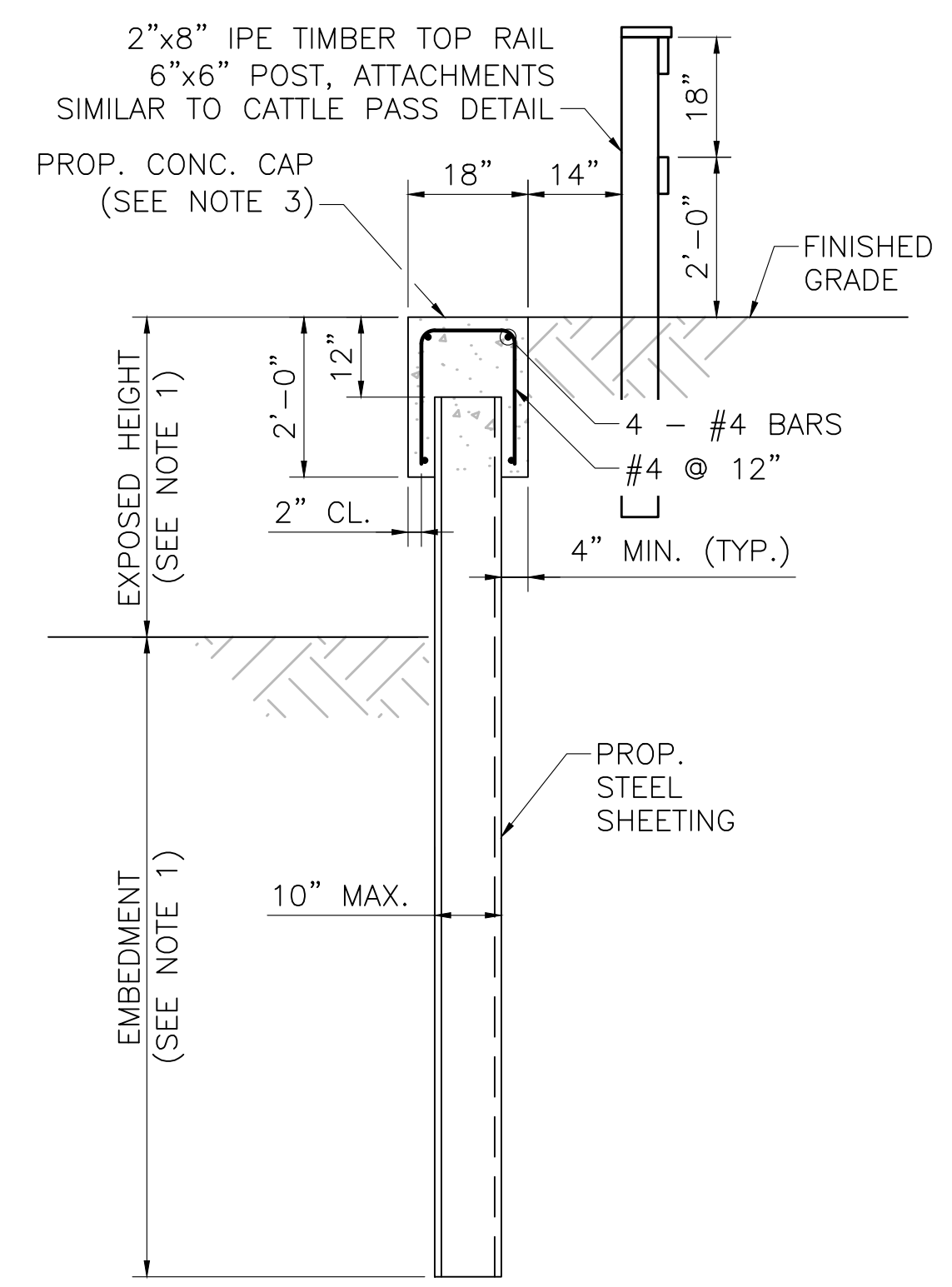
WALL 1 & 2 ELEVATION (AT CATTLE PASS)

SCALE: 3/4"=1'-0"



STEEL PLATE DETAIL

SCALE: 3/4"=1'-0"



TYPICAL SHEETING SECTION

SCALE: 3/4"=1'-0"

SHEETING EMBEDMENT TABLE

EXPOSED HEIGHT	EMBEDMENT
2'-0" (MAX.)	7'-4" (MIN.)
3'-0" (MAX.)	9'-5" (MIN.)
4'-0" (MAX.)	11'-6" (MIN.)
5'-0" (MAX.)	13'-7" (MIN.)
6'-0" (MAX.)	15'-7" (MIN.)
7'-0" (MAX.)	17'-7" (MIN.)

N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH, & SUDBURY MASSACHUSETTS				
CONSTRUCTION DETAILS				
PLAN 165 OF 349				
SCALE: unless noted VARIES	DATE: DEC 2021	DRAWN: AMS	C'H'K D.: SBK	APPR.: KGK
DRAWING NO.				REV.



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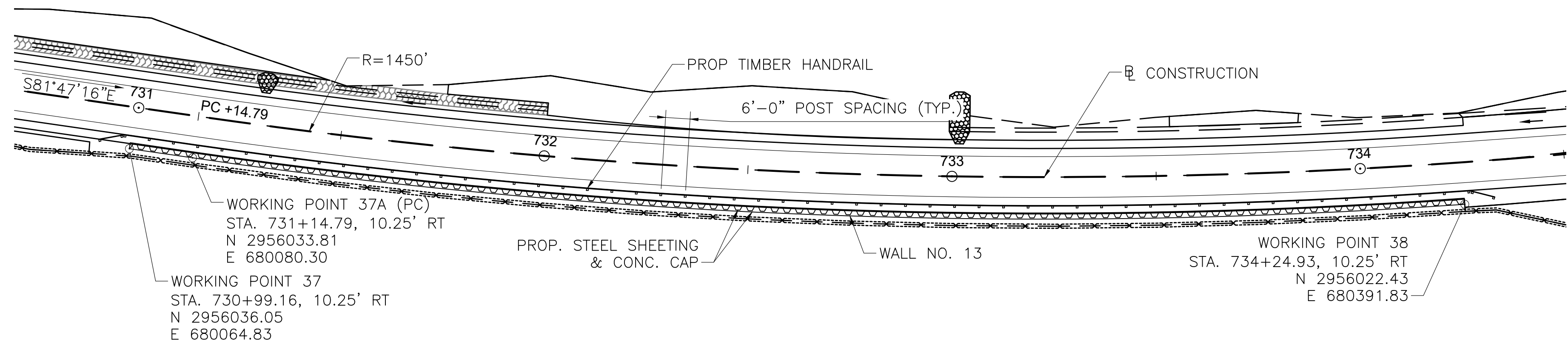
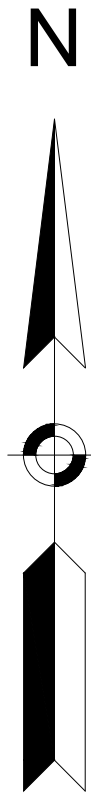
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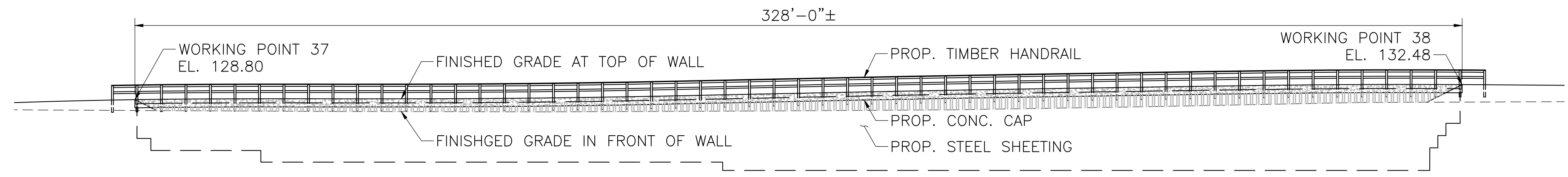
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WALL 13 SHEETING PLAN

SCALE: 1"=20'-0"



WALL 13 ELEVATION

SCALE: 1/4"=1'-0"

NOTES:

1. WALL EXPOSED HEIGHT TO BE VERIFIED IN FIELD. SHEETING EMBEDMENT DEPTH VARIES WITH WALL EXPOSED HEIGHT. SEE TYPICAL SHEETING SECTION AND SHEETING EMBEDMENT TABLE SHEET 165 OF 349.
2. SHEETING SECTION SHALL BE SELECTED BY CONTRACTOR. STEEL SHEETING SHALL BE GRADE 50 STEEL IN ACCORDANCE WITH ASTM A328 WITH A MINIMUM SECTION MODULUS (S_x) OF 7.08 IN³ PER FOOT.
3. CONC. CAP SHALL BE 4000 PSI, 3/4", 610 CEMENT CONCRETE. REINFORCING STEEL SHALL BE GRADE 60 EPOXY COATED STEEL IN ACCORDANCE WITH AASHTO M31. CONSTRUCTION JOINTS IN CAP SHALL BE SPACED AT 24'-0" MAX. CONTRACTOR SHALL SUBMIT JOINT LAYOUT PLAN TO ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION. REINFORCEMENT SHALL BE CONTINUOUS THROUGH CONSTRUCTION

A JOINT.

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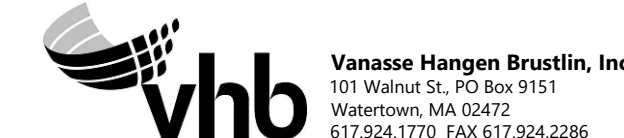
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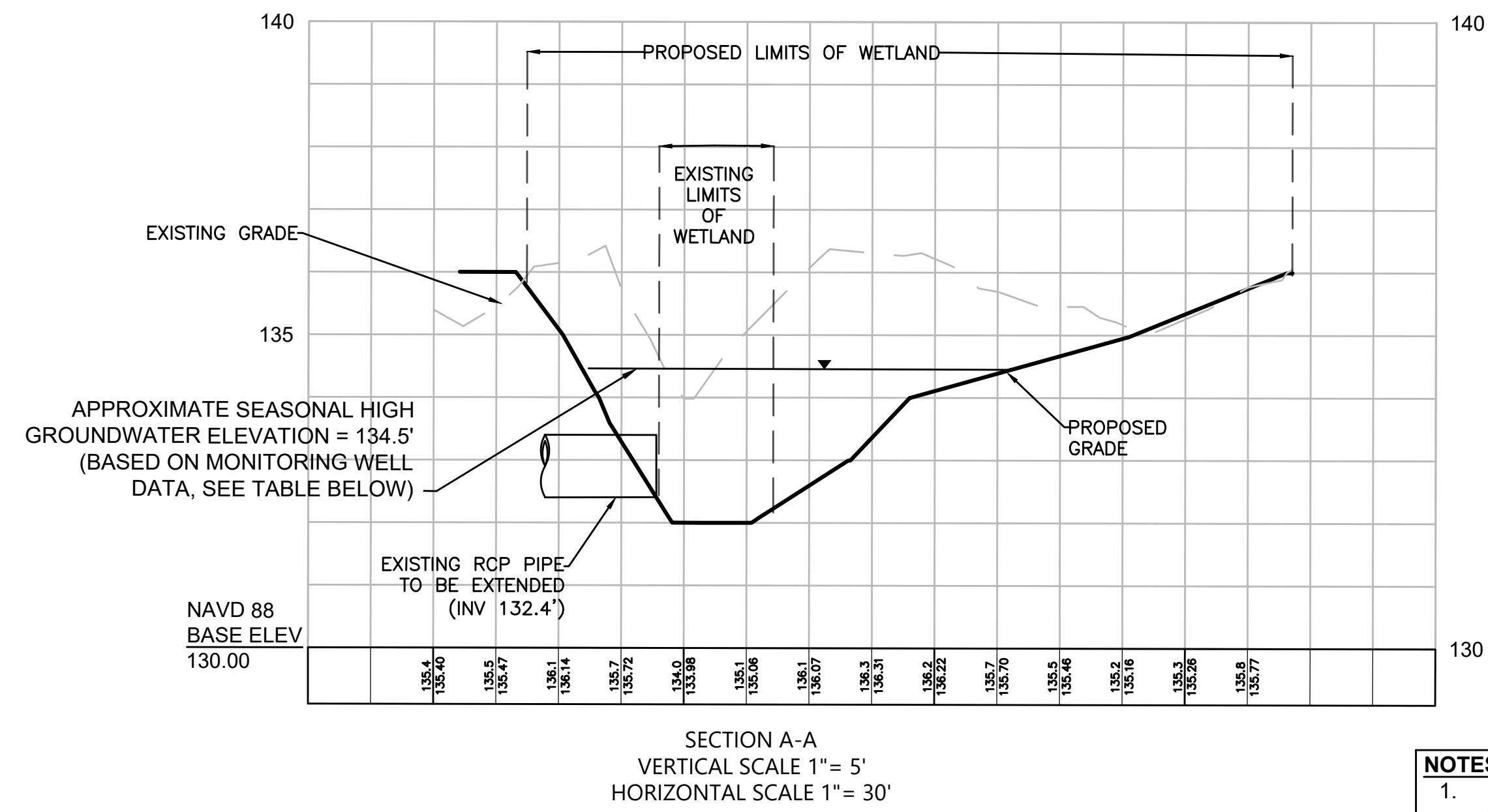
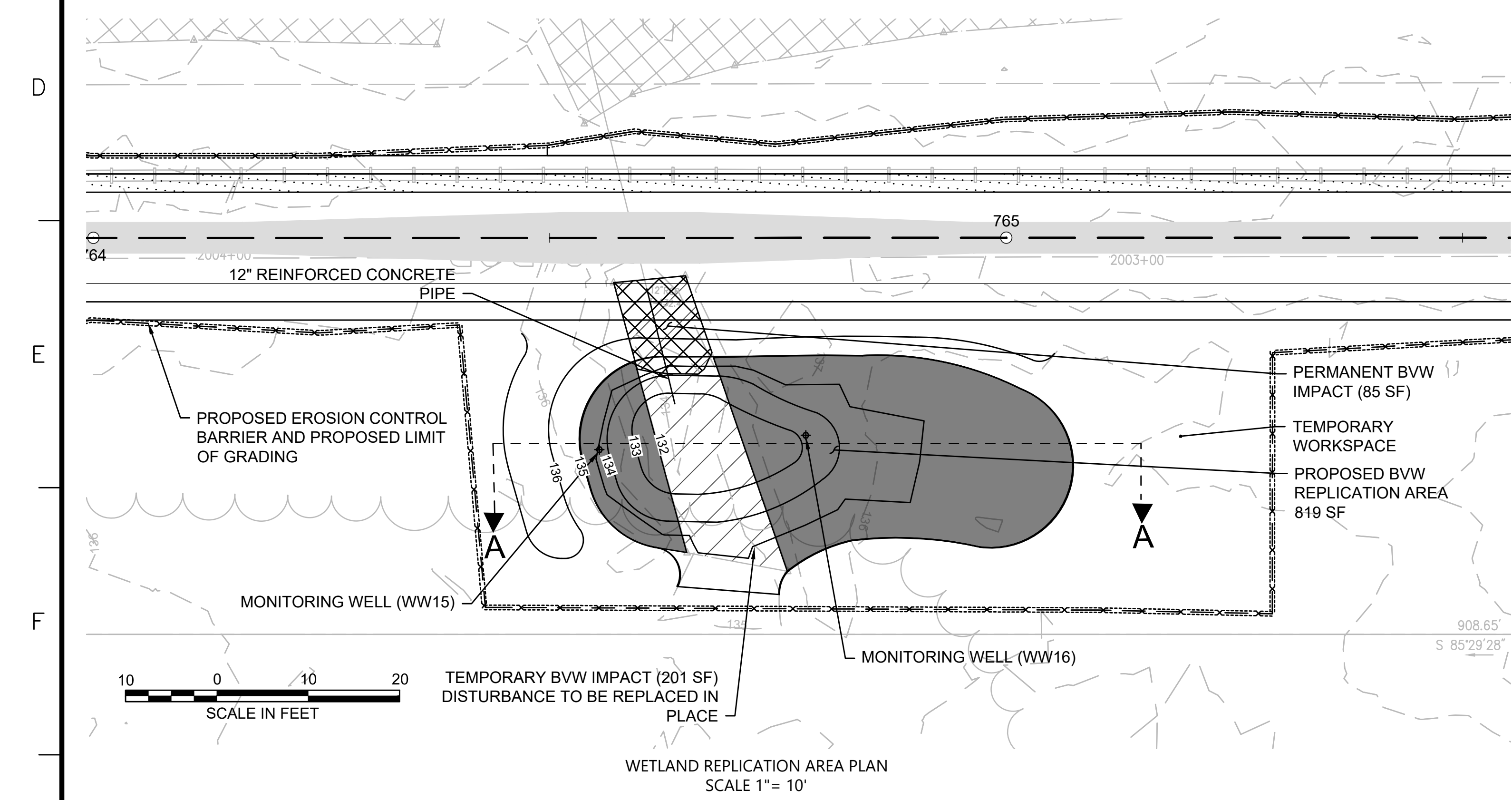
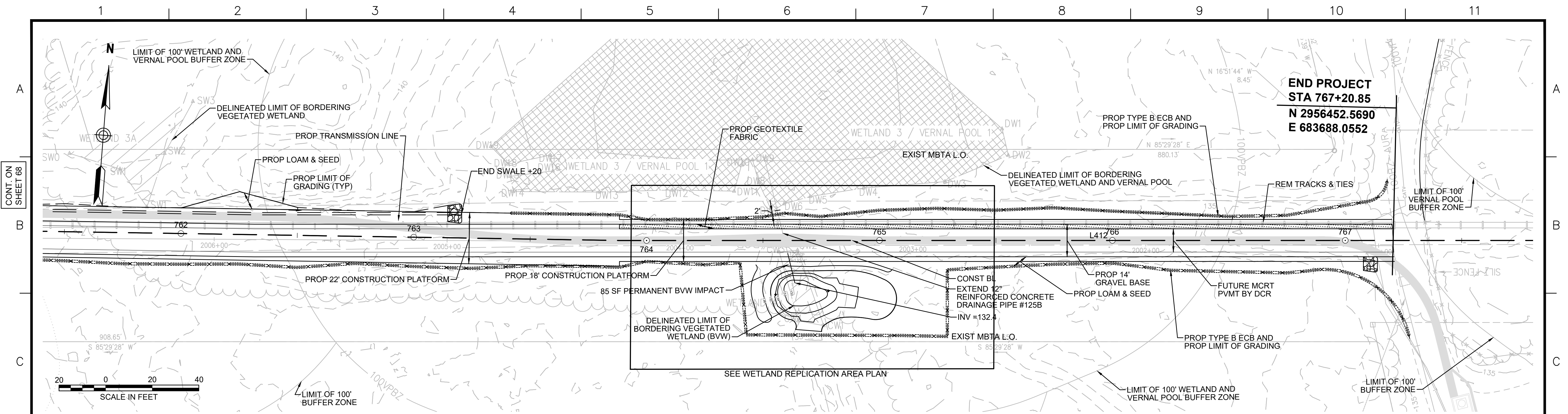
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N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH, & SUDBURY MASSACHUSETTS				
CONSTRUCTION DETAILS				
PLAN 166 OF 349				
SCALE: unless noted VARIES	DATE DEC 2021	DRAWN AMS	CHECKED SBK	APPROVED KGK
DRAWING NO.				REV.



GROUNDWATER DEPTH (FT)		
DATE	WW15*	WW16*
12/5/2018	1.50	1.46
1/10/2019	1.55	1.58
2/12/2019	1.60	N/A
3/27/2019	1.56	1.55
4/18/2019	1.57	1.54
4/25/2019	1.48	1.46
5/23/2019	1.58	1.62

*WW15 AND WW16 LOCATED AT APPROXIMATELY ELEV 136'

- NOTES:**
1. WETLAND BOUNDARIES SHOWN HEREIN ARE THE SAME AS THOSE SHOWN ON HUDSON AND SUDBURY ANRAD PLANS (2018).
 2. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 12" GRAVEL BORROW WITHIN LIMITS SHOWN.

Vanasse Hangen Brustlin, Inc.
101 Walnut St., PO Box 9151
Watertown, MA 02472
617.924.1770 FAX 617.924.2286

N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
WETLAND REPLICATION GRADING PLAN
PLAN 167 OF 349

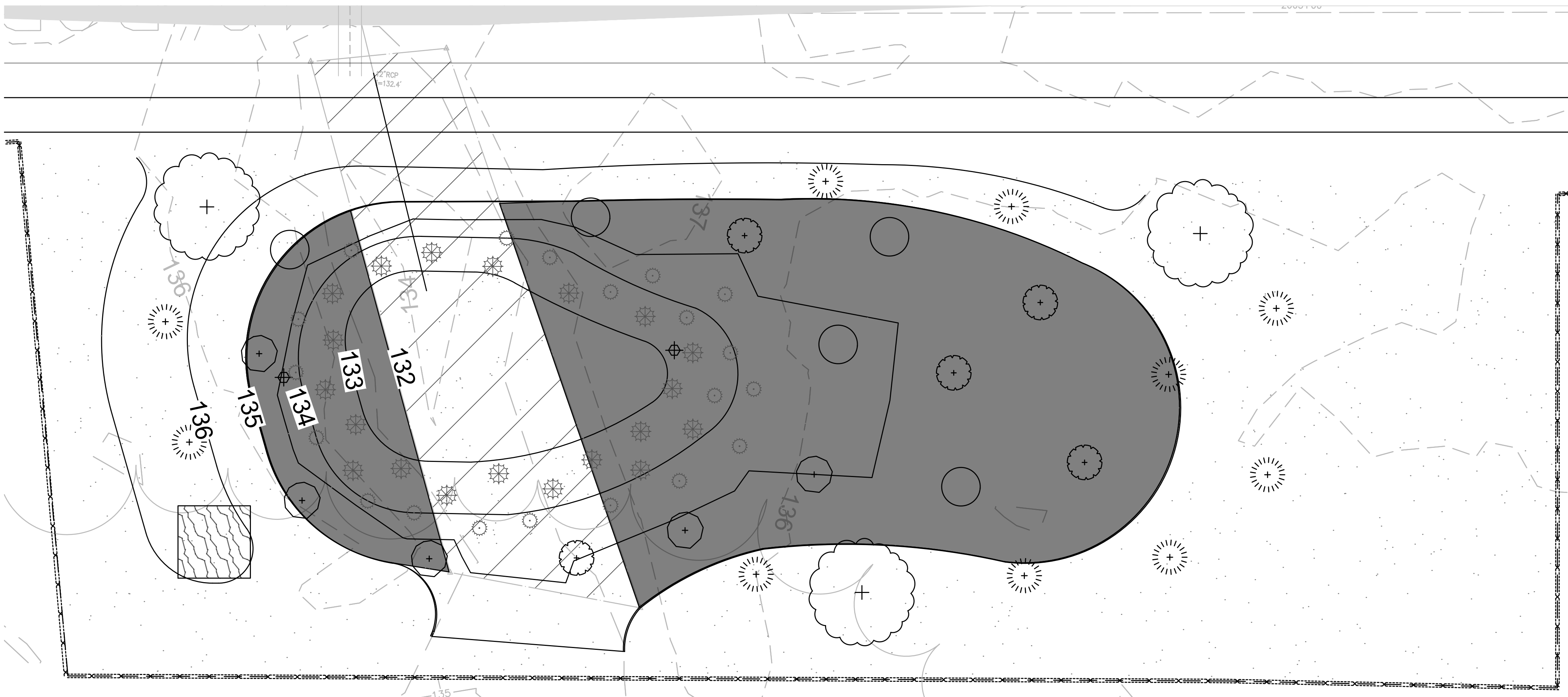
SCALE: unless noted 1"=20'	DATE	DRAWN	CHK'D.	APPR.	DRAWING NO.	REV.
	DEC 2021	MBB	EJM	MAC		

CONT. ON SHEET 68

LEGEND



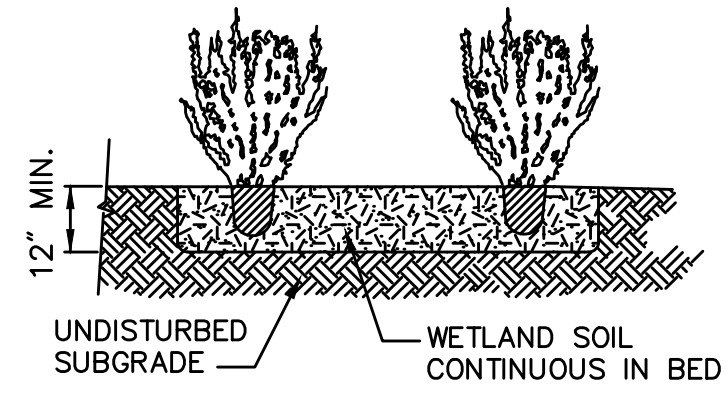
CONT. ON SHEET 68



WETLAND REPLICATION PLANTING PLAN
SCALE 1" = 4'

Specimen	Wetland Status	Plant Type	Plant Size	Quantity	Density/Spacing
Basin Embankment:					
buttonbush (<i>Cephalanthus occidentalis</i>)	OBL	Shrub	18-24 inches	5	6-8 ft. on center
arrow arum (<i>Peltandra virginica</i>)	OBL	Herbaceous	2" plug	20	2-3 ft. on center
swamp rose	OBL	Shrub	18-24 inches	5	6 ft. on center
giant bur-reed (<i>Sparganium eurycarpum</i>)	OBL	Herbaceous	2" plug	20	2-3 ft. on center
silky dogwood (<i>Swida amomum</i>)	FACW	Shrub	18-24 inches	5	6 ft. on center
Wetland seed mix ¹	--	Herbaceous	--		18 lb./ac
Surrounding Buffer Zone:					
red maple (<i>Acer rubrum</i>)	FAC	Tree	1-2" caliper	3	15 ft. on center
sweet pepperbush (<i>Clethra alnifolia</i>)	FAC	Shrub	18-24 inches	10	6 ft. on center
Wetland seed mix ¹	--	Herbaceous	--		18 lb./ac

¹Wetland seed mix: "New England Wetmix" from New England Wetland Plants, Inc. or similar. Typical species: fox sedge (*Carex vulpinoidea*), sallow sedge (*Carex lurida*), broom sedge (*Carex scoparia*), sensitive fern (*Onoclea sensibilis*), blue vervain (*Verbena hastata*), hop sedge (*Carex lupulina*), dark-green bulrush (*Scirpus atrovirens*), nodding bur-marigold (*Bidens cernua*), bristly sedge (*Carex comosa*), fringed sedge (*Carex crinita*), tall mannagrass (*Glyceria grandis*), wool-grass (*Scirpus cyperinus*), soft rush (*Juncus effusus*), spotted Joe-Pye-weed (*Eutrochium maculatum*), boneset (*Eupatorium perfoliatum*), American water-plantain (*Alisma subcordatum*), New England aster (*Symphotrichum novae-angliae*), rattlesnake mannagrass (*Glyceria canadensis*), purple-stem aster (*Symphotrichum puniceum*), soft-stemmed bulrush (*Schoenoplectus tabernaemontani*), blueflag (*Iris versicolor*), swamp milkweed (*Asclepias incarnata*), and Allegheny monkey-flower (*Mimulus ringens*).



Shrub Planting 6/08
N.T.S. Source: WHB LD_691

LEGEND

	WETLAND SEED MIX		BUTTONBUSH		GIANT BUR-REED
	REPLICATION AREA/WETLAND SEED MIX		SWEET PEPPERBUSH		ARROW ARUM
	RED MAPLE		SILKY DOGWOOD		TREE SNAG
	SWAMP ROSE				

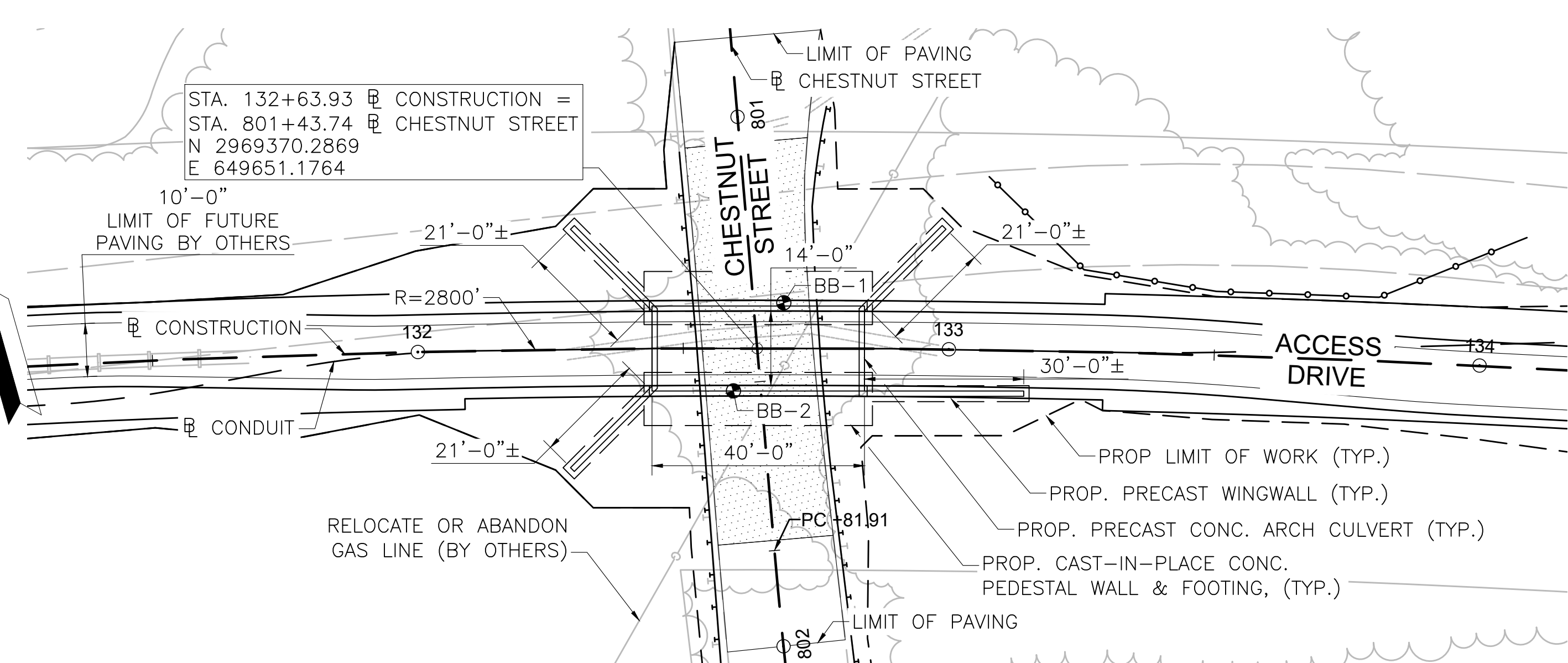
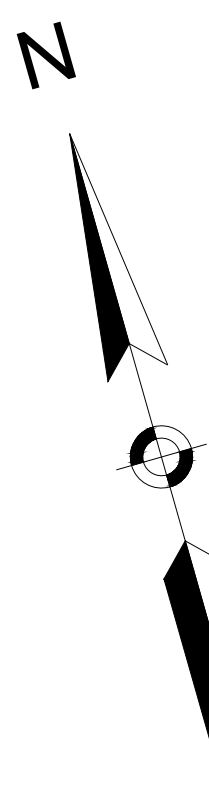
- NOTES:**
- CONSTRUCTION OF THE WETLAND REPLICATION AREA WILL INCLUDE GRADING, SOILS PLACEMENT, AND PLANTING, AND ALL WORK SHALL BE PERFORMED UNDER THE SUPERVISION OF AN EXPERIENCED WETLAND SCIENTIST. ALL PLANTINGS SHALL BE PERFORMED IN SPRING (APRIL 15 TO JUNE 15) OR FALL (SEPTEMBER 1 TO OCTOBER 31).
 - AN EROSION CONTROL BARRIER WILL CONSIST OF SYNCOPATED SILT FENCE (TYPE B EROSION CONTROL BARRIER) AND SHALL BE INSTALLED ALONG THE ENTIRE PERIMETER OF THE REPLICATION AREA EXCEPT AT THE UPGRADIENT EDGE TO ALLOW ACCESS TO MACHINERY.
 - ALL AREAS TO BE PLANTED AS PART OF THE REPLICATION AREA SHALL BE CLEARED AND GRUBBED (AS NEEDED) AND SHALL BE EXCAVATED TO A DEPTH OF 12 INCHES BELOW THE FINAL DESIGN ELEVATIONS. MINOR MODIFICATIONS TO THE GRADING PLAN MAY BE MADE IN THE FIELD BY THE SUPERVISING WETLAND SCIENTIST IN RESPONSE TO HYDROLOGIC CONDITIONS. THE SUPERVISING WETLAND SCIENTIST WILL INSPECT THE FINAL SUB-GRADE OF THE REPLICATION AREA TO ENSURE THAT THE PROPER HYDROLOGY HAS BEEN ESTABLISHED.
 - THE TWELVE-INCH DBH SNAG THAT WILL BE REMOVED DURING CONSTRUCTION WILL BE REINSTALLED WITH A SIGNIFICANT PORTION OF THE ROOT MASS INTACT. THE SNAG WILL BE FIRMLY ENTRENCHED TO PREVENT FUTURE WINDTHROW.
 - THE REPLICATION AREA WILL THEN BE BACKFILLED WITH PREPARED WETLAND SOIL. PREPARED SOILS SHALL CONSIST OF A 1:1 MIXTURE (OR EQUAL VOLUMES) OF ORGANIC AND MINERAL MATERIALS (IN THE SILT LOAM, LOAM, OR LOAMY SAND RANGE) TO INCREASE THE ORGANIC CARBON CONTENT TO BETWEEN 4 AND 12 PERCENT BY WEIGHT. CLEAN LEAF OR COMMERCIALY AVAILABLE COMPOST IS THE PREFERRED AMENDMENT TO ACHIEVE THIS STANDARD, ALTHOUGH OTHER MATERIALS MAY BE USED IF APPROVED BY THE SUPERVISING WETLAND SCIENTIST. AREAS TO BE PLANTED AS BVW SHOULD BE GRADED IN A SLIGHTLY IRREGULAR FASHION TO ALLOW FOR SMALL HUMMOCKS AND HOLLOWES APPROXIMATELY 6 INCHES ABOVE AND BELOW GRADE TO CREATE A PIT AND MOUND TOPOGRAPHY.
 - FALLEN LOGS, BRANCHES, AND OTHER NATURAL MATERIALS SHALL BE DISTRIBUTED IN THE REPLICATION AREA TO PROVIDE ADDITIONAL WILDLIFE HABITAT. THESE MATERIALS SHALL COVER 2 TO 4 PERCENT OF THE REPLICATION AREA'S SURFACE AND SHALL NOT INCLUDE ANY KNOWN INVASIVE SPECIES. WOODY MATERIAL SHOULD VARY IN SIZE AND DEGREE OF DECOMPOSITION.
 - ONCE WETLAND SOILS AND ANY NATURAL MATERIALS HAVE BEEN PLACED, ANY EQUIPMENT OR VEHICLES EXERTING A GROUND PRESSURE OF 3 PSI OR GREATER SHALL NO LONGER BE ALLOWED IN THE REPLICATION AREA TO AVOID COMPACTING THE WETLAND SOILS.
 - PLANTINGS WILL BE INSTALLED ONCE THE ABOVE TASKS HAVE BEEN COMPLETED. ALL SHRUB PLANTING WORK SHALL BE PERFORMED BY HAND USING HAND TOOLS ONLY. THE SPECIES, SIZE, AND QUANTITY OF PLANTINGS SHALL FOLLOW THE PLANTING SCHEDULE. ONLY PLANT MATERIALS NATIVE TO THE REGION SHALL BE USED. IN THE EVENT THAT PLANT SUBSTITUTIONS ARE NECESSARY, THE SUPERVISING WETLAND SCIENTIST OR ANOTHER QUALIFIED WETLAND SCIENTIST OR BOTANIST SHALL BE CONSULTED. ALL WOODY PLANT STOCK SHALL EITHER BE BARE-ROOT OR CONTAINER-GROWN. PLANTINGS SHALL BE INSTALLED IN ACCORDANCE WITH THE DESIGN SPECIFIED ON THE PLAN, ALTHOUGH THE SUPERVISING WETLAND SCIENTIST MAY DIRECT THE PROJECT CONTRACTOR TO RELOCATE PLANTINGS BASED ON FIELD CONDITIONS.
 - FOLLOWING SHRUB PLANTINGS, THE AREA WILL BE SEEDED WITH A NATIVE WETLAND SEED MIX AS SPECIFIED IN THE PLANTING SCHEDULE OR A SIMILAR MIX. THE SEED MIX SHALL BE APPLIED AT A RATE AND IN A MANNER ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS.
 - FOLLOWING COMPLETION OF PLANTING AND SEEDING, A LINE OF EROSION CONTROLS WILL BE INSTALLED ALONG THE UPGRADIENT EDGE OF THE REPLICATION AREA. ALL EROSION CONTROLS AROUND THE REPLICATION AREA SHALL REMAIN IN PLACE UNTIL VEGETATION IS WELL-ESTABLISHED AND SOILS HAVE STABILIZED. EROSION CONTROLS WILL REMAIN IN PLACE UNTIL REMOVAL HAS BEEN APPROVED BY THE ENVIRONMENTAL MONITOR.
 - THE REPLICATION AREA WILL BE MONITORED FOR TWO FULL GROWING SEASONS AFTER PLANTING. THE AREA WILL BE INSPECTED TWICE PER YEAR TO ASSESS WHETHER THE AREA HAS ACHIEVED 75 PERCENT COVER BY REGIONAL INDIGENOUS WETLAND SPECIES. CONSIDERATION WILL BE GIVEN TO OTHER NATIVE WETLAND PLANT SPECIES THAT BECOME ESTABLISHED IN THE REPLICATION.
 - INVASIVE SPECIES WITHIN THE REPLICATION AREA SHALL BE REMOVED BY HAND FOR TWO GROWING SEASONS AFTER PLANTING. IF NECESSARY ANY AREAS WHERE INVASIVE SPECIES HAVE BEEN REMOVED WILL BE RESEDED WITH A SUITABLE WETLAND SEED MIX.
 - SHRUBS AND SEED MIX ARE SUBJECT TO CHANGE OR SUBSTITUTION PENDING AVAILABILITY AND ACTUAL SITE CONDITIONS.

NO.				DESCRIPTION				BY DATE		APPR.					
EVERSOURCE															
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT															
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS															
WETLAND REPLICATION PLANTING PLAN															
PLAN 168 OF 349															
SCALE: unless noted 1"=4'			DATE			DRAWN			CHK'D.			APPR.			
			DEC 2021			MBB			EJM			MAC			
DRAWING NO.				REV.											

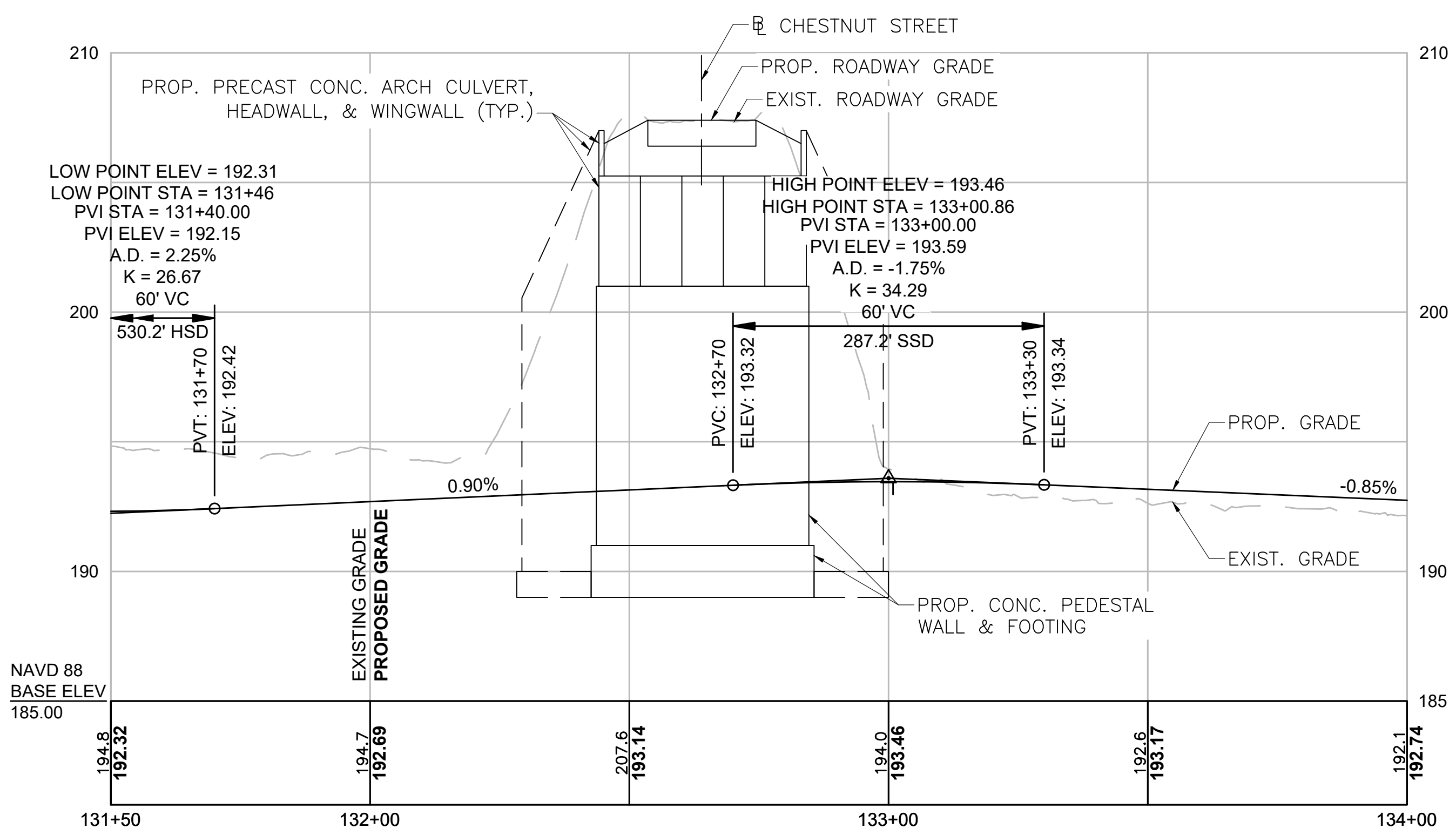
Vanasse Hangen Brustlin, Inc.
101 Walnut St., PO Box 9151
Waltham, MA 02457
617.924.1770 FAX 617.924.2286

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KEY PLAN
SCALE: 1"=20'



PROFILE - ACCESS DRIVE
HORIZONTAL SCALE: 1"=20'
VERTICAL SCALE: 1/4"=1'-0"

GENERAL NOTES: CHESTNUT STREET

DESIGN:
IN ACCORDANCE WITH 2020 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR HL-93 LOADING.

CONCRETE:
ALL CAST IN PLACE CONCRETE SHALL BE 4000 PSI $\frac{3}{4}$ ", 610 CEMENT CONCRETE.
ALL PRECAST CONCRETE SHALL BE 5000 PSI, $\frac{3}{4}$ ", 705 CEMENT CONCRETE.

REINFORCEMENT:
REINFORCING STEEL SHALL BE EPOXY COATED AND SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M31 GRADE 60.

SUBSTRUCTURE DESIGN:
PROPOSED BRIDGE SUBSTRUCTURES INCLUDING FOOTINGS AND PEDESTAL WALLS ARE SHOWN AS PRELIMINARY ONLY. FINAL FOOTING DESIGN BY CULVERT MANUFACTURER. SEE GEOTECH RECOMMENDATIONS.

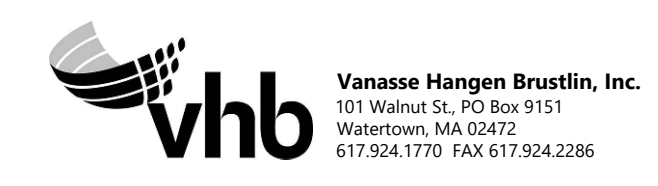
SURVEY AND EXISTING CONDITIONS:
THE EXISTING CONDITIONS SHOWN ON THIS PLAN WERE DEVELOPED FROM A COMBINED EFFORT OF AERIAL PHOTOGRAMMETRIC MAPPING BY EASTERN TOPOGRAPHICS, INC., BASED ON AERIAL PHOTOGRAPHS TAKEN ON FEBRUARY 22, 2013, AND AUGMENTED BY AN ON-THE-GROUND SURVEY PERFORMED BY VHB DURING 2015 AND 2017. THE HORIZONTAL CONTROL IS BASED ON THE MASSACHUSETTS MAINLAND STATE PLANE COORDINATE SYSTEM AND THE NATIONAL GEODETIC SURVEY (NAD83). ALL ELEVATION IS US FEET, REFERENCED TO THE NORTH AMERICA VERTICAL DATUM OF 1988 (NAVD88).

DEMOLITION AND CONSTRUCTION:
ALL EXISTING MATERIALS REMOVED AND NOT REUSED AND ALL WASTE MATERIALS SHALL BECOME THE PROPERTY OF THE CONTRACTOR. CONTAMINATED WASTE SHALL BE DISPOSED OF OFF SITE AT AN APPROVED FACILITY.
ALL UNSUITABLE MATERIALS SHALL BE REMOVED WITHIN THE LIMITS OF THE FOUNDATIONS OF THE STRUCTURE, AS DIRECTED BY THE RESIDENT ENGINEER. BACKFILL WITH GRAVEL BORROW FOR BRIDGE FOUNDATIONS.
BURIED EXISTING BRIDGE COMPONENTS MAY BE ENCOUNTERED DURING EXCAVATION AND SHALL BE REMOVED AS UNCLASSIFIED EXCAVATION. TEMPORARY SHEETING MAY BE REQUIRED AT THE OPTION OF THE CONTRACTOR.
BACKFILL AROUND PROPOSED SUBSTRUCTURE SHALL BE GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES.
THE CONTRACTOR SHALL TAKE THE PROPER PRECAUTIONS TO ENSURE THE STABILITY AND SAFE PERFORMANCE OF ALL STRUCTURAL ELEMENTS DURING DEMOLITION AND CONSTRUCTION.
IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ADEQUATE SHIELDING DURING DEMOLITION AND CONSTRUCTION TO ADEQUATELY PROTECT WORKERS.
ANY DAMAGE TO REMAINING EXISTING COMPONENTS THAT IS CAUSED BY THE CONTRACTOR'S ACTIVITY SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR, AT NO ADDITIONAL EXPENSE.

HEADWALL TEXT:
THE TEXT "MASS CENTRAL RAIL TRAIL" SHALL BE EMBEDDED INTO THE OUTSIDE FACE OF BOTH CONCRETE HEADWALLS OF THE CULVERT STRUCTURE, CENTERED BOTH WAYS. THE SIZE AND STYLE OF THE TEXT SHALL MATCH THAT OF THE STRUCTURE CARRYING CONANT STREET OVER THE MCRT IN WESTON.

CHESTNUT STREET:
SEE SHEET 95 FOR PROFILE OF CHESTNUT STREET.

N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
BRIDGE NO. H-25-011 (CHESTNUT STREET) - KEY PLAN & PROFILE				
PLAN 69 OF 349				
SCALE: unless noted H: 1"=20' V: 1"=4'	DATE DEC 2021	DRAWN AMS	CHK'D. SBK	APPR. KGK
DRAWING NO.	REV.			



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BORING BB-1
 STATION: 132+68.90
 OFFSET: 8.52' LT
 N: 2969377.1
 E: 649658.3
 GROUND ELEVATION: 207.0'
 (SEE NOTE 10)

BORING BB-1 (CONTINUED)

BORING BB-1 (CONTINUED)

BORING NOTES:

1. LOCATION OF BORINGS SHOWN ON THE KEY PLAN THUS: .
2. BORINGS ARE TAKEN FOR PURPOSE OF DESIGN AND SHOW CONDITIONS AT BORING POINTS ONLY, BUT DO NOT NECESSARILY SHOW THE NATURE OF THE MATERIALS TO BE ENCOUNTERED DURING CONSTRUCTION.
3. WATER LEVELS SHOWN ON THE BORING LOGS ARE ASSUMED BASED ON BORINGS PERFORMED FOR THE EXISTING BRIDGE, AS NOTED IN THE GEOTECHNICAL REPORT DATED SEPTEMBER 2018.
4. FIGURES IN COLUMNS INDICATE NUMBER OF BLOWS REQUIRED TO DRIVE A 1 1/8" I.D. SPLIT SPOON SAMPLER 6" USING A 140 POUND WEIGHT FALLING 30".
5. ALL BORINGS WERE MADE IN JUNE OF 2018
6. BORINGS WERE MADE BY GEOLOGIC EARTH EXPLORATION, INC., 7 SHERWOOD DR., NORFOLK, MA 02056.
7. THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988 IS USED THROUGHOUT.
8. BORING LOCATIONS AND ELEVATIONS ARE APPROXIMATE ONLY.

LGCI		BORING LOG		B-BB-1	
Latham Geotechnical Consulting, Inc.		PAGE 1 OF 3			
CLIENT: Vanasse Hangen Brustlin, Inc.		PROJECT NAME: Proposed Chestnut Street Bridge			
LGCI PROJECT NUMBER: 1753-01		PROJECT LOCATION: Hudson, Massachusetts			
DATE STARTED: 6/11/18		DATE COMPLETED: 6/13/18		DRILLING SUBCONTRACTOR: Geosearch, Inc.	
BORING LOCATION: Northern edge of proposed Chestnut St. bridge		DRILLING FOREMAN: Justin Emma / Kenny Bylund		DRILLING METHOD: HSA 4-1/4" I.D. to 14 feet then 3-inch casing	
COORDINATES: NA		DRILL RIG TYPE/MODEL: CME 55 Truck Rig		HAMMER TYPE: Automatic	
SURFACE EL.: 207 ft. NAVD 88 (see note 1)		TOTAL DEPTH: 62 ft.		HAMMER WEIGHT: 140 lb.	
WEATHER: 70s / Sunny				HAMMER DROP: 30 in.	
GROUNDWATER LEVELS:				SPLIT SPOON DIA.: 1.375 in. I.D., 2 in. O.D.	
DURING DRILLING: -				CORE BARREL SIZE: NA	
AT END OF DRILLING: 27.0 ft. / El. 180.0 ft.				LOGGED BY: TS	
OTHER: -				CHECKED BY: NB	

Depth (ft.)	El. (ft.)	Sample Number	Blow Counts (N Value)	Pen./Rec. (in.)	Strata	Material Description
0.6	205.0	G1			Asphalt	Drilled through 7 inches of asphalt
3.5	201.5	G2			Fill	G1 - Well Graded SAND with Silt and Gravel (SW-SM), fine to coarse, 5-10% fines, 35-40% fine to coarse subangular gravel, trace organic fines, trace asphalt, light brown, moist
5.5	199.5	G3			Fill	G2 - Poorly Graded SAND with Silt (SP-SM), fine, trace medium, 5-10% fines, 10-15% fine subangular gravel, trace organic fines, trace wood, brown, moist
6	199.0	S1	6-8-6-9 (14)	24/12	Fill	G3 - Silty SAND (SM), fine to medium, trace coarse, ~15% fines, ~10% fine subangular gravel, brown, moist
8	197.0	S2	8-6-7-5 (13)	24/9	Fill	REMARK 1: Vacuum exploration to 6 feet on 6/8/2018. S1 - Poorly Graded SAND with Silt and Gravel (SP-SM), fine to medium, ~10% fines, ~20% fine to coarse subangular gravel, trace asphalt, brown, moist
10	195.0	S3	5-6-6-5 (12)	24/7	Fill	S2 - Poorly Graded SAND with Silt (SP-SM), fine to medium, ~10% fines, 10-15% fine to coarse subangular gravel, trace asphalt, brown, moist
12	193.0				Boulder	S3 - Poorly Graded SAND with Silt (SP-SM), fine to medium, trace coarse, 10-15% fines, ~10% fine subangular gravel, trace organic fines, brown to orange, moist
13	192.0				Boulder	REMARK 2: Heavy drill chatter from 13 to 18 feet due to possible boulder; could not sample.
18	188.0	S4	20-10-13-12 (23)	24/13	Fill	S4 - Well Graded SAND (SW), fine to coarse, ~5% fines, trace fine subangular gravel, brown, moist
20	186.0	S5	8-6-21-28 (27)	24/15	Sand	S5 - Well Graded SAND (SW), fine to coarse, 0-5% fines, ~5% fine subrounded gravel, light brown, moist

GENERAL NOTES:
 1. The ground surface elevation was interpolated to the nearest foot from a plan titled: "Proposed Conditions Plan for Notice of Intent Submittal, Sudbury-Hudson Transmission Reliability Project, Hudson, Massachusetts," prepared by Vanasse Hangen Brustlin, Inc. and dated February 14, 2018.

APPROX. BOTTOM OF FOOTING EL. 188.5

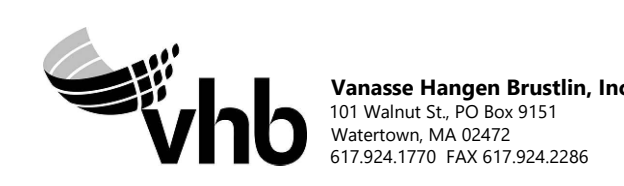
LGCI		BORING LOG		B-BB-1	
Latham Geotechnical Consulting, Inc.		PAGE 2 OF 3			
CLIENT: Vanasse Hangen Brustlin, Inc.		PROJECT NAME: Proposed Chestnut Street Bridge			
LGCI PROJECT NUMBER: 1753-01		PROJECT LOCATION: Hudson, Massachusetts			

Depth (ft.)	El. (ft.)	Sample Number	Blow Counts (N Value)	Pen./Rec. (in.)	Strata	Material Description
26	180.0	S6	43-23-22-22 (45)	24/11		S6 - Poorly Graded SAND with Silt (SP-SM), fine, trace medium to coarse, ~10% fines, trace fine subrounded gravel, light brown, wet
28	178.0	S7	25-25-20-21 (45)	24/12		S7 - Well Graded SAND with Silt (SW-SM), fine to medium, trace coarse, 5-10% fines, light brown, wet
30	176.0	S8	15-17-19-19 (36)	24/15		S8 - Poorly Graded SAND with Silt (SP-SM), fine, trace medium, 5-10% fines, light brown, wet
32	174.0	S9	6-10-16-15 (26)	24/14		S9 - Poorly Graded SAND with Silt (SP-SM), fine, 5-10% fines, light brown, wet
34	172.0					
35	171.0	S10	11-13-15-17 (28)	24/14		S10 - Similar to S9
37	169.0					
40	166.0	S11	14-17-19-19 (36)	24/15		S11 - Similar to S9
42	164.0					
45	161.0	S12	11-16-18-24 (34)	24/16		S12 - Similar to S9
47	159.0					
50	156.0	S13	12-16-23-29 (41)	24/8		S13 - Similar to S9, light brown to gray
52	154.0					
55	151.0	S14	26-34-40-47 (74)	24/16		S14 - Well Graded SAND with Silt (SW-SM), fine to coarse, 5-10% fines, ~5% fine subrounded gravel, light brown to gray, wet
57	149.0					
60	146.0					
62	144.0					

LGCI		BORING LOG		B-BB-1	
Latham Geotechnical Consulting, Inc.		PAGE 3 OF 3			
CLIENT: Vanasse Hangen Brustlin, Inc.		PROJECT NAME: Proposed Chestnut Street Bridge			
LGCI PROJECT NUMBER: 1753-01		PROJECT LOCATION: Hudson, Massachusetts			

Depth (ft.)	El. (ft.)	Sample Number	Blow Counts (N Value)	Pen./Rec. (in.)	Strata	Material Description
62	144.0	S15	16-18-25-25 (43)	24/14	Sand	S15 - 5-10% fines, ~5% fine subrounded gravel, light brown, wet
63	143.0					Bottom of borehole at 62.0 feet. Backfilled borehole with drill cuttings, 5 bags of sand, and 2 bags of cement mix. Ground surface restored with asphalt cold patch.

NO.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH, & SUDBURY MASSACHUSETTS				
BRIDGE H-25-011 (CHESTNUT STREET BRIDGE) BORING LOGS				
PLAN 70 OF 349				
SCALE: unless noted	DATE DRAWN	C'H'K D.	A P P R.	DRAWING NO. REV.
N/A	DEC 2021	AMS	SBK	KGK



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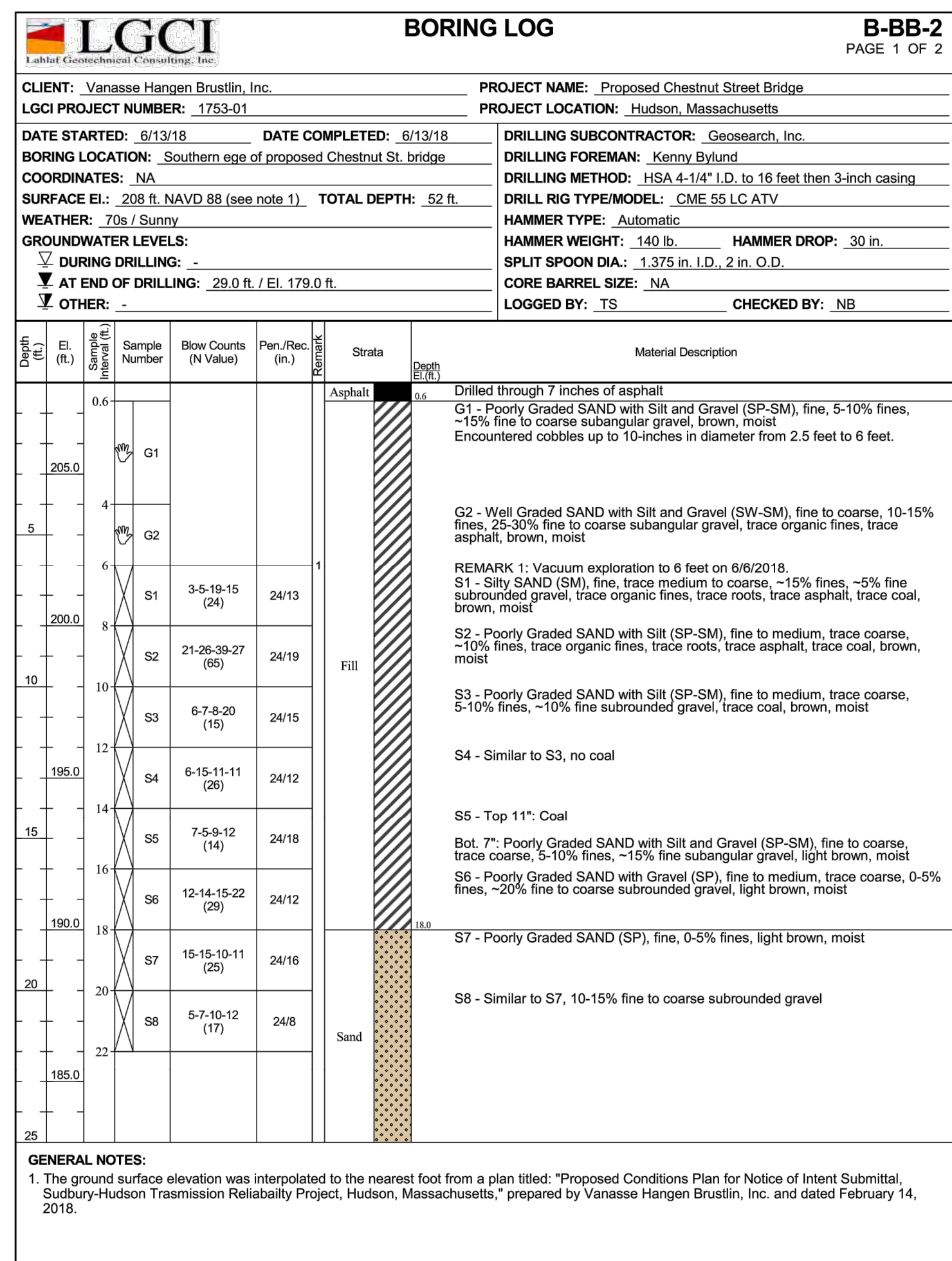
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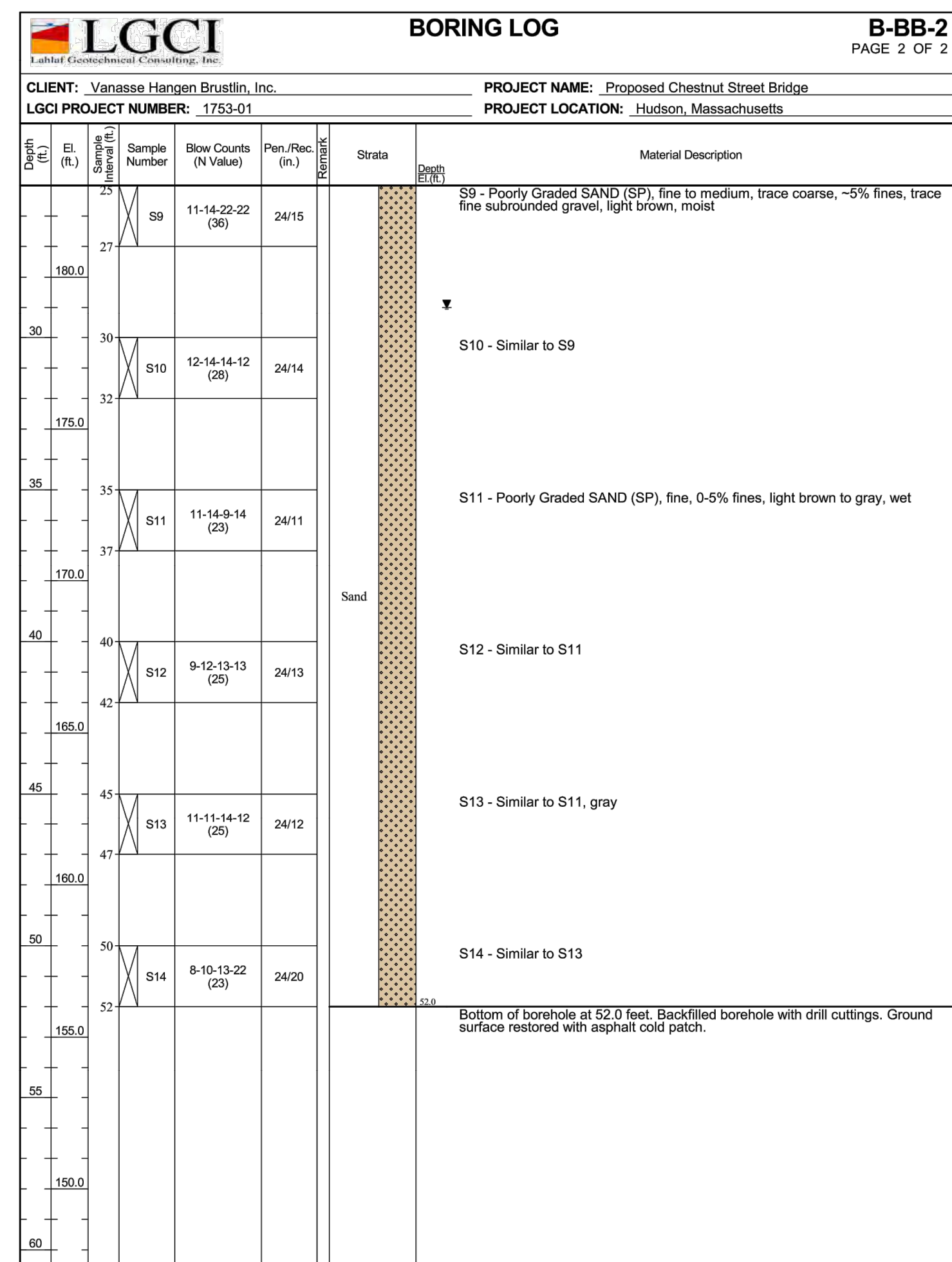
G

BORING BB-2
 STATION: 132+59.41
 OFFSET: 8.06' RT
 N: 2969363.8
 E: 649644.7
 GROUND ELEVATION: 208.0'
 (SEE NOTE 10, SHEET 170 OF 349)

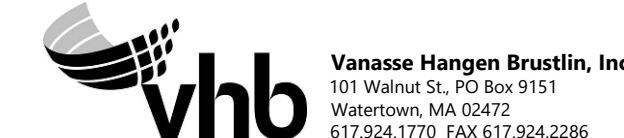
BORING BB-2 (CONTINUED)

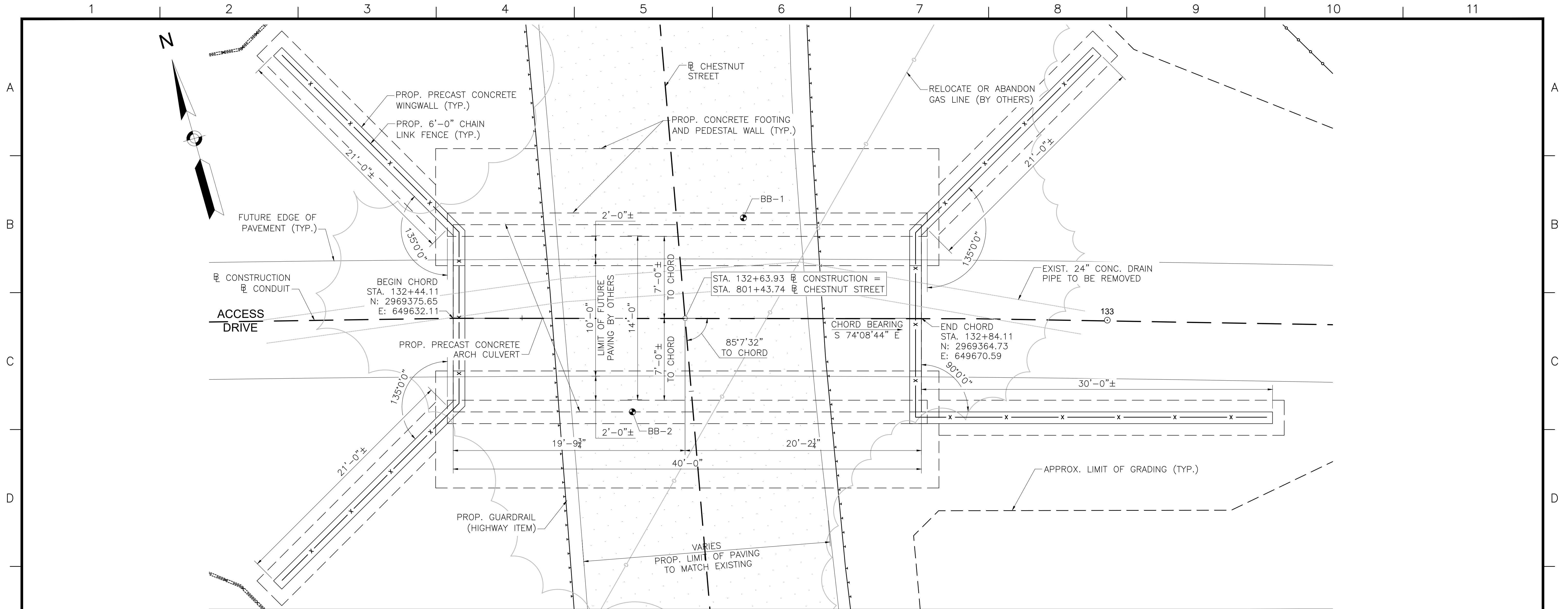


APPROX. BOTTOM OF FOOTING EL. 188.5



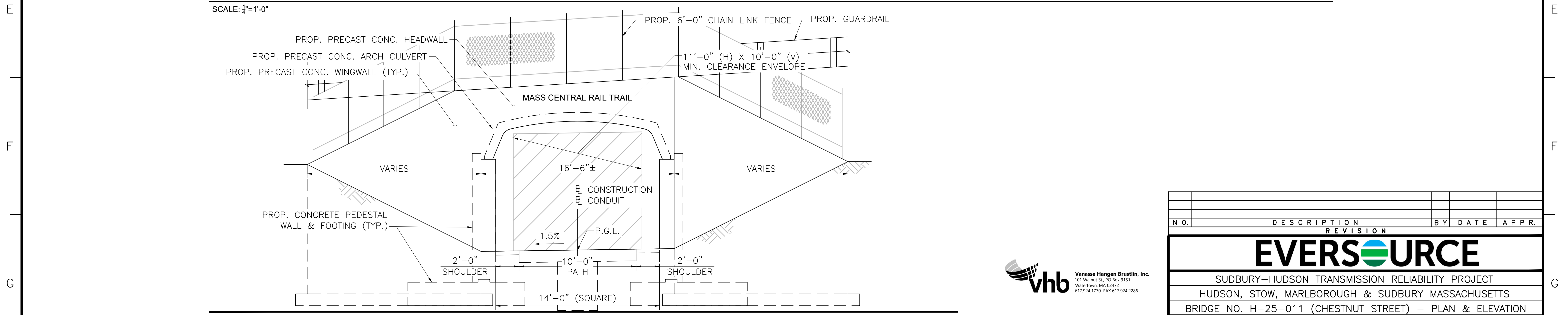
NO.		DESCRIPTION		BY	DATE	APPR.
		REVISION				
EVERSOURCE						
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT						
HUDSON, STOW, MARLBOROUGH, & SUDBURY MASSACHUSETTS						
BRIDGE H-25-011 (CHESTNUT STREET BRIDGE) - BORING LOGS						
PLAN 171 OF 349						
SCALE: unless noted	DATE	DRAWN	CHECKED	APPR.	DRAWING NO.	REV.
N/A	DEC 2021	AMS	SBK	KGK		





CULVERT PLAN

SCALE: 1/4"=1'-0"



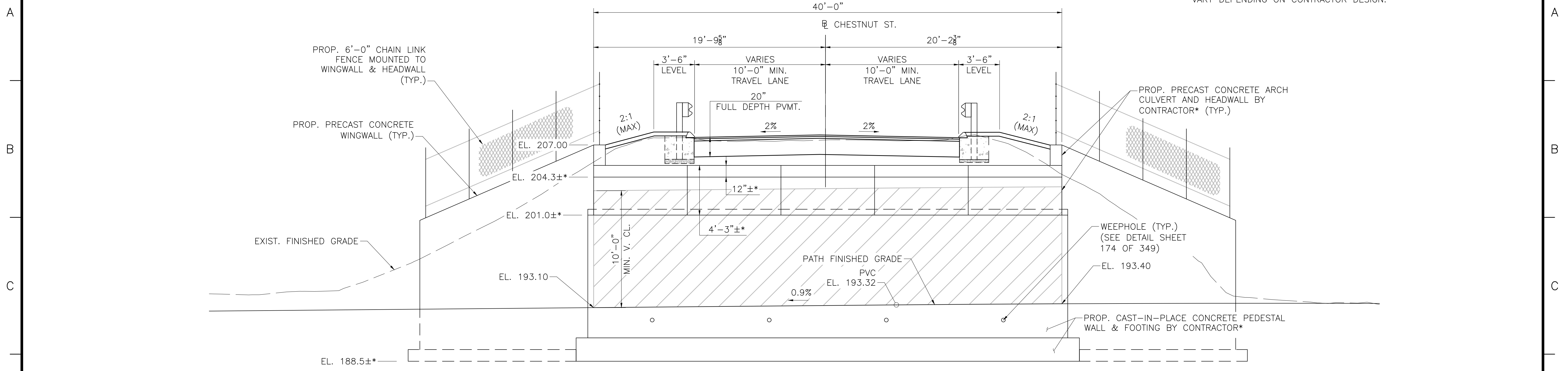
TYPICAL PORTAL ELEVATION

SCALE: 1/4"=1'-0"



N.O.	DESCRIPTION	REVISION	BY	DATE	APPR.
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
BRIDGE NO. H-25-011 (CHESTNUT STREET) - PLAN & ELEVATION					
PLAN 72 OF 349					
SCALE: unless noted 1"=4'	DATE DEC 2021	DRAWN AMS	CHECKED SBK	APPROVED KGK	DRAWING NO. REV.

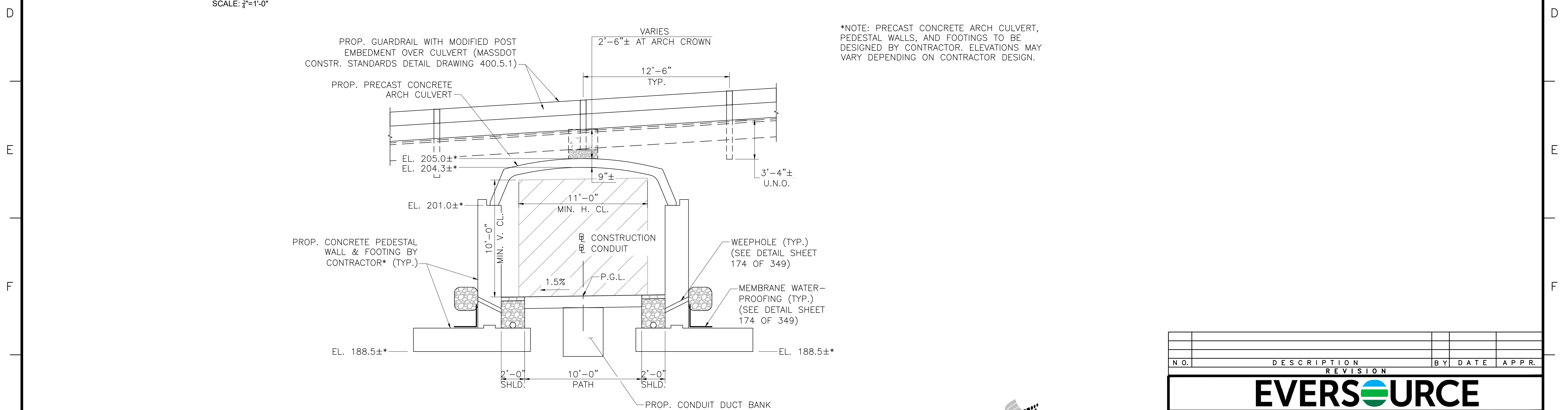
1 2 3 4 5 6 7 8 9 10 11



*NOTE: PRECAST CONCRETE ARCH CULVERT, PEDESTAL WALLS, AND FOOTINGS TO BE DESIGNED BY CONTRACTOR. ELEVATIONS MAY VARY DEPENDING ON CONTRACTOR DESIGN.

CULVERT LONGITUDINAL SECTION

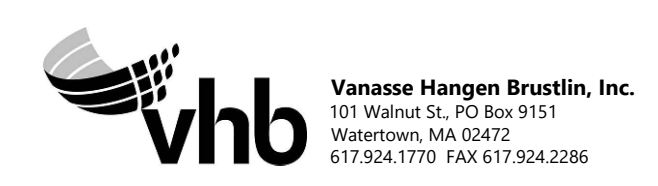
SCALE: 1/4"=1'-0"



*NOTE: PRECAST CONCRETE ARCH CULVERT, PEDESTAL WALLS, AND FOOTINGS TO BE DESIGNED BY CONTRACTOR. ELEVATIONS MAY VARY DEPENDING ON CONTRACTOR DESIGN.

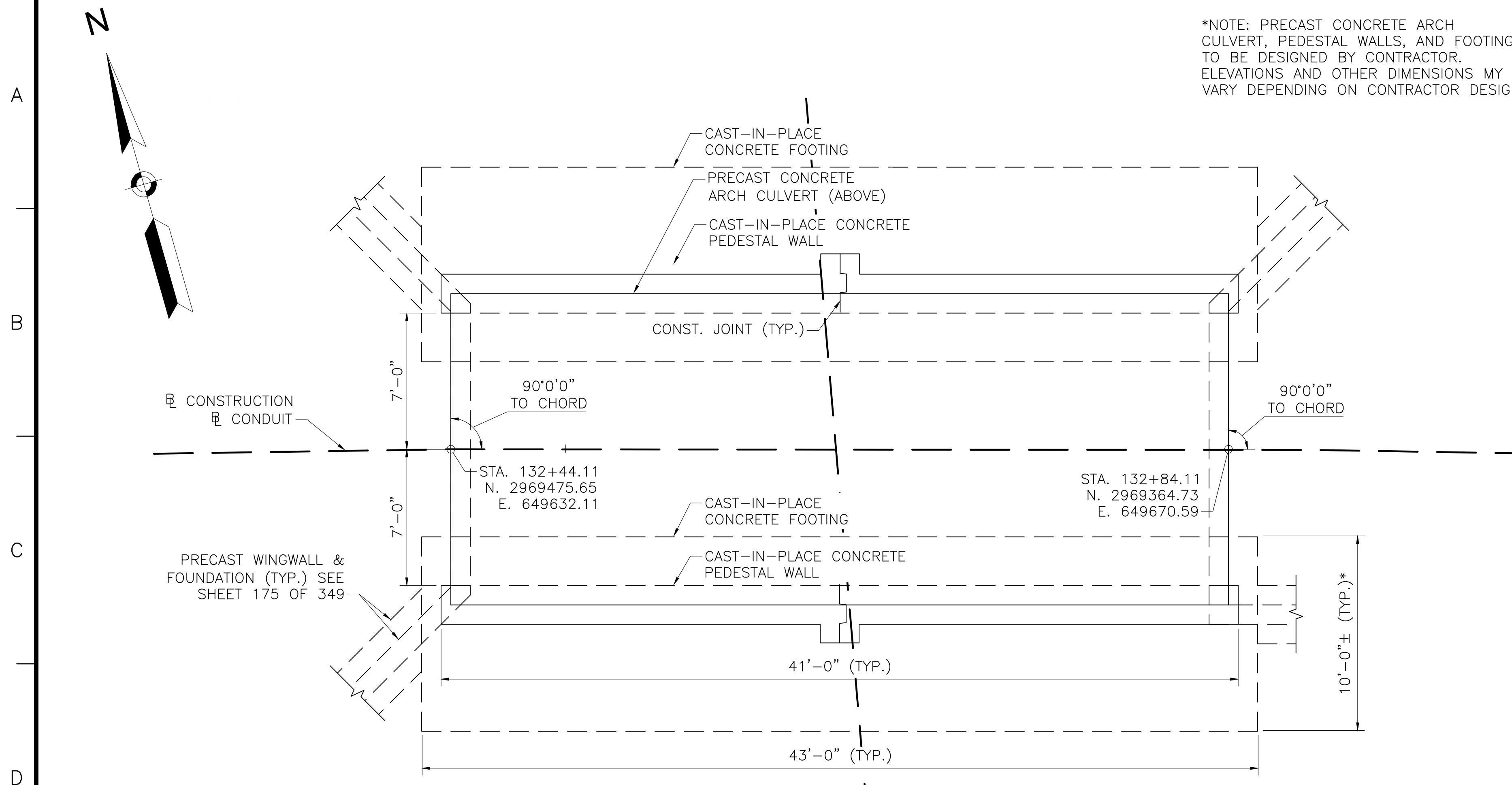
CULVERT TRANSVERSE SECTION

SCALE: 1/4"=1'-0"



N.O.	DESCRIPTION	BY	DATE	APP.R.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
BRIDGE NO. H-25-011 (CHESTNUT STREET) - SECTIONS				
PLAN 73 OF 349				
SCALE: unless noted 1"=4'	DATE DEC 2021	DRAWN AMS	C'H'K D. SBK	APP.R. KGK
	DRAWING NO.	REV.		

1 2 3 4 5 6 7 8 9 10 11



CULVERT FOOTING & PEDESTAL WALL PLAN

SCALE: 1/4"=1'-0"

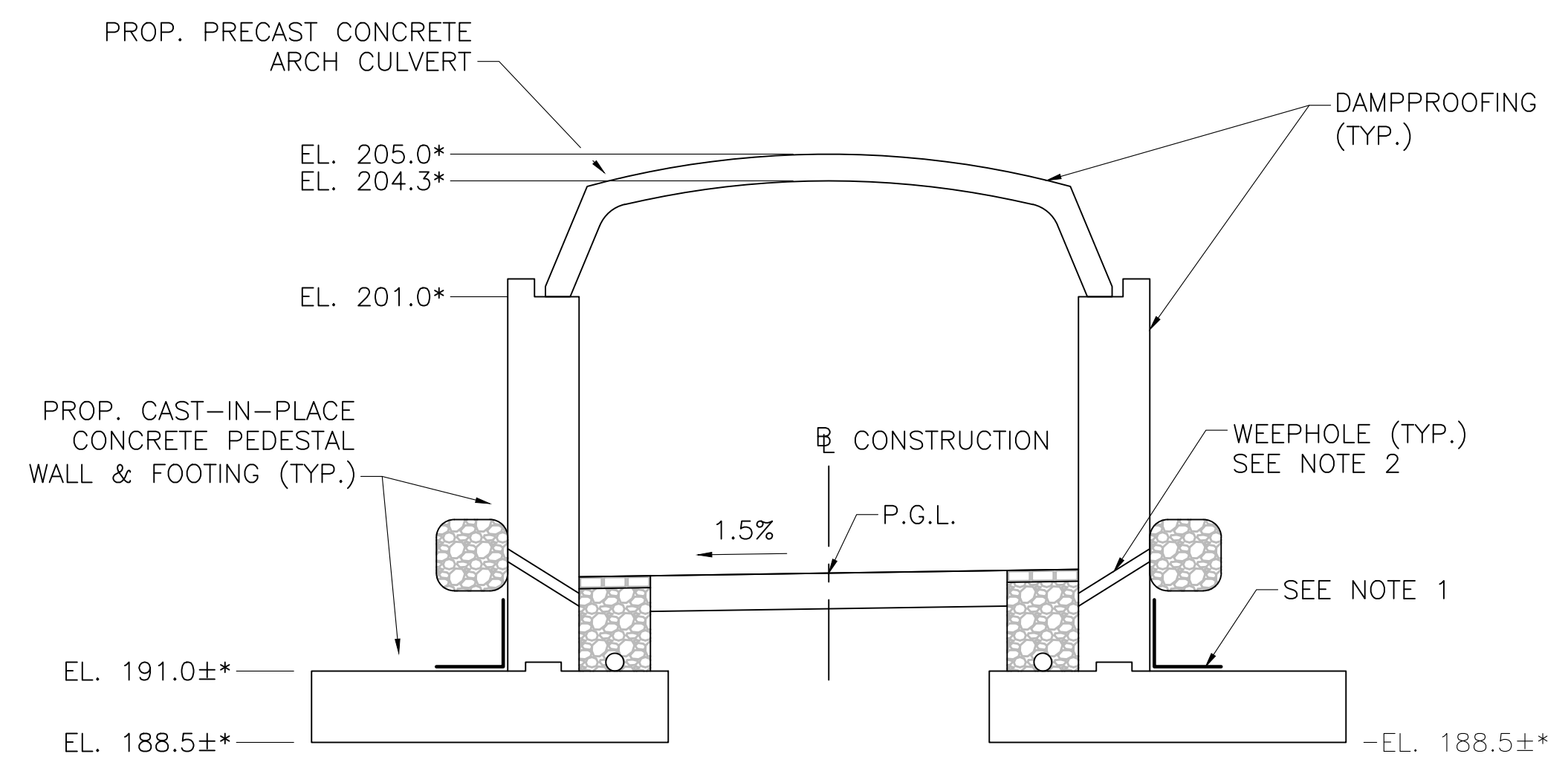
*NOTE: PRECAST CONCRETE ARCH CULVERT, PEDESTAL WALLS, AND FOOTINGS TO BE DESIGNED BY CONTRACTOR. ELEVATIONS AND OTHER DIMENSIONS MY VARY DEPENDING ON CONTRACTOR DESIGN.

NOTES:

- MEMBRANE WATERPROOFING AND 8"x16"x2", 4000 PSI, 3/4" IN, 610 CEMENT CONCRETE BLOCKS LAID IN MORTAR OR OTHER WATERPROOFING PROTECTIVE COURSE, MIN. 2" THICK AS SPECIFIED IN MASSDOT STANDARD SPECIFICATIONS.
- 4" Ø WEEP HOLES 10'-0" O.C. (JUST ABOVE PROTECTIVE COURSE). PROVIDE 1 CUBIC YARD OF CRUSHED STONE AT EACH END OF WEEP HOLE.
- ALL CAST-IN-PLACE CONCRETE SHALL BE 4000 PSI, 3/4" IN, 610 CEMENT CONCRETE. ALL PRECAST CONCRETE SHALL BE 4000 PSI, 3/4" IN, 610 CEMENT CONCRETE.
- THE FACTORED BEARING PRESSURE SHALL BE DETERMINED BY THE CONTRACTOR PER AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

THE FACTORED BEARING RESISTANCE SHALL BE CALCULATED AS A FUNCTION OF THE WIDTH OF THE FOOTING AS DESCRIBED IN THE GEOTECHNICAL REPORT DATED SEPTEMBER 12, 2018. FACTORED BEARING RESISTANCE IS THE PRODUCT OF THE NOMINAL BEARING RESISTANCE AND A RESISTANCE FACTOR OF 0.45.

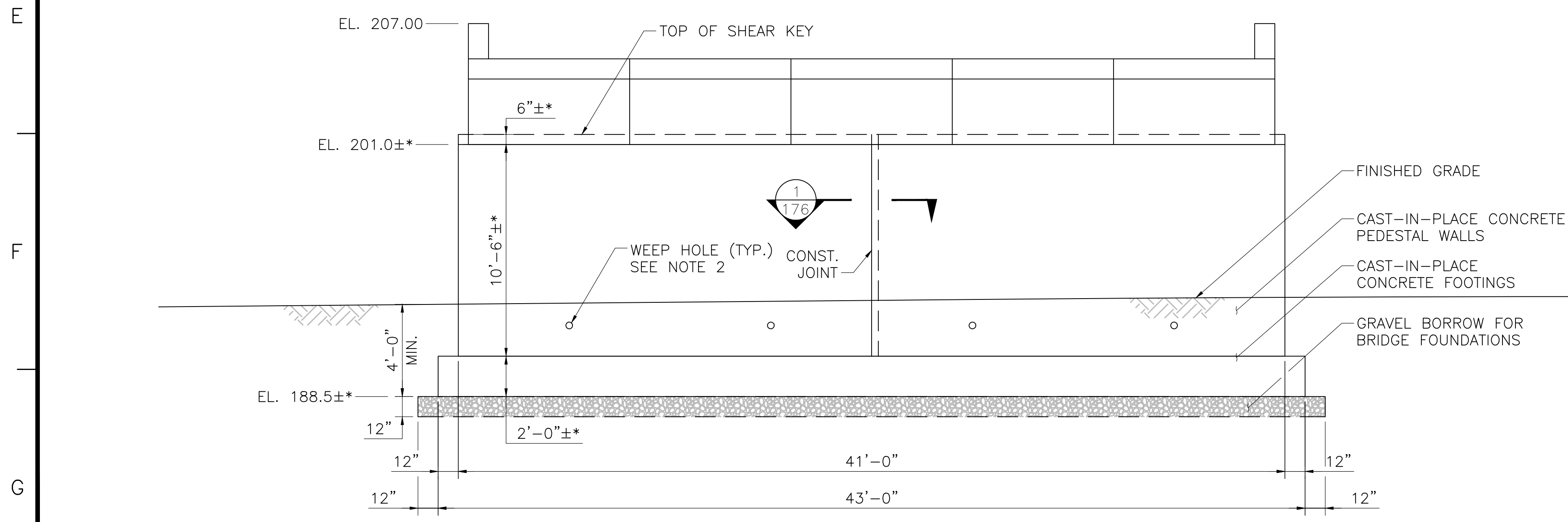
*NOTE: PRECAST CONCRETE ARCH CULVERT, PEDESTAL WALLS, AND FOOTINGS TO BE DESIGNED BY CONTRACTOR. ELEVATIONS AND OTHER DIMENSIONS MY VARY DEPENDING ON CONTRACTOR DESIGN.



CULVERT FOOTING & PEDESTAL WALL SECTION

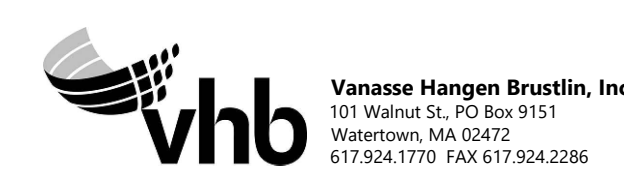
SCALE: 1/4"=1'-0"

*NOTE: PRECAST CONCRETE ARCH CULVERT, PEDESTAL WALLS, AND FOOTINGS TO BE DESIGNED BY CONTRACTOR. ELEVATIONS AND OTHER DIMENSIONS MY VARY DEPENDING ON CONTRACTOR DESIGN.

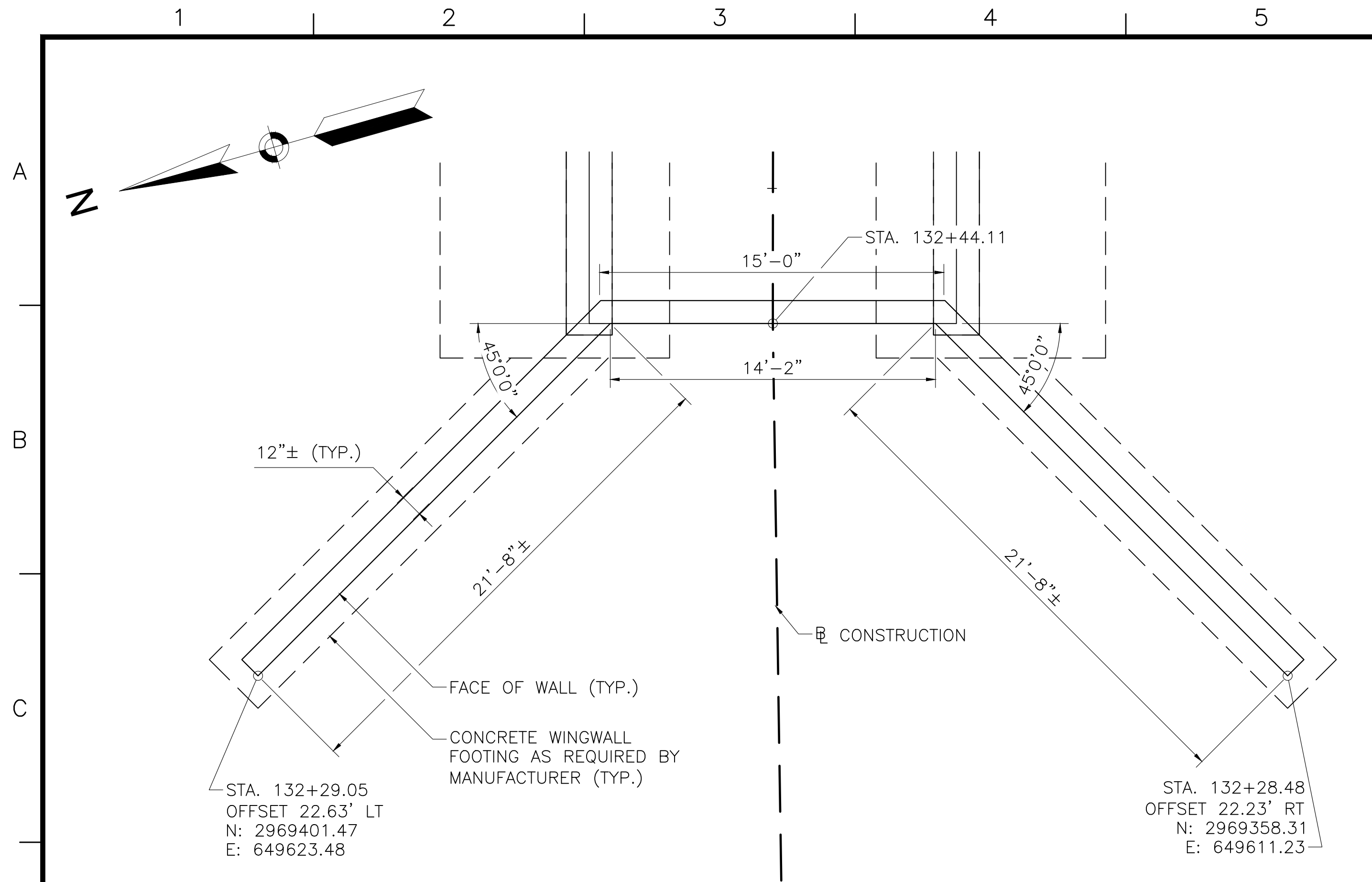


CULVERT FOOTING & PEDESTAL WALL ELEVATION

SCALE: 1/4"=1'-0"

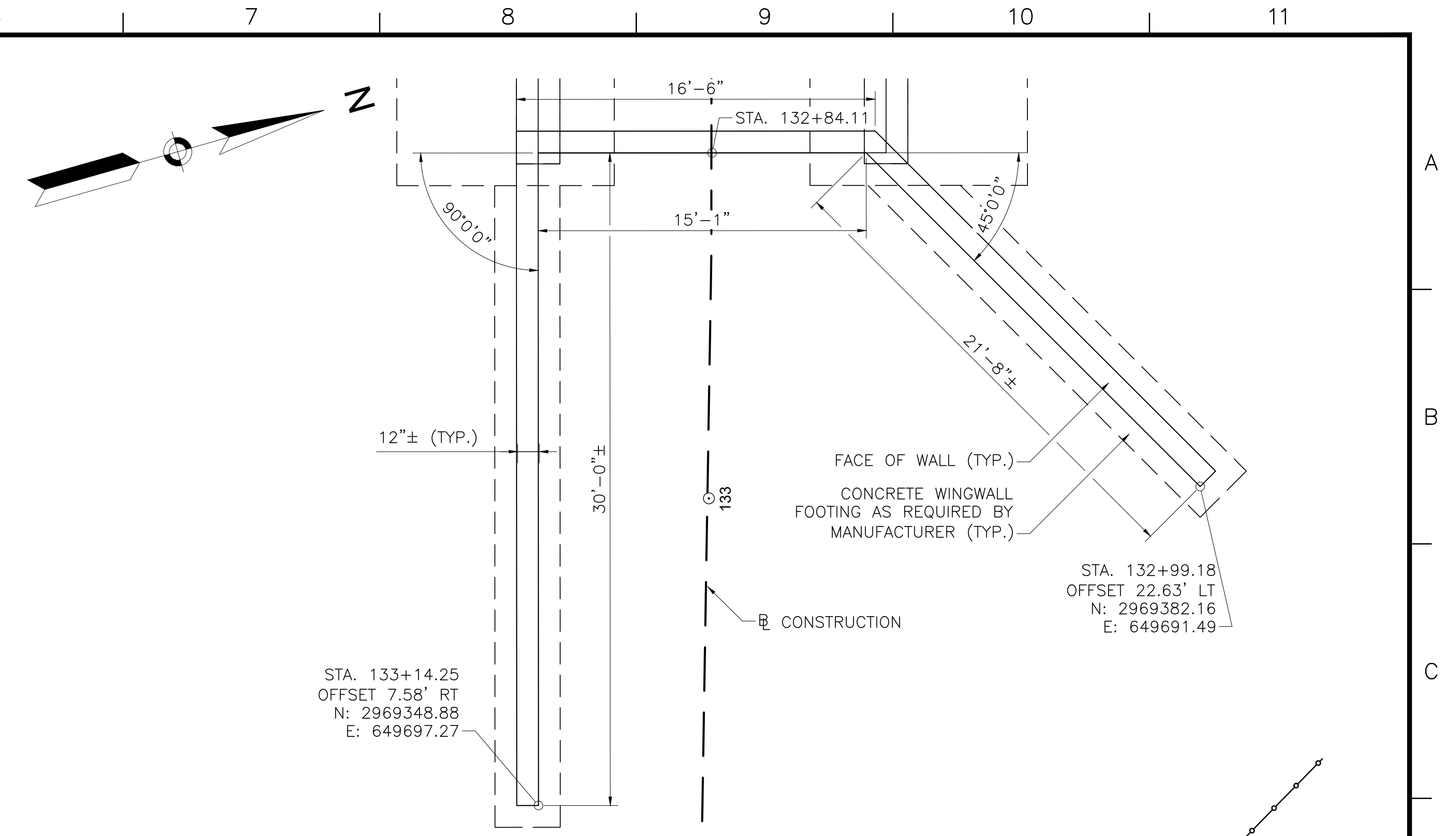


NO.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
BRIDGE NO. H-25-011 (CHESTNUT STREET) - SUBSTRUCTURE DETAILS				
PLAN 74 OF 349				
SCALE: unless noted 1"=4'	DATE DEC 2021	DRAWN AMS	C'H'K D. SBK	APPR. KGK
			DRAWING NO.	REV.



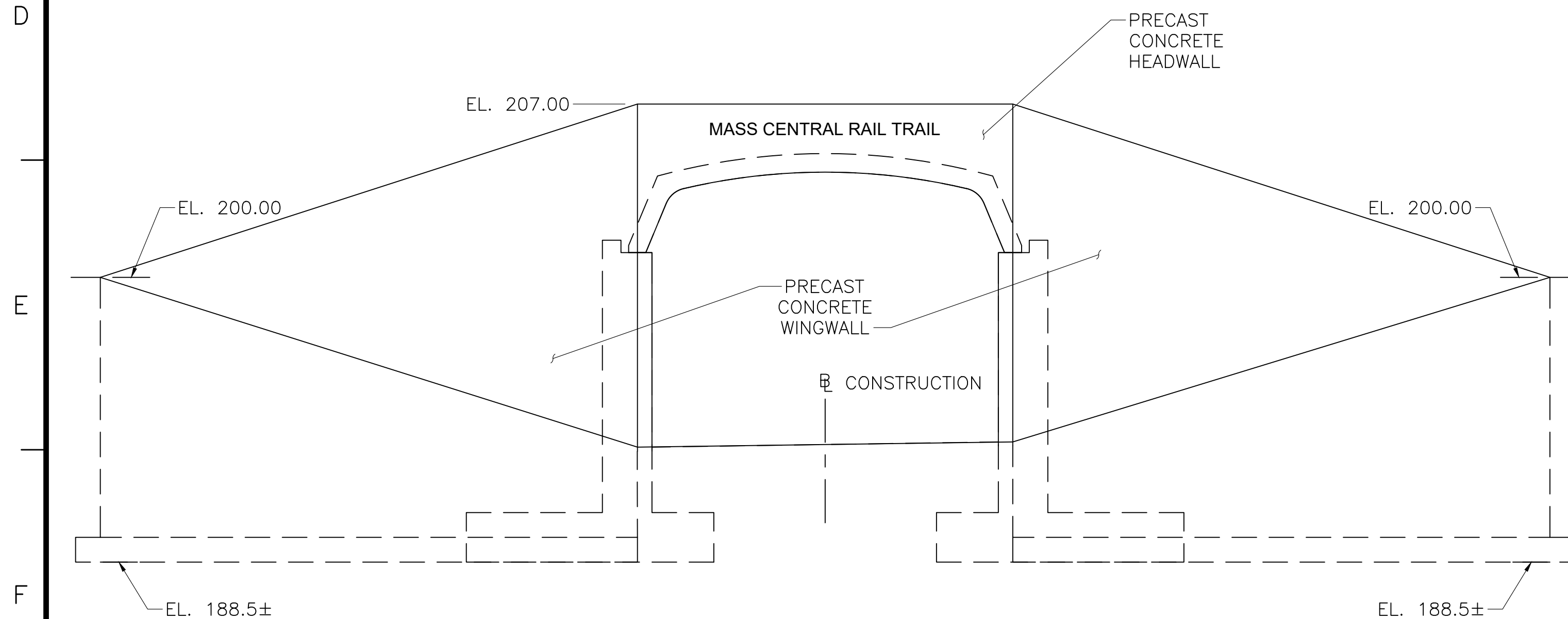
WINGWALL PLAN AT WEST PORTAL

SCALE: 1/4"=1'-0"



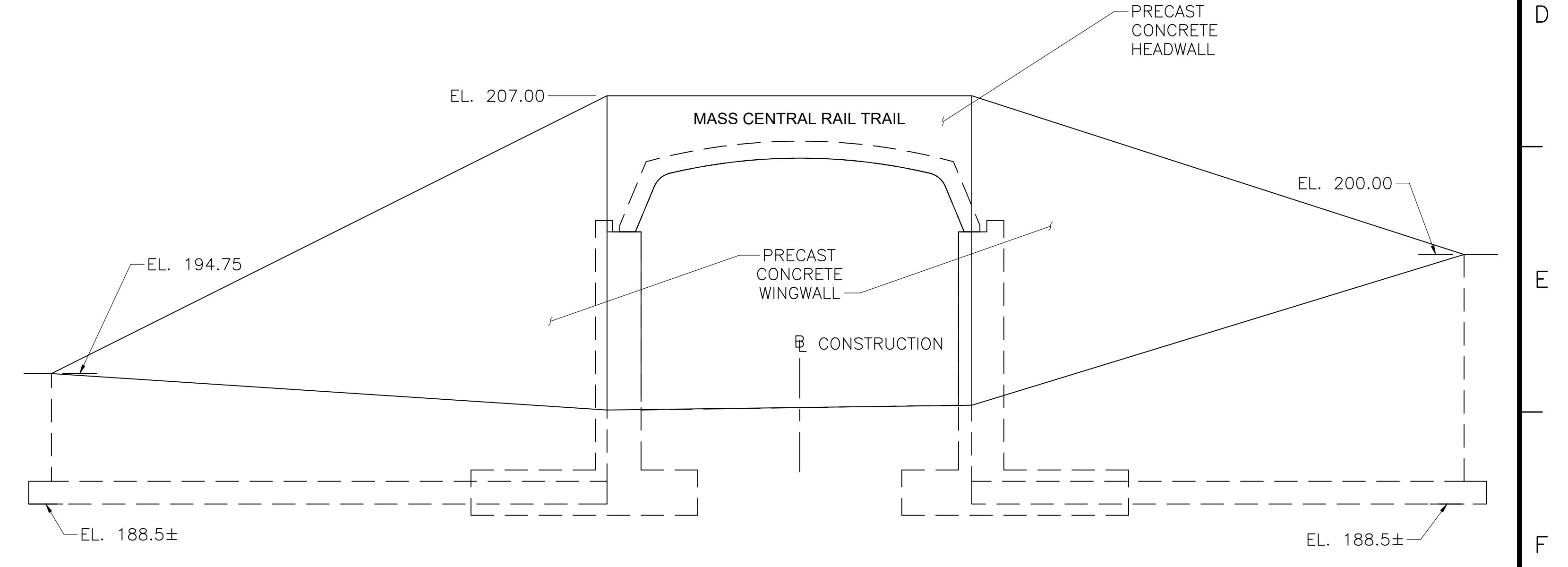
WINGWALL PLAN AT EAST PORTAL

SCALE: 1/4"=1'-0"



WINGWALL DEVELOPED ELEVATION AT WEST PORTAL

SCALE: 1/4"=1'-0"



WINGWALL DEVELOPED ELEVATION AT EAST PORTAL

SCALE: 1/4"=1'-0"



NO.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
BRIDGE NO. H-25-011 (CHESTNUT STREET) - WINGWALL DETAILS				
PLAN 75 OF 349				
SCALE: unless noted 1"=4'	DATE DEC 2021	DRAWN AMS	CHECKED SBK	APPR. KGK
DRAWING NO.				REV.

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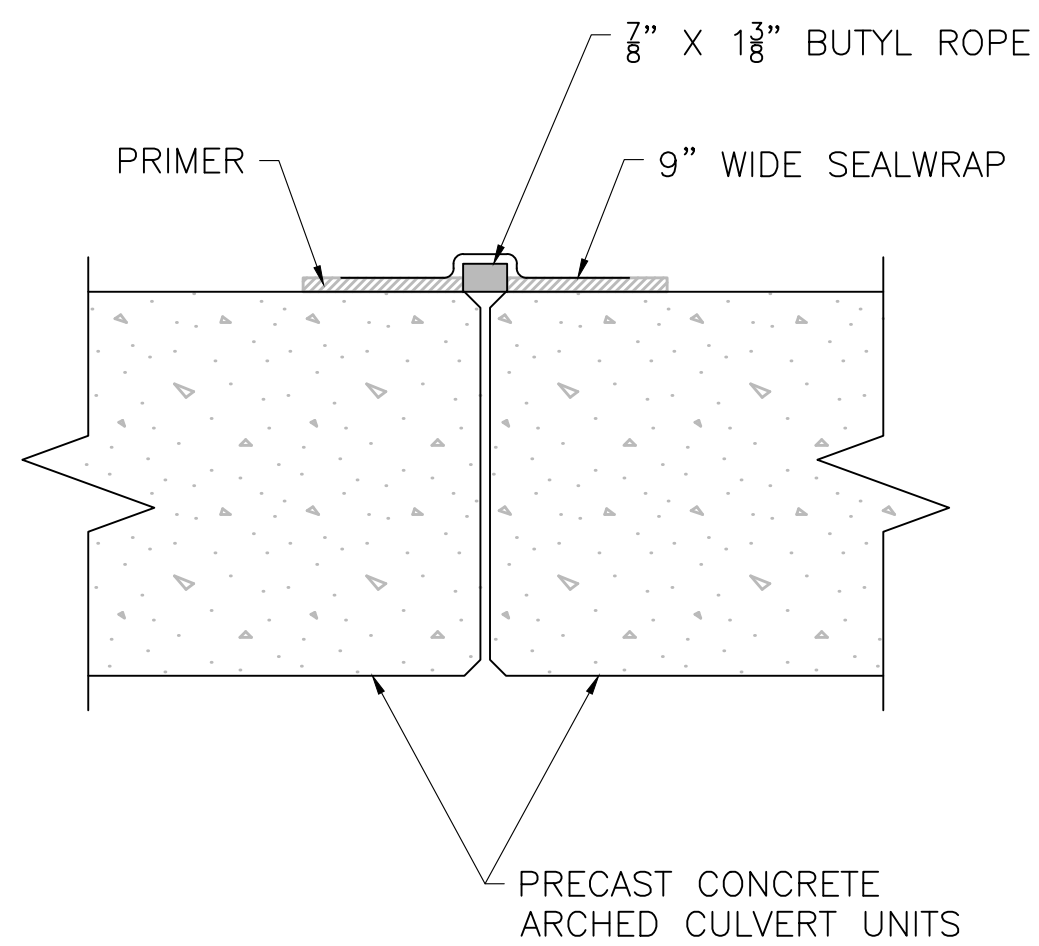
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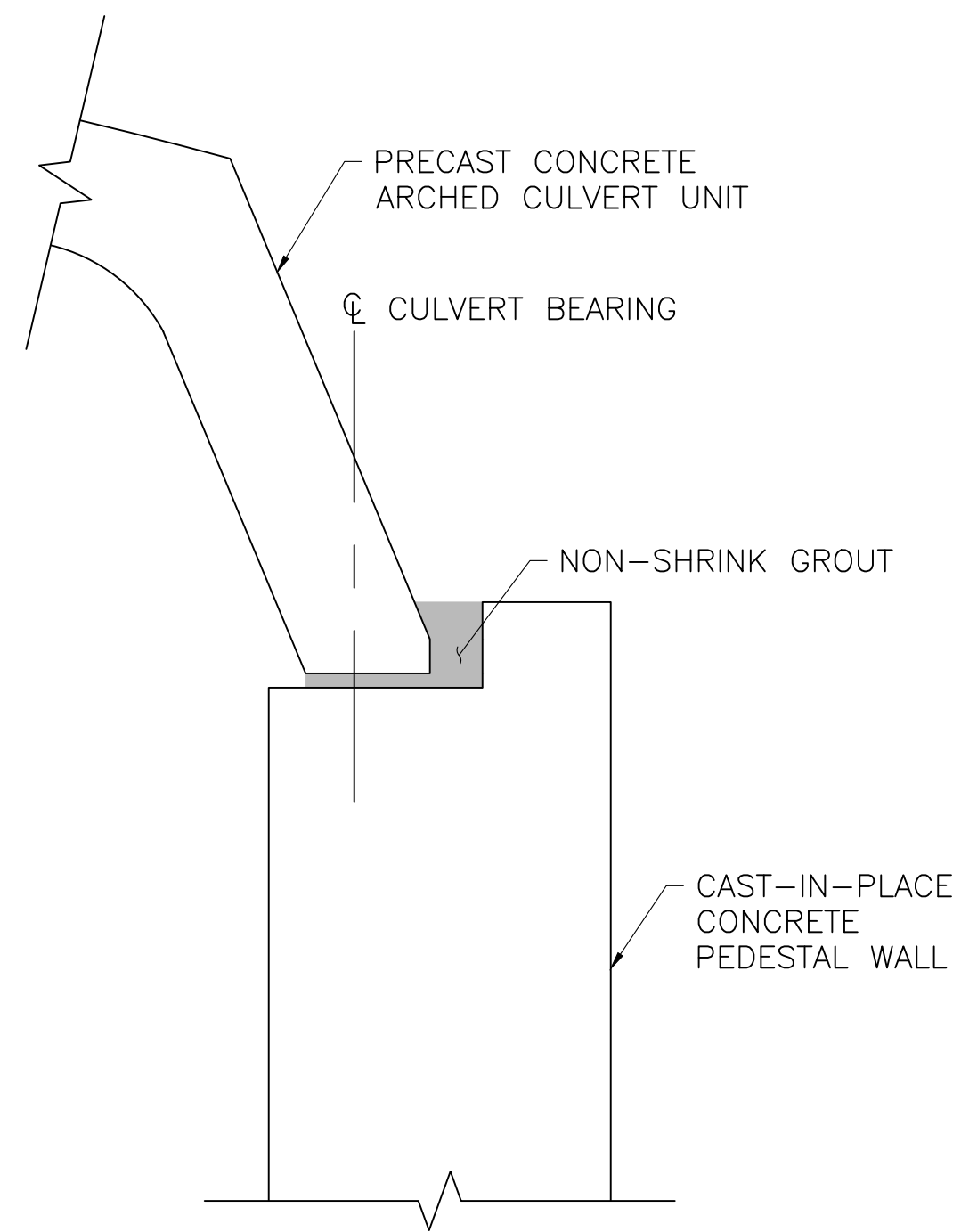
G

NOTE: CULVERT BEARING DETAIL SHOWN IS PRELIMINARY ONLY. ALTERNATE DETAILS SHALL REQUIRE APPROVAL BY THE ENGINEER.

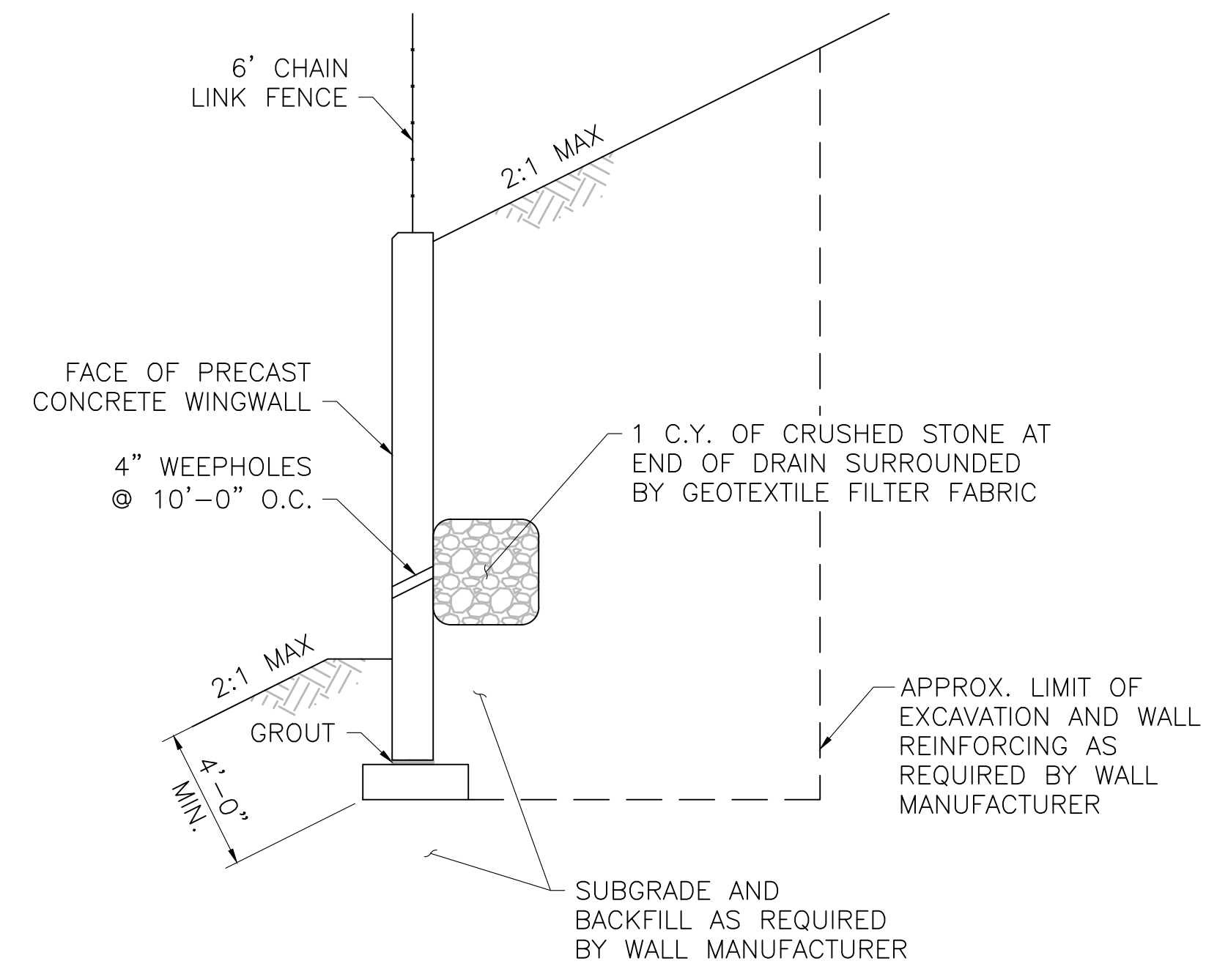
NOTE: RET. WALL TYPE SHOWN IS PRELIMINARY ONLY. ALTERNATE PREFABRICATED WALL TYPES SHALL REQUIRE APPROVAL BY THE ENGINEER.



CULVERT JOINT DETAIL
SCALE: 1"=0'-6"



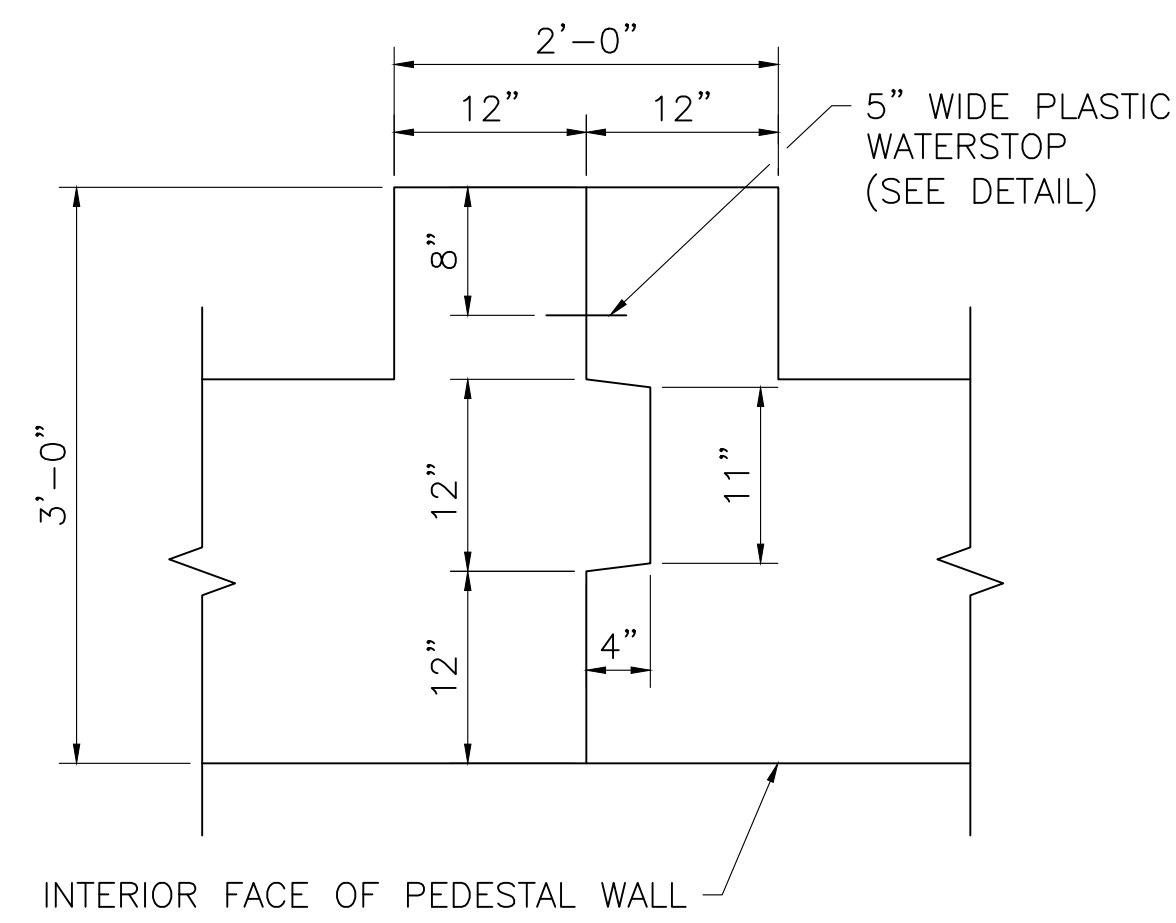
CULVERT BEARING DETAIL
SCALE: 1"=1'-0"



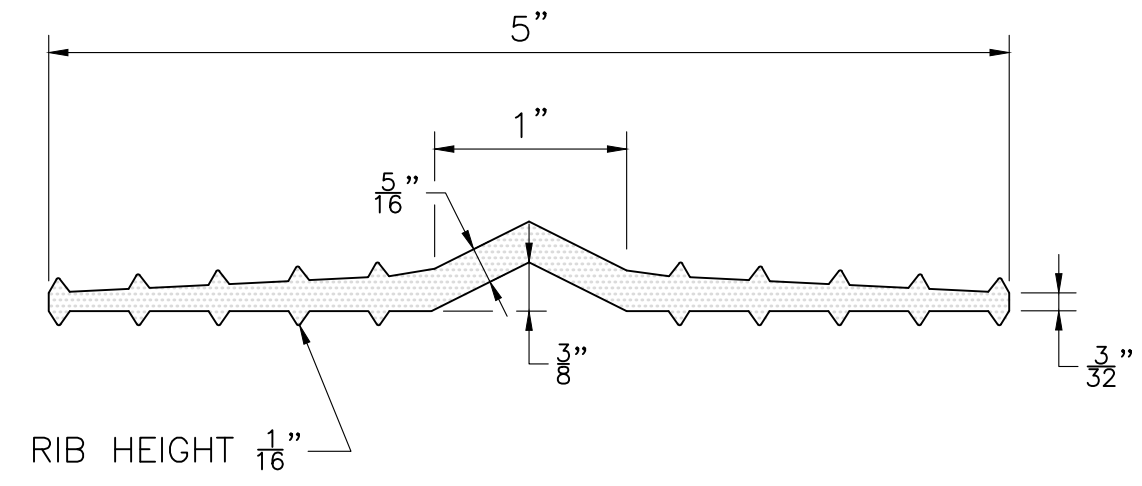
TYPICAL WINGWALL SECTION
SCALE: 1/4"=1'-0"

NOTE: CONSTRUCTION JOINT DETAIL SHOWN IS DIMENSIONED IN ACCORDANCE WITH MASSDOT STANDARD DETAILS. ALTERNATE DETAILS SHALL REQUIRE APPROVAL BY THE ENGINEER.

NOTE: PLASTIC WATERSTOP DETAIL SHOWN IS DIMENSIONED IN ACCORDANCE WITH MASSDOT STANDARD DETAILS. ALTERNATE DETAILS SHALL REQUIRE APPROVAL BY THE ENGINEER.



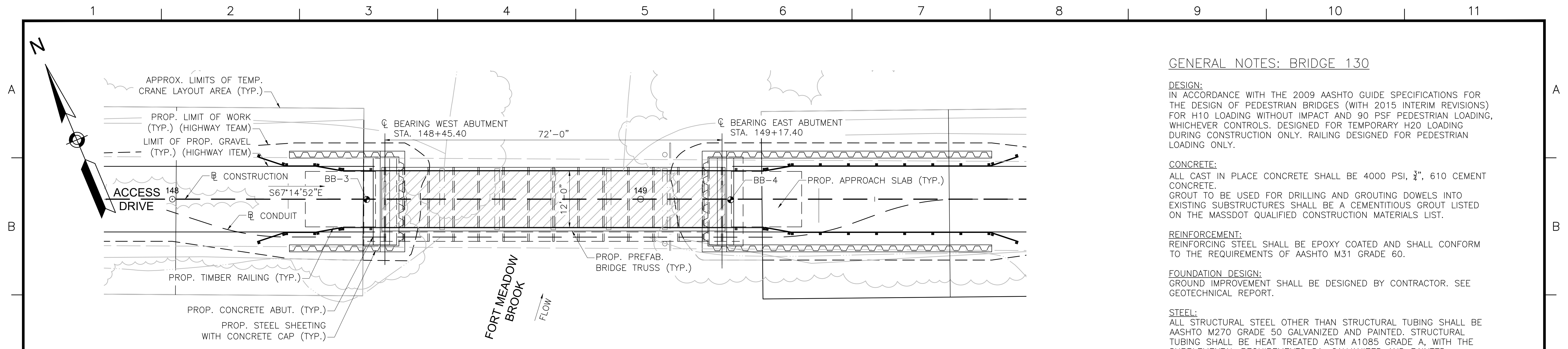
SECTION 1 - CONSTRUCTION JOINT DETAIL
SCALE: 1"=0'-6"



PLASTIC WATERSTOP DETAIL
SCALE: 1"=1'-0"



NO.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
BRIDGE NO. H-25-011 (CHESTNUT STREET) - DETAILS				
PLAN 76 OF 349				
SCALE: unless noted VARIES	DATE: DEC 2021	DRAWN: AMS	CHECKED: SBK	APPROVED: KGK
DRAWING NO.	REV.			



BRIDGE KEY PLAN

SCALE: 1"=10'-0"

GENERAL NOTES: BRIDGE 130

DESIGN:
IN ACCORDANCE WITH THE 2009 AASHTO GUIDE SPECIFICATIONS FOR THE DESIGN OF PEDESTRIAN BRIDGES (WITH 2015 INTERIM REVISIONS) FOR H10 LOADING WITHOUT IMPACT AND 90 PSF PEDESTRIAN LOADING, WHICHEVER CONTROLS. DESIGNED FOR TEMPORARY H20 LOADING DURING CONSTRUCTION ONLY. RAILING DESIGNED FOR PEDESTRIAN LOADING ONLY.

CONCRETE:
ALL CAST IN PLACE CONCRETE SHALL BE 4000 PSI, 3/4", 610 CEMENT CONCRETE. GROUT TO BE USED FOR DRILLING AND GROUTING DOWELS INTO EXISTING SUBSTRUCTURES SHALL BE A CEMENTITIOUS GROUT LISTED ON THE MASSDOT QUALIFIED CONSTRUCTION MATERIALS LIST.

REINFORCEMENT:
REINFORCING STEEL SHALL BE EPOXY COATED AND SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M31 GRADE 60.

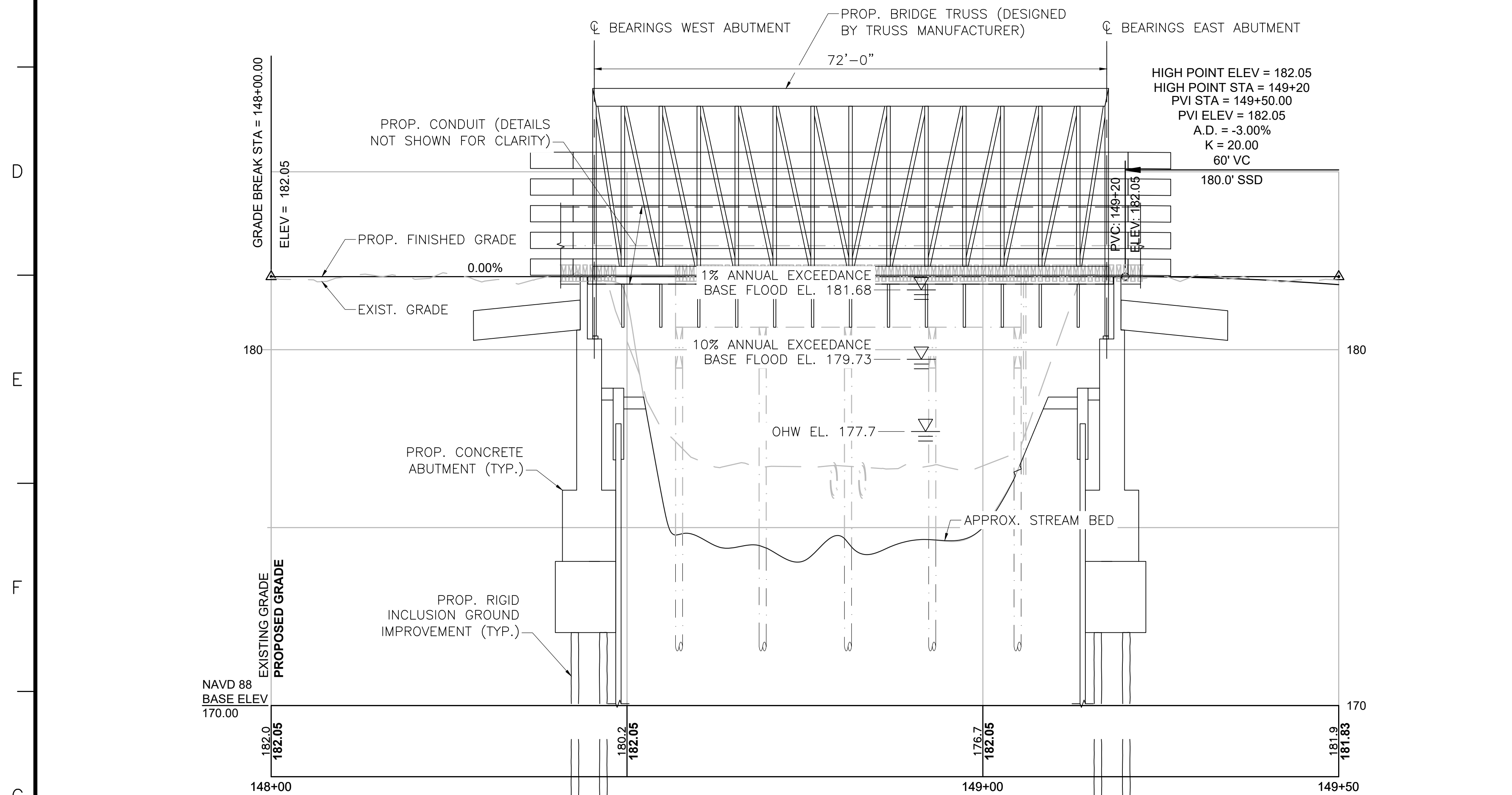
FOUNDATION DESIGN:
GROUND IMPROVEMENT SHALL BE DESIGNED BY CONTRACTOR. SEE GEOTECHNICAL REPORT.

STEEL:
ALL STRUCTURAL STEEL OTHER THAN STRUCTURAL TUBING SHALL BE AASHTO M270 GRADE 50 GALVANIZED AND PAINTED. STRUCTURAL TUBING SHALL BE HEAT TREATED ASTM A1085 GRADE A, WITH THE SUPPLEMENTAL REQUIREMENTS S1, GALVANIZED AND PAINTED. BOLTS THAT FASTEN TO STEEL ONLY SHALL BE AASHTO M1644 (ASTM 325) HIGH STRENGTH BOLTS, GALVANIZED.

TIMBER:
DECK PLANKING AND RAILINGS: IPE, F_b min = 22,000 psi. ALL NAILS, SCREWS, BOLTS, WASHERS, CONNECTORS, FASTENERS AND HARDWARE FOR WOOD CONNECTIONS SHALL BE STAINLESS STEEL TYPE 304 OR TYPE 316. WHERE TREATED TIMBER MEMBERS ARE IN DIRECT CONTACT WITH STEEL PROVIDE VYCOR DECK PROTECTOR BARRIER MEMBRANE BY W.R. GRACE & CO. OR APPROVED EQUAL.

SURVEY AND EXISTING CONDITIONS:
THE EXISTING CONDITIONS SHOWN ON THIS PLAN WERE DEVELOPED FROM A COMBINED EFFORT OF AERIAL PHOTOGRAMMETRIC MAPPING BY EASTERN TOPOGRAPHICS, INC., BASED ON AERIAL PHOTOGRAPHS TAKEN ON FEBRUARY 22, 2013, AND AUGMENTED BY AN ON-THE-GROUND SURVEY PERFORMED BY VHB DURING 2015 AND 2017. THE HORIZONTAL CONTROL IS BASED ON THE MASSACHUSETTS MAINLAND STATE PLANE COORDINATE SYSTEM AND THE NATIONAL GEODETIC SURVEY (NAD83). ALL ELEVATION IS US FEET, REFERENCED TO THE NORTH AMERICA VERTICAL DATUM OF 1988 (NAVD88).

DEMOLITION AND CONSTRUCTION:
ALL EXISTING MATERIALS REMOVED AND NOT REUSED AND ALL WASTE MATERIALS SHALL BECOME THE PROPERTY OF THE CONTRACTOR. TREATED TIMBER AND CONTAMINATED WASTE SHALL BE DISPOSED OF OFF SITE AT AN APPROVED FACILITY. ALL UNSUITABLE MATERIALS SHALL BE REMOVED WITHIN THE LIMITS OF THE FOUNDATIONS OF THE STRUCTURE, AS DIRECTED BY THE RESIDENT ENGINEER. BACKFILL WITH GRAVEL BORROW FOR BRIDGE FOUNDATIONS. BACKFILL AROUND PROPOSED SUBSTRUCTURE SHALL BE GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES. THE CONTRACTOR SHALL TAKE THE PROPER PRECAUTIONS TO ENSURE THE STABILITY AND SAFE PERFORMANCE OF ALL STRUCTURAL ELEMENTS DURING DEMOLITION AND CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ADEQUATE SHIELDING OR NETTING DURING DEMOLITION AND CONSTRUCTION TO ADEQUATELY PROTECT WORKERS AND TO PREVENT DEBRIS AND MATERIALS FROM ENTERING THE WATERWAY. ANY DAMAGE TO REMAINING EXISTING COMPONENTS THAT IS CAUSED BY THE CONTRACTOR'S ACTIVITY SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR, AT NO ADDITIONAL EXPENSE.



PROFILE - ACCESS DRIVE

HORIZONTAL SCALE: 1"=10'-0"
VERTICAL SCALE: 1"=2'-0"



N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
BRIDGE H-25-027 (BRIDGE 130) - KEY PLAN & PROFILE				
PLAN 177 OF 349				
SCALE: unless noted H: 1"=10' V: 1"=2'		DATE DRAWN DEC 2021 AMS		CHK'D. SBK
		APPR. KGK		DRAWING NO. REV.

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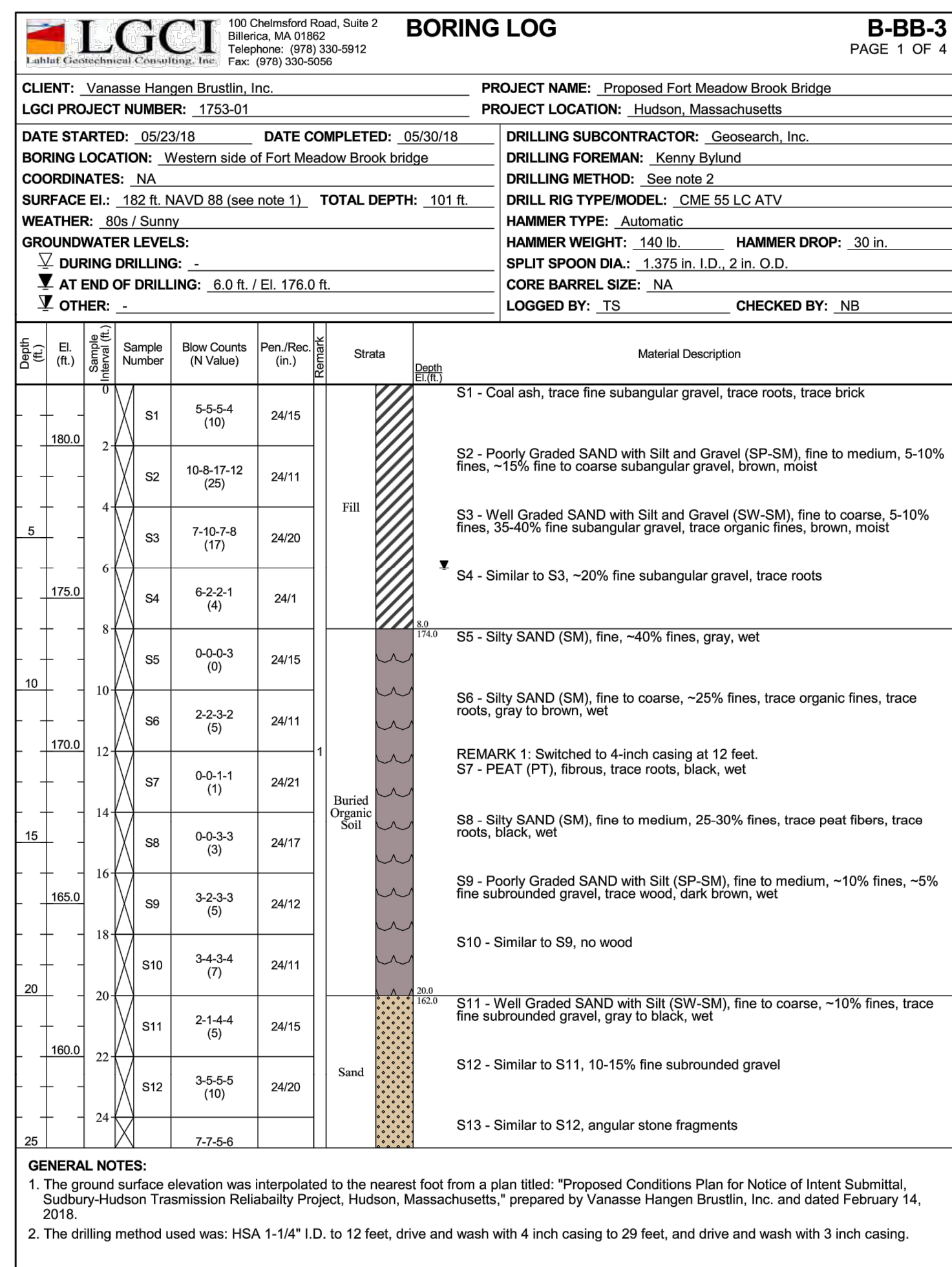
G

BORING BB-3
 STATION: 148+41.50
 OFFSET: 0.07' RT
 N: 2968779.2
 E: 651113.0
 GROUND ELEVATION: 182.0'
 (SEE NOTE 10)

BORING BB-3 (CONTINUED)

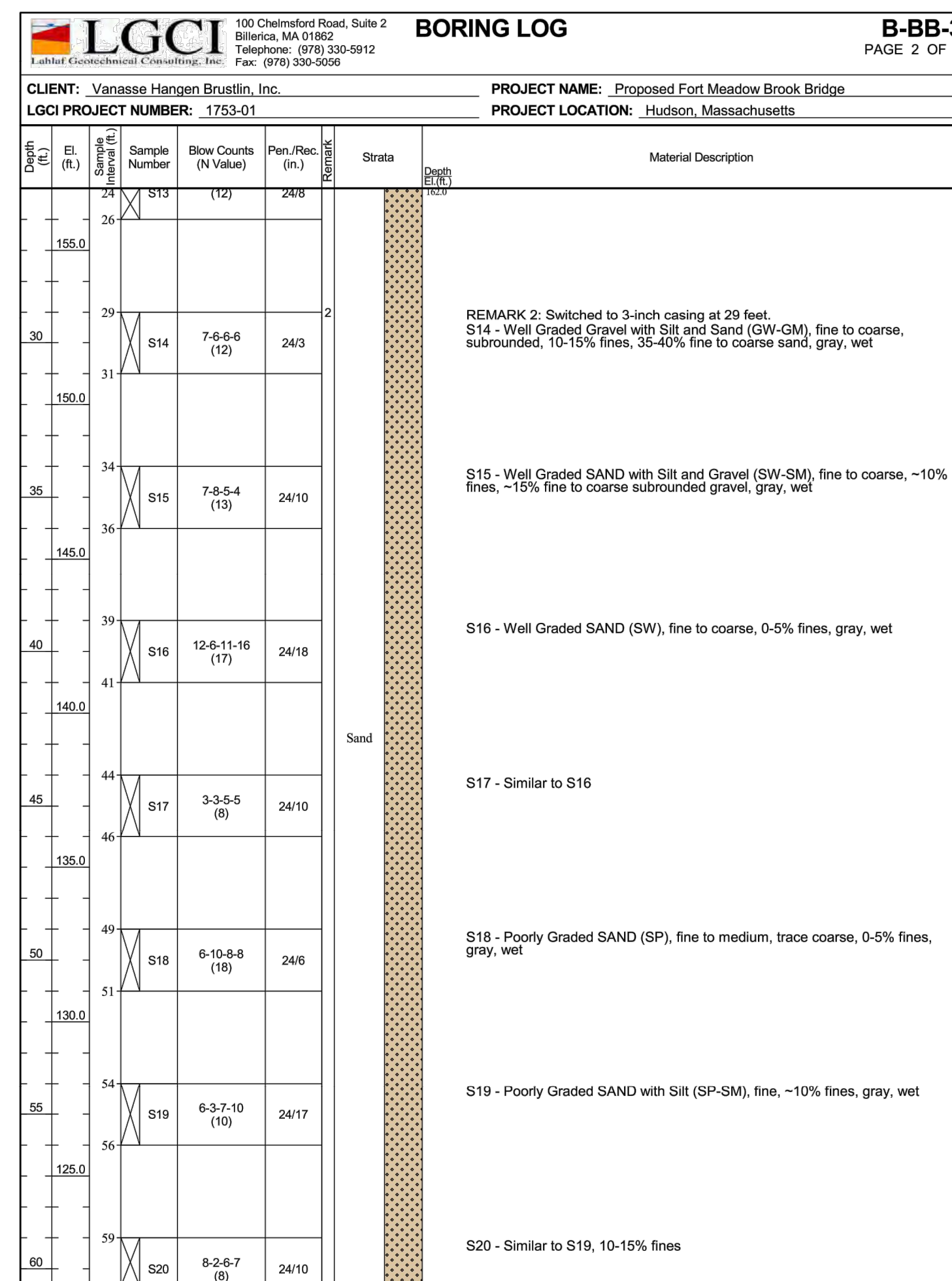
BORING NOTES:

1. LOCATION OF BORINGS SHOWN ON THE KEY PLAN THUS: ●
2. BORINGS ARE TAKEN FOR PURPOSE OF DESIGN AND SHOW CONDITIONS AT BORING POINTS ONLY, BUT DO NOT NECESSARILY SHOW THE NATURE OF THE MATERIALS TO BE ENCOUNTERED DURING CONSTRUCTION.
3. WATER LEVELS SHOWN ON THE BORING LOGS ARE ASSUMED BASED ON BORINGS PERFORMED FOR THE EXISTING BRIDGE, AS NOTED IN THE GEOTECHNICAL REPORT DATED OCTOBER 2018.
4. FIGURES IN COLUMNS INDICATE NUMBER OF BLOWS REQUIRED TO DRIVE A 1 1/8" I.D. SPLIT SPOON SAMPLER 6" USING A 140 POUND WEIGHT FALLING 30".
5. ALL BORINGS WERE MADE IN MAY OF 2018.
6. BORINGS WERE MADE BY GEOLOGIC EARTH EXPLORATION, INC., 7 SHERWOOD DR., NORFOLK, MA 02056.
7. THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988 IS USED THROUGHOUT.
8. BORING LOCATIONS AND ELEVATIONS ARE APPROXIMATE ONLY.



BOTTOM OF FOOTING
 EL. 174.05

BOTTOM OF GROUND IMPROVEMENT
 EL. 151.41



NO.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH, & SUDBURY MASSACHUSETTS				
BRIDGE H-25-011 (BRIDGE 130) - BORING LOGS				
PLAN 78 OF 349				
SCALE: unless noted N/A	DATE DEC 2021	DRAWN AMS	CHECKED KGK	APPROVED KGK
DRAWING NO.				REV.

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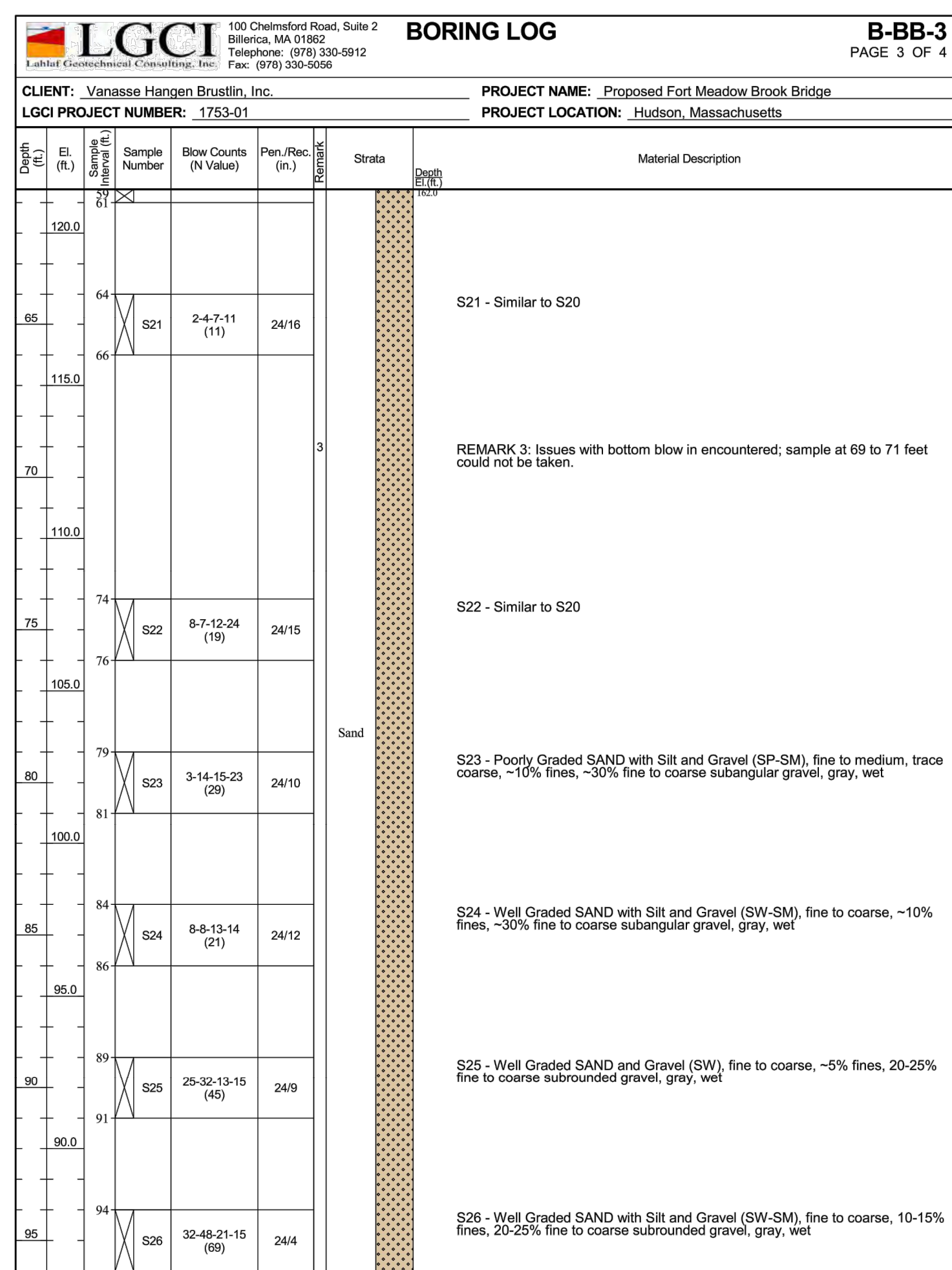
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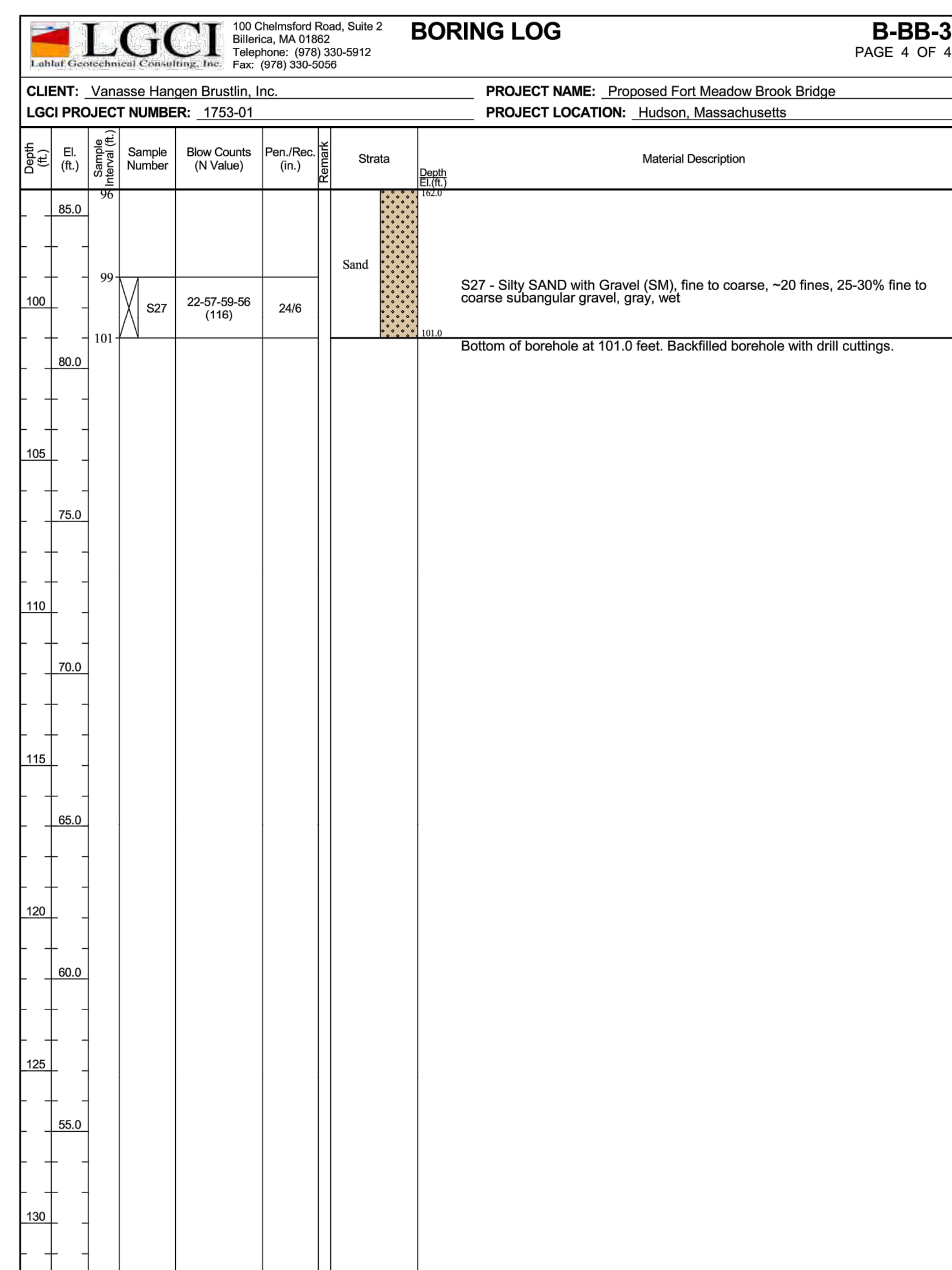
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BORING BB-3 (CONTINUED)



BORING BB-3 (CONTINUED)



N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH, & SUDBURY MASSACHUSETTS				
BRIDGE H-25-011 (BRIDGE 130) - BORING LOGS				
PLAN 79 OF 349				
SCALE: unless noted	DATE	DRAWN	CHECK	APPR.
N/A	DEC 2021	AMS	KGK	KGK
DRAWING NO.	REV.			

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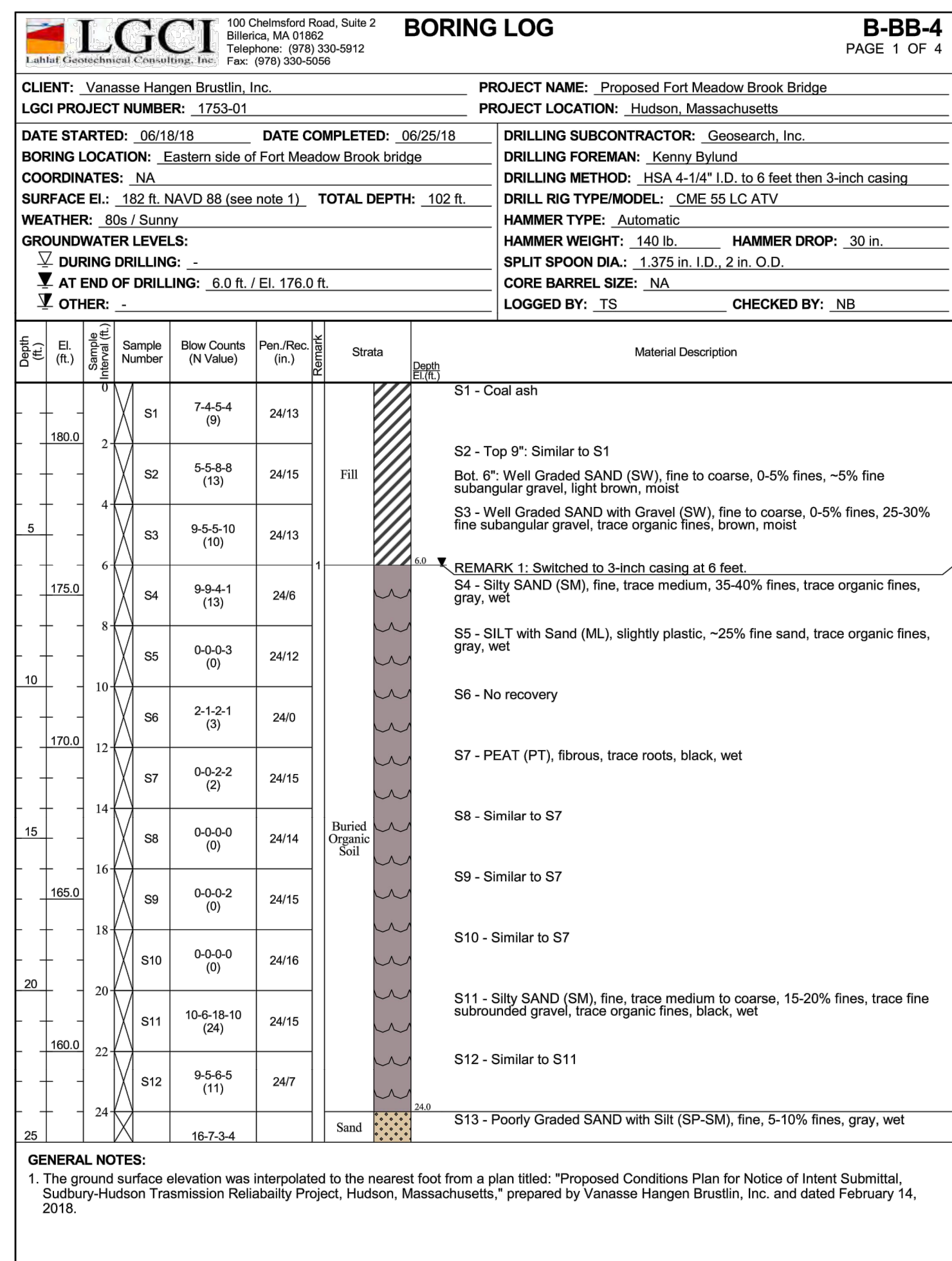
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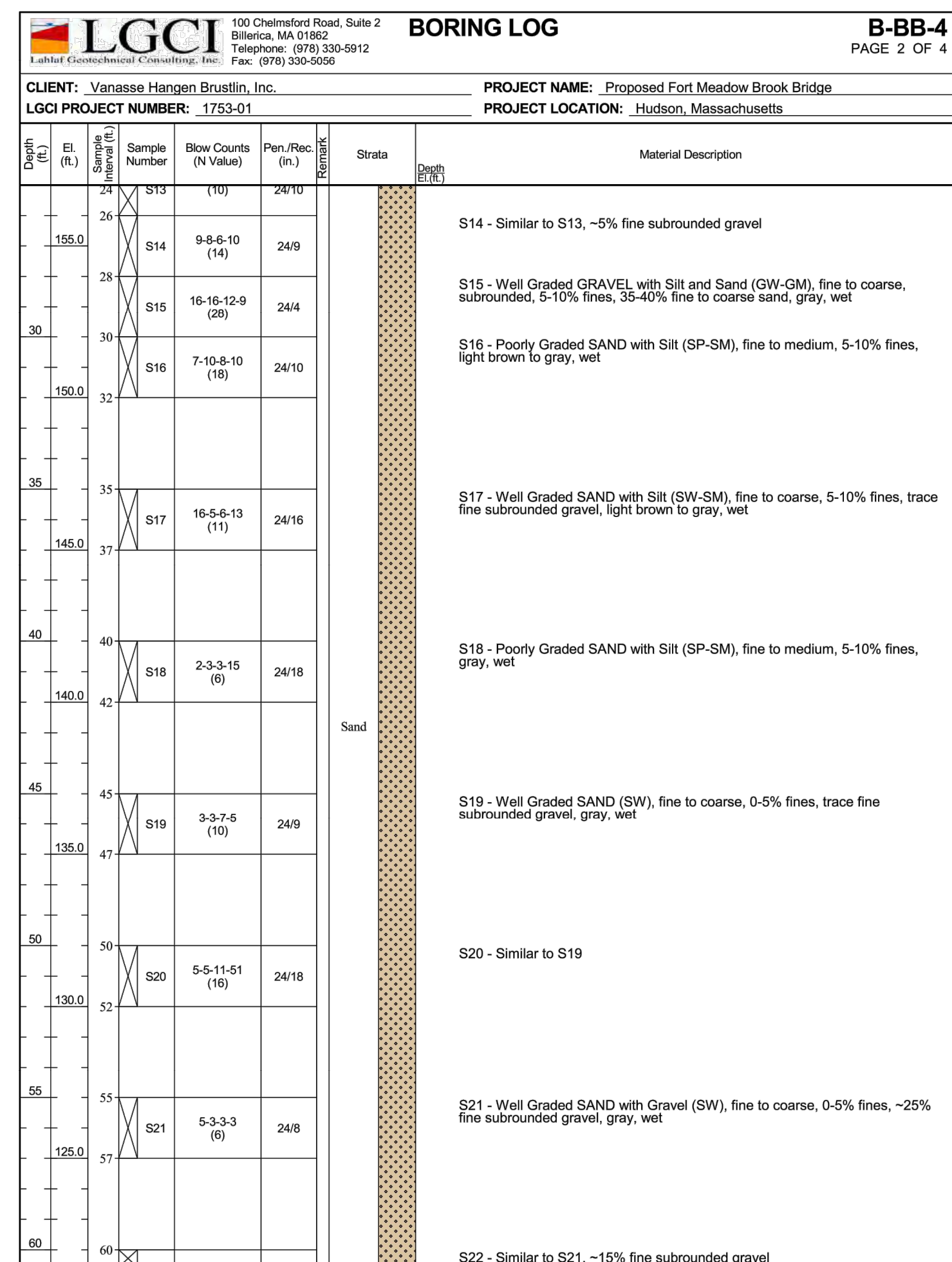
BORING BB-4
 STATION: 149+19.24
 OFFSET: 0.13' RT
 N: 2968749.1
 E: 651184.7
 GROUND ELEVATION: 182.0'
 (SEE NOTE 10, SHEET 178 OF 349)

BORING BB-4 (CONTINUED)



BOTTOM OF FOOTING
 EL. 174.05

BOTTOM OF GROUND IMPROVEMENT
 EL. 151.41



N.O.	DESCRIPTION	BY	DATE	APP.R.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH, & SUDBURY MASSACHUSETTS				
BRIDGE H-25-011 (BRIDGE 130) - BORING LOGS				
PLAN 80 OF 349				
SCALE: unless noted N/A	DATE DEC 2021	DRAWN AMS	CHECKED SBK	APP.R. KGK
DRAWING NO.		REV.		

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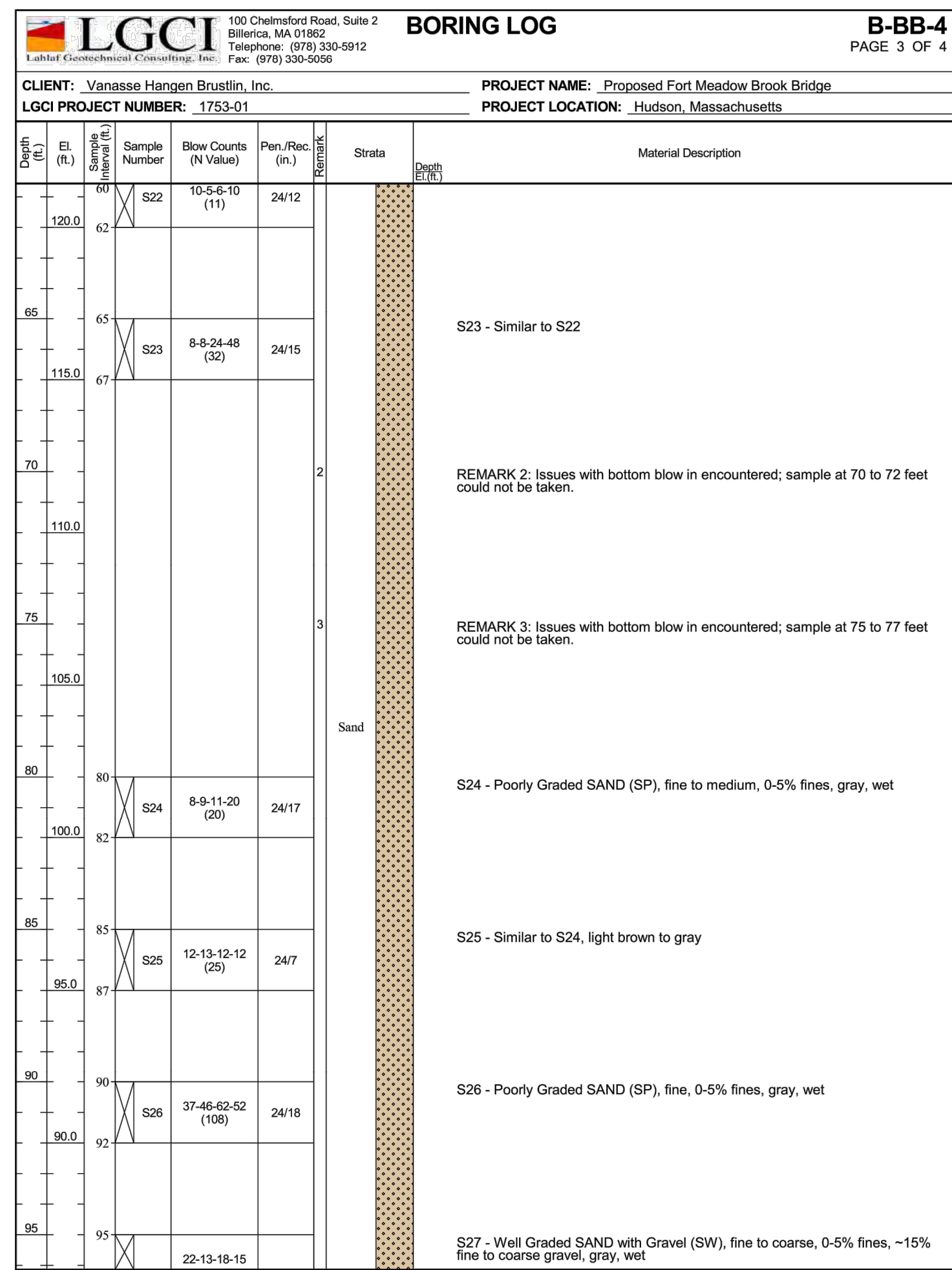
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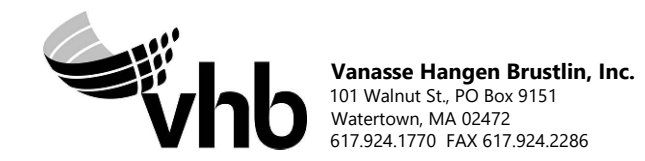
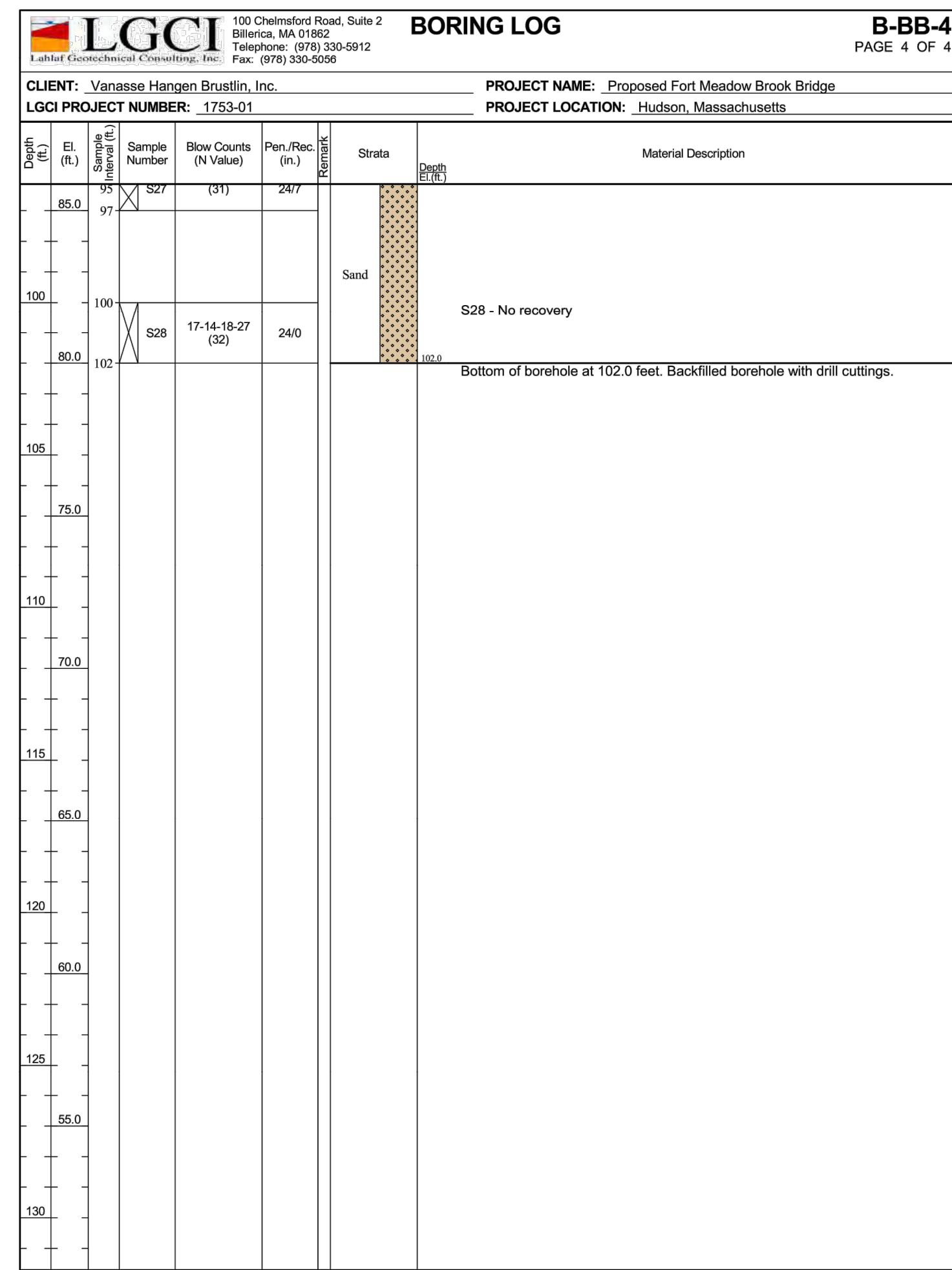
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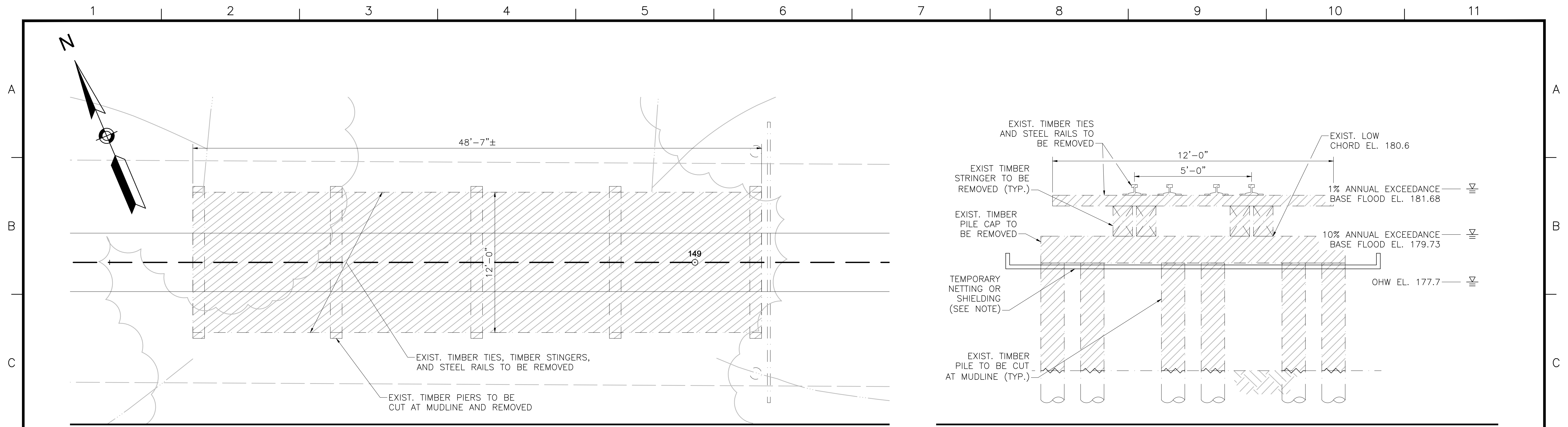
BORING BB-4 (CONTINUED)



BORING BB-4 (CONTINUED)



N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH, & SUDBURY MASSACHUSETTS				
BRIDGE H-25-011 (BRIDGE 130) - BORING LOGS				
PLAN 181 OF 349				
SCALE: unless noted	DATE	DRAWN	CHECK D.	APPR.
N/A	DEC 2021	AMS	SBK	KGK
DRAWING NO.				REV.
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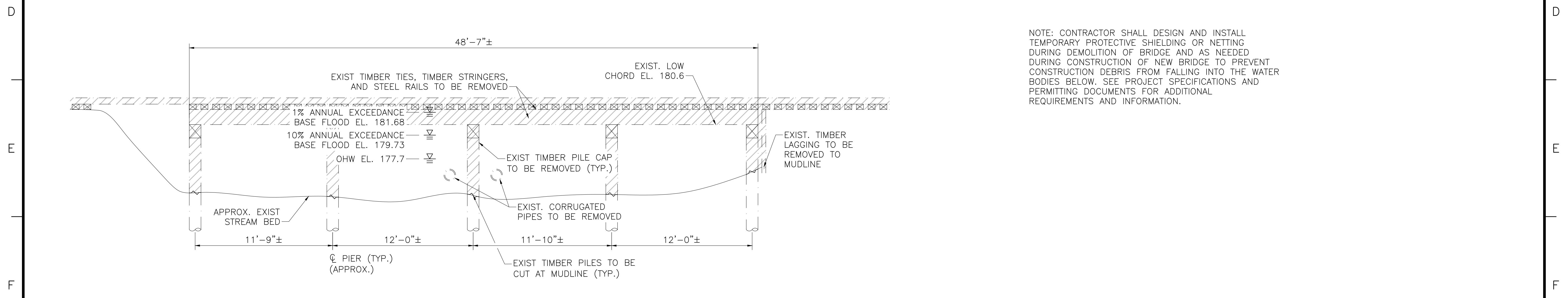


BRIDGE PLAN

SCALE: 1/4"=1'-0"

BRIDGE SECTION

SCALE: 1/4"=1'-0"



BRIDGE ELEVATION

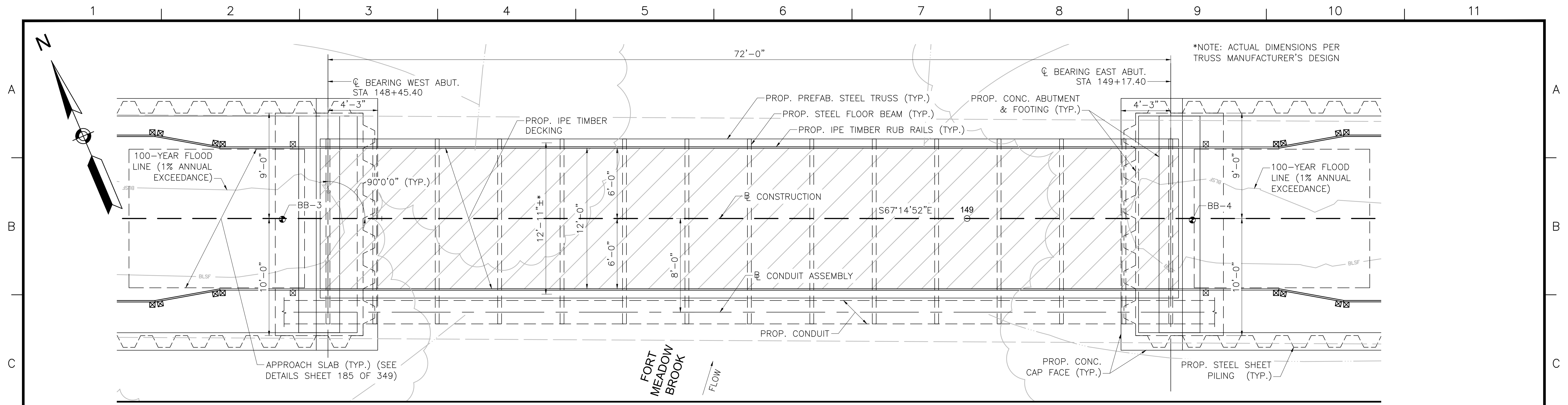
SCALE: 1/4"=1'-0"

NOTE: CONTRACTOR SHALL DESIGN AND INSTALL TEMPORARY PROTECTIVE SHIELDING OR NETTING DURING DEMOLITION OF BRIDGE AND AS NEEDED DURING CONSTRUCTION OF NEW BRIDGE TO PREVENT CONSTRUCTION DEBRIS FROM FALLING INTO THE WATER BODIES BELOW. SEE PROJECT SPECIFICATIONS AND PERMITTING DOCUMENTS FOR ADDITIONAL REQUIREMENTS AND INFORMATION.



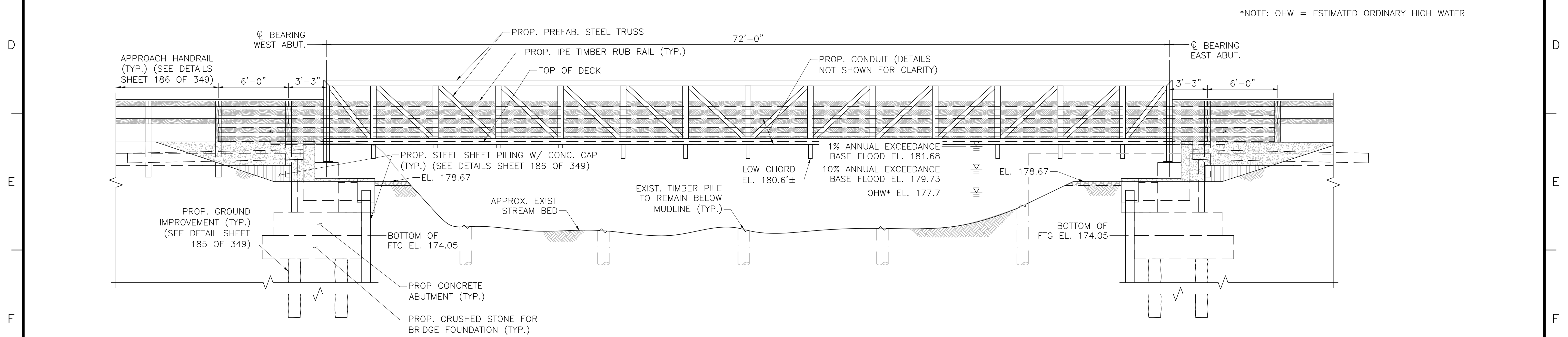
Vanasse Hangen Brustlin, Inc.
101 Walnut St., PO Box 9151
Watertown, MA 02472
617.924.1770 FAX 617.924.2286

N O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
BRIDGE H-25-027 (BRIDGE 130) - DEMOLITION PLAN				
PLAN 82 OF 349				
SCALE: unless noted VARIES	DATE: DEC 2021	DRAWN: AMS	CH'K'D: SBK	APPR.: KGK
DRAWING NO.				REV.



BRIDGE 130 (FORT MEADOW BROOK) PLAN

SCALE: 1/4"=1'-0"



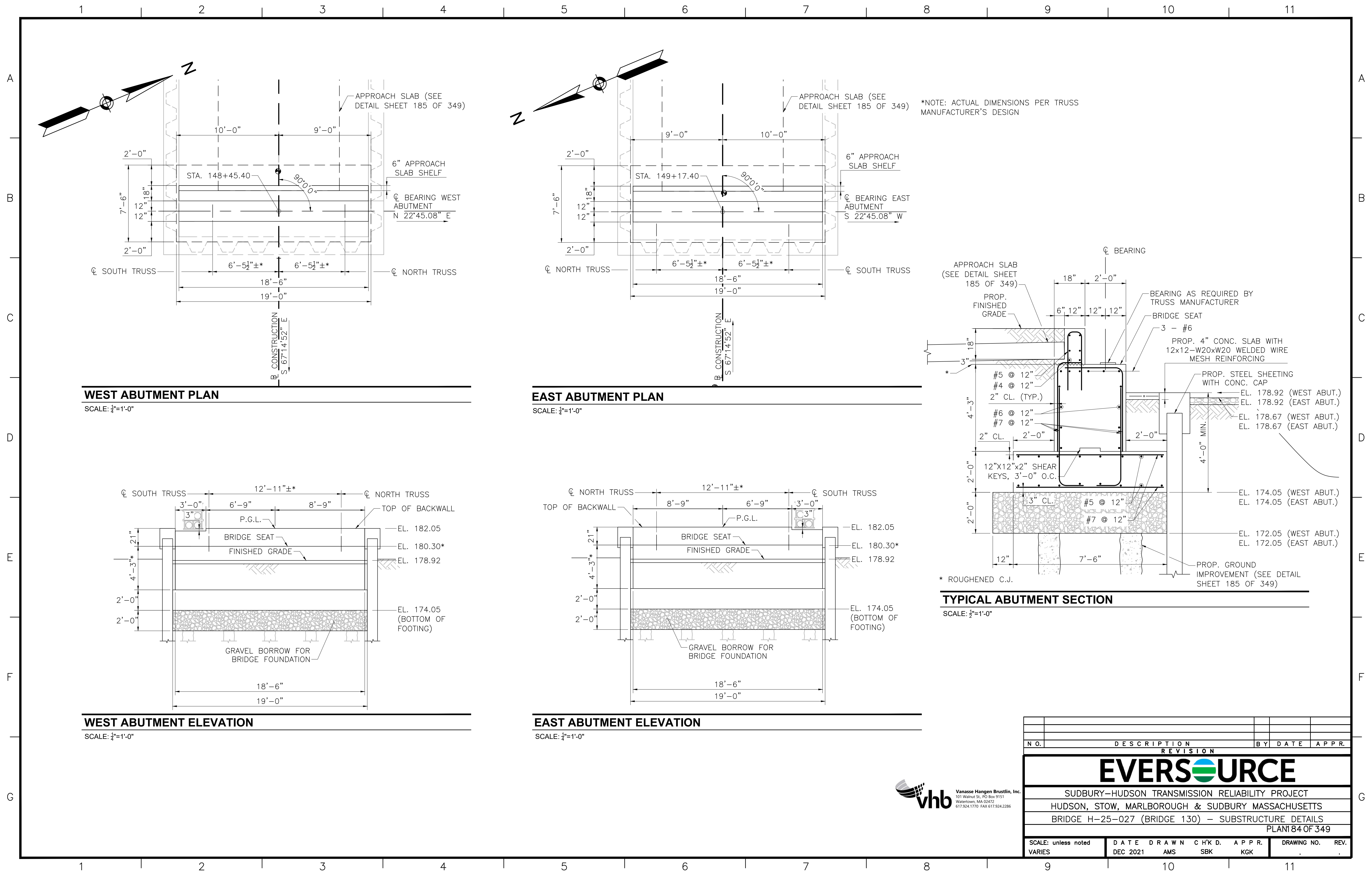
BRIDGE 130 (FORT MEADOW BROOK) ELEVATION

SCALE: 1/4"=1'-0"



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Watertown, MA 02472
617.924.1770 FAX 617.924.2286

N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
BRIDGE H-25-027 (BRIDGE 130) - PLAN & ELEVATION				
PLAN 183 OF 349				
SCALE: unless noted 1"=4'	DATE DEC 2021	DRAWN AMS	CHK'D. SBK	APPR. KGK
				DRAWING NO. REV.



WEST ABUTMENT PLAN

SCALE: 1/4"=1'-0"

EAST ABUTMENT PLAN

SCALE: 1/4"=1'-0"

WEST ABUTMENT ELEVATION

SCALE: 1/4"=1'-0"

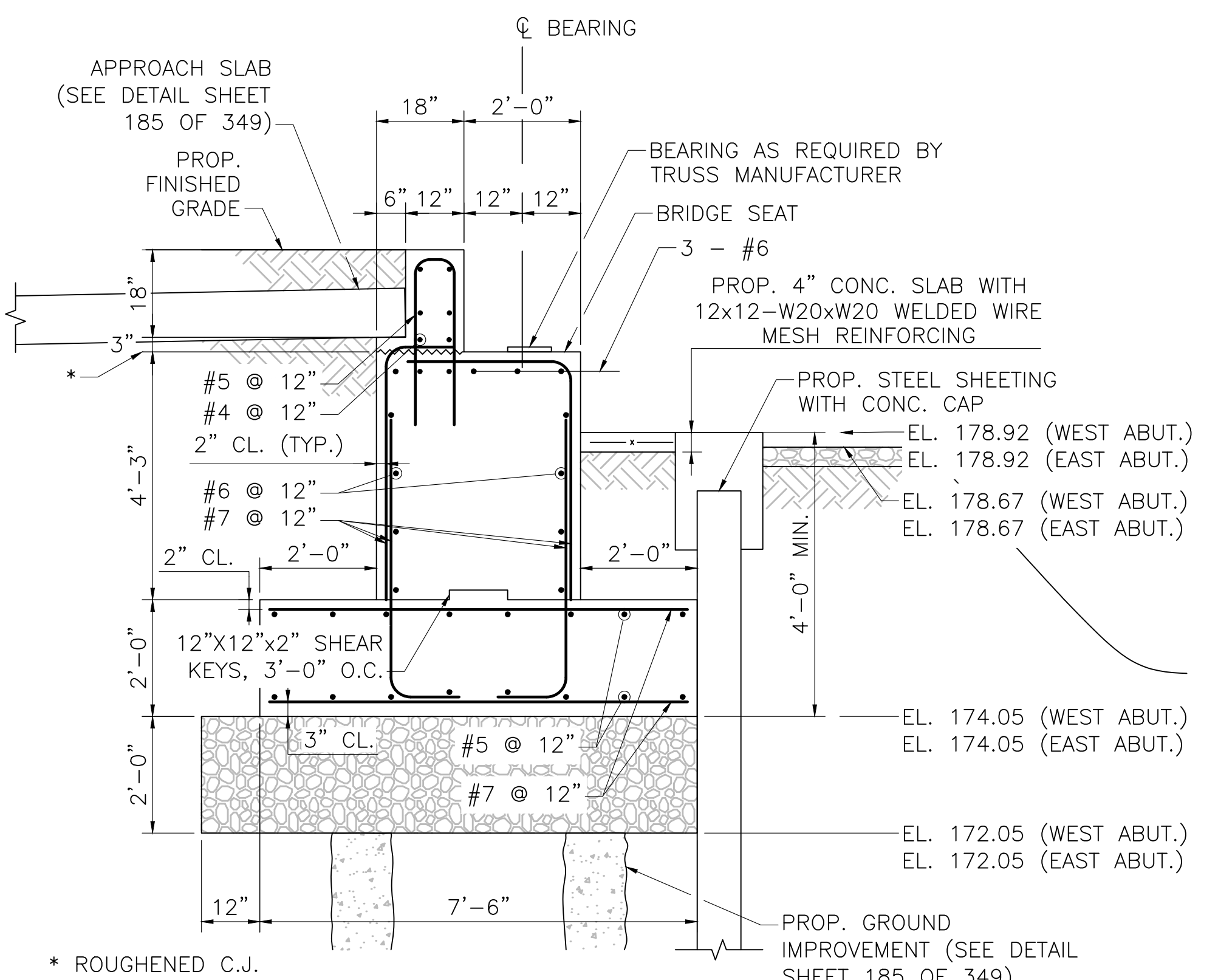
EAST ABUTMENT ELEVATION

SCALE: 1/4"=1'-0"

*NOTE: ACTUAL DIMENSIONS PER TRUSS MANUFACTURER'S DESIGN

TYPICAL ABUTMENT SECTION

SCALE: 1/2"=1'-0"



REVISION			
N.O.	DESCRIPTION	BY	DATE

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 BRIDGE H-25-027 (BRIDGE 130) - SUBSTRUCTURE DETAILS
 PLAN 84 OF 349

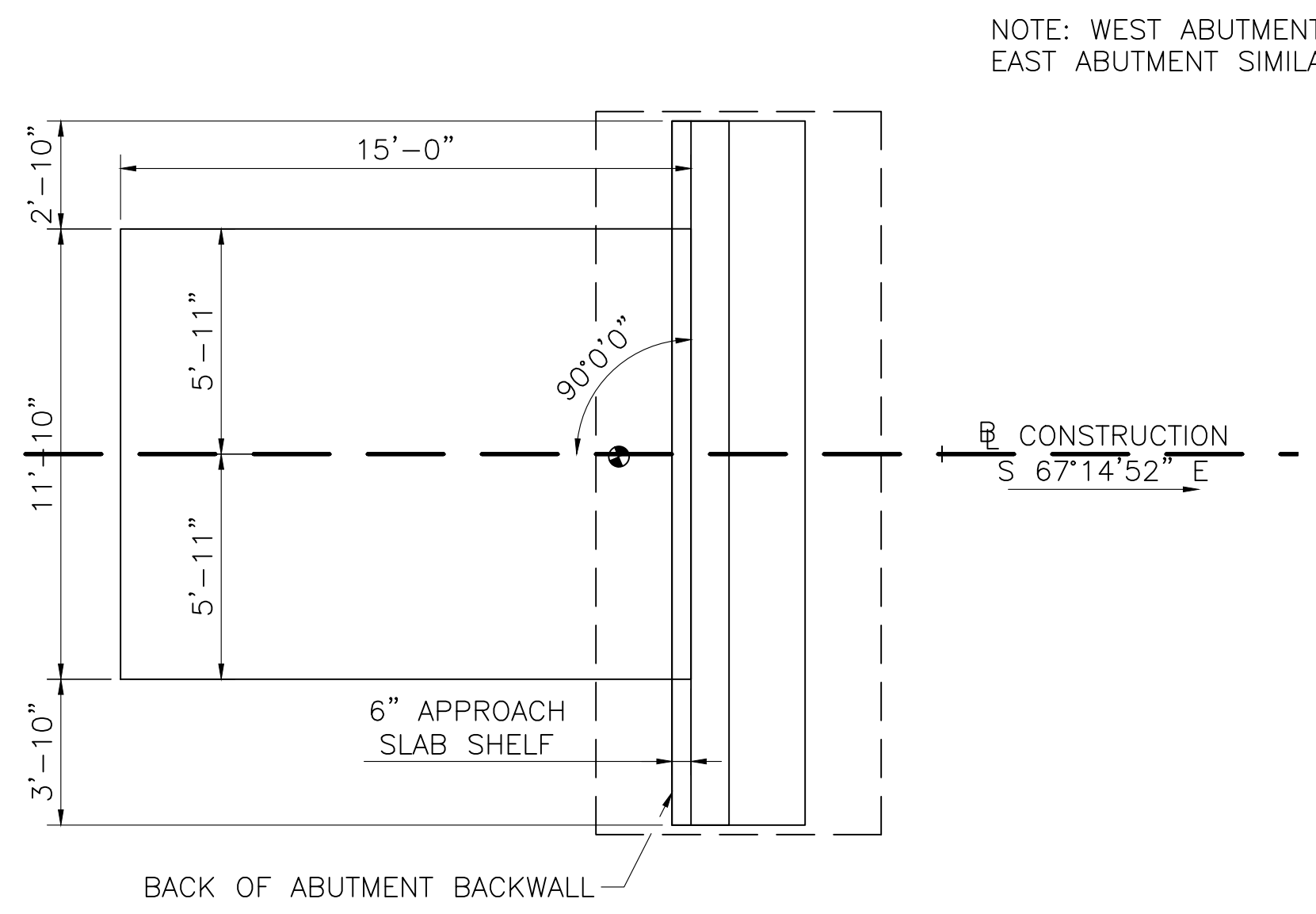
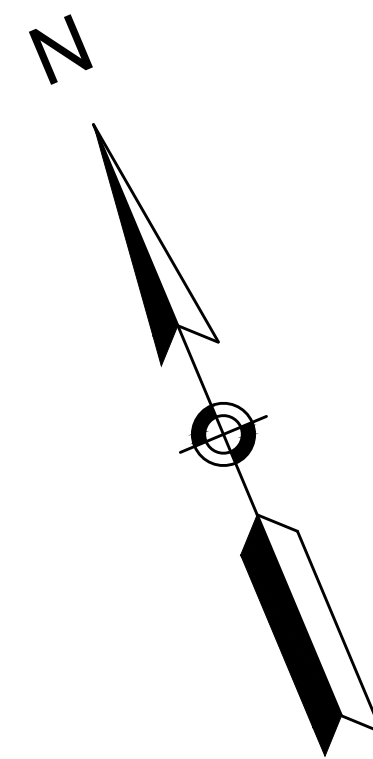
SCALE: unless noted VARIES	DATE: DEC 2021	DRAWN: AMS	CHK'D: SBK	APPR.: KGK	DRAWING NO.:	REV.:
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Vanasse Hangen Brustlin, Inc.
 101 Walnut St., PO Box 9151
 Watertown, MA 02472
 617.924.1770 FAX 617.924.2286

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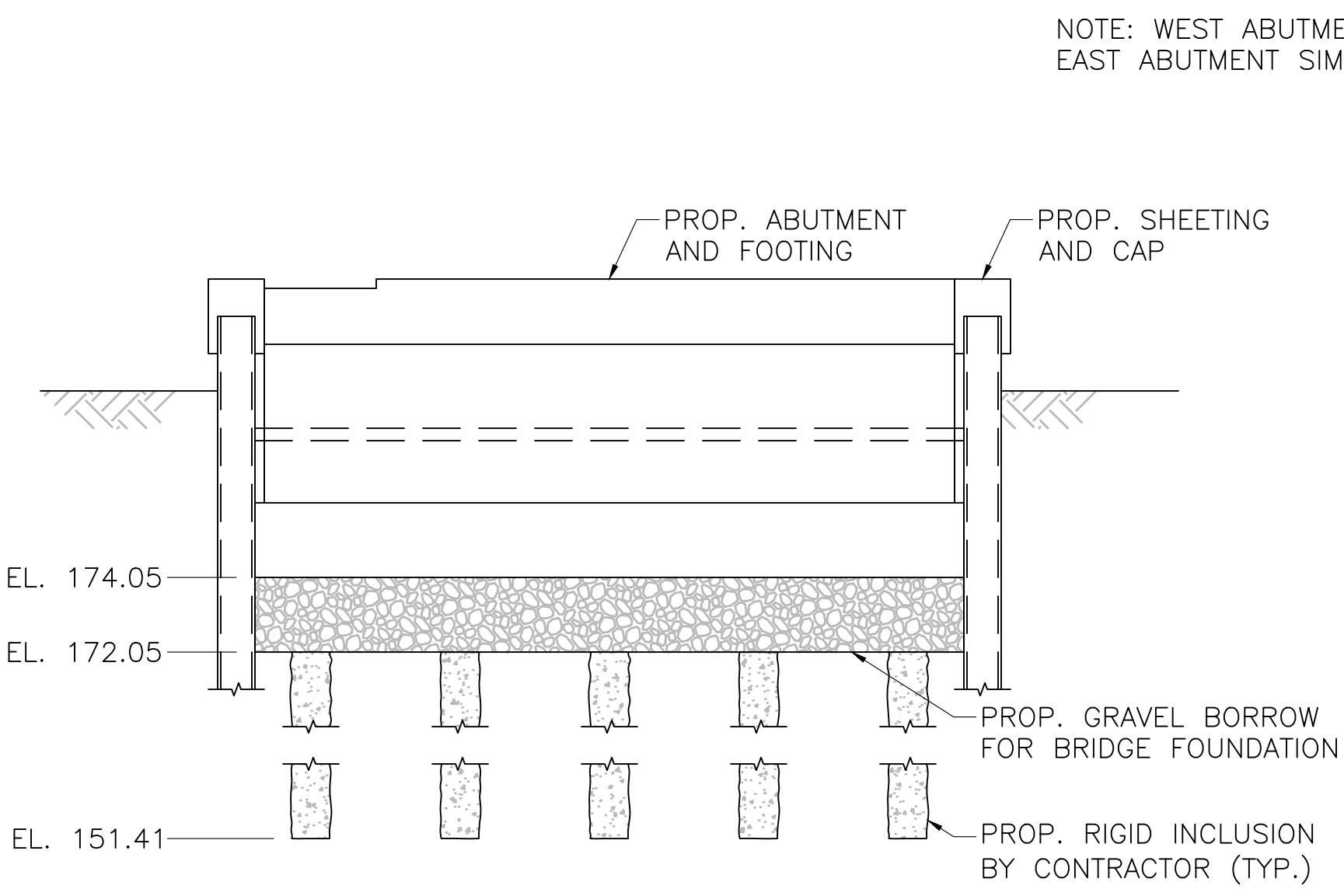
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APPROACH SLAB PLAN

SCALE: 1/4"=1'-0"

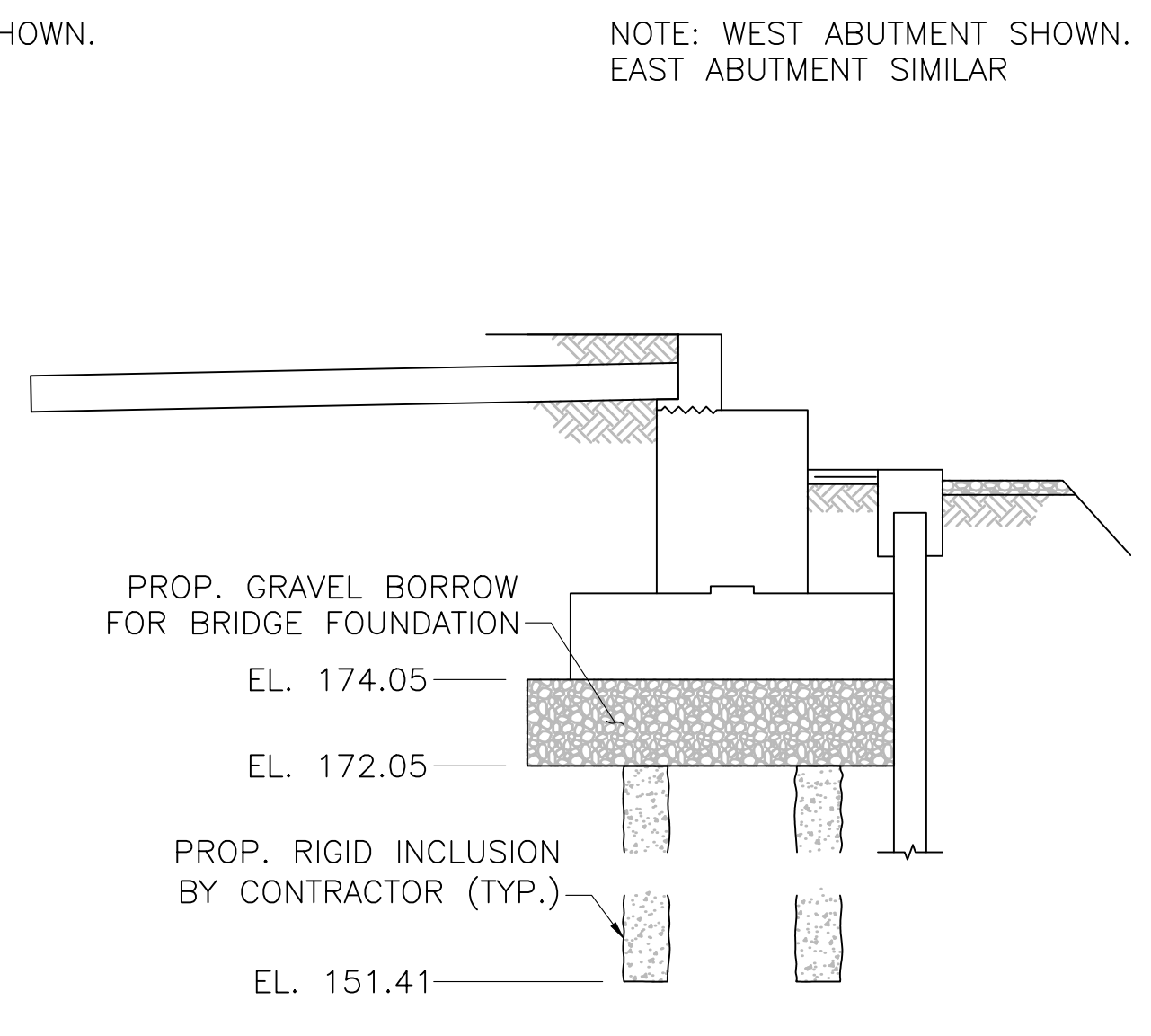
NOTE: WEST ABUTMENT SHOWN.
EAST ABUTMENT SIMILAR



GROUND IMPROVEMENT ELEVATION

SCALE: 1/4"=1'-0"

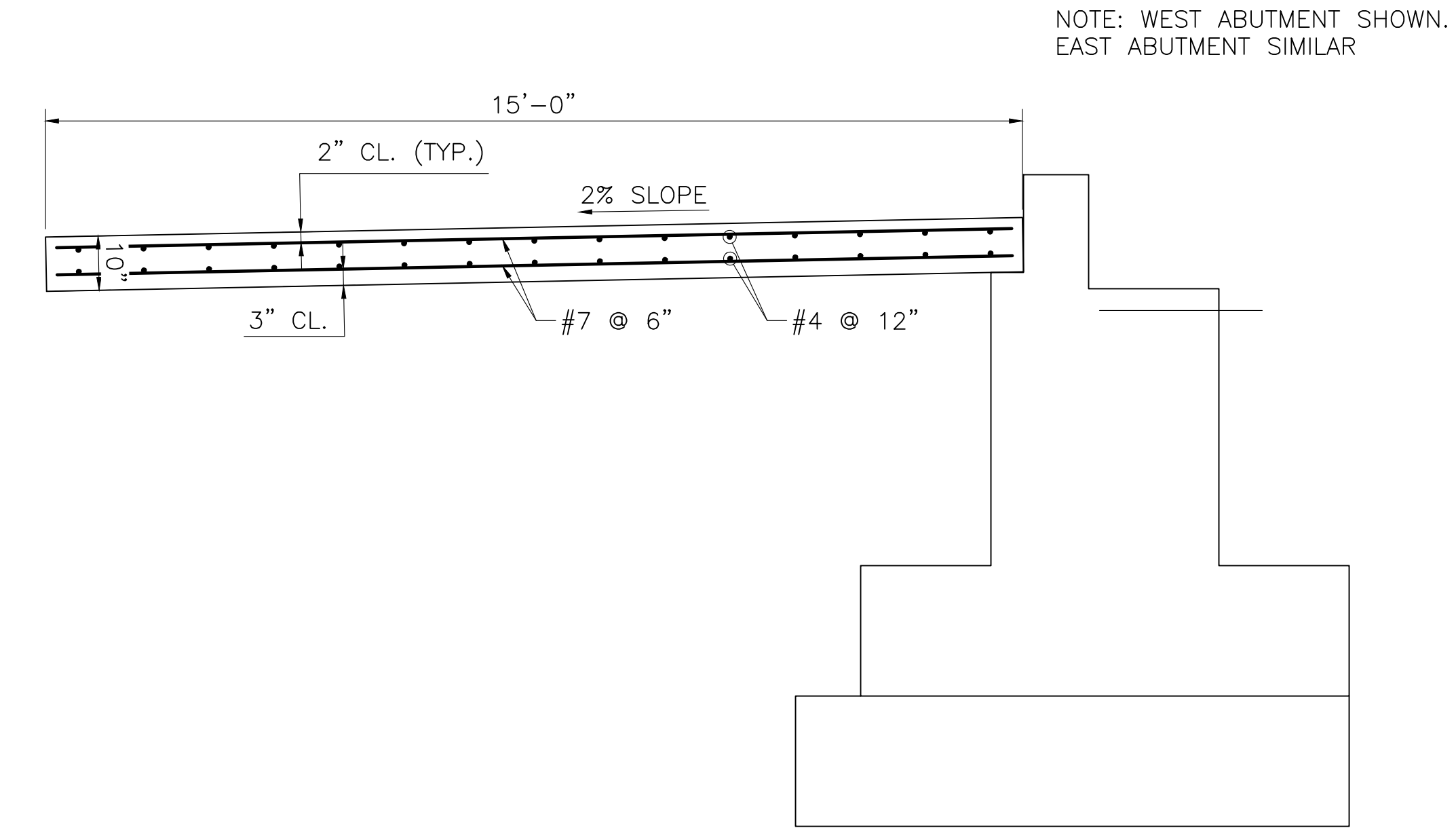
NOTE: WEST ABUTMENT SHOWN.
EAST ABUTMENT SIMILAR



GROUND IMPROVEMENT SECTION

SCALE: 1/4"=1'-0"

NOTE: WEST ABUTMENT SHOWN.
EAST ABUTMENT SIMILAR



APPROACH SLAB DETAIL

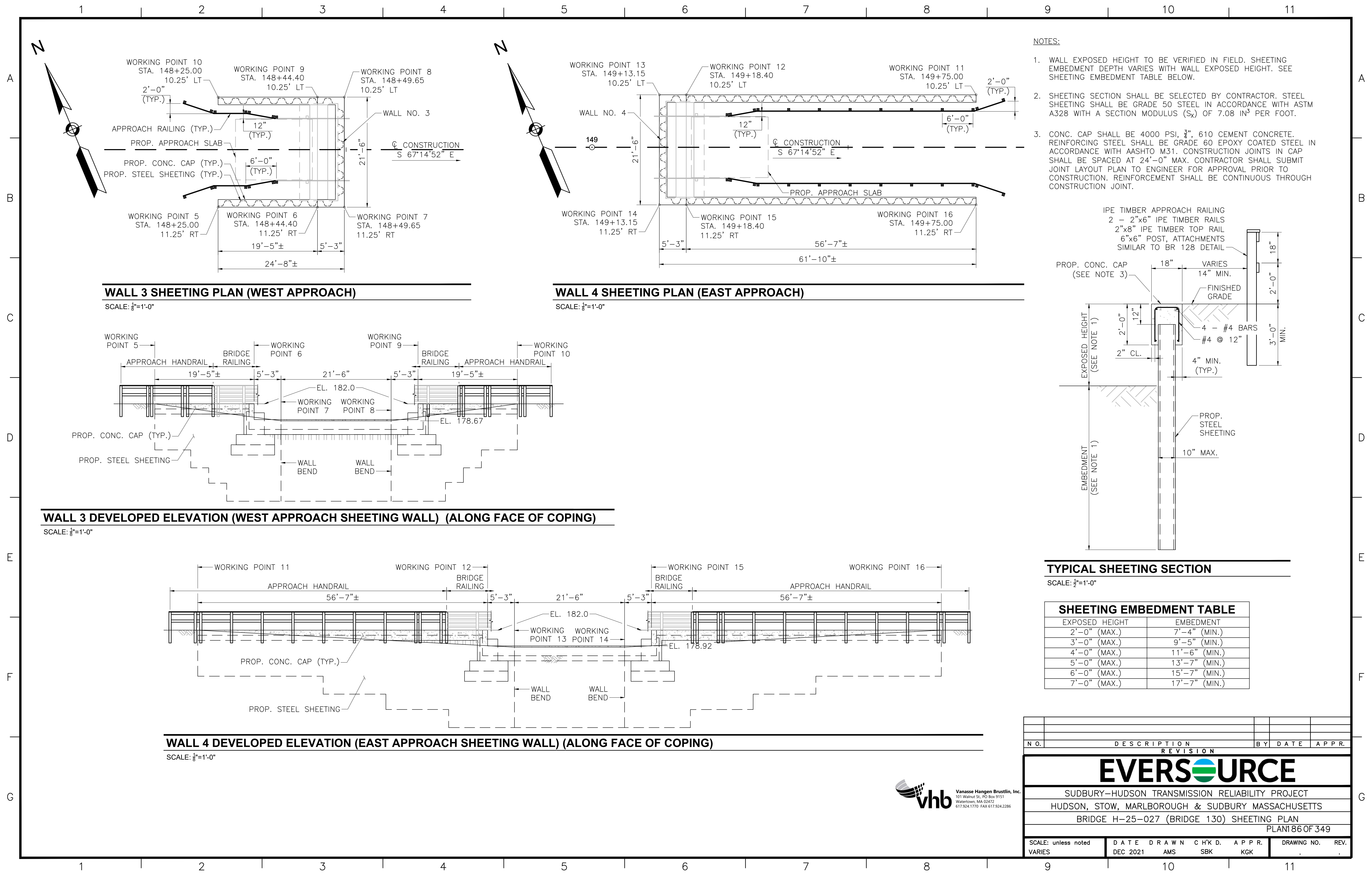
SCALE: 1/2"=1'-0"

NOTE: WEST ABUTMENT SHOWN.
EAST ABUTMENT SIMILAR

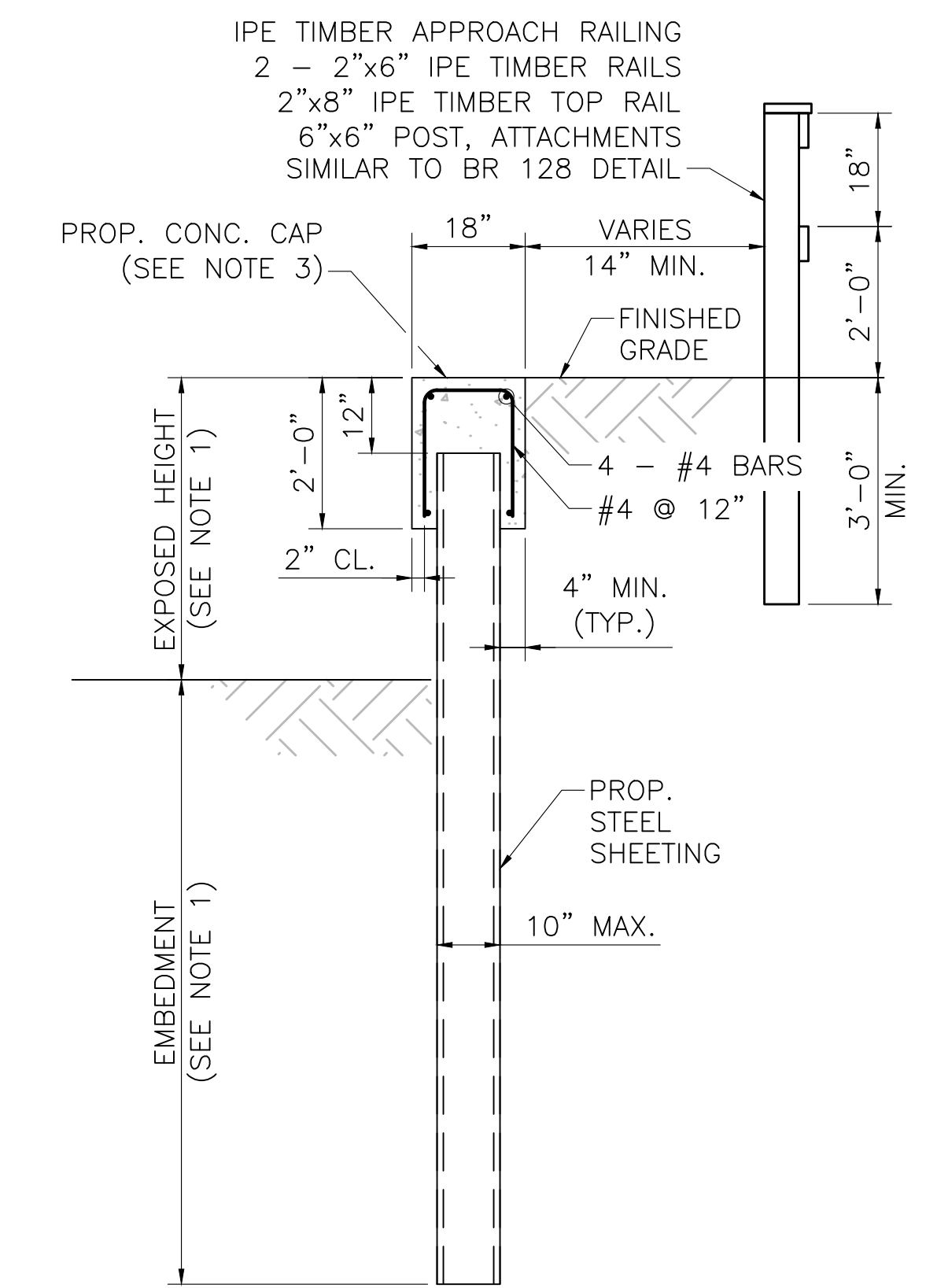


N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
BRIDGE H-25-027 (BRIDGE 130) - SUBSTRUCTURE DETAILS				
PLAN 185 OF 349				
SCALE: unless noted VARIES	DATE DEC 2021	DRAWN AMS	CH'K D. SBK	APPR. KGK
DRAWING NO.	REV.			

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- NOTES:**
1. WALL EXPOSED HEIGHT TO BE VERIFIED IN FIELD. SHEETING EMBEDMENT DEPTH VARIES WITH WALL EXPOSED HEIGHT. SEE SHEETING EMBEDMENT TABLE BELOW.
 2. SHEETING SECTION SHALL BE SELECTED BY CONTRACTOR. STEEL SHEETING SHALL BE GRADE 50 STEEL IN ACCORDANCE WITH ASTM A328 WITH A SECTION MODULUS (S_x) OF 7.08 IN³ PER FOOT.
 3. CONC. CAP SHALL BE 4000 PSI, 3/4", 610 CEMENT CONCRETE. REINFORCING STEEL SHALL BE GRADE 60 EPOXY COATED STEEL IN ACCORDANCE WITH AASHTO M31. CONSTRUCTION JOINTS IN CAP SHALL BE SPACED AT 24'-0" MAX. CONTRACTOR SHALL SUBMIT JOINT LAYOUT PLAN TO ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION. REINFORCEMENT SHALL BE CONTINUOUS THROUGH CONSTRUCTION JOINT.



TYPICAL SHEETING SECTION
SCALE: 1/2"=1'-0"

SHEETING EMBEDMENT TABLE	
EXPOSED HEIGHT	EMBEDMENT
2'-0" (MAX.)	7'-4" (MIN.)
3'-0" (MAX.)	9'-5" (MIN.)
4'-0" (MAX.)	11'-6" (MIN.)
5'-0" (MAX.)	13'-7" (MIN.)
6'-0" (MAX.)	15'-7" (MIN.)
7'-0" (MAX.)	17'-7" (MIN.)

NO.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
BRIDGE H-25-027 (BRIDGE 130) SHEETING PLAN				
PLAN 186 OF 349				
SCALE: unless noted VARIES	DATE: DEC 2021	DRAWN: AMS	CHK'D: SBK	APPR.: KGK
DRAWING NO.	REV.			



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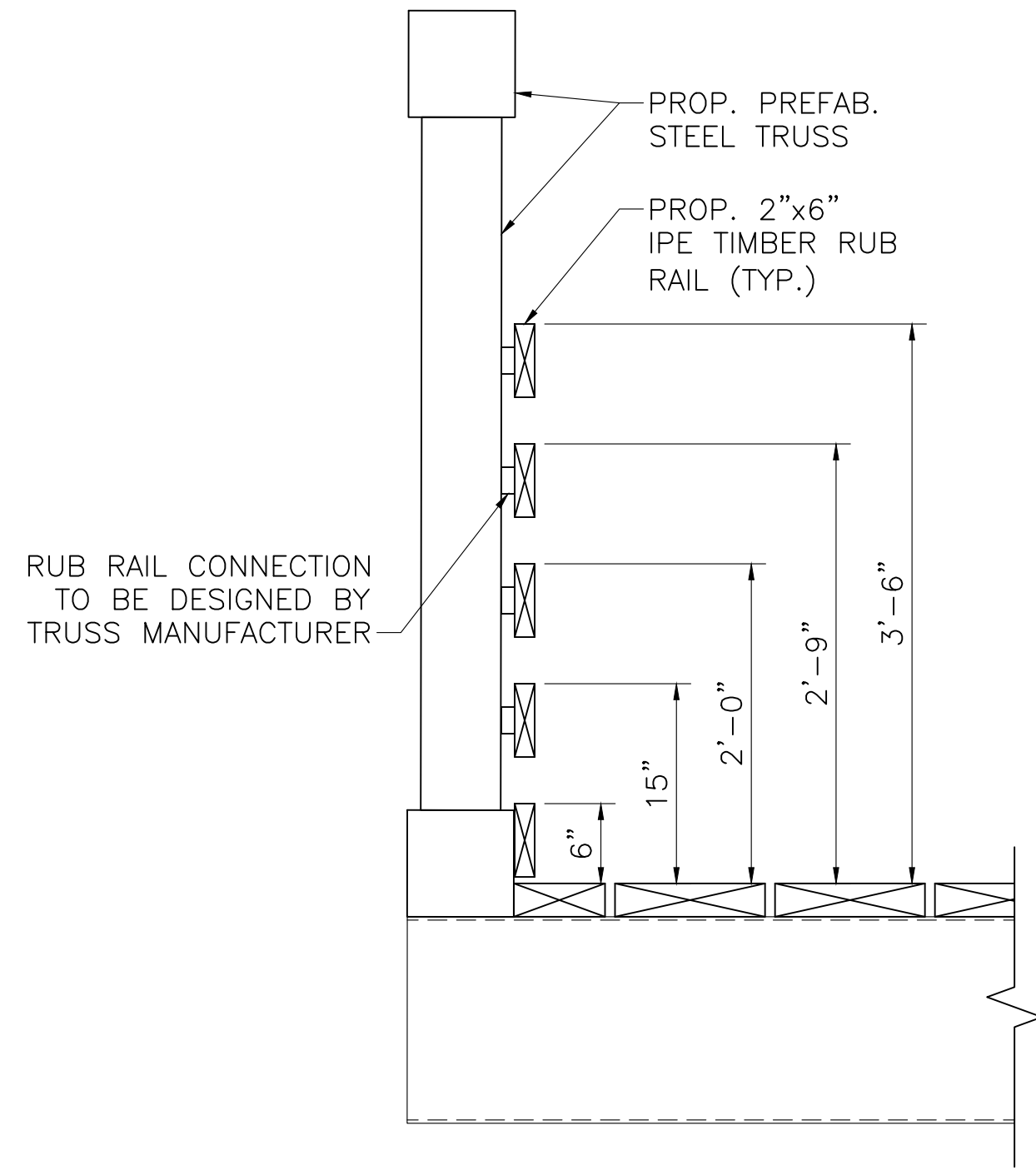
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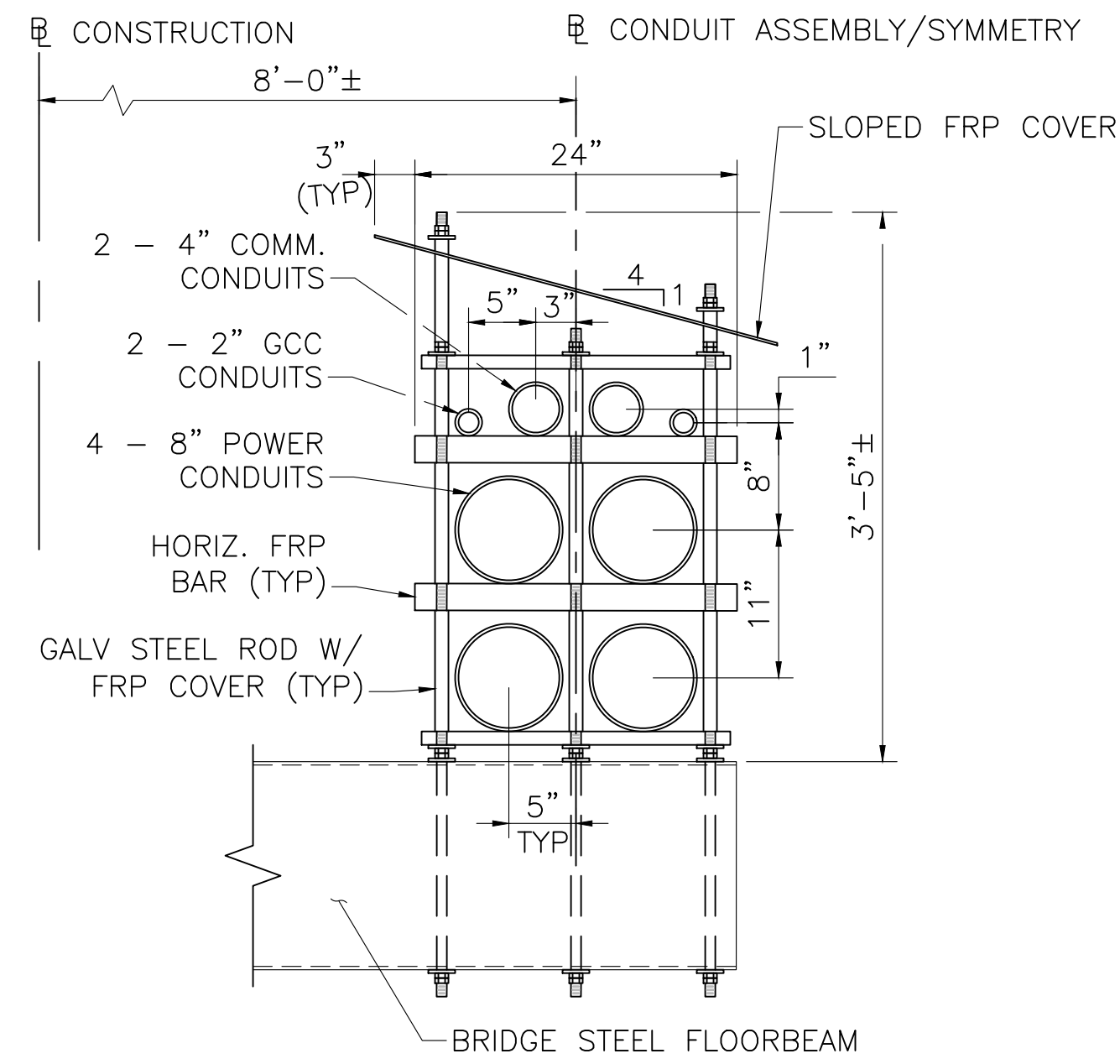
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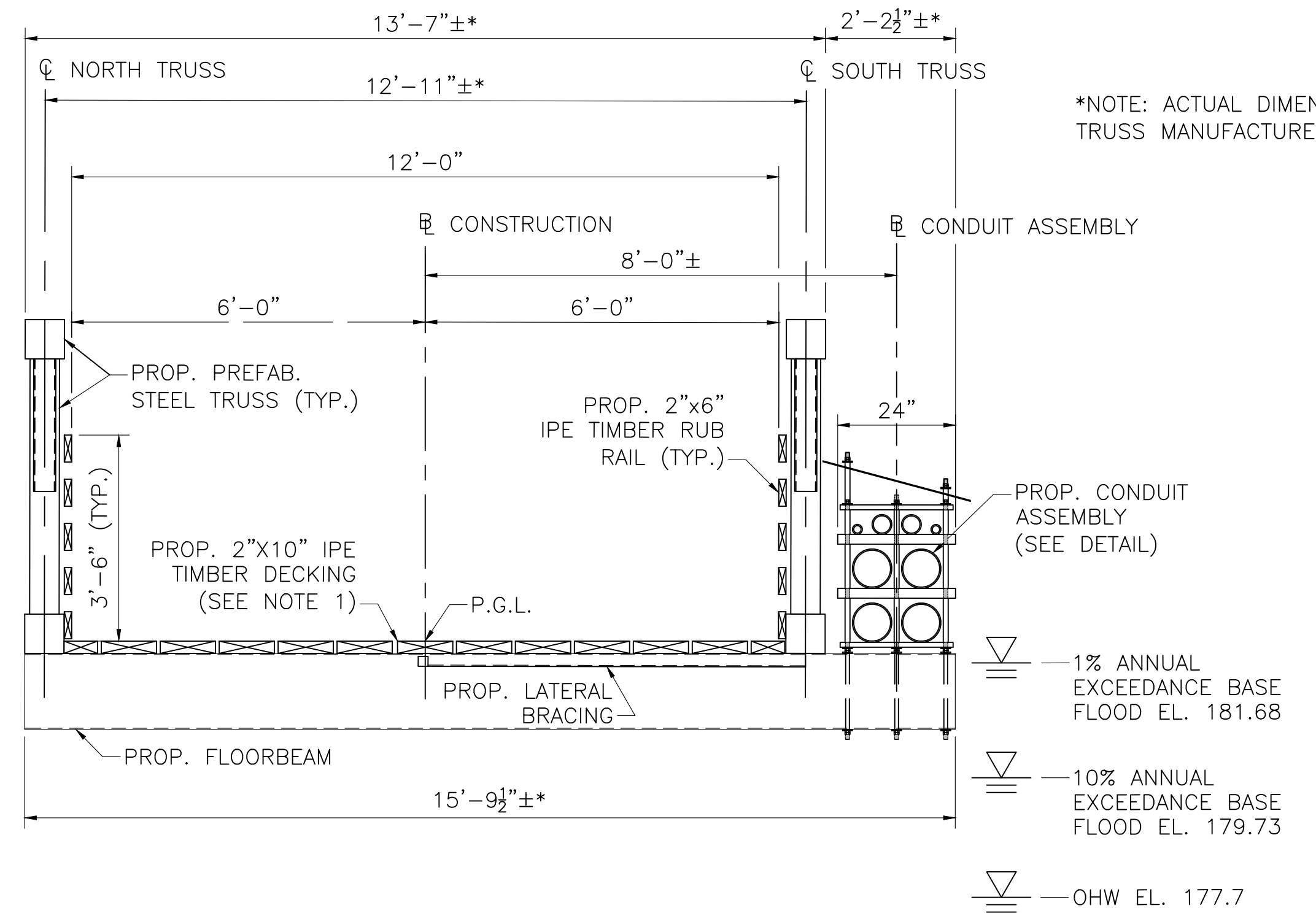
RAILING CONNECTION DETAIL

SCALE: 1"=1'-0"



CONDUIT ASSEMBLY DETAIL

SCALE: 1"=1'-0"



BRIDGE TRANSVERSE SECTION

SCALE: 1/2"=1'-0"

*NOTE: ACTUAL DIMENSIONS PER TRUSS MANUFACTURER'S DESIGN

1% ANNUAL EXCEEDANCE BASE FLOOD EL. 181.68
 10% ANNUAL EXCEEDANCE BASE FLOOD EL. 179.73
 OHW EL. 177.7

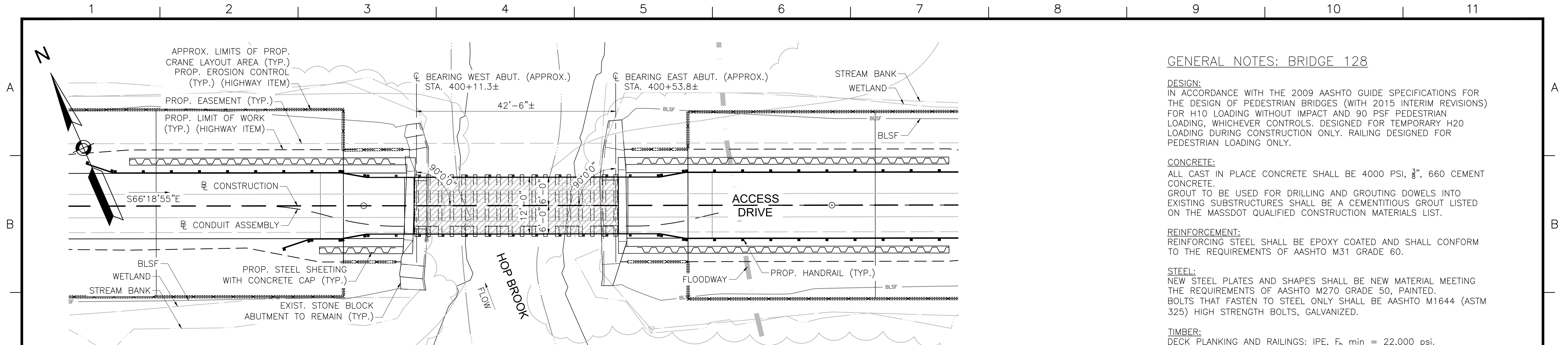
NOTES:

- TRUSS SHALL BE DESIGNED FOR TEMPORARY H2O LOADING DURING CONSTRUCTION. TIMBER DECKING IS DESIGNED FOR H10 LOADING WITHOUT IMPACT AND 90 PSF PEDESTRIAN LOADING, WHICHEVER CONTROLS. CONTRACTOR SHALL DESIGN TEMPORARY DECKING IF BRIDGE IS INTENDED TO BE USED FOR CONSTRUCTION VEHICLES.



N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
BRIDGE H-25-027 (BRIDGE 130) - SECTION & DETAILS				
PLAN 187 OF 349				
SCALE: unless noted VARIES	DATE: DEC 2021	DRAWN: AMS	CHK'D: SBK	APPR.: KGK
DRAWING NO.	REV.			

1 2 3 4 5 6 7 8 9 10 11



BRIDGE KEY PLAN
SCALE: 1"=10'

GENERAL NOTES: BRIDGE 128

DESIGN:
IN ACCORDANCE WITH THE 2009 AASHTO GUIDE SPECIFICATIONS FOR THE DESIGN OF PEDESTRIAN BRIDGES (WITH 2015 INTERIM REVISIONS) FOR H10 LOADING WITHOUT IMPACT AND 90 PSF PEDESTRIAN LOADING, WHICHEVER CONTROLS. DESIGNED FOR TEMPORARY H20 LOADING DURING CONSTRUCTION ONLY. RAILING DESIGNED FOR PEDESTRIAN LOADING ONLY.

CONCRETE:
ALL CAST IN PLACE CONCRETE SHALL BE 4000 PSI, 3/8", 660 CEMENT CONCRETE.
GROUT TO BE USED FOR DRILLING AND GROUTING DOWELS INTO EXISTING SUBSTRUCTURES SHALL BE A CEMENTITIOUS GROUT LISTED ON THE MASSDOT QUALIFIED CONSTRUCTION MATERIALS LIST.

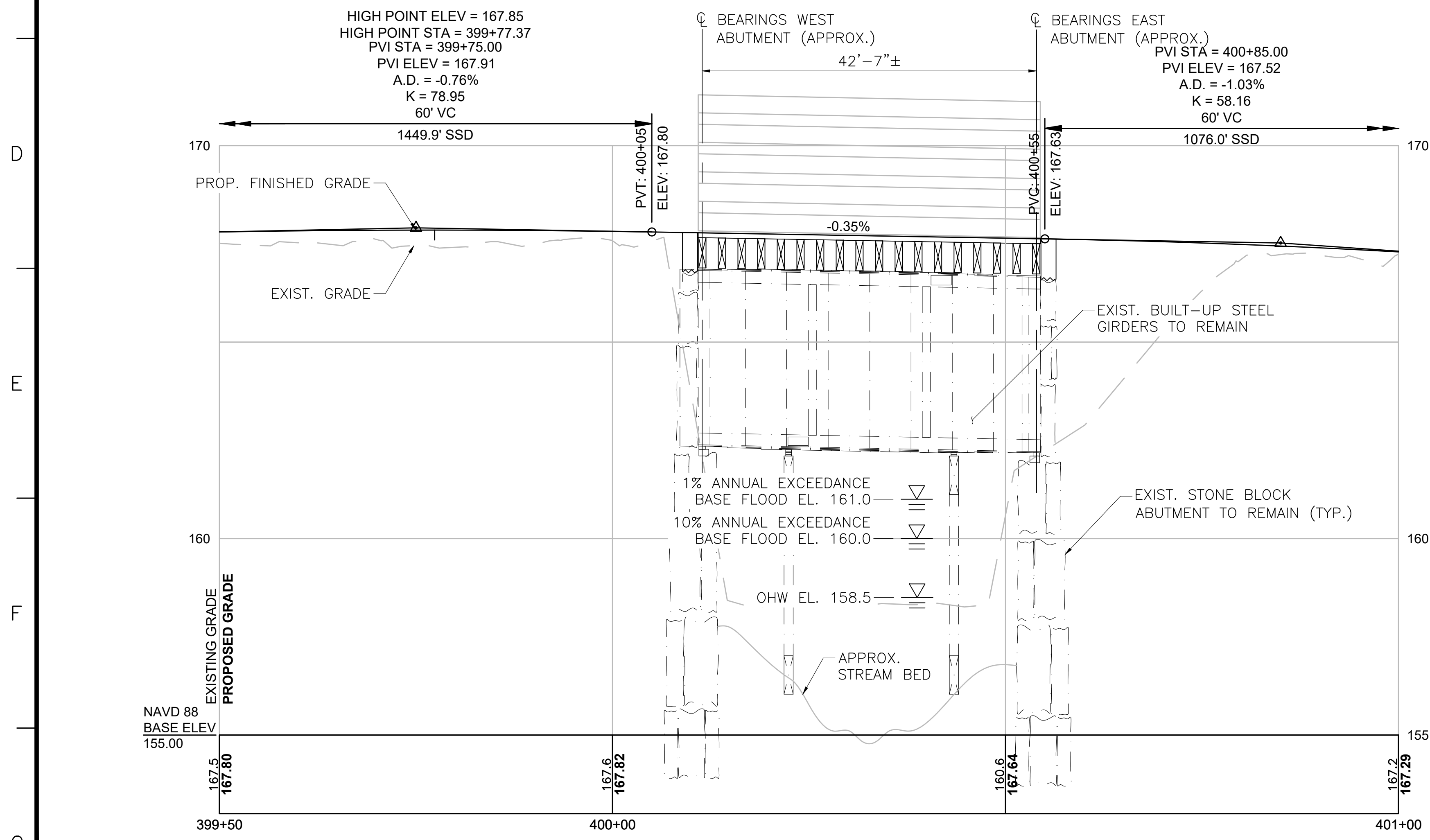
REINFORCEMENT:
REINFORCING STEEL SHALL BE EPOXY COATED AND SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M31 GRADE 60.

STEEL:
NEW STEEL PLATES AND SHAPES SHALL BE NEW MATERIAL MEETING THE REQUIREMENTS OF AASHTO M270 GRADE 50, PAINTED.
BOLTS THAT FASTEN TO STEEL ONLY SHALL BE AASHTO M1644 (ASTM 325) HIGH STRENGTH BOLTS, GALVANIZED.

TIMBER:
DECK PLANKING AND RAILINGS: IPE, F_b min = 22,000 psi.
FLOOR BEAMS: SYP NO. 1 OR BETTER, F_b min = 1,050 psi.
SYP TIMBER SHALL BE TREATED WITH ACQ-D WITH 0.60 PCF RETENTION.
ALL NAILS, SCREWS, BOLTS, WASHERS, CONNECTORS, FASTENERS AND HARDWARE FOR WOOD CONNECTIONS SHALL BE STAINLESS STEEL TYPE 304 OR TYPE 316.
WHERE TREATED TIMBER MEMBERS ARE IN DIRECT CONTACT WITH STEEL PROVIDE VYCOR DECK PROTECTOR BARRIER MEMBRANE BY W.R. GRACE & CO. OR APPROVED EQUAL.
BETWEEN THE TIMBER TRANSVERSE FLOOR BEAMS AND THE DECK PLANKING, PROVIDE A LAYER OF GRACE ICE & WATER SHIELD BY W.R. GRACE & CO. OR APPROVED EQUAL.

SURVEY AND EXISTING CONDITIONS:
THE EXISTING CONDITIONS SHOWN ON THIS PLAN WERE DEVELOPED FROM A COMBINED EFFORT OF AERIAL PHOTOGRAMMETRIC MAPPING BY EASTERN TOPOGRAPHICS, INC., BASED ON AERIAL PHOTOGRAPHS TAKEN ON FEBRUARY 22, 2013, AND AUGMENTED BY AN ON-THE-GROUND SURVEY PERFORMED BY VHB DURING 2015 AND 2017.
THE HORIZONTAL CONTROL IS BASED ON THE MASSACHUSETTS MAINLAND STATE PLANE COORDINATE SYSTEM AND THE NATIONAL GEODETIC SURVEY (NAD83). ALL ELEVATION IS US FEET, REFERENCED TO THE NORTH AMERICA VERTICAL DATUM OF 1988 (NAVD88).

DEMOLITION AND CONSTRUCTION:
ALL EXISTING MATERIALS REMOVED AND NOT REUSED AND ALL WASTE MATERIALS SHALL BECOME THE PROPERTY OF THE CONTRACTOR. TREATED TIMBER AND CONTAMINATED WASTE SHALL BE DISPOSED OF OFF SITE AT AN APPROVED FACILITY.
BACKFILL AROUND ABUTMENTS SHALL BE GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES.
THE CONTRACTOR SHALL TAKE THE PROPER PRECAUTIONS TO ENSURE THE STABILITY AND SAFE PERFORMANCE OF ALL STRUCTURAL ELEMENTS DURING DEMOLITION AND CONSTRUCTION.
IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ADEQUATE SHIELDING OR NETTING DURING DEMOLITION AND CONSTRUCTION TO ADEQUATELY PROTECT WORKERS AND TO PREVENT DEBRIS AND MATERIALS FROM ENTERING THE WATERWAY.
ANY DAMAGE TO REMAINING EXISTING COMPONENTS THAT IS CAUSED BY THE CONTRACTOR'S ACTIVITY SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR, AT NO ADDITIONAL EXPENSE.



PROFILE - ACCESS DRIVE
HORIZONTAL SCALE: 1"=10'
VERTICAL SCALE: 1/2"=1'-0"



NO.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
BRIDGE S-31-017 (BRIDGE 128) - KEY PLAN & PROFILE				
PLAN 188 OF 349				
SCALE: unless noted H: 1"=10' V: 1/2"=1'-0"		DATE DRAWN DEC 2021 AMS		APPR. SBK KGK
		DRAWING NO.		REV.

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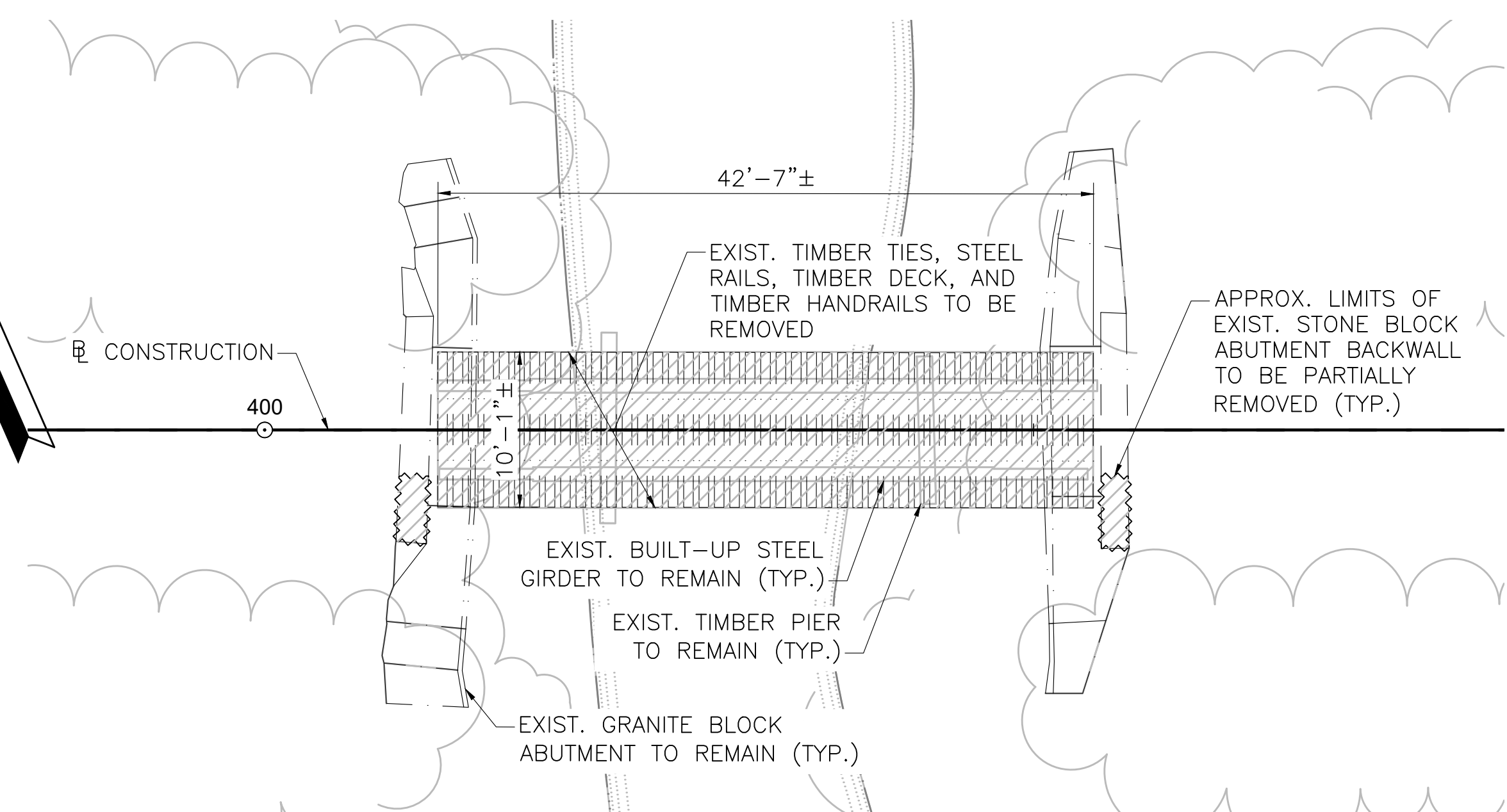
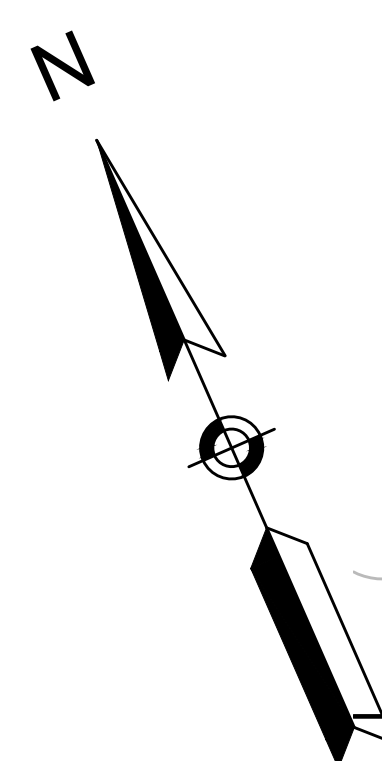
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E

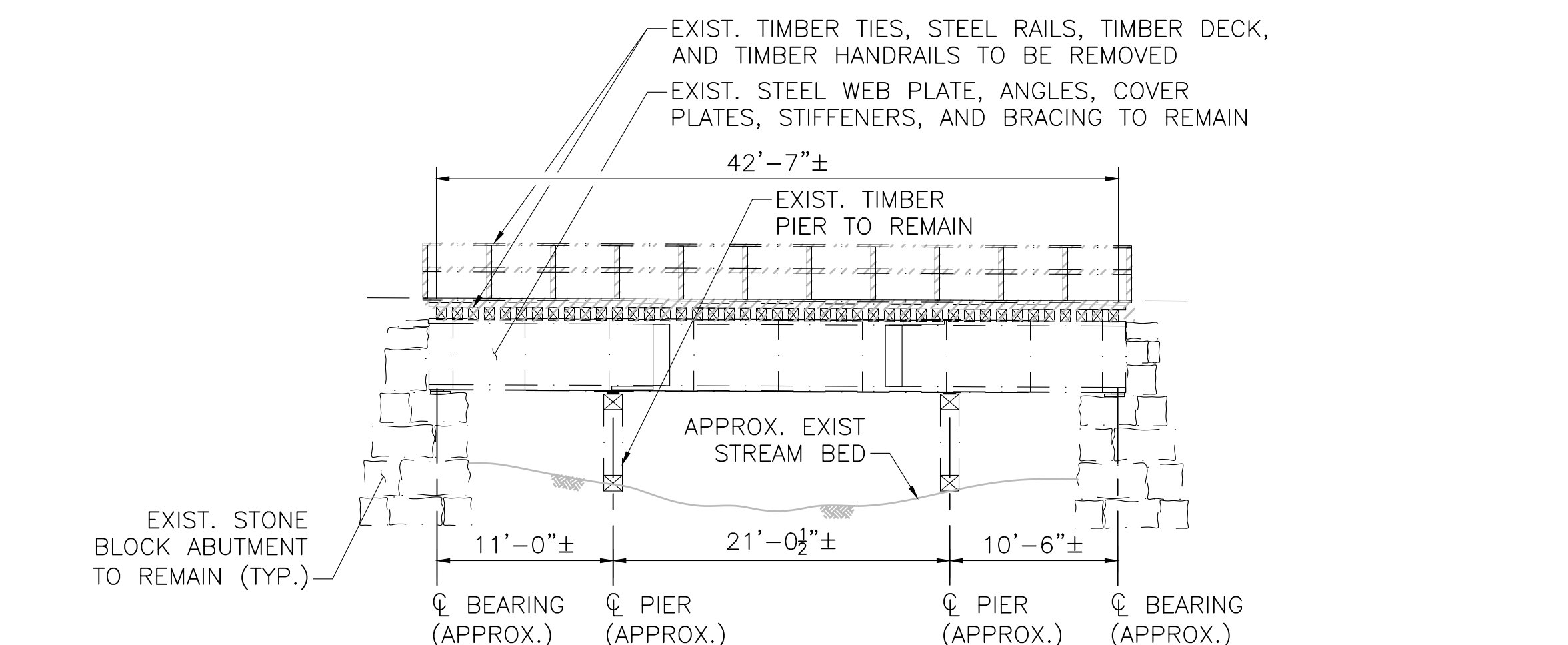
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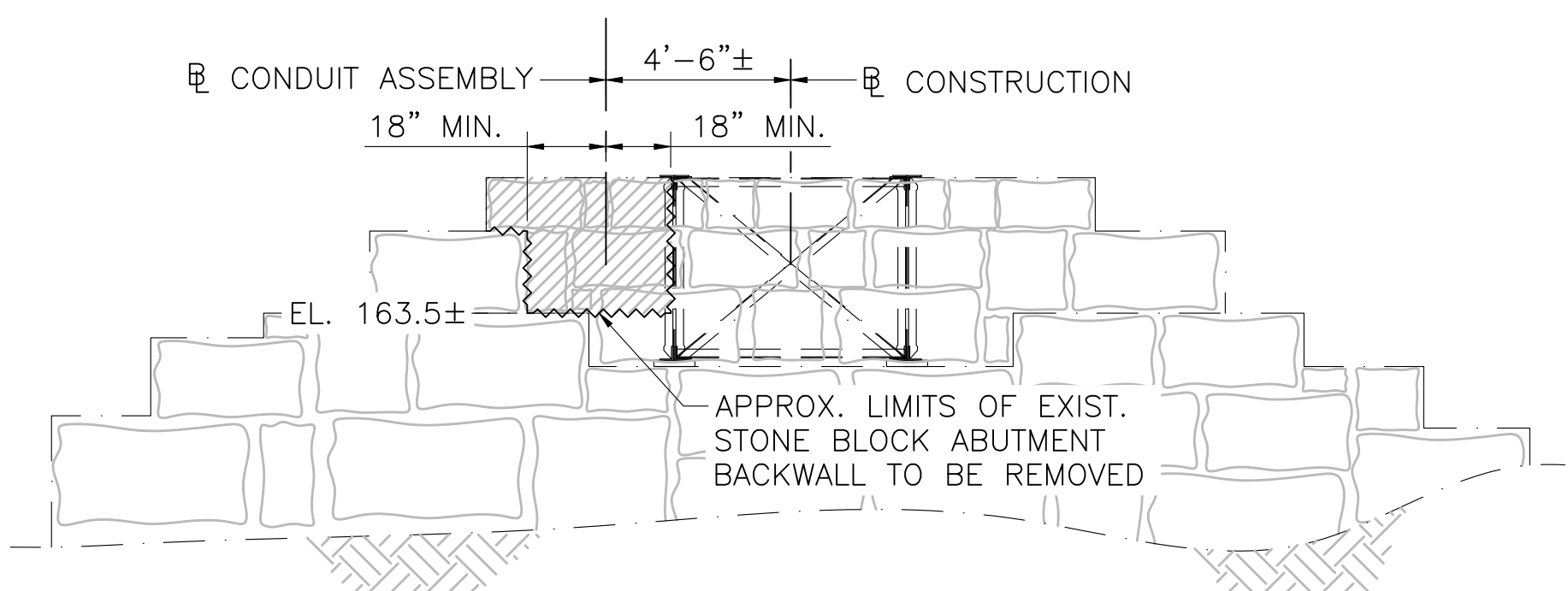
BRIDGE PLAN

SCALE: $\frac{1}{4}$ "=1'-0"



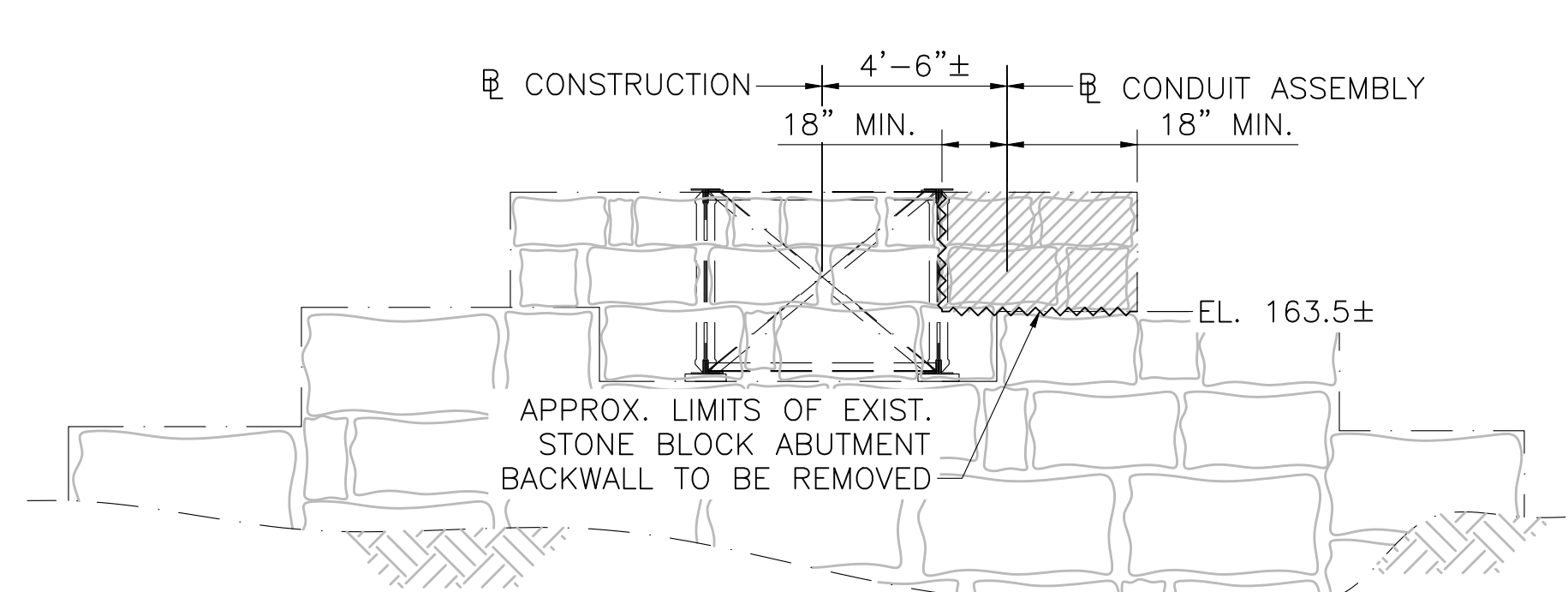
BRIDGE ELEVATION

SCALE: $\frac{1}{4}$ "=1'-0"



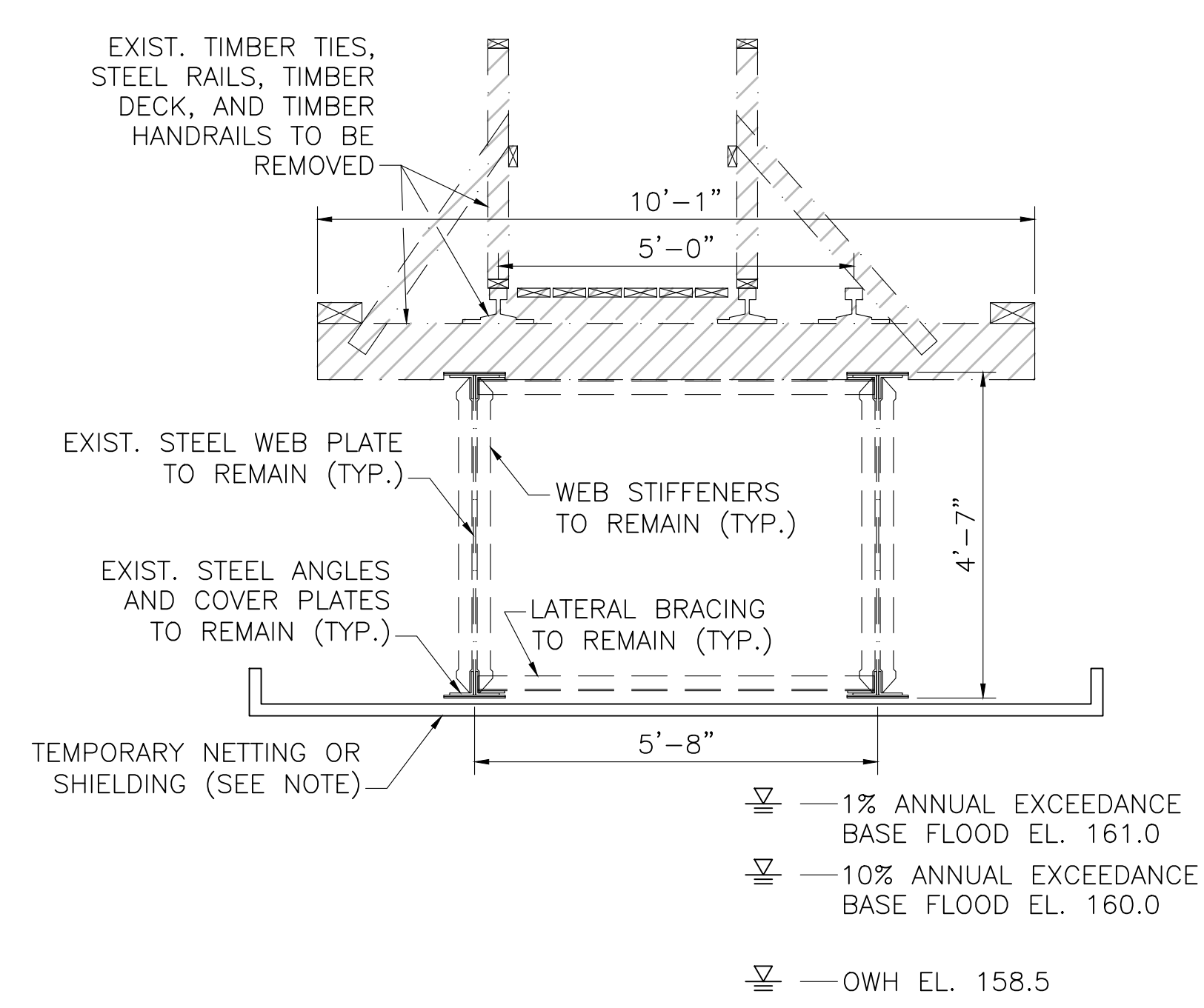
WEST ABUTMENT ELEVATION

SCALE: $\frac{1}{4}$ "=1'-0"



EAST ABUTMENT ELEVATION

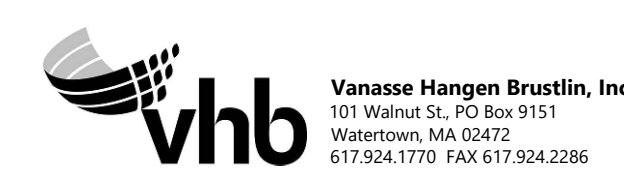
SCALE: $\frac{1}{4}$ "=1'-0"



BRIDGE TRANSVERSE SECTION

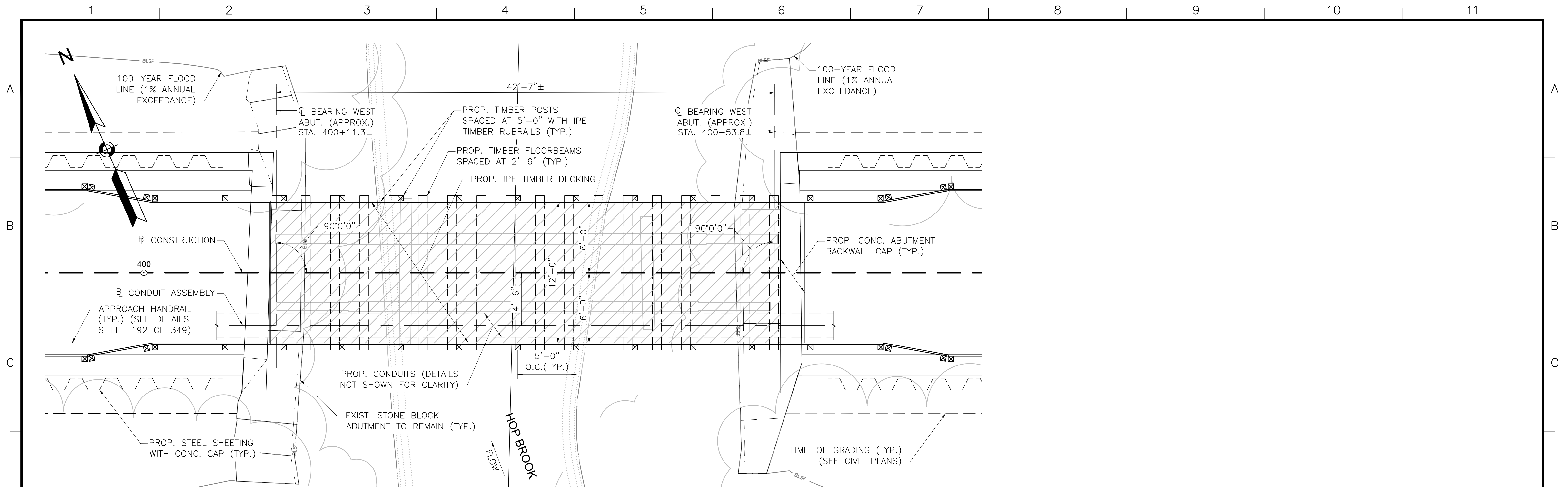
SCALE: $\frac{1}{2}$ "=1'-0"

NOTE: CONTRACTOR SHALL DESIGN AND INSTALL TEMPORARY PROTECTIVE SHIELDING OR NETTING DURING DEMOLITION OF BRIDGE AND AS NEEDED DURING CONSTRUCTION OF NEW BRIDGE TO PREVENT CONSTRUCTION DEBRIS FROM FALLING INTO THE WATER BODIES BELOW. SEE PROJECT SPECIFICATIONS AND PERMITTING DOCUMENTS FOR ADDITIONAL REQUIREMENTS AND INFORMATION.



N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
BRIDGE S-31-017 (BRIDGE 128) - DEMOLITION PLAN				
PLAN 189 OF 349				
SCALE: unless noted	DATE	DRAWN	C'H'K D.	APPR.
VARIABLES	DEC 2021	AMS	SBK	KGK
	DRAWING NO.	REV.		

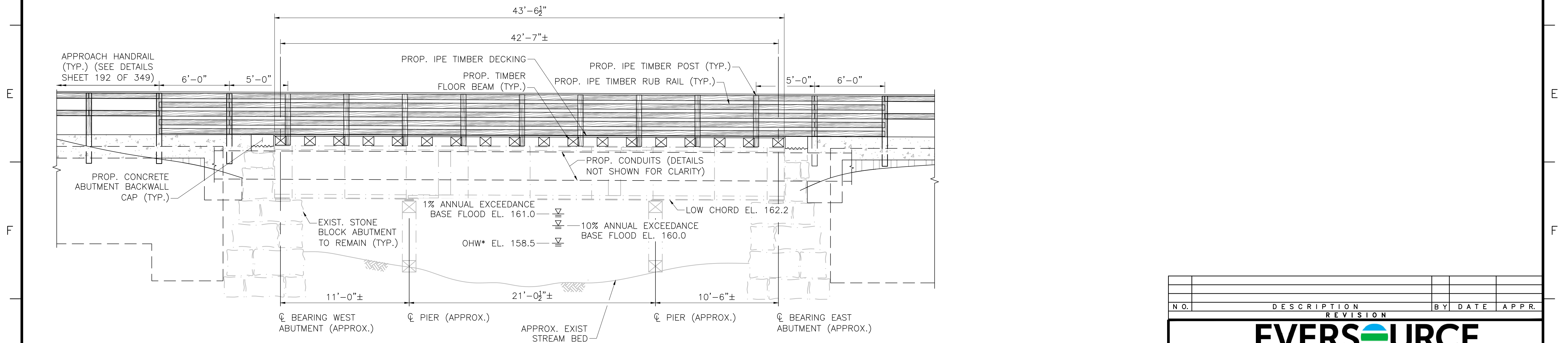
1 2 3 4 5 6 7 8 9 10 11



BRIDGE 128 (HOP BROOK) PLAN

SCALE: 1/4"=1'-0"

*NOTE: OHW = ESTIMATED ORDINARY HIGH WATER



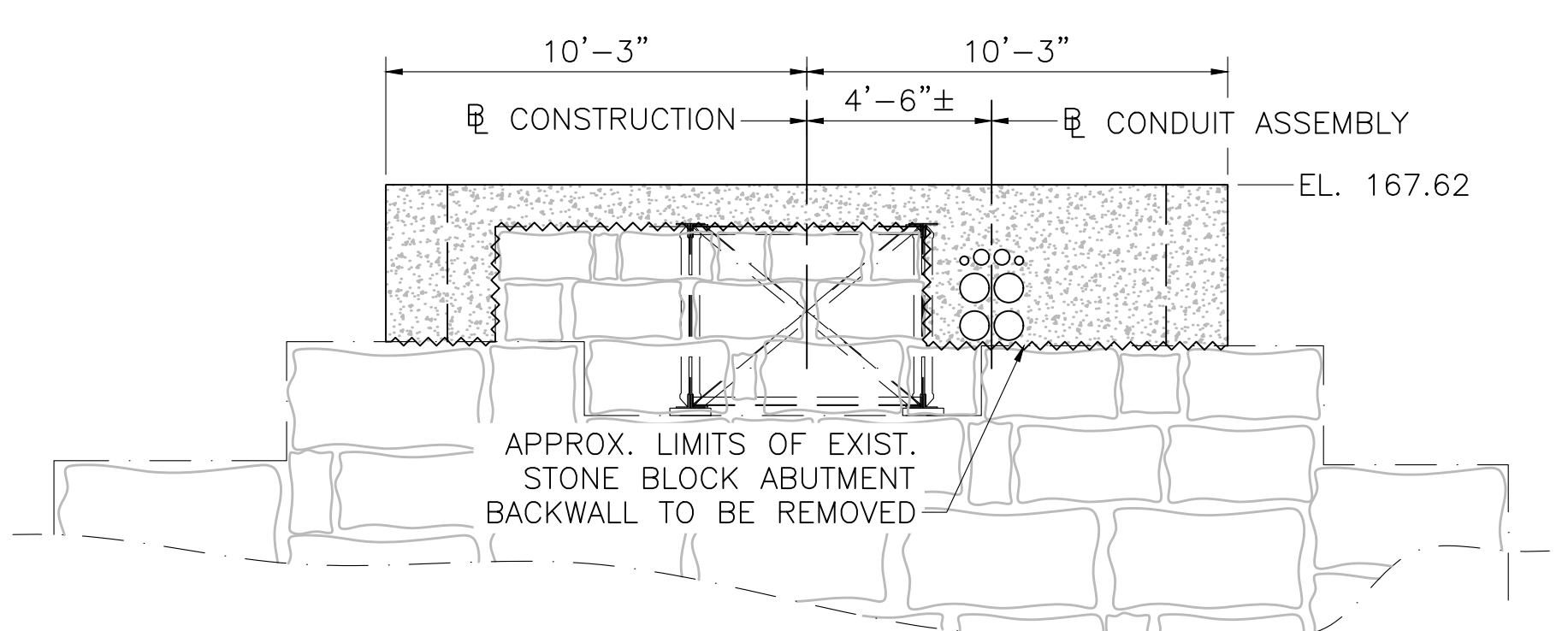
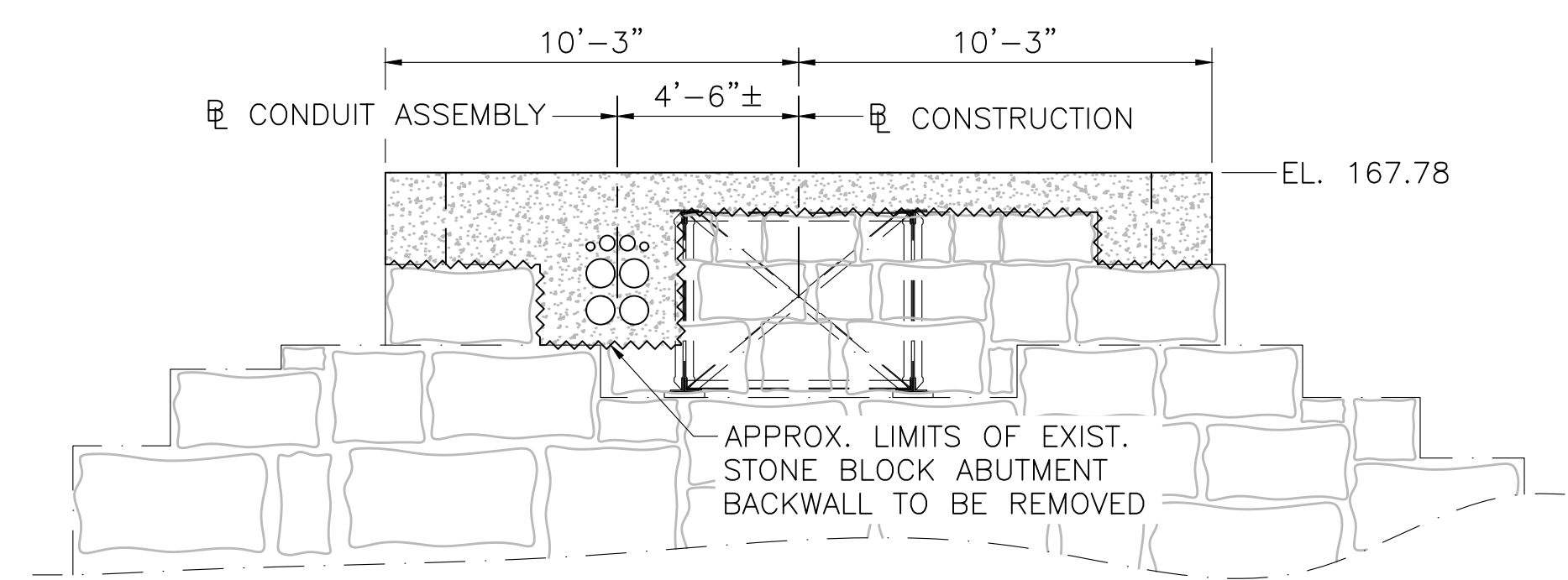
BRIDGE 128 (HOP BROOK) ELEVATION

SCALE: 1/4"=1'-0"



N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
BRIDGE S-31-017 (BRIDGE 128) - PLAN & ELEVATION				
PLAN 90 OF 349				
SCALE: unless noted 1"=4'	DATE DEC 2021	DRAWN AMS	CHECKED SBK	APPR. KGK
				DRAWING NO. REV.

NOTES:
 1. UTILITY SLEEVES SHALL BE STEEL PIPE CONFORMING TO ASTM A-53, TYPE S, GRADE B, STANDARD WEIGHT, PLAIN ENDS, HOT-DIP GALVANIZED AND SHALL BE SET IN THE FORMS PRIOR TO PLACING CONCRETE.

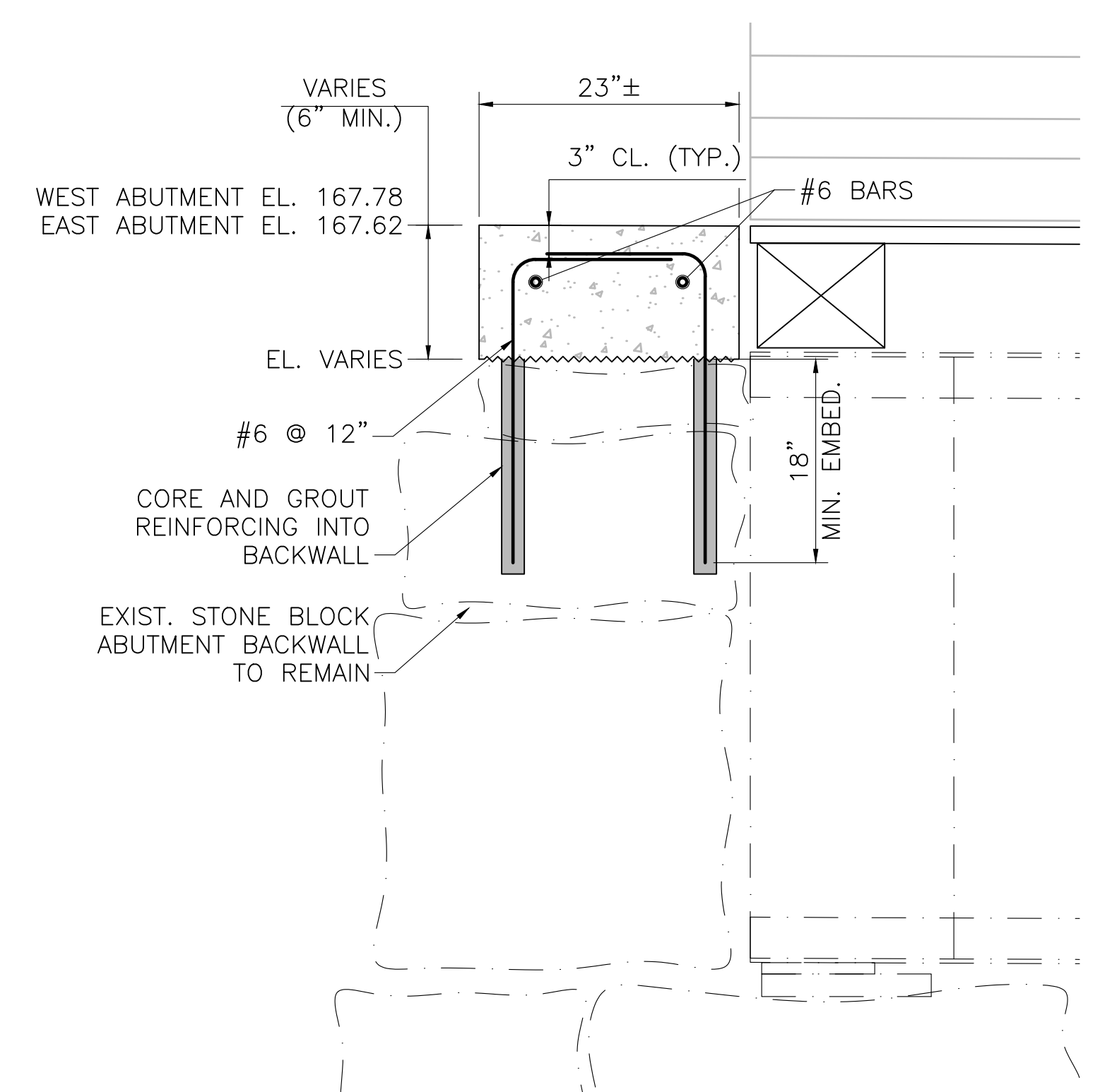


WEST ABUTMENT ELEVATION

SCALE: 3/4"=1'-0"

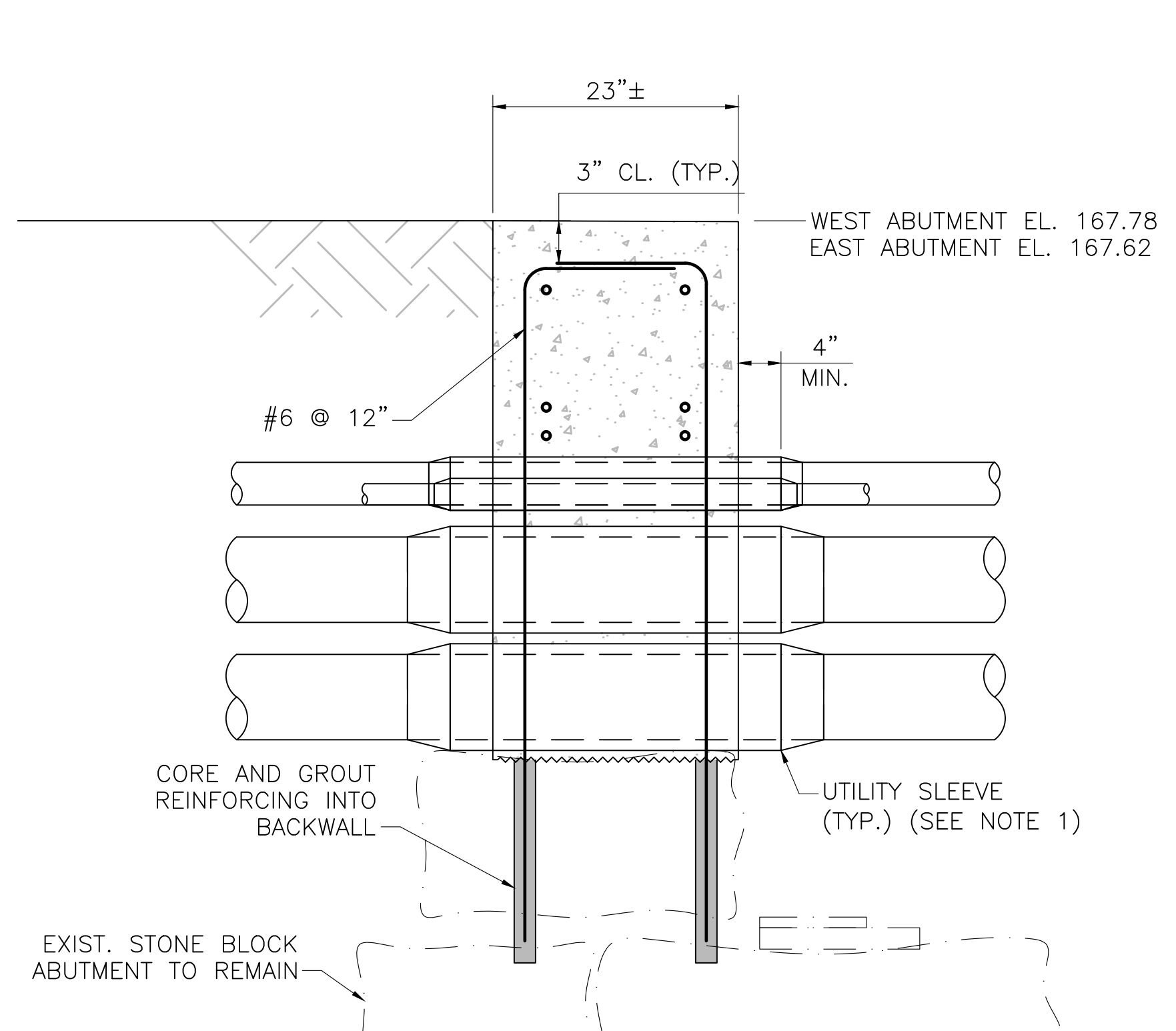
EAST ABUTMENT ELEVATION

SCALE: 3/4"=1'-0"



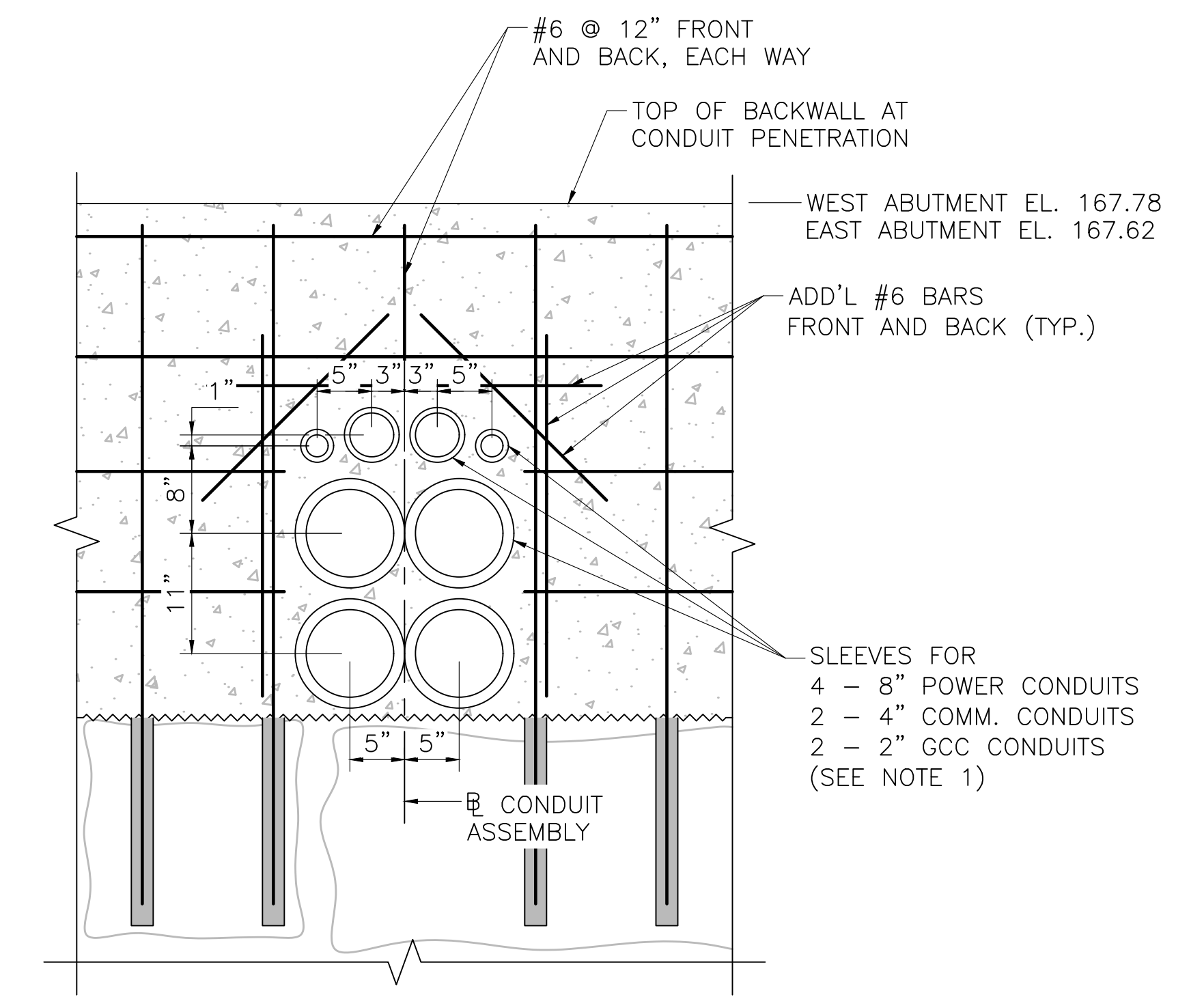
BACKWALL CAP DETAIL

SCALE: 1"=1'-0"



CONDUIT PENETRATION DETAIL

SCALE: 1"=1'-0"

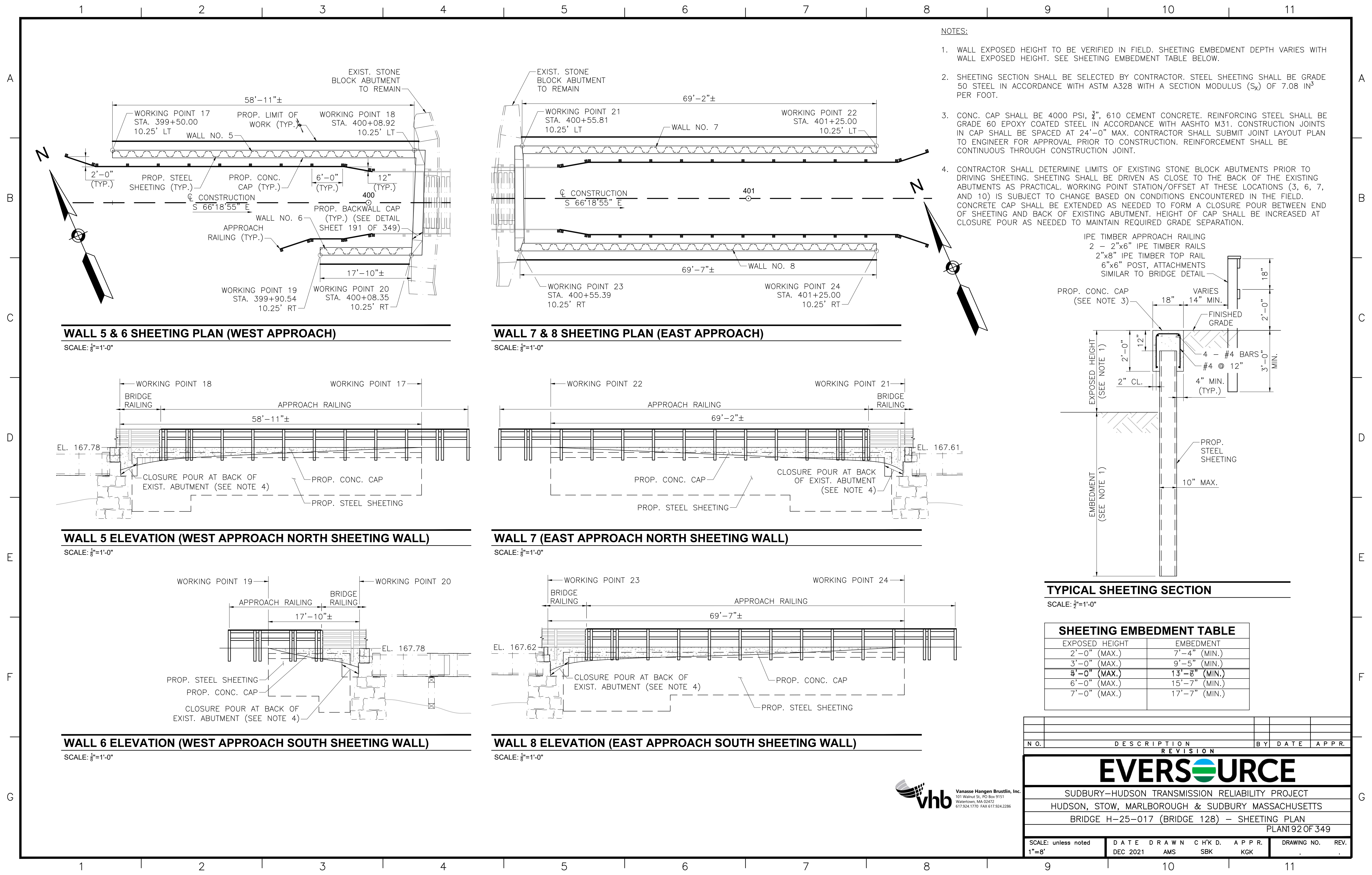


CONDUIT PENETRATION SECTION

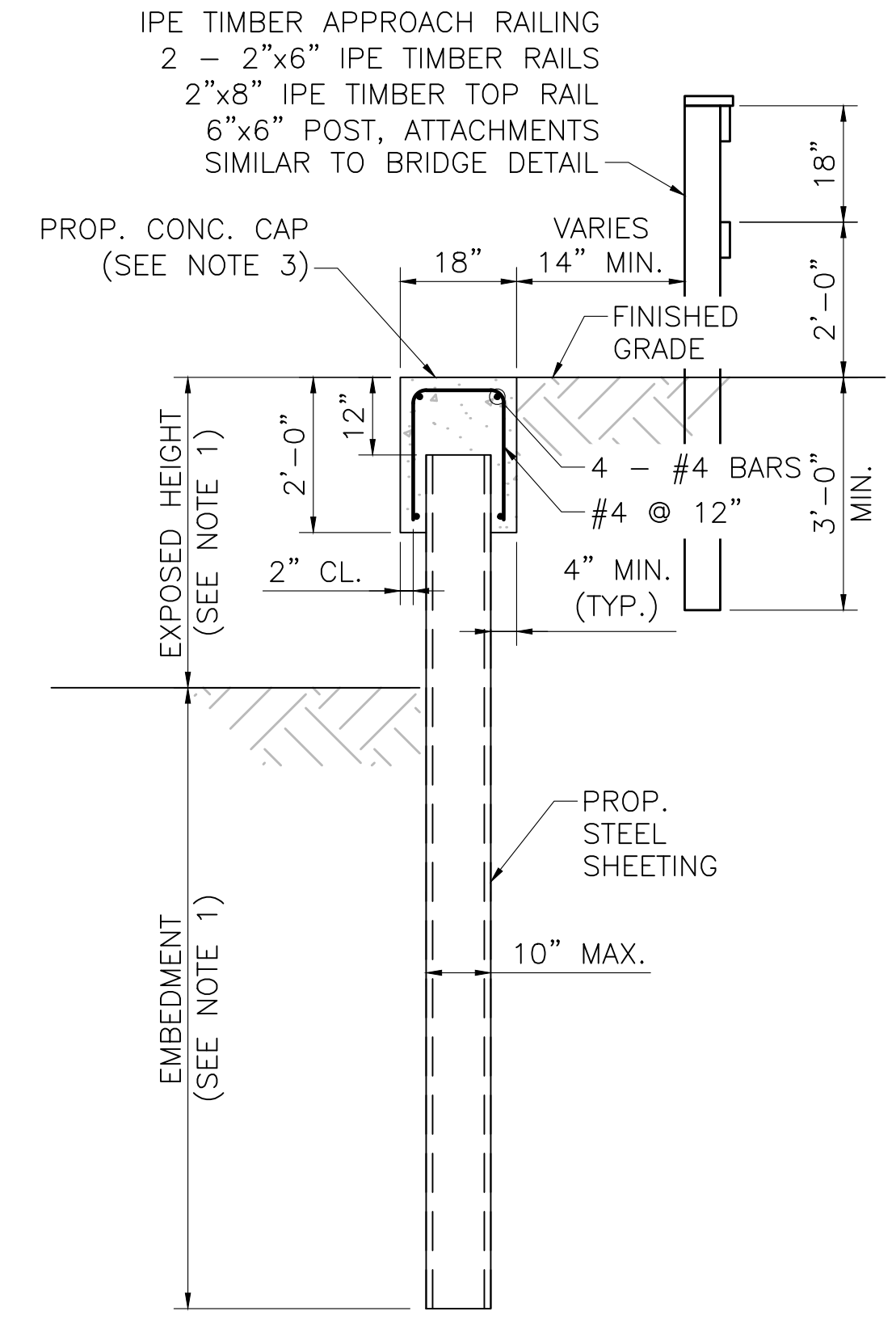
SCALE: 1"=1'-0"



N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
BRIDGE S-31-017 (BRIDGE 128) - ABUTMENT DETAILS				
PLAN 1910F 349				
SCALE: unless noted VARIES	DATE DEC 2021	DRAWN AMS	CHK'D. SBK	APPR. KGK
DRAWING NO.	REV.			



- NOTES:**
1. WALL EXPOSED HEIGHT TO BE VERIFIED IN FIELD. SHEETING EMBEDMENT DEPTH VARIES WITH WALL EXPOSED HEIGHT. SEE SHEETING EMBEDMENT TABLE BELOW.
 2. SHEETING SECTION SHALL BE SELECTED BY CONTRACTOR. STEEL SHEETING SHALL BE GRADE 50 STEEL IN ACCORDANCE WITH ASTM A328 WITH A SECTION MODULUS (S_x) OF 7.08 IN³ PER FOOT.
 3. CONC. CAP SHALL BE 4000 PSI, 3/4", 610 CEMENT CONCRETE. REINFORCING STEEL SHALL BE GRADE 60 EPOXY COATED STEEL IN ACCORDANCE WITH AASHTO M31. CONSTRUCTION JOINTS IN CAP SHALL BE SPACED AT 24'-0" MAX. CONTRACTOR SHALL SUBMIT JOINT LAYOUT PLAN TO ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION. REINFORCEMENT SHALL BE CONTINUOUS THROUGH CONSTRUCTION JOINT.
 4. CONTRACTOR SHALL DETERMINE LIMITS OF EXISTING STONE BLOCK ABUTMENTS PRIOR TO DRIVING SHEETING. SHEETING SHALL BE DRIVEN AS CLOSE TO THE BACK OF THE EXISTING ABUTMENTS AS PRACTICAL. WORKING POINT STATION/OFFSET AT THESE LOCATIONS (3, 6, 7, AND 10) IS SUBJECT TO CHANGE BASED ON CONDITIONS ENCOUNTERED IN THE FIELD. CONCRETE CAP SHALL BE EXTENDED AS NEEDED TO FORM A CLOSURE POUR BETWEEN END OF SHEETING AND BACK OF EXISTING ABUTMENT. HEIGHT OF CAP SHALL BE INCREASED AT CLOSURE POUR AS NEEDED TO MAINTAIN REQUIRED GRADE SEPARATION.



TYPICAL SHEETING SECTION
SCALE: 1/2"=1'-0"

SHEETING EMBEDMENT TABLE	
EXPOSED HEIGHT	EMBEDMENT
2'-0" (MAX.)	7'-4" (MIN.)
3'-0" (MAX.)	9'-5" (MIN.)
4'-0" (MAX.)	13'-8" (MIN.)
6'-0" (MAX.)	15'-7" (MIN.)
7'-0" (MAX.)	17'-7" (MIN.)

NO.				DESCRIPTION				BY DATE		APPR.								
REVISION																		
EVERSOURCE																		
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT																		
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS																		
BRIDGE H-25-017 (BRIDGE 128) - SHEETING PLAN																		
PLAN 92 OF 349																		
SCALE: unless noted 1"=8'			DATE DEC 2021			DRAWN AMS			CHK'D. SBK			APPR. KGK			DRAWING NO.		REV.	



WALL 5 & 6 SHEETING PLAN (WEST APPROACH)

SCALE: 3/8"=1'-0"

WALL 7 & 8 SHEETING PLAN (EAST APPROACH)

SCALE: 3/8"=1'-0"

WALL 5 ELEVATION (WEST APPROACH NORTH SHEETING WALL)

SCALE: 3/8"=1'-0"

WALL 7 (EAST APPROACH NORTH SHEETING WALL)

SCALE: 3/8"=1'-0"

WALL 6 ELEVATION (WEST APPROACH SOUTH SHEETING WALL)

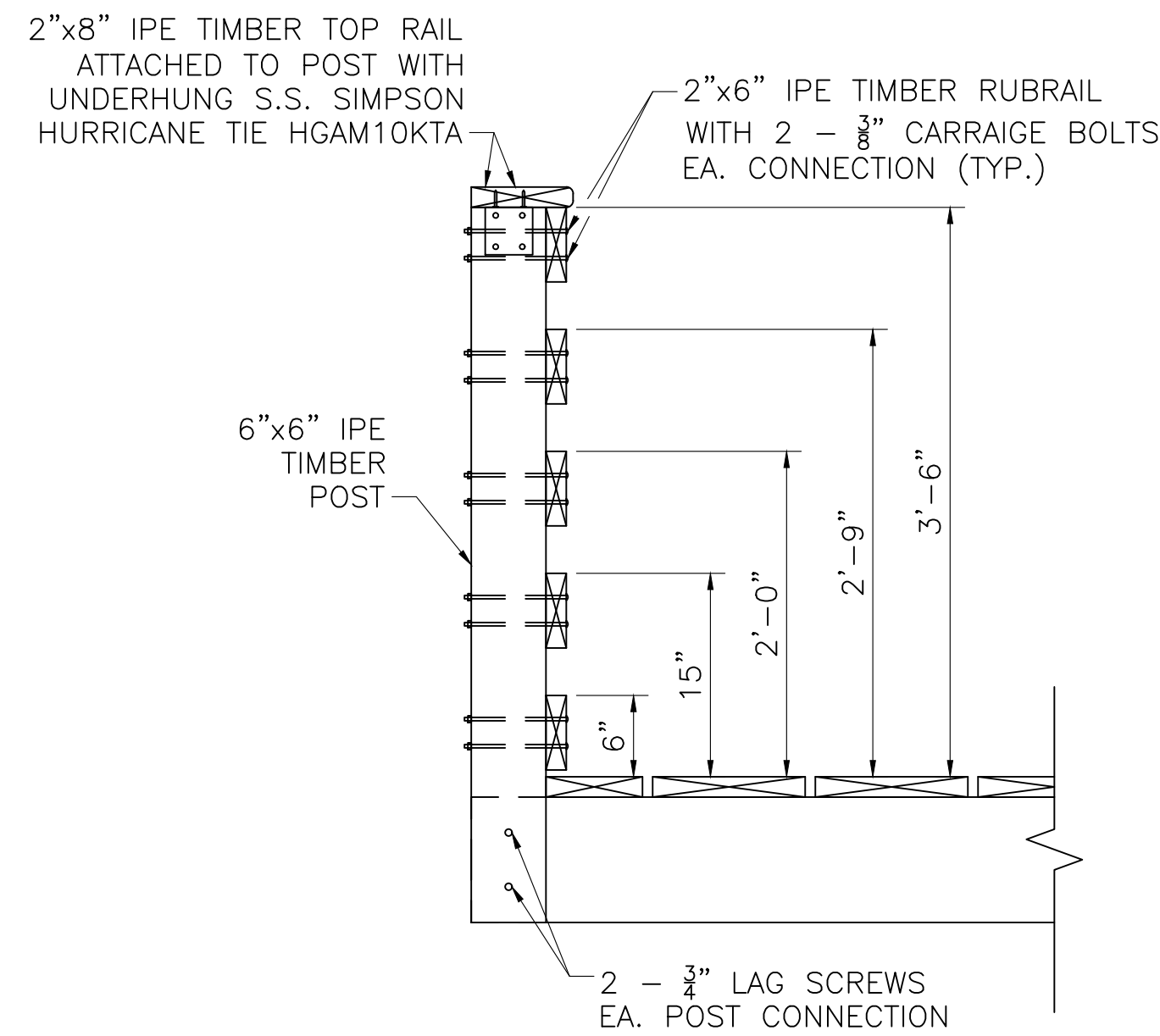
SCALE: 3/8"=1'-0"

WALL 8 ELEVATION (EAST APPROACH SOUTH SHEETING WALL)

SCALE: 3/8"=1'-0"

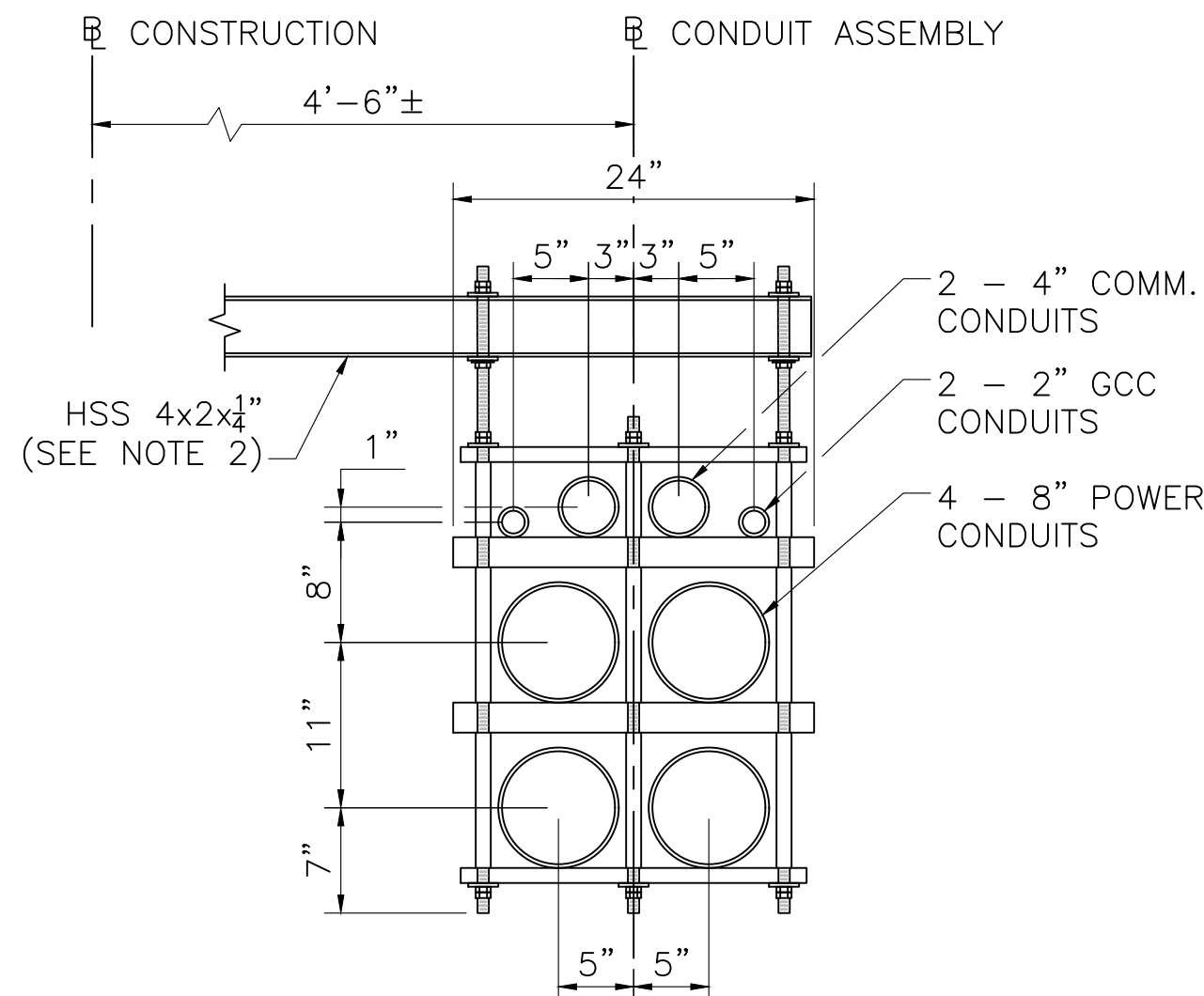
NOTES:

- EXIST. STEEL GIRDERS CAN SUPPORT TEMPORARY H20 LOADING DURING CONSTRUCTION. TIMBER DECKING IS DESIGNED FOR H10 LOADING WITHOUT IMPACT AND 90 PSF PEDESTRIAN LOADING, WHICHEVER CONTROLS. CONTRACTOR SHALL DESIGN TEMPORARY DECKING IF BRIDGE IS INTENDED TO BE USED FOR CONSTRUCTION VEHICLES.
- HSS CONDUIT SUPPORT MEMBERS SHALL BE STRUCTURAL STEEL IN ACCORDANCE WITH MASSDOT STANDARD SPECIFICATIONS SECTION M8.05.0 AND SHALL BE PAINTED IN ACCORDANCE WITH MASSDOT STANDARD SPECIFICATIONS SECTION M7.02. PAINT COLOR FOR HSS SUPPORT MEMBER SHALL MATCH COLOR OF CONDUIT HANGER ASSEMBLY.



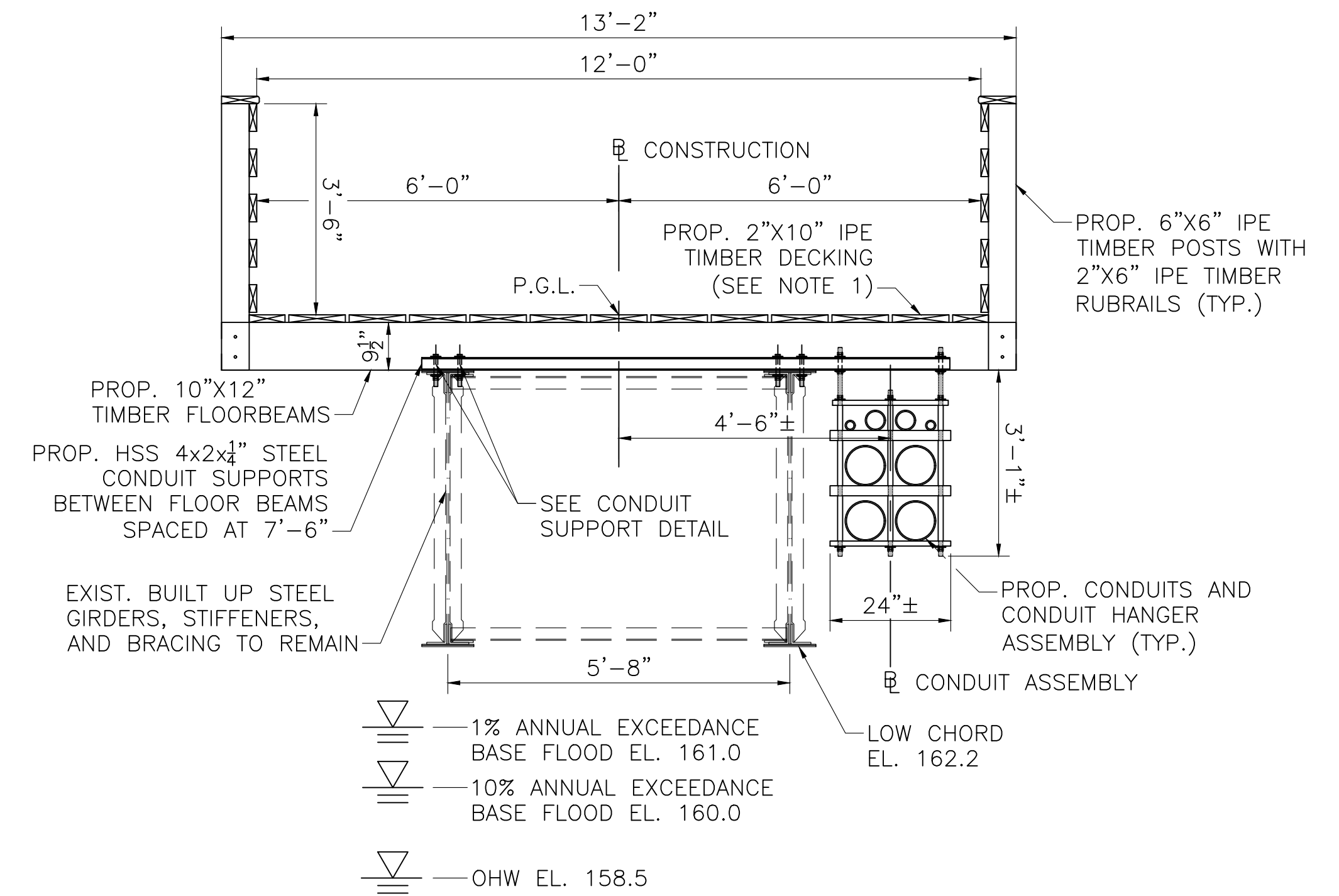
RAILING CONNECTION DETAIL

SCALE: 1"=1'-0"



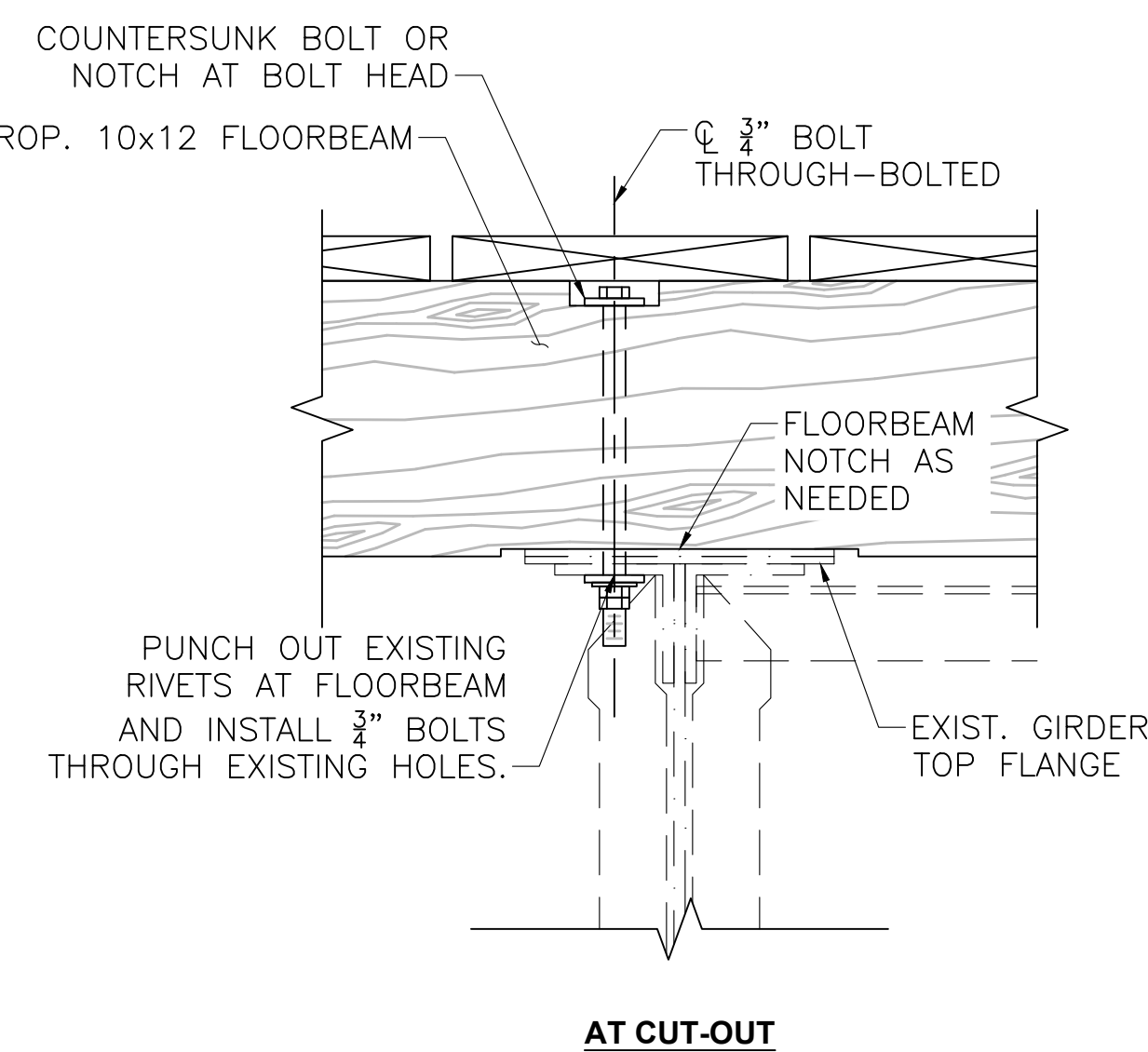
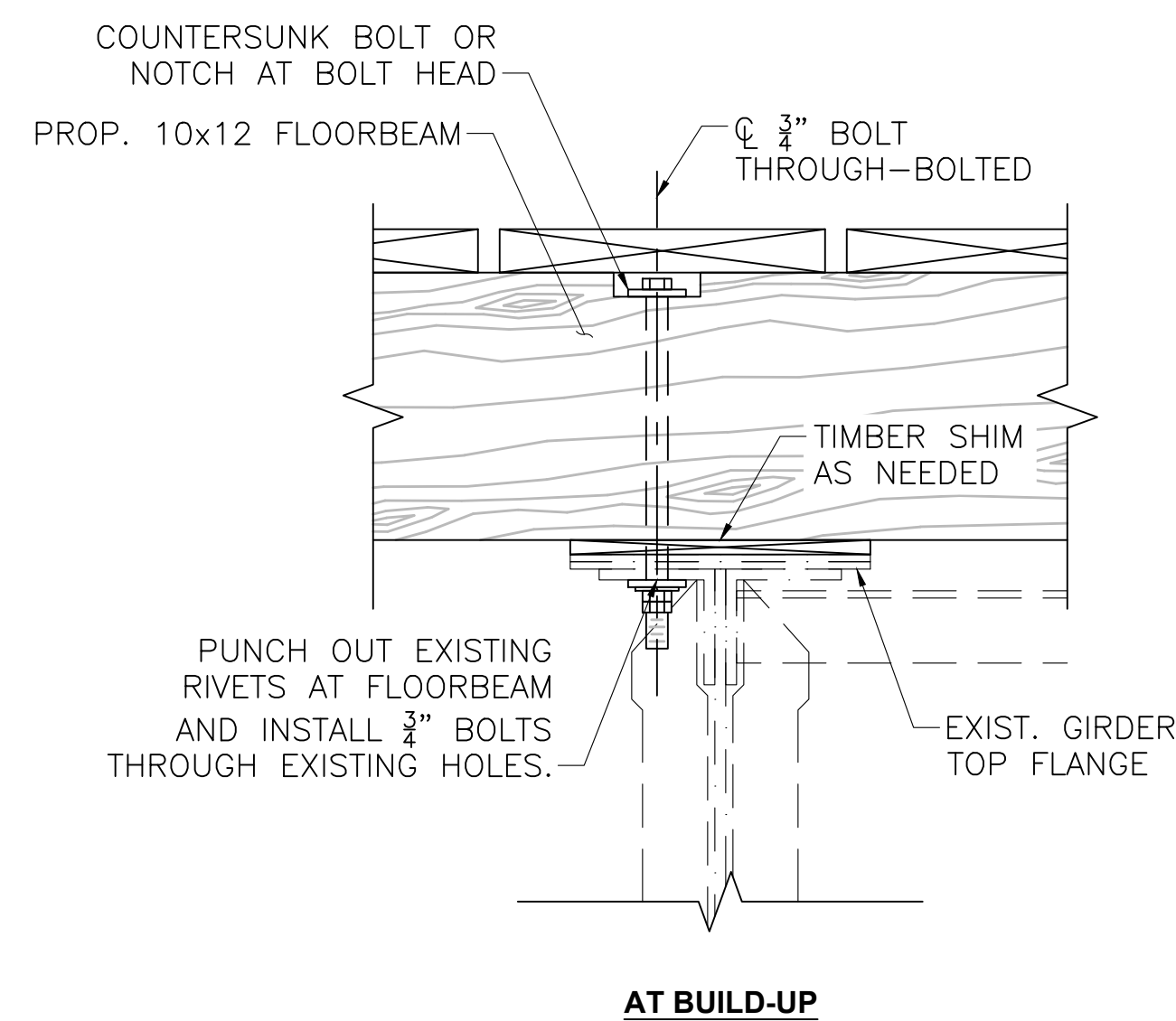
CONDUIT ASSEMBLY DETAIL

SCALE: 1"=1'-0"



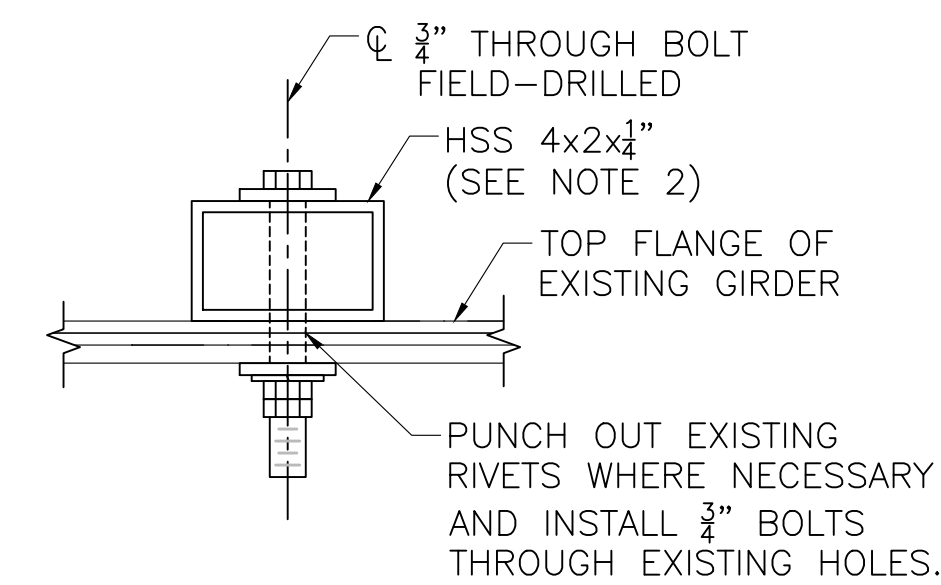
BRIDGE TRANSVERSE SECTION

SCALE: 1/2"=1'-0"



FLOORBEAM CONNECTION DETAIL

SCALE: 2"=1'-0"

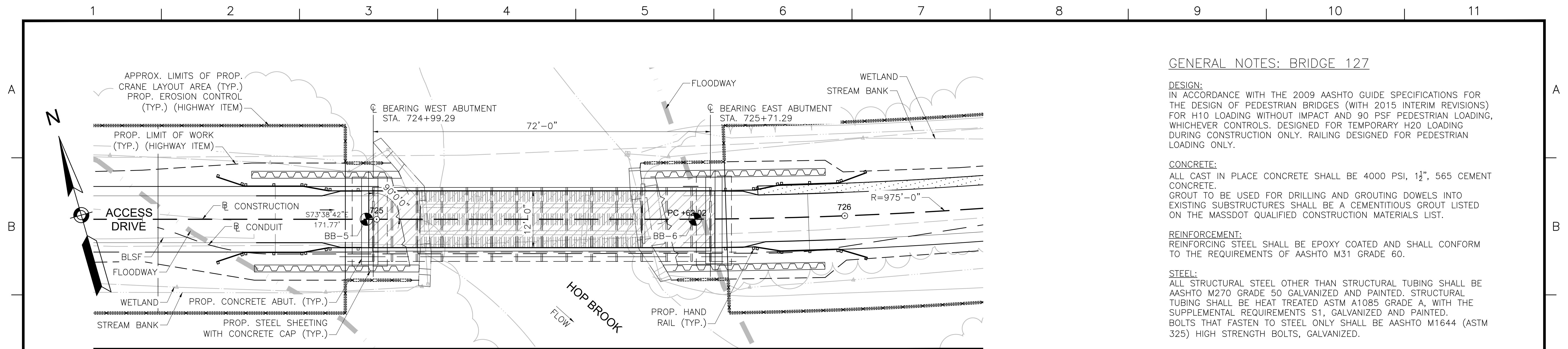


CONDUIT SUPPORT DETAIL

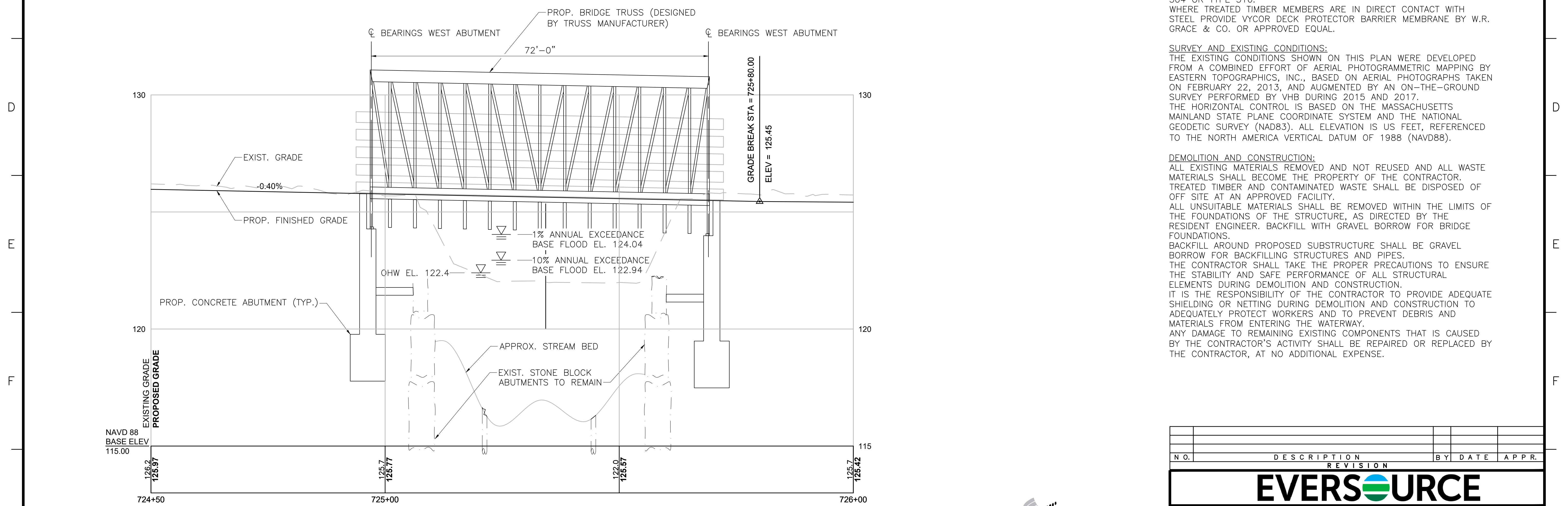
SCALE: 3"=1'-0"

REVISION			
N.O.	DESCRIPTION	BY	DATE
EVERSOURCE			
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT			
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS			
BRIDGE S-31-017 (BRIDGE 128) - SECTION & DETAILS			
PLAN 193 OF 349			
SCALE: unless noted VARIES	DATE DEC 2021	DRAWN AMS	CHK'D. SBK
			APPR. KGK
DRAWING NO.			REV.





BRIDGE KEY PLAN
SCALE: 1"=10'-0"



PROFILE - ACCESS DRIVE
HORIZONTAL SCALE: 1"=10'-0"
VERTICAL SCALE: 1"=2'-0"

GENERAL NOTES: BRIDGE 127

DESIGN:
IN ACCORDANCE WITH THE 2009 AASHTO GUIDE SPECIFICATIONS FOR THE DESIGN OF PEDESTRIAN BRIDGES (WITH 2015 INTERIM REVISIONS) FOR H10 LOADING WITHOUT IMPACT AND 90 PSF PEDESTRIAN LOADING, WHICHEVER CONTROLS. DESIGNED FOR TEMPORARY H20 LOADING DURING CONSTRUCTION ONLY. RAILING DESIGNED FOR PEDESTRIAN LOADING ONLY.

CONCRETE:
ALL CAST IN PLACE CONCRETE SHALL BE 4000 PSI, 1 1/2", 565 CEMENT CONCRETE.
GROUT TO BE USED FOR DRILLING AND GROUTING DOWELS INTO EXISTING SUBSTRUCTURES SHALL BE A CEMENTITIOUS GROUT LISTED ON THE MASSDOT QUALIFIED CONSTRUCTION MATERIALS LIST.

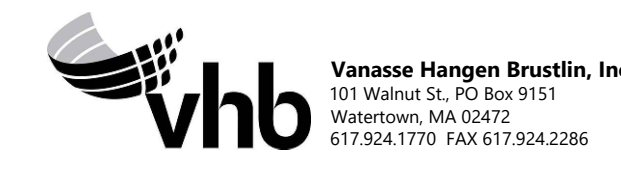
REINFORCEMENT:
REINFORCING STEEL SHALL BE EPOXY COATED AND SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M31 GRADE 60.

STEEL:
ALL STRUCTURAL STEEL OTHER THAN STRUCTURAL TUBING SHALL BE AASHTO M270 GRADE 50 GALVANIZED AND PAINTED. STRUCTURAL TUBING SHALL BE HEAT TREATED ASTM A1085 GRADE A, WITH THE SUPPLEMENTAL REQUIREMENTS S1, GALVANIZED AND PAINTED. BOLTS THAT FASTEN TO STEEL ONLY SHALL BE AASHTO M1644 (ASTM 325) HIGH STRENGTH BOLTS, GALVANIZED.

TIMBER:
DECK PLANKING AND RAILINGS: IPE, F_b min = 22,000 psi.
ALL NAILS, SCREWS, BOLTS, WASHERS, CONNECTORS, FASTENERS AND HARDWARE FOR WOOD CONNECTIONS SHALL BE STAINLESS STEEL TYPE 304 OR TYPE 316.
WHERE TREATED TIMBER MEMBERS ARE IN DIRECT CONTACT WITH STEEL PROVIDE VYCOR DECK PROTECTOR BARRIER MEMBRANE BY W.R. GRACE & CO. OR APPROVED EQUAL.

SURVEY AND EXISTING CONDITIONS:
THE EXISTING CONDITIONS SHOWN ON THIS PLAN WERE DEVELOPED FROM A COMBINED EFFORT OF AERIAL PHOTOGRAMMETRIC MAPPING BY EASTERN TOPOGRAPHICS, INC., BASED ON AERIAL PHOTOGRAPHS TAKEN ON FEBRUARY 22, 2013, AND AUGMENTED BY AN ON-THE-GROUND SURVEY PERFORMED BY VHB DURING 2015 AND 2017.
THE HORIZONTAL CONTROL IS BASED ON THE MASSACHUSETTS MAINLAND STATE PLANE COORDINATE SYSTEM AND THE NATIONAL GEODETIC SURVEY (NAD83). ALL ELEVATION IS US FEET, REFERENCED TO THE NORTH AMERICA VERTICAL DATUM OF 1988 (NAVD88).

DEMOLITION AND CONSTRUCTION:
ALL EXISTING MATERIALS REMOVED AND NOT REUSED AND ALL WASTE MATERIALS SHALL BECOME THE PROPERTY OF THE CONTRACTOR. TREATED TIMBER AND CONTAMINATED WASTE SHALL BE DISPOSED OF OFF SITE AT AN APPROVED FACILITY.
ALL UNSUITABLE MATERIALS SHALL BE REMOVED WITHIN THE LIMITS OF THE FOUNDATIONS OF THE STRUCTURE, AS DIRECTED BY THE RESIDENT ENGINEER. BACKFILL WITH GRAVEL BORROW FOR BRIDGE FOUNDATIONS.
BACKFILL AROUND PROPOSED SUBSTRUCTURE SHALL BE GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES.
THE CONTRACTOR SHALL TAKE THE PROPER PRECAUTIONS TO ENSURE THE STABILITY AND SAFE PERFORMANCE OF ALL STRUCTURAL ELEMENTS DURING DEMOLITION AND CONSTRUCTION.
IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ADEQUATE SHIELDING OR NETTING DURING DEMOLITION AND CONSTRUCTION TO ADEQUATELY PROTECT WORKERS AND TO PREVENT DEBRIS AND MATERIALS FROM ENTERING THE WATERWAY.
ANY DAMAGE TO REMAINING EXISTING COMPONENTS THAT IS CAUSED BY THE CONTRACTOR'S ACTIVITY SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR, AT NO ADDITIONAL EXPENSE.



N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
BRIDGE S-31-016 (BRIDGE 127) - KEY PLAN & PROFILE				
PLAN 94 OF 349				
SCALE: unless noted H: 1"=10' V: 1"=2'		DATE DRAWN DEC 2021 AMS		APPR. SBK KGK
DRAWING NO.		REV.		

A

B

C

D

E

F

G

BORING BB-5
 STATION: 724+98
 OFFSET: 0.0' LT
 N: 2956151.0
 E: 679475.0
 GROUND ELEVATION: 125.0'
 (SEE NOTE 10)

BORING BB-5 (CONTINUED)

BORING NOTES:

1. LOCATION OF BORINGS SHOWN ON THE KEY PLAN THUS: ● .
2. BORINGS ARE TAKEN FOR PURPOSE OF DESIGN AND SHOW CONDITIONS AT BORING POINTS ONLY, BUT DO NOT NECESSARILY SHOW THE NATURE OF THE MATERIALS TO BE ENCOUNTERED DURING CONSTRUCTION.
3. WATER LEVELS SHOWN ON THE BORING LOGS ARE ASSUMED BASED ON BORINGS PERFORMED FOR THE EXISTING BRIDGE, AS NOTED IN THE GEOTECHNICAL REPORT DATED DECEMBER 2018.
4. FIGURES IN COLUMNS INDICATE NUMBER OF BLOWS REQUIRED TO DRIVE A 1 1/8" I.D. SPLIT SPOON SAMPLER 6" USING A 140 POUND WEIGHT FALLING 30".
5. ALL BORINGS WERE MADE IN OCTOBER OF 2018.
6. BORINGS WERE MADE BY GEOLOGIC EARTH EXPLORATION, INC., 7 SHERWOOD DR., NORFOLK, MA 02056.
7. THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988 IS USED THROUGHOUT.
8. BORING LOCATIONS AND ELEVATIONS ARE APPROXIMATE ONLY.

LGCI		BORING LOG		B-BB-5	
100 Chelmsford Road, Suite 2 Billerica, MA 01802 Telephone: (978) 330-5912 Fac: (978) 330-6096		PROJECT NAME: Proposed Hop Brook Bridge		PAGE 1 OF 2	
CLIENT: Vanasse Hangen Brustlin, Inc.		PROJECT LOCATION: Sudbury, Massachusetts		LGCI PROJECT NUMBER: 1836	
DATE STARTED: 10/08/18		DATE COMPLETED: 10/10/18		DRILLING SUBCONTRACTOR: Geosearch, Inc.	
BORING LOCATION: Western side of Hop Brook Bridge		DRILLING FOREMAN: Kenny Bylund		DRILLING METHOD: Drive and wash with 4-inch casing, then 3" casing	
COORDINATES: N/A		DRILL RIG TYPE/MODEL: CME 55 LC ATV		HAMMER TYPE: Automatic	
SURFACE EL.: 125 ft. (see note 1)		TOTAL DEPTH: 54 ft.		HAMMER WEIGHT: 140 lb. HAMMER DROP: 30 in.	
WEATHER: 70s / Partly Cloudy		GROUNDWATER LEVELS:		SPLIT SPOON DIA.: 1.375 in. I.D., 2 in. O.D.	
		DURING DRILLING: 4.0 ft. / El. 121.0 ft. measured on 10/9/18		CORE BARREL SIZE: NA	
		AT END OF DRILLING: 3.5 ft. / El. 121.5 ft.		LOGGED BY: TS / KD CHECKED BY: NB	
		OTHER: 3.2 ft. / El. 121.8 ft. measured on 10/10/18			

Depth (ft.)	Sample Number	Blow Counts (N Value)	Pen./Rec. (in.)	Strata	Material Description
0	S1	4-3-5-4 (8)	24/24	Forest Mat Fill	S1 - Top 2" Forest material
2	S2	3-1-1-1 (2)	24/13	Swamp Deposits	Bot. 22": Silty SAND (SM), fine to medium, trace coarse, ~20% fines, 5-10% fine subangular gravel, trace organic fines, trace roots, brown, moist
4	S3	3-1-3-3 (4)	24/14		S2 - Silty SAND (SM), fine, trace medium, 25-30% fines, trace fine subangular gravel, trace organic fines, trace roots, trace wood, dark brown, wet
6	S4	3-2-4-4 (6)	24/11		S3 - Similar to S2, ~35% fines
8	S5	4-2-5-5 (7)	24/15		S4 - Similar to S2, 35-40% fines
10	S6	3-3-6-7 (9)	24/15		S5 - Similar to S2, ~25% fines
12	S7	3-1-1-3 (2)	24/11		S6 - Top 12": Silty SAND (SM), fine to medium, trace coarse, ~15% fines, trace fine subangular gravel, trace organic fines, trace roots, dark brown, wet
14	S8	0-3-6-16 (9)	24/13		Bot. 3": Well Graded SAND with Silt (SW-SM), fine to medium, trace coarse, 5-10% fines, light brown to gray, wet
16	S9	16-16-15-17 (31)	24/16		S7 - Silty SAND (SM), fine to medium, trace coarse, 20-25% fines, trace fine angular gravel, trace roots, orange to brown, wet
18	S10	12-8-10-14 (18)	24/18		S8 - Silty GRAVEL with Sand (GM), coarse, subangular, 15-20% fines, 20-25% fine to medium sand, brown to orange, wet
20					Sand
24					S10 - Similar to S9
25					S11 - Silty SAND with Gravel (SM), fine to coarse, 20-25% fines, ~20% fine to coarse subangular gravel, light brown to gray, wet

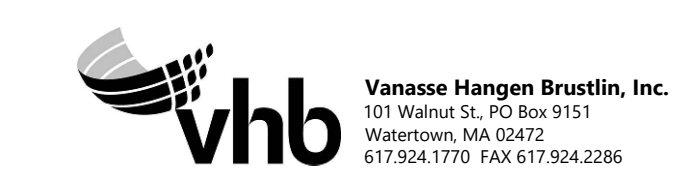
GENERAL NOTES:
 1. The ground surface elevation was interpolated to the nearest foot based on a drawing titled: "Proposed Conditions Plans for Notice of Intent Submittal, Sudbury-Hudson Transmission Reliability Project, Sudbury, Massachusetts," prepared by VHB and dated February 5, 2018.

BOTTOM OF FOOTING
 EL. 117.76

LGCI		BORING LOG		B-BB-5	
100 Chelmsford Road, Suite 2 Billerica, MA 01802 Telephone: (978) 330-5912 Fac: (978) 330-6096		PROJECT NAME: Proposed Hop Brook Bridge		PAGE 2 OF 2	
CLIENT: Vanasse Hangen Brustlin, Inc.		PROJECT LOCATION: Sudbury, Massachusetts		LGCI PROJECT NUMBER: 1836	
DATE STARTED: 10/08/18		DATE COMPLETED: 10/10/18		DRILLING SUBCONTRACTOR: Geosearch, Inc.	
BORING LOCATION: Western side of Hop Brook Bridge		DRILLING FOREMAN: Kenny Bylund		DRILLING METHOD: Drive and wash with 4-inch casing, then 3" casing	
COORDINATES: N/A		DRILL RIG TYPE/MODEL: CME 55 LC ATV		HAMMER TYPE: Automatic	
SURFACE EL.: 125 ft. (see note 1)		TOTAL DEPTH: 54 ft.		HAMMER WEIGHT: 140 lb. HAMMER DROP: 30 in.	
WEATHER: 70s / Partly Cloudy		GROUNDWATER LEVELS:		SPLIT SPOON DIA.: 1.375 in. I.D., 2 in. O.D.	
		DURING DRILLING: 4.0 ft. / El. 121.0 ft. measured on 10/9/18		CORE BARREL SIZE: NA	
		AT END OF DRILLING: 3.5 ft. / El. 121.5 ft.		LOGGED BY: TS / KD CHECKED BY: NB	
		OTHER: 3.2 ft. / El. 121.8 ft. measured on 10/10/18			

Depth (ft.)	Sample Number	Blow Counts (N Value)	Pen./Rec. (in.)	Strata	Material Description
24	S11	(86)	24/9	Sand	REMARK 1: Switched to 3-inch casing at 29 feet.
26					S12 - Silty GRAVEL with Sand (GM), fine to coarse, subangular to rounded, ~15% fines, ~15% fine to coarse sand, light brown to gray, wet
29	S12	60-120/4*	10/5		
30					S13 - Similar to S12
34	S13	23-46-32-22 (78)	24/10		
35					S14 - Top 17": Poorly Graded SAND with Silt (SP-SM), fine to medium, 10-15% fines, trace fine subangular gravel, light brown, wet
36					Bot. 6": Silty GRAVEL with Sand (GM), fine to coarse, 15-20% fines, 15-20% fine to coarse sand, light brown, wet
39	S14	20-40-50-38 (110)	24/23		
40					S15 - Silty SAND with Gravel (SM), fine to coarse, ~25% fines, 15-20% fine subrounded gravel, light brown to gray, wet
41					REMARK 2: Open hole drive and wash technique used at 47 feet.
44	S15	8-20-100/3*	15/7		
45					REMARK 3: Attempted to obtain a core sample at 49 feet. Core barrel advanced ~5 feet in ~10 seconds, indicating that the material was not rock.
49	S16	120/0*	0/0		
50					S16 - No recovery
54	S17	120/0*	0/0		
55					S17 - No recovery
54.0					Bottom of borehole at 54.0 feet. Backfilled borehole with drill cuttings.

N.O.	DESCRIPTION	BY	DATE	APPR.
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH, & SUDBURY MASSACHUSETTS				
BRIDGE S-31-016 (BRIDGE 127) - BORING LOGS				
PLANT 95 OF 349				
SCALE: unless noted	DATE DRAWN	C'H'K D.	A P P R.	DRAWING NO. REV.
N/A	DEC 2021	AMS	SBK	KGK



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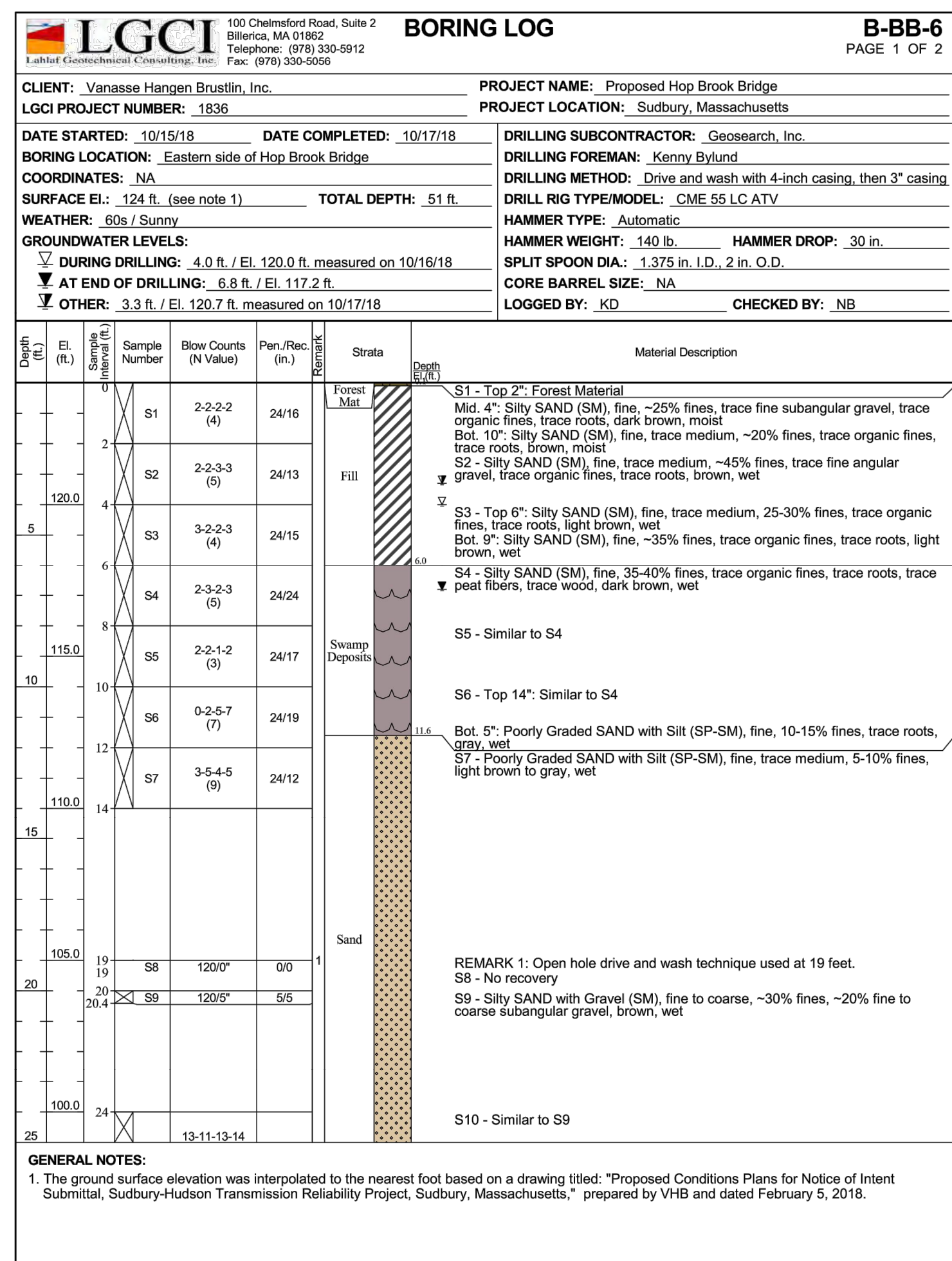
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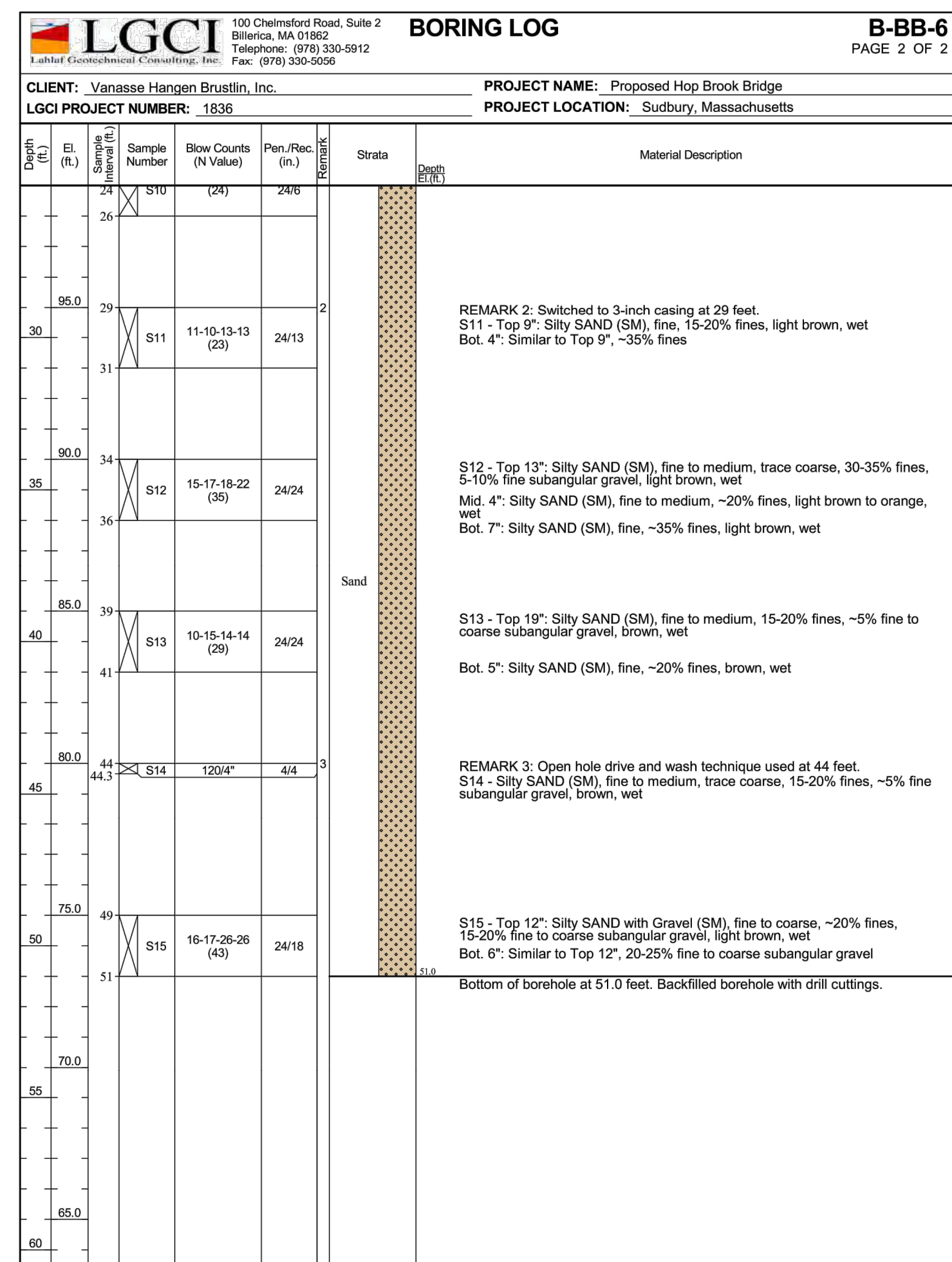
G

BORING BB-6
 STATION: 725+68.0
 OFFSET: 0.0' LT
 N: 2956131.0
 E: 679542.0
 GROUND ELEVATION: 124.0'
 (SEE NOTE 10, SHEET 195 OF 349)

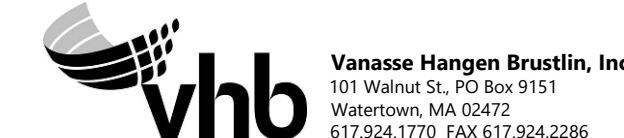
BORING BB-6 (CONTINUED)



BOTTOM OF FOOTING
 EL. 117.47



NO.	DESCRIPTION	BY	DATE	APPR.
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH, & SUDBURY MASSACHUSETTS				
BRIDGE S-31-016 (BRIDGE 127) - BORING LOGS				
PLANT 96 OF 349				
SCALE: unless noted N/A	DATE DEC 2021	DRAWN AMS	CHECKED SBK	APPROVED KGK
DRAWING NO.				REV.



Vanasse Hangen Brustlin, Inc.
 101 Walnut St., PO Box 9151
 Watertown, MA 02472
 617.924.1770 FAX 617.924.2286

1 2 3 4 5 6 7 8 9 10 11

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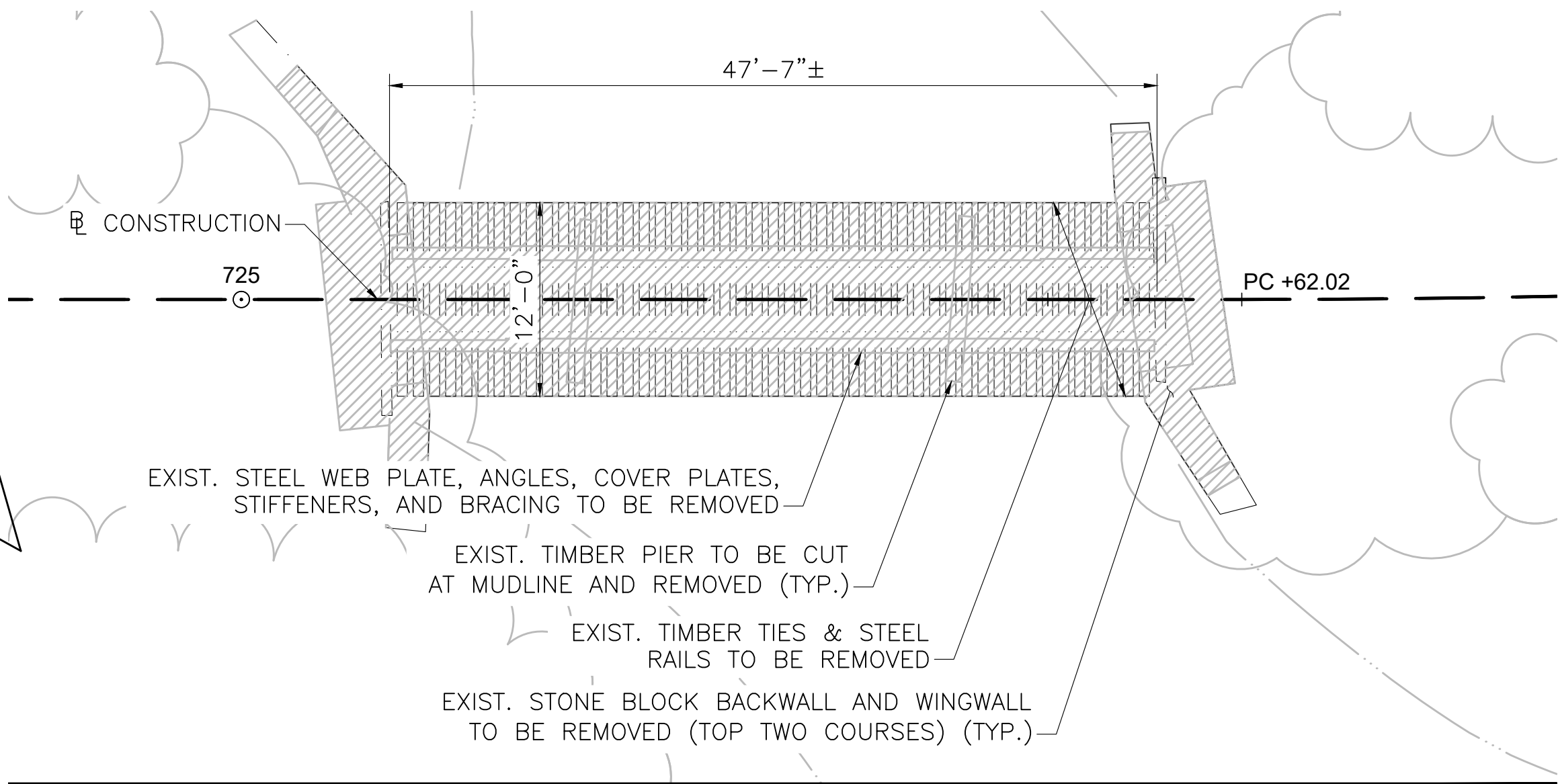
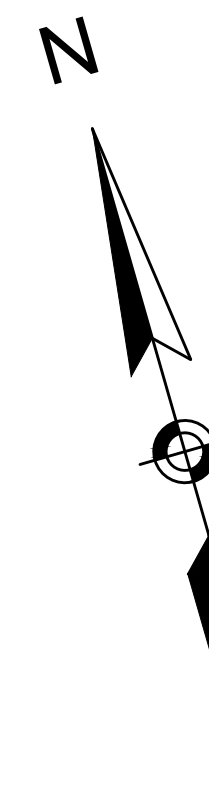
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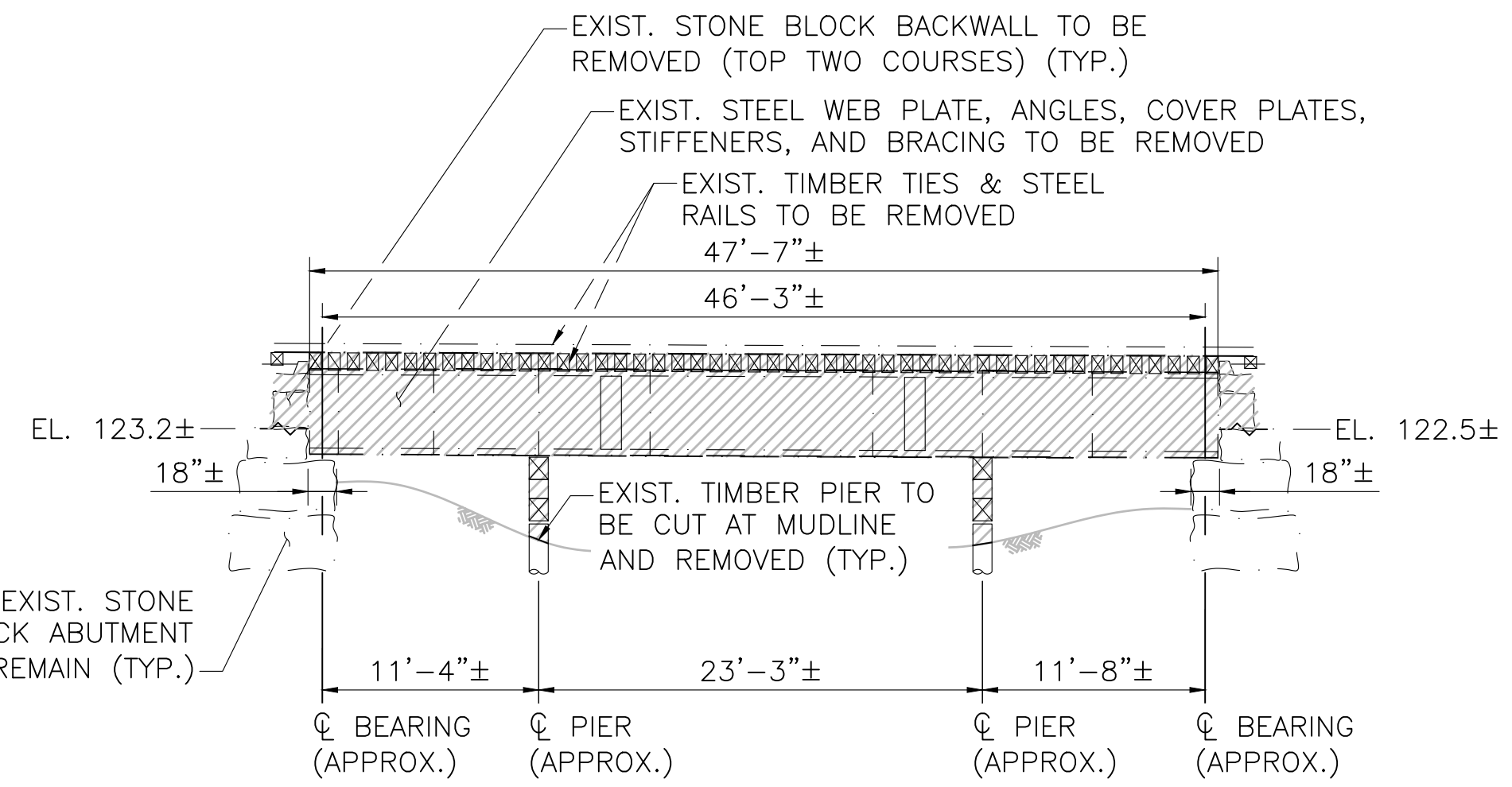
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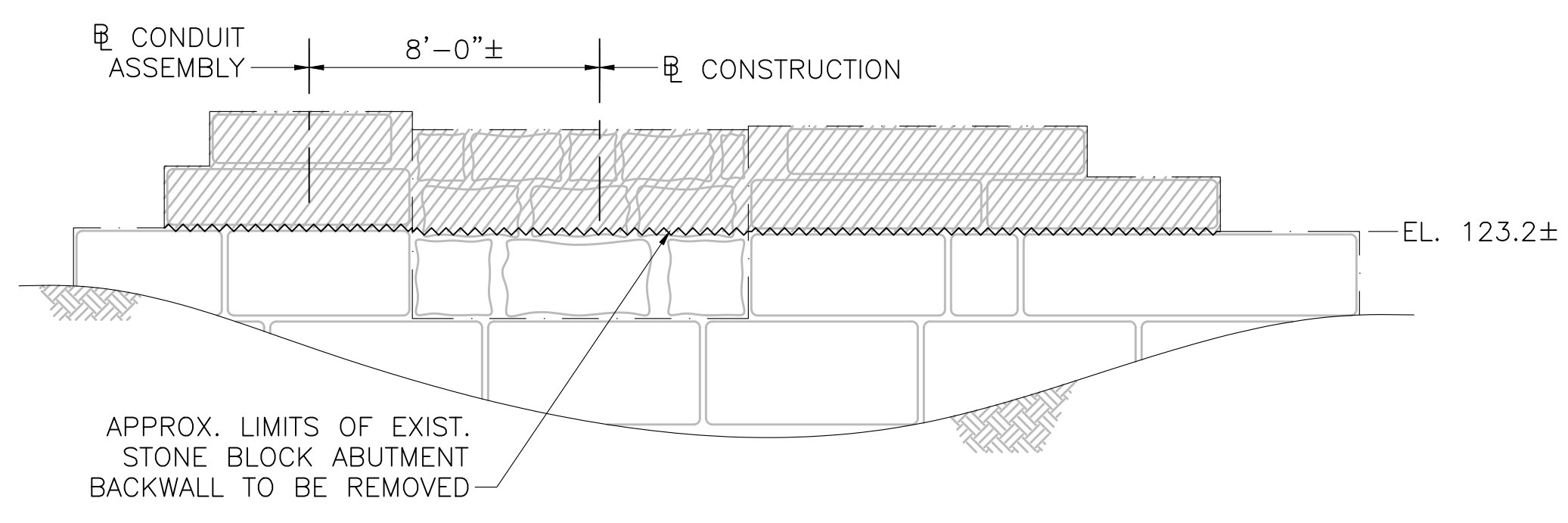
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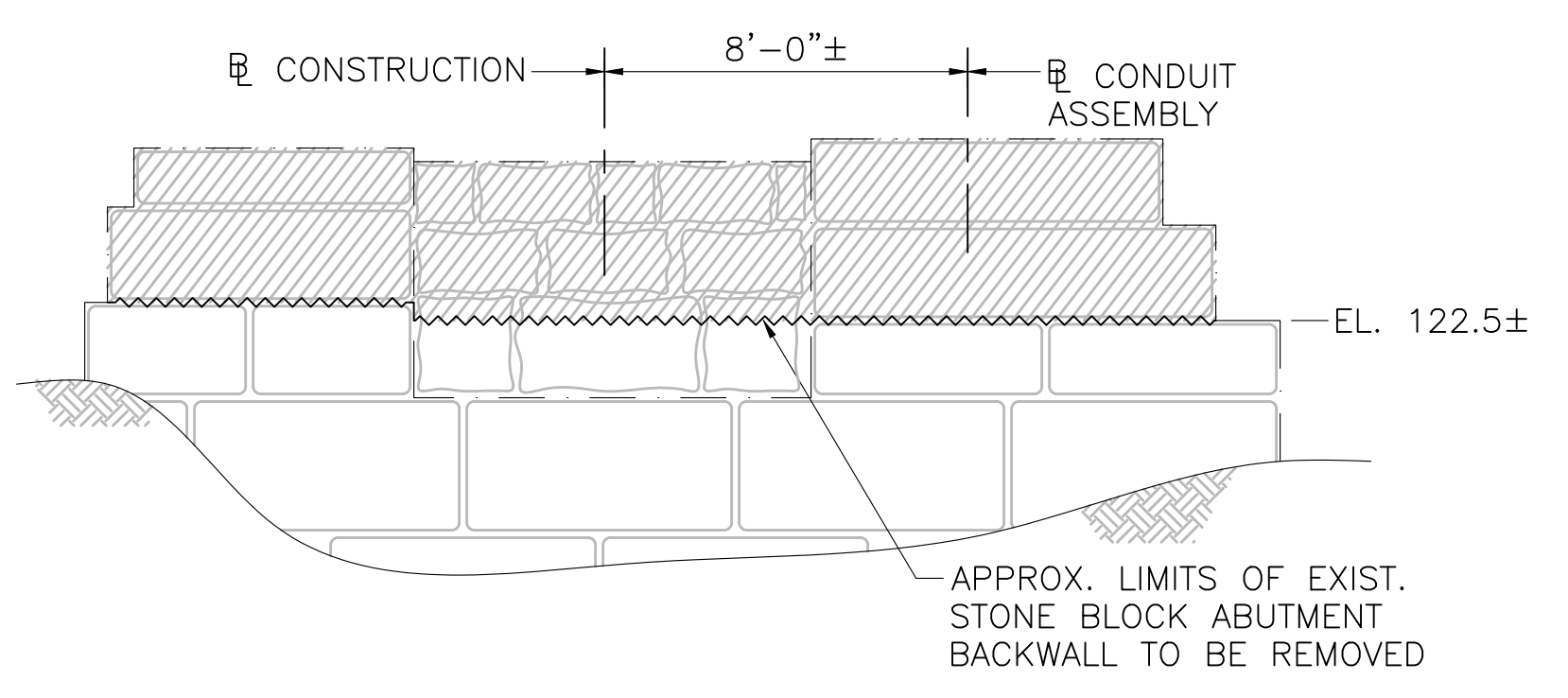
BRIDGE PLAN
SCALE: 1/8"=1'-0"



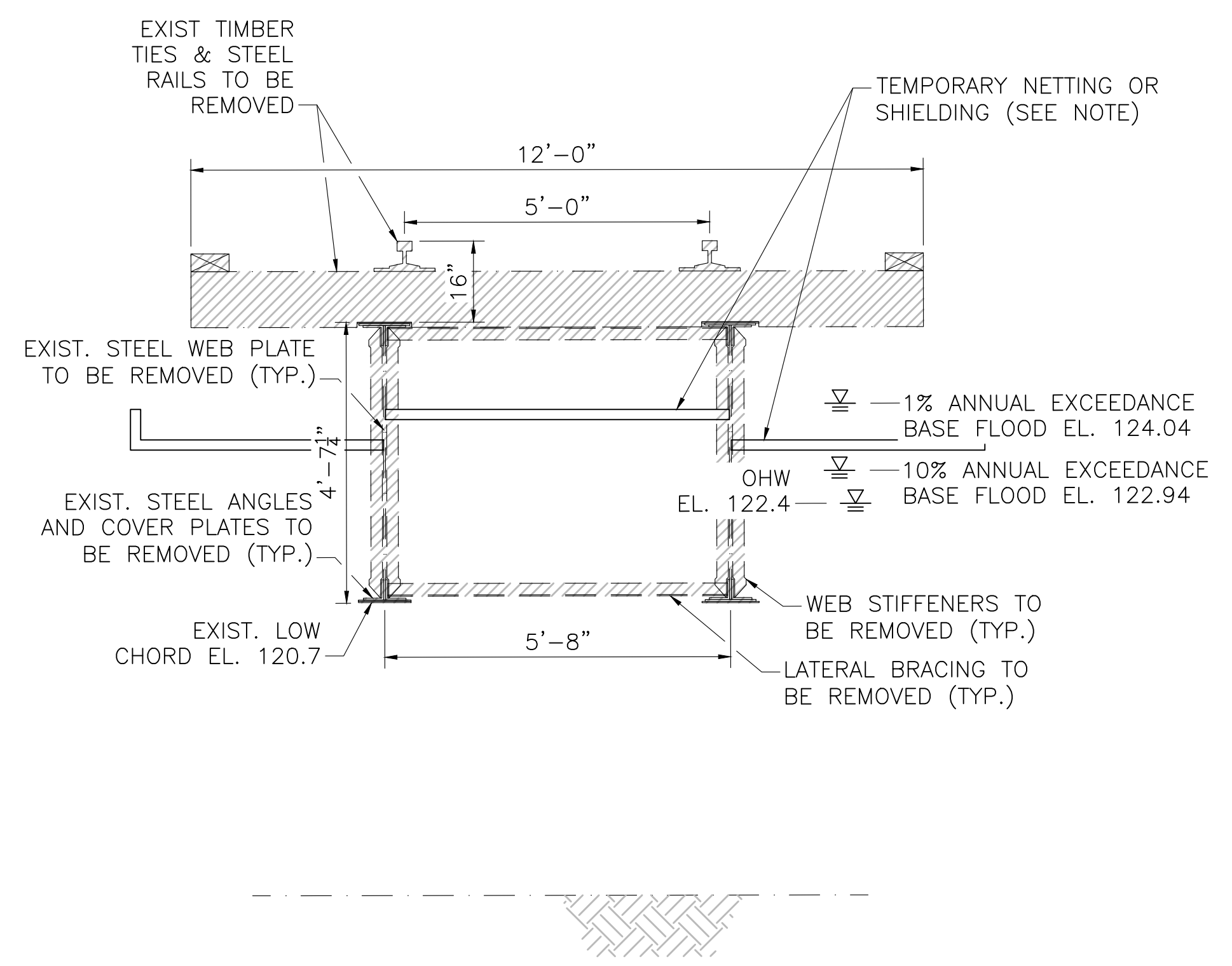
BRIDGE ELEVATION
SCALE: 1/8"=1'-0"



WEST ABUTMENT ELEVATION
SCALE: 1/4"=1'-0"

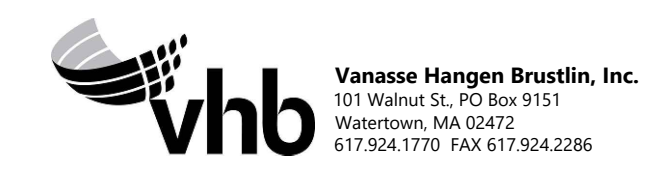


EAST ABUTMENT ELEVATION
SCALE: 1/4"=1'-0"



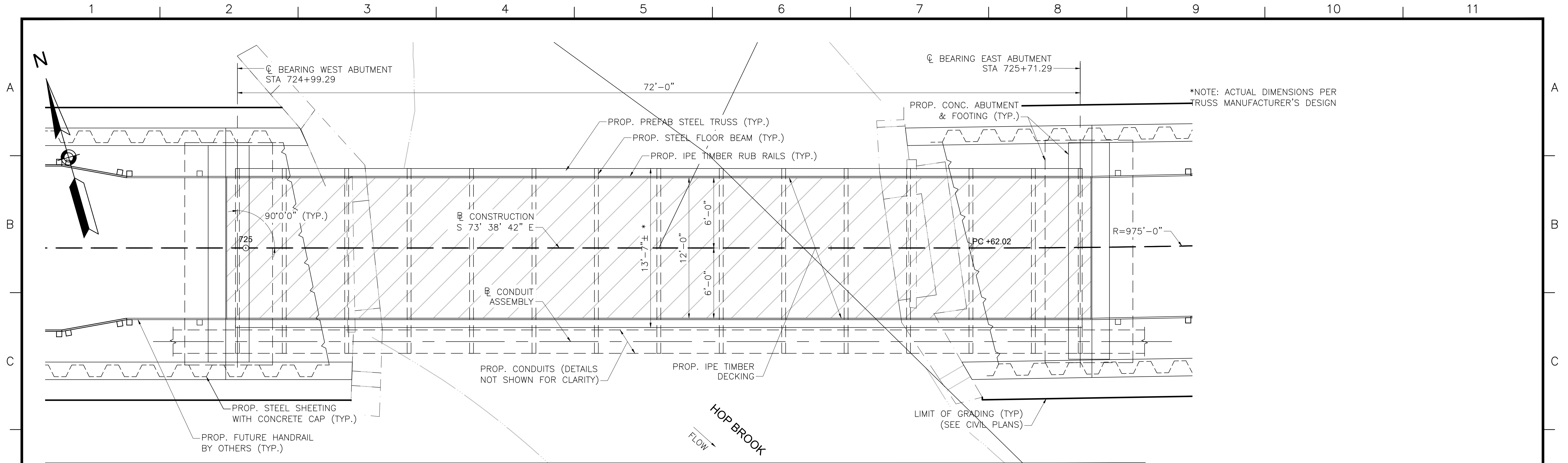
BRIDGE TRANSVERSE SECTION
SCALE: 1/2"=1'-0"

NOTE: CONTRACTOR SHALL DESIGN AND INSTALL TEMPORARY PROTECTIVE SHIELDING OR NETTING DURING DEMOLITION OF BRIDGE AND AS NEEDED DURING CONSTRUCTION OF NEW BRIDGE TO PREVENT CONSTRUCTION DEBRIS FROM FALLING INTO THE WATER BODIES BELOW. SEE PROJECT SPECIFICATIONS AND PERMITTING DOCUMENTS FOR ADDITIONAL REQUIREMENTS AND INFORMATION.



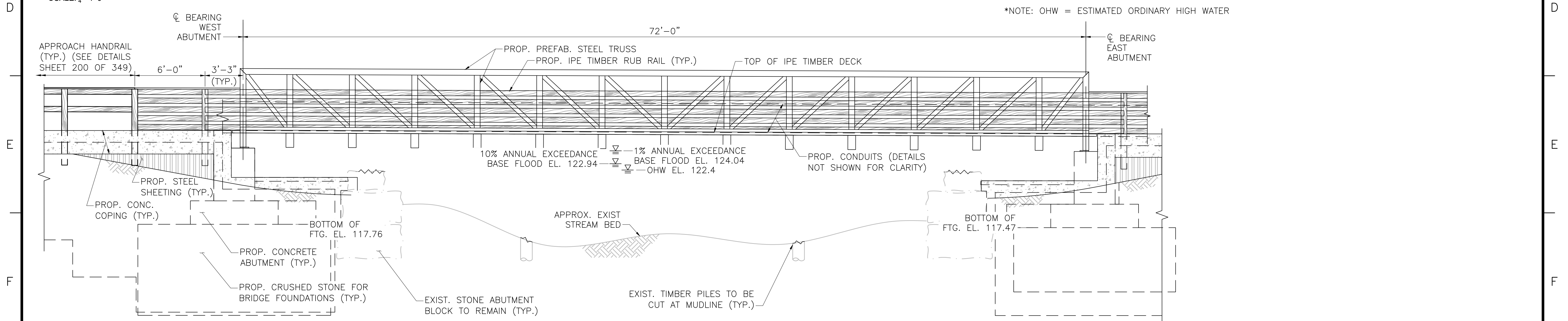
NO.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
BRIDGE S-31-016 (BRIDGE 127) - DEMOLITION PLAN				
PLAN 97 OF 349				
SCALE: unless noted VARIES	DATE: DEC 2021	DRAWN: AMS	CHECKED: SBK	APPR.: KGK
DRAWING NO.		REV.		

1 2 3 4 5 6 7 8 9 10 11



BRIDGE 127 (HOP BROOK) PLAN

SCALE: 1/4"=1'-0"

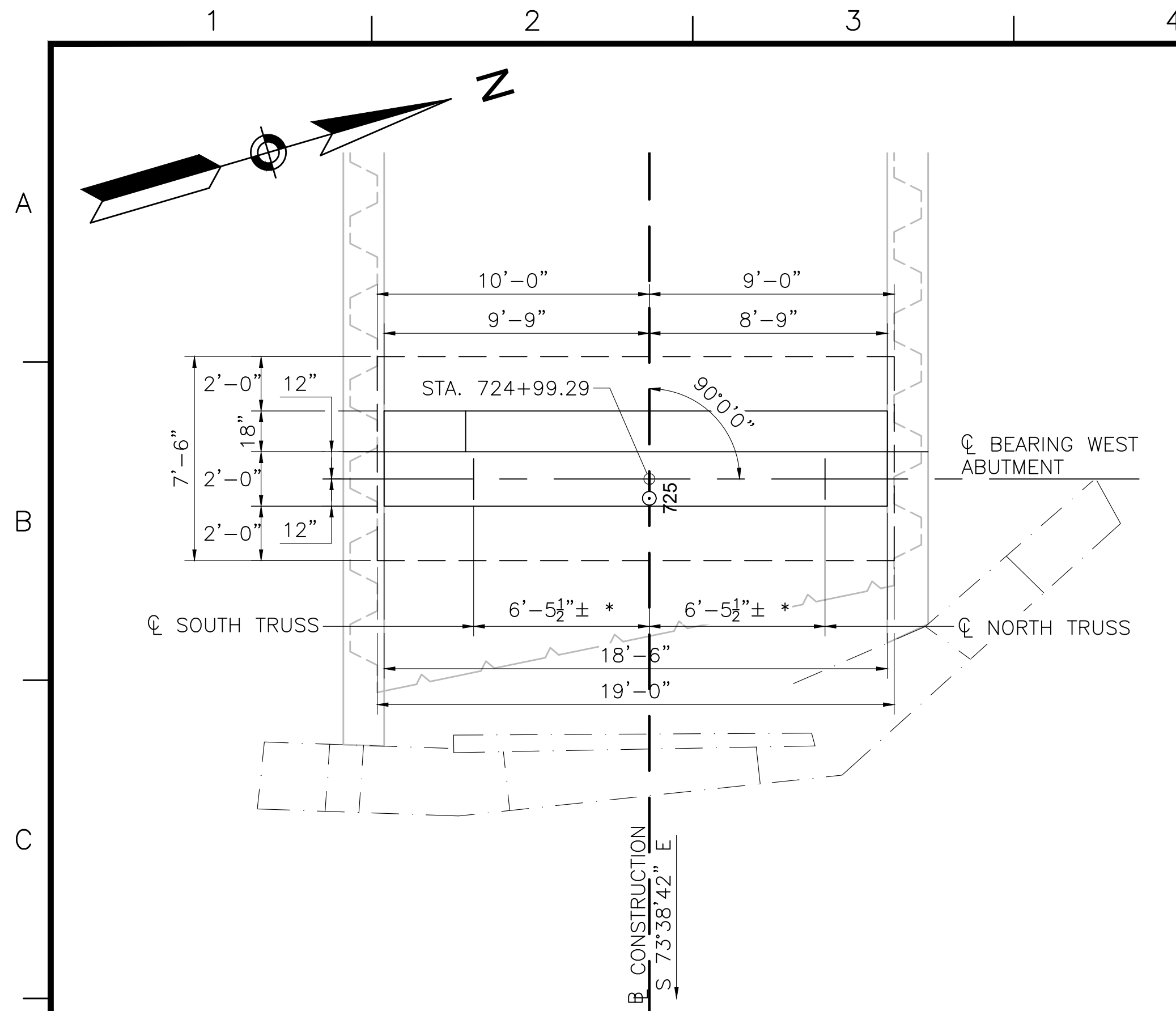


BRIDGE 127 (HOP BROOK) ELEVATION

SCALE: 1/2"=1'-0"

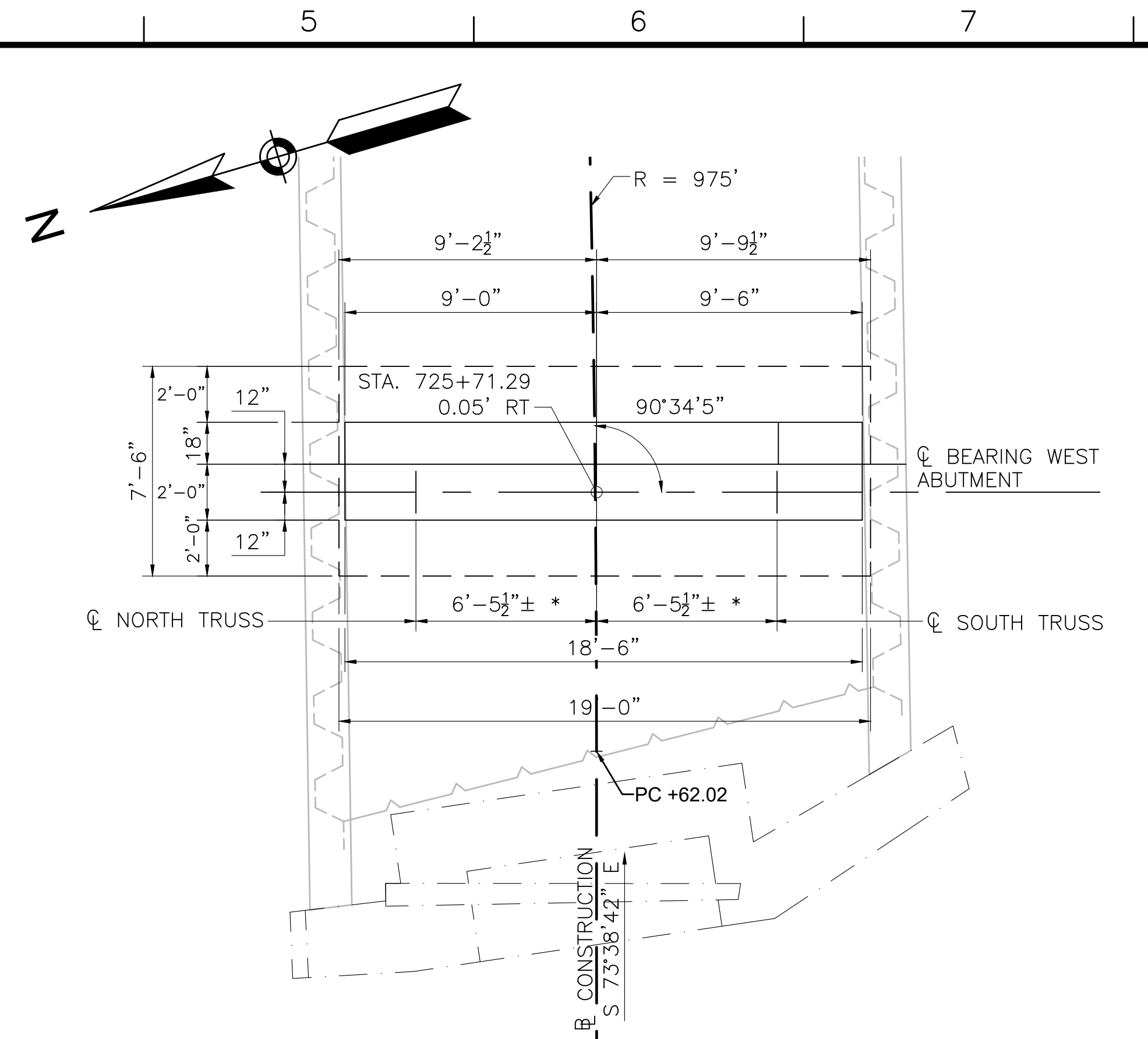


N.O.	DESCRIPTION	BY	DATE	APP.R.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
BRIDGE S-31-016 (BRIDGE 127, HOP BROOK) - PLAN & EL.				
PLAN 98 OF 349				
SCALE: unless noted 1"=4'	DATE DEC 2021	DRAWN AMS	C'H'K D. SBK	APP.R. KGK
DRAWING NO.		REV.		



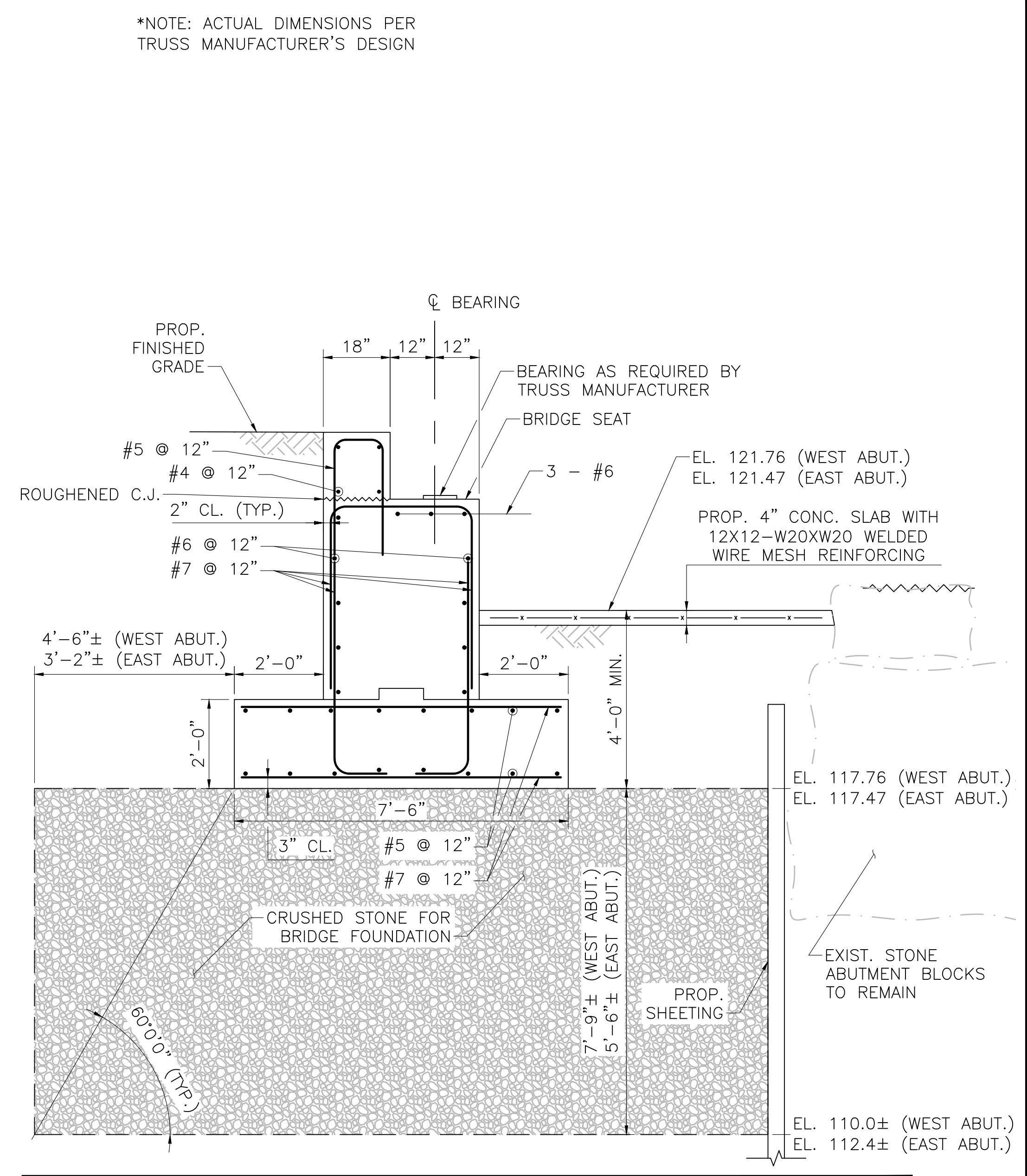
WEST ABUTMENT PLAN

SCALE: 1/4"=1'-0"



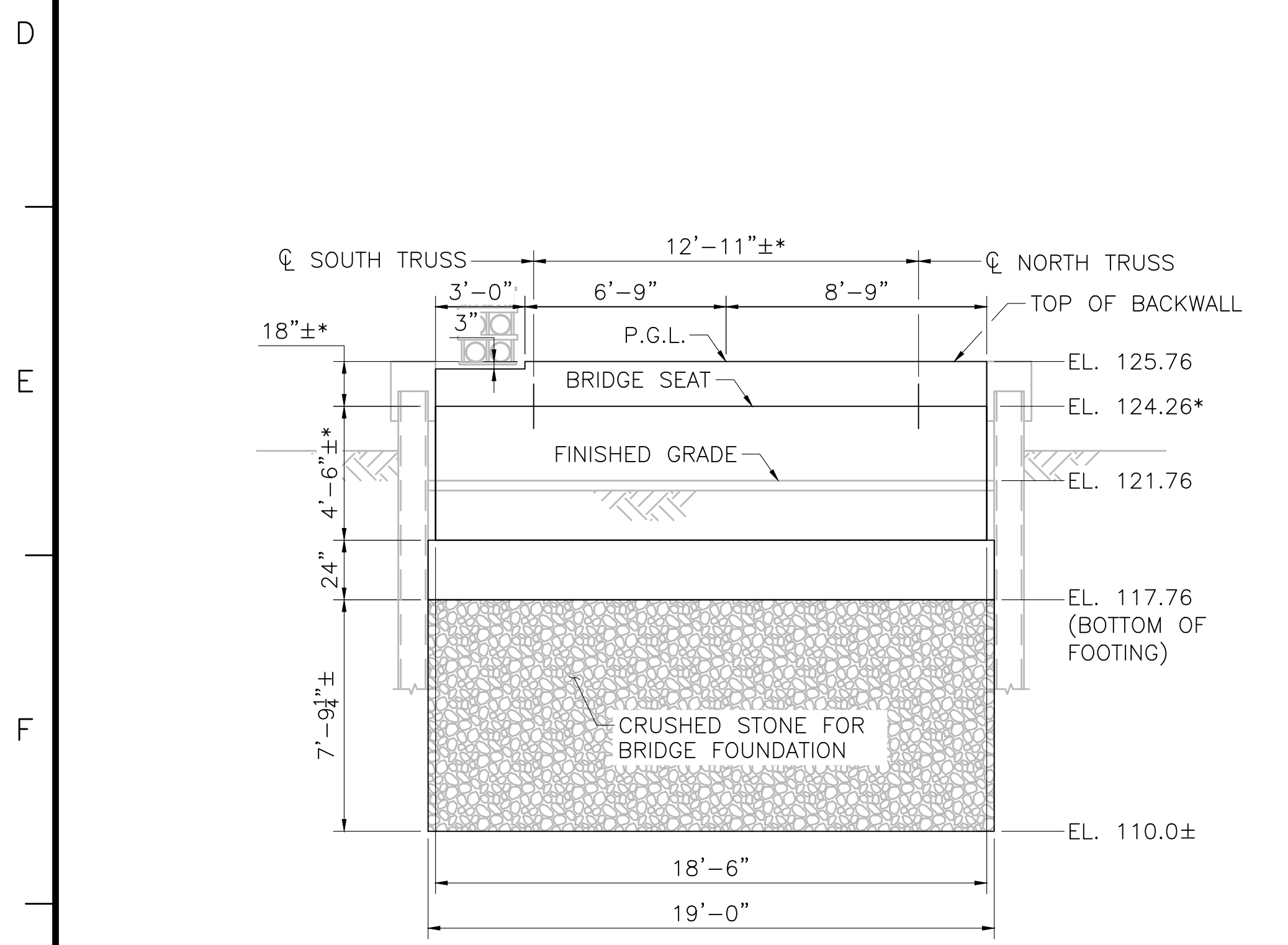
EAST ABUTMENT PLAN

SCALE: 1/4"=1'-0"



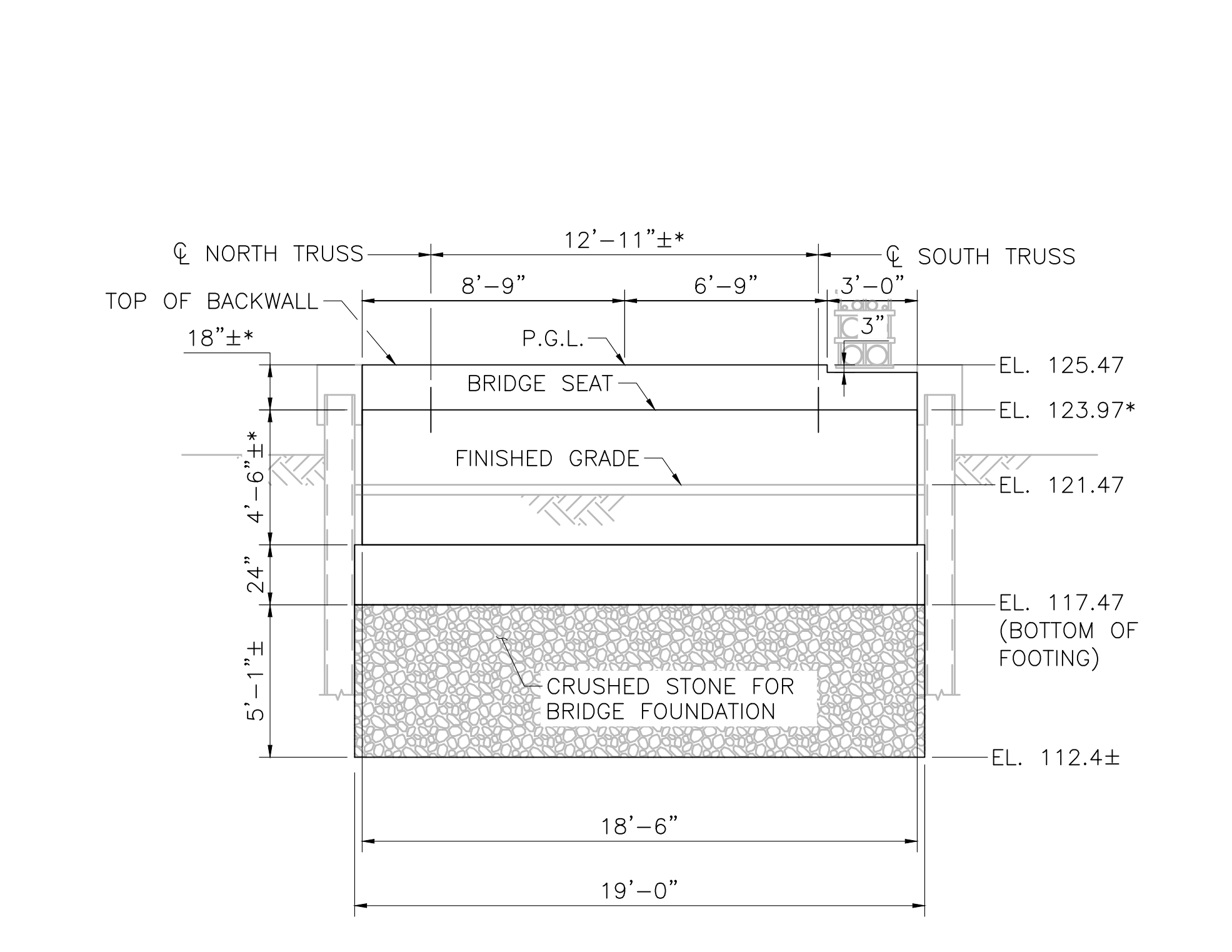
TYPICAL ABUTMENT SECTION

SCALE: 1/2"=1'-0"



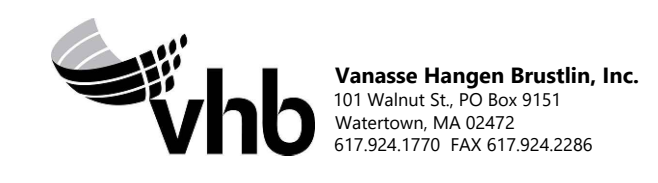
WEST ABUTMENT ELEVATION

SCALE: 1/4"=1'-0"

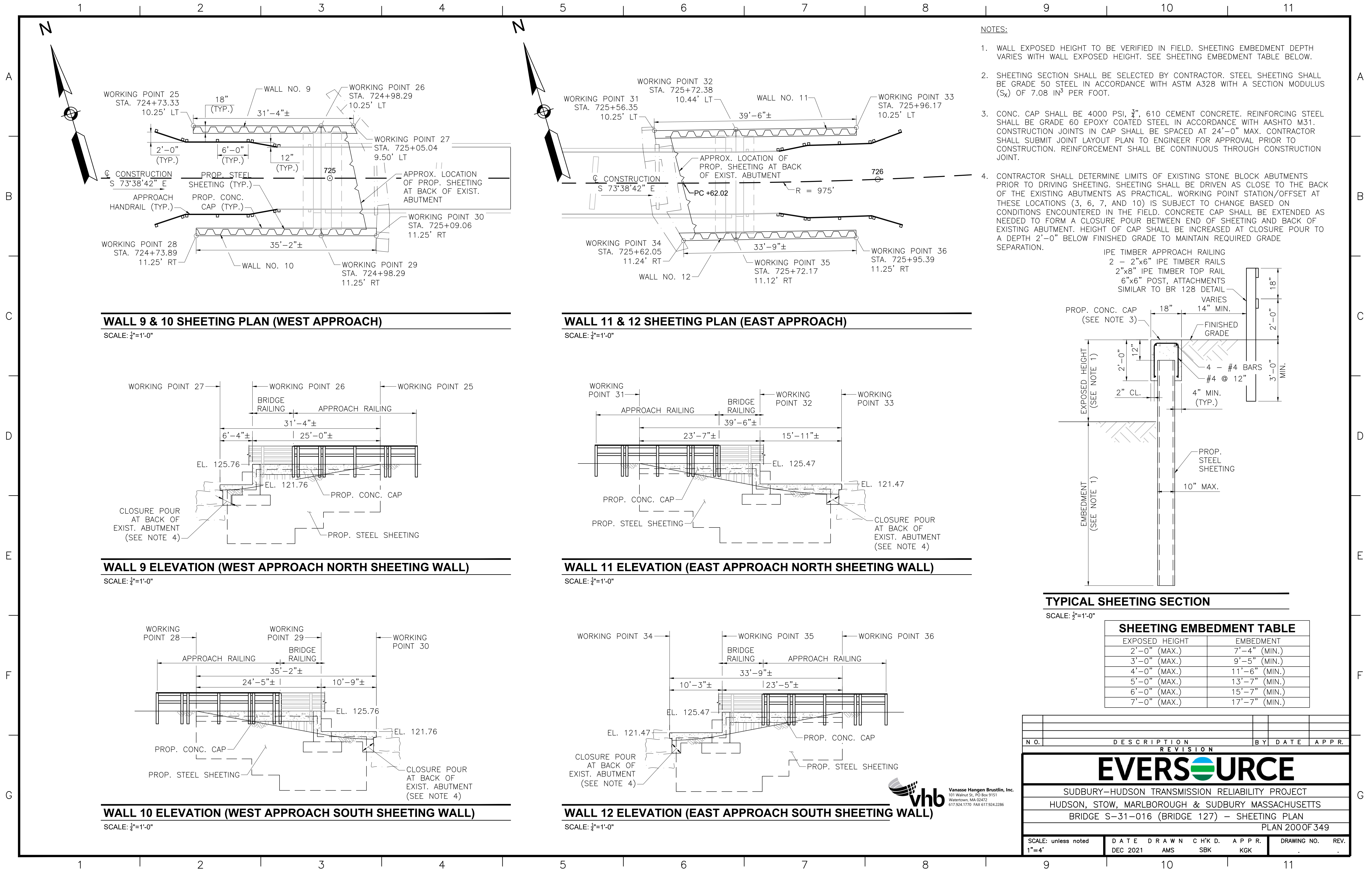


EAST ABUTMENT ELEVATION

SCALE: 1/4"=1'-0"



NO.	DESCRIPTION	BY	DATE	APPR.	
					REVISION
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
BRIDGE S-31-016 (BRIDGE 127) - SUBSTRUCTURE DETAILS					
PLAN 199 OF 349					
SCALE: unless noted 1"=4'	DATE DEC 2021	DRAWN AMS	CHECKED SBK	APPR. KGK	DRAWING NO. REV.



NOTES:

1. WALL EXPOSED HEIGHT TO BE VERIFIED IN FIELD. SHEETING EMBEDMENT DEPTH VARIES WITH WALL EXPOSED HEIGHT. SEE SHEETING EMBEDMENT TABLE BELOW.
2. SHEETING SECTION SHALL BE SELECTED BY CONTRACTOR. STEEL SHEETING SHALL BE GRADE 50 STEEL IN ACCORDANCE WITH ASTM A328 WITH A SECTION MODULUS (S_x) OF 7.08 IN³ PER FOOT.
3. CONC. CAP SHALL BE 4000 PSI, 3/4", 610 CEMENT CONCRETE. REINFORCING STEEL SHALL BE GRADE 60 EPOXY COATED STEEL IN ACCORDANCE WITH AASHTO M31. CONSTRUCTION JOINTS IN CAP SHALL BE SPACED AT 24'-0" MAX. CONTRACTOR SHALL SUBMIT JOINT LAYOUT PLAN TO ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION. REINFORCEMENT SHALL BE CONTINUOUS THROUGH CONSTRUCTION JOINT.
4. CONTRACTOR SHALL DETERMINE LIMITS OF EXISTING STONE BLOCK ABUTMENTS PRIOR TO DRIVING SHEETING. SHEETING SHALL BE DRIVEN AS CLOSE TO THE BACK OF THE EXISTING ABUTMENTS AS PRACTICAL. WORKING POINT STATION/OFFSET AT THESE LOCATIONS (3, 6, 7, AND 10) IS SUBJECT TO CHANGE BASED ON CONDITIONS ENCOUNTERED IN THE FIELD. CONCRETE CAP SHALL BE EXTENDED AS NEEDED TO FORM A CLOSURE POUR BETWEEN END OF SHEETING AND BACK OF EXISTING ABUTMENT. HEIGHT OF CAP SHALL BE INCREASED AT CLOSURE POUR TO A DEPTH 2'-0" BELOW FINISHED GRADE TO MAINTAIN REQUIRED GRADE SEPARATION.

WALL 9 & 10 SHEETING PLAN (WEST APPROACH)

SCALE: 1/4"=1'-0"

WALL 11 & 12 SHEETING PLAN (EAST APPROACH)

SCALE: 1/4"=1'-0"

WALL 9 ELEVATION (WEST APPROACH NORTH SHEETING WALL)

SCALE: 1/4"=1'-0"

WALL 11 ELEVATION (EAST APPROACH NORTH SHEETING WALL)

SCALE: 1/4"=1'-0"

WALL 10 ELEVATION (WEST APPROACH SOUTH SHEETING WALL)

SCALE: 1/4"=1'-0"

WALL 12 ELEVATION (EAST APPROACH SOUTH SHEETING WALL)

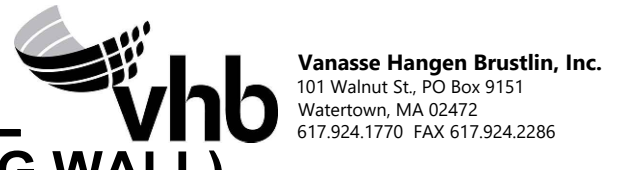
SCALE: 1/4"=1'-0"

TYPICAL SHEETING SECTION

SCALE: 1/2"=1'-0"

SHEETING EMBEDMENT TABLE	
EXPOSED HEIGHT	EMBEDMENT
2'-0" (MAX.)	7'-4" (MIN.)
3'-0" (MAX.)	9'-5" (MIN.)
4'-0" (MAX.)	11'-6" (MIN.)
5'-0" (MAX.)	13'-7" (MIN.)
6'-0" (MAX.)	15'-7" (MIN.)
7'-0" (MAX.)	17'-7" (MIN.)

NO.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
BRIDGE S-31-016 (BRIDGE 127) - SHEETING PLAN				
PLAN 200 OF 349				
SCALE: unless noted 1"=4'	DATE DEC 2021	DRAWN AMS	C'H'K D. SBK	APPR. KGK
DRAWING NO.				REV.



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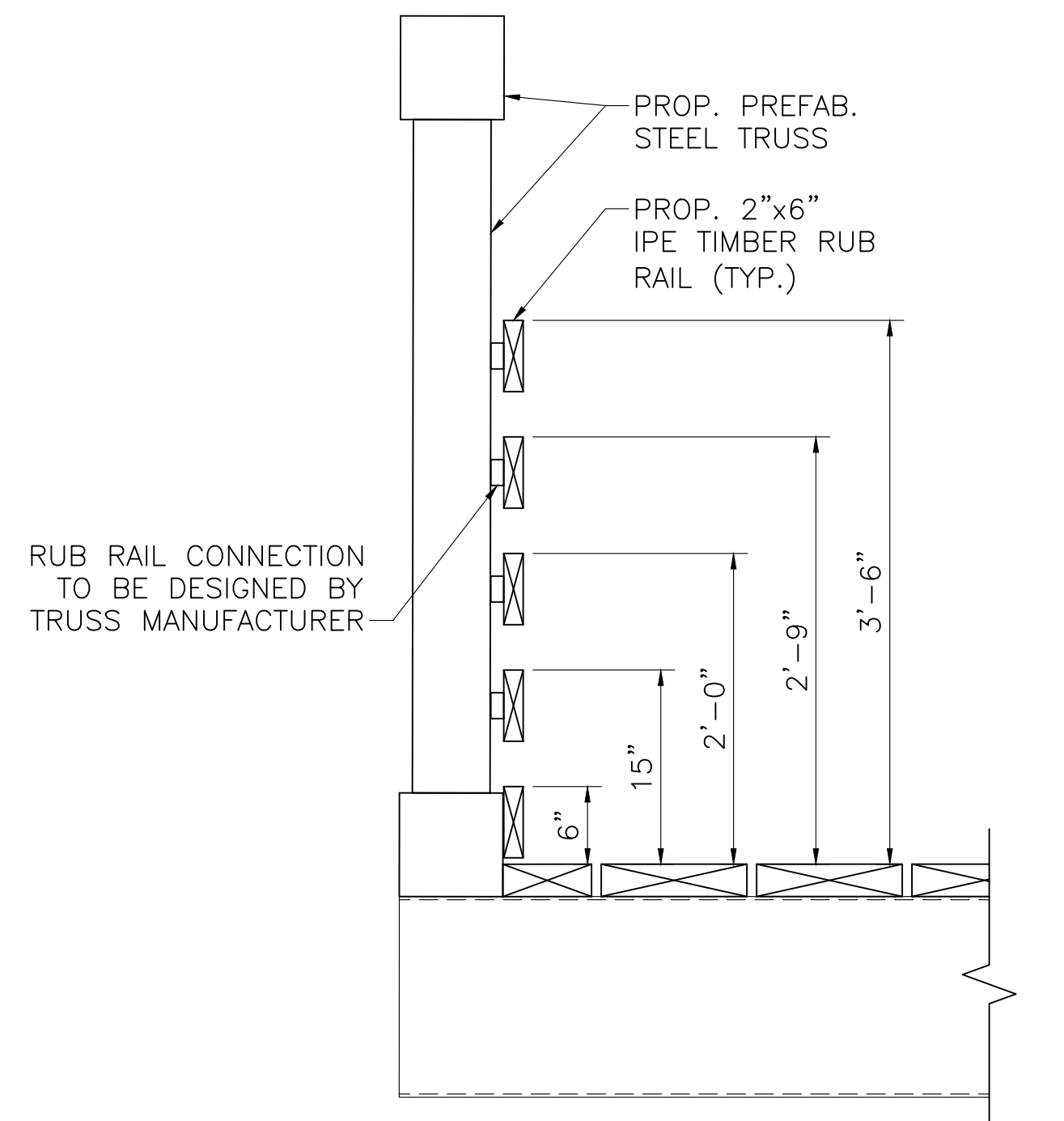
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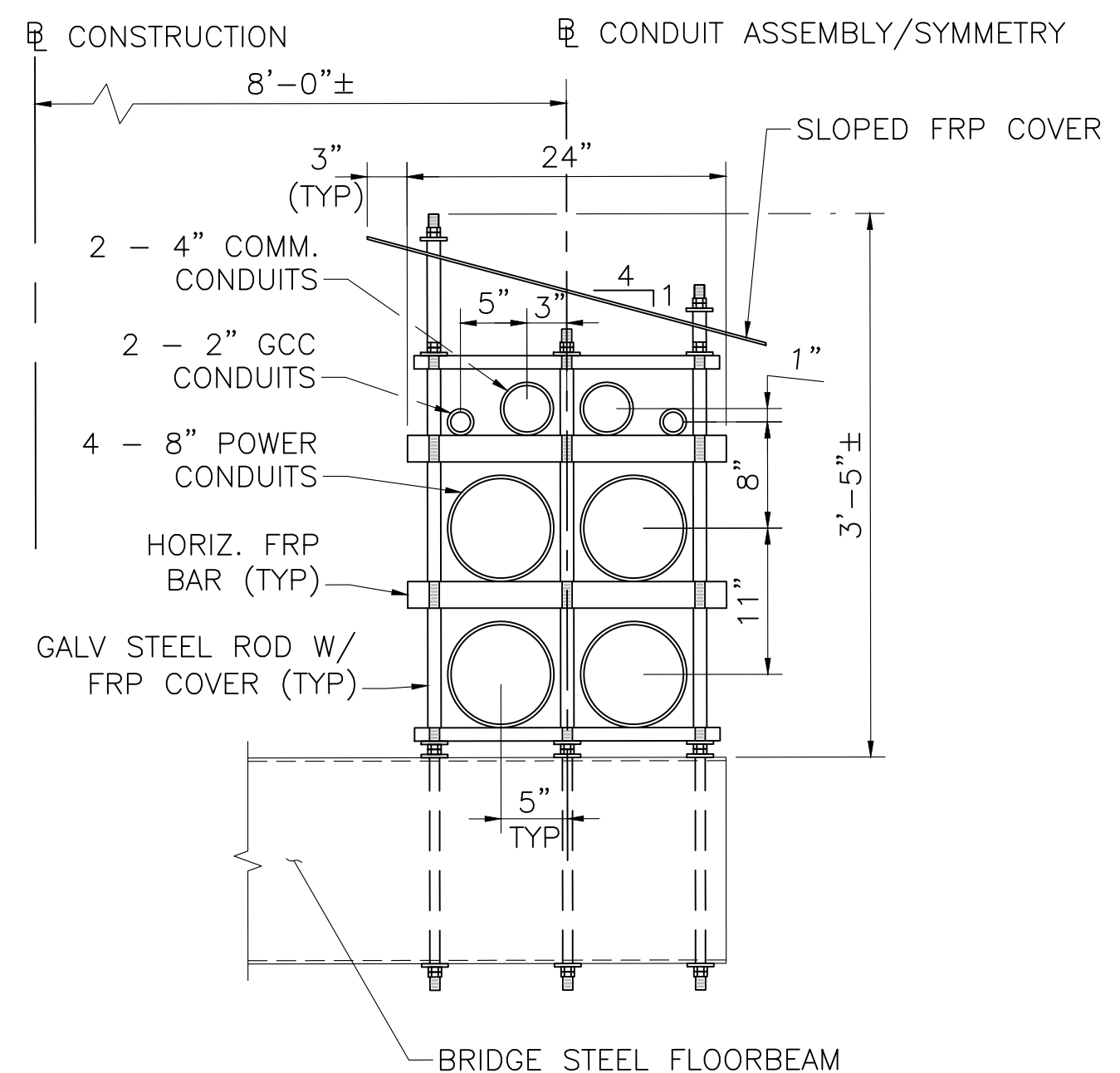
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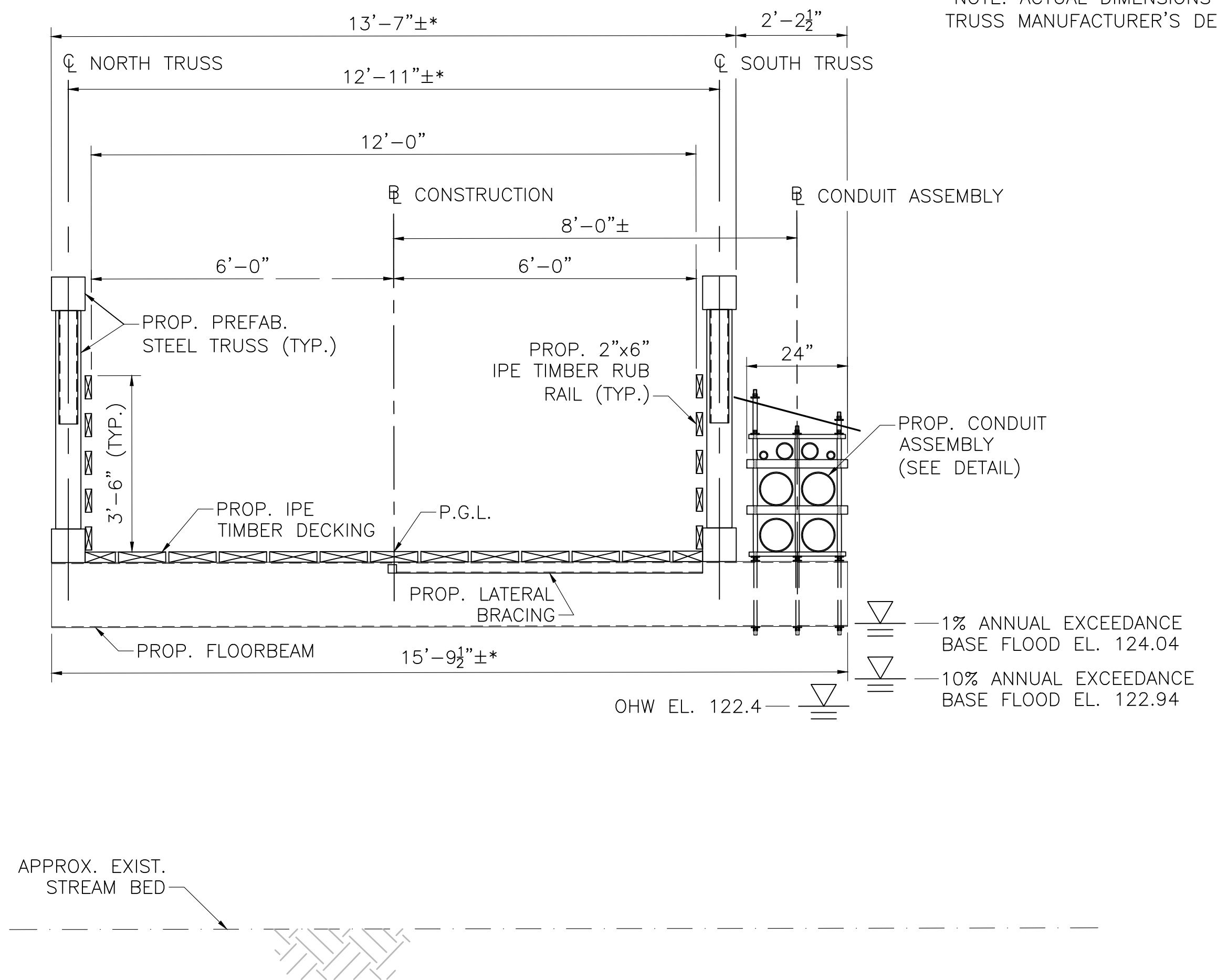
RAILING CONNECTION DETAIL

SCALE: 1"=1'-0"



CONDUIT ASSEMBLY DETAIL

SCALE: 1"=1'-0"



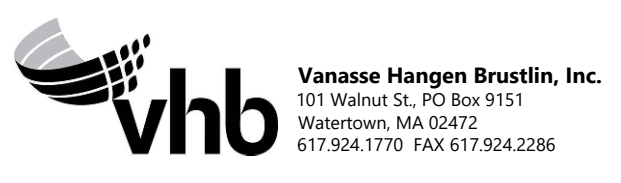
BRIDGE TRANSVERSE SECTION

SCALE: 1/2"=1'-0"

NOTES:

- TRUSS SHALL BE DESIGNED FOR TEMPORARY H2O LOADING DURING CONSTRUCTION. TIMBER DECKING IS DESIGNED FOR H10 LOADING WITHOUT IMPACT AND 90 PSF PEDESTRIAN LOADING, WHICHEVER CONTROLS. CONTRACTOR SHALL DESIGN TEMPORARY DECKING IF BRIDGE IS INTENDED TO BE USED FOR CONSTRUCTION VEHICLES.

N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
BRIDGE S-31-016 (BRIDGE 127) - SECTION OF DETAILS				
PLAN 2010F 349				
SCALE: unless noted	DATE	DRAWN	C'H'K D.	APPR.
VARIABLES	JAN 2020	AMS	SBK	KGK
DRAWING NO.	REV.			
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1 2 3 4 5 6 7 8 9 10 11

1 2 3 4 5 6 7 8 9 10 11

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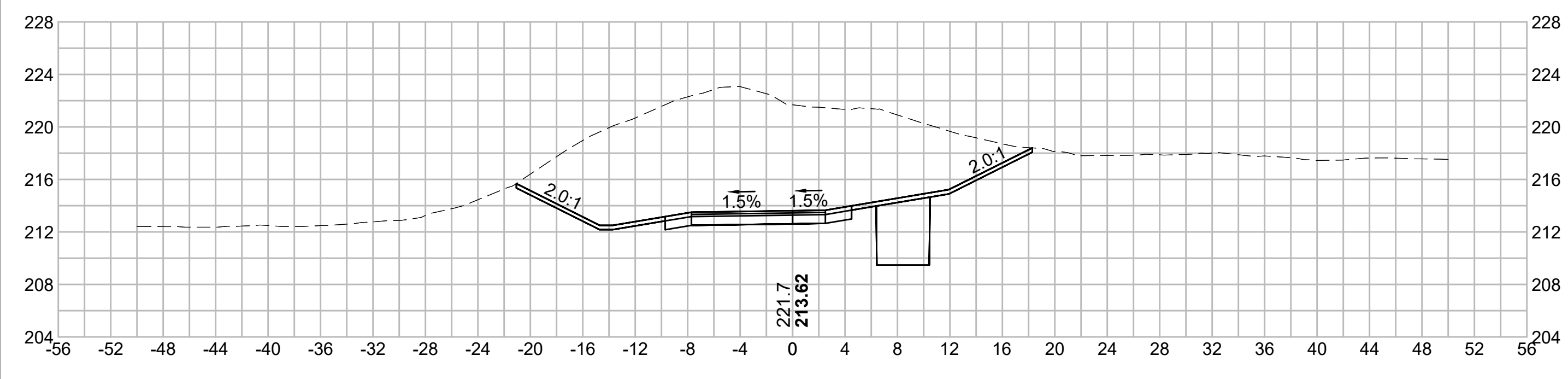
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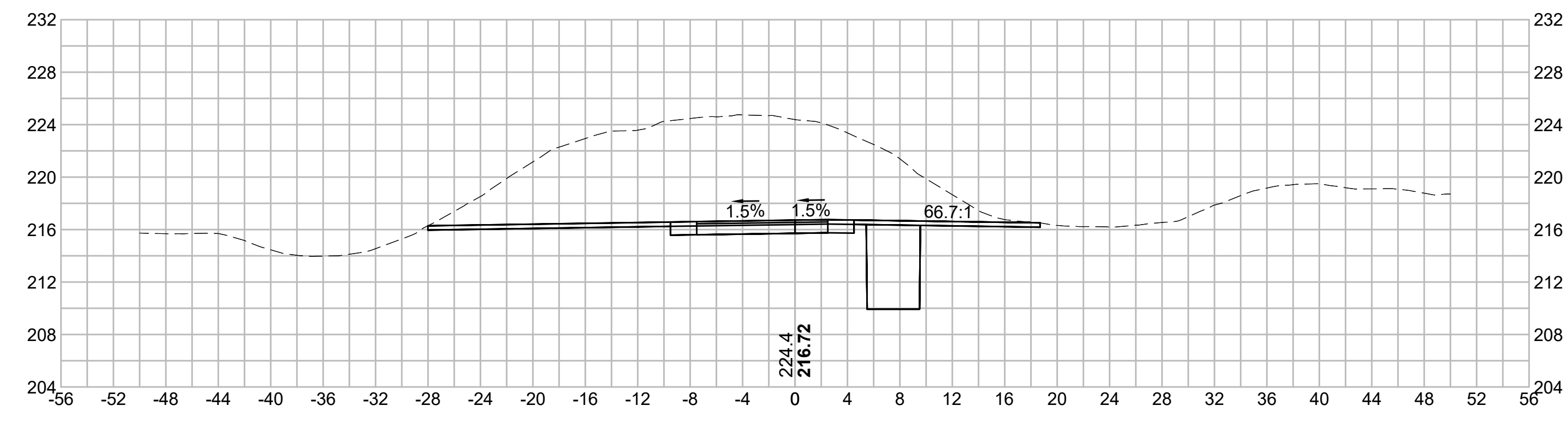
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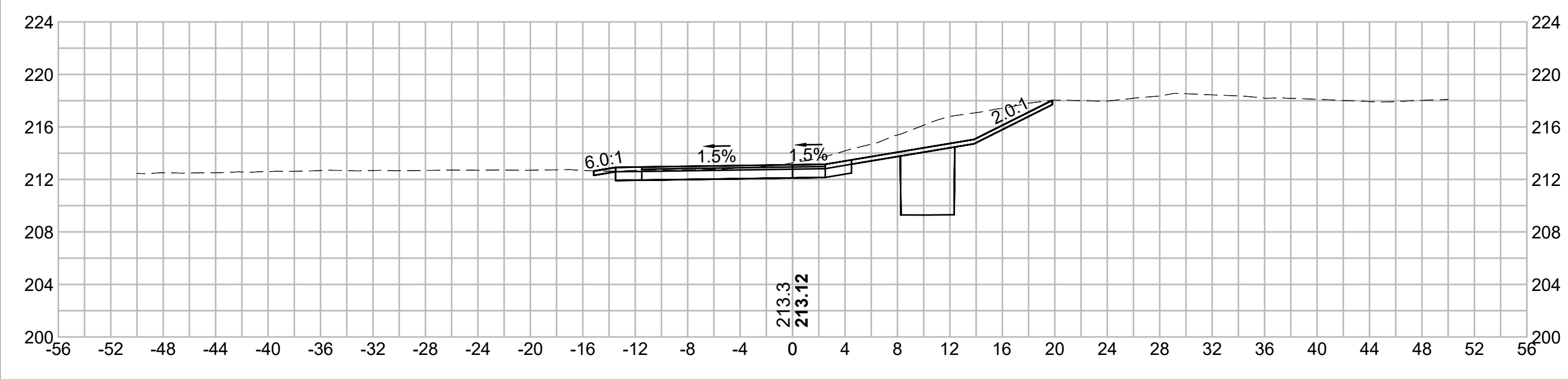
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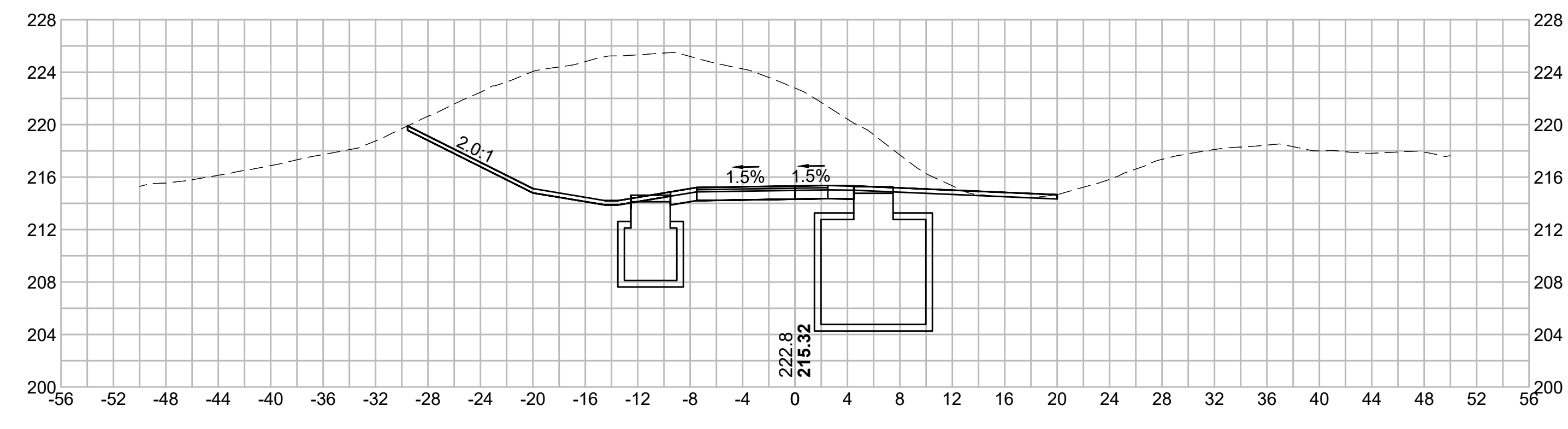
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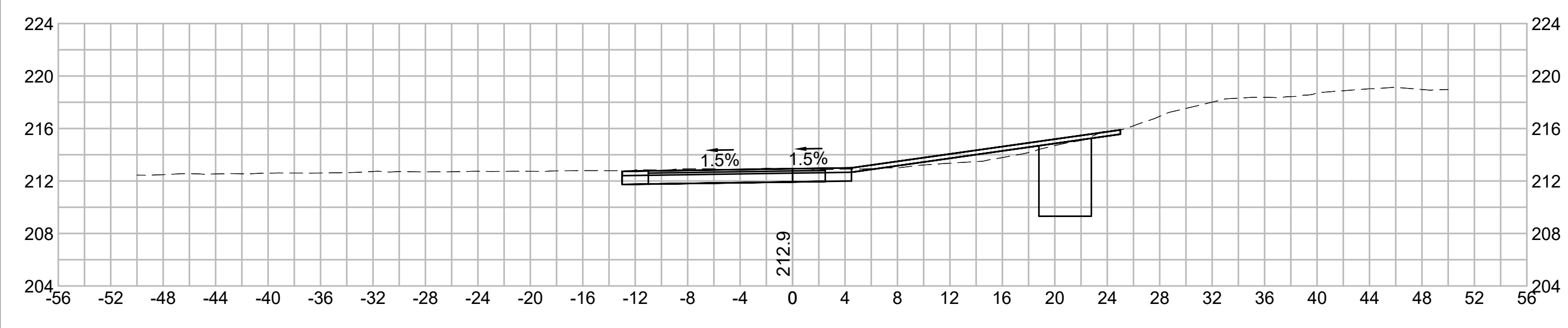
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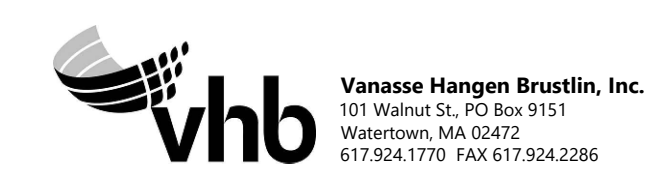
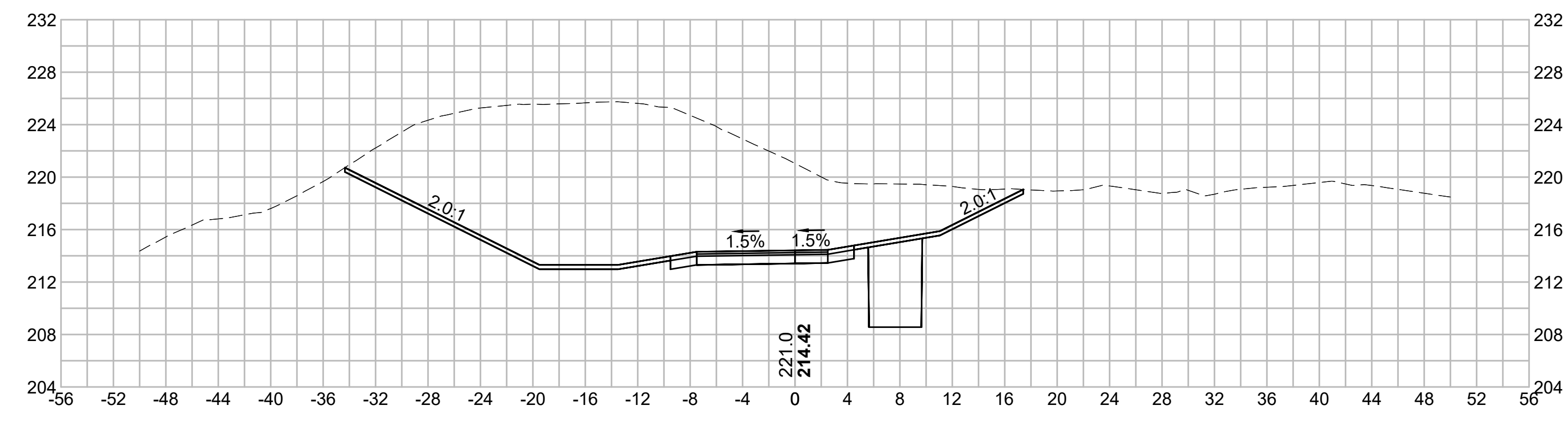
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100+31.46



101+50



N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
CROSS SECTIONS

PLAN 202 OF 349

SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	C'H'K'D. SK	A.P.P.R. MES	DRAWING NO.	REV.
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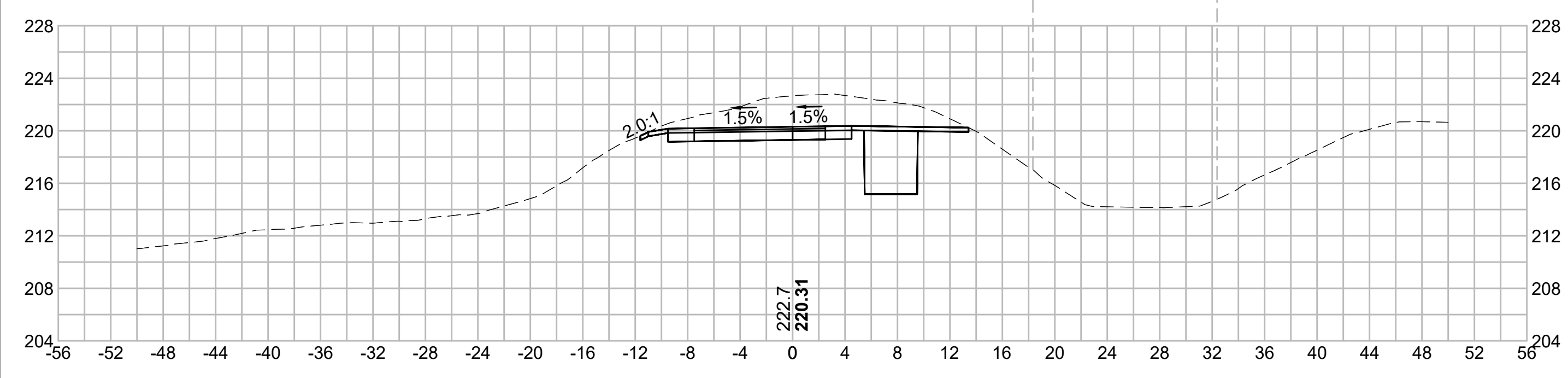
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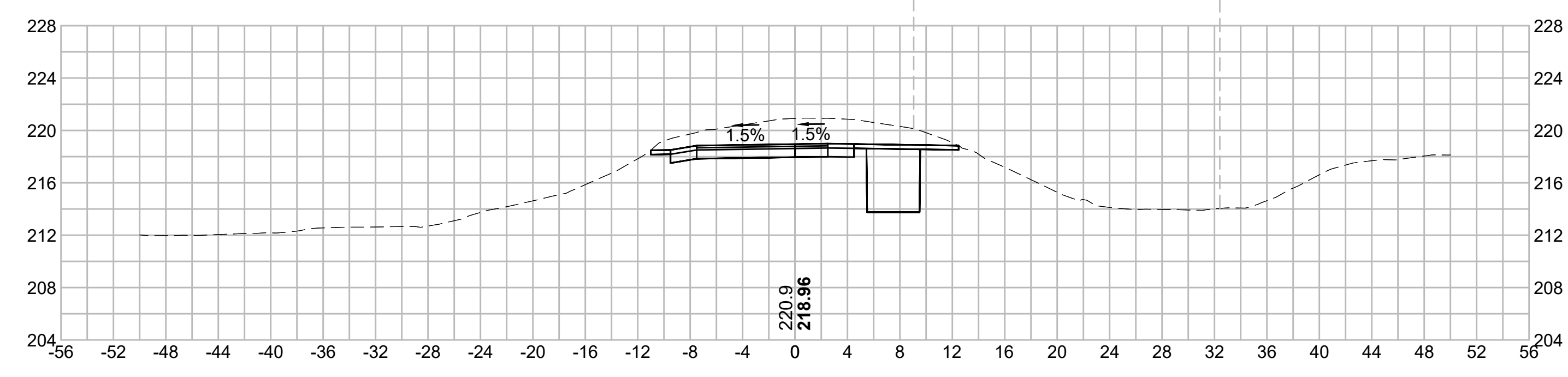
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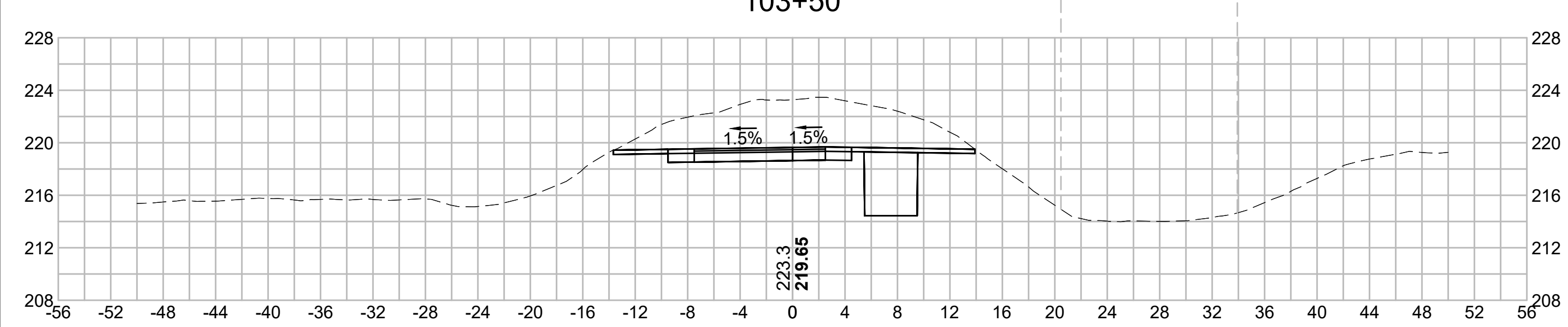
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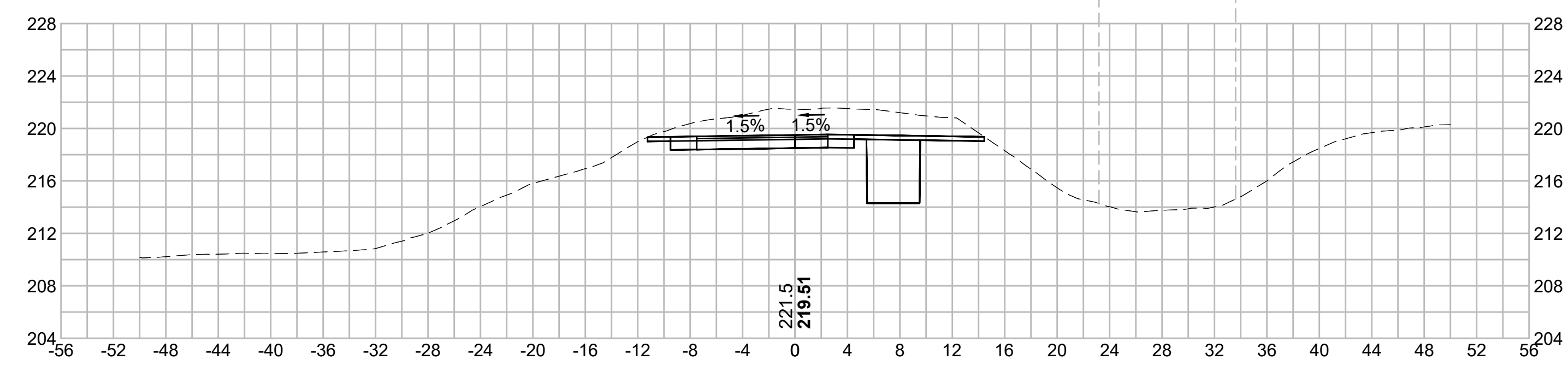
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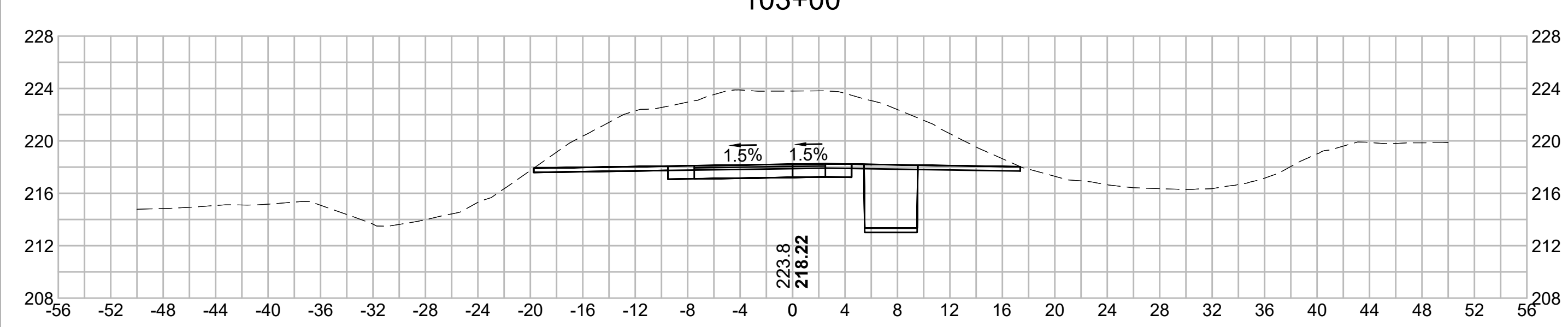
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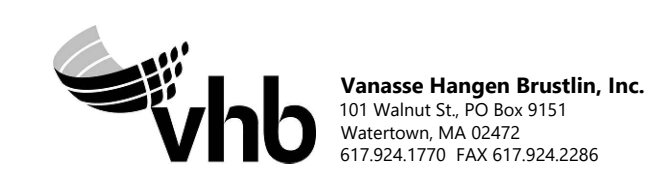
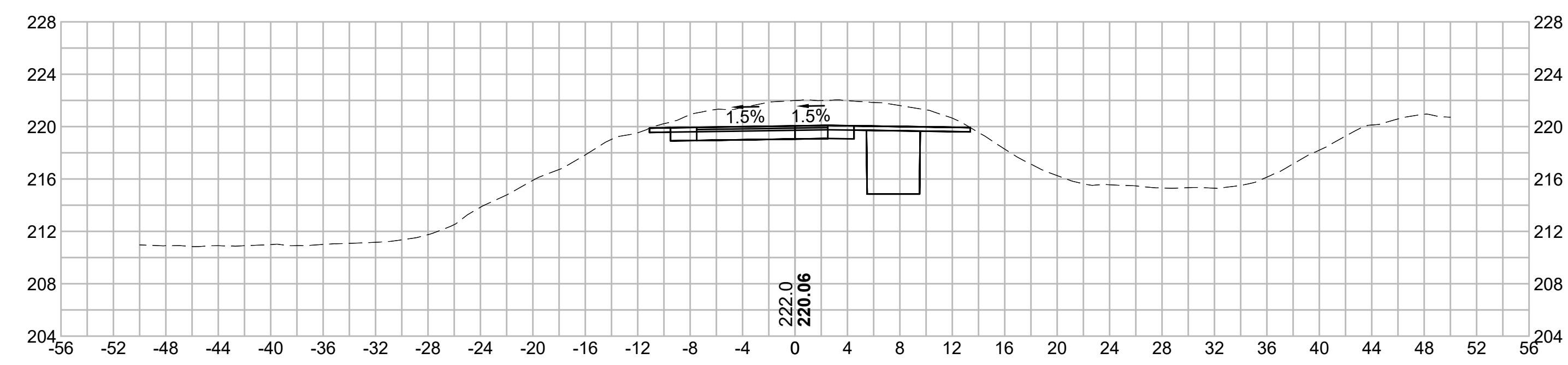
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103+00



104+50



N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

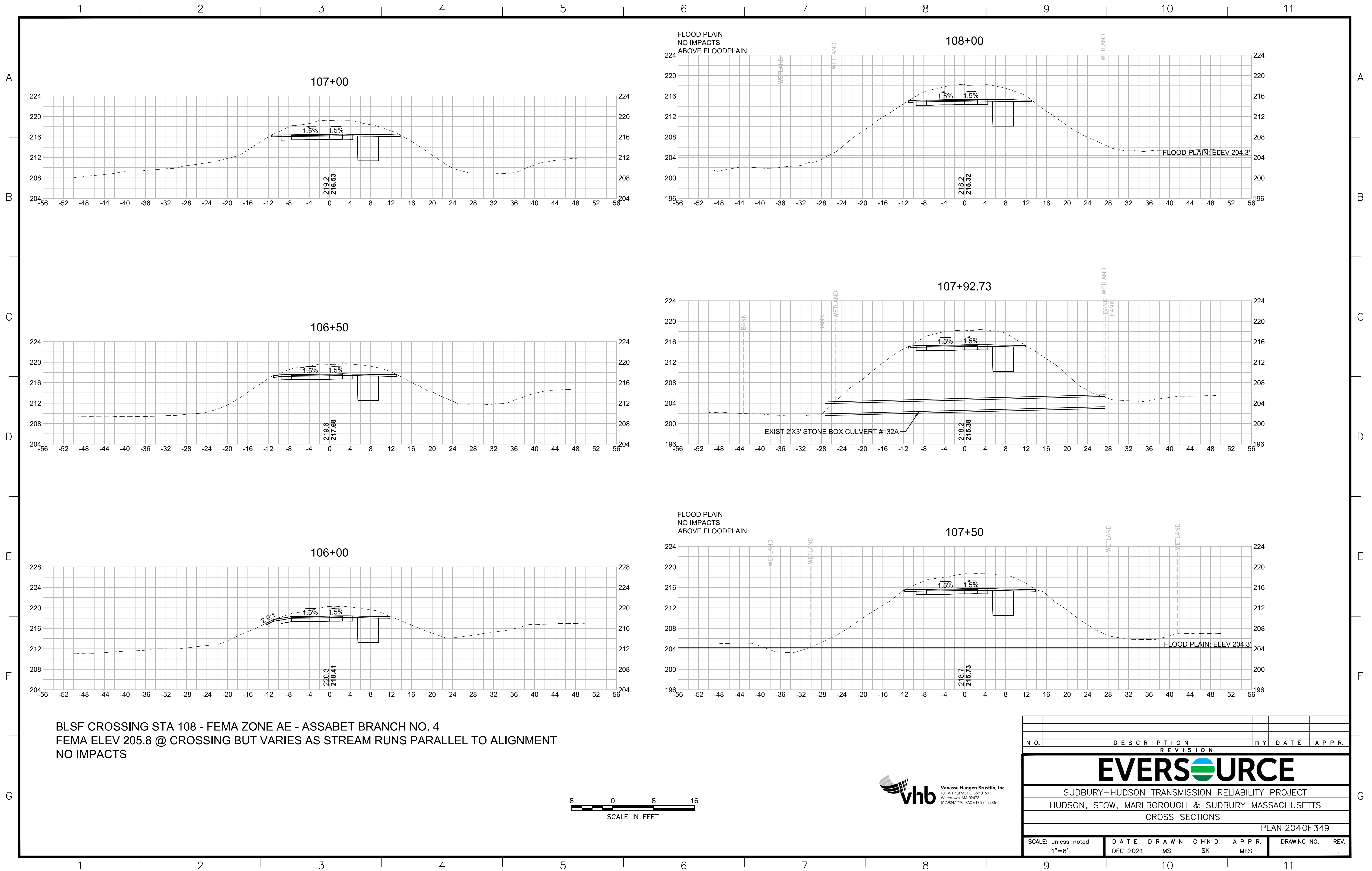
EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 CROSS SECTIONS

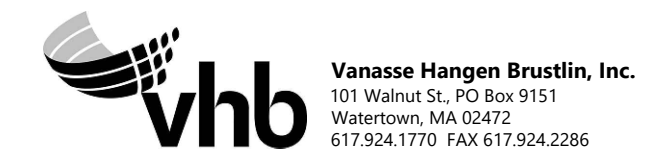
PLAN 203 OF 349

SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES	DRAWING NO. .	REV. .
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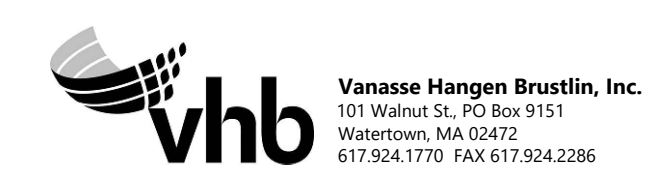
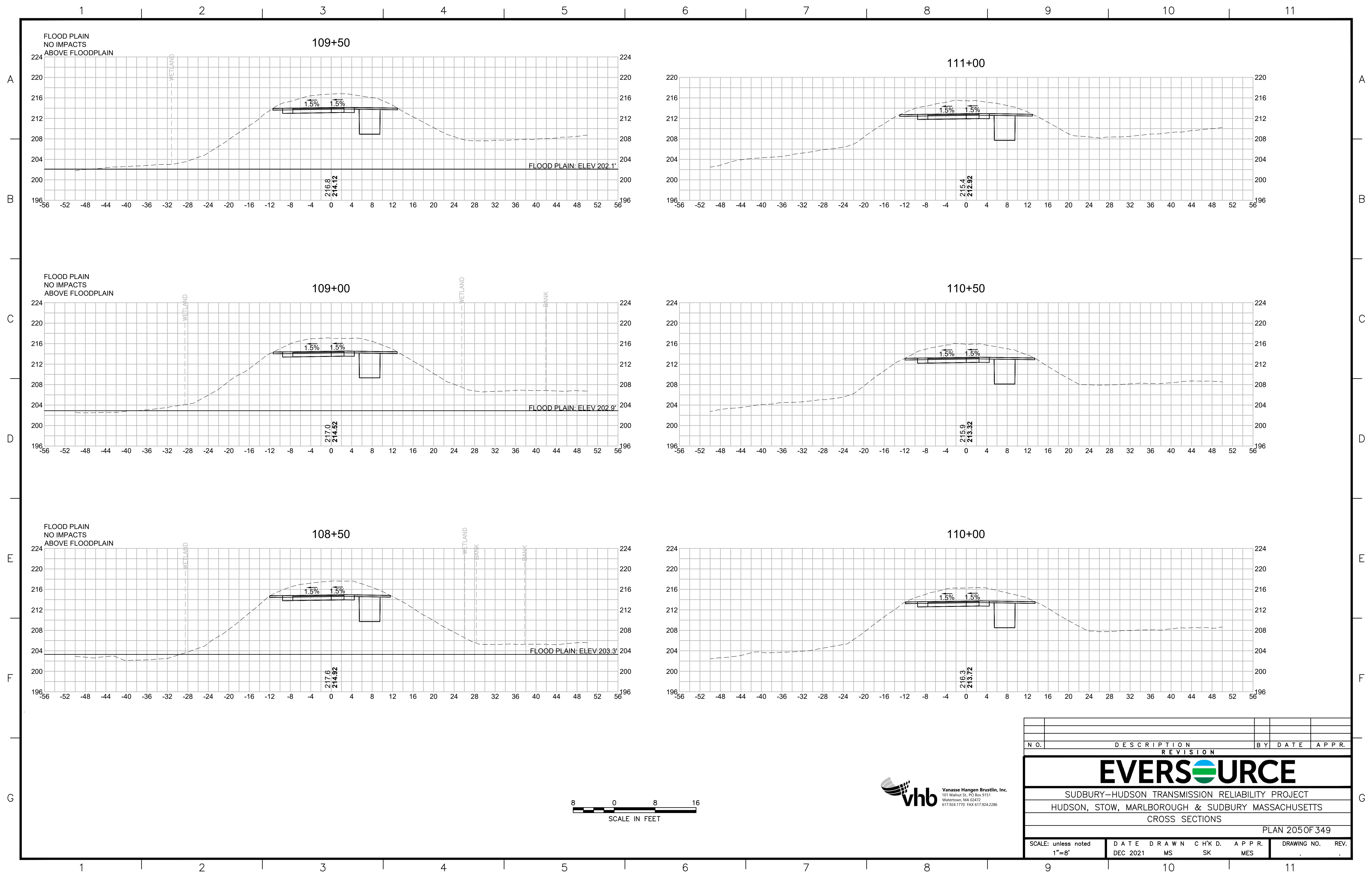
1 2 3 4 5 6 7 8 9 10 11



BLSF CROSSING STA 108 - FEMA ZONE AE - ASSABET BRANCH NO. 4
 FEMA ELEV 205.8 @ CROSSING BUT VARIES AS STREAM RUNS PARALLEL TO ALIGNMENT
 NO IMPACTS



N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 204 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	C'H'K D. SK	APPR. MES
				DRAWING NO. REV.



N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 CROSS SECTIONS

PLAN 205 OF 349

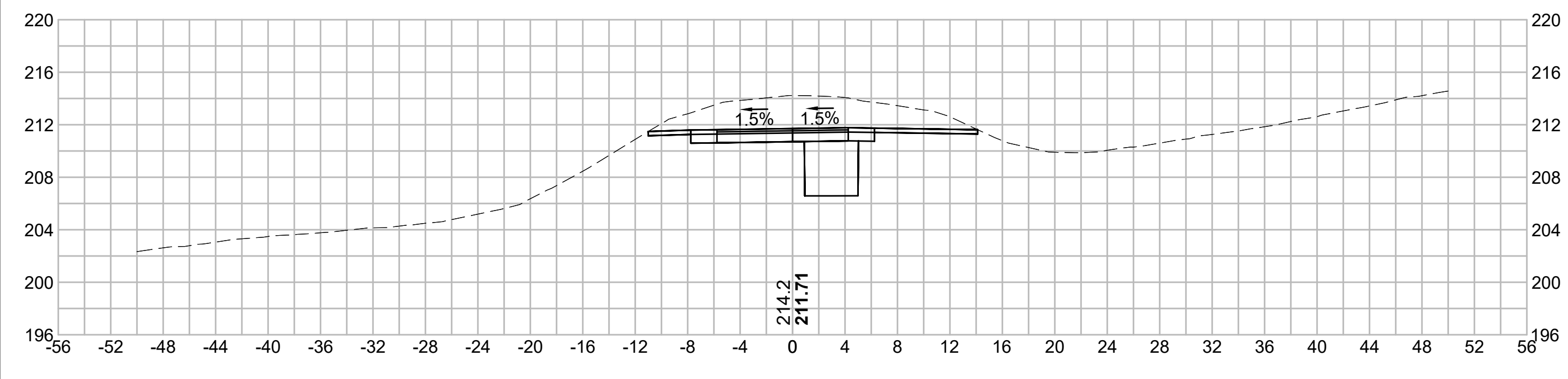
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	C'H'K D. SK	A P P R. MES	DRAWING NO. REV.
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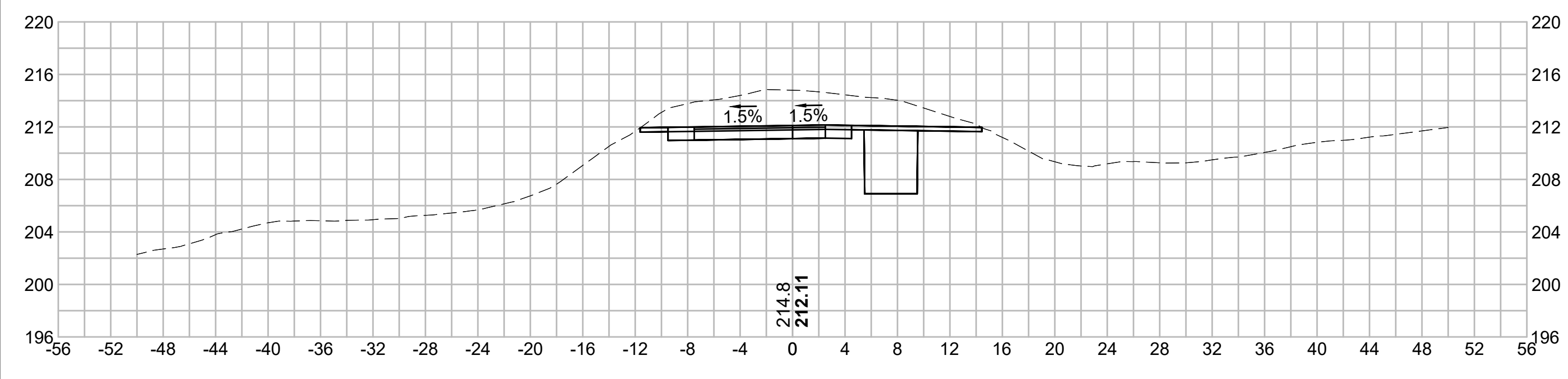
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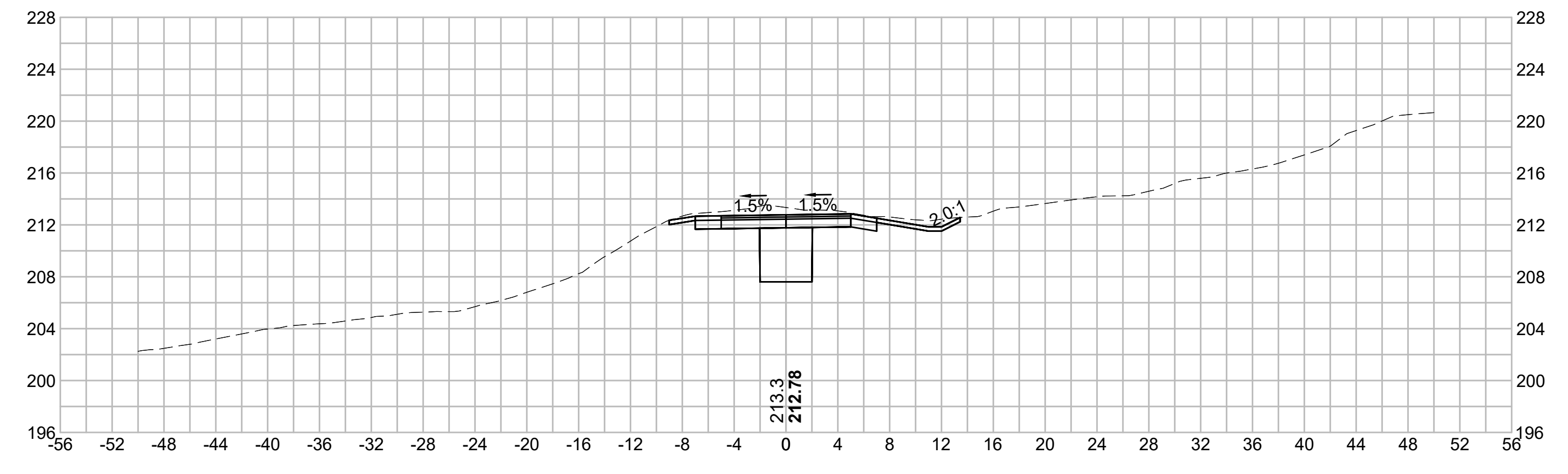
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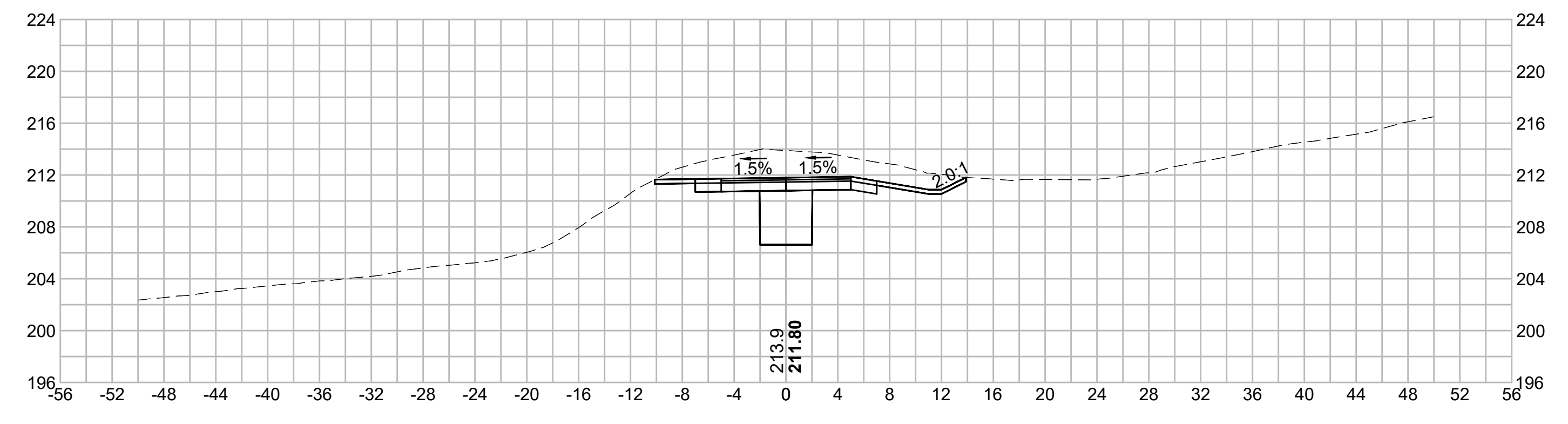
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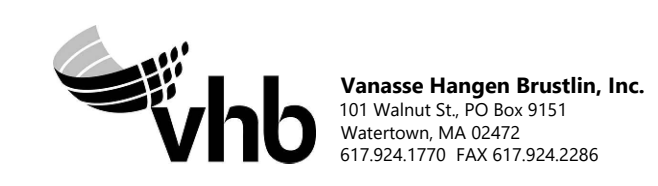
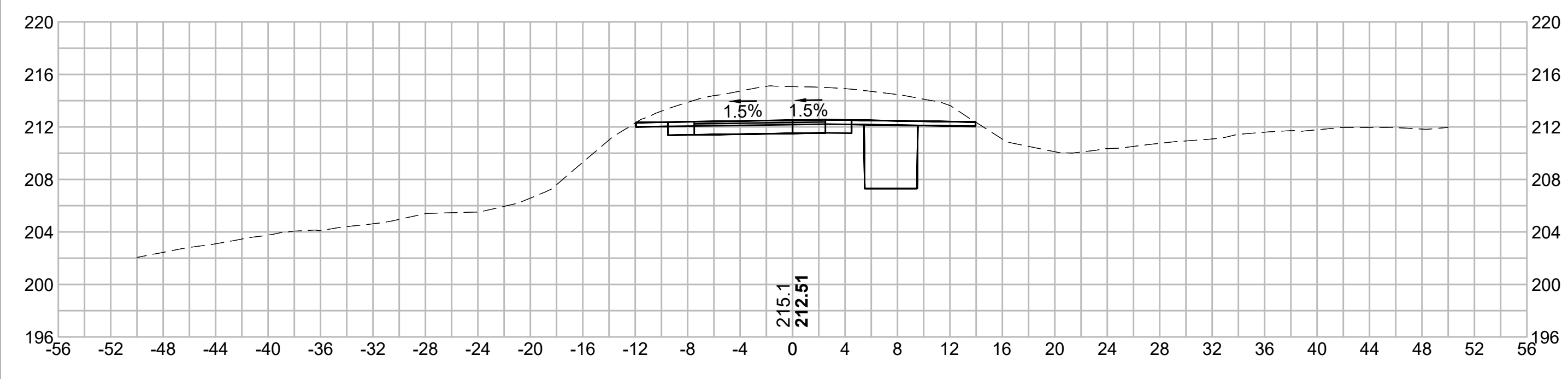
113+50



113+00



111+50



N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 206 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

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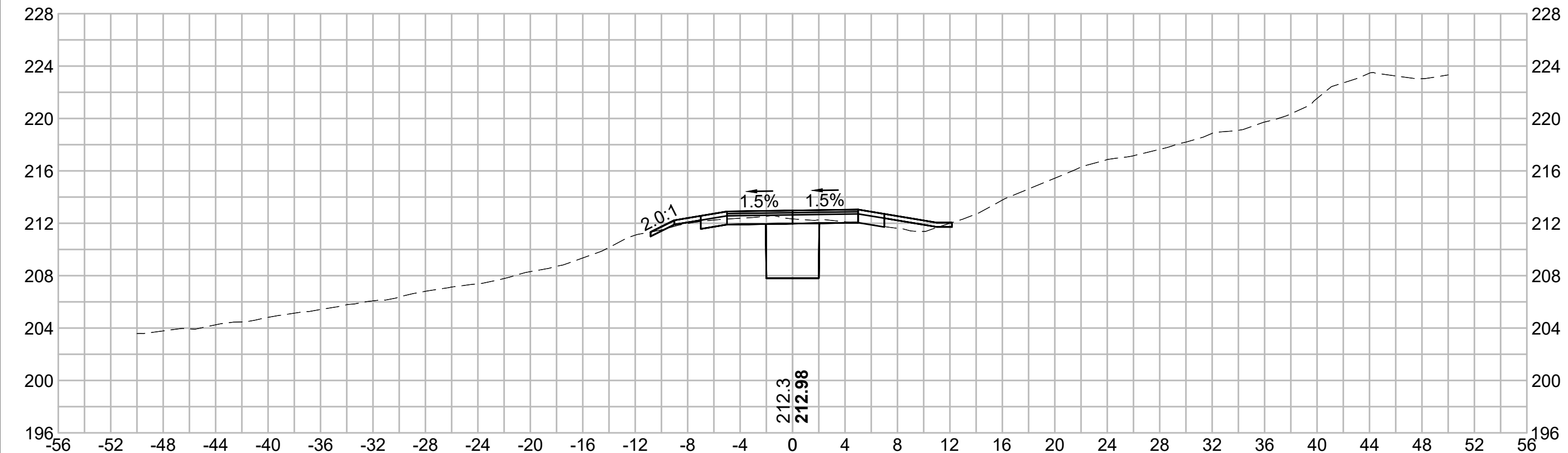
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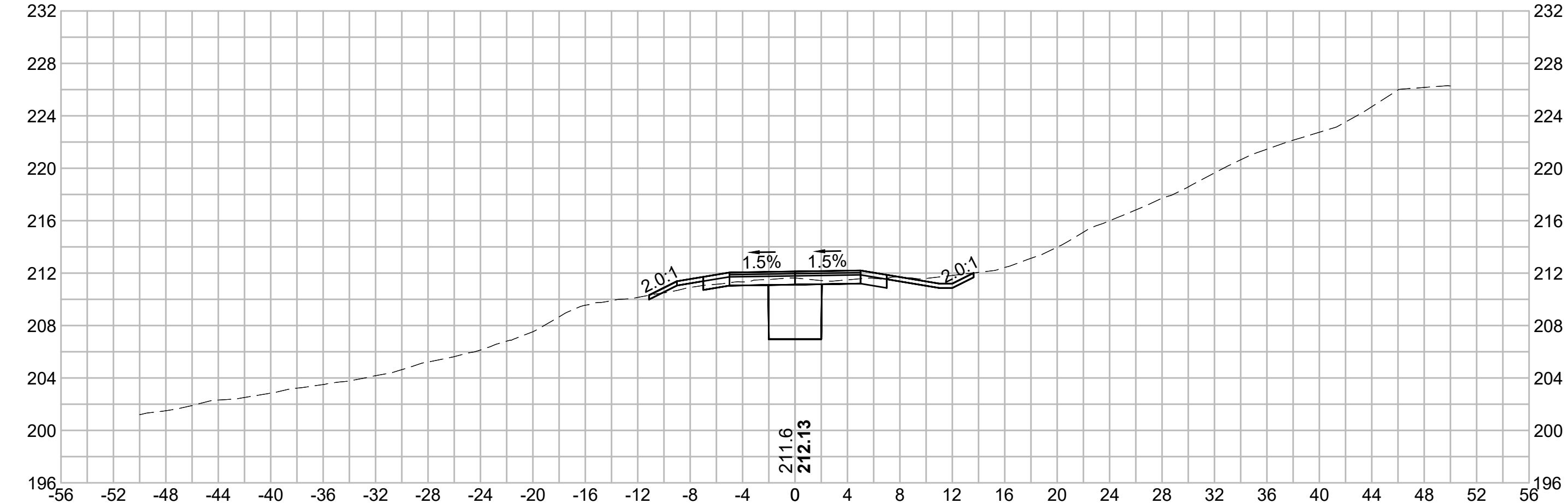
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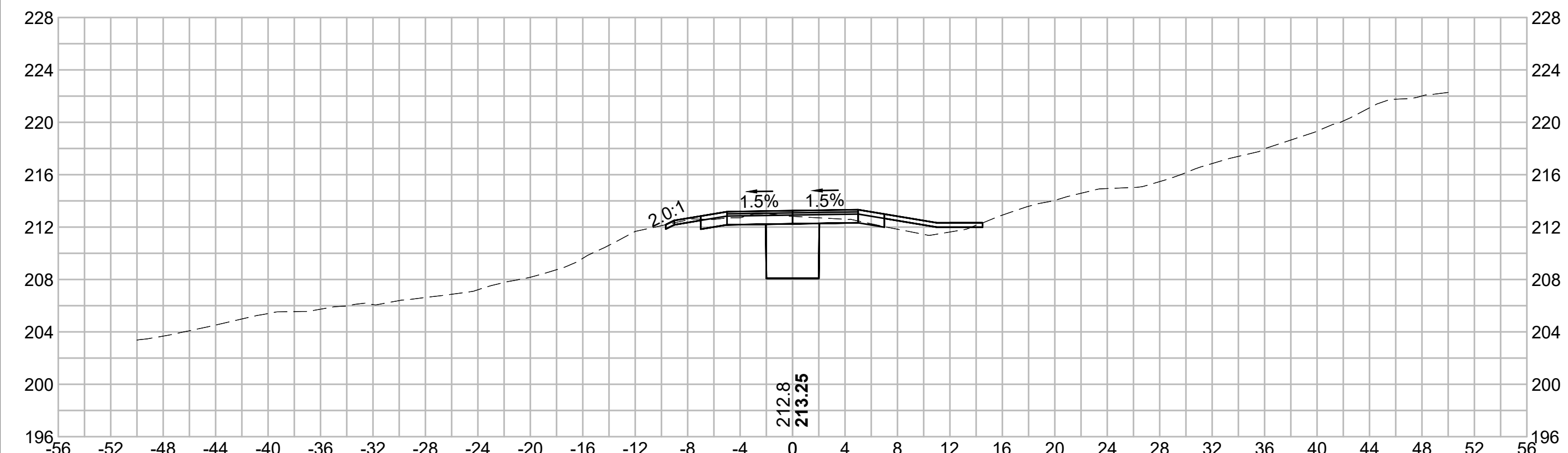
114+50



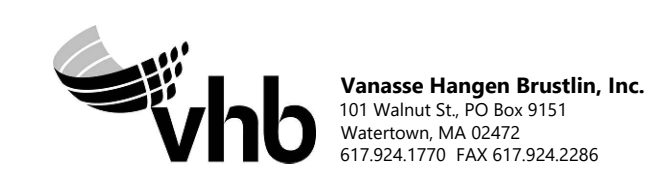
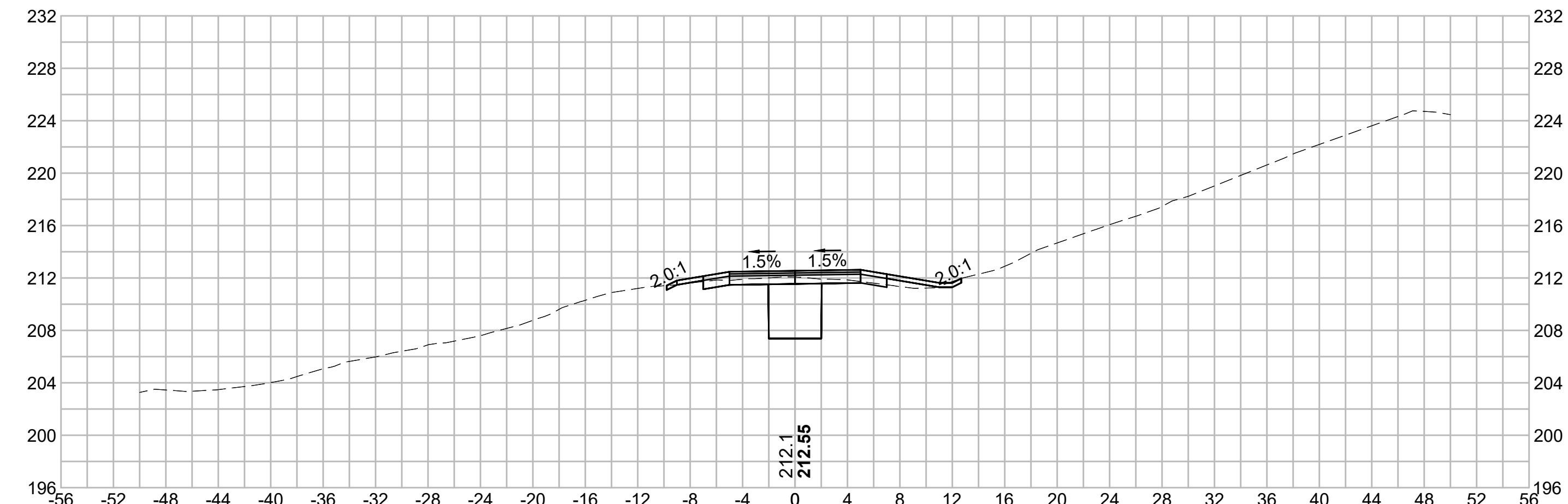
115+50



114+00



115+00



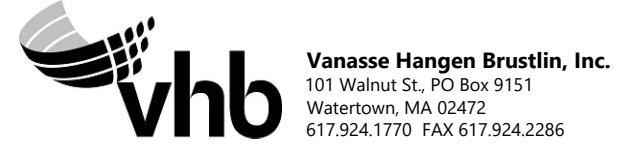
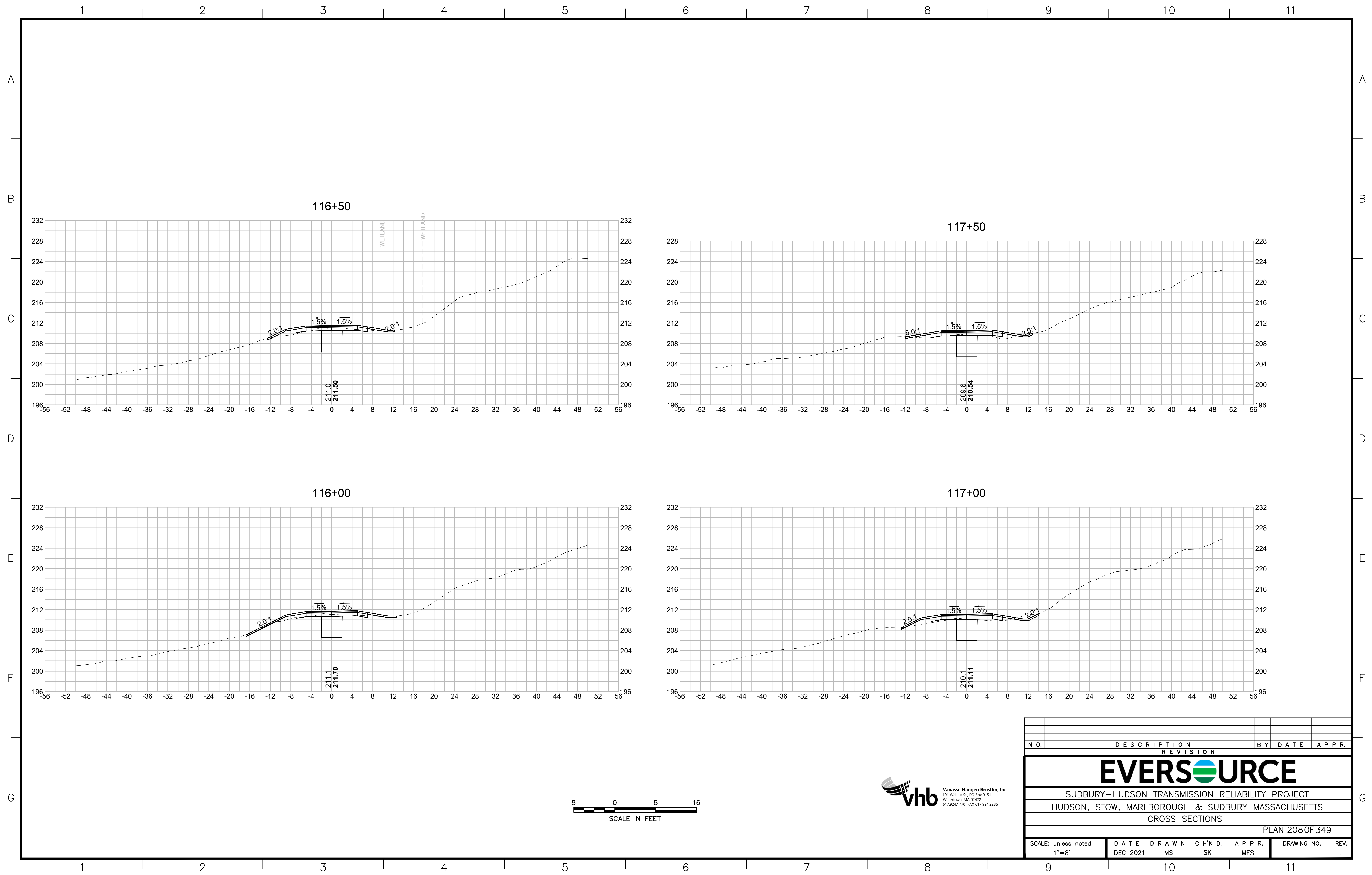
N O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
CROSS SECTIONS
PLAN 207 OF 349

SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	C H'K D. SK	A P P R. MES	DRAWING NO. .	REV. .
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NO.	DESCRIPTION		BY	DATE	APPR.
	REVISION				
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CROSS SECTIONS					
PLAN 208 OF 349					
SCALE: unless noted 1"=8'		DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.		REV.			

1 2 3 4 5 6 7 8 9 10 11

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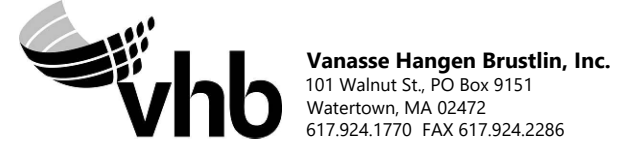
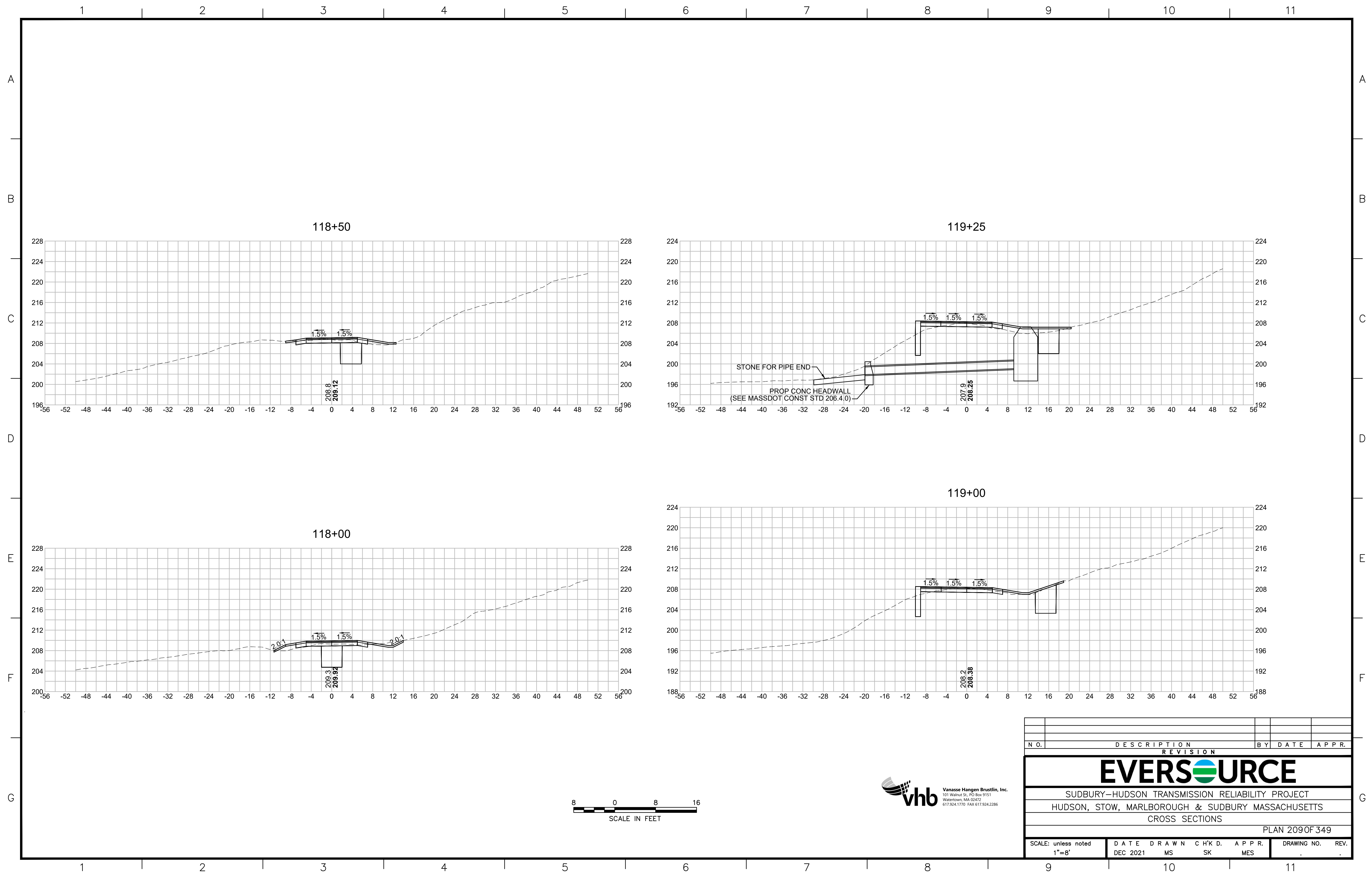
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1 2 3 4 5 6 7 8 9 10 11



NO.		DESCRIPTION		BY		DATE		APPR.	
		REVISION							
EVERSOURCE									
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT									
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
CROSS SECTIONS									
PLAN 209 OF 349									
SCALE: unless noted 1"=8'		DATE DEC 2021		DRAWN MS		C'H'K D. SK		APPR. MES	
DRAWING NO.		REV.		11					

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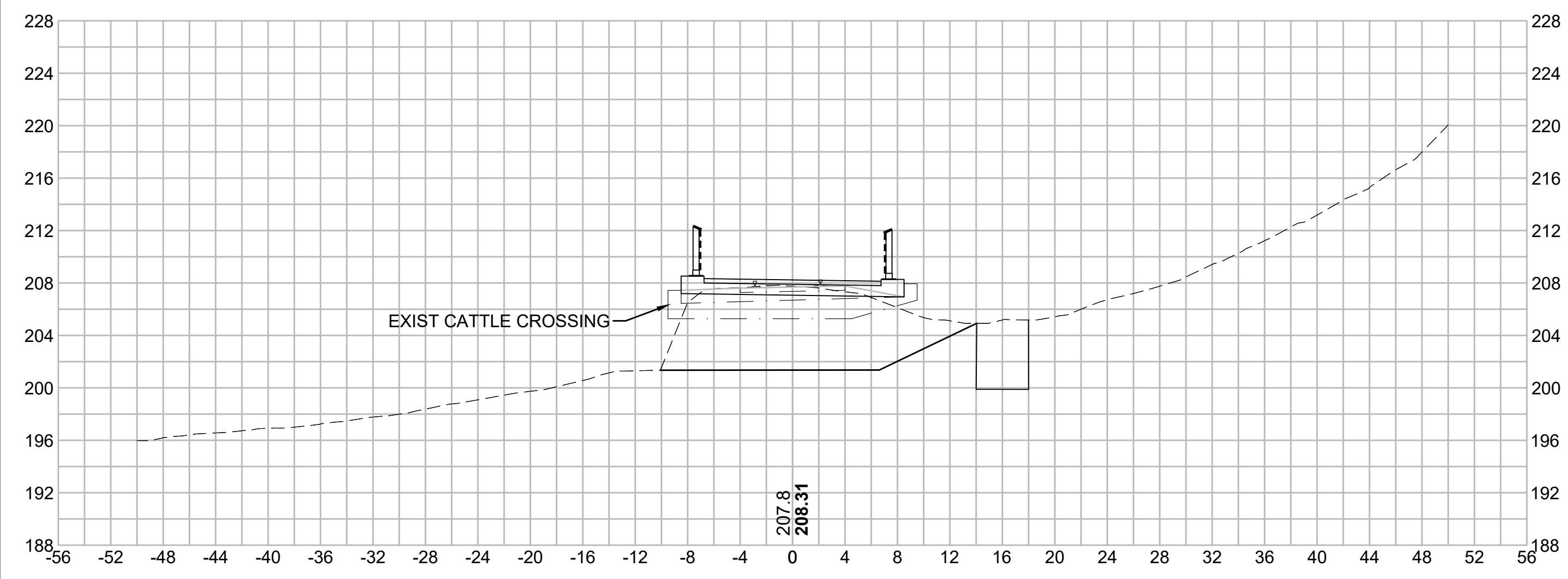
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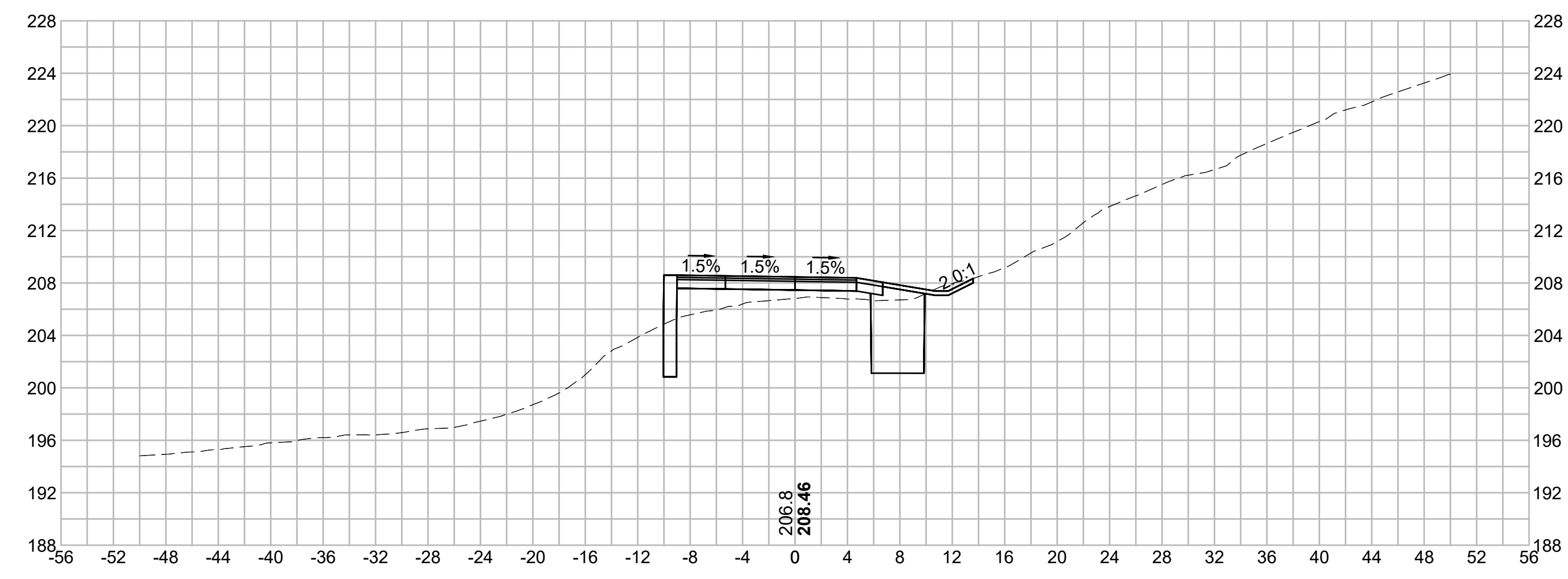
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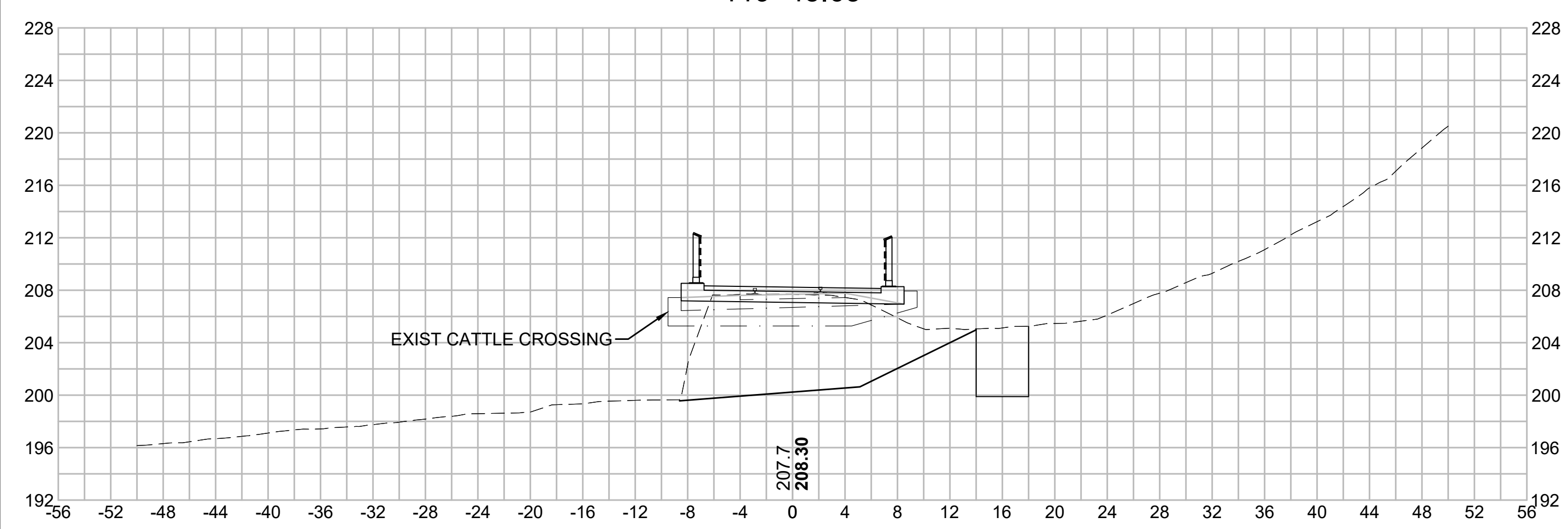
119+50



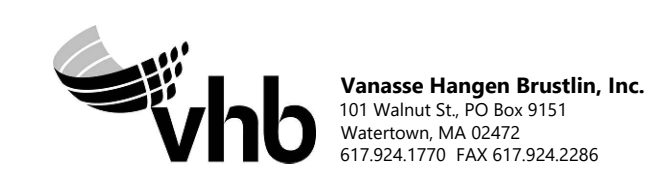
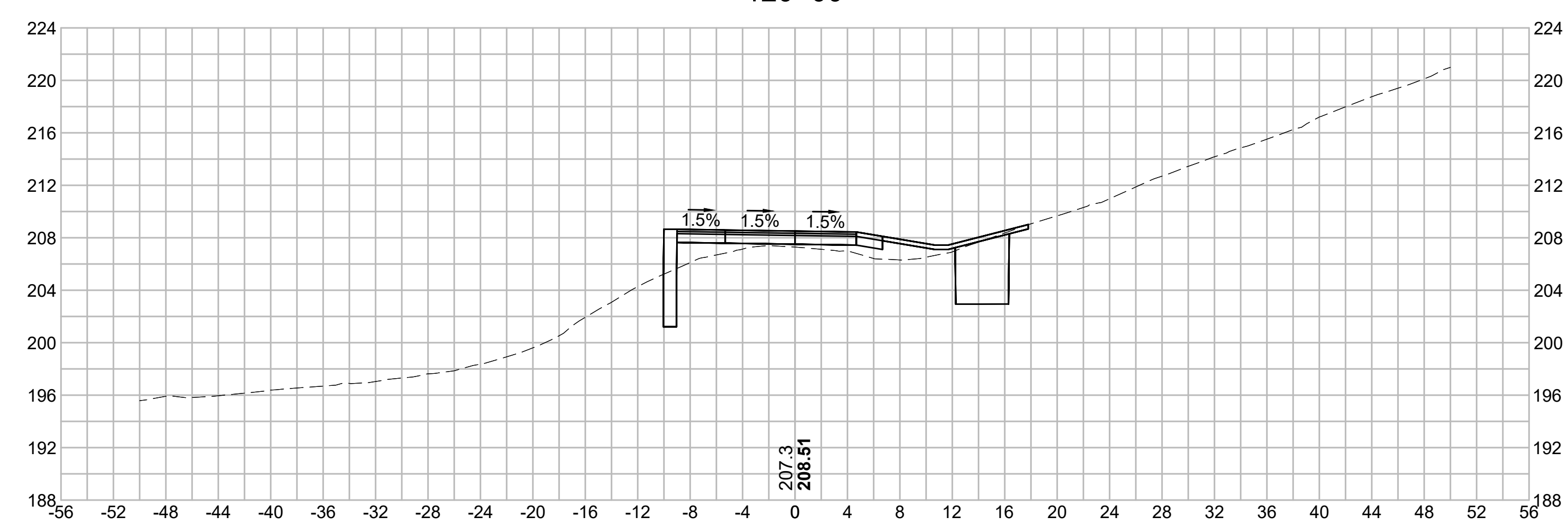
120+50



119+45.63

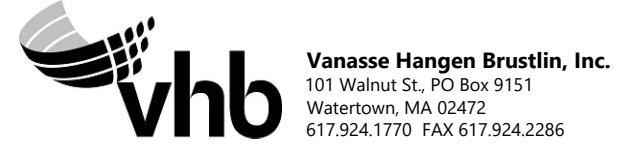
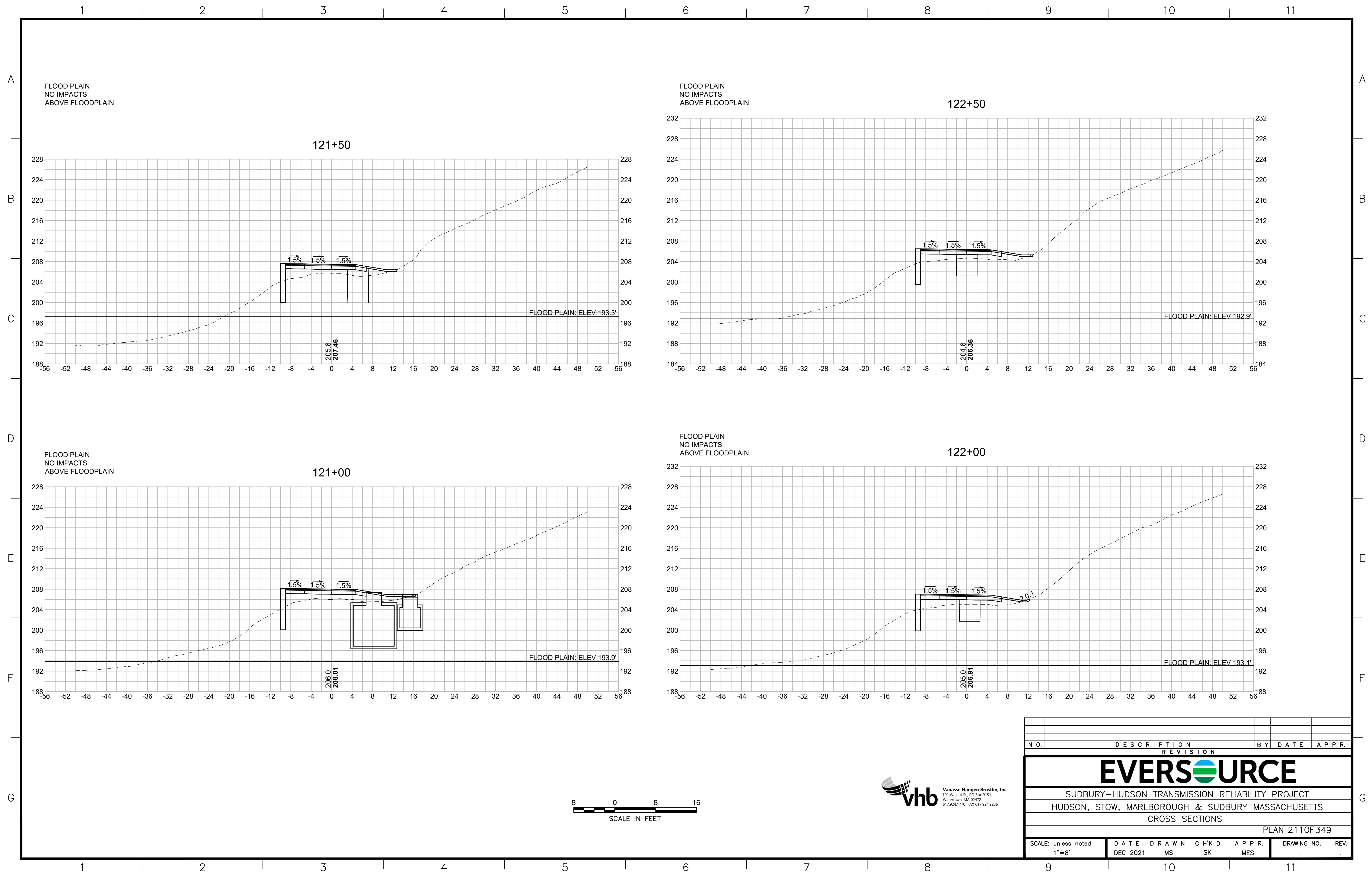


120+00



NO.	DESCRIPTION		BY	DATE	APPR.
	REVISION				
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CROSS SECTIONS					
PLAN 210 OF 349					
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES	DRAWING NO. REV. 11

1 2 3 4 5 6 7 8 9 10 11



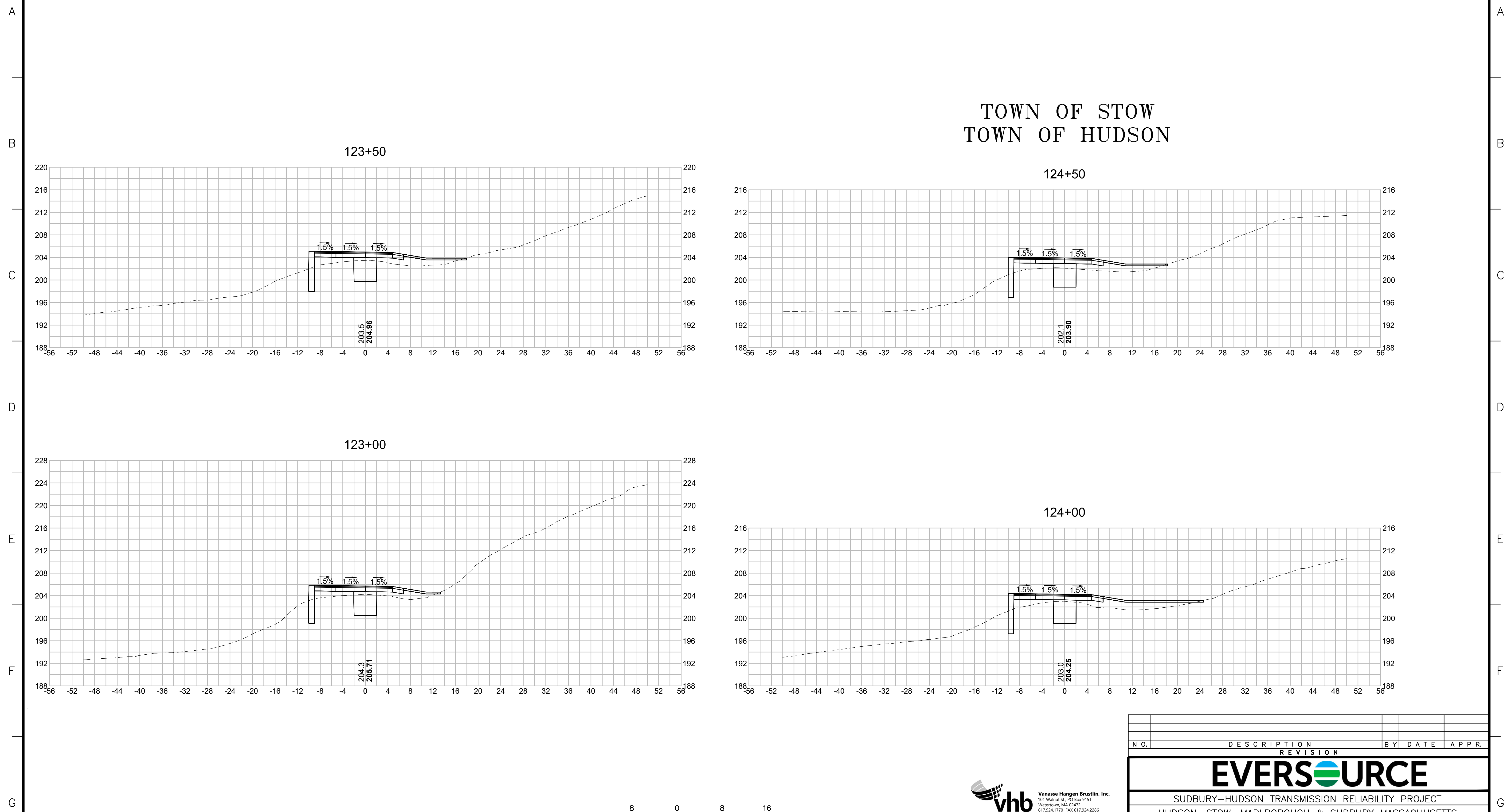
N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

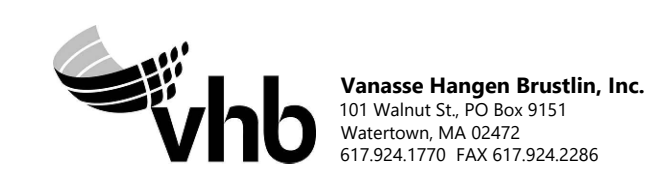
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 CROSS SECTIONS
 PLAN 2110F349

SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	C'H'K D. SK	A P P R. MES	DRAWING NO.	REV.
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1 2 3 4 5 6 7 8 9 10 11

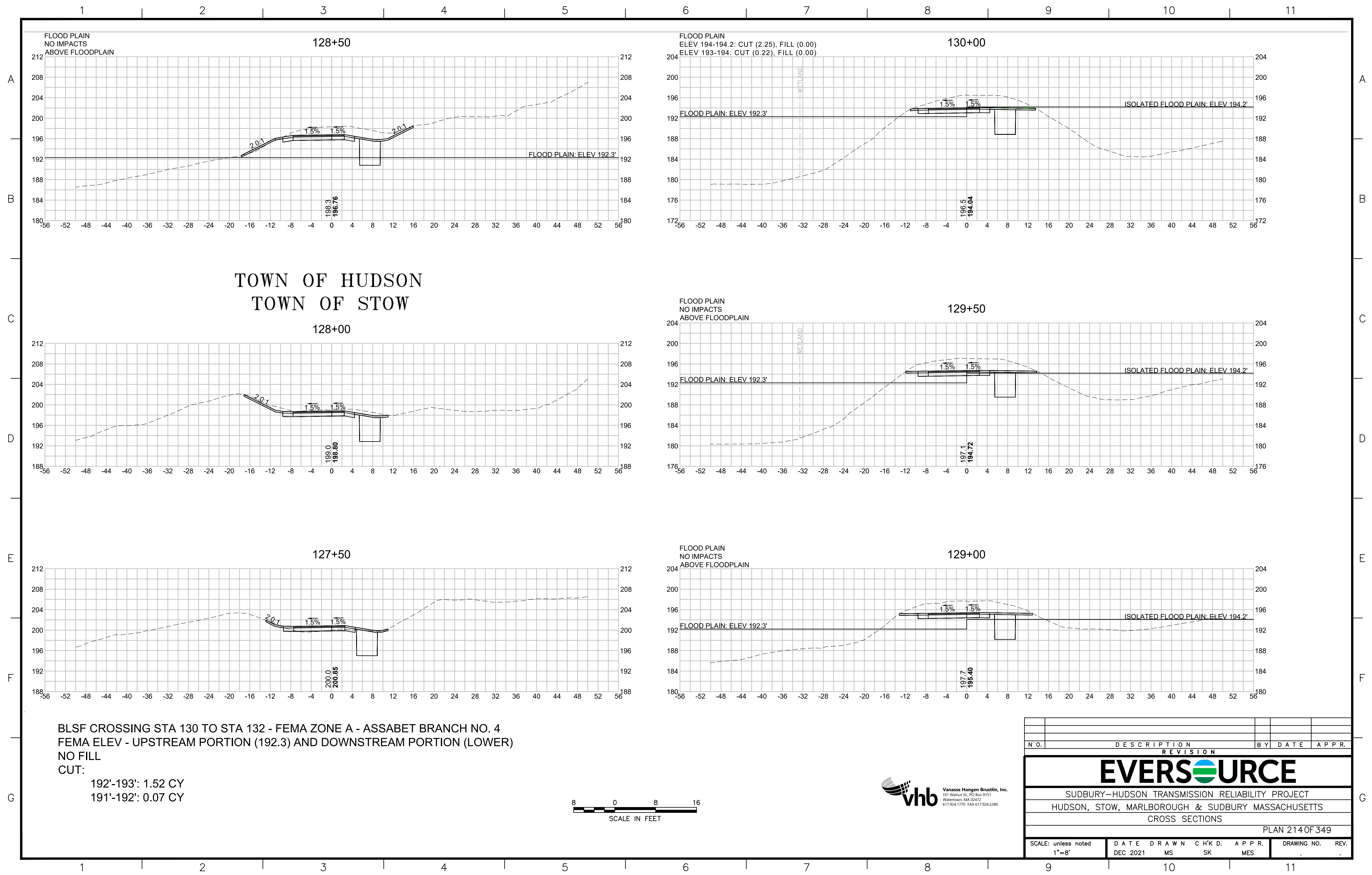


TOWN OF STOW
TOWN OF HUDSON



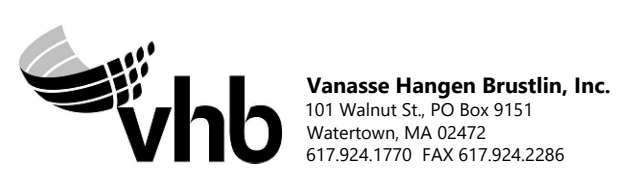
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	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 212 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

1 2 3 4 5 6 7 8 9 10 11

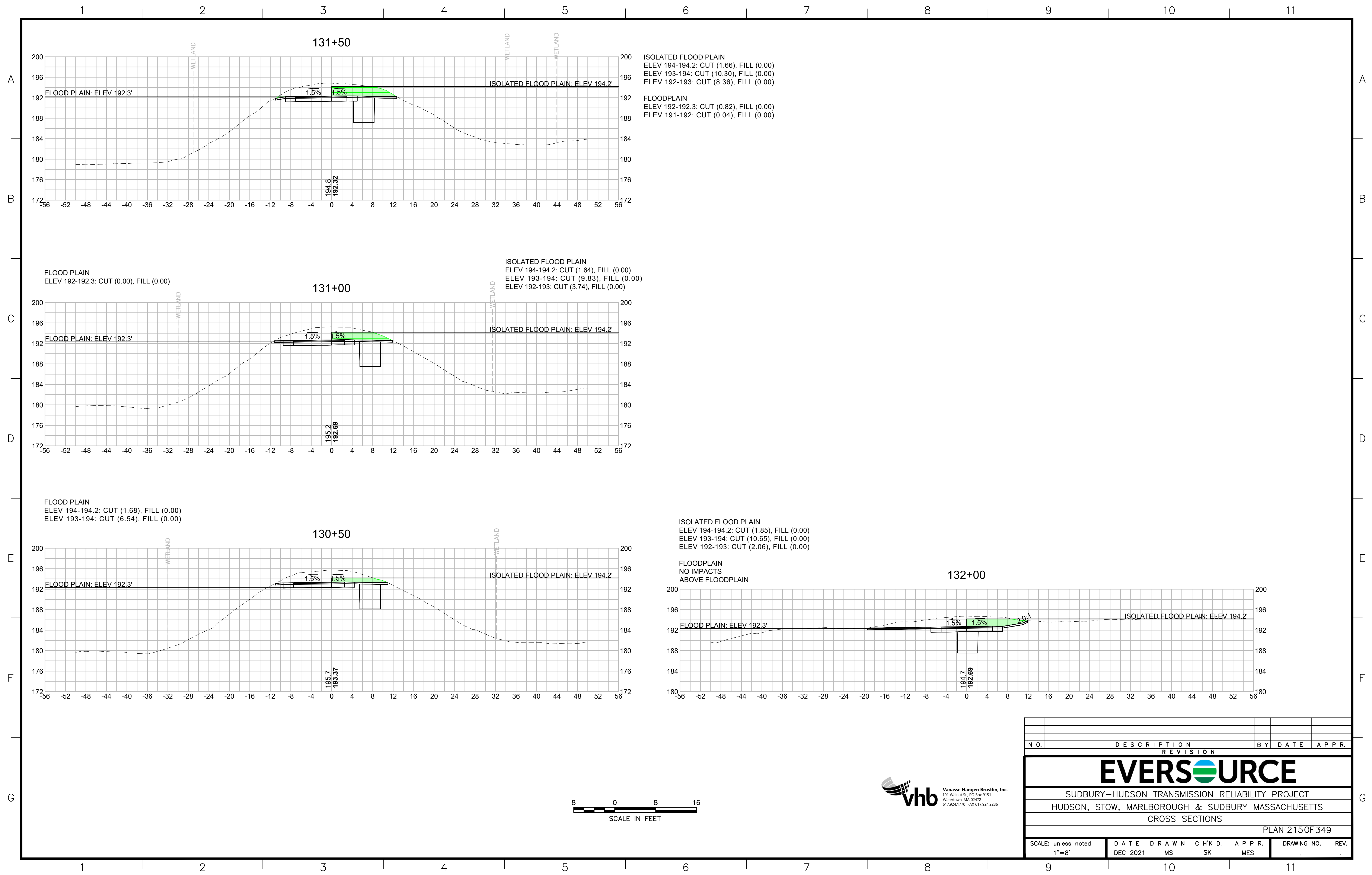


TOWN OF HUDSON
TOWN OF STOW

BLSF CROSSING STA 130 TO STA 132 - FEMA ZONE A - ASSABET BRANCH NO. 4
 FEMA ELEV - UPSTREAM PORTION (192.3) AND DOWNSTREAM PORTION (LOWER)
 NO FILL
 CUT:
 192'-193': 1.52 CY
 191'-192': 0.07 CY



NO.	DESCRIPTION	BY	DATE	APPR.
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 214 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			



N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 CROSS SECTIONS

PLAN 215 OF 349

SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES	DRAWING NO.	REV.
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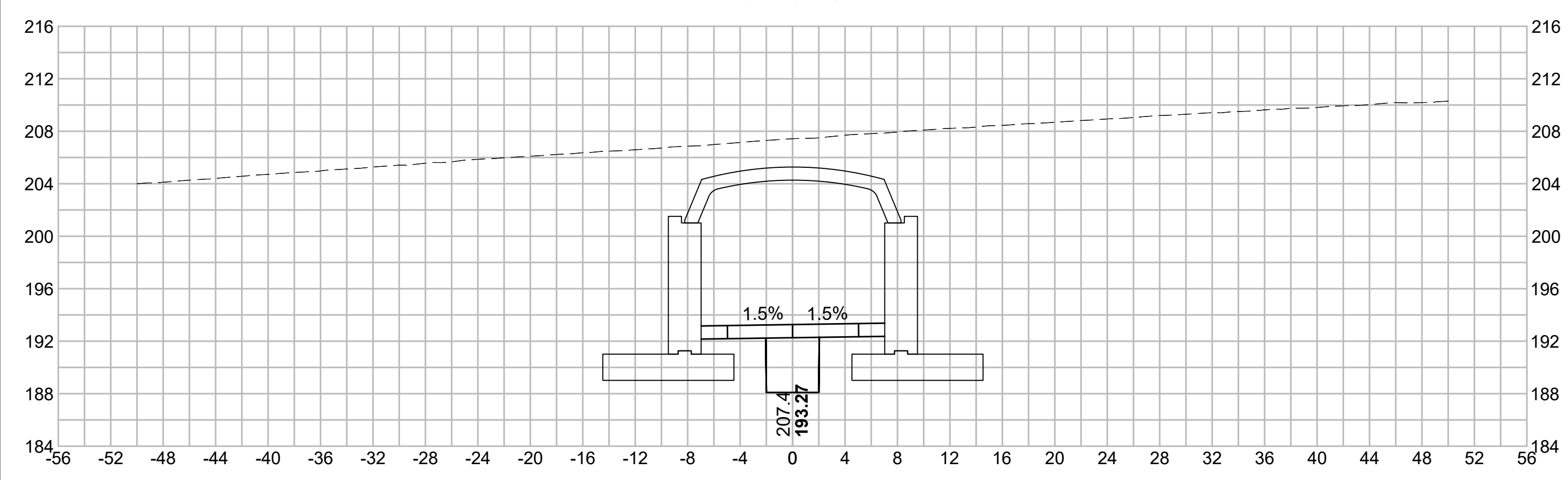
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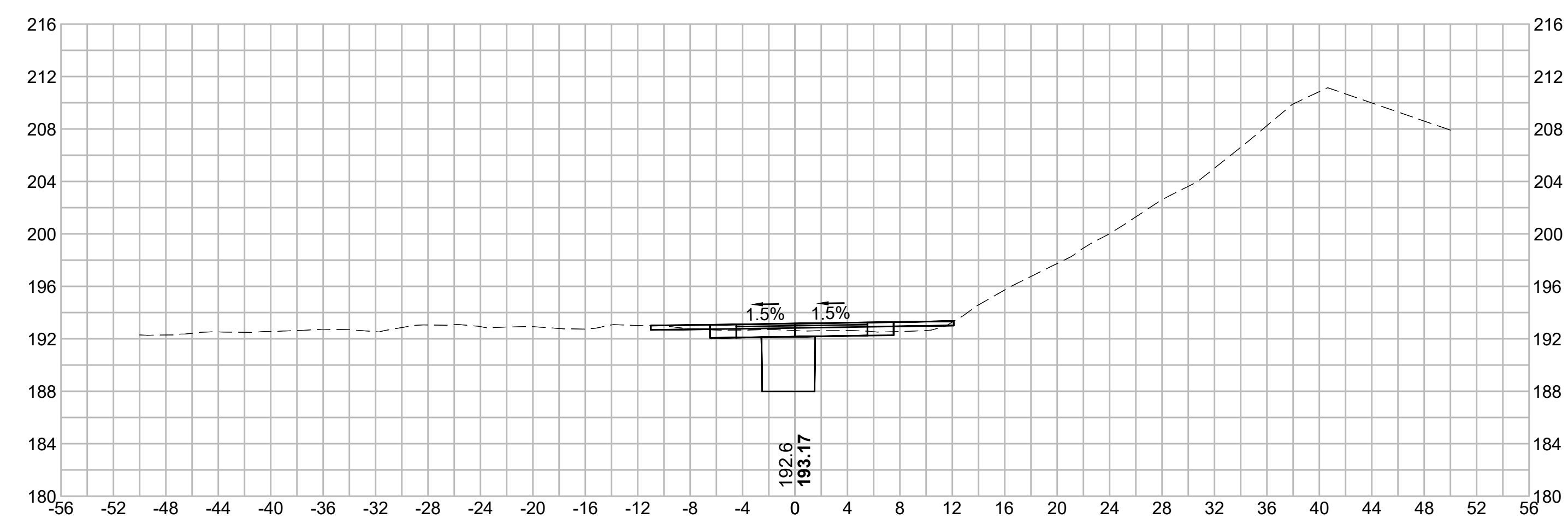
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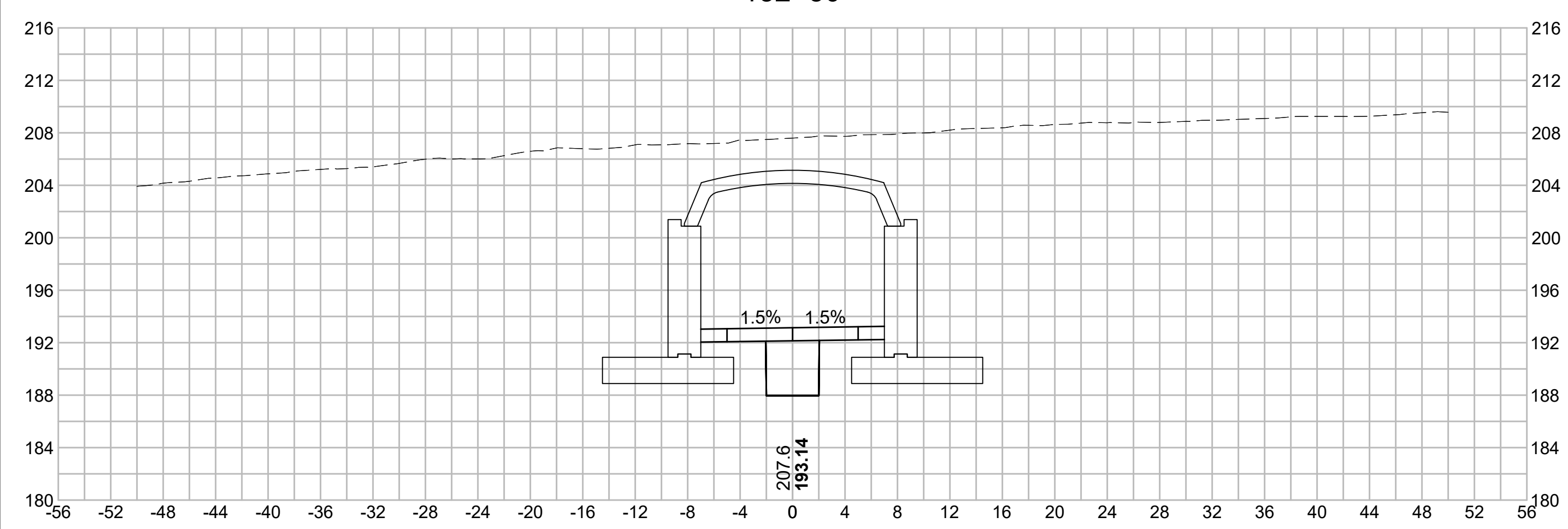
132+64.32



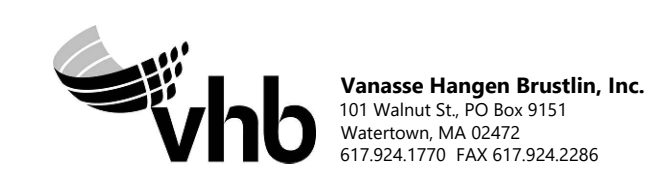
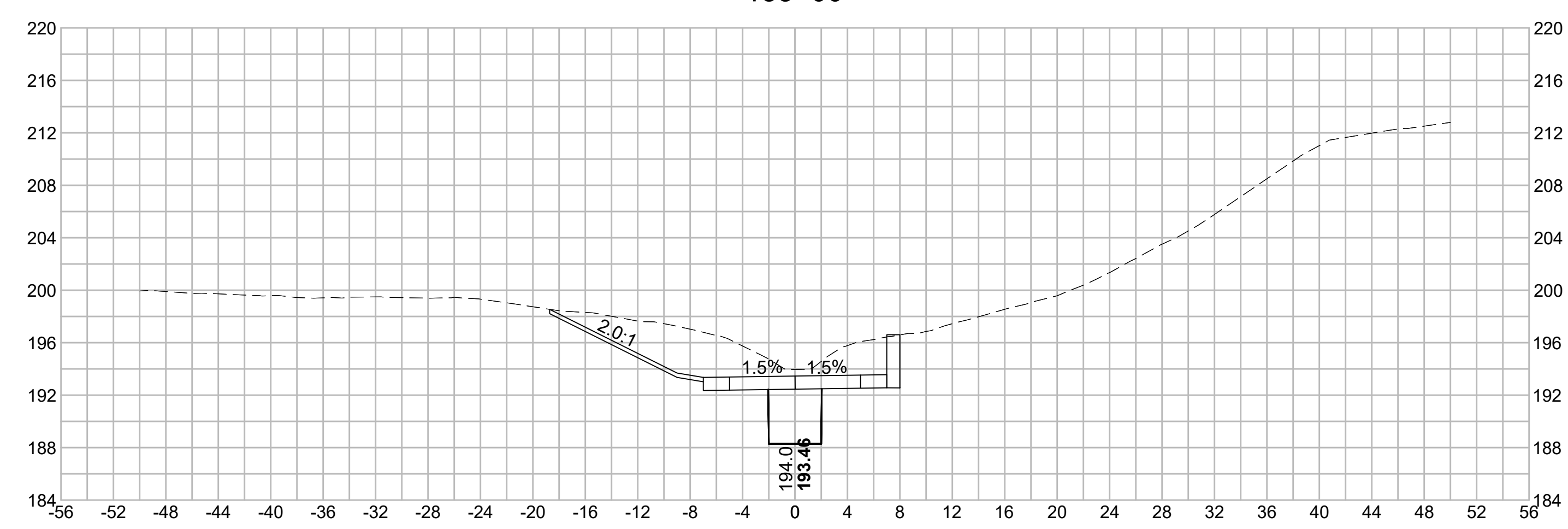
133+50



132+50



133+00



NO.	DESCRIPTION		BY	DATE	APPR.
	REVISION				
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CROSS SECTIONS					
PLAN 216 OF 349					
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES	DRAWING NO. REV.

1 2 3 4 5 6 7 8 9 10 11

1 2 3 4 5 6 7 8 9 10 11

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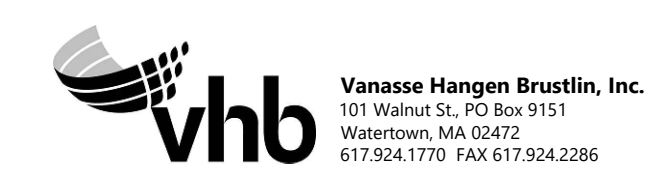
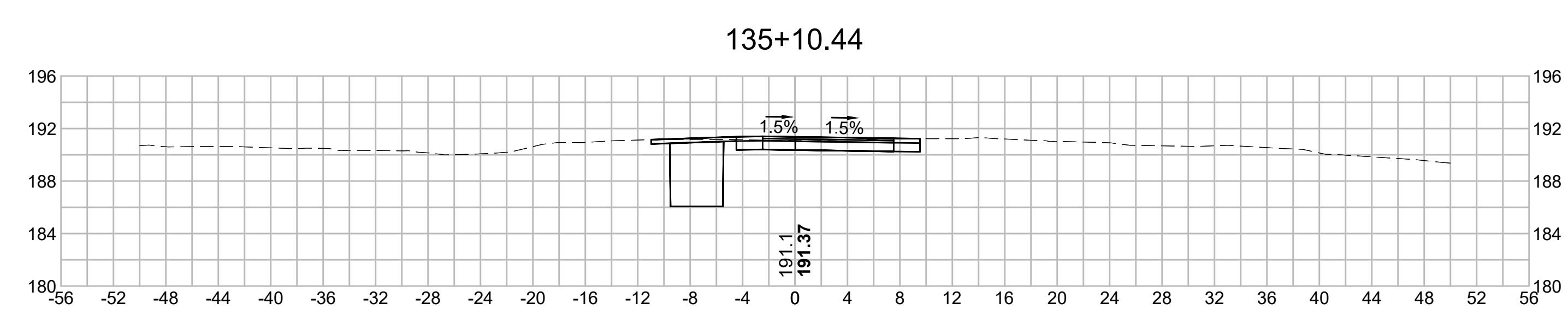
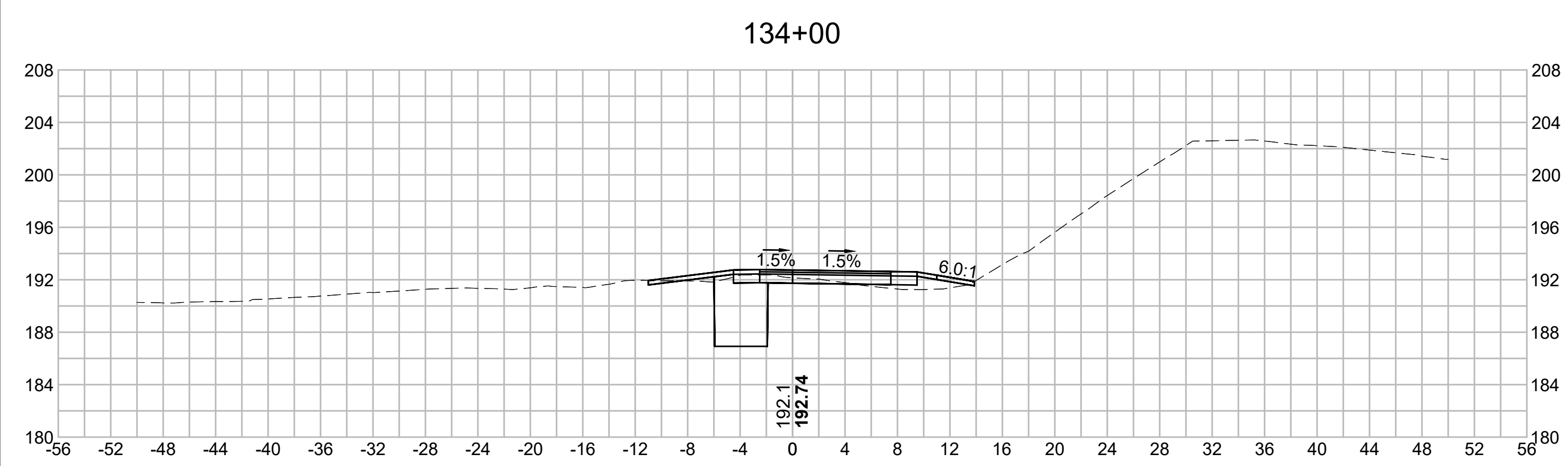
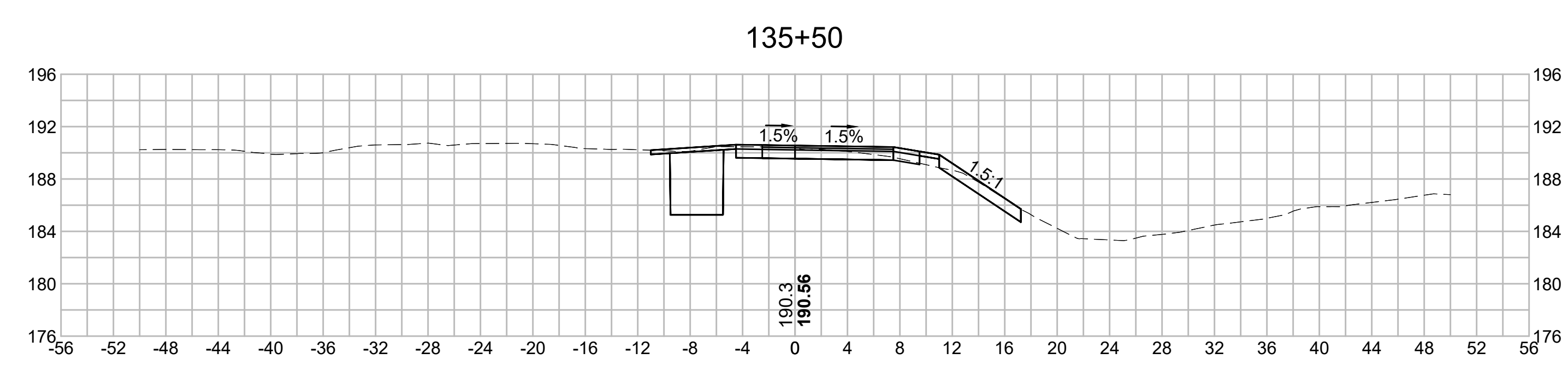
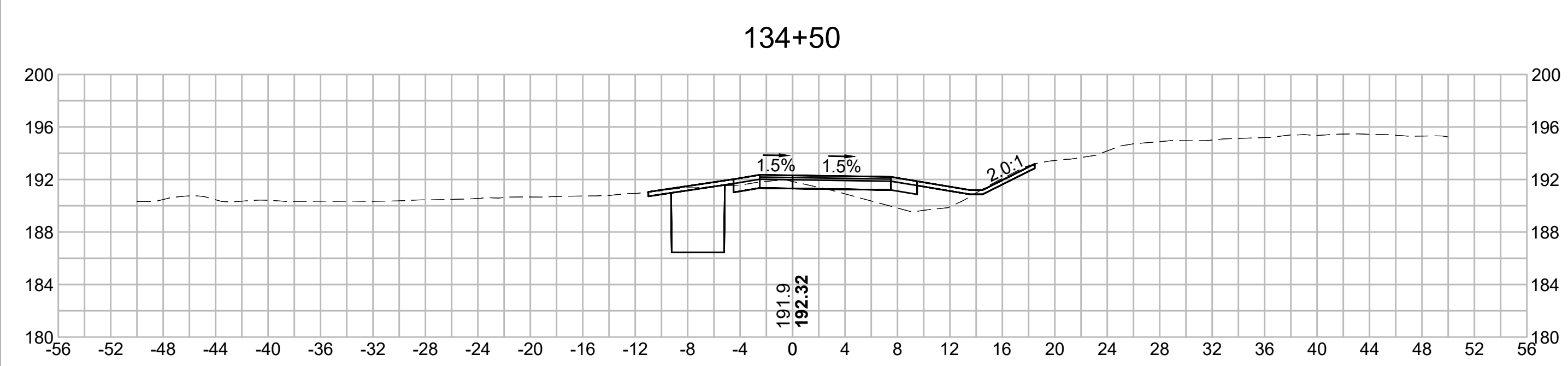
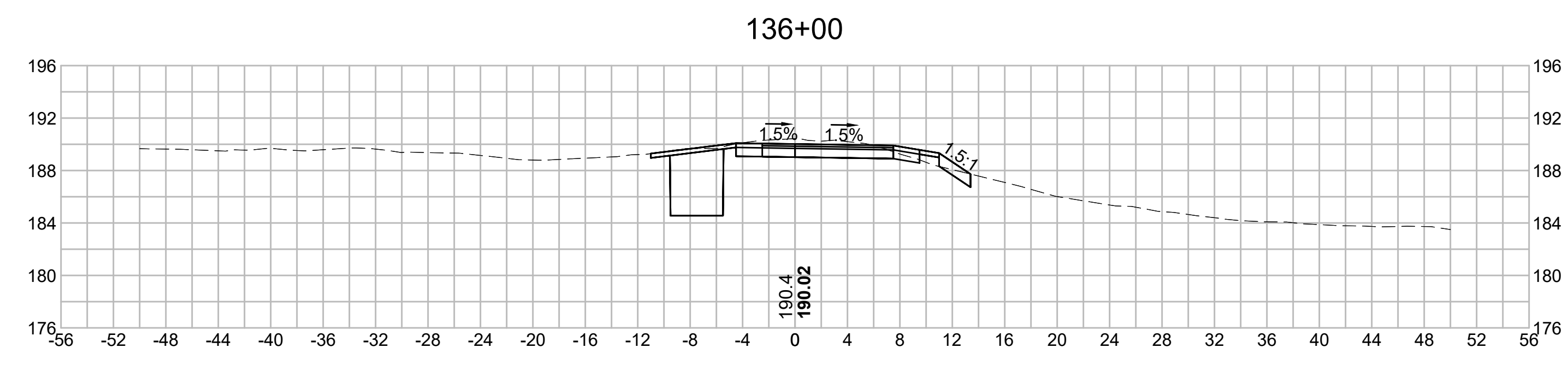
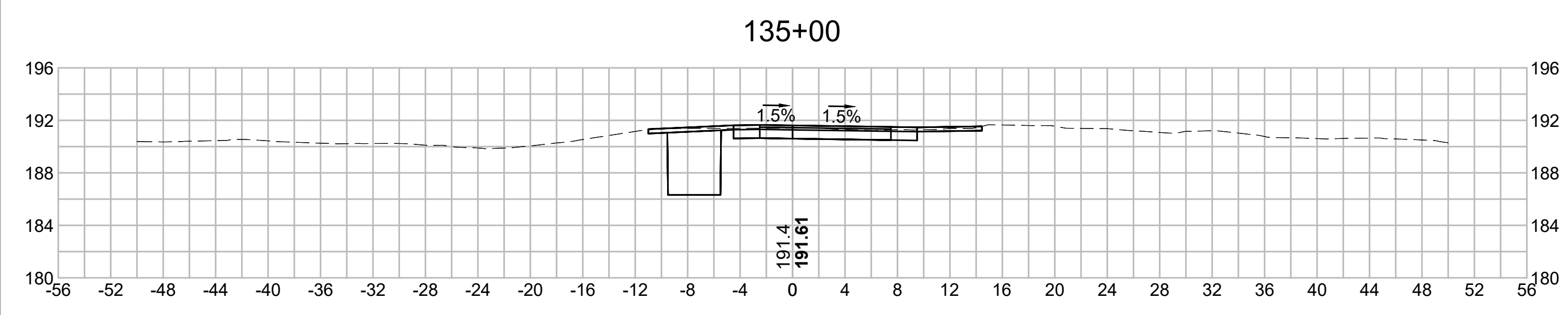
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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 CROSS SECTIONS

PLAN 217 OF 349

SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES	DRAWING NO. .	REV. .
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1 2 3 4 5 6 7 8 9 10 11

1 2 3 4 5 6 7 8 9 10 11

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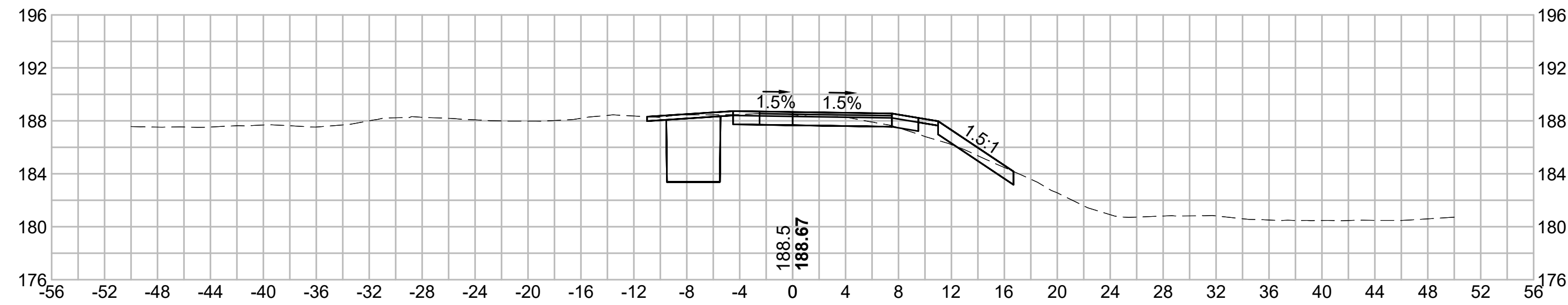
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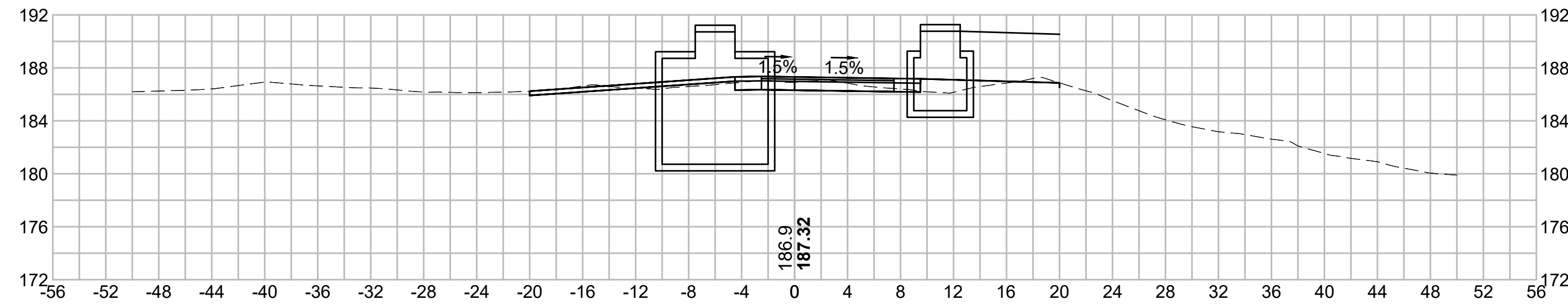
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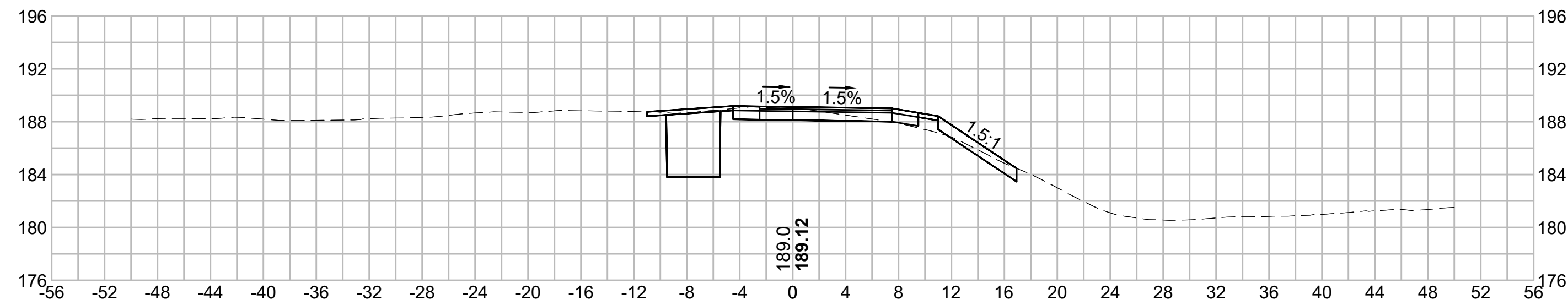
137+50



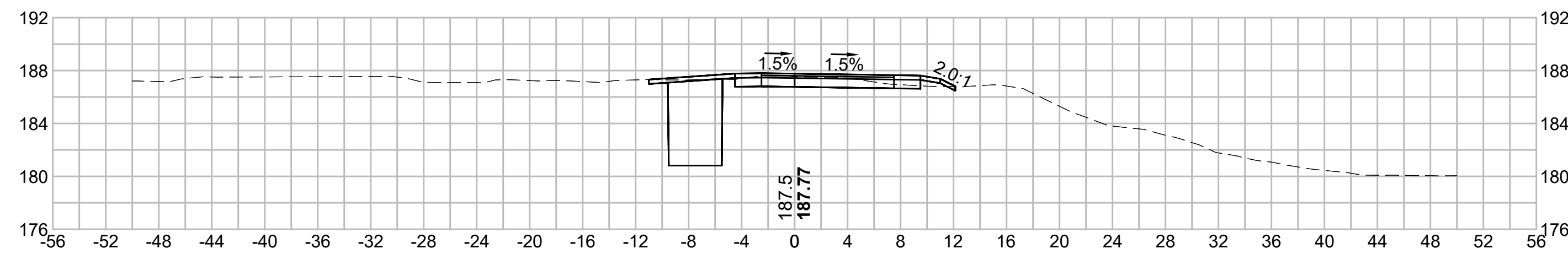
139+00



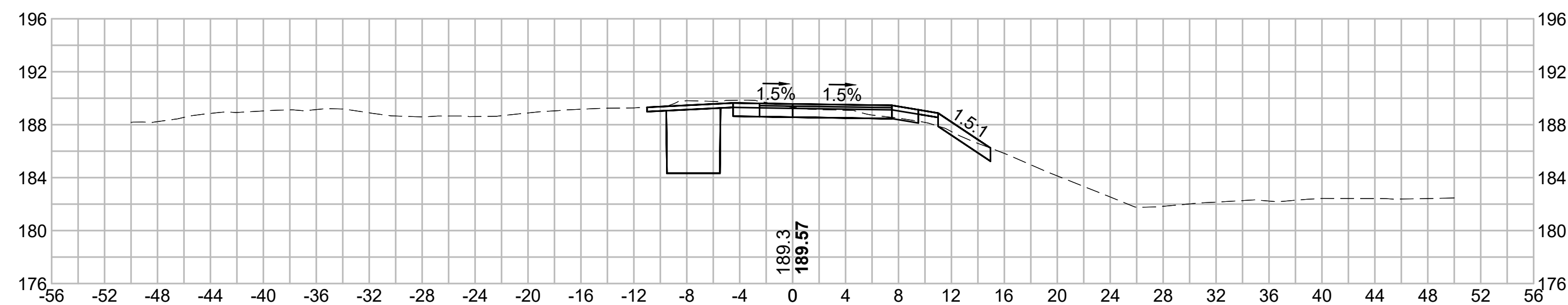
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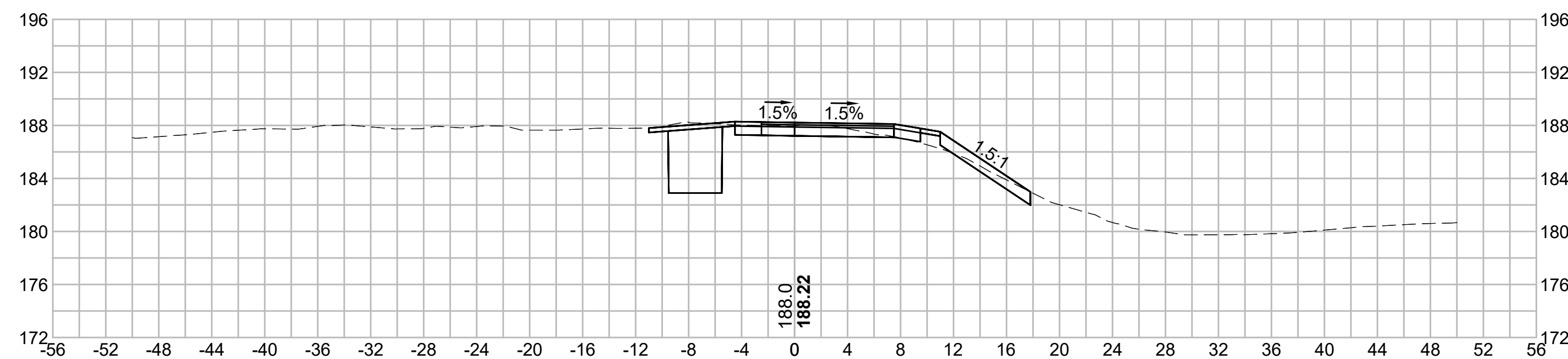
138+50



136+50



138+00



N O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 218 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	C H'K D. SK	A P P R. MES
DRAWING NO.	REV.			

1 2 3 4 5 6 7 8 9 10 11

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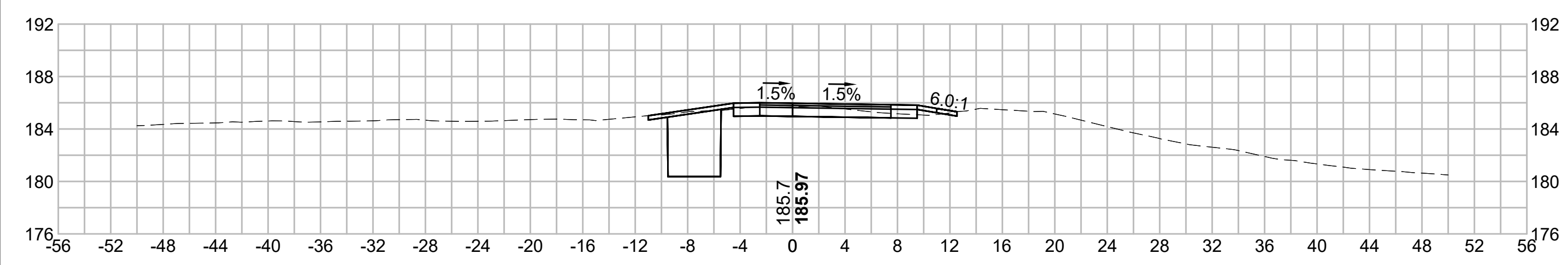
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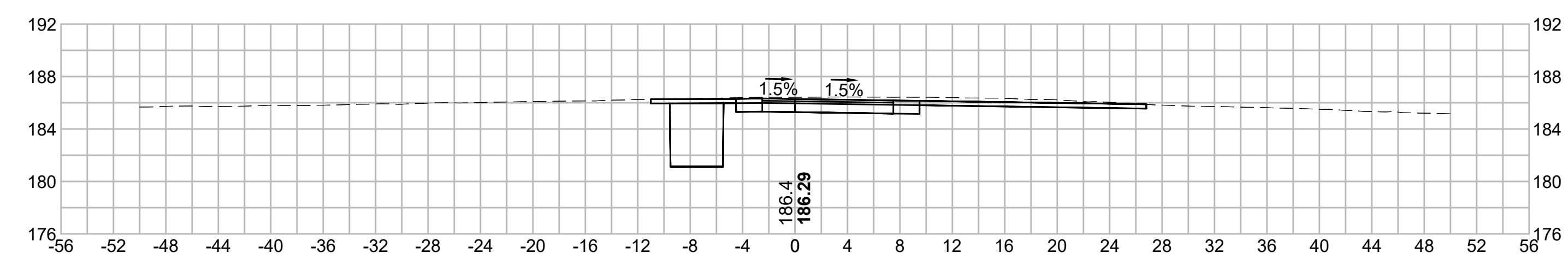
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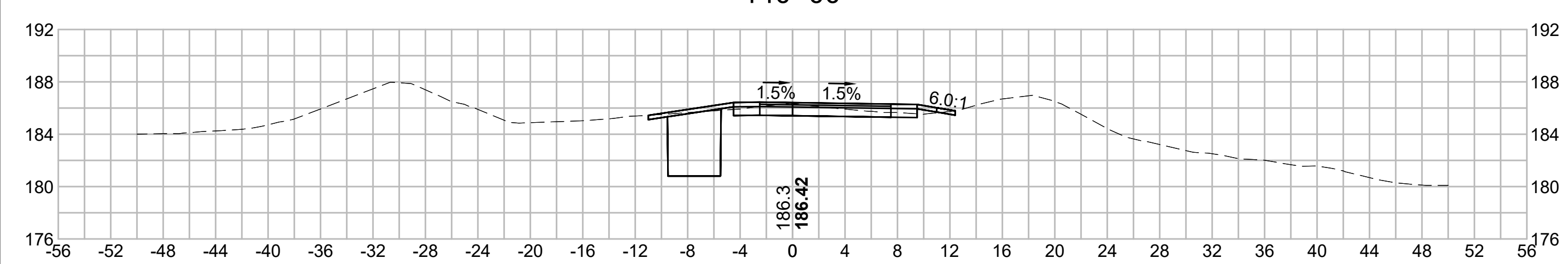
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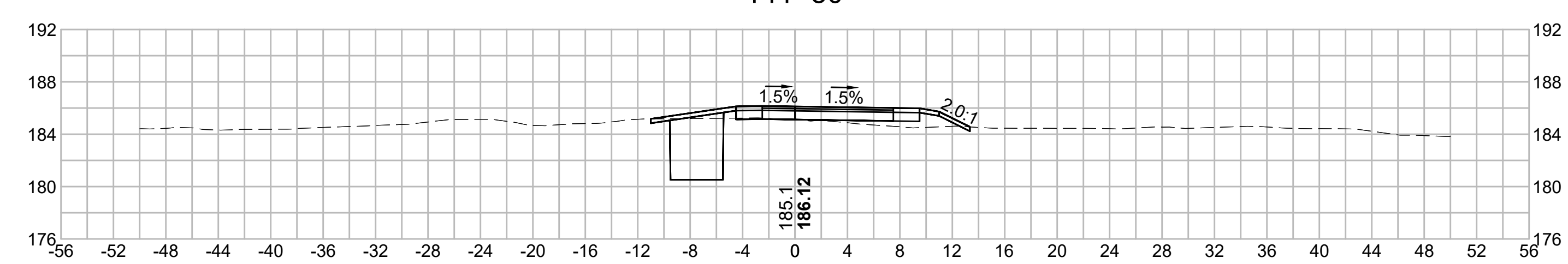
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140+00



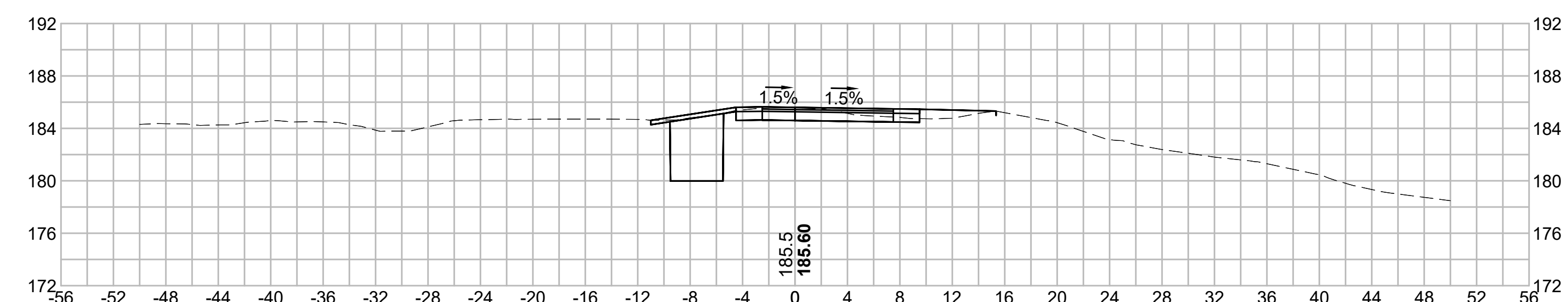
141+50



139+50



141+00



BLSF CROSSING STA 143 TO STA 153 - FEMA ZONE AE - FORT MEADOW BROOK

FEMA ELEV : 182.0'

FILL:

- 181'-182': 22.54 CY
- 180'-181': 8.46 CY
- 179'-180': 0.27 CY
- 178'-179': 0.00 CY

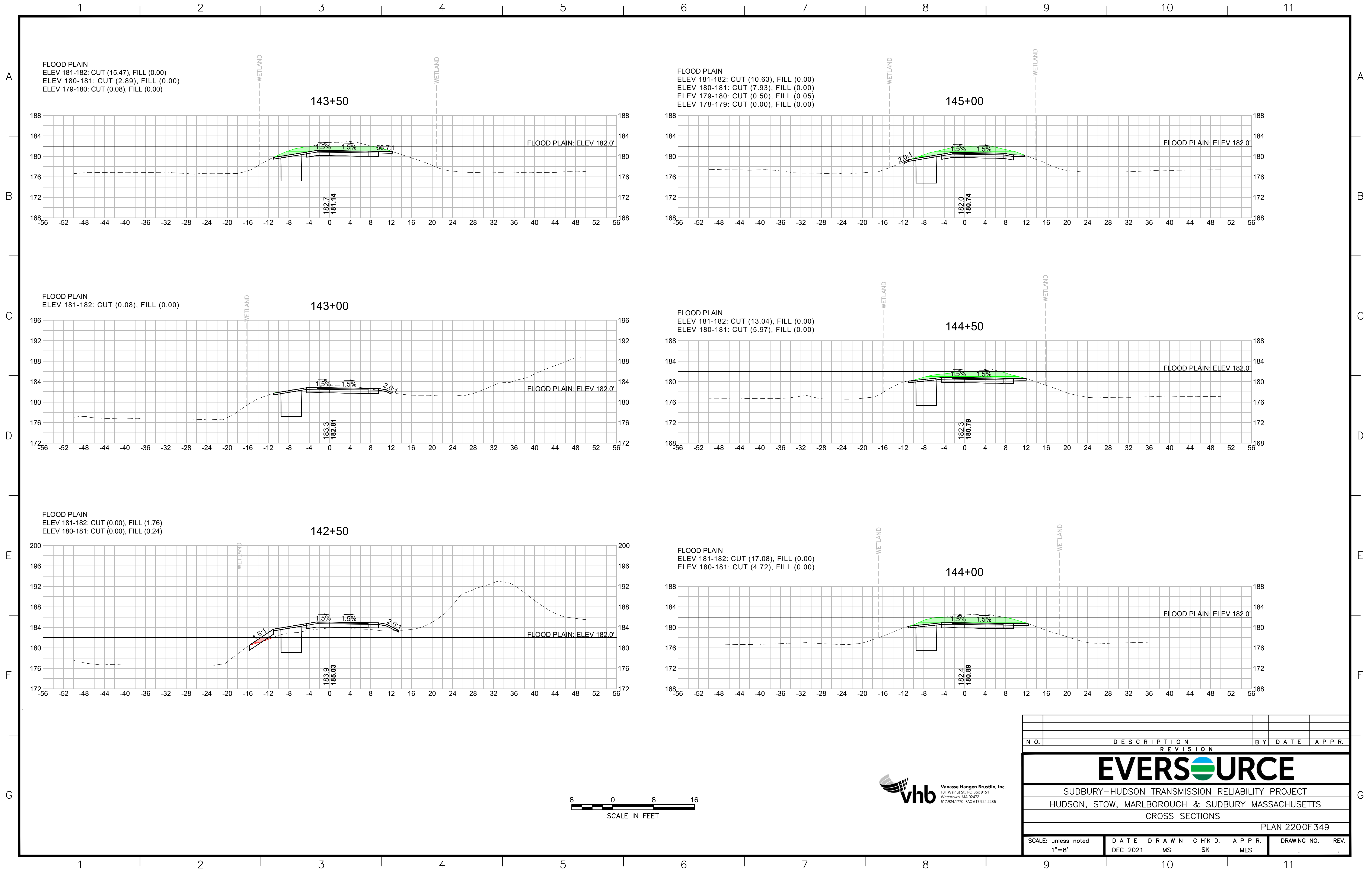
CUT:

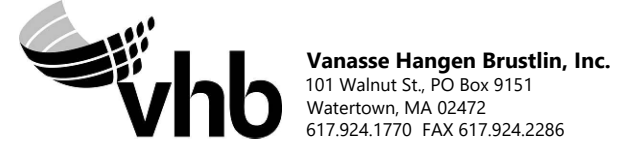
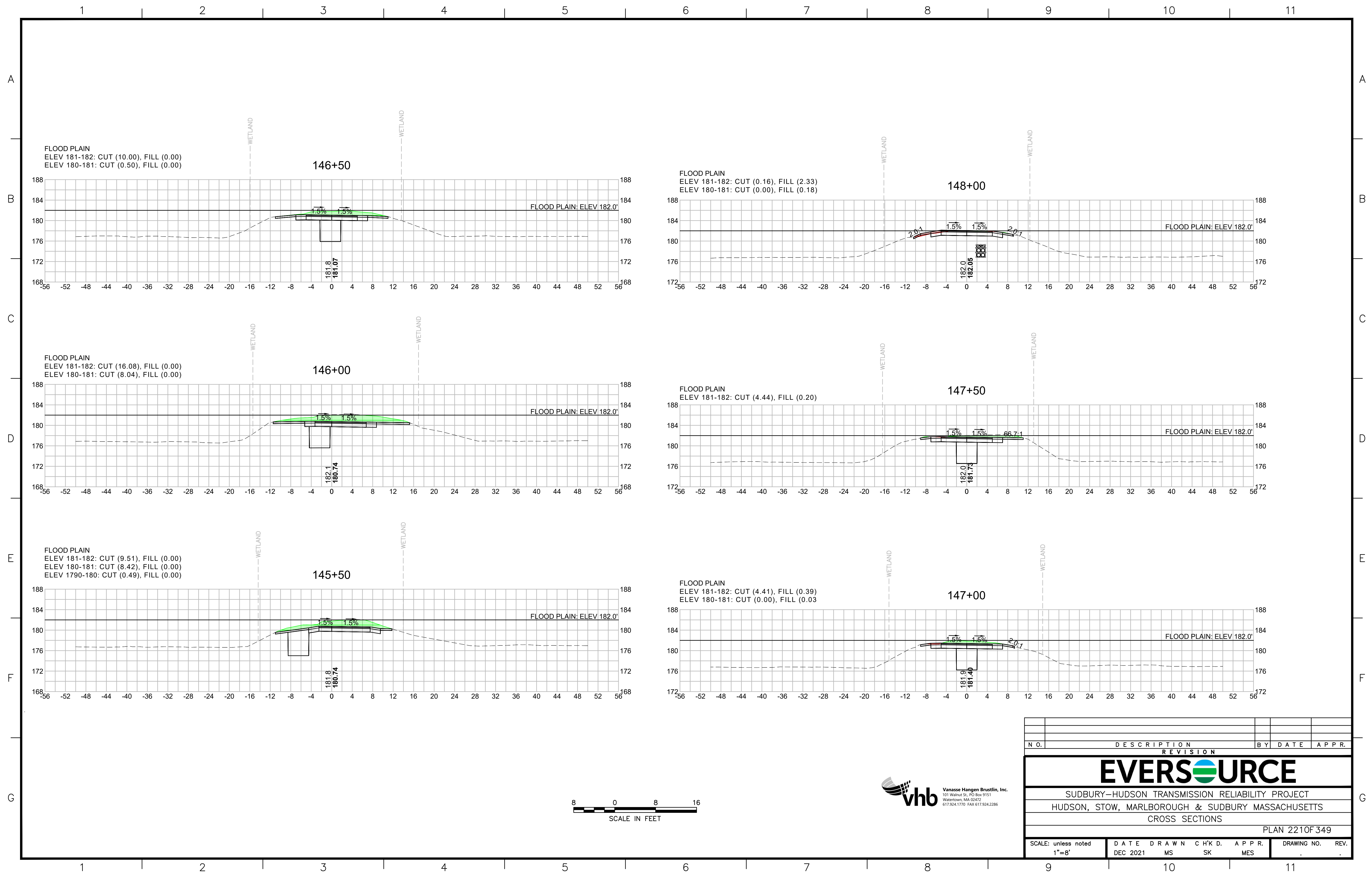
- 181'-182': 329.43 CY
- 180'-181': 242.89 CY
- 179'-180': 13.84 CY
- 178'-179': 4.21 CY



N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 219 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

1 2 3 4 5 6 7 8 9 10 11





N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 CROSS SECTIONS

PLAN 2210F349

SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES	DRAWING NO.	REV.
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1 2 3 4 5 6 7 8 9 10 11

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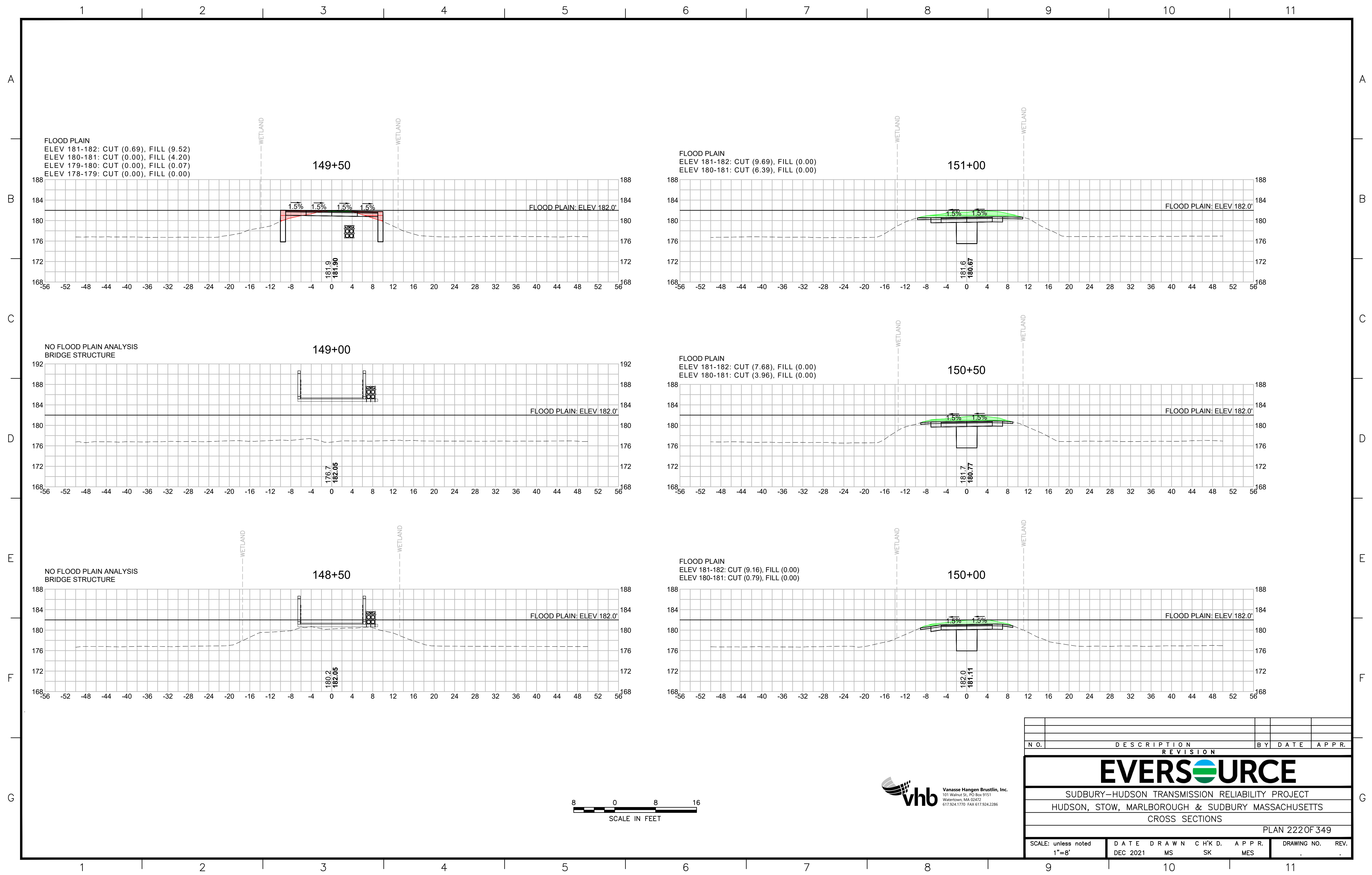
D D

E E

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1 2 3 4 5 6 7 8 9 10 11



FLOOD PLAIN
 ELEV 181-182: CUT (0.69), FILL (9.52)
 ELEV 180-181: CUT (0.00), FILL (4.20)
 ELEV 179-180: CUT (0.00), FILL (0.07)
 ELEV 178-179: CUT (0.00), FILL (0.00)

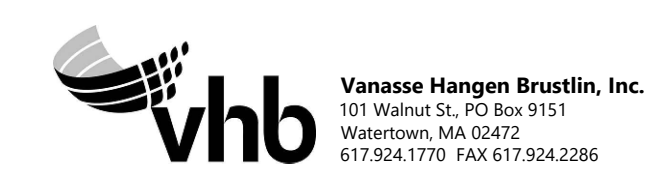
FLOOD PLAIN
 ELEV 181-182: CUT (9.69), FILL (0.00)
 ELEV 180-181: CUT (6.39), FILL (0.00)

NO FLOOD PLAIN ANALYSIS
 BRIDGE STRUCTURE

FLOOD PLAIN
 ELEV 181-182: CUT (7.68), FILL (0.00)
 ELEV 180-181: CUT (3.96), FILL (0.00)

NO FLOOD PLAIN ANALYSIS
 BRIDGE STRUCTURE

FLOOD PLAIN
 ELEV 181-182: CUT (9.16), FILL (0.00)
 ELEV 180-181: CUT (0.79), FILL (0.00)



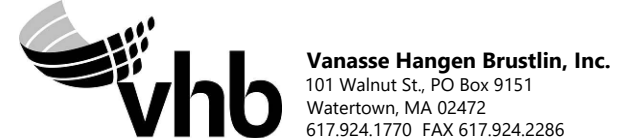
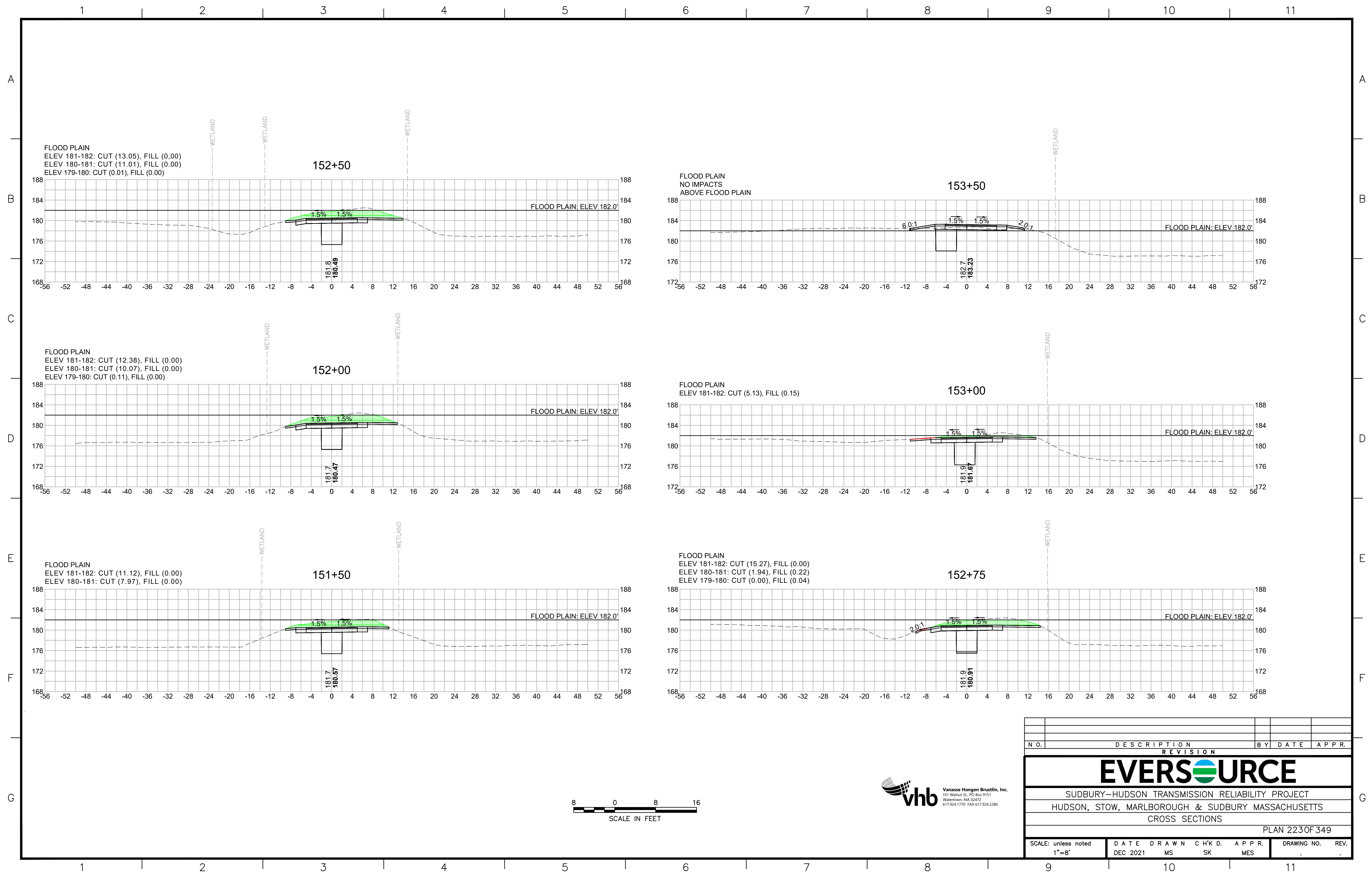
N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 CROSS SECTIONS

PLAN 222 OF 349

SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES	DRAWING NO. REV.
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NO.	DESCRIPTION		BY	DATE	APPR.
	REVISION				
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CROSS SECTIONS					
PLAN 223 OF 349					
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES	DRAWING NO. REV.

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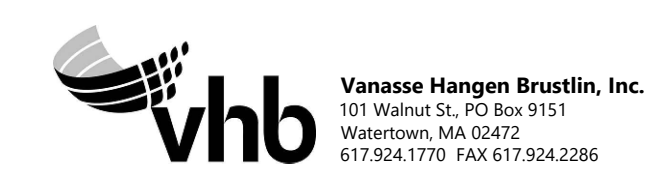
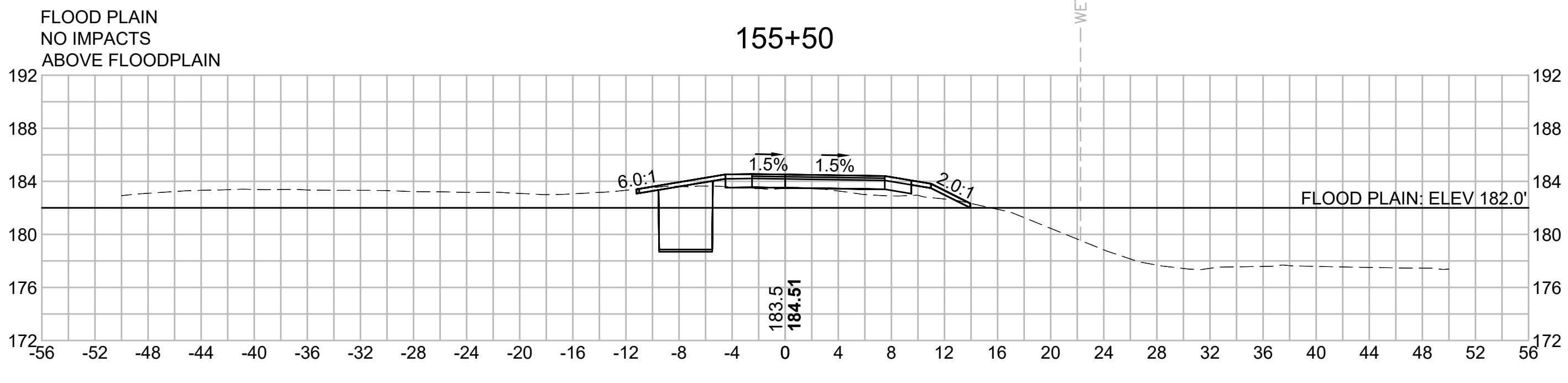
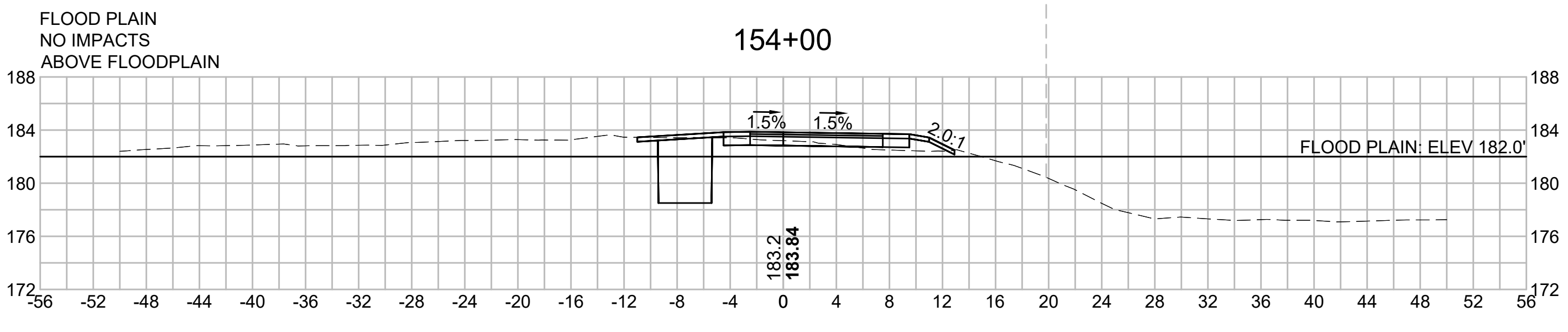
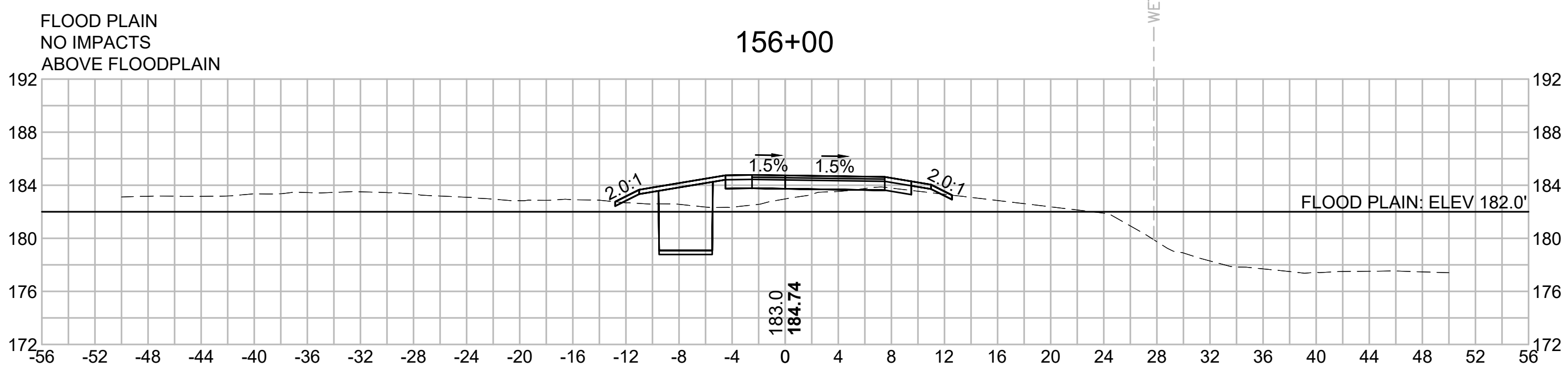
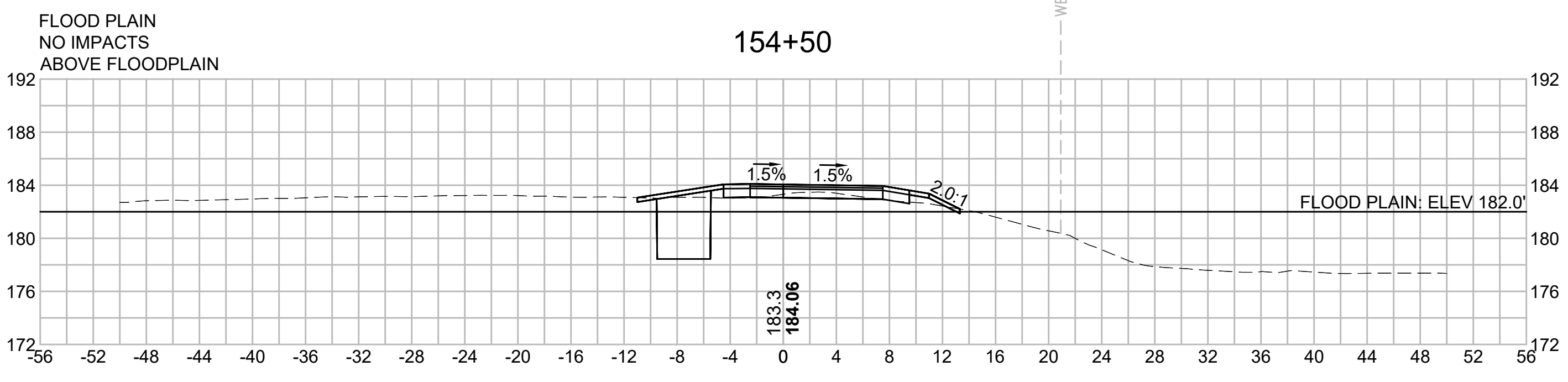
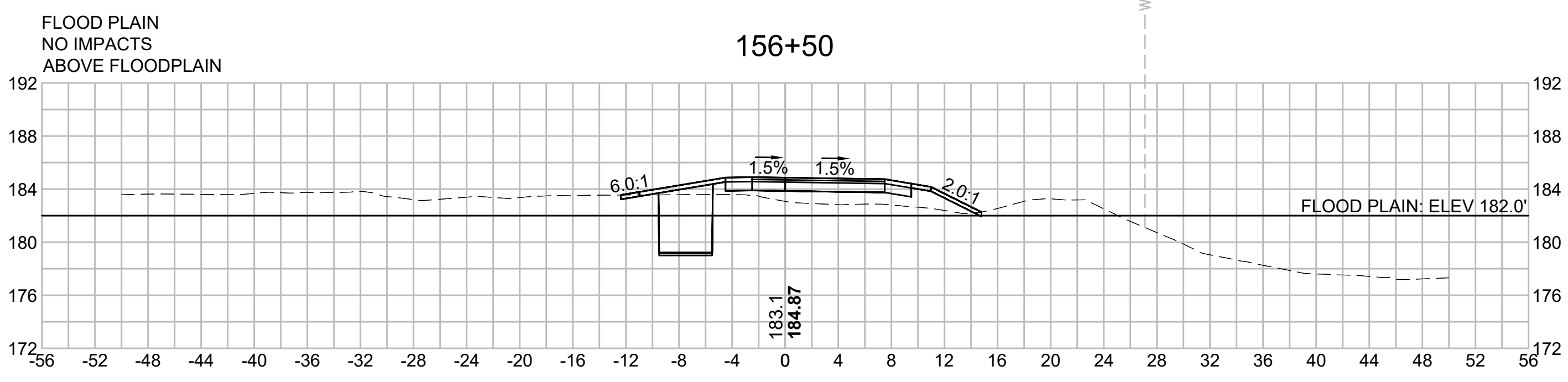
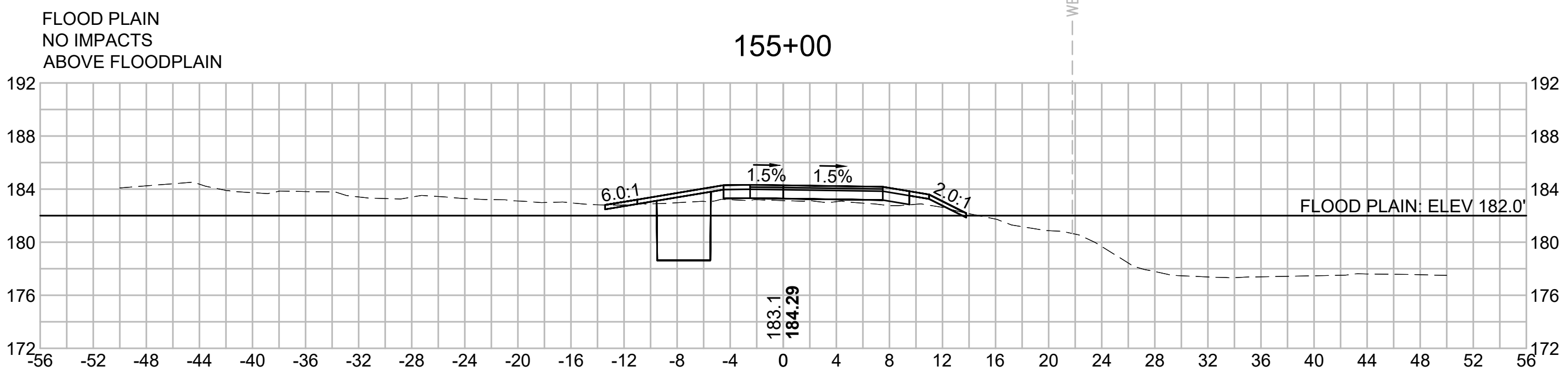
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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 224 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
	DRAWING NO.	REV.		

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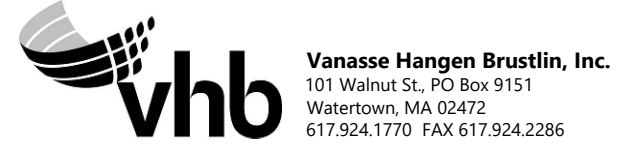
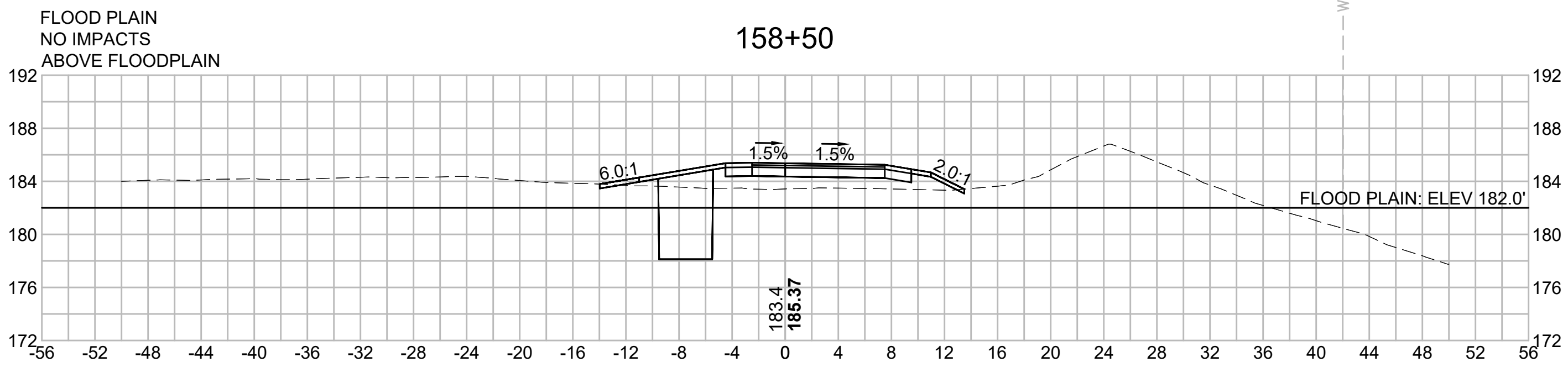
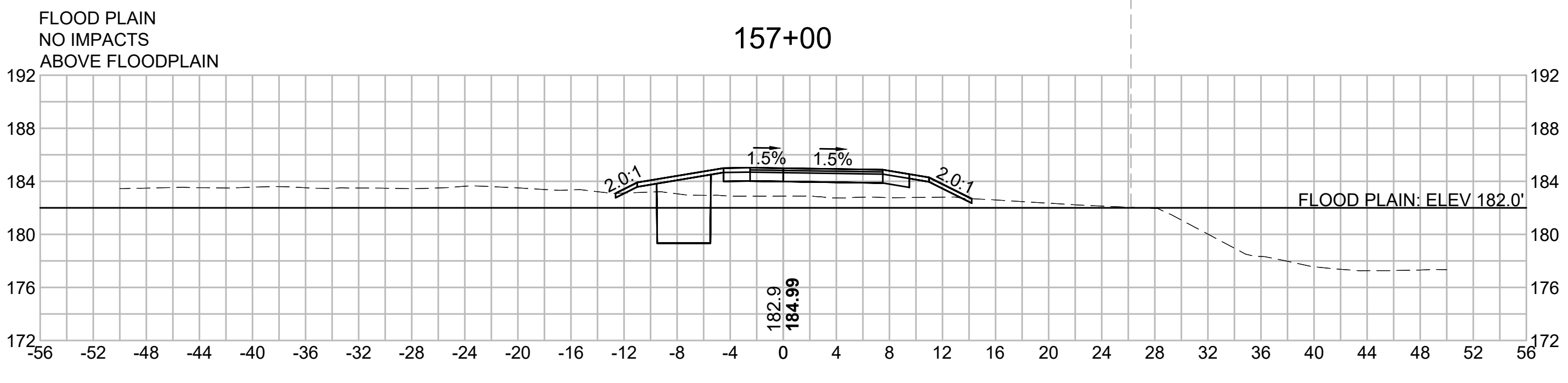
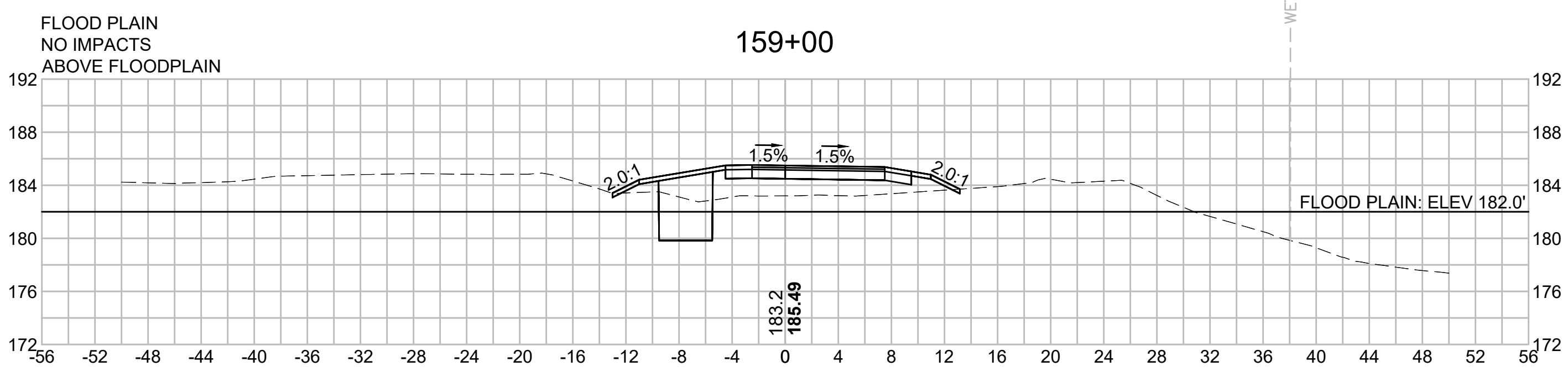
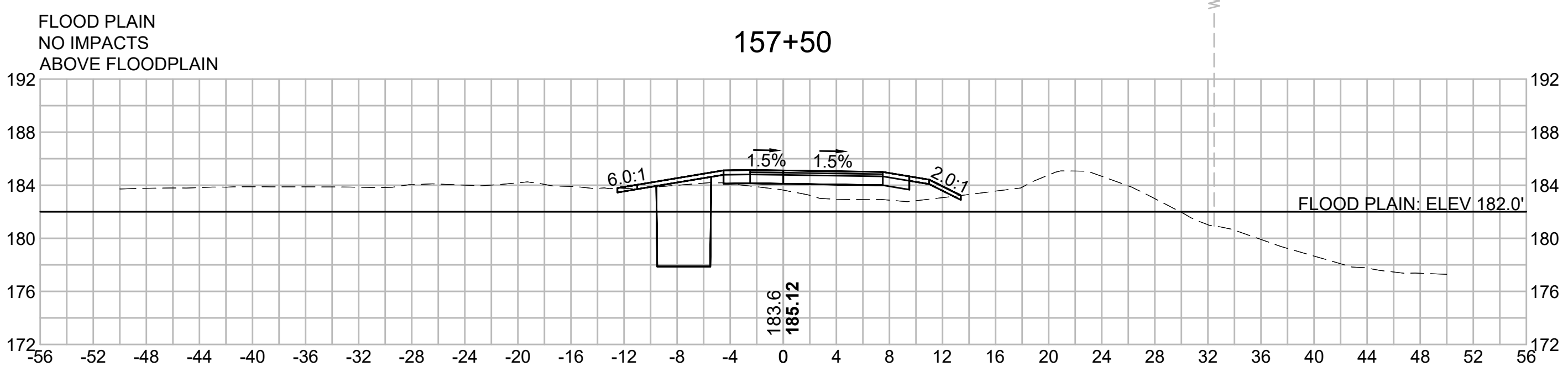
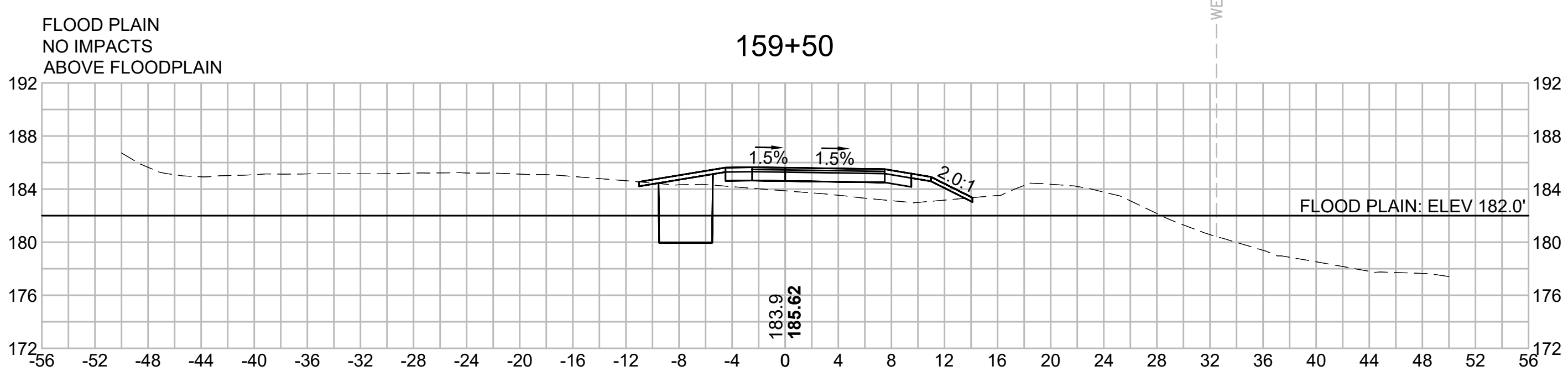
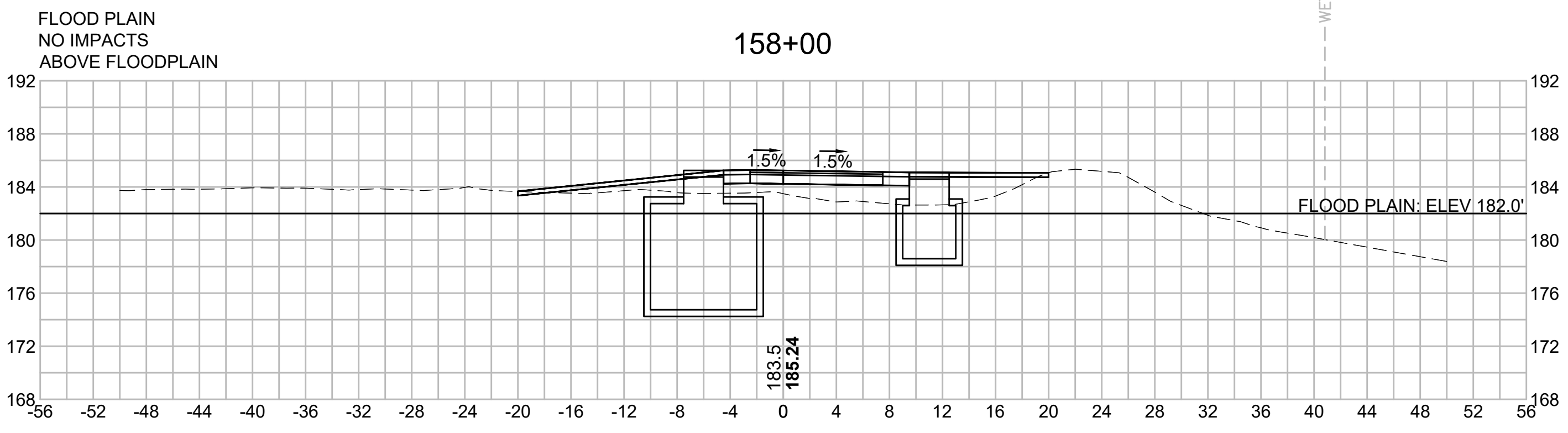
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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

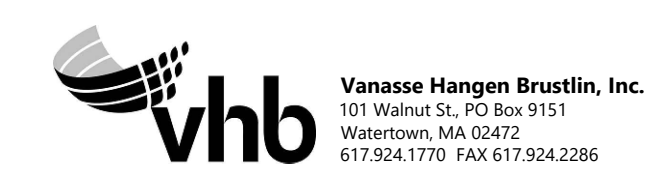
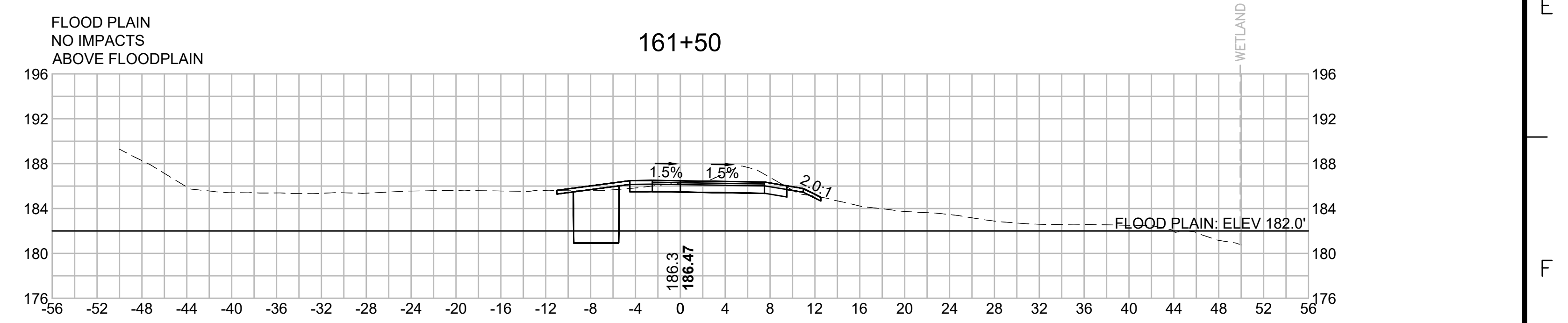
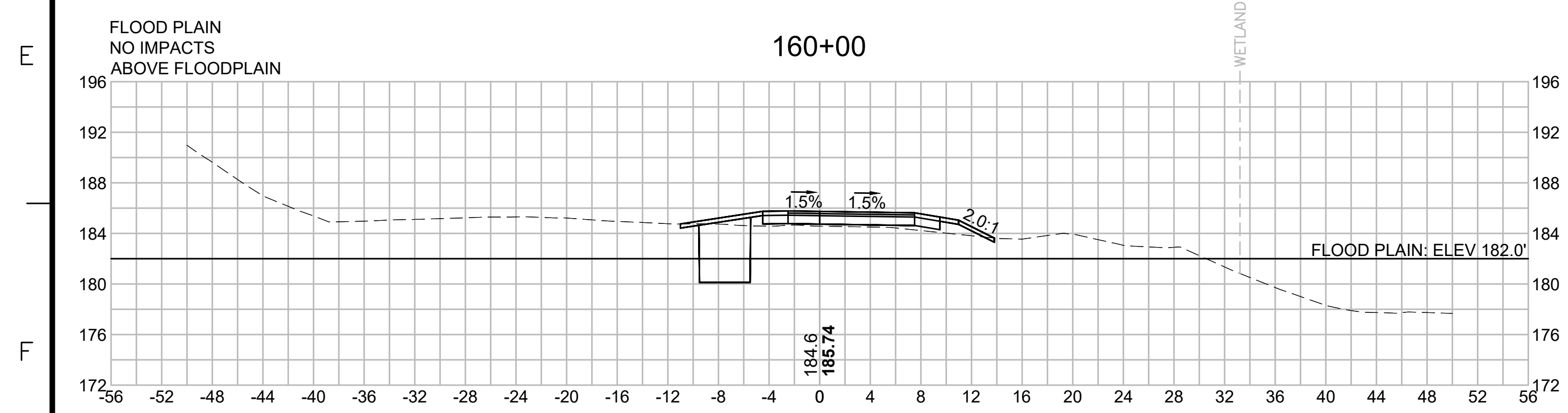
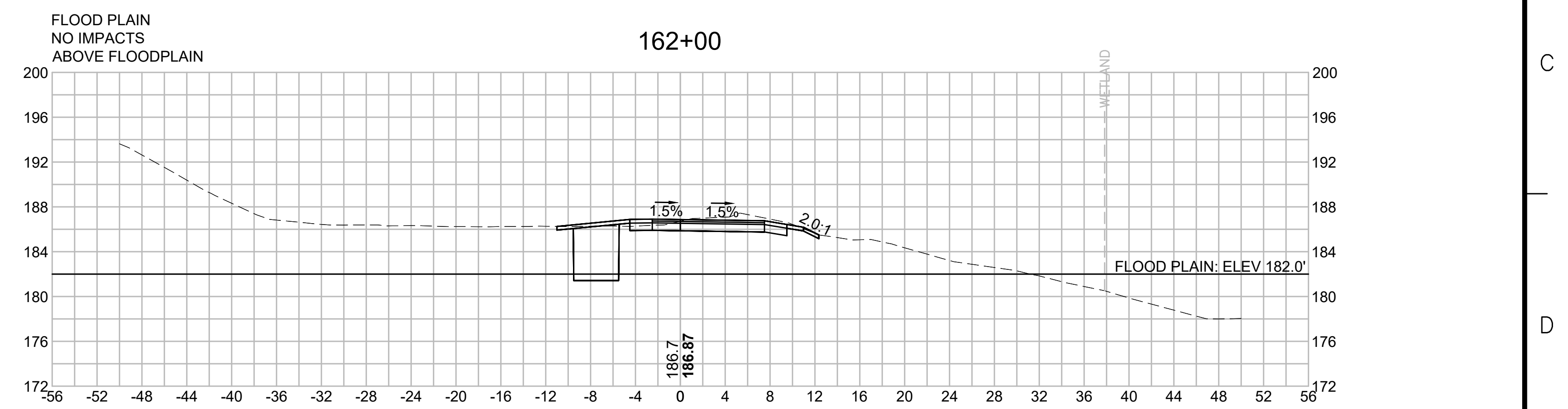
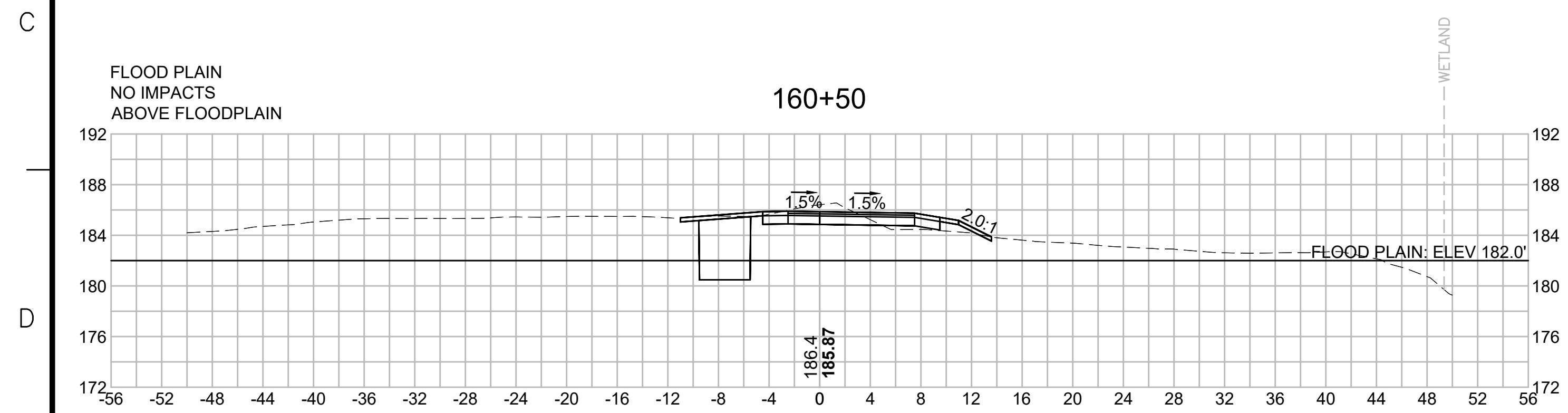
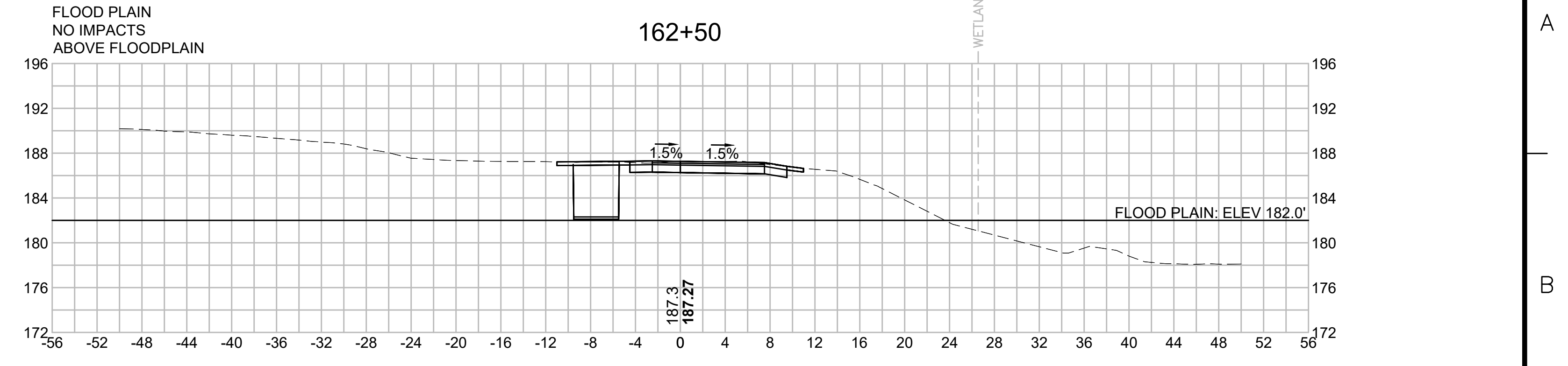
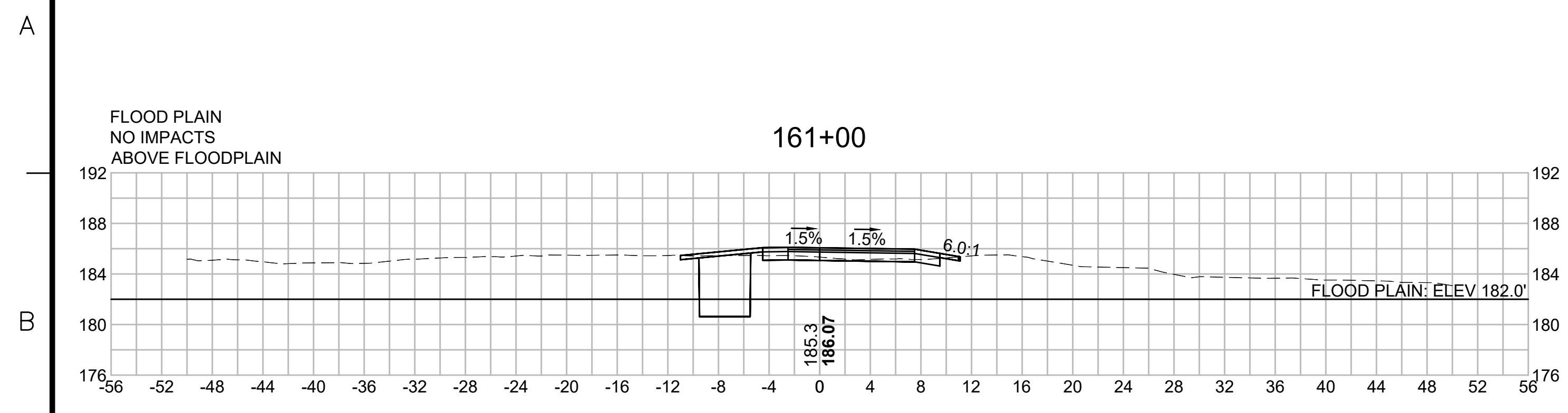
EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 CROSS SECTIONS

PLAN 225 OF 349

SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES	DRAWING NO.	REV.
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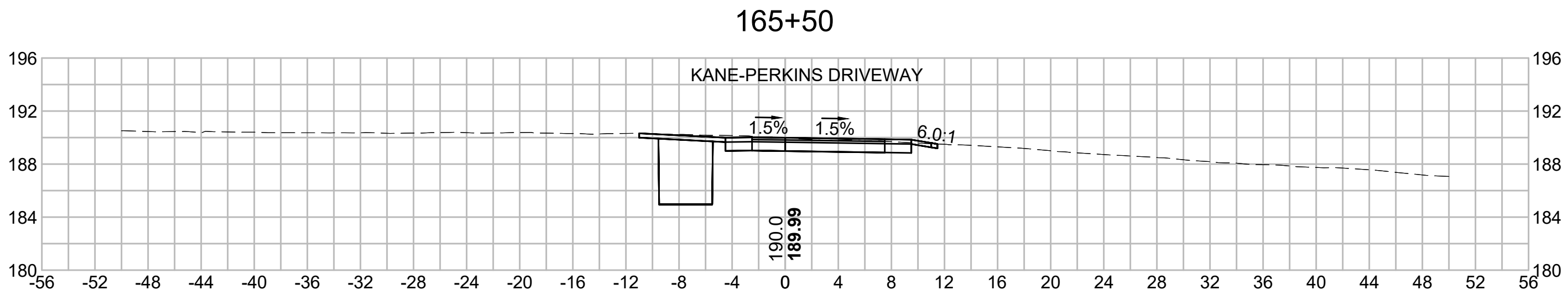
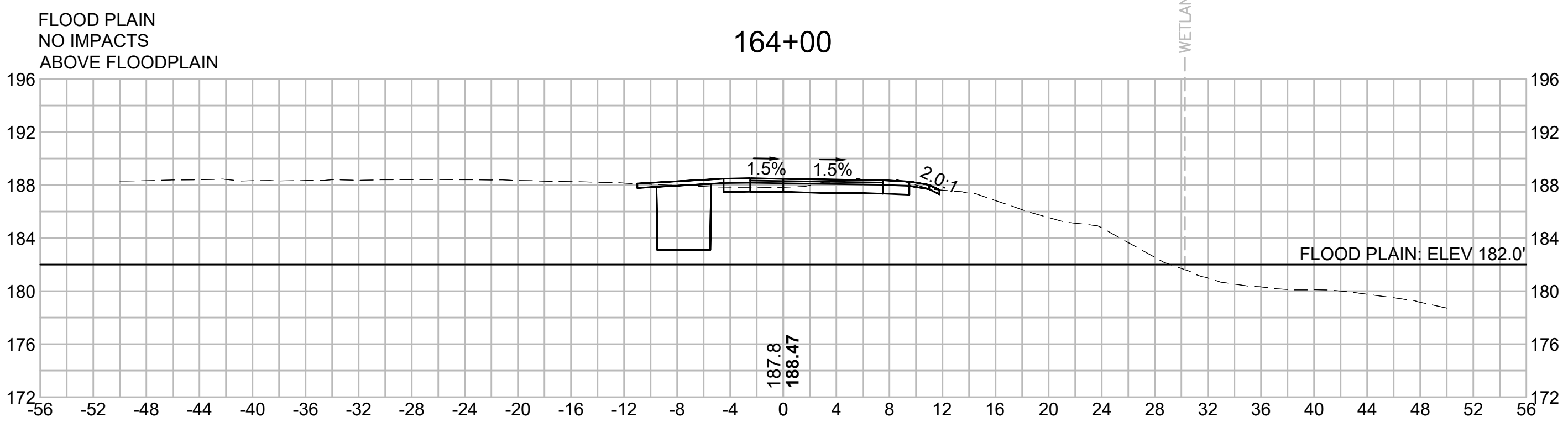
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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 226 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

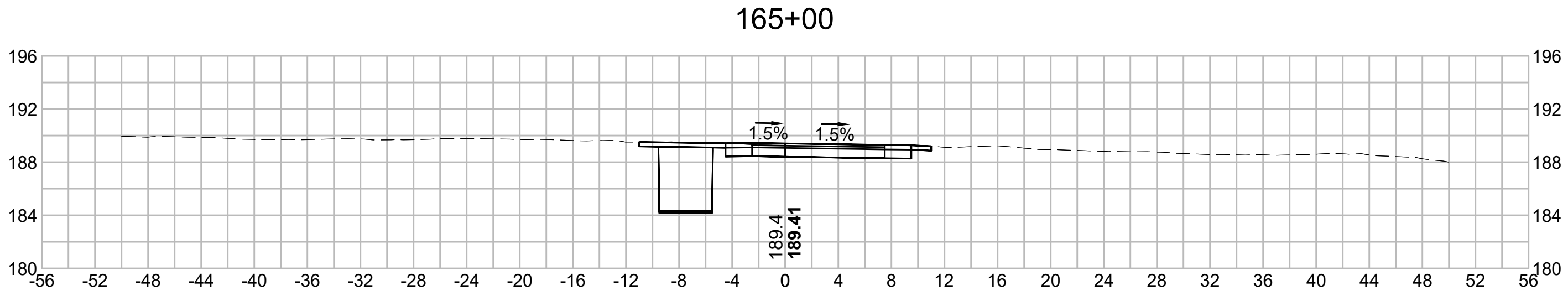
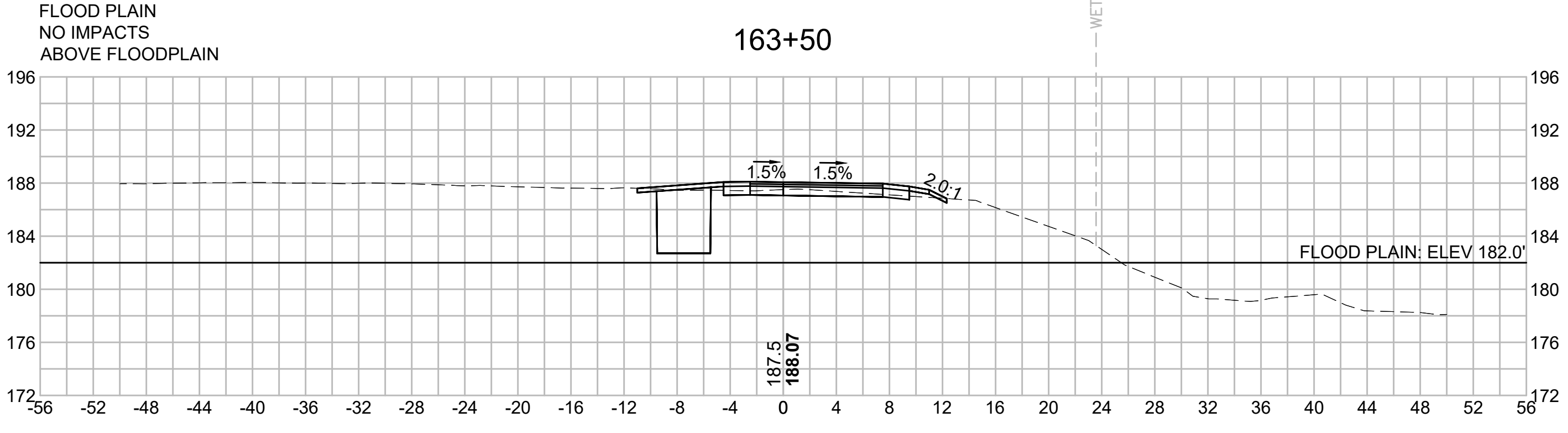
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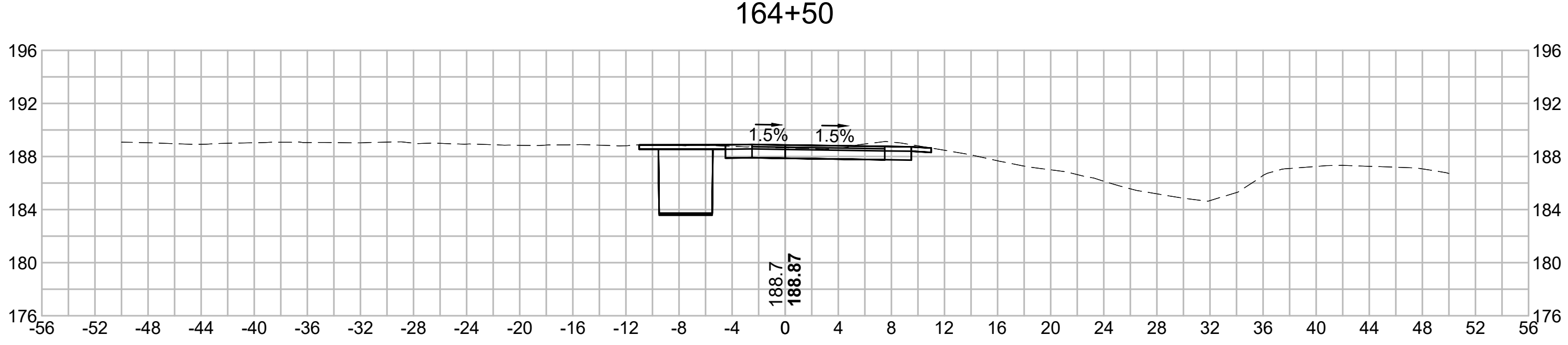
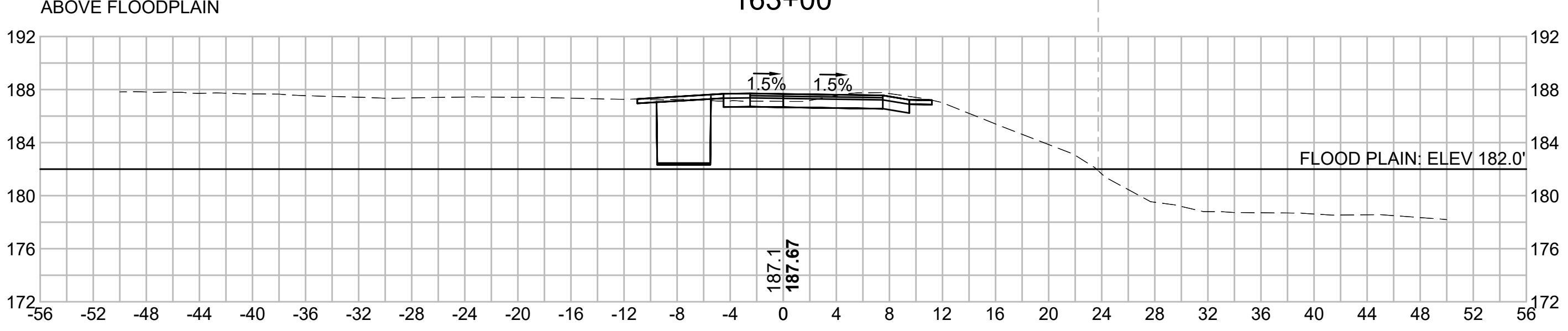
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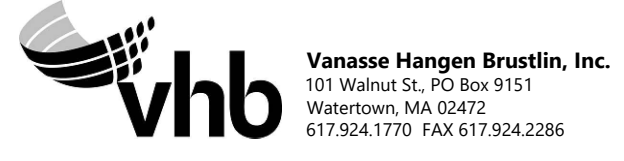
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NO.		DESCRIPTION		BY	DATE	APPR.
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EVERSOURCE						
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT						
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS						
CROSS SECTIONS						
PLAN 227 OF 349						
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES	DRAWING NO.	REV.

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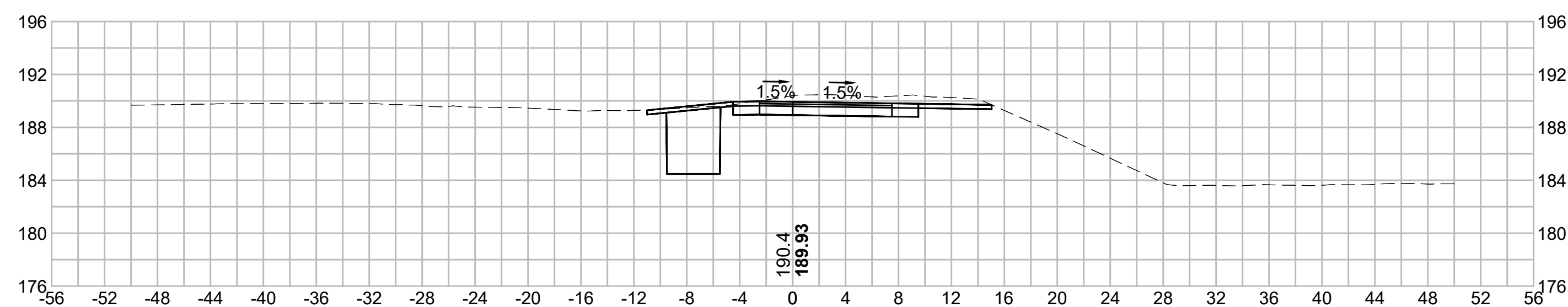
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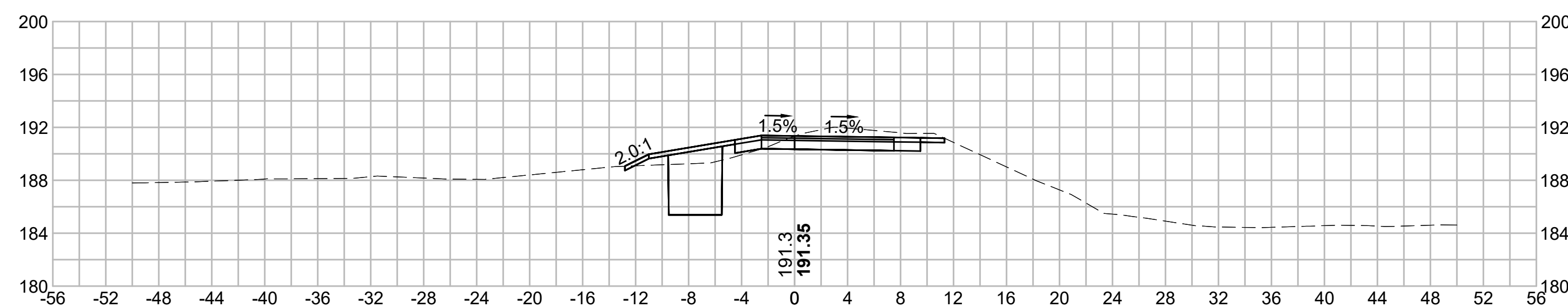
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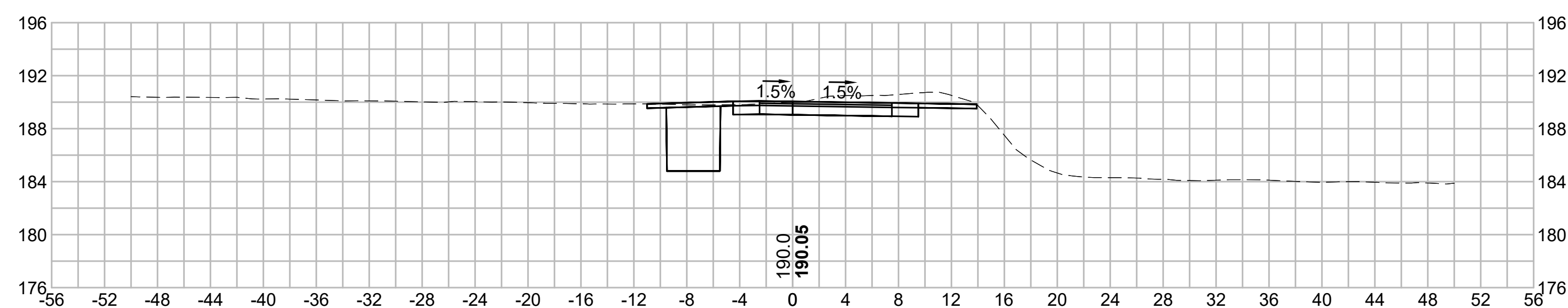
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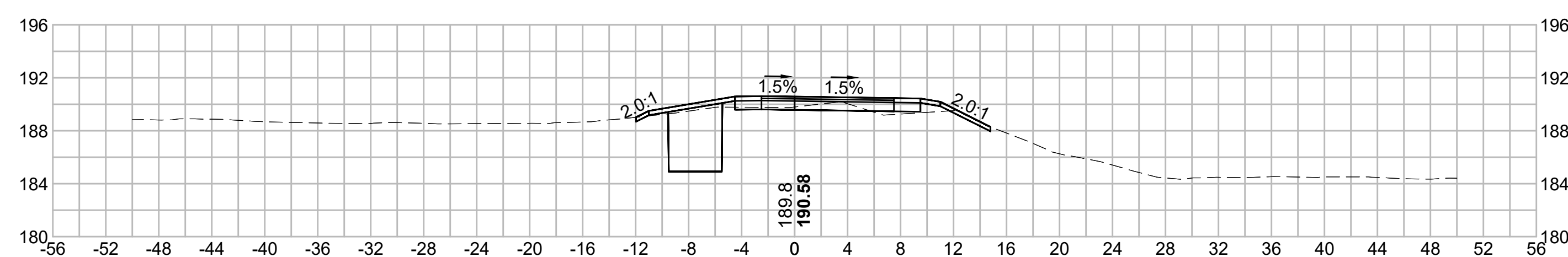
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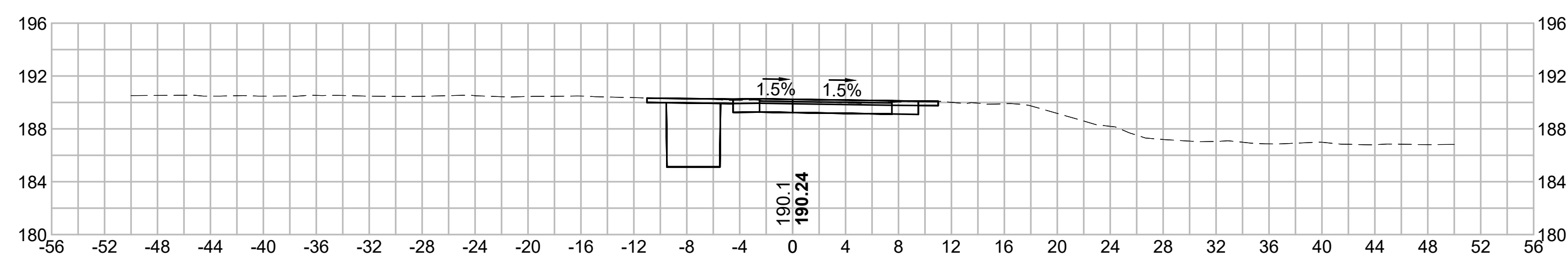
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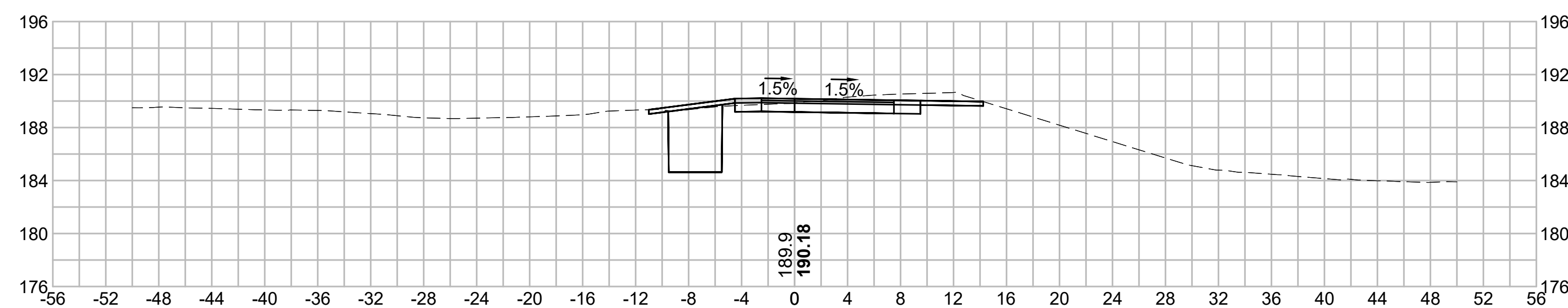
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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

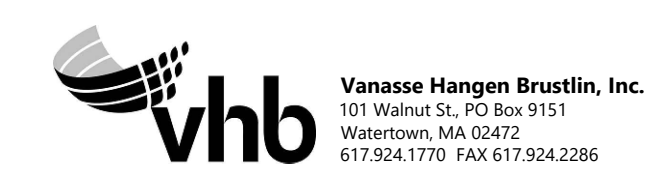
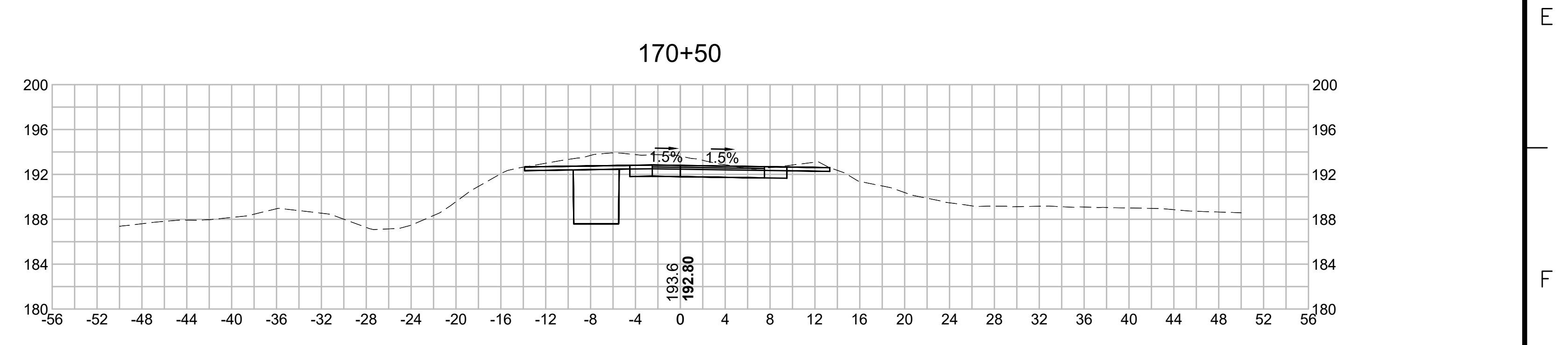
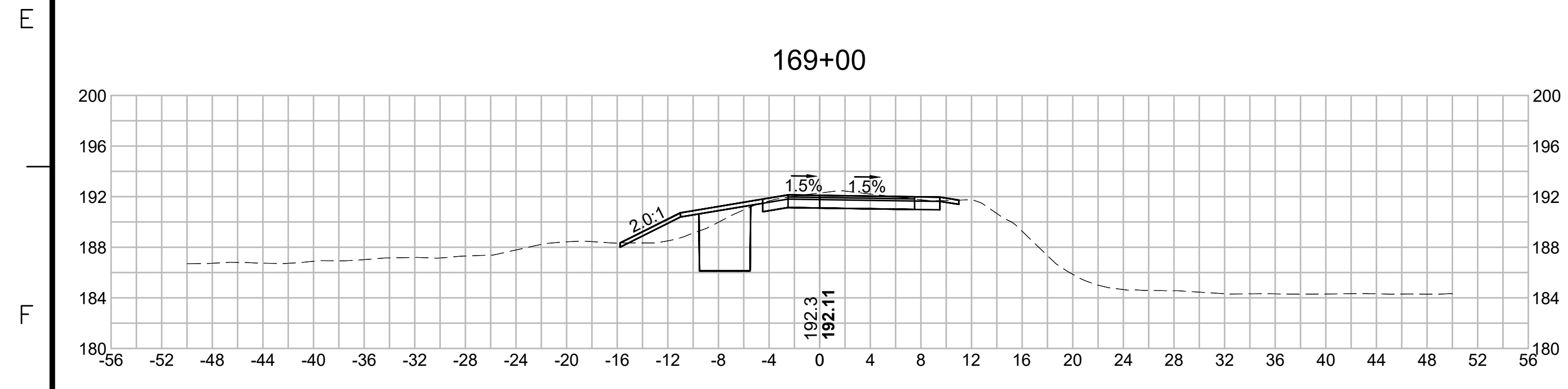
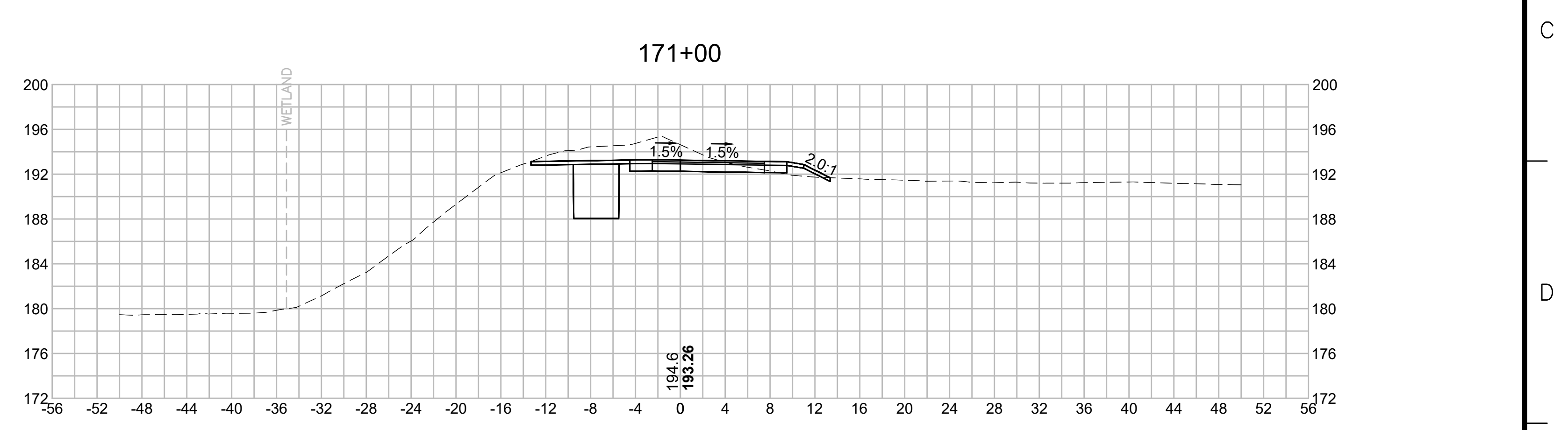
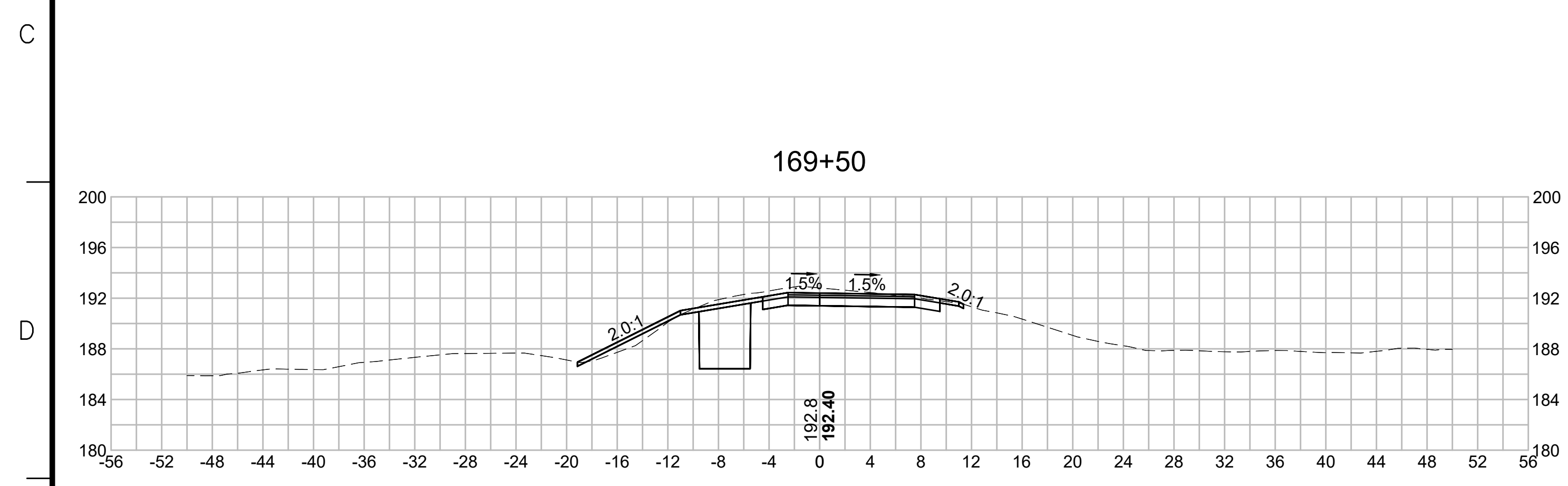
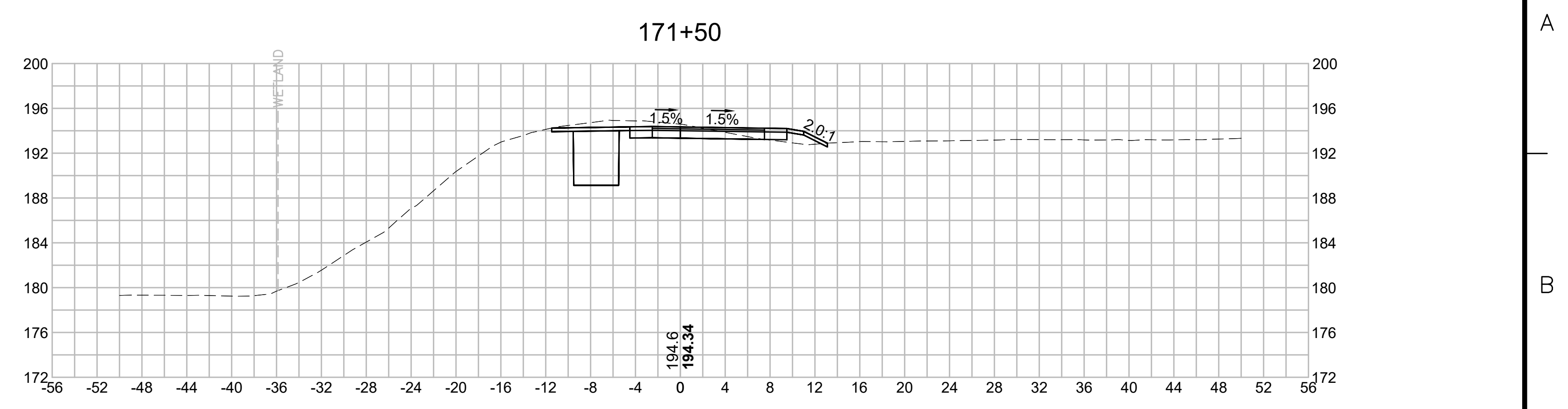
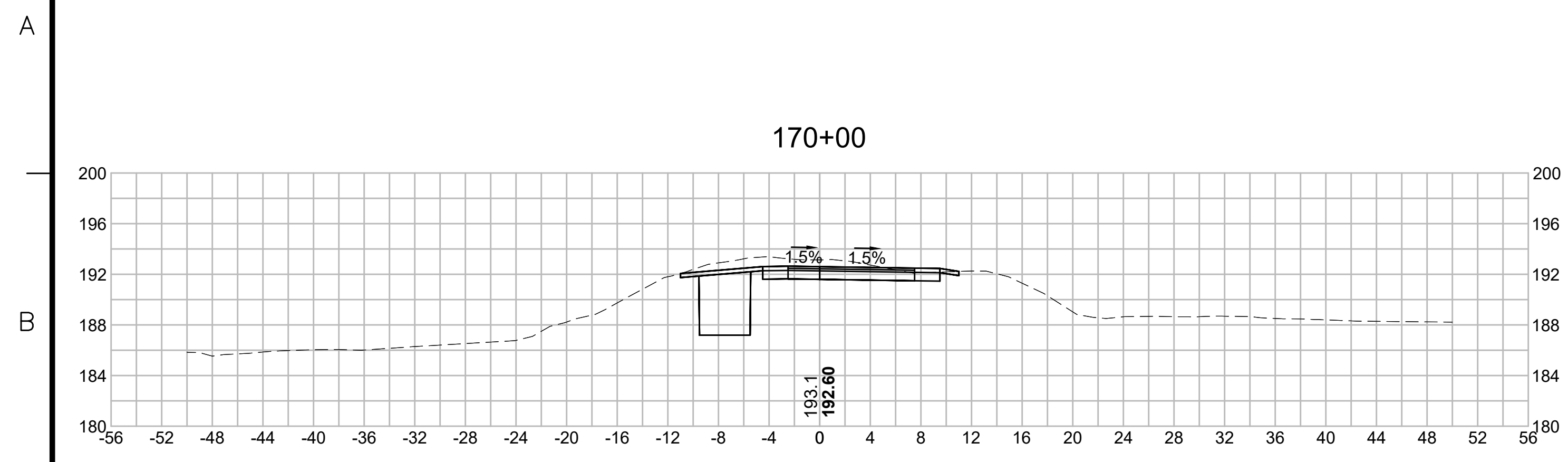
EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 CROSS SECTIONS
 PLAN 228 OF 349

SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES	DRAWING NO. .	REV. .
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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

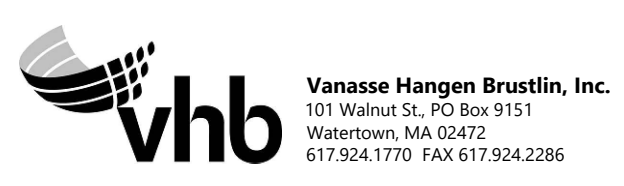
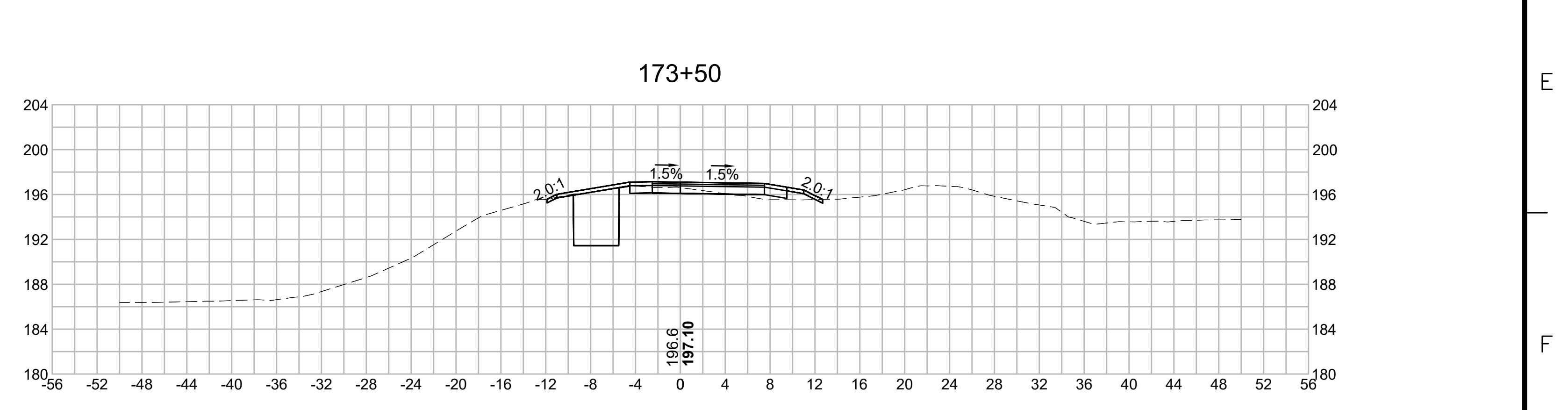
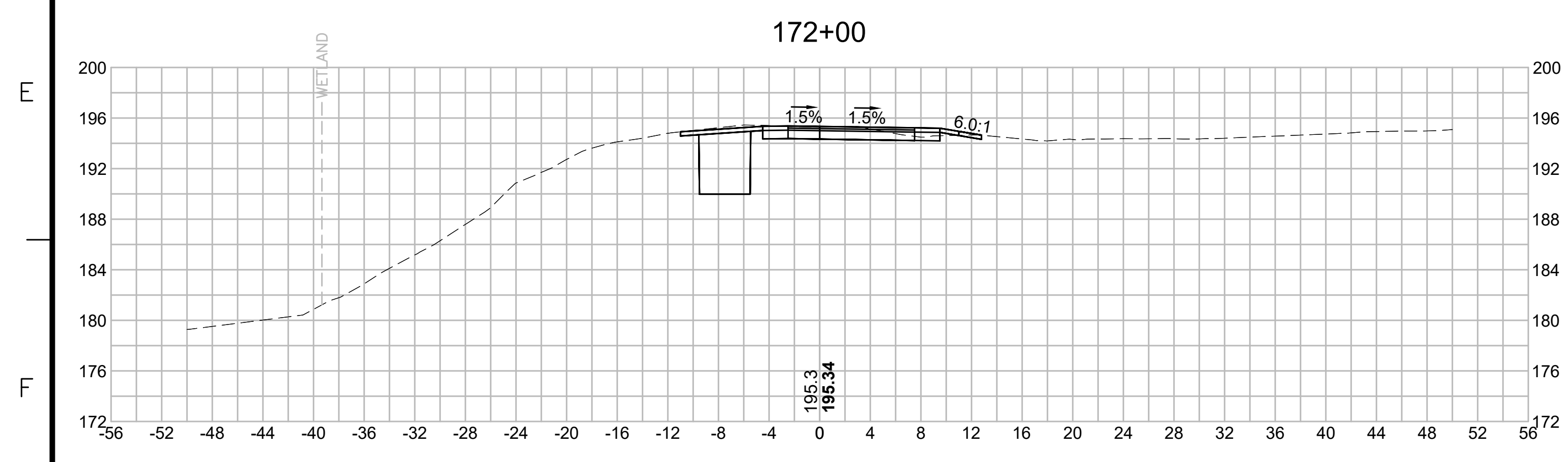
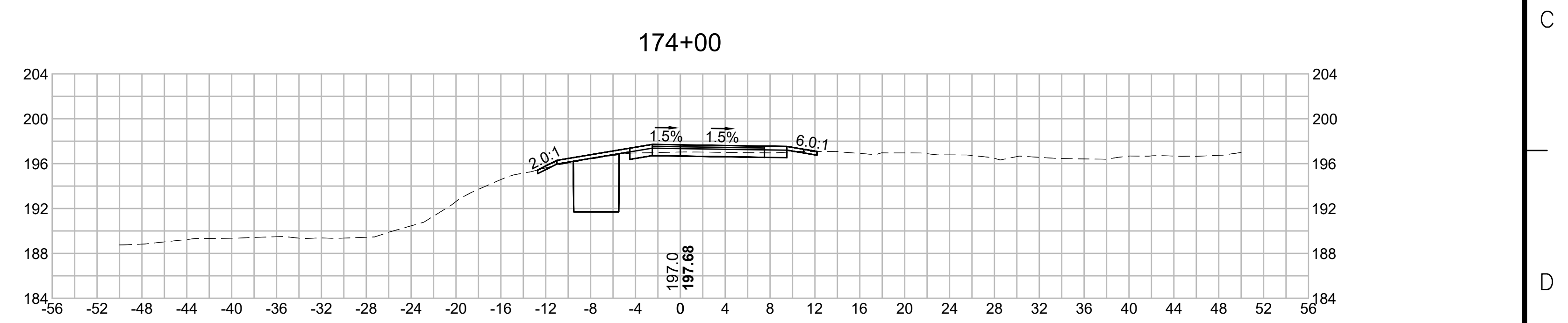
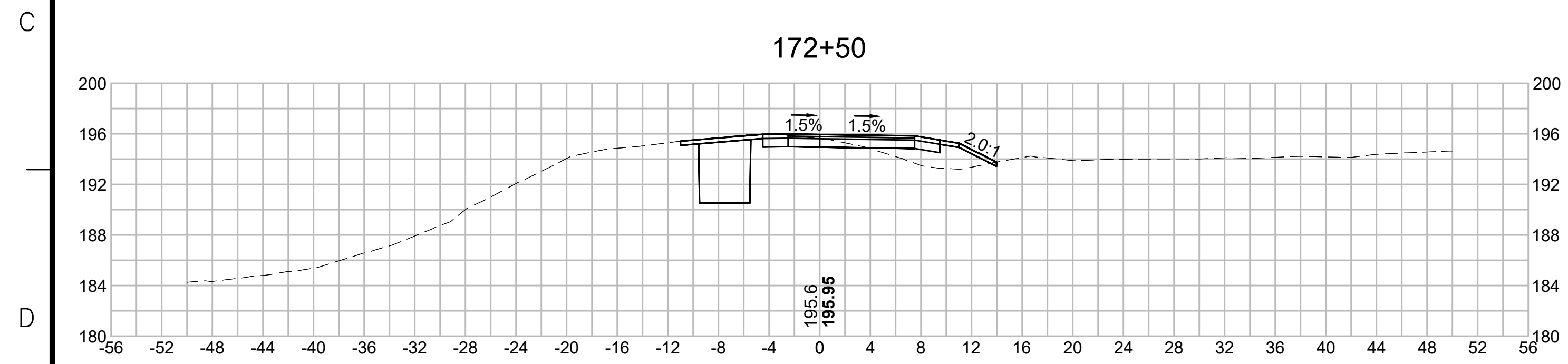
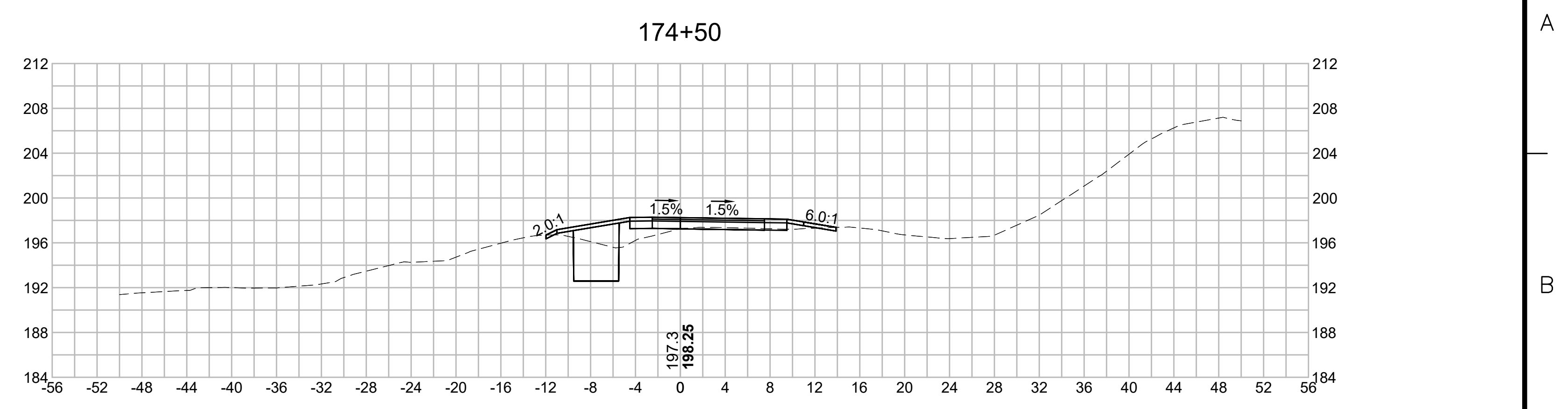
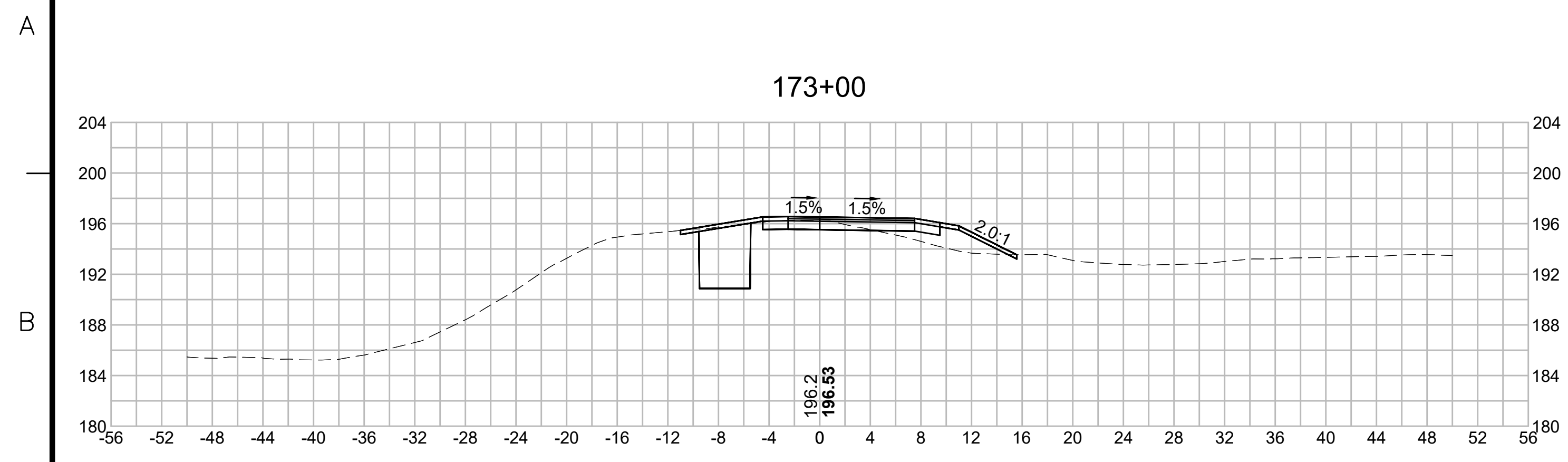
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 CROSS SECTIONS

PLAN 229 OF 349

SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES	DRAWING NO. REV.
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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

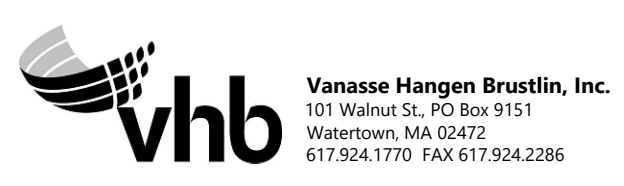
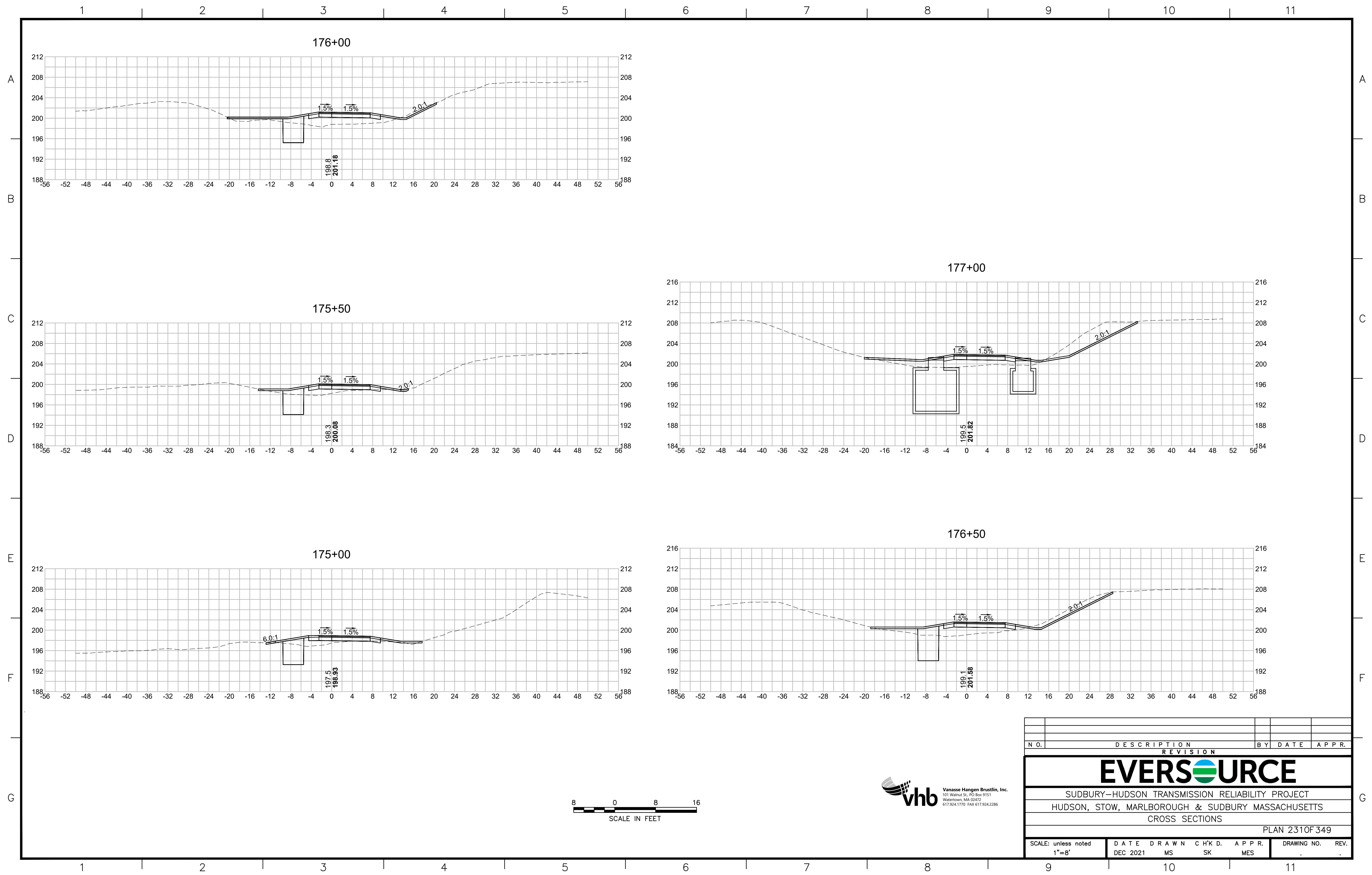
EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 CROSS SECTIONS

PLAN 2300F349

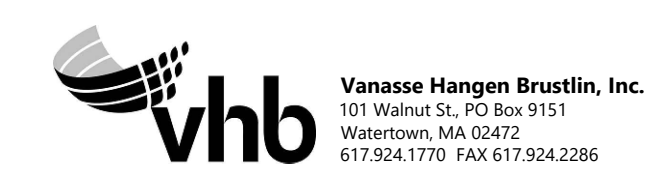
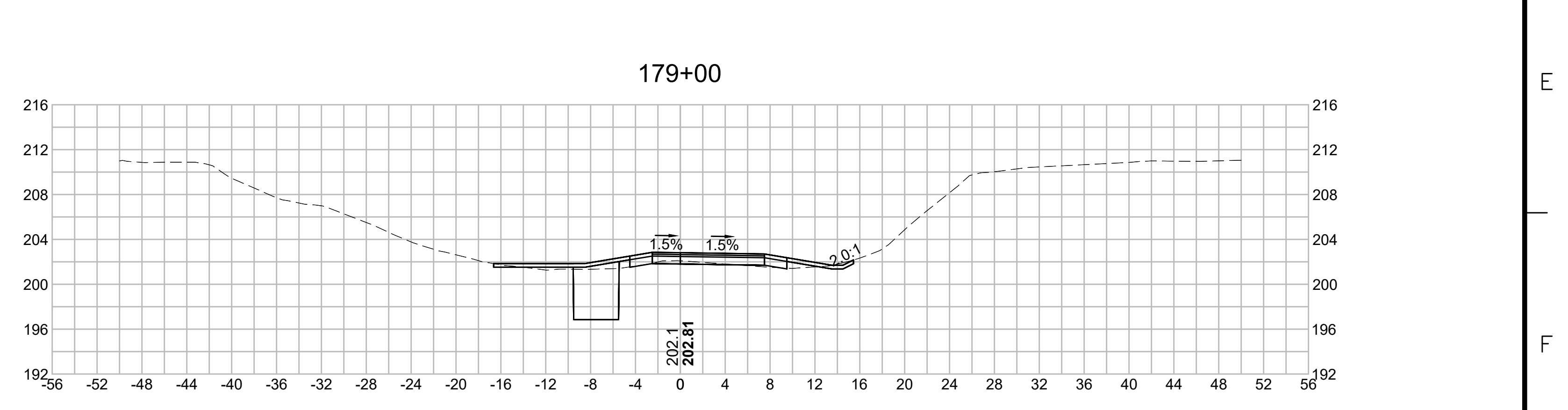
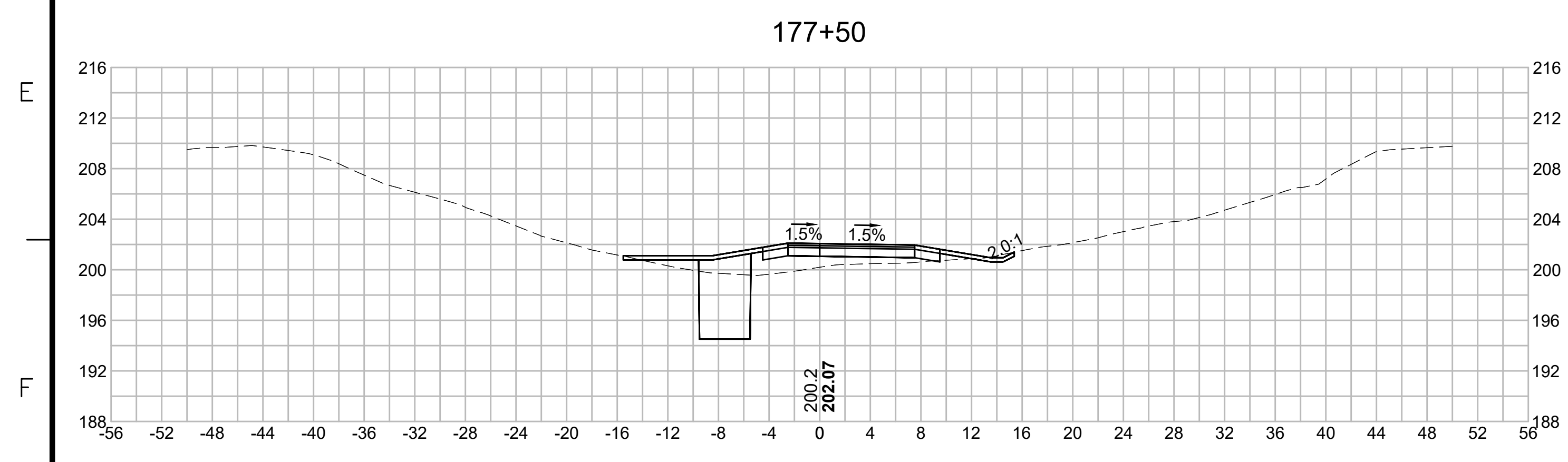
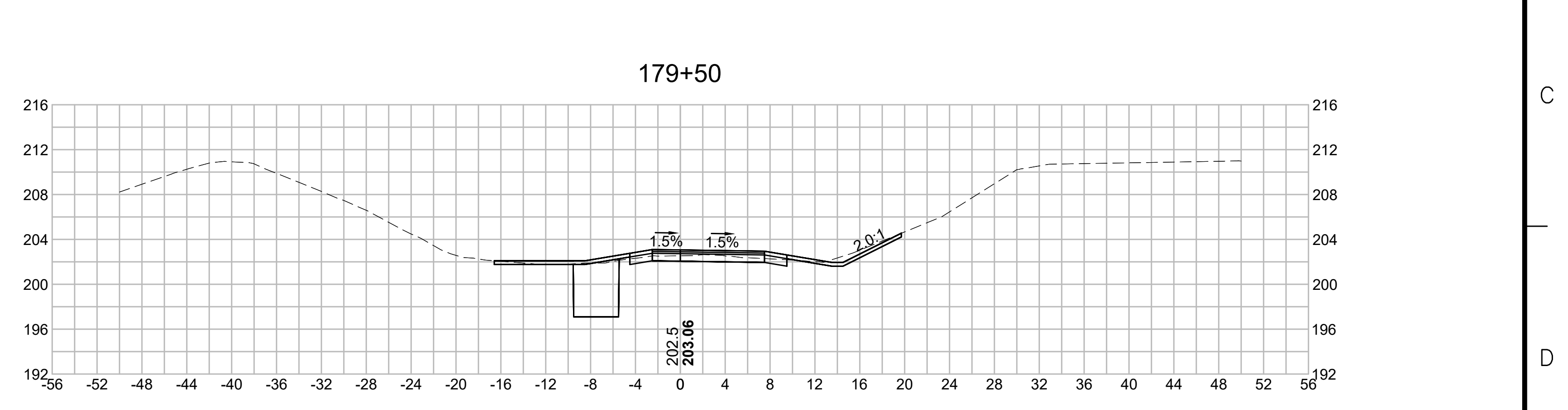
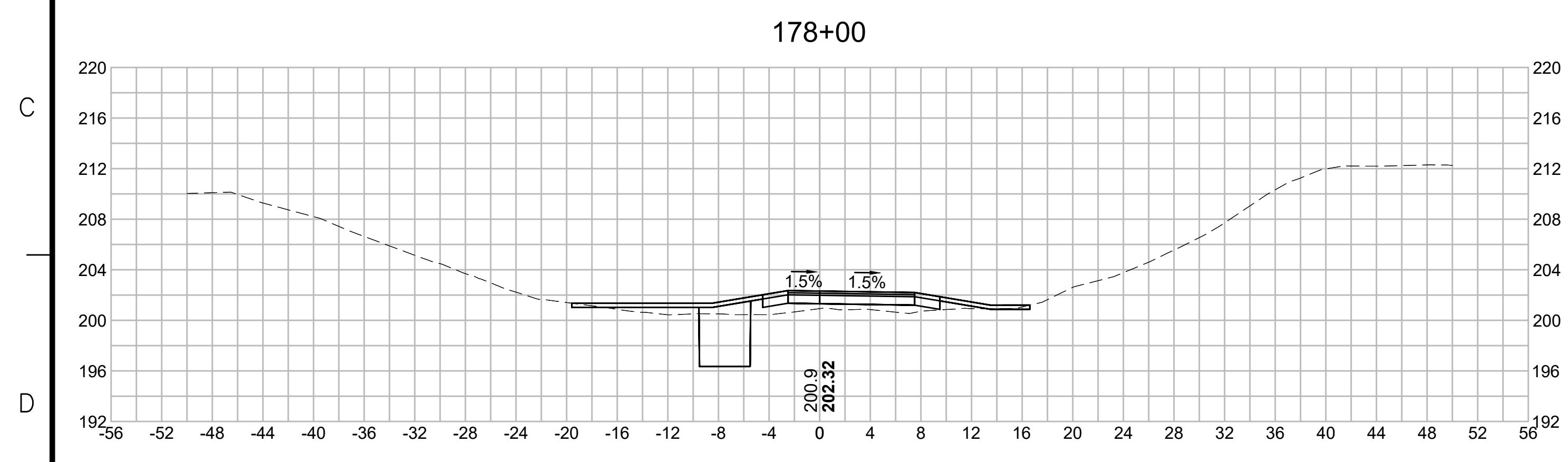
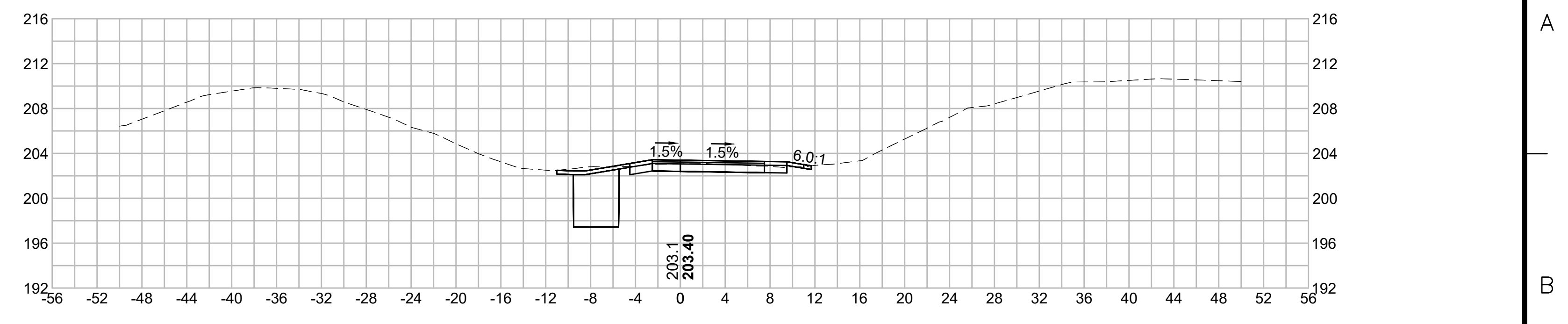
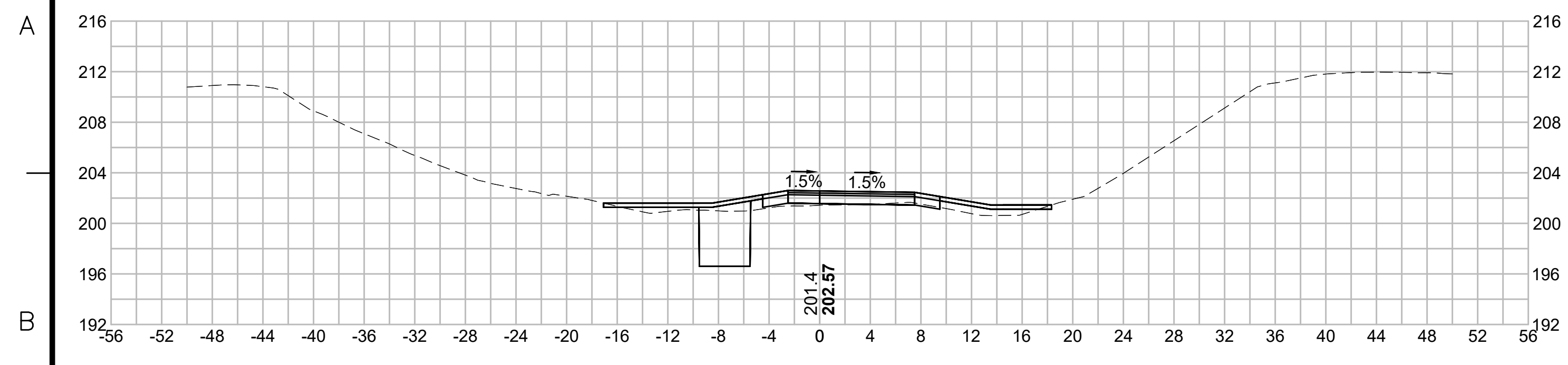
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES	DRAWING NO.	REV.
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NO.	DESCRIPTION		BY	DATE	APPR.
	REVISION				
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CROSS SECTIONS					
PLAN 2310F349					
SCALE: unless noted 1"=8'		DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.				REV.	

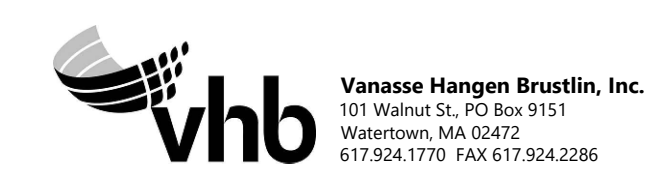
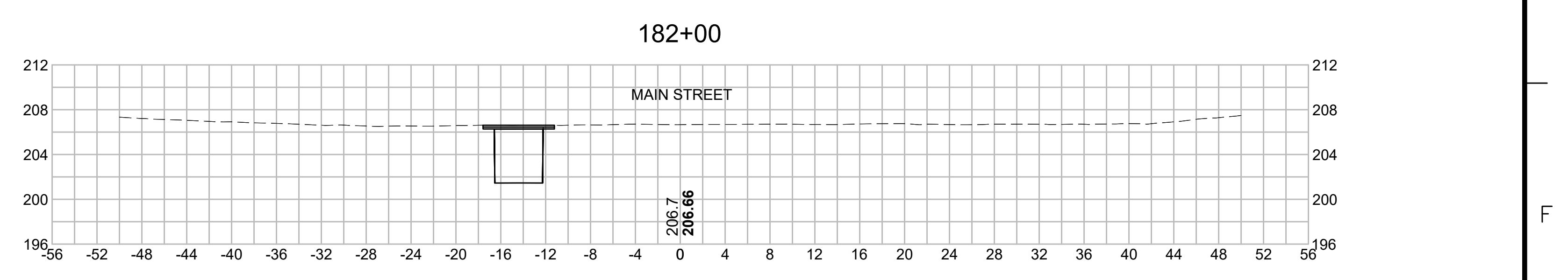
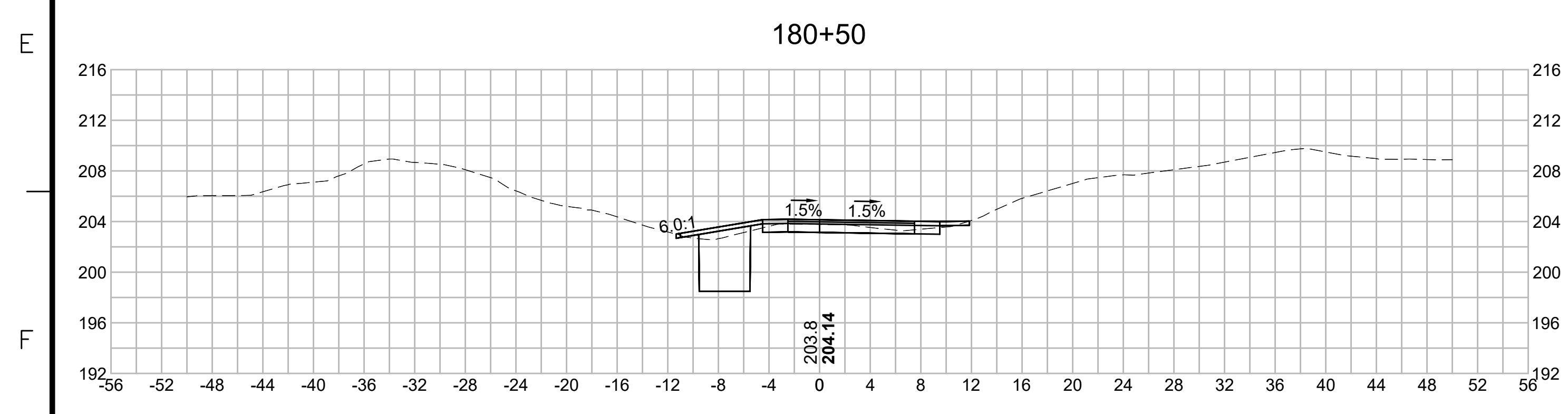
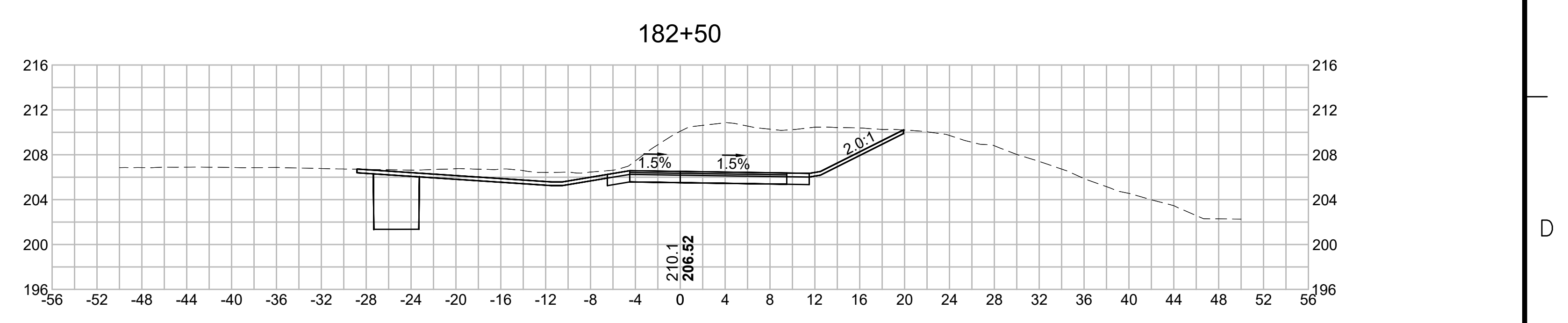
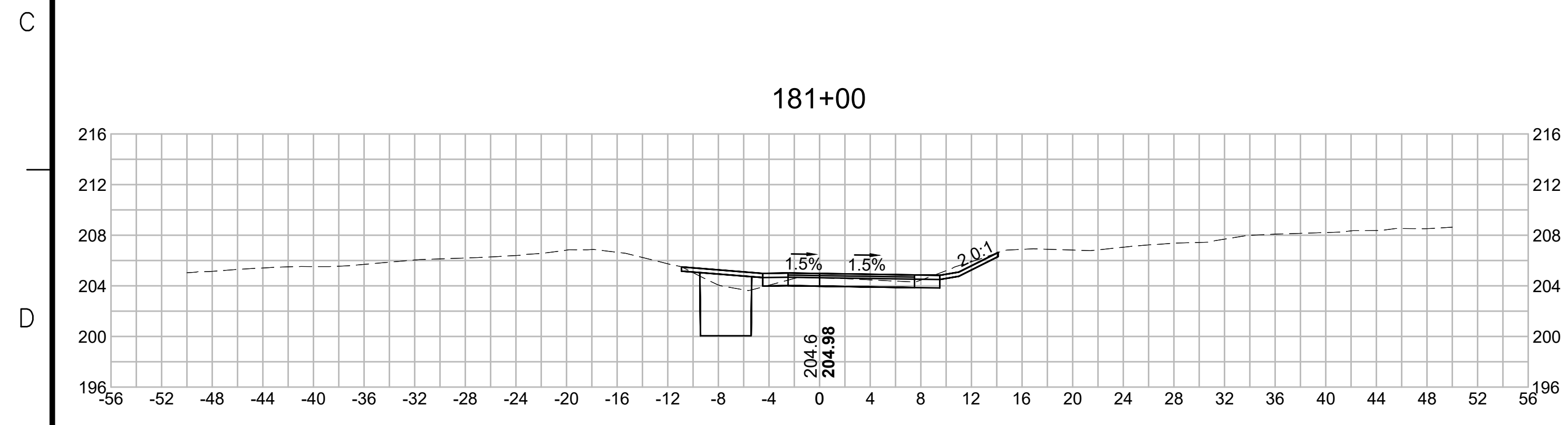
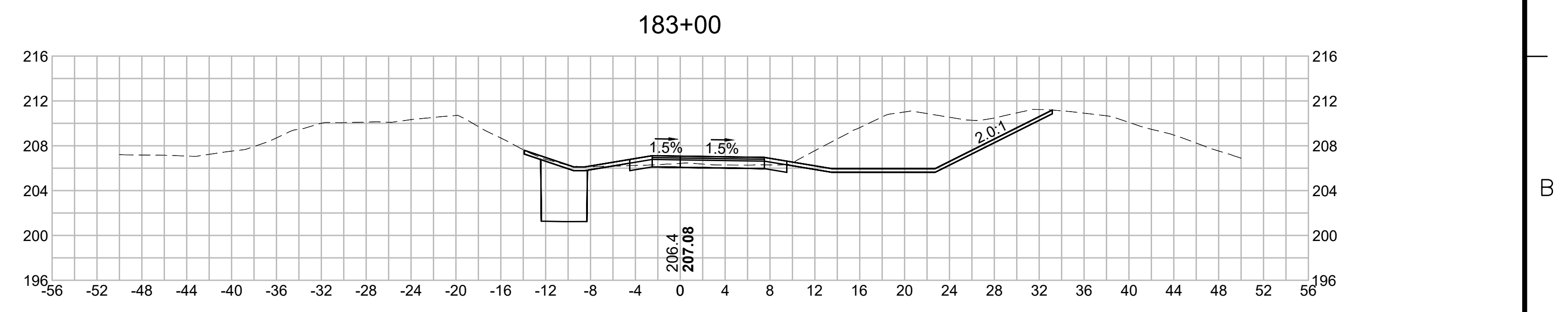
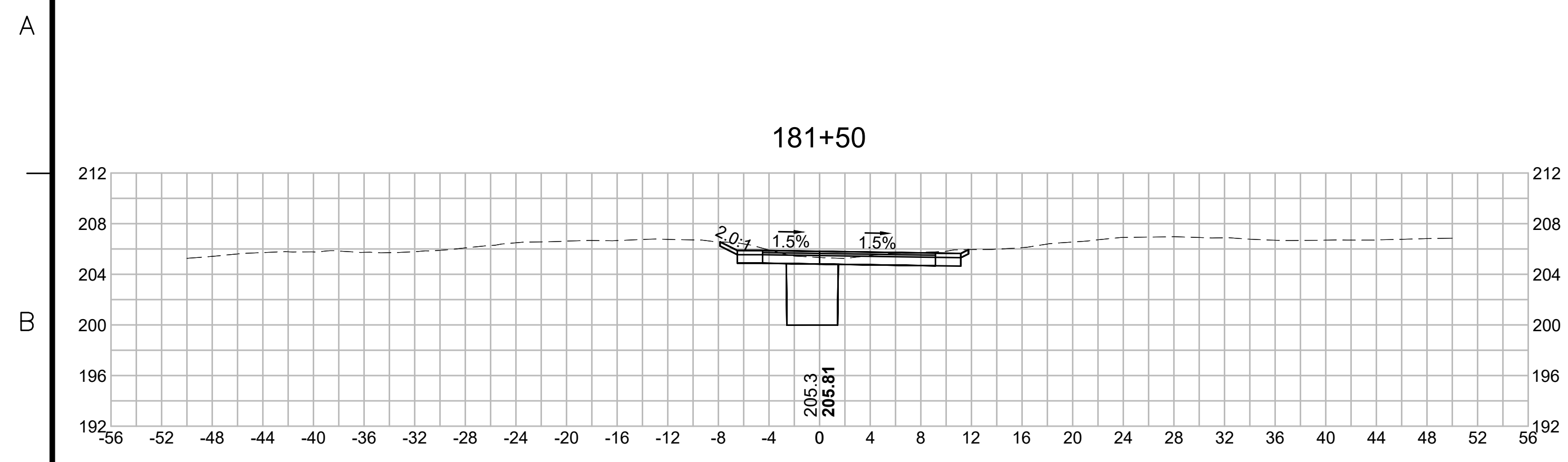
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N.O.	DESCRIPTION	BY	DATE	APPR.
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SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 232 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
CROSS SECTIONS

PLAN 233 OF 349

SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES	DRAWING NO. .	REV. .
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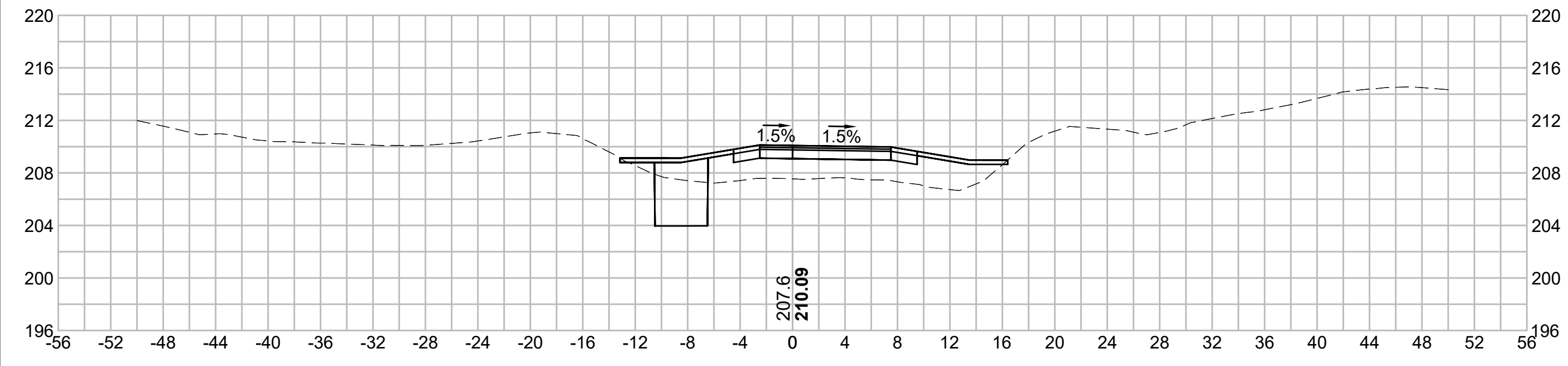
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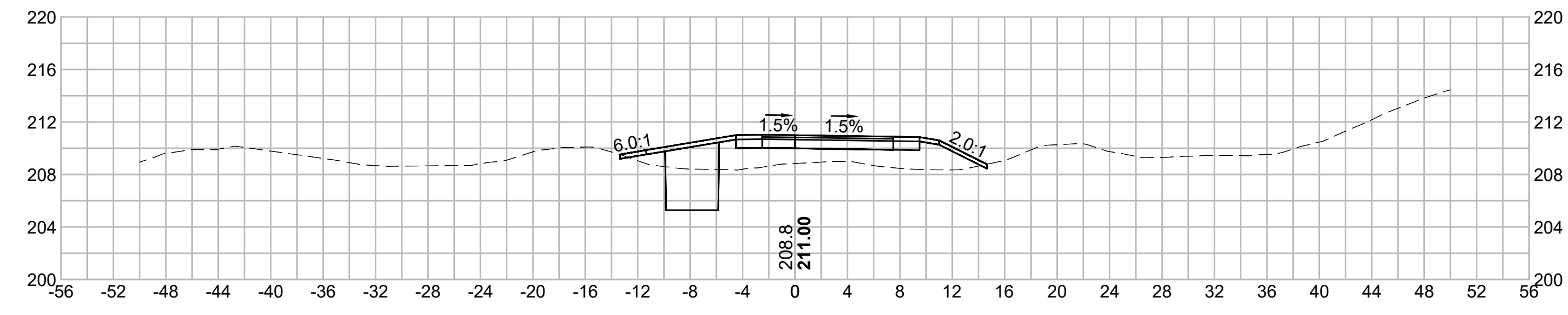
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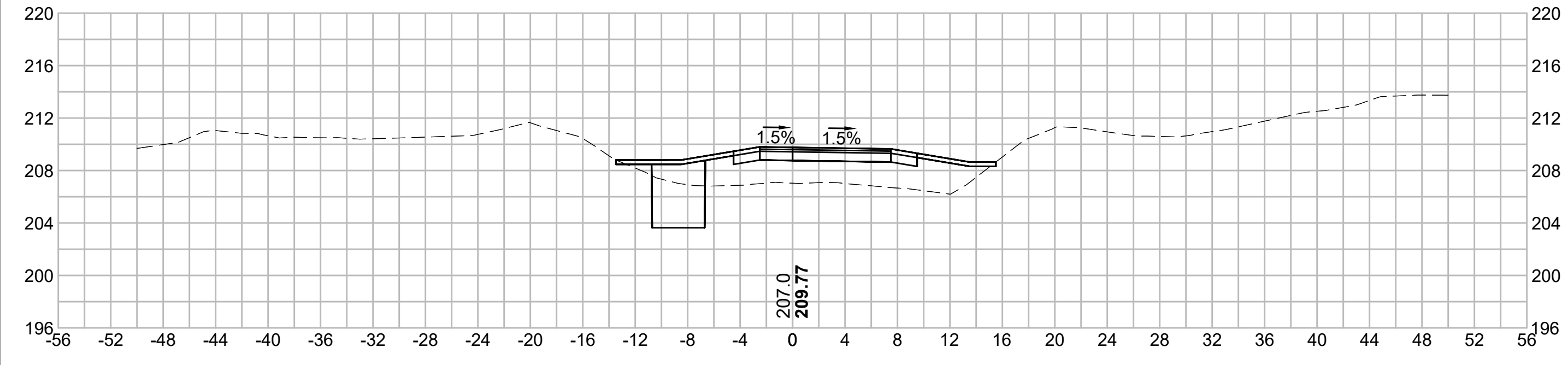
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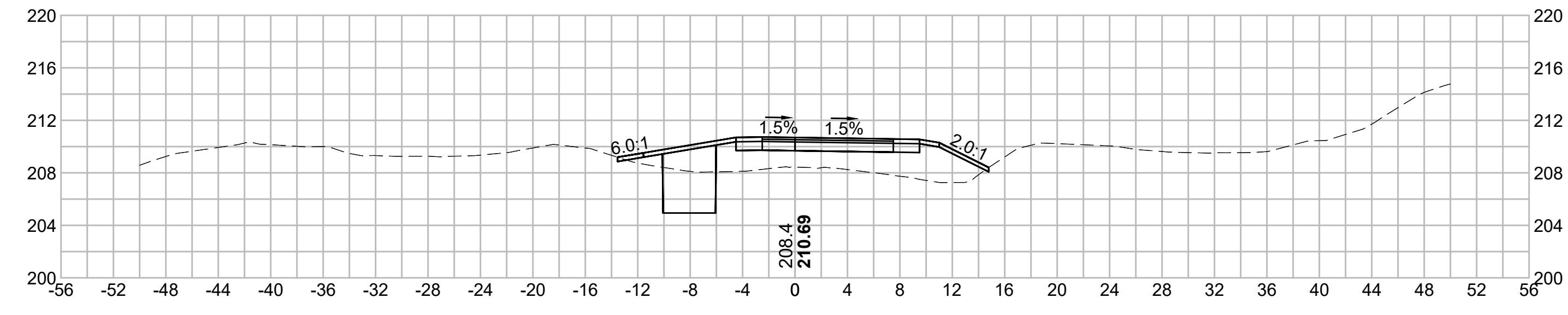
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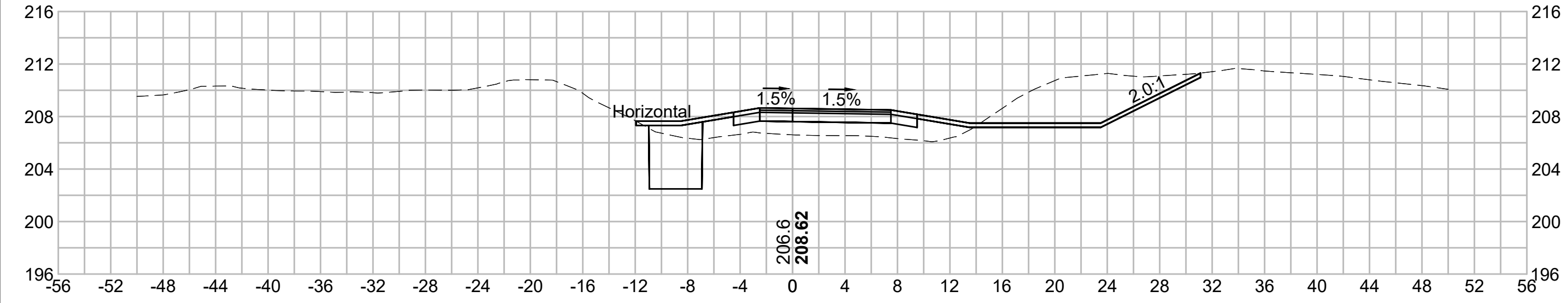
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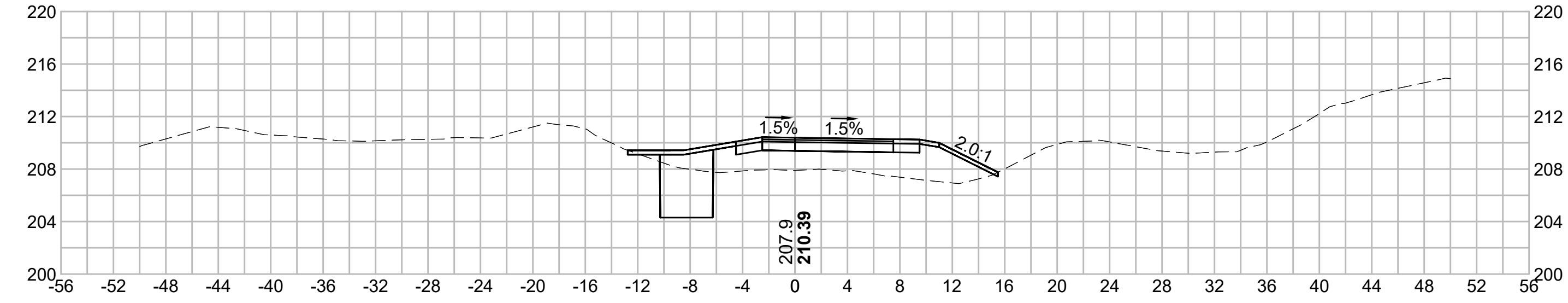
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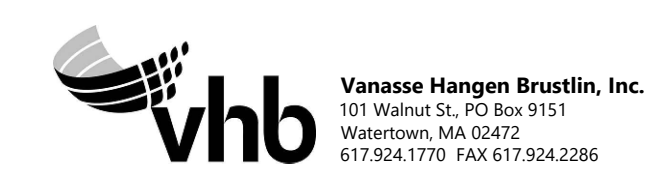
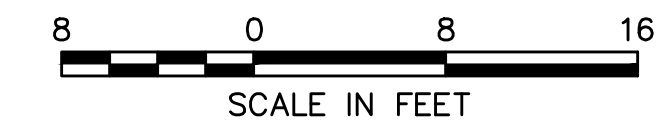


185+00



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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 234 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

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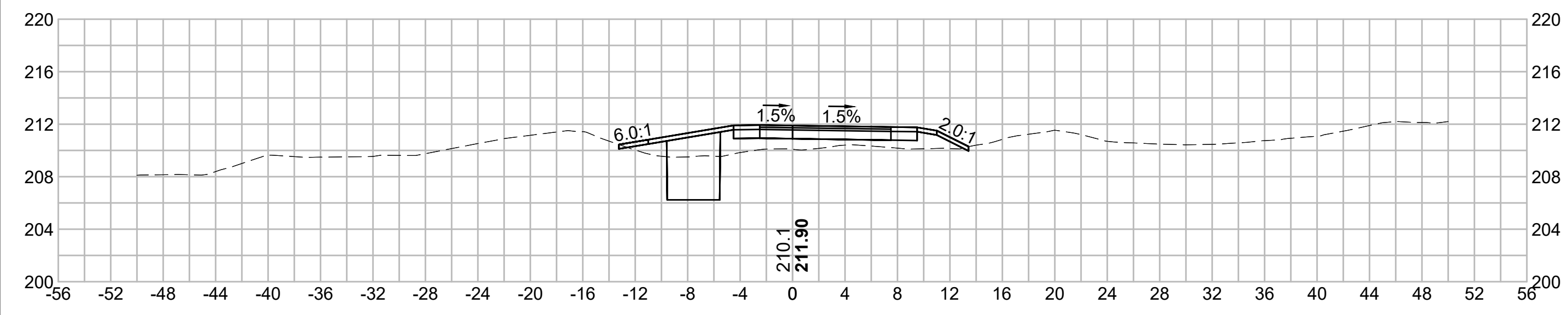
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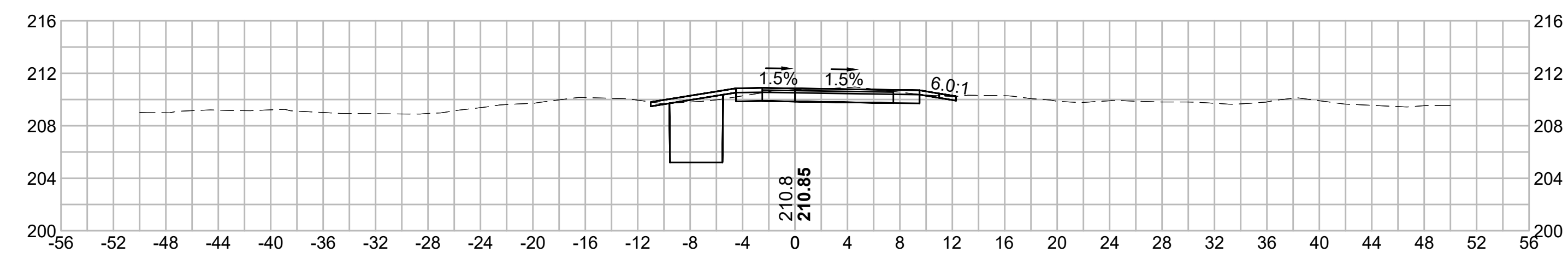
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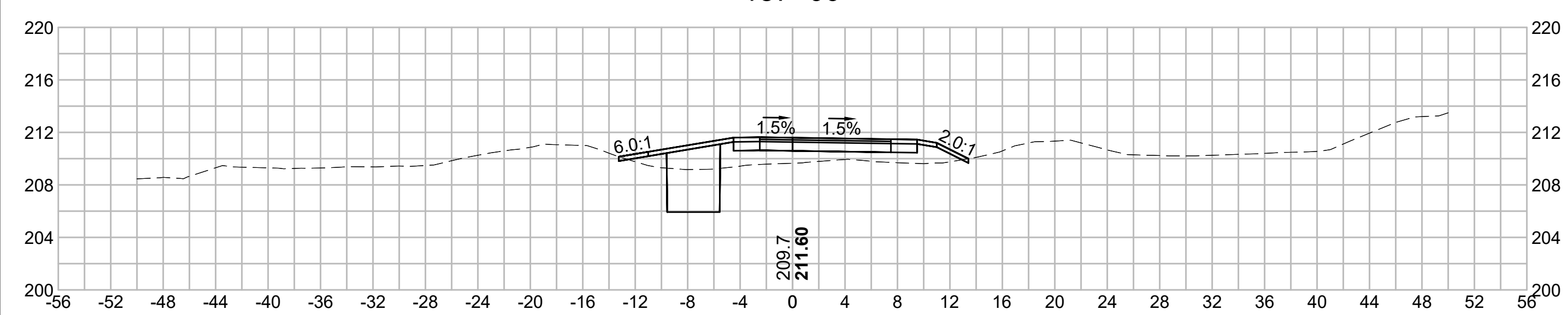
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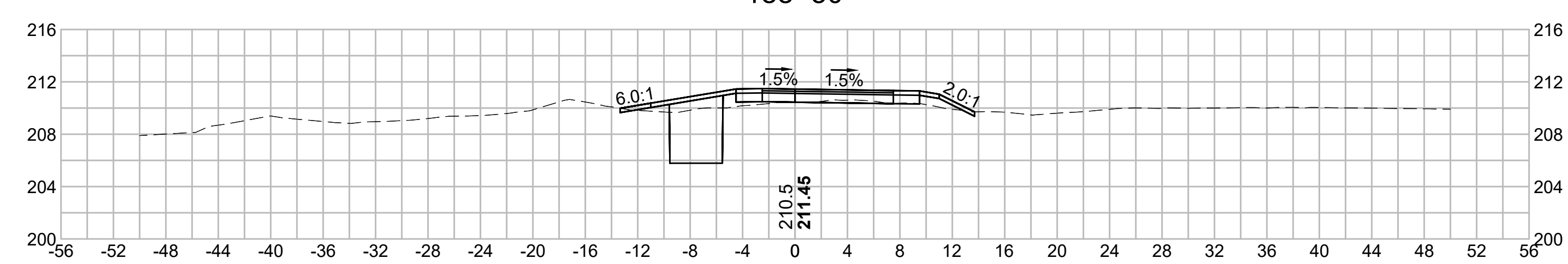
189+00



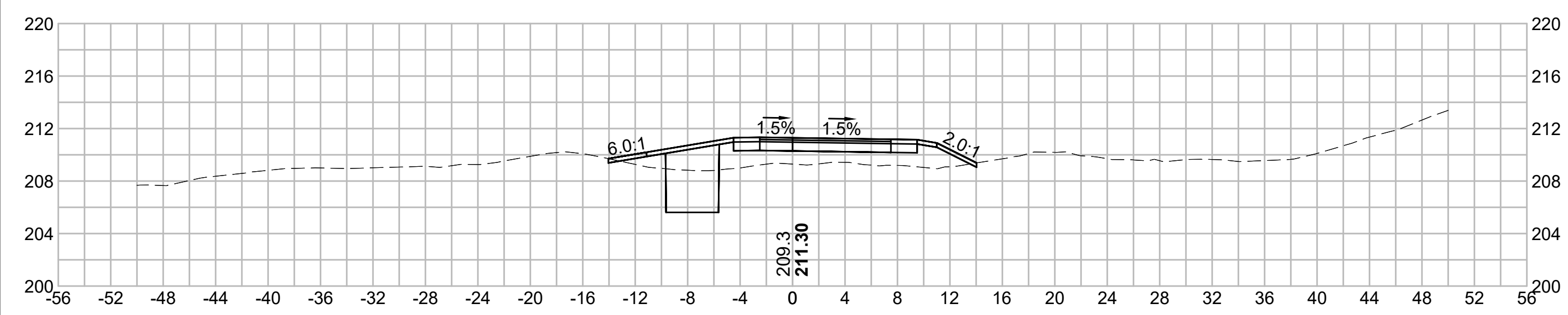
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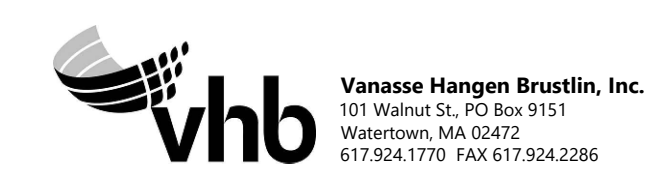
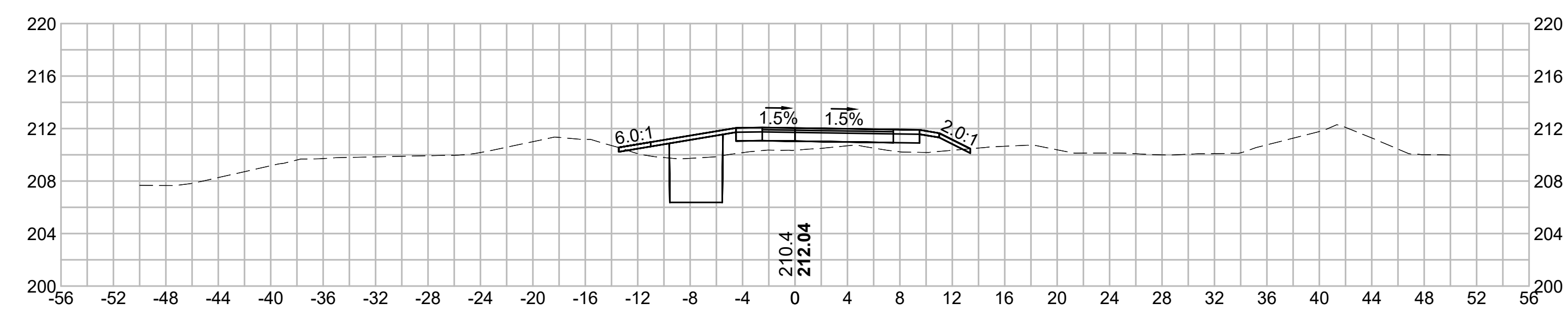
188+50



186+50



188+00



N O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 CROSS SECTIONS

PLAN 235 OF 349

SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	C H'K D. SK	A P P R. MES	DRAWING NO. REV.
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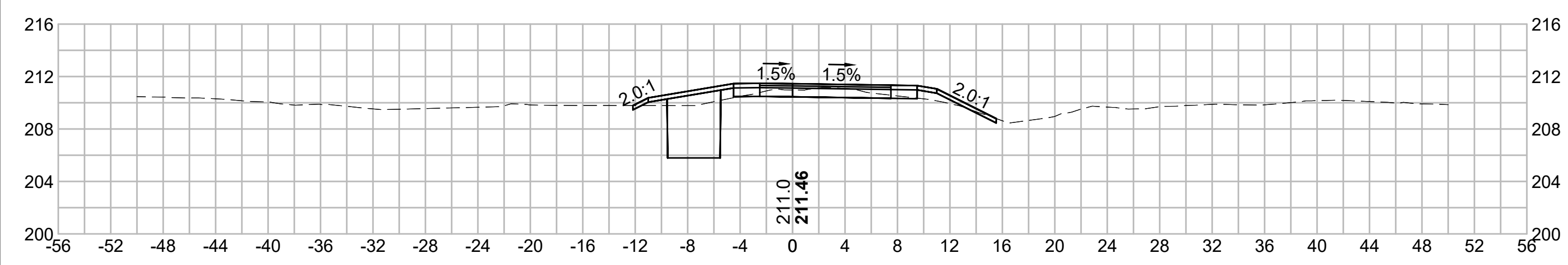
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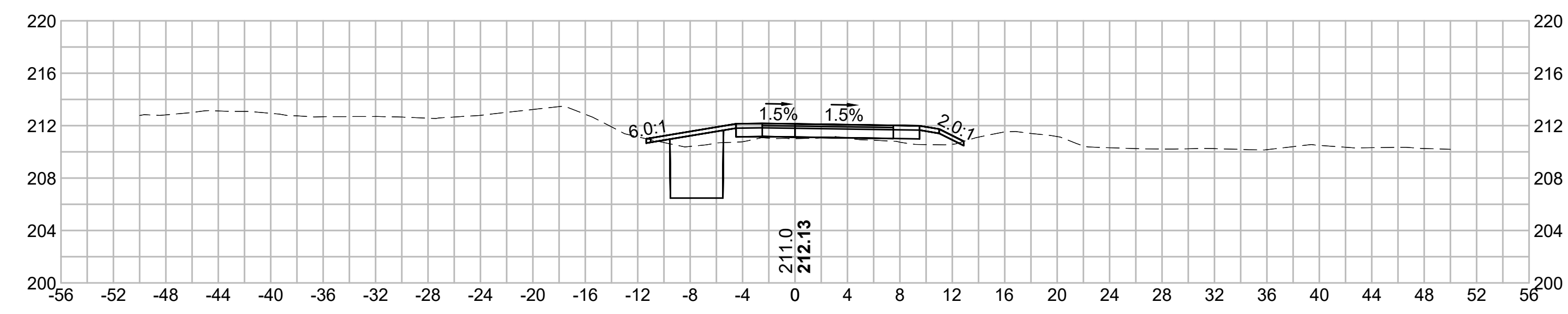
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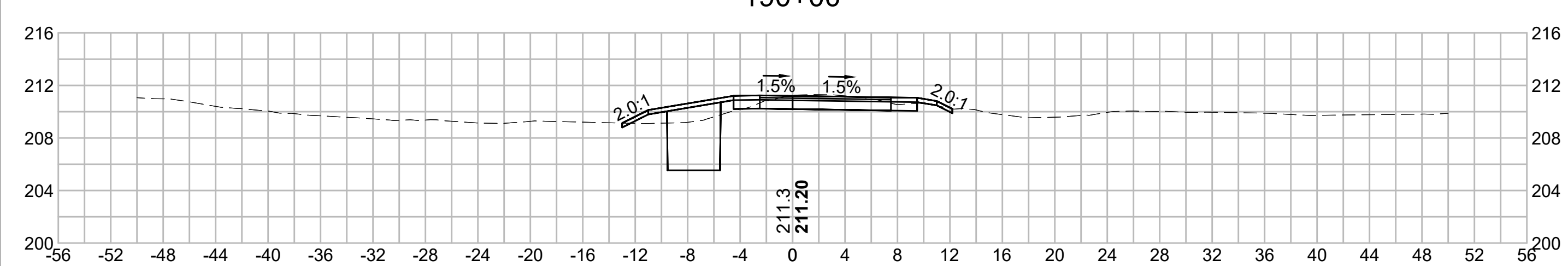
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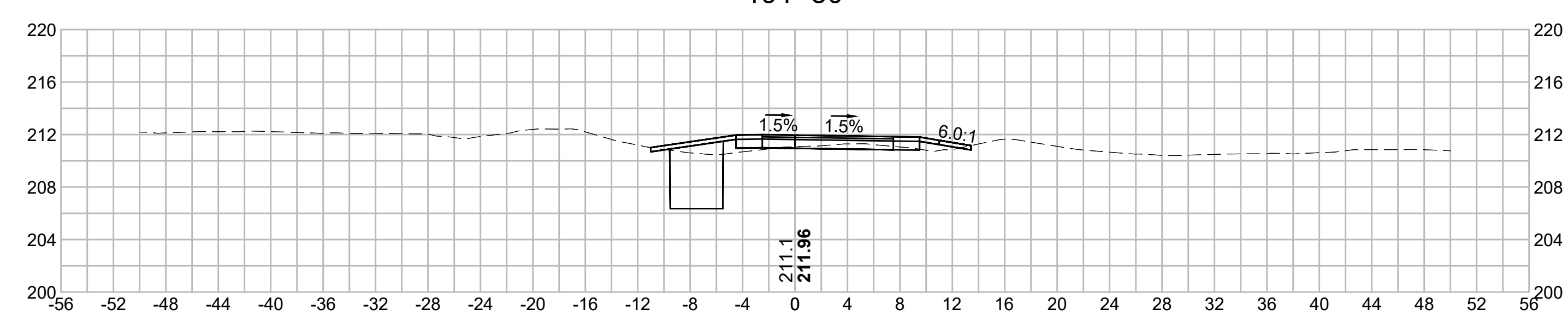
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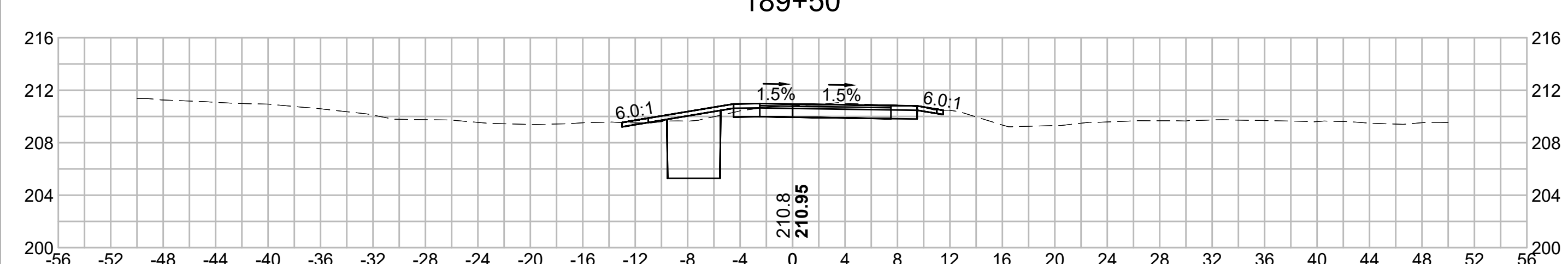
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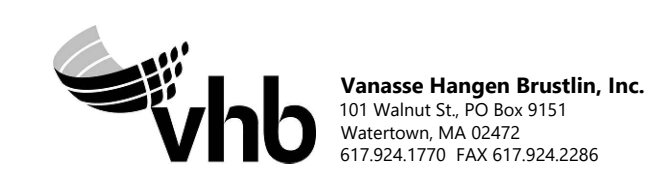
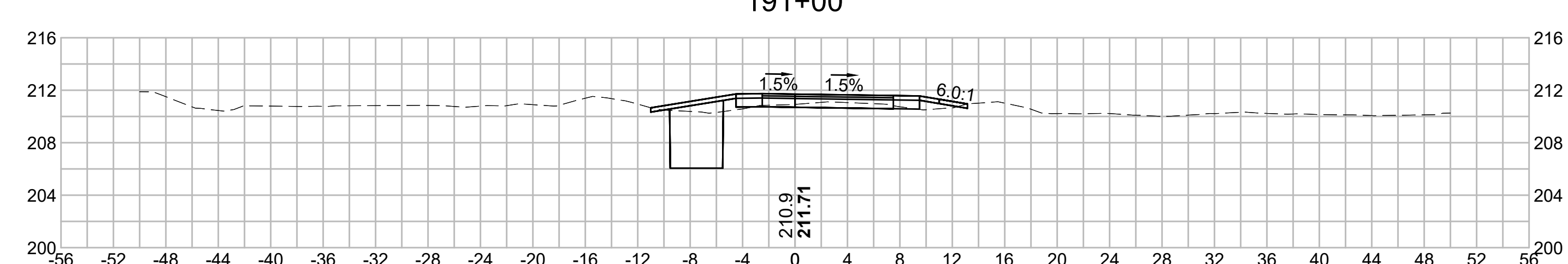
191+50



189+50



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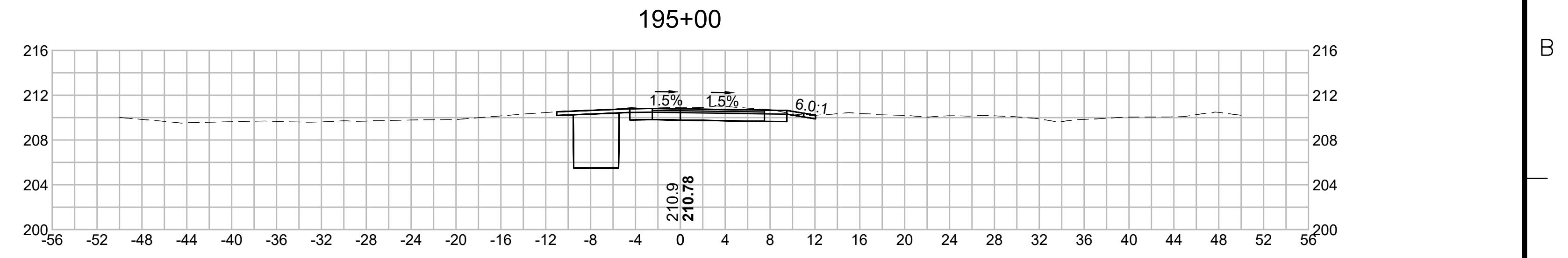
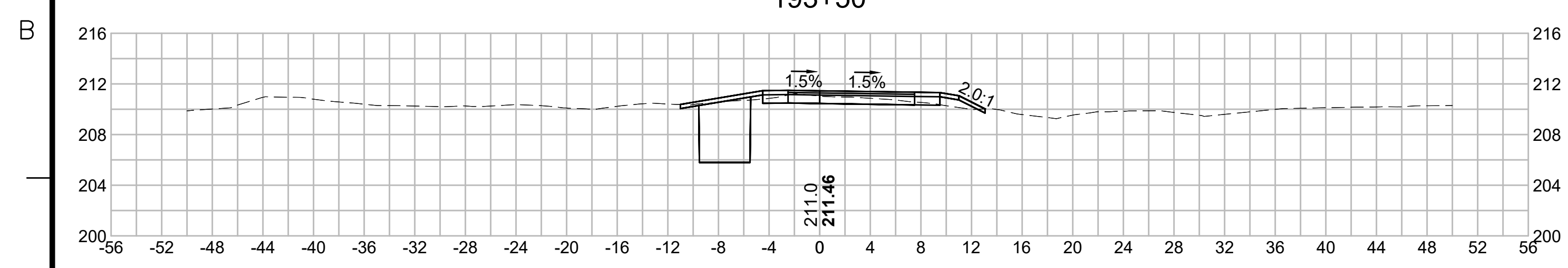


N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 236 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

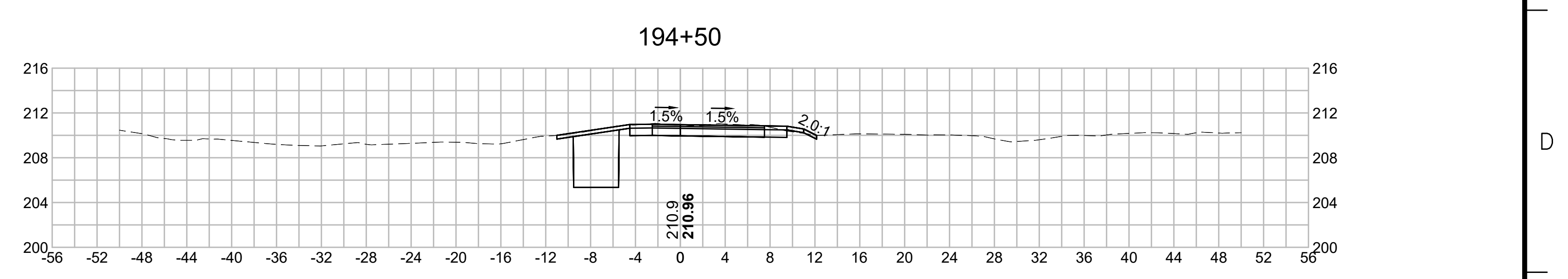
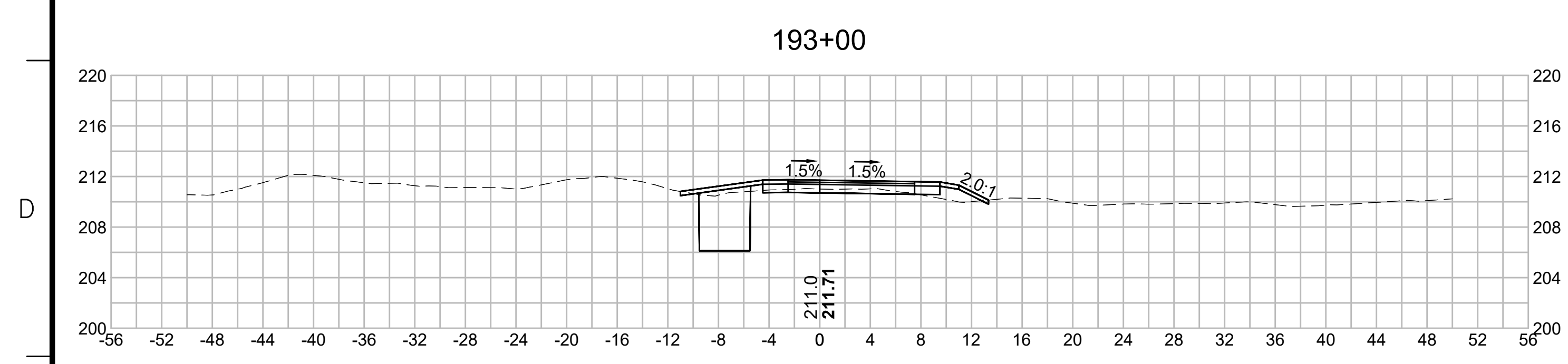
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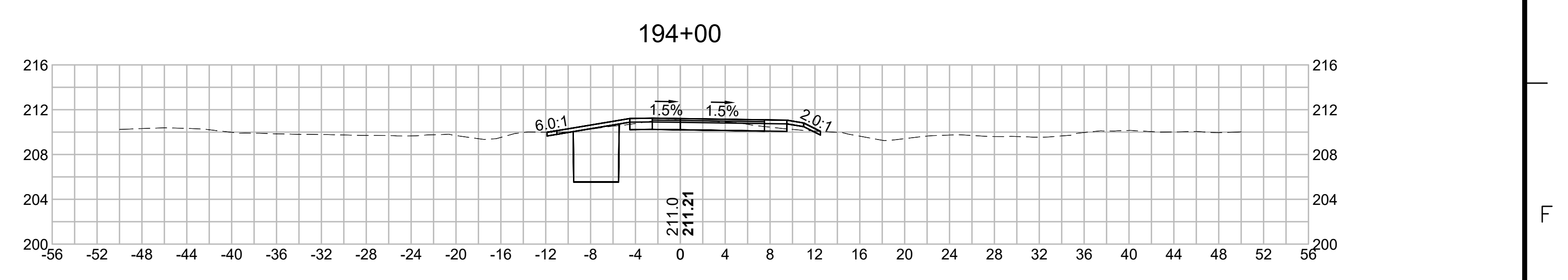
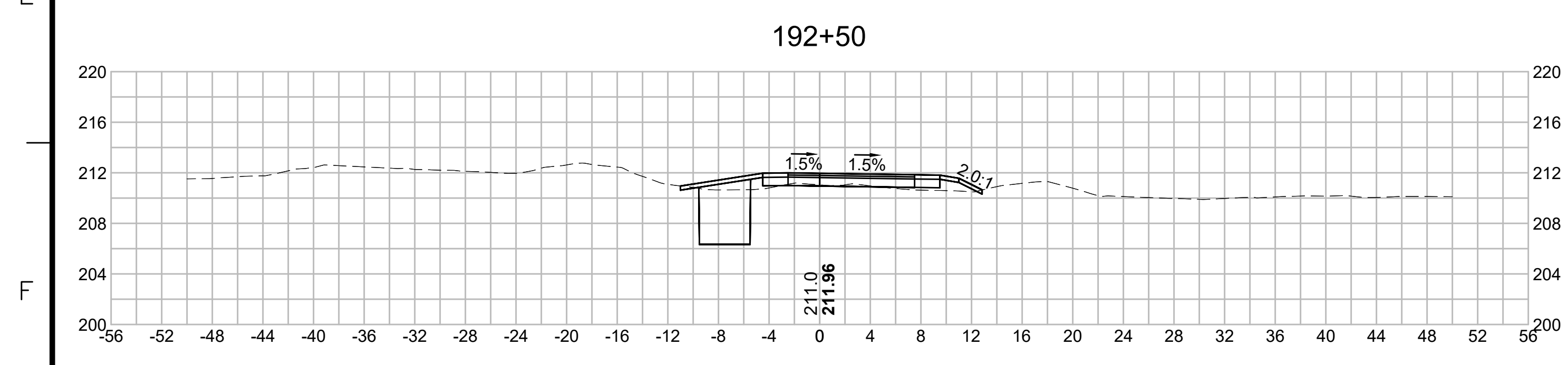
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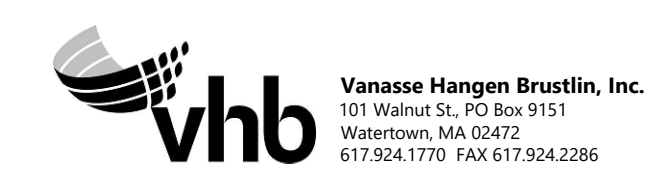


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Vanasse Hangen Brustlin, Inc.
101 Walnut St., PO Box 9151
Watertown, MA 02472
617.224.1770 FAX 617.924.2286

N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 237 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

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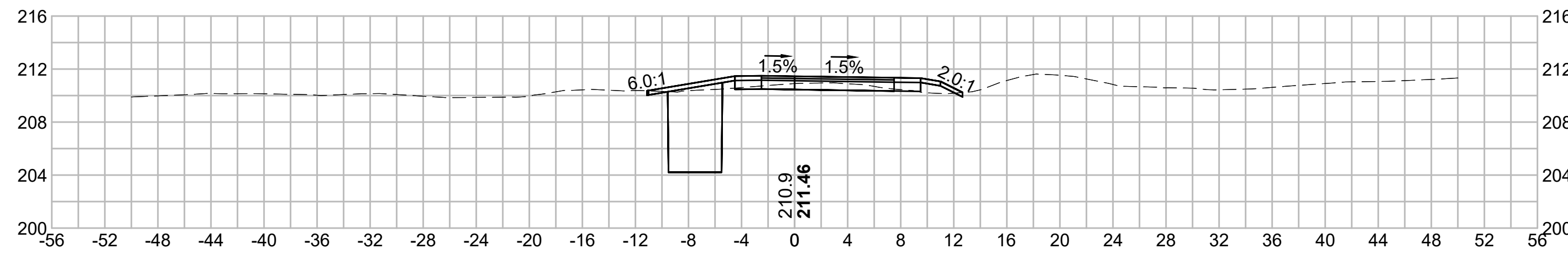
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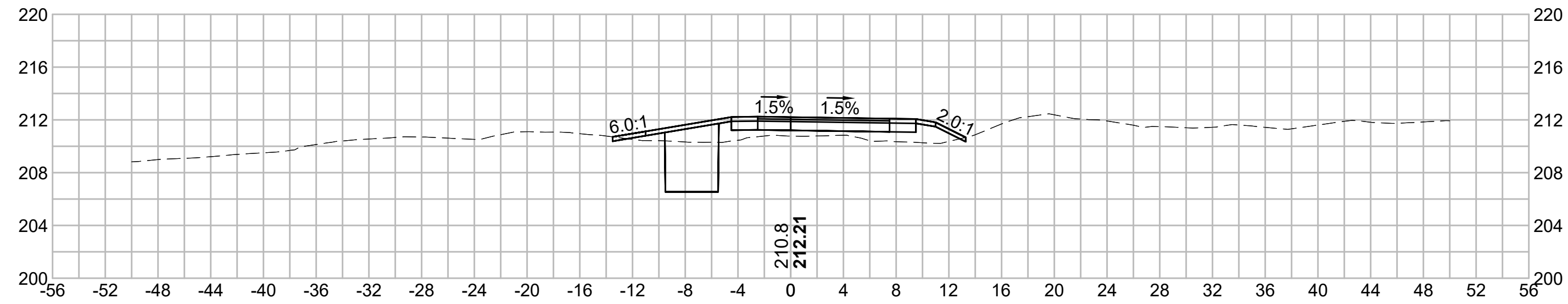
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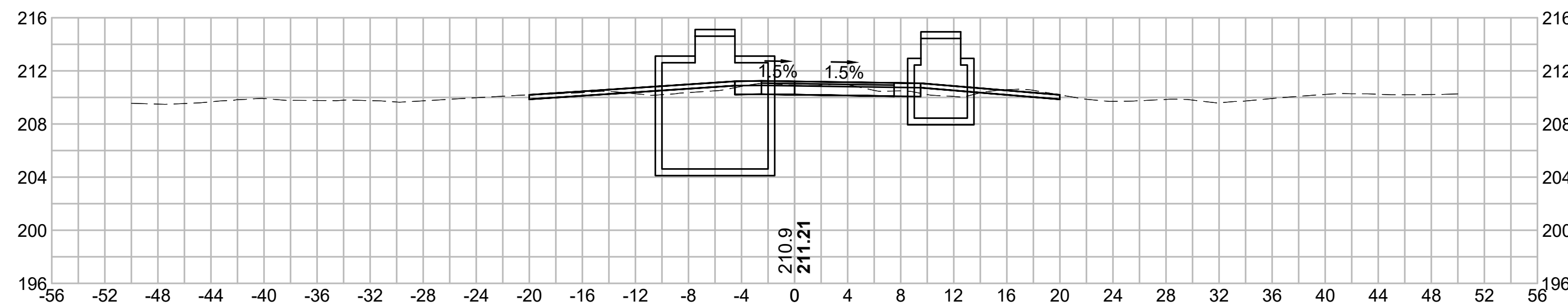
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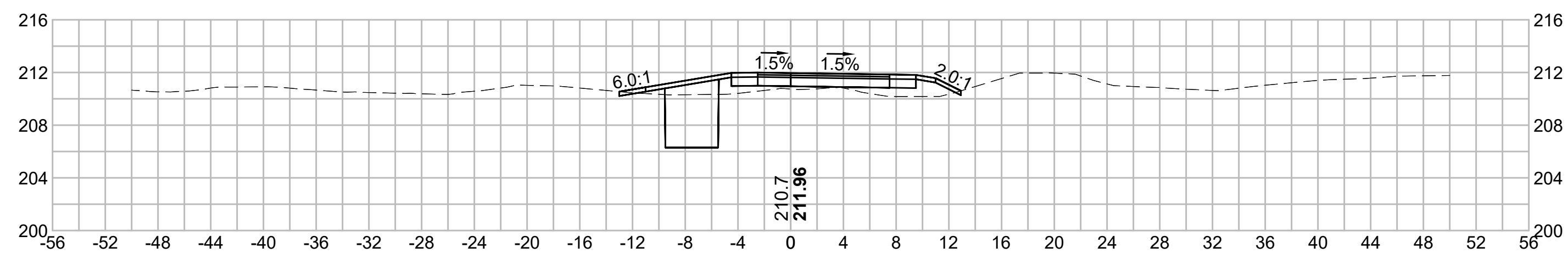
198+00



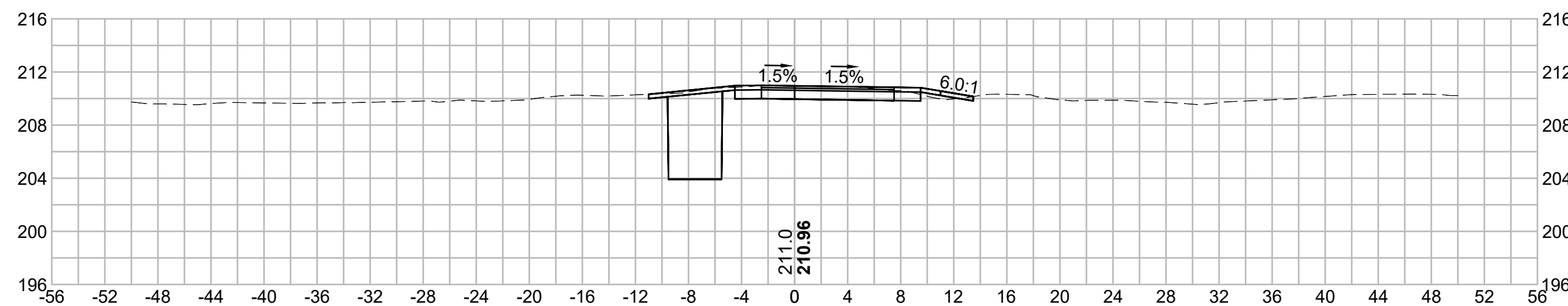
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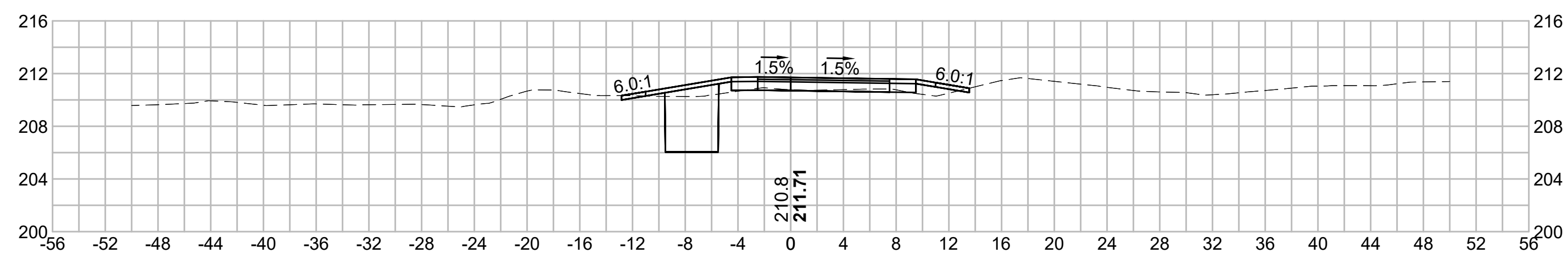
197+50



195+50



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N.O.	DESCRIPTION	BY	DATE	APPR.
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SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 238 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MS
DRAWING NO.	REV.			

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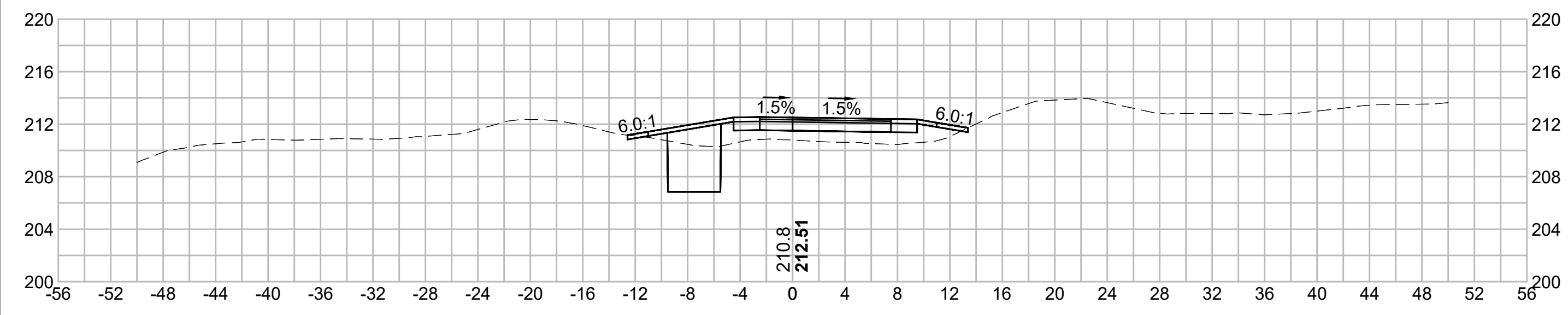
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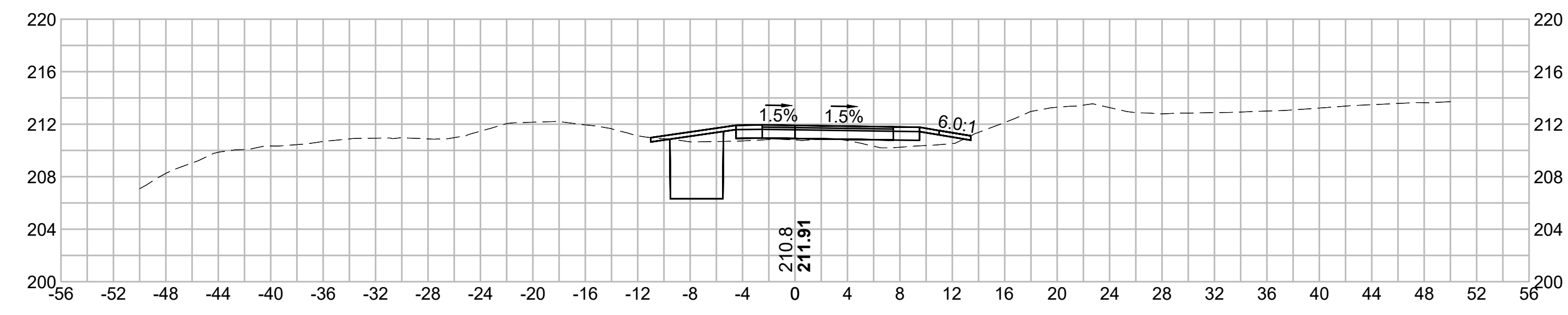
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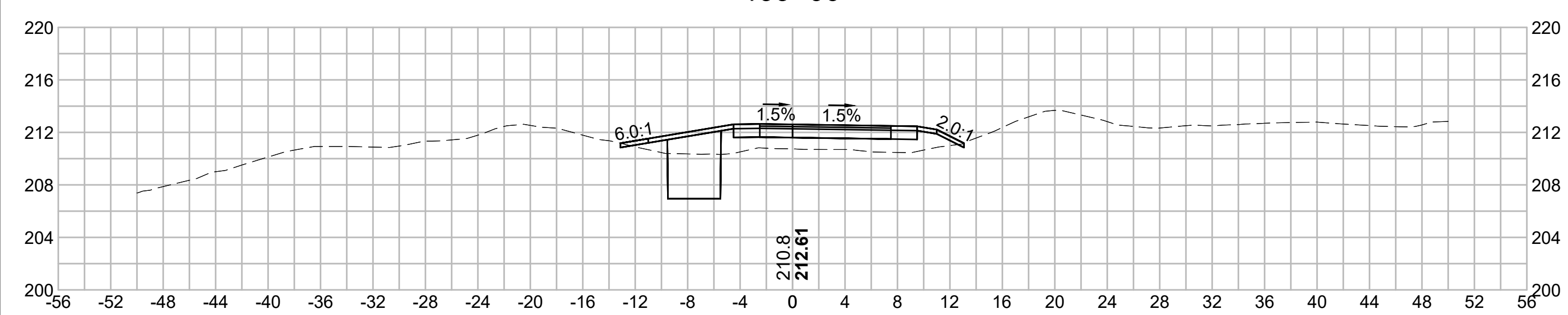
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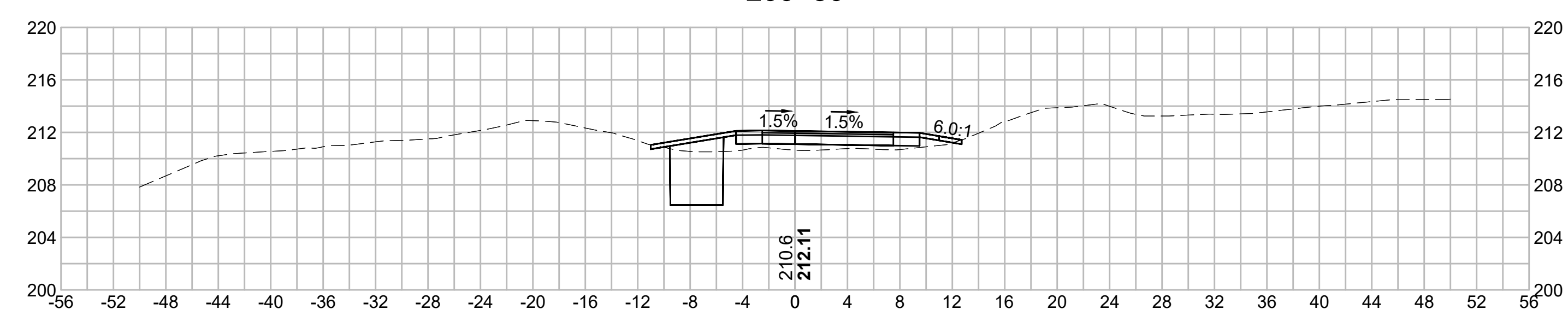
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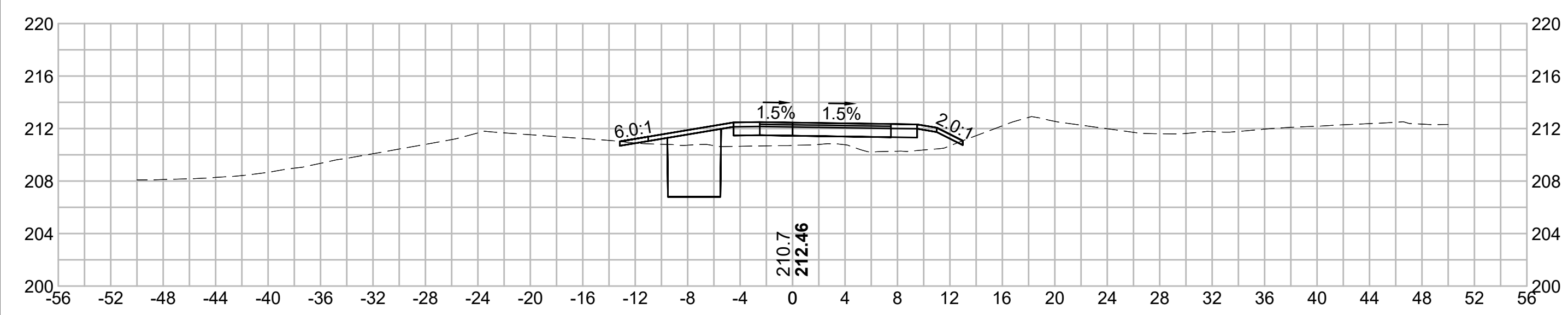
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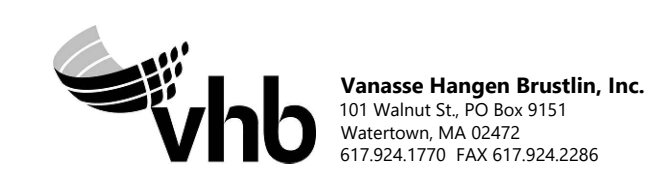
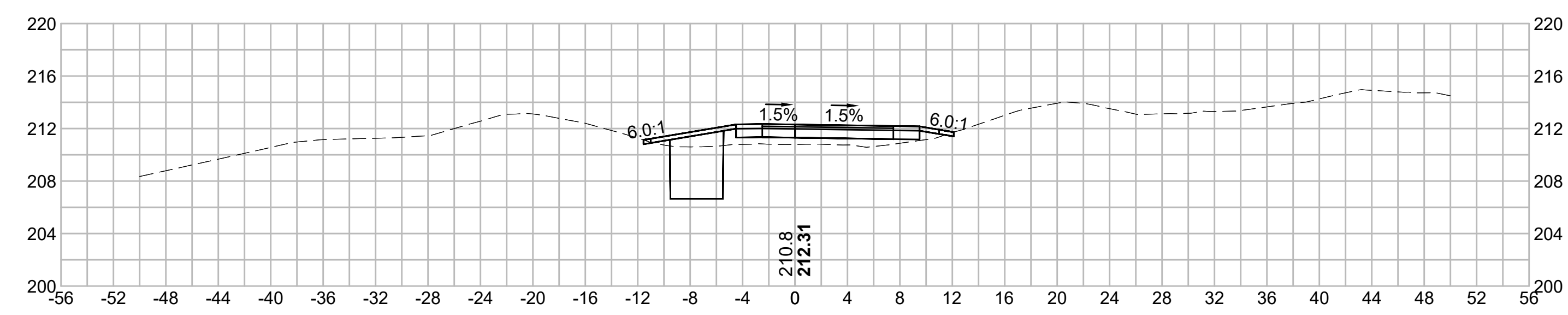
200+50



198+50



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N O.	DESCRIPTION	BY	DATE	APPR.
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SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 239 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

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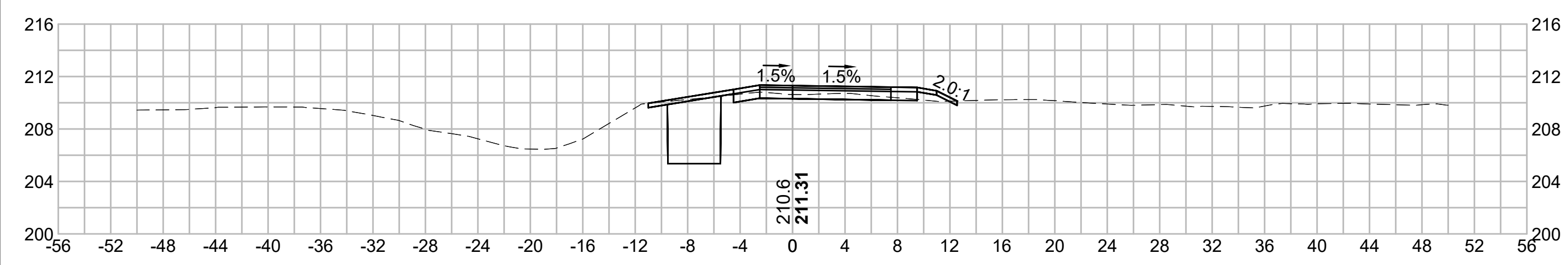
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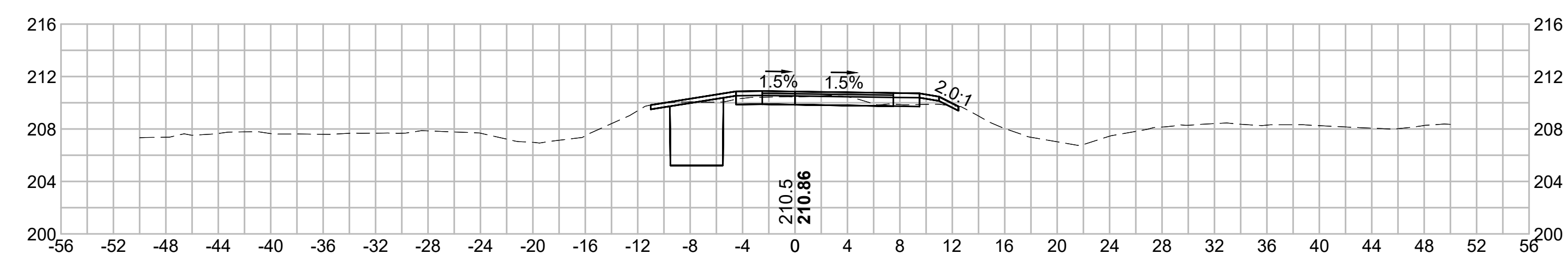
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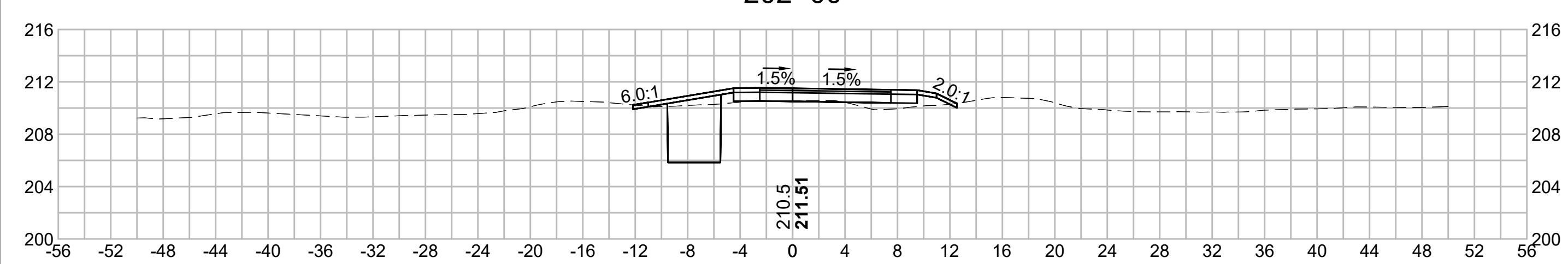
202+50



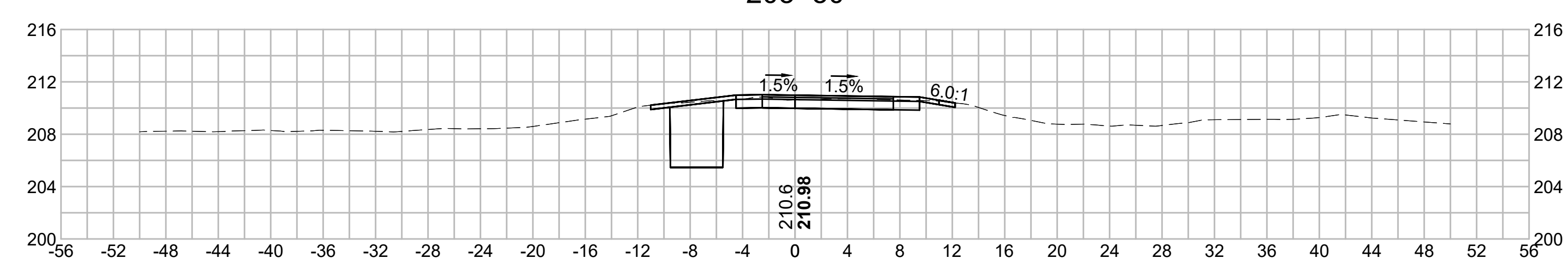
204+00



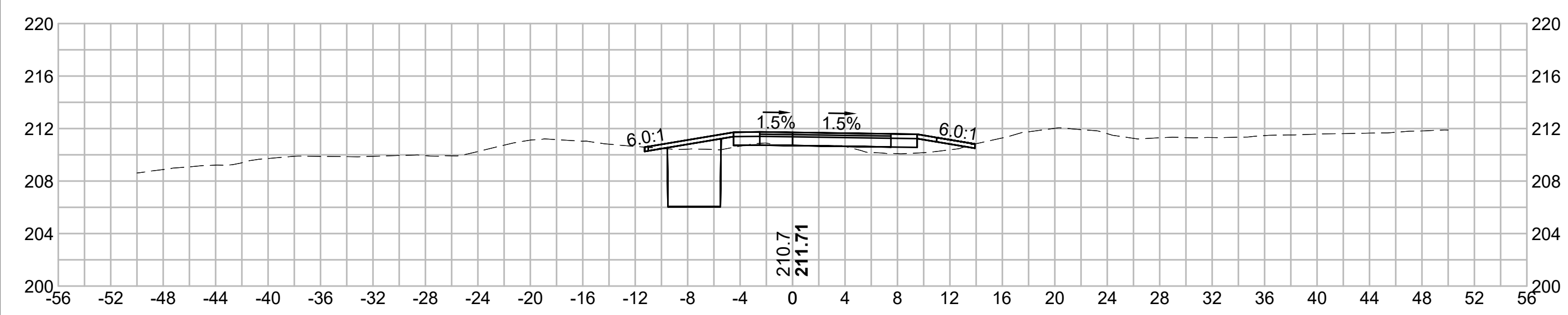
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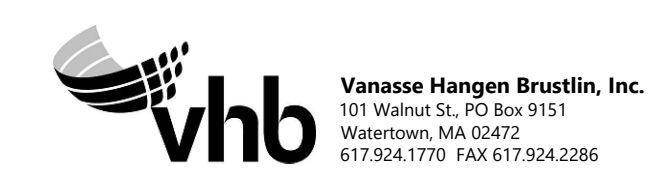
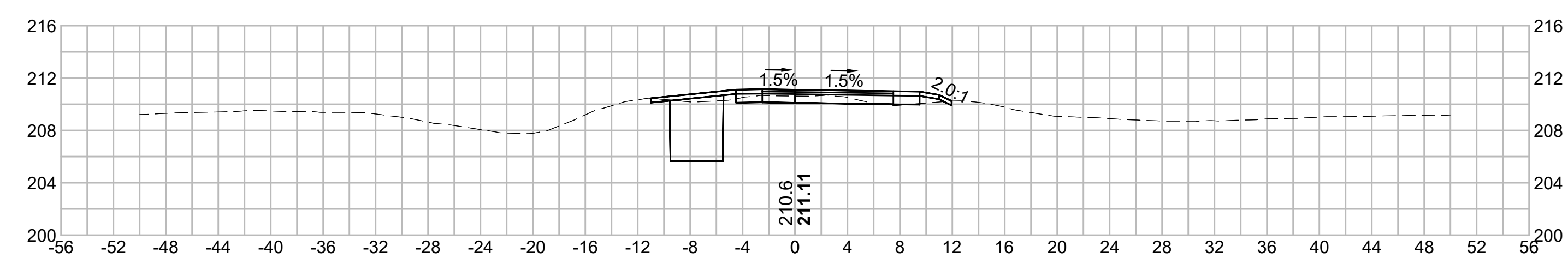
203+50



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N.O.	DESCRIPTION	BY	DATE	APPR.
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SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 2400F349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

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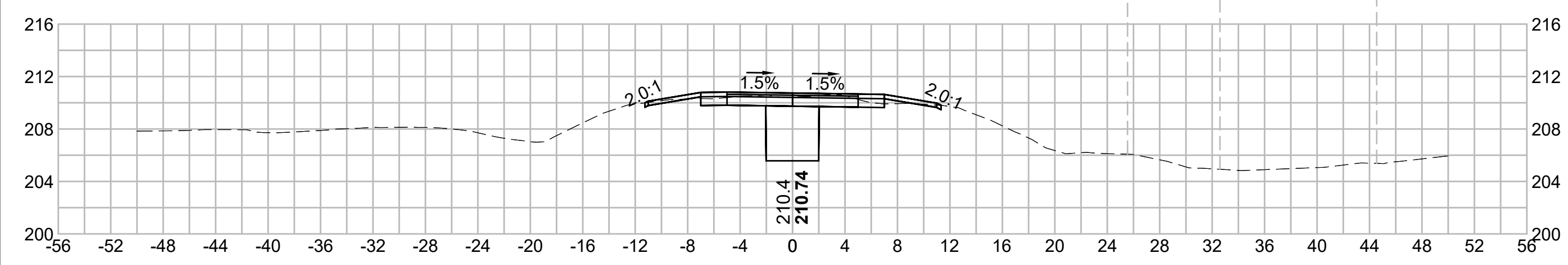
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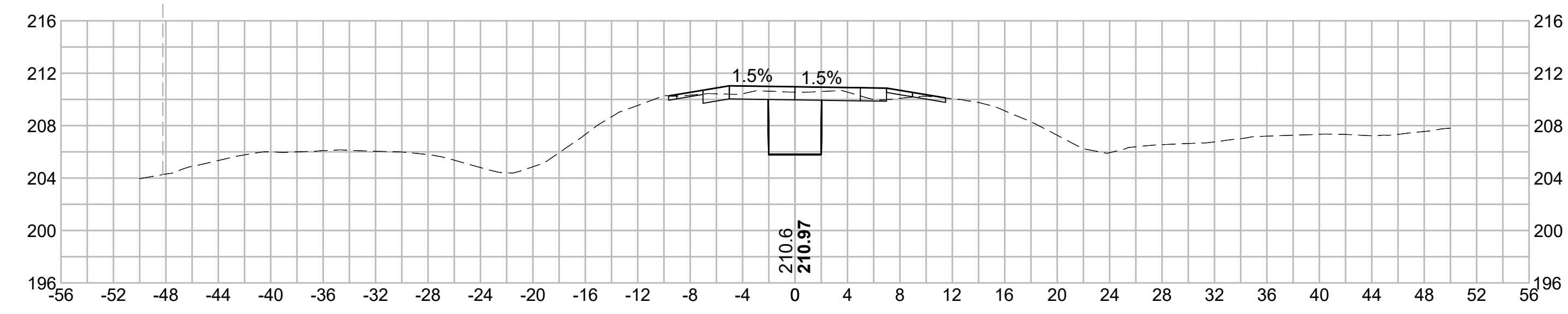
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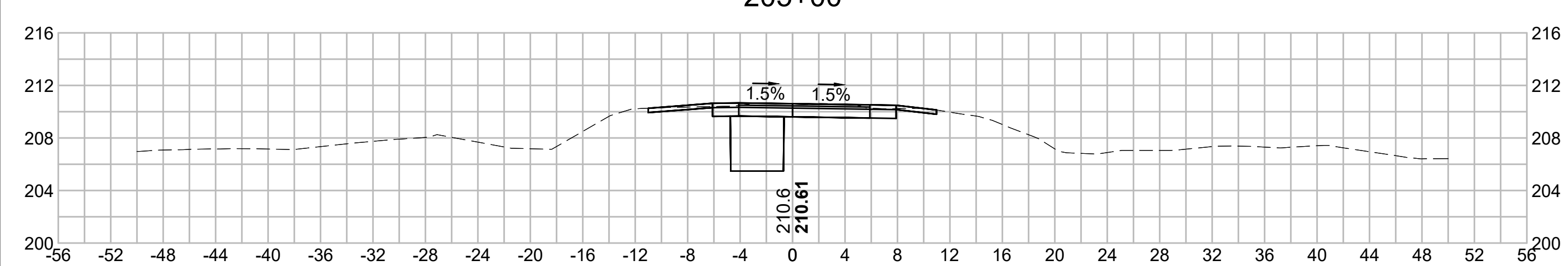
205+50



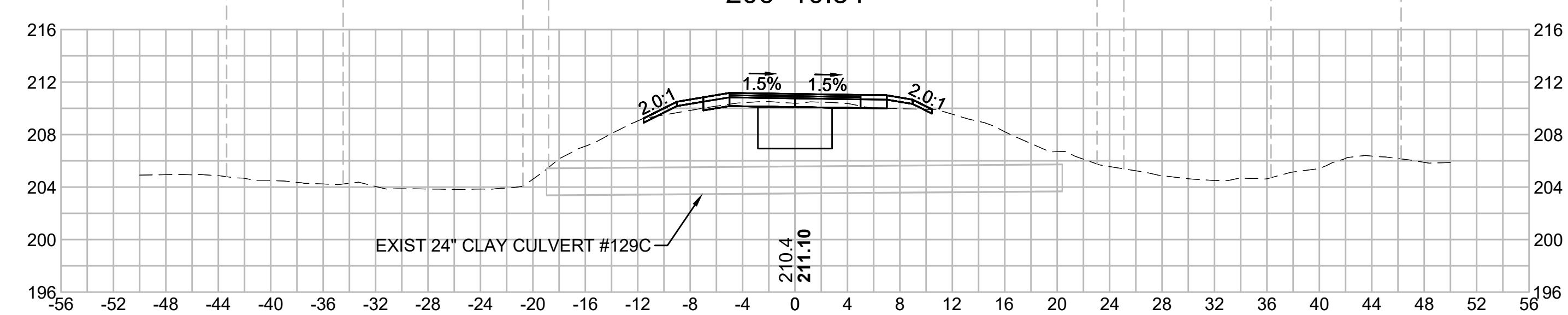
206+50



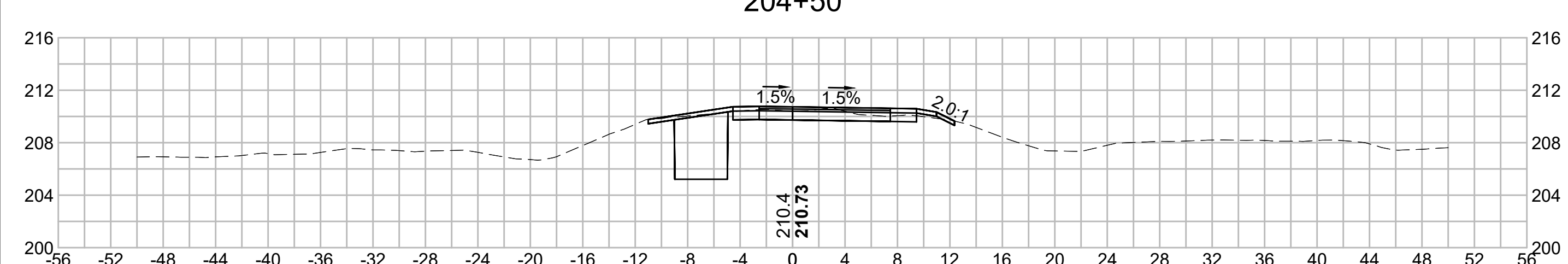
205+00



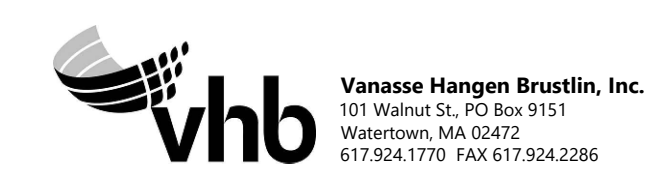
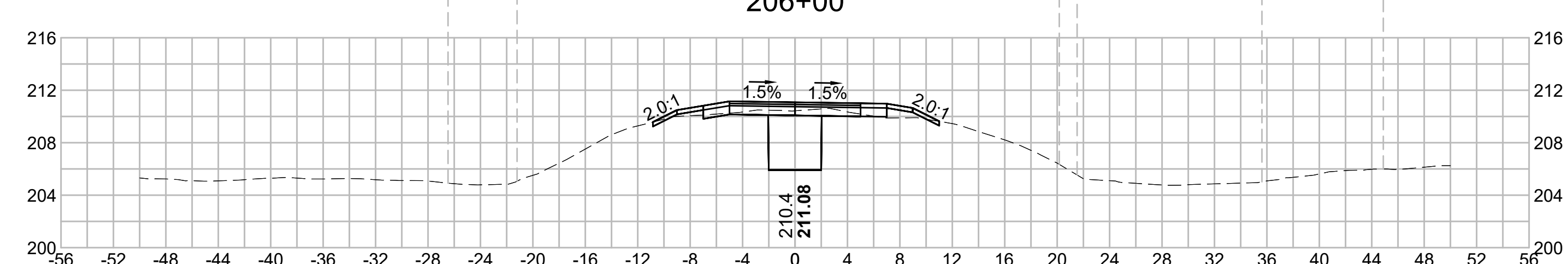
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204+50

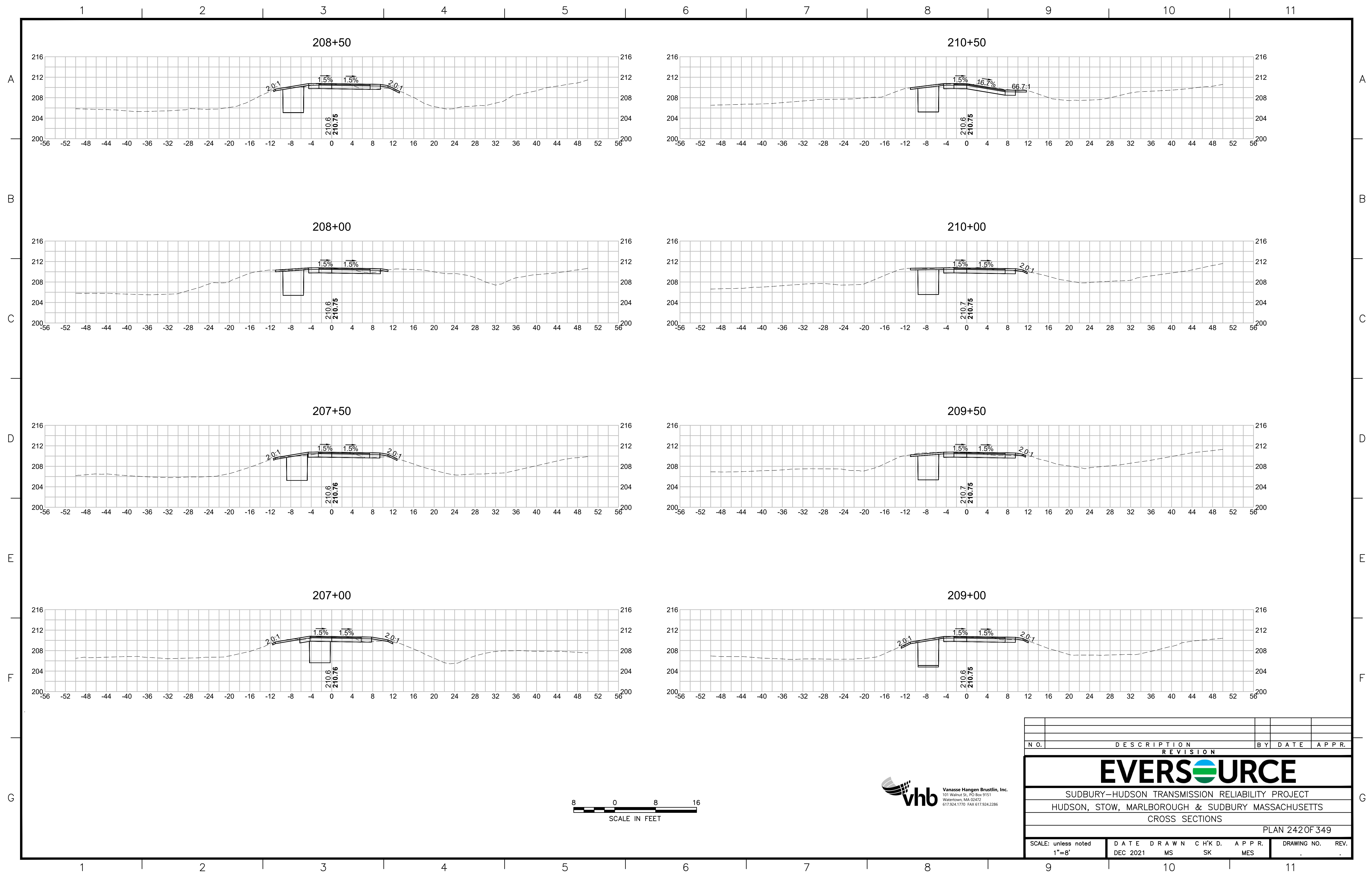


206+00

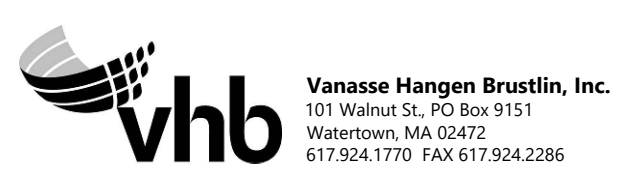


N.O.	DESCRIPTION	BY	DATE	APPR.
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SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 2410F349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

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NO.		DESCRIPTION		BY		DATE		APPR.	
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EVERSOURCE									
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT									
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
CROSS SECTIONS									
PLAN 242 OF 349									
SCALE: unless noted 1"=8'		DATE DEC 2021		DRAWN MS		C'H'K'D. SK		APPR. MES	
DRAWING NO.		REV.							



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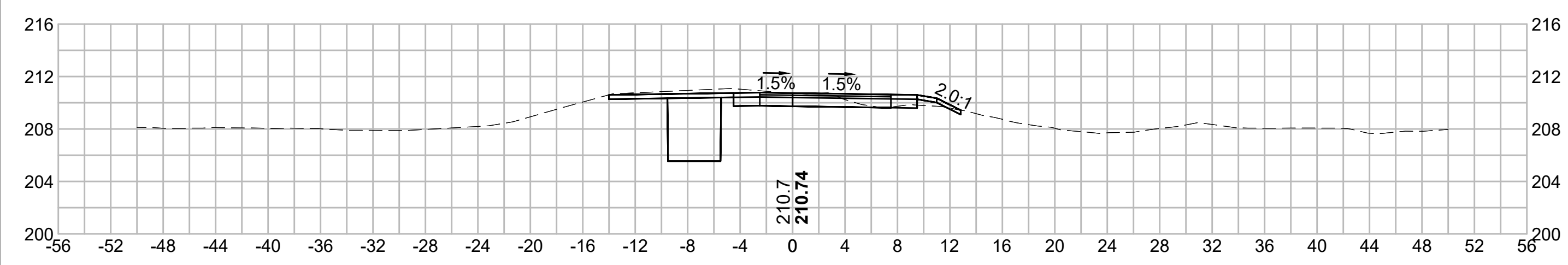
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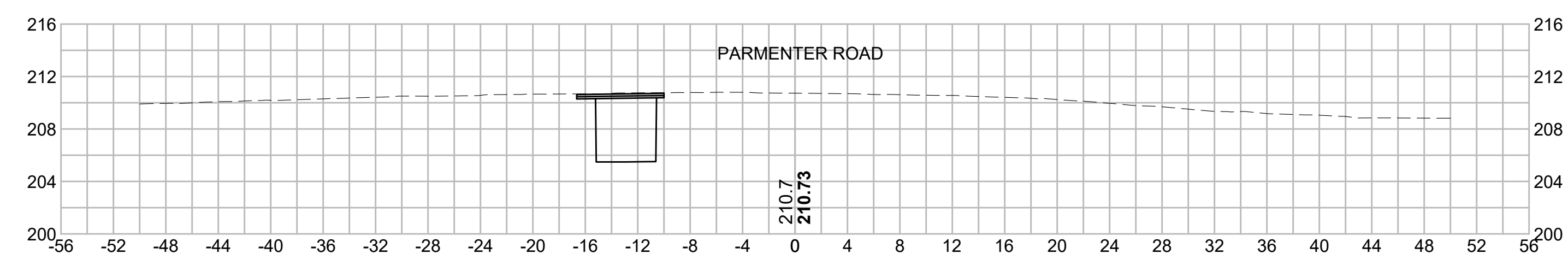
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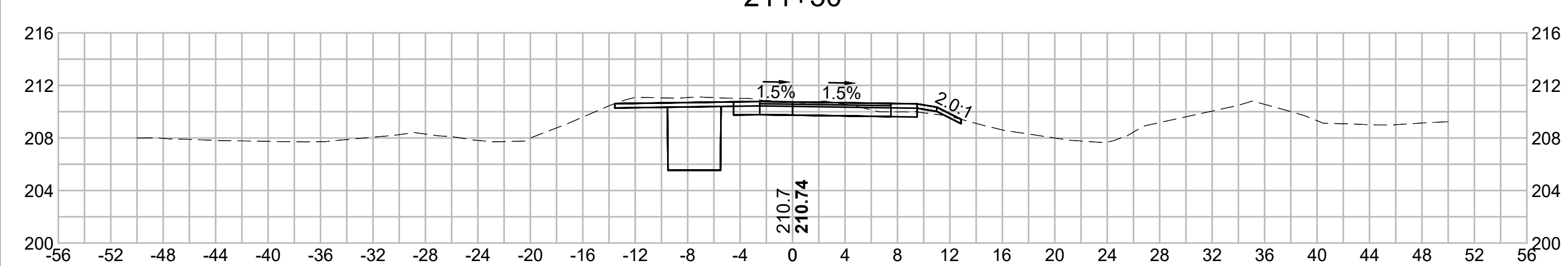
212+00



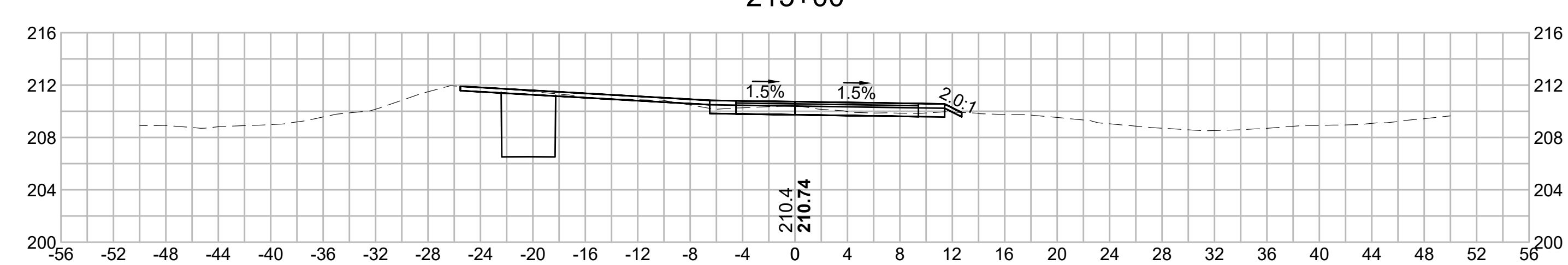
213+50



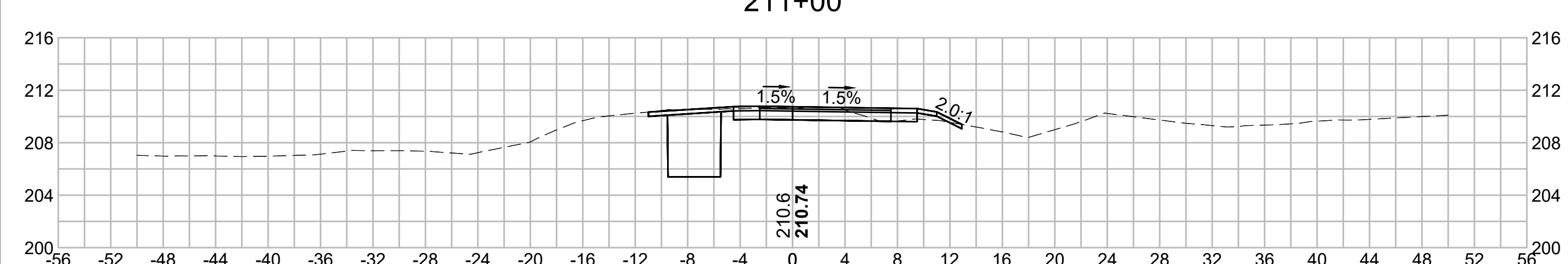
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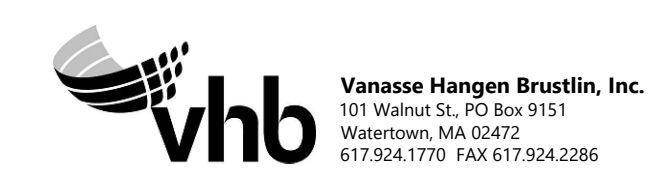
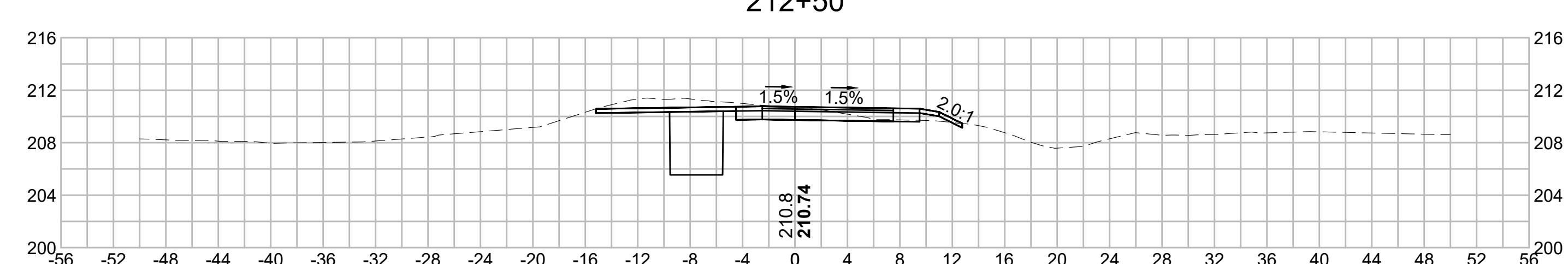
213+00



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NO.		DESCRIPTION		BY	DATE	APPR.
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EVERSOURCE						
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT						
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS						
CROSS SECTIONS						
PLAN 243 OF 349						
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES	DRAWING NO.	REV.

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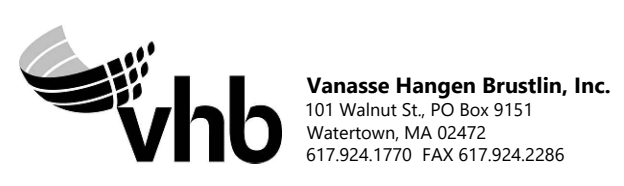
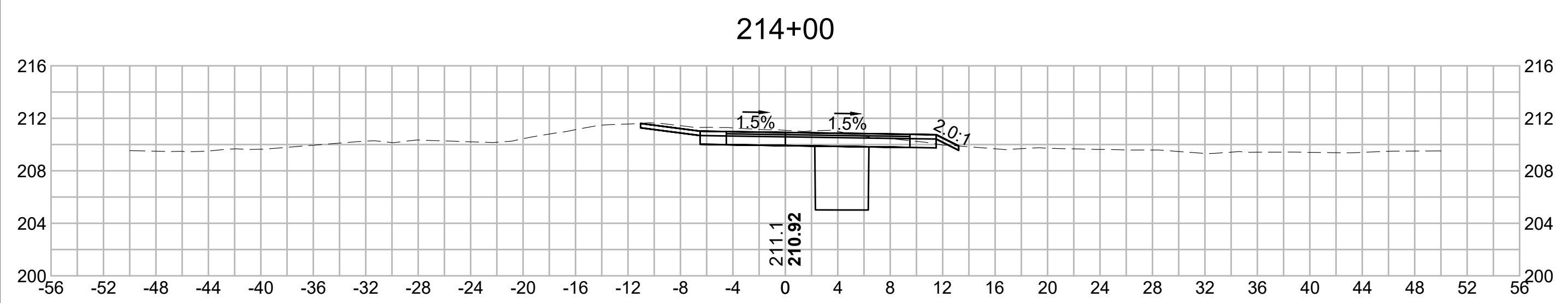
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N.O.	DESCRIPTION	BY	DATE	APPR.
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SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 244 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
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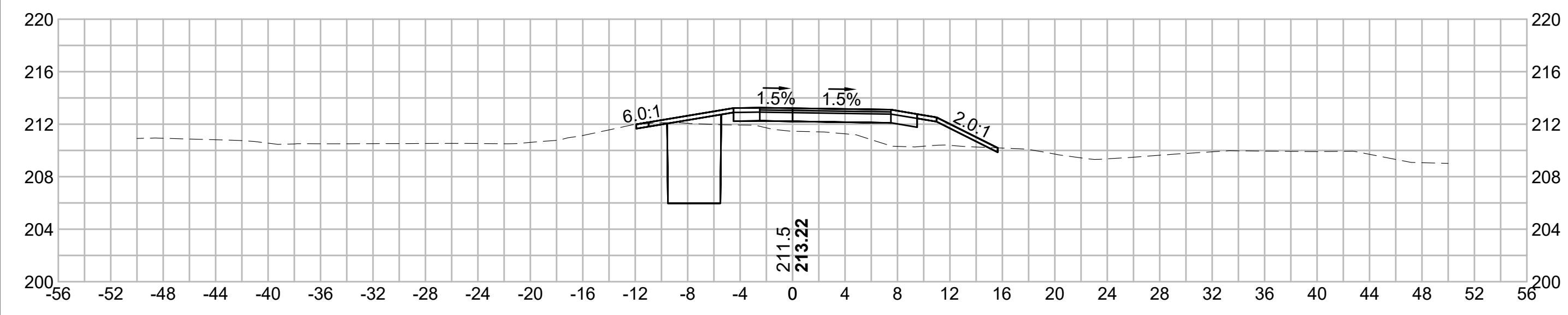
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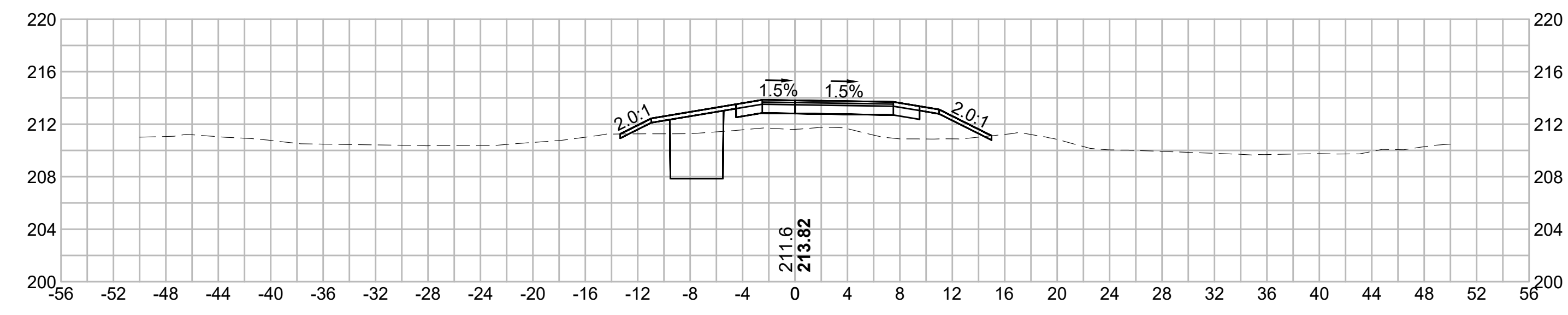
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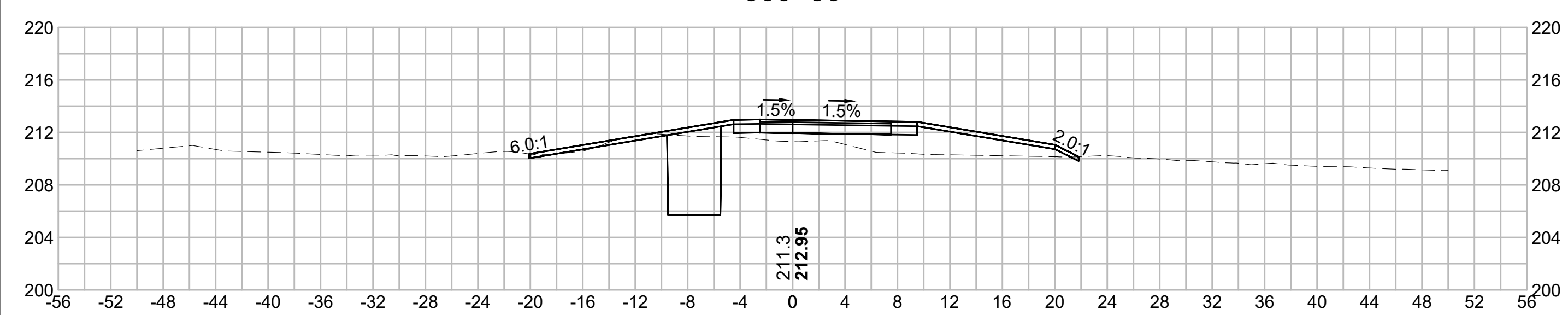
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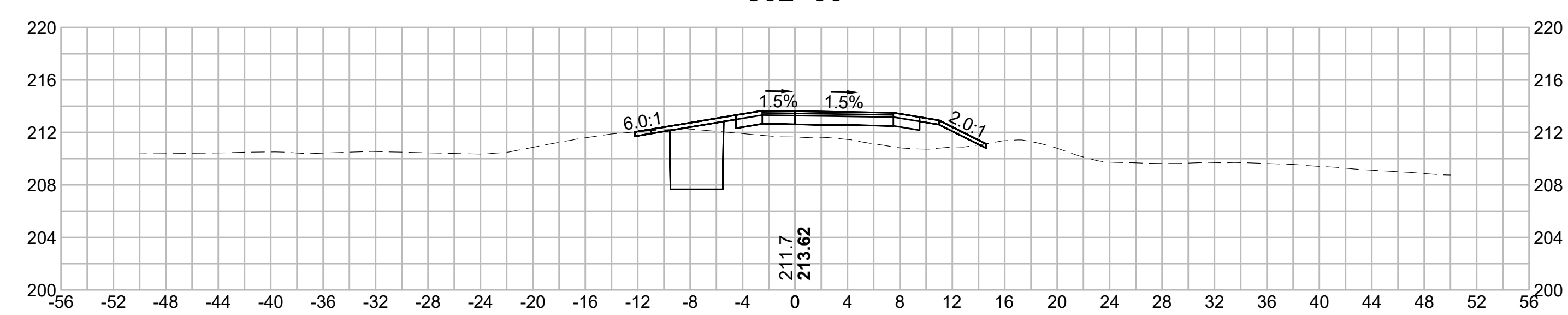
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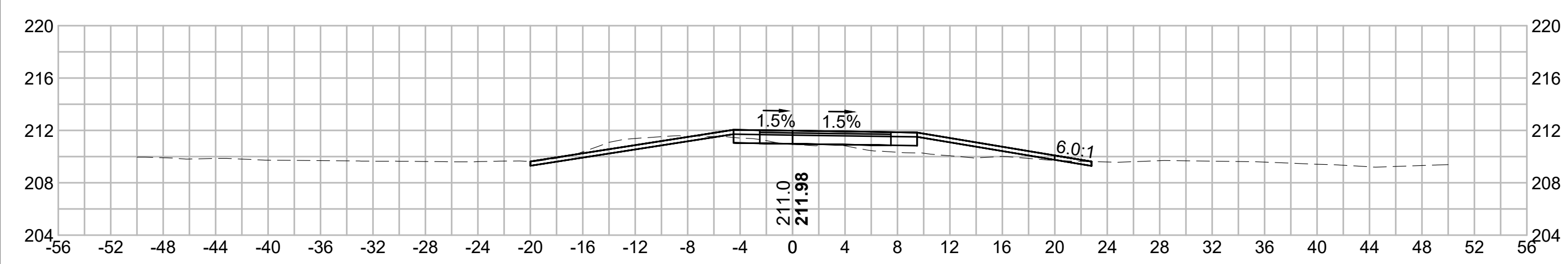
300+50



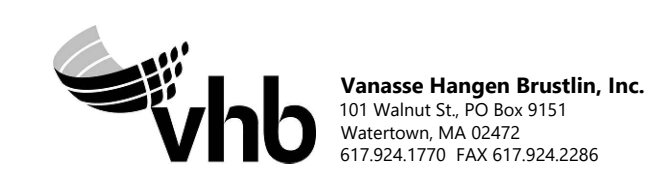
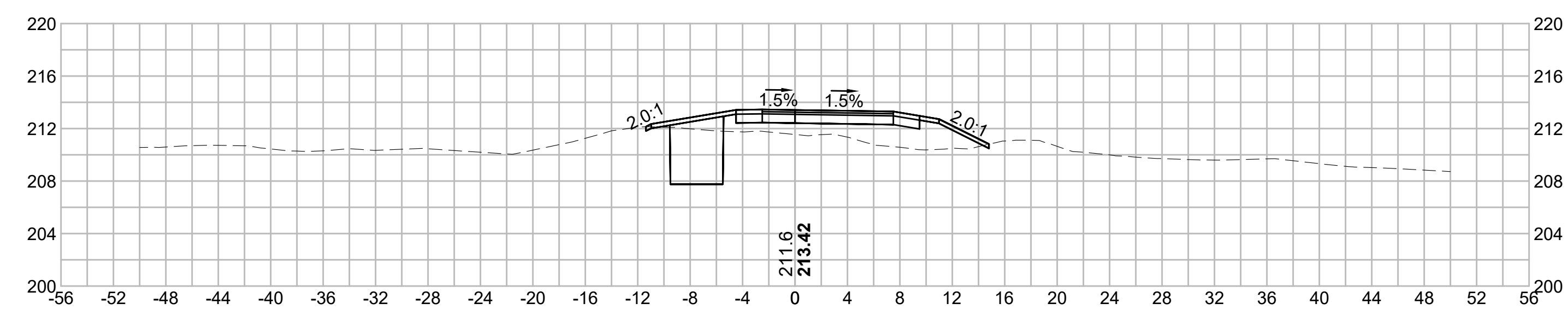
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300+00

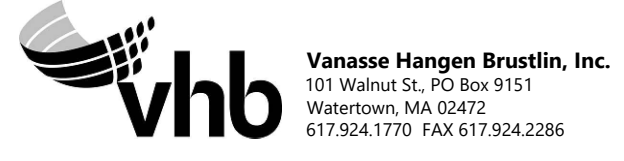
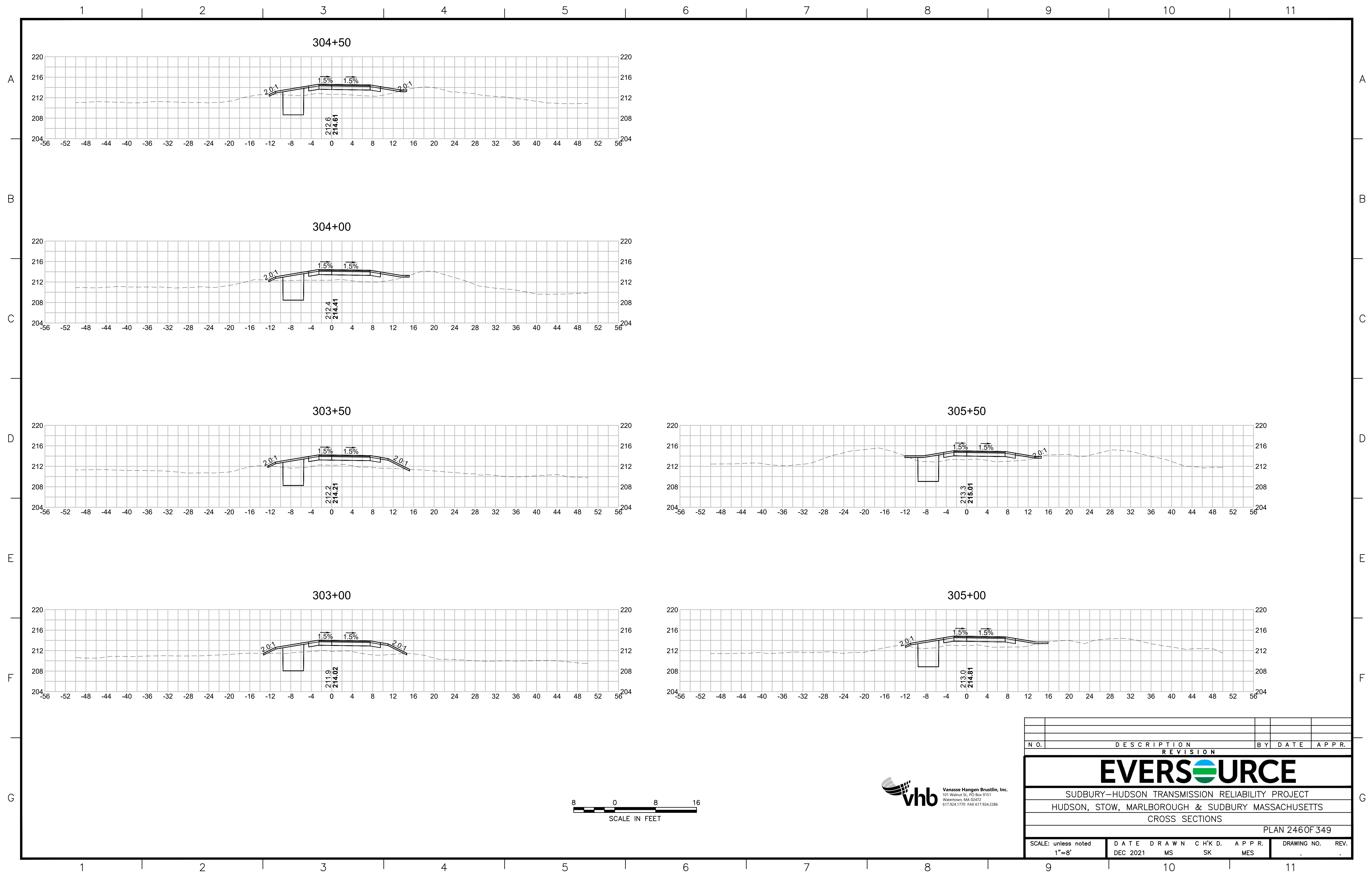


301+50



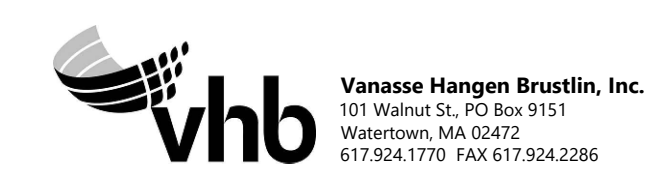
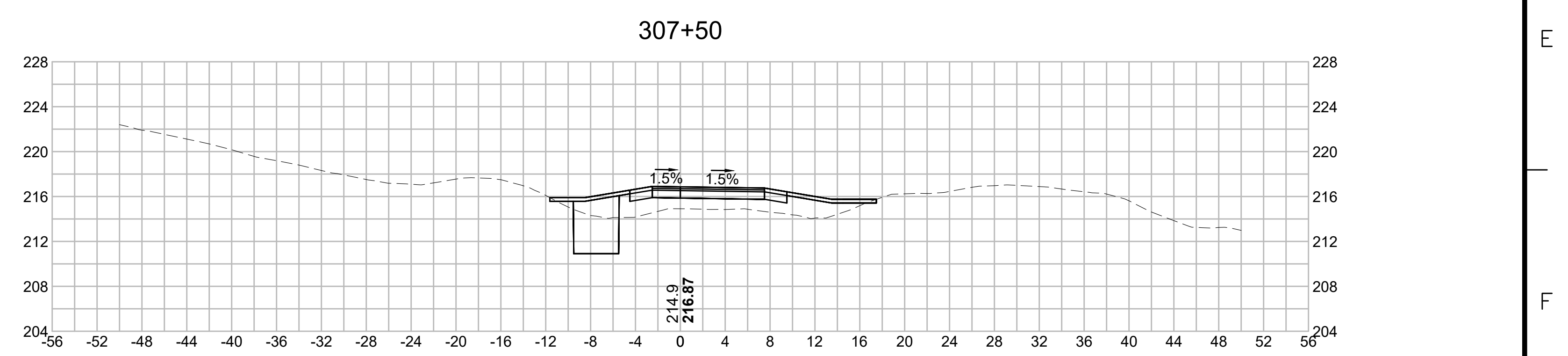
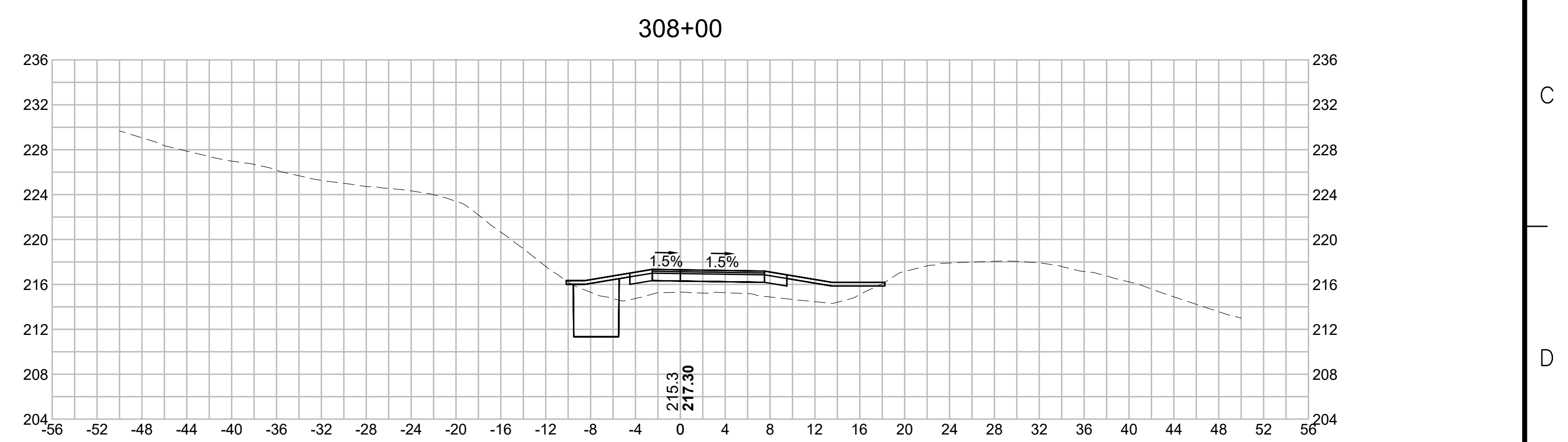
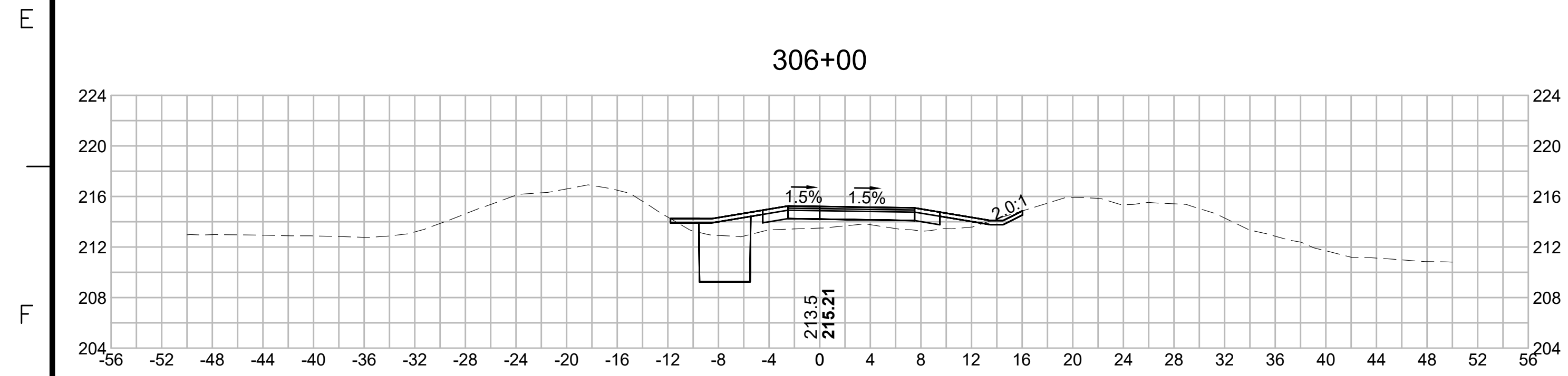
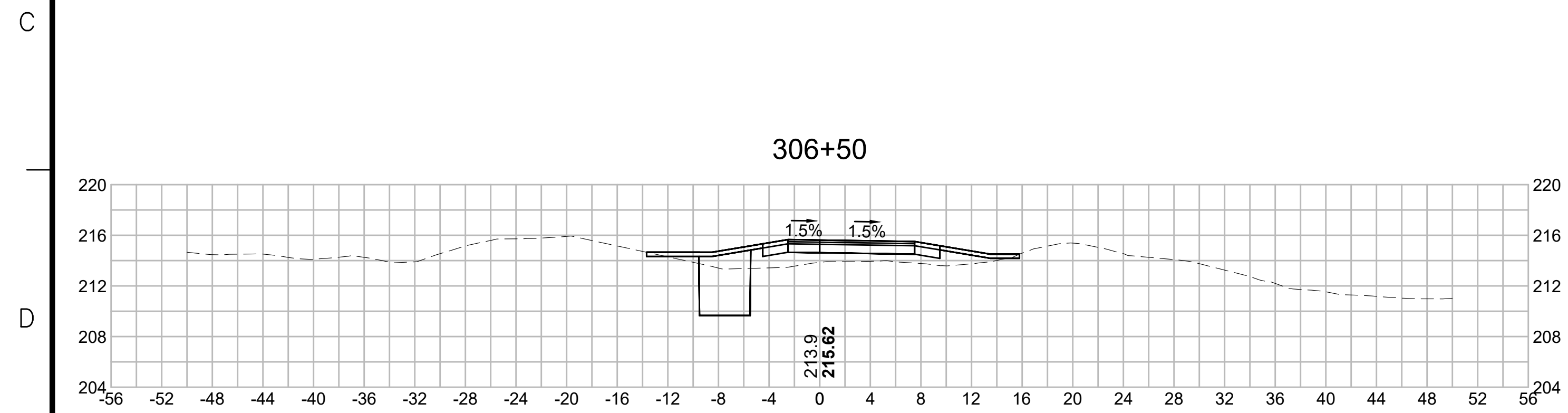
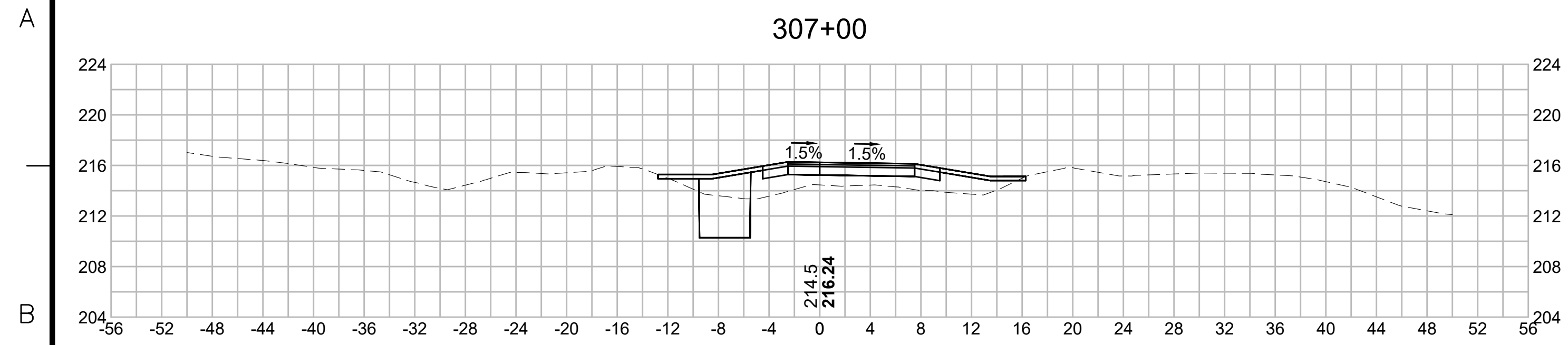
N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 245 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 246 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

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NO.	DESCRIPTION		BY	DATE	APPR.
	REVISION				
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CROSS SECTIONS					
PLAN 247 OF 349					
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	C'H'K D. SK	A P P R. MES	DRAWING NO. REV.

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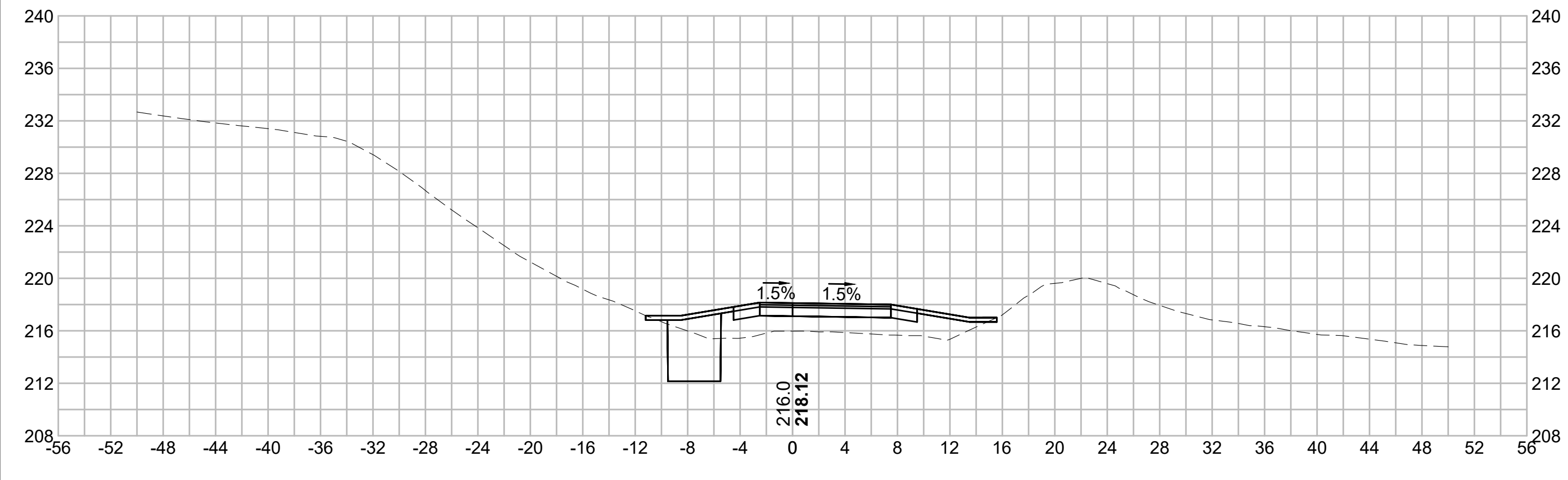
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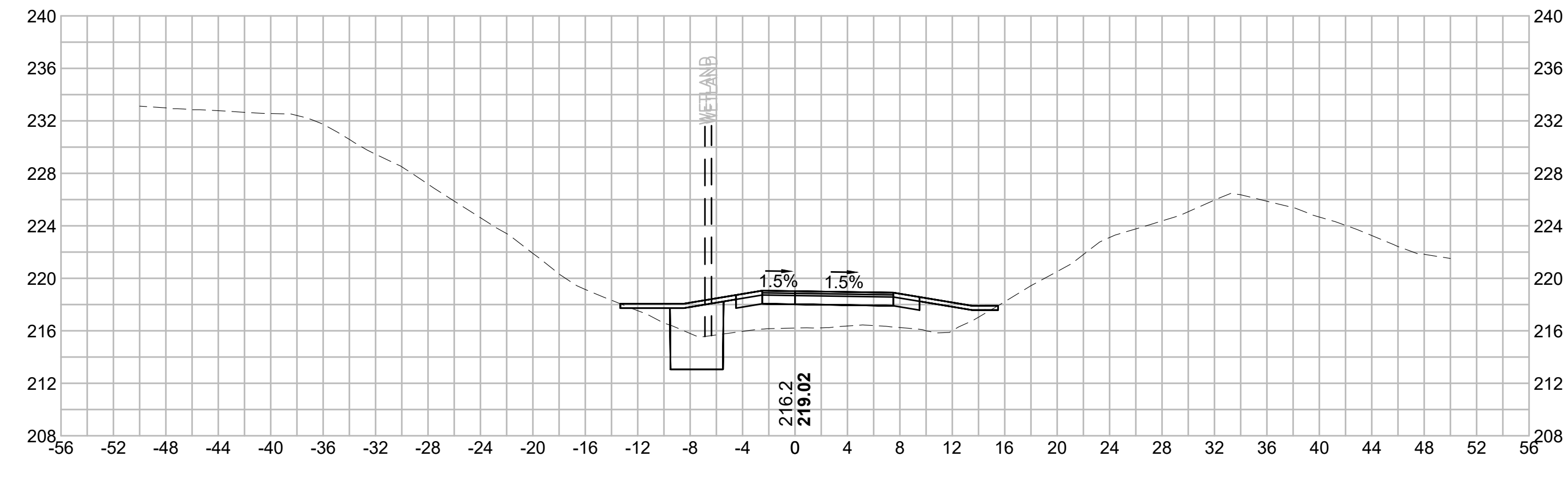
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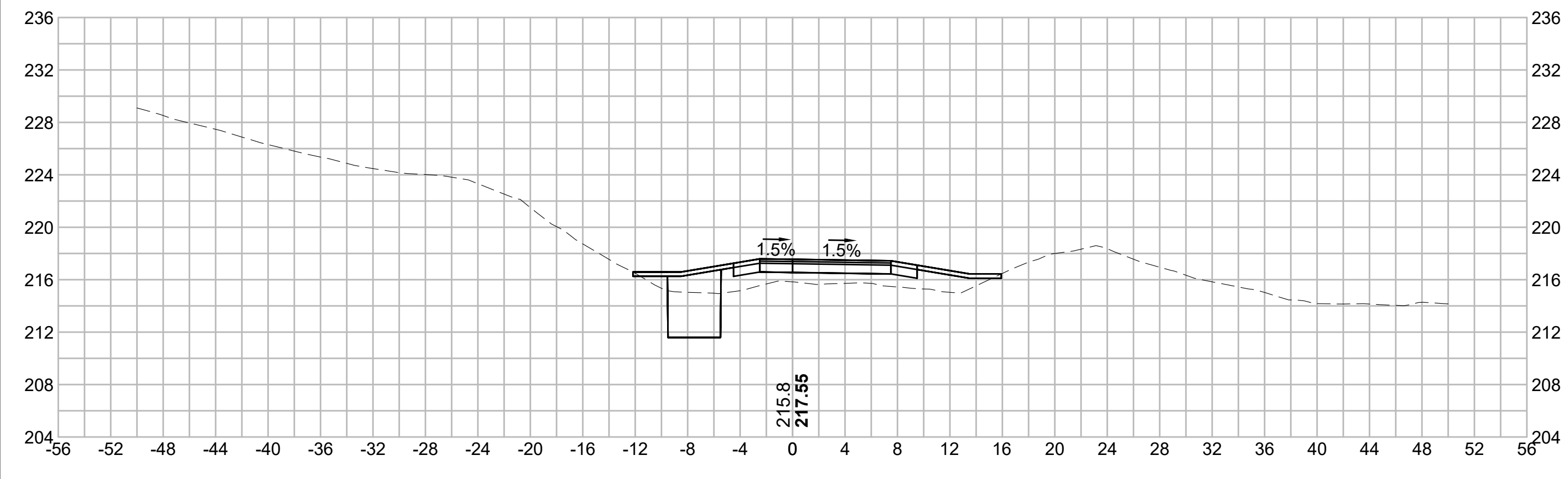
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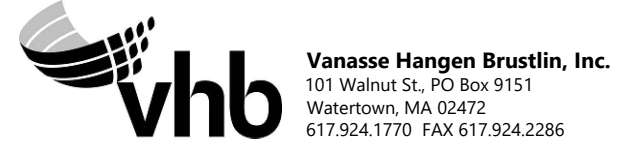
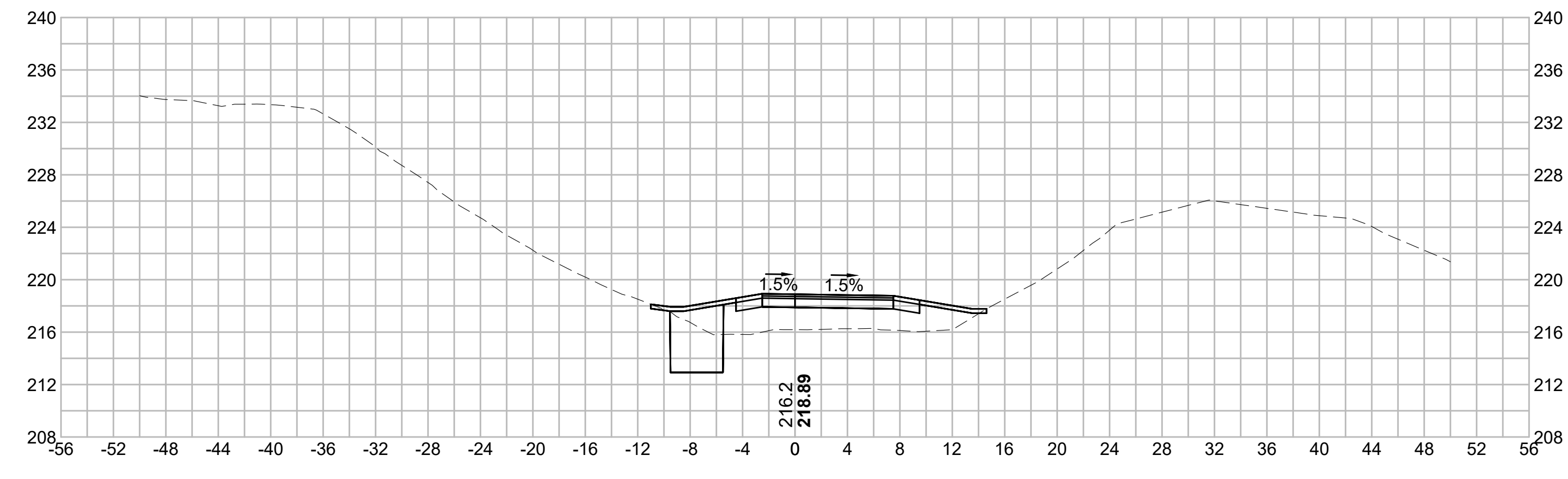
310+00



308+50



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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
CROSS SECTIONS

PLAN 248 OF 349

SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES	DRAWING NO.	REV.
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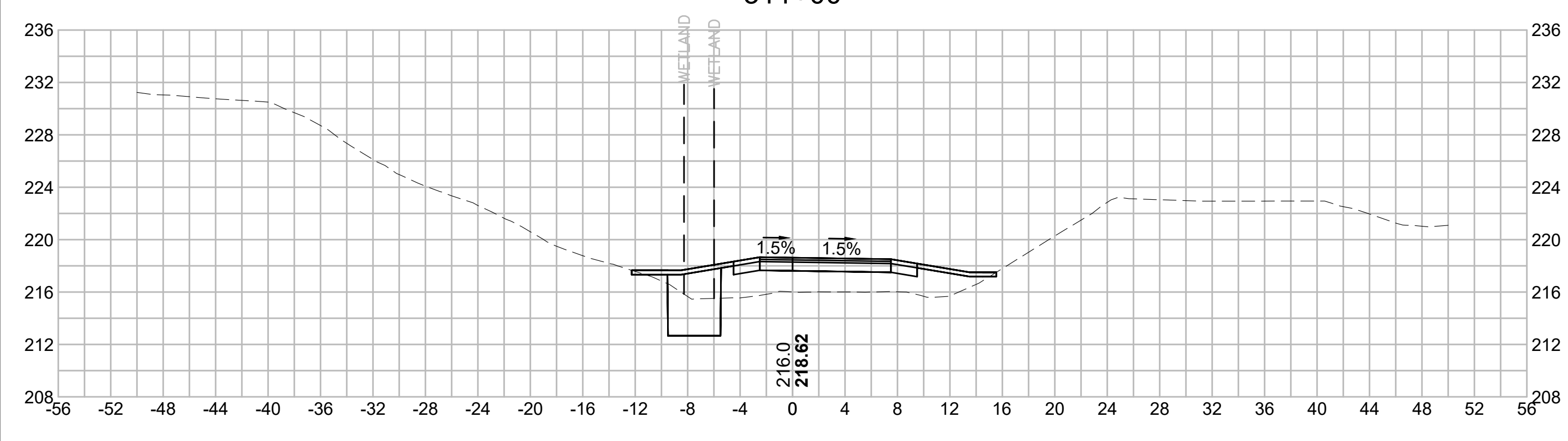
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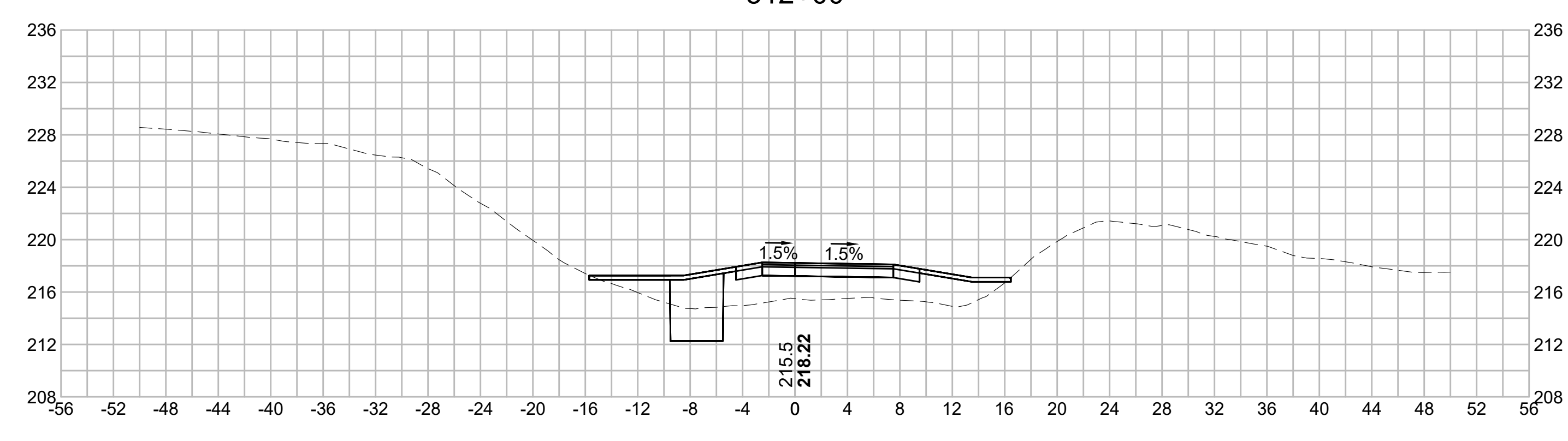
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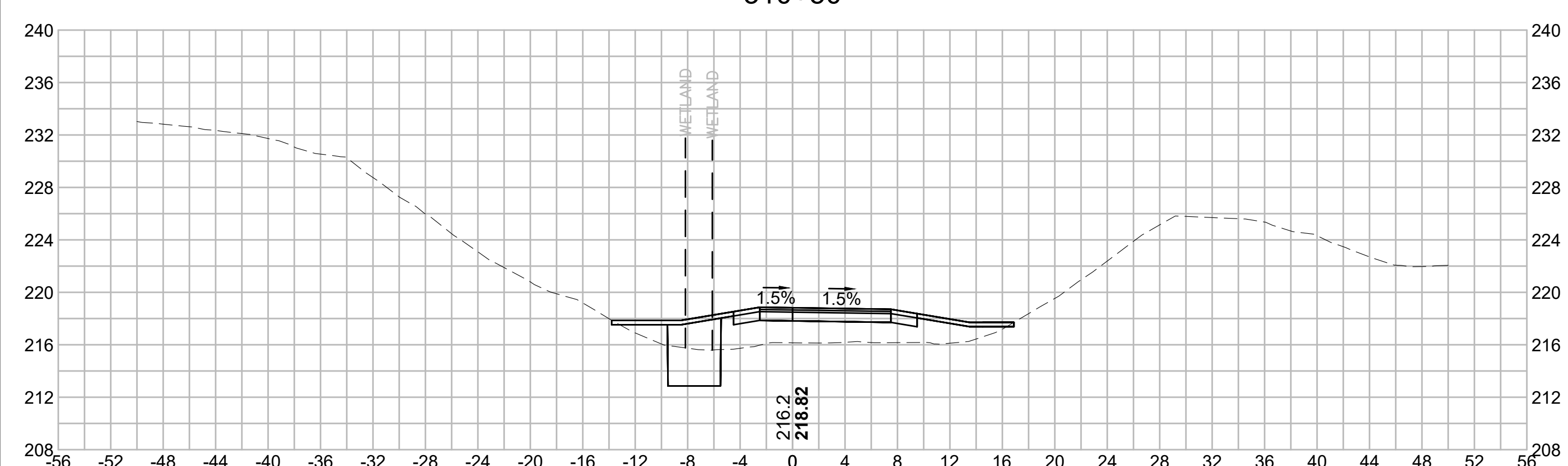
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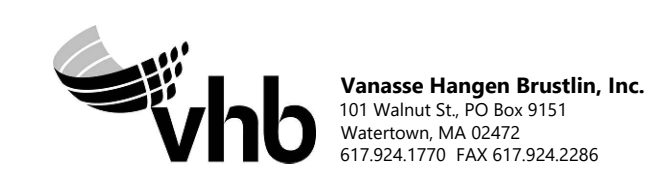
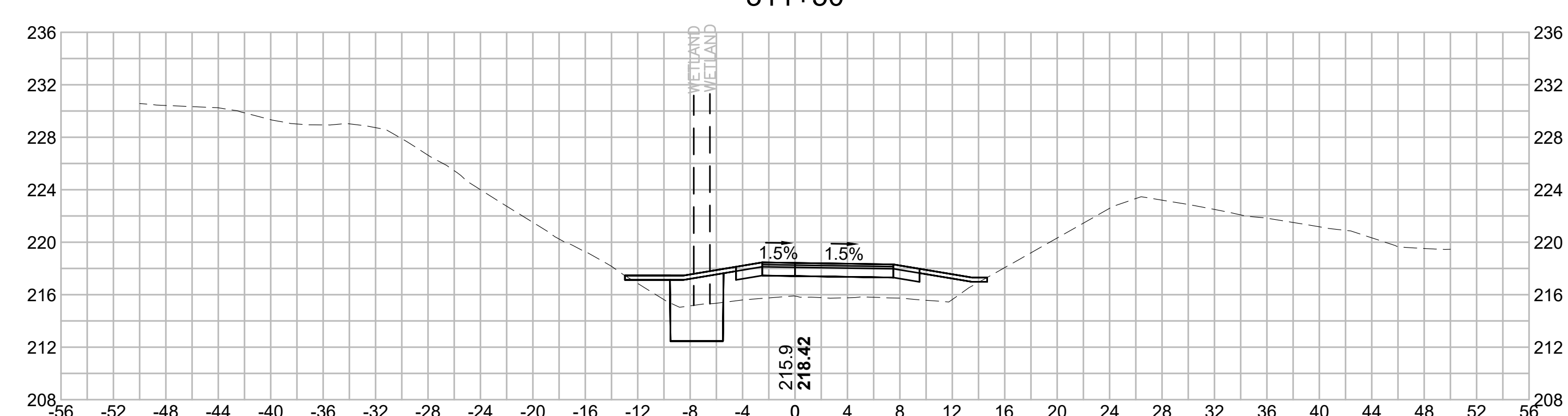
312+00



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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 249 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

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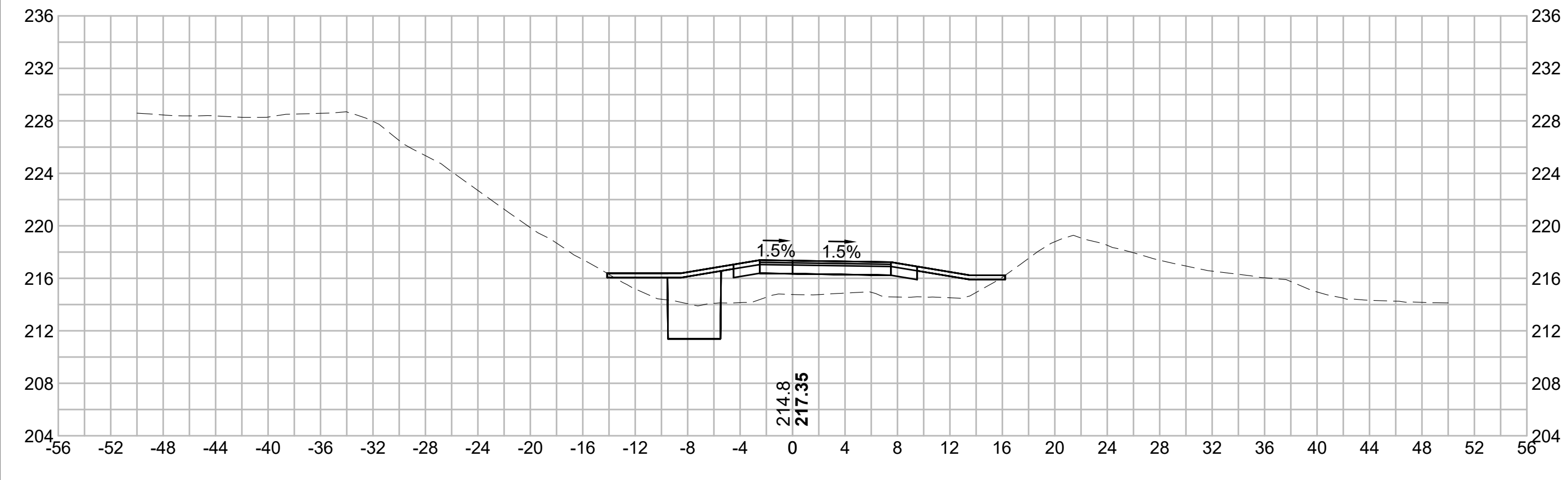
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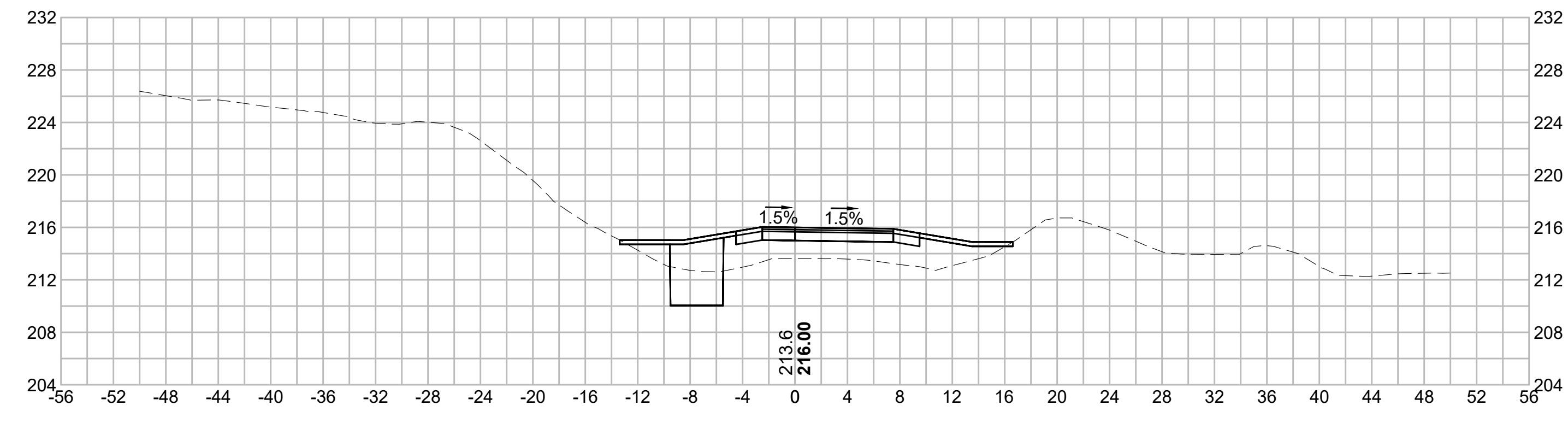
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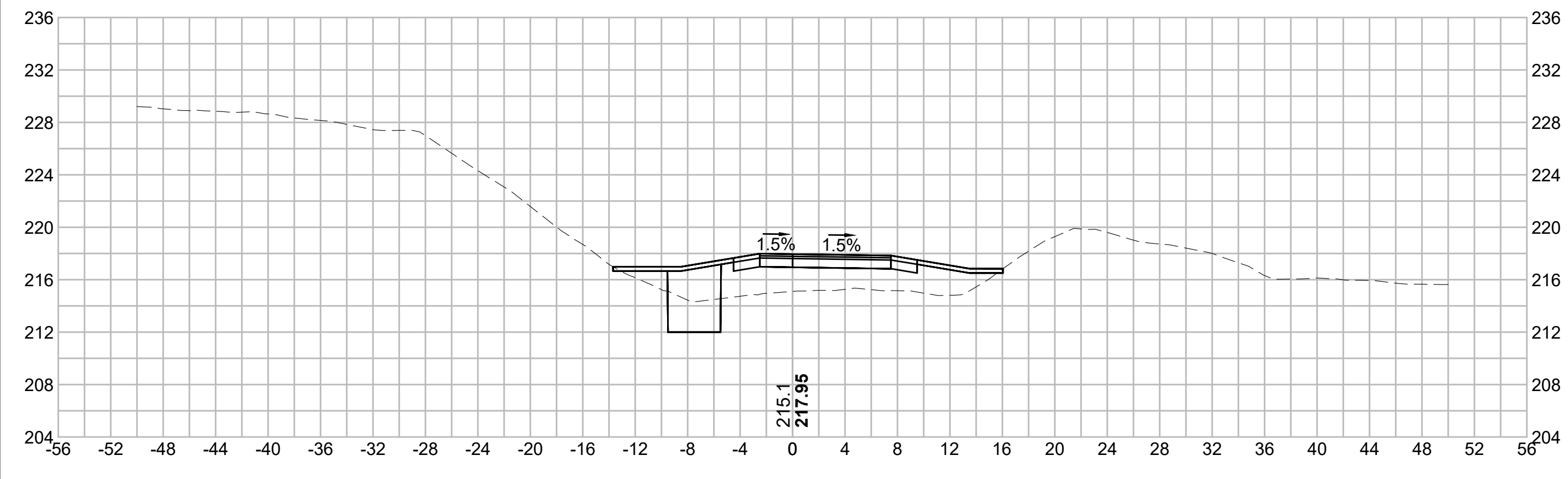
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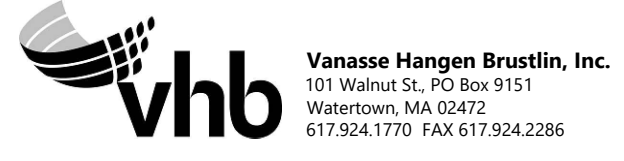
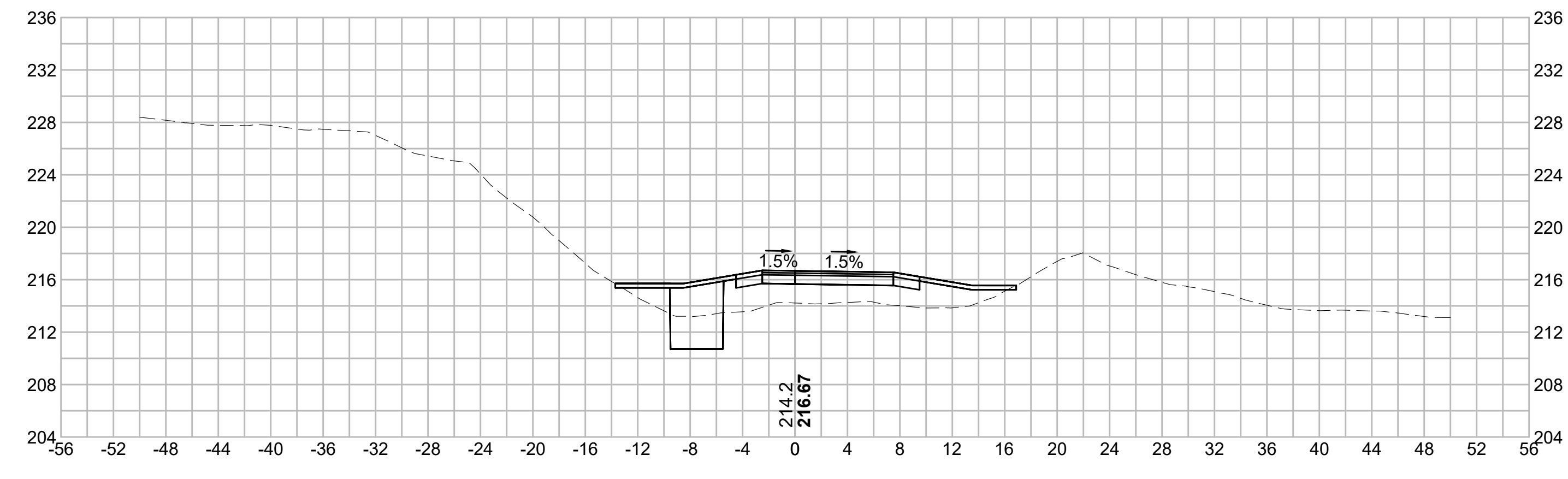
314+00



312+50



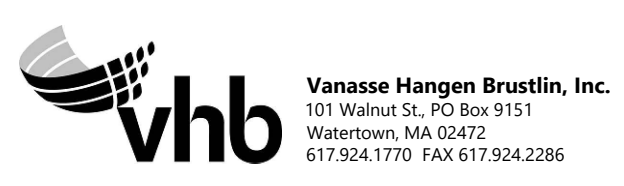
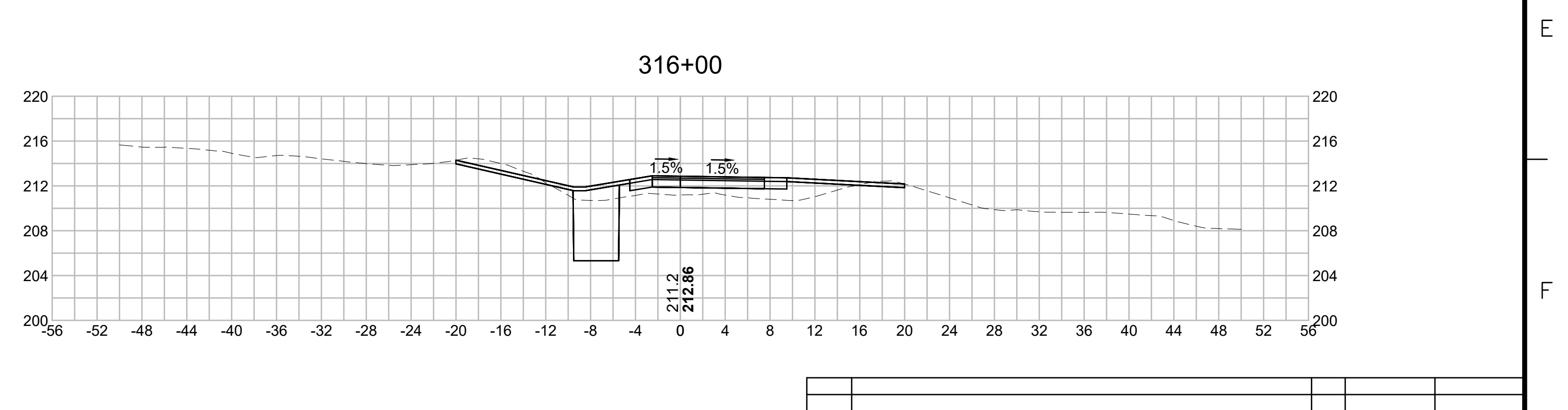
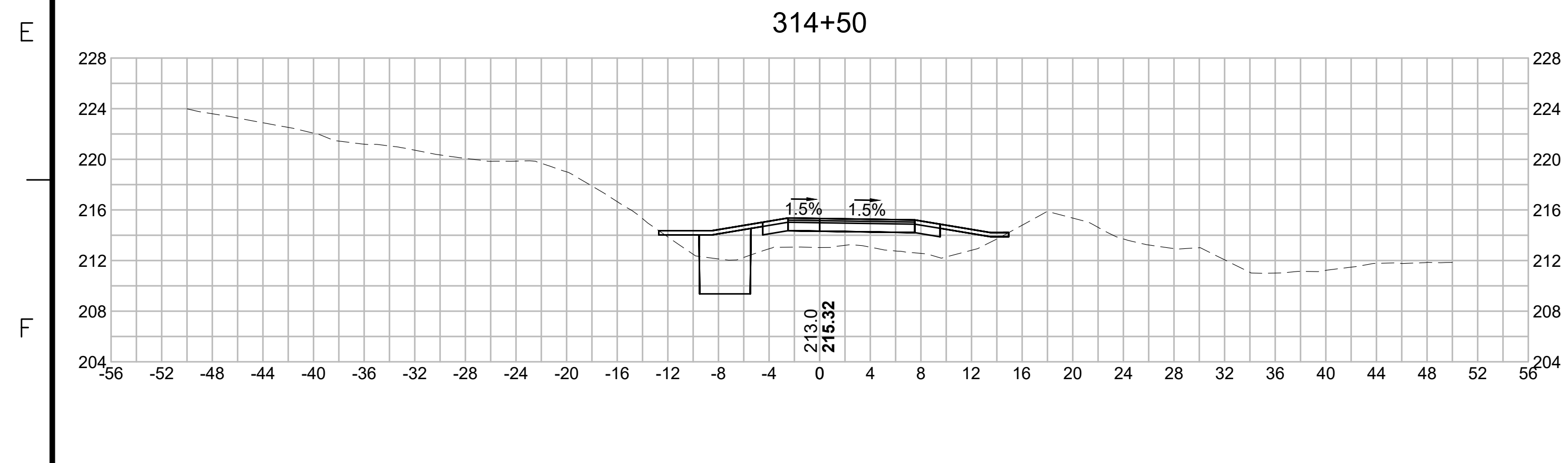
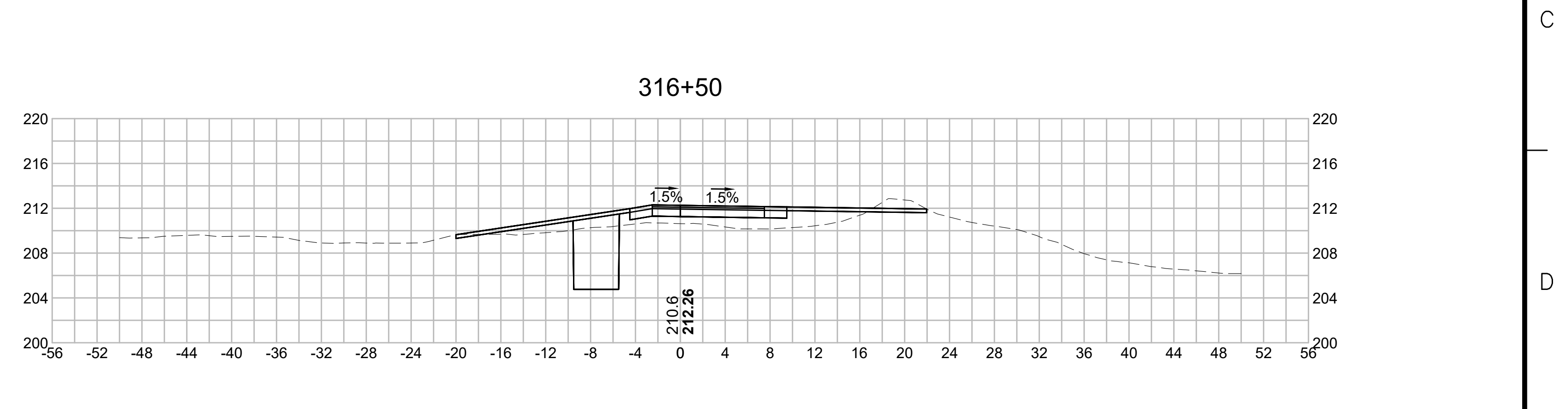
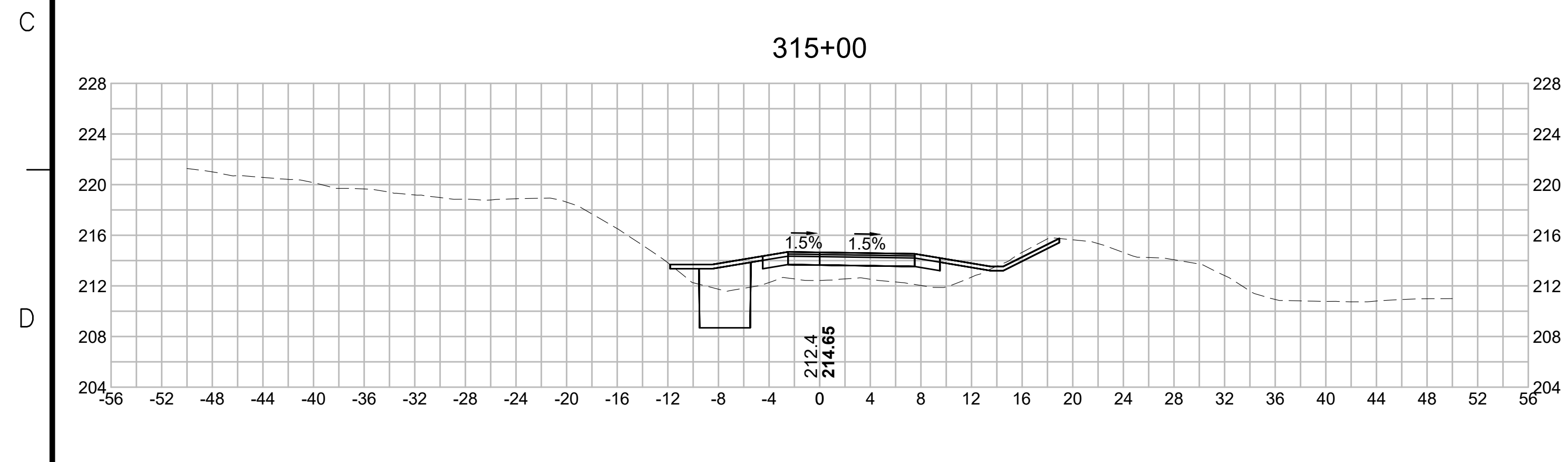
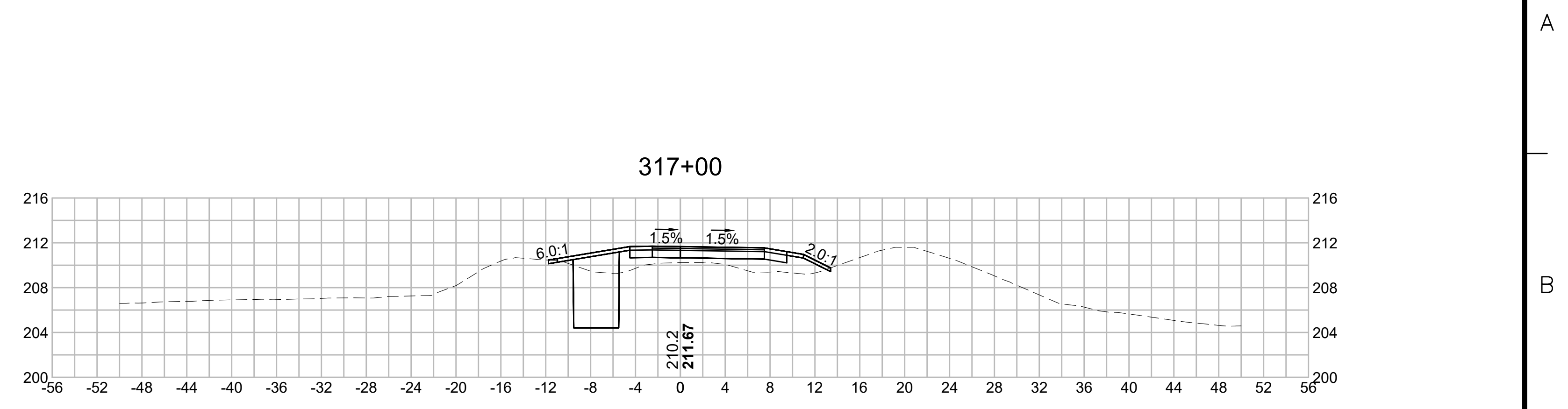
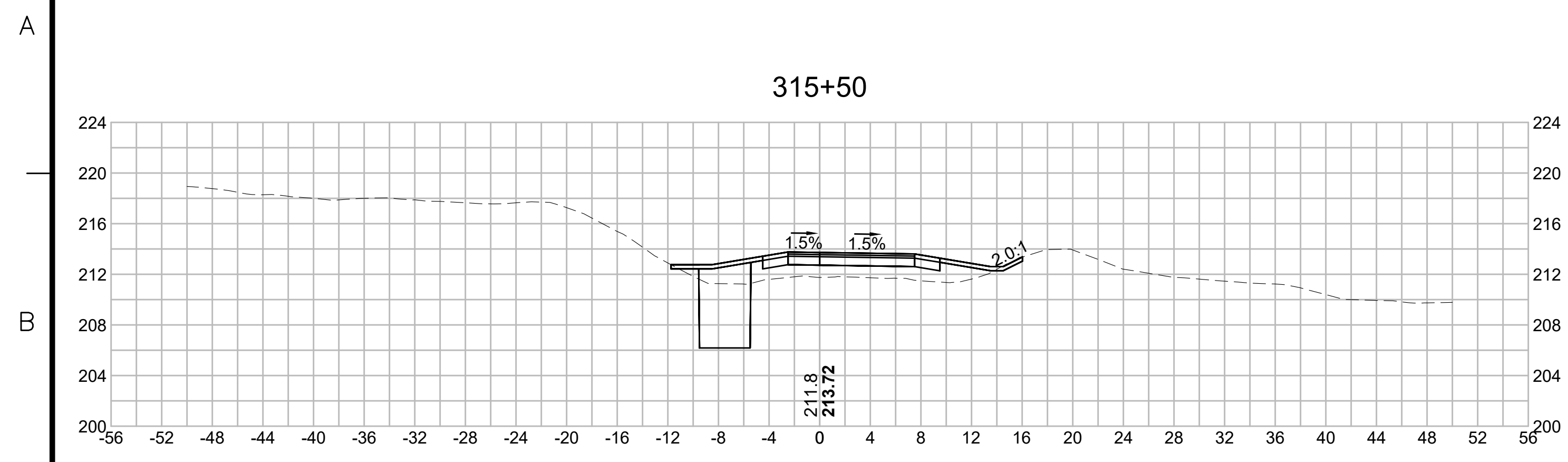
313+50



N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 250 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

1 2 3 4 5 6 7 8 9 10 11

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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 CROSS SECTIONS

PLAN 2510F349

SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	C'H'K'D. SK	A P P R. MES	DRAWING NO.	REV.
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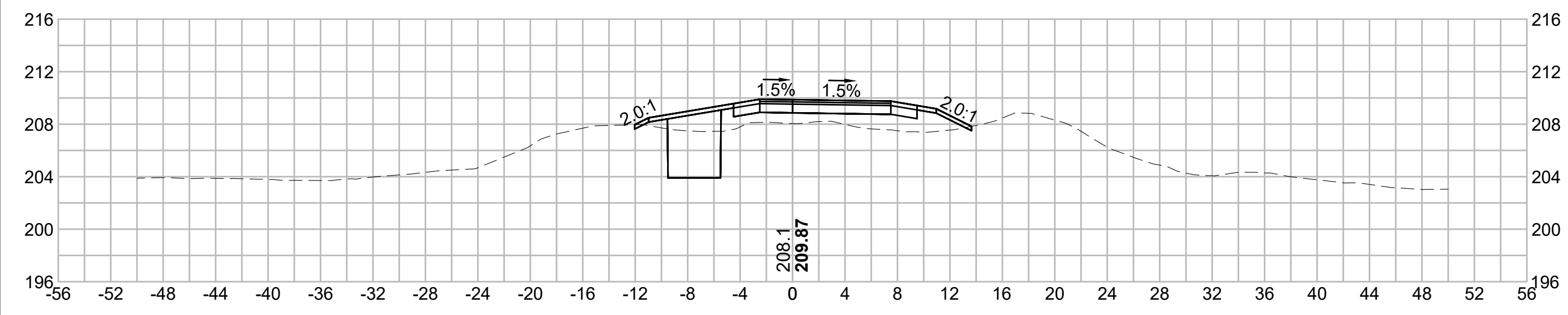
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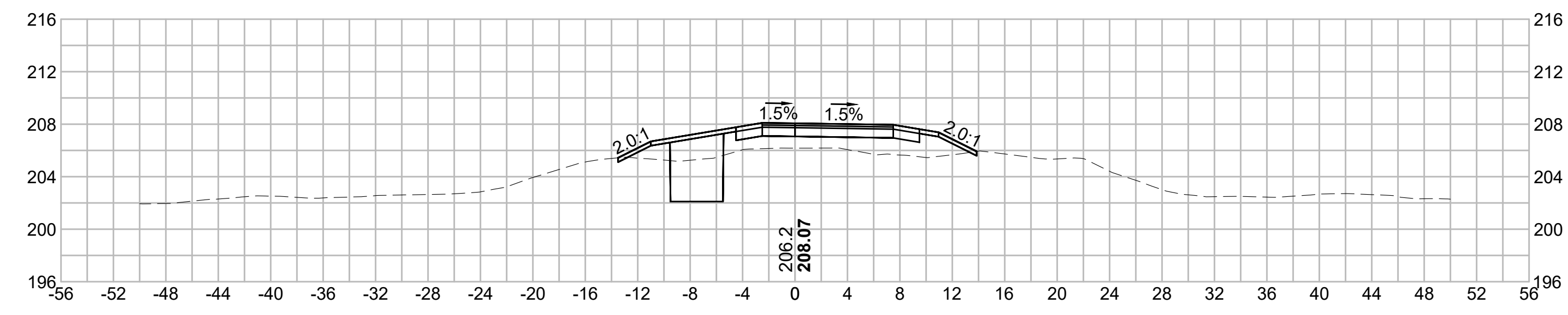
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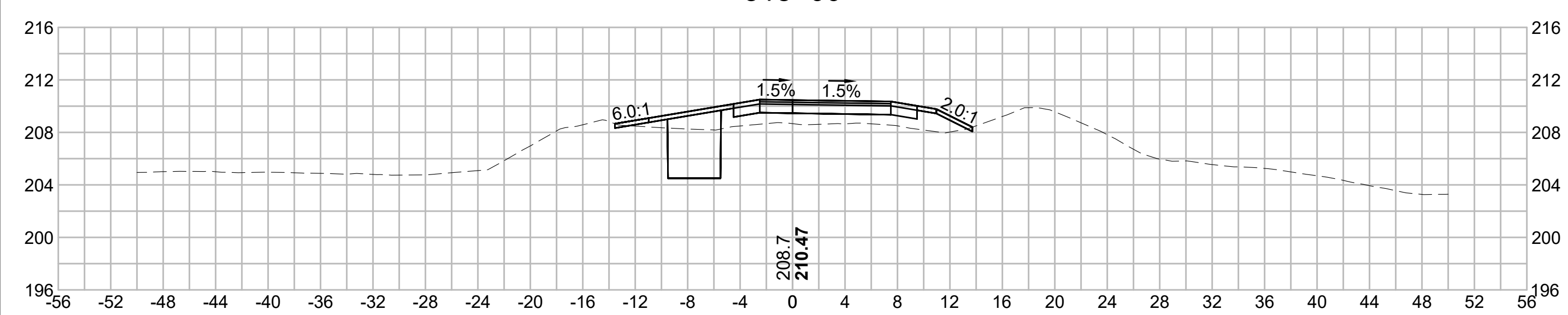
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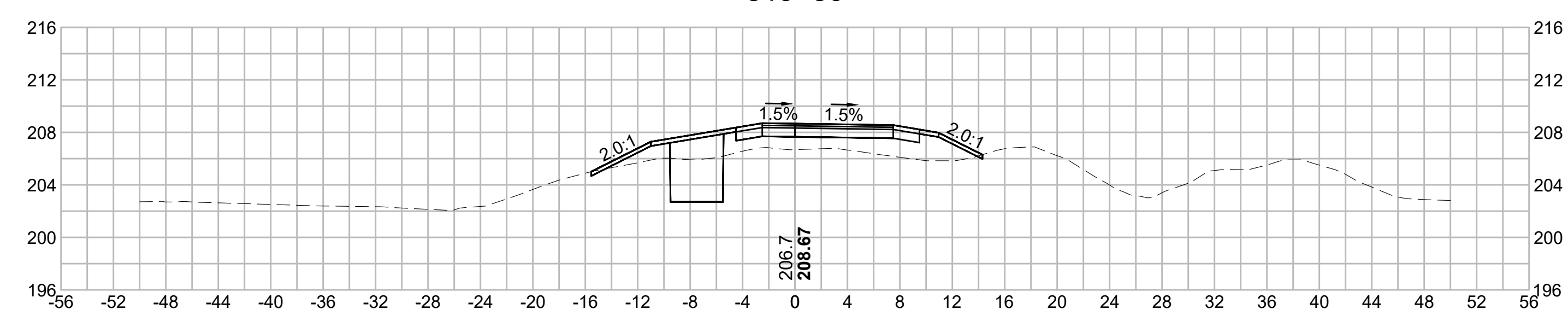
320+00



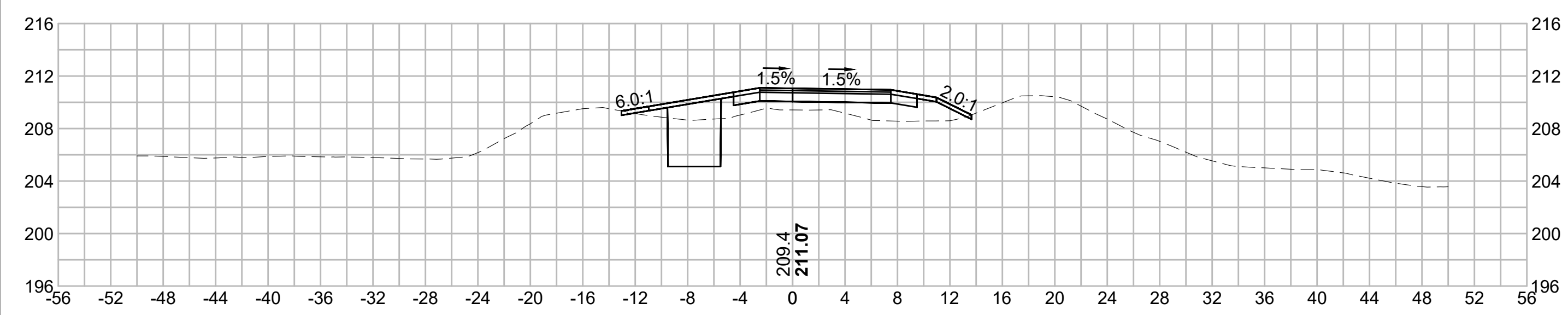
318+00



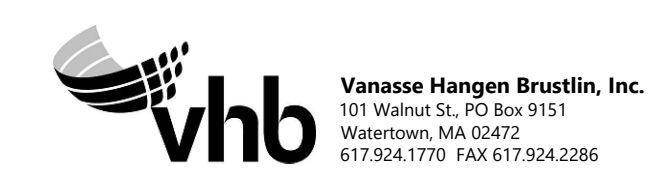
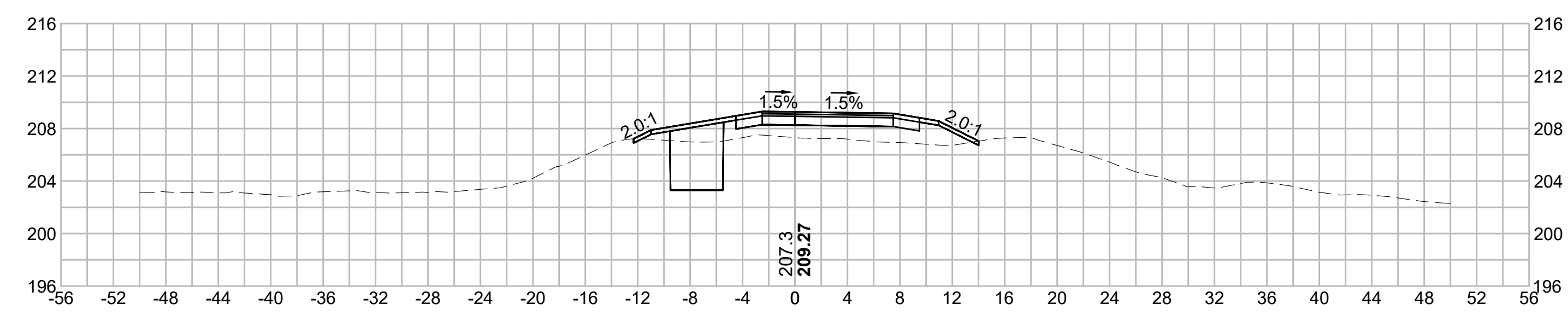
319+50



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N O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 252 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	C'H'K D. SK	A P P R. MES
DRAWING NO.	REV.			

1 2 3 4 5 6 7 8 9 10 11

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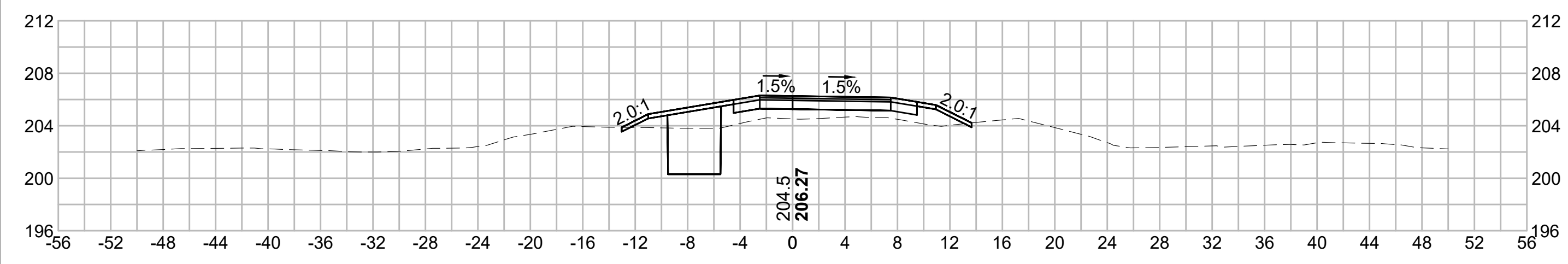
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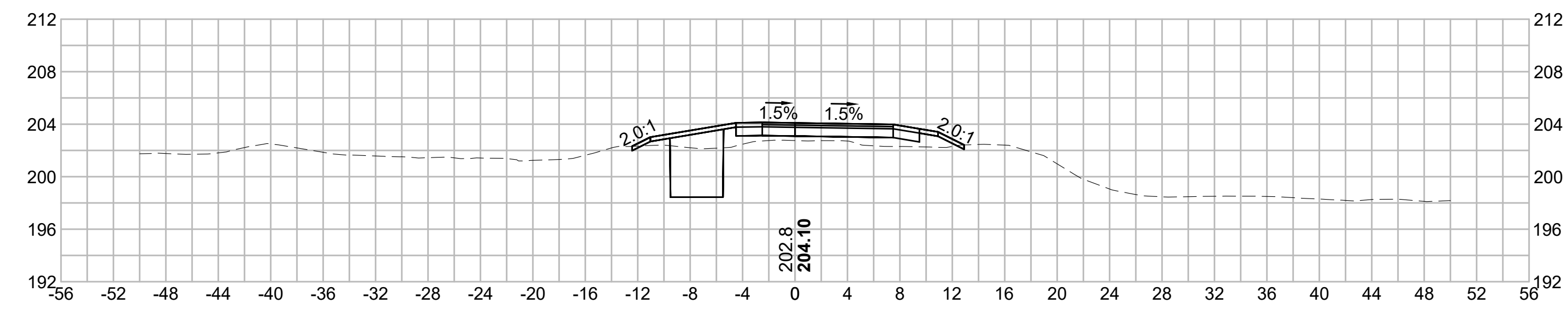
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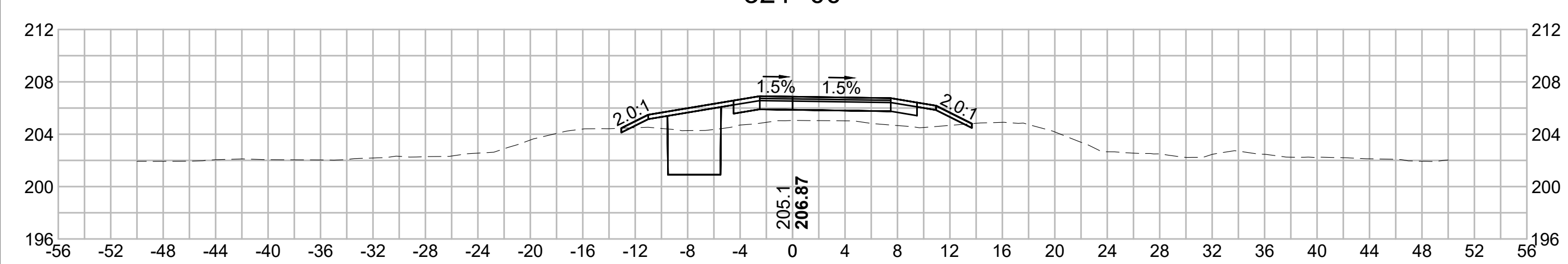
321+50



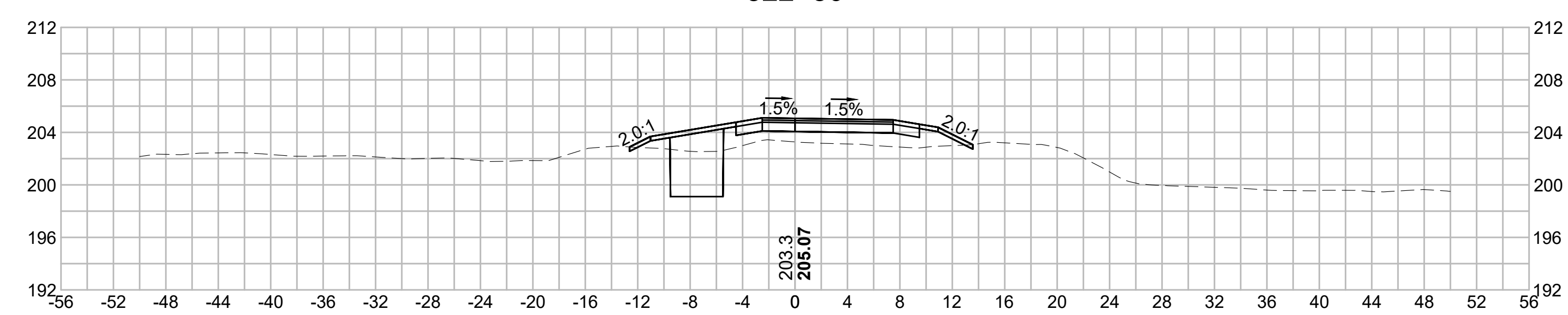
323+00



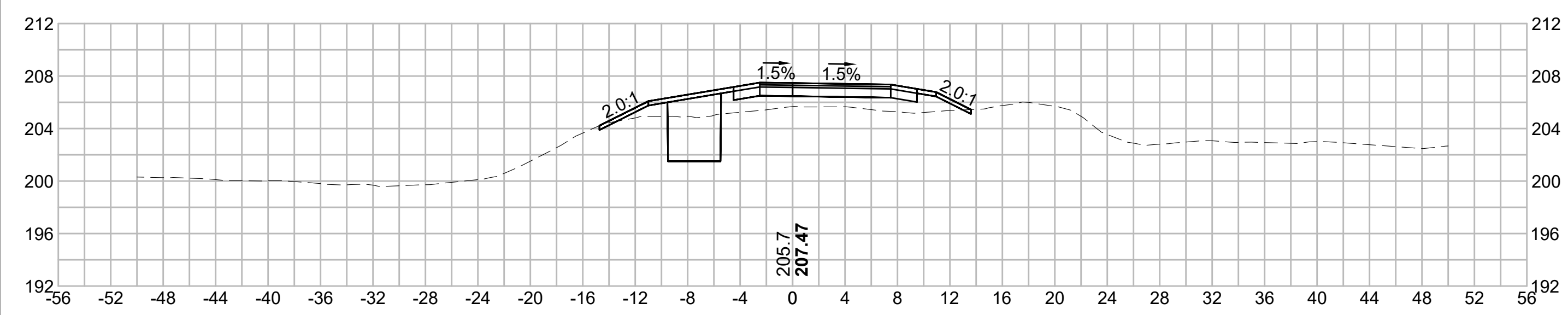
321+00



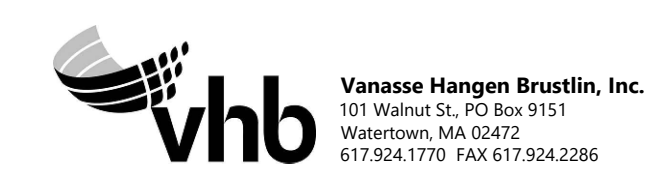
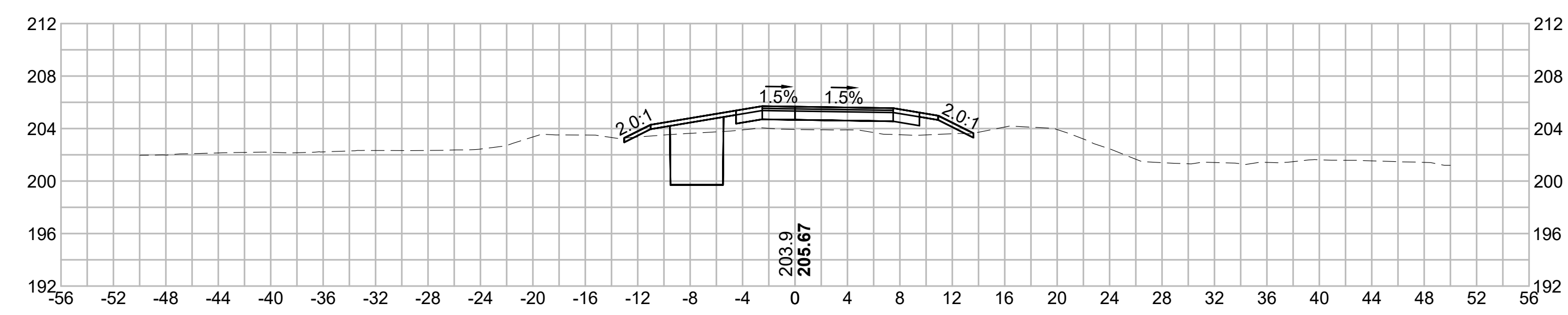
322+50



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N O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

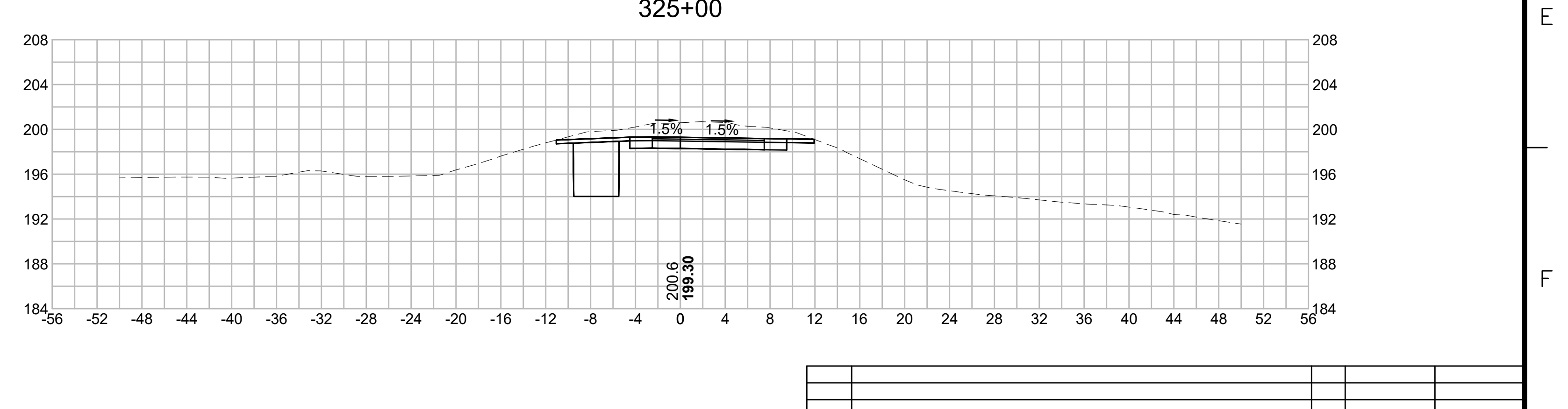
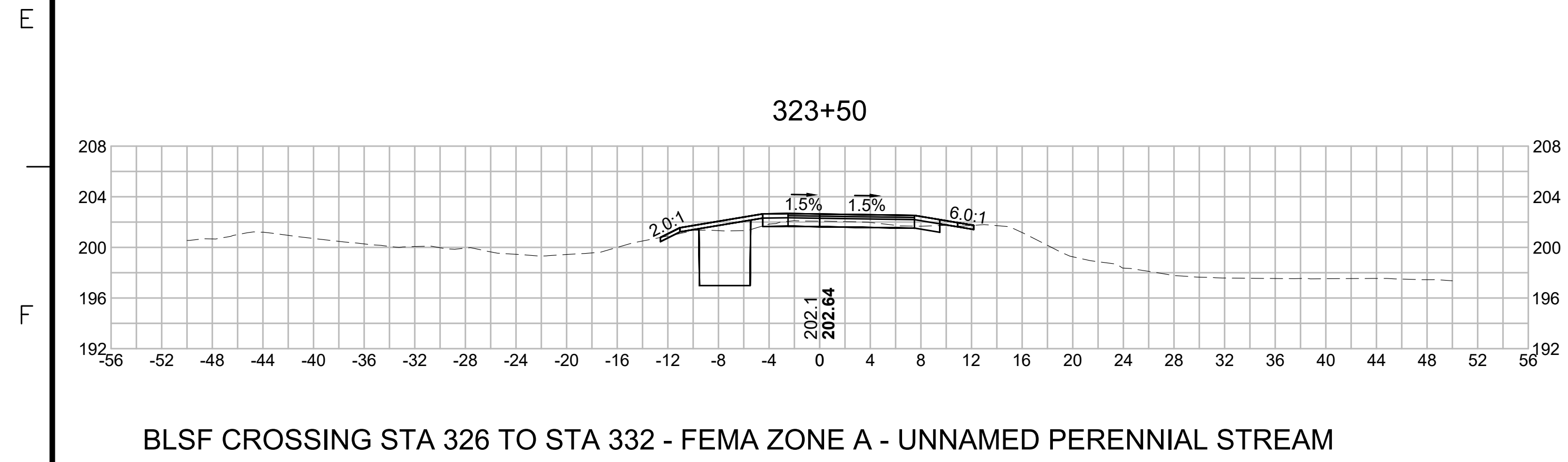
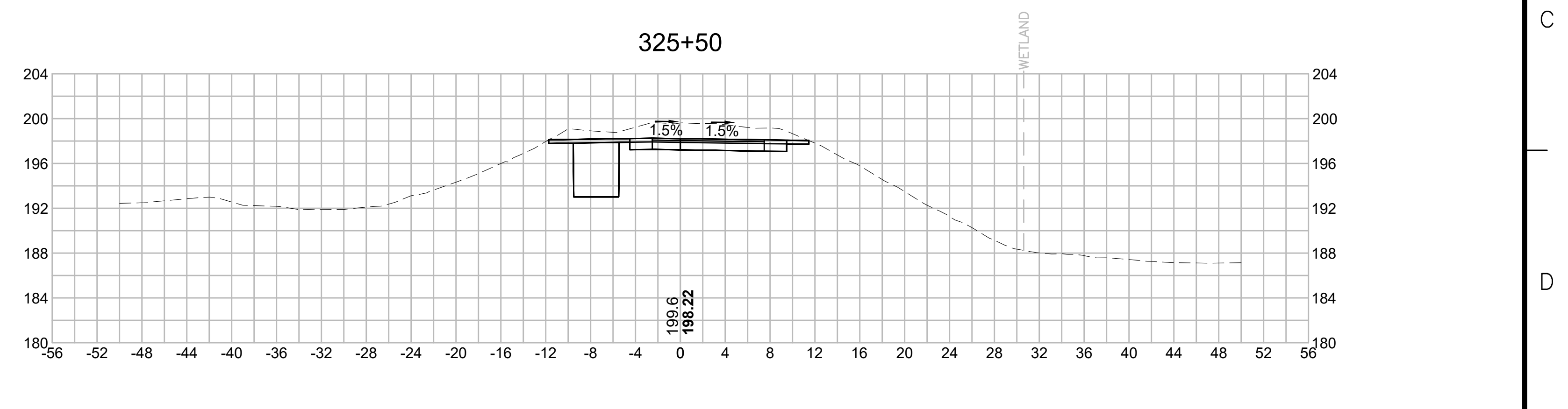
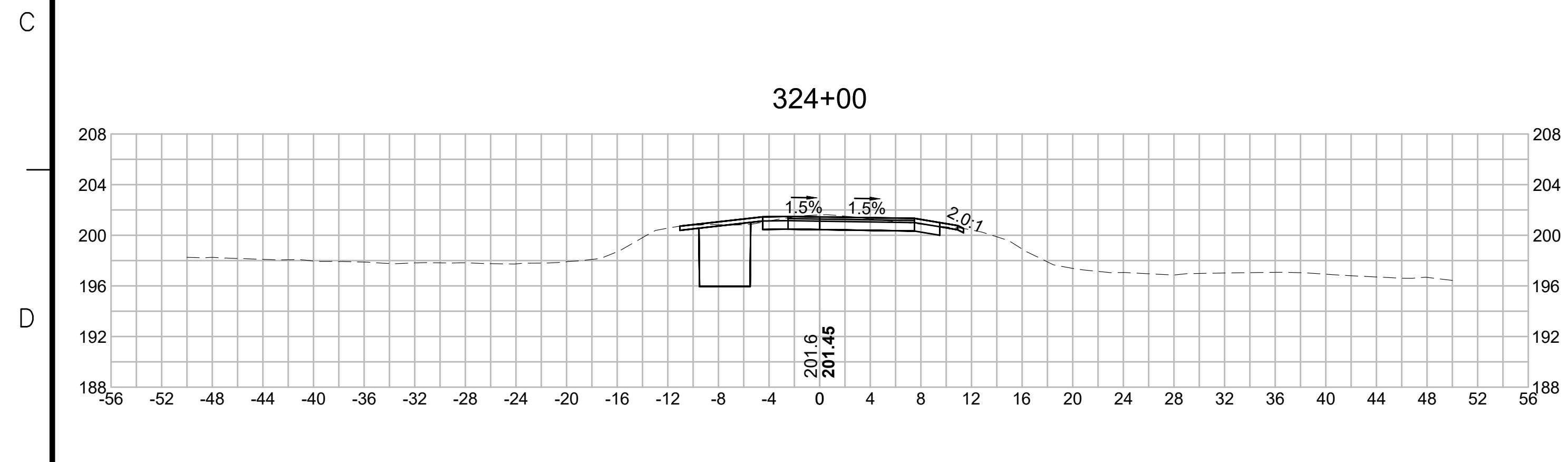
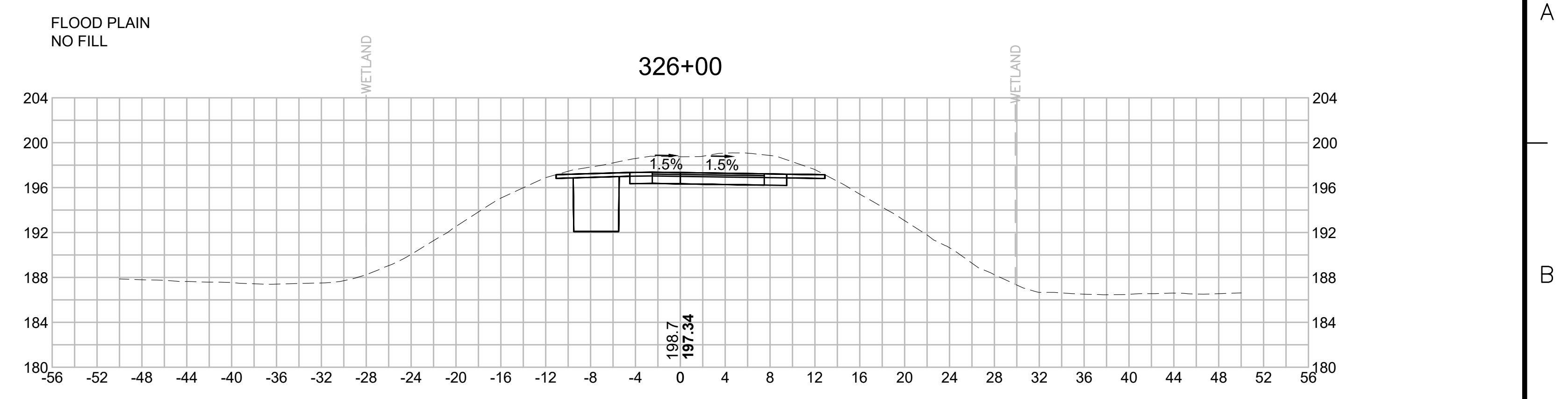
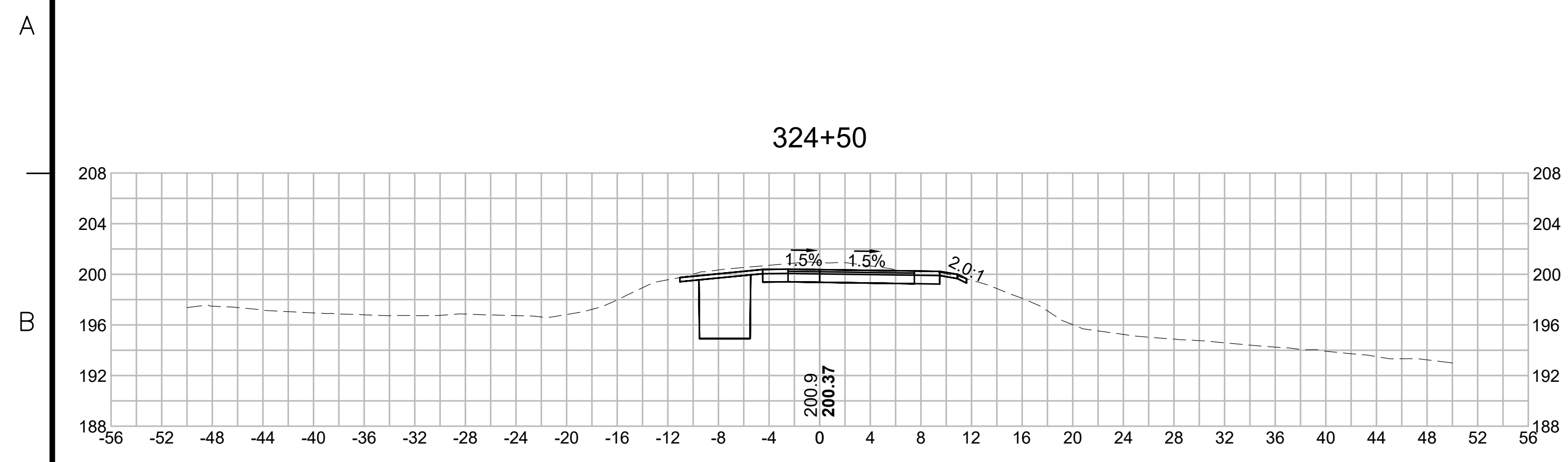
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 CROSS SECTIONS

PLAN 253 OF 349

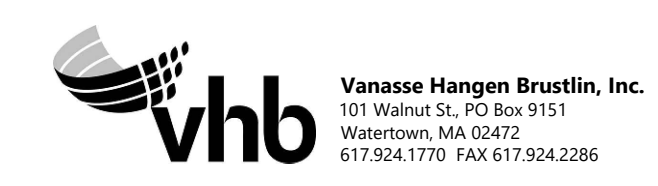
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	C H'K D. SK	APPR. MES	DRAWING NO. REV.
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1 2 3 4 5 6 7 8 9 10 11

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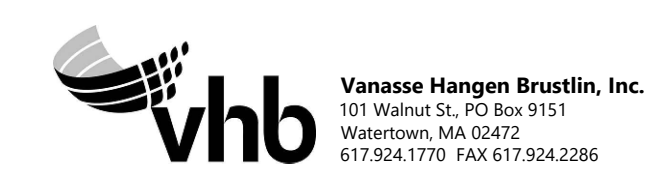
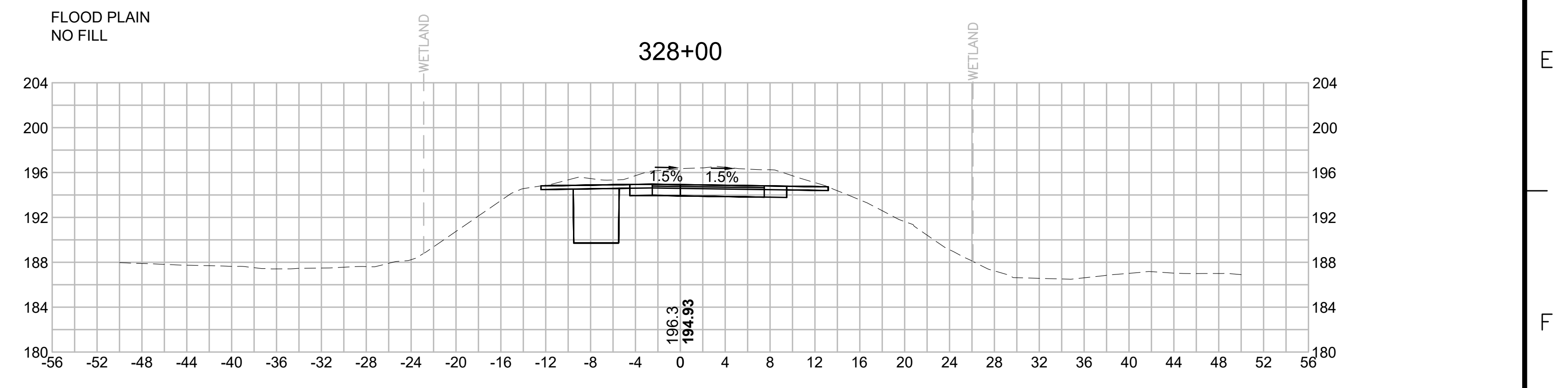
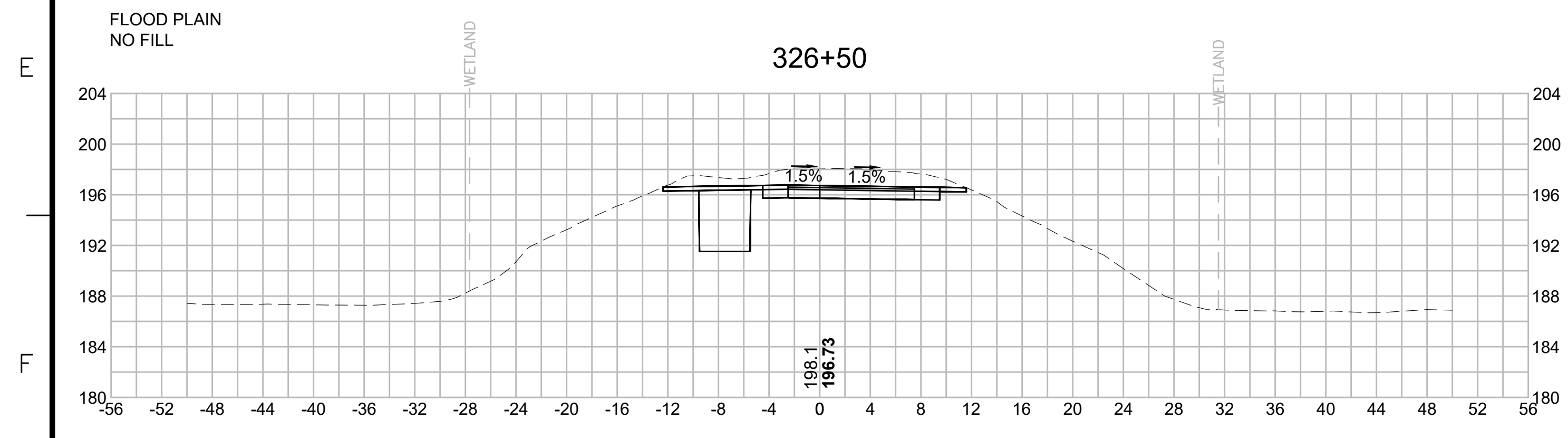
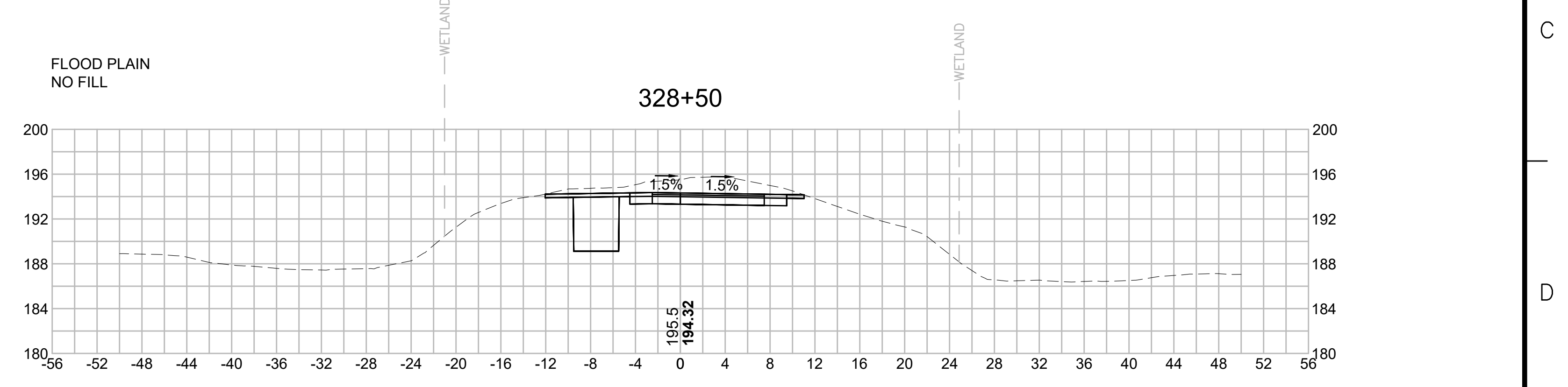
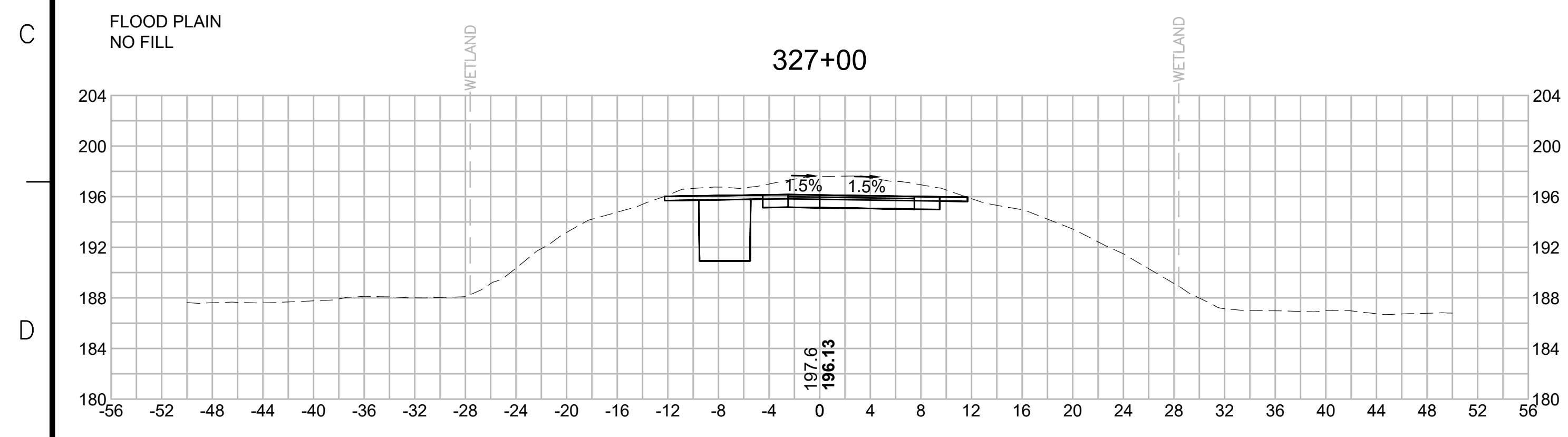
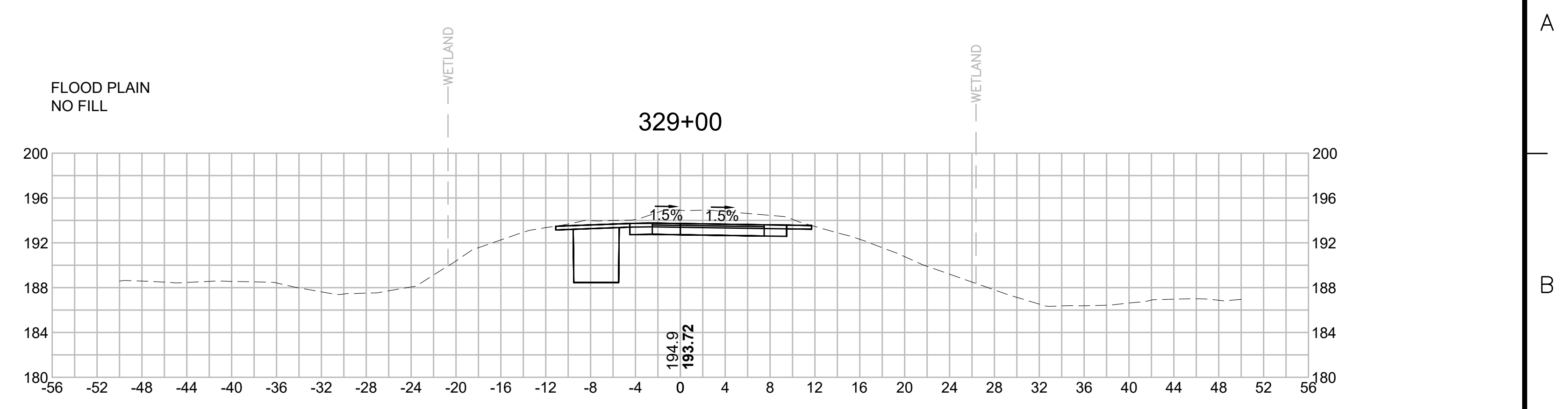
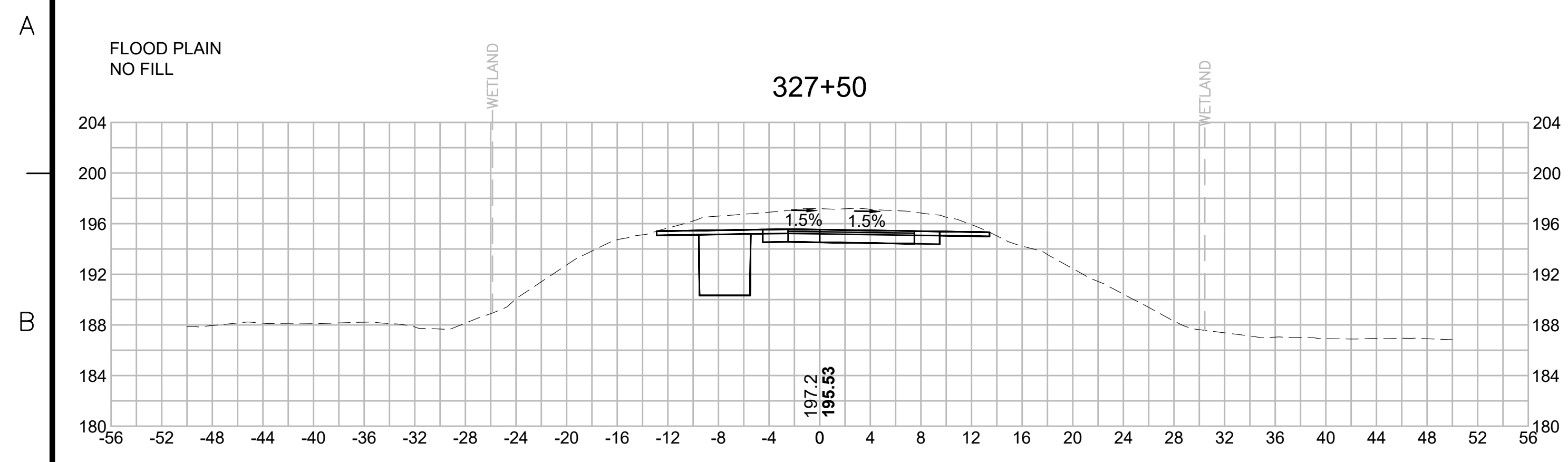
BLSF CROSSING STA 326 TO STA 332 - FEMA ZONE A - UNNAMED PERENNIAL STREAM
 NO ELEVATION FROM FEMA - UNSTUDIED AREA
 NO IMPACTS - NO FILL



N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 254 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

1 2 3 4 5 6 7 8 9 10 11

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N O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
CROSS SECTIONS

PLAN 255 OF 349

SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	C H'K D. SK	A P P R. MES	DRAWING NO.	REV.
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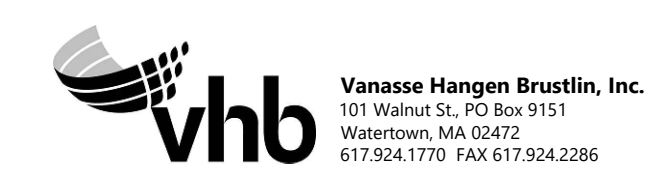
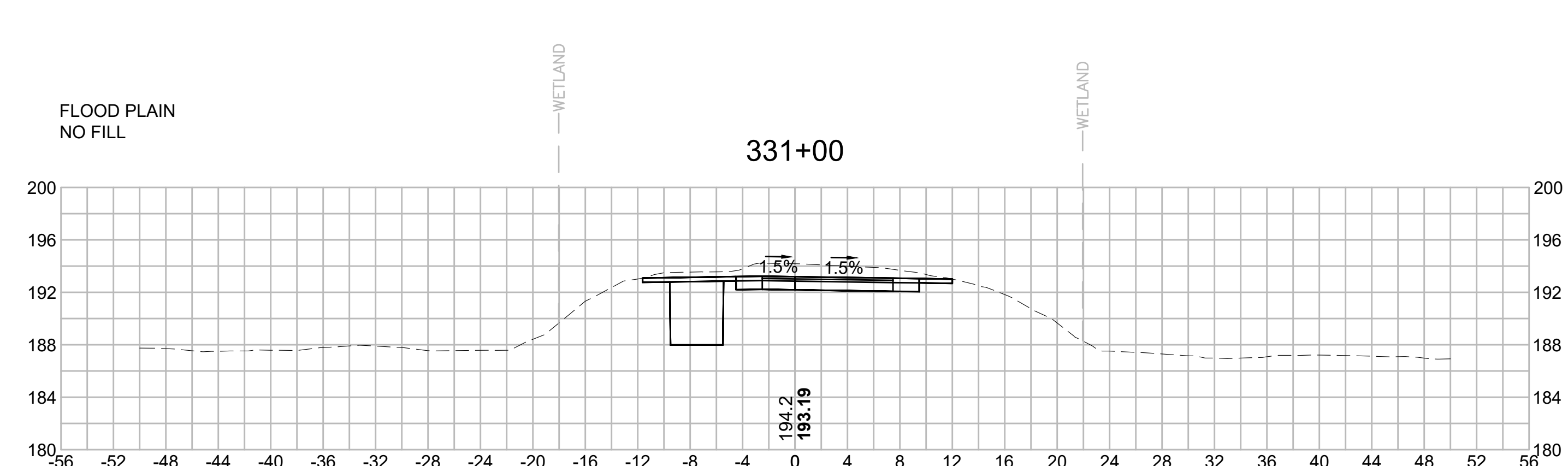
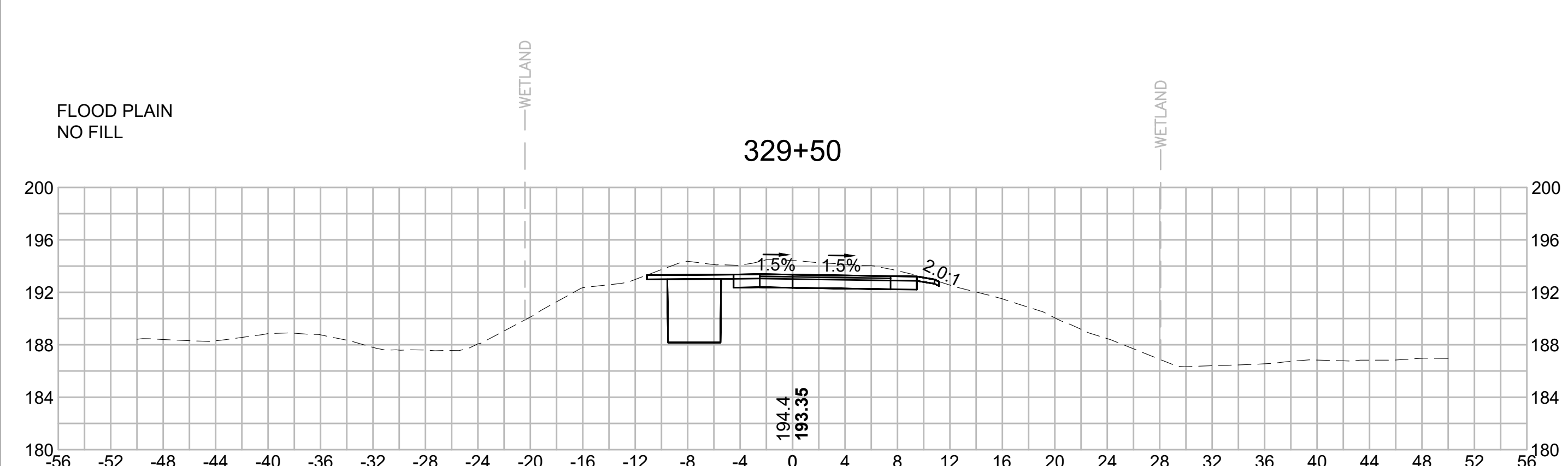
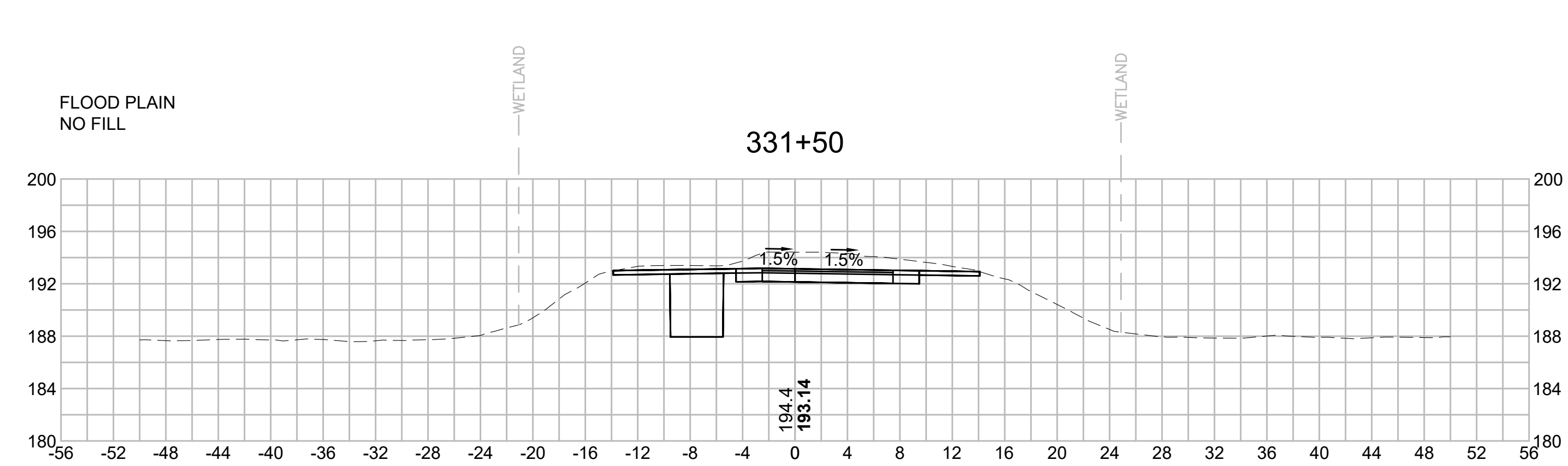
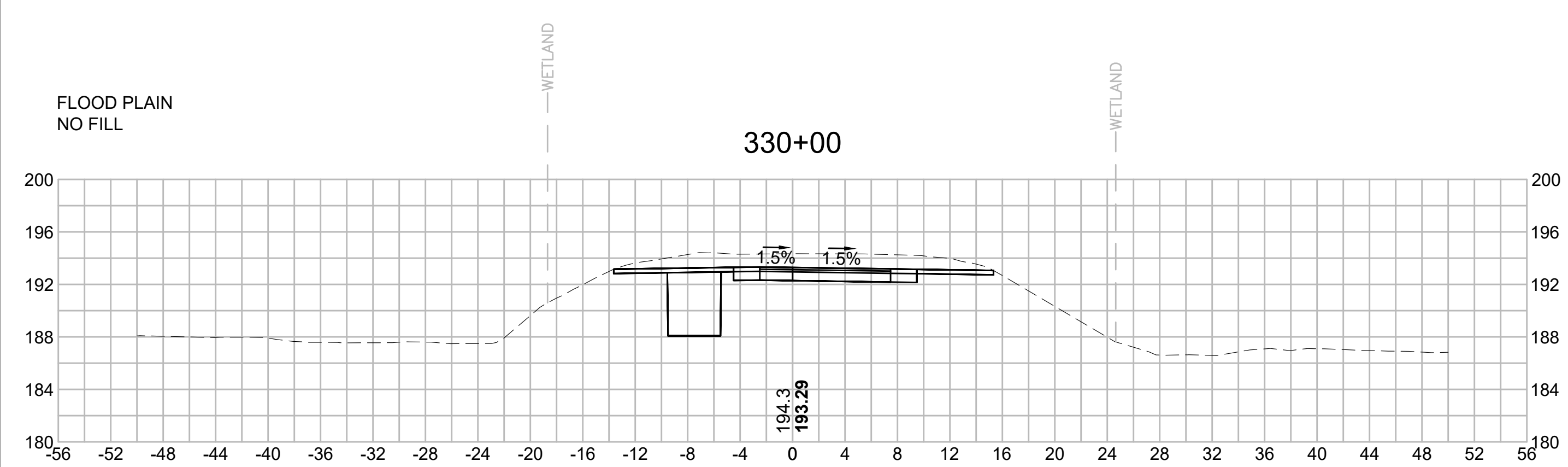
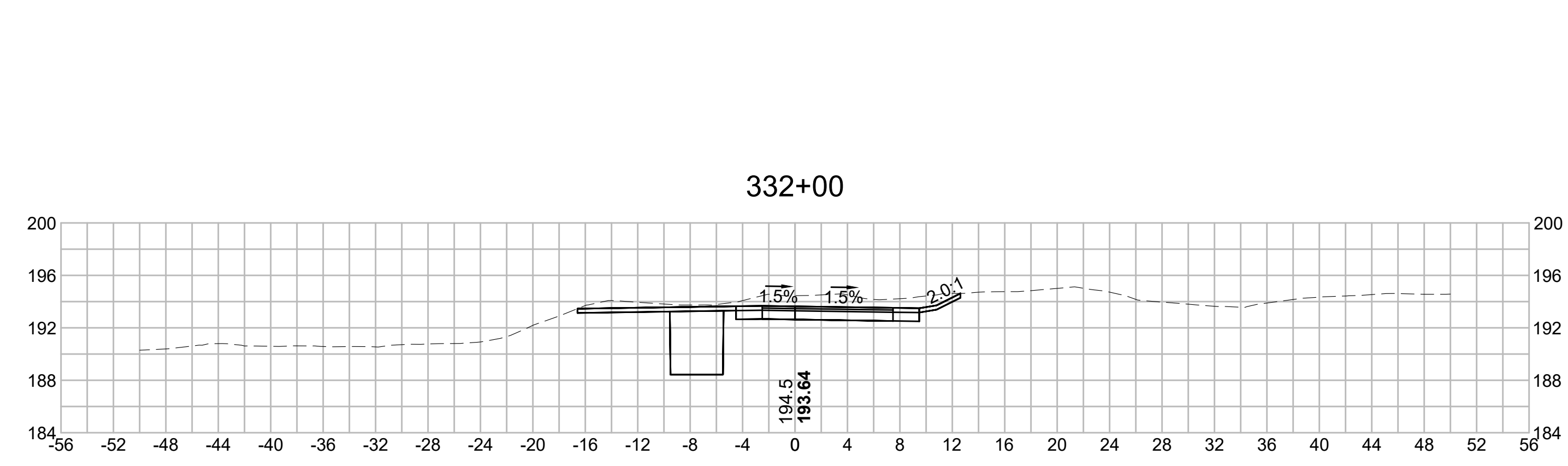
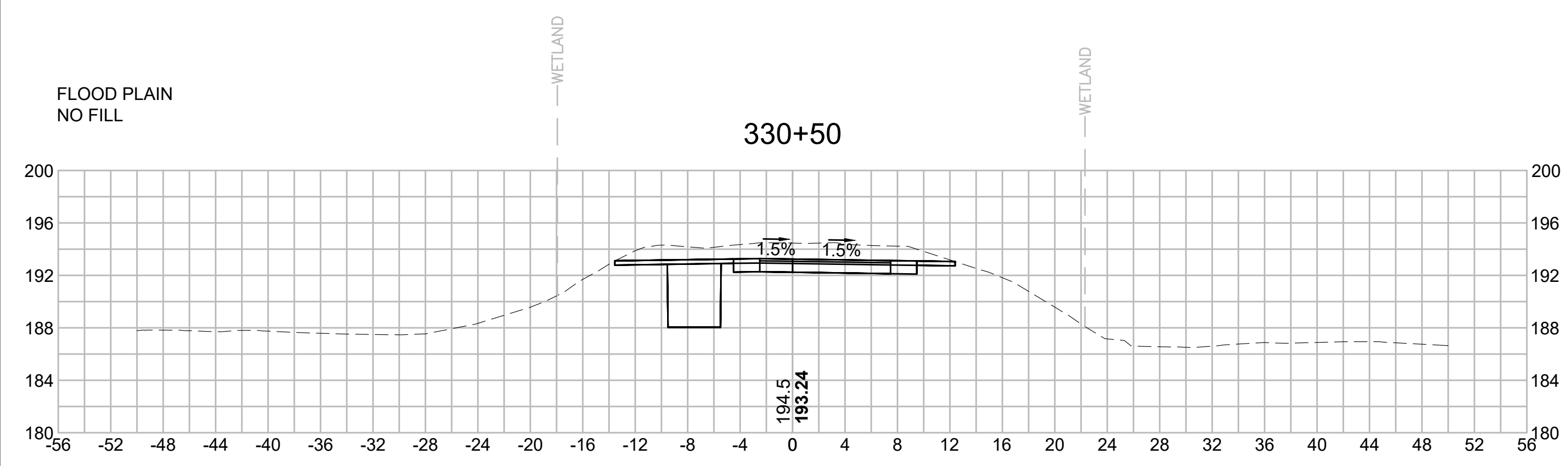
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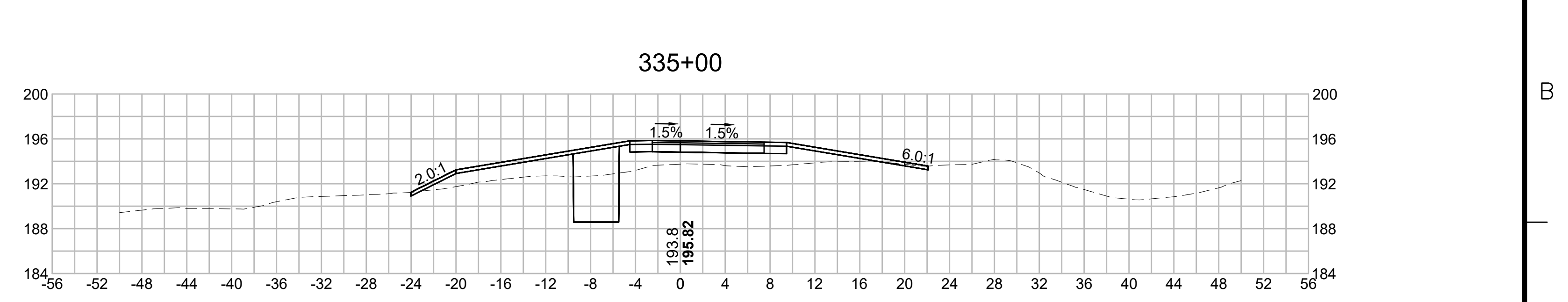
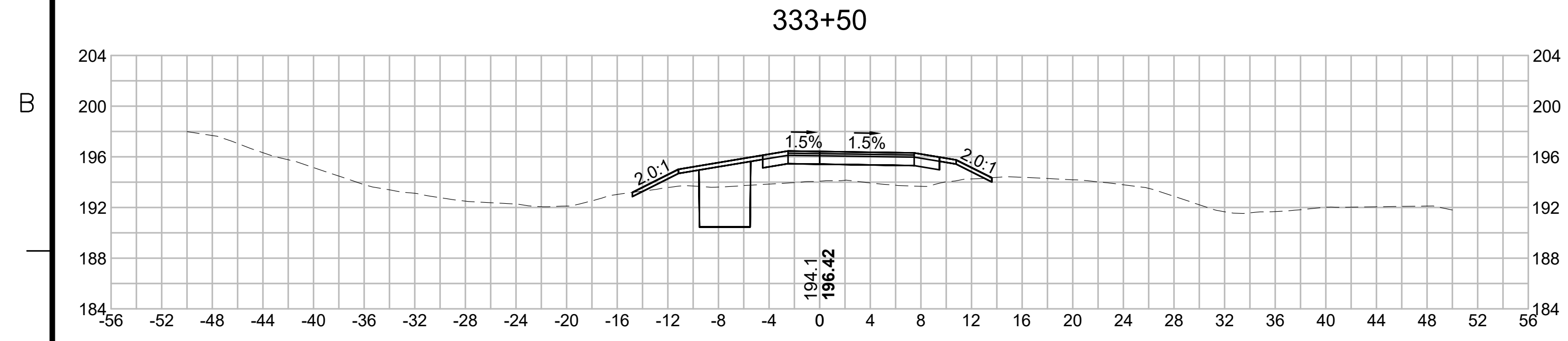
N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 256 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

1 2 3 4 5 6 7 8 9 10 11

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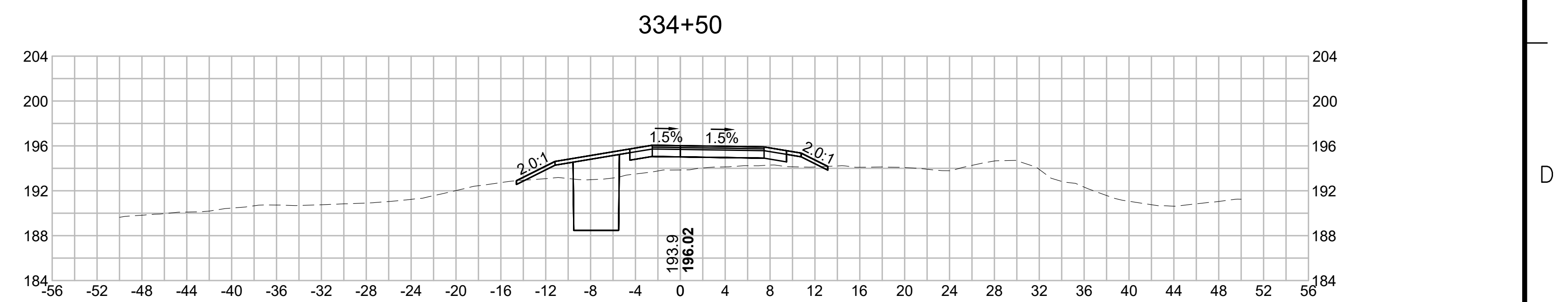
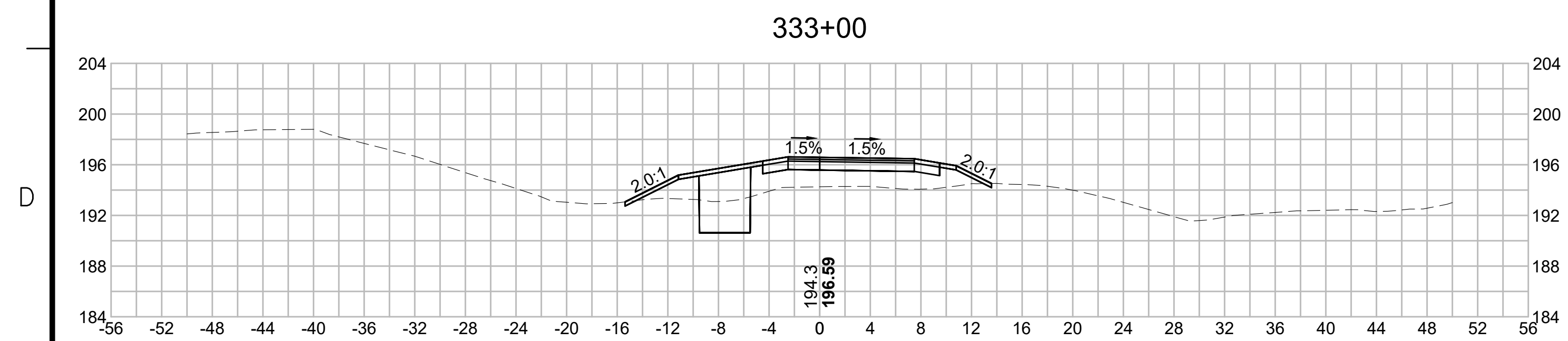
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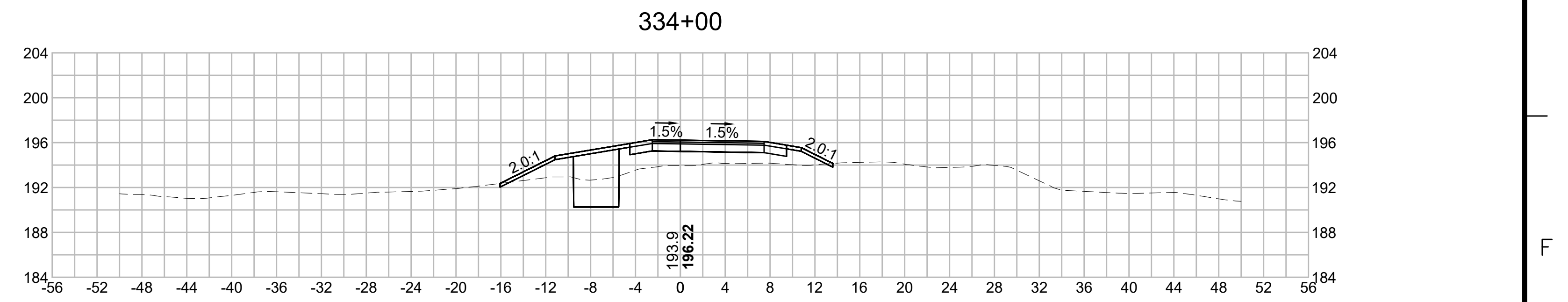
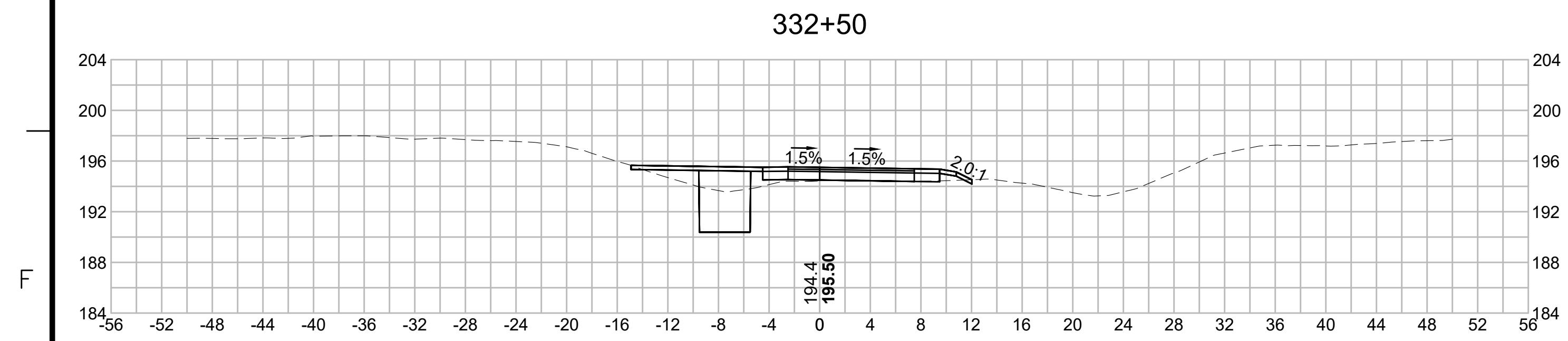
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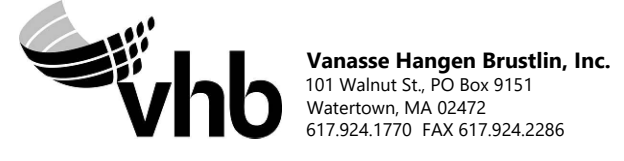


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Vanasse Hangen Brustlin, Inc.
101 Walnut St., PO Box 9151
Watertown, MA 02472
617.224.1770 FAX 617.924.2286

N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 257 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

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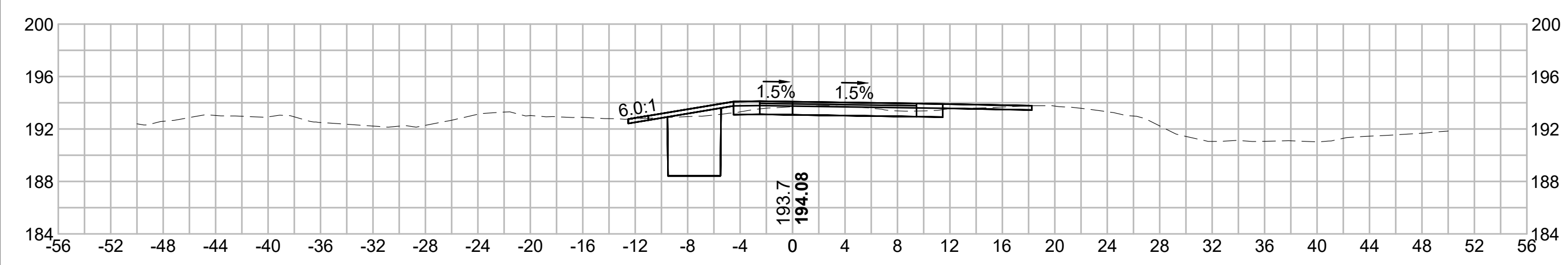
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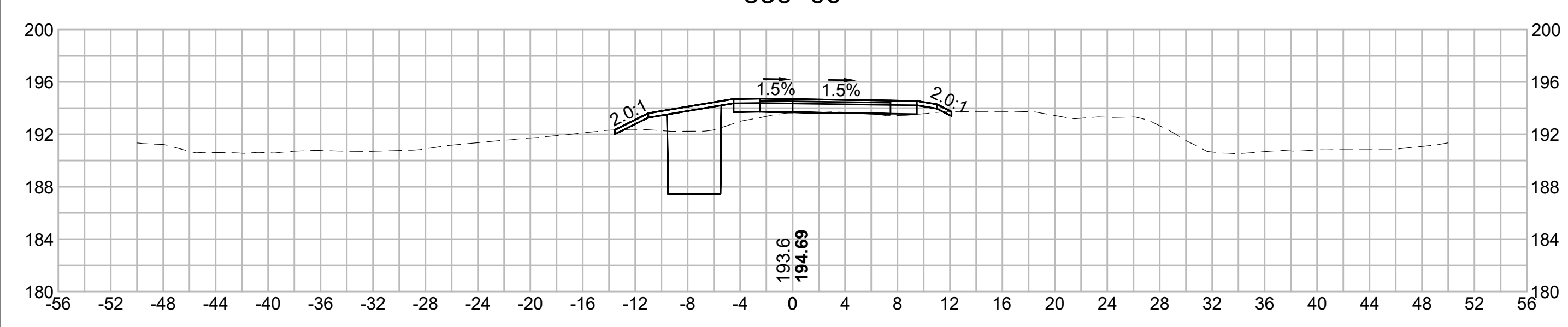
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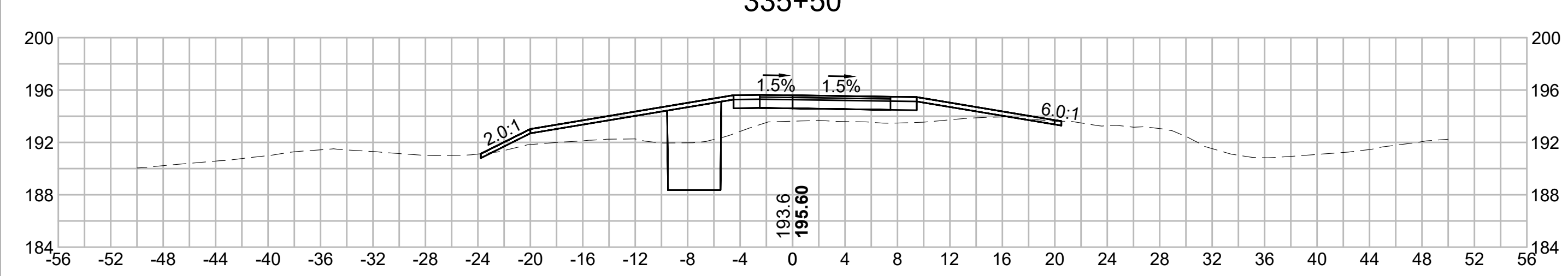
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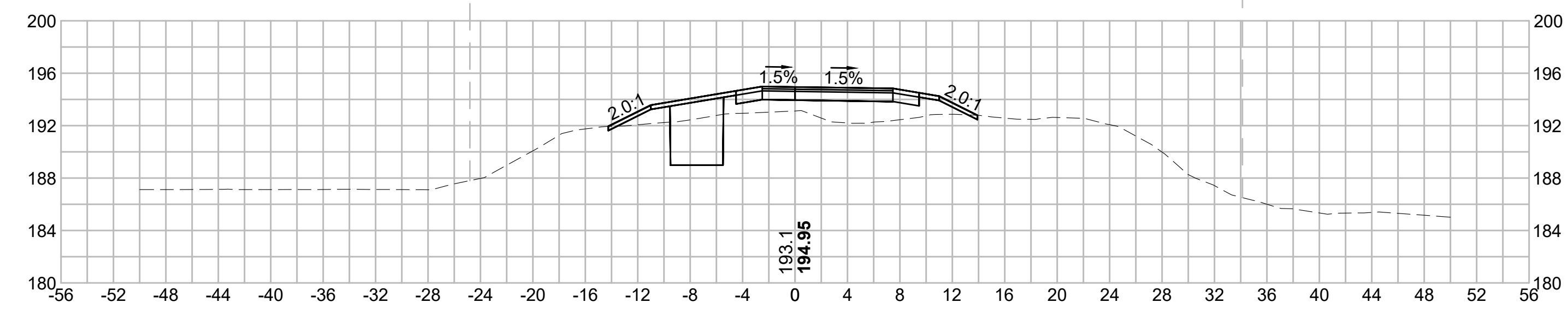
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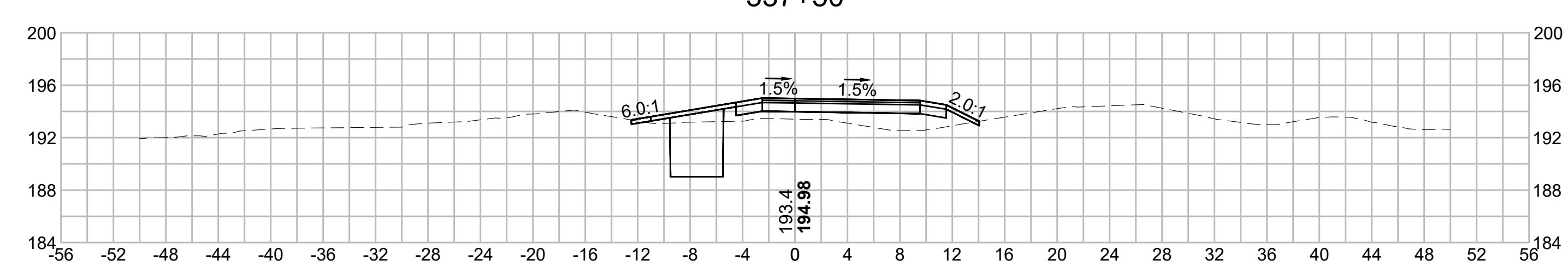
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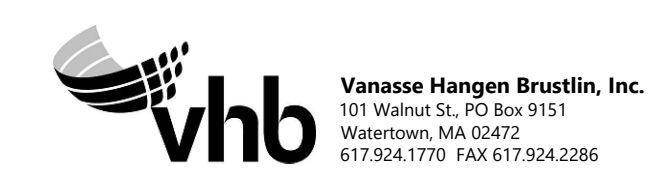
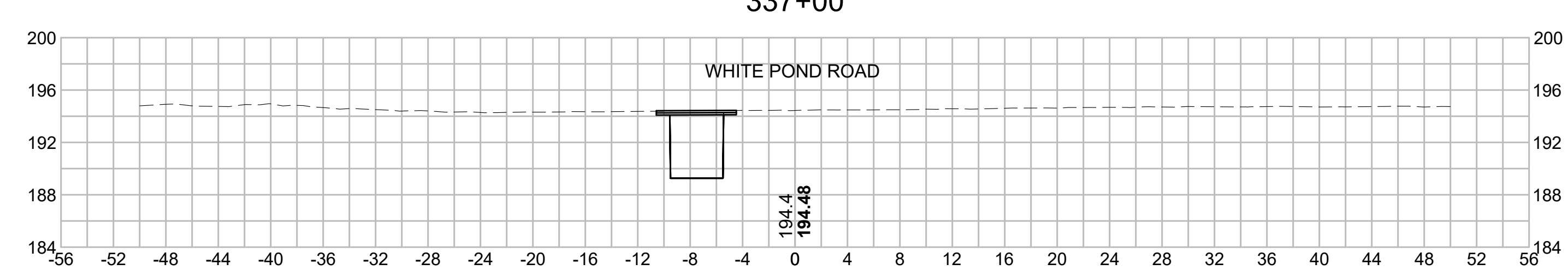
338+00



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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
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SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 258 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECK D. SK	APPR. MES
DRAWING NO.	REV.			

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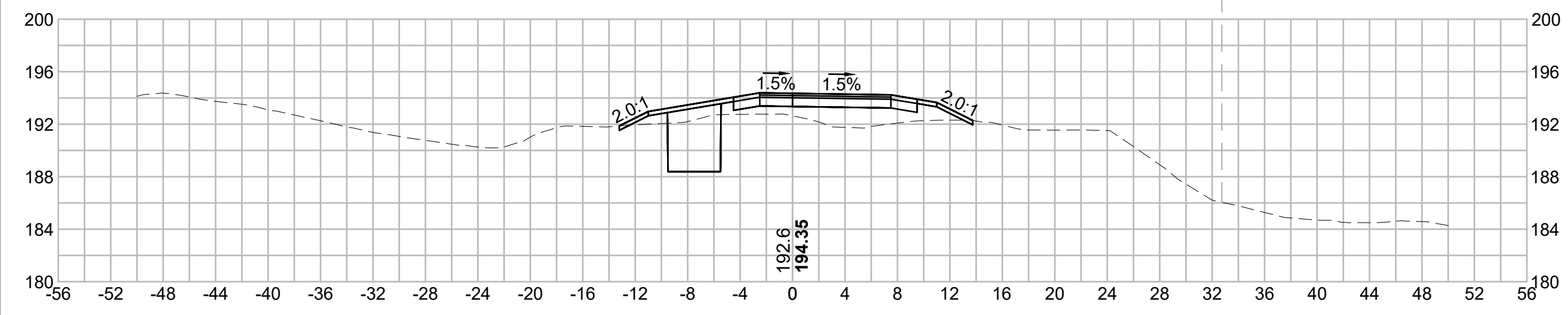
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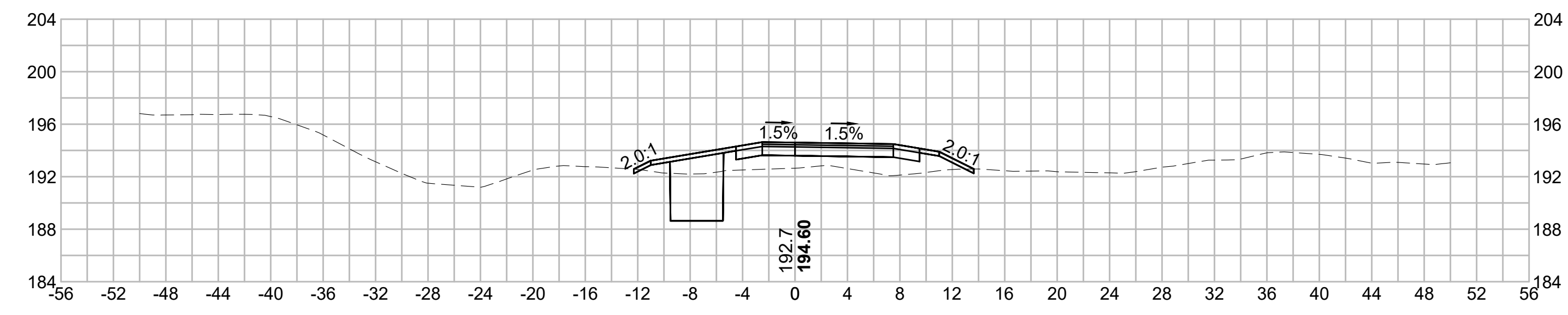
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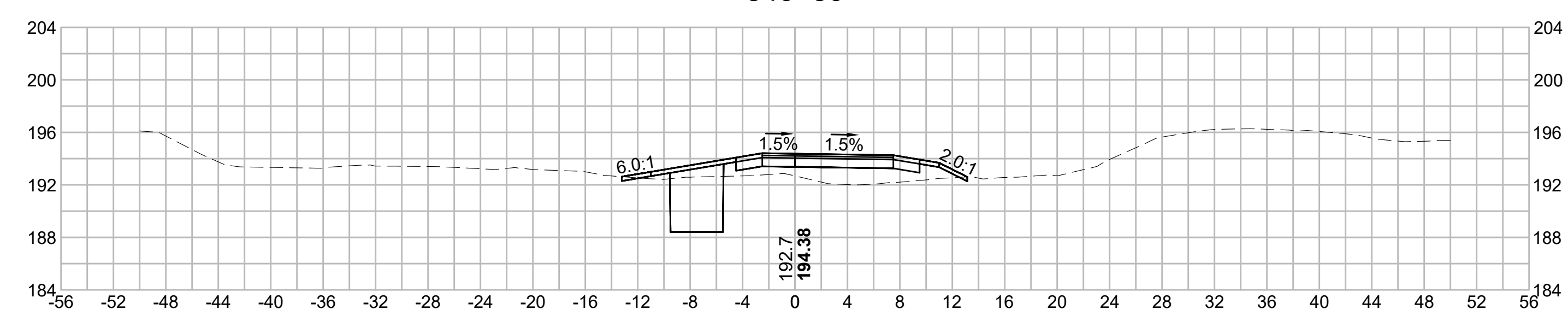
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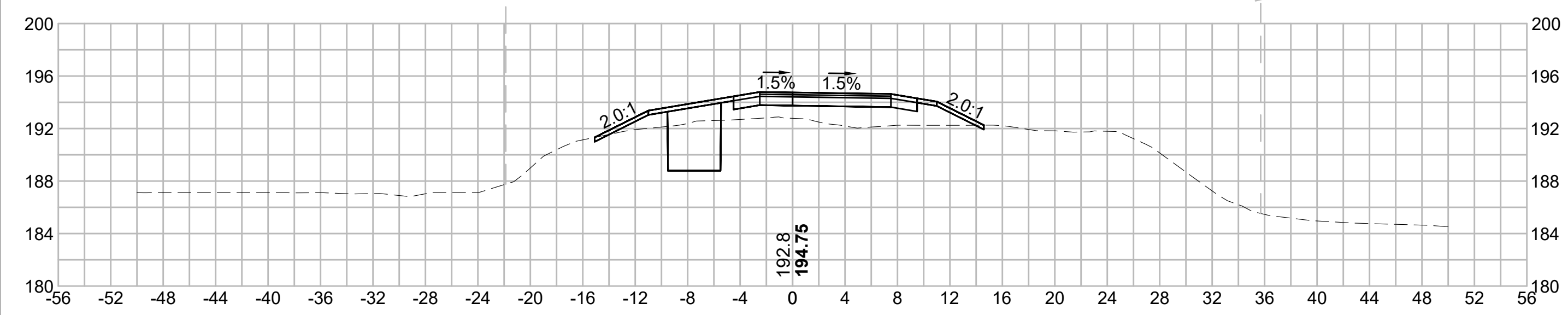
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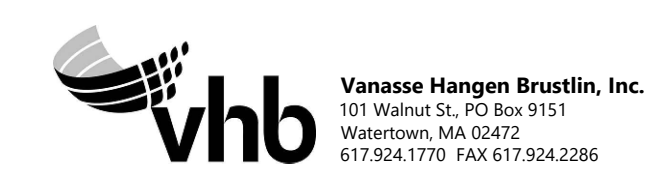
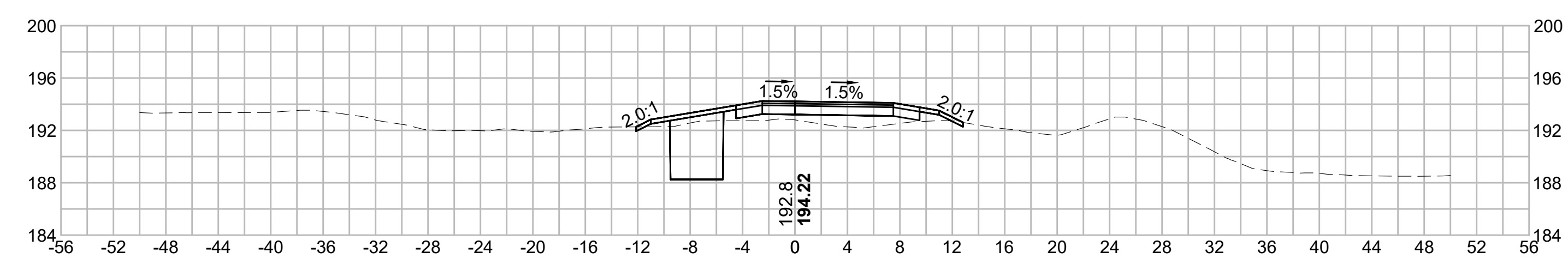
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NO.	DESCRIPTION		BY	DATE	APPR.
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SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CROSS SECTIONS					
PLAN 259 OF 349					
SCALE: unless noted 1"=8'		DATE	DRAWN	CHK'D	APPR.
		DEC 2021	MS	SK	MES
DRAWING NO.				REV.	

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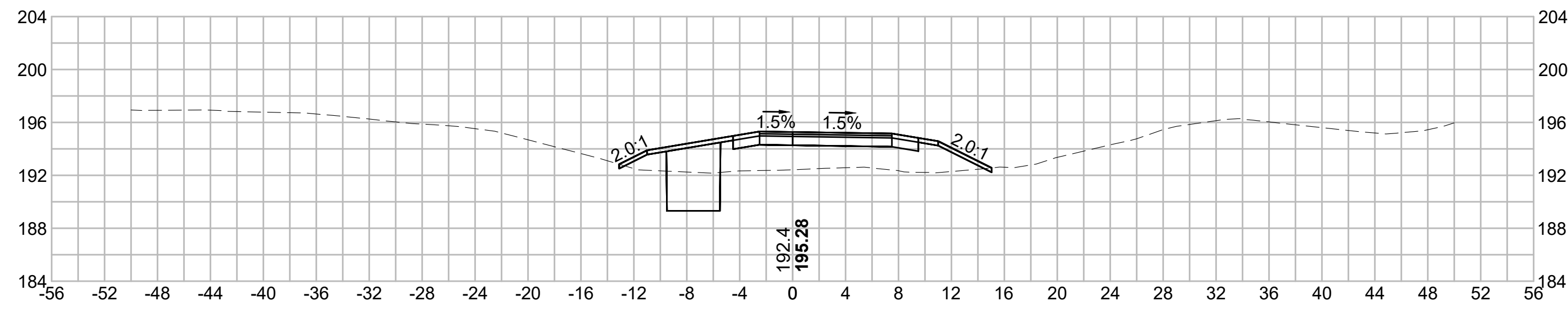
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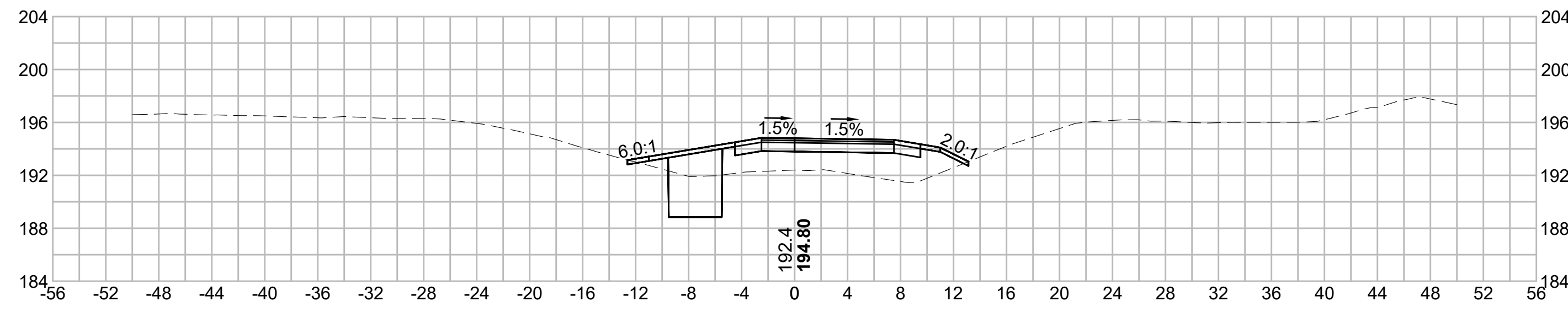
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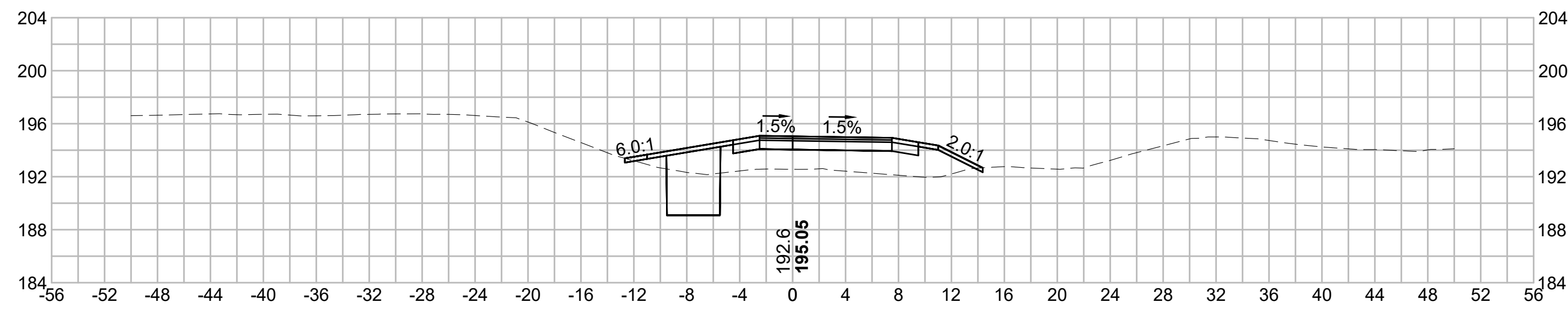
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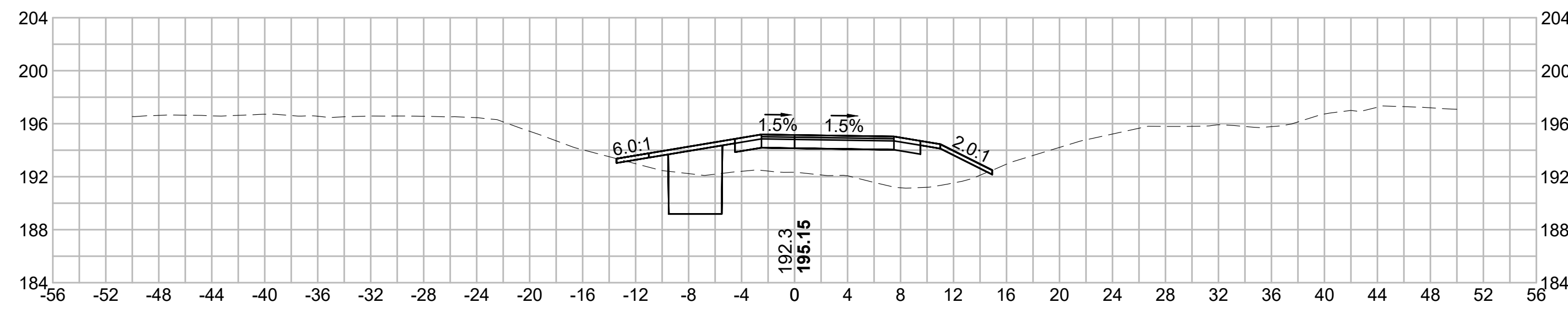
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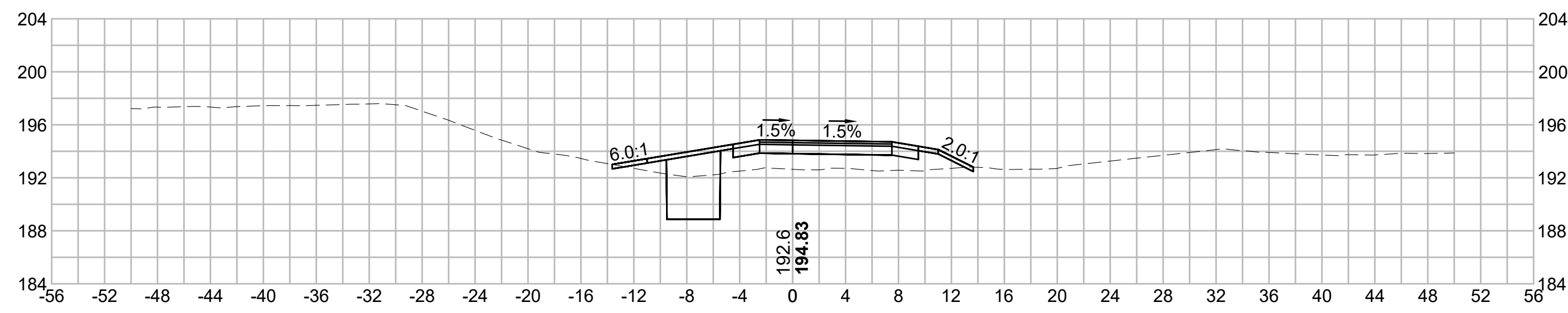
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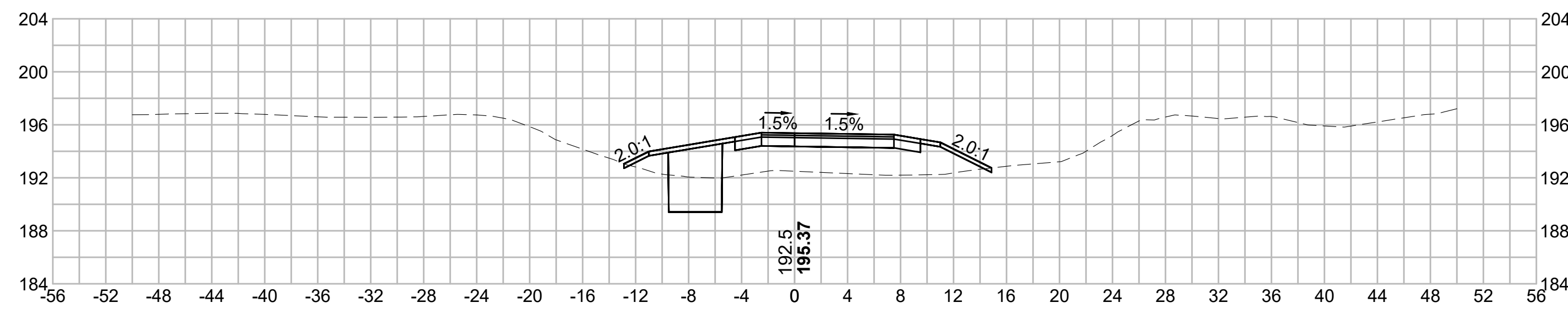
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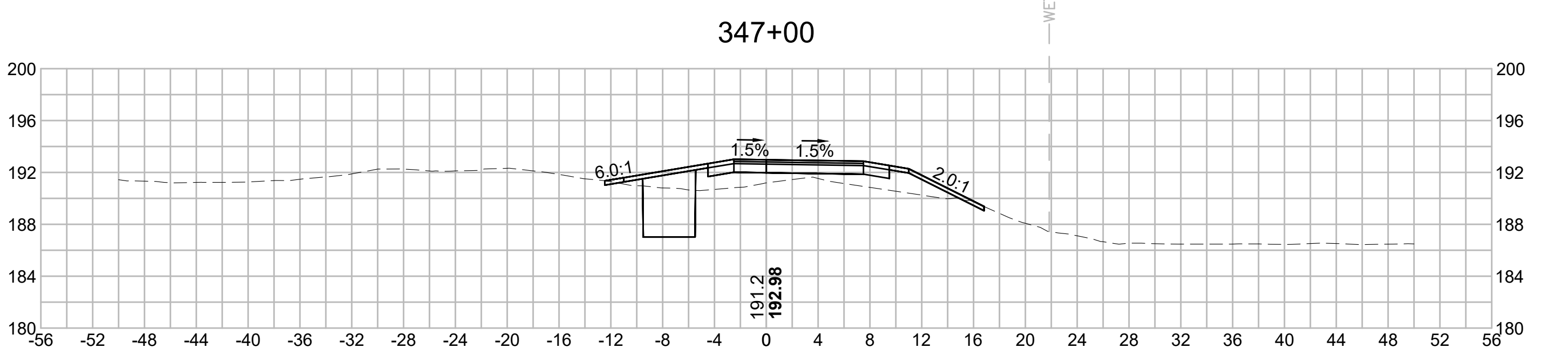
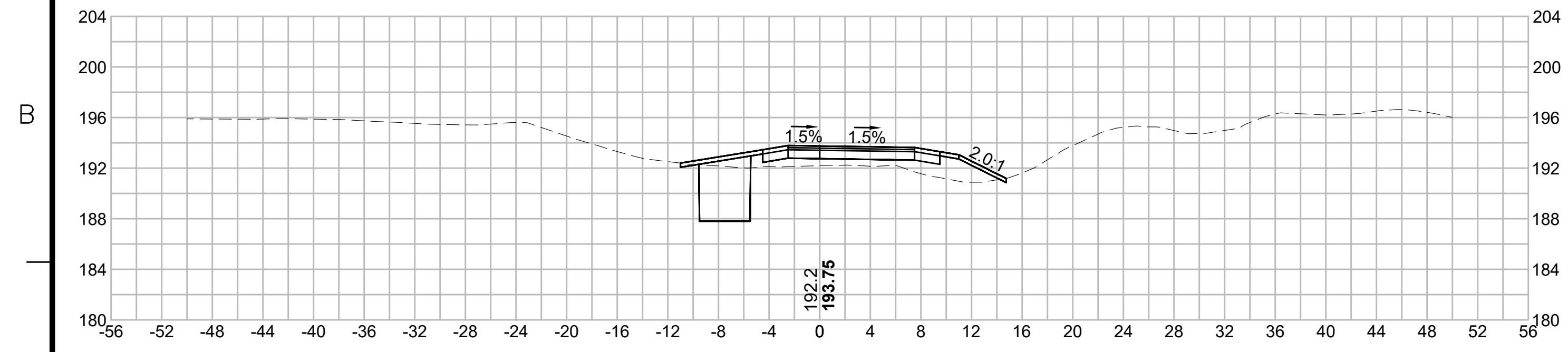
N.O.	DESCRIPTION	BY	DATE	APPR.
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EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 260 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

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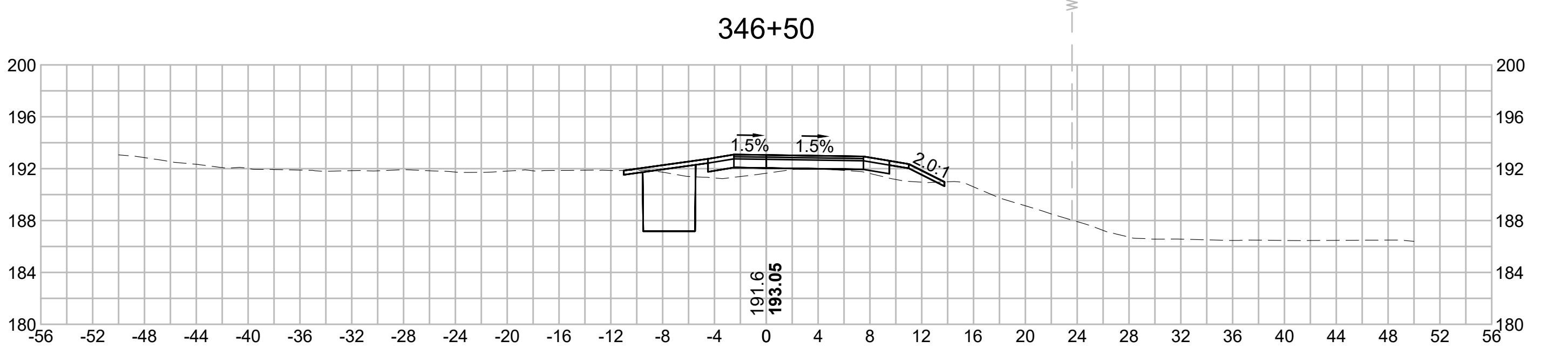
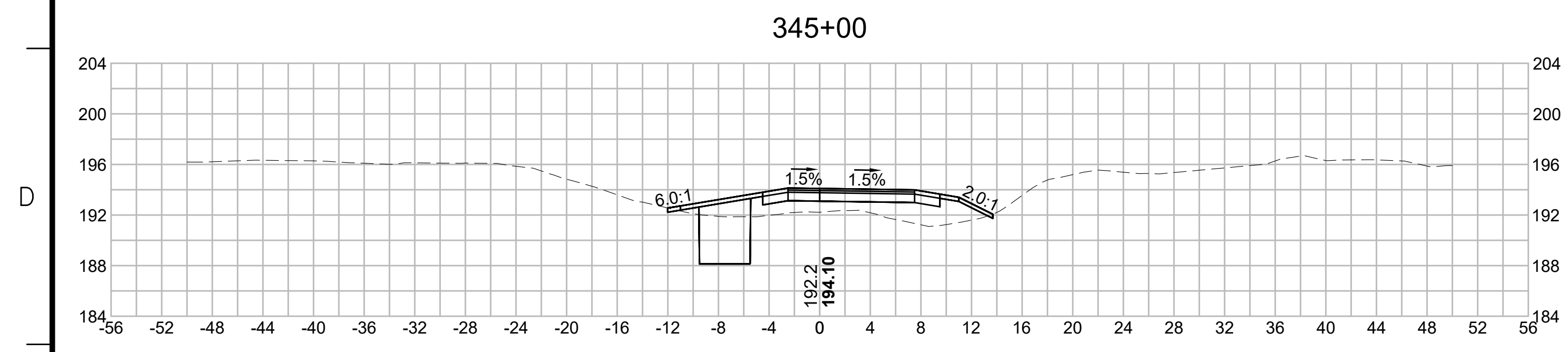
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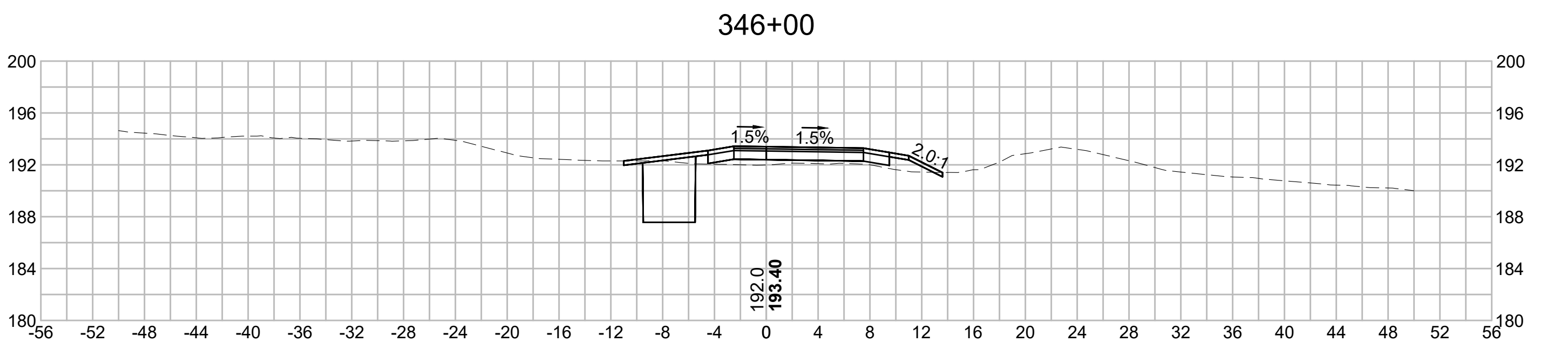
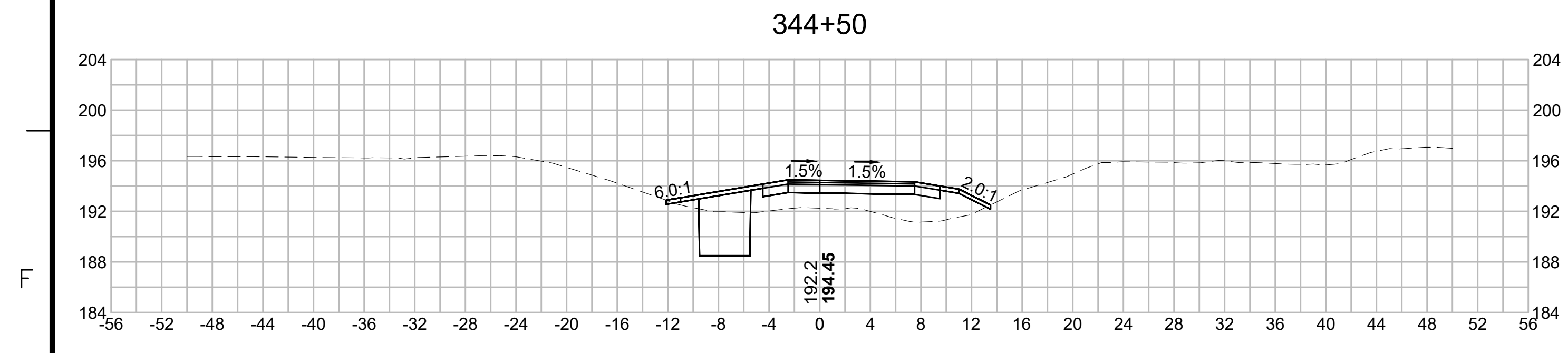
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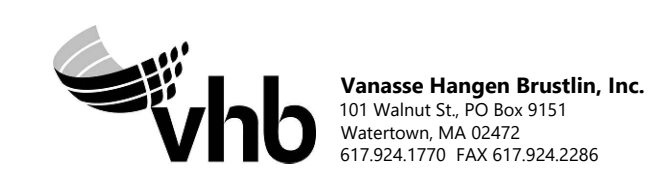


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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 2610F349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

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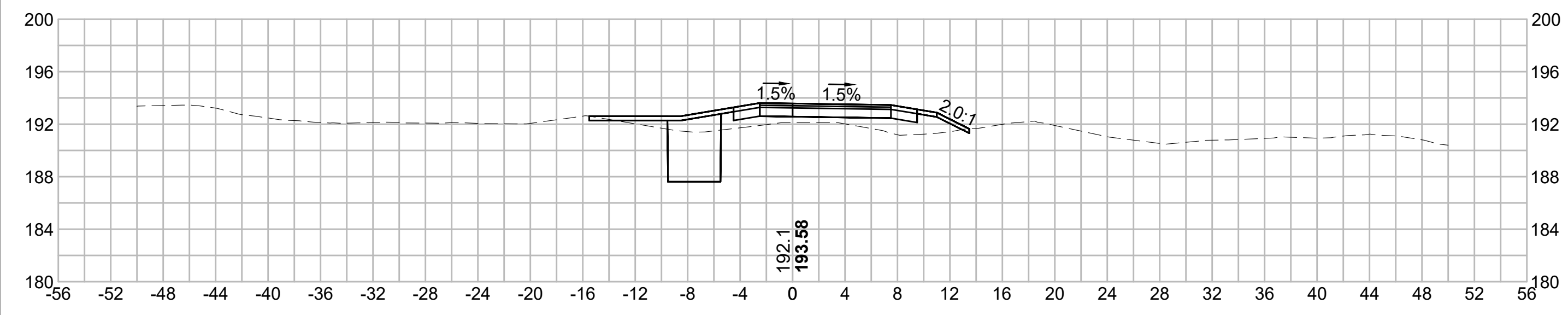
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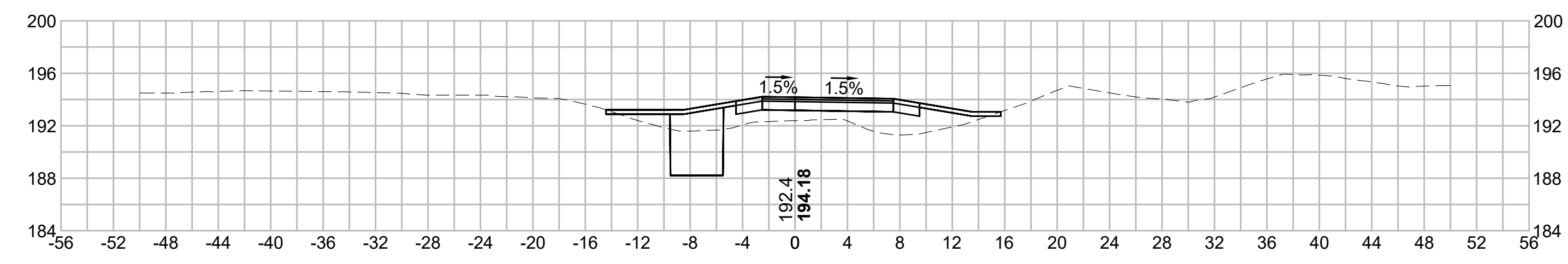
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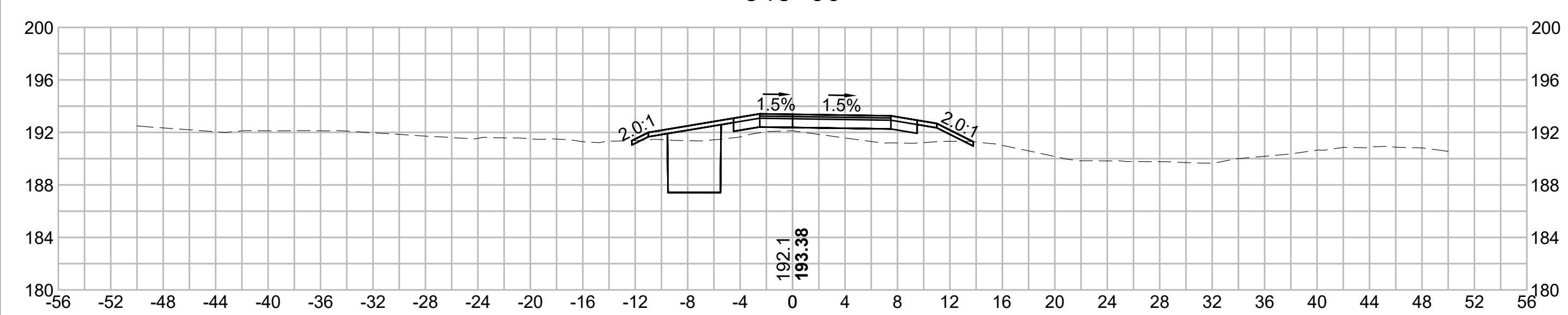
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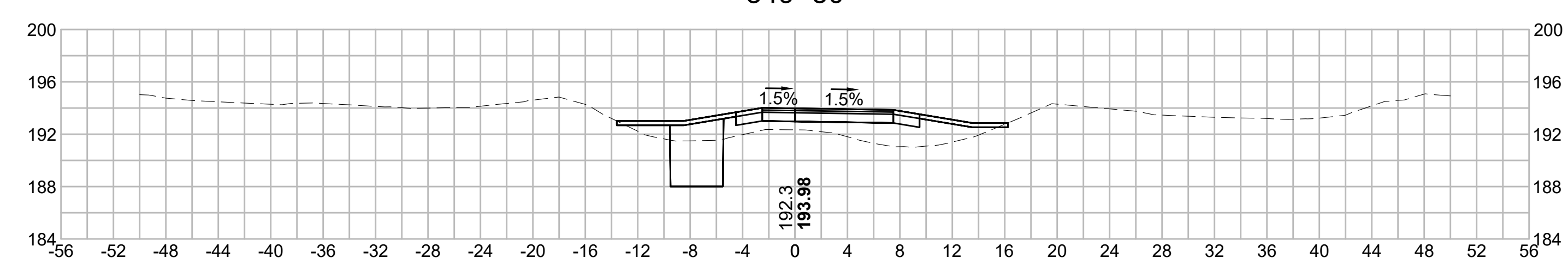
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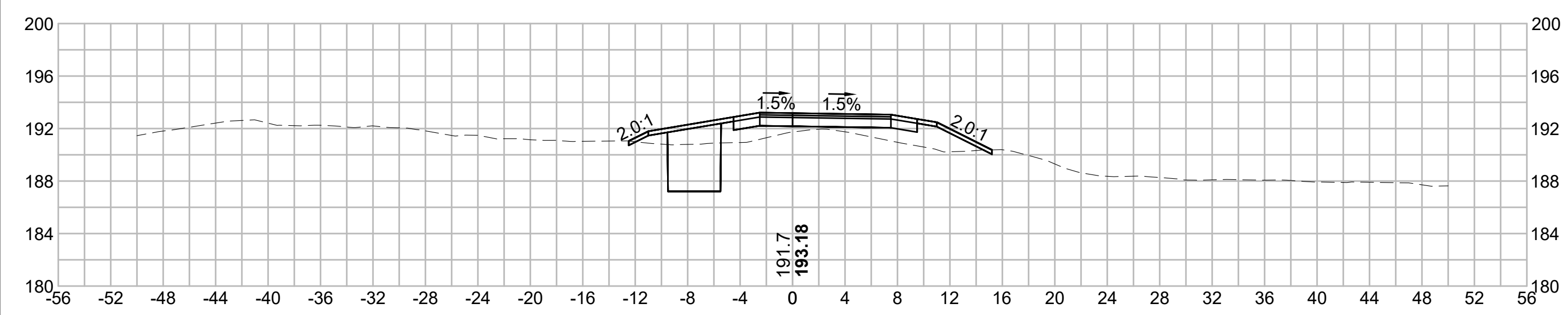
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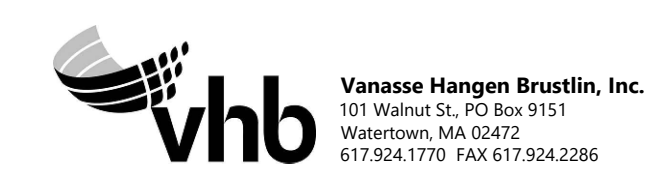
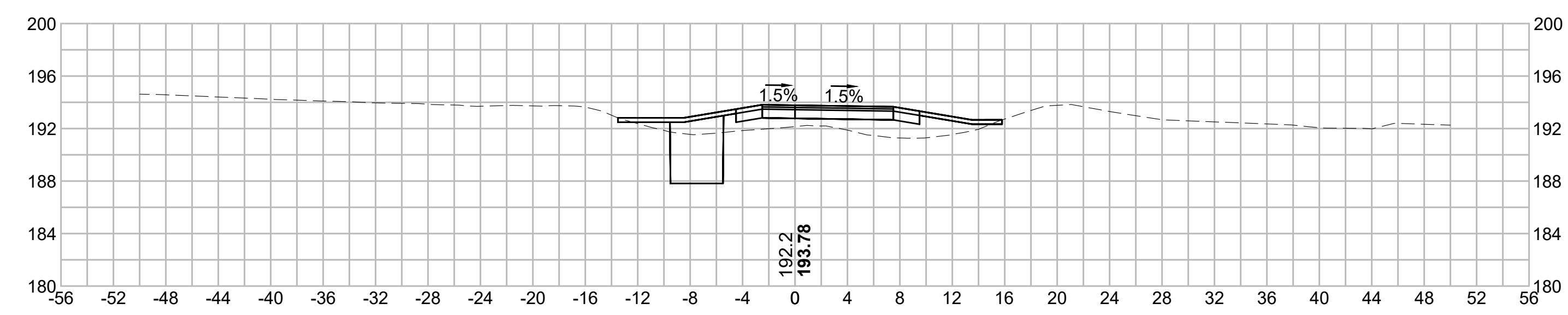
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N.O.	DESCRIPTION	BY	DATE	APPR.
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EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 262 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

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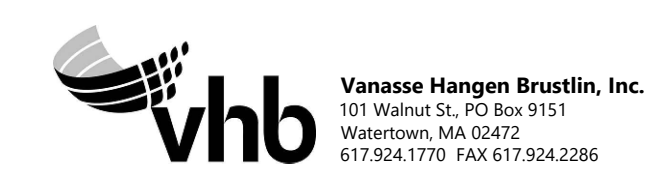
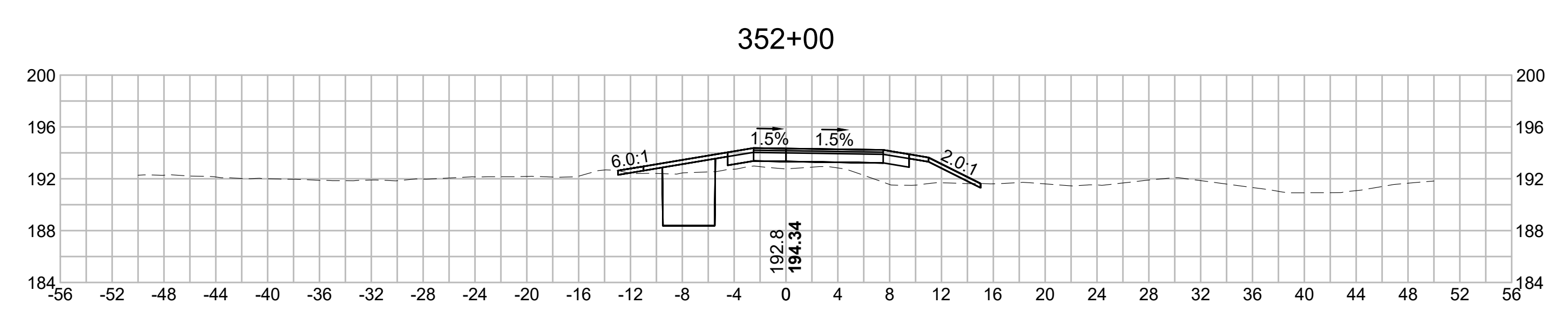
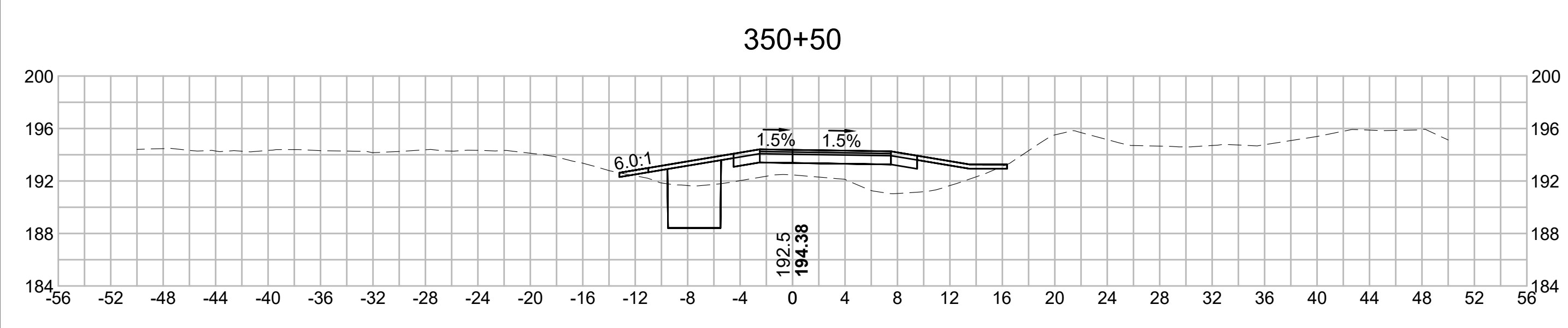
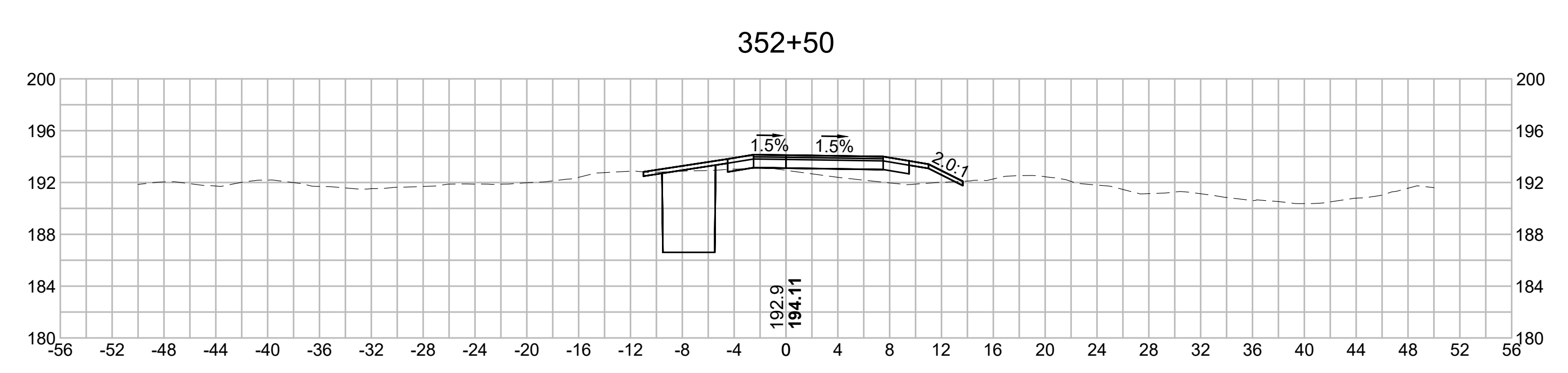
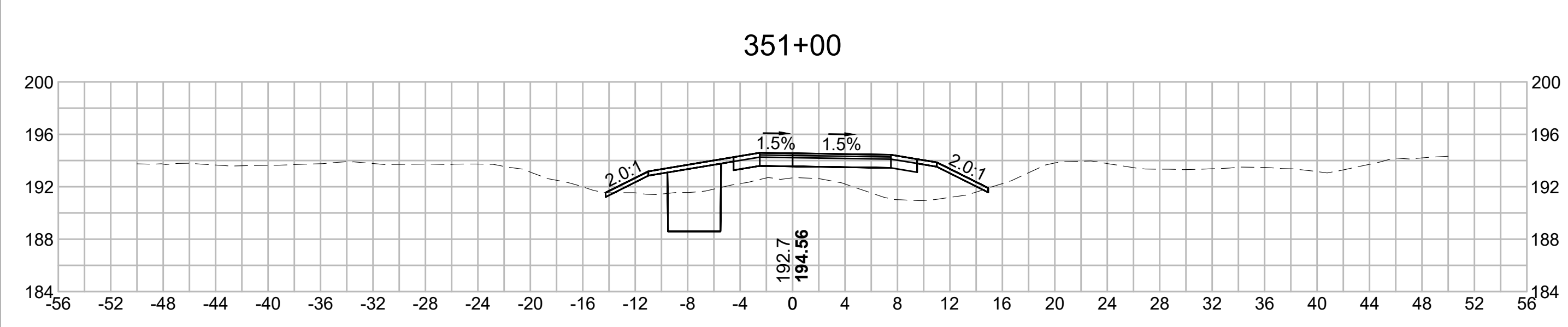
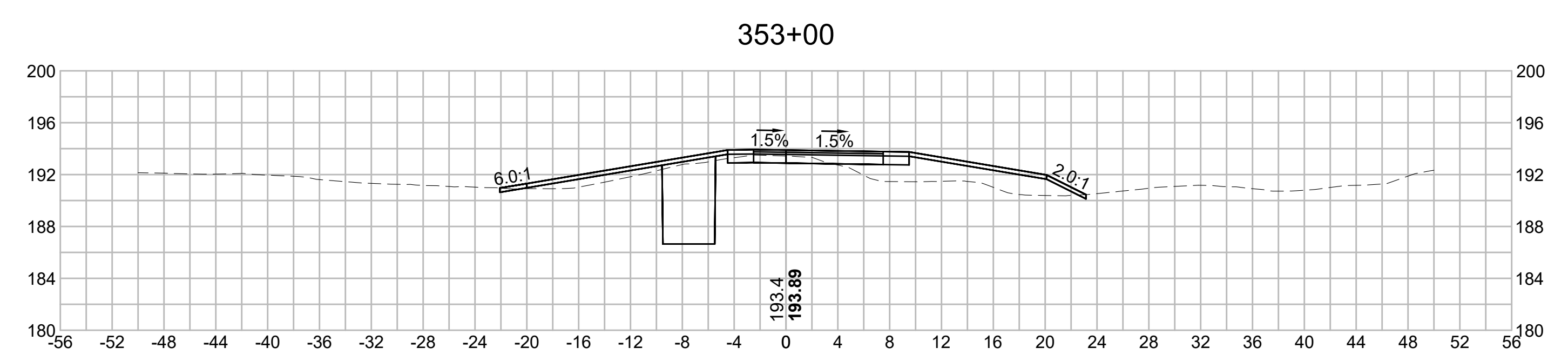
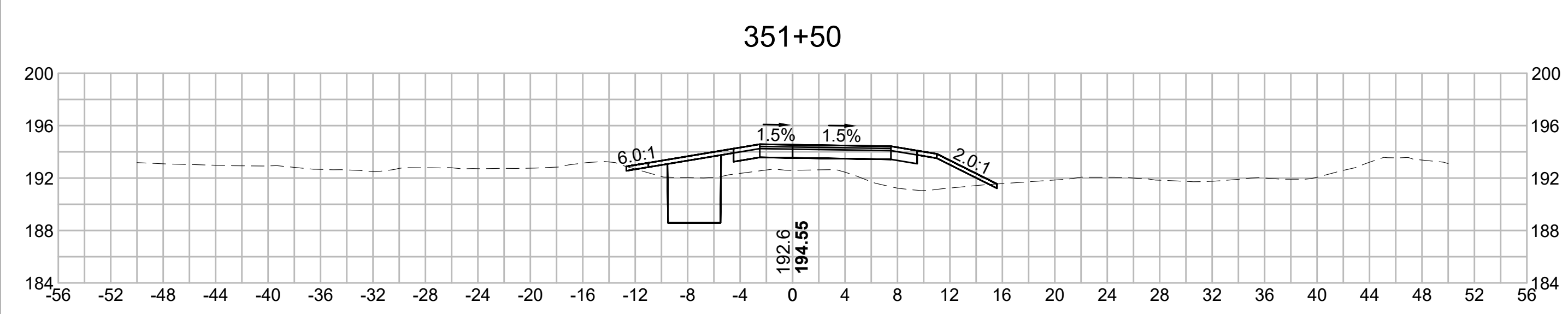
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NO.		DESCRIPTION		BY	DATE	APPR.
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SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT						
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS						
CROSS SECTIONS						
PLAN 263 OF 349						
SCALE: unless noted 1"=8'		DATE	DRAWN	CHK'D	APP'R.	DRAWING NO. REV.
		DEC 2021	MS	SK	MES	. .

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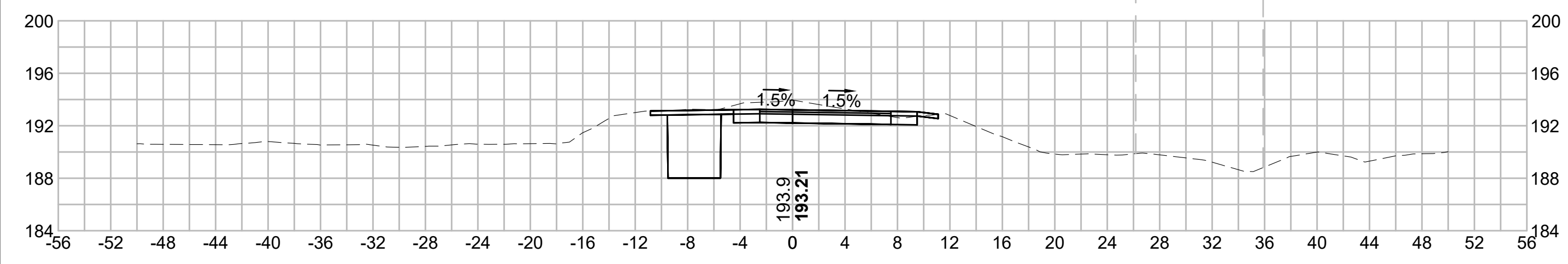
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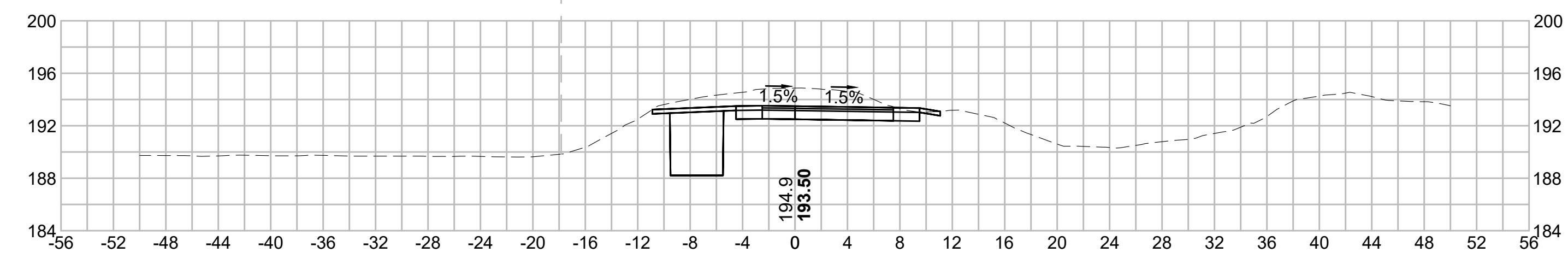
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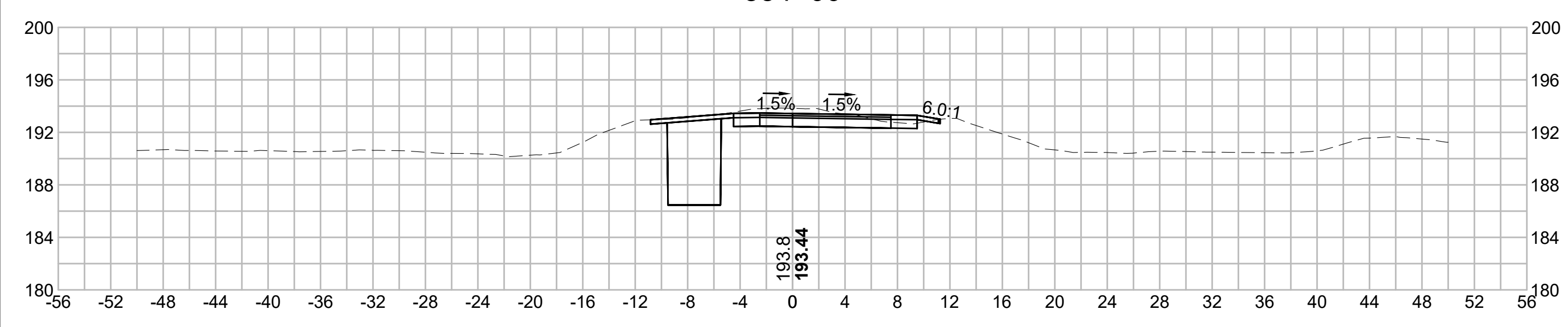
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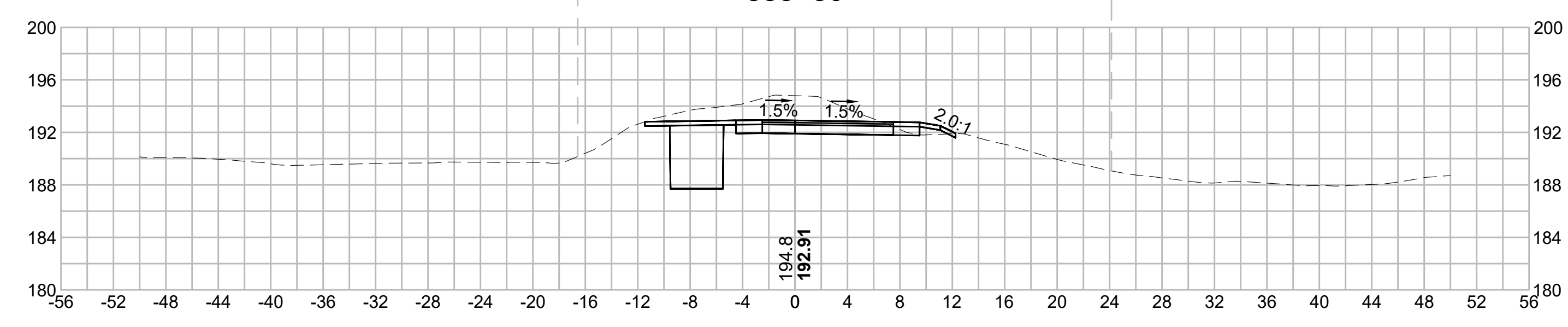
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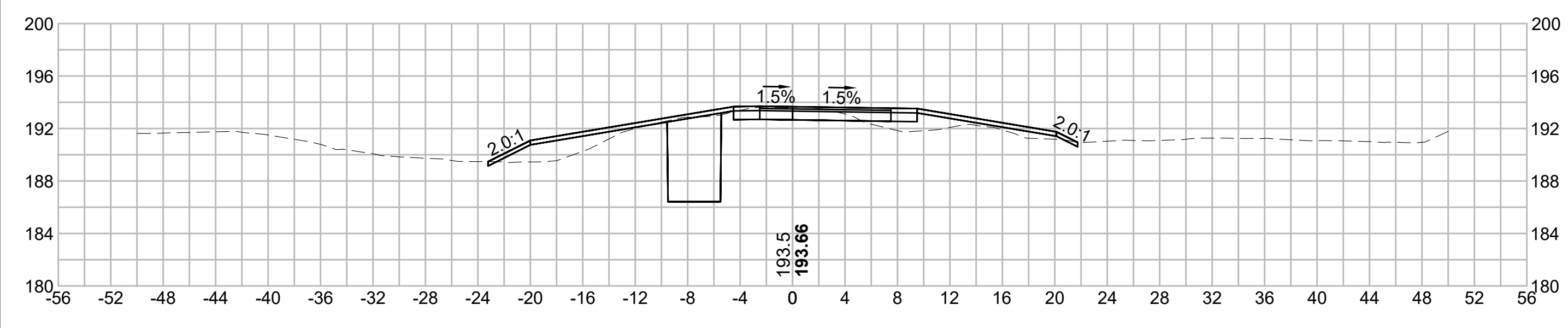
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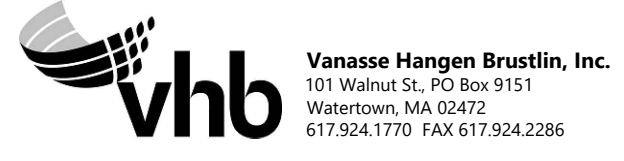
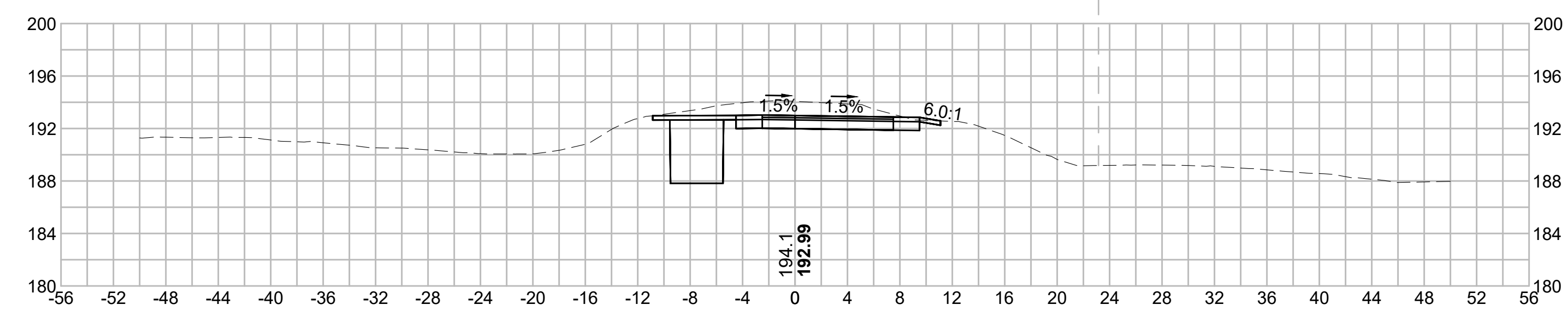
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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 CROSS SECTIONS

PLAN 264 OF 349

SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES	DRAWING NO. REV.
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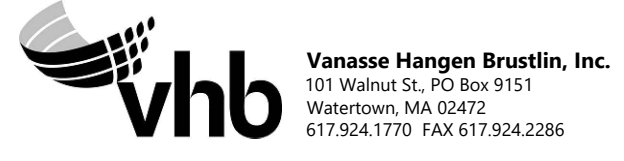
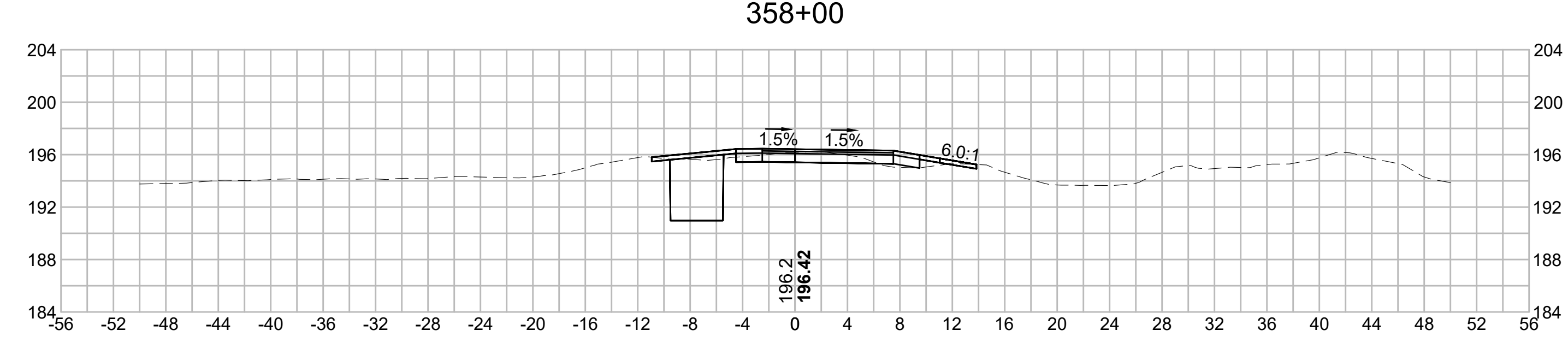
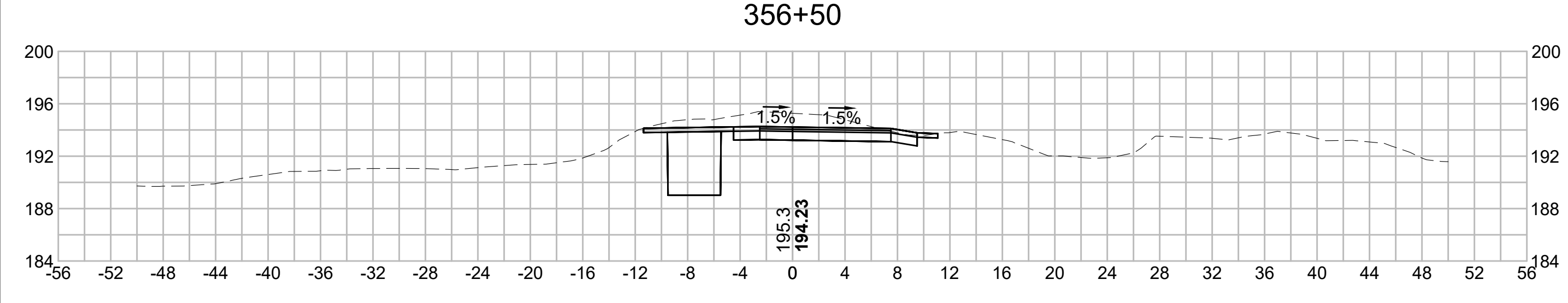
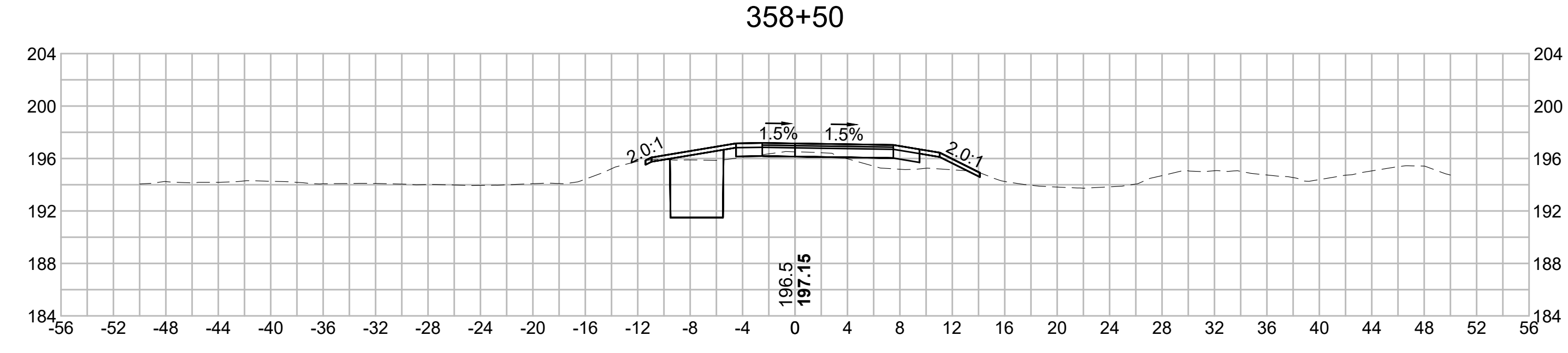
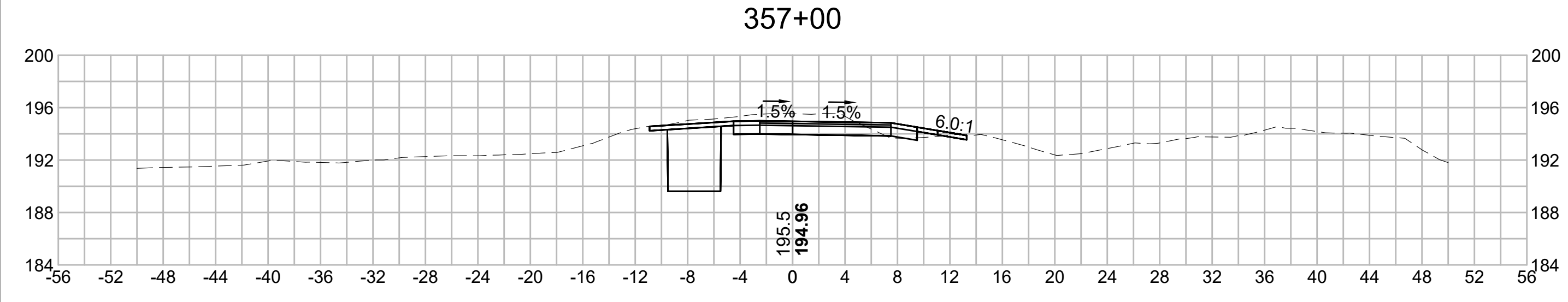
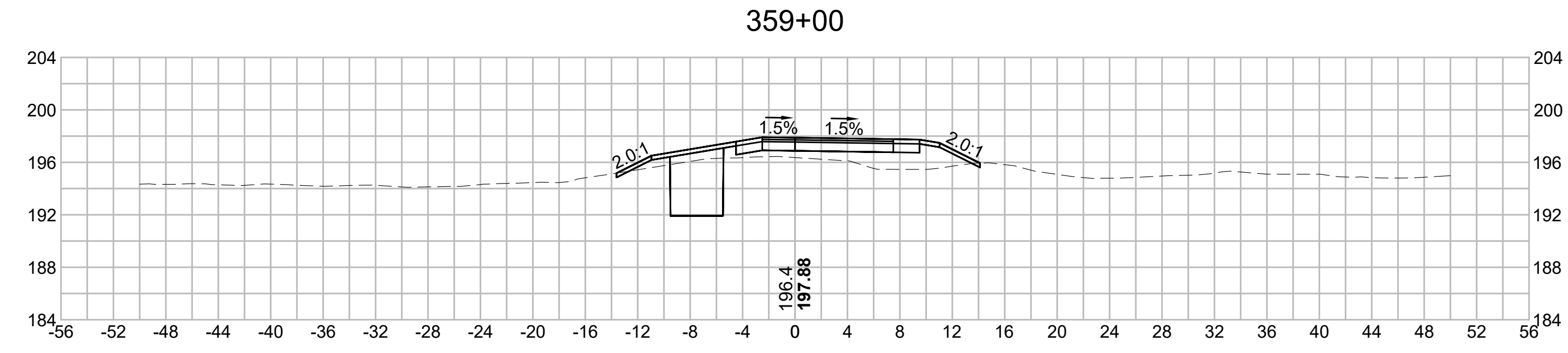
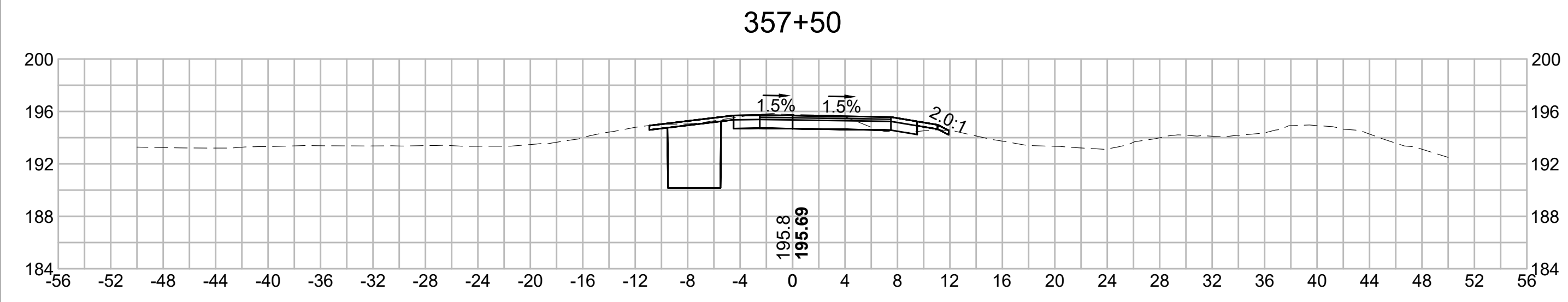
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N.O.	DESCRIPTION	BY	DATE	APPR.
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SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 265 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

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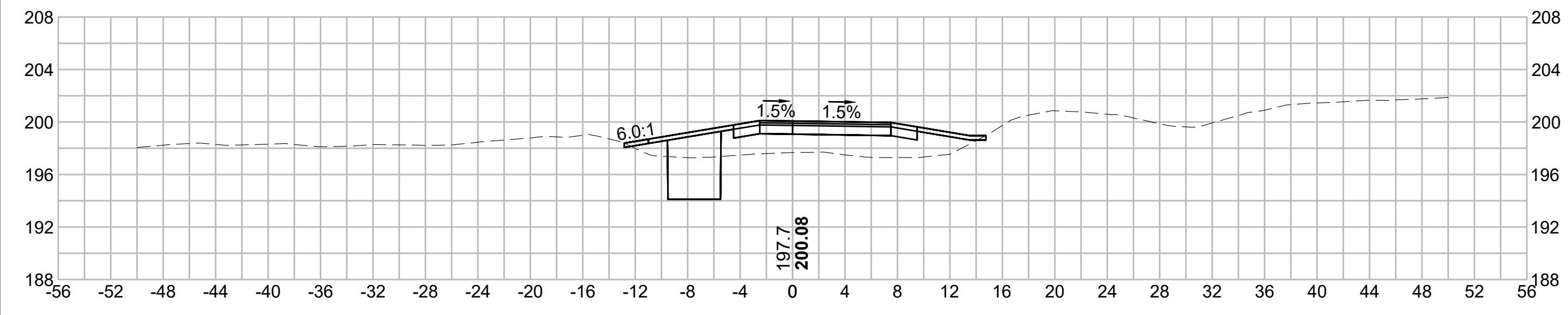
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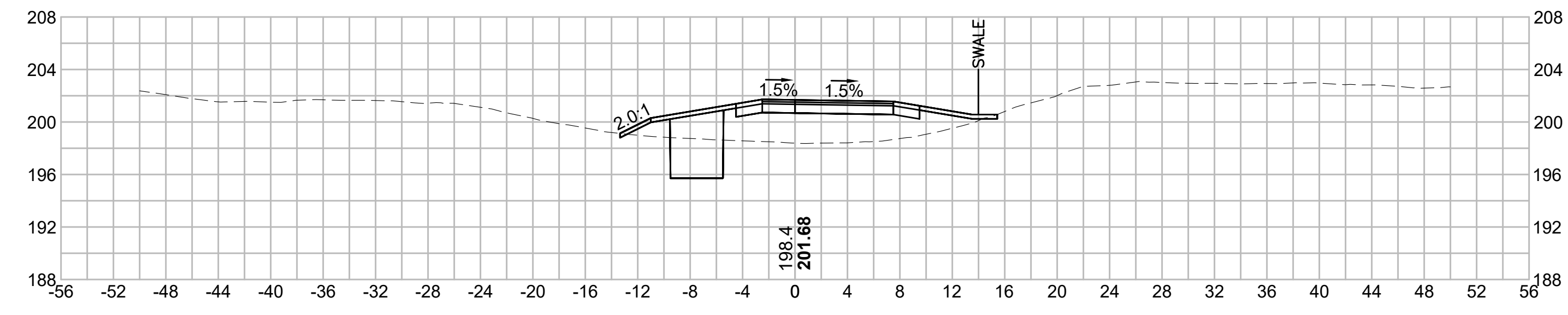
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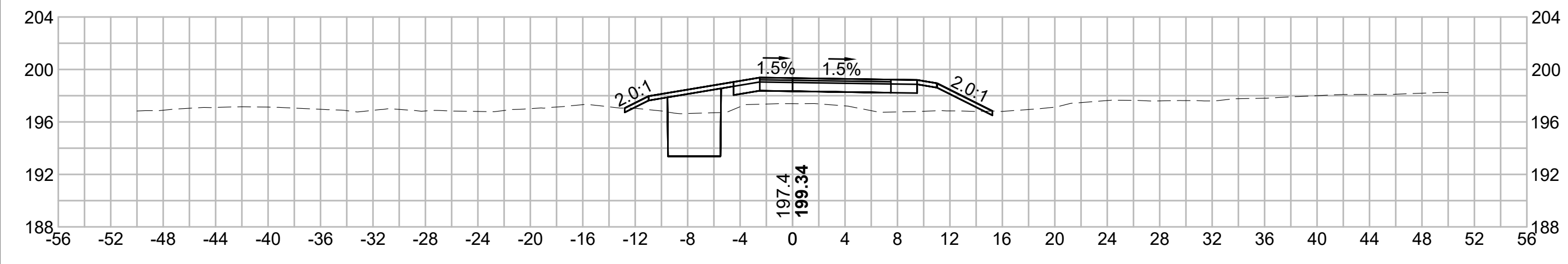


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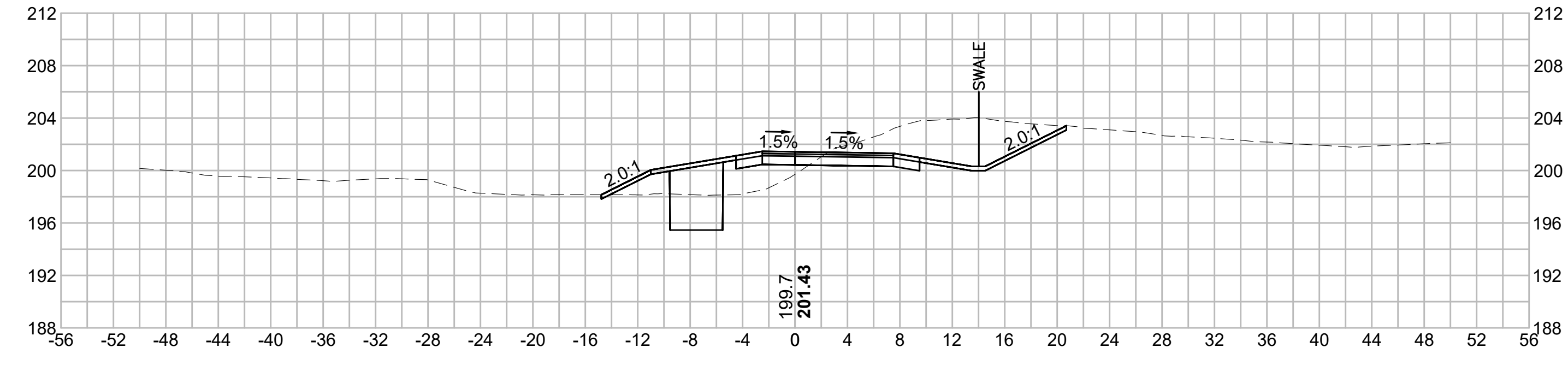


TOWN OF SUDBURY

360+00

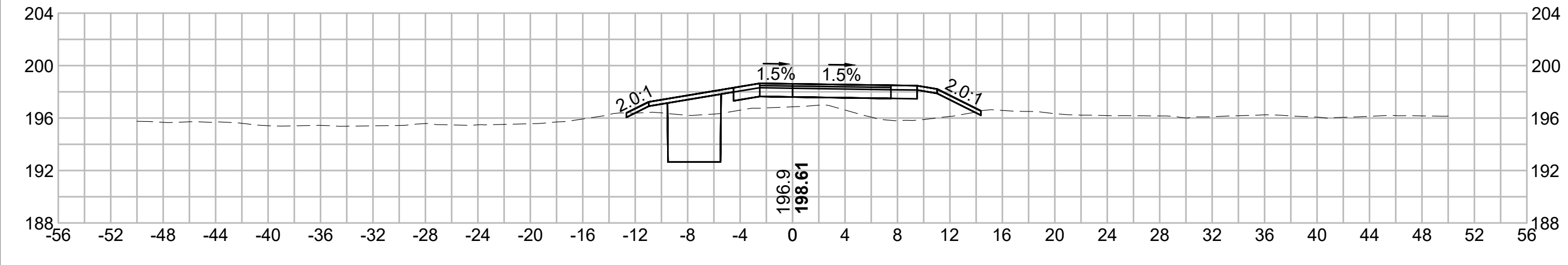


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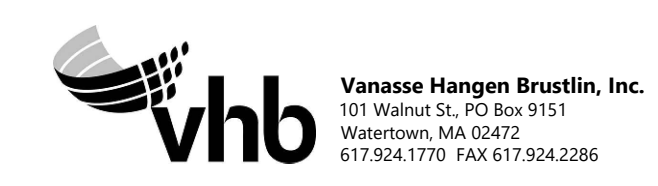
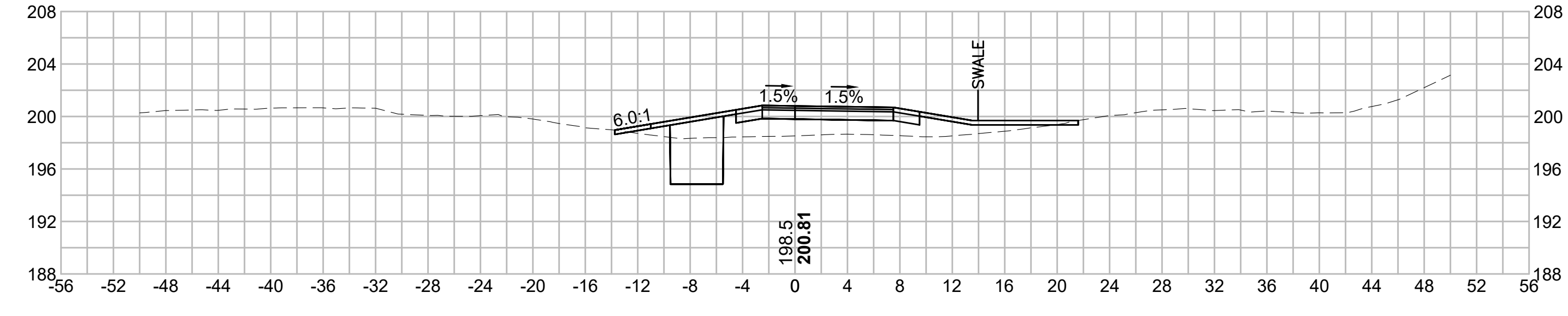


CITY OF MARLBOROUGH
TOWN OF HUDSON

359+50



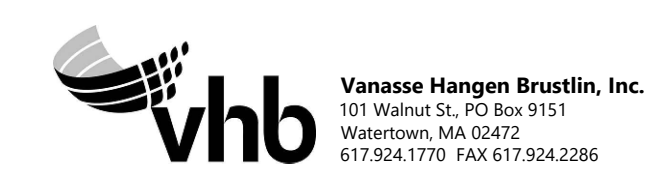
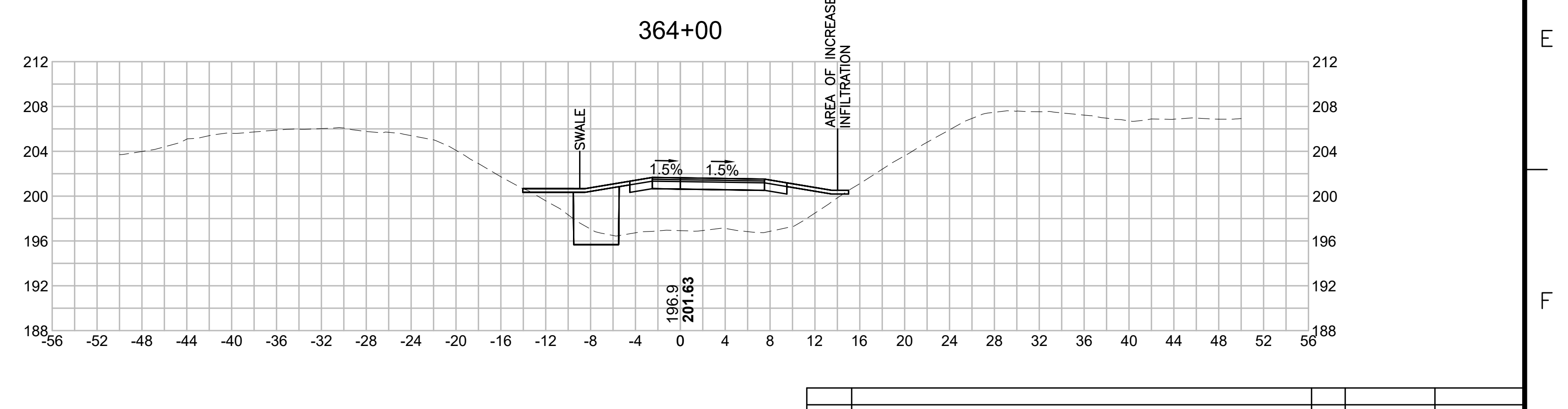
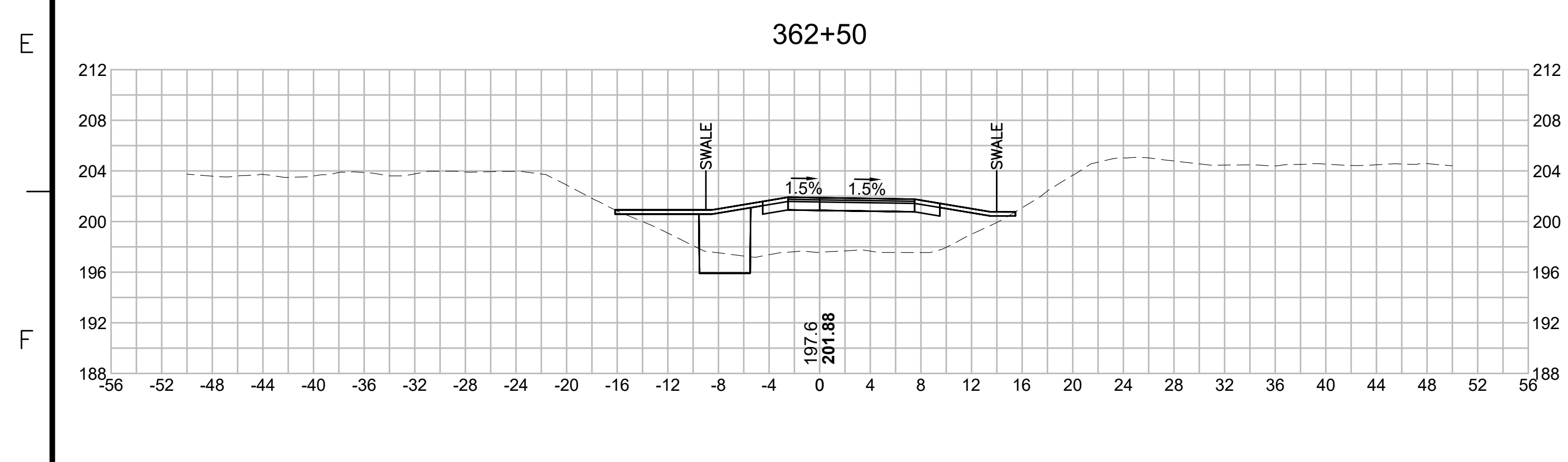
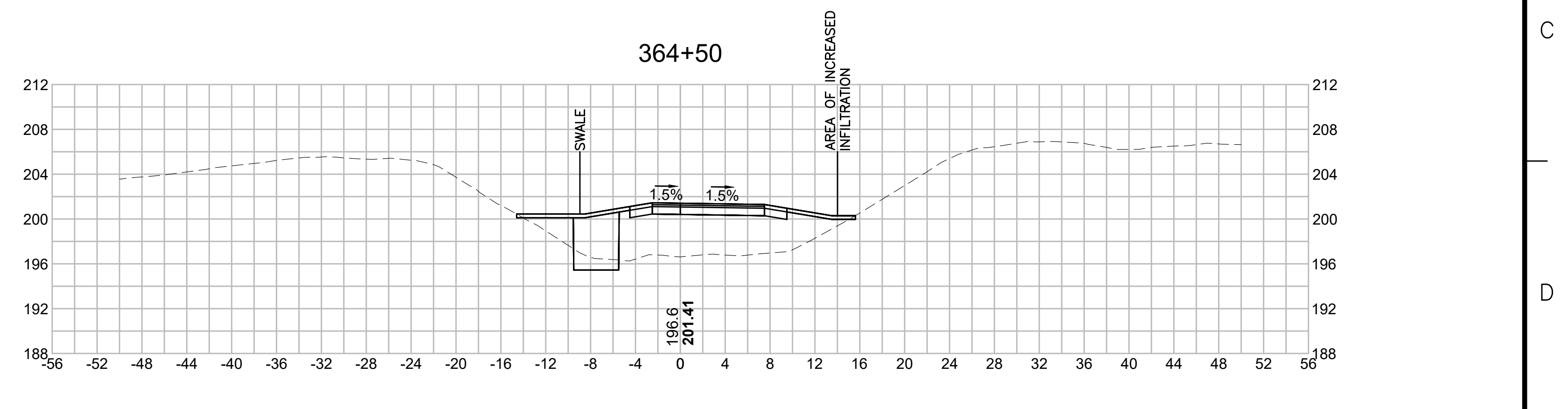
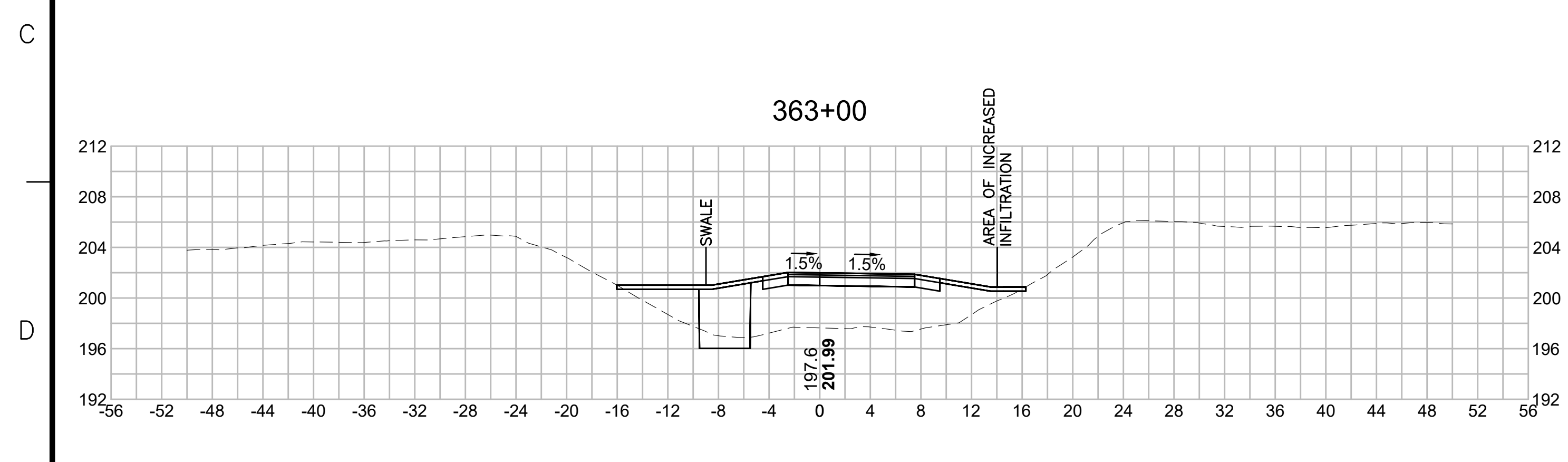
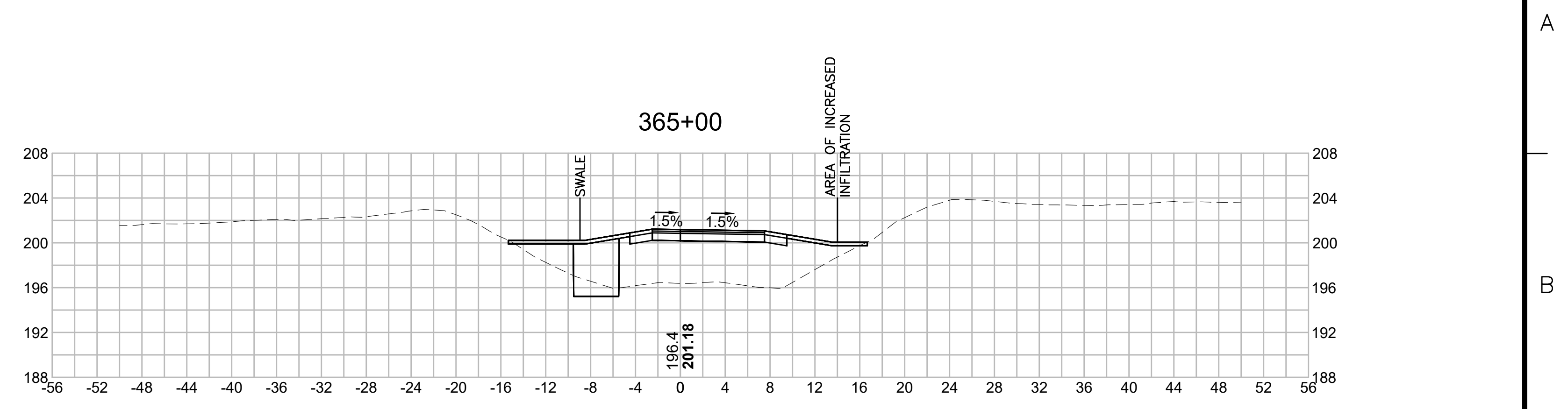
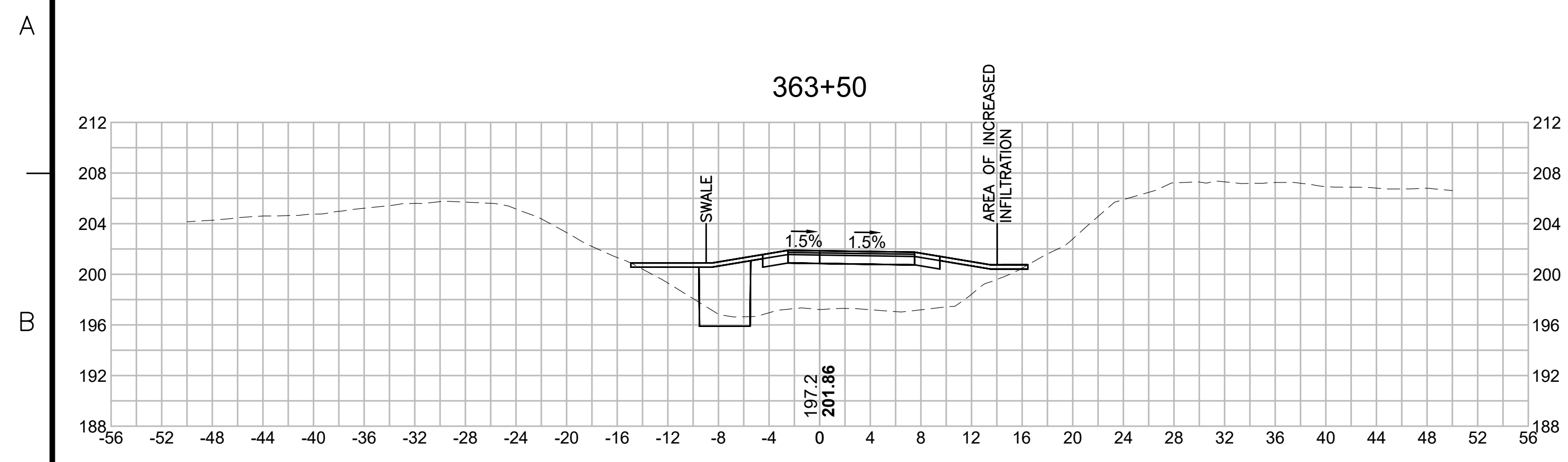
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N.O.	DESCRIPTION	BY	DATE	APPR.
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SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 266 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

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SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 267 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MS
DRAWING NO.	REV.			

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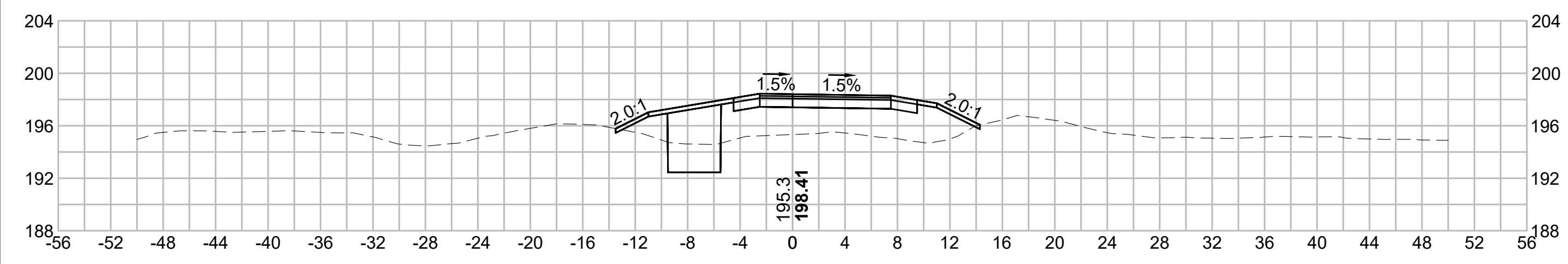
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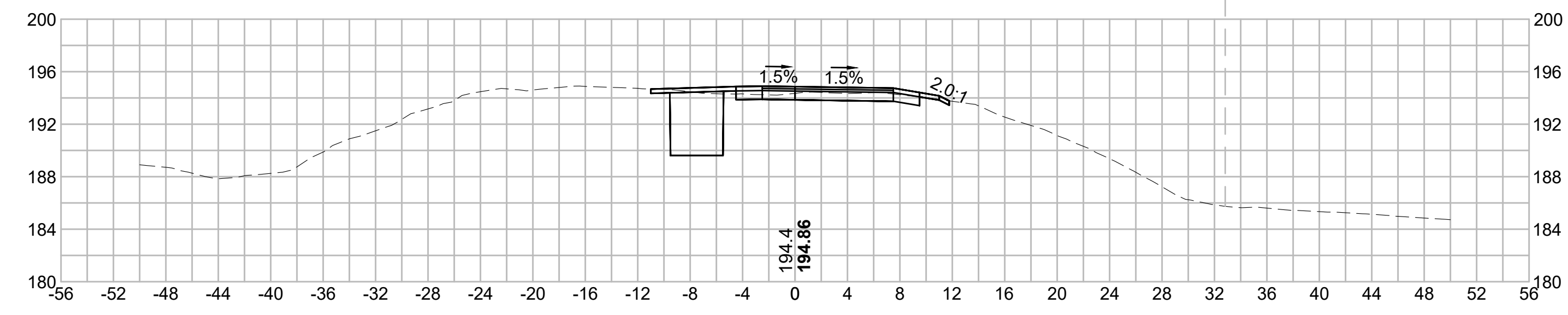
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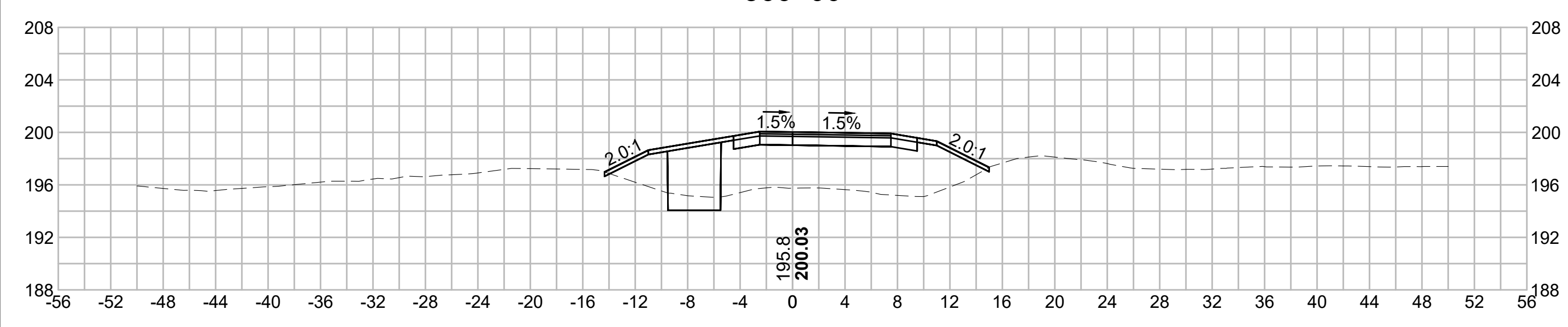
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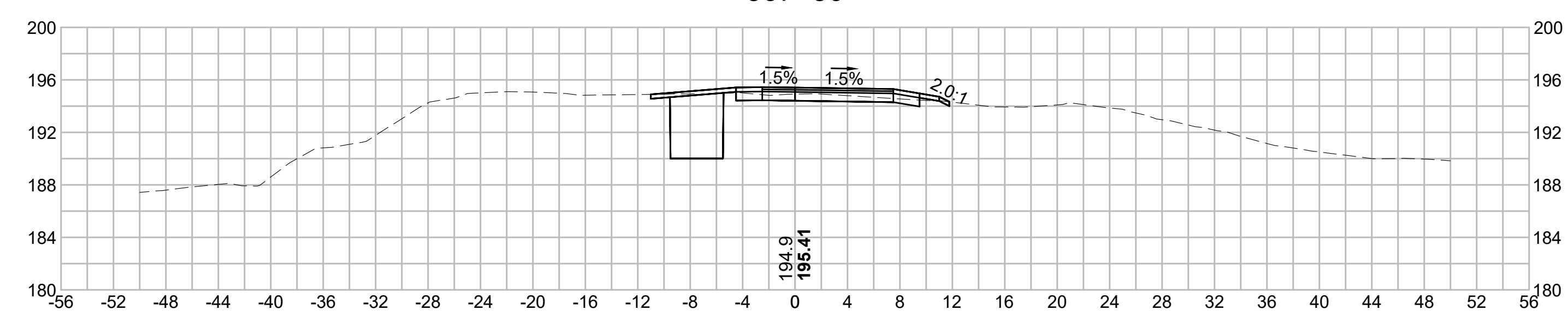
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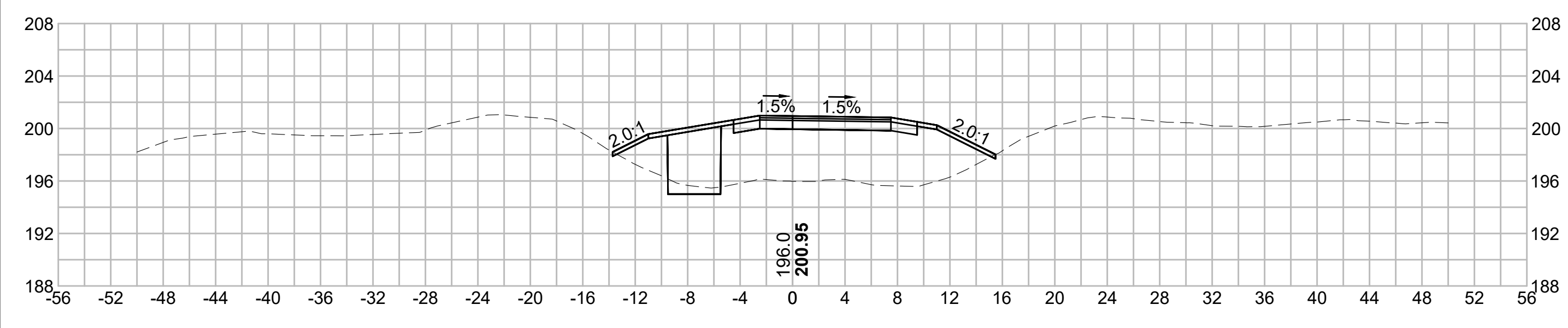
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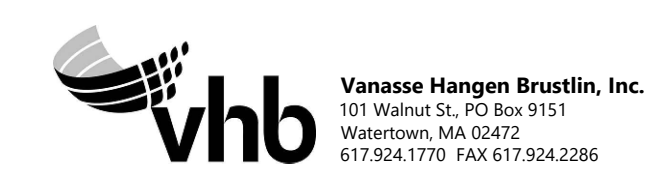
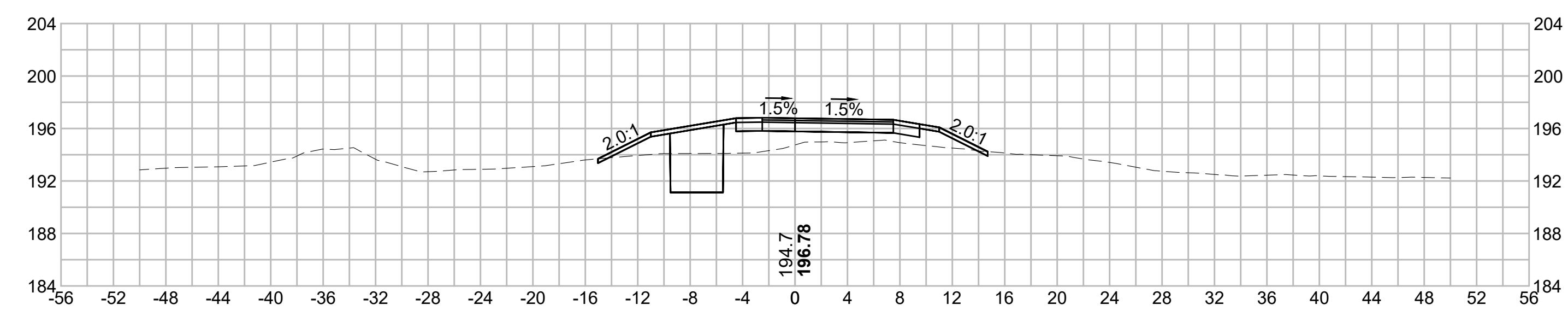
367+50



365+50



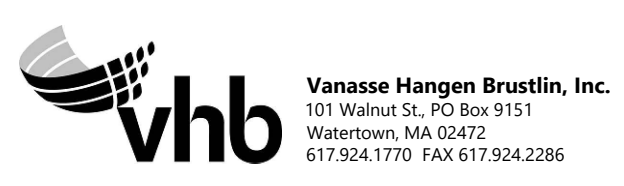
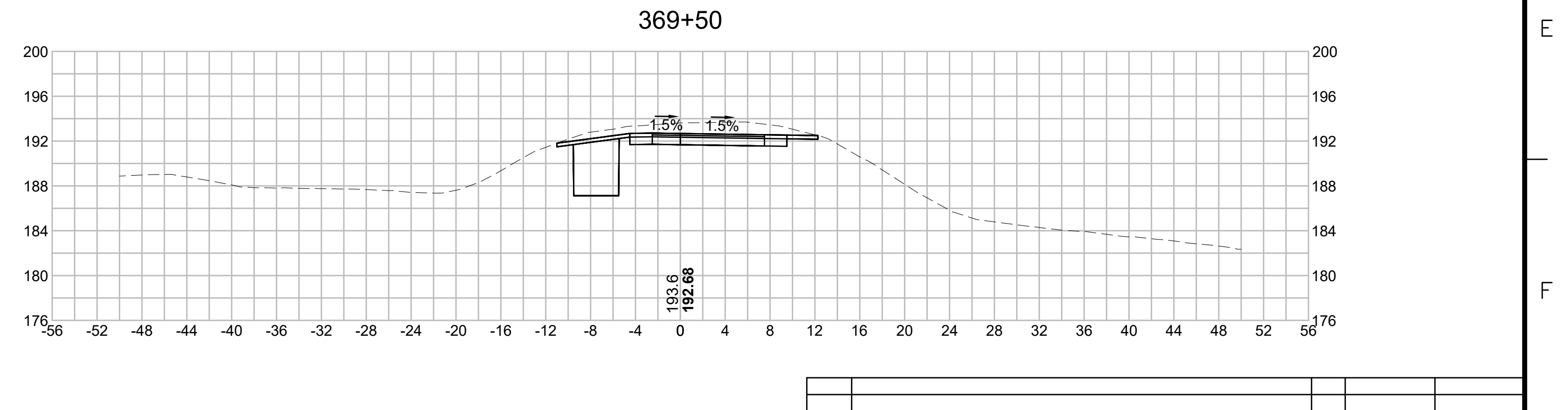
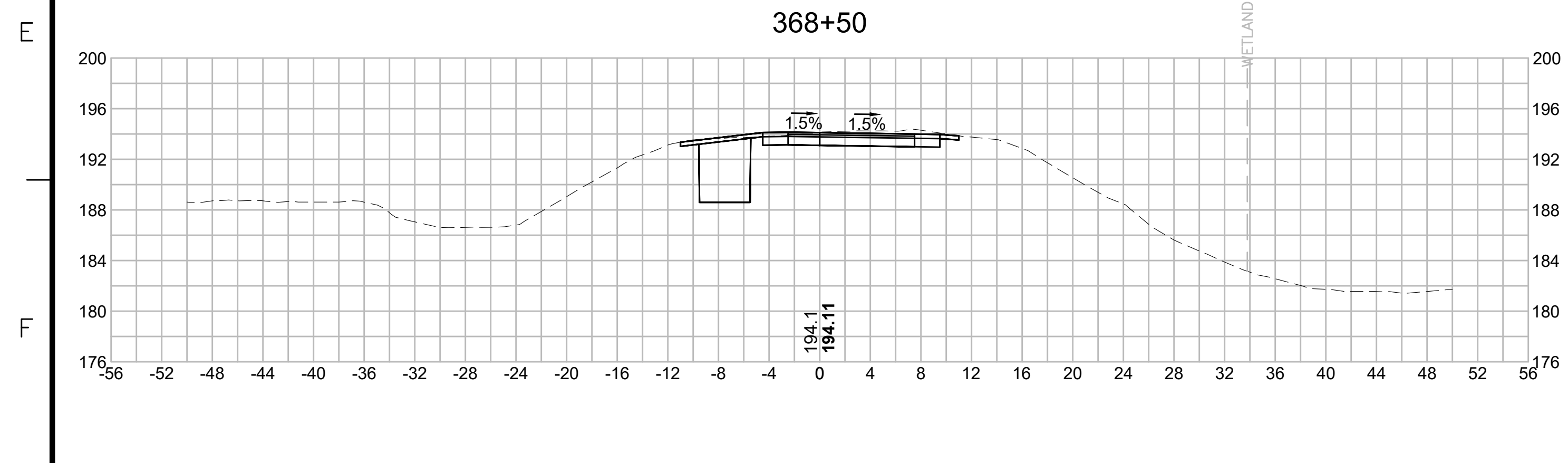
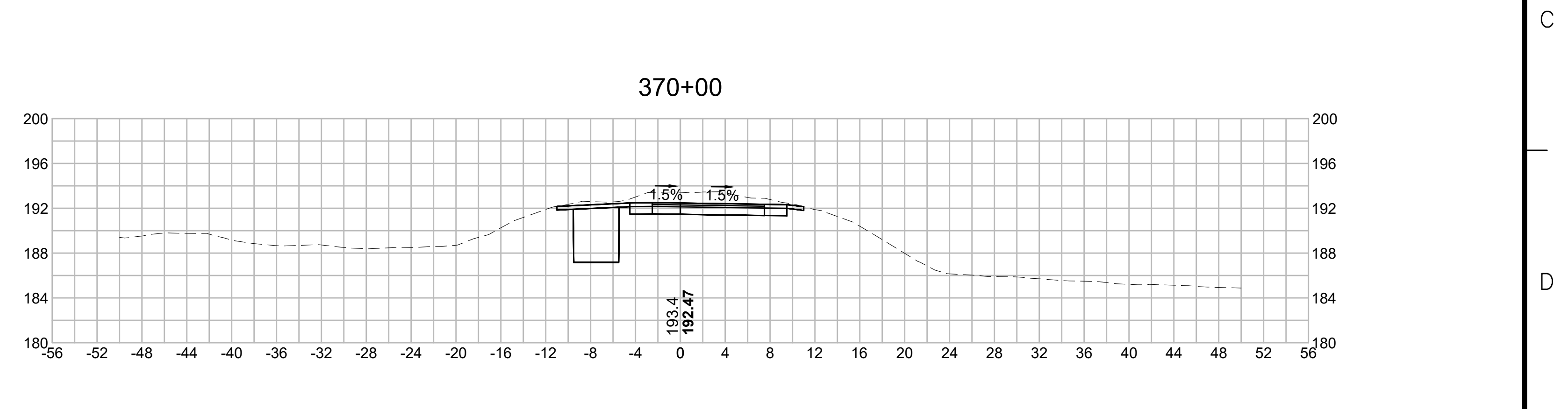
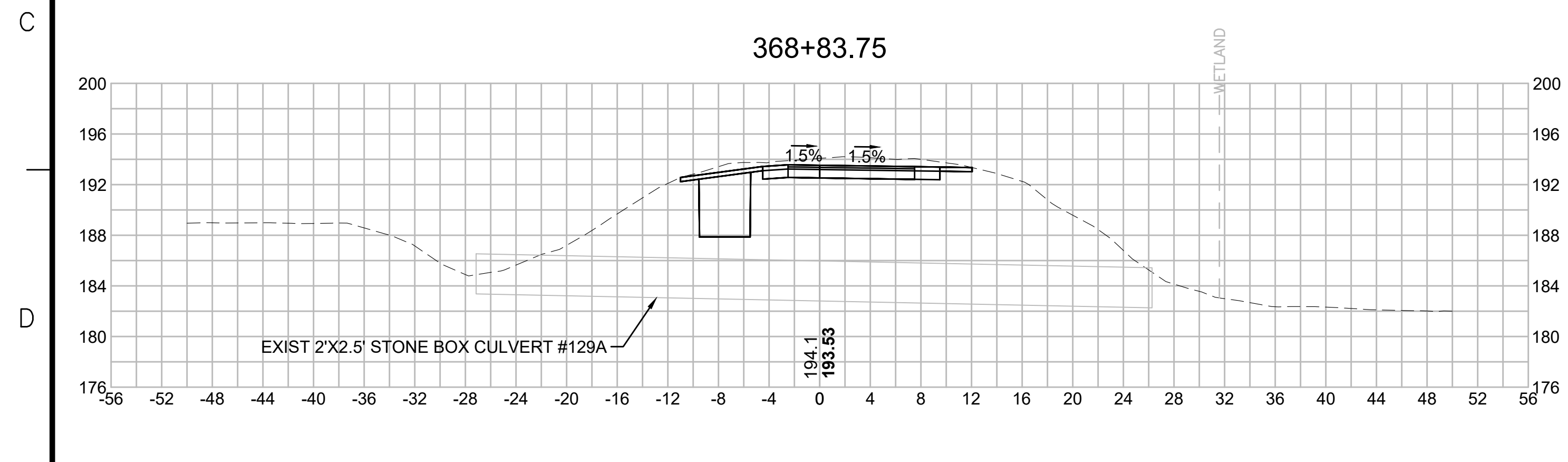
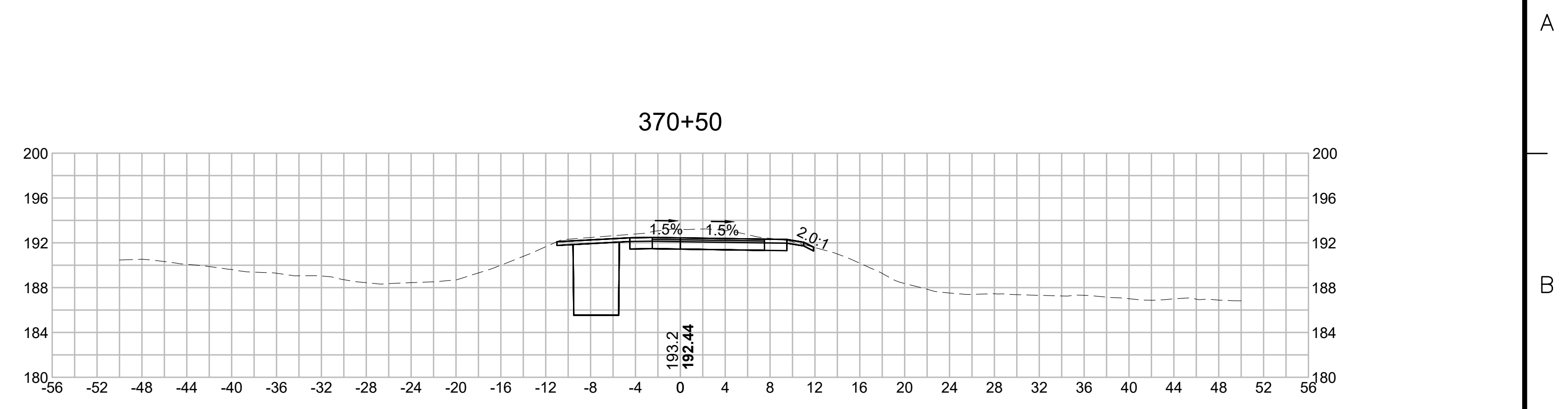
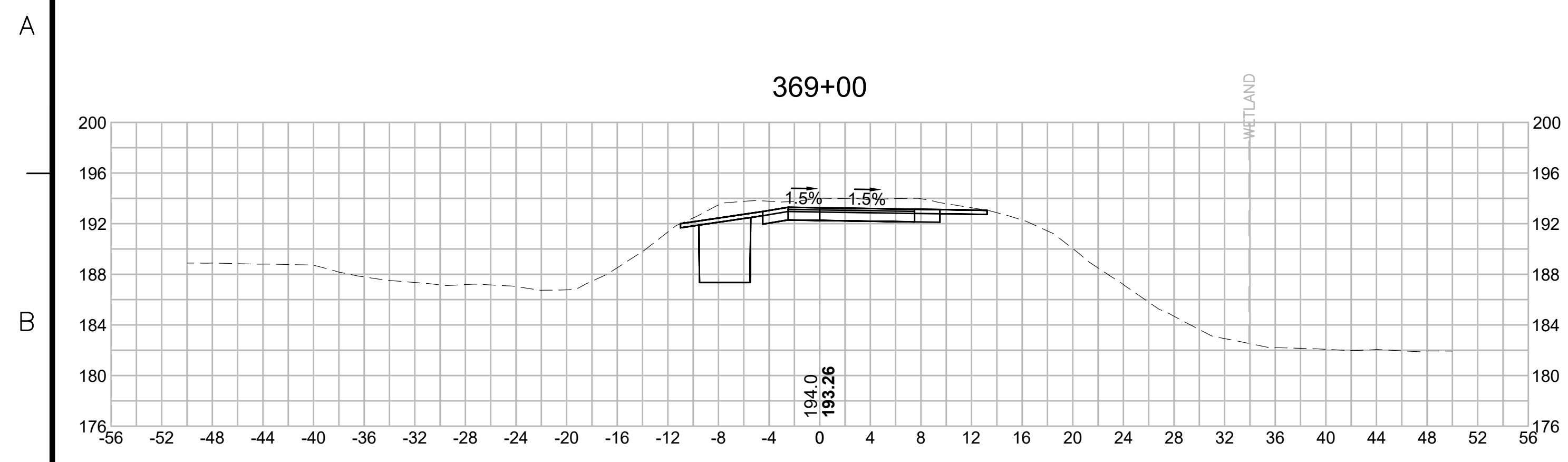
367+00



NO.	DESCRIPTION		BY	DATE	APPR.
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EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CROSS SECTIONS					
PLAN 268 OF 349					
SCALE: unless noted 1"=8'		DATE	DRAWN	CHK'D	APPR.
		DEC 2021	MS	SK	MES
DRAWING NO.					REV.
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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 269 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

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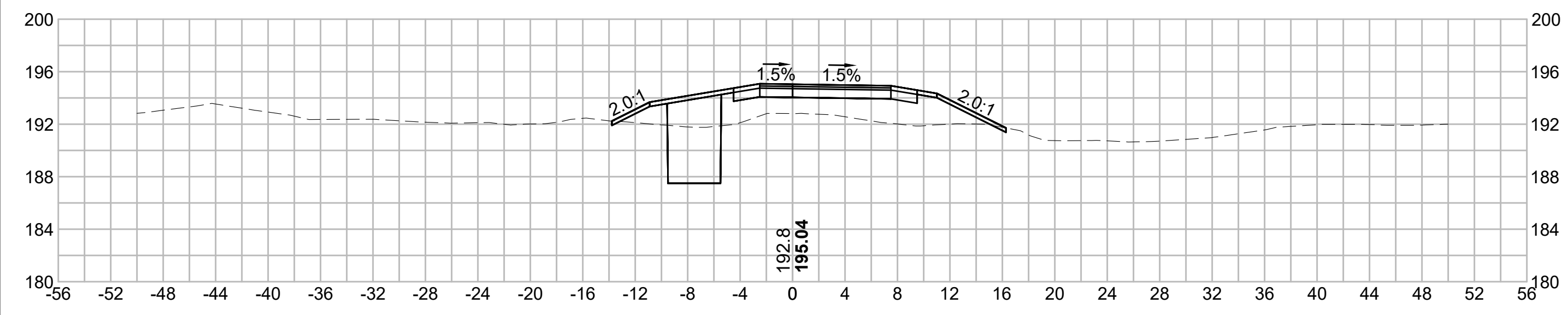
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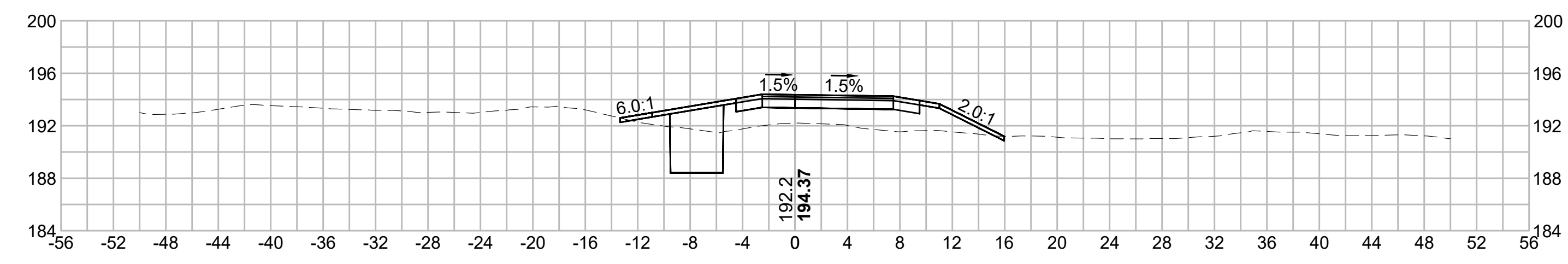
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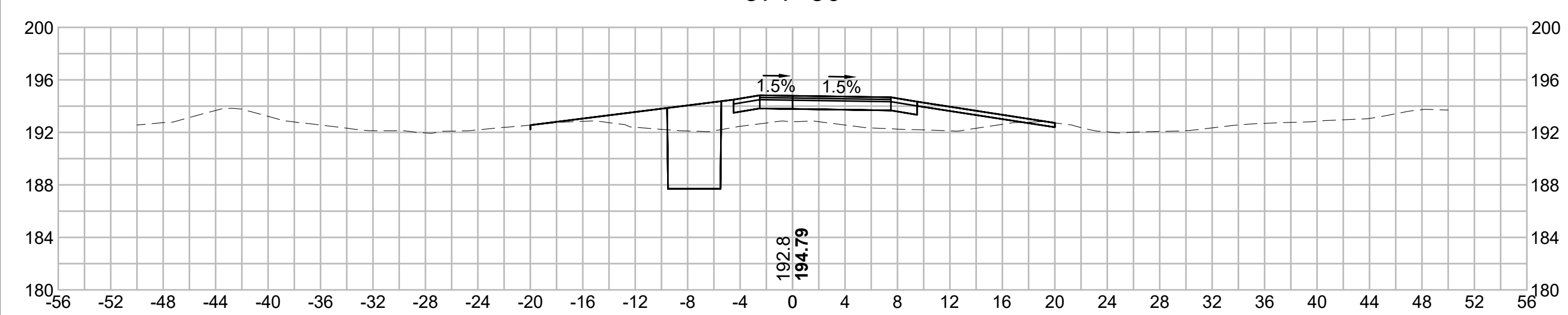
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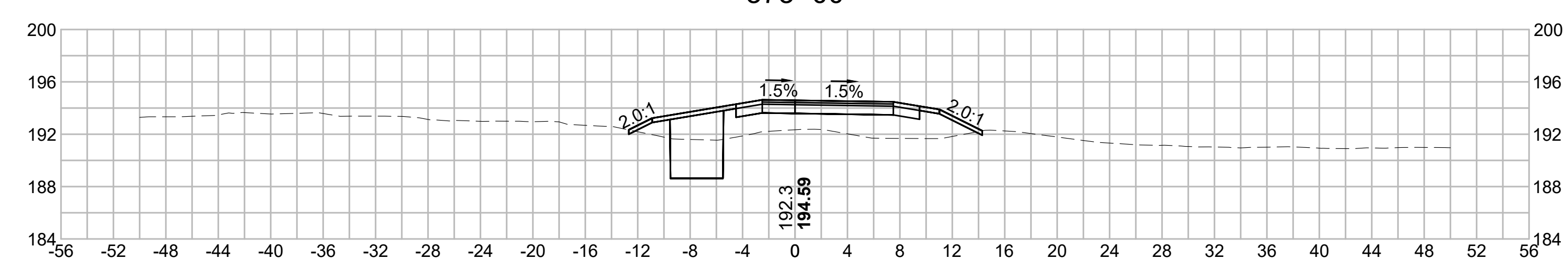
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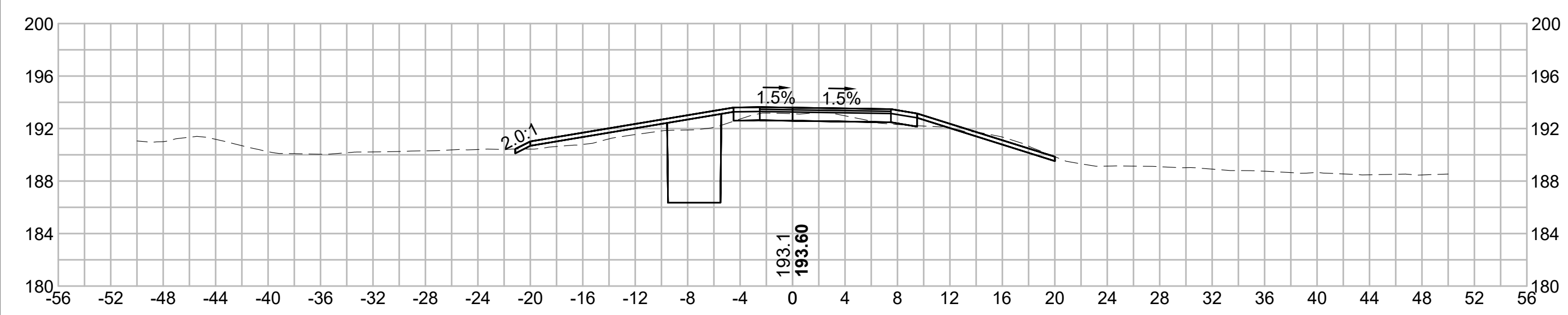
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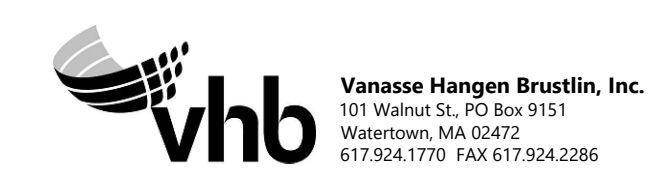
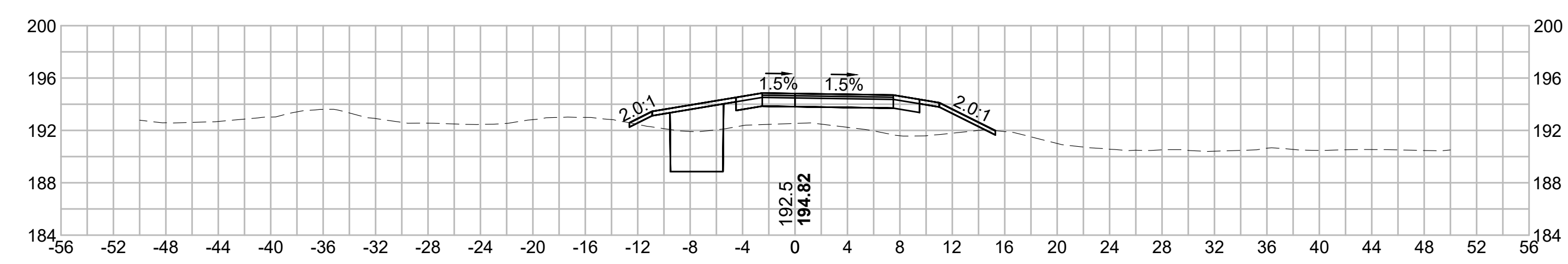
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N.O.	DESCRIPTION	BY	DATE	APPR.
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SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 270 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

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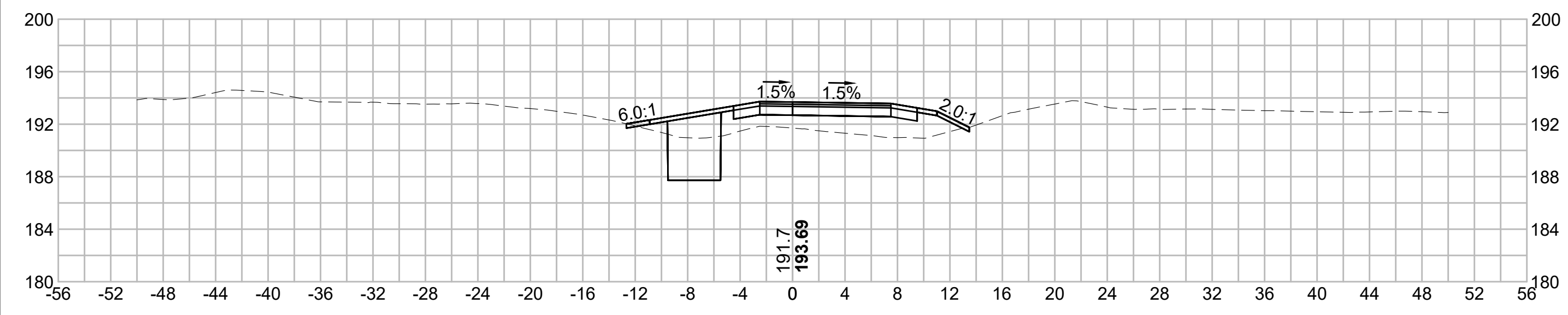
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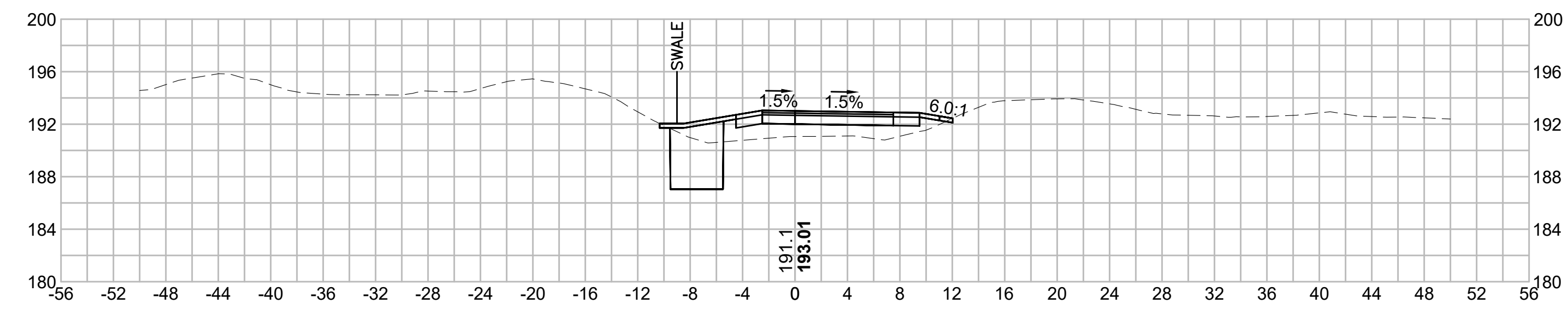
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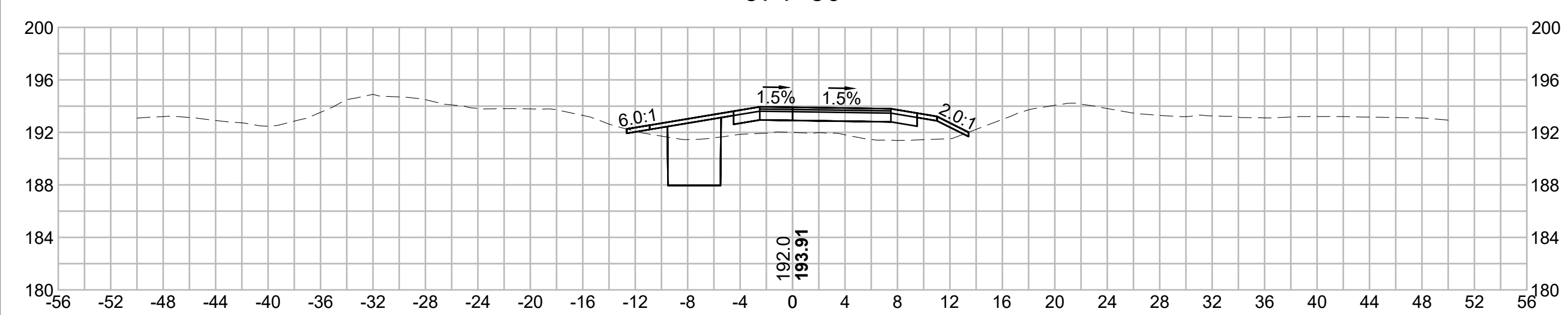
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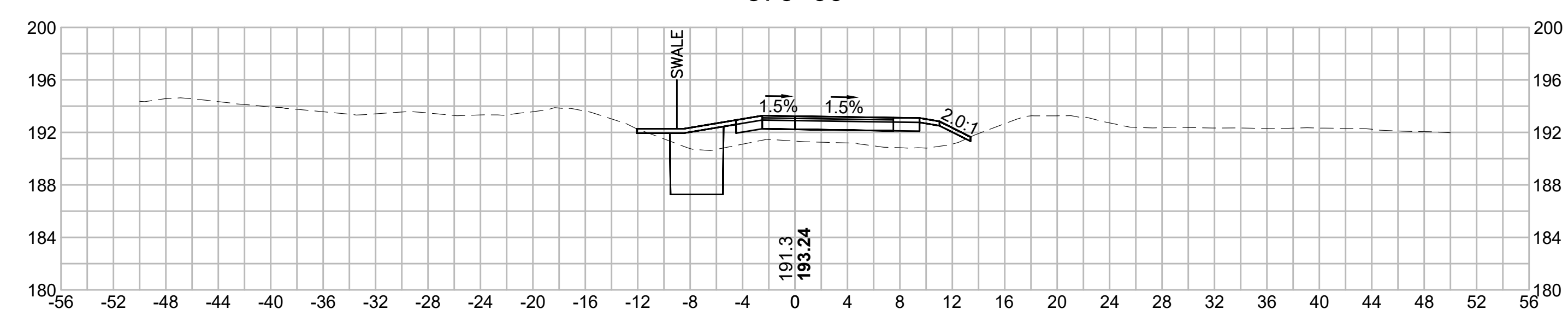
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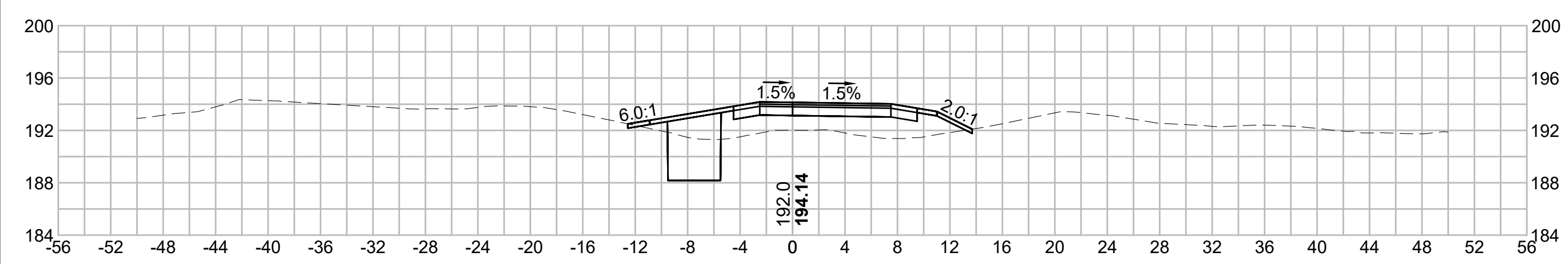
374+50



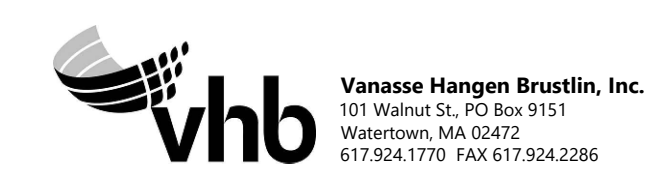
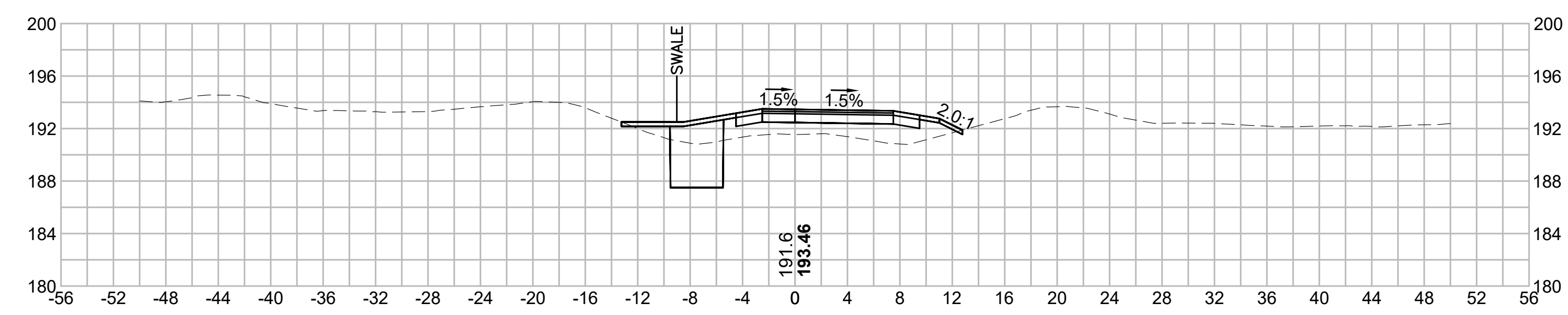
376+00



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N.O.	DESCRIPTION	BY	DATE	APPR.
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HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 2710F349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

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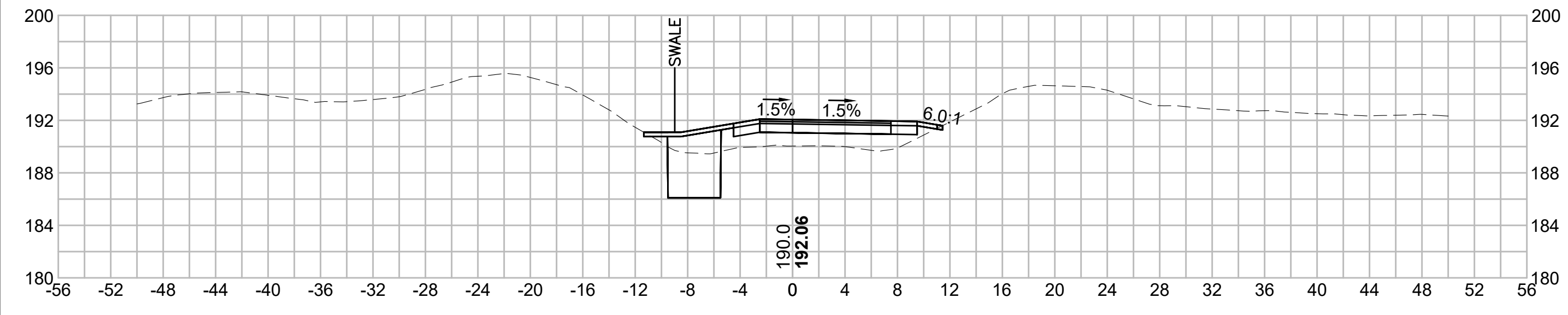
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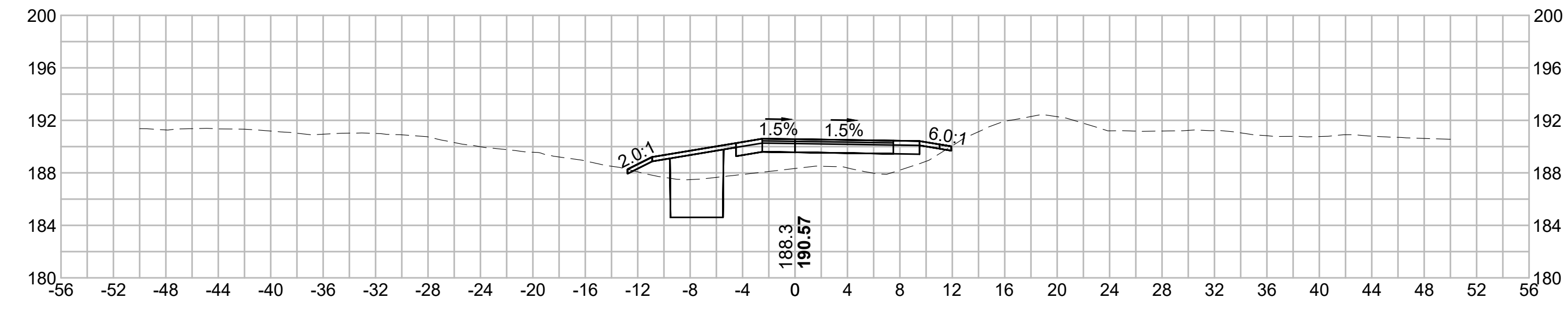
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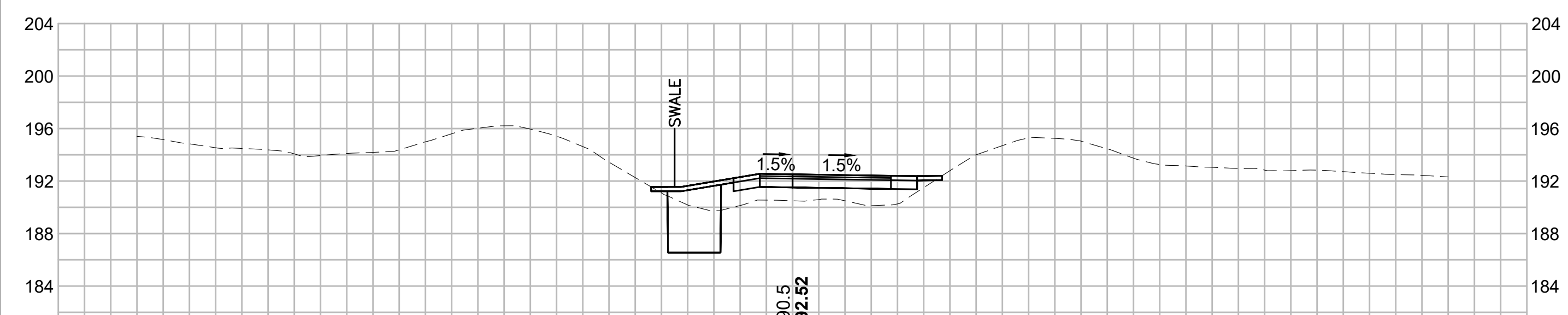
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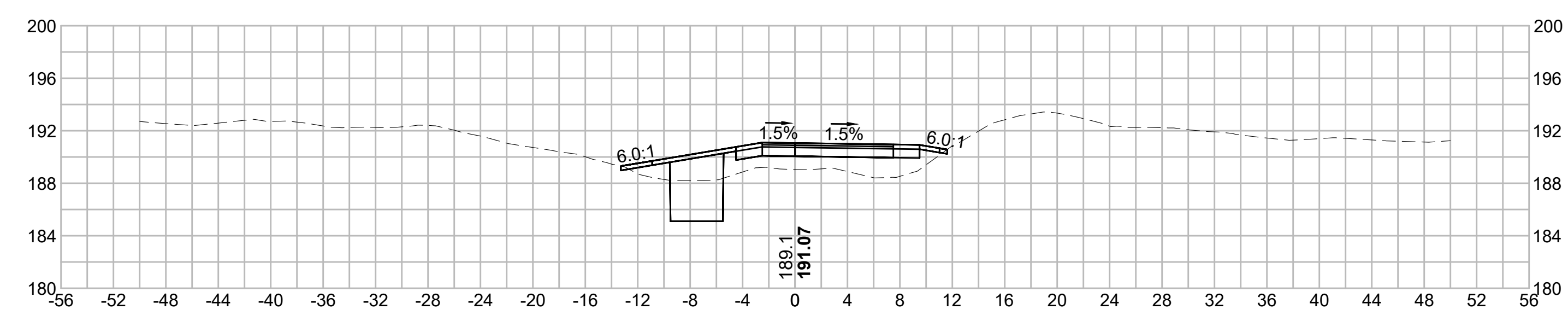
379+50



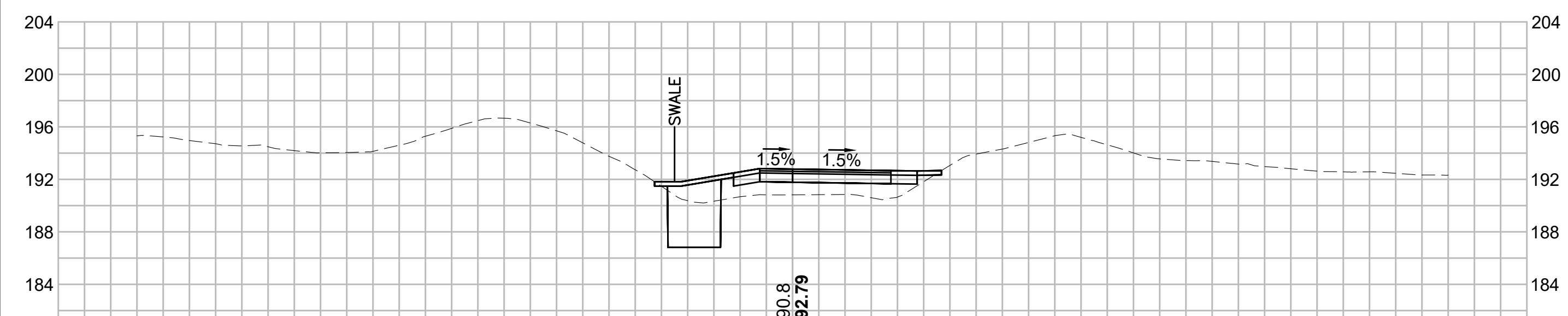
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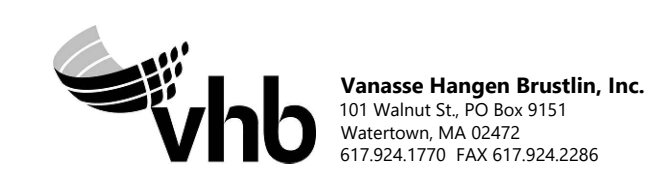
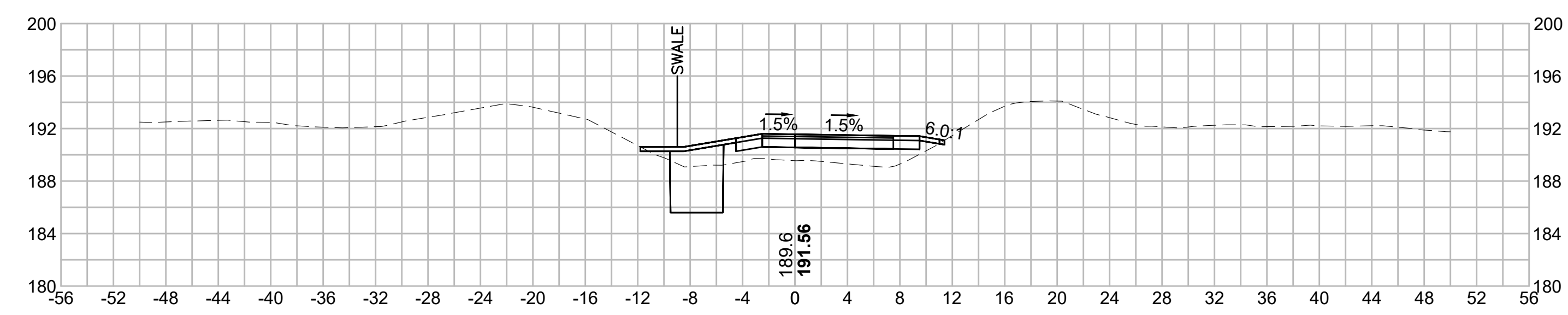
379+00



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N.O.	DESCRIPTION	BY	DATE	APPR.
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SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 272 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.		REV.		

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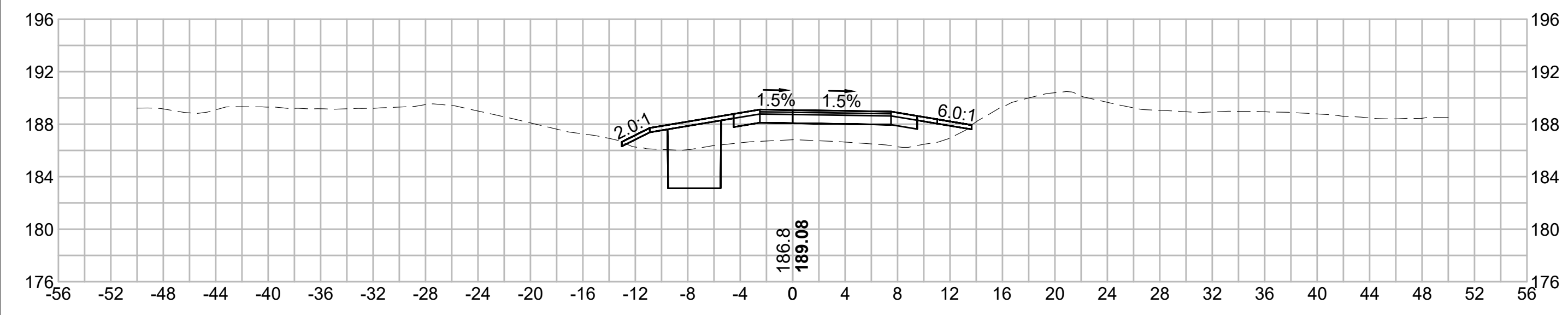
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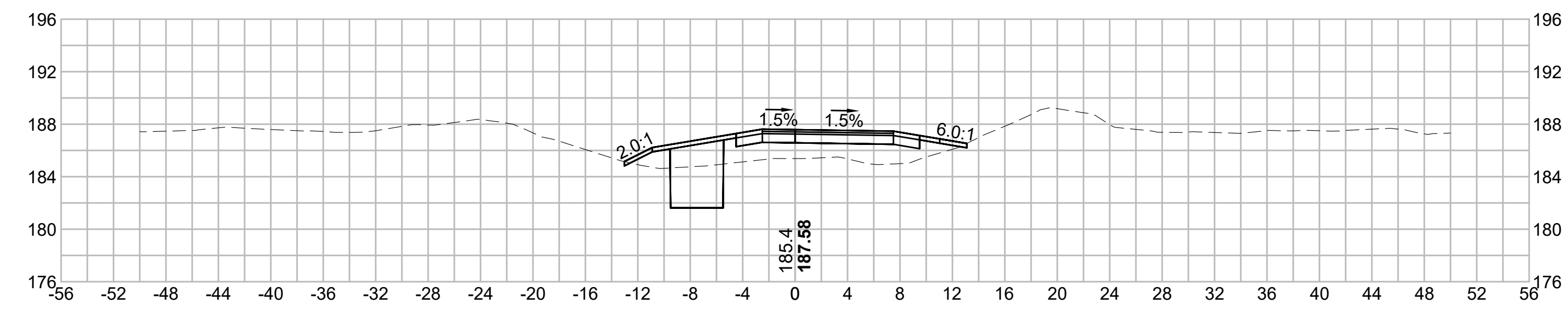
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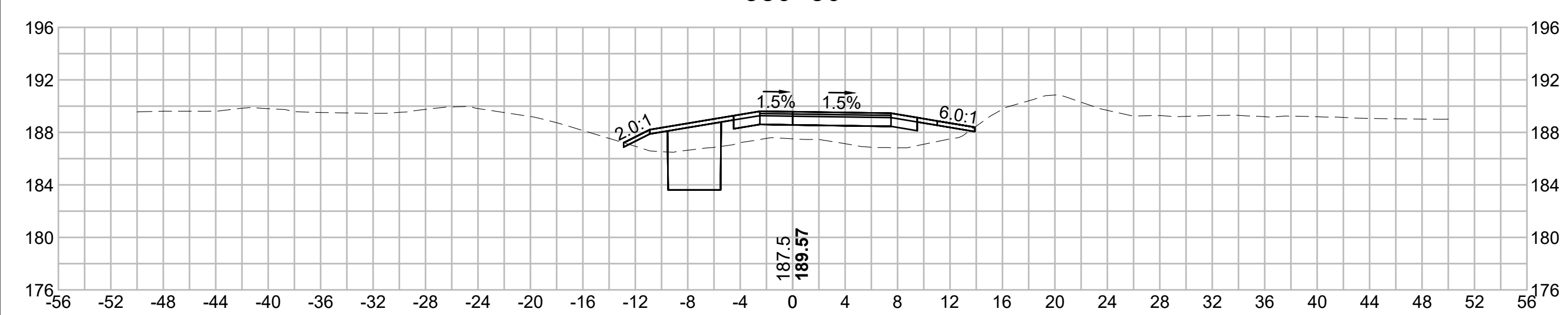
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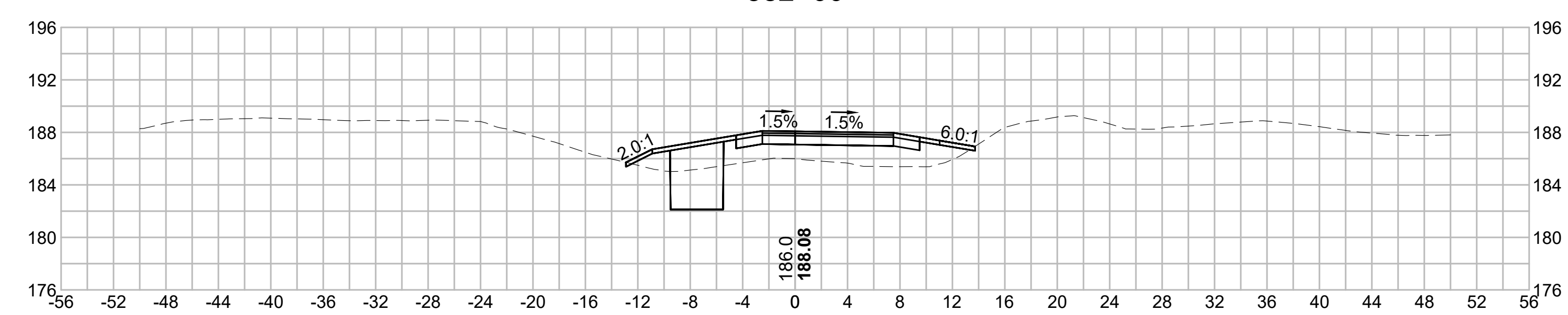
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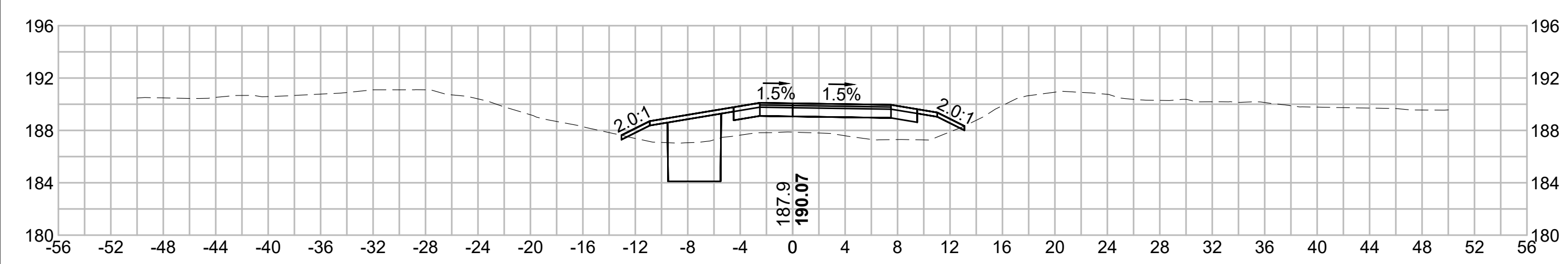
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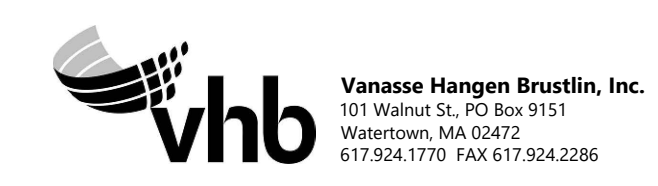
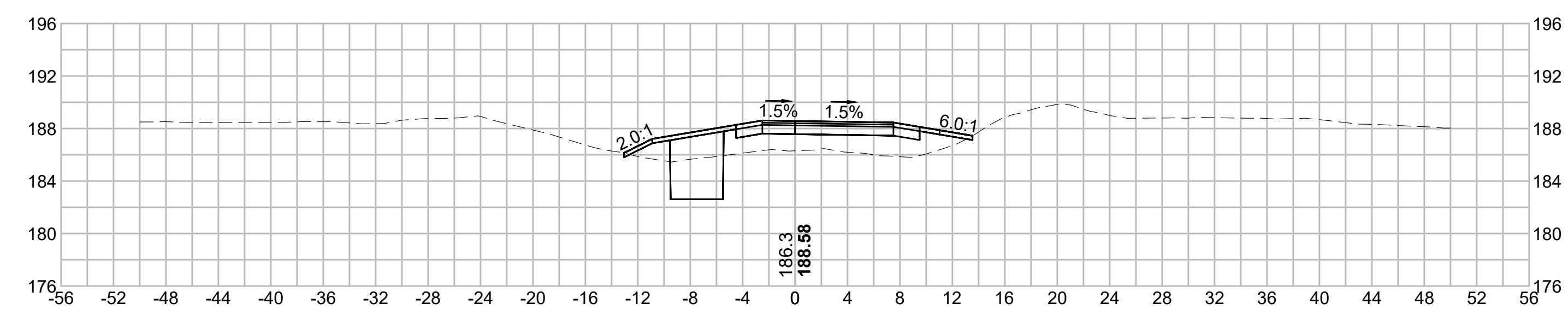
382+00



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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 273 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

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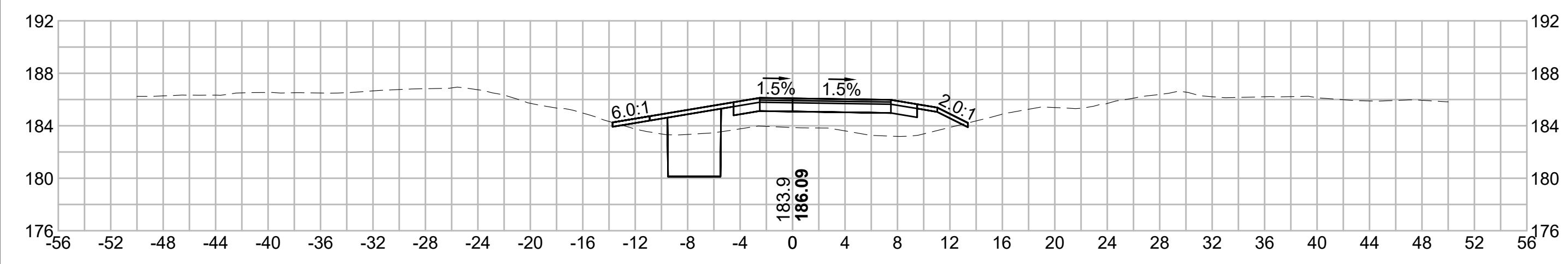
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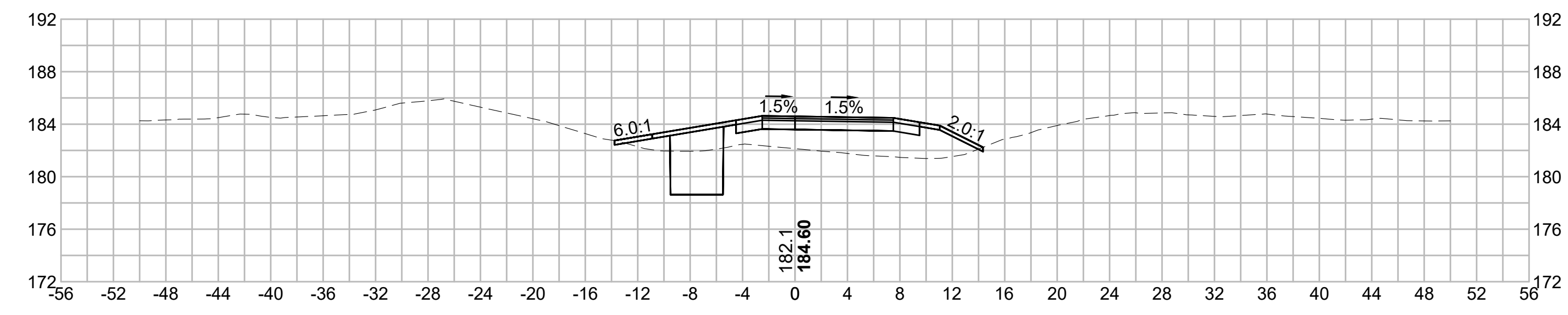
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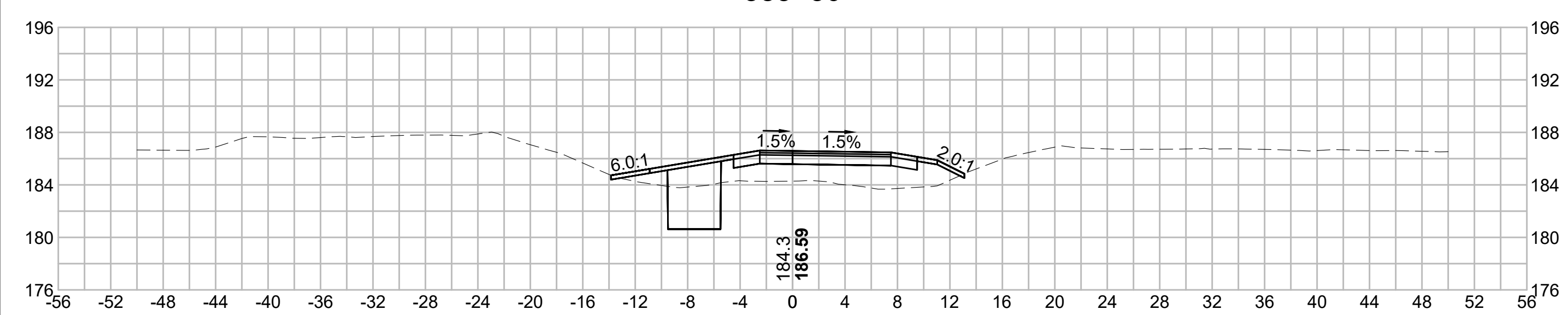
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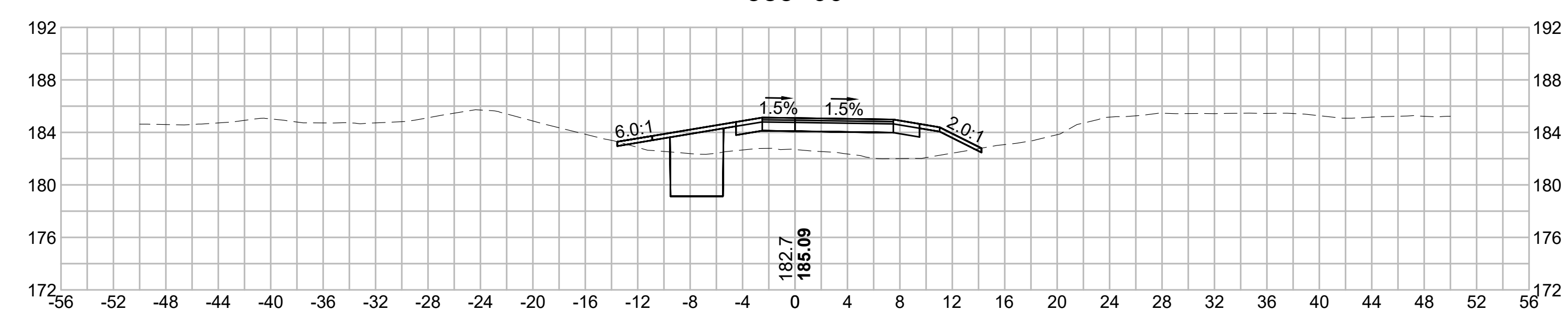
385+50



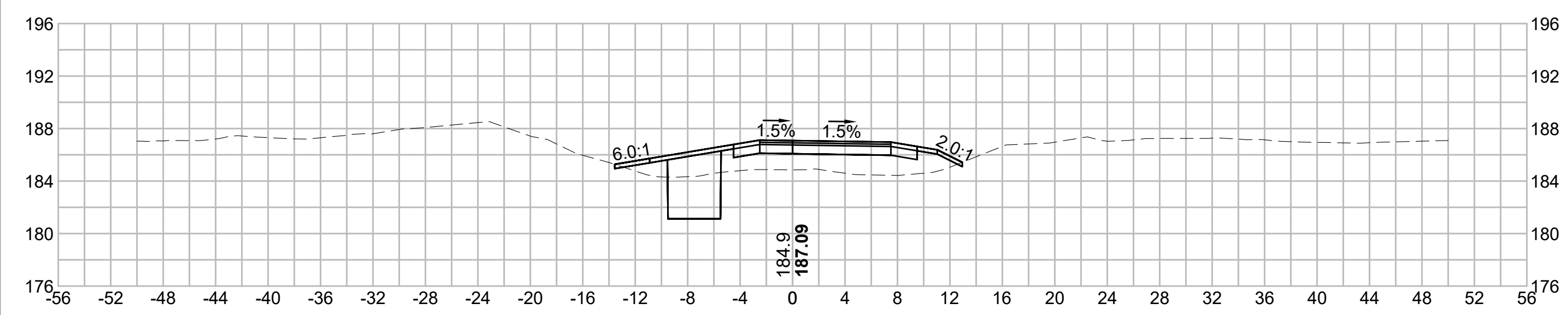
383+50



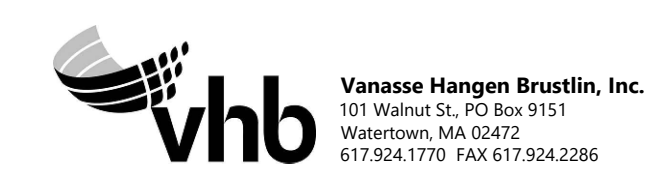
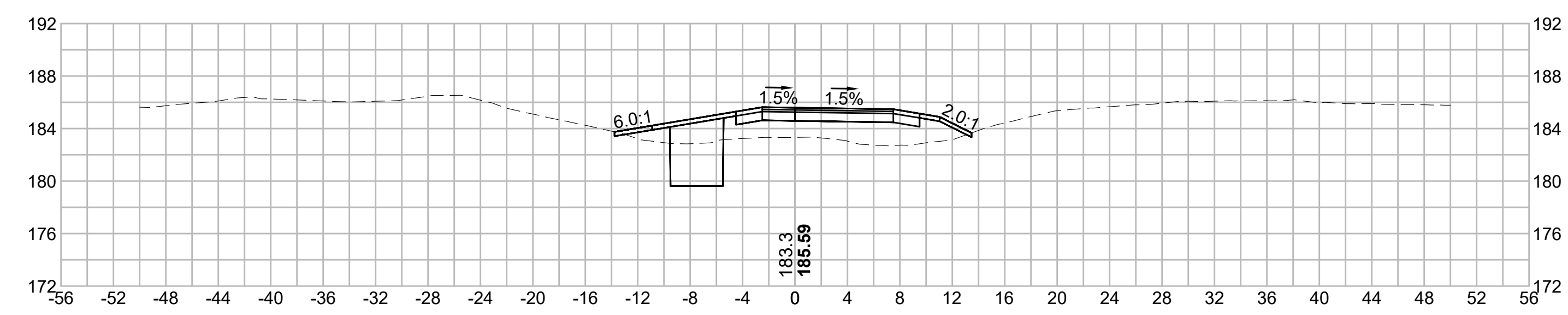
385+00



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N.O.	DESCRIPTION	BY	DATE	APPR.
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SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 274 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

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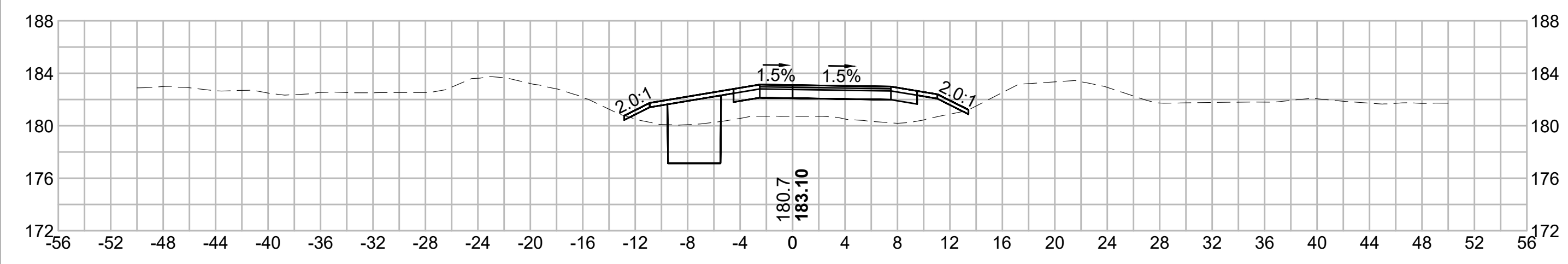
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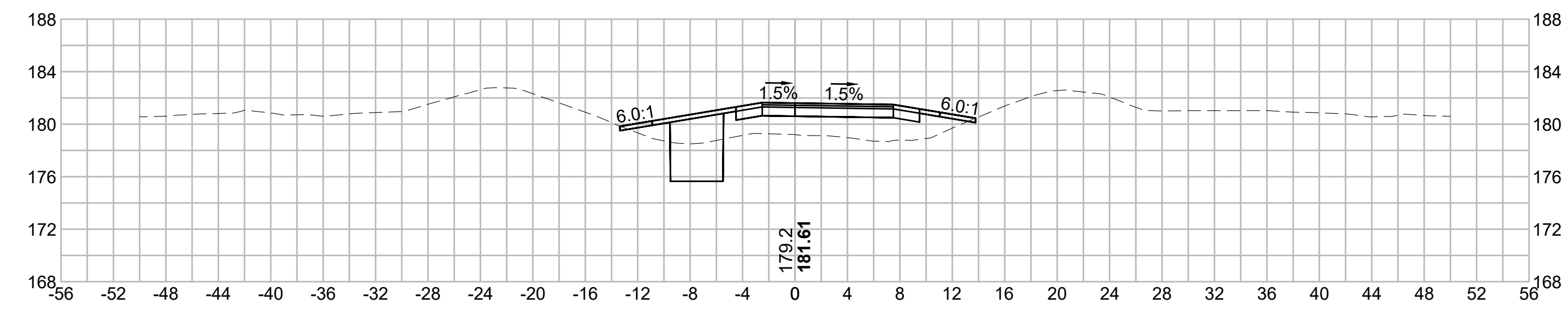
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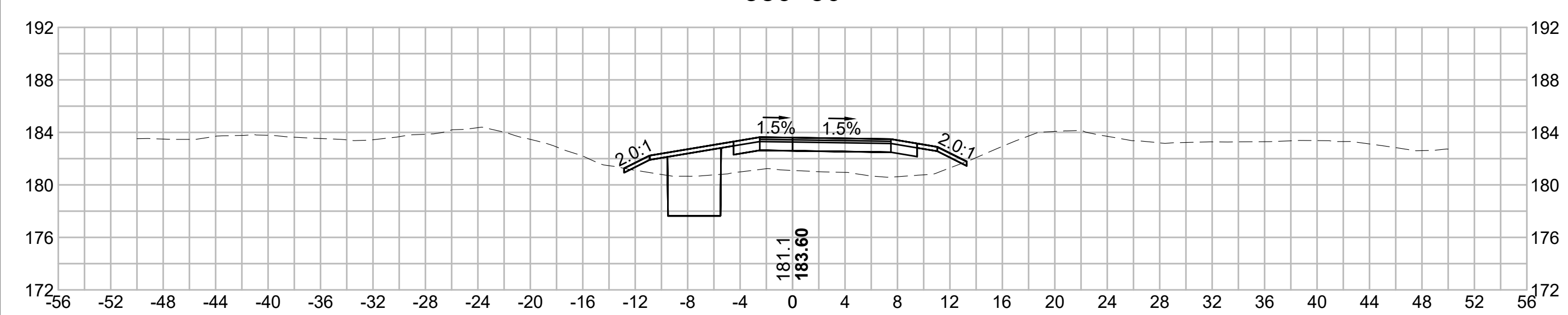
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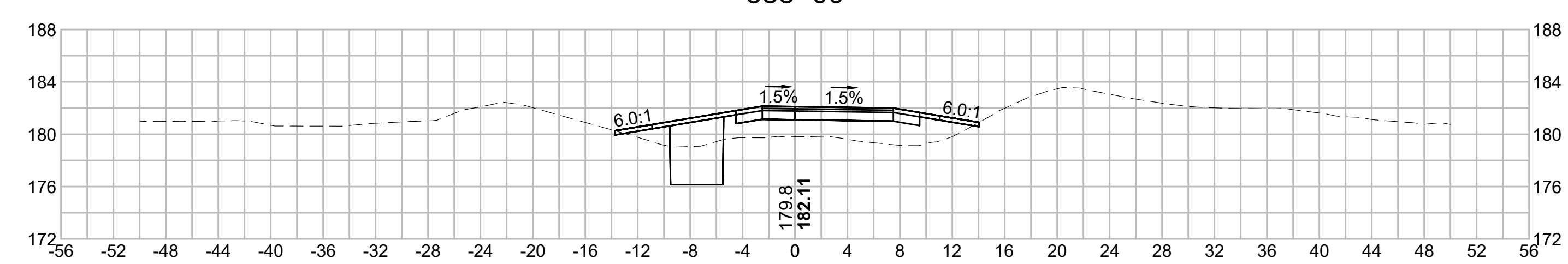
388+50



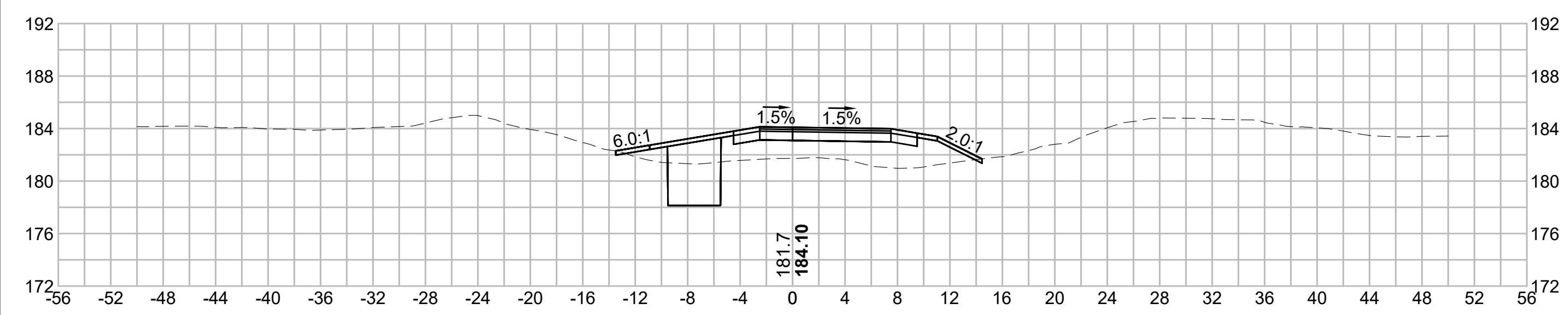
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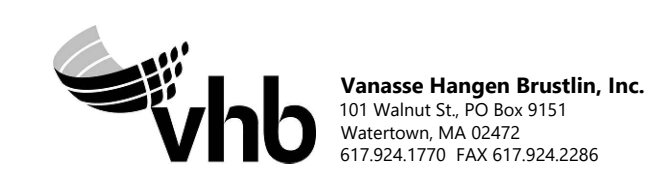
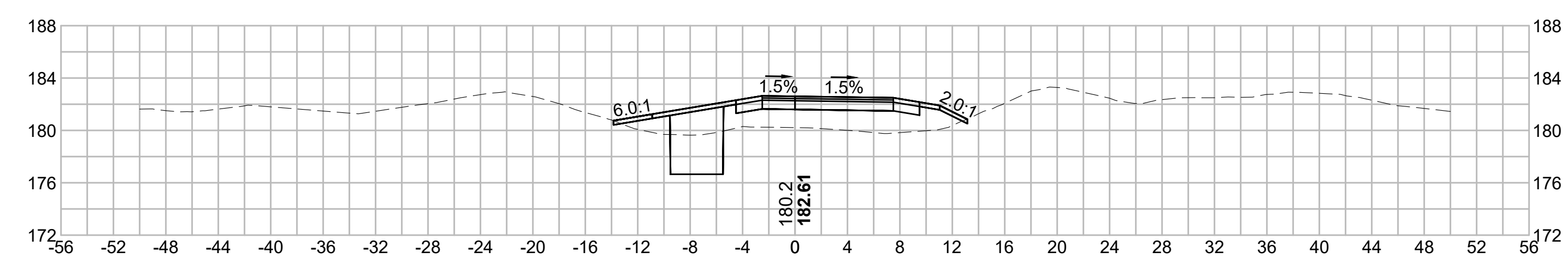
388+00



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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 CROSS SECTIONS

PLAN 275 OF 349

SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES	DRAWING NO. .	REV. .
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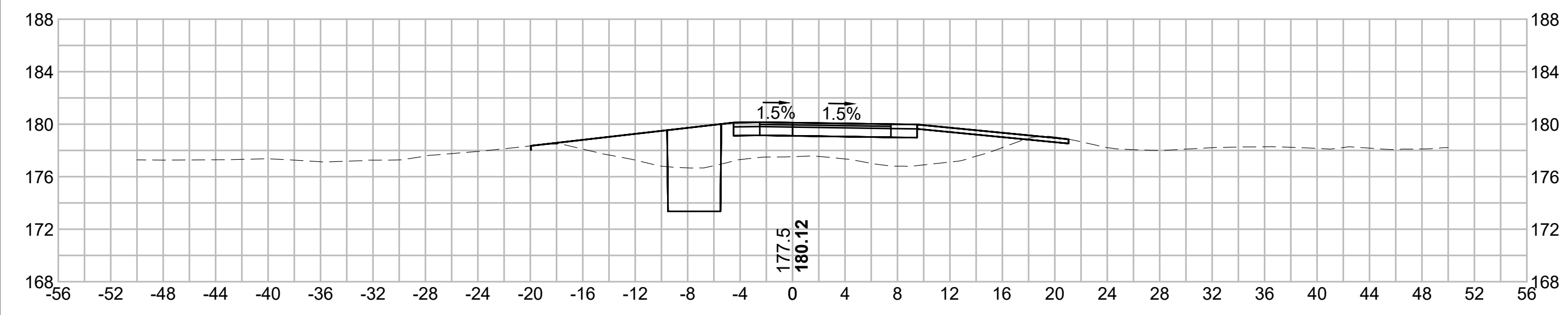
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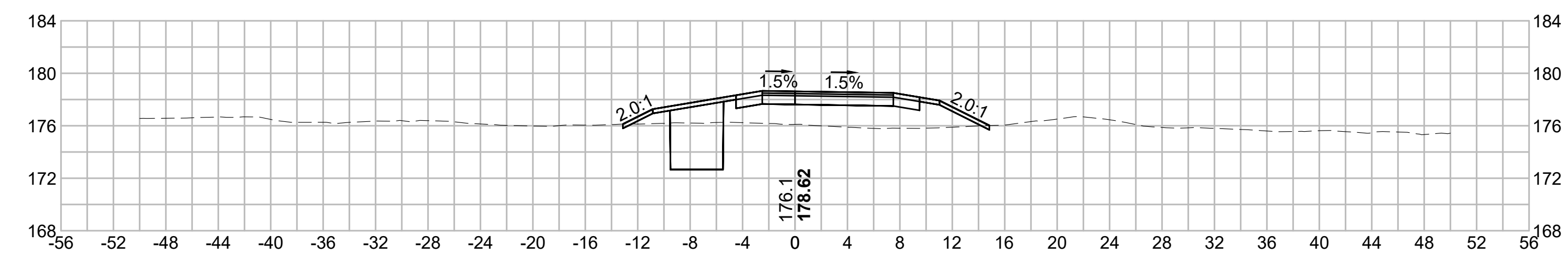
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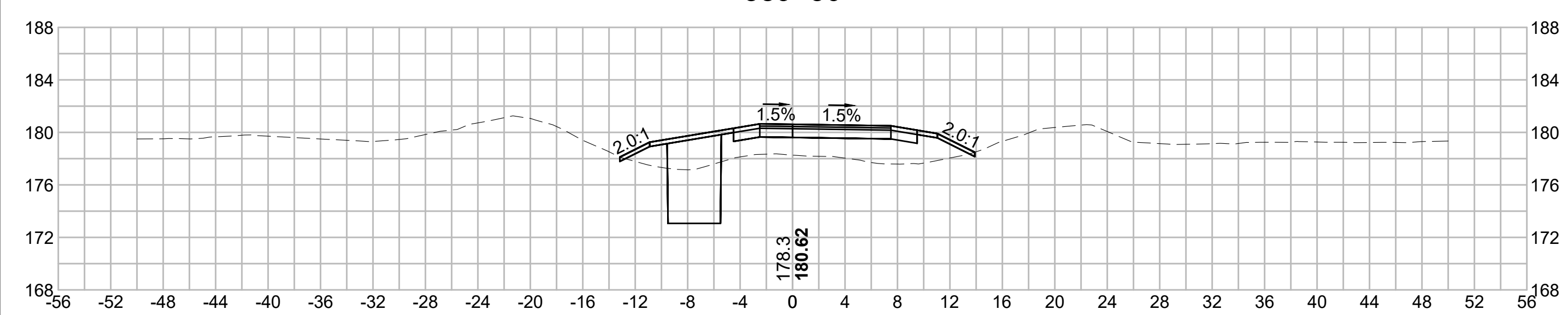
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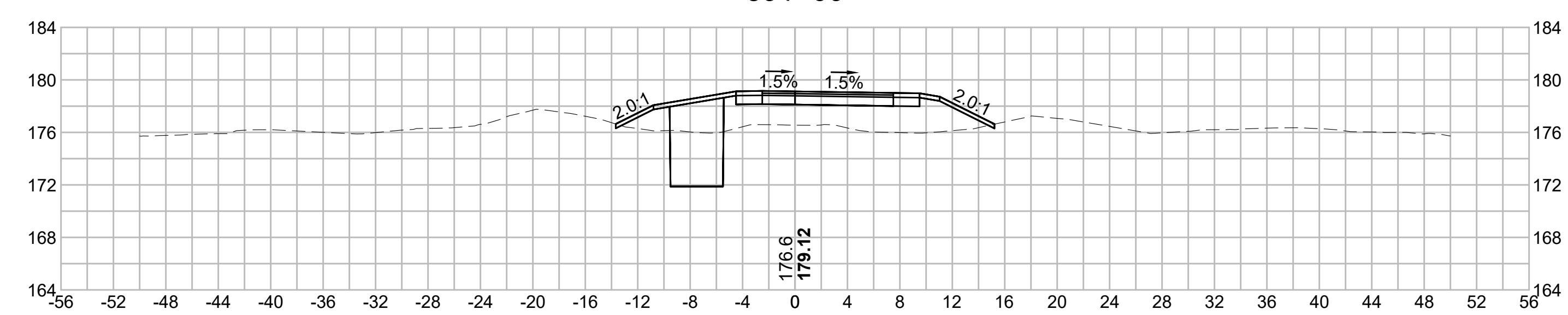
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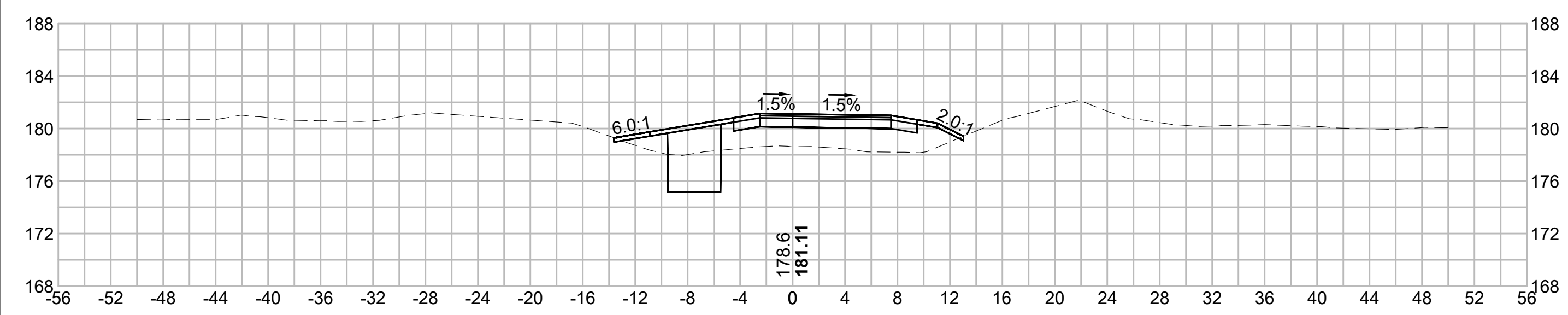
389+50



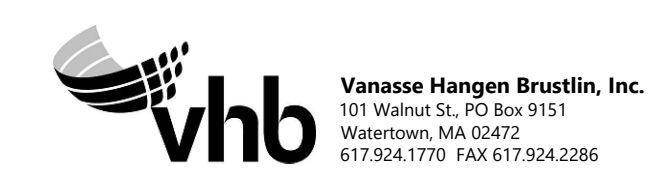
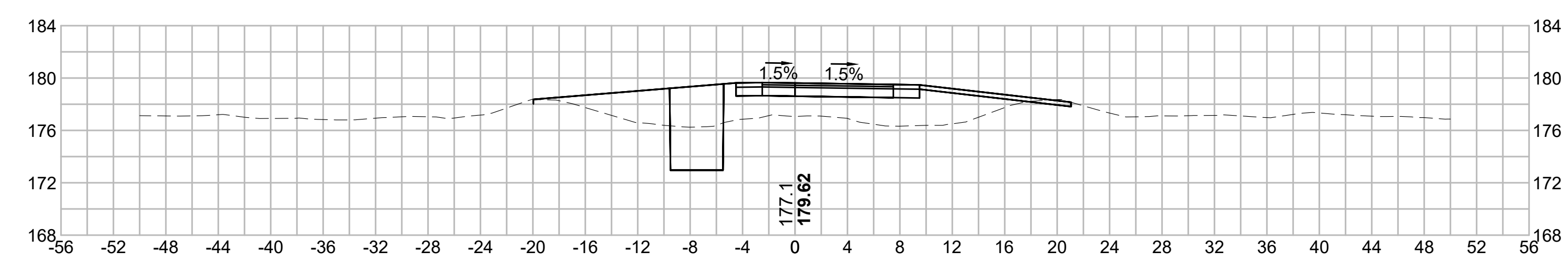
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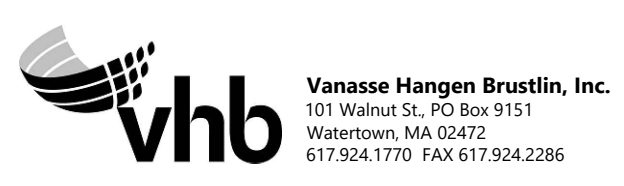
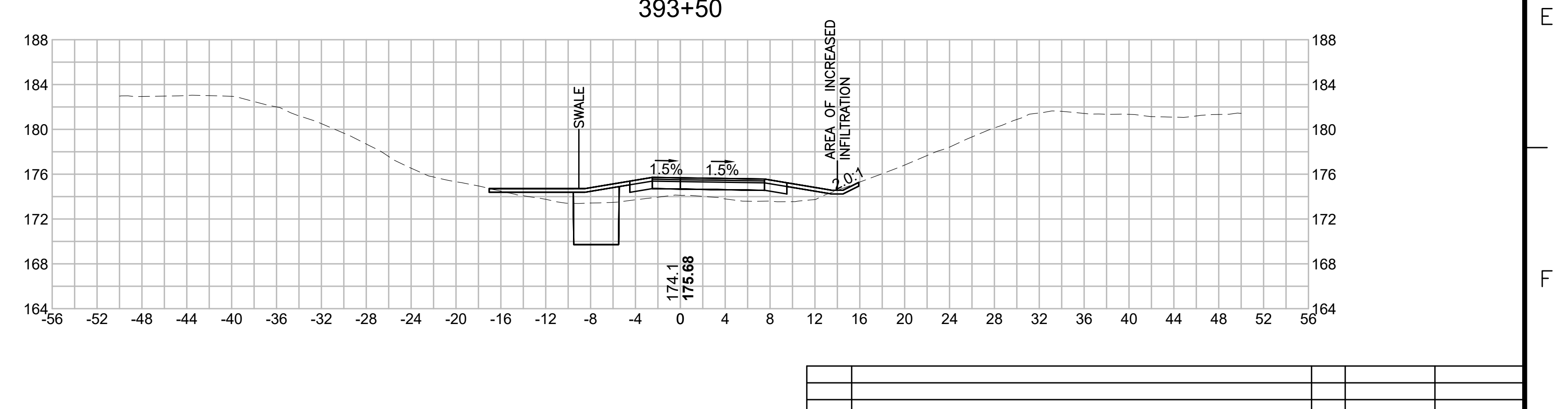
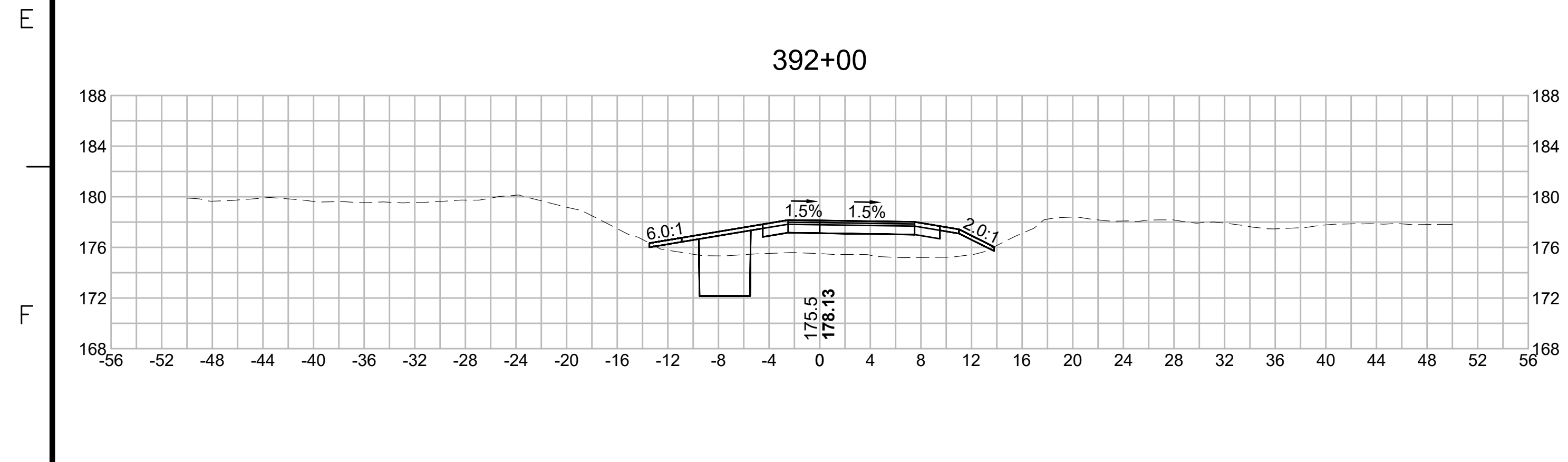
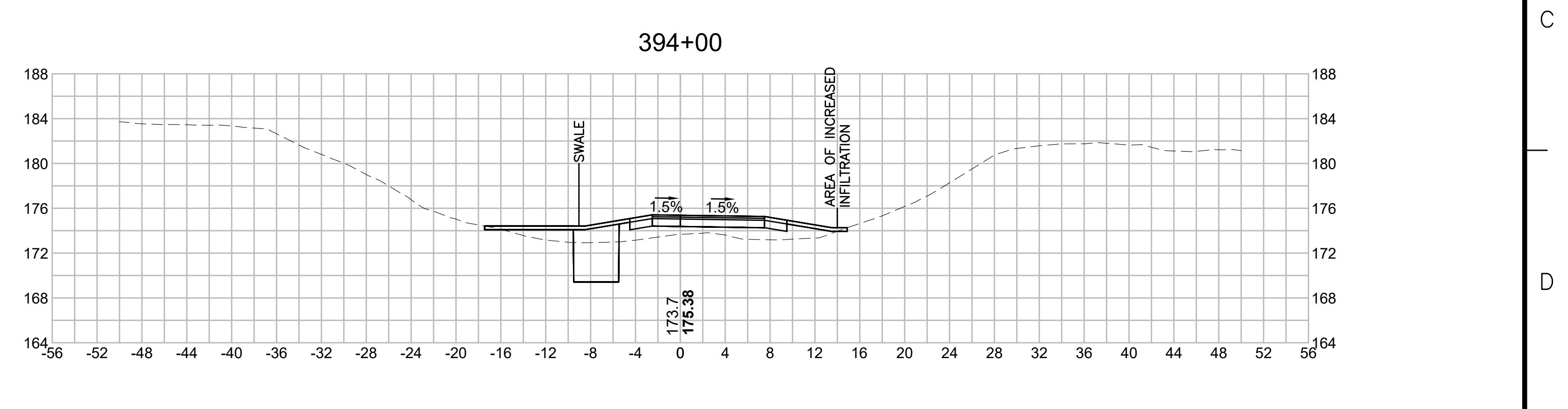
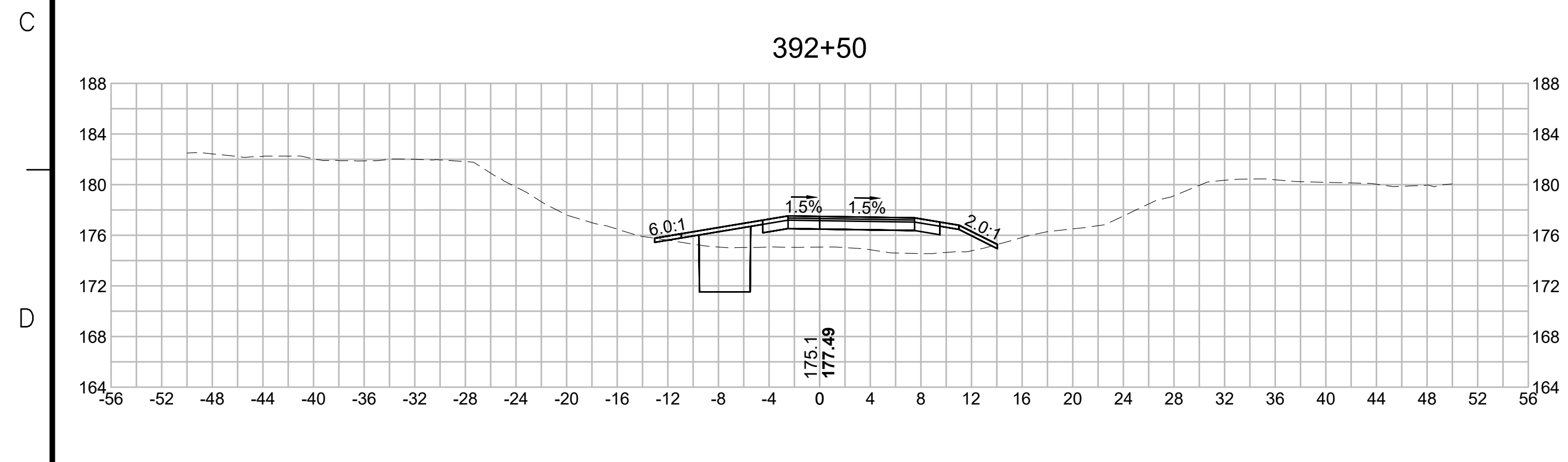
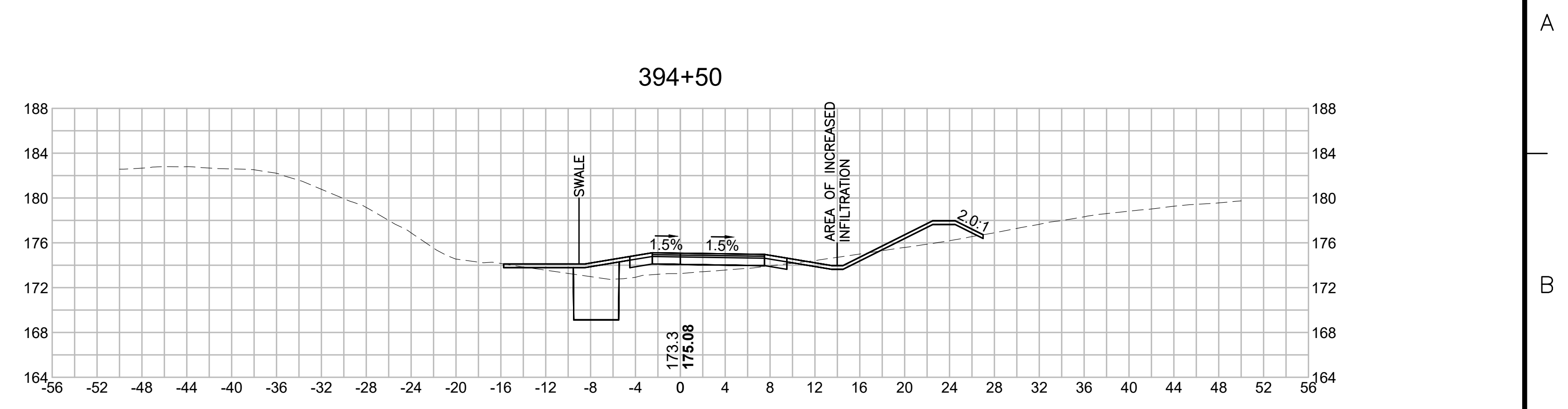
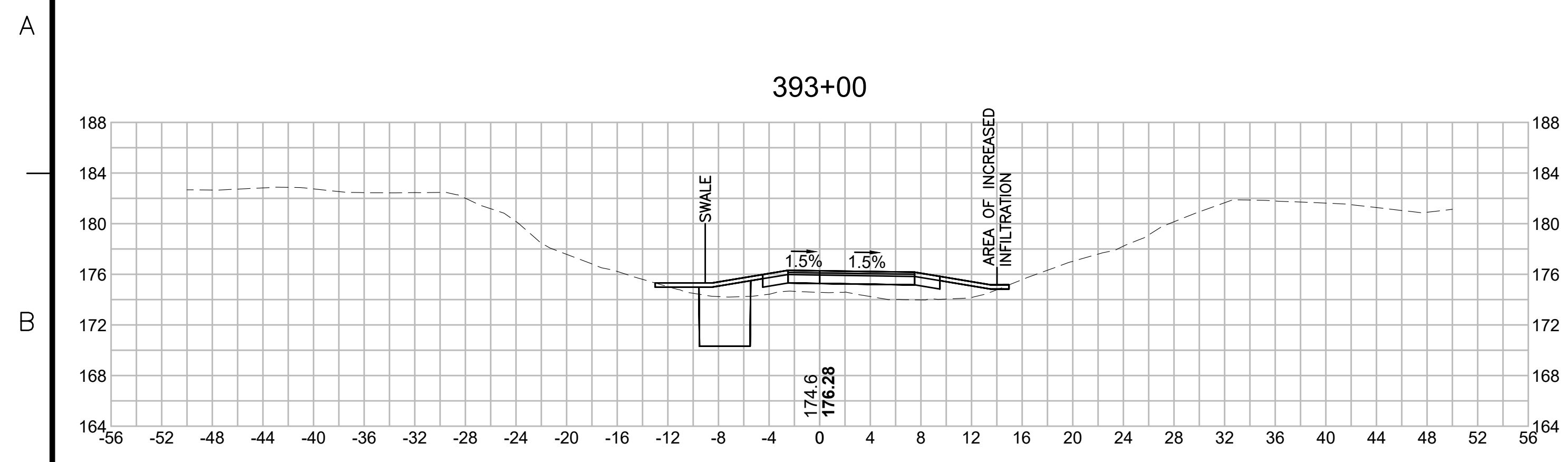
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N.O.	DESCRIPTION	BY	DATE	APPR.
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SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 276 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

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NO.		DESCRIPTION		BY		DATE		APPR.	
		REVISION							
EVERSOURCE									
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT									
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
CROSS SECTIONS									
PLAN 277 OF 349									
SCALE: unless noted 1"=8'		DATE DEC 2021		DRAWN MS		C H'K D. SK		APP R. MES	
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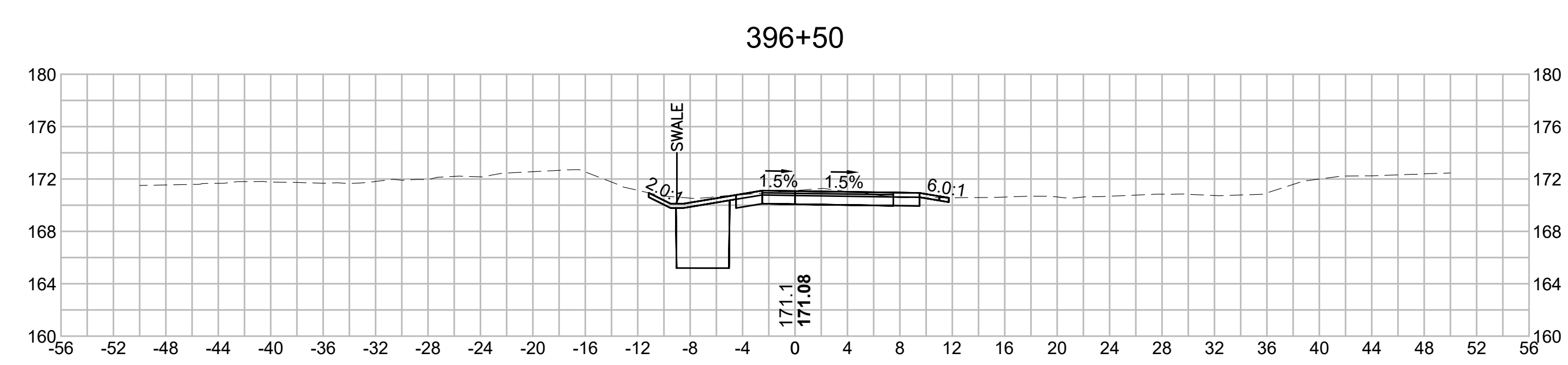
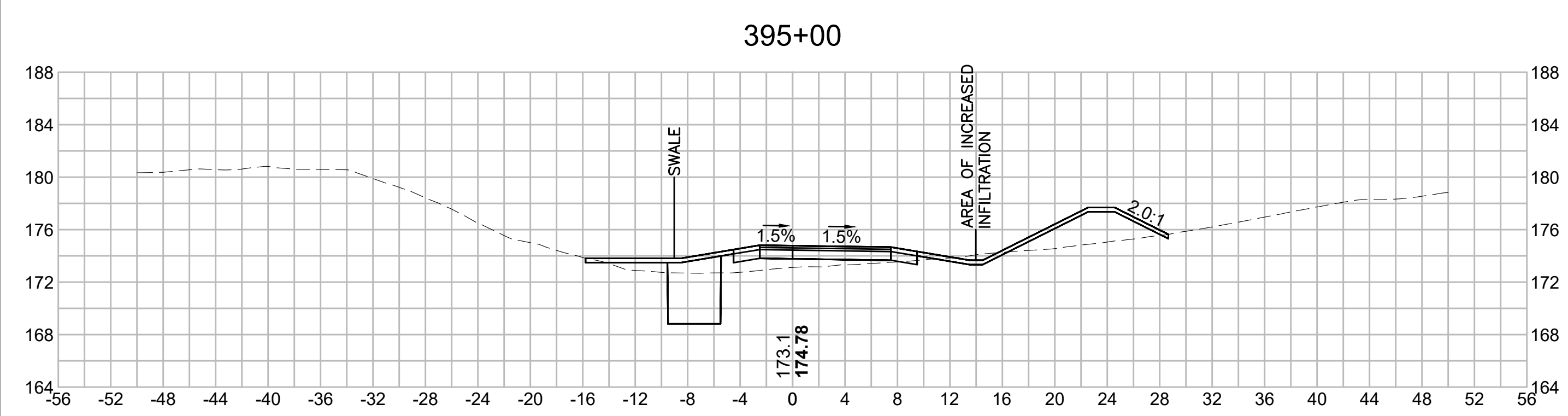
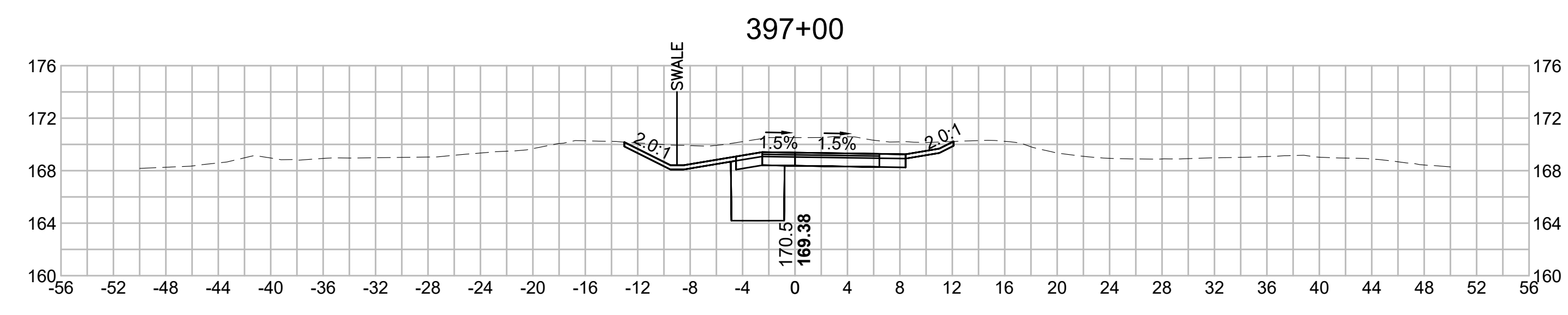
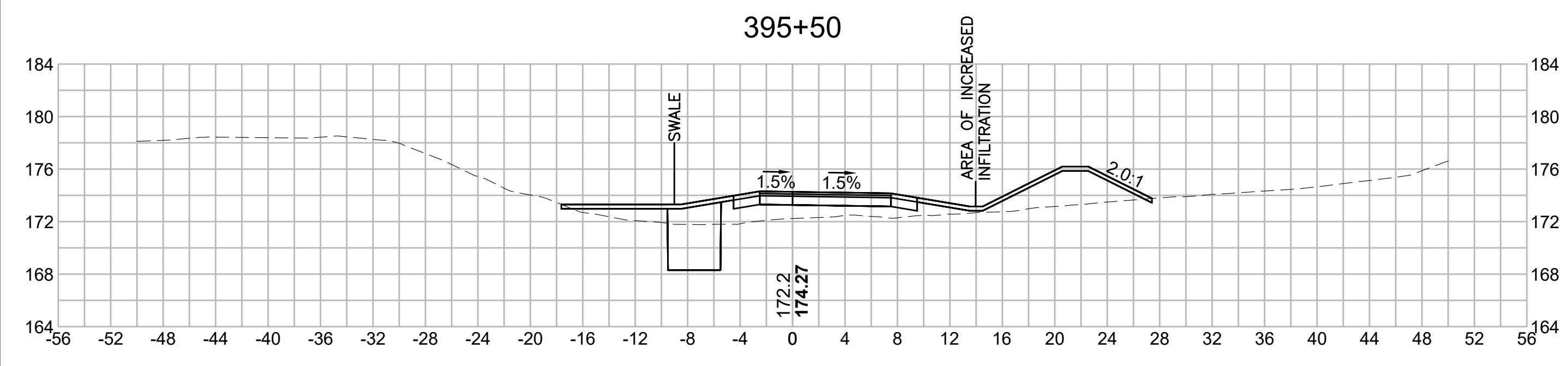
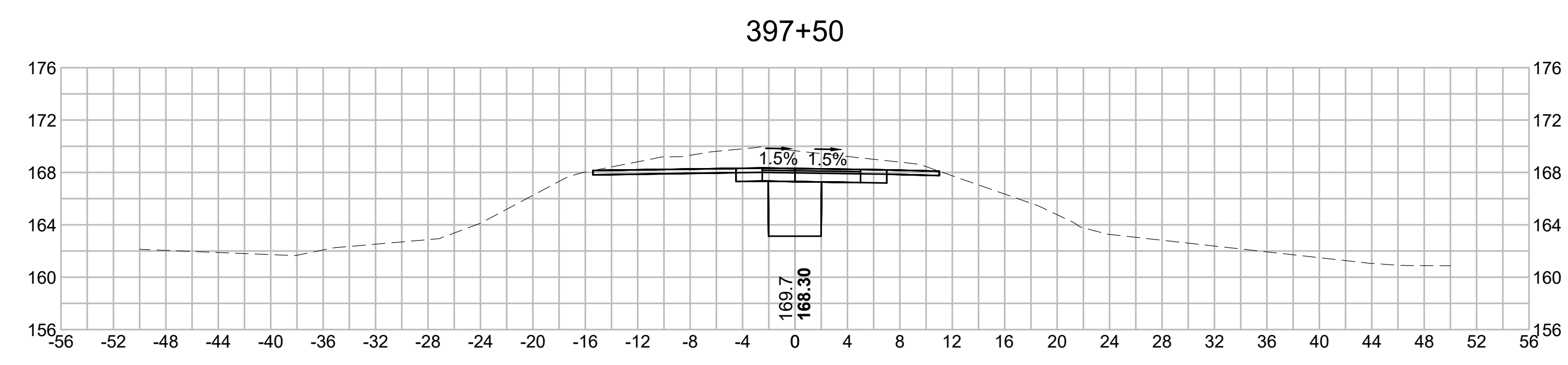
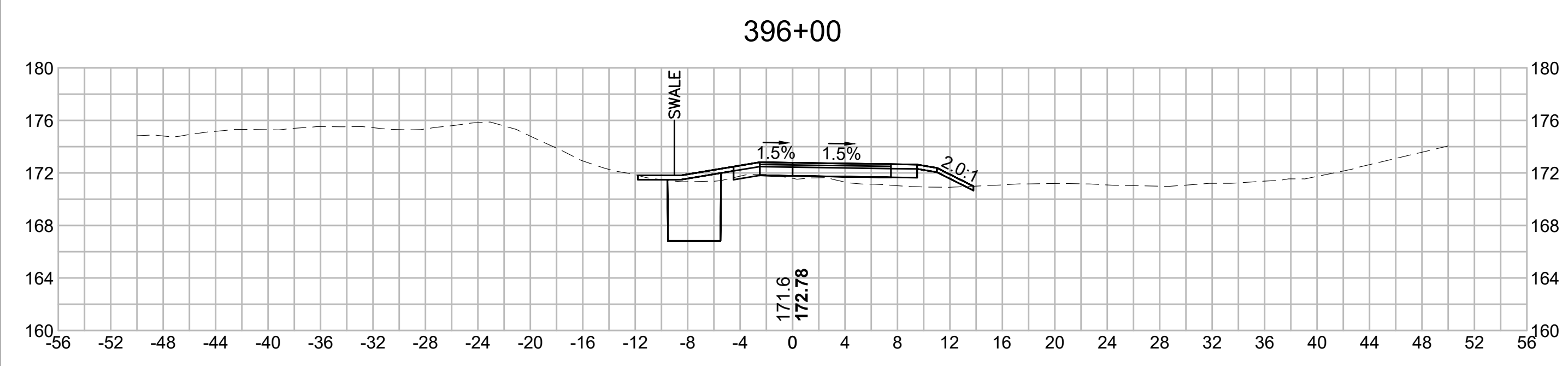
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BLSF CROSSING STA 398 TO STA 403 - FEMA ZONE AE - HOP BROOK

FEMA ELEVATION: 161.0'

FILL:

160'-161': 0.95 CY

159'-160': 0.33 CY

CUT:

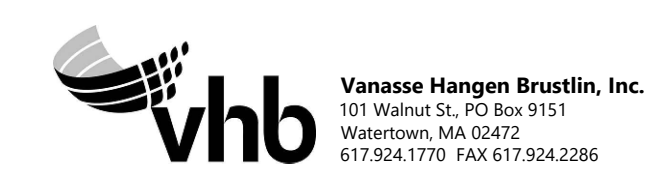
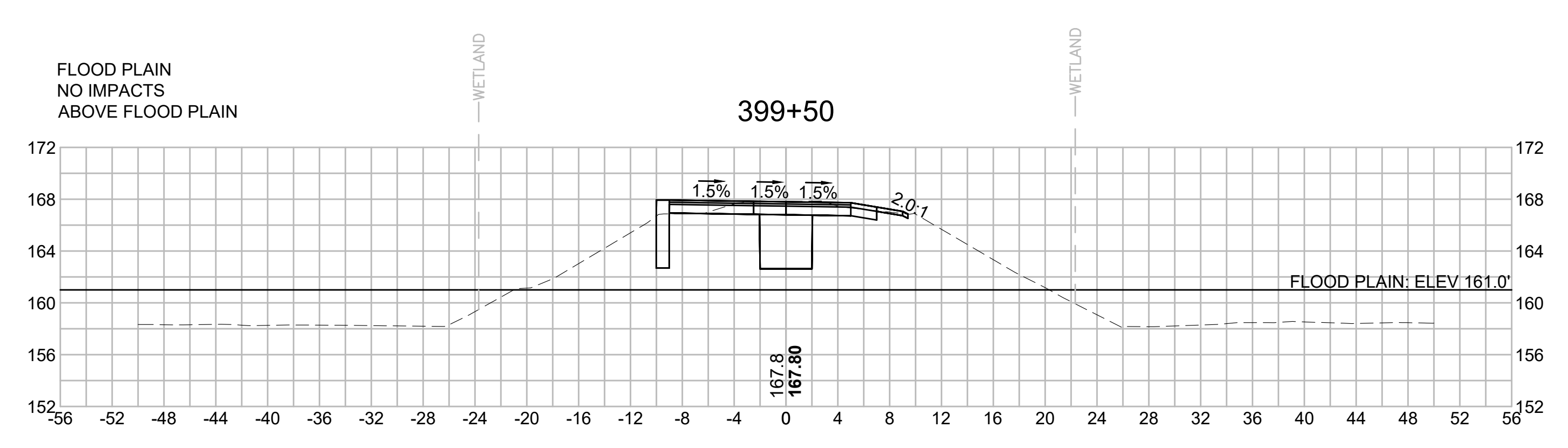
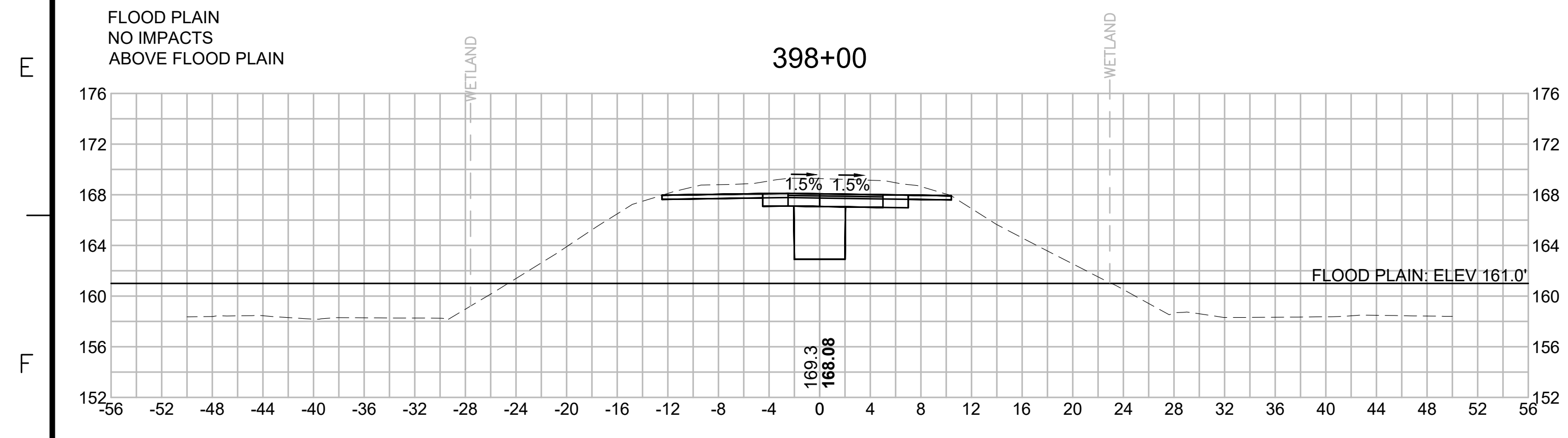
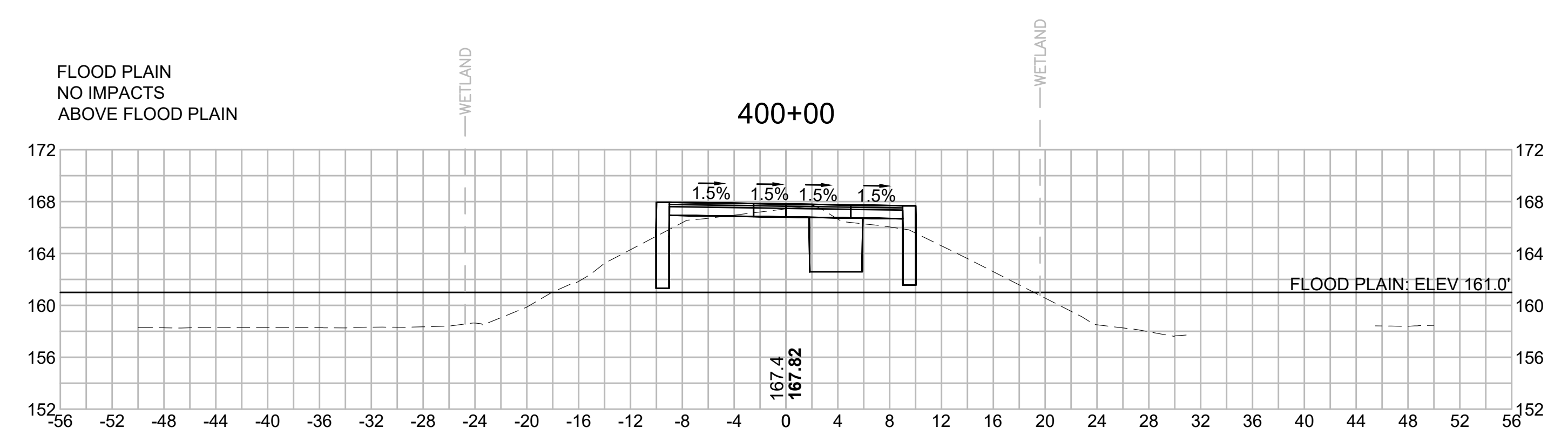
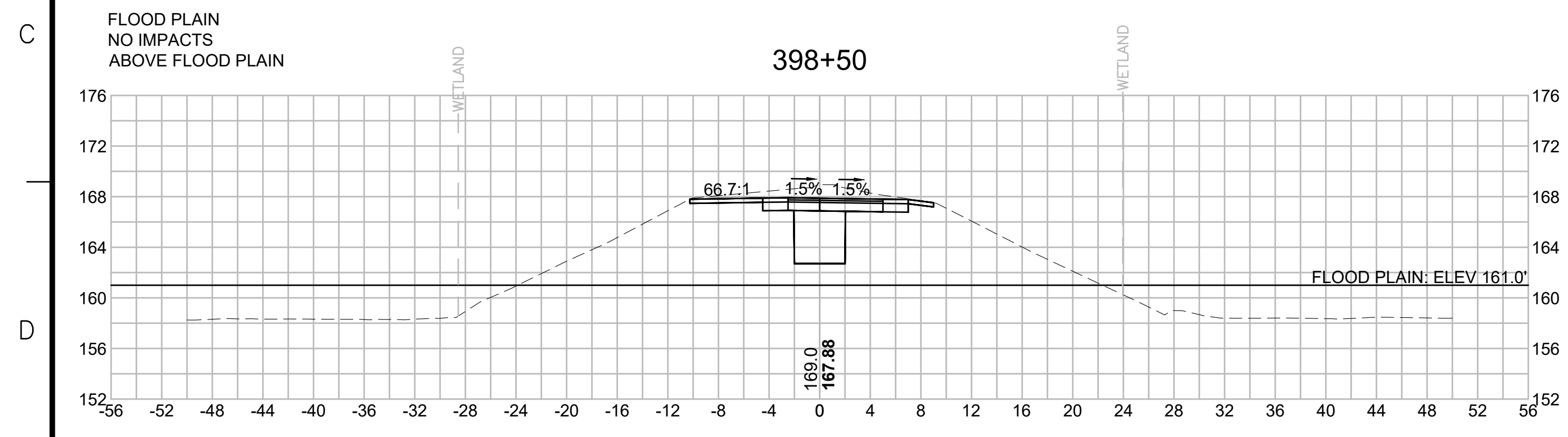
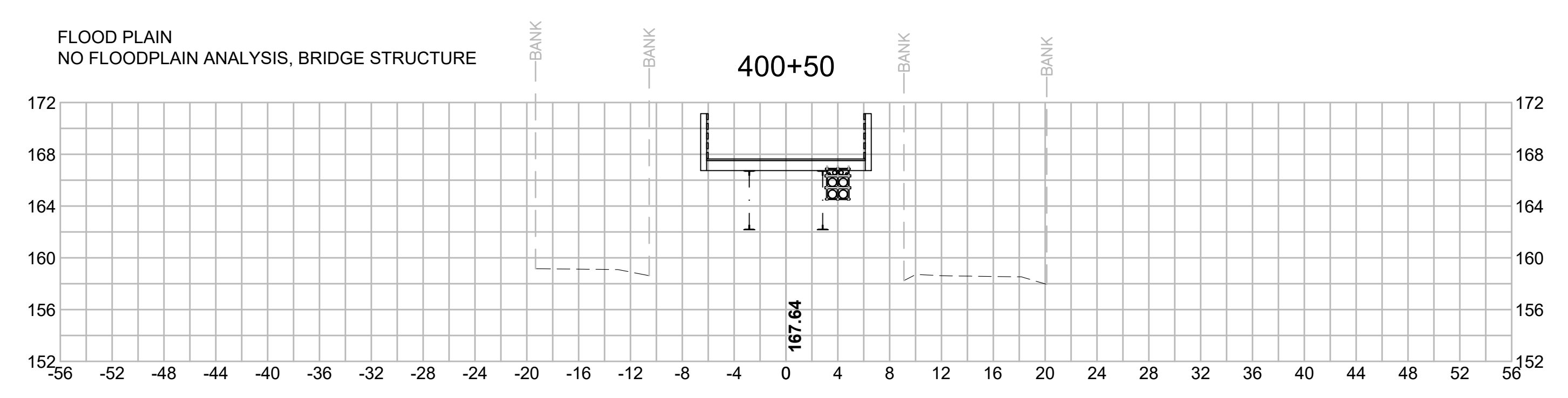
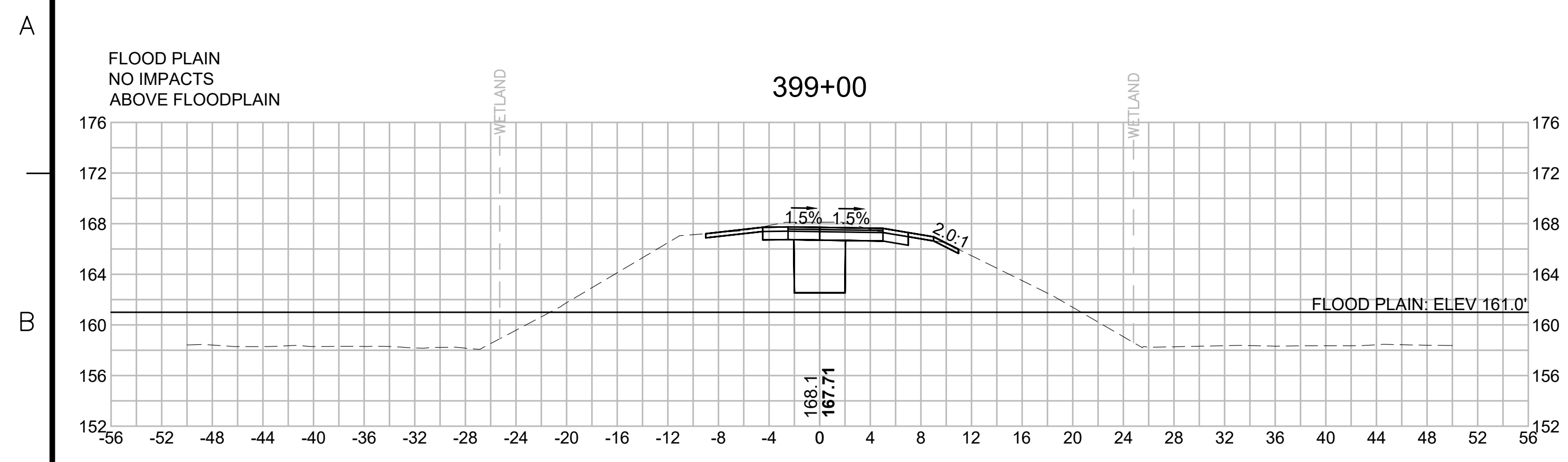
160'-161': 4.04 CY

159'-160': 1.17 CY



N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 278 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

1 2 3 4 5 6 7 8 9 10 11



N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
CROSS SECTIONS

PLAN 279 OF 349

SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES	DRAWING NO.	REV.
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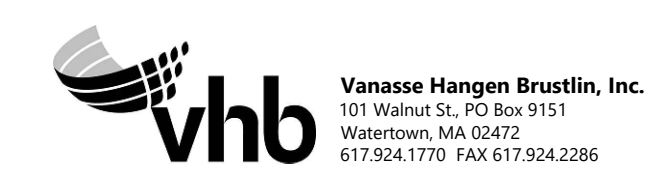
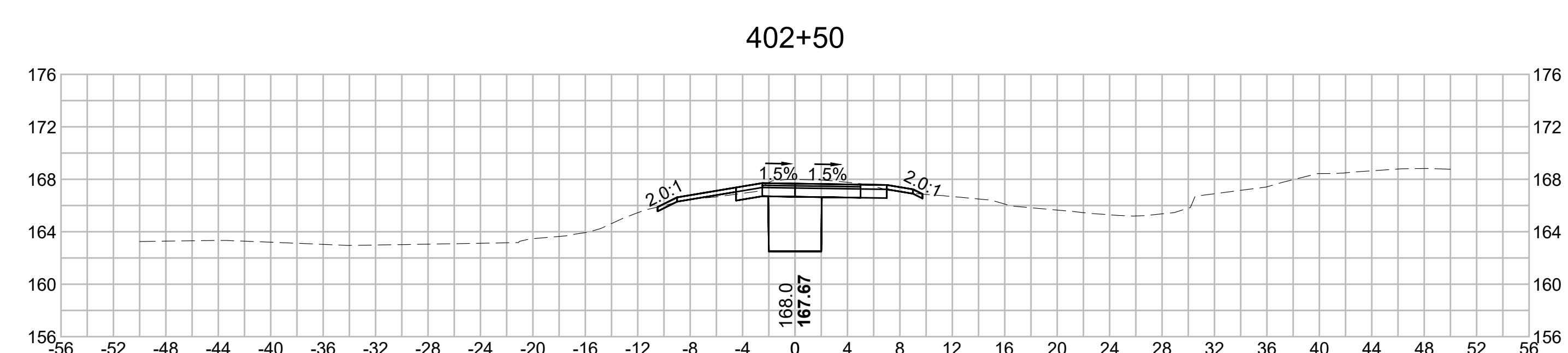
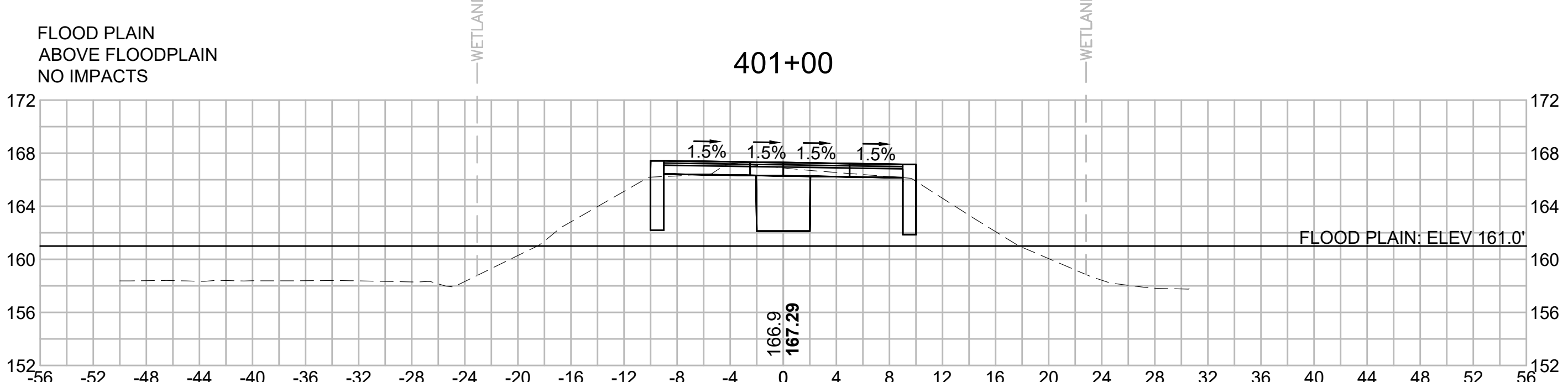
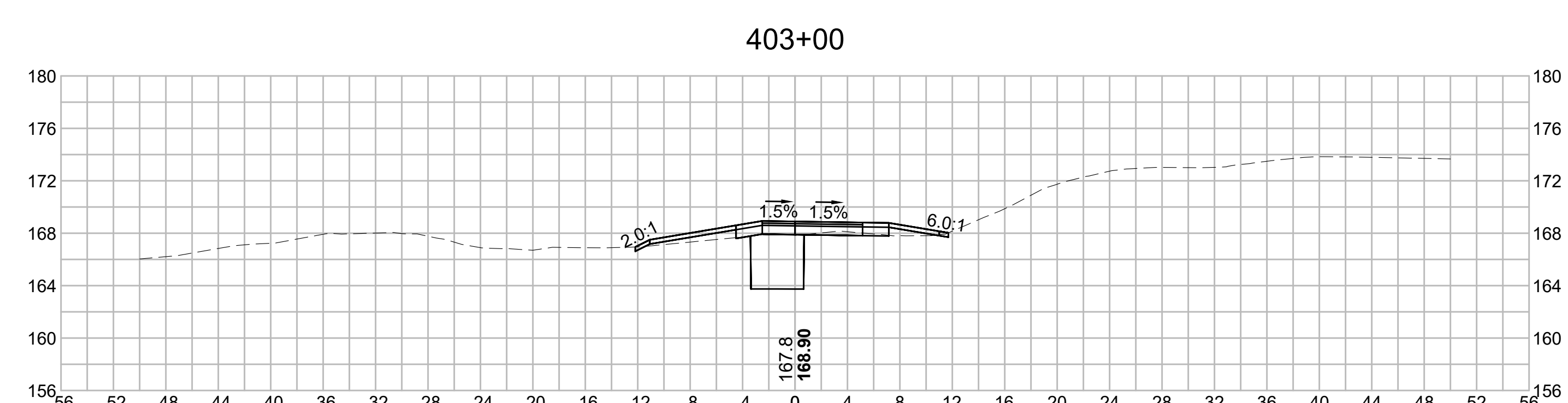
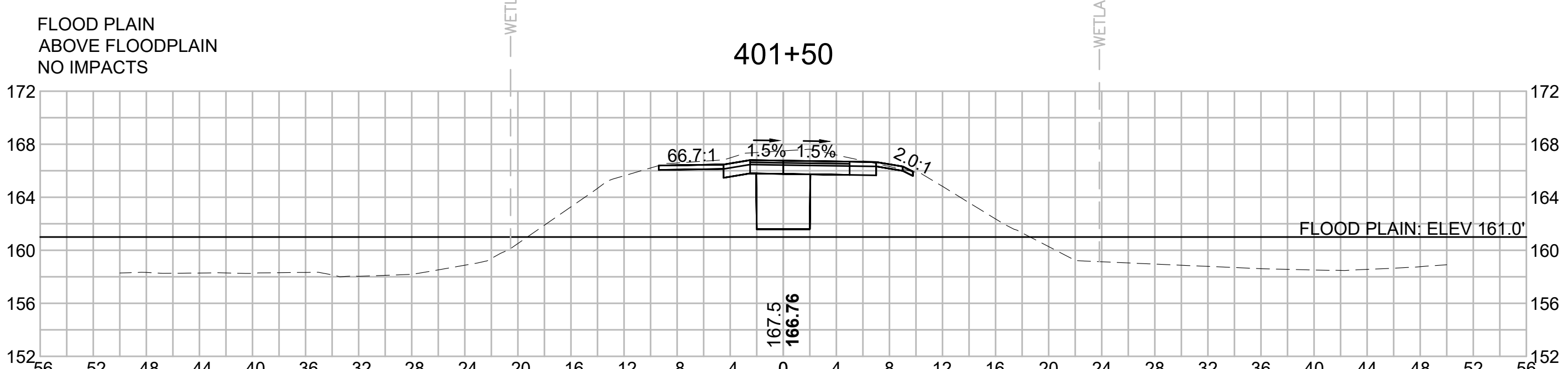
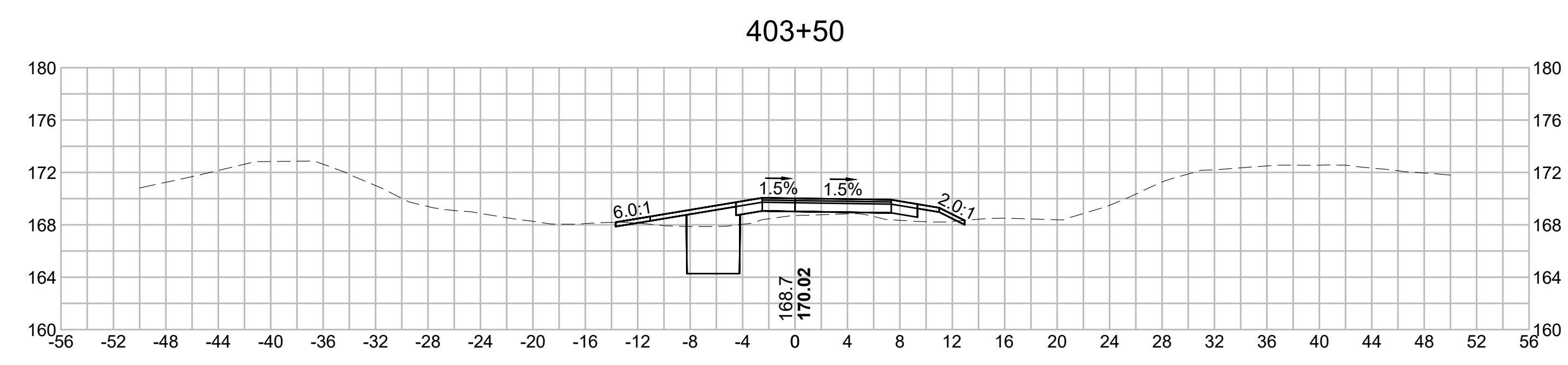
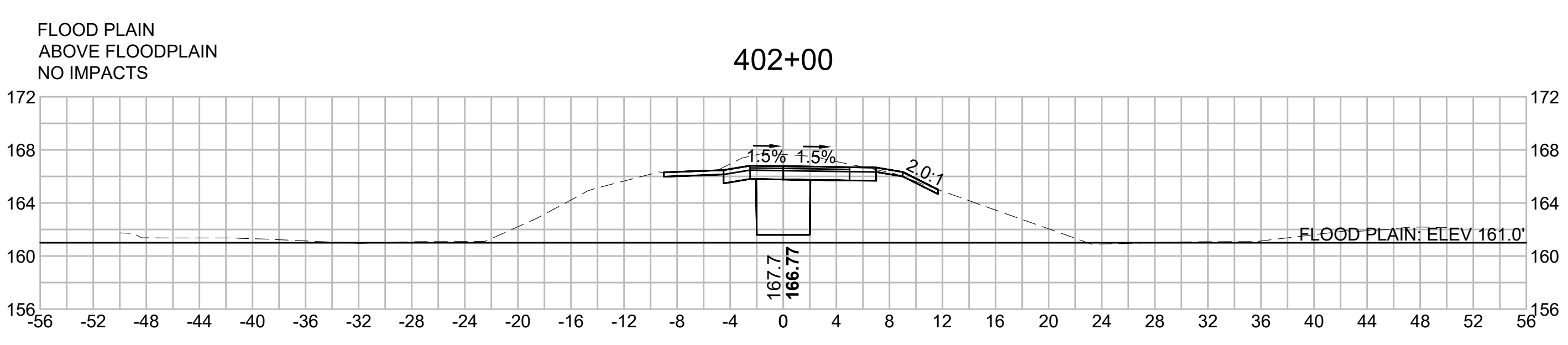
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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

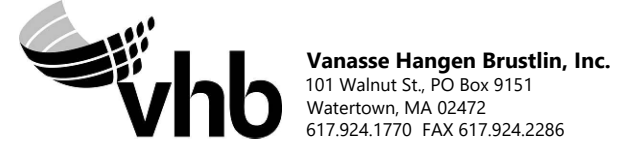
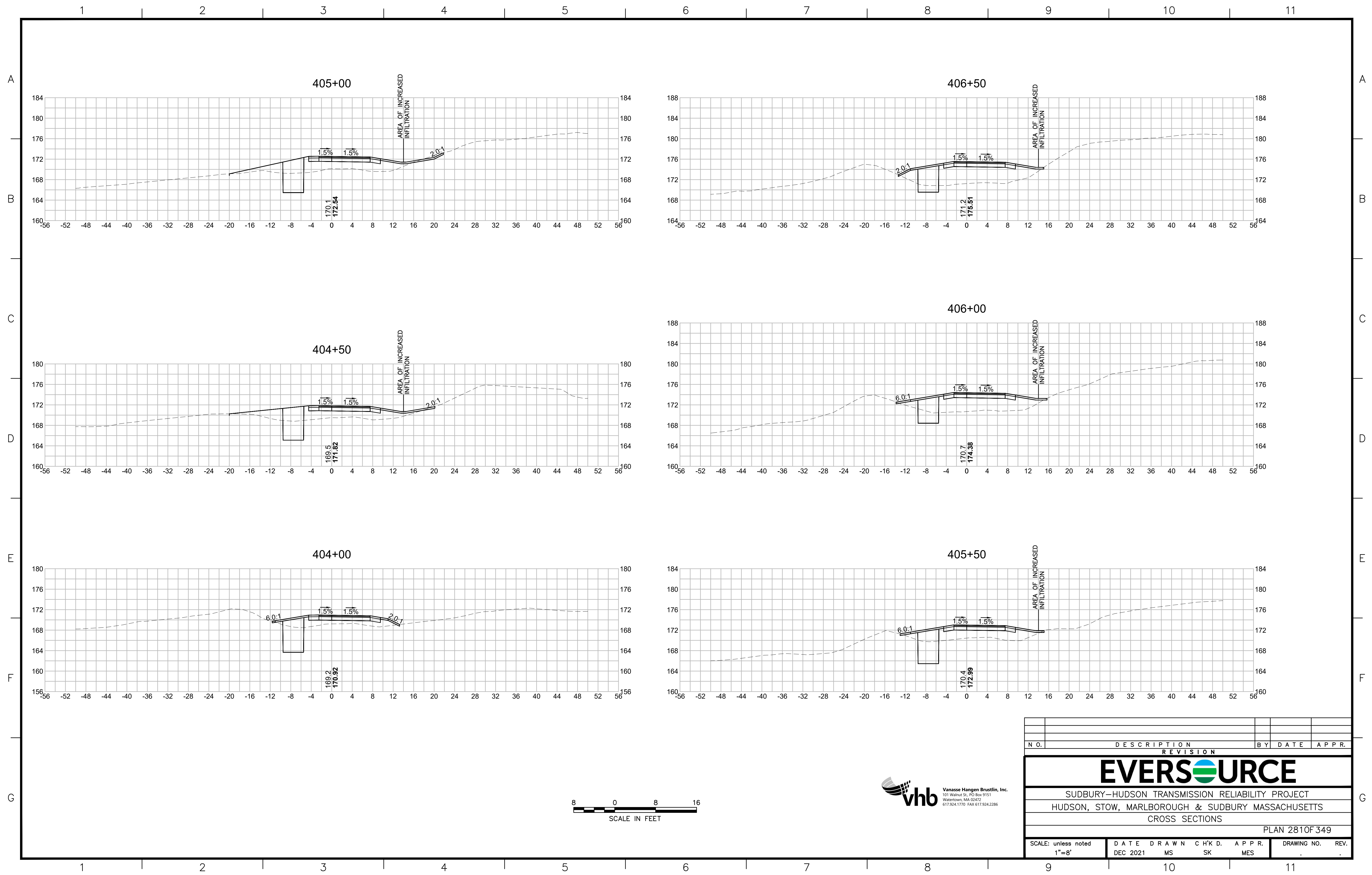
EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
CROSS SECTIONS

PLAN 280 OF 349

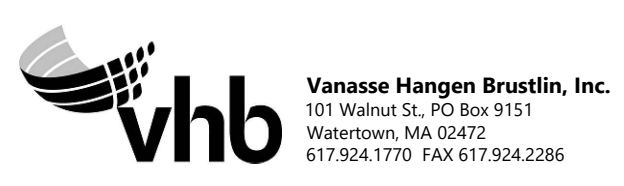
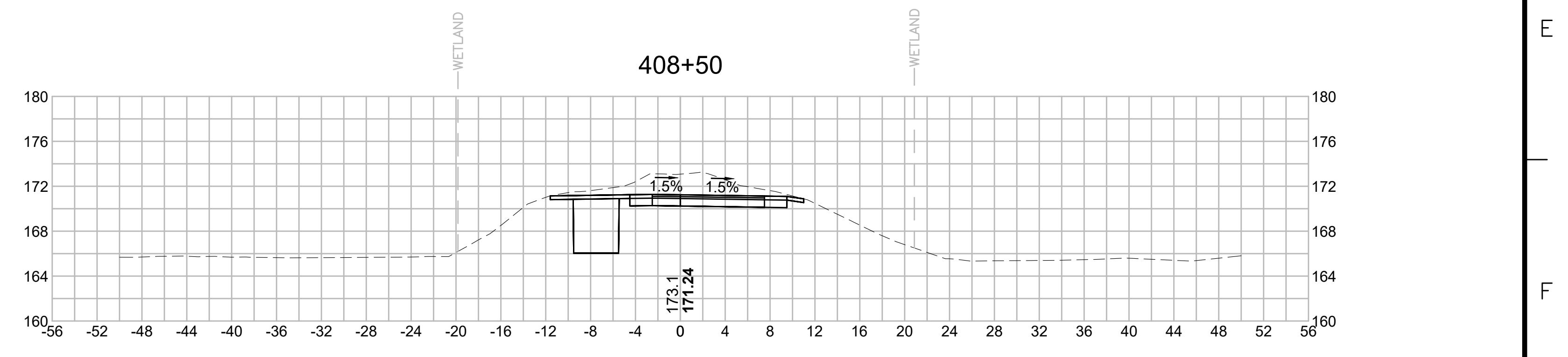
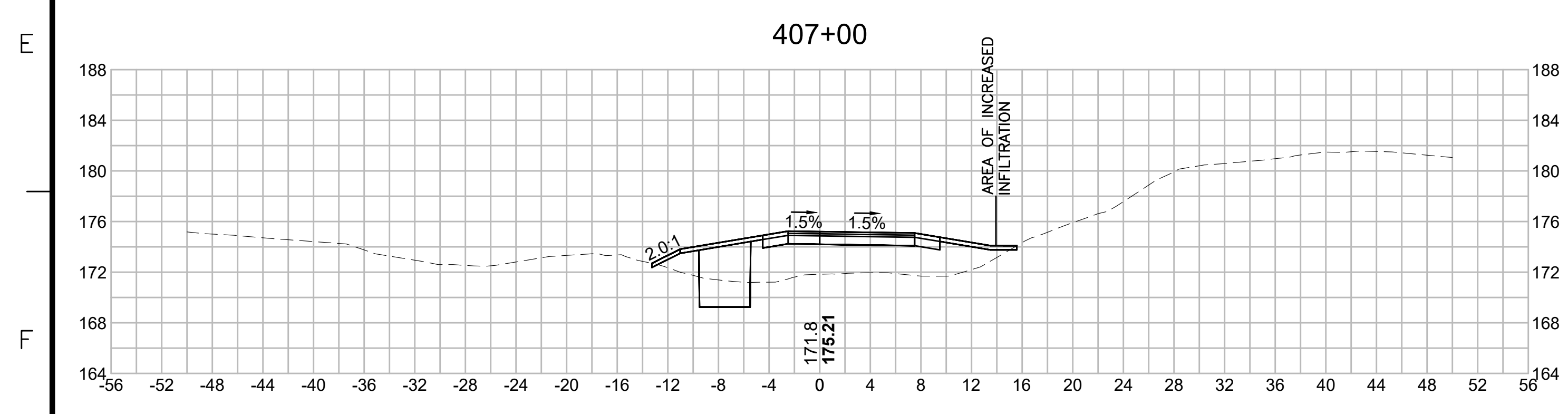
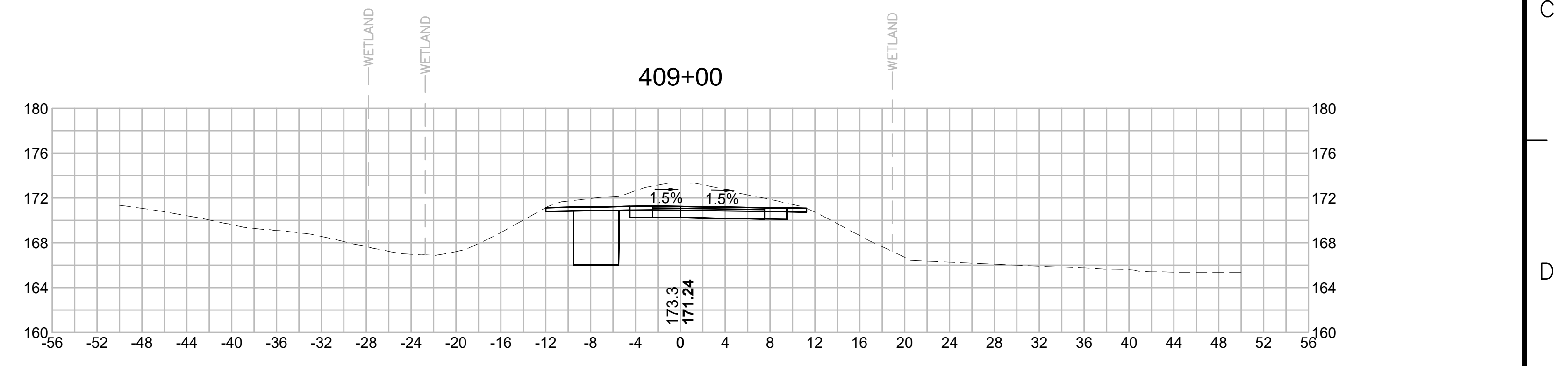
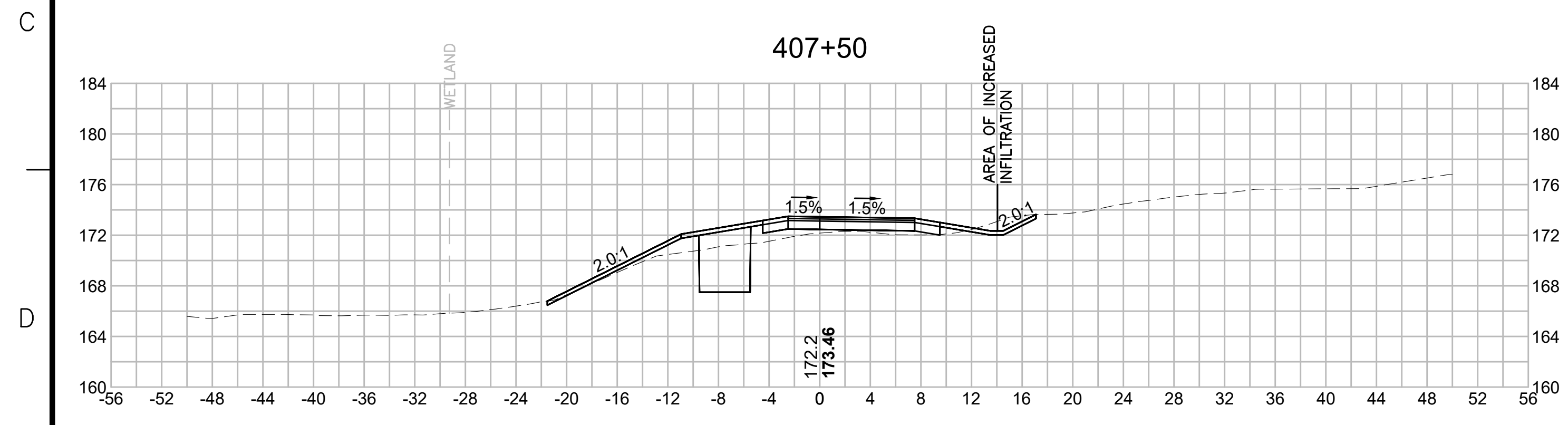
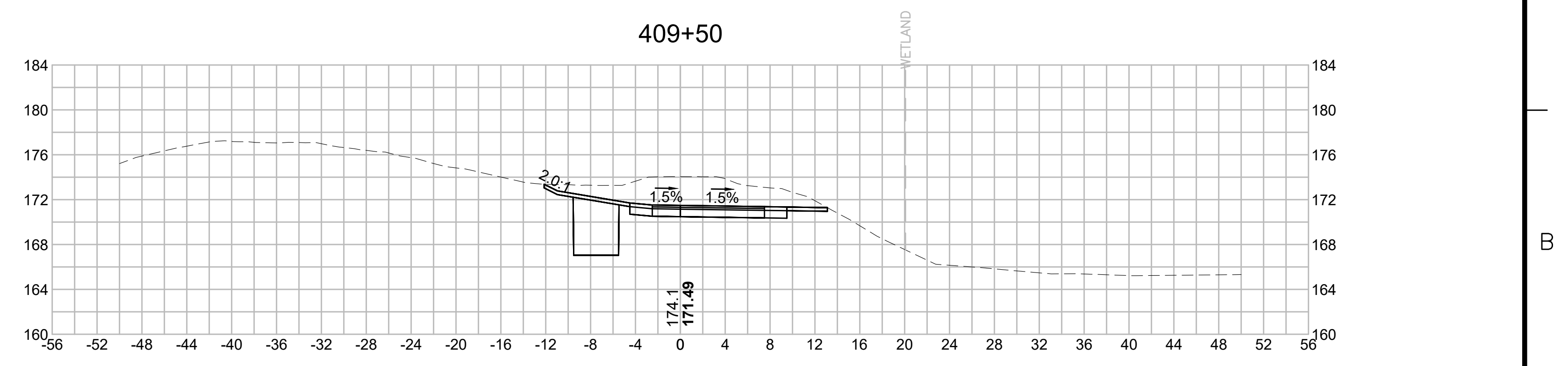
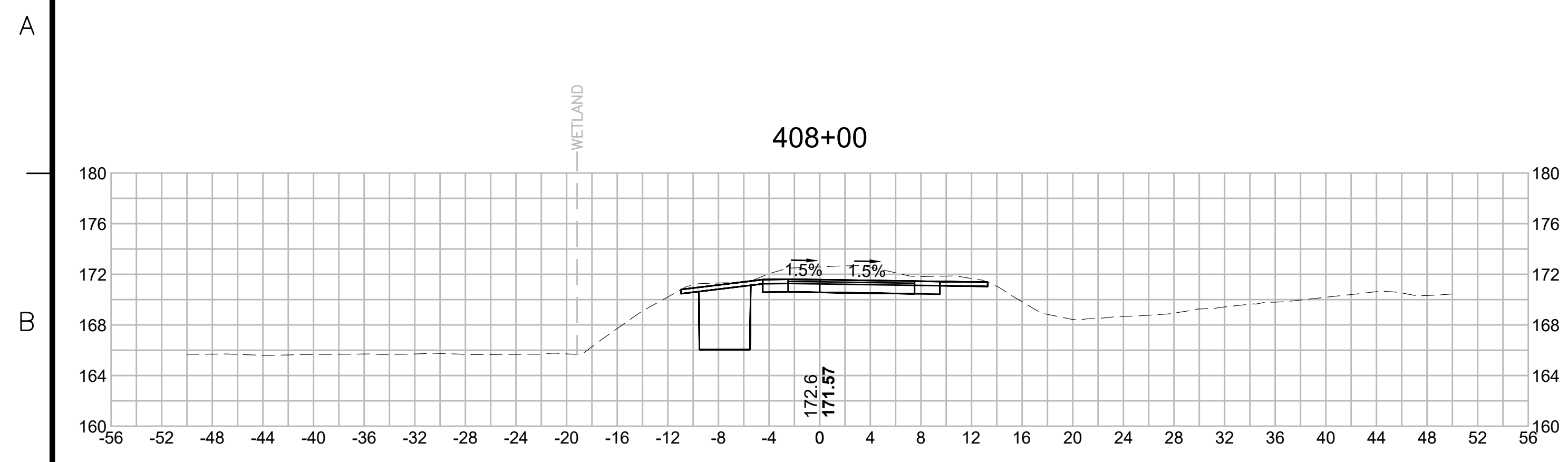
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES	DRAWING NO. REV.
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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 281 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 282 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

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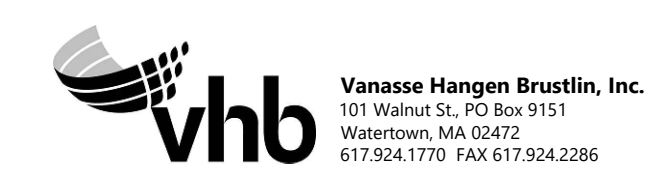
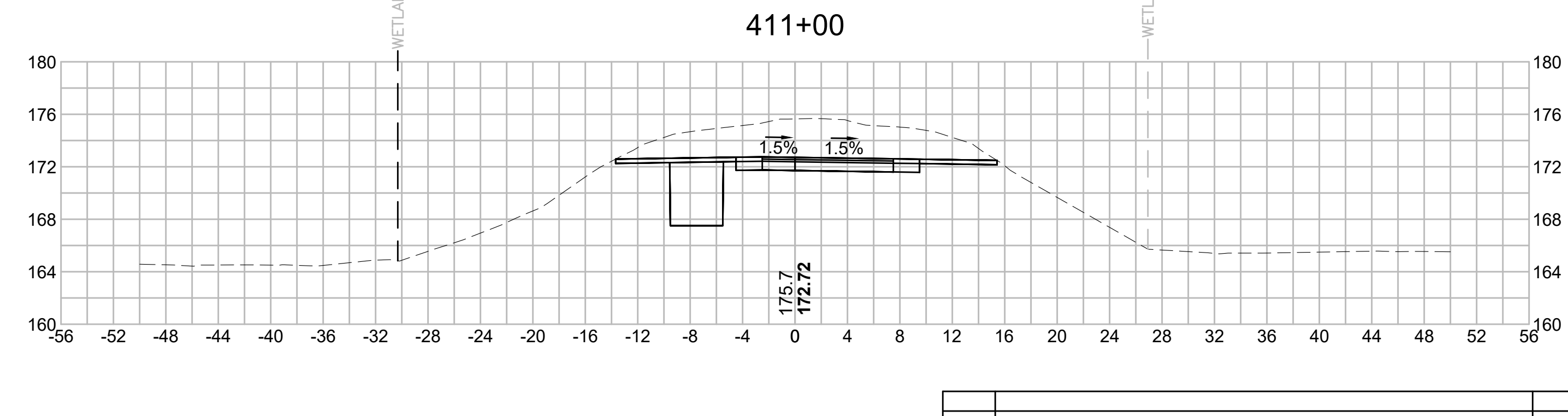
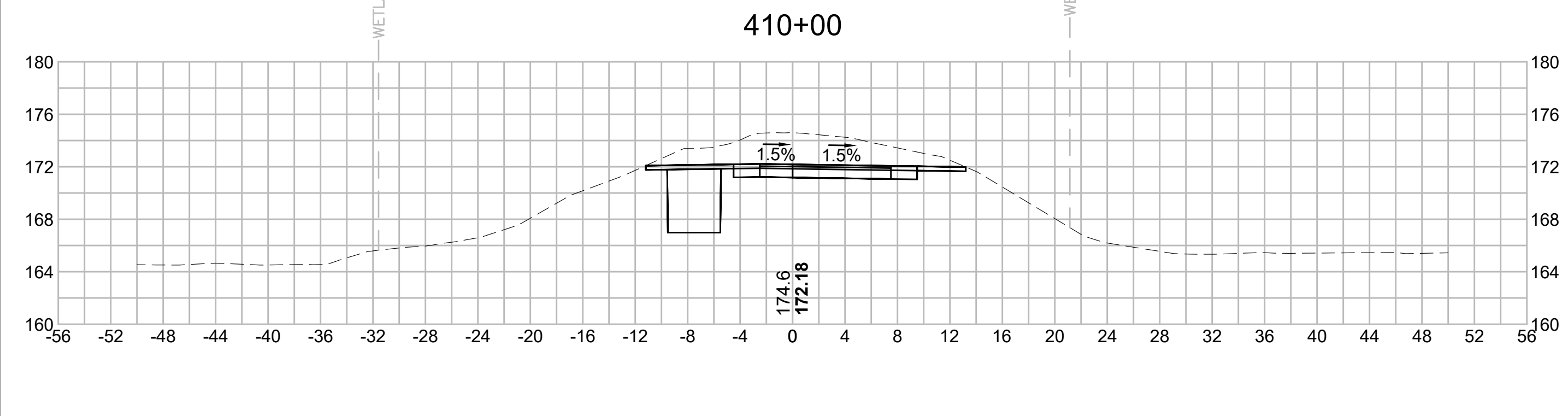
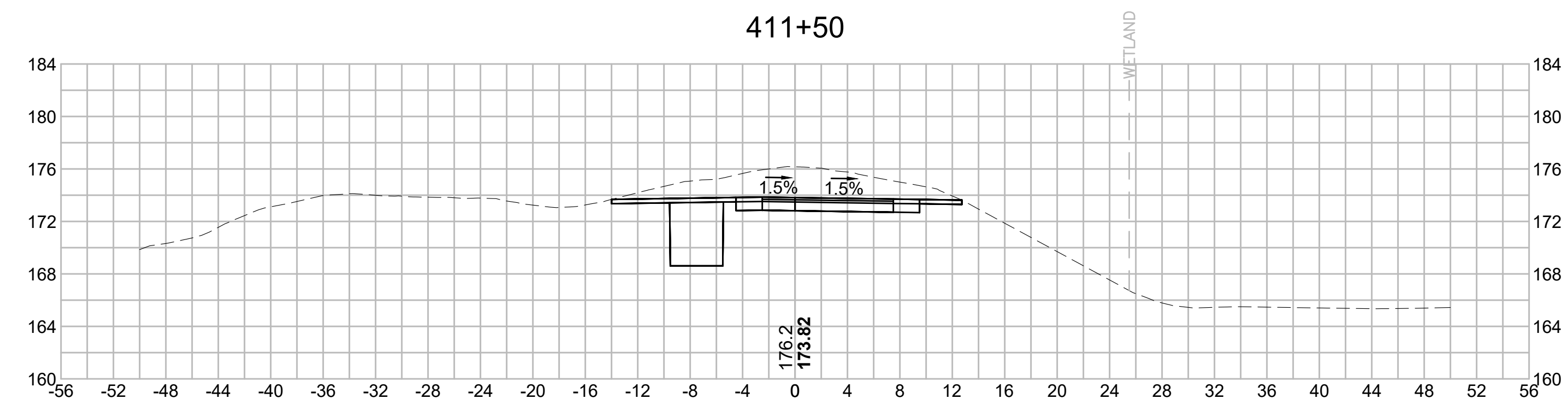
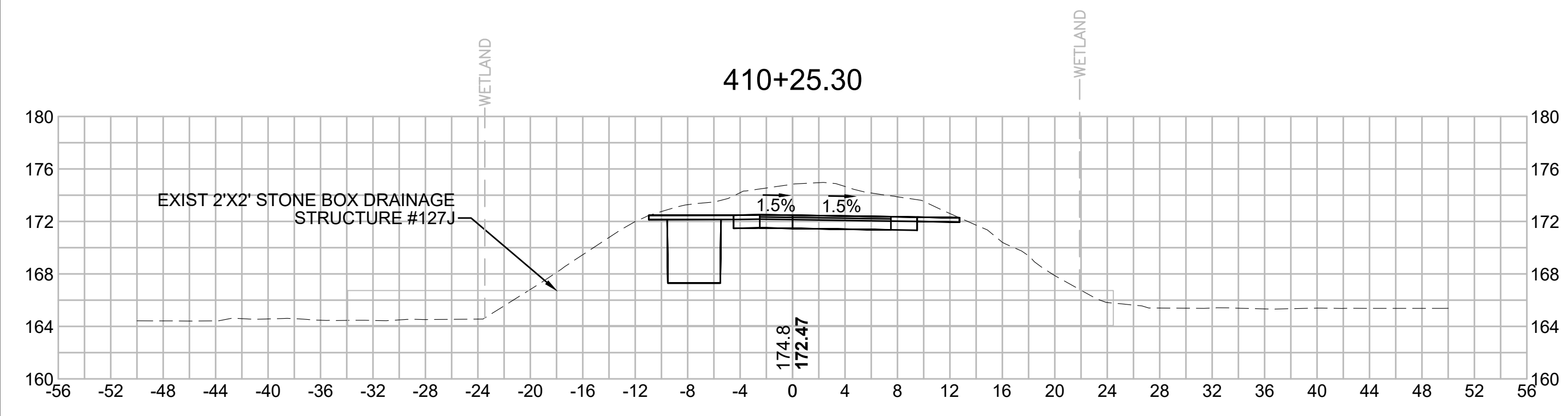
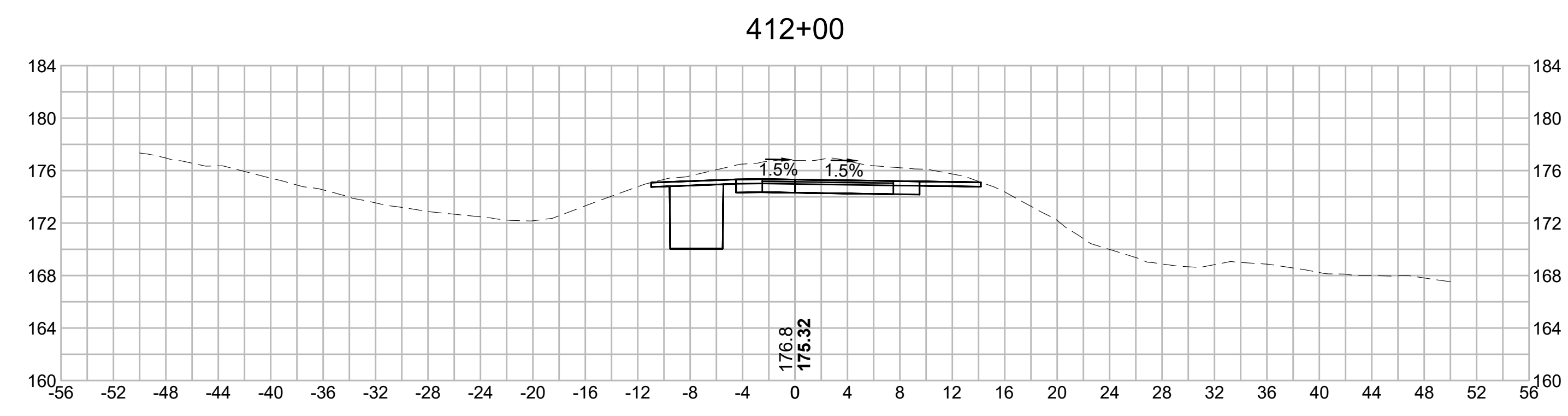
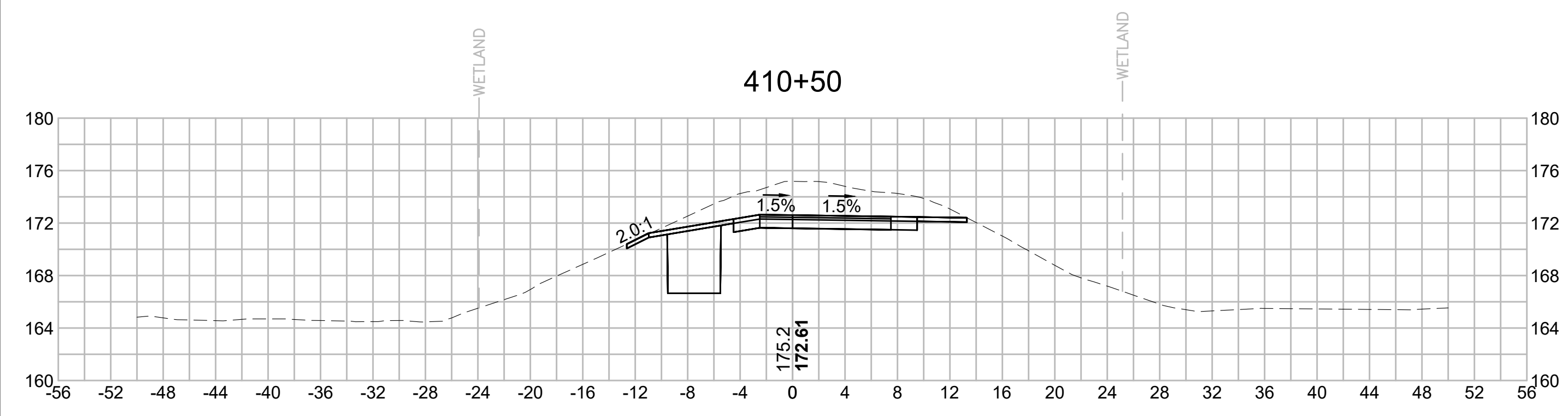
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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 283 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

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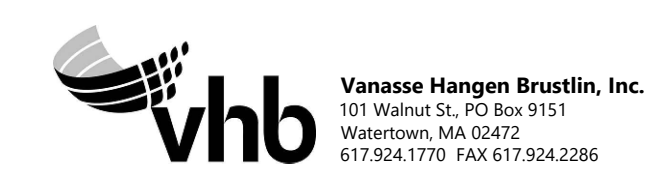
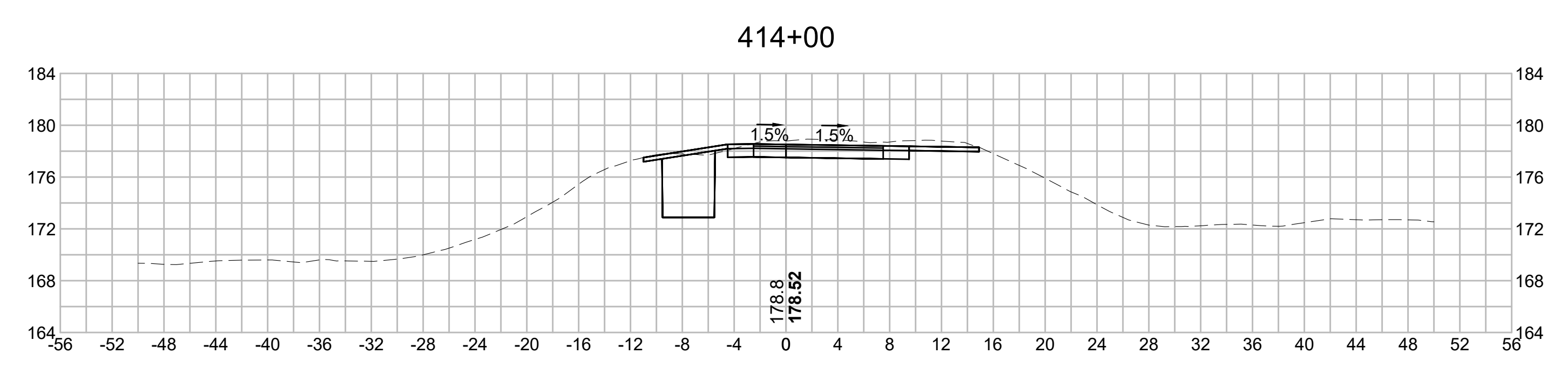
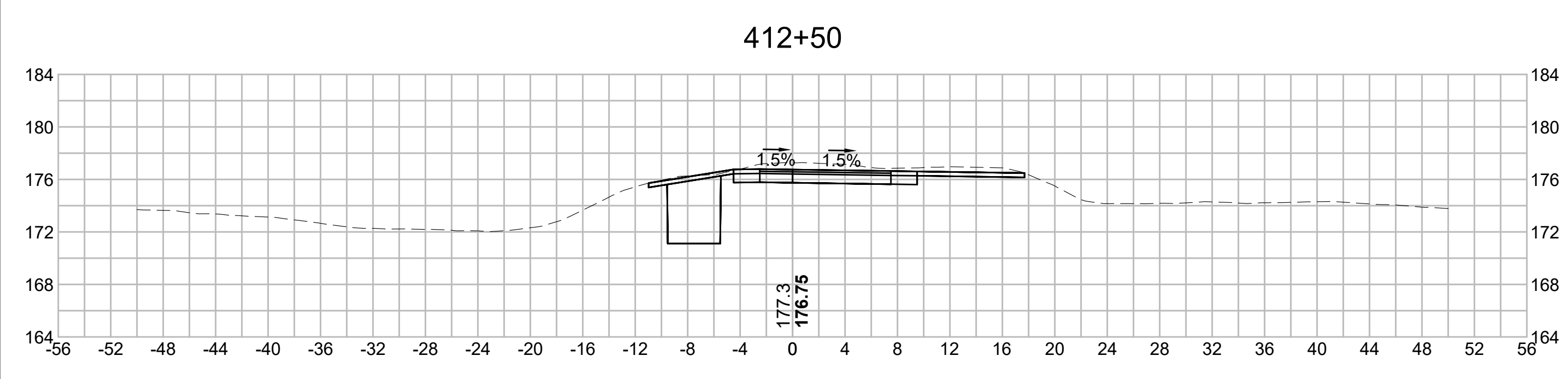
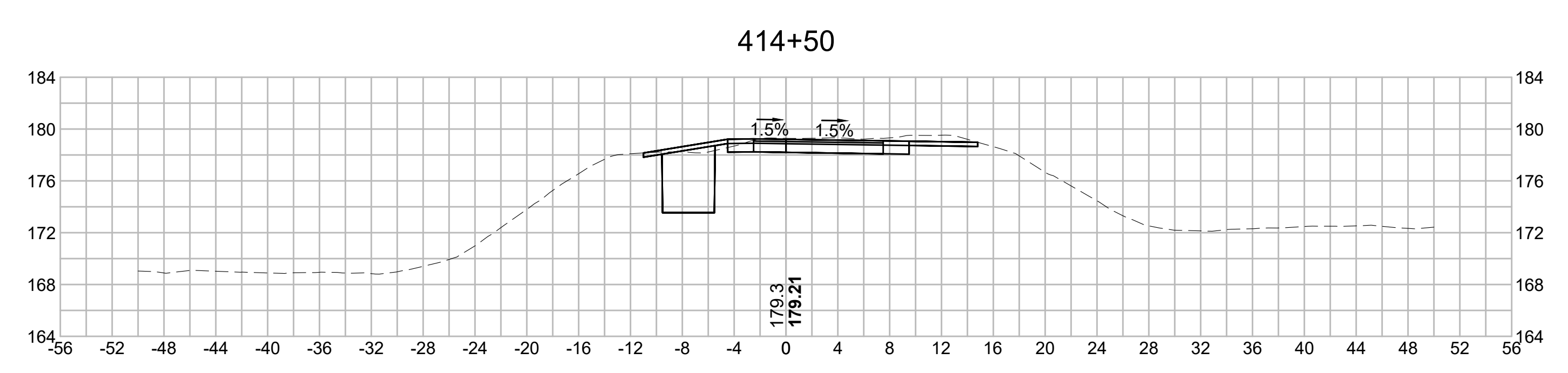
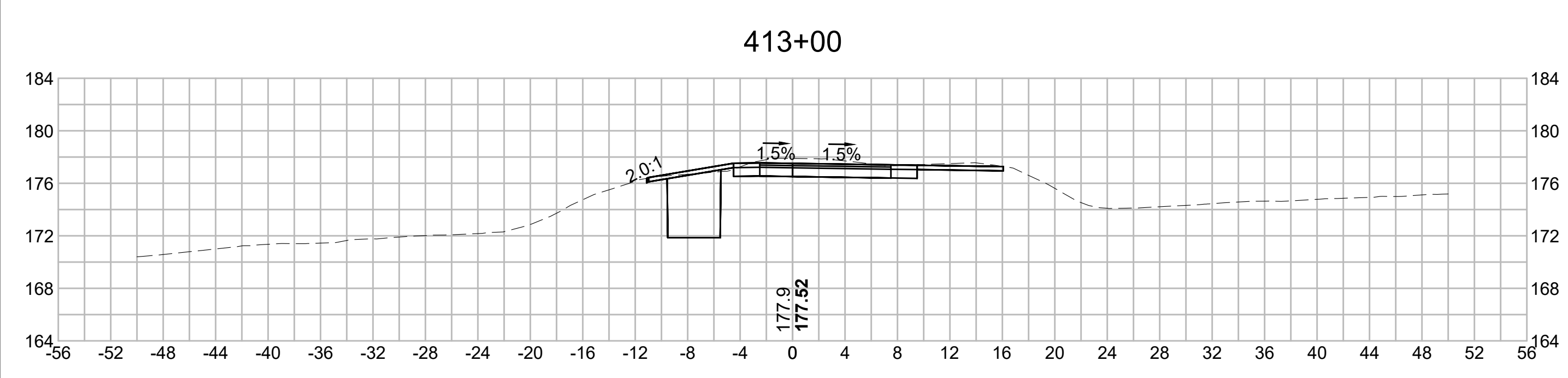
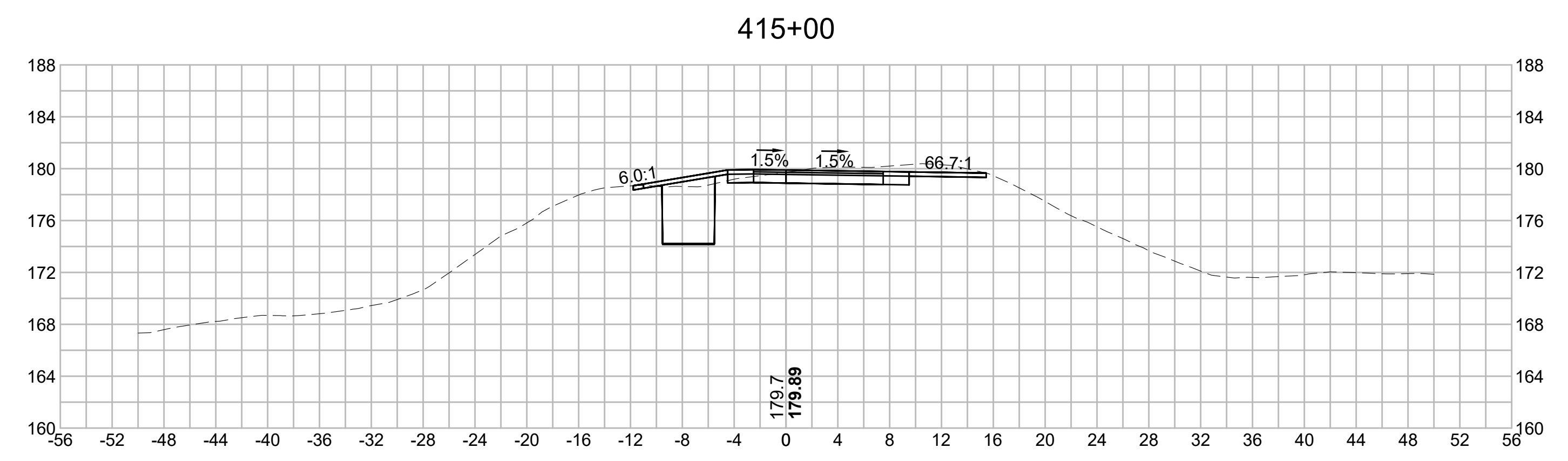
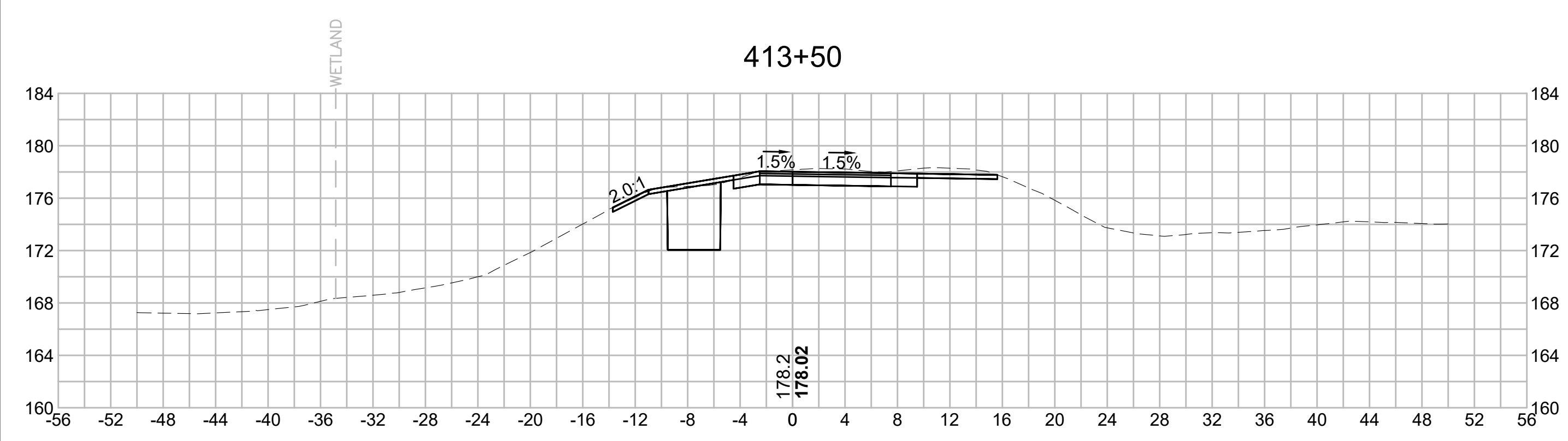
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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 CROSS SECTIONS

PLAN 284 OF 349

SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES	DRAWING NO. .	REV. .
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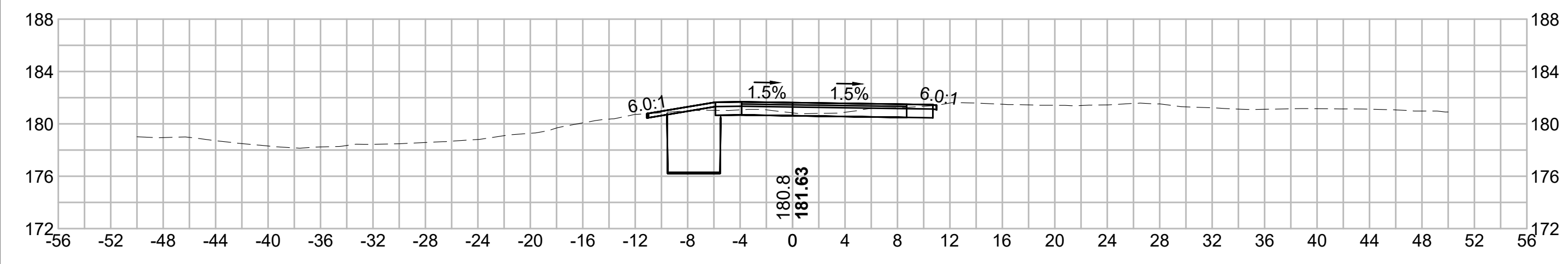
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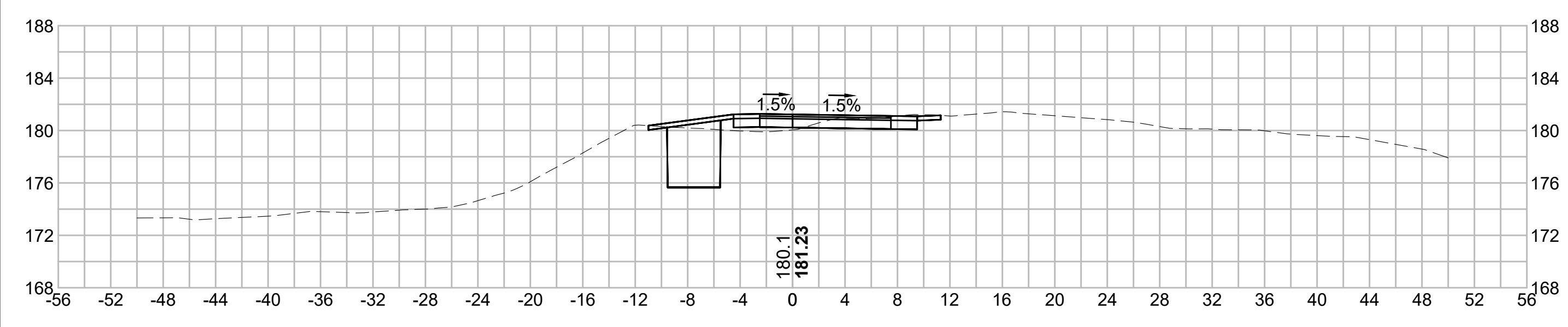
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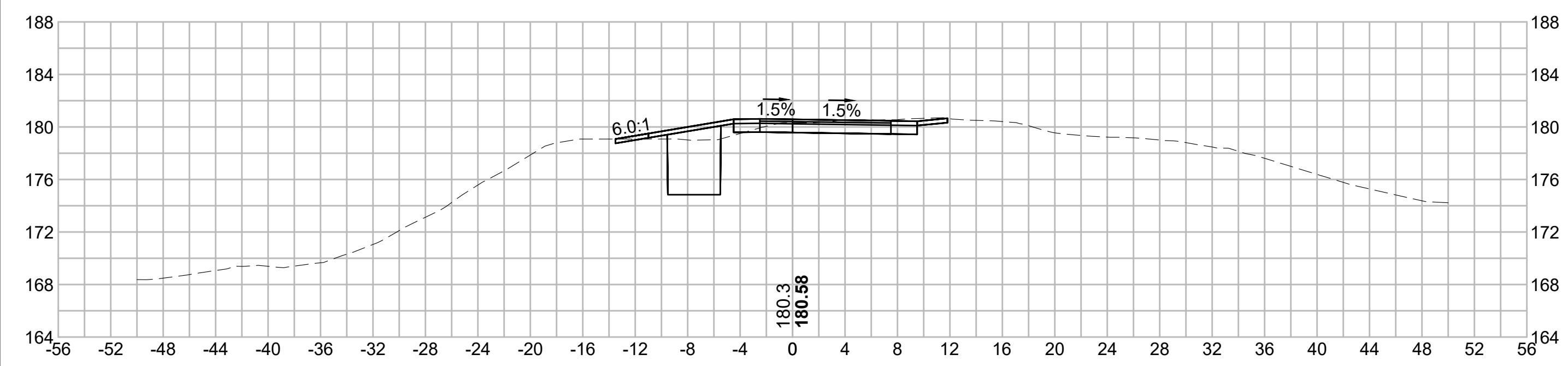
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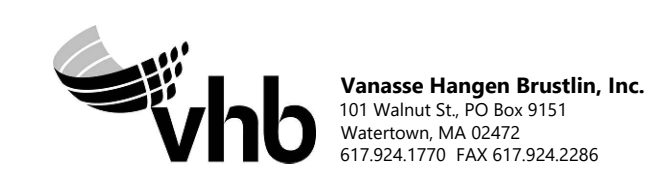
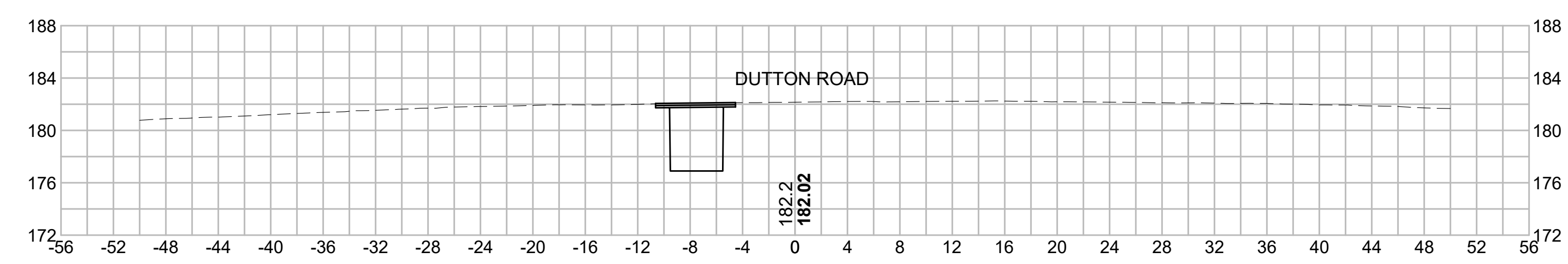
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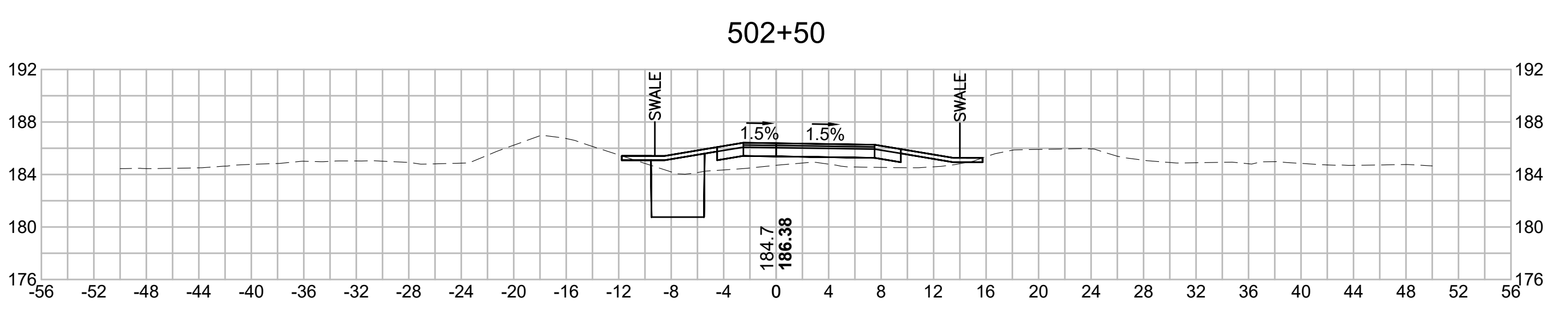
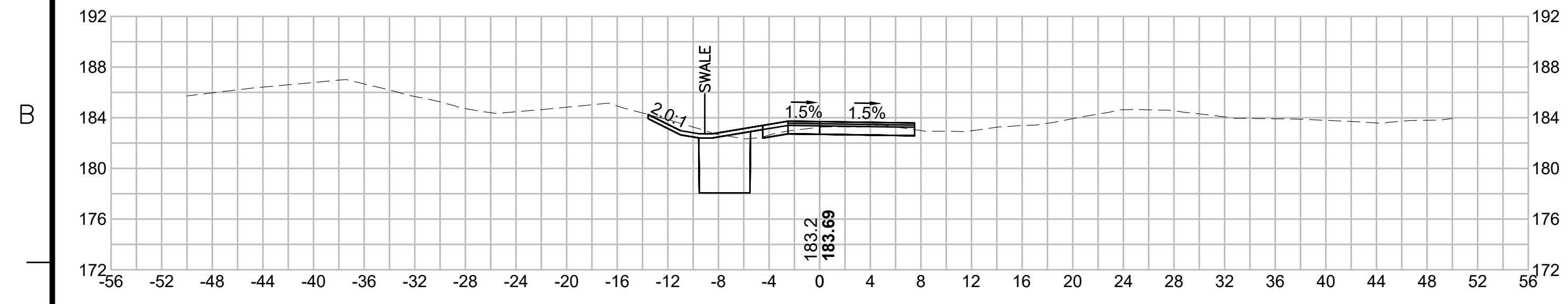
N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 285 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

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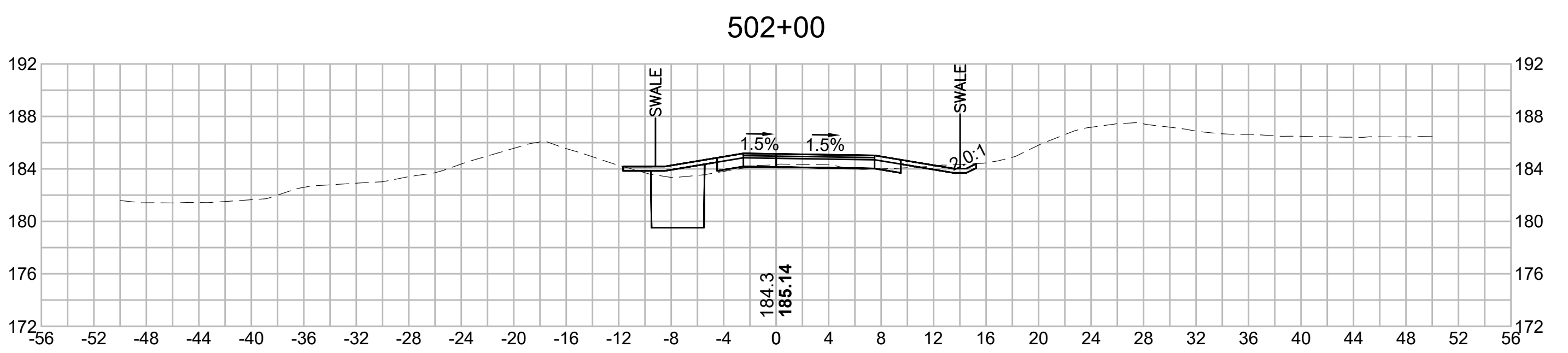
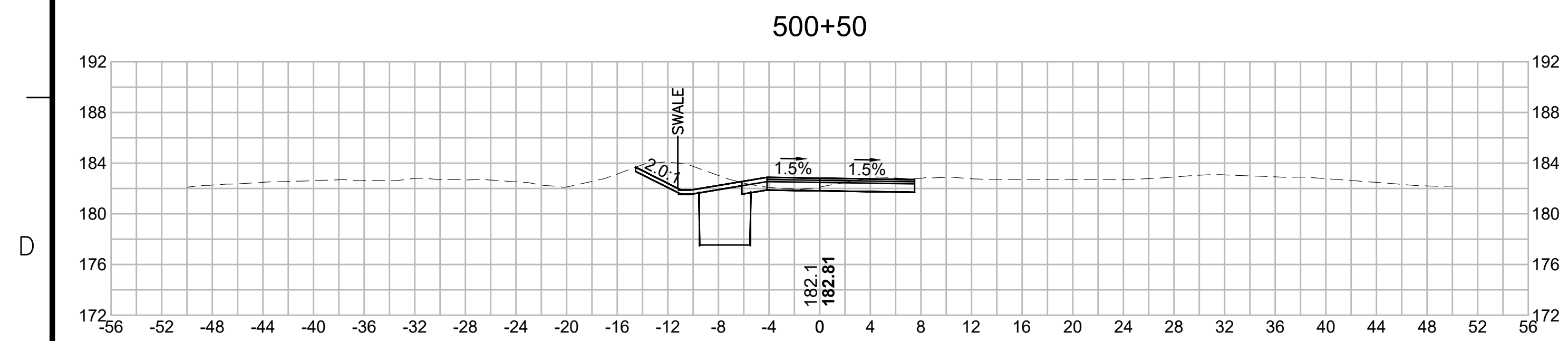
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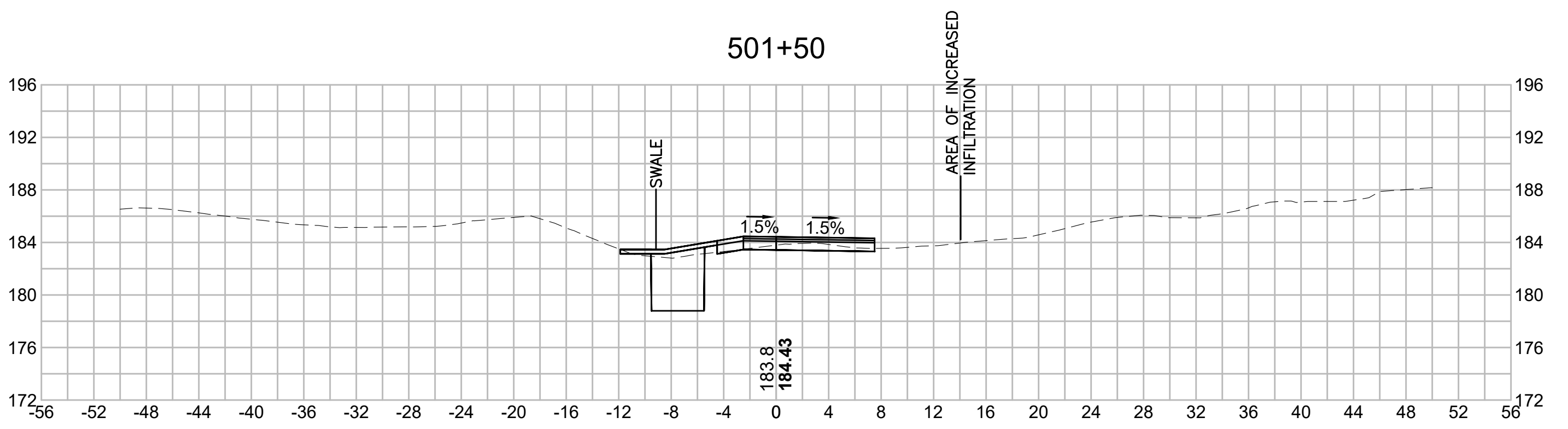
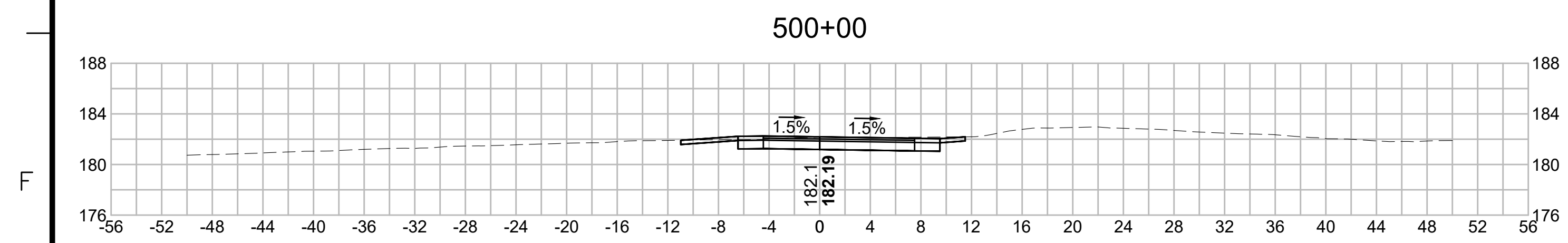
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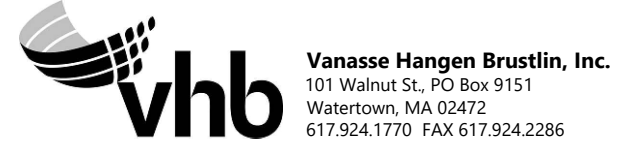
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Vanasse Hangen Brustlin, Inc.
101 Walnut St., PO Box 9151
Watertown, MA 02472
617.294.1770 FAX 617.924.2286

N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 286 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.				REV.

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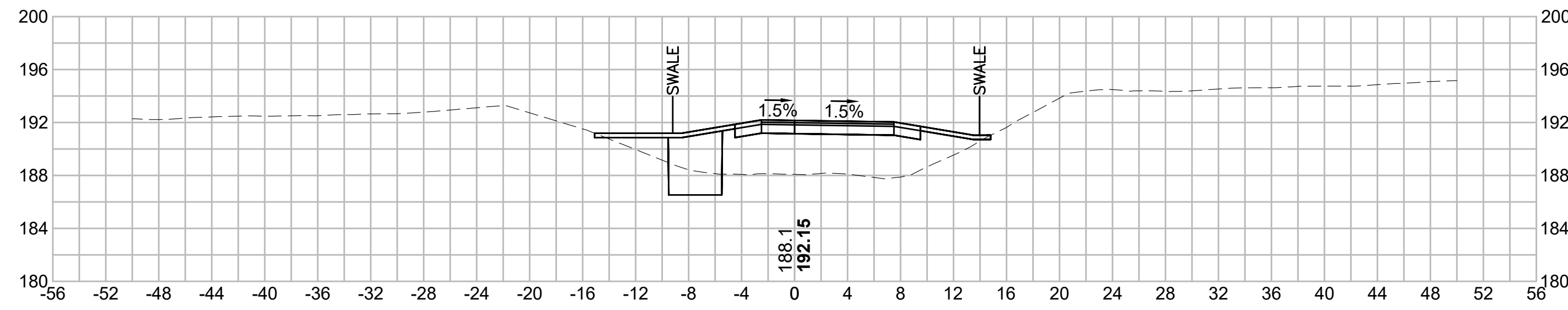
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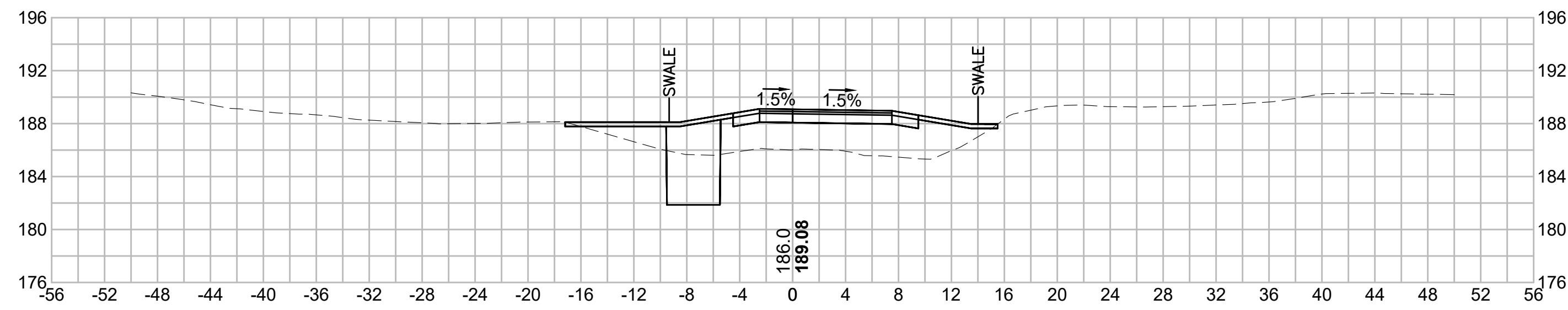
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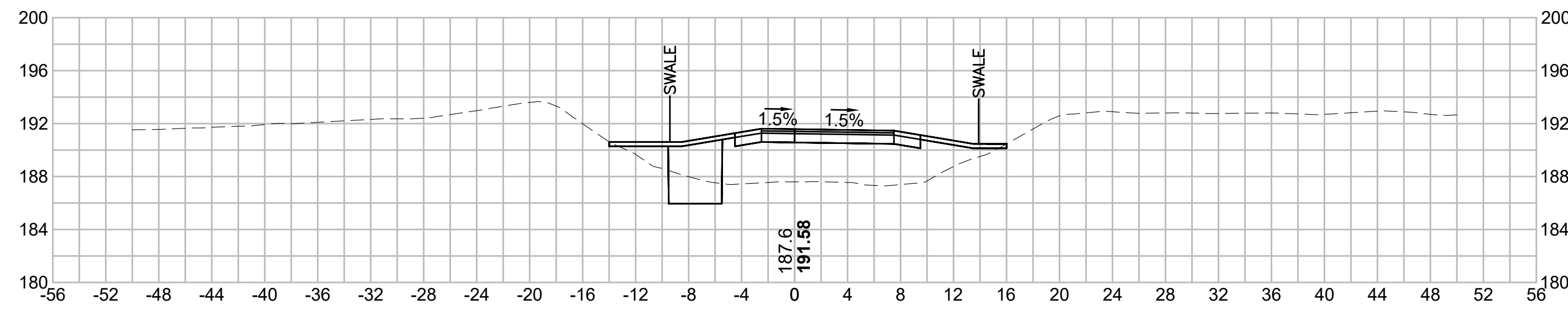
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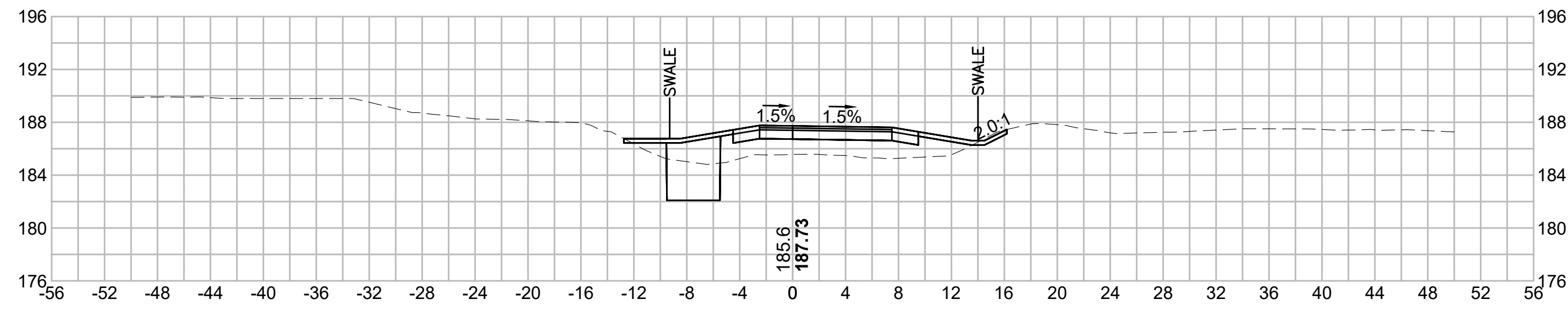
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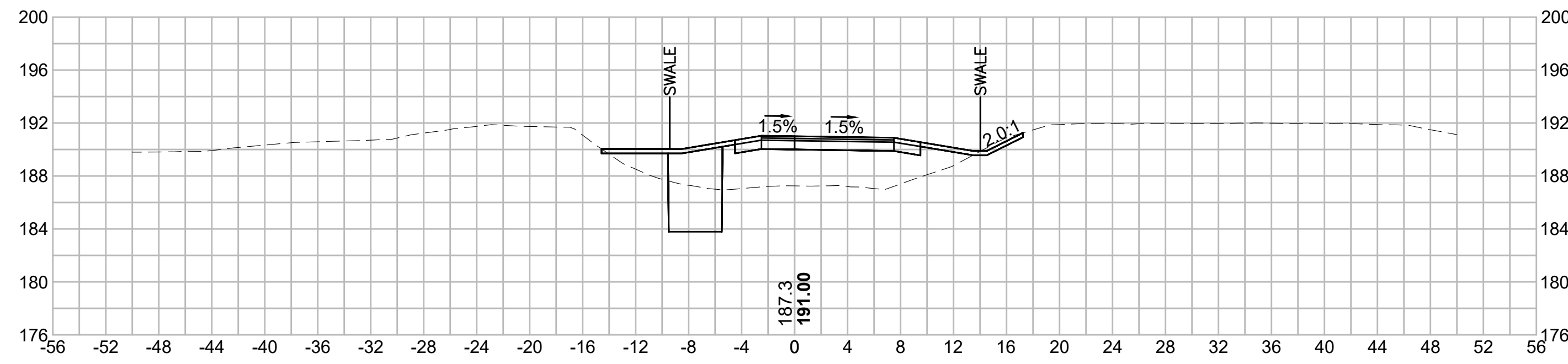
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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 287 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
	DRAWING NO.	REV.		

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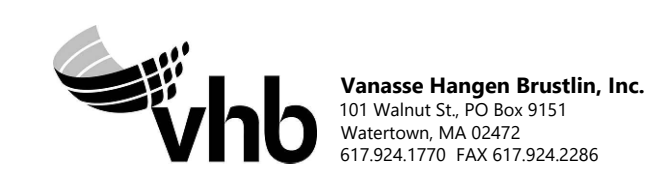
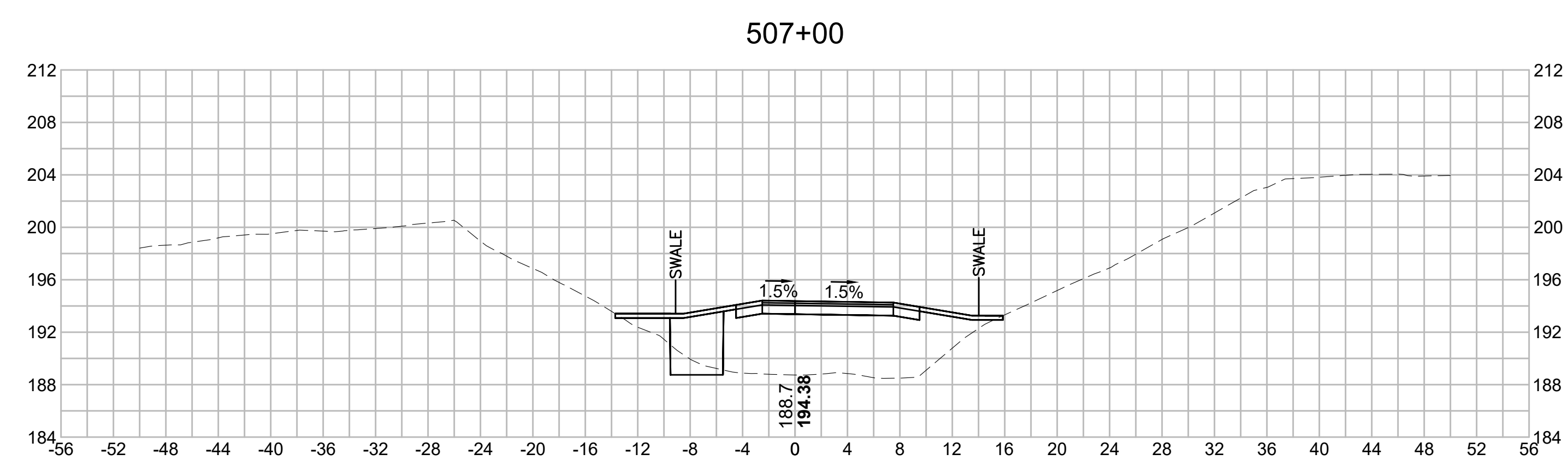
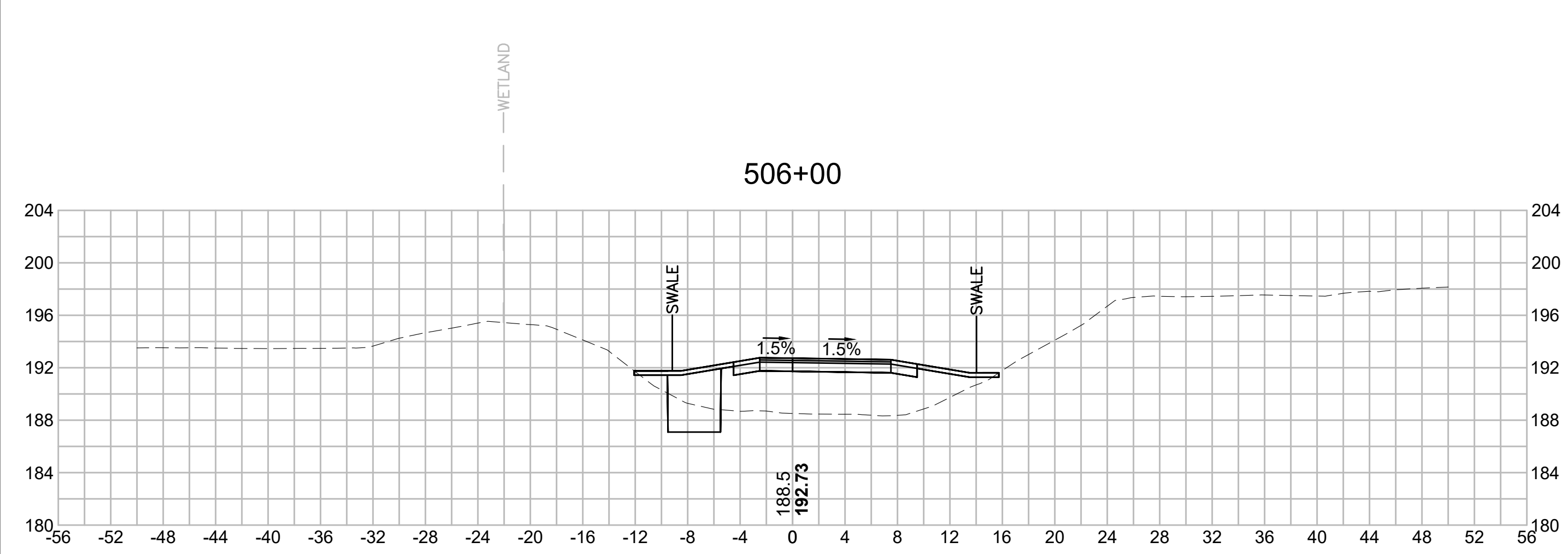
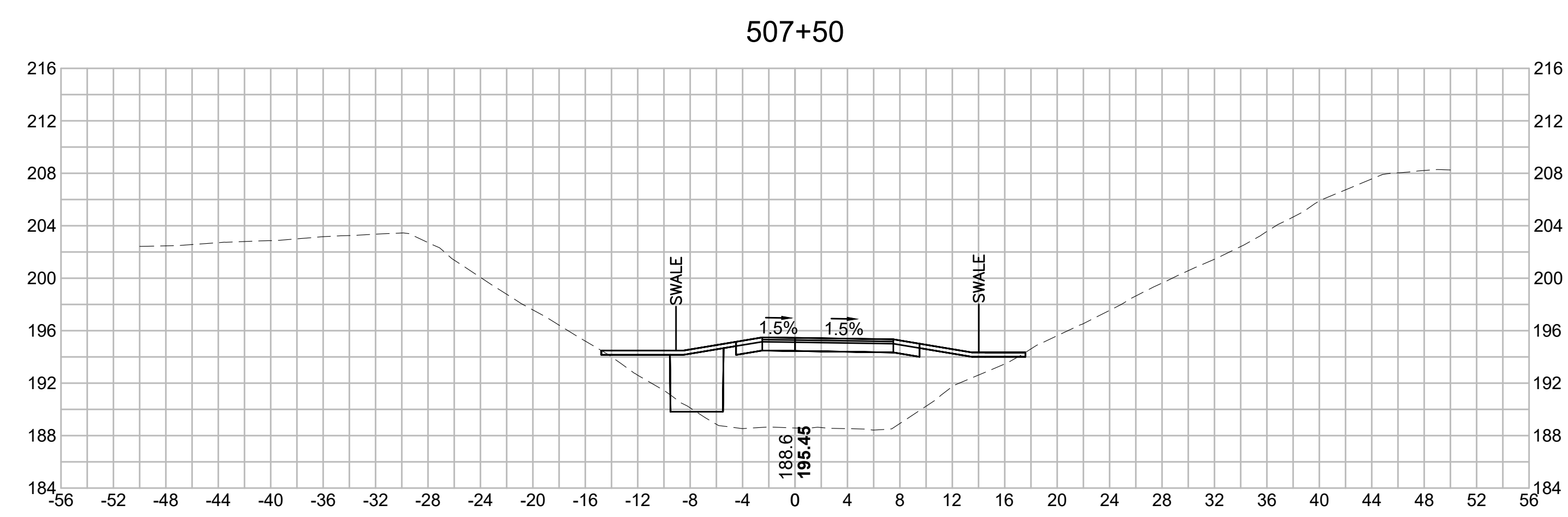
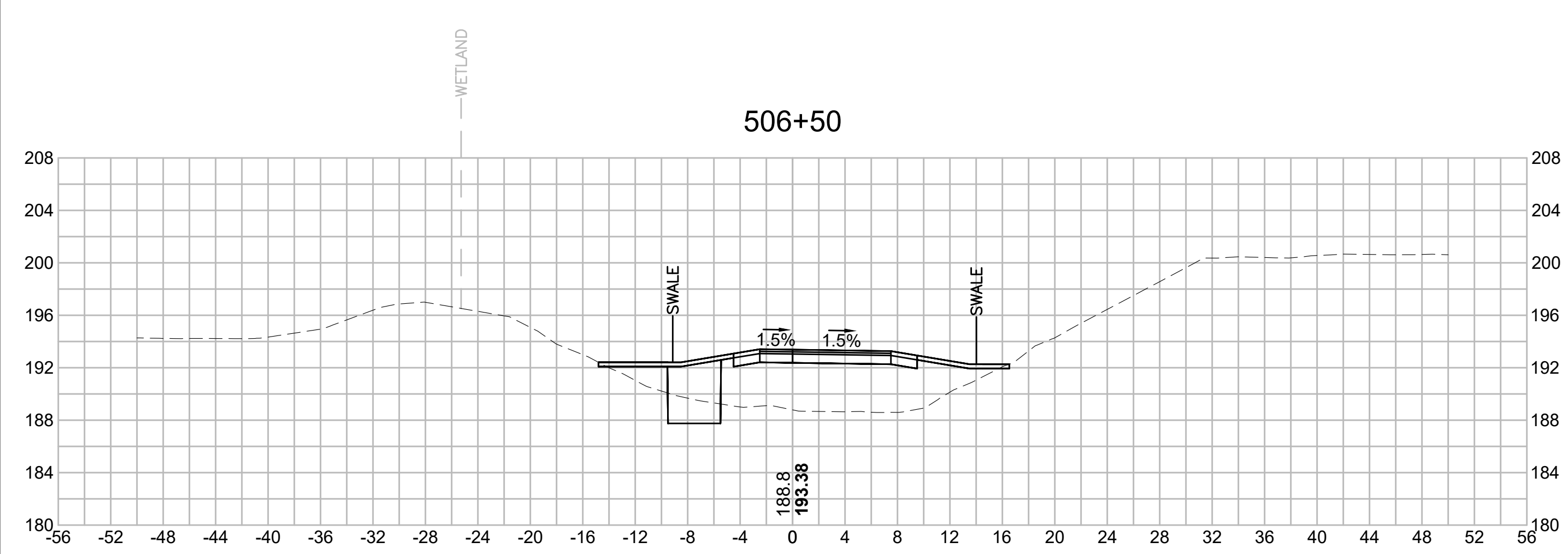
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NO.		DESCRIPTION		BY	DATE	APPR.
		REVISION				
EVERSOURCE						
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT						
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS						
CROSS SECTIONS						
PLAN 288 OF 349						
SCALE: unless noted 1"=8'		DATE	DRAWN	CHK'D	APP'R.	DRAWING NO. REV.
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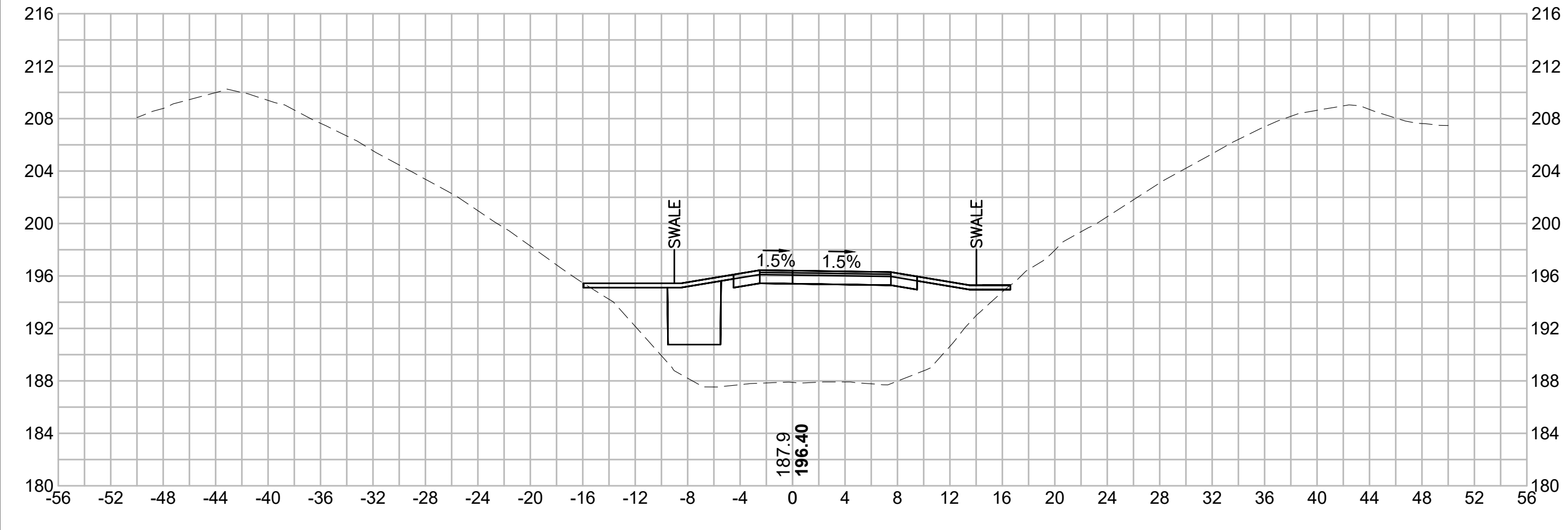
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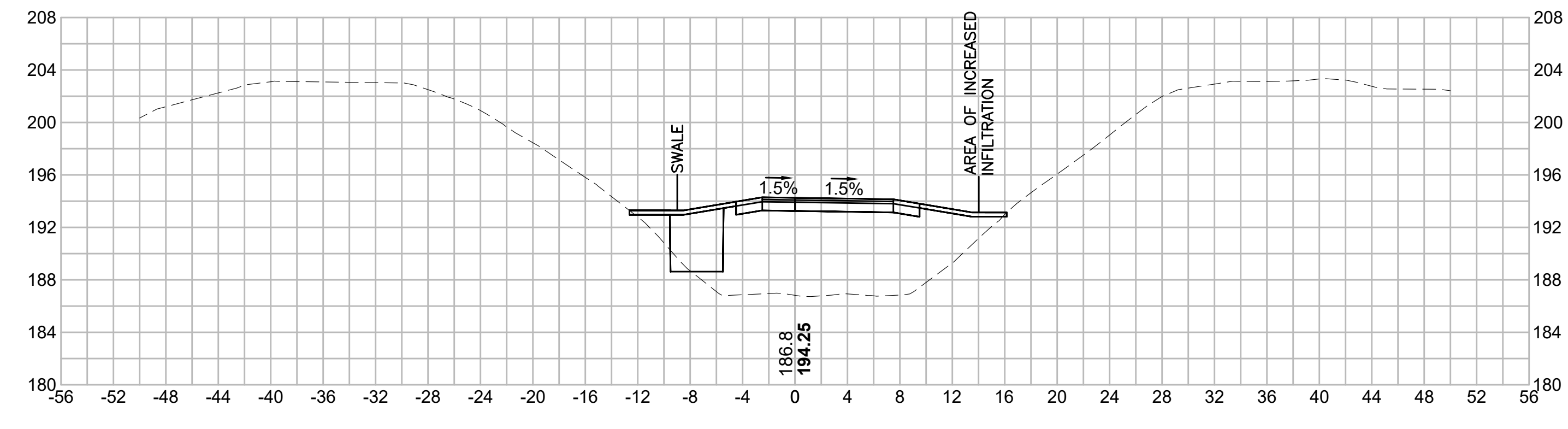
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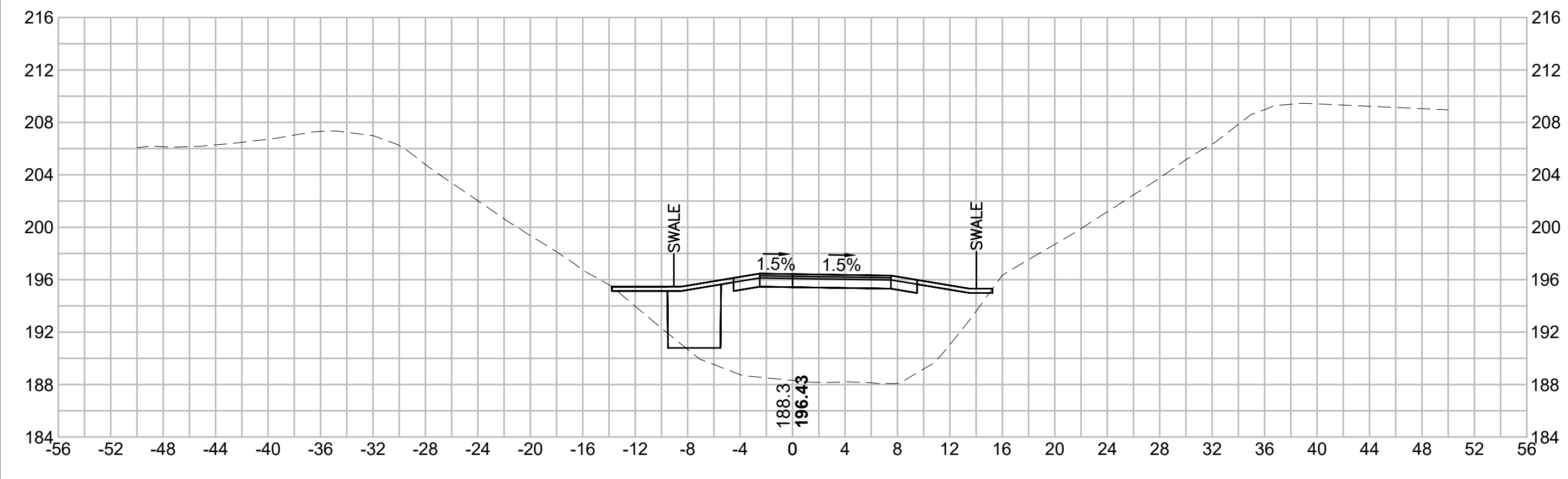
508+50



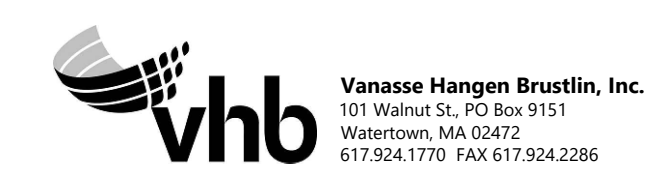
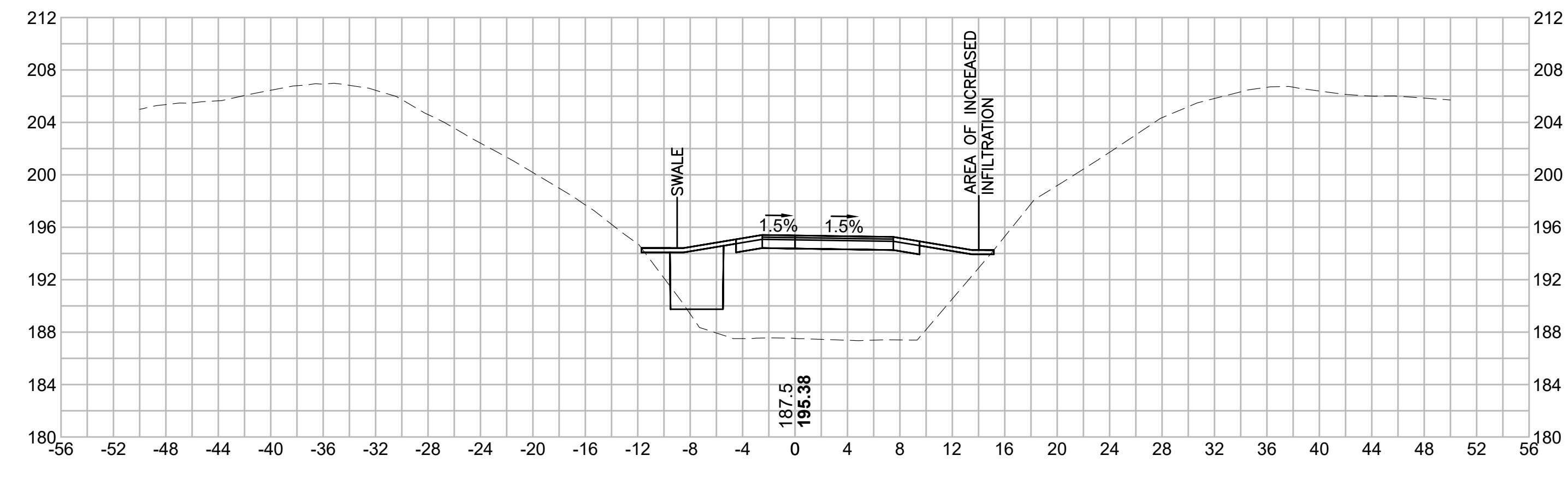
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508+00



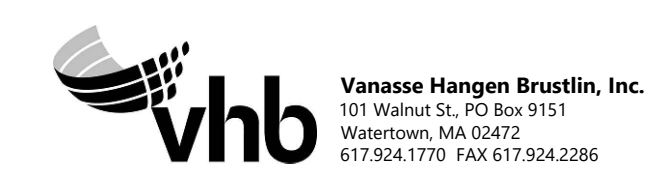
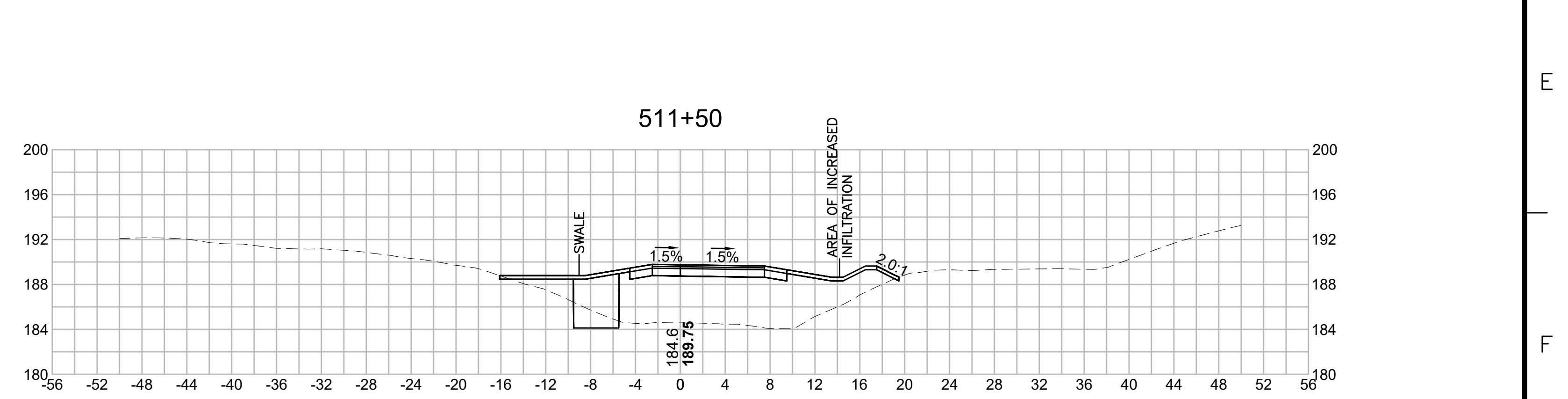
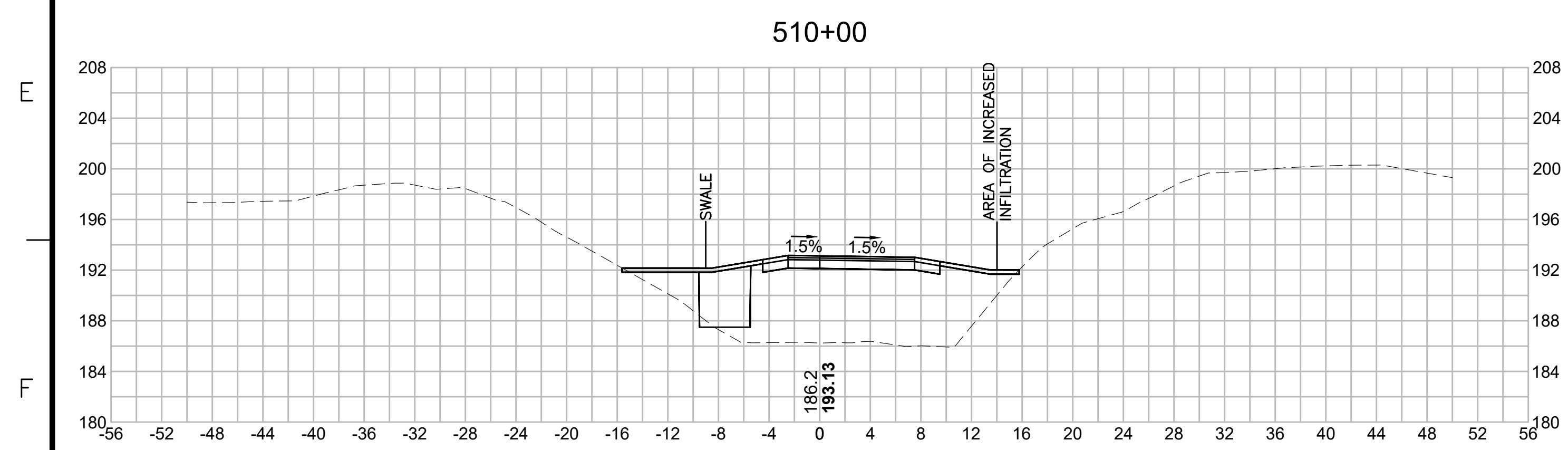
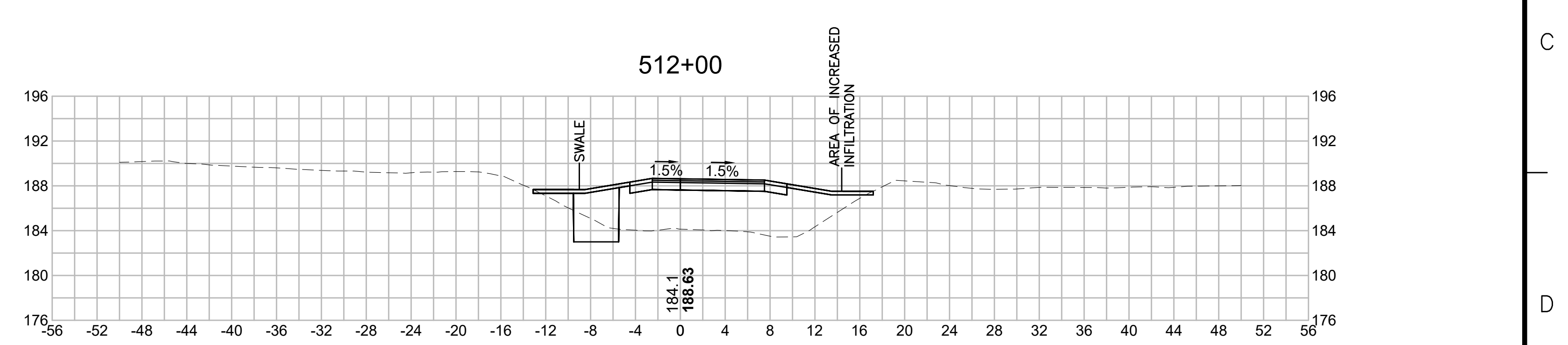
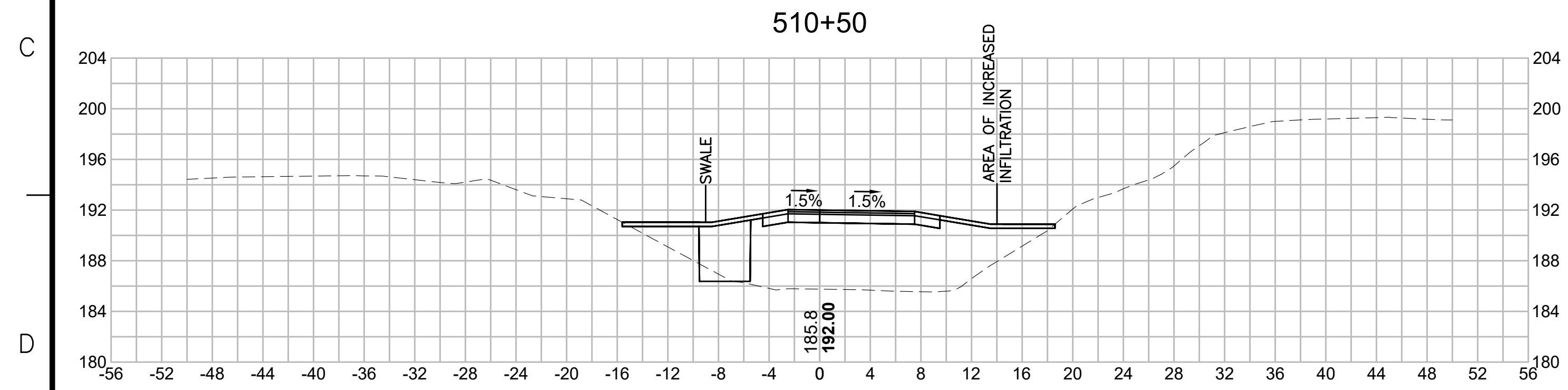
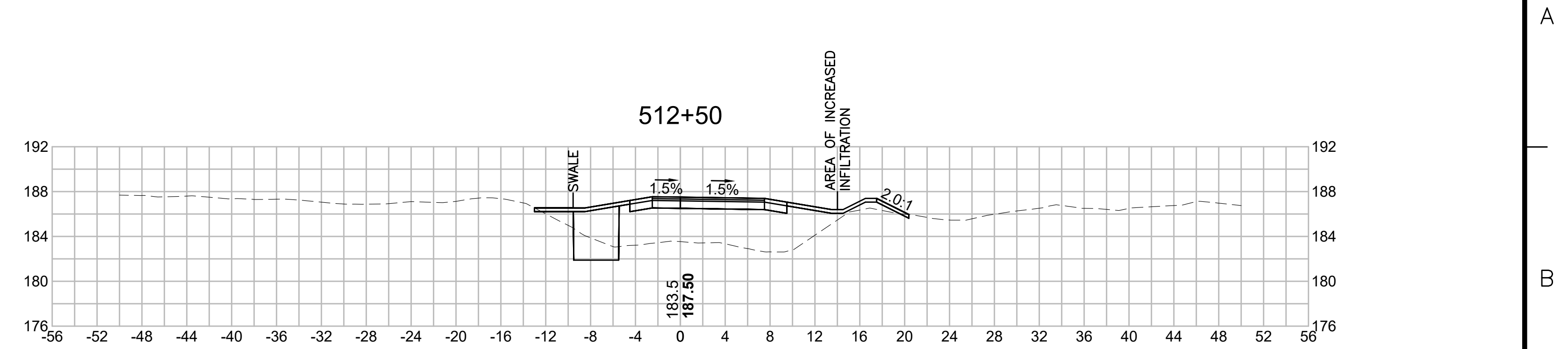
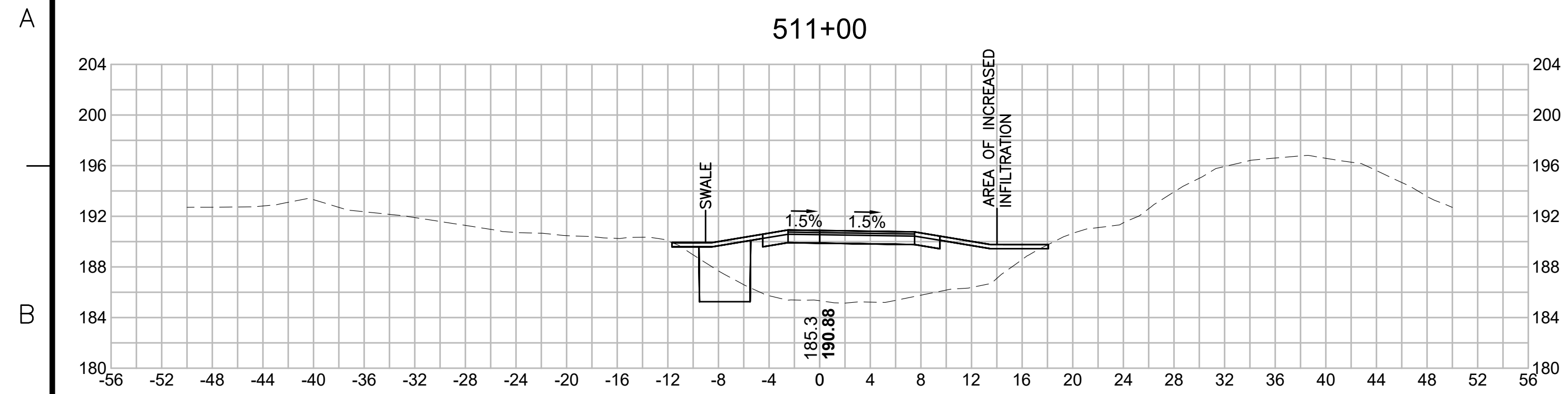
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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 289 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

1 2 3 4 5 6 7 8 9 10 11

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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 290 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

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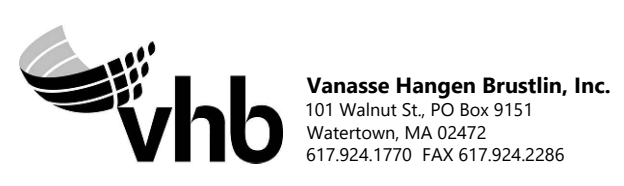
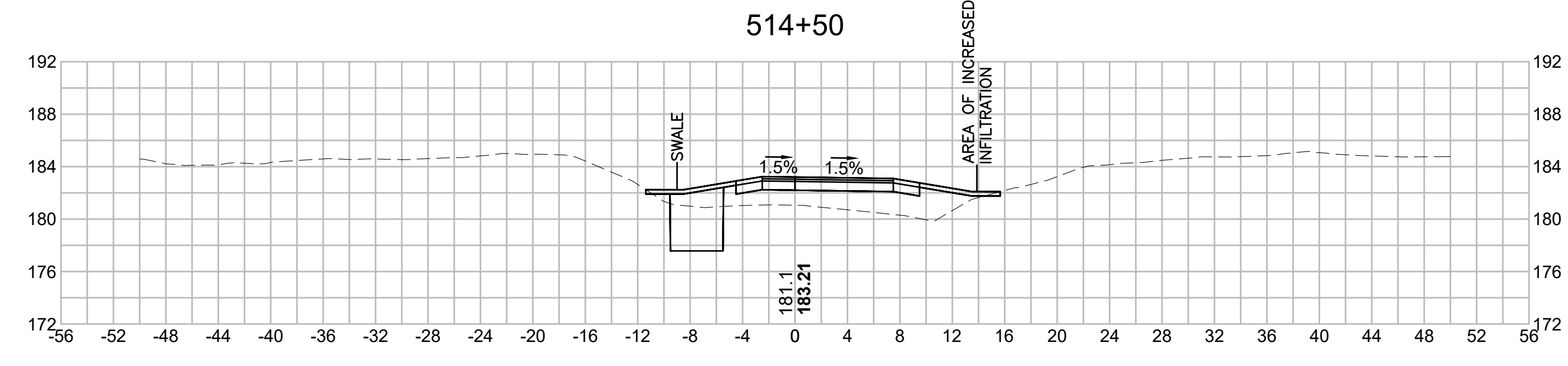
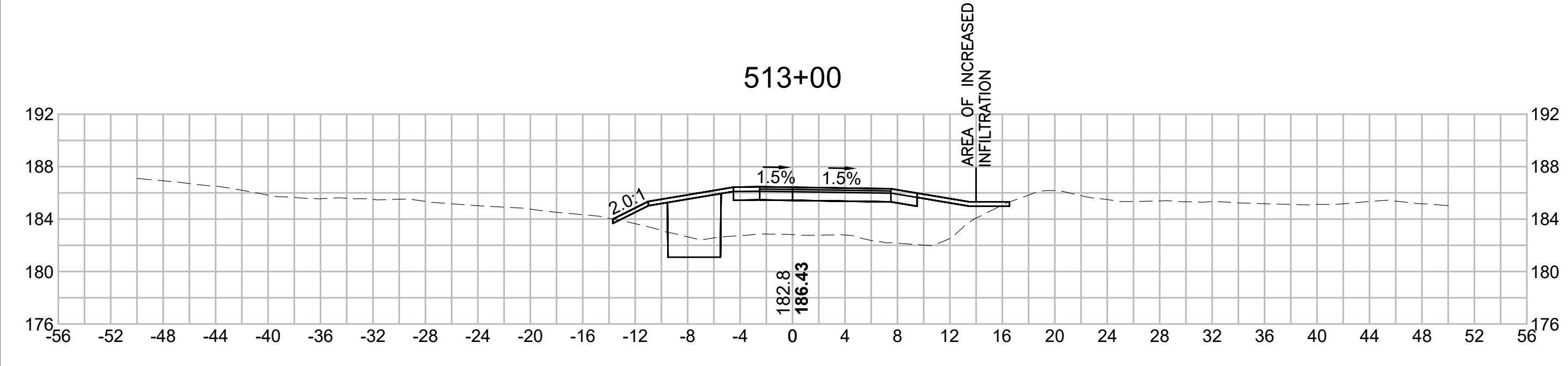
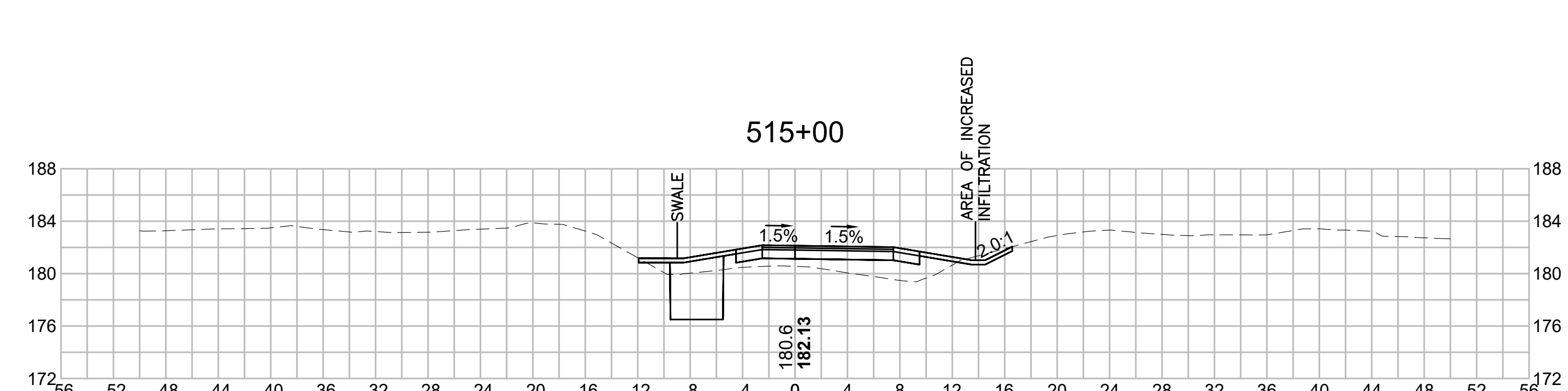
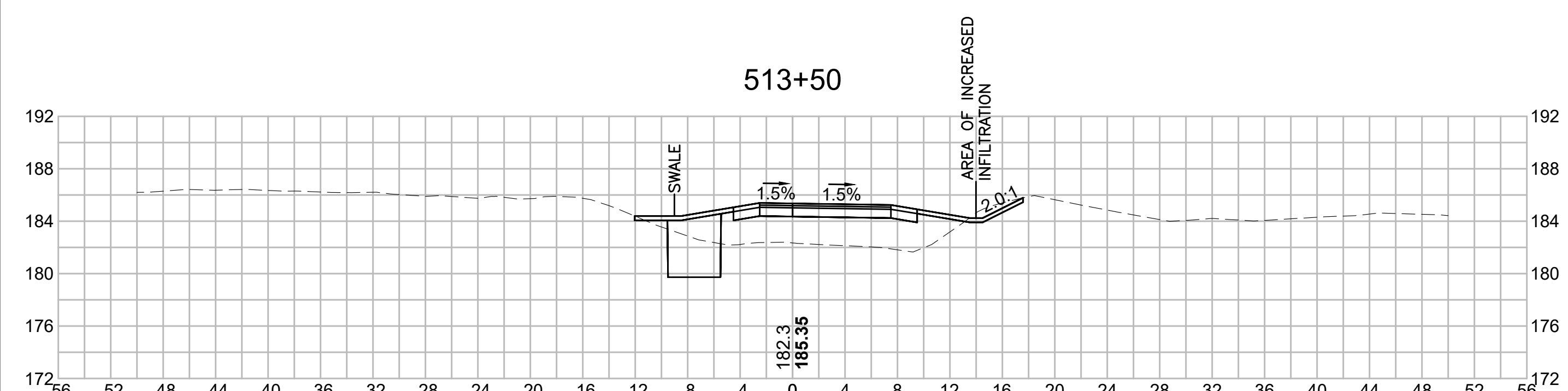
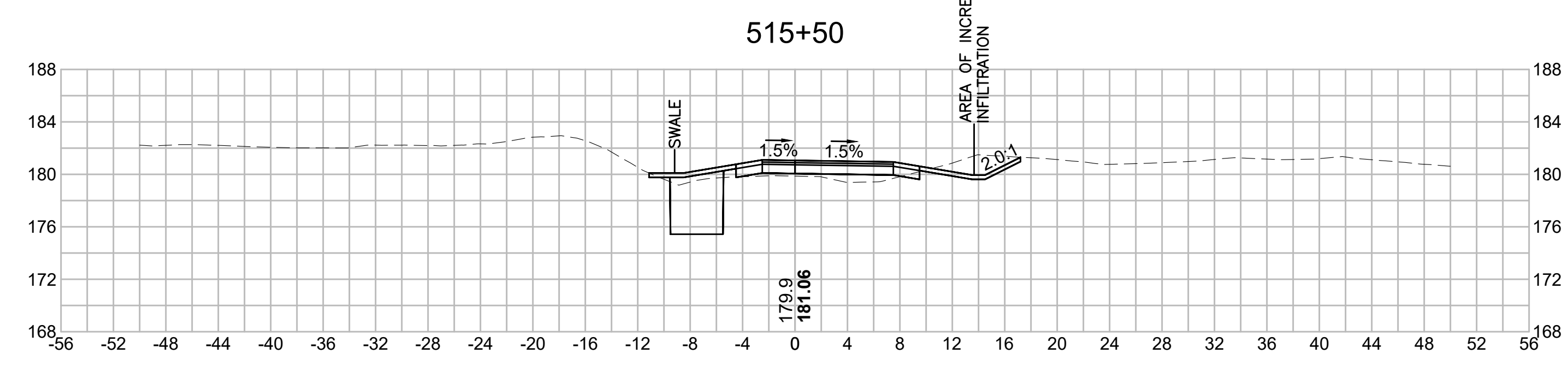
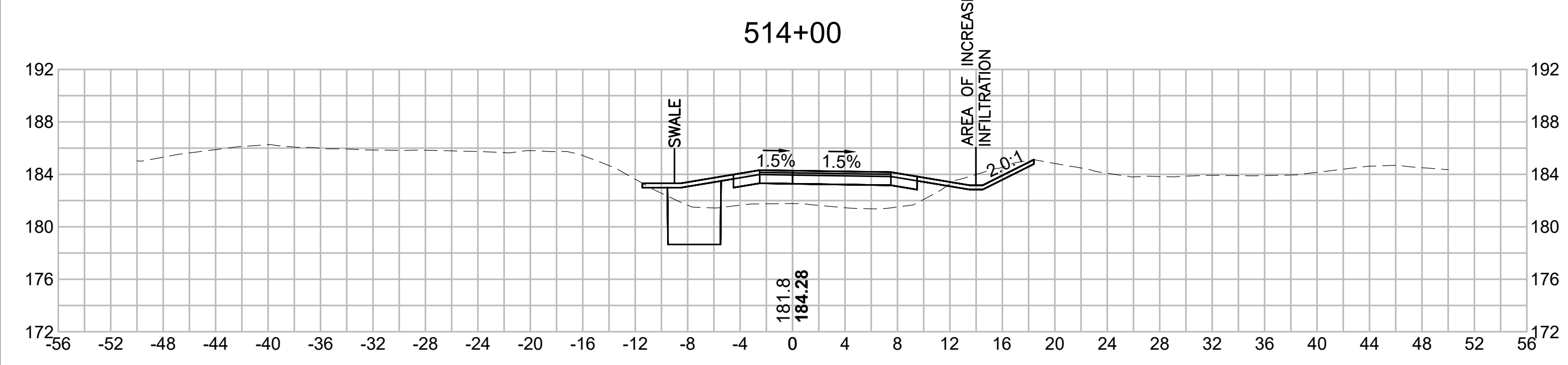
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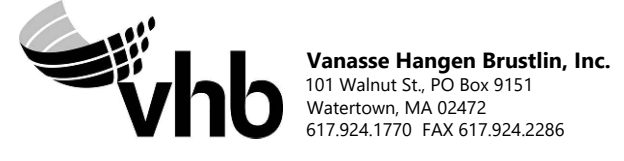
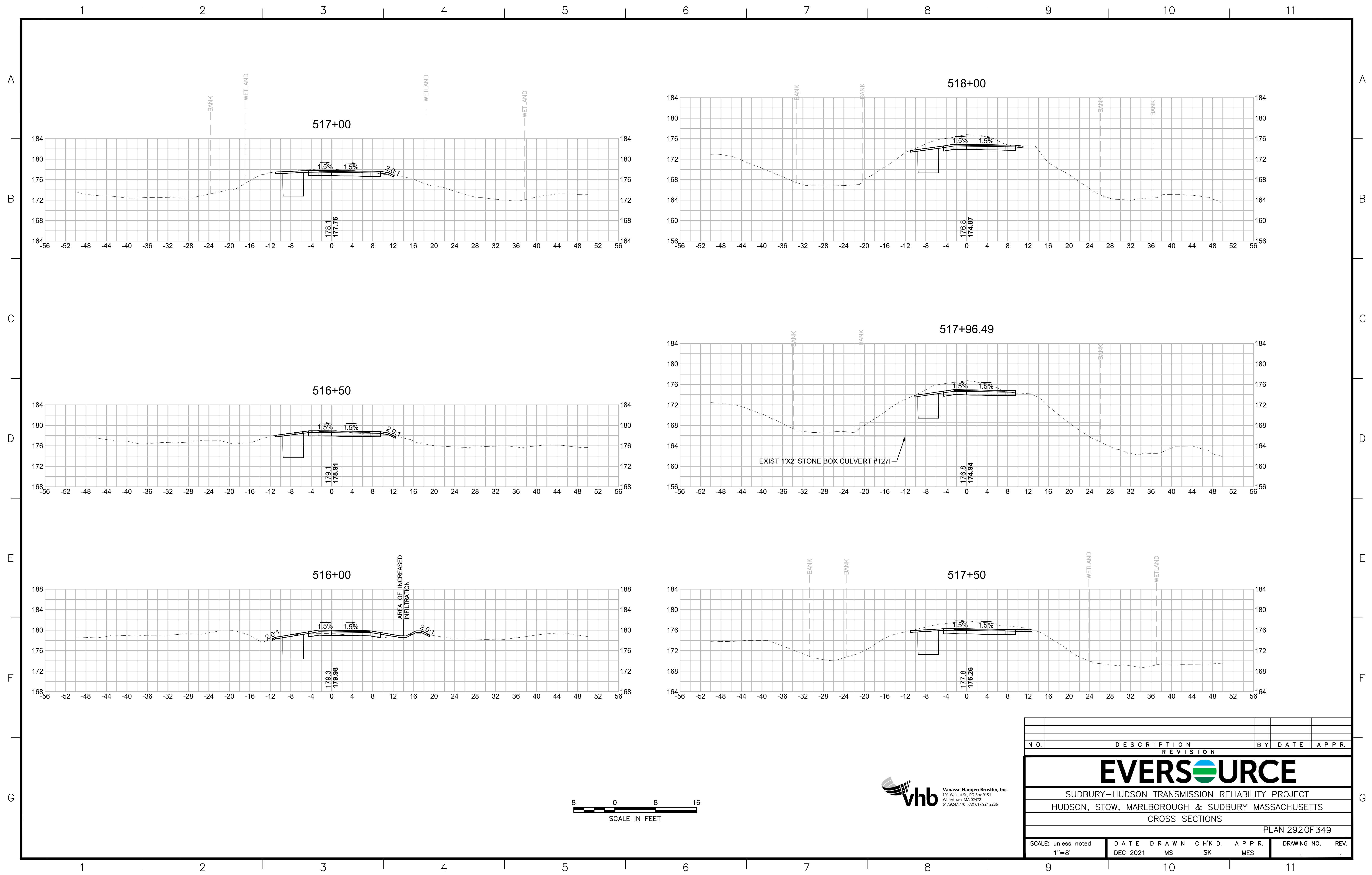
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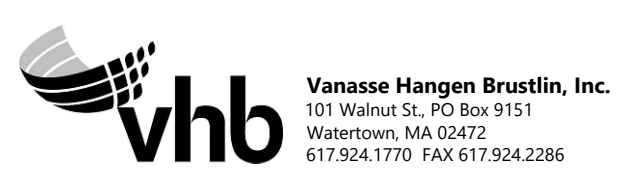
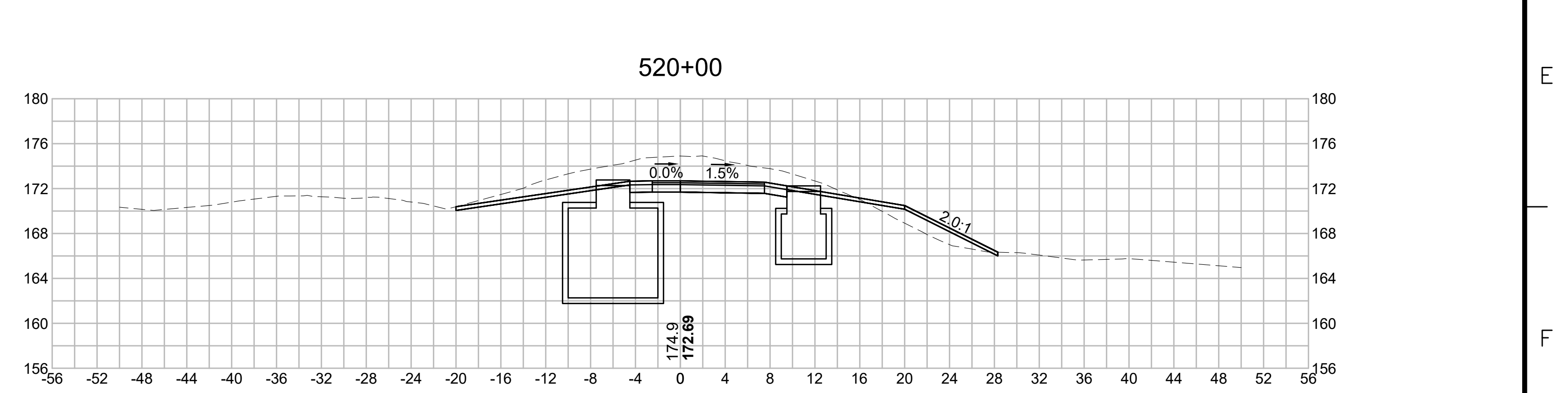
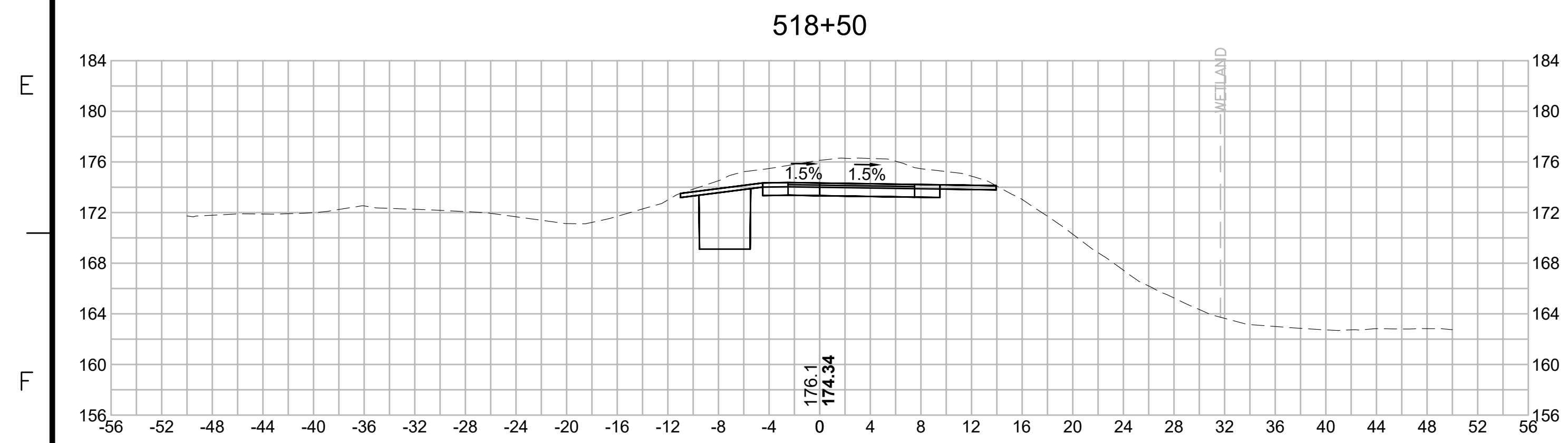
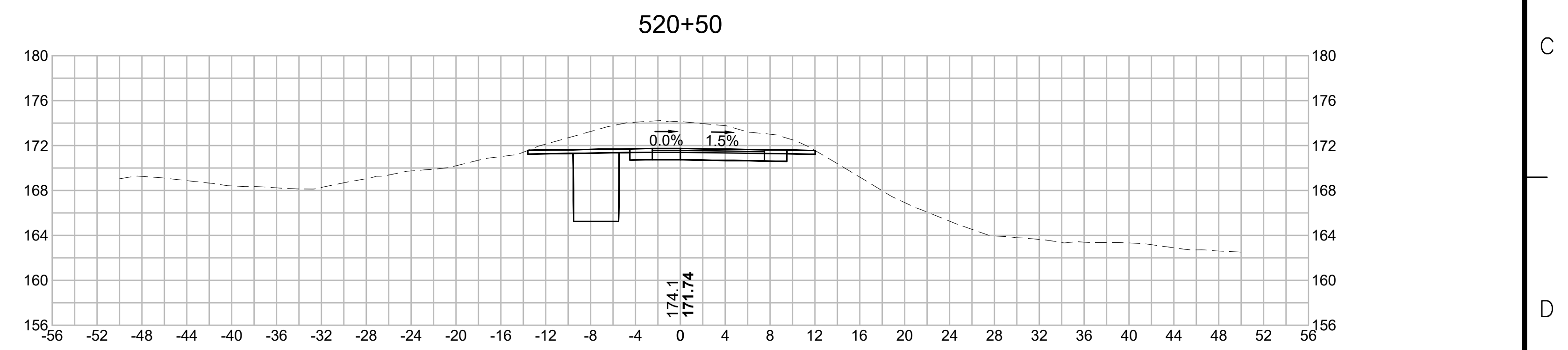
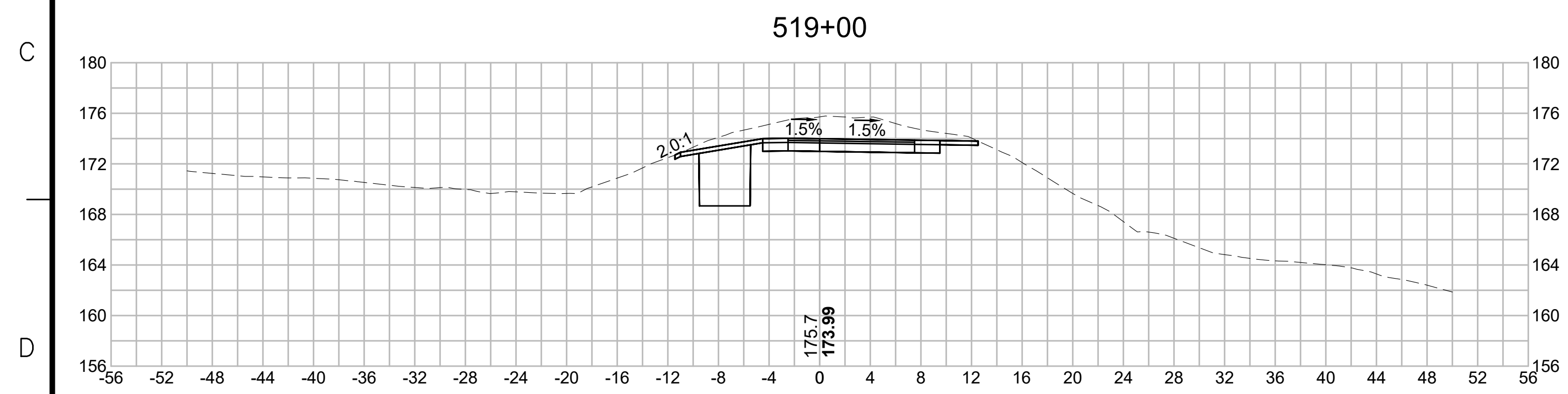
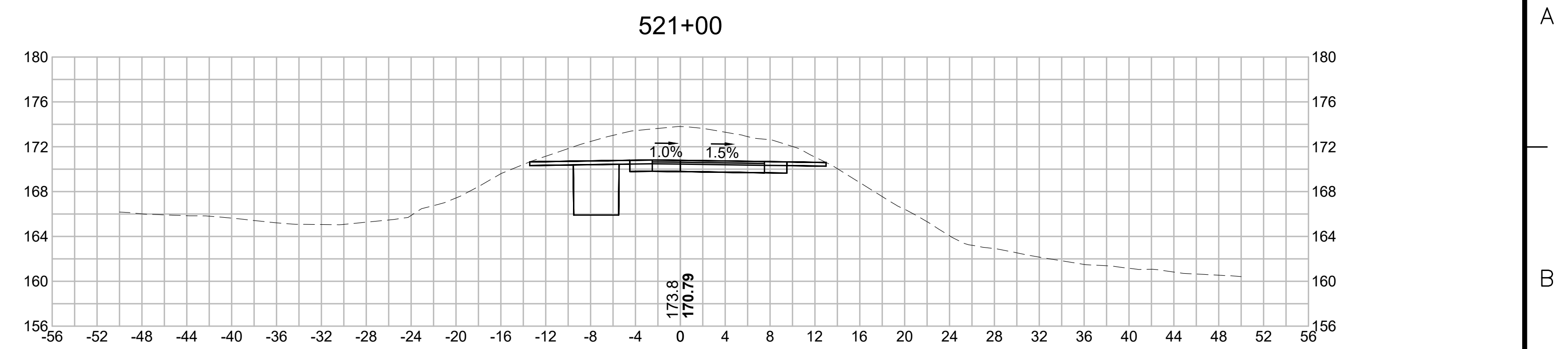
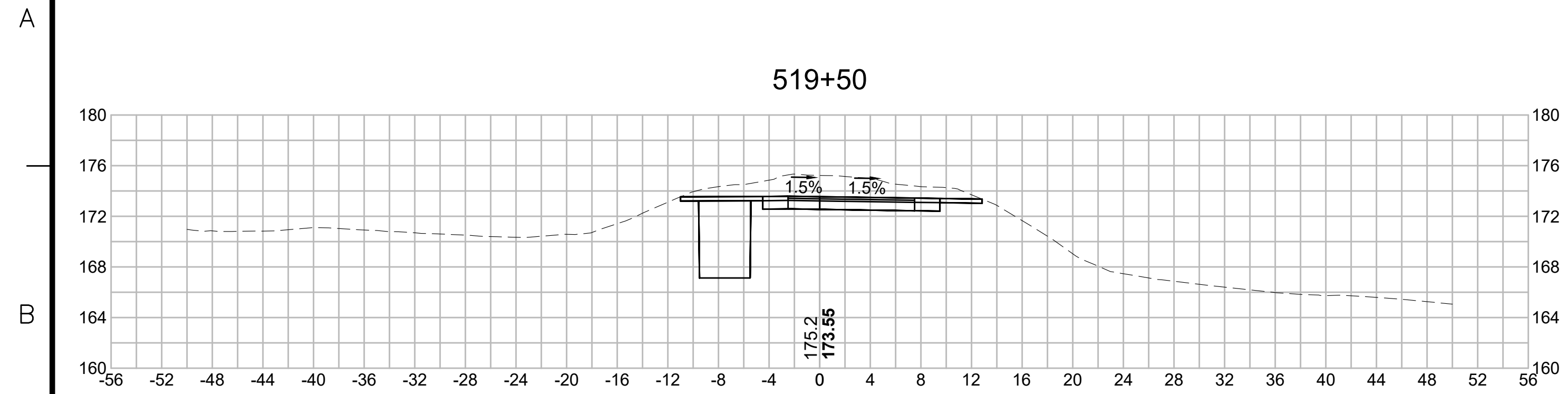
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	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 2910F349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

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NO.	DESCRIPTION		BY	DATE	APPR.
	REVISION				
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CROSS SECTIONS					
PLAN 292 OF 349					
SCALE: unless noted 1"=8'		DATE	DRAWN	CHK'D	APP'R.
		DEC 2021	MS	SK	MES
DRAWING NO.					REV.
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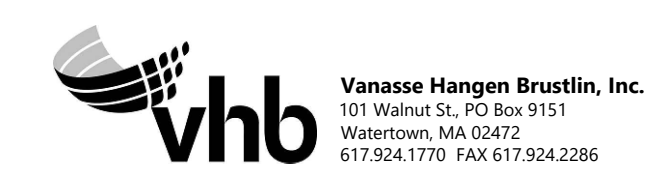
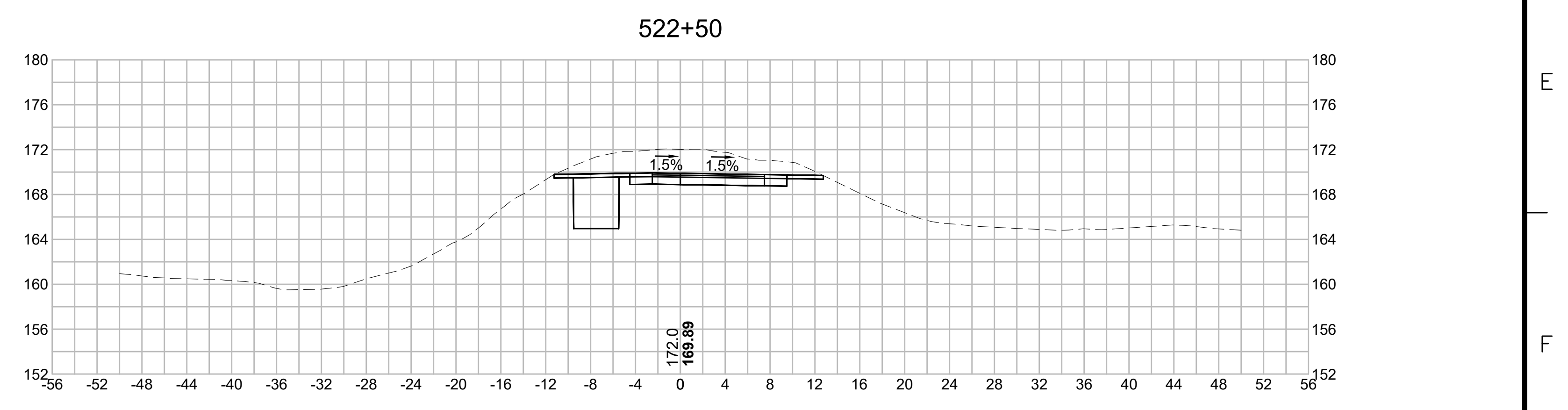
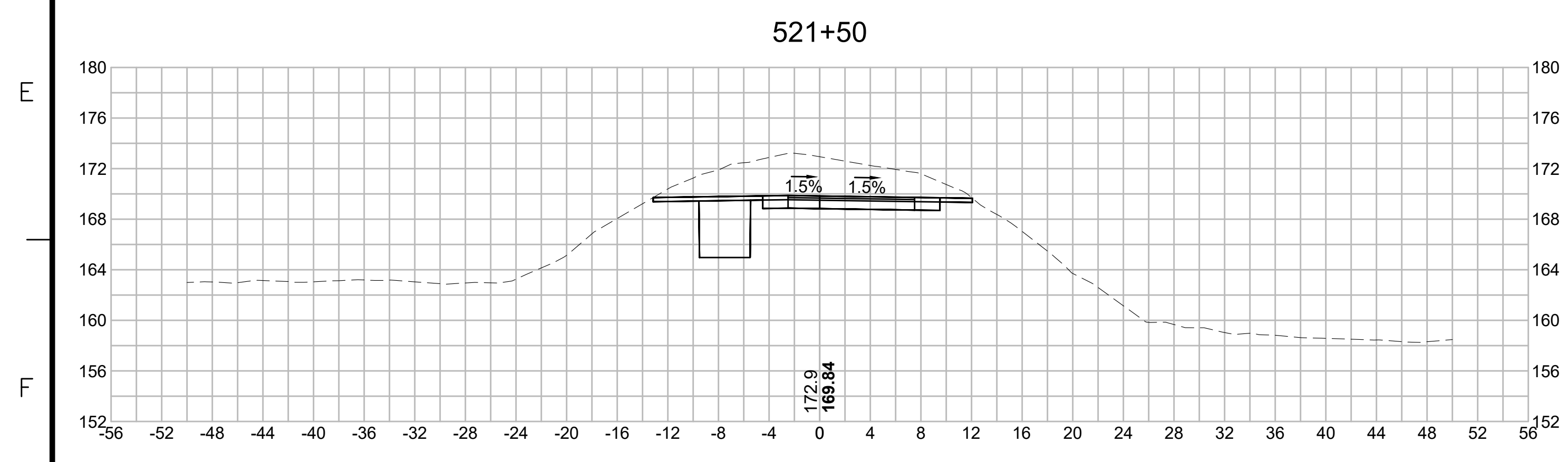
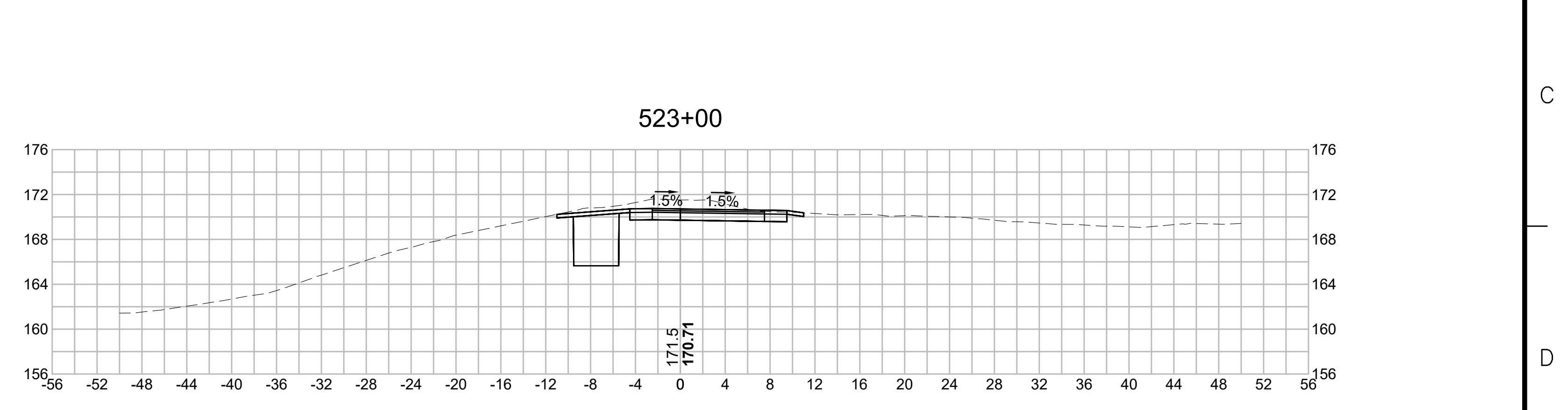
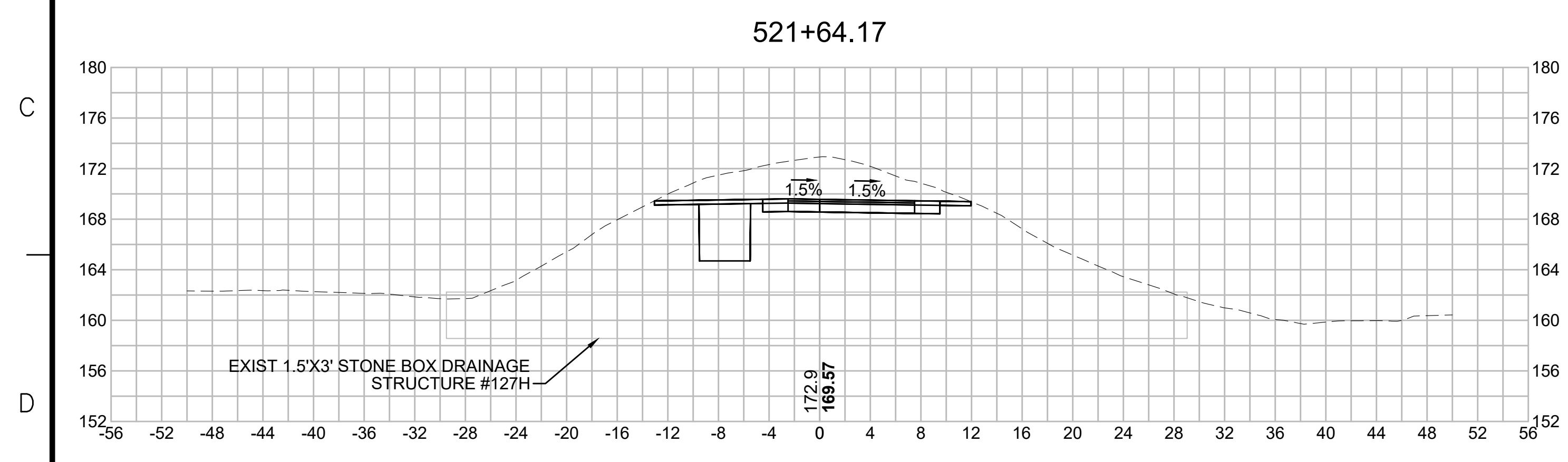
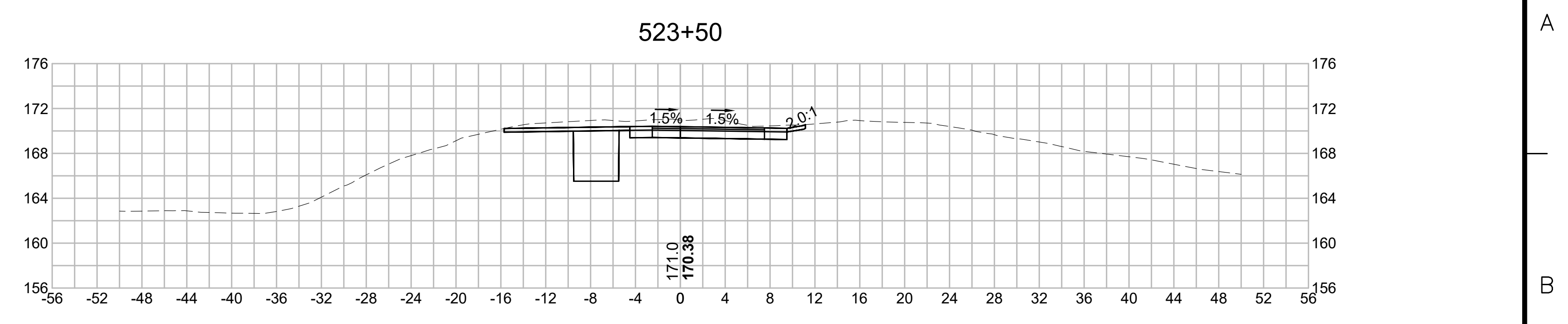
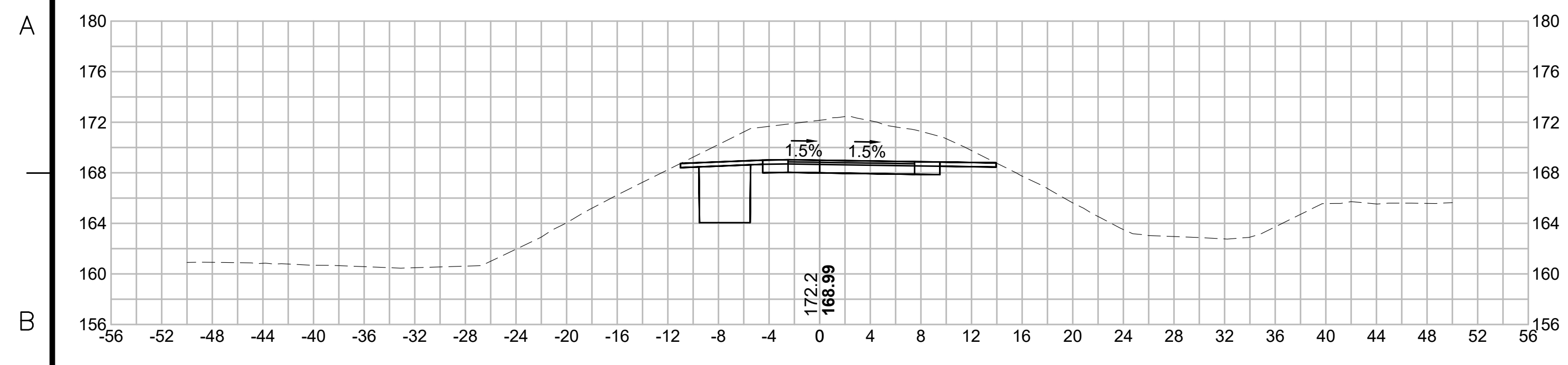
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N.O.	DESCRIPTION	BY	DATE	APPR.
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SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 293 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

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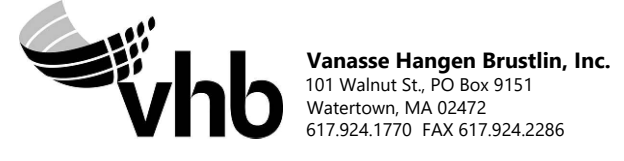
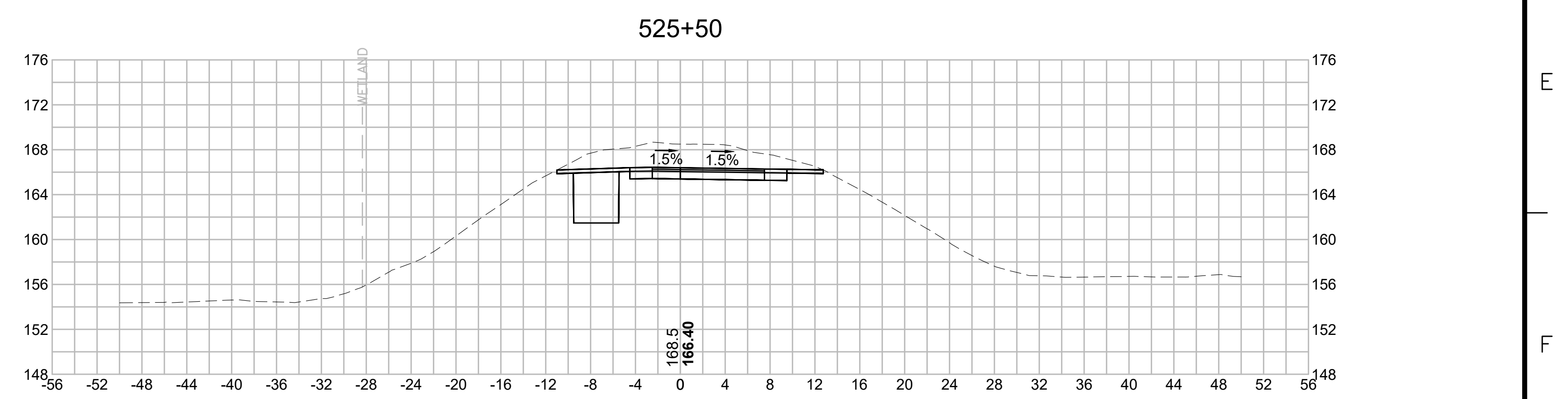
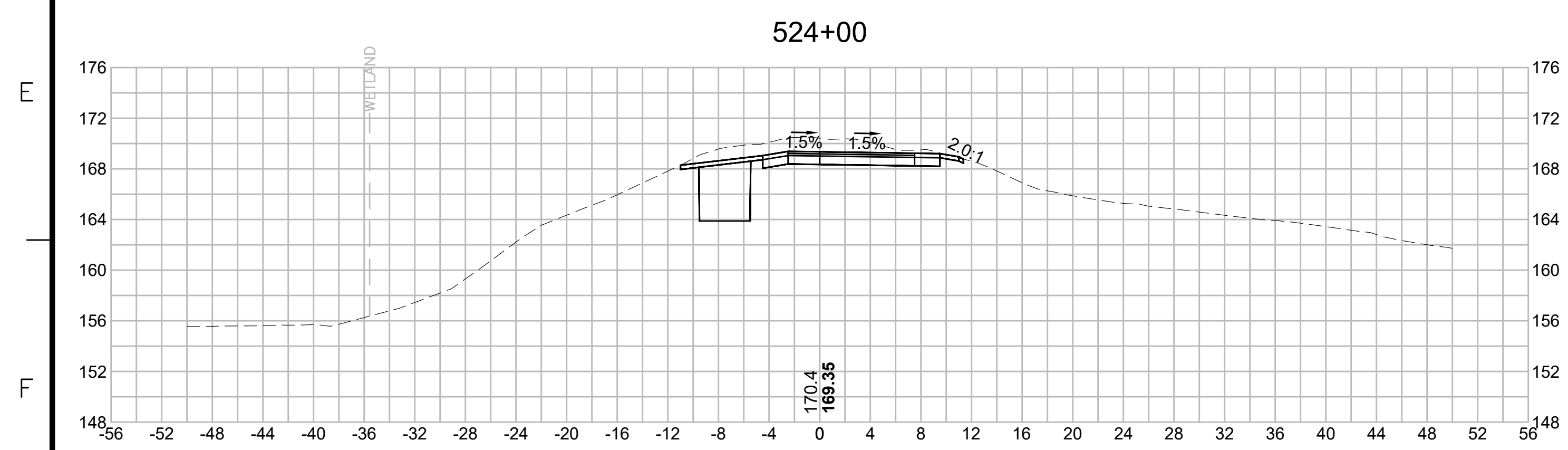
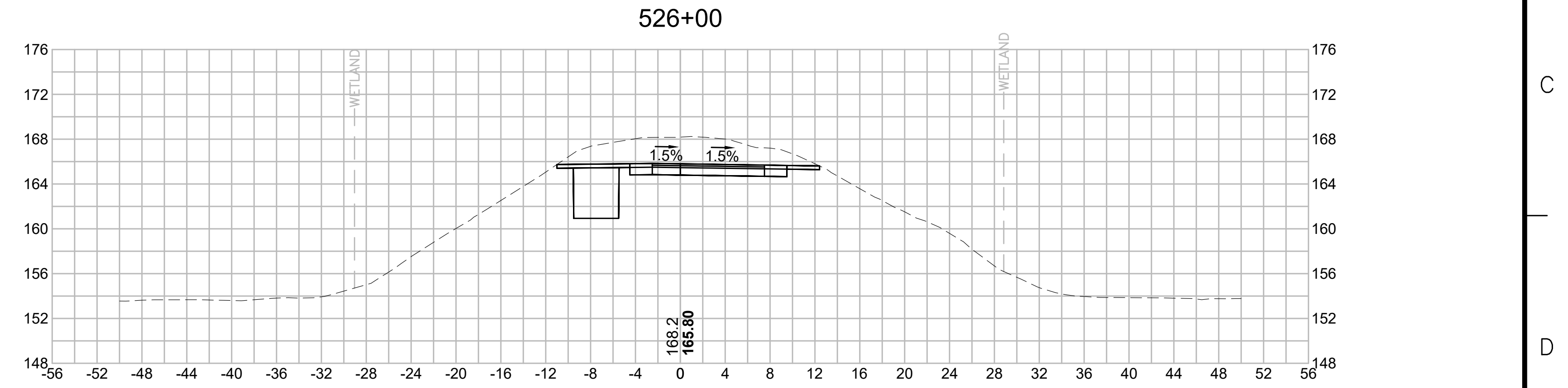
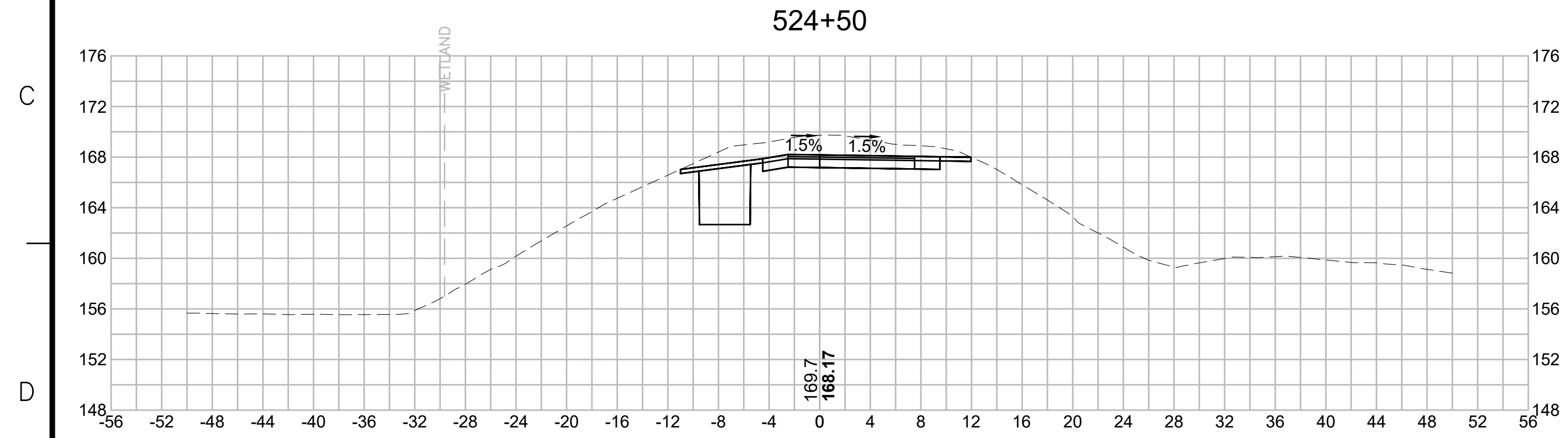
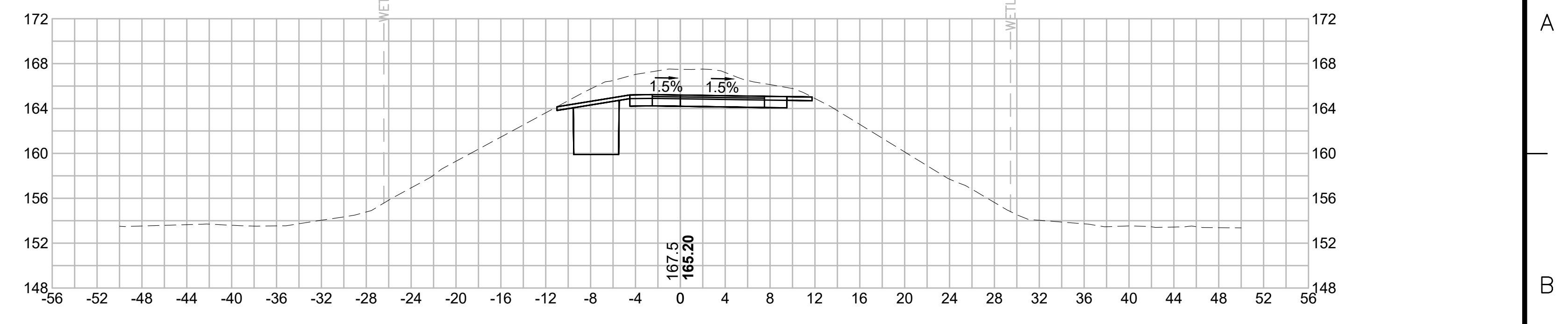
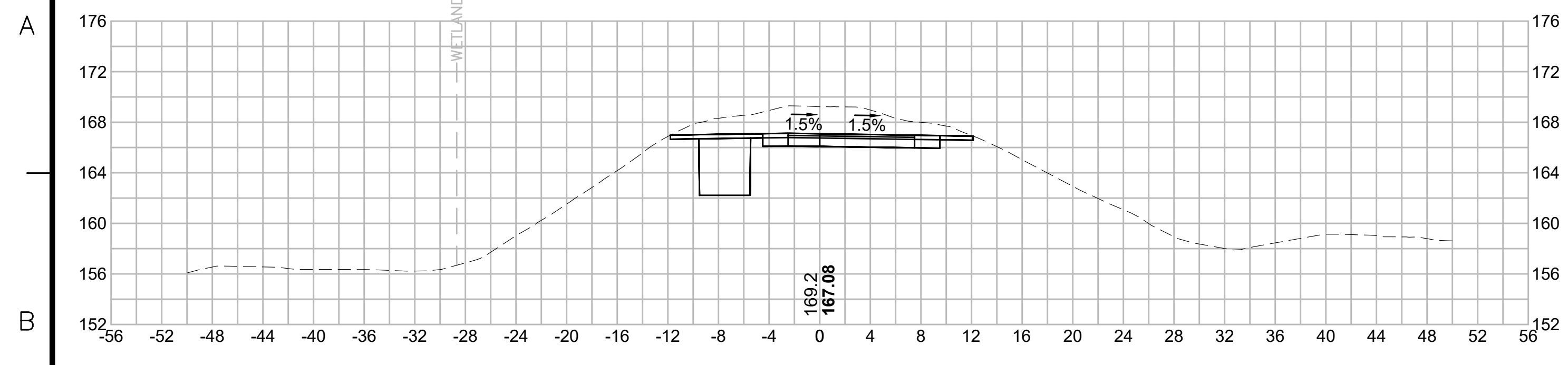
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N.O.	DESCRIPTION	BY	DATE	APPR.
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SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 294 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

1 2 3 4 5 6 7 8 9 10 11

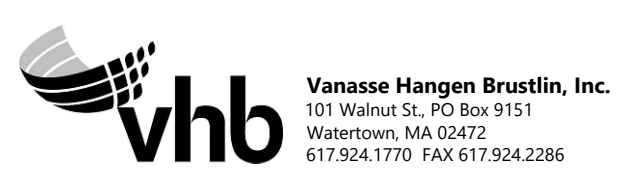
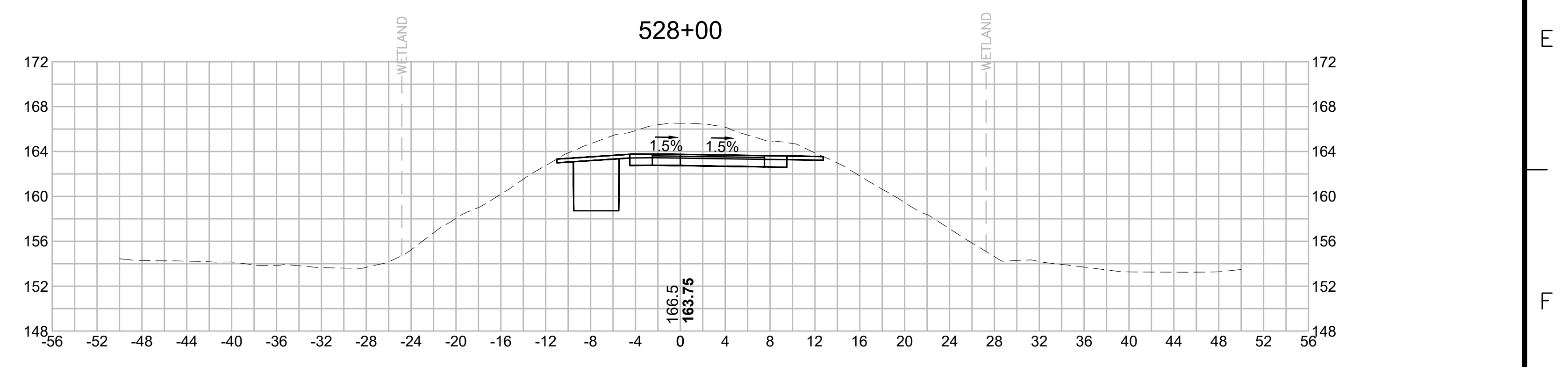
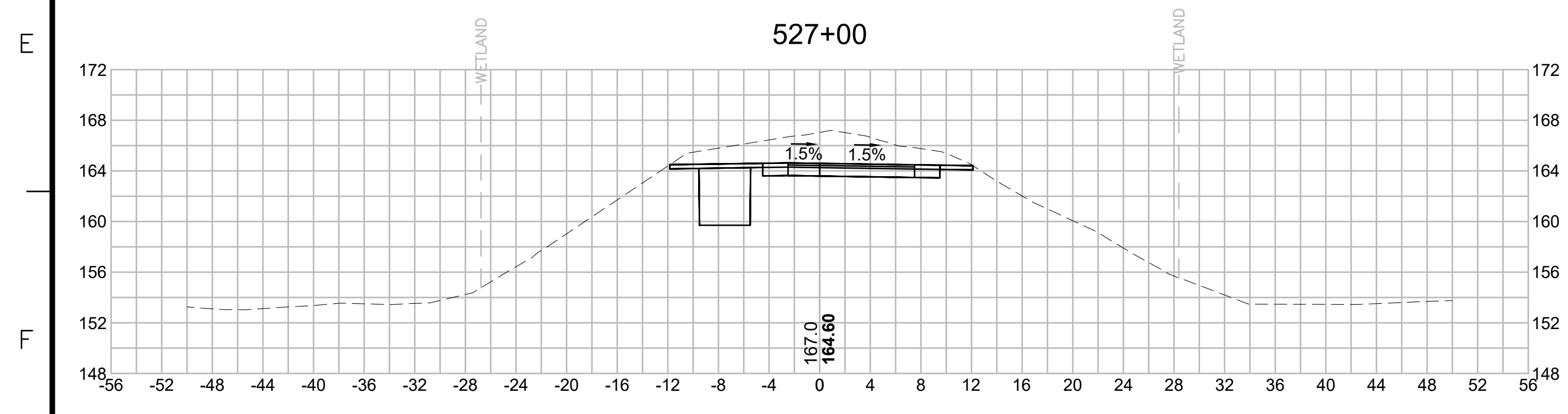
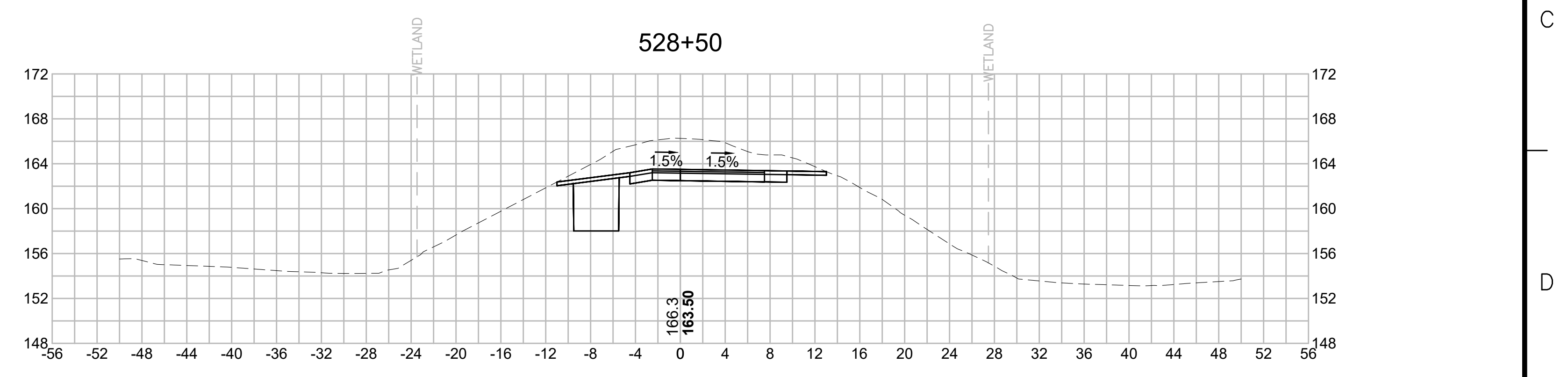
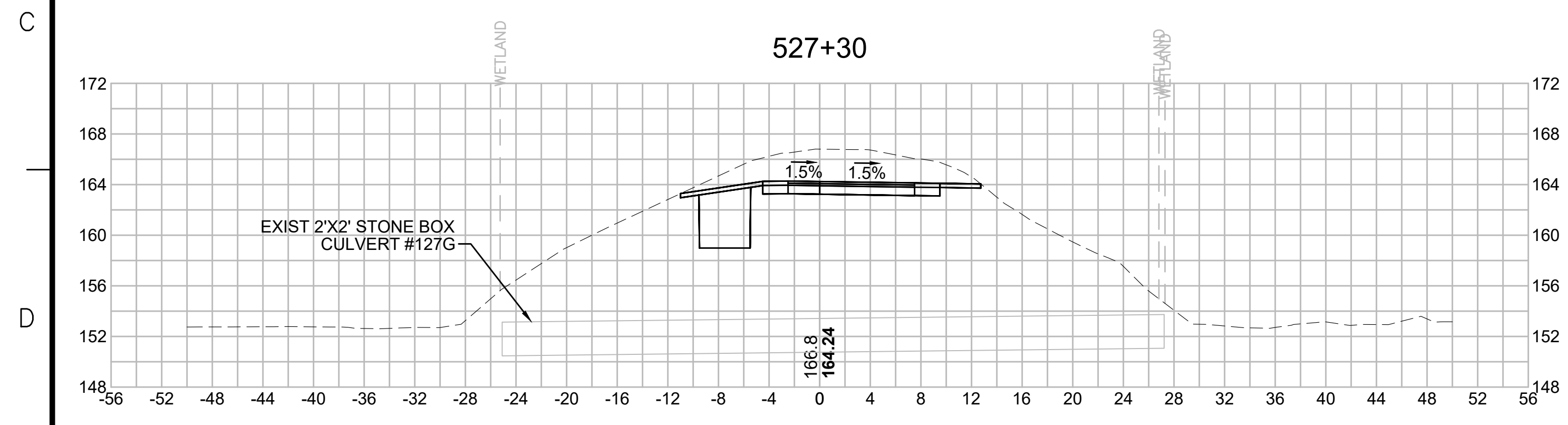
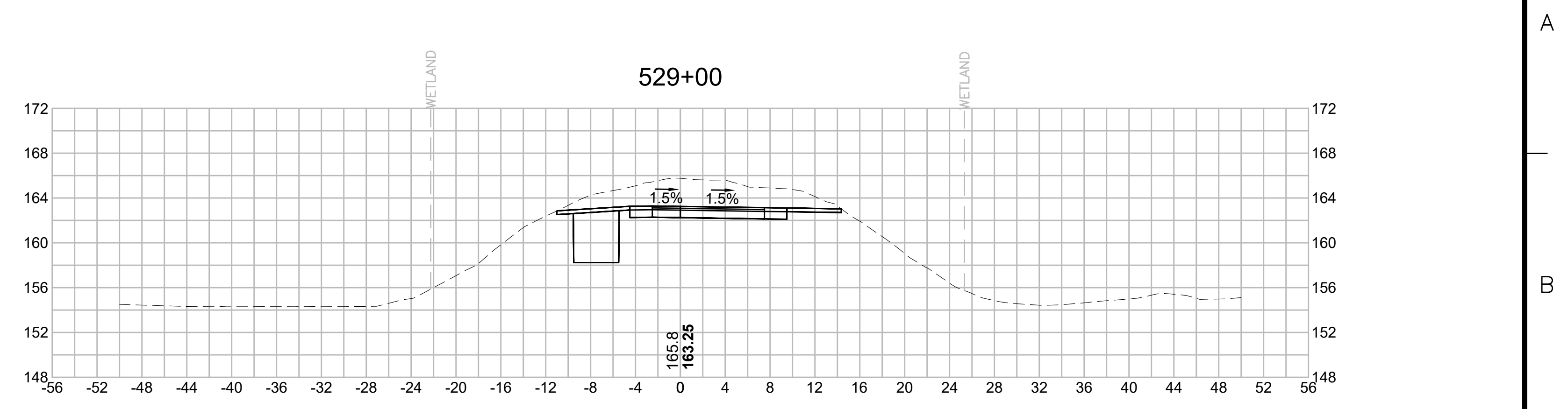
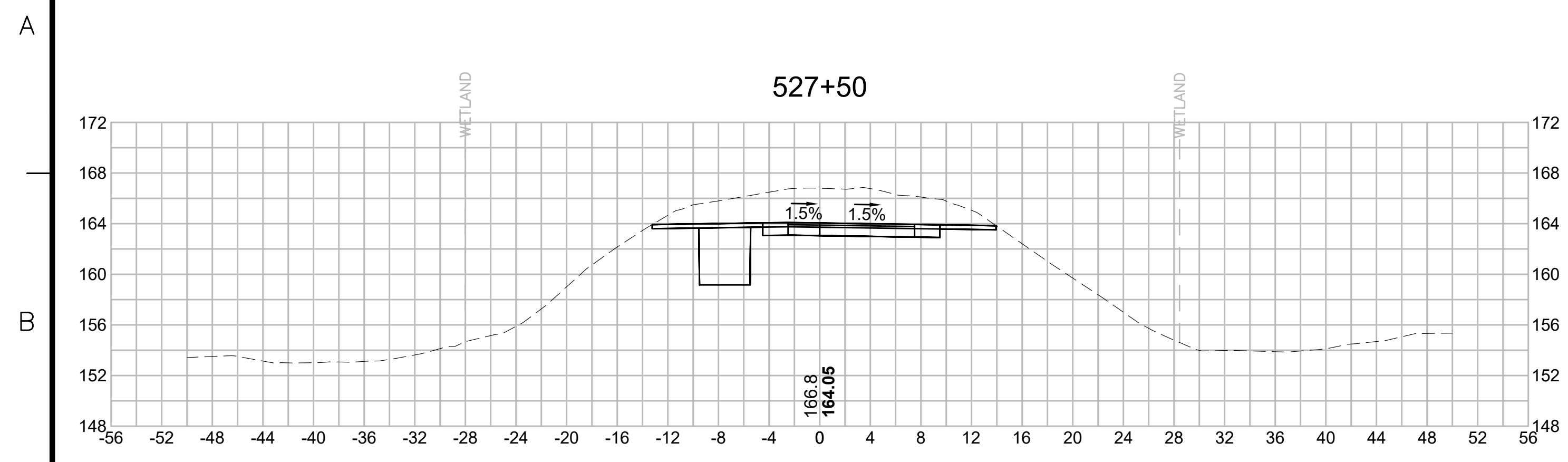
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N.O.	DESCRIPTION	BY	DATE	APPR.
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EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 295 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.		REV.		

1 2 3 4 5 6 7 8 9 10 11

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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
CROSS SECTIONS

PLAN 296 OF 349

SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES	DRAWING NO.	REV.
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1 2 3 4 5 6 7 8 9 10 11

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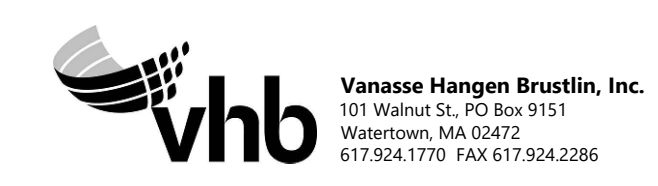
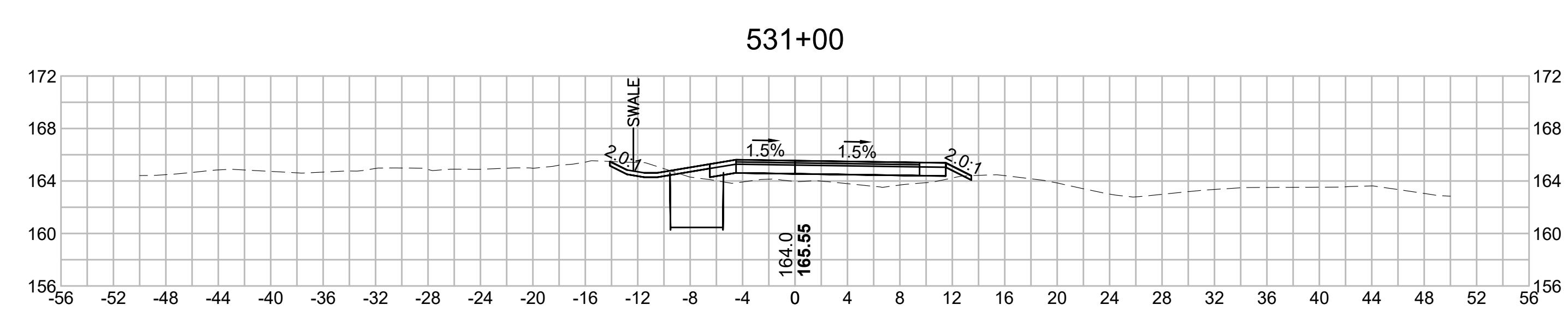
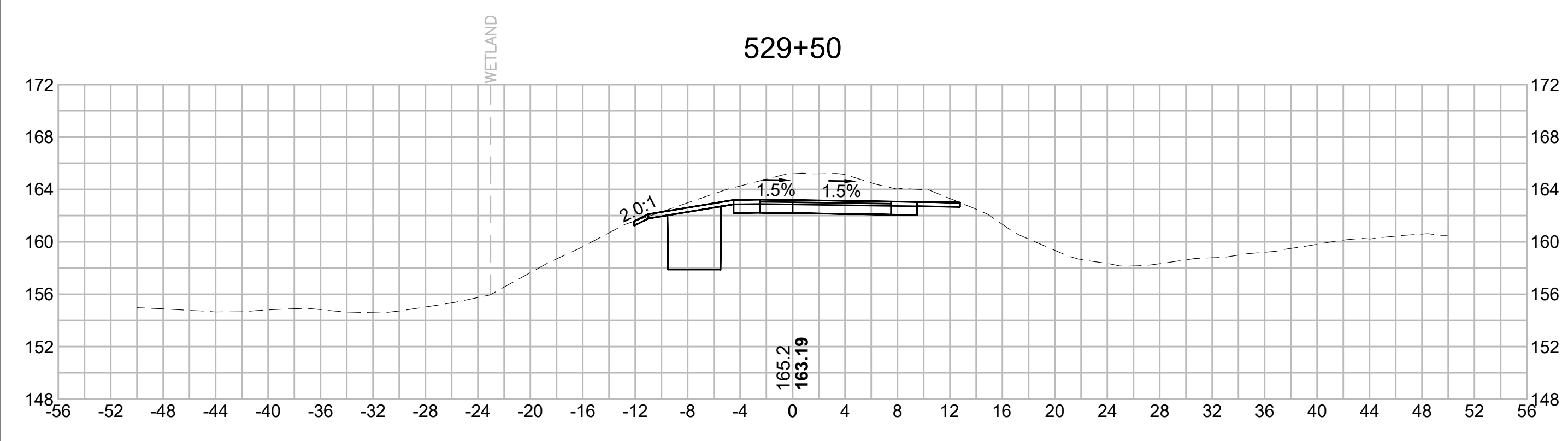
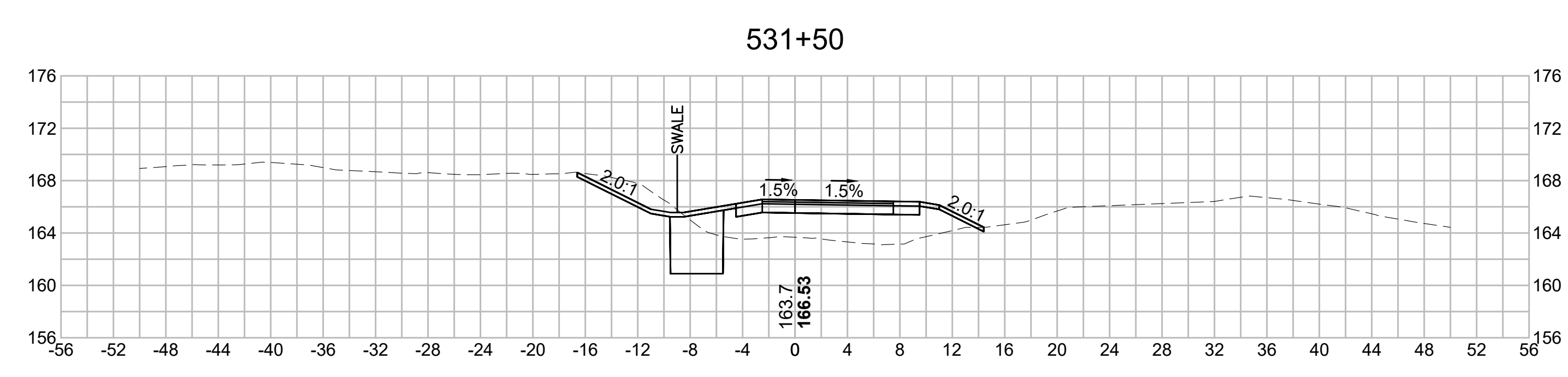
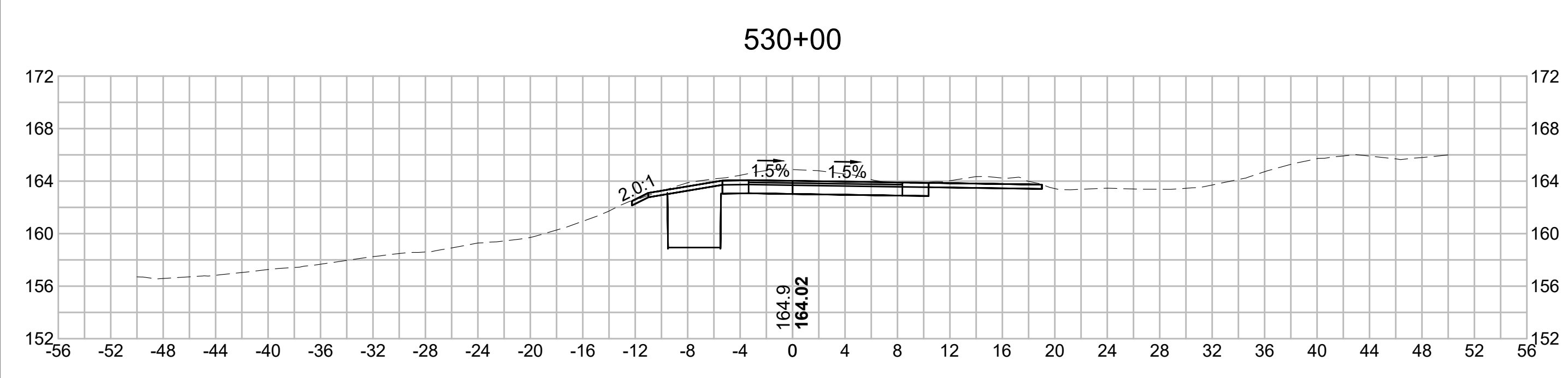
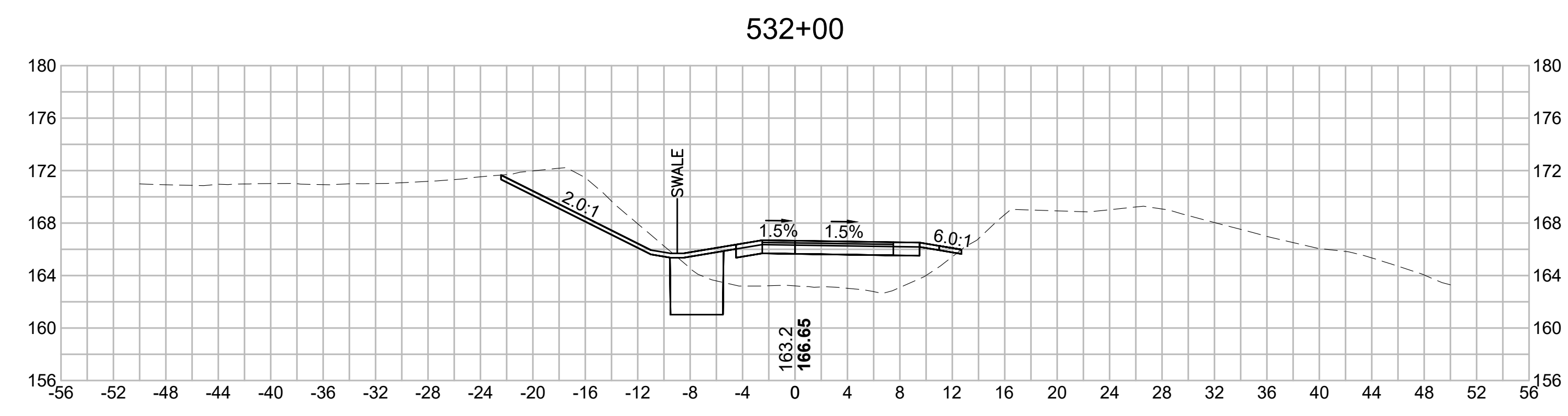
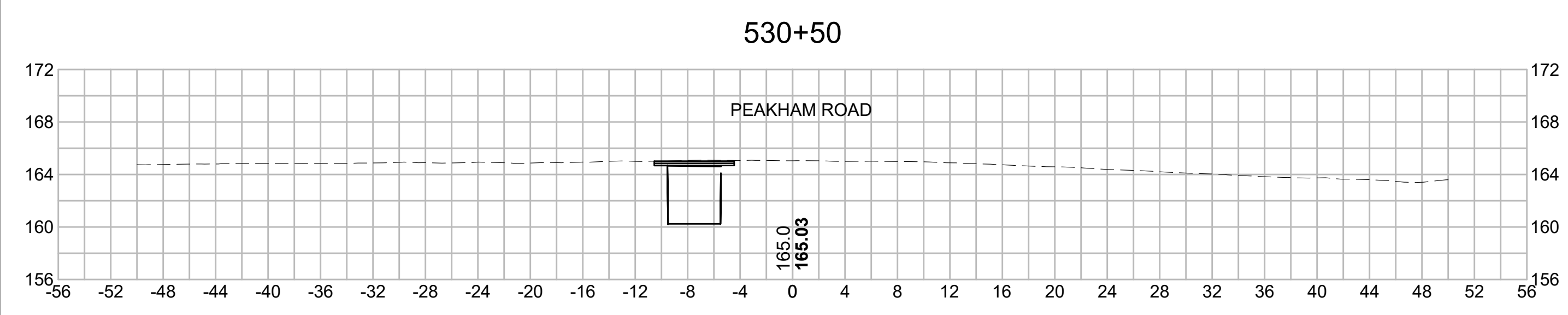
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N O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

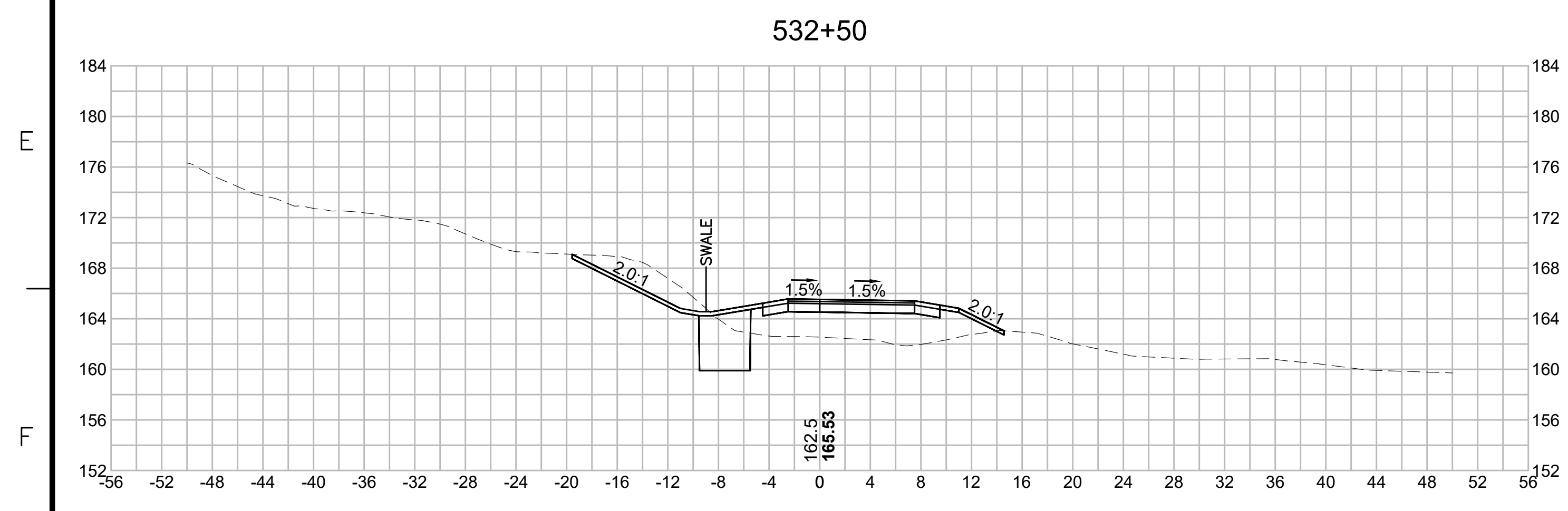
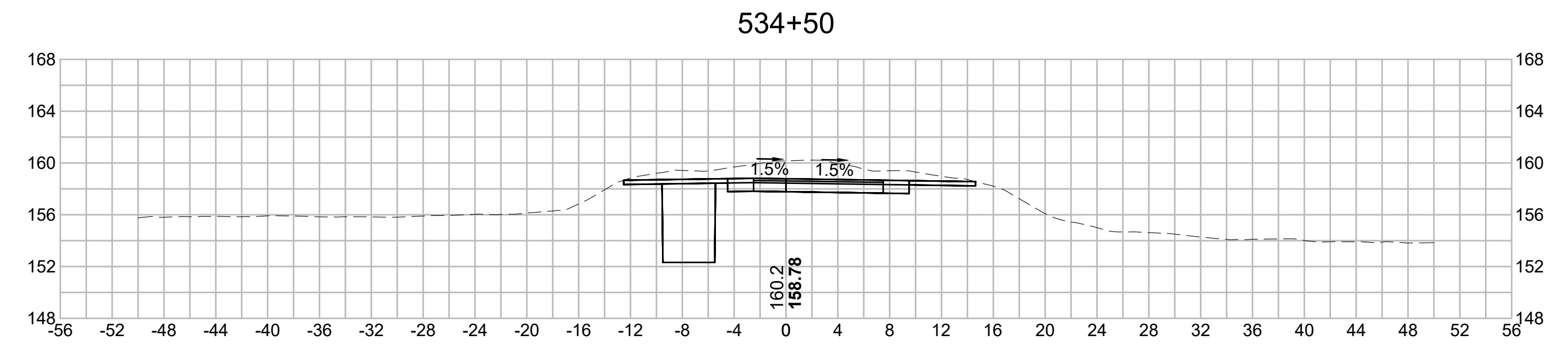
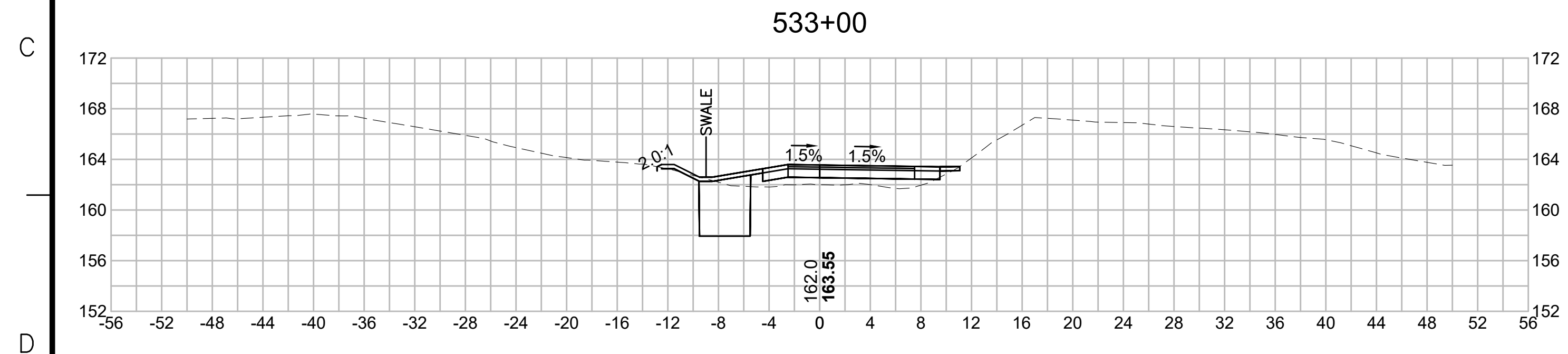
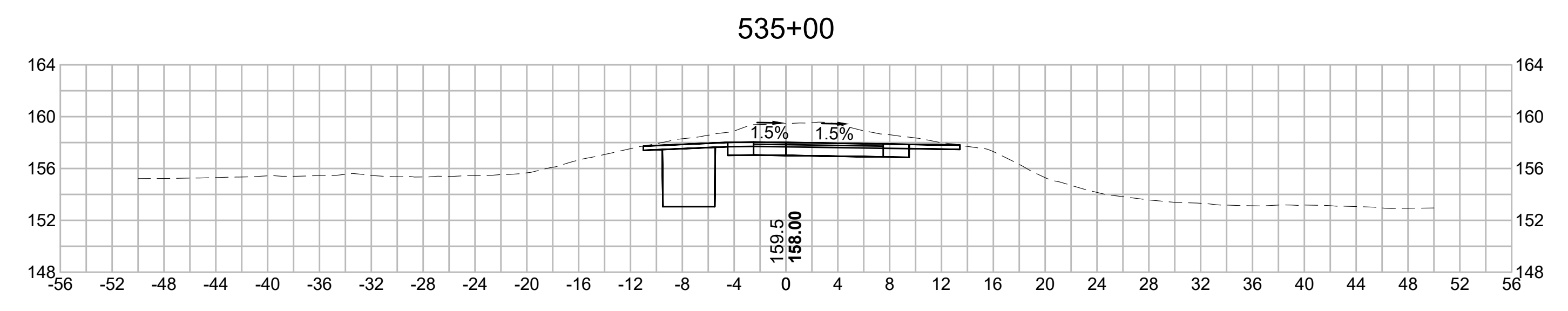
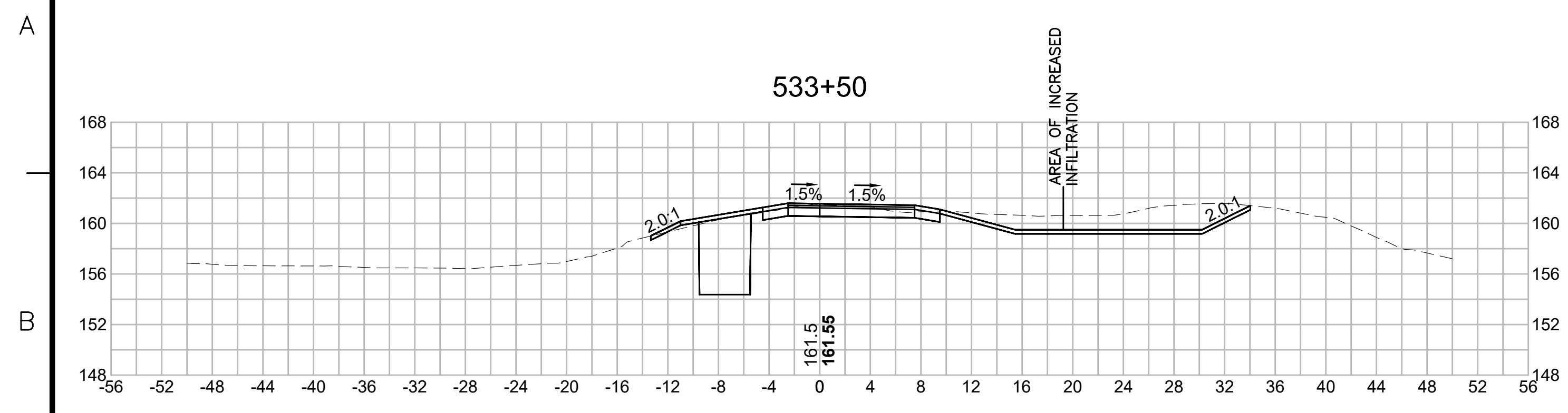
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 CROSS SECTIONS

PLAN 297 OF 349

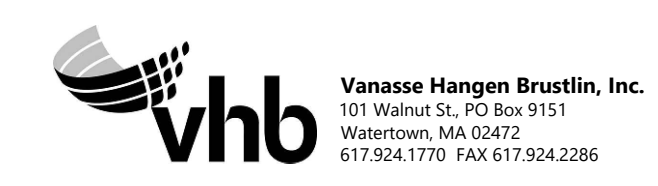
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	C H'K D. SK	APP R. MES	DRAWING NO. REV.
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BLSF CROSSING STA 535 TO STA 542 - FEMA ZONE AE - DUDLEY BROOK
 FEMA ELEVATION: UPSTREAM PORTION (152.2) AND DOWNSTREAM PORTION (148.6)
 NO IMPACTS



N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

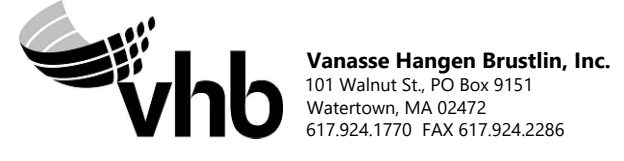
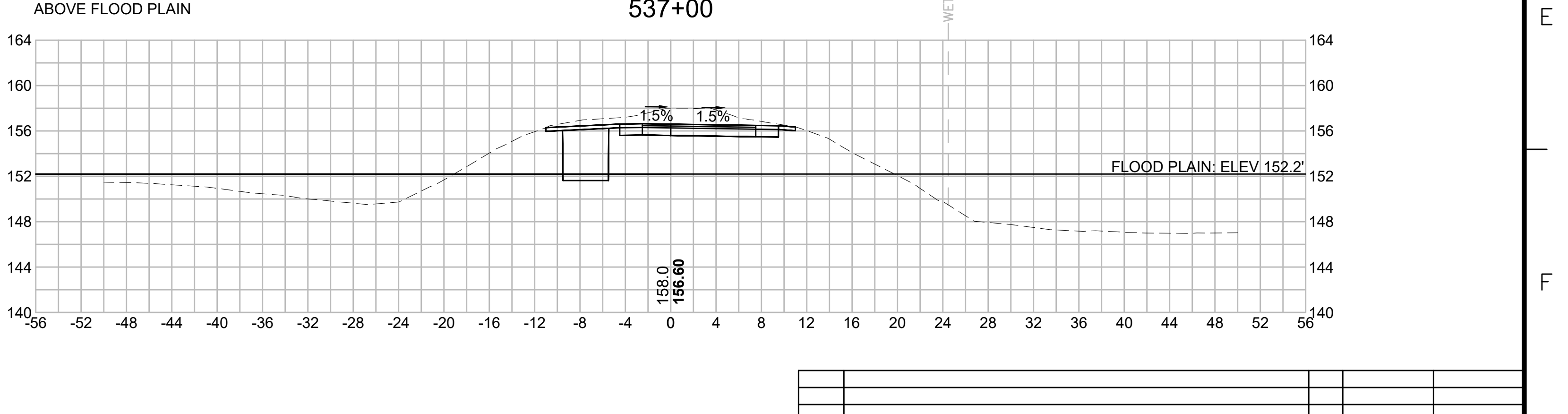
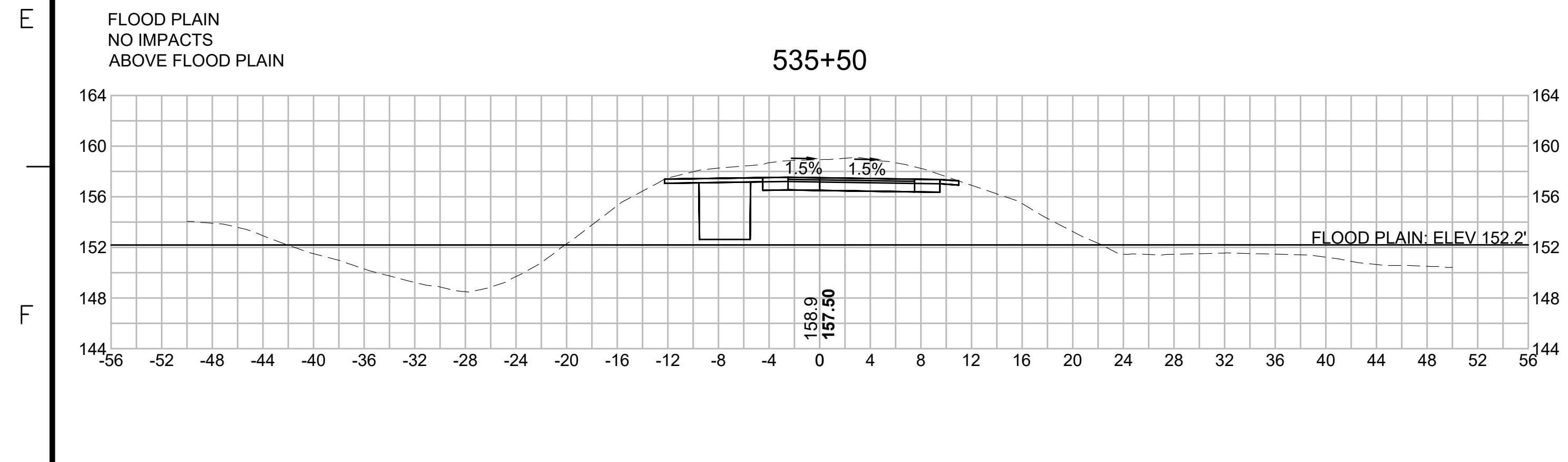
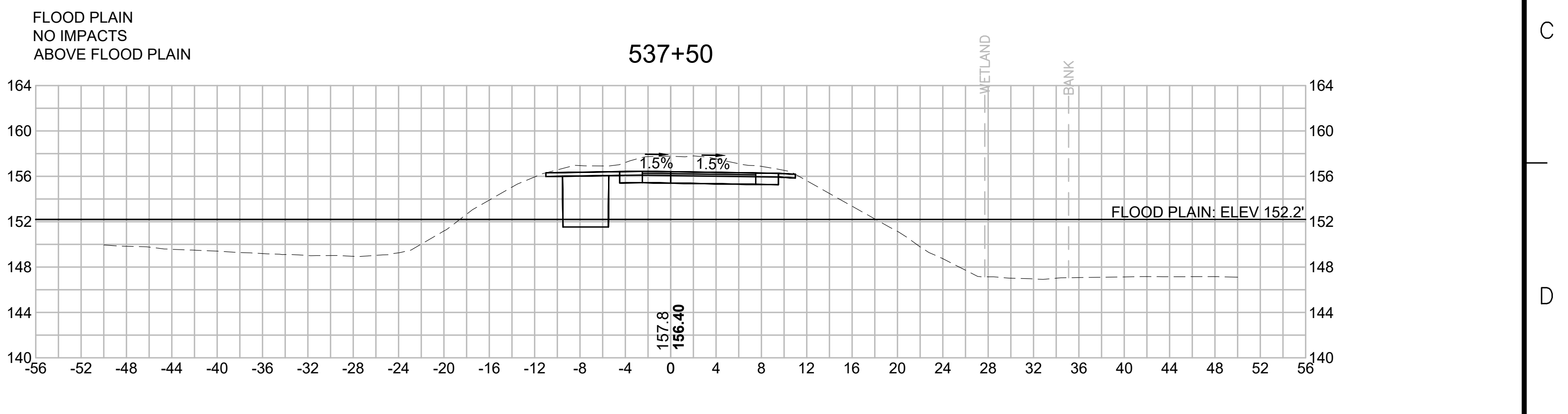
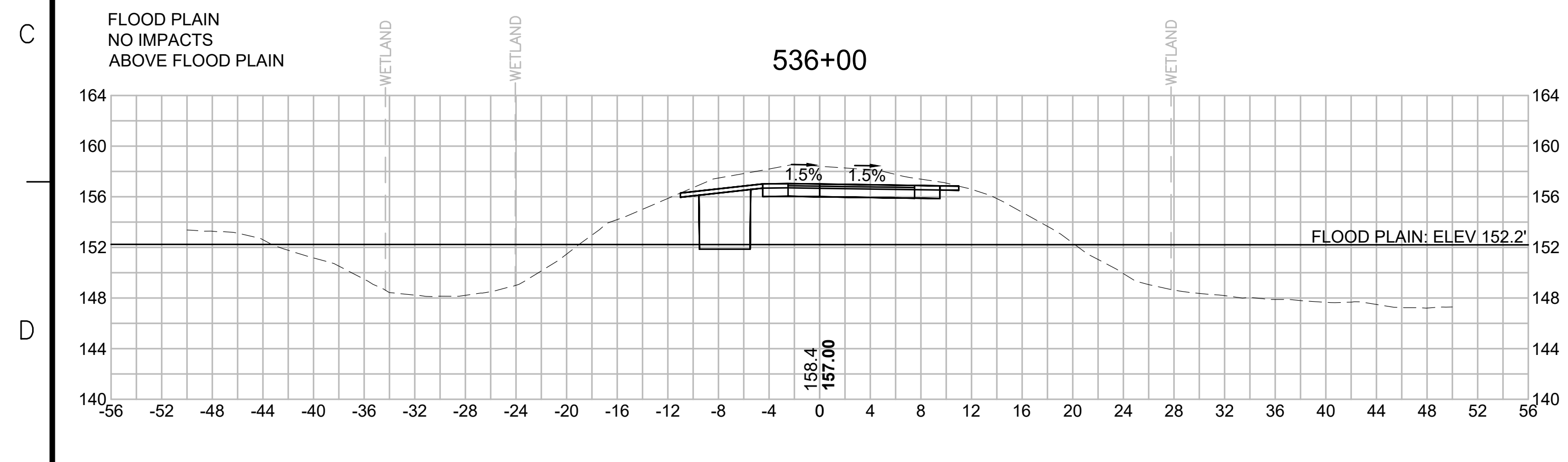
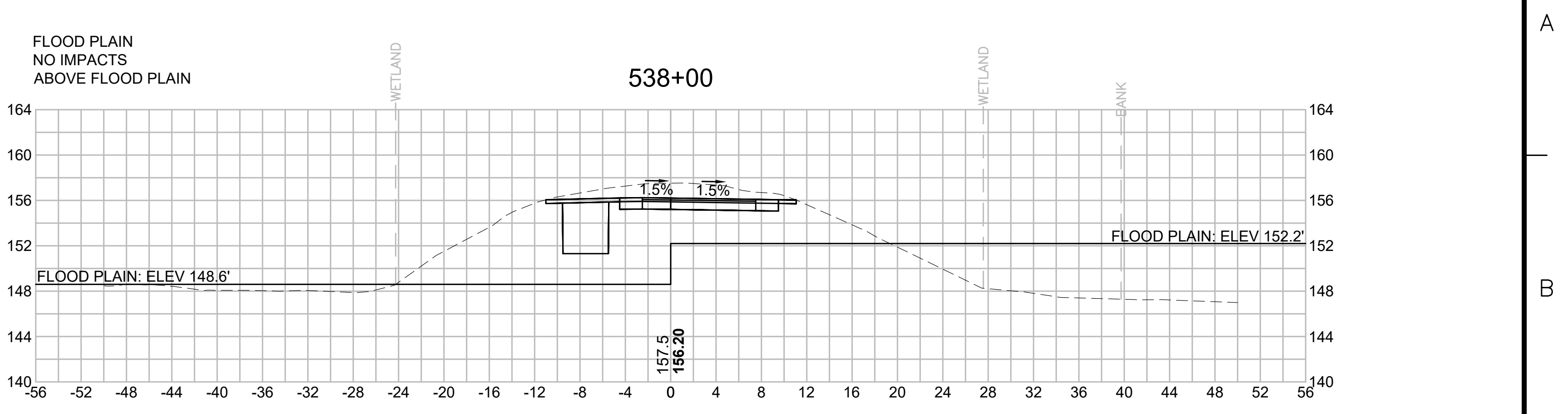
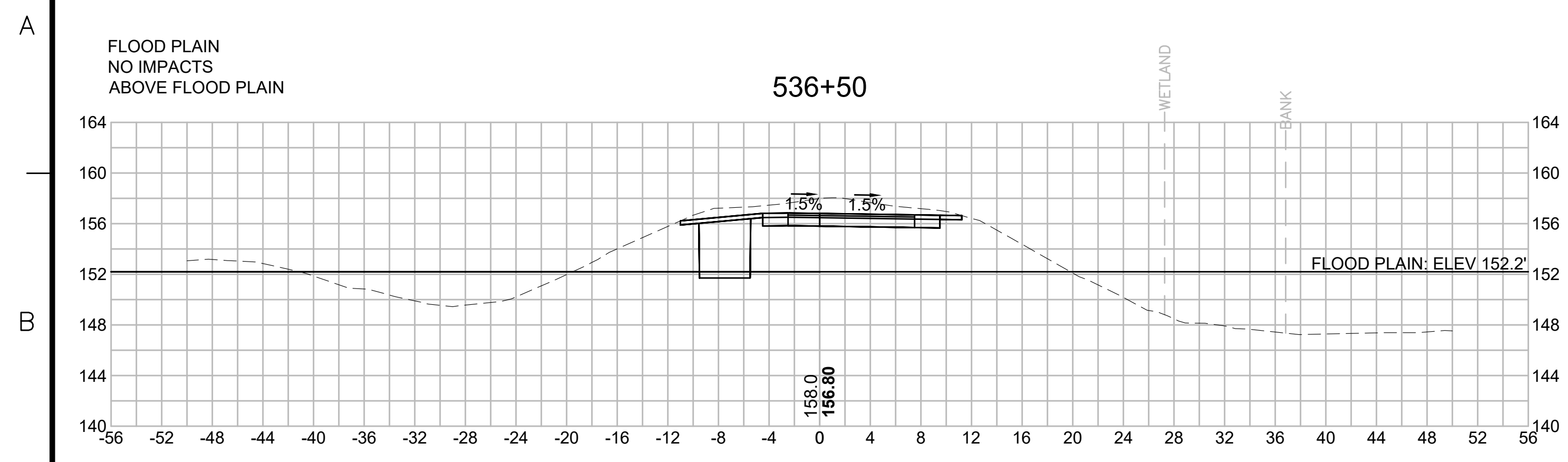
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 CROSS SECTIONS

PLAN 298 OF 349

SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES	DRAWING NO.	REV.
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N O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

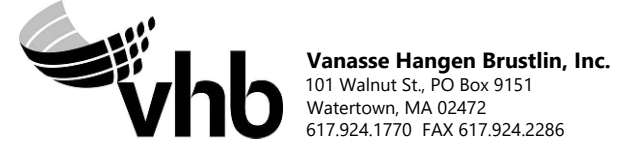
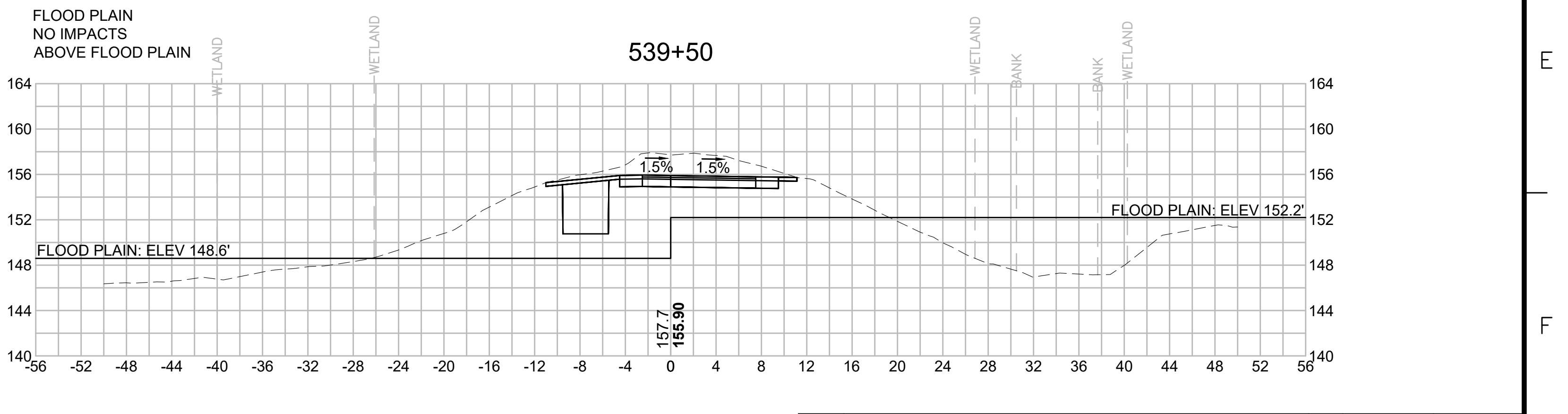
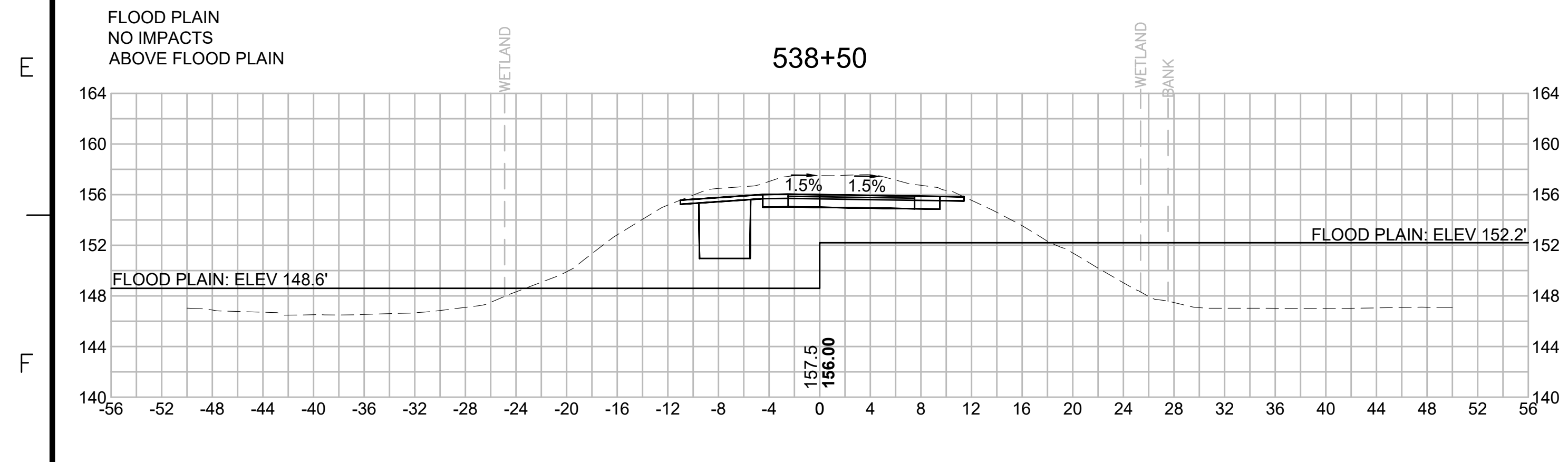
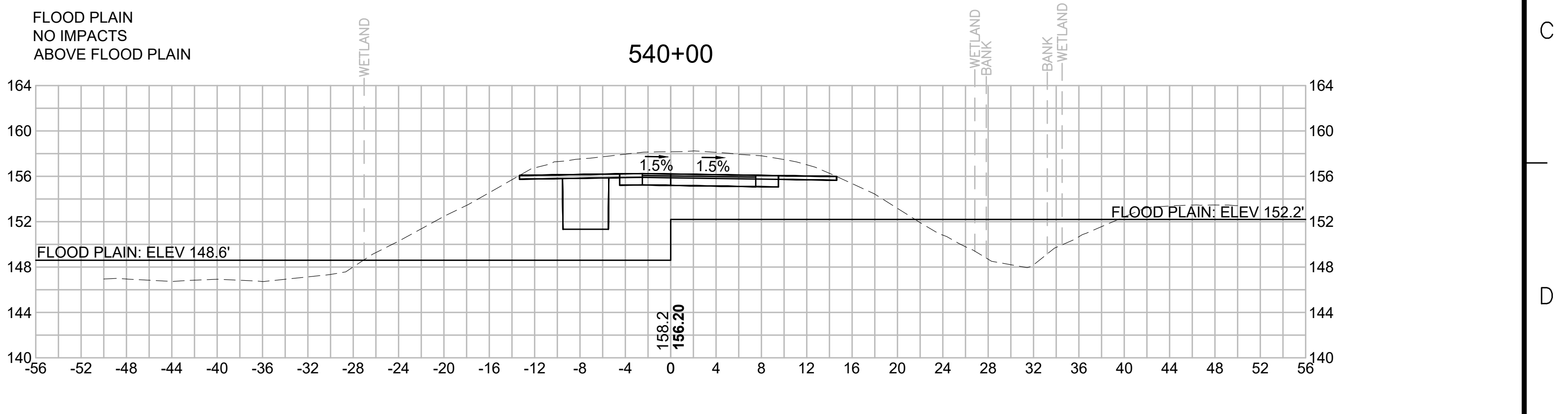
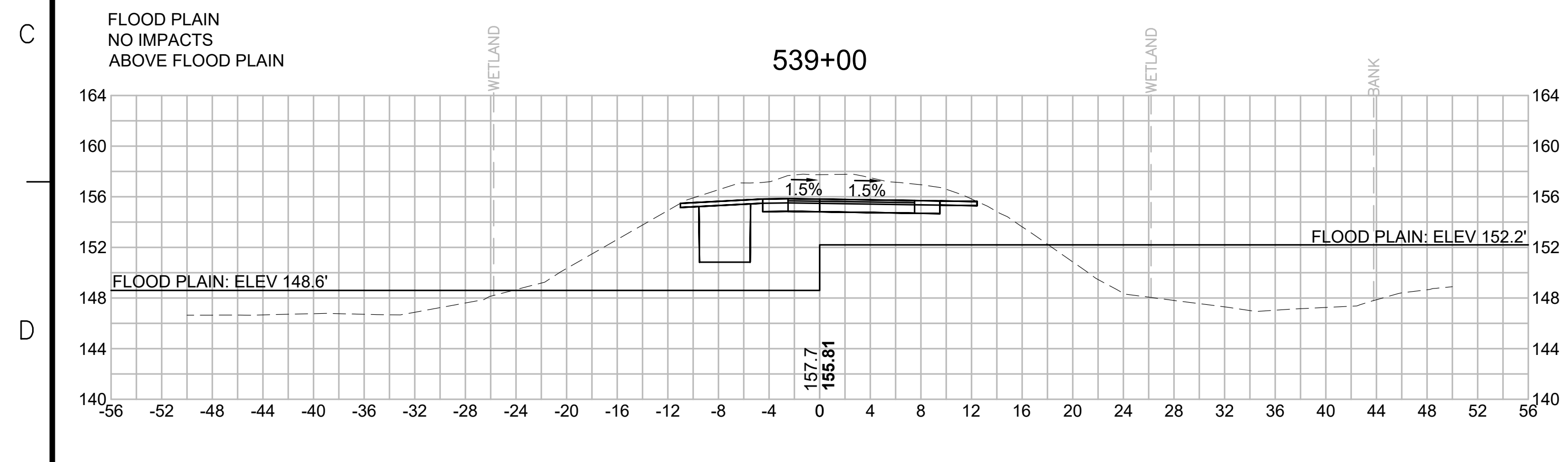
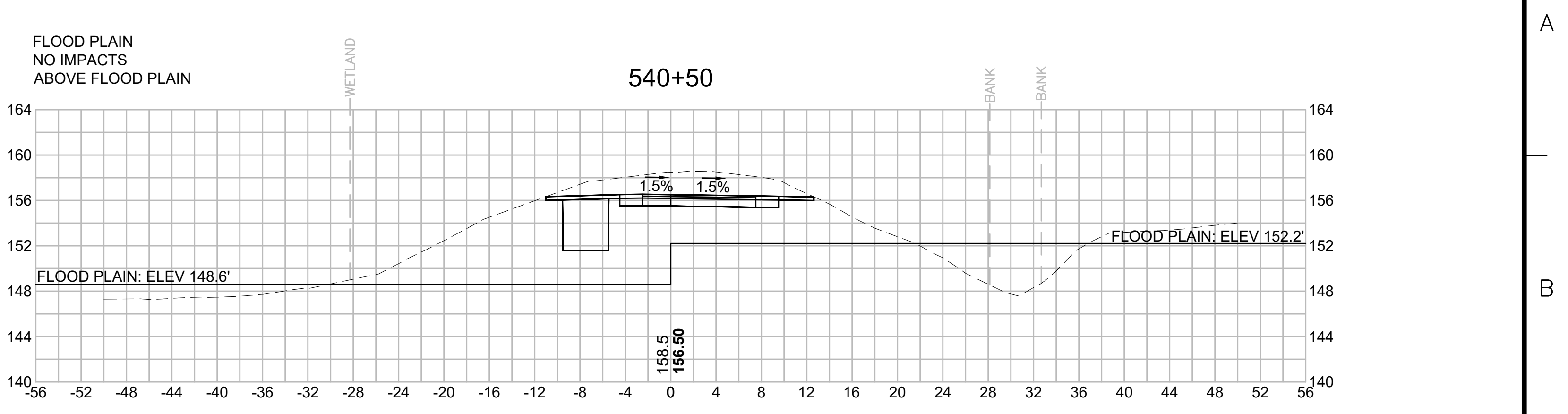
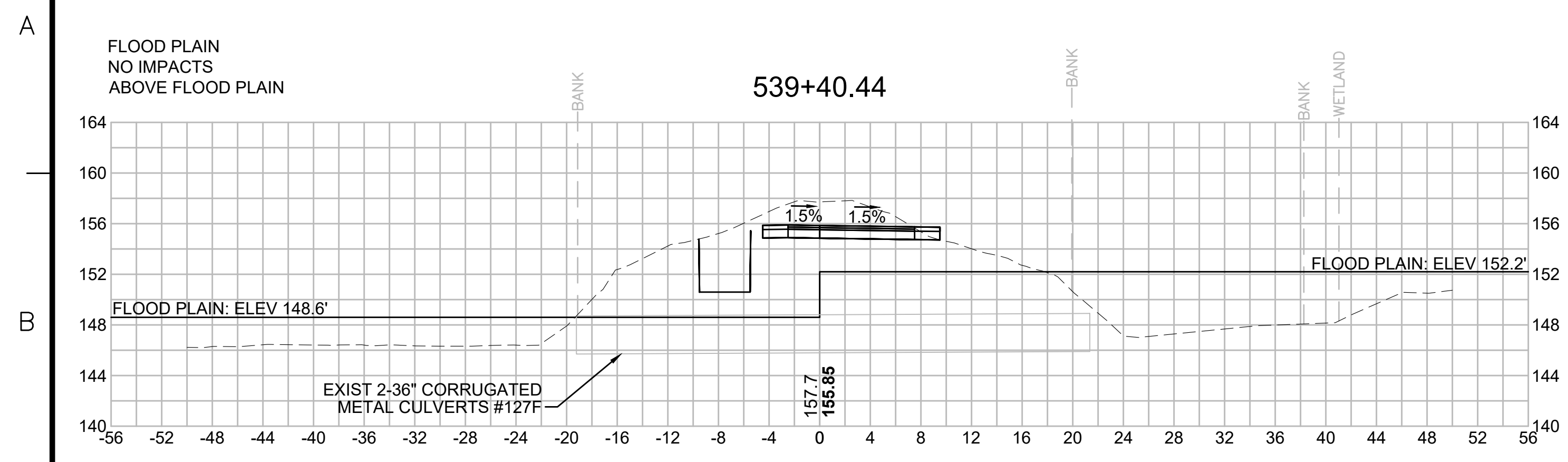
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
CROSS SECTIONS

PLAN 299 OF 349

SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES	DRAWING NO.	REV.
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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
CROSS SECTIONS

PLAN 300 OF 349

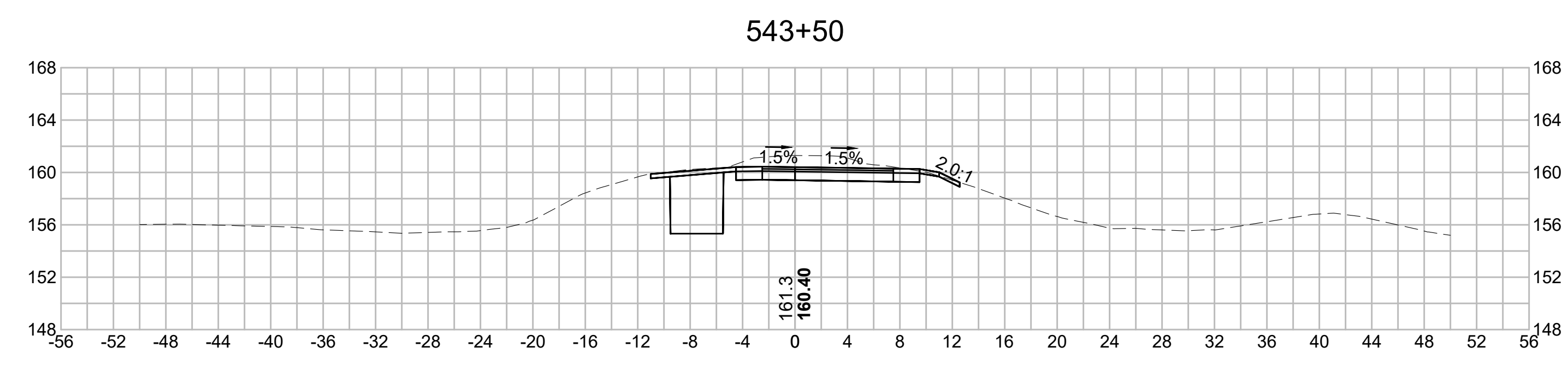
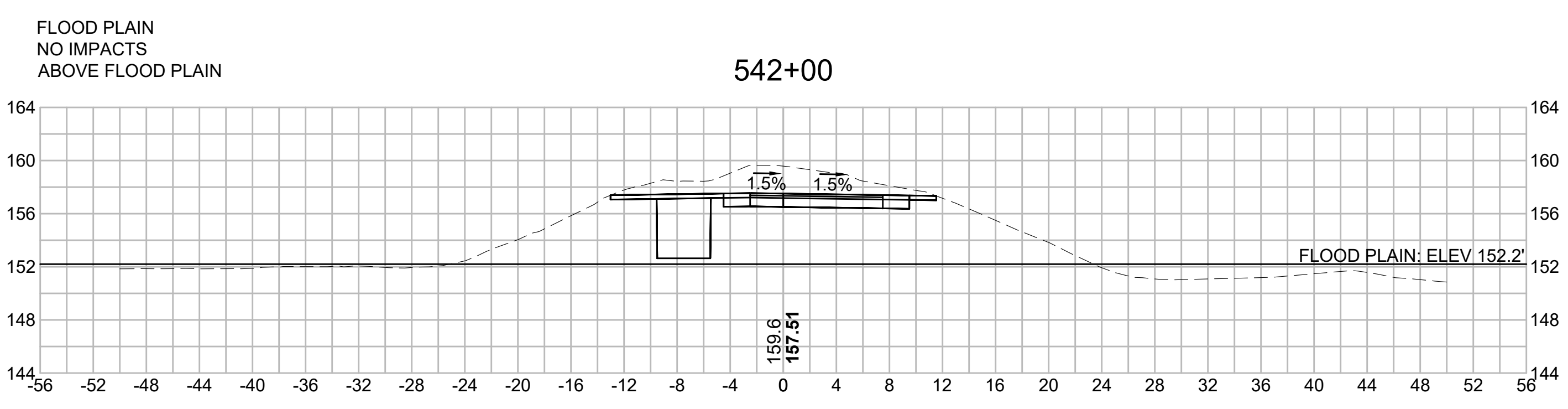
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES	DRAWING NO.	REV.
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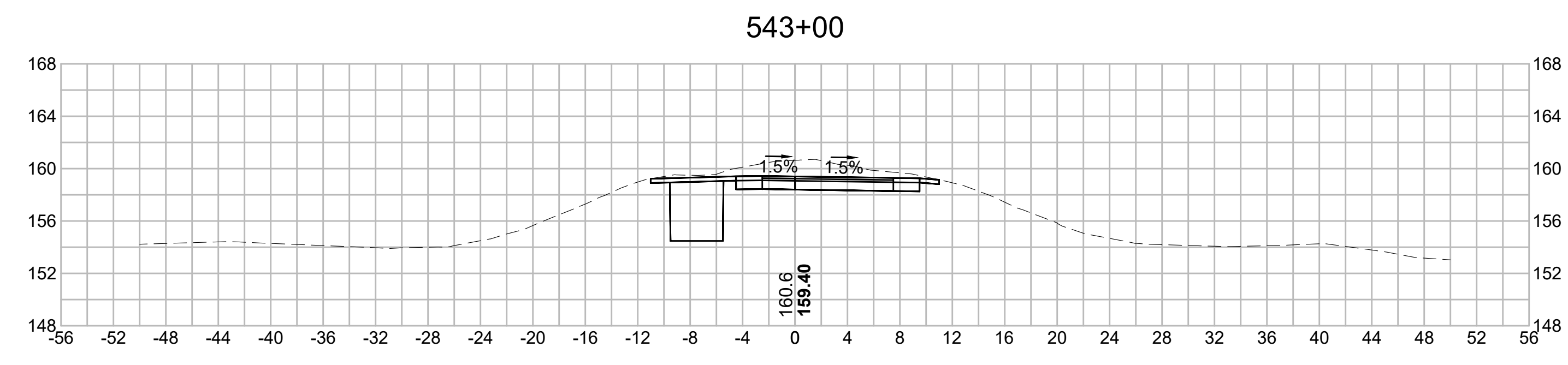
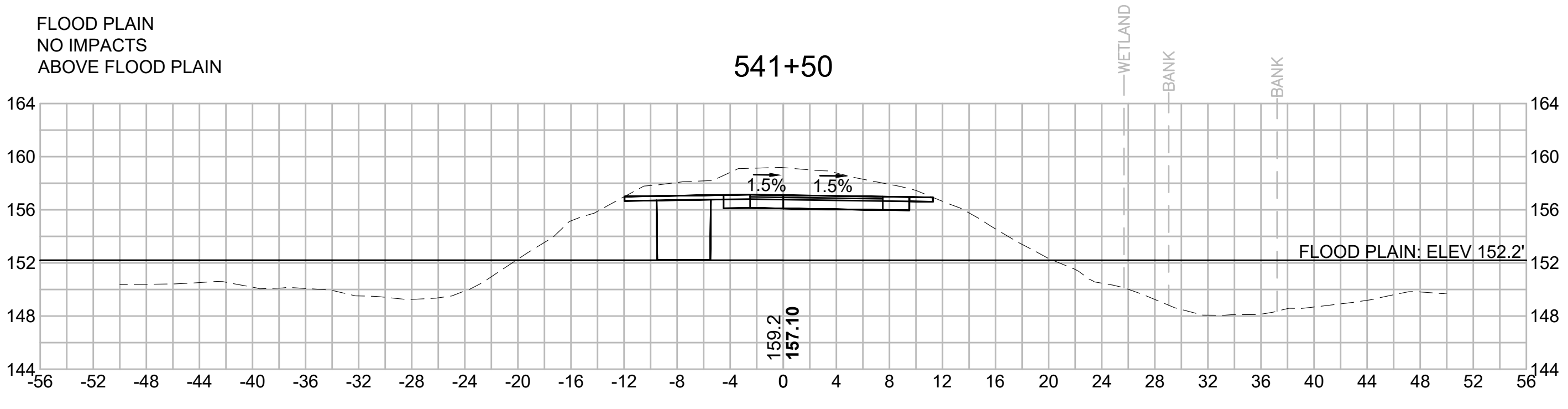
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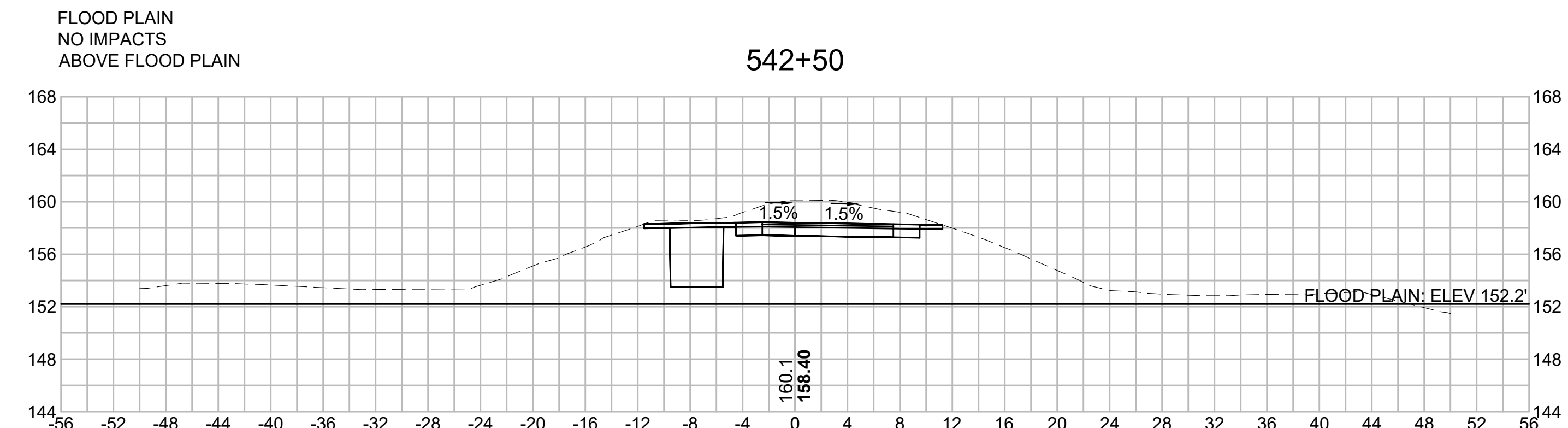
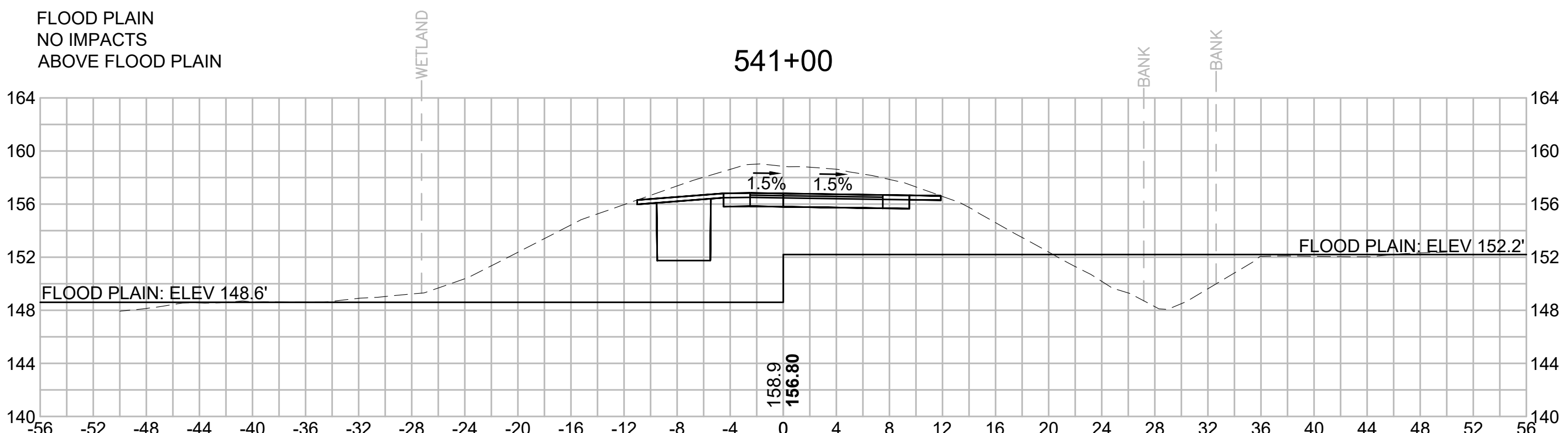
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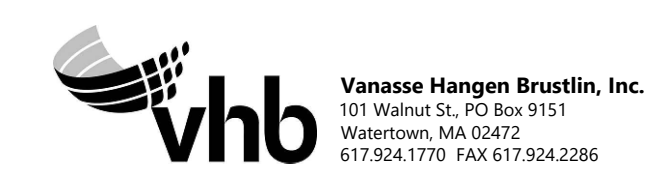
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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
CROSS SECTIONS

PLAN 301 OF 349

SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES	DRAWING NO.	REV.
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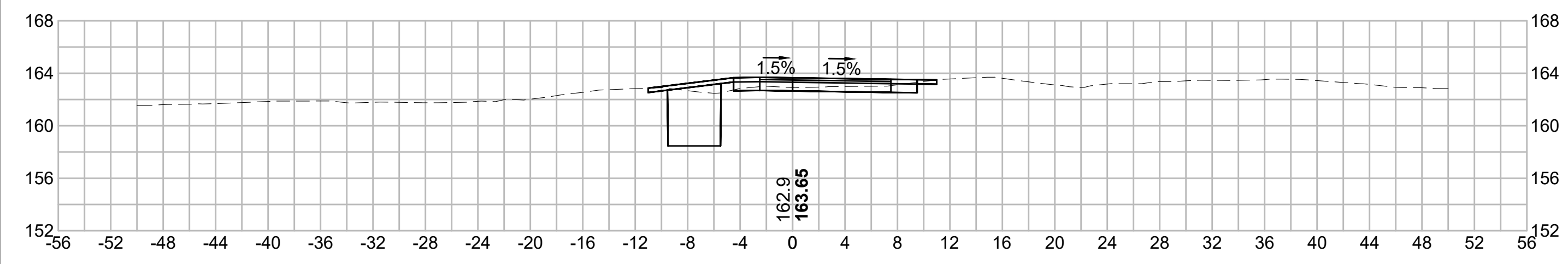
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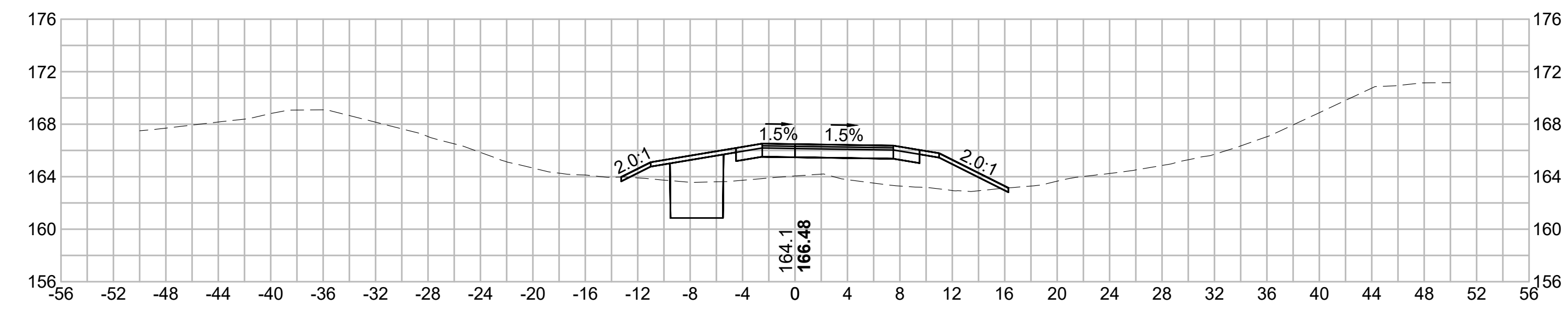
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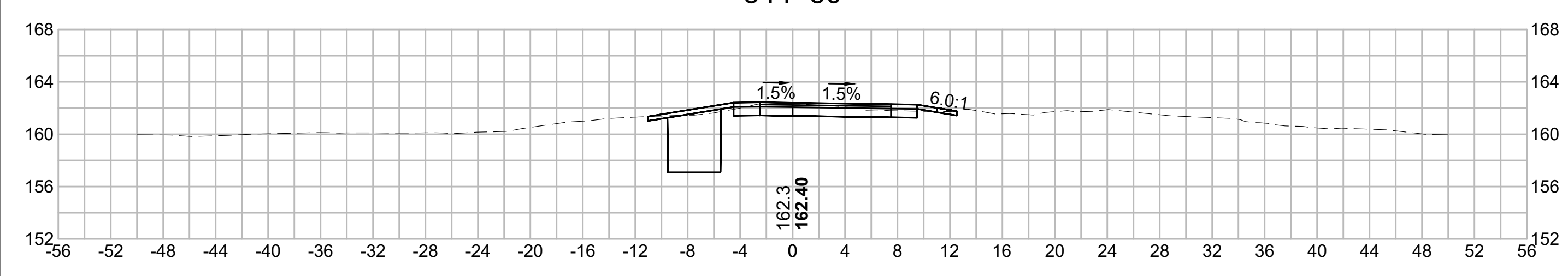
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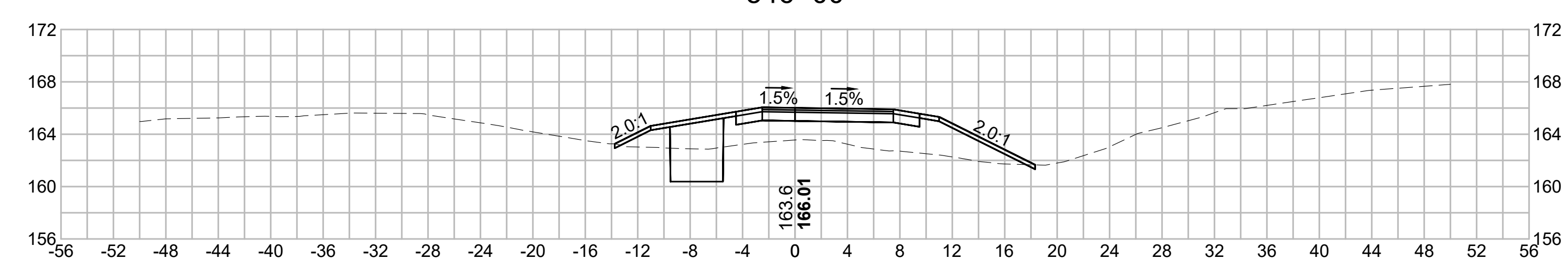
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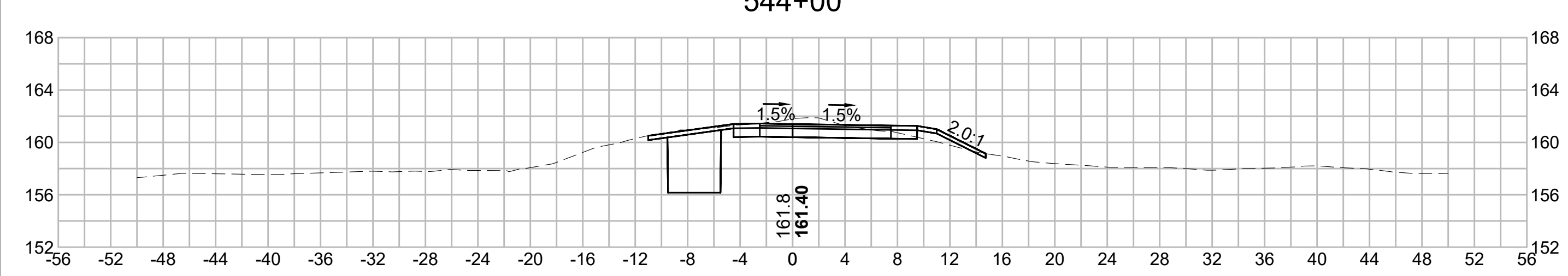
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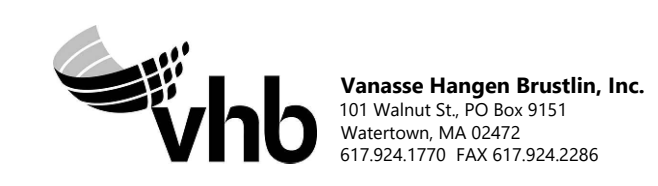
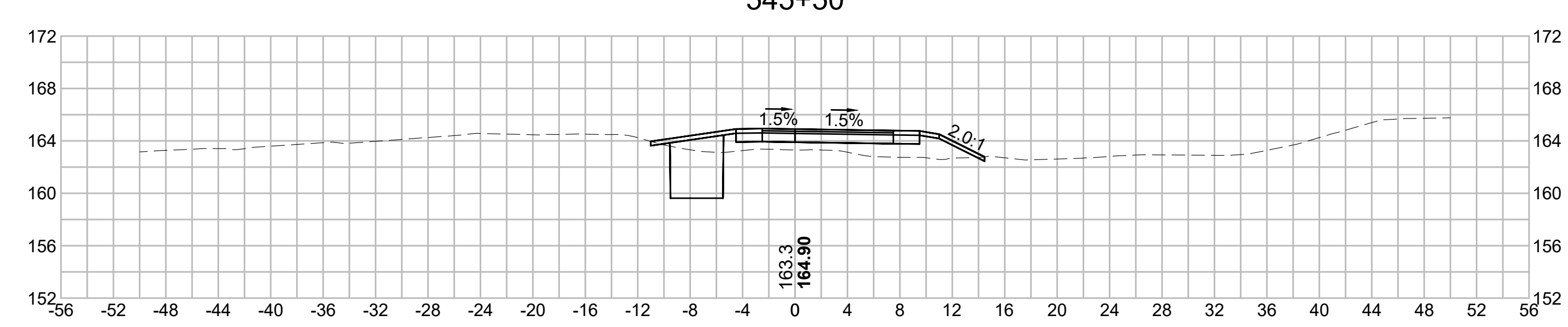
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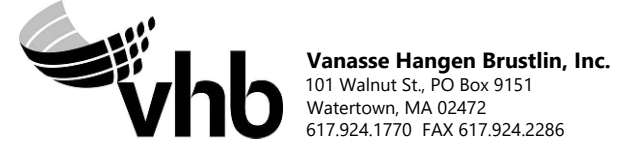
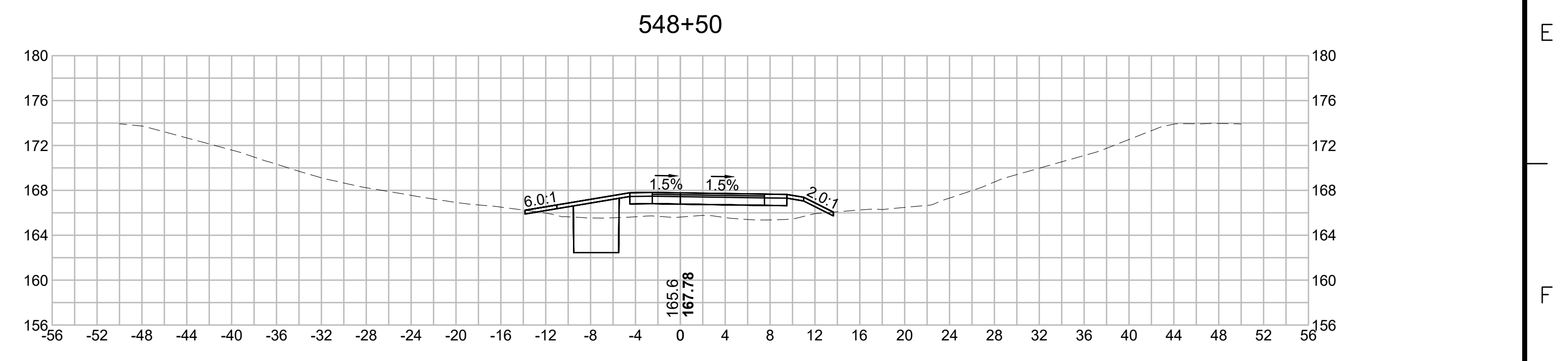
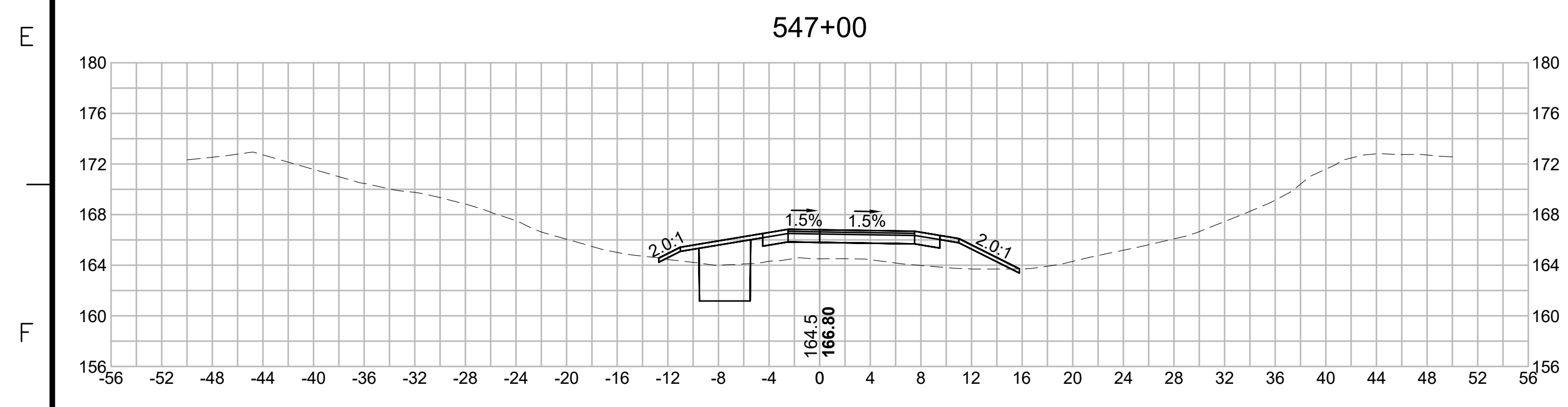
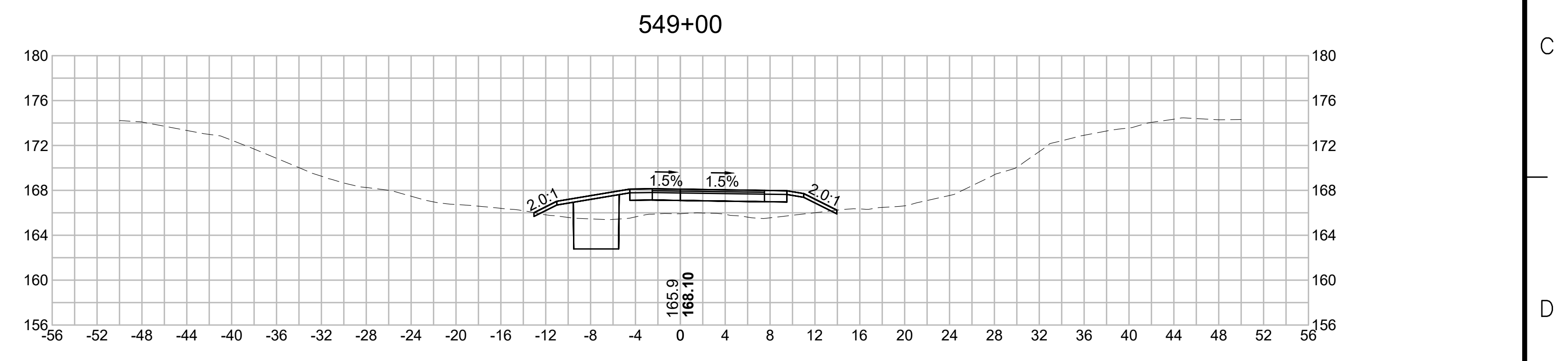
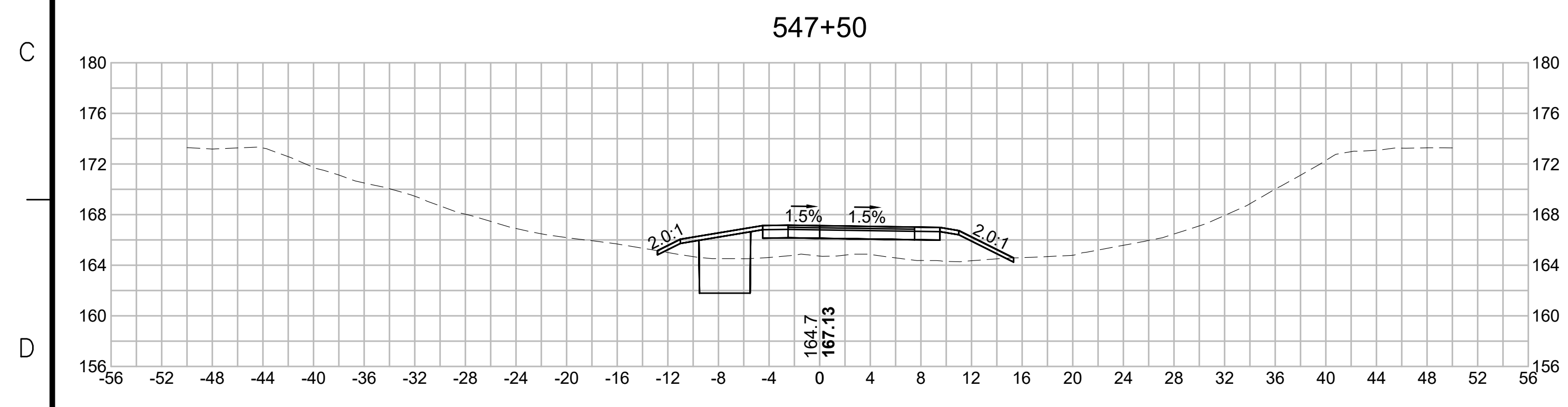
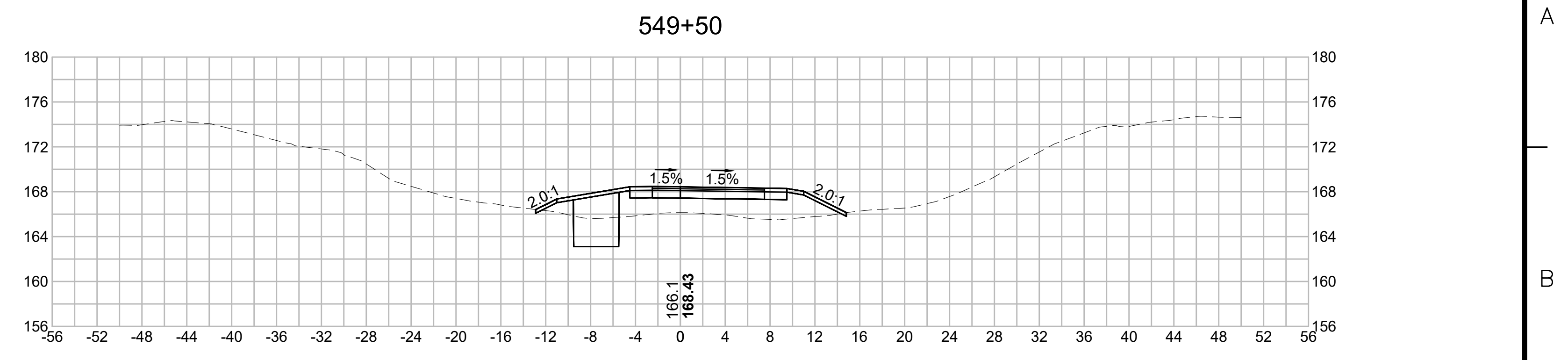
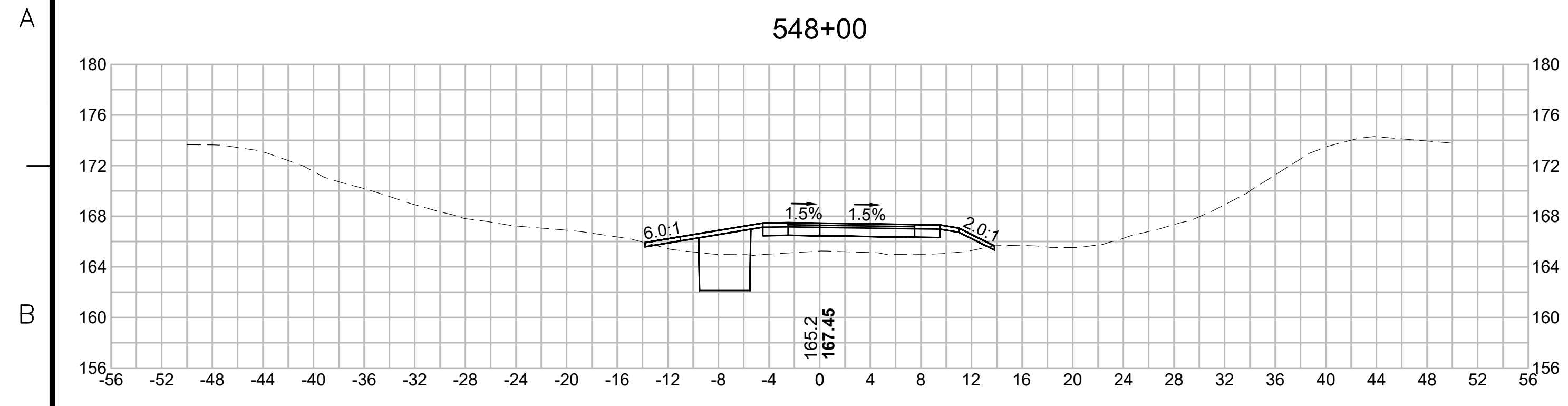
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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 302 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

1 2 3 4 5 6 7 8 9 10 11

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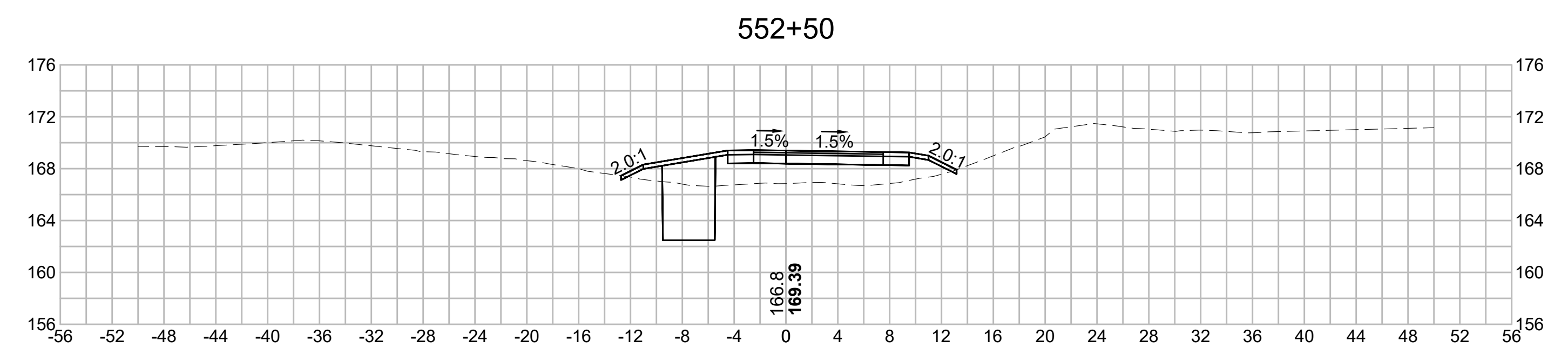
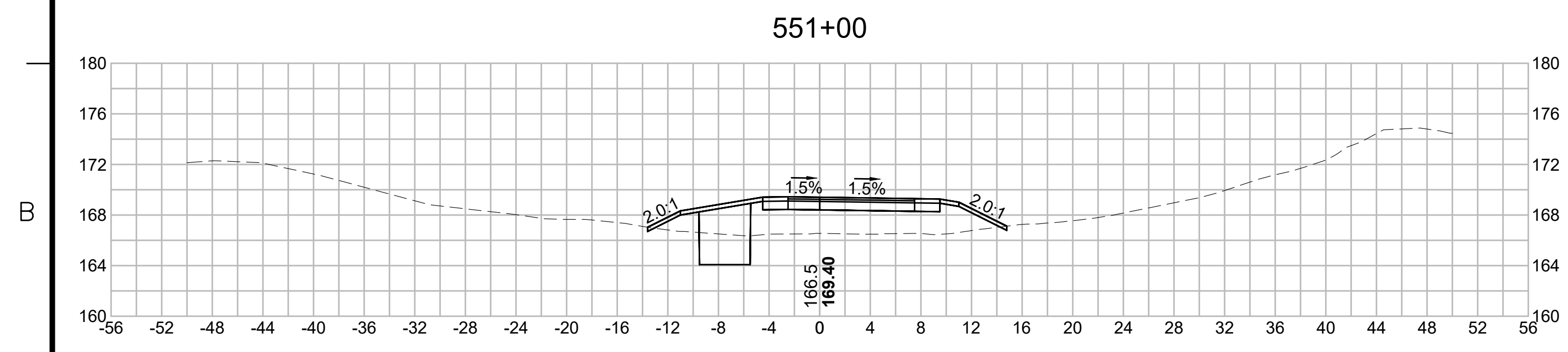
N O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 303 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	C H'K D. SK	A P P R. MES
DRAWING NO.	REV.			

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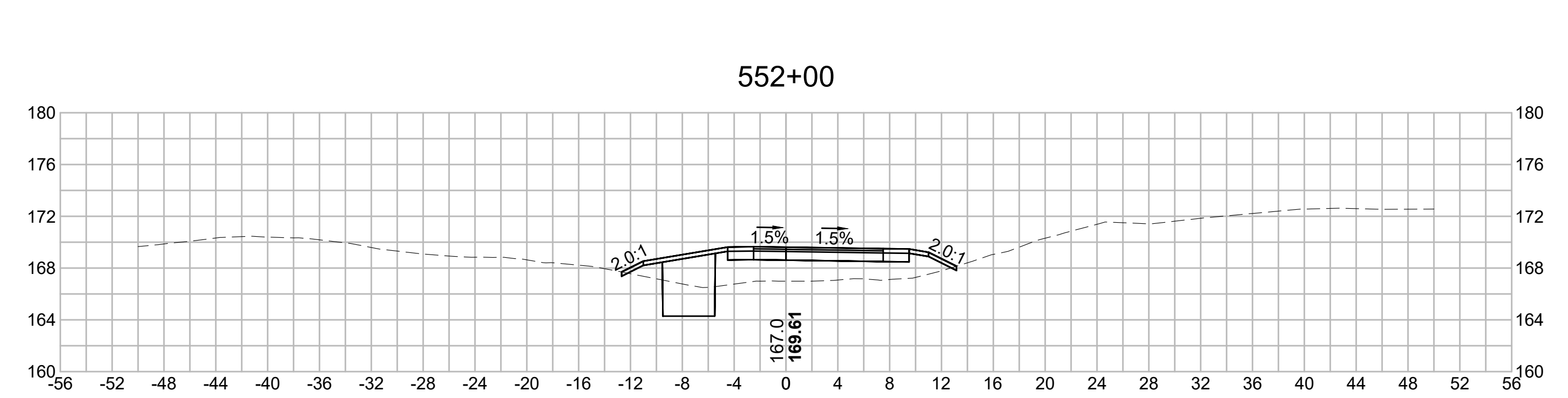
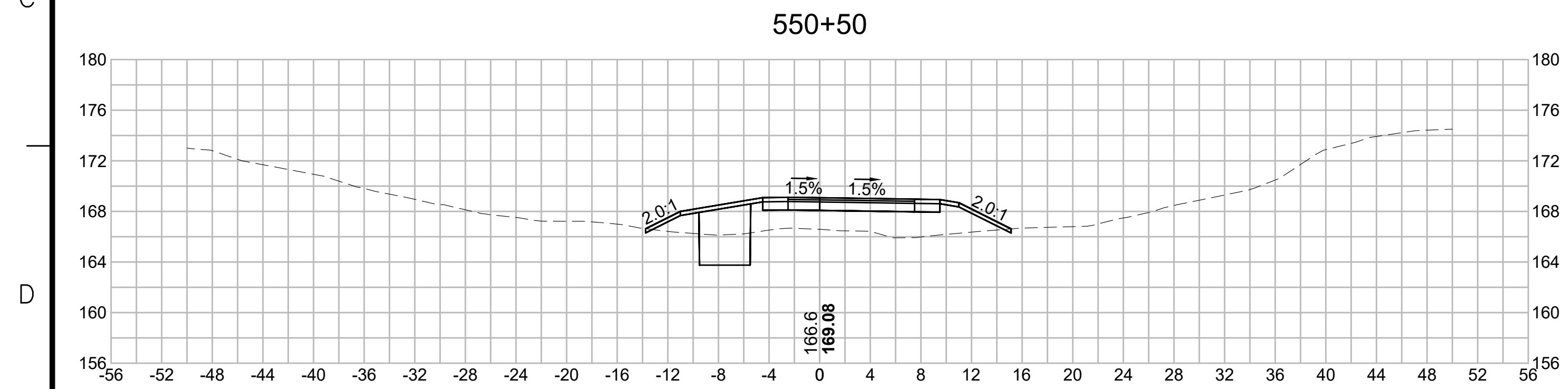
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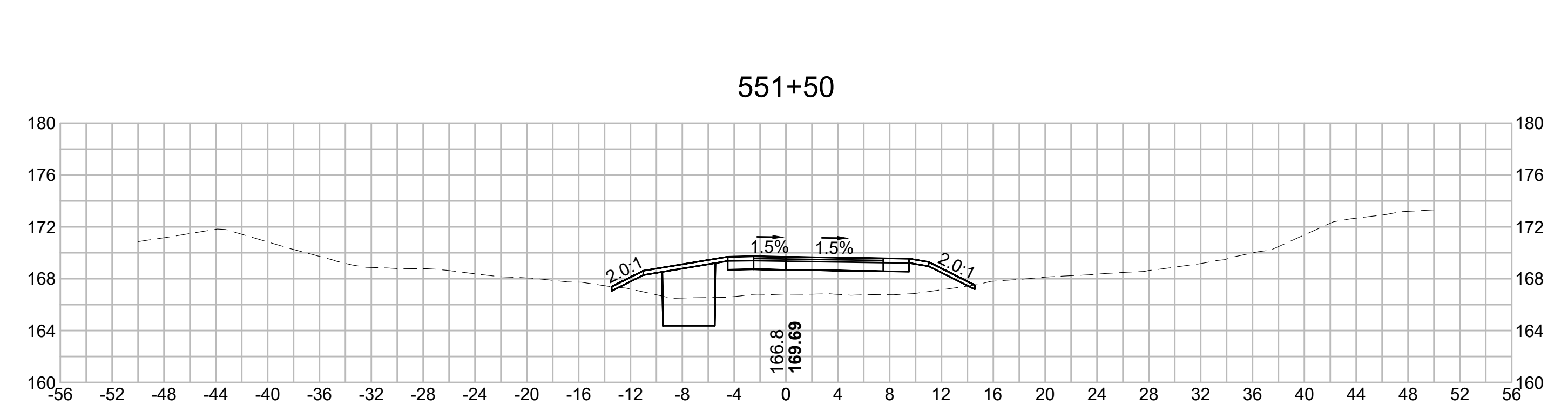
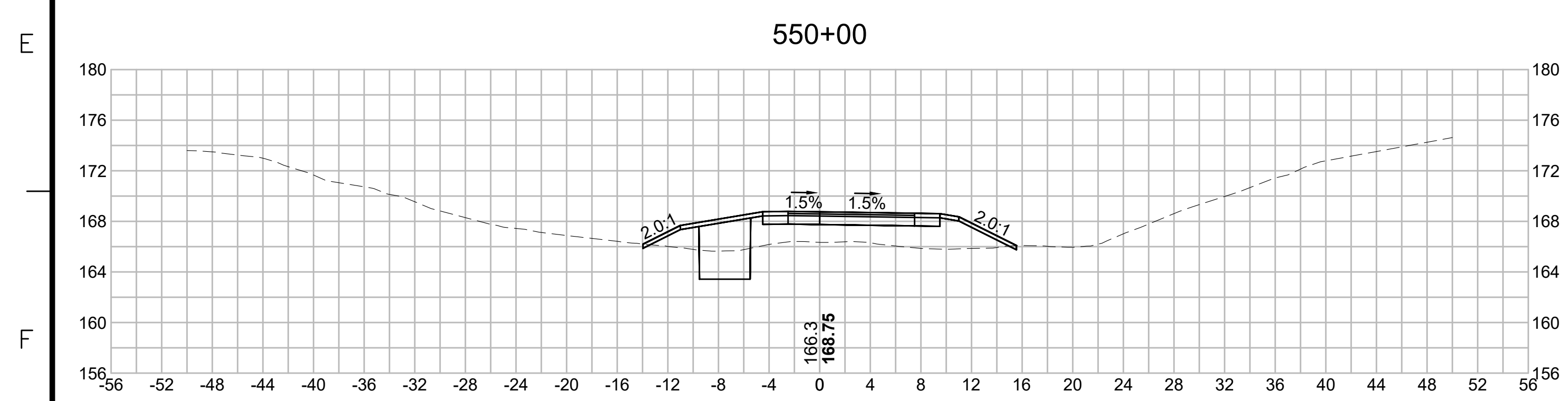
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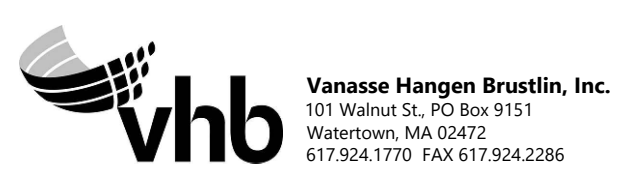
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N O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 CROSS SECTIONS

PLAN 304 OF 349

SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	C H'K D. SK	A P P R. MES	DRAWING NO. .	REV. .
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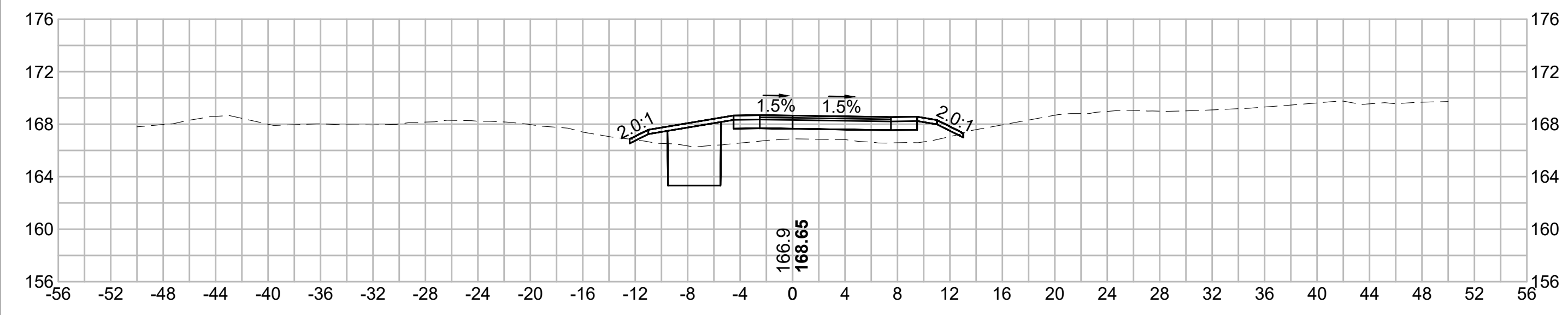
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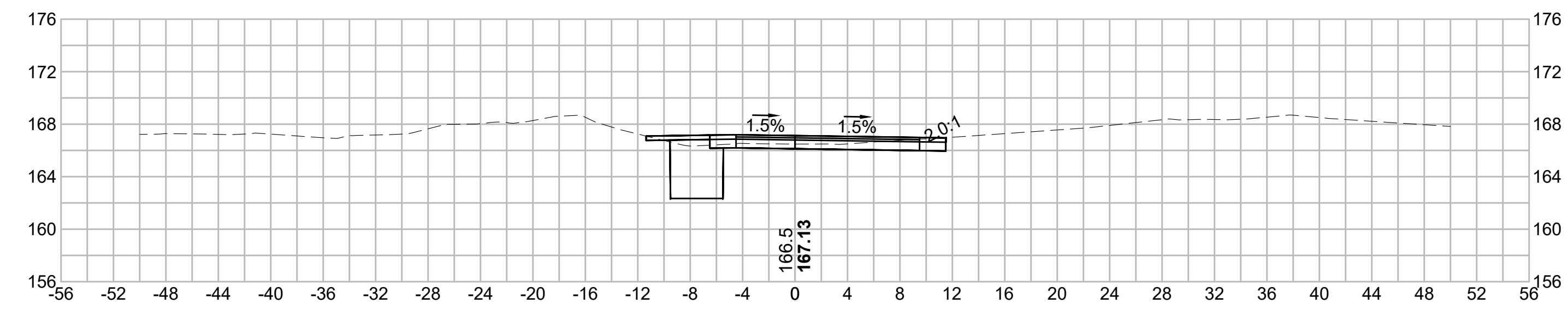
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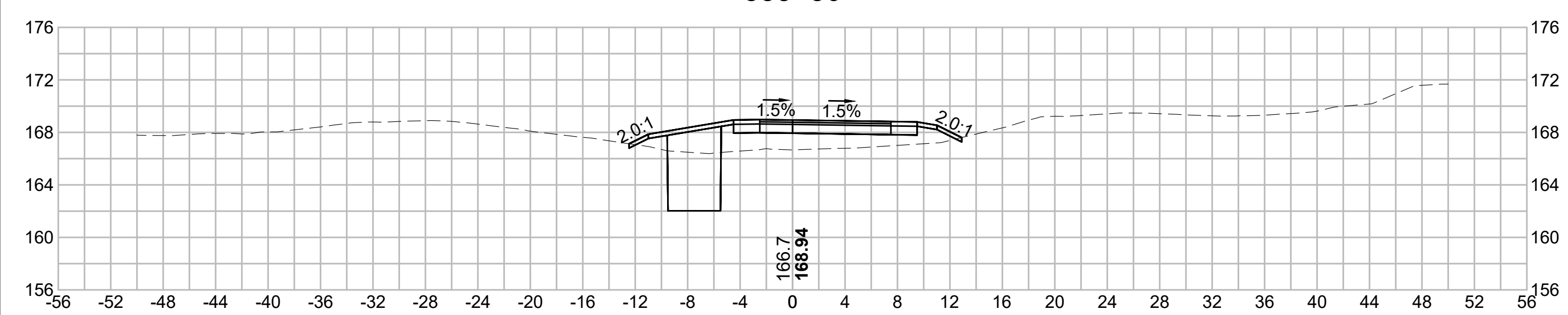
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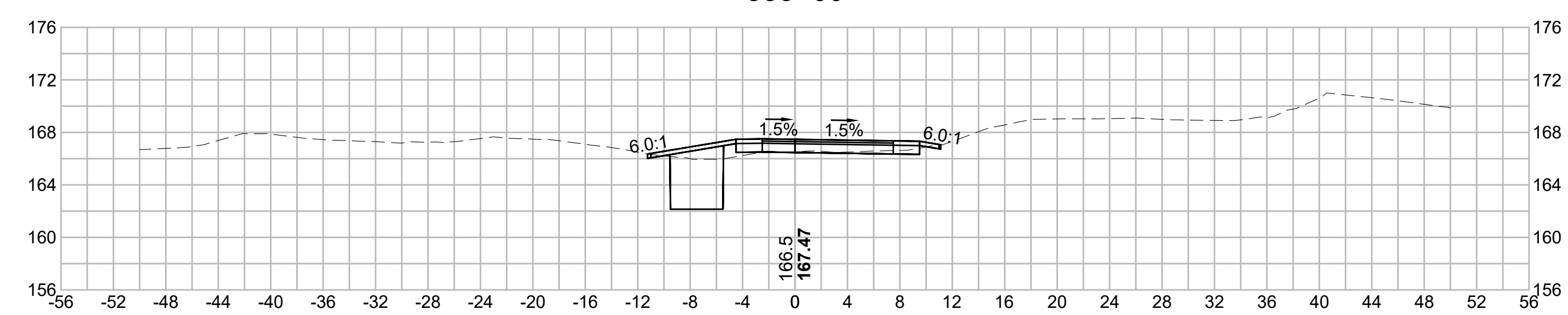
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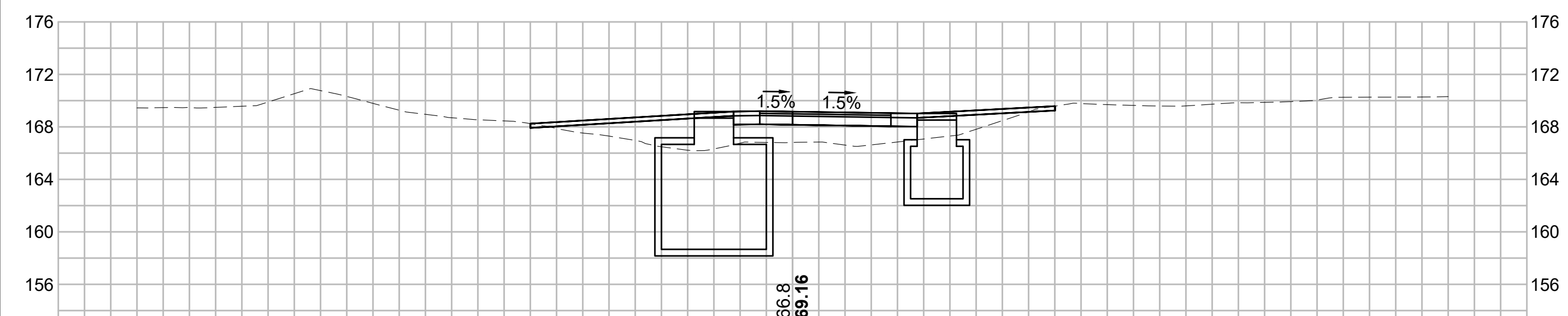
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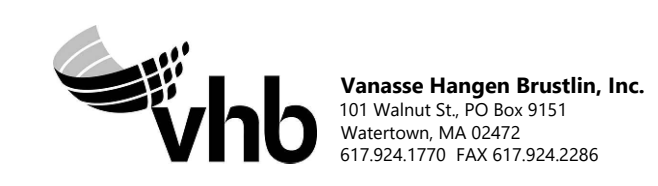
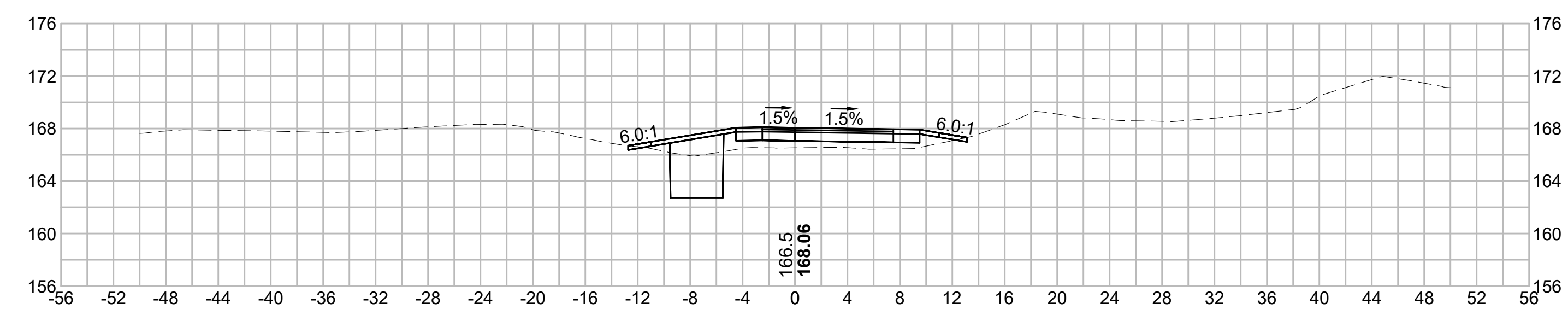
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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 CROSS SECTIONS

PLAN 305 OF 349

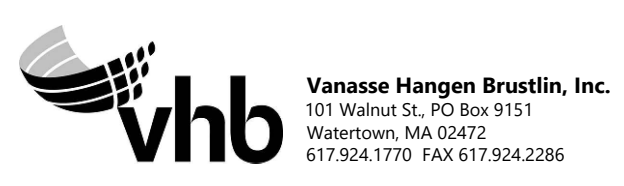
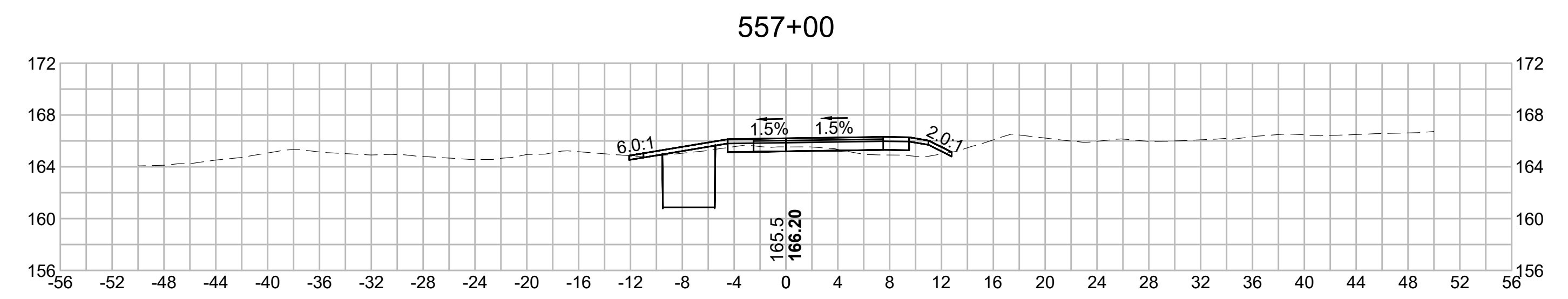
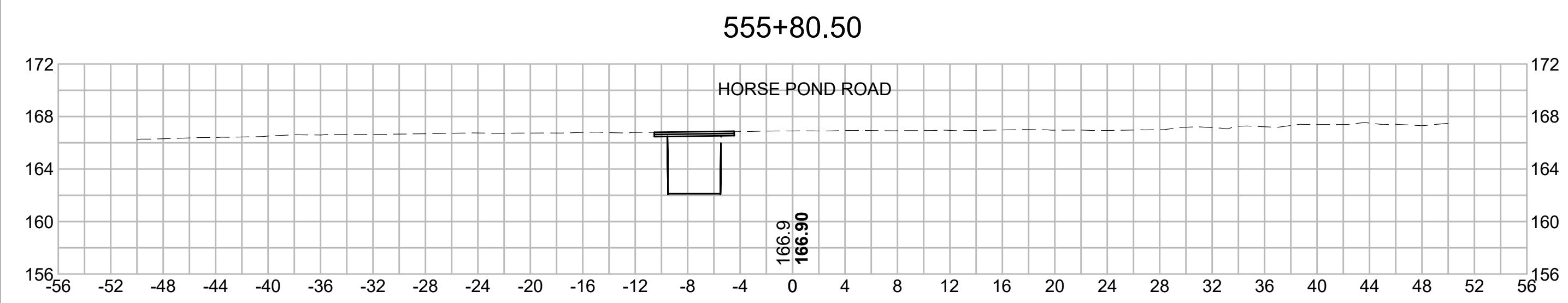
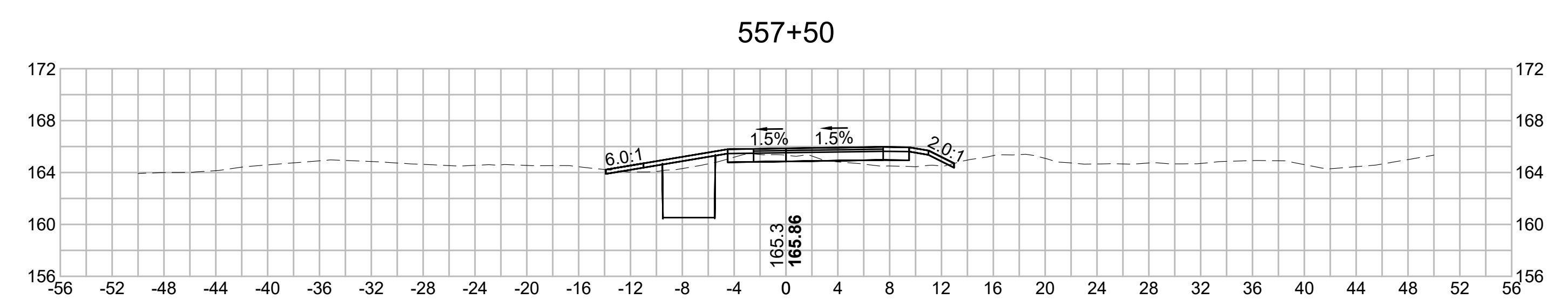
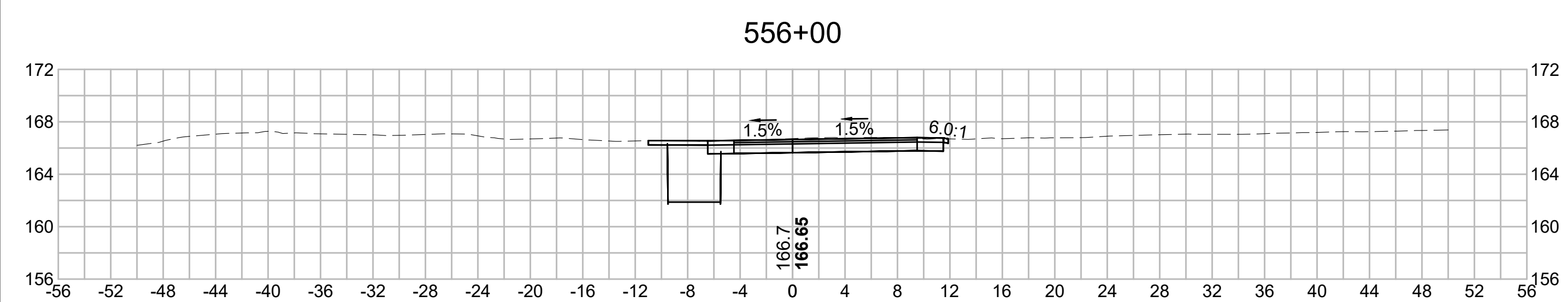
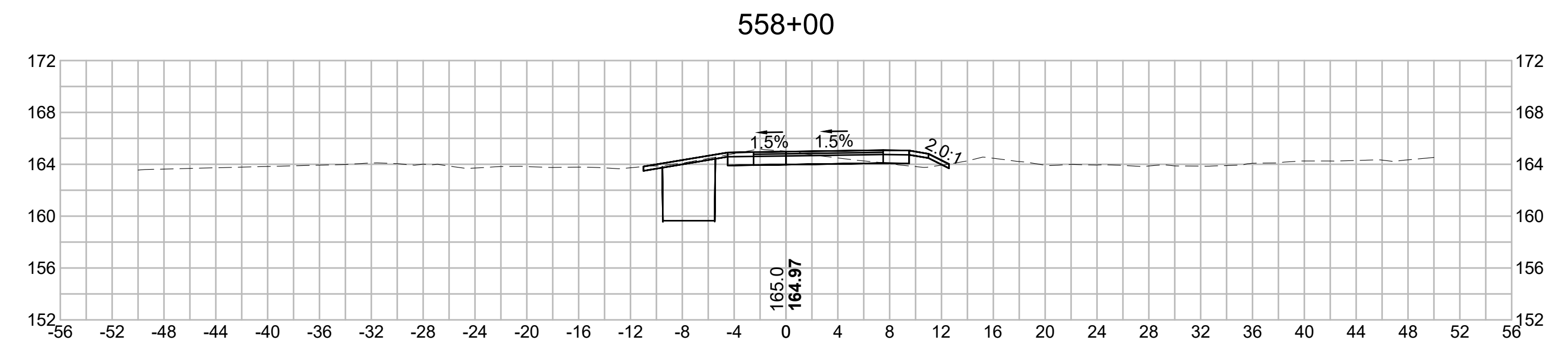
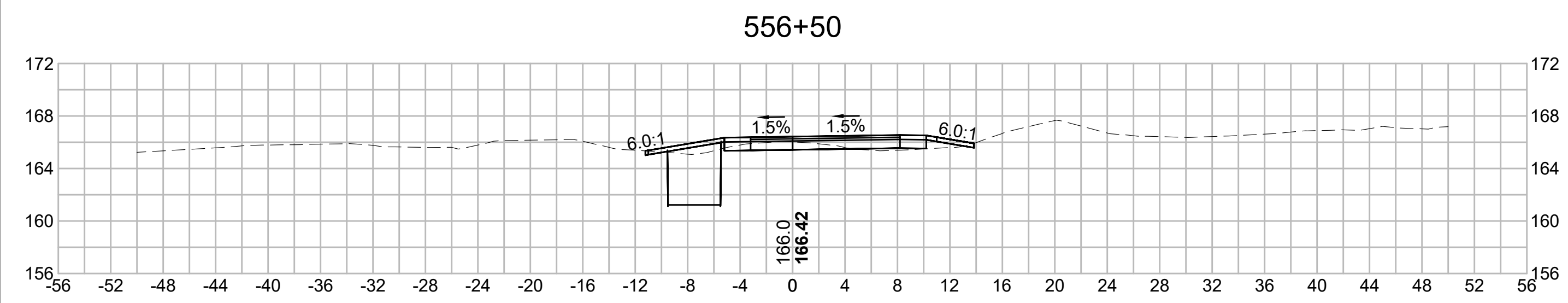
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES	DRAWING NO.	REV.
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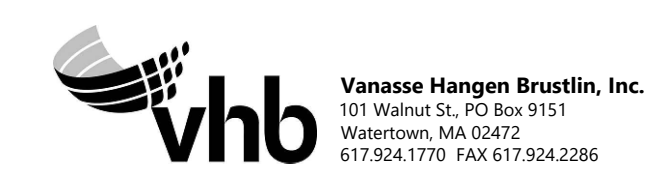
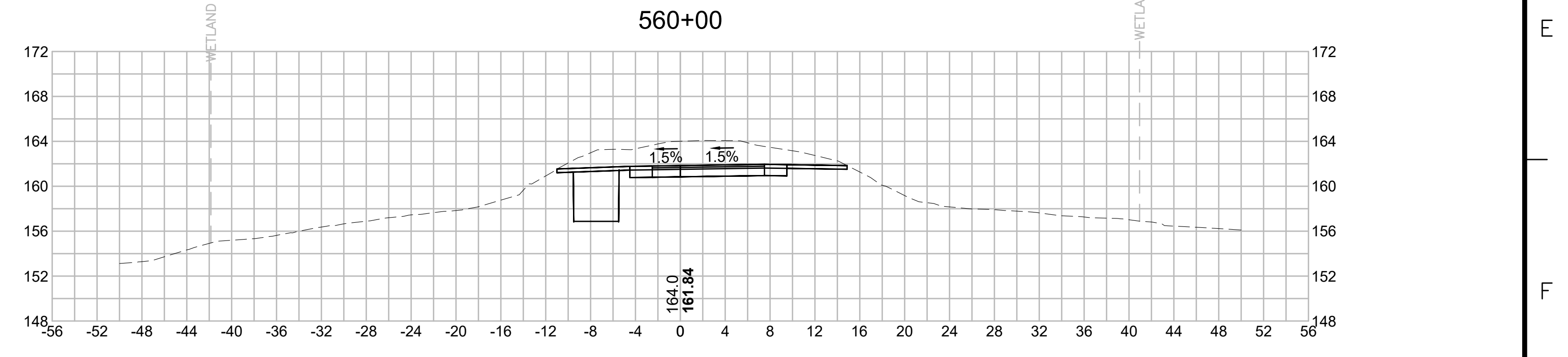
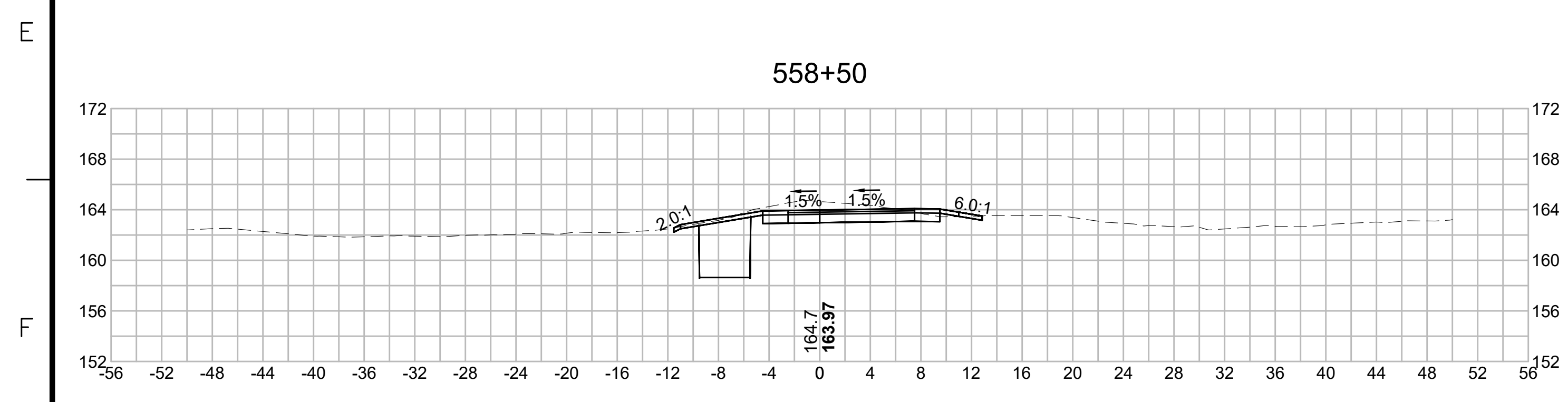
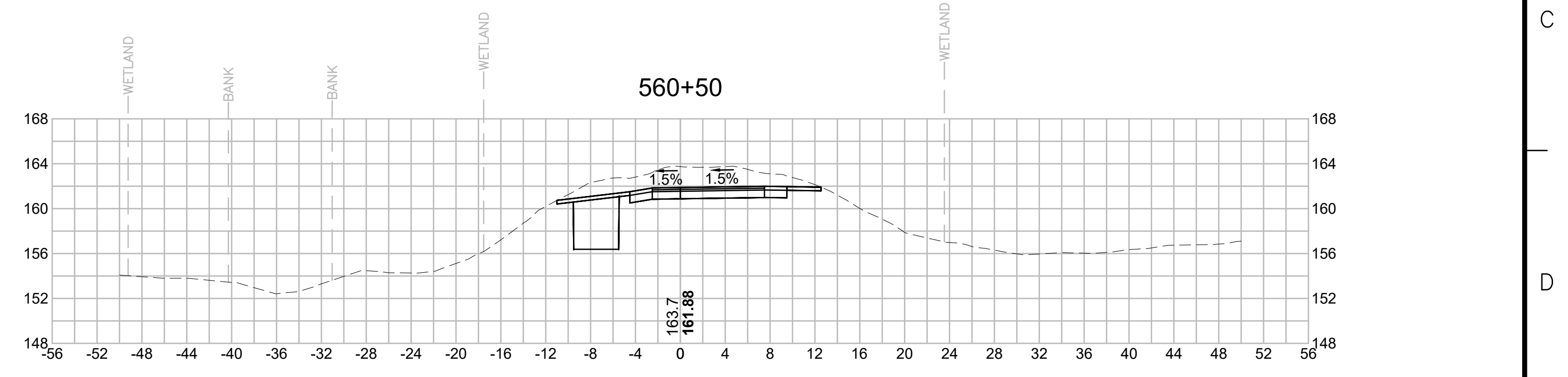
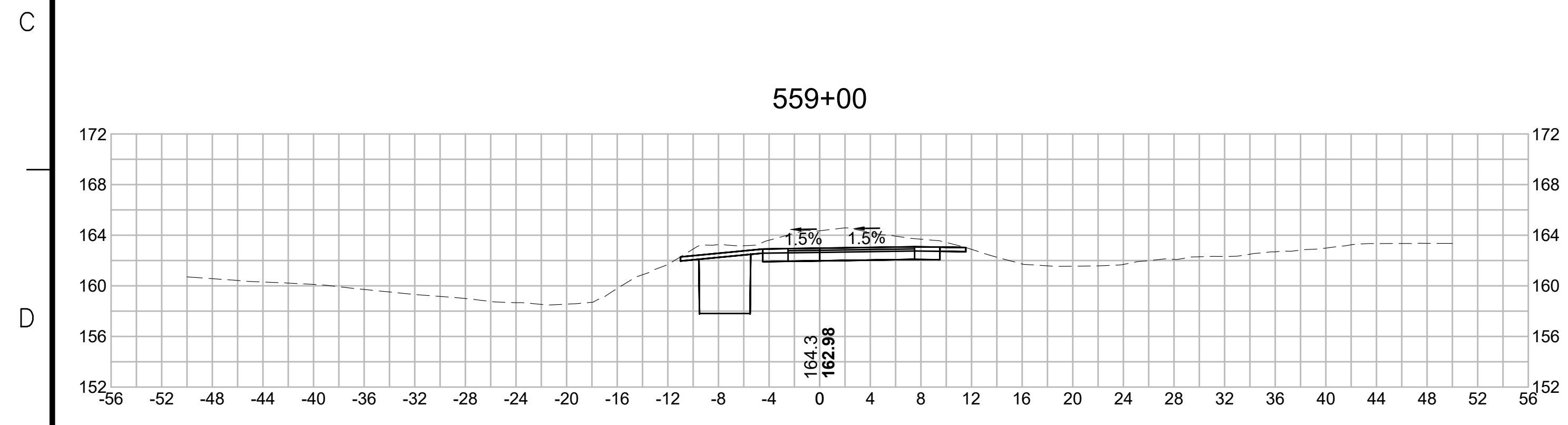
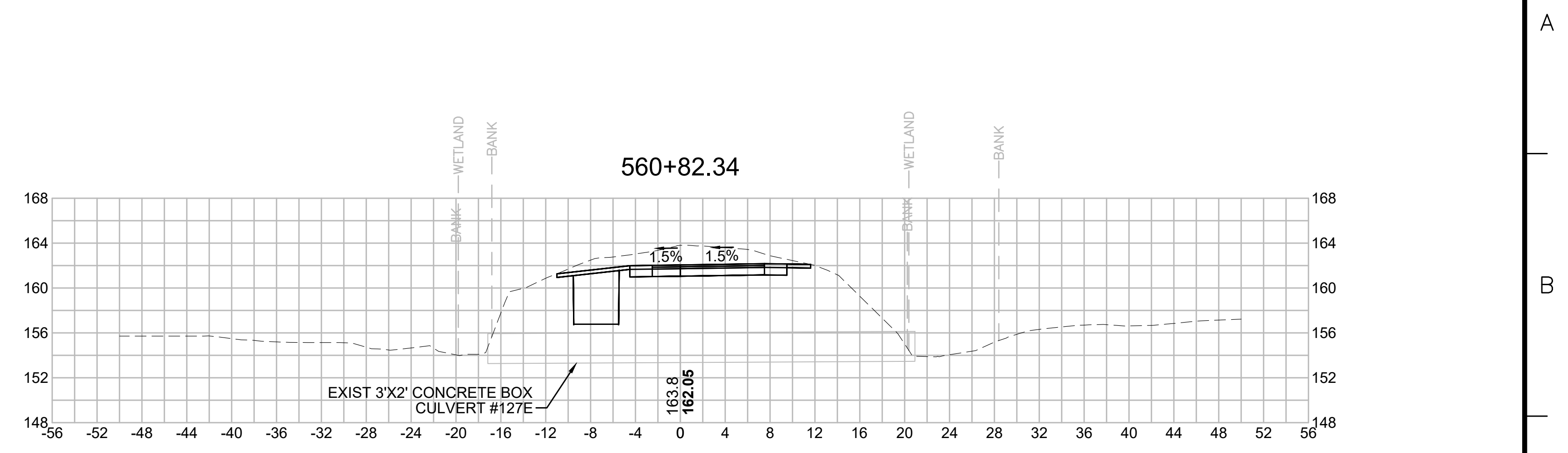
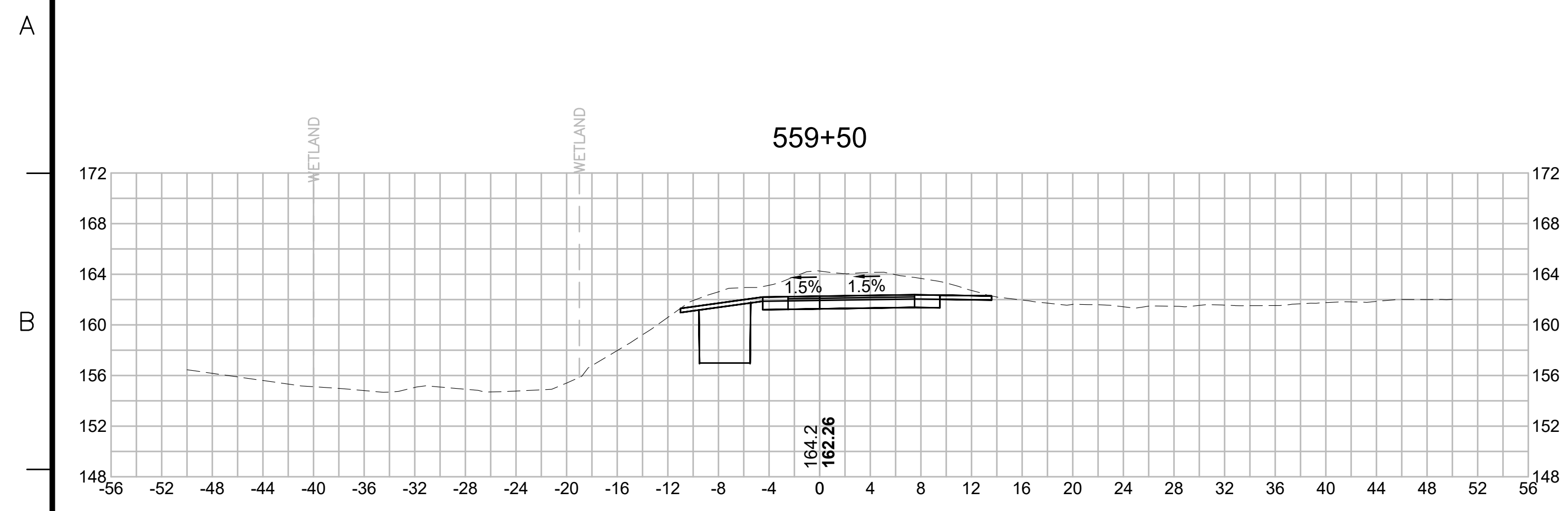
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NO.		DESCRIPTION		BY	DATE	APPR.
		REVISION				
EVERSOURCE						
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT						
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS						
CROSS SECTIONS						
PLAN 306 OF 349						
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES	DRAWING NO.	REV.

1 2 3 4 5 6 7 8 9 10 11

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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUBBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUBBURY MASSACHUSETTS
CROSS SECTIONS

PLAN 307 OF 349

SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES	DRAWING NO.	REV.
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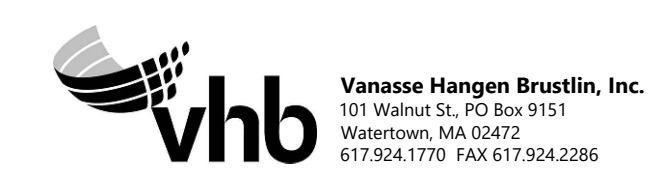
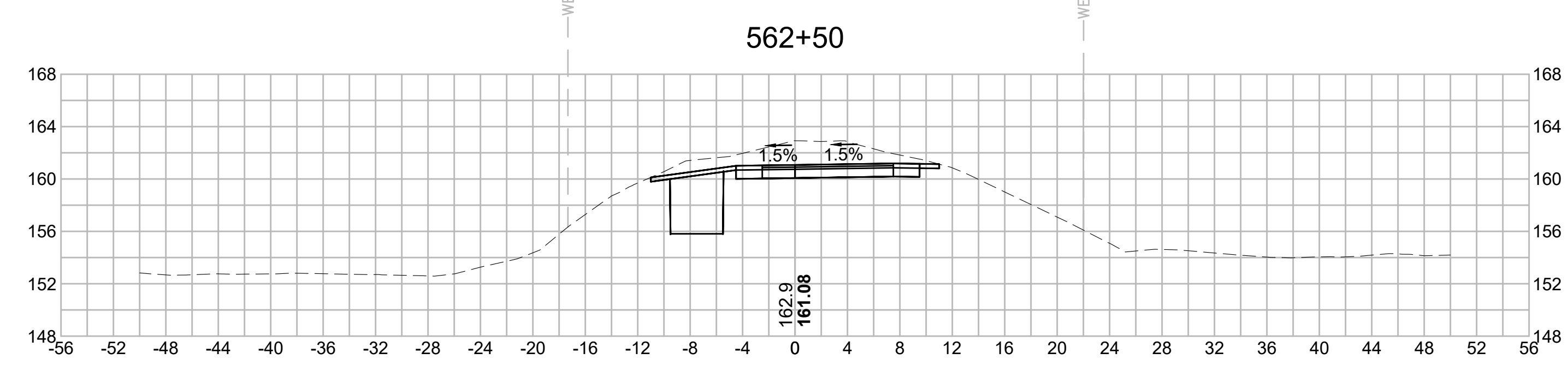
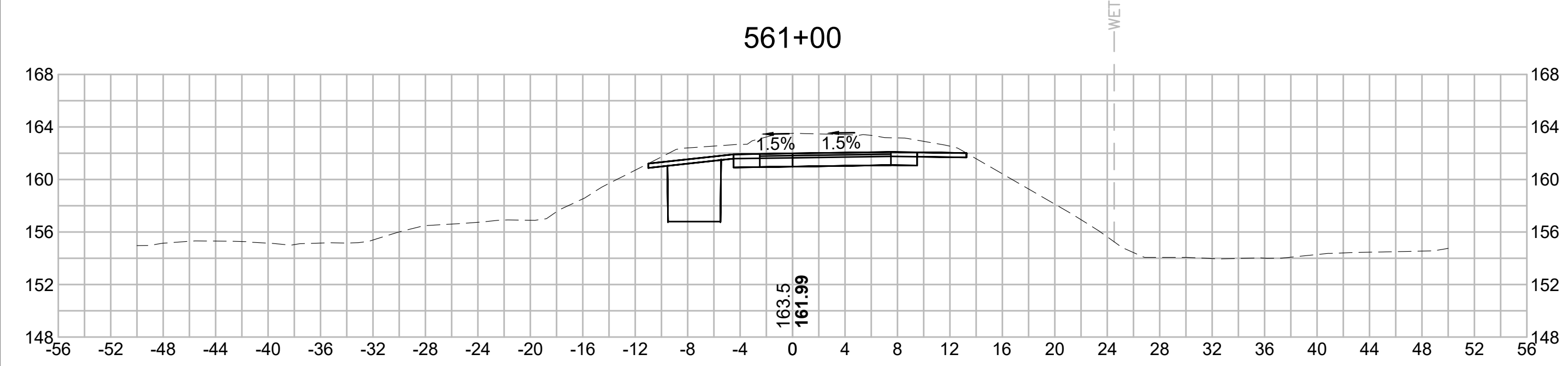
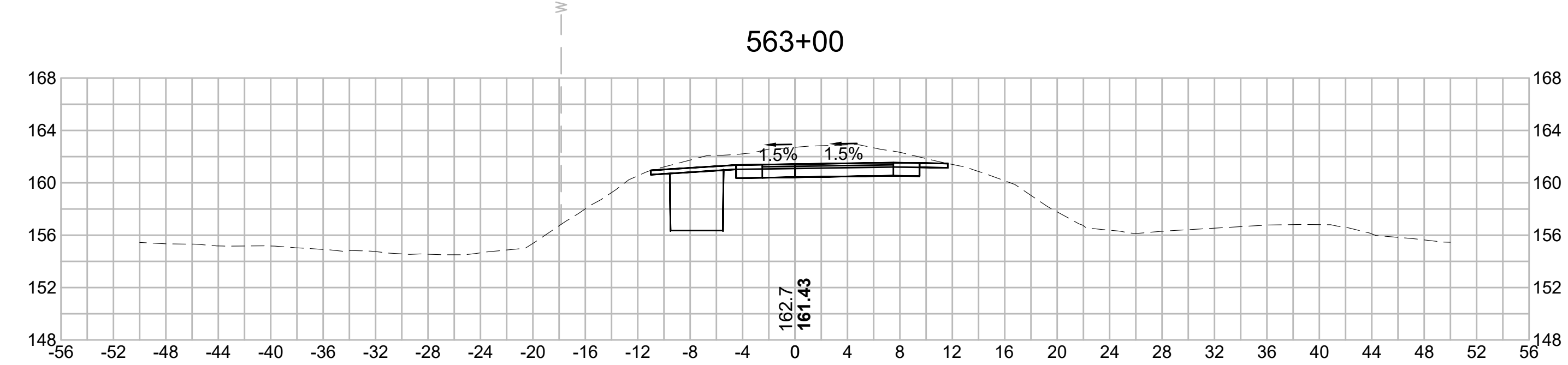
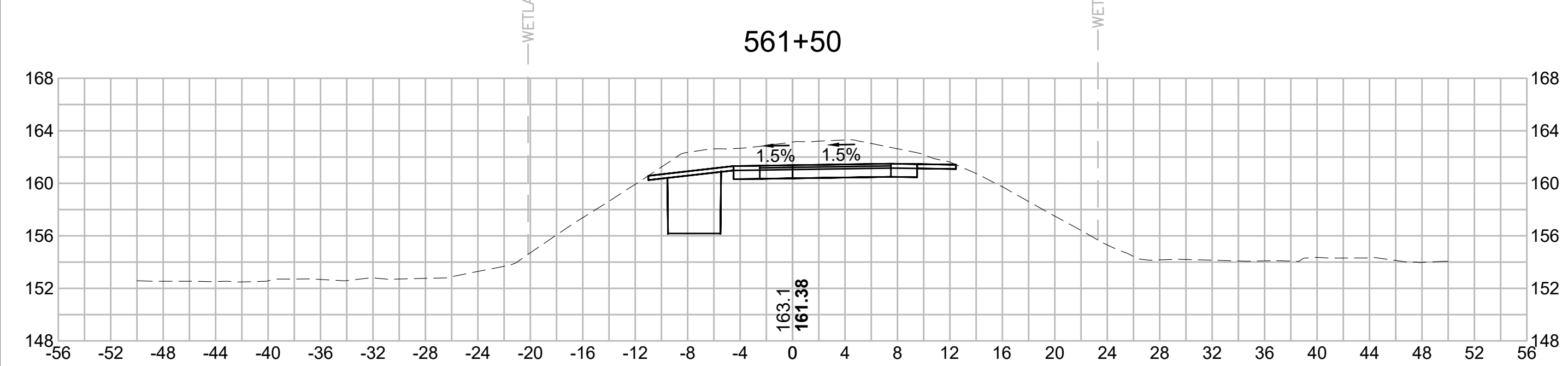
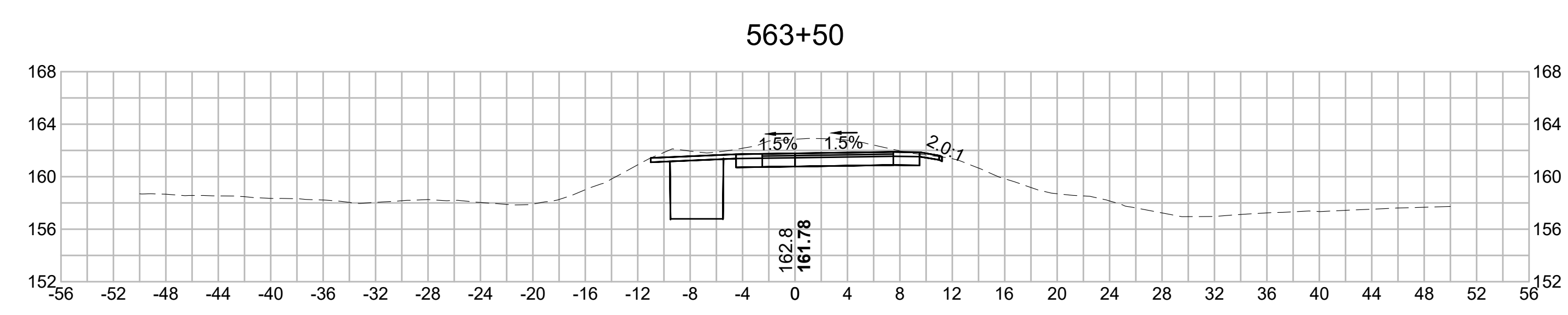
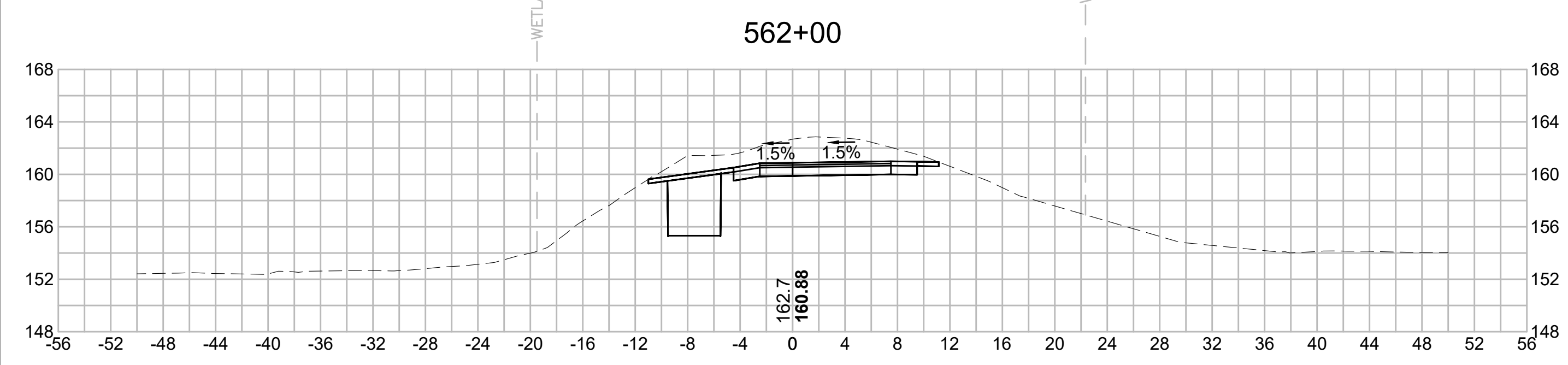
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Vanasse Hangen Brustlin, Inc.
101 Walnut St., PO Box 9151
Watertown, MA 02472
617.924.1770 FAX 617.924.2286

N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 308 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

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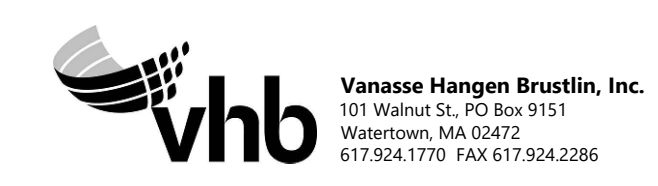
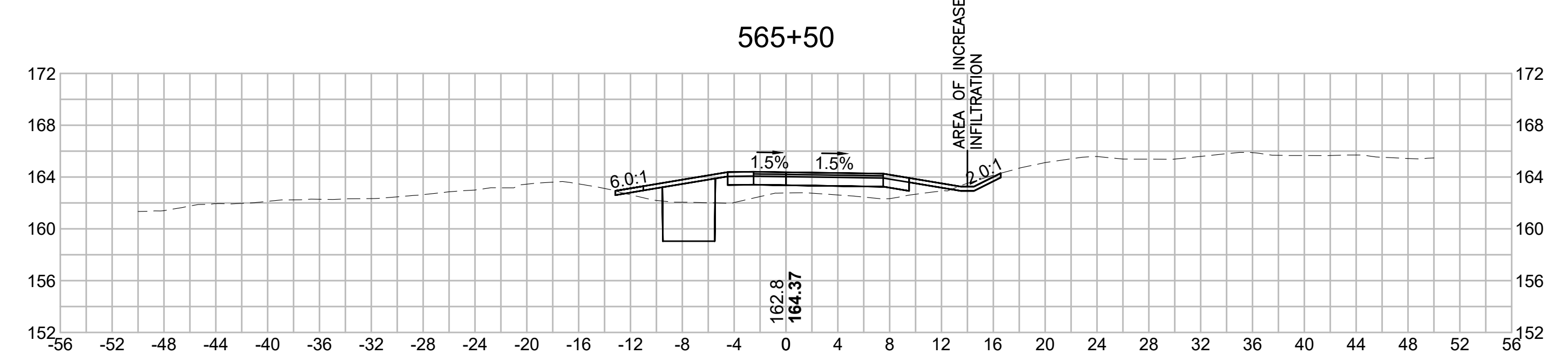
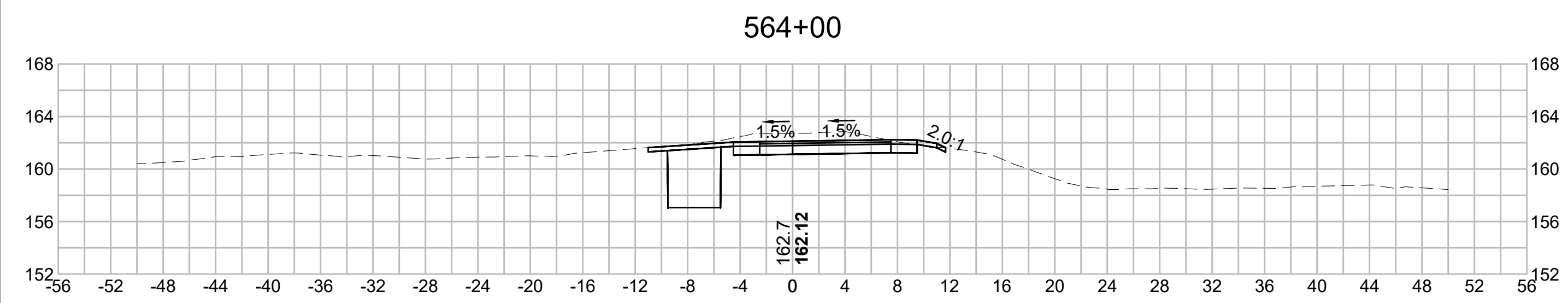
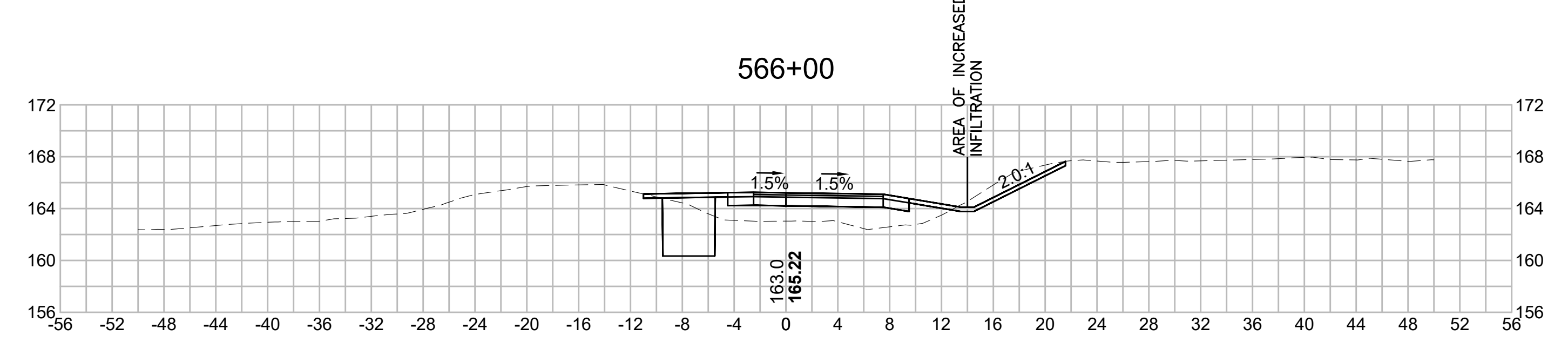
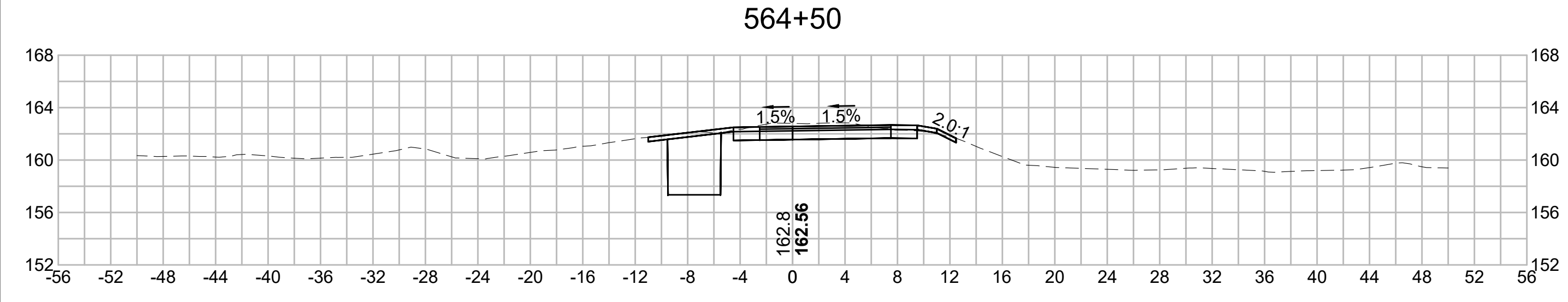
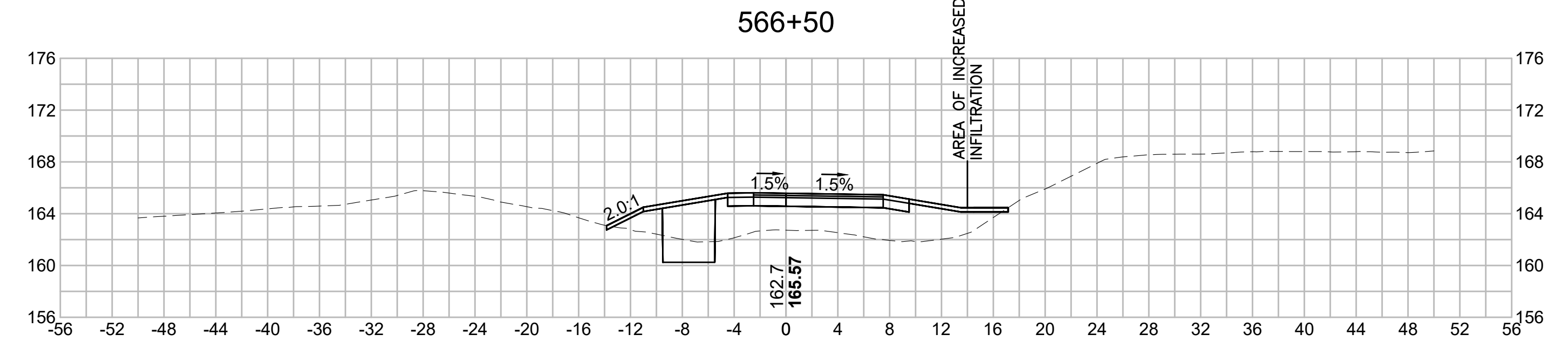
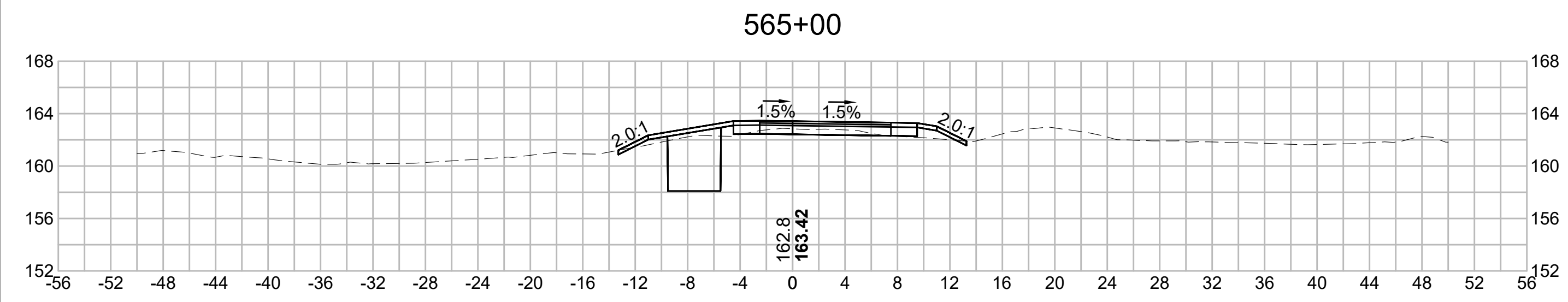
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N O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 309 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	C H'K D. SK	A P P R. MES
DRAWING NO.	REV.			

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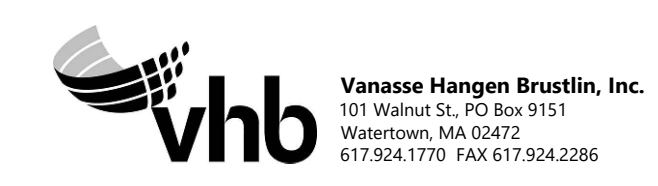
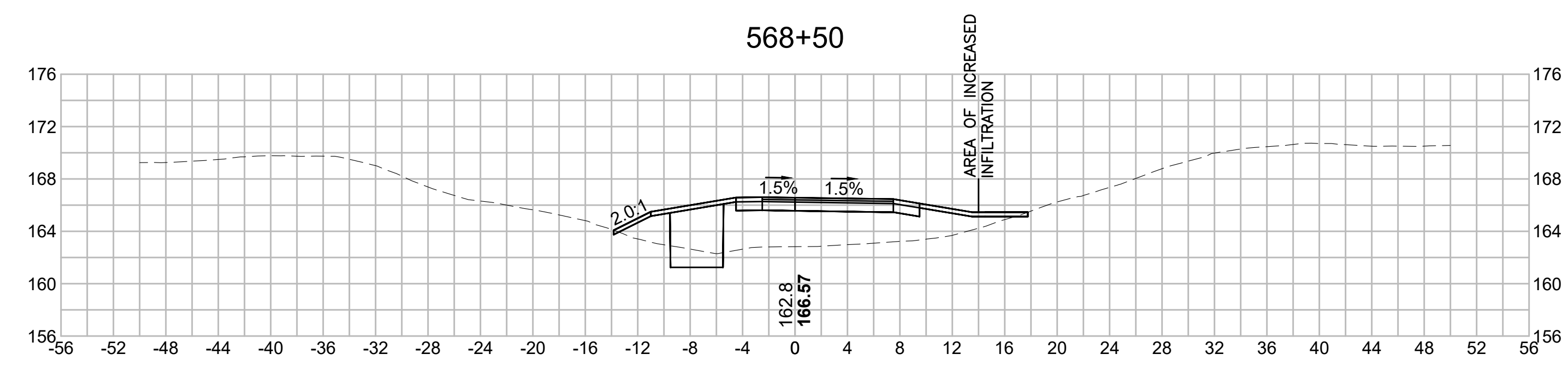
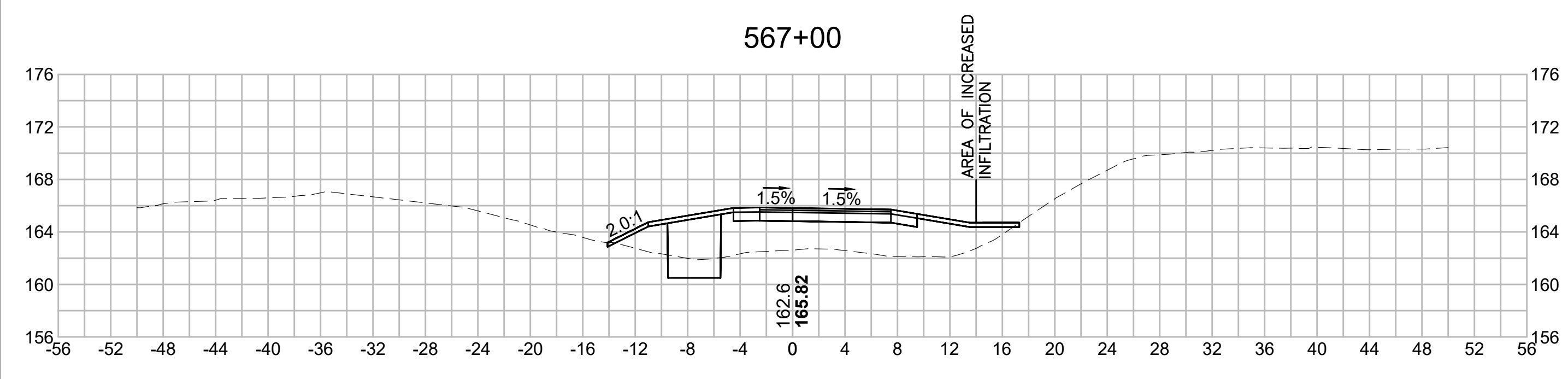
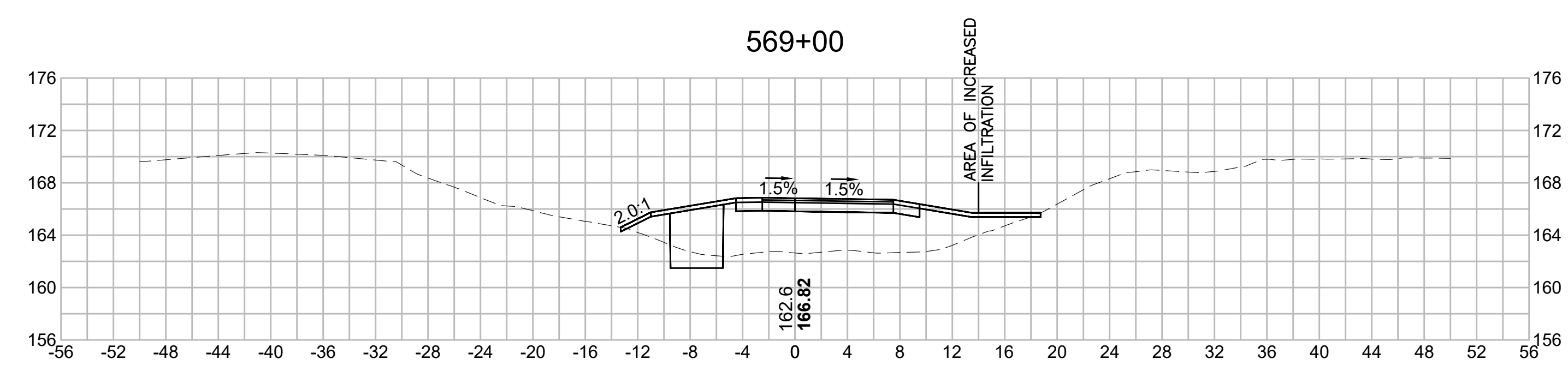
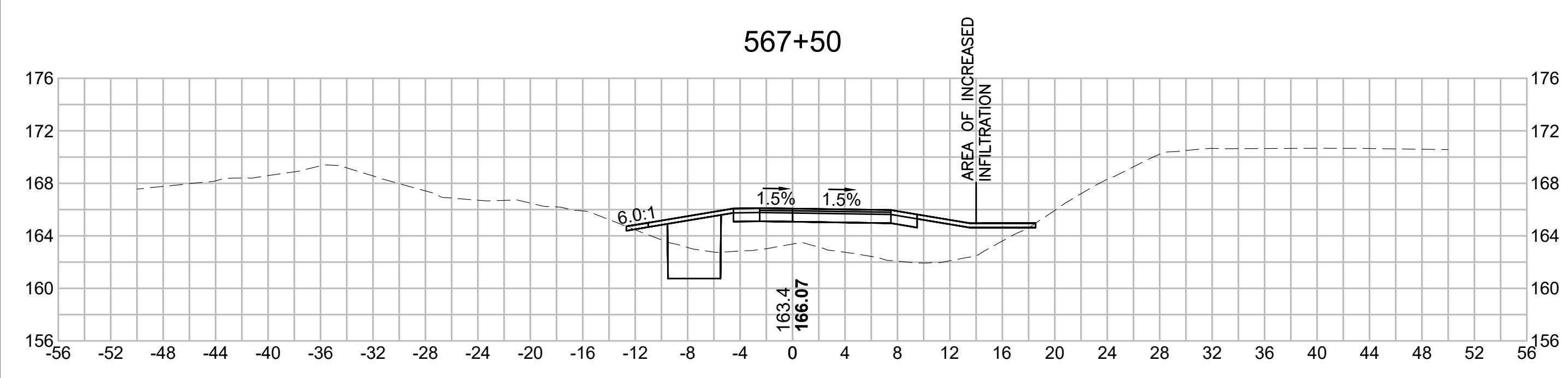
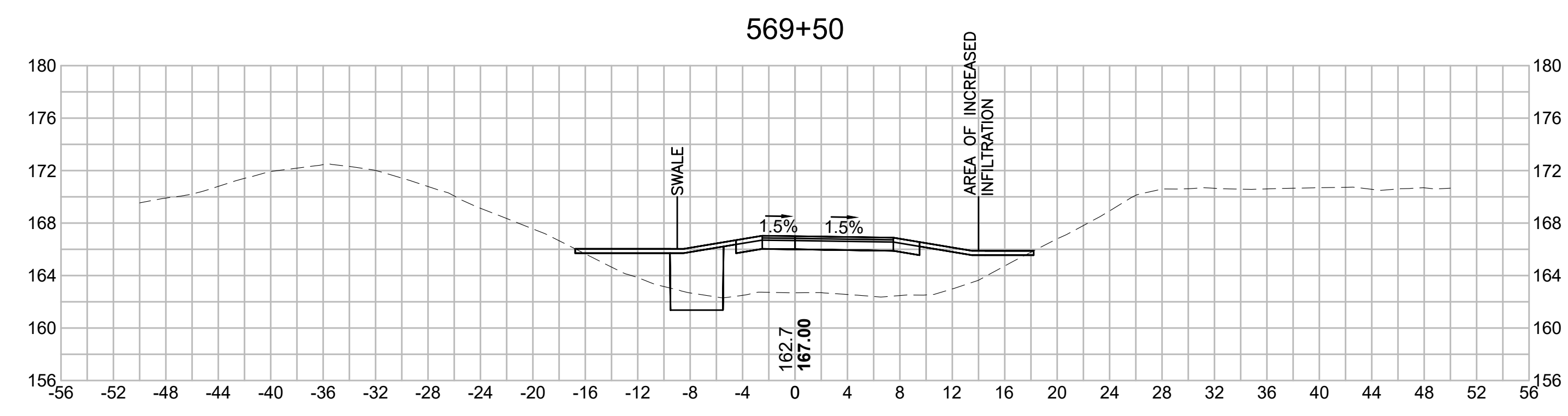
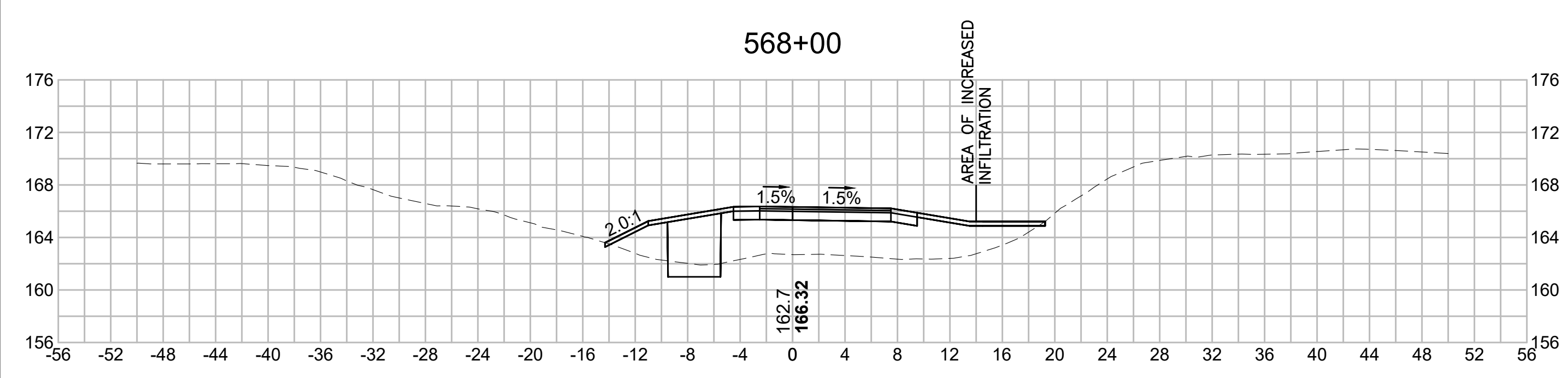
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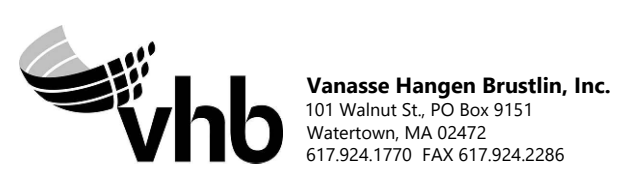
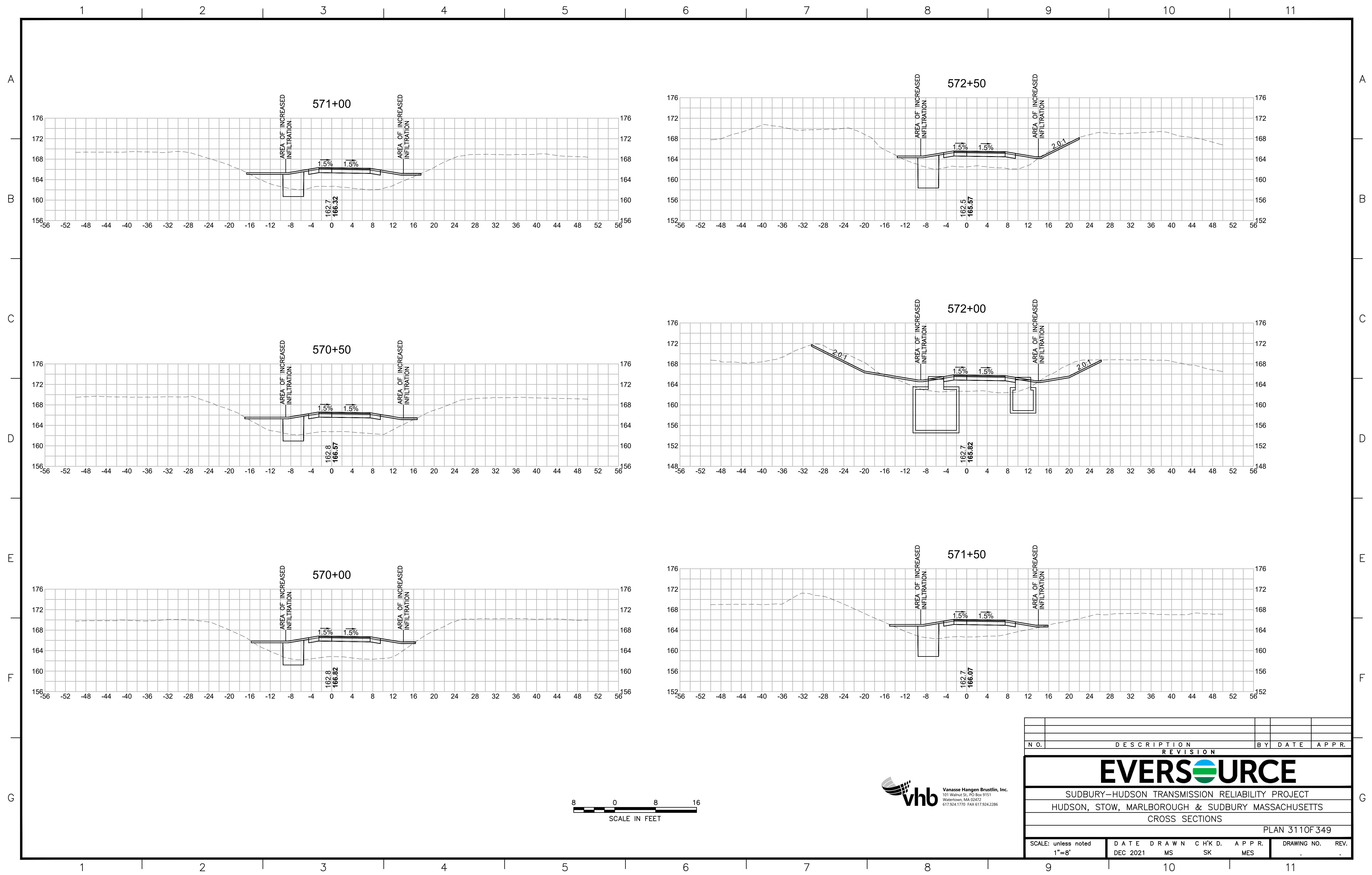
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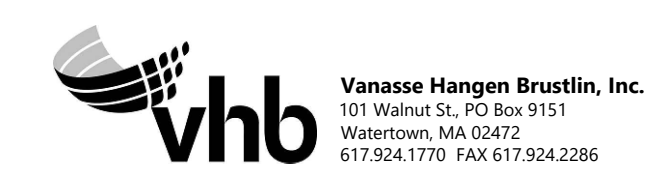
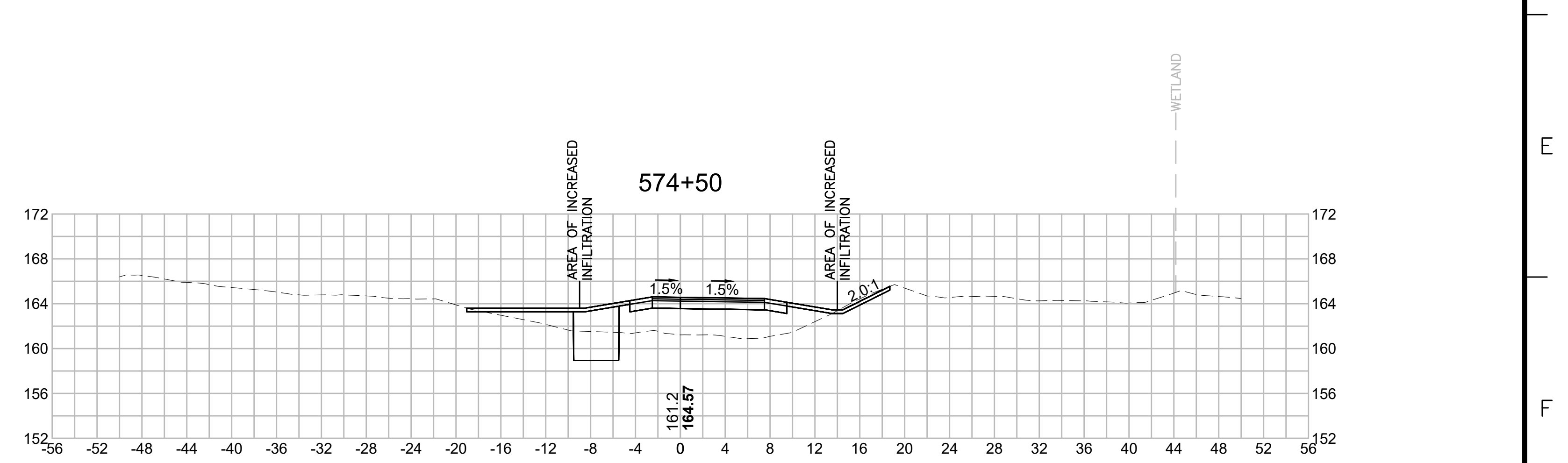
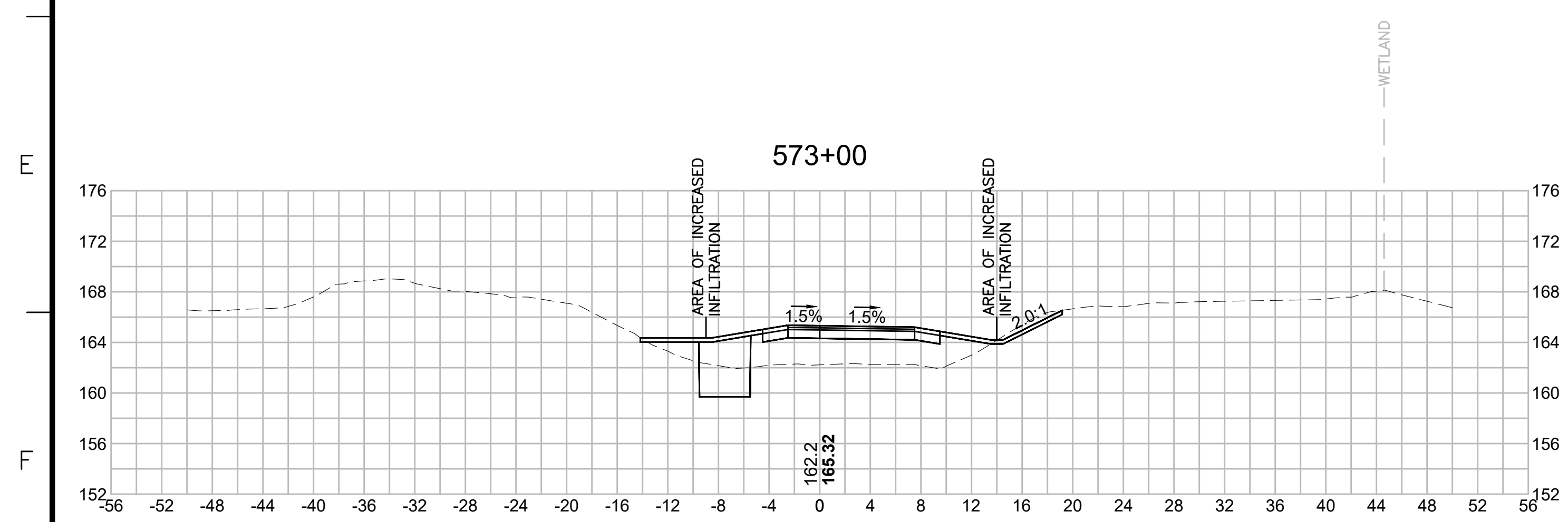
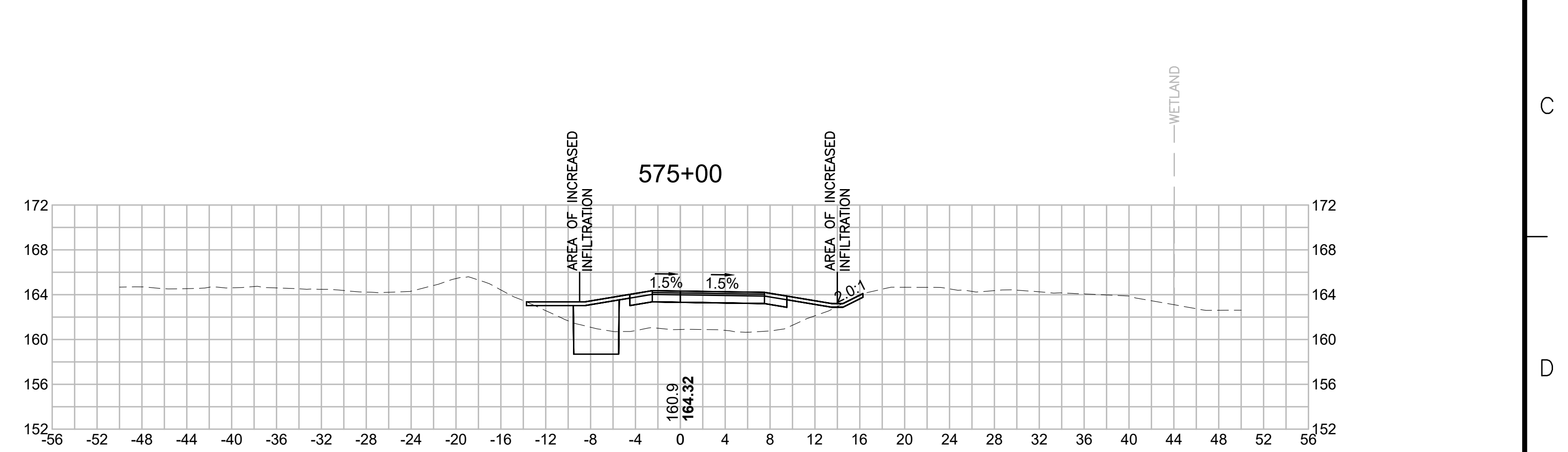
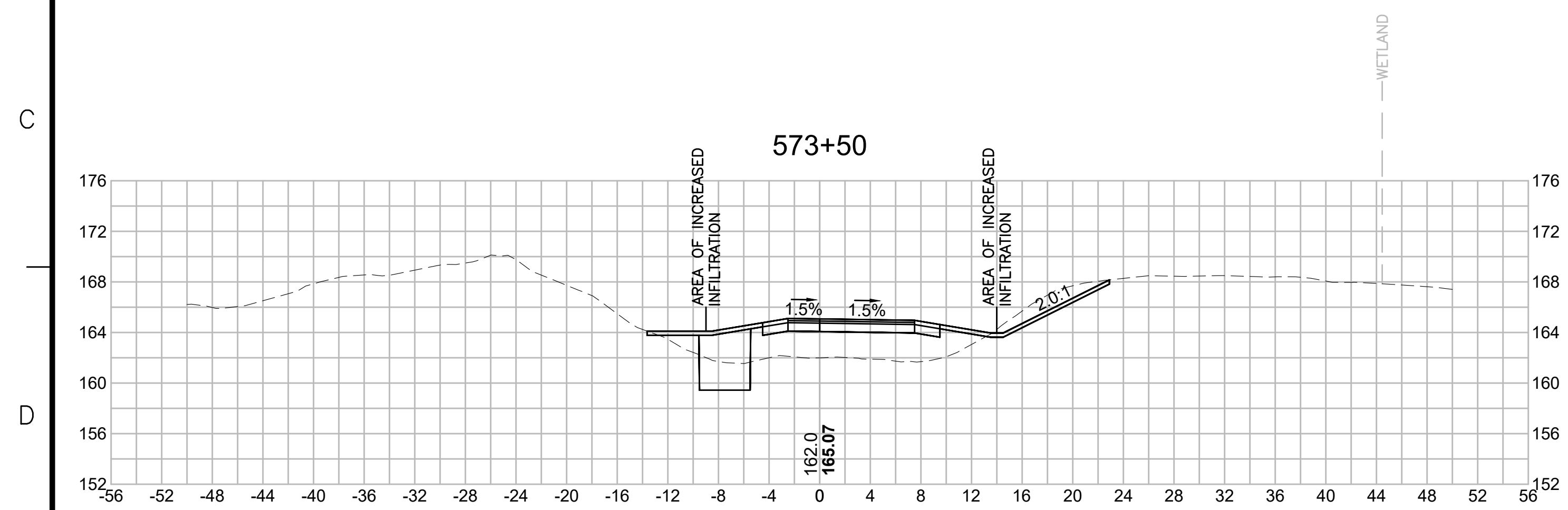
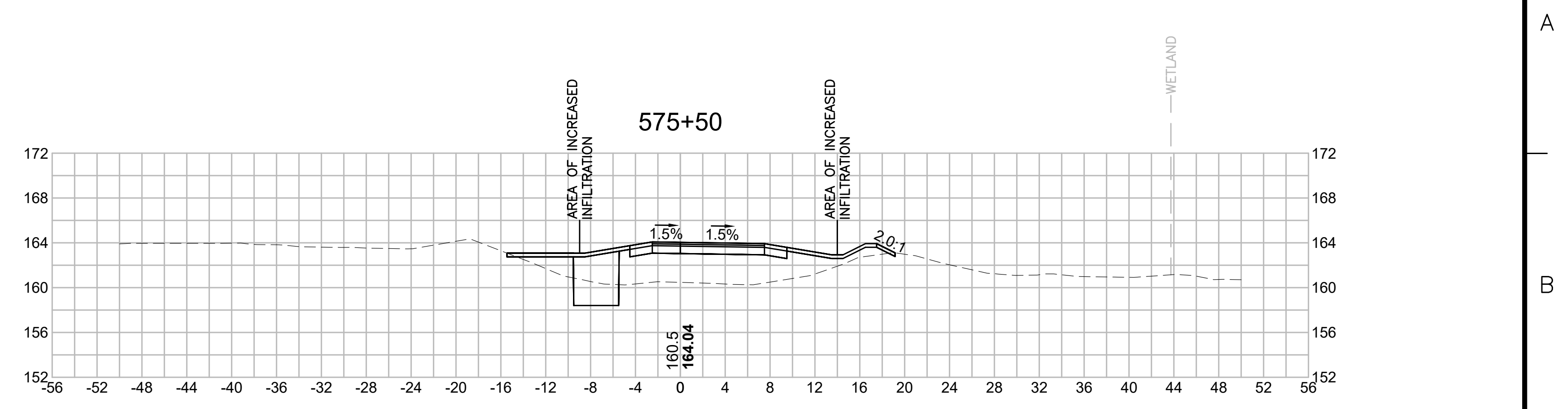
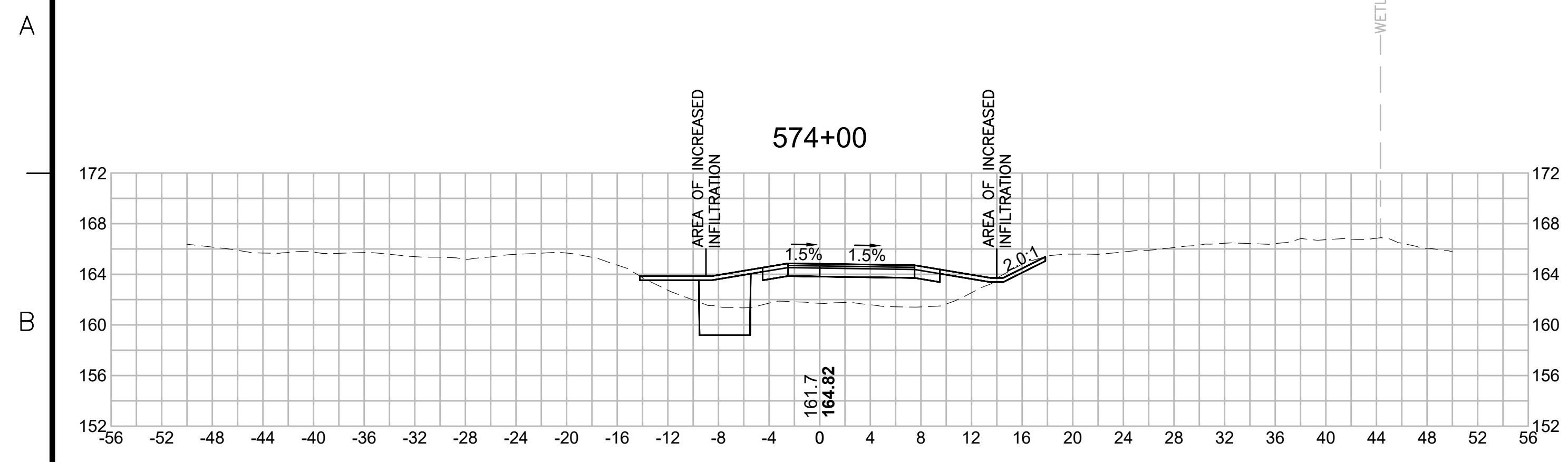
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	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 310 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

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NO.	DESCRIPTION		BY	DATE	APPR.
	REVISION				
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CROSS SECTIONS					
PLAN 3110F349					
SCALE: unless noted 1"=8'	DATE	DRAWN	CHK'D	APPR.	DRAWING NO. REV.
	DEC 2021	MS	SK	MES	. .

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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 312 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.		REV.		

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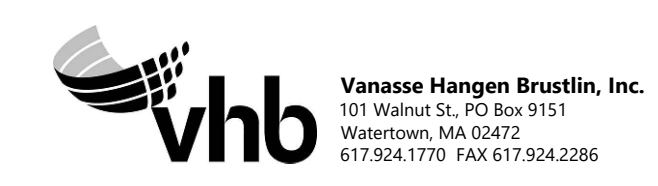
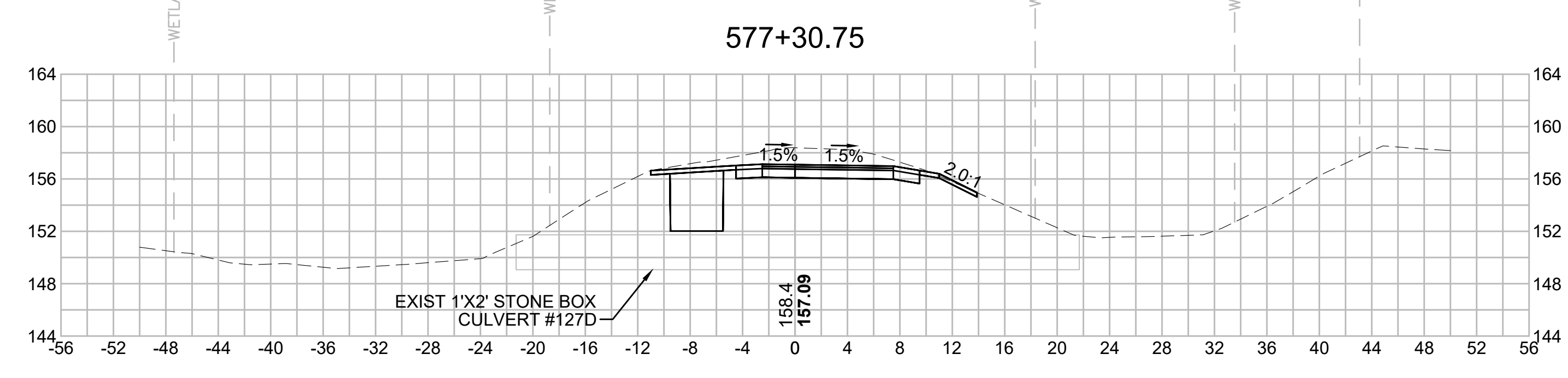
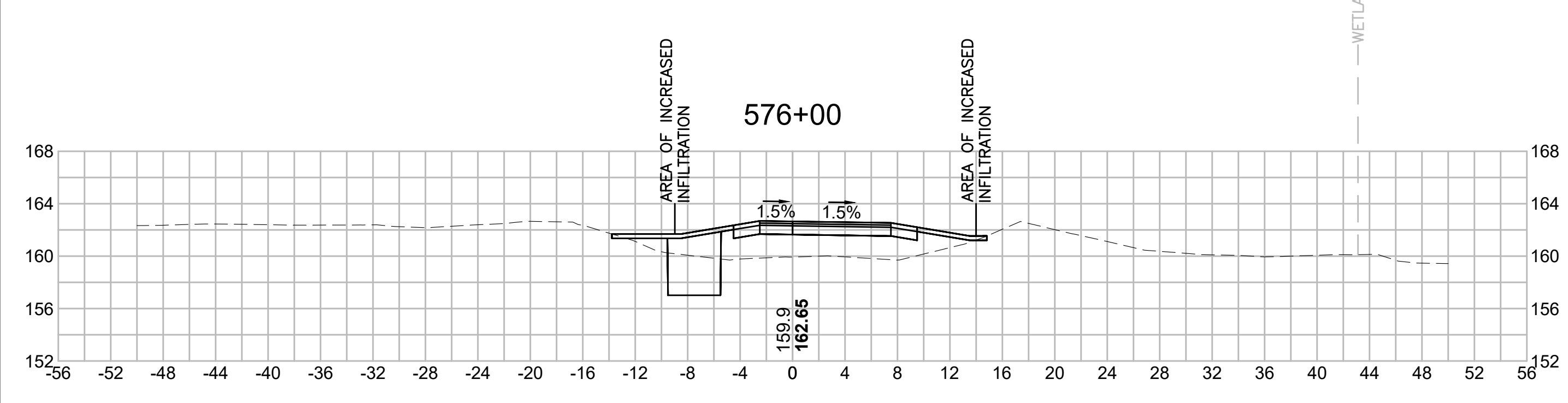
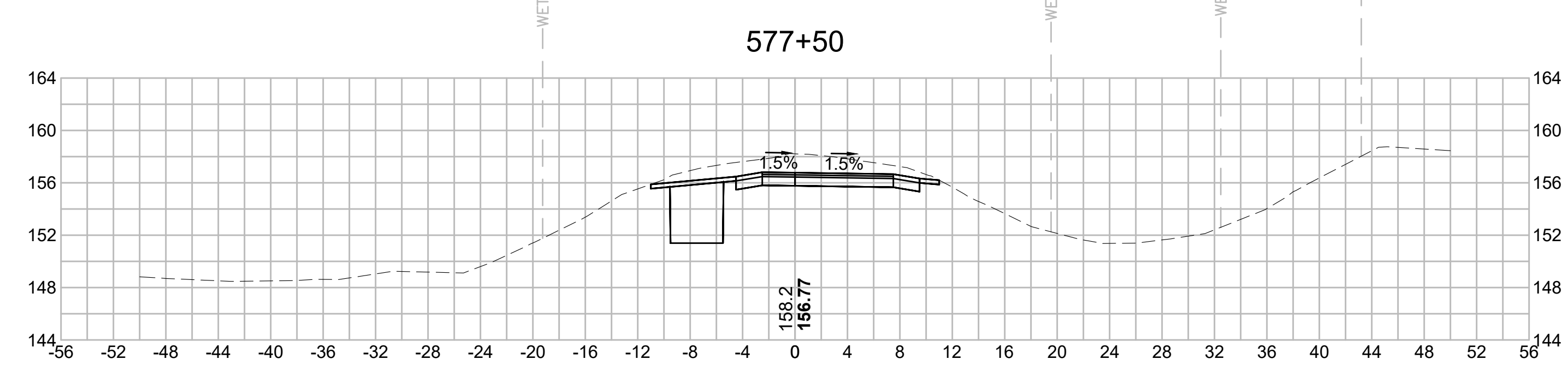
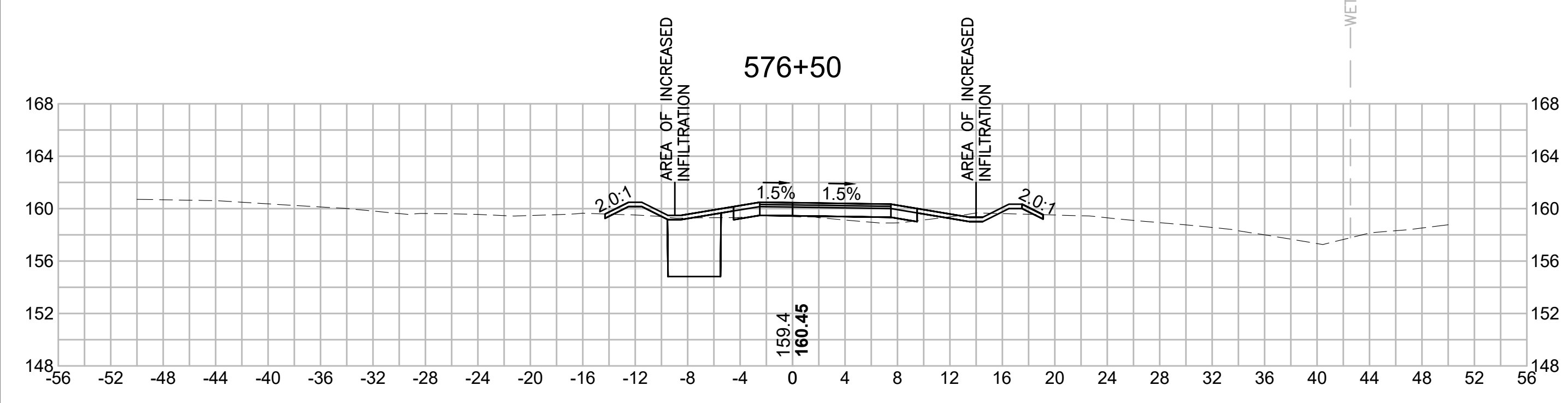
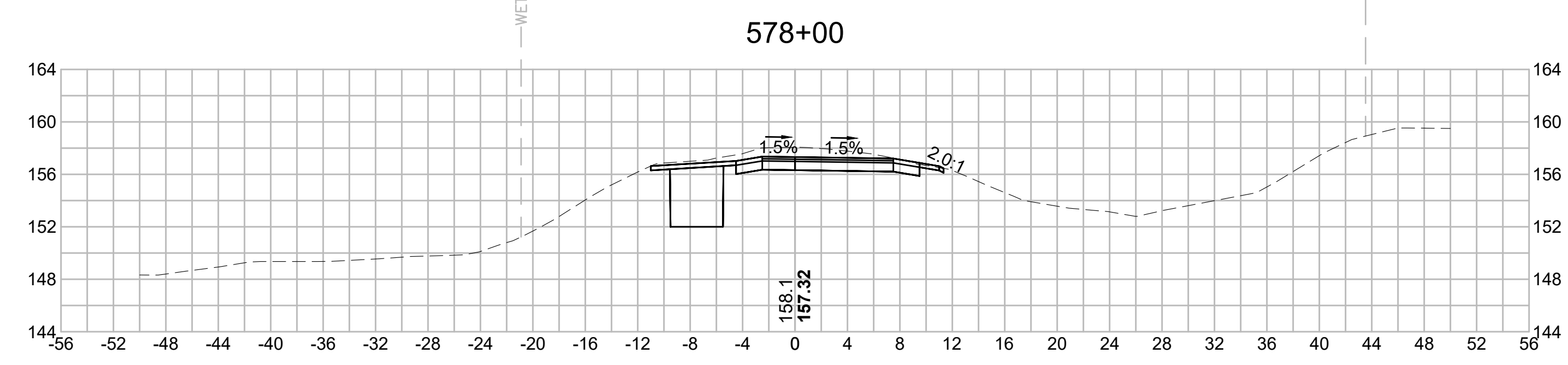
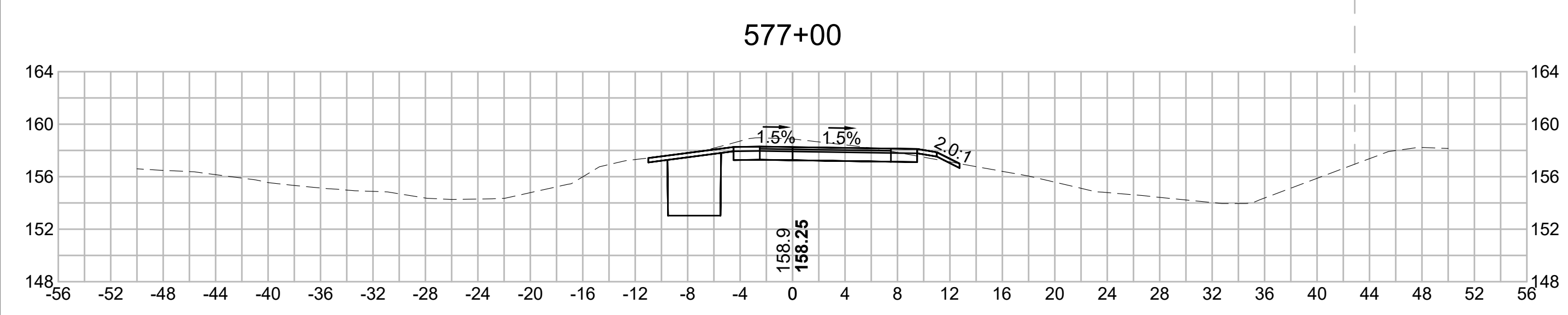
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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 CROSS SECTIONS

PLAN 313 OF 349

SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES	DRAWING NO.	REV.
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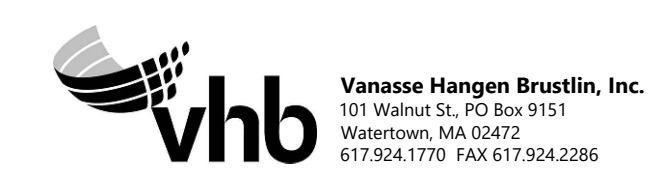
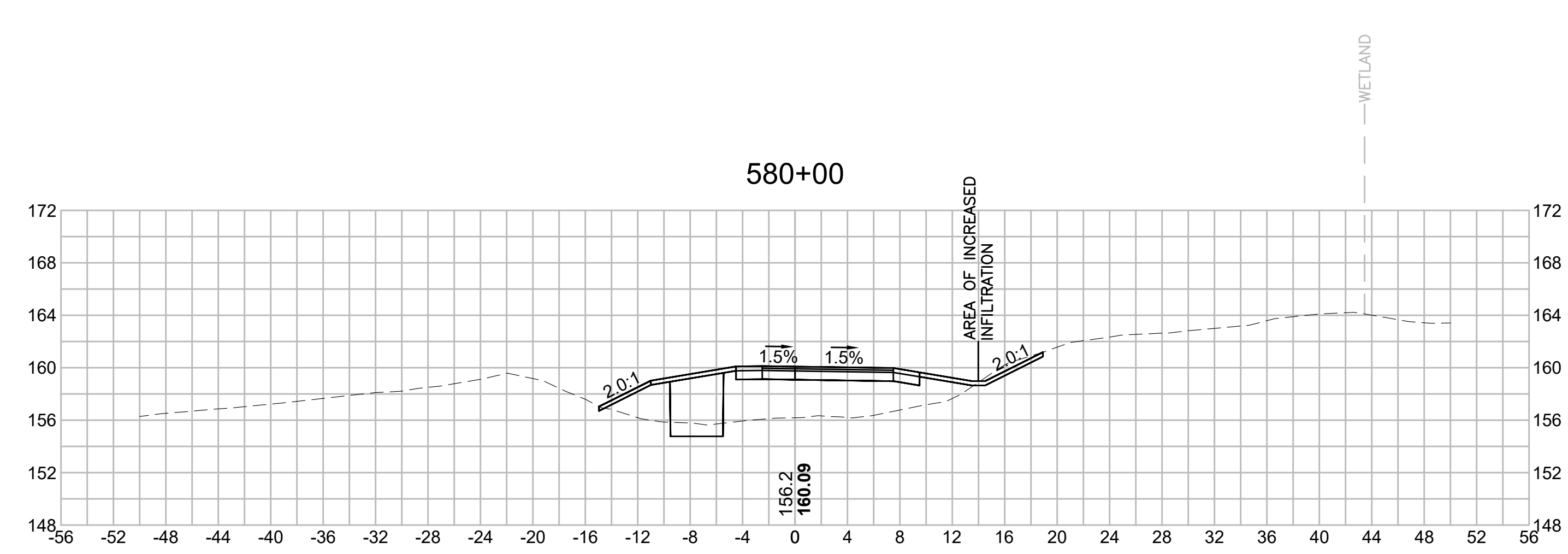
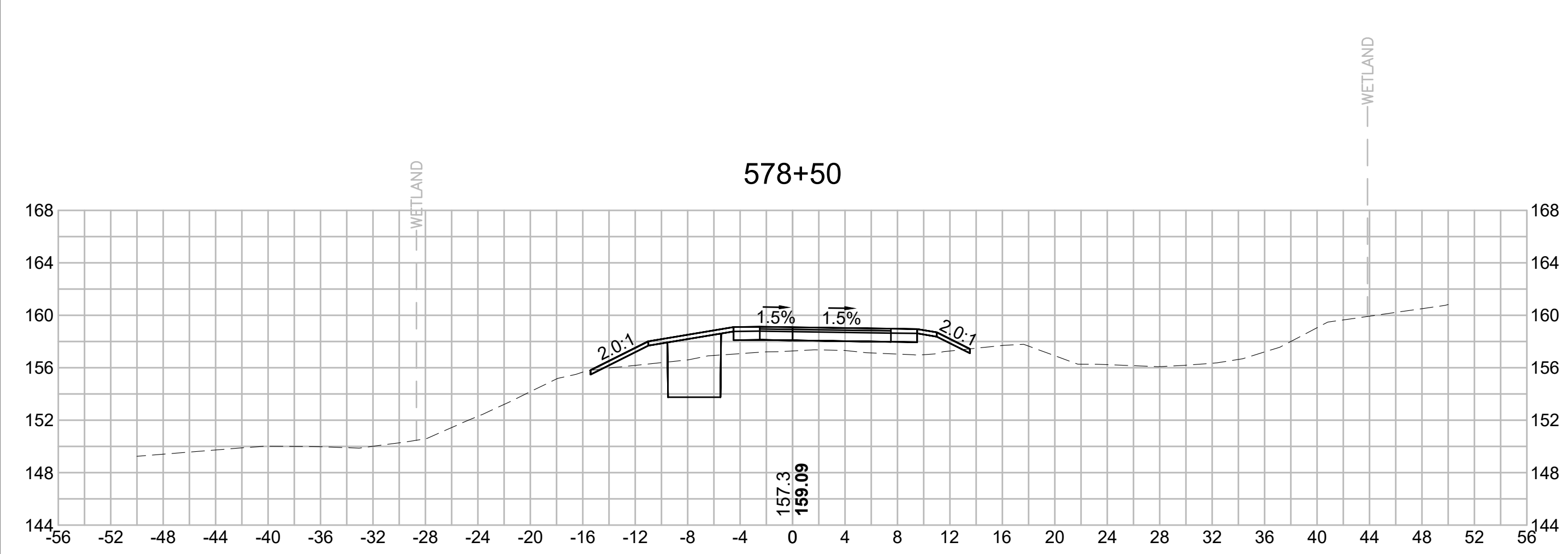
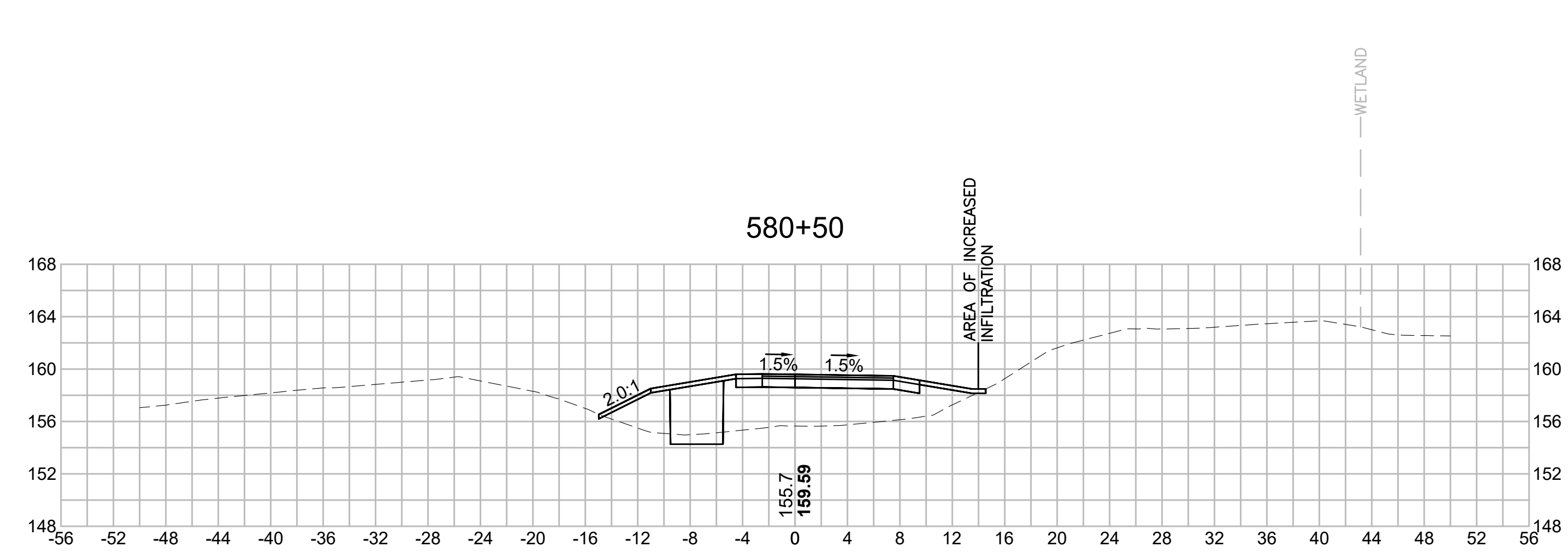
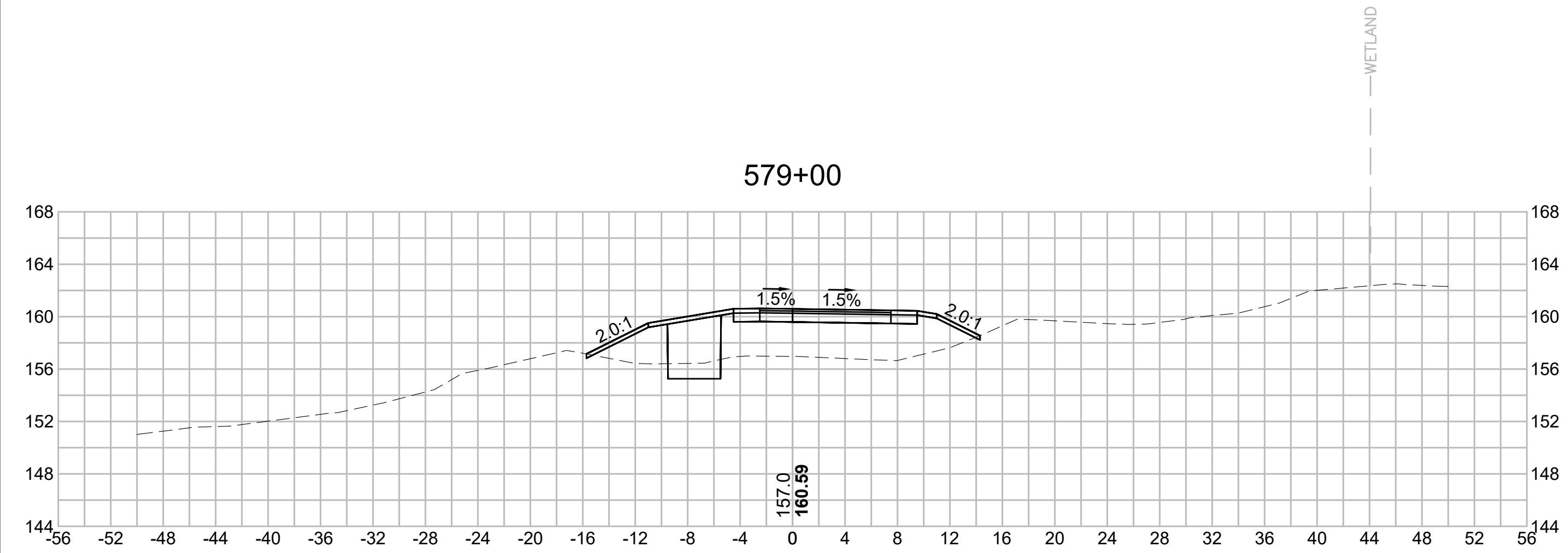
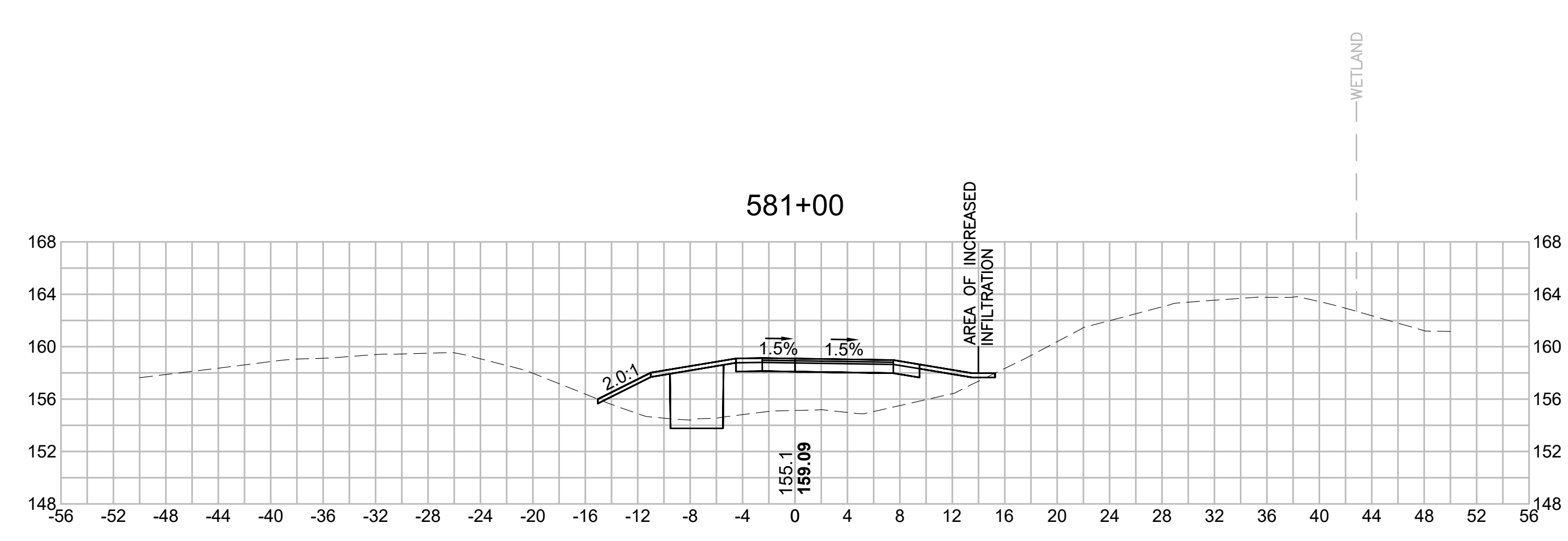
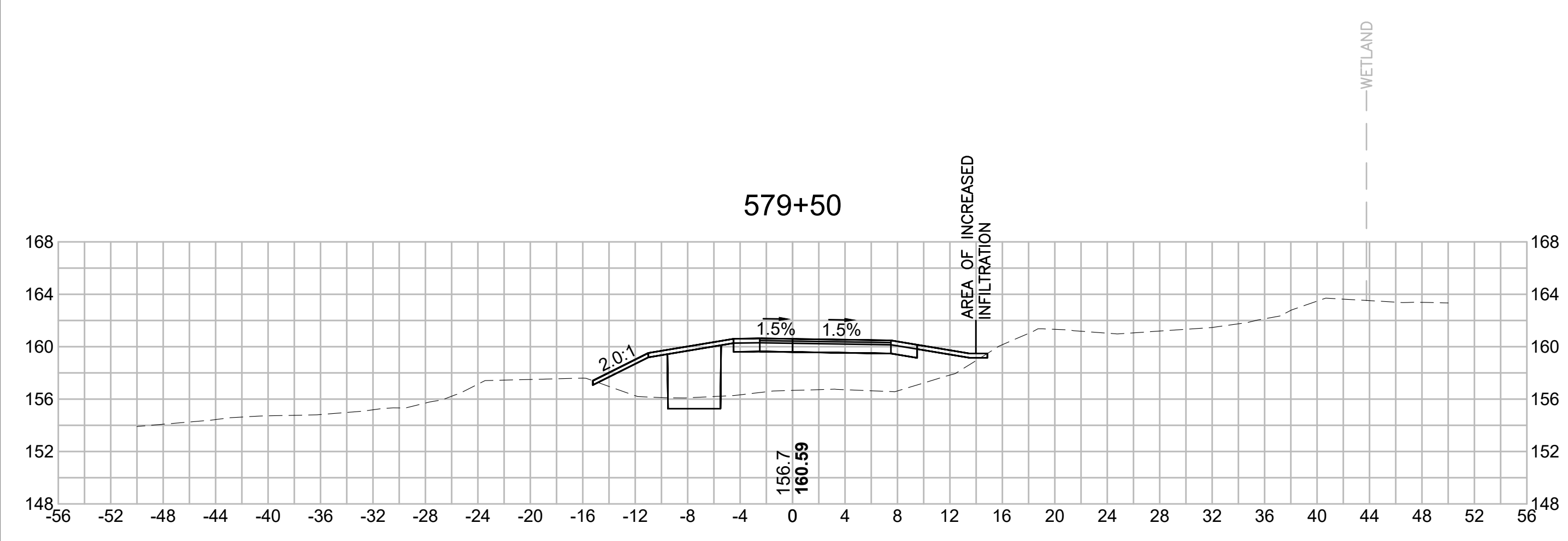
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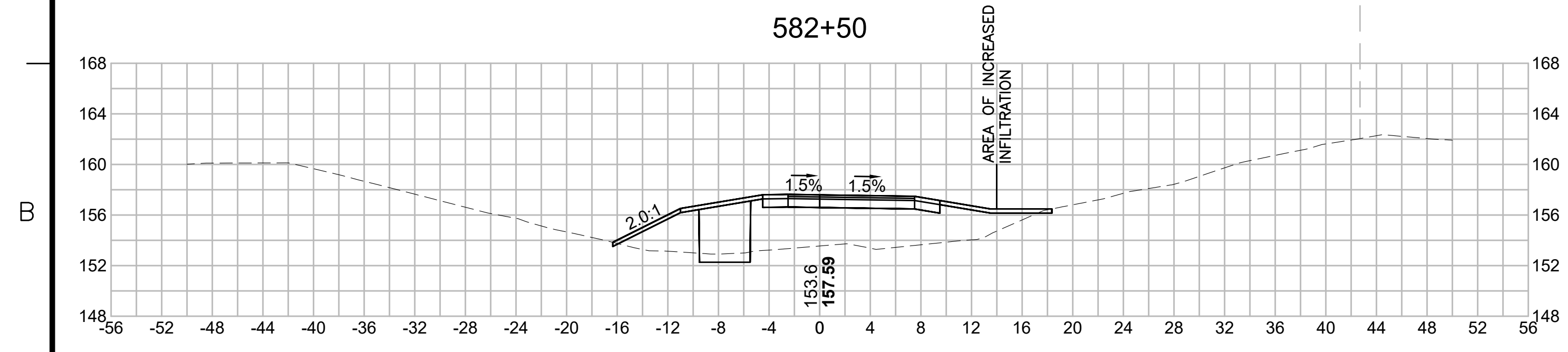


N.O.	DESCRIPTION	BY	DATE	APPR.
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EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 314 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
	DRAWING NO.	REV.		

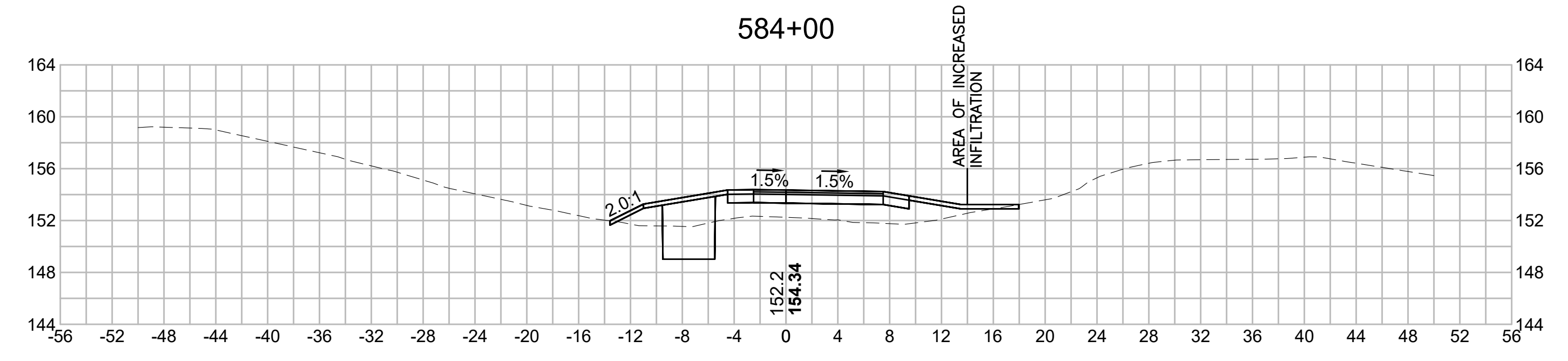
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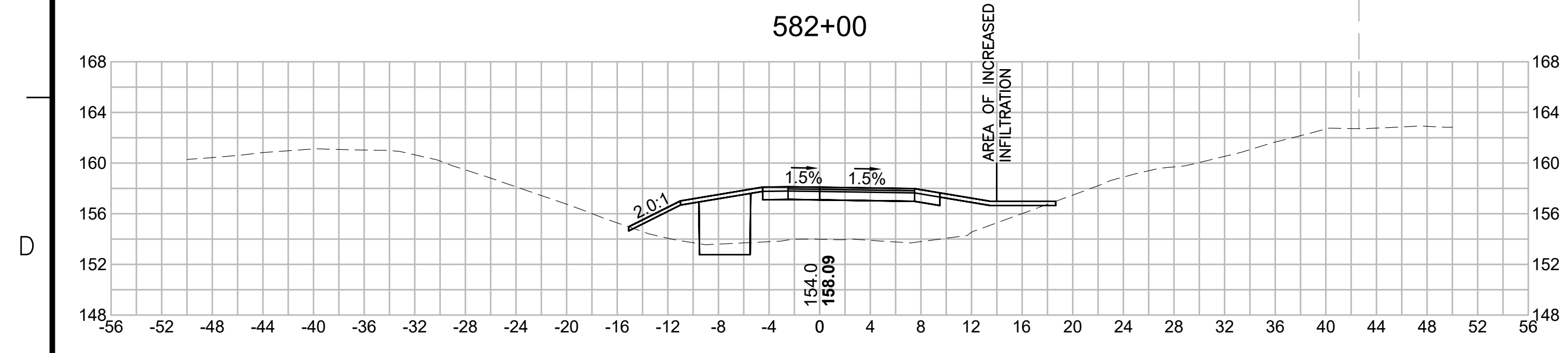
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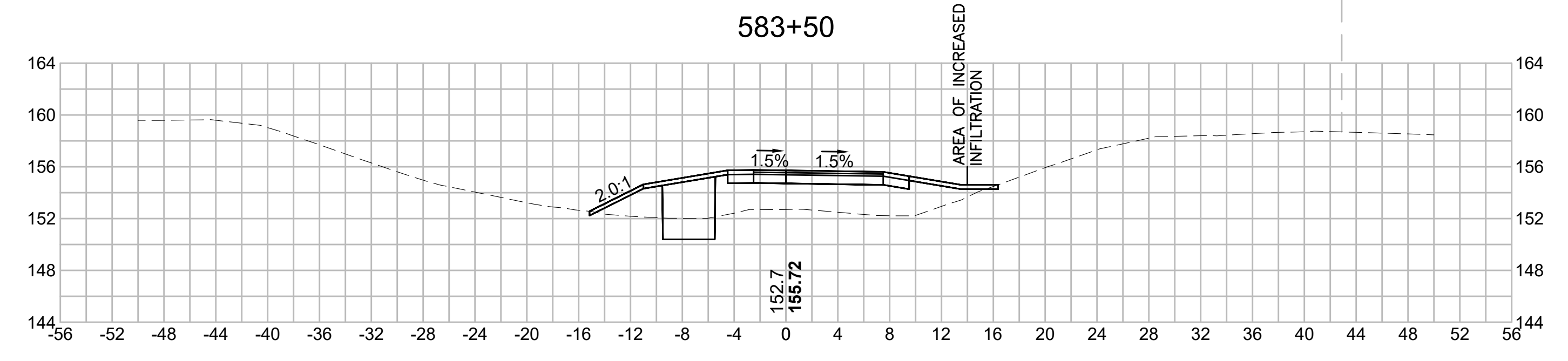
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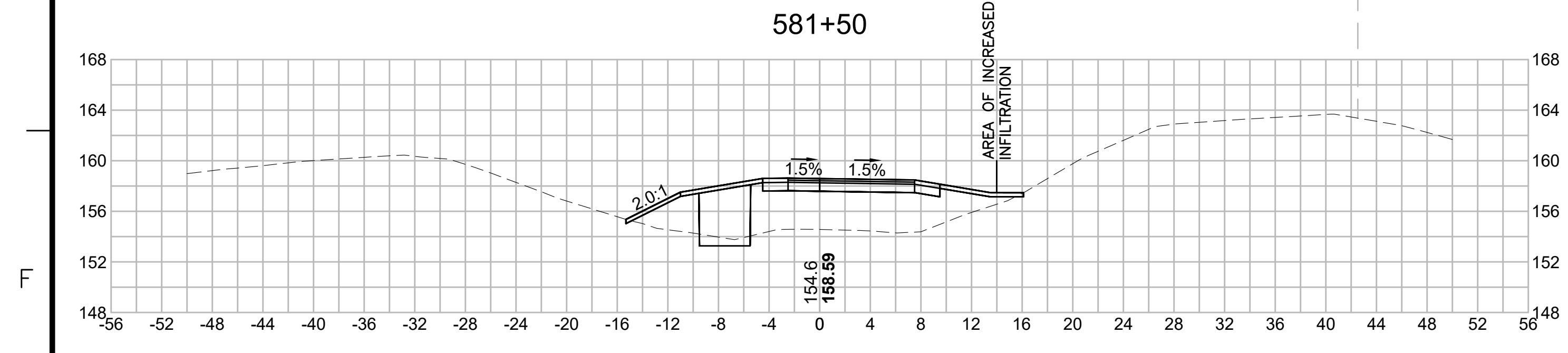
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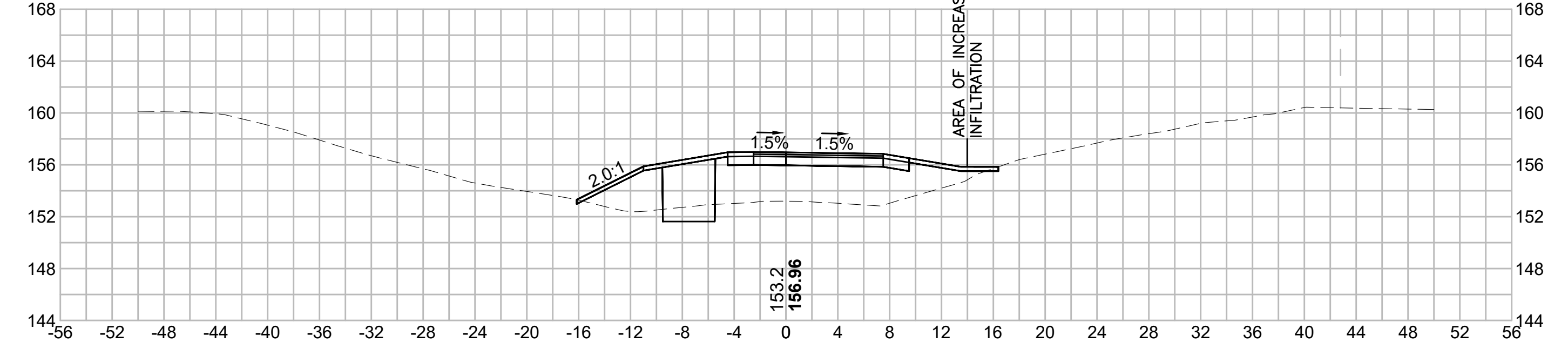
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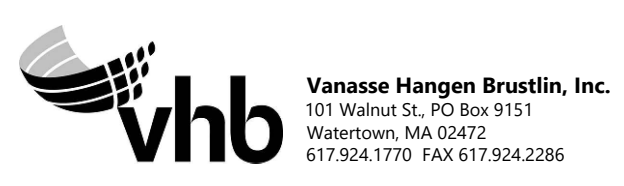
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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 315 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
	DRAWING NO.	REV.		

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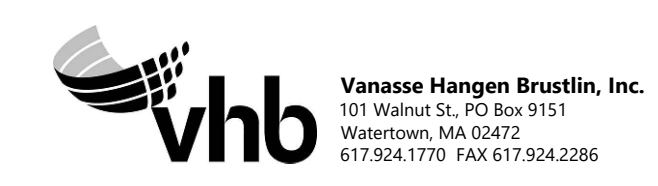
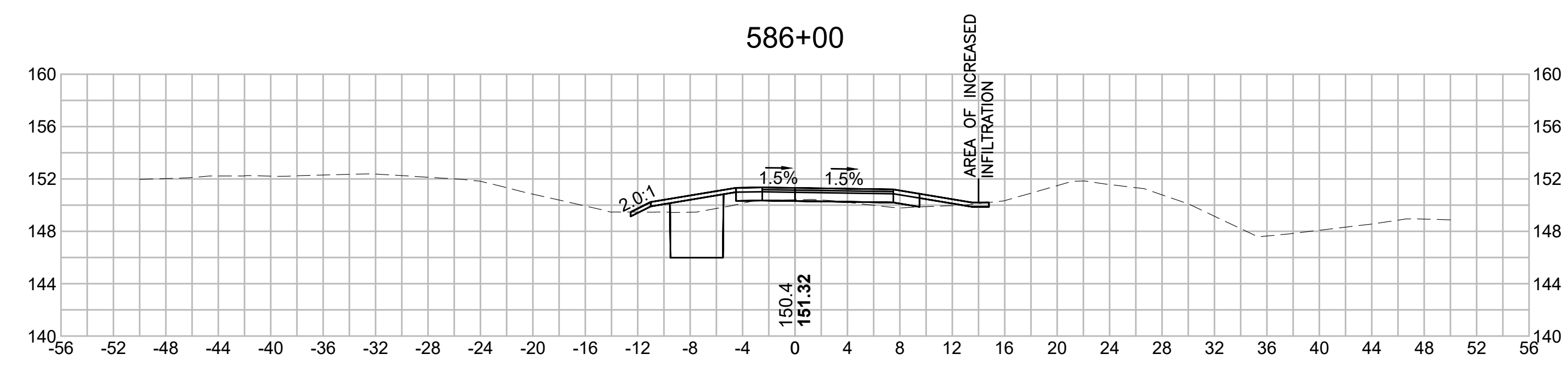
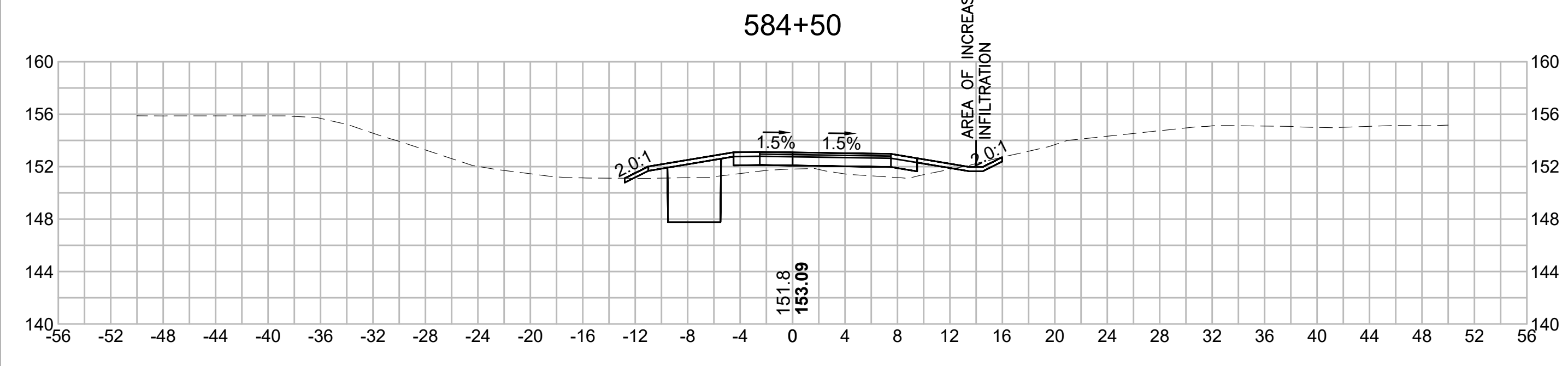
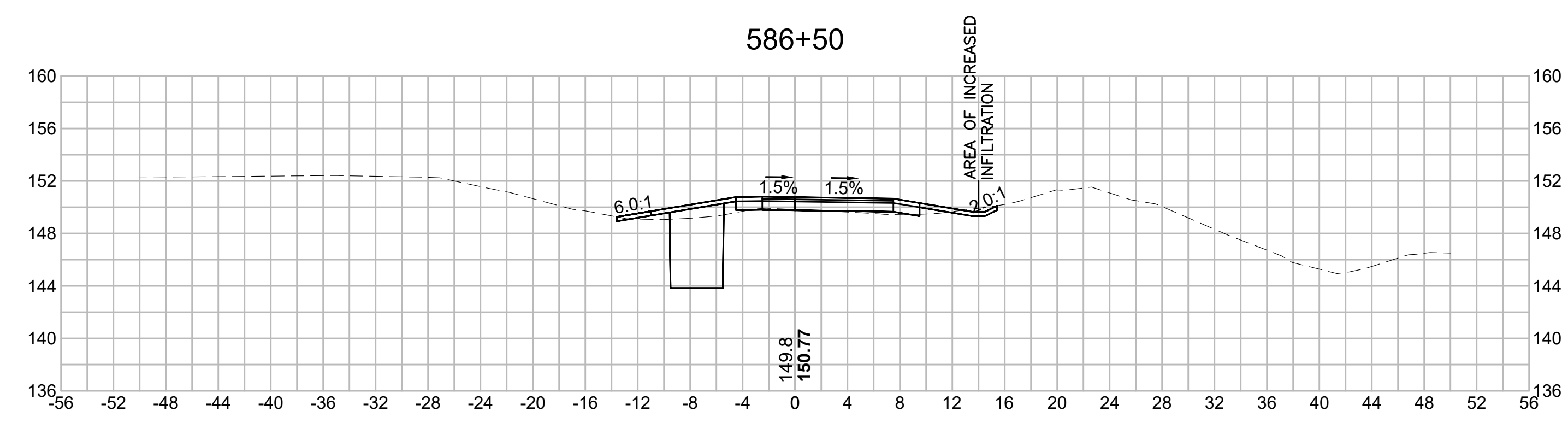
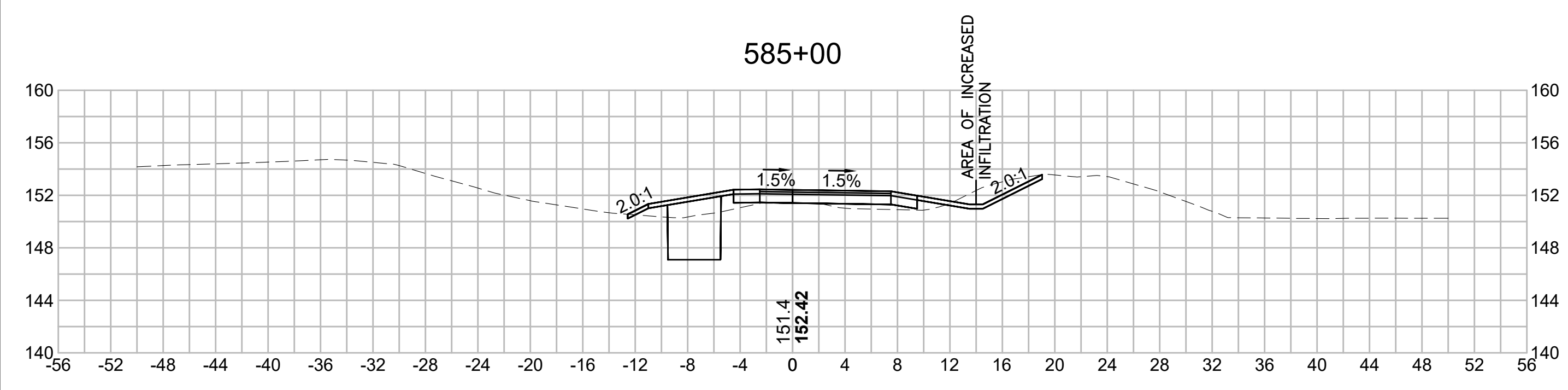
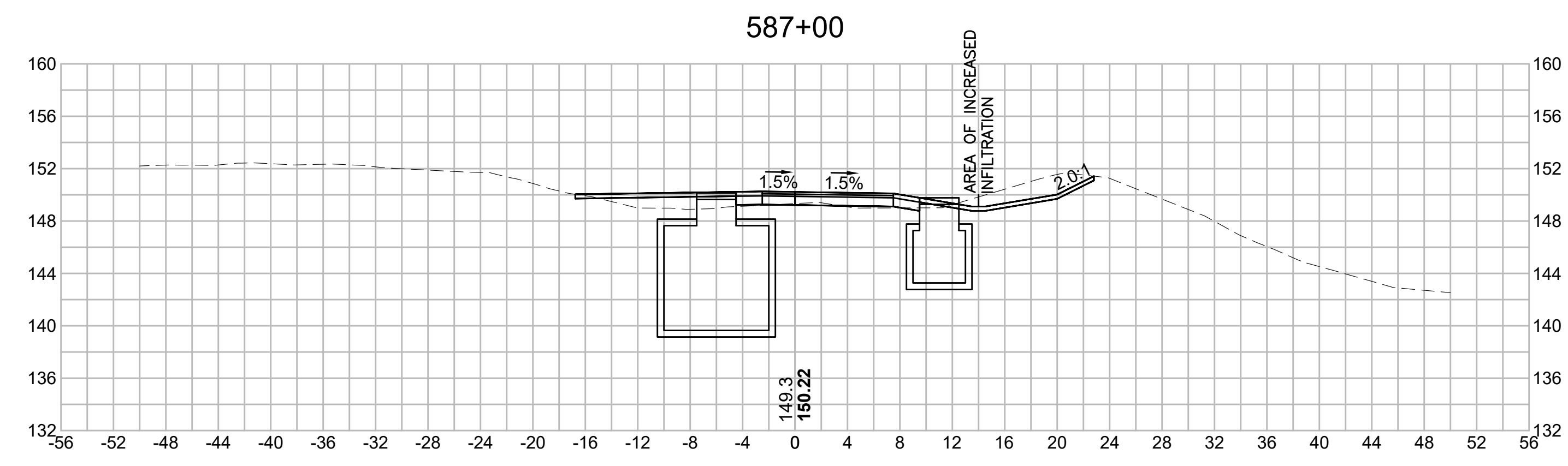
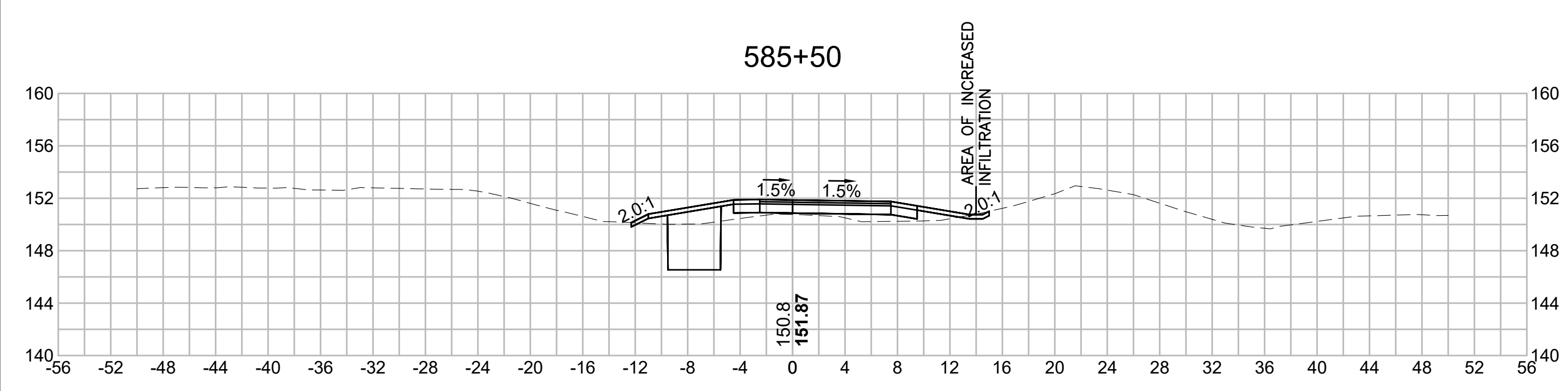
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NO.		DESCRIPTION		BY	DATE	APPR.
		REVISION				
EVERSOURCE						
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT						
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS						
CROSS SECTIONS						
PLAN 316 OF 349						
SCALE: unless noted 1"=8'		DATE	DRAWN	C'H'K'D.	APP'R.	DRAWING NO. REV.
		DEC 2021	MS	SK	MES	

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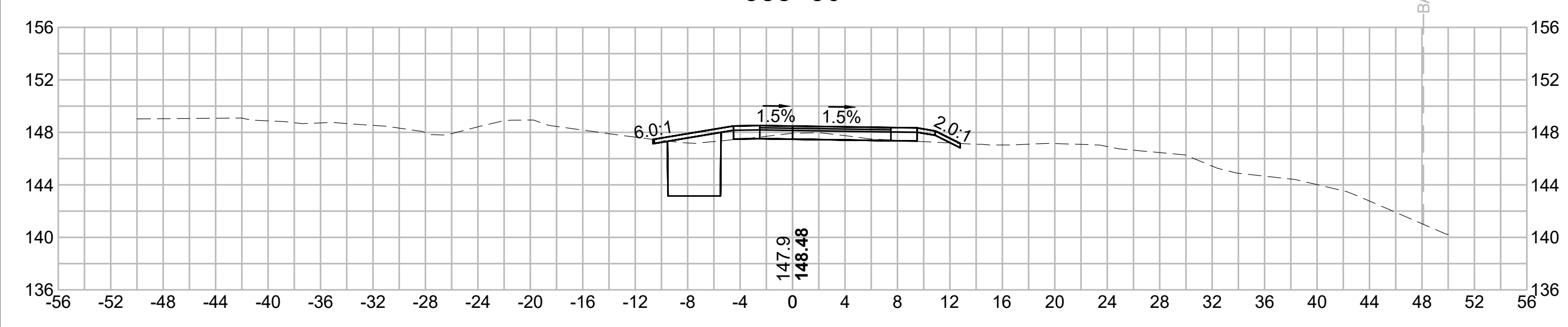
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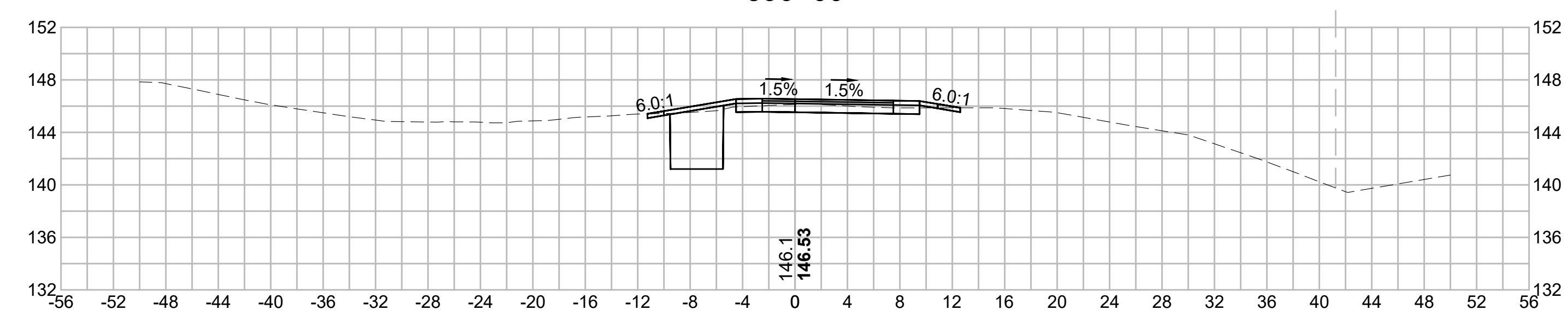
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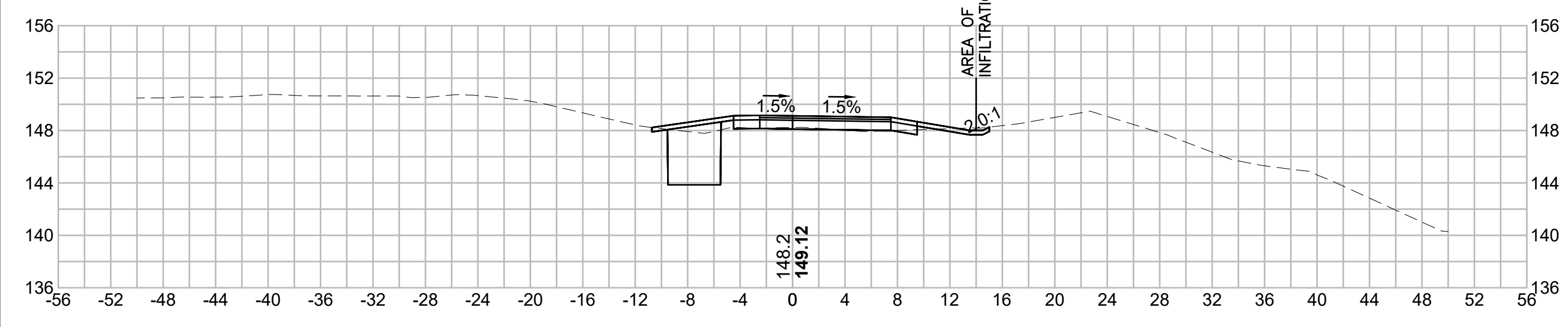
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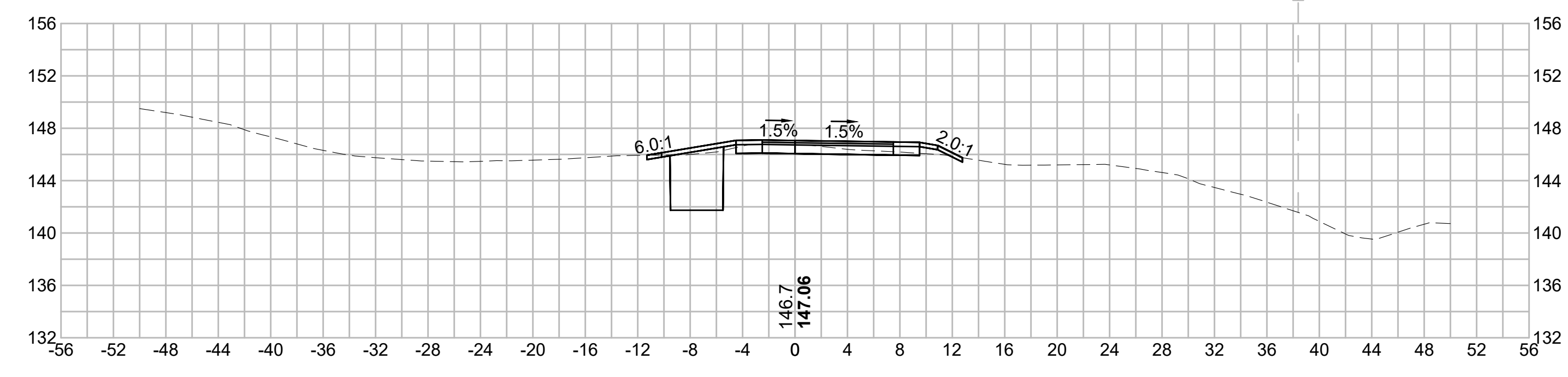
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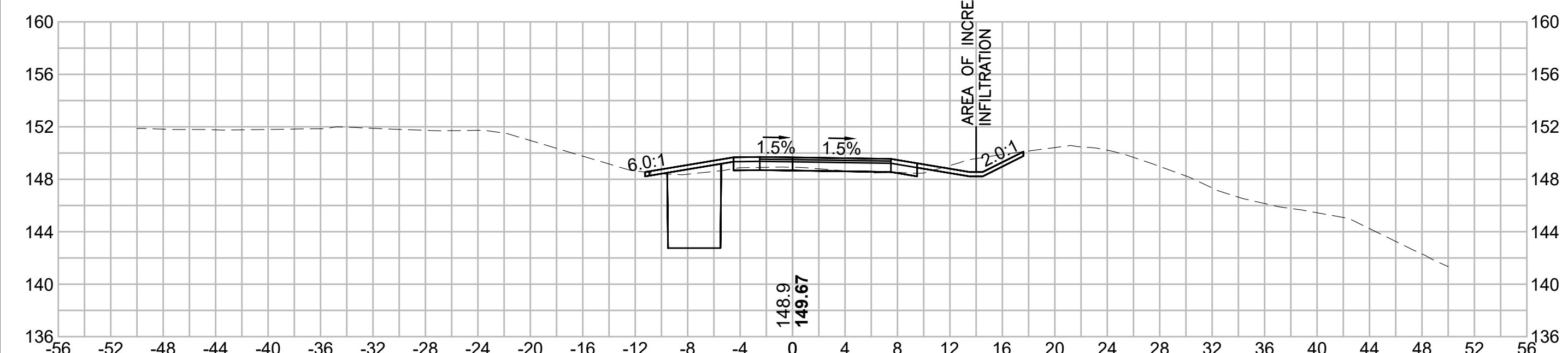
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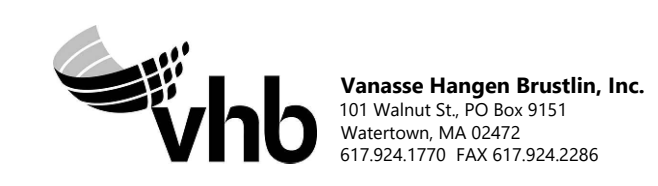
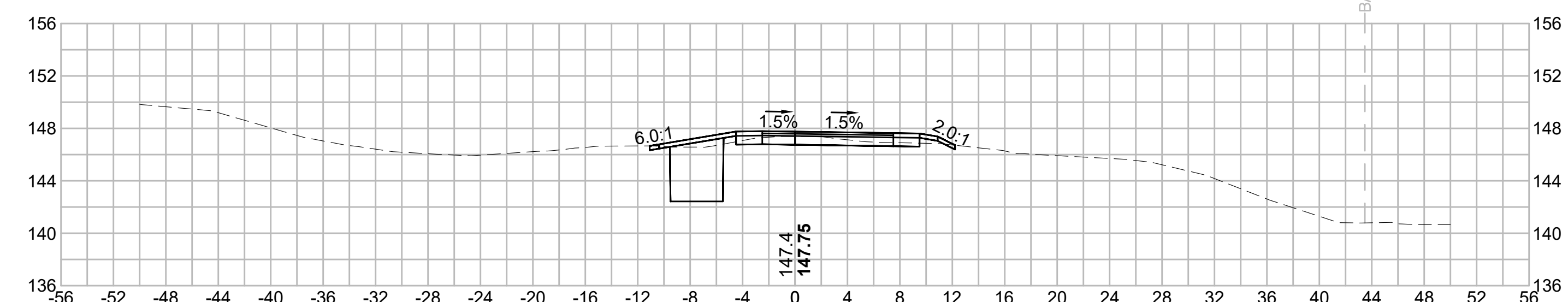
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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
CROSS SECTIONS

PLAN 317 OF 349

SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES	DRAWING NO.	REV.
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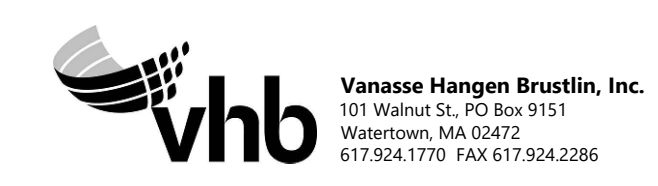
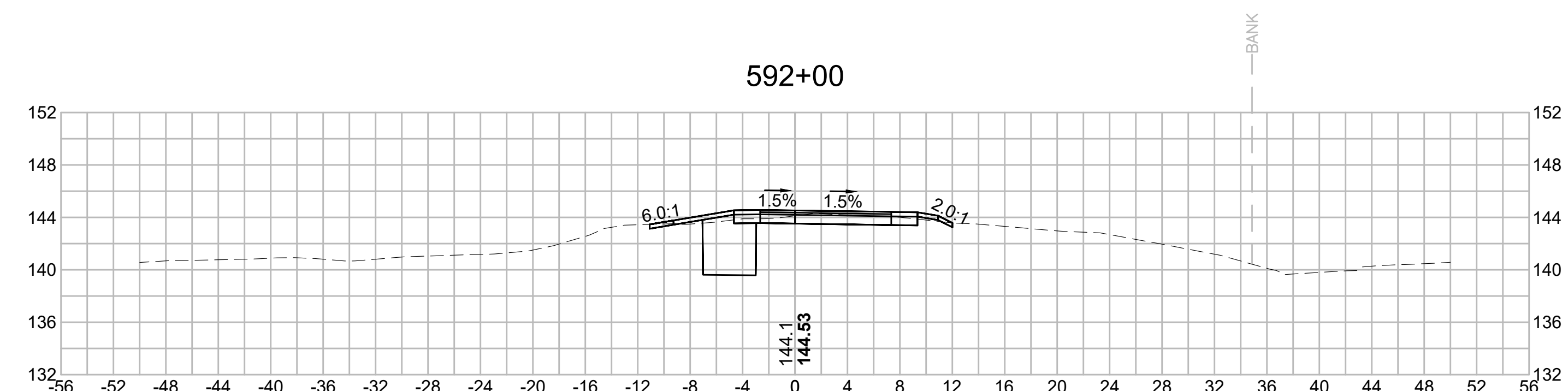
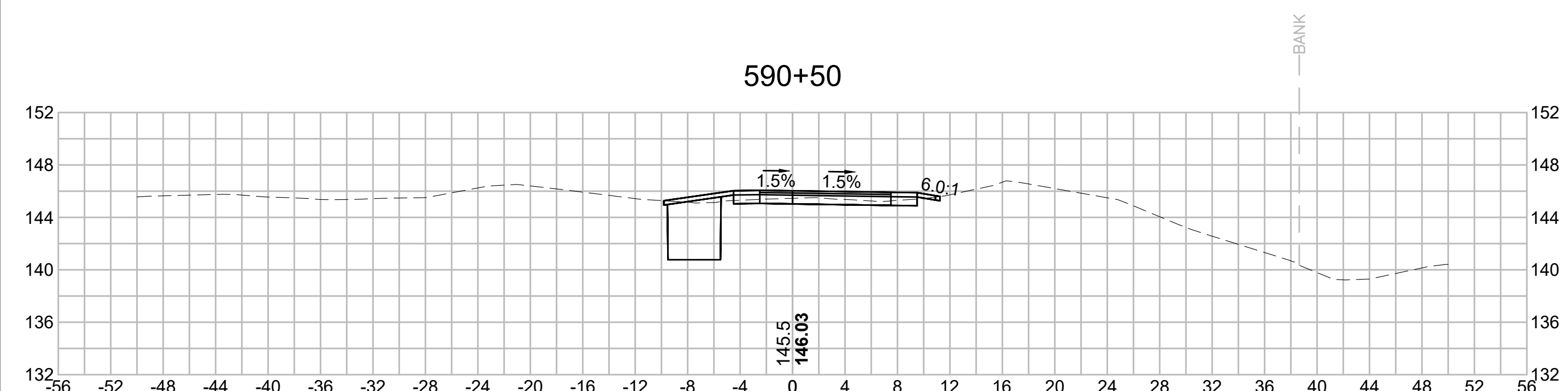
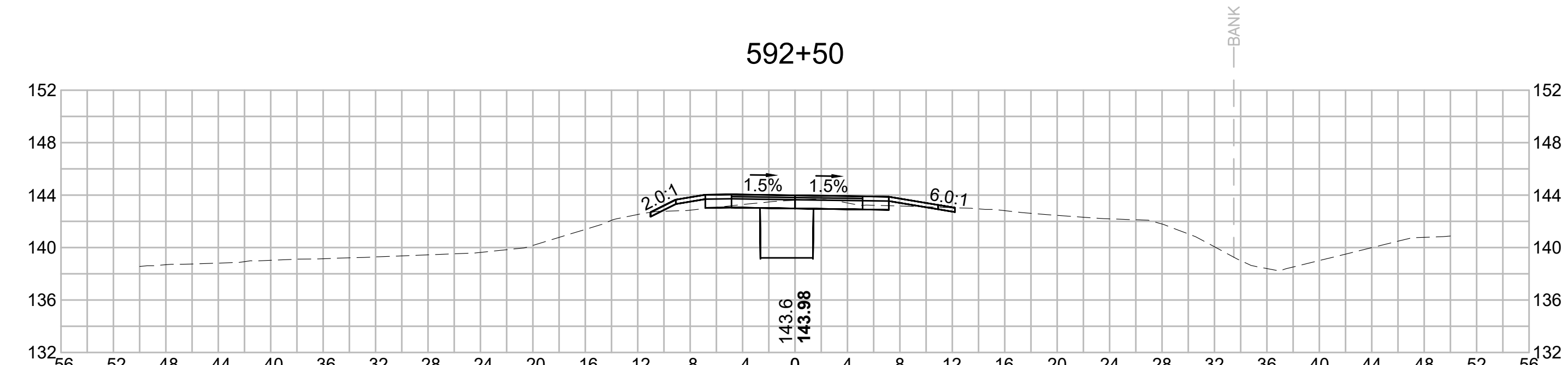
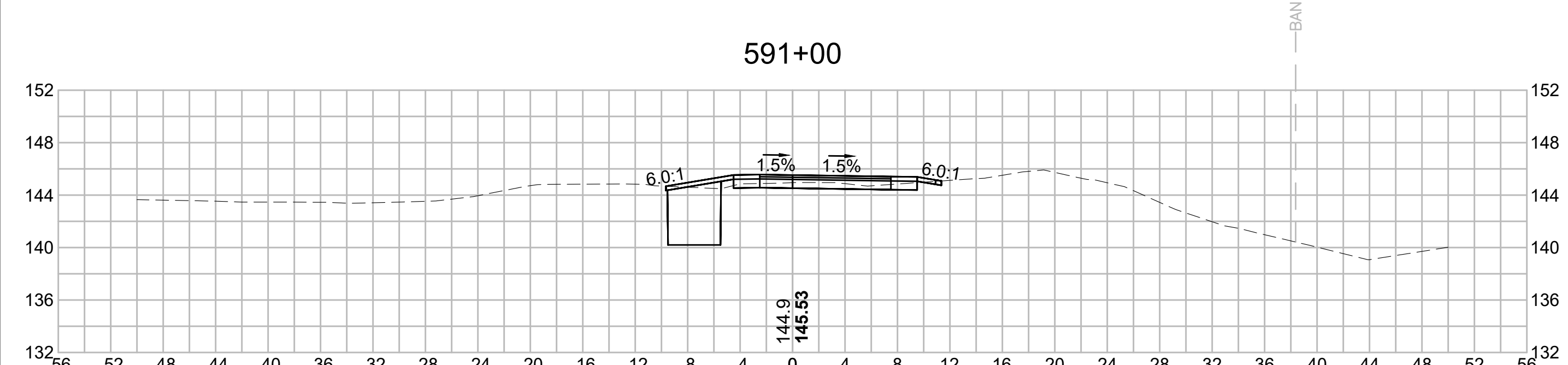
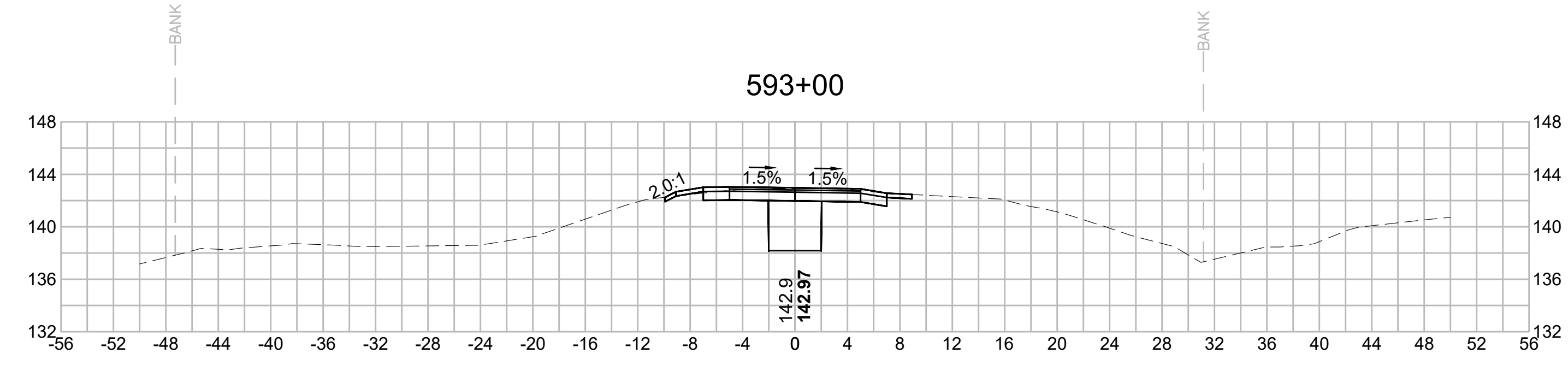
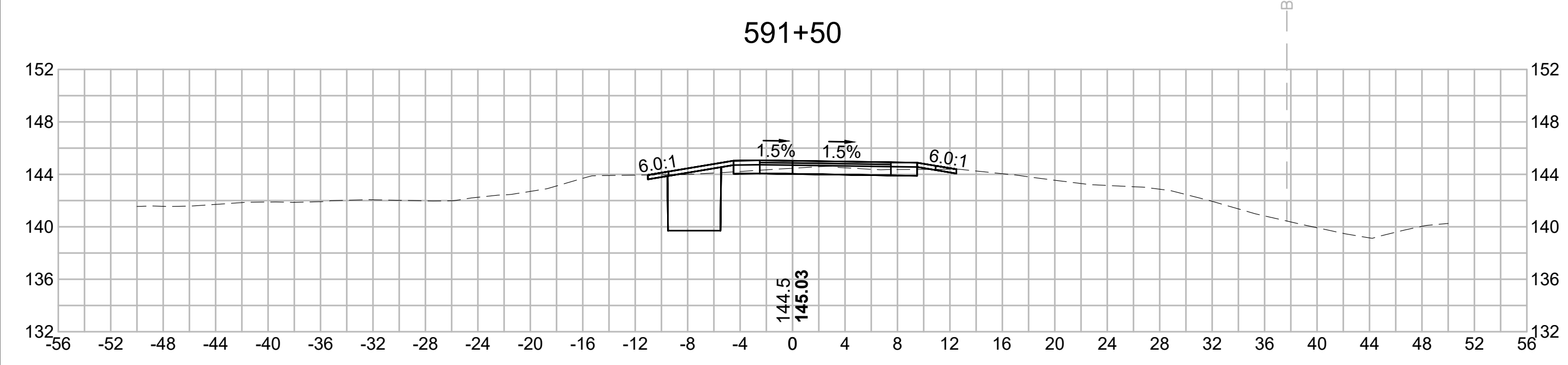
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N O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 318 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	C H'K D. SK	A P P R. MES
DRAWING NO.	REV.			

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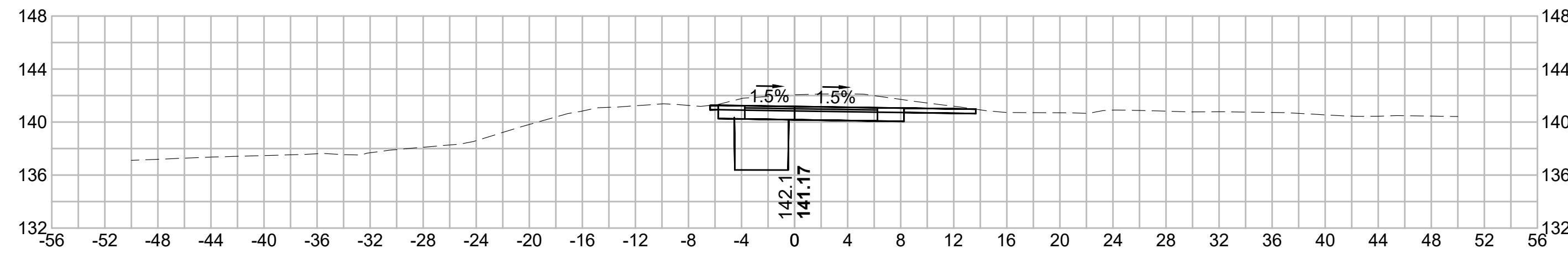
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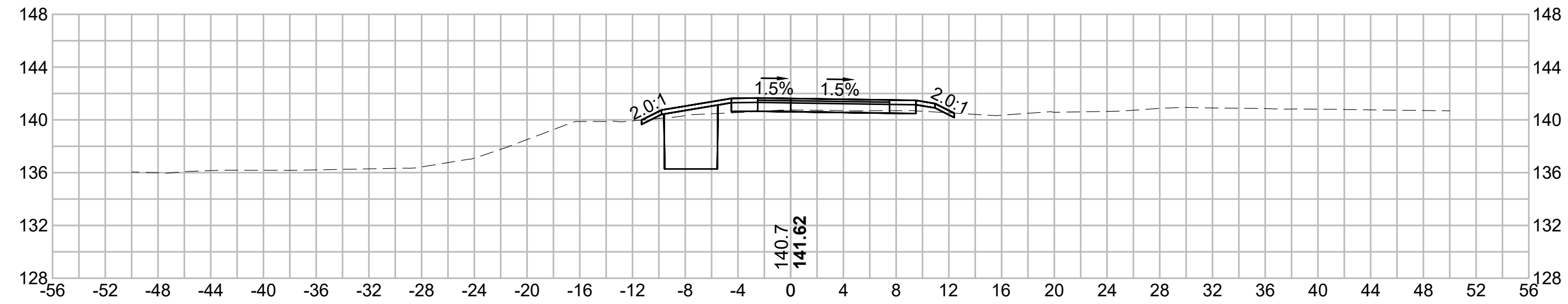
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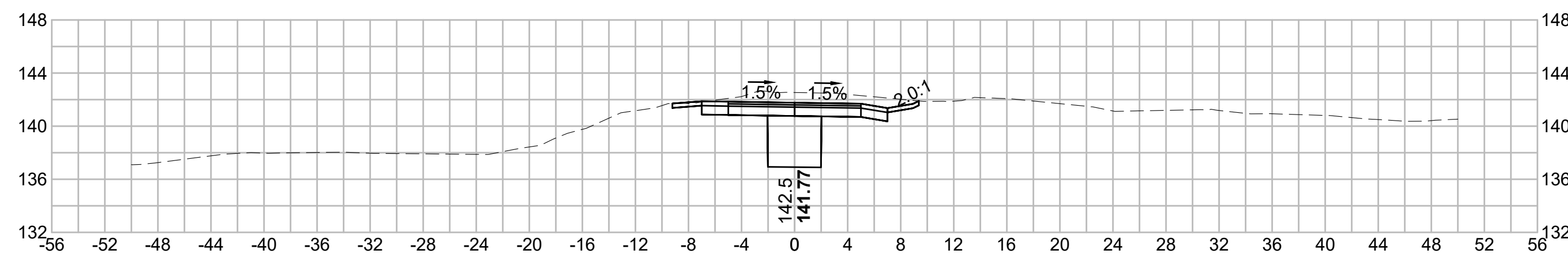
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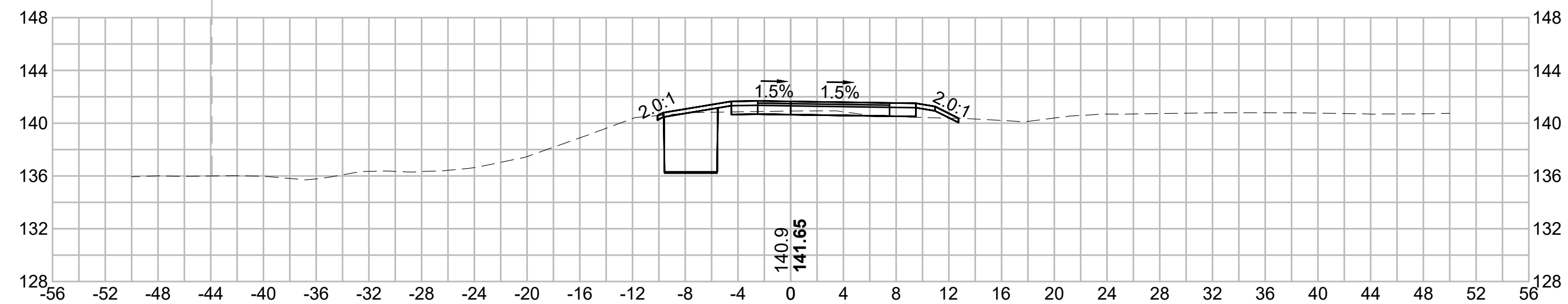
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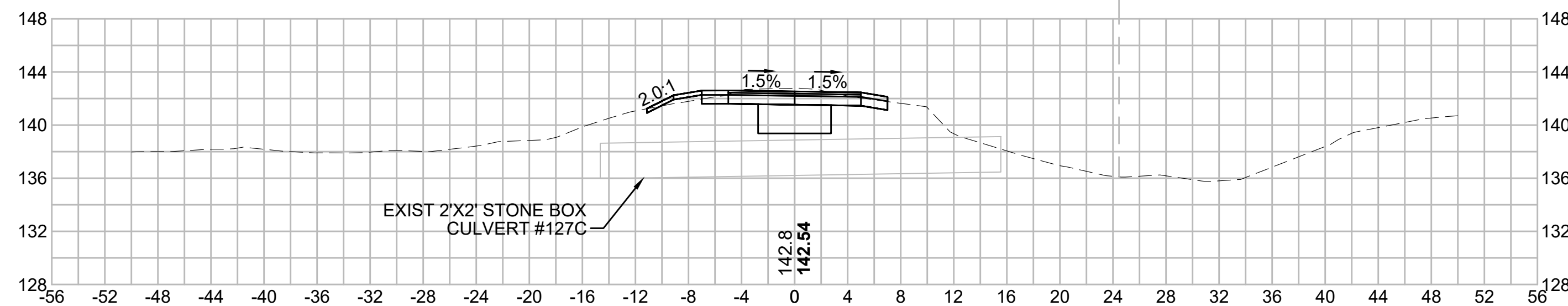
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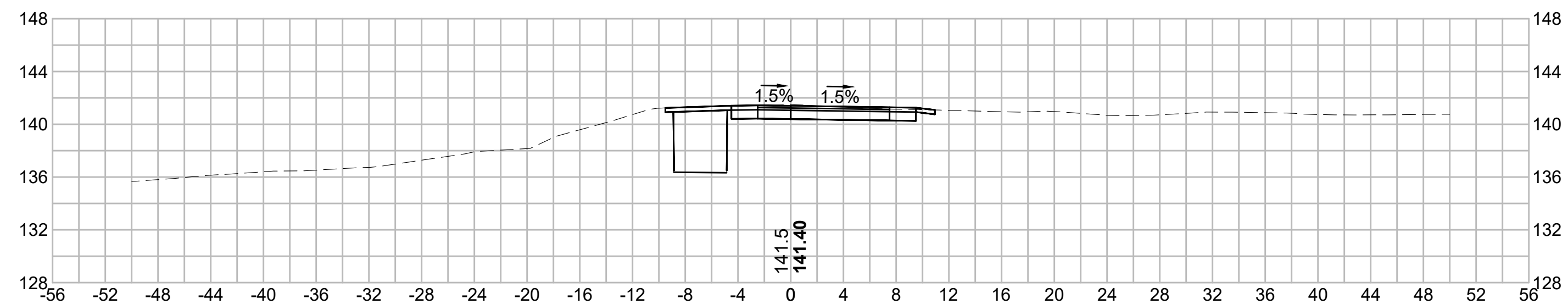
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N.O.	DESCRIPTION	BY	DATE	APPR.
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EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 319 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

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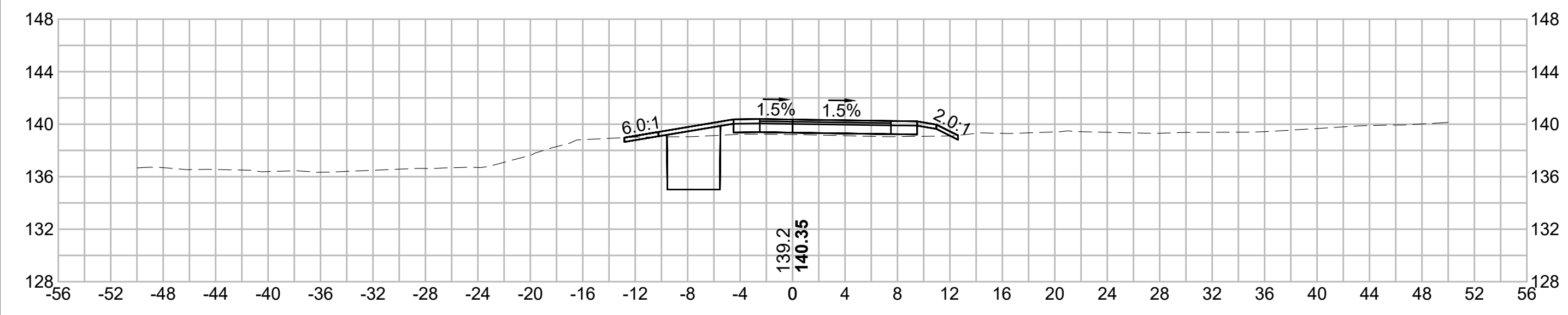
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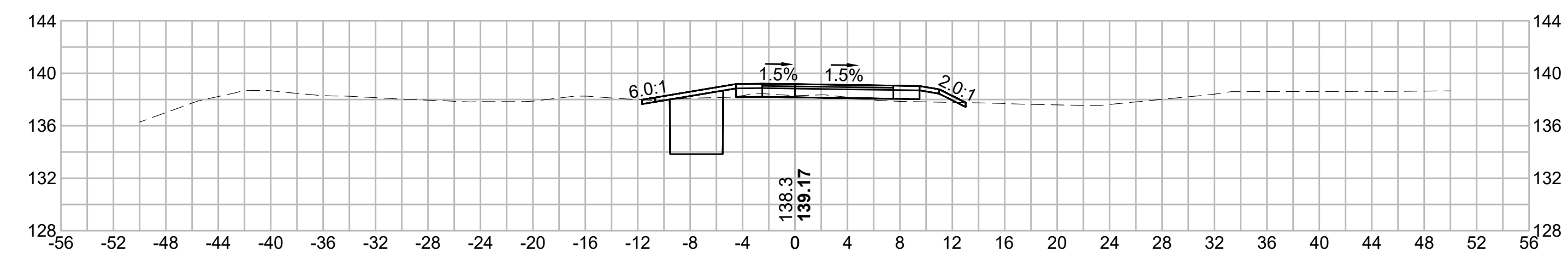
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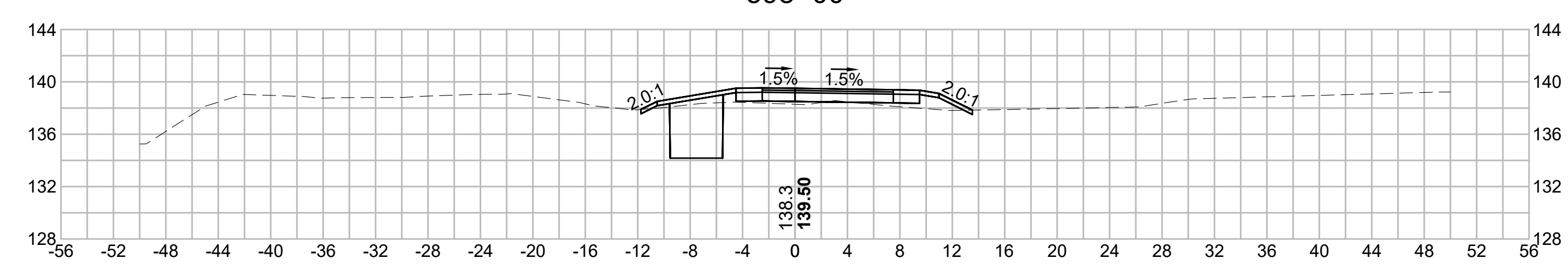
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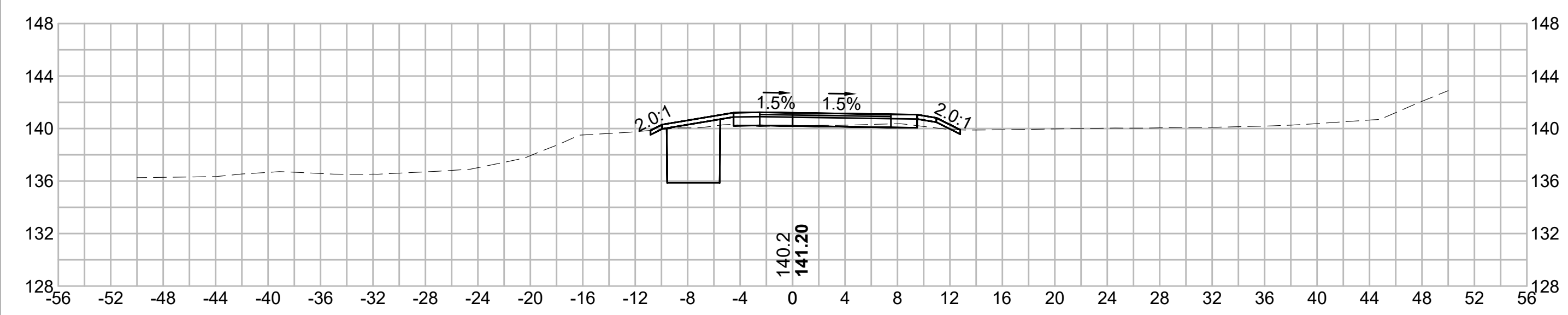
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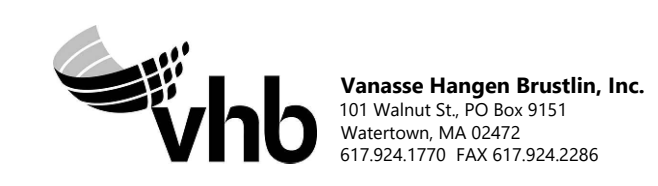
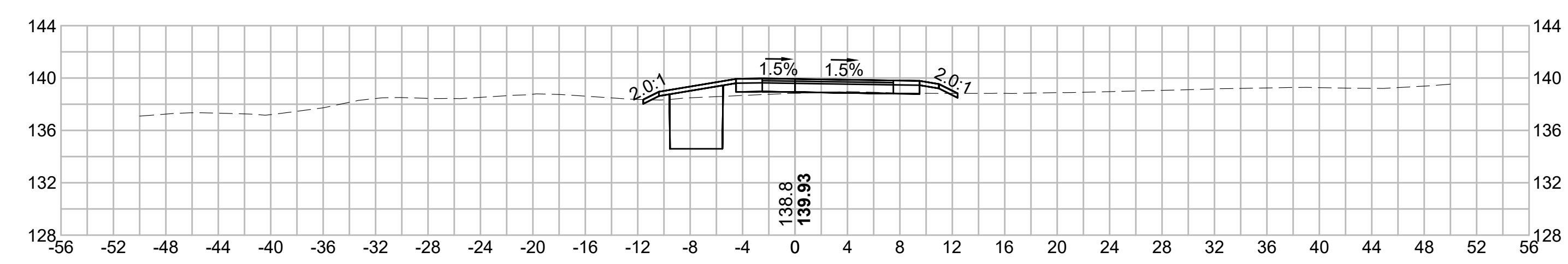
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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
CROSS SECTIONS

PLAN 320 OF 349

SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES	DRAWING NO.	REV.
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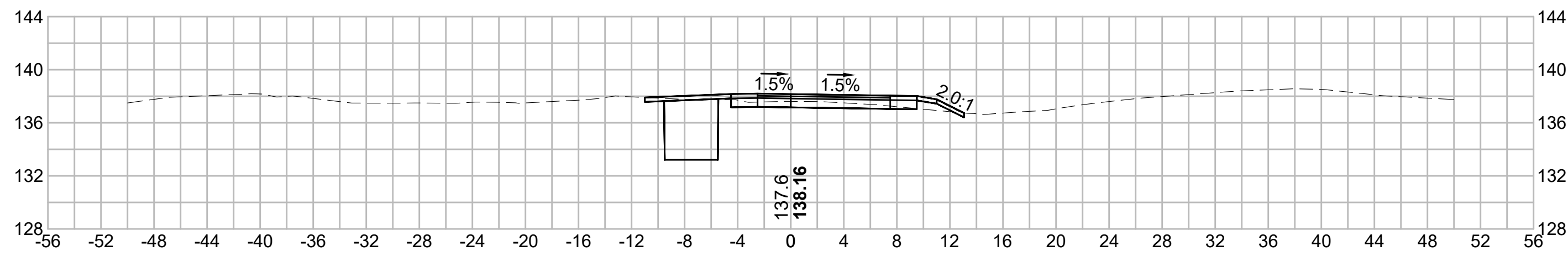
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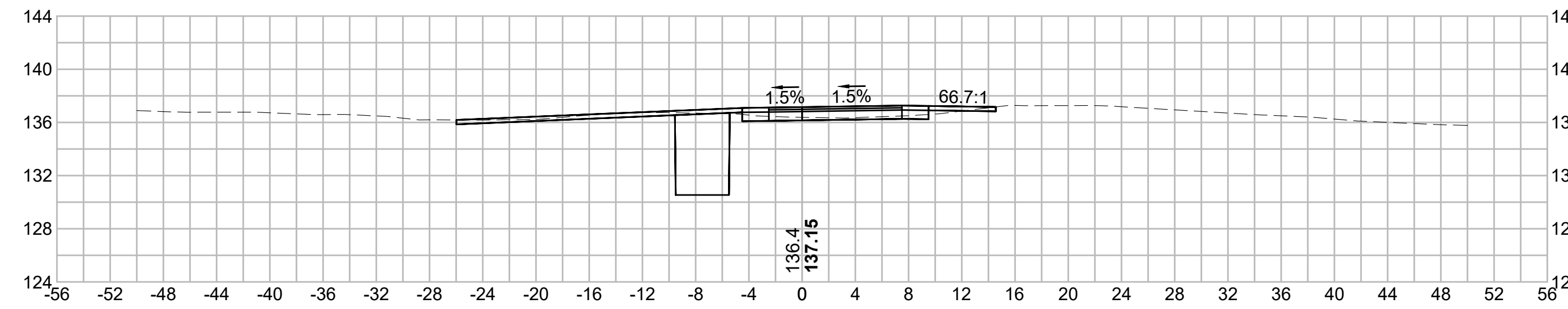
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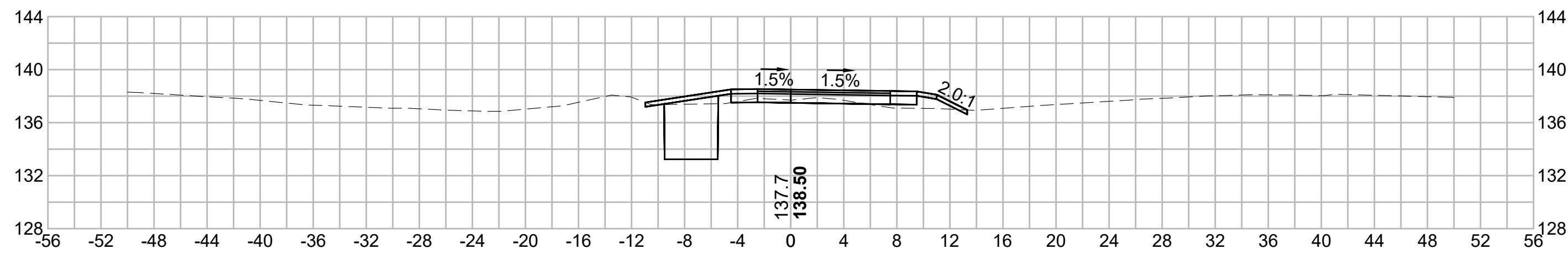
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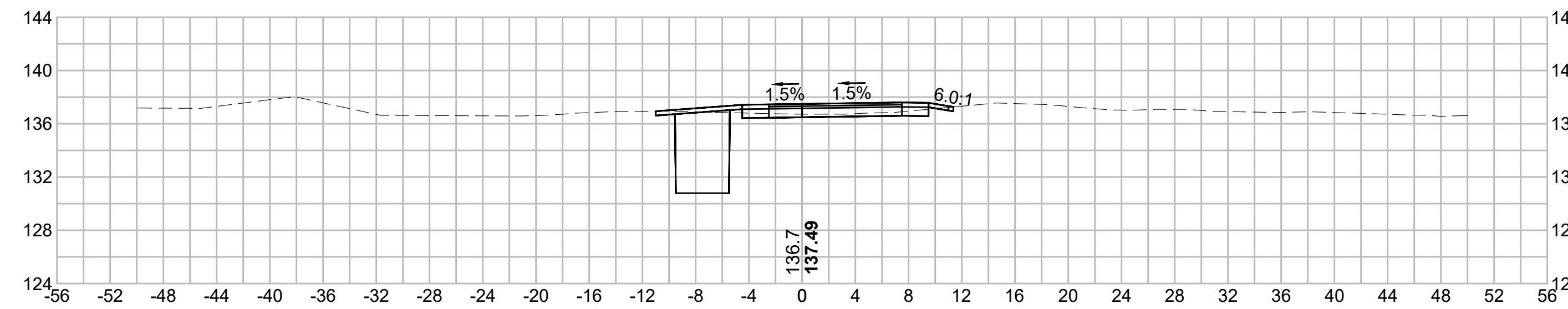
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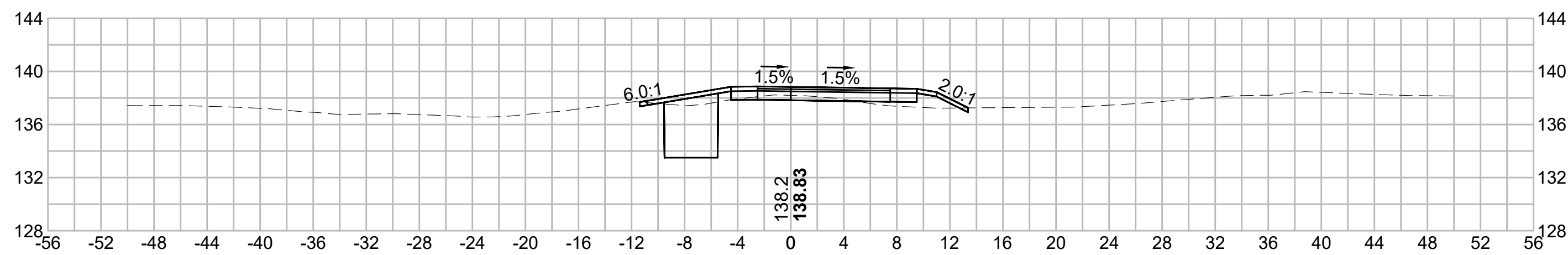
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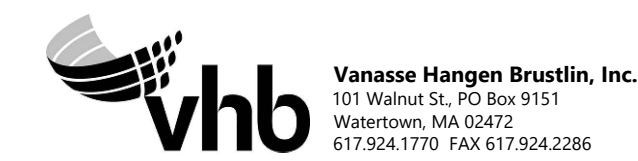
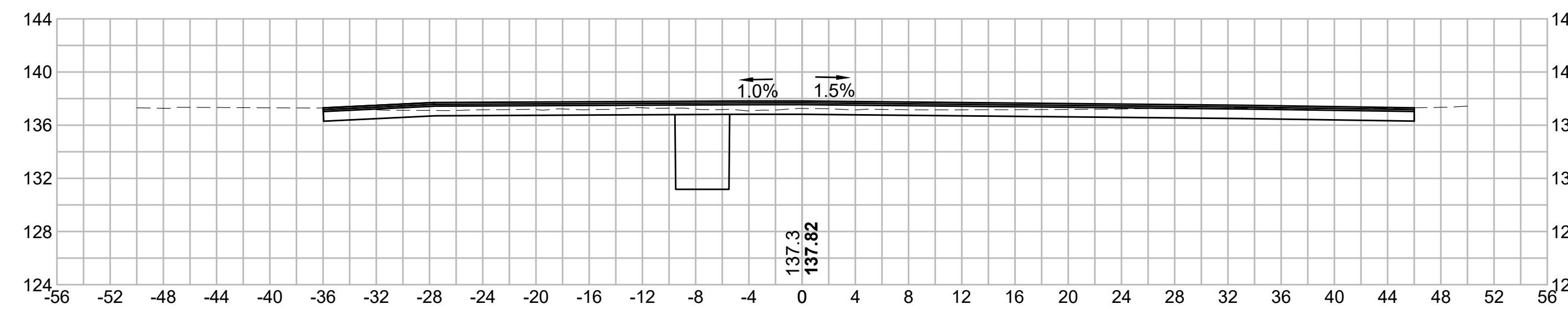
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599+00

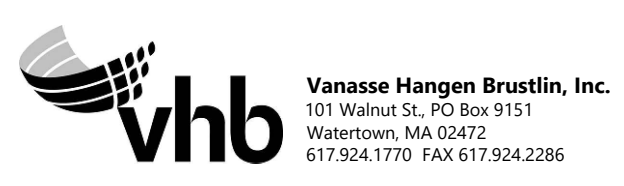
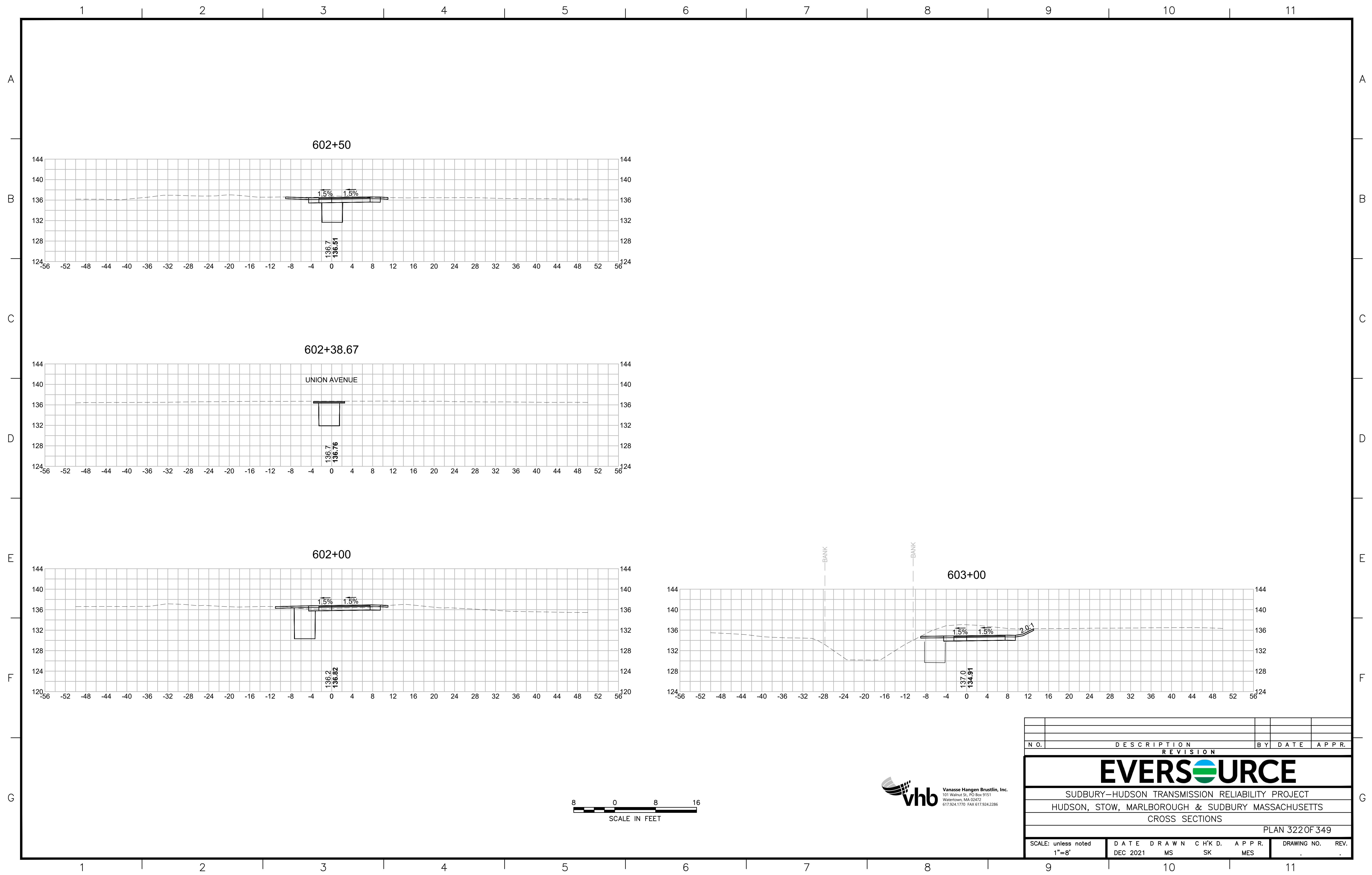


600+50



N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 321 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

1 2 3 4 5 6 7 8 9 10 11



N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 322 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHECKED SK	APPROVED MES
DRAWING NO.	REV.			

1 2 3 4 5 6 7 8 9 10 11

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1 2 3 4 5 6 7 8 9 10 11

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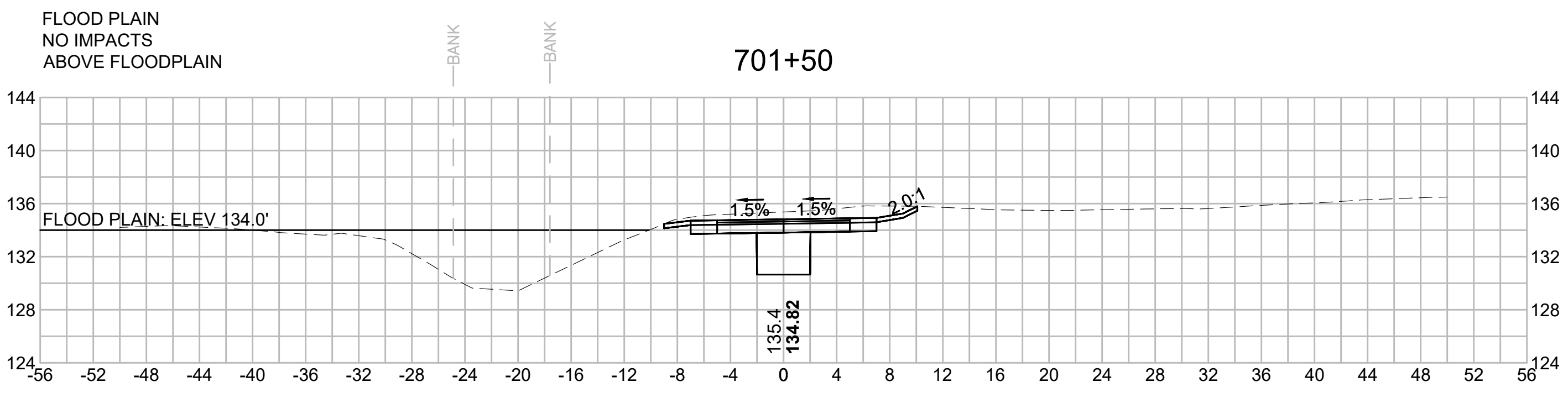
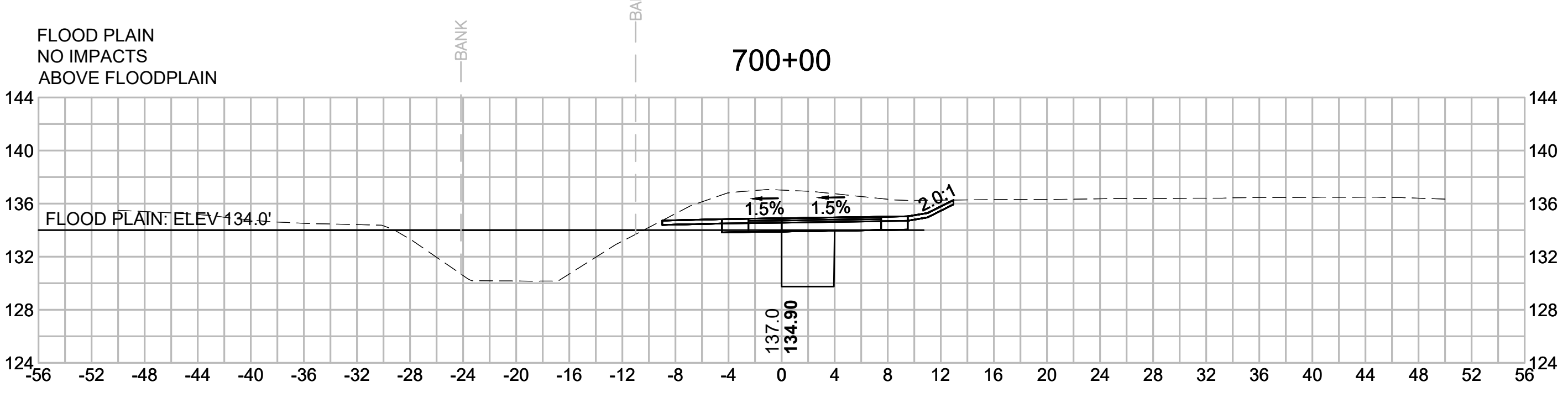
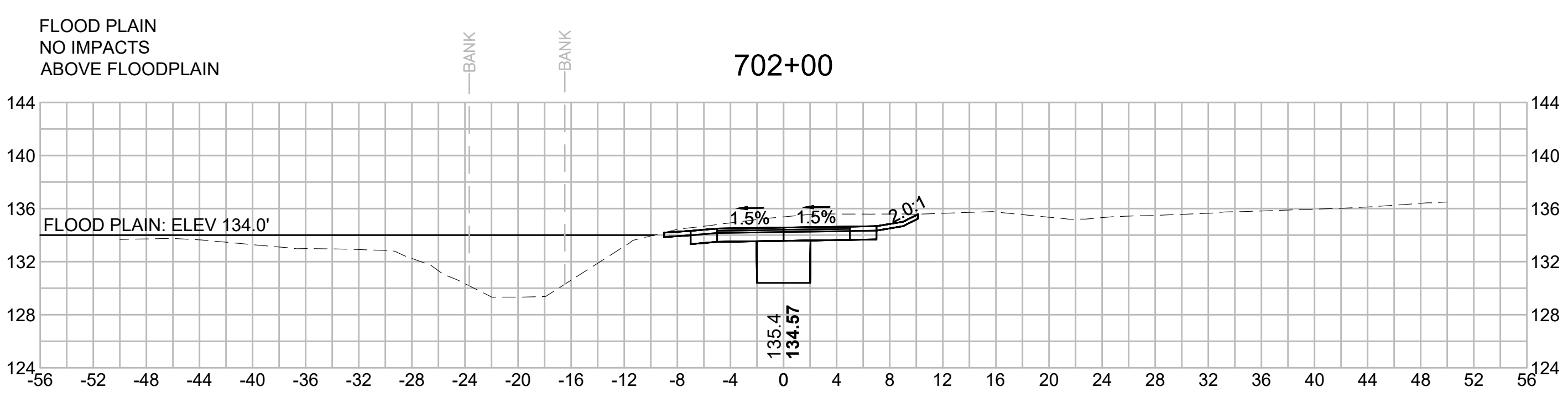
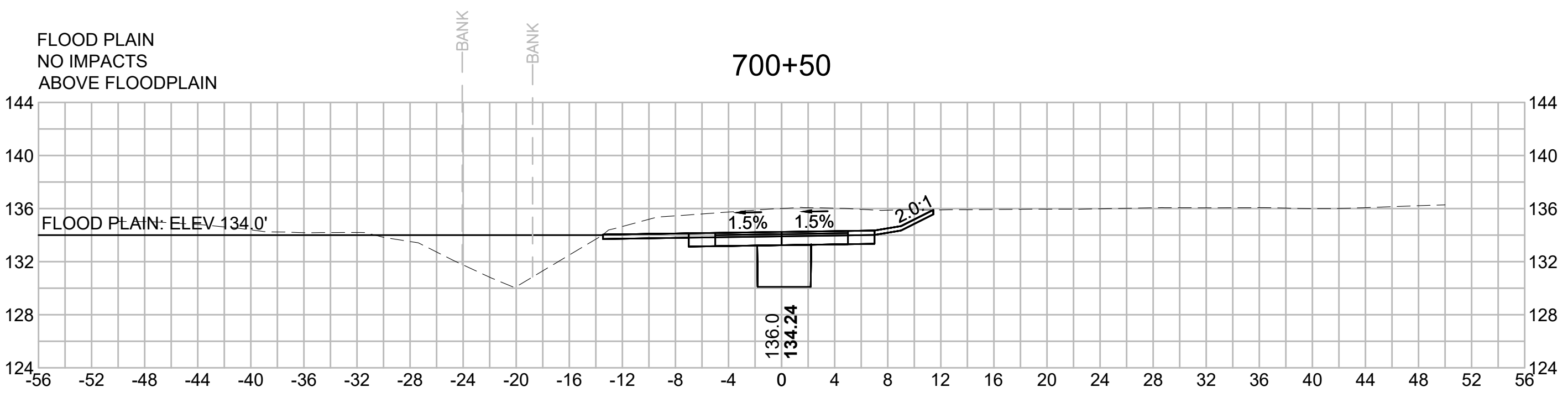
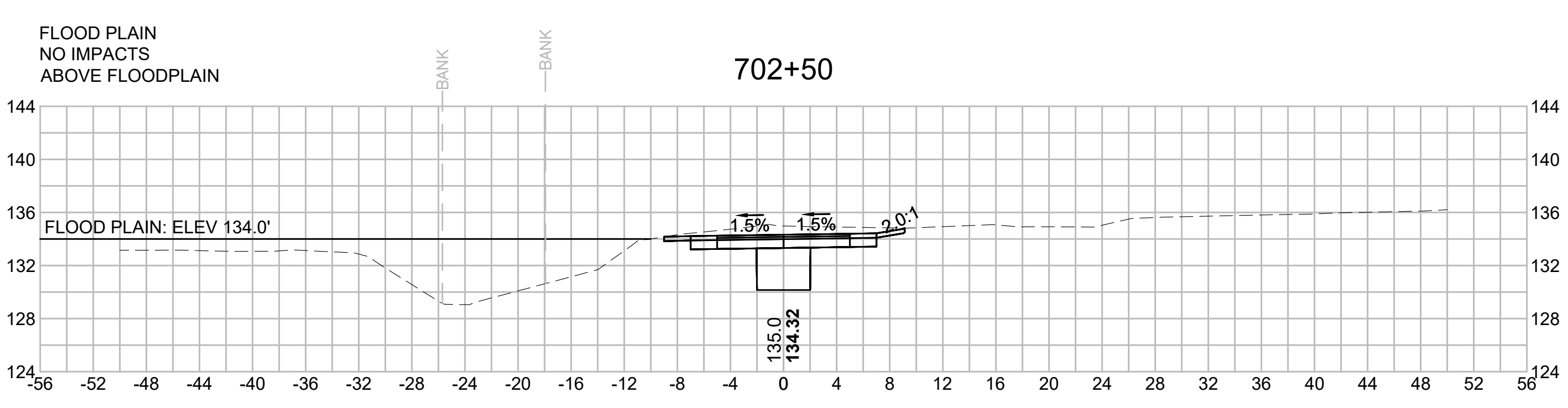
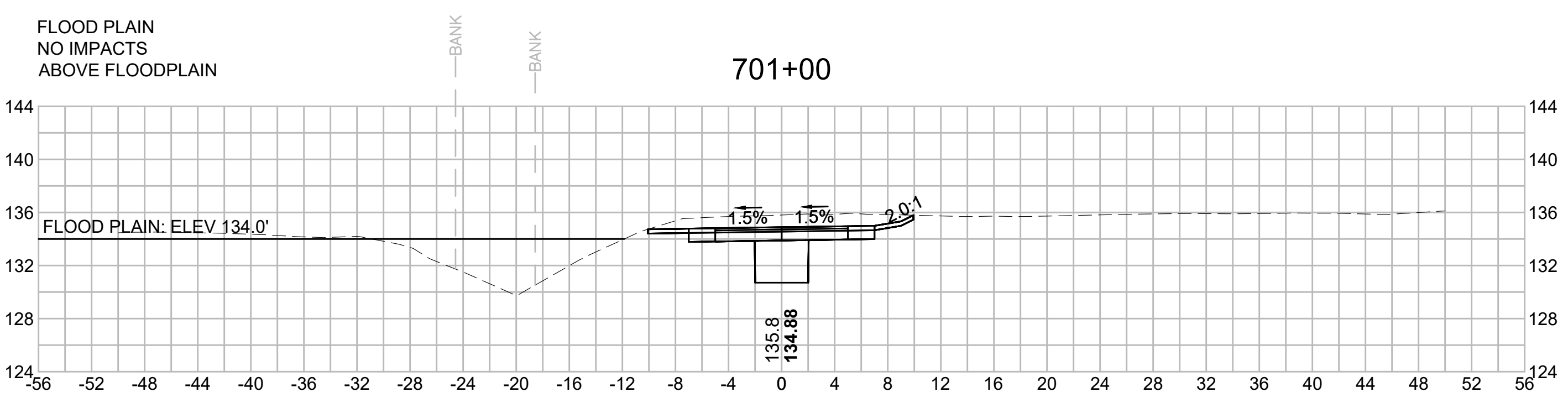
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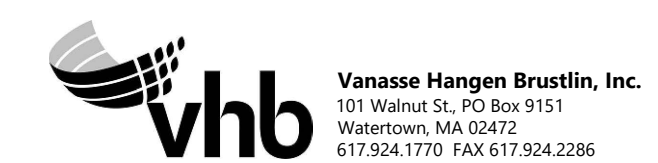
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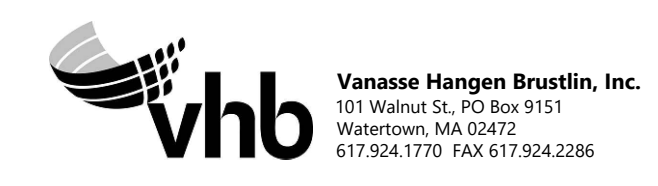
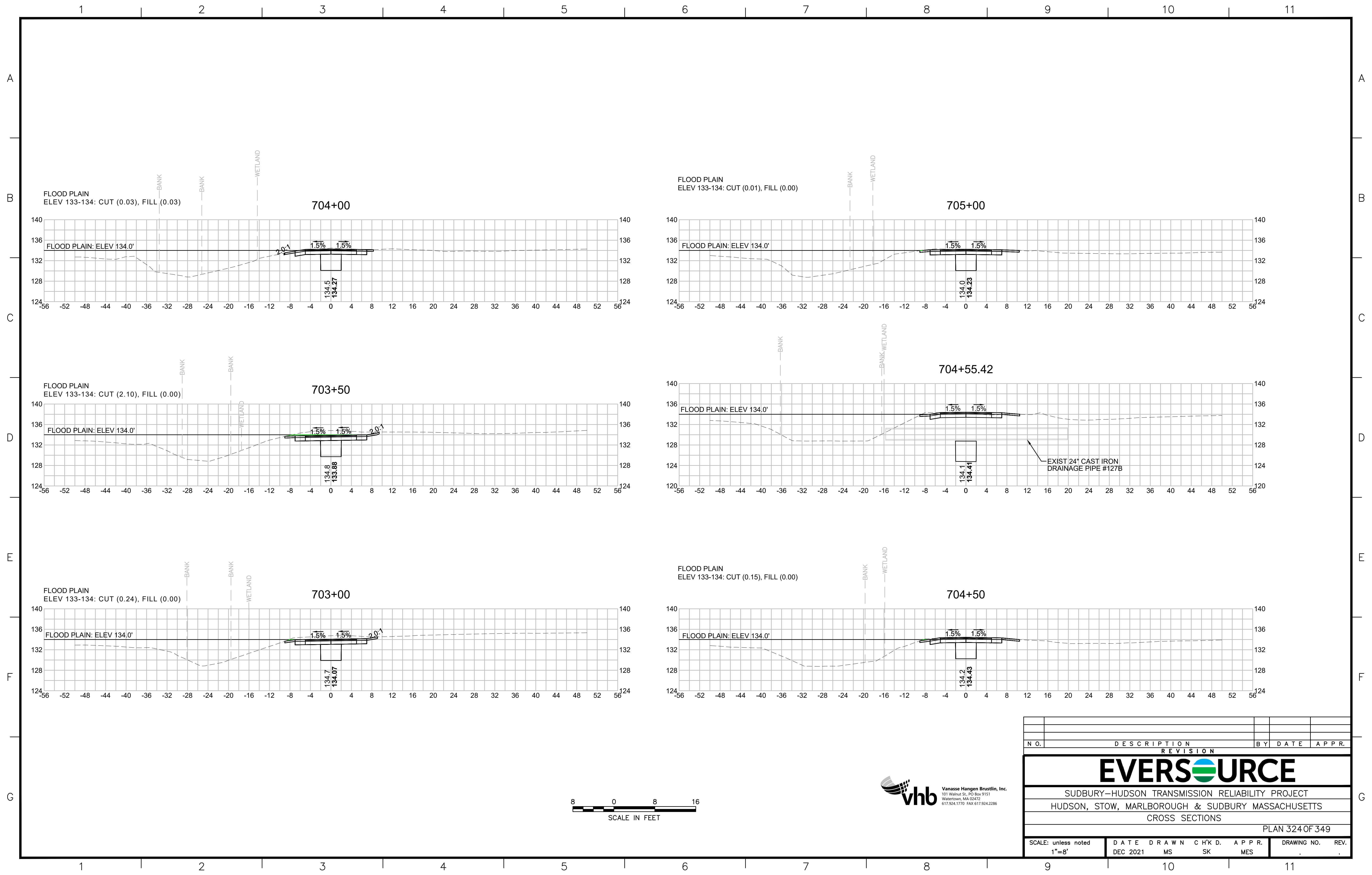


BLSF CROSSING STA 700 TO STA 740 - FEMA ZONE AE - TRIBUTARY TO HOP BROOK AND HOP BROOK
FEMA ELEVATION VARIES

FILL:	CUT:
133'-134': 17.00 CY	133'-134': 46.91 CY
132'-133': 16.13 CY	132'-133': 20.22 CY
131'-132': 1.70 CY	131'-132': 5.50 CY
126'-127': 14.96 CY	126'-127': 17.00 CY
125'-126': 13.81 CY	125'-126': 67.04 CY
124'-125': 1.37 CY	124'-125': 6.11 CY
123'-124': 0.00 CY	123'-124': 0.43 CY



N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 323 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES
	DRAWING NO.	REV.		



N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 324 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES
DRAWING NO.	REV.			

1 2 3 4 5 6 7 8 9 10 11

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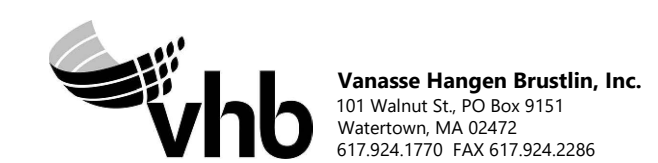
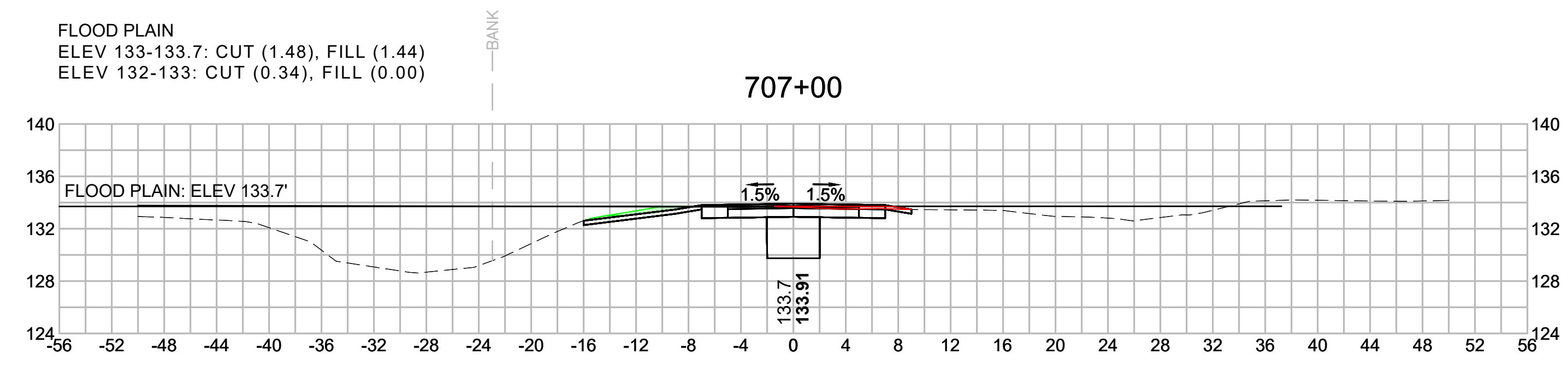
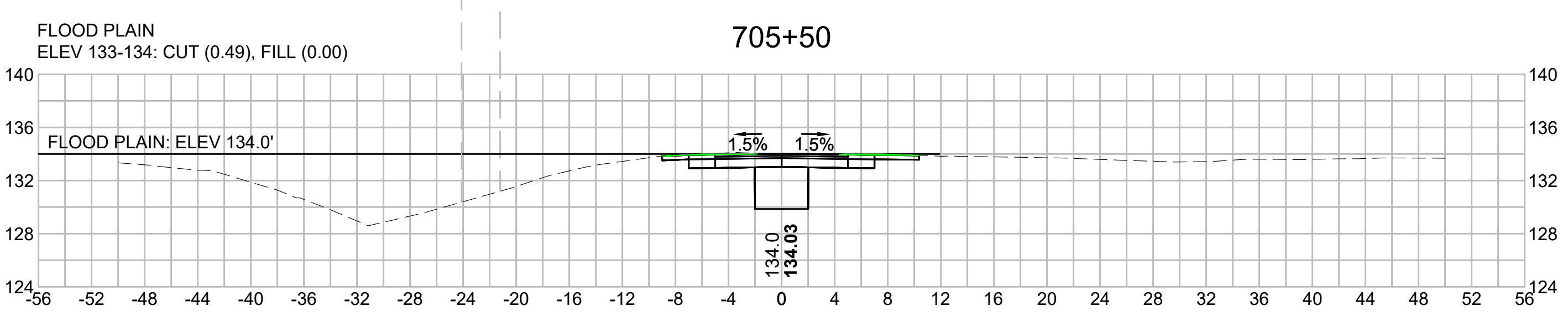
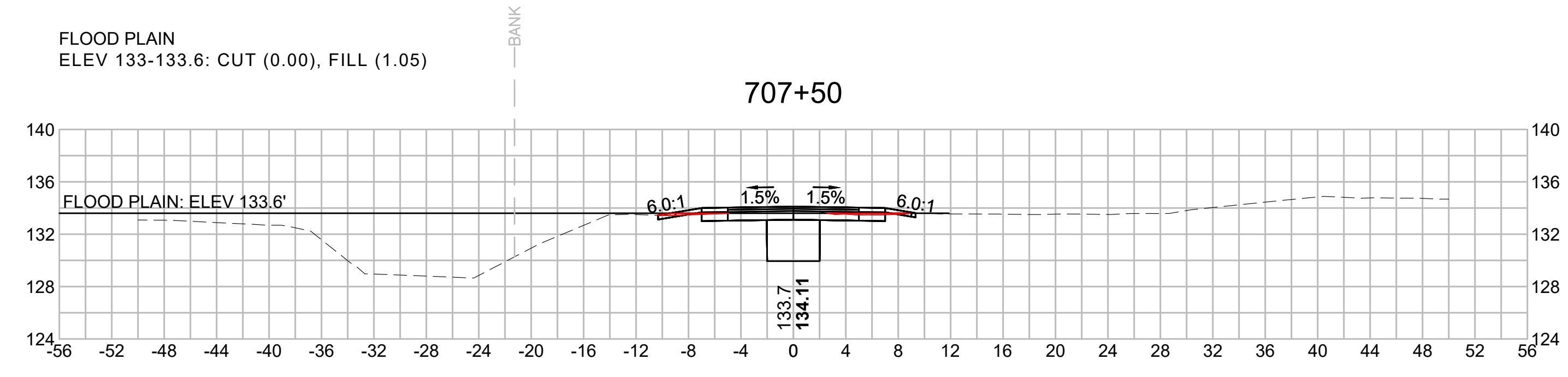
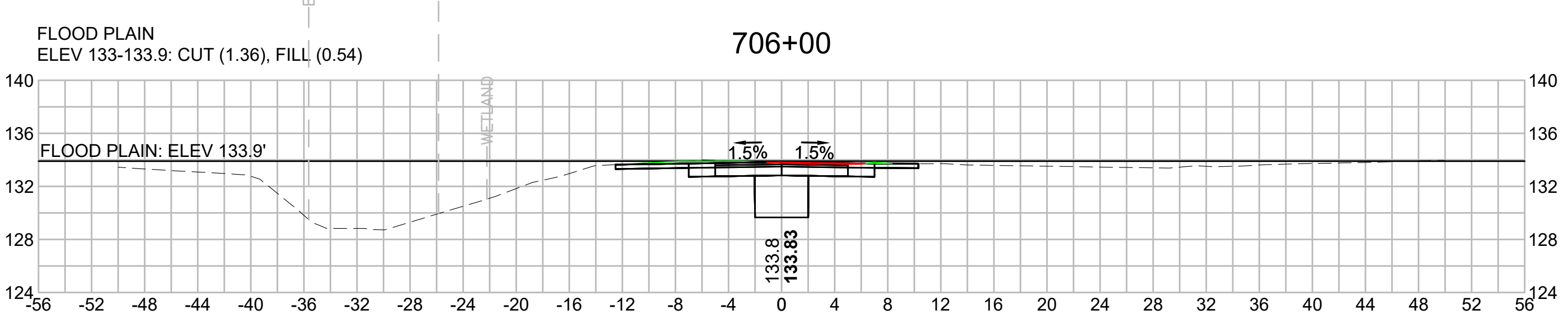
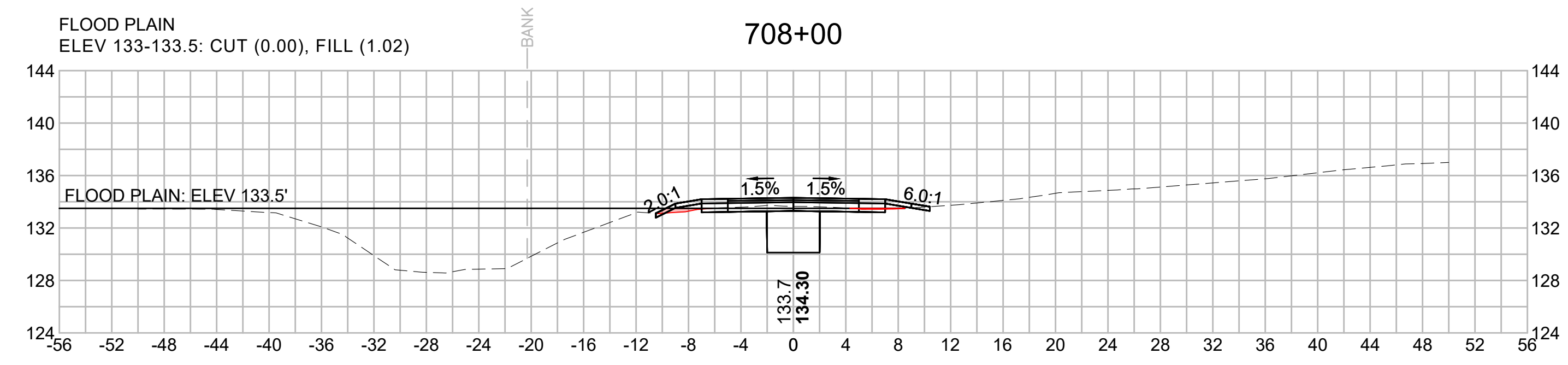
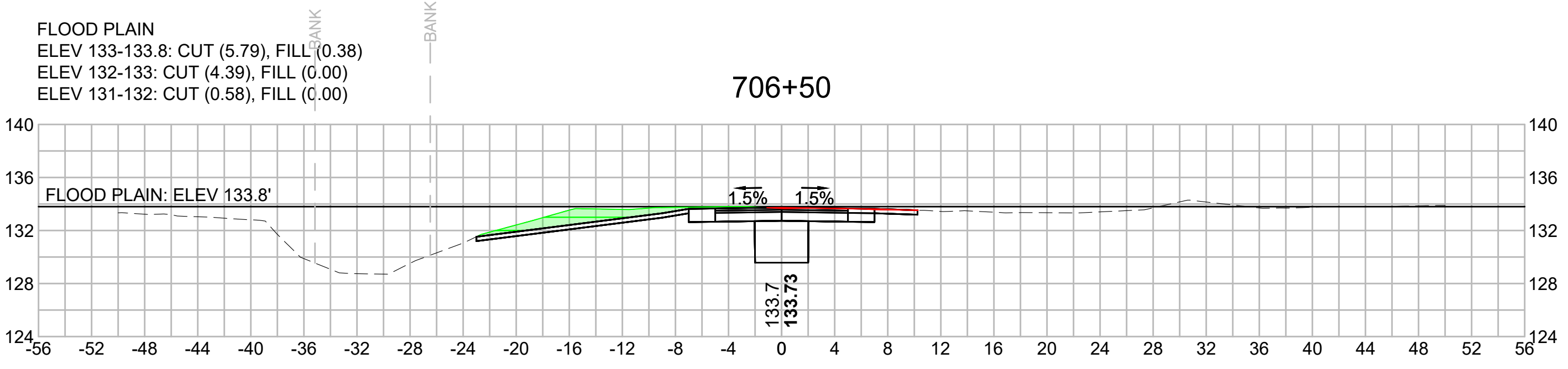
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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 CROSS SECTIONS

PLAN 325 OF 349

SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES	DRAWING NO.	REV.
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1 2 3 4 5 6 7 8 9 10 11

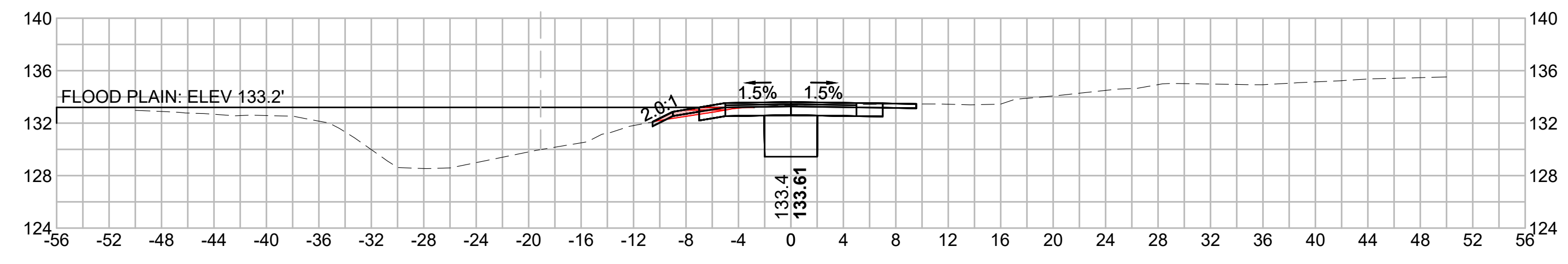
1 2 3 4 5 6 7 8 9 10 11

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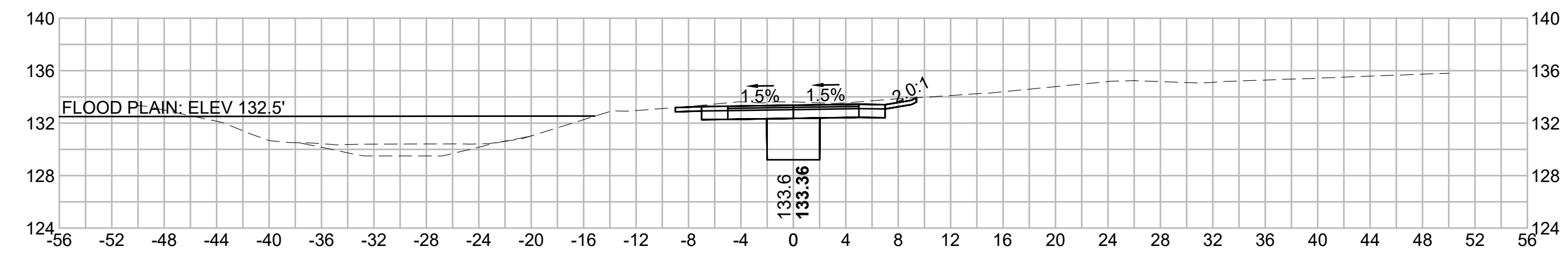
FLOOD PLAIN
 ELEV 133-133.2: CUT (0.00), FILL (0.68)
 ELEV 132-133: CUT (0.00), FILL (1.65)

709+50



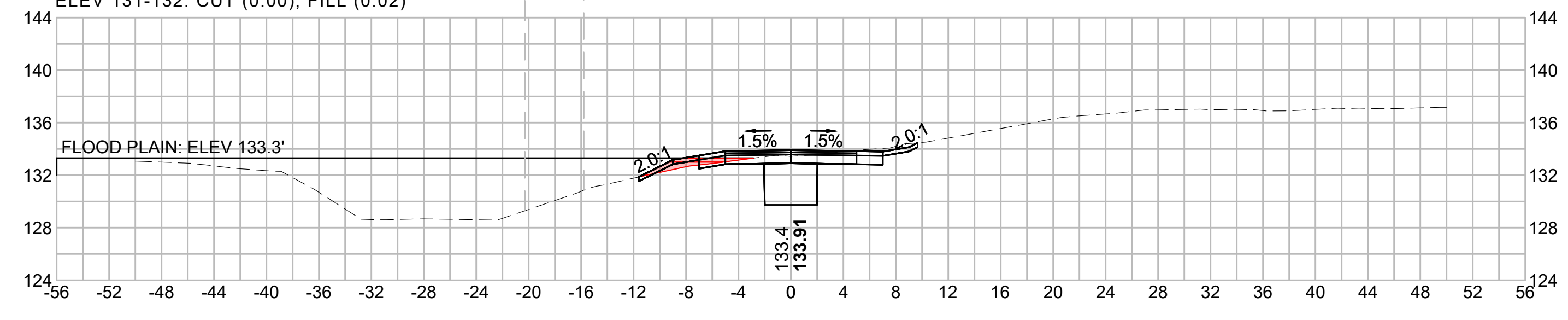
FLOOD PLAIN
 NO IMPACTS
 ABOVE FLOODPLAIN

710+75



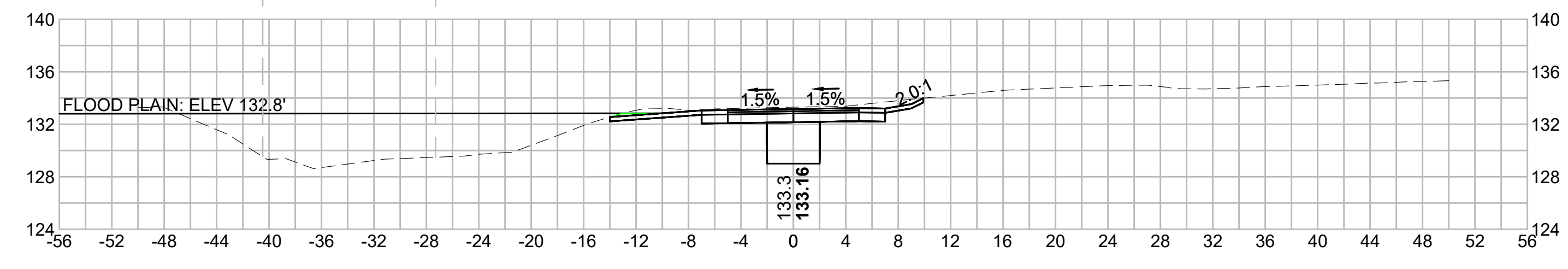
FLOOD PLAIN
 ELEV 133-133.3: CUT (0.00), FILL (1.47)
 ELEV 132-133: CUT (0.00), FILL (1.85)
 ELEV 131-132: CUT (0.00), FILL (0.02)

709+00



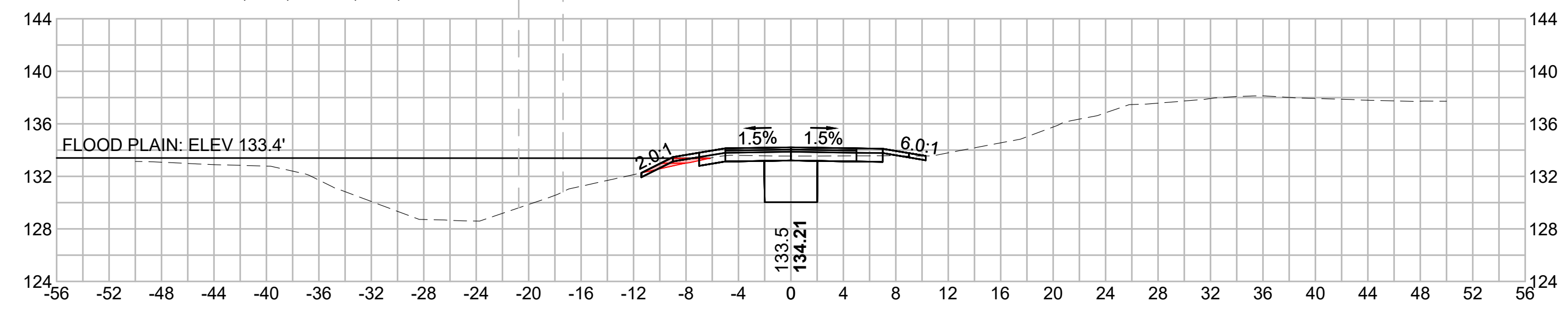
FLOOD PLAIN
 ELEV 132-132.8: CUT (0.44), FILL (0.00)

710+50



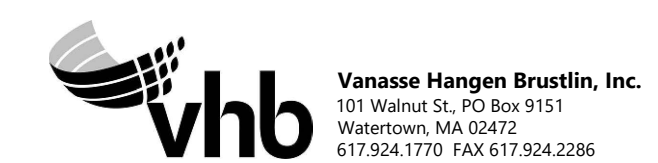
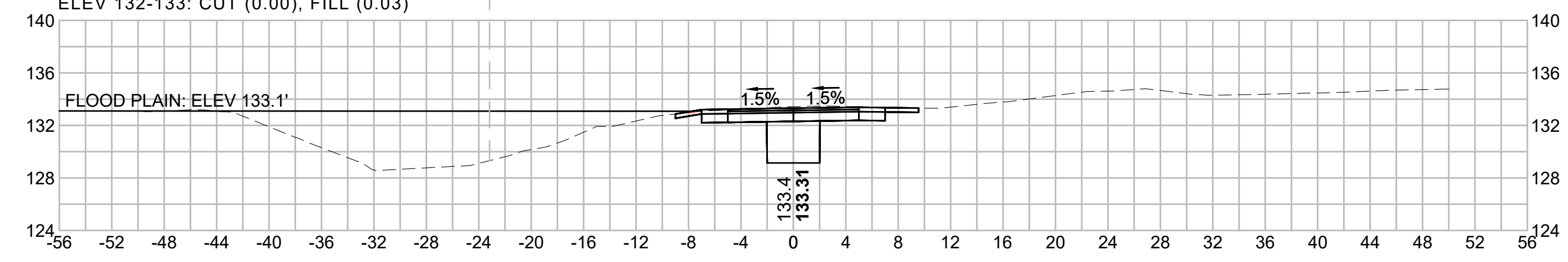
FLOOD PLAIN
 ELEV 133-133.6: CUT (0.00), FILL (0.96)
 ELEV 132-133: CUT (0.00), FILL (0.68)

708+50



FLOOD PLAIN
 ELEV 133-133.1: CUT (0.00), FILL (0.04)
 ELEV 132-133: CUT (0.00), FILL (0.03)

710+00

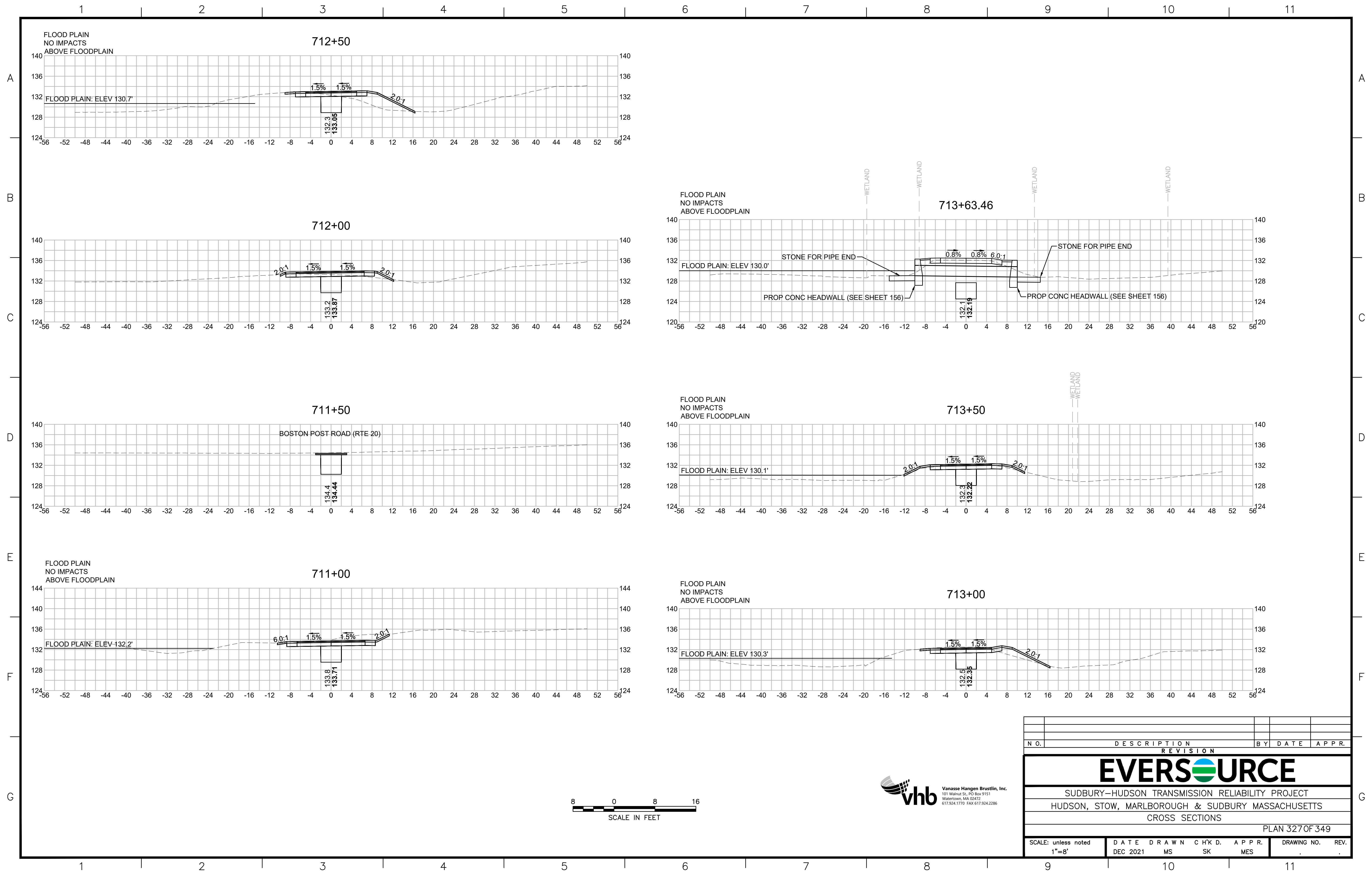


N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 326 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES
DRAWING NO.	REV.			

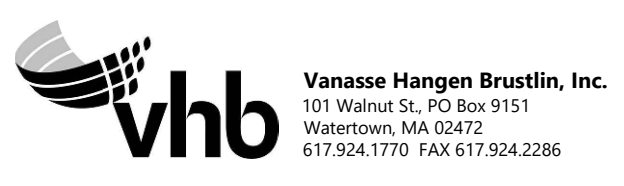
G

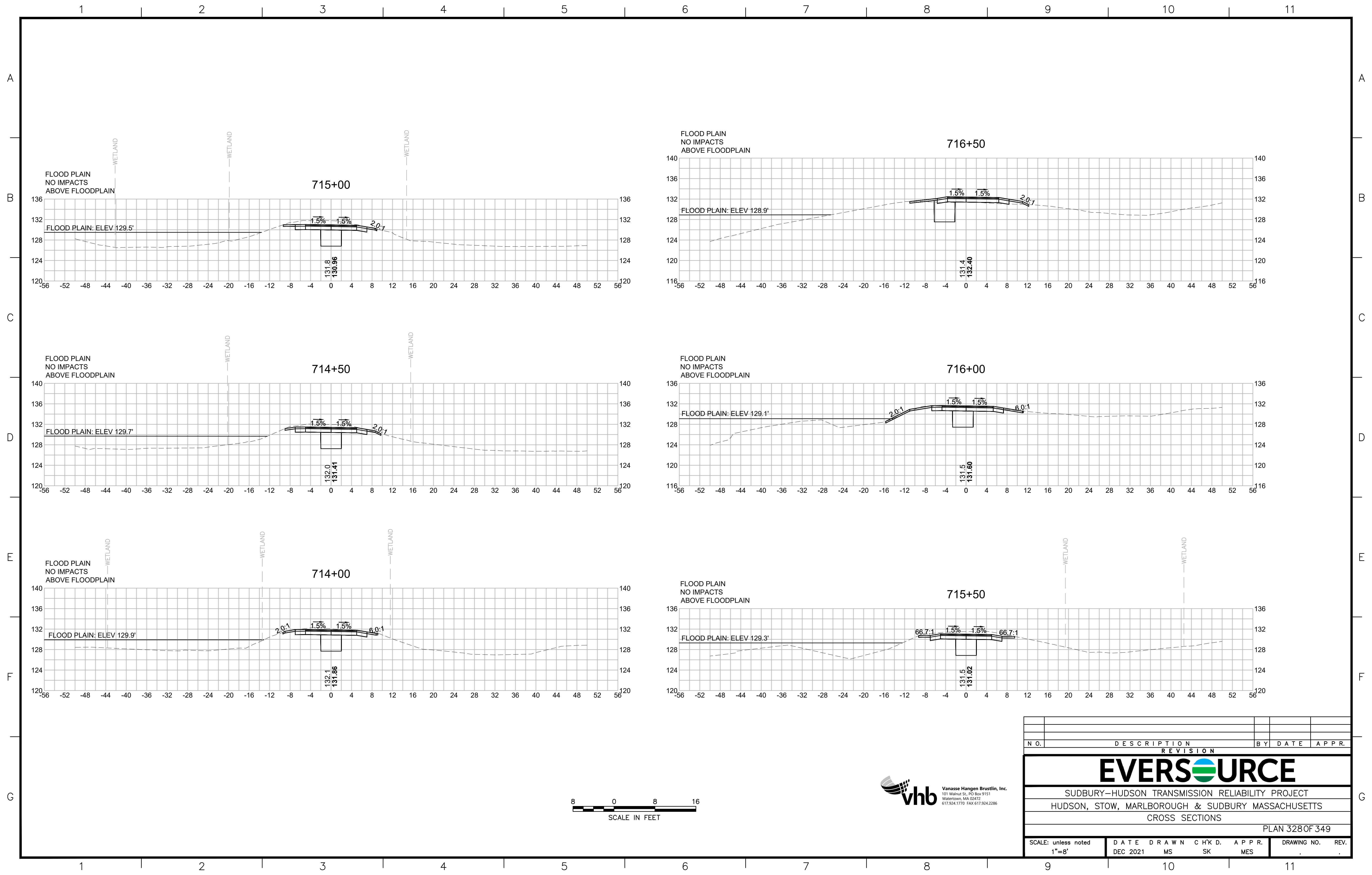
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1 2 3 4 5 6 7 8 9 10 11



NO.		DESCRIPTION	BY	DATE	APPR.
REVISION					
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CROSS SECTIONS					
PLAN 327 OF 349					
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES	DRAWING NO. REV.





N O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

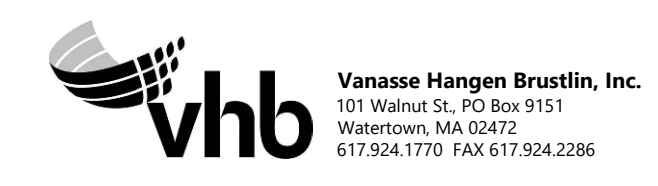
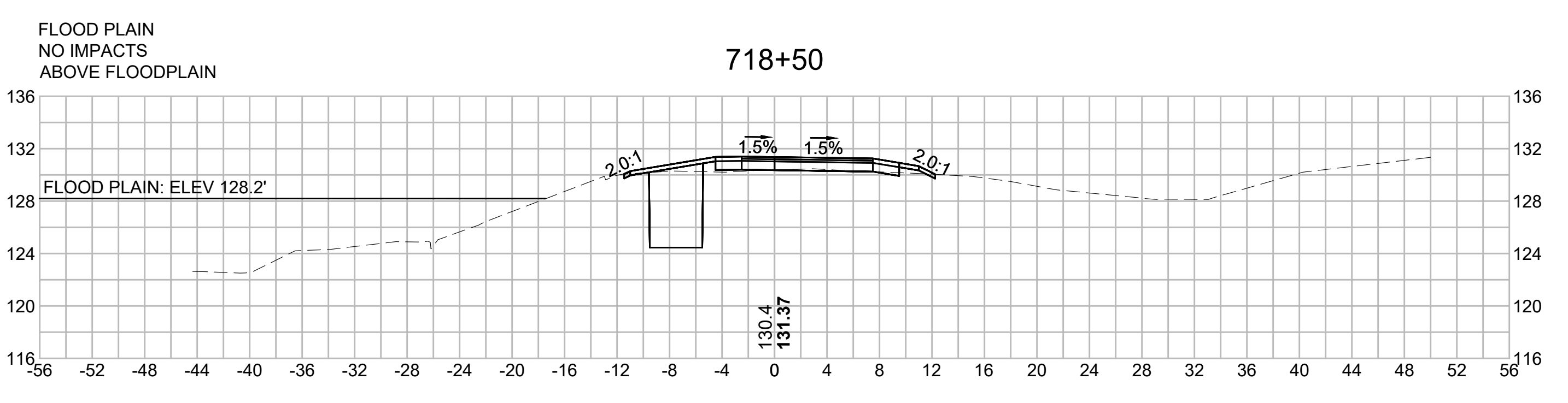
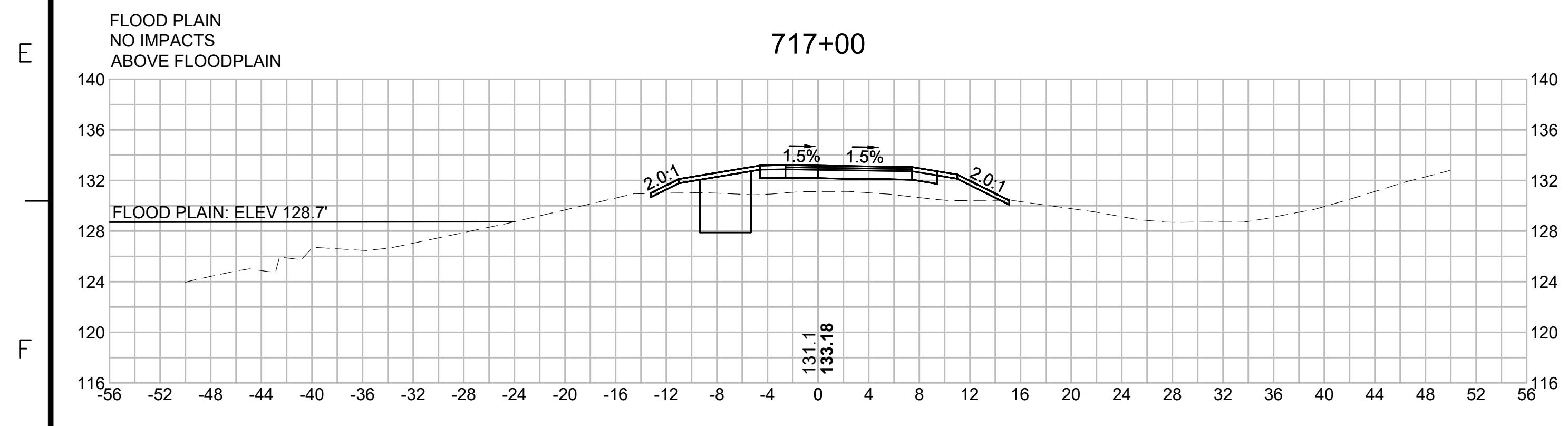
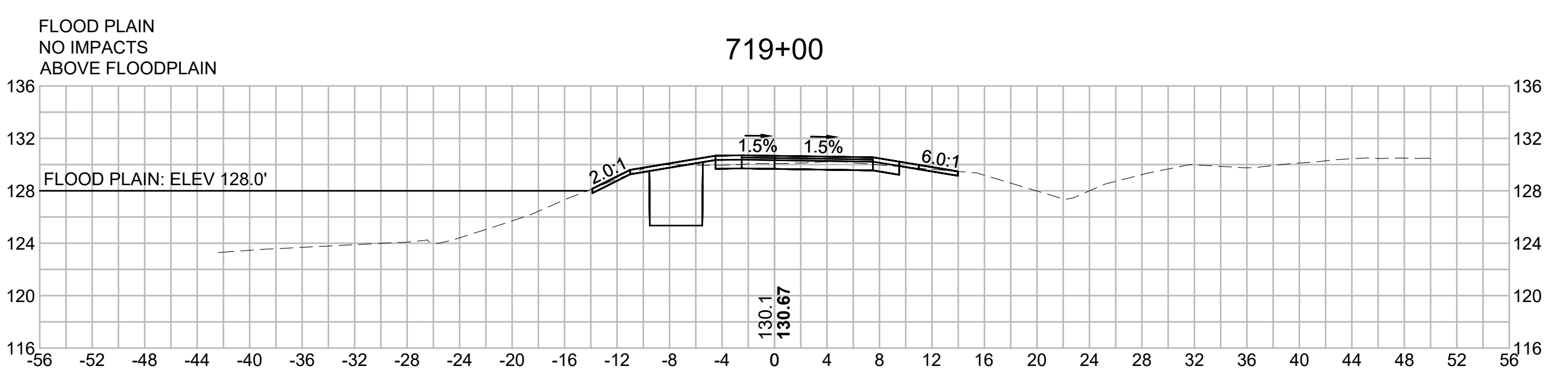
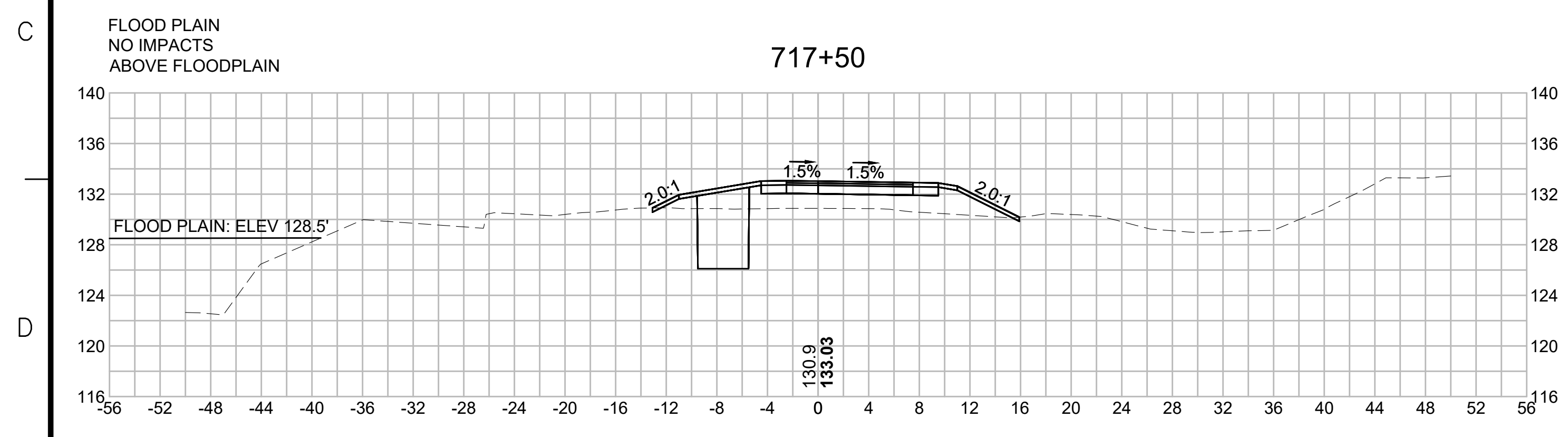
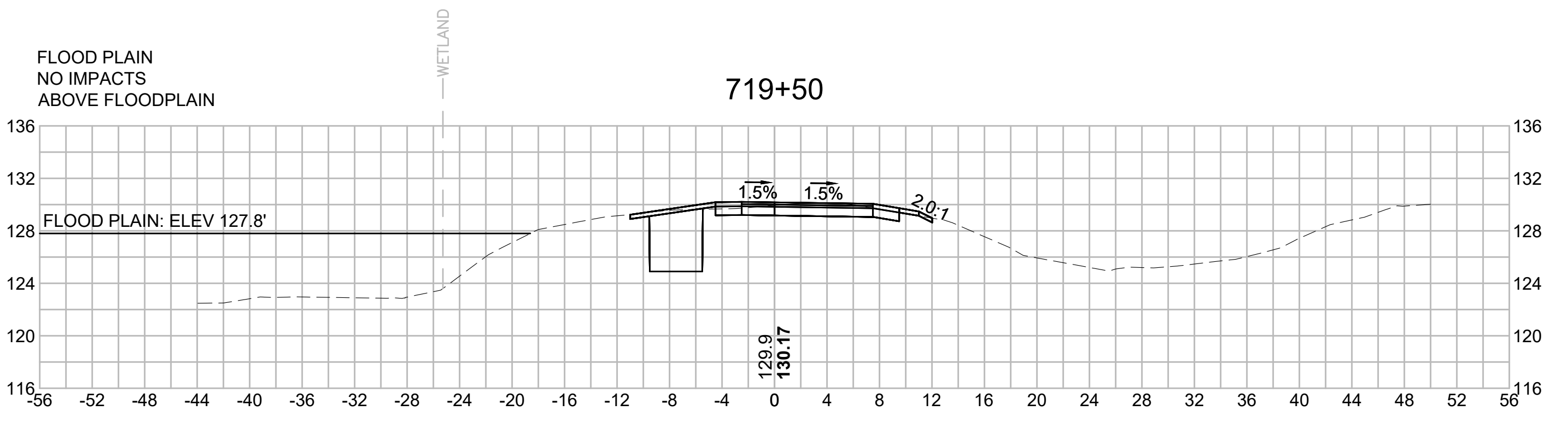
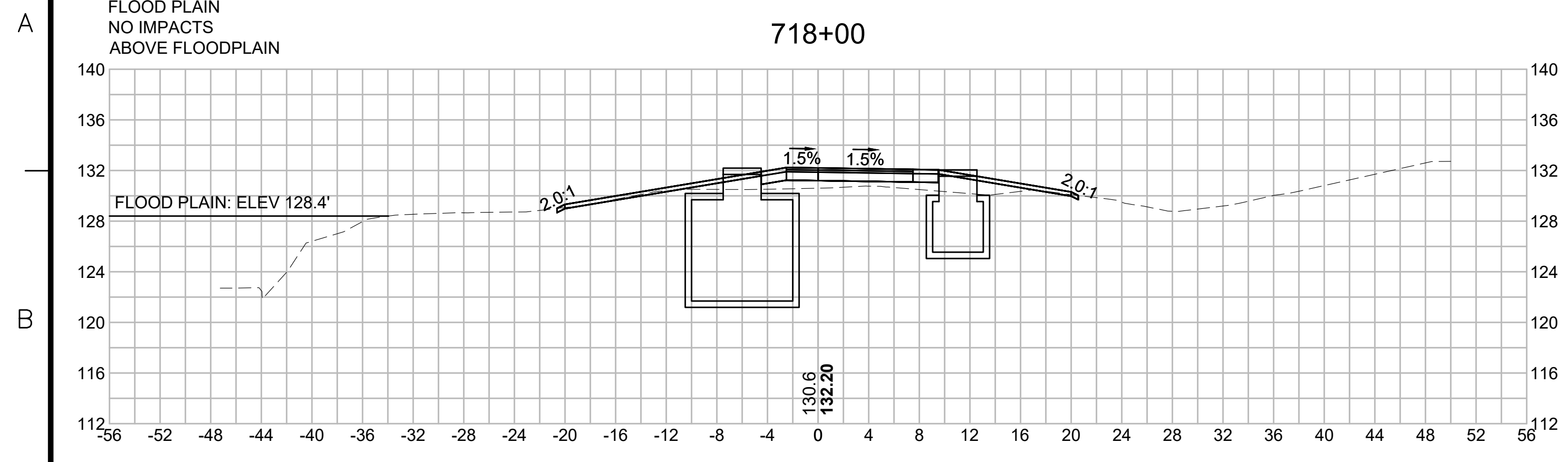
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 CROSS SECTIONS

PLAN 328 OF 349

SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES	DRAWING NO. REV.
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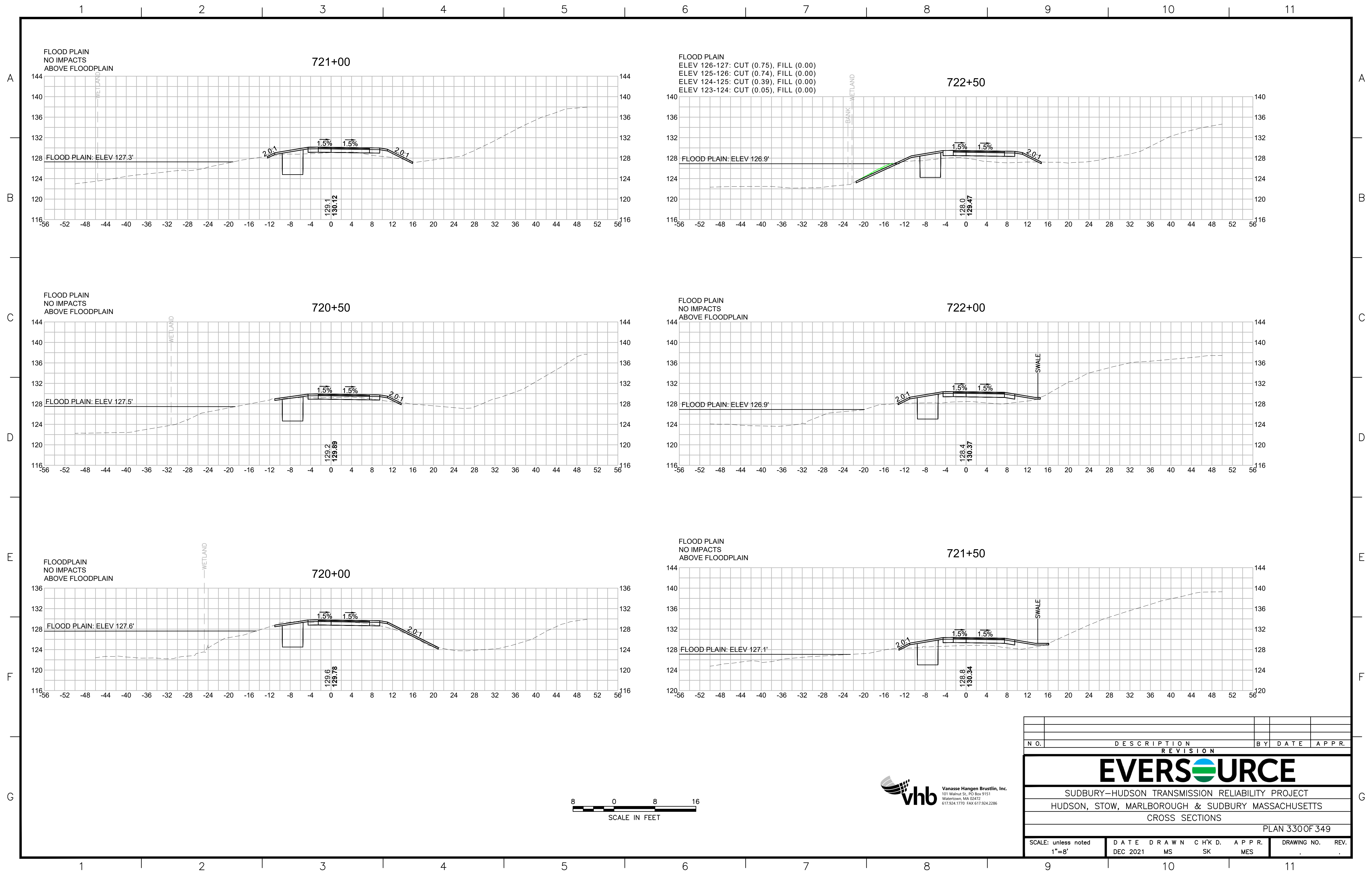


1 2 3 4 5 6 7 8 9 10 11

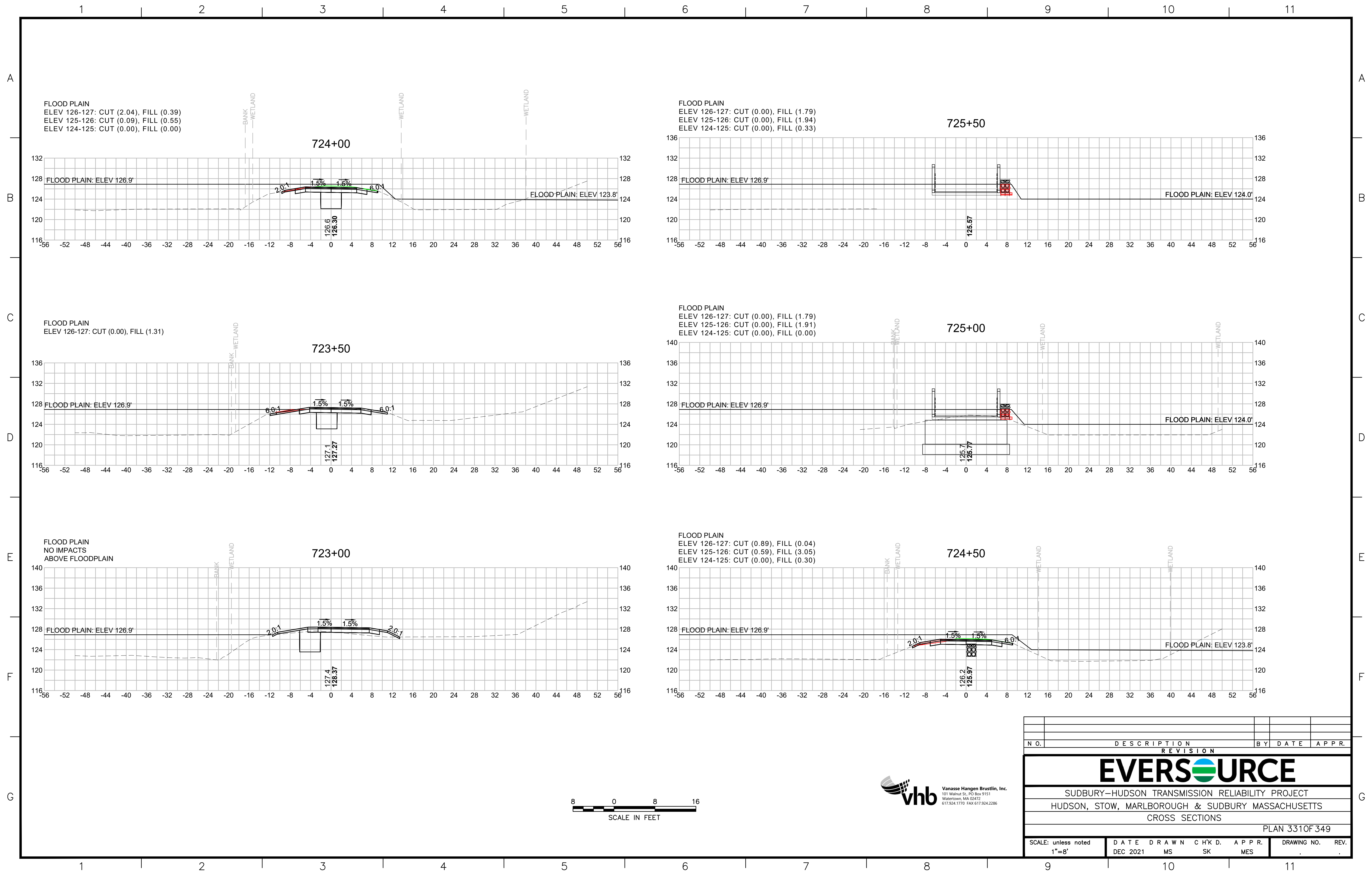


N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 329 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES
DRAWING NO.	REV.			

1 2 3 4 5 6 7 8 9 10 11



N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 330 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES
DRAWING NO.		REV.		



FLOOD PLAIN
 ELEV 126-127: CUT (2.04), FILL (0.39)
 ELEV 125-126: CUT (0.09), FILL (0.55)
 ELEV 124-125: CUT (0.00), FILL (0.00)

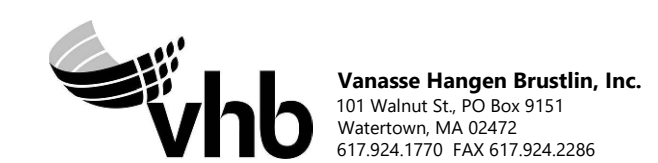
FLOOD PLAIN
 ELEV 126-127: CUT (0.00), FILL (1.79)
 ELEV 125-126: CUT (0.00), FILL (1.94)
 ELEV 124-125: CUT (0.00), FILL (0.33)

FLOOD PLAIN
 ELEV 126-127: CUT (0.00), FILL (1.31)

FLOOD PLAIN
 ELEV 126-127: CUT (0.00), FILL (1.79)
 ELEV 125-126: CUT (0.00), FILL (1.91)
 ELEV 124-125: CUT (0.00), FILL (0.00)

FLOOD PLAIN
 NO IMPACTS
 ABOVE FLOODPLAIN

FLOOD PLAIN
 ELEV 126-127: CUT (0.89), FILL (0.04)
 ELEV 125-126: CUT (0.59), FILL (3.05)
 ELEV 124-125: CUT (0.00), FILL (0.30)



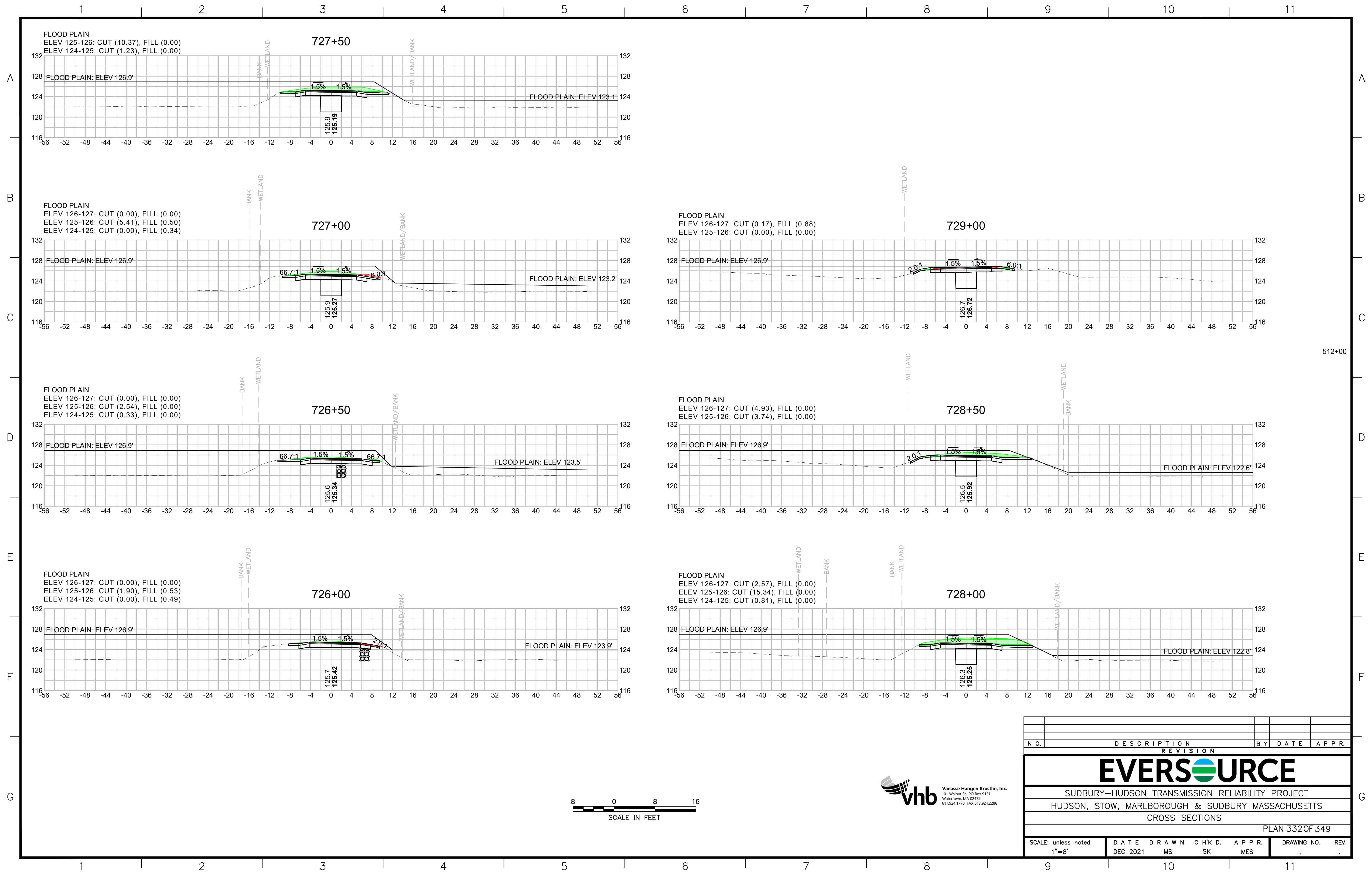
N O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 CROSS SECTIONS

PLAN 3310F 349

SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES	DRAWING NO.	REV.
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FLOOD PLAIN
 ELEV 125-126: CUT (10.37), FILL (0.00)
 ELEV 124-125: CUT (1.23), FILL (0.00)

727+50

FLOOD PLAIN
 ELEV 126-127: CUT (0.00), FILL (0.00)
 ELEV 125-126: CUT (5.41), FILL (0.50)
 ELEV 124-125: CUT (0.00), FILL (0.34)

727+00

FLOOD PLAIN
 ELEV 126-127: CUT (0.17), FILL (0.88)
 ELEV 125-126: CUT (0.00), FILL (0.00)

729+00

FLOOD PLAIN
 ELEV 126-127: CUT (0.00), FILL (0.00)
 ELEV 125-126: CUT (2.54), FILL (0.00)
 ELEV 124-125: CUT (0.33), FILL (0.00)

726+50

FLOOD PLAIN
 ELEV 126-127: CUT (4.93), FILL (0.00)
 ELEV 125-126: CUT (3.74), FILL (0.00)

728+50

FLOOD PLAIN
 ELEV 126-127: CUT (0.00), FILL (0.00)
 ELEV 125-126: CUT (1.90), FILL (0.53)
 ELEV 124-125: CUT (0.00), FILL (0.49)

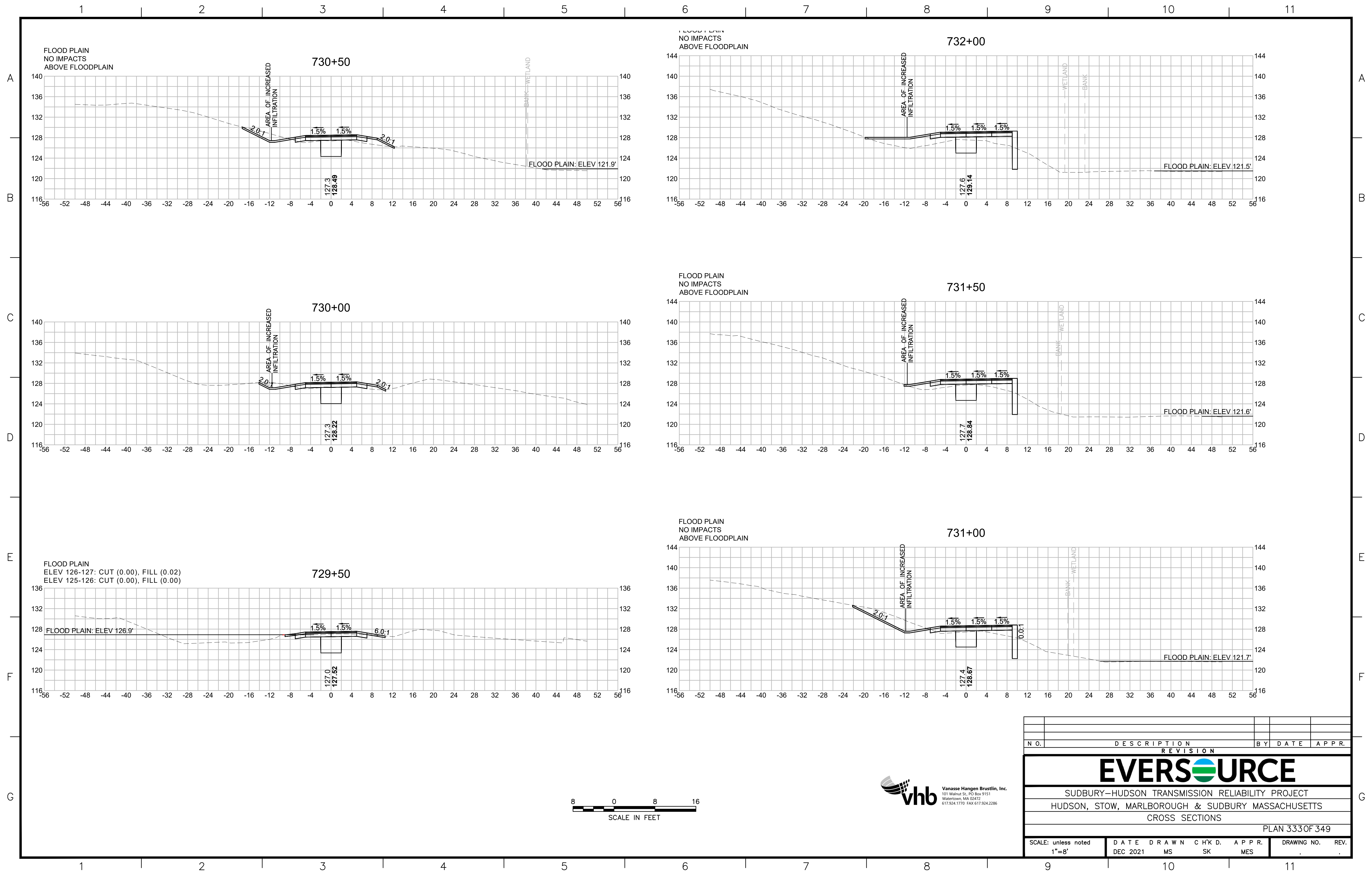
726+00

FLOOD PLAIN
 ELEV 126-127: CUT (2.57), FILL (0.00)
 ELEV 125-126: CUT (15.34), FILL (0.00)
 ELEV 124-125: CUT (0.81), FILL (0.00)

728+00



N O.	DESCRIPTION	BY	DATE	APPR.
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 332 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES
DRAWING NO.	REV.			



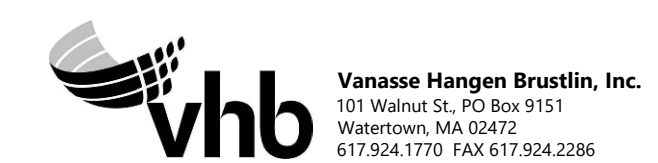
FLOOD PLAIN
NO IMPACTS
ABOVE FLOODPLAIN

FLOOD PLAIN
NO IMPACTS
ABOVE FLOODPLAIN

FLOOD PLAIN
NO IMPACTS
ABOVE FLOODPLAIN

FLOOD PLAIN
NO IMPACTS
ABOVE FLOODPLAIN

FLOOD PLAIN
ELEV 126-127: CUT (0.00), FILL (0.02)
ELEV 125-126: CUT (0.00), FILL (0.00)



N O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 333 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES
DRAWING NO.	REV.			

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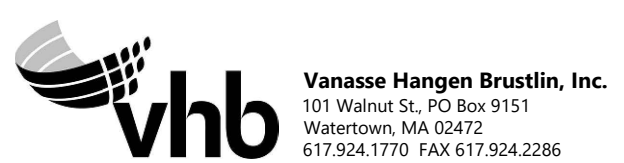
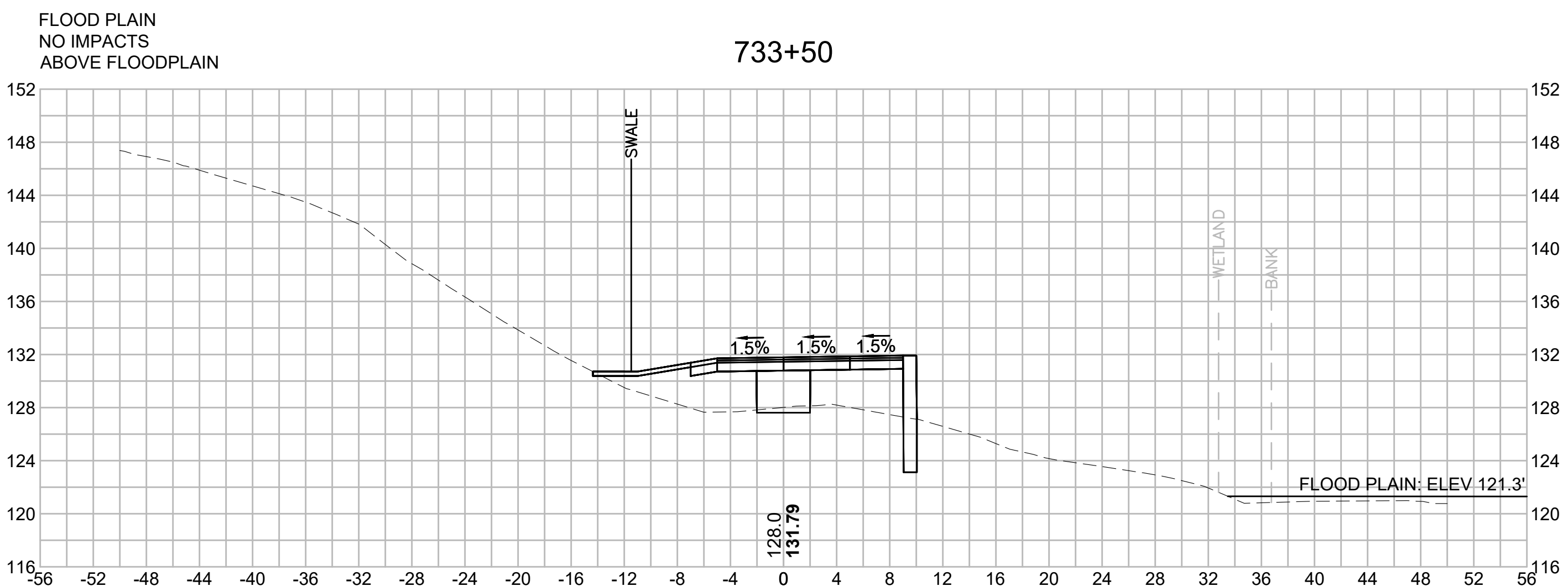
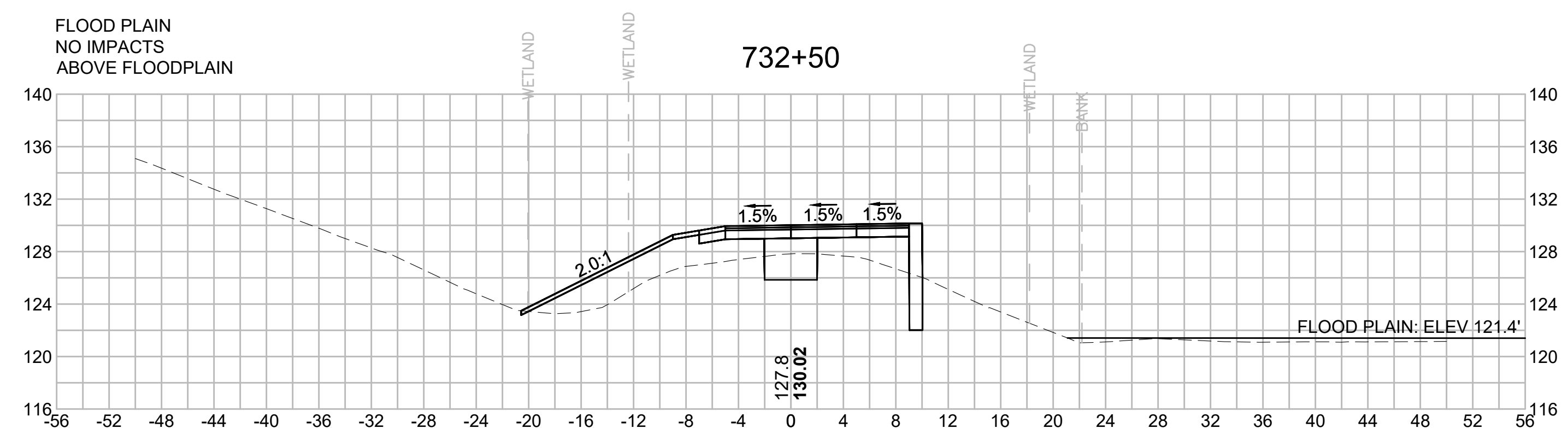
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N O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 334 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES
DRAWING NO.	REV.			

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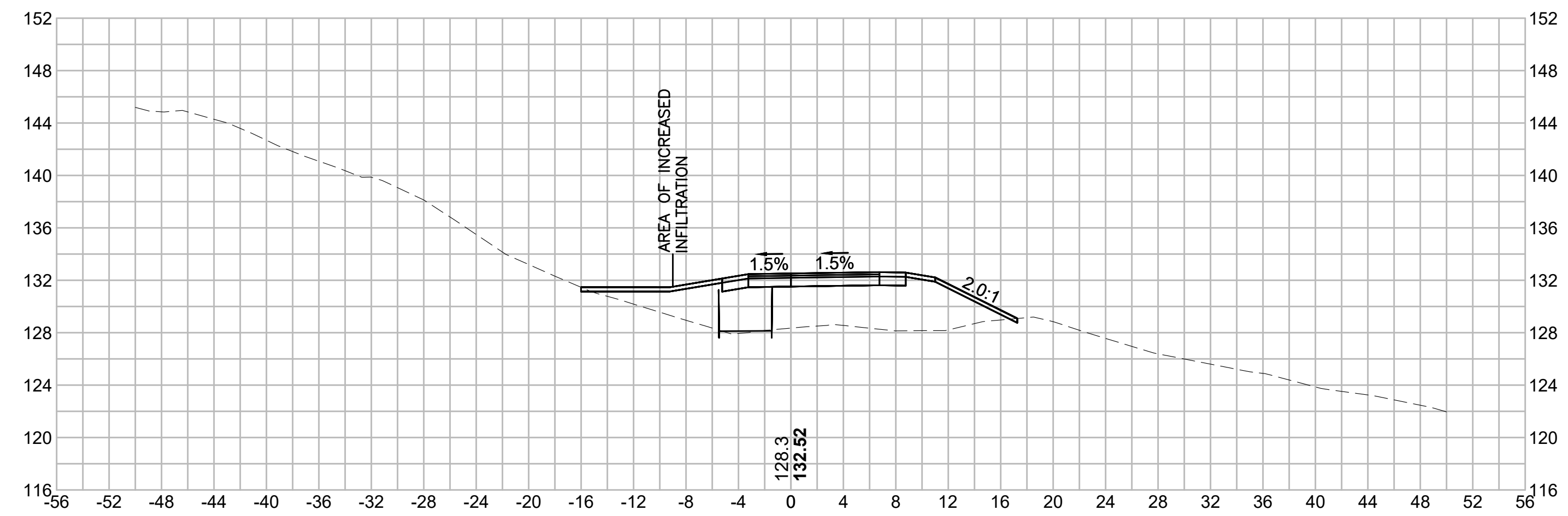
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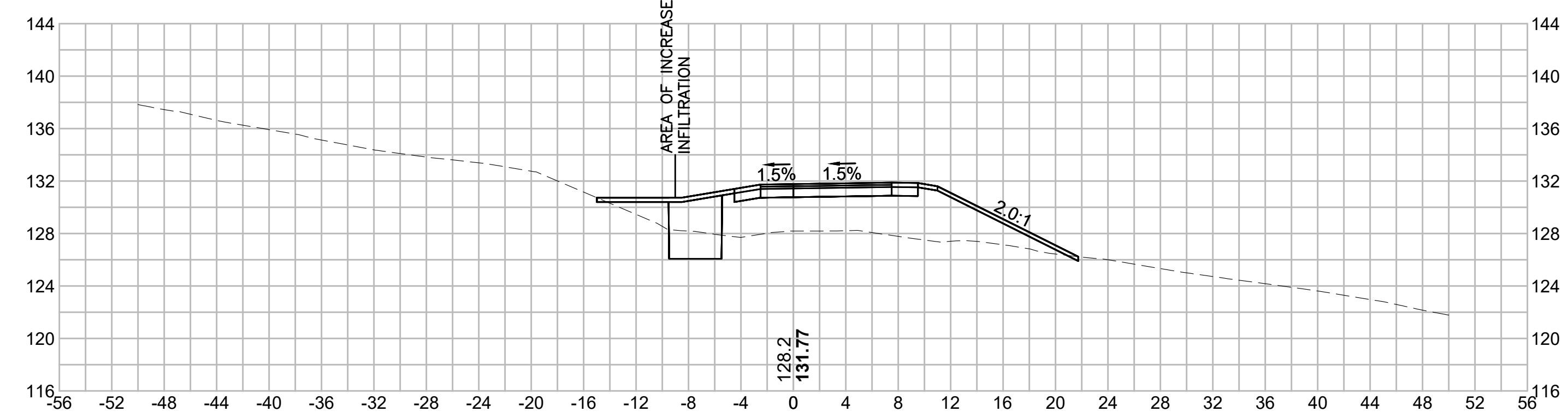
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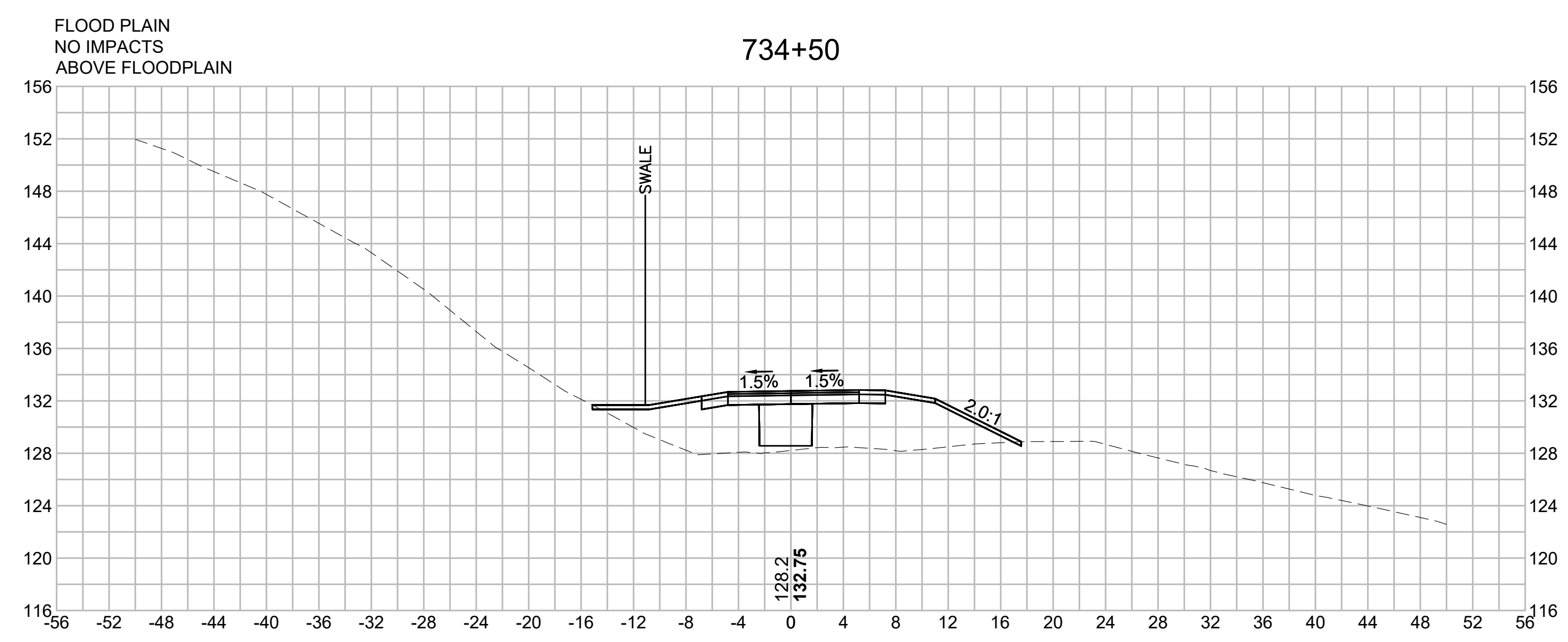
735+00



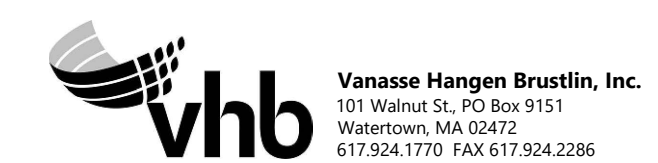
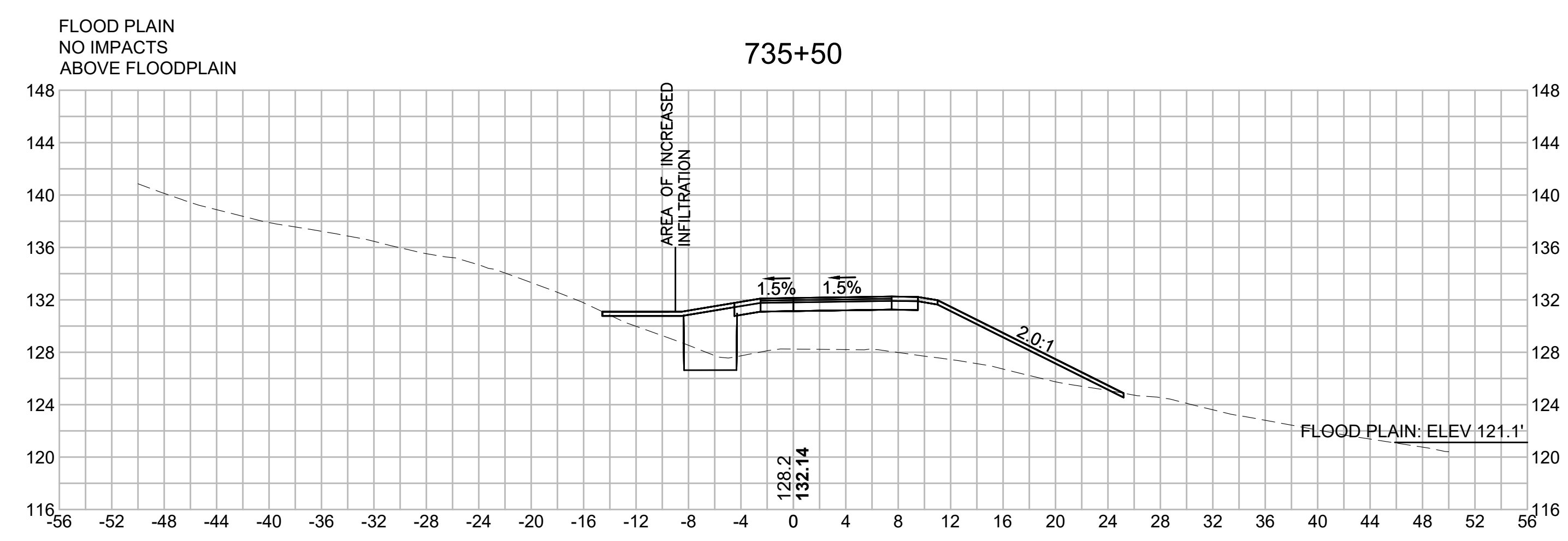
736+00



734+50



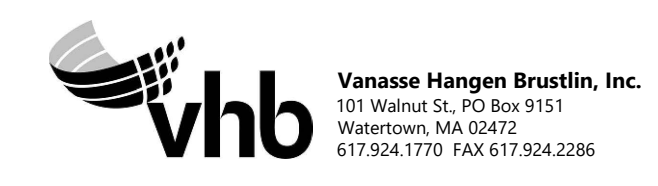
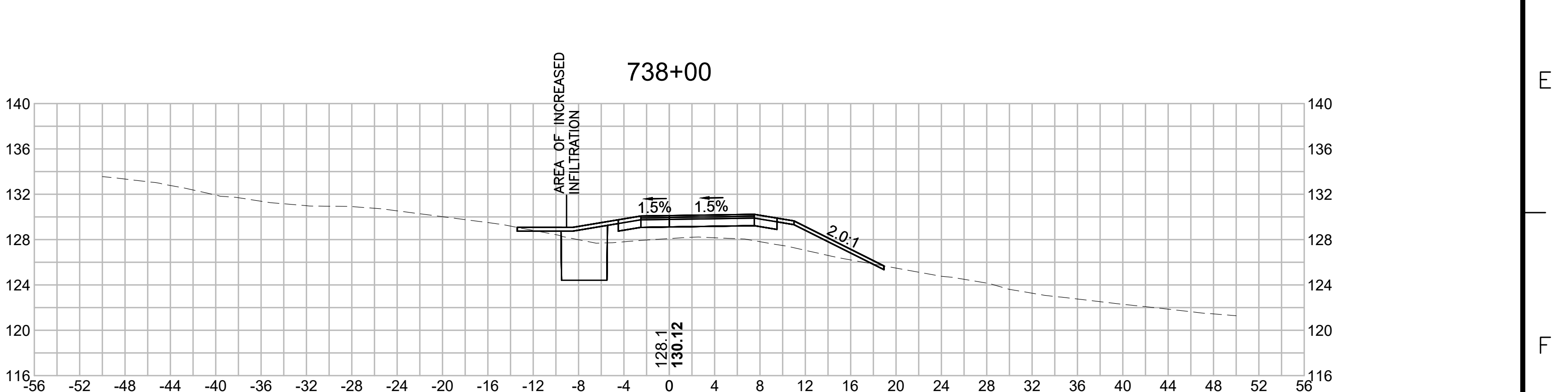
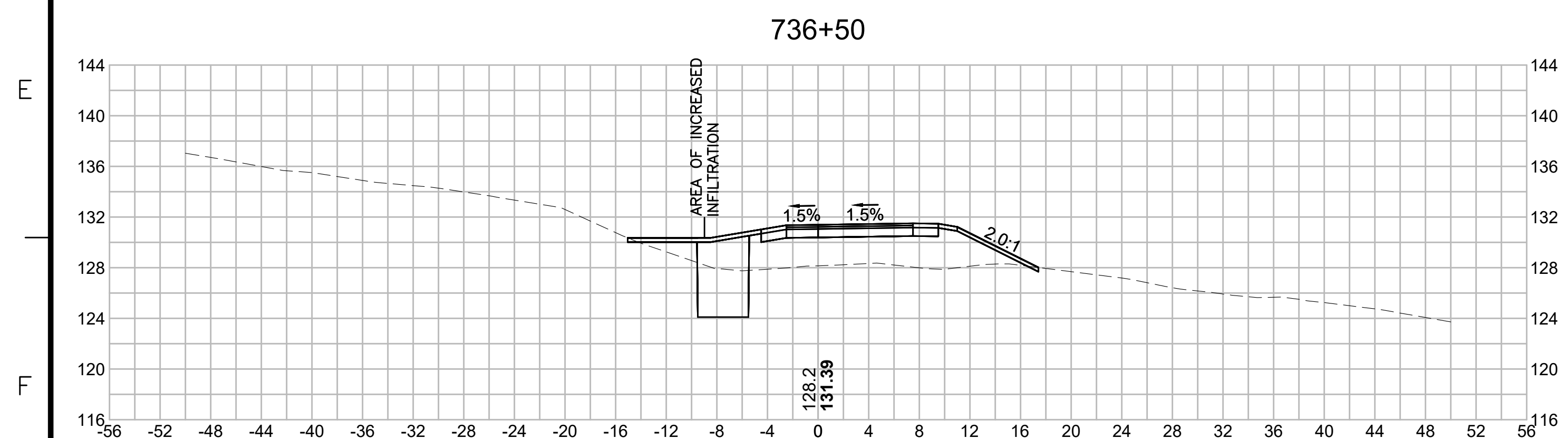
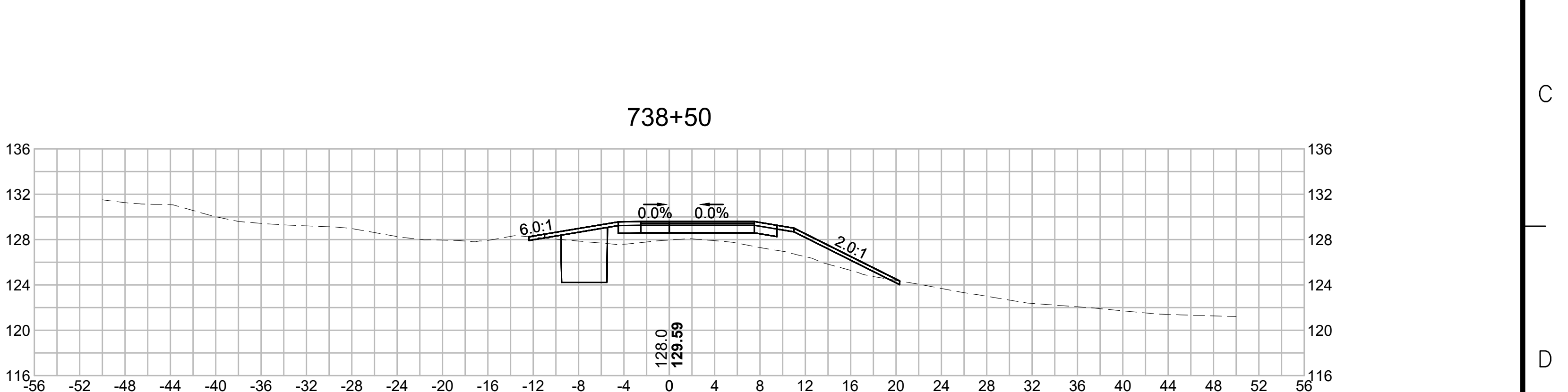
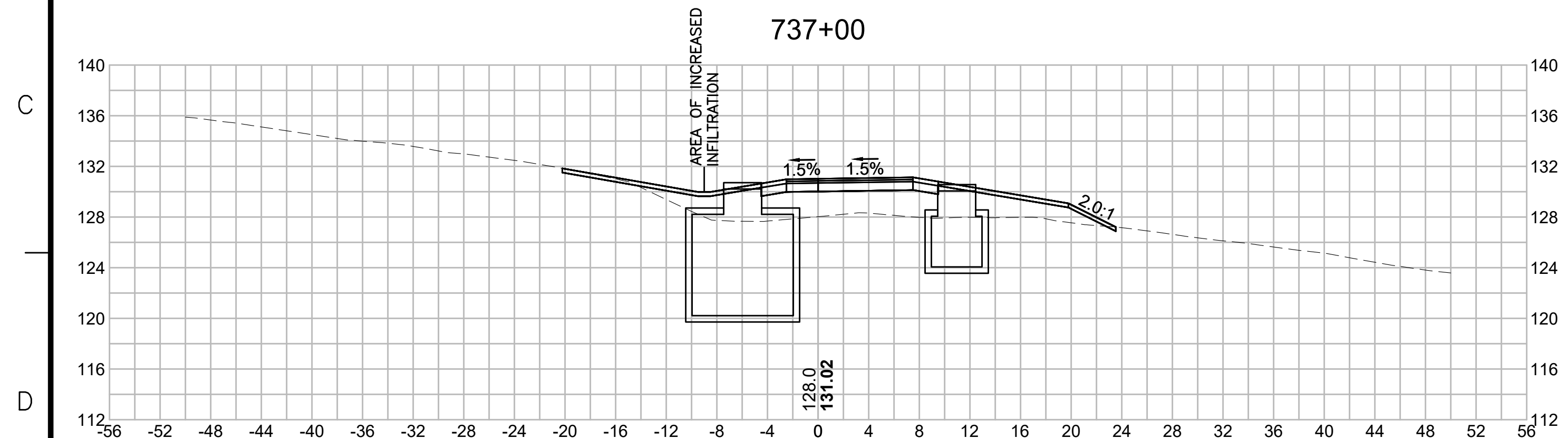
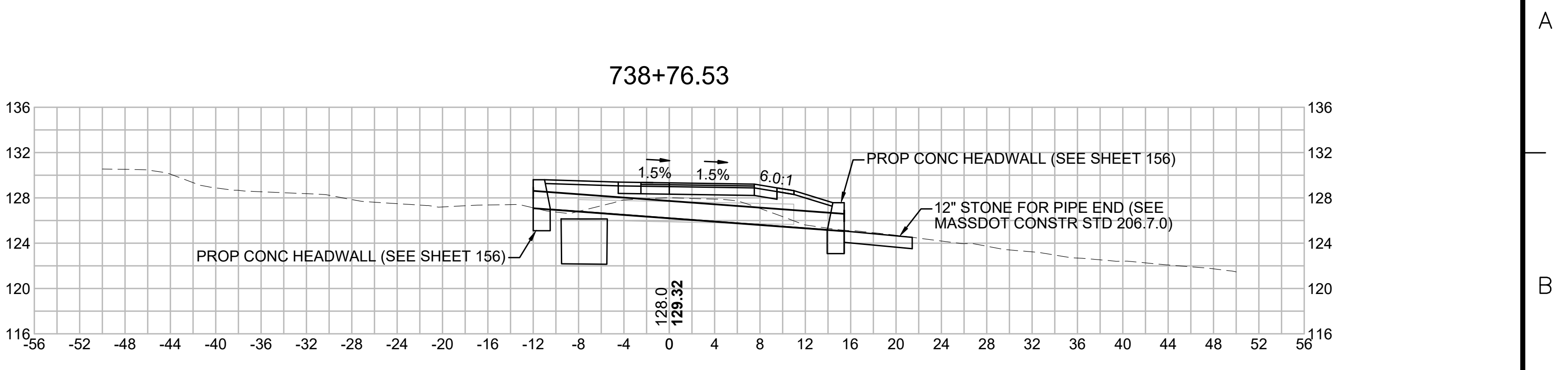
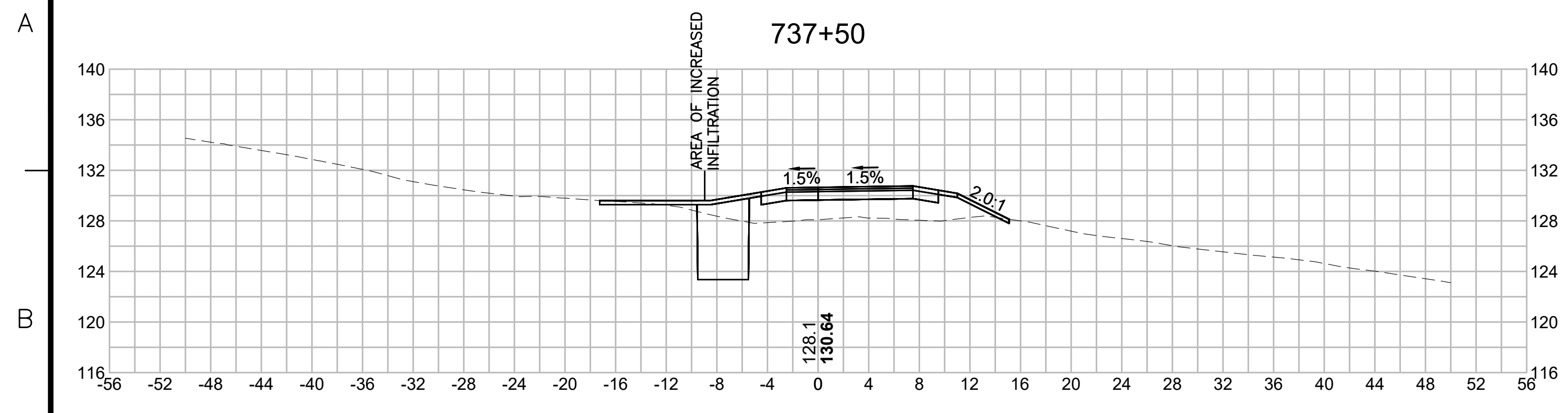
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NO.		DESCRIPTION		BY	DATE	APPR.
REVISION						
EVERSOURCE						
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT						
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS						
CROSS SECTIONS						
PLAN 335 OF 349						
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES	DRAWING NO.	REV.

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N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 336 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CH'K D. SK	APPR. MES
DRAWING NO.	REV.			

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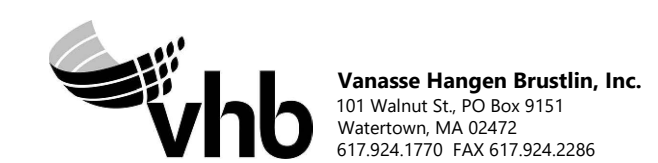
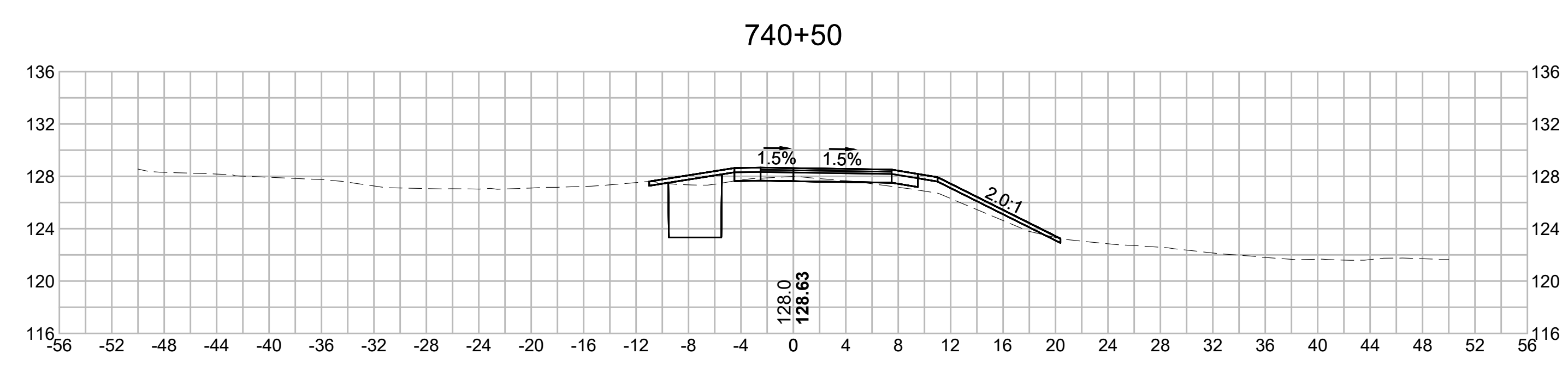
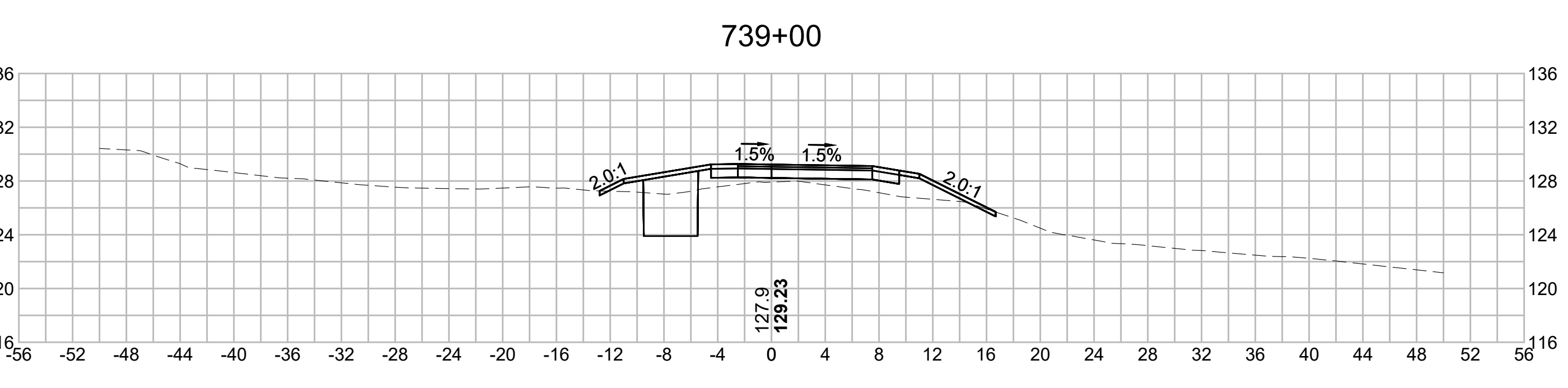
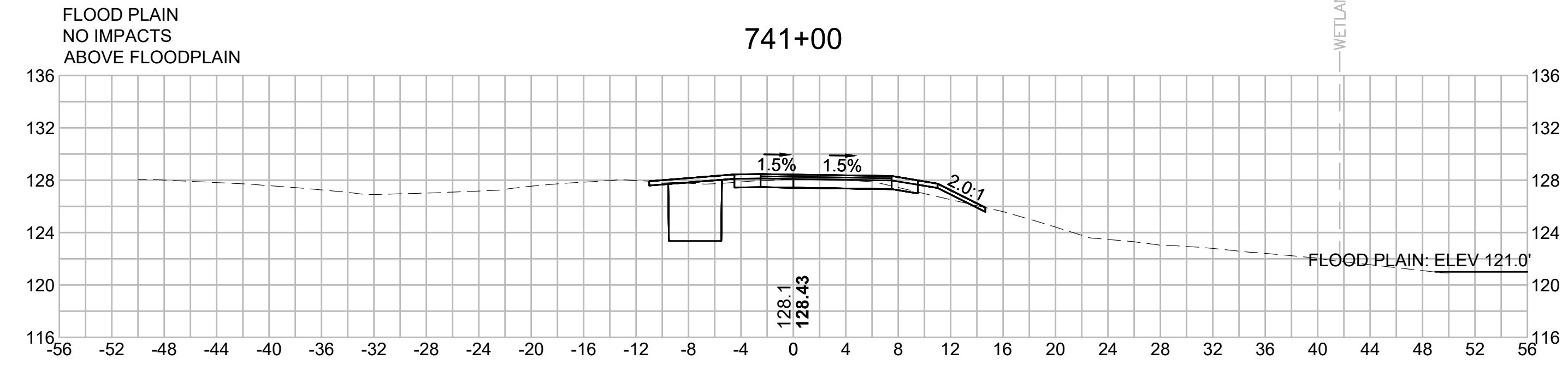
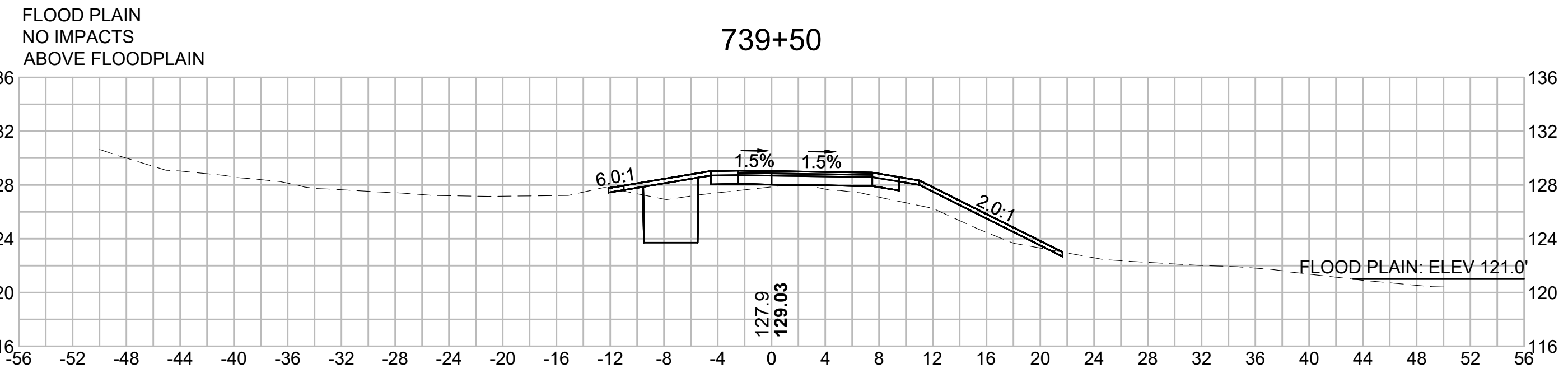
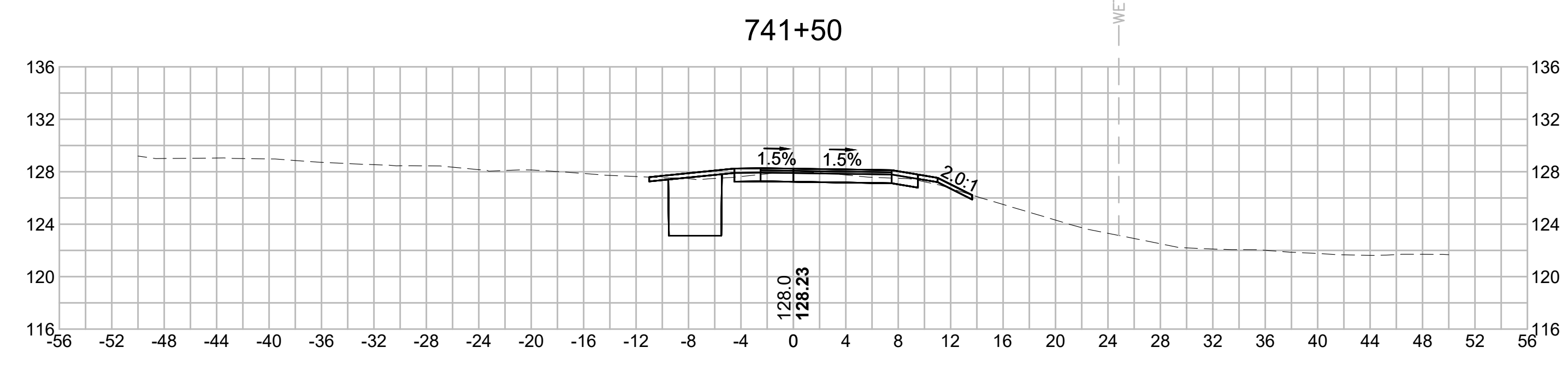
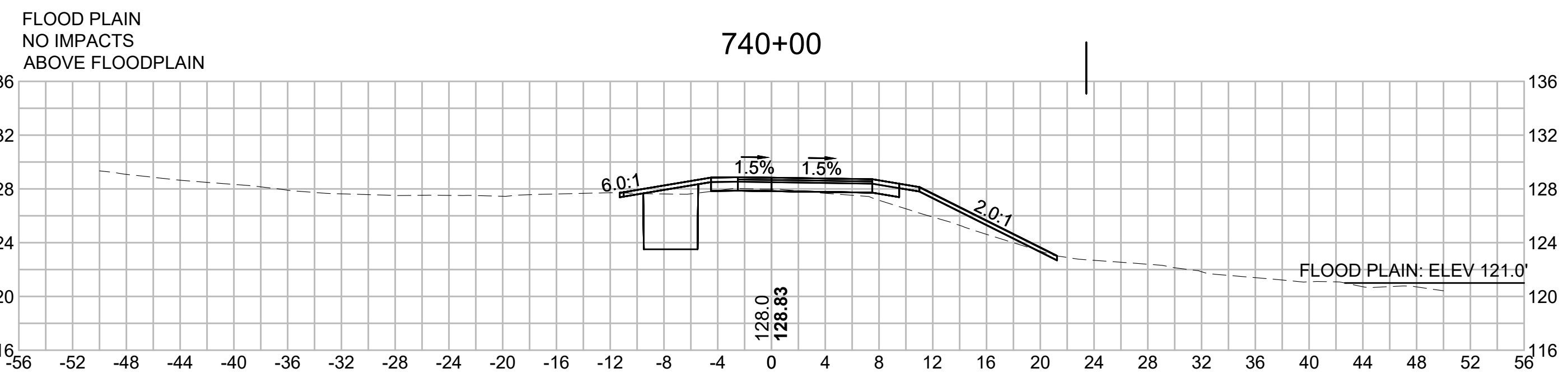
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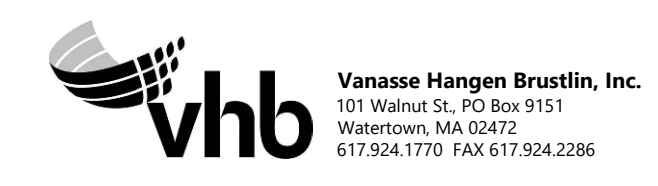
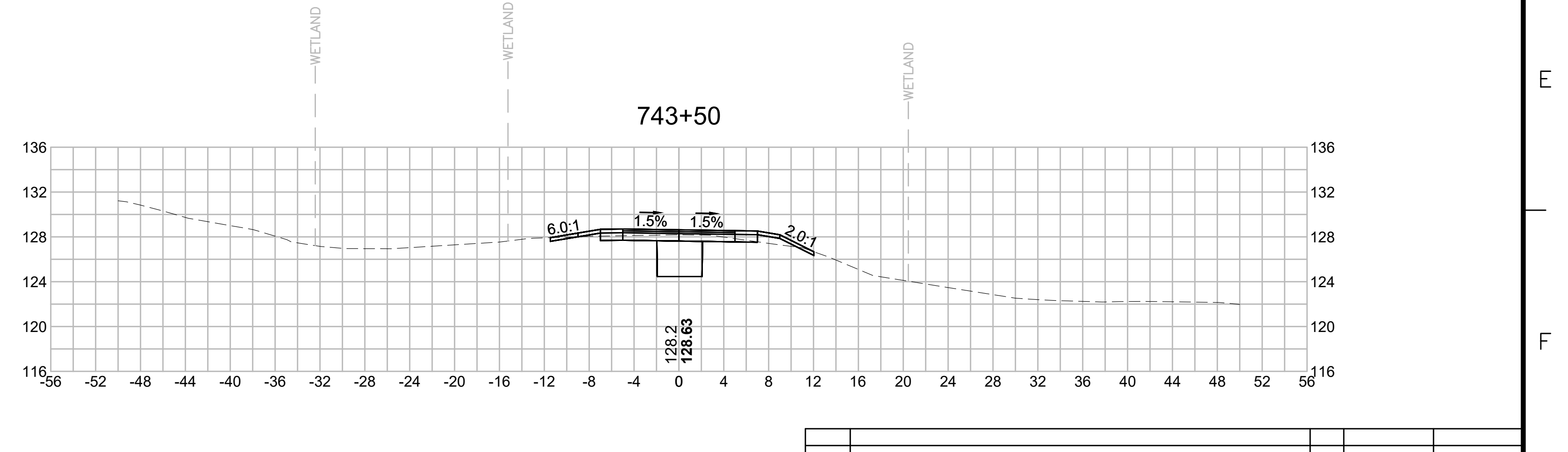
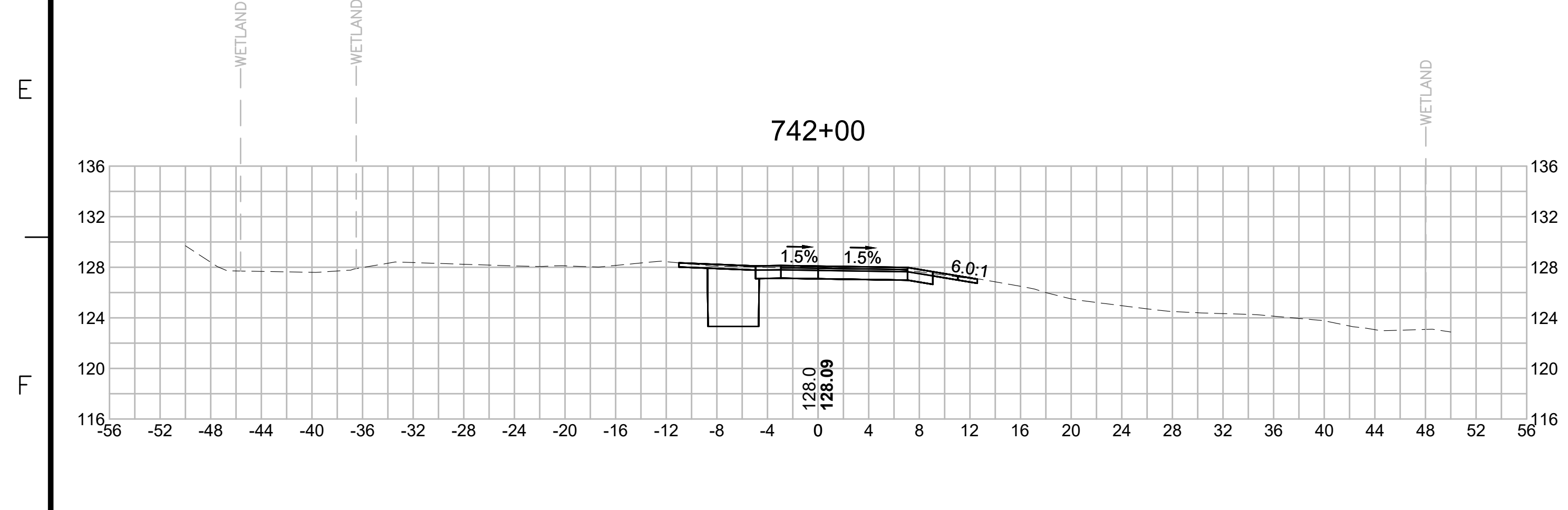
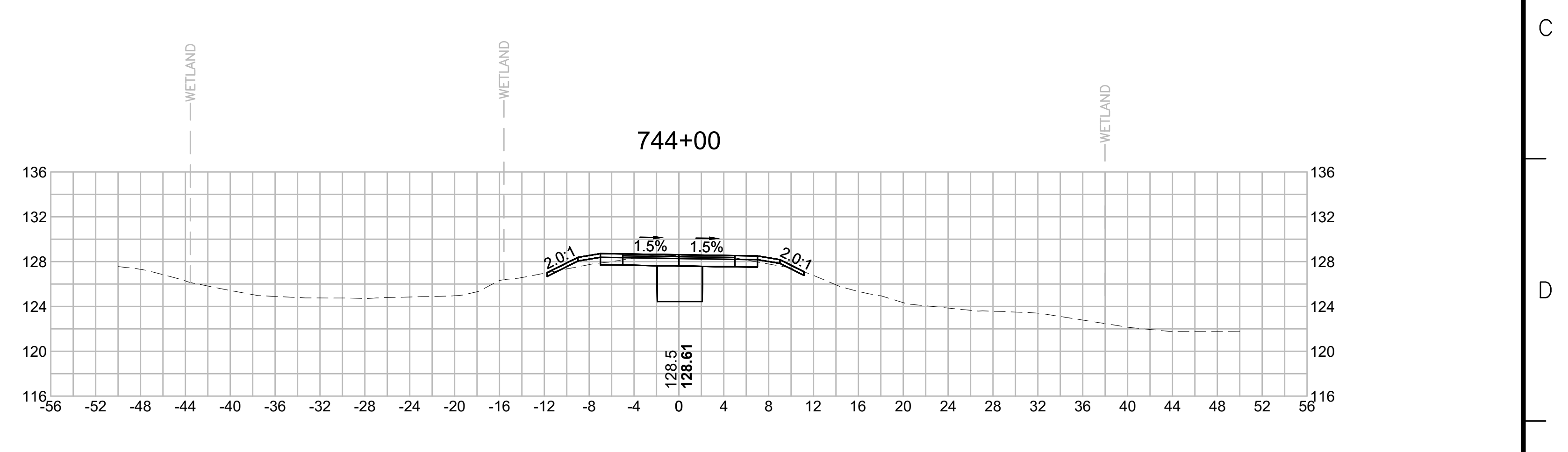
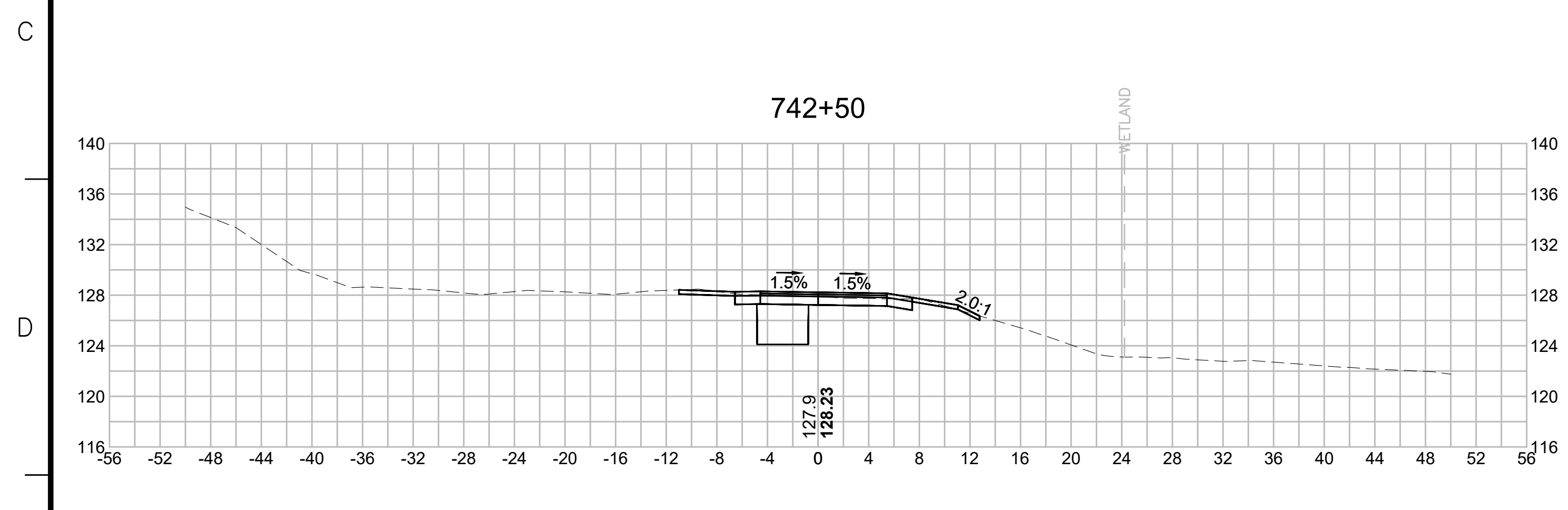
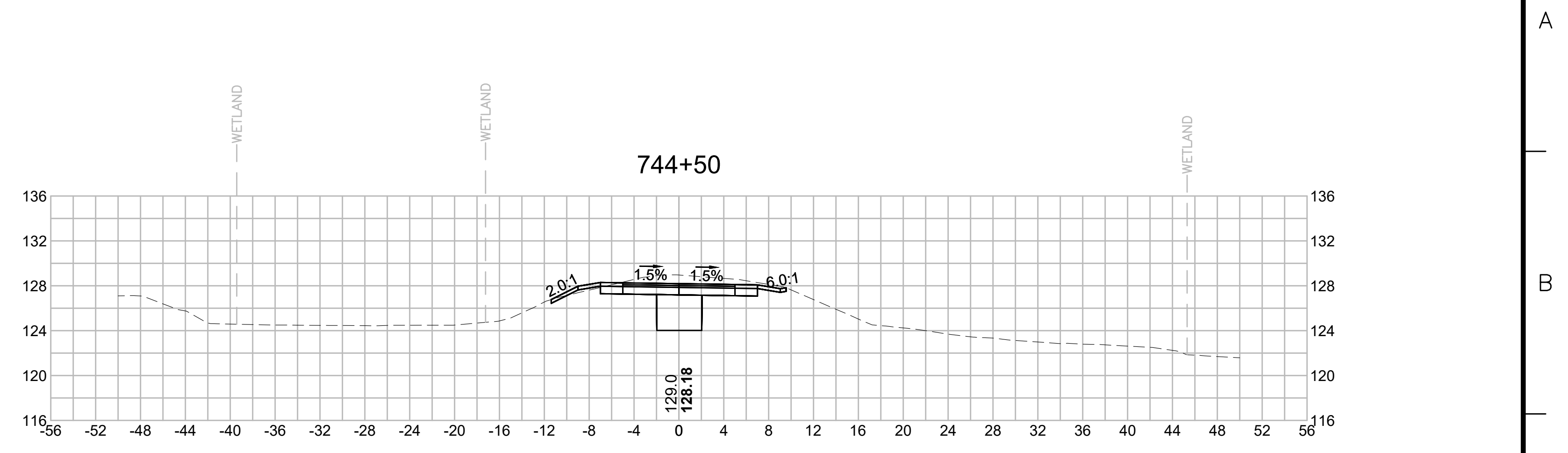
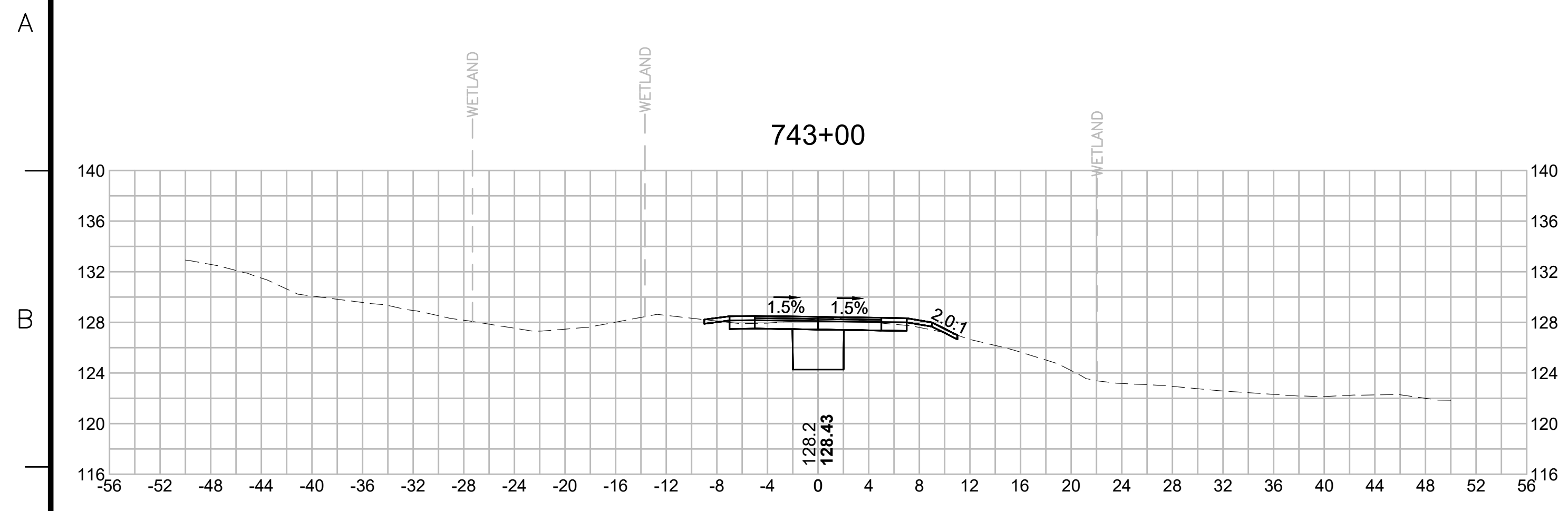
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N O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 337 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES
DRAWING NO.	REV.			

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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 338 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES
DRAWING NO.	REV.			

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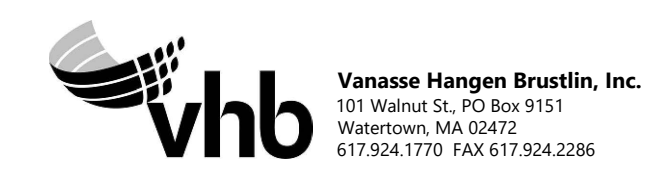
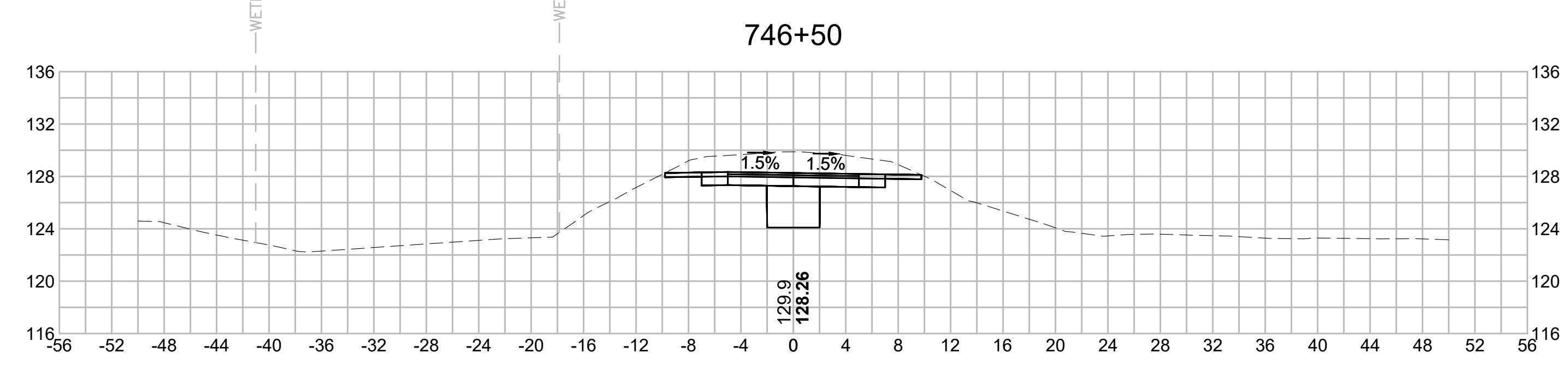
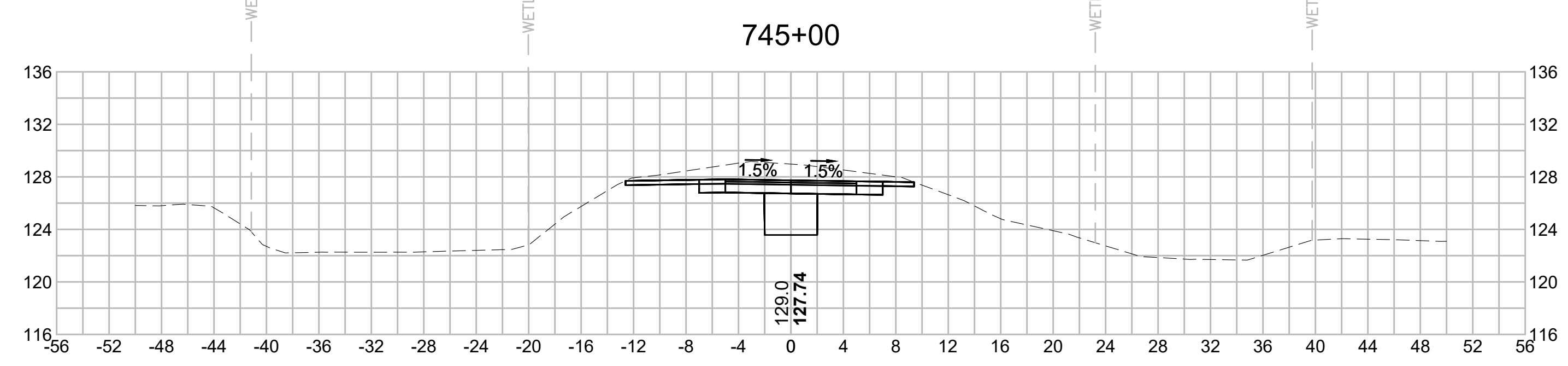
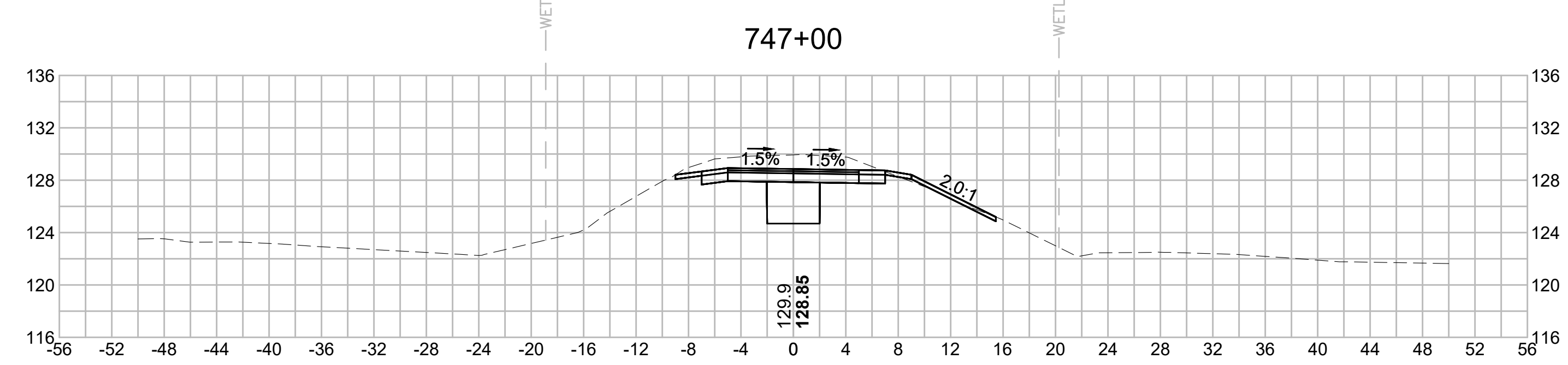
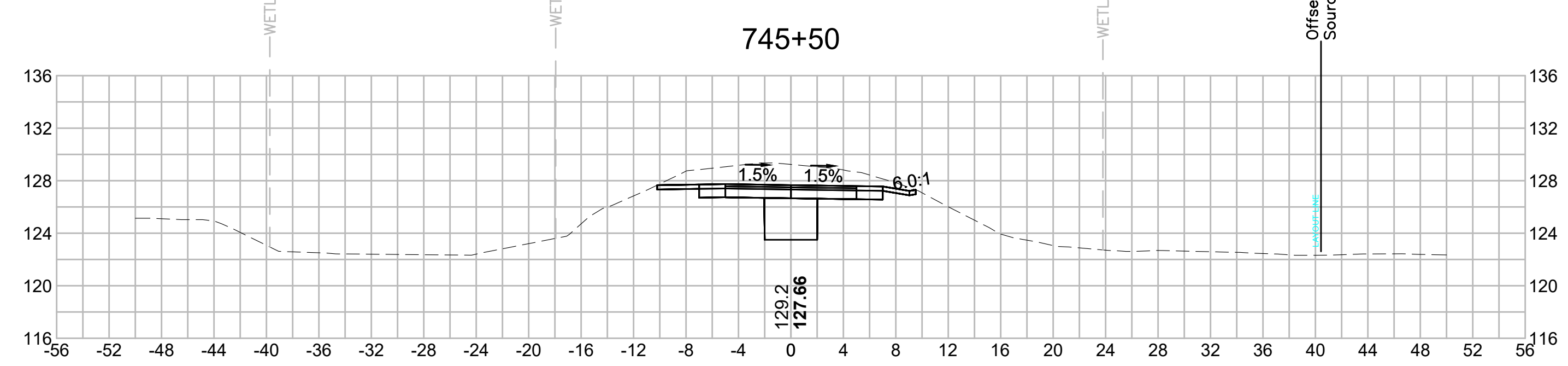
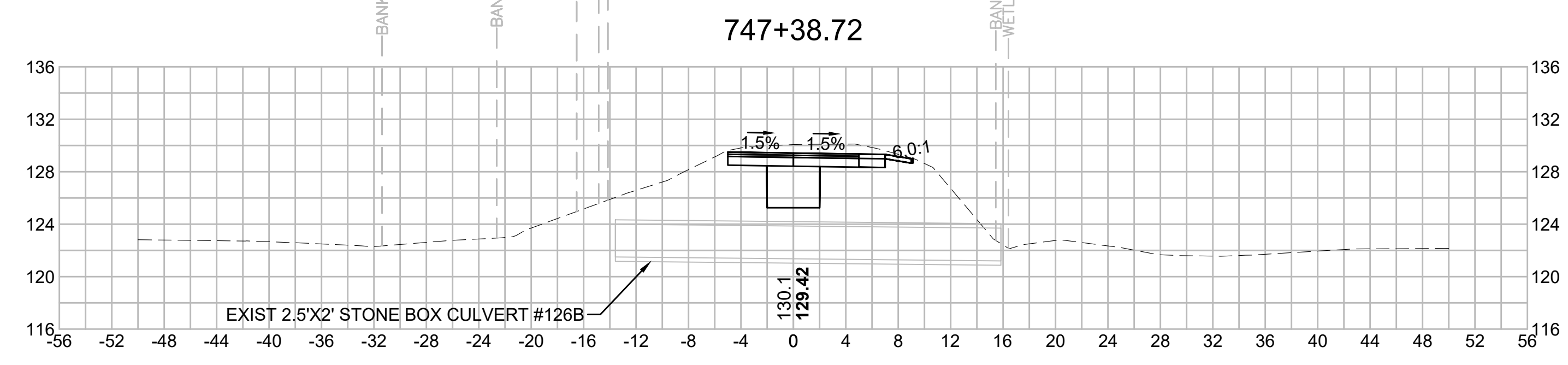
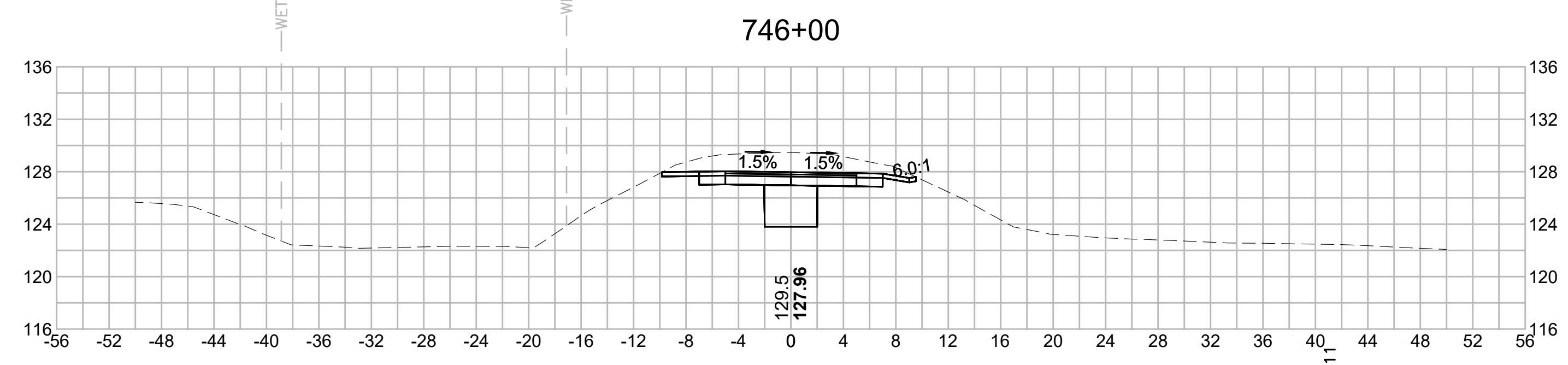
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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 CROSS SECTIONS

PLAN 339 OF 349

SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES	DRAWING NO.	REV.
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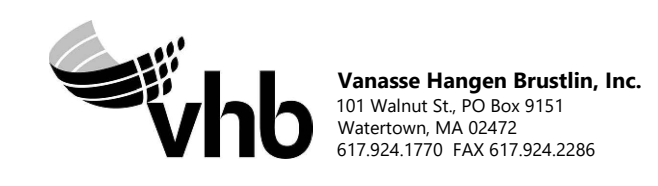
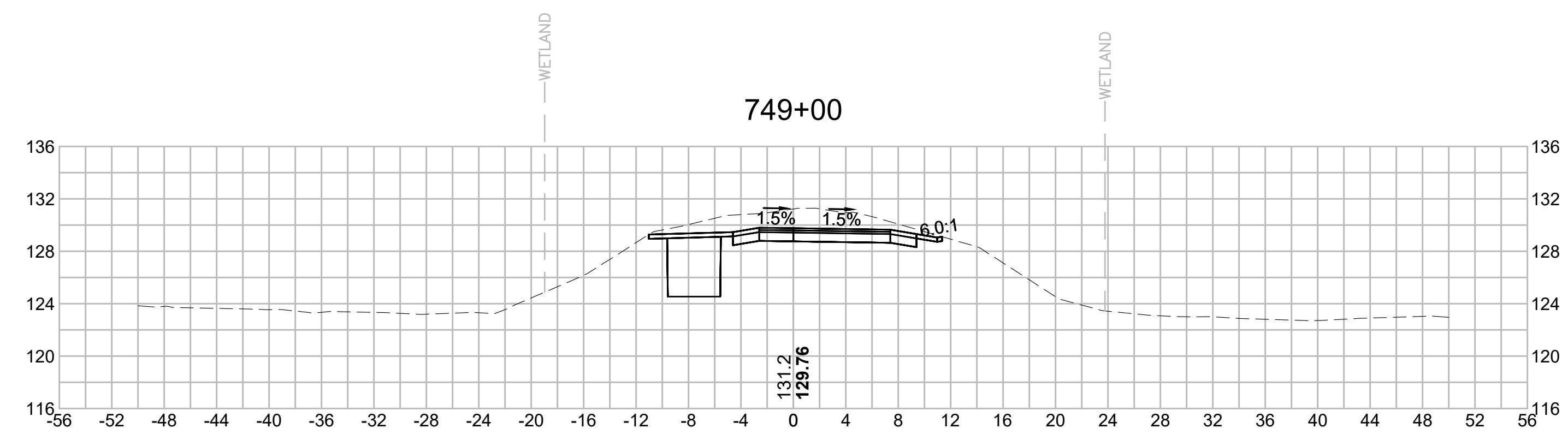
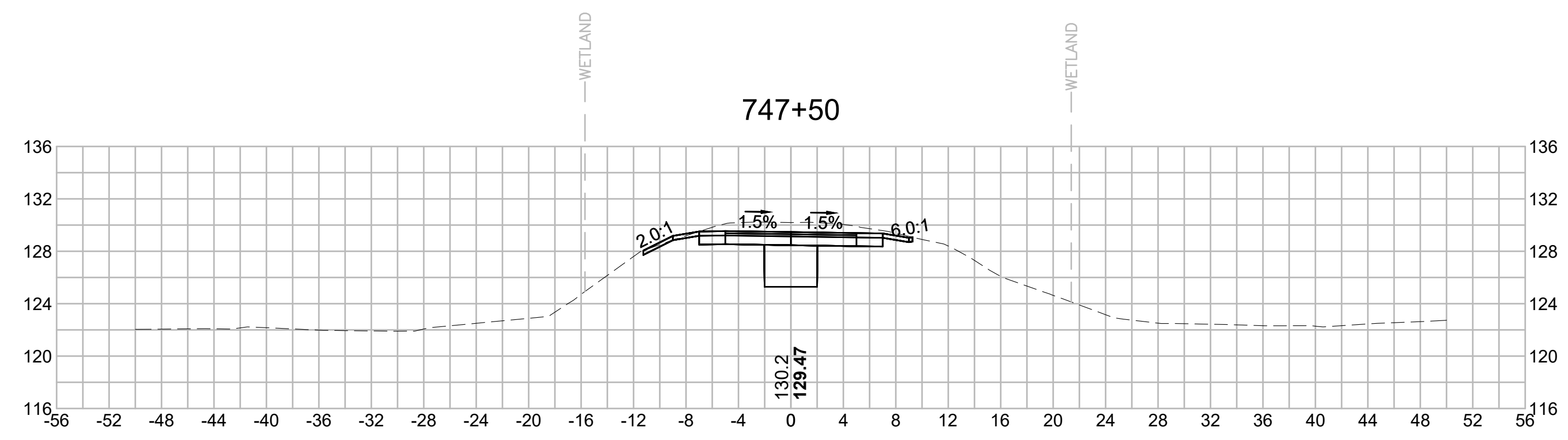
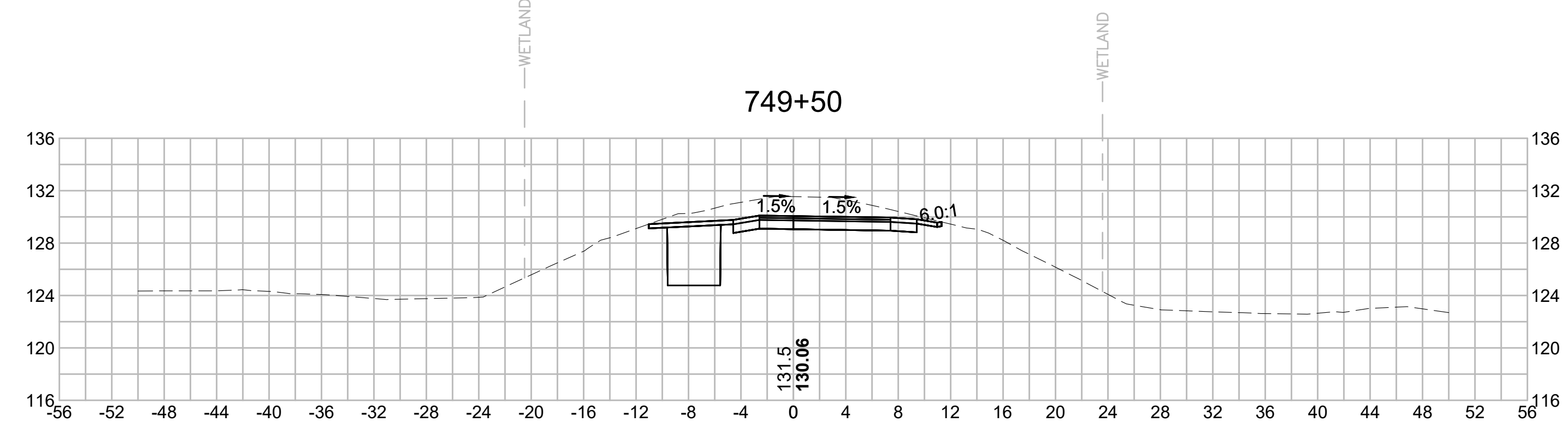
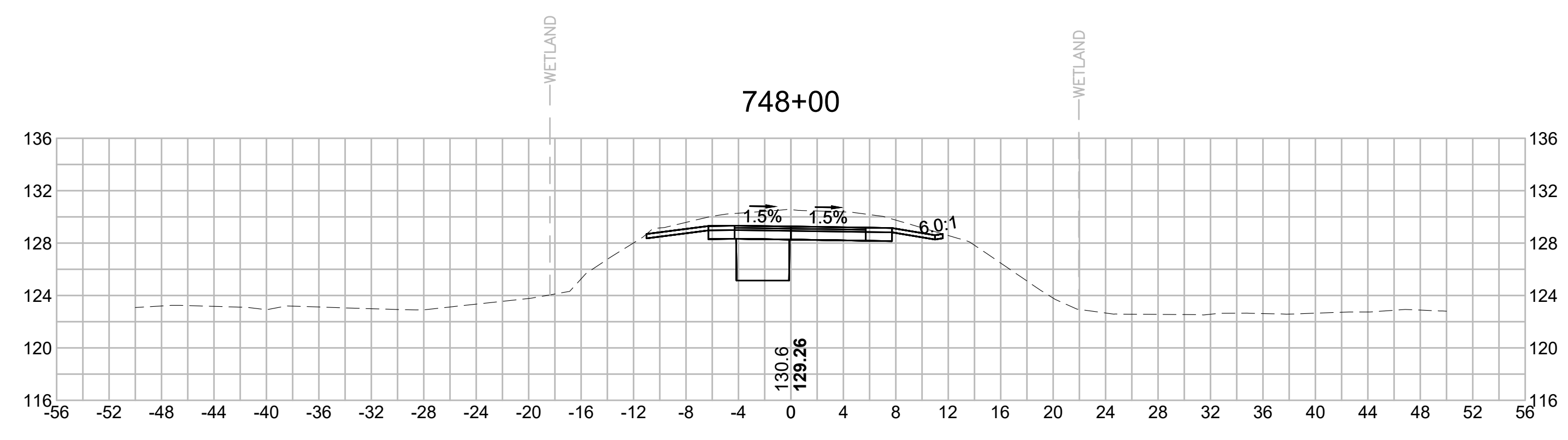
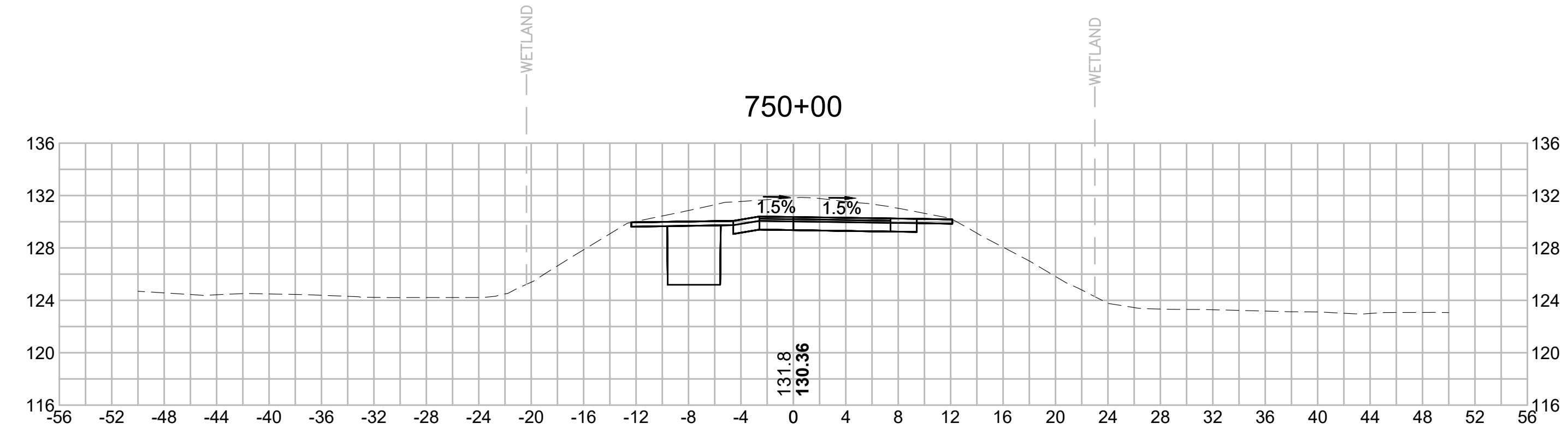
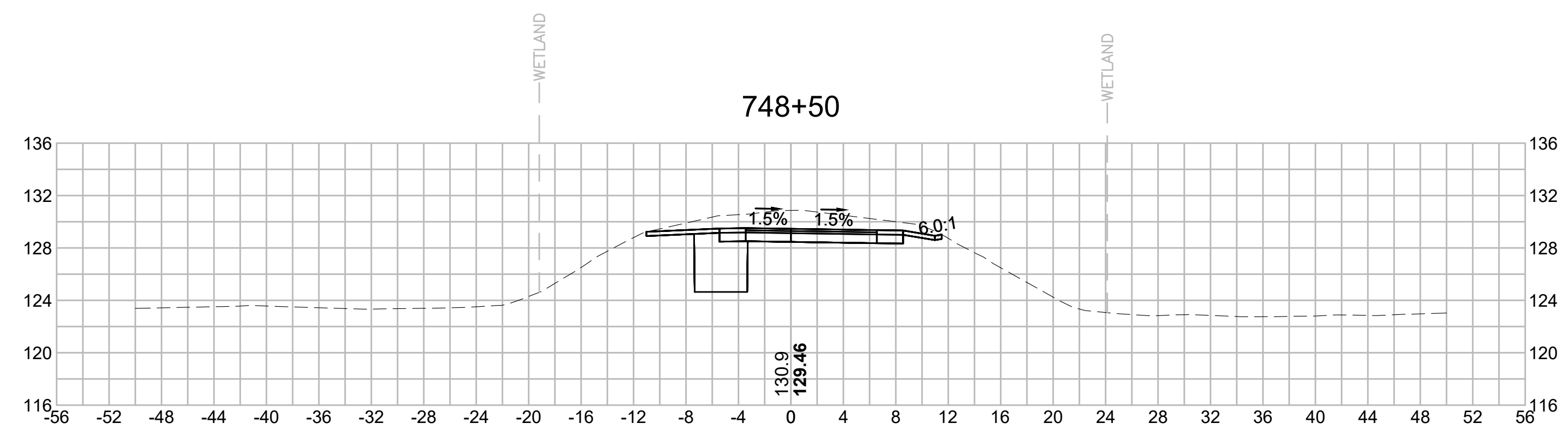
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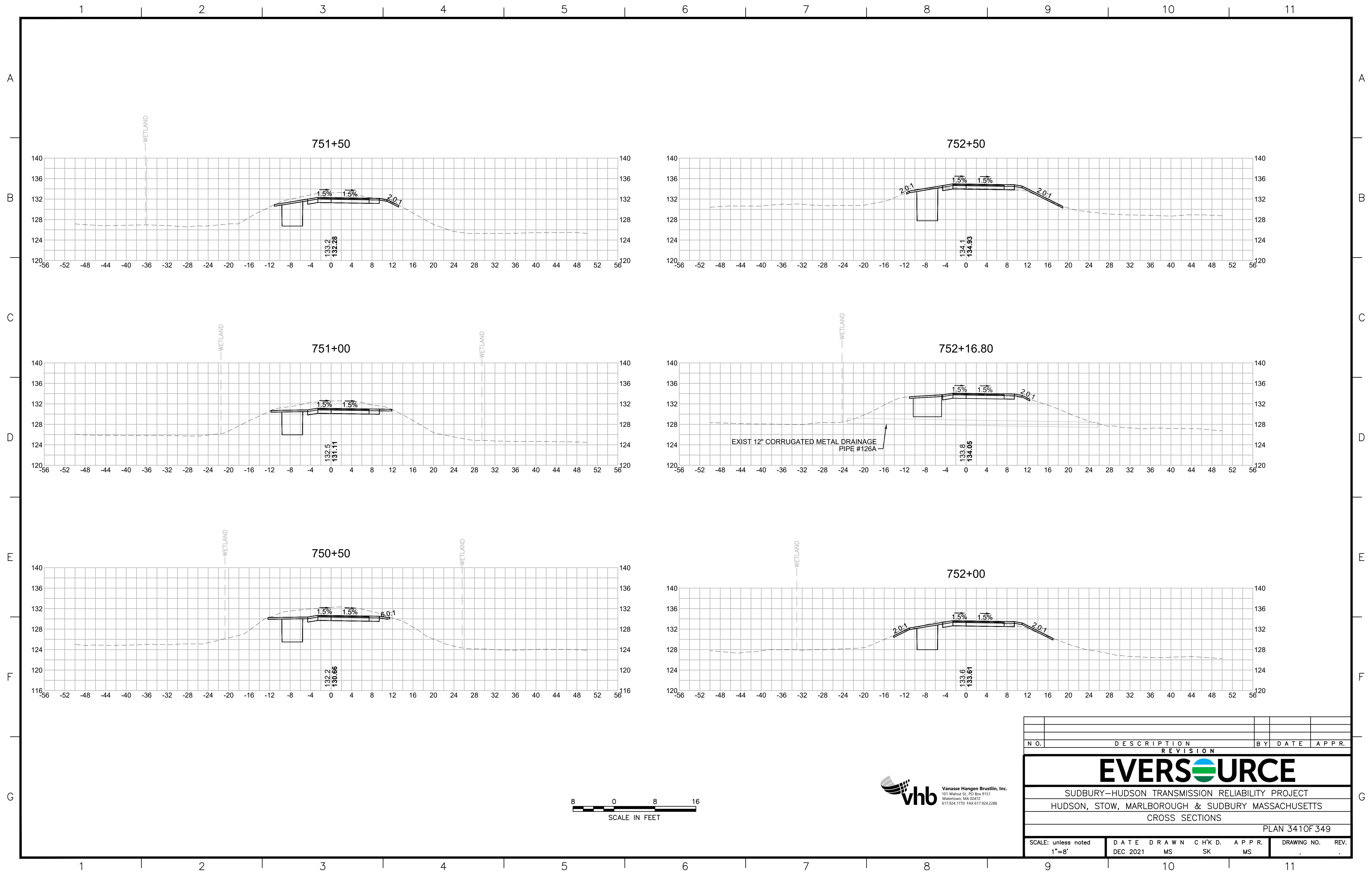
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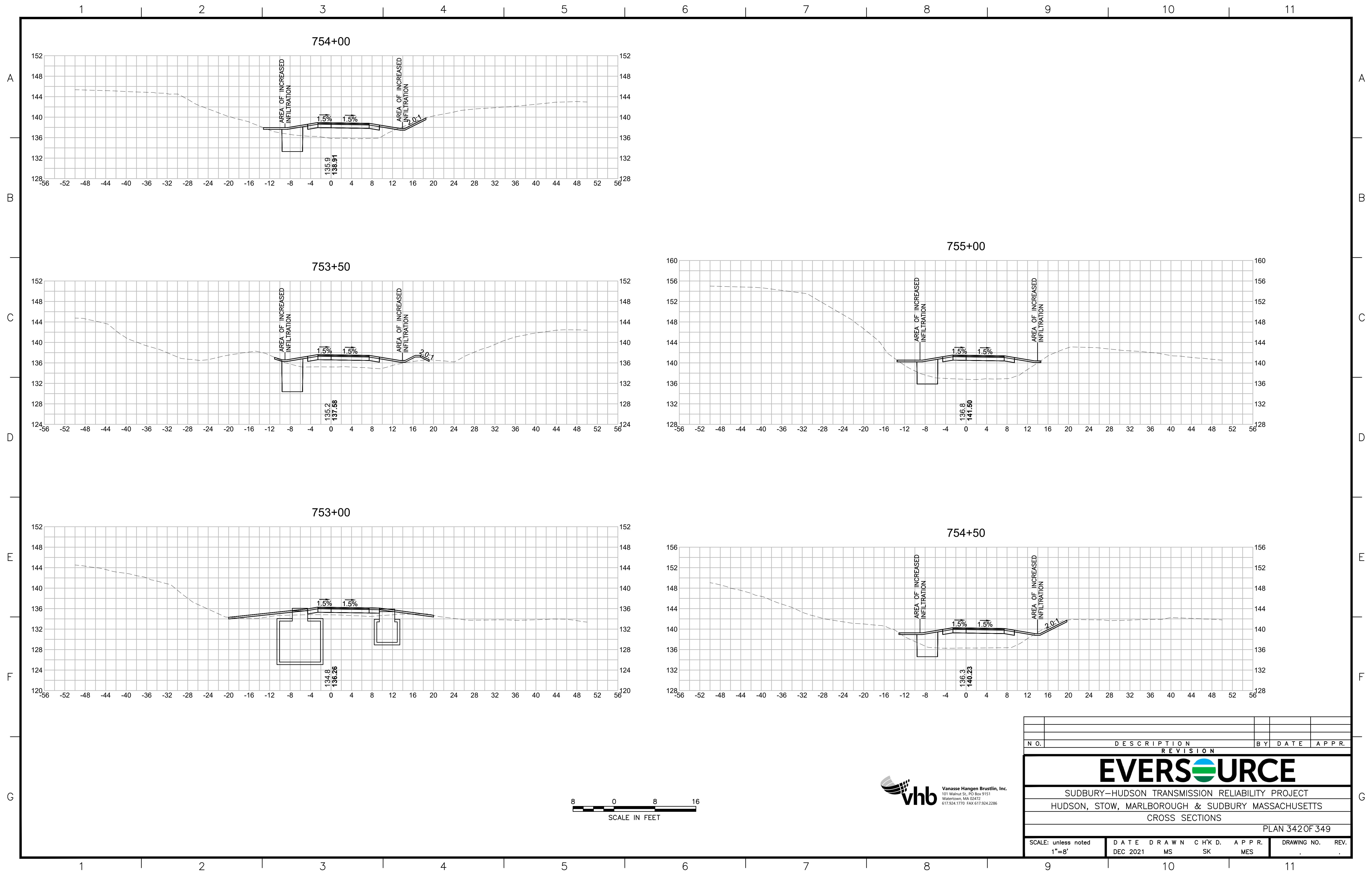


N O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 340 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES
DRAWING NO.	REV.			

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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 341 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MS
DRAWING NO.	REV.			



N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 342 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES
DRAWING NO.	REV.			

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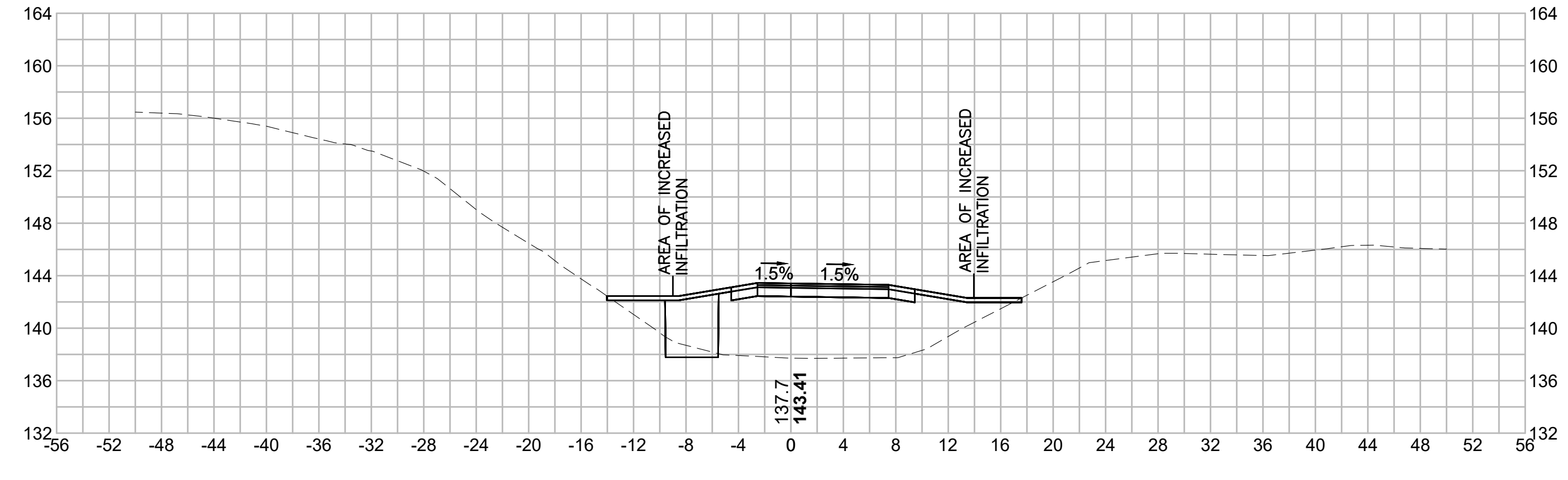
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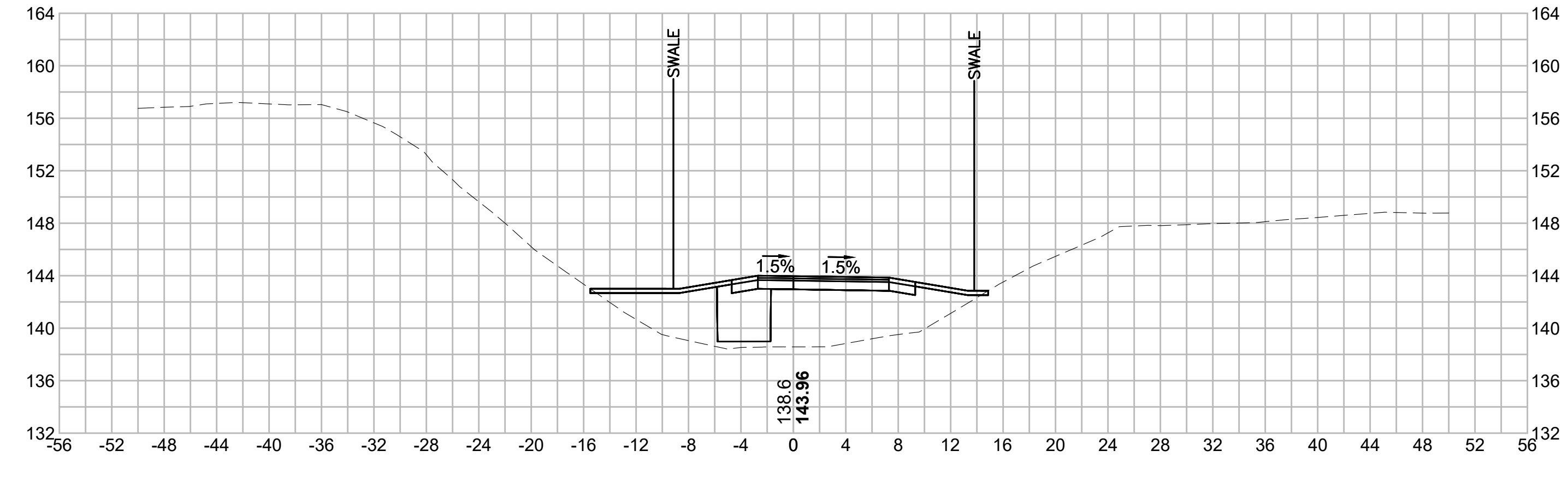
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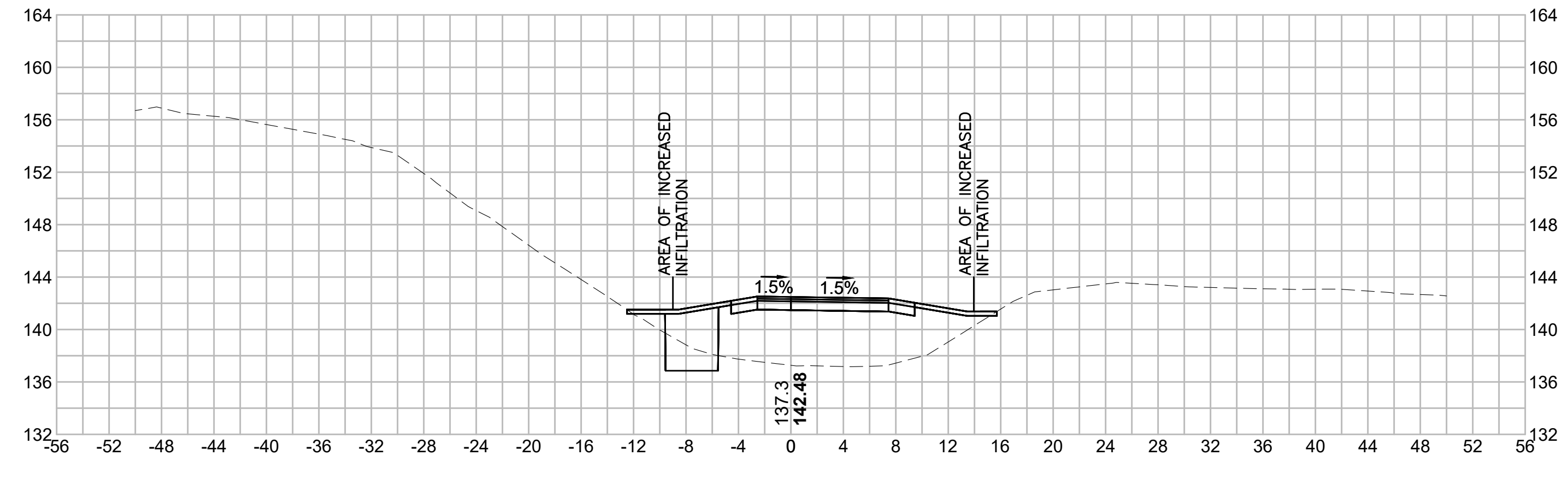
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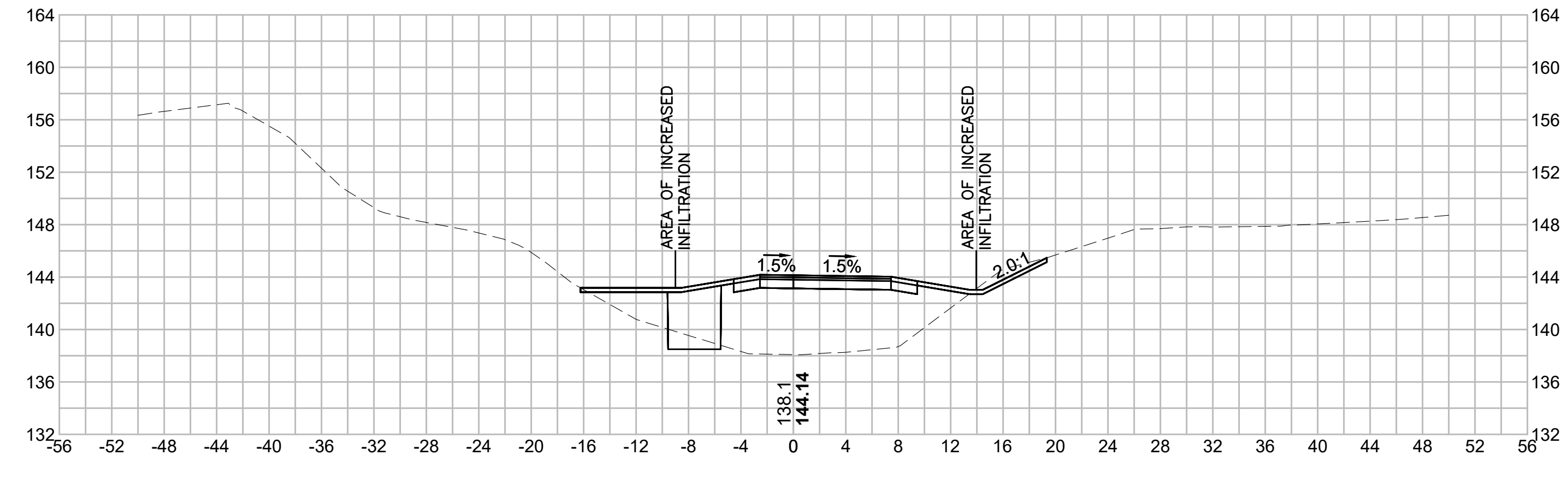
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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 343 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES
DRAWING NO.	REV.			

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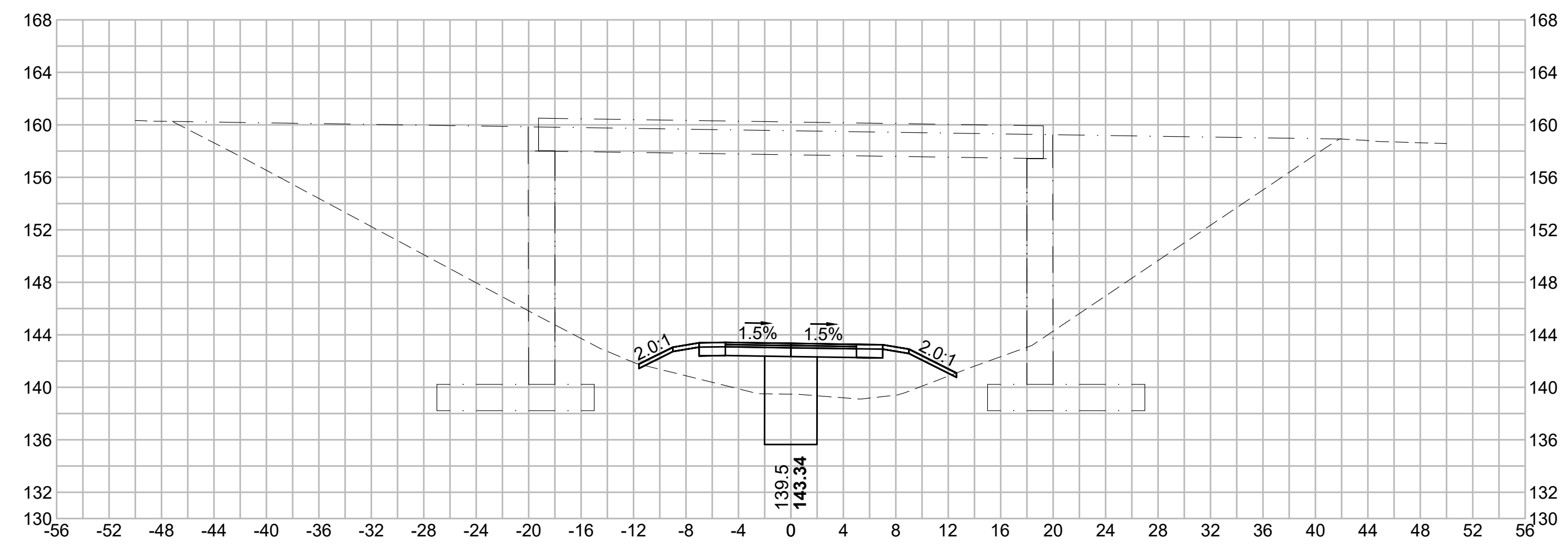
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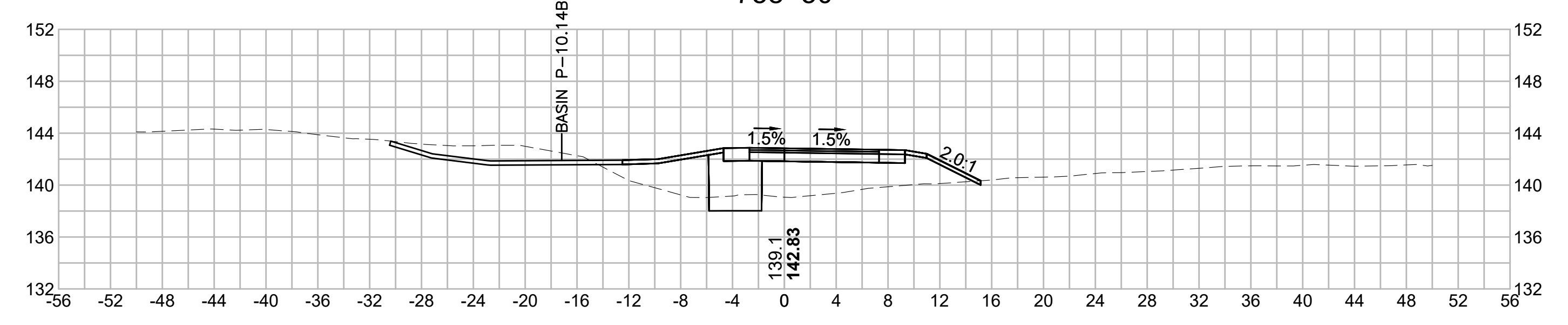
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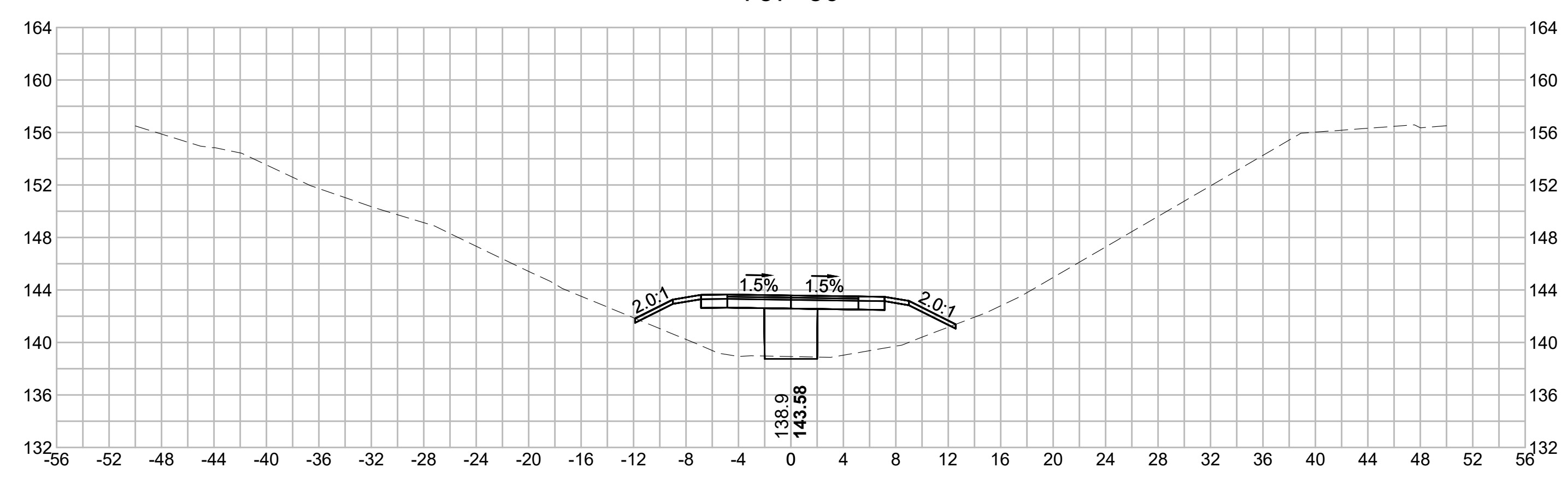
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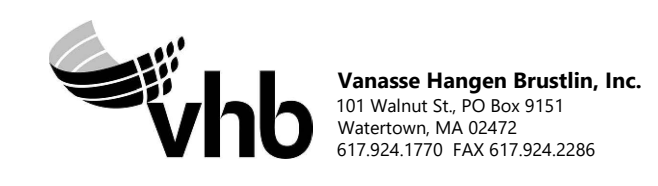
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N O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 344 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES
DRAWING NO.	REV.			

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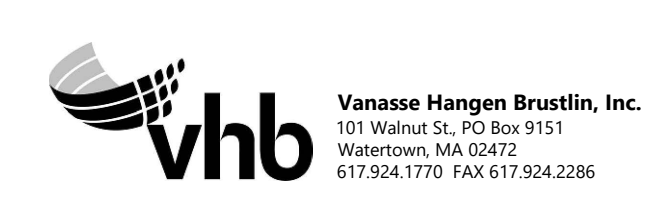
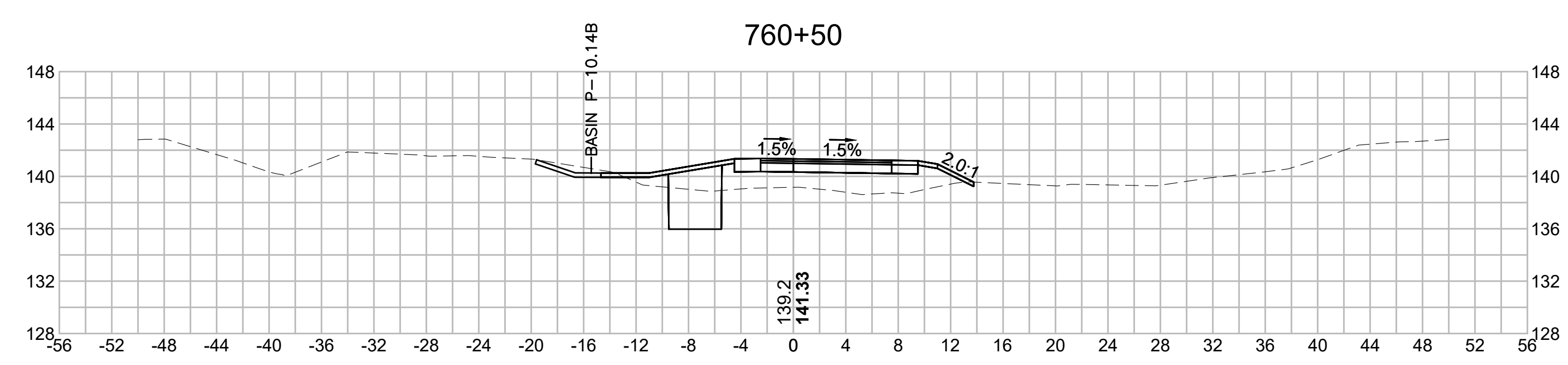
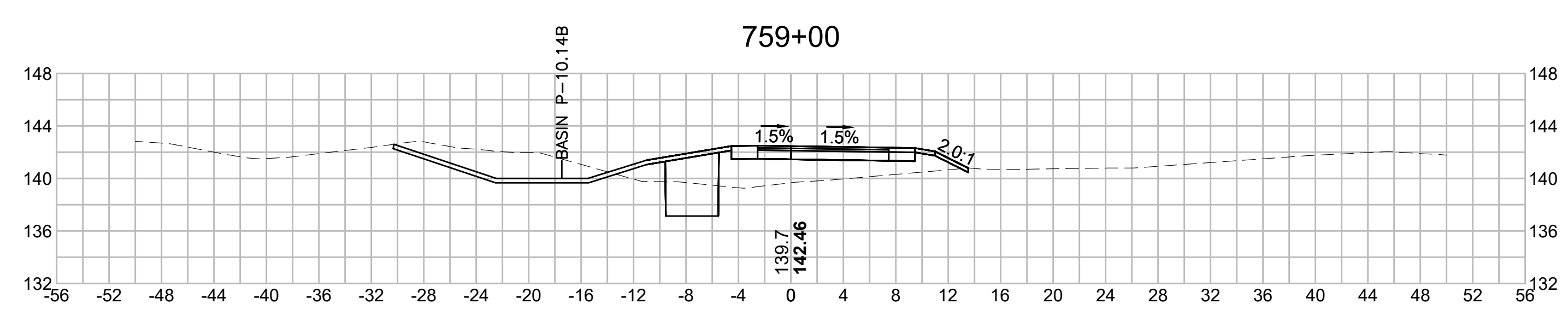
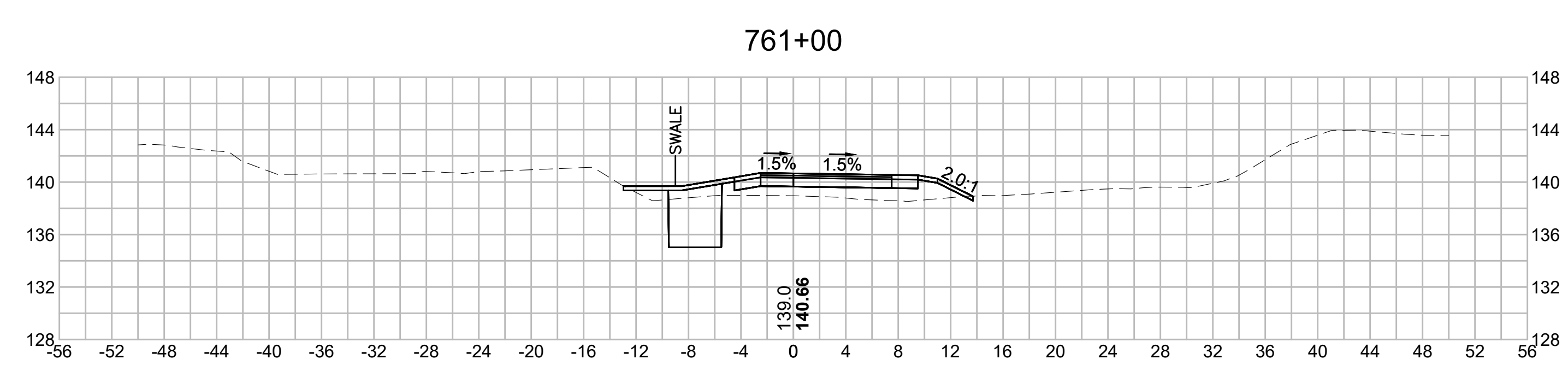
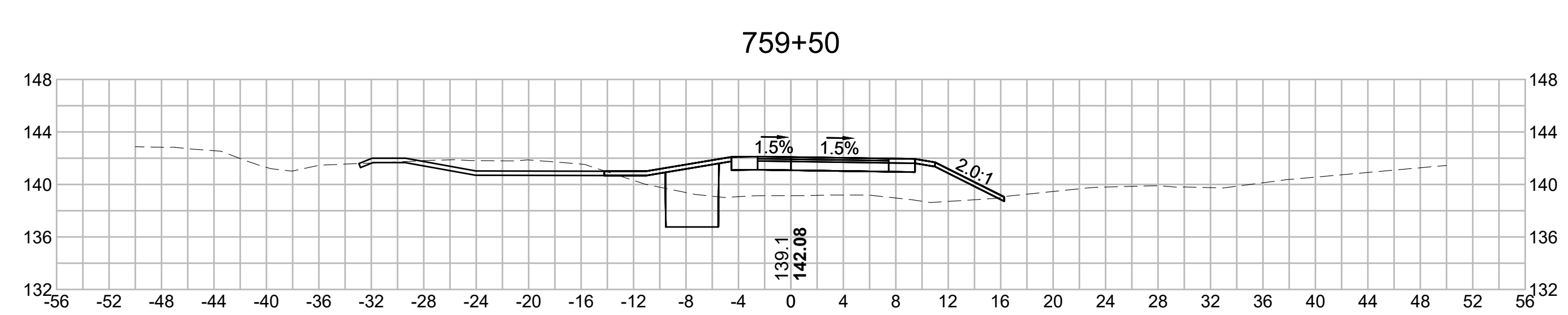
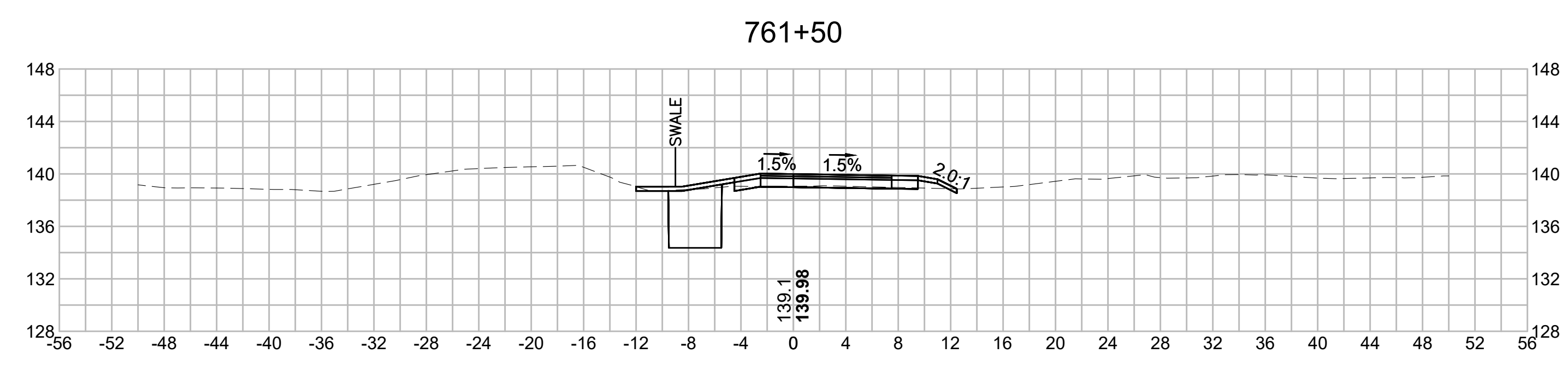
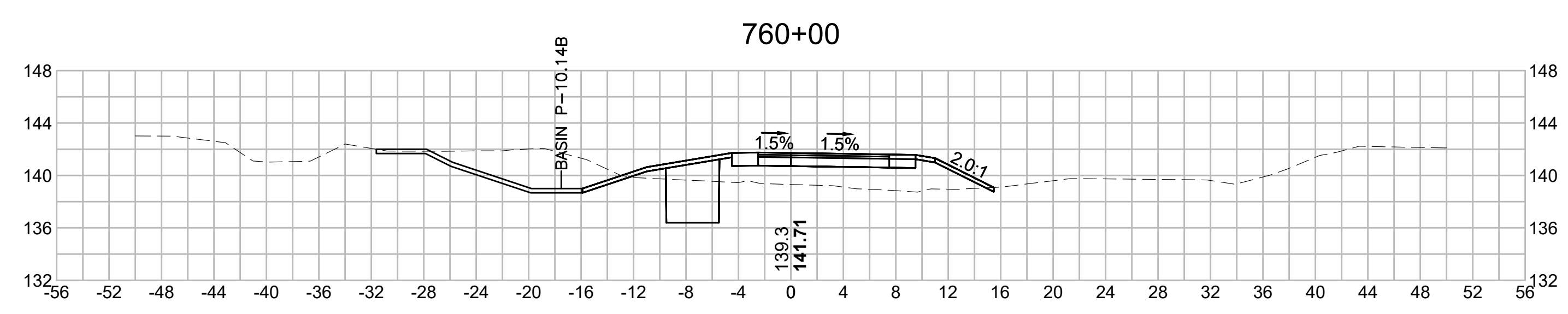
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N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 345 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES
DRAWING NO.	REV.			

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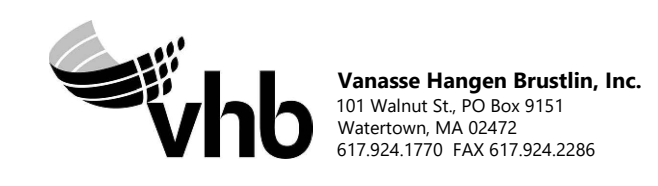
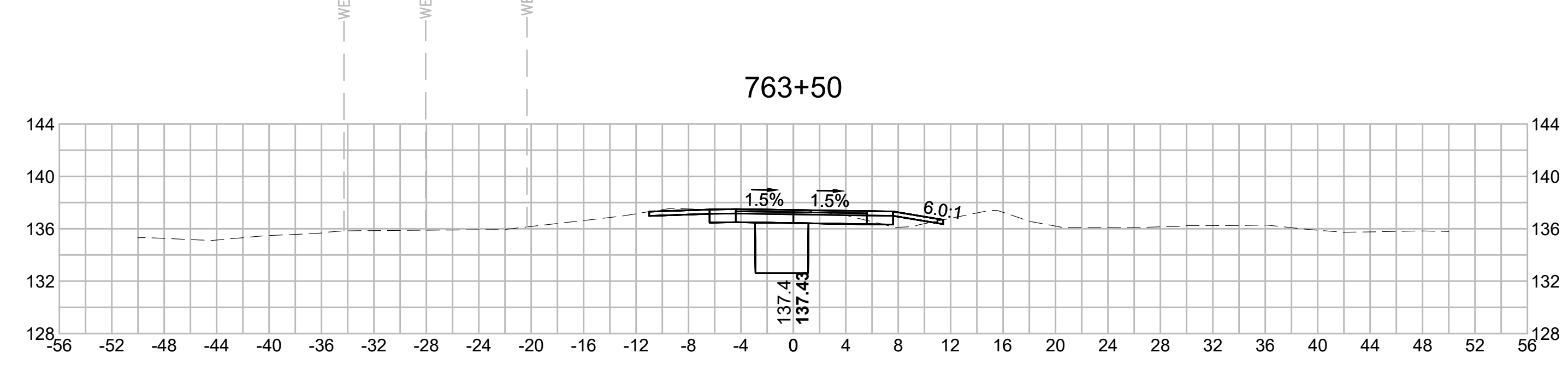
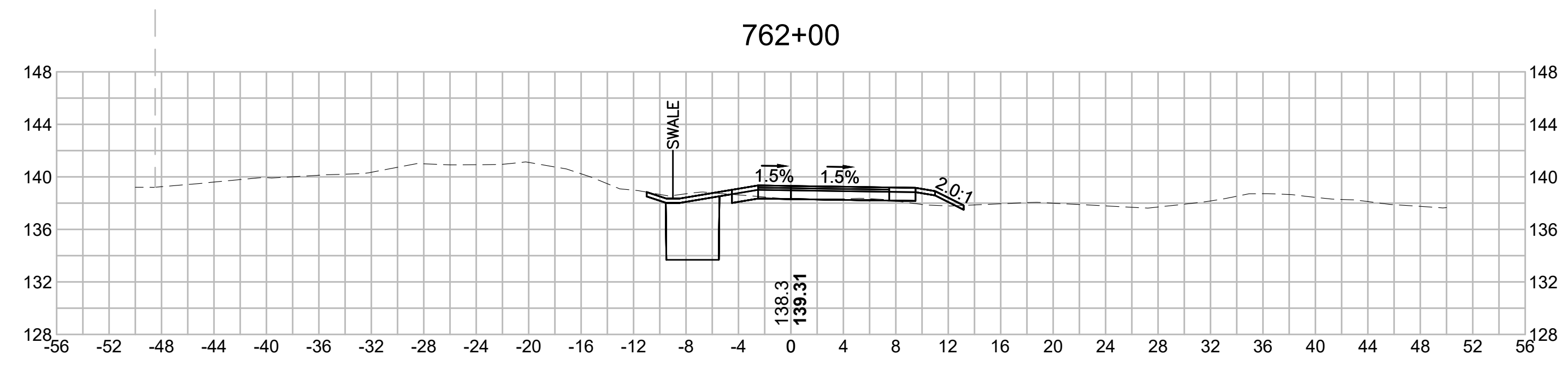
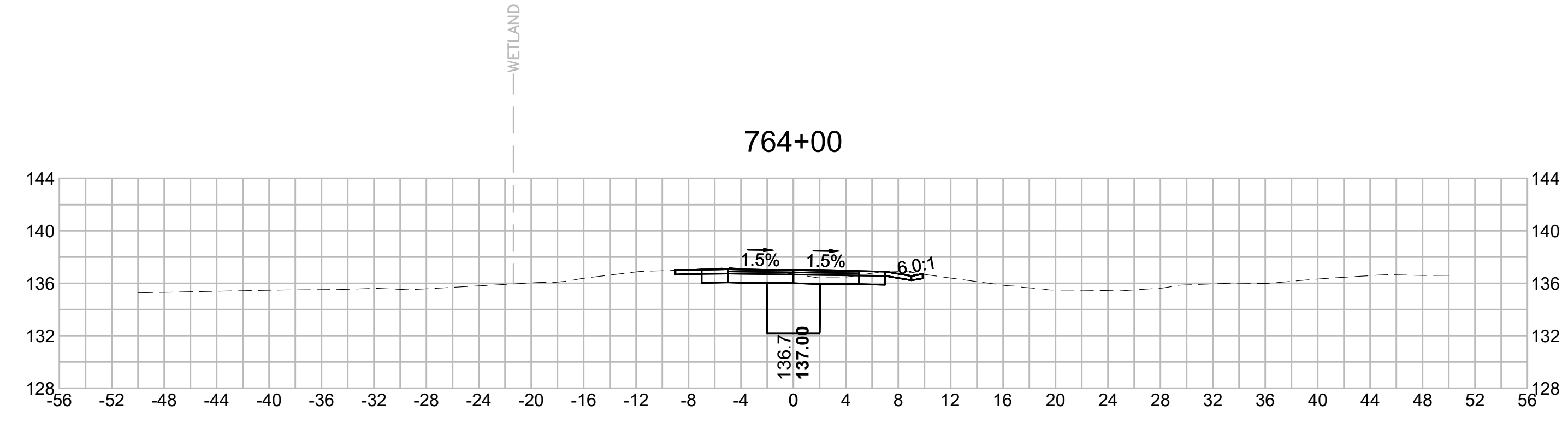
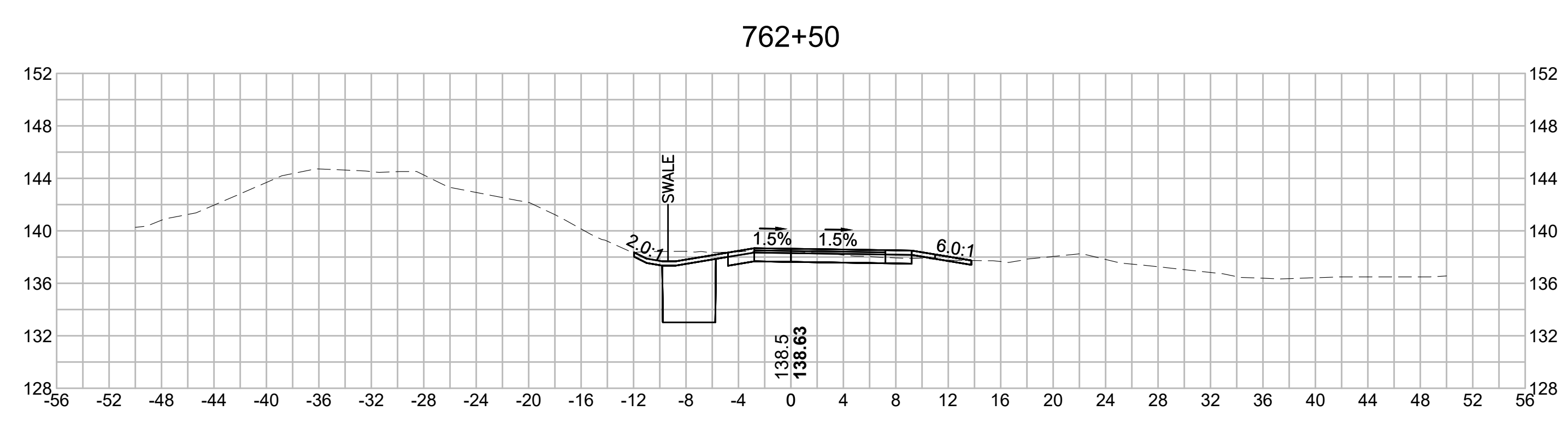
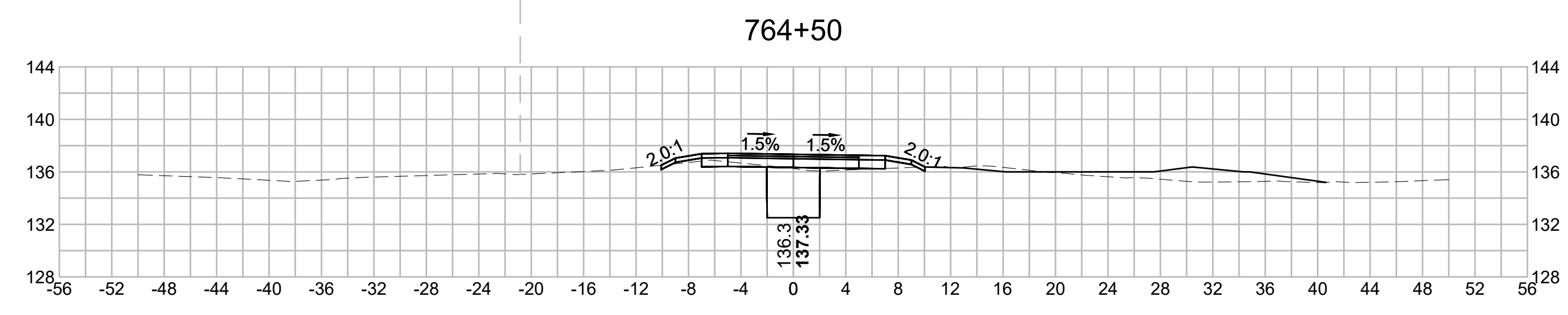
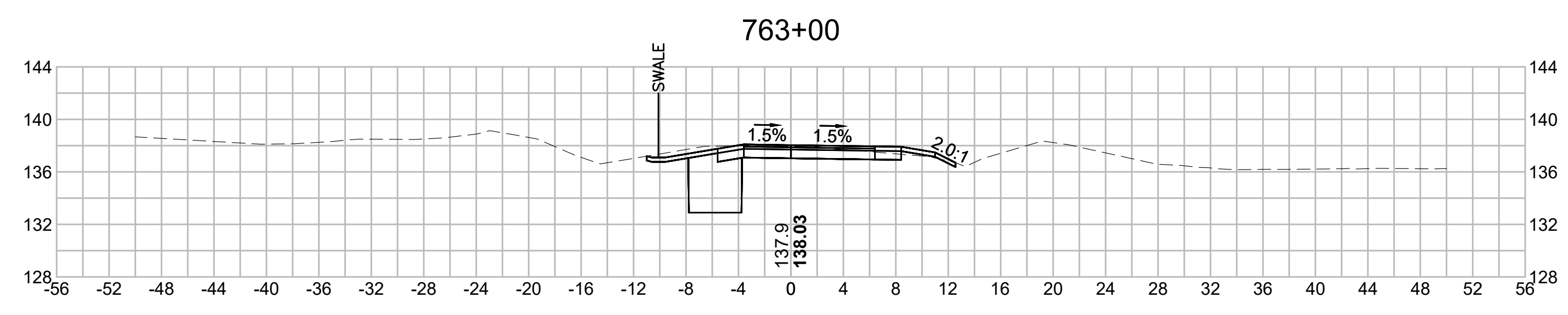
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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

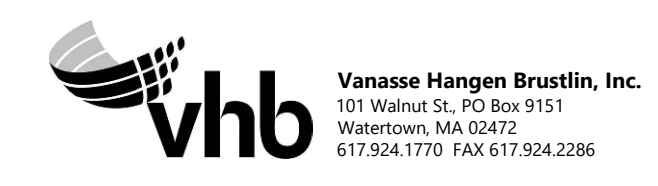
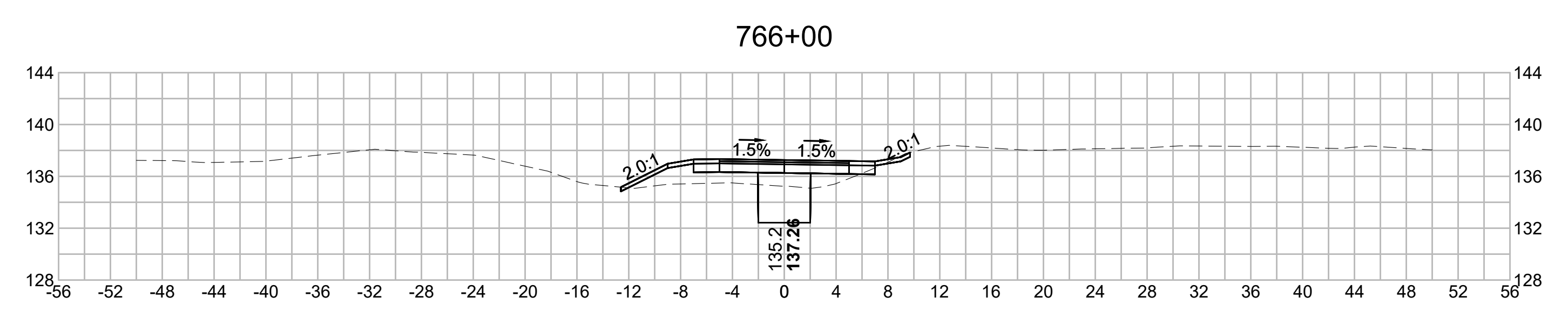
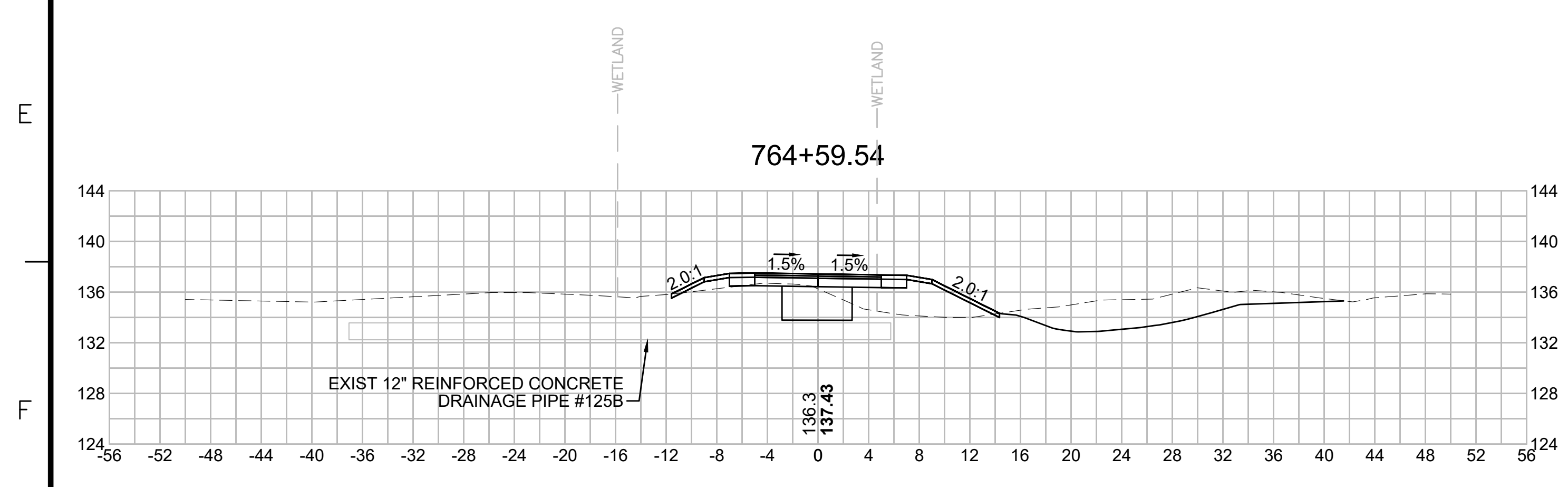
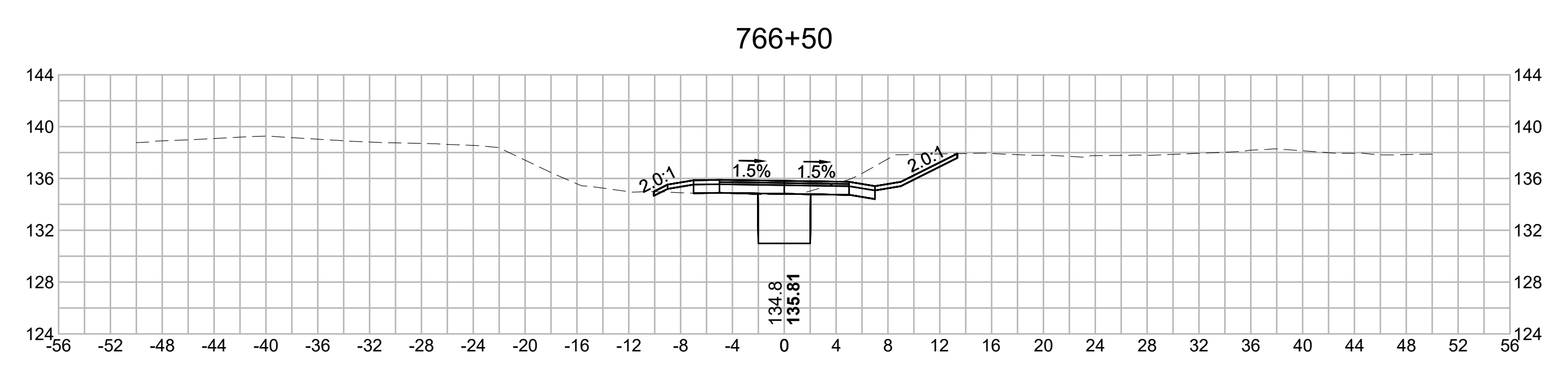
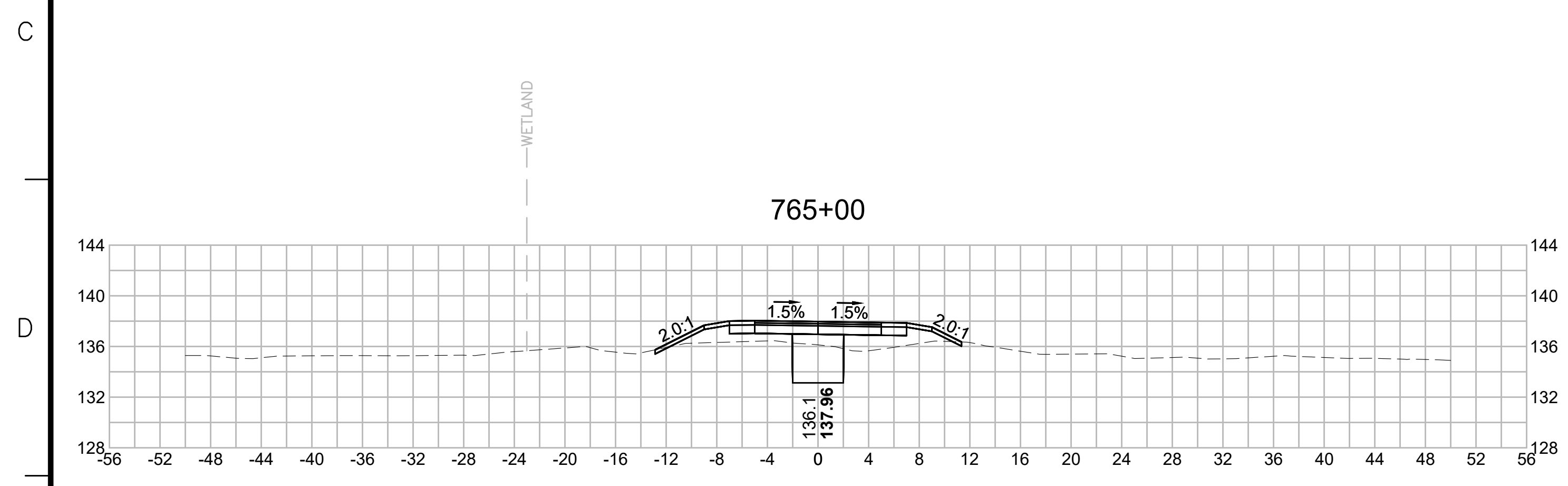
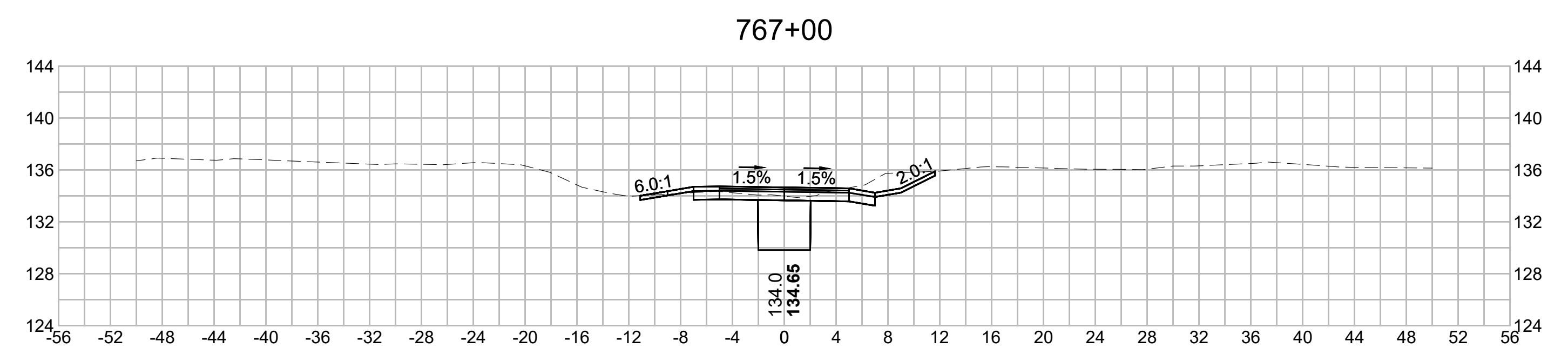
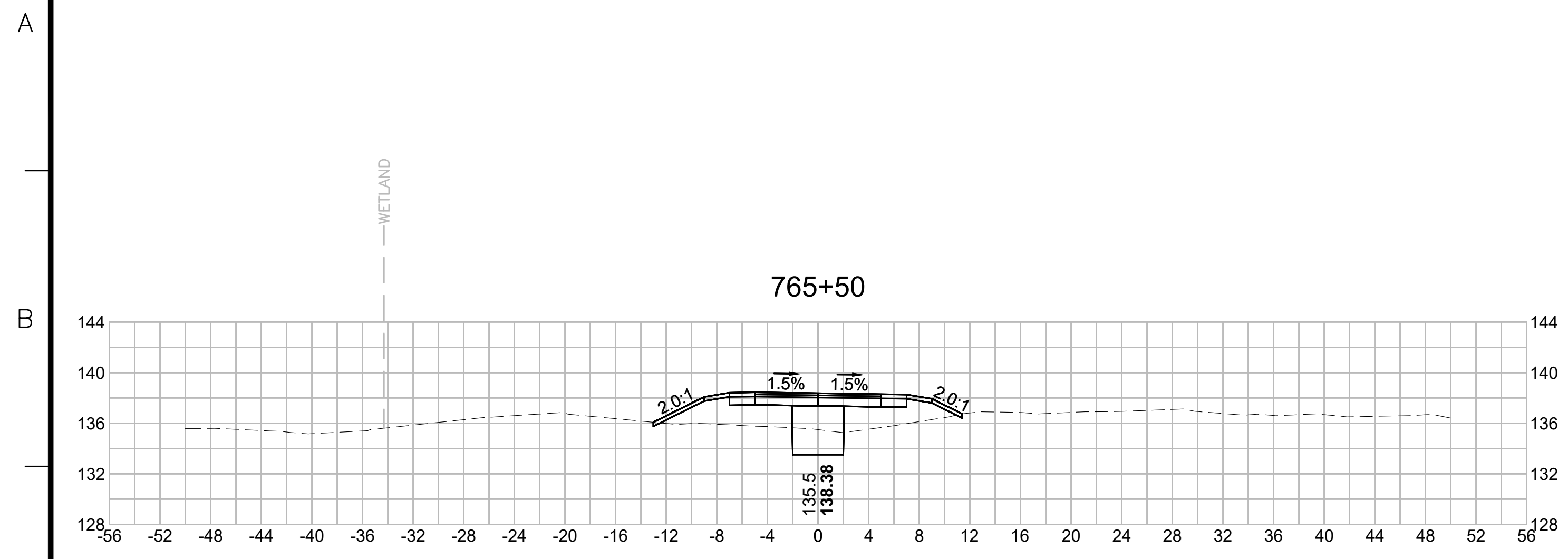
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 CROSS SECTIONS

PLAN 346 OF 349

SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES	DRAWING NO. REV.
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N.O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 CROSS SECTIONS

PLAN 347 OF 349

SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES	DRAWING NO.	REV.
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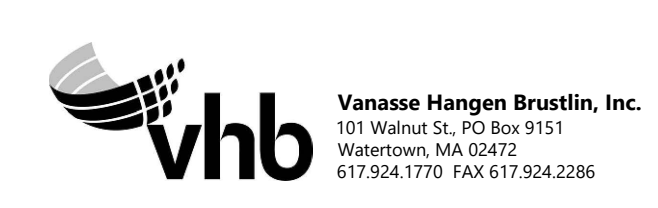
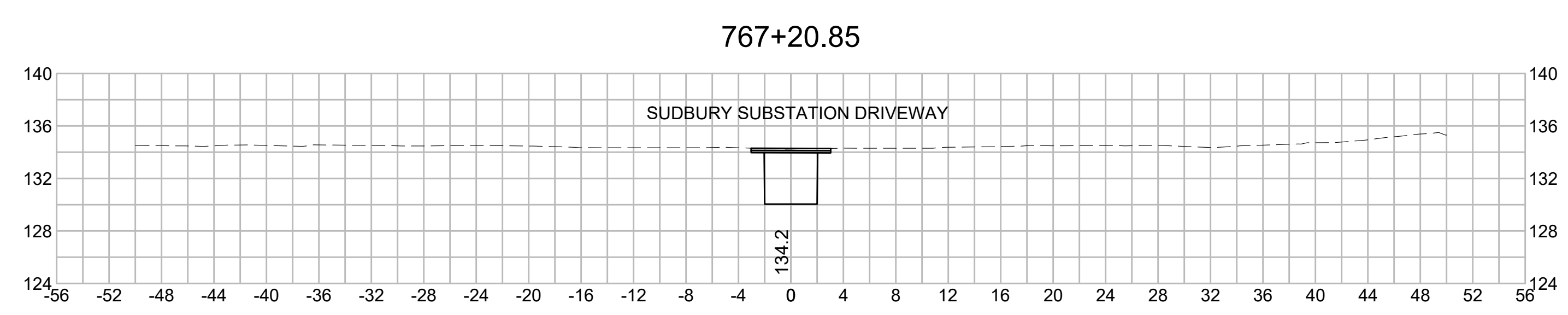
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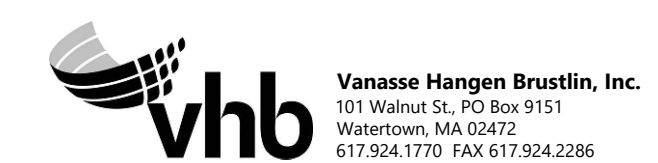
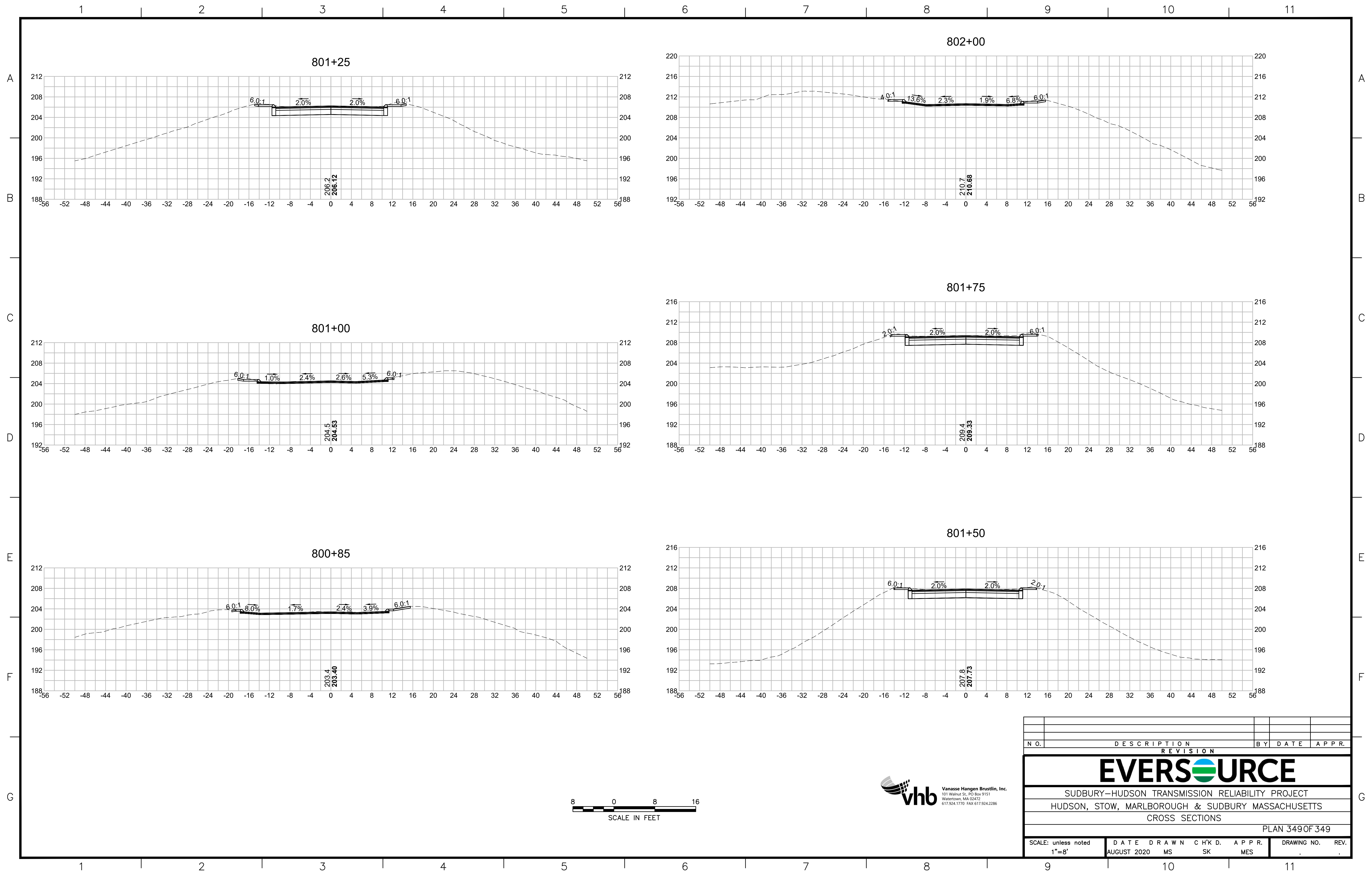
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N O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CROSS SECTIONS				
PLAN 348 OF 349				
SCALE: unless noted 1"=8'	DATE DEC 2021	DRAWN MS	CH'K D. SK	APPR. MS
DRAWING NO.	REV.			

1 2 3 4 5 6 7 8 9 10 11



N O.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
CROSS SECTIONS

PLAN 349 OF 349

SCALE: unless noted 1"=8'	DATE AUGUST 2020	DRAWN MS	CH'K D. SK	APPR. MES	DRAWING NO.	REV.
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US Army Corps
of Engineers®
New England District

WORK-START NOTIFICATION FORM

(Minimum Notice: Two weeks before work begins)

EMAIL TO: Katelyn.M.Rainville@usace.army.mil and cenae-r-ma@usace.army.mil; or

MAIL TO: Katelyn Rainville
Regulatory Division
U.S. Army Corps of Engineers, New England District
696 Virginia Road
Concord, Massachusetts 01742-2751

Also, if the work is in the Massachusetts Coastal Zone (<https://www.mass.gov/service-details/czm-regions-coastal-communities-and-coastal-zone-boundary>), email this form to robert.boeri@mass.gov or mail it to: The Massachusetts Office of Coastal Zone Management, Project Review Coordinator, Suite 800, 251 Causeway Street, Boston, MA 02114.

USACE Permit No. NAE-2017-01406 was issued to Eversource Energy (c/o Denise Bartone) and the Department of Conservation & Recreation (c/o Paul Jahnige). This work is located in freshwater wetlands, Hop Brook, Fort Meadow Brook and authorized the discharge of 60 cubic yards of fill material within freshwater wetlands (1,014 square feet permanent impacts, 2,487 square feet temporary impacts) and open water (1,146 square feet temporary impacts) to replace Bridge #127, Bridge #130, two culverts, and grade discrete sections of the existing right-of-way (ROW) to support an electric transmission line and rail trail.

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: October 31, 2022 Date Permit Expires: April 5, 2023

FOR USE BY THE CORPS OF ENGINEERS

PM: Katelyn Rainville Submittals Required: Yes

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-2017-01406

Project Manager: Katelyn Rainville

Name of Permittee: Eversource Energy & MA Department of Conservation & Recreation

Permit Issuance Date: October 31, 2022

Please sign this certification and return it to our office upon completion of the activity and any mitigation required by the permit. You must submit this after the mitigation is complete, but not the mitigation monitoring, which requires separate submittals.

```

*****
* E-MAIL TO: cenae-r-ma@usace.army.mil; or
*
* MAIL TO: Permits and Enforcement Branch A
*           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



BID PACKAGE

PART XI

SECTION 106 OF THE NATIONAL PRESERVATION ACT

**MEMORANDUM OF AGREEMENT
BETWEEN THE U.S. ARMY CORPS OF ENGINEERS
AND THE MASSACHUSETTS HISTORICAL COMMISSION, NSTAR d/b/a
EVERSOURCE ENERGY AND THE MASSACHUSETTS DEPARTMENT OF
CONSERVATION AND RECREATION
REGARDING THE SUDBURY-HUDSON TRANSMISSION RELIABILITY AND MASS
CENTRAL RAIL TRAIL PROJECT, HUDSON, STOW, MARLBOROUGH, AND
SUDBURY, MASSACHUSETTS**

WHEREAS the U.S. Army Corps of Engineers (USACE) is reviewing a Department of the Army Permit application from NSTAR d/b/a Eversource Energy (Eversource) and the Massachusetts Department of Conservation and Recreation (DCR) for the Sudbury-Hudson Transmission Reliability and Mass. Central Rail Trail Project (File No. NAE-2017-01406) in Hudson, Stow, Marlborough, and Sudbury, Massachusetts, (“the undertaking”) pursuant to Section 404 of the Clean Water Act (33 U.S.C. 1344); and

WHEREAS, the undertaking consists of the discharge of fill material into waters of the U.S. in order to install a new electric transmission line and construct a rail trail within an existing inactive railroad right-of-way, including, but not limited to, the removal of the rails and wood ties, the modification of two culverts, the replacement of Bridge # 127 and Bridge # 130, and the rehabilitation of Bridge # 128, which are contributing historic properties to the Central Massachusetts Railroad Corridor Historic District, which is eligible for listing in the National Register of Historic Places. Bridge # 127 and Bridge # 128 are also individually eligible for listing in the National Register of Historic Places; and

WHEREAS, the USACE has defined the scope of the undertaking to include the permit area and Area of Potential Effects (APE) as shown in the figures submitted to the USACE on May 23, 2022; and

WHEREAS, the USACE issuance of a Section 404 permit is subject to review under Section 106 of the National Historic Preservation Act (NHPA), as amended (54 U.S.C. 306108), which requires federal agencies to take into account the effects of their undertakings on historic properties listed in or eligible for inclusion in the National Register of Historic Places and afford the Advisory Council on Historic Preservation (“ACHP”) a reasonable opportunity to comment; and

WHEREAS, the USACE has determined that the undertaking shall have an adverse effect on the Central Massachusetts Railroad Corridor Historic District, a property eligible for listing in the National Register of Historic Places, and has consulted with the Massachusetts Historical Commission (MHC), the office of the State Historic Preservation Officer, pursuant to 33 CFR Part 325, Appendix C and 36 CFR Part 800, the regulations implementing Section 106 of the NHPA; and

WHEREAS, the USACE has consulted with Eversource and DCR regarding the effects of the undertaking on historic properties and has invited them to sign this Memorandum of Agreement (MOA) as invited signatories pursuant to 36 CFR §800.6(c)(2); and

WHEREAS, the USACE has consulted with the Wampanoag Tribe of Gay Head (Aquinnah), the Mashpee Wampanoag Tribe and the Narragansett Indian Tribe, for which the historic properties may have religious and cultural significance and has invited them to sign this MOA as concurring parties pursuant to 36 CFR §800.6(c)(3); and

WHEREAS, the USACE has consulted with the Sudbury Historical Commission and the Hudson Historical Commission regarding the effects of the undertaking on historic properties and has invited them to sign this Memorandum of Agreement (MOA) as concurring parties pursuant to 36 CFR §800.6(c)(3); and

WHEREAS, the USACE reviewed all comments received from the consulting parties and project-specific information submitted by the applicants and determined there were no prudent or feasible alternatives to demolition and replacement of Bridge 127, primarily due to the extensive deterioration of the existing steel plate girders and timber piles currently submerged in Hop Brook; and

WHEREAS, in accordance with 36 CFR § 800.6(a)(1), the USACE has notified the ACHP by letter dated **February 16, 2022**, of its adverse effect determination with specified documentation, and the ACHP has chosen *not* to participate in the consultation pursuant to 36 CFR §800.6(a)(1)(iii);

NOW, THEREFORE, the USACE, MHC, Eversource, and DCR agree that the undertaking shall be implemented in accordance with the following stipulations in order to take into account the effect of the undertaking on historic properties. The USACE will incorporate the following stipulations as conditions to any Section 404 permit issued to Eversource and DCR for this project.

STIPULATIONS

The USACE shall ensure that the following measures are carried out in consultation with the MHC. Eversource and DCR shall provide proof of compliance with such measures to the USACE and MHC:

I. HISTORIC PROPERTIES AVOIDANCE AND PROTECTION MEASURES

- A. Eversource and DCR shall implement the “Historic Properties Avoidance and Protection Plan” (HPAPP), attached to this MOA as Exhibit 1. The HPAPP outlines specific measures to be taken prior to, during, and after construction activities of Eversource Phase I and DCR Phase II to protect, avoid, and/or minimize impacts to significant, including National Register eligible identified, historic properties and their contributing resources such as archaeological sites and railroad-related features.

II. CENTRAL MASSACHUSETTS RAILROAD CORRIDOR HISTORIC DISTRICT

- A. Eversource and DCR shall produce updated MHC Inventory Forms for Massachusetts Central Railroad Bridges #127 and #128 (MHC#s SUD.901 and SUD.900, respectively) in Sudbury and Fort Meadow Brook Railroad Bridge #130 (MHC# HUD.908) in Hudson. Eversource and DCR responsibility shall be complete when the updated MHC Inventory Forms are submitted to the MHC and USACE.
- B. Eversource shall produce Historic American Engineering Record (HAER) Documentation of Massachusetts Central Railroad Bridges #127 and #128 (MHC#s SUD.901 and SUD.900, respectively) to be undertaken by an Architectural Historian qualified under 36 CFR 61. The HAER documentation shall consist of a structure report to include large format photographs, photo key and index, measured drawings, site plan, and an architectural/historical narrative (“Level II documentation”).

A digital draft HAER document shall be submitted to the MHC for one round of review and comment; any comments shall be received within 30 days of submittal. If no comments are received from the MHC within 30 days of submittal, the project proponents may proceed. One draft copy shall also be provided by Eversource Energy, on behalf of USACE, to the National Park Service, Northeast Regional Office (NPS) for review and comment. Removal of Bridge #127 and rehabilitation of Bridge #128 will not commence until NPS comments or a conditional letter of approval is received; however, construction on the remaining portions of the project will not be delayed by this activity. A digital PDF copy of the final HAER documentation shall be provided to the Hudson and Sudbury Historical Commissions. Eversource’s responsibility shall be complete when one final archival copy of the HAER documentation (one set of photographs/negatives) is submitted to the NPS and the final HAER documentation (one hard copy and one digital PDF copy on CD-ROM) is submitted to the MHC.

Design plans for the rehabilitation of Bridge # 128 shall also be submitted to the MHC for review and comment. If no comments are received from the MHC within 30 days of submittal, the project proponents may proceed with the rehabilitation of Bridge # 128.

- C. Eversource and DCR shall produce photo documentation to Historic American Building Survey (HABS)/HAER standards of the Massachusetts Central Railroad Bridge #130/Fort Meadow Brook Railroad Bridge (MHC# HUD.908) in Hudson prior to demolition. Eversource and the DCR responsibility will be complete after submitting the photo documentation (one hard copy and one digital PDF copy) to the MHC.

- D. If the SHC is interested in taking possession of some or all of the stones to be removed from the abutment of Bridge #128 that will not be used in rehabilitation of the bridge, Eversource shall deliver the stones to a location within the Town of Sudbury, provided the SHC has presented Eversource with written authorization from a proper board/authority of the Town of Sudbury or other underlying landowner no later than sixty (60) days after the issuance of the USACE permit for the project. The written documentation from the SHC shall identify the specific property and location therein to which the SHC wants the abutment stones delivered. Although Eversource will direct its contractor to take reasonable care to reduce damage to the stones during removal from Bridge # 128, Eversource does not make any representation regarding the condition in which stones will be provided to the SHC. Eversource's responsibilities under this provision shall be complete when the stones have been delivered to the property designated by the SHC and after documentation of the completion of such delivery has been provided by Eversource to the USACE.
- E. DCR shall develop, place, and install one 24" x 36" interpretive panel design that describes the history of the Central Massachusetts Railroad Bridges #127, #128, and #130 (MHC #s SUD.901, SUD.900, and HUD.908, respectively). This design shall be fabricated and installed in three locations: at Bridges #127 and #128 in Sudbury, and at Bridge #130 in Hudson. These signs shall be installed within 12 months of DCR completing construction of the rail trail. DCR shall develop the interpretive panels in consultation with the MHC, SHC, HHC and any other interested consulting parties. The interested consulting parties shall also be provided an opportunity to preview and provide comment on each panel before final design. Prior to finalizing the design, MHC shall be provided 30 days to review and approve the final design. If MHC does not respond, DCR shall produce the final design. DCR's responsibility under this Stipulation will be complete upon installation of the panels and DCR providing the USACE, MHC and Consulting Parties a final digital PDF copy.
- F. DCR shall develop, place, and install one 24" x 36" interpretive panel that describes the history of the diamond junction between the Central Massachusetts Railroad and the Framingham & Lowell Railroad. This sign shall be installed within 12 months of DCR completing construction of the rail trail. DCR shall develop the interpretive panels in consultation with the MHC, SHC, HHC and any other interested consulting parties. The interested consulting parties shall also be provided an opportunity to preview and provide comment on each panel before final design. Prior to finalizing the design, MHC shall be provided 30 days to review and approve the final design. If MHC does not respond, DCR shall produce the final design. DCR's responsibility under this Stipulation will be complete upon installation of the panels and DCR providing the USACE, MHC and the Consulting Parties a final digital PDF copy.

- G. DCR shall develop, place, and install one 24" x 36" interpretive panel at the Section Tool House (MHC ID # SUD.282) that describes the history of the Section Tool House. This sign shall be installed within 12 months of DCR completing construction of the rail trail. DCR shall develop the interpretive panels in consultation with the MHC, SHC, HHC and any other interested consulting parties. The interested consulting parties shall also be provided an opportunity to preview and provide comment on each panel before final design. Prior to finalizing the design, MHC shall be provided 30 days to review and approve the final design. If MHC does not respond, DCR shall produce the final design. DCR's responsibility under this Stipulation will be complete upon installation of the panels and DCR providing the USACE, MHC and the Consulting Parties a final digital PDF copy.

- H. DCR shall develop, place, and install one 24" x 36" interpretive panel design that describes the general history of the Central Massachusetts Railroad. This design shall be fabricated and installed in two locations in total, with one panel each to be located in each town. These signs shall be installed within 12 months of DCR completing construction of the rail trail. DCR shall develop the interpretive panels in consultation with the MHC, SHC, HHC and any other interested consulting parties. The interested consulting parties shall also be provided an opportunity to preview and provide comment on each panel before final design. Prior to finalizing the design, MHC shall be provided 30 days to review and approve the final design. If MHC does not respond, DCR shall produce the final design. DCR's responsibility under this Stipulation will be complete upon installation of the panels and DCR providing the USACE, MHC and the Consulting Parties a final digital PDF copy.

- I. DCR shall develop, place, and install up to 20 railroad feature markers consisting of approximately 18" square signs on steel posts, including markers for railroad features to be removed. These signs shall be installed within 12 months of DCR completing construction of the rail trail. DCR shall develop the interpretive panels in consultation with the MHC, SHC, HHC and any other interested consulting parties. The interested consulting parties shall also be provided an opportunity to preview and provide comment on each panel before final design. Prior to finalizing the design, MHC shall be provided 30 days to review and approve the final design. If MHC does not respond, DCR shall produce the final design. DCR's responsibility under this Stipulation will be complete upon installation of the panels and DCR providing the USACE, MHC and Consulting Parties a final digital PDF copy.

- J. Eversource shall rehabilitate the Massachusetts Central Railroad Bridge #128 (MHC# SUD.900) in Sudbury in a manner that is consistent with the *Secretary of the Interior's Standards and Guidelines for Rehabilitation*, as follows: the existing steel girders, timber piers, cross-frames, and the majority of the granite block abutments will be retained in place and reused. The existing timber ties, steel rails, timber deck (non-historic), and timber handrail (non-historic) are to be removed and replaced. The new handrail will be made of timber and will be clearly identifiable as a new bridge element but will also be compatible with the existing historic fabric.
- K. DCR shall install granite markers (6-foot-tall 8" x 8" pillars, lettered on two sides with 2.5"-high lettering) in the vicinity of the East Sudbury Station Archaeological Site (SUD.HA.39), South Sudbury Station Archaeological Site (SUD.HA.26), Wayside Inn Station Archaeological Site (SUD.HA.38), Gleasondale Station Archaeological Site (HUD.HA.8), and the Ordway Station Archaeological Site (HUD.HA.9). These granite markers shall be installed within 12 months of DCR completing construction of the rail trail.
- L. Eversource shall retain three pairs of representative sections of rail, of two different rail lengths, that were removed from their original location during construction. The rails are to be removed at the bolts and neatly stacked at the Section Tool House and beside two rail rest locations in Sudbury. This shall be completed in consultation with the SHC, MHC, and the DCR. Eversource's responsibility shall be complete after the rail sections are stacked at the locations identified above.

III. TRIBAL MONITORING

- A. Eversource shall provide notification of the construction schedule and site access for the Narragansett Indian Tribe, Mashpee Wampanoag Tribe, and Wampanoag Tribe of Gay Head (Aquinnah) to monitor ground disturbing construction activities at designated areas of interest within the limit of work, as identified to Eversource by each tribe in advance.

IV. UNANTICIPATED DISCOVERIES

If properties are discovered that may be historically significant or unanticipated effects on historic properties found, Eversource and DCR shall follow the steps outlined in the Post Review Discoveries Plan attached in Exhibit 2, in accordance with the requirements of 36 CFR 800.13 and 33 CFR 325, Appendix C.

V. DURATION

This MOA shall be null and void if its terms are not carried out within five years from the date of its execution. Prior to such time, USACE may consult with the other signatories to reconsider the terms, including duration, of the MOA and amend it in accordance with Stipulation VII, below.

VI. MONITORING AND REPORTING

Each year following the execution of this MOA until the work is complete, or the permit expires or is terminated, Eversource and DCR shall provide all parties to this MOA a summary report detailing work undertaken pursuant to its terms. Such report shall include any scheduling changes proposed, any problems encountered, and any disputes or objections received by USACE in its efforts to carry out the terms of this MOA.

VII. DISPUTE RESOLUTION

At any time during the implementation of the measures stipulated in this MOA, should an objection to any such measure or its manner of implementation be raised by a signatory, the USACE will notify all signatories to the agreement, take the objection into account, and work as needed to resolve the objection. The disputing signatory Parties will first strive to resolve matters informally. If the signatories cannot agree regarding the dispute, the USACE shall then initiate appropriate actions in accordance with the applicable provisions of 36 CFR 800.

VIII. AMENDMENTS

This MOA may be amended when such an amendment is agreed to in writing by all signatories. The amendment shall be effective on the date a copy signed by all of the signatories is filed with the ACHP.

IX. TERMINATION

If any signatory to this MOA determines that its terms shall not or cannot be carried out, that party shall immediately consult with the other signatories to attempt to develop an amendment per Stipulation VII, above. If within thirty (30) days an amendment cannot

National Historic Preservation Act Section 106 Memorandum of Agreement for Resolution of Adverse Effects to the Central Massachusetts Railroad Corridor Historic District, Sudbury and Hudson, Middlesex County, Massachusetts, U.S. Army Corps of Engineers, Corps Reference Number USACE NAE-2017-1406.

be reached, any signatory may terminate the MOA upon written notification to the other signatories.

Once the MOA is terminated, and prior to work continuing on the undertaking, the USACE must either (a) execute an MOA pursuant to 36 CFR § 800.6 or (b) request, take into account, and respond to the comments of the ACHP under 36 CFR § 800.7. The USACE shall notify the signatories as to the course of action it shall pursue.

Execution of this MOA by the USACE, MHC, Eversource, and DCR, and implementation of its terms evidence that the USACE has taken into account the effects of this undertaking on historic properties and satisfied its obligations under Section 106 of the NHPA.

SIGNATORY:



Tammy Turley
Chief, Regulatory Division
New England District
U.S. Army Corps of Engineers

19 October 2022

Date

Contact Information:

Tammy R. Turley
Chief, Regulatory Division
New England District
696 Virginia Road
Concord, Massachusetts 01742
(978) 318-8174
Tammy.R.Turley@usace.army.mil

Note: Signatures continued next page.

National Historic Preservation Act Section 106 Memorandum of Agreement for Resolution of Adverse Effects to the Central Massachusetts Railroad Corridor Historic District, Sudbury and Hudson, Middlesex County, Massachusetts, U.S. Army Corps of Engineers, Corps Reference Number USACE NAE-2017-1406.

SIGNATORY:



Brona Simon
Executive Director
State Historical Preservation Officer
Massachusetts Historical Commission



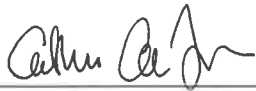
Date

Contact Information:

Brona Simon
Executive Director and SHPO
Massachusetts Historical Commission
The Massachusetts State Archives
Building
220 Morrissey Boulevard
Boston, Massachusetts 02125

Note: Signatures continued next page.

INVITED SIGNATORY:



Catherine Finneran
Vice President of Sustainability and
Environmental Affairs
NSTAR Electric Company d/b/a/
Eversource Energy

September 7, 2022

Date


Contact Information:

Denise Bartone
NSTAR Electric Company d/b/a/
Eversource Energy
247 Station Drive
Westwood, Massachusetts 02090
denise.bartone@eversource.com

Note: Signatures continued next page.

National Historic Preservation Act Section 106 Memorandum of Agreement for Resolution of Adverse Effects to the Central Massachusetts Railroad Corridor Historic District, Sudbury and Hudson, Middlesex County, Massachusetts, U.S. Army Corps of Engineers, Corps Reference Number USACE NAE-2017-1406.

INVITED SIGNATORY:



Douglas J. Rice
Commissioner
Department of Conservation and Recreation

8-9-22

Date

Contact Information:

Paul Jahnige
Department of Conservation and Recreation
136 Damon Road
Northampton, Massachusetts 01060
paul.jahnige@state.ma.us

Note: Signatures continued next page.

CONCURRING PARTY:

Brian Weeden
Chairman
Mashpee Wampanoag Tribe

Date

Contact Information:

Mr. David Weeden
Tribal Historic Preservation Officer
Mashpee Wampanoag Tribe
483 Great Neck Road South
Mashpee, Massachusetts 02649
David.Weeden@mwtribe-nsn.gov

Note: Signatures continued next page.

CONCURRING PARTY:

John Brown III
Tribal Historic Preservation Officer
Narragansett Indian Tribe

Date

Contact Information:

John Brown III
Tribal Historic Preservation Officer
Narragansett Indian Tribe
215 Fenner Hill Road
Hope Valley, Rhode Island 02832
tashtesook@aol.com

Note: Signatures continued next page.

CONCURRING PARTY:

Cheryl Andrews-Maltais
Chairwoman
Wampanoag Tribe of Gay Head (Aquinnah)

Date

Contact Information:

Ms. Bettina Washington
Tribal Historic Preservation Officer
Wampanoag Tribe of Gay Head (Aquinnah)
20 Black Brook Road
Aquinnah, Massachusetts 02535
bettina@wampanoagtribe.net

Note: Signatures continued next page.

CONCURRING PARTY:

Peter Breton
Chair
Hudson Historical Commission

Date

Contact Information:

Mr. Peter Breton
Chair
Hudson Historical Commission
78 Main Street
Hudson, Massachusetts 01749
pbreton@yahoo.com and petebreton@gmail.com

Note: Signatures continued next page.

CONCURRING PARTY:

Chris Hagger
Chair
Sudbury Historical Commission

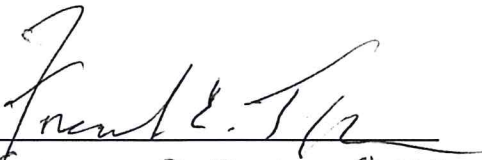
Date

Contact Information:

Chris Hagger
Chair
Sudbury Historical Commission
278 Old Sudbury Road
Sudbury, Massachusetts 01776
cldh7@aol.com

National Historic Preservation Act Section 106 Memorandum of Agreement for Resolution of Adverse Effects to the Central Massachusetts Railroad Corridor Historic District, Sudbury and Hudson, Middlesex County, Massachusetts, U.S. Army Corps of Engineers, Corps Reference Number USACE NAE-2017-1406.

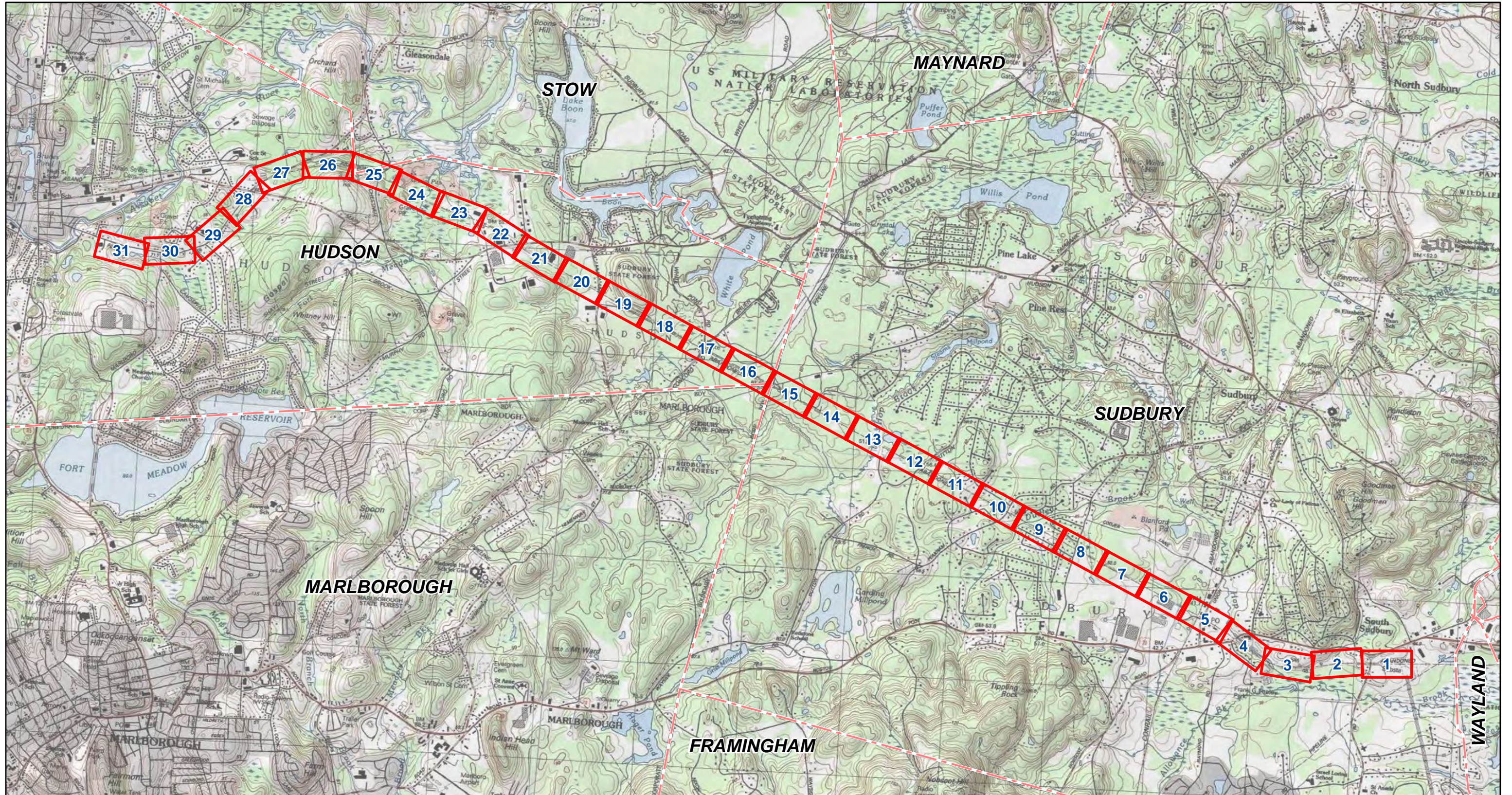
CONCURRING PARTY:


Frederick E. Taylor, Chair
Sudbury Historic Districts Commission

Date 9/17/22

Contact Information:

Sudbury Historic Districts Commission
278 Old Sudbury Road
Sudbury, Massachusetts 01776
HistoricDistricts@sudbury.ma.us



Map Index
 Town Boundaries

DRAFT **EVERSOURCE**
ENERGY

Sudbury-Hudson Transmission Reliability Project

Figure 1
USACE Permit Area Plans
Cover Sheet



Source:
MassGIS, 2015
Ortholmagraphy, VHB

11/1/2018





- Limit of Grading
- MBTA ROW Boundary
- Area of Potential Effect: Central Massachusetts
- Railroad Corridor Historic District
- In-Road Transmission Route
- 16-ft Permit Area Buffer
- Permit Areas
- Wetland Impact
- Bank and Fill in Waterway
- Delineated Wetland Edge
- Approximate Wetland Edge
- Delineated Top of Bank
- Delineated Vernal Pool Edge
- Perennial Stream
- Vernal Pool Area
- Wetland Area
- Land Under Water
- Bordering Land Subject to Flooding
- Drainage Ditch (1995)
- Town Boundaries

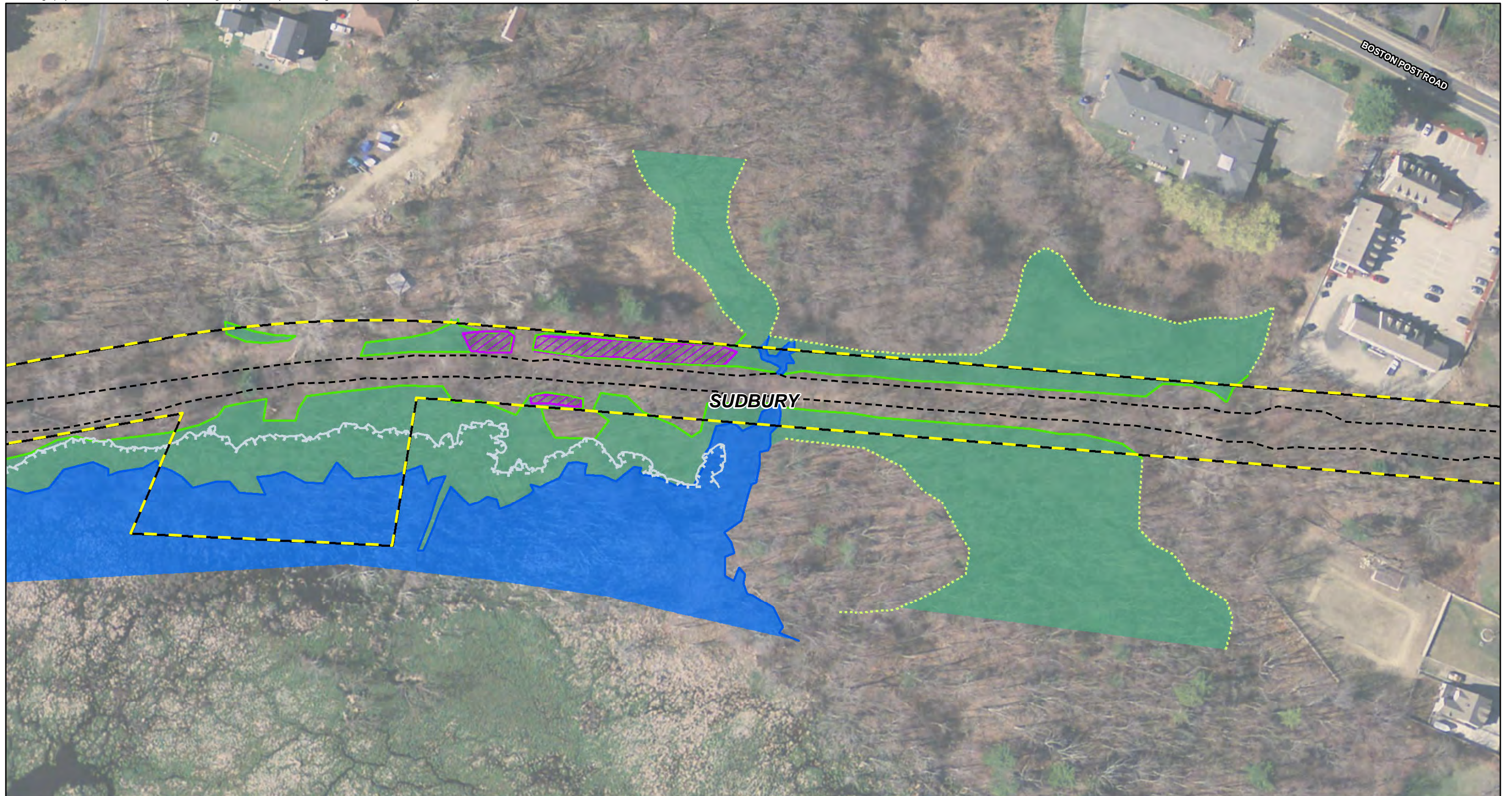


Sudbury-Hudson Transmission Reliability Project

**Figure 1
USACE Permit Area Plans**

Source:
MassGIS, 2015
Orthomagery, VHB
5/23/2022





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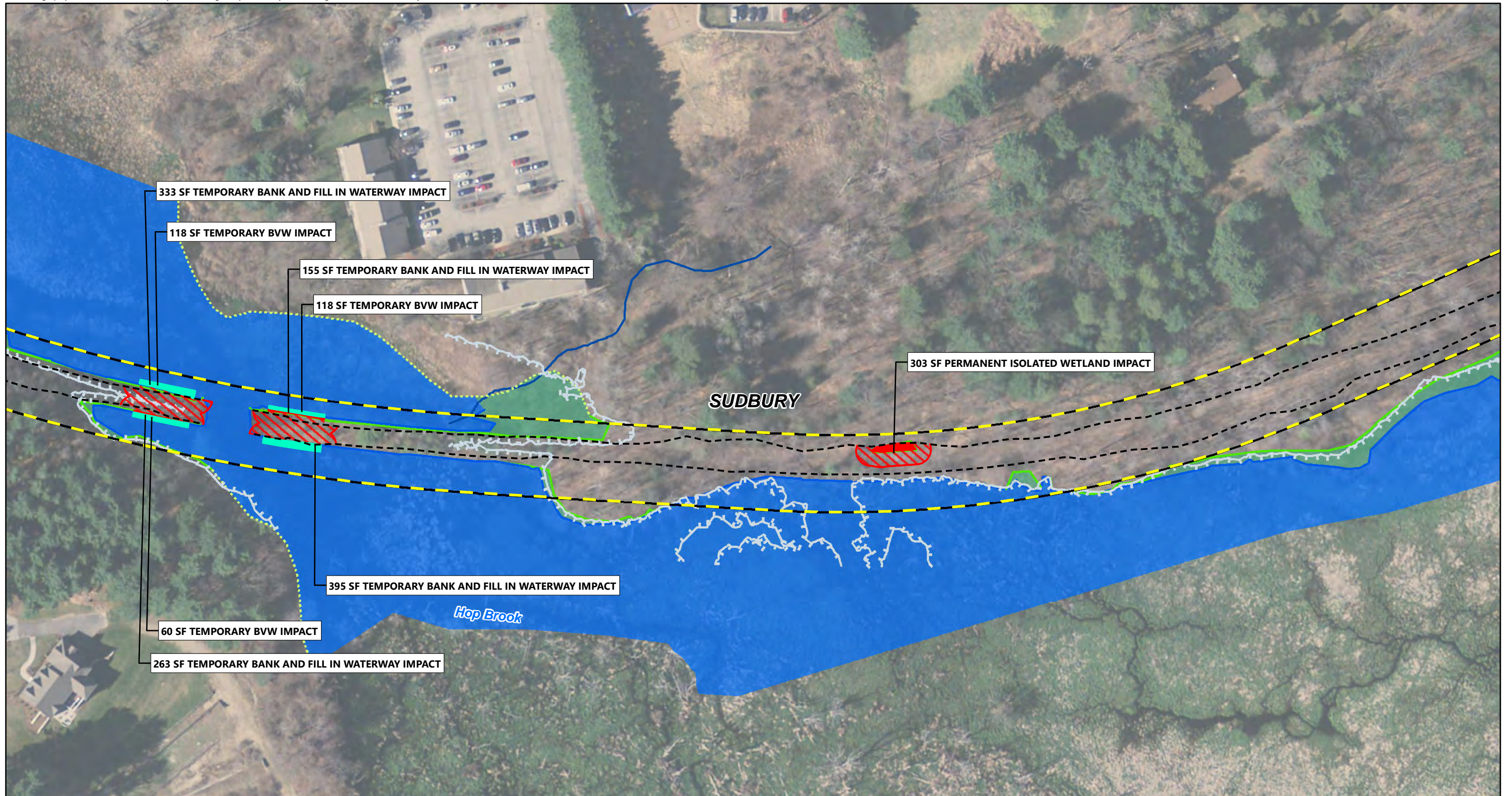


Sudbury-Hudson Transmission Reliability Project

**Figure 1
USACE Permit Area Plans**

Source:
MassGIS, 2015
Orthomagery, VHB
5/23/2022





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Sudbury-Hudson Transmission Reliability Project

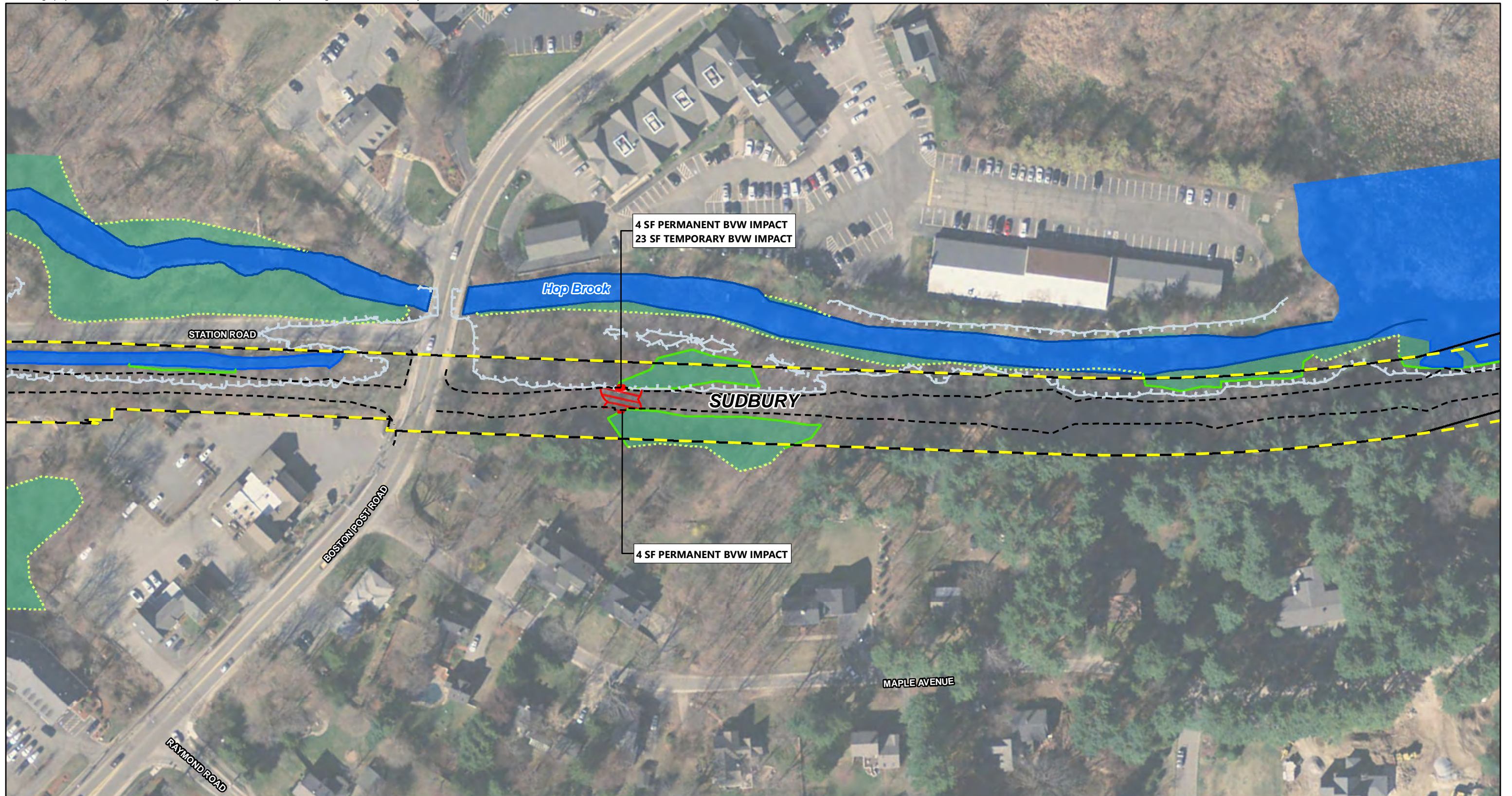
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USACE Permit Area Plans**

Source:
MassGIS, 2015
Orthomagery, VHB
5/23/2022

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0 100 200 Feet





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Sudbury-Hudson Transmission Reliability Project

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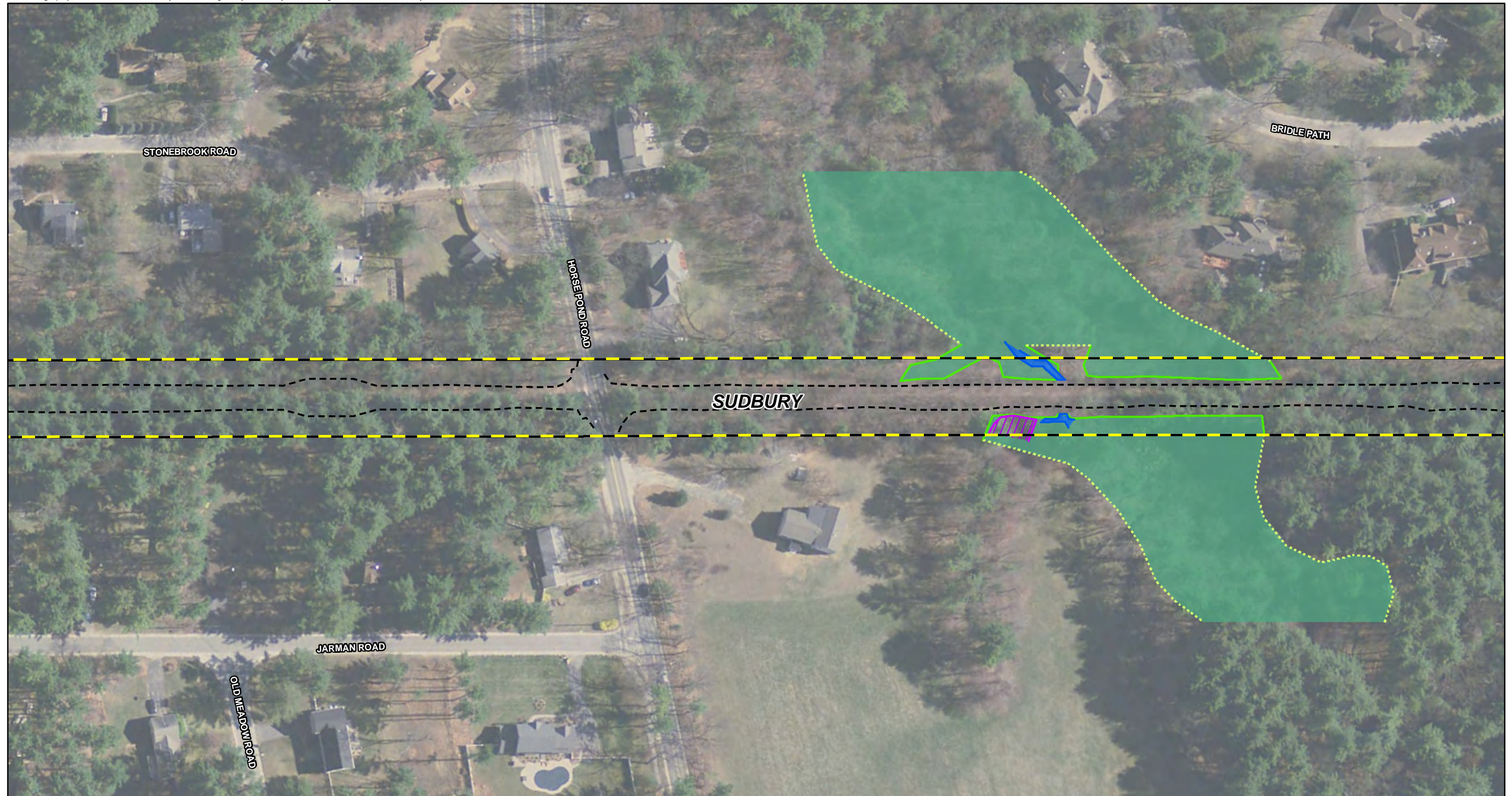


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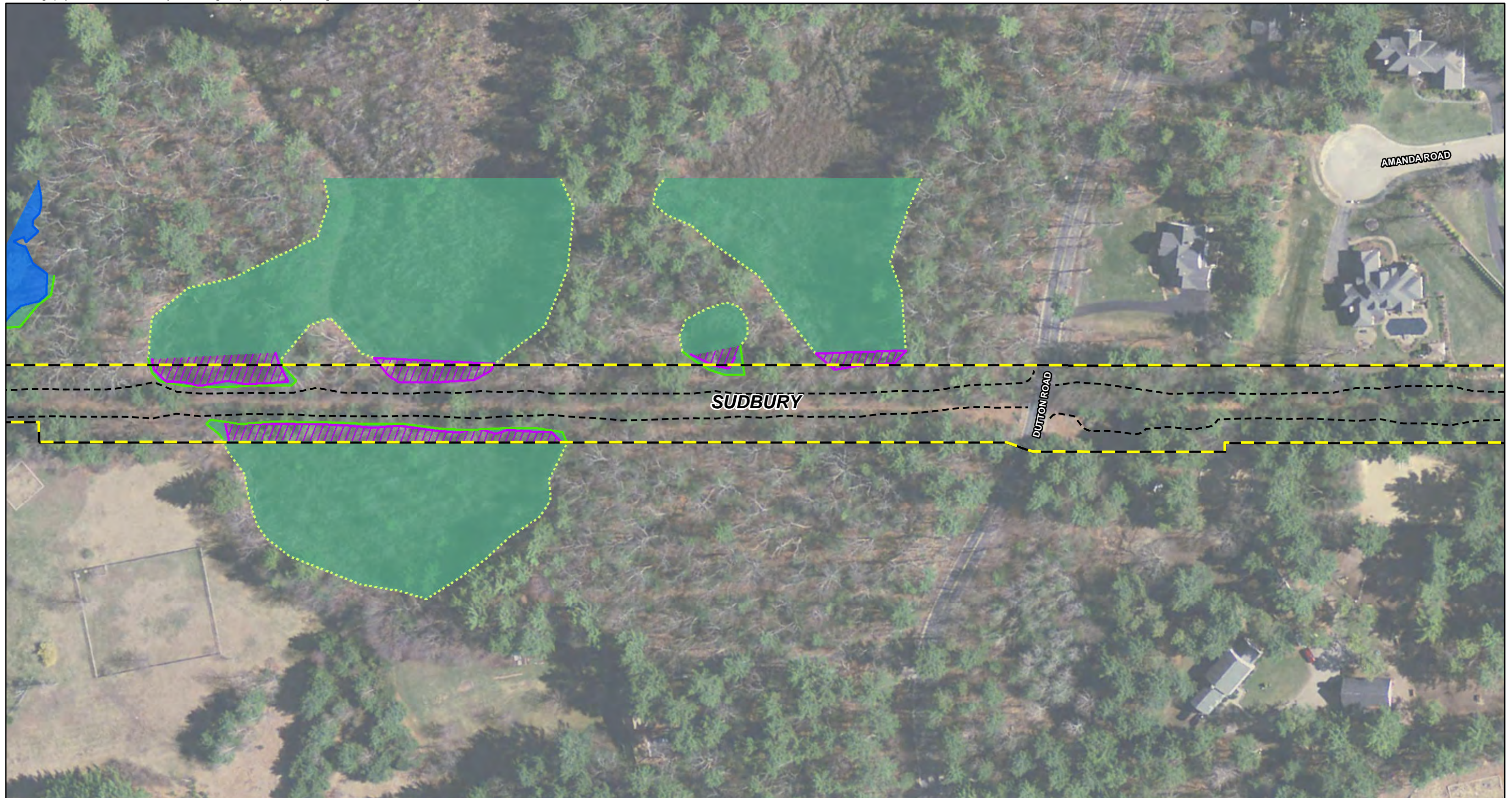


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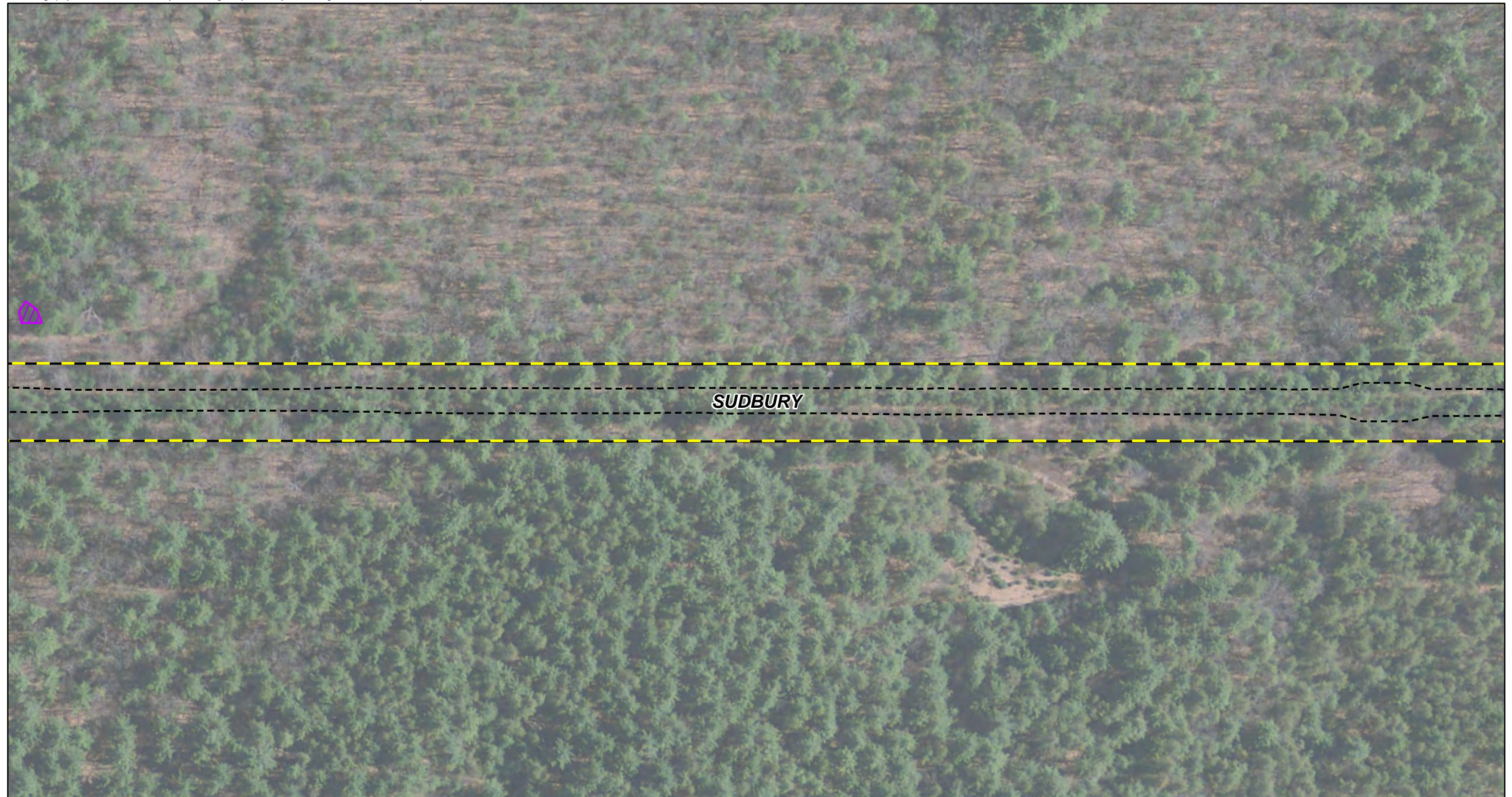
Sudbury-Hudson Transmission Reliability Project

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Sudbury-Hudson Transmission Reliability Project

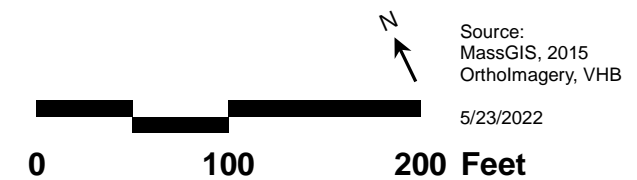
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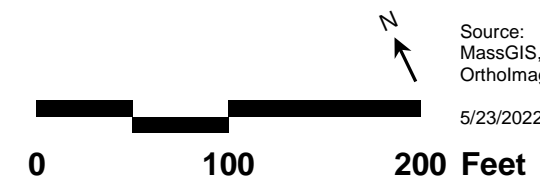
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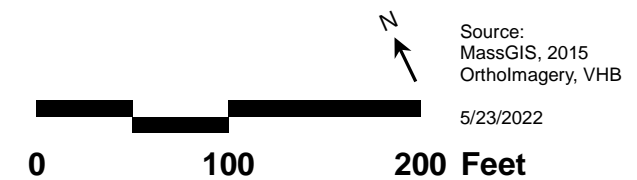
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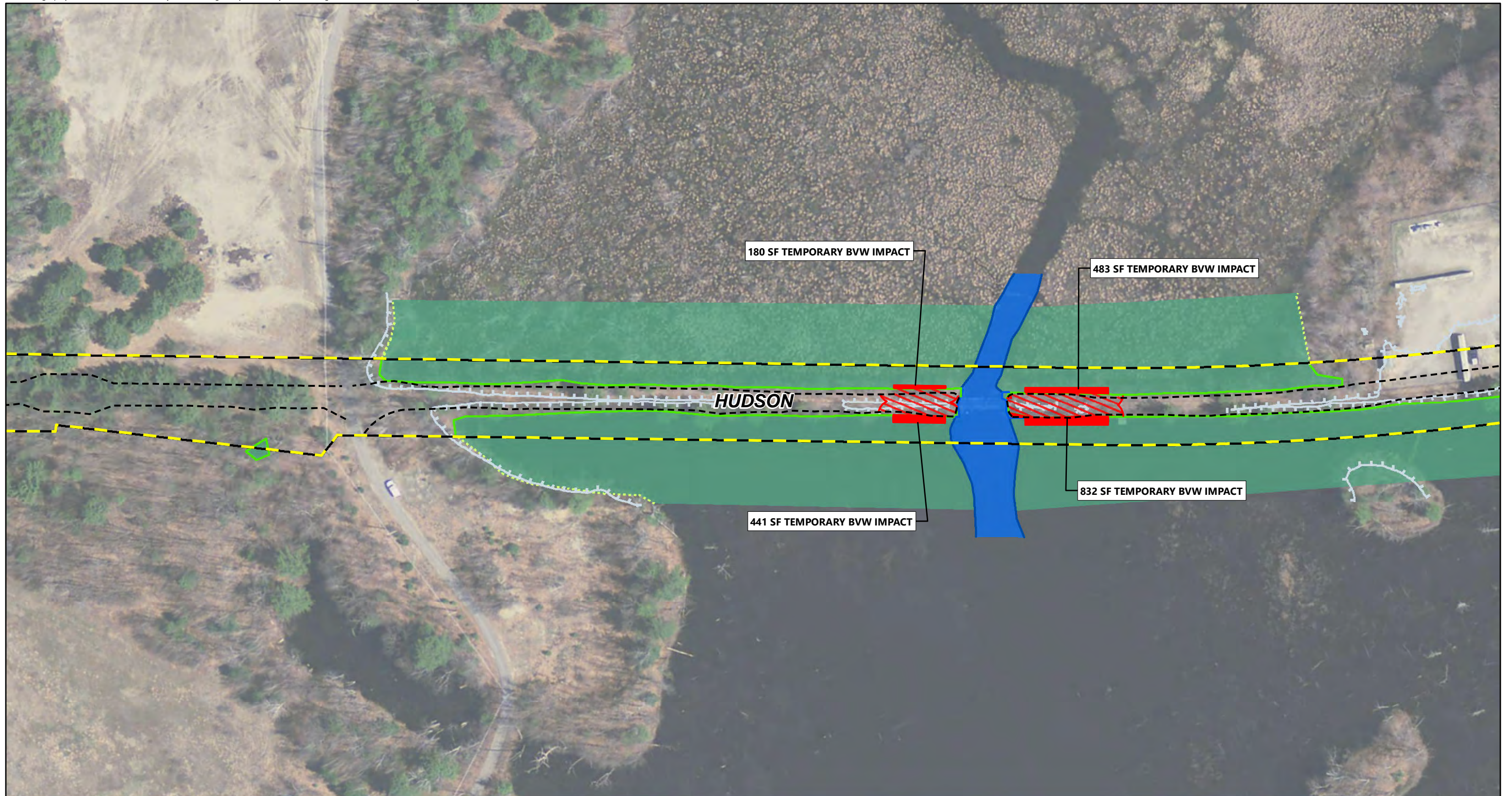


Sudbury-Hudson Transmission Reliability Project

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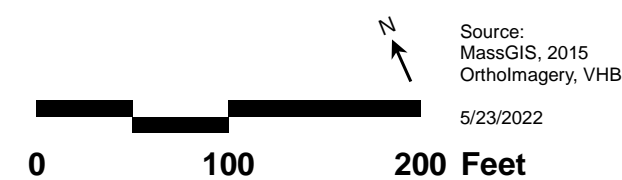


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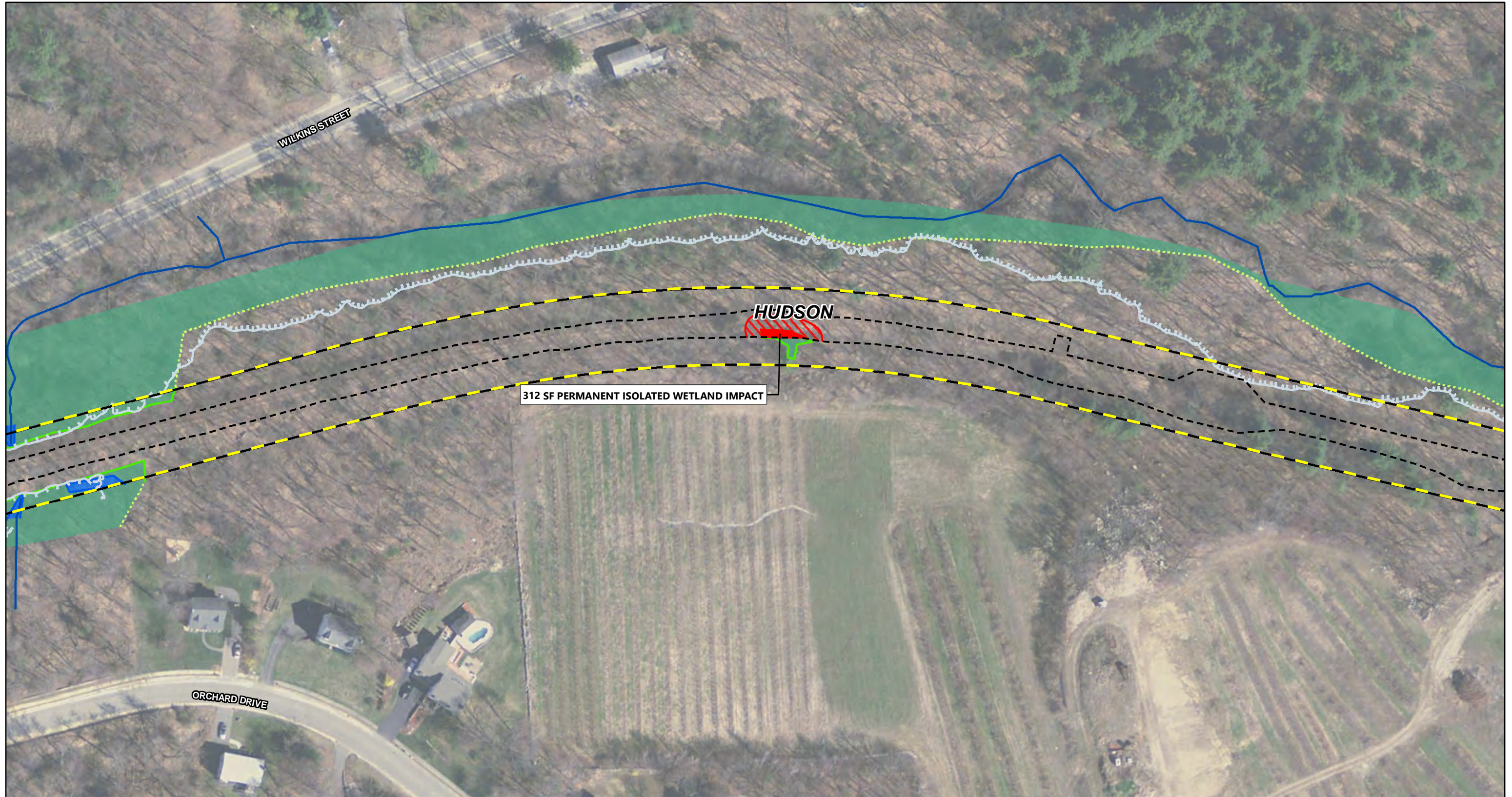


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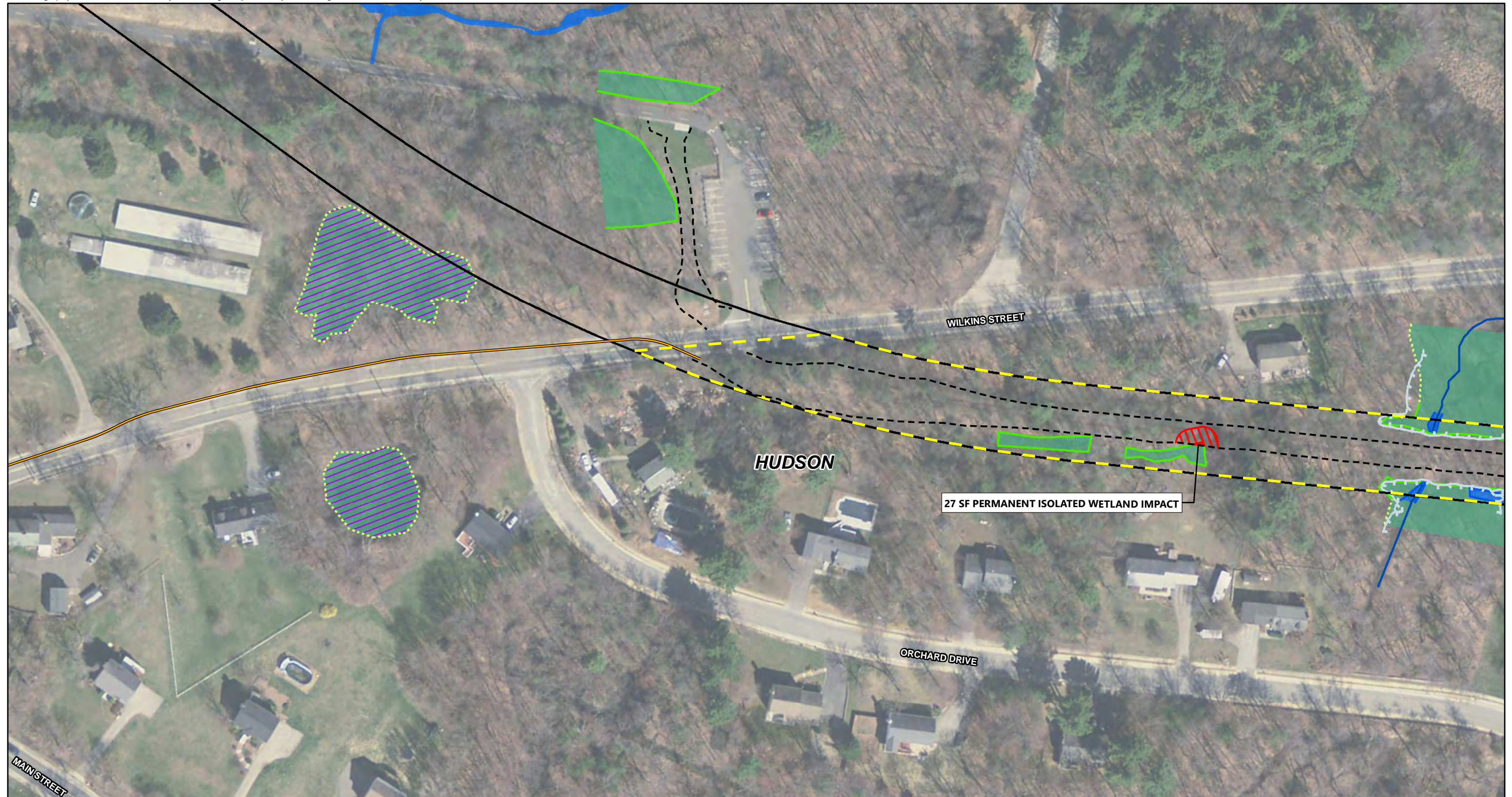


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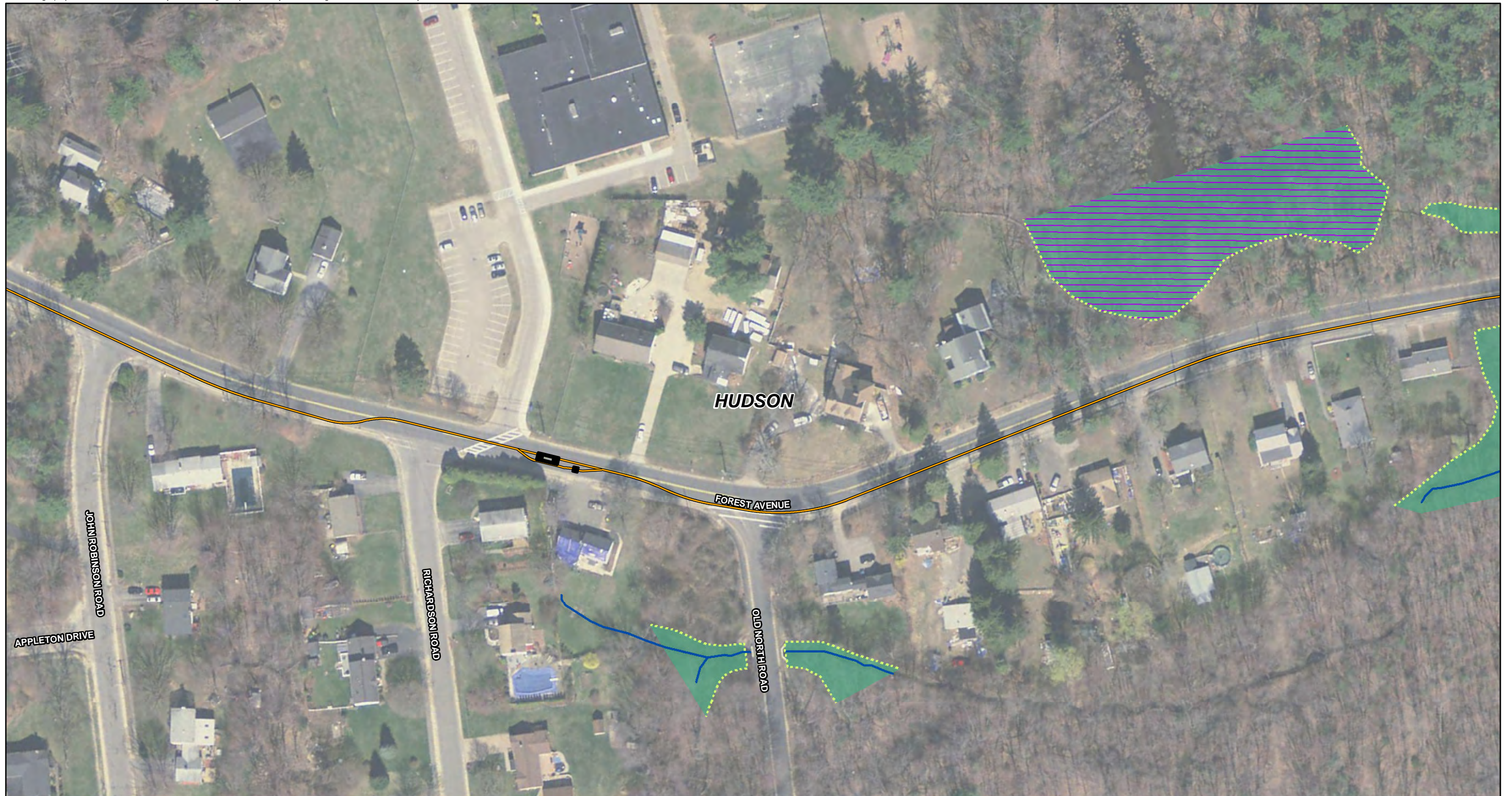


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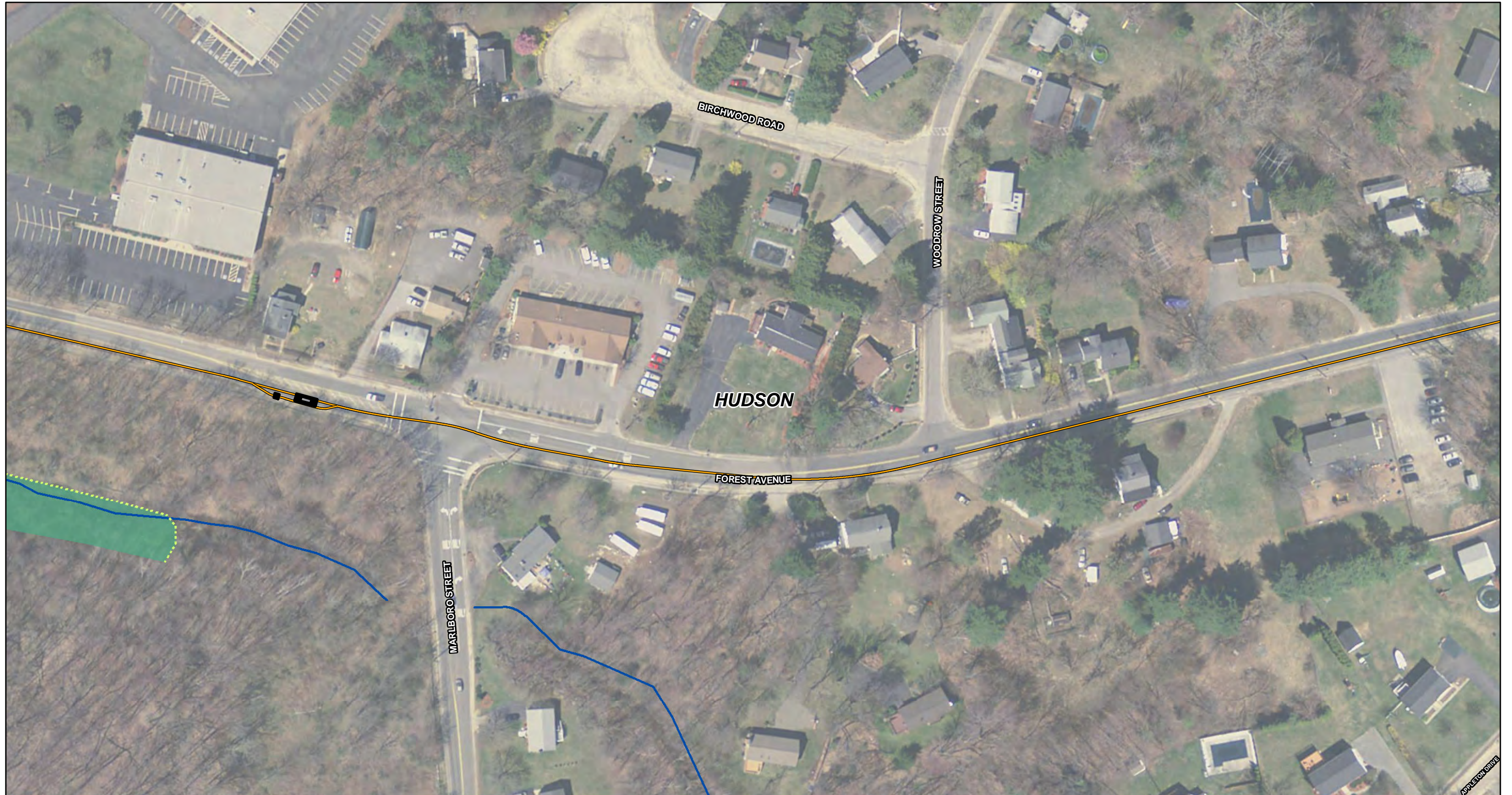


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**HISTORIC PROPERTIES
AVOIDANCE AND PROTECTION PLAN:**

**EVERSOURCE ENERGY/MASSACHUSETTS DEPARTMENT
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SUDBURY-HUDSON TRANSMISSION RELIABILITY AND
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TOWNS OF HUDSON, MARLBOROUGH,
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MHC #RC.62384, EEA #15703.**

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Prepared for

**Eversource Energy
247 Station Drive, SE270
Westwood, MA 02090**

and

**Massachusetts Department of Conservation and Recreation
251 Causeway Street
9th Floor
Boston, MA 02114**

Submitted to

**The Massachusetts Historical Commission
220 Morrissey Boulevard
Boston, MA 02125**

By

Martin G. Dudek

**Commonwealth Heritage Group, Inc.
410 Great Road, Suite B14
Littleton, Massachusetts 01460**

February 11, 2022

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TABLE OF CONTENTS

Table of Contents	1
List of Figures	2
1.0 INTRODUCTION	3
2.0 PRIOR CULTURAL RESOURCE INVESTIGATIONS.....	3
3.0 AVOIDANCE AND PROTECTION PLAN OF HISTORIC PROPERTIES	4
3.1 Pre-Construction Phase	9
3.2 Construction Phase.....	9
3.3 Post-Construction Phase	9
4.0 REFERENCES CITED.....	11

APPENDIX I - CMRRCHD Contributing Resources and Proposed Project Impacts Spreadsheet

List of Figures

- Figure 1. Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project, Hudson Locus Map (USGS)
- Figure 2. Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project, Sudbury Locus Map (USGS)
- Figure 3. Avoidance and protection measures for sensitive cultural resource areas 19-MD-1208 and 19-MD-1209.
- Figure 4. Avoidance and protection measures for sensitive cultural resource area HUD-HA-8.
- Figure 5. Avoidance and protection measures for sensitive cultural resource area HUD-HA-9.
- Figure 6. Avoidance and protection measures for sensitive cultural resource area SUD-HA-36.
- Figure 7. Avoidance and protection measures for sensitive cultural resource area SUD-HA-30.
- Figure 8. Avoidance and protection measures for sensitive cultural resource area SUD-HA-38.
- Figure 9. Avoidance and protection measures for sensitive cultural resource area SUD-HA-26.
- Figure 10. Avoidance and protection measures for sensitive cultural resource area SUD-HA-37.
- Figure 11. Avoidance and protection measures for sensitive cultural resource area SUD-HA-39.
- Figure 12. Avoidance and protection measures for the Sudbury-Hudson-Marlborough town boundary marker.

1.0 INTRODUCTION

Eversource Energy (Eversource) and the Massachusetts Department of Conservation and Recreation (DCR) are proposing a joint project (the “Project”) to construct a new, approximately 9-mile, underground 115-kilovolt electric transmission line and rail trail sited primarily within an unused railroad corridor/right-of-way (ROW) owned by the Massachusetts Bay Transportation Authority (MBTA). This project passes through the municipalities of Sudbury, Hudson, Marlborough, and Stow (Figures 1 and 2). Construction will be conducted in two integrated phases with the majority of the earthwork and the installation of the underground transmission line to be conducted in Phase I and Phase II will consist of the paving and additional ancillary activities associated with the construction of the rail trail.

On behalf of Eversource and the DCR, the following Historic Properties Avoidance and Protection Plan (HPAPP) has been developed by Commonwealth Heritage Group, Inc. (CHG) to protect significant historic and archaeological resources in proximity to the Project’s Limit of Work. An Archaeological Site Avoidance and Protection Plan was requested by the Massachusetts Historical Commission (MHC) for submittal to the MHC (MHC Review Letter to the US Army Corps of Engineers dated December 18, 2019). This document has been revised to incorporate both archaeological and above ground resources and was thus renamed an HPAPP to account for the multiple resource types presented in this document.

This HPAPP consists of three sections: Introduction, Prior Cultural Resources Investigations, and the Avoidance and Protection Plan. The latter includes subsections that address Pre-Construction, Construction and Post-Construction Activities.

2.0 PRIOR CULTURAL RESOURCE STUDIES

The Project requires review and permitting by the US Army Corps of Engineers (USACE) and is being reviewed by the MHC under Section 106 of the National Historic Preservation Act of 1966, as amended (36 CFR 800). The MHC has determined that the project area is within and adjacent to historic and archaeological resources included in the MHC’s Inventory of Historic Assets of the Commonwealth and/or State and/or National Registers of Historic Places (MHC letter dated June 30, 2017). A reconnaissance-level historic properties survey and archaeological reconnaissance survey (under MHC Permit #3783) were conducted by CHG and final reports submitted (Myruski and Meyer 2017; Dudek and Donohue 2018). Based on the results of the reconnaissance surveys, an archaeological intensive (locational) survey was recommended for archaeologically sensitive portions of the Project and two MHC Area Inventory Forms were drafted to document the Central Massachusetts Railroad Corridor Historic District (CMRRCHD) in the Towns of Sudbury (Spies 2020) and Hudson (Benjamin-Ma, et al. 2021). The archaeological intensive (locational) survey was conducted under Permit #3828 issued by the State Archaeologist. Field work was conducted during the summer of 2018 and the final report submitted (Dudek and Donohue 2019).

The archaeological intensive (locational) survey field work identified ten archaeological sites that are considered to be potentially significant (i.e., having the potential to meet the criteria of eligibility for listing on the National Register of Historic Places). Two of the archaeological sites are precontact Native American sites and both sites will be avoided: The Ordway Locus 2 Precontact Site (19-MD-1208) in Hudson consists of a quartz tool, a rhyolite flake, four fire-cracked rocks and a possible fire-related feature; The Ordway Locus 3 Precontact Site (19-MD-1209), also in Hudson, consists of ten pieces of stone chipping debris from tool making and two fire-cracked rocks.

In addition, eight of the ten sites consist of historic archaeological sites. Five railroad station sites and a railroad section tool house associated with the CMRRCHD are present in the Project ROW and include the Gleasondale Station (HUD-HA-8) and the Ordway Station (HUD-HA-9) in Hudson; the Wayside Inn

Station (SUD-HA-38), the South Sudbury Station (SUD-HA-26), the Boston & Maine Railroad Section Tool House (SUD-HA-37) and the East Sudbury Station (SUD-HA-39) in Sudbury. The Boston & Maine Railroad Section Tool House site (SUD-HA-37) includes the standing ca. 1890 section tool house (SUD.282). Intact yard deposits associated with two colonial sites that are primarily located outside of the ROW - the Memorial Forest Cellar Hole (SUD-HA-36) and the Walker Garrison House (SUD-HA-30) - were also identified.

Avoidance and protection of the potentially significant archaeological sites was recommended (Dudek and Donohue 2019). The MHC commented that: “A draft written archaeological site avoidance and protection plan, including stipulations for fencing, signage and contractor briefings, should be prepared by CHG and submitted to the MHC for review and comment” (MHC Review Letter to the USACE dated April 3, 2019).

3.0 AVOIDANCE AND PROTECTION PLAN OF CULTURAL RESOURCES

Table 1. Identified potentially significant archaeological sites and proposed action.

Affected Property			Proposed Action		
Archaeological Site	Site # and town	Segment	Avoidance measures during construction	Burial of site under fill/ geotextile fabric	Figure
Ordway Locus 2 Precontact Site	19-MD-1208 Hudson	5 Main Street to Parmenter Road	Yes		Figure 3
Ordway Locus 3 Precontact Site	19-MD-1209 Hudson	5 Main Street to Parmenter Road	Yes		Figure 3
Gleasondale Station site (CMRRCHD)	HUD-HA-8 Hudson	3 Chestnut Street to Fort Meadow Brook	Partial	X	Figure 4
Ordway Station site (CMRRCHD)	HUD-HA-9 Hudson	6 Parmenter Road to White Pond Road	Yes		Figure 5
Memorial Forest cellar hole	SUD-HA-36 Sudbury	8 Hudson Town Line to Dutton Road	Yes		Figure 6
Walker Garrison House	SUD-HA-30 Sudbury	8 Hudson Town Line to Dutton Road	Yes		Figure 7
Wayside Inn Station site (CMRRCHD)	SUD-HA-38 Sudbury	8 Hudson Town Line to Dutton Road	Yes		Figure 8
South Sudbury Station (CMRRCHD)	SUD-HA-26 Sudbury	11 Horse Pond Road to Union Avenue	Yes		Figure 9
Boston & Maine Railroad Section Tool House (CMRRCHD)	SUD-HA-37 Sudbury	12 Route 20 to Landham Road	Yes		Figure 10
East Sudbury Station site (CMRRCHD)	SUD-HA-39 Sudbury	13 Landham Road to Sudbury Substation	Partial	X	Figure 11

Table 1 lists the ten archaeological sites recommended for avoidance and protection and the proposed measures to be taken. While some of the archaeological sites (Sites 19-MD-1208, 19-MD-1209, SUD-HA-30, and SUD-HA-36) are located outside of the Project's Limit of Work (defined as the maximum extent of ground disturbance during construction activities and shown on Project plans), modifications to the Project route and the Limit of Work have been made to completely avoid four additional sites: HUD-HA-9, SUD-HA-26, SUD-HA-37, and SUD-HA-38. Sites HUD-HA-8 and SUD-HA-39 are partially within the Limit of Work but are being protected from grading or excavation; these sites will be protected by burial of the site within the Limit of Work under the installation of geotextile fabric with clean road-grade fill over the geotextile fabric.

The South Sudbury Railroad Station site (SUD-HA-26) is located west of Union Avenue and south of the railroad under an asphalt-paved driveway and parking area. The 1888 Victorian-style station was demolished in the mid 1950s and no impact to the site is proposed; the site will be protected by the pavement. Prior to demolition of the station, a small Colonial-style depot was constructed in 1952 south of the rail line and east of the former South Sudbury Depot. The 1952 depot was retired from service on January 17, 1965; it is still intact. Avoidance and protection of the ca. 1952 Colonial-style depot is recommended (Figure 9); presently the building has been vacated from the business that was located there recently, but fencing may need to be modified to take into account access to the building or business owner concerns if a business is present at the time of construction.

Central Massachusetts Railroad Corridor Historic District Contributing Resources

In addition to the aforementioned railroad station archaeological sites and the railroad section tool house, a number of other railroad-related features including, but not limited to, bridges, whistle posts, rail rests, signal relay boxes, battery wells, culverts and mile markers were identified and listed as contributing resources to the CMRRCHD. A comprehensive listing of all CMRRCHD contributing resources and the proposed Project actions is presented in Appendix I. A number of these resources will be either removed, replaced, rehabilitated, or altered. These resources include the rails and wood ties (SUD.933 and SUD.934 – MHC Inventory #s for rails and wood ties in Hudson are TBD), with the exception of two sections of spur track located west of Union Avenue and west of Boston Post Road as outlined in the Project plans, Bridge 127 (SUD.901), Bridge 128 (SUD.900), Bridge 130 (MHC Inventory # TBD), Culvert 125B (No MHC Inventory # on form), Culvert 126D (SUD.940), Culvert 127A (SUD.945), and the stone retaining wall at MP 23.95 (MHC Inventory # TBD).

For the remaining contributing resources, individual proposed project actions, along with their mile post and VHB Station locations (present on the Project plan sets) are summarized in Table 2. These impacts were updated after an initial review with the Phase I construction contractor on 1/27/2022. Of these resources, any located well outside the Limit of Work shall be retained and protected with construction fencing and signage that shall be installed in consultation with and approved by the cultural resource consultant (see *Resources to be Avoided* in Table 2). The consultant shall be given 24 hours advanced notice before any construction activities within the immediate vicinity of the feature occurs.

The resources located within the Project's Limit of Work will need to be removed and reset in a new location, but will be reset as close as possible to their original location (see *Resources within Limit of Work to be Removed & Reset* in Table 2). Lastly, a number of additional features are located at the very limit of or directly adjacent to the Limit of Work and will need additional contractor input during construction as to whether or not these objects will need to be removed and reset (see *Resources at very limit of or directly adjacent to Limit of Work and will be Avoided or Removed & Reset* in Table 2); whenever feasible these features will be preserved *in situ*.

Table 2. Identified CMRRCHD contributing resources and proposed action.

Contributing Resource	MHC#	MP	VHB STA	Town
Resources to be Avoided				
Section Tool House	SUD.282	19.75	712+20	Sudbury
South Sudbury Station	SUD.396	19.99	601+50	Sudbury
Telegraph Poles (approx. 23 in total)*	SUD.935	Various	Various	Sudbury
Culvert 126A	SUD.936	18.96	752+17	Sudbury
Milepost	SUD.937	19.00	751+50	Sudbury
Culvert 126B	SUD.938	19.06	747+39	Sudbury
Battery Well for Distant Approach Signal	SUD.942	19.26	736+45	Sudbury
Whistle Post - W on east face, N of tracks	SUD.946	19.73	712+80	Sudbury
Concrete base for Auto Highway Flashers	SUD.947	19.76	711+80	Sudbury
Concrete base for Auto Highway Flashers	SUD.948	19.76	710+90	Sudbury
Signal Relay Box (mast only)	SUD.949	19.76	710+85	Sudbury
Culvert 127B	SUD.950	19.87	704+56	Sudbury
Concrete Bases for Highway Signal	SUD.951	19.97	602+45	Sudbury
Signal Relay Box	SUD.961	20.13	594+50	Sudbury
Culvert 127C	SUD.962	20.14	593+18	Sudbury
Signal Relay Box	SUD.963	20.34	585+00	Sudbury
Wood Post	SUD.964	20.34	584+60	Sudbury
Culvert 127D	SUD.966	20.44	577+31	Sudbury
Culvert 127E	SUD.970	20.75	560+82	Sudbury
Signal Relay Box	SUD.972	20.79	555+50	Sudbury
Milepost B21 N83	SUD.976	21.00	548+80	Sudbury
Culvert 127F	SUD.979	21.18	539+40	Sudbury
Wood Post, south side of ROW	SUD.982	21.36	529+80	Sudbury
Culvert 127G	SUD.983	21.40	527+30	Sudbury
Culvert 127H	SUD.984	21.51	521+64	Sudbury
Culvert 127I	SUD.985	21.58	517+96	Sudbury
Whistle Post (broken) - S side of tracks	SUD.986	21.58	517+50	Sudbury
Rail Rest	SUD.988	21.94	414+15	Sudbury
Milepost B22 N82	SUD.989	22.00	413+05	Sudbury
Culvert 127J	SUD.990	22.05	410+25	Sudbury
Culvert 129A	SUD.992	22.83	368+80	Sudbury
Farm Crossing	TBD	18.79	761+25	Sudbury
Milepost	TBD	23	360+20	Hudson
Rail Rest	TBD	23.05	357+90	Hudson
Telegraph Pole	TBD	23.06	357+25	Hudson
Milepost	TBD	24	307+30	Hudson
Culvert 129C	TBD	24.3	206+15	Hudson
Cattle pass	TBD	25.83	124+90	Hudson
Milepost	TBD	26	114+25	Hudson
Culvert 132A	TBD	26.12	107+90	Hudson
Resources within Limit of Work to be Removed & Reset				
Poured Concrete base for Signal Relay Box/Battery Well	SUD.944	19.60	718+10	Sudbury
Milepost	SUD.953	20.00	601+60	Sudbury
Concrete bases & steel posts for Signal/Electrical boxes (5)	SUD.955	20.00	600+60	Sudbury
Diamond junction with Framingham & Lowell RR	SUD.956	20.02	600+50	Sudbury

Signal Relay Box	SUD.968	20.59	570+05	Sudbury
Whistle Post	SUD.969	20.63	569+15	Sudbury
Crossing Sign Base	SUD.971	20.79	555+65	Sudbury
Wood Post North Side of ROW	SUD.980	21.29	531+90	Sudbury
Conduit Pipe Derail Switch	TBD	23.33	343+35	Hudson
Concrete base well	TBD	24.36	201+10	Hudson
Whistle post (N)	TBD	24.5	195+75	Hudson
Wood Post	TBD	24.72	183+55	Hudson
Utility Pole	TBD	24.76	182+20	Hudson
Track Switch Stand with Electrical Box	TBD	24.8	179+15	Hudson
Concrete Box	TBD	24.89	174+90	Hudson
Milepost	TBD	25	167+75	Hudson
Rail Rest	TBD	25	167+55	Hudson
Rail Rest	TBD	26	114+60	Hudson
Resources at very limit of or directly adjacent to Limit of Work and will be Avoided or Removed & Reset				
Rail Rest	SUD.939	19.21	743+75	Sudbury
Distant Approach Signal	SUD.941	19.26	736+55	Sudbury
Signal Relay Box	SUD.943	19.37	729+60	Sudbury
Electric Switch Box**	TBD	19.75	710 +85	Sudbury
Concrete Sign Post	SUD.952	19.98	602+10	Sudbury
3 Switch Stands	SUD.954	20.00	600+60	Sudbury
Wood whistle/stop sign post	SUD.957	20.02	600+80	Sudbury
Signal Relay Box	SUD.958	20.07	598+55	Sudbury
Concrete Base for Signal E2	SUD.959	20.07	598+55	Sudbury
Rail Rest	SUD.960	20.09	596+90	Sudbury
Tall Concrete Sign Post	SUD.965	20.39	581+10	Sudbury
Rail Rest	SUD.967	20.55	570+65	Sudbury
Distant Approach Interlocking Signal #M208	SUD.973	20.80	551+50	Sudbury
Battery Well for Interlocking Signal #M208	SUD.974	20.80	551+45	Sudbury
Rail Rest	SUD.975	20.98	549+05	Sudbury
Whistle Post – eastbound, S side of tracks	SUD.977	21.13	542+55	Sudbury
Signal Relay Box	SUD.978	21.16	540+85	Sudbury
Auto Highway Flashers/Signal Relay Cabinet	SUD.981	21.35	530+60	Sudbury
Whistle Post - westbound, N of tracks	SUD.987	21.66	513+15	Sudbury
Whistle Post - W on west face, S of tracks	SUD.991	22.19	403+70	Sudbury
Section post	TBD	24	307+30	Hudson
Rail Rest	TBD	24.09	302+60	Hudson
Whistle post (S)	TBD	24.4	200+10	Hudson
Wood Post	TBD	24.78	180+80	Hudson

*Only one of the approximately 23 telegraph poles in Sudbury will need to be removed due to recently identified safety concerns and the remaining will be avoided. The pole to be removed is adjacent to the Diamond Junction.

**Recently identified by Eversource/DCR and not included on CMRRCHD Inventory Form within the Town of Sudbury (Spies 2020).

The removal and resetting of the railroad features identified as contributing resources will be directed by several guidelines:

- 1) Any features to be removed and reset will be photographed beforehand.
- 2) Those features that are in the Project’s Limit of Work will be removed and reset. Whenever feasible, features will be preserved *in situ*.
- 3) If features need to be removed and reset, they will be reset as close as possible to their original location.
- 4) If a feature consists of multiple objects (e.g., SUD.955) the spatial association of these objects will be documented prior to removal and the minimum number of objects will be removed and reset.

- 5) If a feature is closely associated with another feature (e.g., SUD.941 and SUD.942), the spatial association of these objects will be documented prior to removal. If both features need to be reset, the original spatial organization will be maintained when reset, as best as possible. If only one feature needs to be removed and reset, the feature to be removed will be reset in a location a similar distance from the second feature, as best as possible.
- 6) Any feature that is currently leaning will be reset in their original, upright, position, as best as possible, unless this requires additional alteration of or repairs to the object.
- 7) Other than resetting features in an upright position, no attempts will be made to further alter or repair the current condition of the RR features.
- 8) Removal and resetting shall only be done after consultation with the cultural resource consultant, who shall specify the methodology used to remove, protect, and reset the feature, as well as determining the most appropriate location for the resetting of features.
- 9) If there is more than one day's delay between removal and resetting of a feature, the object will be stored on site within the MBTA ROW, but outside the Limit of Work. The resource will be fenced off with high visibility fencing and marked with *No Trespassing* signs until the time in which it can be reset.
- 10) Although not anticipated, if any railroad features are significantly damaged during the removal and resetting process, the feature will be carefully placed outside the Limit of Work, but within the MBTA ROW, and protected with high visibility fencing placed around the feature along with *No Trespassing* signage. Eversource and the DCR will consult with the MHC and the USACE to determine appropriate next steps.

Granite Town-Line Marker

In addition to the historic properties covered under this HPAPP, the Sudbury-Hudson-Marlborough town boundary marker near Old Concord Road will also require protection measures under this Plan (Figure 12). The town boundary location is presently marked with a granite post measuring 10 inches wide and with a height of 47 inches above the ground surface. The post is marked on the west side with the date of "1993"; on the north side with "H" for Hudson; on the east side with "S" for Sudbury; and on the south side with "M" for Marlborough. No railroad ties and tracks are in this area and the present marker was presumably installed around 1993, as the date on the stone suggests. Since the present granite marker is less than 50 years of age, it is not considered to be potentially eligible for the National Register of Historic Places. However, avoidance and protection of the town boundary stone is planned as the marker is protected under Massachusetts General Laws Chapter 42, Boundaries of Cities and Town, Sections 1-12 (www.massachusettsgenerallaws.com/generallaws.htm). Modifications to the Project route and the Limit of Work have been made to avoid the marker (Figure 12).

Avoidance and Protection Measures

Avoidance and protection measures for the resources include installing high-visibility temporary fencing (i.e., orange construction fence) around the resources or for archaeological sites, at key locations such as along the edges of the Project's Limit of Work and the sensitive cultural resource area, as noted in Figures 3 to 12. Signs with *No Trespassing* should be posted along the fence to indicate that these are off-limits areas. No access or impacts are allowed within the fenced areas. Construction personnel and contractors will be instructed to neither perform nor permit any construction, excavation, grading, tree stumping, filling, dumping, or the storage or staging of equipment vehicles, or supplies within the boundaries of the fenced area. Monitoring or flagging of the areas by CHG can assist in facilitating the employment of protection measures (i.e., placement of fencing). For sites HUD-HA-8 and SUD-HA-39 a CHG Project Archaeologist will monitor the installation of geotextile fabric and clean road-grade fill as necessary to assist in the accurate placement of protective fill over the archaeological sites.

CHG cultural resource personnel will make field visits to ensure that the avoidance and protective measures are carried out as specified, with photographic documentation prior to, during and after construction. The pre-construction, construction, and post-construction elements of the HPAPP for the Project are detailed below:

3.1 PRE-CONSTRUCTION PHASE

A pre-construction meeting will be held with Project personnel and contractors and CHG's Principal Investigator to review these measures.

The pre-construction activities will involve the following:

- Pre-construction site inspection;
- Photography;
- Construction personnel briefing; and
- High-visibility fencing with *No Trespassing* signs along the sensitive cultural resource areas to be protected.

3.2 CONSTRUCTION PHASE

Construction will be conducted in two integrated phases with the majority of the earthwork and the installation of the underground transmission line to be conducted in Phase I; Phase II will consist of paving and other activities associated with the construction of the rail trail. The majority of the removal and resetting of railroad features will be performed during Phase I of construction.

CHG cultural resource personnel will be available during the course of Phase I of construction work as needed, which will include the monitoring and other activities identified above. For Phase II construction activities, the DCR staff archaeologist or another qualified professional archaeologist will also be available for any necessary monitoring activities.

The construction activities will include the following:

- Avoidance of the fenced sensitive cultural resource areas;
- Monitoring of the installation of geotextile fabric and clean road-grade fill at Sites HUD-HA-8 and SUD-HA-39;
- Specification of the methodology used to remove, preserve, and reset the railroad features;
- Monitoring the removal and resetting of the railroad features; and
- Response, reporting, and corrective actions if these conditions are not met.

3.3 POST-CONSTRUCTION PHASE

CHG cultural resource personnel will conduct a post-construction inspection immediately after the construction phase of the Project to evaluate the condition of the archaeologically sensitive areas and determine whether or not project-related impacts had taken place within the protected areas. The findings of the inspection will be reported to the MHC and the USACE via a memorandum.

The post-construction activities will include the following:

- Fence and sign removal;
- Post-construction site inspection;

- Photography; and
- Post-construction memorandum.

4.0 REFERENCES CITED

Benjamin-Ma, Nicole, Quinn Stuart and David Gutbrod

2021 *MHC Inventory Form A – Central Massachusetts Railroad Corridor, Town of Hudson*. Inventory Form submitted to the Massachusetts Historical Commission, Boston, MA.

Dudek, Martin G. and Barbara Donohue

2018 *Archaeological Reconnaissance Survey for the Sudbury-Hudson Transmission Reliability Project, Towns of Sudbury, Hudson, Marlborough, and Stow, Middlesex County, Massachusetts*. Report submitted to the Massachusetts Historical Commission, Boston, MA.

Dudek, Martin G. and Barbara Donohue

2019 *Archaeological Intensive (Locational) Survey for the Sudbury-Hudson Transmission Reliability Project, Towns of Sudbury, Hudson, Marlborough, and Stow, Middlesex County, Massachusetts*. Report submitted to the Massachusetts Historical Commission, Boston, MA.

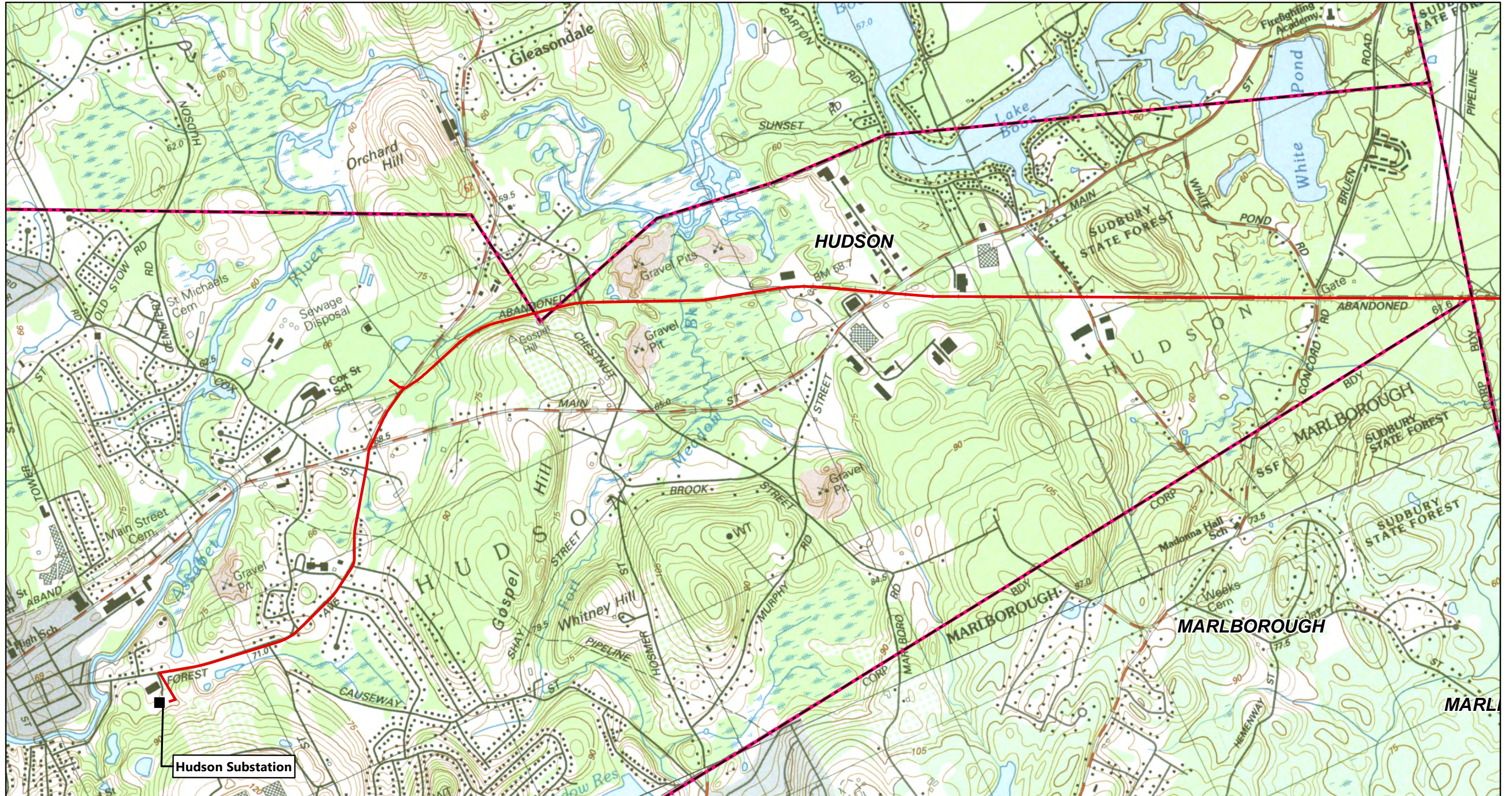
Myruski, Candice N. and Richard Meyer

2017 *Sudbury-Hudson Transmission Reliability Project Town of Sudbury, City of Marlborough, Town of Stow, and Town of Hudson, Middlesex County, Massachusetts MHC No. RC.62384; EEA No. 15703 Reconnaissance-Level Historic Properties Survey*. Report submitted to the Massachusetts Historical Commission, Boston, MA.

Spies, Stacy E.

2020 *MHC Inventory Form A – Central Massachusetts Railroad Corridor, Town of Sudbury*. Inventory Form submitted to the Massachusetts Historical Commission, Boston, MA.

Figures



- Project
- Substation Location
- ▭ Municipal Boundary

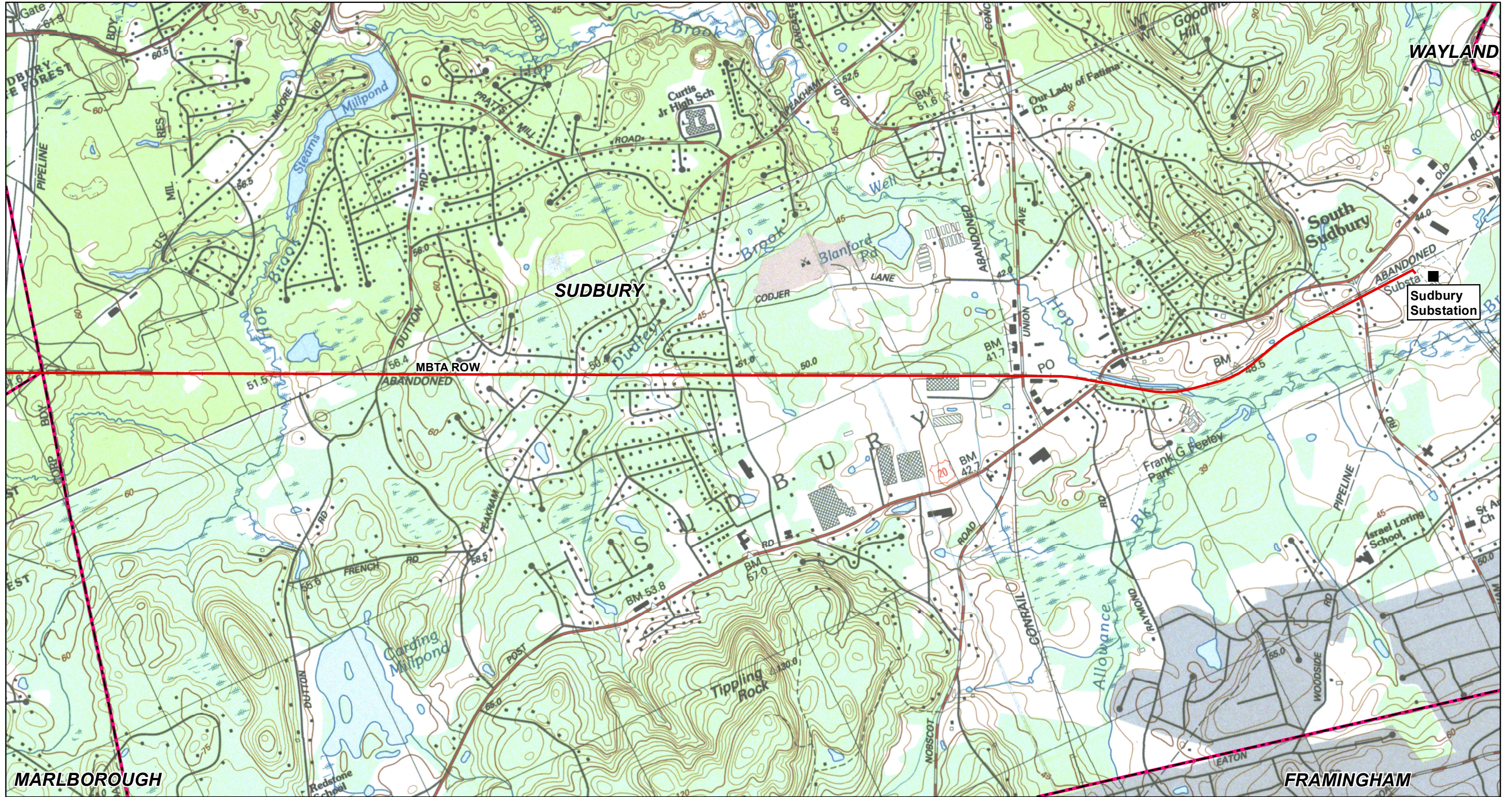


Figure 1: Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project, Hudson Locus Map (USGS)



Source:
MassGIS, VHB
12/23/2019

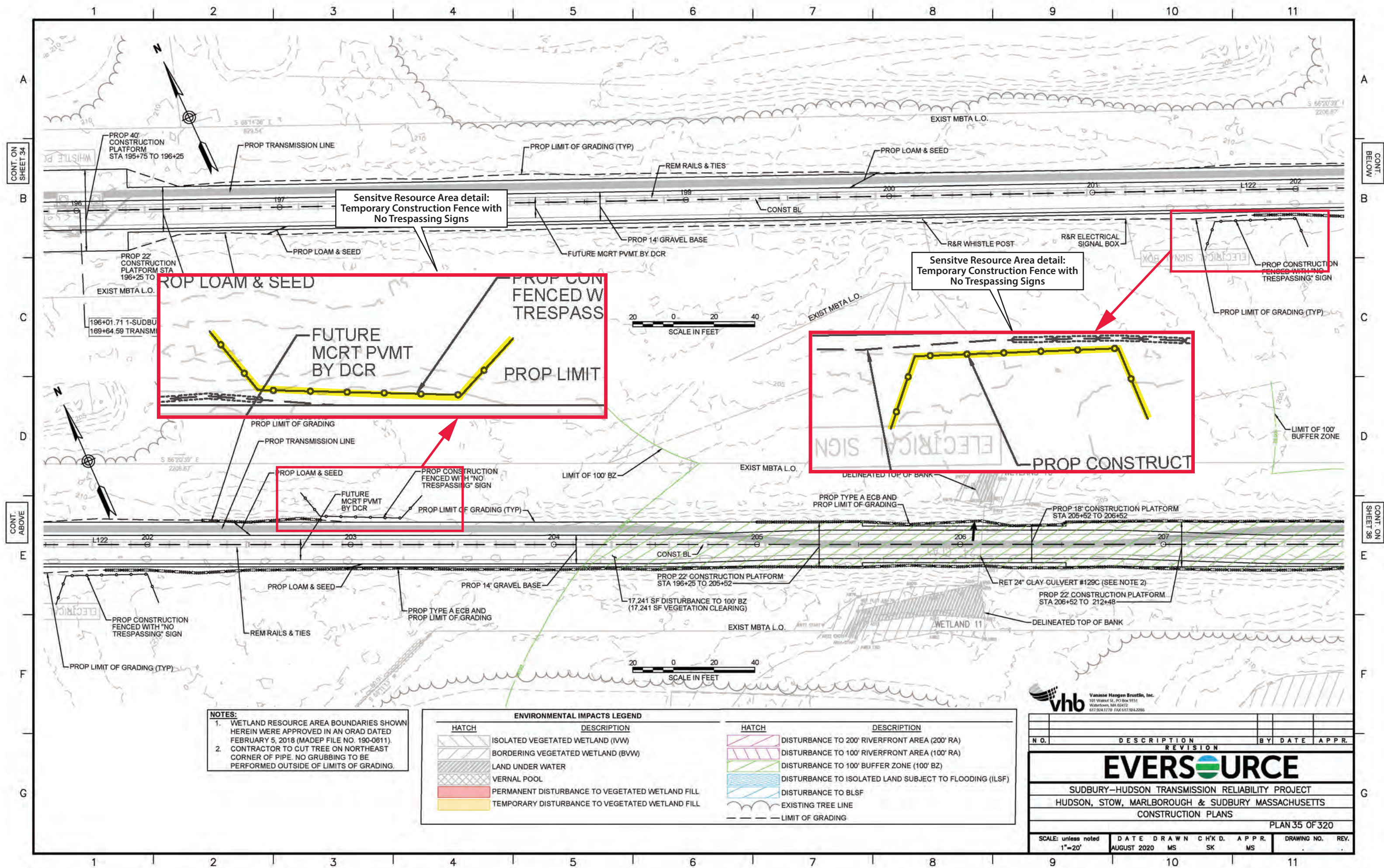




- Project
- Substation Location
- Municipal Boundary

Figure 2: Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project, Sudbury Locus Map (USGS)





- NOTES:**
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO. 190-0611).
 2. CONTRACTOR TO CUT TREE ON NORTHEAST CORNER OF PIPE. NO GRUBBING TO BE PERFORMED OUTSIDE OF LIMITS OF GRADING.

ENVIRONMENTAL IMPACTS LEGEND		ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION	HATCH	DESCRIPTION
[Hatched Box]	ISOLATED VEGETATED WETLAND (IWW)	[Hatched Box]	DISTURBANCE TO 200' RIVERFRONT AREA (200' RA)
[Hatched Box]	BORDERING VEGETATED WETLAND (BVW)	[Hatched Box]	DISTURBANCE TO 100' RIVERFRONT AREA (100' RA)
[Hatched Box]	LAND UNDER WATER	[Hatched Box]	DISTURBANCE TO 100' BUFFER ZONE (100' BZ)
[Hatched Box]	VERNAL POOL	[Hatched Box]	DISTURBANCE TO ISOLATED LAND SUBJECT TO FLOODING (ILSF)
[Hatched Box]	PERMANENT DISTURBANCE TO VEGETATED WETLAND FILL	[Hatched Box]	DISTURBANCE TO BLSF
[Hatched Box]	TEMPORARY DISTURBANCE TO VEGETATED WETLAND FILL	[Hatched Box]	EXISTING TREE LINE
		[Hatched Box]	LIMIT OF GRADING

vhb Vanasse Hangen Brustlin, Inc.
 101 Walnut St., PO Box 9151
 Watertown, MA 02472
 617.924.3179 FAX 617.924.2986

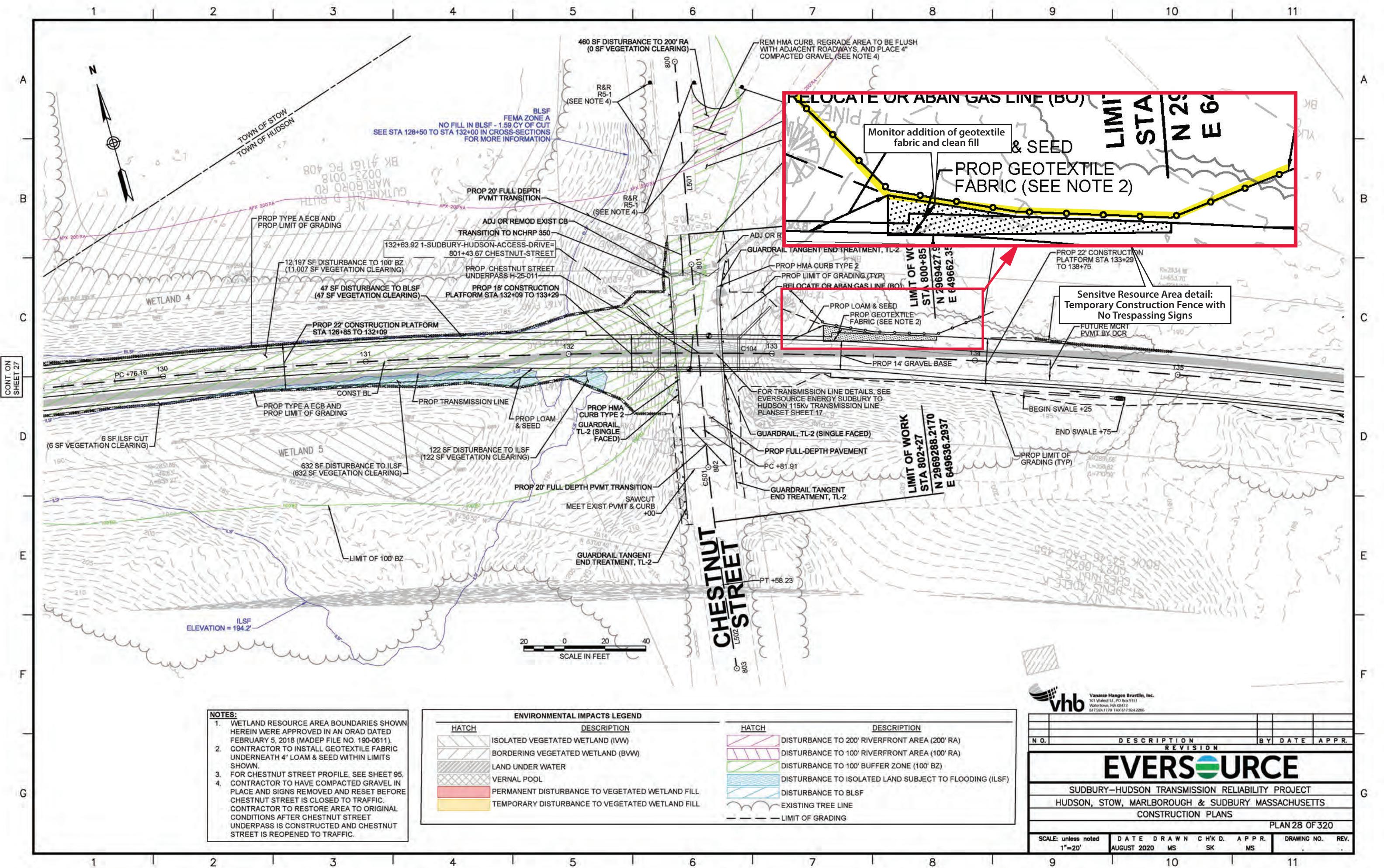
N.O.	DESCRIPTION	REVISION	BY	DATE	APPR.

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 CONSTRUCTION PLANS
 PLAN 35 OF 320

SCALE: unless noted	DATE	DRAWN	CHK'D.	APPR.	DRAWING NO.	REV.
1"=20'	AUGUST 2020	MS	SK	MS		

Figure 3. Avoidance and protection measures for sensitive cultural resource areas 19-MD-1208 and 19-MD-1209.



- NOTES:**
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO. 190-0611).
 2. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 4" LOAM & SEED WITHIN LIMITS SHOWN.
 3. FOR CHESTNUT STREET PROFILE, SEE SHEET 95.
 4. CONTRACTOR TO HAVE COMPACTED GRAVEL IN PLACE AND SIGNS REMOVED AND RESET BEFORE CHESTNUT STREET IS CLOSED TO TRAFFIC. CONTRACTOR TO RESTORE AREA TO ORIGINAL CONDITIONS AFTER CHESTNUT STREET UNDERPASS IS CONSTRUCTED AND CHESTNUT STREET IS REOPENED TO TRAFFIC.

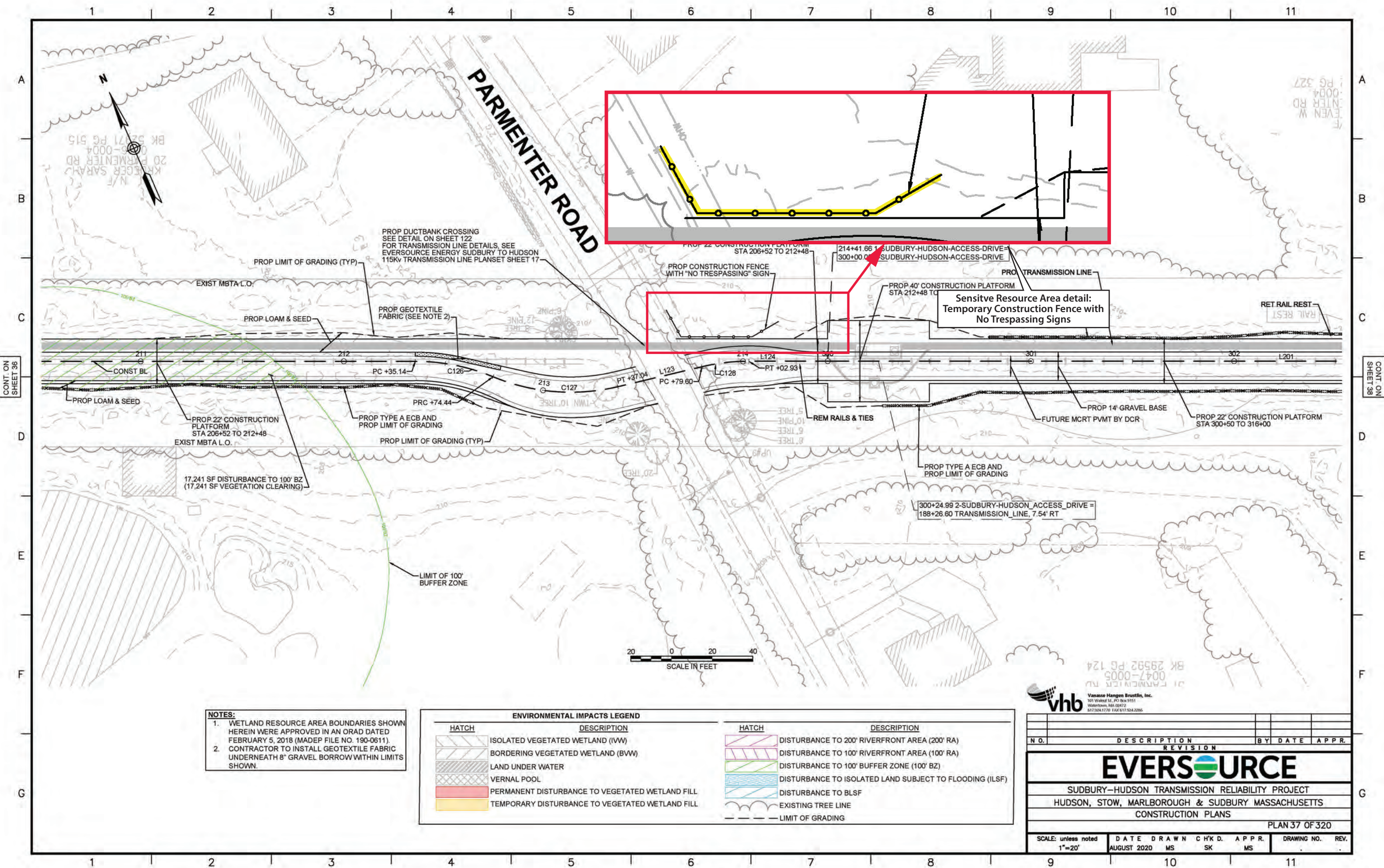
HATCH	DESCRIPTION
	ISOLATED VEGETATED WETLAND (IWW)
	BORDERING VEGETATED WETLAND (BVW)
	LAND UNDER WATER
	VERNAL POOL
	PERMANENT DISTURBANCE TO VEGETATED WETLAND FILL
	TEMPORARY DISTURBANCE TO VEGETATED WETLAND FILL

HATCH	DESCRIPTION
	DISTURBANCE TO 200' RIVERFRONT AREA (200' RA)
	DISTURBANCE TO 100' RIVERFRONT AREA (100' RA)
	DISTURBANCE TO 100' BUFFER ZONE (100' BZ)
	DISTURBANCE TO ISOLATED LAND SUBJECT TO FLOODING (ILSF)
	DISTURBANCE TO BLSF
	EXISTING TREE LINE
	LIMIT OF GRADING

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NO.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CONSTRUCTION PLANS				
PLAN 28 OF 320				
SCALE: unless noted 1"=20'	DATE AUGUST 2020	DRAWN MS	CHK'D. SK	APPR. MS
				DRAWING NO. REV.

Figure 4. Avoidance and protection measures for sensitive cultural resource area HUD-HA-8.



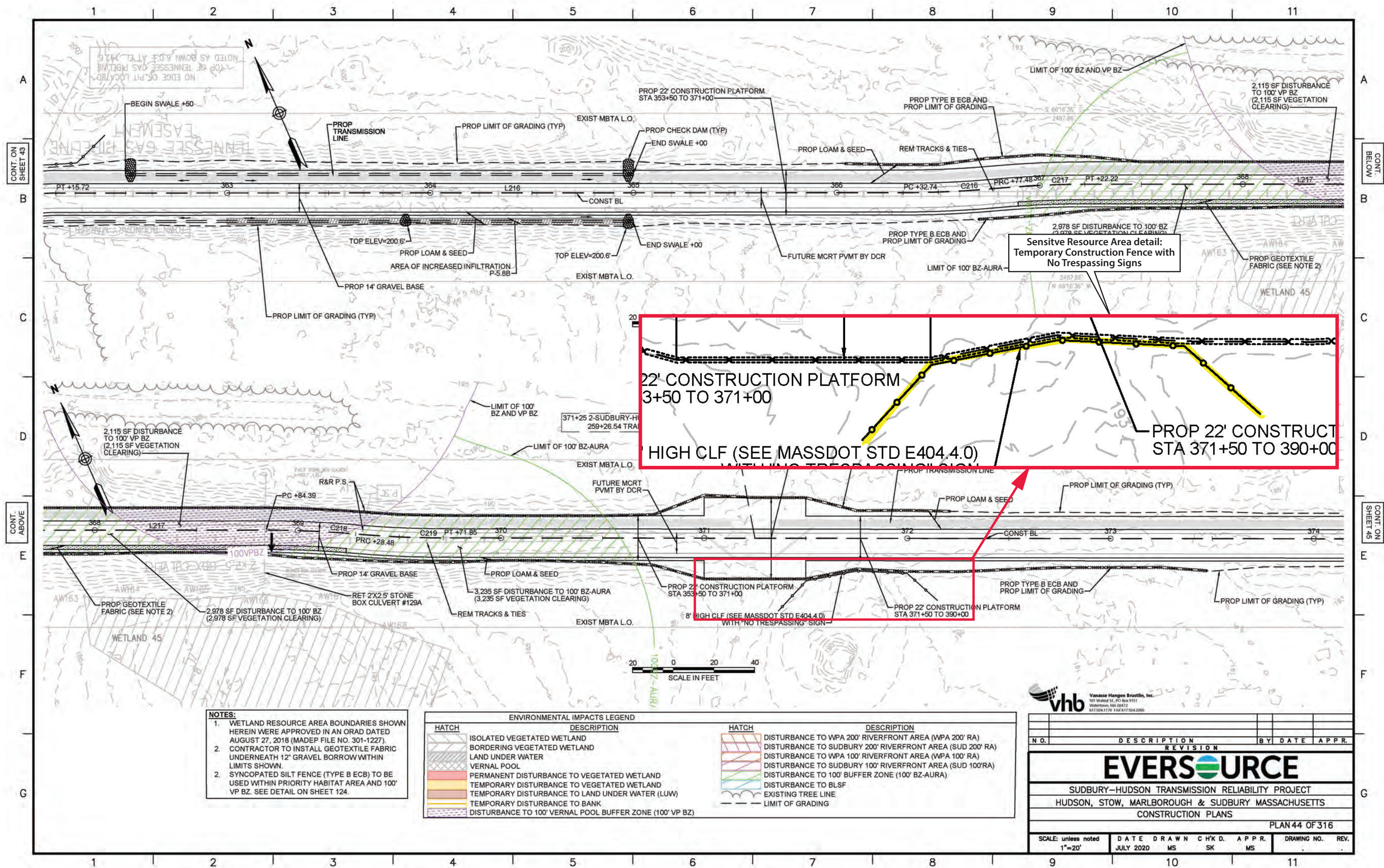
- NOTES:**
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO. 190-0611).
 2. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 8" GRAVEL BORROW WITHIN LIMITS SHOWN.

ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
	ISOLATED VEGETATED WETLAND (IWW)
	BORDERING VEGETATED WETLAND (BWW)
	LAND UNDER WATER
	VERNAL POOL
	PERMANENT DISTURBANCE TO VEGETATED WETLAND FILL
	TEMPORARY DISTURBANCE TO VEGETATED WETLAND FILL
HATCH	DESCRIPTION
	DISTURBANCE TO 200' RIVERFRONT AREA (200' RA)
	DISTURBANCE TO 100' RIVERFRONT AREA (100' RA)
	DISTURBANCE TO 100' BUFFER ZONE (100' BZ)
	DISTURBANCE TO ISOLATED LAND SUBJECT TO FLOODING (ILSF)
	DISTURBANCE TO BLSF
	EXISTING TREE LINE
	LIMIT OF GRADING

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 Watertown, MA 02472
 617.904.1770 FAX 617.904.2096

NO.	DESCRIPTION	BY	DATE	APPR.
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CONSTRUCTION PLANS				
PLAN 37 OF 320				
SCALE: unless noted 1"=20'	DATE AUGUST 2020	DRAWN MS	CHK'D. SK	APPR. MS
				DRAWING NO. REV.

Figure 5. Avoidance and protection measures for sensitive cultural resource area HUD-HA-9.



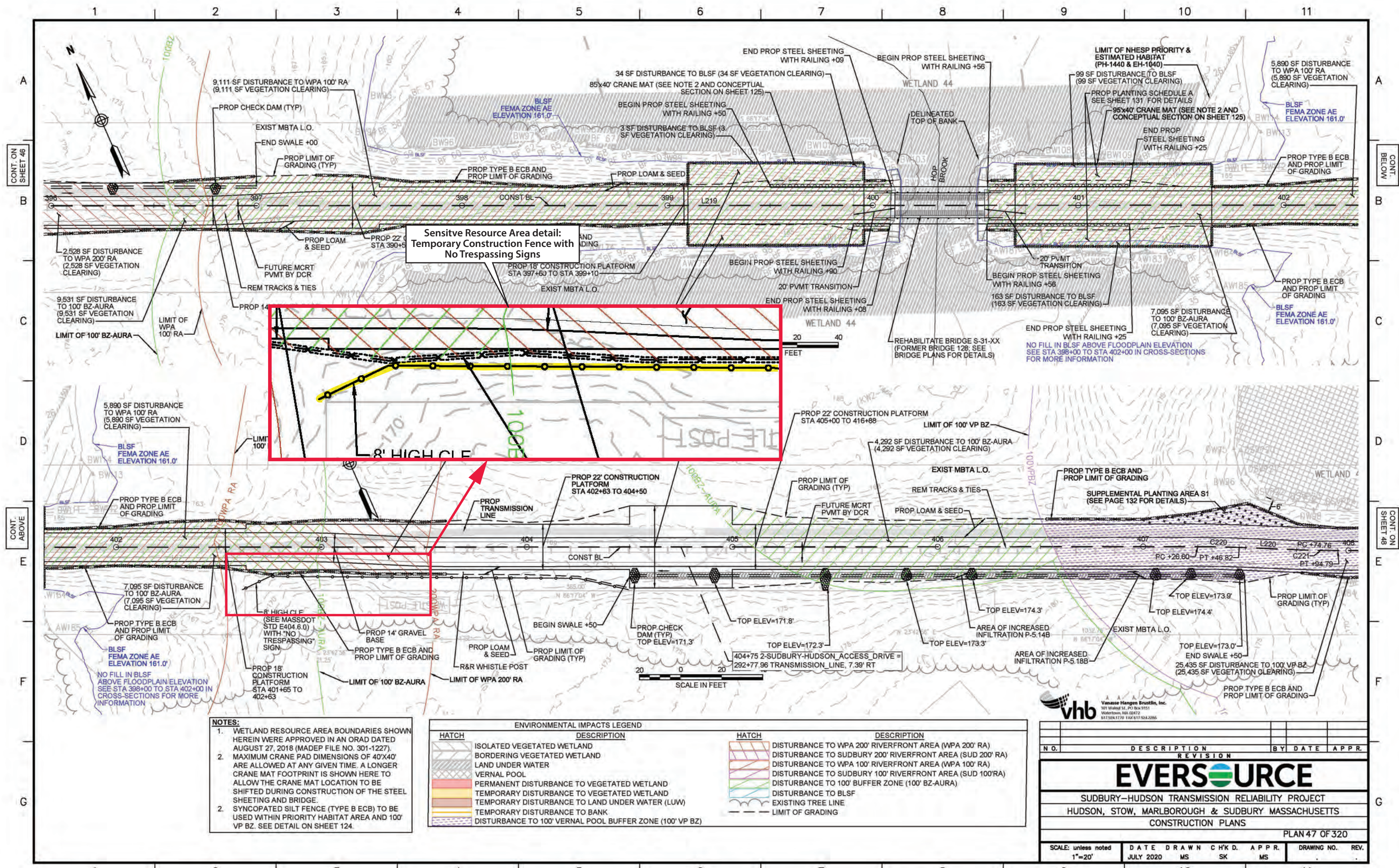
- NOTES:**
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227). CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 12" GRAVEL BORROW WITHIN LIMITS SHOWN.
 2. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 100' VP BZ. SEE DETAIL ON SHEET 124.

ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
[Hatch: Diagonal lines]	ISOLATED VEGETATED WETLAND
[Hatch: Stippled]	BORDERING VEGETATED WETLAND
[Hatch: Horizontal lines]	LAND UNDER WATER
[Hatch: Vertical lines]	VERNAL POOL
[Hatch: Red diagonal lines]	PERMANENT DISTURBANCE TO VEGETATED WETLAND
[Hatch: Yellow diagonal lines]	TEMPORARY DISTURBANCE TO VEGETATED WETLAND
[Hatch: Blue diagonal lines]	TEMPORARY DISTURBANCE TO LAND UNDER WATER (LUW)
[Hatch: Orange diagonal lines]	TEMPORARY DISTURBANCE TO BANK
[Hatch: Green diagonal lines]	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)
[Hatch: Red diagonal lines]	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
[Hatch: Yellow diagonal lines]	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
[Hatch: Blue diagonal lines]	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
[Hatch: Green diagonal lines]	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
[Hatch: Purple diagonal lines]	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
[Hatch: Dashed line]	EXISTING TREE LINE
[Hatch: Solid line]	LIMIT OF GRADING

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N.O.	DESCRIPTION	REVISION	BY	DATE	APPR.
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CONSTRUCTION PLANS					
PLAN 44 OF 316					
SCALE: unless noted 1"=20'	DATE JULY 2020	DRAWN MS	C'H'K D. SK	APPR. MS	DRAWING NO. REV.

Figure 6. Avoidance and protection measures for sensitive cultural resource area SUD-HA-36.

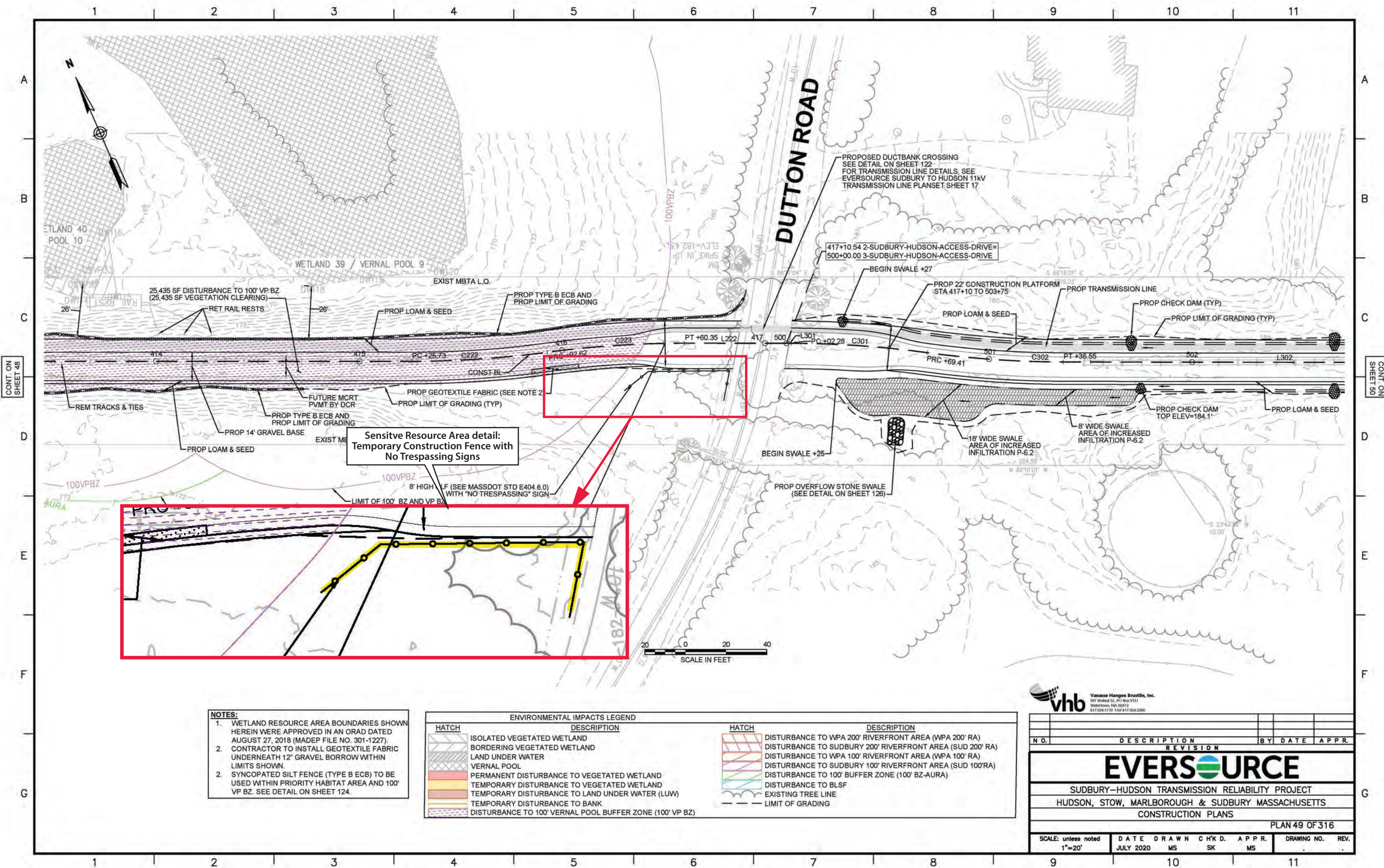


- NOTES:**
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227). MAXIMUM CRANE PAD DIMENSIONS OF 40'X40' ARE ALLOWED AT ANY GIVEN TIME. A LONGER CRANE MAT FOOTPRINT IS SHOWN HERE TO ALLOW THE CRANE MAT LOCATION TO BE SHIFTED DURING CONSTRUCTION OF THE STEEL SHEETING AND BRIDGE.
 2. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 100' VP BZ. SEE DETAIL ON SHEET 124.

ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
[Hatched pattern]	ISOLATED VEGETATED WETLAND
[Hatched pattern]	BORDERING VEGETATED WETLAND
[Hatched pattern]	LAND UNDER WATER
[Hatched pattern]	VERNAL POOL
[Hatched pattern]	PERMANENT DISTURBANCE TO VEGETATED WETLAND
[Hatched pattern]	TEMPORARY DISTURBANCE TO VEGETATED WETLAND
[Hatched pattern]	TEMPORARY DISTURBANCE TO LAND UNDER WATER (LUW)
[Hatched pattern]	TEMPORARY DISTURBANCE TO BANK
[Hatched pattern]	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)
[Hatched pattern]	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
[Hatched pattern]	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
[Hatched pattern]	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
[Hatched pattern]	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100'RA)
[Hatched pattern]	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
[Hatched pattern]	DISTURBANCE TO BLSF
[Hatched pattern]	EXISTING TREE LINE
[Hatched pattern]	LIMIT OF GRADING

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N.O.	DESCRIPTION	BY DATE	APPR.
EVERSOURCE			
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT			
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS			
CONSTRUCTION PLANS			
PLAN 47 OF 320			
SCALE: unless noted 1"=20'	DATE JULY 2020	DRAWN MS	C'H'K'D. SK
		APPR. MS	REV.

Figure 7. Avoidance and protection measures for sensitive cultural resource area SUD-HA-30.



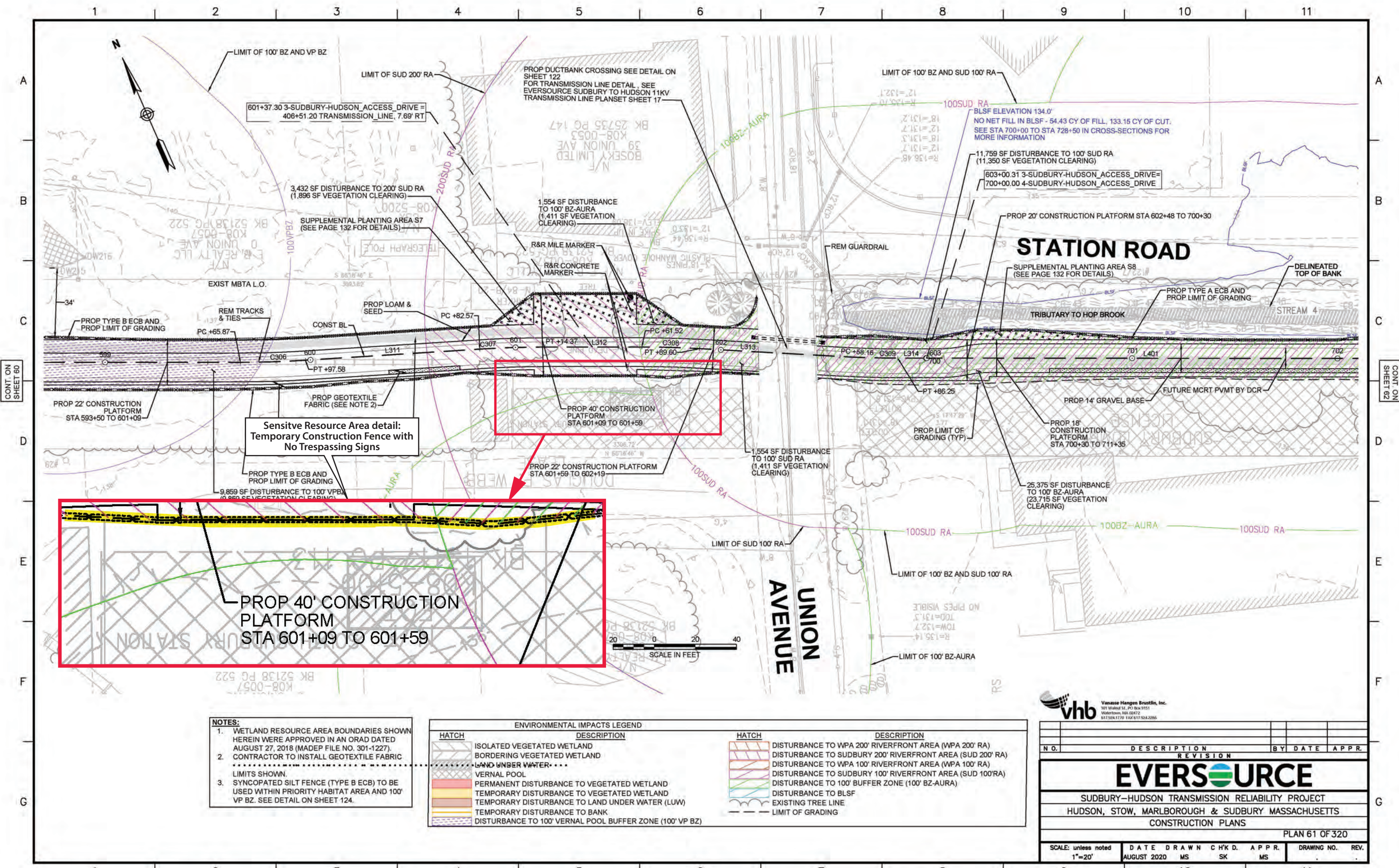
- NOTES:**
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).
 2. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 12" GRAVEL BORROW WITHIN LIMITS SHOWN.
 2. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 100' VP BZ. SEE DETAIL ON SHEET 124.

ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
[Hatch]	ISOLATED VEGETATED WETLAND
[Hatch]	BORDERING VEGETATED WETLAND
[Hatch]	LAND UNDER WATER
[Hatch]	VERNAL POOL
[Hatch]	PERMANENT DISTURBANCE TO VEGETATED WETLAND
[Hatch]	TEMPORARY DISTURBANCE TO VEGETATED WETLAND
[Hatch]	TEMPORARY DISTURBANCE TO LAND UNDER WATER (LUW)
[Hatch]	TEMPORARY DISTURBANCE TO BANK
[Hatch]	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)
[Hatch]	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
[Hatch]	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
[Hatch]	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
[Hatch]	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
[Hatch]	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
[Hatch]	DISTURBANCE TO BLSF
[Hatch]	EXISTING TREE LINE
[Hatch]	LIMIT OF GRADING

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NO.	DESCRIPTION	REVISION	BY	DATE	APPR.
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CONSTRUCTION PLANS					
PLAN 49 OF 316					
SCALE: unless noted 1"=20'	DATE JULY 2020	DRAWN MS	CHK'D. SK	APPR. MS	DRAWING NO. REV.

Figure 8. Avoidance and protection measures for sensitive cultural resource area SUD-HA-38.



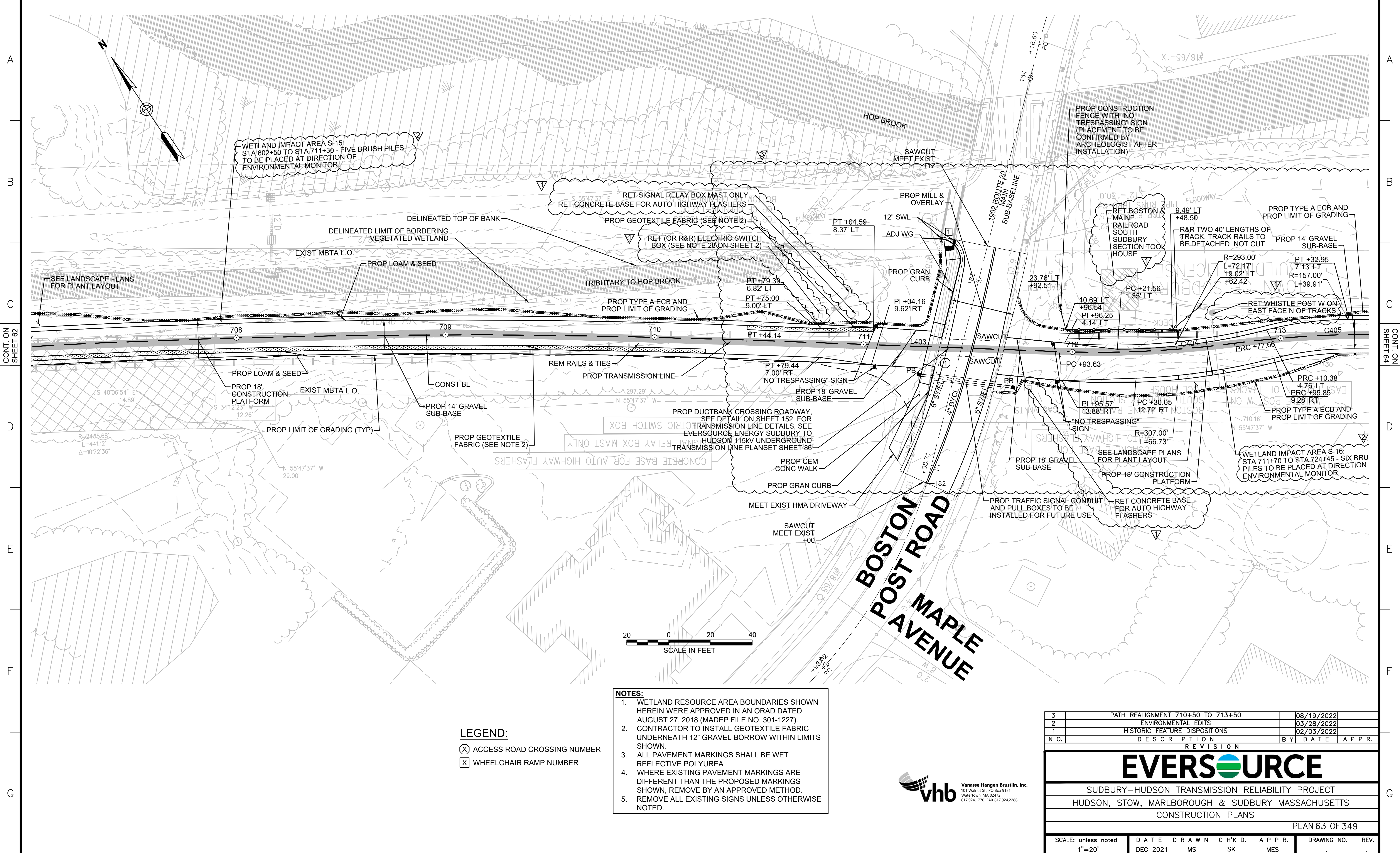
- NOTES:**
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227). CONTRACTOR TO INSTALL GEOTEXTILE FABRIC LIMITS SHOWN.
 2. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 100' VP BZ. SEE DETAIL ON SHEET 124.

ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
[Hatch: Diagonal lines]	ISOLATED VEGETATED WETLAND
[Hatch: Stippled]	BORDERING VEGETATED WETLAND
[Hatch: Dotted]	LAND UNDER WATER
[Hatch: Horizontal lines]	VERNAL POOL
[Hatch: Vertical lines]	PERMANENT DISTURBANCE TO VEGETATED WETLAND
[Hatch: Diagonal lines (other)]	TEMPORARY DISTURBANCE TO VEGETATED WETLAND
[Hatch: Stippled (other)]	TEMPORARY DISTURBANCE TO LAND UNDER WATER (LUW)
[Hatch: Horizontal lines (other)]	TEMPORARY DISTURBANCE TO BANK
[Hatch: Vertical lines (other)]	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)
[Hatch: Diagonal lines (other)]	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
[Hatch: Stippled (other)]	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
[Hatch: Dotted (other)]	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
[Hatch: Horizontal lines (other)]	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
[Hatch: Vertical lines (other)]	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
[Hatch: Diagonal lines (other)]	DISTURBANCE TO BLSF
[Hatch: Stippled (other)]	EXISTING TREE LINE
[Hatch: Dotted (other)]	LIMIT OF GRADING

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Watertown, MA 02472
617.254.1170 FAX 617.254.2266

NO.	DESCRIPTION	BY	DATE	APPR.
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CONSTRUCTION PLANS				
PLAN 61 OF 320				
SCALE: unless noted 1"=20'	DATE AUGUST 2020	DRAWN MS	C'H'K D. SK	APPR. MS
				DRAWING NO. REV.

Figure 9. Avoidance and protection measures for sensitive cultural resource area SUD-HA-26.



CONT. ON SHEET 62

CONT. ON SHEET 64

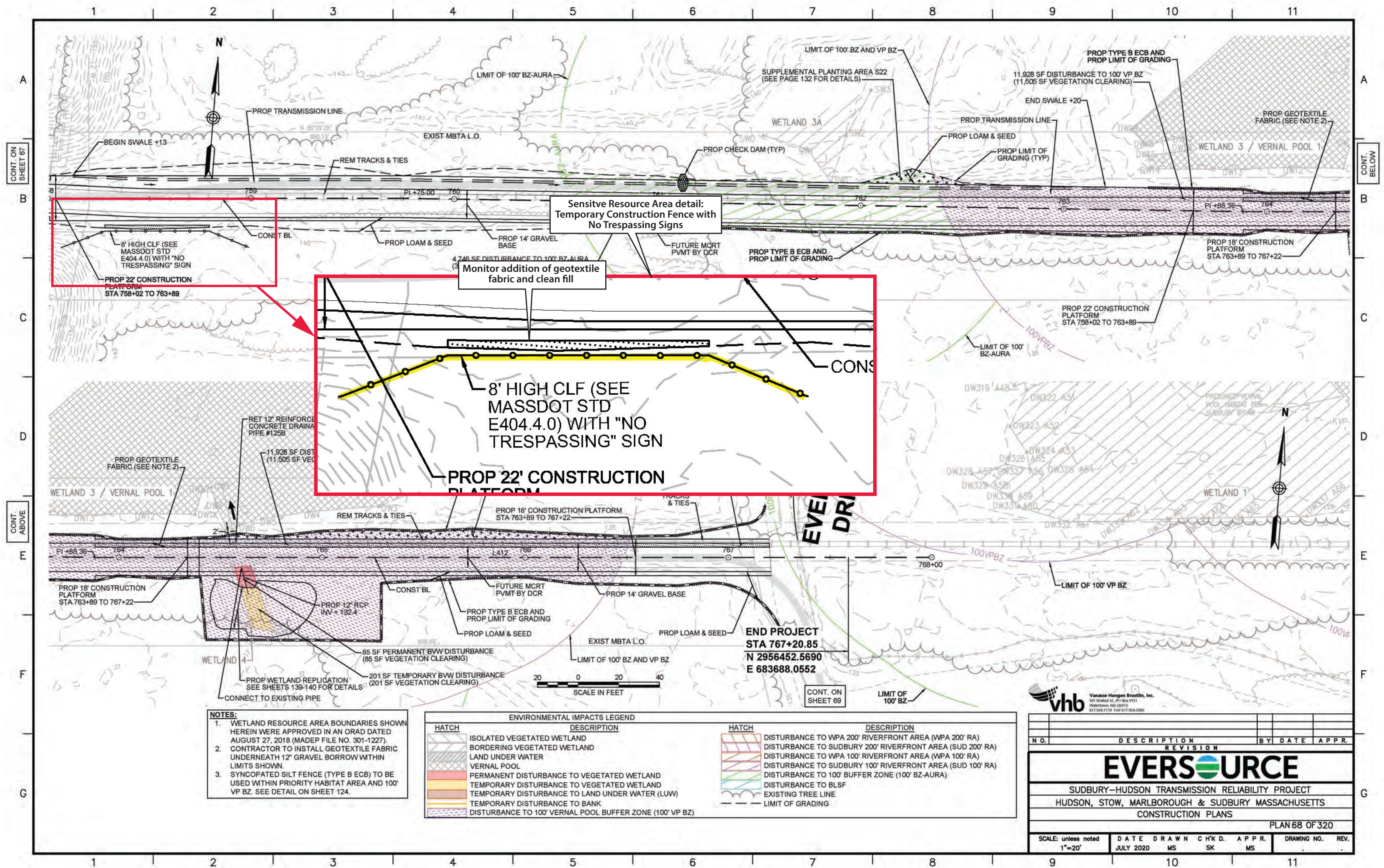


LEGEND:
 (X) ACCESS ROAD CROSSING NUMBER
 (X) WHEELCHAIR RAMP NUMBER

- NOTES:**
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).
 2. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 12" GRAVEL BORROW WITHIN LIMITS SHOWN.
 3. ALL PAVEMENT MARKINGS SHALL BE WET REFLECTIVE POLYUREA
 4. WHERE EXISTING PAVEMENT MARKINGS ARE DIFFERENT THAN THE PROPOSED MARKINGS SHOWN, REMOVE BY AN APPROVED METHOD.
 5. REMOVE ALL EXISTING SIGNS UNLESS OTHERWISE NOTED.



3	PATH REALIGNMENT 710+50 TO 713+50	08/19/2022		
2	ENVIRONMENTAL EDITS	03/28/2022		
1	HISTORIC FEATURE DISPOSITIONS	02/03/2022		
N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CONSTRUCTION PLANS				
PLAN 63 OF 349				
SCALE: unless noted 1"=20'	DATE DEC 2021	DRAWN MS	CHK'D. SK	APPR. MES
DRAWING NO.	REV.			



- NOTES:**
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).
 2. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 12" GRAVEL BORROW WITHIN LIMITS SHOWN.
 3. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 100' VP BZ. SEE DETAIL ON SHEET 124.

ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
[Hatched pattern]	ISOLATED VEGETATED WETLAND
[Hatched pattern]	BORDERING VEGETATED WETLAND
[Hatched pattern]	LAND UNDER WATER
[Hatched pattern]	VERNAL POOL
[Hatched pattern]	PERMANENT DISTURBANCE TO VEGETATED WETLAND
[Hatched pattern]	TEMPORARY DISTURBANCE TO VEGETATED WETLAND
[Hatched pattern]	TEMPORARY DISTURBANCE TO LAND UNDER WATER (LUW)
[Hatched pattern]	TEMPORARY DISTURBANCE TO BANK
[Hatched pattern]	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)
[Hatched pattern]	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
[Hatched pattern]	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
[Hatched pattern]	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
[Hatched pattern]	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
[Hatched pattern]	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
[Hatched pattern]	DISTURBANCE TO BLSF
[Hatched pattern]	EXISTING TREE LINE
[Hatched pattern]	LIMIT OF GRADING

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 617.254.1170 FAX 617.524.2266

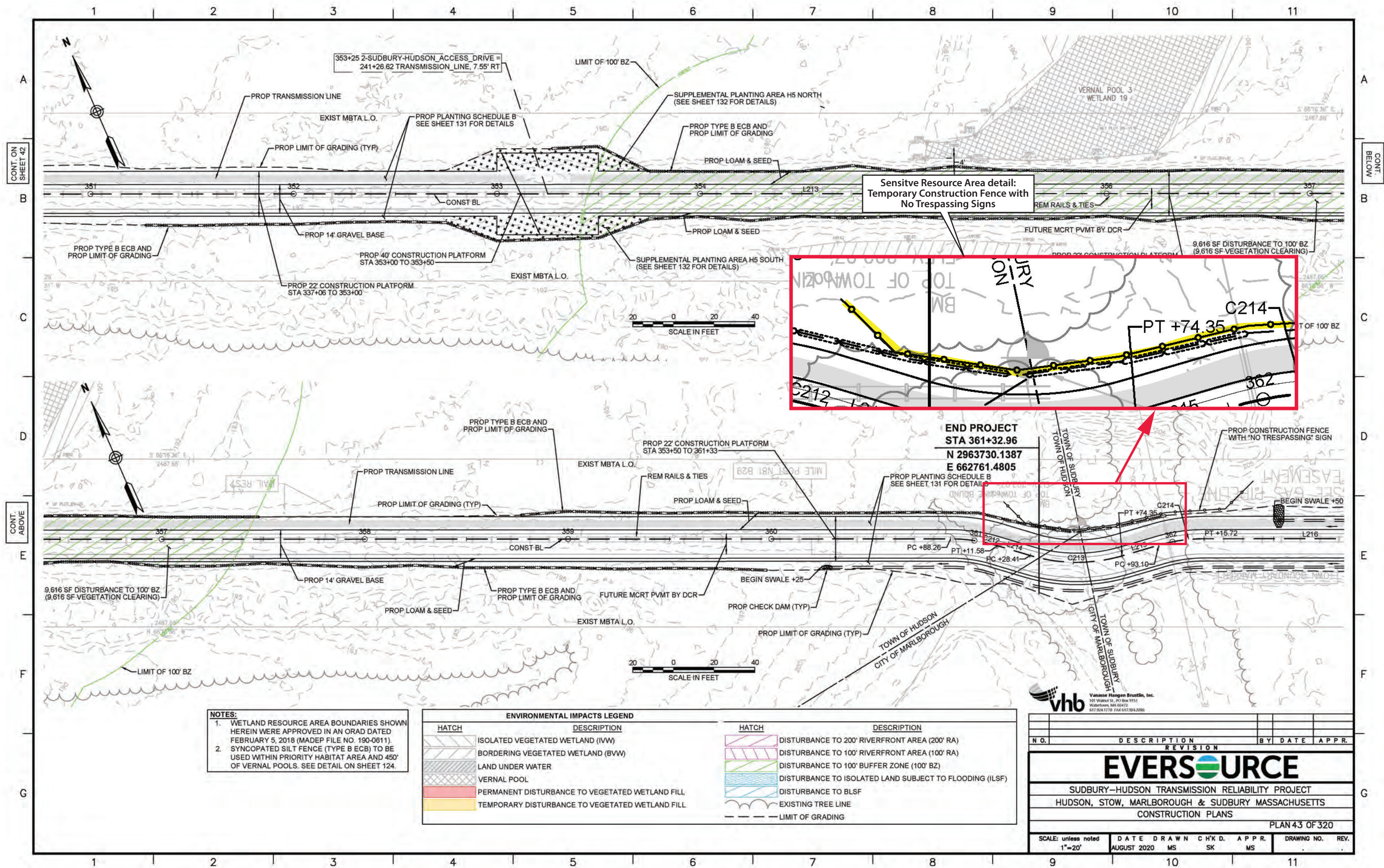
NO.	DESCRIPTION	REVISION	BY	DATE	APPR.

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
 HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
 CONSTRUCTION PLANS
 PLAN 68 OF 320

SCALE:	DATE	DRAWN	CHK'D.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MS		

Figure 11. Avoidance and protection measures for sensitive cultural resource area SUD-HA-39.



NOTES:
 1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO. 190-0611).
 2. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 450' OF VERNAL POOLS. SEE DETAIL ON SHEET 124.

ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
[Hatched pattern]	ISOLATED VEGETATED WETLAND (IWW)
[Hatched pattern]	BORDERING VEGETATED WETLAND (BVW)
[Hatched pattern]	LAND UNDER WATER
[Hatched pattern]	VERNAL POOL
[Hatched pattern]	PERMANENT DISTURBANCE TO VEGETATED WETLAND FILL
[Hatched pattern]	TEMPORARY DISTURBANCE TO VEGETATED WETLAND FILL
HATCH	DESCRIPTION
[Hatched pattern]	DISTURBANCE TO 200' RIVERFRONT AREA (200' RA)
[Hatched pattern]	DISTURBANCE TO 100' RIVERFRONT AREA (100' RA)
[Hatched pattern]	DISTURBANCE TO 100' BUFFER ZONE (100' BZ)
[Hatched pattern]	DISTURBANCE TO ISOLATED LAND SUBJECT TO FLOODING (ILSF)
[Hatched pattern]	DISTURBANCE TO BLSF
[Hatched pattern]	EXISTING TREE LINE
[Hatched pattern]	LIMIT OF GRADING

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N.O.	DESCRIPTION	REVISION	BY DATE	APPR.
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS CONSTRUCTION PLANS				
PLAN 43 OF 320				
SCALE: unless noted 1"=20'	DATE AUGUST 2020	DRAWN MS	C'H'K D. SK	APPR. MS
DRAWING NO.	REV.			

Figure 12. Avoidance and protection measures for the Sudbury-Hudson-Marlborough town boundary marker.

APPENDIX I:
CMRRCHD Contributing Resources and Proposed Project Impacts Spreadsheet

MHC#	Feature	VHB STA	Milepost	Proposed Action	Proposed Project Activity	Party to Complete Proposed Action
Newly identified contributing resource (not included on SUD.R inventory form)						
	Electric switch box	710+85	19.75	Avoid/R&R	Avoid; if not possible, remove and reset.	Eversource
Contributing resources on SUD.R inventory form that could not be located by SHC/Spies, but were located by Eversource/DCR						
	Farm Crossing -Wood Box 1' span, 3' H	761+25	18.79	Avoid	Outside limit of work	
	Culvert 125B	764+60	18.73	Extend	Extend existing pipe to maintain vernal pool hydrology.	Eversource
Contributing resources on SUD.R inventory form that were located by both SHC/Spies and Eversource/DCR						
SUD.933	Rails	Throughout	Throughout	Remove	Remove	Eversource
SUD.934	Wood Ties	Throughout	Throughout	Remove	Remove	Eversource
SUD.935	Telegraph Poles (approx. 23 in total)	Throughout	Throughout	Avoid*	*All outside limit of work but one. Remove 1 telegraph pole closest to diamond junction due to safety hazard.	Eversource
SUD-HA-39	East Sudbury Station Archaeological Site	758+50	18.84	Avoid & protect	Protect with geotextile fabric & fill.	Eversource
Lanham Road						
SUD.936	Culvert 126A	752+17	18.96	Avoid	Clear out sediment	
SUD.937	Milepost	751+50	19.00	Avoid	Outside limit of work	
SUD.938	Culvert 126B	747+39	19.06	Avoid	Cut vegetation on northeast wingwall that is causing collapse (no grubbing).	
SUD.939	Rail Rest	743+75	19.21	Avoid/R&R	Avoid; if not possible, remove and reset.	Eversource
SUD.940	Culvert 126D	738+77	19.22	Replace	Replace with 18" ductile iron pipe ("DIP") with concrete headwall to maintain drainage patterns.	Eversource
SUD.941	Distant Approach Signal	736+55	19.26	Avoid/R&R	Avoid; if not possible, remove and reset.	Eversource
SUD.942	Battery Well for Distant Approach Signal	736+45	19.26	Avoid	Outside limit of work	
SUD.943	Signal Relay Box	729+60	19.37	Avoid/R&R	Avoid; if not possible, remove and reset.	Eversource
SUD.901	Bridge 127	725+25	19.47	Replace	Replace superstructure (top two courses of stone abutments to be removed; other courses to remain).	Eversource
SUD.944	Poured Concrete base for Signal Relay Box/Battery Well	718+10	19.60	R&R	Remove & reset	Eversource
SUD.945	Culvert 127A	713+63	19.70	Replace	Replace with 24" ductile iron pipe ("DIP") with concrete headwall due to heavy corrosion.	Eversource
SUD.946	Whistle Post - W on east face, N of tracks	712+80	19.73	Avoid	Outside limit of work	
SUD.282	Section Tool House	712+20	19.75	Avoid	Outside limit of work	
SUD-HA-37	Section Tool House Archaeological Site	712+20	19.75	Avoid & protect	Outside limit of work	Eversource
SUD.947	Concrete base for Auto Highway Flashers	711+80	19.76	Avoid	Outside limit of work	
Boston Post Road						
SUD.948	Concrete base for Auto Highway Flashers	710+90	19.76	Avoid	Outside limit of work	
SUD.949	Signal Relay Box (mast only)	710+85	19.76	Avoid	Outside limit of work	
SUD.950	Culvert 127B	704+56	19.87	Avoid	Outside limit of work	
SUD.951	Concrete Bases for Highway Signal	602+45	19.97	Avoid	Outside limit of work	
Union Avenue						
SUD.952	Concrete Sign Post	602+10	19.98	Avoid/R&R	Avoid; if not possible, remove and reset.	Eversource
SUD.396	South Sudbury Station	601+50	19.99	Avoid	Avoid	
SUD-HA-26	South Sudbury Station Archaeological Site	601+50	19.99	Avoid & protect	Outside limit of work	Eversource
SUD.953	Milepost	601+60	20.00	R&R	Remove & reset	Eversource
SUD.954	3 Switch Stands	600+60	20.00	Avoid/R&R	Avoid; if not possible, remove and reset.	Eversource
SUD.955	Concrete bases & steel posts for Signal/Electrical Boxes (5)	600+60	20.00	R&R	Remove & reset	Eversource
SUD.956	Diamond junction with Framingham & Lowell RR	600+50	20.02	R&R	Remove & reset	Eversource Remove; DCR Reset
SUD.957	Wood whistle/stop sign post	600+80	20.02	Avoid/R&R	Avoid; if not possible, remove and reset.	Eversource
SUD.958	Signal Relay Box	598+55	20.07	Avoid/R&R	Avoid; if not possible, remove and reset.	Eversource
SUD.959	Concrete Base for Signal E2	598+55	20.07	Avoid/R&R	Avoid; if not possible, remove and reset.	Eversource
SUD.960	Rail Rest	596+90	20.09	Avoid/R&R	Avoid; if not possible, remove and reset.	Eversource
SUD.961	Signal Relay Box	594+50	20.13	Avoid	Outside limit of work	
SUD.962	Culvert 127C	593+18	20.14	Avoid	Outside limit of work	
SUD.963	Signal Relay Box	585+00	20.34	Avoid	Outside limit of work	
SUD.964	Wood Post	584+60	20.34	Avoid	Data shows outside limit of work. Could not find on 1/27/22 field visit.	
SUD.965	Tall Concrete Sign Post	581+10	20.39	Avoid/R&R	Avoid; if not possible, remove and reset.	Eversource
SUD.966	Culvert 127D	577+31	20.44	Avoid	Outside limit of work	

Remove	2
Replace	3
Rehab	1
Extend	1
Avoid	36
Avoid / R&R	20
R&R	8
Total**	71

** including 4 archaeological sites, two resources included on Spies' inventory but were not located nor given MHC inventory numbers, and one new resource (electric switch box) that was identified recently by CHG/VHB.

MHC#	Feature	VHB STA	Milepost	Proposed Action	Proposed Project Activity	Party to Complete Proposed Action
SUD.967	Rail Rest	570+65	20.55	Avoid/R&R	Avoid; if not possible, remove and reset. Data shows on edge of work. Could not find on 1/27/22 field visit.	Eversource
SUD.968	Signal Relay Box	570+05	20.59	R&R	Remove & reset	Eversource
SUD.969	Whistle Post - westbound, N of tracks	569+15	20.63	R&R	Remove & reset	Eversource
SUD.970	Culvert 127E	560+82	20.75	Avoid	Outside limit of work	
Horse Pond Road						
SUD.971	Crossing Sign Base	555+65	20.79	R&R	Remove & reset	Eversource
SUD.972	Signal Relay Box	555+50	20.79	Avoid	Outside limit of work	
SUD.973	Distant Approach Interlocking Signal #M208	551+50	20.80	Avoid/R&R	Avoid; if not possible, remove and reset.	Eversource
SUD.974	Battery Well for Interlocking Signal #M208	551+45	20.80	Avoid/R&R	Avoid; if not possible, remove and reset.	Eversource
SUD.975	Rail Rest	549+05	20.98	Avoid/R&R	Avoid; if not possible, remove and reset.	Eversource
SUD.976	Milepost B21 N83	548+80	21.00	Avoid	Outside limit of work	
SUD.977	Whistle Post - eastbound, S side of tracks	542+55	21.13	Avoid/R&R	Avoid; if not possible, remove and reset.	Eversource
SUD.978	Signal Relay Box	540+85	21.16	Avoid/R&R	Avoid; if not possible, remove and reset.	Eversource
SUD.979	Culvert 127F	539+40	21.18	Avoid	Outside limit of work	
SUD.980	Wood Post North Side of ROW	531+90	21.29	R&R	Remove & reset	Eversource
SUD.981	Auto Highway Flashers/Signal Relay Cabinet	530+60	21.35	Avoid/R&R	Avoid; if not possible, remove and reset.	Eversource
Peakham Road						
SUD.982	Wood Post, south side of ROW	529+80	21.36	Avoid	Outside limit of work	
SUD.983	Culvert 127G	527+30	21.40	Avoid	Outside limit of work	
SUD.984	Culvert 127H	521+64	21.51	Avoid	Cut two 12" trees that are causing wingwall damage (no grubbing).	
SUD.985	Culvert 127I	517+96	21.58	Avoid	Clear out debris on north end.	
SUD.986	Whistle Post (broken) - S side of tracks	517+50	21.58	Avoid	Outside limit of work	
SUD.987	Whistle Post - westbound, N of tracks	513+15	21.66	Avoid/R&R	Outside limit of work	Eversource
Dutton Road						
SUD-HA-38	Wayside Inn Archaeological Site	500+15	21.90	Avoid & protect	Outside limit of work	Eversource
SUD.988	Rail Rest	414+15	21.94	Avoid	Outside limit of work	
SUD.989	Milepost B22 N82	413+05	22.00	Avoid	Outside limit of work	
SUD.990	Culvert 127J	410+25	22.05	Avoid	Outside limit of work	
SUD.991	Whistle Post - W on west face, S of tracks	403+70	22.19	Avoid/R&R	Avoid; if not possible, remove and reset.	Eversource
SUD.900	Bridge #128	400+30	22.24	Rehab	Upgrade bridge deck to support trail & transmission line (removal of small portion of stone abutments on south side of both east and west abutments; other portions to remain).	Eversource
SUD.992	Culvert 129A	368+80	22.83	Avoid	Outside limit of work	

Contributing resources on SUD.R inventory form that could not be located by SHC/Spies or Eversource/DCR

XXX	Signal Relay Box		18.39?
XXX	Culvert 126C		19.28?
XXX	Whistle Post -- W on East face N of tracks		22.?

MHC#	Feature	VHB STA	Milepost	Proposed Action	Proposed Project Activity	Party to Complete Proposed Action
Town Boundary						
	Rails		Throughout	Remove	Remove	Eversource
	Ties		Throughout	Remove	Remove	Eversource
	Milepost	360+20	23	Avoid	Outside limit of work	
	Rail Rest	357+90	23.05	Avoid	Outside limit of work	
	Telegraph Pole	357+25	23.06	Avoid	Outside limit of work	
	Conduit Pipe Derail Switch	343+35	23.33	R&R	Remove & reset	Eversource
	Stone wall	309+55	23.95	Remove	Remove	Eversource
	Milepost	307+30	24	Avoid	Outside limit of work	
	Section Post	307+30	24	Avoid/R&R	Remove & reset	Eversource
	Rail Rest	302+60	24.09	Avoid/R&R	Remove & reset	Eversource
HUD.HA-9	Ordway Archaeological Site	214+00	24.1	Avoid & protect	Outside limit of work	Eversource
Parmenter Road						
	Culvert 129C	206+15	24.3	Avoid	Remove tree on northeast corner; stabilize bank	
	Concrete base well	201+10	24.36	R&R	Remove & reset	Eversource
	Whistle post (S)	200+10	24.4	Avoid/R&R	Avoid; if not possible, remove and reset.	Eversource
	Whistle post (N)	195+75	24.5	R&R	Remove & reset	Eversource
	Wood Post	183+55	24.72	R&R	Remove & reset	Eversource
	Utility Pole	182+20	24.76	R&R	Remove & reset	Eversource
Main Street						
	Wood Post	180+80	24.78	Avoid/R&R	Avoid; if not possible, remove and reset.	Eversource
	Track Switch Stand with Electrical Box	179+15	24.8	R&R	Remove & reset	Eversource
	Concrete Box	174+90	24.89	R&R	Remove & reset	Eversource
	Milepost	167+75	25	R&R	Remove & reset	Eversource
	Rail Rest	167+55	25	R&R	Remove & reset	Eversource
HUD.908	Bridge #130	148+75	25.37	Replace	Replace superstructure (no existing abutments)	Eversource
Fort Meadow Brook						
HUD.HA-8	Gleasondale Station Archeological Site	132+95	25.64	Avoid & protect	Protect with geotextile fabric & fill.	Eversource
Chestnut Street						
	Cattle pass	124+90	25.83	Avoid	Remove rails and ties on top of cattle pass	
	Rail Rest	114+60	26	R&R	Remove & reset	Eversource
	Milepost	114+25	26	Avoid	Outside limit of work	
	Culvert 132A	107+90	26.12	Avoid	Outside limit of work	
Wilkins Street						

Remove	3
Replace	1
Rehab	0
Extend	0
Avoid	10
Avoid / R&R	4
R&R	10
Total*	28

* includes 2 archaeological sites



THE CLASSIC
CONCRETE
BLOCK
SYSTEM

1500





PLEASE
CONSIDER
THESE
SUGGESTIONS

**POST-REVIEW DISCOVERIES PLAN
FOR THE EVERSOURCE
ENERGY/MASSACHUSETTS DEPARTMENT OF
CONSERVATION AND RECREATION'S
SUDBURY-HUDSON RELIABILITY AND MCRT
PROJECT
TOWNS OF HUDSON, MARLBOROUGH,
SUDBURY, AND STOW
MIDDLESEX COUNTY, MASSACHUSETTS**

**POST-REVIEW DISCOVERIES PLAN
FOR THE EVERSOURCE ENERGY/MASSACHUSETTS
DEPARTMENT OF CONSERVATION AND
RECREATION'S
SUDBURY-HUDSON RELIABILITY AND MCRT PROJECT
TOWNS OF HUDSON, MARLBOROUGH,
SUDBURY, AND STOW
MIDDLESEX COUNTY, MASSACHUSETTS**

Prepared for

**(NSTAR Electric Co. d/b/a/
Eversource Energy
107 Selden Street
Berlin, CT 06037**

and

**Massachusetts Department of Conservation and Recreation
251 Causeway Street
9th Floor
Boston, MA 02114**

Submitted to

**The Massachusetts Historical Commission
220 Morrissey Boulevard
Boston, MA 02125**

By

Martin G. Dudek

**Commonwealth Heritage Group, Inc.
410 Great Road, Suite B14
Littleton, Massachusetts 01460**

February 11, 2022

TABLE OF CONTENTS

- 1.0 INTRODUCTION.....3
- 2.0 PLAN FOR UNANTICIPATED POST-REVIEW DISCOVERIES4
 - 2.1 Unanticipated Discoveries of Archaeological Resources Plan.....4
 - 2.1.1 Cultural Resources Training.....4
 - 2.1.2 Notification Protocol.....5
- 3.0 FEDERAL, STATE, TRIBAL, AND PROJECT CONTACTS.....8
 - 3.1 Federal Contacts8
 - 3.2 Massachusetts State Historic Preservation Office.....8
 - 3.3 Massachusetts Medical Examiner and Police Contacts.....8
 - 3.4 Massachusetts Commission on Indian Affairs9
 - 3.5 Federally-Recognized Tribal Contacts9
 - 3.6 Town Historical Commissions10
 - 3.7 Project Contacts.....10

Figures

LIST OF FIGURES

- Figure 1: Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project, Hudson Locus Map (USGS)
- Figure 2: Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project, Sudbury Locus Map (USGS)

1.0 INTRODUCTION

Eversource Energy (Eversource) and the Massachusetts Department of Conservation and Recreation (DCR) are proposing a joint project (the “Project”) to construct a new, approximately 9-mile, underground 115-kilovolt electric transmission line and rail trail sited primarily within an unused railroad corridor/right-of-way (ROW) owned by the Massachusetts Bay Transportation Authority (MBTA). This project passes through the municipalities of Sudbury, Hudson, Marlborough, and Stow (Figures 1 and 2). Construction will be conducted in two phases with the majority of the earthwork and the installation of the underground transmission line to be conducted in Phase I; Phase II will consist of paving and other activities associated with the construction of the rail trail.

On behalf of Eversource and the DCR, the following Post-Review Discoveries Plan has been developed by Commonwealth Heritage Group, Inc. (Commonwealth) for unanticipated archaeological resources that may be encountered by the Project. The Post-Review Discoveries Plan supplements the Archaeological Site Avoidance and Protection Plan (ASAPP) developed by Commonwealth to protect identified significant historic and archaeological resources in proximity to the Project’s Limit of Work. While the ASAPP protects known cultural resources, the Post-Review Discoveries Plan is designed for potentially significant and previously unidentified discoveries that may be encountered by the Project.

2.0 PROTOCOL FOR UNANTICIPATED POST-REVIEW DISCOVERIES

2.1 UNANTICIPATED DISCOVERIES OF ARCHAEOLOGICAL RESOURCES

To ensure compliance with all federal and state regulations concerning the protection of cultural resources, a Protocol for Post-Review Discoveries has been prepared for the Project. The Protocol has been designed by Commonwealth for consistency with 36 CFR 800.13 (a-d) (Post-review discoveries).

Potentially significant archaeological resources could include precontact archaeological sites, historic foundations, and railroad-related features. Precontact archaeological sites in the Project corridor generally consist of stone tools or stone tool-making debris, sometimes associated with campsites and fire pits. Historic archaeological sites include those with stone foundations such as from a cellar hole or barn foundation, and warrant review under this plan. The most common or likely discovery would be a railroad-related resource, such as a buried railroad marker or whistle post. The nature of the cut-and-fill railroad bed construction within the Project's Limit of Work makes it likely that most precontact and earlier historic archaeological sites were removed during the historic excavation of the railroad bed cuts, while raised railroad beds were built through low areas and wetlands that were less likely to contain such sites. Human remains are not considered likely to be encountered. However, burials of farm or work animals, such as mules or horses, may be possible. Discoveries of buried animal remains or any potential human remains warrant review under this plan.

Determination of an appropriate course of action (avoidance or mitigation) for the discovery will be determined through consultation with the appropriate authorities including the Massachusetts Historical Commission (MHC) and the United States Army Corps of Engineers (USACE).

2.1.1 CULTURAL RESOURCES TRAINING

The identification of archaeological resources requires basic training in order to recognize potential sites. As a result, basic training in cultural resource site recognition will be provided to Project Inspectors and construction contractor personnel in advance of both phases of construction. The training program will emphasize the protocol to be followed regarding actions to be taken and notification required in the event of a significant site discovery during construction. The protocol will be included in all relevant construction contractor documents. The implementation of this protocol will require the controlling oversight of the Project Environmental Leads and Inspectors and the cooperation and compliance of the construction crew. The trainings will be performed by a qualified on-call professional archaeologist (On-Call Archaeologist). The On-Call Archaeologist for Phase I construction training will be Commonwealth's Principal Investigator and the On-Call Archaeologist for Phase II construction training will be either DCR's staff archaeologist or another qualified professional archaeologist, to be named at a later date.

- Holding a pre-construction meeting with the construction crew, supervisors, and inspectors to review the protocol.

- Training construction supervisors and inspectors in the nature of archaeological and historical site remains.
- On-Call Archaeologist will be available to respond immediately to any unexpected discoveries.
- Hard copies of the protocol will be handed out during the pre-construction meeting with the construction crew, supervisors, and inspectors, to be kept on hand by work crews, supervisors and inspectors in the field.
- Explanation of the Unmarked Burial Law process and protocol if human remains are encountered.

2.1.2 NOTIFICATION PROCEDURES

Eversource and the DCR are committed to the protection and preservation of cultural resources, in accordance with federal and state legislation. Eversource and the DCR recognize that – despite the intensive cultural resource field investigations that are typically performed prior to project construction – it is nonetheless possible that previously unknown cultural resources could be discovered during the project construction process, particularly during excavation activities. Eversource and the DCR recognize the requirement for strict compliance with federal and state regulations and guidelines regarding the treatment of human remains, if any are discovered. The following details the protocol that will be followed in the event that new cultural resource sites or human remains are discovered during both phases of the construction process.

The protocol to follow in the event of an unanticipated discovery during both phases of construction contains the steps outlined below. The identity of key personnel including the Environmental Project Lead and On-Call Archaeologist will change depending on the phase of construction. For Phase I construction activities, the Environmental Project Lead will be Denise Bartone (Eversource) and the On-Call Archaeologist will be a qualified professional archaeologist from Commonwealth Heritage Group. For Phase II construction activities, the Environmental Project Lead will be Paul Jahnige (DCR) and the On-Call Archaeologist will be either the DCR staff archaeologist or another qualified professional archaeologist.

- The Contractor will immediately notify the Environmental Project Lead of an unanticipated discovery.
- The Environmental Project Lead will direct a *Stop Work* order for the area within 20 ft of the discovery to the Contractor's Site Foreman to flag or fence off the discovery location and direct the Contractor to take measures to ensure site security. Any discovery made on a weekend or overnight hours will be protected until all appropriate parties are notified of the discovery. The Contractor will not restart work in the area of the find until the Environmental Project Lead has granted clearance.
- The Environmental Project Lead will indicate the location and date of the discovery on the project plans and will notify the On-Call Archaeologist, who will undertake a site visit or otherwise coordinate an on-site archaeological consultation.
- The On-Call Archaeologist will conduct a preliminary assessment of the find to determine if it is a potentially significant archaeological site.

- If the find is determined by the On-Call Archaeologist to not be a potentially significant archaeological site, the Environmental Project Lead will notify the Contractor's Work Foreman to resume work.
- If the find is a previously unidentified railroad feature, of a common type (e.g., whistle post, displaced rail rest, or buried culvert) and is within the LOW, it will be removed and later reset, if applicable, according to the guidelines set forth in the Historic Properties Avoidance and Protection Plan (HPAPP) and the Environmental Project Lead will notify the Contractor's Work Foreman to resume work. Any such features encountered will be documented in the Post-construction memorandum outlined in the HPAPP.
- If the On-Call Archaeologist determines the find is a potentially significant archaeological site, Project personnel will notify the MHC's and the USACE's designees of the find. The On-Call Archaeologist and the Project Team will consult with the MHC and the USACE on an appropriate course of action (c.f., Avoidance and Protection or further evaluation) depending upon the potential significance of the discovery and the potential project effects.
- If the find is a potentially significant cultural resource and measures to avoid or minimize adverse effects must be considered, the On-Call Archaeologist will prepare a discovery memorandum with appropriate maps and photographs for submittal to Eversource, DCR, the MHC, the U.S. Army Corps of Engineers (USACE), and all of the consulting parties for their review and comment. The discovery memorandum will be submitted within 48 hours of the On-Call Archaeologist's field review of the discovery and may include an assessment of significance (National Register eligibility) of the site and recommended treatment options. The discovery memorandum may be sent to the MHC, the USACE and other consulting parties by facsimile or email, as appropriate, to expedite review.
- Duration of any work stoppages at the discovery location will be contingent upon the significance of the identified archaeological resource(s) and consultation with the MHC, the USACE, and other appropriate parties to determine the prudent and feasible measures to avoid, minimize, or mitigate any adverse effects to the site. Measures to avoid or minimize adverse effects to significant archaeological resources, including the development and implementation of a site avoidance and protection plan, will be considered in consultation, prior to development of mitigation plans. If no prudent and feasible alternatives exist to avoidance or minimization of project impacts, then mitigation measures may be recommended.

In the unlikely event that human remains are encountered during Project ground disturbance, whether as part of a burial or as an isolated occurrence of human bone from a disturbed context, the Massachusetts Unmarked Burial Law (MUBL) (Massachusetts General Laws (MGL), Chapter 38, Section 6; Chapter 9, Section 26A and 27C; and Chapter 7, Section 38A; all as amended) will be adhered to. All work in the vicinity of the discovery shall stop (i.e., work within 20 ft). The Contractor will immediately notify the Environmental Project Lead of the discovery of human remains. The Environmental Project Lead will direct a *Stop Work* order to the Contractor's Site Foreman to flag or fence off the archaeological discovery location and direct the Contractor to take measures to ensure site security. Any discovery made on a weekend or

overnight hours will be protected. The Project team will notify the USACE, the MHC, and any other consulting parties as directed by the USACE (e.g., Tribal Historic Preservation Officers) of the discovery. The Contractor will not restart work in the area of the find until the Environmental Project Lead has granted clearance following compliance with Massachusetts Unmarked Burial Law.

3.0 FEDERAL, STATE, TRIBAL AND PROJECT CONTACTS

3.1 FEDERAL CONTACTS

United States Army Corps of Engineers – New England District

Katelyn M. Rainville
Project Manager
U.S. Army Corps of Engineers - New England District
696 Virginia Road
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Tel: 978-318-8677
Email: Katelyn.M.Rainville@usace.army.mil

Marc Paiva
Archaeologist/Tribal Liaison
U.S. Army Corps of Engineers – New England District
696 Virginia Road
Concord, Massachusetts 01742
Tel: (978) 318-8796
Email: marcos.a.paiva@usace.army.mil

3.2 MASSACHUSETTS STATE HISTORIC PRESERVATION OFFICE

Brona Simon
Executive Director, State Archaeologist and State Historic Preservation Officer (SHPO)
Massachusetts Historical Commission
220 Morrissey Boulevard
Boston, Massachusetts 02125
Tel: (617) 727-8470

3.3 MASSACHUSETTS MEDICAL EXAMINER AND POLICE CONTACTS

Medical Examiner

Dr. Mindy Hull
Chief Medical Examiner
Office of the Chief Medical Examiner
720 Albany Street
Boston, MA 02118
Tel: (617) 267-6767 ext. 176
Fax: (617) 267-6763

State Police

State Police Framingham Barracks
450 Worcester Road,
Framingham, MA 01702
Tel: (508) 820-2250

3.4 COMMISSION ON INDIAN AFFAIRS

Massachusetts Commission on Indian Affairs

John A. Peters, Jr.,
Executive Director
Massachusetts Commission on Indian Affairs
100 Cambridge Street, Suite 300
Boston, Massachusetts 02114
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Email: john.peters@mass.gov

3.5 FEDERALLY-RECOGNIZED TRIBAL CONTACTS

Wampanoag Tribe of Gay Head (Aquinnah)

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Tribal Historic Preservation Officer
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Aquinnah, Massachusetts 02535
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Email: thpo@wampanoagtribe-nsn.gov

Mashpee Wampanoag Indian Tribe

David Weeden
Tribal Historic Preservation Officer/Director
483 Great Neck Road South
Mashpee, Massachusetts 02649
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Email: David.Weeden@mwtribe-NSN.gov

Narragansett Indian Tribe

John Brown
Tribal Historic Preservation Officer
4425 South County Trail
Charlestown, RI 02813
Tel: (401) 585-0142; Cell: (413) 325-7691
Email: tashtesook@aol.com

3.6 TOWN HISTORICAL COMMISSIONS

Hudson Historical Commission

Peter Breton
Board Member
78 Main St
Hudson, MA 01749
Email: petebreton@gmail.com

Sudbury Historical Commission

Chris Hagger
Chair
Flynn Building - 279 Old Sudbury Road
Sudbury, MA 01776
Email: historical@sudbury.ma.us

3.7 PROJECT CONTACTS

Eversource Energy

Denise M. Bartone
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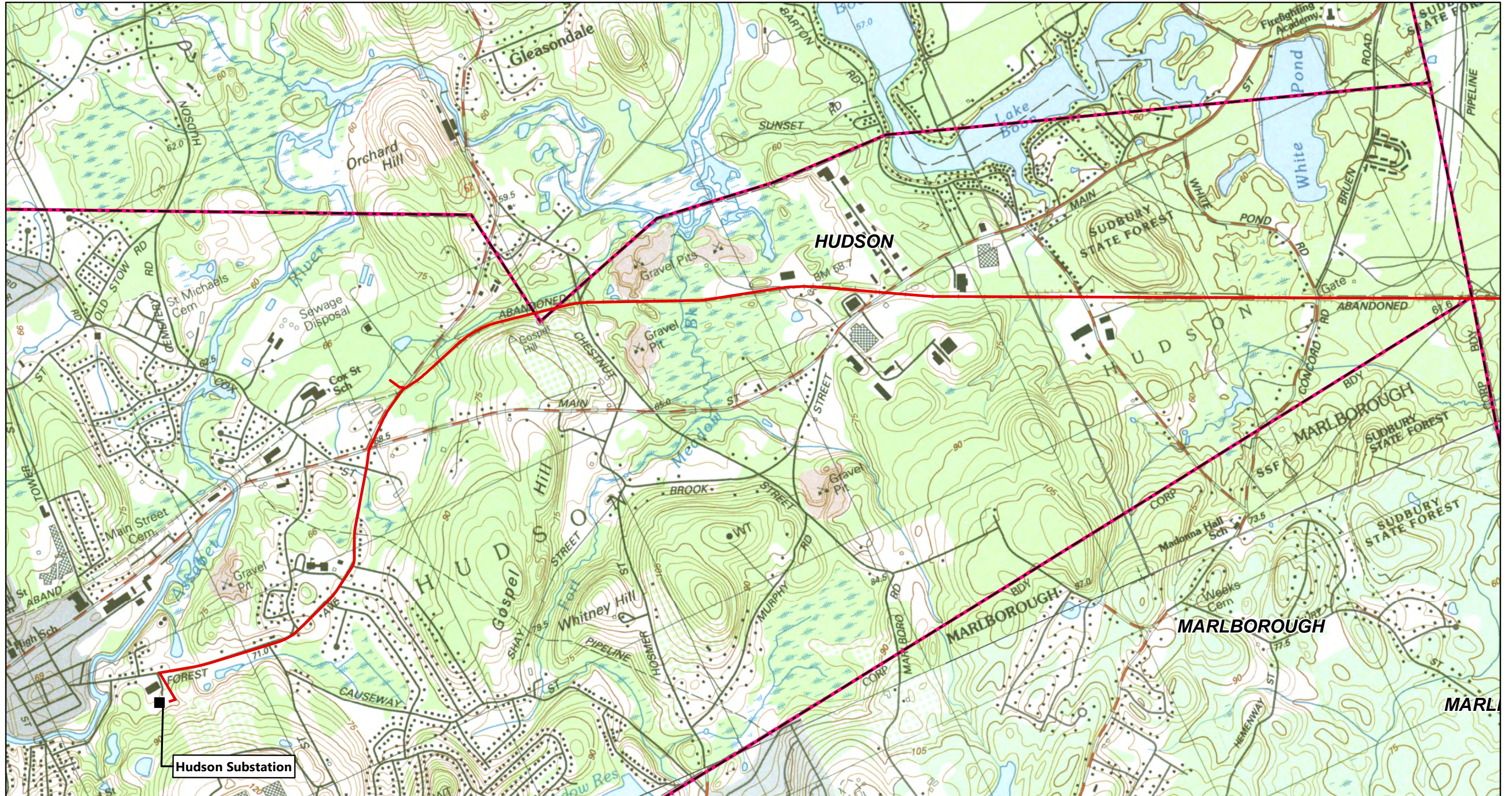
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FIGURES



- Project
- Substation Location
- - - Municipal Boundary

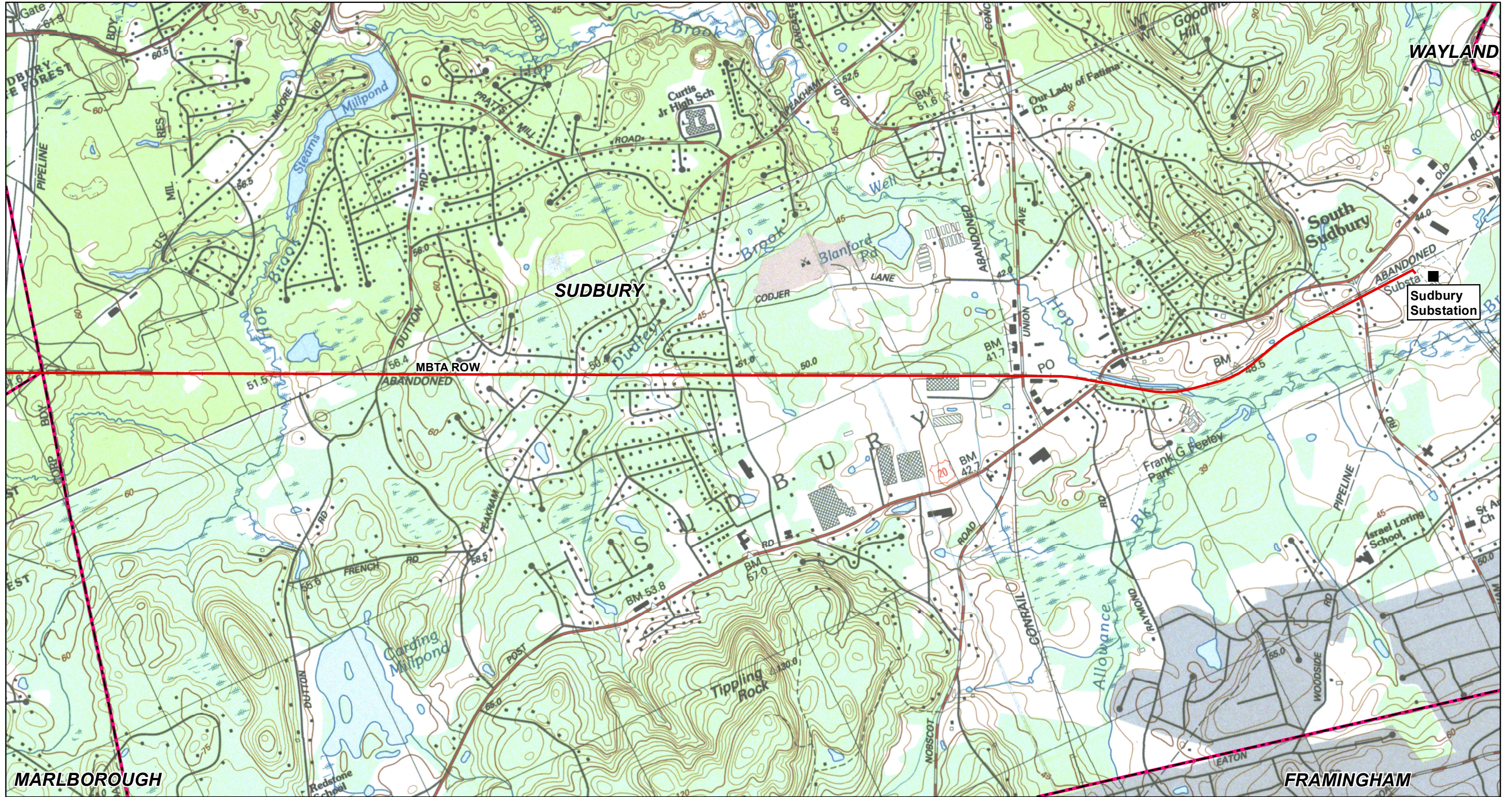


Figure 1: Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project, Hudson Locus Map (USGS)



Source:
MassGIS, VHB
12/23/2019





- Project
- Substation Location
- Municipal Boundary

Figure 2: Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project, Sudbury Locus Map (USGS)





BID PACKAGE

PART XII

STATE HIGHWAY ACCESS PERMITS