

Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project

Sudbury, Massachusetts

PREPARED FOR



NSTAR Electric Company
d/b/a Eversource Energy
247 Station Drive
Westwood, Massachusetts 02090



Massachusetts Department of
Conservation and Recreation
251 Causeway Street, 9th Floor
Boston, MA 02114

PREPARED BY



101 Walnut Street
PO Box 9151
Watertown, MA 02471
617.924.1770

MARCH 2020

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NOI Application

- › Massachusetts Wetlands Protection Act Form 3
- › Copy of Filing Checks

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Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File Number

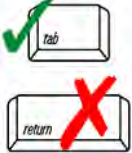
Document Transaction Number

Sudbury

City/Town

Important:

When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



Note:
Before completing this form consult your local Conservation Commission regarding any municipal bylaw or ordinance.

A. General Information

1. Project Location (**Note:** electronic filers will click on button to locate project site):

183 Boston Post Road (Sudbury Substation)

a. Street Address

Sudbury

b. City/Town

01776

c. Zip Code

Latitude and Longitude:

42.360010

d. Latitude

-71.397331

e. Longitude

Book 7734/Page 426

f. Assessors Map/Plat Number

K10-0014

g. Parcel /Lot Number

2. Applicant:

Multiple applicants - see attached page

a. First Name

b. Last Name

c. Organization

d. Street Address

e. City/Town

f. State

g. Zip Code

h. Phone Number

i. Fax Number

j. Email Address

3. Property owner (required if different from applicant): ☐ Check if more than one owner

a. First Name

b. Last Name

Massachusetts Bay Transportation Authority

c. Organization

10 Park Plaza

d. Street Address

Boston

e. City/Town

MA

f. State

02116

g. Zip Code

h. Phone Number

i. Fax Number

j. Email address

4. Representative (if any):

Katie Kinsella / Gene Crouch

a. First Name

b. Last Name

VHB

c. Company

2 Washington Square, Suite 219

d. Street Address

Worcester

e. City/Town

MA

f. State

01604

g. Zip Code

617-924-1770

h. Phone Number

i. Fax Number

kkinsella@vhb.com / gcrouch@vhb.com

j. Email address

5. Total WPA Fee Paid (from NOI Wetland Fee Transmittal Form):

\$750.00

a. Total Fee Paid

\$362.50

b. State Fee Paid

\$387.50

c. City/Town Fee Paid



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A. General Information (continued)

6. General Project Description:

The Project involves construction of a new 115kV underground electrical transmission line and a paved DCR MCRT bike path. The Project will be constructed from the existing Sudbury Substation and will continue along the inactive MBTA ROW until it reaches the Sudbury/Hudson town line. For additional details regarding the Project description, please see the narrative submitted with the NOI.

7a. Project Type Checklist: (Limited Project Types see Section A. 7b.)

- | | |
|---|---|
| 1. <input type="checkbox"/> Single Family Home | 2. <input type="checkbox"/> Residential Subdivision |
| 3. <input type="checkbox"/> Commercial/Industrial | 4. <input type="checkbox"/> Dock/Pier |
| 5. <input checked="" type="checkbox"/> Utilities | 6. <input type="checkbox"/> Coastal engineering Structure |
| 7. <input type="checkbox"/> Agriculture (e.g., cranberries, forestry) | 8. <input type="checkbox"/> Transportation |
| 9. <input checked="" type="checkbox"/> Other | |

7b. Is any portion of the proposed activity eligible to be treated as a limited project (including Ecological Restoration Limited Project) subject to 310 CMR 10.24 (coastal) or 310 CMR 10.53 (inland)?

1. ☒ Yes ☐ No If yes, describe which limited project applies to this project. (See 310 CMR 10.24 and 10.53 for a complete list and description of limited project types)

The underground transmission line and the DCR bike path qualify as a "limited project" per 310 CMR 10.53(3)(d) and 10.53(6), respectively.

If the proposed activity is eligible to be treated as an Ecological Restoration Limited Project (310 CMR 10.24(8), 310 CMR 10.53(4)), complete and attach Appendix A: Ecological Restoration Limited Project Checklist and Signed Certification.

8. Property recorded at the Registry of Deeds for:

Middlesex County: N/A - ROW

a. County

b. Certificate # (if registered land)

c. Book

d. Page Number

B. Buffer Zone & Resource Area Impacts (temporary & permanent)

- ☐ Buffer Zone Only – Check if the project is located only in the Buffer Zone of a Bordering Vegetated Wetland, Inland Bank, or Coastal Resource Area.
- ☒ Inland Resource Areas (see 310 CMR 10.54-10.58; if not applicable, go to Section B.3, Coastal Resource Areas).

Check all that apply below. Attach narrative and any supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.



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B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)

For all projects affecting other Resource Areas, please attach a narrative explaining how the resource area was delineated.

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
a. <input checked="" type="checkbox"/> Bank	0 permanent; 246 temporary 1. linear feet	2. linear feet
b. <input checked="" type="checkbox"/> Bordering Vegetated Wetland	89 permanent; 524 temp. 1. square feet	784 2. square feet
c. <input checked="" type="checkbox"/> Land Under Waterbodies and Waterways	0 permanent; 1,146 temp. 1. square feet 0 3. cubic yards dredged	0 2. square feet

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
d. <input checked="" type="checkbox"/> Bordering Land Subject to Flooding	2,686 perm.; 7,749 temp. 1. square feet -78.46 (net gain of storage) 3. cubic feet of flood storage lost	2. square feet 4. cubic feet replaced
e. <input type="checkbox"/> Isolated Land Subject to Flooding	1. square feet 2. cubic feet of flood storage lost	3. cubic feet replaced
f. <input checked="" type="checkbox"/> Riverfront Area	Hop Brook, Dudley Brook 1. Name of Waterway (if available) - specify coastal or inland	

2. Width of Riverfront Area (check one):

- ☐ 25 ft. - Designated Densely Developed Areas only
- ☐ 100 ft. - New agricultural projects only
- ☒ 200 ft. - All other projects

3. Total area of Riverfront Area on the site of the proposed project: 457,504
square feet

4. Proposed alteration of the Riverfront Area:

<u>61003 perm.; 95463 temp.</u>	<u>49741 perm.; 79520 temp.</u>	<u>11262 perm.; 15943 temp.</u>
a. total square feet	b. square feet within 100 ft.	c. square feet between 100 ft. and 200 ft.

5. Has an alternatives analysis been done and is it attached to this NOI? ☒ Yes ☐ No

6. Was the lot where the activity is proposed created prior to August 1, 1996? ☒ Yes ☐ No

3. ☐ Coastal Resource Areas: (See 310 CMR 10.25-10.35)

Note: for coastal riverfront areas, please complete **Section B.2.f.** above.



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B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)

Check all that apply below. Attach narrative and supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.

Online Users:
Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

<u>Resource Area</u>	<u>Size of Proposed Alteration</u>	<u>Proposed Replacement (if any)</u>
a. <input type="checkbox"/> Designated Port Areas	Indicate size under Land Under the Ocean, below	
b. <input type="checkbox"/> Land Under the Ocean	1. square feet _____ 2. cubic yards dredged _____	
c. <input type="checkbox"/> Barrier Beach	Indicate size under Coastal Beaches and/or Coastal Dunes below	
d. <input type="checkbox"/> Coastal Beaches	1. square feet _____	2. cubic yards beach nourishment _____
e. <input type="checkbox"/> Coastal Dunes	1. square feet _____	2. cubic yards dune nourishment _____
	<u>Size of Proposed Alteration</u>	<u>Proposed Replacement (if any)</u>
f. <input type="checkbox"/> Coastal Banks	1. linear feet _____	
g. <input type="checkbox"/> Rocky Intertidal Shores	1. square feet _____	
h. <input type="checkbox"/> Salt Marshes	1. square feet _____	2. sq ft restoration, rehab., creation _____
i. <input type="checkbox"/> Land Under Salt Ponds	1. square feet _____	
	2. cubic yards dredged _____	
j. <input type="checkbox"/> Land Containing Shellfish	1. square feet _____	
k. <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	
	1. cubic yards dredged _____	
l. <input type="checkbox"/> Land Subject to Coastal Storm Flowage	1. square feet _____	
4. <input type="checkbox"/> Restoration/Enhancement	If the project is for the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.2.b or B.3.h above, please enter the additional amount here.	
	a. square feet of BVW _____	b. square feet of Salt Marsh _____
5. <input checked="" type="checkbox"/> Project Involves Stream Crossings		
	0 _____	2 - Bridge 127 (reconstruction), Bridge 128 (rehabilitation) _____
	a. number of new stream crossings	



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C. Other Applicable Standards and Requirements

- ☐ This is a proposal for an Ecological Restoration Limited Project. Skip Section C and complete Appendix A: Ecological Restoration Limited Project Checklists – Required Actions (310 CMR 10.11).

Streamlined Massachusetts Endangered Species Act/Wetlands Protection Act Review

1. Is any portion of the proposed project located in **Estimated Habitat of Rare Wildlife** as indicated on the most recent Estimated Habitat Map of State-Listed Rare Wetland Wildlife published by the Natural Heritage and Endangered Species Program (NHESP)? To view habitat maps, see the *Massachusetts Natural Heritage Atlas* or go to http://maps.massgis.state.ma.us/PRI_EST_HAB/viewer.htm.

a. ☒ Yes ☐ No

If yes, include proof of mailing or hand delivery of NOI to:

**Natural Heritage and Endangered Species Program
Division of Fisheries and Wildlife
1 Rabbit Hill Road
Westborough, MA 01581**

8/1/2017

b. Date of map

If yes, the project is also subject to Massachusetts Endangered Species Act (MESA) review (321 CMR 10.18). To qualify for a streamlined, 30-day, MESA/Wetlands Protection Act review, please complete Section C.1.c, and include requested materials with this Notice of Intent (NOI); *OR* complete Section C.2.f, if applicable. *If MESA supplemental information is not included with the NOI, by completing Section 1 of this form, the NHESP will require a separate MESA filing which may take up to 90 days to review (unless noted exceptions in Section 2 apply, see below).*

- c. Submit Supplemental Information for Endangered Species Review*

1. ☐ Percentage/acreage of property to be altered:

(a) within wetland Resource Area

percentage/acreage

(b) outside Resource Area

percentage/acreage

2. ☐ Assessor's Map or right-of-way plan of site

2. ☒ Project plans for entire project site, including wetland resource areas and areas outside of wetlands jurisdiction, showing existing and proposed conditions, existing and proposed tree/vegetation clearing line, and clearly demarcated limits of work **

(a) ☐ Project description (including description of impacts outside of wetland resource area & buffer zone)

(b) ☐ Photographs representative of the site

* Some projects **not** in Estimated Habitat may be located in Priority Habitat, and require NHESP review (see <http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/regulatory-review/>). Priority Habitat includes habitat for state-listed plants and strictly upland species not protected by the Wetlands Protection Act.

** MESA projects may not be segmented (321 CMR 10.16). The applicant must disclose full development plans even if such plans are not required as part of the Notice of Intent process.



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C. Other Applicable Standards and Requirements (cont'd)

- (c) ☐ MESA filing fee (fee information available at http://www.mass.gov/dfwele/dfw/nhosp/regulatory_review/mesa/mesa_fee_schedule.htm). Make check payable to "Commonwealth of Massachusetts - NHESP" and **mail to NHESP** at above address

Projects altering 10 or more acres of land, also submit:

- (d) ☐ Vegetation cover type map of site
- (e) ☐ Project plans showing Priority & Estimated Habitat boundaries
- (f) OR Check One of the Following

1. ☐ Project is exempt from MESA review.
Attach applicant letter indicating which MESA exemption applies. (See 321 CMR 10.14, http://www.mass.gov/dfwele/dfw/nhosp/regulatory_review/mesa/mesa_exemptions.htm; the NOI must still be sent to NHESP if the project is within estimated habitat pursuant to 310 CMR 10.37 and 10.59.)

2. ☐ Separate MESA review ongoing. a. NHESP Tracking # _____ b. Date submitted to NHESP _____
3. ☒ Separate MESA review completed.
Include copy of NHESP "no Take" determination or valid Conservation & Management Permit with approved plan.

3. For coastal projects only, is any portion of the proposed project located below the mean high water line or in a fish run?
- a. ☒ Not applicable – project is in inland resource area only b. ☐ Yes ☐ No

If yes, include proof of mailing, hand delivery, or electronic delivery of NOI to either:

South Shore - Cohasset to Rhode Island border, and the Cape & Islands:

Division of Marine Fisheries -
Southeast Marine Fisheries Station
Attn: Environmental Reviewer
1213 Purchase Street – 3rd Floor
New Bedford, MA 02740-6694
Email: DMF.EnvReview-South@state.ma.us

North Shore - Hull to New Hampshire border:

Division of Marine Fisheries -
North Shore Office
Attn: Environmental Reviewer
30 Emerson Avenue
Gloucester, MA 01930
Email: DMF.EnvReview-North@state.ma.us

Also if yes, the project may require a Chapter 91 license. For coastal towns in the Northeast Region, please contact MassDEP's Boston Office. For coastal towns in the Southeast Region, please contact MassDEP's Southeast Regional Office.



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C. Other Applicable Standards and Requirements (cont'd)

Online Users:

Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

4. Is any portion of the proposed project within an Area of Critical Environmental Concern (ACEC)?
- a. ☐ Yes ☒ No If yes, provide name of ACEC (see instructions to WPA Form 3 or MassDEP Website for ACEC locations). **Note:** electronic filers click on Website.
- b. ACEC
5. Is any portion of the proposed project within an area designated as an Outstanding Resource Water (ORW) as designated in the Massachusetts Surface Water Quality Standards, 314 CMR 4.00?
- a. ☐ Yes ☒ No
6. Is any portion of the site subject to a Wetlands Restriction Order under the Inland Wetlands Restriction Act (M.G.L. c. 131, § 40A) or the Coastal Wetlands Restriction Act (M.G.L. c. 130, § 105)?
- a. ☐ Yes ☒ No
7. Is this project subject to provisions of the MassDEP Stormwater Management Standards?
- a. ☒ Yes. Attach a copy of the Stormwater Report as required by the Stormwater Management Standards per 310 CMR 10.05(6)(k)-(q) and check if:
1. ☐ Applying for Low Impact Development (LID) site design credits (as described in Stormwater Management Handbook Vol. 2, Chapter 3)
 2. ☐ A portion of the site constitutes redevelopment
 3. ☒ Proprietary BMPs are included in the Stormwater Management System.
- b. ☐ No. Check why the project is exempt:
1. ☐ Single-family house
 2. ☐ Emergency road repair
 3. ☐ Small Residential Subdivision (less than or equal to 4 single-family houses or less than or equal to 4 units in multi-family housing project) with no discharge to Critical Areas.

D. Additional Information

- ☐ This is a proposal for an Ecological Restoration Limited Project. Skip Section D and complete Appendix A: Ecological Restoration Notice of Intent – Minimum Required Documents (310 CMR 10.12).

Applicants must include the following with this Notice of Intent (NOI). See instructions for details.

Online Users: Attach the document transaction number (provided on your receipt page) for any of the following information you submit to the Department.

1. ☒ USGS or other map of the area (along with a narrative description, if necessary) containing sufficient information for the Conservation Commission and the Department to locate the site. (Electronic filers may omit this item.)
2. ☒ Plans identifying the location of proposed activities (including activities proposed to serve as a Bordering Vegetated Wetland [BVW] replication area or other mitigating measure) relative to the boundaries of each affected resource area.



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D. Additional Information (cont'd)

3. ☒ Identify the method for BVW and other resource area boundary delineations (MassDEP BVW Field Data Form(s), Determination of Applicability, Order of Resource Area Delineation, etc.), and attach documentation of the methodology.
4. ☒ List the titles and dates for all plans and other materials submitted with this NOI.
- See attached
- a. Plan Title _____
- b. Prepared By _____ c. Signed and Stamped by _____
- d. Final Revision Date _____ e. Scale _____
- f. Additional Plan or Document Title _____ g. Date _____
5. ☐ If there is more than one property owner, please attach a list of these property owners not listed on this form.
6. ☐ Attach proof of mailing for Natural Heritage and Endangered Species Program, if needed.
7. ☐ Attach proof of mailing for Massachusetts Division of Marine Fisheries, if needed.
8. ☒ Attach NOI Wetland Fee Transmittal Form
9. ☒ Attach Stormwater Report, if needed.

E. Fees

1. ☐ Fee Exempt: No filing fee shall be assessed for projects of any city, town, county, or district of the Commonwealth, federally recognized Indian tribe housing authority, municipal housing authority, or the Massachusetts Bay Transportation Authority.

Applicants must submit the following information (in addition to pages 1 and 2 of the NOI Wetland Fee Transmittal Form) to confirm fee payment:

356373

2. Municipal Check Number

355484

4. State Check Number

VHB

6. Payor name on check: First Name

1/96/20

3. Check date

12/17/19

5. Check date

7. Payor name on check: Last Name



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F. Signatures and Submittal Requirements

I hereby certify under the penalties of perjury that the foregoing Notice of Intent and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge. I understand that the Conservation Commission will place notification of this Notice in a local newspaper at the expense of the applicant in accordance with the wetlands regulations, 310 CMR 10.05(5)(a).

I further certify under penalties of perjury that all abutters were notified of this application, pursuant to the requirements of M.G.L. c. 131, § 40. Notice must be made by Certificate of Mailing or in writing by hand delivery or certified mail (return receipt requested) to all abutters within 100 feet of the property line of the project location.

1. Signature of Applicant

3/6/20

2. Date

3. Signature of Property Owner (if different)

4. Date

5. Signature of Representative (if any)

6. Date

For Conservation Commission:

Two copies of the completed Notice of Intent (Form 3), including supporting plans and documents, two copies of the NOI Wetland Fee Transmittal Form, and the city/town fee payment, to the Conservation Commission by certified mail or hand delivery.

For MassDEP:

One copy of the completed Notice of Intent (Form 3), including supporting plans and documents, one copy of the NOI Wetland Fee Transmittal Form, and a **copy** of the state fee payment to the MassDEP Regional Office (see Instructions) by certified mail or hand delivery.

Other:

If the applicant has checked the "yes" box in any part of Section C, Item 3, above, refer to that section and the Instructions for additional submittal requirements.

The original and copies must be sent simultaneously. Failure by the applicant to send copies in a timely manner may result in dismissal of the Notice of Intent.



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F. Signatures and Submittal Requirements

I hereby certify under the penalties of perjury that the foregoing Notice of Intent and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge. I understand that the Conservation Commission will place notification of this Notice in a local newspaper at the expense of the applicant in accordance with the wetlands regulations, 310 CMR 10.05(5)(a).

I further certify under penalties of perjury that all abutters were notified of this application, pursuant to the requirements of M.G.L. c. 131, § 40. Notice must be made by Certificate of Mailing or in writing by hand delivery or certified mail (return receipt requested) to all abutters within 100 feet of the property line of the project location.

1. Signature of Applicant

2. Date

3. Signature of Property Owner (if different)

4. Date

4/11/19

5. Signature of Representative (if any)

6. Date

For Conservation Commission:

Two copies of the completed Notice of Intent (Form 3), including supporting plans and documents, two copies of the NOI Wetland Fee Transmittal Form, and the city/town fee payment, to the Conservation Commission by certified mail or hand delivery.

For MassDEP:

One copy of the completed Notice of Intent (Form 3), including supporting plans and documents, one copy of the NOI Wetland Fee Transmittal Form, and a **copy** of the state fee payment to the MassDEP Regional Office (see Instructions) by certified mail or hand delivery.

Other:

If the applicant has checked the "yes" box in any part of Section C, Item 3, above, refer to that section and the Instructions for additional submittal requirements.

The original and copies must be sent simultaneously. Failure by the applicant to send copies in a timely manner may result in dismissal of the Notice of Intent.



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File Number

Document Transaction Number

Sudbury
City/Town

F. Signatures and Submittal Requirements

I hereby certify under the penalties of perjury that the foregoing Notice of Intent and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge. I understand that the Conservation Commission will place notification of this Notice in a local newspaper at the expense of the applicant in accordance with the wetlands regulations, 310 CMR 10.05(5)(a).

I further certify under penalties of perjury that all abutters were notified of this application, pursuant to the requirements of M.G.L. c. 131, § 40. Notice must be made by Certificate of Mailing or in writing by hand delivery or certified mail (return receipt requested) to all abutters within 100 feet of the property line of the project location.

1. Signature of Applicant

Holly Palmgren, MBTA

2. Date

12/18/19

3. Signature of Property Owner (if different)

4. Date

5. Signature of Representative (if any)

6. Date

For Conservation Commission:

Two copies of the completed Notice of Intent (Form 3), including supporting plans and documents, two copies of the NOI Wetland Fee Transmittal Form, and the city/town fee payment, to the Conservation Commission by certified mail or hand delivery.

For MassDEP:

One copy of the completed Notice of Intent (Form 3), including supporting plans and documents, one copy of the NOI Wetland Fee Transmittal Form, and a **copy** of the state fee payment to the MassDEP Regional Office (see Instructions) by certified mail or hand delivery.

Other:

If the applicant has checked the "yes" box in any part of Section C, Item 3, above, refer to that section and the Instructions for additional submittal requirements.

The original and copies must be sent simultaneously. Failure by the applicant to send copies in a timely manner may result in dismissal of the Notice of Intent.



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
NOI Wetland Fee Transmittal Form
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A. Applicant Information

1. Location of Project:

183 Boston Post Road (Sudbury Substation)

a. Street Address

Sudbury

b. City/Town

c. Check number

d. Fee amount

2. Applicant Mailing Address:

See attached

a. First Name

b. Last Name

c. Organization

d. Mailing Address

e. City/Town

f. State

g. Zip Code

h. Phone Number

i. Fax Number

j. Email Address

3. Property Owner (if different):

a. First Name

b. Last Name

Massachusetts Bay Transportation Authority

c. Organization

10 Park Plaza

d. Mailing Address

Boston

e. City/Town

MA

f. State

02116

g. Zip Code

h. Phone Number

i. Fax Number

j. Email Address

B. Fees

Fee should be calculated using the following process & worksheet. **Please see Instructions before filling out worksheet.**

Step 1/Type of Activity: Describe each type of activity that will occur in wetland resource area and buffer zone.

Step 2/Number of Activities: Identify the number of each type of activity.

Step 3/Individual Activity Fee: Identify each activity fee from the six project categories listed in the instructions.

Step 4/Subtotal Activity Fee: Multiply the number of activities (identified in Step 2) times the fee per category (identified in Step 3) to reach a subtotal fee amount. Note: If any of these activities are in a Riverfront Area in addition to another Resource Area or the Buffer Zone, the fee per activity should be multiplied by 1.5 and then added to the subtotal amount.

Step 5/Total Project Fee: Determine the total project fee by adding the subtotal amounts from Step 4.

Step 6/Fee Payments: To calculate the state share of the fee, divide the total fee in half and subtract \$12.50. To calculate the city/town share of the fee, divide the total fee in half and add \$12.50.

To calculate filing fees, refer to the category fee list and examples in the instructions for filling out WPA Form 3 (Notice of Intent).



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
NOI Wetland Fee Transmittal Form
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

B. Fees (continued)

Step 1/Type of Activity	Step 2/Number of Activities	Step 3/Individual Activity Fee	Step 4/Subtotal Activity Fee
Category 2e	1	500	750

Step 5/Total Project Fee:

Step 6/Fee Payments:

Total Project Fee:	\$750
	a. Total Fee from Step 5
State share of filing Fee:	\$362.50
	b. 1/2 Total Fee less \$12.50
City/Town share of filing Fee:	\$387.50
	c. 1/2 Total Fee plus \$12.50

C. Submittal Requirements

- a.) Complete pages 1 and 2 and send with a check or money order for the state share of the fee, payable to the Commonwealth of Massachusetts.

Department of Environmental Protection
Box 4062
Boston, MA 02211

- b.) **To the Conservation Commission:** Send the Notice of Intent or Abbreviated Notice of Intent; a **copy** of this form; and the city/town fee payment.

To MassDEP Regional Office (see Instructions): Send a copy of the Notice of Intent or Abbreviated Notice of Intent; a **copy** of this form; and a **copy** of the state fee payment. (E-filers of Notices of Intent may submit these electronically.)

WPA Form 3 – Notice of Intent Additional Page

A. General Information

2. Applicant:

Denise	Bartone	
a. First Name	b. Last Name	
NSTAR Electric Company d/b/a Eversource Energy		
c. Organization		
247 Station Drive, SE270		
d. Street Address		
Westwood	MA	02090
e. City/Town	f. State	g. Zip Code
781-441-8174		Denise.bartone@eversource.com
h. Phone Number	i. Fax Number	j. Email Address

Applicant:

Priscilla	Geigis	
a. First Name	b. Last Name	
Department of Conservation and Recreation		
c. Organization		
251 Causeway Street, Suite 600		
d. Street Address		
Boston	MA	02114
e. City/Town	f. State	g. Zip Code
617-626-1250		Priscilla.Geigis@massmail.state.ma.us
h. Phone Number	i. Fax Number	j. Email Address

D. Additional Information

Sudbury-Hudson Transmission Reliability Project Sudbury Notice of Intent Plans	
a. Plan Title	
VHB	Margot E. Schoenfelder, Mark A. Costa, Shanta B. Keller
b. Prepared by	c. Signed and Stamped by
March 2020	1"=20'
d. Final Revision Date	e. Scale

Mass Central Rail Trail in the Town of Hudson, Stow, Marlborough & Sudbury:
Sudbury Notice of Intent Submission

a. Plan Title	
VHB	Tracie Lenhardt
b. Prepared by	c. Signed and Stamped by
Jan 2020	1"=20'
d. Final Revision Date	e. Scale

Abutter Notifications

- › Abutter Notification Letter
- › Certified Abutters List

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Ref: 12970.00



Notification to Abutters under the Wetlands Protection Act

Pursuant to the requirements of the Massachusetts Wetlands Protection Act (MGL Chapter 131, Section 40), you are hereby notified of the following:

The co-applicants, NSTAR Electric Company d/b/a Eversource Energy ("Eversource") and the Massachusetts Department of Conservation and Recreation ("DCR") have filed a Notice of Intent ("NOI") with the Sudbury Conservation Commission seeking approval for construction of the Sudbury-Hudson Transmission Reliability Project and the Mass Central Rail Trail ("the Project"). The Project involves construction of a new 115-kV underground transmission line and a multi-use path within an existing inactive railroad right-of-way.

Information regarding this NOI can be obtained by calling the Sudbury Conservation Commission at (978) 440-5471 between 8:00 AM and 3:30 PM, Monday through Friday. You can also call Katie Kinsella at (617) 607-2157 between 8:00 AM and 4:00 PM, Monday through Friday, with questions or to arrange to view the NOI.

Copies of the NOI can be obtained from the Sudbury Conservation Commission or Katie Kinsella by calling the numbers above. You may be charged for a copy of the NOI.

The Sudbury Conservation Commission will hold a public hearing on the NOI. Notice of the public hearing including the date, time and place, will be published in a local newspaper at least five (5) business days in advance and will be posted in Town Hall at least 48 hours in advance. You can also call the Sudbury Conservation Commission at the number listed above to determine the date, time, and place of the hearing.

Information on this NOI and the Wetlands Protection Act can also be obtained by calling the Northeast Regional Office of the Massachusetts Department of Environmental Protection at (978) 694-3200.

Engineers | Scientists | Planners | Designers

101 Walnut Street
PO Box 9151
Watertown, Massachusetts 02471
P 617.924.1770
F 617.924.2286

Parcel ID	Location	Owner	Owner Line 2	Mailing Address	Mailing City	Mailing State	Mailing Zip
H03-5000	RAILWAY	MASS BAY TRANSPORTATION		10 PARK PLAZA	BOSTON	MA	02116
H04-0009	325 DUTTON	TOWN OF SUDBURY	CONSERVATION	278 OLD SUDBURY ROAD	SUDBURY	MA	01776
J04-0011	290 DUTTON	BISSON PAUL E & DOROTHY		290 DUTTON RD	SUDBURY	MA	01776
J04-0107	249 DUTTON	MCMAHON JOHN		249 DUTTON RD	SUDBURY	MA	01776
J04-0712	318 DUTTON	ZIFFER RANDALL E & LYNNE		318 DUTTON RD	SUDBURY	MA	01776
J04-0721	33 BULKLEY	LIGHT BRIAN & RHONDA J		33 BULKLEY RD	SUDBURY	MA	01776
J04-0722	45 AMANDA	PARWANI HARISH MOHAN & V		45 AMANDA RD	SUDBURY	MA	01776
J04-0723	49 AMANDA	SCONYERS JOSEPH B & SHAI		49 AMANDA RD	SUDBURY	MA	01776
J04-0724	55 AMANDA	WILNER HOWARD	TRUSTEES OF	55 AMANDA RD	SUDBURY	MA	01776
J05-0001	222 PEAKHAM	HUDSON GILBERT L & MEGHAN		222 PEAKHAM RD	SUDBURY	MA	01776
J05-0002	230 PEAKHAM	FENDELL SHEILA	MARIA A	230 PEAKHAM RD	SUDBURY	MA	01776
J05-0003	242 PEAKHAM	JOHNSON ETHEL	H TRS, ETHEL	242 PEAKHAM RD	SUDBURY	MA	01776
J05-0008	237 PEAKHAM	GUSKI MICHAEL E & HELENE		237 PEAKHAM RD	SUDBURY	MA	01776
J05-0101	80 JARMAN	BLANCHETTE CHRISTOPHER		80 JARMAN RD	SUDBURY	MA	01776
J05-0217	45 WHISPER	KOMMIT KATHY		45 WHISPERING PINE RD	SUDBURY	MA	01776
J05-0330	229 PEAKHAM	ARTHUR DOUGLAS R & JOYCE		229 PEAKHAM RD	SUDBURY	MA	01776
J05-0354	22 COLBURN	TU TYSON		22 COLBURN CIR	SUDBURY	MA	01776
J05-0355	12 COLBURN	CROTEAU MARCO	CROTEAU LINE	12 COLBURN CIR	SUDBURY	MA	01776
J05-0356	6 COLBURN	GENEROSO JOSE	TRUSTEES OF	6 COLBURN CIR	SUDBURY	MA	01776
J05-0357	71 ROBERT	BASKARACA SEMA & CENK		71 ROBERT BEST RD	SUDBURY	MA	01776
J05-0358	79 ROBERT	BILLIG RICHARD	THERESA CO-T	79 ROBERT BEST RD	SUDBURY	MA	01776
J05-0379	123 AUSTIN	PLATH JAMES T & BETHANY E		123 AUSTIN RD	SUDBURY	MA	01776
J05-0380	115 AUSTIN	GIBBS DAVID D		115 AUSTIN RD	SUDBURY	MA	01776
J05-0381	109 AUSTIN	DENSEL CHRISTOPHER	DENSEL WILLIAM	109 AUSTIN RD	SUDBURY	MA	01776
J05-0382	101 AUSTIN	ZIMMER CHARLES C & GLADYS		101 AUSTIN RD	SUDBURY	MA	01776
J05-0383	95 AUSTIN	RATHOLANDER J	JEANINE	95 AUSTIN RD	SUDBURY	MA	01776
J05-0384	89 AUSTIN	RHARDING MICHAEL R & KARA		89 AUSTIN RD	SUDBURY	MA	01776
J05-0385	81 AUSTIN	RJOST ALAN C & DIANE A		81 AUSTIN RD	SUDBURY	MA	01776
J05-0386	15 BULKLEY	RESNIC DAVID J & AMY Z		15 BULKLEY RD	SUDBURY	MA	01776
J05-0387	19 BULKLEY	CHEN BENJAMIN J & REBECCA		19 BULKLEY ROAD	SUDBURY	MA	01776
J05-0720	25 BULKLEY	HELON CHRISTOPHER & MAR		25 BULKLEY RD	SUDBURY	MA	01776
J05-5000	RAILWAY	EOT	MASS BAY TR	10 PARK PLAZA	BOSTON	MA	02116
J06-0016	124 HORSE	PUSHEA JOSEPH	DOLORES	124 HORSE POND RD	SUDBURY	MA	01776
J06-0102	72 JARMAN	KAHLER ROYCE C & SHIRLEY		72 JARMAN RD	SUDBURY	MA	01776
J06-0103	66 JARMAN	EWART CHRIS	LORA KELLY A	66 JARMAN RD	SUDBURY	MA	01776
J06-0104	60 JARMAN	CRUZ RAPHAEL	YEATON ERIC	60 JARMAN ROAD	SUDBURY	MA	01776
J06-0105	54 JARMAN	SCHOLTEN JAMES	LEPAK AMY E	54 JARMAN RD	SUDBURY	MA	01776
J06-0106	48 JARMAN	SAVOY ROBERT P & JO ANN		48 JARMAN RD	SUDBURY	MA	01776
J06-0107	42 JARMAN	CASS PAUL N & VALERIE R		42 JARMAN RD	SUDBURY	MA	01776
J06-0108	36 JARMAN	HAMILTON CHRISTOPHER & L		36 JARMAN RD	SUDBURY	MA	01776
J06-0109	30 JARMAN	EYE XIUZI & YU RUIHENG		30 JARMAN RD	SUDBURY	MA	01776
J06-0110	24 JARMAN	PAPPAS NICHOLAS & CHRIST		24 JARMAN RD	SUDBURY	MA	01776
J06-0111	18 JARMAN	FROSEN THERESA M		18 JARMAN RD	SUDBURY	MA	01776
J06-0112	12 JARMAN	FMEIDELL PHILIP & TATIANA		12 JARMAN RD	SUDBURY	MA	01776

J06-0113	111 HORSE POND RD	MURPHY MATTHEW D & FELICIA	111 HORSE POND RD	SUDBURY	MA	01776
J06-0216	40 WHISPERING PINE RD	PHILLIPS RAYMOND JOHN	40 WHISPERING PINE RD	SUDBURY	MA	01776
J06-0309	47 STONEBROOK RD	BERRY MATTHEW SANTANGELO	47 STONEBROOK RD	SUDBURY	MA	01776
J06-0310	41 STONEBROOK RD	SAGE CYRILLE SCHEFFER DE	41 STONEBROOK RD	SUDBURY	MA	01776
J06-0311	33 STONEBROOK RD	INGHAM JAMES P	33 STONEBROOK RD	SUDBURY	MA	01776
J06-0312	29 STONEBROOK RD	ADMV MANAGEMENT LLC	29 STONEBROOK RD	SUDBURY	MA	01776
J06-0313	21 STONEBROOK RD	JENDRZEJEWSKI SHETH SAMIR	21 STONEBROOK RD	SUDBURY	MA	01776
J06-0314	15 STONEBROOK RD	CARTY DANIEL E & FALLON M	15 STONEBROOK RD	SUDBURY	MA	01776
J06-0315	9 STONEBROOK RD	MOHANTY SANJIB K & IPSITA	9 STONEBROOK RD	SUDBURY	MA	01776
J06-0316	3 STONEBROOK RD	ROGERS ARLIN B & KATHLEEN	3 STONEBROOK RD	SUDBURY	MA	01776
J06-0500	TOWN OF SUDBURY	TREASURER	278 OLD SUDBURY RD	SUDBURY	MA	01776
J06-0504	25 BRIDLE PATH	MACARTHUR GORDON R & L	25 BRIDLE PATH	SUDBURY	MA	01776
J06-0505	35 BRIDLE PATH	HART JON L	35 BRIDLE PATH	SUDBURY	MA	01776
J06-0506	100 HORSE POND RD	CHABAD CENTER OF SUDBURY	100 HORSE POND RD	SUDBURY	MA	01776
J07-0100	TRAILSIDE CIRCLE	TOWN OF SUDBURY	TREASURER	Sudbury	MA	01776
J07-0106	41 BRIDLE PATH	BRUNO JOHN F & REBECCA E	41 BRIDLE PATH	SUDBURY	MA	01776
J07-0107	49 BRIDLE PATH	HODEL JOHN F	49 BRIDLE PATH	SUDBURY	MA	01776
J07-0108	57 BRIDLE PATH	SPEROU JOHN SPEROU REAL	57 BRIDLE PATH	SUDBURY	MA	01776
J07-0109	3 TRAILSIDE CIRCLE	DEITEL HARVEY M & BARBARA	3 TRAILSIDE CIRCLE	SUDBURY	MA	01776
J07-0110	11 TRAILSIDE CIRCLE	YANZHEN JENNY & CAO YONG	11 TRAILSIDE CIRCLE	SUDBURY	MA	01776
J07-0111	17 TRAILSIDE CIRCLE	CRANE ROBERT	17 TRAILSIDE CIRCLE	SUDBURY	MA	01776
K06-0600	BOSTON POST RD	STONE ANNE THE STONE FARM	554 BOSTON POST RD	SUDBURY	MA	01776
K07-0016	UNION AVE	CAVICCHIO PAUL P.N.J. 1995 RE	110 CODJER LN	SUDBURY	MA	01776
K07-0017	33 UNION AVE	CHISWICK PAUL C/O PARIS TRU	490-B BOSTON POST RD STE	SUDBURY	MA	01776
K07-0021	536 BOSTON POST RD	BPR DEVELOPMENT C/O NATIONAL	2310 WASHINGTON ST	NEWTON LOWELL	MA	02462
K07-0022	526 BOSTON POST RD	BPR DEVELOPMENT C/O NATIONAL	2310 WASHINGTON ST	NEWTON LOWELL	MA	02462
K07-0023	203 BAY DRIVE	SUDBURY AVENUE C/O AVALON C	600 ATLANTIC AVE 20TH FLO	BOSTON	MA	02210
K07-0024	22 FARMSTEAD LN	PULTE HOMES OF NEW ENGLAND	115 FLANDERS RD SUITE 200	WESTBOROUGH	MA	01581
K07-0024-0-0012	FARMSTEAD LN	TICHNOR GEO GORDON JUDITH	2 FARMSTEAD LN	SUDBURY	MA	01776
K07-0024-0-0014	FARMSTEAD LN	PULTE HOME OF NEW ENGLAND	115 FLANDERS RD SUITE 200	WESTBOROUGH	MA	01581
K07-0024-0-0016	FARMSTEAD LN	BALL JUDITH B COSTA MANUEL	6 FARMSTEAD LN	SUDBURY	MA	01776
K07-0024-0-0018	FARMSTEAD LN	DONOVAN DOUGLAS TRUSTEE OF	8 FARMSTEAD LN	SUDBURY	MA	01776
K07-0024-0-0019	FARMSTEAD LN	CASSARINO LINDA F	10 FARMSTEAD LN	SUDBURY	MA	01776
K07-0024-0-0012	FARMSTEAD LN	SILVERMAN KATHLEEN TRUSTEE SILV	12 FARMSTEAD LN	SUDBURY	MA	01776
K07-0024-0-0113	FARMSTEAD LN	VON PETERFF TRUSTEE OF A	3 FARMSTEAD LN	SUDBURY	MA	01776
K07-0024-0-0115	FARMSTEAD LN	FONTE COLANGELO COLANGELO	28 EDMANDS RD # 20	FRAMINGHAM	MA	01701
K07-0024-0-0117	FARMSTEAD LN	PARKHILL CRAIG HANDLEY JUD	7 FARMSTEAD LN	SUDBURY	MA	01776
K07-0024-0-0119	FARMSTEAD LN	SINGH NEENA	9 FARMSTEAD LN	SUDBURY	MA	01776
K07-0024-0-0111	FARMSTEAD LN	DEMARINES VICTOR MILLER MELIN	11 FARMSTEAD LN	SUDBURY	MA	01776
K07-0024-0-0113	FARMSTEAD LN	MOORE SUSAN J	13 FARMSTEAD LN	SUDBURY	MA	01776
K07-0024-0-0115	FARMSTEAD LN	RYAN THOMAS K & LISA A	15 FARMSTEAD LN	SUDBURY	MA	01776
K07-0024-0-0117	FARMSTEAD LN	DEMARINES VICTOR M & LINDA	17 FARMSTEAD LN	SUDBURY	MA	01776
K07-0025	1 FARMSTEAD LN	SUDBURY SENIOR C/O NATIONAL	2310 WASHINGTON ST	NEWTON LOWELL	MA	02462
K07-0026	0 BOSTON POST RD	TOWN OF SUDBURY C/O BOARD OF	278 OLD SUDBURY RD	SUDBURY	MA	01776
K07-0027	0 ROADWAY	BPR DEVELOPMENT C/O NATIONAL	2310 WASHINGTON ST	NEWTON LOWELL	MA	02462
K07-5000	RAILWAY	MASS BAY TRANSPORTATION	10 PARK PLAZA	BOSTON	MA	02116

K08-0020-0-101	35	MAPLE AV	LIEBERMAN BARBARA J	35 MAPLE AVE	SUDBURY	MA	01776
K08-0020-0-102	35	MAPLE AV	RAPA DENNIS GILLESPIE JO	35 MAPLE AVE	SUDBURY	MA	01776
K08-0020-0-103	35	MAPLE AV	WADSWORTH PAMELA R & CH	35 MAPLE AVE	SUDBURY	MA	01776
K08-0020-0-201	35	MAPLE AV	LAMKIN ROBERT B & JOAN R	35 MAPLE AVE	SUDBURY	MA	01776
K08-0020-0-202	35	MAPLE AV	BURKLEY ELA TRUSTEE OF M	35 MAPLE AVE	SUDBURY	MA	01776
K08-0020-0-203	35	MAPLE AV	PARRISH R W TRUSTEES OF	35 MAPLE AVE	SUDBURY	MA	01776
K08-0020-0-301	35	MAPLE AV	TABLOSKI THEODORE F & PA	35 MAPLE AVE UNIT 301	SUDBURY	MA	01776
K08-0020-0-302	35	MAPLE AV	BRADY CORNELIUS W & MAR	35 MAPLE AVE UNIT 302	SUDBURY	MA	01776
K08-0020-0-303	35	MAPLE AV	VANWOERKON MOORE BARB	46 CONCORD RD	WESTON	MA	02493
K08-0020-0-401	35	MAPLE AV	REED JOHN J TRUSTEE OF T	35 MAPLE AVE	SUDBURY	MA	01776
K08-0020-0-402	35	MAPLE AV	KATZ PHILIP	35 MAPLE AVE	SUDBURY	MA	01776
K08-0020-0-501	35	MAPLE AV	REVIS SUSAN M & ANTONY	35 MAPLE AVE UNIT 501	SUDBURY	MA	01776
K08-0020-0-502	35	MAPLE AV	SYNNOTT MARK B & CHERYL	35 MAPLE AVE UNIT 502	SUDBURY	MA	01776
K08-0020-0-503	35	MAPLE AV	DROPKIN GOLDIE	35 MAPLE AVE UNIT 503	SUDBURY	MA	01776
K08-0020-0-601	35	MAPLE AV	PERLMAN NOAH & LAUREN	35 MAPLE AVE	SUDBURY	MA	01776
K08-0020-0-602	35	MAPLE AV	GOODMAN LEON & LEONA	35 MAPLE AVE	SUDBURY	MA	01776
K08-0020-0-701	35	MAPLE AV	AARONSON BURTON C & MA	35 MAPLE AVE	SUDBURY	MA	01776
K08-0020-0-702	35	MAPLE AV	CONLIN JEFFREY L	35 MAPLE AVE	SUDBURY	MA	01776
K08-0020-0-703	35	MAPLE AV	VARGO MARK W & KAREN M	35 MAPLE AVE	SUDBURY	MA	01776
K08-0020-0-801	35	MAPLE AV	LUBAR EDWAR MAPLE AVENU	35 MAPLE AVE UNIT 801	SUDBURY	MA	01776
K08-0020-0-802	35	MAPLE AV	NORINA BOYLE	35 MAPLE AVE UNIT 802	SUDBURY	MA	01776
K08-0020-0-901	35	MAPLE AV	HULIHAN MAILE	35 MAPLE AVE	SUDBURY	MA	01776
K08-0020-0-902	35	MAPLE AV	FLORU DAN & MARIETTA	35 MAPLE AVE	SUDBURY	MA	01776
K08-0021	28	MAPLE AV	VELLOM DANIEL C	28 MAPLE AVE	SUDBURY	MA	01776
K08-0022	22	MAPLE AV	LI WENJUN & LU LU	22 MAPLE AVE	SUDBURY	MA	01776
K08-0023	14	MAPLE AV	BROSNAN JOHN & MIKAYLA	14 MAPLE AVE	SUDBURY	MA	01776
K08-0024	10	MAPLE AV	GOODRICH PETER M & RACH	10 MAPLE AVE	SUDBURY	MA	01776
K08-0025	4	MAPLE AVE	4 MAPLE LLC	10 MAPLE AVE	SUDBURY	MA	01776
K08-0026	365	BOSTON	GOLDBERG KE C/O INTRUM C	180 WELLS AVENUE STE 100	NEWTON	MA	02459
K08-0029		BOSTON PC	SUDBURY VALLEY TRUSTEES	18 WOLBACH RD	SUDBURY	MA	01776
K08-0037	378	BOSTON	SCRIVANOS C SUD REALTY T	3 PLUFF AVENUE	NORTH READI	MA	01864
K08-0038	0	STATION R	UNION AVENUE REALTY, LLC	46 UNION AV	SUDBURY	MA	01776
K08-0039	34	STATION R	MUTUAL REALTY TRUST OF S	34 AUTUMN ST	SUDBURY	MA	01776
K08-0040	40	STATION R	STATION RD AUTO BODY & G	38-40 STATION RD	SUDBURY	MA	01776
K08-0041	46	UNION AV	UNION AVENUE REALTY LLC	46 UNION AVE	SUDBURY	MA	01776
K08-0053	39	UNION AV	CHISWICK PAR C/O PARIS TRU	490-B BOSTON POST RD STE	SUDBURY	MA	01776
K08-0054	37	UNION AV	MASS BAY TR C/O SAXONVIL	P.O.BOX 2375	HAMPTON	NH	03843
K08-0055		UNION AVE	MCCARTHY LA CAS TRUST	578 BOSTON POST RD	SUDBURY	MA	01776
K08-0056	27	UNION AV	MCNAMARA R THE ROBMAR	28 UNION AVE	SUDBURY	MA	01776
K08-0057		UNION AVE	CHISWICK PAR C/O PARIS TRU	490-B BOSTON POST RD STE	SUDBURY	MA	01776
K08-0073	0	UNION AVE	CHISWICK PAR C/O PARIS TRU	490-B BOSTON POST RD STE	SUDBURY	MA	01776
K08-0074	28	UNION AV	MCNAMARA ROBERT W TRS	P O BOX 833	SUDBURY	MA	01776
K08-0082	394	BOSTON	CHEN LI-YUN Y CHENS FAMIL	394 BOSTON POST RD	SUDBURY	MA	01776
K08-0084		OFF BOSTON	TOWN OF SUD TREASURER	278 OLD SUDBURY RD	Sudbury	MA	01776
K08-5000		RAILWAY	MASS BAY TRANSPORTATION	10 PARK PLAZA	BOSTON	MA	02116
K08-5100		RAILWAY	EOT MASS BAY TRA	10 PARK PLAZA	BOSTON	MA	02116

K08-5200	RAILWAY	CSX		500 WATER ST C910	JACKSONVILLE	FL	32202
K09-0056	333 BOSTON	SPACECRAFT LLC		51 RIVER STREET	WELLESLEY H	MA	02481
K09-0057-0-11A	329 BOSTON	CONVENIENT HOMECARE SE		689 MAIN ST	WALTHAM	MA	02451
K09-0057-0-11B	329 BOSTON	SHANNON PRODUCTS CORP		329 BOSTON POST RD, UNIT 2	SUDBURY	MA	01776
K09-0057-0-11C	329 BOSTON	CTA REAL ESTATE HOLDINGS		327 F BOSTON POST RD	SUDBURY	MA	01776
K09-0057-0-11D	329 BOSTON	CTA REAL ESTATE HOLDINGS		327 F BOSTON POST RD	SUDBURY	MA	01776
K09-0057-0-1A	327 BOSTON	SPENCER THOMAS W JR		327A BOSTON POST RD	SUDBURY	MA	01776
K09-0057-0-1B	327 BOSTON	PEDO REALTY LLC		45 MEADOWBROOK CIR	SUDBURY	MA	01776
K09-0057-0-1C	327 BOSTON	STRAUS MERRIL & ELLEN		327 BOSTON POST RD SUITE	SUDBURY	MA	01776
K09-0057-0-1D	327 BOSTON	YAFFE PETER CAROL S TRS		327 BOSTON POST RD	SUDBURY	MA	01776
K09-0057-0-1E	327 BOSTON	JAFAROV VUGAR		18 PINEWOOD AVE	SUDBURY	MA	01776
K09-0057-0-1F	327 BOSTON	CTA REAL ESTATE HOLDINGS		327 F BOSTON POST RD	SUDBURY	MA	01776
K09-0059-0-1	321 BOSTON	THOMPSON ROBERT J		5 APPLESEED DR	WESTBOROUGH	MA	01581
K09-0059-0-15	325 BOSTON	O'CONNOR REALTY GROUP L		325 BOSTON POST RD UNIT 1	SUDBURY	MA	01776
K09-0059-0-1A	323 BOSTON	SALVIA PETER M & SUSAN W		45 BISHOP LANE	SUDBURY	MA	01776
K09-0059-0-1B	323 BOSTON	SALVIA PETER M & SUSAN W		45 BISHOP LANE	SUDBURY	MA	01776
K09-0059-0-1C	323 BOSTON	GERBE THOMAS		323 BOSTON POST RD UNIT 1	SUDBURY	MA	01776
K09-0059-0-2	321 BOSTON	CHALAH ANAS & CARLA		6 BIGELOW DR	SUDBURY	MA	01776
K09-0059-0-25	325 BOSTON	POST ROAD PROPERTIES LL		26 SPRING ST	SUDBURY	MA	01776
K09-0059-0-2A	321 BOSTON	ANDERSON RO RMA REALTY		321 BOSTON POST RD	SUDBURY	MA	01776
K09-0059-0-2A	323 BOSTON	STONE LAURA & RICHARD		323 2A BOSTON POST RD	SUDBURY	MA	01776
K09-0059-0-2B	321 BOSTON	ANDERSON RO RMA REALTY		321 BOSTON POST RD	SUDBURY	MA	01776
K09-0059-0-2B	323 BOSTON	HELWIG MARK W & RUTHIE		18 NADINE RD	FRAMINGHAM	MA	01701
K09-0059-0-2C	323 BOSTON	HELWIG MARK W & RUTHIE		18 NADINE RD	FRAMINGHAM	MA	01701
K09-0059-0-2D	323 BOSTON	HELWIG MARK W & RUTHIE		18 NADINE RD	FRAMINGHAM	MA	01701
K09-0059-0-35	325 BOSTON	ARCH PROPERTY GROUP LL		3 BROOKSIDE FARM LN	SUDBURY	MA	01776
K09-0059-0-3A	321 BOSTON	POYDAR HENRY IVY REALTY TR		76 BIRCHWOOD LN	LINCOLN	MA	01773
K09-0059-0-3A	323 BOSTON	323 BOSTON POST ROAD REA		323 BOSTON POST RD STE 3A	SUDBURY	MA	01776
K09-0059-0-3B	321 BOSTON	POYDAR HENRY IVY REALTY TR		76 BIRCHWOOD LN	LINCOLN	MA	01773
K09-0059-0-3B	323 BOSTON	323 BOSTON POST ROAD REA		323 BOSTON POST RD STE 3A	SUDBURY	MA	01776
K09-0059-0-3C	321 BOSTON	PEDULLA BAR TRUSTEE OF T		321 BOSTON POST RD UNIT 3	SUDBURY	MA	01776
K09-0059-0-3C	323 BOSTON	LOPILATO PAUL LAFRATTA PH		323 BOSTON POST RD UNIT 3	SUDBURY	MA	01776
K09-0059-0-3D	321 BOSTON	PRCC LLC		321 BOSTON POST RD UNIT 3	SUDBURY	MA	01776
K09-0059-0-3D	323 BOSTON	LOPILATO PAUL LAFRATTA PH		323 BOSTON POST RD UNIT 3	SUDBURY	MA	01776
K09-0059-0-45	325 BOSTON	MCGLYNN PARTNERS LLC		325 BOSTON POST ROAD	SUDBURY	MA	01776
K09-0059-0-4A	321 BOSTON	RPG PROPERTIES LLC		321 BOSTON POST RD	SUDBURY	MA	01776
K09-0059-0-4A	323 BOSTON	RONG QING DU		323 BOSTON POST RD 4A	SUDBURY	MA	01776
K09-0059-0-4B	321 BOSTON	RPG PROPERTIES LLC		321 BOSTON POST RD	SUDBURY	MA	01776
K09-0059-0-4B	323 BOSTON	RONG QING DU		323 BOSTON POST RD 4A	SUDBURY	MA	01776
K09-0059-0-4C	321 BOSTON	NICKERSON G B JR & DAVID A		321 BOSTON POST RD SUITE	SUDBURY	MA	01776
K09-0059-0-4C	323 BOSTON	SUITE 4C LLC		323 BOSTON POST RD 4C	SUDBURY	MA	01776
K09-0061	303 BOSTON	ARNHEIM DAVID L & MERRILL		303 BOSTON POST RD	SUDBURY	MA	01776
K09-0063	BOSTON PD	ARCURI JOSEPH & ANNETTE		271 BOSTON POST RD	SUDBURY	MA	01776
K09-0065	275 BOSTON	BAZILE CASTERA		275 BOSTON POST RD	SUDBURY	MA	01776
K09-0066	271 BOSTON	ARCURI JOSEPH & ANNETTE		271 BOSTON POST RD	SUDBURY	MA	01776
K09-0067	BOSTON PD	MASS BAY TRANSPORTATION		10 PARK PLACE	BOSTON	MA	02110

K09-0069	MAPLE AVE	MASS BAY TRANSPORTATION	50 HIGH ST		BOSTON	MA	02110
K09-0071	50 MAPLE AVE	LEIBOWITZ HENRY & PEPPI J	50 MAPLE AVE		SUDBURY	MA	01776
K09-0072	44 MAPLE AVE	AINSWORTH MARY JANE	44 MAPLE AVE		SUDBURY	MA	01776
K09-0073	34 MAPLE AVE	COXALL HAROLD	15 PINE ST		WELLESLEY	MA	02481
K09-0081	0 BOSTON POST RD	TOWN OF SUDBURY CONSERVATION	278 OLD SUDBURY RD		SUDBURY	MA	01776
K10-0003	267 LANDHAM ROAD	SAFAR GASTON	132 NEWBURY ST		BOSTON	MA	02116
K10-0004	LANDHAM ROAD	SAFAR GASTON	132 NEWBURY ST		BOSTON	MA	02116
K10-0005	271 LANDHAM ROAD	HAN XU	271 LANDHAM ROAD		SUDBURY	MA	01776
K10-0006	277 LANDHAM ROAD	TRANter EDWARD J & KRISTEN	277 LANDHAM RD		SUDBURY	MA	01776
K10-0007-0-1A	215 A BOSTON POST RD	EMMA LOU LLC	1 GLEN PINES WAY		MILLIS	MA	02054
K10-0007-0-1B	215 B BOSTON POST RD	HOWARD FARM LLC	6 HOWARD FARM RD		SHARON	MA	02067
K10-0007-0-1C	215 C BOSTON POST RD	ORR CHARLES SPEER REALTY	215 BOSTON POST RD		SUDBURY	MA	01776
K10-0007-0-2B	215 B BOSTON POST RD	MICHELSON KARI TRUSTEES MICHELSON	215 BOSTON POST RD		SUDBURY	MA	01776
K10-0007-0-2C	215 C BOSTON POST RD	ORR CHARLES SPEER REALTY	215 BOSTON POST RD		SUDBURY	MA	01776
K10-0008	209 BOSTON POST RD	PEARLMAN AL DELTA LAND TRUST	172 BISHOPS FOREST DR		WALTHAM	MA	02173
K10-0009	227 BOSTON POST RD	CONGREGATION B'NAI TORAH	PO BOX 273		SUDBURY	MA	01776
K10-0012	189 BOSTON POST RD	CCC POST ROAD C/O THE COOLIDGE	189 BOSTON POST RD		SUDBURY	MA	01776
K10-0014	183 BOSTON POST RD	NSTAR ELECTRIC PROPERTY TAX	P.O. BOX 270		HARTFORD	CT	06141
K10-0015	256 LANDHAM ROAD	UNITED STATES OF AMERICA	260 LANDHAM RD		SUDBURY	MA	01776
K10-0038	BOSTON POST RD	ARCURI JOSEPH & ANNETTE	271 BOSTON POST RD		SUDBURY	MA	01776
K10-0040	225 BOSTON POST RD	CONGREGATION B'NAI TORAH	PO BOX 273		SUDBURY	MA	01776
K10-0041	LANDHAM ROAD	TOWN OF SUDBURY CONSERVATION	278 OLD SUDBURY ROAD		SUDBURY	MA	01776
K10-0081	187 BOSTON POST RD	CCC POST ROAD LIMITED PARTNERSHIP	34 WASHINGTON ST		BRIGHTON	MA	02135
K10-0101	272 LANDHAM ROAD	BLAIR CHADWICK	272 LANDHAM RD		SUDBURY	MA	01776
K11-0402	163 BOSTON POST RD	NSTAR ELECTRIC PROPERTY TAX	P.O. BOX 270		HARTFORD	CT	06141
K11-0501	BOSTON POST RD	BUDDY DOG HUMANE SOCIETY	151 BOSTON POST RD		SUDBURY	MA	01776
K11-5000	RAILWAY	MASS BAY TRANSPORTATION	10 PARK PLAZA		BOSTON	MA	02116



1

Introduction

On behalf of the co-applicants, the Massachusetts Department of Conservation and Recreation ("DCR") and NSTAR Electric Company d/b/a Eversource Energy ("Eversource"), VHB is submitting this Notice of Intent ("NOI") pursuant to the Massachusetts Wetlands Protection Act (M.G.L. Chapter 131, Section 40¹) ("MWPA" or the "Act") and its implementing regulations (310 CMR 10.00²) ("the MWPA Regulations"), and the Sudbury Wetlands Administration Bylaw³ ("the Bylaw") and the Sudbury Wetlands Administration Bylaw Regulations⁴ ("Bylaw Regulations"), for the construction of a portion of the Massachusetts Central Rail Trail ("MCRT") and installation of a portion of an underground electric transmission line within an inactive Massachusetts Bay Transportation Authority ("MBTA") railroad right-of-way ("ROW") within the limits of the Town of Sudbury, Massachusetts.

As proposed herein, "the Project" includes completion of a portion of the regional MCRT and construction of a portion of a new 115-kilovolt ("kV") underground electric transmission line ("the underground transmission line" or commonly referred to as "the Sudbury-Hudson Transmission Line Project"). This Project is the direct result of a collaborative project-planning process among DCR, Eversource, and the MBTA. This coordinated effort combines two compatible uses within a single existing and under-utilized transportation corridor, with a proposed phased construction sequence to minimize cost, the overall construction schedule, and potential impacts to wetland resource areas.

Throughout the design phase of the Project, Eversource and DCR have coordinated closely and have jointly met with local municipalities as well as state regulatory agencies such as Massachusetts Department of Environmental Protection ("MassDEP") Wetlands Division, MassDEP Waterways (Chapter 91) Division, and the Natural Heritage & Endangered Species Program ("NHESP") to discuss the details for the proposed MCRT and the underground transmission line. DCR and Eversource have developed a Memorandum of Understanding

¹ Massachusetts Wetlands Protection Act (M.G.L. c. 131 §40). <https://malegislature.gov/Laws/GeneralLaws/PartI/TitleXIX/Chapter131/Section40>

² Massachusetts Wetlands Protection Act Regulations (310 CMR 10.00). <https://www.mass.gov/files/documents/2016/08/vy/310cmr10a.pdf>

³ Article XXII Wetlands Administration Bylaw. <https://s3-us-west-2.amazonaws.com/cdn.sudbury.ma.us/wp-content/uploads/sites/273/2015/01/ARTICLE-XXII-WETLANDS-ADMINISTRATION.pdf?version=7c07334911d90a7ef9dce506686542d9>

⁴ Sudbury Wetlands Administration Bylaw Regulations. <https://s3-us-west-2.amazonaws.com/cdn.sudbury.ma.us/wp-content/uploads/sites/272/2017/10/Wetlands-Bylaw-Regulation-Amendment-170925.pdf?version=18d2af56918f837c61fd50801a467313>

("MOU") to memorialize agreements to design, permit, construct, operate, and maintain the Project, and have made a concerted effort to design the Project to avoid and minimize impacts to wetland resource areas. This joint application by Eversource and DCR will allow the Sudbury Conservation Commission to evaluate and condition the proposed work activities accordingly.

The Project will serve the dual purpose of increasing the reliability of the regional electric transmission system and advancing state-wide multi-use trail network initiatives. The underground electric transmission component of the Project will resolve thermal overloads and low voltage conditions and will support the increased demand for electricity within this portion of the transmission system.

In Massachusetts, regional trails are an important priority for increasing the number of commuters who bike and walk to work and for providing recreational opportunities. The MCRT is one of these regional commuter trails that is American Disabilities Act ("ADA") compliant and accessible by people of all abilities. When completed, the MCRT will connect over 20 communities and provide over 100 miles of interconnected walking and biking trails. DCR has included the construction of the Sudbury to Hudson portion of the MCRT in a long-range capital planning request for Fiscal Year 2021. The Massachusetts Department of Transportation ("MassDOT") Project Review Committee has also approved the MCRT for design as MassDOT Project #608995. DCR constructed the Weston to Wayland portion of the MCRT, which was completed in fall 2019.

Proposed Project Overview

As shown in Figures 1 and 2 in Attachment A, the Project in Sudbury is approximately 4.3 miles long and is located entirely within the MBTA ROW from the Hudson/Sudbury municipal border to the Sudbury Substation off Route 20. The "Project Locus" related to this Project is the entire width of the MBTA ROW within Sudbury, an approximately 150-foot-long portion of the Eversource driveway to the Sudbury Substation, and the Sudbury Substation. The "Project Site" is the limit of work for the Project.

The Project will be constructed in a two-phased approach described in more detail in Section 3 of this NOI filing. Phase 1 of the Project will be under the control and responsibility of Eversource and will include all major earthwork, bridge rehabilitation (Bridge 128) and bridge reconstruction (Bridge 127), and the installation of the underground transmission line (see plans provided in Attachment B). Phase 2 of the Project will be under the control and responsibility of DCR and will include installation of facilities for road crossings, paving the MCRT, and final restoration of the work zone (see plans in Attachment C).

Summary of Wetland Resource Area Impacts in Sudbury

A summary of the wetland resource area impacts is provided in Table 1.

Table 1 Wetland Resource Area Impact Summary within the Project Site in Sudbury

Wetland Resource Area	Permanent Disturbance ¹ Square Feet (Acres)	Temporary Disturbance ² Square Feet (Acres)	Total Disturbance Square Feet (Acres)	Wetland Resource Area on Project Locus ³ Square Feet (Acres)	Comments
MWPA/Sudbury Bylaw Jurisdiction					
Bordering Vegetated Wetland	89 (0.002)	524 (0.012)	613 (0.014)	131,436 (3.02)	BVW impacts at Bridge 127, culvert 127A, and Wetland 4. All areas of temporary disturbance will be revegetated with native species. The 89 square feet of permanent BVW loss (4 square feet at Wetland 18 and 85 square feet at Wetland 4) will be replicated on the Project Site.
MWPA Riverfront Area ⁴	61,003 (1.4)	95,463 (2.2)	156,466 (3.6)	457,504 (10.5)	Activities proposed within the MWPA RFA of three waterbodies. All disturbed areas outside of the 61,003 square feet of the proposed MCRT paved surface are to be revegetated with native species.
Bordering Land Subject to Flooding	2,686 (0.06)	7,749 (0.2)	10,435 (0.2)	172,294 (4.0)	All disturbed areas outside of the 2,686 square feet of proposed MCRT paved surface are to be revegetated with native species. The Project will result in a net gain of 78.46 cubic yards of flood storage in BLSF.
Land Under Water Bodies and Waterways	0	1,146 (0.03)	1,146 (0.03)	92,342 (2.1)	All LUWW impacts are temporary and are associated with the placement of the crane mats at Bridge 127. All areas of disturbance will be restored.
Bank (linear feet)	0	246 (0.005)	246 (0.006)	7,379 (0.17)	All Bank impacts are temporary and are associated with placement of the crane mats at Bridge 127. All areas of disturbance will be restored.

Wetland Resource Area	Permanent Disturbance ¹ Square Feet (Acres)	Temporary Disturbance ² Square Feet (Acres)	Total Disturbance Square Feet (Acres)	Wetland Resource Area on Project Locus ³ Square Feet (Acres)	Comments
MWPA Buffer Zone ⁵	123,686 (2.8)	196,884 (4.5)	320,570 (7.4)	985,096 (19.7)	All disturbed areas outside of the 123,686 square feet of the proposed MCRT paved surface are to be revegetated with native species.
Federal Section 401 and 404/Sudbury Bylaw Jurisdiction					
Isolated Vegetated Wetland	303 (0.007)	0	303 (0.007)	303 (0.007)	One IVW will be filled; loss of IVW will be replicated within the Project Locus.
Sudbury Bylaw Jurisdiction Only					
Adjacent Upland Resource Area	94,645 (2.2)	153,519 (3.5)	248,164 (5.7)	853,305 (19.6)	All disturbed areas outside of the 94,645 square feet of the proposed MCRT paved surface are to be revegetated with native species.
Vernal Pool Buffer	33,139 (0.8)	49,553 (1.1)	82,692 (1.9)	254,887 (5.8)	All disturbed areas outside of the 33,139 square feet of the proposed MCRT paved surface are to be revegetated with native species.
Bylaw Riverfront Area ⁶	31,789 (0.7)	46,707 (1.1)	78,496 (1.8)	253,630 (5.8)	All disturbed areas outside of the 31,789 square feet of the proposed MCRT paved surface are to be revegetated with native species.

Source: VHB

1. The permanent disturbance for RFA, BLSF, AURA, and Vernal Pool Buffers is limited to the impervious surface proposed for the MCRT.
2. The temporary disturbance for RFA, BLSF, AURA, and Vernal Pool Buffers includes all areas of disturbance outside of the limits of the impervious surface associated with the MCRT. All temporarily disturbed areas will be revegetated with native species.
3. The "Project Locus" includes the entire approximately 82-foot width of the MBTA ROW, the portion of the Eversource Substation access driveway, and the Sudbury Substation.
4. The MWPA RFA that is under MWPA/Sudbury jurisdiction is for state perennial streams only.
5. MWPA Buffer Zone includes all areas considered AURA under the Sudbury Bylaw as well as portions of Vernal Pool Buffers where the Vernal Pool is within BVW.
6. The Bylaw RFA that is under Sudbury jurisdiction only are the streams that are defined as perennial under the Bylaw Regulations, but do not qualify as perennial according to the MWPA and MWPA Regulations.

The Project fully complies with all applicable MWPA and Sudbury Bylaw related performance standards for their respective resource areas, including Buffer Zones to state wetland resource areas, Bordering Vegetated Wetland ("BVW"), Bordering Land Subject to Flooding ("BLSF"), Land Under Water Bodies and Waterways ("LUWW"), Bank, Riverfront Area ("RFA") and local Adjacent Upland Resource Area ("AURA").

In addition to fully complying with the performance standards, both components of the Project qualify for "limited project" status under the MWPA Regulations. The transmission line component qualifies under 310 CMR 10.53(3)(d) for the "construction, reconstruction, operation, and maintenance of underground or overhead public utilities," and the majority of the bike path component, which is within MWPA RFA but outside of other MWPA resource areas, qualifies under 310 CMR 10.53(6) for the "construction, rehabilitation, and maintenance of footpaths, bike paths, and other pedestrian or non-motorized vehicle access to or along riverfront areas but outside other resource areas, provided that adverse impacts from the work are minimized and that the design specifications are commensurate with the projected use and are compatible with the character of the riverfront area" (see Section 5.1.1). Three sections of the MCRT alignment are not eligible for limited project status because they are within MWPA RFA that overlaps with BLSF. However, as discussed in detail in Section 5.1.8, these three sections fully comply with all applicable performance standards for both RFA and BLSF.

The Project also fully complies with all applicable performance standards under the Section 401 Water Quality Certification regulations and proposes to replace the loss of vegetated wetlands (bordering and isolated) at a ratio of 2:1 (see Sections 5.1.5 and 5.4, and Attachment D).

The following sections of this NOI provide detailed information regarding existing conditions within the Project Site (Section 2.0), present details regarding the proposed work activities (Section 3.0), provide an overview of the avoidance and minimization strategies implemented relative to wetland resource areas (Section 4.0), and present a detailed summary of compliance with applicable performance standards and proposed mitigation measures (Section 5.0).

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2

Existing Conditions

As shown in Figures 1 and 2 in Attachment A, the Project in Sudbury is approximately 4.3 miles long and is located entirely within the MBTA ROW from the Hudson/Sudbury municipal border to the Sudbury Substation off Route 20. The MBTA ROW width is variable but is approximately 82 feet wide in most locations and travels past residential areas, commercial developments, wooded areas, and roadways.

The "Project Locus" includes the entire approximately 82-foot width of the MBTA ROW, an approximately 150-foot-long portion of the Eversource driveway to the Sudbury Substation, and the Sudbury Substation. The Project Site generally ranges from 18 feet to 50 feet wide within resource areas, except at manhole locations, the proposed replication area, and at the Boston Post Road crossing where the limit of work widens for replacement of the sidewalk.

Within the proposed limits of work associated with the Project, the MBTA ROW is previously developed consistent with its former use as a railroad right-of-way. In its present condition, the track structure occupies a footprint that is approximately 11 feet wide throughout the entire Project Locus. In addition, in most areas within the proposed limits of work where wetland resource areas are crossed by the Project some type of path also exists alongside the track structure and stone ballast footprint. In some areas these paths are narrow and appear to be used predominantly by walkers, and in other areas they appear to be used by mountain bikers and all-terrain vehicle users. In other segments, such as the portion of the Project located between the Sudbury/Marlborough/Hudson town lines and Dutton Road, there are wider and well-defined pathways that have limited or no vegetation, are apparently heavily used by hikers and individuals walking dogs and riding horses, and appear to also be used by mountain bikers, snowmobile users, and all-terrain vehicle users.

Photographs of the existing conditions are provided in Attachment E.

2.1 Overview of Wetland Resource Areas Within the Project Locus

The following freshwater wetland resource areas are present within or proximate to the Project Locus: Bank, LUWW, BVW, BLSF, and RFA. All wetland resource areas were delineated following the methodologies that are described in 310 CMR 10.55, the MassDEP 1995

manual,⁵ and are consistent with the US Army Corps of Engineers ("USACE") 1987 Manual⁶ and its Northcentral and Northeast Regional Supplement.⁷ Wetland resource areas outside of the Project Locus were not field delineated due to property access restrictions and were digitized using available MassDEP Geographic Information Systems ("GIS") data and ortho-imagery. The imagery used was from spring 2011 and 2012 and is prior to leaf-out, which permits a more accurate interpretation of field conditions.

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 (see Attachment F). The ORAD included BVW, Bank, LUWW, BLSF (in accordance with Sudbury Wetlands Bylaw Definition), RFA (as determined by the Sudbury Wetlands Bylaw Perennial stream and mean annual high water definition), and vernal pools (in accordance with Sudbury Wetland Bylaw definition). 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.

Note that under the MWPA, Hop Brook and Dudley Brook are considered perennial and have an associated RFA designated as "WPA RA" on the plans. Under the Sudbury Bylaw, all remaining streams on the Project Locus are defined to be perennial; the RFAs associated with these streams are jurisdictional under the Bylaw Regulations only and are designated as "SUD RA" on the plans.

In addition, the Sudbury Bylaw regulates activities within the 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 (referenced herein as "Vernal Pool Buffer") extends 100 feet from the mean annual high-water line defining the depression (this is denoted on the plans as "100VPBZ"). There are also isolated wetlands on the Project Locus that are subject to local and federal jurisdiction.

2.2 Mapped Soils within the Project Locus in Sudbury

According to the Natural Resources Conservation Service Web Soil Survey,⁸ there are several different soil series mapped within the Project Locus in Sudbury (see Figure 3 in Attachment A and Table 2 below). However, because the previous use of the MBTA ROW

⁵ MassDEP Division of Wetlands and Waterways. Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetlands Protection Act. March 1995. <https://www.mass.gov/files/documents/2016/08/pn/bvwmanua.pdf>

⁶ U.S. Army Corps of Engineers. Corps of Engineers Wetlands Delineation Manual. January 1987. <https://usace.contentdm.oclc.org/digital/collection/p266001coll1/id/4530>

⁷ U.S. Army Corps of Engineers Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Northcentral and Northeast Region (Version 2.0). January 2012. <https://usace.contentdm.oclc.org/utis/getfile/collection/p266001coll1/id/7640>

⁸ U.S. Department of Agriculture Natural Resources Conservation Service – Web Soil Survey. https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm?TARGET_APP=Web_Soil_Survey_application_u1wl5v13de1ikaypfk14ngvp

was a railroad, the soils have been disturbed and/or filled. This was confirmed during the advancement of geotechnical borings throughout the MBTA ROW, which identified that fill material is present in subsurface soils ranging up to 12 feet below surface grade.

Table 2 NRCS Mapped Soil Types within the Project Locus in Sudbury

Map Unit Name/Soil Series	Map Unit Symbol	Hydric	Hydrologic Soil Group	Drainage Class
Scarboro mucky fine sandy loam, 0-3% slopes	6A	Yes	A/D	Very poorly drained
Freetown muck, 0-1% slopes	52A	Yes	B/D	Very poorly drained
Freetown muck, ponded, 0-1% slopes	53A	Yes	B/D	Very poorly drained
Charlton-Hollis-Rock outcrop complex, 3-8% slopes	103B	No	A	Well drained
Hollis-Rock outcrop-Charlton complex, 15-25% slopes	104D	No	D	Well drained
Hinckley loamy sand, 3-8% slopes	253B	No	A	Excessively drained
Hinckley loamy sand, 8-15% slopes	253C	No	A	Excessively drained
Hinckley loamy sand, 15-25% slopes	253D	No	A	Excessively drained
Windsor loamy sand, 0-3% slopes	255A	No	A	Excessively drained
Windsor loamy sand, 3-8% slopes	255B	No	A	Excessively drained
Deerfield loamy sand, 3-8% slopes	256B	No	B	Moderately well drained
Carver loamy coarse sand, 3-8% slopes	259B	No	A	Excessively drained
Montauk fine sandy loam, 8-15% slopes, extremely stony	302C	No	C	Well drained
Udorthents-Urban land complex	656	No	N/A	N/A

Source: NRCS Web Soil Survey

2.3 Protected Sensitive Habitats

The following sections provide an overview of sensitive habitats that fall under jurisdiction of either the MWPA or the Massachusetts Endangered Species Act and include Estimated/Protected Habitat for State-Listed species, Outstanding Resource Waters, Areas of Critical Environmental Concern, and Coldwater Fisheries.

2.3.1 Estimated/Priority Habitat for State Listed Species

Based on the most recently published edition of the Massachusetts Natural Heritage Atlas (14th edition, effective August 1, 2017), a portion of the Project Locus within the MBTA ROW east of White Pond Road in Hudson to just west of the Hop Brook Bridge 128 crossing in Sudbury is within Priority and Estimated Habitat of rare species, PH1440/EH1040 (see Figure 4 in Attachment A). Within Sudbury, the Priority and Estimated Habitat ends at the Hudson/Sudbury town line. Based on the August 4, 2017, response letter from Massachusetts Division of Fisheries and Wildlife ("MassWildlife") Natural Heritage and Endangered Species Program ("NHESP"), there are four state-listed species of special concern within PH1440/EH1040 (see Table 3 and Attachment G).

Table 3 State-Listed Protected Species

Scientific name	Common Name	State Status
<i>Terrapene carolina</i>	Eastern Box Turtle	Special Concern
<i>Caprimulgus vociferus</i>	Eastern Whip-poor-will	Special Concern
<i>Catocala herodias gerhardi</i>	Gerhard's Underwing Moth	Special Concern
<i>Metarranthus pilosaria</i>	Coastal Swamp Metarranthus Moth	Special Concern

Source: NHESP

2.3.2 Coldwater Fishery Resources

Coldwater Fishery Resources ("CFRs") are identified as Critical Areas in the MWPA (310 CMR 10.04) and are regulated under the Massachusetts Surface Water Quality Standards (314 CMR 4.00⁹). Based on the latest mapping of CFRs by MassWildlife, Hop Brook is classified as a CFR¹⁰, though MassDEP has identified Hop Brook as an impaired water body and the Surface Water Quality Standards classify it as a Class B Warm Water Fishery due to maximum mean monthly temperatures that generally exceed 68 degrees Fahrenheit during the summer months.

In addition to Hop Brook, under the Bylaw, CFRs also include the tributaries and spring-fed seeps that drain into said CFR.

There are therefore six additional streams that are not identified as CFRs by MassWildlife, but are considered CFRs under the Sudbury Bylaw:

1. Intermittent stream at Station 527+30, which drains into Dudley Brook
2. Dudley Brook at Station 539+40, which drains into Hop Brook
3. Intermittent stream at Station 561+82, which drains into Dudley Brook
4. Intermittent stream at 593+18, which drains into Landham Brook (which is mapped as a CFR by MassWildlife)
5. Intermittent tributary to Hop Brook that runs parallel to the Project Site near Station Road
6. Tributary to Wash Brook at Station 747+39 (Wash Brook drains into Hop Brook)

2.3.3 Areas of Critical Environmental Concern

Based on a review of available MassGIS data, no portion of the Project Site is located within an Area of Critical Environmental Concern¹¹ ("ACEC").

⁹ Massachusetts Surface Water Quality Standards (314 CMR 4.00). <https://www.mass.gov/files/documents/2016/11/nv/314cmr04.pdf>

¹⁰ MassWildlife Coldwater Fisheries Resource List. <https://mass-eoea.maps.arcgis.com/apps/webappviewer/index.html?id=56ddeb43ffc642feb3117ce7ebd1aa43>

¹¹ MassGIS OLIVER – Areas of Critical Environmental Concern Data Layer. http://maps.massgis.state.ma.us/map_ol/oliver.php

2.3.4 Outstanding Resource Waters and Vernal Pools

Outstanding Resource Waters (“ORWs”) are defined in 314 CMR 4.00 as Class A Public Water Supplies and their tributaries, wetlands bordering Class A ORWs, active and inactive reservoirs approved by the MassDEP Drinking Water Program after December 29, 2006, and other waters as determined by MassDEP based on their outstanding socio-economic, recreational, ecological and/or aesthetic values. Vernal pools certified by MassWildlife are designated as Class B ORWs, and wetlands bordering Class B, SB, or SA ORWs are also designated as ORWs. As such, one certified vernal pool within the Project Locus in Sudbury is considered an ORW.

In addition, 12 “certifiable” vernal pools and 7 presumed vernal pools that are on or adjacent to the Project Locus were delineated in the ORAD under the local bylaw.

2.4 Public Water Supply Resources

Public water supply resources are addressed here because Bank, BVW, LUWW, and RFA are presumed to contribute to the protection of private or public water supplies. Available MassGIS data was reviewed to identify Wellhead Protection Areas (“WPAs”) and public water supply wells within the vicinity of the Project. There is one Zone II WPA that overlays a portion of the Project Locus within the MBTA ROW. Zone II WPAs are those portions of an aquifer that contribute to the recharge of an existing public water supply well or wellfield. There are no public water supply wells or Zone I areas within or immediately surrounding any portion of the Project Locus (see Figure 5 in Attachment A). Based on correspondence with Sudbury’s Director of Public Health, there are no drinking water wells in the vicinity of the Project Locus. Per this response, data was gathered from the Board of Health, Water District, and DEP records and these records confirm that only irrigation wells are located in the vicinity of the Project Locus in Sudbury.

As described further in Sections 5.1.4 through 5.1.6, 5.2.2, and 5.2.5, the Project will comply with all applicable requirements under the Sudbury Bylaw and Bylaw Regulations, and with all applicable performance standards for Bank, BVW, LUWW, and RFA under the MWPA in order to protect ground water and surface water quality and quantity.

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3

Proposed Work

The Project will be constructed in a two-phased approach as described in detail below. Phase 1 of the Project will be under the control and responsibility of Eversource and will include all major earthwork, bridge reconstruction, construction of the wetland replication area, and the installation of the underground transmission line and stormwater management features. Phase 2 of the Project will be under the control and responsibility of DCR and will include installation of facilities at road crossings, paving the MCRT and final restoration. During both phases, Best Management Practices ("BMPs") will be employed to minimize impacts, and environmental monitors will be present throughout to confirm that all activities are being conducted in accordance with applicable permit conditions.

The general construction sequencing associated with each phase is as follows:

Phase 1 Construction Activities (some components listed may be conducted simultaneously)

- › Development of Storm Water Pollution and Prevention Plan ("SWPPP")
- › Identification of contractor access and laydown areas, to be located outside of wetland jurisdictional areas
- › Vegetation removal within the limit of work (no stumping)
- › Installation of erosion and sediment controls with on-going monitoring and maintenance during Phase 1
- › Installation of new equipment at Sudbury Substation
- › Rail and tie removal
- › Grading to create construction platform
- › Installation of stormwater management features
- › Construction of wetland replication area
- › Construction of bridges and other crossings
- › Installation of manholes and duct bank
- › Installation of electrical and signal conduit for MCRT at road crossings
- › Final grading of the gravel base for MCRT
- › Cable pulling, splicing, testing, and commissioning
- › Loaming and seeding of disturbed areas

Phase 2 Construction Activities (some components listed may be conducted simultaneously)

- › Development of Storm Water Pollution and Prevention Plan ("SWPPP")
- › Installation of posts and mast arms at road crossings
- › Monitoring and maintenance of all erosion and sediment controls for Phase 2
- › Grading and compacting gravel base
- › Placement of intermediate and surface course of pavement for MCRT and turn outs
- › Installation of imprinted resin median and detectable warning panels at road crossings
- › Installation of fencing, benches, and bike racks
- › Installation of woody vegetation plantings
- › Loaming and seeding along shoulders, side slopes, and any other disturbed areas
- › Installation of roadway and trail markings and signs
- › Removal of erosion controls by hand and reseeded of footprint once vegetated areas are established and any other applicable permit conditions achieved
- › Development of as-builts for all Phase 2 activities

The following sections provide detailed descriptions of the proposed work activities associated with each of the two phases of the Project.

3.1 Proposed Phase 1 Construction Activities

Construction of Phase 1 of the Project will generally require a 22-foot-wide construction platform along the MBTA ROW to create a flat and stable work area for construction of the Project (see Figure 6 in Attachment A). The 22-foot width is the minimum width that will provide for two-way construction vehicle traffic, allowing multiple crews to work concurrently within the same section of the MBTA ROW, maximizing construction efficiency and reducing construction duration and impacts to abutting residents. This also allows sufficient space for construction vehicles to be safely staged and to travel alongside the excavated and shored trench and allows for easier access and egress of emergency vehicles in the event of an incident that would require first responders to be deployed to the construction area.

There is one location where the construction platform will be reduced to 20 feet wide and several locations where it will be reduced to 18 feet wide in order to balance minimization of impacts to resource areas with safety and efficiency of construction. The proposed limit of work is limited to the maximum extent possible within resource areas to meet existing grade, satisfy DCR design criteria, and accommodate stormwater management features.

The construction platform within the MBTA ROW will generally consist of the following:

- › A 14-foot-wide, 8-inch-deep gravel base;
- › A four-foot-wide duct bank trench (offset from the 14-foot gravel base by one-foot in most locations);

- › Three feet of additional construction area to facilitate installation of the duct bank; and
- › Manhole installation areas (requiring additional workspace outlined below).

At each proposed manhole location, to accommodate installation, the limits of clearing will be temporarily expanded to an approximate width of 40 feet, for a length of 50 feet. Following construction, these areas will be allowed to grow back to a final maintained width of 19 feet. Each manhole is approximately eight feet wide by eight feet high and 24 feet long. Due to their size, most of the manholes will be located partially underneath the MCRT with the manhole covers in the shoulder adjacent to the MCRT. The manhole depth will vary by location, with the base measuring approximately 12 to 15 feet below the proposed final grade of the MCRT. Manholes will be spaced approximately every 1,500 to 1,800 feet, and the spacing has been optimized to avoid wetland resource areas where feasible. At each transmission line manhole location, a separate precast communication handhole measuring four feet by four feet by four feet will be installed on the opposite side of the MCRT.

Plans for this portion of the work are provided in Attachment B.

3.1.1 Vegetation Removal

The Project requires removal of existing vegetation, including trees, saplings, shrubs, and herbaceous vegetation within the limits of work. Prior to the start of construction, the proposed limits of work will be delineated with survey grade equipment and staked, and only the trees that require removal will be visibly marked. In addition, prior to vegetation removal, the boundaries of wetlands will be clearly marked to prevent unauthorized encroachment.

Any limbs that overhang the limits of work and need to be trimmed for construction vehicle access and operations will be selectively cut. Affected limbs will be cut in a manner that will maintain the health of the trees. The design has minimized tree removal to the extent practicable by locating the construction platform along the existing rail bed. However, where tree removal is necessary, it will consist of cutting trunks as close to the ground as possible and leaving the stumps and roots in place. Tree trunks and large limbs will be cut, and smaller limbs and brush will be chipped for removal from the Project Locus.

Typical equipment used to clear vegetation includes tree shears, brush mowing units, a skidder bucket and/or manual climbers, a forwarder or tree dump truck, and a chipper with a winch. Hand cutting using chainsaws and brush saws will be used as necessary in sensitive areas.

3.1.2 Best Management Practices

To minimize impacts during construction, the construction crews will implement a variety of BMPs based on Eversource's BMP manual (see Attachment H), which include, but are not limited to, the following:

- › **Erosion and Sediment Controls** are installed between construction areas and resource areas such as wetlands. They are designed to prevent and minimize the transport of sediment carried by stormwater into resource areas down-gradient. In many situations they also mark the limit of work. The proposed erosion and sediment controls for the Project include “syncopated” silt fence (installed in a specific layout that permits wildlife movement, to be used within Estimated/Priority Habitat and within 450 feet of vernal pools), silt fence and compost filter tubes. The proposed location for each type of erosion and sediment control barrier is indicated on the NOI plans found in Attachments B and C. Please note that hay will not be used. Other types of erosion and sediment controls that might be used during construction include:
 - **Jute Mesh Erosion Control Blankets** are used to temporarily stabilize disturbed soils on steep slopes and promote rapid growth of vegetation for permanent stabilization, thus preventing erosion.
 - **Hydro Seeding** is another form of erosion prevention and is used to promote rapid stabilization of disturbed soils (including slopes) and rapid growth of vegetation. In practice, fiber mulch suspended in water along with plant seeds and tackifiers are sprayed on disturbed areas covering the entirety of the disturbed area. The fiber mulch adheres to the ground surface forming a thin mat that stabilizes the soil surface, retains moisture, and helps to promote rapid germination of plant seeds.
 - **Turbidity Controls** are typically used in conjunction with other BMPs when work occurs either in or immediately adjacent to areas that are inundated by water such as at bridges. Depending on the water depth at the time of construction, they may consist of a geotextile fabric suspended from flotation booms and weighted at the bottom (turbidity curtains) or staked tall silt fence.
- › **Construction Signage** is typically used throughout the Project Locus alerting contractors of sensitive areas (including wetlands, rare species, vernal pools, tree protection, cultural resource areas, and time of year restrictions), approved access locations, and locations where access is prohibited.
- › **Dewatering** is required when it is necessary to remove water from an excavation during construction. The need for dewatering is driven by field conditions and depends on the location of excavation, the time of year, and current and recent weather conditions (e.g., rain events). If dewatering is required based on field conditions, efforts will be made to locate the discharge either in the construction trench or in uplands at least 100 feet from wetlands. A soil and groundwater management plan will be developed that includes procedures for the management of any dewatering. The contractor will follow all guidelines in the soil and groundwater management plan and Eversource’s BMP manual (see Attachment H for dewatering BMPs). Several methods can be used to temporarily divert and dewater from work areas, including:
 - **Overland flow** may be used when there is no potential for discharged water to flow overland into wetlands or waterbodies. The water flows overland without any filtering to well-drained, vegetated upland areas and naturally infiltrates into the soil.

- **Frac tanks** are prefabricated and self-contained units that contain a series of baffles that allow fine materials to settle out of the water column.
 - **Filter bags and straw bale containment areas** may be used when there is a potential for discharged water to flow overland into wetlands or waterbodies. These containment areas will be located in well-vegetated areas outside of wetlands and more than 100 feet from a waterbody or stream bank.
 - **Discharge hose filter socks** may be used when there isn't enough space to construct sediment basins or enough suitable uplands for overland flow and infiltration. Filter "socks" or bags may be attached to the end for the discharge hose of the pump and used for dewatering. Additional measures such as straw bales may be installed around the filter device for added protection.
- › **Construction mats** are primarily used to minimize soil disturbance for access, bridges, and work platforms for construction equipment in wetland or soft soils. Currently, the only location where construction mats are proposed are at both Hop Brook crossings for the bridge reconstruction (Bridge 127) and rehabilitation (Bridge 128). The mats will be thoroughly cleaned and will be free of vegetation before and after use on the Project, and Eversource maintains standards that contractors must abide by.
- › **Only native indigenous plantings and seed mixes** will be used to revegetate and restore disturbed areas within the Project Site, and, if possible, will be obtained from a local nursery. If used, straw mulch will be spread over the seed mix in place of hay to prevent the spread of invasive plant species seed stock, retain moisture and encourage growth. The restored areas will be monitored annually by DCR for invasive species colonization.
- › **All imported soil shall be certified as clean and free of invasive species** by the site contractor.
- › **Construction Entrance Track Pads** are installed at construction entrances to prevent construction machinery from tracking soil onto paved roadways.

Following vegetation removal activities and prior to grubbing, the location of the erosion and sediment controls will be identified in the field with survey grade equipment and will be installed in accordance with Eversource's BMPs manual and any applicable permit requirements. Eversource's Construction Supervisor and designated EM will oversee the installation of erosion and sediment controls by Eversource's contractor, which will be installed between the work area and environmentally sensitive areas, such as wetlands, streams, and drainage courses. The erosion and sediment control details are shown on sheet 124 in the NOI plans in Attachment B. Syncopated silt fencing will be used (as shown on sheet 124 of the Plans) to permit movement of wildlife in Estimated/Priority Habitat and within 450 feet of vernal pools. At bridges, sediment controls and debris netting will be installed to prevent impacts to wetlands and waterways.

If any stockpiling within the Project Site becomes necessary, it will be limited in size and duration and silt fence/compost filter tube will be installed around its perimeter. These sediment controls will be inspected regularly and promptly repaired or replaced, as needed.

Specific locations for dewatering have not been identified because groundwater can vary depending on location, time of year, and recent storm events. If dewatering is required based on field conditions, efforts will be made to locate the discharge either in the construction trench or in uplands at least 100 feet from wetlands. BMPs such as dewatering basins and filter bags are shown on sheet 125 of the Plans in Attachment B. A soil and groundwater management plan will be developed that includes procedures for the management of any dewatering and the contractor will follow all guidelines in Eversource's BMP manual (see Attachment H for dewatering BMPs).

The Project will require coverage under the National Pollutant Discharge Elimination System ("NPDES") 2017 Stormwater Construction General Permit ("CGP"), given that there will be disturbance of over an acre of land from proposed construction activities. Actions required under the CGP include:

- › Develop a Stormwater Pollution Prevention Plan ("SWPPP") that details how stormwater discharges will be controlled;
- › Complete and submit a construction Notice of Intent ("NOI") to USEPA;
- › Install and maintain erosion and sediment controls throughout the entire construction project so they operate effectively to control stormwater discharges;
- › Implement pollution prevention controls to minimize the discharge of pollutants from stormwater and spilled or leaked materials;
- › Conduct inspections on the site a) at least once every 7 calendar days, or b) once every 14 calendar days and within 24 hours of the occurrence of a storm event of 0.25-inch or greater, or the occurrence of runoff from snowmelt enough to cause discharge;
- › Take corrective action to address any issues with stormwater controls or discharges; and
- › Keep the SWPPP up to date to reflect current conditions on the site.

Both Eversource and DCR will develop SWPPPs from the detailed plans provided in this application, specific to the proposed work to be undertaken during each phase of the project. The SWPPPs for the Project will include adequate soil erosion prevention measures, sediment control, and turbidity control plan to prevent the migration of soil and sediment from disturbed areas to adjacent wetlands and waterbodies.

3.1.3 Installation of New Equipment at Sudbury Substation

To accommodate the Project, the following equipment would be installed at the existing Sudbury Substation within the existing fence line:

- › 115-kV breaker with associated disconnect switch
- › 115-kV surge arresters (three)
- › 115-kV cable disconnect switch (one) and termination structure(s) (three)
- › 115-kV air core shunt reactor with associated foundations
- › 115-kV breaker with associated disconnects and foundations to switch the shunt reactor

- › Shielding mast (approximately 100 feet tall)
- › 115-kV bus support structure (one) for 115-kV conductors
- › Control, protection, and communication equipment inside the existing control house
- › Underground conduits and cable trench for control cables

3.1.4 Removal of Rails and Ties, Grading of Construction Platform, and Installation of Stormwater Features

The conversion of the existing rail bed to a gravel base requires the removal and salvage of the steel rails and removal and disposal off-site of the wooden rail ties, in accordance with applicable requirements. The rails will be cut by hand using a cutoff saw or oxyacetylene torch and the ties will be removed and placed into trucks using an excavator and fork loader. The existing rail bed will then be graded and leveled using a bulldozer to a “subgrade” below the final gravel base elevation for use during construction, and stormwater features (swales and check dams) will be installed. If necessary, stumps and roots will be grubbed during this stage. Eversource has developed a Soil Management Plan and all soil within the MBTA ROW will be managed in accordance with applicable regulatory requirements. Refer to Section 5.2 and sheets 122 and 123 of the plans in Attachment B for more information about the stormwater features.

3.1.5 Construction of Manholes and Duct Bank

The installation of pre-cast concrete manholes will follow the completion of the construction platform. Manholes are used to facilitate cable installation and splicing and enable access for future maintenance. Placement of manholes is determined by several factors including, but not limited to: allowable pulling tensions; sidewall pressure on the cables as they are pulled around a bend; the maximum length of a cable that can be transported on the width, height, and weight of the cable reel; and accessibility of the site based on existing environmental constraints.

For the Project, the size of each manhole is approximately eight feet wide by eight feet high and 24 feet long. The manhole depth will vary by location, with the base measuring approximately 12 to 15 feet below the proposed final grade of the gravel base. The manholes are located entirely underground with only manhole covers being visible at ground level at final grade. At each manhole, a precast communication handhole measuring four feet by four feet by four feet will be installed parallel to each manhole on the opposite side of the MCRT. It is anticipated that each manhole will take approximately five to seven days to install.

In Sudbury, a total of 13 manholes will be installed within the MBTA ROW, with seven manholes located in the following resource areas:

1. Station 519+75 to 520+25: Within Sudbury RFA and 100-foot buffer zone/AURA
2. Station 533+75 to 534+25: Within MWPA RFA and 100-foot buffer zone/AURA

3. Station 586+75 to 587+25: Within Sudbury RFA and 100-foot buffer zone/AURA
4. Station 601+09 to 601+59: Within Sudbury RFA
5. Station 717+75 to 718+25: Within MWPA RFA and 100-foot buffer zone/AURA
6. Station 736+75 to 737+25: Within MWPA RFA and 100-foot buffer zone/AURA
7. Station 752+75 to 753+25: Within 100-foot buffer zone/AURA

There are no manholes located within BVW, BLSF, or LUWW.

After the manholes are installed, the duct bank that protects the cable will be constructed. Working in sections, the trench will be excavated, and the conduit will either be assembled inside the trench or pre-assembled at the ground surface and lowered into the trench. High-strength thermal concrete will be placed around the conduit to form the duct bank. The trench will then back-filled with fluidized thermal backfill, which is a concrete-like material.

3.1.6 Installation of Electrical and Signal Conduit for MCRT at Road Crossings

At roadway crossings, the MCRT will use rectangular rapid flashing beacons ("RRFB") to stop traffic and allow safe crossing of roadways. Construction within public roadways during Phase 1 will be limited to installation of conduit and signal equipment under the existing roadways at the crossings. The existing pavement will be sawcut, a trench excavated, conduit installed, the trench backfilled and road surface repaved. Once the conduit is installed, the signal and power cables will be installed.

3.1.7 Construction of MCRT Gravel Base

Following the installation of the transmission line, additional grading will bring the construction platform subgrade up to the final elevation for the MCRT gravel base, and 8 inches of gravel will be installed. Upon completion of construction associated with the underground transmission line and grading of the MCRT base, Eversource will stabilize all disturbed areas outside of the 14-foot gravel base with loam and a native seed mix.

3.1.8 Cable Pulling, Splicing, Testing, and Commissioning

Each conduit will be tested and cleaned prior to cable installation. The cables will be installed in sections between two adjacent manholes. Adjacent cable sections will then be spliced together inside the manholes. The splicing operation requires a specialized splicing van containing all the equipment and a generator. An air conditioning unit may also be used to control the moisture content in the manholes during the splicing activity. A portable generator will provide the electrical power for the splicing van and air conditioning unit and will be muffled to minimize noise. Typically, the splicing van is located over one manhole access cover. The air conditioner is located near the second manhole access cover and the generator is in a convenient area nearby out of the immediate work zone.

Once the electric cable is installed and spliced, the communications fiber cable is pulled and spliced in the communications handholes. Splicing the communications fiber cable typically

requires three (10-hour) work days to complete at each of the manholes. Once the cable system installation is complete, the cables are field-tested from the substations. At the completion of successful testing, the line is energized.

3.1.9 Waterbody and Drainageway Crossings

The condition of each bridge, culvert, and drainage pipe was evaluated by VHB structural engineers in 2017 and 2018 along the entire length of the Project Locus (see Table 4 below). For the purposes of this application, bridges are defined as structures that traverse over regulated streams, culverts are structures that convey regulated streams, and drainage pipes are structures that convey stormwater or overland flow only (no streams). The following sections describe the proposed improvements/replacements to these crossings.

3.1.9.1 Bridges

Western Hop Brook Crossing (Bridge 128)

The Project crosses Hop Brook west of Dutton Road via an existing steel girder bridge. There are BVWs, LUWW, BLSF, Bank, RFA, and Sudbury's local AURA on either side of the existing bridge structure. The existing superstructure is in satisfactory condition, and the intermediate timber piers are in fair to satisfactory condition. However, the existing superstructure will not adequately support the rail trail and transmission line, so the existing bridge deck will be upgraded to support the rail trail and transmission line as well as construction vehicles, which will facilitate efficient construction sequencing and minimize construction duration. No foundation work will be necessary as part of the bridge rehabilitation because the existing stone abutments of this bridge are suitable for reuse.

Crane mats will be temporarily installed at either side of the crossing outside of the time-of-year-restriction ("TOYR") for Hop Brook (October 1 through June 30), partially within RFA, BLSF, and 100-foot Buffer Zone/AURA, to facilitate rehabilitation of the superstructure. See the conceptual crane mat section on sheet 125 in Attachment B for details regarding the conceptual construction of the crane mats and sheet 130 in Attachment B for a typical crane mat restoration detail for Bridge 128. Bridge 128 will be rehabilitated in full compliance with the Massachusetts Stream Crossing Standards. The following outlines the general sequence of construction activities proposed for Bridge 128:

1. Initial survey;
2. Vegetation removal and installation of erosion and sediment controls;
3. Grade the construction platform to subgrade;
4. Install debris containment measures, crane mats (outside TOYR), and associated erosion and sediment controls for removal of the existing superstructure;
5. Remove existing bridge span;
6. Install sheet piling retaining walls;

7. Install new bridge components including integrated duct system (including temporary steel decking);
8. Continue sheeting installation, removing crane mats outside of the Hop Brook TOYR as sheets are installed working away from the bridges;
9. Install jute mesh erosion control blankets, a native seed mix, and woody plantings to stabilize crane mat areas;
10. Connect duct bank on the bridge to the duct bank in the construction platform;
11. Final grading, installation of gravel base, and restoration of all disturbed areas; and
12. Remove temporary steel decking and install permanent wood decking.

Eastern Hop Brook Crossing (Bridge 127)

The Project crosses Hop Brook east of Route 20 via Bridge 127, an existing steel girder bridge, which is similar to Bridge 128. There are BVWs, LUWW, BLSF, Bank, RFA, and Sudbury's local AURA on either side of the existing bridge structure. The existing stone masonry abutments are in satisfactory condition, and the existing steel is in fair to satisfactory condition. However, the piers are in poor condition, with the easterly pier showing total section loss and no longer providing effective bearing. In addition, the existing structure is partially submerged in the water, causing deterioration to the bridge. Due to this, the existing bridge structure will be removed except for the existing stone abutments, and a new replacement bridge will be built in the same location to support the MCRT and transmission line.

Crane mats will be temporarily installed at either side of the crossing outside of the TOYR for Hop Brook, partially within BVW, LUWW, RFA, BLSF, Bank, and 100-foot Buffer Zone/AURA, to facilitate replacement of the bridge. The new bridge will consist of a single span structure with new abutments that will be constructed landward of the existing abutment locations. The low chord of the new bridge will be located above the existing bridge's low chord so that the bridge will no longer be partially submerged. As part of the bridge replacement, the existing timber piers will be cut at the mudline and removed by hand. This bridge will be designed and built to support construction vehicles to expedite construction between Hop Brook and the Sudbury Substation. The removal of the existing piers and the increased height of the span will have the benefits of increasing the hydraulic opening at the bridge, increasing navigability, providing additional clearance over the two-year design storm event, and reducing the likelihood of trapping debris. See the conceptual crane mat section on sheet 125 in Attachment B for details regarding the conceptual construction of the crane mats and sheet 130 in Attachment B for a typical crane mat restoration detail for Bridge 127.

Bridge 127 will be reconstructed in full compliance with the Massachusetts Stream Crossing Standards. The following outlines the general sequence of construction activities proposed for Bridge 127:

1. Initial survey;
2. Vegetation removal and installation of erosion and sediment controls;

3. Grade the construction platform to subgrade;
4. Install debris containment measures, crane mats (outside TOYR), and associated erosion and sediment controls for removal of the existing bridge;
5. Remove existing bridge piers and steel span;
6. Install sheeting to facilitate excavation for new bridge abutment installation;
7. Install new bridge abutments (landward of existing abutments);
8. Install new steel bridge sections including integrated duct system (including temporary steel decking);
9. Continue sheeting installation, removing crane mats (outside TOYR) as sheets are installed working away from the bridges;
10. Install jute mesh erosion control blankets, a native seed mix, and woody plantings to stabilize crane mat areas;
11. Connect duct bank on the bridge to the duct bank in the construction platform;
12. Final grading, installation of gravel base, and restoration of all disturbed areas; and
13. Remove temporary steel decking and install permanent wood decking.

Culverts and Drain Pipes

Other crossings include culverts and drainage pipes. The condition of each crossing was evaluated for being able to safely support the Project, as well as to identify any potential opportunities to improve conditions at these crossings without causing major disturbance to the resources around them. The results of the evaluation and the proposed work are summarized in Table 4 below.

Table 4 Other Crossings

Crossing ID	Station	Plan Sheet	Type	Size/Material	Existing Conditions	Work Proposed
129A	368+84	44	Drainage Structure	2'x2.5' Stone Box	South end collapsed; north end not found. Appears clear inside 10 ft. in from south end. Existing cover: 8.2 ft.	None. Sufficient cover between Project and culvert.
127J	410+25	48	Drainage Structure	2'x2' Stone Box	South headwall and wingwall partial collapse; north end total collapse. Running water audible. Existing cover: 8.1 ft.	None. Sufficient cover between Project and culvert.
127I	517+96	51	Culvert	1'x2' Stone Box	South headwall collapsed; north end partially filled with debris. Water visibly flowing. Existing cover: 8.1 ft.	Clear out debris on north end. Sufficient cover between Project and culvert.
127H	521+64	51	Drainage Structure	1.5'x3' Stone Box	South end in fair condition; north headwall and wingwall collapsing. Clear all the way through. Existing cover: 10.6 ft.	Cut two 12" trees that are causing wingwall damage (no grubbing). Sufficient cover between Project and culvert.
127G	527+30	52	Culvert	2'x2' Stone Box	South end in fair to good condition; north headwall collapsing. Clear all the way through. Existing cover: 13.4 ft.	None. Sufficient cover between Project and culvert.
127F	539+40	54	Culvert	Two 36" Corrugated Metal	South wingwalls partially collapsed; north wingwalls and headwalls in fair condition. Both ends of pipes heavily corroded. Clear all the way through; interior in fair condition. Existing cover: 8.9 ft.	None. Sufficient cover between Project and culvert.
127E	560+82	57	Culvert	3'x2' Concrete Box	Both concrete ends and headwalls in poor condition. Clear all the way through. Interior appears to be stone. Existing cover: 7.5 ft.	None. Sufficient cover between Project and culvert.
127D	577+31	58	Drainage Structure	1'x2' Stone Box	South end not found; north headwall mostly buried. Existing cover: 6.7 ft.	None. Sufficient cover between Project and culvert.
127C	593+18	59	Culvert	2'x2' Stone Box	South end filled with dirt; north end not found. Interior in fair condition. Existing cover: 3.9 ft.	None. Transmission line design will use flat 4x1 configuration.
127B	704+56	62	Drainage Pipe	24" Cast Iron	South end appears to be catch basin in lumber yard; north end damaged. Existing cover: 3.0 ft.	None. Transmission line will be installed under culvert.

Crossing ID	Station	Plan Sheet	Type	Size/Material	Existing Conditions	Work Proposed
127A	713+63	64	Drainage Pipe	24" Cast Iron	Lined with metal pipe, resulting in 19-in. pipe opening. Mostly filled with dirt. At south end original pipe broken and liner pipe heavily corroded; minor corrosion of liner pipe at north end. Existing cover: 1.9 ft.	Replace with 24" ductile iron pipe ("DIP") with concrete headwall.
126D	738+77	66	Drainage Pipe	18" Cast Iron	South end broken and half filled with dirt; north end broken and buried. Existing cover: 2.8 ft.	None. <i>Note: Abandon in place. No wetland resources on either end.</i>
126C	Identified on MBTA evaluation map but not found in the field					
126B	747+39	67	Culvert	2.5'x2' Stone Box	North headwall collapsing; northeast wingwall collapsing. Clear all the way through. Existing cover: 5.9 ft.	Cut vegetation on northeast wingwall that is causing collapse (no grubbing). Sufficient cover between Project and culvert.
126A	752+17	67	Drainage Pipe	12" Corrugated Metal	Half full of sediment. Both ends in fair condition. Existing cover: 4.9 ft.	Clear out sediment. Transmission line design will use flat 4x1 configuration.
125B	764+60	69	Drainage Pipe	12" Reinforced Concrete	Completely buried; north end under vernal pool. Existing cover: 2.8 ft.	Extend existing pipe to maintain vernal pool hydrology. Transmission line design will use flat 4x1 configuration.

Source: VHB

3.1.10 Restoration

Restoration efforts following construction begin with removal of construction debris and stabilization of disturbed soil. All disturbed areas outside of the gravel base will then be restored by loaming and seeding with a seed mix that contains only species native to New England such as Canada wild rye (*Elymus canadensis*), little bluestem (*Schizachyrium scoparium*), fox sedge (*Carex vulpinoidea*), soft rush (*Juncus effusus*), New England Aster (*Symphotrichum novae-angliae*), woodland goldenrod (*Solidago caesia*), and joe-pye weed (*Eutrochium maculatum*) (see sheet 131 in the NOI plans provided in Attachment B for seed mix). In addition, the crane mat locations and the slopes adjacent to Hop Brook will be planted with trees and shrubs and additional plantings will be installed within Estimated and Priority Habitat. All woody plantings will be installed after the MCRT is constructed to avoid damaging the plants.

All restoration plantings and seed mixes will consist of native species and, if feasible, be from local nursery stock. The Native Plant Trust's Go Botany site¹² as well as The Native Plant List¹³ on Sudbury's Conservation Commission website (prepared by the Conservation Department of Native Plants in Middlesex County) were reviewed to identify recommended plantings in Sudbury. The Native Plant List states that it is not an all-inclusive list and was used as a guide when selecting species; however, the planting plan was designed to replace native species that are being removed (e.g., the proposed Project will remove silky dogwood, so the planting plan includes replanting silky dogwood).

Eversource's qualified environmental monitor or qualified biologist will direct the locations of the woody plantings to the contractor in the field. All plantings will be planting in a naturalized condition to provide wildlife habitat and will not be planted in a linear manner except where the plantings need to be linear to provide a visual alignment reference for the MCRT. Please see sheet 131 in the plans in Attachment B for the planting schedules.

3.2 Phase 2 Construction Activities

Phase 2 construction will consist of work within the same MBTA ROW as Phase 1, and public road crossings along the MBTA ROW (refer to the plans in Attachment C). Certain Phase 2 activities can begin once sections of Phase 1 activities are completed.

The following sections provide further detail of activities associated with Phase 2 of the Project. Section 3.2.1 provides an overview of the proposed activities along the MBTA ROW,

¹² Go Botany. Native Plant Trust. <https://gobotany.nativeplanttrust.org/>

¹³ Native Plant List. Conservation Department of Native Plants in Middlesex County. <https://s3-us-west-2.amazonaws.com/cdn.sudbury.ma.us/wp-content/uploads/sites/272/2014/08/NativePlantList.pdf?version=b9f7ef2b3e317d111cf632f6f98c2b92>

and Section 3.2.2 provides details regarding the proposed activities at and within public roadways.

3.2.1 Construction within the MBTA ROW

For Phase 2 of the Project, Eversource will turn over the construction site to DCR following installation of the gravel base. DCR will fine grade and compact the surface, and then pave the MCRT. After paving, the shoulders will be loamed and seeded, and woody plantings will be installed. Installation of railings will complete the Project within the MBTA ROW.

Erosion and sediment controls will remain in place from Phase 1 and DCR will assume responsibility to maintain the controls for the duration of Phase 2 of the Project. Once the Project is complete and disturbed areas are stable with final vegetation, DCR will remove the erosion controls upon approval of the environmental monitor. Plans for this portion of the work are provided in Attachment C.

3.2.2 Construction within Public Roadways

At roadway crossings, RRFBs will be installed that are activated by people using the MCRT to stop traffic and allow safe crossing of roadways. Construction within public roadway during Phase 2 will be limited to installation of signal equipment, pole foundations, signal poles, gateway details and pavement markings. Conduit for the crossing signals will be installed during Phase 1; during Phase 2, the signal equipment and crossing buttons will be installed.

3.2.3 Restoration

All disturbed areas outside of the 10-foot-wide paved MCRT will be restored by loaming and seeding with the same seed mix that is used in Phase 1, containing only species native to New England. In addition, as described in Section 3.1.10, woody plantings proposed in Priority Habitat and at both Hop Brook crossings will be installed under the direction of a qualified environmental monitor or qualified biologist.

3.3 Operation and Maintenance

DCR will be responsible for operation and maintenance of stormwater features and a 19-foot-wide corridor that includes:

- › The 10-foot-wide paved MCRT;
- › Adjacent two-foot shoulders (four feet total); and
- › A five-foot corridor over the duct bank.

DCR will mow and/or weed whack the shoulders adjacent to the rail trail biweekly or as needed between Memorial Day and Columbus Day. Outside of the shoulders, DCR will mow the area over the duct bank no more than once annually. Outside of the 19-foot maintained area, woody vegetation will be allowed to naturally revegetate and DCR will not implement

vegetation management unless it poses a risk to MCRT users or to the underground transmission line. Eversource inspection vehicles will use the paved MCRT to access the transmission line facility once every three years.

3.3.1 Invasive Species Management

DCR will monitor for invasive species as part of its regular trail maintenance and will generally follow its BMPs for managing invasive plants as resources and priorities allow. The BMPs include the following guidelines:

- › **Prevention:** Monitor properties annually for potential introductions, especially near boundaries and disturbed areas (e.g., roadsides, trailheads). Eliminate new infestations using hand pulling or weed wrenches when feasible.
- › **Management Planning:** Identify population sizes and locations. Prioritize populations for management based on significance of the resource, aggressiveness of the species, and potential for long-term control.
- › **Mechanical Control:** Hand pulling recommended for young plants and small populations. Cutting or mowing, repeatedly through the season before plants flower, can be good for large monocultures or when root systems are extensive. For species where a small fragment of root can start a new plant, one option may be to remove all above-ground invasive vegetation and cover the area with layers of black plastic, to remain in place for 1 to 4 growing seasons depending on the species.
- › **Chemical Control:** Chemical treatments will only be used when another approach is not effective. Herbicides must be applied only by a licensed applicator. For woody stemmed species, herbicide can be applied locally to the cut surface immediately after cutting. Generally speaking, broadcast chemical foliar application is not an appropriate control method along improved-surface trails and greenways.

Due to the linear nature of rail trails and their history of previous disturbance, it is usually not feasible to attempt to control invasive plants beyond the mowed area, with the following exceptions:

- › Small, emerging populations of invasive plants within an otherwise native landscape matrix can be prioritized for control efforts.
- › Species or individuals that may result in user safety issues should be addressed. For example, Oriental Bittersweet can impact canopy trees adjacent to rail trails and can create "hazard tree" conditions in certain cases.
- › Species or individuals that are resulting in damage to the improved surface pathway infrastructure should be removed. For example, the roots of Black Locust and Japanese Knotweed can both cause significant damage to the paved trail surface.

If DCR finds it necessary to use chemical treatment, this work will be done in compliance with the Massachusetts Department of Agricultural Resources regulations at 333 CMR 11.00, which protect sensitive areas such as groundwater and drinking water wells.



4

Avoidance and Minimization Measures

The Project has undergone an extensive and collaborative design process that included evaluation of methods to avoid and minimize impacts to wetland resource areas to the maximum extent practicable.

Table 5 below summarizes the reduction in impacts followed by subsections discussing each measure that resulted in these reductions.

Table 5 Summary of Changes in Design to Minimize and Avoid Impacts

Wetland Resource Area	Impact Amount Prior to Reduction in Footprint	Impact Amount Based on Current Design Plans	Summary of Change
Bordering Vegetated Wetlands ("BVW")	1,655 sf – permanent fill and vegetation removal within limits of grading	89 sf – vegetation removal and permanent fill within limits of grading	Decrease of 3,723 sf of BVW impacts. Use of revised 2018 wetland line approved in the ORAD issued by the Sudbury Conservation Commission. Redesign rip rap slopes at Hop Brook crossings to retaining walls. Reduction in Project footprint to include vegetation removal only within limits of disturbance. Reduction of width of construction platform.
	2,480 sf – vegetation removal (outside of permanent fill limits) 4,135 sf total disturbance	524 sf – vegetation removal, within 524 sf for temporary placement of timber mats (for cranes in BVW outside of permanent fill limits near Hop Brook and installation of headwall at pipe #127A) 613 sf total disturbance	
Bordering Land Subject to Flooding ("BLSF")	10,529 sf – land disturbance from limits of proposed grading	2,686 sf – permanent land disturbance from paving of MCRT	Decrease of 91 sf of total BLSF disturbance. The decrease in square footage disturbance is from the revised BLSF line approved in the Sudbury ORAD and the reduction in Project footprint to include vegetation removal only within limits of disturbance. The Project is currently designed to have a net increase in flood storage (78.72 cy net gain) along its length in Sudbury.
	4,268 sf – vegetation removal in BLSF (outside of limits of grading) 14,797 sf total	7,752 sf – temporary land disturbance from limits of grading 54.43 cy of fill, 133.15 cy of cut = 78.72 cy of net gain in flood storage 10,438 sf total land disturbance 78.72 cy net gain storage	

4.1 Reduction of Construction Platform Width

During the design process, it was determined that the construction platform, except for manhole locations and other limited select locations, could be reduced in width from 30 feet to 22 feet. As described in Section 3.1, the 22-foot width is the minimum needed for safe passage of construction vehicles alongside the excavated and shored trench, efficient construction with two-way construction vehicle traffic and multiple crews working concurrently within the same section of ROW, and access and egress of emergency vehicles.

There is one location (82 linear feet) where the construction platform will be reduced to 20 feet wide and several locations (for a total of 3,488 linear feet) where it will be reduced to 18 feet wide in order to balance minimization of impacts to resource areas with safety and efficiency of construction. This reduction minimized grading and impacts to wetland resource areas and historic resources. Specifically, reductions were made in the following eight areas (see plans in Attachment B for locations):

1. On plan sheet 47 (station 397+60 to 399+10 and 401+65 to 402+63), the elevation of the access road is dictated by the design of Bridge #128 over Hop Brook. On either side of the bridge, the access road must be higher than it would otherwise be in an embankment section. An 18-foot platform is used in this location to avoid BVW impacts, avoid having a net fill in BLSF, and minimize permanent and temporary impacts to BLSF, MWPA RFA, and Sudbury's AURA.
2. On plan sheet 59 (station 592+75 to 593+50), an 18-foot construction platform is used to avoid impacts to existing culvert #127C and Bank on either side of the access road, and to minimize impacts to Sudbury's local RFA and AURA.
3. On plan sheet 61 (station 602+48 to 700+30), a 20-foot construction platform is used to avoid impacts to BLSF, LUWW and Bank and reduce impacts to Sudbury's local RFA.
4. On plan sheets 61-63 (station 700+30 to 711+35), an 18-foot construction platform is used to minimize/avoid impacts to BVW, LUWW, RFA (both MWPA and Sudbury), Bank, and Sudbury's AURA associated with the adjacent tributary to Hop Brook to the north, and to avoid having a net fill in BLSF. This area is also constrained by Sudbury Lumber's legal easement to the south.
5. On plan sheets 63-64 (station 711+65 to 715+76), an 18-foot construction platform is used to minimize permanent impacts to BVW, MWPA RFA, and Sudbury's local AURA. The 18-foot construction platform also avoids impacts to the historic Boston and Maine Railroad Section Tool House (SUD.282).
6. On plan sheets 64-65 (station 723+76 to 724+34 and station 726+37 to 734+27), the elevation of the access road is dictated by the design of Bridge #127 over Hop Brook. On either side of the bridge, the access road must be higher than it would otherwise be in an embankment section. An 18-foot platform is used in this location to avoid and/or minimize temporary and/or permanent impacts to BVW, MWPA RFA, Bank, LUWW, and Sudbury's AURA, and to avoid having a net fill in BLSF.

7. On plan sheets 66-67 (station 742+88 to 747+56), an 18-foot construction platform is used to avoid permanent impacts to BVW, bank, and vernal pools, and reduce impacts to MWPA RFA and Sudbury's local AURA and 100-foot vernal pool buffer.
8. On plan sheet 68 (station 763+89 to 767+22), an 18-foot construction platform is used to avoid permanent impacts to the vernal pool to the north of the access road, and to minimize permanent impacts to the BVW to the south of the access road, and Sudbury's local AURA and 100-foot vernal pool buffer.

4.2 Use of Retaining Walls

Rather than using riprap or turf reinforcement, retaining walls were proposed where feasible to minimize Project related impacts within jurisdictional wetland resource areas. They reduce impacts because retaining walls allow for a vertical drop in the proposed grade down to the existing elevation, which reduces the Project footprint by eliminating the need to grade the slope back to the existing ground. Within Sudbury, the Project proposes the use of retaining walls for approximately 326 linear feet from Station 730+99 to 734+25, which is within MWPA RFA and 100-foot BZ/AURA.

4.3 Use of Steel Sheeting at Hop Brook Crossings

The original design included installing rip rap within Hop Brook for both Bridge 127 and Bridge 128. However, to reduce impacts to LUWW and Bank, the bridges were redesigned to use steel sheeting instead of rip rap. The steel sheeting allows the permanent limit of disturbance to be a constant three feet from the edge of the construction platform, which minimizes grading and impacts to LUWW. In contrast, when using rip rap, the distance between the limit of disturbance and the edge of the construction platform varies based on the existing topography and is at least several feet further away than when using sheeting, thus causing greater impacts to LUWW and Bank.

4.4 Location of Manholes

As discussed within Section 3.2.1, manholes require a larger construction footprint of approximately 40 feet by 50 feet. To minimize impacts to wetland resource areas and buffer zones, manholes were placed outside of jurisdictional wetland resource areas where feasible by spacing them a maximum of 2,100 feet apart where the curvature of the MBTA ROW allowed, which is greater than typical manhole spacing. This design consideration eliminated all manholes within BVW. Seven of 13 manholes will be in RFA and/or 100-foot Buffer Zone/AURA as identified in Section 3.1.1.4.

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5

Proposed Wetland Impacts, Mitigation Overview and Regulatory Compliance Summary

In Sudbury, construction of the Project will result in temporary and permanent disturbance to state and locally jurisdictional wetland resource areas, including BVW, BLSF, Bank, LUWW, and RFA. The Bylaw and Bylaw Regulations have some concurrent jurisdiction with the MWPA but include additional requirements beyond the MWPA for Coldwater Fishery Resources and AURA.

The Project fully complies with all applicable MWPA and Sudbury Bylaw related performance standards for their respective resource areas, including Buffer Zones to state wetland resource areas, BVW, BLSF, LUWW, Bank, RFA and local AURA.

In addition to fully complying with the performance standards, both components of the Project qualify for "limited project" status under the MWPA Regulations. The transmission line component qualifies under 310 CMR 10.53(3)(d) for the "construction, reconstruction, operation, and maintenance of underground or overhead public utilities," and the majority of the bike path component, which is within MWPA RFA but outside of other MWPA resource areas, qualifies under 310 CMR 10.53(6) for the "construction, rehabilitation, and maintenance of footpaths, bike paths, and other pedestrian or non-motorized vehicle access to or along riverfront areas but outside other resource areas, provided that adverse impacts from the work are minimized and that the design specifications are commensurate with the projected use and are compatible with the character of the riverfront area" (see Section 5.1.1). Three sections of the MCRT alignment are not eligible for limited project status because they are within MWPA RFA that overlaps with BLSF. However, as discussed in detail in Section 5.1.8, these three sections fully comply with all applicable performance standards for previously developed and degraded RFA and for BLSF.

Furthermore, the Project's construction activities meet applicable stormwater management standards, the MCRT was designed to meet the Massachusetts Stormwater Management Standards to the maximum extent practicable per 310 CMR 10.05(6)(m)6, and the Project fully complies with the Massachusetts Endangered Species Act (for work within Estimated Habitat).

The Project also fully complies with all applicable performance standards under the Section 401 Water Quality Certification regulations and proposes to replace the loss of vegetated wetlands (bordering and isolated) at a ratio of 2:1 (see Sections 5.1.5 and 5.4, and Attachment D).

The following sections provide details to demonstrate compliance with the applicable federal, state, and local performance standards, including the Massachusetts Stormwater Management Standards. Note that for resource areas where the Bylaw has concurrent jurisdiction with the MWPA, the MWPA performance standards apply and compliance is discussed in Section 5.1. Section 5.2 addresses the additional requirements outlined in the Bylaw, beyond those specified in the MWPA, Section 5.3 addresses Stormwater Management under both the state and local regulations, and Section 5.4 addresses compliance with Section 401 of the federal Clean Water Act.

5.1 Massachusetts Wetlands Protection Act (310 CMR 10.00)

All wetland resource area boundaries within the Project Locus for BVW, RFA, BLSF, Bank, and LUWW were verified and approved in an ORAD that was issued by the Sudbury Conservation Commission on August 27, 2018 (MADEP File No. 301-1227). As discussed throughout this NOI, unavoidable impacts to these resources were minimized to the maximum extent practicable during design.

The following information is provided to demonstrate compliance with the applicable performance standards in the MWPA Regulations. Note that the performance standards identified in these sections also apply to the relevant wetland resource areas protected by the Bylaw and Bylaw Regulations; Section 5.2 addresses the additional requirements outlined in the Bylaw Regulations.

5.1.1 Limited Project Status

The Project is the result of a collaborative effort among Eversource, DCR, and MBTA to provide a project that incorporates dual compatible uses, each serving public needs, within the footprint of a previously disturbed and inactive transportation ROW and within existing public roadways.

Each of the components of the Project qualifies as a limited project under the MWPA regulations as detailed below.

5.1.1.1 Underground Transmission Line [310 CMR 10.53(3)(d)]

The MWPA Regulation at 310 CMR 10.53(3) states the following:

“Notwithstanding the provisions of 310 CMR 10.54 through 10.58 and 10.60, the Issuing Authority may issue an Order of Conditions and impose such conditions as will contribute to the interests identified in M.G.L. c. 131, § 40 permitting the following limited projects In determining whether to exercise its discretion to

approve the limited projects listed in 310 CMR 10.53(3), the Issuing Authority shall consider the following factors: the magnitude of the alteration and the significance of the project site to the interests identified in M.G.L. c. 131, § 40, the availability of reasonable alternatives to the proposed activity, the extent to which adverse impacts are minimized, and the extent to which mitigation measures, including replication or restoration, are provided to contribute to the protection of the interests identified in M.G.L. c. 131, § 40.”

The underground transmission line portion of the Project qualifies as a limited project per 310 CMR 10.53(3)(d), which applies to the “construction, reconstruction, operation, and maintenance of underground or overhead public utilities.” Limited Project status for this component of the Project was confirmed by MassDEP’s Central Regional Office (“CERO”) in their comments submitted during MEPA review for the transmission line.

A limited project under 310 CMR 10.53(3)(d) may be permitted by the issuing authority in accordance with the following general conditions and any additional conditions deemed necessary by the issuing authority:

1. *The issuing authority may require a reasonable alternative route with fewer adverse effects for a local distribution or connecting line not reviewed by the Energy Facilities Siting Council (emphasis added).*

The underground transmission line component of the Project was reviewed by the Energy Facilities Siting Board (“EFSB”), formerly the EFSC, and as such, 310 CMR 10.53(3)(d)1. does not apply. The Certificate of Environmental Impact and Public Interest approving this route for the underground transmission line portion of the Project was issued by the EFSB on December 18, 2019.

2. *Best available measures shall be used to minimize adverse effects during construction.*

Consistent with 310 CMR 10.53(3)(d)2., best management practices (“BMPs”) will be implemented to minimize adverse effects to wetland resource areas during construction. A discussion of BMPs that will be utilized is presented in Section 3.1.1.2 of this NOI (see also Attachment H) and a draft Construction Spill Prevention Control and Countermeasures Plan is included as Attachment I. In addition, as outlined in Section 4 of this filing, impacts to wetland resource areas from the Project were avoided and minimized to the extent practicable during the design phase.

3. *The surface vegetation and contours of the area shall be substantially restored.*

Consistent with 310 CMR 10.53(3)(d)3., surface vegetation and contours will be substantially restored within the limits of disturbance associated with the Project. All disturbed areas within the limits of disturbance that are outside of the 14-foot gravel base will be revegetated with a seed mix containing native plant species with a focus on developing an herbaceous and low-growing woody vegetation community over the duct bank (a five-foot corridor), and herbaceous and taller woody vegetation will be allowed to naturally revegetate in the remaining areas. In addition, woody shrubs and

herbaceous vegetation will be planted within the Priority and Estimated Habitat area and within the temporary crane mat locations at Hop Brook.

The Project was sited within the MBTA corridor to maximize use of the existing raised rail bed and to locate the Project within existing degraded areas to minimize grading and vegetation removal. The proposed Project topography generally follows the existing topography within the MBTA ROW. Where the Project is proposed within public roadways, the existing road surface will be restored to its original elevation. Please refer to the profile for the Project on sheets 83 to 94 of Attachment B for a detailed comparison of the existing versus proposed elevations.

4. *All sewer lines shall be constructed to minimize inflow and leakage.*

310 CMR 10.53(3)(d)3. does not apply because the Project does not involve construction of a sewer line.

5.1.1.2 Mass Central Rail Trail [310 CMR 10.53(6)]

The MCRT component of the Project qualifies as a "limited project" under 310 CMR 10.53(6), which states the following:

"Notwithstanding the provisions of 310 CMR 10.58, the issuing authority may issue an Order of Conditions permitting as a limited project the construction, rehabilitation, and maintenance of footpaths, bike paths, and other pedestrian or non-motorized vehicle access to or along riverfront areas but outside other resource areas, provided that adverse impacts from the work are minimized and that the design specifications are commensurate with the projected use and are compatible with the character of the riverfront area. Generally, the width of access shall not exceed ten feet of pavement, except within an area that is already altered (e.g., railroad beds within rights of way). Access shall not be located in vernal pools or fenced in a manner which would impede the movement of wildlife."

DCR proposes to construct a 10-foot-wide paved bike path surface as Phase 2 of this Project. This limited project provision applies to the areas where the bike path is in the areas of RFA that do not overlap other MWPA resource areas. Adverse impacts from the work have been minimized and the design is commensurate with the projected use and compatible with the character of the RFA. The proposed grading for the Project follows the requirements and standard approach DCR employs for the design and construction of multi-use trails in the Commonwealth. Three sections of the bike path alignment are within areas that include both RFA and BLSF and are not eligible for the limited project status. However, as discussed in Section 5.1.8, the RFAs within the Project Site are previously developed from the former railroad ROW, so the Project has also been designed to satisfy the performance standards for previously developed and degraded RFA at 310 CMR 10.58(5).

5.1.2 Massachusetts Stream Crossing Standards [310 CMR 10.53(8)]

Within Sudbury, the proposed Project will cross five intermittent and three perennial waterbodies. Both Hop Brook crossings are bridges (Bridges 127 and 128); however, only Bridge 127 is being reconstructed because Bridge 128 is being rehabilitated. All other streams, including Dudley Brook, are conveyed underneath the rail bed by existing culverts. .

1. Bridge 128: Hop Brook (See Sheet 47 in Attachment B, Station 400+08 to 400+56). The Project proposes to rehabilitate this bridge.
2. Culvert 127I: Unnamed stream (See Sheet 51 in Attachment B, Station 517+96). The Project proposes to clear debris from the north end of the pipe.
3. Culvert 127G: Unnamed tributary to Dudley Brook (See Sheet 52 in Attachment B, Station 527+30). No culvert work proposed.
4. Culvert 127F: Dudley Brook (See Sheet 54 in Attachment B, Station 539+40). No culvert work proposed.
5. Culvert 127E: Unnamed tributary to Dudley Brook (See Sheet 57 in Attachment B, Station 560+82). No culvert work proposed.
6. Culvert 127C: Unnamed tributary to Landham Brook (See Sheet 59 in Attachment B, Station 593+18). No culvert work proposed.
7. Bridge 127: Hop Brook (See Sheet 65 in Attachment B, Station 725+05 to 725+62). The Project proposes to replace this bridge.
8. Culvert 126B: Unnamed tributary to Wash Brook (See Sheet 67 in Attachment B, Station 747+39). The Project proposes to cut vegetation on the northeast wingwall that is causing collapse (no grubbing is proposed).

Compliance with Stream Crossing Standards

The Stream Crossing Standards apply to new structures and replacement structures. As described above, Bridge 127 at Hop Brook is the only stream crossing that is proposed to be replaced in Sudbury (there are no new stream crossings proposed). Under 310 CMR 10.53(8), any person proposing the replacement of an existing stream crossing shall demonstrate to the Issuing Authority that the impacts of the crossing have been avoided where possible, and when not possible have been minimized and that mitigation measures have been provided to contribute to the protection of the interests identified in M.G.L. c. 131, § 40.

This standard is presumed to be met for the replacement of an existing non-tidal crossing if the work is designed to comply with the Massachusetts Stream Crossing Standards ("the MSC Standards") to the maximum extent practicable. The proposed replacement for Bridge 127 at Hop Brook was designed to comply fully with the MSC Standards as outlined in the following sections.

1. *Open-bottom span preferred (a bridge is optimal)*

The Project proposes to replace the existing bridge with a new single-span bridge. There will be no disruption to the streambed.

2. *If a culvert, then it should be embedded...*

The Project is not proposing a culvert in this location.

3. *Spans channel width (a minimum of 1.2 times the bankfull width)*

To estimate the bankfull width ("BFW") for the eastern Hop Brook crossing (Bridge 127), VHB used the *Scientific Investigations Report 2013–5155: Equations for Estimating Bankfull Channel Geometry and Discharge for Streams in Massachusetts* ("BFW Equation"), the 2006 Bent Equations, and field measurements taken on February 2, 2018. The BFW was estimated to be approximately 42.4, 45.0, and 44.0 feet, based on each of these methods, respectively. The existing bridge spans the estimated BFW. The proposed bridge span of 70.5 exceeds the required span of 1.2 times the BFW (see Table 6).

Table 6 Bankfull Width at Hop Brook (Bridge 127)

Bankfull Method	Width (feet)
SIR2013 5155	42.4
Bent, 2006	45.0
Field Observation	44.0
<i>Use largest to be conservative</i>	
BFW (max.):	45.0
Required Span = 1.2*BFW	54.0
Proposed Span	70.5

Source: VHB

4. *Natural bottom substrate within the structure*

The proposed bridge replacement will not disturb the existing natural bottom substrate.

5. *Match water depth and velocity in natural stream over a range of flows*

The MSC Standards state that open-bottom spans are preferred. The Project does not propose a closed structure that would affect water depth and velocity.

6. *Openness > 0.82 feet (0.25 meters). Optimal Standard requires openness ratio of 2.46 feet (0.75 meters).*

The ratio is calculated as the crossing's cross-sectional area divided by the length of the crossing. The proposed crossing complies with the standards with an openness ratio of 20.2.

7. *Banks should be present on each side of the stream matching the horizontal profile of the existing stream and banks.*

The proposed abutments will be located landward of the existing abutments and will not result in changes to the horizontal profile of the existing stream and banks.

5.1.3 Buffer Zone [310 CMR 10.53(1)]

Summary of Impacts

The Project was designed to fully comply with all applicable performance standards for Buffer Zone. Note that the area designated as Buffer Zone under the MWPA is the same as the area designated as AURA under the Sudbury Bylaw.

There is a total of 985,096 square feet of Buffer Zone within the Project Locus. The Project will result in 123,686 square feet (12.6% of all Buffer Zone within the Project Locus) of permanent disturbance to Buffer Zone from the paving of the MCRT bike path, and 196,884 square feet (20.0% of all Buffer Zone within the Project Locus) of temporary disturbance to Buffer Zone from installation of the transmission line and construction of the base for the MCRT. All areas of temporary Buffer Zone disturbance outside the 10-foot-wide pavement of the MCRT will be restored with a native seed mix.

Proposed Restoration and Mitigation Measures

To prevent work within the Buffer Zone from causing adverse impacts to adjacent resource areas, the following mitigation measures will be implemented:

- › Erosion and sediment controls will be installed prior to any grading to protect adjacent resources and demarcate a clear limit of work.
- › All disturbed areas outside the 10-foot pavement of the MCRT will be loamed and seeded with a native seed mix.
- › Once the Project is complete, all areas outside of the 19-foot-wide final maintained width will be allowed to naturally revegetate with woody vegetation.

Regulatory Compliance Summary

The following paragraphs present a summary of how the Project will fully comply with the General Performance Standards for activities proposed within Buffer Zone per 310 CMR 10.53(1):

The potential for adverse impacts to Resource Areas from work in the Buffer Zone may increase with the extent of the work and the proximity to the Resource Area. The Issuing Authority may consider the characteristics of the Buffer Zone, such as the presence of steep slopes, that may increase the potential for adverse impacts on Resource Areas. Conditions may include limitations on the scope and location of work in the Buffer Zone as necessary to avoid alteration of Resource Areas. The Issuing Authority may require erosion and sedimentation

controls during construction, a clear limit of work, and the preservation of natural vegetation adjacent to the Resource Area and/or other measures commensurate with the scope and location of the work within the Buffer Zone to protect the interests of M.G.L. c. 131, § 40. Where a Buffer Zone has already been developed, the Issuing Authority may consider the extent of existing development in its review of subsequent proposed work and, where prior development is extensive, may consider measures such as the restoration of natural vegetation adjacent to a Resource Area to protect the interest of M.G.L. c. 131, § 40. The purpose of preconstruction review of work in the Buffer Zone is to ensure that adjacent Resource Areas are not adversely affected during or after completion of the work.

As described in Section 2, the Buffer Zone within the Project Locus consists of previously developed areas associated with its historic use as a railroad ROW. The Project has been designed to minimize grading and vegetation removal to the extent practicable by maximizing use of the existing rail bed and keeping disturbance close to areas that have been previously disturbed from the historic and present use of the ROW. During construction, erosion and sedimentation controls will be used within Buffer Zone to prevent adverse effects to adjacent resource areas and demarcate a clear limit of work. Where feasible, the Project has been designed to preserve natural vegetation adjacent to the resource area. Where vegetation adjacent to resource areas must be removed, disturbed areas will be loamed and seeded with a native seed mix, and in areas adjacent to Hop Brook, woody vegetation will be planted to restore the natural vegetation adjacent to the resource area.

5.1.4 Bank (310 CMR 10.54)

Summary of Impacts

The Project was designed to fully comply with all applicable performance standards for Bank.

The Project will result in 246 linear feet of temporary disturbance to Bank at four locations within the MBTA ROW at Bridge 127 as outlined in Table 7. The temporary disturbance is required to facilitate the placement of crane mats which are needed for reconstruction of the bridge. The bank will be restored after the crane mats are removed.

Table 7 Permanent and Temporary Disturbance to Bank (Linear Feet)

Station	Stream ID	Permanent Disturbance	Temporary Disturbance ¹
724+33 to 724+93 (South)	3 (Hop Brook)	0	60
724+33 to 724+97 (North)	3 (Hop Brook)	0	64
725+74 to 726+36 (North)	3 (Hop Brook)	0	60
725+75 to 726+36 (South)	3 (Hop Brook)	0	62
Total		0	246

Source: VHB

Proposed Restoration and Mitigation Measures

Erosion and sediment controls will be installed prior to any grading, and once construction is complete all disturbed areas will be loamed and seeded to re-stabilize these areas. In addition, the following restoration and mitigation measures will be implemented at the eastern Hop Brook crossing where temporary Bank disturbance is proposed.

- › Debris containment measures and additional erosion and sediment controls will be installed at the bridge itself for the removal of the existing structure.
- › Crane mats will be in place for the minimum duration necessary and will be removed immediately upon completion of activities (or outside of TOYR, as applicable) where the use of a crane is required. See the conceptual crane mat section on sheet 125 in Attachment B for details regarding the conceptual construction of the crane mats.
- › Following removal of mats, the area where mats were placed will be restored and stabilized with jute mesh erosion control blankets and planted with native woody plant species (see crane mat restoration detail on plan set in Attachment B, Sheet 130). The trees and shrubs will be planted after Phase 2 construction is completed to avoid disturbing and/or damaging the plants. The area will be reseeded with an appropriate wetland seed mix that will allow for the regrowth of indigenous, non-invasive herbaceous species to supplement natural recruitment.

Regulatory Compliance Summary

The following paragraphs present a summary of how the Project will fully comply with the General Performance Standards for activities proposed within Bank per 310 CMR 10.54(4)(a) through (c):

- (a) *Where the presumption set forth in 310 CMR 10.54(3) is not overcome, any proposed work on a Bank shall not impair the following:*

1. *The physical stability of the bank;*

As described in Table 7 above, there are no permanent alterations to Bank. The proposed crane mats will not impair the physical stability of the Bank because the crane mat will only contact limited areas of the Bank. Once construction is complete, jute mesh erosion control blankets will be applied to the final grade and the area will be seeded with a native herbaceous seed mix to stabilize the Bank and the adjacent buffer zone will be planted with woody shrubs and trees (see sheets 130 and 131 in the plans in Attachment B).

2. *The water carrying capacity of the existing channel within the bank;*

The Project does not propose any permanent encroachments within the main stream channel that might impair the water carrying capacity of the Bank. The temporary crane mats will be placed in low gradient flow areas adjacent to the main stream channel located under the bridge. They will not be used within the

main channel and therefore will not affect its water carrying capacity during construction.

3. *Ground water and surface water quality;*

The Project will not impair the ability of the existing Bank resource to continue to protect ground water and surface water quality because the Bank will be stabilized using the sediment control and erosion prevention measures described herein, including the application of a native seed mix, plantings with native trees and shrubs, and use of crane mats to protect the Bank during construction. The erosion prevention measures and native plantings will also ensure that sediment does not enter the stream channel during and after construction, thus protecting water quality.

4. *The capacity of the bank to provide breeding habitat, escape cover and food for fisheries; and*

The Project will not impair the capacity of the Bank to provide breeding habitat, escape cover, or food for fisheries because the Bank stabilization measures and proposed restoration plantings described herein will provide these habitat features following construction.

5. *The capacity of the bank to provide important wildlife habitat functions. A Project... that (cumulatively) alters up to 10% or 50 feet (whichever is less) of the length of the bank found to be significant to the protection of wildlife habitat shall not be deemed to impair its capacity to provide important wildlife habitat functions.*

A detailed Wildlife Habitat Evaluation ("WHE") was completed within the areas of proposed temporary Bank impacts (see WIAs S17 and S18 in the WHE in Attachment J). Important wildlife habitat features identified within these two WIAs included:

- › Important Upland/Wetland Food Plants;
- › Standing Dead Trees;
- › Tree Cavities in Trunks or Limbs;
- › Large Woody Debris on the Ground;
- › Rocks, Crevices, Fallen Logs, Overhanging Branches, or Hummocks at or Within 1m Above the Water's Surface;
- › Live or Dead Standing Vegetation Overhanging or Offering Good Visibility of Open Water; and
- › Standing Water Present At least Part of the Growing Season Suitable for use by Breeding Amphibians, Non-Breeding Amphibians, Turtles, or Foraging Waterfowl.

The Project will not permanently alter more than 10% or 50 feet of Bank and therefore will not impair its capacity to provide important wildlife habitat functions.

Although crane mats will temporarily alter more than 50 feet of Bank for a short period, the area will be stabilized and fully restored, and the WHE determined that this work will not adversely affect wildlife habitat that is significant to the protection of wildlife habitat functions. Restoration measures were incorporated into the Project in these locations where appropriate and include measures such as plantings to offset the loss of food plants, reinstalling standing dead trees that will be removed during construction, creating brush piles to replace the loss of some large woody debris on the ground, and plantings to offset the loss of vegetation overhanging open water and providing good visibility of open water. Overall, following construction and the implementation of restoration measures, the Project will not reduce the capacity of the area to provide important wildlife habitat features or have an adverse effect on the availability of important wildlife habitat either on a local or regional scale. See the WHE in Attachment J for more details

6. *Work on a stream crossing shall be presumed to meet the performance standard set forth in 310 CMR 10.54(4)(a) provided the work is performed in compliance with the Massachusetts Stream Crossing Standards.*

As described in Section 5.1.2, the Bridge 127 replacement was designed to fully comply with the Stream Crossing Standards.

- (b) *Notwithstanding the provisions of 310 CMR 10.54(4)(a), structures may be permitted in or on a Bank when required to prevent flood damage...*

This standard is not applicable. The Project does not propose any structures for preventing flood damage.

- (c) *Notwithstanding the provisions of 310 CMR 10.54(4)(a) or (b), no project may be permitted which will have any adverse effect on specified habitat sites of Rare Species, as identified by procedures established under 310 CMR 10.59.*

The Project will not have any adverse effect on specified habitat sites of Rare Species. The Project was reviewed by NHESP and a conditional no-take determination was issued (see Attachment G). See Section 5.1.8 for further discussion regarding rare species and consultation with NHESP.

5.1.5 Bordering Vegetated Wetlands (310 CMR 10.55)

Summary of Impacts

The Project was designed to fully comply with all applicable performance standards for BVW and to avoid permanent impacts to BVW to the greatest extent possible. The Project will result in minor permanent disturbance to BVW at two locations, and temporary disturbance in six locations, as outlined in Table 8.

Table 8 Permanent and Temporary Disturbance to BVW (Square Feet)

Station	Wetland ID	Permanent Disturbance	Temporary Disturbance	Comments
713+57 to 713+69 (North)	18	4	23	Drainage pipe replacement and headwall installation
713+61 to 713+69 (South)	19	0	4	
724+33 to 724+97 (North)	15	0	118	Crane mats on west side of Bridge 127
724+33 to 724+93 (South)	16	0	60	
725+74 to 726+36 (North)	14	0	118	Crane mats on east side of Bridge 127
764+57 to 764+65 (South)	4	85	201	Permanent disturbance from grading for construction platform; temporary disturbance from extension of existing drainage pipe and creation of wetland replication area
Total		89	524	

Source: VHB

Proposed Restoration and Mitigation Measures

Erosion and sediment controls will be installed prior to any grading. In addition, the following restoration and mitigation measures will be implemented at the Hop Brook (Bridge 127) crossing where temporary BVW disturbance is proposed:

- › Debris containment measures and additional erosion and sediment controls will be installed at the bridge itself for the removal of the existing structure.
- › Crane mats will be in place for the minimum duration necessary and will be removed immediately upon completion of activities where the use of a crane is required.
- › Following removal of mats, the area where mats were placed will be restored by raking and re-grading the soil (if necessary due to soil compaction).
- › The crane mat area will be stabilized with jute mesh erosion control blankets and planted with native woody plant species (see crane mat restoration detail on plan set in Attachment B, Sheet 130). The trees and shrubs will be planted after Phase 2 construction is completed to avoid disturbing and/or damaging the plants. The area will be reseeded with an appropriate wetland seed mix that will allow for the regrowth of indigenous, non-invasive herbaceous species to supplement natural recruitment.

For the permanent impacts to BVW, the Applicants propose to provide wetland replication at a ratio of approximately 2:1. Please refer to Attachment D for a wetland replication report and sheets 133 and 134 in the NOI plans submitted as Attachment B for the wetland replication plans.

Regulatory Compliance Summary

The following paragraphs present a summary of how the Project will fully comply with the General Performance Standards for activities proposed within BVW, as per 310 CMR 10.55(4)(a) through (e):

- (a) *Where the presumption set forth in 310 CMR 10.55(4)(a), is not overcome, any proposed work in a Bordering Vegetated Wetland shall not destroy or otherwise impair any portion of said area.*

The Project was designed to minimize impacts to BVW. The Project will result in the loss of 89 square feet of BVW. Most of this impact (85 square feet) is located on the south side of the railroad tracks from Station 764+57 to 764+65 at Wetland 4. The Project proposes to provide wetland replication for all wetland losses (both BVW and IVW) in the area surrounding the impact to Wetland 4 at a ratio of approximately 2:1. Please see 310 CMR 10.55(4)(b) below and Attachment D in this NOI.

- (b) *Notwithstanding the provisions of 310 CMR 10.55(4)(a), the issuing authority may issue an OOC permitting work which results in the loss of up to 5,000 square feet of BVW when said area is replaced in accordance with the following general conditions and any additional, specific conditions the issuing authority deems necessary to ensure that the replacement area will function in a manner similar to the area that will be lost:*

1. *the surface of the replacement area to be created ("the replacement area") shall be equal to that of the area that will be lost ("the lost area");*

The Project will result in 89 square feet of permanent BVW loss and 303 square feet of IVW loss. The Applicants propose to provide 784 square feet of wetland replication for a replacement ratio of 2:1.

2. *the ground water and surface elevation of the replacement area shall be approximately equal to that of the lost area;*

Two wetland mitigation wells were installed within the proposed wetland replication area to collect groundwater elevation data. These data were used to determine the surface elevation of the wetland replication area, in conjunction with the surface elevation of the abutting BVW.

3. *The overall horizontal configuration and location of the replacement area with respect to the bank shall be similar to that of the lost area;*

The replication area was designed such that it has a similar horizontal configuration to the larger area of permanent wetland fill and the abutting wetland to the replication area.

4. *the replacement area shall have an unrestricted hydraulic connection to the same water body or waterway associated with the lost area;*

The replacement area is directly adjacent to the area of loss in Wetland 4 and will have an unrestricted hydraulic connection to the same water body or waterway associated with the lost area.

5. *the replacement area shall be located within the same general area of the water body or reach of the waterway as the lost area;*

The replacement area will be located directly adjacent to the lost area in Wetland 4.

6. *at least 75% of the surface of the replacement area shall be reestablished with indigenous wetland plant species within two growing seasons, and prior to said vegetative reestablishment any exposed soil in the replacement area shall be temporarily stabilized to prevent erosion in accordance with standard U.S. Soil Conservation Service methods; and*

The wetland replication area will be inspected during the first two growing seasons following planting to evaluate the effectiveness of the replication area. Plots will be established and the vegetation community will be inventoried to determine the percent cover of wetland plant species to confirm that a minimum of 75% of the replication area's vegetation is successfully established and stabilized within the first two growing seasons. A wetland seed mix will be applied to provide an herbaceous layer to stabilize the soil and prevent erosion in accordance with standard USCS methods. See sheet 134 in the NOI plans submitted as Attachment B for the proposed wetland plantings and seed mix.

7. *the replacement area shall be provided in a manner which is consistent with all other General Performance Standards for each resource area in Part III of 310 CMR 10.00.*

The replacement area is located within the 100-foot Buffer Zone to BVW, which does not have performance standards. Once wetland soils and any natural materials have been placed, equipment or vehicles exerting a ground pressure greater than 3 pounds per square inch (psi) will no longer be allowed in the replacement area to avoid compacting the wetland soils.

- (c) *Notwithstanding the provisions of 310 CMR 10.55(4)(a), the issuing authority may issue an Order of Conditions permitting work which results in the loss of a portion of Bordering Vegetated Wetland when;*

1. *said portion has a surface area less than 500 square feet;*
2. *said portion extends in a distinct linear configuration ("finger-like") into adjacent uplands; and*
3. *in the judgment of the issuing authority it is not reasonable to scale down, redesign or otherwise change the proposed work so that it could be completed without loss of said wetland.*

Although this subsection would be applicable to the fingerlike projection of 85 square feet, the Project will address the loss of 89 square feet of BVW under subsection (b) above and provide 2:1 replication.

- (d) *No project may be permitted which will have any adverse effect on specified habitats of rare vertebrate or invertebrate species, as identified by the procedures under 310 CMR 10.59.*

The Project will not have any adverse effect on specified habitat of rare species. The Project was reviewed by NHESP and a conditional no-take determination was issued (see Attachment G). See Section 5.1.8 for further discussion regarding rare species and consultation with NHESP.

- (e) *Any proposed work shall not destroy or otherwise impact any portion of a BVW that is within an ACEC.*

The Project is not located within an ACEC.

5.1.6 Land under Water Bodies and Waterways (310 CMR 10.56)

Summary of Impacts

The Project was designed to fully comply with all applicable performance standards for LUWW and there are no proposed permanent impacts to LUWW.

The Project will result in temporary disturbance to LUWW at four locations within the Project Site as outlined in Table 9. All four temporary disturbance areas are near Bridge 127, where a total of approximately 1,146 square feet of temporary disturbance to LUWW will be required to facilitate the placement of crane mats, which are needed for reconstruction of the bridge.

Table 9 Permanent and Temporary Disturbance to LUWW (Square Feet)

Station	Stream ID	Permanent Disturbance	Temporary Disturbance
724+33 to 724+97 (North)	3 (Hop Brook)	0	333
724+33 to 724+93 (South)	3 (Hop Brook)	0	263
725+74 to 726+36 (North)	3 (Hop Brook)	0	155
725+75 to 726+36 (South)	3 (Hop Brook)	0	395
Total		0	1,146

Source: VHB

Proposed Mitigation Measures

The following mitigation measures will be implemented at Bridge 127 where temporary LUWW disturbance is proposed.

- › Debris containment measures and additional erosion and sediment controls will be installed at the bridge itself for the removal of the existing structure.
- › Crane mats will be in place for the minimum duration necessary and will be removed immediately upon completion of activities where the use of a crane is required.

- › Following removal of mats, the area where mats were placed will be restored and stabilized with jute mesh erosion control blankets. The area will be reseeded with an appropriate wetland seed mix that will allow for the regrowth of indigenous, non-invasive herbaceous species to supplement natural recruitment.

Regulatory Compliance Summary

The following paragraphs present a summary of how the Project will fully comply with the General Performance Standards for activities proposed within LUWW, as per 310 CMR 10.56(4)(a) through (c):

- (a) *Where the presumption set forth in 310 CMR 10.56(3) is not overcome, any proposed work within Land under Water Bodies and Waterways shall not impair the following:*

1. *The water carrying capacity within the defined channel, which is provided by said land in conjunction with the banks;*

The proposed temporary disturbance is associated with the placement of crane mats which will not impair the water carrying capacity of the existing channel. The mats will be placed within the low gradient flow areas adjacent to the main defined channel and will not be placed within the main channel itself.

2. *Ground and surface water quality;*

The ability of LUWW resource areas to continue to provide the function of the protection of ground and surface water quality will not be adversely affected by the Project. As described in Section 3.1.2, erosion and sediment control measures including turbidity controls will ensure that sediment does not enter the stream channel, thus protecting water quality.

3. *The capacity of said land to provide breeding habitat, escape cover and food for fisheries;*

The Project will not impair the capacity of the LUWW resource areas to provide breeding habitat, escape cover, or food for fisheries. As described in Section 3, crane mats, erosion controls, and debris containment measures will be used at Bridge 127 to protect the waterway during construction, and the disturbed area will be restored with aquatic plantings once construction is complete. Additional details regarding Coldwater Fishery Resources are provided in Section 5.2.2.

4. *The capacity of said land to provide important wildlife habitat functions. A project... that cumulatively alters up to 10% or 5,000 square feet (whichever is less) of land in this area found to be significant to the protection of wildlife habitat shall not be deemed to impair its capacity to provide important wildlife functions.*

The Project will not alter more than 10% or 5,000 square feet of LUWW and therefore shall not be deemed to impair its capacity to provide important wildlife functions. Although a WHE was not required, an Appendix B Detailed WHE was completed for the temporary LUWW impacts (see WIAs S17 and S18 in the WHE in

Attachment J) to evaluate potential impacts from the temporary placement of crane mats. Within LUWW, the only important wildlife habitat feature that was identified was Standing Water Present for at Least Part of the Growing Season Suitable for Use by Breeding Amphibians, Non-Breeding Amphibians, Turtles, or Foraging Waterfowl. During reconstruction of Bridge 127 filter fabric will be laid under and wrapped around the timber crane mats to prevent sediment from entering the waterbody. Once Bridge 127 is reconstructed, the crane mats will be removed, and the area will be restored (see crane mat restoration detail on sheet 130 and planting plan on sheet 131 in the NOI plans provided in Attachment B).

5. *Work on a stream crossing shall be presumed to meet the performance standards set forth at 310 CMR 10.56(4)(a) provided the work is performed in compliance with the Massachusetts Stream Crossing Standards.*

As described in Section 5.1.2, the Project was designed to fully comply with the Stream Crossing Standards.

- (b) *Notwithstanding the provisions of 310 CMR 10.56(4)(a), the issuing authority may issue an Order in accordance with M.G.L. c. 131, § 40 to maintain or improve boat channels within Land under Water Bodies and Waterways...*

The Project does not involve work to maintain or improve boat channels.

- (c) *Notwithstanding the provisions of 310 CMR 10.56(4)(a) or (b), no project may be permitted which will have any adverse effect on specified habitat sites of rare vertebrate or invertebrate species, as identified by procedures established under 310 CMR 10.59.*

The Project will not have any adverse effect on specified habitat sites of Rare Species. The Project was reviewed by NHESP and a conditional no-take determination was issued (see Attachment G). See Section 5.1.8 for further discussion regarding rare species and consultation with NHESP.

5.1.7 Bordering Land Subject to Flooding (310 CMR 10.57)

Summary of Impacts

The Project was designed to fully comply with all applicable performance standards for BLSF and will result in a net gain of flood storage within the Project Site. In addition, because the Project will result in a net gain 78.46 cubic yards of flood storage, the Project will not adversely affect the floodway associated with Hop Brook.

As outlined in Tables 10 and 11, the Project will result in permanent and temporary disturbance to BLSF at three locations within the Project Site. In all cases, permanent disturbance is due to the paved surface proposed for the MCRT and temporary disturbance includes all areas of disturbance outside the limits of the paved MCRT. All disturbed areas outside the limits of paved surfaces will be revegetated with native species.

Table 10 identifies the square footage of disturbance in each area; Table 11 summarizes the changes to flood storage volume.

Table 10 Permanent and Temporary Disturbance to BLSF (square feet)

Disturbance Area	Station	Permanent Disturbance ¹ (square feet)	Temporary Disturbance ² (square feet)	Total Disturbance (square feet)
Hop Brook (Bridge 128)	399+24 to 399+95	0	37	37
Station 399+24 to 401+65	400+65 to 401+65	0	262	262
Base Flood Elevation = 161.0 feet	Subtotal	0	302	302
Unnamed Tributary to Hop Brook Station 702+18 to 710+52 Base Flood Elevation = 132.0 to 134.0 feet	702+18 to 702+32	0	6	6
	702+88 to 706+17	0	570	570
	706+30 to 707+32	0	282	282
	708+00 to 710+19	64	862	926
	710+32 to 710+52	0	7	7
	Subtotal	64	1,727	1,791
Hop Brook (Bridge 127) Station 713+57 to 729+26 Base Flood Elevation = 122.0 to 127.0 feet	713+57 to 713+63	0	31	31
	722+38 to 722+65	0	68	68
	723+42 to 725+07	523	1,993	2,516
	725+56 to 729+26	2,099	3,631	5,730
	Subtotal	2,622	5,723	8,345
Total		2,686	7,749	10,435

Source: VHB

1 Permanent disturbance is due to paved surface proposed for the MCRT.

2 Temporary disturbance includes all areas of disturbance outside of the limits of paved MCRT. All disturbed areas outside the limits of paved surfaces will be revegetated with native species.

Table 11 Summary of Changes to Flood Storage Volume in BLSF (cubic yards)

Disturbance Area	Elevation (feet)	Fill	Cut	Net Gain (Cut)
Unnamed Tributary to Hop Brook Station 702+18-710+52	133'-134'	17.30	20.81	-3.52
	132'-133'	7.80	9.37	-1.57
	131'-132'	0.04	1.07	-1.04
Hop Brook (Bridge 127) Station 713+57 to 729+26	126'-127'	10.89	21.02	-10.13
	125'-126'	15.70	75.41	-59.70
	124'-125'	2.70	5.11	-2.41
	123'-124'	0.00	0.09	-0.09
	Total	54.43	132.89	-78.46 (Net Gain)

Source: VHB

Proposed Restoration and Mitigation Measures

As required by the performance standards for BLSF, the Project was designed to provide compensatory storage for any flood storage volume that will be lost as a result of the Project. In addition, a detailed wildlife habitat evaluation has been completed for those areas

within the limits of work for the Project that are in BLSF and proposed restoration measures are incorporated into the Project. The following section provides more details related to compensatory flood storage and wildlife habitat features within BLSF.

Regulatory Compliance Summary

The following paragraphs present a summary overview of how the Project will fully comply with the General Performance Standards for activities proposed within BLSF, as per 310 CMR 10.57(4)(a)1 through 3 and 10.57(4)(c):

- 10.57(4)(a)1. *Compensatory storage shall be provided for all flood storage volume that will be lost as the result of a proposed project within Bordering Land Subject to Flooding, when in the judgment of the issuing authority said loss will cause an increase or will contribute incrementally to an increase in the horizontal extent and level of flood waters during peak flows.*

As shown in Table 11, the Project will result in a total of 54.43 cubic yards of fill and 132.89 cubic yards of cut, for a net gain of 78.46 cubic yards of flood storage associated with an unnamed tributary to Hop Brook near Station Road and Hop Brook itself east of Boston Post Road (Station 700+00 to 728+50). As required, the cut areas result in compensatory flood storage at each incremental elevation within the floodplain where fill is proposed.

- 10.57(4)(a)2. *Work within Bordering Land Subject to Flooding, including that work required to provide the above-specified compensatory storage, shall not restrict flows so as to cause an increase in flood stage or velocity.*

The Project will not restrict flows and will not result in an increase in flood stage or velocity. No culverts will be replaced within BLSF, the low chord of Bridge 127 will be higher in elevation than its current elevation so that the bridge is not partially submerged, and Bridge 128 will maintain the same elevation as existing conditions.

- 10.57(4)(a)3. *Work in those portions of bordering land subject to flooding found to be significant to the protection of wildlife habitat shall not impair its capacity to provide important wildlife habitat functions. Except for work which would adversely affect vernal pool habitat, a project or projects on a single lot, for which Notice(s) of Intent is filed on or after November 1, 1987, that (cumulatively) alter(s) up to 10 percent or 5,000 square feet (whichever is less) of land in this resource area found to be significant to the protection of wildlife habitat, shall not be deemed to impair its capacity to provide important wildlife habitat functions. Additional alterations beyond the above threshold, or altering vernal pool habitat, may be permitted if they will have no adverse effects on wildlife habitat, as determined by procedures contained in 310 CMR 10.60.*

Table 10 provides a summary of the permanent and temporary disturbances to the surface vegetation within BLSF. After the Project is constructed, all areas

outside of the paved surface of the MCRT will be loamed and seeded along the side slopes and the immediate vicinity of Bridges 128 and 127 will be replanted with woody vegetation (see the crane mat restoration detail and planting schedule on sheets 130 and 131 of Attachment B).

It is important to note that 310 CMR 10.57(1)(a)(3) states that railroad tracks, including embankment and ballast, have effectively eliminated wildlife habitat functions, and all permanent BLSF impacts will occur within the existing railroad tracks and ballast. Notwithstanding this important clarification of the performance standards, Detailed "Appendix B" Wildlife Habitat Evaluations were completed to identify existing wildlife habitat features within all wetland resource areas, including BLSF. The evaluations determined that features such as woody vegetation, food plants, and woody debris are abundant in the area surrounding the Project in BLSF, outside of the proposed disturbance. In addition, the Applicants propose to reinstall removed standing dead trees; create brush piles; and plant native trees, shrubs, and herbaceous cover as restoration for the features that will be lost. The Project also involves removing the tracks and ties from the MBTA ROW, which removes a movement barrier for turtles and amphibians and improves existing conditions. For these reasons, the Project will not impair the capacity for these areas to provide important wildlife habitat functions. Please see Attachment J for the Wildlife Habitat Evaluation.

- 10.57(4)(c) *Notwithstanding the provisions of 310 CMR 10.57(4)(a) or (b), no project may be permitted which will have any adverse effect on specified wildlife habitat sites of rare vertebrate or invertebrate species, as identified by procedures established under 310 CMR 10.59.*

As determined by NHESP, the Project will not have an adverse effect on specified habitats of rare vertebrate or invertebrate species. The Project was reviewed by NHESP and a conditional no-take determination was issued (see Attachment G) for both Phases 1 and 2. See Section 5.1.7 for further discussion regarding rare species and consultation with NHESP.

5.1.8 Riverfront Area (310 CMR 10.58)

Summary of Impacts

The Project was designed to fully comply with all applicable performance standards for RFA and will provide an improvement to the previously degraded areas.

There are three locations of disturbance to MWPA RFA within the Project Site:

1. Station 395+71 to 403+52: Associated with Hop Brook crossing west of Dutton Road (see plan sheets 46 to 47 in Attachment B)

2. Station 533+85 to 543+57: Associated with Dudley Brook (see plan sheet 54 in Attachment B)
3. Station 705+30 to 749+45: Associated with Hop Brook east of Route 20 (see plan sheets 61 to 67 in Attachment B)

These three locations comprise 457,504 total square feet of existing, previously disturbed RFA within the Project Locus in Sudbury. Approximately 65,431 square feet of the previously disturbed RFA is degraded by the presence of existing rails, ties and ballast. As outlined in Table 12, the Project will result in permanent disturbances to RFA within the Project Site due to installation of the MCRT, and temporary disturbance due to installation of the transmission line, construction of the MCRT base, and the placement of crane mats (and associated vegetation removal) to accommodate rehabilitation and replacement of Bridges 128 and 127. In total, the Project will temporarily disturb 20.9 percent of the RFA within the work limits of the Project.

Table 12 Permanent and Temporary Disturbance to MWPA RFA

Disturbance Area	Station	Inner 100' RFA			Outer 200' RFA			Comments
		Permanent Disturbance ¹ (square feet)	Temporary Disturbance ² (square feet)	Total Disturbance (square feet)	Permanent Disturbance ¹ (square feet)	Temporary Disturbance ² (square feet)	Total Disturbance (square feet)	
Hop Brook (Bridge 128) 395+71 to 403+52	395+71 to 396+73	0	0	0	1,022	1,506	2,528	Out of the total 49,355 square feet of RFA in this area, 7,994 square feet is currently degraded. The Project will restore all areas outside of the 10-foot MCRT, resulting in a 1.4% reduction in degraded area.
	396+73 to 400+09	3,330	5,781	9,111	0	0	0	
	400+60 to 402+55	1,923	3,967	5,890	0	0	0	
	402+55- 403+52	0	0	0	1,027	1,534	2,561	
	Subtotal	5,253	9,748	15,001	2,049	3,040	5,089	
Dudley Brook 533+85 to 543+57	533+85 to 534+95	0	0	0	1,519	2,510	4,029	Out of the total 74,359 square feet of RFA in this area, 10,750 square feet is currently degraded. The Project will restore all areas outside the 10-foot MCRT, resulting in a 0.8% reduction in degraded area.
	534+95 to 542+56	7,596	10,265	17,861	0	0	0	
	542+56 to 543+57	0	0	0	1,023	1,359	2,382	
	Subtotal	7,596	10,265	17,861	2,542	3,869	6,411	
Hop Brook (Bridge 127) 705+30- 749+45	705+30 to 706+95	0	0	0	1,518	1,926	3,444	Out of the total 333,790 square feet of RFA in this area, 46,687 square feet is currently degraded. The Project will restore all areas outside the 10-foot MCRT, result in a 0.9% reduction in degraded area.
	706+95 to 711+40	4,743	5,225	9,968	0	0	0	
	711+35 to 711+40	0	0	0	0	218	218	
	711+60 to 714+65	0	0	0	974	1,667	2,641	
	711+60 to 725+10	12,540	19,686	32,226	0	0	0	

Disturbance Area	Station	Inner 100' RFA			Outer 200' RFA			Comments
		Permanent Disturbance ¹ (square feet)	Temporary Disturbance ² (square feet)	Total Disturbance (square feet)	Permanent Disturbance ¹ (square feet)	Temporary Disturbance ² (square feet)	Total Disturbance (square feet)	
	725+70 to 743+10	16,290	30,985	47,275	0	0	0	
	737+04 to 737+40	0	0	0	0	158	158	
	741+25 to 745+95	0	0	0	3,158	3,802	6,960	
	743+10 to 743+90	0	276	276	0	0	0	
	744+75 to 748+45	3,319	3,335	6,654	0	0	0	
	748+45 to 749+45	0	0	0	1,021	1,264	2,284	
	Subtotal	36,892	59,507	96,399	6,671	9,034	15,705	
	Total	49,741	79,520	129,261	11,262	15,943	27,205	

Source: VHB

- 1 Permanent disturbance is limited to the impervious surface proposed for the MCRT
- 2 Temporary disturbance includes all areas of disturbance outside of the limits of impervious surfaces associated with the MCRT. All disturbed areas outside the limits of impervious surface will be revegetated with native species.

Proposed Restoration and Mitigation Measures

The Project was designed to avoid and minimize impacts to RFA to the extent practicable by:

- › Reducing the construction platform width to 18 feet at the approaches to Bridges 127 and 128;
- › Using steel sheeting at both Bridges 128 and 127 to further minimize the limit of disturbance; and
- › Using a retaining wall from Station 730+99 to 734+25;
- › Spacing out manholes to a maximum of 2,100 feet apart where curvature allowed.

In addition, the following restoration and mitigation measures will be implemented in RFA:

- › Erosion and sediment controls will be installed to protect the associated waterbodies.
- › Crane mats at Bridges 128 and 127 will be in place for the minimum duration necessary and will be removed immediately upon completion of activities where the use of a crane is required.
- › Following removal of the crane mats, the area where mats were placed will be restored by raking and re-grading the soil (if necessary due to soil compaction).
- › The crane mat area will be stabilized with jute mesh erosion control blankets and planted with native woody plant species (see crane mat restoration detail and planting schedule on sheets 130 and 131 in the plan set in Attachment B). The trees and shrubs will be planted after Phase 2 construction is completed to avoid disturbing and/or damaging the plants. The area will also be reseeded with an appropriate seed mix that will allow for the regrowth of indigenous, non-invasive herbaceous species to supplement natural recruitment.
- › After Phase 1 is constructed, all temporarily disturbed areas outside of the 14-foot gravel base will be loamed and seeded with the seed mix shown on sheet 131 in the plans in Attachment B.
- › After Phase 2 is completed, DCR will loam and seed the two-foot shoulders on either side of the MCRT so that all temporarily disturbed areas except for the 10-foot wide MCRT are replanted.
- › Once the Project is complete, all areas outside of the 19-foot-wide final maintained width will be allowed to naturally revegetate with woody vegetation.

Regulatory Compliance Summary

As discussed in Section 5.1.1 above, both phases of the Project qualify as limited projects for relief from certain provisions of 310 CMR 10.58 for work in RFA. In addition, because the RFA in the Project Locus is previously developed from the former railroad right-of-way operations, including degraded areas where the ballast, rails and ties are located, the Project is a redevelopment project that proposes reuse of degraded and previously developed areas subject to 310 CMR 10.58(5). The Project fully complies with all applicable performance

standards at 310 CMR 10.58(5), which requires compliance with 310 CMR 10.58(4)(a) and (b), but not 10.58(4)(c) and (d).

As outlined below, the Project fully complies with the provisions of 310 CMR 10.58(4)(a) and (b):

10.58(4)(a) The work shall meet the performance standards for all other resource areas within Riverfront Area. When work in the RFA is also within the buffer zone to another resource area, the performance standards for the RFA shall contribute to the protection of the interests of M.G.L. c. 131 § 40 in lieu of any additional requirements that might otherwise be imposed on work in the buffer zone within the RFA;

As presented in detail in Sections 5.1.3 through 5.1.7, the Project was designed to fully comply with the performance standards of other wetland resource areas within RFA along the Project Site.

10.58(4)(b) No project may be permitted within the RFA which will have any adverse effect on specified habitat sites of rare wetland or upland vertebrate or invertebrate species ... or certified vernal pool habitat;

The Project will not have any adverse effect on specified habitat of rare species. The Project was reviewed by NHESP and conditional no-take determinations have been issued (see Attachment G). See Section 5.1.8 for further discussion regarding rare species and consultation with NHESP.

In addition, the following paragraphs present a summary of how the Project will fully comply with the performance standards for redevelopment within previously developed RFA, as per 310 CMR 10.58(5):

*10.58(5) Notwithstanding the provisions of 310 CMR 10.58(4)(c) and (d), the issuing authority may allow work to redevelop a previously developed riverfront area, provided the proposed work improves existing conditions. Redevelopment means replacement, rehabilitation or expansion of existing structures, improvement of existing roads, **or reuse of degraded or previously developed areas** [emphasis added]. A previously developed riverfront area contains areas degraded prior to August 7, 1996 by impervious surfaces from existing structures or pavement, absence of topsoil, junkyards, or abandoned dumping grounds.*

The RFAs that extend into the Project Locus are previously developed from the construction and operation of the railroad right-of-way, including degraded areas occupied by the steel rails, wooden railroad ties, and stone ballast with a linear footprint that is 11 feet wide. Therefore, all of the work in RFAs within the Project Site, including both the transmission line and MCRT components, is within previously developed RFA, and the 10-foot paved surface of the MCRT is designed to be located within the footprint of the existing 11-foot degraded area.

10.58(5)(a) At a minimum, proposed work shall result in an improvement over existing conditions of the capacity of the riverfront area to protect the interests identified in M.G.L. c. 131 § 40.

The Project will result in an improvement over the existing conditions of the capacity of the RFA to protect the interests of the Act. The Project will improve the RFA by reducing the total footprint of the degraded area by 1 foot in width throughout the RFA, which results in a reduction in degraded area of approximately 4,339 square feet. In addition, except for the 10-foot-wide paved MCRT, the remaining previously developed area within the proposed limits of work, including existing areas of recent activity where there is limited or no vegetation, will be restored with dense native vegetation. Please refer to sheet 131 in Attachment B for the proposed planting schedule.

In addition to reducing the footprint of the currently degraded areas and restoring all areas with native vegetation, the Project will improve the capacity of the RFA to protect the wildlife habitat interest of the MWPA by removing the existing rails and ties, which extend approximately four to five inches above the ground and create a barrier to wildlife movement, particularly for reptiles and amphibians. For example, turtles have difficulty climbing over the rails and are therefore required to travel to widely spaced crossing points such as existing culverts to cross the railroad embankment. The Project will remove the obstruction and create a flat unobstructed surface that is more readily traversed by small wildlife such as turtles and migrating salamanders.

10.58(5)(b) Stormwater management is provided according to standards established by the Department.

Stormwater management during construction will comply with all applicable standards. Per 310 CMR 10.05(6)(m)6, the Stormwater Management Standards (SMS) for the post-construction phase shall apply to the maximum extent practicable to footpaths, bike paths, and other paths for pedestrian and/or non-motorized vehicle access. The Project was designed for the final condition of the paved MCRT to meet the SMS to the maximum extent practicable and includes an open stormwater system with vegetated filter strips and water quality swales with check dams to provide treatment. The MCRT will require 10 feet of paving and runoff will sheet flow to the vegetated shoulders, providing an additional opportunity for stormwater to infiltrate before it enters the swales. The swales were designed to convey water to appropriate discharge points to maintain existing drainage patterns and were sized such that they can accommodate a two-year storm to meet DCR's standards and, according to the stormwater analysis, frequently meeting the 10-year storm requirements of the SMS as well.

The end use of the Project will be the MCRT, therefore, is not anticipated to increase pollutant loads within the Project Locus above the existing conditions. The MCRT will be used by pedestrians and bicyclists, which will not contribute

contaminants to the path surface. Other than in emergency situations, motor vehicle access along the path will be limited to bi-weekly mowing over the shoulders and annual mowing over the duct bank by DCR, inspections by Eversource approximately once every three years, and other maintenance as needed by both Eversource and DCR. In addition, the MCRT will not be plowed and/or treated in the winter. Therefore, there will be little to no contaminants on the path surface to be washed off by stormwater runoff. For additional details regarding stormwater management, please refer to the Stormwater Report in Attachment L.

- 10.58(5)(c) *Within 200-foot riverfront areas, proposed work shall not be located closer to the river than existing conditions or 100 feet, whichever is less, or not closer than existing conditions within 25-foot riverfront areas, except in accordance with 310 CMR 10.58(5)(f) or (g).*

The Project is not located closer to the river than existing conditions. The existing degraded and previously disturbed RFA extends through the entire RFA and to the edge of both Hop Brook and Dudley Brook crossings. In addition, although the Project involves rehabilitating Bridge 128 and reconstruction of Bridge 127, no foundation work will be required within the waterbody. The existing stone abutments at Bridge 128 will be reused and the new abutments at Bridge 127 will be constructed behind (landward) of the existing abutments, which will remain in place (please refer to Section 3.1.9 for additional information on bridge construction). The Project also provides restoration in the form of revegetation with native species of the RFA, which is addressed in 310 CMR 10.58(5)(f).

- 10.58(5)(d) *Proposed work, including expansion of existing structures, shall be located outside the riverfront area or toward the riverfront area boundary and away from the river, except in accordance with 310 CMR 10.58(5)(f) or (g).*

The Project is a redevelopment project that proposes reuse of existing degraded and previously developed areas in the RFA. The Project Locus is a former linear transportation corridor that currently crosses existing water bodies and their associated RFAs. There are existing culverts or bridges at each water body crossing. All work associated with the Project, including both the transmission line and MCRT components, is proposed entirely within the previously developed and degraded area. The Project does not propose expansion of the existing degraded or previously developed areas in the RFA.

To the extent feasible, the Project also has been designed to locate work outside of RFA or toward the RFA boundary and away from associated waterbodies, including manholes. To avoid and minimize placement of manholes within RFA, they were spaced as much as 2,000 feet apart as the curvature of the MBTA ROW allowed. Where manholes could not be located outside of RFA, they were located at the outer edge of the 200-foot RFA; or where they were within the

100-foot RFA due to the waterbody paralleling the Project, they were located at least 700 feet away from the waterbody crossing. The Project also provides restoration in the form of revegetation of the RFA, which is addressed in 310 CMR 10.58(5)(f).

10.58(5)(e) The area of proposed work shall not exceed the amount of degraded area, provided that the proposed work may alter up to 10% if the degraded area is less than 10% of the riverfront area, except in accordance with 310 CMR 10.58(5)(f) or (g).

The existing degraded area is greater than 10 percent of the total previously developed RFA in the Project Locus. Therefore, the Project is not limited to alteration of up to 10% of the RFA as prescribed in this performance standard. The Project also is proposing on-site restoration in accordance with 310 CMR 10.58(5)(f).

10.58(5)(f) When an applicant proposes restoration on-site of degraded riverfront area, alteration may be allowed notwithstanding the criteria of 310 CMR 10.58(5)(c), (d), and (e) at a ratio in square feet of at least 1:1 of restored area to area of alteration not conforming to the criteria. Areas immediately along the river shall be selected for restoration. Alteration not conforming to the criteria shall begin at the riverfront area boundary.

There is a total of 95,463 square feet of proposed temporary RFA disturbance and 61,002 square feet of proposed permanent RFA disturbance associated with the Project. The only permanent disturbance is the 10-foot-wide paved MCRT, which will be within the 11-foot-wide degraded area. All areas of disturbance outside of the paved MCRT will be restored with native species, which meets the criteria of 1:1. In addition, the Project will reduce the amount of degraded area by 4,339 square feet by restoring the degraded area, reducing the amount of degraded RFA on the Project Locus by approximately 1 percent.

Restoration shall include:

- 1. Removal of all debris, but retaining any trees or other mature vegetation;*

Any debris within the limits of work will be removed as part of the Project. Existing trees and mature vegetation will be retained wherever possible within the RFA. Once the Project is completed, all disturbed areas outside of the 10-foot MCRT paved surface will be restored with native vegetation to provide a dense herbaceous cover and trees and shrubs are proposed at both Hop Brook crossings. Please refer to sheets 130 and 131 in the NOI plans provided in Attachment B for planting details.

- 2. Grading to a topography which reduces runoff and increases infiltration;*

Within the proposed limits of work, the grading has been designed to reduce runoff and promote infiltration. The RFA will be graded flat along the

MCRT but with a slight pitch to the either side to shed runoff. The dense herbaceous growth adjacent to the MCRT will function as a vegetated filter strip to reduce runoff and promote infiltration of stormwater runoff.

3. *Coverage by topsoil at a depth consistent with natural conditions at the site; and*

The Project Site within RFA is previously disturbed, consisting primarily of a filled embankment to support the rails and maintain a relatively level alignment. Except for the 10-foot-wide paved MCRT, all disturbed areas within the Project Site will be covered with a minimum of four inches of clean topsoil consistent with natural conditions and will be revegetated with native species.

4. *Seeding and planting with an erosion control seed mixture, followed by plantings of herbaceous and woody species appropriate to the site.*

A restoration seed mixture will be used throughout the Project Site, which contains a mixture of native species including Canada wild rye, little bluestem, fox sedge, soft rush, New England Aster, woodland goldenrod, and joe-pye weed (see sheet 131 in the NOI plans provided in Attachment B for seed mix). Except for the 10-foot-wide paved MCRT, this seed mix will be applied in all areas of proposed disturbance associated with the Project, which includes approximately 4,339 square feet of existing degraded RFA. In addition to the herbaceous vegetation, woody shrubs will be planted approximately eight feet to the north of the MCRT in two locations within RFA, and trees and shrubs will be planted in a naturalized pattern at both Hop Brook crossings. Please refer to sheets 130 and 131 in the plans provided in Attachment B for the proposed crane mat restoration details and planting schedules.

- 10.58(5)(g) *When an applicant proposes mitigation either on-site or in the riverfront area within the same general area of the river basin, alteration may be allowed notwithstanding the criteria of 310 CMR 10.58(5)(c), (d), or (e) at a ratio in square feet of at least 2:1 of mitigation area to area of alteration not conforming to the criteria or an equivalent level of environmental protection where square footage is not a relevant measure. Alteration not conforming to the criteria shall begin at the riverfront area boundary. Mitigation may include off-site restoration of riverfront areas, conservation restrictions under M.G.L. c. 184, §§ 31 to 33 to preserve undisturbed riverfront areas that could be otherwise altered under 310 CMR 10.00, the purchase of development rights within the riverfront area, the restoration of bordering vegetated wetland, projects to remedy an existing adverse impact on the interests identified in M.G.L. c. 131, § 40 for which the applicant is not legally responsible, or similar activities undertaken voluntarily by the applicant which will support a determination by the issuing authority of no significant adverse impact. Preference shall be given to potential mitigation projects, if any, identified in a*

River Basin Plan approved by the Secretary of the Executive Office of Environmental Affairs.

Mitigation is not proposed for this Project because it includes extensive restoration of degraded and previously disturbed RFA in accordance with 10.58(5)(f) above.

10.58(5)(h) *The issuing authority shall include a continuing condition in the Certificate of Compliance for projects under 310 CMR 10.58(5)(f) or (g) prohibiting further alteration within the restoration or mitigation area, except as may be required to maintain the area in its restored or mitigated condition. Prior to requesting the issuance of the Certificate of Compliance, the applicant shall demonstrate the restoration or mitigation has been successfully completed for at least two growing seasons.*

This condition is understood and will be met.

5.1.9 Estimated Habitats of Rare Wildlife (310 CMR 10.59)

There is Estimated Habitat (EH 1440) within a portion of the Project Locus that extends from White Pond Road east to just east of Hop Brook (Bridge 128); however, within Sudbury, it terminates at the Hudson/Sudbury town line.

Consultation with NHESP for Eversource's underground transmission line began in March 2016. Based upon the latest information provided by NHESP in August 2017 in response to an information request, this area contains records for eastern box turtle (*Terrapene carolina*), eastern whip-poor-will (*Caprimulgus vociferous*), Gerhard's underwing (*Catocala herodias gerhardi*), and coastal swamp Metarranthis (*Metarranthis pilosaria*).

Based on discussions with NHESP, it was determined that Eversource and DCR would file separate MESA checklists for the two Phases of the Project, but under the same file number. Eversource submitted a MESA checklist to the NHESP on September 19, 2018, which included mitigation measures for all four species and time-of-year restrictions ("TOYR"). No construction will occur in areas mapped for eastern whip-poor-will during nesting season (May 1 to July 31). NHESP reviewed the checklist and issued a conditional no-take determination for Eversource's underground transmission line on October 19, 2018 (Attachment G). DCR submitted a MESA checklist on April 17, 2019 that included the same mitigation measures identified in Eversource's filing, and NHESP issued a conditional no-take determination for Phase 2 of the Project on May 17, 2019 (Attachment G).

5.1.10 Wildlife Habitat Evaluations (310 CMR 10.60)

According to 310 CMR 10.60(1), to the extent that a proposed project will alter wildlife habitat beyond established thresholds for each respective wetland resource area, such alterations may be permitted only if they will have no adverse effects on wildlife habitat. Adverse effects on wildlife habitat are the alteration of any habitat characteristic listed in 310

CMR 10.60(2), “insofar as such alteration will, following two growing seasons of project completion and thereafter (or, if a project would eliminate trees, upon the maturity of replanted saplings) substantially reduce its capacity to provide the important wildlife habitat functions listed in 310 CMR 10.60(2).” The Guidance continues, stating, “it is not adequate to conclude that a project will result in an adverse effect only because alterations to wildlife habitat are proposed. The alterations become “adverse” when they *substantially* (emphasis added) reduce the site’s capacity to provide important wildlife habitat functions (e.g., shelter, food, breeding areas) and consequently reduce the site’s capacity to support wildlife.” The Guidance also states, “simply put, no adverse effect does not mean no alteration.”

To demonstrate that a project will meet the no adverse effect standard, the Guidance states that it must be demonstrated that either:

- › A site lacks any important habitat features listed in Appendix A or B; or
- › Important habitat features exist but adverse effects will be avoided because the project will not substantially reduce the capacity of the site to provide the important wildlife habitat functions.
 - Adverse effects can be avoided by restoration, replication, or other mitigation.
 - Applicants can also demonstrate that alterations will have a negligible effect on important habitat features. This can occur when an important habitat feature is very common on the site so that the amount of habitat feature lost is insignificant to what will remain on the site.

Summary of Impacts

Table 13 provides an overview of the wetland resource areas along the Project and identifies the threshold requirements and the corresponding Project disturbance to these resource areas.

Table 13 Wildlife Habitat Evaluation Thresholds per Wetland Resource Area

Wetland Resource Area	Appendix A Threshold	Appendix B Threshold	Project Disturbance (square feet)
Bank – 10.54(4)(a)5	10 percent or 50 Linear Feet (whichever is less)	When triggered by Appendix A	246 linear feet
Bordering Vegetated Wetland (no thresholds in regulations)	Below 5,000 square feet	Above 5,000 square feet	613
Land Under Water Bodies and Waterways – 10.56(4)(a)4	10 percent or 5,000 Square Feet (whichever is less)	When triggered by Appendix A	1,146
Bordering Land Subject to Flooding – 10.57(4)(a)3	10 percent or 5,000 Square Feet (whichever is less), except for work that would adversely affect vernal pool habitat	When triggered by Appendix A or for any impacts to certified or documented vernal pool habitat	10,435 (No impacts to certified or documented vernal pool habitat)
Previously Developed RFA	Appendix A and Appendix B are not required for previously developed RFA		

Sources: MWPA Regulations (310 CMR 10.00); *Massachusetts Wildlife Habitat Protection Guidance for Inland Wetlands* (MassDEP 2006); VHB

The Project will result in impacts to BVW, Bank, LUWW, BLSF, RFA that are jurisdictional under both the MWPA and Bylaw Regulations, RFA that is jurisdictional under the Bylaw Regulations only, and Sudbury's local AURA and IVW. However, 310 CMR 10.57(1)(a)(3) states that railroad tracks, including embankment and ballast, have effectively eliminated wildlife habitat functions. In addition, LUWW impacts do not exceed the threshold and a WHE is not required for previously developed RFA and there are no performance standards at 310 CMR 10.58(5) for wildlife habitat. Regardless, all WIAs, including BLSF, RFA, and LUWW, were evaluated. To evaluate these impacts, 21 WIAs (WIAs S1-S21) were identified and a Detailed WHE ("Appendix B") was completed at each WIA, which is the most rigorous and comprehensive type of WHE required under MWPA and the Bylaw Regulations. Of the 21 WIAs, S1, S2, S7, S8, S9, S11, S12, S13, S14, a portion of S15, and S21 are within Sudbury's jurisdiction only.

Site visits to complete the WHE occurred from April through October 2019, and 21 individual WIAs were evaluated. The evaluations determined that although there are some important wildlife habitat features within the WIAs, there is an abundance of important wildlife habitat features beyond the construction footprint of the Project Site within the remainder of the Project Locus. These features are also present within areas beyond the Project Locus in quantities such that the evaluations determined that the losses attributed to the Project will not have an adverse effect on wildlife habitat in the local area or region. Notwithstanding these findings, as described below the Project incorporates restoration measures on the Project Locus to replace some of the wildlife features that will be impacted within the construction footprint and to supplement important wildlife habitat features in the area.

Proposed Restoration Measures

Eversource and DCR propose the following restoration and replication measures for the wildlife habitat features that will be impacted:

- › Removing the existing rails and ties, which are an impediment to wildlife movement;
- › Reinstalling standing dead trees (i.e., snags) that will be temporarily removed for construction;
- › Creating brush piles within the limits of the WIA to replace large woody debris on the ground;
- › Reseeding all disturbed areas with an herbaceous seed mix consisting of native species to promote growth of herbaceous vegetation;
- › Planting tree, shrub, and aquatic species within both Hop Brook crossings to replace those that will be removed in the crane mat locations and immediately surrounding areas; and
- › Planting woody shrubs within Estimated and Priority Habitat.

In addition, the construction schedule for the Project considers and includes time-of-year restrictions for work activities along Project segments that contain state-listed species habitat, coldwater fishery resources, and vernal pools. The time-of-year restrictions related to state-listed species and non-listed species of significance include the following:

- › No construction in areas mapped for eastern whip-poor-will due to potential nesting activities (May 1 to July 31);
- › No construction up to 450 feet from a vernal pool to avoid migratory breeding period (March 1 to May 14);
- › No work allowed within 100 feet of black racer hibernaculum to avoid disturbance (November 1 to March 31); and
- › No active in-stream work in Hop Brook (October 1 to June 30).

For additional details regarding the results of the WHE and restoration proposals, please refer to Attachment J.

Regulatory Compliance Summary

As described above, the Applicants propose to restore and replicate important wildlife habitat functions within Project WIAs. In accordance with 310 CMR 10.60(3), restoration and replication will be completed in accordance with the following general conditions:

- (a) *The surface of the replacement area to be created ("the replacement area") shall be equal to that of the area that will be lost ("the lost area");*

Standing dead trees (snags) that will be removed during construction will be reinstalled and brush piles and plantings are proposed in an equal or greater amounts to that which will be lost. Please refer to Attachment J for details regarding the replacements

proposed in each impact area. Typical details for the snags and brush piles are included in Attachment K. Planting details are located on sheet 131 in the NOI plans provided in Attachment B.

- (b) *The elevation of groundwater relative to the surface of the replacement area shall be approximately equal to that of the lost area;*

The Project will not result in changes to the elevation of groundwater.

- (c) *The replacement area shall be located within the same general area as the lost area. In the case of banks and land under water, the replacement area shall be located on the same water body or waterway if the latter has not been rechanneled or otherwise relocated. In the case of bordering land subject to flooding, the replacement area shall be located approximately the same distance from the water body or waterway as the lost area. In the case of vernal pool habitat, the replacement area shall be located in close proximity to the lost area;*

There are no permanent impacts to Bank or LUWW and all temporarily disturbed areas will be restored once construction is completed. Standing dead trees that will be removed during construction will be reinstalled and brush piles will be created within the same general areas as the areas of disturbance. Please refer to Attachment J for details regarding the WHE and Attachment K for typical details for reinstallation of snags and creation of brush piles.

- (d) *Interspersion and diversity of vegetation, water and other wildlife habitat characteristics of the replacement area, as well as its location relative to neighboring wildlife habitats, shall be similar to that of the lost areas, insofar as necessary to maintain the wildlife habitat functions of the lost area;*

As described above and in more detail in Attachment J, replacement features and vegetation to be planted will be similar to that of the lost area and will maintain the wildlife habitat functions of the lost area. Typical details for creation of these features are included in Attachment K and planting details are located on sheet 131 in the NOI plans submitted as Attachment B.

- (e) *The project shall not alter ten or more acres of Land Subject to Flooding or Land under Water found to be significant to the protection of wildlife habitat, or 2,000 feet or more of Bank found to be significant to the protection of wildlife habitat (in the case of a bank of a stream or river, this shall be measured on each side of said stream or river).*

The Project will alter less than half an acre of Land Subject to Flooding and Land Under Water and will alter less than 2,000 feet of Bank.

- (f) *If the replacement area is located in an area subject to M.G.L. c. 131, § 40, there shall be no adverse effect on the existing important wildlife habitat functions of said area as measured by the standards of 310 CMR 10.60;*

The proposed replacement features (snags, brush piles, and plantings) do not require substantial disturbance within the proposed area and will not have an adverse effect on the existing important wildlife habitat functions in said areas.

- (g) *The "thresholds" established in 310 CMR 10.54(4)(a)5., 10.56(4)(a)4., 10.57(4)(a)3. and 10.58(4)(d)1.c. (below which alterations of resource areas are not deemed to impair capacity to provide important wildlife habitat functions) shall not apply to any replacement area; and*

This condition is understood.

- (h) *The replacement area shall be provided in a manner which is consistent with all other General Performance Standards for each resource area in 310 CMR 10.51 through 10.60.*

The replacement features require minimal disturbance and will be provided in a manner that is consistent with all other General Performance Standards for each resource area.

5.2 Town of Sudbury Wetlands Administration Bylaw

The Town of Sudbury Wetlands Administration Bylaw and its implementing regulations have some concurrent jurisdiction with the MWPA but include additional requirements beyond the MWPA. In particular, the Bylaw regulates isolated vegetated wetlands ("IVW"), CFRs and AURAs (including Vernal Pool Buffers) and has additional requirements regarding wildlife habitat evaluations and resource replications.

The following discussion is provided to demonstrate compliance with the Bylaw and its Regulations. Note that, for resource areas where the Bylaw has concurrent jurisdiction with the MWPA, the MWPA performance standards apply and compliance is discussed in Section 5.1. This section addresses the *additional* requirements outlined in the Bylaw, beyond those specified in the MWPA.

5.2.1 Isolated Vegetated Wetland

As shown in Table 1, the Project will result in the loss of one IVW (303 square feet) in Sudbury, which will be replicated within the Project Locus as discussed in Section 5.2.5. Although there are no specific performance standards for IVW, Section 7 of the Bylaw states that an applicant must "avoid or prevent unacceptable significant or cumulative effects upon the resource area values protected by this bylaw." By replicating this area of IVW, the Project will avoid significant effects upon the resource area values provided by the IVW such as flood control and wildlife habitat.

5.2.2 Cold Water Fisheries Resources (Section 2.6 of the Bylaw Regulations)

Under the Bylaw Regulations, the primary performance standard applied to protect the functioning of CFRs is to maintain an undisturbed, vegetated state within the RFA and/or restore the riparian area to a naturally vegetated state. The Regulations also prioritize maintaining canopy trees along exposed streams, leaving undisturbed any logs, stumps and other large woody debris in or overhanging the water, and maintaining connections between rivers and adjacent floodplains.

According to the Bylaw Regulations, CFRs include any stream designated as a cold water fishery in 314 CMR 4.00, any stream designated as a cold water fishery by MassWildlife, and waters where there is evidence based on a fish survey that a cold water fish population and habitat exist. The areas that may qualify as CFRs under the Bylaw within the Project Locus in Sudbury include the following:

- › Hop Brook at Station 400+30 (Bridge 128)
- › Intermittent stream at Station 527+30, which drains into Dudley Brook
- › Dudley Brook at Station 539+40, which drains into Hop Brook
- › Intermittent stream at Station 561+82, which drains into Dudley Brook
- › Intermittent stream at 593+18, which drains into Landham Brook (which is mapped as a CFR by MassWildlife)
- › Intermittent tributary to Hop Brook that runs parallel to the Project Site near Station Road (Station 602+50 to 710+50)
- › Hop Brook at Station 725+35 (Bridge 127)
- › Tributary to Wash Brook at Station 747+39 (Wash Brook drains into Hop Brook)

Summary of Impacts

There will be no disturbance within the waterways of any of the CFRs except at Hop Brook at Bridge 127, where there will be temporary disturbance from the placement of crane mats to support replacement of the bridge. There will be no impacts to baseflow, existing connections to adjacent floodplains, or levels of phosphates or nitrates in the CFRs. The Project includes a stormwater design that will promote infiltration and recharge with minimal increases to peak discharge rates (refer to Attachment L for the full Stormwater Report). The end use of the Project will be the MCRT, which will be used by pedestrians and bicyclists and will not contribute phosphates or nitrates. No fertilizers will be used for the seeding and planting proposed post-construction, and DCR's maintenance of the corridor will involve mowing and/or weed whacking and will not include use of fertilizers.

Vegetation will be removed from the RFA within 80 feet of Dudley Brook, both Hop Brook crossings, and the tributary to Hop Brook along Station Road. At the direction of the Natural Heritage & Endangered Species Program, Eversource consulted with Dr. Caleb Slater, Anadromous Fish Project Leader for the Massachusetts Division of Fisheries and Wildlife, regarding potential impacts to state-identified CFRs (the two Hop Brook crossings) and

appropriate measures to avoid, minimize, and mitigate such impacts. Plans and work descriptions were provided for Dr. Slater to review and a site visit was conducted with Dr. Slater on April 19, 2018. Based on this information, Dr. Slater indicated that the work as proposed is not anticipated to result in impacts to CFRs, and the proposed vegetation removal should not cause a significant increase in insolation or stream temperatures because a large portion of the existing brook is already flowing through open wet meadows.

Proposed Restoration and Mitigation Measures

The Project has been designed to avoid and minimize impacts to these CFRs to the extent practicable by the following measures:

- › Using steel sheeting to minimize the limit of disturbance, avoid grading within the waterway, and minimize the amount of vegetation that may need to be removed
- › Reducing the width of the limits of disturbance across the Project from 30 feet to 22 feet, and
- › Further reducing the limits of disturbance to 18 feet at the approaches to both bridges and along most of Station Road adjacent to the tributary to Hop Brook.

In addition, the following restoration and mitigation measures will be implemented at the CFR crossings:

- › Erosion and sediment controls will be installed prior to grading.
- › After Phase 1 is constructed, permanent impact areas outside of the 14-foot gravel base will be loamed and seeded with the seed mix shown on the NOI Plans in Attachment B.
- › After Phase 2 is completed, DCR will loam and seed the two-foot shoulders on either side of the MCRT so that all permanently disturbed areas except for the 10-foot wide MCRT are replanted.
- › Once the Project is complete, all areas outside of the 19-foot-wide final maintained width will be allowed to naturally revegetate with woody vegetation.
- › At Bridges 128 and 127:
 - At Bridge 127, debris containment measures and additional erosion and sediment controls will be installed for the removal of the existing structure.
 - Crane mats will be in place for the minimum duration necessary and will be removed immediately upon completion of activities where the use of a crane is required.
 - Following removal of mats, the area where mats were placed will be restored by raking and re-grading the soil (if necessary due to soil compaction).
 - The crane mat areas will be stabilized with jute mesh erosion control blankets and planted with native woody plant species to provide shade (see crane mat restoration detail on plan set in Attachment B, Sheet 130). The trees and shrubs will be planted after Phase 2 construction is completed to avoid disturbing and/or damaging the plants. The area will be reseeded with an appropriate wetland seed mix that will allow

for the regrowth of indigenous, non-invasive herbaceous species to supplement natural recruitment.

These actions will serve to restore the area to a naturally vegetated state and will allow the area to continue to serve the functions of filtering out excess sediments, nutrients, and other pollutants and maintaining adequate groundwater recharge.

Regulatory Compliance Summary

The following discussion presents a summary of how the Project will comply with the CFR performance stands in Section 2.6 of the Bylaw Regulations.

- › *Maintain and/or restore an undisturbed, vegetated forested state in Riverfront Area of at least 80-feet from top of bank*

Some vegetation will be removed from the Riverfront Area within 80 feet of the bank of the eight potential CFRs under the Bylaw. To comply with this standard, the Project was designed to be within the smallest footprint possible to safely facilitate construction in these areas with an emphasis on maintaining existing vegetation to the extent possible. Previous design iterations included vegetation removal outside of the proposed limits of grading to facilitate equipment swing. However, the Project proponents have consulted with a construction contractor to identify how work within these areas could be completed to eliminate vegetation removal outside of the limits of grading, which was accomplished. At all locations except for the 10-foot-wide MCRT, vegetation will be restored within the proposed limits of disturbance.

- › *Retain canopy shade along stream banks*

As described above, the Project has been designed with an emphasis on maintaining existing vegetation to the extent possible and will restore any disturbed vegetation within the proposed limits of disturbance along the stream banks. In addition, at the two Hop Brook crossings Dr. Slater of MassWildlife noted that a large part of the existing brook is already flowing through open wet meadows, and no shade impacts are expected as the Applicants will be replanting appropriate and compatible vegetation that will replace any existing canopy and provide shade upon completion of construction.

- › *Do not disturb logs, stumps and other large woody debris in and/or overhanging the water*

A detailed wildlife habitat evaluation was completed for each of these locations to identify any logs, stumps, and other large woody debris in and/or overhanging the water that will be removed. Following construction in the area, these features will be replicated in the same general location using logs that will be generated by Project vegetation removal.

- › *Maintain connections between rivers and adjacent floodplains*

The Project will not disrupt existing connections between the CFRs and the adjacent floodplains. No culverts associated with stream crossings will be replaced or enlarged, and existing conditions will be maintained or improved. In addition, the abutments for

the reconstructed bridges will be installed landward of the existing abutments and retaining walls will be installed to minimize the permanent Project footprint in these locations. Furthermore, the Project was designed to comply with all applicable performance standards related to BLSF, which include maintaining appropriate hydrologic connections between waterbodies and adjacent floodplains.

- › *Establish level of phosphates and nitrates in the CFR pre-construction and complete post-construction monitoring and evaluation*

The Project does not propose long-term use of fertilizers after the MCRT is completed and will not result in any increase in phosphates or nitrates in the CFRs.

- › *Establish baseflow of stream pre-construction and monitor post construction*

The Project does not propose any permanent disturbance within the waterways. At Hop Brook at Bridge 127, there will be temporary disturbance from the placement of crane mats, and the replaced bridge will no longer be partially submerged. Neither of these activities will result in a decrease of baseflow.

- › *Blockages of CFRs are not permitted without a special limited permit. Stream crossing of an in-place bridge is permitted*

The Project will not result in blocking a CFR. The existing railroad bridges will be reconstructed (Bridge 127) and rehabilitated (Bridge 128), and the transmission line will be attached to the side of the bridge. In addition, the low chord of Bridge 127 will be located above the existing bridge's low chord such that the new bridge will not be partially submerged, as it is in its current condition.

- › *The creation of a man-made dam of any sort is prohibited, unless approved by the Massachusetts Division of Fish and Wildlife and the Sudbury Conservation Commission*

The Project does not involve the construction of a man-made dam.

- › *Any activity, disturbance, construction or habitat modifications in the CFR Watershed that will increase the stream's temperature is prohibited*

The Project proponents have consulted with DFW and completed a site visit with a DFW fisheries biologist to discuss the potential for the proposed activities to increase the stream's temperatures at these locations. The DFW fisheries biologist did not suggest that any mitigation measures or restoration techniques would need to be implemented to maintain stream temperature given the similarities in existing and future conditions at each location.

5.2.3 Adjacent Upland Resource Areas (Section 7.2 of the Bylaw Regulations)

Under the Bylaw, the Commission may require an applicant to maintain a strip of continuous, undisturbed vegetative cover in part or all of the AURA and set other conditions on this area, unless the applicant provides evidence deemed sufficient by the Commission that the area or part of it may be disturbed without harm to the values protected by the Bylaw. The

applicant must demonstrate that the proposed activities in the AURA are necessary and that reasonable alternatives, including reducing the scale and scope of the project, do not exist.

The information presented in this NOI is intended to demonstrate that the AURA in the Project Locus will not be adversely impacted by the disturbance proposed for this Project, that reasonable alternatives to the proposed activities do not exist, and that the proposed activities will not affect resource values singularly or cumulatively because the regrading and restoration of vegetation will fully protect all of the wetland values cited in the Bylaw.

The Project has been designed to avoid and minimize impacts to AURA to the maximum extent practicable. As described in Section 4, the applicants have made extensive efforts to reduce the construction platform width and minimize the Project footprint using retaining walls and steel sheeting. The design has maximized the use of the existing rail bed to minimize vegetation removal and changes to existing grades, and to keep disturbance close to areas that have been previously disturbed from the historic and present use of the ROW.

Within the Project Locus, the total area of AURA is 853,305 square feet. In accordance with Section 7.2.2 of the Bylaw, the Project has been designed with areas of No Disturbance, Temporary Disturbance, and Permanent Disturbance. The majority (71%) of the total area of AURA will be a No Disturbance Area, with no activities proposed. As shown in Table 14, there are approximately 248,164 square feet of proposed disturbance within AURA (29% of the AURA on the Project Locus). Of this total, approximately 153,519 square feet of the proposed work (18% of AURA within the Project Locus) will be a Temporary Disturbance Area, where disturbed areas will be loamed and seeded and/or provided with additional plantings to return the area to natural vegetation and function. The remaining 94,645 square feet of the proposed work (11% of AURA within the Project Locus) will be a Permanent Disturbance Area, where the final condition is the paved bike path surface.

Table 14 Permanent and Temporary Disturbance to AURA
[Total AURA = 853,305 square feet]
[No Disturbance Area = 605,141 square feet]

<u>Stationing</u>	<u>Permanent Disturbance (square feet)</u>	<u>Temporary Disturbance (square feet)</u>	<u>Total Disturbance (square feet)</u>
367+00 to 368+50	1,282	1,696	2,978
368+85 to 370+60	1,445	1,790	3,235
396+60 to 400+10	3,502	6,029	9,531
400+50 to 403+00	2,423	4,672	7,095
404+90 to 406+60	1,437	2,851	4,288
515+75 to 522+80	6,553	11,094	17,647
525+75 to 527+40	1,606	2,139	3,745
530+35 to 530+50	332	278	610
530+50 to 530+80	131	272	403
534+00 to 543+90	9,682	13,652	23,334

Stationing	Permanent Disturbance (square feet)	Temporary Disturbance (square feet)	Total Disturbance (square feet)
558+10 to 559+20	999	1,397	2,396
561+50 to 564+25	2,677	3,460	6,137
576+10 to 580+00	3,669	6,382	10,051
586+40 to 586+00	9,328	14,377	23,705
601+60-602+10	573	981	1,554
602+50-711+40	11,839	13,536	25,375
711+60 to 725+10	12,539	21,642	34,181
725+70 to 743+10	17,435	32,118	49,553
747+85 to 753+30	5,372	8,773	14,145
760+55 to 762+40	1,821	2,919	4,740
767+25 to 767+30	0	64	64
Eversource Driveway	0	1,068	1,068
Sudbury Substation	0	2,329	2,329
TOTAL	94,645	153,519	248,164

Source: VHB.

- 1 Permanent disturbance is limited to the impervious paved surface proposed for the MCRT.
- 2 Temporary disturbance includes all areas of disturbance outside of the limits of paved MCRT, and work within the Sudbury Substation. All disturbed areas outside the limits of paved surfaces and outside the Substation will be revegetated with native species.

As noted in Section 9 of the Bylaw, there is a special adjacent upland resource area definition for vernal pools. In consideration of this, Table 15 identifies impacts within Vernal Pool Buffers separate from other AURAs. Within the Project Locus, the total area of Vernal Pool Buffer is 254,887 square feet. The majority (68%) of the total Vernal Pool Buffer will be a No Disturbance Area, with no activities proposed. There are approximately 82,692 square feet of proposed disturbance within Vernal Pool Buffer (32% of the Vernal Pool Buffer on the Project Locus). Approximately 49,553 square feet of the proposed work (19% of Vernal Pool Buffer within the Project Locus) will be a Temporary Disturbance Area, where disturbed areas will be loamed and seeded and/or provided with additional plantings to return the area to natural vegetation and function. The remaining 33,139 square feet of the proposed work (13% of Vernal Pool Buffer within the Project Locus) will be a Permanent Disturbance Area, where the final condition is the paved bike path surface.

**Table 15 Permanent and Temporary Disturbance to Vernal Pool Buffer
[No Disturbance Area = 172,195 square feet]**

Stationing	Permanent Disturbance (square feet)	Temporary Disturbance (square feet)	Total Disturbance (square feet)
368+50 to 368+85	888	1,227	2,115
375+00 to 376+60	1,255	1,998	3,253
406+60 to 416+50	9,818	15,615	25,433

Stationing	Permanent Disturbance (square feet)	Temporary Disturbance (square feet)	Total Disturbance (square feet)
522+95 to 525+75	2,843	4,082	6,925
527+40 to 530+35	3,049	4,443	7,492
559+20 to 561+50	2,404	3,545	5,949
595+70 to 599+75	4,010	5,849	9,859
743+10 to 747+85	4,786	5,389	10,175
762+40 to 766+50	4,086	7,297	11,383
TOTAL	33,139	49,445	82,584

Source: VHB.

- 1 Permanent disturbance is limited to impervious paved surface proposed for the MCRT.
- 2 Temporary disturbance includes all areas of disturbance outside of the limits of paved MCRT. All disturbed areas outside the limits of paved surfaces will be revegetated with native species.

Erosion and sediment controls (see Section 3.1.2 and Attachment B) will be installed prior to any grading to protect adjacent wetland resource areas, and syncopated silt fence will be used within 450 feet of vernal pools. In addition, as described in Section 5.1.10, the Project will implement time-of-year restrictions related to state-listed species, vernal pools, black racers, and CFRs.

The Project will restore all disturbed areas outside of the 10-foot-wide MCRT using a native seed mix with a focus on developing an herbaceous and low-growing woody vegetation community over the duct bank (a 5-foot corridor). In addition, any areas outside of the 19-foot-wide maintained corridor that includes the paved MCRT, two 2-foot shoulders, and 5-foot area over the duct bank will be allowed to naturally revegetate with herbaceous and taller woody vegetation. Woody shrubs and herbaceous vegetation will be planted within Priority and Estimated Habitat and at the banks of both Hop Brook crossings (see Attachment B, sheets 130 and 131 for planting details). The Project also proposes to create wildlife habitat features such as snags and brush piles and to reseed to establish a native herbaceous cover to mitigate for wildlife habitat features that are lost. Refer to the WHE in Attachment J for more information about habitat features in each AURA. These actions will serve to restore the AURA to a naturally vegetated state and will ensure that they will continue to support the wetland values protected by the Bylaw.

5.2.4 Wildlife Habitat (Sections 7.3 and 7.4 of the Bylaw Regulations)

The Bylaw and Bylaw Regulations may require a WHE and Section 7.4 of the Bylaw Regulations states, "for the purposes of this Bylaw the Wildlife Habitat Evaluation shall use Appendix B of the *Wildlife Habitat Protection Guidance*." According to Section 7.3 of the Bylaw Regulations, "all wildlife habitat functions are presumed to exist in all resource areas, and therefore, all resource areas are presumed significant for wildlife habitat interests and values." According to the Bylaw Regulations, a WHE is vital to confirm the presence or absence of wildlife features within the WIAs on the project site (i.e., Project Locus). Similar to the MWPA and the Guidance, the Bylaw Regulations state "no project may have a significant

adverse project/site-specific impact or an adverse cumulative impact on wildlife for more than two growing seasons.”

The Project will not have a significant adverse site-specific or cumulative impact on wildlife habitat. As described in Section 5.1.9, detailed “Appendix B” WHEs were completed for impact areas along the Project, including Sudbury Bylaw RFA and AURA. As described above, historic and present use of the ROW has impacted the existing habitat through the introduction of invasive species and creation of defined trails that lack vegetation. Adverse effects from the Project will be avoided by substantially restoring important wildlife habitat functions of areas within the Project Locus during construction, and in many cases the important habitat features identified are abundant outside of the impact area. The Project also involves removing the tracks and ties from the MBTA ROW, which removes a movement barrier for turtles and amphibians and improves existing conditions. Please see Attachment J for the Wildlife Habitat Evaluation.

5.2.5 Resource Replications (Section 7.8 of the Bylaw Regulations)

Section 7.8 in the Bylaw Regulations sets out the Commission’s standards for wetland replication. Although impacts were minimized to the greatest extent practicable, the Project will result in 89 square feet of permanent BVW alteration and 303 square feet of IVW alteration, which is being mitigated with a proposed wetland replication at a 2:1 ratio (minimum of 1:1 under the Water Quality Regulations and 2:1 under the Bylaw). Please refer to Attachment D for a wetland replication report.

Pursuant to the Bylaw Regulations, the proposed wetland replication should be completed in accordance with the following conditions:

7.8.1. The replicated wetland must be constructed in full and conditionally approved prior to construction of any structures;

Eversource respectfully requests a waiver from this requirement and asks that the Commission allow completion of the replication area during construction of the Project. The contractor will need to remove vegetation to access the replication area and Eversource requests that the contractor will be allowed to conduct this replication activity as part of the overall vegetation removal for the Project as described in Section 3.1.1.1.

7.8.2. At a minimum, the replicated wetland must reproduce all the values and functions of the original wetland as determined by the Conservation Commission;

The proposed replication area is located directly adjacent to the larger area of impact, west of Landham Road. The existing wetland is an old drainage ditch with standing water and there is no vegetation in the center of the channel. There is a small fringe of vegetation at the south end of the channel, and the surrounding upland area has been historically disturbed by the rail bed activities. The original wetland provides little wildlife habitat value at present, and the proposed replication

will provide greater species diversity and wildlife habitat, improving the values and functions being provided.

- 7.8.3. *The area of replication must be at least twice as large as the area of the original resource area that will be destroyed;*

The Project will result in 89 square feet of permanent BVW impacts and 303 square feet of permanent IVW impacts. The Applicants propose to provide 784 square feet of replication (a ratio of 2:1).

- 7.8.6. *The top 12" of soil from the original wetland must be transplanted with soil structure – especially the lamination and density profile – intact to the replication;*

The soil within the original wetland is generally disturbed from previous land use and some invasive species are present in the area. To avoid introducing invasive species into the replacement wetland, the Applicants do not intend to transplant existing soils and instead propose to use a minimum of 12 inches of manmade organic enriched topsoil mixture consisting of equal volumes of organic (compost) and mineral material.

- 7.8.7. *Any replication or restoration work that creates a resource on abutting properties shall require an easement from the abutting property owner covering the full extension of the resource on that property prior to commencement of the work; and*

The proposed replication will not create wetland resources on abutting properties.

- 7.8.8. *A bond shall be posted that will enable to Commission to complete the replication should the applicant fail to fulfill obligations set forth in the Order of Conditions.*

Eversource will post a bond as required.

5.2.6 Local Riverfront Area Protection (Section 7.10 of the Bylaw Regulations)

Summary of Impacts

The Project was designed to fully comply with all applicable performance standards for the additional RFAs that are subject to jurisdiction under the Sudbury Bylaw.

There are six areas of RFA subject to jurisdiction under the Bylaw:

1. Station 514+98 to 520+31: Associated with an unnamed stream (see plan sheet 51 in Attachment B)
2. Station 525+25 to 529+45: Associated with an unnamed stream (see plan sheet 52 in Attachment B)
3. Station 558+06 to 562+94: Associated with an unnamed stream (see plan sheets 56 to 57 in Attachment B)
4. Station 585+30 to 595+15: Associated with an unnamed stream (see plan sheets 59 to 60 in Attachment B)

5. Station 600+56 to 705+30: Associated with an unnamed tributary to Hop Brook at Station Road (see plan sheets 61 to 63 in Attachment B)
6. Station 749+45 to 749+55: Associated with an unnamed stream (see plan sheets 66 to 67 in Attachment B)

These six locations comprise 252,729 square feet of existing RFA under the Bylaw within the Project Locus in Sudbury. As outlined in Table 16, the Project will result in permanent disturbance to RFA within the MBTA ROW due to installation of the MCRT, and temporary disturbance due to installation of the transmission line, construction of the base for the MCRT, and the placement of crane mats (and associated vegetation removal) to accommodate rehabilitation and replacement of Bridges 128 and 127.

Table 16 Permanent and Temporary Disturbance of Sudbury Bylaw RFA

Station	Inner 100' RFA			Outer 200' RFA		
	Permanent Disturbance ¹ (square feet)	Temporary Disturbance (square feet)	Total Disturbance (square feet)	Permanent Disturbance ¹ (square feet)	Temporary Disturbance (square feet)	Total Disturbance (square feet)
Unnamed Stream, Station 514+98 to 520+31						
514+98- 516+00	-	-	-	1,022	1,895	2,917
516+00- 519+15	3,105	4,539	7,644	-	-	-
519+15- 520+31	-	-	-	1,091	3,025	4,116
<i>Subtotal</i>	<i>3,105</i>	<i>4,539</i>	<i>7,644</i>	<i>2,113</i>	<i>4,920</i>	<i>7,033</i>
Unnamed Stream, Station 525+25 to 529+45						
525+25- 526+25	-	-	-	987	1,372	2,359
526+25- 528+45	2,070	2,913	4,983	-	-	-
528+45- 529+45	-	-	-	1,084	1,592	2,676
<i>Subtotal</i>	<i>2,070</i>	<i>2,913</i>	<i>4,983</i>	<i>2,071</i>	<i>2,964</i>	<i>5,035</i>
Unnamed Stream, Station 558+06 to 562+94						
558+05- 559+35	-	-	-	1,243	1,792	3,035
559+30- 562+95	2,509	3,611	6,120	-	-	-
562+95- 563+94	-	-	-	1,014	1,346	2,360
<i>Subtotal</i>	<i>2,509</i>	<i>3,611</i>	<i>6,120</i>	<i>2,257</i>	<i>3,138</i>	<i>5,395</i>

Station	Inner 100' RFA			Outer 200' RFA		
	Permanent Disturbance ¹ (square feet)	Temporary Disturbance (square feet)	Total Disturbance (square feet)	Permanent Disturbance ¹ (square feet)	Temporary Disturbance (square feet)	Total Disturbance (square feet)
Unnamed Stream, Station 585+30 to 595+15						
585+35- 586+45	-	-	-	1,072	1,909	2,981
586+45- 594+15	7,831	12,368	20,199	-	-	-
594+15- 595+15	-	-	-	909	1,230	2,139
<i>Subtotal</i>	<i>7,831</i>	<i>12,368</i>	<i>20,199</i>	<i>1,981</i>	<i>3,139</i>	<i>5,120</i>
Tributary to Hop Brook, Station 600+56 to 705+30						
600+55- 601+60	-	-	-	1,434	1,998	3,432
601+60- 602+10	573	981	1,554	-	-	-
602+50- 705+30	5,751	6,008	11,759	-	-	-
<i>Subtotal</i>	<i>6,324</i>	<i>6,989</i>	<i>13,313</i>	<i>1,434</i>	<i>1,998</i>	<i>3,432</i>
Tributary to Hop Brook, Station 749+45 to 749+55						
749+45- 749+55	-	-	-	94	128	222
<i>Subtotal</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>94</i>	<i>128</i>	<i>222</i>
TOTAL	21,839	30,420	52,259	9,950	16,287	26,237

Source: VHB.

1 Permanent disturbance is limited to paved surface proposed for the MCRT.

2 Temporary disturbance includes all areas of disturbance outside of the limits of paved bike path associated with MCRT. All disturbed areas outside the limits of the paved bike path will be revegetated with native species.

Proposed Mitigation Measures

The Project was designed to avoid and minimize impacts to RFA to the extent practicable by:

- › Avoiding disturbance of existing culverts unless necessary for safe installation of the Project
- › Maintaining existing vegetation and/or restoring vegetation adjacent to the associated water bodies
- › Reducing the construction platform width to 18 feet at the following locations:
 - The approaches to the unnamed stream at Station 593+18

- Along Station Road
 - The approaches to the unnamed stream at Station 747+39
- › Using a retaining wall from Station 730+99 to 734+25;

In addition, the following mitigation measures will be implemented in RFA:

- › Erosion and sediment controls will be installed to protect the associated waterbodies.
- › After Phase 1 is constructed, permanent impact areas outside of the 14-foot gravel base will be loamed and seeded with the seed mix shown on sheet 131 in the plans in Attachment B.
- › After Phase 2 is completed, DCR will loam and seed the two-foot shoulders on either side of the MCRT so that all permanently disturbed areas except for the 10-foot-wide MCRT are replanted.
- › Once the Project is complete, all areas outside of the 19-foot-wide final maintained width will be allowed to naturally revegetate with woody vegetation.

Regulatory Compliance Summary

Section 7.10 in the Bylaw Regulations states that the protections afforded to RFAs shall follow the regulations in sections 7.2 and 7.3 for Adjacent Upland Resource Areas for the full 200-foot extent of the RFA.

As described in 5.2.3 above, the Commission may require an applicant to maintain a strip of continuous, undisturbed vegetative cover and set other conditions in this area unless the applicant provides sufficient evidence that the proposed disturbance will not harm the values protected by the Bylaw, and that the proposed activities are necessary and that reasonable alternatives, including reducing the scale and scope of the project, do not exist.

The Project has been designed to avoid and minimize impacts to RFA by minimizing the width of the construction platform and maximizing the use of the existing rail bed. Within the Project Locus, the majority of 200-foot RFA will consist of a No Disturbance Area, with no activities proposed. As shown in Table 15, there are approximately 87,483 square feet of proposed disturbance within RFA that are jurisdictional exclusively under the Bylaw (*i.e.*, areas that are not defined as RFA under the MWPA Regulations). Approximately 55,694 square feet of the proposed work will be Temporary Disturbance Area, where disturbed areas will be loamed and seeded and/or provided with additional plantings to return the area to natural vegetation and function. The remaining 31,789 square feet of the proposed work will be Permanent Disturbance Area, where the final condition is the paved bike path surface. These areas are included within the AURA areas addressed above in Section 5.2.3.

The Project will improve existing conditions on the previously degraded railbed by removing the existing rails and ties, and loaming, seeding, and/or planting all construction areas outside of the proposed 10 feet of pavement. The final condition will present less of a barrier to movement to wildlife such as turtles and salamanders, and the proposed plantings within Estimated and Priority Habitat and at the two Hop Brook crossings will provide food and

shelter for wildlife and provide shade for the CFRs. As discussed in Section 5.2.4 and in more detail in the Wildlife Habitat Evaluation in Attachment J, the Project will not have a significant adverse site-specific or cumulative impact on wildlife habitat within RFA.

5.3 Stormwater Management

5.3.1 Massachusetts Stormwater Management Standards

Stormwater management during construction will comply with all applicable standards.

Per 310 CMR 10.05(6)(m)6, the Stormwater Management Standards for the post-construction phase shall apply to the maximum extent practicable to footpaths, bike paths, and other paths for pedestrian and/or non-motorized vehicle access. The Project was designed to meet the SMS to the maximum extent practicable and includes an open stormwater system with vegetated water quality swales and check dams to promote infiltration and recharge. The MCRT will require 10 feet of paving and runoff will sheet flow to the vegetated shoulders, providing an additional opportunity for stormwater to infiltrate before it enters the swales. The swales were designed to convey water to appropriate discharge points to maintain existing drainage patterns along the Project and were sized such that they can accommodate a two-year storm to meet DCR's standards and, according to the stormwater analysis, frequently meeting the 10-year storm requirements of the SMS as well.

The end use of the Project will be the MCRT and is not anticipated to increase the pollutant loads within the Project Locus above the existing conditions. The Project will be used by pedestrians and bicyclists, which will not contribute contaminants to the path surface. Therefore, there will be little to no contaminants on the path surface to be washed off by stormwater runoff. Other than in emergency situations, vehicle access along the path will be limited to bi-weekly mowing over the shoulders by DCR, inspections by Eversource approximately once every three years, and other maintenance as needed by both Eversource and DCR. The MCRT will not be plowed and/or treated in the winter.

In developing the current Project design, the following tasks were completed to stormwater management features for the Project:

- › Additional analysis was performed to provide appropriate swales and check dams to handle a two-year storm for compliance with the Massachusetts Stormwater Standards.
 - All designed swales were sized such that the proposed MCRT will not be overtopped during a two-year storm event, per DCR design standards.
 - Swales were designed to include check dams with a spacing that varies based on the longitudinal slope of the swale such that the check dams result in an "effective" maximum slope of two percent in all swales, thus preventing erosive flows.
 - Check dams were designed for swales having a longitudinal gradient below two percent to encourage greater infiltration.

- Check dam details were revised to have a height of six inches, instead of the typical one-foot height, given that most of the swales are one foot deep, and as such, a six-inch check dam height provides free board for higher flows, ensuring that the flow of stormwater will stay within the swale.
- The check dam details have a stone size of 3 inches to prevent dislodged stones from migrating downstream during high-flow conditions.
- › Erosion control barriers will be installed in all locations where water can flow off the Project limits at a slope of 2:1 or when water can sheet-flow off the Project limits within 100 feet of a wetland.
- › Additional analyses of existing and proposed flows to vernal pools were performed using the TR-55 methodology to confirm that the Project will not impact the annual recharge of any of the vernal pools.
- › A comprehensive analysis of peak flow rates was completed for all existing outfalls so that the Project will not increase peak flows to abutting private properties or closed drainage systems at crossing roadways considering the 25-year storm.

The Project was also evaluated and designed to address potential impacts to critical areas to the greatest extent practicable. As defined in the SMS, critical areas include:

- › Outstanding Resource Waters as designated in 314 CMR 4.00;
- › Special Resource Waters as designated in 314 CMR 4.00;
- › Recharge areas for public water supplies as defined in 310 CMR 22.02 (Zone Is, Zone IIs and Interim Wellhead Protection Areas for groundwater sources and Zone As for surface water sources);
- › Bathing beaches as defined in 105 CMR 445.000;
- › Cold-water fisheries as defined in 310 CMR 10.04 and 314 CMR 9.02; and
- › Shellfish growing areas as defined in 310 CMR 10.04 and 314 CMR 9.02.

The Project does not involve work within any Outstanding Resource Waters, Special Resource Waters, bathing beaches, shellfish growing areas, Zone I Wellhead Protection Areas, Interim Wellhead Protection Areas, or Zone As for surface water sources. However, the Project passes through one Zone II WPA in Sudbury, and crosses Hop Brook, which is identified by MassWildlife as a Coldwater Fishery Resource. In addition, although the Project does not involve any work within vernal pools (which qualify as ORWs) or vernal pool habitat as defined in the MWPA, there is one vernal pool certified by the Natural Heritage & Endangered Species Program and 12 presumed vernal pools under the Bylaw within or adjacent to the Project Locus in Sudbury, and Eversource has evaluated potential stormwater impacts to these resources.

In critical areas, the SMSs require that at least 44 percent of the total suspended solids ("TSS") be removed prior to discharge into an infiltration structure. This requirement would typically require multiple pretreatment practices in series. The Stormwater Handbook identifies several acceptable stormwater treatment BMPs for critical areas, including

bioretention areas, sand or organic filters, and infiltration basins, trenches, or subsurface structures. The SMSs also require that BMPs be set back 100 feet from vernal pools and that all infiltrating BMPs be located at least 50 feet from any surface water including wetlands. Meeting these standards would not be achievable without additional vegetation removal, significant changes to existing topography, increases to the limit of disturbance near wetlands and vernal pools, and/or alterations to existing drainage patterns. Filtering BMPs must also be sufficiently raised to discharge into the receiving water while meeting minimum media depths, which would require raising the Project grade around the most environmentally sensitive areas. The Project will be used by pedestrians and bicyclists will not contribute contaminants to the path surfaces. Therefore, there will be little to no contaminants on the path surface to be washed off by stormwater runoff.

In summary, the Project includes the use of vegetated shoulders and water quality swales with check dams to promote infiltration and recharge. DCR will pave only 10 feet of the 14-foot-wide gravel access path and will loam and seed the shoulders with a native herbaceous seed mix. This loaming and seeding will provide an additional opportunity for stormwater shed from the paved surface to infiltrate before it enters the swales. The swales were designed to convey water to appropriate discharge points to maintain existing drainage patterns along the Project and were sized considering the volumes of runoff from the pavement such that they can accommodate a two-year storm. This design meets all applicable SMS requirements to the maximum extent practicable, is consistent with the stormwater management for all DCR's rail trail facilities and is appropriate for the Eversource underground transmission line as well.

Please refer to the Stormwater Report in Attachment L for additional details regarding the stormwater management measures.

5.3.2 Sudbury Stormwater Management Bylaw

Under Section 5C of Article V(F), the Sudbury Stormwater Management Bylaw, a Stormwater Management Permit ("SMP") is required from the Planning Board, or its designee, for the Project. Under Section 4.0 of the Sudbury Stormwater Management Bylaw Regulations, the Planning Board may designate the Conservation Commission as the Reviewing Agent, and if a project meets the Applicability Section of the Stormwater Management Bylaw and it is within the specific jurisdiction of the Conservation Commission, then the entire project and all related projects required as a result of the activity proposed by the applicant may be designated to the jurisdiction of the Conservation Commission without further action needed by the Planning Board. The Applicants have requested that the Planning Board delegate review to the Conservation Commission as allowed under Section 4.0.

Section 8.A.3 of the Stormwater Management Bylaw Regulations identifies design and performance criteria for projects subject to an SMP. The Project fully complies with these criteria:

- a. *The design of the project shall, to the maximum extent feasible, employ environmentally sensitive site design as outlined in the DEP handbook and shall attempt to reproduce natural hydrologic conditions with respect to ground and surface waters.*

The Project has employed environmentally sensitive site design by incorporating low impact development techniques:

- › Reducing impervious surfaces by using a 10-foot paved path rather than DCR's typical 12-foot width;
- › Reproducing natural hydrologic conditions and treating stormwater at its source through the use of "country drainage" such as vegetated water quality swales and check dams that are located close to the impervious path that generates the runoff;
- › Minimizing disturbance to existing trees and shrubs; and
- › Protecting natural features and processes by maintaining existing drainage patterns.

- b. *Evaluation of Low Impact Development practices is required, and implementation of such practices is required, to the maximum extent practicable and where it provides a substantially equivalent alternative. Guidance on these practices is provided in Appendix D and the MA Stormwater Management Handbook.*

Please refer to the response to part a above.

- c. *The Stormwater Management Plan shall incorporate source controls of contaminants and employ Best Management Practices (BMPs) to minimize stormwater pollution.*

The end use of the Project will be the MCRT, which will be used by pedestrians and bicyclists and will not contribute contaminants to path surfaces to be washed off by stormwater runoff.

- d. *The water quality volume for sizing of BMPs shall be based on 1-inch of runoff from the tributary area.*

The Project has sized BMPs to handle 1 inch of runoff from the tributary area. As shown in Attachment L, the Project will not result in any increases in peak discharge rates for a 1-inch storm.

- e. *Hydrologic analyses using TR-55/TR-20 methodology shall be performed on the entire project site and include any off-site areas that drain to or through the project site.*

As described in Attachment L, hydrologic analyses were performed using the TR-55/TR-20 methodology along the entire Project and included off-site areas that drain to or through the Project.

- f. *The analyses shall be analyzed for the 1 inch, and the 2, 10, 25 and 100-year design storms under pre-development and post-development conditions. The 24-hour rainfall amounts for the 2, 10, 25- and 100-year storms are to be based on the Northeast Regional Climate Center "Atlas of Precipitation Extremes for the Northeastern United States and*

Southeastern Canada.” For Sudbury, the 24 hr rainfall amounts are as follows (rounded to the nearest one-tenth of an inch):

- › 2 yr, 24 hr event = 3.2 inches
- › 10 yr, 24 hr event = 4.8 inches
- › 25 yr, 24 hr event = 6.0 inches
- › 100 yr, 24 hr event = 8.6 inches

As described in Attachment L, analyses were performed for the 1-inch and the 2, 10, 25, and 100-year 24-hour design storms under pre-development and post-development conditions.

- g. The analysis is to be performed on a pre and post sub-watershed basis with designated control points at each location where runoff leaves the site.*

The analysis was performed on a pre and post sub-watershed basis with designated control points at each location where runoff leaves the site.

- h. The same land area shall be used in the analysis to facilitate comparison of existing and proposed conditions.*

Comparison of the existing and proposed conditions was completed using the same land area.

- i. The total volume of discharge as well as peak rate shall be evaluated at each control point.*

The total volume of discharge as well as peak rate was evaluated at each control point.

- j. Redevelopment Standards: Projects involving redevelopment of existing sites shall be designed in accordance with the redevelopment checklist provided in the latest MA Stormwater Handbook. All redevelopment projects must provide a net improvement to stormwater conditions at the site, either in the area of disturbance or to other areas on the site.*

Many portions of the Project involve redevelopment of the existing railroad ROW, as defined in Section 2.0 of the Sudbury Stormwater Bylaw (“any construction, alteration, improvement, repaving, or resurfacing on a previously developed site”). The Project has been designed in accordance with the redevelopment checklist provided in the latest MA Stormwater Handbook and provides a net improvement to stormwater conditions at the site.

5.4 Section 401 of the Clean Water Act

In addition to the 89 square feet of permanent impacts to BVW, the Project will result in 303 square feet of permanent impact to one isolated wetland (Wetland 13) in Sudbury that is subject to federal jurisdiction under Sections 401 and 404 of the Clean Water Act.

A Water Quality Certification ("WQC") would be required under 314 CMR 9.00. However, per 314 CMR 9.03(1), the Project does not require a separate application to MassDEP for a WQC provided that the following conditions are met:

- (a) *the Final Order of Conditions [under the MWWPA] permits work that results in the loss of up to 5,000 square feet cumulatively of bordering and isolated vegetated wetlands and land under water.*

The Project will result in the loss of 1,018 square feet cumulatively of bordering and isolated vegetated wetlands and land under water and therefore meets this condition. Of this amount, 622 square feet is located in Hudson and the remaining 396 square feet is located in Sudbury.

- (b) *the Final Order of Conditions includes conditions requiring at least 1:1 replacement of bordering vegetated wetlands under 310 CMR 10.55(4)(b);*

The Project proposes to replace bordering vegetated wetlands at a ratio of 2:1 as described in Section 5.1.4. Please refer to Attachment D for more information regarding the replication proposed.

- (c) *if applicable, the activity conforms to the Waterways Crossing requirements at General Condition 21 in the Corps of Engineers' Programmatic General Permit (PGP) for Massachusetts; and*

The Project will comply with the Waterways Crossing requirements of the Corps of Engineers' latest General Permit for Massachusetts (issued April 16, 2018). The Project will only require replacement of one waterway crossing (Bridge 127), which will be constructed in the same alignment as the existing crossing but raised to pull the bridge out of the water and will comply with the Massachusetts Stream Crossing Standards (see Section 5.1.2).

- (d) *the proposed work is not subject to 314 CMR 9.04.*

The Project is not subject to 314 CMR 9.04.

5.5 General Mitigation Measures and Best Management Practices Summary

The Project incorporates general mitigation measures and BMPs to avoid and/or minimize permanent and temporary disturbance, including the following:

- › **Erosion and Sediment Controls:** As discussed within Section 3.2.1.3, the Project will employ a variety of erosion and sediment controls, which may include:
 - Construction mats to support cranes at the Hop Brook crossings;
 - Silt fence, straw bales, compost filter tubes, straw wattles, and/or silt socks;
 - Jute mesh erosion control blankets;

- Hydroseeding;
 - Turbidity controls; and
 - Frac tanks/filter bags and straw bale containment areas.
- › **ROW Restoration:** As discussed within Sections 3.1.10 and 3.2.3, restoration of the ROW will include:
- Loaming and seeding all disturbed areas outside of the 10-foot-wide paved MCRT; and
 - Planting woody vegetation within the crane mat areas at both Hop Brook crossings, within the Priority and Estimated Habitat area, and at select locations as slope protection (see Attachment C for safety plantings).
- › **Invasive Species Monitoring:** As discussed within Section 3.4.1, DCR will be responsible for monitoring for invasive species on an annual basis.
- › **Environmental Monitoring:** Eversource and DCR will employ a qualified EM during both Phases of construction. The EM will be responsible for daily inspections of work areas and will address potential issues related to the environment, if any (e.g., sediment migration, erosion controls, swamp mat installation, rare species, etc.). The EM will have stop work authority if site conditions are found to not be in conformance with permit conditions. During Phase 1, an Eversource EM will be responsible for ensuring that all construction activities are completed in accordance with applicable permit conditions. Once Phase 1 is complete, DCR's EM will assume all monitoring responsibilities during Phase 2 construction.

Attachments

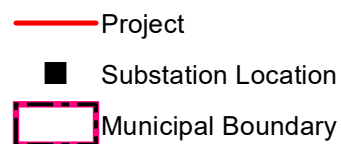
- Attachment A – Site Figures
- Attachment B – NOI Plans: Underground Transmission Line along Inactive MBTA Corridor (*under separate cover*)
- Attachment C – NOI Plans: Mass Central Rail Trail Along Inactive MBTA Corridor (*under separate cover*)
- Attachment D – Wetland Replication Report
- Attachment E – Site Photographs
- Attachment F – Sudbury ORAD
- Attachment G – NHESP Correspondence
- Attachment H – Best Management Practices
- Attachment I – Draft Construction Spill Prevention Control and Countermeasures Plan
- Attachment J – Wildlife Habitat Evaluation (*under separate cover*)
- Attachment K – Snag and Brush Pile Replacement Details
- Attachment L – Stormwater Management Report (*under separate cover*)

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Attachment A – Site Figures

- › Figure 1 – Sudbury USGS Locus Map
- › Figure 2 – Sudbury Aerial Map
- › Figure 3 – Sudbury Soils Map
- › Figure 4 – Sudbury NHESP Priority and Estimated Habitat Map
- › Figure 5 – Sudbury Public Water Supply and Groundwater Resources Map
- › Figure 6 – Construction Conditions

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Figure 1: Sudbury Locus Map (USGS)

1/9/2020





- Project
- Substation Location
- Municipal Boundary

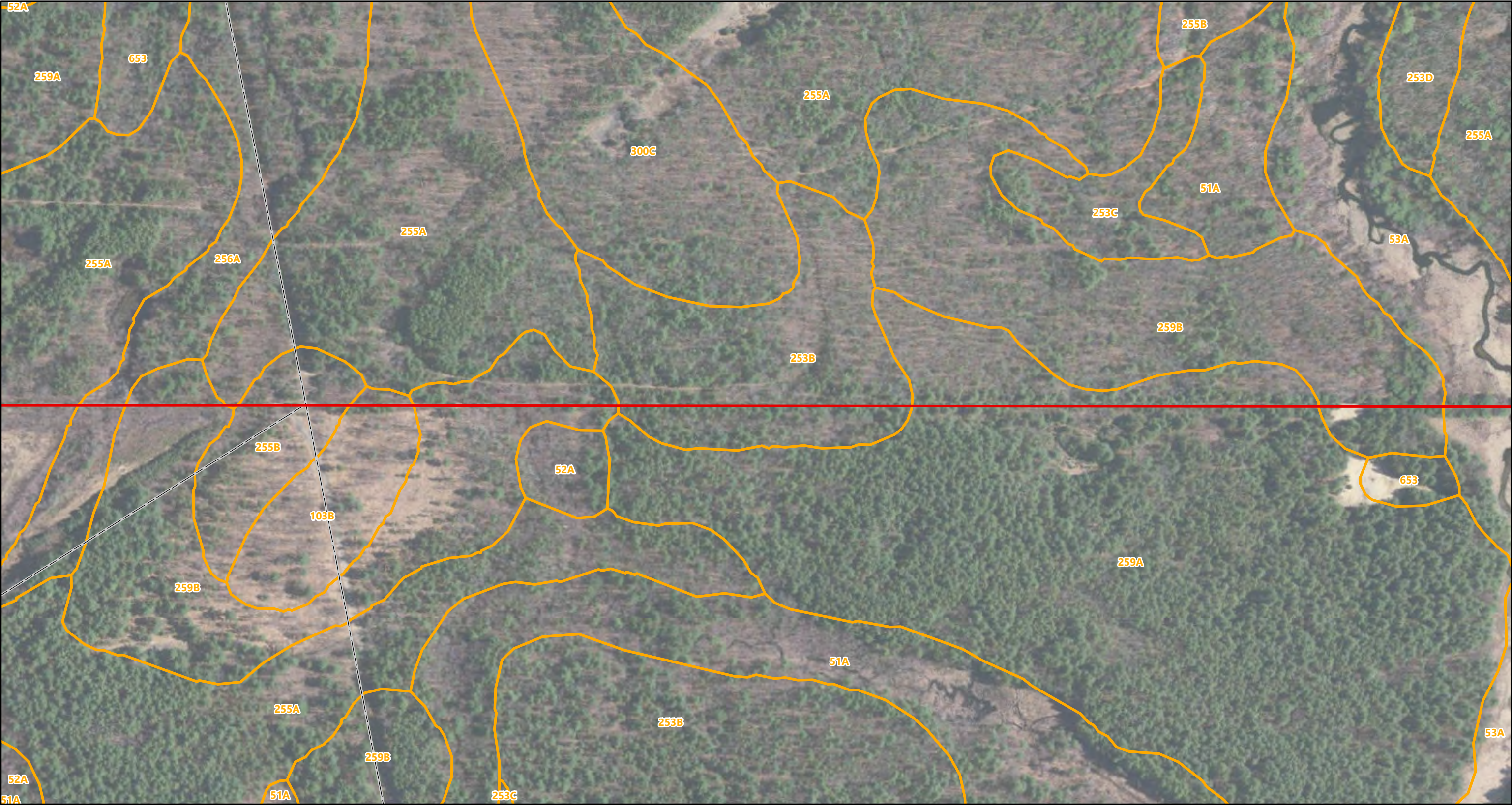
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Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project

Figure 2: Sudbury Aerial Map

Source:
MassGIS, VHB
1/9/2020





- Project
- NRCS Soil Boundary
- Substation Location
- Municipal Boundary

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Figure 3: Sudbury Soils Map

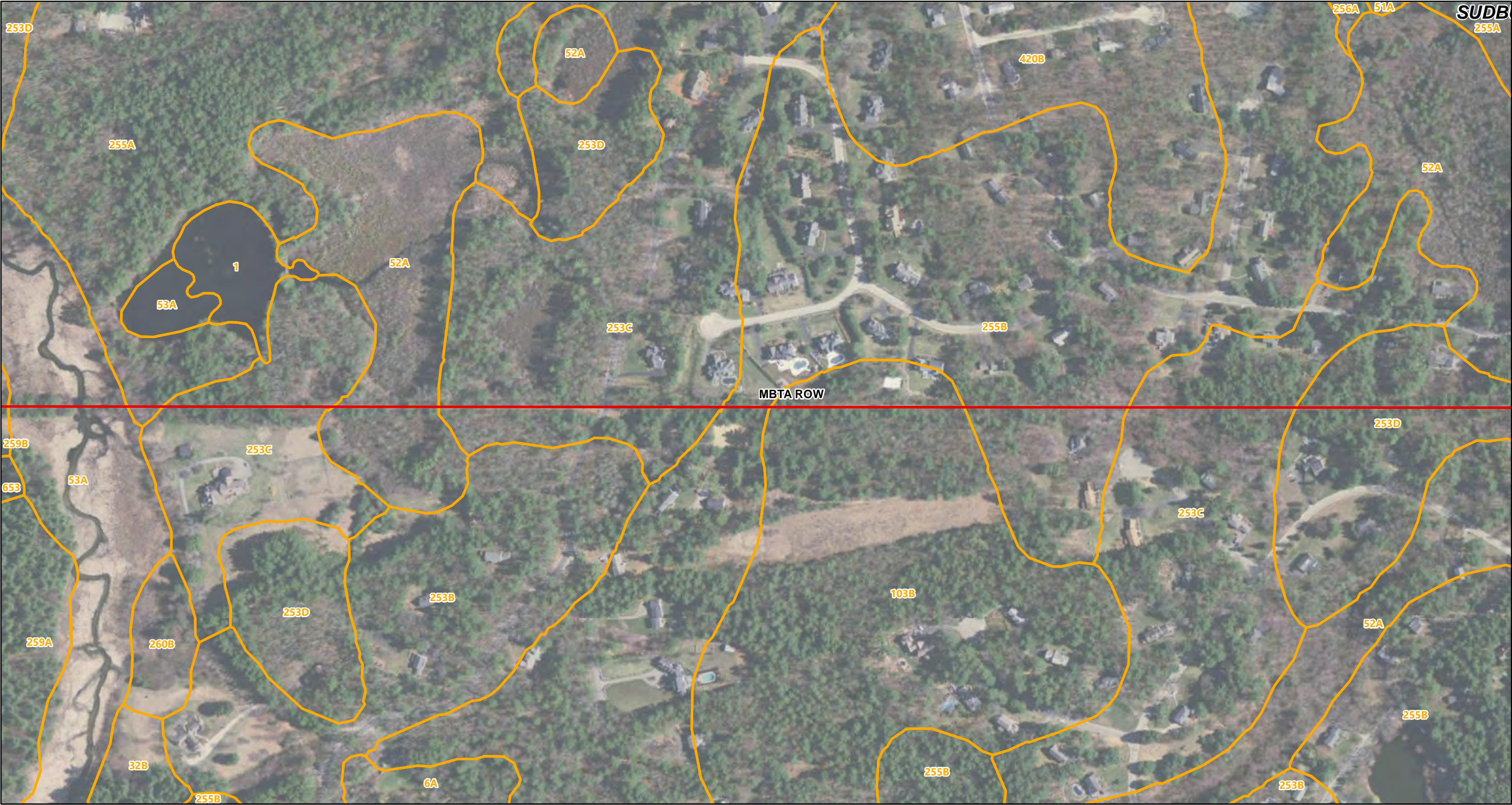
Page 1 of 6

Source:
MassGIS, VHB

1/10/2020

0300600 Feet

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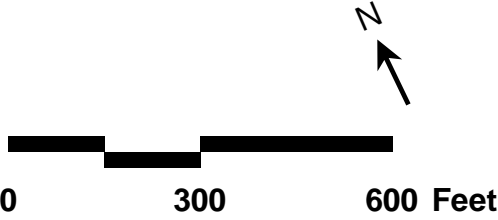


— Project
■ Substation Location
□ Municipal Boundary
□ NRCS Soil Boundary

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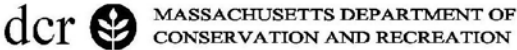
Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project

Figure 3: Sudbury Soils Map





- Project
- NRCS Soil Boundary
- Substation Location
- Municipal Boundary

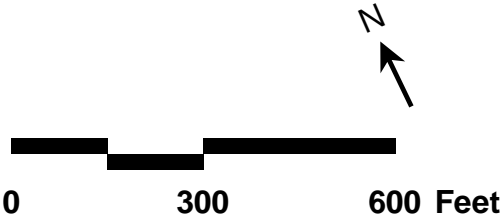


Sudbury-Hudson Transmission Reliability and
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Figure 3: Sudbury Soils Map

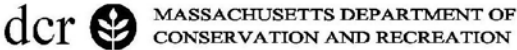


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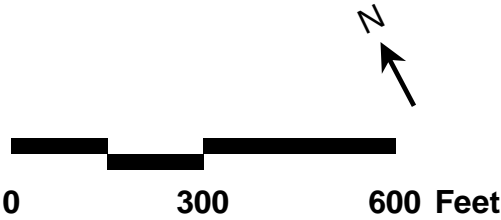


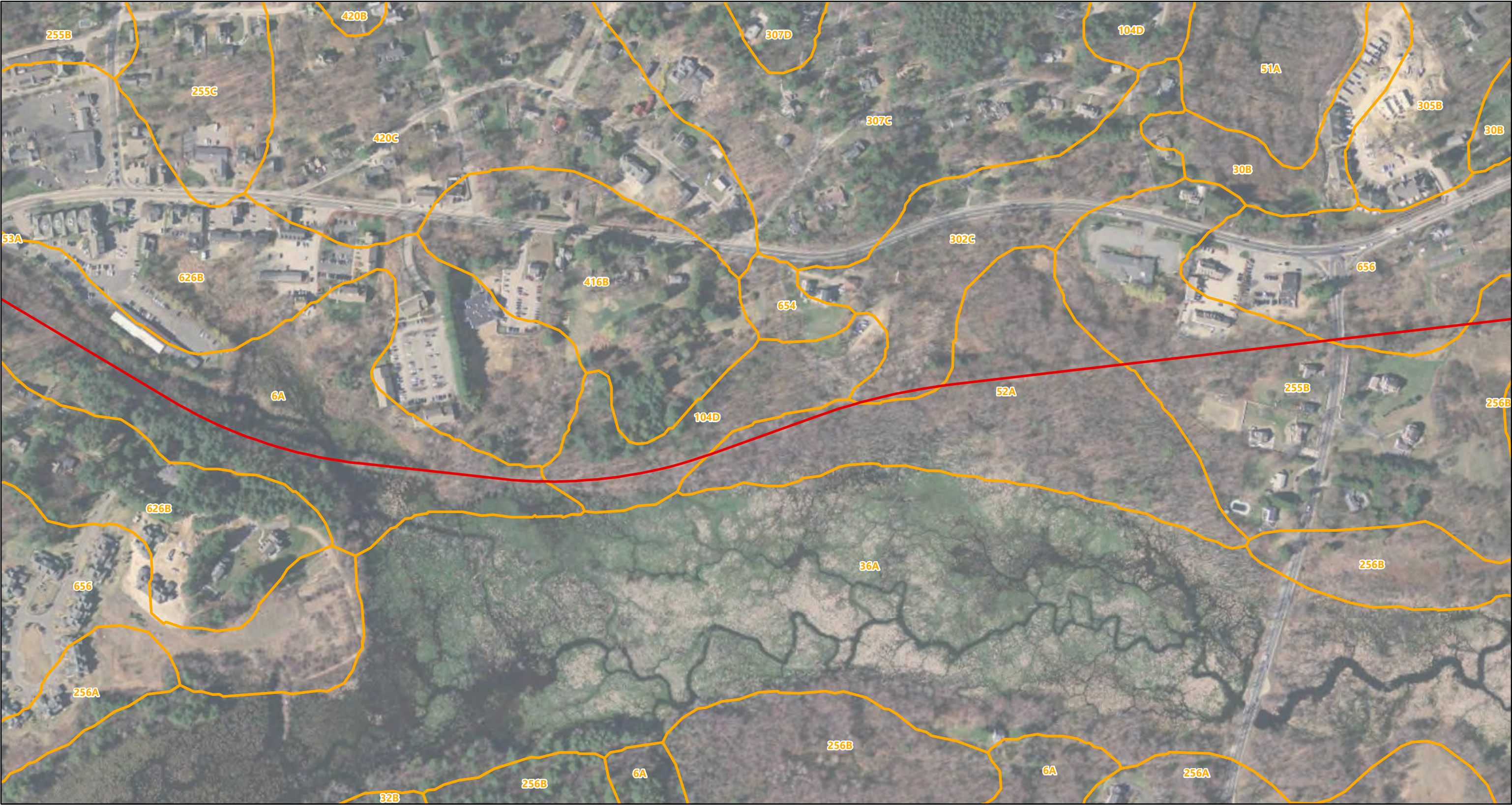
- Project
- NRCS Soil Boundary
- Substation Location
- Municipal Boundary



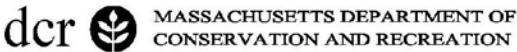
Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project

Figure 3: Sudbury Soils Map





- Project
- NRCS Soil Boundary
- Substation Location
- - - Municipal Boundary

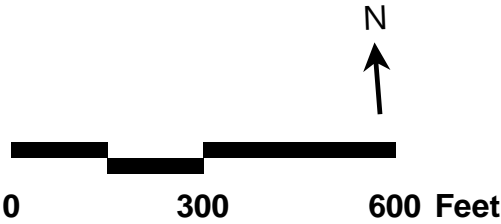


Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project

Figure 3: Sudbury Soils Map



Source:
MassGIS, VHB
1/10/2020



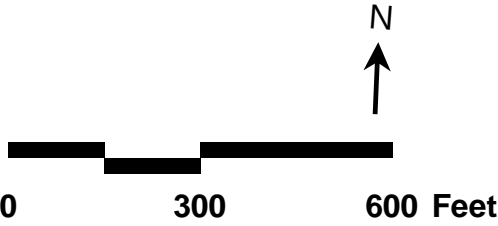


- Project
- NRCS Soil Boundary
- Substation Location
- Municipal Boundary



Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project

Figure 3: Sudbury Soils Map





- MBTA ROW Boundary
- Limit of Disturbance
- Municipal Boundary
- Project Area with in NHESP Habiat
- Parcel Boundaries (MassGIS)
- NHESP Priority Habitat

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Figure 4: Sudbury NHESP Priority & Estimated
Habitat Map





- MBTA ROW Boundary
- - - Limit of Disturbance
- ▭ Municipal Boundary
- ▭ Project Area with in NHEP Habiata
- ▭ Parcel Boundaries (MassGIS)
- ▭ NHESP Priority Habitat

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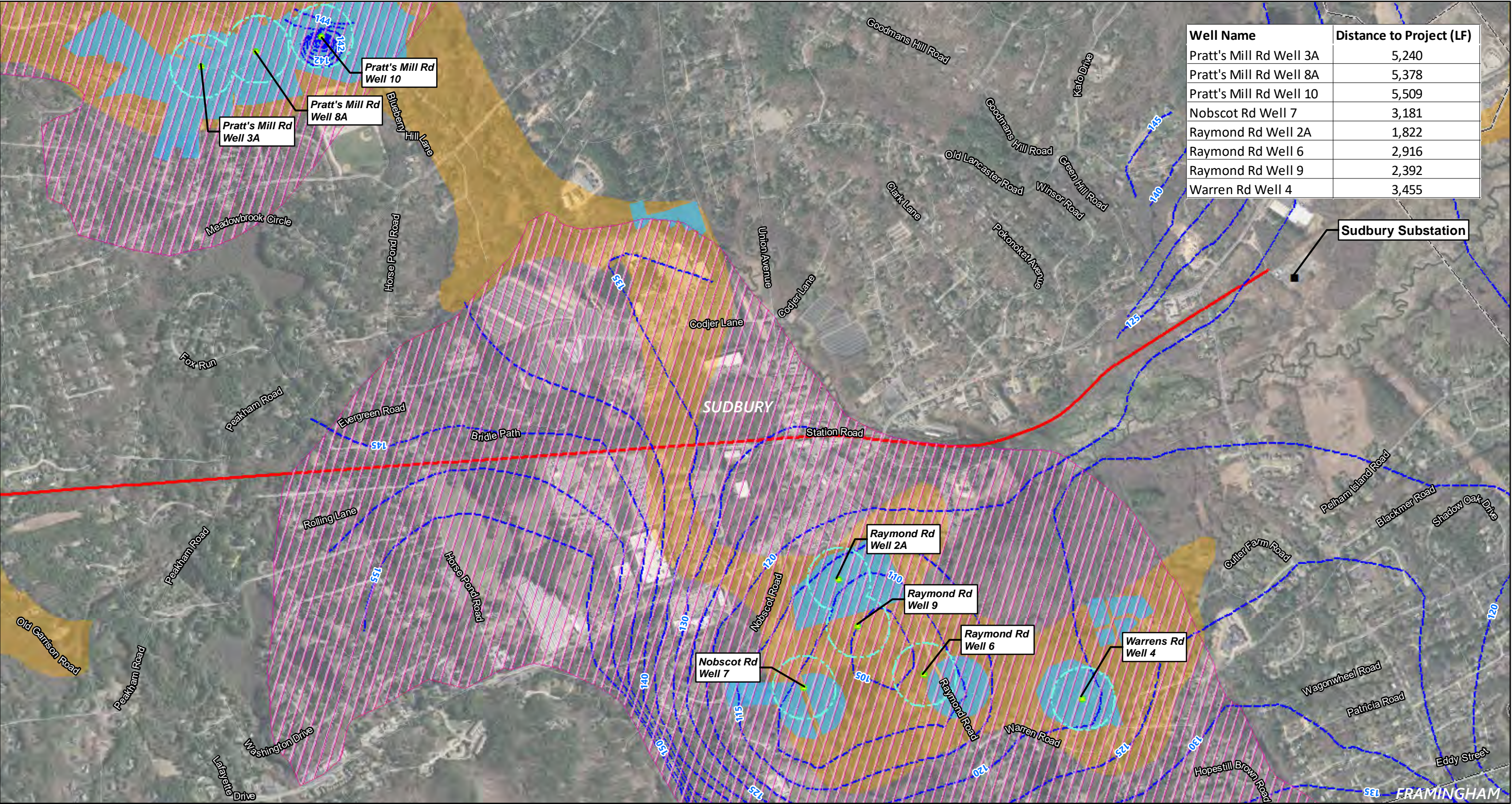
Figure 4: Sudbury NHEP Priority & Estimated
Habitat Map



Source:
MassGIS, VHB

1/10/2020





Well Name	Distance to Project (LF)
Pratt's Mill Rd Well 3A	5,240
Pratt's Mill Rd Well 8A	5,378
Pratt's Mill Rd Well 10	5,509
Nobscot Rd Well 7	3,181
Raymond Rd Well 2A	1,822
Raymond Rd Well 6	2,916
Raymond Rd Well 9	2,392
Warren Rd Well 4	3,455

Project

Open Space Protected for Water Supply

Aquifer

Outstanding Resource Water

MADEP Wellhead Protection Areas

Zone I

Zone II

Community Groundwater Source

Surface Water Intake

Non-Community Groundwater Source

Emergency Surface Water

Groundwater Contour (FT)

Source:
MassGIS,
Whitman & Howard (1991),
VHB

1/10/2020

Scale bar: 0, 1,200, 2,400 Feet. North arrow pointing towards the top right.

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Sudbury-Hudson Transmission Reliability and

Mass Central Rail Trail Project

Figure 5: Sudbury Public Water Supply and

Groundwater Resources



* Exceptions include manhole locations where limits of clearing are approximately 45' wide, and near Hop Brook, where limits of clearing are approximately 18' wide



FIGURE 6-1
Eversource Construction Conditions
Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project



FIGURE 6-2
Post-Eversource Construction Conditions
Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project

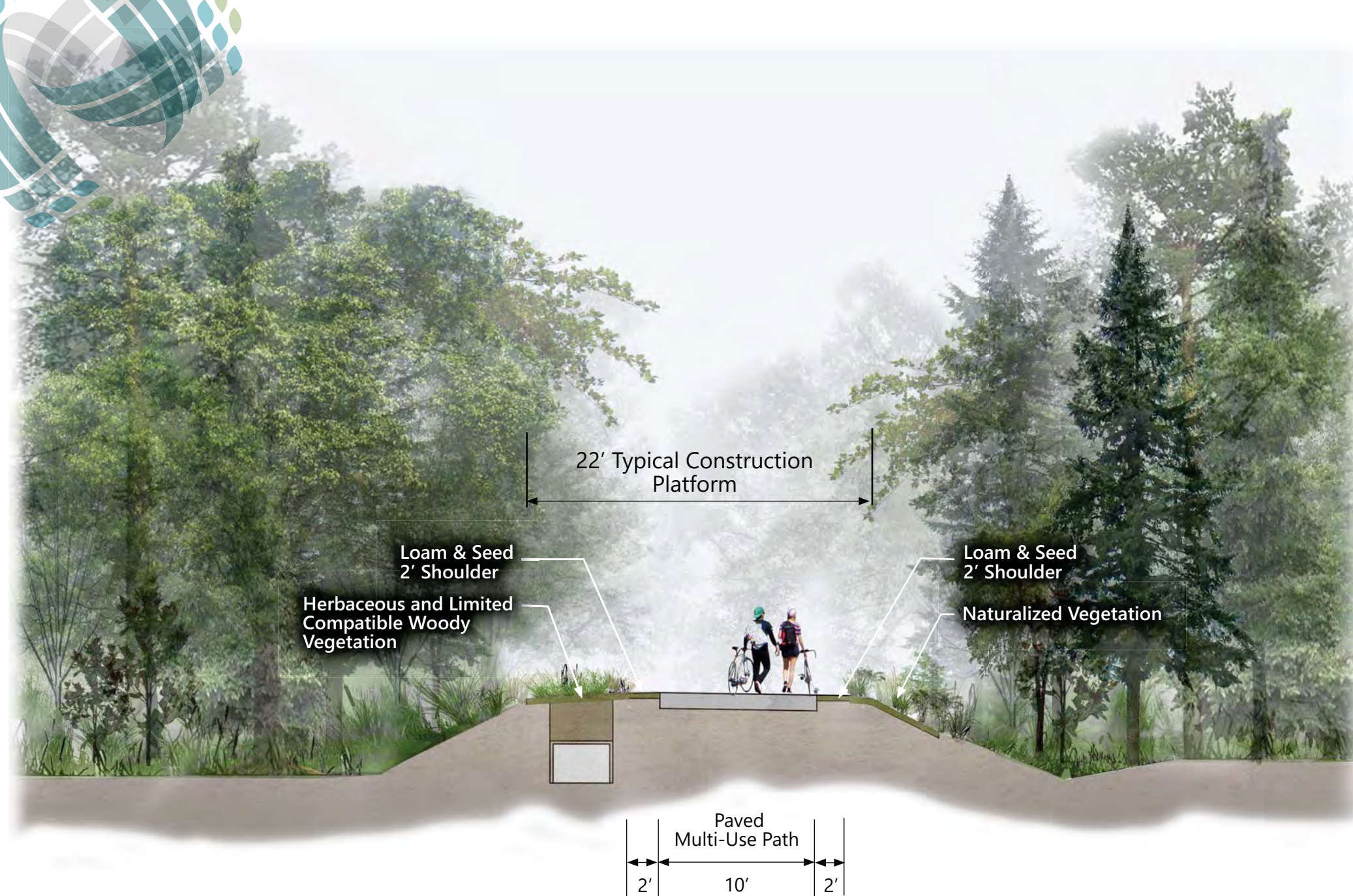


FIGURE 6-3
Post-DCR Construction Conditions
Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project

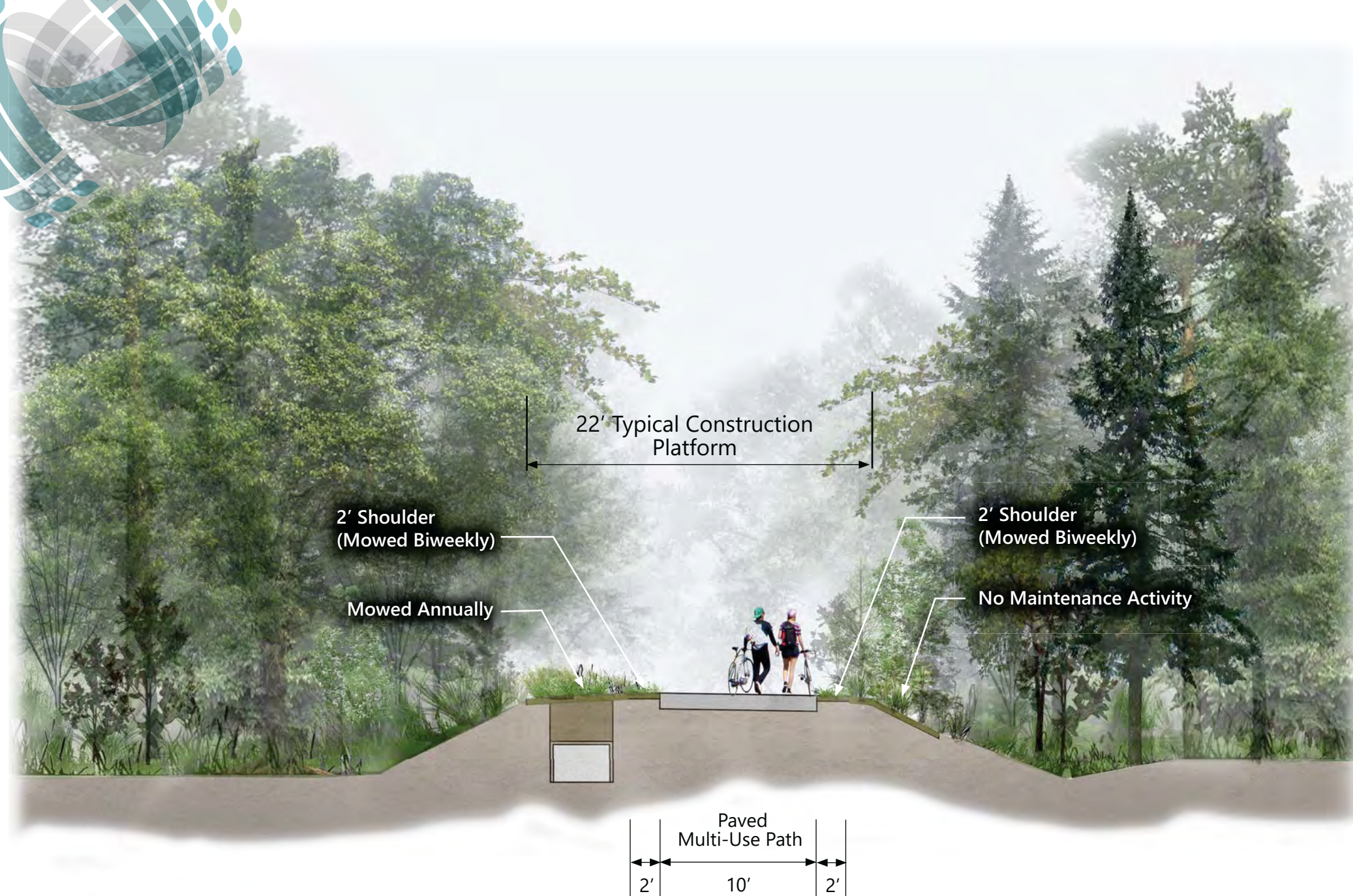


FIGURE 6-4
DCR Maintenance Conditions
Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project

**Attachment B – NOI Plans: Underground
Transmission Line along Inactive MBTA
Corridor (under separate cover)**

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Attachment C – NOI Plans: Mass Central Rail Trail Along Inactive MBTA Corridor (under separate cover)

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Attachment D – Wetland Replication Report

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Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project

Sudbury, Massachusetts

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March 2020

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1

Wetland Replication

Mitigation for unavoidable impacts to wetland resource areas is required under the MHPA, the 401 Water Quality Regulations as part of the federal Clean Water Act, and the Sudbury Bylaw. The Project will result in approximately 89 square feet of permanent impact to BVW and 303 square feet of permanent impact to IVW, for a total of 392 square feet of permanent impact. A total of 819 square feet of wetland replication is proposed in the area immediately adjacent to the largest impacted area of BVW, which will provide mitigation for all permanent wetland impacts at a ratio of approximately 2:1. Constructing and monitoring the replication area will be the responsibility of Eversource. The replication area will be constructed concurrently with the Project.

1.1 Existing Replication Area Conditions

The proposed wetland replication area is on the south side of an unmaintained portion of the Project Locus immediately adjacent to Wetland 4, which is an excavated wetland channel where most of the permanent impacts will occur. The channel is an old drainage ditch that is approximately six to eight feet wide and approximately 30 feet long, with abrupt and clearly defined slopes. The channel is hydrologically connected to Wetland 3 on the north side of the Project Locus via a mostly blocked 12-inch reinforced concrete pipe under the railroad tracks. VHB's survey team was only able to locate the southern end of this pipe. Water seeps under the railroad tracks from Wetland 3 through the culvert into the north end of Wetland 4, then flows out the south end under an old cart path via another pipe. The outflow pipe was not readily observed in the field. During a site visit in April 2019, the channel held approximately 12 inches of standing water, with no wetland vegetation in the center of the channel and a small fringe of wetland vegetation at the south end of the channel. Typical species include silky dogwood (*Swida amomum*) and sensitive fern (*Onoclea sensibilis*). The surrounding upland area has been historically disturbed by the construction and operation of the railroad, with a few mature trees and an understory of several vines and shrubs. Typical species include red maple (*Acer rubrum*), silky dogwood, glossy buckthorn (*Frangula alnus*), Oriental bittersweet (*Celastrus orbiculata*), fox grape (*Vitis labrusca*), and multiflora rose (*Rosa multiflora*).

1.2 Wetland Replication Design, Construction Approach, and Sequencing

Below is a summary of design considerations, construction approach, and sequence of events for the replication area. Design considerations and construction sequencing are subject to modification based on site conditions and scheduling of various Project elements. Characteristics considered while designing the wetland replication area include depth to groundwater, soils to be used, and types of vegetation to be planted.

1.2.1 Overall Design and Depth to Groundwater

To determine existing groundwater depths within the proposed replication area, two groundwater monitoring wells were installed (WW15 and W16) on either side of Wetland 4 in 2018. Groundwater levels in the wells were recorded from December 2018 to April 2019 and were consistently observed approximately 18 inches below the existing ground surface, which is consistent with the observed water levels in the channel itself.

To maintain the hydrologic connection between Wetland 3 and Wetland 4, the Project will extend the existing pipe that connects under the railroad tracks. The existing invert elevation of the pipe in Wetland 4 is 132.4 feet; the end of the pipe has been buried over time by sediment from the railroad bed. The Project will excavate the existing bottom of Wetland 4 down to approximately elevation 132 to allow the end of the pipe extension to remain open, and the surrounding area will be graded up from this point. At this elevation, groundwater is expected to be between the finished surface of the replication area and no greater than 12 inches below the surface for 14 or more consecutive days during the growing season. A cross-section is included on Sheet 133 in the NOI Plans provided as Attachment B in the submitted NOI, which shows the horizontal configuration of the replication area in relation to the impacted area.

As shown on Sheets 133 and 134 in the NOI Plans provided as Attachment B in the submitted NOI, the proposed conditions will provide a larger, wider, and deeper wetland area with more gradual slopes than the existing drainage ditch. As discussed above, hydrology in the replication area is expected to function in a similar manner to that of the existing wetland, and groundwater flows will have an unrestricted connection to the wetland replication area and will be contiguous with the existing adjacent wetland area in the channel.

1.2.2 Replication Area Soils

The replication area will have a minimum of 12 inches of an organic enriched topsoil placed over the excavated base elevation of approximately 132 feet. Common practice in building a replication area is to salvage and translocate soils from the filled wetland into the replacement area. However, because of the potential to introduce invasive species into the replacement wetland via translocated soils, this practice will not be used on this site. Instead, a manmade soil mixture consisting of equal volumes of organic (compost) and mineral

material such as rich loamy sand with a loose to friable consistency will be used. No wood chips will be added to the manmade soil. Soil material will be spread in a manner that will minimize soil compaction in the wetland replication areas.

1.2.3 Replication Area Vegetation

A palustrine scrub-shrub community of native shrubs along with a native seed mix will be planted in the replication area. The immediate buffer zone around the wetland will be planted with transitional plants that are found in both wetlands and uplands. These plantings will provide a wetland replication area and surrounding buffer zone that provides greater species diversity and wildlife habitat than the existing channel. Plants selected for the replication area will be healthy disease-free stock from a regional nursery. All planted material will be guaranteed for one year following the date of final acceptance. Plant material that fails to become established within one year will be replaced in-kind. Alternative species may be added to the landscape plan upon consultation with the environmental monitor and pending availability of plant species identified for use.

The species selected are suitable to the proposed hydrologic and soil conditions. Plants have been selected for their wildlife value as potential nesting sites, protective cover habitat, and food sources. Table 1 lists recommended species and other details of the proposed plantings.

Table 1 Wetland Replication Area Planting Schedule

Specimen	Wetland Status	Plant Type	Plant Size	Quantity	Density/Spacing
Basin Embankment:					
buttonbush (<i>Cephalanthus occidentalis</i>)	OBL	Shrub	18-24 inches	10	6-8 ft. on center
arrow arum (<i>Peltandra virginica</i>)	OBL	Herbaceous	2" plug	20	2-3 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

¹ Wetland seed mix: "New England Wetmix" from New England Wetland Plants, Inc. or similar. Typical species: fox sedge (*Carex vulpinoidea*), tall 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*).

The planting schedule is also provided on Sheet 134 in the NOI Plans provided as Attachment B in the submitted NOI. The species selected for the replication area will be planted according to standard planting protocols and planting depths.

The wetland seed mix will provide an herbaceous layer that will help prevent the establishment of invasive species. The proposed seed mix will be applied at the recommended rate of approximately one pound per 2,000 square feet (18 pounds per acre). Due to the small size of the replication area, the seed mix will also be applied to the buffer zone around the wetland, since it contains species that can also grow in transitional areas adjacent to wetlands such as sensitive fern, spotted Joe-Pye-weed, New England aster, and soft rush. The seed mix will provide a ground cover of native herbaceous species that will stabilize the soil in the replication area and provide a food source, cover habitat, and potential nesting sites for birds and small mammals.

1.2.4 Standing Dead Tree (Snag)

A single dead standing tree (snag) is present adjacent to the existing channel. Snags are important wildlife habitat features, providing perches and a food supply for several different types of birds. The snag will be preserved and reused in the wetland replication area. The snag will be pushed over rather than cut to preserve the root structure for use as a stable base. The snag will be pruned as needed, but as many of the large upper limbs will be preserved as possible. The root mass of the snag will be buried to provide support. The snag will be firmly entrenched into the ground to minimize the possibility of future windthrow. Figure A in Attachment L of the submitted NOI illustrates the methodology of the snag creation technique.

1.2.5 Wetland Replication Construction Methods and Sequencing

Wetland replication is one part of the larger construction effort for the Project, and portions of the work may be completed concurrent with similar activities throughout the Project Site. Detailed means and methods of construction will be at the discretion and responsibility of the contractor performing the work to construct the Project. Below is a general construction sequence for the wetland replication. This sequence is subject to modification based on site conditions and scheduling of various Project elements.

- › **Vegetation Clearing and Erosion Controls:** Prior to commencement of construction activities in the replication area, temporary erosion controls will be installed along the entire perimeter of the proposed wetland replication area except at the upgradient edge to allow access to machinery. Following installation, all existing vegetation will be removed.
- › **Site Preparation:** The replication area will be grubbed as necessary and all roots and stumps will be removed from the Project Site. The replication area will be excavated to approximately 12 inches below the proposed grades; this soil will be removed from the site. Soils in disturbed areas may contain root and seed stock of invasive plant material, and removal reduces colonization of restoration areas by invasive plants. The replication

area will be backfilled with approximately 12 inches of manmade organically enriched soil. To avoid compaction, heavy mechanical equipment will not be allowed in this area once the soils have been placed.

- › **Vegetation Planting:** Wetland plants will be installed according to the planting schedule discussed above and as shown on Sheet 134 in the NOI Plans provided as Attachment B in the submitted NOI. Habitat features such as large woody debris will also be added as available. Pending actual site and weather conditions, all plantings will take place in spring (April 15–June 15) or fall (September 1–October 31). Upon delivery of the plant material to the site, the environmental monitor will inspect the planting stock to ensure that the specimens are healthy, free from pests, and suitable for use within the planting area. Unsuitable specimens will be rejected and replaced with suitable specimens. Any planting substitutions must be approved by the environmental monitor. All woody plant stock will either be bare-root or container-grown. Upon final stabilization all erosion controls will be removed upon approval by the environmental monitor.
- › **Maintenance:** As necessary following planting, the wetland replication area will be irrigated as necessary to ensure successful establishment of newly planted vegetation.

1.3 Monitoring of Wetland Replication and Invasive Species

The wetland replication area will be inspected during the first two growing seasons following planting to evaluate the effectiveness of the replication and to monitor the replication area for invasive species. If any invasive species are found, they will be uprooted and removed from the area.

The vegetation community in the replication area will be inventoried late in the growing season to determine the percent cover of hydrophytes. Yearly monitoring reports will be prepared summarizing the year's findings and will provide recommendations to ensure the success of the replication effort. These reports will be provided to the Conservation Commission. Eversource will undertake whatever efforts are necessary to ensure compliance with this plan.

The first year of monitoring will be the first year that the site has been through a full growing season after planting. For monitoring purposes, a growing season starts no later than May 31. If there are problems that need to be addressed and if the measures to correct them require prior approval from the Conservation Commission, Eversource will contact the Commission as soon as the need for corrective action is discovered.

1.3.1 Wetland Monitoring Report Content

Annual monitoring reports will be prepared and submitted to the Conservation Commission. The reports will provide details on the success standard described below.

- › The proposed vegetation diversity and/or density goals for woody plants from the plan are met. The planting area will be monitored to assess whether:

- It is free of invasive plant species;
 - The established plantings are healthy and vigorous, and
 - They provide a vegetated cover of at least 75% surface area.
- › The replication area will exhibit wetland hydrology indicators. The replication area will be monitored for positive signs of wetland hydrology, which include primary indicators such as surface water, high water table, soil saturation and others for an adequate duration as detailed in the US Army Corps of Engineers' "Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region," dated January 2012.

In addition to a comparison of the planting area to the success standards, the monitoring narrative will provide:

- › Descriptions of the monitoring inspections that occurred since the last report (to be completed in year 2);
- › Descriptions of the remedial actions done during the monitoring year to meet the two success standards (if any), including such actions as removing debris, replanting, re-grading any areas, applying additional topsoil or soil amendments, etc.;
- › Descriptions of the general health and vigor of the planted specimens, prognosis for future survival, and diagnosis of cause(s) of morbidity or mortality;
- › Percent cover and percent survival for each species of planted specimens;
- › Observed wetland hydrology during spring and fall for the first two years;
- › If necessary, recommended remedial measures to achieve or maintain achievement of the success standards; and
- › Representative photographs of the planting areas taken from the same locations for each monitoring event.

Attachment E – Site Photographs

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Photo 1 Looking east down the ROW near Station 376+20



Photo 2 Looking west down the ROW near Station 399+00 with the well-defined foot path visible in the right side of the photograph. This location is west of Dutton Road and Hop Brook.

**Sudbury-Hudson Transmission Reliability and Mass
Central Rail Trail Project**

Sudbury, MA
Representative Photographs

EVERSOURCE
ENERGY

dcr
Massachusetts




Photo 3 Looking west down the ROW near Station 414+50 with the well-defined foot path visible in the right side of the photograph. This location is west of Dutton Road and east of Hop Brook.



Photo 4 Looking east down the ROW near Station 524+90 with the well-defined foot path visible in the right side of the photograph. This location is between Dutton Road and Peakham Road.


	<p><u>Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project</u></p> <p>Sudbury, MA Representative Photographs</p>	<p>EVERSOURCE ENERGY</p> <p>dcr Massachusetts</p> 
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Photo 5 Looking east down the ROW near Station 535+50 with the well-defined foot path visible in the left side of the photograph. This location is between Peakham Road and Horse Pond Road.



Photo 6 Looking east down the ROW near Station 558+20 with the well-defined foot path visible in the left side of the photograph. This location is just east of Horse Pond Road.


	<p><u>Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project</u></p> <p>Sudbury, MA Representative Photographs</p>	<p>EVERSOURCE ENERGY</p> <p>dcr Massachusetts</p> 
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Photo 7 Looking east down the ROW near Station 576+30 with a moderately defined foot path visible in the right side of the photograph. This location is between Horse Pond Road and Union Avenue.



Photo 8 Looking east down the ROW near Station 717+90. This location is between Boston Post Road and Hop Brook.



	<p><u>Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project</u></p> <p>Sudbury, MA Representative Photographs</p>	<p>EVERSOURCE ENERGY</p> <p>dc Massachusetts</p> 
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Photo 9 Looking east down the ROW near Station 735+85. This location is east of Hop Brook and west of Landham Road.



Photo 10 Looking west at ROW near Station 761+70. This location is between Landham Road and the Sudbury Substation access road.

	<p><u>Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project</u></p> <p>Sudbury, MA Representative Photographs</p>	<p>EVERSOURCE ENERGY</p> <p>dcr Massachusetts</p> 
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Attachment F – Sudbury ORAD

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For Registry of Deeds Use Only



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Massachusetts Department of Environmental Protection
 Bureau of Resource Protection - Wetlands

WPA Form 4B – Order of Resource Area Delineation

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

301-1227

MassDEP File Number

eDEP Transaction Number

Sudbury

City/Town

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.



Note: Before completing this form consult your local Conservation Commission regarding any municipal bylaw or ordinance.

From: Sudbury
1. Conservation Commission

2. This Issuance is for (check one):
 a. ☒ Order of Resource Area Delineation
 b. ☐ Amended Order of Resource Area Delineation

3. Applicant:
Denise Bartone
 a. First Name b. Last Name
NSTAR Electric Company d/b/a Eversource Energy
 c. Organization
247 Station Drive, SE270
 d. Mailing Address
Westwood MA 02090
 e. City/Town f. State g. Zip Code

4. Property Owner (if different from applicant):
Janelle Chan
 a. First Name b. Last Name
Massachusetts Bay Transportation Authority
 c. Organization
10 Park Plaza
 d. Mailing Address
Boston MA 02116
 e. City/Town f. State g. Zip Code

5. Project Location:
183 Boston Post Rd. (start) to Sudbury-Hudson line along MBTA track
various
 d. Assessors Map/Plat Number
 Latitude and Longitude
 (in degrees, minutes, seconds):
11/21/2017 (3/15/18) Sudbury 01776
 Dates: MBTA signature provided f. Latitude g. Longitude
 b. Date Public Hearing Closed c. Date of Issuance

1/4B, Inc.
 01 Walnut St.
 Vttr, MA 02441

134-426



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

**WPA Form 4B – Order of Resource Area
Delineation**

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

301-1227

MassDEP File Number

eDEP Transaction Number

Sudbury

City/Town

A. General Information (cont.)

7. Title and Date (or Revised Date if applicable) of Final Plans and Other Documents:

Existing Conditions Plan for ANRAD Submittal, Sudbury-Hudson
Transmission Reliability Project, Sudbury MA, 46 sheets

Oct. 18, 2017
REVISED through
July 24, 2018

c. Title

d. Date

B. Order of Delineation

1. The Conservation Commission has determined the following (check whichever is applicable):

- a. ☒ **Accurate:** The boundaries described on the referenced plan(s) above and in the Abbreviated Notice of Resource Area Delineation are accurately drawn for the following resource area(s):

1. ☒ Bordering Vegetated Wetlands
2. ☒ Other resource area(s), specifically:

a. Bordering Land Subject to Flooding (in accordance with Sudbury Wetlands Bylaw definition), Bank, Land Under Water Body, Riverfront Area (as determined by Sudbury Wetlands Bylaw Perennial stream and mean annual high water definition); Vernal Pools (in accordance with Sudbury Wetland Bylaw definition)

Should the Base Flood Elevations (BFEs) shown on the Plans be revised by FEMA as the result of a Letter of Map Revision (LOMR), the revised BFEs shall supersede the BFEs confirmed in this ORAD and the Bordering Land Subject to Flooding shall adhere to such changes.

- b. ☐ **Modified:** The boundaries described on the plan(s) referenced above, as modified by the Conservation Commission from the plans contained in the Abbreviated Notice of Resource Area Delineation, are accurately drawn from the following resource area(s):

1. ☐ Bordering Vegetated Wetlands
2. ☐ Other resource area(s), specifically:

a.

- c. ☒ **Inaccurate:** The boundaries described on the referenced plan(s) and in the Abbreviated Notice of Resource Area Delineation were found to be inaccurate and cannot be confirmed for the following resource area(s):

1. ☐ Bordering Vegetated Wetlands
2. ☒ Other resource area(s), specifically:

THIS ORAD IS NOT APPROVING: 1) ANY RESOURCE AREA LABELED ON THE REFERENCED PLANS AS "AWL" (APPROXIMATE WETLAND LINE); 2) THE



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

**WPA Form 4B – Order of Resource Area
Delineation**

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

FLOODWAY AS SHOWN ON THE REFERENCED PLAN (NOT A WETLAND
RESOURCE AREA).

Provided by MassDEP:

301-1227

MassDEP File Number

eDEP Transaction Number

Sudbury

City/Town

B. Order of Delineation (cont.)

3. ☒ The boundaries were determined to be inaccurate because:

The "AWL" was not determined by field survey and not reviewed in the field due to the locations on private property

C. Findings

This Order of Resource Area Delineation determines that the boundaries of those resource areas noted above, have been delineated and approved by the Commission and are binding as to all decisions rendered pursuant to the Massachusetts Wetlands Protection Act (M.G.L. c.131, § 40) and its regulations (310 CMR 10.00). This Order does not, however, determine the boundaries of any resource area or Buffer Zone to any resource area not specifically noted above, regardless of whether such boundaries are contained on the plans attached to this Order or to the Abbreviated Notice of Resource Area Delineation.

This Order must be signed by a majority of the Conservation Commission. The Order must be sent 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 DEP Regional Office (see <http://www.mass.gov/eea/agencies/massdep/about/contacts/find-the-massdep-regional-office-for-your-city-or-town.html>).

D. 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 DEP Regional Office to issue a Superseding Order of Resource Area Delineation. When requested to issue a Superseding Order of Resource Area Delineation, the Department's review is limited to the objections to the resource area delineation(s) stated in the appeal request. 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 of Resource Area Delineation 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 Determination, or providing written information to the Department prior to issuance of a Superseding Order or Determination.

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).



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

**WPA Form 4B – Order of Resource Area
Delineation**

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

301-1227
MassDEP File Number

eDEP Transaction Number

Sudbury
City/Town

Aug 27, 2018
Date of Issuance

E. Signatures

Please indicate the number of members who will sign this form.

Charles Russo
Signature of Conservation Commission Member
Kathleen Rogers
Signature of Conservation Commission Member
Richard Morse
Signature of Conservation Commission Member
Mary Senter
Signature of Conservation Commission Member

William Harkab
Signature of Conservation Commission Member
Richard Morse
Signature of Conservation Commission Member

1. Number of Signers

This Order is valid for three years from the date of issuance.

If this Order constitutes an Amended Order of Resource Area Delineation, this Order does not extend the issuance date of the original Final Order, which expires on _____ unless extended in writing by the issuing authority.

This Order is issued to the applicant and the property owner (if different) as follows:

2. ☐ By hand delivery on _____

a. Date

3. ☒ By certified mail, return receipt requested on _____

a. Date

Aug 27, 2018
7015 1520 0003 5445 7281

Attachment G – NHESP Correspondence

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MASSWILDLIFE

DIVISION OF FISHERIES & WILDLIFE

1 Rabbit Hill Road, Westborough, MA 01581

p: (508) 389-6300 | f: (508) 389-7890

MASS.GOV/MASSWILDLIFE

Jack Buckley, Director

August 04, 2017

Vivian Kimball
Vanasse Hangen Brustlin, Inc.
2 Washington Square
Union Station, Suite 219
Worcester MA 01604

RE: Project Location: Sudbury to Hudson Transmission Reliability Project (MTBA ROW)
Town: HUDSON, MARLBOROUGH, SUDBURY, STOW
NHESP Tracking No.: 15-34327

To Whom It May Concern:

Thank you for contacting the Natural Heritage and Endangered Species Program of the MA Division of Fisheries & Wildlife (the "Division") for information regarding state-listed rare species in the vicinity of the above referenced site. Based on the information provided, this project site, or a portion thereof, is located **within** *Priority Habitat 1040* (PH 1040) and *Estimated Habitat 1440* (EH 1440) as indicated in the *Massachusetts Natural Heritage Atlas* (14th Edition). Our database indicates that the following state-listed rare species have been found in the vicinity of the site:

<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 vociferus</i>	Eastern Whip-poor-will	Bird	Special Concern
<i>Catocala herodias gerhardi</i>	Gerhard's Underwing Moth	Butterflies and Moths	Special Concern
<i>Metarranthus pilosaria</i>	Coastal Swamp Metarranthus Moth	Butterflies and Moths	Special Concern

The species listed above are protected under the Massachusetts Endangered Species Act (MESA) (M.G.L. c. 131A) and its implementing regulations (321 CMR 10.00). State-listed wildlife are also protected under the state's Wetlands Protection Act (WPA) (M.G.L. c. 131, s. 40) and its implementing regulations (310 CMR 10.00). Fact sheets for most state-listed rare species can be found on our website (www.mass.gov/nhesp).

Please note that projects and activities located within Priority and/or Estimated Habitat **must** be reviewed by the Division for compliance with the state-listed rare species protection provisions of MESA (321 CMR 10.00) and/or the WPA (310 CMR 10.00).

Wetlands Protection Act (WPA)

If the project site is within Estimated Habitat and a Notice of Intent (NOI) is required, then a copy of the NOI must be submitted to the Division so that it is received at the same time as the local conservation commission. If the Division determines that the proposed project will adversely affect the actual Resource Area habitat of state-protected wildlife, then the proposed project may not be permitted (310 CMR 10.37, 10.58(4)(b) & 10.59). In such a case, the project proponent may request a consultation with

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the Division to discuss potential project design modifications that would avoid adverse effects to rare wildlife habitat.

A streamlined joint MESA/WPA review process is available. When filing a Notice of Intent (NOI), the applicant may file concurrently under the MESA on the same NOI form and qualify for a 30-day streamlined joint review. For a copy of the NOI form, please visit the MA Department of Environmental Protection's website: <http://www.mass.gov/eea/agencies/massdep/service/approvals/wpa-form-3.html>.

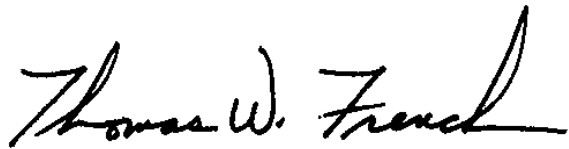
MA Endangered Species Act (MESA)

If the proposed project is located within Priority Habitat and is not exempt from review (see 321 CMR 10.14), then project plans, a fee, and other required materials must be sent to Natural Heritage Regulatory Review to determine whether a probable Take under the MA Endangered Species Act would occur (321 CMR 10.18). Please note that all proposed and anticipated development must be disclosed, as MESA does not allow project segmentation (321 CMR 10.16). For a MESA filing checklist and additional information please see our website: www.mass.gov/dfw/nhESP/regulatory-review.

We recommend that rare species habitat concerns be addressed during the project design phase prior to submission of a formal MESA filing, as avoidance and minimization of impacts to rare species and their habitats is likely to expedite endangered species regulatory review.

This evaluation is based on the most recent information available in the Natural Heritage database, which is constantly being expanded and updated through ongoing research and inventory. If the purpose of your inquiry is to generate a species list to fulfill the federal Endangered Species Act (16 U.S.C. 1531 et seq.) information requirements for a permit, proposal, or authorization of any kind from a federal agency, we recommend that you contact the National Marine Fisheries Service at (978)281-9328 and use the U.S. Fish and Wildlife Service's Information for Planning and Conservation website (<https://ecos.fws.gov/ipac>). If you have any questions regarding this letter please contact Emily Holt, Endangered Species Review Assistant, at (508) 389-6385.

Sincerely,

A handwritten signature in black ink that reads "Thomas W. French". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Thomas W. French, Ph.D.
Assistant Director



MASSWILDLIFE

DIVISION OF FISHERIES & WILDLIFE

1 Rabbit Hill Road, Westborough, MA 01581

p: (508) 389-6300 | f: (508) 389-7890

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Jack Buckley, Director

October 19, 2018

Denise Bartone
NSTAR Electric dba Eversource Energy
247 Station Drive, SE270
Westwood, MA 02090

Paul Jahnige
DCR Greenways & Trails Program
136 Damon Rd
Northampton, MA 01060

RE: Applicant: Denise Bartone
 Project Location: MBTA Right of Way- Sudbury, Marlborough, Hudson, Stow
 Project Description: Sudbury–Hudson Transmission Reliability; DCR Phase 2: Mass Central
 Rail Trail (MCRT)
 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 September 2018) with plans, Corridor Management Plan, Turtle Protection Plan, and other required materials, including the for review pursuant to the Massachusetts Endangered Species Act (MESA) (MGL c.131A) and its implementing regulations (321 CMR 10.00).

The proposed project includes the installation of an underground electrical transmission line in the existing MBTA right-of-way (Phase 1), totaling 4 acres of disturbance within Priority Habitat. Total habitat loss from the project will be minimized through compatible management of 1.9 acres of the duct bank and slopes of the construction platform. The Division understands that following the completion of the transmission line project the Department of Conservation and Recreation (DCR) proposes to install a segment of the Mass Central Rail Trail (MCRT) within the final construction platform layout (Phase 2). Eversource and DCR have coordinated to develop a Corridor Management Plan to address ongoing management activities within the right-of-way and an Eastern Box Turtle Protection Plan.

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).

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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

Based on the information provided and the information contained in our database, the Division finds that a portion 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 Eastern Box Turtle Protection Plan (dated 5/31/2018) must be implemented as proposed.
2. The Corridor Management Plan for Massachusetts Central Rail Trail and Sudbury-Hudson Transmission Reliability Project (dated 5/31/2018) must be implemented as proposed.
3. Timing restrictions for construction activities within Whip-poor-will habitats must be implemented, as proposed unless otherwise approved by the Division.
4. Within thirty (30) days of the completion of the transmission line project, or as otherwise approved by the Division, the Applicant shall submit a compliance report containing, including a summary of construction timelines and photographs, to the Division documenting the completion of the project.

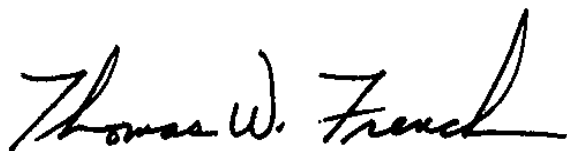
DCR Mass Central Rail Trail (Phase 2)

The Division has been involved in ongoing coordination with DCR regarding the proposed MCRT segment following completion of the transmission line. The Division's review of the Mass Central Rail Trail pursuant to the MESA is ongoing. DCR must submit a supplemental MESA Project Review Checklist which must include site plans for the MRCT for Division review and written approval.

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,

A handwritten signature in black ink that reads "Thomas W. French". The signature is fluid and cursive, with the first name "Thomas" and last name "French" being more prominent than the middle initial "W".

Thomas W. French, Ph.D.
Assistant Director

cc: John Vieira, VHB
MBTA
Sudbury Conservation Commission
Hudson Conservation Commission
Marlborough Conservation Commission
Stow Conservation Commission



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
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<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.

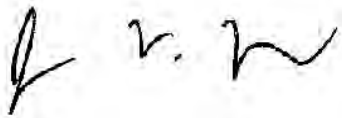
Based on the information provided and the information contained in our database, the Division finds that Phase 2 of this project, as currently proposed, **must be conditioned in order to avoid a prohibited Take of state-listed species (321 CMR 10.18(2)(a))**. To avoid a prohibited Take of state-listed 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,

A handwritten signature in black ink, appearing to read 'J. V. Regosin', with a stylized flourish at the end.

Jonathan V. Regosin, Ph.D.
Deputy Director

cc: Gene Crouch, VHB
MBTA
Sudbury Conservation Commission
Hudson Conservation Commission
Marlborough Conservation Commission
Stow Conservation Commission

Attachment H – Best Management Practices

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1.3 Straw (or Hay) Bales

Applications: Erosion and sedimentation control, mulch

Limitations:

- Hay bales degrade quickly.
- Hay bale height can provide an obstacle to movement of smaller wildlife.
- Should not be used as a temporary check dam/ stormwater control within waterways.
- Difficult to install during frozen conditions.
- Generally only effective for 3-6 months (hay) or 6-12 months (straw) before replacement.

Overview:

Hay/straw bales should be placed end-to-end to form a temporary sedimentation control barrier. This barrier should run perpendicular to the slope and direction of runoff, and should be installed downgradient of the disturbed site (i.e., construction area). Hay/straw bales are intended to slow flow velocity and trap sediments to prevent siltation in sensitive areas, specifically downgradient areas with open and/or flowing water. Barriers should be removed once the project is complete and soils are stabilized with erosion control blankets and/or well-established vegetation.

Installation:

- Install hay/straw bales end-to-end lengthwise along the toe of a slope or along a slope contour being sure the bales are butted tightly against each other without gaps between them. The outer ends of the barrier should be turned slightly upslope.
- Entrench to a minimum depth of 4 inches and backfill around the base of the bale. If additional protection is needed, backfill both upslope and downslope to create better ground contact and reduce sediment passage through or beneath hay/straw bales.
- Stake each hay/straw bale into the ground by two stakes each approximately 3 feet long
- If a silt fence is being used with the hay/straw bale barrier, position the silt fence downgradient of the hay/straw bales (hay bales filter first).
- Since hay/straw bales degrade quickly, check barriers often and replace as needed. Routinely remove and dispose of sediment buildup in a stable upland area.
- The hay/straw bale barrier should be as far away from downgradient sensitive areas, and as close to the work areas as construction limitations allow, in order to minimize the total work area and disturb as little area as possible.
- Once the project is complete and soils are stabilized, hay/straw bales should generally be compacted and allowed to decay in place, as their height can provide an obstacle to movement of smaller wildlife. Spreading hay bales around a site as mulch could introduce weed seeds. Using hay/straw as mulch is not generally

problematic if the site is already colonized by invasive species. Plastic bailing twine should be removed from hay/straw bales. Wooden stakes should also be removed.

Maintenance:

- Inspect before a forecasted storm event and daily during a prolonged rain event.
- Remove accumulated sediment and properly disposed outside sensitive areas when it has reached a thickness of $\frac{1}{2}$ to $\frac{2}{3}$ the height of the bale.
- Replace rotted or sediment-covered bales when necessary.

Additional Comments:

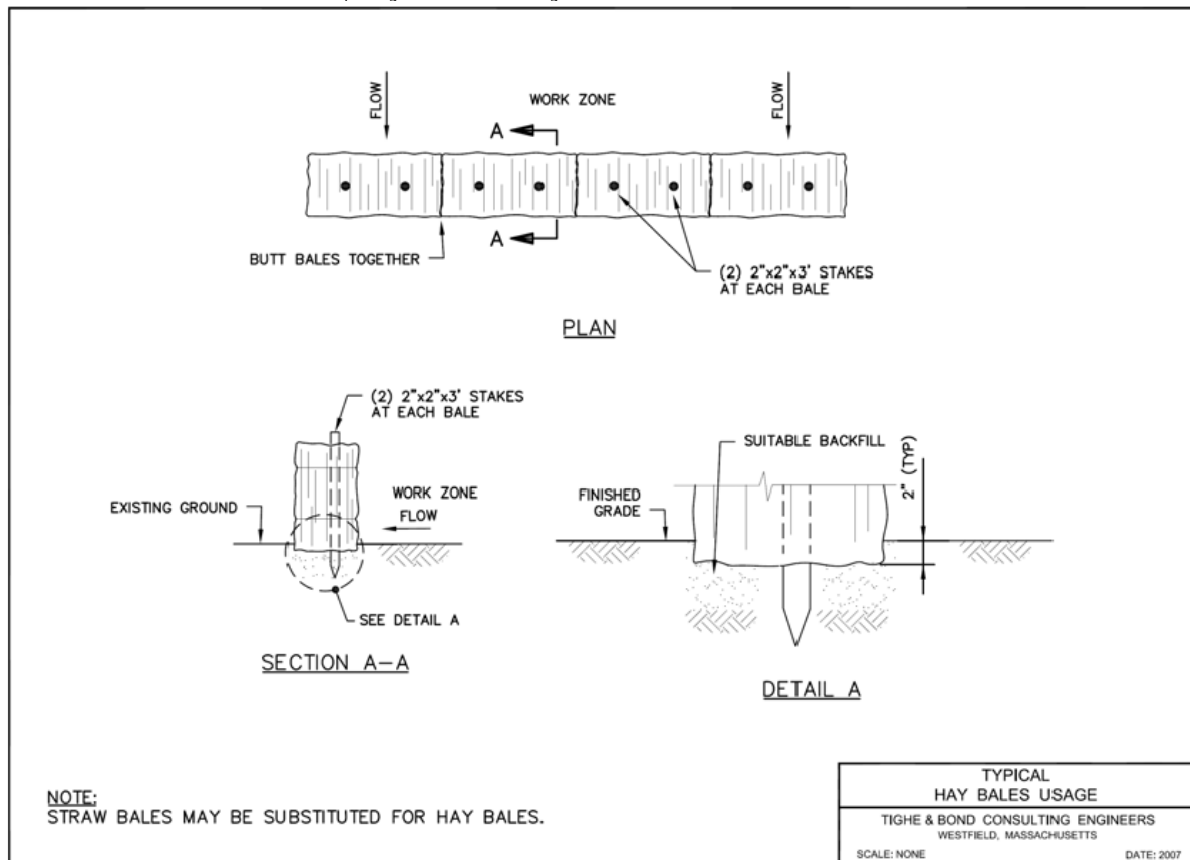
Straw bales are favored over hay bales for use as erosion control barriers. Since straw bales are composed of the dried stalks left over after a grain is harvested, they do not **contain the plant's seeds and therefore will not spread growth of such species**, some of which may be exotic, invasive or otherwise undesirable. Hay bales are generally less expensive, but consist of the seed heads and the upper, thinner portion of the stems which generally decay faster than straw.



Properly installed hay bale barrier with silt fence.



Properly installed hay bale barrier with silt fence.



1.4 Silt Fence

Applications: Sedimentation control, work limits, temporary animal barrier, slows flow on steep slopes

Limitations:

- Frozen or rocky ground (for installing stakes).
- May prevent critical movements of sensitive wildlife species.
- Disposal.

Overview:

Silt fence is constructed of a permeable geotextile fabric secured by wooden stakes driven into the ground. It is installed as a temporary barrier to prevent sediments from flowing into an unprotected and/or sensitive area from a disturbed site. A silt fence should be installed downgradient of the work area. Once the project is complete and soils are stabilized, silt fence materials (i.e., geotextile fabric and wooden stakes) must be removed and properly disposed off-site (see environmental scientist to determine if area is stabilized).

Installation:

- Install silt fence along the toe of a slope or along a fairly level contour with the outermost ends directed upslope. The fabric should be laid into a 6-inch wide by 6-inch deep trench dug on the upslope side of the fence and tamped down with fill material to ensure a sturdy base and so sediments will not flow beneath the fabric. Use of a Ditch Witch® or similar equipment is suggested for this task.
- Drive the **silt fence stakes into the ground until secure (≥6 inches below grade)**.
- If a hay bale or straw bale barrier is being used with the silt fence, position the silt fence downgradient of the bales.
- The silt fence should be as far away from downgradient sensitive areas, and as close to the work areas as construction limitations allow, in order to disturb as little area as possible.

Maintenance:

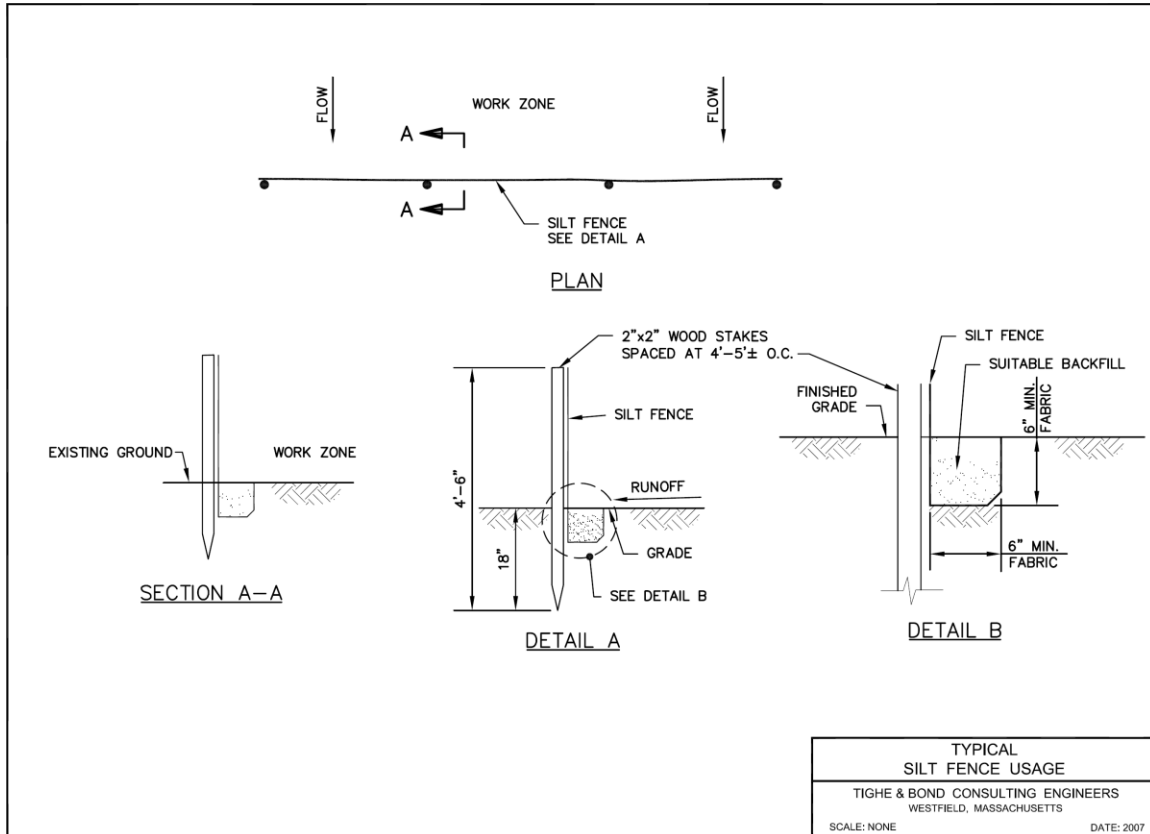
- Inspect frequently and replace or repair as needed, especially during long-term projects.
- Routinely remove and properly dispose of sediment buildup in a stable upland area, outside of sensitive areas. Remove sediment when it has accumulated to a thickness of ½ the height of the silt fence.

Additional Comments:

A silt fence must be installed in an excavated trench and located where shallow pools can form so sediment can settle. The fence must be placed along the contour. If placed otherwise, water may concentrate to a low point and is likely to flow beneath the fence.



Properly installed and functioning silt fence. Direction of flow indicated by blue arrow.



1.5 Syncopated Silt Fence

Applications: Sedimentation control, work limits, slow flows on steep slopes, and permit wildlife movement.

Limitations:

- Frozen or rocky ground (for installing stakes).
- Complex installation compared to standard silt fence.
- Disposal.

Overview:

Syncopated silt fence refers to silt fence that is installed in a specific layout that permits wildlife movement. Many construction projects continue over at least one wildlife activity season, and silt fence may impede the movement of animals. Syncopated silt fencing is to be installed in areas where silt fencing may impede wildlife access to a resource (i.e., vernal pool, wooded area). These areas will be identified when developing wetland protection measures.

Installation:

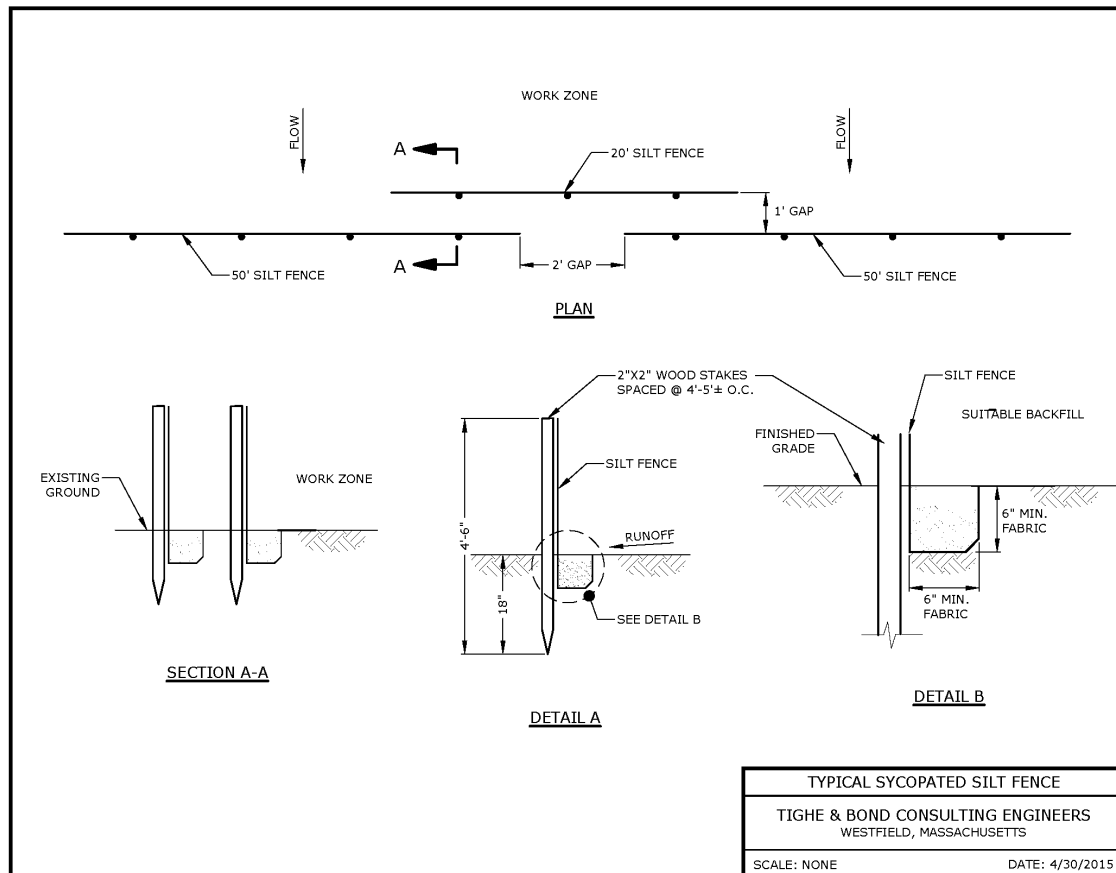
- The syncopated silt fence layout is shown on the typical below. For every 50 feet of siltation fence installed, allow for a gap of two feet before installing the next section. The gap allows wildlife movement. One foot behind the main silt fence line, install a second row of silt fence approximately 20 feet in length and centered at the gap.
- Install silt fence along the toe of a slope or along a fairly level contour with the outermost ends directed upslope. The fabric should be laid into a 6-inch wide by 6-inch deep trench dug on the upslope side of the fence and tamped down with fill material to ensure a sturdy base and so sediments will not flow beneath the fabric. Use of a Ditch Witch® or similar equipment is suggested for this task.
- **Drive the silt fence stakes into the ground until secure (≥6 inches below grade).**
- If a hay bale or straw bale barrier is being used with the silt fence, position the silt fence downgradient of the bales.
- The silt fence should be as far away from downgradient sensitive areas, and as close to the work areas as construction limitations allow, in order to disturb as little area as possible.

Maintenance:

- Inspect frequently and replace or repair as needed, especially during long-term projects.
- Routinely remove and properly dispose of sediment buildup in a stable upland area, outside of sensitive areas. Remove sediment when it has accumulated to a thickness of ½ the height of the silt fence.

Additional Comments:

A silt fence must be installed in an excavated trench and located where shallow pools can form so sediment can settle. The fence must be placed along the contour. If placed otherwise, water may concentrate to a low point and is likely to flow beneath the fence.



1.6 Erosion Control Blankets

Applications: Slope stabilization, erosion and sedimentation control

Limitations:

- Can be used on steep (i.e. greater than 45°) slopes but not on rocky soils.
- Mulches may be more cost effective on flatter areas.

Overview:

Erosion control blankets are generally composed of biodegradable or synthetic materials and are used as a temporary or permanent aid in the stabilization of disturbed soil on slopes. These blankets are used to prevent erosion, stabilize soils, and protect seeds from foragers while vegetation is recolonized.

Installation:

- **Always follow manufacturer's instructions for properly installing erosion control blankets.** Different composition blankets are recommended for site-specific conditions (slope grades, contributing watershed areas) and use requirements (biodegradable, photodegradable, non-biodegradable).
- Prior to installation, clear the slope of any rocks, branches, or other debris.
- Rolled out blankets in a downward direction starting at the highest point of installation. Secure blankets above the crest of the slope using a berm tamped down along the top of the disturbed area.
- Tack down blankets with stakes or staples every 11 to 12 inches (or closer) horizontally and every 3 feet (or closer) vertically. Biodegradable staples are preferred.
- Overlap each blanket section horizontally with the next section by approximately 2 or 3 inches. Vertical overlaps should be approximately 6 inches, with the upslope section overlaying that of the down-slope section.

Maintenance:

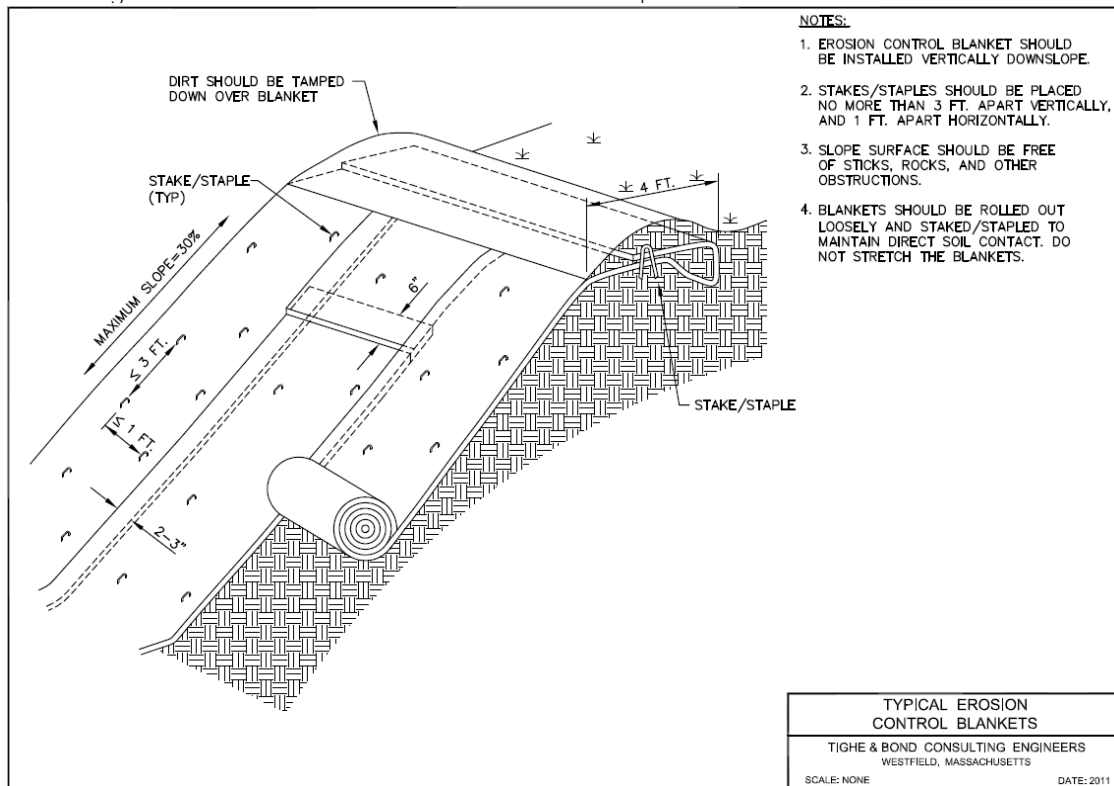
- Inspect for movement of topsoil or erosion weekly and after major precipitation events. Inspect until vegetation is firmly established.
- Repair surface, reseed, replace topsoil, and install new netting if washout, breakage, or erosion occurs.

Additional Comments:

Additional materials used for erosion control with a continuous sheet or material include Jute Mats (sheets of woven jute fiber) and Turf Reinforcement Matting (geotextile matrix most effective for channels).



Installing erosion control blanket on an unstable slope.



1.7 Straw/Compost Wattles

Applications: Erosion and sedimentation control, work limits

Limitations:

- Not recommended for steep slopes.

Overview:

Straw wattles are used as an erosion control device to slow runoff velocities, entrain suspended sediments, and promote vegetation growth until an area is stabilized. They are not generally intended for steep slopes, but rather, to stabilize low to moderate grades where there is a broad area of disturbance. Straw wattles may also be used along small stream banks to protect areas before vegetation has stabilized the soils. The wattles are constructed from a biodegradable netting sock stuffed with straw and may be left to biodegrade in place once a project is complete.

Wattles should be placed lengthwise, perpendicular to the direction of runoff. The wattles are typically spaced about 10 to 40 feet apart, depending on the slope angle. Additionally, the soil texture should be considered – for soft, loamy soils, wattles should be placed closer together; for coarse, rocky soils, they may be placed further apart.

Installation:

- Install prior to disturbing soil in the upgradient drainage area.
- Install so that the ends of each row of wattles on a slope are slightly turned downhill to prevent ponding behind them.
- Where straw wattles are installed end-to-end, butt the wattles tightly together so as not to allow water/sediments to flow between them.
- Place straw wattles in a shallow trench to assure stabilization and soil should be packed against the wattle on the uphill side.
- Securely stake straw wattles to the ground by driving a stake directly through the wattle approximately every four feet. A portion of each stake should remain approximately 2 to 3 inches above the wattle.
- Use *without* silt fence reinforcement: at the base of shallow slopes, on frozen ground, bedrock, and rooted, forested areas.
- Use *with* silt fence reinforcement: at low points of concentrated runoff, below culvert outlets, at the base of slopes more than 50 feet long, and in places where standalone mulch wattles have failed.

Maintenance:

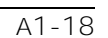
- Routinely inspect wattles and after rain events. Repair as needed with additional wattles and/or stakes.
- Remove sediment deposits when they reach half the height of the wattle. Repair or reshapes wattles when they have eroded or have become sediment clogged or ineffective.

- If flow is evident around the edges, extend the barriers or evaluate replacing them with temporary check dams.
- Reinforce the berm with an additional sediment control measure, such as silt fence or a temporary rock check dam, if there is erosion or undercutting at the base or sides of the berm or if large volumes of water are being impounded behind the berm.

Additional Comments:

Woody vegetation and tall grasses may need to be removed before installing the berm to prevent voids that allow sediment under the berm. Wattles can also be planted with woody vegetation and seeded with legumes for additional stability.





1.9 Catch Basin Protection

Applications: Erosion and sedimentation control

Limitations:

- For small quantity and low velocity stormwater flows.
- Hay/straw bales hard to stake into paved areas.
- Ineffective for very silty water.
- May require authorization from local government for discharge to municipal system.
- Fabric drop inlet should be used where stormwater runoff velocities are low and where the inlet drains a small, nearly level area.
- Undercutting and erosion under filter fabric if fabric is not buried at bottom.

1.9.1 Hay/Straw Bales, Filter Fabric, and Filter Baskets

Overview:

Hay bales, filter fabric, and filter baskets are all temporary devices placed around and within existing catch basin inlets to protect the stormwater management system from high sediment loads and high velocities during construction. Use in areas where stormwater runoff is relatively small and velocities are low and where shallow sheets of run-off are expected.

Hay/Straw Bales Installation: Hay/straw bales are recommended for areas which have the storage space to allow temporary ponding since they are one of the least permeable protection methods.

- Installation is similar to perimeter hay/straw bale barriers.
- Use bales that are wire bound or string tied. Place bales so that the bindings are on the sides of the bales rather than against the ground.
- Install hay/straw bales in a box configuration around the drop inlet with the ends of the bales placed tightly against each other.
- If the area is unpaved, anchor bales using two stakes driven through the bale and into the ground.
- Hay bales can be placed around the perimeter of the inlet in order to extend the life of the filter fabric and/or basket by removing much of the sediment beforehand.

Filter Fabric Installation: Filter fabric is used to protect catch basins from excessive sediment.

- Cut fabric from a single roll.
- Place fabric beneath catch basin grate.
- Avoid setting top of fabric too high, which will lead to flow bypassing the inlet.

Filter Baskets/Bags Installation: Install filter baskets/bags within catch basins in combination with hay bales, fabric, stone or sod drop inlets. They may be used alone where drainage area is small with shallow flows.

- **Install per manufacturer's instructions.**
- Filter baskets typically consist of a porous fabric bag which is fitted under the catch basin grate.
- Sediments are filtered out of the stormwater and accumulate in the basket or bag.

Maintenance:

- Inspect weekly and after each major rain event.
- Remove accumulated sediment on a regular basis.
- Replace or make repairs as needed.
- Remove after area is permanently stabilized.

Additional Comments:

Discharge of clean water into municipal system catch basins may be an option for certain sites. However, this activity must be coordinated with the municipality and shall not occur without their written consent.

1.9.2 Sod or Stone Mound Drop Inlets

Overview:

Sod or stone mound drop inlets are temporary devices placed around and within existing catch basin inlets to protect the stormwater management system from high sediment loads and high velocities. They are used in areas where stormwater run-off is relatively heavy and overflow capacity is necessary. Sod should only be used in well vegetated areas and when the general area around the inlet is planned for vegetation and is well suited for lawns. Stone mounds are well suited for the heaviest flows.

Installation:

- For Sod: Place a mound of permanently vegetated sod around the perimeter of the inlet to a minimum height of 6 inches.
- For Stone: Stone can be used alone or in combination with stacked concrete blocks. Gravel alone will slow drainage time and increase settlement.
- **Place wire mesh with ½" openings over the inlet with 1 foot** extending on each side. Overlay with filter fabric.
- **Surround inlet with mound of gravel, 1" diameter or smaller, to a minimum height of 6", placed over the mesh.**
- **If blocks are used, stack them around the inlet, between 12 and 24" high, place mesh over the openings and pile the gravel against the outside face of the blocks.**

Maintenance:

- Inspect weekly and after each major rain event.
- Remove accumulated sediment when it reaches ½ of the height of the filter mound. Stone especially must be regularly maintained.

- Repair erosion as necessary.
- If the storm flow bypasses inlet and causes erosion, the top of the structure is too high.
- If the trap is not efficient and/or there is sediment overload, the drainage area is too large to handle load. Consider constructing a temporary sediment trap.
- If scour holes develop (if blocks are being used), blocks are not placed snugly against the inlet grate.

Filter Baskets/Silt Bags

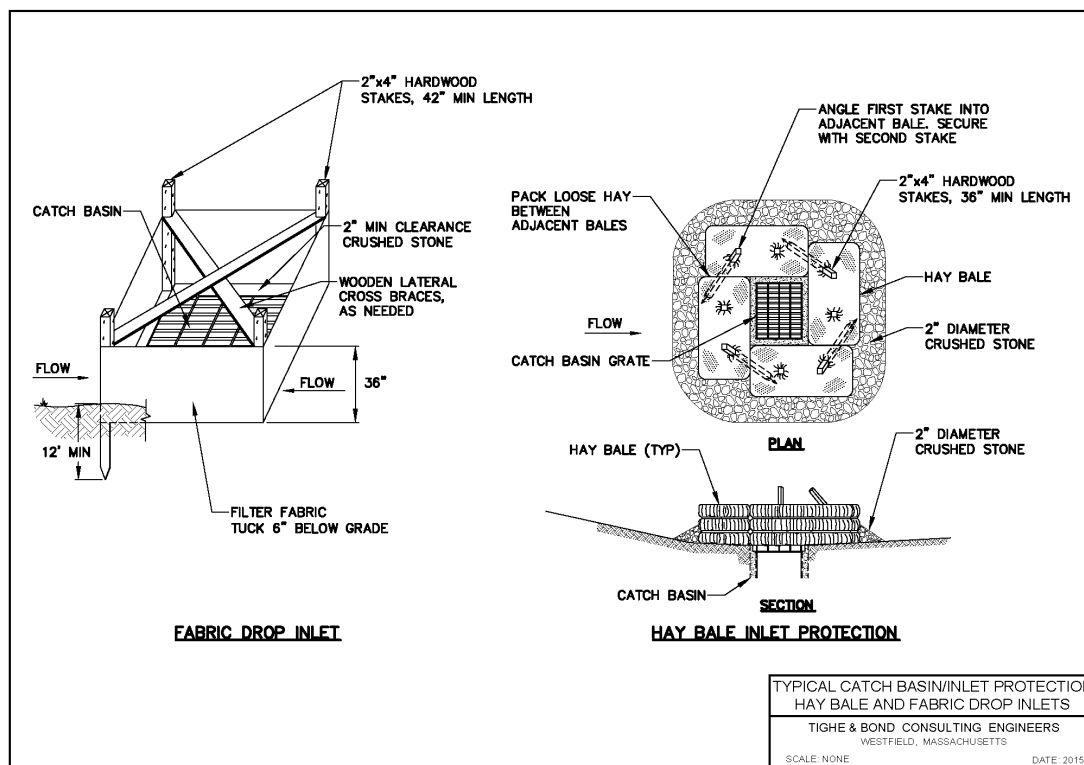
Filter baskets/silt bags are installed within catch basins in combination with hay bales, fabric, stone or sod drop inlets. They can potentially be used alone where drainage area is small with shallow flows. They may cause ponding or may rip under heavier flows without the additional external filtering method.

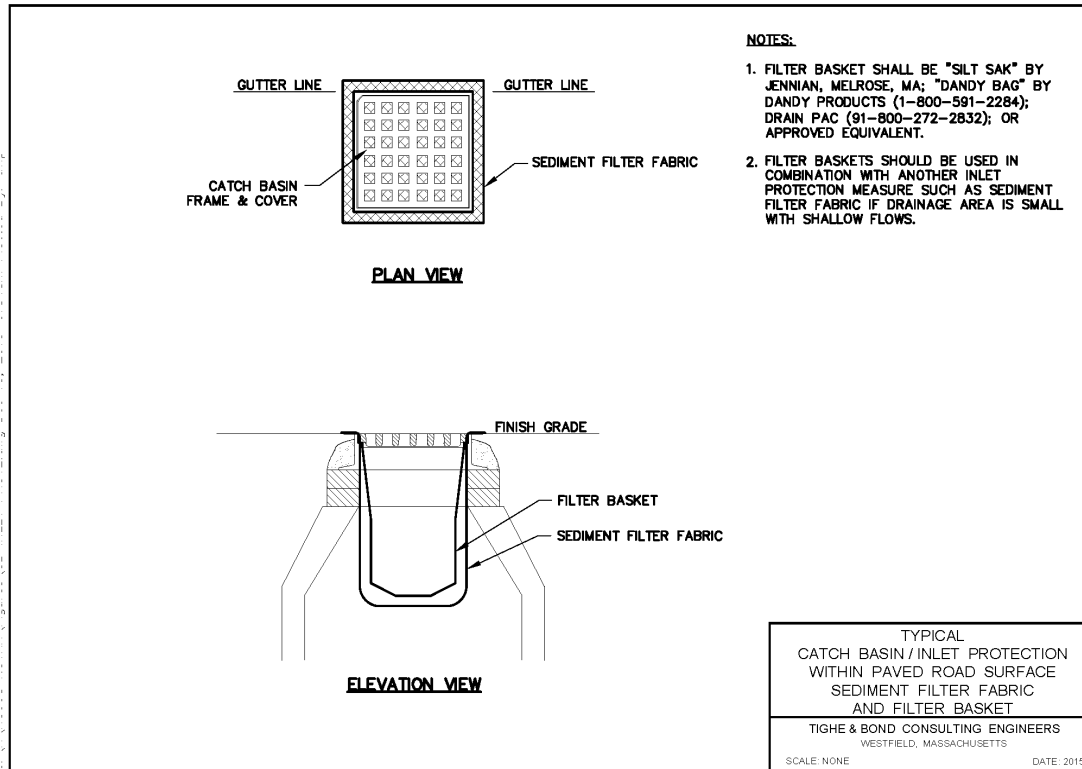
Installation:

- Several trademarked/name brand filter/silt bags exist and should be installed per **the manufacturer's instructions**. Almost all consist of a porous fabric bag which is fitted under the catch basin grate. Sediments are filtered out of the stormwater and accumulate in the bag.

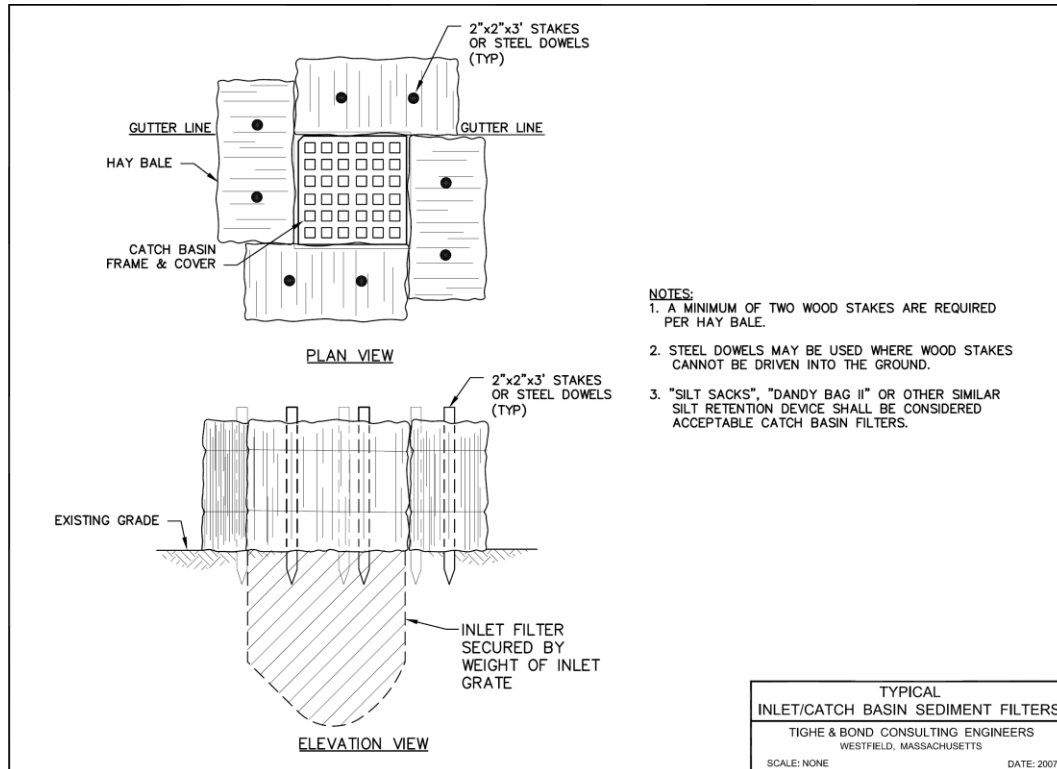
Maintenance:

- Inspect inlet and fabric weekly and after each major rain event.
- Remove sediment when the bag is halfway full.
- Replace bags as necessary due to wear or ripping.





Catchbasin protected from sedimentation by filter fabric.



1.10 Loaming and Seeding

Applications: Erosion control, soil stabilization, site restoration

Limitations:

- May be site specific limitations (e.g. permit or State requirements).
- Applies to upland areas only.

Overview:

Permanent seeding is appropriate for vegetated swales, steep slopes, or filter strips. Temporary seeding is used if construction has ceased and if an area will be exposed.

Installation:

- Apply loam/ **topsoil prior to spreading seed mix per manufacturer's** recommendations. Apply water, fertilizer, and mulch to seedbed, as needed.
- Plant native species of grasses and legumes where practicable.

Maintenance:

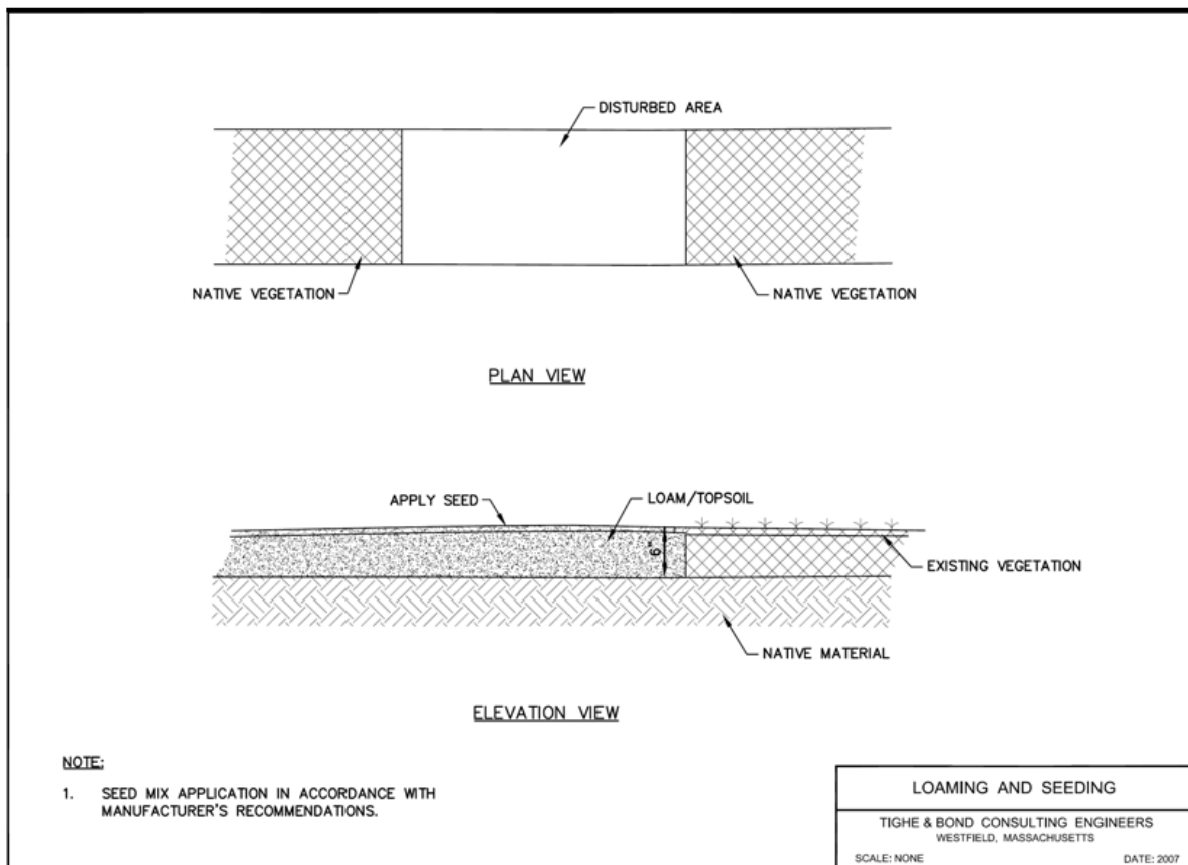
- Inspect on regular basis until vegetation has established.
- If washout or erosion occurs, repair surface, re-seed, re-mulch and install new netting.
- Follow permit requirements regarding use of wetland seed mix in wetlands where required.

Additional Comments:

Cool Season Grasses	Warm Season Grasses
<ul style="list-style-type: none"> • Best growth in the cool weather of fall and spring, set seed in June and July. • Seed April 1-May 31 and Aug 1-Sept 10. 	<ul style="list-style-type: none"> • Growth begins in the spring, accelerates in the summer, and plants set seed in the fall. • Seed April 1-May 15, dormant seeding Nov 1-Dec 15.



Loaming and seeding of recently disturbed right of way.



1.11 Mulching with Hay/Straw/Woodchips

Applications: Erosion control, soil stabilization, site restoration

Limitations:

- May be site specific limitations (e.g. permit or State requirements).
- Applies to upland areas only.
- Thick mulch may prevent seed germinations.
- Mulch on steep slopes must be secured with netting to prevent it from being washed away.

Overview:

Mulching consists of an application of a protective blanket of straw or other plant residue, gravel, or synthetic material to the soil surface to provide short term soil protection. It enhances plant establishment by conserving moisture and moderating soil temperatures, and anchors seed and topsoil in place. Mulch also reduces stormwater runoff velocity.

Application rates and technique depend on material used. Select mulch material based on soil type, site conditions and season. Straw/hay provides the densest cover if applied at the appropriate rate (at least ½ inch) and should be mechanically or chemically secured to the soil surface. Woodchip application can be less expensive if on-site materials are used.

Installation:

- Use in areas which have been temporarily or permanently seeded.
- Use mulch netting on slopes greater than 3% or in concentrated flows.
- Mulch prior to winter (ideally in mid-summer).

Maintenance:

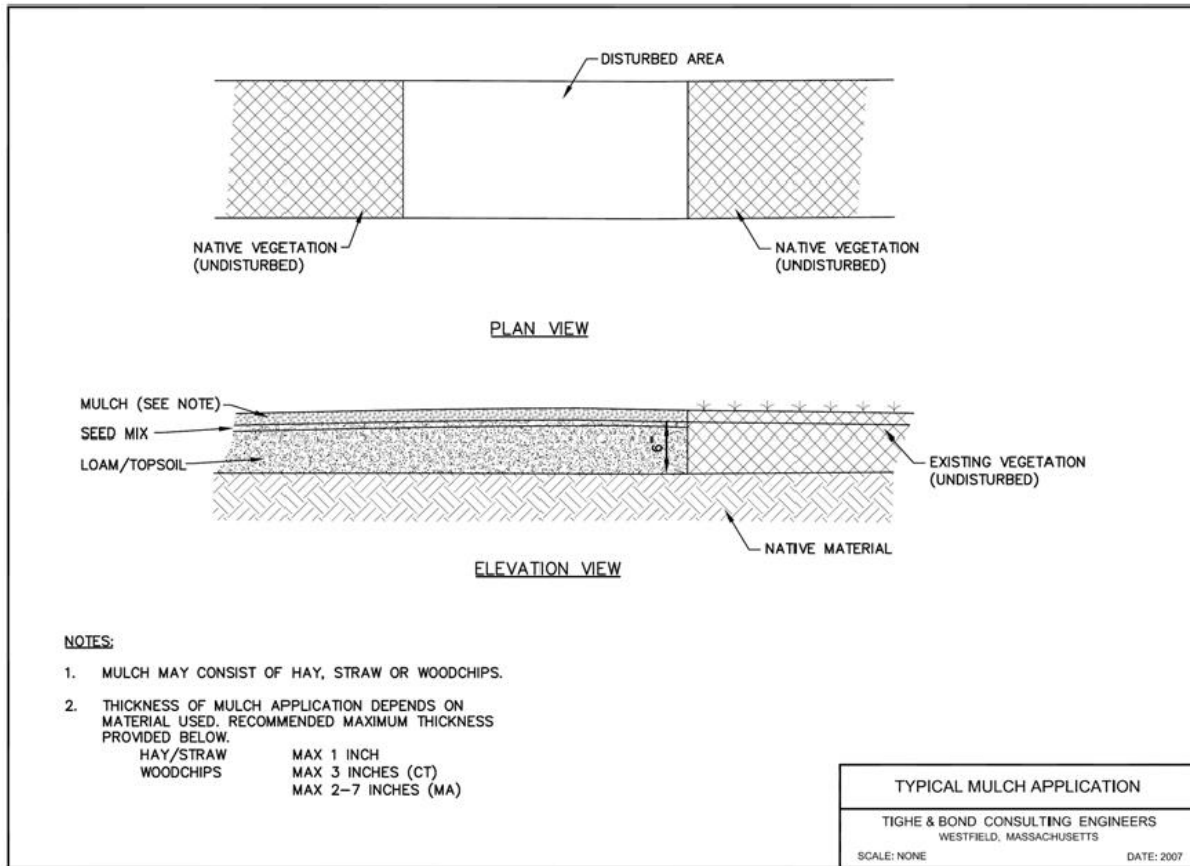
- Inspect on regular basis until vegetation has established.
- If washout or erosion occurs, repair surface, re-seed, re-mulch, and install new netting.

Additional Comments:

Type	Description/Use
Straw/Hay	<ul style="list-style-type: none"> • Straw or hay applied to surface at 2-4 tons per acre • Mechanically or chemically secured to soil surface • Provides the densest cover to protect soil and seeds
Wood Fiber/Hydraulic Mulch	<ul style="list-style-type: none"> • Chopped up fibers applied to the soil surface with a hydroseeder • Tackifier when necessary can be applied with fiber, seeds and fertilizer in one step. This is best when done with fast growing seeds
Compost	<ul style="list-style-type: none"> • Compost acts as a soil amendment but is more expensive than most mulches • Its efficiency is comparable to wood fiber
Wood Chips	<ul style="list-style-type: none"> • Use of wood chips as a mulch saves money if on-site materials are used • Effective when applied at high levels (6 tons per acre) and on up to 35% slopes



Typical view of light mulching atop unstable, seeded soils.



1.12 Coir Log Use for Bank Stabilization

Applications: Bank stabilization, wetlands and watercourse restoration

Limitations:

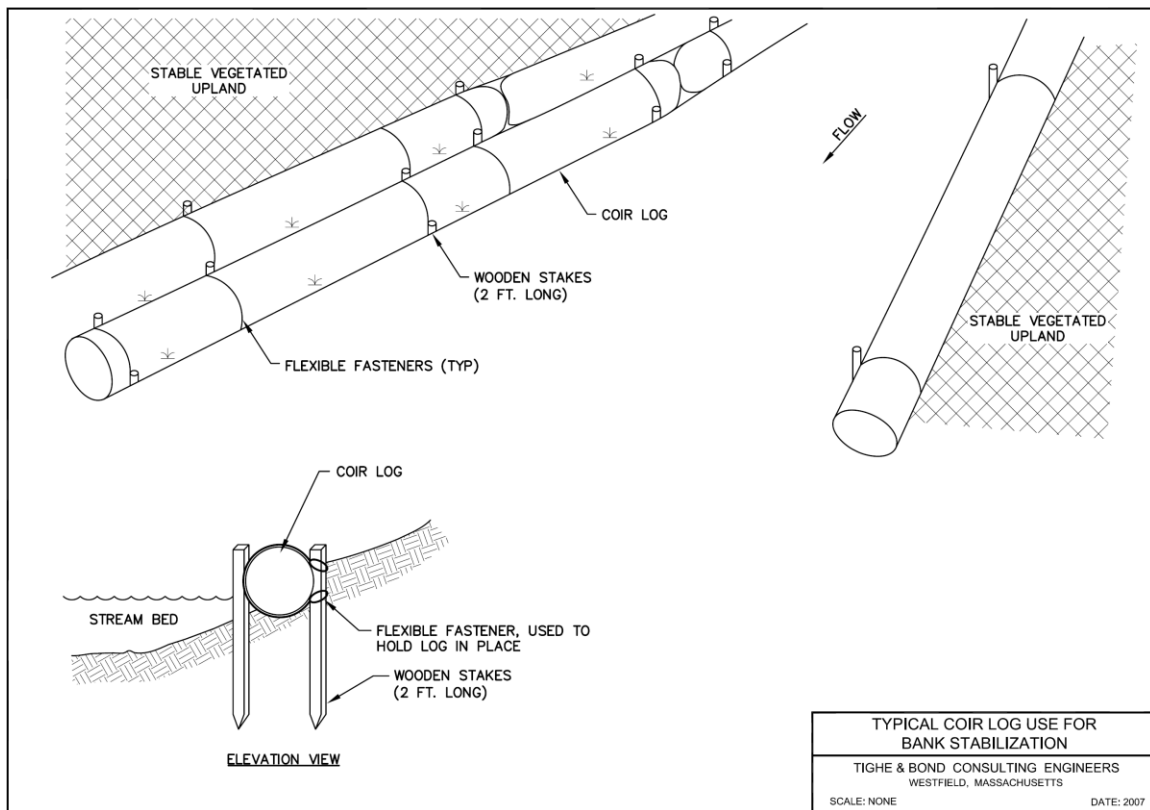
- Moderately expensive.

Overview:

- Refer to permit requirements (if applicable) and manufacturer's specifications.
- Install along banks between upland and watercourse using wooden stakes (2 foot long) and flexible fasteners (to hold log in place).



Coir logs used to restore a stream bed and banks.



1.14 Check Dams

Applications: Stormwater management, erosion control

Limitations:

- Need to be adequately sized based on expected rain events.

Overview:

Check dams are porous physical barriers placed across a drainageway to reduce the velocity of concentrated stormwater flows and erosion. Check dams also temporarily pond stormwater runoff to allow sediment in the water column to settle out. Permanent or long-term check dams are typically constructed of rip rap or other stone material. Short-term check dams can be constructed of rip rap. Rip rap check dams are preferred over hay bales.

Installation:

- Place stone by hand or machine, making side slopes no steeper than 1:1 and with a maximum height of 3 feet at the center of the check dam. A geotextile may be used under the stone to provide a stable foundation and/or to facilitate removal of the stone.
- The minimum height of the check dam shall be the flow depth of the drainageway, but shall not exceed 3 feet at the center.
- Install the check dam so that it spans the full width of the drainageway, plus 18 inches on each side. Leave the center of the check dam approximately 6 inches lower than the height of the outer edges.
- The maximum spacing between check dams should be such that the toe of the upstream check dam is at the same elevation as the top of the center of the downstream check dam.

Maintenance:

- For permanent stone check dams, inspect and maintain the check dam in accordance with the standards and specifications provided in the design for the site.
- For temporary check dams, inspect at least once per week and within 24 hours of the end of a precipitation event of 0.5 inches or more to determine maintenance needs.
- Maintenance may include, but are not limited to, the replacement of stone, repair of erosion around or under the structure, and/or the removal and proper disposal of accumulated sediment.

Problem	Solution/Explanation
Stone displaced from face of dam	Stone size too small and/or face too steep
Erosion downstream from dam	Install stone lined apron
Erosion of abutments during high flow	Rock abutment height too low
Sediment loss through dam	Inadequate layer of stone on inside face or stone too coarse to restrict flow through dam



Stone check dams at construction site.



Stone check dam at construction site.

2.1.2 Frac Tank

Applications: Dewatering, managing contaminated groundwater

Limitations:

- Expensive
- May be site specific limitations (e.g. extremely unlevel ground)
- May require proper disposal at a regulated facility (in cases of contaminated groundwater)

Overview:

Frac Tanks are pre-fabricated and self-contained units that contain a series of baffles that allow fine materials to settle out of the water column. Use frac tanks when the work requires dewatering in an area with very silt laden water and/or contaminated groundwater.



Frac tank on-site for dewatering activities.

2.1.3 Filter Bags and Hay Bale Containment Area

Applications: Dewatering

Limitations:

- Pumps require oversight at all times.
- Filter bags clog and require replacement.

Overview:

Use filter bags with hay bale containment area for dewatering when there is the potential for discharged water to flow overland into wetlands or waterbodies. Locate dewatering sites in well-vegetated areas within the right of way or approved work areas. Locate discharges outside of wetlands and over 100 feet from a streambank or waterbody, if practicable.

Installation:

- Place pump in a containment structure (i.e., child-sized plastic pool) to avoid fuel leakage to the wetlands or waterways.
- Properly place the discharge hose into a pre-manufactured, geotextile filter bag **per the manufacturer's instructions.**
- Place the filter bag in a well-vegetated area outside of a wetland area and over 100 feet from a waterbody, if practicable.
- Elevate the intake hose off the trench bottom and create a sump with clean rock in order to avoid pumping additional sediment.
- Build a hay bale corral for the filter bag if the water must be discharged within 100 feet of a wetland, waterbody, or other sensitive area.
- **Stake a double vertical line of hay bales in an "L" or "U" shape on the downgradient sides of the bag to further filter the discharge water.**

Maintenance:

- Man the pump at all times.
- Refuel pump within a plastic containment structure and/or over 100 feet from the wetland or waterbody.
- Routinely check the filter bag during pumping activities to ensure that it is not reaching its holding capacity.
- If the bag appears to be nearing its limits, stop dewatering until more water has filtered out and the bag can be replaced.
- Properly dispose of used filter bags and trapped sediment.

2.1.4 Discharge Hose Filter Socks

Applications: Dewatering

Limitations:

- Ineffective for very silty water

Overview:

Use discharge hose filter socks at sites where there is insufficient space to construct sediment basins or enough suitable uplands for overland flow and infiltration. **Filter “socks”** or bags may be affixed to the end for the discharge hose of the pump and used for dewatering. It is important that enough socks be on hand at the site to accommodate the anticipated need, as they fill fast with more turbid water. Additional measures such as hay or straw bales can be installed around the filter device for added protection.



Dewatering to filter “sock” surrounded by hay bales.

2.4 Silt Barriers

Applications: Turbidity control

Limitations:

- Must be rated to withstand anticipated flow velocity and quantity.

Overview:

Staked and floating silt barriers are temporary flexible barriers used within a waterbody to separate or deflect natural flow around a work area. Barriers are placed around the sediment source to contain the sediment-laden water, allowing suspended soil particle to settle out of suspension and stay in the immediate area. The staked barrier consists of geotextile fabric attached to support posts and a wire support fence and a chain sewn into a sleeve along the bottom edge to allow the barrier to conform to the channel.

The floating silt barriers are often called silt or turbidity curtains, and can be purchased from manufacturers or can be made on site. Construction generally includes a skirt (geotextile fabric) that forms the barrier, flotation segments such as styrofoam sealed in a seam along the top of the fabric, a ballast chain sealed into a sleeve along the bottom edge of the fabric, a loadline built into the barrier above or below the flotation segments, and piles or posts tied back to underwater or on shore anchor points.

Staked Silt Barriers

- For installations which only isolate a part of the stream, barriers can be used in higher flows (shallow streams with currents less than 0.5 ft/s).
- Do not use in streams/river with strong currents, strong waves, ice, floating debris, or boats and do not place barriers completely across stream channels unless they are minor or intermittent streams with negligible flow.

Installation:

- Place the staked barrier and wire support fence at least 1 foot above the waterline. Do not install in a waterbody deeper than 4 feet.
- Place support stakes 10 feet apart and drive them 2 feet into the channel bottom.
- Fasten the wire mesh securely against the fabric with heavy duty wire staples at **least 1" long. If possible, use a continuous roll of fabric and fasten securely to the posts with heavy duty staples with a maximum spacing of 2".**
- Where possible, prefabricate a staked barrier on shore. Carefully roll it up lengthwise and move it into place.
- Secure the bottom edge of fabric to the channel bottom by placing a heavy chain into a sewn sleeve along the fabric edge, or by placing clean rockfill over the edge.

Floating Silt Barriers

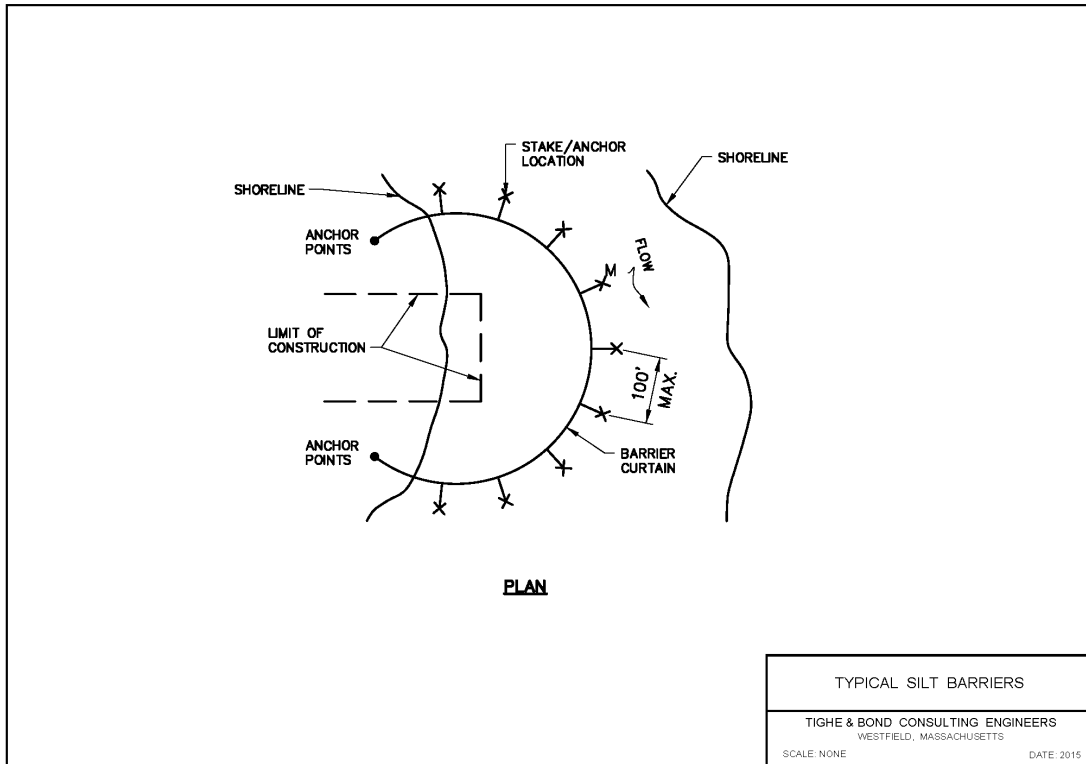
- Use only in negligible or low flow conditions. Can be used for instream areas between 2.6 feet and 6 feet deep and with waves potentially up to 10 feet.
- Do not use to stop, divert, or filter a significant volume of water.

Installation:

- Purchasing a pre-manufactured silt curtain such as Siltmaster® will save time **constructing the barrier. Follow manufacturer's advice for the area.**
- Enclose the smallest area as practicable. Locate the barrier far enough away from construction equipment to avoid damage.
- Launch the furled barrier from a ramp, pier or shore. Set the shore anchor points and tie off one end of the barrier to the stream anchor point and the downstream end to a boat. Bring to the downstream point to be anchored.
- Anchor the barrier in the desired formation and make sure the skirt is not twisted around the flotation.
- Cut the furling ties and let the ballast sink to its maximum depth.
- Slant the barrier at an angle, not perpendicular to the flow. If the barrier will be exposed to reversing currents, anchor it on both sides.

Maintenance for both:

- Inspect daily for any rips or tears or turbidity in the stream flow. Repair immediately with overlapping pieces of geotextile fabric.
- Remove accumulated sediment from the base of the barrier. If necessary, dewater turbid water to an onshore filter bag before removing the barrier.
- Remove the barrier carefully when the work is completed and after suspended sediments have time to settle out.



Section 4

Inspection and Maintenance

A pre-construction meeting will be held to discuss how often and who will be checking that all erosion and sedimentation controls are in working order. All BMPs will be inspected at least once per week during construction and at least once per month during restoration. Construction sites will be inspected after major storm events (rainfall events greater than 0.25 inches).

4.1 During Construction

Construction sites, construction access roads, and the associated erosion and sedimentation controls should be inspected by the person(s) designated at the pre-construction meeting, as required by permit conditions. Any damage observed must be repaired in a timely matter, at least within 48 hours of observation. Repairs may include regrading and/or top dressing the surface with additional aggregate to eliminate ruts as well as those repairs required by each erosion and sedimentation measure used.

All inspections will be documented in the project folder.

4.1.1 Maintenance of E&S Controls

Spare erosion and sedimentation control materials such as straw wattles, hay/straw bales and silt fencing should be kept on site or readily available so they may be replaced if they become non-functional due to deterioration or damaged during a storm, extreme water or wind, or other unexpected events.

4.1.2 Rapid Wetland Response Restoration

In the event of unintended discharges of sediment into wetlands, Eversource will quickly control, contain and remove sediment using non- or marginally invasive methods. Responding quickly to unintended discharges minimizes the difficulty and cost of restoration if the sediment is left in place for an extended period of time. Eversource will conduct sediment removal activities at the time of discharge and will notify the appropriate regulators of the discharge and the restoration process.

4.1.3 Vehicle Storage

All storage and refueling of vehicles and other equipment must occur outside of and as far away as practical from sensitive areas such as wetlands, unless specifically agreed by the Project Team and an alternate protocol is developed and approved internally. Refueling for larger, less mobile equipment such as drill rigs or large cranes, may be allowed within wetland resources only with prior approval and if specified precautions and protocols are followed. A proper location for refueling should be identified and designated before site work begins. The recommended minimum distance from wetland areas for storage of fuel and refueling is 100 feet. Additionally, equipment should be checked regularly for evidence of leaks. Construction material storage should also be located at least 100 feet from wetlands.

4.1.4 Spills

Spill kits consist of emergency cleanup and spill containment materials that can be used in the event of a fuel or other chemical spill. Spill kits must be kept on site and accessible at all times in case of an emergency spill. Such kits should generally contain multiple absorbent socks and/or pillows and wipes and temporary disposal bags. Follow the applicable Eversource Contractor Work Rules.

4.1.5 Post Construction

Post-construction inspections of restored areas will be conducted at regular intervals throughout the growing season, as required by any applicable permits, and/or after major storm events. Sites should be inspected for success or failure of revegetation, invasive species colonization, and erosion and sedimentation. In the event additional measures are required to achieve site restoration and stabilization, corrective actions shall be identified and implemented.

All information collected during inspections, regular maintenance, and repair procedures should be documented in project folders. In addition, photographic or diagrammatic logs may be kept to help record certain events and for documentation of project progress and any noteworthy observations.

The construction work is not complete until all areas are restored.

Section 5

Rehabilitation and Restoration

5.1 Restoration

All areas disturbed by construction, repair, and maintenance activities shall be substantially restored to pre-construction conditions. Please refer to Appendix A Section I for photos and typicals for loaming, seeding, and mulching. Prompt restoration minimizes the extent and duration of soil exposure and protects disturbed areas from stormwater runoff. Stabilization should be conducted as soon as practicable. Where appropriate, it is preferable to allow wetlands to naturally revegetate.

5.1.1 Seed Mixes

Several different seed mixes are available for upland and wetland restoration. State-specific comprehensive summaries of seed mixes for both temporary and permanent seeding of disturbed sites can be found within the following documents:

- Massachusetts: Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas, page 157:
<http://www.mass.gov/eea/docs/dep/water/essec1.pdf>
- Connecticut: 2002 Connecticut Guidelines for Soil and Erosion Sediment Control, page 5-3-8: <http://www.ct.gov/deep/cwp/view.asp?A=2720&Q=325660>

Upland Seed Mix: If significant grading or upland alteration has occurred, annual **rye grass seed shall be placed following manufacturer's recommendations** after regrading activities.

Wetland Seed Mix: If significant grading or wetland alteration has occurred, a wetland seed mix shall be placed **following manufacture's recommendations** after regrading activities.

5.1.2 Upland

The following restoration techniques apply to restoration projects in upland areas.

- Soil excavated during construction and not used as backfill must be evenly spread onto disturbed areas to restore grades. Topsoil shall be stripped and separated to the extent practical, for re-use. Permanent soil protection shall be provided for all areas disturbed by construction activities. All areas will be seeded either by Hydro-seeding or broadcast seeding. If areas cannot be seeded due to the time of year, then mulch (hay or straw) is still required prior to the next precipitation event.
- Topsoil removed during construction activities will be replaced, seeded, and mulched.
- All areas that are broadcast seeded shall be treated with a layer of mulch, such as hay, but preferably straw, up to one inch thick to enhance moisture retention, dissipate disturbance from precipitation, and detract birds foraging on broadcast seed.

- Rehabilitation of access routes and other areas must be performed as soon as practicable after construction is completed, including reestablishment of water bars or other BMPs to control erosion of the access road, and the removal and restoration of temporary wetland or waterway crossings.
 - Temporary breaks in construction activities may warrant seeding and mulching of disturbed areas as interim erosion control measures.
- Erosion control measures shall remain in place until soils are clearly stabilized. Once soils are stable, erosion controls – especially silt fence, which presents an obstacle to movement of small animals shall be removed and properly disposed. Stakes should be removed from hay bales and spread as mulch to remove barriers to wildlife movement.
- Straw is preferred over hay to prevent the spread of invasive plant species seed stock.
- If a grading operation at a site shall be suspended for a period of more than 29 consecutive days, the disturbed area shall be stabilized by seeding, mulching, and/or other appropriate means within the first 7 days of the suspension of grading.
- Within 7 days after a final grade is established in any grading operation the disturbed area shall be stabilized by seeding, loaming, and/or other appropriate means.

5.1.3 Wetland/Watercourses

Regrading of Ruts: Upon removal of construction mats, or other BMPs, the wetland resource area should be inspected for rutting or disturbance from eroded upland soils. Any rutting should be regraded to pre-existing contours and upland soils removed from wetland areas while taking care not to compact soils.

The following restoration techniques apply to restoration project in wetlands:

Maintenance, Repair, and Emergency Projects (When No Permit is Required)

- Remove mats **by “backing” out of the site** and removing mats one at a time. Regrade soils to pre-existing contours while taking care not to compact soils.
- Soils excavated from wetland areas shall be segregated and stockpiled separately (i.e., topsoil/muck apart from mineral subsoil) in a dry/upland area at least 100 feet from wetland boundaries unless other provisions have been made to facilitate restoration activities.
- Excavated wetland soils that have been stockpiled during underground utility installations within wetlands shall be replaced in the same order (i.e., mineral subsoil beneath organic topsoil/muck) to the extent practicable and restored to pre-disturbance grades.
 - Grading activities should include the elimination of ruts within the area to be restored.
- If replacement of soil associated with temporary wetland or watercourse crossings for access roads is necessary, disturbed areas must be restored to pre-disturbance grades, either seeded and mulched, or allowed to revegetate from the natural seed bank.

- Disturbed wetland areas shall generally be allowed to revegetate from the natural seed bank. Measures to discourage the establishment or spread of plant species identified as non-native, invasive species by federal or state agencies shall be utilized. Environmental Licensing and Permitting can evaluate whether to let the wetland vegetate naturally.
- Any restoration plantings or seed mixes used in restoration shall consist of species native to the project area and, if feasible, from local nursery stock.
- Any stream banks and beds damaged shall be restored through use of geotextile erosion control blankets, and/or coir logs.
- All seeded areas shall be treated with a layer of mulch (i.e., hay, but preferably straw) up to one inch thick to enhance moisture retention, dissipate disturbance from precipitation, and detract songbirds foraging on broadcast seed.

5.2 Private Property

5.2.1 Improved Areas

Access to and along the ROW over private property must be improved to the extent necessary to ensure suitable passage for construction equipment, provide erosion control, and maintain proper drainage. Upon completion of construction activities, altered yards, lawns, agricultural areas, and other improved areas must be restored to a condition equal to or better than before their use for the construction project. If access is over a property off the transmission easement, then it is the responsibility of a construction representative to determine if legal access rights are available to cross the property.

5.2.2 Overall Work Site

Construction personnel should remove all work-related trailers, buildings, rubbish, waste soil, temporary structures, and unused materials upon satisfactory completion of work. All areas should be left clean, without any litter or equipment (wire, pole butts, anchors, insulators, cross-arms, cardboard, coffee cups, water bottles, etc.) and restored to a stable condition and close to the original condition. Debris and spent equipment should be returned to the operating facility or contractor staging area for disposal or recycling as appropriate.

5.2.3 Material Storage/Staging and Parking Areas

Upon completion of all work, all material storage yards, staging areas, and parking areas shall be completely cleared of all waste and debris. Unless otherwise directed or unless other arrangements have been made with an off ROW or off-property owner, material storage yards and staging areas shall be returned to the condition that existed prior to the installation of the material storage yard or staging area. Regardless of arrangements made with a landowner, all areas shall be restored to their pre-construction condition or better. Also any temporary structures erected by the construction personnel, including fences, shall be removed by the construction personnel and the area restored as near as possible to its original condition, including seeding and mulching as needed.

Attachment I – Draft Construction Spill Prevention Control and Countermeasures Plan

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Sudbury, Massachusetts Construction Spill Prevention Control & Countermeasures Plan

Construction personnel will be instructed regarding the following spill prevention practices and procedures. Notices stating these practices will be posted in the office trailer, and the site construction supervisor will be responsible for seeing that these procedures are followed.

Material Management Practices

The following material management practices will be used to reduce the risk of spills or other accidental exposure of materials and substances to stormwater runoff. These include good housekeeping practices and guidelines for the handling of hazardous products.

The following good housekeeping practices will be followed on-site during the construction period.

- No storage, stockpiling or staging of construction-related materials or products will occur within 100 feet of a wetland or waterway without adequate erosion control protection and without approval of the Conservation Commission.
- An effort will be made to store only enough product required to do the job.
- All materials stored on-site will be stored in a neat, orderly manner in their appropriate containers, and (if necessary) under a roof or other enclosure.
- Products will be kept in their original containers with the original manufacturer's label.
- Substances will not be mixed with one another unless recommended by the manufacturer.
- Whenever possible, all of a product will be used before disposing of the container.
- Manufacturer's recommendations for proper use and disposal will be followed.
- The project superintendent will inspect the storage area(s) daily to ensure proper use and disposal of materials on-site.

The following practices will reduce the risks associated with hazardous materials (e.g., petroleum products, solvents).

- A copy of all Safety Data Sheets (SDS) for materials or products used during construction will be kept in the office trailer.
- Products will be kept in original containers unless they are not re-sealable.
- Original labels and SDS sheets will be retained; they contain important health, safety and product information.
- If surplus product must be disposed of, it will be done in accordance with Federal, State and Local regulations along with the manufacturer's recommended methods for proper disposal.

Product-Specific Practices

The following product-specific practices will be followed on-site. Recommendations are provided for petroleum products, fertilizers, solvents, paints, and other hazardous substances, and concrete.

Petroleum Products

All on-site vehicles will be monitored for leaks and will receive regular preventive maintenance to reduce the chance of leakage. No vehicle maintenance or handling of petroleum products will occur within 100 feet of a wetland or waterway. Petroleum products will be stored in tightly sealed containers that are clearly labeled. Any asphalt substances used on-site will be applied according to manufacturer's recommendations. No petroleum-based or asphalt substances will be stored within 100 feet of a wetland or waterway.

Fertilizers

Fertilizers will be applied only in the minimum amounts recommended by the manufacturer. Once applied, the fertilizer will be worked into the soil to limit exposure to stormwater. Storage will be in a covered shed; and the contents of any partially used bags will be transferred to a sealable, plastic bin to avoid spills. No fertilizer storage will occur within 100 feet of a wetland or waterway.

Solvents, Paints, and other Hazardous Substances

All containers will be tightly sealed and stored when not required for use. Excess materials will not be discharged to the storm sewer system but will be properly disposed according to manufacturer's instructions or state and local regulations. No storage will occur within 100 feet of a wetland or waterway.

Concrete Trucks

Concrete trucks will not be allowed to wash out or discharge surplus concrete or drum wash water within 100 feet of wetland resources, except within the limits of the existing reservoir, or into catch basins that are already in place.

Cranes

Stationary cranes (cranes that cannot be driven to a fueling location) will be fueled by experienced fueling technicians. A 55-gallon petroleum spill kit will be maintained onsite at each crane fueling location. Crane fueling will not be conducted during inclement weather conditions or high winds. The fuel tanker truck will be parked on a portable dike during crane fueling.

Spill Control/Notification Practices

In addition to the good housekeeping and material management practices discussed above, the following practices will be followed for spill control, notification and cleanup.

- Manufacturer's recommended methods for spill cleanup will be clearly posted and site personnel will be informed of the procedures and the location of the information and cleanup supplies.
- Materials and equipment necessary for spill cleanup will be kept in the material storage area on-site. Equipment and materials will include, but will not be limited to, shovels, wheel barrows, brooms, dust pans, mops, rags, gloves, goggles, kitty litter or Speedi-Dry, sand, sawdust, and plastic and metal trash containers specifically designated for this purpose.
- All spills will be removed immediately after discovery.
- The spill area will be kept well ventilated and personnel will wear protective clothing to prevent injury from contact with a hazardous substance.
- Spills of toxic or hazardous material in excess of reportable quantities, as established in the Massachusetts Contingency Plan (MCP), will be reported to the Massachusetts Department of Environmental Protection Division of Hazardous Waste [(617) 556-1133 or 1-888-304-1133]. The Emergency Spill Response Procedure is provided as Attachment A.
- The construction superintendent responsible for the daily operations will be the spill prevention and cleanup coordinator. He will designate at least three other site personnel to receive spill prevention and cleanup training. These individuals will each become responsible for a particular phase of prevention and cleanup. The names of the responsible spill personnel will be posted in the material storage area and in the on-site office trailer.

Source Control

Trash removal, designated trash storage areas, pavement sweeping and the controlled use of fertilizer and deicing agents on the site will reduce the pollutant load in the site's stormwater management system.

Construction Trash Removal

Daily loose trash removal will prevent litter, construction debris, and construction chemicals exposed to stormwater from becoming a pollutant source for stormwater discharges. All loose trash will be placed in appropriate storage containers until disposed of properly off-site.

Covered Trash/Storage Areas

Areas to be used for storing dumpsters, compactors or other raw or waste materials will be covered to prevent contact with stormwater.

Pavement Sweeping

Paved surfaces at the site will be swept at least twice annually (fall and spring). The sweeping program will remove contaminants directly from paved surfaces before their release into stormwater runoff. Pavement sweeping has been demonstrated to be an effective initial treatment for reducing pollutant loading into stormwater¹.

Fertilizer

Only slow-release organic fertilizers will be used in landscaped areas. This will limit the amount of nutrients that could enter the stormwater and wetland systems. Fertilizer use will be reduced once the proposed landscaping is established.

Deicing Agents

The use of road salt (sodium chloride) for maintenance of parking areas and circulation drives during the winter will be minimized. Sand will be the primary agent used during ice and snow conditions. De-icing or anti-caking agents, added to enhance performance and application characteristics of the sand mixture, will be included only as necessary and at minimum application rates. This will help to limit the amount of dissolved pollutants in snowmelt and stormwater runoff.

Waste Disposal

All non-demolition waste materials will be collected and stored in securely lidded metal dumpsters. The dumpster will meet all local and state solid waste management regulations. All trash and non-demolition construction debris from the site will be deposited in the dumpster; and the dumpster will be emptied as necessary. Trash will be hauled by a licensed contractor and disposed in accordance with federal, state, and local environmental regulations. No trash or construction waste will be buried on-site, and personnel will be instructed regarding the correct procedure for waste disposal. Notices stating these practices will be posted in the office trailer and the site construction supervisor will be responsible for seeing that these procedures are followed.

Hazardous Waste

Hazardous waste materials (e.g., petroleum products, solvents) will be disposed in the manner specified by local and state regulation, or by the manufacturer. Site personnel will be instructed in these practices, and the site construction supervisor will be responsible for seeing that these procedures are followed.

Sanitary Waste

Sanitary waste will be collected from the portable units by a licensed contractor a minimum of three times weekly and disposed in compliance with state and local regulation.

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Attachment A

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Spill Response Procedure

Initial Notification

In the event of a spill the facility and/or construction manager or supervisor will be notified immediately.

Construction Manager: (name) _____
(phone) _____

Project Supervisor: (name) _____
(phone) _____

Assessment - Initial Containment

The supervisor or manager will assess the incident and initiate containment control measures with the appropriate spill containment equipment included in the spill kit kept on-site. The supervisor will first contact the **Sudbury** Fire Department and then notify the **Sudbury** Police Department, if there is a danger to the public. The fire department is ultimately responsible for matters of public health and safety and should be notified immediately by calling **911**.

Non-emergency phone numbers

Fire Department: (978) 440-5301

Police Department: (978) 443-1042

Board of Health (978) 440-5479

Conservation Commission (978) 440-5471

Further Notification

Based on the assessment by the supervisor or manager, additional notification to a cleanup contractor may be made. The Massachusetts Department of Environmental Protection and the EPA may be notified depending upon the nature and severity of the spill. The supervisor or manager will be responsible for determining the level of cleanup and notification required. The attached list of emergency phone numbers shall be posted in the main construction/facility office and readily accessible to all employees.

HAZARDOUS WASTE / OIL SPILL REPORT

Date____/____/____

Time_____AM / PM

Approximate location _____

Type of equipment_____Make_____Size_____

S / N_____Weather Conditions_____

On or near water ☐ Yes If yes, name of body of water_____
 ☐ No

Type of chemical / oil spilled_____

Amount of chemical / oil spilled_____

Cause of spill_____

Measures taken to contain or clean up spill_____

Amount of chemical / oil recovered_____Method_____

Material collected as a result of clean up

_____drums containing_____

_____drums containing_____

_____drums containing_____

Location and method of debris disposal_____

Name and address of any person, firm, or corporation suffering damages_____

Procedures, method, and precautions instituted to prevent a similar occurrence from recurring_____

Spill reported to General Office by_____Time_____AM / PM

Spill reported to DEP / National Response Center by_____

DEP Date____/____/____Time_____AM / PMInspector_____

NRC Date____/____/____Time_____AM / PMInspector_____

Additional comments_____

EMERGENCY RESPONSE EQUIPMENT INVENTORY

The following equipment and materials shall be maintained at all times and stored in a secure area for long-term emergency response need.

--	SORBENT PADS	2 BALES
--	SORBENT BOOM	100 FEET
--	SAND BAGS (empty)	50
--	SPEEDI-DRI ABSORBENT	5 40# BAGS
--	SQUARE END SHOVELS	2
--	PICK	1
--	PRY BAR	2
--	DRAIN COVERS	2

The following items shall be placed in a convenient, readily accessible location on site.

--	HAY BALES & GRADE STAKES	10
--	SAND	10 CUBIC YARDS

EMERGENCY NOTIFICATION PHONE NUMBERS

1. CONSTRUCTION MANAGER
NAME: _____ MOBILE: _____
PHONE: _____ HOME PHONE: _____

ALTERNATE:
NAME: _____ MOBILE: _____
PHONE: _____ HOME PHONE: _____
2. SUDBURY FIRE DEPARTMENT
EMERGENCY: 911
BUSINESS: (978) 440-5301

SUDBURY POLICE DEPARTMENT
GENERAL NUMBER: (978) 443-1042
3. CLEANUP CONTRACTOR: _____
ADDRESS: _____
PHONE: _____
4. MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
EMERGENCY: (888) 304-1133
NORTHEAST REGION: (978) 694-3200
5. NATIONAL RESPONSE CENTER (Will contact EPA and other agencies, as necessary)
PHONE: (800) 424-8802
6. SUDBURY CONSERVATION COMMISSION
CONTACT: _____
PHONE: (978) 440-5471
7. SUDBURY BOARD OF HEALTH
CONTACT: _____
PHONE: (978) 440-5479
8. SUDBURY HIGHWAY DEPARTMENT (DISCHARGE TO STORM DRAIN)
CONTACT: _____
PHONE: (978) 440-5421

ATTACHMENT B

DRAFT

Attachment J – Wildlife Habitat Evaluation (under separate cover)

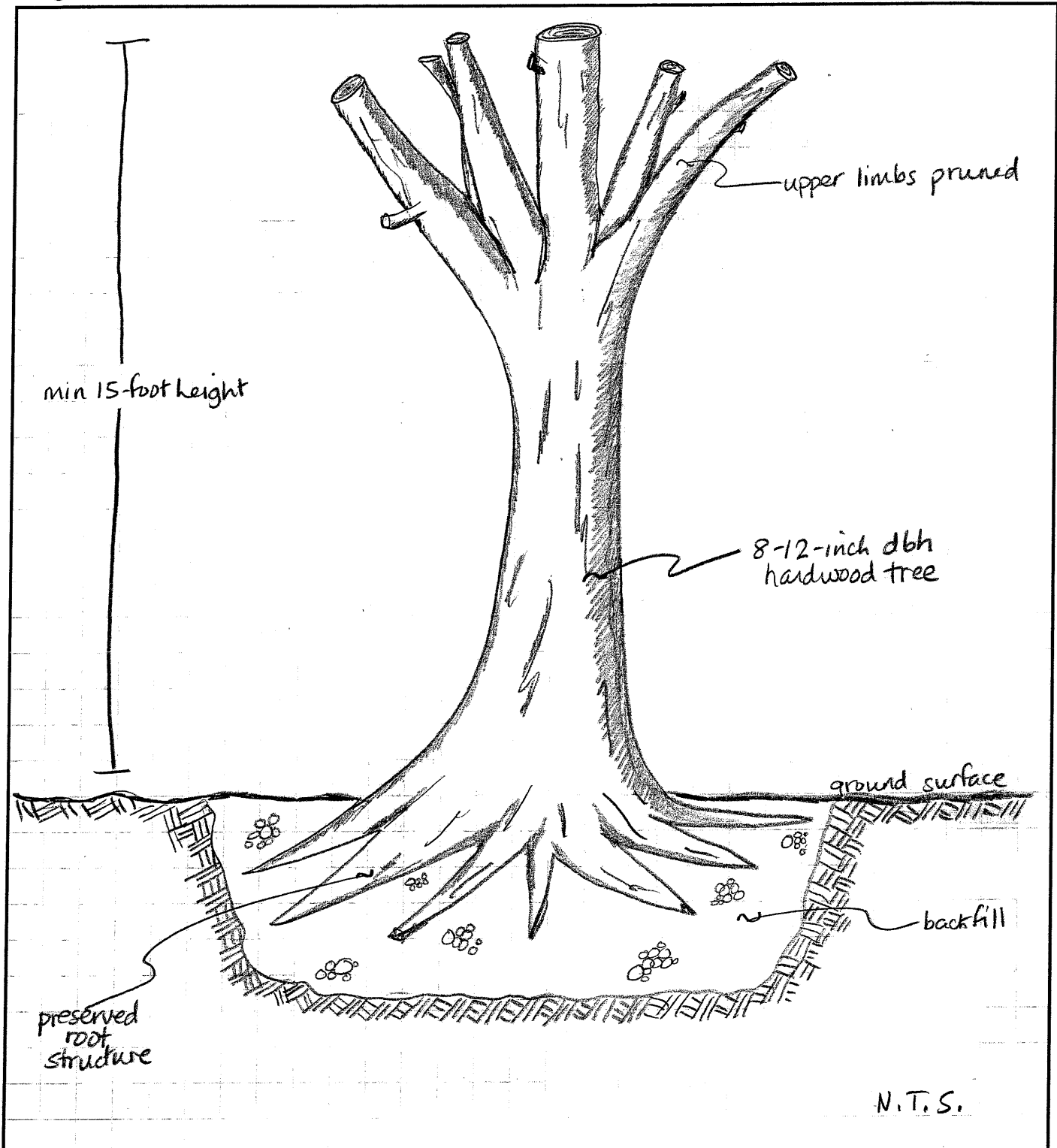
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Attachment K – Snag and Brush Pile Replacement Details

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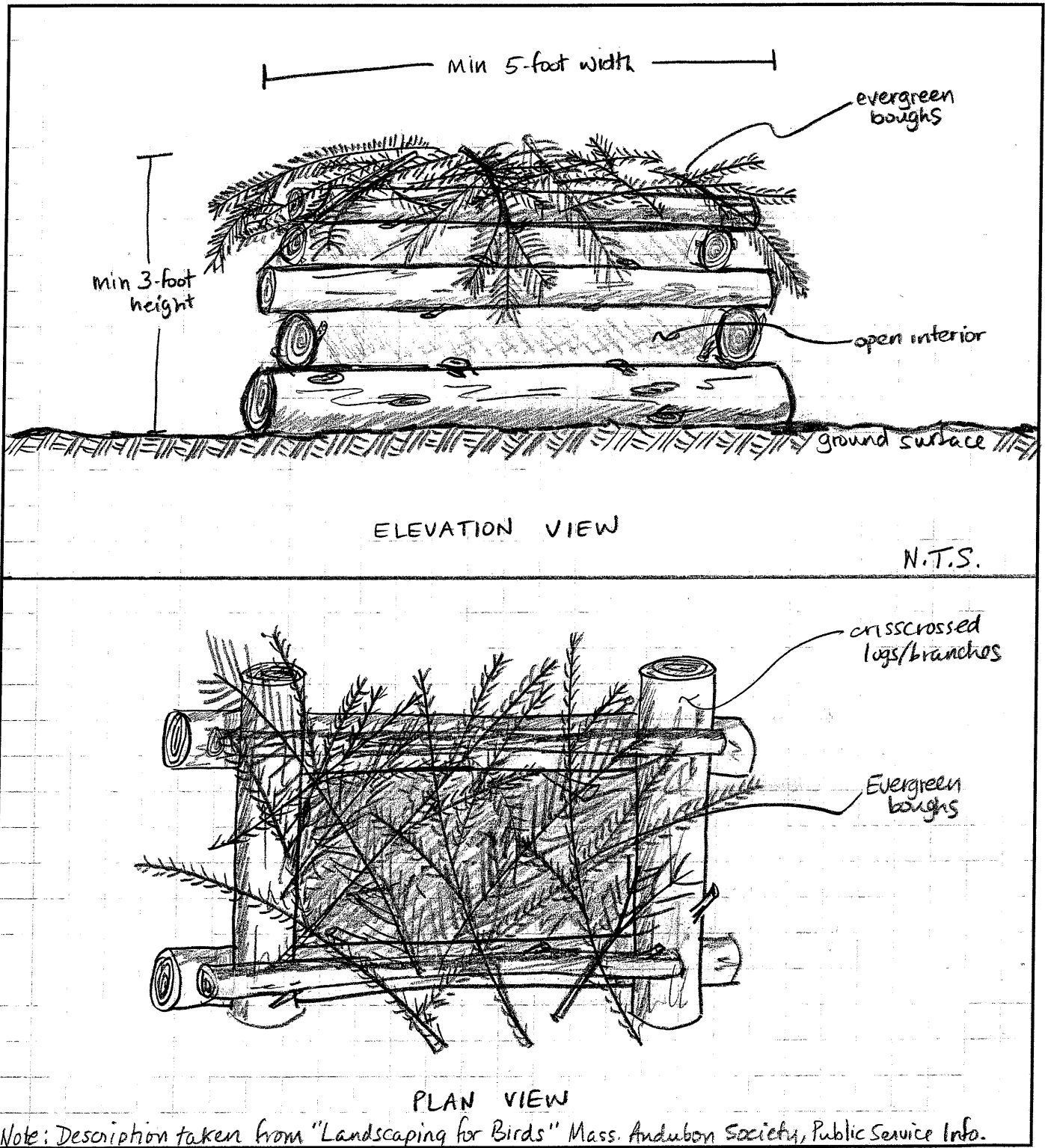
Project T-1 Project # _____
 Location _____ Sheet _____ of _____
 Calculated by _____ Date _____
 Checked by _____ Date _____
 Title Replacement Snag Detail

FIGURE A.



Project _____ Project # _____
 Location _____ Sheet _____ of _____
 Calculated by _____ Date _____
 Checked by _____ Date _____
 Title Brush Pile Detail

FIGURE B.

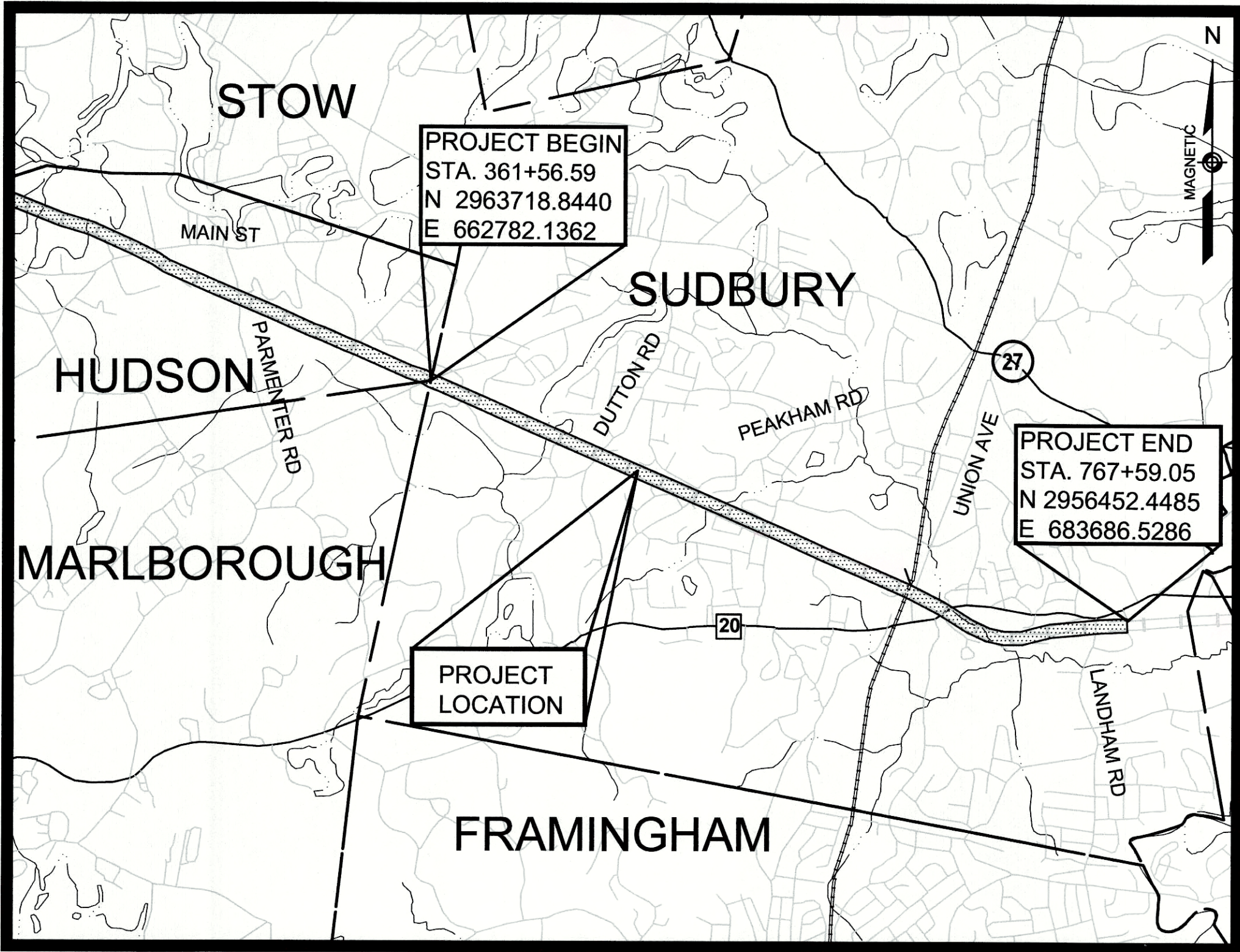


Attachment L – Stormwater Management Report (under separate cover)

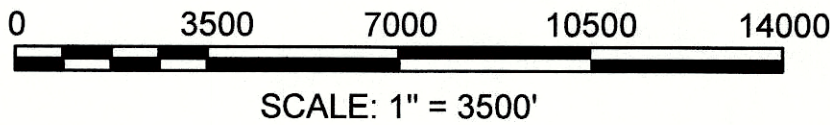
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EVERSOURCE
SUDBURY-HUDSON
TRANSMISSION RELIABILITY PROJECT
SUDBURY NOTICE OF INTENT PLANS


SHEET NO.	DESCRIPTION
1	TITLE SHEET & INDEX
2	LEGEND & ABBREVIATIONS
4-6 3-6	KEY PLAN
10-13 7-13	SURVEY TIE-IN PLANS
14-17, 19-22 14-23	TYPICAL SECTIONS
43-70 24-70	CONSTRUCTION PLANS
72-74 71-74	CONSTRUCTION BASELINE DATA
83-94 75-95	PROFILE
96-102, 115-117, 120-121 96-121	TEMPORARY TRAFFIC CONTROL PLANS
122-131 122-133	CONSTRUCTION DETAILS
134-135	WETLAND REPLICATION
155-167 136-167	BRIDGE PLANS
232-314 168-315	CROSS SECTIONS




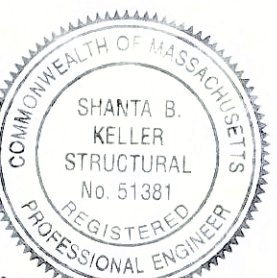
VANASSE HANGEN BRUSTLIN, INC.
WATERTOWN, MASSACHUSETTS



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.


Margot E. Schoenfelder
ENGINEER
3/5/2020
DATE


Mark A. Costa
ENGINEER
SHEETS 134-135
3/5/2020
DATE


Shanta S. Keller
ENGINEER
SHEETS 155-167
3/5/2020
DATE

N.O.	DESCRIPTION	BY	DATE	APP.R.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
TITLE SHEET & INDEX				
PLAN 1 OF 315				
SCALE: unless noted 1"=3500'	DATE MARCH 2020	DRAWN MS	CHK'D. SK	APP.R. MS
DRAWING NO.				REV.

1234567891011

GENERAL SYMBOLS

EXISTING

PROPOSED

DESCRIPTION

TRAFFIC SIGNAL

CATCH BASIN / DROP INLET

CATCH BASIN CURB INLET

GAS PUMP

MAIL BOX

POST SQUARE

POST CIRCULAR

GAS VENT

ELECTRIC HANDHOLE

FENCE GATE POST

GAS GATE

BENCHMARK

HYDRANT

LIGHT POLE

COUNTY BOUND

GPS POINT

CABLE MANHOLE

DRAINAGE MANHOLE

ELECTRIC MANHOLE

GAS MANHOLE

MISC MANHOLE

SEWER MANHOLE

TELEPHONE MANHOLE

WATER MANHOLE

MASSACHUSETTS HIGHWAY BOUND

MONUMENT

STONE BOUND

TOWN OR CITY BOUND

TRAVERSE OR TRIANGULATION STATION

TROLLEY POLE OR GUY POLE

TRANSMISSION POLE

UTILITY POLE W/ FIREBOX

UTILITY POLE WITH DOUBLE LIGHT

UTILITY POLE W / 1 LIGHT

UTILITY POLE

BUSH

TREE

STUMP

WATER GATE

OVERHEAD CABLE/WIRE

STEEL SHEETING

CONTOURS (ON-THE-GROUND SURVEY DATA)

CONTOURS (PHOTOGRAMMETRIC DATA)

UNDERGROUND DRAIN PIPE (DOUBLE LINE 24 INCH AND OVER)

UNDERGROUND CATV CONDUIT

UNDERGROUND GAS MAIN (DOUBLE LINE 24 INCH AND OVER)

UNDERGROUND SEWER MAIN (DOUBLE LINE 24 INCH AND OVER)

UNDERGROUND TELEPHONE DUCT (DOUBLE LINE 24 INCH AND OVER)

UNDERGROUND WATER MAIN (DOUBLE LINE 24 INCH AND OVER)

BALANCED STONE WALL

GUARD RAIL - STEEL POSTS

GUARD RAIL - WOOD POSTS

CHAIN LINK OR METAL FENCE

WOOD FENCE

FENCE

EROSION CONTROL BARRIER

CHECK DAM

TREE LINE

SAWCUT LINE

TOP OR BOTTOM OF SLOPE

LIMIT OF EDGE OF PAVEMENT OR COLD PLANE AND OVERLAY

BANK OF RIVER OR STREAM

BORDER OF WETLAND

LIMIT OF NHESP PRIORITY & ESTIMATED HABITAT

APPROXIMATE WETLAND LINE

100 FT WETLAND BUFFER

100 FT BORDERING LAND SUBJECT TO FLOODING BUFFER

200 FT RIVERFRONT AREA BUFFER

APPROX 200 FT RIVERFRONT AREA BUFFER

100 FT RIVERFRONT AREA BUFFER

APPROX 100 FT RIVERFRONT AREA BUFFER

AURA BUFFER

100 FT AURA BUFFER

100 FT VERNAL POOL AREA BUFFER

STATE HIGHWAY LAYOUT

TOWN OR CITY LAYOUT

COUNTY LAYOUT

TOWN OR CITY BOUNDARY LINE

PROPERTY LINE OR APPROXIMATE PROPERTY LINE

CONSTRUCTION BASELINE

GENERAL SYMBOLS (cont.)

EXISTING

PROPOSED

DESCRIPTION

EXISTING WALKING TRAIL

LIMIT OF GRADING

TRAFFIC SIGNAL CONDUIT

EASEMENT

PERMANENT EASEMENT ON MBTA PROPERTY

FLOODWAY

PAVEMENT MARKINGS SYMBOLS

EXISTING

PROPOSED

DESCRIPTION

CROSSWALK - 12" WHITE

SOLID WHITE LINE - 4"

DOUBLE YELLOW LINE - 4"

ABBREVIATIONS

GENERAL

GENERAL

ABAN

ADJ

APPROX.

AURA

BIT.

BC

BD.

BL

BLDG

BLSF

BM

BO

BOS

BR.

BVW

BZ

CB

CBCI

CC

CCM

CEM

CI

CIP

CLF

CL

CMP

CSP

CO.

CONC

CONT

CONST

DI

DIA

DIP

DW

DWY

ECB

ELEV (or EL.)

EMB

EOP

EXIST (or EX)

EXC

F&C

F&G

FAC

FACU

FACW

FDN.

FLDSTN

GD

GG

GIP

GRAN

GRAV

GRD

HDW

HMA

HOR

HYD

INV

ILSF

IVW

JCT

ABANDON

ADJUST

APPROXIMATE

ADJACENT UPLAND RESOURCE AREA

BITUMINOUS

BOTTOM OF CURB

BOUND

BASELINE

BUILDING

BORDERING LAND SUBJECT TO FLOODING

BENCHMARK

BY OTHERS

BOTTOM OF SLOPE

BRIDGE

BORDERING VEGETATED WETLAND

BUFFER ZONE

CATCH BASIN

CATCH BASIN WITH CURB INLET

CEMENT CONCRETE

CEMENT CONCRETE MASONRY

CEMENT

CURB INLET

CAST IRON PIPE

CHAIN LINK FENCE

CENTERLINE

CORRUGATED METAL PIPE

CORRUGATED STEEL PIPE

COUNTY

CONCRETE

CONTINUOUS

CONSTRUCTION

DROP INLET

DIAMETER

DUCTILE IRON PIPE

STEADY DON'T WALK - PORTLAND ORANGE

DRIVEWAY

EROSION CONTROL BARRIER

ELEVATION

EMBANKMENT

EDGE OF PAVEMENT

EXISTING

EXCAVATION

FRAME AND COVER

FRAME AND GRATE

FACULTATIVE

FACULTATIVE UPLAND

FACULTATIVE WETLAND

FOUNDATION

FIELDSTONE

GROUND

GAS GATE

GALVANIZED IRON PIPE

GRANITE

GRAVEL

GUARD

HEADWALL

HOT MIX ASPHALT

HORIZONTAL

HYDRANT

INVERT

ISOLATED LAND SUBJECT TO FLOODING

ISOLATED VEGETATED WETLAND

JUNCTION

LENGTH OF CURVE

LIGHT POLE

LEFT

LAND UNDER WATER

MAXIMUM

MAILBOX

MANHOLE

MASSACHUSETTS HIGHWAY BOUND

MINIMUM

NOT IN CONTRACT

NUMBER

NOT TO SCALE

OBLIGATE WETLAND

PULL BOX

POINT OF CURVATURE

POINT OF COMPOUND CURVATURE

PROFILE GRADE LINE

POINT OF INTERSECTION

POINT ON CURVE

POINT ON TANGENT

POINT OF REVERSE CURVATURE

PROJECT

PROPOSED

POINT OF TANGENCY

POINT OF VERTICAL CURVATURE

POINT OF VERTICAL INTERSECTION

POINT OF VERTICAL TANGENCY

PAVEMENT

RADIUS OF CURVATURE

RIVERFRONT AREA

REMOVE AND DISPOSE

REINFORCED CONCRETE PIPE

ROAD

ROADWAY

REMOVE

RETAIN

RETAINING WALL

RIGHT OF WAY

RAILROAD

REMOVE AND RESET

REMOVE AND STACK

RIGHT

STONE BOUND

SHOULDER

SEWER MANHOLE

STREET

STATION

STOPPING SIGHT DISTANCE

STATE HIGHWAY LAYOUT LINE

SIDEWALK

TANGENT DISTANCE OF CURVE/TRUCK %

TANGENT

TEMPORARY

TYPICAL

UTILITY POLE

OBLIGATE UPLAND

VARIES

VERTICAL

VERTICAL CURVE

VERNAL POOL

WHEEL CHAIR RAMP

WATER GATE

WATER METER/WATER MAIN

GENERAL NOTES:

1.

2.

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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.

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).

THE CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND GRADES IN THE FIELD BEFORE COMMENCING WORK AND PROMPTLY NOTIFY THE ENGINEER OF ANY DISCREPANCIES.

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.

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).

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.

THE CONTRACTOR SHALL VERIFY BY TEST PIT, THE LOCATIONS OF EXISTING UTILITIES THAT MAY CONFLICT WITH PROPOSED TRANSMISSION LINE. ANY FIELD ADJUSTMENTS REQUIRED WILL BE MADE AS APPROVED OR DIRECTED BY THE ENGINEER.

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.

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.

THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANIES.

EXISTING UTILITY POLES WILL BE RELOCATED BY OTHERS IF REQUIRED.

TREES AND SHRUBS WITHIN THE LIMITS OF GRADING SHALL BE REMOVED ONLY UPON APPROVAL OF THE ENGINEER.

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.

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).

ALL PROP LOAM AND SEED CALLED OUT ON THE CONSTRUCTION PLANS TO ADHERE TO PLANTING SCHEDULE C PROVIDED ON DETAIL SHEET 131 UNLESS NOTED OTHERWISE.

JOINTS BETWEEN NEW ASPHALT CONCRETE ROADWAY PAVEMENT AND SAWCUT EXISTING PAVEMENT SHALL BE SEALED WITH BITUMEN AND BACKSANDED.

EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE RETAINED UNLESS INDICATED OTHERWISE ON THE DRAWINGS.

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.

ALL PROPOSED HOT MIX ASPHALT CURB SHALL BE MASSDOT TYPE 2.

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.

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.

DISPOSAL OF ALL SURPLUS MATERIAL SHALL BE AS APPROVED BY THE ENGINEER AND OWNER.

LATERAL DRAIN PIPES SHALL BE INSTALLED WITH A PITCH OF 0.01 FOOT PER FOOT (MINIMUM) UNLESS NOTED OTHERWISE ON THE PLANS.

WHERE DEWATERING IS REQUIRED, CONTRACTOR SHALL TREAT WATER WITH DEWATERING BASIN OR DEWATERING FILTER BAGS BASED ON INPUT FROM LOCAL CONSERVATION COMMISSIONS.

SYNCPATED SILT FENCE TO BE USED AS AN EROSION CONTROL BARRIER WITHIN 100' VERNAL POOL BUFFER ZONES AND PRIORITY HABITAT AREAS.

THE LOCATIONS OF ALL EROSION CONTROL BARRIER SHALL BE ESTABLISHED BY SURVEY-GRADE EQUIPMENT AND ARE SUBJECT TO CHANGE BASED ON FIELD CONDITIONS.

1234567891011

GENERAL SYMBOLS

EXISTING

PROPOSED

DESCRIPTION

TRAFFIC SIGNAL

CATCH BASIN / DROP INLET

CATCH BASIN CURB INLET

GAS PUMP

MAIL BOX

POST SQUARE

POST CIRCULAR

GAS VENT

ELECTRIC HANDHOLE

FENCE GATE POST

GAS GATE

BENCHMARK

HYDRANT

LIGHT POLE

COUNTY BOUND

GPS POINT

CABLE MANHOLE

DRAINAGE MANHOLE

ELECTRIC MANHOLE

GAS MANHOLE

MISC MANHOLE

SEWER MANHOLE

TELEPHONE MANHOLE

WATER MANHOLE

MASSACHUSETTS HIGHWAY BOUND

MONUMENT

STONE BOUND

TOWN OR CITY BOUND

TRAVERSE OR TRIANGULATION STATION

TROLLEY POLE OR GUY POLE

TRANSMISSION POLE

UTILITY POLE W/ FIREBOX

UTILITY POLE WITH DOUBLE LIGHT

UTILITY POLE W / 1 LIGHT

UTILITY POLE

BUSH

TREE

STUMP

WATER GATE

OVERHEAD CABLE/WIRE

STEEL SHEETING

CONTOURS (ON-THE-GROUND SURVEY DATA)

CONTOURS (PHOTOGRAMMETRIC DATA)

UNDERGROUND DRAIN PIPE (DOUBLE LINE 24 INCH AND OVER)

UNDERGROUND CATV CONDUIT

UNDERGROUND GAS MAIN (DOUBLE LINE 24 INCH AND OVER)

UNDERGROUND SEWER MAIN (DOUBLE LINE 24 INCH AND OVER)

UNDERGROUND TELEPHONE DUCT (DOUBLE LINE 24 INCH AND OVER)

UNDERGROUND WATER MAIN (DOUBLE LINE 24 INCH AND OVER)

BALANCED STONE WALL

GUARD RAIL - STEEL POSTS

GUARD RAIL - WOOD POSTS

CHAIN LINK OR METAL FENCE

WOOD FENCE

FENCE

EROSION CONTROL BARRIER

CHECK DAM

TREE LINE

SAWCUT LINE

TOP OR BOTTOM OF SLOPE

LIMIT OF EDGE OF PAVEMENT OR COLD PLANE AND OVERLAY

BANK OF RIVER OR STREAM

BORDER OF WETLAND

LIMIT OF NHESP PRIORITY & ESTIMATED HABITAT

APPROXIMATE WETLAND LINE

100 FT WETLAND BUFFER

100 FT BORDERING LAND SUBJECT TO FLOODING BUFFER

200 FT RIVERFRONT AREA BUFFER

APPROX 200 FT RIVERFRONT AREA BUFFER

100 FT RIVERFRONT AREA BUFFER

APPROX 100 FT RIVERFRONT AREA BUFFER

AURA BUFFER

100 FT AURA BUFFER

100 FT VERNAL POOL AREA BUFFER

STATE HIGHWAY LAYOUT

TOWN OR CITY LAYOUT

COUNTY LAYOUT

TOWN OR CITY BOUNDARY LINE

PROPERTY LINE OR APPROXIMATE PROPERTY LINE

CONSTRUCTION BASELINE

GENERAL SYMBOLS (cont.)

EXISTING

PROPOSED

DESCRIPTION

EXISTING WALKING TRAIL

LIMIT OF GRADING

TRAFFIC SIGNAL CONDUIT

EASEMENT

PERMANENT EASEMENT ON MBTA PROPERTY

FLOODWAY

PAVEMENT MARKINGS SYMBOLS

EXISTING

PROPOSED

DESCRIPTION

CROSSWALK - 12" WHITE

SOLID WHITE LINE - 4"

DOUBLE YELLOW LINE - 4"

ABBREVIATIONS

GENERAL

GENERAL

ABAN

ADJ

APPROX.

AURA

BIT.

BC

BD.

BL

BLDG

BLSF

BM

BO

BOS

BR.

BVW

BZ

CB

CBCI

CC

CCM

CEM

CI

CIP

CLF

CL

CMP

CSP

CO.

CONC

CONT

CONST

DI

DIA

DIP

DW

DWY

ECB

ELEV (or EL.)

EMB

EOP

EXIST (or EX)

EXC

F&C

F&G

FAC

FACU

FACW

FDN.

FLDSTN

GD

GG

GIP

GRAN

GRAV

GRD

HDW

HMA

HOR

HYD

INV

ILSF

IVW

JCT

ABANDON

ADJUST

APPROXIMATE

ADJACENT UPLAND RESOURCE AREA

BITUMINOUS

BOTTOM OF CURB

BOUND

BASELINE

BUILDING

BORDERING LAND SUBJECT TO FLOODING

BENCHMARK

BY OTHERS

BOTTOM OF SLOPE

BRIDGE

BORDERING VEGETATED WETLAND

BUFFER ZONE

CATCH BASIN

CATCH BASIN WITH CURB INLET

CEMENT CONCRETE

CEMENT CONCRETE MASONRY

CEMENT

CURB INLET

CAST IRON PIPE

CHAIN LINK FENCE

CENTERLINE

CORRUGATED METAL PIPE

CORRUGATED STEEL PIPE

COUNTY

CONCRETE

CONTINUOUS

CONSTRUCTION

DROP INLET

DIAMETER

DUCTILE IRON PIPE

STEADY DON'T WALK - PORTLAND ORANGE

DRIVEWAY

EROSION CONTROL BARRIER

ELEVATION

EMBANKMENT

EDGE OF PAVEMENT

EXISTING

EXCAVATION

FRAME AND COVER

FRAME AND GRATE

FACULTATIVE

FACULTATIVE UPLAND

FACULTATIVE WETLAND

FOUNDATION

FIELDSTONE

GROUND

GAS GATE

GALVANIZED IRON PIPE

GRANITE

GRAVEL

GUARD

HEADWALL

HOT MIX ASPHALT

HORIZONTAL

HYDRANT

INVERT

ISOLATED LAND SUBJECT TO FLOODING

ISOLATED VEGETATED WETLAND

JUNCTION

LENGTH OF CURVE

LIGHT POLE

LEFT

LAND UNDER WATER

MAXIMUM

MAILBOX

MANHOLE

MASSACHUSETTS HIGHWAY BOUND

MINIMUM

NOT IN CONTRACT

NUMBER

NOT TO SCALE

OBLIGATE WETLAND

PULL BOX

POINT OF CURVATURE

POINT OF COMPOUND CURVATURE

PROFILE GRADE LINE

POINT OF INTERSECTION

POINT ON CURVE

POINT ON TANGENT

POINT OF REVERSE CURVATURE

PROJECT

PROPOSED

POINT OF TANGENCY

POINT OF VERTICAL CURVATURE

POINT OF VERTICAL INTERSECTION

POINT OF VERTICAL TANGENCY

PAVEMENT

RADIUS OF CURVATURE

RIVERFRONT AREA

REMOVE AND DISPOSE

REINFORCED CONCRETE PIPE

ROAD

ROADWAY

REMOVE

RETAIN

RETAINING WALL

RIGHT OF WAY

RAILROAD

REMOVE AND RESET

REMOVE AND STACK

RIGHT

STONE BOUND

SHOULDER

SEWER MANHOLE

STREET

STATION

STOPPING SIGHT DISTANCE

STATE HIGHWAY LAYOUT LINE

SIDEWALK

TANGENT DISTANCE OF CURVE/TRUCK %

TANGENT

TEMPORARY

TYPICAL

UTILITY POLE

OBLIGATE UPLAND

VARIES

VERTICAL

VERTICAL CURVE

VERNAL POOL

WHEEL CHAIR RAMP

WATER GATE

WATER METER/WATER MAIN

GENERAL NOTES:

1.

2.

3.

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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.

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).

THE CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND GRADES IN THE FIELD BEFORE COMMENCING WORK AND PROMPTLY NOTIFY THE ENGINEER OF ANY DISCREPANCIES.

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.

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).

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.

THE CONTRACTOR SHALL VERIFY BY TEST PIT, THE LOCATIONS OF EXISTING UTILITIES THAT MAY CONFLICT WITH PROPOSED TRANSMISSION LINE. ANY FIELD ADJUSTMENTS REQUIRED WILL BE MADE AS APPROVED OR DIRECTED BY THE ENGINEER.

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.

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.

THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANIES.

EXISTING UTILITY POLES WILL BE RELOCATED BY OTHERS IF REQUIRED.

TREES AND SHRUBS WITHIN THE LIMITS OF GRADING SHALL BE REMOVED ONLY UPON APPROVAL OF THE ENGINEER.

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.

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).

ALL PROP LOAM AND SEED CALLED OUT ON THE CONSTRUCTION PLANS TO ADHERE TO PLANTING SCHEDULE C PROVIDED ON DETAIL SHEET 131 UNLESS NOTED OTHERWISE.

JOINTS BETWEEN NEW ASPHALT CONCRETE ROADWAY PAVEMENT AND SAWCUT EXISTING PAVEMENT SHALL BE SEALED WITH BITUMEN AND BACKSANDED.

EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE RETAINED UNLESS INDICATED OTHERWISE ON THE DRAWINGS.

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.

ALL PROPOSED HOT MIX ASPHALT CURB SHALL BE MASSDOT TYPE 2.

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.

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.

DISPOSAL OF ALL SURPLUS MATERIAL SHALL BE AS APPROVED BY THE ENGINEER AND OWNER.

LATERAL DRAIN PIPES SHALL BE INSTALLED WITH A PITCH OF 0.01 FOOT PER FOOT (MINIMUM) UNLESS NOTED OTHERWISE ON THE PLANS.

WHERE DEWATERING IS REQUIRED, CONTRACTOR SHALL TREAT WATER WITH DEWATERING BASIN OR DEWATERING FILTER BAGS BASED ON INPUT FROM LOCAL CONSERVATION COMMISSIONS.

SYNCPATED SILT FENCE TO BE USED AS AN EROSION CONTROL BARRIER WITHIN 100' VERNAL POOL BUFFER ZONES AND PRIORITY HABITAT AREAS.

THE LOCATIONS OF ALL EROSION CONTROL BARRIER SHALL BE ESTABLISHED BY SURVEY-GRADE EQUIPMENT AND ARE SUBJECT TO CHANGE BASED ON FIELD CONDITIONS.

1234567891011

GENERAL SYMBOLS

EXISTING

PROPOSED

DESCRIPTION

TRAFFIC SIGNAL

CATCH BASIN / DROP INLET

CATCH BASIN CURB INLET

GAS PUMP

MAIL BOX

POST SQUARE

POST CIRCULAR

GAS VENT

ELECTRIC HANDHOLE

FENCE GATE POST

GAS GATE

BENCHMARK

HYDRANT

LIGHT POLE

COUNTY BOUND

GPS POINT

CABLE MANHOLE

DRAINAGE MANHOLE

ELECTRIC MANHOLE

GAS MANHOLE

MISC MANHOLE

SEWER MANHOLE

TELEPHONE MANHOLE

WATER MANHOLE

MASSACHUSETTS HIGHWAY BOUND

MONUMENT

STONE BOUND

TOWN OR CITY BOUND

TRAVERSE OR TRIANGULATION STATION

TROLLEY POLE OR GUY POLE

TRANSMISSION POLE

UTILITY POLE W/ FIREBOX

UTILITY POLE WITH DOUBLE LIGHT

UTILITY POLE W / 1 LIGHT

UTILITY POLE

BUSH

TREE

STUMP

WATER GATE

OVERHEAD CABLE/WIRE

STEEL SHEETING

CONTOURS (ON-THE-GROUND SURVEY DATA)

CONTOURS (PHOTOGRAMMETRIC DATA)

UNDERGROUND DRAIN PIPE (DOUBLE LINE 24 INCH AND OVER)

UNDERGROUND CATV CONDUIT

UNDERGROUND GAS MAIN (DOUBLE LINE 24 INCH AND OVER)

UNDERGROUND SEWER MAIN (DOUBLE LINE 24 INCH AND OVER)

UNDERGROUND TELEPHONE DUCT (DOUBLE LINE 24 INCH AND OVER)

UNDERGROUND WATER MAIN (DOUBLE LINE 24 INCH AND OVER)

BALANCED STONE WALL

GUARD RAIL - STEEL POSTS

GUARD RAIL - WOOD POSTS

CHAIN LINK OR METAL FENCE

WOOD FENCE

FENCE

EROSION CONTROL BARRIER

CHECK DAM

TREE LINE

SAWCUT LINE

TOP OR BOTTOM OF SLOPE

LIMIT OF EDGE OF PAVEMENT OR COLD PLANE AND OVERLAY

BANK OF RIVER OR STREAM

BORDER OF WETLAND

LIMIT OF NHESP PRIORITY & ESTIMATED HABITAT

APPROXIMATE WETLAND LINE

100 FT WETLAND BUFFER

100 FT BORDERING LAND SUBJECT TO FLOODING BUFFER

200 FT RIVERFRONT AREA BUFFER

APPROX 200 FT RIVERFRONT AREA BUFFER

100 FT RIVERFRONT AREA BUFFER

APPROX 100 FT RIVERFRONT AREA BUFFER

AURA BUFFER

100 FT AURA BUFFER

100 FT VERNAL POOL AREA BUFFER

STATE HIGHWAY LAYOUT

TOWN OR CITY LAYOUT

COUNTY LAYOUT

TOWN OR CITY BOUNDARY LINE

PROPERTY LINE OR APPROXIMATE PROPERTY LINE

CONSTRUCTION BASELINE

GENERAL SYMBOLS (cont.)

EXISTING

PROPOSED

DESCRIPTION

EXISTING WALKING TRAIL

LIMIT OF GRADING

TRAFFIC SIGNAL CONDUIT

EASEMENT

PERMANENT EASEMENT ON MBTA PROPERTY

FLOODWAY

PAVEMENT MARKINGS SYMBOLS

EXISTING

PROPOSED

DESCRIPTION

CROSSWALK - 12" WHITE

SOLID WHITE LINE - 4"

DOUBLE YELLOW LINE - 4"

ABBREVIATIONS

GENERAL

GENERAL

ABAN

ADJ

APPROX.

AURA

BIT.

BC

BD.

BL

BLDG

BLSF

BM

BO

BOS

BR.

BVW

BZ

CB

CBCI

CC

CCM

CEM

CI

CIP

CLF

CL

CMP

CSP

CO.

CONC

CONT

CONST

DI

DIA

DIP

DW

DWY

ECB

ELEV (or EL.)

EMB

EOP

EXIST (or EX)

EXC

F&C

F&G

FAC

FACU

FACW

FDN.

FLDSTN

GD

GG

GIP

GRAN

GRAV

GRD

HDW

HMA

HOR

HYD

INV

ILSF

IVW

JCT

ABANDON

ADJUST

APPROXIMATE

ADJACENT UPLAND RESOURCE AREA

BITUMINOUS

BOTTOM OF CURB

BOUND

BASELINE

BUILDING

BORDERING LAND SUBJECT TO FLOODING

BENCHMARK

BY OTHERS

BOTTOM OF SLOPE

BRIDGE

BORDERING VEGETATED WETLAND

BUFFER ZONE

CATCH BASIN

CATCH BASIN WITH CURB INLET

CEMENT CONCRETE

CEMENT CONCRETE MASONRY

CEMENT

CURB INLET

CAST IRON PIPE

CHAIN LINK FENCE

CENTERLINE

CORRUGATED METAL PIPE

CORRUGATED STEEL PIPE

COUNTY

CONCRETE

CONTINUOUS

CONSTRUCTION

DROP INLET

DIAMETER

DUCTILE IRON PIPE

STEADY DON'T WALK - PORTLAND ORANGE

DRIVEWAY

EROSION CONTROL BARRIER

ELEVATION

EMBANKMENT

EDGE OF PAVEMENT

EXISTING

EXCAVATION

FRAME AND COVER

FRAME AND GRATE

FACULTATIVE

FACULTATIVE UPLAND

FACULTATIVE WETLAND

FOUNDATION

FIELDSTONE

GROUND

GAS GATE

GALVANIZED IRON PIPE

GRANITE

GRAVEL

GUARD

HEADWALL

HOT MIX ASPHALT

HORIZONTAL

HYDRANT

INVERT

ISOLATED LAND SUBJECT TO FLOODING

ISOLATED VEGETATED WETLAND

JUNCTION

LENGTH OF CURVE

LIGHT POLE

LEFT

LAND UNDER WATER

MAXIMUM

MAILBOX

MANHOLE

MASSACHUSETTS HIGHWAY BOUND

MINIMUM

NOT IN CONTRACT

NUMBER

NOT TO SCALE

OBLIGATE WETLAND

PULL BOX

POINT OF CURVATURE

POINT OF COMPOUND CURVATURE

PROFILE GRADE LINE

POINT OF INTERSECTION

POINT ON CURVE

POINT ON TANGENT

POINT OF REVERSE CURVATURE

PROJECT

PROPOSED

POINT OF TANGENCY

POINT OF VERTICAL CURVATURE

POINT OF VERTICAL INTERSECTION

POINT OF VERTICAL TANGENCY

PAVEMENT

RADIUS OF CURVATURE

RIVERFRONT AREA

REMOVE AND DISPOSE

REINFORCED CONCRETE PIPE

ROAD

ROADWAY

REMOVE

RETAIN

RETAINING WALL

RIGHT OF WAY

RAILROAD

REMOVE AND RESET

REMOVE AND STACK

RIGHT

STONE BOUND

SHOULDER

SEWER MANHOLE

STREET

STATION

STOPPING SIGHT DISTANCE

STATE HIGHWAY LAYOUT LINE

SIDEWALK

TANGENT DISTANCE OF CURVE/TRUCK %

TANGENT

TEMPORARY

TYPICAL

UTILITY POLE

OBLIGATE UPLAND

VARIES

VERTICAL

VERTICAL CURVE

VERNAL POOL

WHEEL CHAIR RAMP

WATER GATE

WATER METER/WATER MAIN

GENERAL NOTES:

1.

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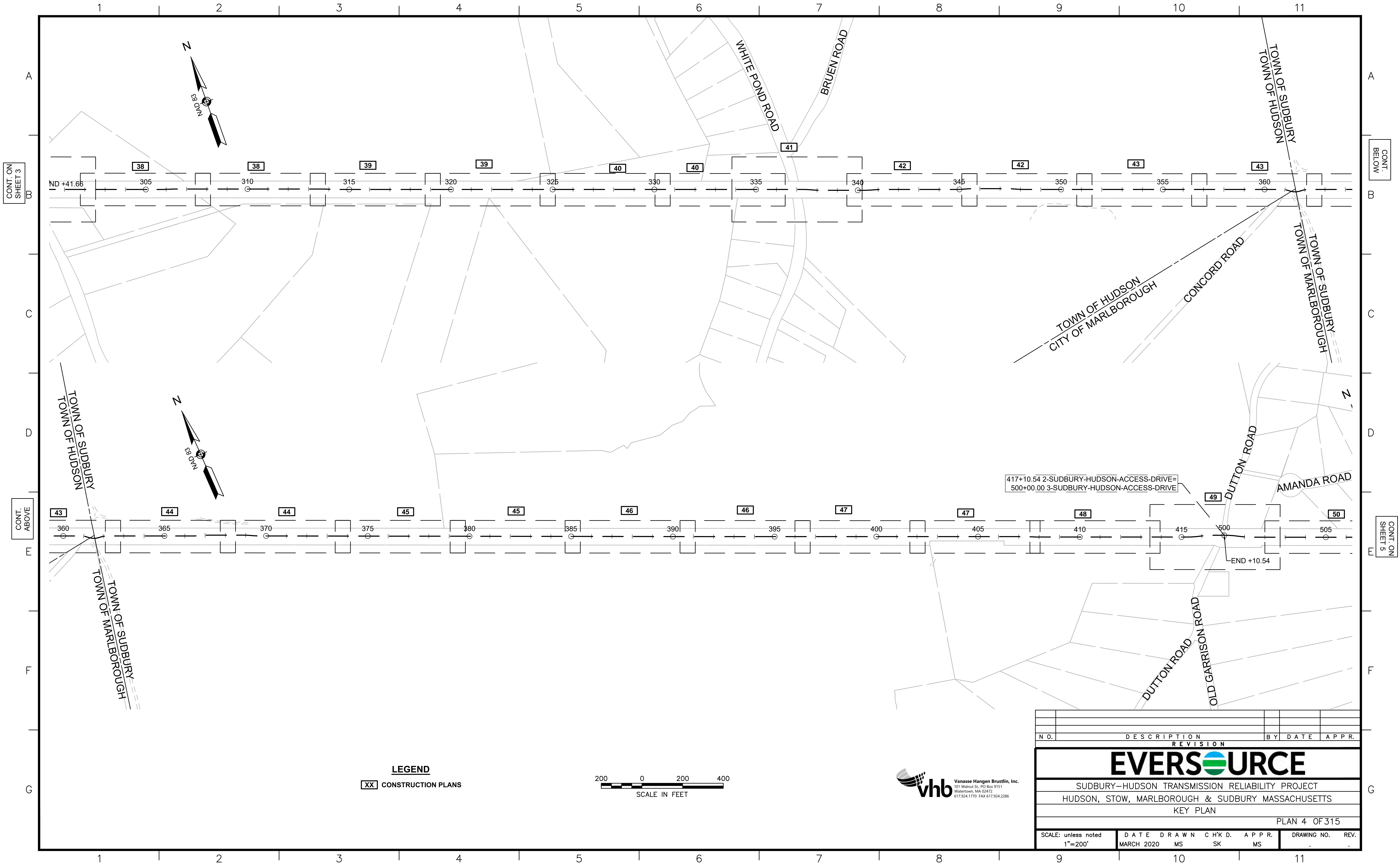
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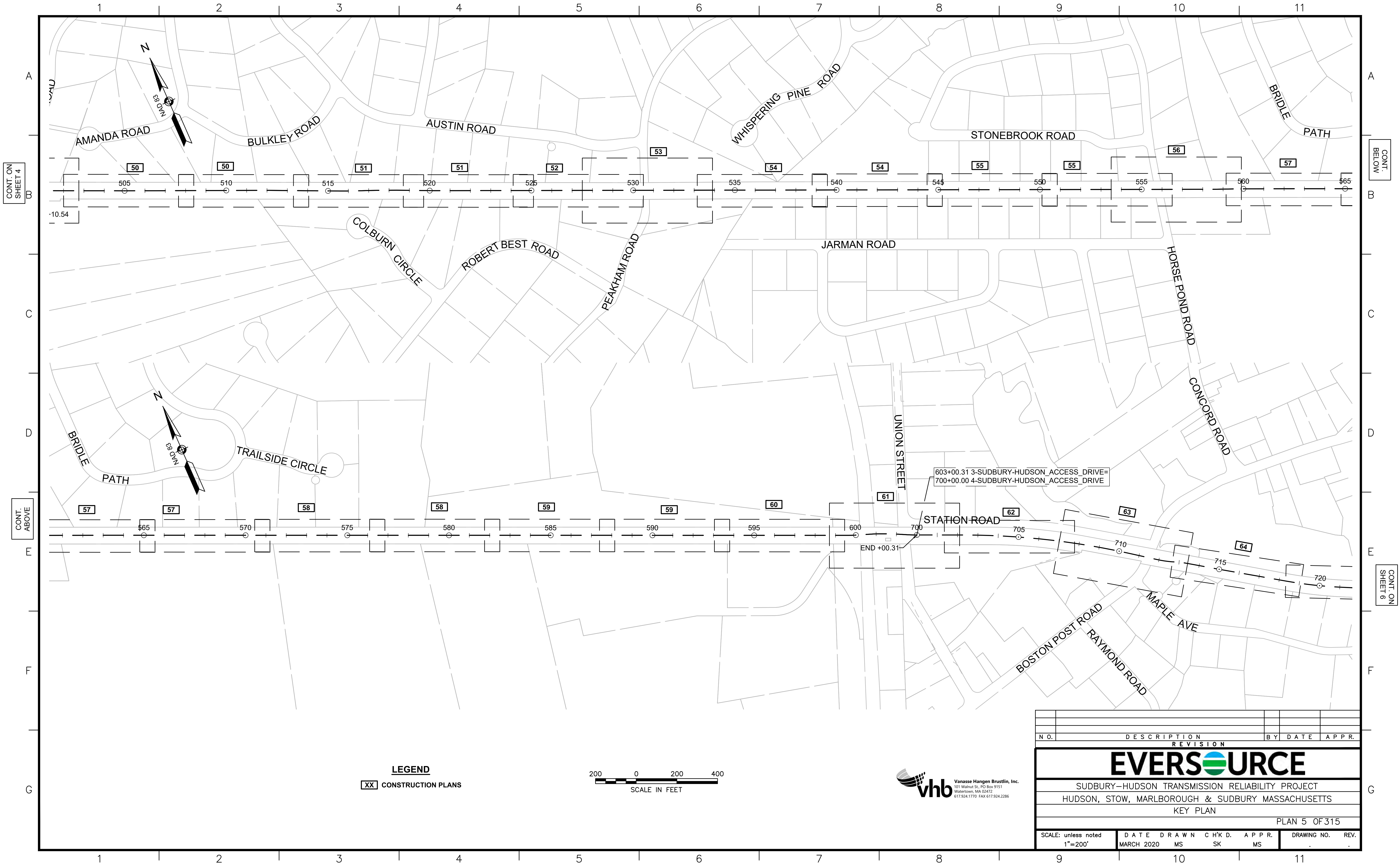
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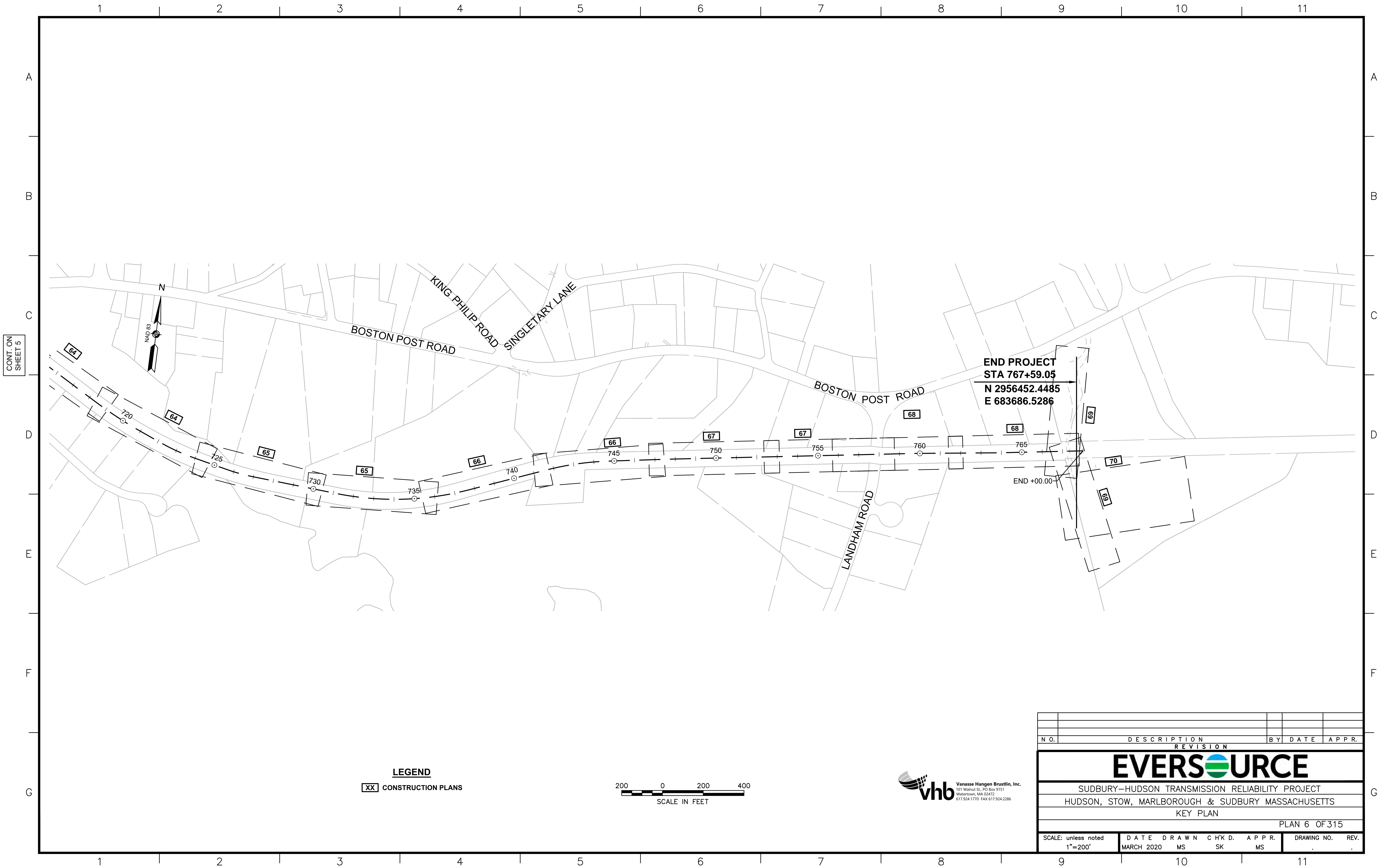
THE APPROXIMATE WET



N.O.	DESCRIPTION					BY	DATE		APPR.
REVISION									
EVERSOURCE									
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT									
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
KEY PLAN									
PLAN 4 OF 315									
SCALE: unless noted 1"=200'		DATE DRAWN		CH'K'D.		APPR.		DRAWING NO.	REV.
MARCH 2020		MS		SK		MS			



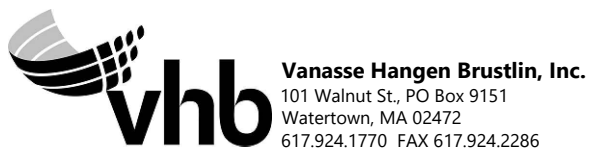
N.O.	DESCRIPTION	BY	DATE	APPR.	
	REVISION				
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
KEY PLAN					
PLAN 5 OF 315					
SCALE: unless noted 1"=200'	DATE MARCH 2020	DRAWN MS	C'H'K D. SK	APPR. MS	DRAWING NO. REV.



CONT. ON
SHEET 5

LEGEND

XX CONSTRUCTION PLANS



N.O.	DESCRIPTION					BY	DATE		APPR.
REVISION									
EVERSOURCE									
SUDBURY—HUDSON TRANSMISSION RELIABILITY PROJECT									
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
KEY PLAN									
PLAN 6 OF 315									
SCALE: unless noted 1"=200'		DATE		DRAWN		CH'K'D.		APPR.	
		MARCH 2020		MS		SK		MS	
DRAWING NO.				REV.					

CONT. ON
SHEET 9

CONT. ON
SHEET 11

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

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



Vanasse Hangen Brustlin, Inc.
101 Walnut St., PO Box 9151
Watertown, MA 02472
617.924.1770 FAX 617.924.2286

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

N O.	DESCRIPTION	BY	DATE	A P P R.	
REVISION					
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
SURVEY TIE-IN PLANS					
PLAN 10 OF 315					
SCALE: unless noted 1"=200'	DATE MARCH 2020	DRAWN MS	C H'K D. SK	A P P R. MS	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	164.66	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



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N.O.	DESCRIPTION	BY	DATE	APP.R.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
SURVEY TIE-IN PLANS				
PLAN 11 OF 315				
SCALE: unless noted 1"=200'	DATE MARCH 2020	DRAWN MS	C'H'K D. SK	APP.R. MS
DRAWING NO.	REV.			

CONT. ON
SHEET 11

CONT. ON
SHEET 13

3-SUDBURY-HUDSON_ACCESS_DRIVE CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	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' Δ= 3°38'00" 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' L=31.81' Δ= 3°38'42" 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' L=28.08' Δ= 3°13'05" 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' L=28.08' Δ= 3°13'05" 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

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' Δ= 12°25'19" T=408.11'		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' Δ= 9°37'46" T=42.12'		712+77.66	2956735.524	678411.539
C405	712+77.66	2956735.524	678411.539	R = 500.00' L=66.80' Δ= 7°39'17" T=33.45'		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' 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

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

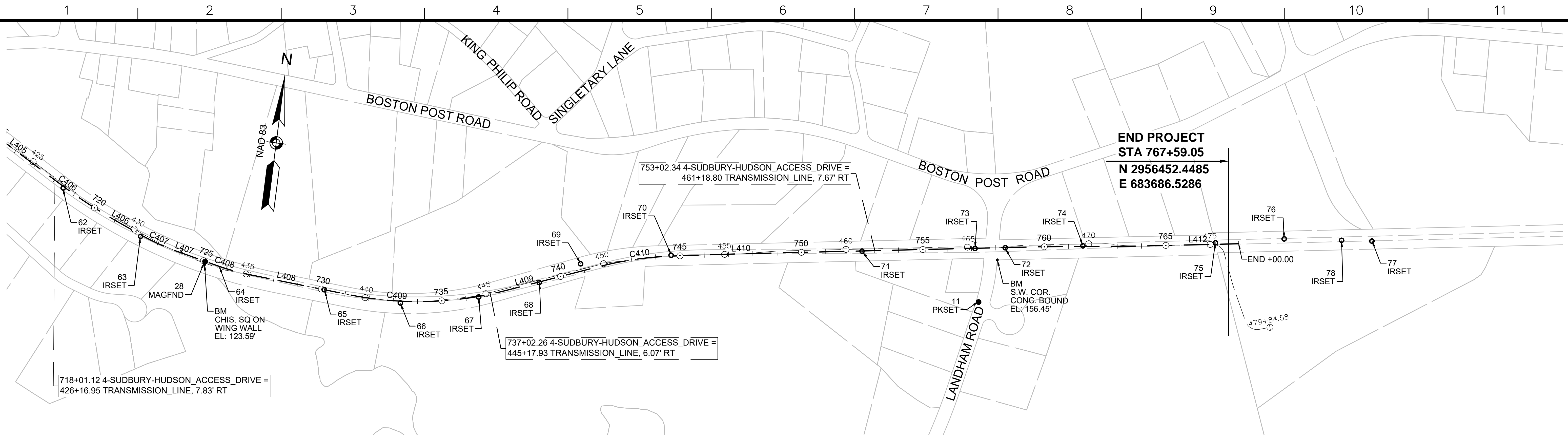
NORTHING	EASTING	ELEV	DESCRIPTION
2957455.231	677224.797	138.09	SPIKE IN UP
2956841.239	678313.243	136.71	BOLT ON HYDRANT



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REVISION					
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
SURVEY TIE-IN PLANS					
PLAN 12 OF 315					
SCALE: unless noted 1"=200'	DATE MARCH 2020	DRAWN MS	CHECKED SK	APPR. MS	DRAWING NO. REV.

CONT. ON
SHEET 12



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		S56°18'15"E 352.06'	718+33.90	2956429.201	678875.635
C406	718+33.90	2956429.201	678875.635	R = 2150.00' Δ= 7°27'00" L=279.96' 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' Δ= 9°53'27" L=172.63' 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' Δ= 8°08'34" L=138.56' 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' Δ= 25°44'54" L=651.62' 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' Δ= 12°28'35" L=304.86' 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

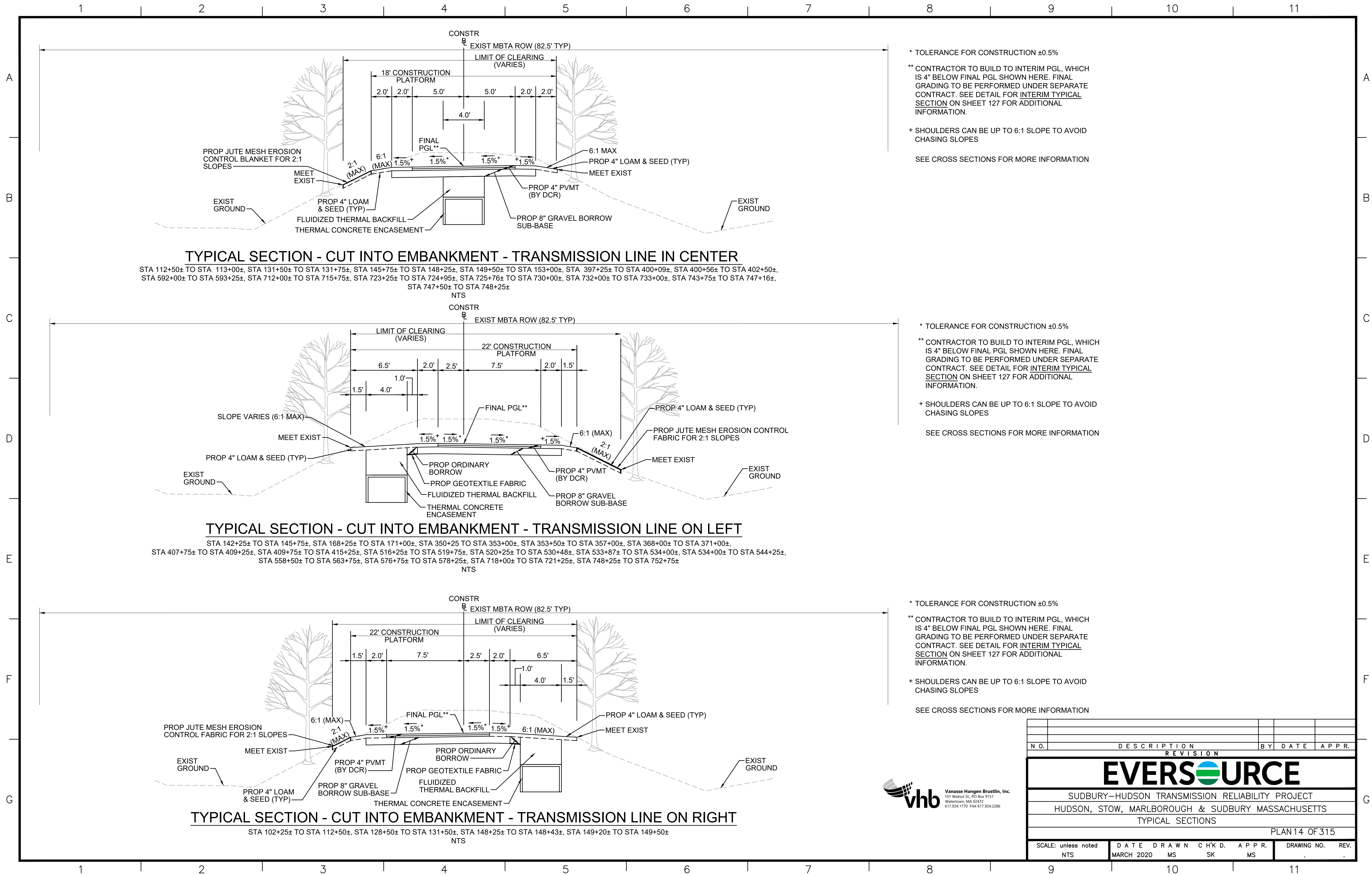
SURVEY TRAVERSE TABLE						
POINT #	NORTHING	EASTING	ELEV	RAW DESCRIPTION	STATION CONSTR	OFFSET CONSTR
28	2956147.431	679484.162		MAGFND	725+07.67	0.49 RT
62	2956416.645	678884.311	130.43	IRSET	718+48.12	5.68 RT
63	2956235.685	679213.375	127.74	IRSET	722+23.22	6.08 RT
65	2956058.540	679980.234	127.40	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

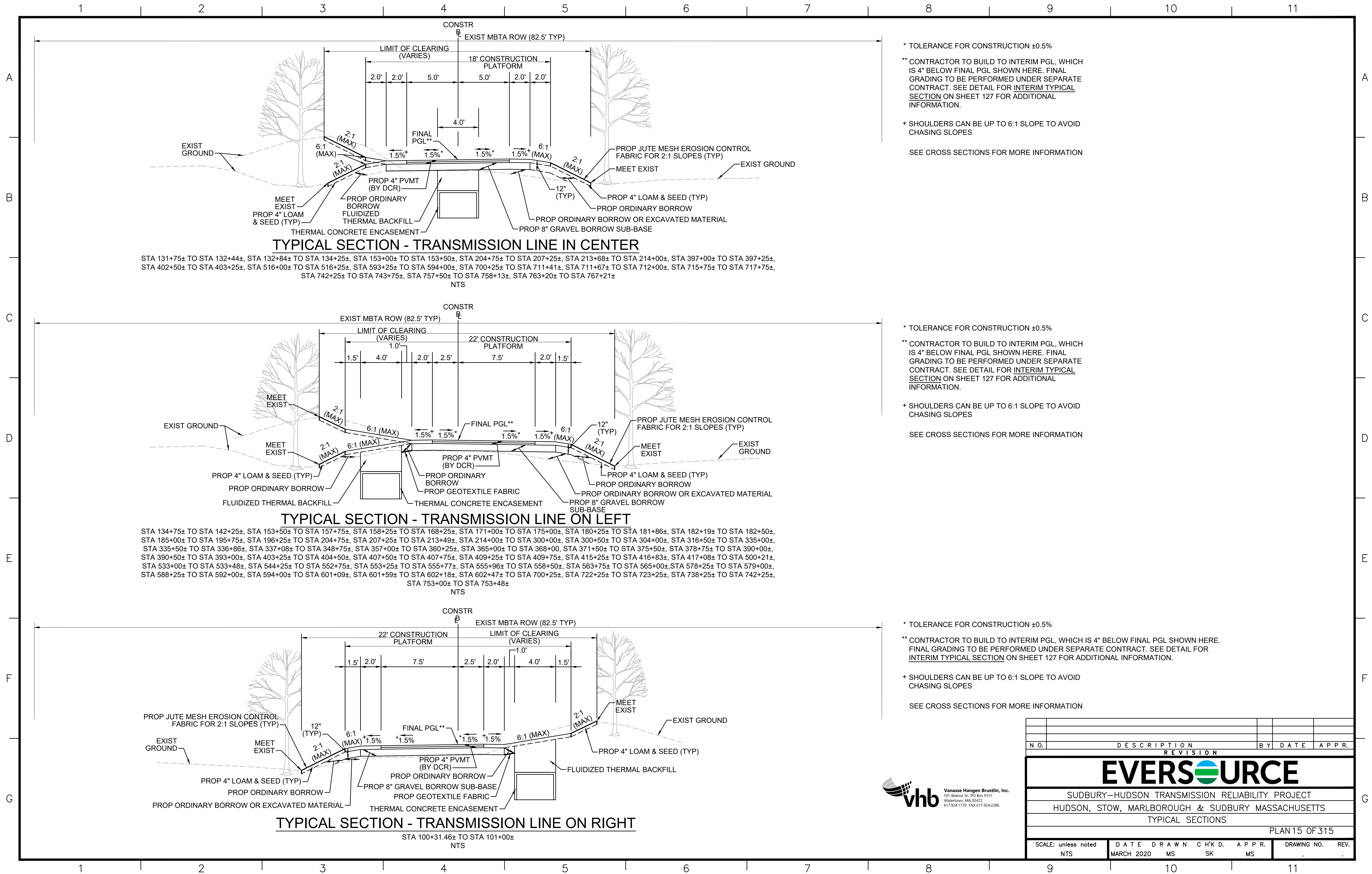


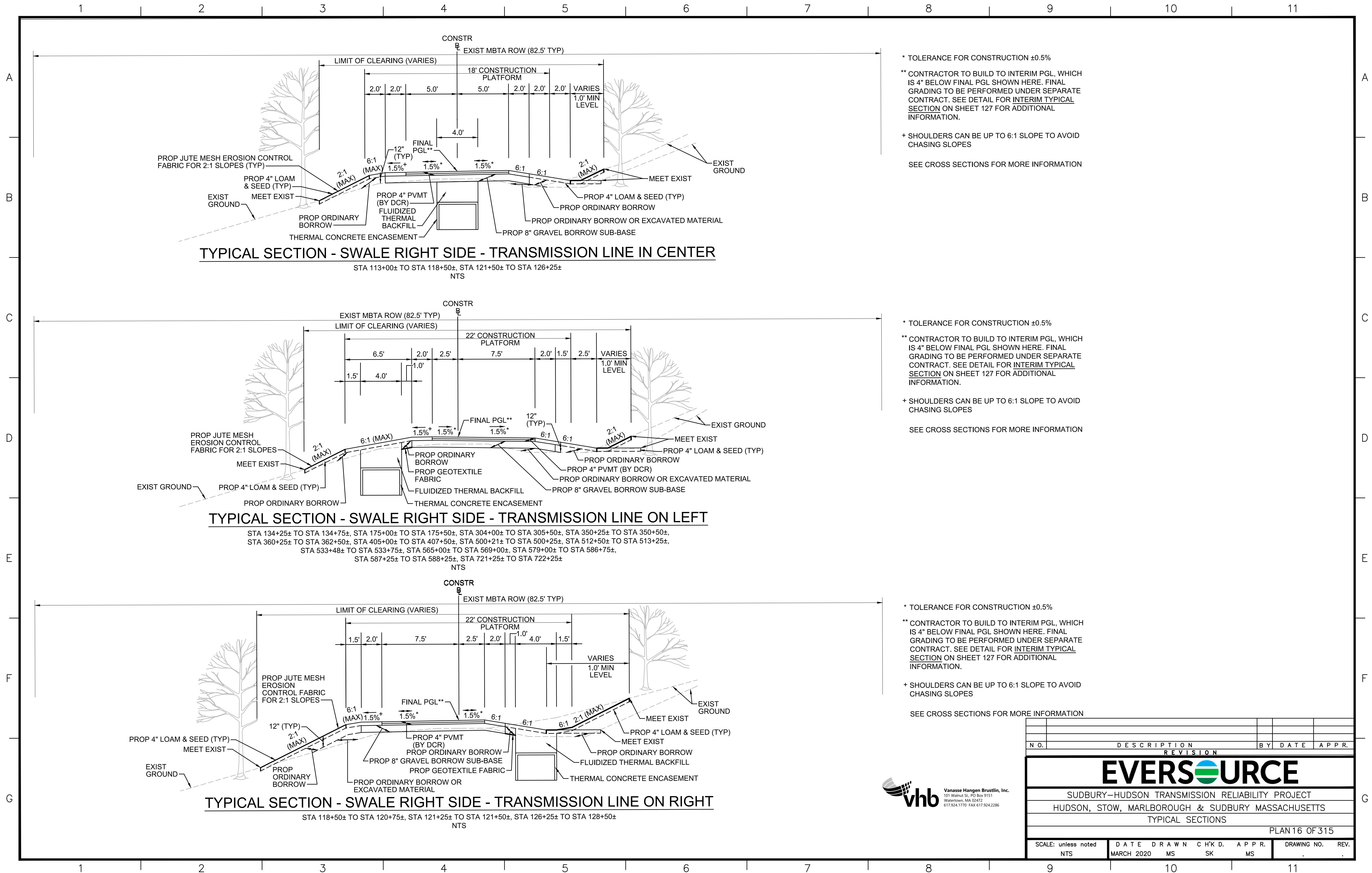
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N.O.	DESCRIPTION	BY	DATE	APP.R.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
SURVEY TIE-IN PLANS				
PLAN 13 OF 315				
SCALE: unless noted 1"=200'	DATE MARCH 2020	DRAWN MS	C'H'K D. SK	APP.R. MS
DRAWING NO.	REV.			



N O.		D E S C R I P T I O N				B Y		D A T E		A P P R.	
R E V I S I O N											
EVERSOURCE											
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT											
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS											
TYPICAL SECTIONS											
PLAN 14 OF 315											
SCALE: unless noted NTS		D A T E		D R A W N		C H ' K D.		A P P R.		DRAWING NO. REV.	
		MARCH 2020		MS		SK		MS			





* TOLERANCE FOR CONSTRUCTION $\pm 0.5\%$

** 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 127 FOR ADDITIONAL INFORMATION.

+ SHOULDERS CAN BE UP TO 6:1 SLOPE TO AVOID CHASING SLOPES

SEE CROSS SECTIONS FOR MORE INFORMATION

* TOLERANCE FOR CONSTRUCTION $\pm 0.5\%$

** 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 127 FOR ADDITIONAL INFORMATION.

+ SHOULDERS CAN BE UP TO 6:1 SLOPE TO AVOID CHASING SLOPES

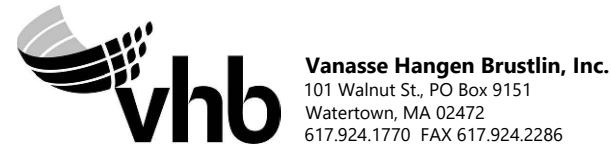
SEE CROSS SECTIONS FOR MORE INFORMATION

* TOLERANCE FOR CONSTRUCTION $\pm 0.5\%$

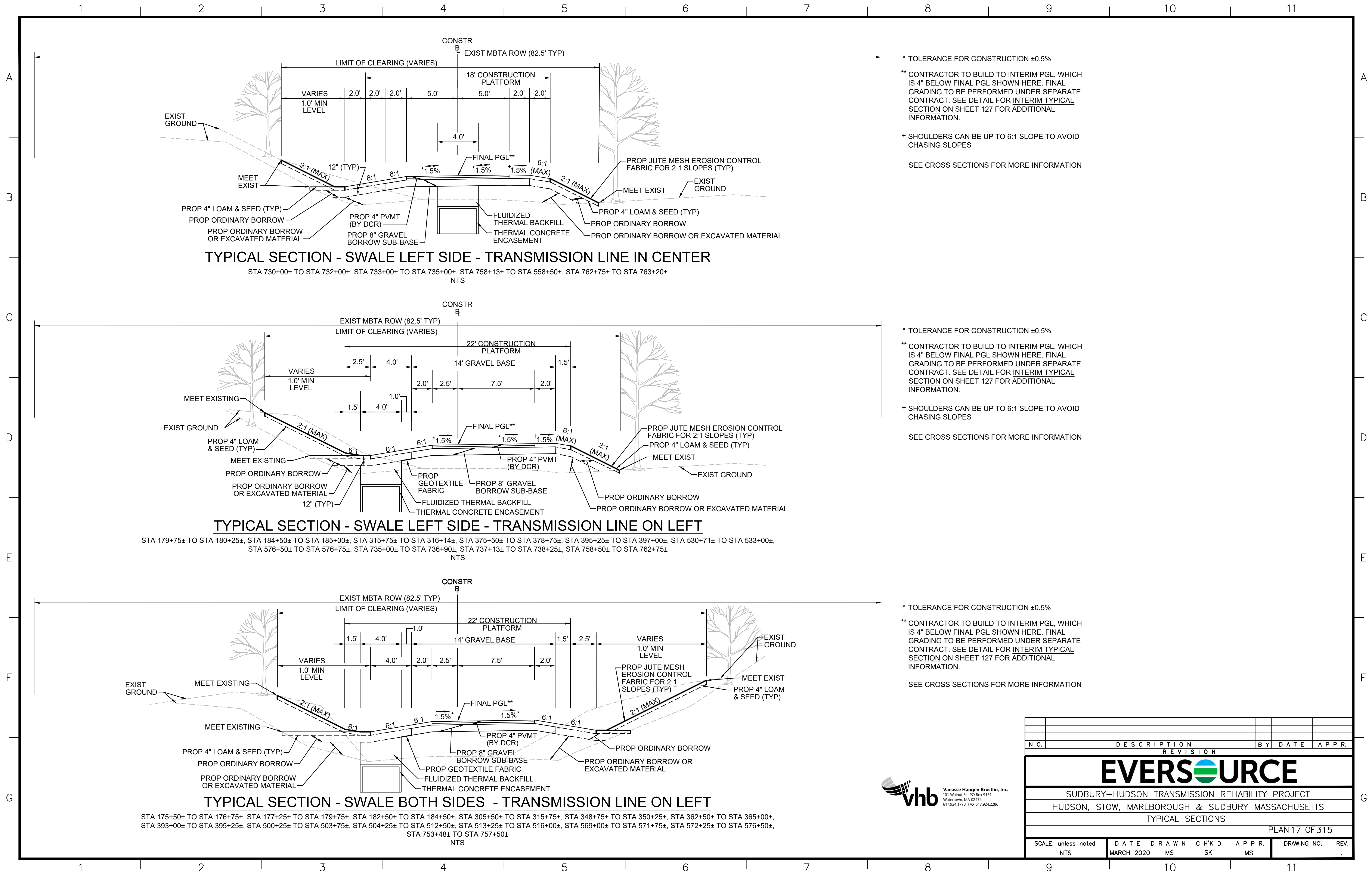
** CONTRACTOR TO BUILD TO INTERIM PGL, WHICH IS 4" BELOW FINAL PGL SHOWN HERE. FINAL GRADING TO BE PERFORMED UNDER SEPARATE CONTRACT. SEE DETAIL FOR INTERIM TYPICAL SECTION ON SHEET 127 FOR ADDITIONAL INFORMATION.

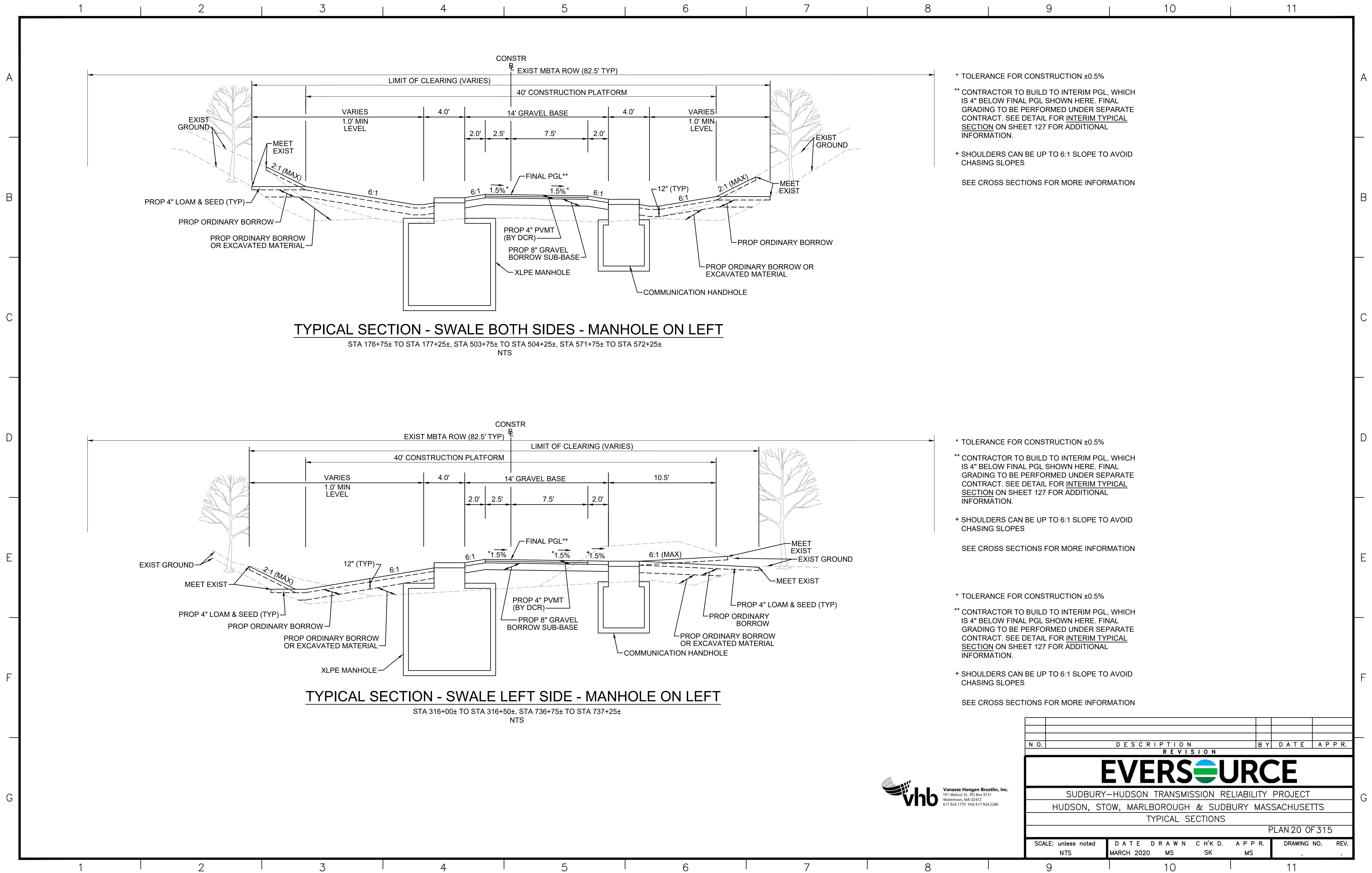
+ SHOULDERS CAN BE UP TO 6:1 SLOPE TO AVOID CHASING SLOPES

SEE CROSS SECTIONS FOR MORE INFORMATION



NO.		DESCRIPTION				BY	DATE		APPR.
REVISION									
EVERSOURCE									
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT									
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
TYPICAL SECTIONS									
PLAN 16 OF 315									
SCALE: unless noted		DATE		DRAWN		CHK'D		APPR.	
NTS		MARCH 2020		MS		SK		MS	
DRAWING NO.					REV.				





* TOLERANCE FOR CONSTRUCTION $\pm 0.5\%$

** 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 127 FOR ADDITIONAL INFORMATION.

+ SHOULDERS CAN BE UP TO 6:1 SLOPE TO AVOID CHASING SLOPES

SEE CROSS SECTIONS FOR MORE INFORMATION

* TOLERANCE FOR CONSTRUCTION $\pm 0.5\%$

** 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 127 FOR ADDITIONAL INFORMATION.

+ SHOULDERS CAN BE UP TO 6:1 SLOPE TO AVOID CHASING SLOPES

SEE CROSS SECTIONS FOR MORE INFORMATION

* TOLERANCE FOR CONSTRUCTION $\pm 0.5\%$

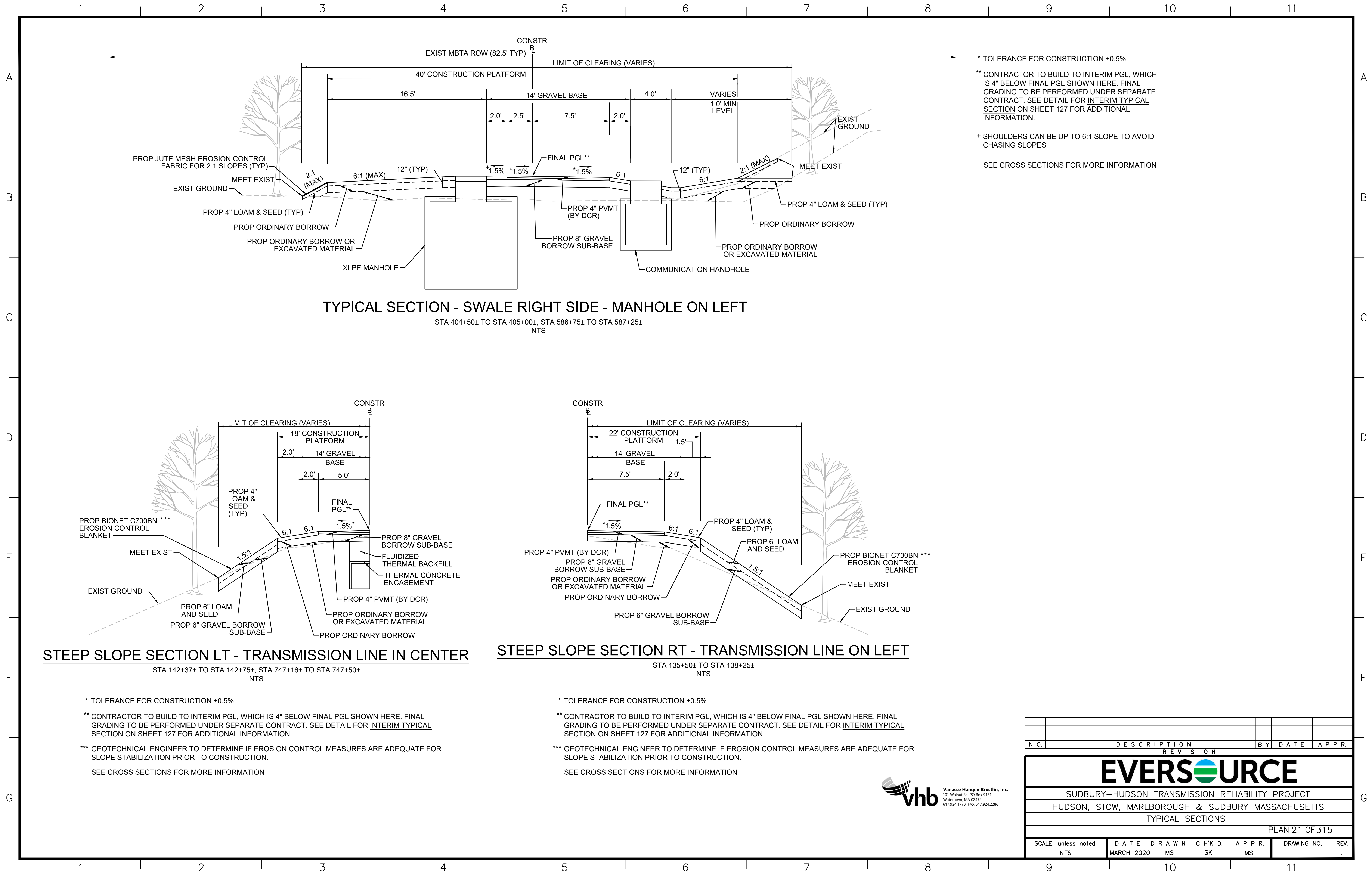
** CONTRACTOR TO BUILD TO INTERIM PGL, WHICH IS 4" BELOW FINAL PGL SHOWN HERE. FINAL GRADING TO BE PERFORMED UNDER SEPARATE CONTRACT. SEE DETAIL FOR INTERIM TYPICAL SECTION ON SHEET 127 FOR ADDITIONAL INFORMATION.

+ SHOULDERS CAN BE UP TO 6:1 SLOPE TO AVOID CHASING SLOPES

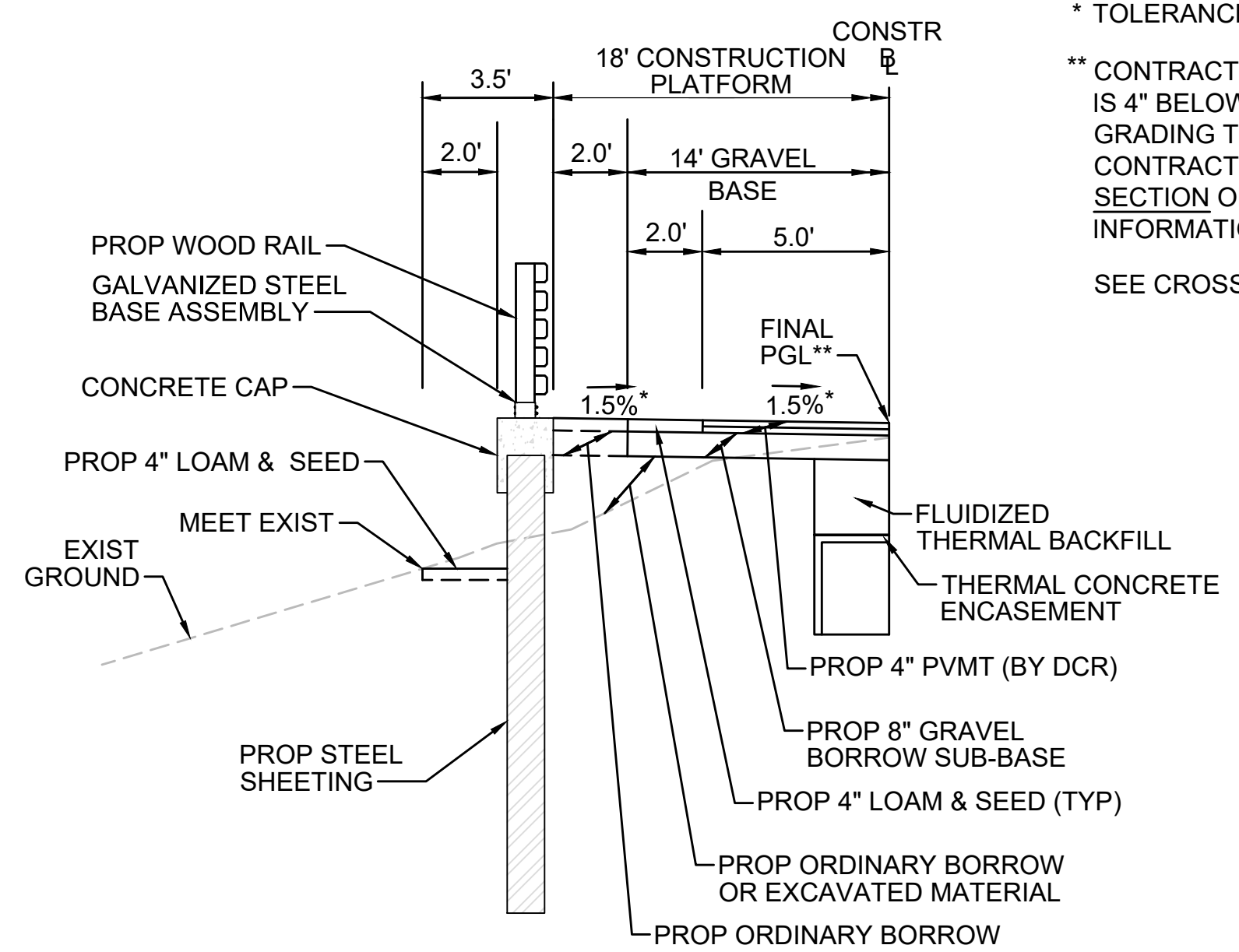
SEE CROSS SECTIONS FOR MORE INFORMATION



N.O.	DESCRIPTION			BY	DATE	APPR.
REVISION						
EVERSOURCE						
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT						
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS						
TYPICAL SECTIONS						
					PLAN 20 OF 315	
SCALE: unless noted NTS	DATE	DRAWN	CH'K D.	APP R.	DRAWING NO.	REV.
	MARCH 2020	MS	SK	MS	.	.



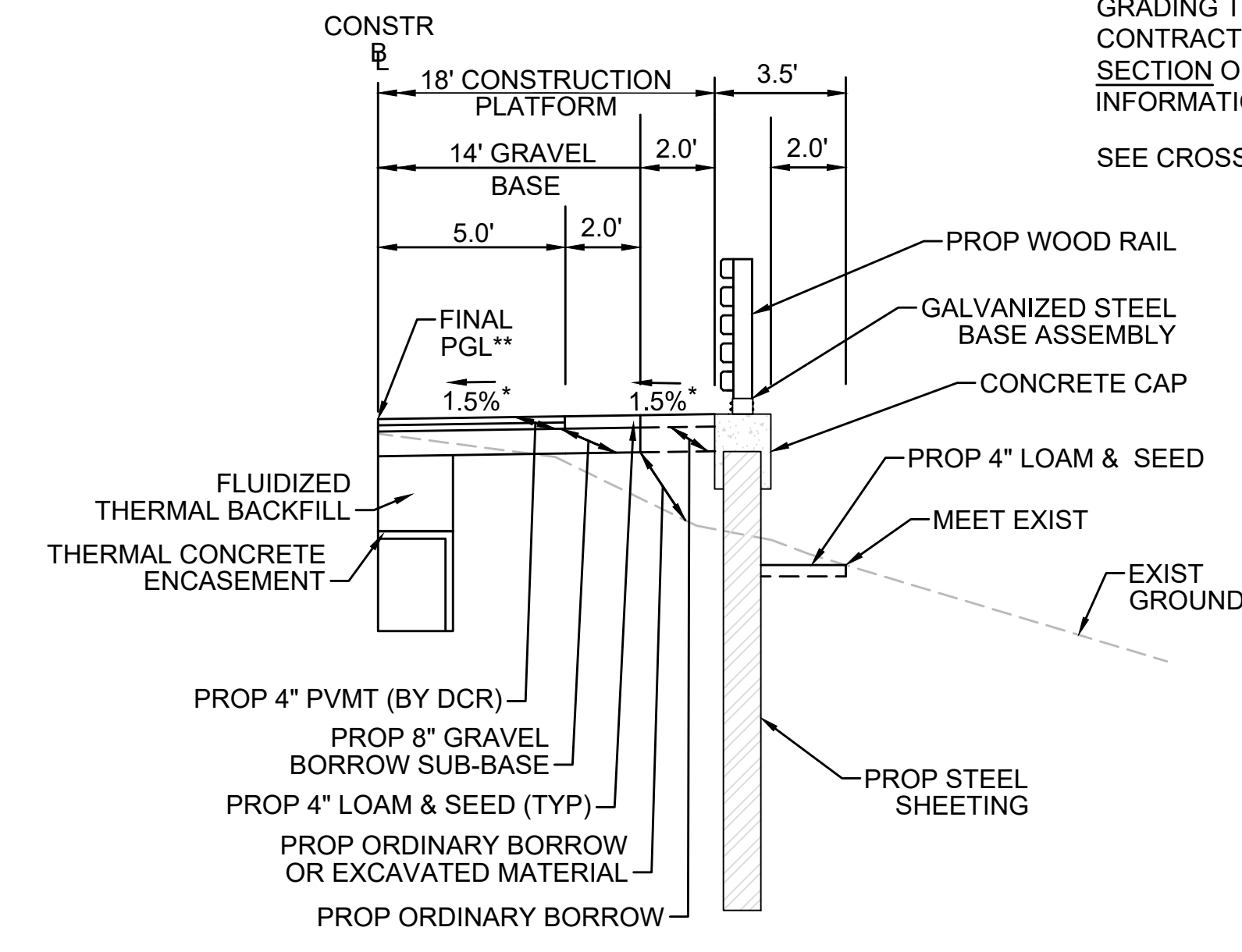
N O.	DESCRIPTION	BY	DATE	APP.	
REVISION					
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
TYPICAL SECTIONS					
PLAN 21 OF 315					
SCALE: unless noted NTS	DATE MARCH 2020	DRAWN MS	CHK'D. SK	APP. MS	DRAWING NO. REV.



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 424+73± TO STA 425+03±, STA 425+59± TO STA 425+96± NTS

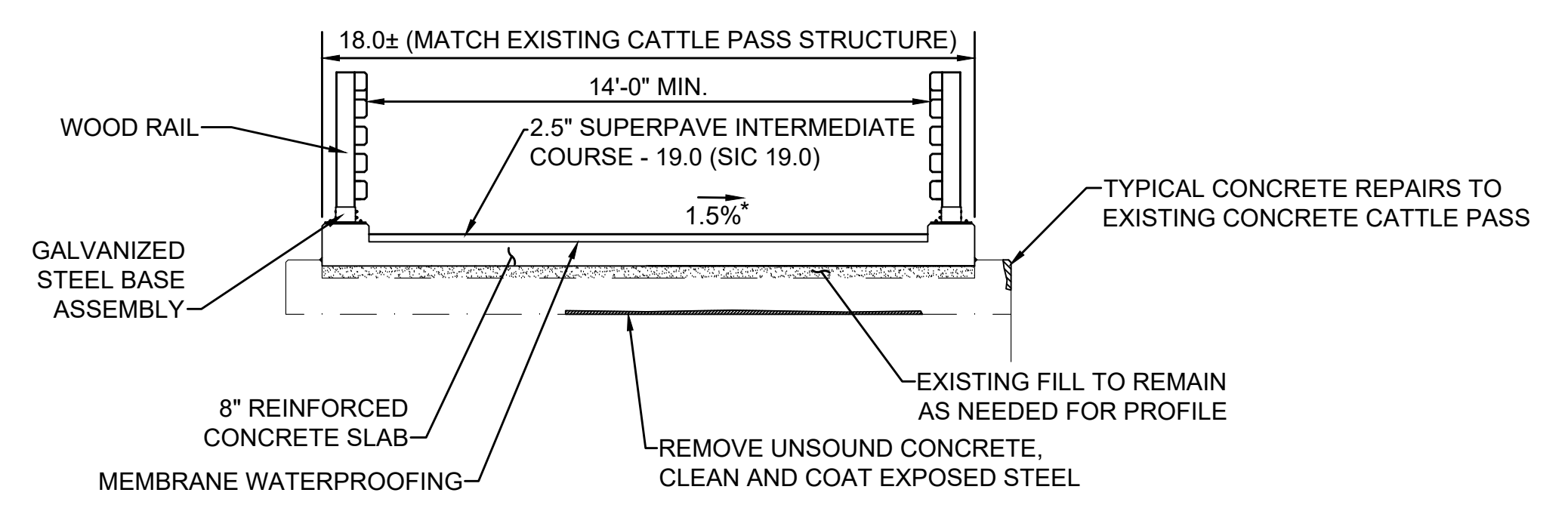
* TOLERANCE FOR CONSTRUCTION ±0.5%
** CONTRACTOR TO BUILD TO INTERIM PGL, WHICH IS 4" BELOW FINAL PGL SHOWN HERE. FINAL GRADING TO BE PERFORMED UNDER SEPARATE CONTRACT. SEE DETAIL FOR INTERIM TYPICAL SECTION ON SHEET 127 FOR ADDITIONAL INFORMATION.
SEE CROSS SECTIONS FOR MORE INFORMATION



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 424+73± TO STA 425+03±, STA 425+59± TO STA 425+96±, STA 731+00± TO STA 734+25± NTS

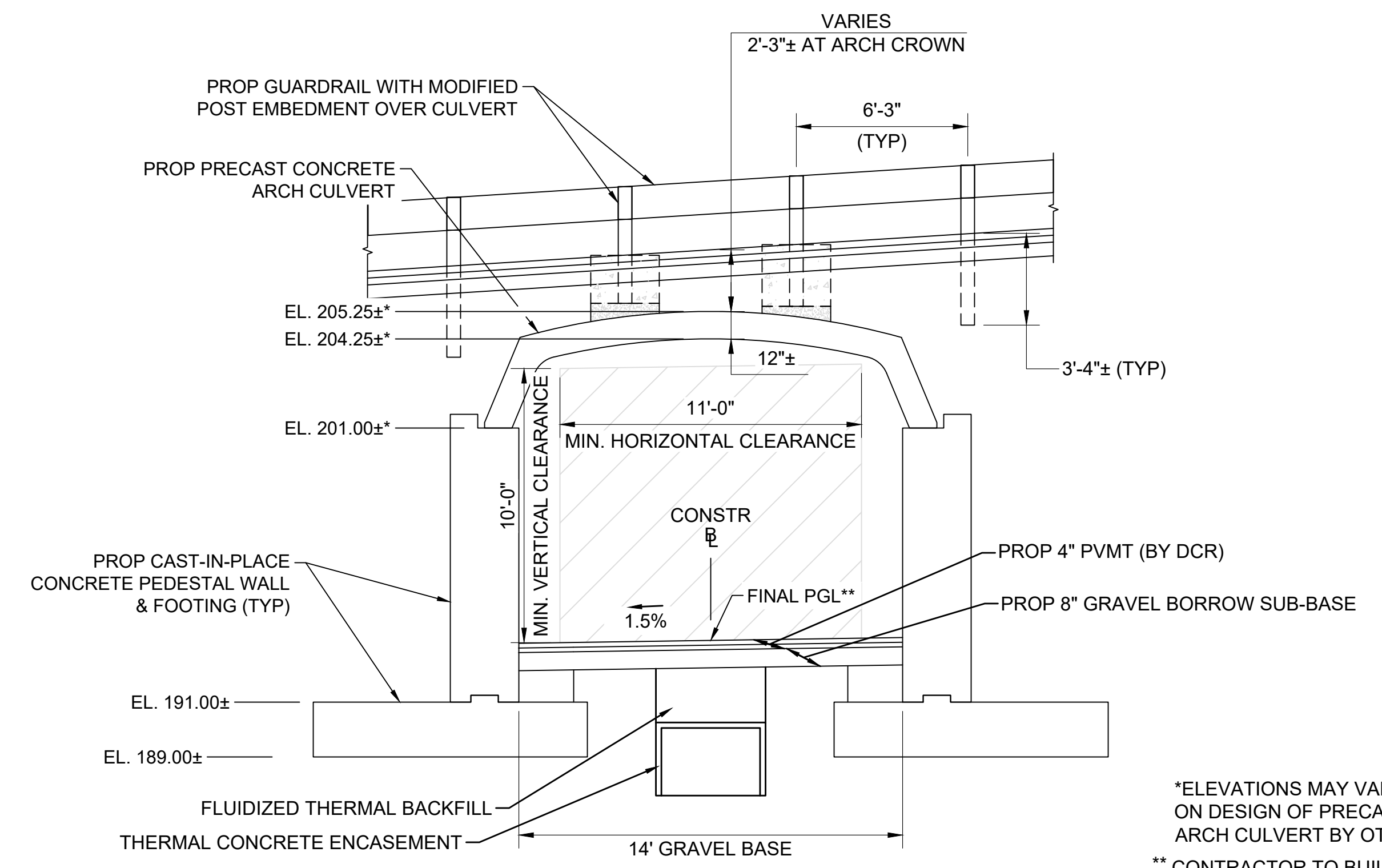
*TOLERANCE FOR CONSTRUCTION ±0.5%



CATTLE CROSSING

STA 119+38± TO STA 119+52± NTS

*TOLERANCE FOR CONSTRUCTION ±0.5%



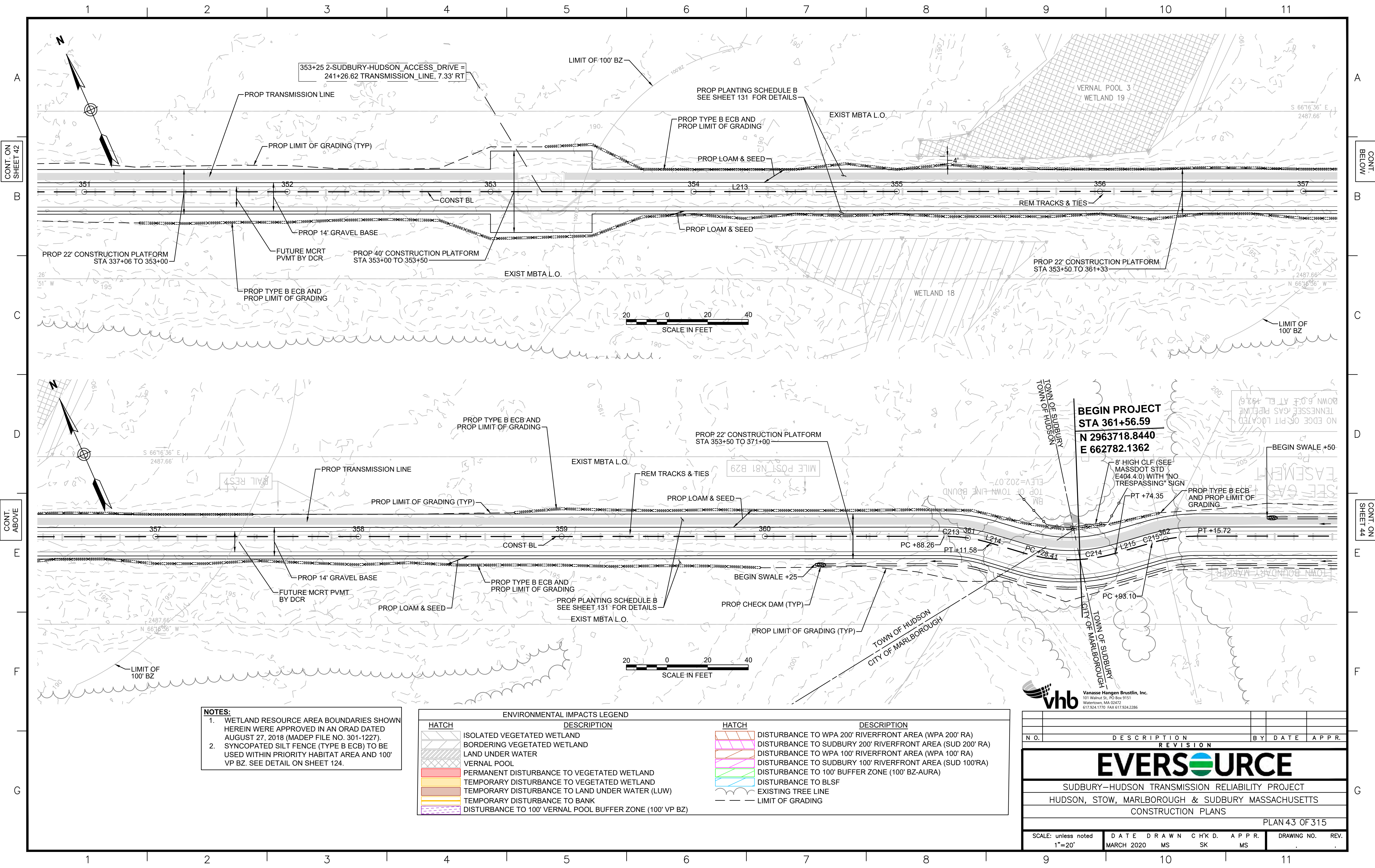
CHESTNUT STREET CULVERT

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 127 FOR ADDITIONAL INFORMATION.
SEE BRIDGE PLANS FOR MORE INFORMATION



NO.		DESCRIPTION			BY	DATE	APPR.
REVISION							
EVERSOURCE							
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT							
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS							
TYPICAL SECTIONS							
						PLAN 22 OF 315	
SCALE: unless noted NTS		DATE	DRAWN	CH'K'D.	APPR.	DRAWING NO.	REV.
		MARCH 2020	MS	SK	MS	.	.

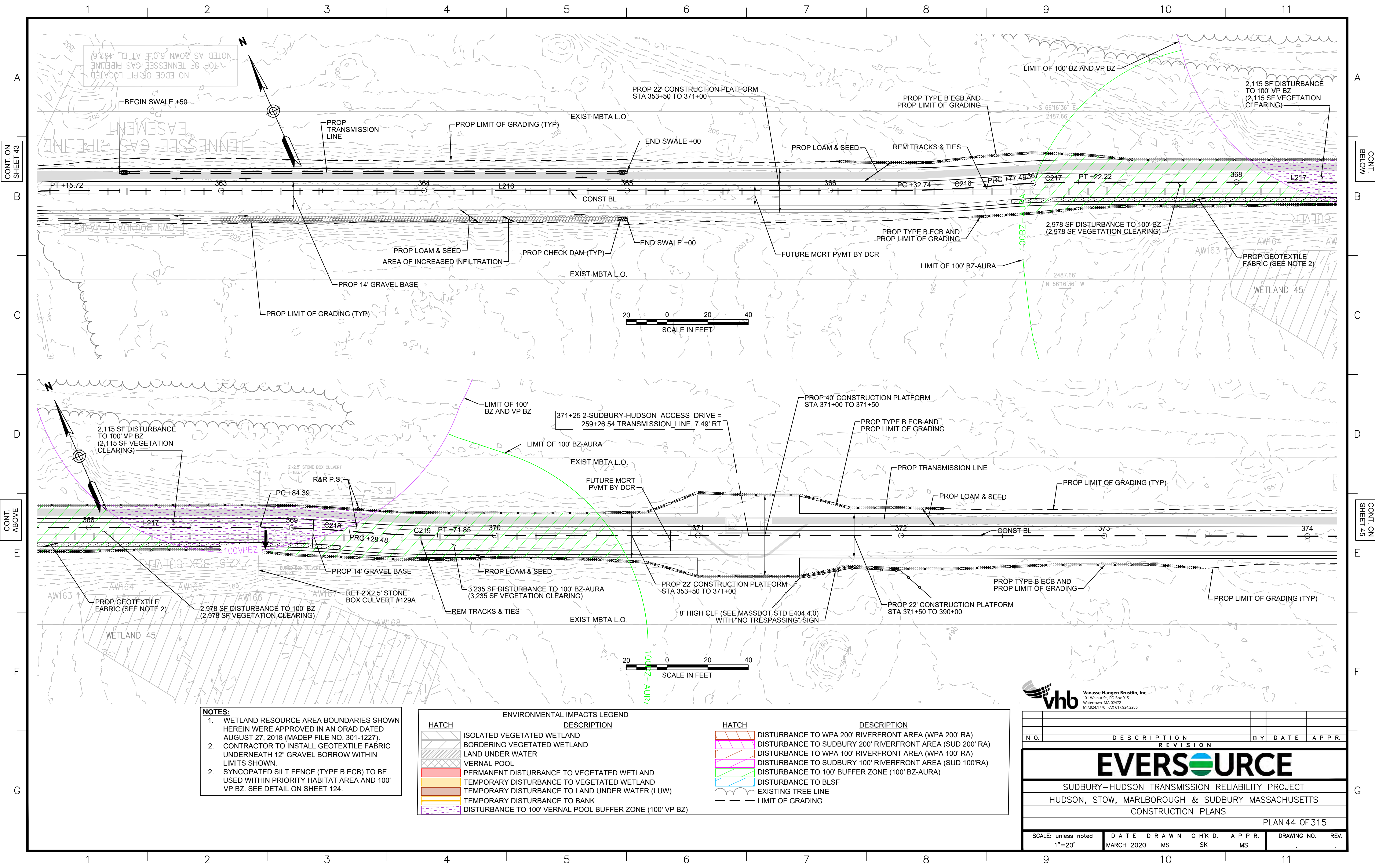


NOTES:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).
2. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 100' VP BZ. SEE DETAIL ON SHEET 124.

ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
	ISOLATED VEGETATED WETLAND
	BORDERING VEGETATED WETLAND
	LAND UNDER WATER
	VERNAL POOL
	PERMANENT DISTURBANCE TO VEGETATED WETLAND
	TEMPORARY DISTURBANCE TO VEGETATED WETLAND
	TEMPORARY DISTURBANCE TO LAND UNDER WATER (LUW)
	TEMPORARY DISTURBANCE TO BANK
	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)
	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
	DISTURBANCE TO BLSF
	EXISTING TREE LINE
	LIMIT OF GRADING

vhb
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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									
CONSTRUCTION PLANS									
PLAN 43 OF 315									
SCALE: unless noted 1"=20'		DATE		DRAWN		CHK'D		APPR.	
		MARCH 2020		MS		SK		MS	
					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.
 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
	ISOLATED VEGETATED WETLAND
	BORDERING VEGETATED WETLAND
	LAND UNDER WATER
	VERNAL POOL
	PERMANENT DISTURBANCE TO VEGETATED WETLAND
	TEMPORARY DISTURBANCE TO VEGETATED WETLAND
	TEMPORARY DISTURBANCE TO LAND UNDER WATER (LUW)
	TEMPORARY DISTURBANCE TO BANK
	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)
	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
	DISTURBANCE TO BLSF
	EXISTING TREE LINE
	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 44 OF 315

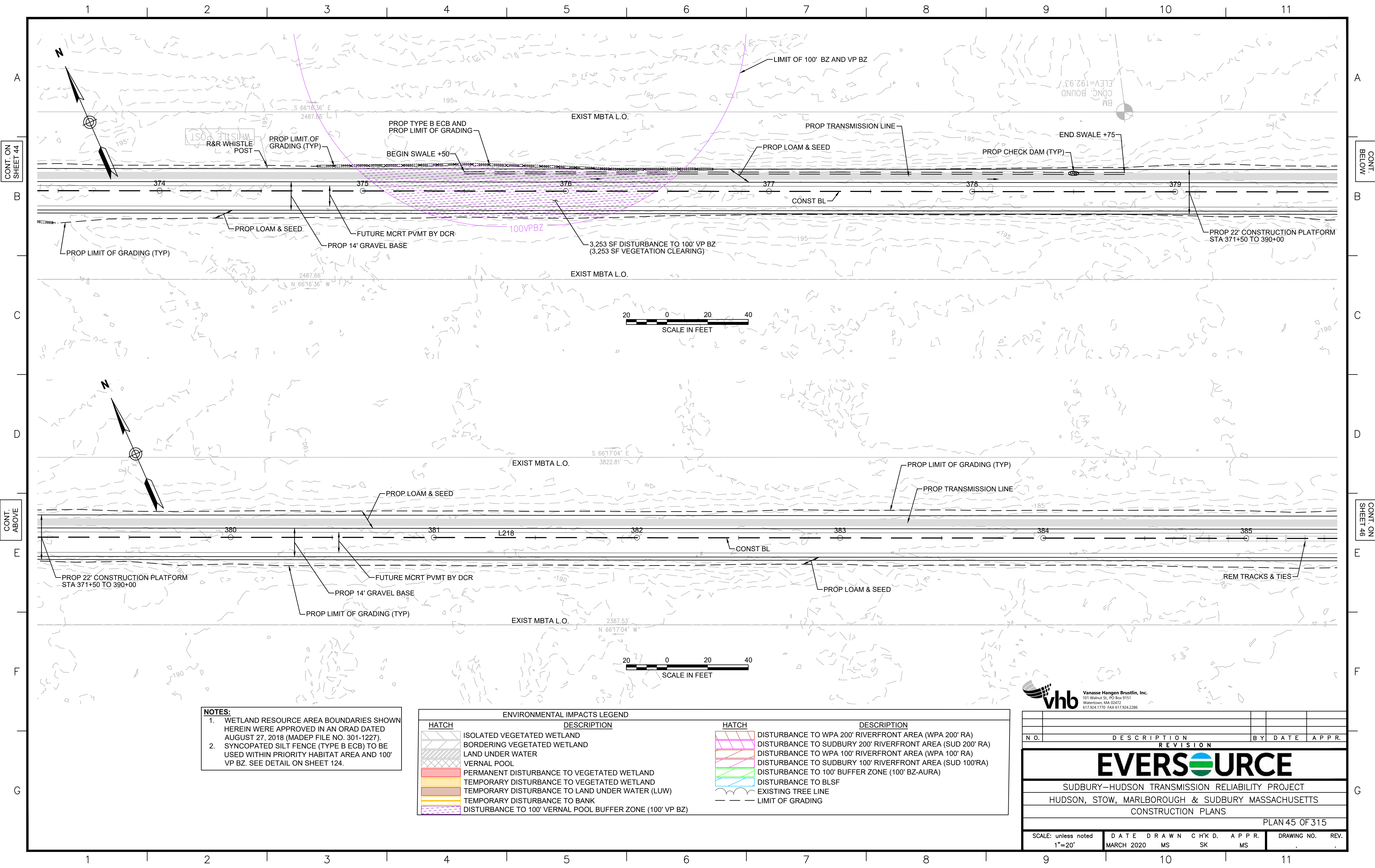
SCALE: unless noted 1"=20'	DATE MARCH 2020	DRAWN MS	CHK'D SK	APPR. MS	DRAWING NO.	REV.
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CONT. ON
SHEET 43

CONT.
BELOW

CONT. ABOVE

CONT. ON
SHEET 45



NOTES:

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 100' VP BZ. SEE DETAIL ON SHEET 124.

ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
	ISOLATED VEGETATED WETLAND
	BORDERING VEGETATED WETLAND
	LAND UNDER WATER
	VERNAL POOL
	PERMANENT DISTURBANCE TO VEGETATED WETLAND
	TEMPORARY DISTURBANCE TO VEGETATED WETLAND
	TEMPORARY DISTURBANCE TO LAND UNDER WATER (LUW)
	TEMPORARY DISTURBANCE TO BANK
	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)
	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
	DISTURBANCE TO BLSF
	EXISTING TREE LINE
	LIMIT OF GRADING

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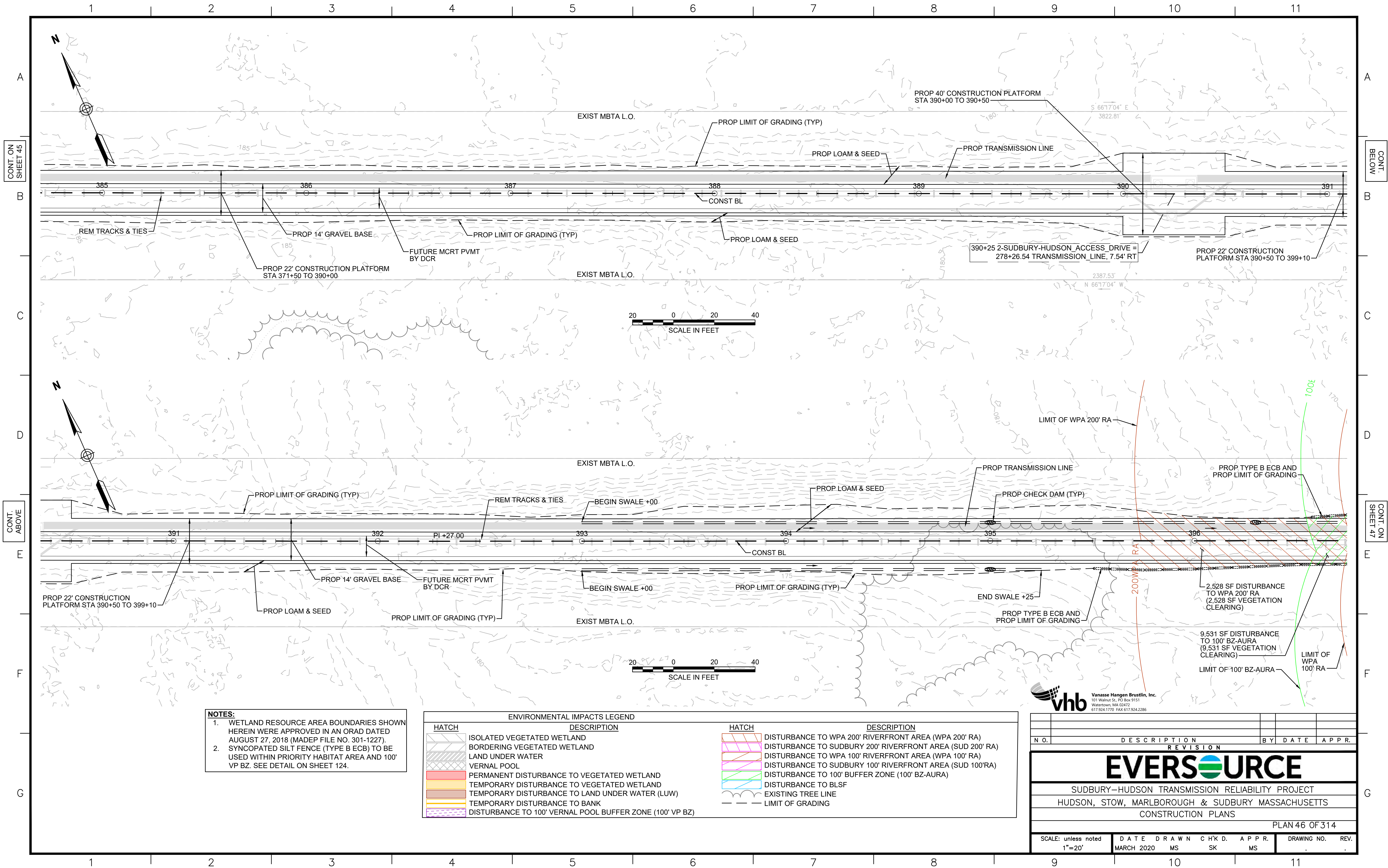
N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CONSTRUCTION PLANS				
PLAN 45 OF 315				
SCALE: unless noted 1"=20'	DATE MARCH 2020	DRAWN MS	CHK'D SK	APPR. MS
DRAWING NO.		REV.		

CONT. ON
SHEET 44

CONT.
BELOW

CONT. ABOVE

CONT. ON
SHEET 46

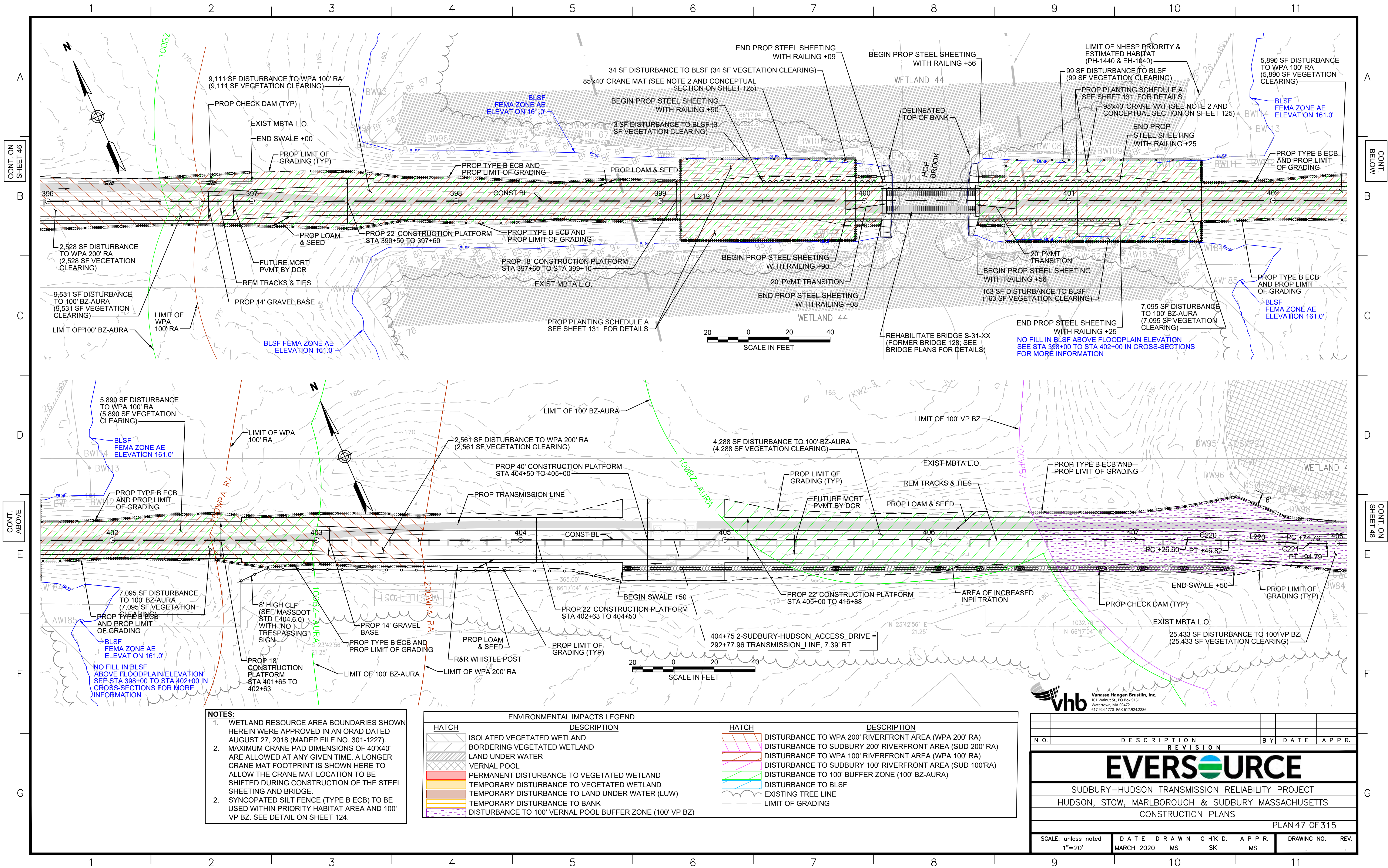


- NOTES:**
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).
 2. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 100' VP BZ. SEE DETAIL ON SHEET 124.

ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
	ISOLATED VEGETATED WETLAND
	BORDERING VEGETATED WETLAND
	LAND UNDER WATER
	VERNAL POOL
	PERMANENT DISTURBANCE TO VEGETATED WETLAND
	TEMPORARY DISTURBANCE TO VEGETATED WETLAND
	TEMPORARY DISTURBANCE TO LAND UNDER WATER (LUW)
	TEMPORARY DISTURBANCE TO BANK
	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)
	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
	DISTURBANCE TO BLSF
	EXISTING TREE LINE
	LIMIT OF GRADING

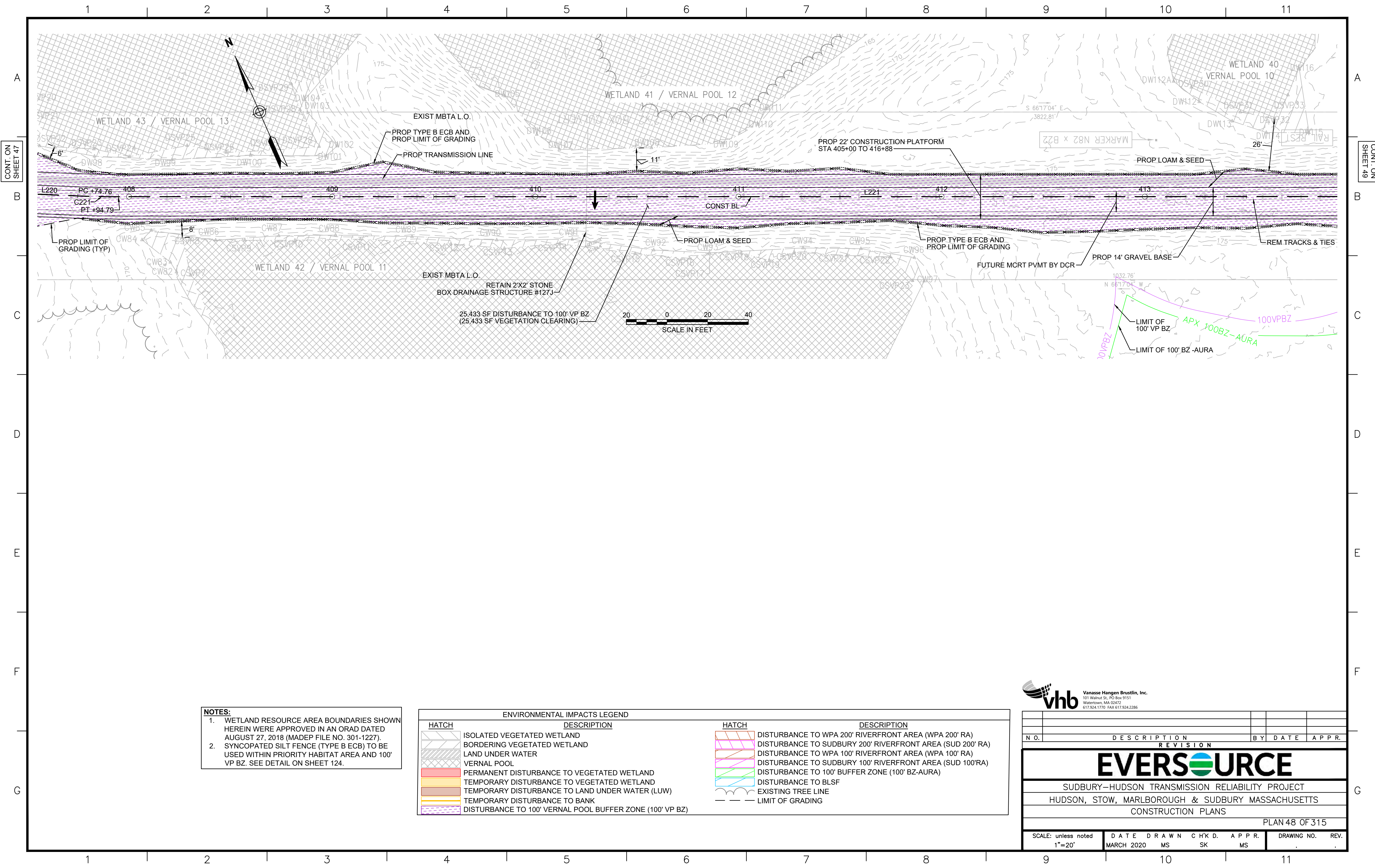
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N O.	DESCRIPTION					BY	DATE	APPR.	
REVISION									
EVERSOURCE									
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT									
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
CONSTRUCTION PLANS									
PLAN 46 OF 314									
SCALE: unless noted 1"=20'		DATE		DRAWN		C H'K D.		APPR.	
		MARCH 2020		MS		SK		MS	
				DRAWING NO.		REV.			



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NO.	DESCRIPTION	BY	DATE	APPR.	REVISION		
EVERSOURCE							
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT							
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS							
CONSTRUCTION PLANS							
PLAN 47 OF 315							
SCALE: unless noted 1"=20'		DATE DRAWN: MARCH 2020		CH'K'D: MS		APPR: SK	
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. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 100' VP BZ. SEE DETAIL ON SHEET 124.

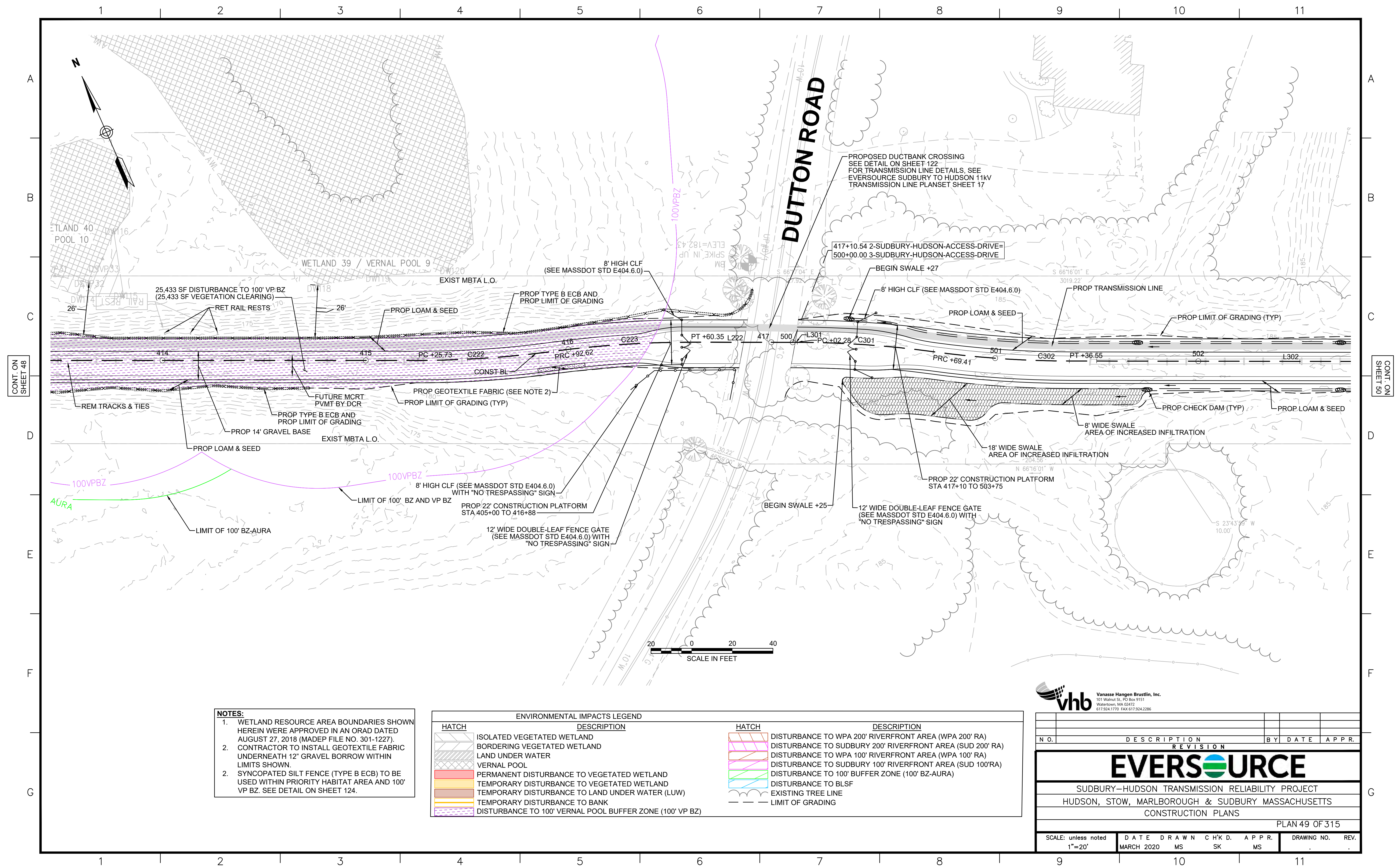
ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
	ISOLATED VEGETATED WETLAND
	BORDERING VEGETATED WETLAND
	LAND UNDER WATER
	VERNAL POOL
	PERMANENT DISTURBANCE TO VEGETATED WETLAND
	TEMPORARY DISTURBANCE TO VEGETATED WETLAND
	TEMPORARY DISTURBANCE TO LAND UNDER WATER (LUW)
	TEMPORARY DISTURBANCE TO BANK
	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)
	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
	DISTURBANCE TO BLSF
	EXISTING TREE LINE
	LIMIT OF GRADING

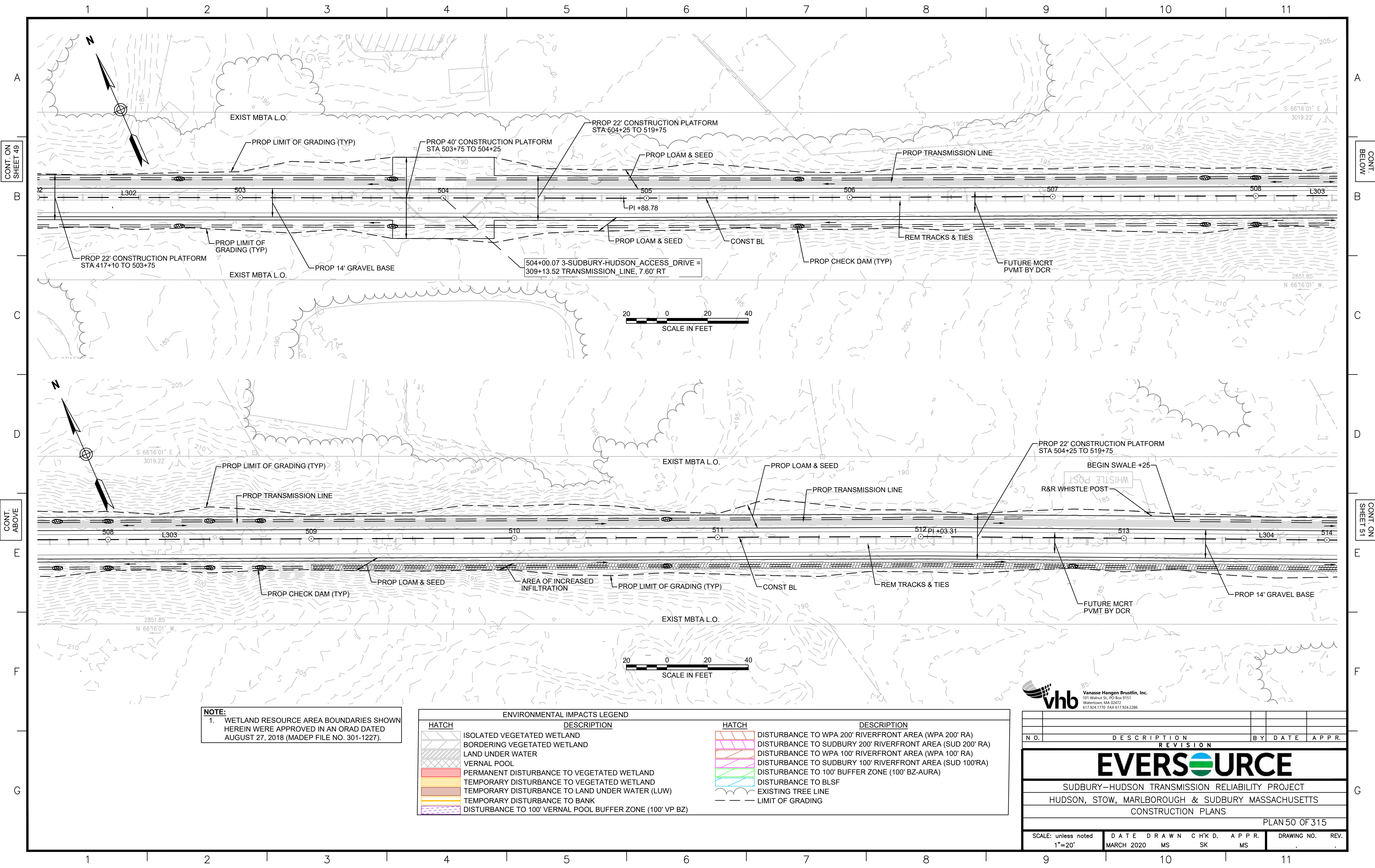
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617.924.1770 FAX 617.924.2286

N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CONSTRUCTION PLANS				
PLAN 48 OF 315				
SCALE: unless noted 1"=20'	DATE MARCH 2020	DRAWN MS	CHK'D SK	APPR. MS
DRAWING NO.	REV.			

CONT. ON
SHEET 47

CONT. ON
SHEET 49



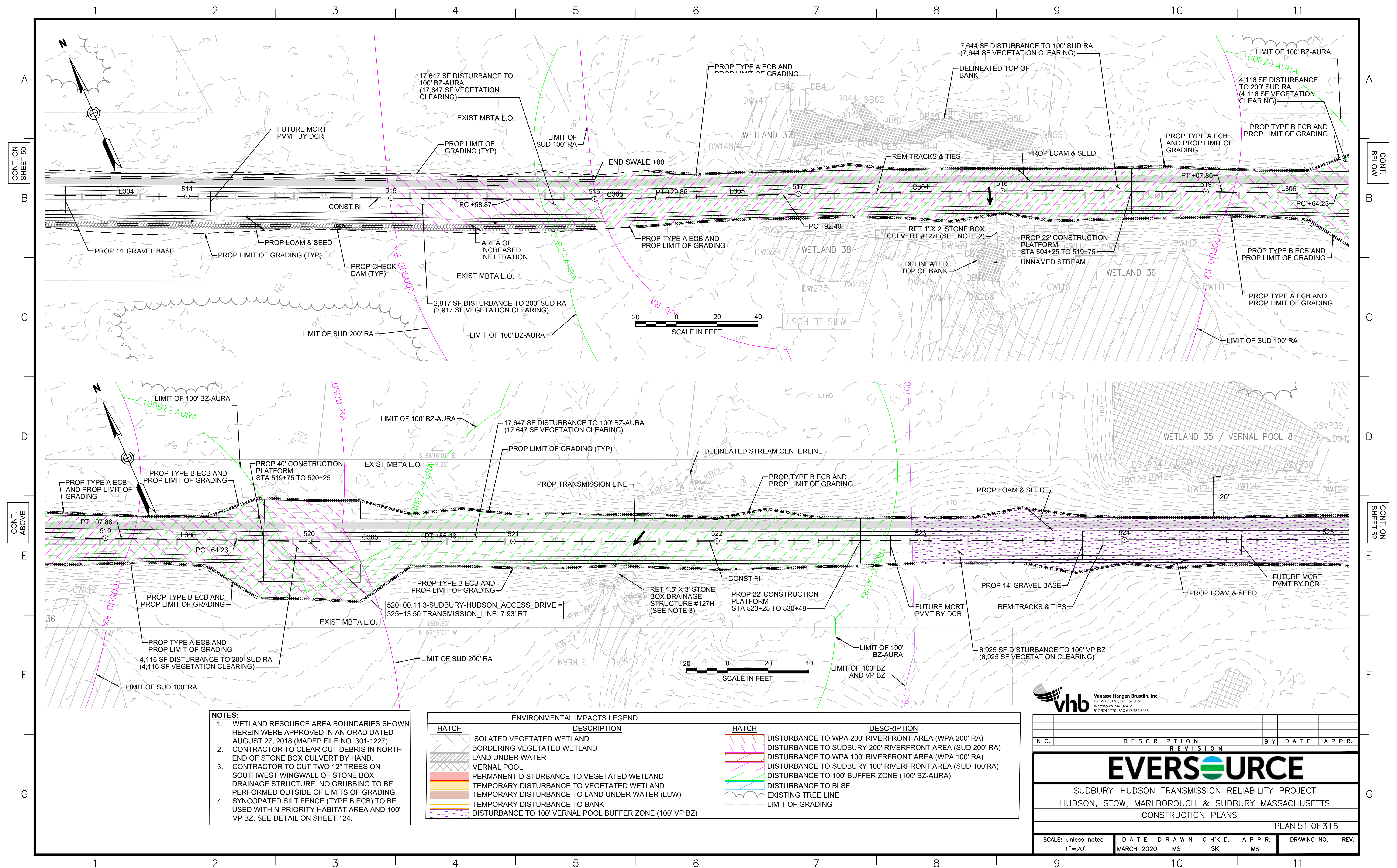


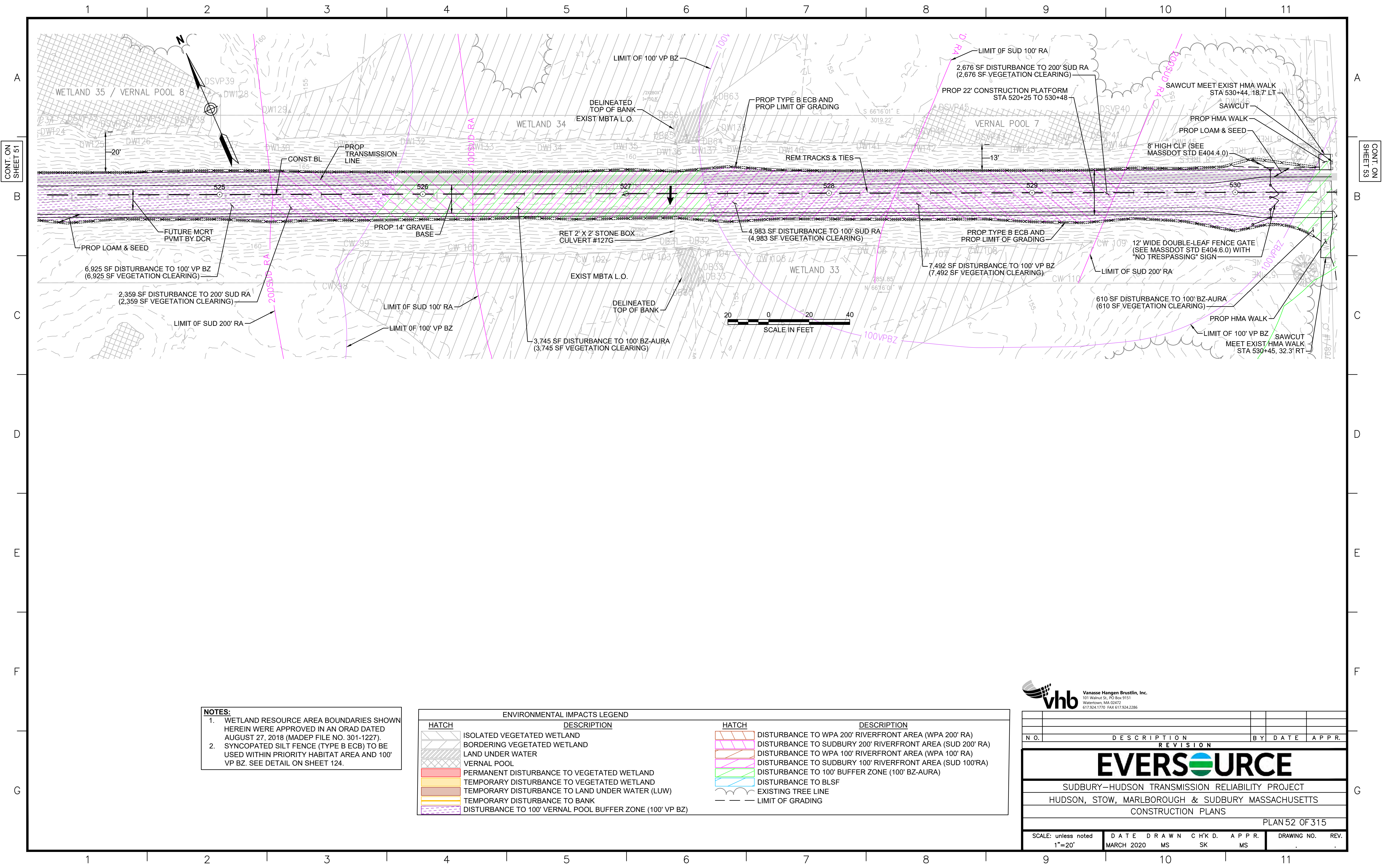
NOTE:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).

ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
	ISOLATED VEGETATED WETLAND
	BORDERING VEGETATED WETLAND
	LAND UNDER WATER
	VERNAL POOL
	PERMANENT DISTURBANCE TO VEGETATED WETLAND
	TEMPORARY DISTURBANCE TO VEGETATED WETLAND
	TEMPORARY DISTURBANCE TO LAND UNDER WATER (LUW)
	TEMPORARY DISTURBANCE TO BANK
	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)
	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
	DISTURBANCE TO BLSF
	EXISTING TREE LINE
	LIMIT OF GRADING

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N O.	DESCRIPTION				BY	DATE		APPR.	
REVISION									
EVERSOURCE									
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT									
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
CONSTRUCTION PLANS									
PLAN 50 OF 315									
SCALE: unless noted 1"=20'		DATE		DRAWN		C H'K'D.		APPR.	
		MARCH 2020		MS		SK		MS	
								DRAWING NO. REV.	
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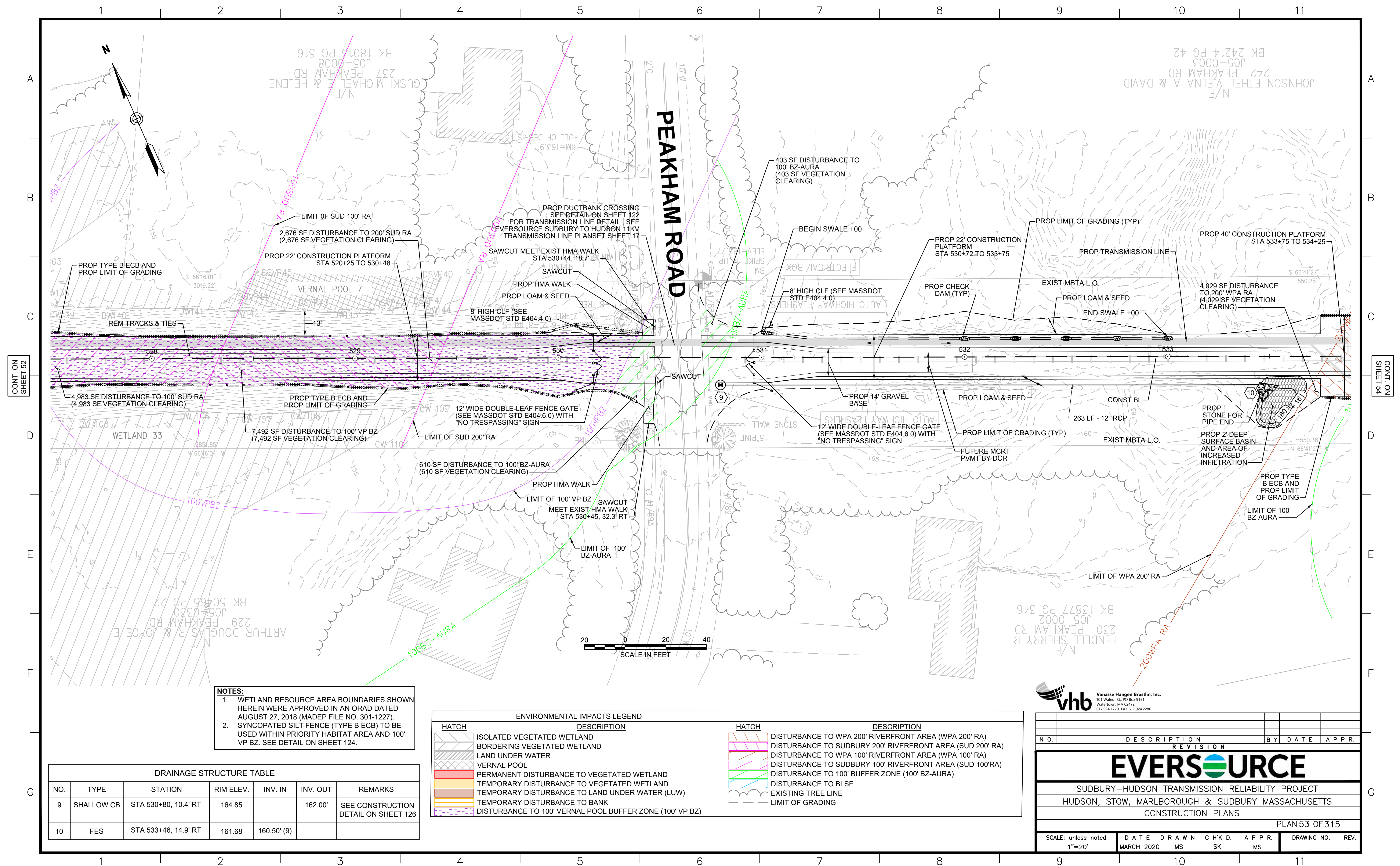
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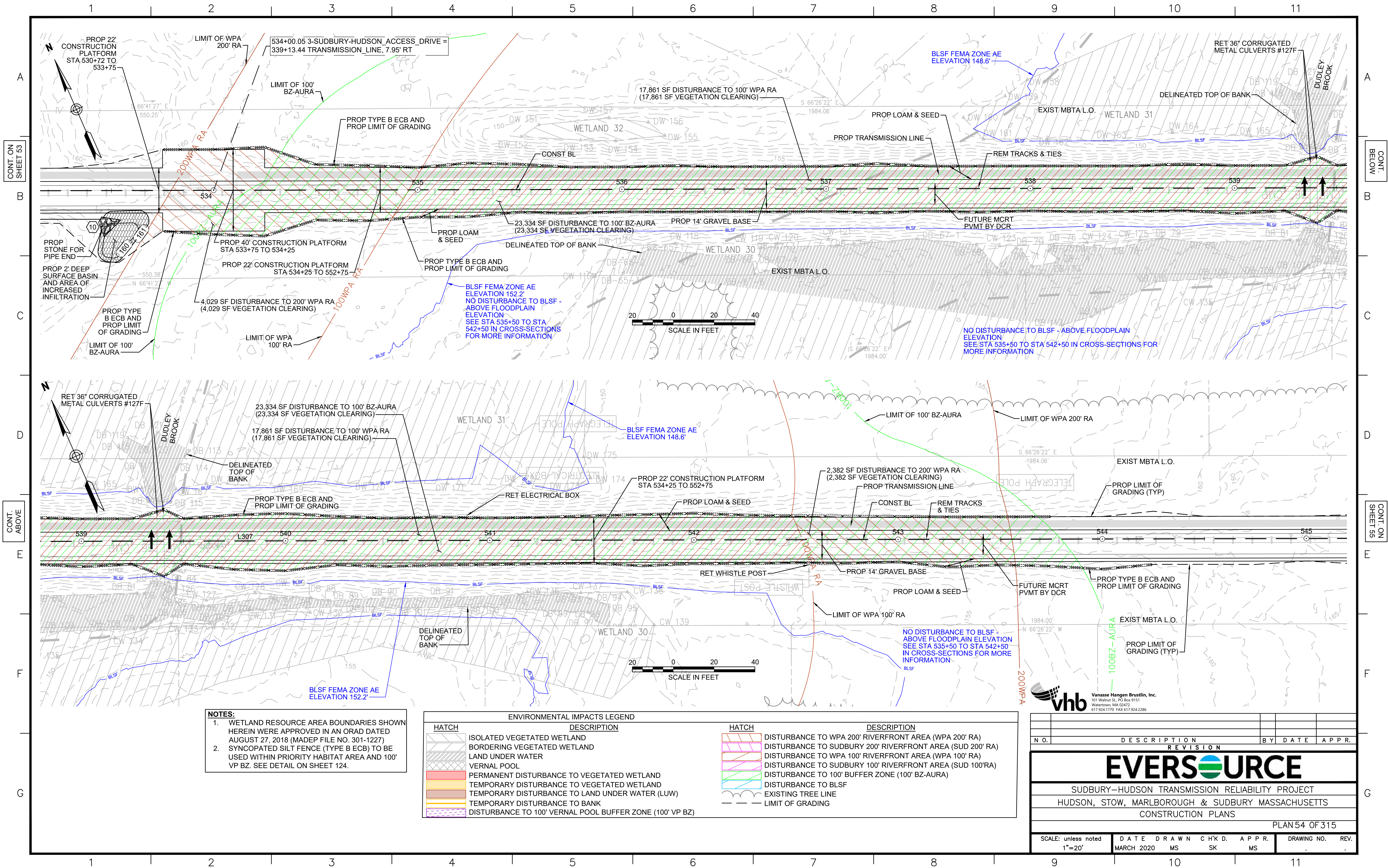
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).
2. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 100' VP BZ. SEE DETAIL ON SHEET 124.

ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
	ISOLATED VEGETATED WETLAND
	BORDERING VEGETATED WETLAND
	LAND UNDER WATER
	VERNAL POOL
	PERMANENT DISTURBANCE TO VEGETATED WETLAND
	TEMPORARY DISTURBANCE TO VEGETATED WETLAND
	TEMPORARY DISTURBANCE TO LAND UNDER WATER (LUW)
	TEMPORARY DISTURBANCE TO BANK
	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)
	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
	DISTURBANCE TO BLSF
	EXISTING TREE LINE
	LIMIT OF GRADING

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Watertown, MA 02472
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N O.	DESCRIPTION				BY	DATE		APPR.	
REVISION									
EVERSOURCE									
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT									
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
CONSTRUCTION PLANS									
PLAN 52 OF 315									
SCALE: unless noted 1"=20'		DATE		DRAWN		C H'K'D.		APPR.	
		MARCH 2020		MS		SK		MS	
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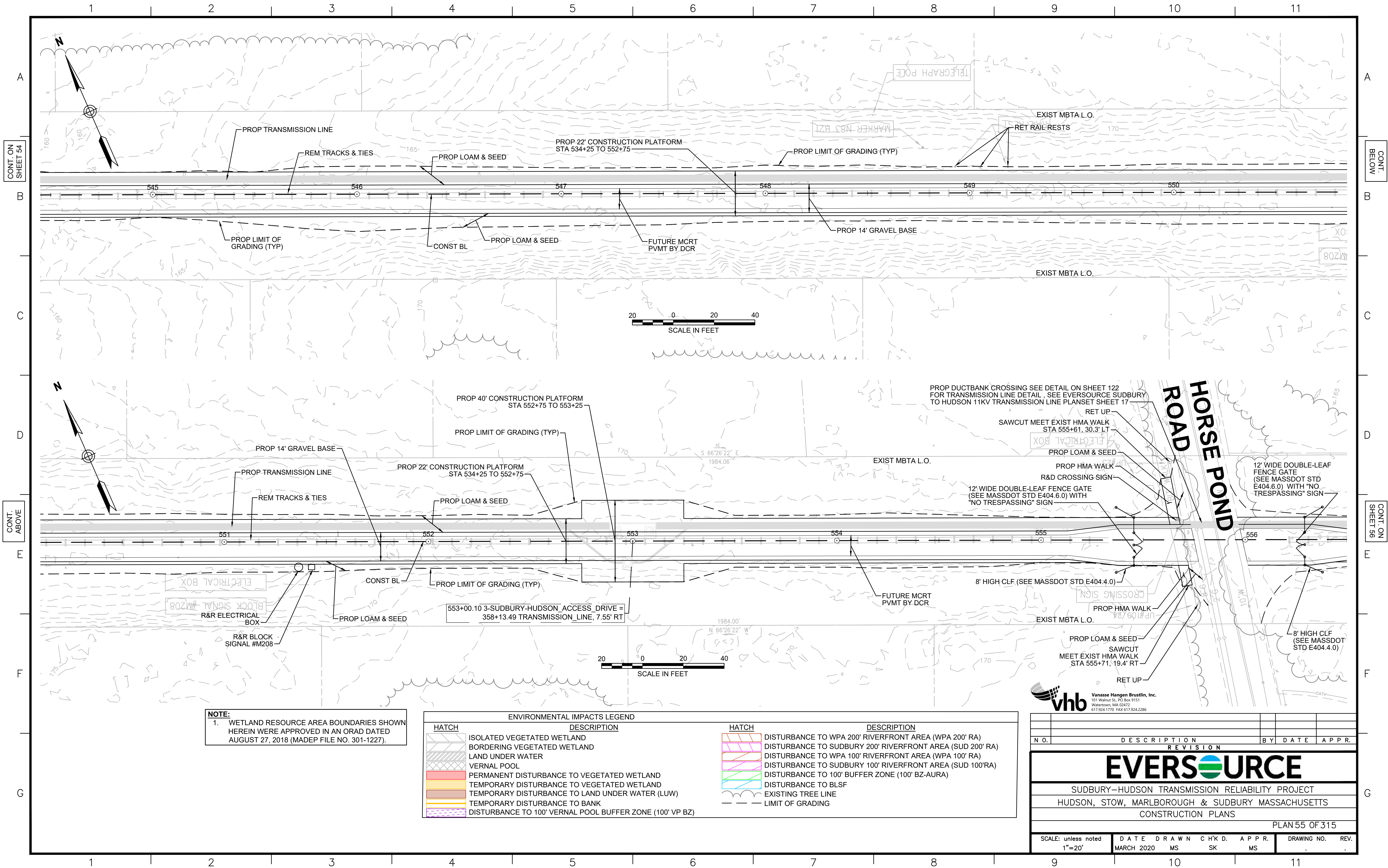


NOTES:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227)
2. SYNCOATED 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
	ISOLATED VEGETATED WETLAND
	BORDERING VEGETATED WETLAND
	LAND UNDER WATER
	VERNAL POOL
	PERMANENT DISTURBANCE TO VEGETATED WETLAND
	TEMPORARY DISTURBANCE TO VEGETATED WETLAND
	TEMPORARY DISTURBANCE TO LAND UNDER WATER (LUW)
	TEMPORARY DISTURBANCE TO BANK
	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)
	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
	DISTURBANCE TO BLSF
	EXISTING TREE LINE
	LIMIT OF GRADING

N O.	DESCRIPTION					BY	DATE	APPR.	
REVISION									
EVERSOURCE									
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT									
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
CONSTRUCTION PLANS									
PLAN 54 OF 315									
SCALE: unless noted 1"=20'		DATE		DRAWN		C H'K D.		APPR.	
		MARCH 2020		MS		SK		MS	
DRAWING NO.				REV.					



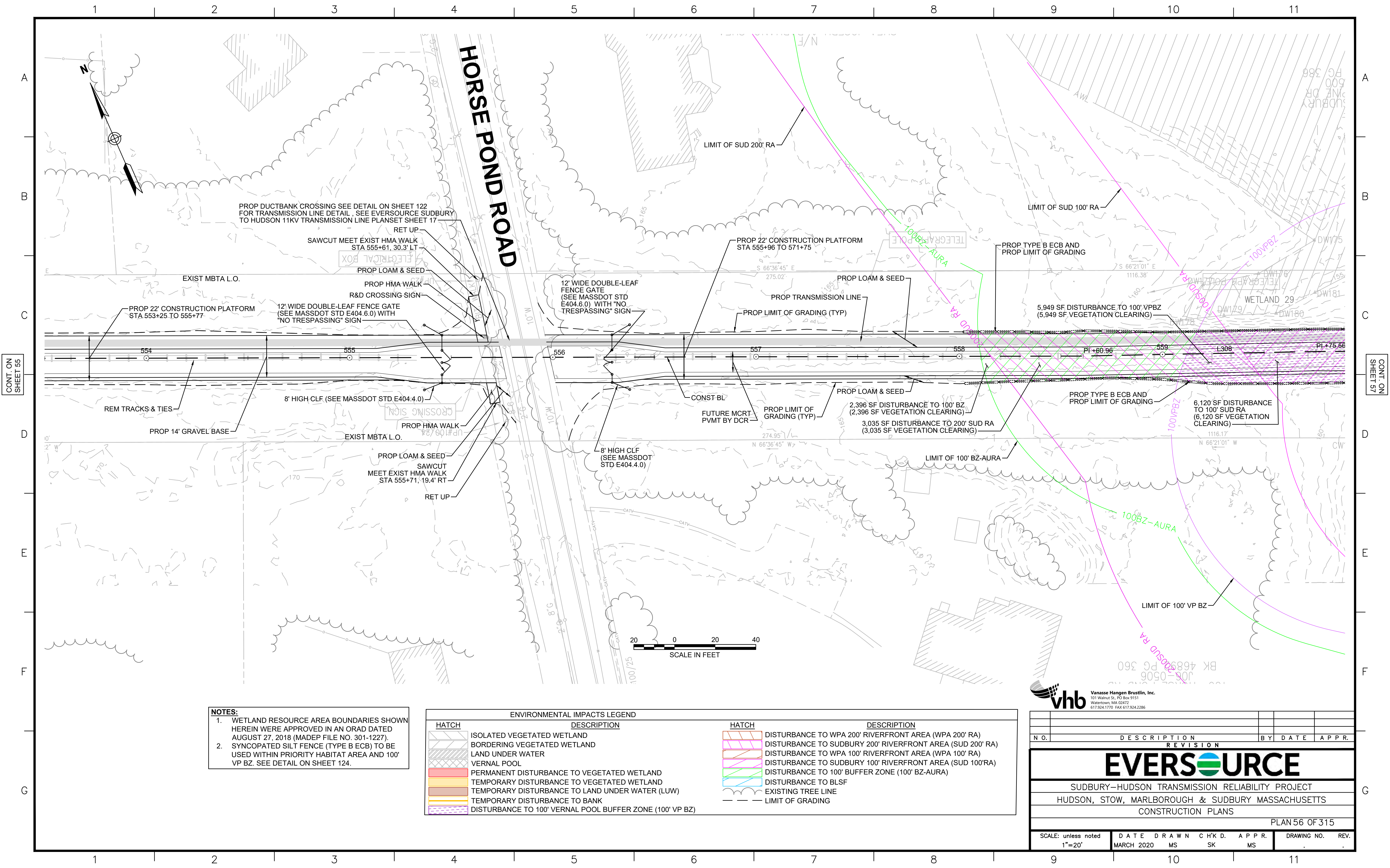
NOTE:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).

ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
	ISOLATED VEGETATED WETLAND
	BORDERING VEGETATED WETLAND
	LAND UNDER WATER
	VERNAL POOL
	PERMANENT DISTURBANCE TO VEGETATED WETLAND
	TEMPORARY DISTURBANCE TO VEGETATED WETLAND
	TEMPORARY DISTURBANCE TO LAND UNDER WATER (LUW)
	TEMPORARY DISTURBANCE TO BANK
	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)
	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
	DISTURBANCE TO BLSF
	EXISTING TREE LINE
	LIMIT OF GRADING

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N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CONSTRUCTION PLANS				
PLAN 55 OF 315				
SCALE: unless noted 1"=20'	DATE MARCH 2020	DRAWN MS	CHK'D. SK	APPR. MS
DRAWING NO.	REV.			

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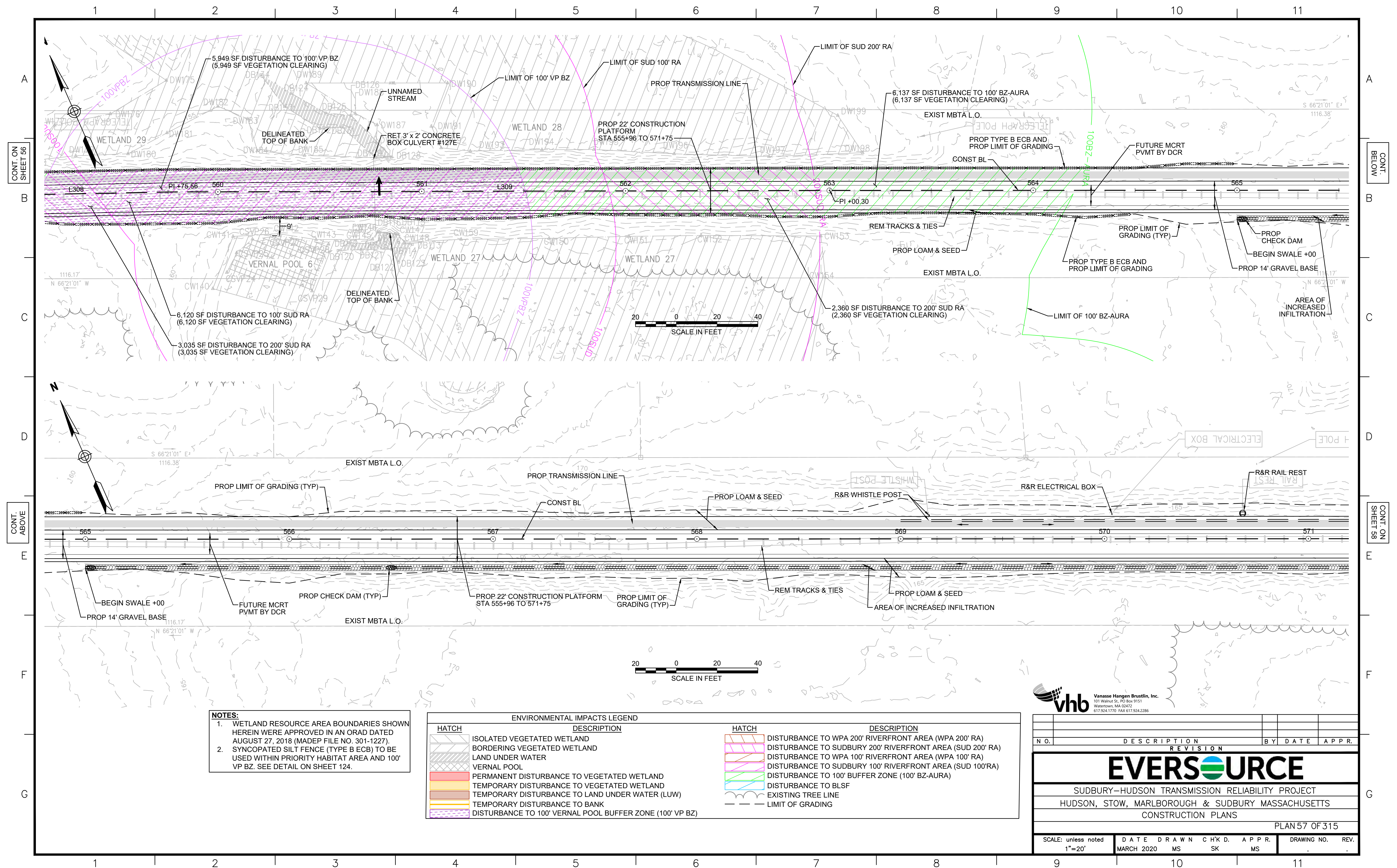
- NOTES:**
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).
 2. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 100' VP BZ. SEE DETAIL ON SHEET 124.

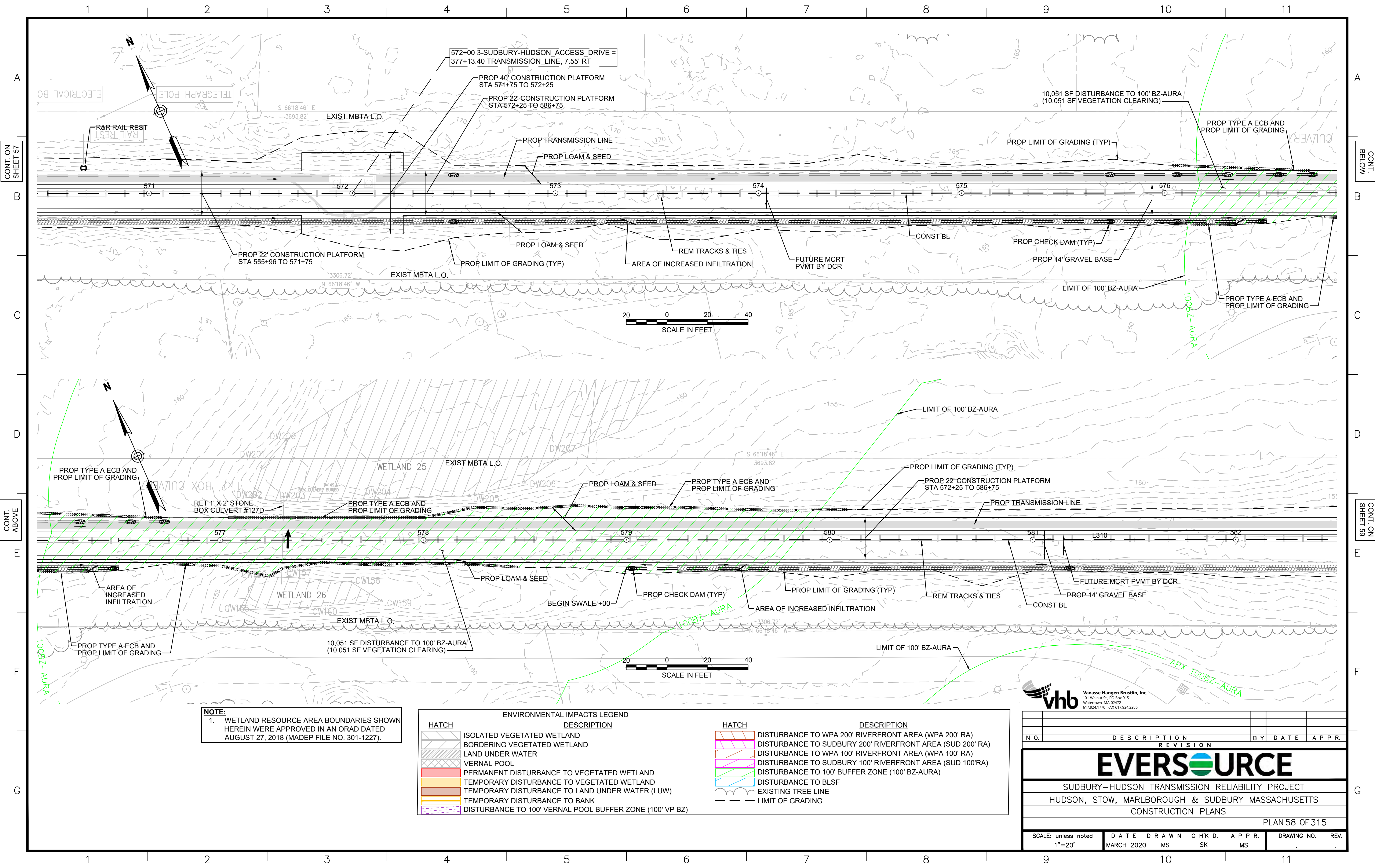
ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
	ISOLATED VEGETATED WETLAND
	BORDERING VEGETATED WETLAND
	LAND UNDER WATER
	VERNAL POOL
	PERMANENT DISTURBANCE TO VEGETATED WETLAND
	TEMPORARY DISTURBANCE TO VEGETATED WETLAND
	TEMPORARY DISTURBANCE TO LAND UNDER WATER (LUW)
	TEMPORARY DISTURBANCE TO BANK
	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)

HATCH	DESCRIPTION
	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
	DISTURBANCE TO BLSF
	EXISTING TREE LINE
	LIMIT OF GRADING

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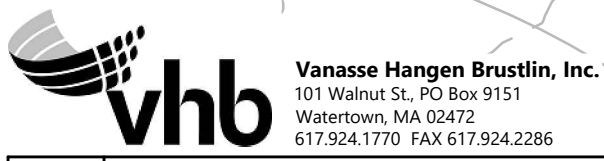
NO.		DESCRIPTION	BY	DATE	APPR.
REVISION					
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CONSTRUCTION PLANS					
PLAN 56 OF 315					
SCALE: unless noted 1"=20'		DATE	DRAWN	CHK'D	APPR.
		MARCH 2020	MS	SK	MS
DRAWING NO.		REV.			



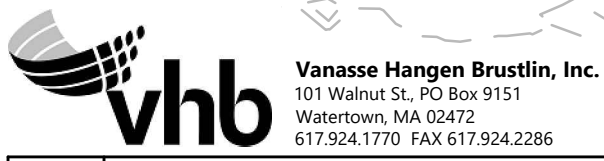
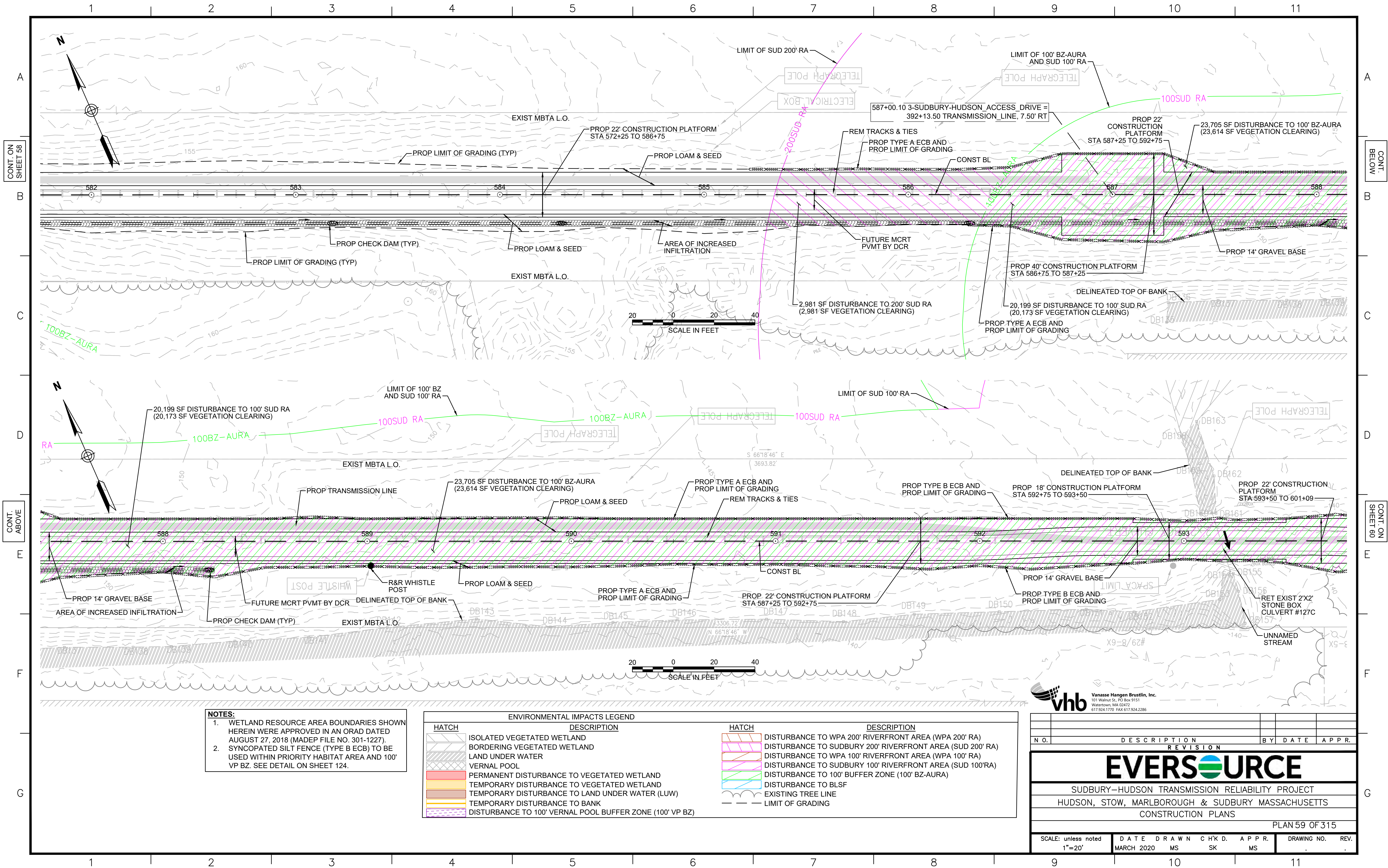


NOTE:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).

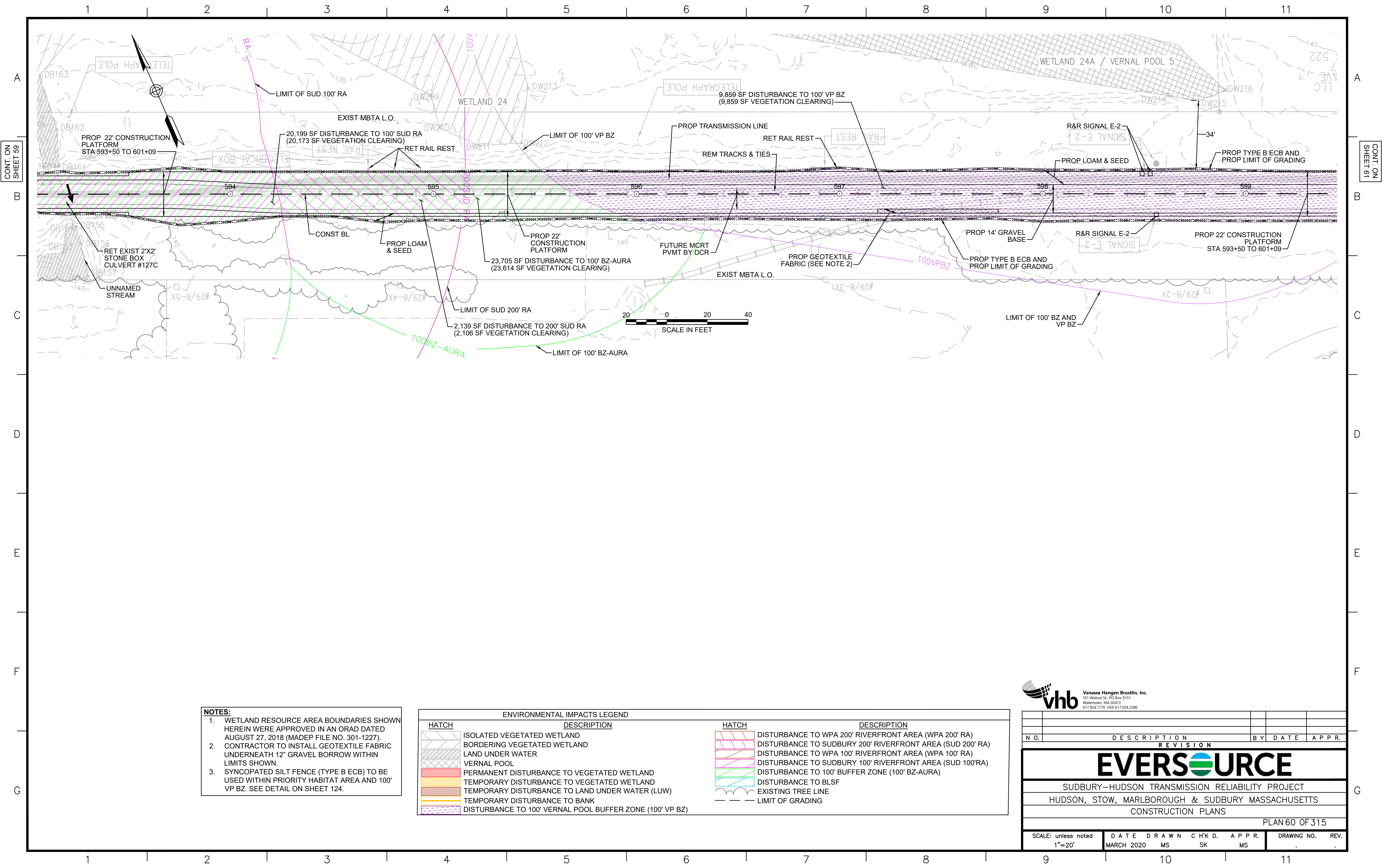
ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
	ISOLATED VEGETATED WETLAND
	BORDERING VEGETATED WETLAND
	LAND UNDER WATER
	VERNAL POOL
	PERMANENT DISTURBANCE TO VEGETATED WETLAND
	TEMPORARY DISTURBANCE TO VEGETATED WETLAND
	TEMPORARY DISTURBANCE TO LAND UNDER WATER (LUW)
	TEMPORARY DISTURBANCE TO BANK
	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)
	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
	DISTURBANCE TO BLSF
	EXISTING TREE LINE
	LIMIT OF GRADING



NO.		DESCRIPTION	BY	DATE	APPR.
REVISION					
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CONSTRUCTION PLANS					
PLAN 58 OF 315					
SCALE: unless noted 1"=20'		DATE	DRAWN	CHK'D	APPR.
		MARCH 2020	MS	SK	MS
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									
CONSTRUCTION PLANS									
PLAN 59 OF 315									
SCALE: unless noted 1"=20'		DATE		DRAWN		C H'K'D.		APPR.	
		MARCH 2020		MS		SK		MS	
								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
	ISOLATED VEGETATED WETLAND
	BORDERING VEGETATED WETLAND
	LAND UNDER WATER
	VERNAL POOL
	PERMANENT DISTURBANCE TO VEGETATED WETLAND
	TEMPORARY DISTURBANCE TO VEGETATED WETLAND
	TEMPORARY DISTURBANCE TO LAND UNDER WATER (LUW)
	TEMPORARY DISTURBANCE TO BANK
	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)

HATCH	DESCRIPTION
	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
	DISTURBANCE TO BLSF
	EXISTING TREE LINE
	LIMIT OF GRADING

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N O.	DESCRIPTION	BY	DATE	APPR.
REVISION				

EVERSOURCE

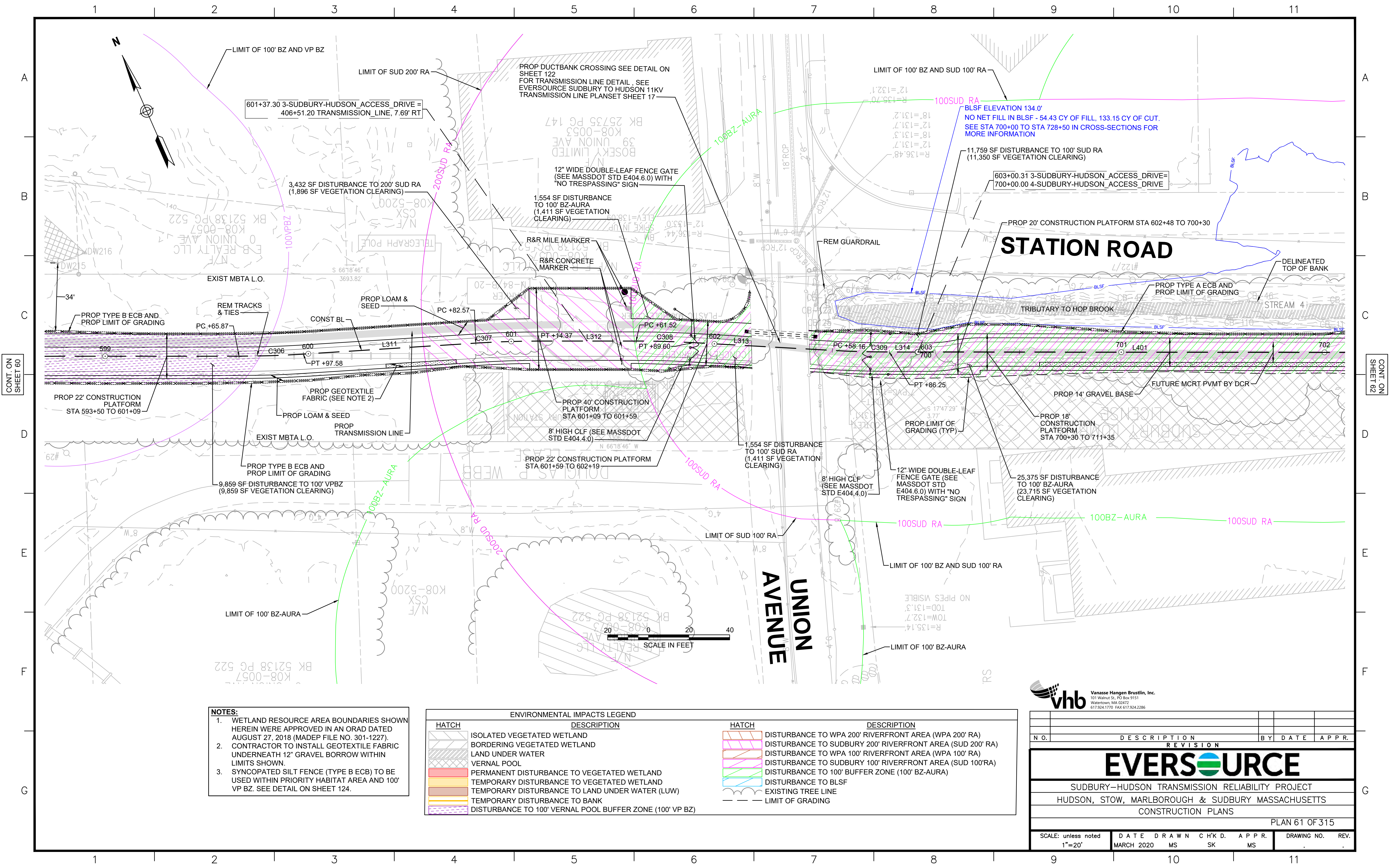
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
CONSTRUCTION PLANS

PLAN 60 OF 315

SCALE: unless noted 1"=20'	DATE MARCH 2020	DRAWN MS	CHK'D SK	APPR. MS	DRAWING NO.	REV.

CONT. ON
SHEET 59

CONT. ON
SHEET 61



- 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.

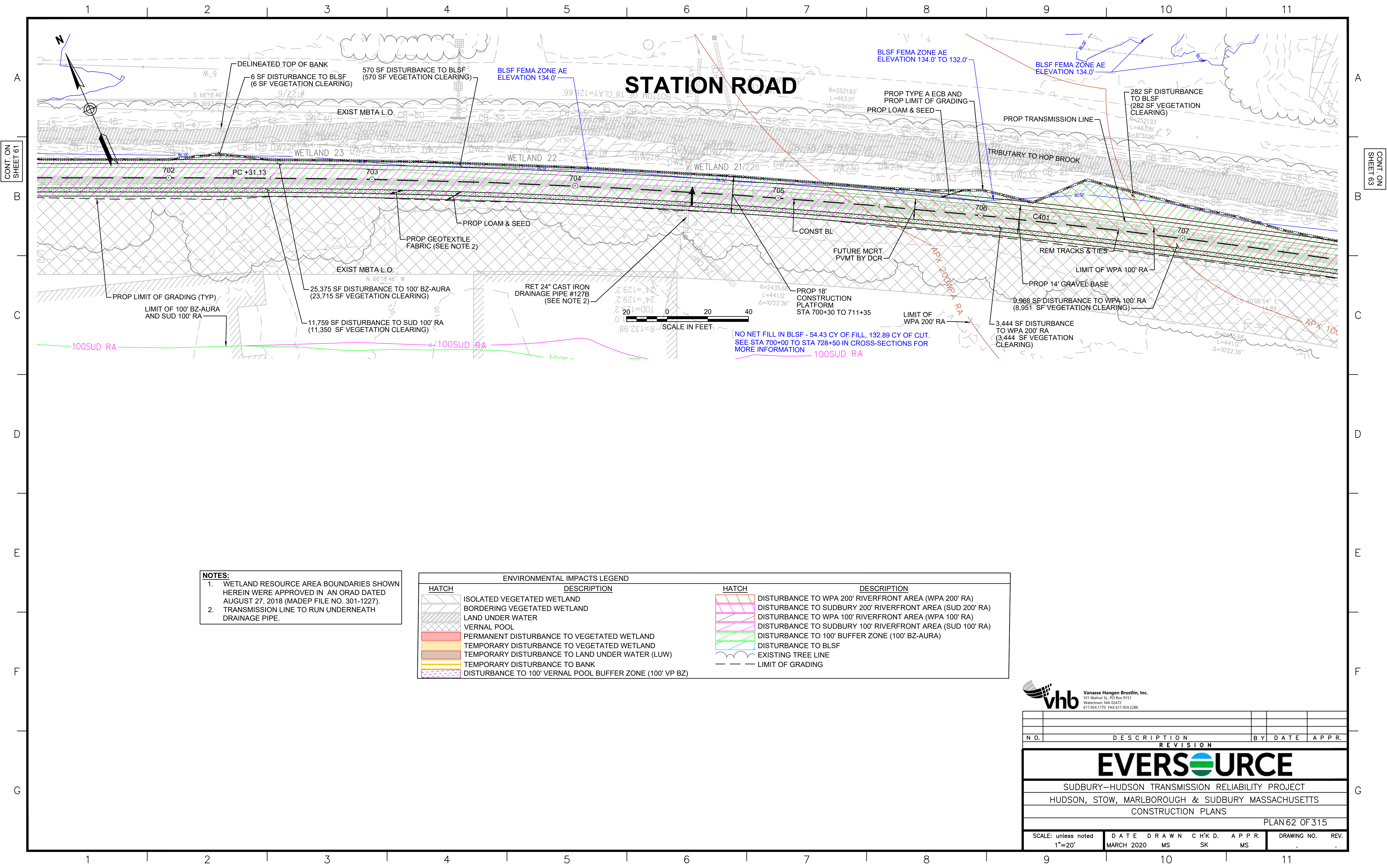
ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
	ISOLATED VEGETATED WETLAND
	BORDERING VEGETATED WETLAND
	LAND UNDER WATER
	VERNAL POOL
	PERMANENT DISTURBANCE TO VEGETATED WETLAND
	TEMPORARY DISTURBANCE TO VEGETATED WETLAND
	TEMPORARY DISTURBANCE TO LAND UNDER WATER (LUW)
	TEMPORARY DISTURBANCE TO BANK
	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)
HATCH	DESCRIPTION
	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
	DISTURBANCE TO BLSF
	EXISTING TREE LINE
	LIMIT OF GRADING

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N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CONSTRUCTION PLANS				
PLAN 61 OF 315				
SCALE: unless noted 1"=20'	DATE MARCH 2020	DRAWN MS	CHK'D. SK	APPR. MS
DRAWING NO.		REV.		

CONT. ON
SHEET 60

CONT. ON
SHEET 62



- 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.

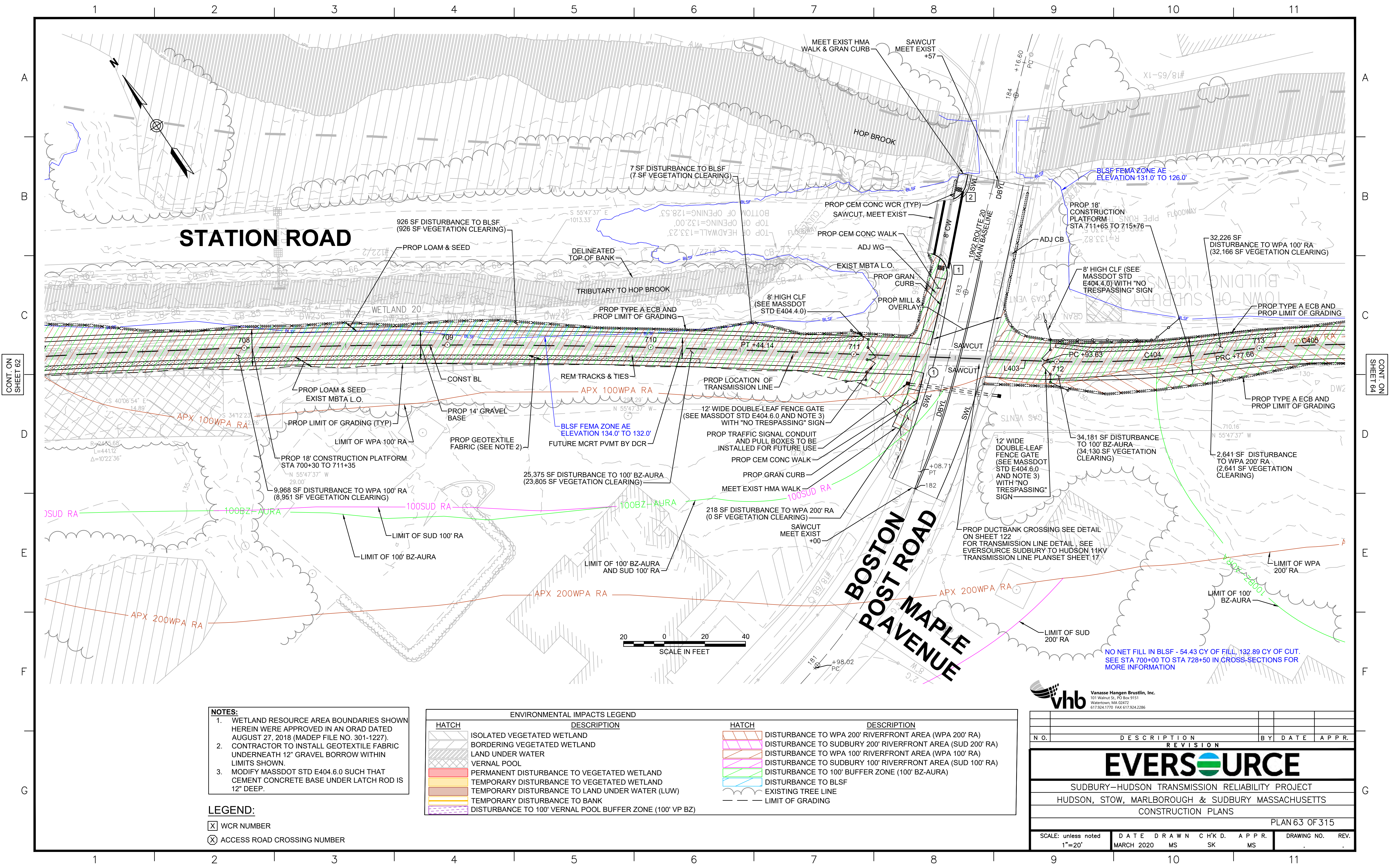
ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
	ISOLATED VEGETATED WETLAND
	BORDERING VEGETATED WETLAND
	LAND UNDER WATER
	VERNAL POOL
	PERMANENT DISTURBANCE TO VEGETATED WETLAND
	TEMPORARY DISTURBANCE TO VEGETATED WETLAND
	TEMPORARY DISTURBANCE TO LAND UNDER WATER (LUW)
	TEMPORARY DISTURBANCE TO BANK
	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)
	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
	DISTURBANCE TO BLSF
	EXISTING TREE LINE
	LIMIT OF GRADING

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N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CONSTRUCTION PLANS				
PLAN 62 OF 315				
SCALE: unless noted 1"=20'	DATE MARCH 2020	DRAWN MS	CHK'D. SK	APPR. MS
DRAWING NO.	REV.			

CONT. ON
SHEET 61

CONT. ON
SHEET 63



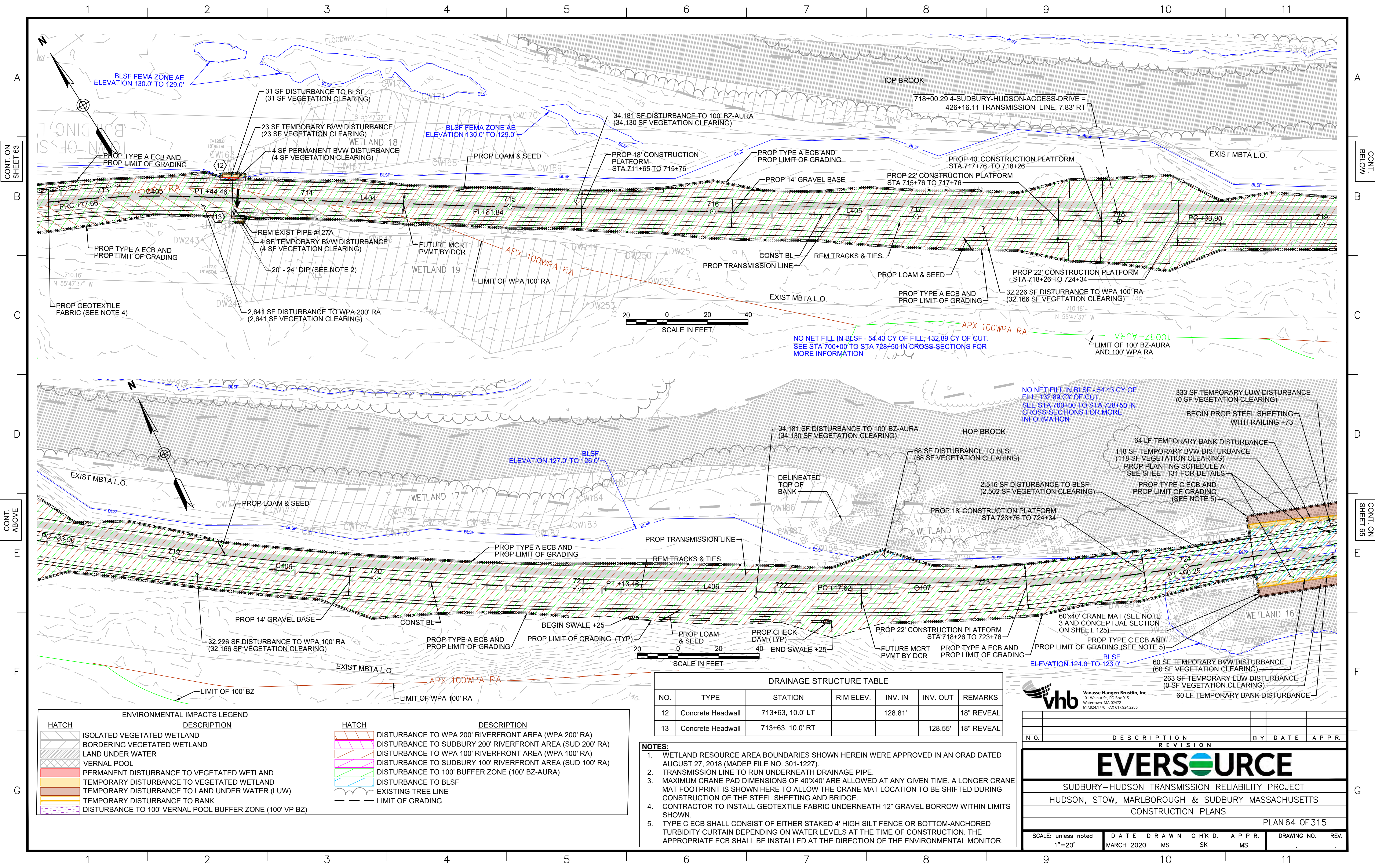
- NOTES:**
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).
 2. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 12" GRAVEL BORROW WITHIN LIMITS SHOWN.
 3. MODIFY MASSDOT STD E404.6.0 SUCH THAT CEMENT CONCRETE BASE UNDER LATCH ROD IS 12" DEEP.

- LEGEND:**
- [X] WCR NUMBER
 - [X] ACCESS ROAD CROSSING NUMBER

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

vhb
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NO.		DESCRIPTION	BY	DATE	APPR.
REVISION					
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CONSTRUCTION PLANS					
PLAN 63 OF 315					
SCALE: unless noted 1"=20'		DATE	DRAWN	CHK'D	APPR.
		MARCH 2020	MS	SK	MS
DRAWING NO.		REV.			



ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
[Hatch Pattern]	ISOLATED VEGETATED WETLAND
[Hatch Pattern]	BORDERING VEGETATED WETLAND
[Hatch Pattern]	LAND UNDER WATER
[Hatch Pattern]	VERNAL POOL
[Hatch Pattern]	PERMANENT DISTURBANCE TO VEGETATED WETLAND
[Hatch Pattern]	TEMPORARY DISTURBANCE TO VEGETATED WETLAND
[Hatch Pattern]	TEMPORARY DISTURBANCE TO LAND UNDER WATER (LUW)
[Hatch Pattern]	TEMPORARY DISTURBANCE TO BANK
[Hatch Pattern]	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)

DESCRIPTION	
[Hatch Pattern]	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
[Hatch Pattern]	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
[Hatch Pattern]	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
[Hatch Pattern]	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
[Hatch Pattern]	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
[Hatch Pattern]	DISTURBANCE TO BLSF
[Hatch Pattern]	EXISTING TREE LINE
[Hatch Pattern]	LIMIT OF GRADING

DRAINAGE STRUCTURE TABLE						
NO.	TYPE	STATION	RIM ELEV.	INV. IN	INV. OUT	REMARKS
12	Concrete Headwall	713+63, 10.0' LT		128.81'		18" REVEAL
13	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.

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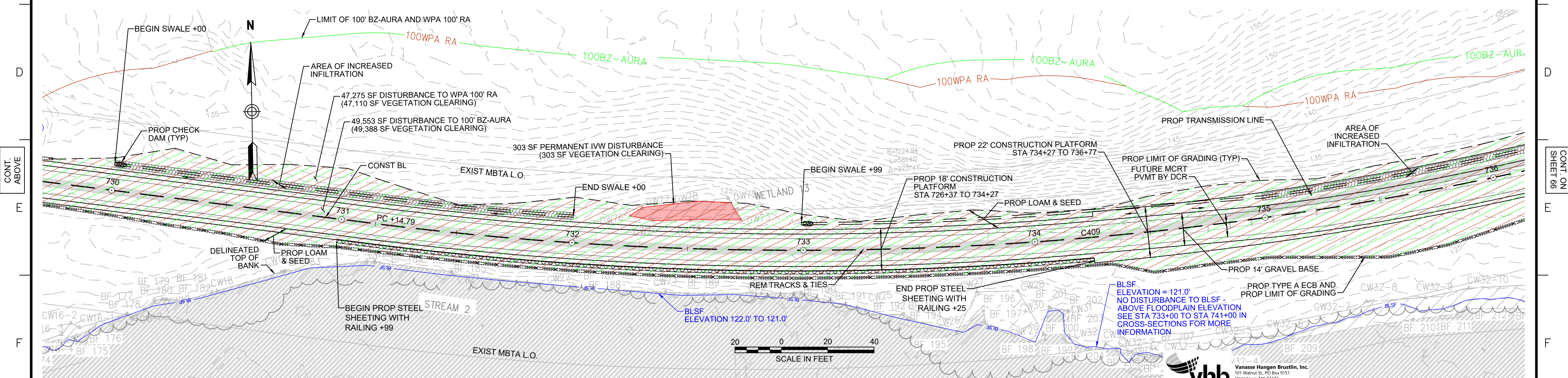
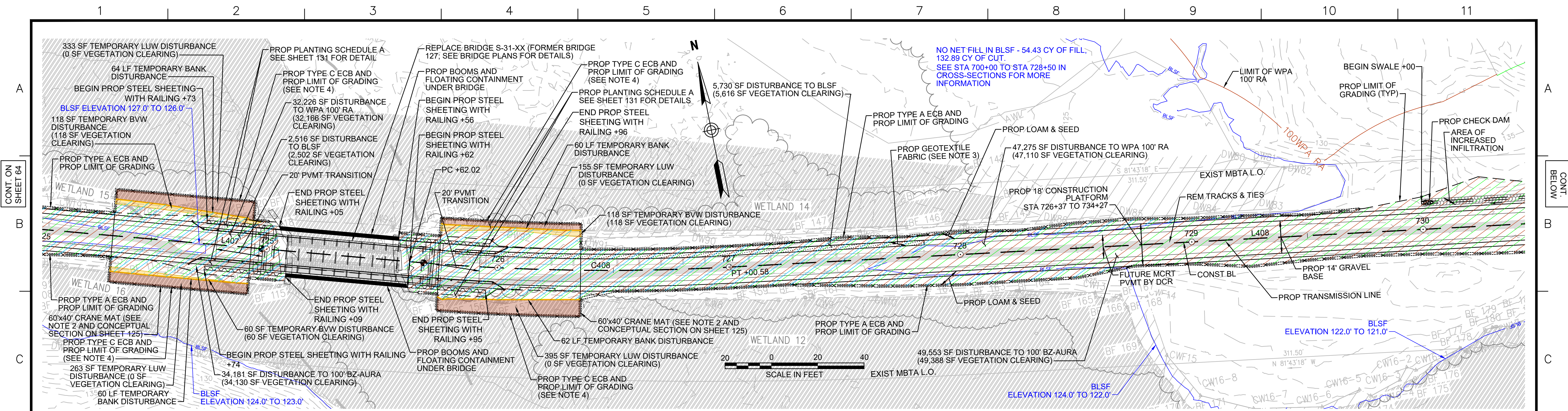
NO.	DESCRIPTION	REVISION	BY	DATE	APPR.

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
CONSTRUCTION PLANS

PLAN 64 OF 315

SCALE: unless noted 1"=20'	DATE MARCH 2020	DRAWN MS	CHK'D SK	APPR. MS	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. 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. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 12" GRAVEL BORROW WITHIN LIMITS SHOWN. 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.

ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
	ISOLATED VEGETATED WETLAND
	BORDERING VEGETATED WETLAND
	LAND UNDER WATER
	VERNAL POOL
	PERMANENT DISTURBANCE TO VEGETATED WETLAND
	TEMPORARY DISTURBANCE TO VEGETATED WETLAND
	TEMPORARY DISTURBANCE TO LAND UNDER WATER (LUW)
	TEMPORARY DISTURBANCE TO BANK
	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)
	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
	DISTURBANCE TO BLSF
	EXISTING TREE LINE
	LIMIT OF GRADING

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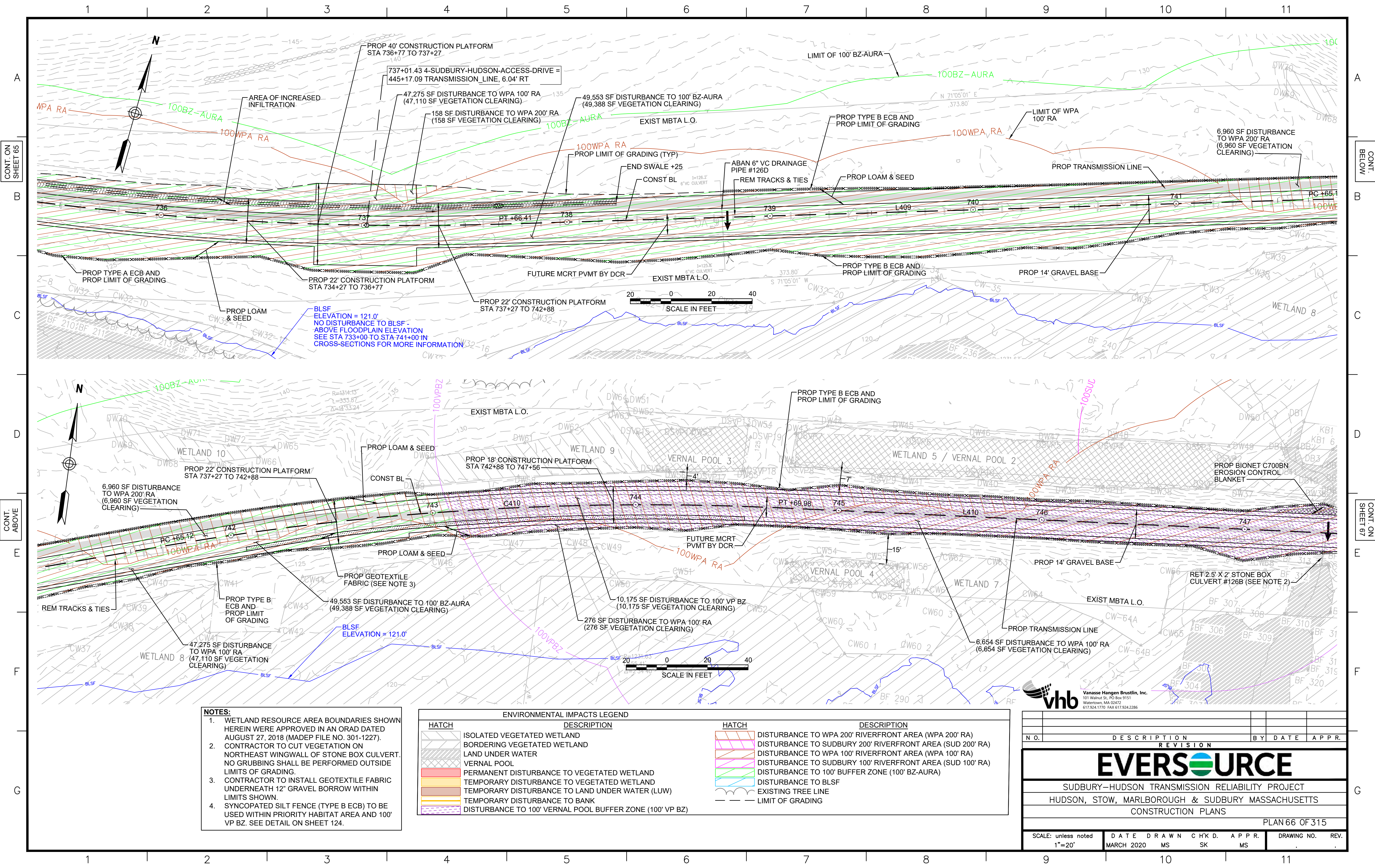
N.O.	DESCRIPTION	REVISION	BY	DATE	APPR.

EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
CONSTRUCTION PLANS

PLAN 65 OF 315

SCALE: unless noted 1"=20'	DATE MARCH 2020	DRAWN MS	CHK'D SK	APPR. MS	DRAWING NO. 	REV.
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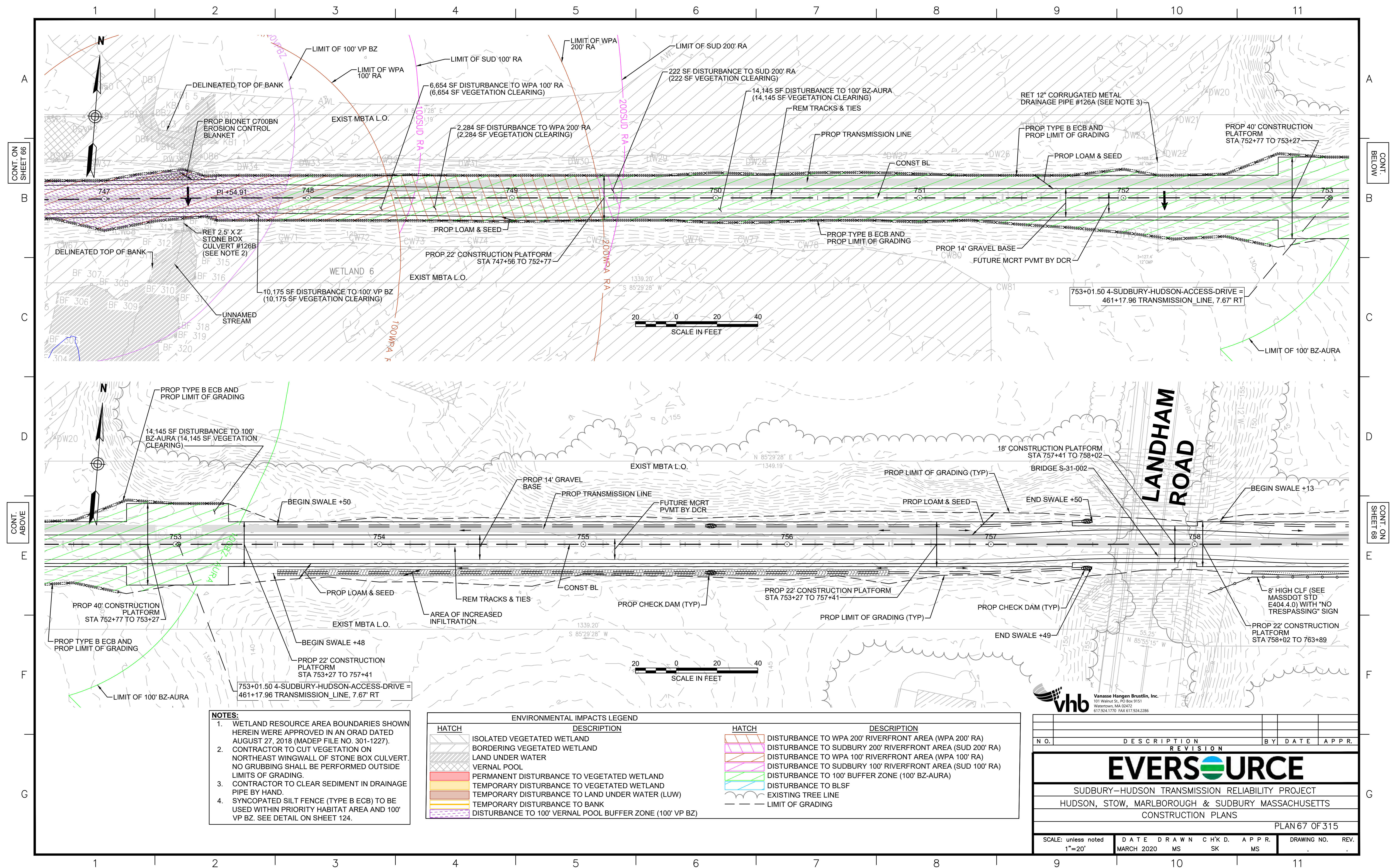


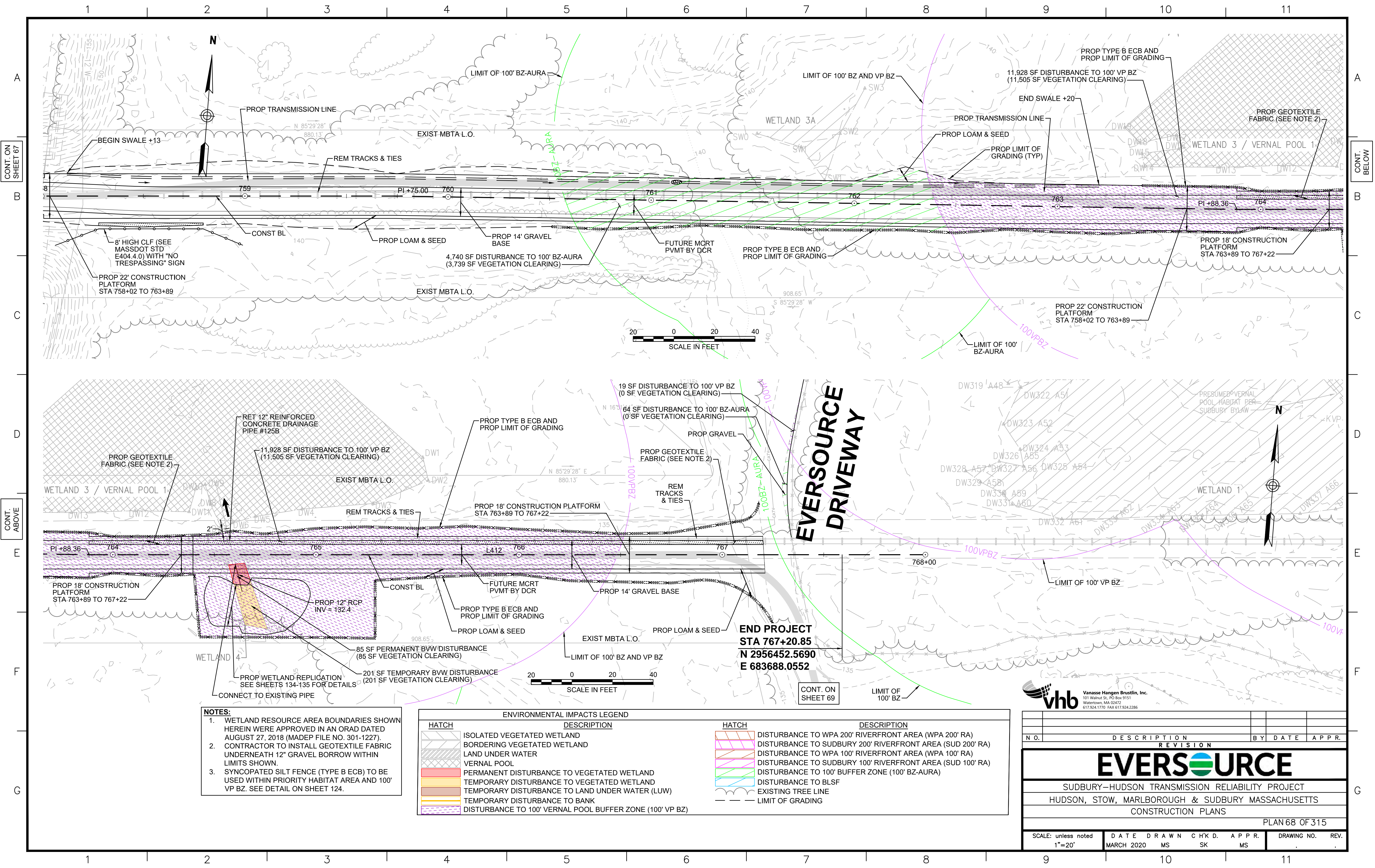
- NOTES:**
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).
 2. CONTRACTOR TO CUT VEGETATION ON NORTHEAST WINGWALL OF STONE BOX CULVERT. NO GRUBBING SHALL BE PERFORMED OUTSIDE LIMITS OF GRADING.
 3. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 12" GRAVEL BORROW WITHIN LIMITS SHOWN.
 4. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 100' VP BZ. SEE DETAIL ON SHEET 124.

ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
	ISOLATED VEGETATED WETLAND
	BORDERING VEGETATED WETLAND
	LAND UNDER WATER
	VERNAL POOL
	PERMANENT DISTURBANCE TO VEGETATED WETLAND
	TEMPORARY DISTURBANCE TO VEGETATED WETLAND
	TEMPORARY DISTURBANCE TO LAND UNDER WATER (LUW)
	TEMPORARY DISTURBANCE TO BANK
	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)
	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
	DISTURBANCE TO BLSF
	EXISTING TREE 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 66 OF 315					
SCALE: unless noted 1"=20'		DATE	DRAWN	CHK'D	APPR.
		MARCH 2020	MS	SK	MS
DRAWING NO.		REV.			





- NOTES:**
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 3. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 100' VP BZ. SEE DETAIL ON SHEET 124.

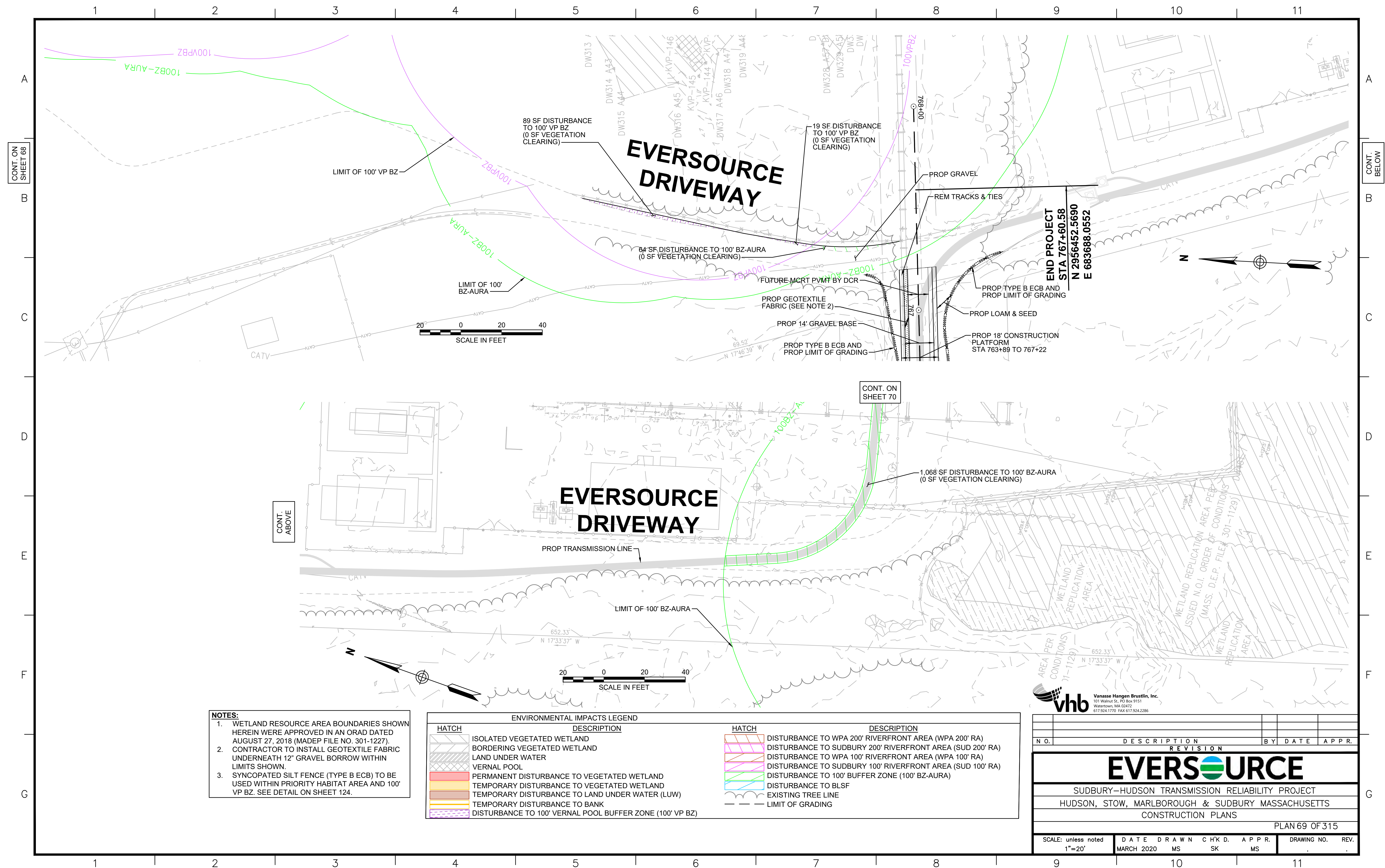
ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
	ISOLATED VEGETATED WETLAND
	BORDERING VEGETATED WETLAND
	LAND UNDER WATER
	VERNAL POOL
	PERMANENT DISTURBANCE TO VEGETATED WETLAND
	TEMPORARY DISTURBANCE TO VEGETATED WETLAND
	TEMPORARY DISTURBANCE TO LAND UNDER WATER (LUW)
	TEMPORARY DISTURBANCE TO BANK
	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)
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	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
	DISTURBANCE TO BLSF
	EXISTING TREE LINE
	LIMIT OF GRADING

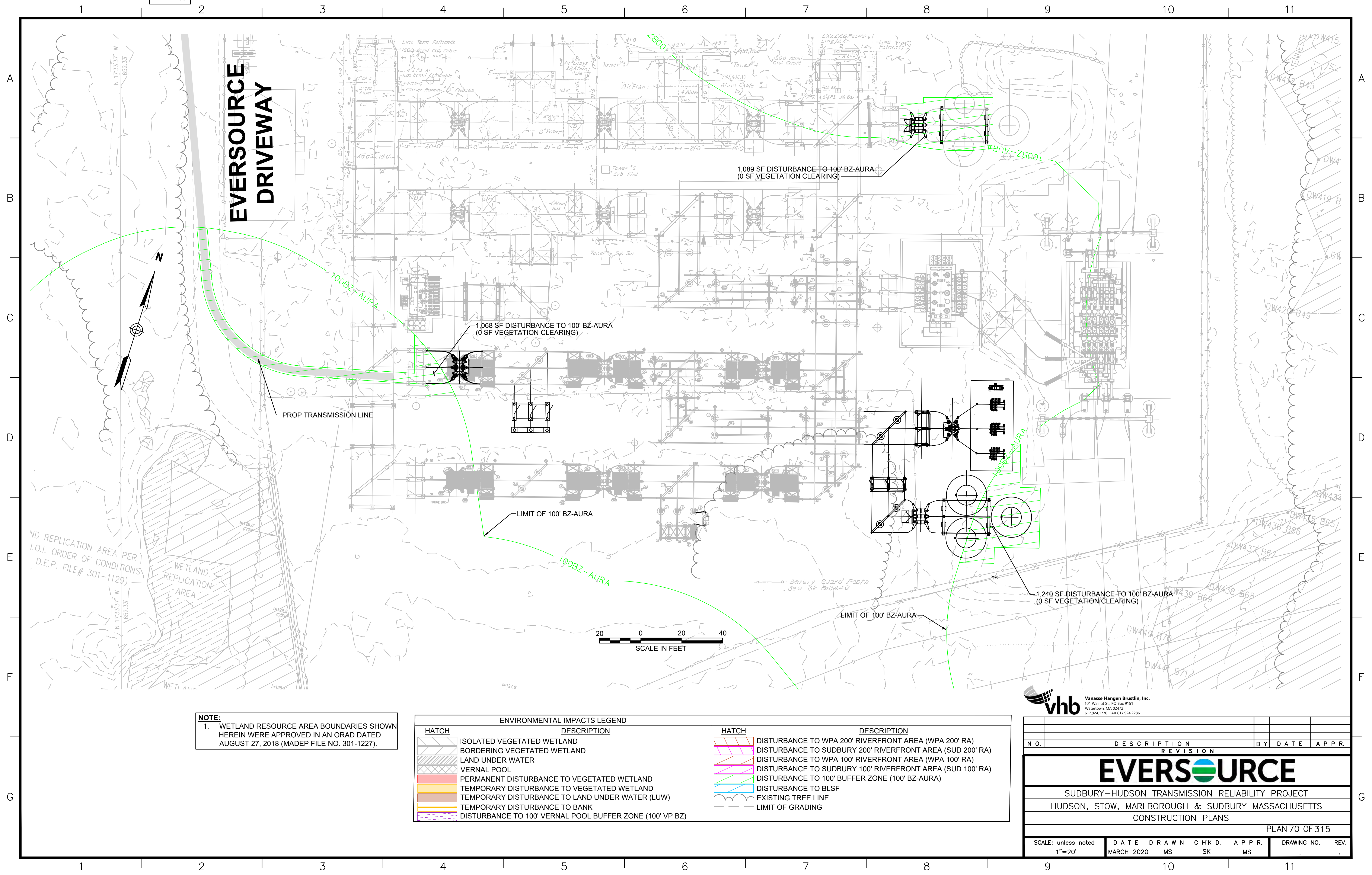
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N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
CONSTRUCTION PLANS				
PLAN 68 OF 315				
SCALE: unless noted 1"=20'	DATE MARCH 2020	DRAWN MS	CHK'D. SK	APPR. MS
DRAWING NO.		REV.		

**EVERSOURCE
DRIVEWAY**

**END PROJECT
STA 767+20.85
N 2956452.5690
E 683688.0552**





NOTE:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).

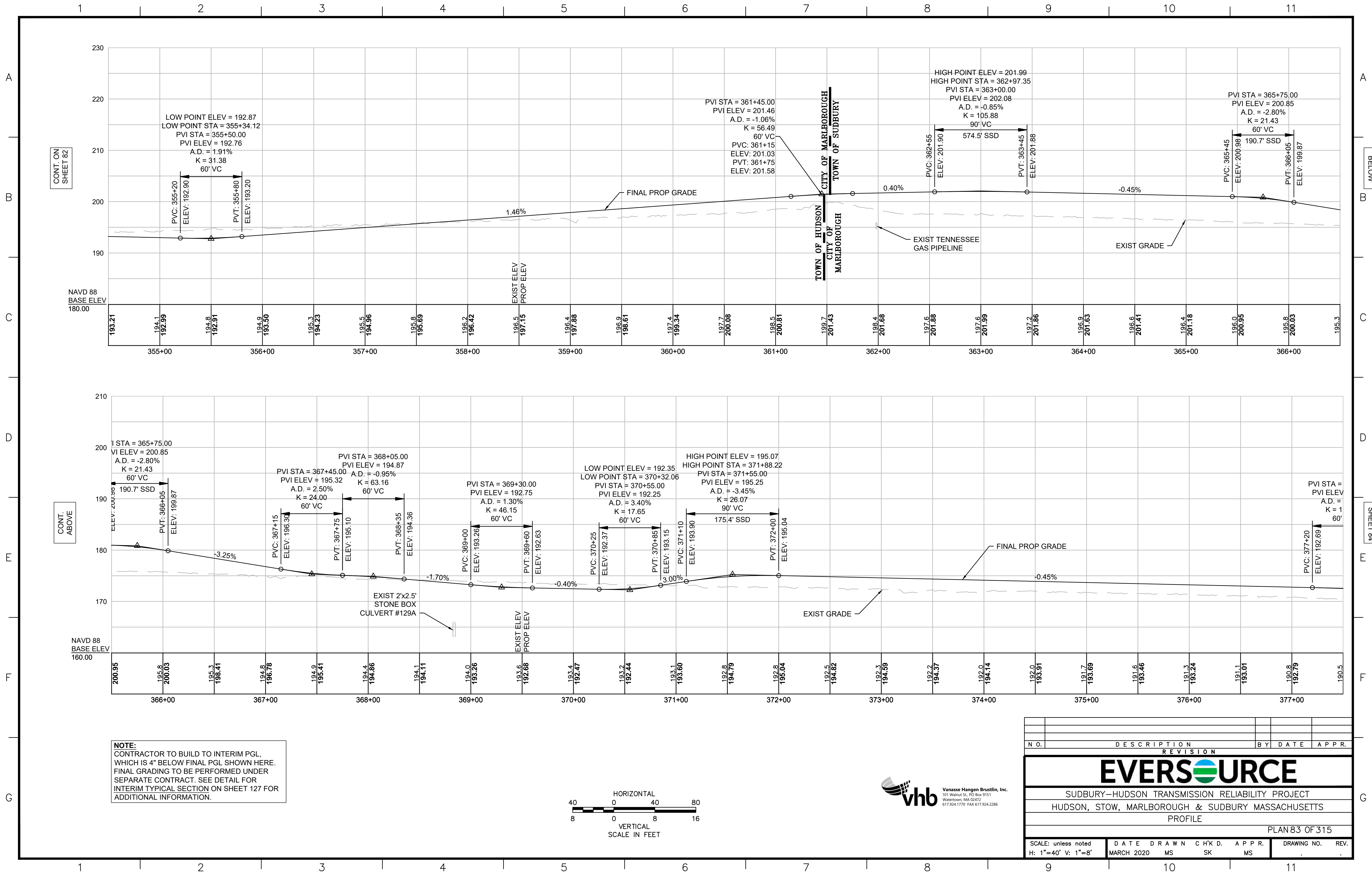
ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
	ISOLATED VEGETATED WETLAND
	BORDERING VEGETATED WETLAND
	LAND UNDER WATER
	VERNAL POOL
	PERMANENT DISTURBANCE TO VEGETATED WETLAND
	TEMPORARY DISTURBANCE TO VEGETATED WETLAND
	TEMPORARY DISTURBANCE TO LAND UNDER WATER (LUW)
	TEMPORARY DISTURBANCE TO BANK
	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)
	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
	DISTURBANCE TO BLSF
	EXISTING TREE LINE
	LIMIT OF GRADING

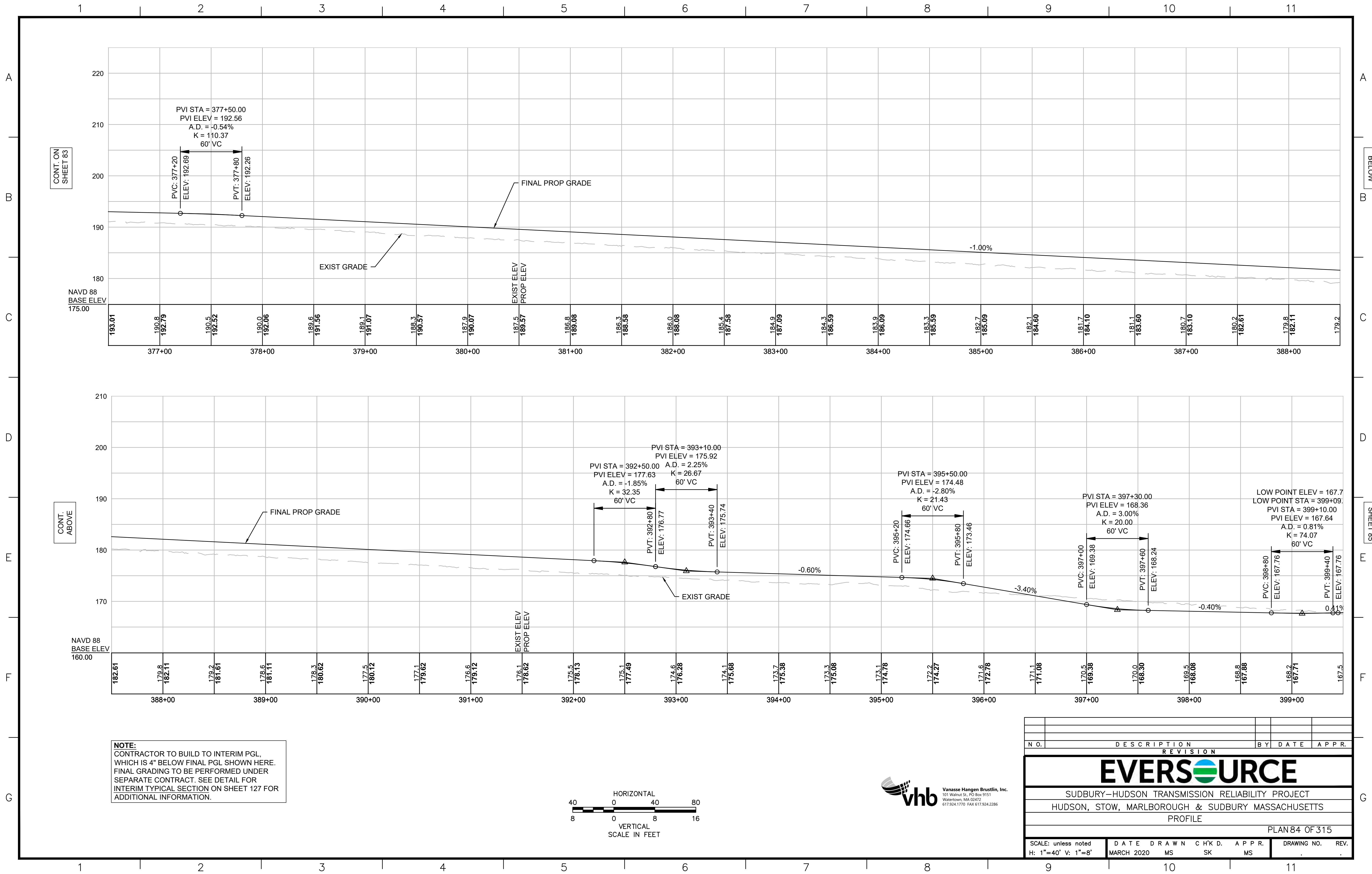
vhb Vanasse Hangen Brustlin, Inc.
101 Walnut St., PO Box 9151
Watertown, MA 02472
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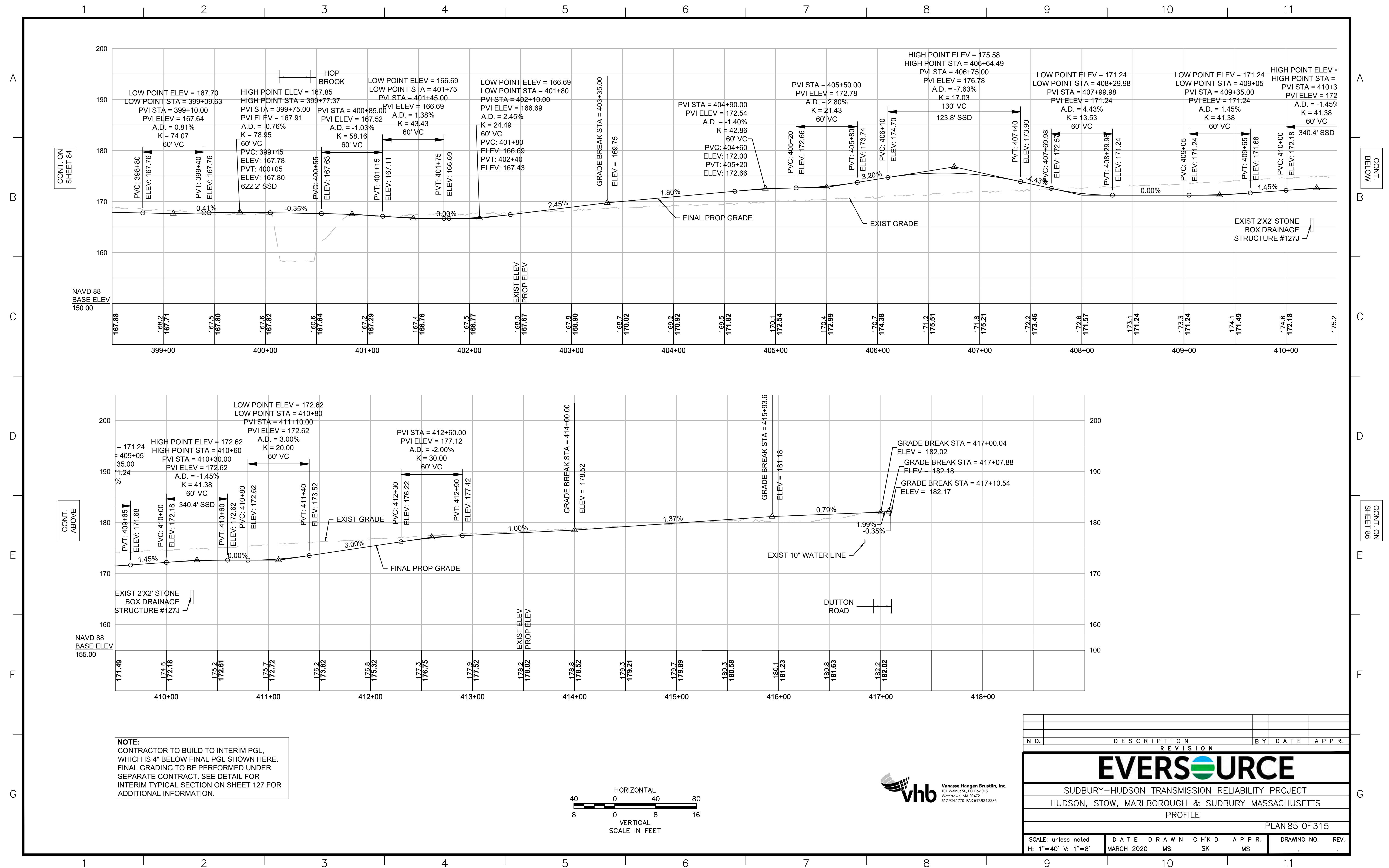
NO.		DESCRIPTION	BY	DATE	APPR.
REVISION					
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CONSTRUCTION PLANS					
PLAN 70 OF 315					
SCALE: unless noted 1"=20'		DATE	DRAWN	CHK'D	APPR.
		MARCH 2020	MS	SK	MS
DRAWING NO.		REV.			

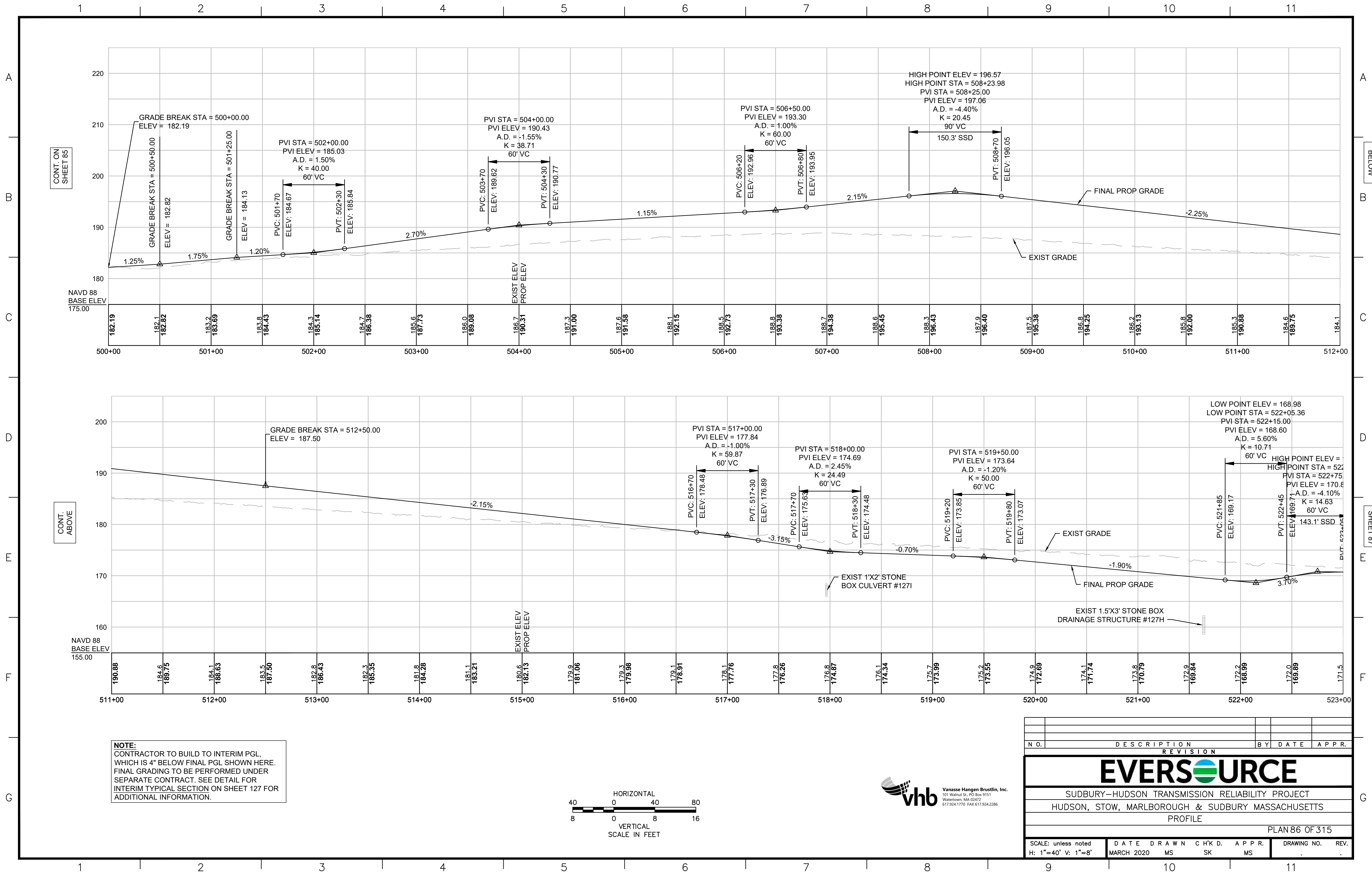
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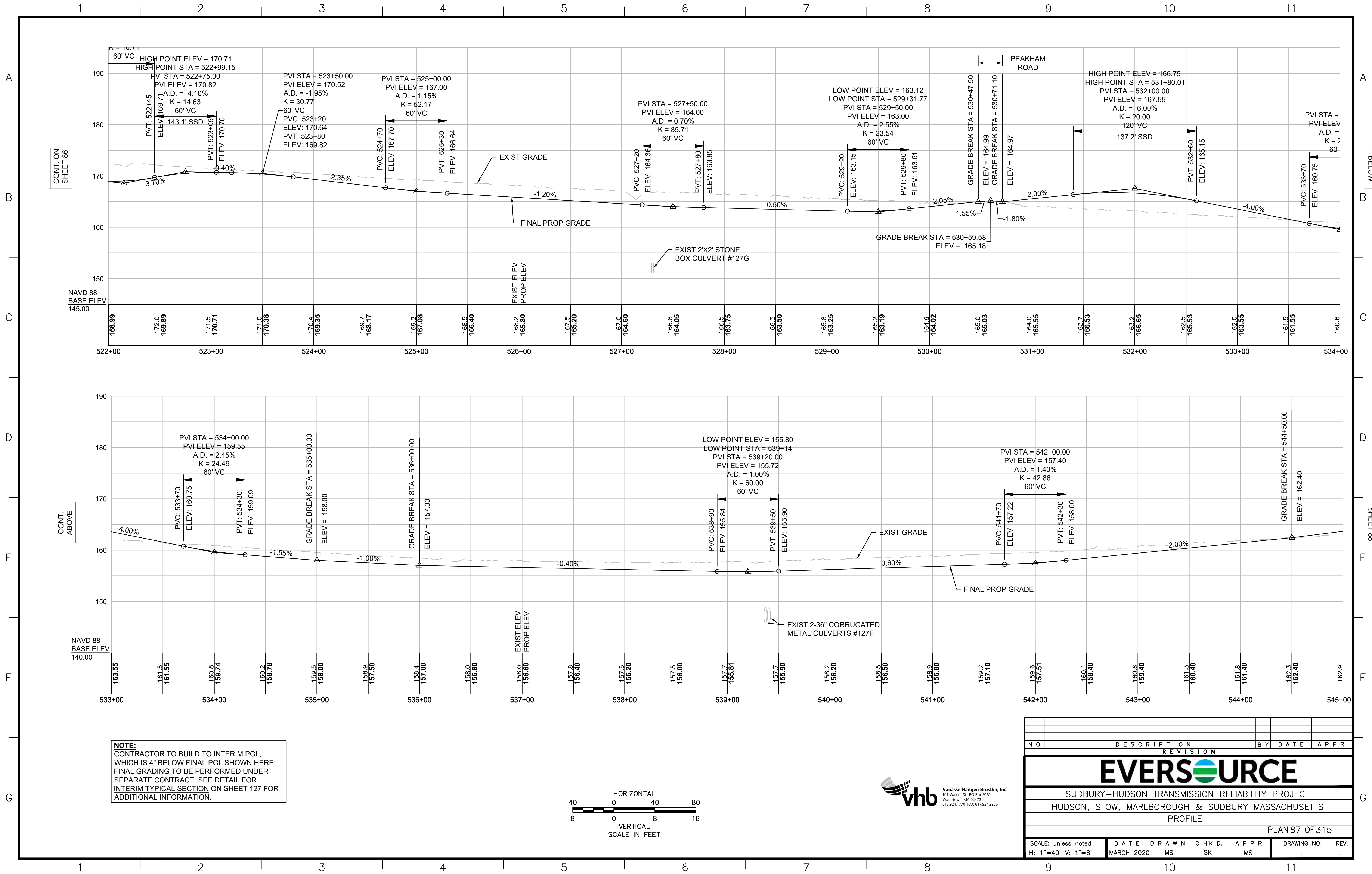
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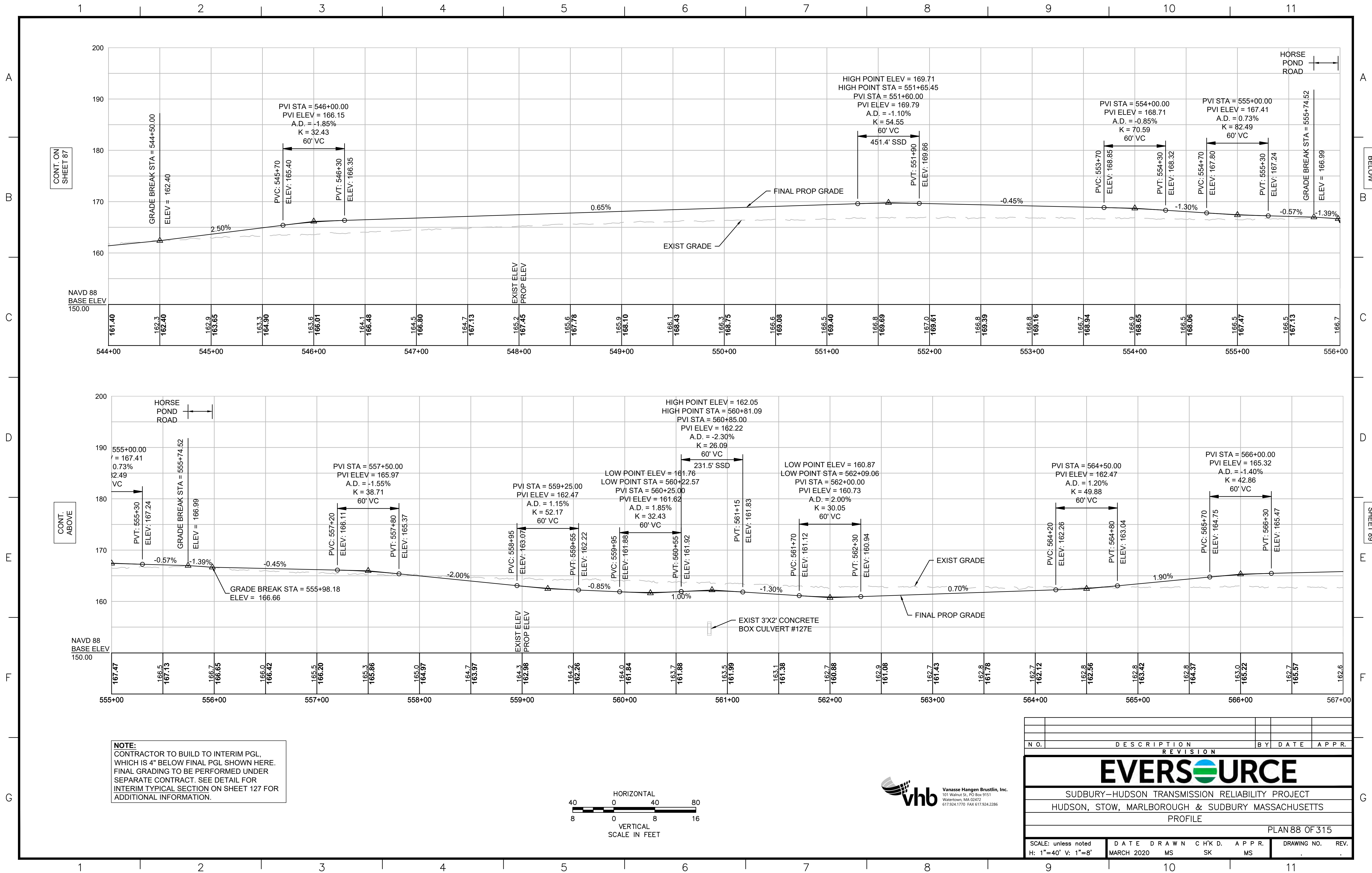


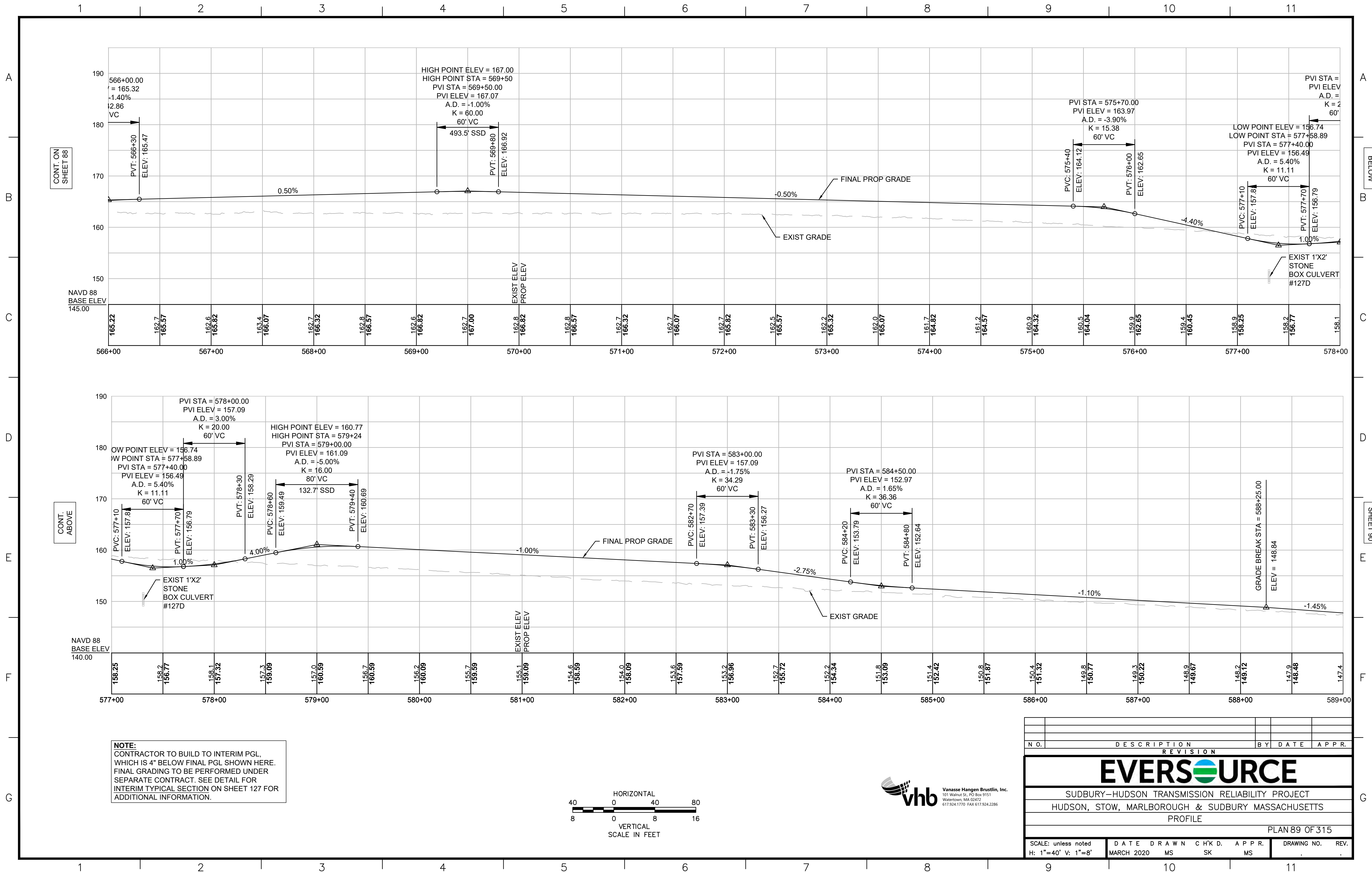


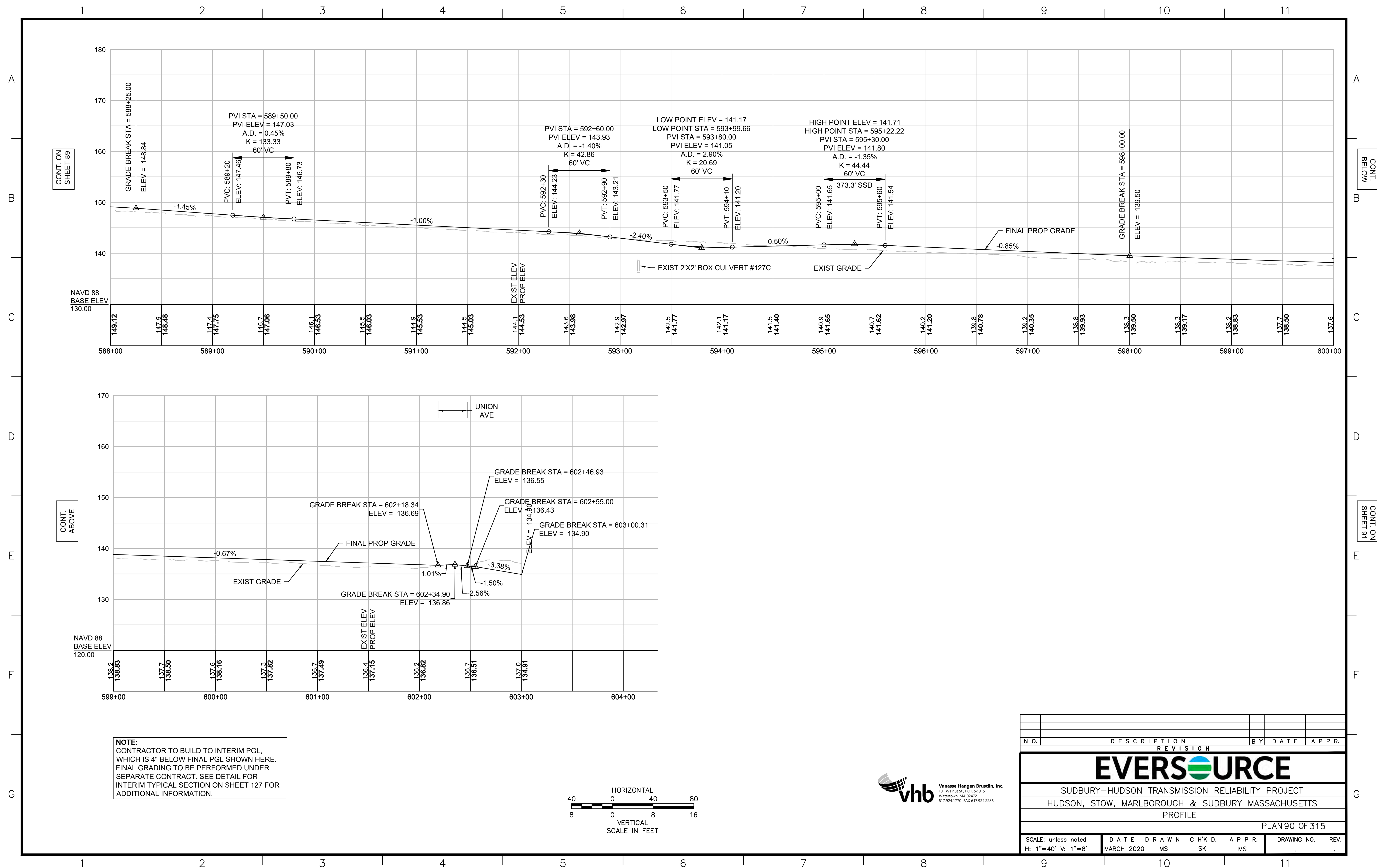


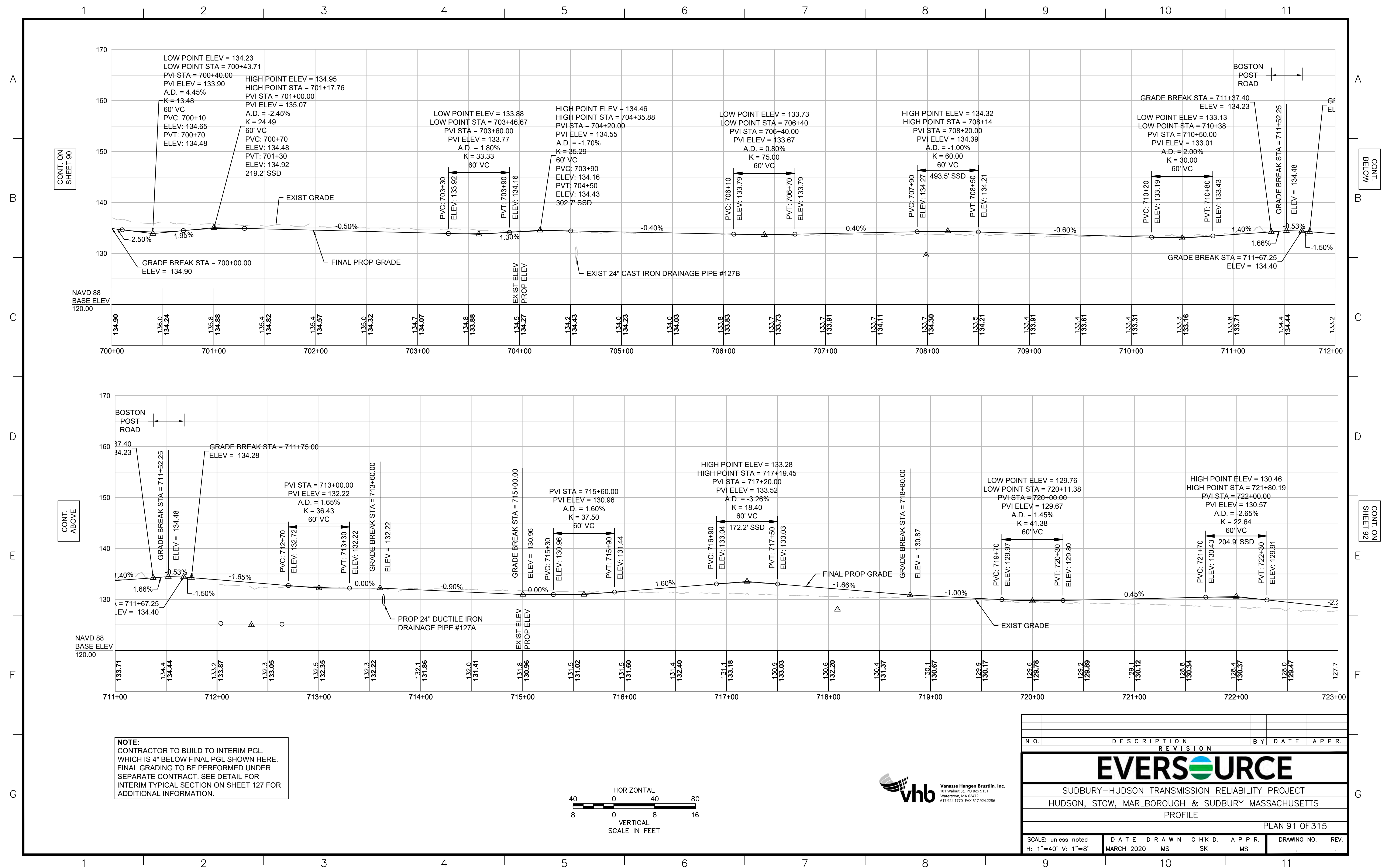


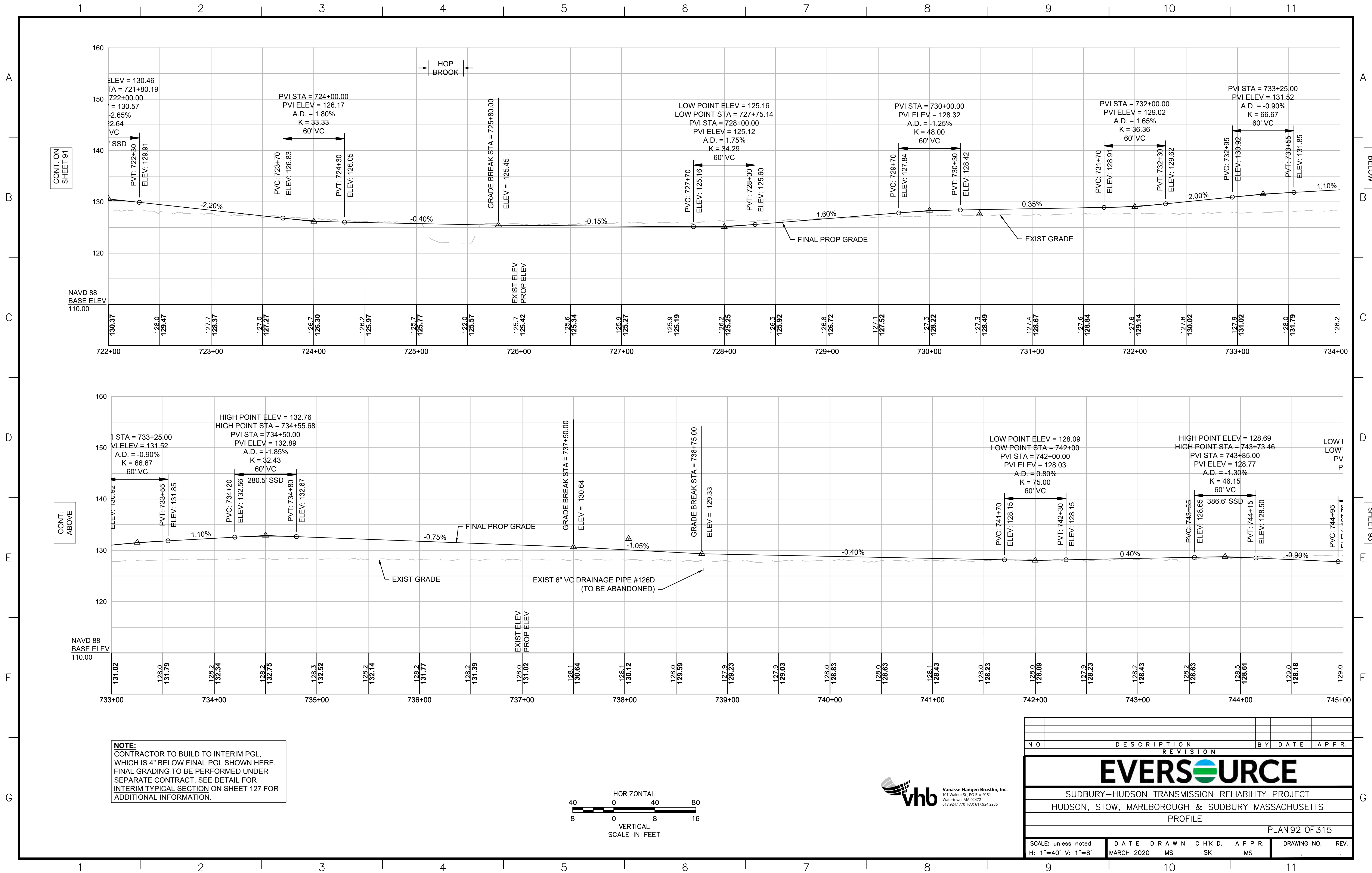


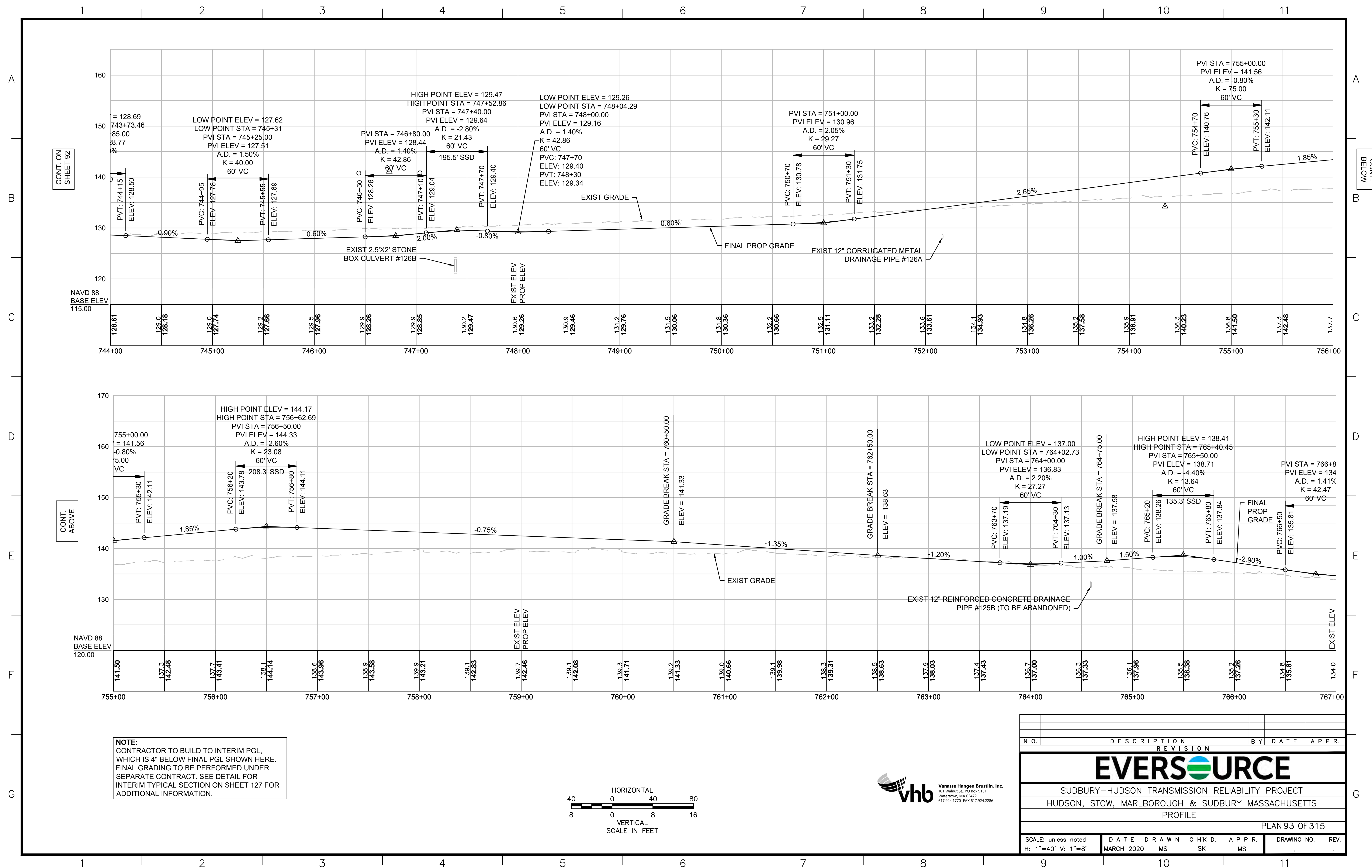


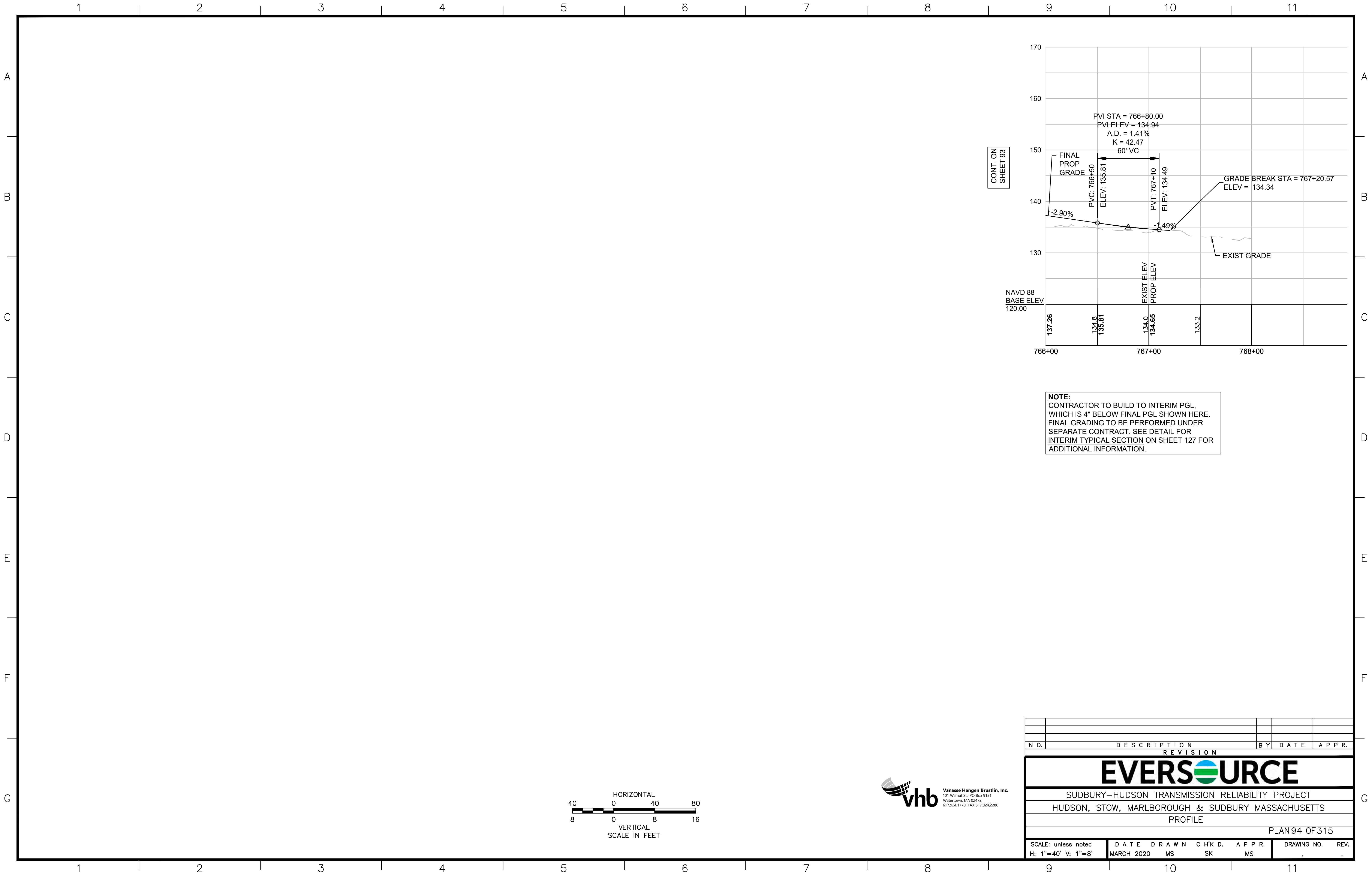


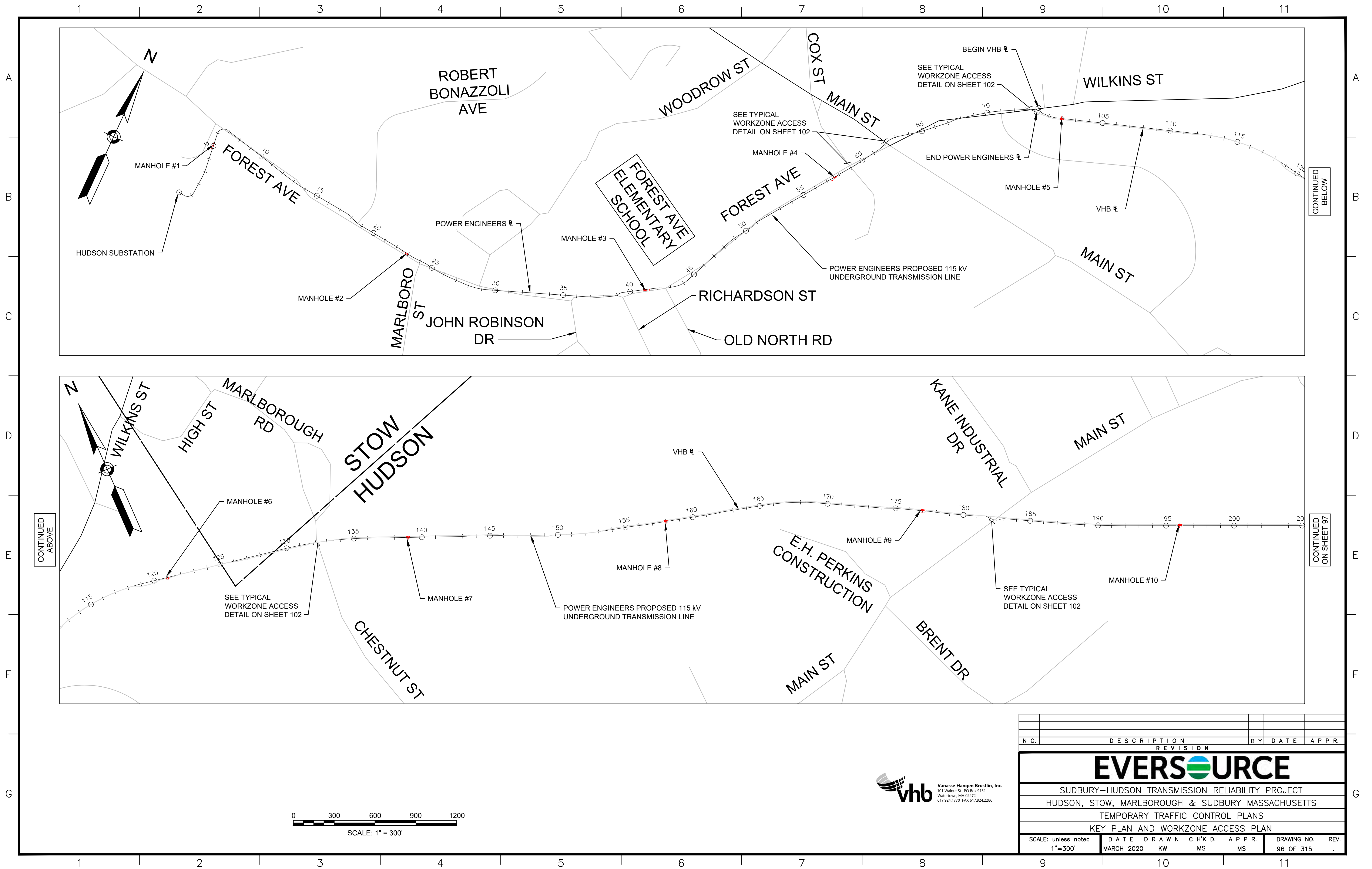




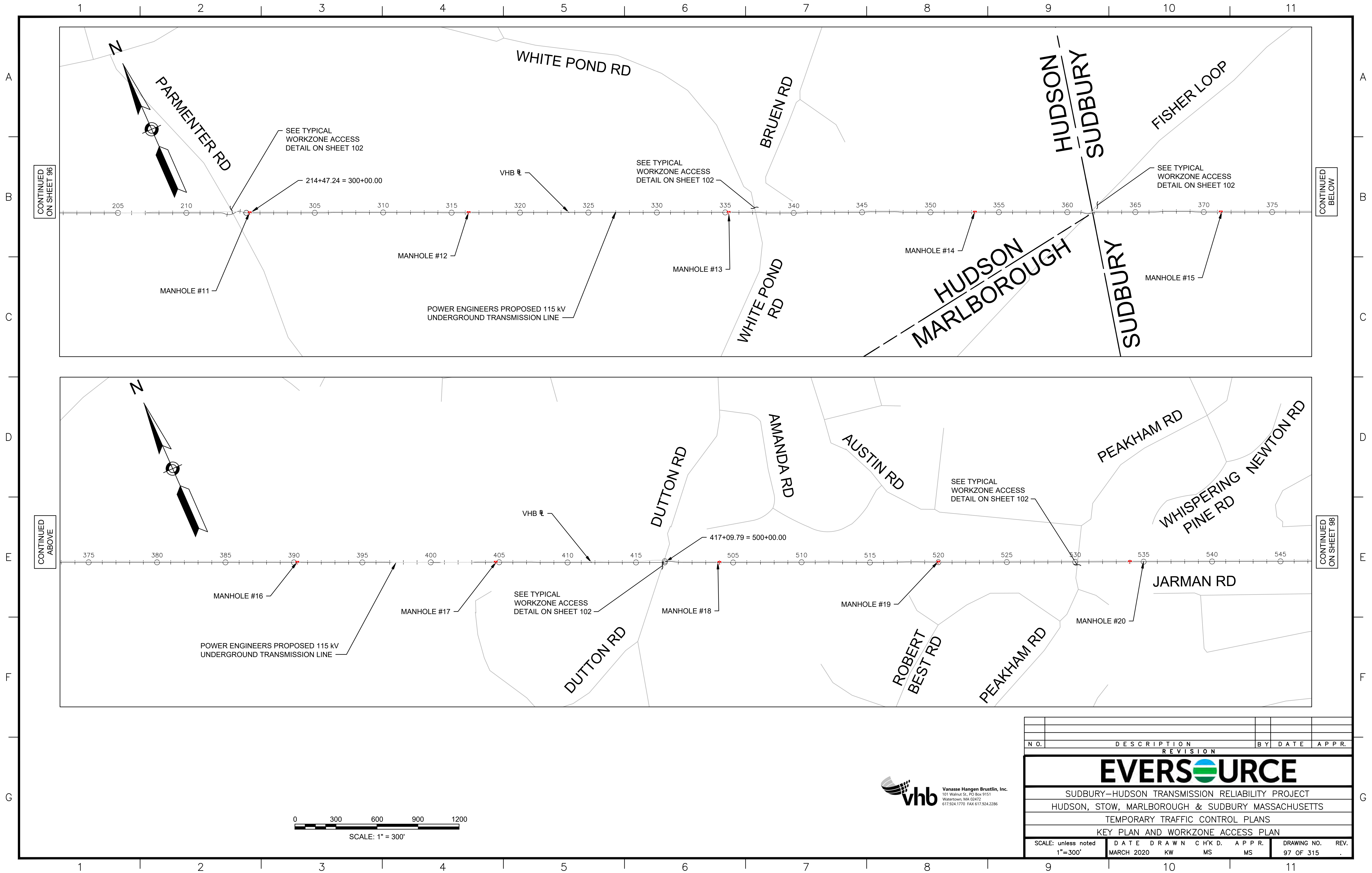


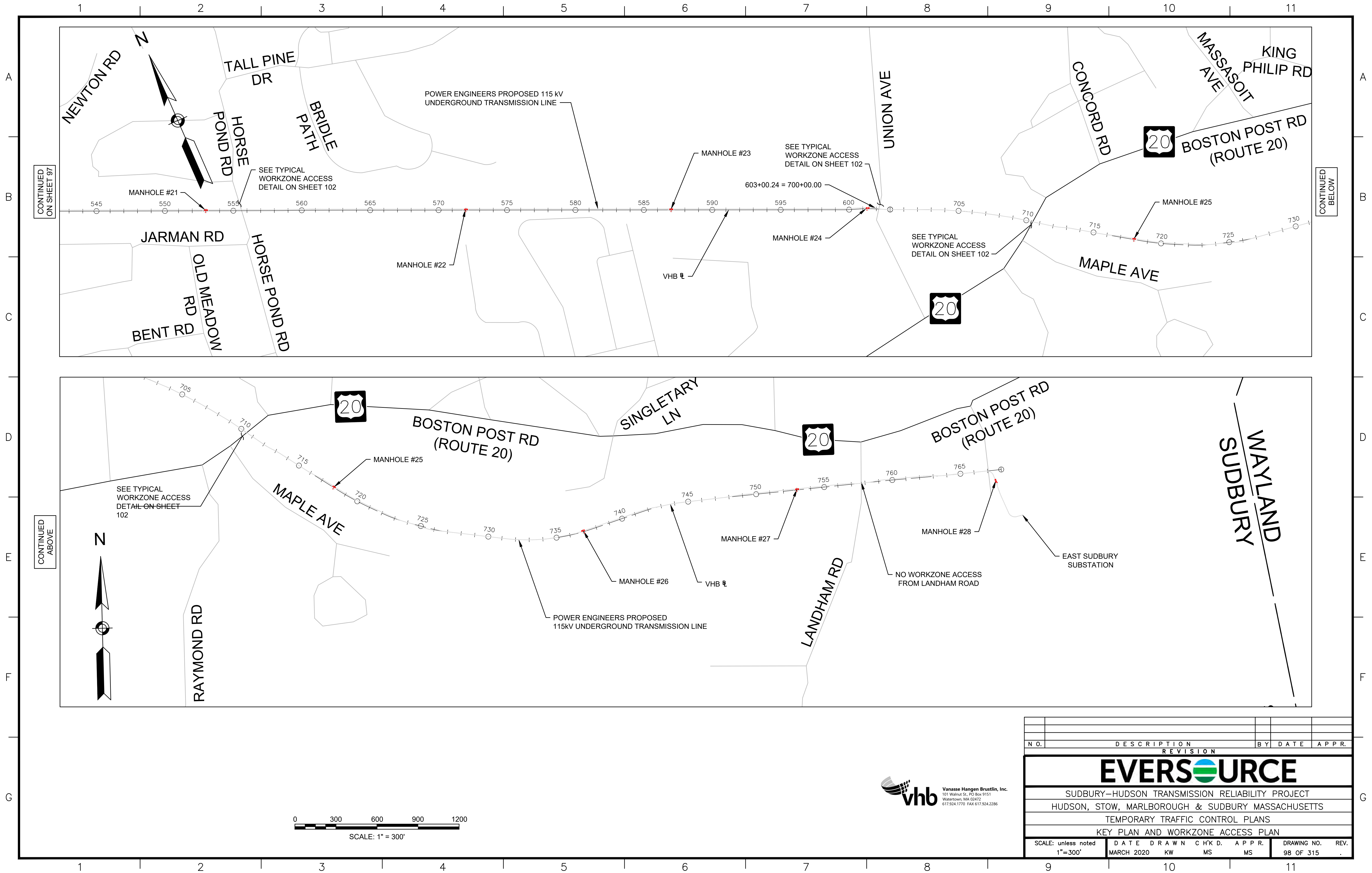






N O.	DESCRIPTION					BY	DATE	APPR.	
REVISION									
EVERSOURCE									
SUDBURY—HUDSON TRANSMISSION RELIABILITY PROJECT									
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
TEMPORARY TRAFFIC CONTROL PLANS									
KEY PLAN AND WORKZONE ACCESS PLAN									
SCALE: unless noted 1"=300'		DATE		DRAWN		C H K ' D		AP P R .	
		MARCH 2020		KW		MS		MS	
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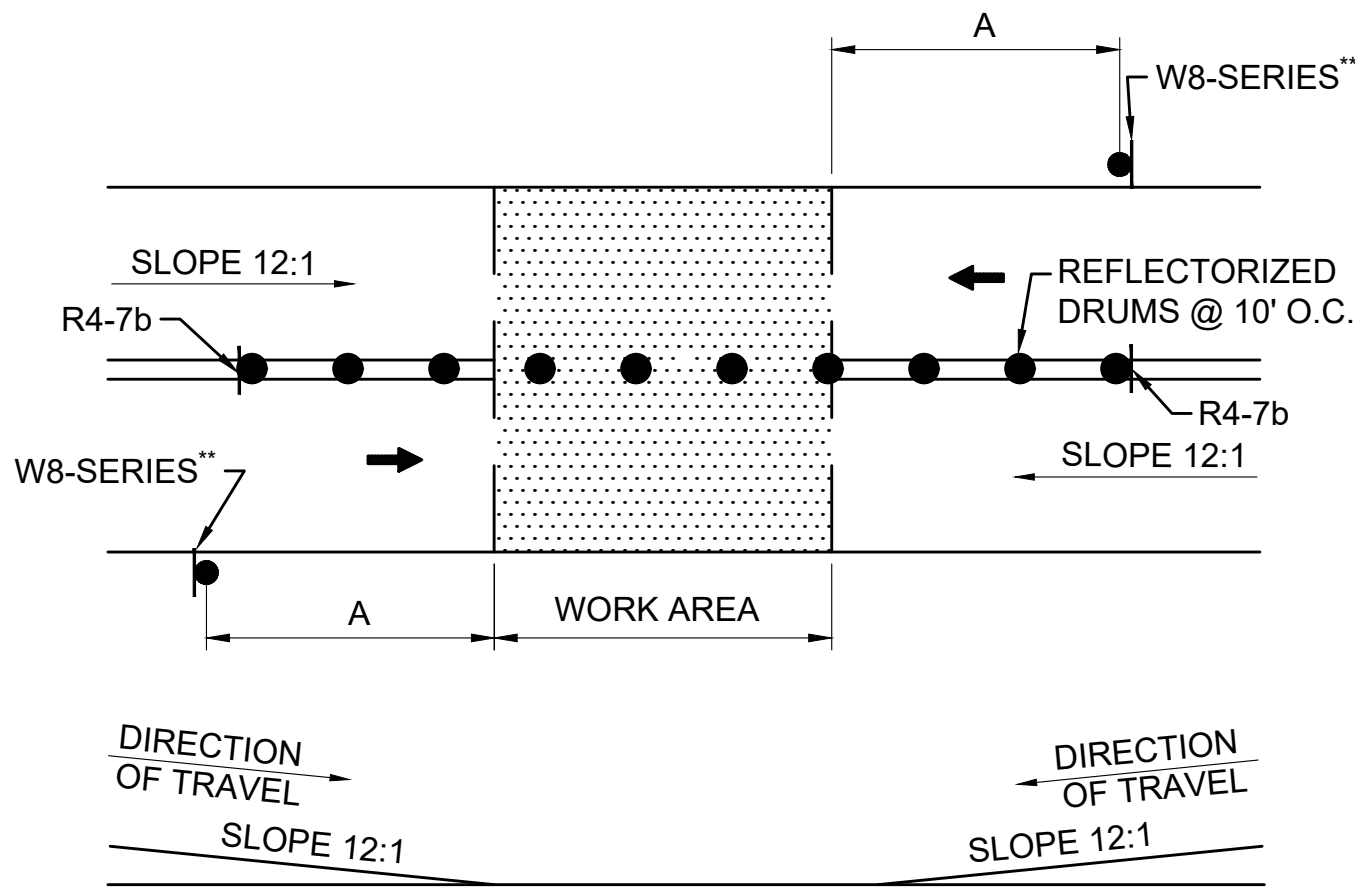




GENERAL NOTES

- 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).
- WORK HOURS SHALL BE AS STIPULATED BY THE ENERGY FACILITIES SITING BOARD (EFSB) AND AS APPROVED BY AGENCY OR MUNICIPALITY WITH JURISDICTION OF THE ROADWAY.
- 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 12.
- 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
20' IF POSTED SPEED IS 45 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.
- MA-W20-7b SIGNS SHALL BE REPLACED BY W20-7 SIGNS WHEN FLAGGERS ARE USED IN LIEU OF POLICE OFFICER DETAILS.
- WHEN UTILIZING TYPICAL TRAFFIC CONTROL DETAILS OR STAGING SETUPS, COVER EXISTING CONFLICTING ADVANCE WARNING SIGNS AS REQUIRED TO COMPLETE THE WORK.
- 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 AS NEEDED WHEN WORKING ADJACENT TO PRIVATE PROPERTY TO DELINEATE WORK ZONE LIMITS AND PREVENT UNAUTHORIZED ACCESS.

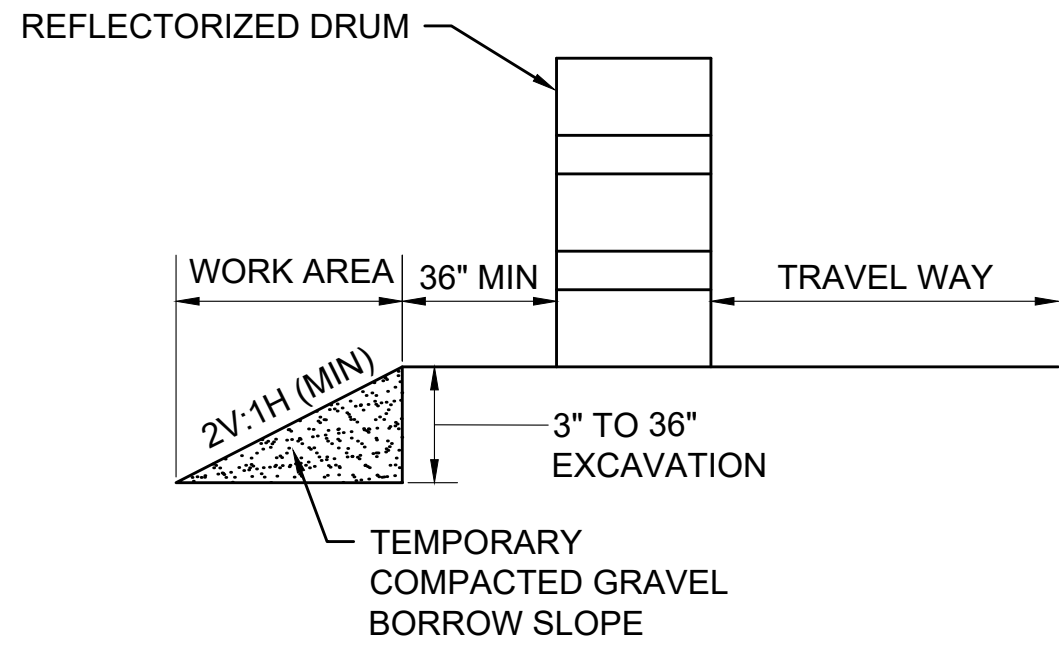
LANE TAPER LENGTH FORMULAS	
L= TAPER LENGTH IN FEET	
W= WIDTH OF ROADWAY TO BE SHIFTED OR REDIRECTED IN FEET	
S= POSTED SPEED LIMIT IN MPH	
POSTED SPEED	
40 MPH OR LESS	GREATER THAN 40 MPH
$L = \frac{WS^2}{60}$	L= WS



- 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



- 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

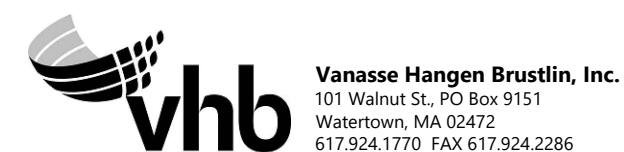
SCALE: NTS

LEGEND

	FLAGGER
	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 PORTABLE PEDESTRIAN BARRICADE
NTS	NOT TO SCALE

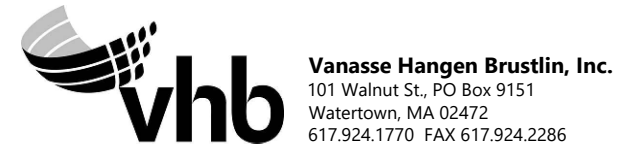
ADVANCE SIGN SPACING				
ROADWAY	DISTANCE BETWEEN SIGNS (FEET)			
	A	B	C	D
FOREST AVE, WILKINS ST, MAIN ST, CONCORD RD, DUTTON RD, PEAKHAM RD, HORSE POND RD, UNION AVE, LANDHAM RD	350	150	350	350
BOSTON POST RD (ROUTE 20)	500	250	500	500
ALL OTHERS	100	50	100	100

BUFFER SPACING	
SPEED (MPH)	DISTANCE (FEET)
15	80
20	115
25	155
30	200
35	250
40	305

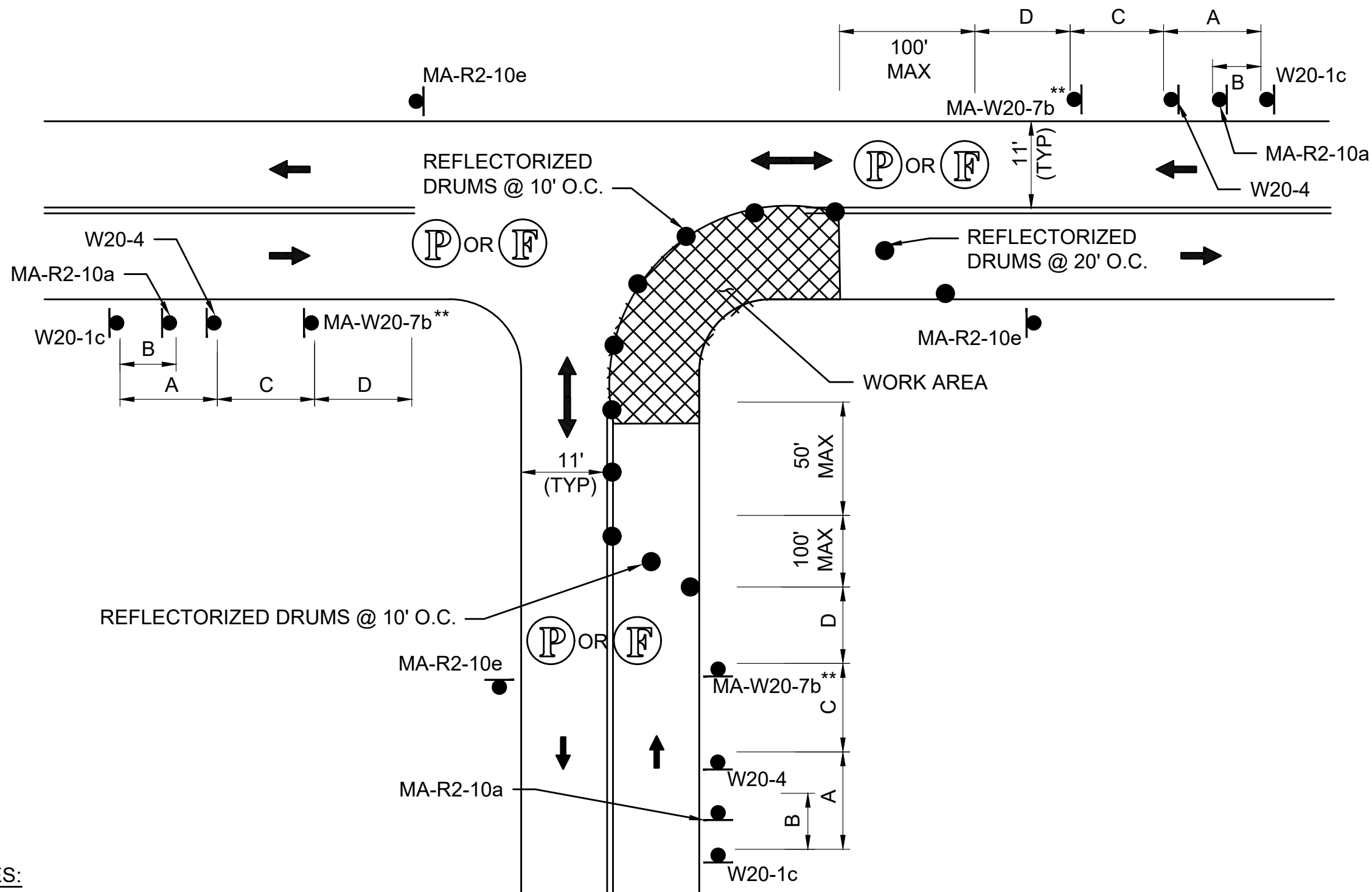


N O.	DESCRIPTION	BY	DATE	APP.R.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
TEMPORARY TRAFFIC CONTROL PLANS				
GENERAL NOTES AND LEGEND				
SCALE: unless noted NTS	DATE MARCH 2020	DRAWN KW	CHK'D. MS	APP.R. MS
DRAWING NO. 99 OF 315	REV. .			

	1	2	3	4	5	6	7	8	9	10	11	
	SUGGESTED TEMPORARY TRAFFIC CONTROL SETUP APPLICATION											
	TOWN	ROADWAY	POWER ⚡ STATION (SEE NOTE 1)	VHB ⚡ STATION (SEE NOTE 2)	TEMPORARY TRAFFIC CONTROL SETUPS	SHEET NUMBER	NOTES					
A <												



N O.	DESCRIPTION	BY	DATE	APPR.	
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SUDBURY--HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
TEMPORARY TRAFFIC CONTROL PLANS					
SUGGESTED TEMPORARY TRAFFIC CONTROL					
SCALE: unless noted NTS	DATE MARCH 2020	DRAWN KW	CHK'D MS	APPR. MS	DRAWING NO. REV. 100 OF 315 .

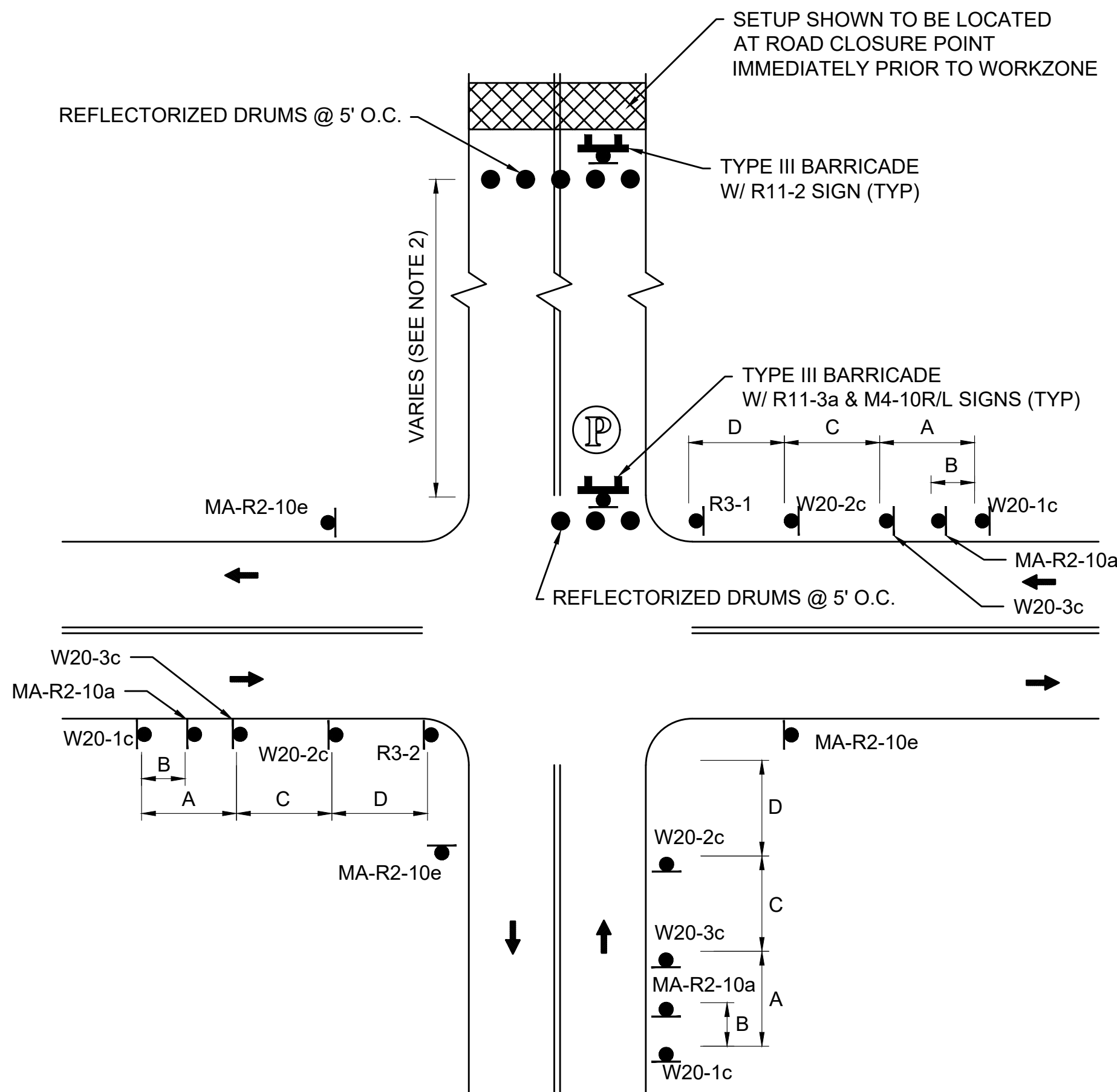


NOTES:

1. ADVANCE WARNING SIGN PLACEMENT TO BE ADJUSTED AS NECESSARY.
2. ** SEE NOTE 20 ON TTCP GENERAL NOTES & LEGEND SHEET.

ONE LANE BI-DIRECTIONAL TRAFFIC AT INTERSECTIONS

SCALE: NTS

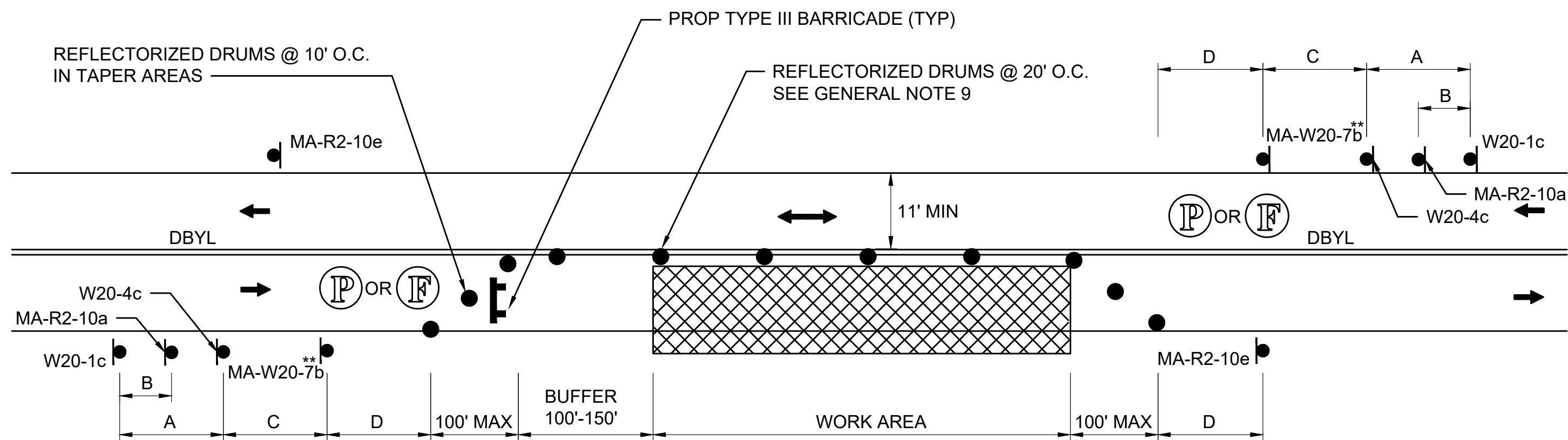


NOTE:

1. REFER TO ADVANCE SIGN SPACING TABLE ON TTCP GENERAL NOTES & LEGEND SHEET.
2. SEE DETOUR PLAN FOR LOCATION OF WORKZONE AND PARTIAL ROAD CLOSURE.

TYPICAL LOCAL ROAD CLOSURE WITH LOCAL ACCESS

SCALE: NTS

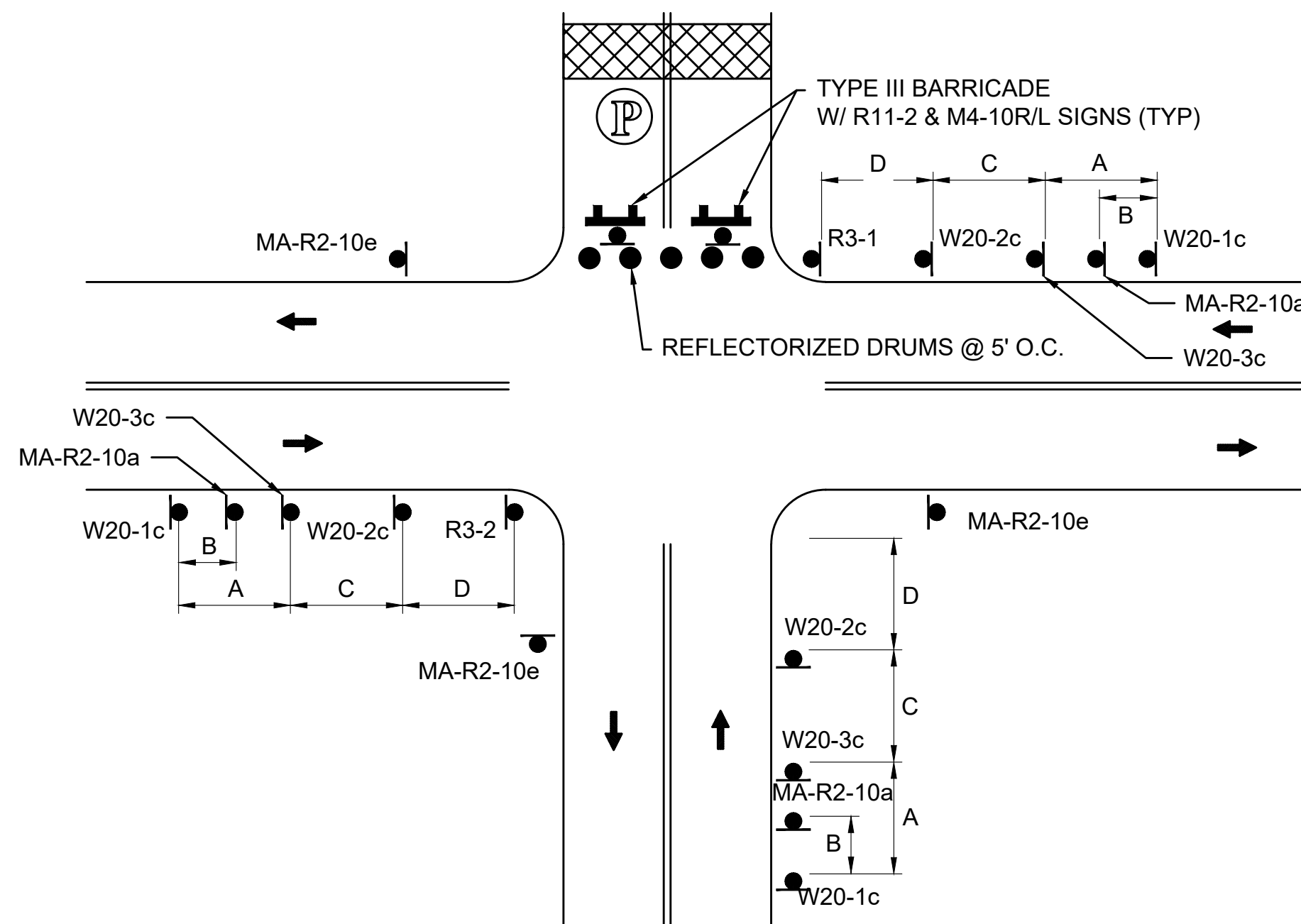


NOTES:

1. REFER TO ADVANCE SIGN SPACING TABLE ON TTCP GENERAL NOTES & LEGEND SHEET.
2. ** SEE NOTE 20 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.

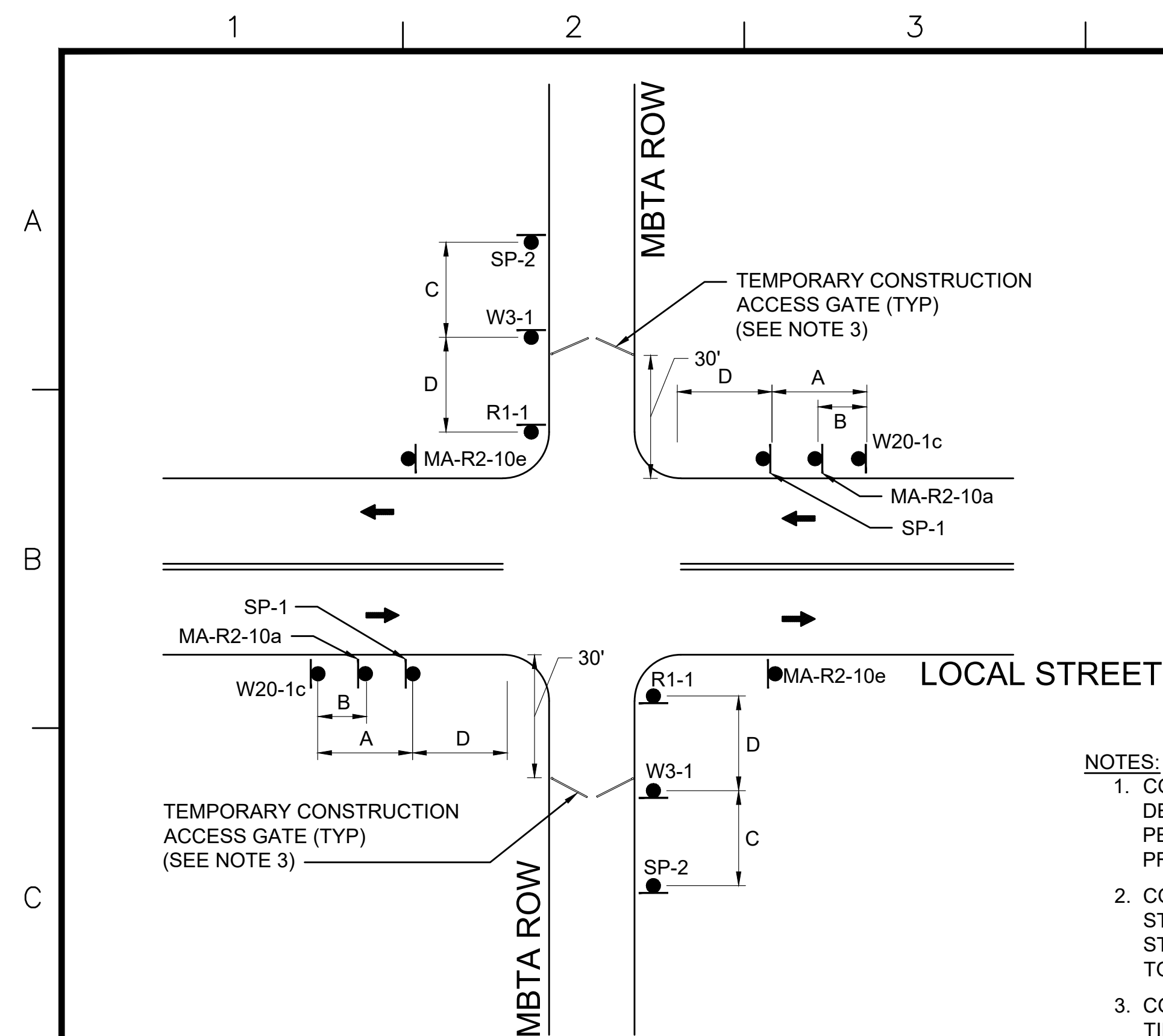
TYPICAL LOCAL ROAD CLOSURE

SCALE: NTS

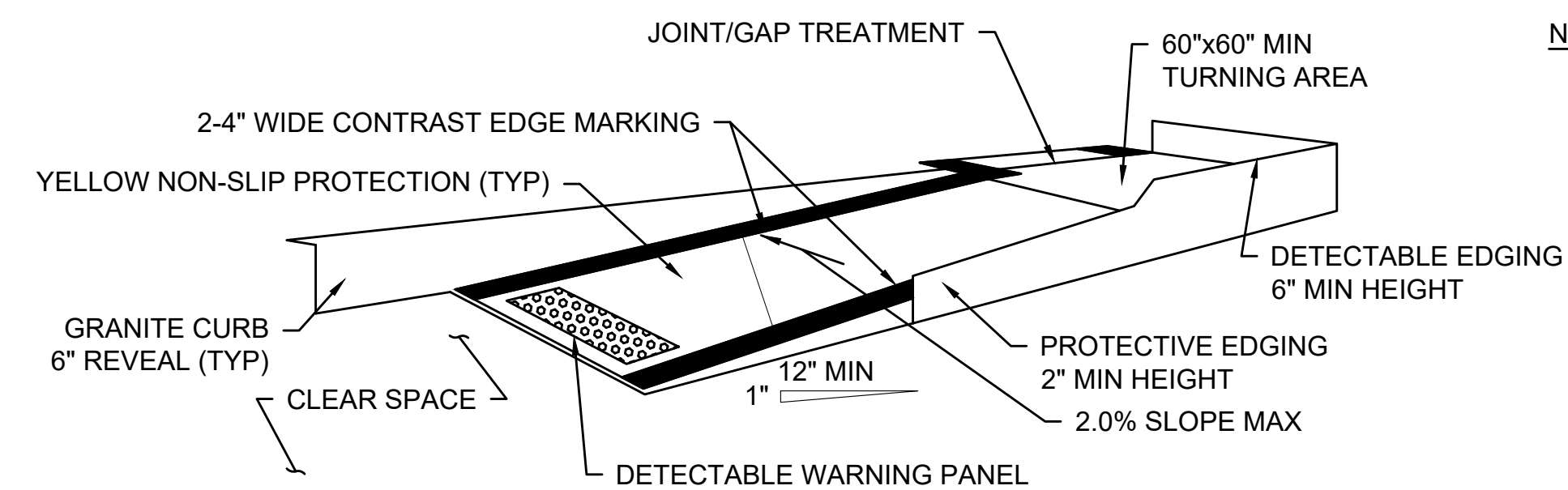


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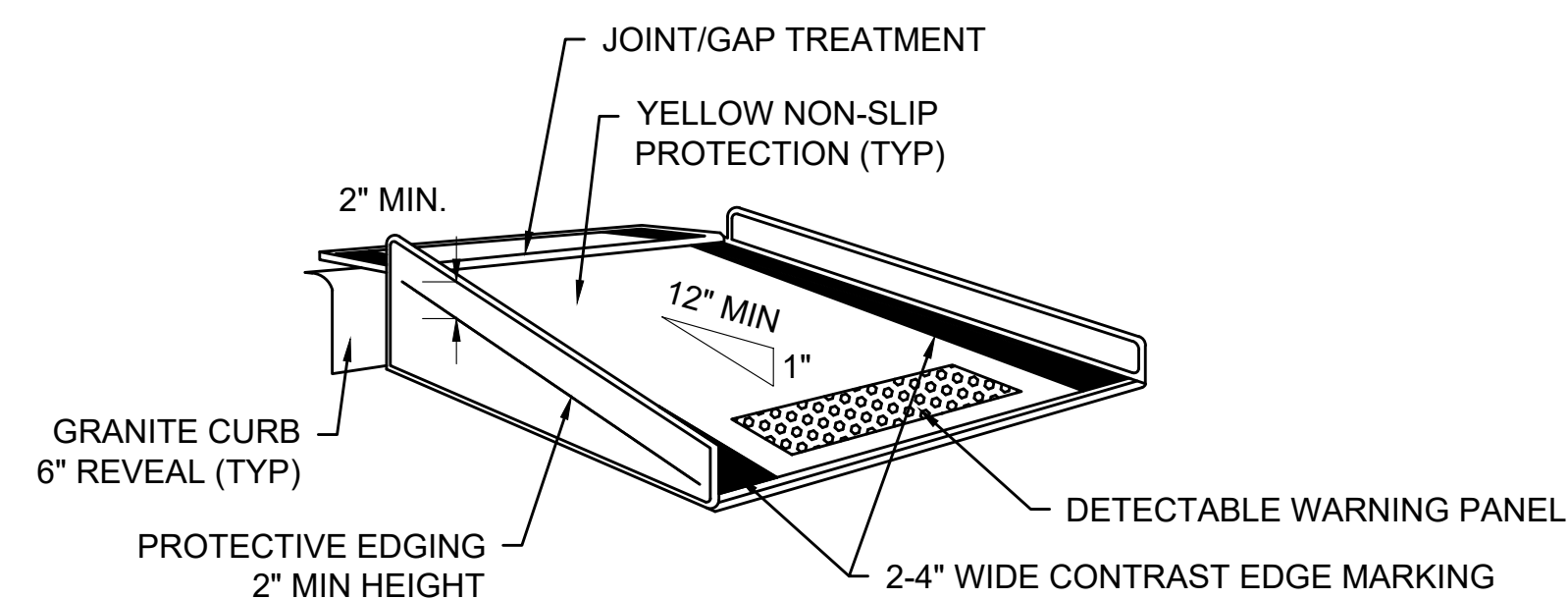
N O.	DESCRIPTION					BY	DATE	APPR.	
REVISION									
EVERSOURCE									
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT									
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
TEMPORARY TRAFFIC CONTROL PLANS									
TYPICAL DETAILS									
SCALE: unless noted NTS		DATE	DRAWN	CHK'D	APPR.	DRAWING NO.		REV.	
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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 RESTRICT UNAUTHORIZED ACCESS AT ALL TIMES.



TEMPORARY CURB RAMP-PARALLEL TO CURB

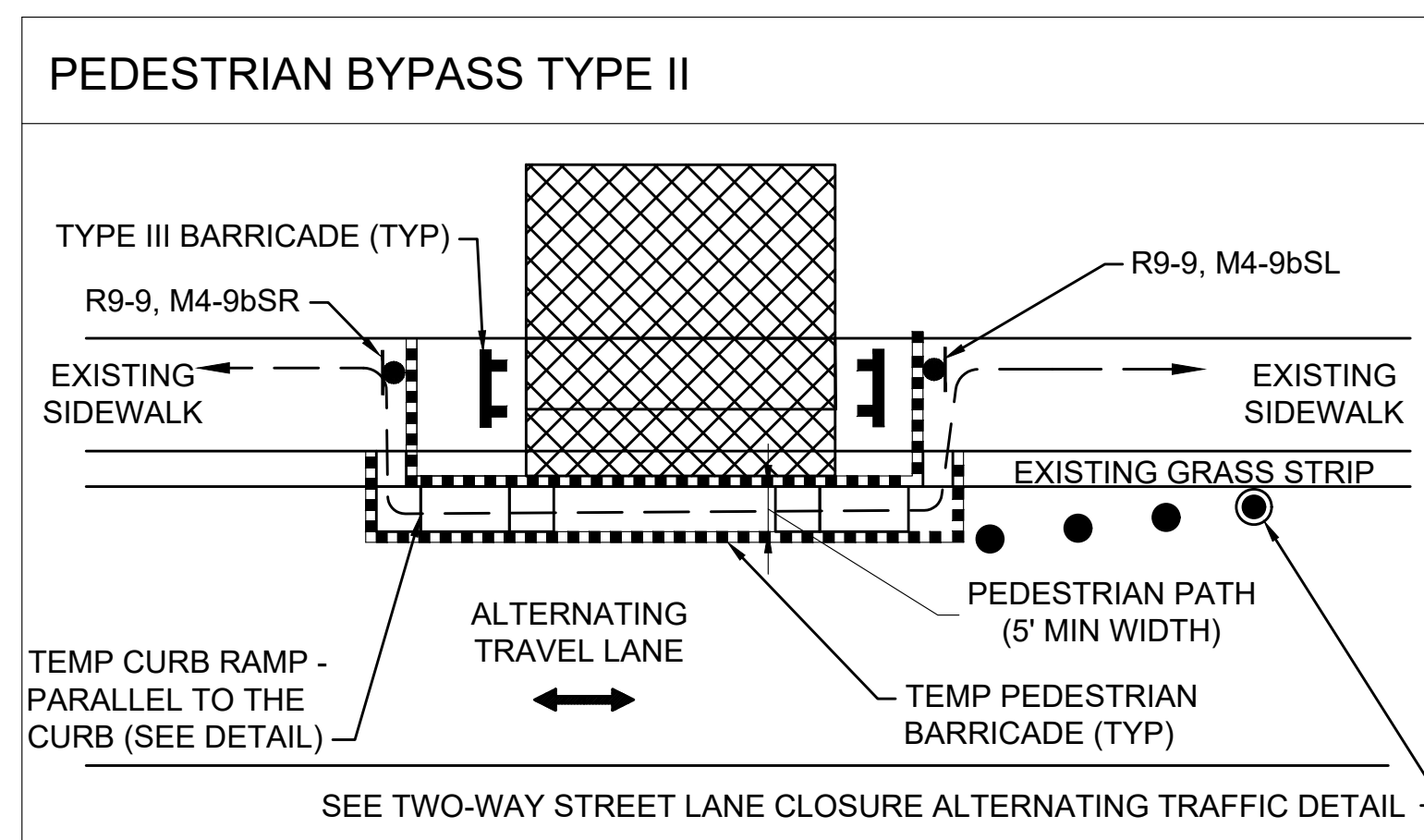
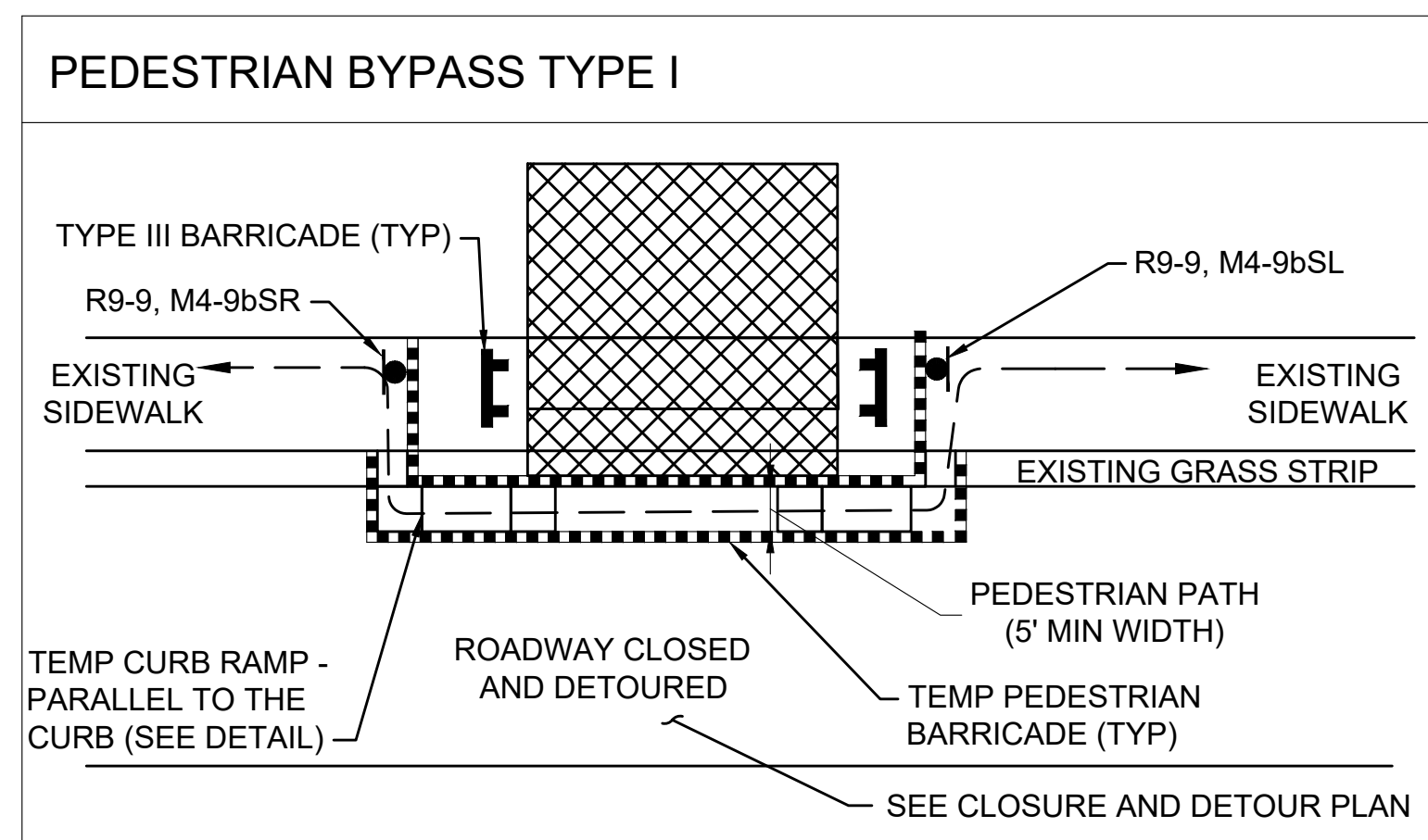


TEMPORARY CURB RAMP-PERPENDICULAR TO CURB

- 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.

TYPICAL WORKZONE ACCESS

SCALE: NTS





PEDESTRIAN BYPASS DETAIL


SCALE: NTS

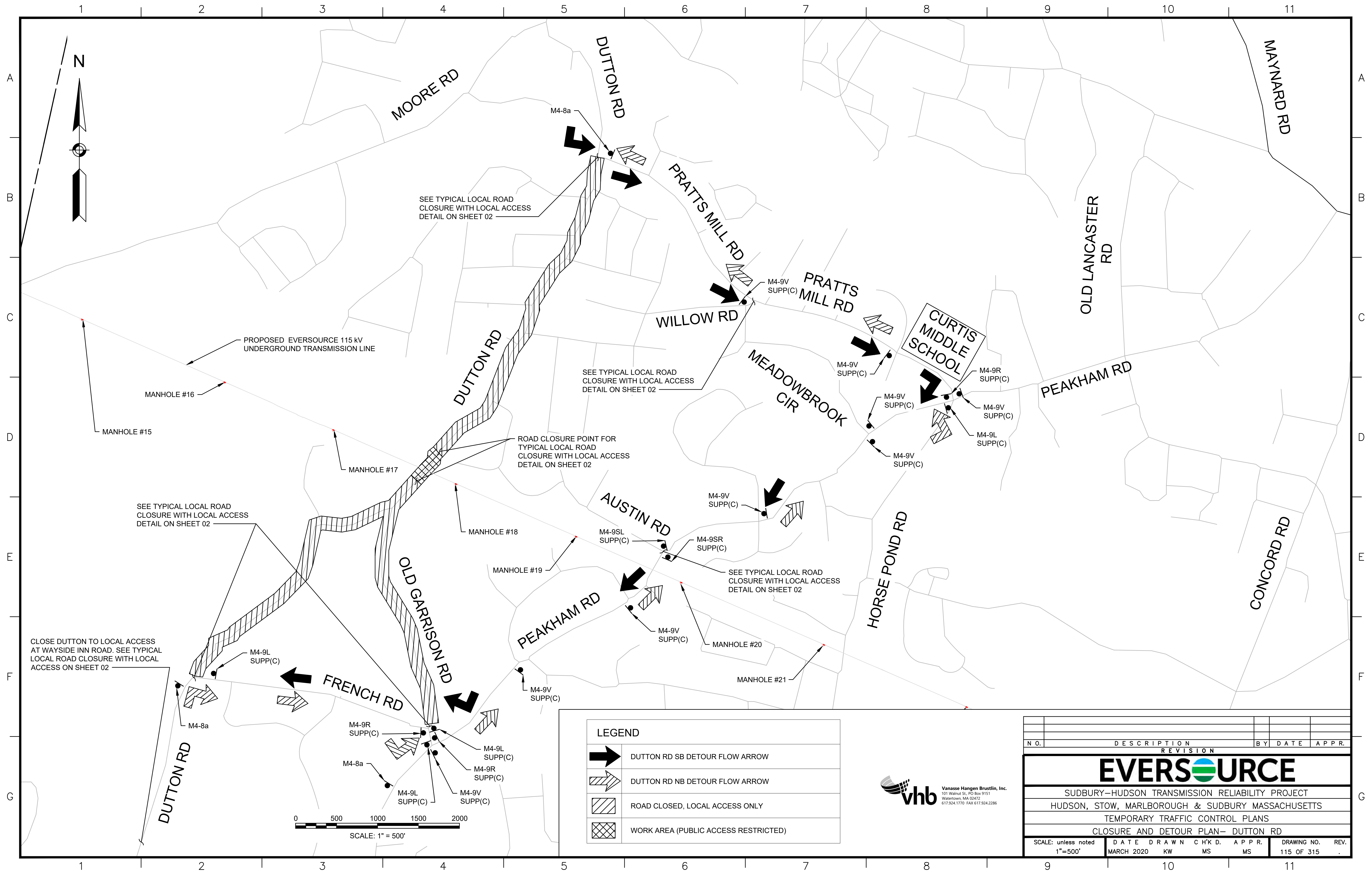
TEMPORARY CURB RAMPS

SCALE: NTS

- 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.

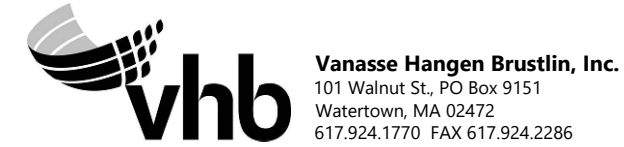


N.O.		DESCRIPTION		BY	DATE		APPR.		
REVISION									
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SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT									
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
TEMPORARY TRAFFIC CONTROL PLANS									
TYPICAL DETAILS									
SCALE: unless noted	DATE	DRAWN	C'H'K'D.	APPR.	DRAWING NO.	REV.			
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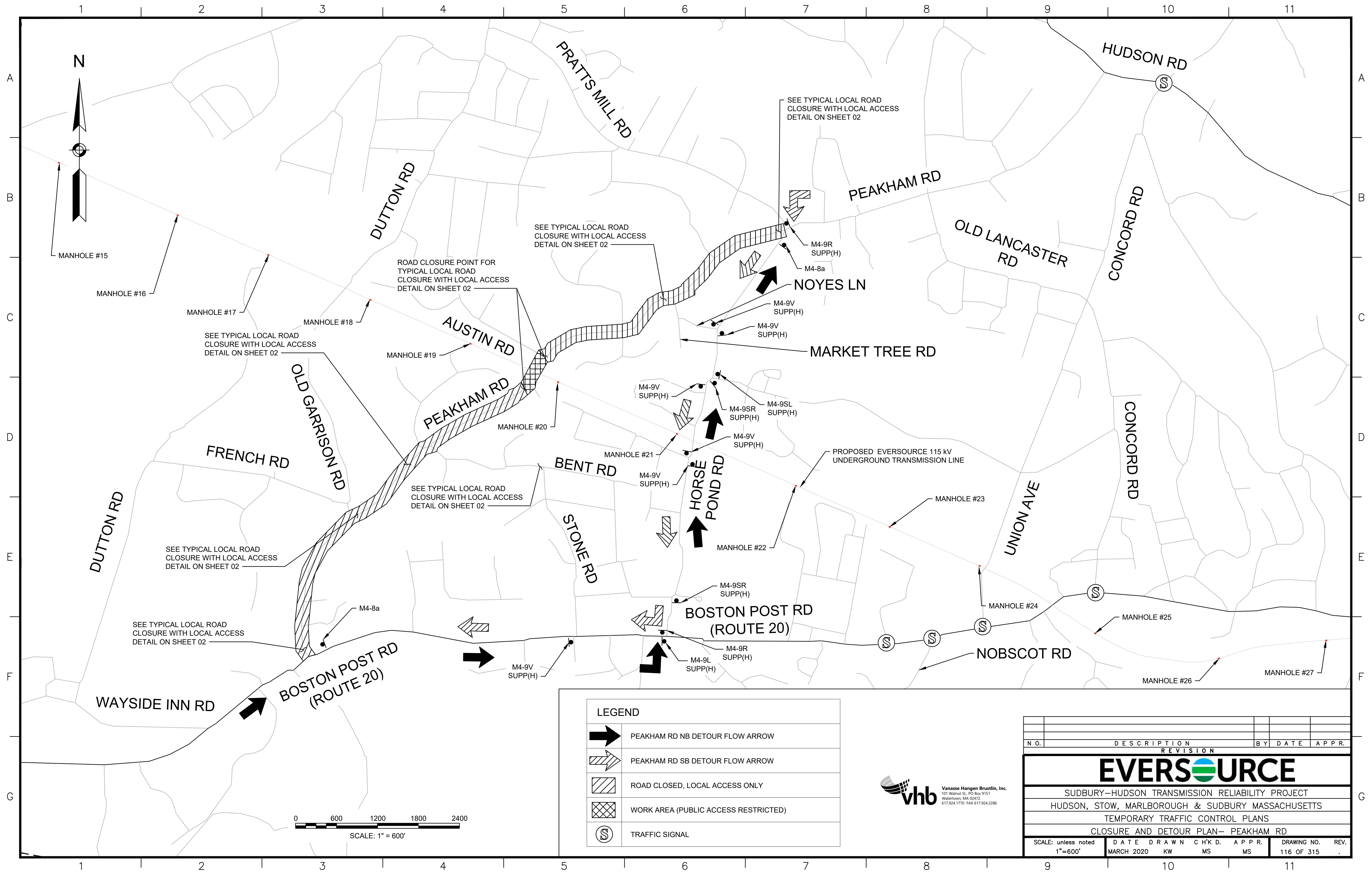


LEGEND

- DUTTON RD SB DETOUR FLOW ARROW
- DUTTON RD NB DETOUR FLOW ARROW
- ROAD CLOSED, LOCAL ACCESS ONLY
- WORK AREA (PUBLIC ACCESS RESTRICTED)



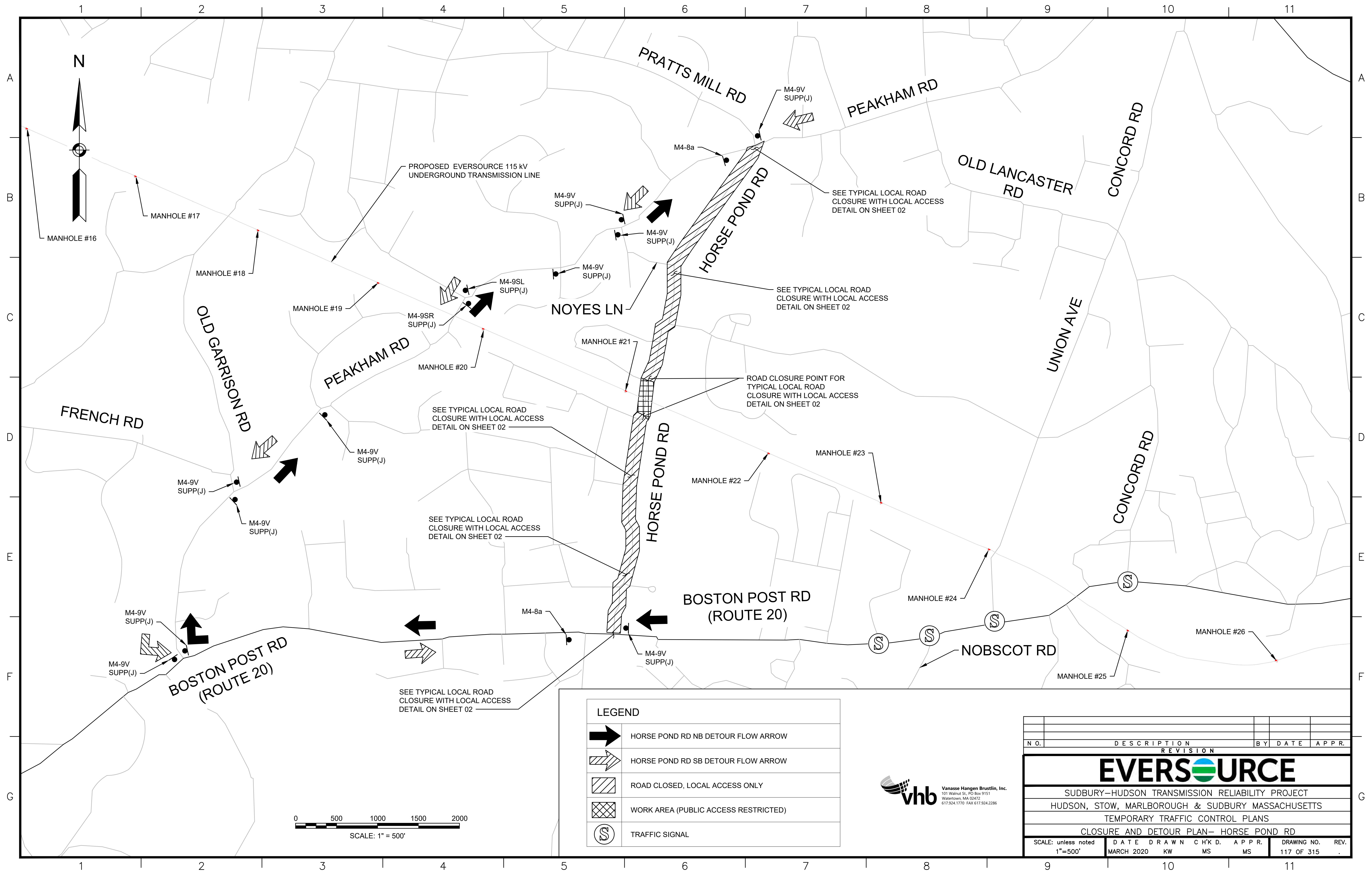
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HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
TEMPORARY TRAFFIC CONTROL PLANS									
CLOSURE AND DETOUR PLAN- DUTTON RD									
SCALE: unless noted 1"=500'		DATE		DRAWN		C'H'K'D.		APPR.	
		MARCH 2020		KW		MS		MS	
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LEGEND	
	PEAKHAM RD NB DETOUR FLOW ARROW
	PEAKHAM RD SB DETOUR FLOW ARROW
	ROAD CLOSED, LOCAL ACCESS ONLY
	WORK AREA (PUBLIC ACCESS RESTRICTED)
	TRAFFIC SIGNAL

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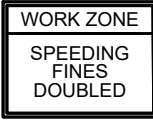
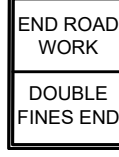




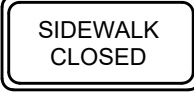










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HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
TEMPORARY TRAFFIC CONTROL PLANS									
CLOSURE AND DETOUR PLAN- PEAKHAM RD									
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		MARCH 2020		KW		MS		MS	
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LEGEND	
	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

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TEMPORARY TRAFFIC CONTROL PLANS									
CLOSURE AND DETOUR PLAN- HORSE POND RD									
SCALE: unless noted 1"=500'		DATE		DRAWN		CHK'D		APPR.	DRAWING NO. REV.
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TEMPORARY TRAFFIC CONTROL SIGN SUMMARY									
IDENTIFI- CATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (INCHES)			COLOR		
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.	BACK- GROUND	LEGEND	BORDER
MA-R2-10a	48"	36"		AS PER MASSDOT STANDARD			FLUOR- ESCENT ORANGE	BLACK	BLACK
MA-R2-10e	36"	48"		↓			WHITE FLUOR- ESCENT ORANGE WHITE	BLACK	BLACK
R1-1	36"	36"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			RED	WHITE	WHITE
R3-1	24"	24"					WHITE	RED/ BLACK	BLACK
R3-2	24"	24"					WHITE	RED/ BLACK	BLACK
R4-7b	24"	30"					WHITE	BLACK	BLACK
R9-9	24"	12"					WHITE	BLACK	BLACK
R11-2	48"	30"					WHITE	BLACK	BLACK
R11-3a	60"	30"					WHITE	BLACK	BLACK
W1-4L	36"	36"					FLUOR- ESCENT ORANGE	BLACK	BLACK
W1-4R	36"	36"					FLUOR- ESCENT ORANGE	BLACK	BLACK
W3-1	36"	36"					FLUOR- ESCENT ORANGE	BLACK RED/ BLACK	BLACK
W5-1	36"	36"					FLUOR- ESCENT ORANGE	BLACK	BLACK
W8-1	36"	36"					FLUOR- ESCENT ORANGE	BLACK	BLACK
W8-8	36"	36"					FLUOR- ESCENT ORANGE	BLACK	BLACK
W8-9	36"	36"					FLUOR- ESCENT ORANGE	BLACK	BLACK
W20-1c	36"	36"		↓			FLUOR- ESCENT ORANGE	BLACK	BLACK

IDENTIFI- CATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (INCHES)			BACK- GROUND	COLOR	BORDER
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.		LEGEND	
W20-2c	36"	36"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			FLUOR- ESCENT ORANGE	BLACK	BLACK
W20-3c	36"	36"					FLUOR- ESCENT ORANGE	BLACK	BLACK
W20-4c	36"	36"					FLUOR- ESCENT ORANGE	BLACK	BLACK
W20-7	36"	36"					FLUOR- ESCENT ORANGE	BLACK	BLACK
MA-W20-7b	36"	36"					AS PER MASSDOT STANDARD		
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"					FLUOR- ESCENT ORANGE	BLACK	BLACK
M4-9L	30"	24"					FLUOR- ESCENT ORANGE	BLACK	BLACK
M4-9R	30"	24"					FLUOR- ESCENT ORANGE	BLACK	BLACK
M4-9SL	30"	24"					FLUOR- ESCENT ORANGE	BLACK	BLACK
M4-9SR	30"	24"					FLUOR- ESCENT ORANGE	BLACK	BLACK
M4-9V	30"	24"					FLUOR- ESCENT ORANGE	BLACK	BLACK
M4-10L	48"	18"					FLUOR- ESCENT ORANGE	BLACK	---
M4-10R	48"	18"					FLUOR- ESCENT ORANGE	BLACK	---

NOTES:

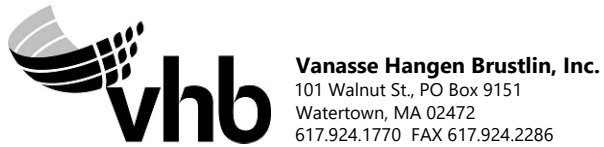
1. HIGH INTENSITY REFLECTIVE SHEETING SHALL BE USED FOR ALL SIGNS. SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION" FOR TEXT DIMENSIONS, AS AMENDED; THE 1977 MASSHIGHWAY DEPARTMENT CONSTRUCTION AND TRAFFIC STANDARD DETAILS, AS AMENDED, FOR SIGNS AND SUPPORTS; THE MASSHIGHWAY DEPARTMENT SIGN LISTINGS 1993 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.

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	DRAWN	CHK'D.	APPR.	DRAWING NO.		REV.	
	MARCH 2020	KW	MS	MS	120 OF 315		.	

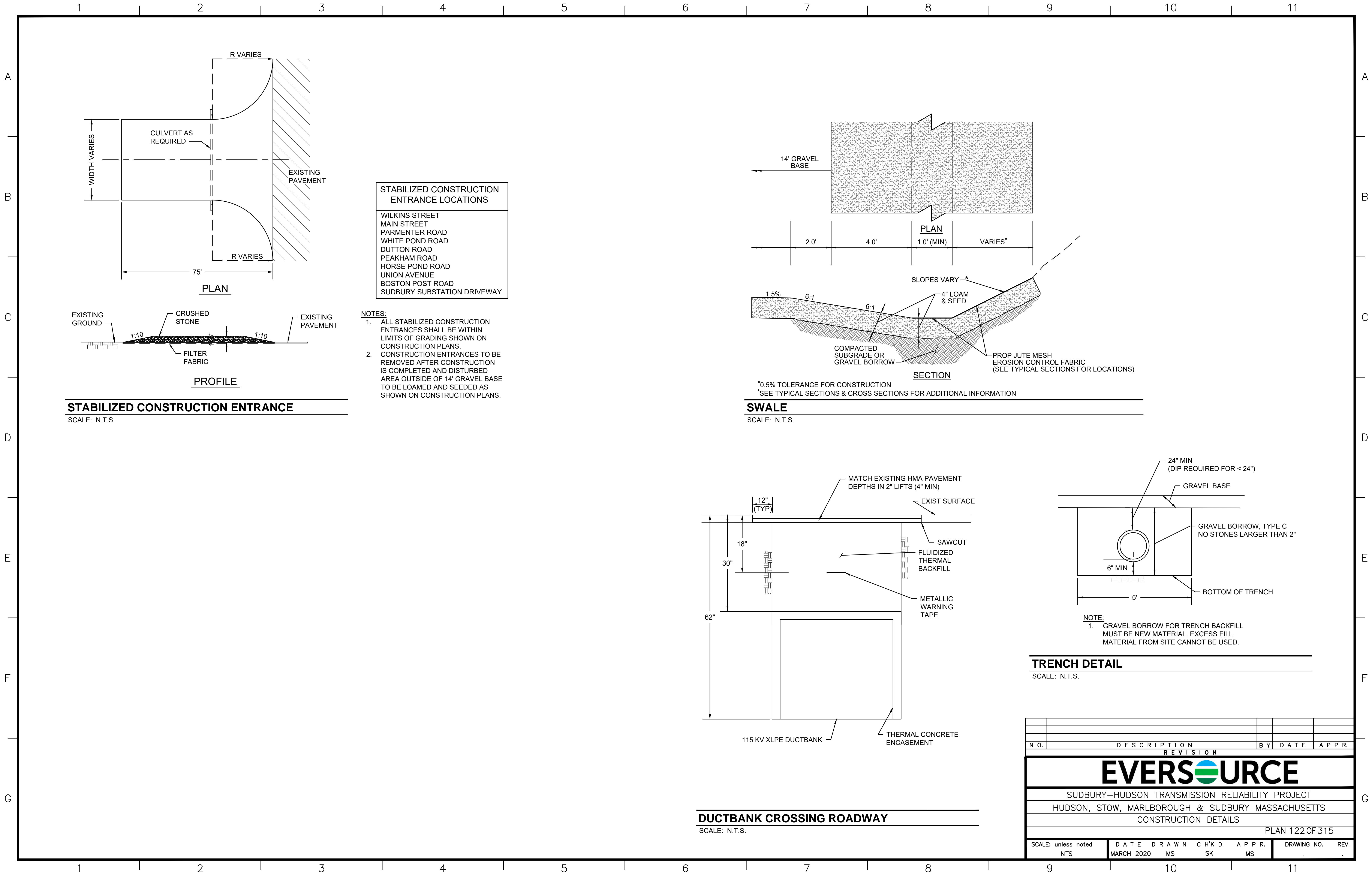
TEMPORARY TRAFFIC CONTROL SIGN SUMMARY (CONTINUED)									
IDENTIFI- CATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (INCHES)			BACK- GROUND	COLOR	BORDER
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.			
SUPP(A)	48"	12"	MARLBORO RD	6"C	3" 3"	N/A	FLUOR- ESCENT ORANGE	BLACK	BLACK
SUPP(B)	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"	CAUTION VEHICLES ENTERING	6"C 6"C 6"C	3.5" 3.5"	N/A	FLUOR- ESCENT ORANGE	BLACK	BLACK
SP-2	36"	36"	ROAD CROSSING AHEAD	6"C 6"C 6"C	3.5" 3.5"	N/A	FLUOR- ESCENT ORANGE	BLACK	BLACK

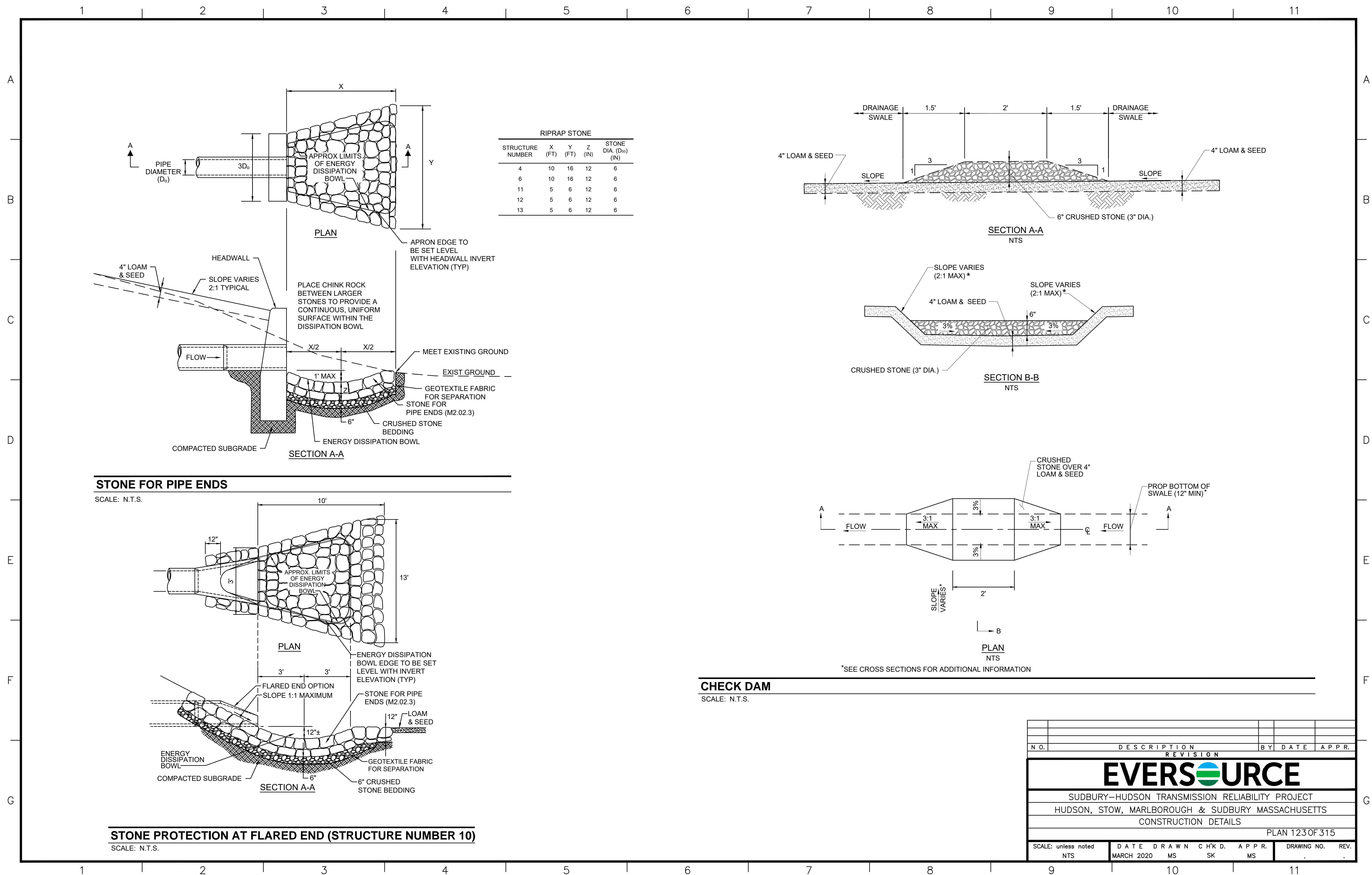
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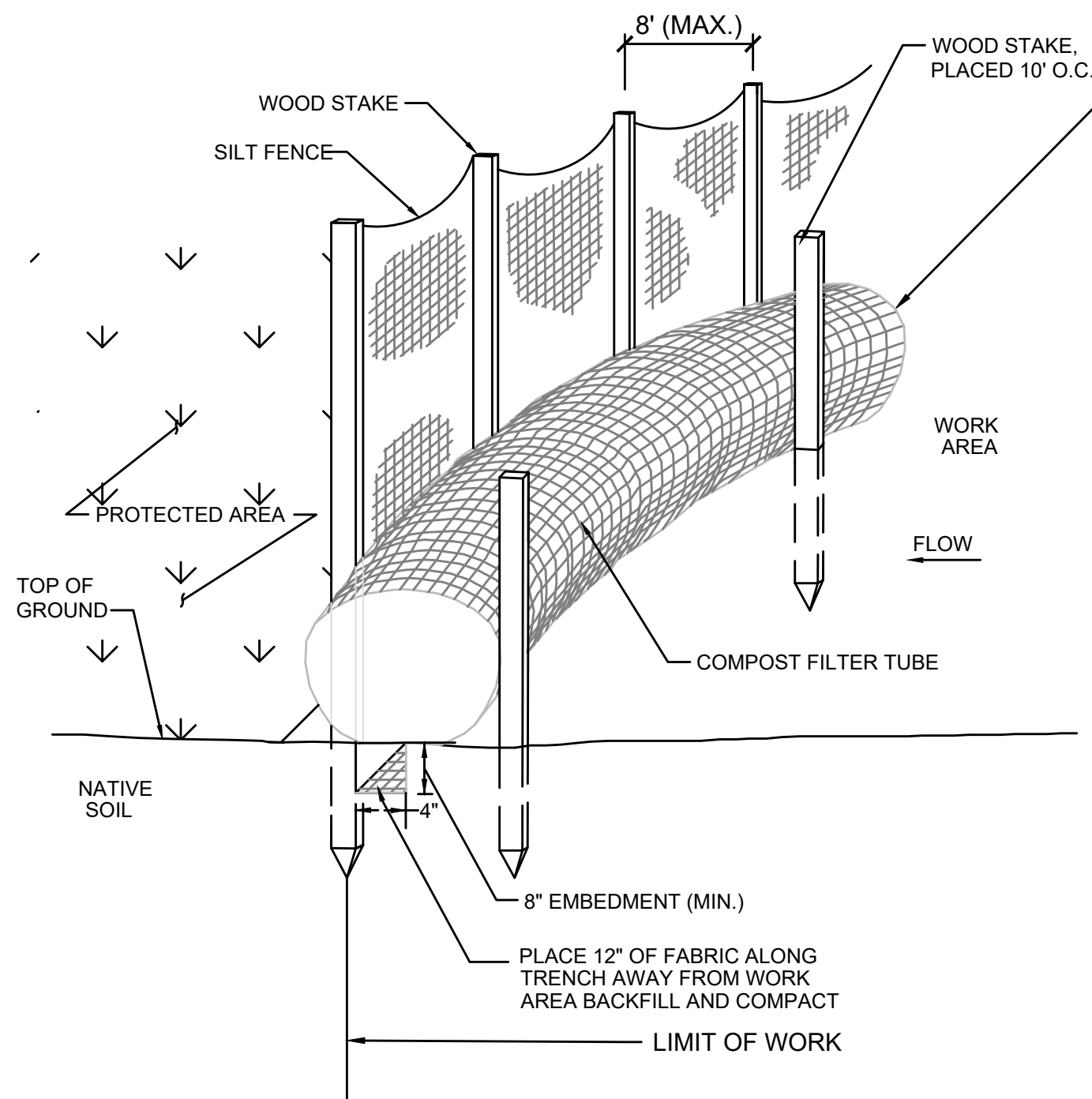
1. HIGH INTENSITY REFLECTIVE SHEETING SHALL BE USED FOR ALL SIGNS. SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION" FOR TEXT DIMENSIONS, AS AMENDED; THE 1977 MASSHIGHWAY DEPARTMENT CONSTRUCTION AND TRAFFIC STANDARD DETAILS, AS AMENDED, FOR SIGNS AND SUPPORTS; THE MASSHIGHWAY DEPARTMENT SIGN LISTINGS 1993 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.



N O.	DESCRIPTION			BY	DATE
REVISION					
EVERSOURCE					
SUDBURY—HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
TEMPORARY TRAFFIC CONTROL PLANS					
SIGN SUMMARY					
SCALE: unless noted		DATE	DRAWN	CHK'D	A P P R.
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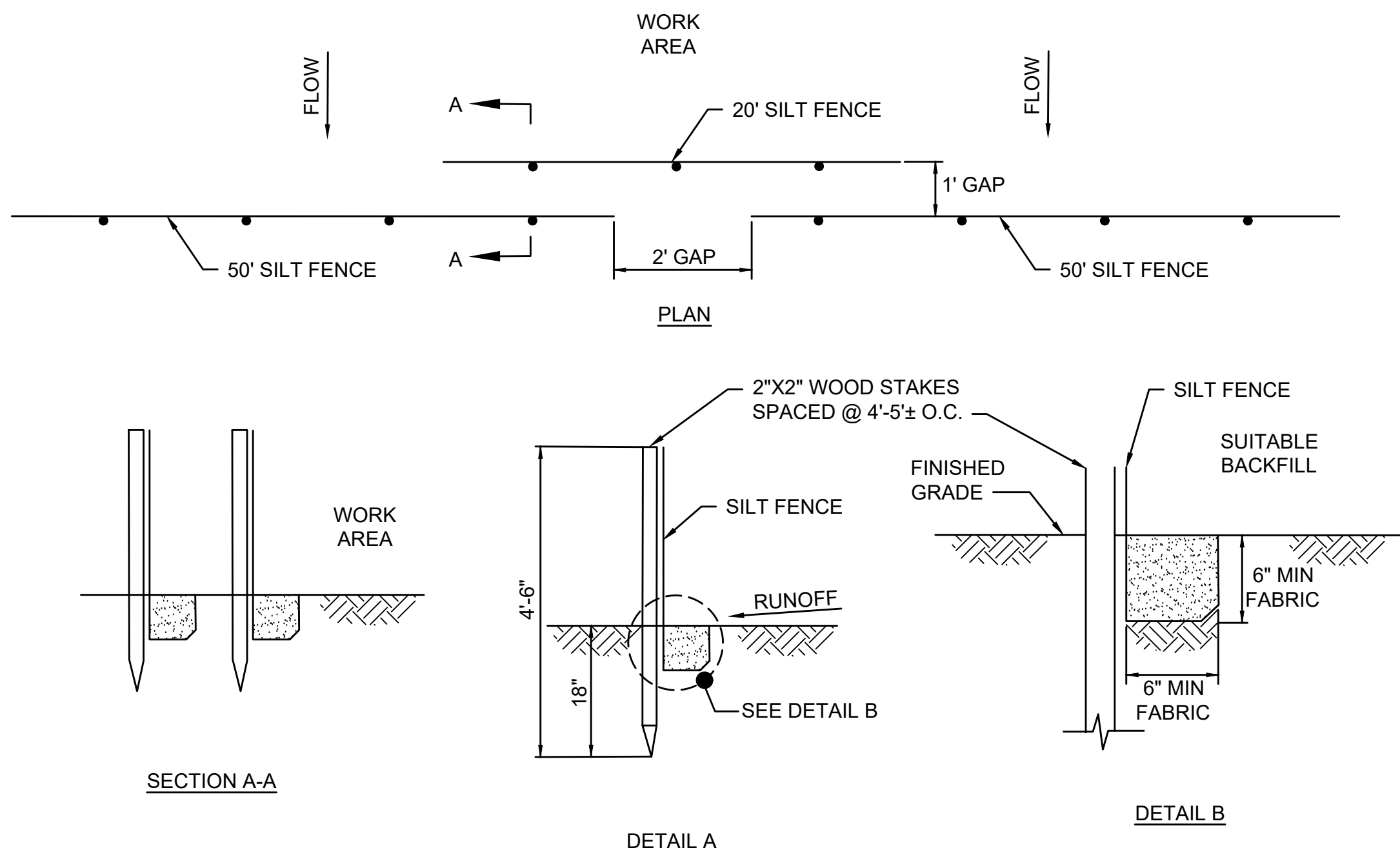




- COMPOST FILTER TUBE
MINIMUM 12 INCHES IN DIAMETER WITH AN
EFFECTIVE HEIGHT OF 9.5 INCHES
- WOOD STAKE,
PLACED 10' O.C.
- WOOD STAKE
- SILT FENCE
- 8" (MAX.)
- WORK AREA
- PROTECTED AREA
- TOP OF GROUND
- NATIVE SOIL
- COMPOST FILTER TUBE
- 8" EMBEDMENT (MIN.)
- PLACE 12" OF FABRIC ALONG
TRENCH AWAY FROM WORK
AREA BACKFILL AND COMPACT
- LIMIT OF WORK
- FLOW
- 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.
 4. INSPECTIONS SHALL BE FREQUENT, AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY.
 5. 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.
 6. TUBES CAN BE PLACED DIRECTLY ON EXISTING PAVEMENT WHEN NECESSARY.
 7. 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

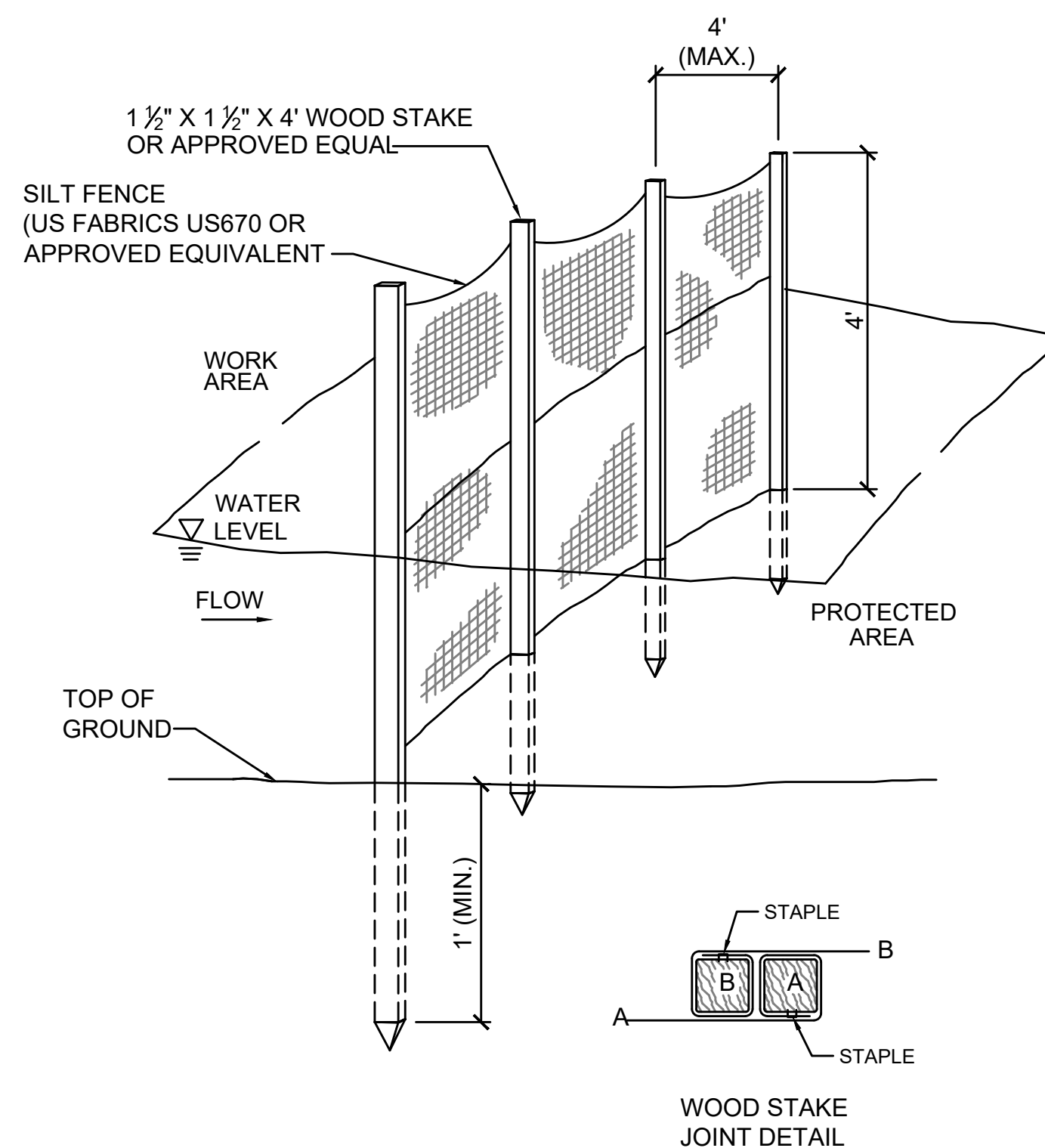
SCALE: NTS



- 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.

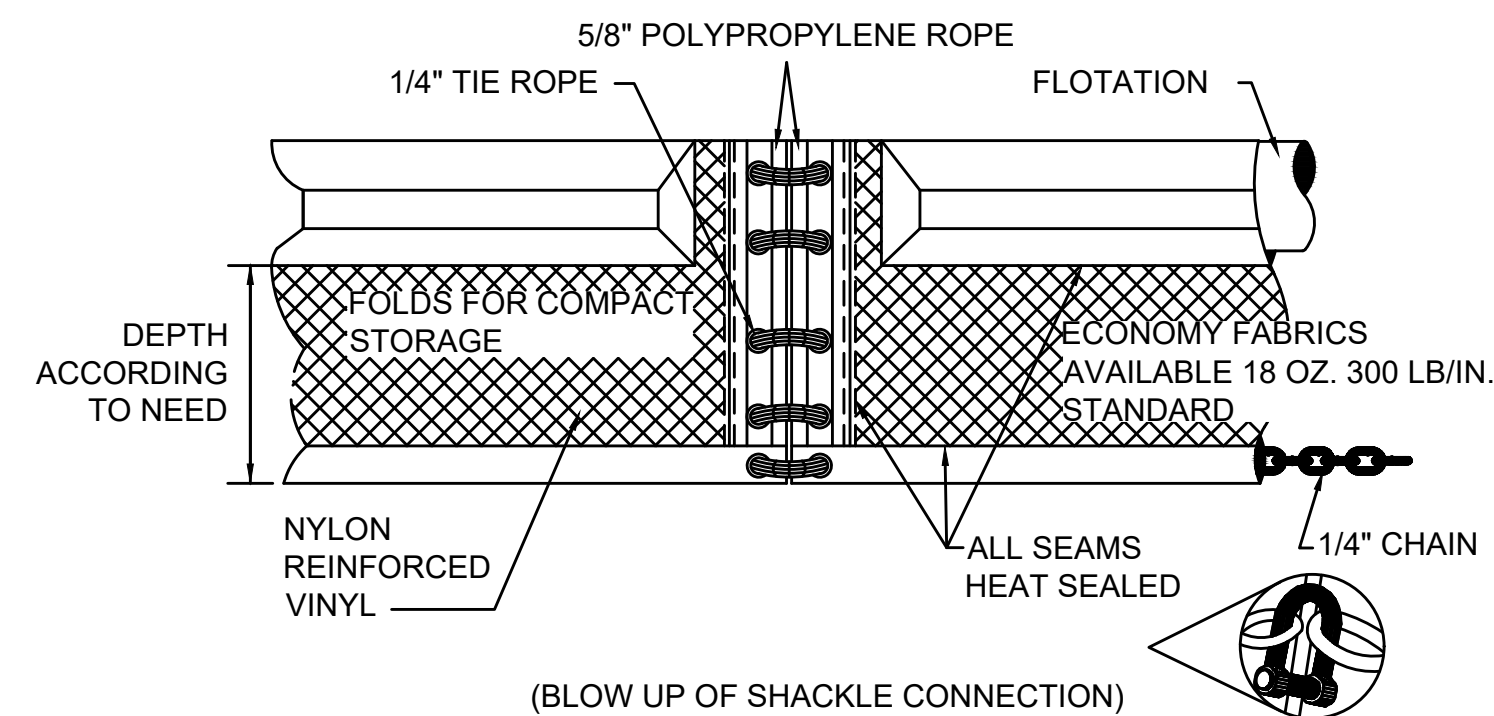
SYNCOPATED SILT FENCE DETAIL - TYPE B EROSION CONTROL BARRIER

SCALE: N.T.S.



4' HIGH SILT FENCE BARRIER DETAIL - EROSION CONTROL BARRIER TYPE C (OPTION 1)

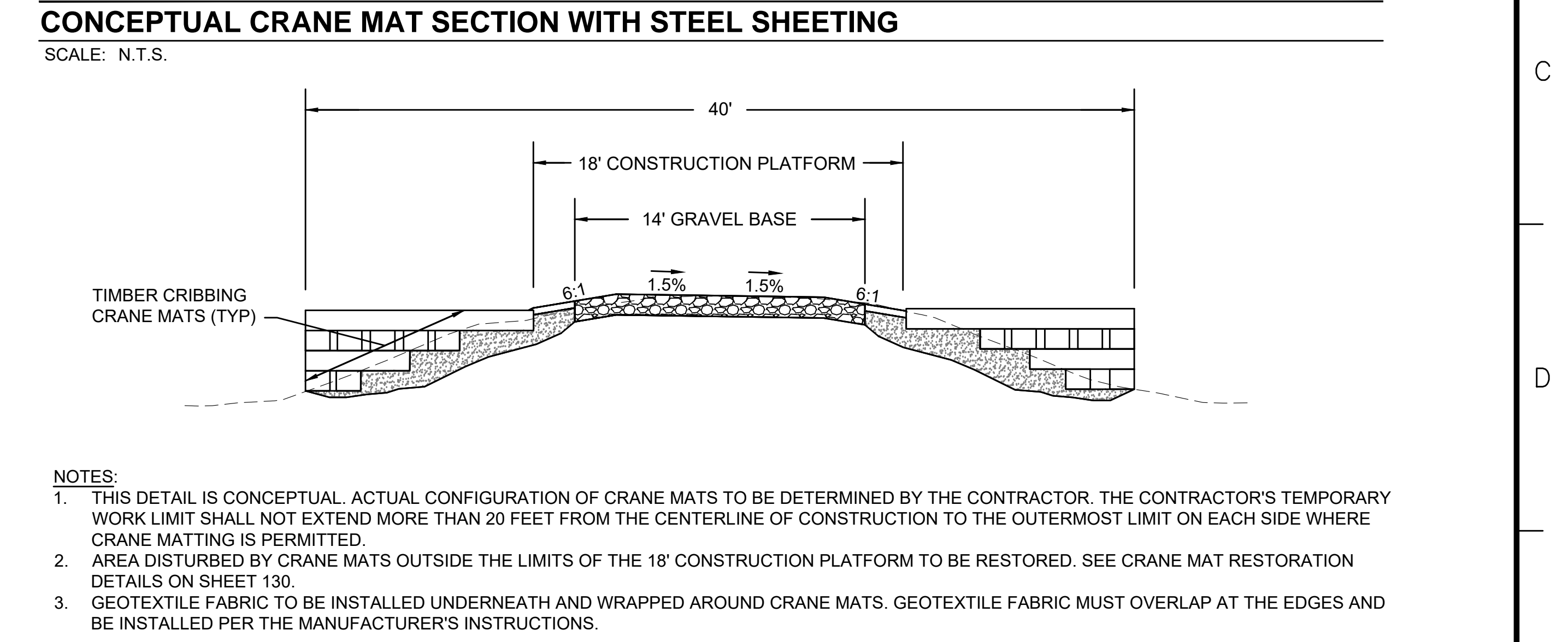
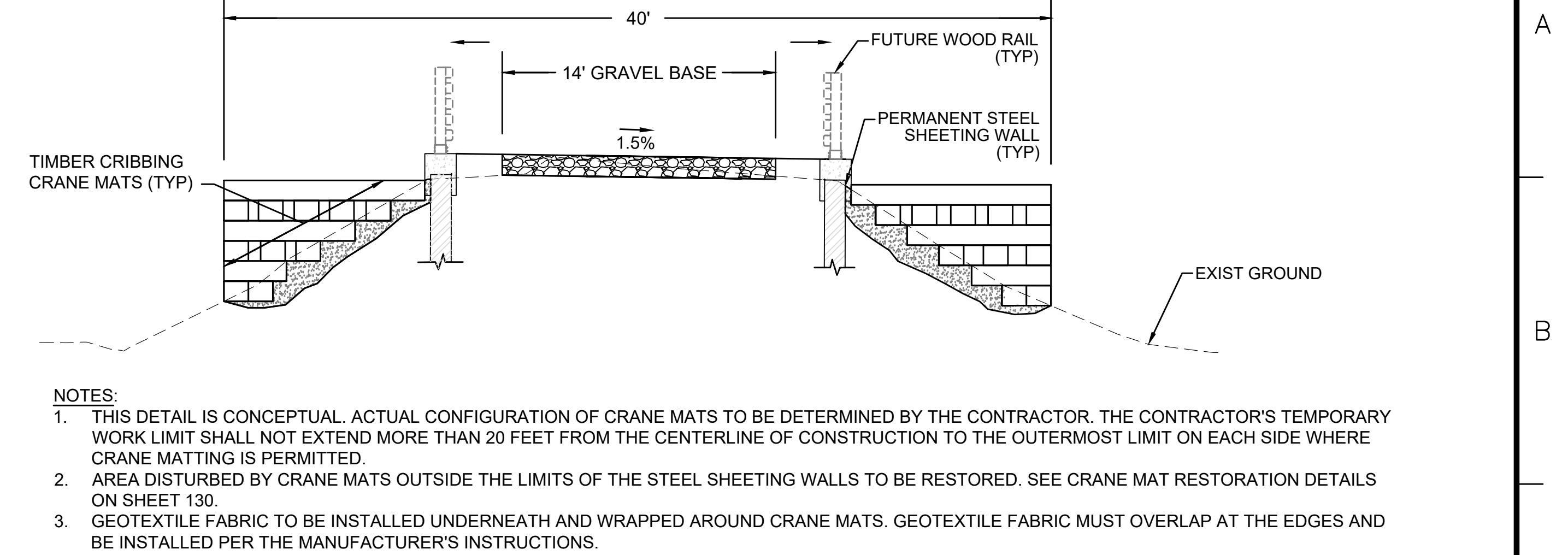
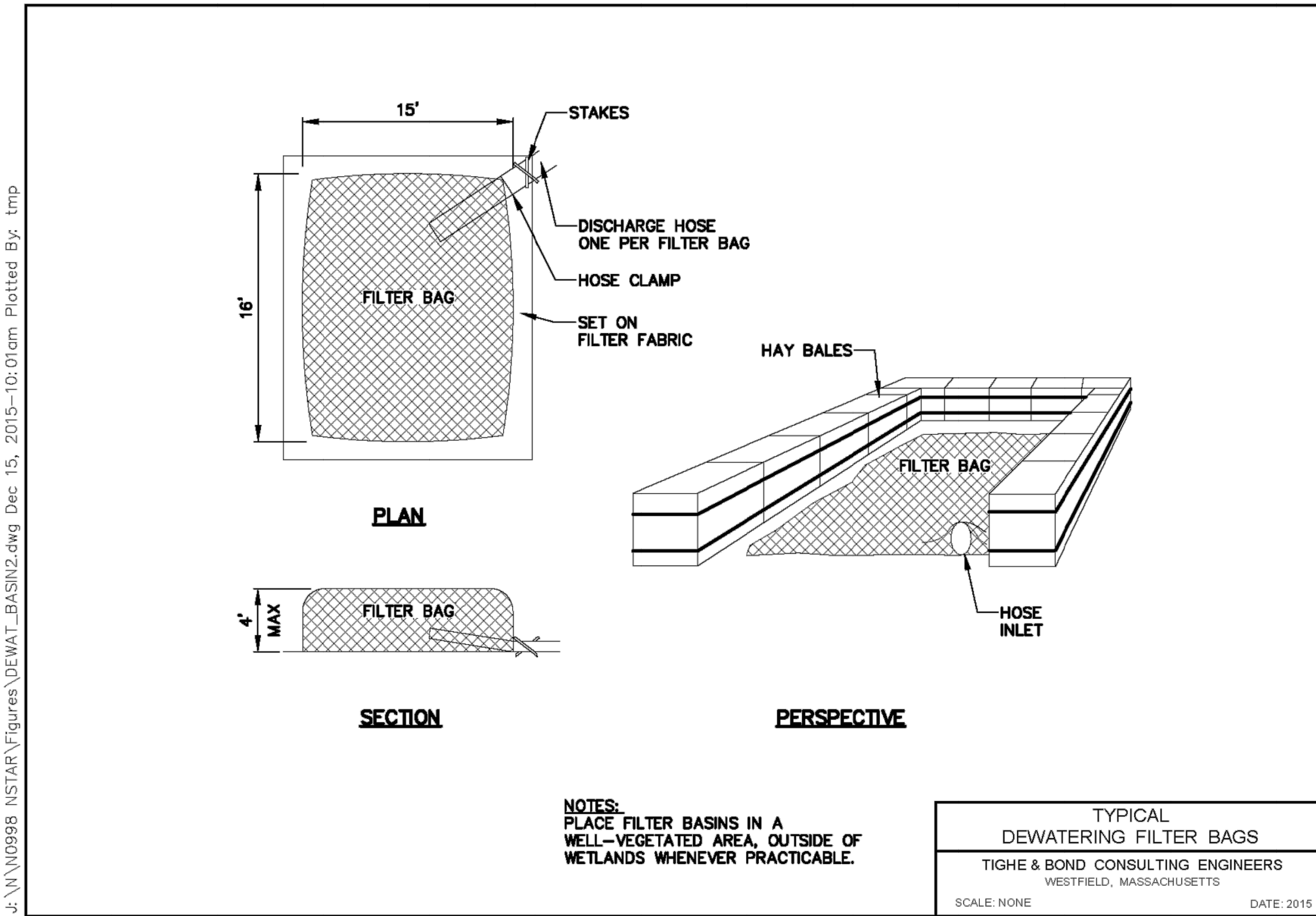
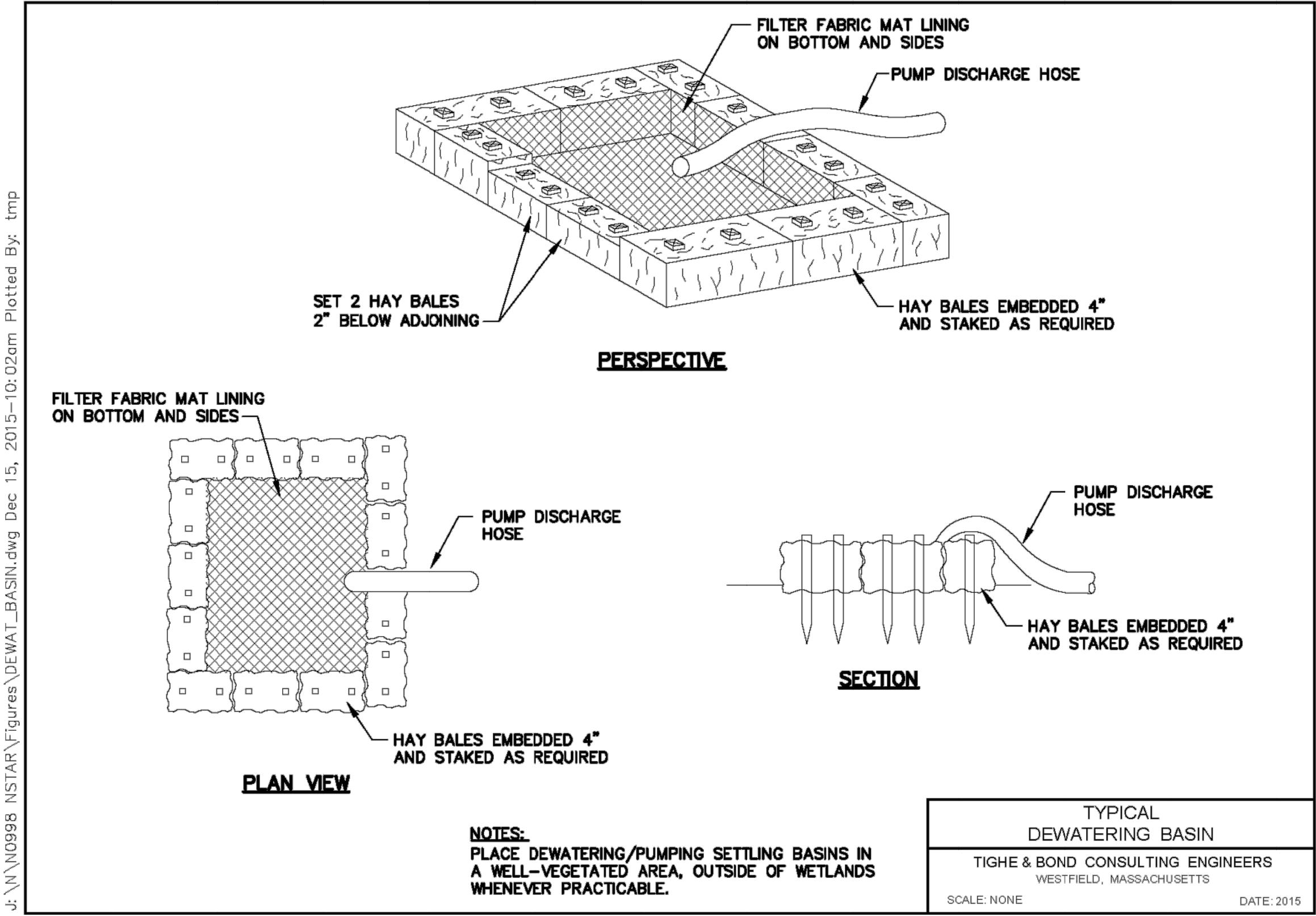
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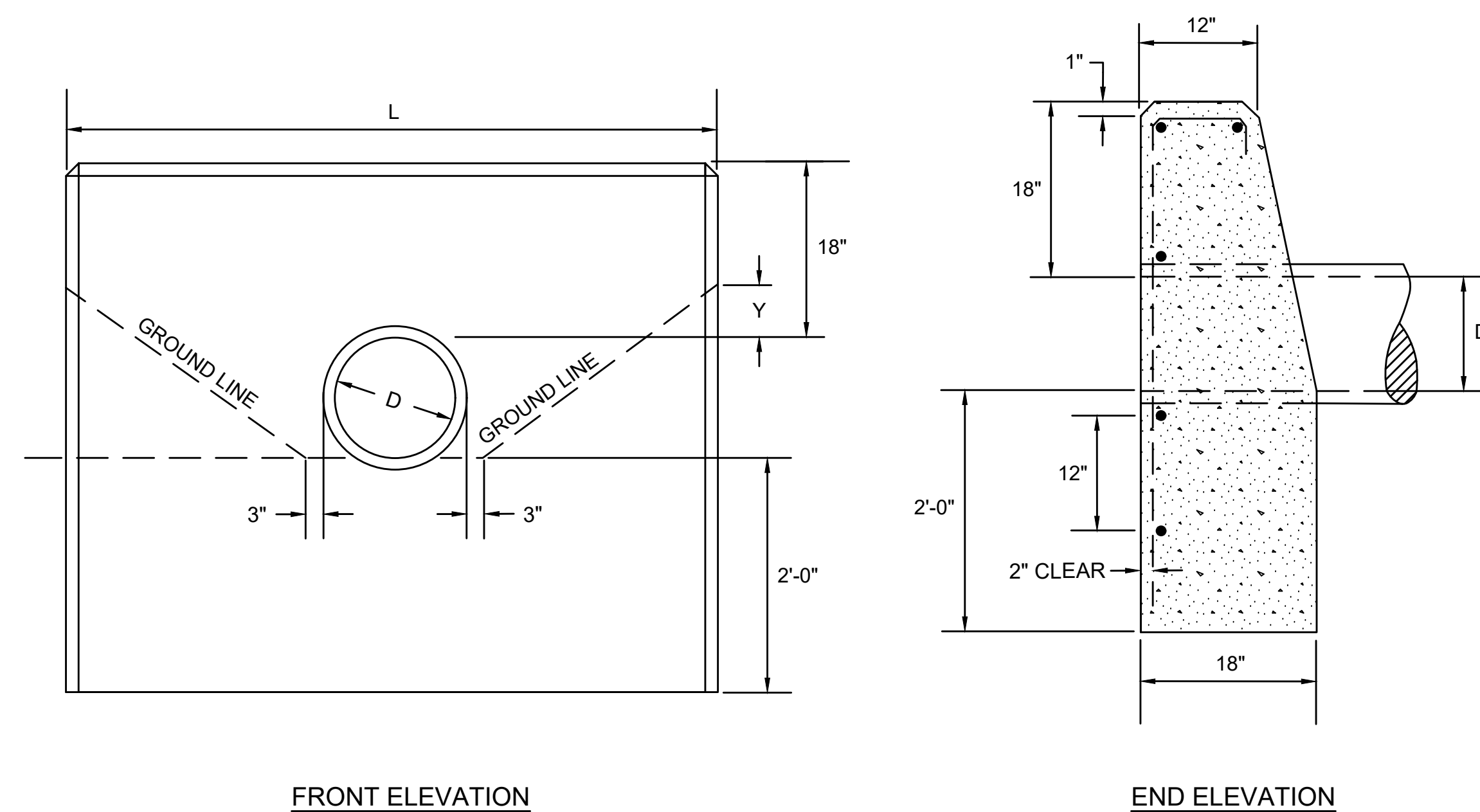
TURBIDITY CURTAIN DETAIL - EROSION CONTROL BARRIER TYPE C (OPTION 2)

SCALE: N.T.S.

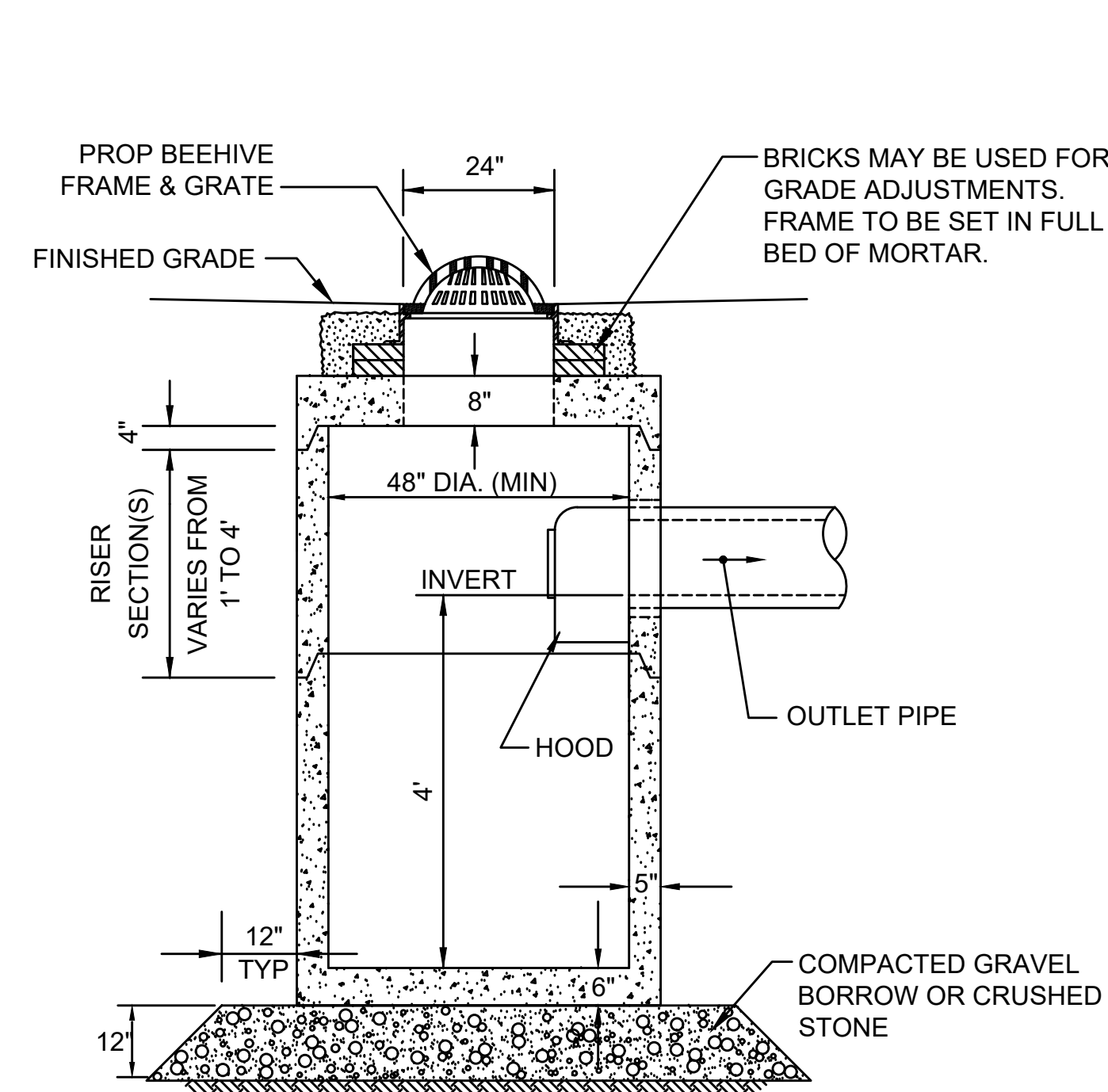
N.O.	DESCRIPTION	BY	DATE	APP.R.
	REVISION			
EVERSOURCE SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS CONSTRUCTION DETAILS PLAN 124 OF 315				
SCALE: unless noted NTS	DATE MARCH 2020	DRAWN MS	CHK'D. SK	APP.R. MS
DRAWING NO.	REV.			



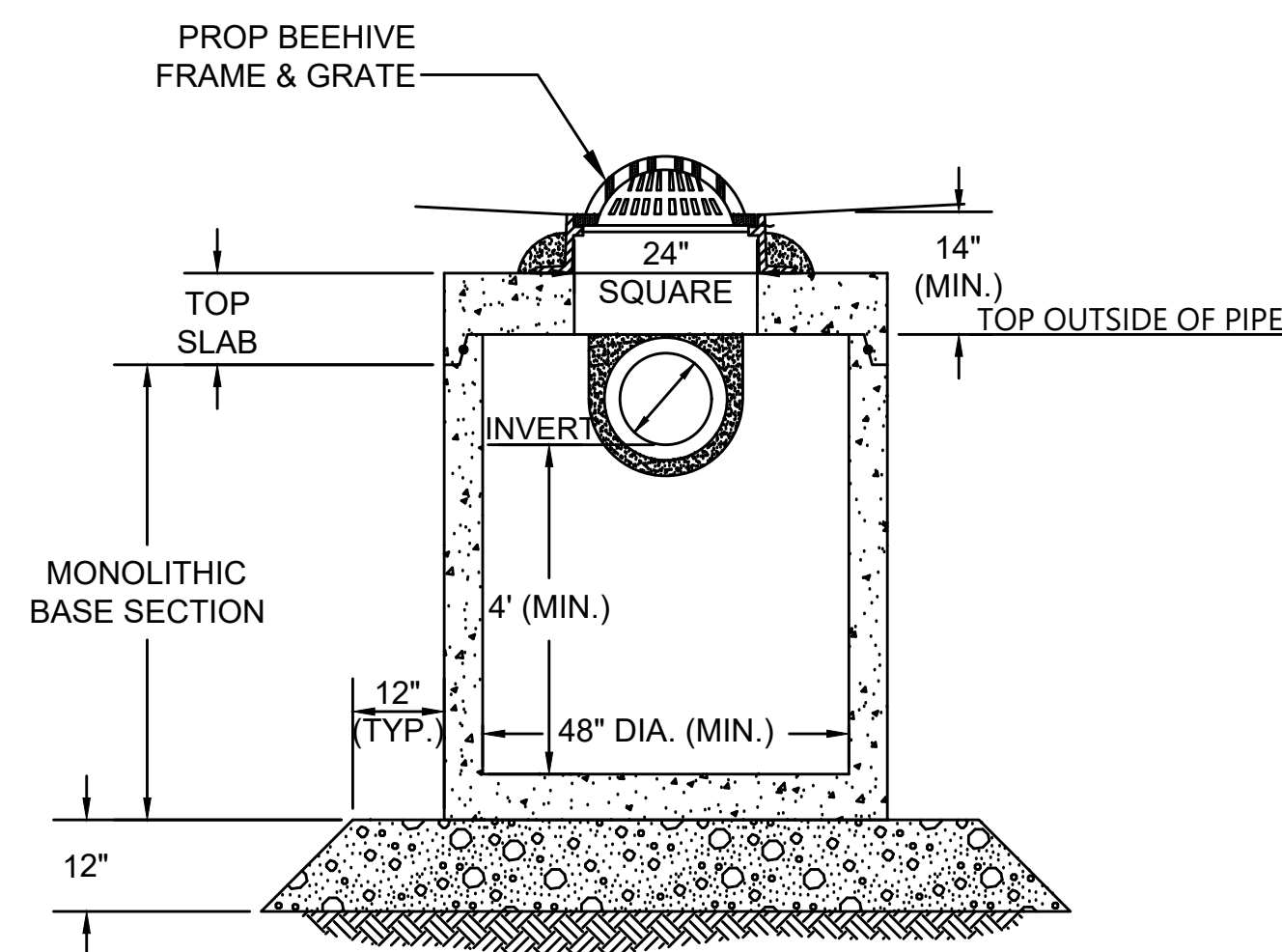
N O.	DESCRIPTION	BY	DATE	APP.	
REVISION					
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CONSTRUCTION DETAILS					
PLAN 125 OF 315					
SCALE: unless noted NTS	DATE MARCH 2020	DRAWN MS	CHK'D SK	APP.R MS	DRAWING NO. REV.



HEADWALL WITH 18" REVEAL ABOVE PIPE

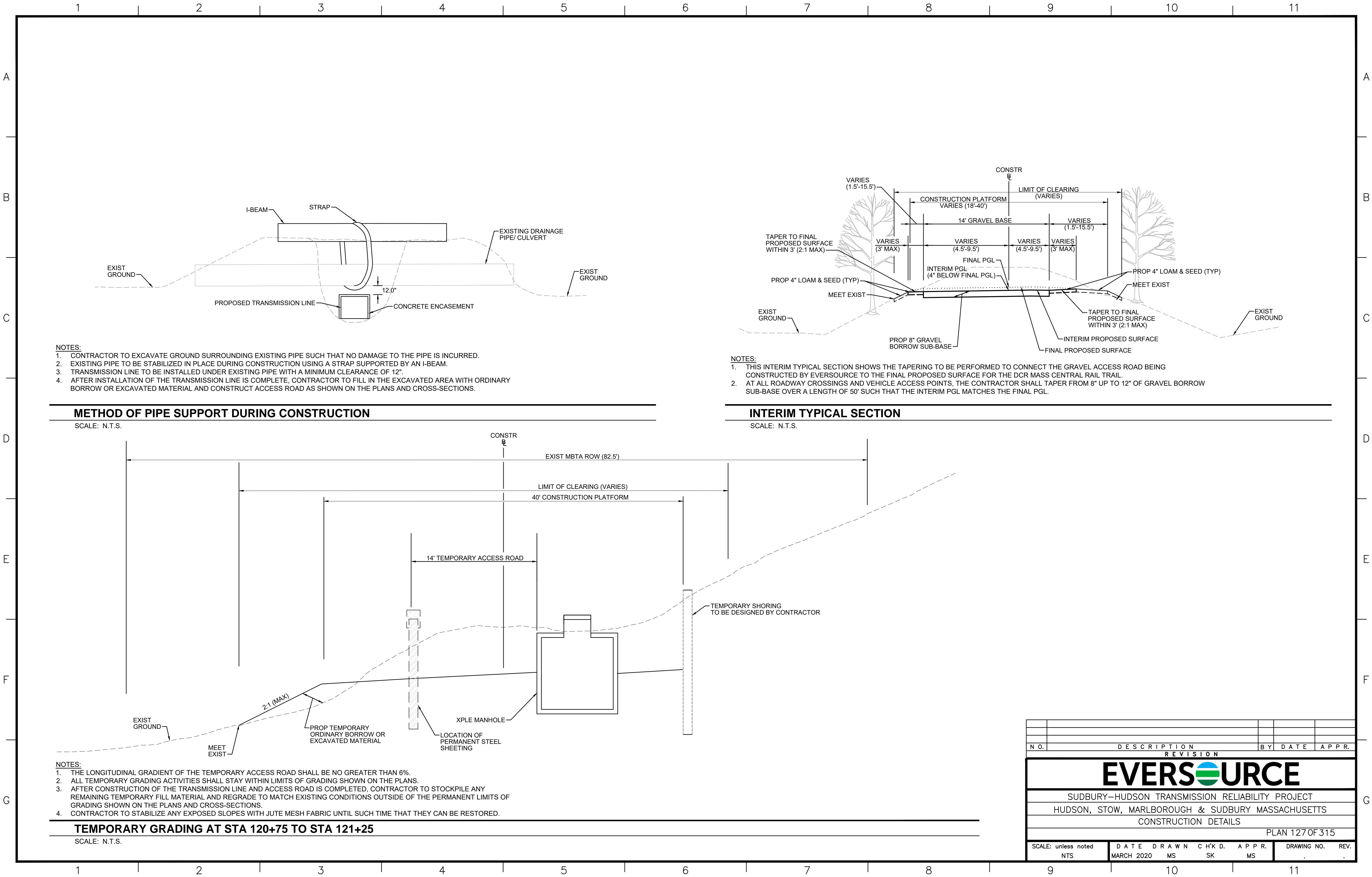


DEEP SUMP CATCH BASIN WITH HOOD (CB)

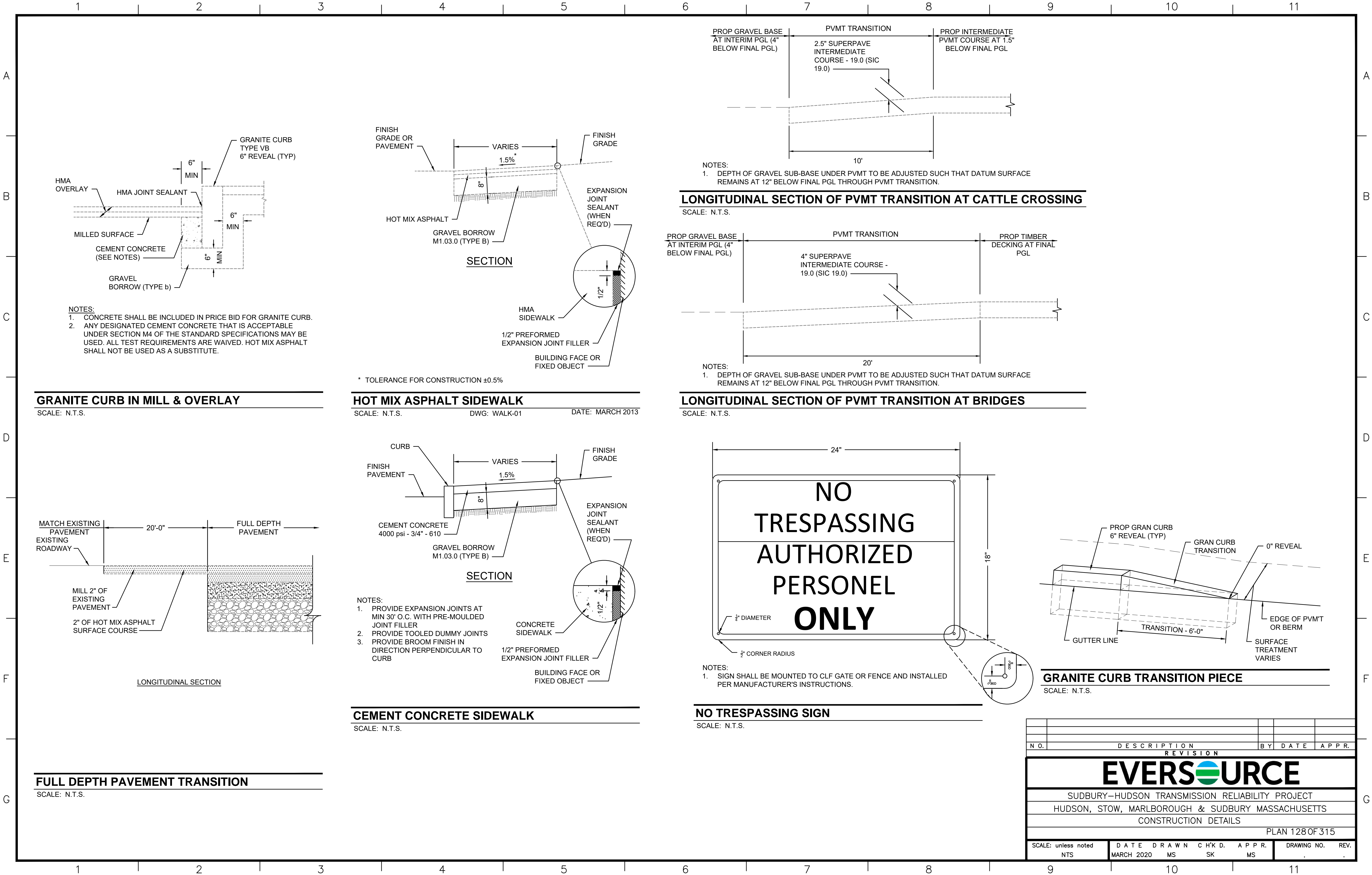


CATCH BASIN WITH SHALLOW COVER (SHALLOW CB)

N O.	DESCRIPTION					BY	DATE	APPR.	
REVISION									
EVERSOURCE									
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT									
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
CONSTRUCTION DETAILS									
PLAN 126OF315									
SCALE: unless noted		DATE DRAWN		C H'K D.		APPR.		DRAWING NO. REV.	
NTS		MARCH 2020 MS		SK		MS		.	



N O.	DESCRIPTION	BY	DATE	APPR.	
REVISION					
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CONSTRUCTION DETAILS					
PLAN 127 OF 315					
SCALE: unless noted NTS	DATE MARCH 2020	DRAWN MS	CH'K D. SK	APPR. MS	DRAWING NO. REV. . .



1 2 3 4 5 6 7 8 9 10 11

A

B

C

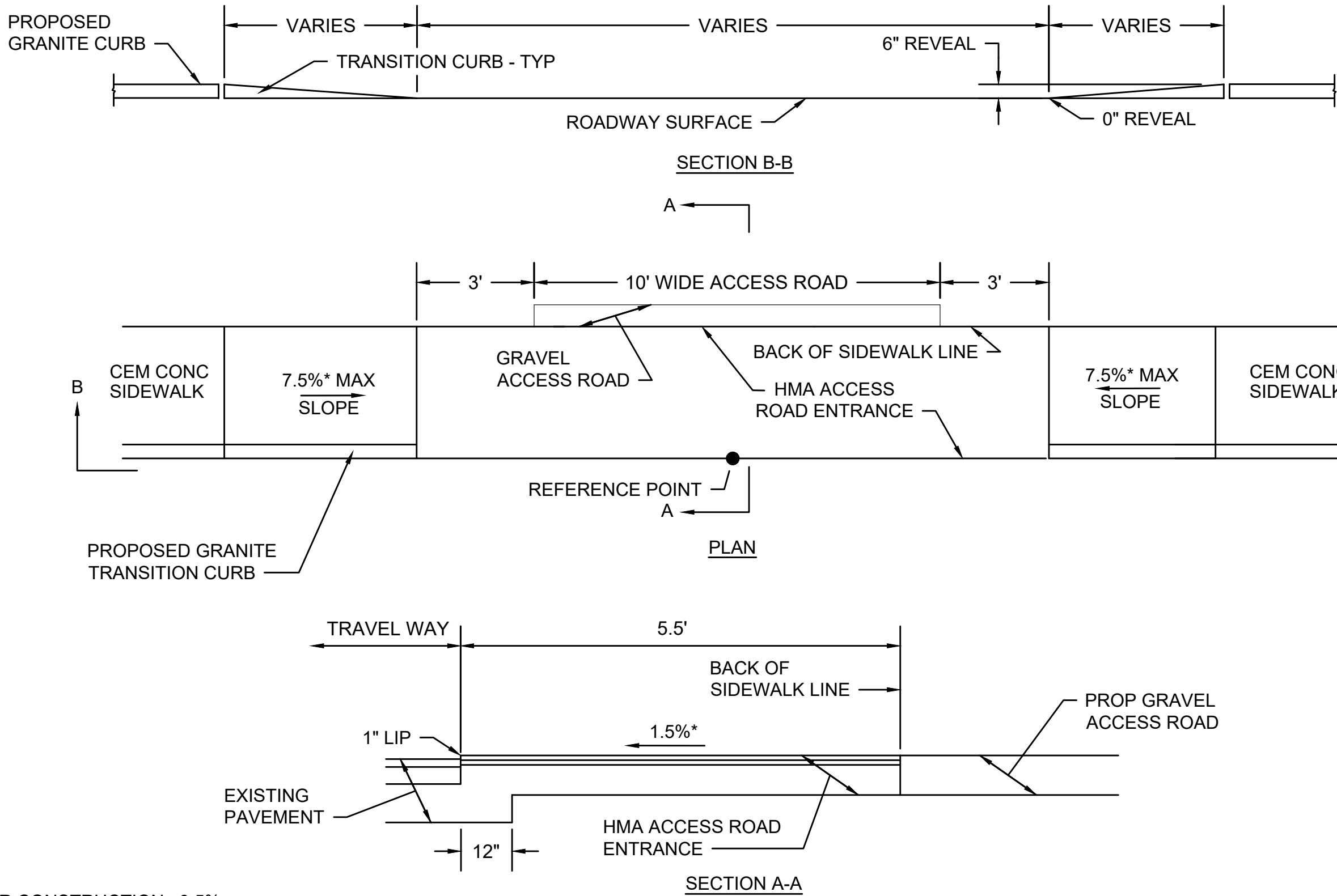
D

E

F

G

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.

1 2 3 4 5 6 7 8 9 10 11

A

B

C

D

E

F

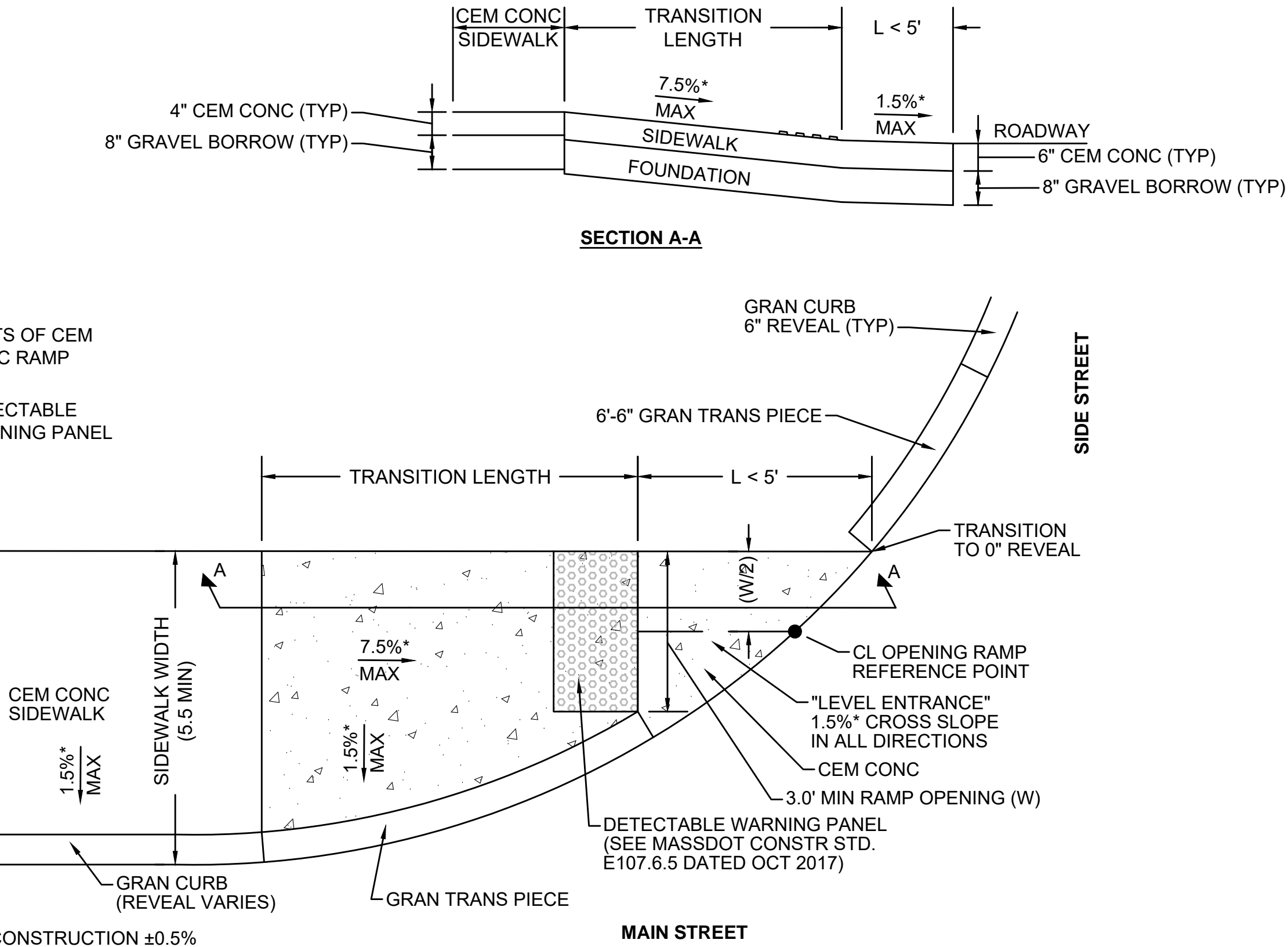
G

WHEELCHAIR RAMP DATA								
NO.	LOCATION (REF POINT)	SIDEWALK WIDTH	RAMP OPENING (W)	ROADWAY GUTTER	REVEAL	TRANS	OPENING ELEV	COMMENTS
BOSTON POST ROAD (ROUTE 20) STATE HIGHWAY LAYOUT								
1	183+13.3, 15.4' LT	5.5'	3.0'	0.46%	6"	7'-8"	134.27	
2	183+44.2, 15.7' LT	4.5'	3.0'	-1.14%	6"	9'-0"	134.49	

NOTE: NEGATIVE (-) ROADWAY GUTTER MAX DENOTES A LOW SIDE TRANSITION.

LEGEND

- LIMITS OF CEM CONC RAMP
- DETECTABLE WARNING PANEL



*TOLERANCE FOR CONSTRUCTION ±0.5%

WHEELCHAIR RAMP - 'L' IS LESS THAN 5'

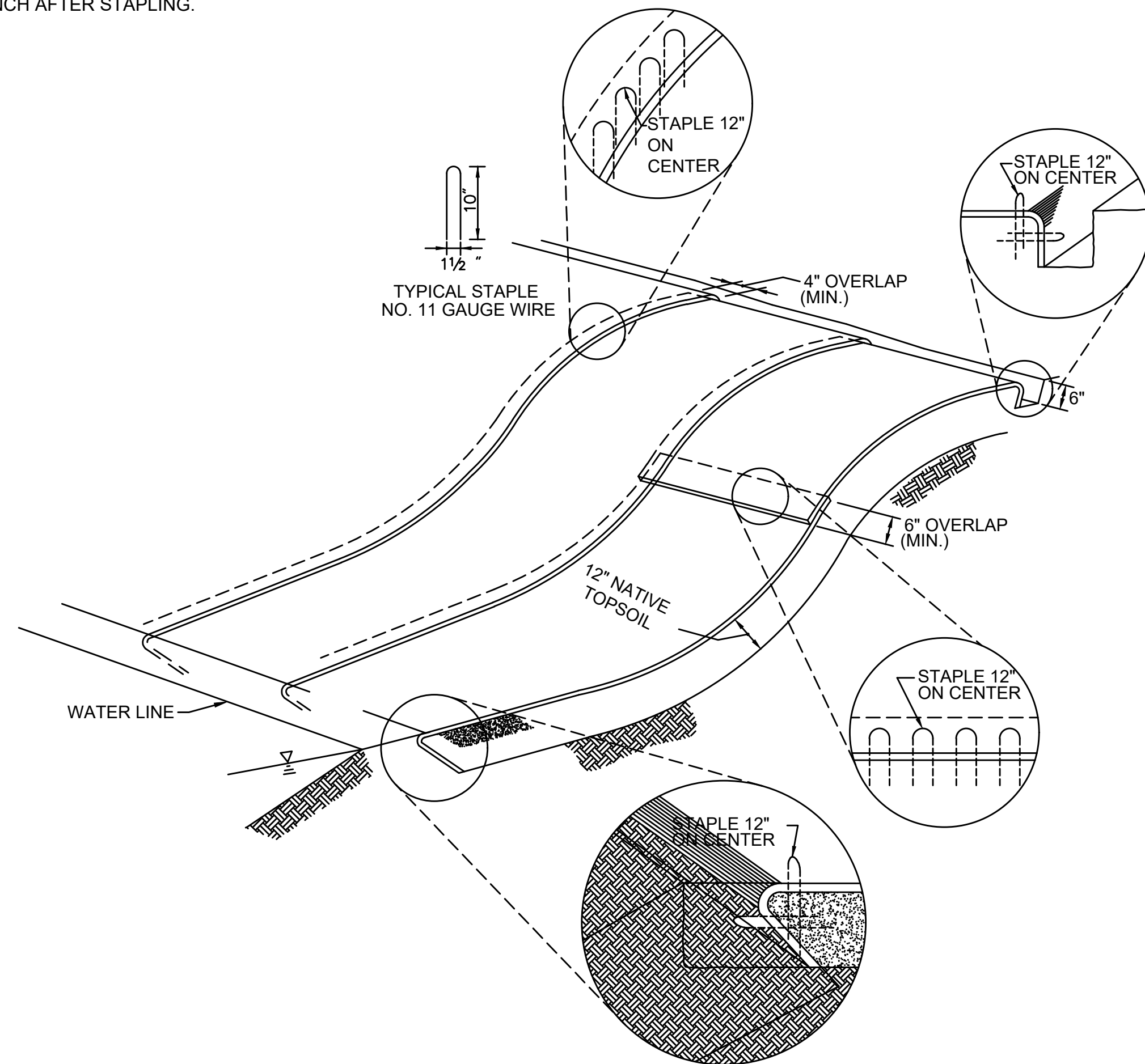
SCALE: N.T.S.

N O.	DESCRIPTION	BY	DATE	A P P R.	
REVISION					
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CONSTRUCTION DETAILS					
PLAN 129 OF 315					
SCALE: unless noted NTS	DATE MARCH 2020	DRAWN MS	CH'K D. SK	A P P R. MS	DRAWING NO. REV. . .

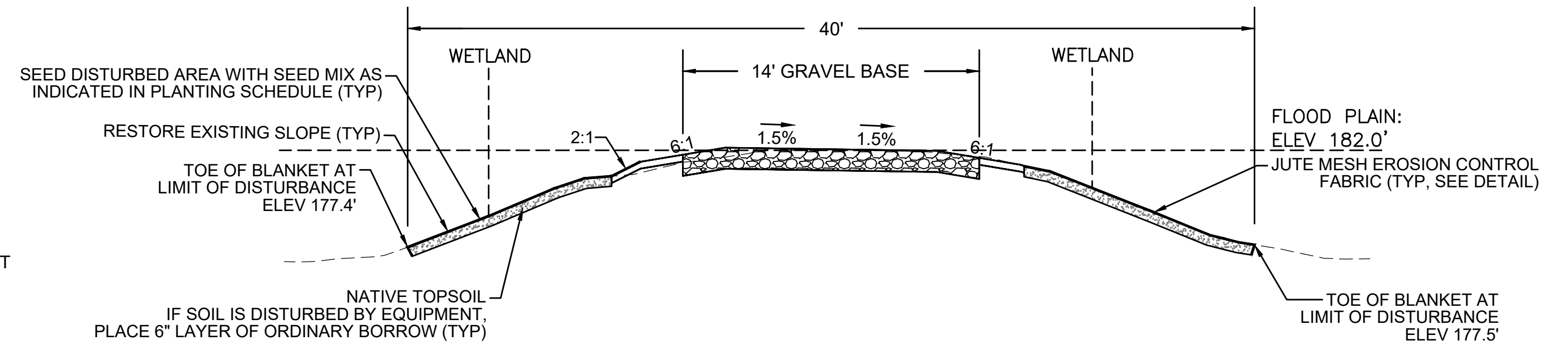
1 2 3 4 5 6 7 8 9 10 11

1. METHOD OF INSTALLATION SHALL BE AS PER MANUFACTURER'S RECOMMENDATIONS.

1. 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.
2. PREPARE SOIL BEFORE INSTALLING FABRIC, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
3. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE FABRIC IN A 6" (15cm) DEEP X 6" (15 cm) WIDE TRENCH WITH APPROXIMATELY 12" (30cm) OF FABRIC EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE FABRIC WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 cm) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30 cm) PORTION OF FABRIC BACK OVER SEED AND COMPACTED SOIL. SECURE FABRIC OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30 cm) APART ACROSS THE WIDTH OF THE FABRIC.
4. ROLL FABRIC FROM TOP OF SLOPE TO BOTTOM. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE.
5. INSTALL TREE, SHRUB, AND/OR PLUG PLANTINGS AT THE LOCATIONS INDICATED IN THE PLANTING SCHEDULE ON SHEET 131 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.
6. 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.
7. PLACE CONSECUTIVE FABRICS END OVER END (SHINGLE STYLE) WITH A 4"-6" (10 cm-15 cm) OVERLAP. USE A DOUBLE ROW OF STAPLES STAGGERED 4" (10 cm) APART AND 4" (10cm) ON CENTER TO SECURE FABRIC.
8. FULL LENGTH EDGE OF FABRIC AT TOP OF SIDE SLOPES MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 cm) APART IN A 6" (15 cm) DEEP X 6" (15 cm) WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
9. ADJACENT FABRICS MUST BE OVERLAPPED APPROXIMATELY 2"-5" (5 cm-12.5 cm) (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.
10. FULL LENGTH EDGE OF FABRIC AT BOTTOM OF SIDE SLOPES MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 cm) APART. FABRIC SHALL HAVE A MINIMUM 6" RUNOUT LENGTH UNDER GEOWEB.
11. A MINIMUM OF 4 NOTCHED WOOD STAKES SHALL BE INSTALLED TO SECURE EACH FABRIC, ONE AT EACH CORNER.
12. THE TERMINAL END OF THE FABRIC MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 cm) APART IN A 6" (15 cm) DEEP X 6" (15 cm) WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.



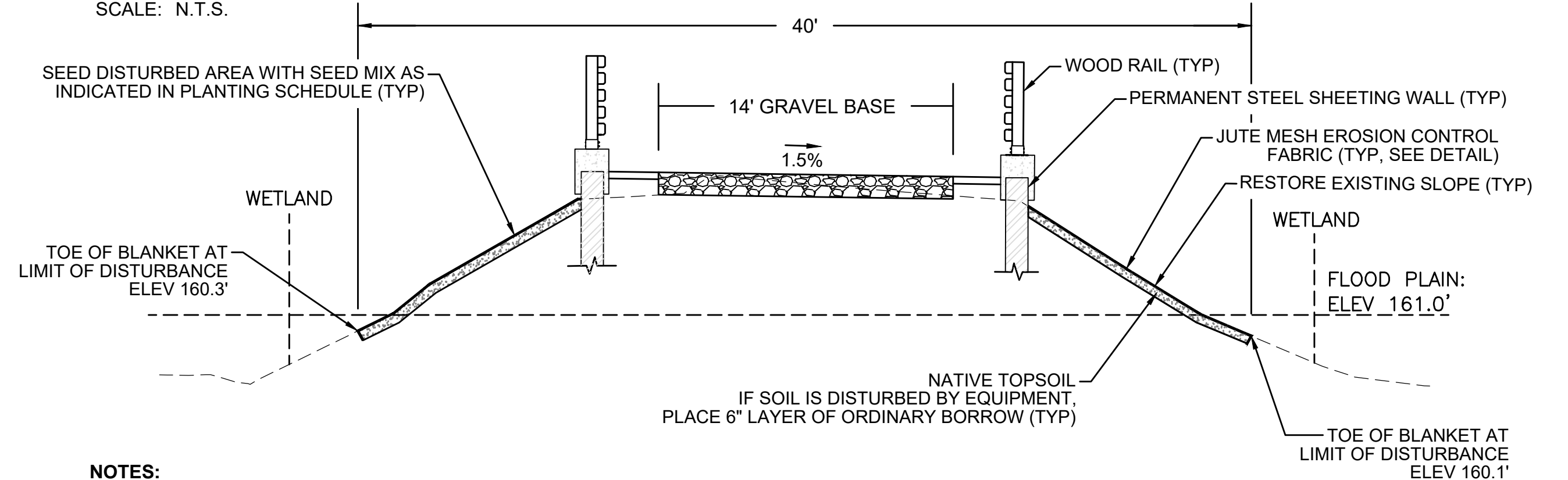
SCALE: N.T.S.



1. THIS SECTION APPLIES ONLY TO THE FOLLOWING STATION RANGES:

- STA 147+75 TO 148+50
STA 149+00 TO 150+25
2. THE CROSS-SECTION FOR STATION 148+00 IS USED AS A REPRESENTATIVE AREA FOR THE PURPOSES OF THIS DETAIL.

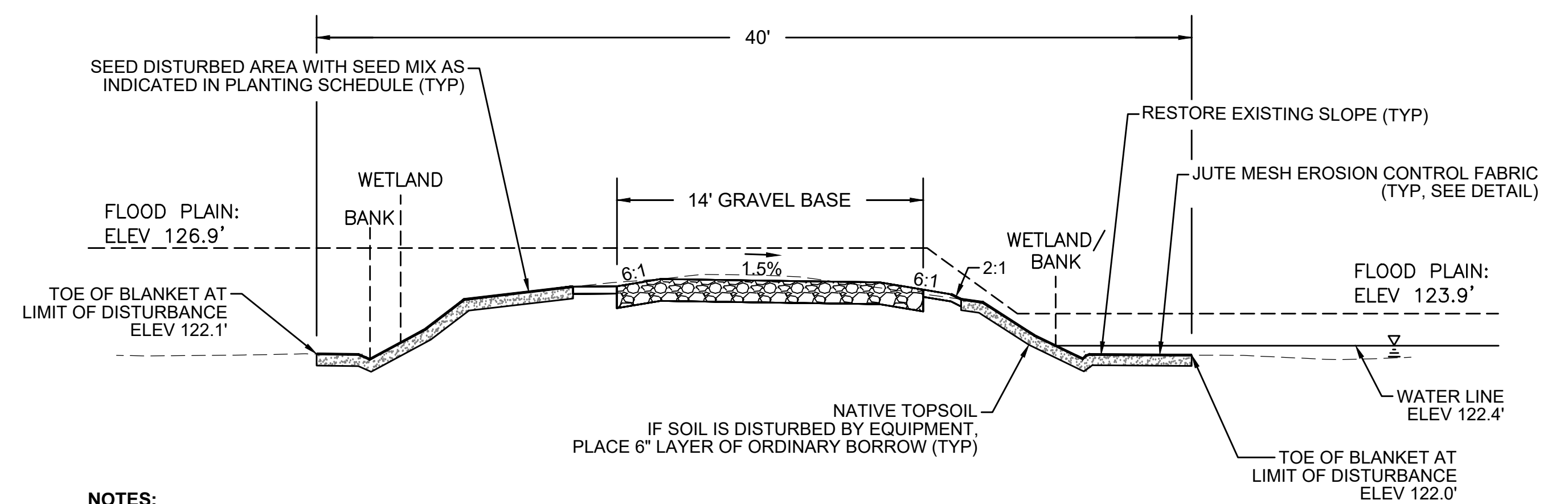
SCALE: N.T.S.



1. THIS SECTION APPLIES ONLY TO THE FOLLOWING STATION RANGES:

- STA 399+10 TO 400+20
STA 400+75 TO 401+75
2. THE CROSS-SECTION FOR STATION 401+00 IS USED AS A REPRESENTATIVE AREA FOR THE PURPOSES OF THIS DETAIL.

SCALE: N.T.S.

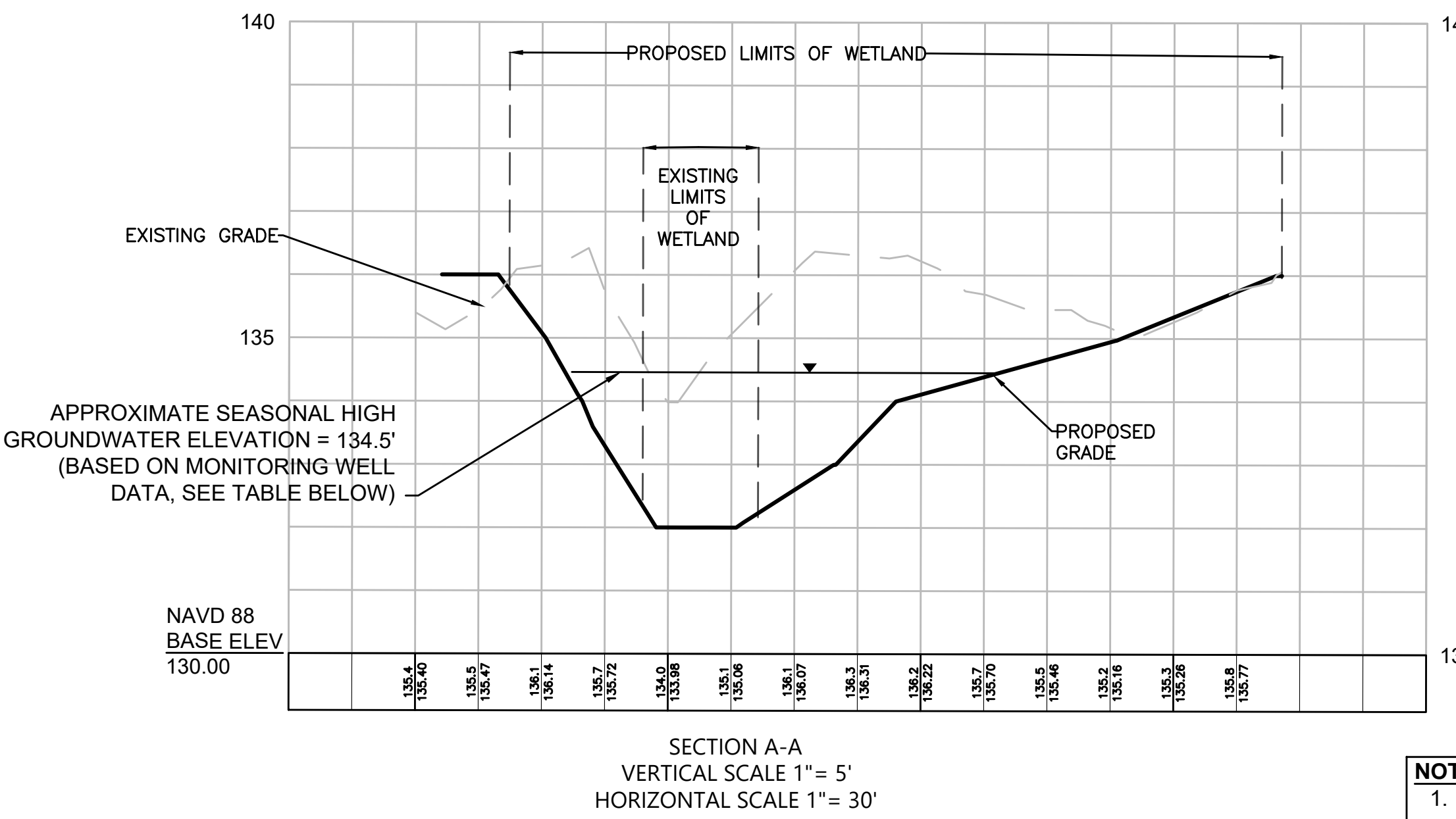
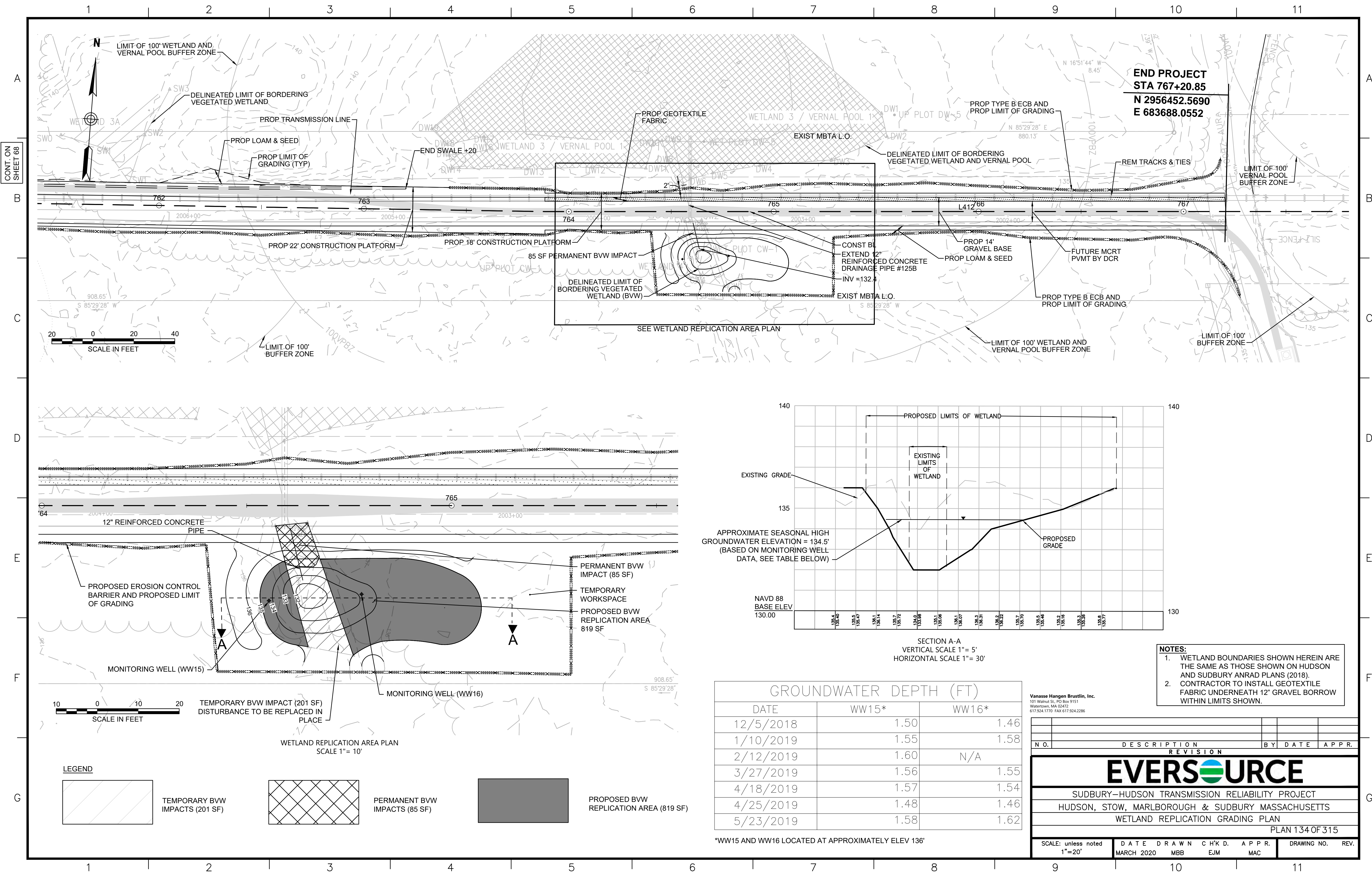


1. THIS SECTION APPLIES ONLY TO THE FOLLOWING STATION RANGES:

- STA 724+40 TO 725+00
STA 725+70 TO 726+40
2. THE CROSS-SECTION FOR STATION 726+00 IS USED AS A REPRESENTATIVE AREA FOR THE PURPOSES OF THIS DETAIL.

SCALE: N.T.S.

N.O.	DESCRIPTION					BY	DATE	APPR.	
REVISION									
EVERSOURCE									
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT									
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
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		MARCH 2020 MS		SK		MS			



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.

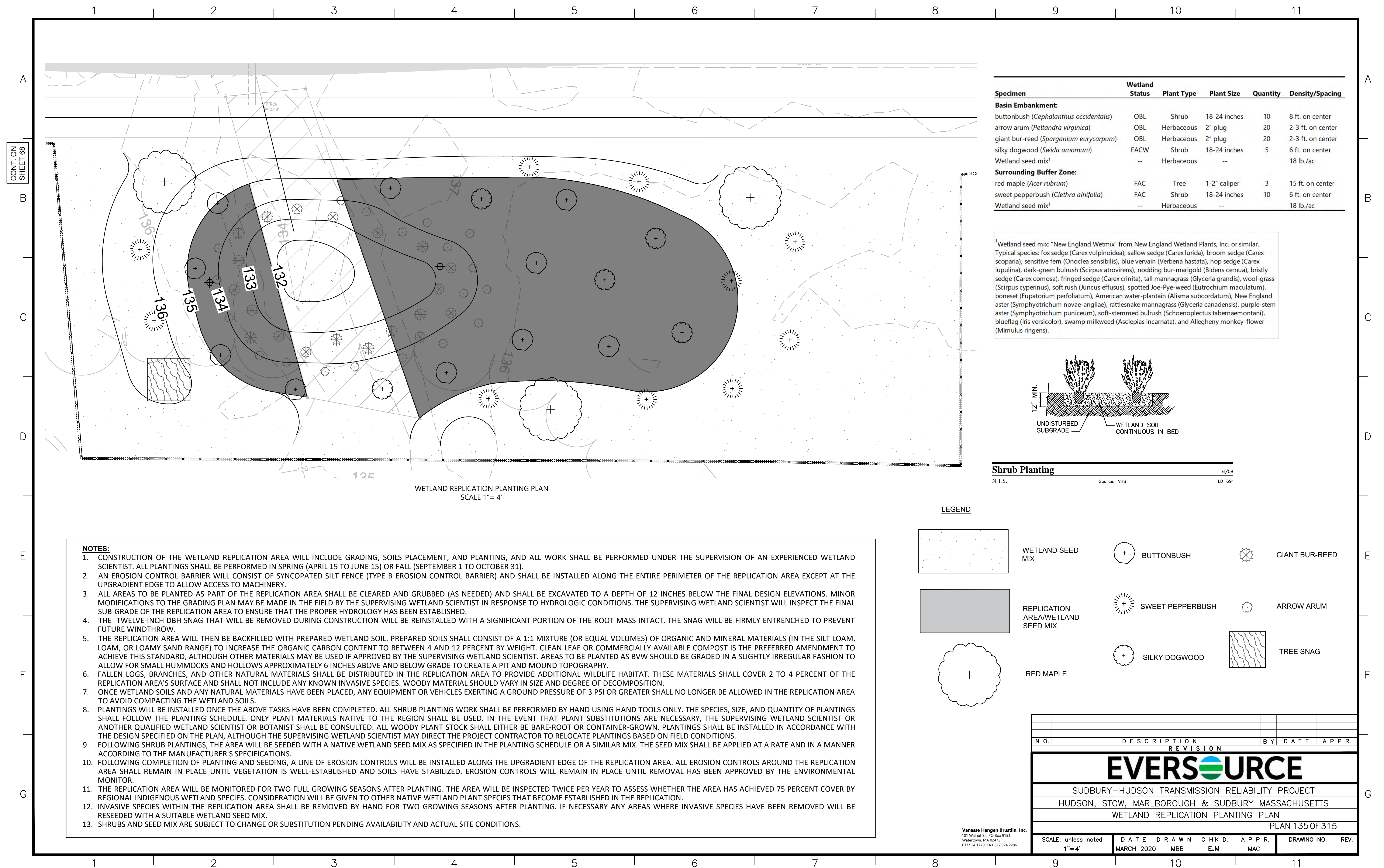
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Watertown, MA 02472
617.924.1770 FAX 617.924.2286

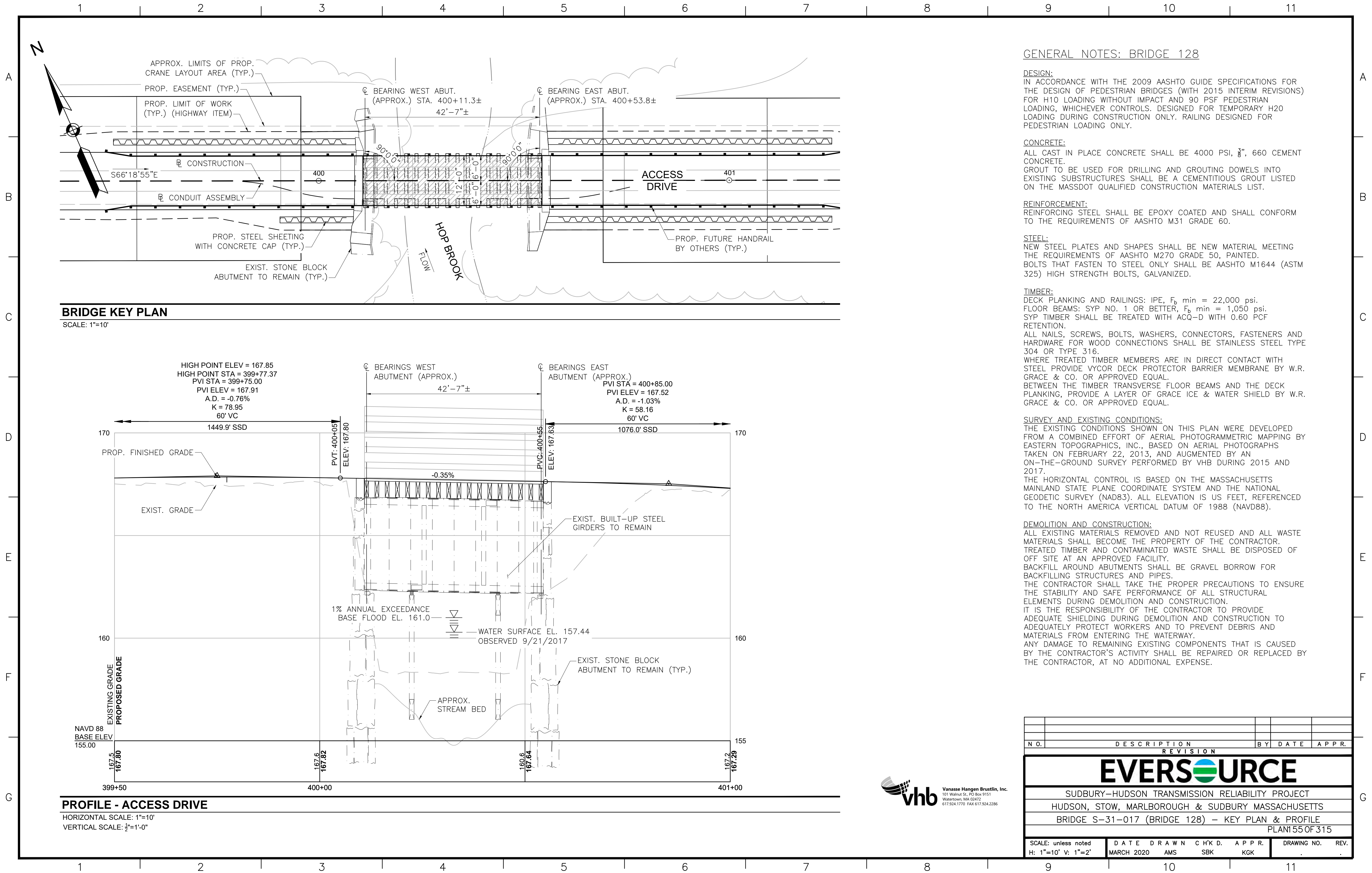
N.O.	DESCRIPTION	BY	DATE	APP.R.
	REVISION			

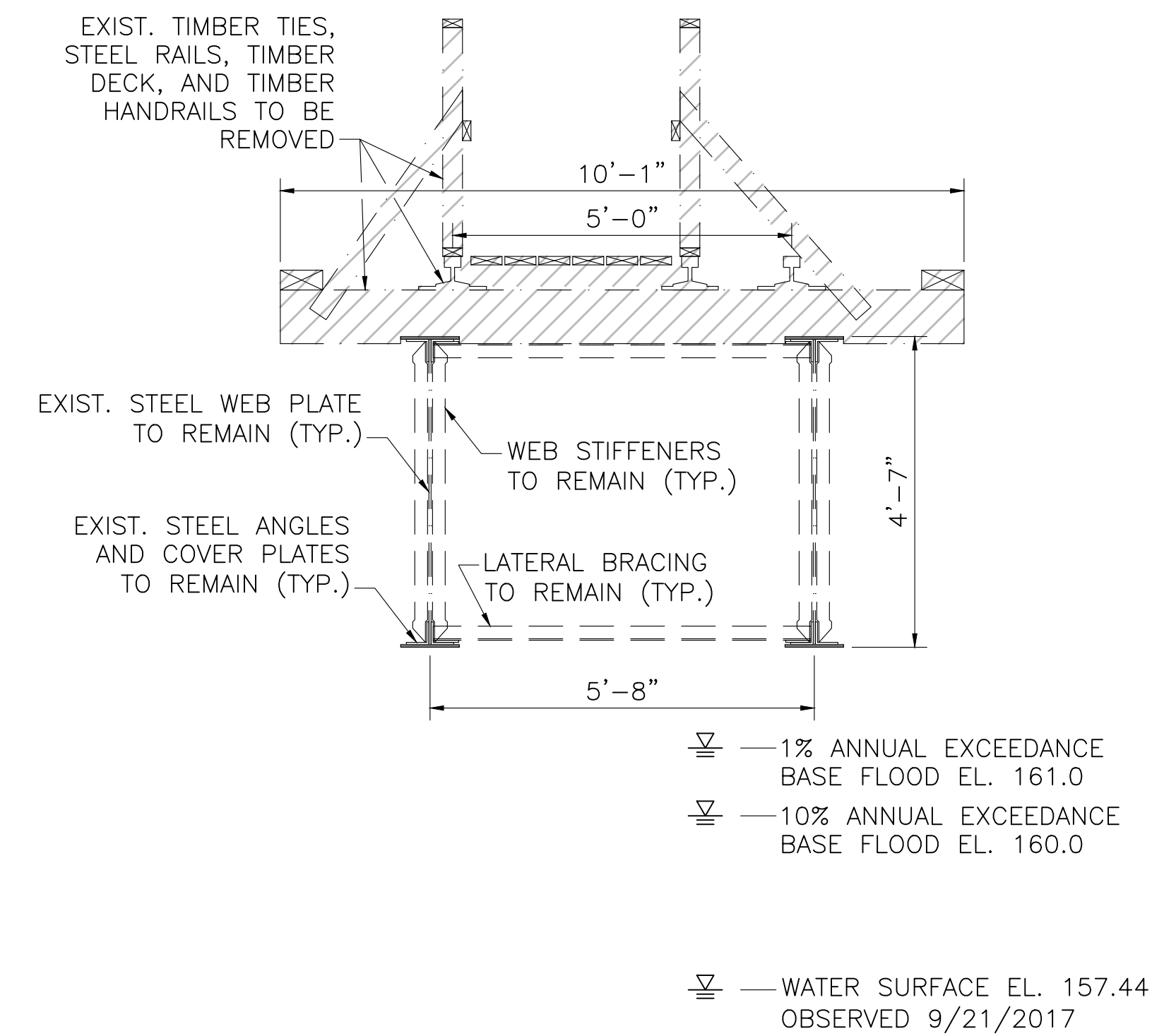
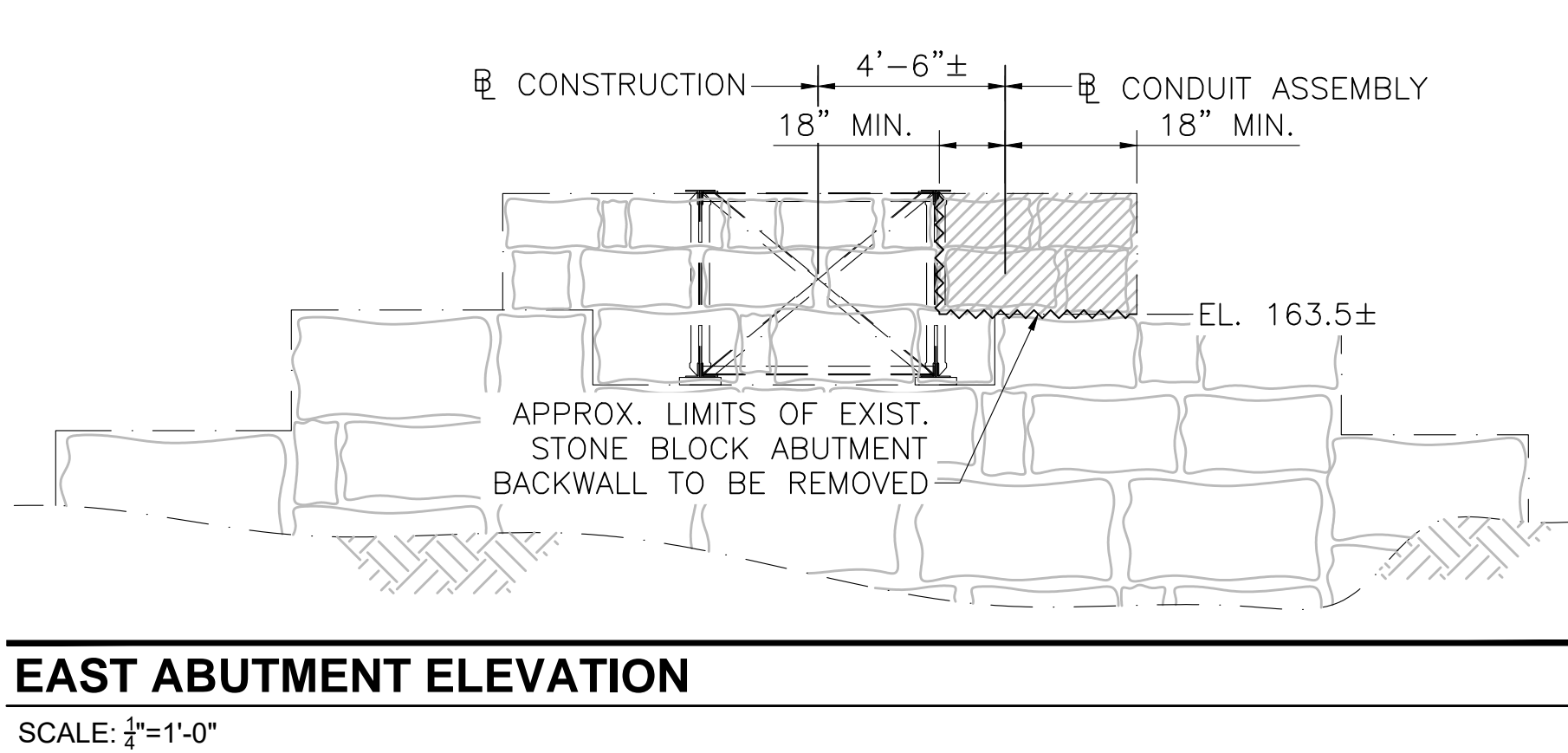
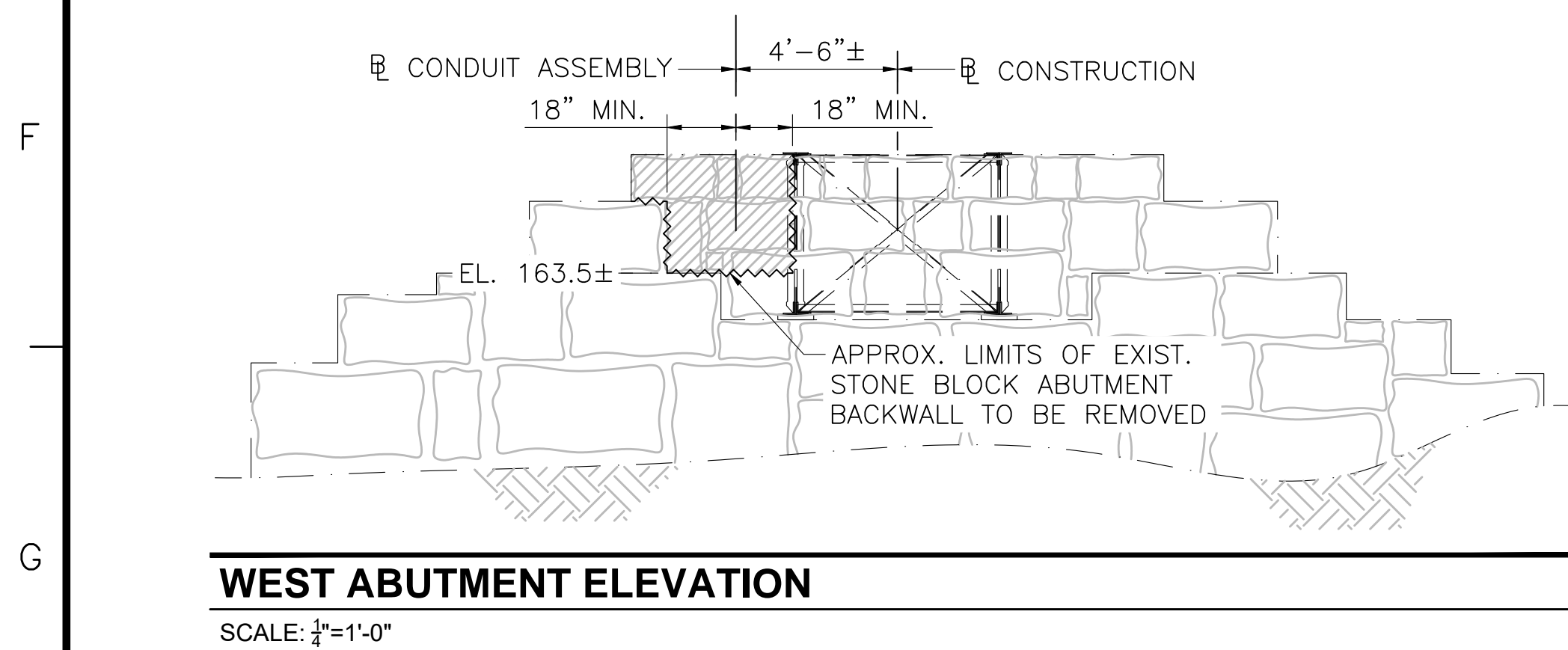
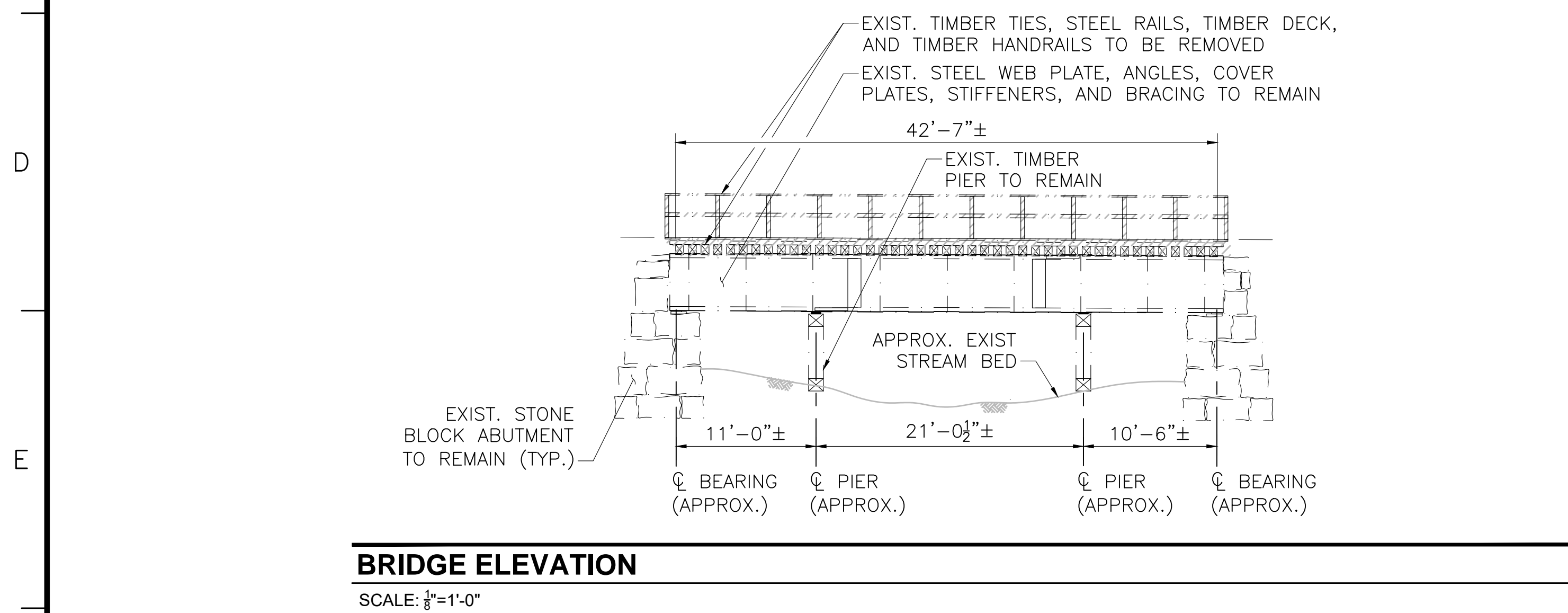
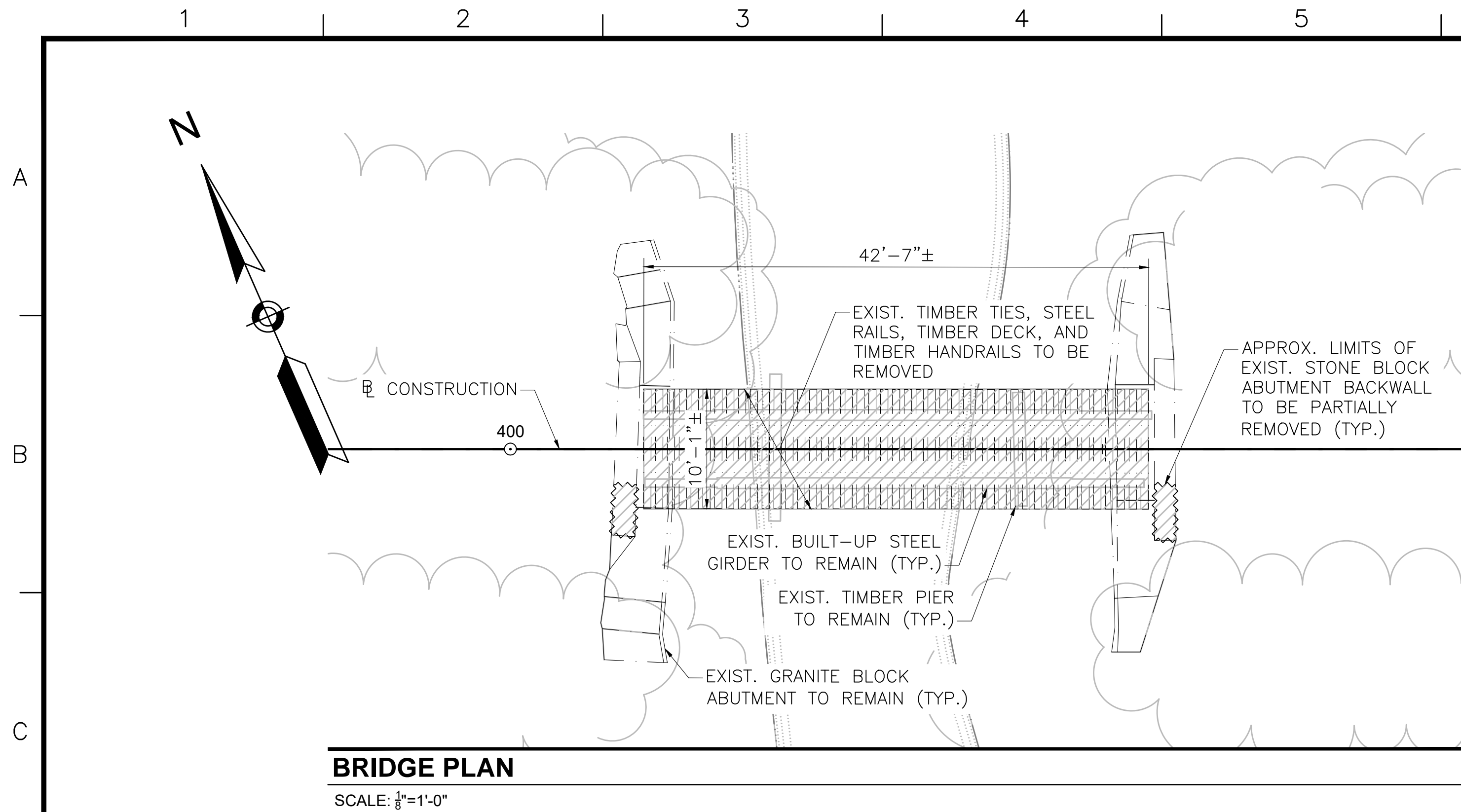
EVERSOURCE

SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
WETLAND REPLICATION GRADING PLAN
PLAN 134 OF 315

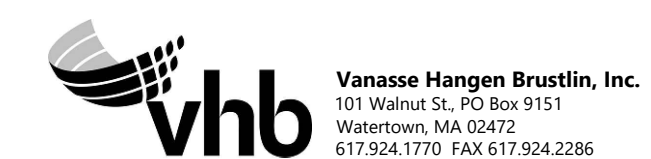
SCALE: unless noted 1"=20'	DATE MARCH 2020	DRAWN MBB	CH'K'D. EJM	APP.R. MAC	DRAWING NO.	REV.
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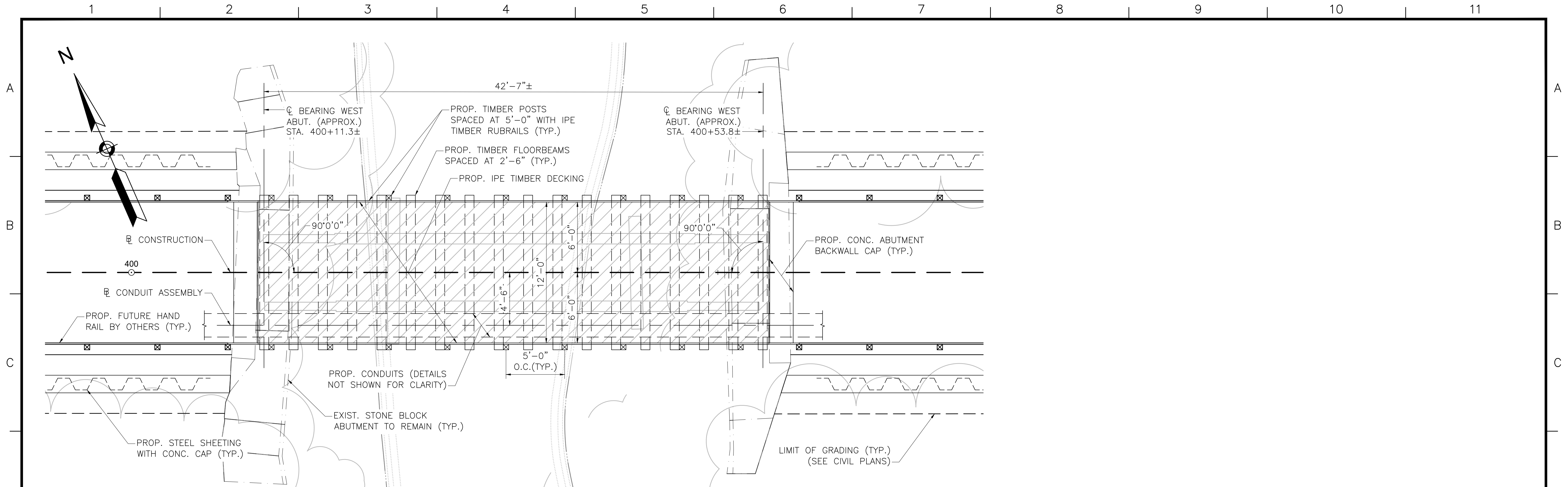




NOTE: CONTRACTOR SHALL INSTALL NETTING OR SHIELDING TO CONTAIN DEBRIS DURING DEMOLITION.

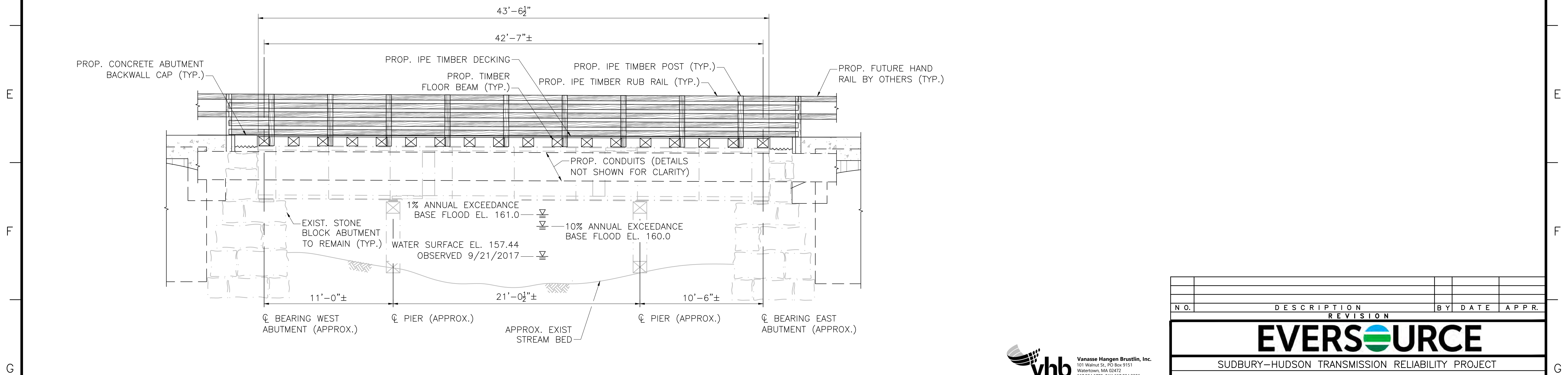


N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
BRIDGE S-31-017 (BRIDGE 128) - DEMOLITION PLAN				
PLAN 156 OF 315				
SCALE: unless noted VARIES	DATE: MARCH 2020	DRAWN: AMS	CHK'D: SBK	APPR.: KGK
DRAWING NO.	REV.			



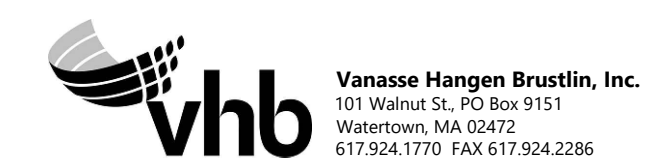
BRIDGE 128 (HOP BROOK) PLAN

SCALE: 1/4"=1'-0"

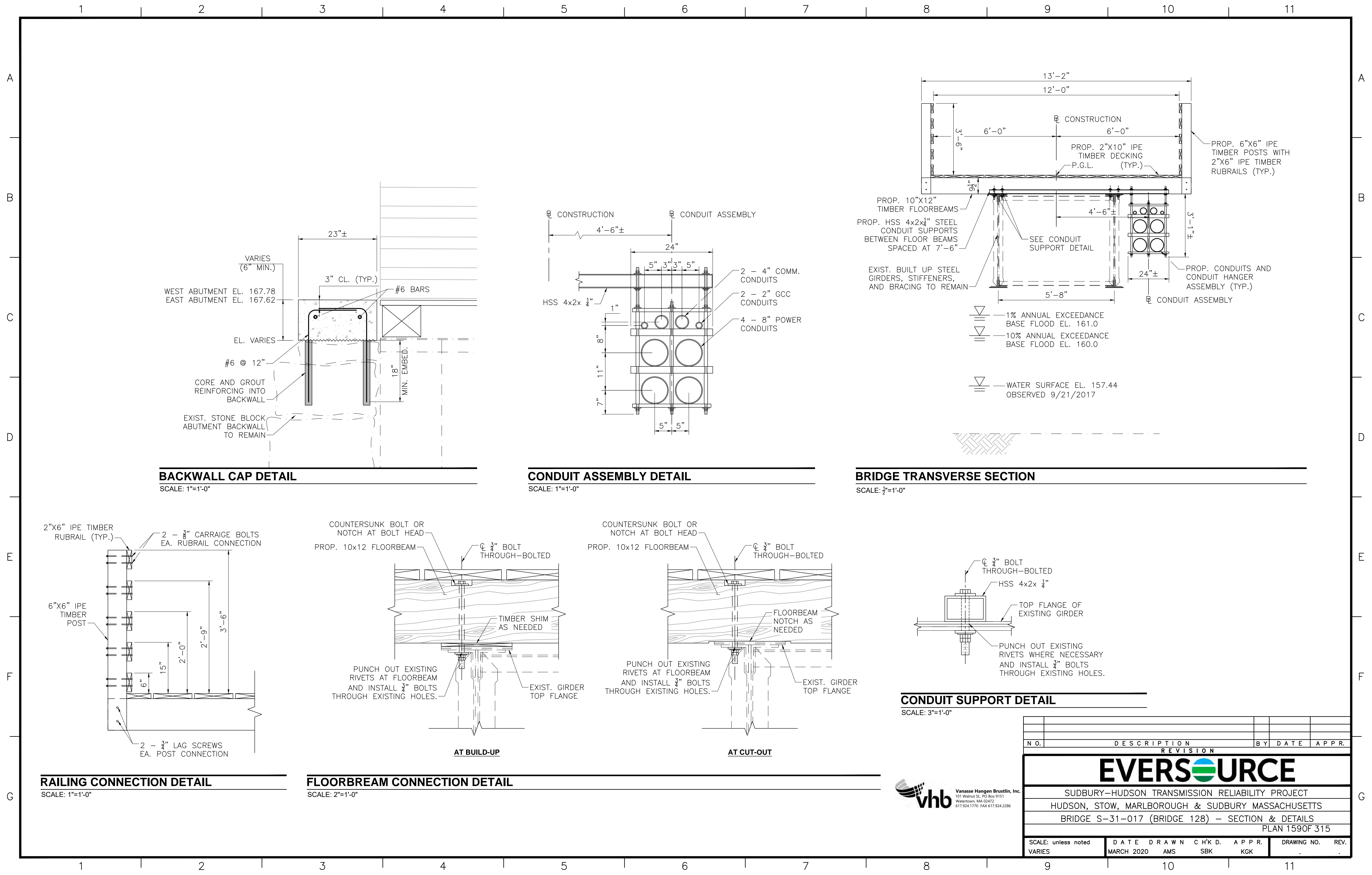


BRIDGE 128 (HOP BROOK) ELEVATION

SCALE: 1/4"=1'-0"



N.O.	DESCRIPTION				BY	DATE	APPR.
REVISION							
<div>EVERSOURCE</div>							
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT							
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS							
BRIDGE S-31-017 (BRIDGE 128) - PLAN & ELEVATION							
PLAN 157 OF 315							
SCALE: unless noted 1"= 4'		DATE	DRAWN	C'H'K D.	APPR.	DRAWING NO.	REV.
		MARCH 2020	AMS	SBK	KGK		



BACKWALL CAP DETAIL

SCALE: 1"=1'-0"

CONDUIT ASSEMBLY DETAIL

SCALE: 1"=1'-0"

BRIDGE TRANSVERSE SECTION

SCALE: 1/2"=1'-0"

CONDUIT SUPPORT DETAIL

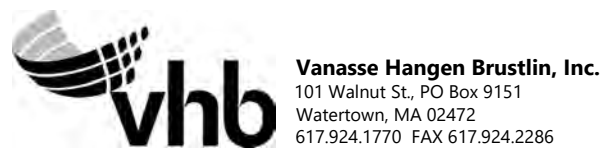
SCALE: 3/4"=1'-0"

RAILING CONNECTION DETAIL

SCALE: 1"=1'-0"

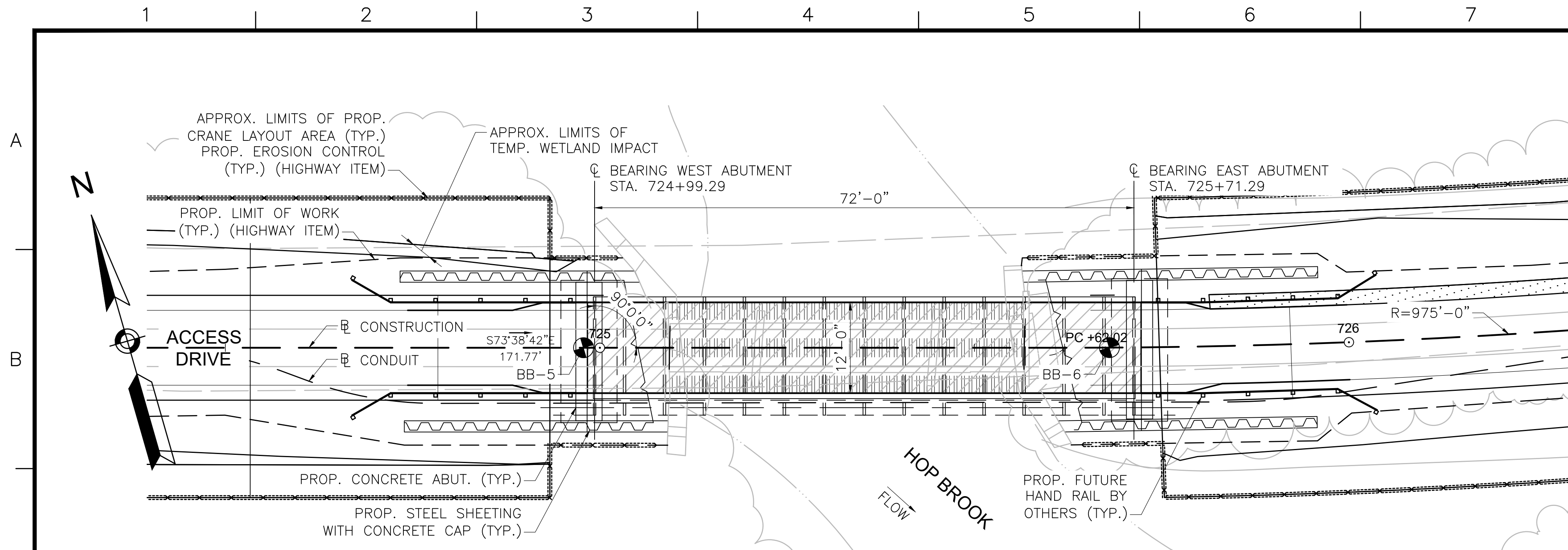
FLOORBREAM CONNECTION DETAIL

SCALE: 2"=1'-0"



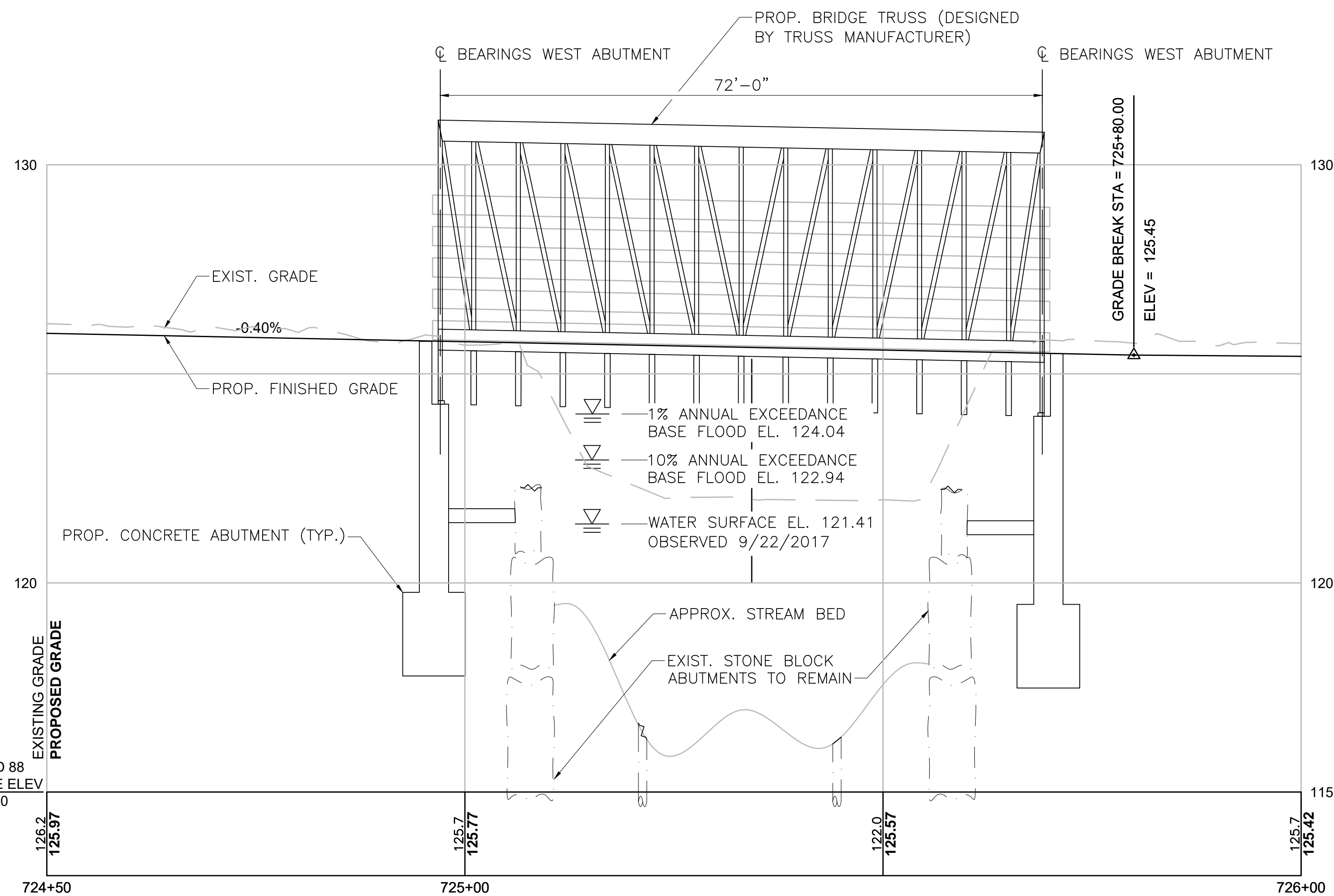
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REVISION									
EVERSOURCE									
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT									
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
BRIDGE S-31-017 (BRIDGE 128) - SECTION & DETAILS									
PLAN 1590F 315									
SCALE: unless noted		DATE		DRAWN		CHK'D		APPR.	
VARIES		MARCH 2020		AMS		SBK		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.

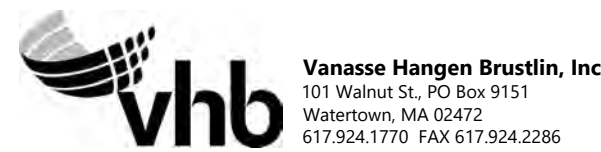
REINFORCEMENT:
REINFORCING STEEL SHALL BE EPOXY COATED AND SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M31 GRADE 60.

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.

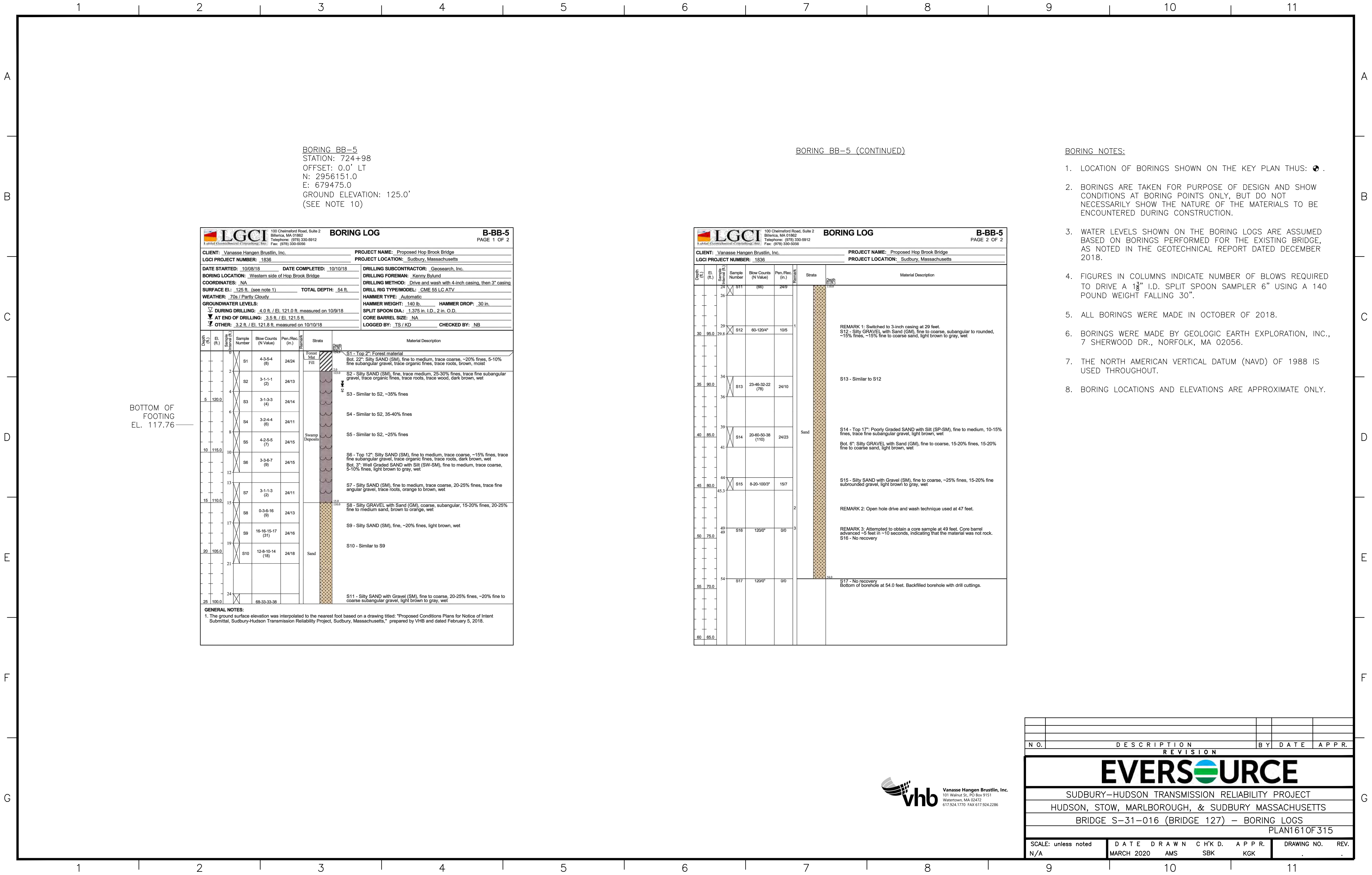
SURVEY AND EXISTING CONDITIONS:
THE EXISTING CONDITIONS SHOWN ON THIS PLAN WERE DEVELOPED FROM A COMBINED EFFORT OF AERIAL PHOTOGRAMMETRIC MAPPING BY EASTERN TOPOGRAPHICS, INC., BASED ON AERIAL PHOTOGRAPHS TAKEN ON FEBRUARY 22, 2013, AND AUGMENTED BY AN ON-THE-GROUND SURVEY PERFORMED BY VHB DURING 2015 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 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.



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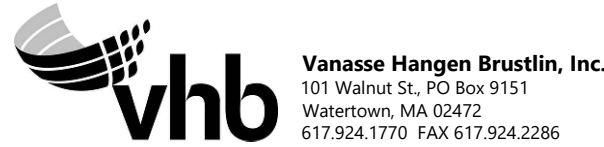
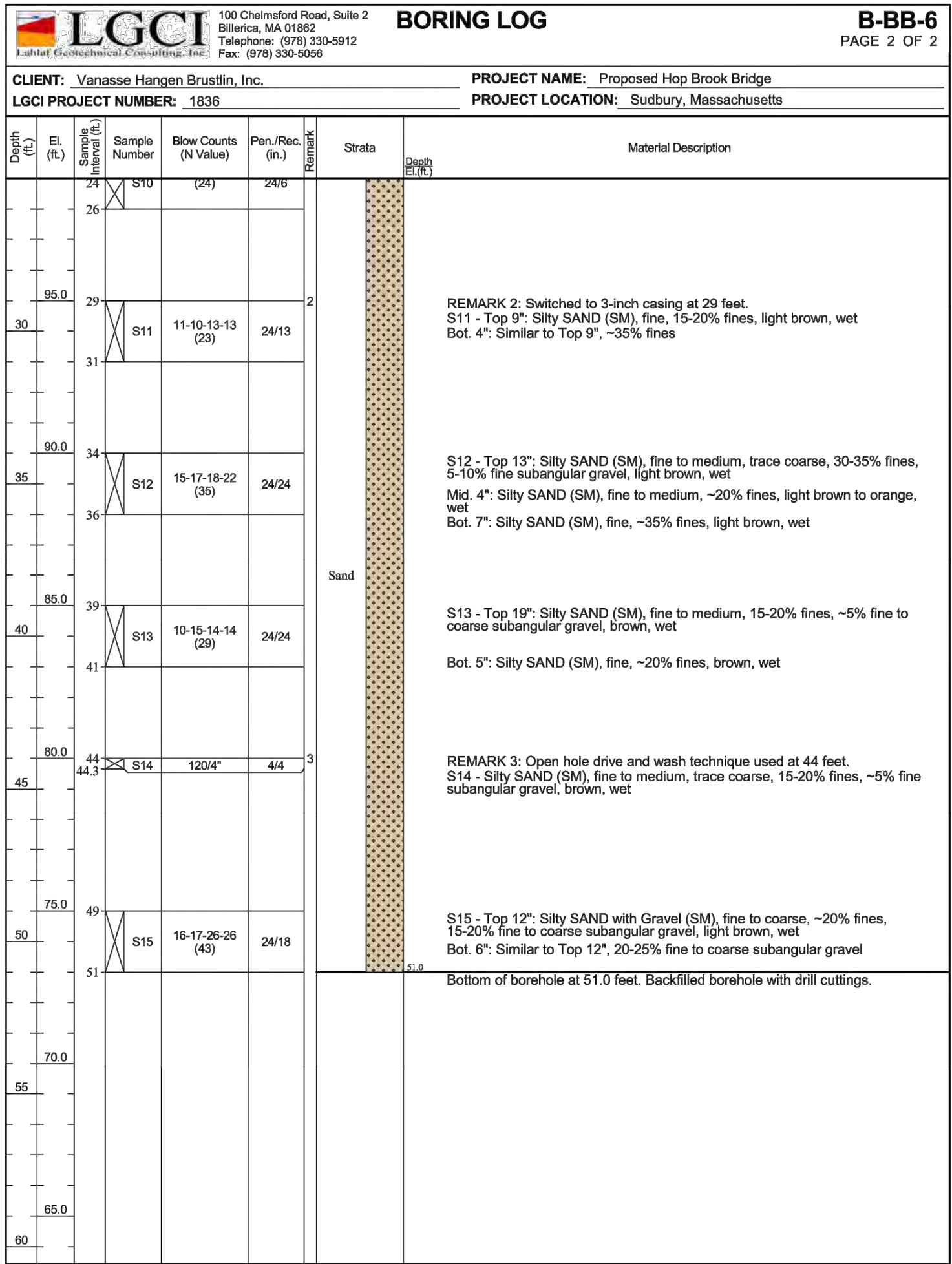
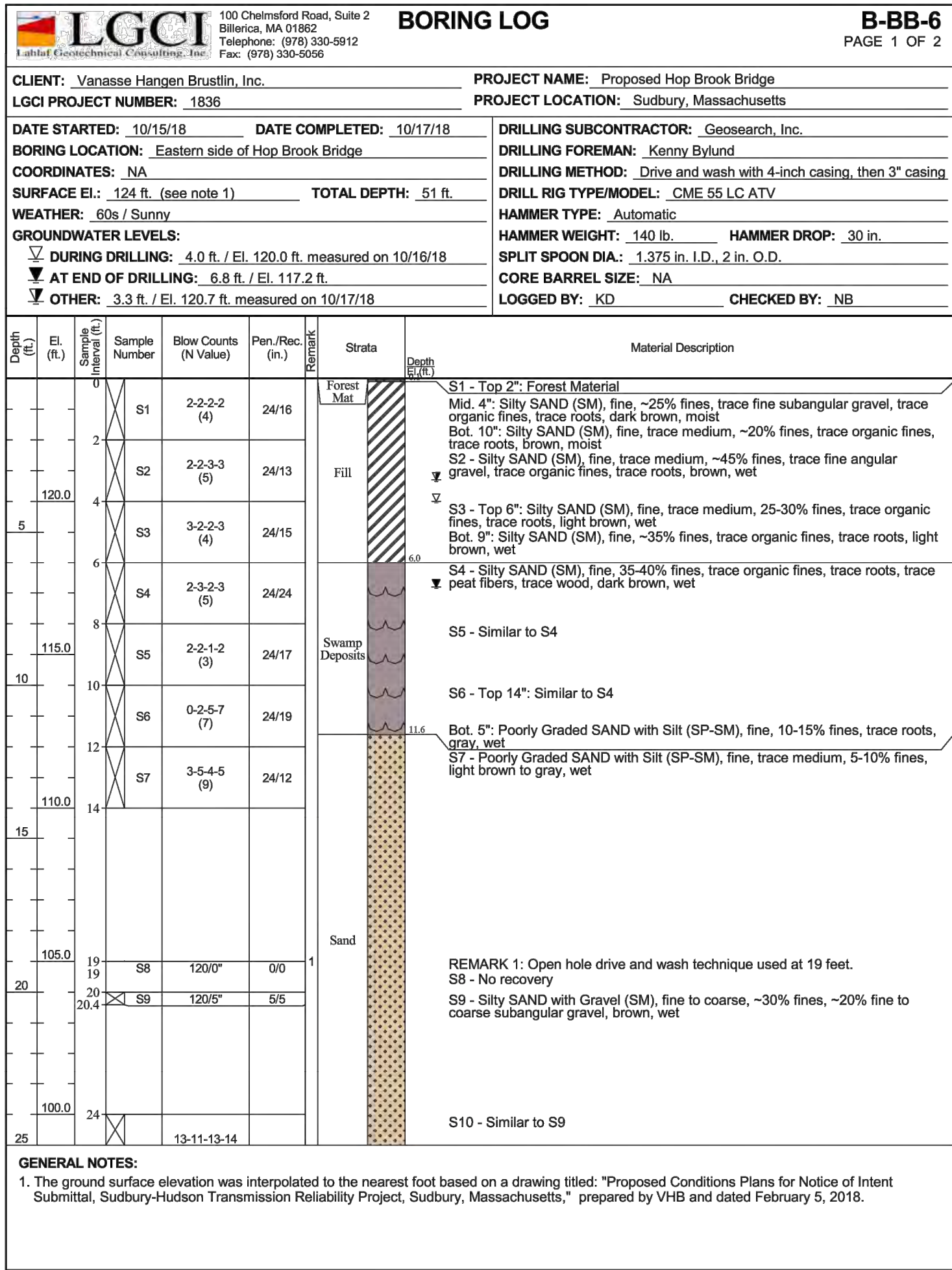
N O.	DESCRIPTION					BY	DATE	APPR.	
REVISION									
EVERSOURCE									
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT									
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
BRIDGE S-31-016 (BRIDGE 127) - KEY PLAN & PROFILE									
PLAN 160 OF 315									
SCALE: unless noted H: 1"=10' V: 1"=2'		DATE	DRAWN	C H'K D.	APPR.		DRAWING NO. REV.		
		MARCH 2020	AMS	SBK	KGK				



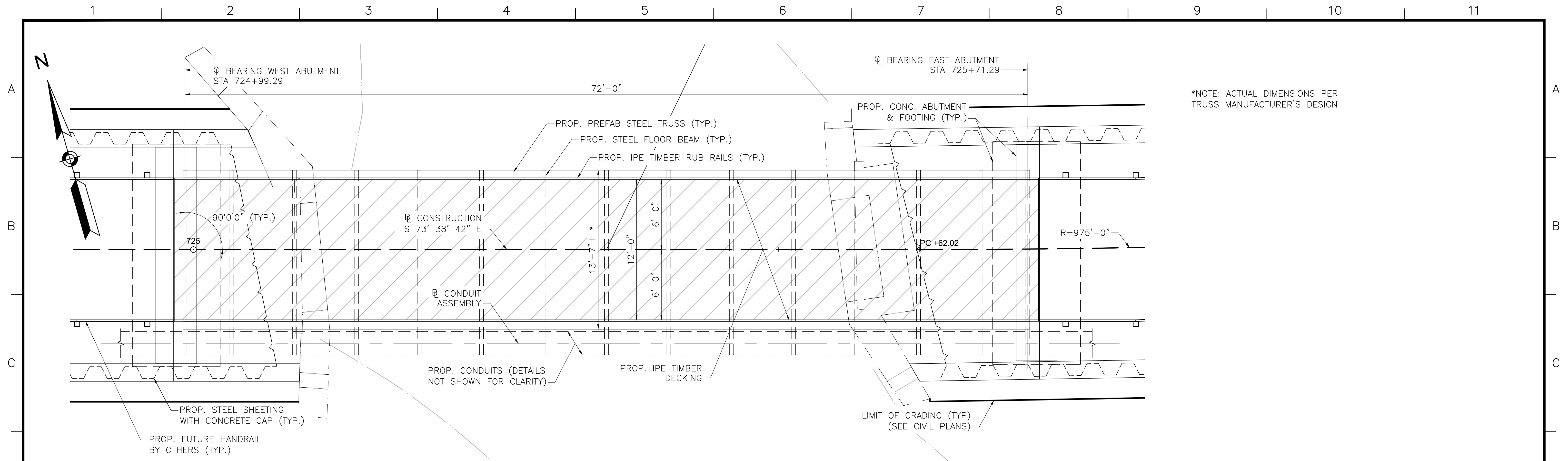
BORING BB-6
STATION: 725+68.0
OFFSET: 0.0' LT
N: 2956131.0
E: 679542.0
GROUND ELEVATION: 124.0'
(SEE NOTE 10, SHEET 161 OF 315)

BORING BB-6 (CONTINUED)

BOTTOM OF
FOOTING
EL. 117.47

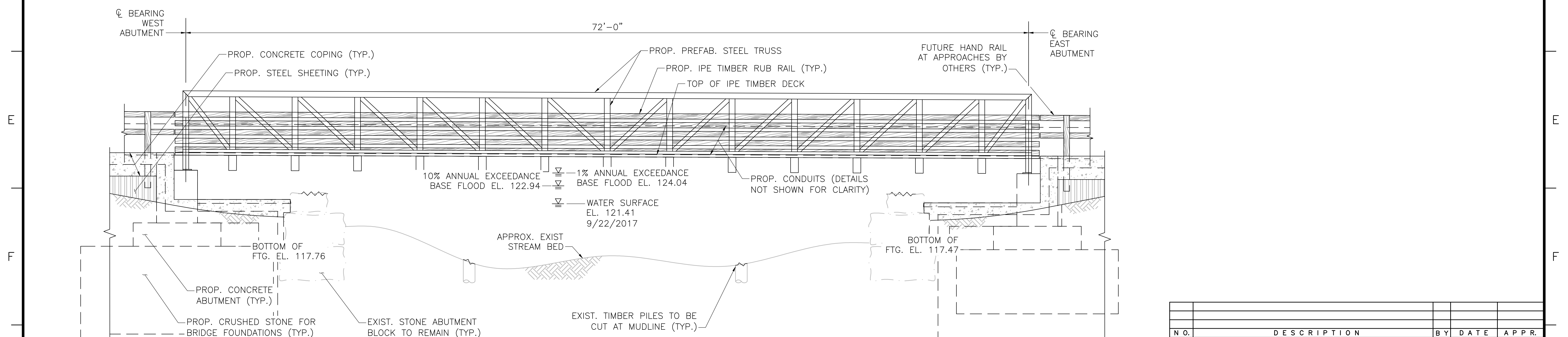


N O.	DESCRIPTION	BY	DATE	APP R.	
REVISION					
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH, & SUDBURY MASSACHUSETTS					
BRIDGE S-31-016 (BRIDGE 127) - BORING LOGS					
PLAN 162 OF 315					
SCALE: unless noted	DATE	DRAWN	CHECKED	APP R.	DRAWING NO. REV.
N/A	MARCH 2020	AMS	SBK	KGK	.



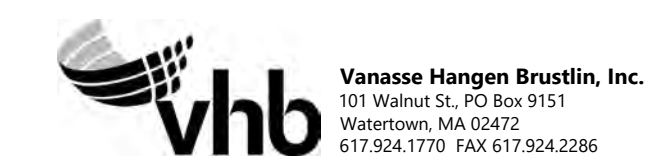
BRIDGE PLAN

SCALE: 1/4"=1'-0"

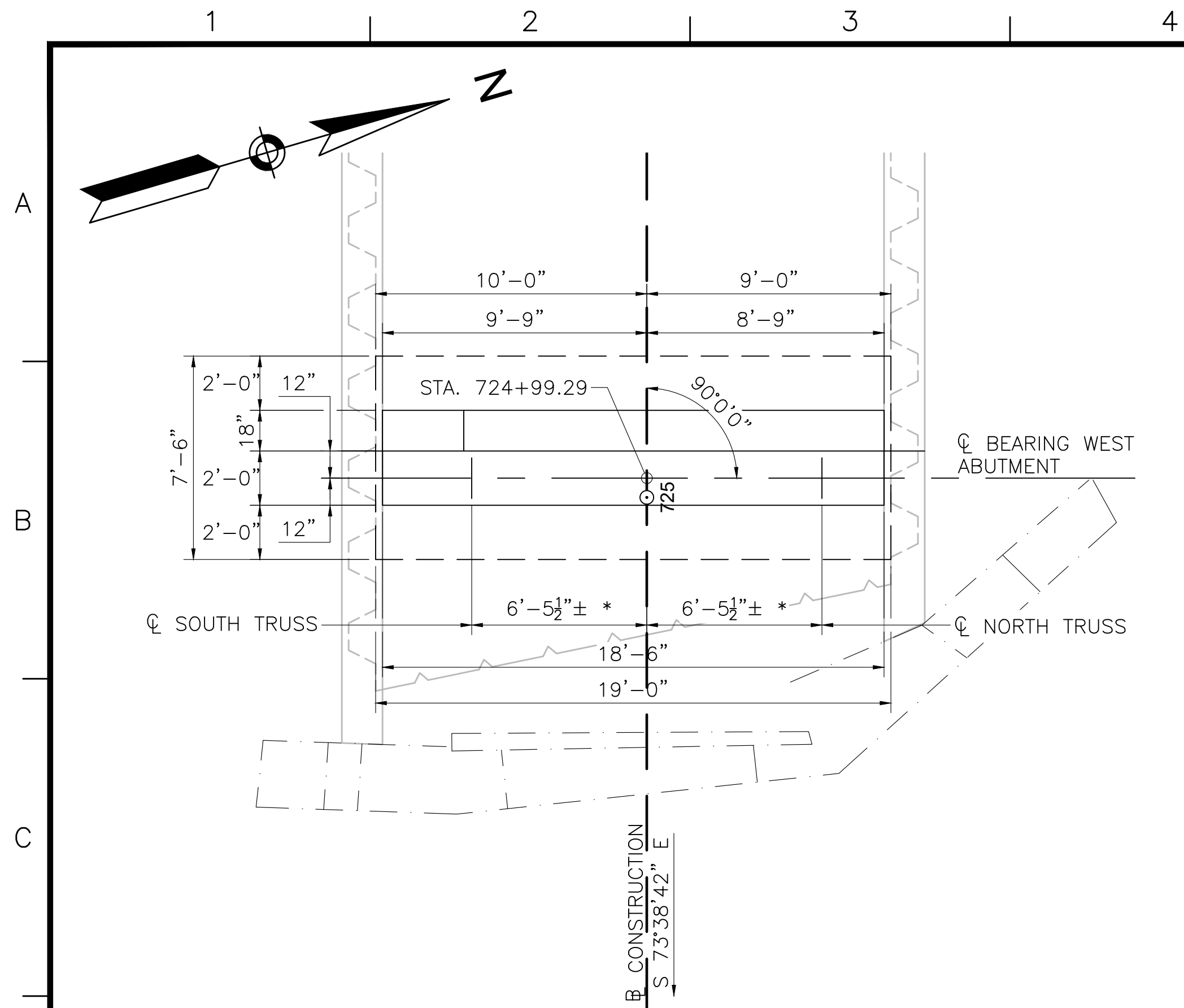


BRIDGE ELEVATION

SCALE: 1/4"=1'-0"

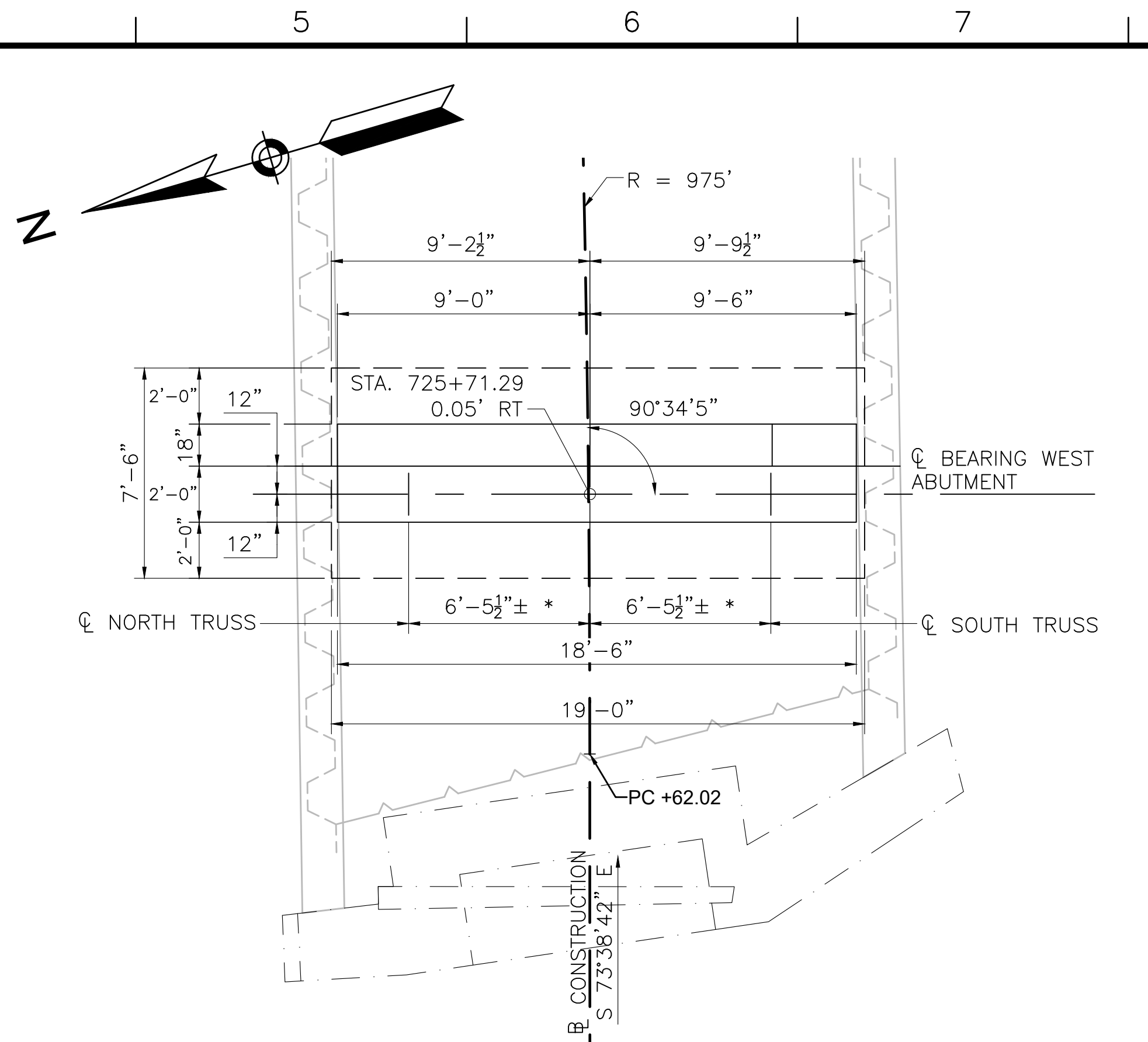


N O.		D E S C R I P T I O N				B Y		D A T E		A P P R.	
R E V I S I O N											
<div>EVERSOURCE</div>											
SUDBURY—HUDSON TRANSMISSION RELIABILITY PROJECT											
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS											
BRIDGE S-31-016 (BRIDGE 127, HOP BROOK) – PLAN & EL.											
PLANT 64 OF 315											
SCALE: unless noted 1"=4'		D A T E		D R A W N		C H'K D.		A P P R.		DRAWING NO. REV.	
		MARCH 2020		AMS		SBK		KGK		.	



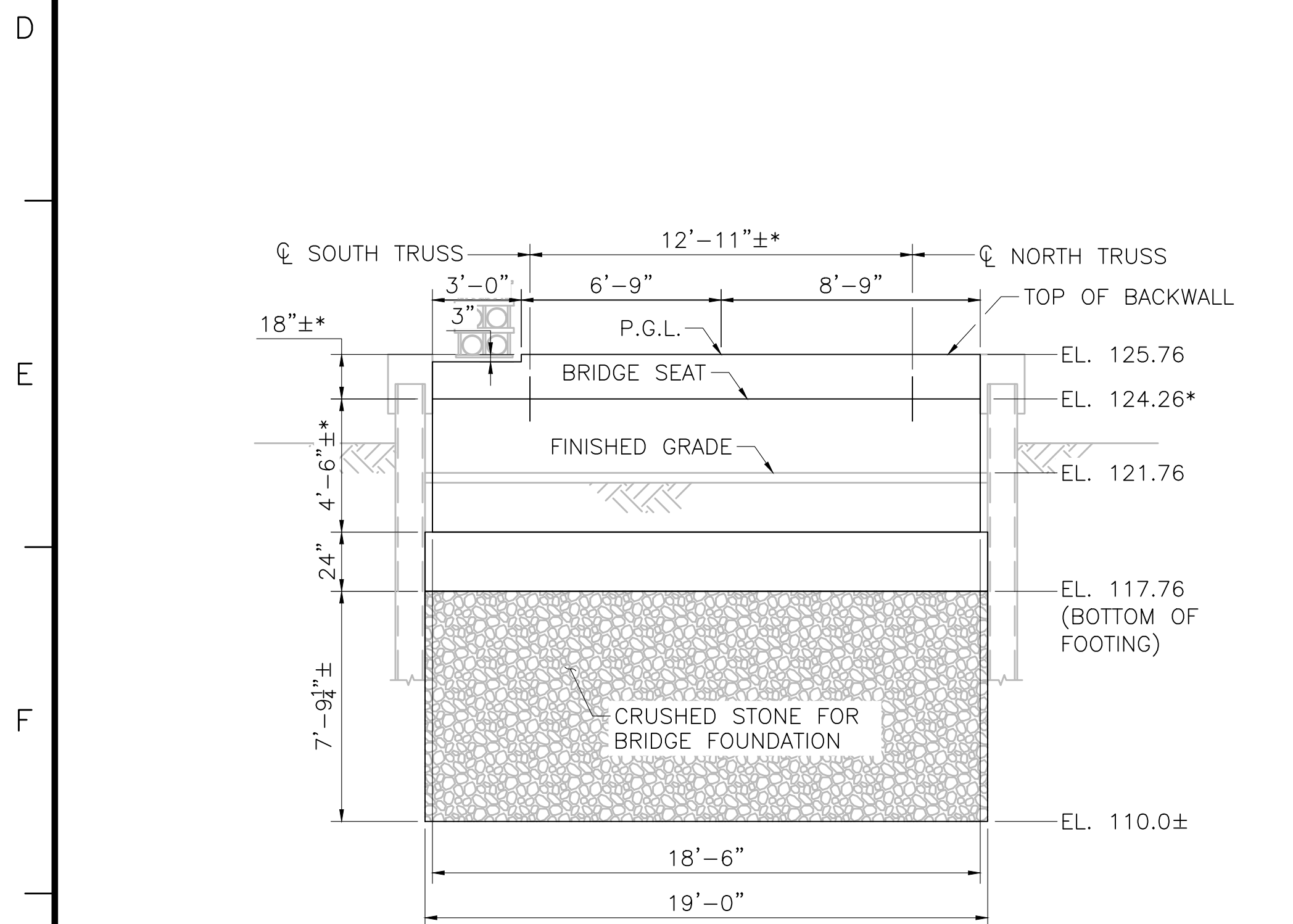
WEST ABUTMENT PLAN

SCALE: $\frac{1}{4}$ "=1'-0"



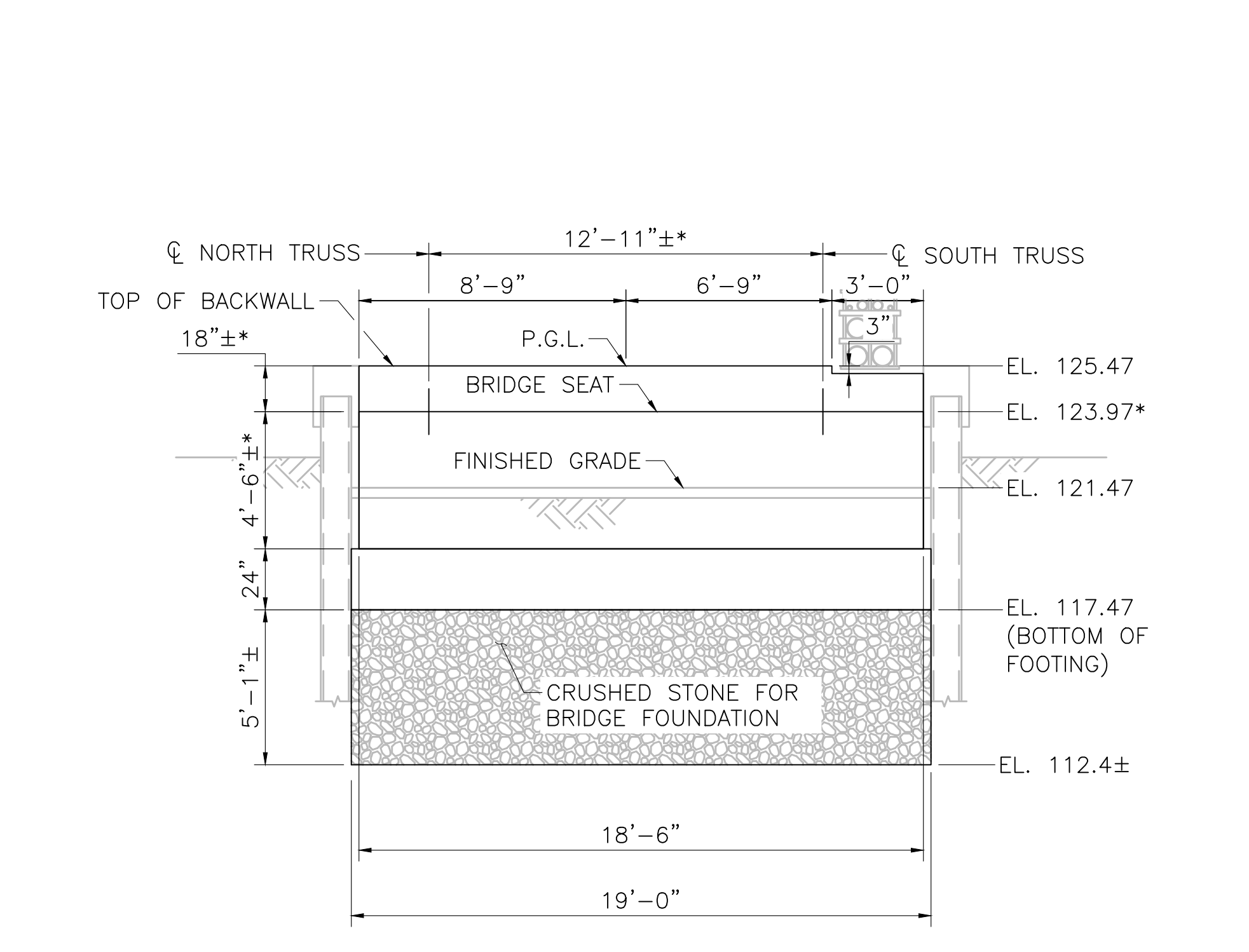
EAST ABUTMENT PLAN

SCALE: $\frac{1}{4}$ "=1'-0"



WEST ABUTMENT ELEVATION

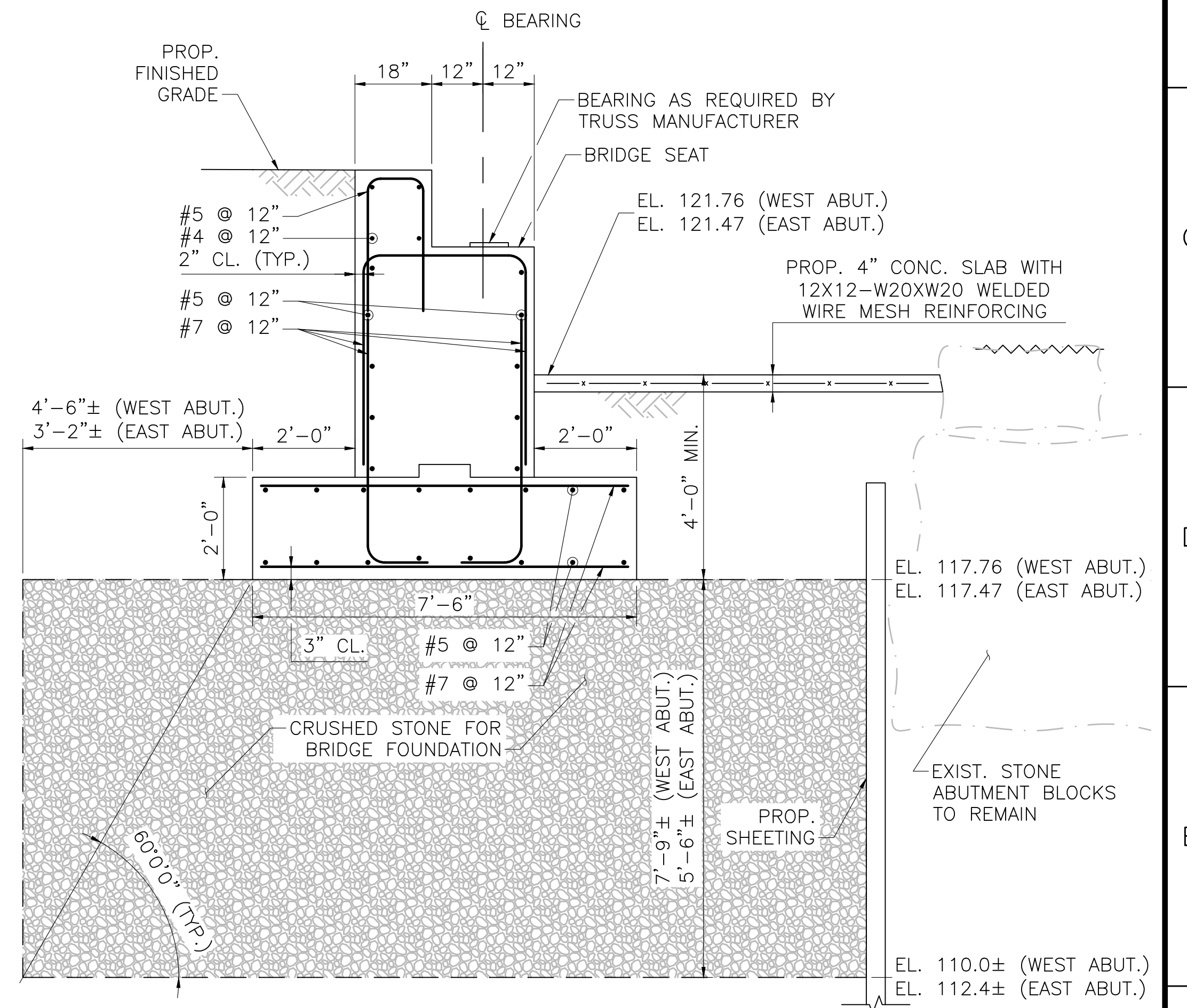
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EAST ABUTMENT ELEVATION

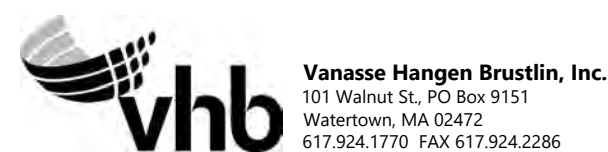
SCALE: $\frac{1}{4}$ "=1'-0"

*NOTE: ACTUAL DIMENSIONS PER TRUSS MANUFACTURER'S DESIGN

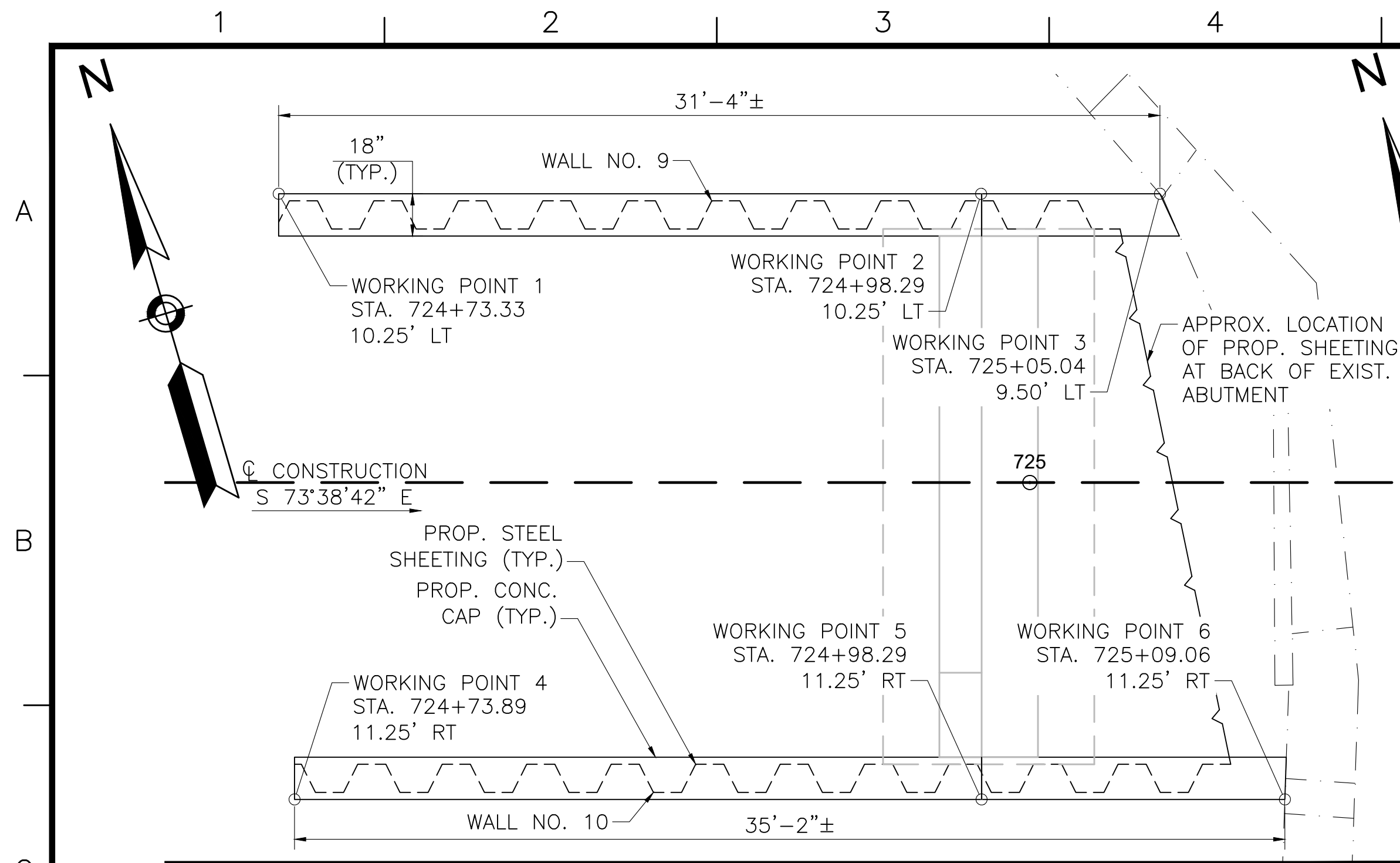


TYPICAL ABUTMENT SECTION

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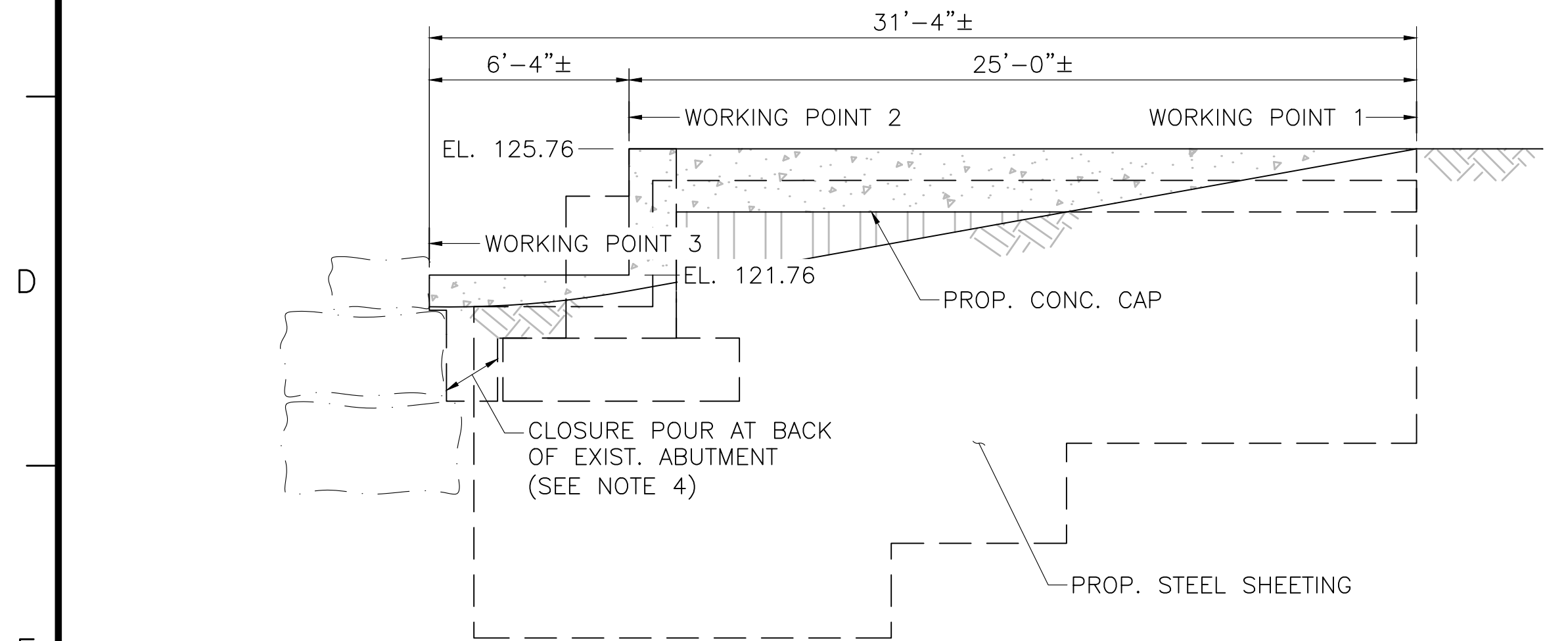


N.O.	DESCRIPTION	BY	DATE	APPR.
REVISION				
EVERSOURCE				
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT				
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS				
BRIDGE S-31-016 (BRIDGE 127) - SUBSTRUCTURE DETAILS				
PLAN 65 OF 315				
SCALE: unless noted 1"=4'	DATE MARCH 2020	DRAWN AMS	CHK'D SBK	APPR. KGK
DRAWING NO.	REV.			



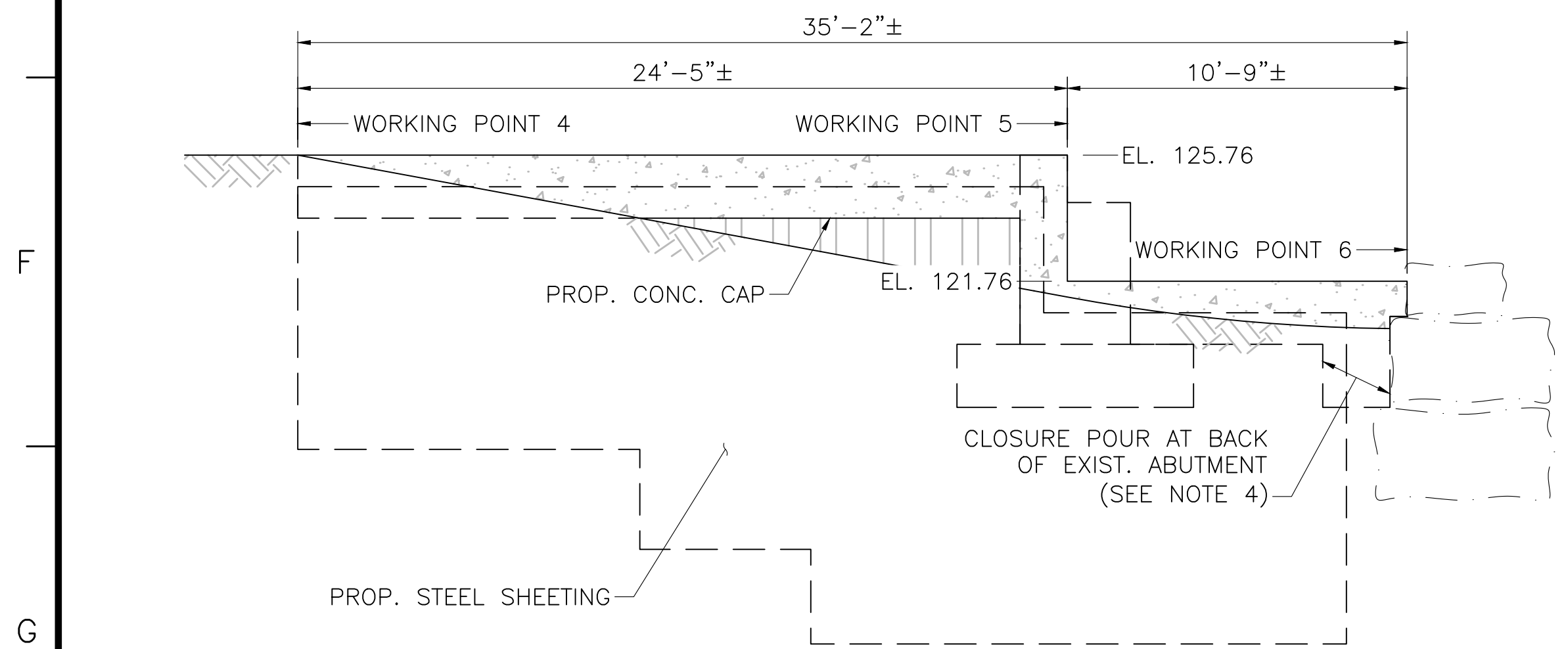
WEST APPROACH SHEETING PLAN

SCALE: $\frac{1}{4}$ "=1'-0"



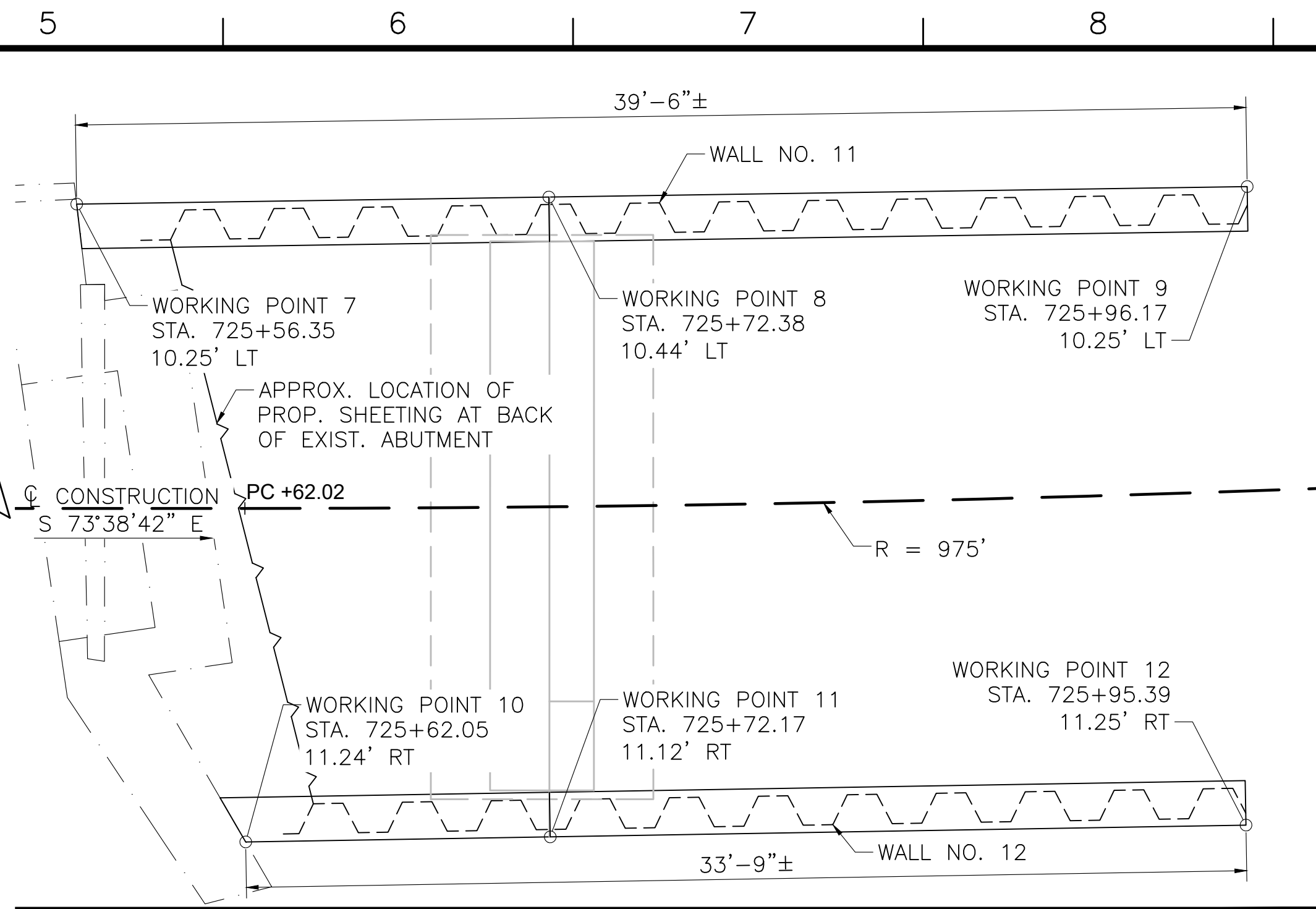
WEST APPROACH NORTH SHEETING WALL ELEVATION

SCALE: $\frac{1}{4}$ "=1'-0"



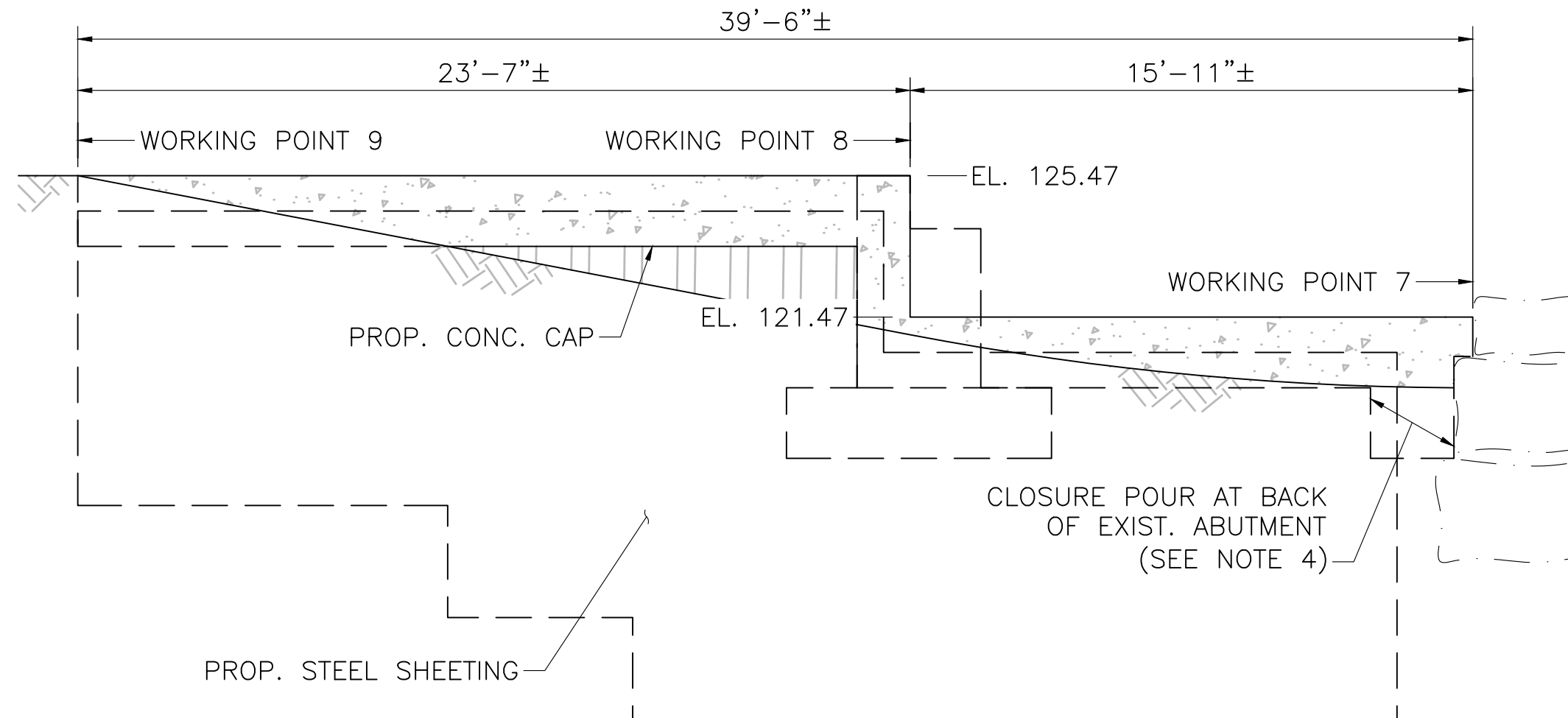
WEST APPROACH SOUTH SHEETING WALL ELEVATION

SCALE: $\frac{1}{4}$ "=1'-0"



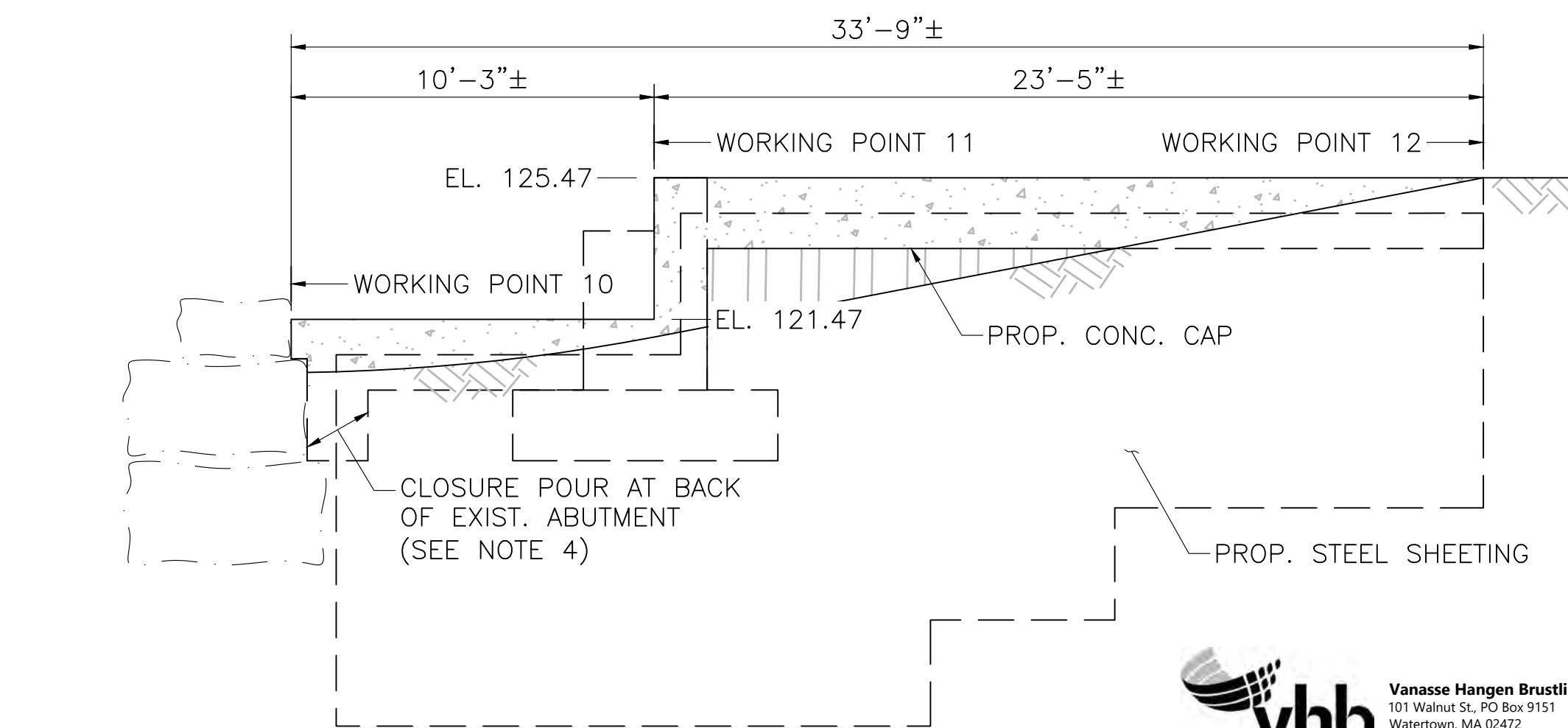
EAST APPROACH SHEETING PLAN

SCALE: $\frac{1}{4}$ "=1'-0"



EAST APPROACH NORTH SHEETING WALL ELEVATION

SCALE: $\frac{1}{4}$ "=1'-0"

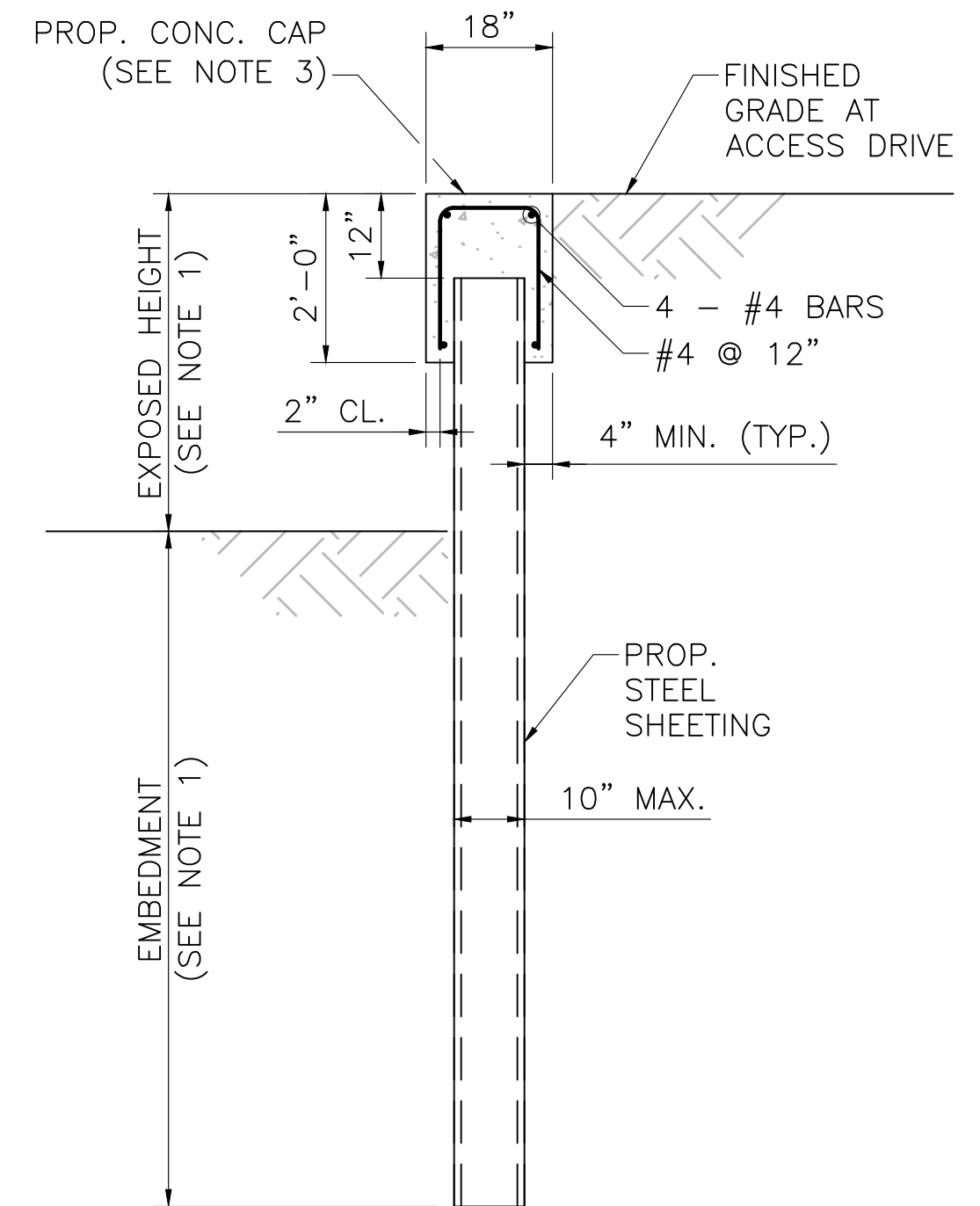


EAST APPROACH SOUTH SHEETING WALL ELEVATION

SCALE: $\frac{1}{4}$ "=1'-0"

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, $\frac{3}{4}$ ", 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.

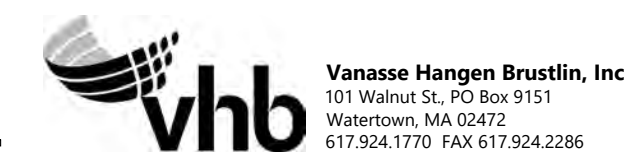


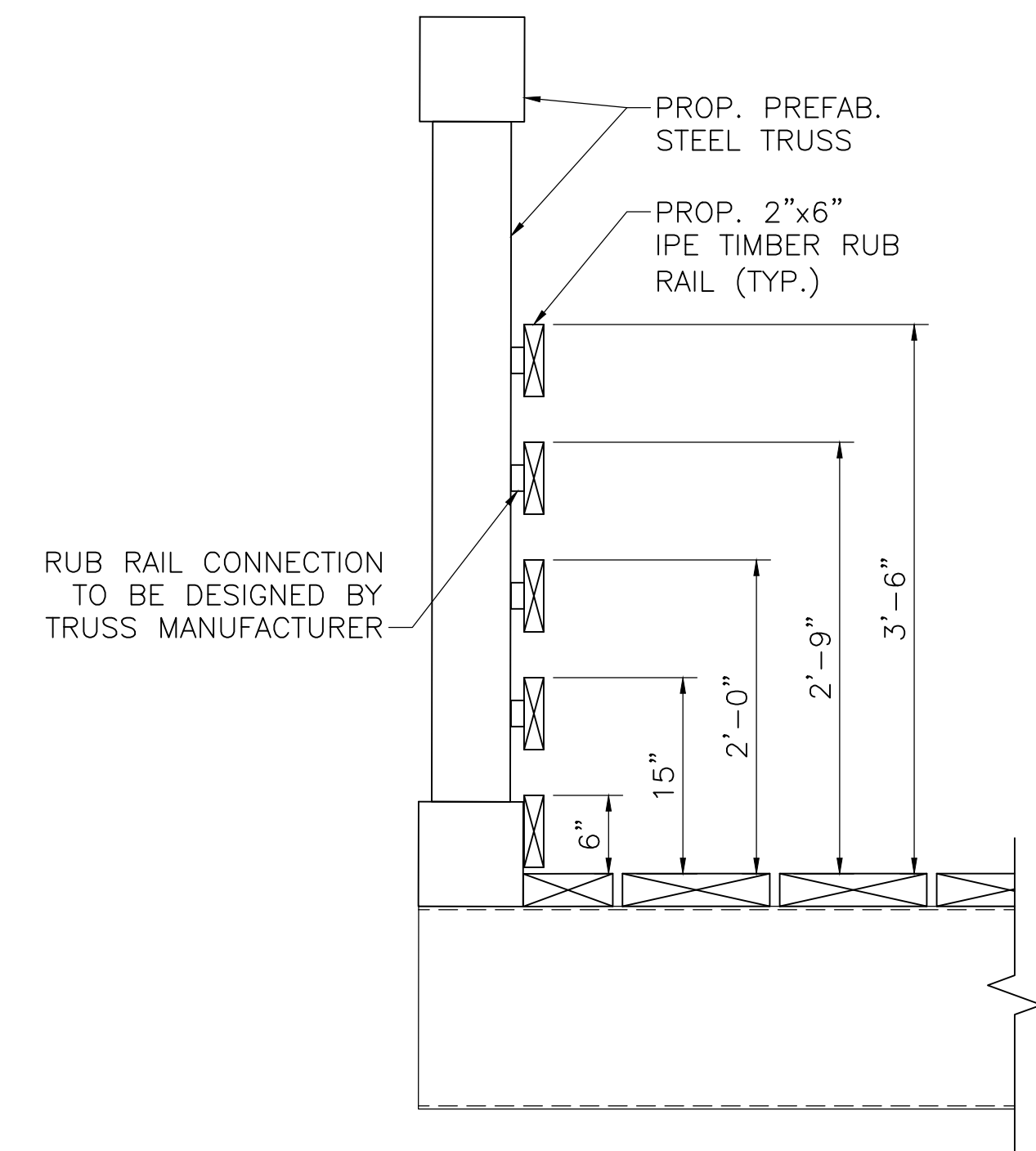
TYPICAL SHEETING SECTION

SCALE: $\frac{1}{2}$ "=1'-0"

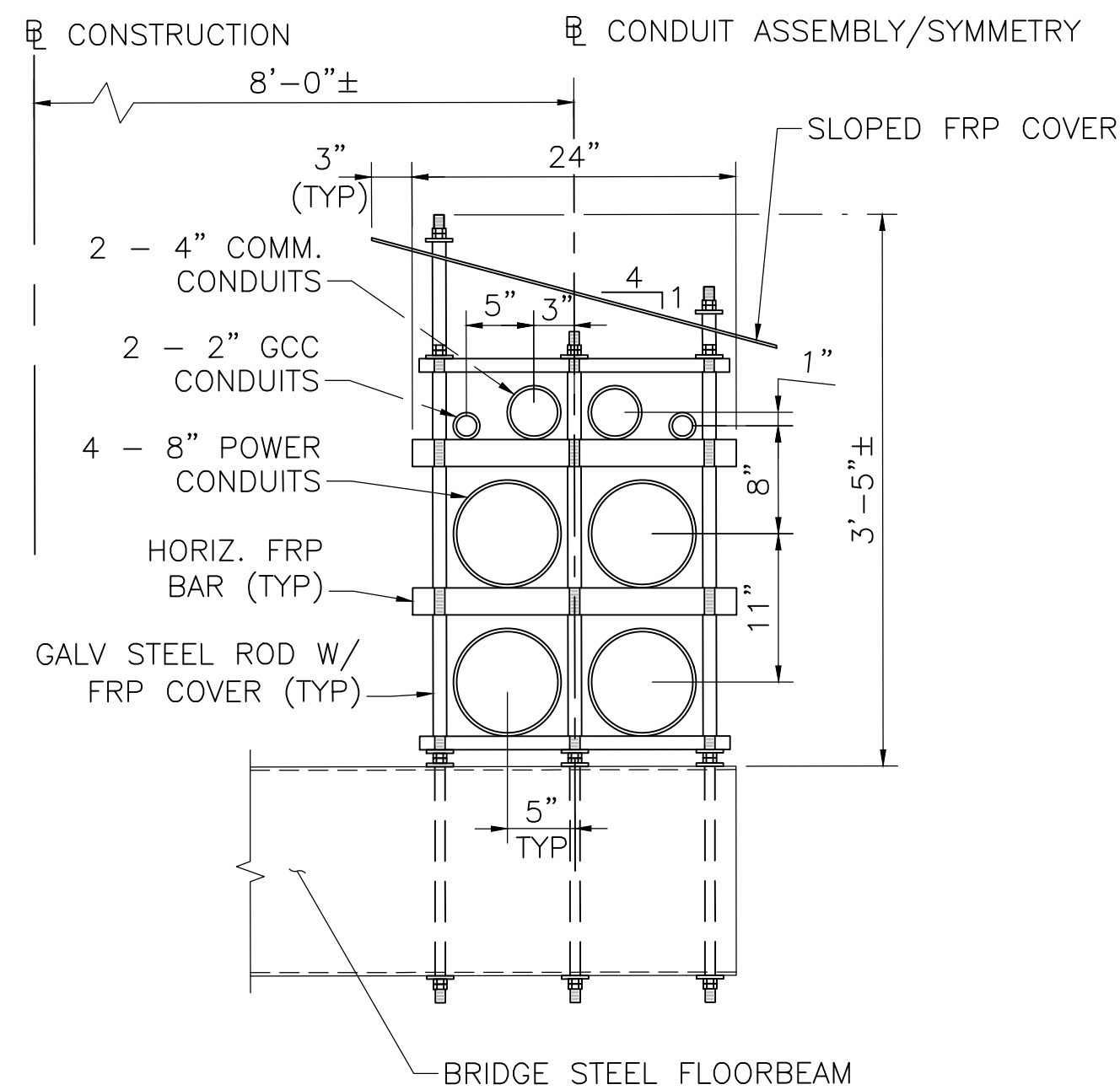
SHEETING EMBEDMENT TABLE	
EXPOSED HEIGHT	EMBEDMENT
2'-0" (MAX.)	7'-4" (MIN.)
3'-0" (MAX.)	9'-5" (MIN.)
4'-0" (MAX.)	11'-6" (MIN.)
5'-0" (MAX.)	13'-7" (MIN.)
6'-0" (MAX.)	15'-7" (MIN.)
7'-0" (MAX.)	17'-7" (MIN.)

REVISION			
N.O.	DESCRIPTION	BY	DATE
EVERSOURCE SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS BRIDGE S-31-016 (BRIDGE 127) - SHEETING PLAN PLAN 166 OF 315			
SCALE: unless noted 1"=4'	DATE MARCH 2020	DRAWN AMS	CHK'D. SBK
	APPR. KGK		
DRAWING NO.	REV.		

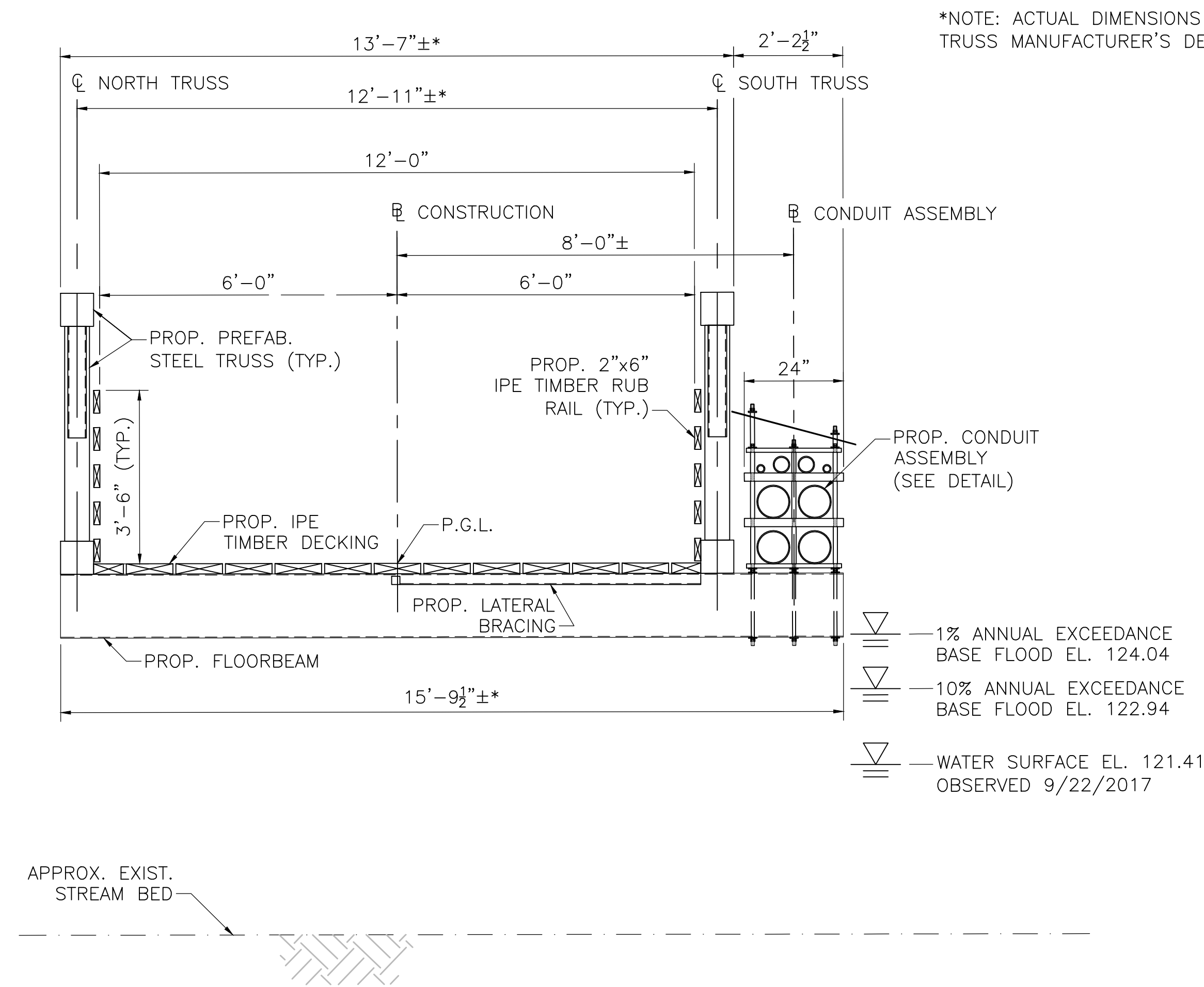




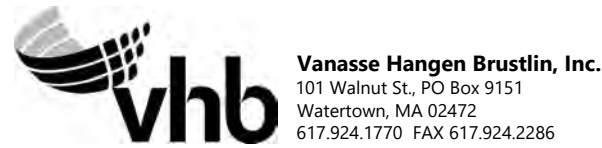
RAILING CONNECTION DETAIL
SCALE: 1"=1'-0"



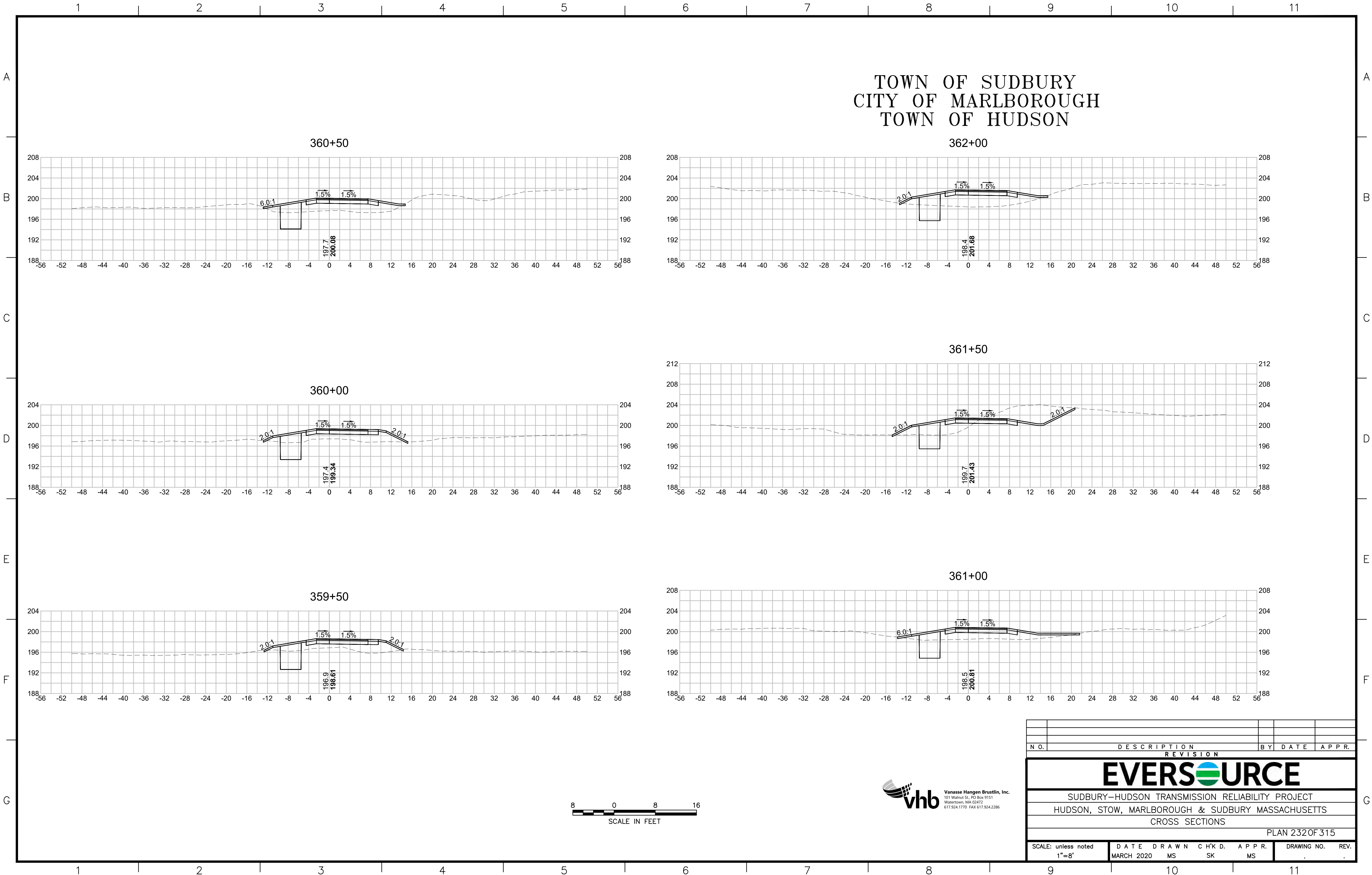
CONDUIT ASSEMBLY DETAIL
SCALE: 1"=1'-0"

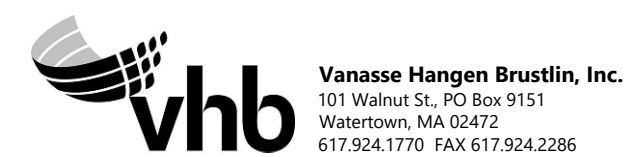
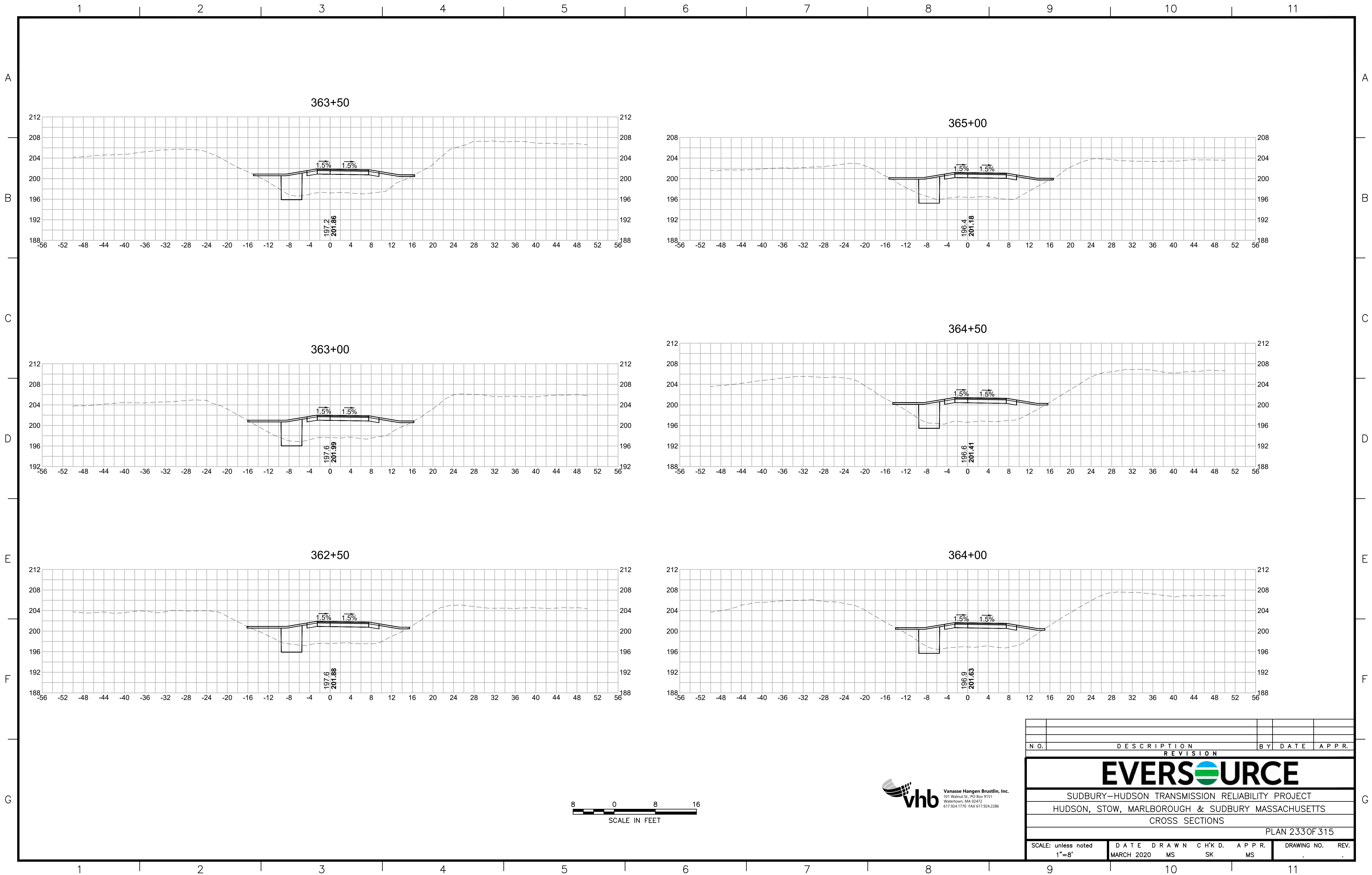


BRIDGE TRANSVERSE SECTION
SCALE: 3/4"=1'-0"

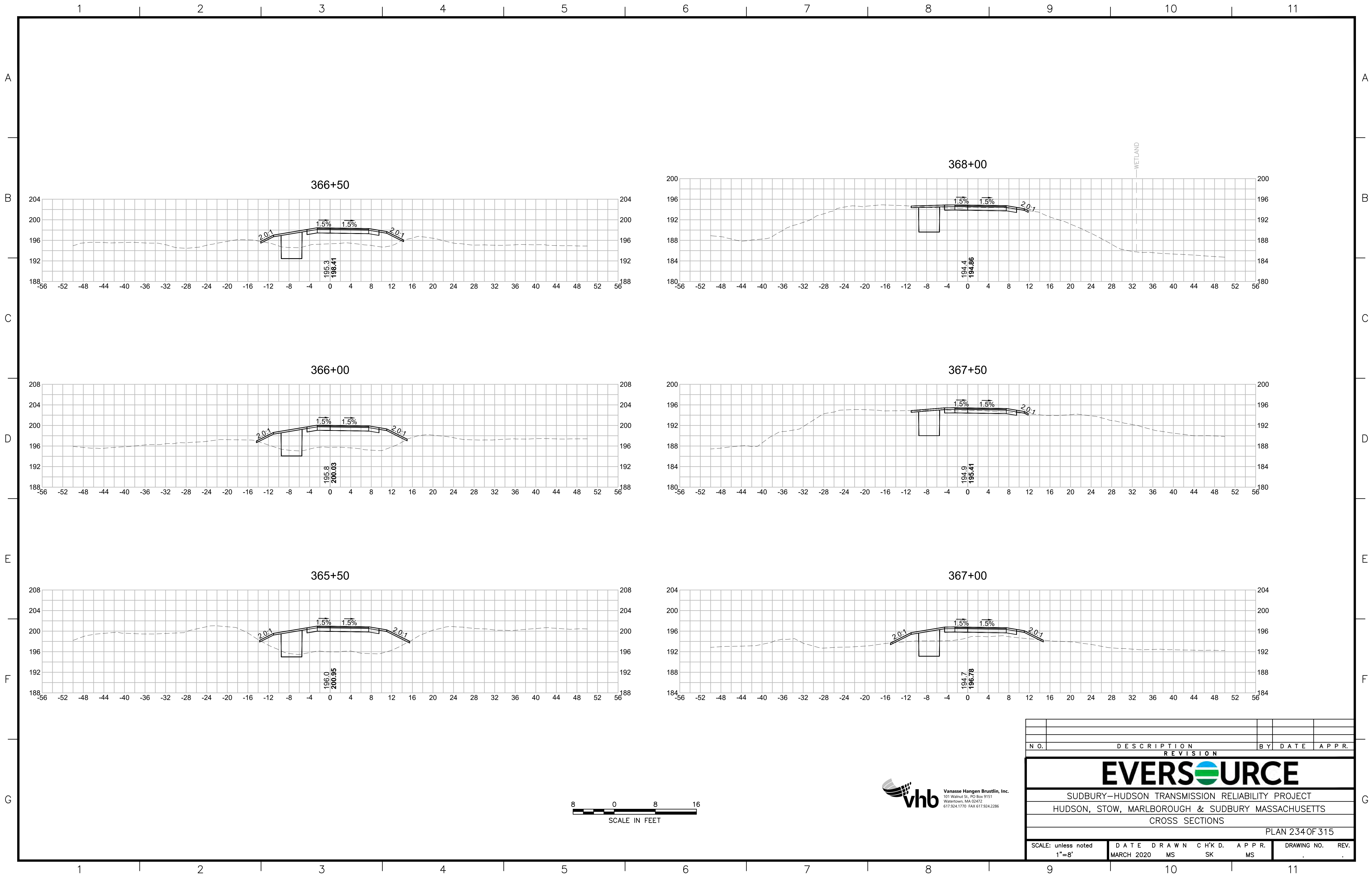


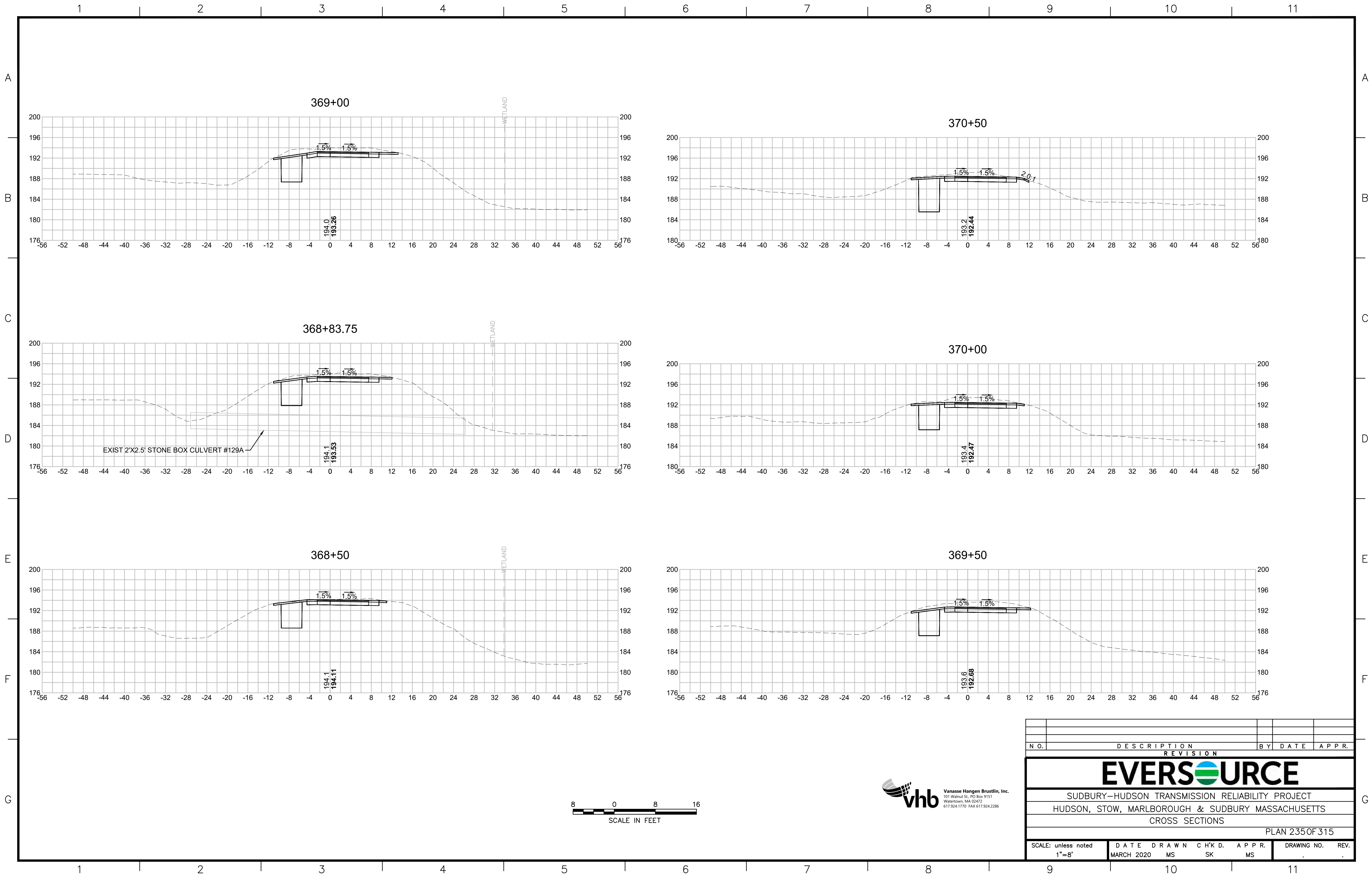
N O.	DESCRIPTION					BY	DATE	APPR.	
REVISION									
EVERSOURCE									
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT									
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
BRIDGE S-31-016 (BRIDGE 127) - SECTION OF DETAILS									
PLAN 167 OF 315									
SCALE: unless noted		DATE		DRAWN		CHK'D		APPR.	
VARIES		JAN 2020		AMS		SBK		KGK	
						DRAWING NO.		REV.	
								#	

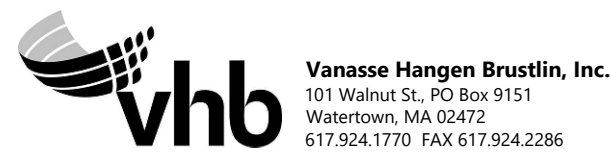
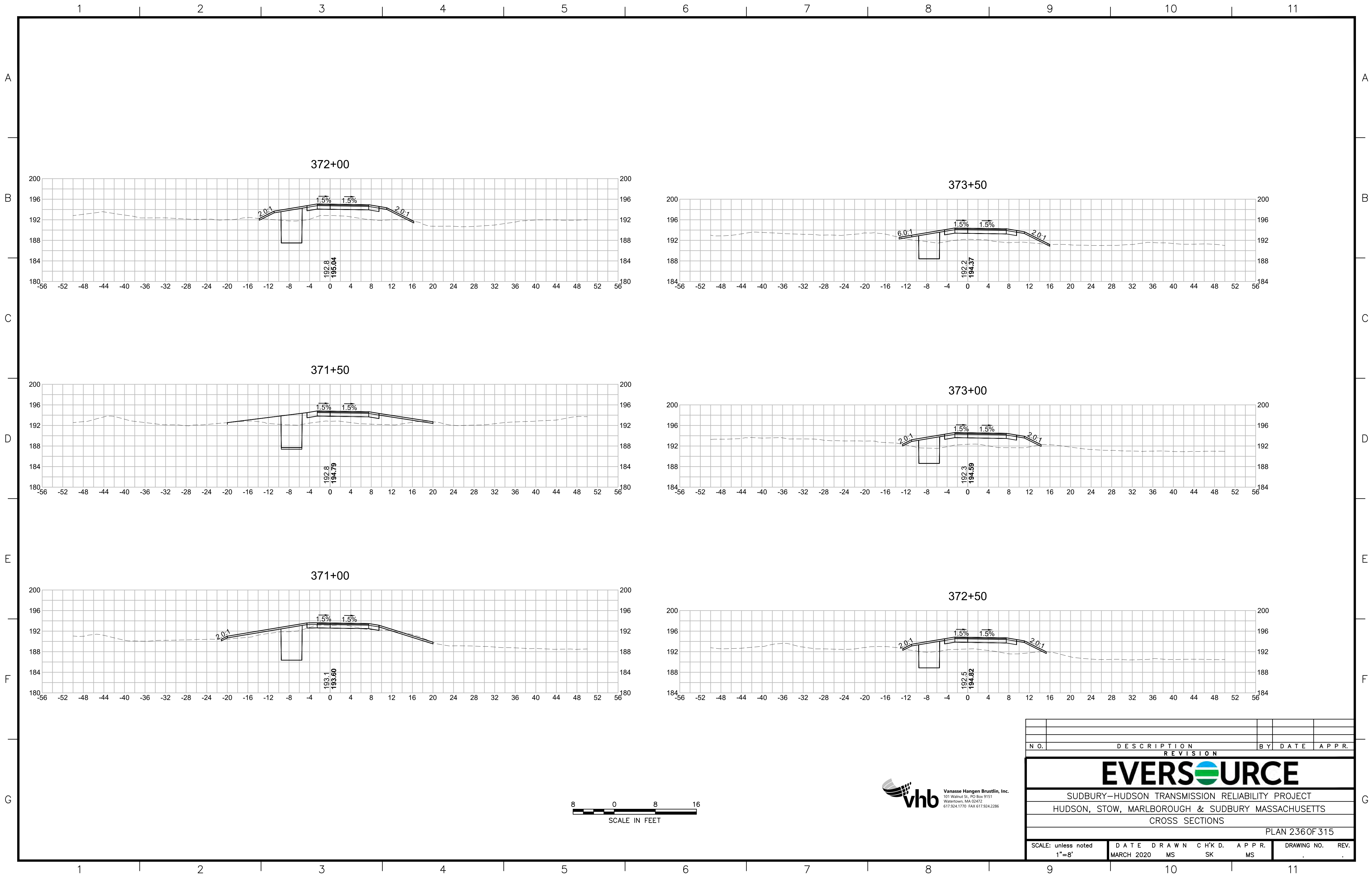




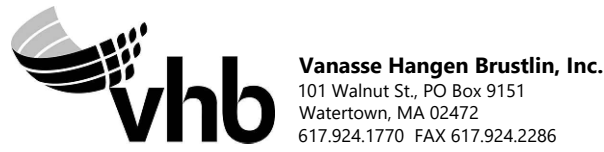
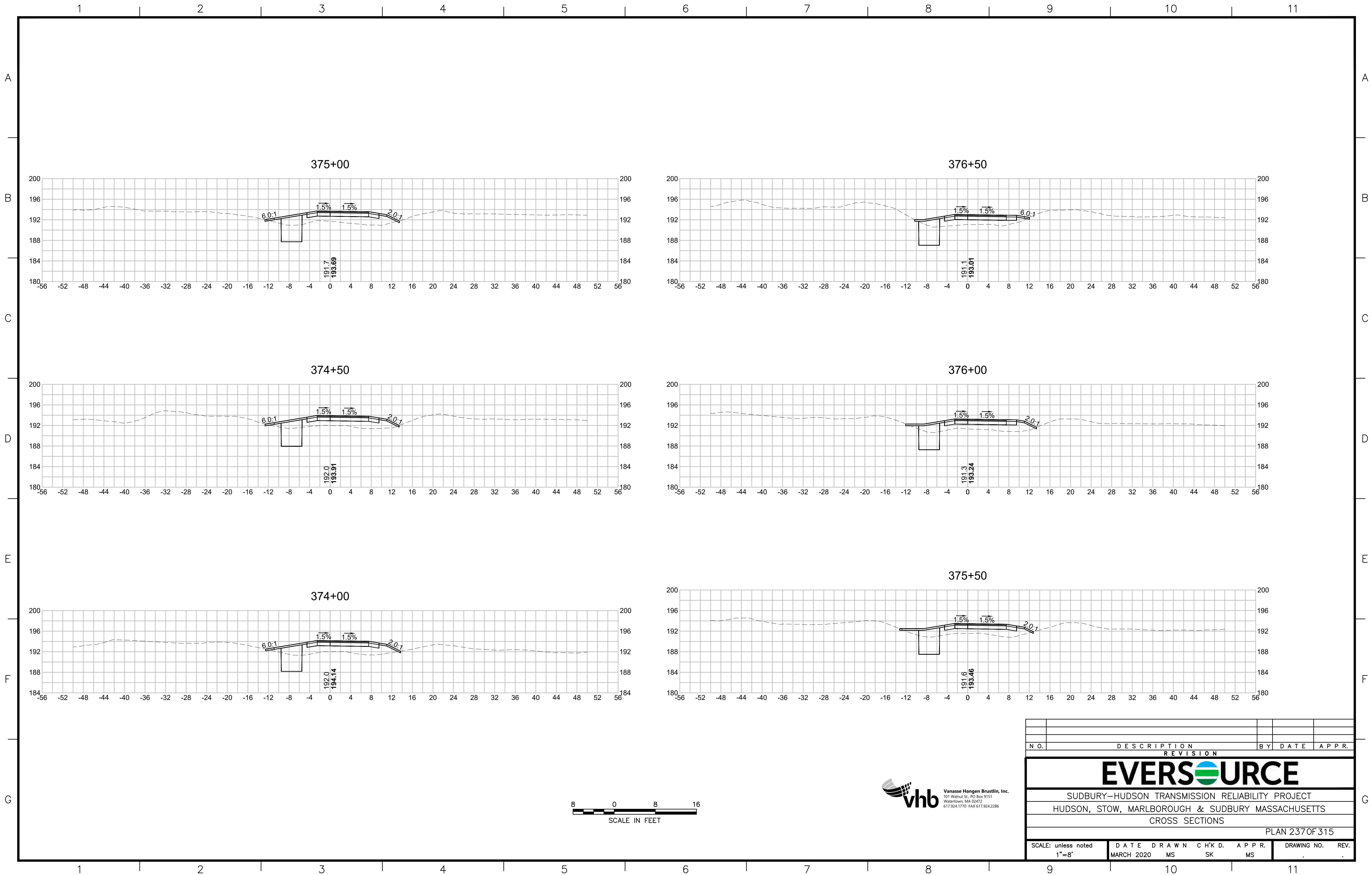
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REVISION									
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SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT									
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
CROSS SECTIONS									
PLAN 233 OF 315									
SCALE: unless noted 1"=8'		DATE		DRAWN		CHK'D.		APPR.	
		MARCH 2020		MS		SK		MS	
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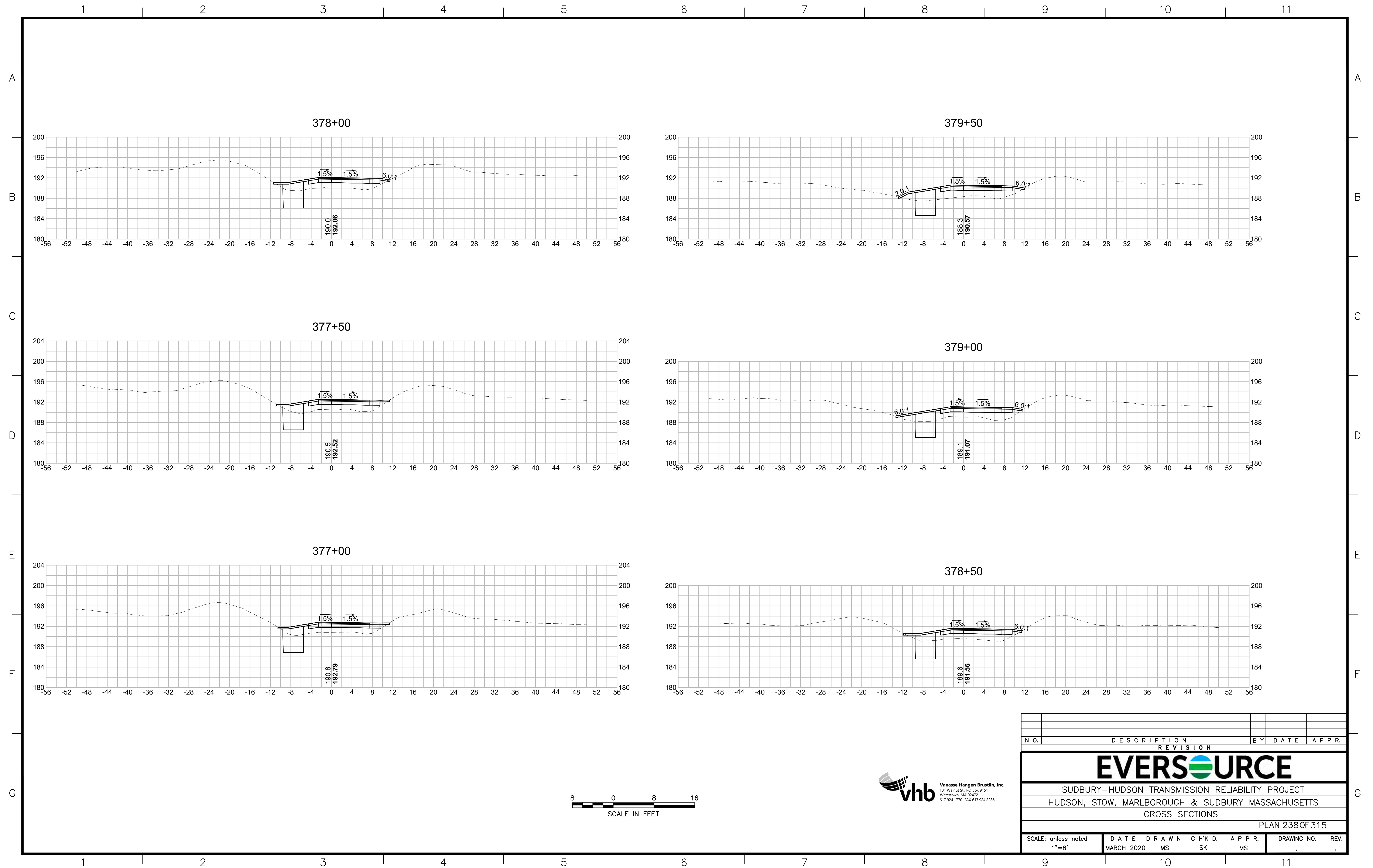


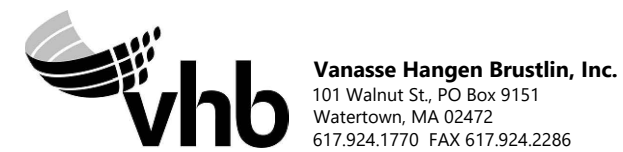
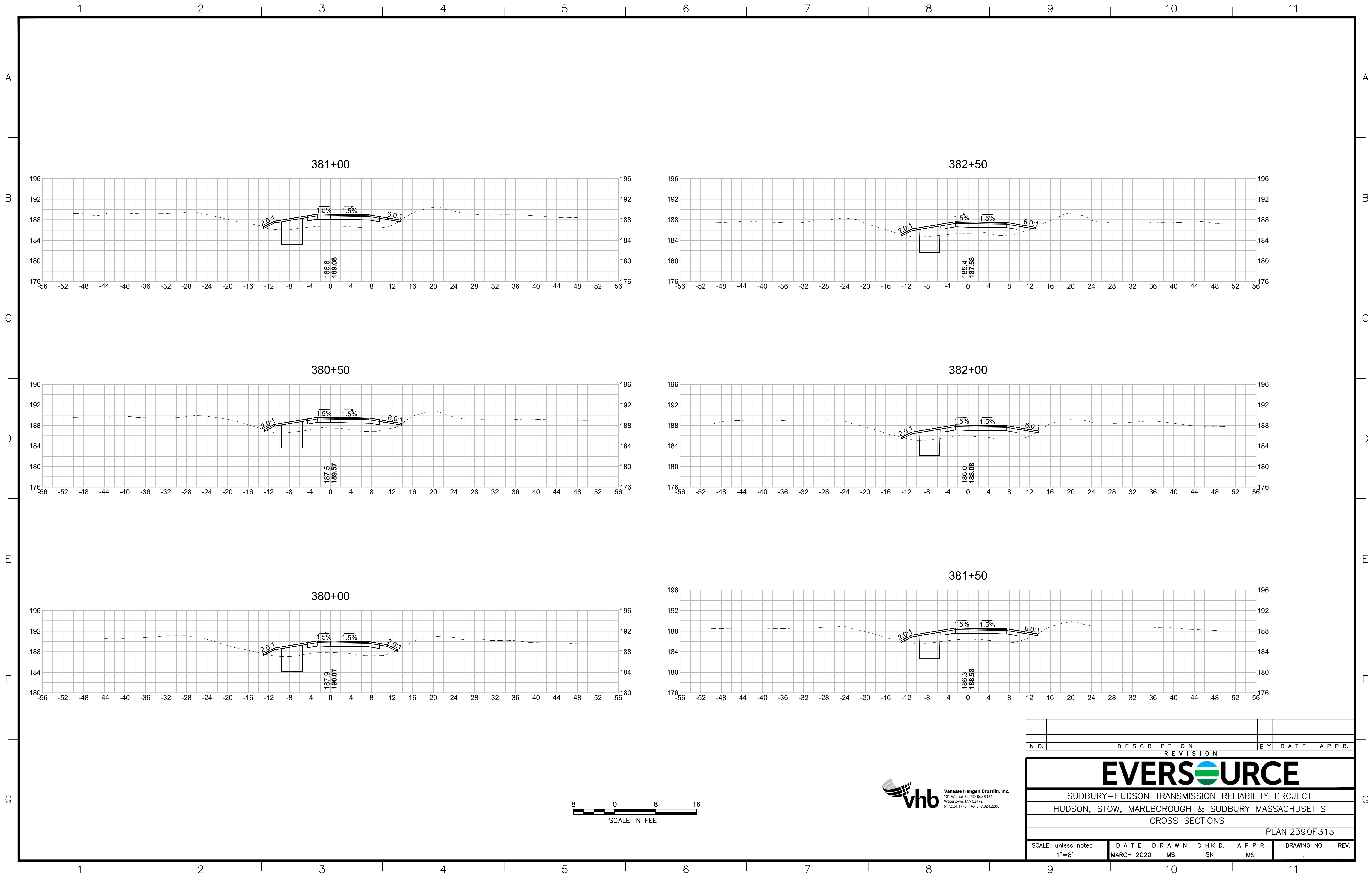


N.O.	DESCRIPTION		BY	DATE	APPR.
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EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CROSS SECTIONS					
PLAN 236 OF 315					
SCALE: unless noted 1"=8'		DATE	DRAWN	CHK'D	APPR.
		MARCH 2020	MS	SK	MS
DRAWING NO.		REV.			

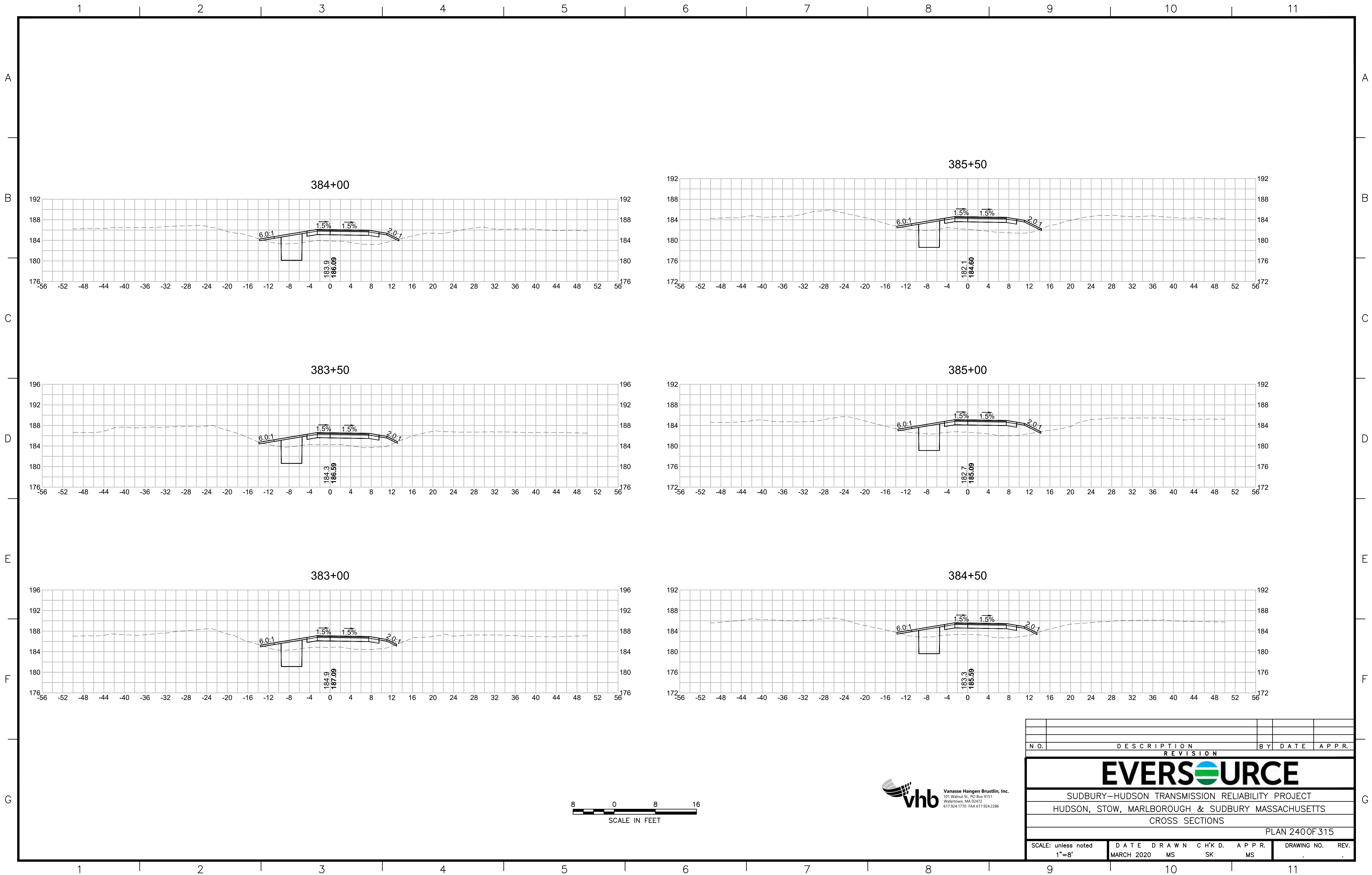


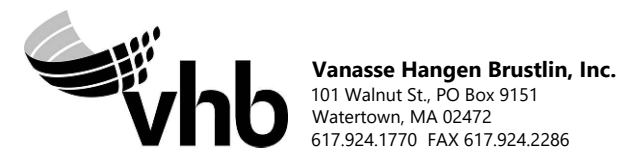
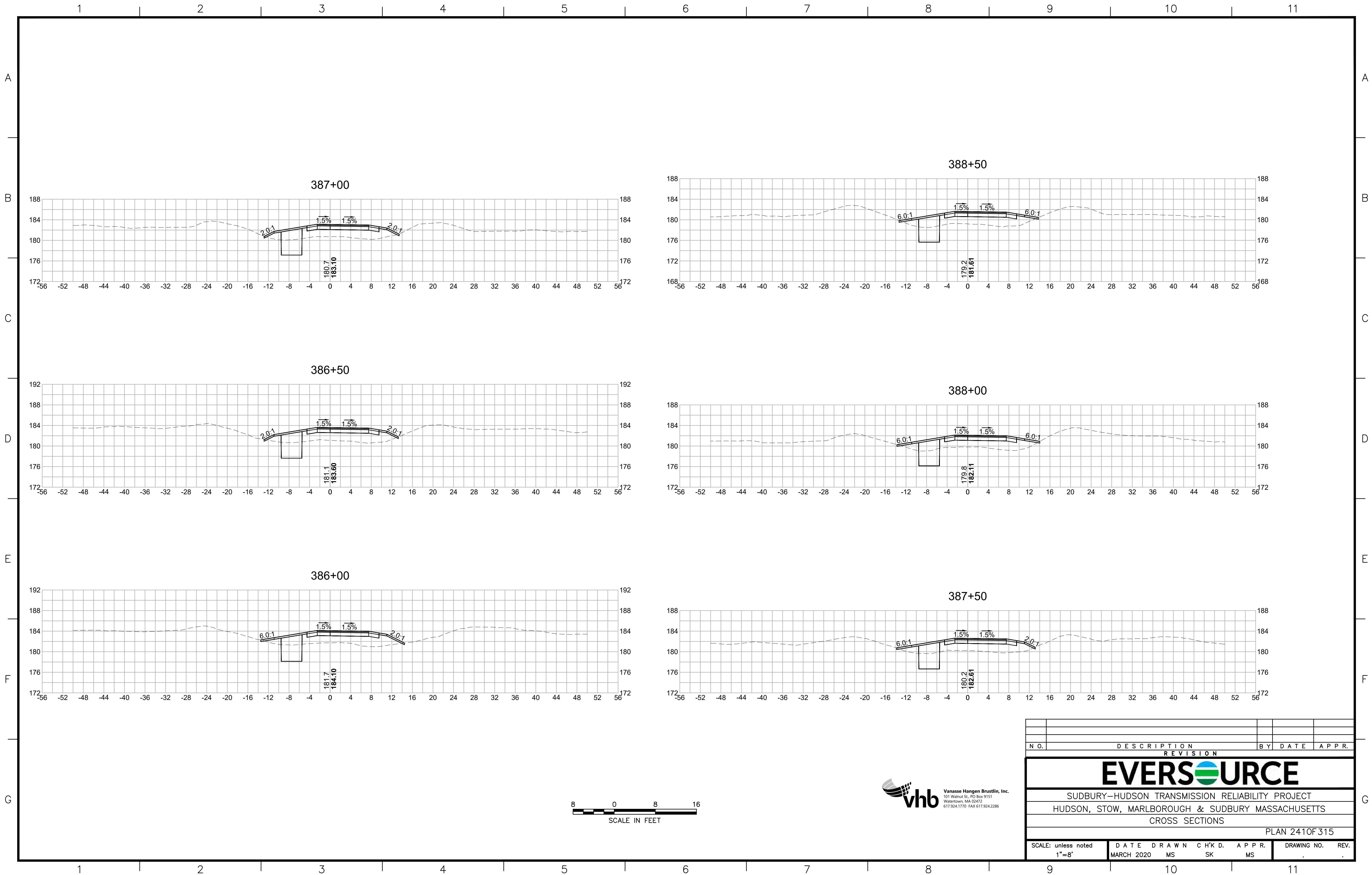
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EVERSOURCE									
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HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
CROSS SECTIONS									
PLAN 237 OF 315									
SCALE: unless noted 1"=8'		DATE		DRAWN		C H'K D.		APPR.	
		MARCH 2020		MS		SK		MS	
DRAWING NO.					REV.				



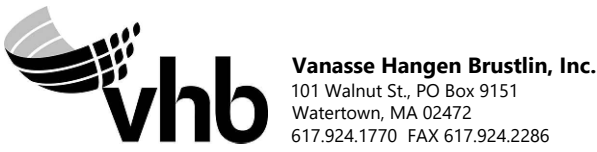
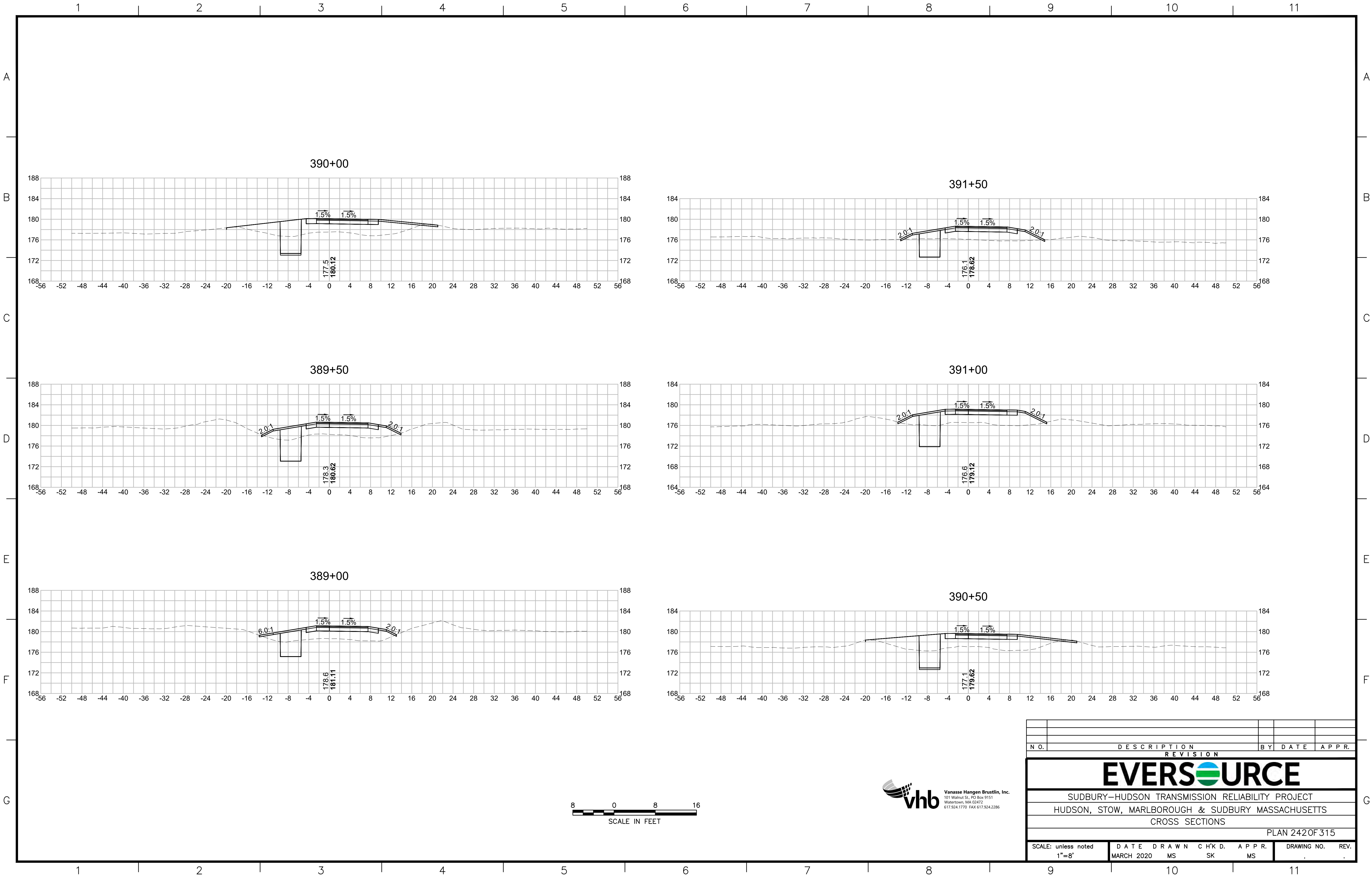


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EVERSOURCE									
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HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
CROSS SECTIONS									
PLAN 239 OF 315									
SCALE: unless noted 1"=8'		DATE		DRAWN		CHK'D		APPR.	
		MARCH 2020		MS		SK		MS	
								DRAWING NO. REV.	
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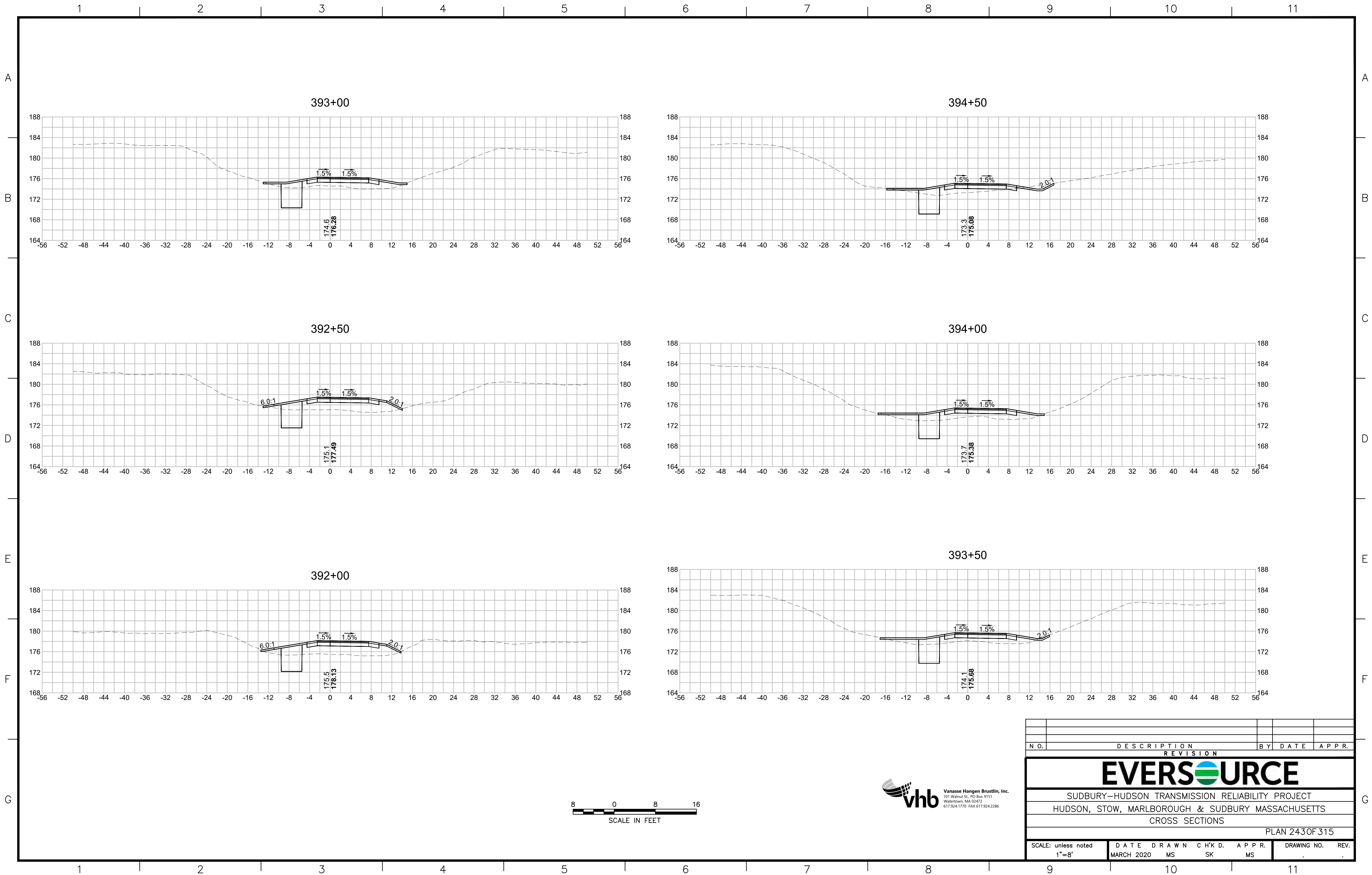


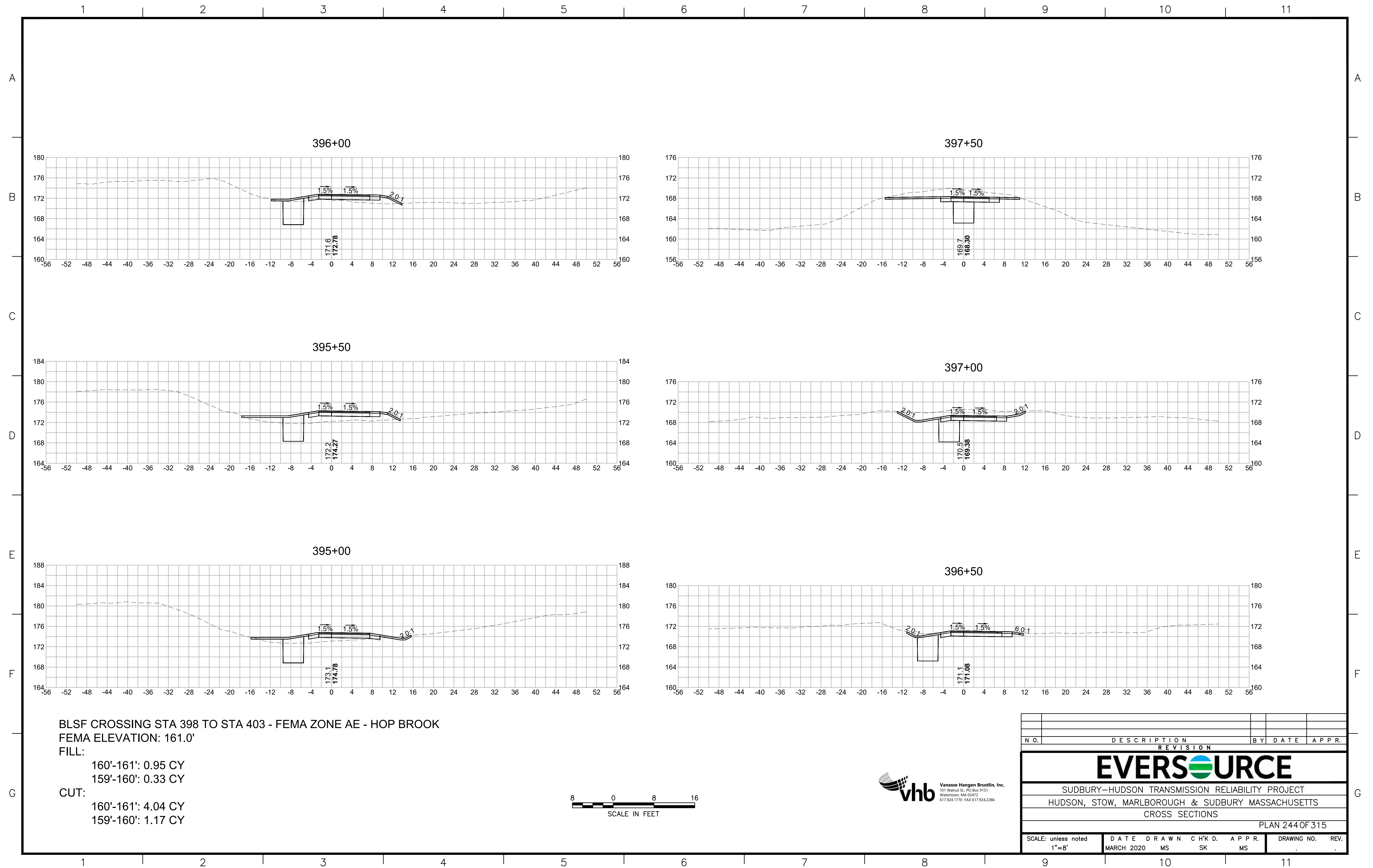


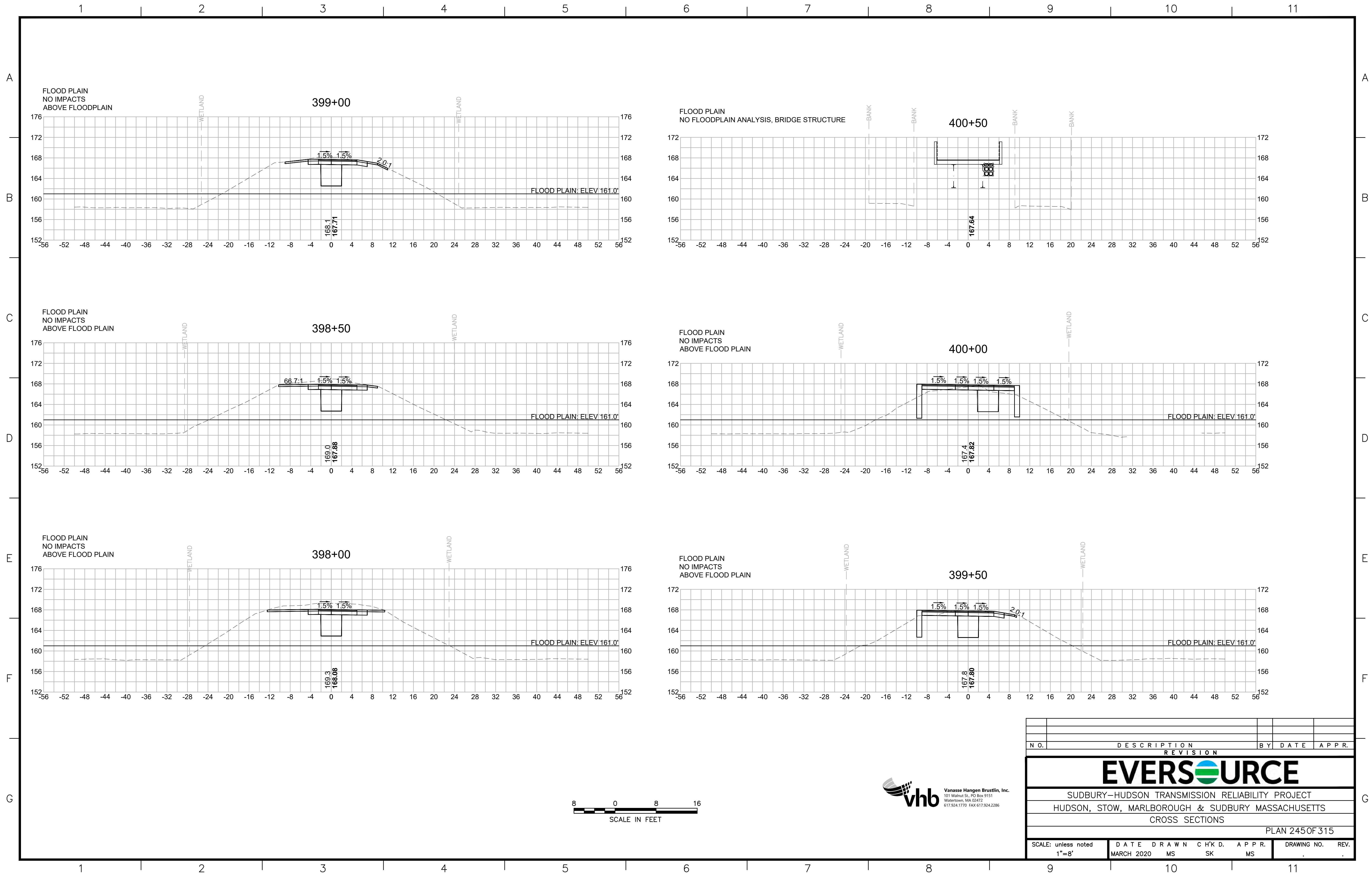
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CROSS SECTIONS									
PLAN 2410F315									
SCALE: unless noted 1"=8'		DATE		DRAWN		CH'K D.		APPR.	
		MARCH 2020		MS		SK		MS	
DRAWING NO.					REV.				



N O.	DESCRIPTION					BY	DATE	APPR	
REVISION									
EVERSOURCE									
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT									
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
CROSS SECTIONS									
PLAN 242OF 315									
SCALE: unless noted 1"=8'		DATE	DRAWN	C H'K'D.	APPR.		DRAWING NO.		REV.
		MARCH 2020	MS	SK	MS		.		.

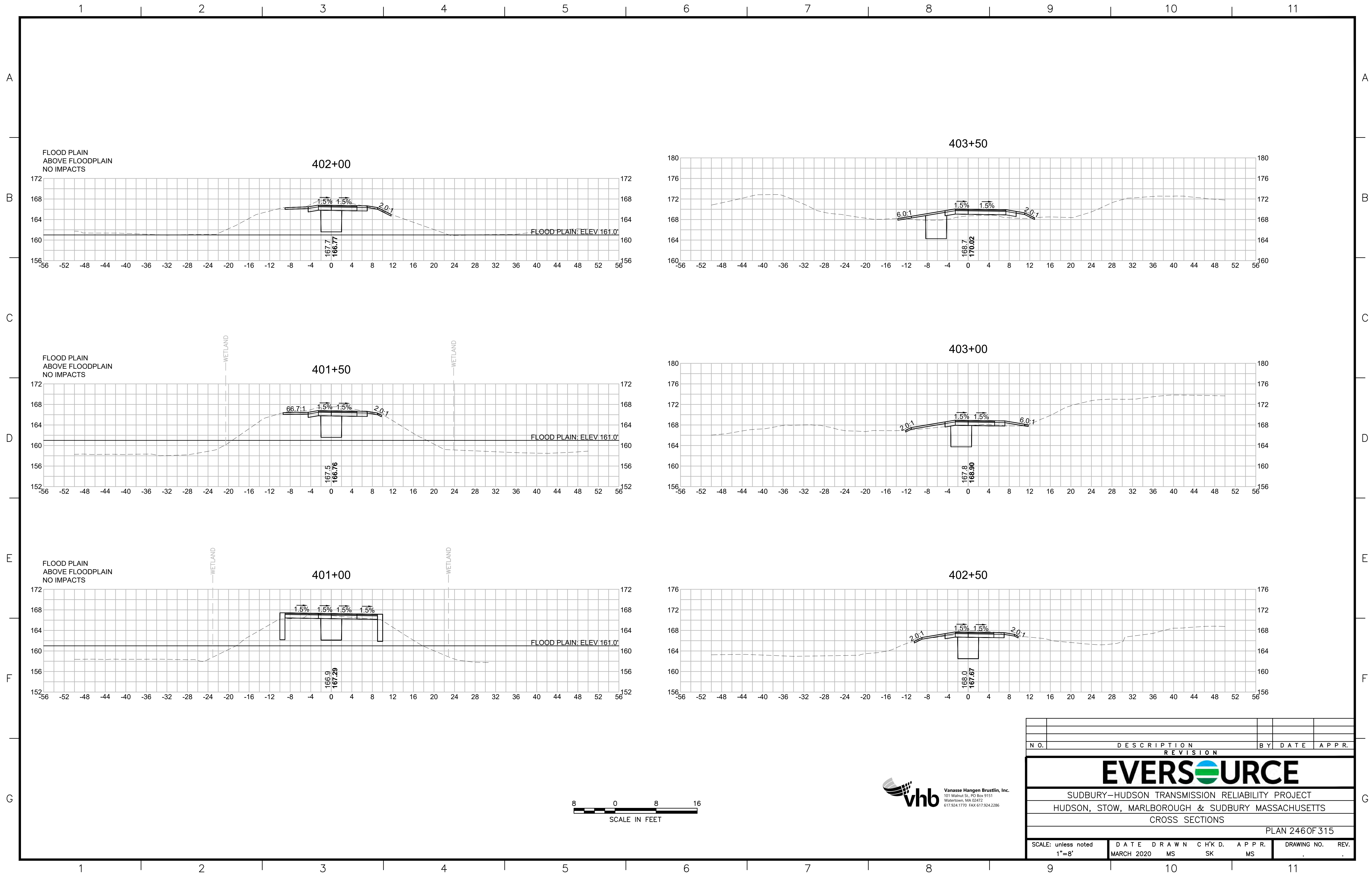


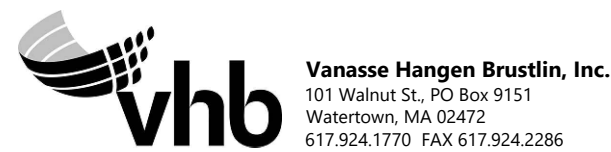
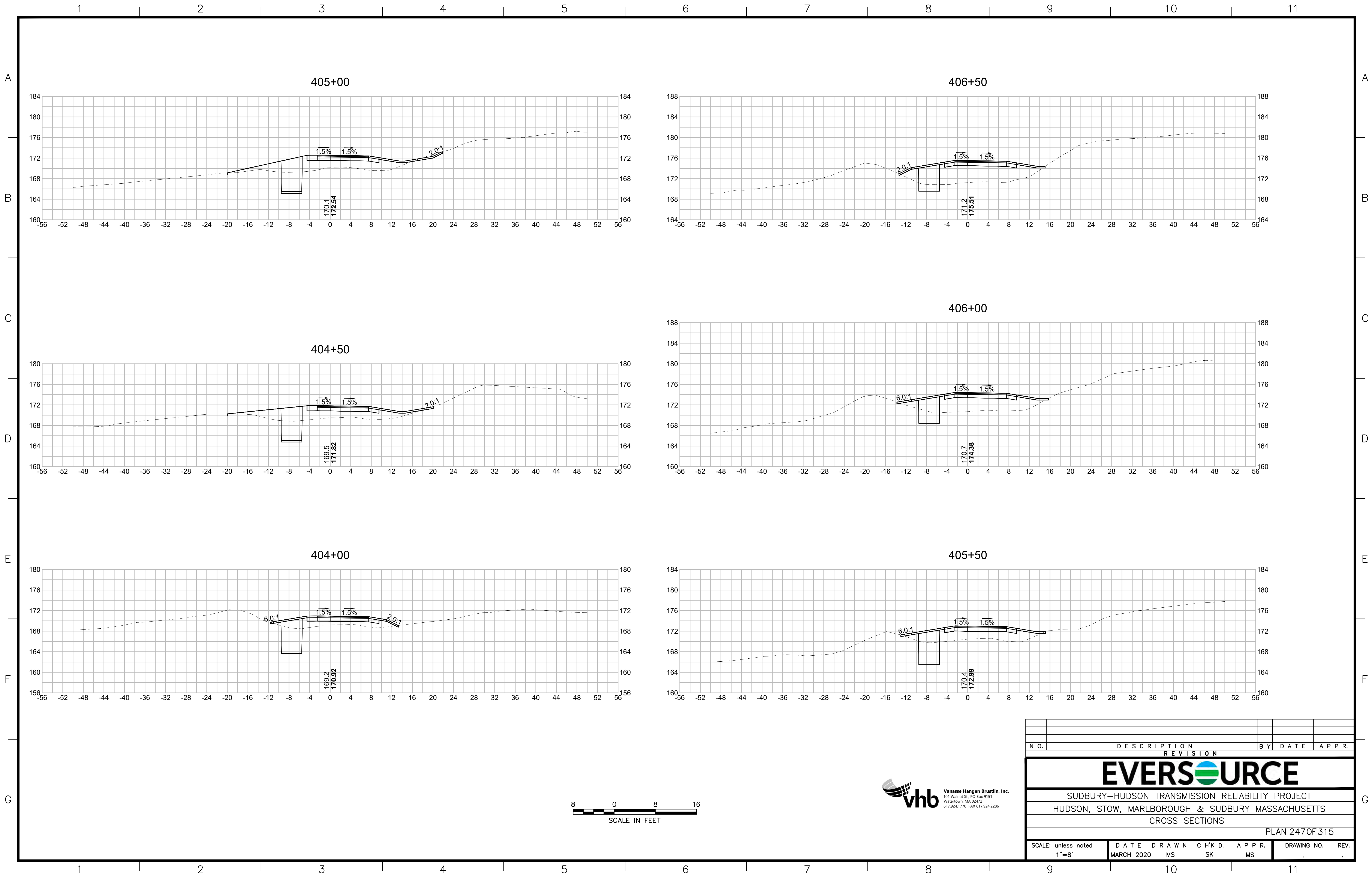




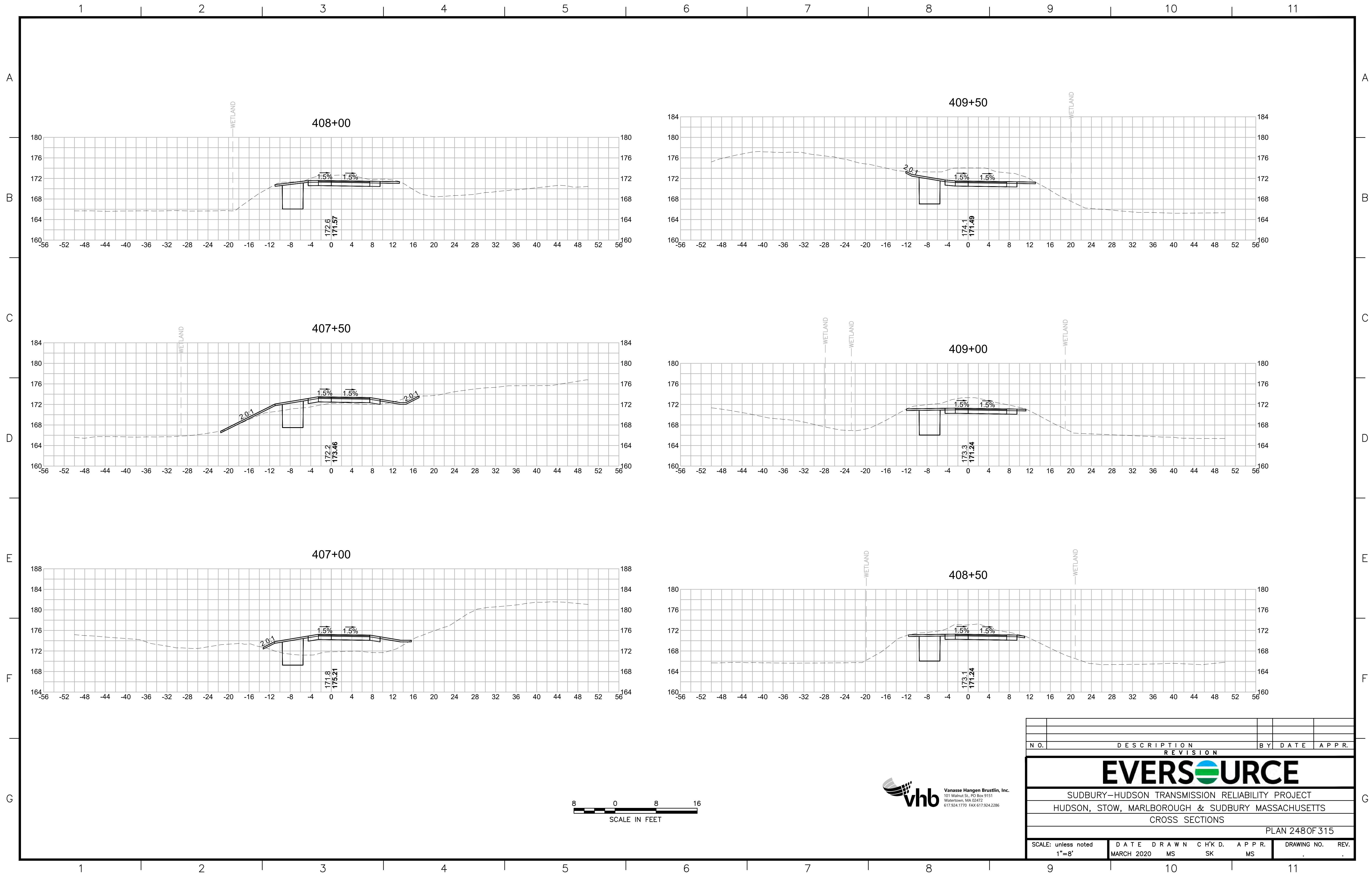
vhb Vanasse Hangen Brustlin, Inc.
101 Walnut St., PO Box 9151
Watertown, MA 02472
617.924.1770 FAX 617.924.2286

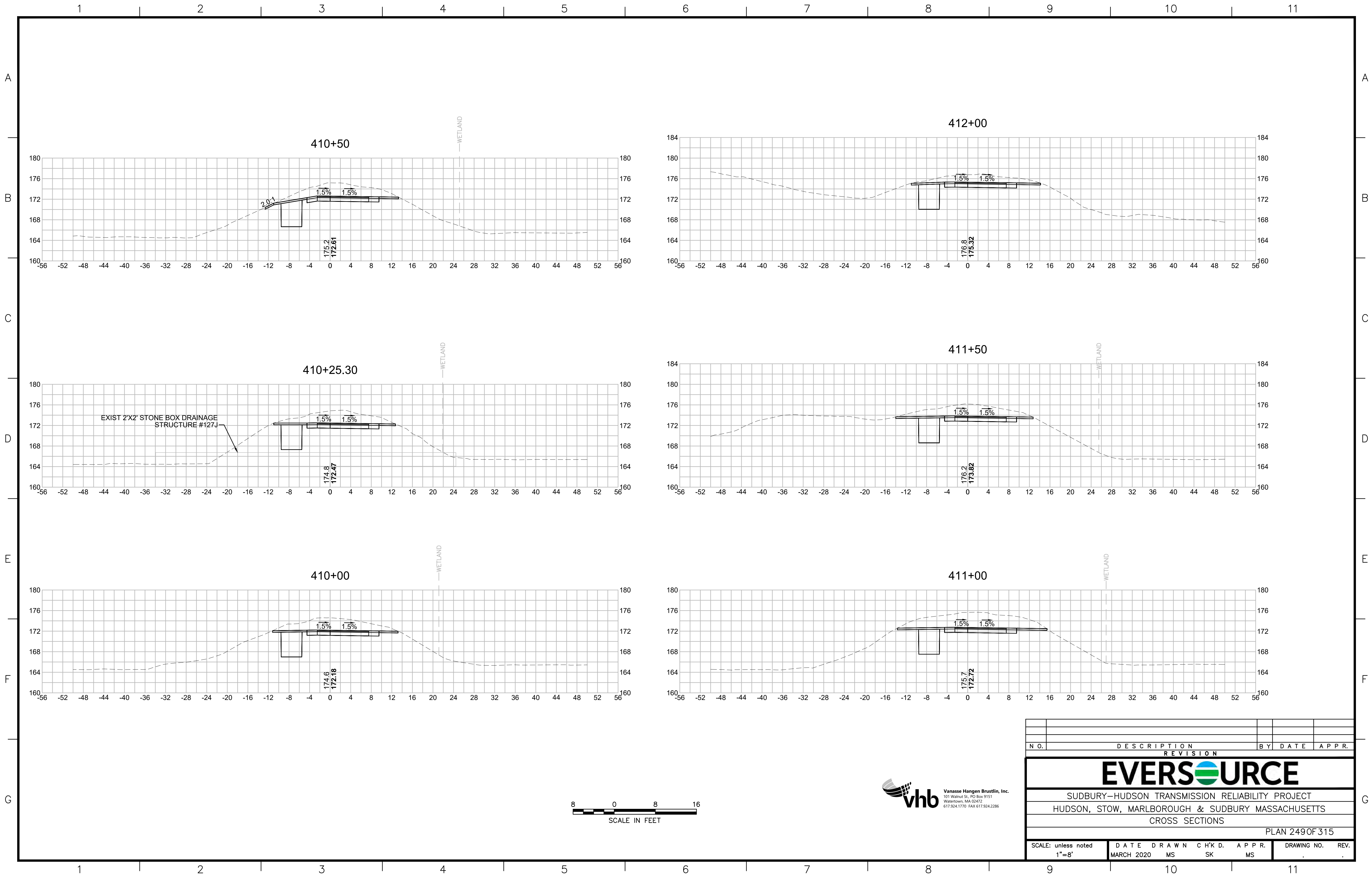
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R E V I S I O N											
EVERSOURCE											
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT											
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS											
CROSS SECTIONS											
PLAN 245 OF 315											
SCALE: unless noted 1"=8'		D A T E		D R A W N		C H'K D.		A P P R.		DRAWING NO. REV.	
		MARCH 2020		MS		SK		MS		.	

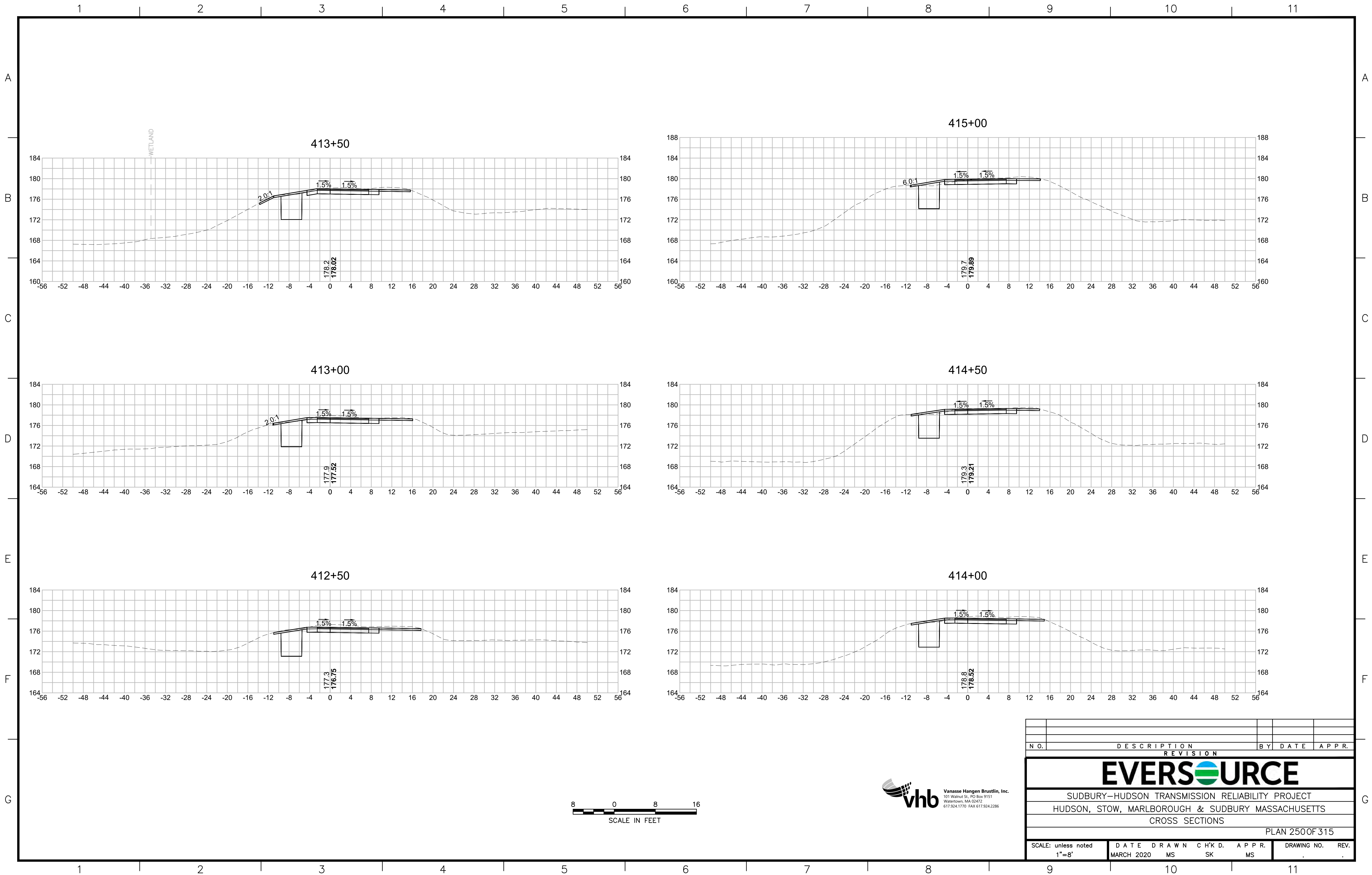


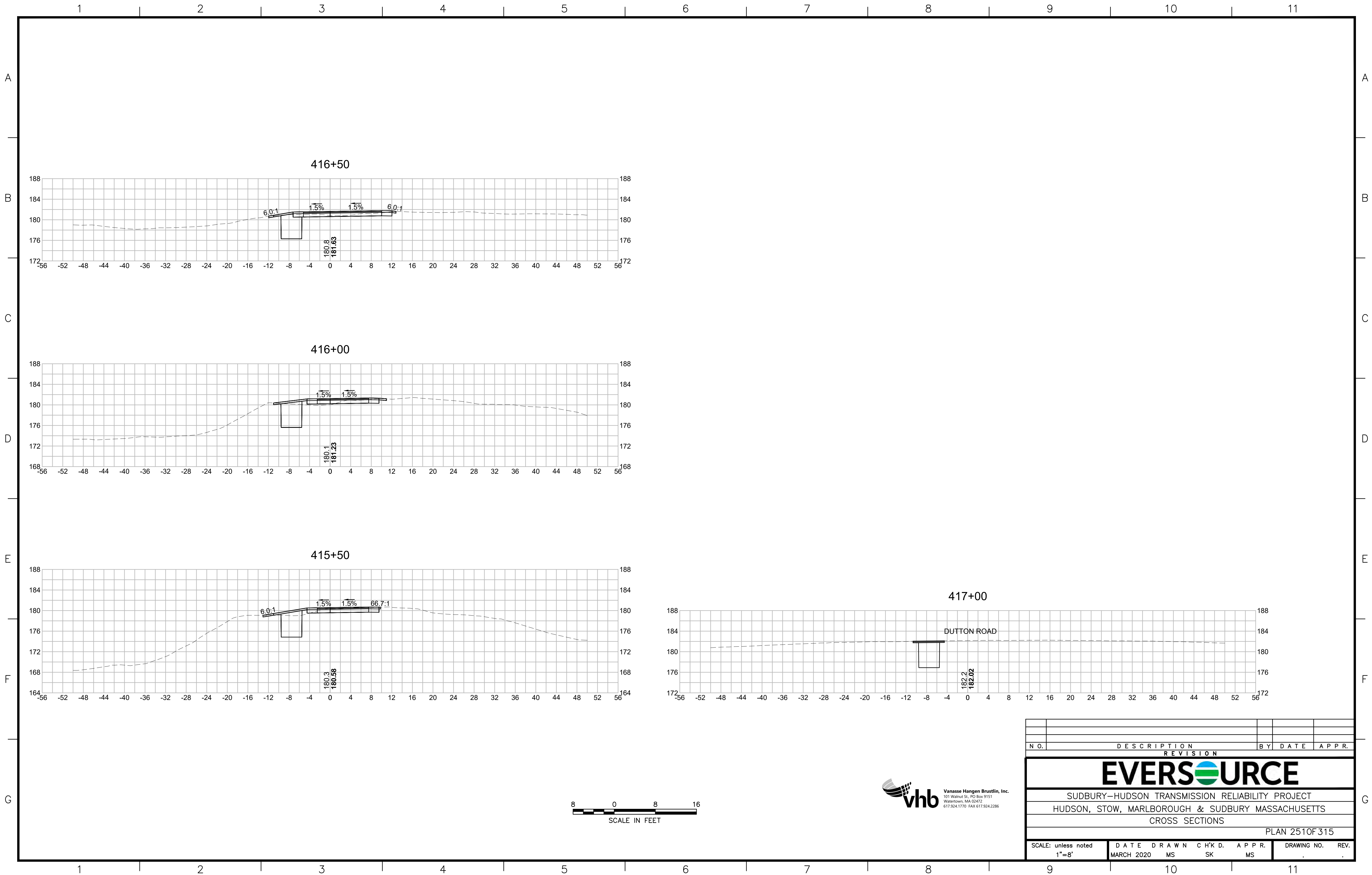


N.O.	DESCRIPTION					BY	DATE	APPR.	
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EVERSOURCE									
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT									
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
CROSS SECTIONS									
PLAN 247 OF 315									
SCALE: unless noted 1"=8'		DATE		DRAWN		CHK'D		APPR.	
		MARCH 2020		MS		SK		MS	
					DRAWING NO.		REV.		

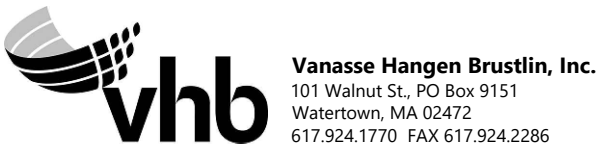
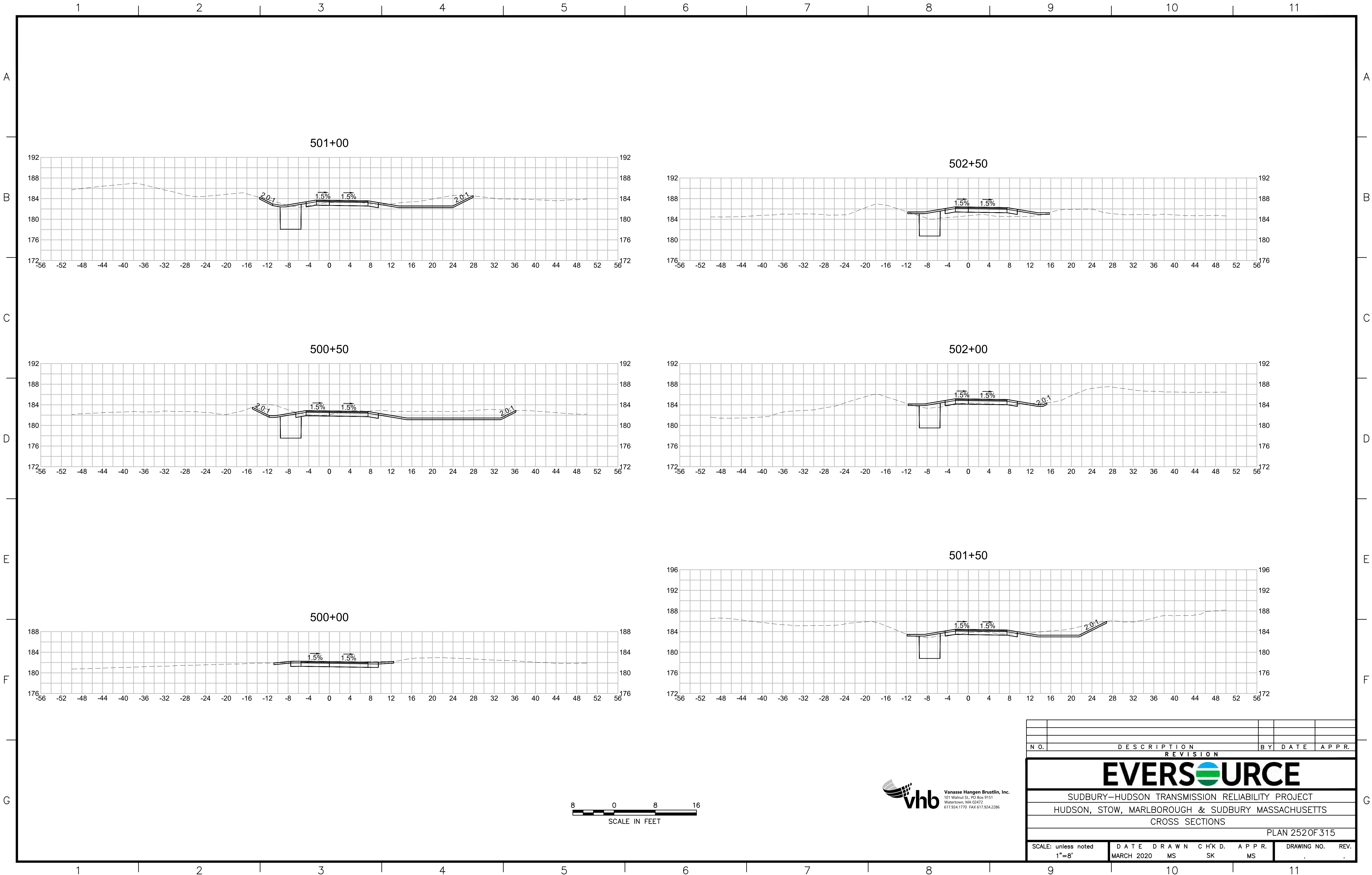




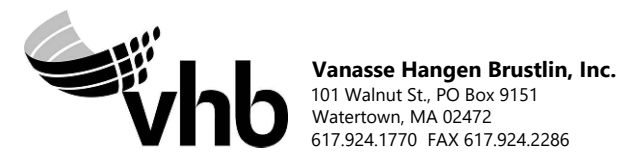
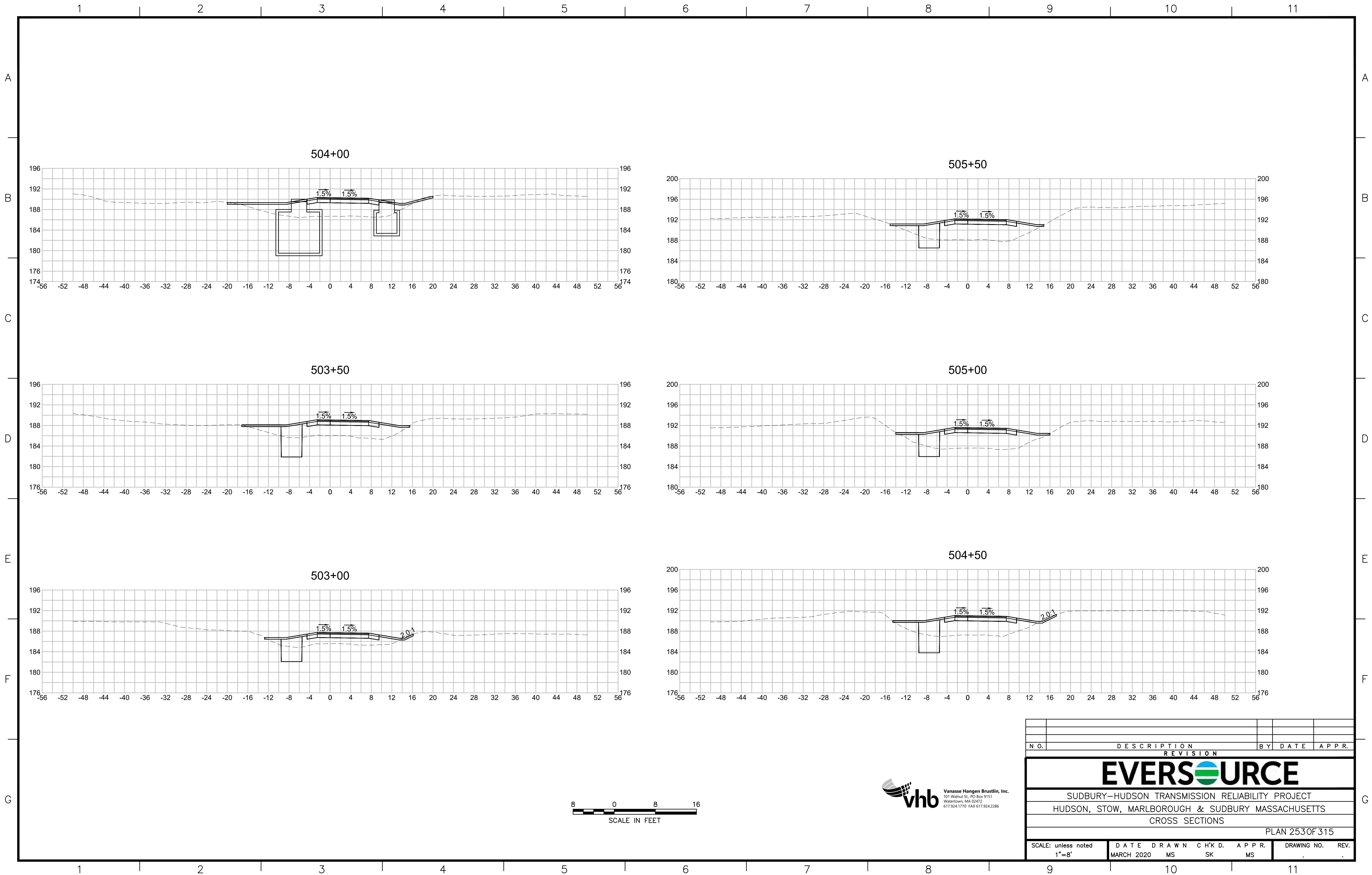




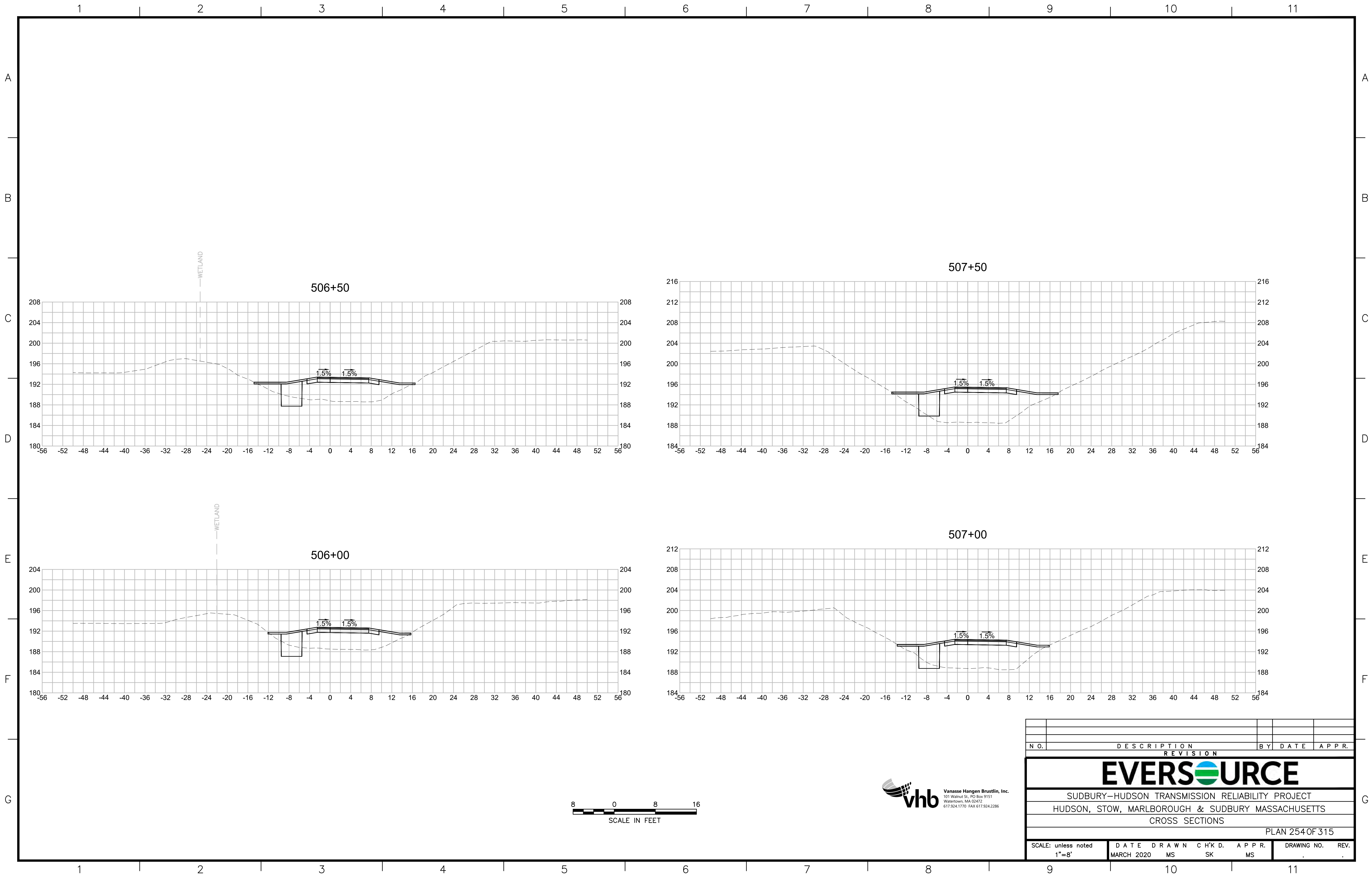
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EVERSOURCE									
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HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
CROSS SECTIONS									
PLAN 2510F315									
SCALE: unless noted 1"=8'		DATE		DRAWN		CHK'D		APPR.	
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DRAWING NO.					REV.				



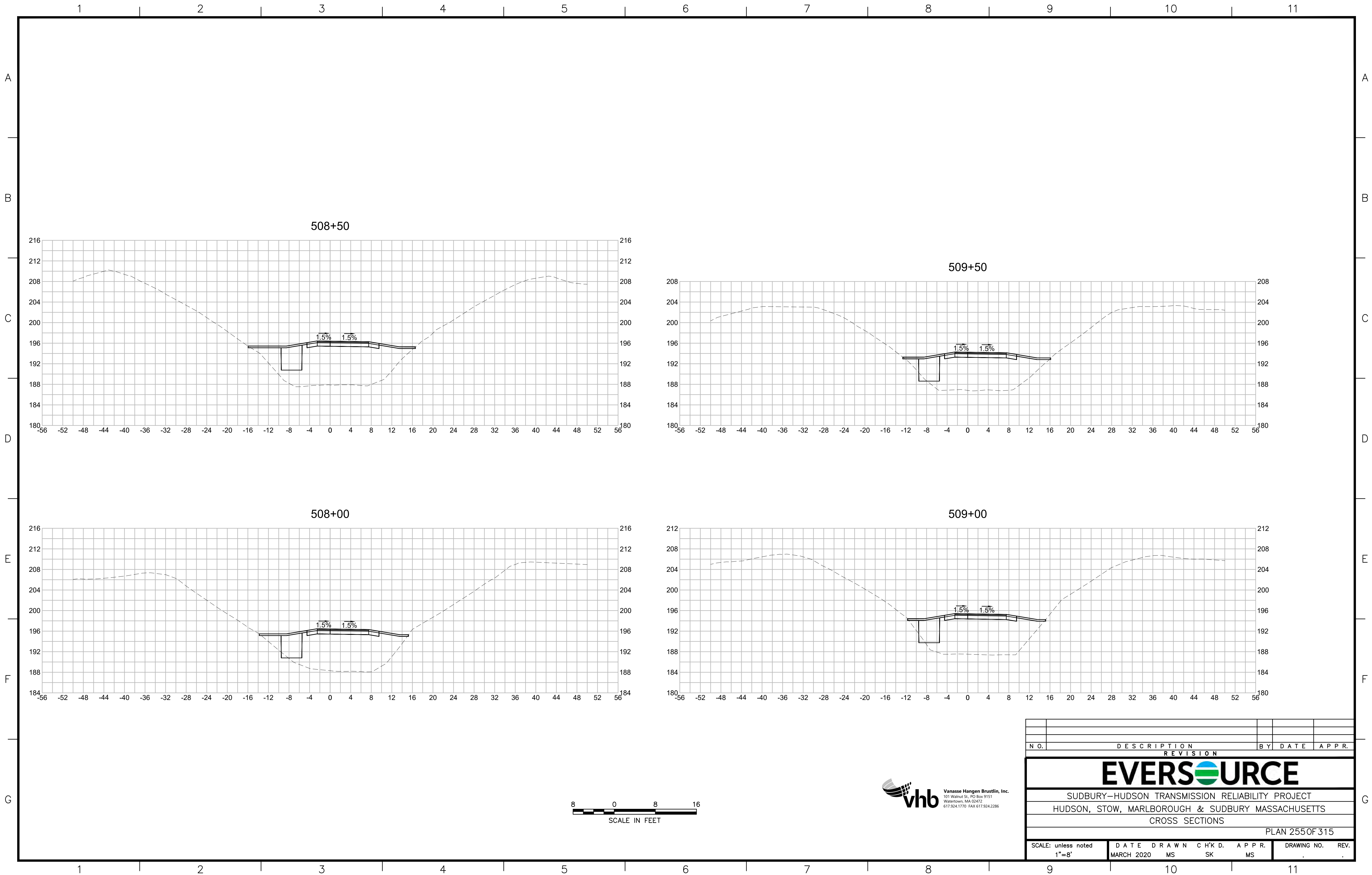
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REVISION									
EVERSOURCE									
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HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
CROSS SECTIONS									
PLAN 252 OF 315									
SCALE: unless noted 1"=8'		DATE		DRAWN		CHK'D.		APPR.	
		MARCH 2020		MS		SK		MS	
DRAWING NO.					REV.				

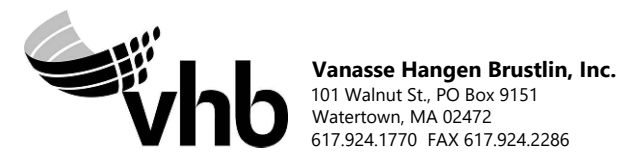
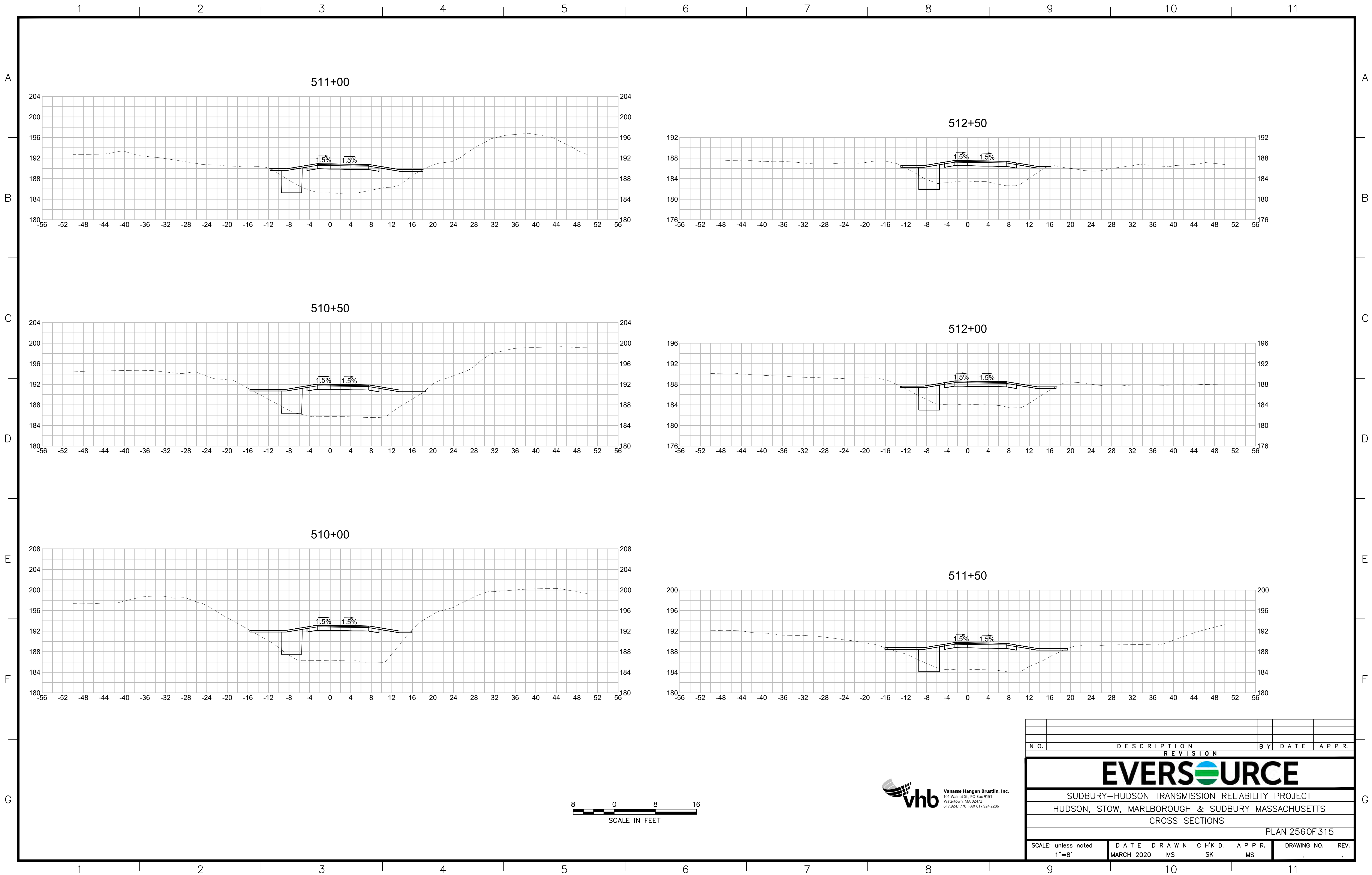


N.O.	DESCRIPTION			BY	DATE
	REVISION				APPR.
EVERSOURCE					
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HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CROSS SECTIONS					
PLAN 253 OF 315					
SCALE: unless noted 1"=8'		DATE	DRAWN	CHK'D	APPR.
		MARCH 2020	MS	SK	MS
DRAWING NO.		REV.			

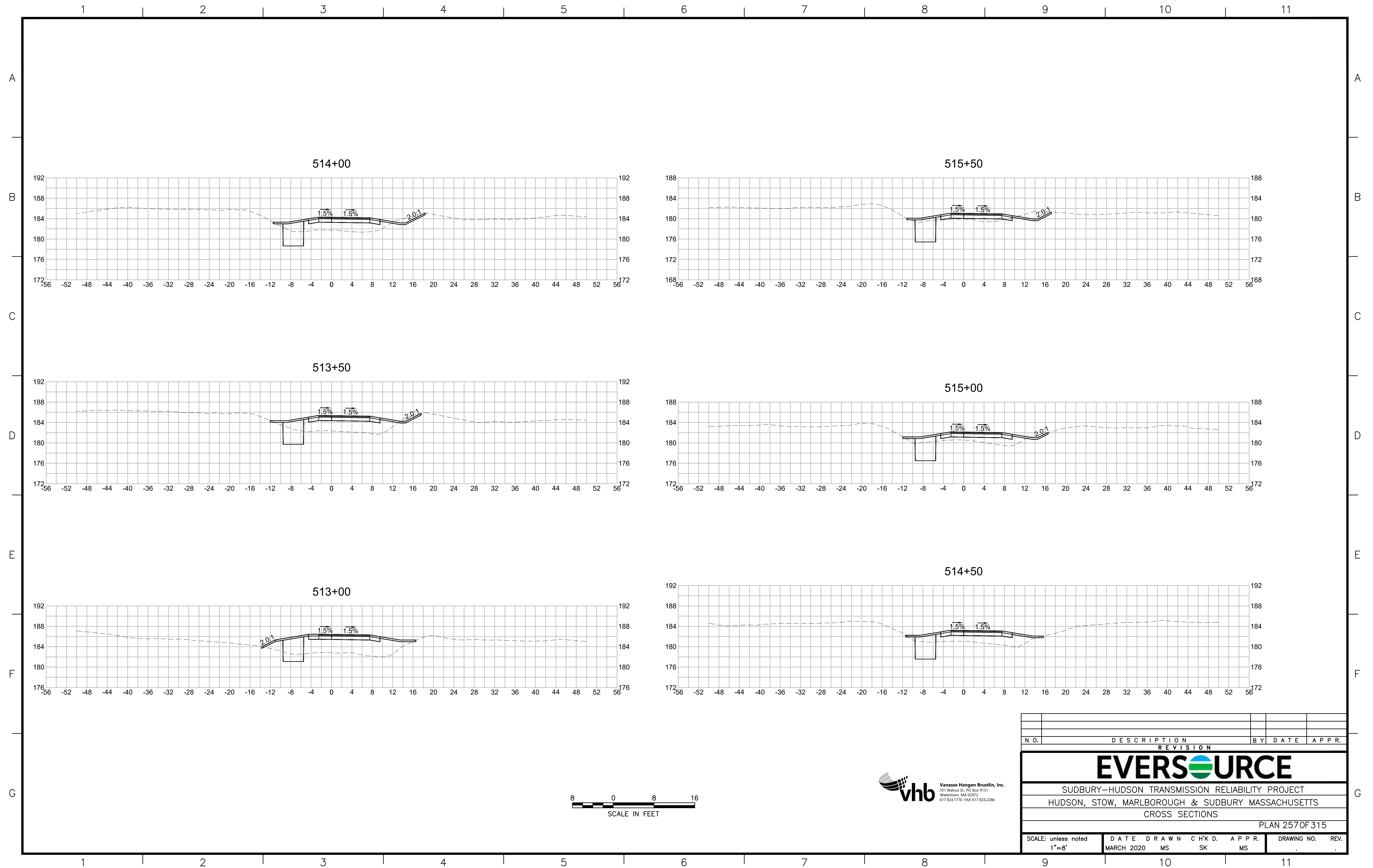


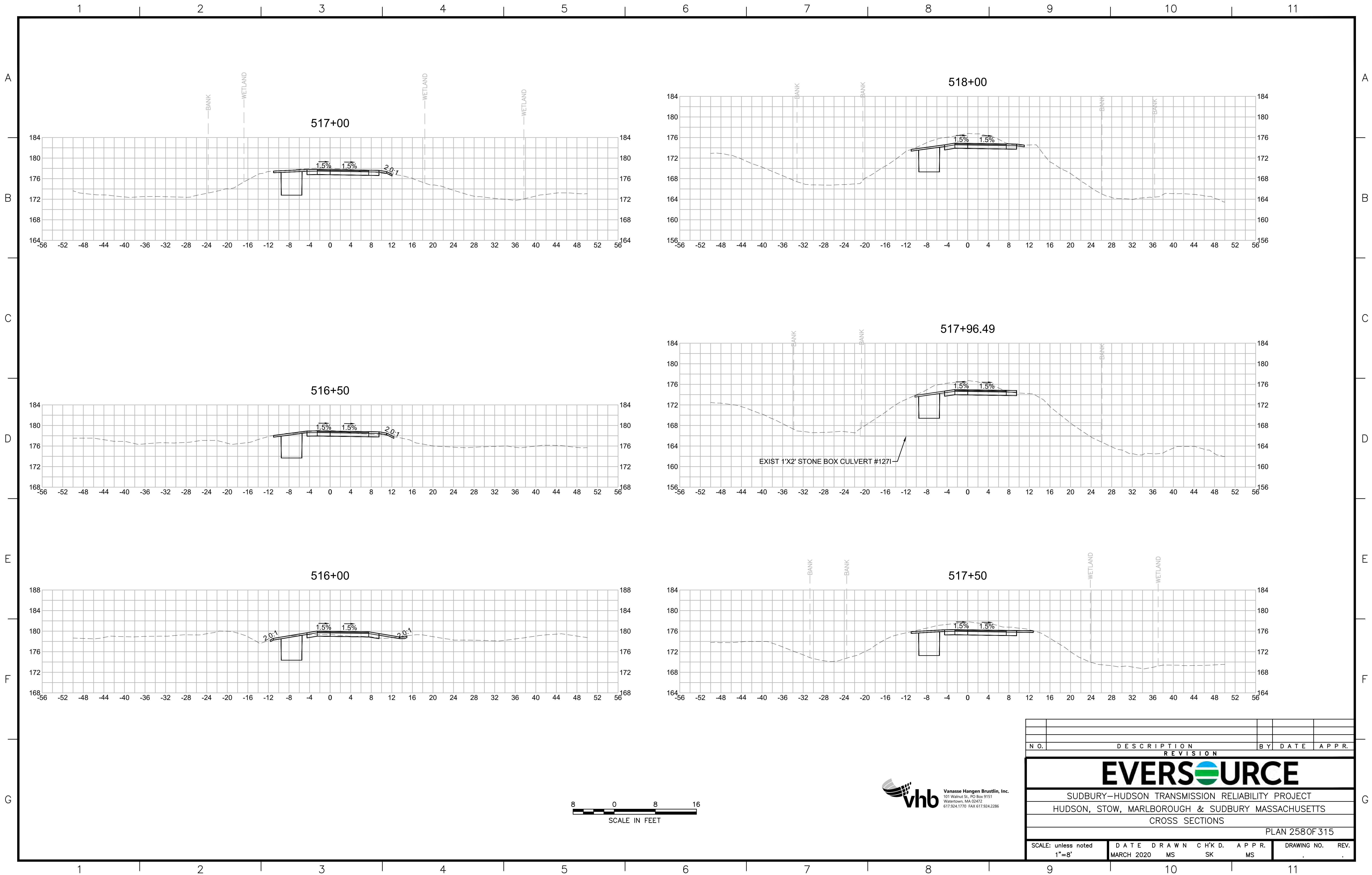
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REVISION									
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HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
CROSS SECTIONS									
PLAN 254 OF 315									
SCALE: unless noted 1"=8'		DATE		DRAWN		C H'K'D.		APPR.	
		MARCH 2020		MS		SK		MS	
DRAWING NO.					REV.				

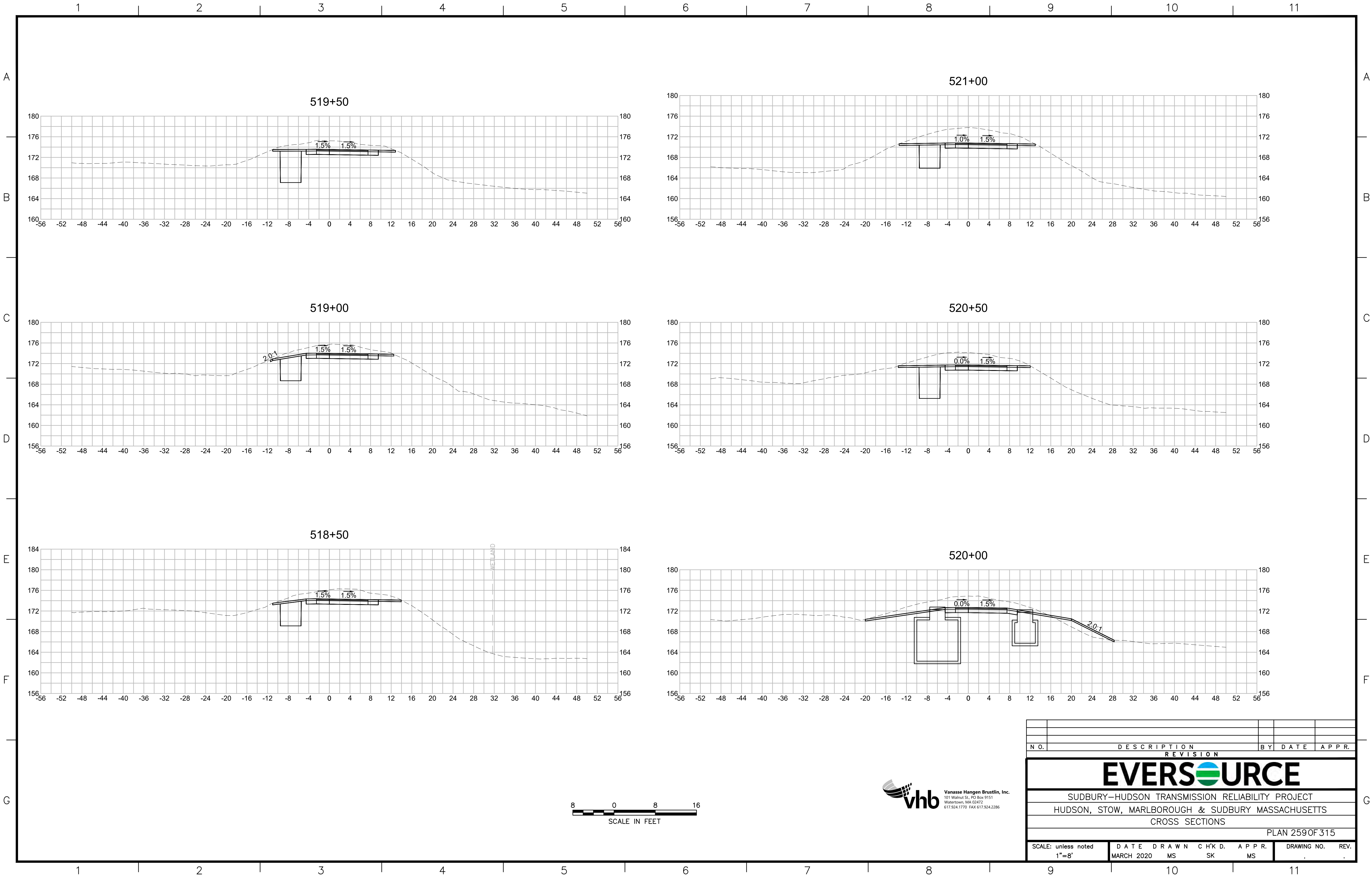




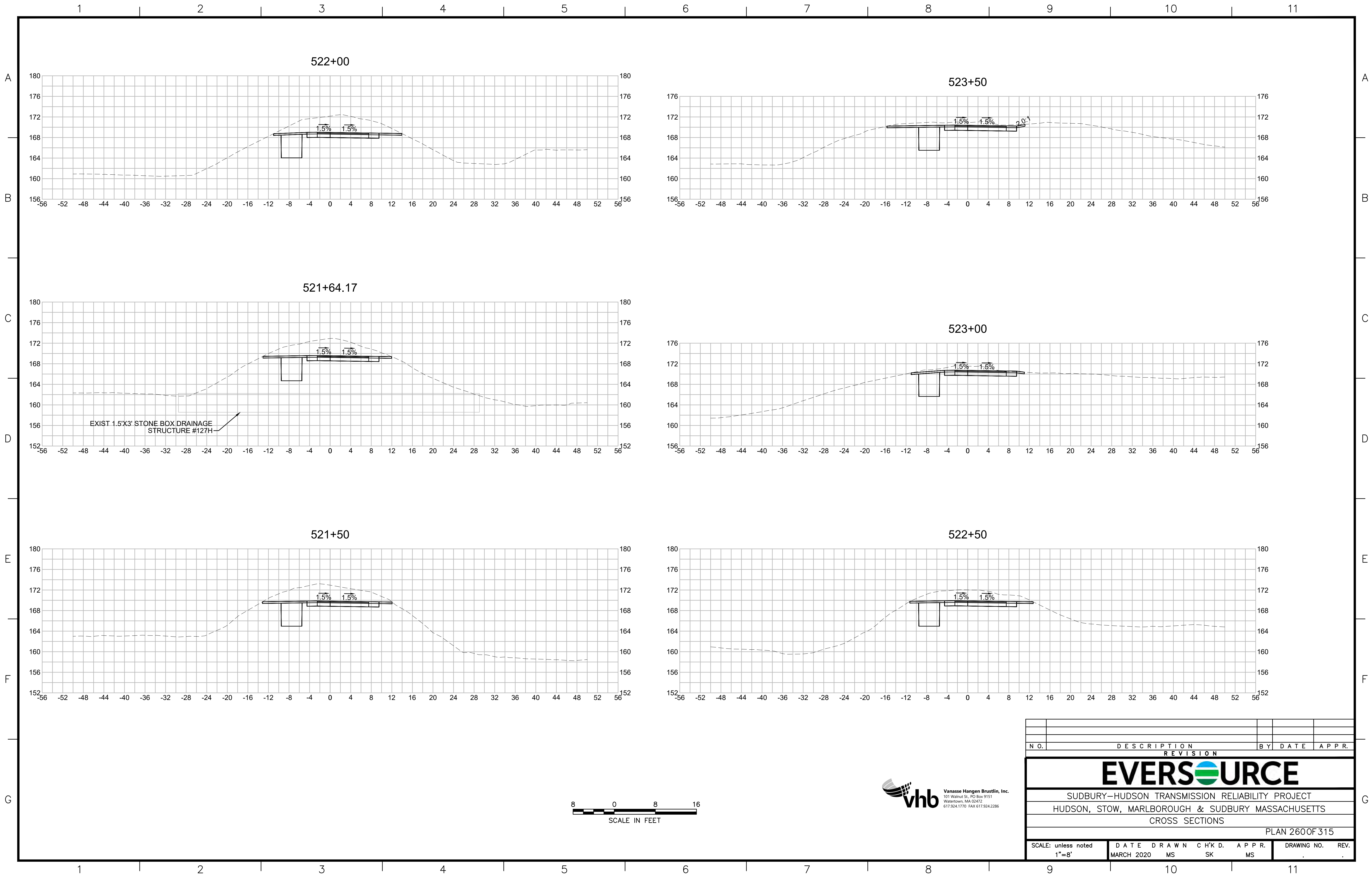
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	REVISION			APPR.	
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CROSS SECTIONS					
PLAN 256 OF 315					
SCALE: unless noted 1"=8'		DATE	DRAWN	CHECKED	APPR.
		MARCH 2020	MS	SK	MS
DRAWING NO.		REV.			

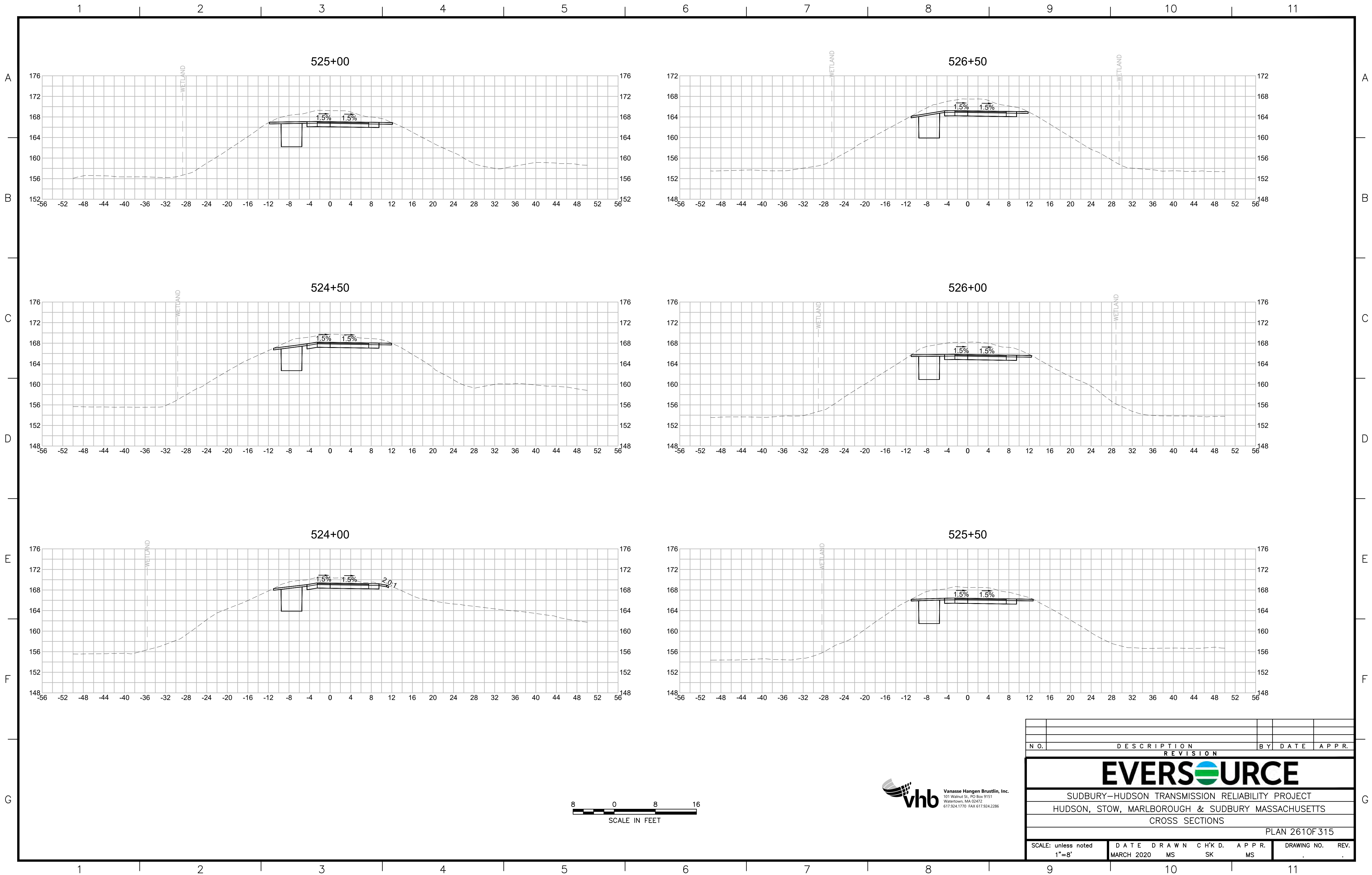


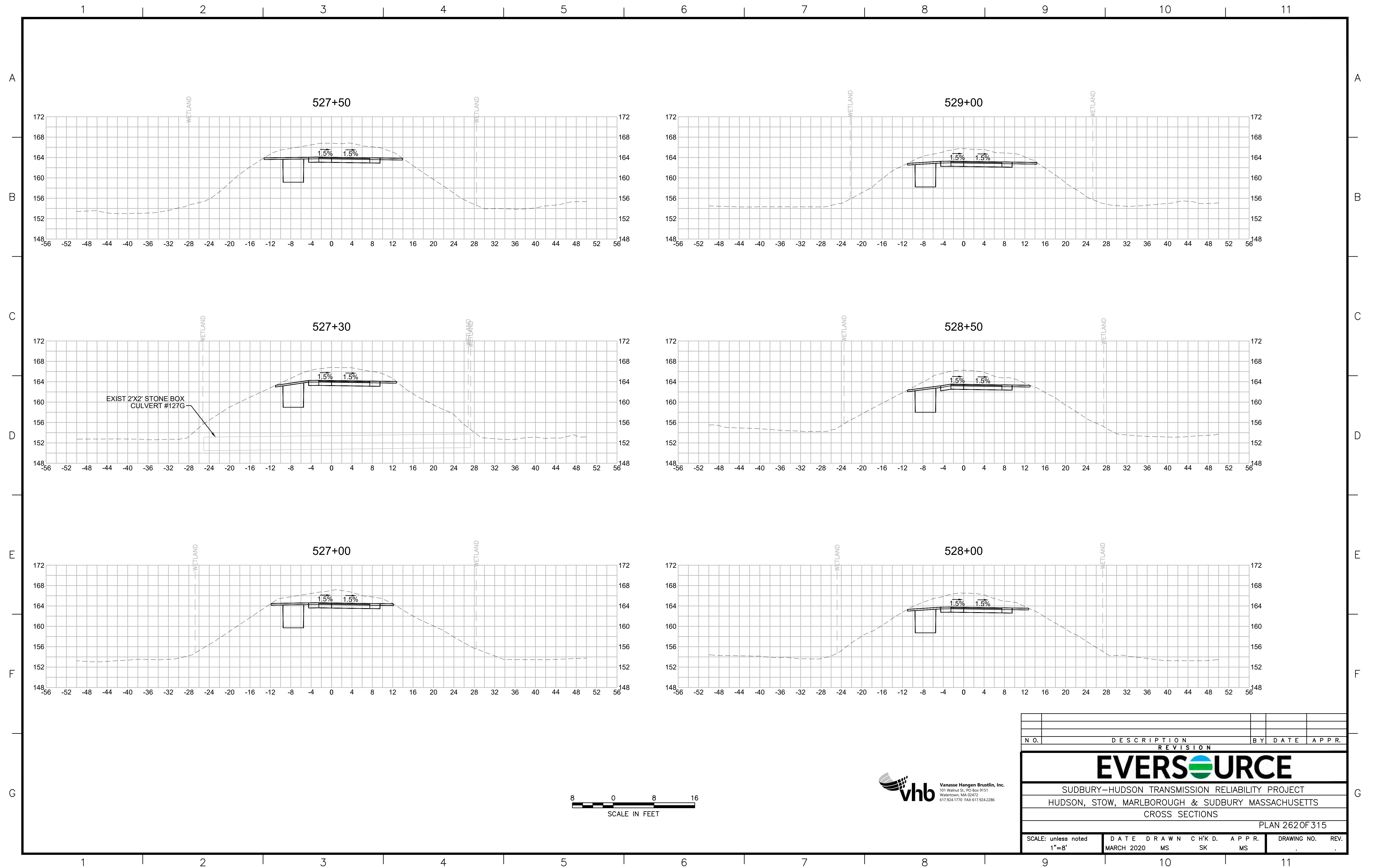


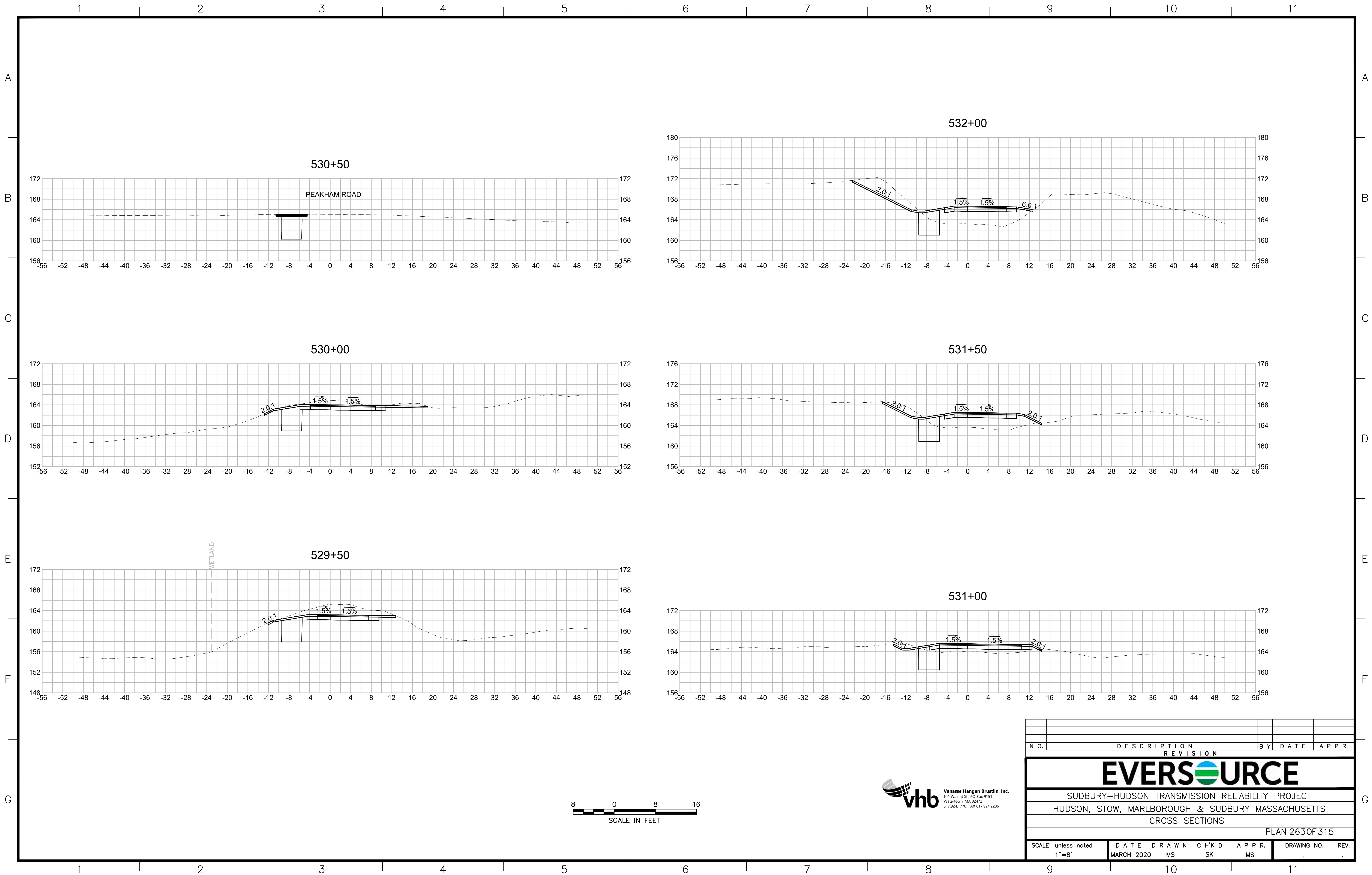


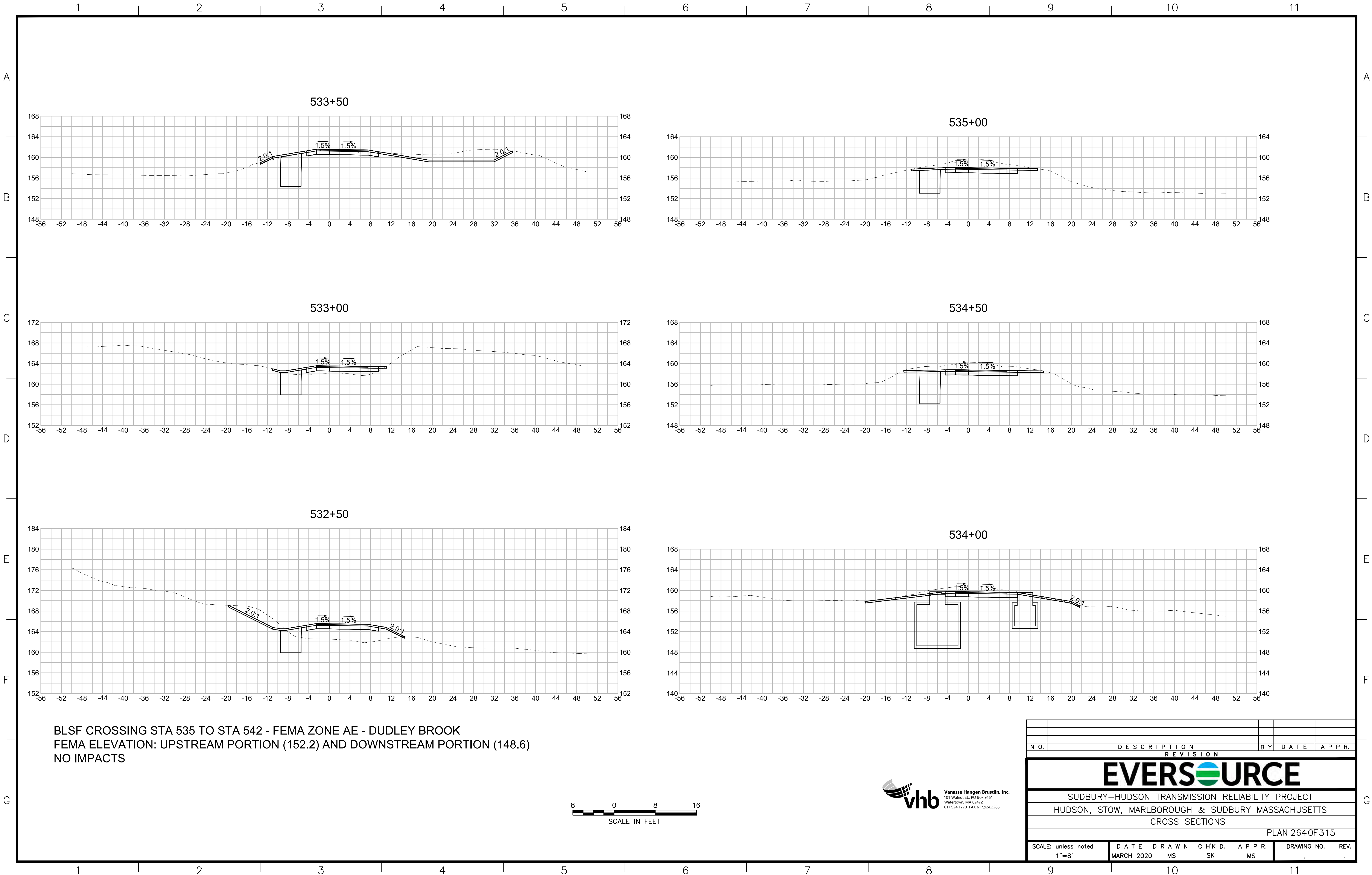
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	REVISION			APPR.	
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CROSS SECTIONS					
PLAN 259 OF 315					
SCALE: unless noted 1"=8'		DATE	DRAWN	C H'K D.	A P P R.
		MARCH 2020	MS	SK	MS
DRAWING NO.		REV.			



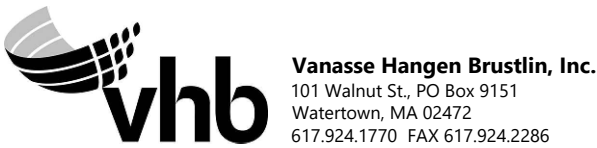




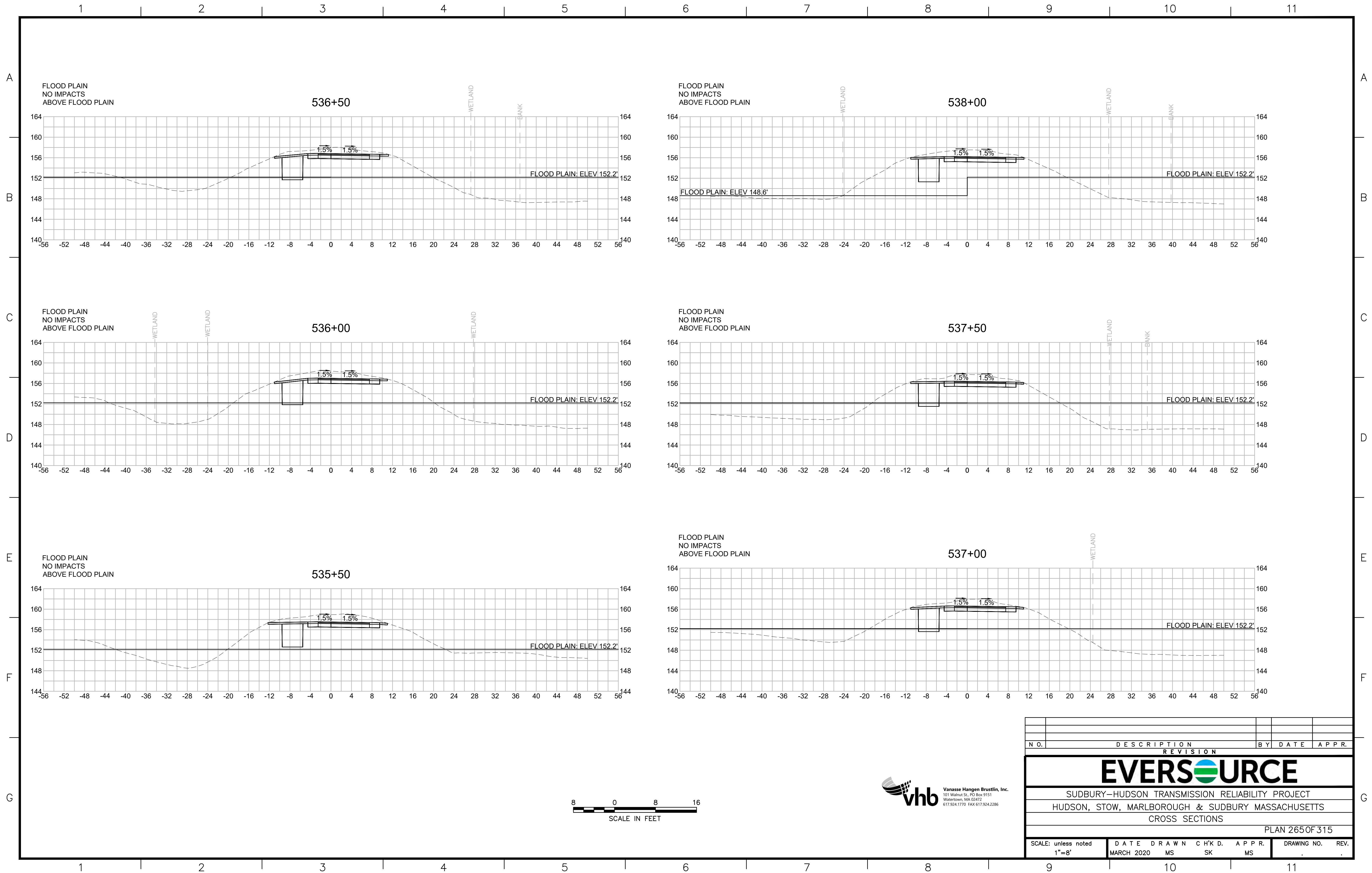


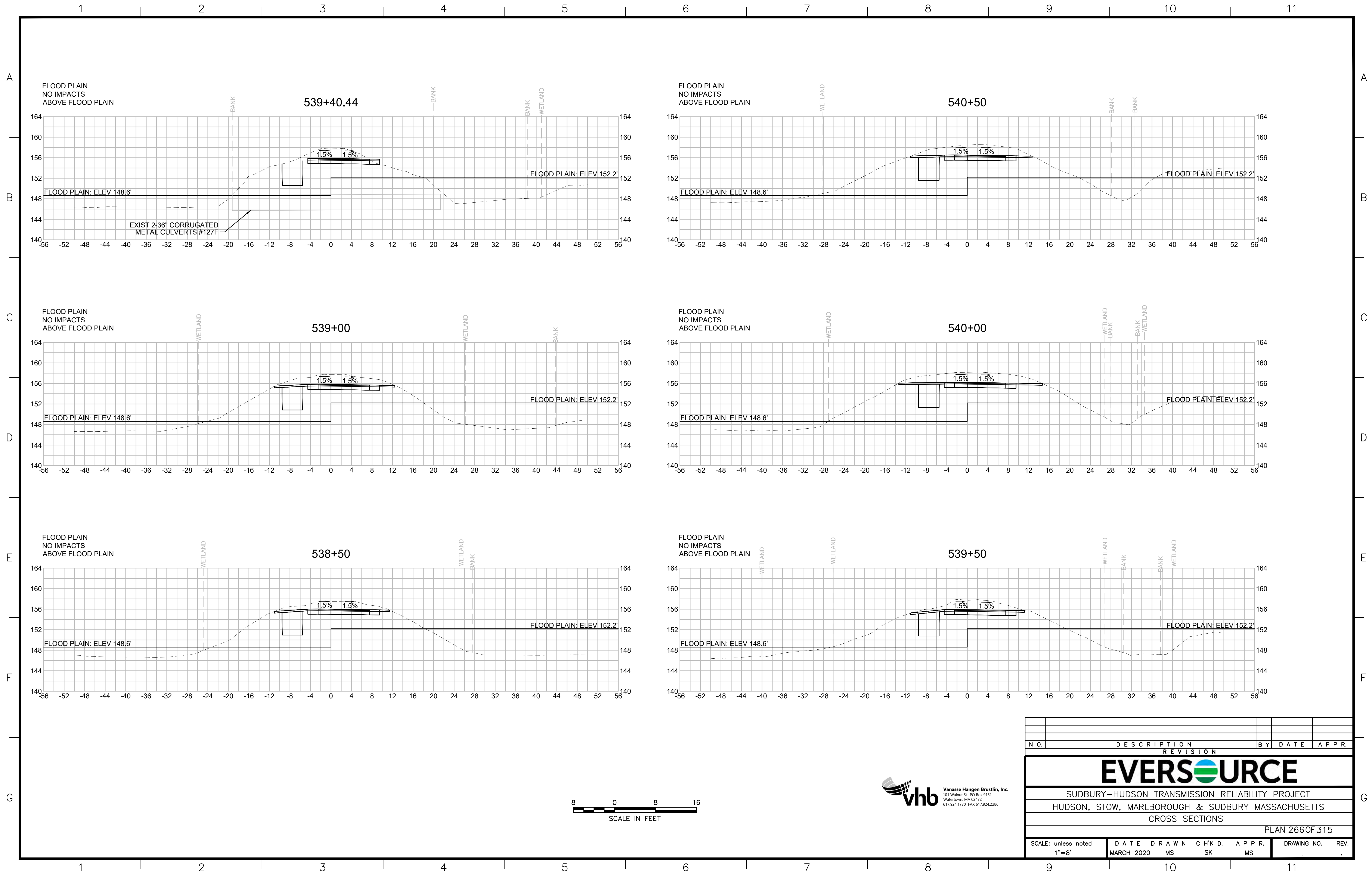


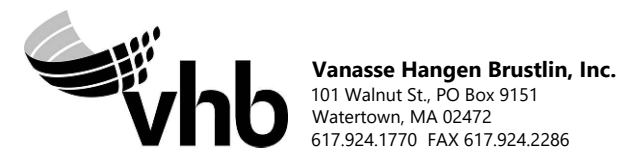
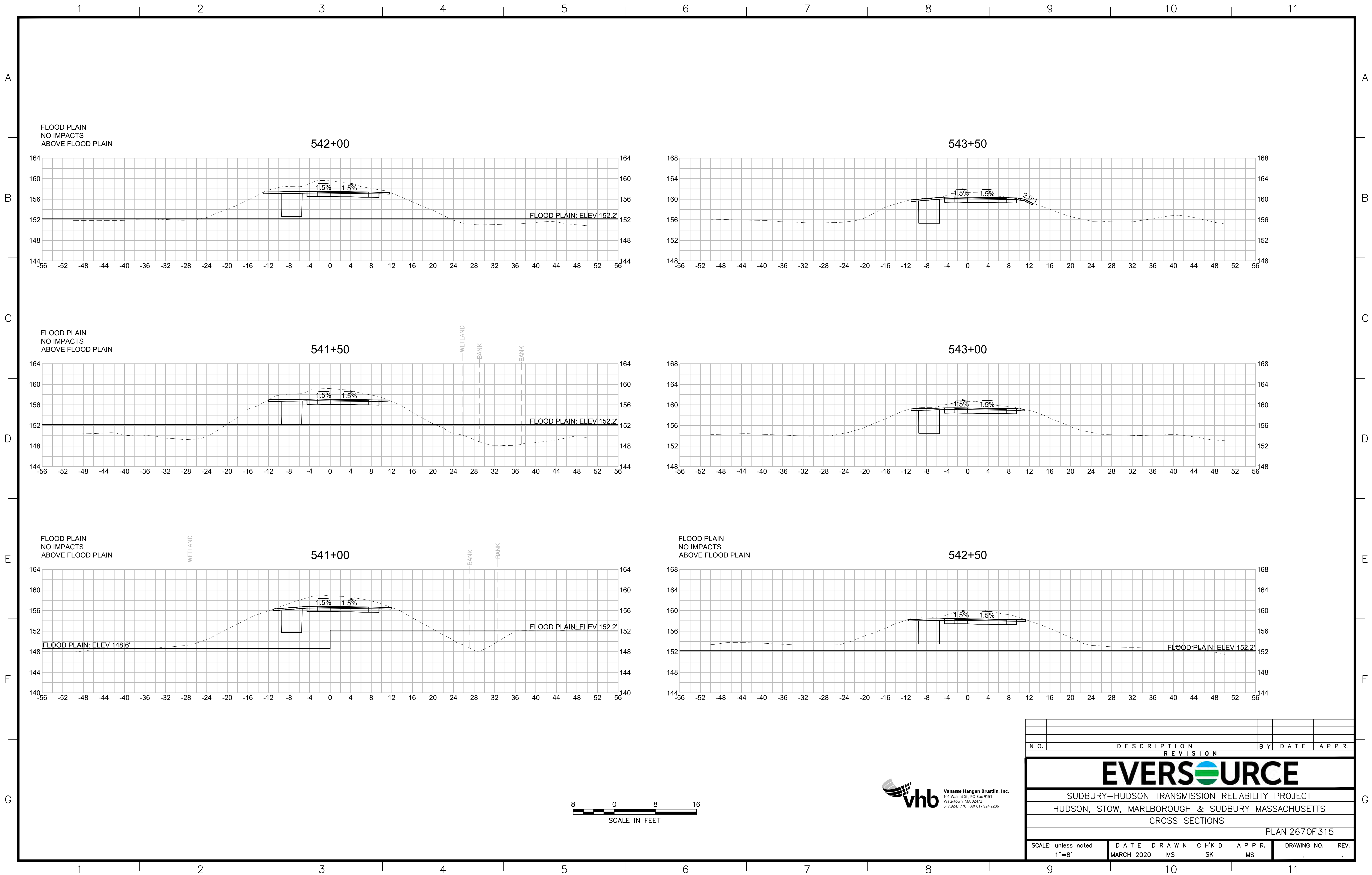
BLSF CROSSING STA 535 TO STA 542 - FEMA ZONE AE - DUDLEY BROOK
FEMA ELEVATION: UPSTREAM PORTION (152.2) AND DOWNSTREAM PORTION (148.6)
NO IMPACTS



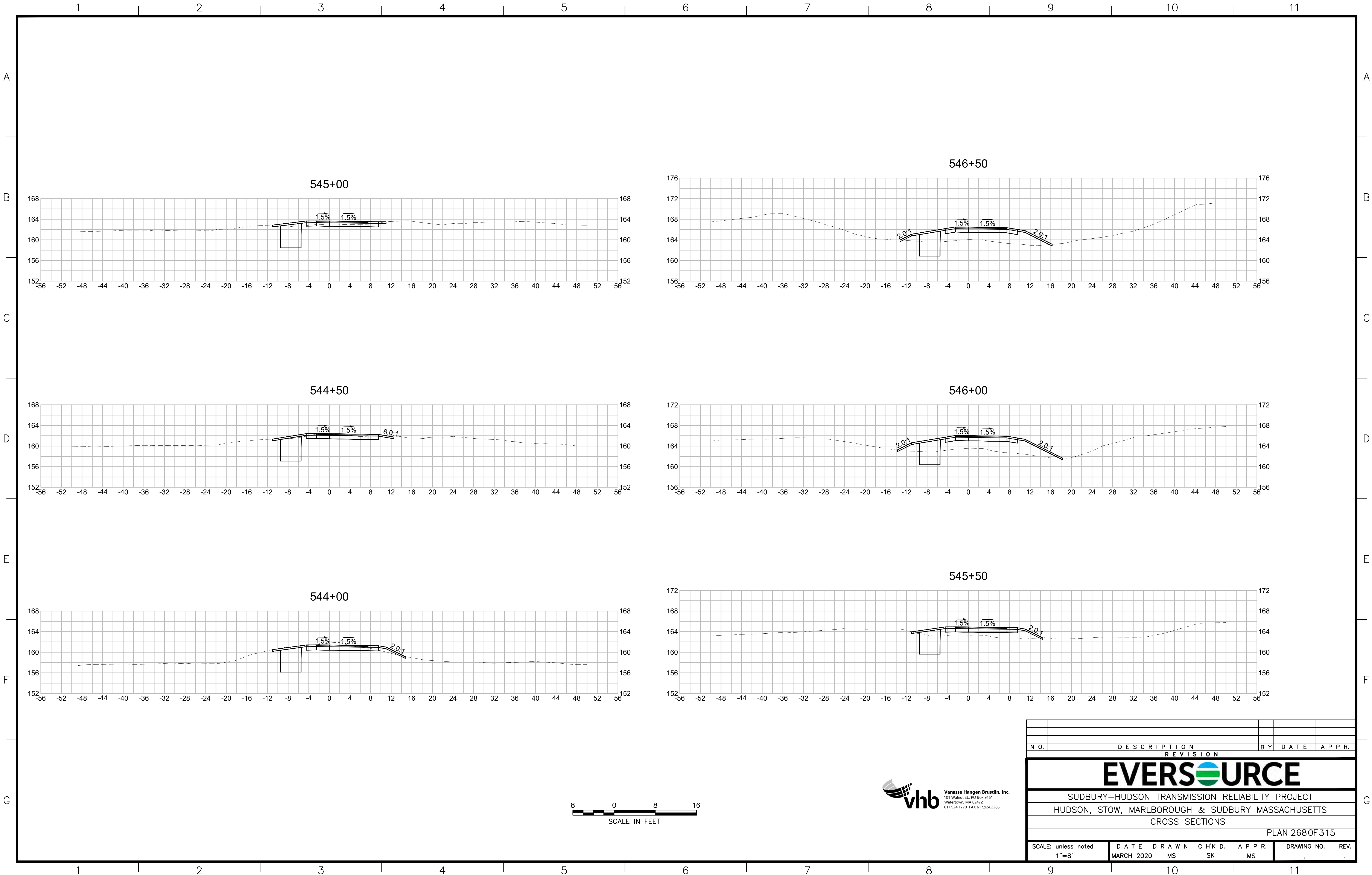
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HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS							
CROSS SECTIONS							
PLAN 264 OF 315							
SCALE: unless noted 1"=8'		DATE	DRAWN	C H'K D.	A P P R.		
		MARCH 2020	MS	SK	MS		
DRAWING NO.		REV.					

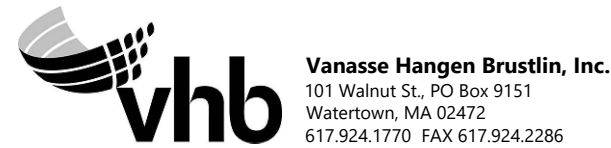
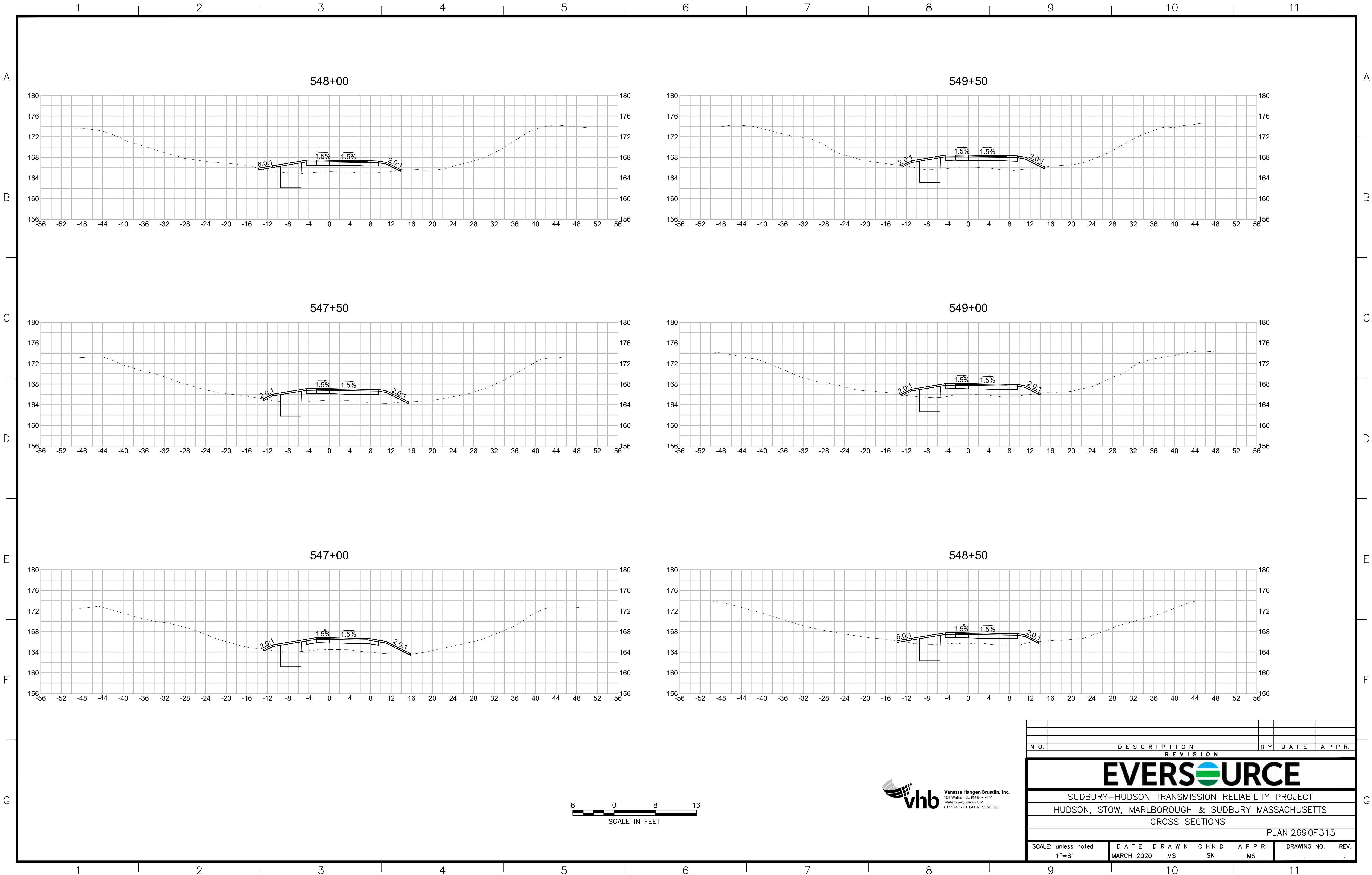




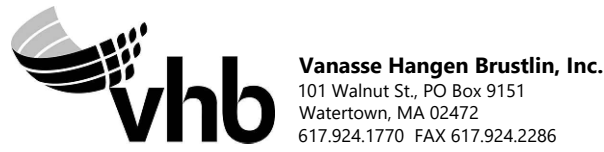
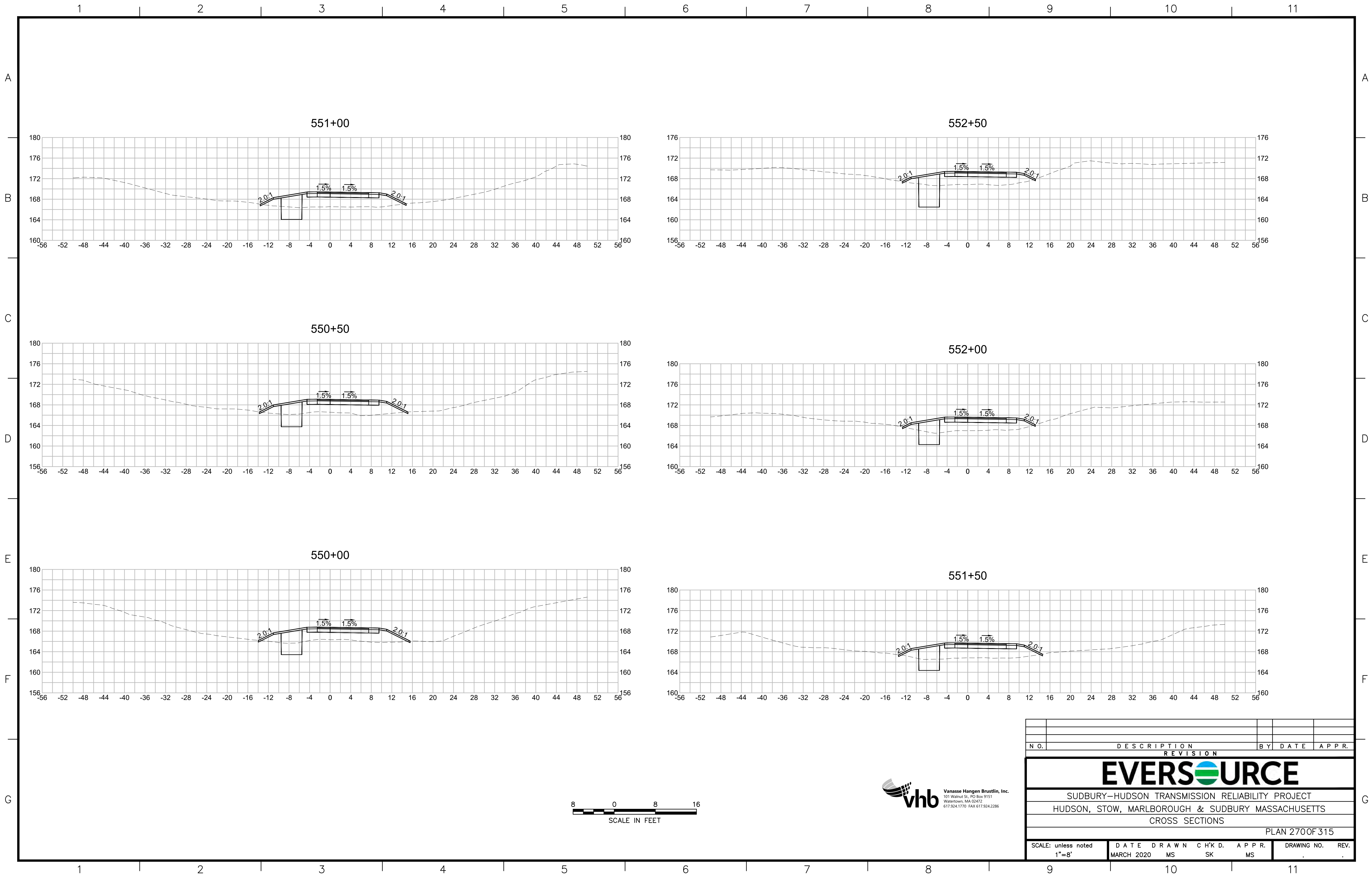


N.O.	DESCRIPTION				BY	DATE	APPR.		
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EVERSOURCE									
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT									
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
CROSS SECTIONS									
PLAN 267 OF 315									
SCALE: unless noted 1"=8'		DATE		DRAWN		CHK'D		APPR.	
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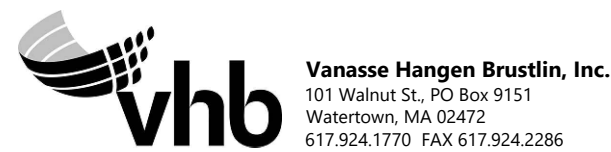
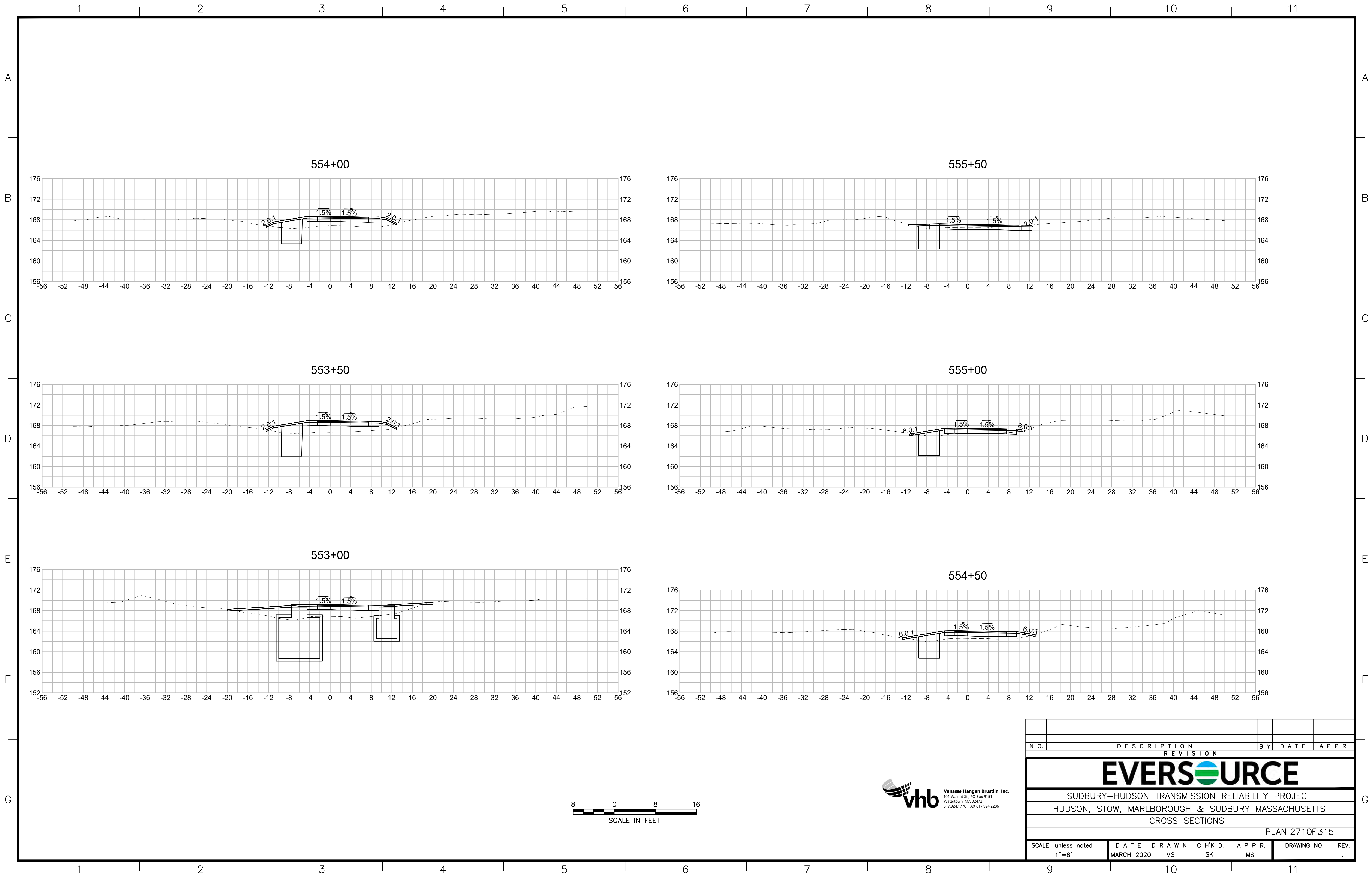




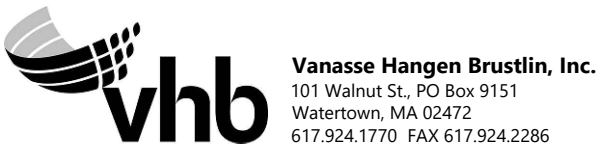
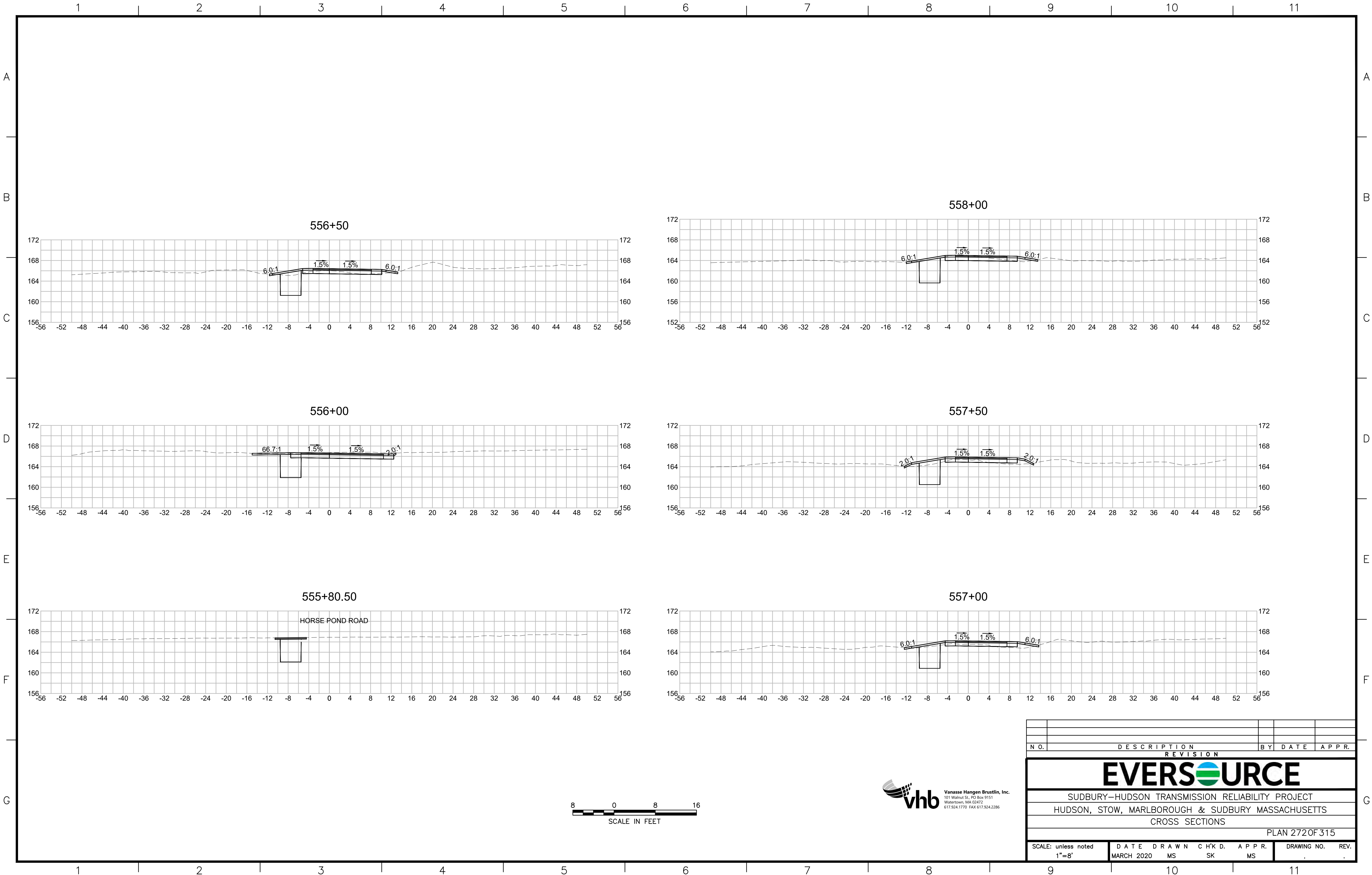
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HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
CROSS SECTIONS									
PLAN 269 OF 315									
SCALE: unless noted 1"=8'		DATE		DRAWN		CHK'D.		APPR.	
		MARCH 2020		MS		SK		MS	
								DRAWING NO. REV.	



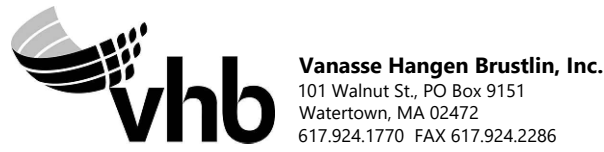
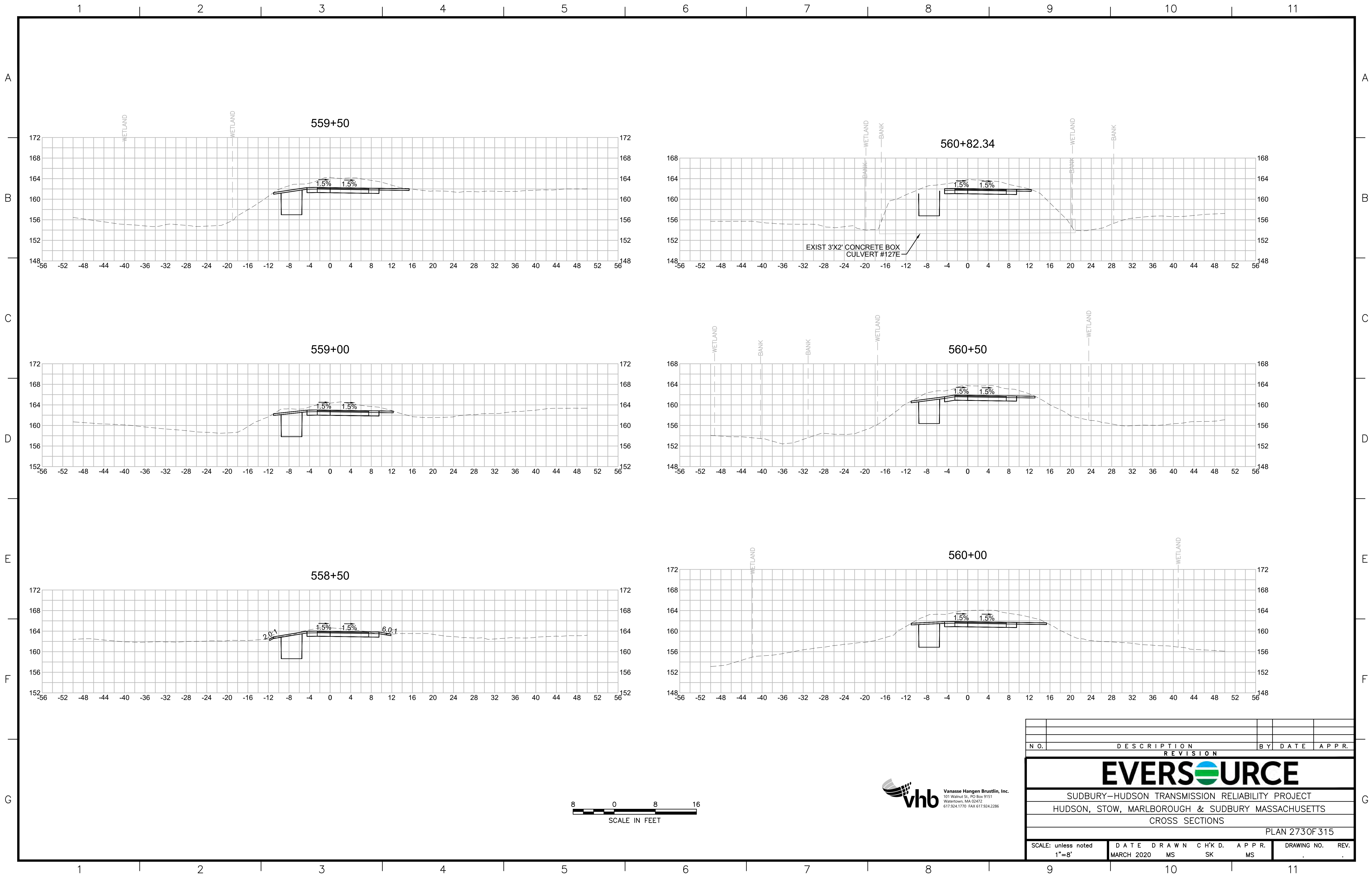
N O.	DESCRIPTION					BY	DATE	APPR.	
REVISION									
EVERSOURCE									
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HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
CROSS SECTIONS									
PLAN 2700F 315									
SCALE: unless noted 1"=8'		DATE		DRAWN		C H'K'D.		APPR.	
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DRAWING NO.					REV.				



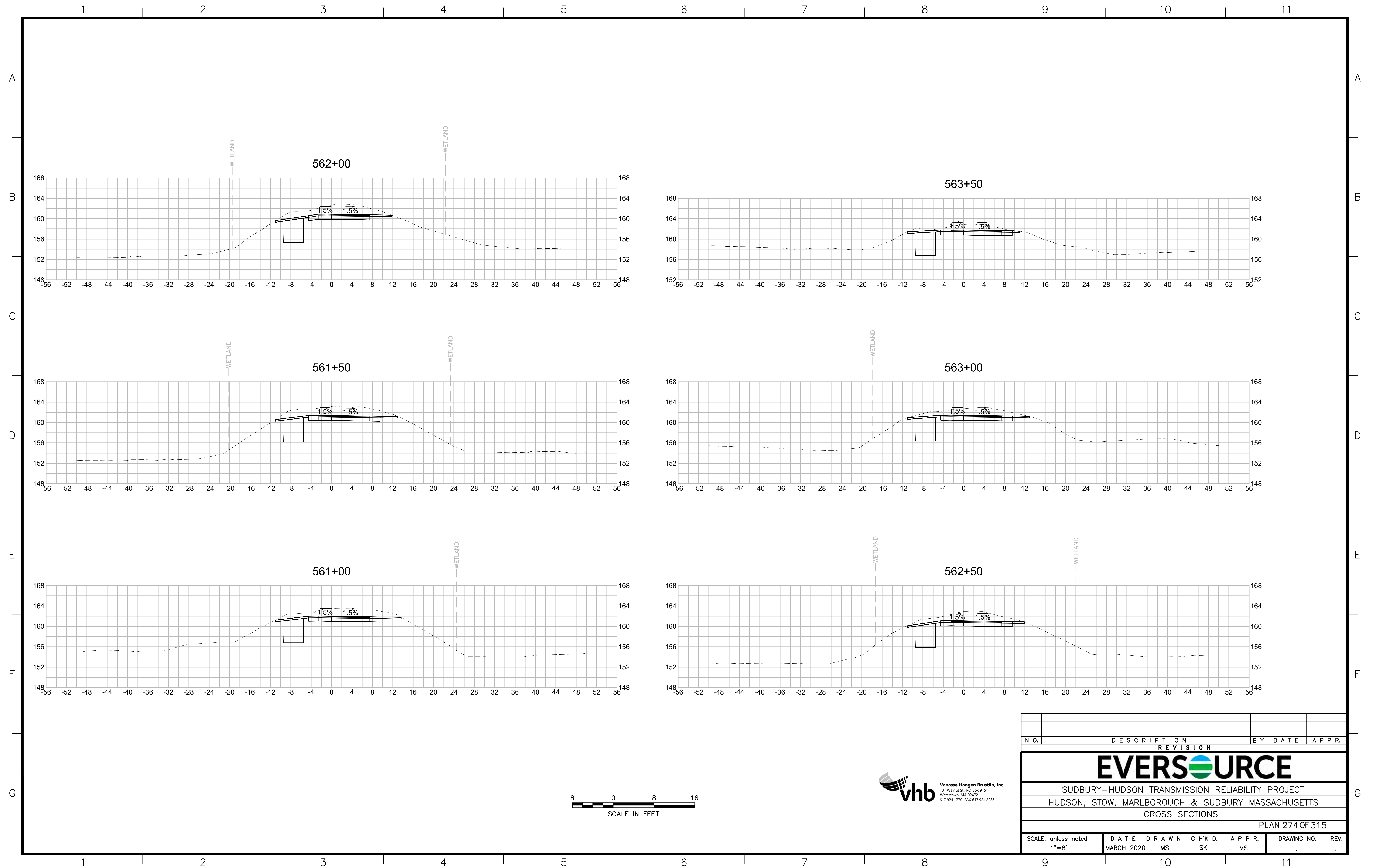
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	REVISION			APPR.	
EVERSOURCE					
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HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CROSS SECTIONS					
PLAN 2710F315					
SCALE: unless noted 1"=8'		DATE	DRAWN	CHK'D	APPR.
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DRAWING NO.		REV.			

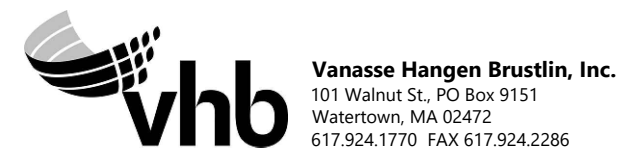
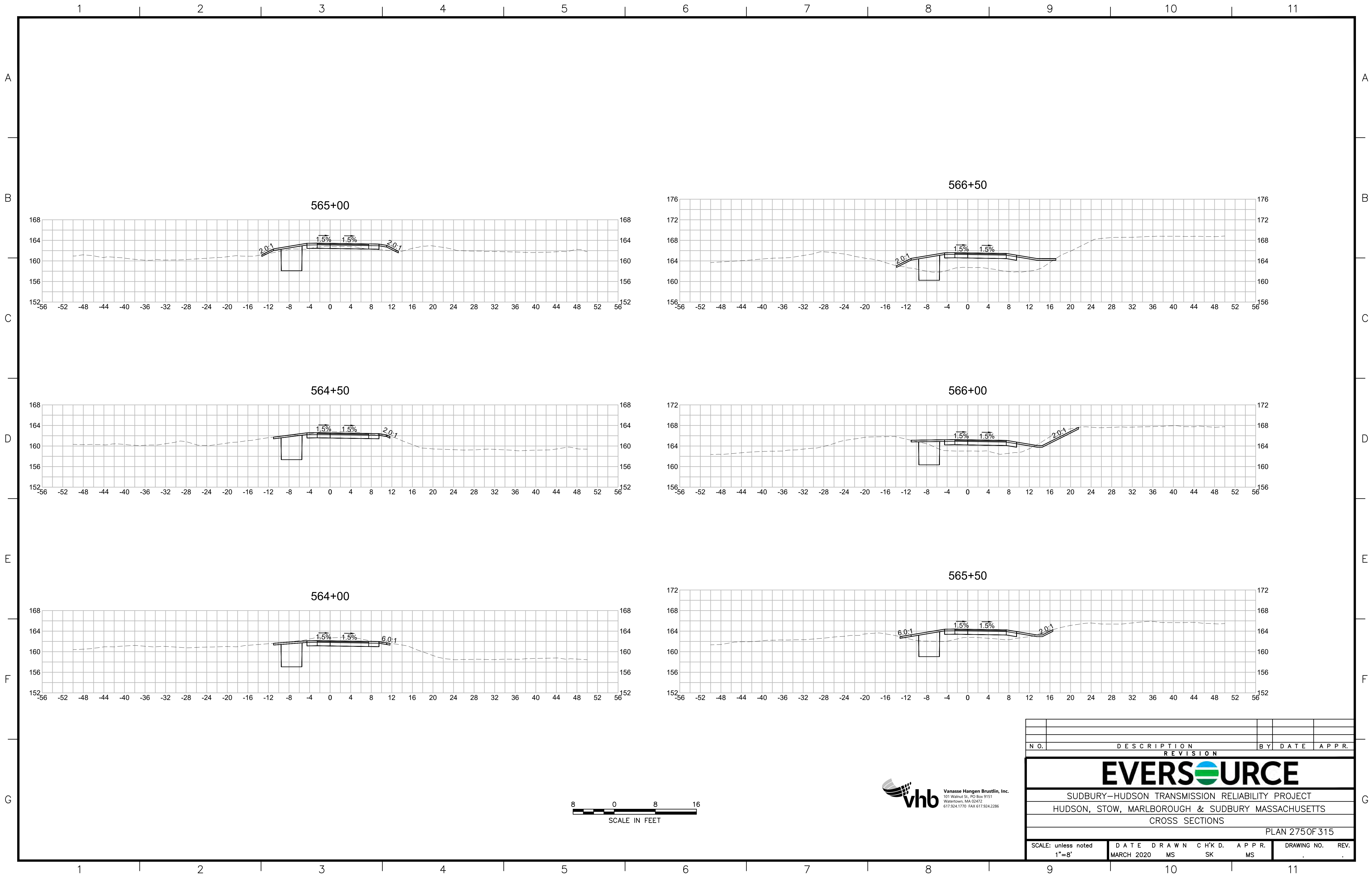


N.O.	DESCRIPTION					BY	DATE	APPR.	
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EVERSOURCE									
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HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
CROSS SECTIONS									
PLAN 272OF 315									
SCALE: unless noted 1"=8'		DATE		DRAWN		C H'K'D.		APPR.	
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DRAWING NO.					REV.				

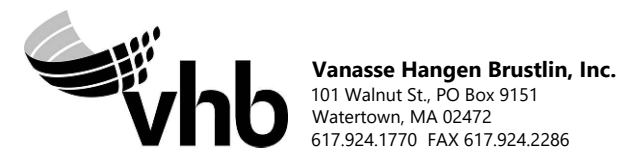
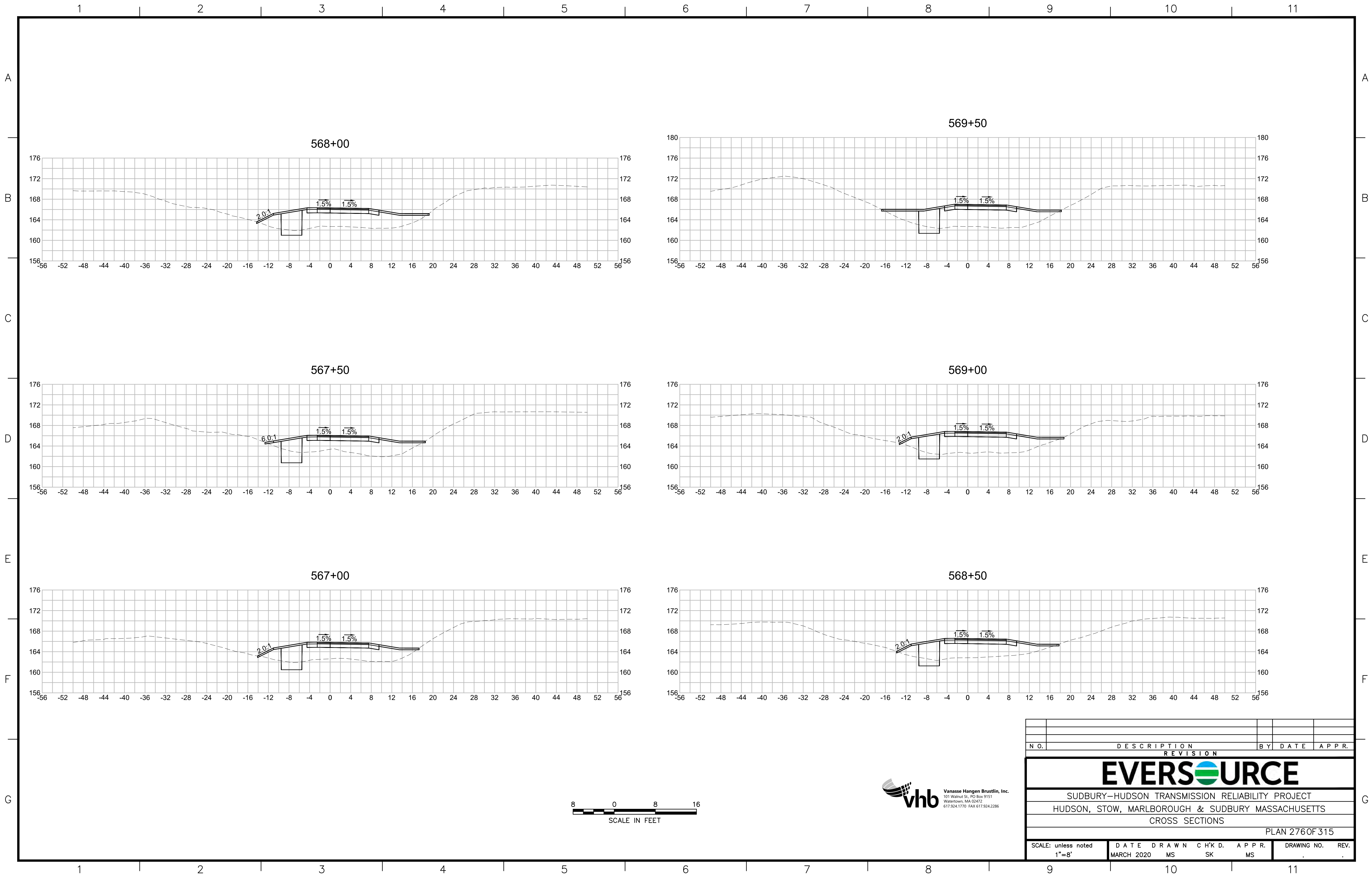


N O.	DESCRIPTION					BY	DATE	APPR.	
REVISION									
EVERSOURCE									
SUDBURY—HUDSON TRANSMISSION RELIABILITY PROJECT									
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
CROSS SECTIONS									
PLAN 273 OF 315									
SCALE: unless noted 1"=8'		DATE		DRAWN		C H'K D.		APPR.	
		MARCH 2020		MS		SK		MS	
DRAWING NO.					REV.				

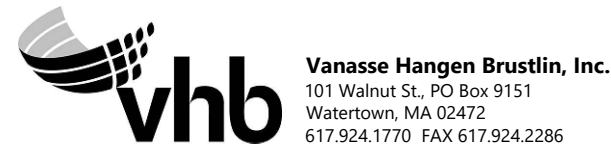
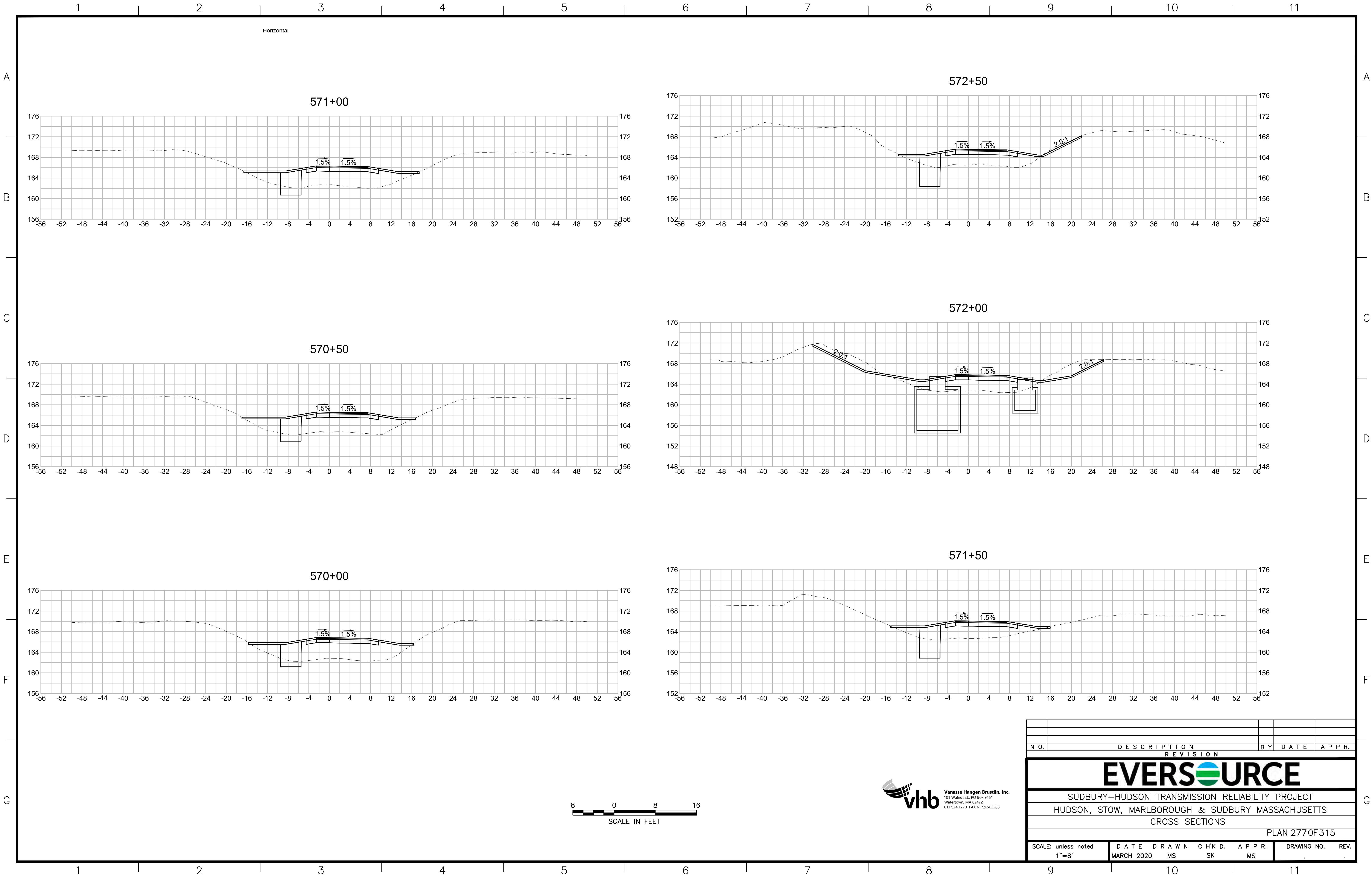




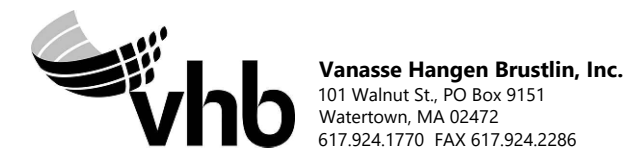
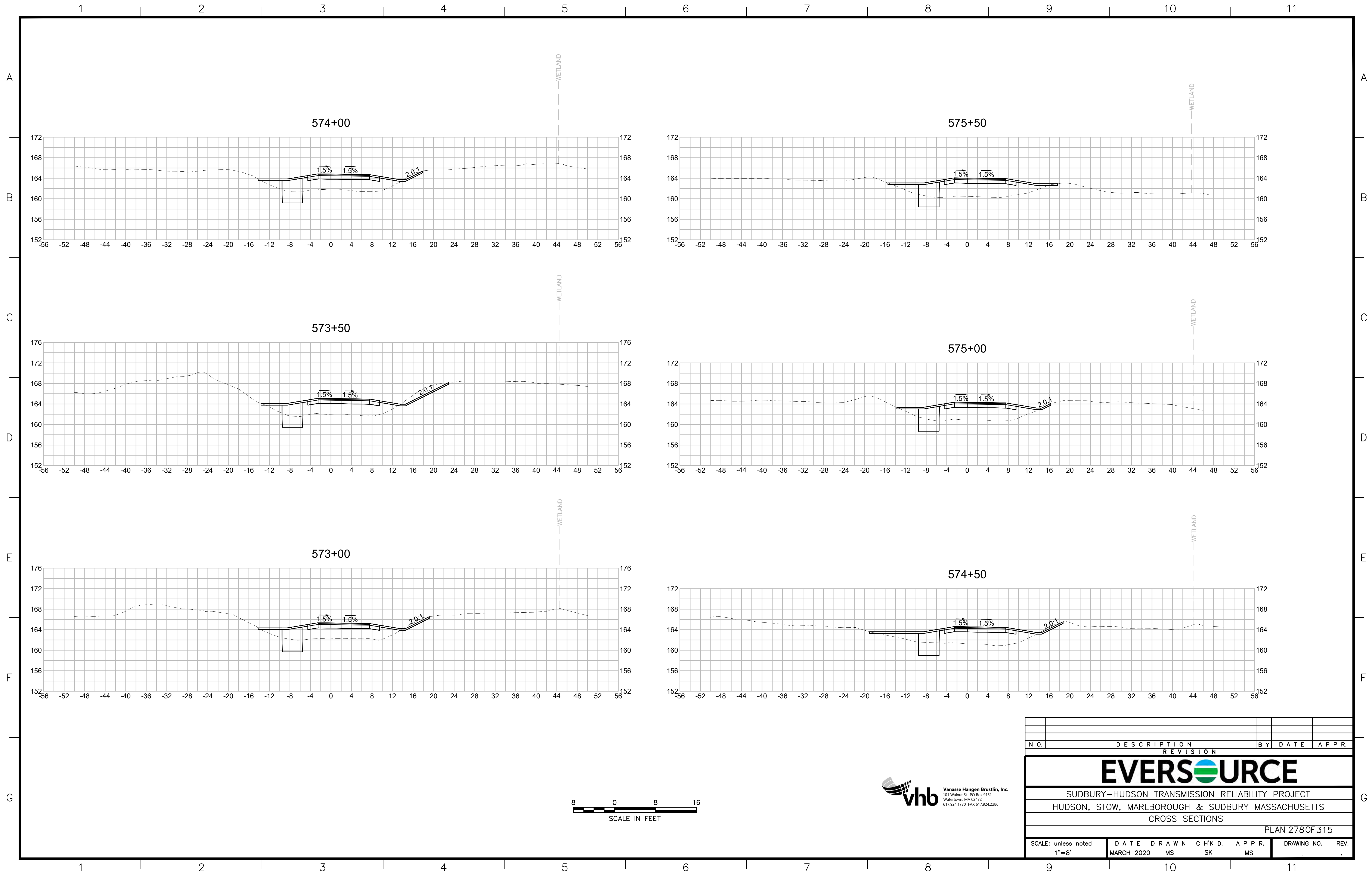
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	REVISION				APPR.
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CROSS SECTIONS					
PLAN 275 OF 315					
SCALE: unless noted 1"=8'		DATE	DRAWN	CHK'D	APPR.
		MARCH 2020	MS	SK	MS
DRAWING NO.		REV.			



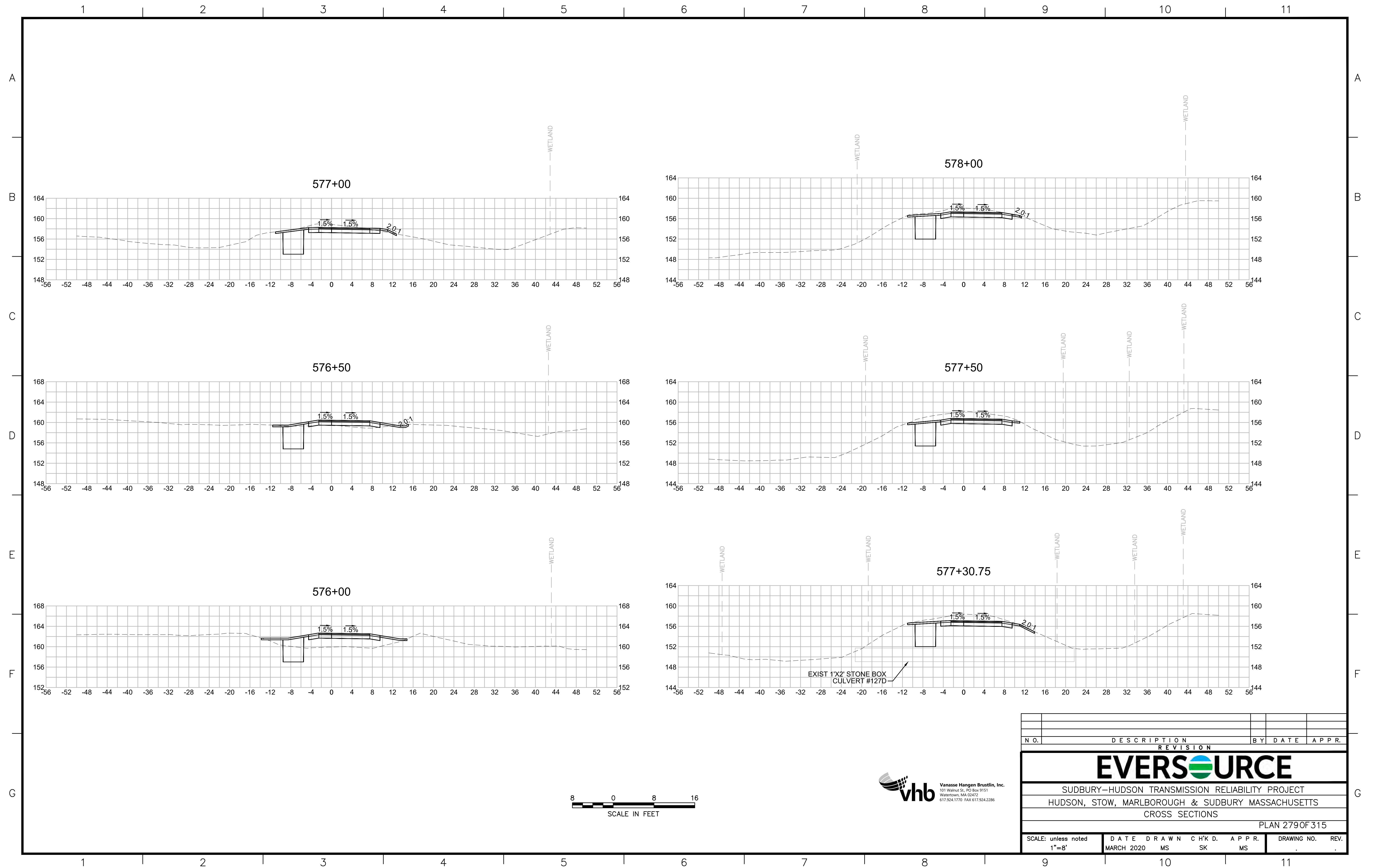
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EVERSOURCE									
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HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
CROSS SECTIONS									
PLAN 276 OF 315									
SCALE: unless noted 1"=8'		DATE		DRAWN		CHK'D		APPR.	
MARCH 2020		MS		SK		MS		DRAWING NO. REV.	

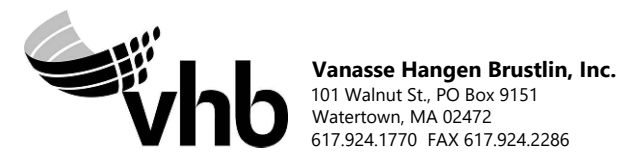
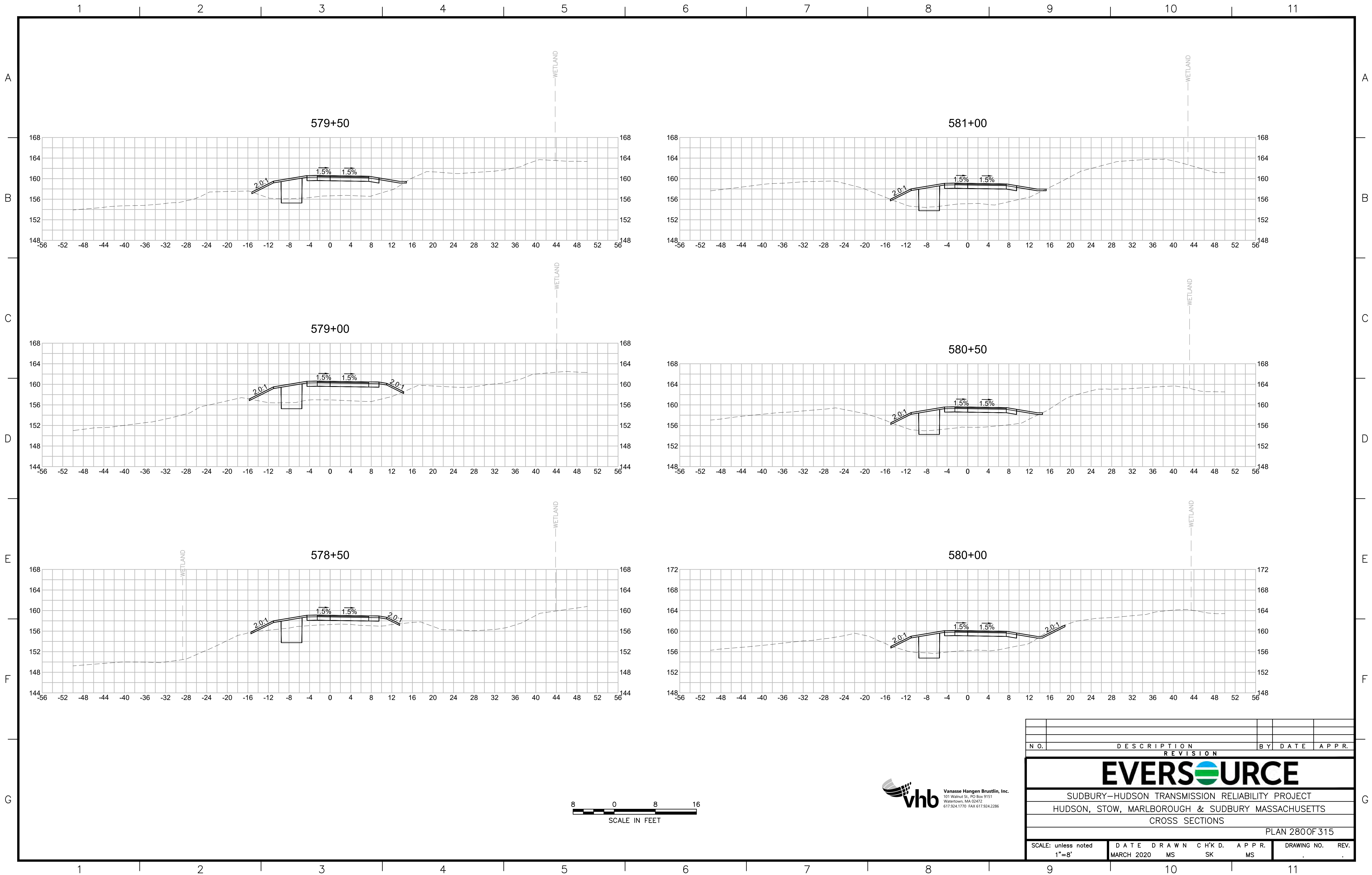


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EVERSOURCE									
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT									
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
CROSS SECTIONS									
PLAN 277 OF 315									
SCALE: unless noted 1"=8'		DATE		DRAWN		CHK'D		APPR.	
		MARCH 2020		MS		SK		MS	
					DRAWING NO.		REV.		

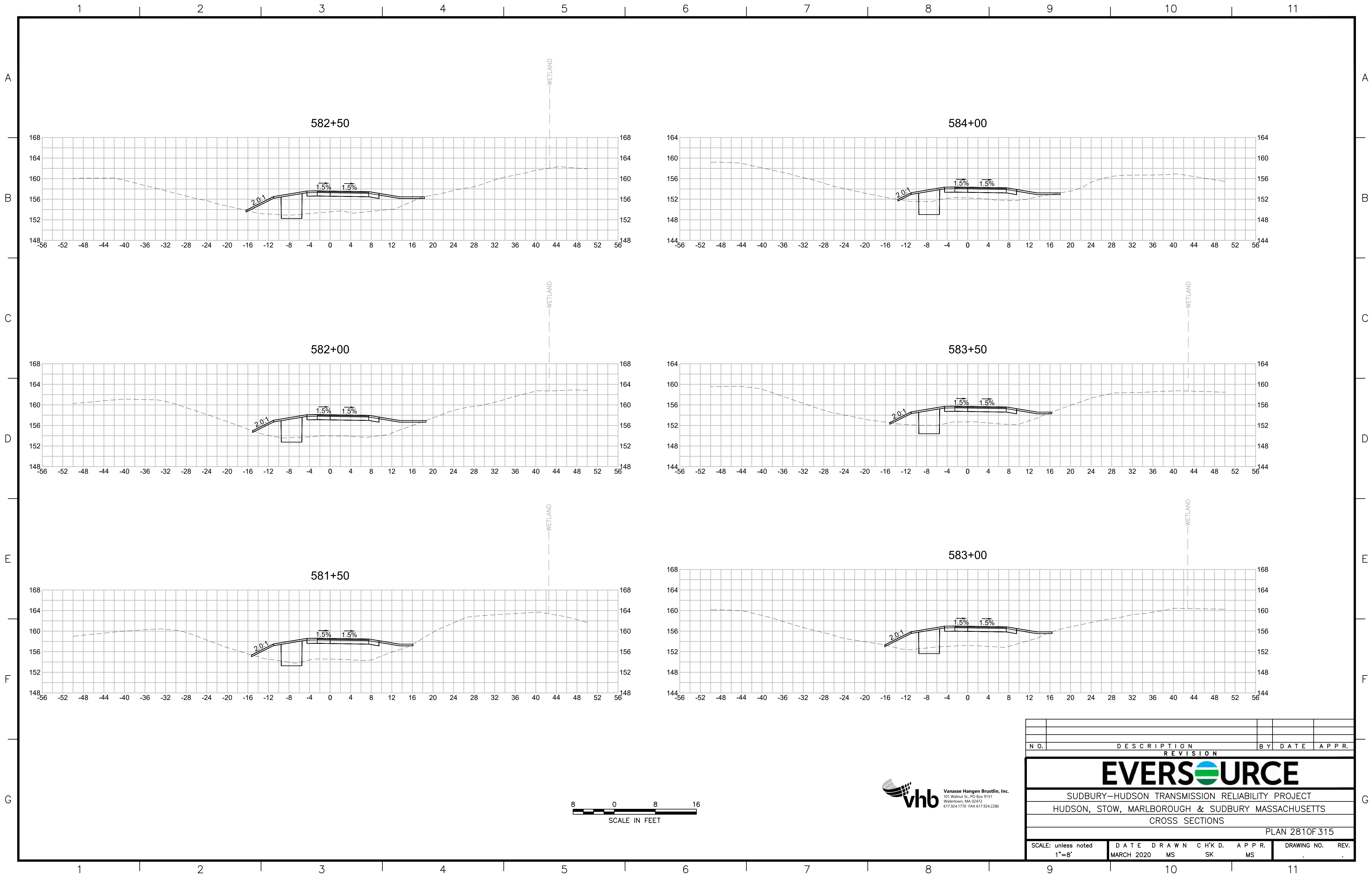


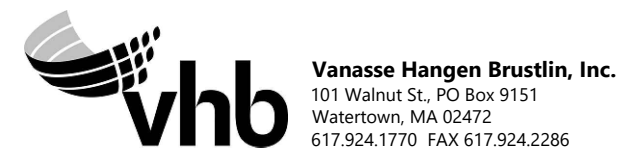
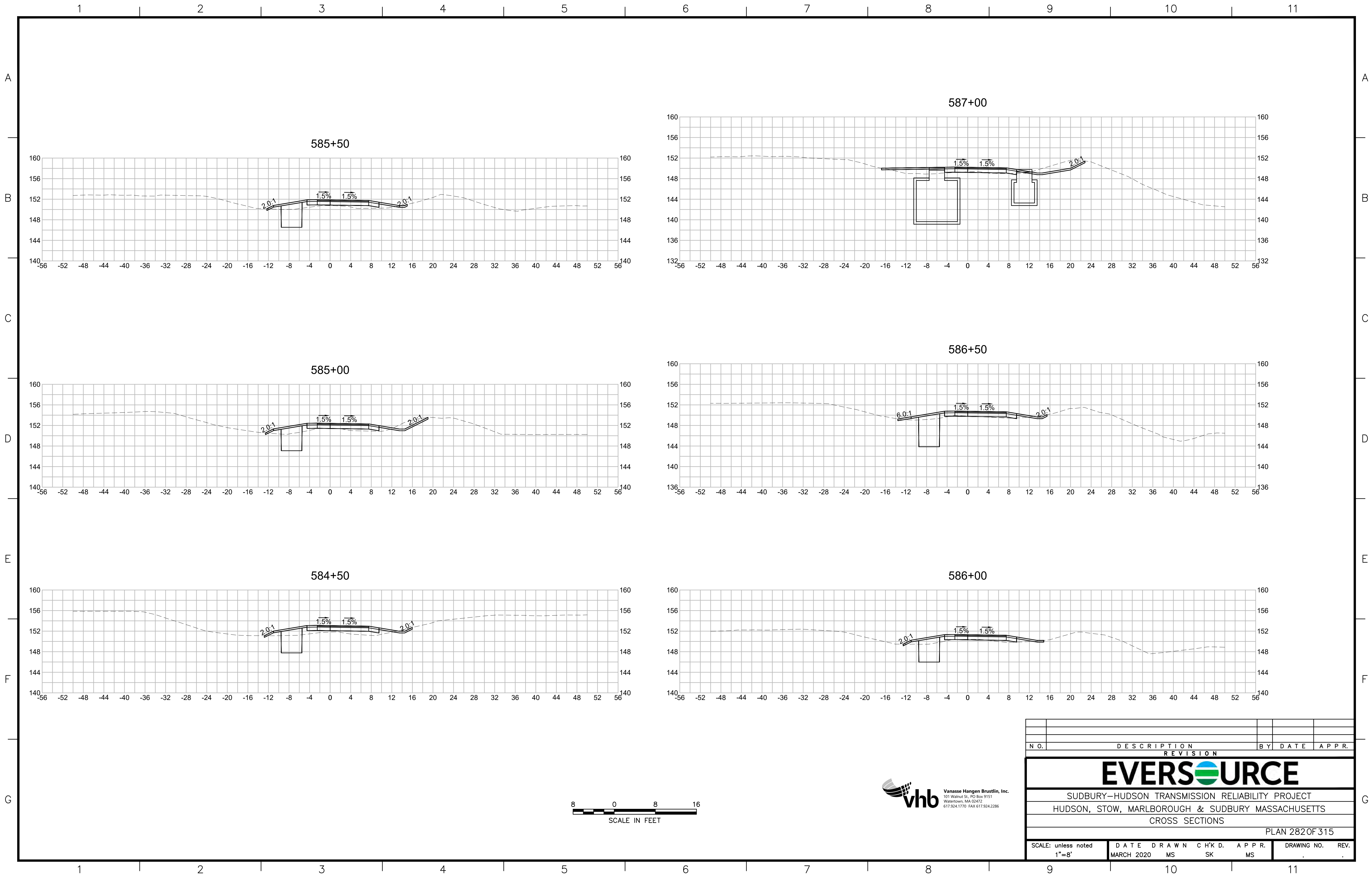
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REVISION									
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HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
CROSS SECTIONS									
PLAN 278OF 315									
SCALE: unless noted 1"=8'		DATE		DRAWN		CH'K'D.		APPR.	
		MARCH 2020		MS		SK		MS	
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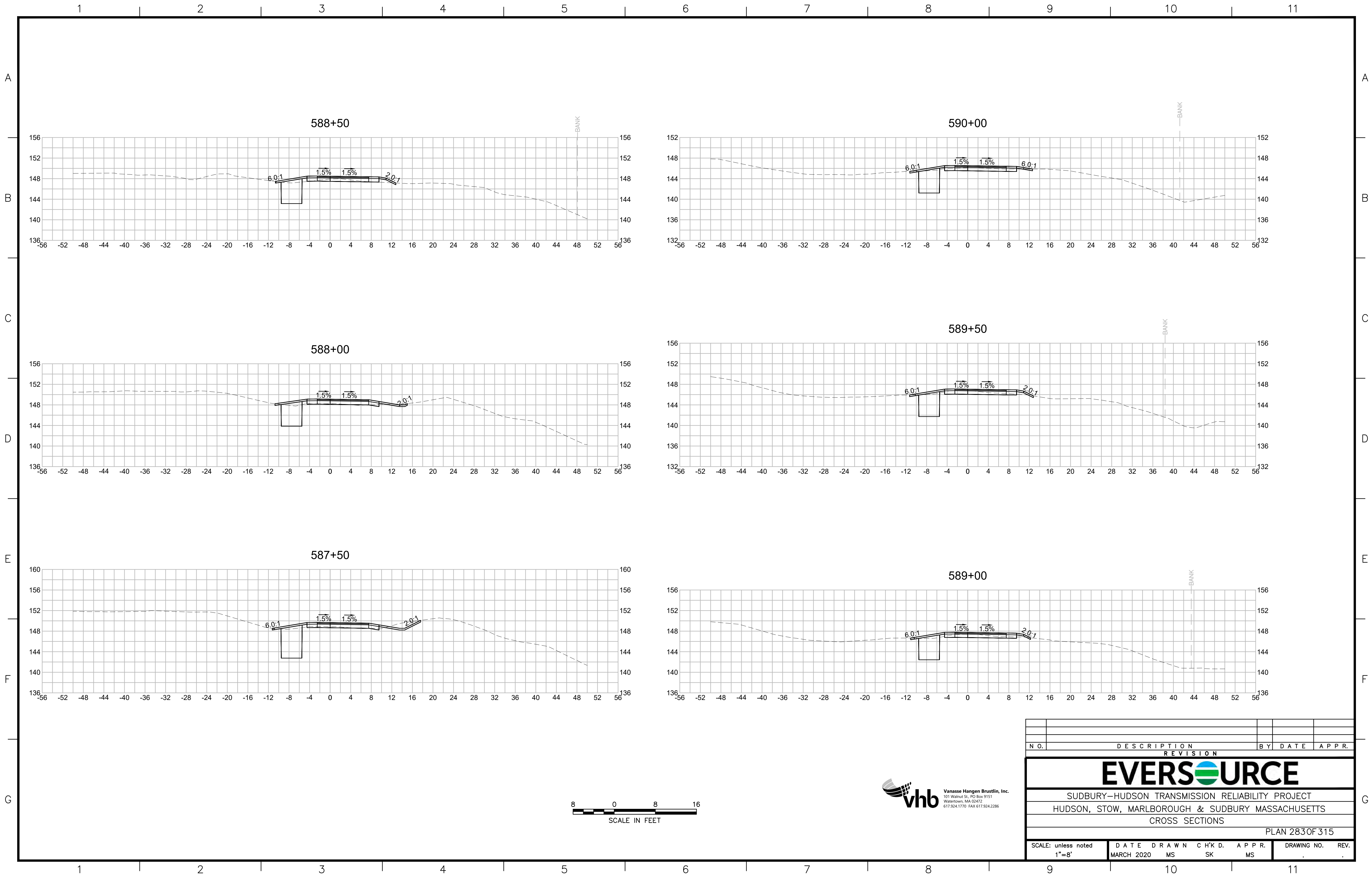
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EVERSOURCE									
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HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
CROSS SECTIONS									
PLAN 2800F 315									
SCALE: unless noted 1"=8'		DATE		DRAWN		CHK'D		APPR.	
		MARCH 2020		MS		SK		MS	
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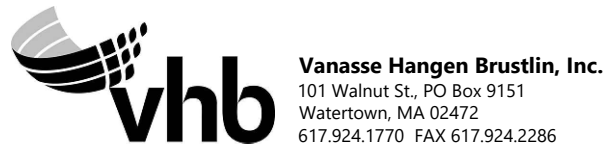
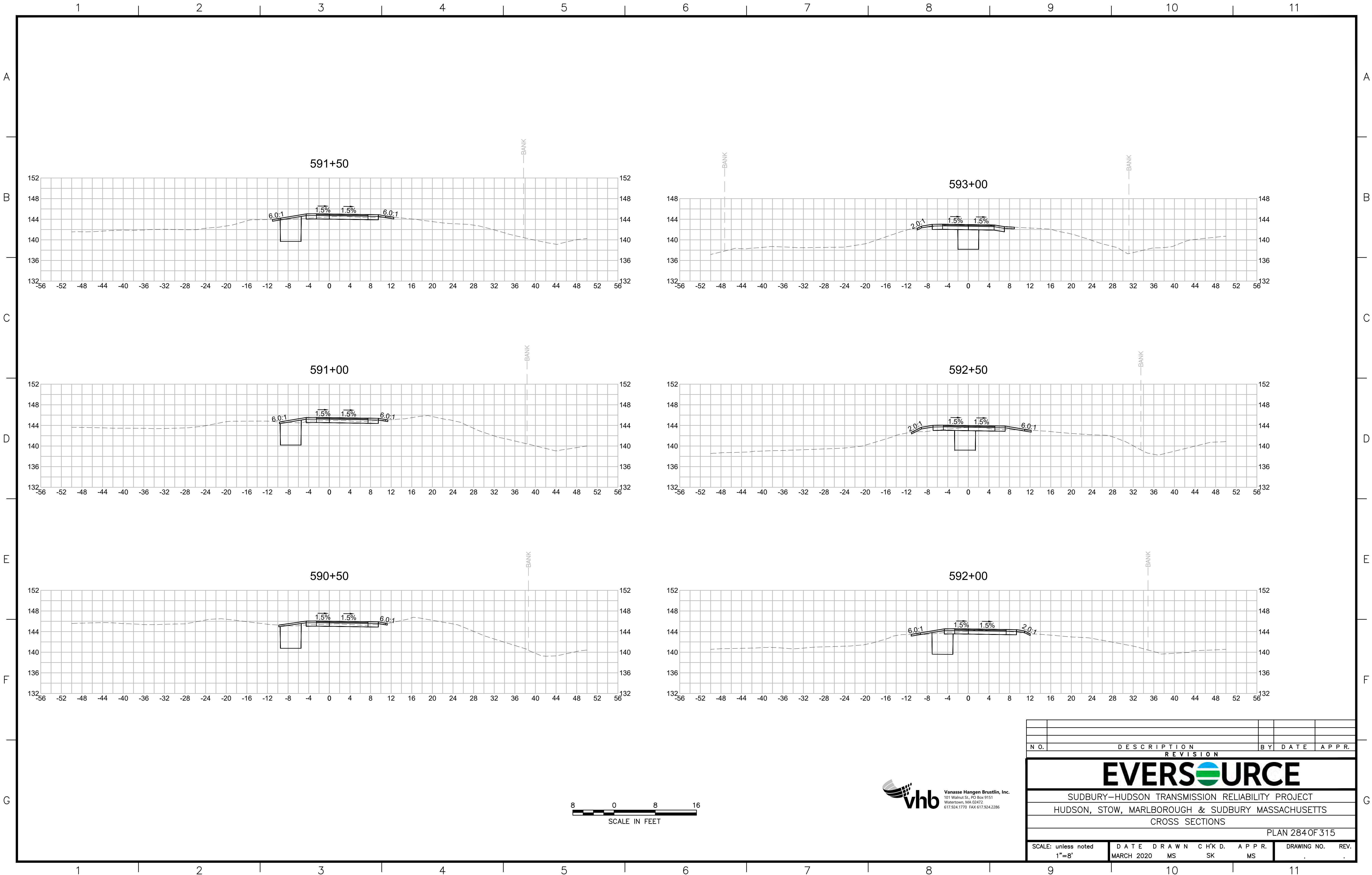


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Watertown, MA 02472
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N.O.	DESCRIPTION			BY	DATE
	REVISION			APPR.	
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CROSS SECTIONS					
PLAN 282 OF 315					
SCALE: unless noted 1"=8'		DATE	DRAWN	CHK'D	APPR.
		MARCH 2020	MS	SK	MS
DRAWING NO.		REV.			

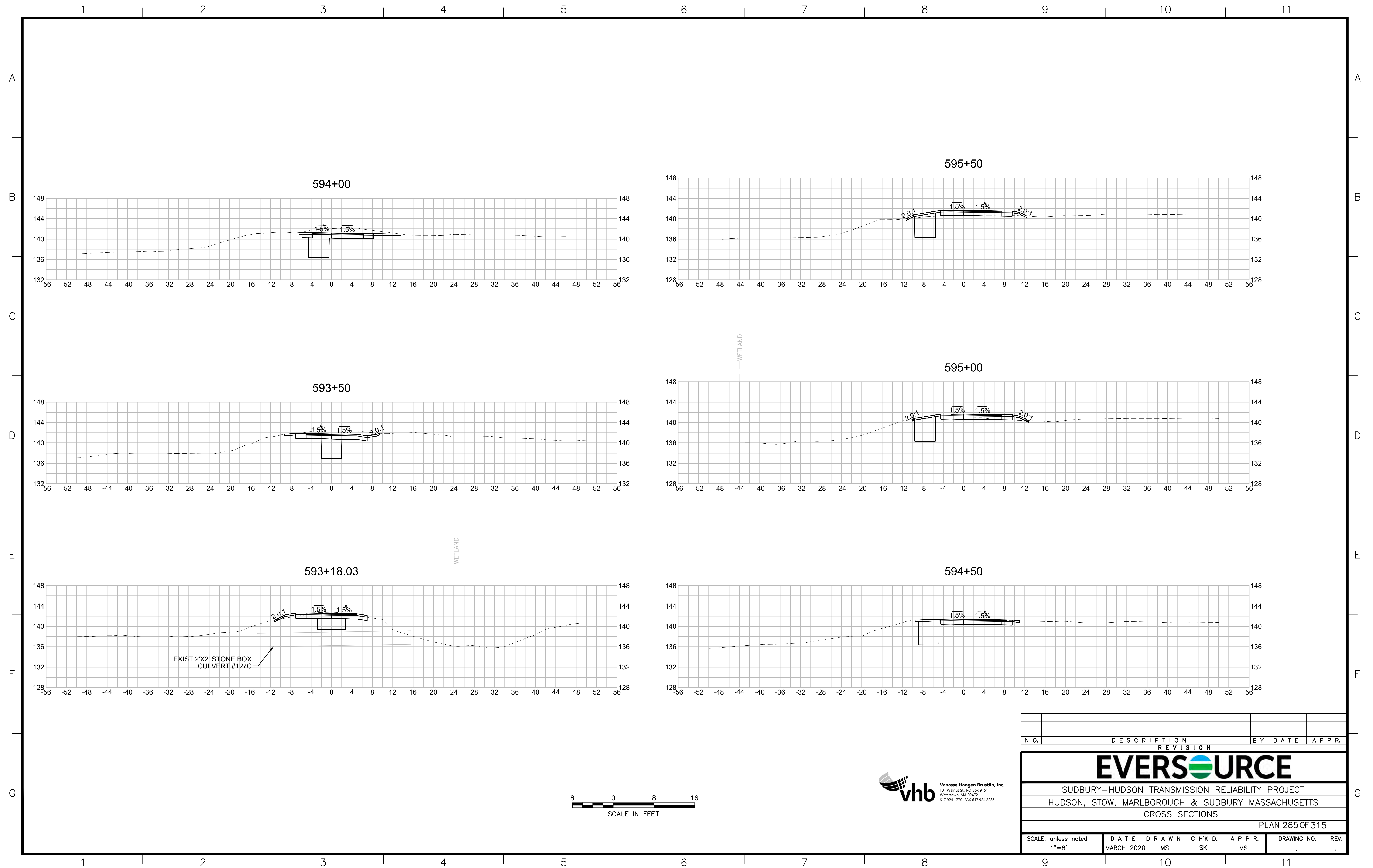


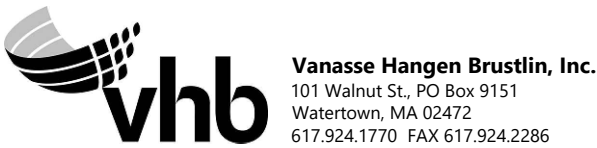
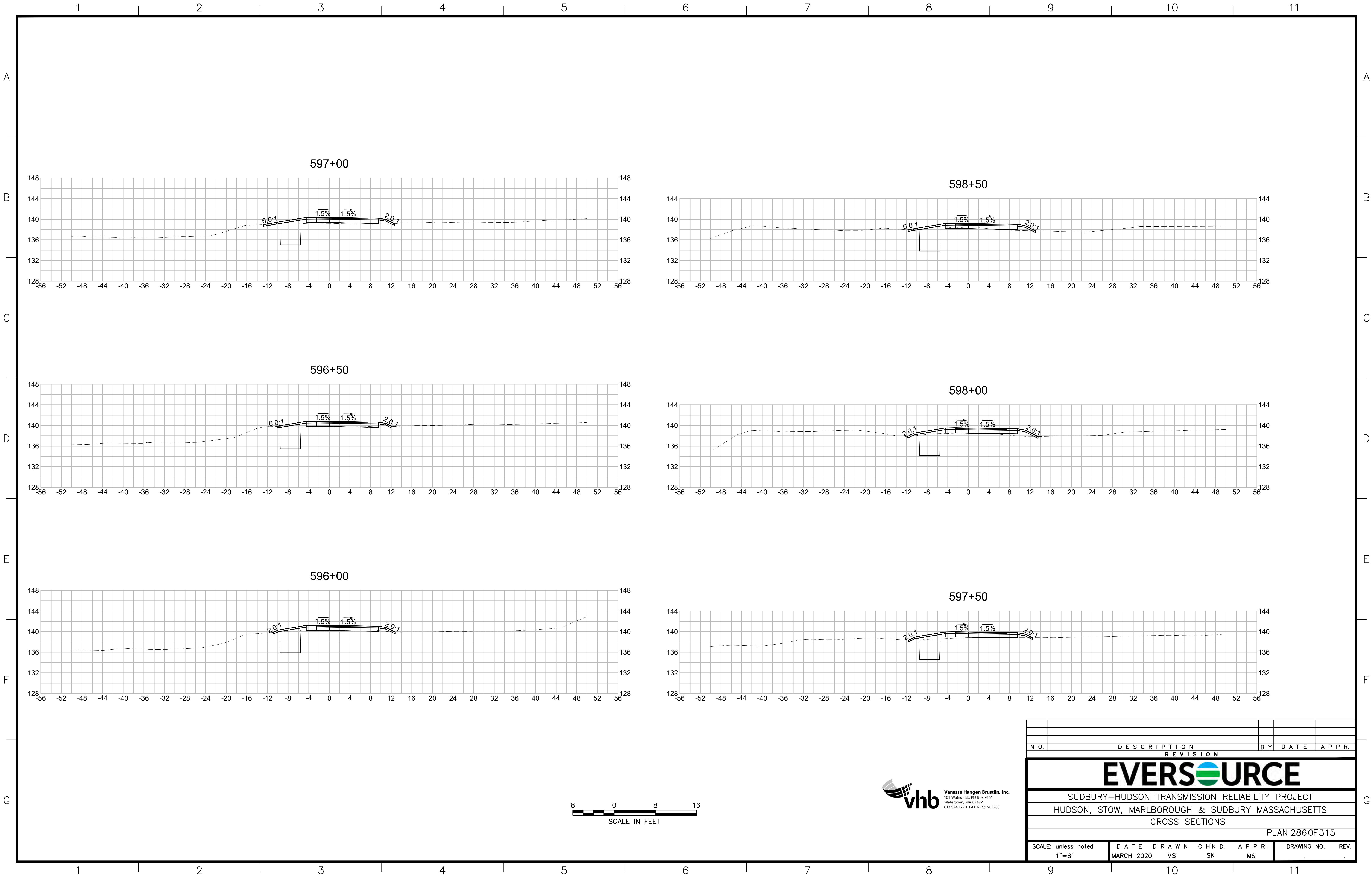
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REVISION									
EVERSOURCE									
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT									
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
CROSS SECTIONS									
PLAN 283 OF 315									
SCALE: unless noted 1"=8'		DATE	DRAWN	C H'K'D.	APPR.		DRAWING NO.		REV.
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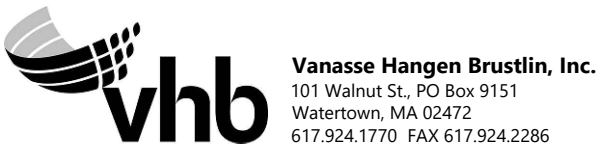
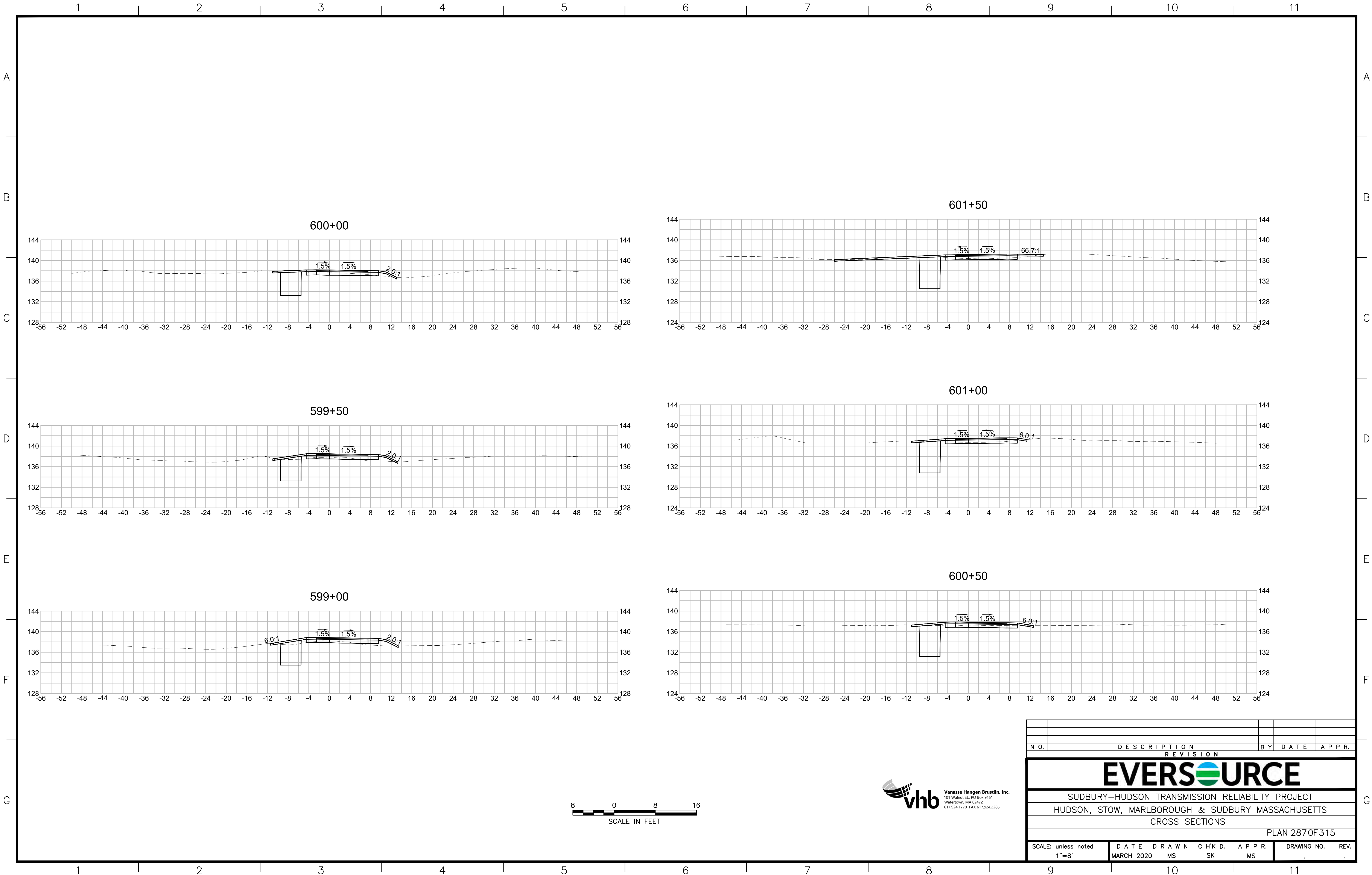
Vanasse Hangen Brustlin, Inc.
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Watertown, MA 02472
617.924.1770 FAX 617.924.2286

N.O.	DESCRIPTION			BY	DATE
	REVISION			APPR.	
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CROSS SECTIONS					
PLAN 284 OF 315					
SCALE: unless noted 1"=8'		DATE	DRAWN	CHK'D	APPR.
		MARCH 2020	MS	SK	MS
DRAWING NO.		REV.			

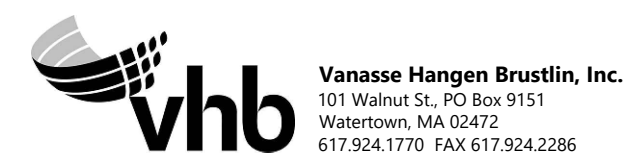
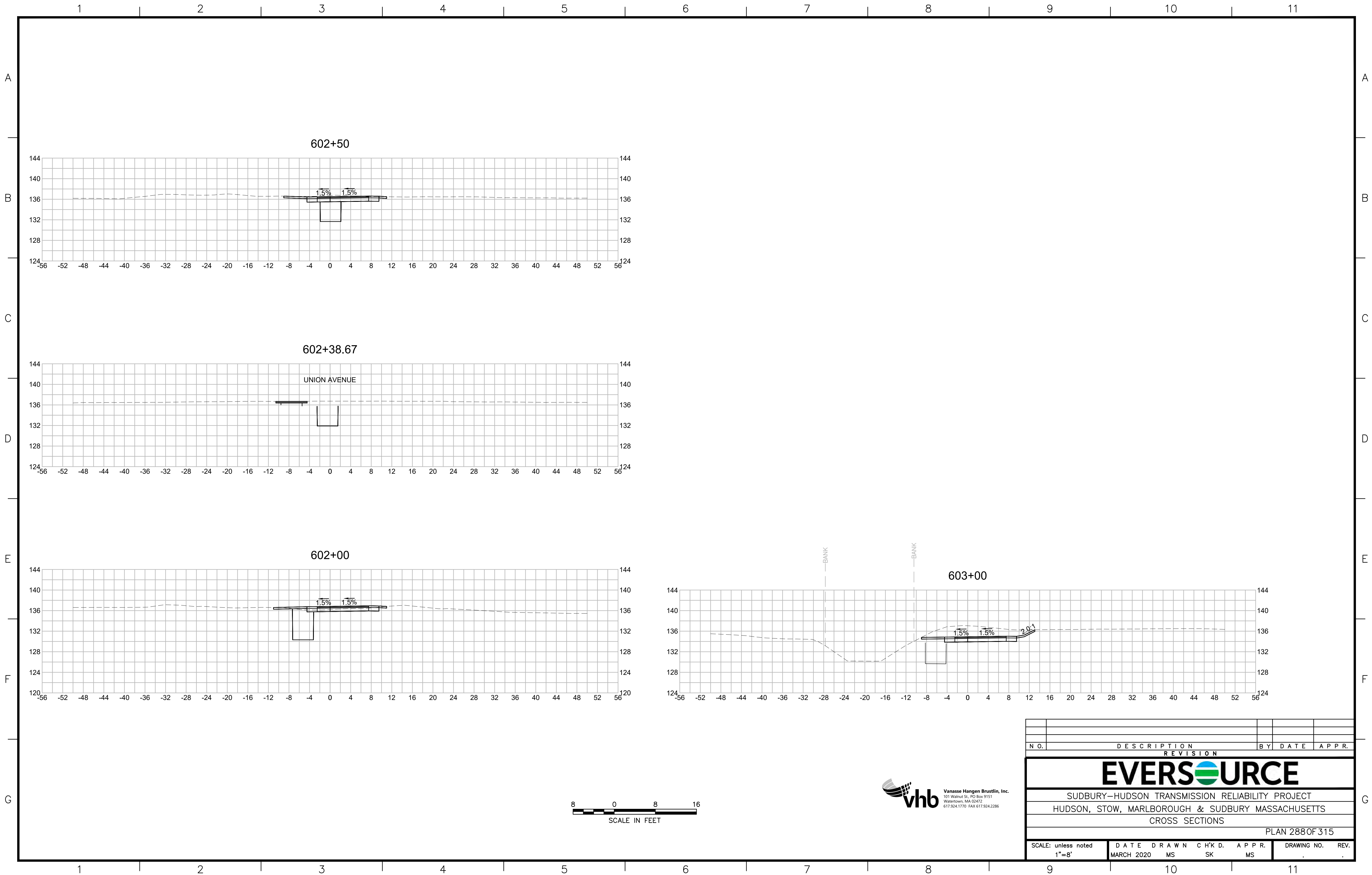




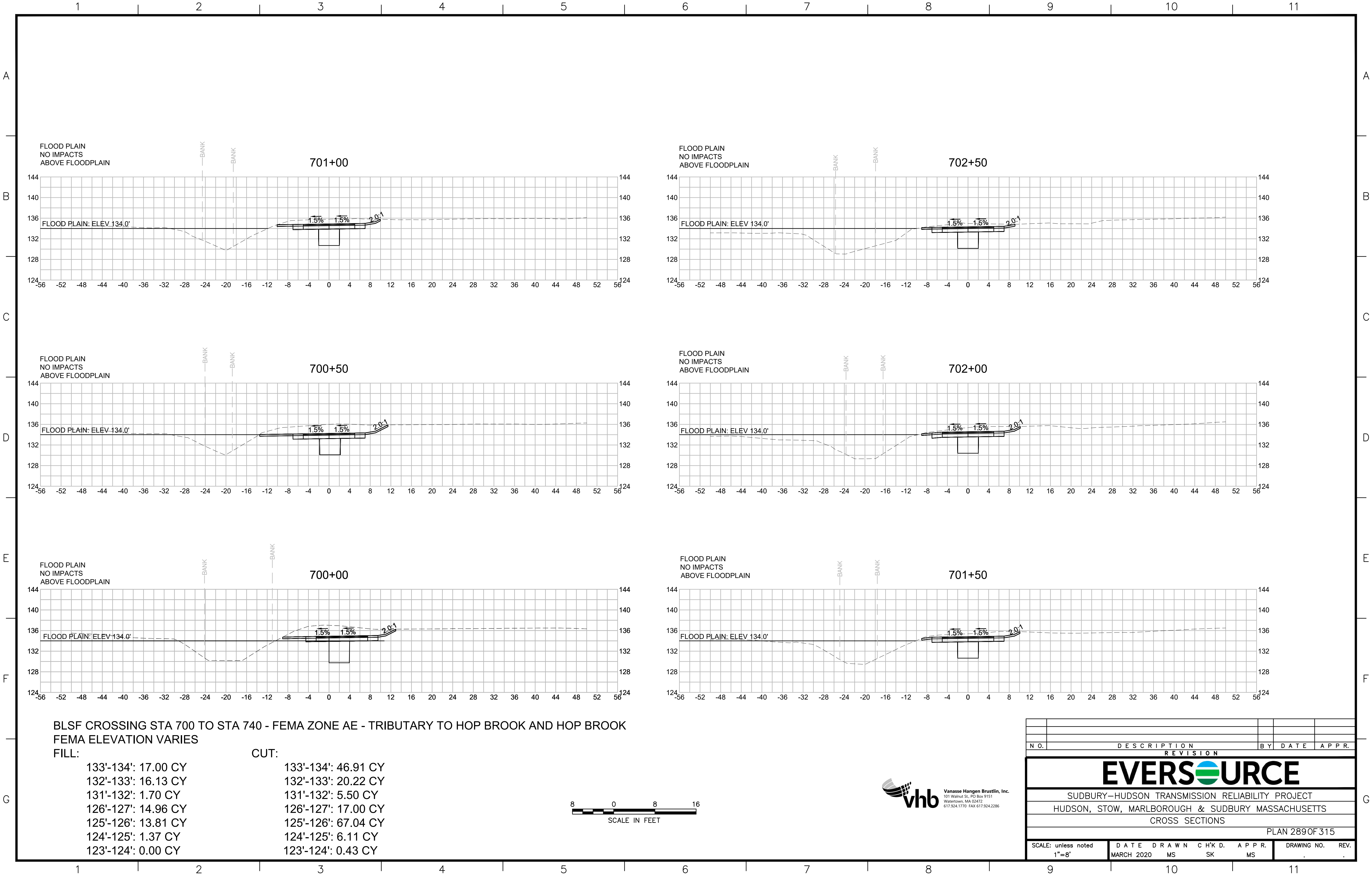
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HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
CROSS SECTIONS									
PLAN 286 OF 315									
SCALE: unless noted 1"=8'		DATE DRAWN		C H'K D.		APPR.		DRAWING NO.	REV.
MARCH 2020		MS		SK		MS		.	.



N.O.	DESCRIPTION					BY	DATE		APPR.
REVISION									
EVERSOURCE									
SUDBURY—HUDSON TRANSMISSION RELIABILITY PROJECT									
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
CROSS SECTIONS									
PLAN 287 OF 315									
SCALE: unless noted 1"=8'		DATE		DRAWN		C H'K'D.		APPR.	
		MARCH 2020		MS		SK		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 288OF 315									
SCALE: unless noted 1"=8'		DATE	DRAWN	C H'K D.	APP R.	DRAWING NO.		REV.	
		MARCH 2020	MS	SK	MS				

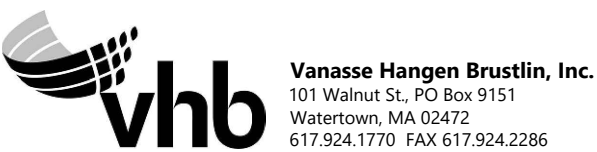


BLSF CROSSING STA 700 TO STA 740 - FEMA ZONE AE - TRIBUTARY TO HOP BROOK AND HOP BROOK
FEMA ELEVATION VARIES
FILL:

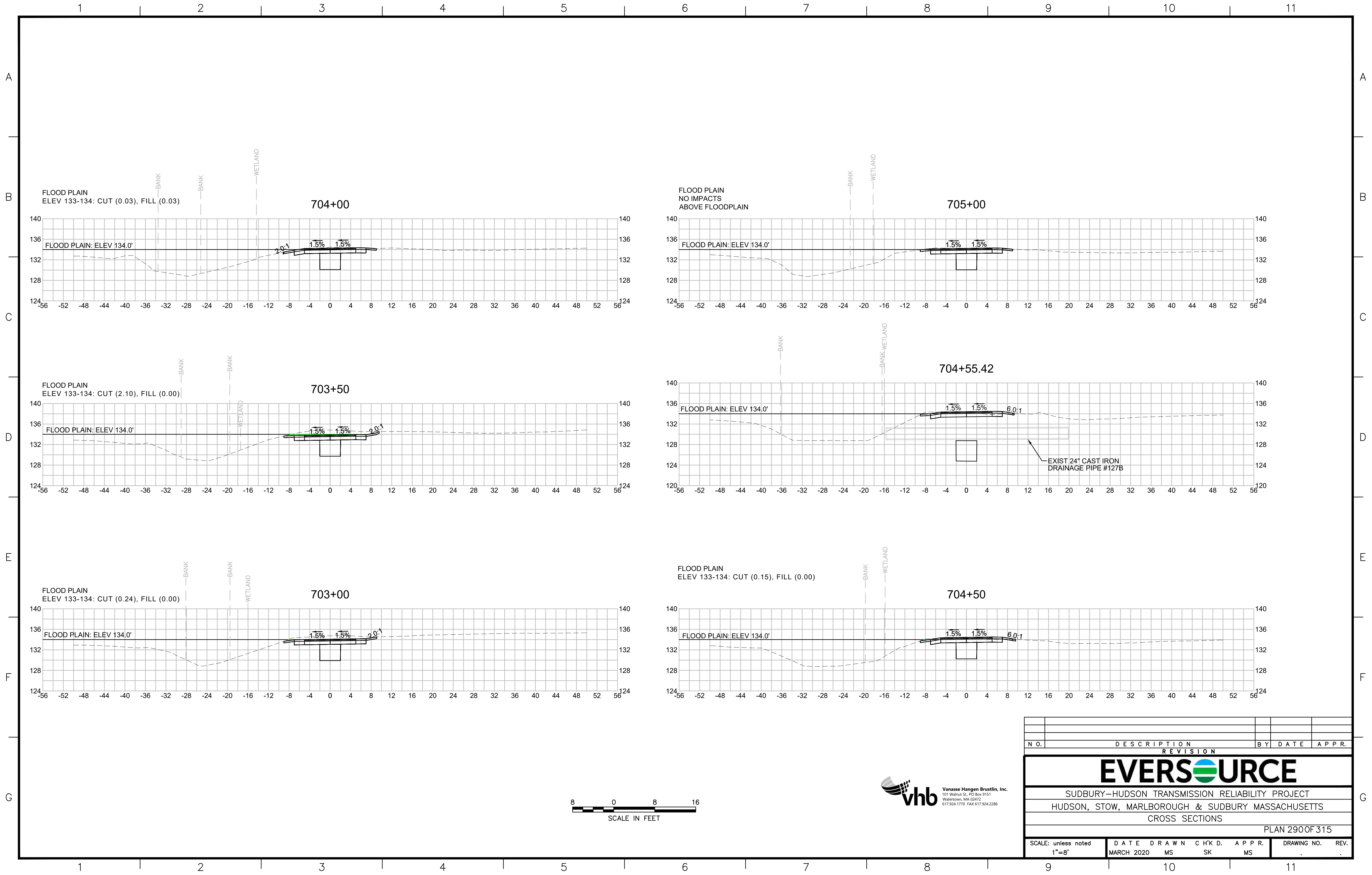
- 133'-134': 17.00 CY
- 132'-133': 16.13 CY
- 131'-132': 1.70 CY
- 126'-127': 14.96 CY
- 125'-126': 13.81 CY
- 124'-125': 1.37 CY
- 123'-124': 0.00 CY

CUT:

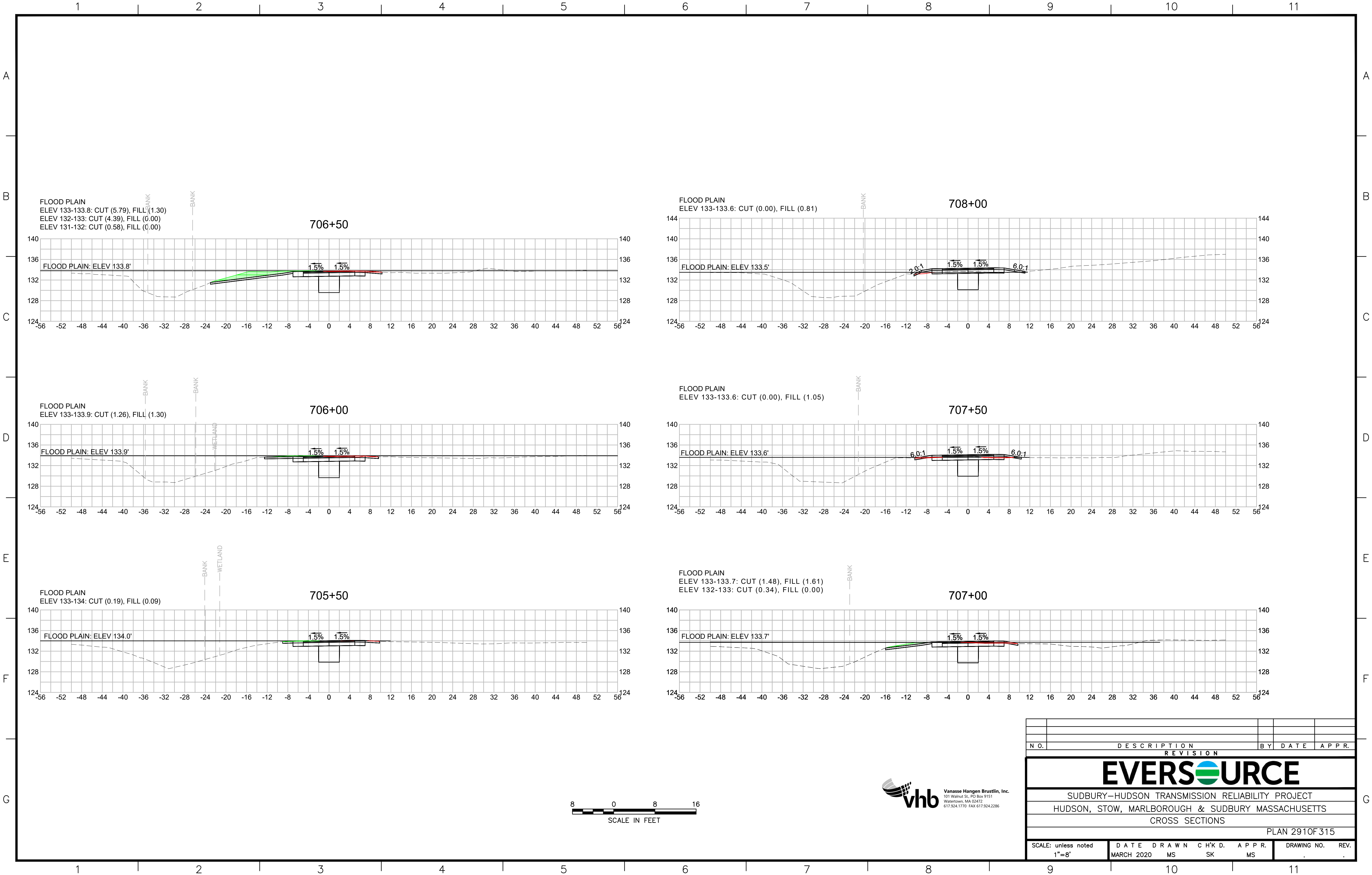
- 133'-134': 46.91 CY
- 132'-133': 20.22 CY
- 131'-132': 5.50 CY
- 126'-127': 17.00 CY
- 125'-126': 67.04 CY
- 124'-125': 6.11 CY
- 123'-124': 0.43 CY



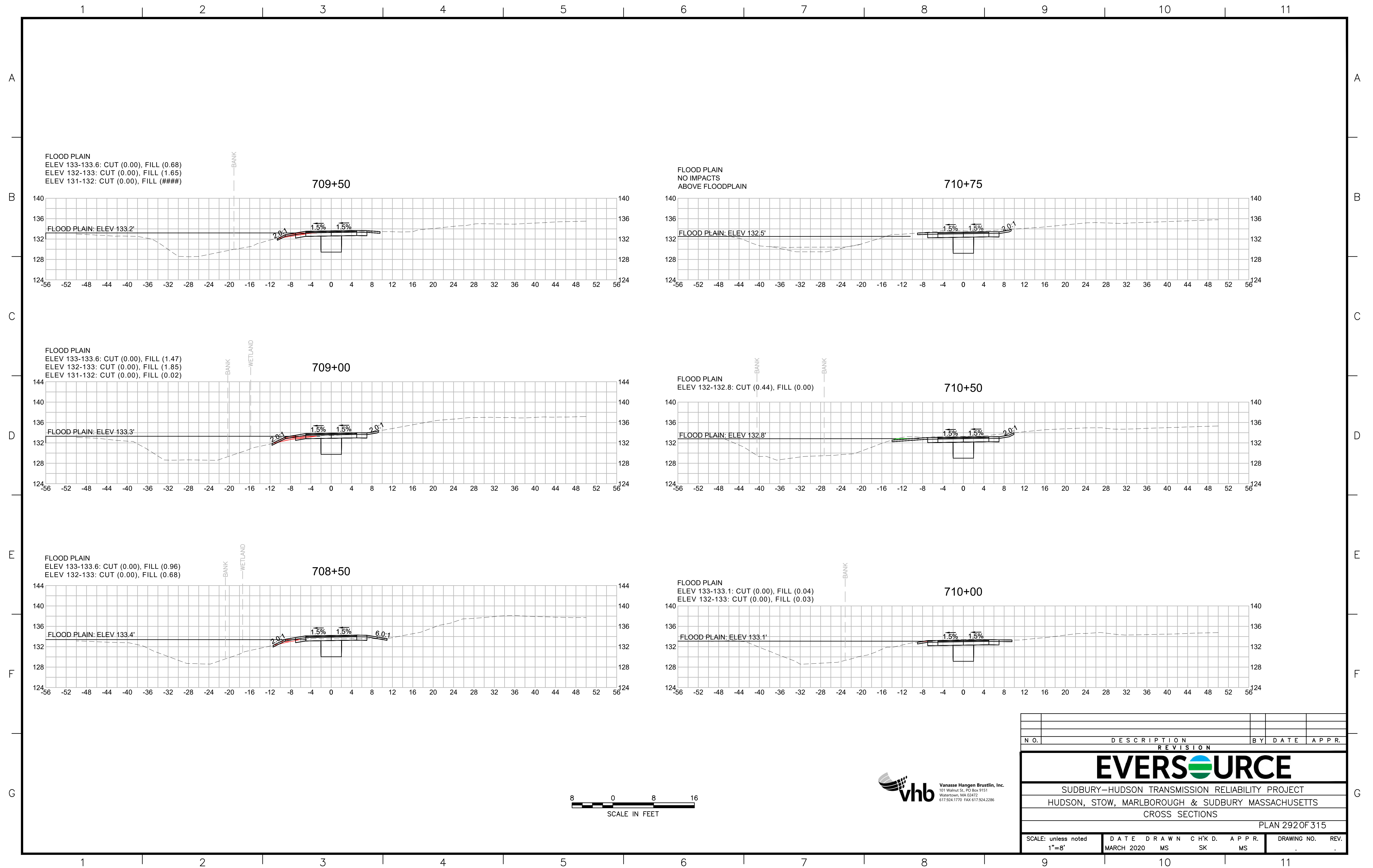
N O.	DESCRIPTION					BY	DATE		APPR.
REVISION									
EVERSOURCE									
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT									
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
CROSS SECTIONS									
PLAN 289 OF 315									
SCALE: unless noted 1"=8'		DATE		DRAWN		CHK'D.		APPR.	
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DRAWING NO.					REV.				

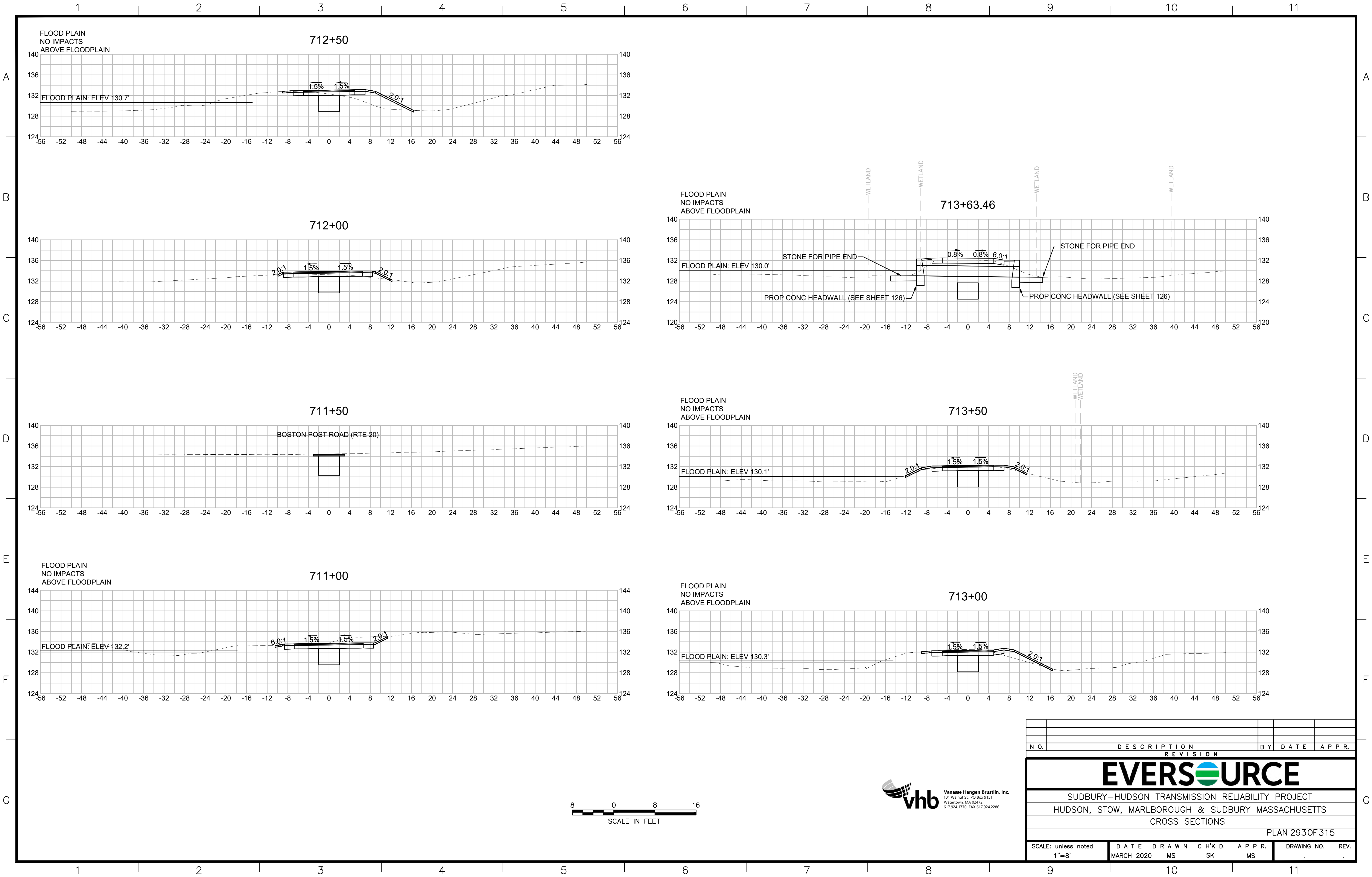


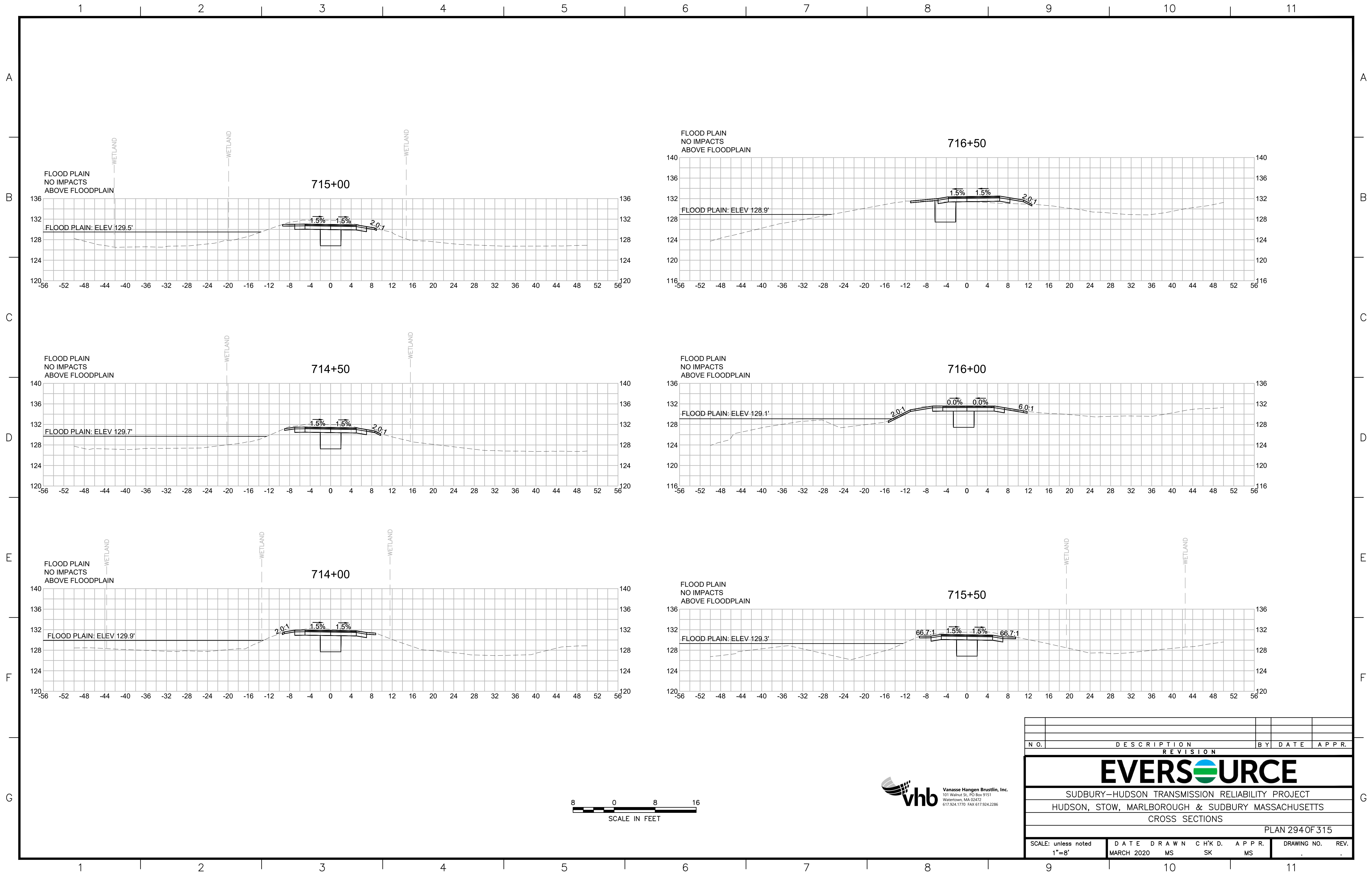
N O.	DESCRIPTION			BY	DATE
	REVISION				APP.R.
EVERSOURCE					
SUDBURY—HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CROSS SECTIONS					
PLAN 290 OF 315					
SCALE: unless noted 1"=8'		DATE	DRAWN	C H'K D.	A P P R.
		MARCH 2020	MS	SK	MS
DRAWING NO.		REV.			



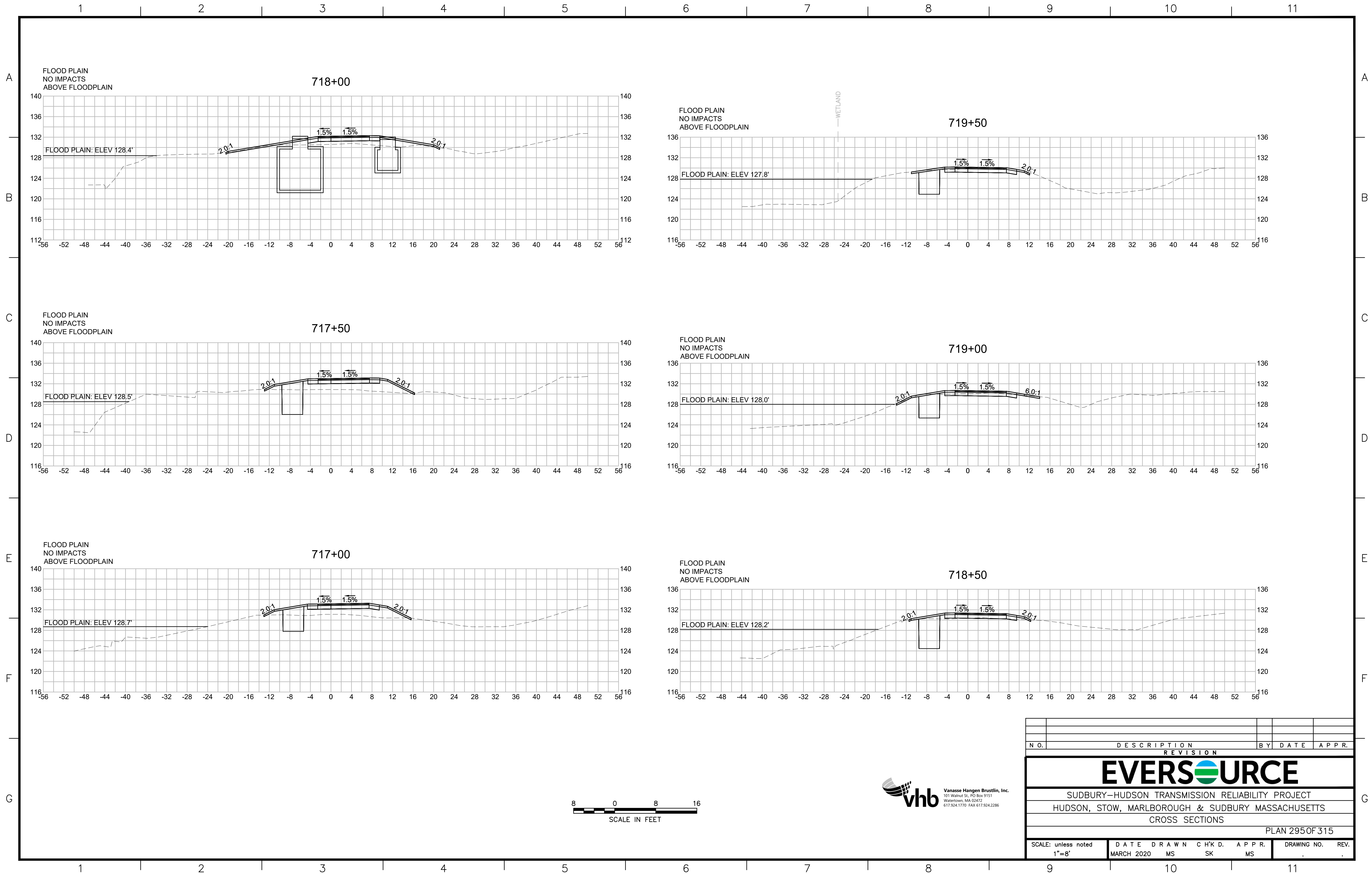
N O.	DESCRIPTION	BY	DATE	APPR.	
REVISION					
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CROSS SECTIONS					
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SCALE: unless noted 1"=8'	DATE MARCH 2020	DRAWN MS	CHK'D SK	APPR. MS	DRAWING NO. REV.

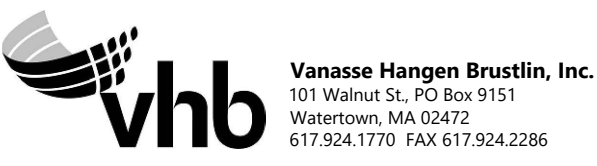
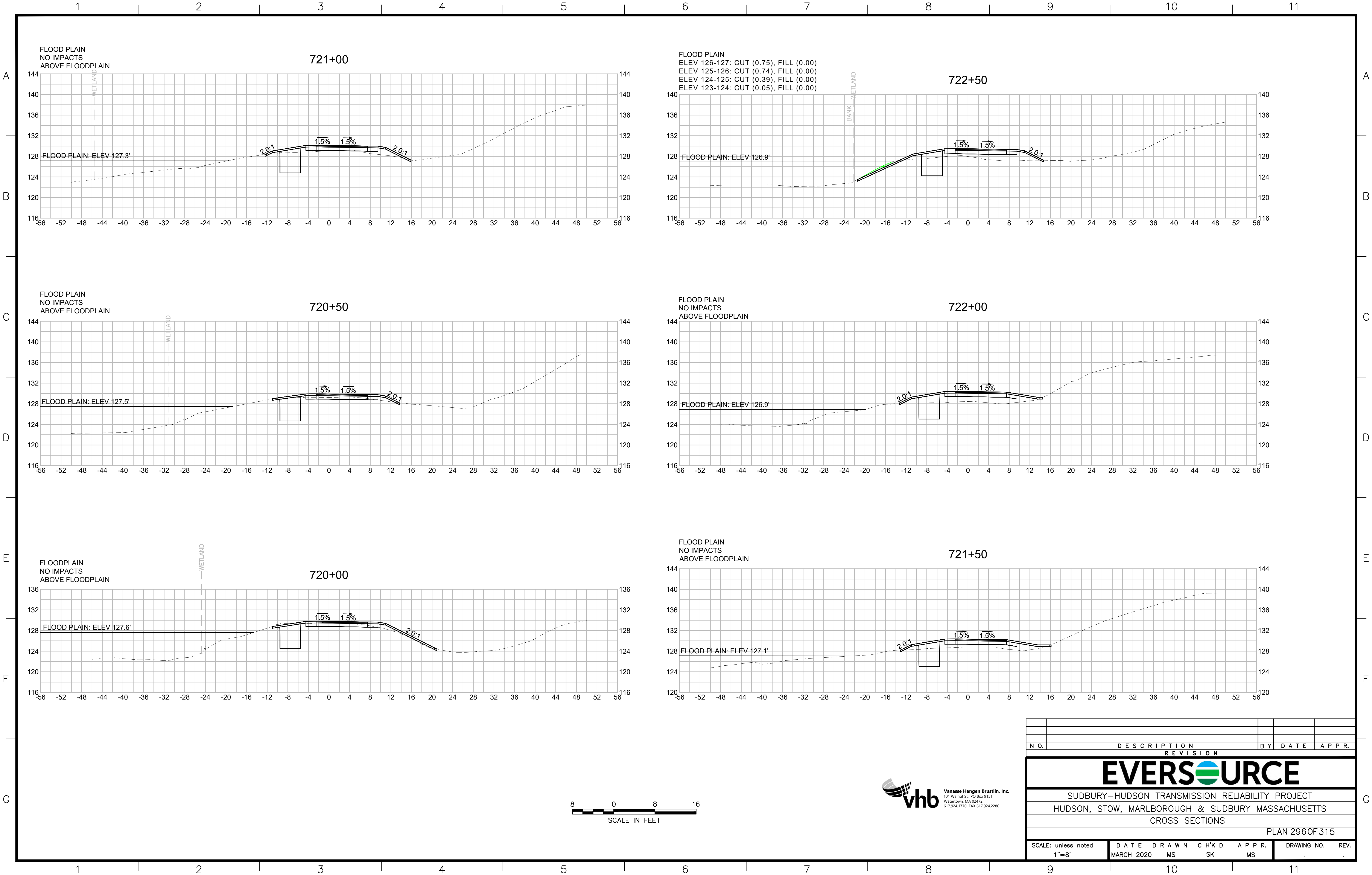




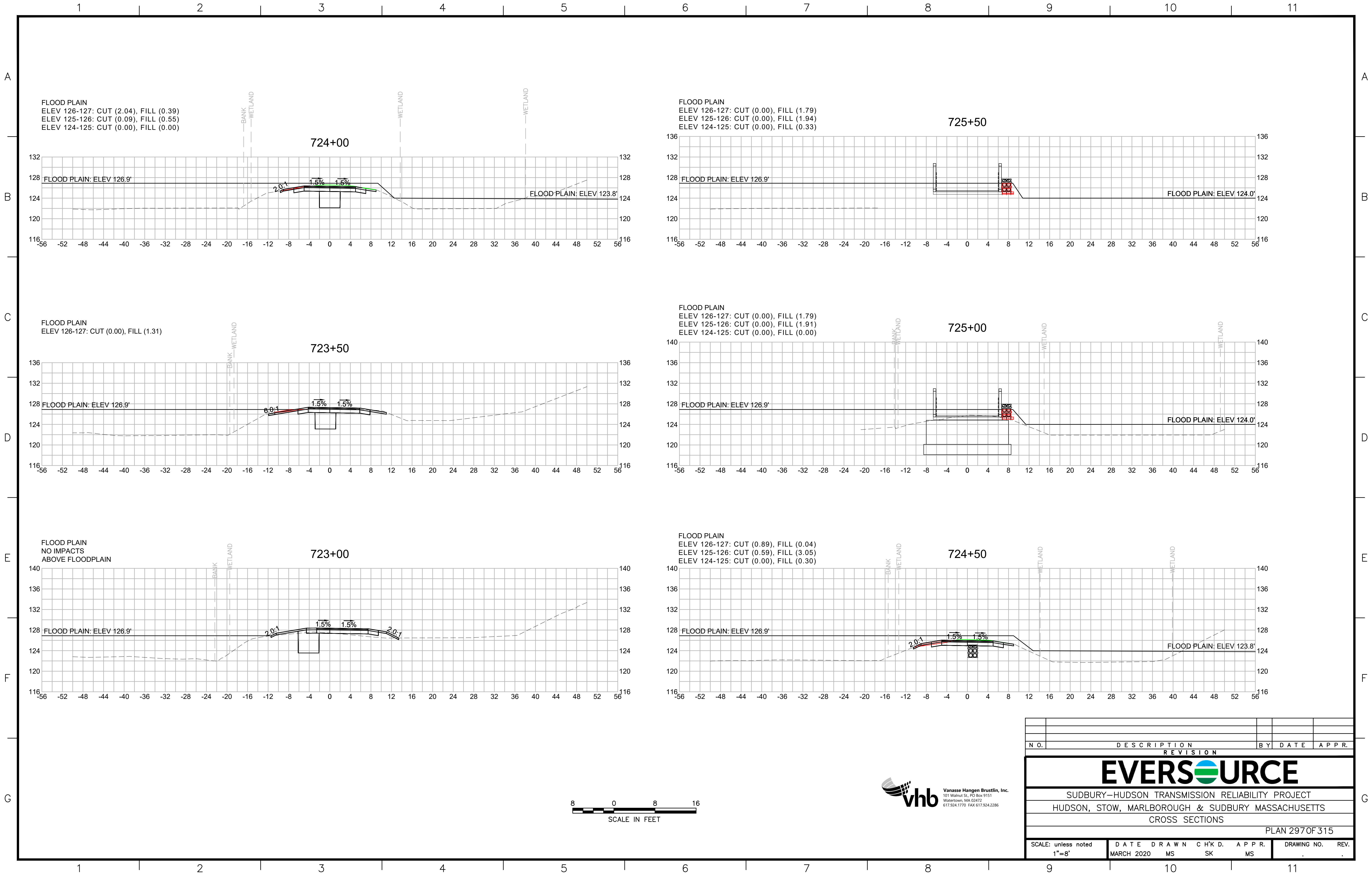


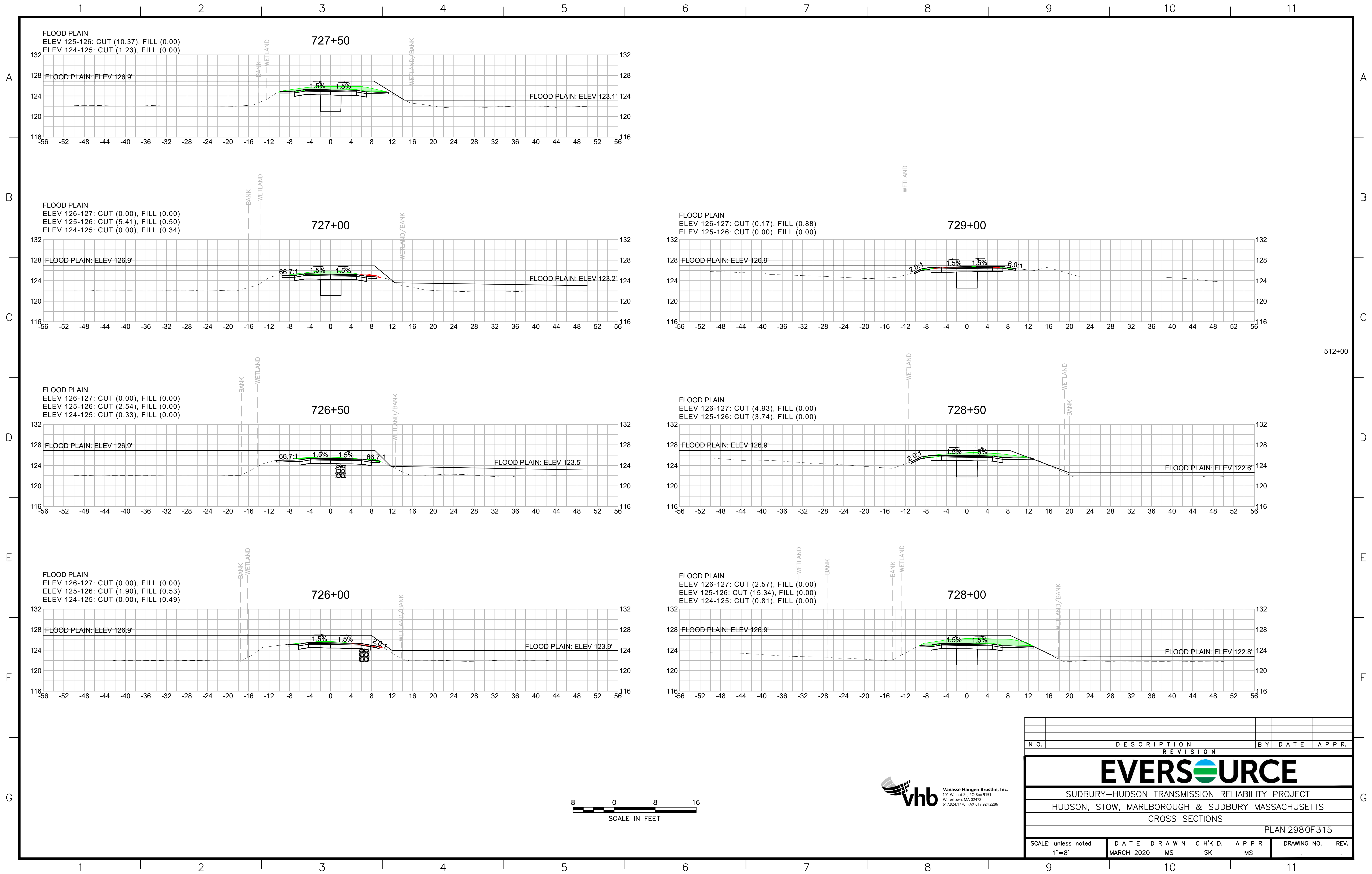
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R E V I S I O N											
EVERSOURCE											
SUDBURY—HUDSON TRANSMISSION RELIABILITY PROJECT											
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS											
CROSS SECTIONS											
PLAN 294 OF 315											
SCALE: unless noted		D A T E		D R A W N		C H ' K D.		A P P R.		D R A W I N G N O.	
1"=8'		MARCH 2020		MS		SK		MS		REV.	

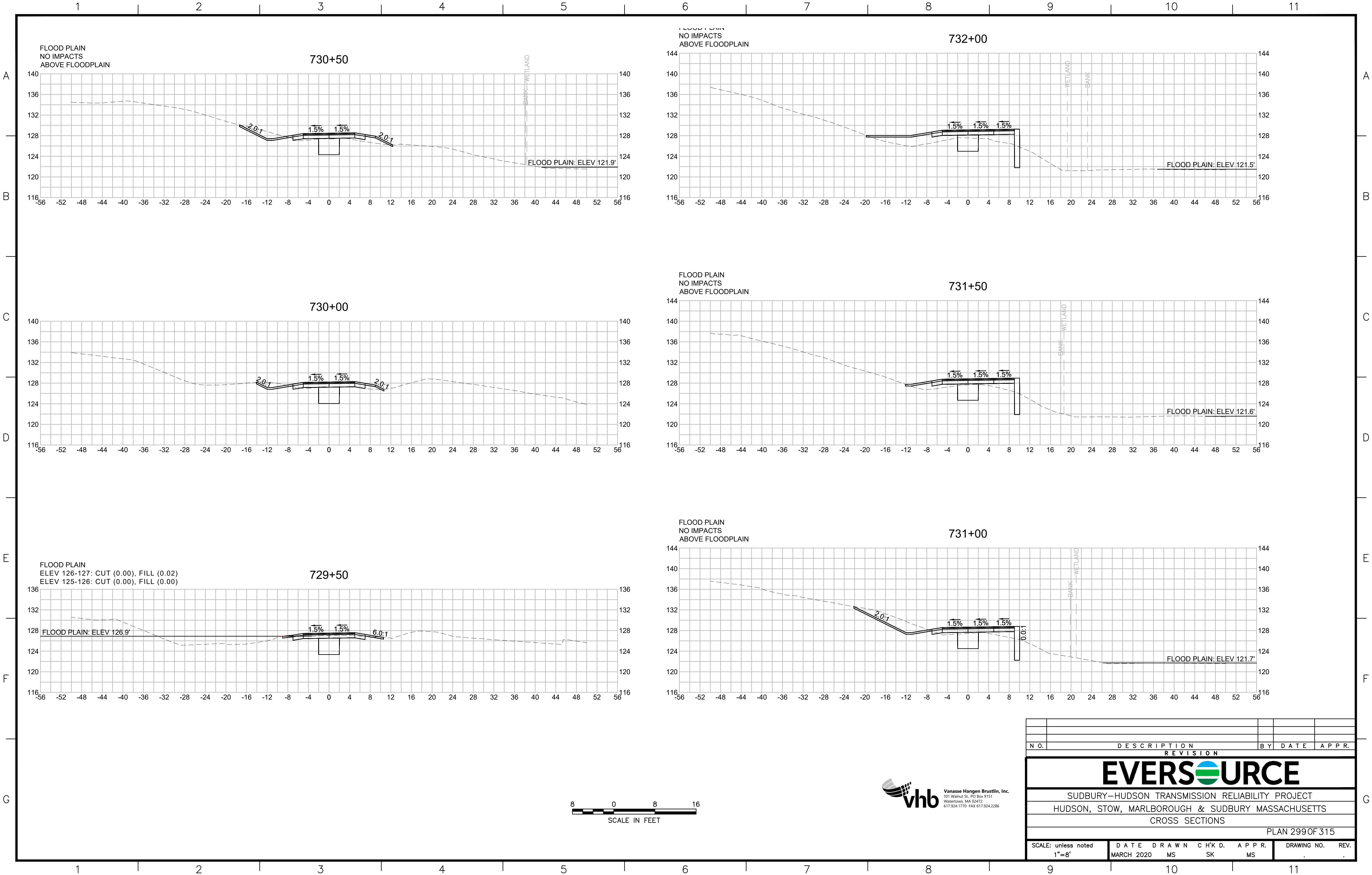




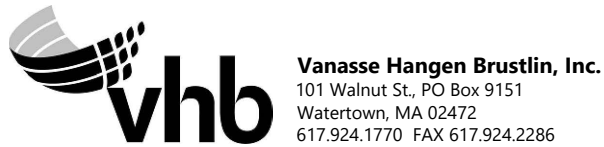
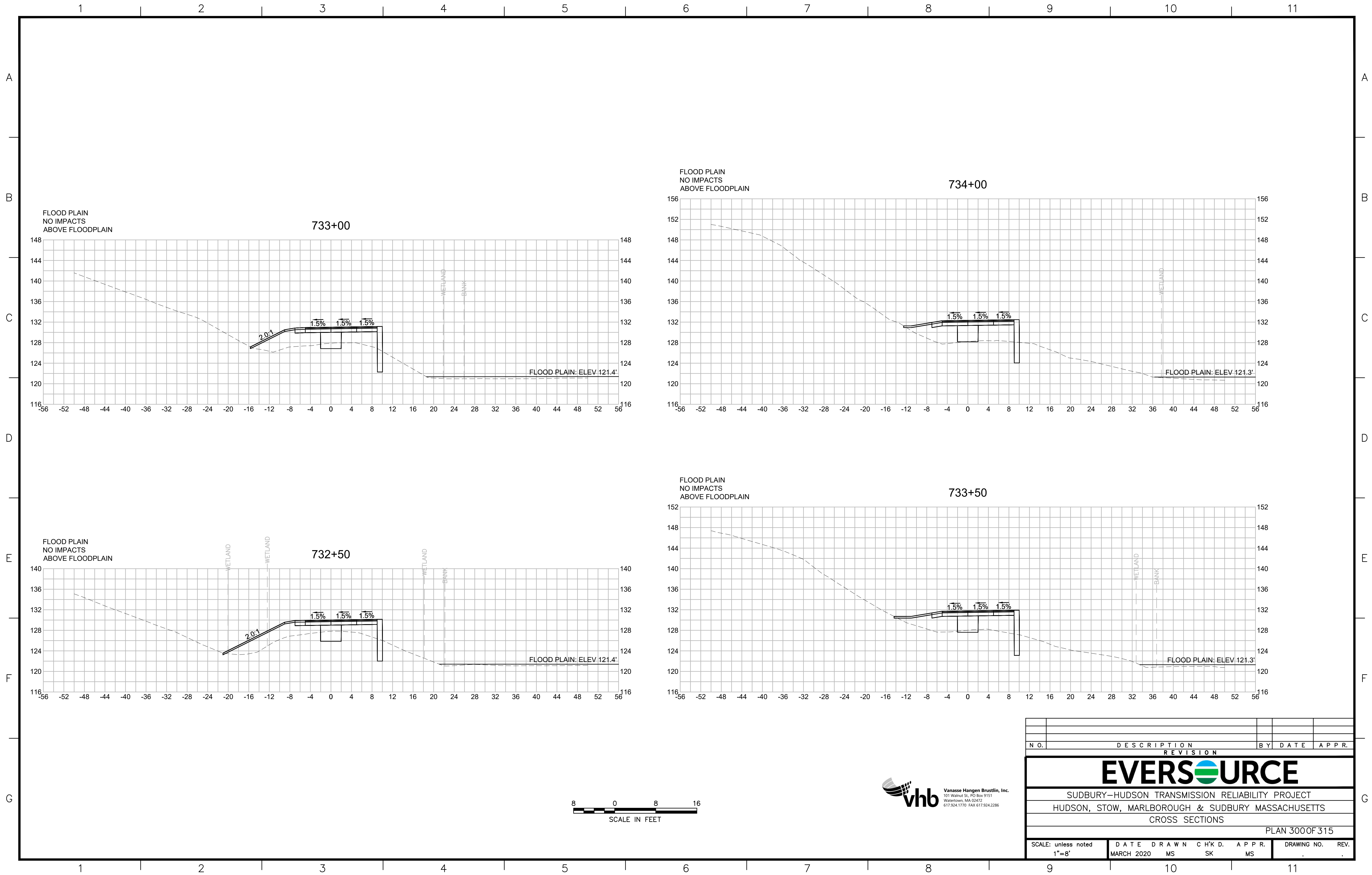
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SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CROSS SECTIONS					
PLAN 296 OF 315					
SCALE: unless noted 1"=8'		DATE	DRAWN	C H'K D.	A P P R.
		MARCH 2020	MS	SK	MS
DRAWING NO.		REV.			



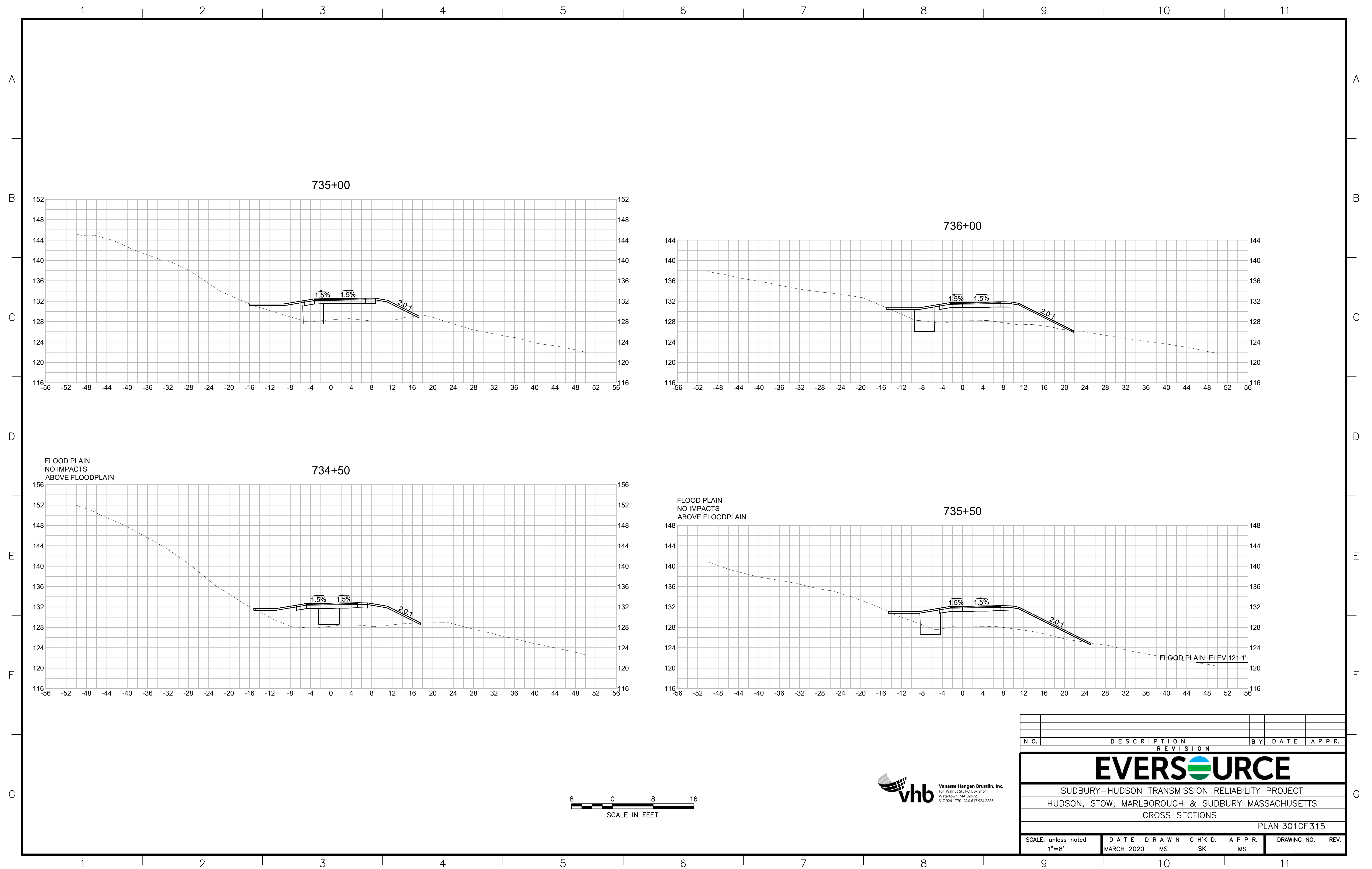


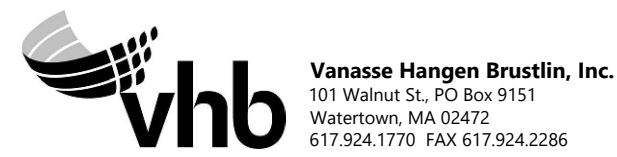
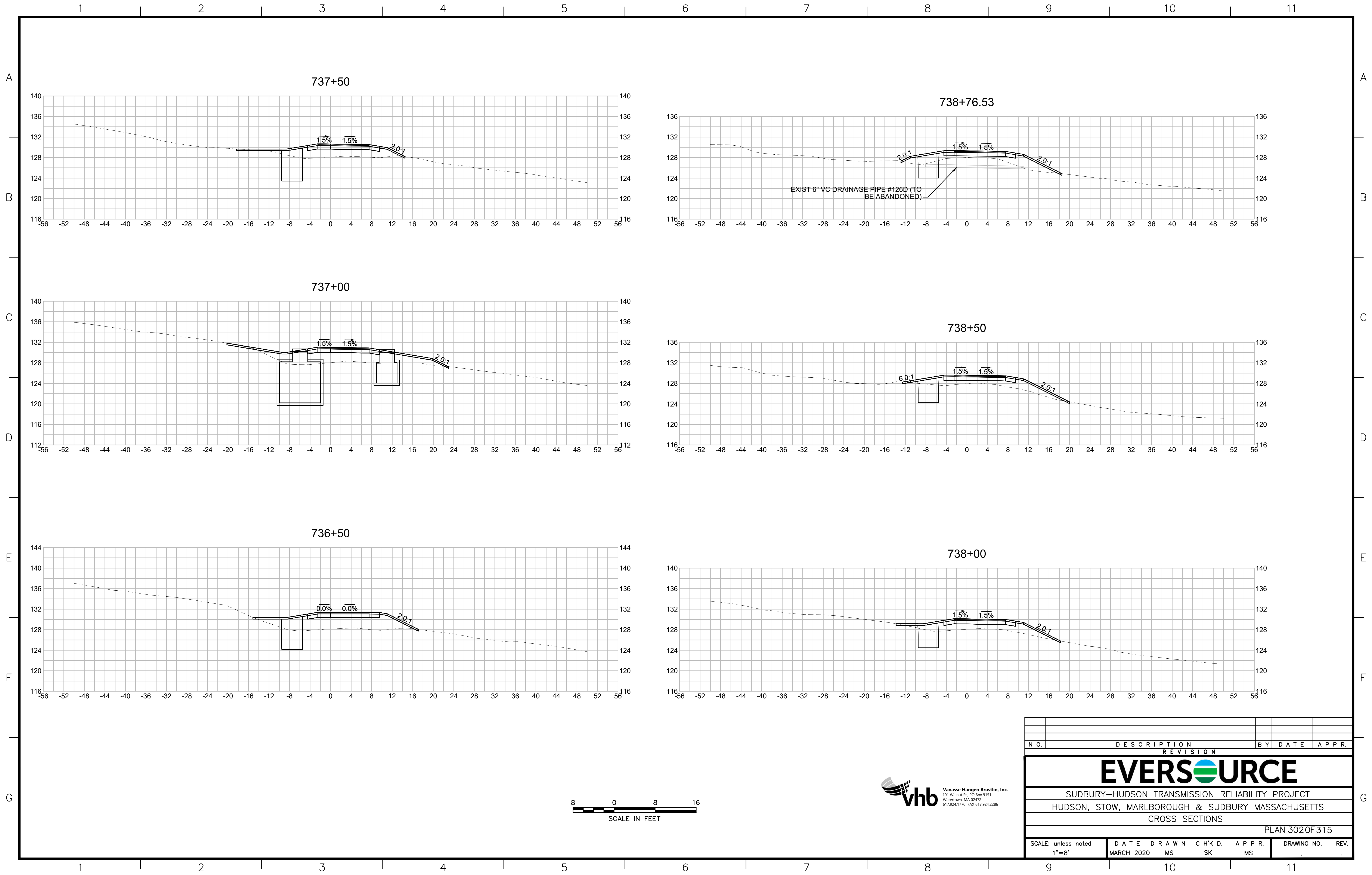


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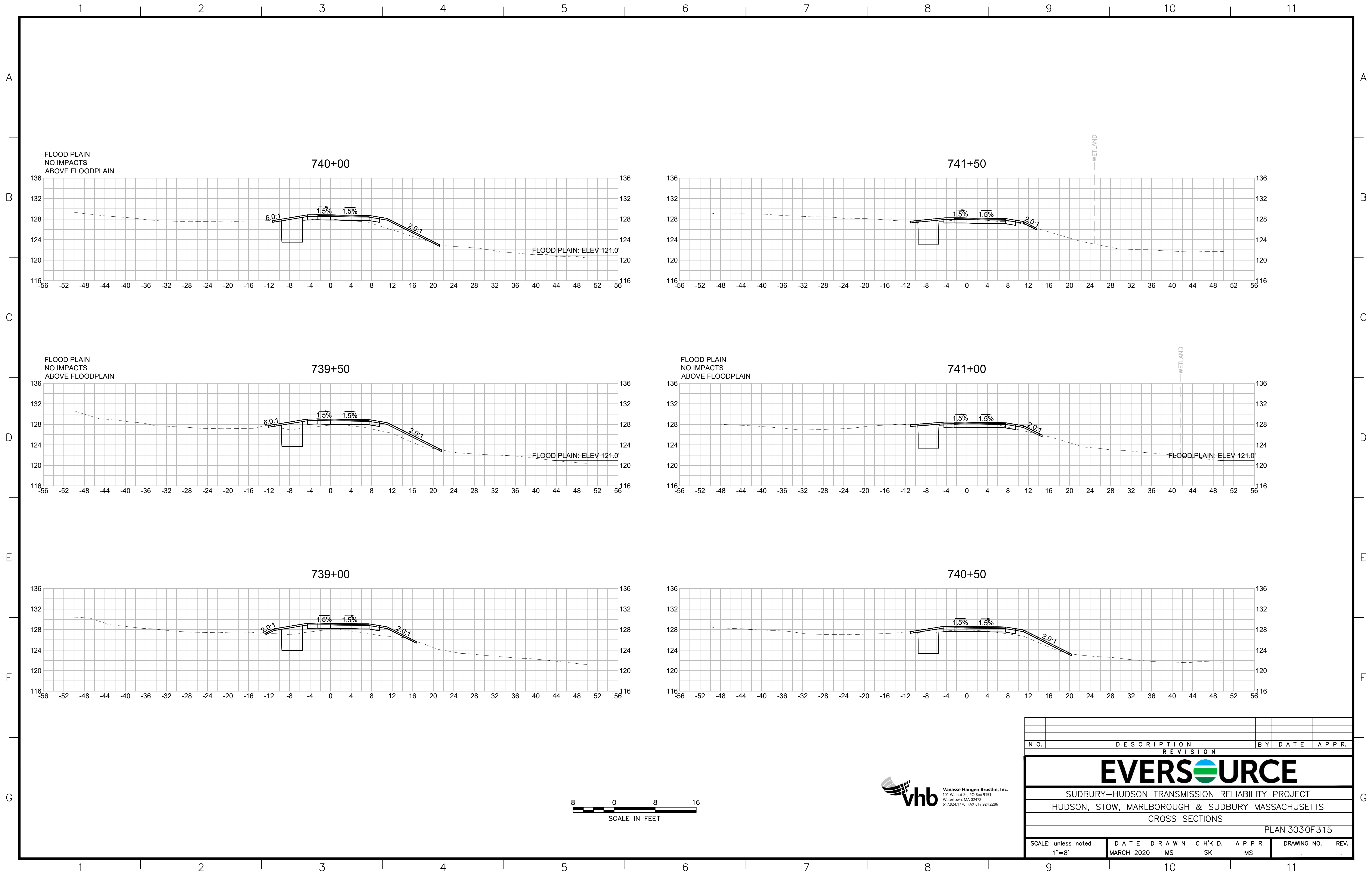


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EVERSOURCE									
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HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
CROSS SECTIONS									
PLAN 3000F 315									
SCALE: unless noted 1"=8'		DATE		DRAWN		CHK'D		APPR.	
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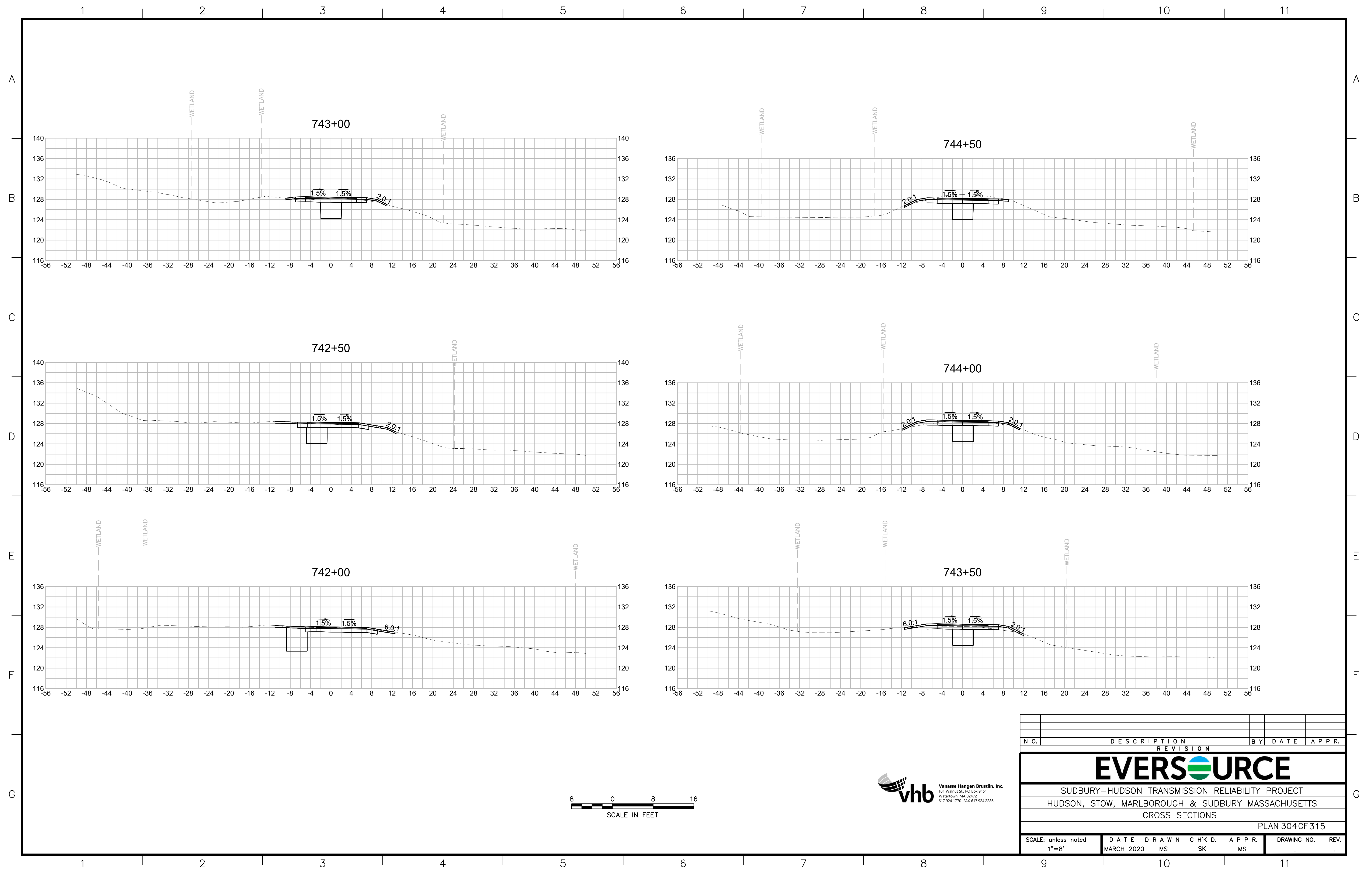


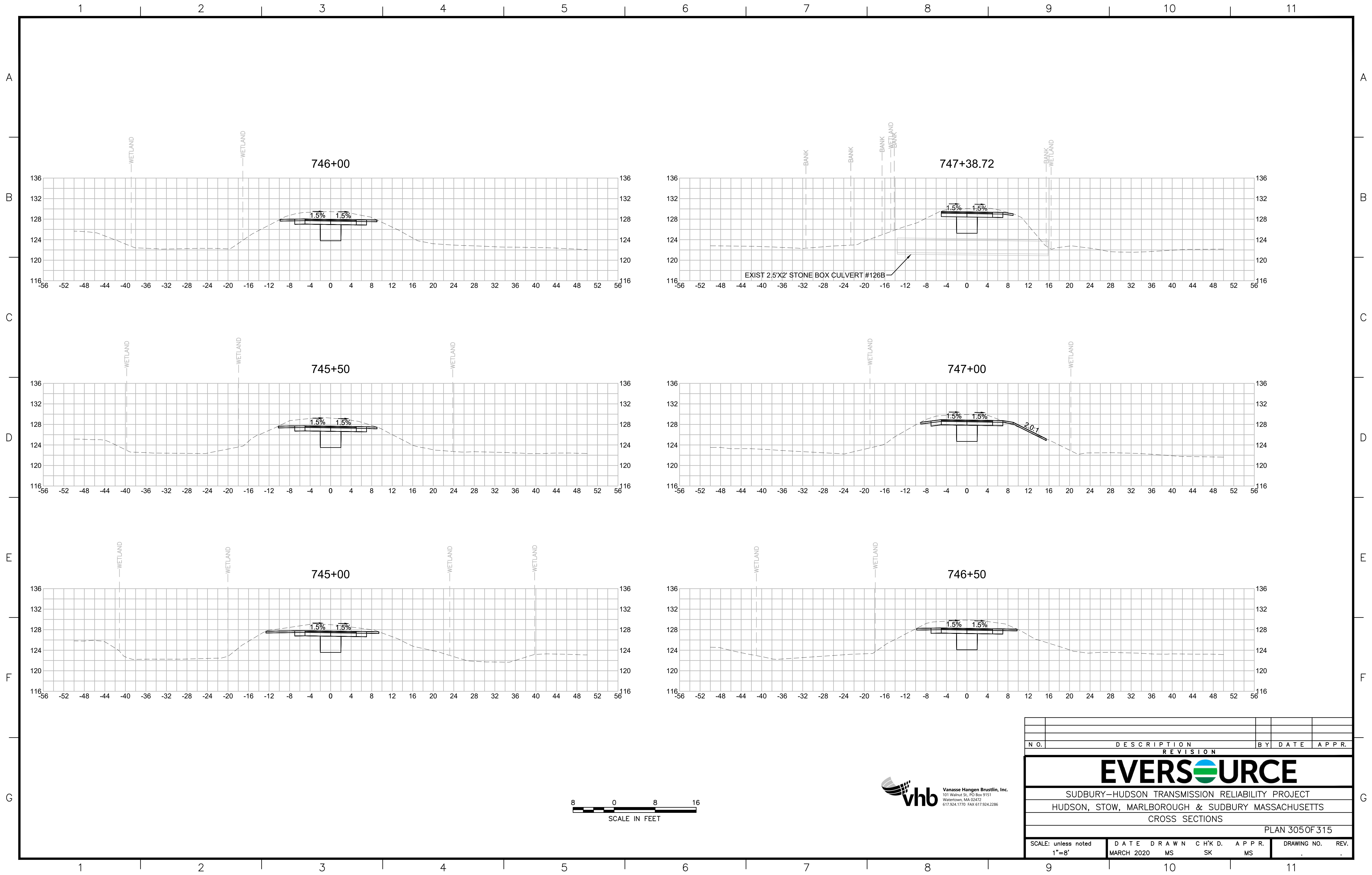


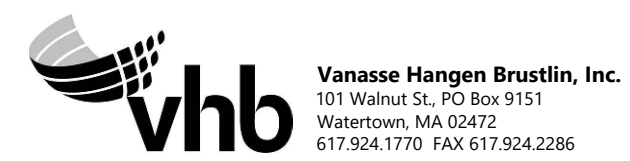
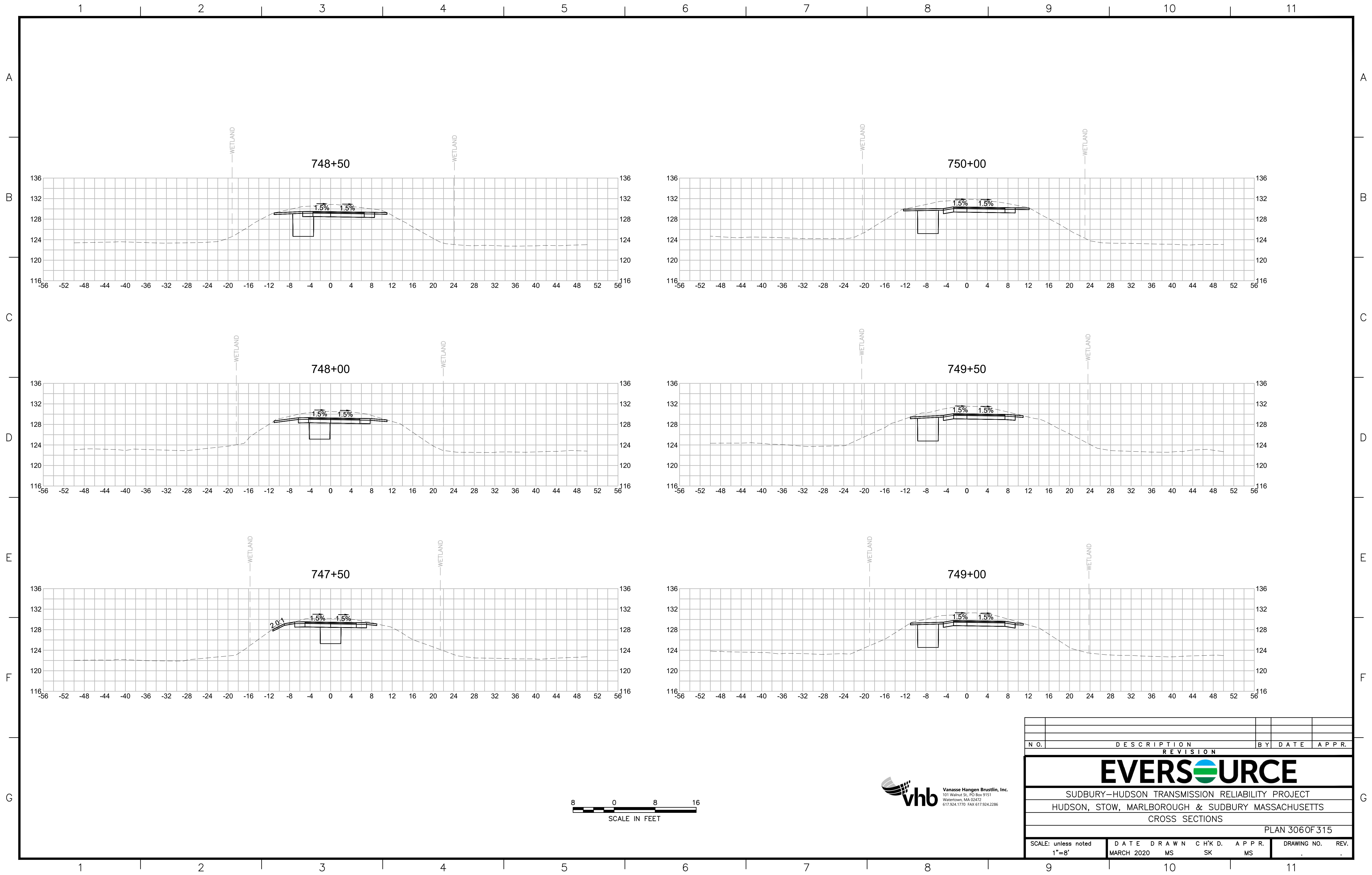
N O.	DESCRIPTION			BY	DATE
	REVISION			APPR.	
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CROSS SECTIONS					
PLAN 302 OF 315					
SCALE: unless noted 1"=8'		DATE	DRAWN	C H K ' D.	APPR.
		MARCH 2020	MS	SK	MS
DRAWING NO.		REV.			



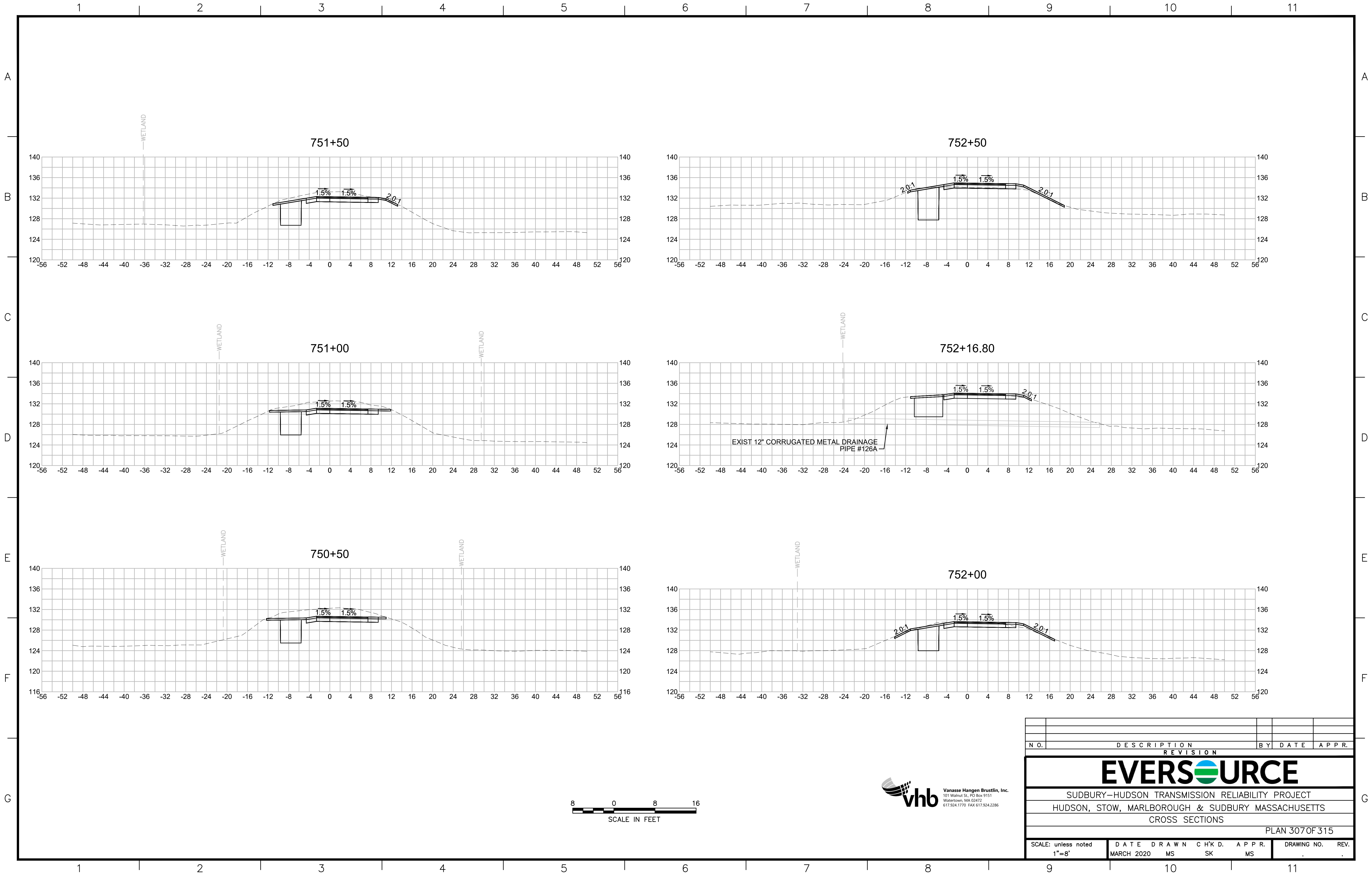
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REVISION									
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SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT									
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
CROSS SECTIONS									
PLAN 303 OF 315									
SCALE: unless noted 1"=8'		DATE	DRAWN	C H'K'D.	APPR.	DRAWING NO.		REV.	
		MARCH 2020	MS	SK	MS	.		.	

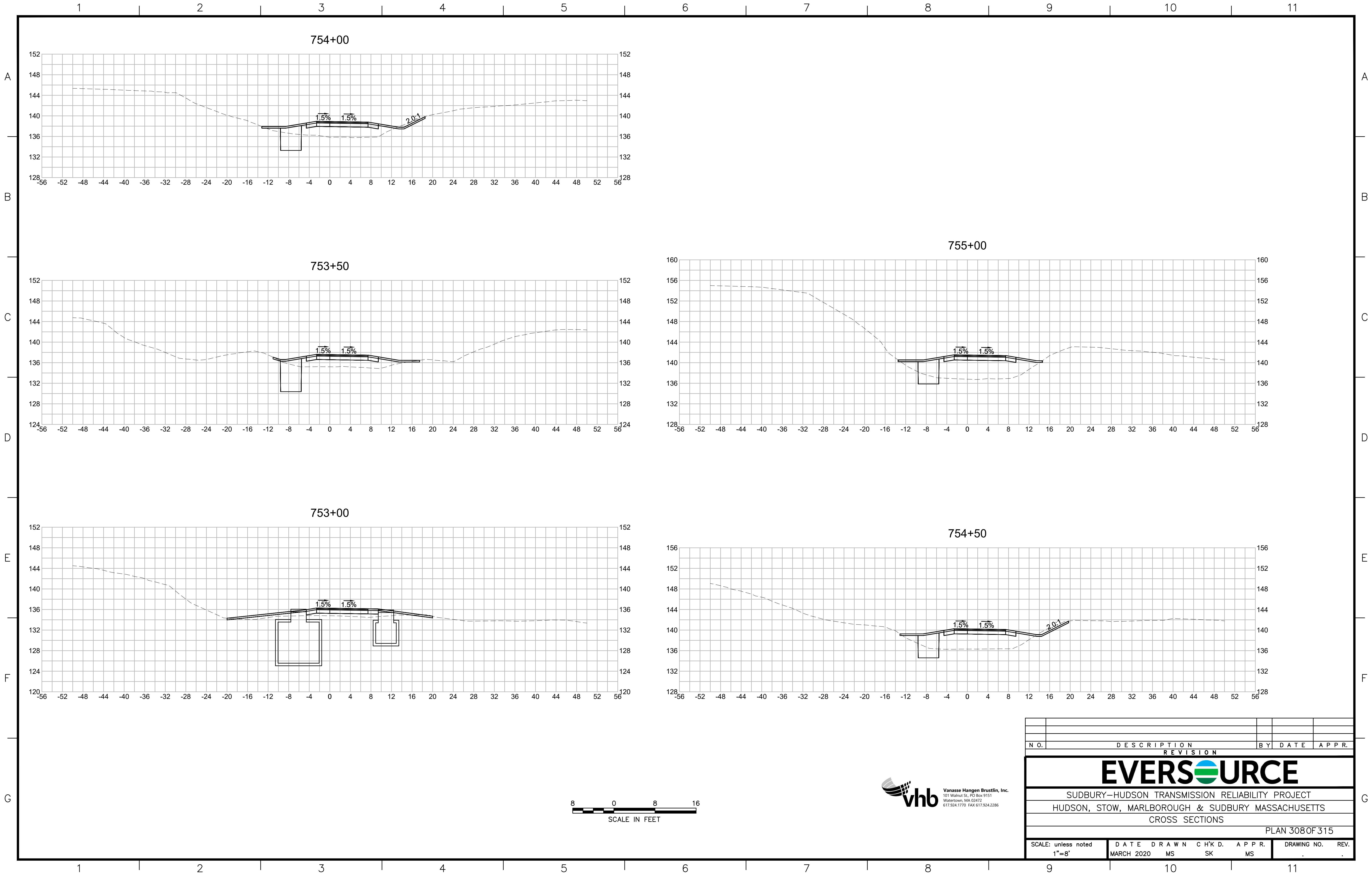


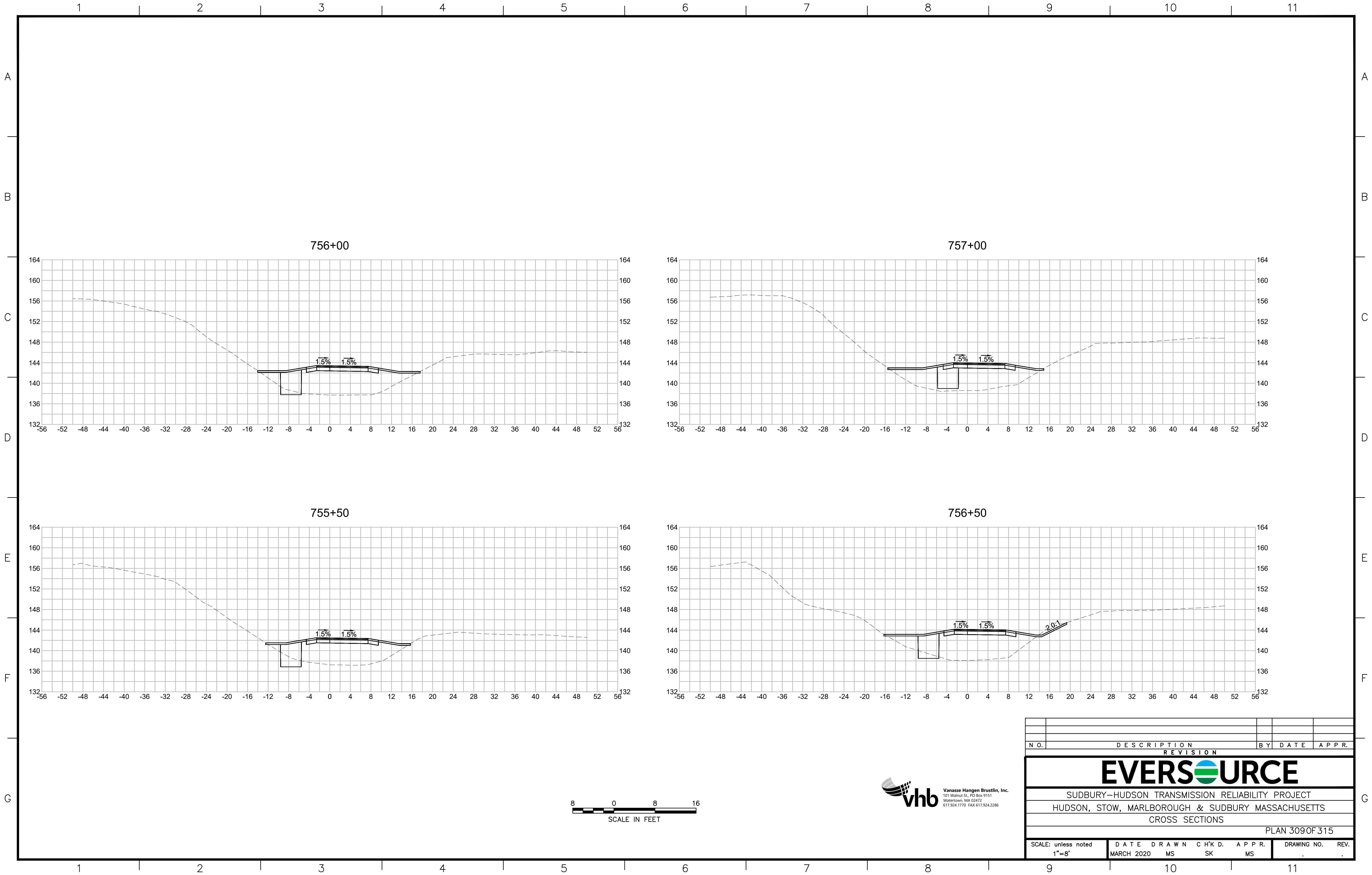


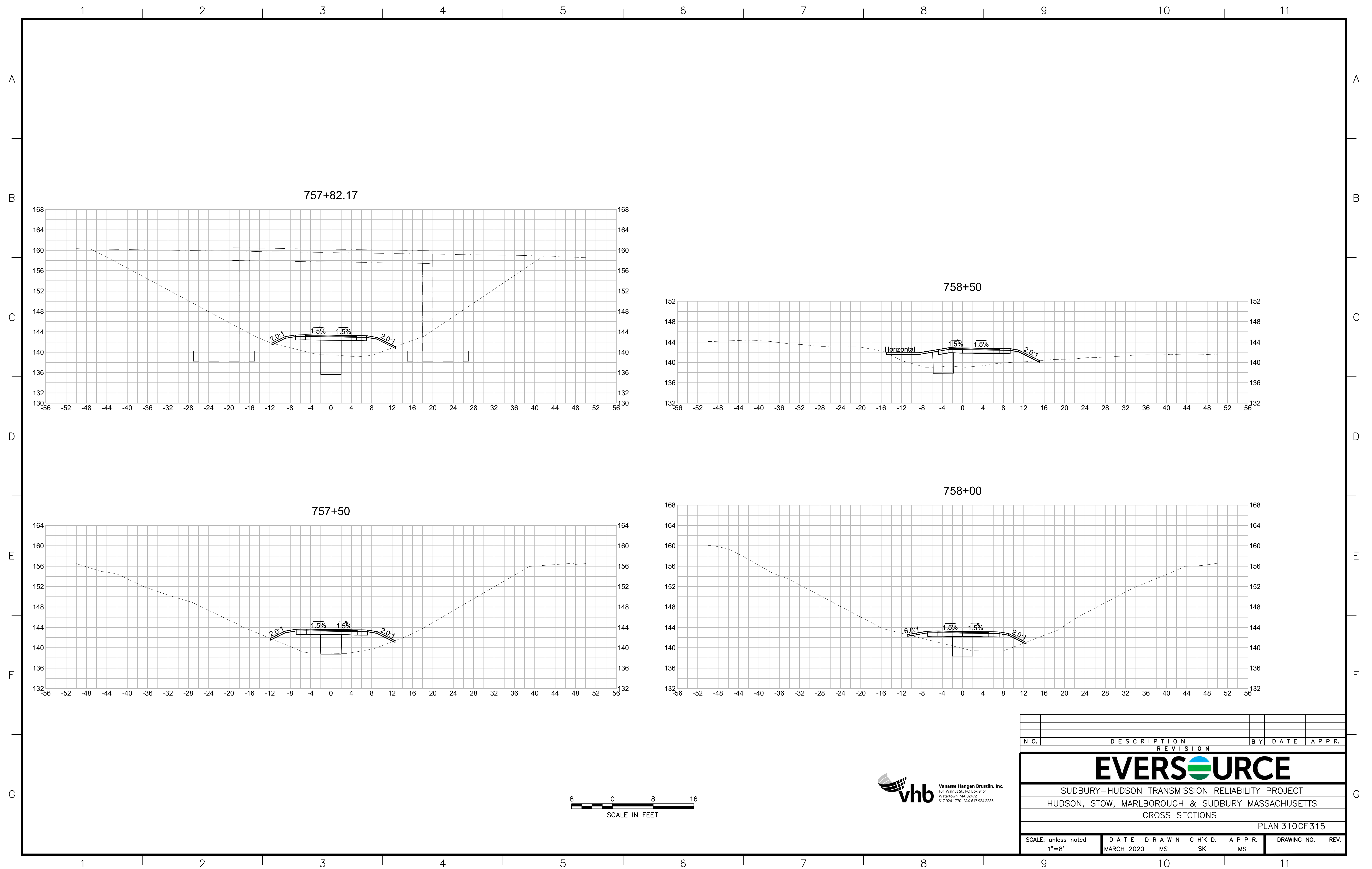


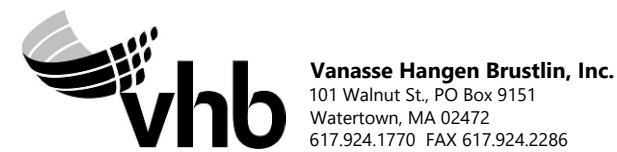
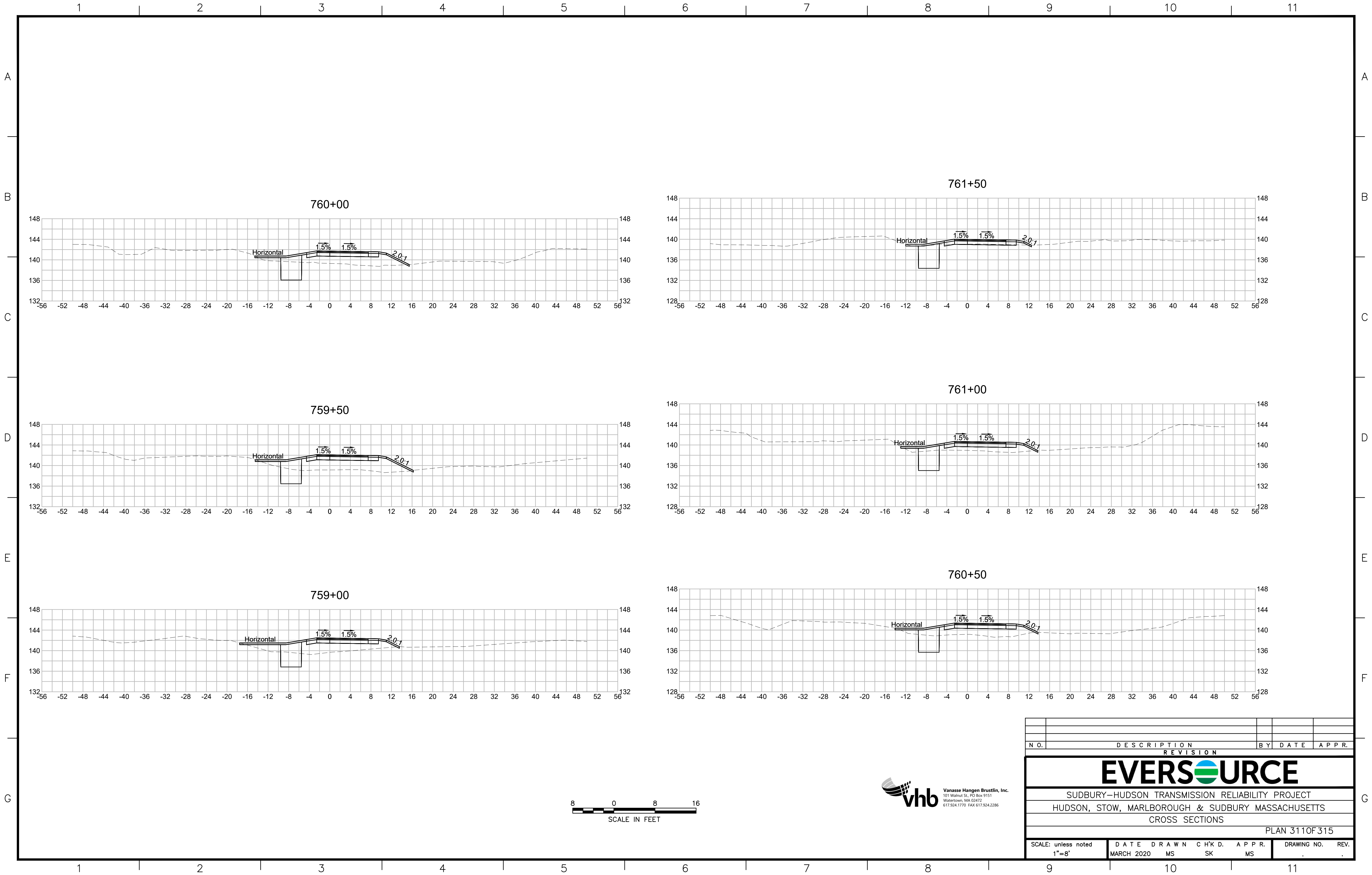
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SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT									
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
CROSS SECTIONS									
PLAN 306 OF 315									
SCALE: unless noted 1"=8'		DATE		DRAWN		CHK'D.		APPR.	
MARCH 2020		MS		SK		MS		DRAWING NO. REV.	



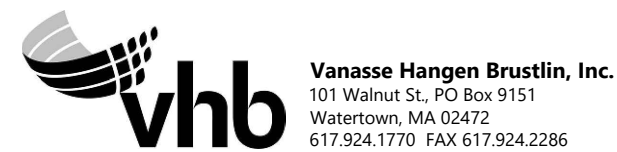
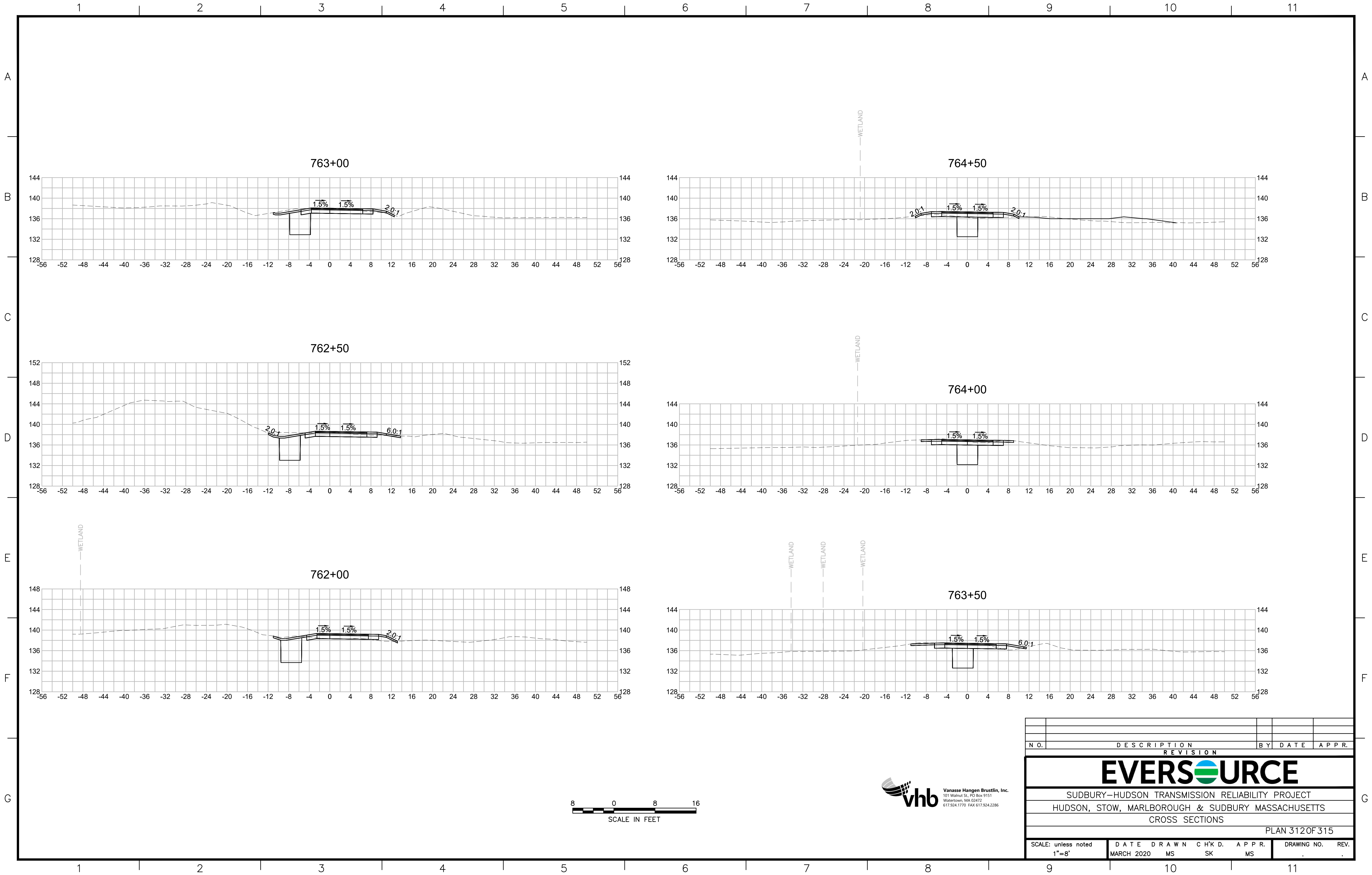






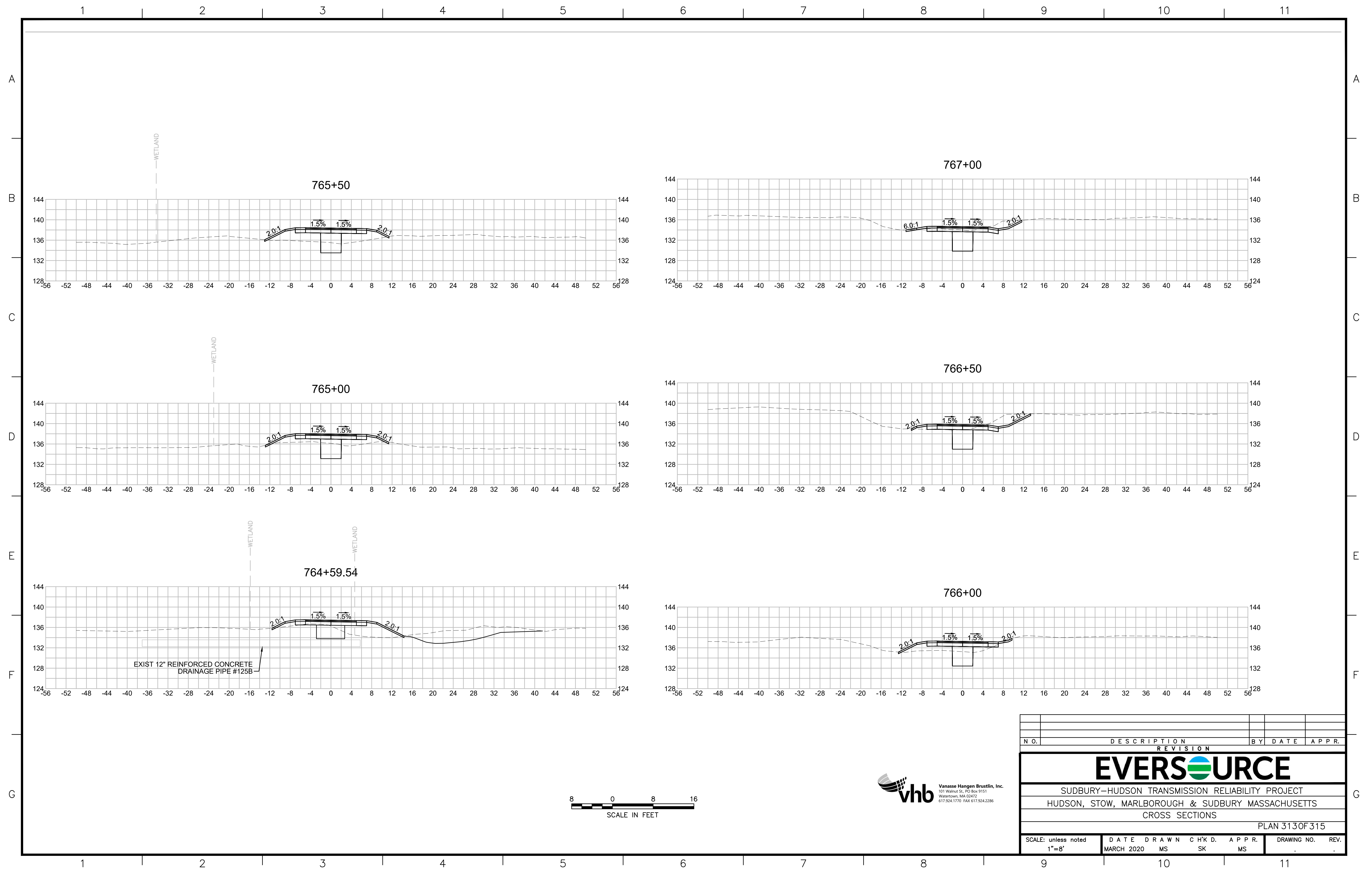


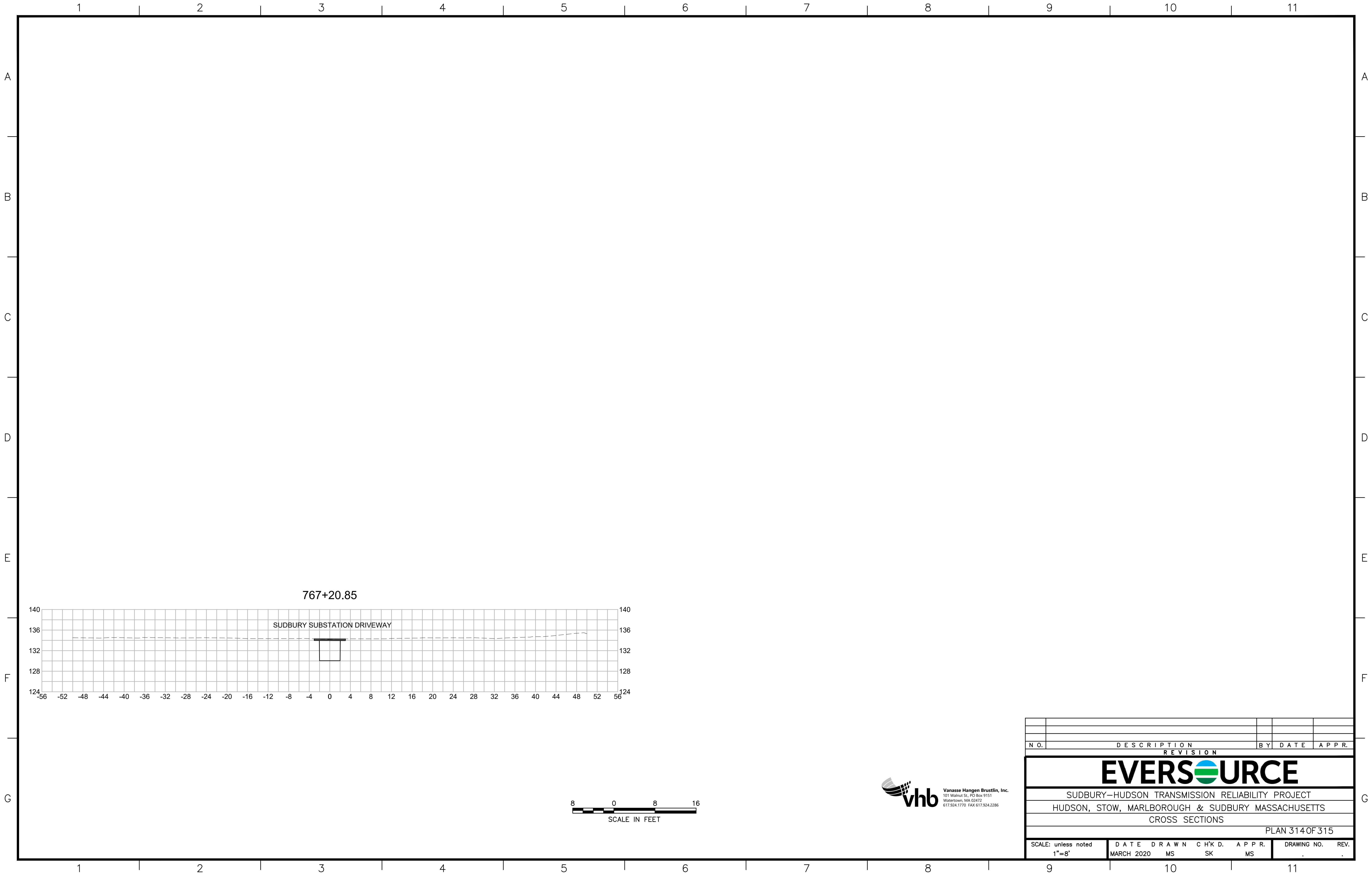
N O.	DESCRIPTION			BY	DATE
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EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CROSS SECTIONS					
PLAN 311 OF 315					
SCALE: unless noted 1"=8'		DATE	DRAWN	C H K ' D.	APPR.
		MARCH 2020	MS	SK	MS
DRAWING NO.		REV.			



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


































































































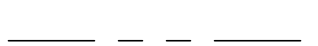
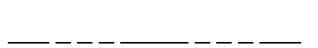

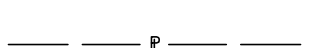
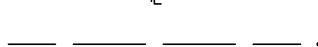


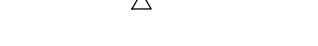
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REVISION									
EVERSOURCE									
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT									
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS									
CROSS SECTIONS									
PLAN 312 OF 315									
SCALE: unless noted 1"=8'		DATE		DRAWN		CH'K D.		APPR.	
MARCH 2020		MS		SK		MS		DRAWING NO. REV.	





N O.	DESCRIPTION			BY	DATE
	REVISION			APPR.	
EVERSOURCE					
SUDBURY-HUDSON TRANSMISSION RELIABILITY PROJECT					
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS					
CROSS SECTIONS					
PLAN 314 OF 315					
SCALE: unless noted 1"=8'		DATE	DRAWN	CH'K D.	APPR.
		MARCH 2020	MS	SK	MS
DRAWING NO.		REV.			

GENERAL SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		JERSEY BARRIER
		CATCH BASIN
		CATCH BASIN CURB INLET
		FLAG POLE
		GAS PUMP
		MAIL BOX
		POST SQUARE
		POST CIRCULAR
		WELL
		ELECTRIC HANDHOLE
		FENCE GATE POST
		GAS GATE
		BORING HOLE
		MONITORING WELL
		TEST PIT
		HYDRANT
		LIGHT POLE
		CONCRETE BOUND/DRILL HOLE
		GPS POINT
		CABLE MANHOLE
		DRAINAGE MANHOLE
		ELECTRIC MANHOLE
		GAS MANHOLE
		MISC MANHOLE
		SEWER MANHOLE
		TELEPHONE MANHOLE
		WATER MANHOLE
		MASSACHUSETTS HIGHWAY BOUND
		MONUMENT
		STONE BOUND
		TOWN OR CITY BOUND
		TRAVERSE OR TRIANGULATION STATION
		TROLLEY POLE OR GUY POLE
		TRANSMISSION POLE
		UTILITY POLE W/ FIREBOX
		UTILITY POLE WITH DOUBLE LIGHT
		UTILITY POLE W / 1 LIGHT
		UTILITY POLE
		BUSH
		TREE
		STUMP
		SWAMP / MARSH
		WETLAND FLAG
		
		PARKING METER
		OVERHEAD CABLE/WIRE
		CURBING
		CONTOURS (ON-THE-GROUND SURVEY DATA)
		CONTOURS (PHOTOGRAMMETRIC DATA)
		UNDERGROUND DRAIN PIPE (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND ELECTRIC DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND GAS MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND SEWER MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND TELEPHONE DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND WATER MAIN (DOUBLE LINE 24 INCH AND OVER)
		BALANCED STONE WALL
		GUARD RAIL - STEEL POSTS
		WOOD GUARD RAIL
		CHAIN LINK OR METAL FENCE
		WOOD FENCE
		TREE LINE
		SAWCUT LINE
		TOP OR BOTTOM OF SLOPE
		LIMIT OF EDGE OF PAVEMENT OR COLD PLANE AND OVERLAY
		BANK OF RIVER OR STREAM
		BORDER OF WETLAND
		100 FT WETLAND BUFFER
		200 FT RIVERFRONT AREA BUFFER
		APPROX 200 FT RIVERFRONT BUFFER
		100 FT RIVERFRONT AREA BUFFER
		APPROX 100 FT RIVERFRONT AREA BUFFER
		AURA BUFFER
		100 FT AURA BUFFER
		100 FT VERNAL POOL AREA BUFFER
		STATE HIGHWAY LAYOUT/STATE OWNED LAND
		TOWN OR CITY LAYOUT
		COUNTY LAYOUT
		RAILROAD SIDELINE
		TOWN OR CITY BOUNDARY LINE
		PROPERTY LINE OR APPROXIMATE PROPERTY LINE
		EASEMENT
		COMPOST FILTER TUBE
		TRAVERSE OR TRIANGULATION STATION
		CHECK DAM
		SITE BENCH W/ CONCRETE PAD


ABBREVIATIONS

GENERAL	
AADT	ANNUAL AVERAGE DAILY TRAFFIC
ABAN	ABANDON
ADJ	ADJUST
APPROX.	APPROXIMATE
A.C.	ASPHALT CONCRETE
ACCM PIPE	ASPHALT COATED CORRUGATED METAL PIPE
BIT.	BITUMINOUS
BC	BOTTOM OF CURB
BD.	BOUND
BL	BASELINE
BLDG	BUILDING
BM	BENCHMARK
BO	BY OTHERS
BOS	BOTTOM OF SLOPE
BR.	BRIDGE
CB	CATCH BASIN
CB CI	CATCH BASIN WITH CURB INLET
CC	CEMENT CONCRETE
CCM	CEMENT CONCRETE MASONRY
CEM	CEMENT
CI	CURB INLET
CIP	CAST IRON PIPE
CLF	CHAIN LINK FENCE
CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
CSP	CORRUGATED STEEL PIPE
CO.	COUNTY
CONC	CONCRETE
CONT	CONTINUOUS
CONST	CONSTRUCTION
CR GR	CROWN GRADE
DHV	DESIGN HOURLY VOLUME
DI	DROP INLET
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DW	STEADY DON'T WALK - PORTLAND ORANGE
DWY	DRIVEWAY
ELEV (or EL.)	ELEVATION
EMB	EMBANKMENT
EOP	EDGE OF PAVEMENT
EXIST (or EX)	EXISTING
EXC	EXCAVATION
F&C	FRAME AND COVER
F&G	FRAME AND GRATE
FDN.	FOUNDATION
FLDSTN	FIELDSTONE
GAR	GARAGE
GD	GROUND
GG	GAS GATE
GI	GUTTER INLET
GIP	GALVANIZED IRON PIPE
GRAN	GRANITE
GRAV	GRAVEL
GRD	GUARD
HDW	HEADWALL
HMA	HOT MIX ASPHALT
HOR	HORIZONTAL
HYD	HYDRANT
INV	INVERT
JCT	JUNCTION
L	LENGTH OF CURVE
LB	LEACH BASIN
LP	LIGHT POLE
LST	LANDSCAPE TIMBER
LT	LEFT
MAX	MAXIMUM
MB	MAILBOX
MH	MANHOLE
MHB	MASSACHUSETTS HIGHWAY BOUND
MIN	MINIMUM
NIC	NOT IN CONTRACT
NO.	NUMBER
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVATURE
P.G.L.	PROFILE GRADE LINE
PI	POINT OF INTERSECTION
POC	POINT ON CURVE
POT	POINT ON TANGENT
PRC	POINT OF REVERSE CURVATURE
PROJ	PROJECT
PROP	PROPOSED
PSB	PLANTABLE SOIL BORROW
PT	POINT OF TANGENCY
PVC	POINT OF VERTICAL CURVATURE
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENCY
PVMT	PAVEMENT

ABBREVIATIONS (cont.)

GENERAL	
PWW	PAVED WATER WAY
R	RADIUS OF CURVATURE
R&D	REMOVE AND DISPOSE
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
RDWY	ROADWAY
REM	REMOVE
RET	RETAIN
RET WALL	RETAINING WALL
ROW	RIGHT OF WAY
RR	RAILROAD
R&R	REMOVE AND RESET
R&S	REMOVE AND STACK
RT	RIGHT
SB	STONE BOUND
SHLD	SHOULDER
SMH	SEWER MANHOLE
ST	STREET
STA	STATION
SSD	STOPPING SIGHT DISTANCE
SHLO	STATE HIGHWAY LAYOUT LINE
SW	SIDEWALK
T	TANGENT DISTANCE OF CURVE/TRUCK %
TAN	TANGENT
TEMP	TEMPORARY
TC	TOP OF CURB
TMA	TELEPHONE MAST ARM
TOS	TOP OF SLOPE
TYP	TYPICAL
UP	UTILITY POLE
VAR	VARIES
VERT	VERTICAL
VC	VERTICAL CURVE
WCR	WHEEL CHAIR RAMP
WG	WATER GATE
WIP	WROUGHT IRON PIPE
WM	WATER METER/WATER MAIN
X-SECT	CROSS SECTION

PAVEMENT MARKINGS SYMBOLS

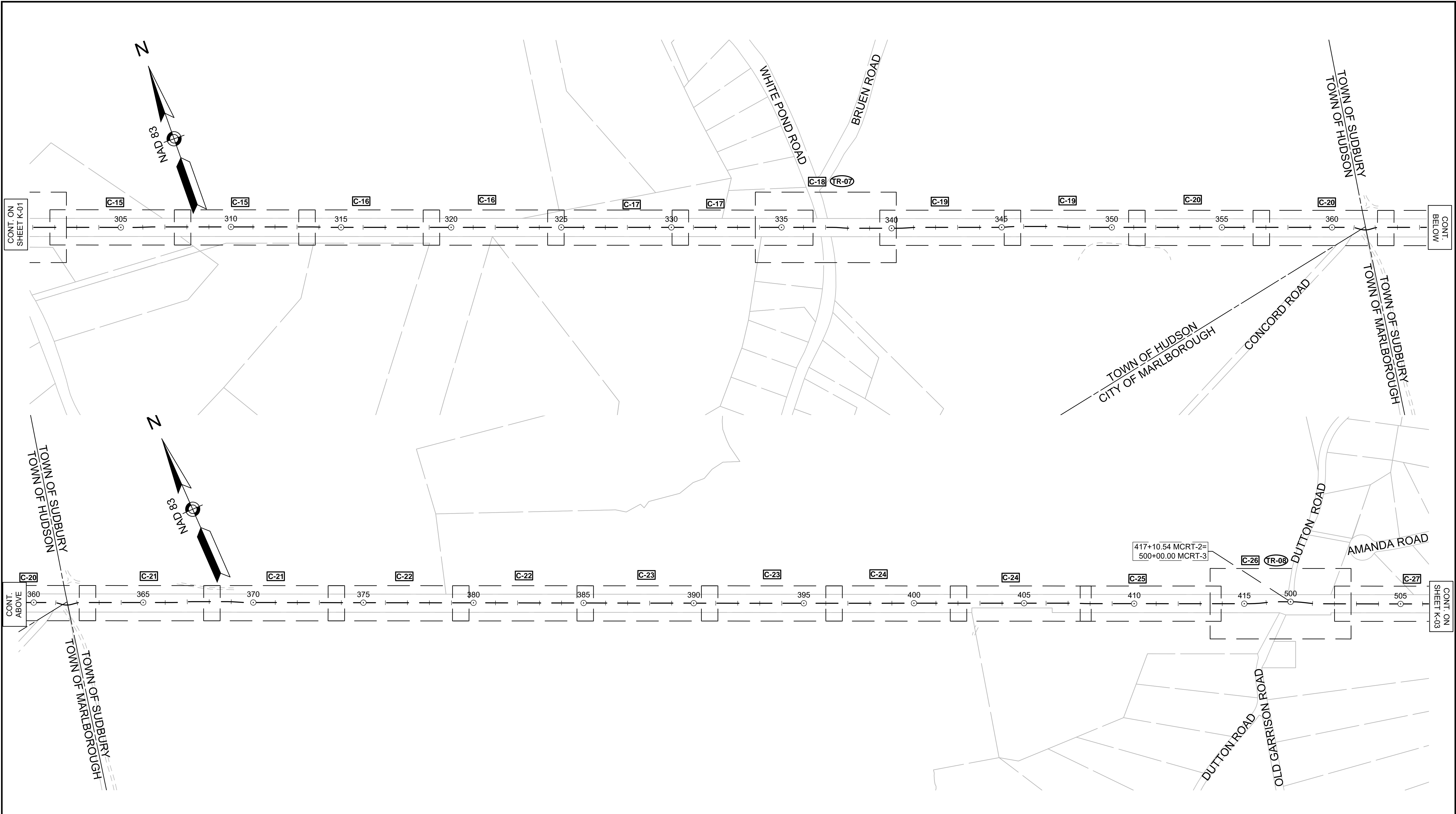
EXISTING	PROPOSED	DESCRIPTION
	SL	STOP LINE
	 CW	CROSSWALK
	SWL	SOLID WHITE LINE
	SYL	SOLID YELLOW LINE
	BWL	BROKEN WHITE LINE
	BYL	BROKEN YELLOW LINE
	DWL	DOTTED WHITE LINE
	DYL	DOTTED YELLOW LINE
	DWLEx	DOTTED WHITE LINE EXTENSION
	DYLEx	DOTTED YELLOW LINE EXTENSION
	DBWL	DOUBLE WHITE LINE
	DBYL	DOUBLE YELLOW LINE

GENERAL NOTES:

- 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.
- 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).
- THE CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND GRADES IN THE FIELD BEFORE COMMENCING WORK AND PROMPTLY NOTIFY THE ENGINEER OF ANY DISCREPANCIES.
- 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.
- 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). IN HUDSON, ADDITIONAL WETLANDS WERE DELINEATED AND SURVEYED BY VHB IN JANUARY 2019.
- 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.
- 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.
- 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.
- THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANIES.
- EXISTING UTILITY POLES WILL BE RELOCATED BY OTHERS IF REQUIRED.
- TREES AND SHRUBS WITHIN THE LIMITS OF GRADING SHALL BE REMOVED ONLY UPON APPROVAL OF THE ENGINEER.
- 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.
- 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).
- JOINTS BETWEEN NEW ASPHALT CONCRETE ROADWAY PAVEMENT AND SAWCUT EXISTING PAVEMENT SHALL BE SEALED WITH BITUMEN AND BACKSANDS.
- EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE RETAINED UNLESS INDICATED OTHERWISE ON THE DRAWINGS.
- 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.
- ALL PROPOSED HOT MIX ASPHALT CURB SHALL BE MASSDOT TYPE 3 UNLESS STATED OTHERWISE ON THE PLANS.
- 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.
- DISPOSAL OF ALL SURPLUS MATERIAL SHALL BE AS APPROVED BY THE ENGINEER AND OWNER.
- ALL EXISTING EROSION CONTROL BARRIER, CONSTRUCTION FENCING AND SILT SACKS SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION ACTIVITIES AND REMOVED AFTER CONSTRUCTION ACTIVITIES ARE COMPLETE.

REV.	DATE	DESCRIPTION	BY
		 Transportation Land Development Environmental Services 101 Walnut St., P.O. Box 9151 Watertown, MA 02472 617 924 1770 FAX 617 924 2286	

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 CHECKED-SHK	LEGEND ABBREVIATIONS & GENERAL NOTES	SHEET NO.
DRAWN: JCR CHECKED-TAL	CONT. P19-3295-D1A ACC. XXXXXXXX	SCALE: NTS DATE: MAR 2020 L-01 1 OF 1



CONT. ON
SHEET K-01

CONT.
BELOW

CONT.
ABOVE

CONT. ON
SHEET K-03

LEGEND

C-XX CONSTRUCTION PLANS

TR-XX TRAFFIC PLANS



REV.	DATE	DESCRIPTION	BY

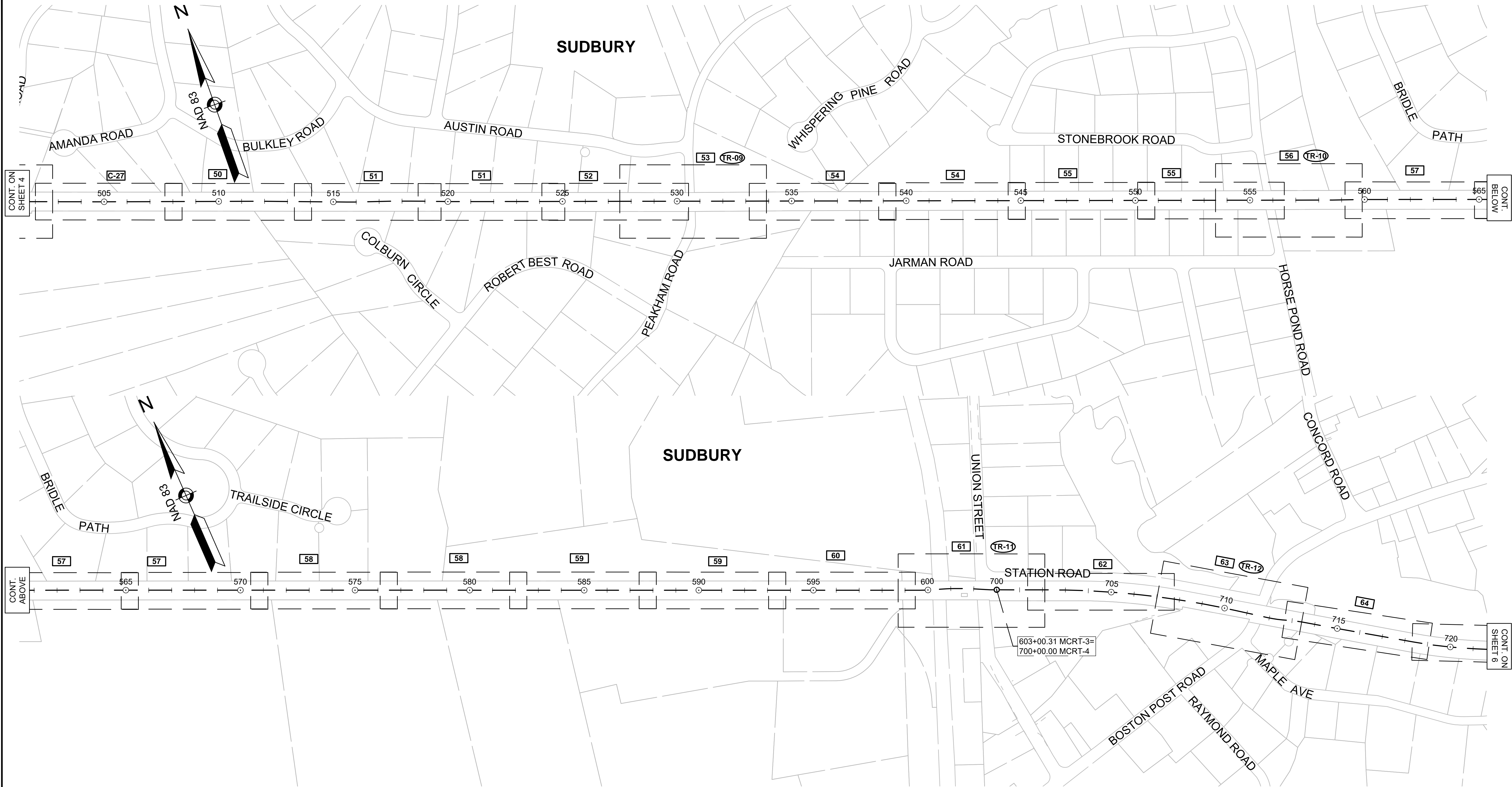
Transportation Land Development
Environmental Services
101 Walnut St., P.O. Box 9151
Watertown, MA 02472
617 924 1770 FAX 617 924 2286

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	<div>KEY PLAN</div>	SHEET NO. K-02 2 OF 4
CHECKED: SHK		
DRAWN: JCR		
CHECKED: TAL	CONT. P19-3295-D1A ACC. XXXXXXx	SCALE: NTS DATE: MAR 2020



LEGEND

 CONSTRUCTION PLANS

 TRAFFIC PLANS



REV.	DATE	DESCRIPTION	BY



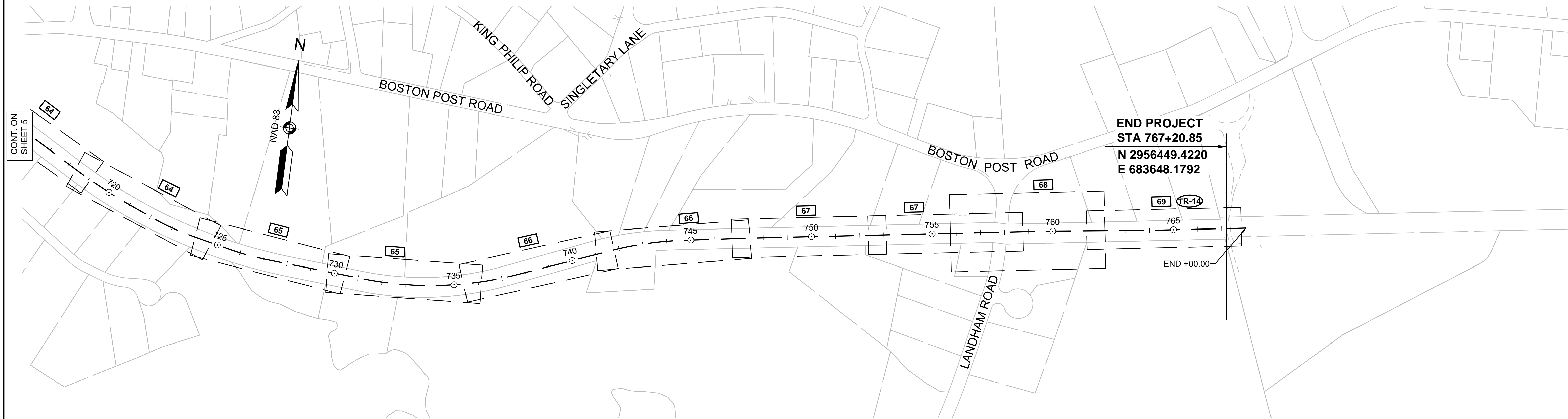
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Environmental Services
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COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION AND RECREATION
DIVISION OF PLANNING AND ENGINEERING

MASS CENTRAL RAIL TRAIL - WAYSIDE

MASS CENTRAL RAIL TRAIL
HUDSON, STOW, MARLBOROUGH & SUDBURY, MA

DESIGNER: JCR CHECKED: SHK	KEY PLAN	SHEET NO. K-03 3 OF 4
DRAWN: JCR CHECKED: TAL		
CONT. P19-3295-D1A ACC. XXXXXXx	SCALE: NTS DATE: MAR 2020	



LEGEND
[C-XX] CONSTRUCTION PLANS
[TR-XX] TRAFFIC PLANS



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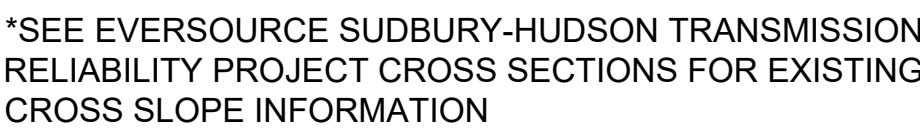
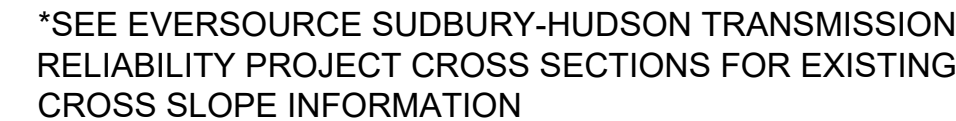
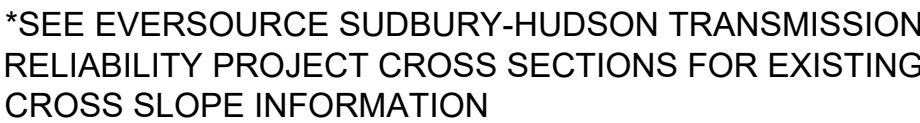
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Environmental Services
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COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION AND RECREATION
DIVISION OF PLANNING AND ENGINEERING

MASS CENTRAL RAIL TRAIL - WAYSIDE

MASS CENTRAL RAIL TRAIL
HUDSON, STOW, MARLBOROUGH & SUDBURY, MA

DESIGNER: JCR CHECKED: SHK	KEY PLAN	SHEET NO. K-04 4 OF 4
DRAWN: JCR CHECKED: TAL		
CONT. P19-3295-D1A ACC. XXXXXXx	SCALE: NTS DATE: MAR 2020	



PROPOSED PATH PAVEMENT

* NOTE:
FROM STA 100+00± TO STA 767+20± EXIST GRAVEL FROM
EVERSOURCE ACCESS ROAD SHALL BE USED FOR
SUBBASE MATERIAL.

* NOTE:
2.5" SUPERPAVE INTERMEDIATE COURSE TO BE
INSTALLED AS PART OF EVERSOURCE SUDBURY-HUDSON
TRANSMISSION LINE RELIABILITY PROJECT.

* NOTE:
EXIST GRAVEL FROM EVERSOURCE ACCESS ROAD SHALL
BE USED FOR SUBBASE MATERIAL.

* NOTE:
EXIST GRAVEL FROM EVERSOURCE ACCESS ROAD SHALL
BE USED FOR SUBBASE MATERIAL.

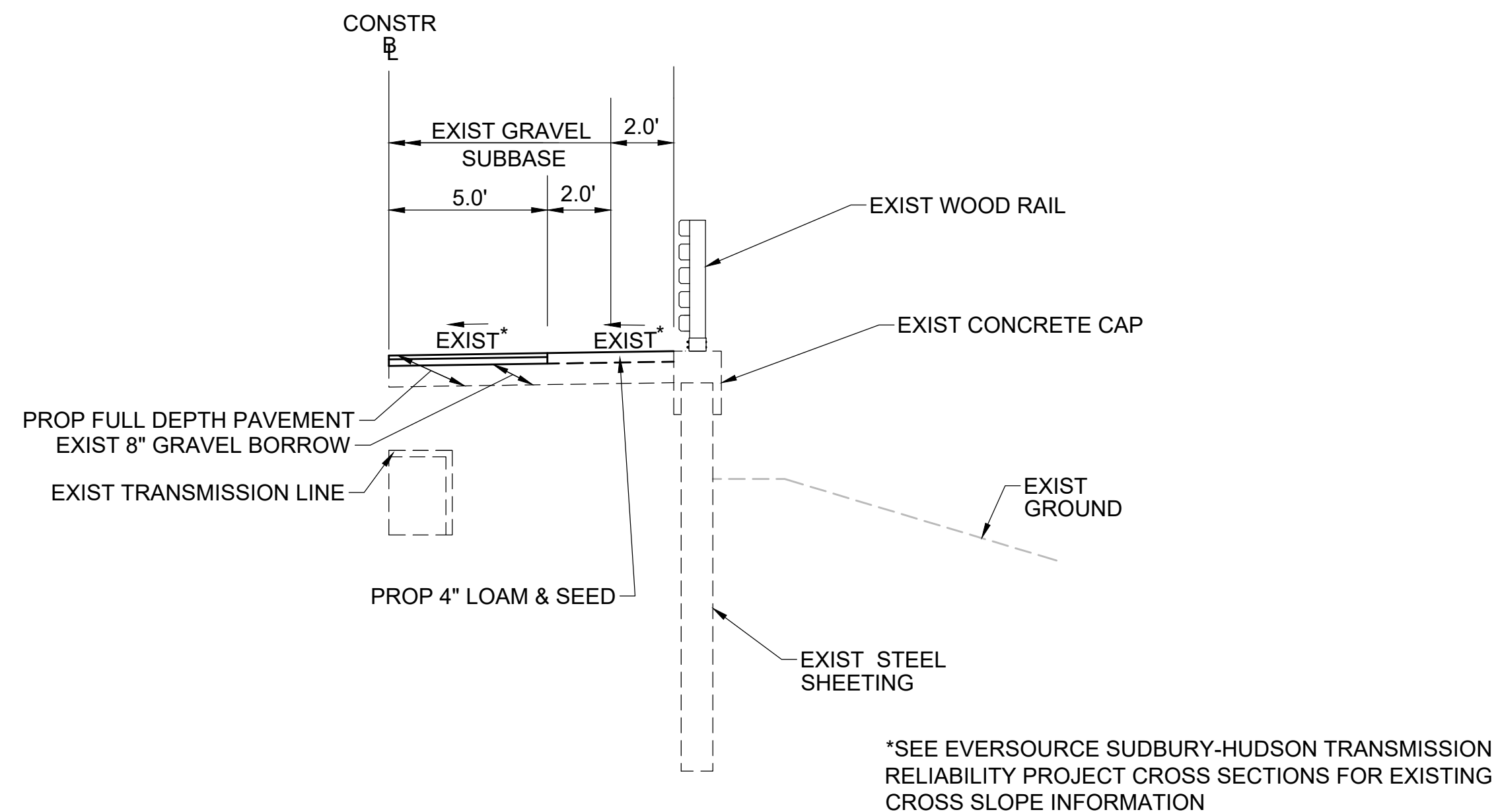
SUBBASE: 8" GRAVEL BORROW, TYPE b

1. ALL HOT MIX ASPHALT SHALL BE PRODUCED WITH A WARM-MIX ASPHALT ADDITIVE.
2. ALL HOT MIX ASPHALT PAVEMENTS SHALL BE CONSTRUCTED AND PRODUCED IN ACCORDANCE WITH SECTION 450 HOT MIX ASPHALT PAVEMENT.
3. ASPHALT EMULSION FOR TACK COAT (RS-1H) SHALL BE SPRAY APPLIED FOR DOUBLE OVERLAP COVERAGE AT 0.05 GALLONS PER SQUARE YARD OVER SMOOTH SURFACES.
4. HMA JOINT SEALANT (ASPHALT RUBBER) SHALL BE APPLIED IN SURFACE COURSE AT ALL VERTICAL COLD JOINTS PRIOR TO PAVING.
5. ALL HOT MIX ASPHALT WALKS SHALL BE MEASURED AND PAID FOR UNDER ITEM 702 OF STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES.



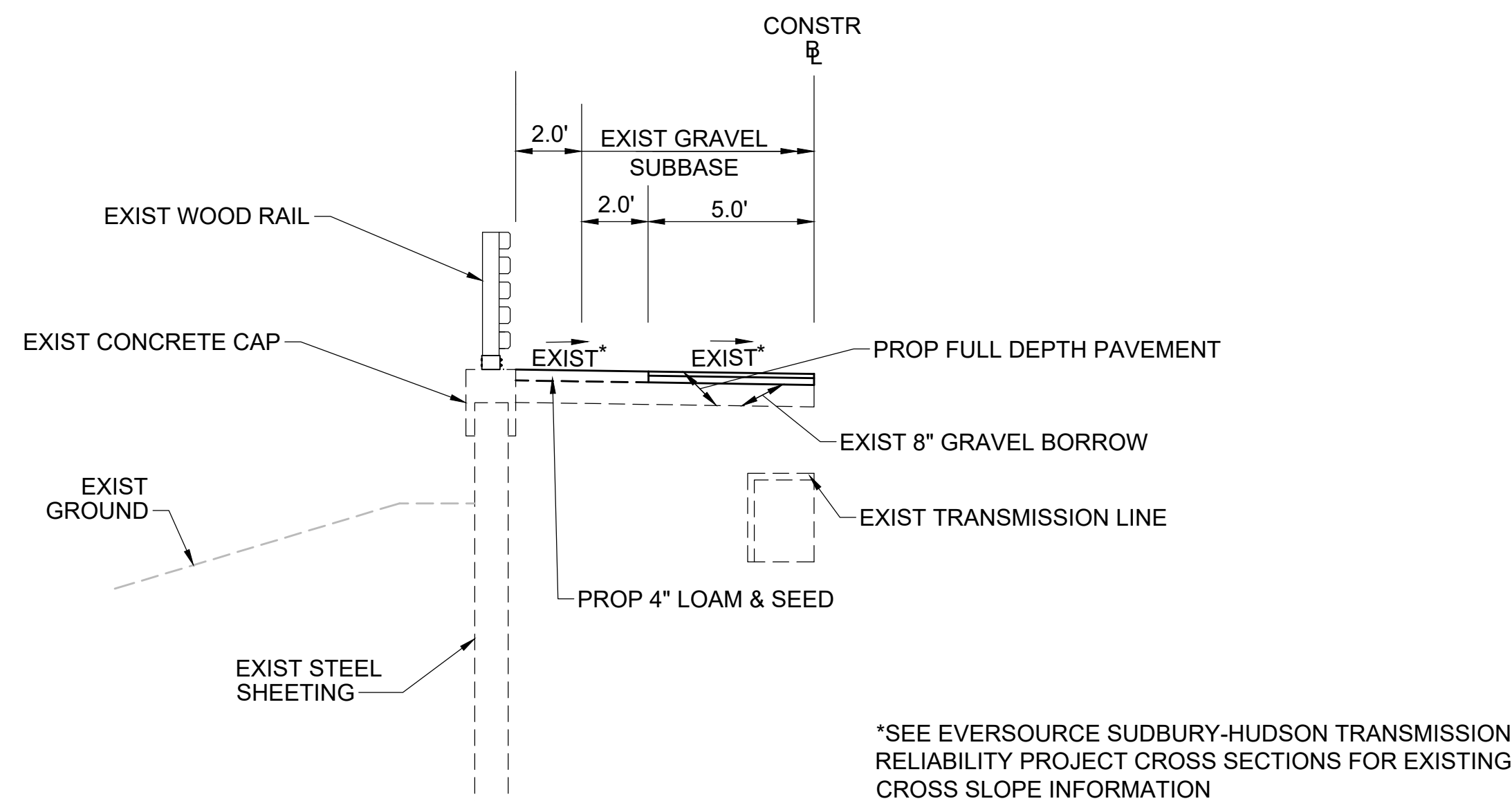
vhb
Transportation Land Development
Environmental Services
101 Walnut St., P.O. Box 9151
Watertown, MA 02472
617 924 1770 FAX 617 924 2286

DESIGNER: JCR CHECKED: SHK DRAWN: JCR CHECKED: TAL	<h2 style="margin: 0;">TYPICAL SECTIONS & PVMT NOTES</h2>	SHEET NO. _____ <div style="font-size: 2em; font-weight: bold; text-align: center;">TS-01</div>				
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CONT. P19-3295-D1A	SCALE: 1" = 20'-0"					
ACC. XXXXXXXX	DATE: MAR 2020					



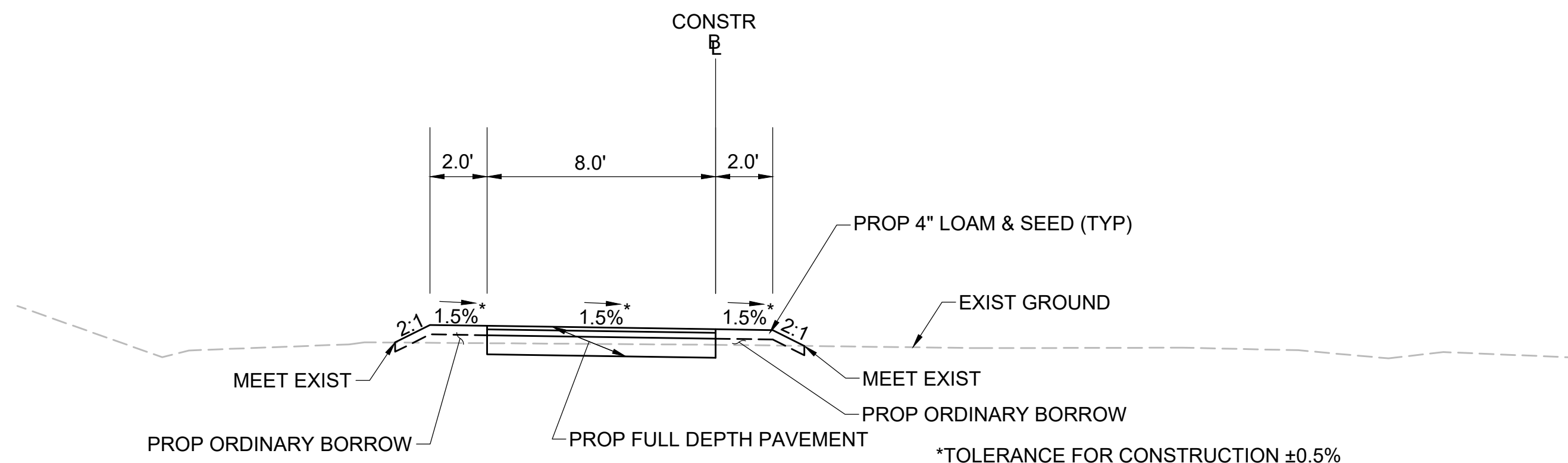
SHEETING SECTION RT

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



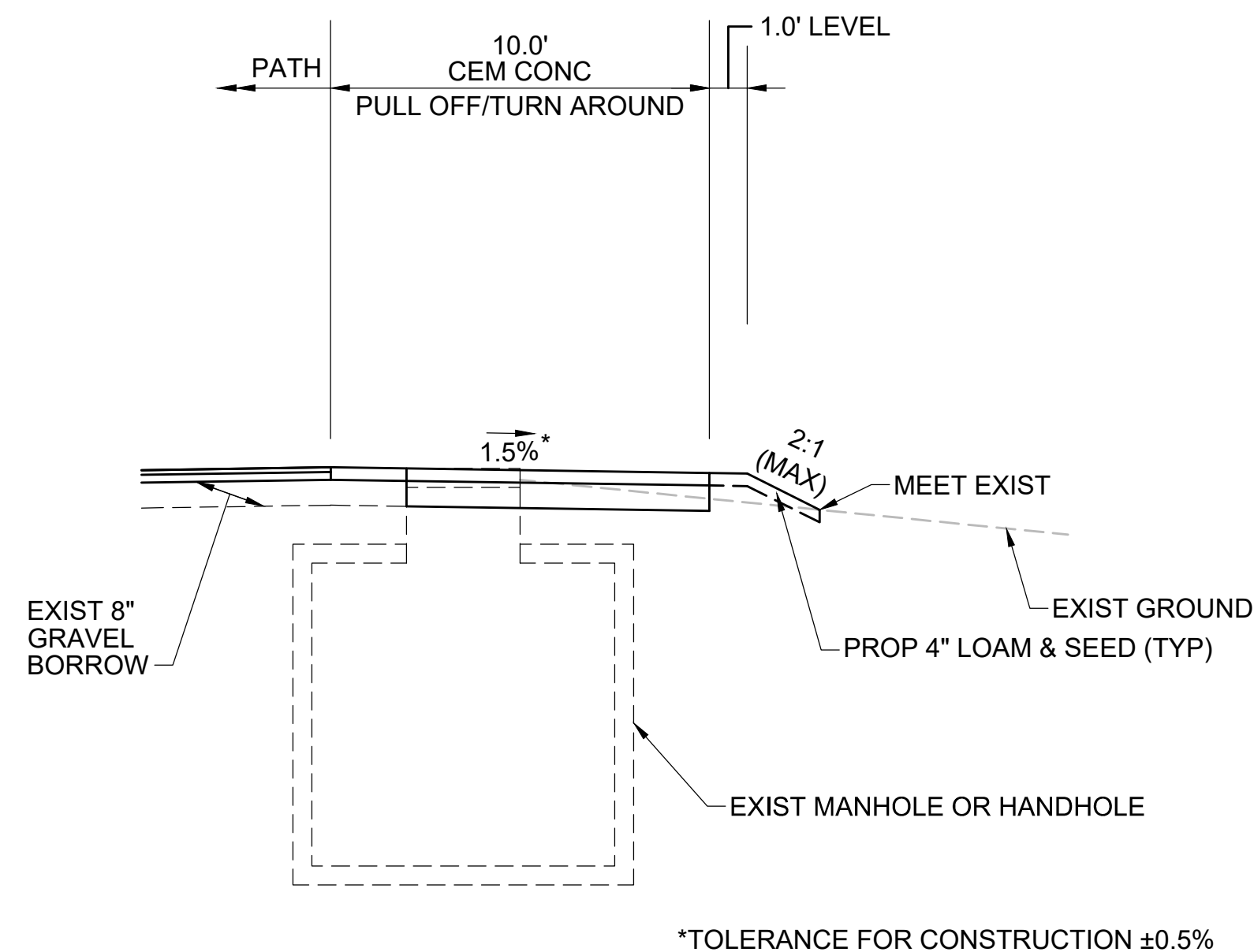
SHEETING SECTION LT

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



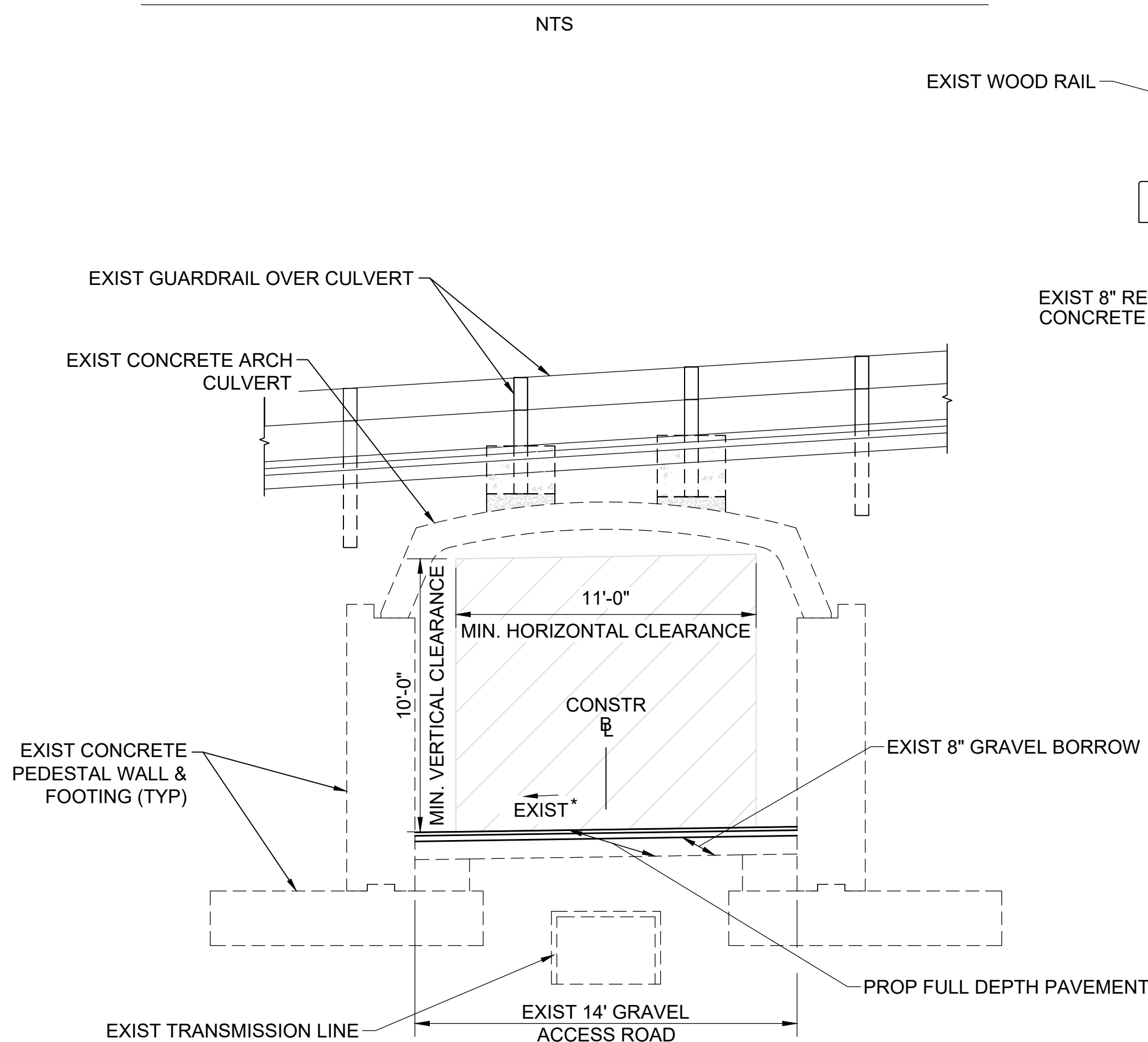
TYPICAL SECTION - MCRT CONNECTION

STA 10+15± TO STA 12+40±
NTS



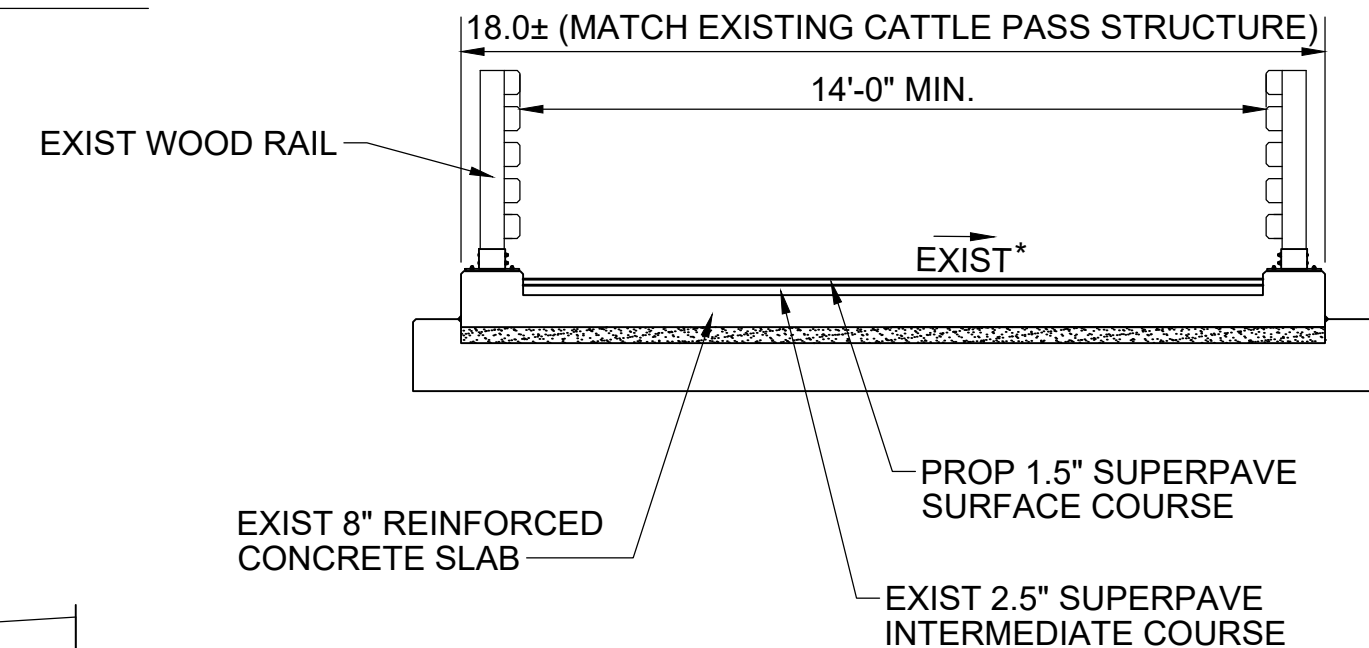
TYPICAL SECTION - PULL OFF/TURN AROUND

NTS



CHESTNUT STREET CULVERT

STA 132+44± TO STA 132+84±
NTS



CATTLE CROSSING

STA 119+38± TO STA 119+52±
NTS

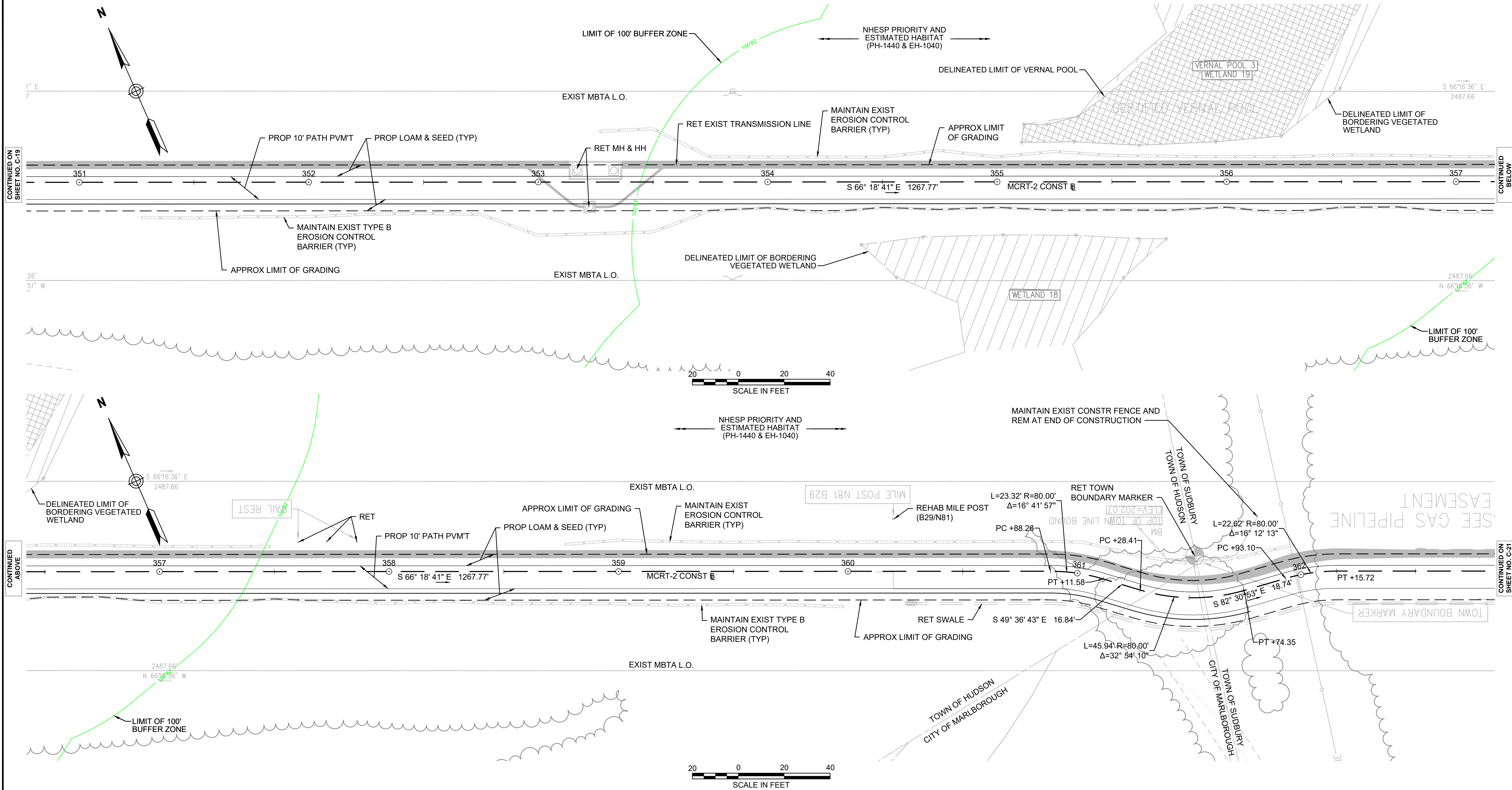
*SEE EVERSOURCE SUDBURY-HUDSON TRANSMISSION
RELIABILITY PROJECT CROSS SECTIONS FOR EXISTING
CROSS SLOPE INFORMATION

*SEE EVERSOURCE SUDBURY-HUDSON TRANSMISSION
RELIABILITY PROJECT CROSS SECTIONS FOR EXISTING
CROSS SLOPE INFORMATION

REV.	DATE	DESCRIPTION	BY

Transportation Land Development
Environmental Services
101 Walnut St., P.O. Box 9151
Watertown, MA 02472
617 924 1770 FAX 617 924 2286

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 CHECKED: SHK	TYPICAL SECTIONS & PVMT NOTES		SHEET NO.
DRAWN: JCR CHECKED: TAL	CONT. P19-3295-D1A ACC. XXXXXXXX	SCALE: 1" = 20'-0" DATE: MAR 2020	TS-02 2 OF 2

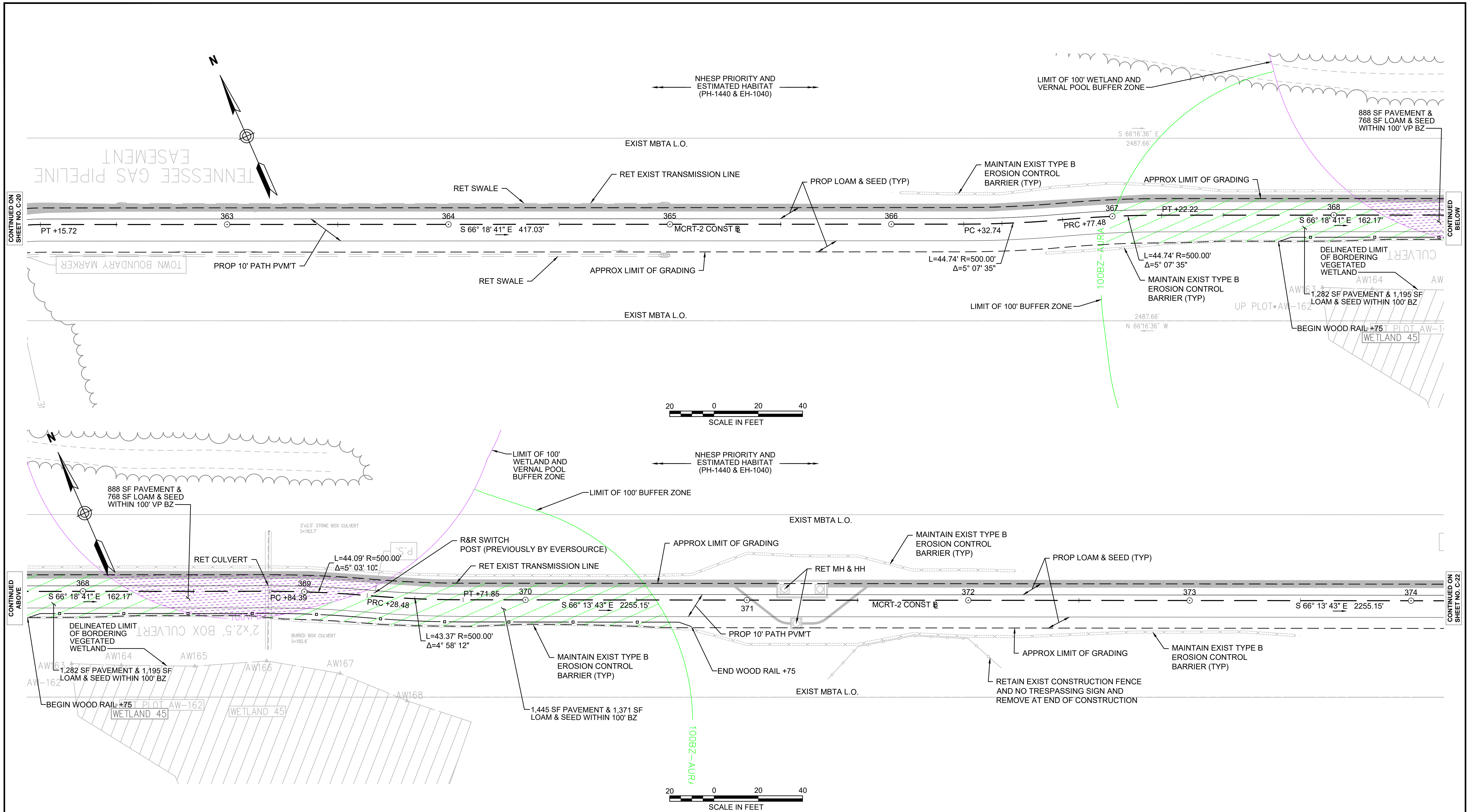


ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
	ISOLATED VEGETATED WETLAND
	BORDERING VEGETATED WETLAND
	LAND UNDER WATER
	VERNAL POOL
	PERMANENT DISTURBANCE TO VEGETATED WETLAND
	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)
	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
	DISTURBANCE TO BLSF
	EXISTING TREE LINE
	LIMIT OF GRADING

REV.	DATE	DESCRIPTION	BY

Transportation Land Development
Environmental Services
101 Walnut St., P.O. Box 9151
Watertown, MA 02472
617 924 1770 FAX 617 924 2286

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		SHEET NO.	
CHECKED: SHK		C-20	
DRAWN: JCR		20 OF 46	
CHECKED: TAL			
CONSTRUCTION PLANS			
CONT. P19-3295-D1A		SCALE: 1" = 20'-0"	
ACC. XXXXXXXX		DATE: MAR 2020	



NOTE:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).

ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
	ISOLATED VEGETATED WETLAND
	BORDERING VEGETATED WETLAND
	LAND UNDER WATER
	VERNAL POOL
	PERMANENT DISTURBANCE TO VEGETATED WETLAND
	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)
	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
	DISTURBANCE TO BLSF
	EXISTING TREE LINE
	LIMIT OF GRADING

REV.	DATE	DESCRIPTION	BY

Transportation Land Development
Environmental Services
101 Walnut St., P.O. Box 9151
Watertown, MA 02472
617 924 1770 FAX 617 924 2286

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

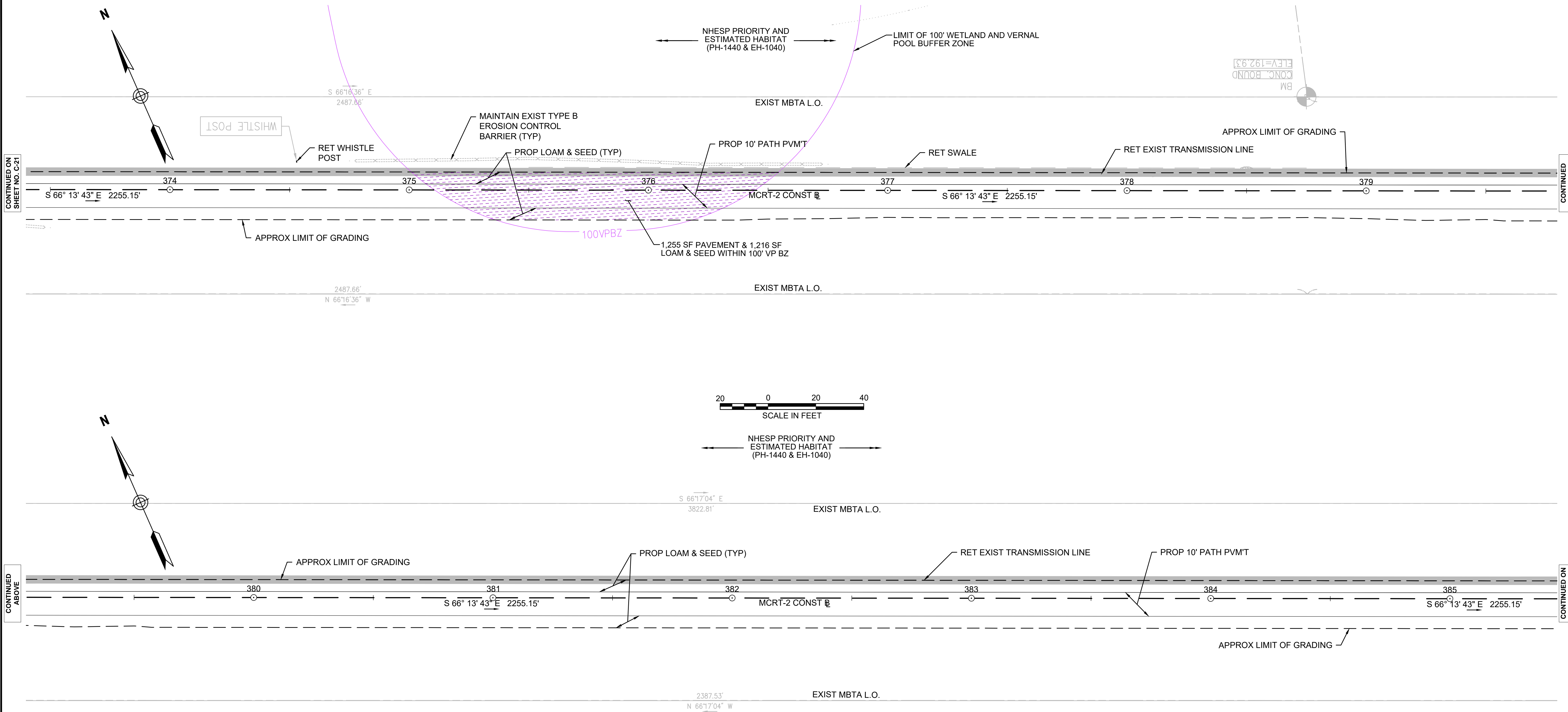
CONSTRUCTION PLANS

DESIGNER: JCR
CHECKED: SHK
DRAWN: JCR
CHECKED: TAL

CONT. P19-3295-D1A
ACC. XXXXXXXX

SCALE: 1" = 20'-0"
DATE: MAR 2020

SHEET NO.
C-21
21 OF 46



NOTE:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).

ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
	ISOLATED VEGETATED WETLAND
	BORDERING VEGETATED WETLAND
	LAND UNDER WATER
	VERNAL POOL
	PERMANENT DISTURBANCE TO VEGETATED WETLAND
	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)
	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
	DISTURBANCE TO BLSF
	EXISTING TREE LINE
	LIMIT OF GRADING

REV.	DATE	DESCRIPTION	BY

Transportation Land Development
Environmental Services
101 Walnut St., P.O. Box 9151
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617 924 1770 FAX 617 924 2286

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
CHECKED: SHK

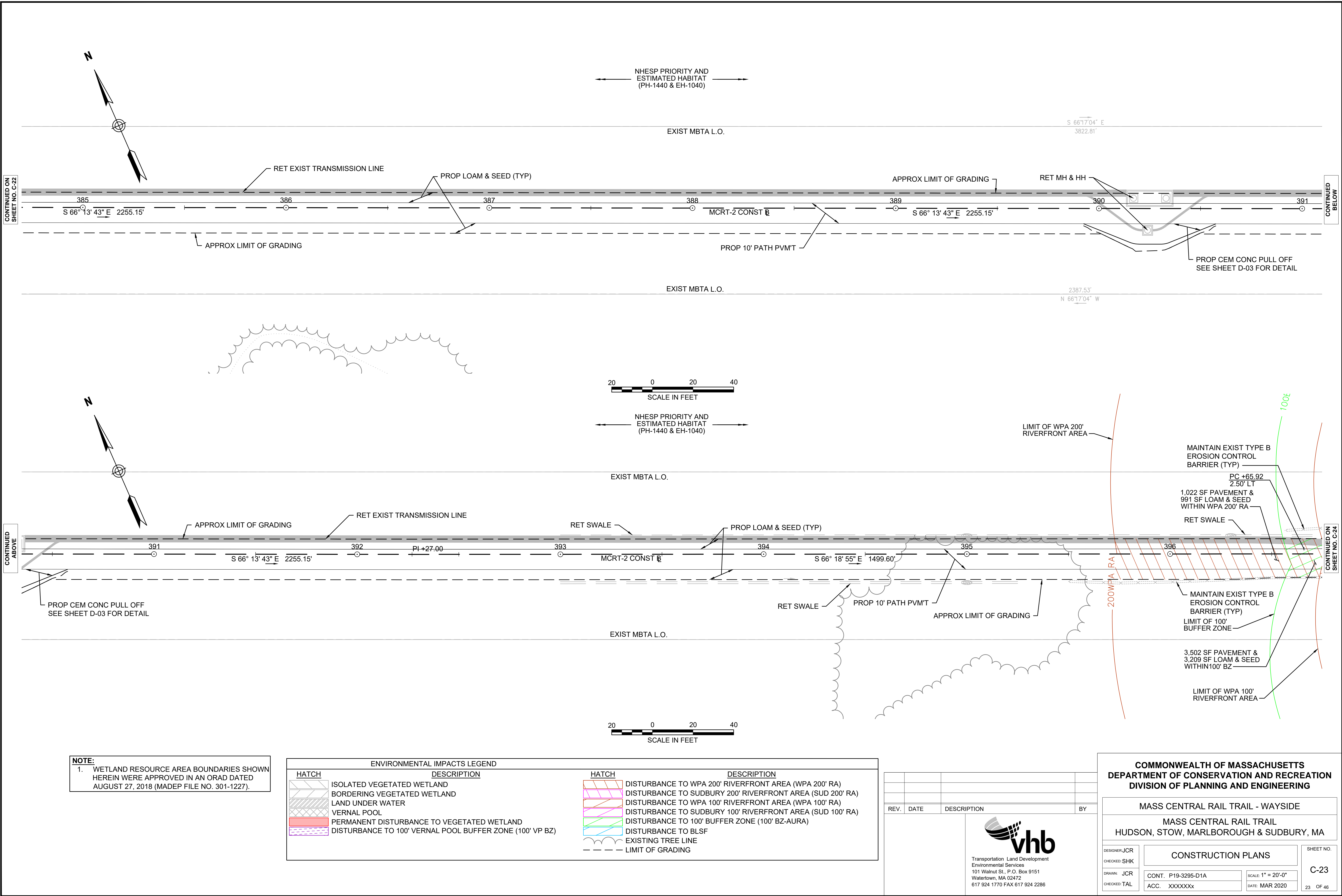
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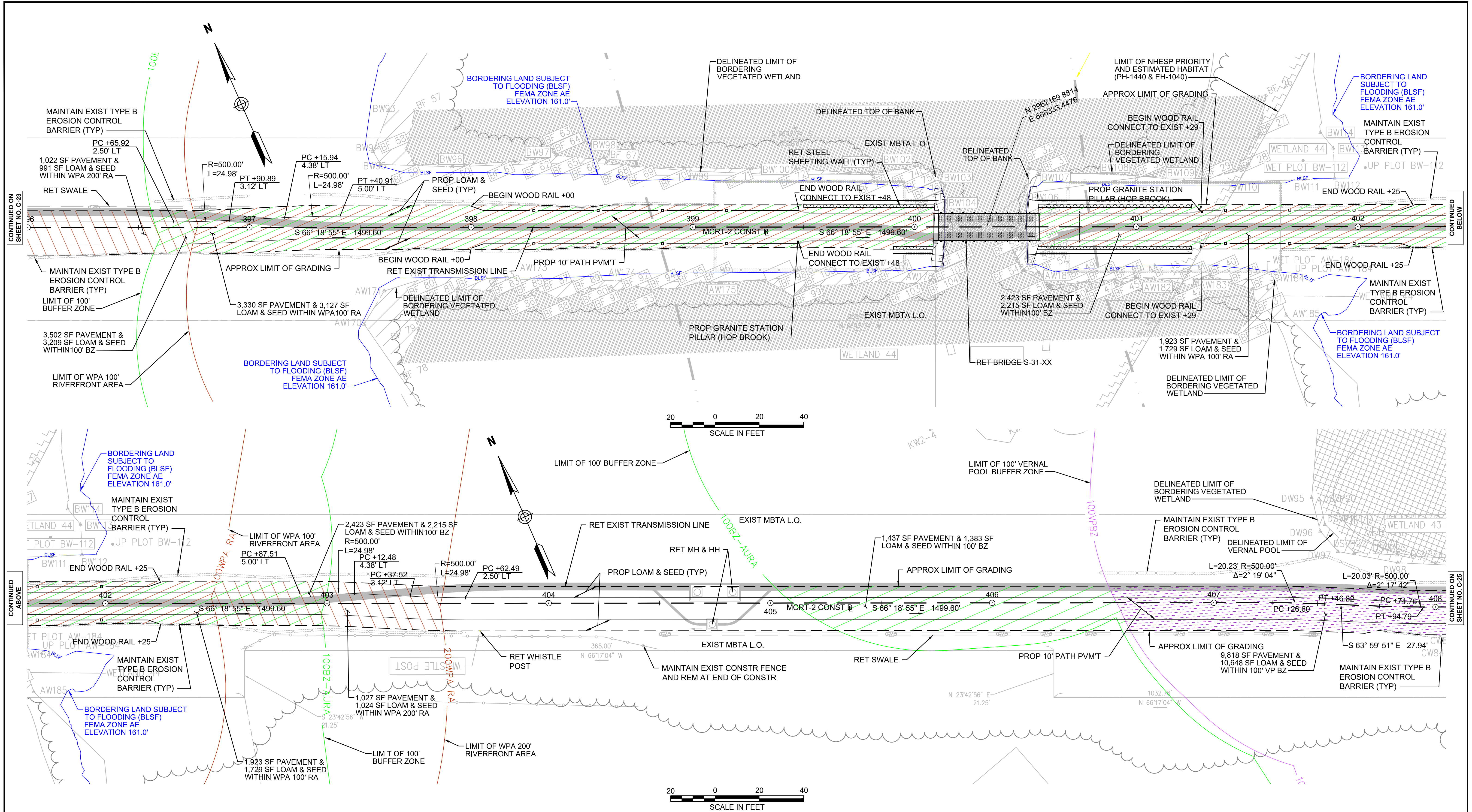
CONSTRUCTION PLANS

CONT. P19-3295-D1A
ACC. XXXXXXXX

SCALE: 1" = 20'-0"
DATE: MAR 2020

SHEET NO.
C-22
22 OF 46





NOTE:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).

ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
	ISOLATED VEGETATED WETLAND
	BORDERING VEGETATED WETLAND
	LAND UNDER WATER
	VERNAL POOL
	PERMANENT DISTURBANCE TO VEGETATED WETLAND
	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)
	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
	DISTURBANCE TO BLSF
	EXISTING TREE LINE
	LIMIT OF GRADING

REV.	DATE	DESCRIPTION	BY

Transportation Land Development
Environmental Services
101 Walnut St., P.O. Box 9151
Watertown, MA 02472
617 924 1770 FAX 617 924 2286

**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**

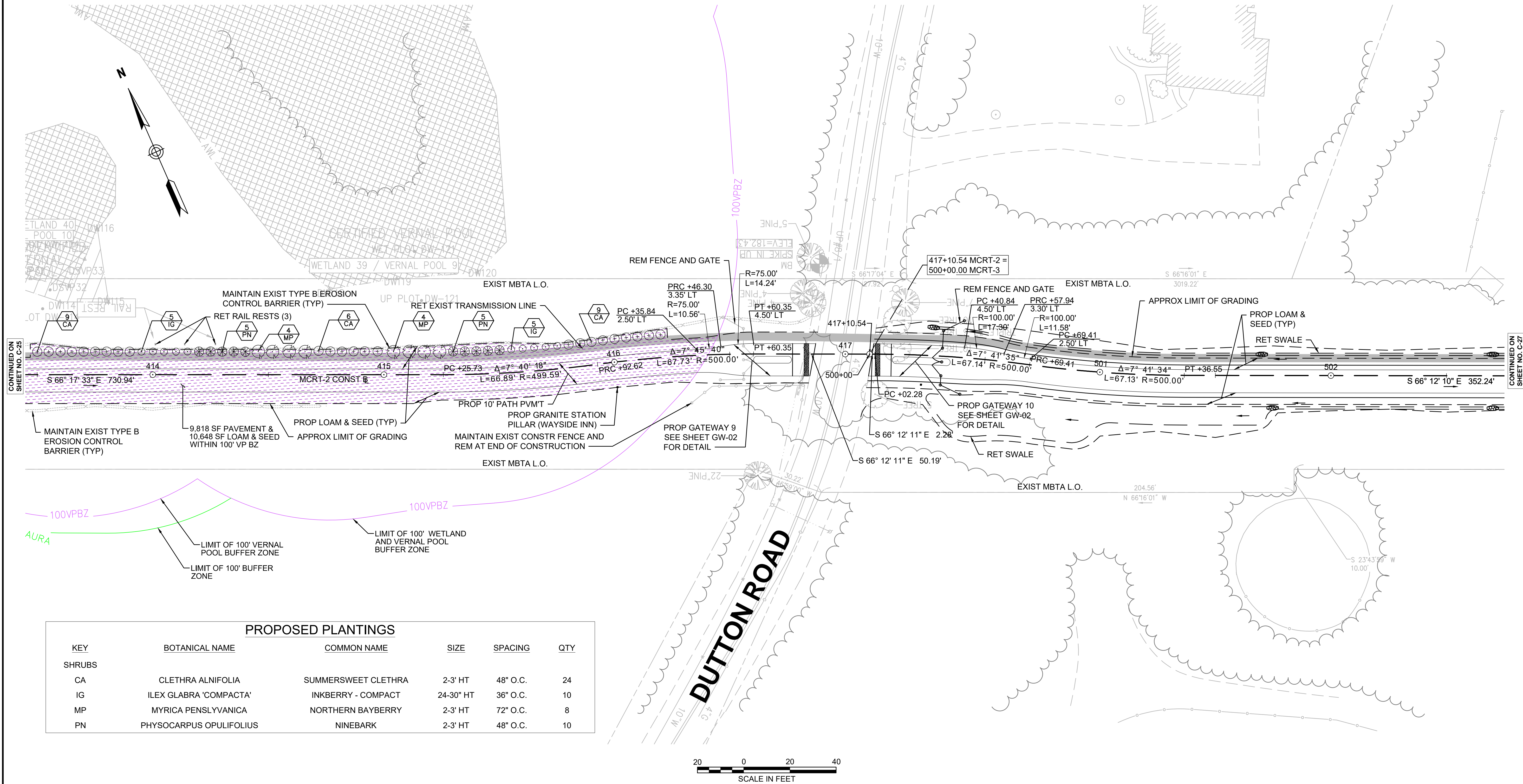
CONSTRUCTION PLANS

DESIGNER: JCR
CHECKED: SHK
DRAWN: JCR
CHECKED: TAL

CONT. P19-3295-D1A
ACC. XXXXXXXX

SCALE: 1" = 20'-0"
DATE: MAR 2020

SHEET NO.
C-24
24 OF 46



PROPOSED PLANTINGS

KEY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	QTY
SHRUBS					
CA	CLETHRA ALNIFOLIA	SUMMERSWEET CLETHRA	2-3' HT	48" O.C.	24
IG	ILEX GLABRA 'COMPACTA'	INKBERRY - COMPACT	24-30" HT	36" O.C.	10
MP	MYRICA PENNSYLVANICA	NORTHERN BAYBERRY	2-3' HT	72" O.C.	8
PN	PHYSOCARPUS OPULIFOLIUS	NINEBARK	2-3' HT	48" O.C.	10

NOTE:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).

ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
	ISOLATED VEGETATED WETLAND
	BORDERING VEGETATED WETLAND
	LAND UNDER WATER
	VERNAL POOL
	PERMANENT DISTURBANCE TO VEGETATED WETLAND
	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)
	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
	DISTURBANCE TO BLSF
	EXISTING TREE LINE
	LIMIT OF GRADING

REV.	DATE	DESCRIPTION	BY

Transportation Land Development
Environmental Services
101 Walnut St., P.O. Box 9151
Watertown, MA 02472
617 924 1770 FAX 617 924 2286

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

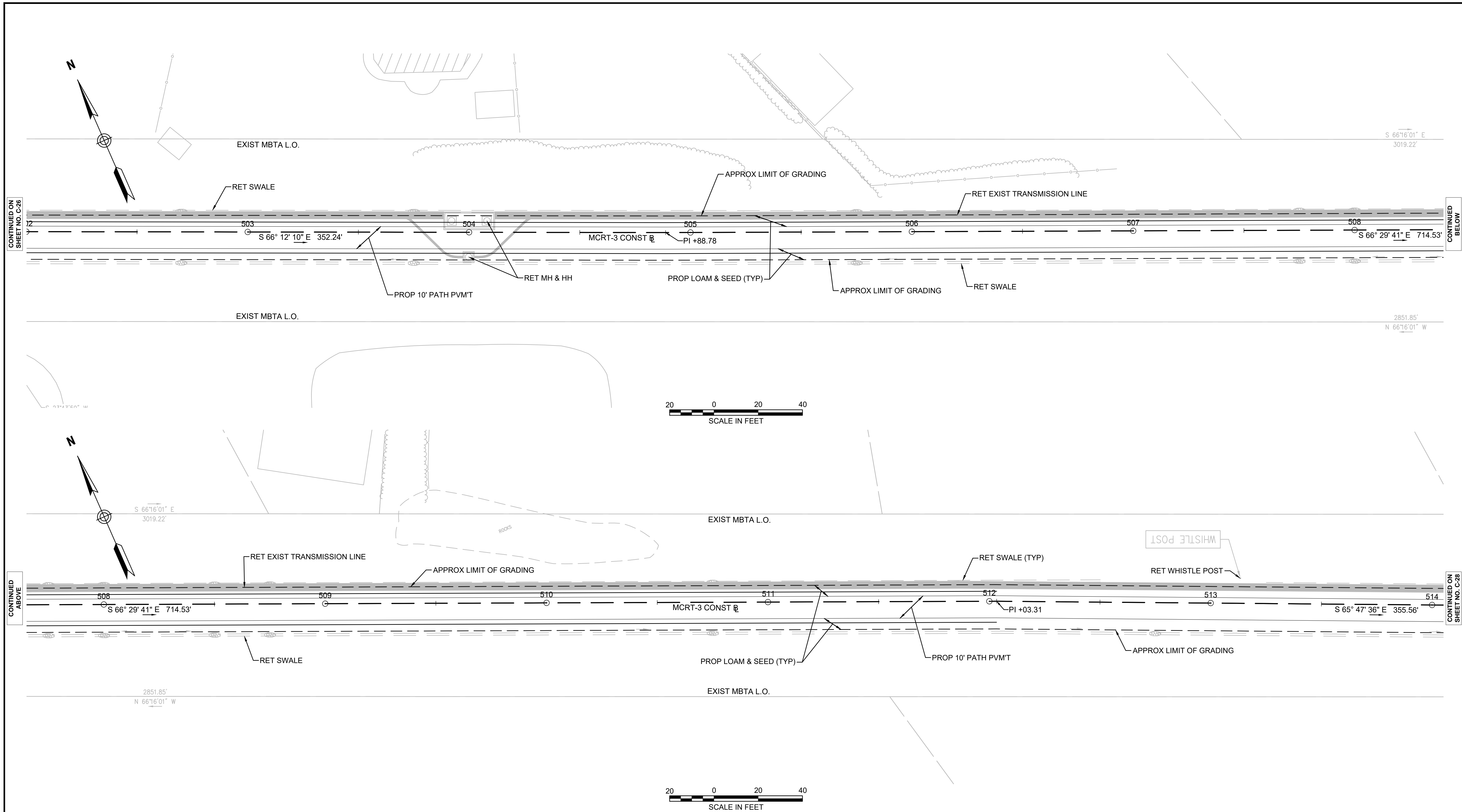
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CHECKED: SHK
DRAWN: JCR
CHECKED: TAL

CONSTRUCTION PLANS

CONT. P19-3295-D1A
ACC. XXXXXXXX

SCALE: 1" = 20'-0"
DATE: MAR 2020

SHEET NO.
C-26
26 OF 46



NOTE:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).

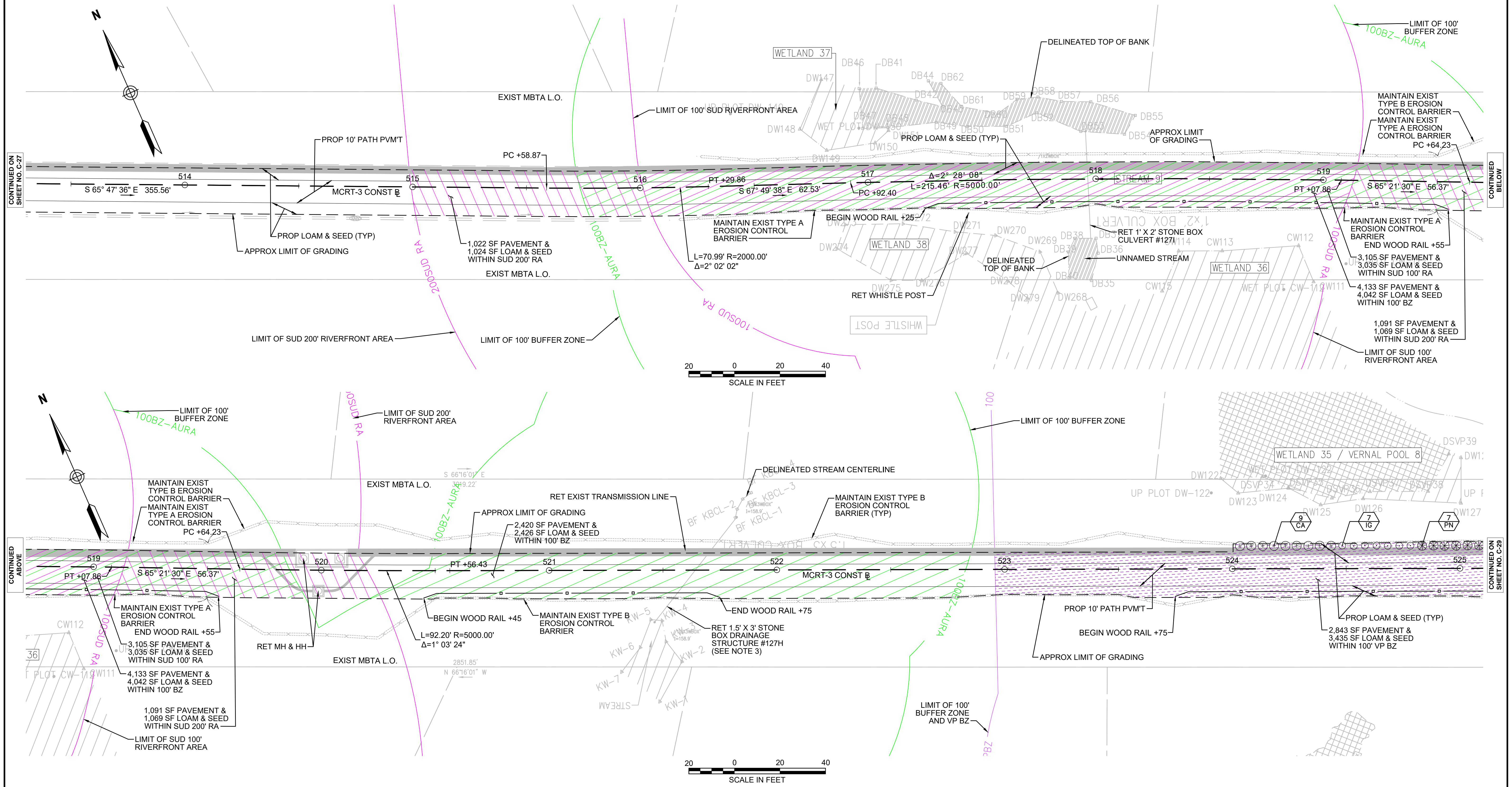
ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
	ISOLATED VEGETATED WETLAND
	BORDERING VEGETATED WETLAND
	LAND UNDER WATER
	VERNAL POOL
	PERMANENT DISTURBANCE TO VEGETATED WETLAND
	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)

HATCH	DESCRIPTION
	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
	DISTURBANCE TO BLSF
	EXISTING TREE LINE
	LIMIT OF GRADING

REV.	DATE	DESCRIPTION	BY

Transportation Land Development
Environmental Services
101 Walnut St., P.O. Box 9151
Watertown, MA 02472
617 924 1770 FAX 617 924 2286

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 CHECKED: SHK	CONSTRUCTION PLANS		SHEET NO.
DRAWN: JCR CHECKED: TAL	CONT. P19-3295-D1A ACC. XXXXXXXX	SCALE: 1" = 20'-0" DATE: MAR 2020	C-27 27 OF 46



NOTE:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).

ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
	ISOLATED VEGETATED WETLAND
	BORDERING VEGETATED WETLAND
	LAND UNDER WATER
	VERNAL POOL
	PERMANENT DISTURBANCE TO VEGETATED WETLAND
	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)
	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
	DISTURBANCE TO BLSF
	EXISTING TREE LINE
	LIMIT OF GRADING

REV.	DATE	DESCRIPTION	BY

Transportation Land Development
Environmental Services
101 Walnut St., P.O. Box 9151
Watertown, MA 02472
617 924 1770 FAX 617 924 2286

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

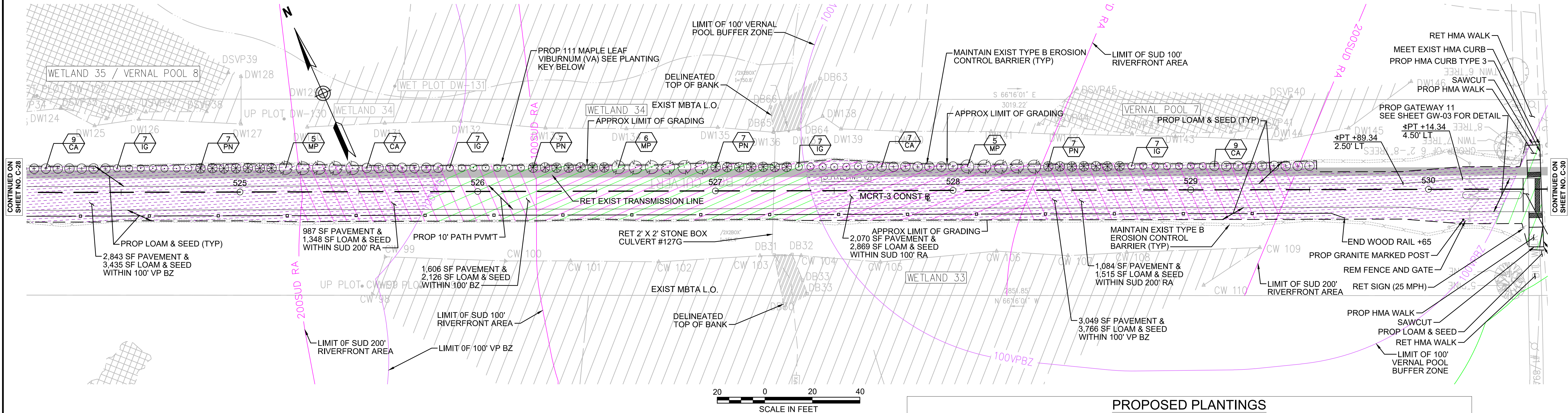
CONSTRUCTION PLANS

DESIGNER: JCR
CHECKED: SHK
DRAWN: JCR
CHECKED: TAL

CONT. P19-3295-D1A
ACC. XXXXXXXX

SCALE: 1" = 20'-0"
DATE: MAR 2020

SHEET NO.
C-28
28 OF 46



PROPOSED PLANTINGS					
KEY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	QTY
SHRUBS					
CA	CLETHRA ALNIFOLIA	SUMMERSWEET CLETHRA	2-3' HT	48" O.C.	32
IG	ILEX GLABRA 'COMPACTA'	INKBERRY - COMPACT	24-30" HT	36" O.C.	28
MP	MYRICA PENSLYVANICA	NORTHERN BAYBERRY	2-3' HT	72" O.C.	16
PN	PHYSOCARPUS OPULIFOLIUS	NINEBARK	2-3' HT	48" O.C.	28

NOTE:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).

ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
	ISOLATED VEGETATED WETLAND
	BORDERING VEGETATED WETLAND
	LAND UNDER WATER
	VERNAL POOL
	PERMANENT DISTURBANCE TO VEGETATED WETLAND
	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)
	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
	DISTURBANCE TO BLSF
	EXISTING TREE LINE
	LIMIT OF GRADING

REV.	DATE	DESCRIPTION	BY

Transportation Land Development
Environmental Services
101 Walnut St., P.O. Box 9151
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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

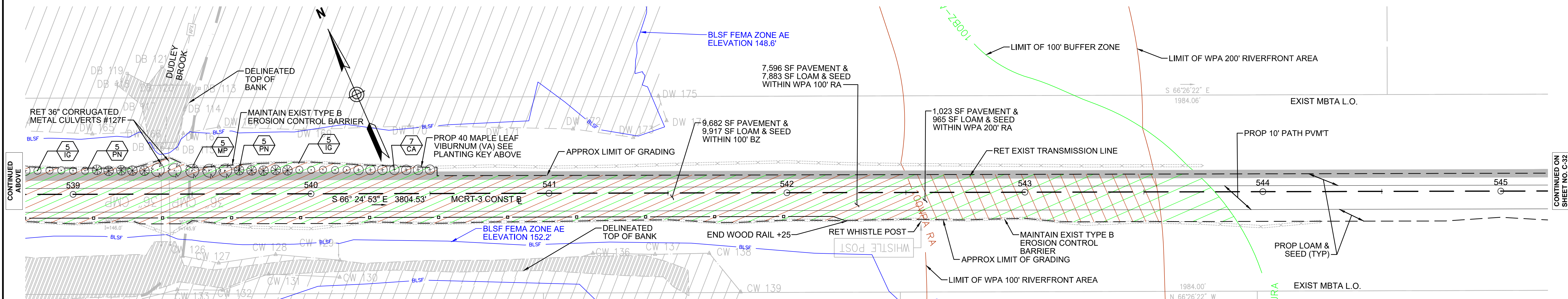
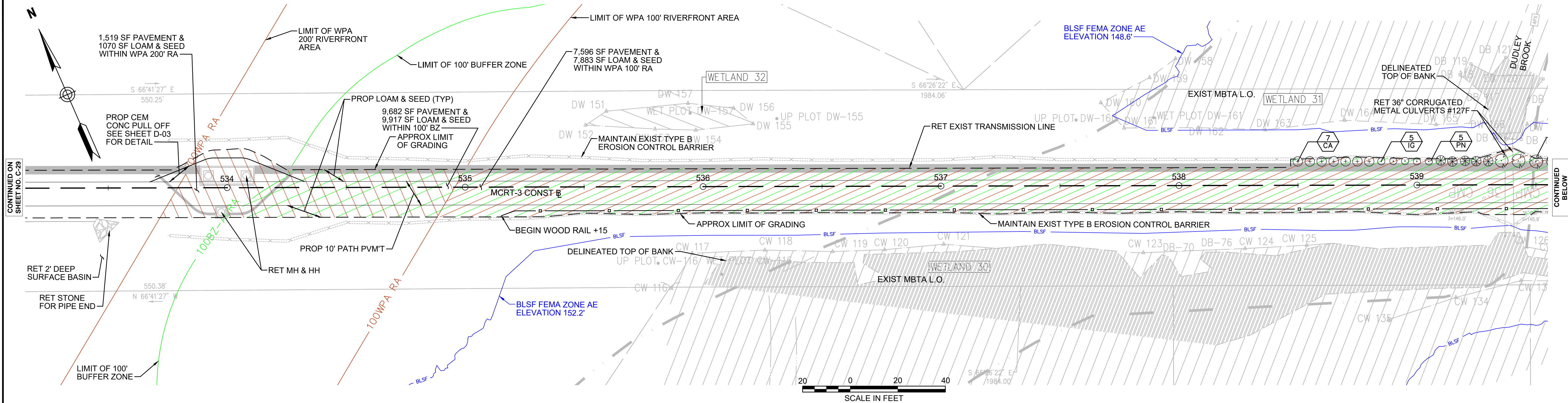
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DRAWN: JCR
CHECKED: TAL

CONSTRUCTION PLANS

CONT. P19-3295-D1A
ACC. XXXXXXXX

SCALE: 1" = 20'-0"
DATE: MAR 2020

SHEET NO.
C-29
29 OF 46



PROPOSED PLANTINGS					
KEY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	QTY
SHRUBS					
CA	CLETHRA ALNIFOLIA	SUMMERSWEET CLETHRA	2-3' HT	48" O.C.	14
IG	ILEX GLABRA 'COMPACTA'	INKBERRY - COMPACT	24-30" HT	36" O.C.	10
MP	MYRICA PENNSYLVANICA	NORTHERN BAYBERRY	2-3' HT	72" O.C.	5
PN	PHYSOCARPUS OPULIFOLIUS	NINEBARK	2-3' HT	48" O.C.	10

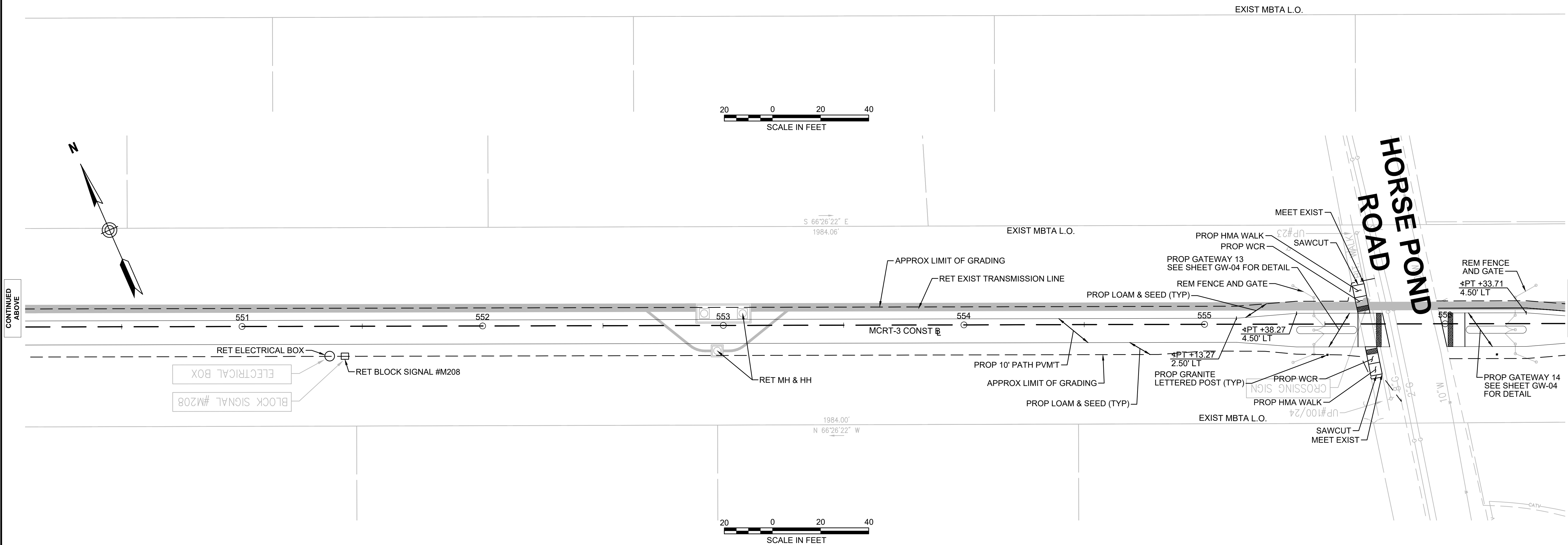
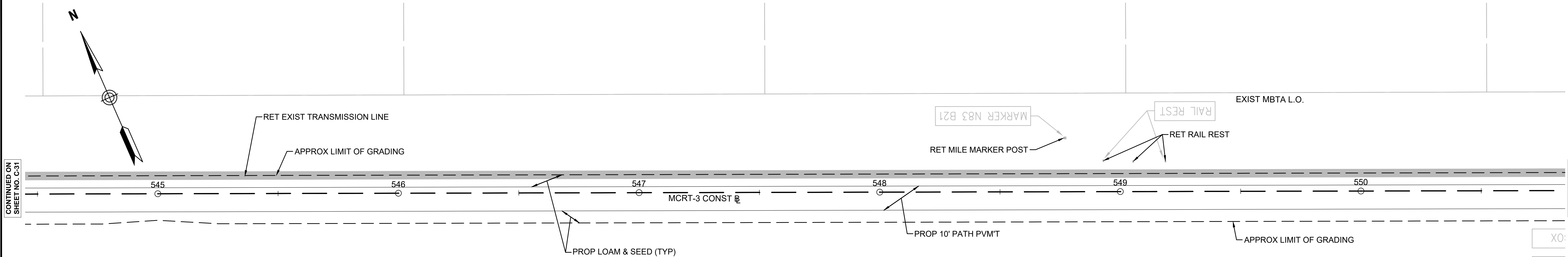
NOTE:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).

ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
	ISOLATED VEGETATED WETLAND
	BORDERING VEGETATED WETLAND
	LAND UNDER WATER
	VERNAL POOL
	PERMANENT DISTURBANCE TO VEGETATED WETLAND
	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)
	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
	DISTURBANCE TO BLSF
	EXISTING TREE LINE
	LIMIT OF GRADING

REV.	DATE	DESCRIPTION	BY

Transportation Land Development
Environmental Services
101 Walnut St., P.O. Box 9151
Watertown, MA 02472
617 924 1770 FAX 617 924 2286

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 PLANS			
DESIGNER: JCR	CONT. P19-3295-D1A		SHEET NO.
CHECKED: SHK	ACC. XXXXXXXX		C-31
DRAWN: JCR	SCALE: 1" = 20'-0"		31 OF 46
CHECKED: TAL	DATE: MAR 2020		



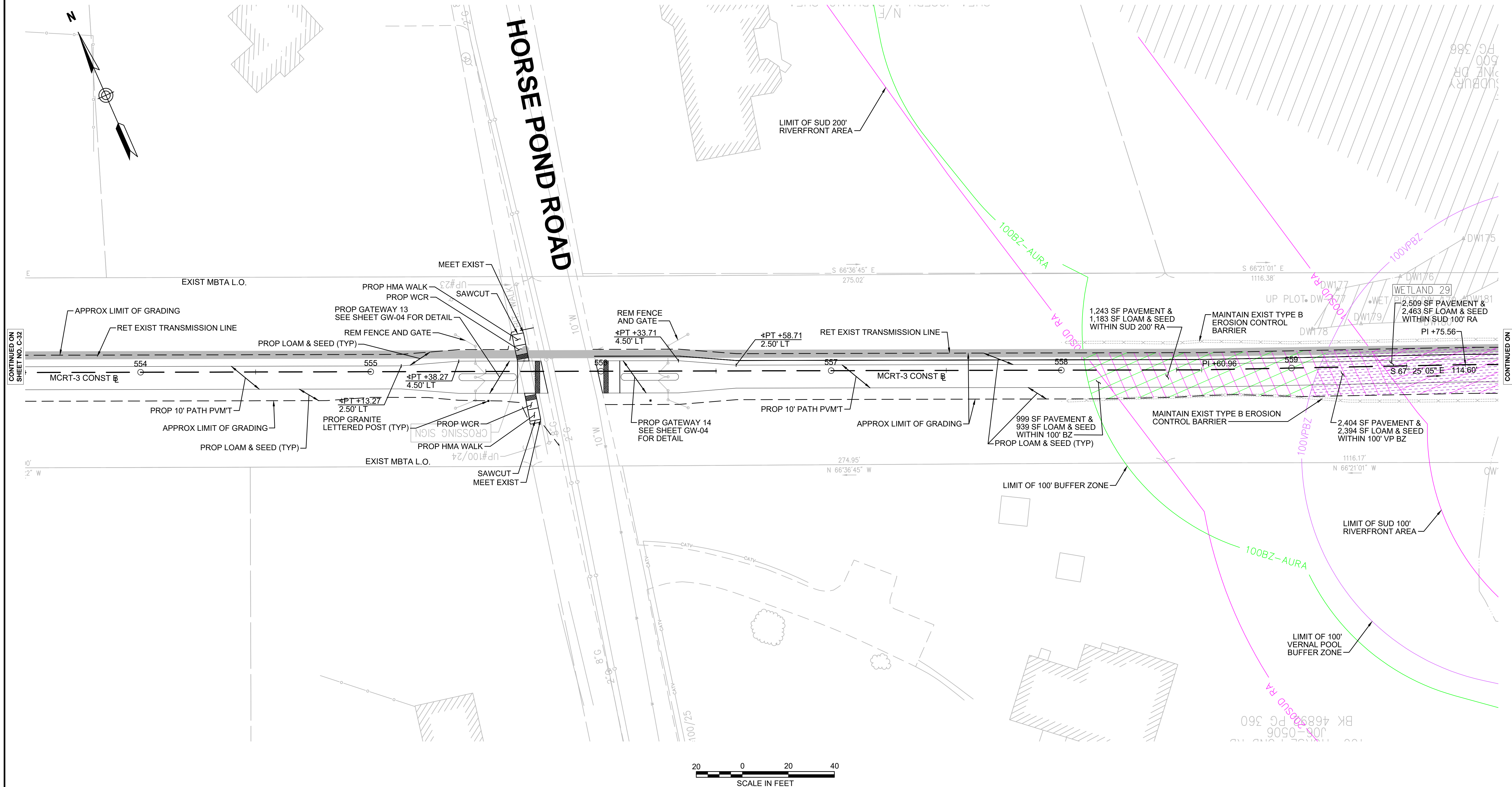
NOTE:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).

ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
	ISOLATED VEGETATED WETLAND
	BORDERING VEGETATED WETLAND
	LAND UNDER WATER
	VERNAL POOL
	PERMANENT DISTURBANCE TO VEGETATED WETLAND
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	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
	DISTURBANCE TO BLSF
	EXISTING TREE LINE
	LIMIT OF GRADING

REV.	DATE	DESCRIPTION	BY

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Environmental Services
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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 CHECKED: SHK DRAWN: JCR CHECKED: TAL	CONSTRUCTION PLANS CONT. P19-3295-D1A ACC. XXXXXXXX SCALE: 1" = 20'-0" DATE: MAR 2020	SHEET NO. C-32 32 OF 46



NOTE:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).

ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
	ISOLATED VEGETATED WETLAND
	BORDERING VEGETATED WETLAND
	LAND UNDER WATER
	VERNAL POOL
	PERMANENT DISTURBANCE TO VEGETATED WETLAND
	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)
	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
	DISTURBANCE TO BLSF
	EXISTING TREE LINE
	LIMIT OF GRADING

REV.	DATE	DESCRIPTION	BY

Transportation Land Development
Environmental Services
101 Walnut St., P.O. Box 9151
Watertown, MA 02472
617 924 1770 FAX 617 924 2286

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

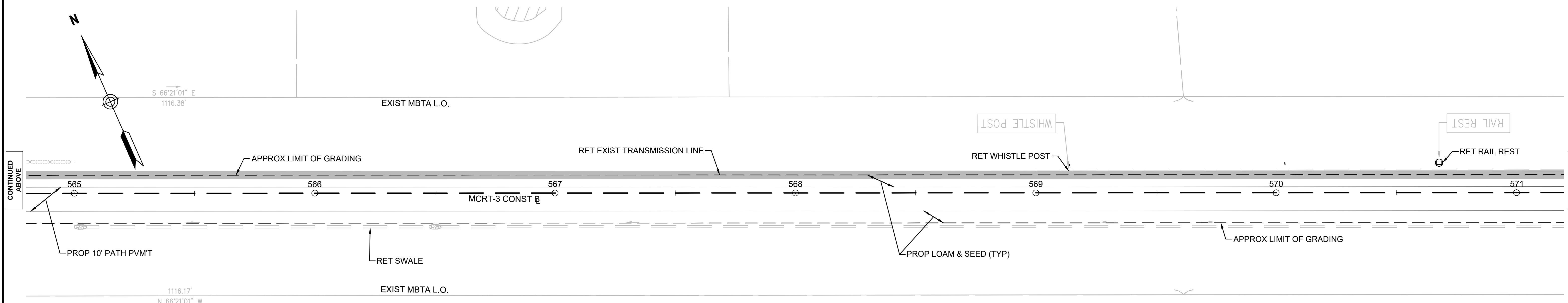
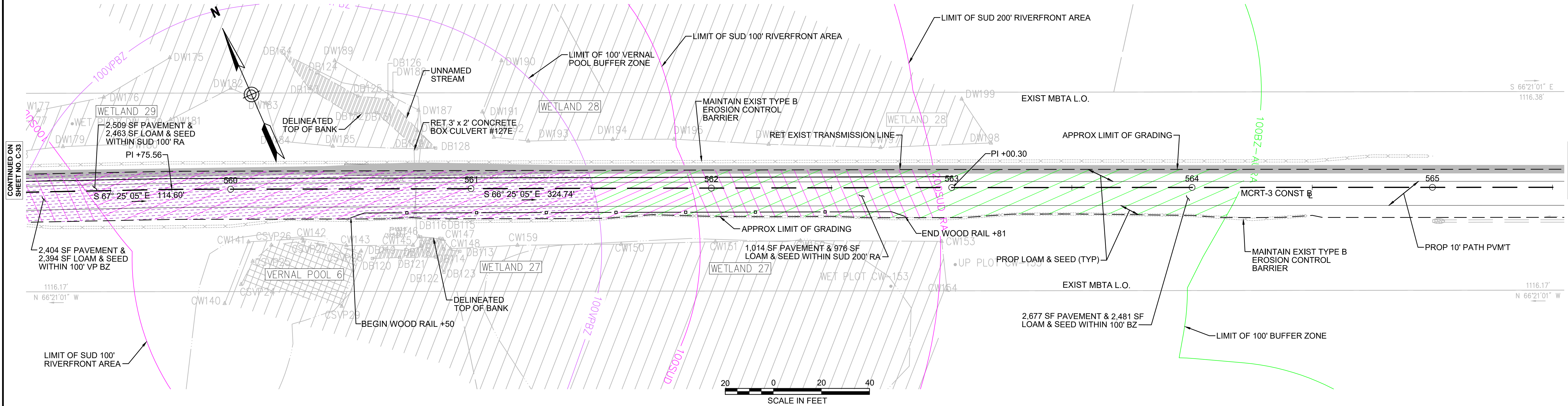
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CHECKED: SHK

DRAWN: JCR
CHECKED: TAL

CONT. P19-3295-D1A
ACC. XXXXXXXX

SCALE: 1" = 20'-0"
DATE: MAR 2020

SHEET NO.
C-33
33 OF 46



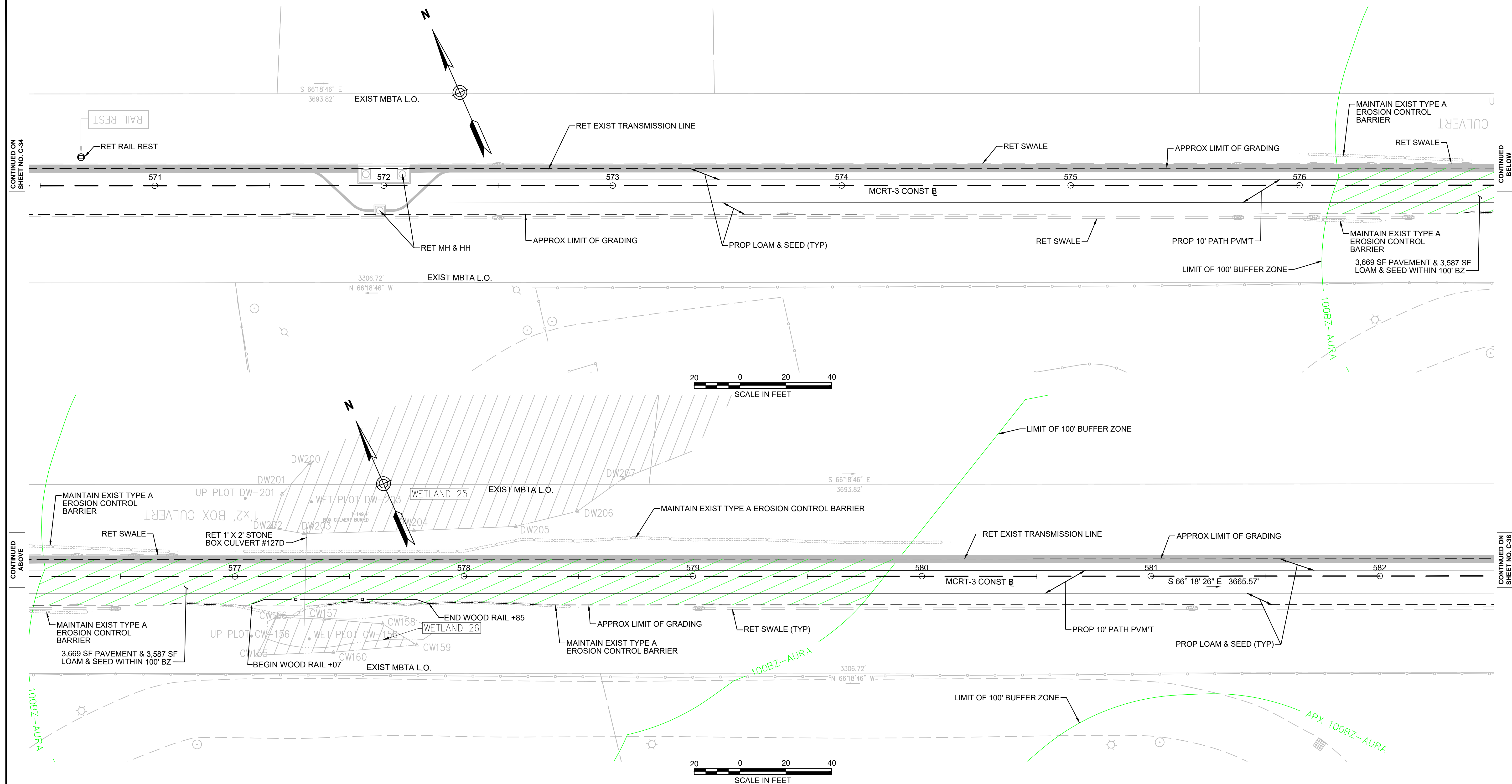
NOTE:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).

ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
	ISOLATED VEGETATED WETLAND
	BORDERING VEGETATED WETLAND
	LAND UNDER WATER
	VERNAL POOL
	PERMANENT DISTURBANCE TO VEGETATED WETLAND
	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)
	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
	DISTURBANCE TO BLSF
	EXISTING TREE LINE
	LIMIT OF GRADING

REV.	DATE	DESCRIPTION	BY

Transportation Land Development
Environmental Services
101 Walnut St., P.O. Box 9151
Watertown, MA 02472
617 924 1770 FAX 617 924 2286

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 PLANS		SHEET NO.
CHECKED: SHK	CONT. P19-3295-D1A		C-34
DRAWN: JCR	ACC. XXXXXXXX	SCALE: 1" = 20'-0"	34 OF 46
CHECKED: TAL	DATE: MAR 2020		



NOTE:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).

ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
	ISOLATED VEGETATED WETLAND
	BORDERING VEGETATED WETLAND
	LAND UNDER WATER
	VERNAL POOL
	PERMANENT DISTURBANCE TO VEGETATED WETLAND
	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)

HATCH	DESCRIPTION
	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
	DISTURBANCE TO BLSF
	EXISTING TREE LINE
	LIMIT OF GRADING

REV	DATE	DESCRIPTION	BY



Transportation Land Development
Environmental Services
101 Walnut St., P.O. Box 9151
Watertown, MA 02472
617 924 1770 FAX 617 924 2286

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 PLANS

DESIGNER: JCR
CHECKED: SHK
DRAWN: JCR
CHECKED: TAL

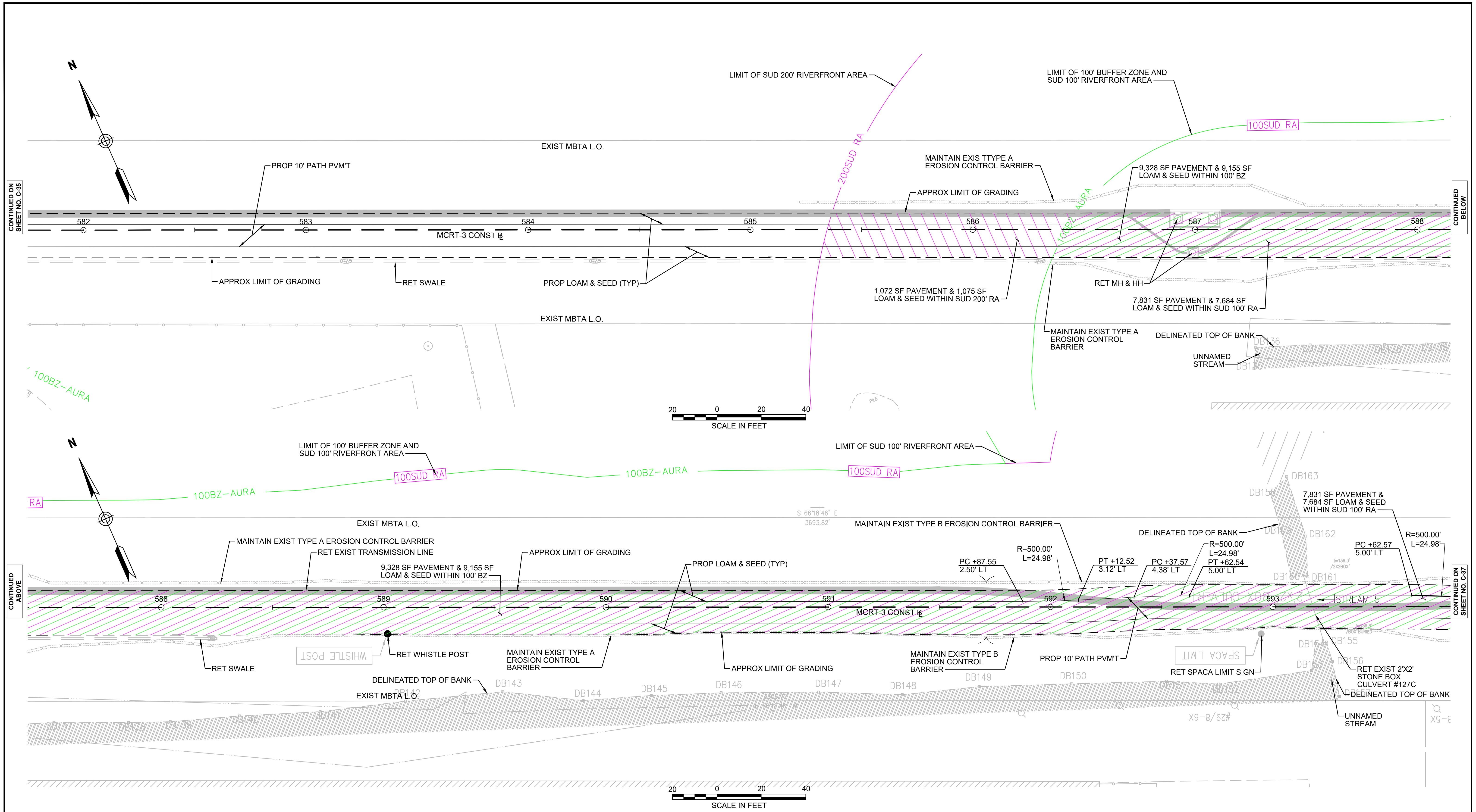
CONT.	P19-3295-D1A
ACC.	XXXXXXXX

SCALE: 1" = 20'-0"
DATE: MAR 2020

SHEET NO.

C-35

QE 46



NOTE:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).

ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
	ISOLATED VEGETATED WETLAND
	BORDERING VEGETATED WETLAND
	LAND UNDER WATER
	VERNAL POOL
	PERMANENT DISTURBANCE TO VEGETATED WETLAND
	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)
	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
	DISTURBANCE TO BLSF
	EXISTING TREE LINE
	LIMIT OF GRADING

REV.	DATE	DESCRIPTION	BY

Transportation Land Development
Environmental Services
101 Walnut St., P.O. Box 9151
Watertown, MA 02472
617 924 1770 FAX 617 924 2286

**COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION AND RECREATION
DIVISION OF PLANNING AND ENGINEERING**

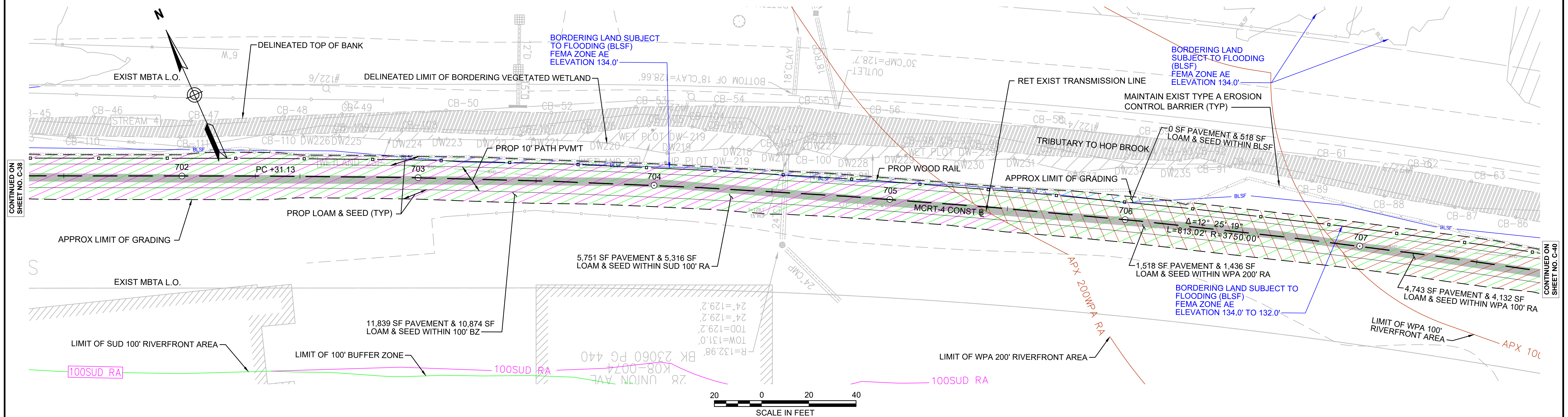
MASS CENTRAL RAIL TRAIL - WAYSIDE

**MASS CENTRAL RAIL TRAIL
HUDSON, STOW, MARLBOROUGH & SUDBURY, MA**

CONSTRUCTION PLANS

DESIGNER: JCR	CHECKED: SHK	DRAWN: JCR	CHECKED: TAL
CONT. P19-3295-D1A		ACC. XXXXXXXX	
SCALE: 1" = 20'-0"		DATE: MAR 2020	

SHEET NO. C-36
36 OF 46



NOTE:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).

ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
	ISOLATED VEGETATED WETLAND
	BORDERING VEGETATED WETLAND
	LAND UNDER WATER
	VERNAL POOL
	PERMANENT DISTURBANCE TO VEGETATED WETLAND
	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)
	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
	DISTURBANCE TO BLSF
	EXISTING TREE LINE
	LIMIT OF GRADING

REV.	DATE	DESCRIPTION	BY

Transportation Land Development
Environmental Services
101 Walnut St., P.O. Box 9151
Watertown, MA 02472
617 924 1770 FAX 617 924 2286

**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
CHECKED: SHK

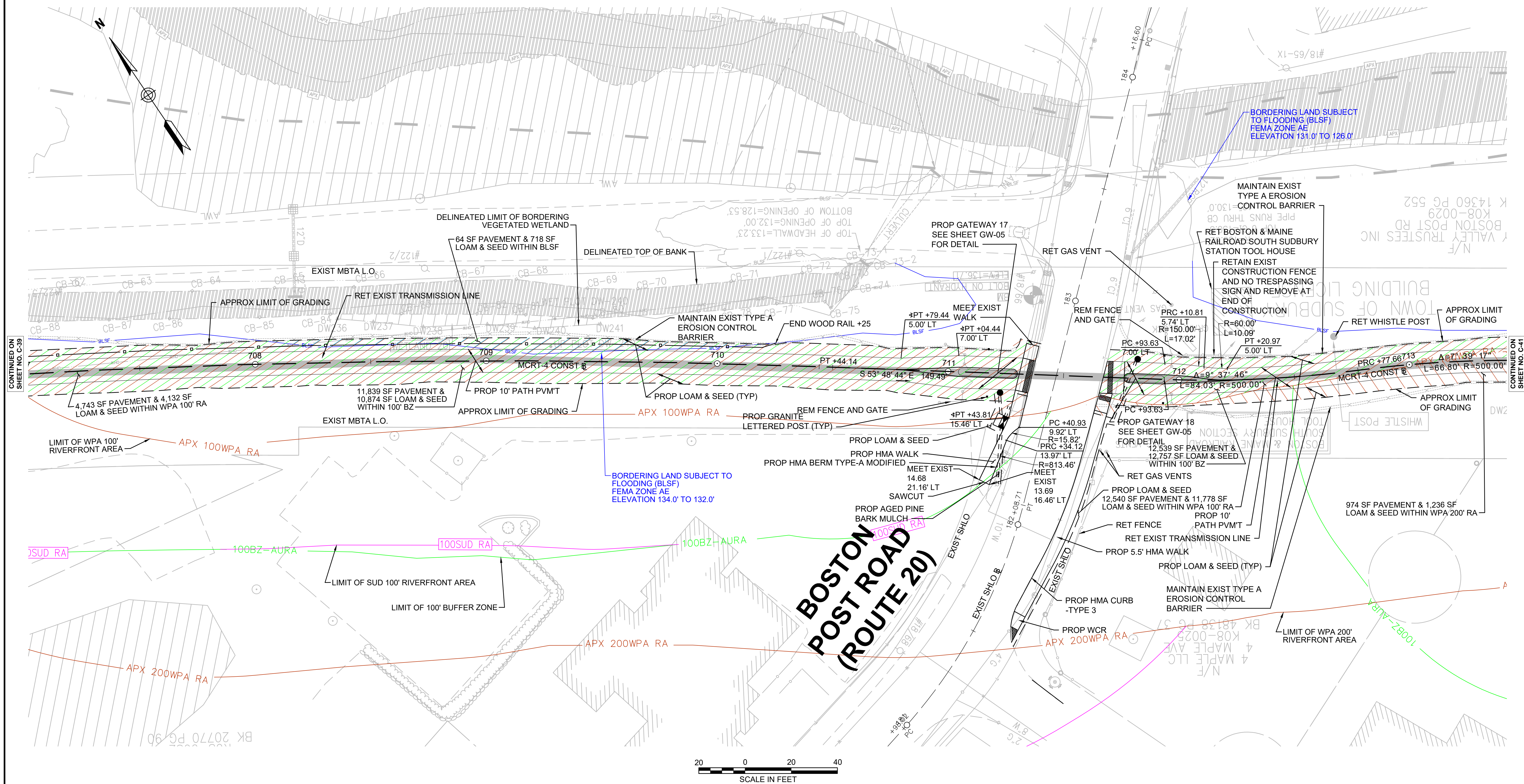
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CHECKED: TAL

CONSTRUCTION PLANS

CONT. P19-3295-D1A
ACC. XXXXXXXX

SCALE: 1" = 20'-0"
DATE: MAR 2020

SHEET NO.
C-39
39 OF 46



NOTE:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).

ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
	ISOLATED VEGETATED WETLAND
	BORDERING VEGETATED WETLAND
	LAND UNDER WATER
	VERNAL POOL
	PERMANENT DISTURBANCE TO VEGETATED WETLAND
	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)
	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
	DISTURBANCE TO BLSF
	EXISTING TREE LINE
	LIMIT OF GRADING

REV.	DATE	DESCRIPTION	BY

Transportation Land Development
Environmental Services
101 Walnut St., P.O. Box 9151
Watertown, MA 02472
617 924 1770 FAX 617 924 2286

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

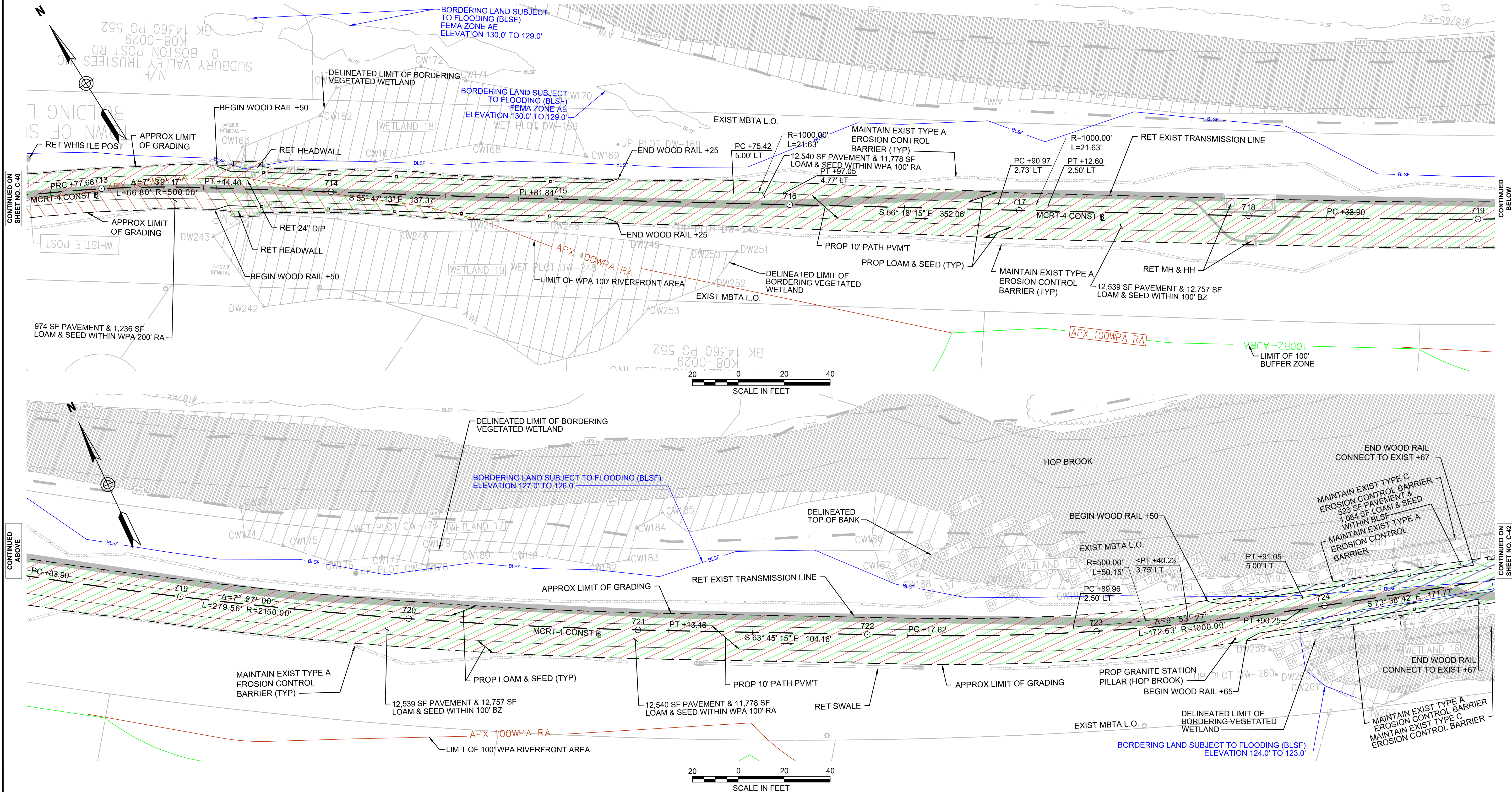
CONSTRUCTION PLANS

DESIGNER: JCR
CHECKED: SHK
DRAWN: JCR
CHECKED: TAL

CONT. P19-3295-D1A
ACC. XXXXXXXX

SCALE: 1" = 20'-0"
DATE: MAR 2020

SHEET NO.
C-40
40 OF 46



NOTE:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).

ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
	ISOLATED VEGETATED WETLAND
	BORDERING VEGETATED WETLAND
	LAND UNDER WATER
	VERNAL POOL
	PERMANENT DISTURBANCE TO VEGETATED WETLAND
	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)
	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
	DISTURBANCE TO BLSF
	EXISTING TREE LINE
	LIMIT OF GRADING

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**

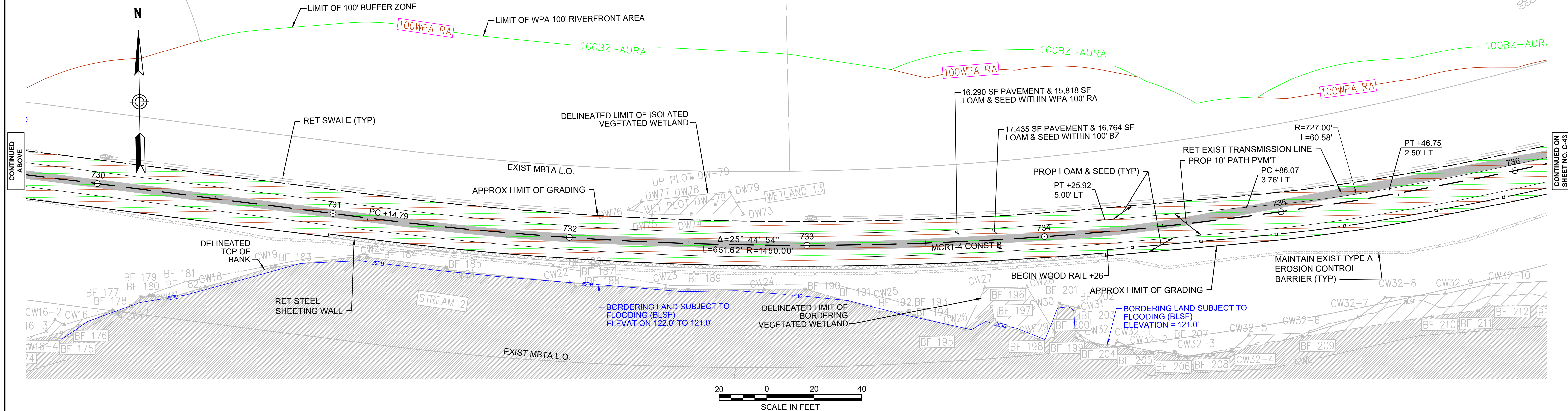
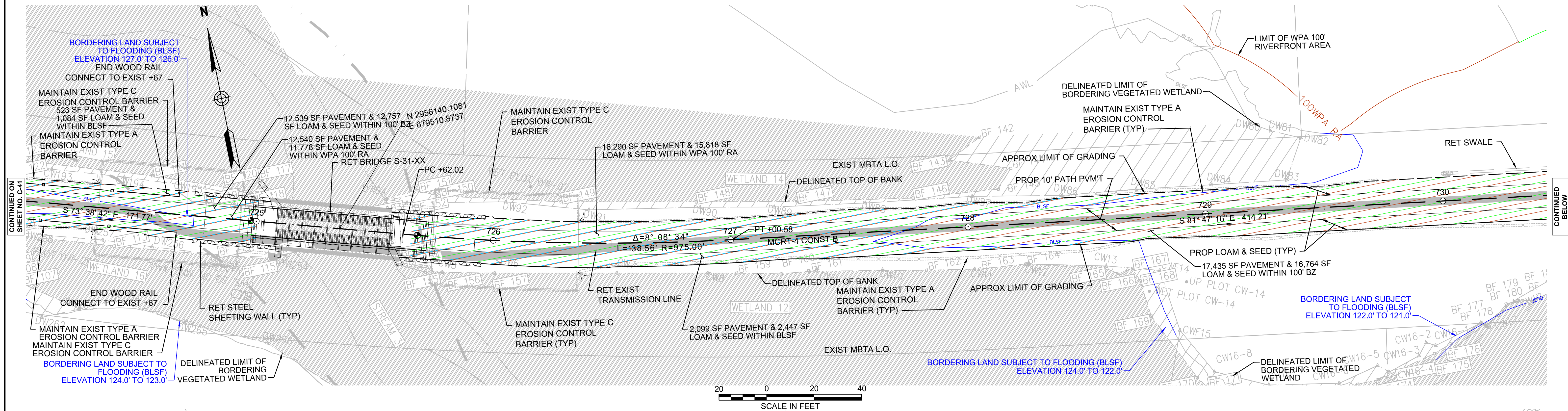
CONSTRUCTION PLANS

DESIGNER: JCR
CHECKED: SHK
DRAWN: JCR
CHECKED: TAL

CONT. P19-3295-D1A
ACC. XXXXXXXX

SCALE: 1" = 20'-0"
DATE: MAR 2020

SHEET NO. C-41
41 OF 46



NOTE:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).

ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
	ISOLATED VEGETATED WETLAND
	BORDERING VEGETATED WETLAND
	LAND UNDER WATER
	VERNAL POOL
	PERMANENT DISTURBANCE TO VEGETATED WETLAND
	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)
	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
	DISTURBANCE TO BLSF
	EXISTING TREE LINE
	LIMIT OF GRADING

REV.	DATE	DESCRIPTION	BY

Transportation Land Development
Environmental Services
101 Walnut St., P.O. Box 9151
Watertown, MA 02472
617 924 1770 FAX 617 924 2286

**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**

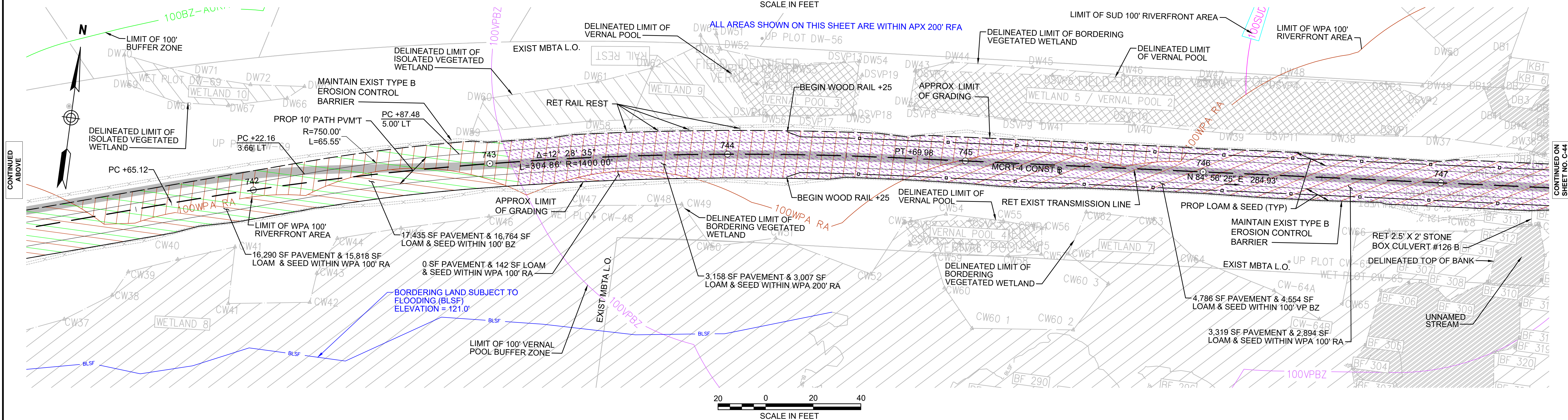
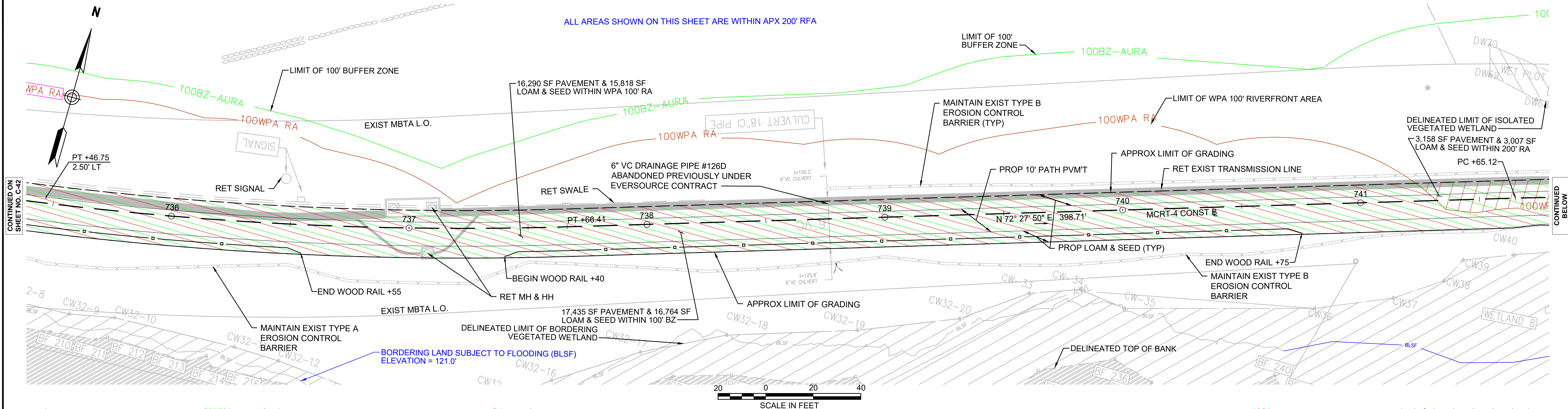
CONSTRUCTION PLANS

DESIGNER: JCR
CHECKED: SHK
DRAWN: JCR
CHECKED: TAL

CONT. P19-3295-D1A
ACC. XXXXXXXX

SCALE: 1" = 20'-0"
DATE: MAR 2020

SHEET NO.
C-42
42 OF 46



NOTE:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).

ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
	ISOLATED VEGETATED WETLAND
	BORDERING VEGETATED WETLAND
	LAND UNDER WATER
	VERNAL POOL
	PERMANENT DISTURBANCE TO VEGETATED WETLAND
	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)
	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
	DISTURBANCE TO BLSF
	EXISTING TREE LINE
	LIMIT OF GRADING

REV.	DATE	DESCRIPTION	BY

Transportation Land Development
Environmental Services
101 Walnut St., P.O. Box 9151
Watertown, MA 02472
617 924 1770 FAX 617 924 2286

**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**

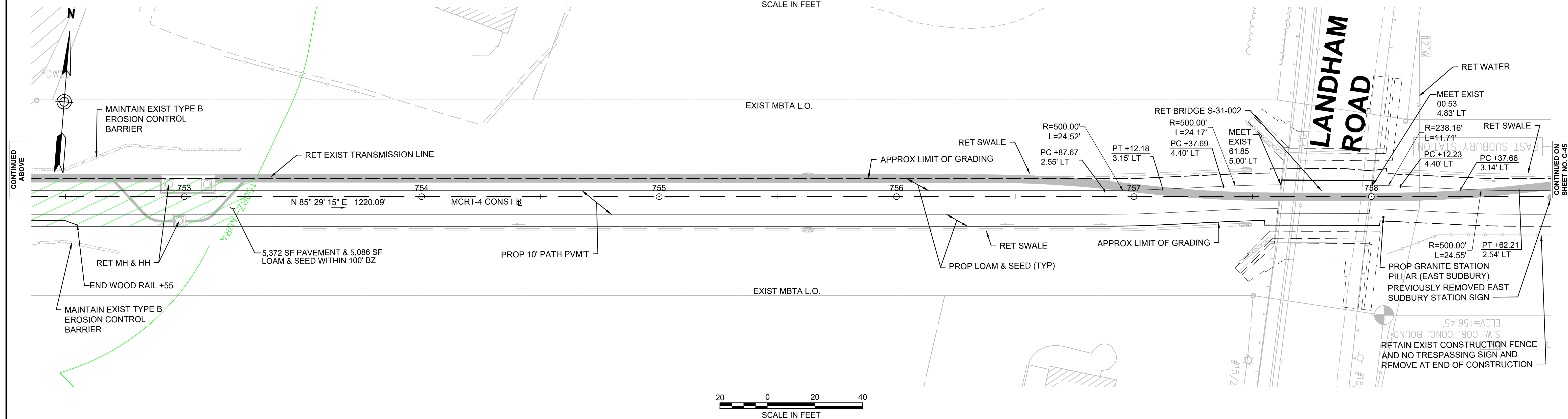
CONSTRUCTION PLANS

DESIGNER: JCR
CHECKED: SHK
DRAWN: JCR
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CONT. P19-3295-D1A
ACC. XXXXXXXX

SCALE: 1" = 20'-0"
DATE: MAR 2020

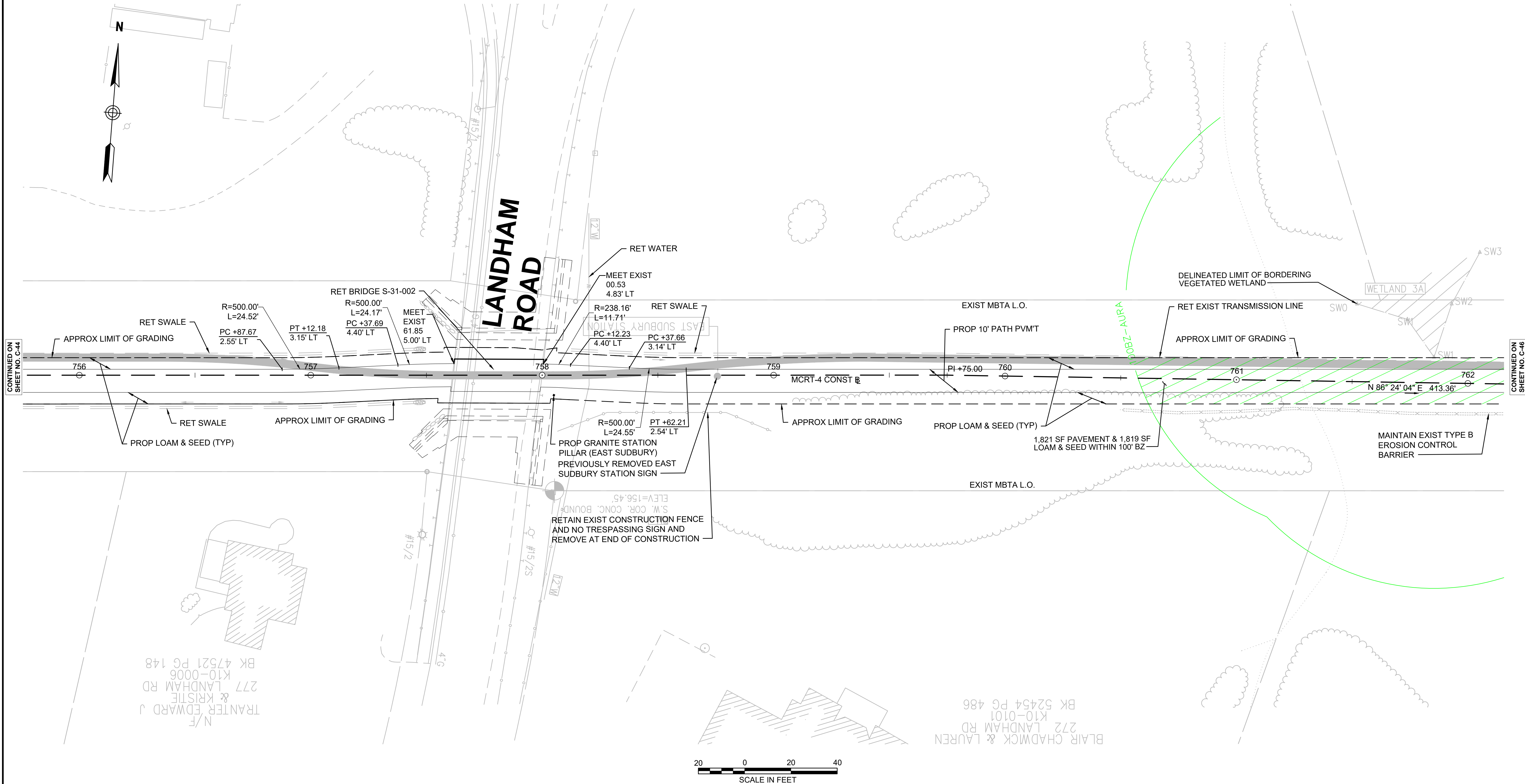
SHEET NO.
C-43
43 OF 46



ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
	ISOLATED VEGETATED WETLAND
	BORDERING VEGETATED WETLAND
	LAND UNDER WATER
	VERNAL POOL
	PERMANENT DISTURBANCE TO VEGETATED WETLAND
	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)

HATCH	DESCRIPTION
	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
	DISTURBANCE TO SUBBURY 200' RIVERFRONT AREA (SUD 200' RA)
	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
	DISTURBANCE TO SUBBURY 100' RIVERFRONT AREA (SUD 100' RA)
	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
	DISTURBANCE TO BLSF
	EXISTING TREE LINE
	LIMIT OF GRADING

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			
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CONT. P19-3295-D1A ACC. XXXXXXXx	SCALE: 1" = 20'-0" DATE: MAR 2020		



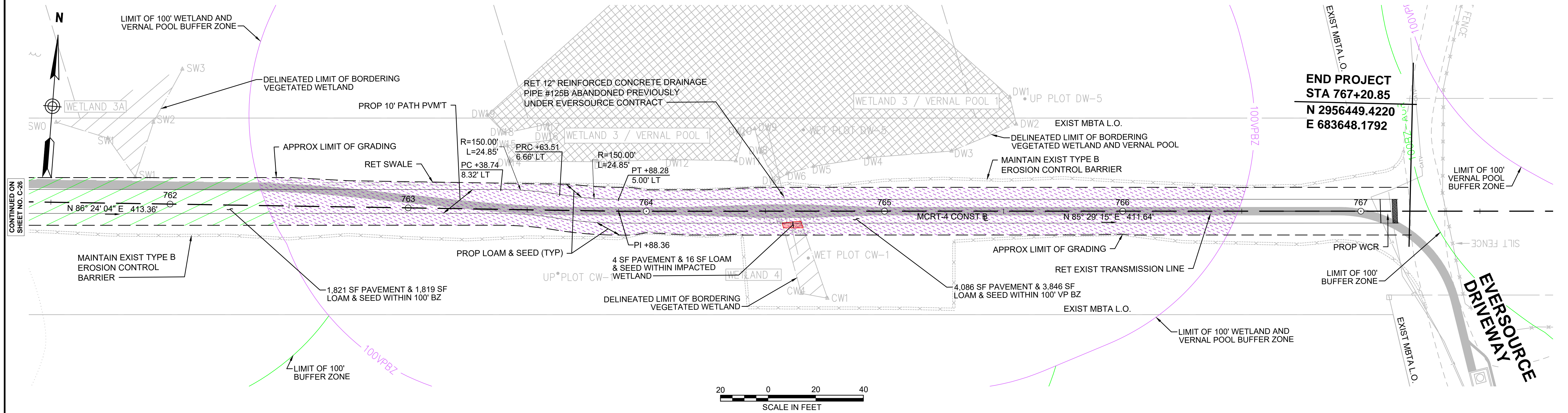
NOTE:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).

ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
	ISOLATED VEGETATED WETLAND
	BORDERING VEGETATED WETLAND
	LAND UNDER WATER
	VERNAL POOL
	PERMANENT DISTURBANCE TO VEGETATED WETLAND
	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)
	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
	DISTURBANCE TO BLSF EXISTING TREE LINE
	LIMIT OF GRADING

REV.	DATE	DESCRIPTION	BY

Transportation Land Development
Environmental Services
101 Walnut St., P.O. Box 9151
Watertown, MA 02472
617 924 1770 FAX 617 924 2286

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 CHECKED: SHK	CONSTRUCTION PLANS		SHEET NO.
DRAWN: JCR CHECKED: TAL	CONT. P19-3295-D1A ACC. XXXXXXXX	SCALE: 1" = 20'-0" DATE: MAR 2020	C-45 45 OF 46



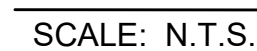
NOTE:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).

ENVIRONMENTAL IMPACTS LEGEND	
HATCH	DESCRIPTION
	ISOLATED VEGETATED WETLAND
	BORDERING VEGETATED WETLAND
	LAND UNDER WATER
	VERNAL POOL
	PERMANENT DISTURBANCE TO VEGETATED WETLAND
	DISTURBANCE TO 100' VERNAL POOL BUFFER ZONE (100' VP BZ)
	DISTURBANCE TO WPA 200' RIVERFRONT AREA (WPA 200' RA)
	DISTURBANCE TO SUDBURY 200' RIVERFRONT AREA (SUD 200' RA)
	DISTURBANCE TO WPA 100' RIVERFRONT AREA (WPA 100' RA)
	DISTURBANCE TO SUDBURY 100' RIVERFRONT AREA (SUD 100' RA)
	DISTURBANCE TO 100' BUFFER ZONE (100' BZ-AURA)
	DISTURBANCE TO BLSF
	EXISTING TREE LINE
	LIMIT OF GRADING

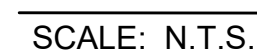
REV.	DATE	DESCRIPTION	BY

Transportation Land Development
Environmental Services
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Watertown, MA 02472
617 924 1770 FAX 617 924 2286

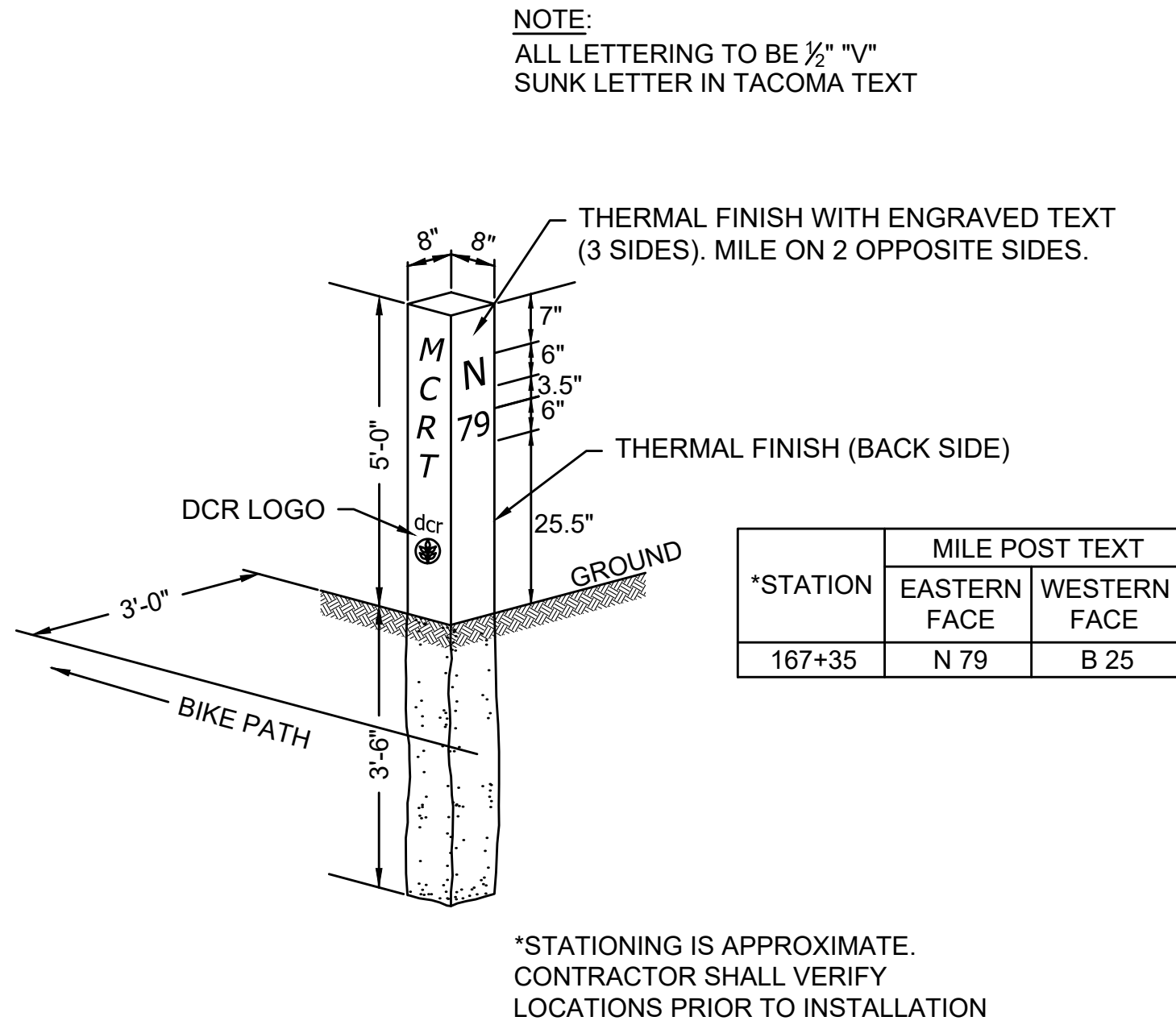
COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION DIVISION OF PLANNING AND ENGINEERING	
MASS CENTRAL RAIL TRAIL - WAYSIDE	
MASS CENTRAL RAIL TRAIL HUDSON, STOW, MARLBOROUGH & SUDBURY, MA	
DESIGNER: JCR CHECKED: SHK	SHEET NO. C-46
DRAWN: JCR CHECKED: TAL	CONSTRUCTION PLANS
CONT. P19-3295-D1A ACC. XXXXXXXX	SCALE: 1" = 20'-0" DATE: MAR 2020
46 OF 46	



SIT ROOT BALL ON EXISTING
UNDISTURBED SOIL OR ON
COMPACTED SUBGRADE

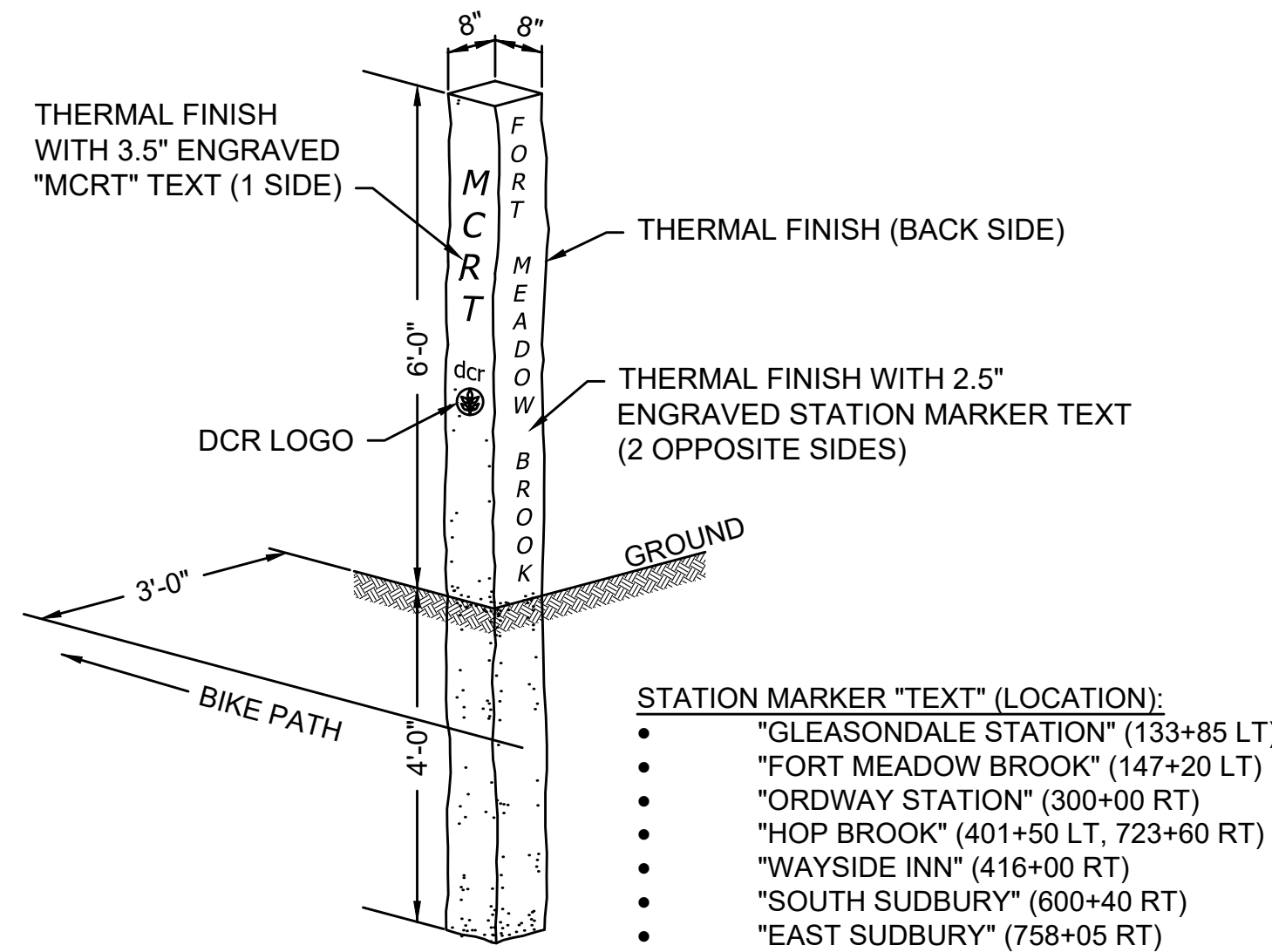


**COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION AND RECREATION
DIVISION OF PLANNING AND ENGINEERING**



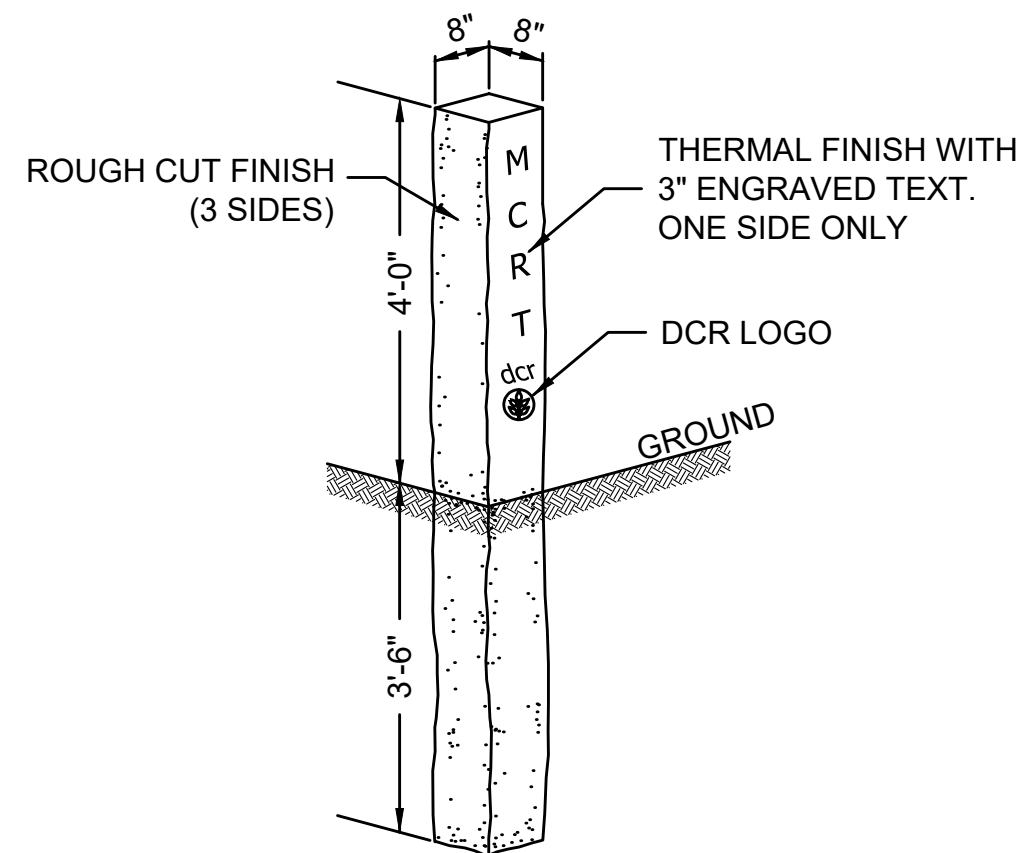
GRANITE MILE POST

SCALE: N.T.S.



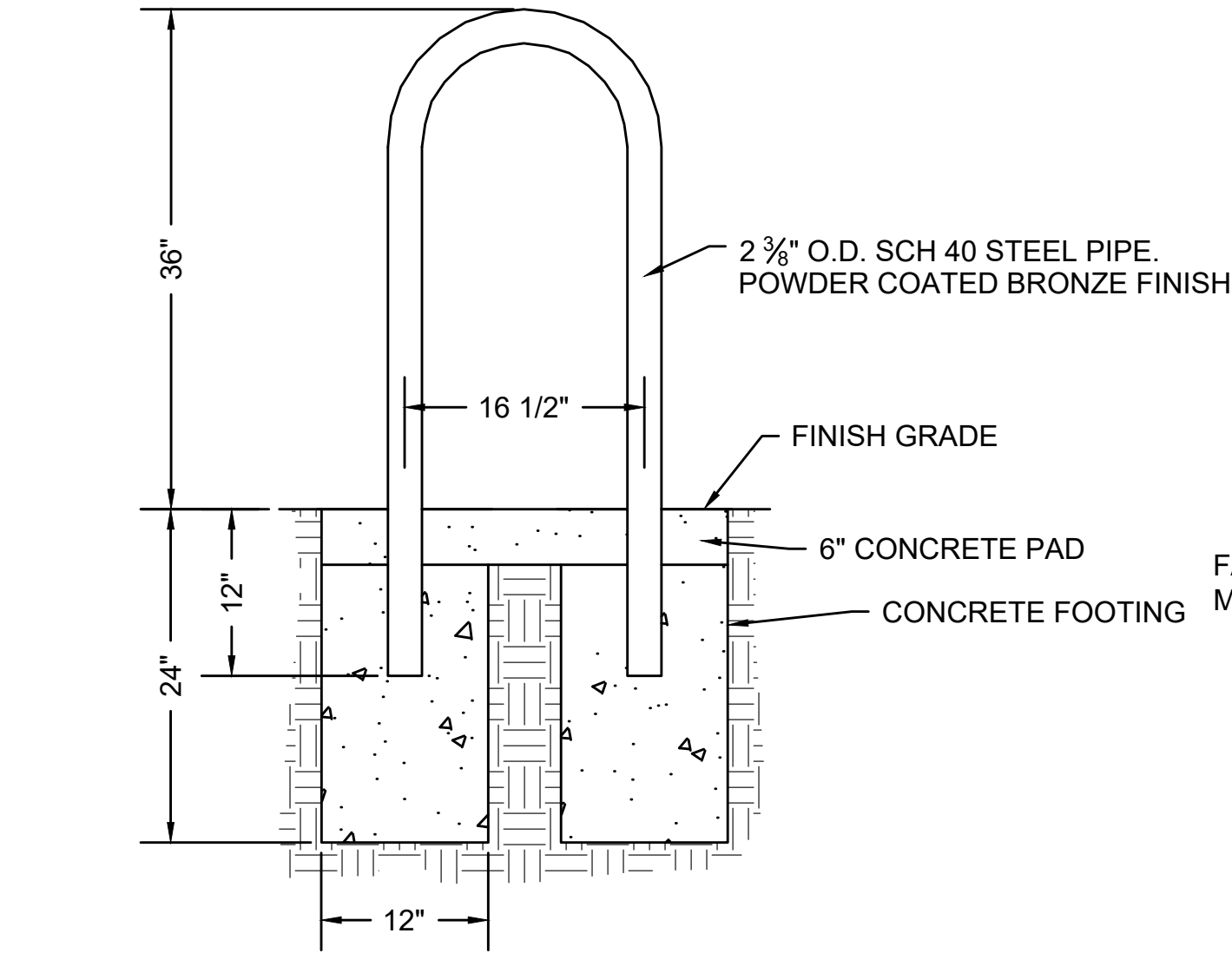
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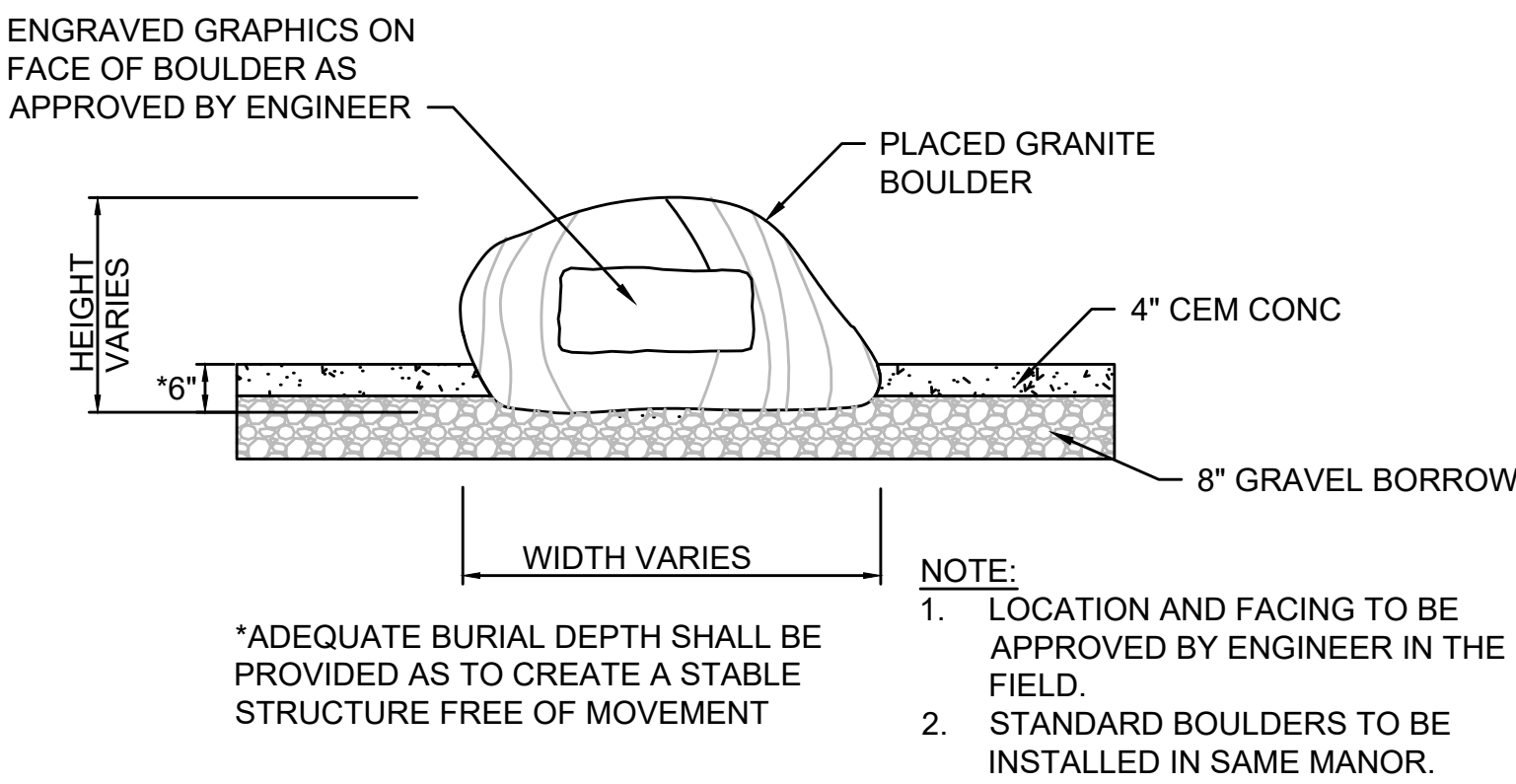
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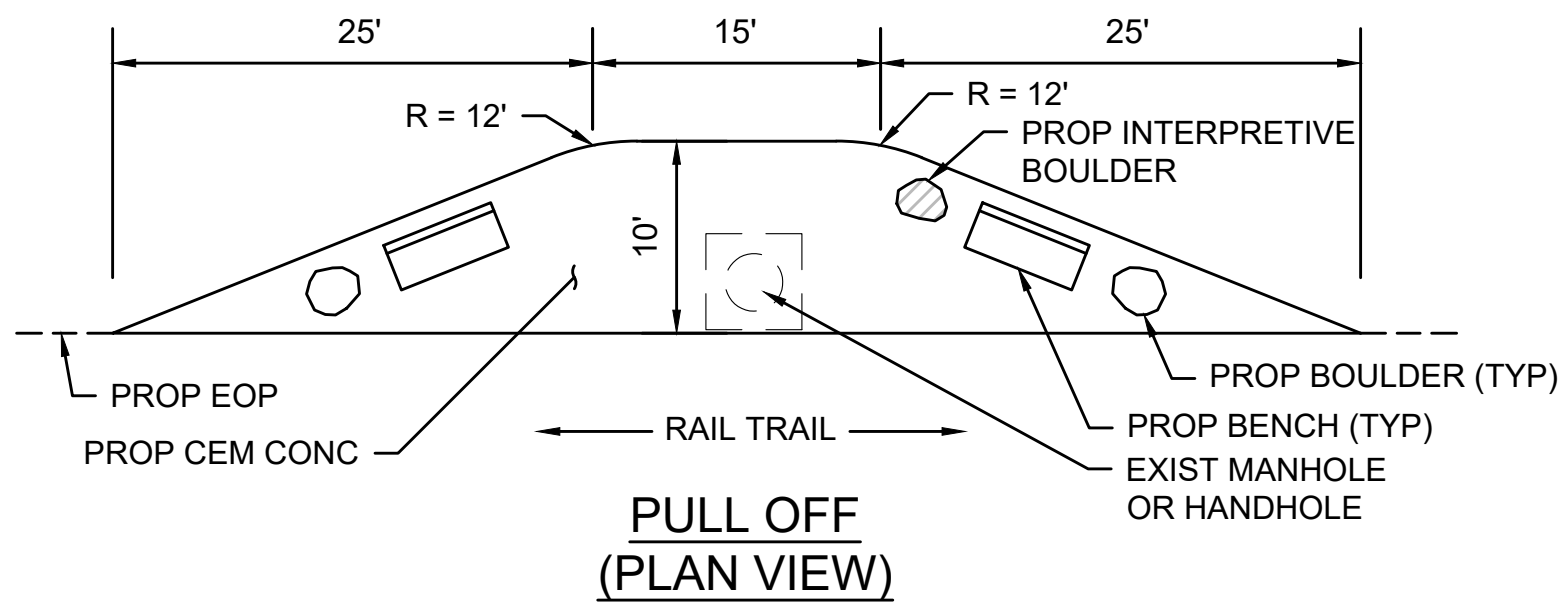
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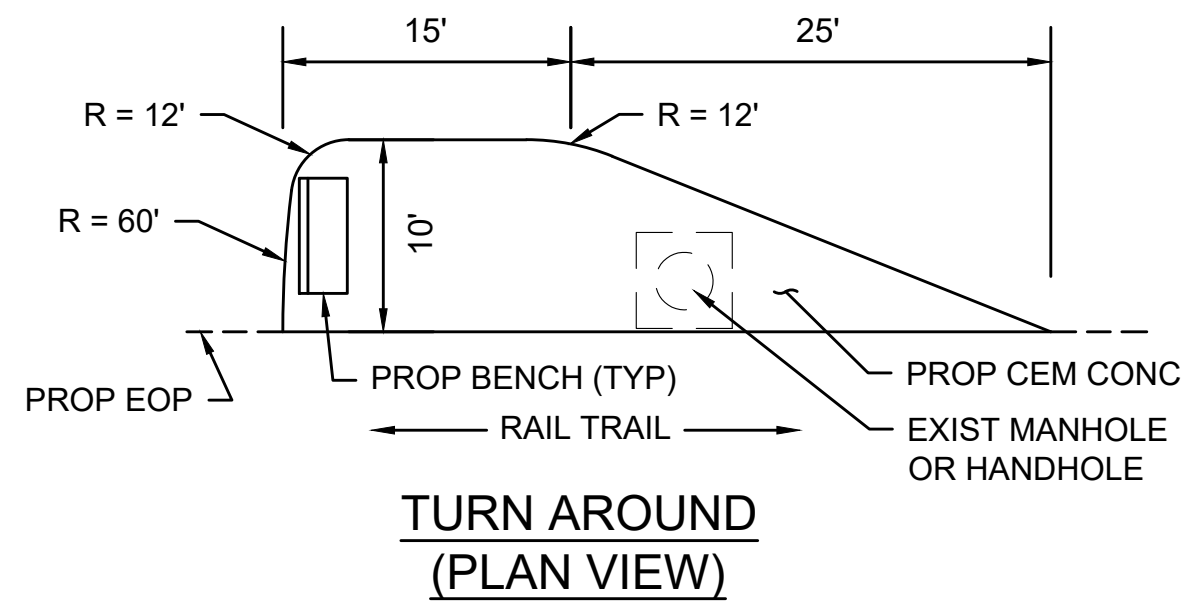
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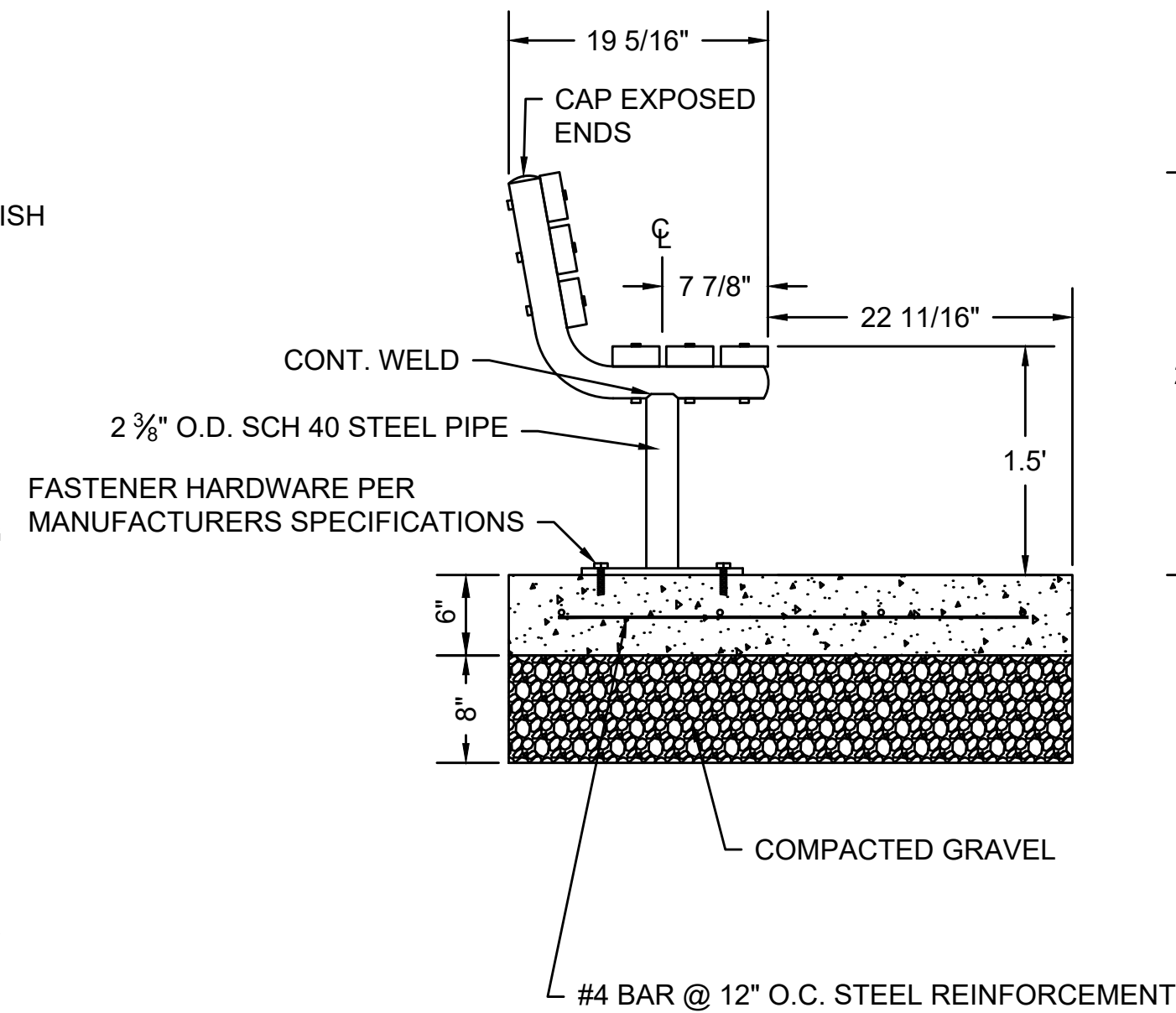
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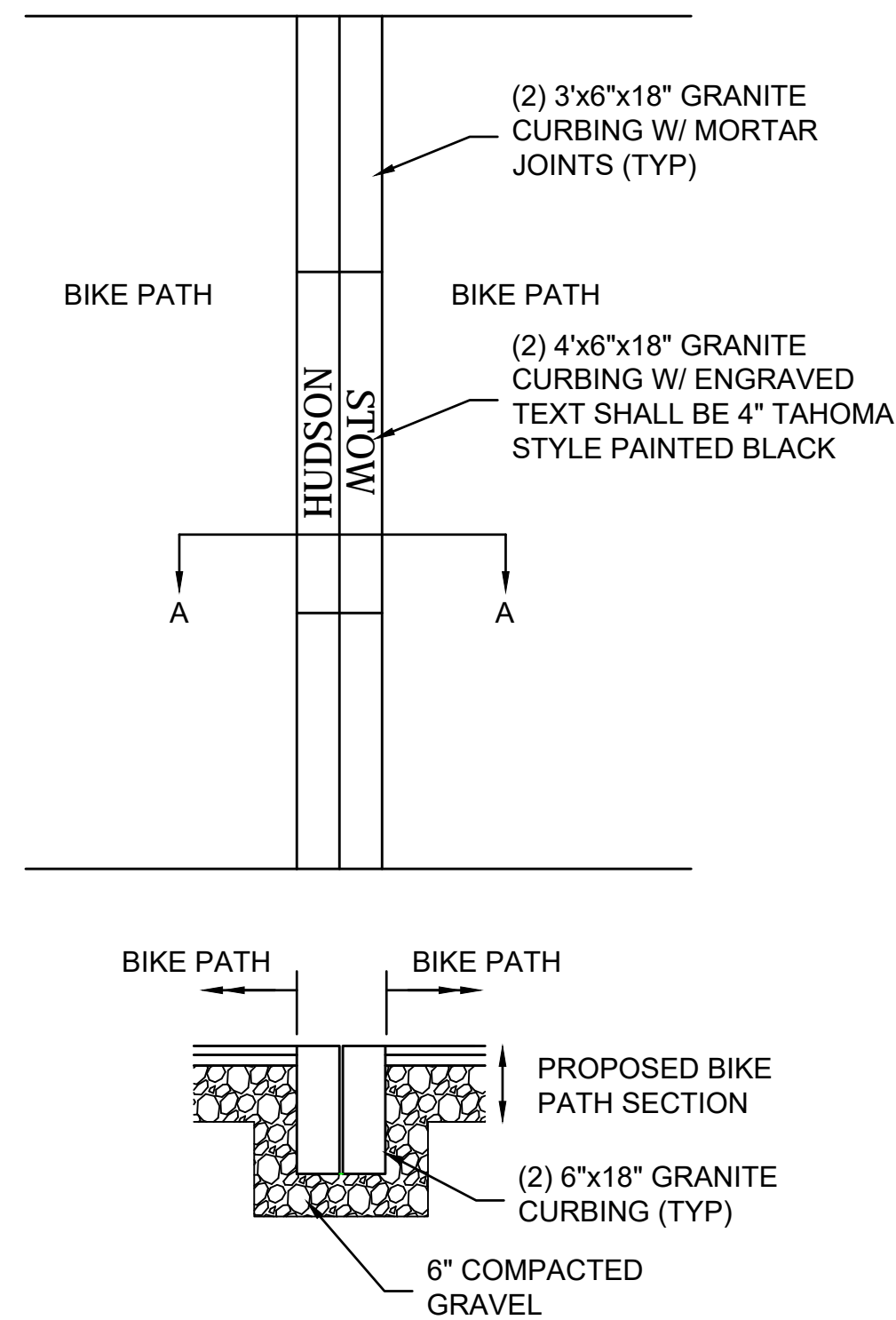
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BENCH

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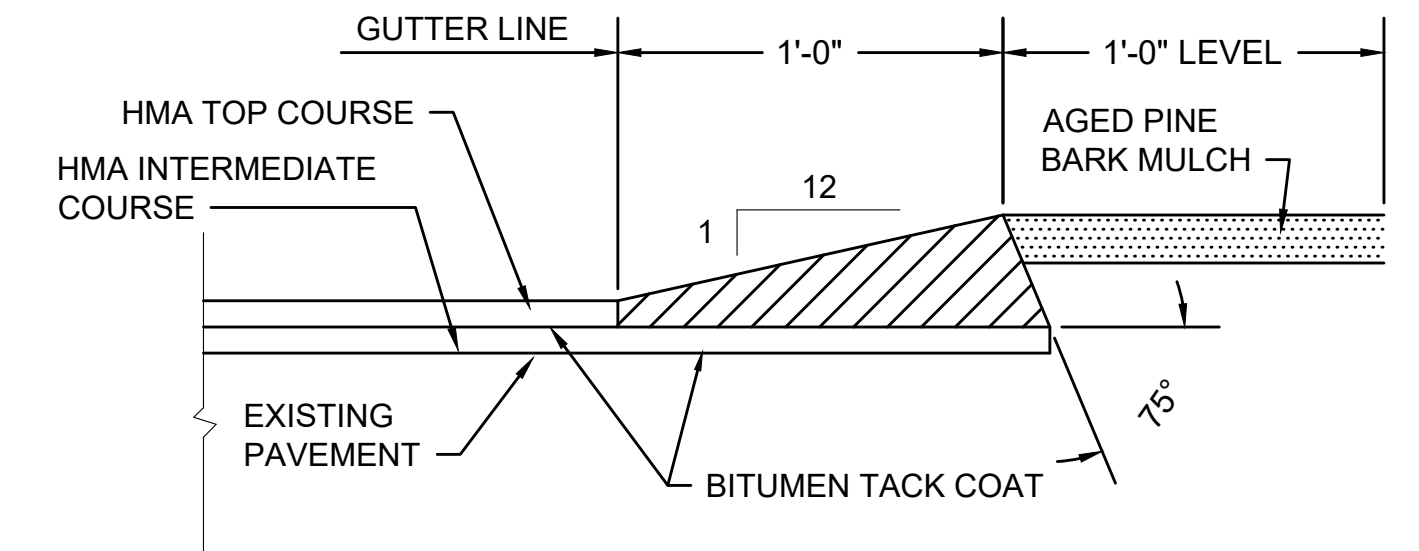
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HMA BERM TYPE A-MODIFIED

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MASS CENTRAL RAIL TRAIL HUDSON, STOW, MARLBOROUGH & SUDBURY, MA

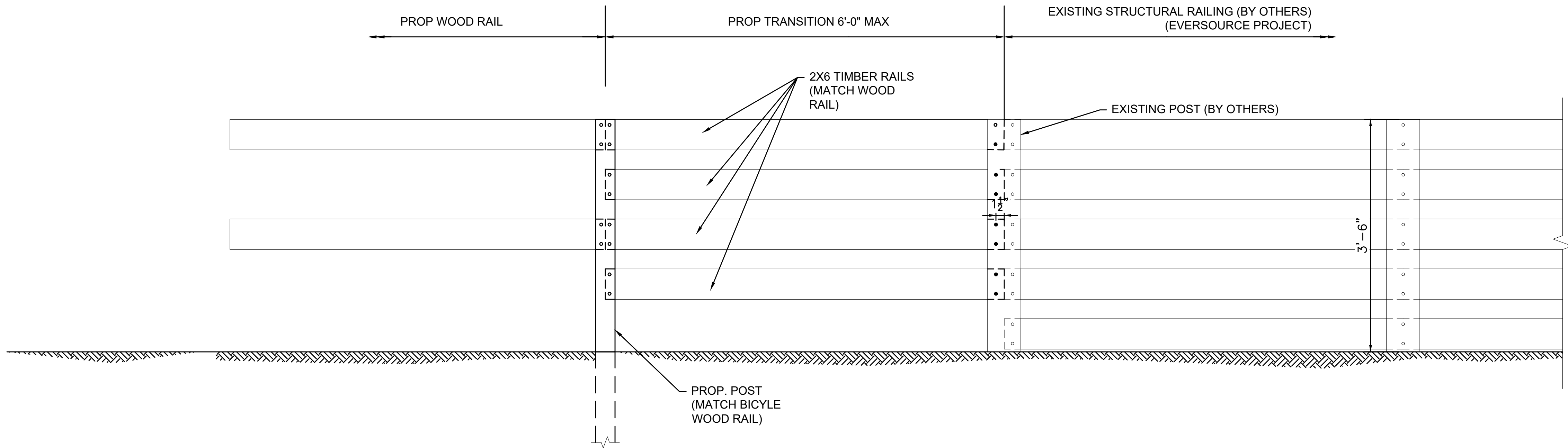
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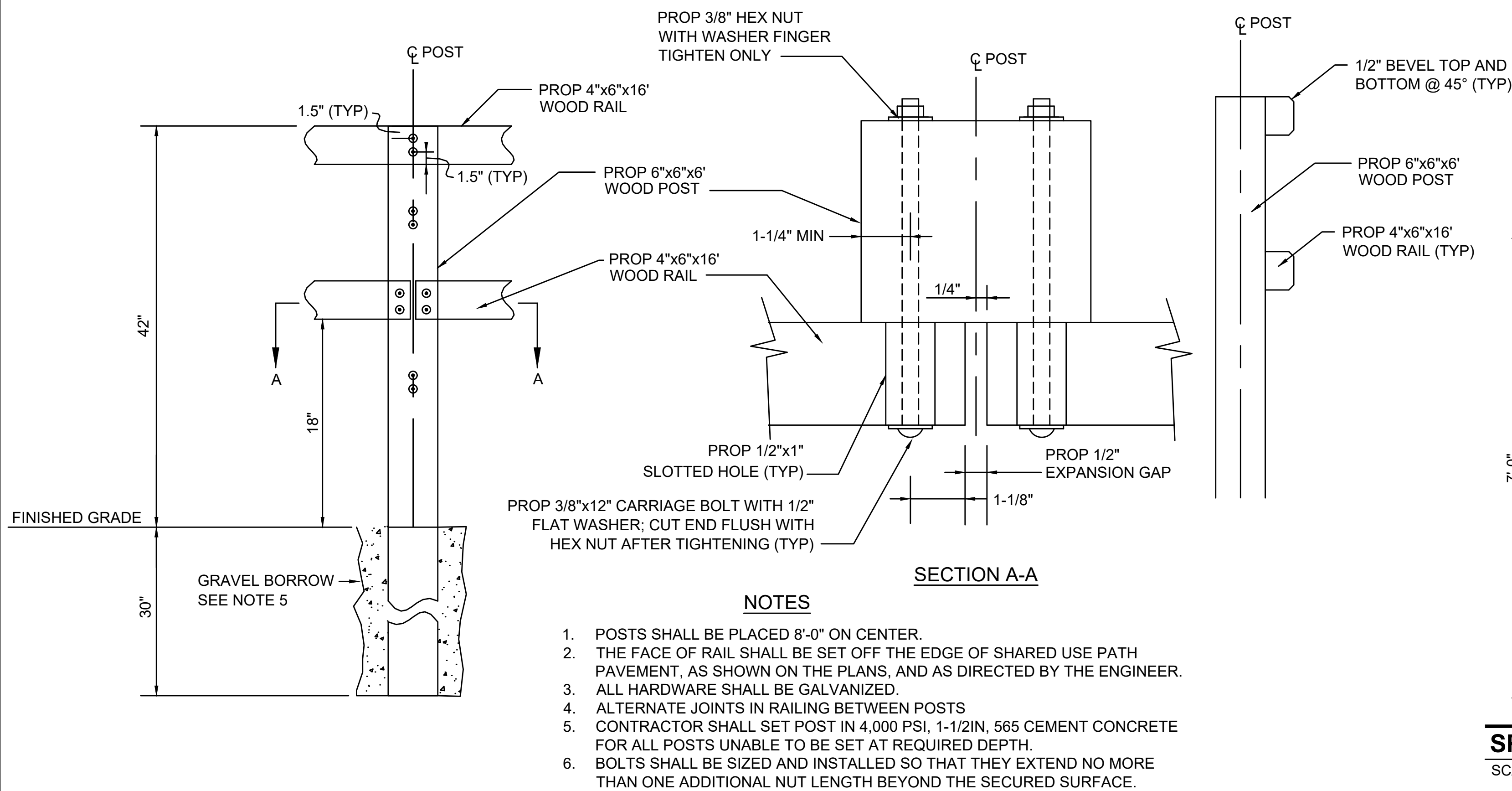
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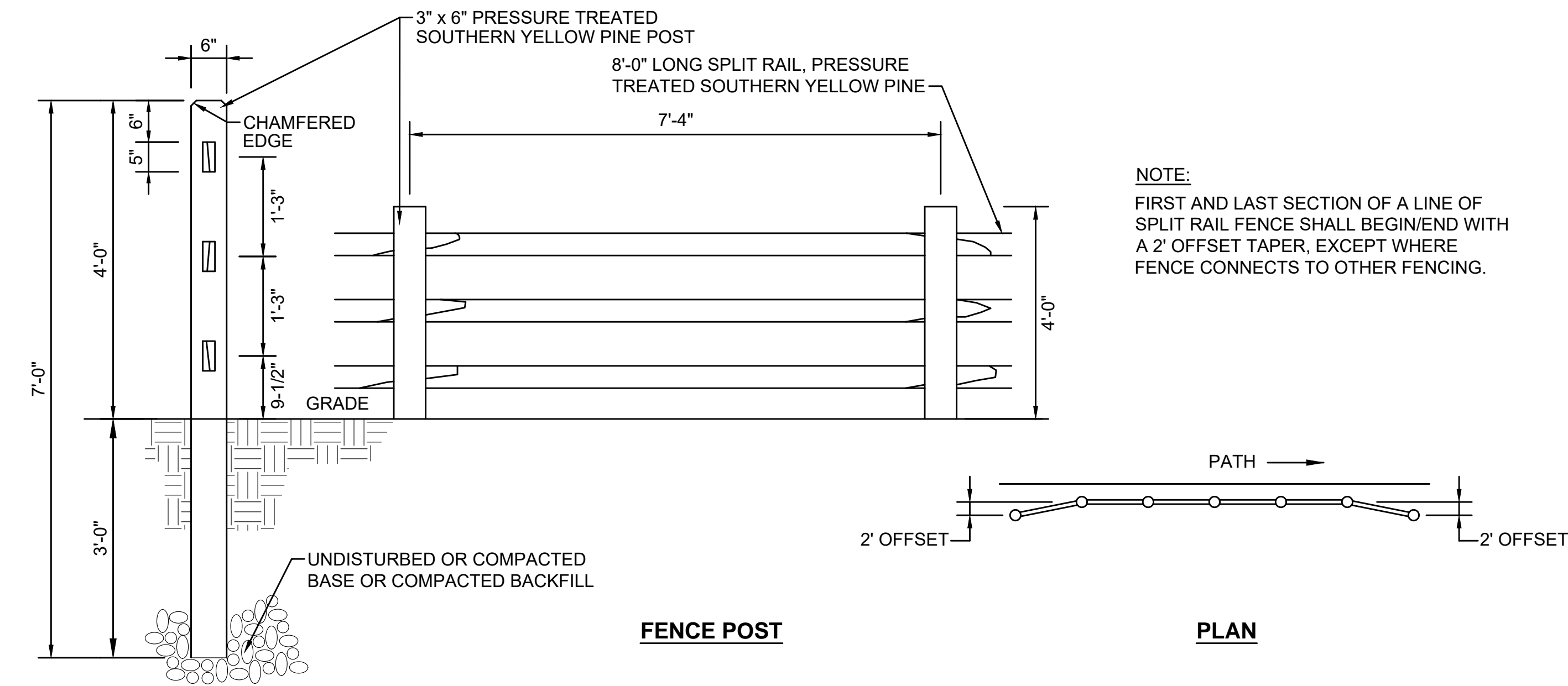
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SPLIT RAIL WOOD FENCE

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WOOD RAIL TERMINAL END - PLAN VIEW

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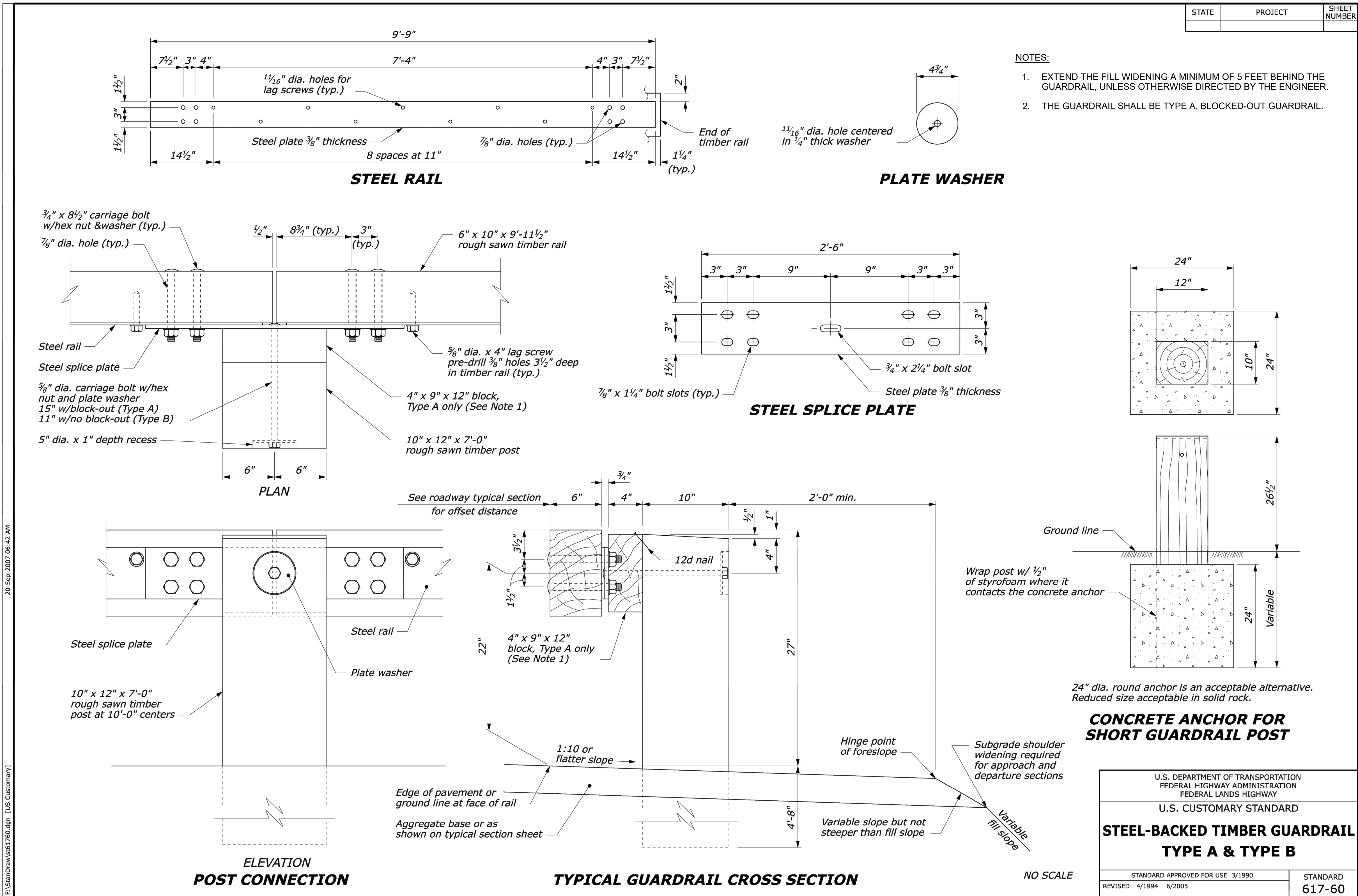
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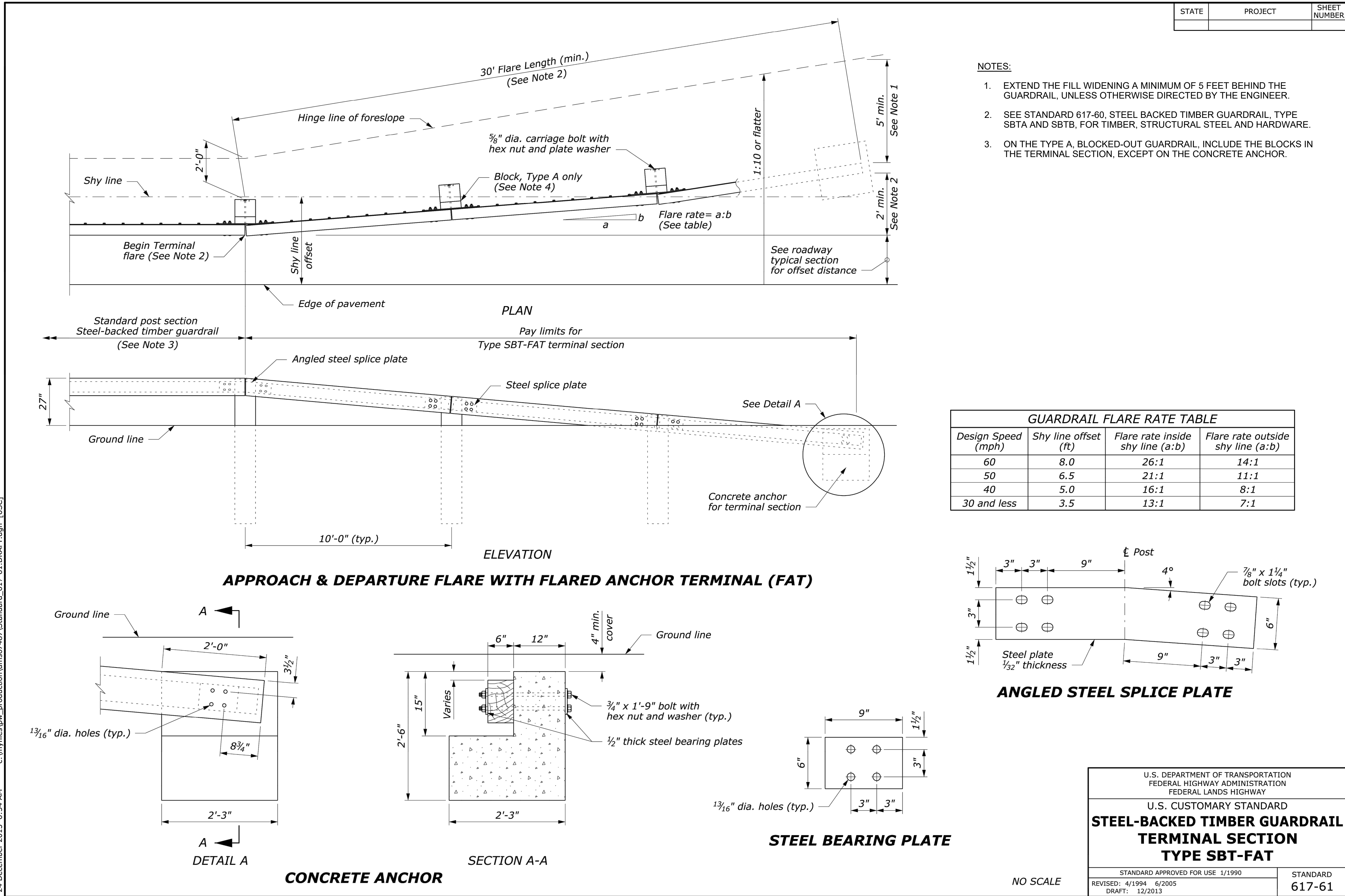
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MASS CENTRAL RAIL TRAIL
HUDSON, STOW, MARLBOROUGH & SUDBURY, MA

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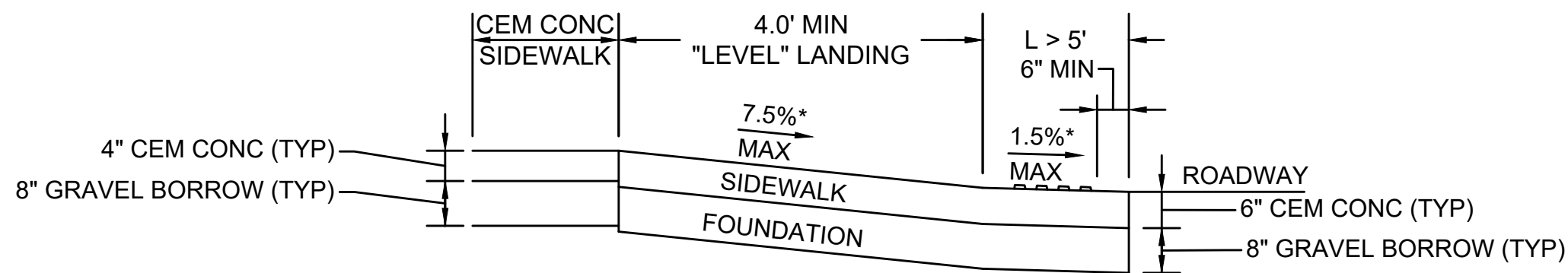
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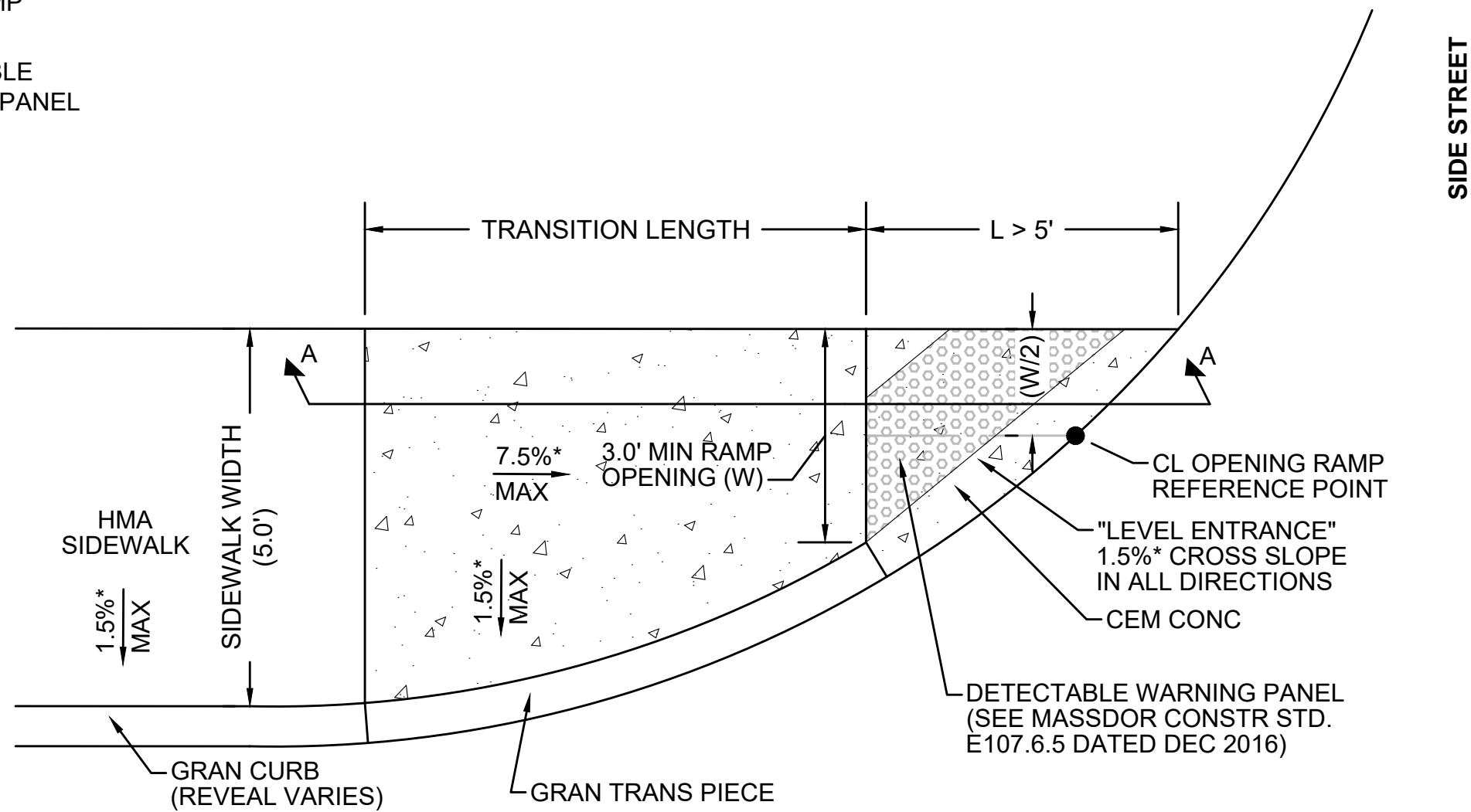
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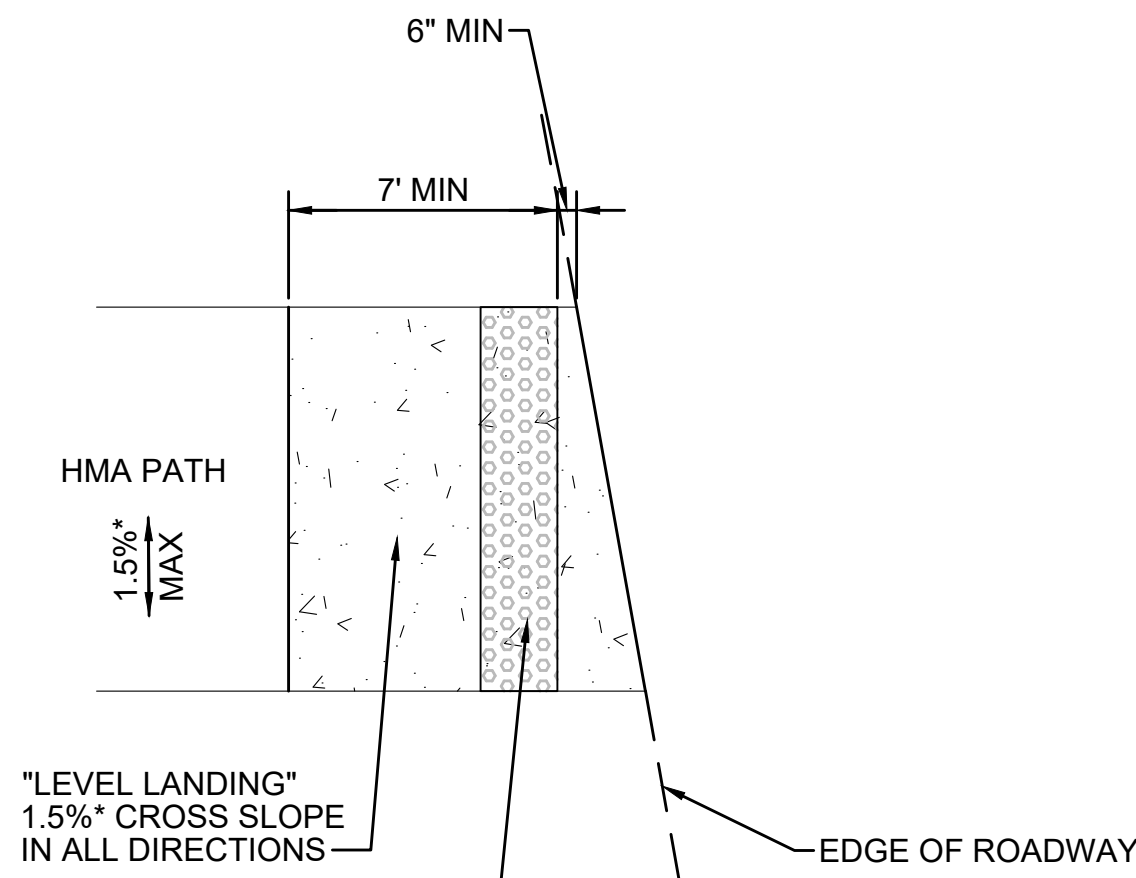
LEGEND

- LIMITS OF CEM CONC RAMP
- DETECTABLE WARNING PANEL



WHEELCHAIR RAMP - 'L' IS GREATER THAN 5'

SCALE: NTS



LEGEND

- LIMITS OF CEM CONC RAMP
- DETECTABLE WARNING PANEL

*TOLERANCE FOR CONSTRUCTION ±0.5%

WHEELCHAIR RAMP - PATH

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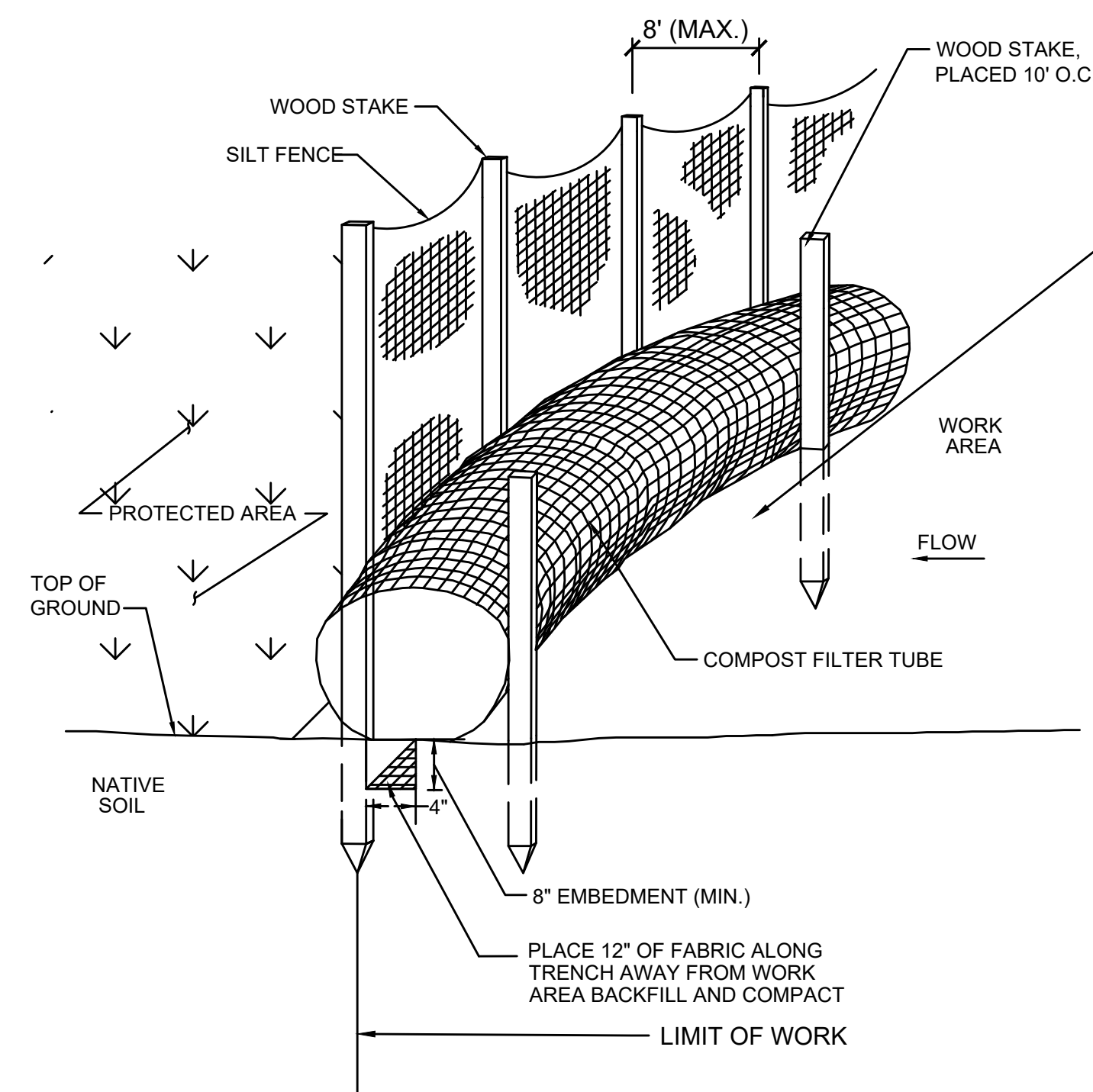
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MASS CENTRAL RAIL TRAIL
HUDSON, STOW, MARLBOROUGH & SUDBURY, MA

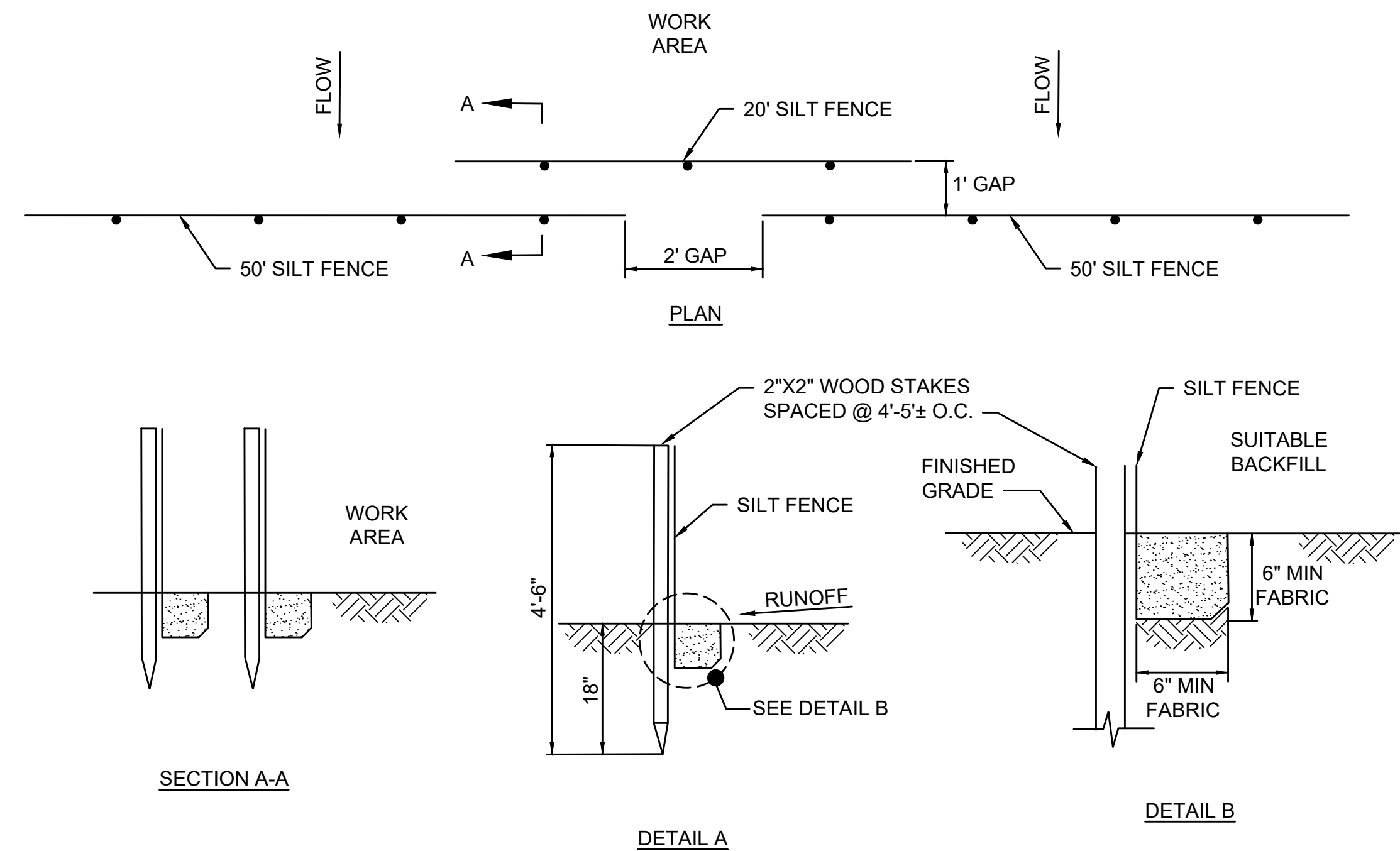
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- NOTES:**
1. FILTER CLOTH SHALL BE FASTENED SECURELY TO POSTS WITH WIRE TIES OR STAPLES, AND POSTS SHALL BE SPACED EVERY 10 FEET.
 2. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY 6 INCHES AND FOLDED.
 3. ENTRENCH SILT FENCE BUT NOT COMPOST FILTER TUBE.
 4. INSPECTIONS SHALL BE FREQUENT, AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY.
 5. 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.
 6. TUBES CAN BE PLACED DIRECTLY ON EXISTING PAVEMENT WHEN NECESSARY.
 7. 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

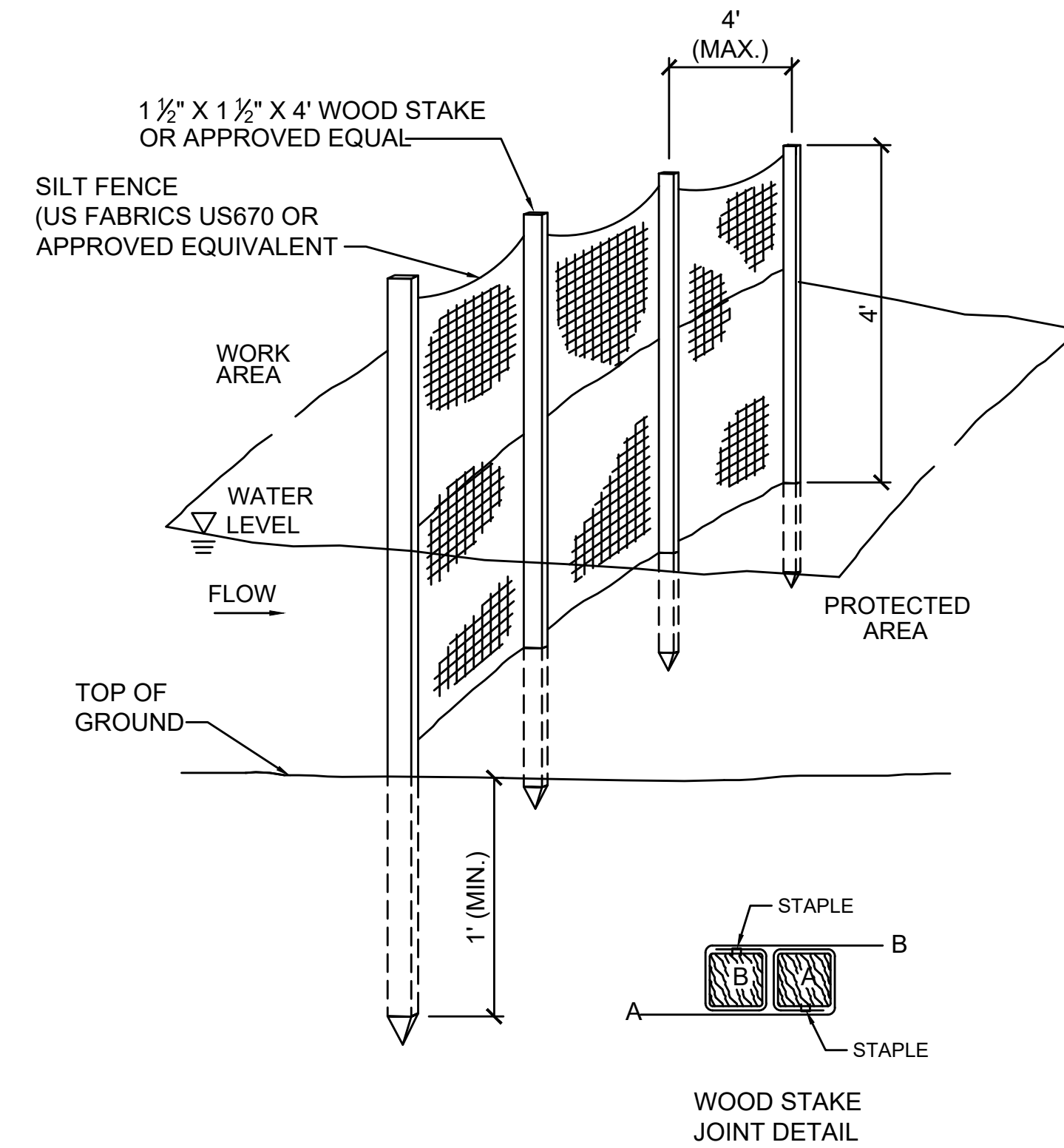
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- NOTES:**
1. SYNCOPATED SILT FENCE SHALL BE USED WITHIN ALL PRIORITY HABITAT AREAS AND WITHIN 450' OF VERNAL POOLS.
 2. INSTALL GAP AFTER EVERY 50' OF EROSION CONTROL BARRIER.

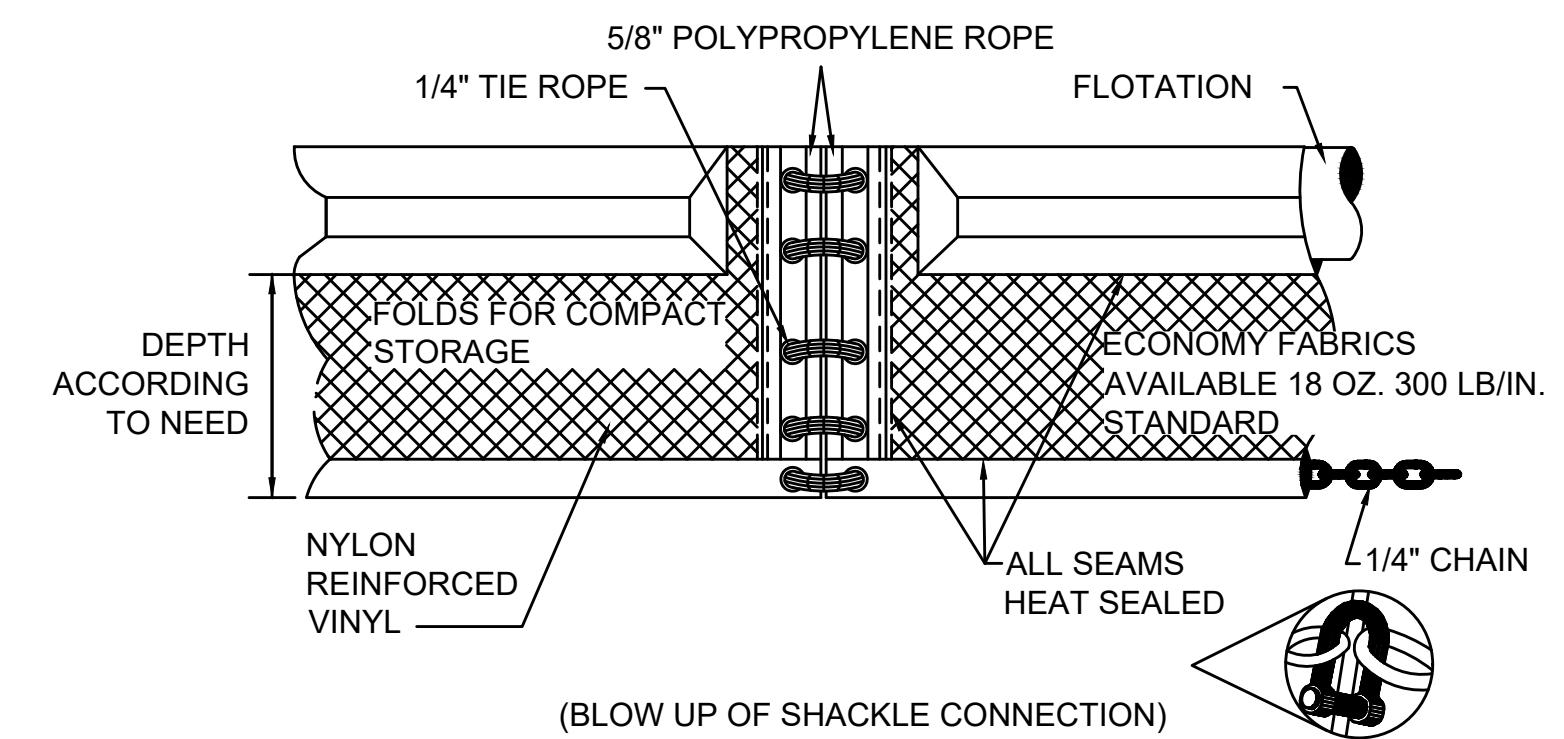
SYNCOPATED SILT FENCE DETAIL - TYPE B EROSION CONTROL BARRIER

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4' HIGH SILT FENCE BARRIER DETAIL - EROSION CONTROL BARRIER TYPE C (OPTION 1)

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TURBIDITY CURTAIN DETAIL - EROSION CONTROL BARRIER TYPE C (OPTION 2)

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101 Walnut St., P.O. Box 9151
Watertown, MA 02472
617 924 1770 FAX 617 924 2286

Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project

Sudbury, Massachusetts

PREPARED FOR



NSTAR Electric Company
d/b/a Eversource Energy
247 Station Drive
Westwood, Massachusetts 02090



Massachusetts Department of
Conservation and Recreation
251 Causeway Street, 9th Floor
Boston, MA 02114

PREPARED BY



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March 2020

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- Attachment A – Wildlife Habitat Evaluation Figures
- Attachment B – Detailed Wildlife Habitat Evaluation Forms and Photographs
- Attachment C – Resumes
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1

Introduction

Following the Massachusetts Department of Environmental Protection's ("MassDEP") "Wildlife Habitat Protection Guidance for Inland Wetlands ("the Guidance")¹ the Sudbury Wetlands Administration Bylaw² ("Bylaw"), and the Sudbury Wetlands Administration Bylaw Regulations³ ("Bylaw Regulations"), Appendix B: Detailed Wildlife Habitat Evaluations forms ("WHE") were completed for individual Wetland Impact Areas ("WIAs") in support of a Notice of Intent ("NOI") submission on behalf of the co-applicants, the Massachusetts Department of Conservation and Recreation ("DCR") and NSTAR Electric Company d/b/a Eversource Energy ("Eversource"). The WHE evaluated WIAs that are jurisdictional under both the MassDEP Wetlands Protection Act ("MSPA") and the Bylaw Regulations.

The "Project" includes completing a portion of the regional Massachusetts Central Rail Trail ("MCRT") and constructing a new 115-kilovolt ("kV") underground electric transmission line ("the underground transmission line"). For a detailed Project description, please see Section 2 in the NOI narrative. Both the underground transmission line and the MCRT qualify as limited projects according to the Wetlands Protection Act Regulations⁴ ("the Regulations") at 310 CMR 10.53(3)(d) and 10.53(6), respectively. The "Project Locus" in Sudbury is approximately 4.3 miles long and includes the entire width of the MBTA ROW from the Hudson/Sudbury municipal border to the Sudbury Substation off Route 20. The MBTA ROW width is variable but averages 82 feet wide in most locations and travels past residential areas, commercial developments, wooded areas, and roadways. It is important to note that this WHE only evaluated Project-related impacts to wetland resource areas within the MBTA ROW and not the Sudbury Substation because it is already constructed and does not contain natural habitat.

The boundaries of wetland resource areas in the Project Locus were approved by the Sudbury Conservation Commission with an Order of Resource Area Delineation ("ORAD")

¹ Massachusetts Department of Environmental Protection. Wildlife Habitat Protection Guidance for Inland Wetlands (2006). <http://umasscaps.org/pdf/wldhab.pdf>

² Article XXII Wetlands Administration Bylaw. Accessed February 26, 2019. <https://s3-us-west-2.amazonaws.com/cdn.sudbury.ma.us/wp-content/uploads/sites/273/2015/01/ARTICLE-XXII-WETLANDS-ADMINISTRATION.pdf?version=7c07334911d90a7ef9dce506686542d9>

³ Sudbury Wetlands Administration Bylaw Regulations, Revised September 25, 2017. Accessed February 26, 2019. <https://s3-us-west-2.amazonaws.com/cdn.sudbury.ma.us/wp-content/uploads/sites/272/2017/10/Wetlands-Bylaw-Regulation-Amendment-170925.pdf?version=18d2af56918f837c61fd50801a467313>

⁴ Massachusetts Wetlands Protection Act Regulations (310 CMR 10.00). Effective October 24, 2014. <https://www.mass.gov/regulations/310-CMR-1000-wetlands-protection-act-regulations>

that was issued on August 27, 2018 (MassDEP File No. 301-1227). Project-related impacts were minimized to the maximum extent practicable; however, certain impacts to Bank (310 CMR 10.54), Bordering Vegetated Wetlands ("BVW") (310 CMR 10.55), Land Under Water Bodies and Waterways (310 CMR 10.56), Bordering Land Subject to Flooding ("BLSF") (310 CMR 10.57 (1)(a)), Riverfront Area ("RFA") (310 CMR 10.58), and Sudbury's locally regulated RFA (Sections 2.5 and 7.10 of Bylaw Regulations) and, as defined in Section 9 of the Sudbury Bylaw, Adjacent Upland Resource Area ("AURA"), are unavoidable, as described in the accompanying NOI filing (see Attachment A for figures). AURA is defined in the Sudbury Wetlands Administration Bylaw as "all lands within 100 feet of wetland resource areas... except for perennial streams and rivers for which the upland resource area extends 200 feet from the top of bank, and except for vernal pools, ponds under 10,000 square feet in area, and isolated land subject to flooding." The Project is not located within Isolated Land Subject to Flooding (310 CMR 10.57(1)(b)) or Vernal Pool Habitat (310 CMR 10.04) in Sudbury. The only MWPA perennial streams within the Project Locus in Sudbury are Hop Brook (two crossing locations at Bridge 127 and 128) and Dudley Brook. The RFAs associated with these streams are jurisdictional under the MWPA. The remaining streams are considered perennial under the Bylaw Regulations only and the RFAs associated with these streams are not jurisdictional under the MWPA.

To evaluate these impacts, 21 WIAs (WIAs S1-S21) were identified and a Detailed WHE ("Appendix B") was completed at each WIA, which is the most rigorous and comprehensive type of WHE required under MWPA and the Bylaw Regulations. Of the 21 WIAs, eleven (S1, S2, S7, S8, S9, S11, S12, S13, S14, a portion of S15, and S21) are within Sudbury's jurisdiction only because they are either AURA and/or are Sudbury RFA only. Table 3 provides a list of the WIAs, their size and resource area/jurisdiction. All RFA impacts, regardless of whether they are MWPA jurisdictional, were evaluated even though it is not required under 310 CMR 10.58(5) or the Guidance.

1.1 Regulatory Background

1.1.1 Wetlands Protection Act and its Implementing Regulations

In 1986, the Massachusetts Legislature established that wetlands can provide wildlife habitat and added "wildlife habitat" as an interest under the Massachusetts Wetlands Protection Act, M.G.L. c131 § 40⁵, ("MWPA" or "the Act"), and the Regulations at 310 CMR 10.00. In the Act, wildlife habitat is defined as "those areas subject to M.G.L. c 131 § 40 which due to their plant community composition and structure, hydrologic regime or other characteristics, provide important food, shelter, migratory or overwintering areas, or breeding areas for wildlife."

In 1987, MassDEP revised the Regulations to incorporate protection of wildlife habitat as a wetlands interest protected by the Act. Accordingly, standards and procedures to protect important wildlife habitat functions in wetland resource areas were added to the Regulations

⁵ Massachusetts Wetlands Protection Act (M.G.L. c. 131 §40). <https://malegislature.gov/Laws/GeneralLaws/PartI/TitleXIX/Chapter131/Section40>

at 310 CMR 10.60. MassDEP outlined the interpretation of the statutory language (especially the statutory definition of “wildlife habitat”) as well as the legislative intent in the Preface to the 1987 Regulatory Revisions related to the Protection of Wildlife Habitat (“the Preface”).⁶ Key elements of the Preface explain important premises that helped form the basis for the regulatory changes. A summary of the premises that are important to consider when identifying and assessing important wildlife habitat value and possible adverse effects as part of a planned project are:

- › The mere presence of wildlife in a resource area is not enough to establish habitat value. Instead, it is the presence of plant community, hydrologic regime, or other characteristics that is determinative. The statute protects habitat value not wildlife per se.
- › The presence of basic characteristics that can provide wildlife habitat does not establish that a wetland resource area is significant to wildlife habitat. As per the regulatory guidance from MassDEP in the Preface, in order for a wetland resource area to be considered significant to wildlife habitat, certain features must be present and they must “provide *important* (emphasis added) food, shelter, migratory or overwintering areas or breeding areas for wildlife”.
- › The Department believes the Legislature meant to protect wetland habitat which is important to wildlife from a regional or statewide perspective.

In 2006, MassDEP developed a guidance document that details the process by which WHEs are completed. According to the Guidance, the objectives of a WHE are to document the presence of “important wildlife habitat features” within wetland resource areas that will be affected by a project and identify potential adverse impacts to these specific “important wildlife habitat features” that could result from the construction and maintenance of a proposed project.

1.1.1.1 No Adverse Effect Standard

According to 310 CMR 10.60(1), to the extent that a proposed project will alter wildlife habitat beyond established thresholds for each respective wetland resource area, such alterations may be permitted only if they will have no adverse effects on wildlife habitat. Adverse effects on wildlife habitat are the alteration of any habitat characteristic listed in 310 CMR 10.60(2), “insofar as such alteration will, following two growing seasons of project completion and thereafter (or, if a project would eliminate trees, upon the maturity of replanted saplings) substantially reduce its capacity to provide the important wildlife habitat functions listed in 310 CMR 10.60(2).” The Guidance continues, stating, “it is not adequate to conclude that a project will result in an adverse effect only because alterations to wildlife habitat are proposed. The alterations become “adverse” when they *substantially* (emphasis added) reduce the site’s capacity to provide important wildlife habitat functions (e.g., shelter, food, breeding areas) and consequently reduce the site’s capacity to support wildlife.” The Guidance also states, “simply put, no adverse effect does not mean no alteration.”

⁶ Preface to Wetlands Regulations Relative to the Protection of Wildlife Habitat 1987 Regulatory Revisions. Pages 14-22.
<https://www.mass.gov/files/documents/2016/08/ri/310cmr10b.pdf>

To demonstrate that a project will meet the no adverse effect standard, the Guidance states that it must be demonstrated that either:

- › A site lacks any important habitat features listed in Appendix A or B; or
- › Important habitat features exist but adverse effects will be avoided because the project will not substantially reduce the capacity of the site to provide the important wildlife habitat functions.
 - Adverse effects can be avoided by restoration, replication, or other mitigation.
 - Applicants can also demonstrate that alterations will have a negligible effect on important habitat features. This can occur when an important habitat feature is very common on the site so that the amount of habitat feature lost is insignificant to what will remain on the site.

1.1.1.2 Wildlife Habitat Evaluation Impact Thresholds

Typically, the Regulations require that a WHE be conducted when a proposed project will alter certain wetland resource areas (Bank, Land Under Water, or Bordering Land Subject to Flooding) beyond established thresholds identified in the Regulations [310 CMR 10.60(1)].

For Project-related wetland resource impacts, Table 1 below lists the regulatory threshold values below which impacts are deemed not to impair wildlife habitat and do not require completion of WHE. Project wetland resource related impacts that would result from the proposed Project are also identified in Table 1.

Table 1 Wildlife Habitat Evaluation Thresholds per Resource Area

Resource Area	Regulation Threshold (below which deemed not to impair wildlife habitat) ¹	Proposed Project Impacts (Total) ²
Bank – 10.54(4)(a)5	10% or 50 linear feet (whichever is less)	246 linear feet
Land Under Water Bodies and Waterways – 10.56(4)(a)4	10% or 5,000 square feet (whichever is less)	1,146 square feet
Bordering Land Subject to Flooding – 310 CMR 10.57(4)(a)3, (2)(a)5&6, (4)(a)3	10% or 5,000 square feet (whichever is less), except for work that would adversely affect vernal pool habitat	10,435 square feet
MWPA Riverfront Area ³ – 310 CMR 10.58(5)	No threshold - however, different review requirements apply depending on whether the riverfront is undisturbed (310 CMR 10.58(4)) (and the size of impact), previously developed (310 CMR 10.58(5)) or if the activity is grandfathered or exempted from requirements for the riverfront area (310 CMR 10.58(6)).	156,466 square feet

Bordering Vegetated Wetland 310 CMR 10.55(4)(b)	No threshold - impacts must be replicated in a manner that will function similar to the area that will be lost*	613 square feet
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1. Source: MassDEP's Wildlife Habitat Protection Guidance for Inland Wetlands, Table 1
2. Source: VHB
3. Proposed impacts in this table are for MWPA RFA only and do not include Sudbury's local RFA. However, all RFA impacts, including Sudbury jurisdiction only, were evaluated in this WHE.

The Guidance further details when and what type of WHE should be completed based on wetland resource area impacts. Table 2 below identifies resource types impacted by the Project, the alteration limits that determine which level of a WHE is required (i.e., Appendix A or Appendix B) and the impact levels at which the no adverse effect/no impairments standard applies.

Table 2 Wetland Resource Areas Impact by the Project and Level of WHE Required Based on Alteration

Resource Area	Simple WHE (Appendix A) Required	Detailed WHE (Appendix B) Required	No Adverse Effect/No Impairment Required
Bank	For alterations above thresholds	When triggered by Appendix A	For alterations above thresholds
LUWW	For alterations above thresholds	When triggered by Appendix A	For alterations above thresholds
BLSF (presumed significant to wildlife habitat)	For alterations above thresholds	When triggered by Appendix A or for any impacts to certified or documented vernal pool habitat	For alterations above thresholds or for any impacts to certified/documented vernal pool habitat
Previously Developed RFA	Appendix A and Appendix B are not required for previously developed RFA		
BVW	For alterations less than 5,000 square feet	When triggered by Appendix A, for alterations greater than 5,000 square feet or for any size impact in Habitat of Potential Regional or Statewide Importance or certified or documented vernal pool habitat	For all alterations

Source: MassDEP's Wildlife Habitat Protection Guidance for Inland Wetlands, Table 2

The Project will result in impacts to MWPA jurisdictional BVW, Bank, LUWW, BLSF, and RFA. However, it is important to note that 310 CMR 10.57(1)(a)(3) states that railroad tracks,

including embankment and ballast, have effectively eliminated wildlife habitat functions. In addition, although LUWW impacts do not exceed the threshold and a WHE is not required for previously developed RFA and there are no performance standards at 310 CMR 10.58(5) for wildlife habitat. Regardless, all WIAs, including BLSF, RFA, and LUWW, were evaluated. To evaluate these impacts, 21 WIAs (WIAs S1-S21) were identified and a Detailed WHE ("Appendix B") was completed at each WIA.

1.1.2 Sudbury Wetlands Administration Bylaw and its Implementing Regulations

The Town of Sudbury's Bylaw and Bylaw Regulations also may require a WHE at the discretion of the municipality, and Section 7.4 of the Bylaw Regulations states, "For the purposes of this Bylaw the Wildlife Habitat Evaluation shall use Appendix B of the DEP *Wildlife Habitat Protection Guidance*." According to Section 7.3 of the Bylaw Regulations, "all wildlife habitat functions are presumed to exist in all resource areas, and therefore, all resource areas are presumed significant for wildlife habitat interests and values." According to the Bylaw Regulations, a WHE is vital to confirm the presence or absence of wildlife features within the WIAs on the project site (i.e., Project Locus). Similar to the MWPA and the Guidance, the Bylaw Regulations state "no project may have a significant adverse project/site-specific impact or an adverse cumulative impact on wildlife for more than two growing seasons."

The Bylaw Regulations define a significant project-specific impact as "an impact caused by work or other activities in a resource area that would under reasonable assumptions (a) result in a measurable decrease in the capacity of *the site* to provide wildlife habitat functions such as (but not limited to) food, shelter, breeding space, or inter-habitat/intra-habitat movement, or (b) impair, damage, destroy, or reduce in value for wildlife purposes certain specific habitat features." The Bylaw Regulations goes on to say that "the relative abundance of those features off the project site is irrelevant to the determination of site-specific impact."

Under the Bylaw Regulations, a significant cumulative adverse project-specific impact is "when work or other activities in a resource area would under reasonable assumptions (a) result in a measurable decrease in the collective capacity of *the site, the neighborhood, the town, or the watershed (collectively known as the vicinity)* to provide wildlife habitat functions such as (but not limited to) food, shelter, breeding space, or inter-habitat/intra-habitat movement, or (b) impair, damage, destroy, or reduce in value for wildlife purposes certain specific habitat features."

1.2 Project Wildlife Habitat Evaluation Contents

Information provided in this WHE includes the following:

- › A summary of the WHE methodology employed (Section 2);
- › Descriptions of the types of impacts to WIAs that will result from the Project (Section 3);

- › A summary of wildlife habitat conditions and important habitat features found within Impact Areas (Section 3);
- › An analysis of potential adverse effects resulting from the Project as defined in the MWPA and the Bylaw Regulations (Section 3); and
- › Proposed restoration and mitigation measures to offset unavoidable impacts to important habitat features, as necessary (Section 3).

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2

Evaluation Methodology

The WHE for the Project was completed following the approach described in the Guidance and using Appendix B: Detailed Wildlife Habitat Evaluation Forms from that document, as is required by the MWPA Regulations and Section 7.4 of the Sudbury Bylaw Regulations. Fundamental with the use of DEP's Appendix B form, the approach for the WHE completed under the Bylaw follows DEP's Guidance.

Important wildlife habitat features were evaluated at a total of 21 WIAs occurring within Bank, LUWW, BVW, BLSF, RFA (both MWPA and Bylaw regulated), and AURA within the Project Locus. As discussed within Section 1, several of the WIAs are locally-regulated WIAs only (that is, only in AURA and/or locally regulated RFA). A combination of desktop review and field investigations were employed to complete a Detailed WHE at each proposed WIA. Wildlife Habitat Evaluation Figures depicting the location of each WIA are included in Attachment A. Appendix B: Detailed Wildlife Habitat Evaluation Forms, photographs, and vegetation lists for each WIA are in Attachment B. The resumes of field scientists responsible for completing the WHE are provided in Attachment C and detailed WHE tables are included in Attachment D.

2.1 Prior to Initiation of WHE

Prior to initiating the WHE and as part of the design phase for the Project, the limits of the Project Locus on the MBTA ROW were defined as the entire width of the MBTA ROW and it was determined that the WHE would only evaluate WIAs within the MBTA ROW. Engineering design efforts identified the limits of disturbance using available site plans that included the limits of the Project Locus and boundaries of wetland resource areas approved by the Sudbury Conservation Commission in an ORAD. The proposed limits of work associated with the Project were established to maximize use of the existing previously developed areas associated with the former railroad operations within the Project Locus. During this process, the limits of grading and associated disturbance were adjusted and refined to avoid and minimize wetland resource impacts as much possible within the confines of the Project Locus. WIAs were identified as areas where the limit of disturbance and wetland resource areas overlap within the MBTA ROW. The locations of those WIAs are shown on the figures provided in Attachment A.

Using the Project Locus boundaries, limits of work developed through the design process, and the wetland resource area boundaries approved by the Sudbury Conservation

Commission, GIS shapefiles were developed showing the individual WIAs. Those shapefiles were used during field and desktop evaluations of important wildlife habitat features in the 21 WIAs in Sudbury. Table 3 lists the WIAs, their locations, and affected resource areas.

2.2 Field Evaluation

Field investigations were primarily used to complete the following components of the Appendix B Detailed WHE Form:

- › Part 2, I General Description;
- › Part 2, II Site Description (excluding soils);
- › Part 2, III Important Habitat Features; and
- › Part 2, V Habitat Degradation.

Field investigations for each WIA in Sudbury were completed by field scientists from April through October 2019. To accurately locate each WIA and to collect data (including photographs), a Trimble R1 GNSS receiver was employed in conjunction with cell phones, WIA shapefiles and Esri's ArcGIS Collector application.

Documented observations include wetland characteristics, important wildlife habitat features, vegetation including the presence of invasive species, biophysical characteristics, and habitat degradation. The evaluation included noting whether important wildlife habitat features were present beyond the WIA but within the Project Locus to determine whether the Project will result in an adverse effect to wildlife habitat in accordance with Section V.B.2.b in the Guidance and Section 7.3 of the Bylaw Regulations. The diameter at breast height ("dbh") was evaluated by using a dbh measuring tape and the distance of nests (if present) and mammal dens was determined using a digital rangefinder. Photographs were taken at each WIA to document existing conditions.

Specific important wildlife habitat features and site contextual considerations that were evaluated at each WIA during the field investigations included:

- › Food Availability;
- › Shrub Thickets or Streambed with Abundant Earthworms;
- › Shrub and/or Herbaceous Vegetation Suitable for Veery Nesting;
- › Standing Dead Trees and Cavities;
- › Small Mammal Burrows;
- › Depressions that May Serve as Seasonal (Vernal/Autumnal) Pools;
- › Standing Water Present At least Part of the Growing Season;
- › Sphagnum Hummocks or Mats, Moss-Covered Logs or Saturated Logs, Overhanging or Directly Adjacent to Pools of Standing Water;
- › Cover, Perches, Basking, Denning, and Nesting Habitat;
- › Important Habitat Characteristics Associated with Streams;
- › Wildlife Dens and Nests;

- › Emergent Wetlands; and
- › Habitat Degradation.

The soil inventory on the Appendix B form (Part 2, II Site Description, C. Inventory (Soils)) was completed in part by reviewing the U.S. Department of Agriculture (USDA) Web Soil Survey⁷ mapping for each WIA. Onsite observations were made to confirm, or update soil descriptions provided on the USDA web site.

2.3 Desktop Review and Evaluation

A desktop review of each WIA was undertaken to complete Part 2, Section IV, Landscape Context, of the Appendix B, Detailed WHE field form. In completing these reviews, available MassGIS data layers and WIA shapefiles were used. Landscape Context includes Habitat Continuity which identifies whether an individual WIA is part of:

- › An emergent marsh, and if so, the size in acres;
- › A wetland complex, and if so, the size in acres; and
- › Contiguous forested habitat that could serve as habitat for forest interior nesting birds, grassland nesting birds, or special habitat such as a gallery floodplain forest.

Landscape Context also evaluates Habitat Connectivity. To characterize the connectivity relationship of the WIAs to surrounding habitats, five categories of habitat connectivity were considered based on the Guidance. These include:

1. No direct connections to adjacent areas of wildlife habitat (little connectivity function);
2. Connectors numerous or WIA is imbedded in a large area of natural habitat (limited connectivity function);
3. WIA contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function);
4. WIA serves as part of a sole connector to adjacent areas of habitat (important for connectivity function); and
5. WIA serves as the only connector to adjacent areas of habitat (very important for connectivity function).

In addition to information reviewed to complete Section IV for the field form, MassDEP's Important Habitat Map⁸ for the Town of Sudbury and MassGIS Natural Heritage and Endangered Species Program Priority and Estimated Habitat maps were reviewed to determine if any of the WIAs occurred within "Habitat of Potential Regional or Statewide Importance" or mapped rare species habitat respectively.

⁷ USDA NRCS Web Soil Survey. <https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>

⁸ MassDEP Important Habitat Maps, http://umasscaps.org/data_maps/massdep-maps.html

2.4 Evaluation of Potential Adverse Effects and Proposed Restoration and Mitigation

Once each WIA was evaluated using the Appendix B forms, the proposed impacts were evaluated to determine potential adverse effects in accordance with Section V of the Guidance and Section 7.3 of the Bylaw Regulations. If an important wildlife habitat feature was identified within a WIA, adverse effects were avoided by either proposing restoration under Section V.B.2.b.ii or, as per Section V.B.2.b.iii, demonstrating that the alteration(s) will be negligible because the amount of the feature that will be lost within the WIA is insignificant to that which will remain on the Project Locus. This is consistent with Section 7.3 of the Bylaw Regulations which states, "no project may have a significant adverse project/site-specific impact or an adverse cumulative impact on wildlife habitat for more than two growing seasons."

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3

Wildlife Habitat Evaluation Results

The information in this section includes detailed accounts for the 21 WIAs associated with the Project in Sudbury (see Table 3 for details). WIAs S1, S2, S7, S8, S9, S11, S12, S13, S14, a portion of S15, and S21 are locally jurisdictional WIAs only because they are within Sudbury's RFA and/or AURA. The remaining WIAs are jurisdictional under the MWPA and Bylaw Regulations. Details provided below include important wildlife habitat features identified, discussion of potential adverse impacts to wildlife habitat resulting from the Project (if any), and discussion of proposed restoration and mitigation measures to offset impacts (if any). Table 3 below provides a summary of important wildlife features documented in each of the WIAs. Figures depicting the location of each WIA are in Attachment A of this document. Completed Appendix B: Detailed Wildlife Habitat Forms, vegetation lists, and representative photographs for the WIAs are provided in Attachment B of this document. Resumes for the personnel who completed the WHE are in Attachment C and tables summarizing all field observations including the presence or absence of individual wildlife habitat features within each WIA are provided in Attachment D.

Sections 3.1 through 3.15 below provide a detailed discussion regarding the important wildlife habitat features and existing site conditions documented within each WIA. As described in the following subsections, there is an abundance of important wildlife habitat features beyond the proposed limits of work associated with the Project within the remainder of the Project Locus (Sudbury Bylaw Regulations project site). These important habitat features are also present within areas beyond the Project Locus in quantities such that the minor losses attributed to the Project will not have an adverse effect on wildlife habitat (see Section V.B.2.b.iii of the Guidance and Section 7.3 of the Bylaw Regulations). Regardless of these findings, the Project incorporates restoration measures within areas disturbed from the Project to replace some of the lost important wildlife habitat features within the proposed limits of work and to supplement important wildlife habitat features on the Project Locus. Restoration and mitigation measures proposed for important wildlife habitat features within the proposed limits of work for the Project include:

- › Removing the existing rails and ties, which are an impediment to wildlife movement;
- › Reinstalling standing dead trees that will be removed during construction;
- › Creating brush piles to replace large woody debris on the ground;

- › Restoring all disturbed areas with an herbaceous seed mix consisting of native species to promote growth of herbaceous vegetation; and
- › Planting tree, shrub, and aquatic species at both Hop Brook crossings to replace those that will be removed in the crane mat locations.

The presence of Habitat of Potential Regional and Statewide Importance ("Important Wildlife Habitat") and mapped Priority and Estimated Habitat for State-listed Rare, Threatened, and Endangered Species ("rare species habitat") was evaluated as part of the WHE completed for the Project. Based on the latest Important Habitat Map for the Town of Sudbury (MassGIS online version, August 2017), none of the WIAs are within any areas of mapped Important Habitat.

According to the most recently published edition of the Massachusetts Natural Heritage Atlas (MassGIS online version, August 2017)⁹, the Project in Sudbury passes through mapped Priority and Estimated Habitat from the location where the Hudson, Sudbury, and Marlborough municipal boundaries meet to a location approximately 85 feet east of Hop Brook. Along this length, there are six WIAs (WIAs 1-6) within mapped Priority or Estimated Habitat.

To avoid a rare species "take" under the Massachusetts Endangered Species Act ("MESA") (321 CMR 10.00), the Natural Heritage and Endangered Species Program ("NHESP") was consulted on a regular basis during the Project design phase. Based on those consultations, to avoid a state-listed species "take," protection plans were developed. Those protection plans along with other supporting information were submitted to NHESP in a MESA Checklist to obtain a "take / no take" determination from that agency. On October 19, 2018, and May 17, 2019, NHESP rendered conditional "no take" determinations for both the Eversource and DCR phases of the Project, respectively (see Attachment G in the NOI). Accordingly, based on the Regulations, the work proposed in Sudbury will have no adverse effect on specified habitat sites of rare vertebrate or invertebrate species, as identified in the procedures established under 310 CMR 10.59.

⁹ Habitat of Potential Regional or Statewide Importance, Town of Sudbury, MA.
http://www.umass.edu/landeco/research/caps/data/dep/maps/CAPS_DEP_SUDBURY.pdf

Table 3 Summary of Important Wildlife Habitat Features within Wetland Impact Areas within the Project in Sudbury

Impact Area	Stationing ¹	Total Area of Impacts (square feet)	Jurisdiction (MWPA/Bylaw) ²	Wetland Resource Area Type (Area of Impact in Square Feet) ³	Associated BVW and/or Stream	Important Wildlife Habitat Features ⁴	Important Upland/Wetland Food Plants	Standing Dead Trees (Snags)	Cavities in Trunks or Limbs of Trees	Small Mammal Burrows	Dense Herbaceous Cover	Large Woody Debris on the Ground	Rocks, Crevices, Fallen Logs, Overhanging Branches, or Hummocks at or within 1 meter above Water's Surface	Live or Dead Standing Vegetation Overhanging Water or Offering Good Visibility of Open Water	Standing Water Present At least Part of the Growing Season Suitable for use by Breeding Amphibians, Non-breeding Amphibians, Turtles, and/or Foraging Waterfowl	Project Area is Within 100' of Beaver, Mink, or Otter Den, Bank Swallow
S1	367+00-370+70	8,328	Bylaw	AURA (8,328)	Wetland 45 and Approximate Wetland		X				X					
S2	375+00-376+50	3,253	Bylaw	AURA (3,253)	Approximate Wetland		X									
S3	395+75-399+10	7,893	MWPA	MWPA RFA (7,893) and AURA (5,788)	Wetland 44 and Hop Brook		X	X				X		X		
S4	399+10-400+10	3,746	MWPA	MWPA RFA (3,746), BLSF (37), and AURA (3,746)	Wetland 44 and Hop Brook		X					X		X		
S5	400+60-401+65	4,168	MWPA	MWPA RFA (4,168), BLSF (262), and AURA (4,168)	Wetland 44 and Hop Brook		X	X				X	X ⁵	X		X ⁶
S6	401+65-403+50	4,283	MWPA	MWPA RFA (4,283) and AURA (2,928)	Wetland 44 and Hop Brook		X	X				X		X		
S7	405+00-416+40	29,721	Bylaw	AURA (29,721)	Wetlands 39-43		X	X				X				
S8	515+00-522+90	21,087	Bylaw	Bylaw RFA (14,677) and AURA (17,647)	Wetlands 36-38 and Unnamed Stream		X	X	X	X	X	X				
S9	523+00-530+90	19,120	Bylaw	Bylaw RFA (10,018) and AURA (19,175)	Wetlands 33-35 and Unnamed Stream		X	X		X		X				
S10	533+60-543+90	24,865	MWPA	MWPA RFA (24,272) and AURA (23,334)	Wetlands 30 and 31 and Dudley Brook		X	X	X	X		X				
S11	558+10-564+20	14,482	Bylaw	Bylaw RFA (11,515) and AURA (14,482)	Wetlands 27-29 and Unnamed Stream		X	X			X	X				

Impact Area	Stationing ¹	Total Area of Impacts (square feet)	Jurisdiction (MWPA/Bylaw) ²	Wetland Resource Area Type (Area of Impact in Square Feet) ³	Associated BVW and/or Stream	Important Wildlife Habitat Features ⁴	Important Upland/Wetland Food Plants	Standing Dead Trees (Snags)	Cavities in Trunks or Limbs of Trees	Small Mammal Burrows	Dense Herbaceous Cover	Large Woody Debris on the Ground	Rocks, Crevices, Fallen Logs, Overhanging Branches, or Hummocks at or within 1 meter above Water's Surface	Live or Dead Standing Vegetation Overhanging Water or Offering Good Visibility of Open Water	Standing Water Present At least Part of the Growing Season Suitable for use by Breeding Amphibians, Non-breeding Amphibians, Turtles, and/or Foraging Waterfowl	Project Area is Within 100' of Beaver, Mink, or Otter Den, Bank Swallow
S12	576+10-588+00	10,051	Bylaw	AURA (10,051)	Wetland 25		X			X	X	X				
S13	585+25-599+90	36,545	Bylaw	Bylaw RFA (25,319) and AURA (33,564)	Wetlands 24 and 24A and Unnamed Stream/Stormwater Ditch		X			X		X				
S14	600+50-602+25	4,986	Bylaw	Bylaw RFA (4,986) and AURA (1,554)	Unnamed Stream/Station Road Drainage Ditch		X	X								
S15	602+50-711+30	25,375	Bylaw/MWPA ⁷	Bylaw RFA (11,759), MPWA RFA (13,630), BLSF (1,791), and AURA (25,375)	Wetlands 20-22 and Unnamed Stream/Station Road Drainage Ditch		X	X				X				
S16	711+70-724+40	32,745	MWPA	MWPA RFA (32,745), BLSF (877) BVW (31) and AURA (32,285)	Wetlands 15-19 and Hop Brook		X	X	X			X		X		
S17	724+40-725+05	2,718	MWPA	MWPA RFA (2,122), BLSF (1,738), AURA (1,947), LUWW (596), BVW (178), and Bank (124 linear feet)	Wetlands 15 and 16 and Hop Brook		X	X					X	X	X	
S18	725+70-726+30	2,828	MWPA	MWPA RFA (2,277), BLSF (2,154), AURA (2,160), LUWW (550), BVW (118), and Bank (122 linear feet)	Wetlands 12 and 14 and Hop Brook		X	X			X		X ⁸	X	X	
S19	726+30-753+15	71,713	Bylaw/MWPA	Bylaw RFA (222), MWPA RFA (61,552), AURA	Wetlands 5, 6, 7, 8, 9, 11, 12, and 14 and Hop Brook		X	X						X		

Impact Area	Stationing ¹	Total Area of Impacts (square feet)	Jurisdiction (MWPA/Bylaw) ²	Wetland Resource Area Type (Area of Impact in Square Feet) ³	Associated BVW and/or Stream	Important Wildlife Habitat Features ⁴	Important Upland/Wetland Food Plants	Standing Dead Trees (Snags)	Cavities in Trunks or Limbs of Trees	Small Mammal Burrows	Dense Herbaceous Cover	Large Woody Debris on the Ground	Rocks, Crevices, Fallen Logs, Overhanging Branches, or Hummocks at or within 1 meter above Water's Surface	Live or Dead Standing Vegetation Overhanging Water or Offering Good Visibility of Open Water	Standing Water Present At least Part of the Growing Season Suitable for use by Breeding Amphibians, Non-breeding Amphibians, Turtles, and/or Foraging Waterfowl	Project Area is Within 100' of Beaver, Mink, or Otter Den, Bank Swallow
				(71,713), BLSF (3,576), Bylaw IVW (303)												
S20	760+60-766+45	16,668	MWPA	AURA (16,668) and BVW (286)	Wetlands 3, 3A, and 4		X	X			X	X				
S21	767+00	172	Bylaw	AURA (172)	Wetland 1		X									

Source: VHB

1. Please refer to Attachment B in the NOI for Project plans and Attachment A of this WHE for the Wildlife Habitat Evaluation Impact Area figures for stationing.
2. WIAs that are listed as Bylaw are only jurisdictional under the Sudbury Bylaw Regulations. WIAs that are listed as MWPA are jurisdictional under both the MPWA and the Sudbury Bylaw Regulations.
3. RFA overlaps with other wetland resource areas and some WIAs contain multiple wetland resource areas.
4. Important Wildlife Habitat Features are those discussed in the Guidance and listed on the Appendix B: Detailed Wildlife Habitat Evaluation forms.
5. S5 contained two fallen logs within one meter above the water’s surface.
6. S5 had one small potential turtle nesting area.
7. S15 is within Sudbury Bylaw jurisdiction only from approximately Station 600+55-705+30 and is within Sudbury Bylaw and MWPA jurisdiction from approximately Station 705+30 to 711+40.
8. S18 had a few small logs that overhung the water

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3.1 Wetland Impact Area S1

WIA S1 is located within Priority and Estimated Habitat and is a Sudbury jurisdictional WIA only because it consists of AURA. The AURA is associated with Wetland 45 that is south of the limit of grading and a vernal pool¹⁰ that is approximately 76 feet north of the WIA. The WIA is generally situated between the Sudbury Valley Trustees ("SVT") Memorial Forest to the south and the Assabet River National Wildlife Refuge to the north. It extends from approximately Station 367+00 to 370+70, just east of the Hudson/Sudbury/Marlborough corporate limits. In this location the railroad track was mostly built on fill and is higher than the adjacent areas.

The WIA encompasses areas that were previously developed from the historic construction and operation of the rail line and is mostly 22 feet wide and 370 feet long. There is a total of 8,328 square feet of proposed AURA impact. Most of the impacts will occur along the elevated railroad bed that includes the inactive track, fill material, and ballast. Impacts at this location would result from vegetation removal, site grading, installation of the underground transmission line, and paving the MCRT. The railroad tracks and ties are still present and there is a well-defined footpath immediately north of the tracks within the Impact Area. An established trail identified as "S-3" on the Sudbury Valley Trustees' Memorial Forest Trail Map is located approximately 20 to 35 feet to the north of the MBTA ROW on U.S Fish and Wildlife land.

The location where impacts will occur is upland and is vegetated primarily with trees, saplings, shrubs, and some limited herbaceous growth. Dominant Plants include eastern white pine (*Pinus strobus*), glossy false buckthorn (*Frangula alnus*), and Pennsylvania sedge (*Carex pensylvanica*).

Forms of past and current human activities noted within and near the WIA here include derelict railroad infrastructure (railroad ties and tracks), ballast, and a well-worn foot trail north and parallel to the train track. The area is heavily traveled by people walking with or without their dogs, mountain bikers, and horseback riders.

In summary, the Project will not result in a substantial reduction or result in an adverse effect of important wildlife habitat features found in WIA S1. Restoration measures were incorporated into the Project in this location where appropriate, which includes planting lowbush blueberry to offset the removal of food plants and restoring all disturbed areas outside of the 10-foot-wide paved MCRT with a native seed mix that will provide dense herbaceous cover. Overall, following construction and the implementation of restoration measures, the Project will not reduce the capacity of the area to provide important wildlife habitat features or have an adverse effect on the availability of important wildlife habitat either on a local or regional scale.

¹⁰ All wetland areas identified as vernal pools on the Project have been documented following the requirements identified in the Sudbury Wetland Bylaw. In addition, the occurrence and the location of these vernal pools have been accepted as part of the ORAD issued for the Project (DEP File #301-1227).

3.1.1 Important Wildlife Habitat Features Identified, Adverse Effects Analysis, and Proposed Restoration

WIA S1 was evaluated to determine whether important wildlife habitat features were present and if so, whether the Project would result in adverse impacts to those features. Within WIA S1, two important wildlife habitat features were identified:

- › Upland/Wetland Food Plants; and
- › Dense Herbaceous Cover.

Below is a discussion of each feature that was identified and evaluated within the WIA followed by an adverse effect analysis and any proposed restoration measures.

3.1.1.1 Upland/Wetland Food Plants

Within WIA S1, there are several upland plant species (hard mast [e.g., oaks] and fruit/berry producers) that can provide food for wildlife. These species include black oak (*Quercus velutina*), bristly dewberry (*Rubus hispida*), and late lowbush blueberry (*Vaccinium angustifolium*). Glossy false buckthorn, an invasive plant species that can also provide a source of food to wildlife, was also seen there.

Adverse Effects Analysis and Proposed Restoration

Individually, none of the food plants noted within the WIA S1 are particularly unique or abundant to the WIA. All these species can be found outside of the WIA in the Project Locus and beyond. Because of the presence of similar food plants in areas near locations where loss of some food plants from the Project will occur, Project-related losses are not expected to reduce the capacity of the area to provide the important wildlife habitat value that this feature provides and will not result in an adverse effect. Regardless of the no adverse effect determination, the Project will include planting woody species within this WIA including lowbush blueberry (*Vaccinium angustifolium*), which is a food plant.

3.1.1.2 Dense Herbaceous Cover

There is an insignificant amount of (approximately 50 square feet) of Pennsylvania sedge (*Carex pensylvanica*) in this WIA. The Pennsylvania sedge continues south of the WIA within the Project Locus (MBTA ROW) to the south of the WIA and outside of the Project Locus in much greater abundance than what is currently present within the WIA.

Adverse Effects Analysis and Proposed Restoration

Dense herbaceous vegetation can provide cover, food, and nesting habitats for a variety of small mammals, amphibians, reptiles, and bird species. Construction activities associated with the Project will remove this insignificant amount of dense herbaceous vegetation where it presently grows. However, removing this small area of dense herbaceous cover will not adversely affect the wildlife habitat functions it provides due to its size and because

additional, larger areas of dense herbaceous vegetation are present beyond the WIA and within the Project Locus (i.e., project site in the Bylaw Regulations).

Irrespective of this no adverse effect determination, the Project includes restoring all areas within the Project Site that will not be paved for the 10-foot-wide MCRT with a seed mix consisting of native herbaceous species. Within this WIA, it includes approximately 4,713 square feet of restoration with native species. Consequently, the seeding with a native herbaceous seed mix will greatly offset that which will be lost, thereby providing additional habitat value for wildlife and will not result in an adverse effect. Please refer to Planting Schedule B: Priority Habitat on sheet 131 in the plans in Attachment B of the NOI for the planting schedule.

3.2 Wetland Impact Area S2

WIA S2 is within Priority and Estimated Habitat and is a Sudbury jurisdiction WIA because it is AURA. A vernal pool is located approximately 68 feet north of the MBTA ROW within the Assabet River National Wildlife Refuge. In this area the railroad track was likely a result of cut and is lower than the adjacent areas.

The WIA is located within areas that were previously developed from the historic construction and operation of the rail line. The WIA extends from approximately Station 375+00 to 376+50 and is approximately 25 feet wide by 150 feet long. There is a total of 3,253 square feet of proposed AURA impact resulting from vegetation removal, site grading, installation of the underground transmission line, and paving the MCRT. The railroad tracks and ties are still present and there is a well-defined footpath immediately north of the tracks within the Impact Area. An established trail marked as "S-3" on SVTs Memorial Forest Trail Map is located approximately 20 to 35 feet to the north of the MBTA ROW in this location.

Vegetation throughout this WIA is not very diverse. Dominant species include gray birch (*Betula populifolia*), eastern white pine, mixed tree oaks (*Quercus* spp.), glossy false buckthorn, and black huckleberry.

Forms of past and current human activities noted within and near the WIA here include derelict railroad infrastructure (railroad ties and tracks) and a well-worn foot trail north and parallel to the train tracks. Observations made during site visits include moderate foot traffic by people, people walking dogs, horseback riders and people riding bikes. Tire tracks indicating use by individuals riding dirt bikes (motorcycles) in the area were also seen.

In summary, the Project will not result in a substantial reduction of or an adverse effect to important wildlife habitat features found in WIA S2. Restoration measures were incorporated into the Project in this location where appropriate, which includes planting black huckleberry to offset the removal of food plants and restoring all disturbed areas outside of the 10-foot-wide paved MCRT with a native seed mix which will provide dense herbaceous cover. Within this WIA, it includes 1,998 square feet of restoration with native species. Overall, following construction and the implementation of restoration measures, the Project will not reduce the capacity of the area to provide important wildlife habitat features or have an adverse effect on the availability of important wildlife habitat either on a local or regional scale.

3.2.1 Important Wildlife Habitat Features Identified, Adverse Effects Analysis, and Proposed Restoration

WIA S2 was evaluated to determine whether important wildlife habitat features were present and if so, whether the Project would result in adverse impacts to those features. Within WIA S2, one important wildlife habitat feature was identified:

› Upland/Wetland Food Plants

Below is a discussion this feature followed by an adverse effect analysis and any proposed restoration measures.

Within WIA S2, there are several upland plant species (hard mast and fruit/berry producers) that can provide food for wildlife. These species include tree oaks, black huckleberry, and whiplash dewberry (*Rubus flagellaris*). Glossy false buckthorn, an invasive plant species that can also provide a source of food to wildlife, was also seen there.

Adverse Effects Analysis and Proposed Restoration

Individually, none of the food plants noted within the WIA S2 are unique to the WIA and all these species can be found outside of the WIA on the Project Locus and beyond. Because of the presence of similar food plants in areas near locations where loss of some food plants from the Project will occur, Project-related losses are not expected to reduce the capacity of the Project Locus and surrounding area to provide the important wildlife habitat value that this feature provides. Regardless of the no adverse effect determination, the Project will include planting black huckleberry (*Gaylussacia baccata*) within this WIA, which is a food plant.

3.3 Wetland Impact Areas S3, S4, S5, and S6

WIAs S3, S4, S5, and S6 are discussed together because they are associated with the Hop Brook wetland complex west of Dutton Road. These WIAs are located within and in close proximity to Wetland 44, which is a large palustrine emergent marsh associated with Hop Brook. The WIAs are also located within Priority and Estimated Habitat.

In this location the railroad track was built on fill and is higher than the adjacent wetland areas. The railroad tracks and ties are still present and there is a well-defined footpath immediately north of the tracks within these Impact Areas. The channel of Hop Brook crosses the Project from approximately Station 400+25 to 400+60 and flows in a northerly direction beneath an existing steel girder railroad bridge. A new pedestrian bridge was added to the existing substructure in recent history.

The proposed Project footprint in this area averages 18 to 22 feet in width and is approximately 782 feet in length. WIA S3 extends from approximately Station 395+75 to 399+10; WIA S4 extends from approximately Station 399+10 to 400+10; WIA S5 extends from approximately Station 400+60 to 401+60; and WIA S6 extends from approximately Station 401+60 to 403+50.

Timber (crane) mats will be temporarily placed within a portion of WIA S4 on the westside of Hop Brook from approximately Station 399+10 to 399+95. The Project limits within this crane mat area are approximately 40 feet wide (north to south) and 85 feet long (east to west). Timber mats will also be temporarily placed on the east side of Hop Brook within a portion of WIA S5 from approximately Station 400+65 to 401+60. The Project limits within this crane mat area are approximately 40 feet wide (north to south) in this location and 95 feet long (east to west).

Most of the impacts in this area will occur along the elevated railroad bed that includes the inactive railroad track, fill material, and ballast. Work that will result in disturbance to wetland resource areas include vegetation removal, site grading, rehabilitation of the Hop Brook bridge (Bridge 128), temporary placement of timber mats, installing the underground transmission line and paving the MCRT. In locations where the timber mats are proposed it will be necessary to remove all woody vegetation, possibly including tree stumps, to ensure that the mats are installed properly to ensure a safe, stable, and level work platform for the crane that will be used in this location. The timber mats are required to facilitate rehabilitating the Hop Brook bridge and will result in temporary impacts to AURA, BLSF, and RFA, that will be restored once rehabilitation of the bridge is complete and the timber mats are removed.

WIAs S3 and S6 are west and east of Hop Brook respectively, beyond the limits of the crane mats. WIA S3 includes approximately 7,893 square feet of MWPA RFA impacts and 5,788 square feet of AURA impacts. WIA S6 includes approximately 4,283 square feet of MWPA RFA impacts and 2,928 square feet of AURA impacts. In general, WIAs S3 and S6 are similar. Along both the north and south sides of these areas the vegetation is primarily woody consisting of trees, saplings and shrubs. Herbaceous vegetation is also present here in scattered locations including in the central portion of the Project where the railroad track is situated. Dominant vegetation within S3 includes red maple (*Acer rubrum*), Morrow's honeysuckle, and eastern white pine, and dominant vegetation within S6 includes red maple, Pennsylvania sedge, Morrow's honeysuckle, eastern white pine, and black oak.

WIAs S4 and S5 are located immediately west and east of Hop Brook respectively. WIA S4 includes approximately 37 square feet of BLSF impacts, and 3,746 square feet of MWPA RFA impacts, and 3,746 square feet of AURA impacts. WIA S5 includes approximately 262 square feet of BLSF impacts, 4,168 square feet of MWPA RFA impacts, and 4,168 square feet of AURA impacts. These WIAs occur in areas where the Project footprint is expanded to accommodate the temporary placement of crane mats to support the rehabilitation of the existing bridge. Dominant vegetation in S4 includes red maple, eastern white pine, Morrow's honeysuckle, and black cherry (*Prunus serotina*). Dominant vegetation in S5 includes red maple, glossy false buckthorn, Pennsylvania sedge, Morrow's honeysuckle, eastern white pine, and false lily-of-the-valley (*Maianthemum canadense*).

Forms of past and current human activities noted within and near the WIA here include derelict railroad infrastructure (railroad ties and tracks) and a well-worn foot trail north and parallel to the train track. Observations made during site visits include moderate foot traffic by people, people walking dogs, horseback riders and people riding bikes. Tire tracks indicating use by individuals riding dirt bikes (motorcycles) in the area were also observed.

In summary, the Project will not result in a substantial reduction of important wildlife habitat features found in WIAs S3, S4, S5, and S6. Restoration measures were incorporated into the Project in these locations where appropriate, which includes plantings to offset some loss of food plants, reinstalling removed standing dead trees, creating brush piles to replace the loss of large woody debris on the ground, plantings to offset the loss of vegetation overhanging open water and providing good visibility of open water, replacing the two fallen logs that overhang 1m or less above the water surface, and restoring all disturbed areas outside of the 10-foot-wide paved MCRT with a native seed mix which will provide dense herbaceous cover. Overall, following construction and the implementation of restoration measures, the Project will not reduce the capacity of the area to provide important wildlife habitat features or have an adverse effect on the availability of important wildlife habitat either on a local or regional scale.

3.3.1 Important Wildlife Habitat Features, Impacts, and Proposed Restoration

WIAs S3, S4, S5, and S6 were evaluated to determine whether important wildlife habitat features were present and if so, whether the Project would result in adverse impacts to those features. Within this group of WIAs seven important wildlife habitat features were identified. These include:

- › Upland/Wetland Food Plants;
- › Standing Dead Trees;
- › Tree Cavities in Trunks or Limbs;
- › Large Woody Debris on the Ground;
- › Rocks, Crevices, Fallen Logs. Overhanging Branches or Hummocks at or Within 1m Above the Water's surface; and
- › Live or Dead Standing Vegetation Overhanging or Offering Good Visibility of Open Water and Overhanging Branches within One Meter Above the Water's Surface;
- › Exposed Areas of Well-Drained, Sandy Soil Suitable for Turtle Nesting.

The following subsections detail the important wildlife habitat features found in WIAs S3, S4, S5, and S6 followed by an adverse effect analysis and any proposed mitigation measures.

3.3.1.1 Upland/Wetland Food Plants

Within WIAs S3, S4, S5, and S6 there is a variety of upland plant species that provide wildlife value as source of food for a variety of species. These species include black oak, white oak (*Quercus alba*), black cherry, late lowbush blueberry, and Canada serviceberry (*Amelanchier canadensis*). Glossy false buckthorn and Morrow's honeysuckle, both invasive plant species that can also provide a source of food to wildlife, were also observed.

Adverse Effects Analysis and Restoration

Although food plants will be removed within these WIAs, none of them are abundant and these same species are present in greater abundance on areas of the berm that will not be

affected by the Project and within the Project Locus. As mitigation for the loss of vegetation within the locations where crane mats will be placed, tree and shrub species will be planted in equivalent quantities to replace those being lost. Woody plantings within these areas that are food sources to wildlife will include serviceberry, black oak, black huckleberry, winterberry (*Ilex verticillata*), and highbush blueberry (*Vaccinium corymbosum*). All disturbed areas except for the 10-foot-wide paved MCRT will be seeded with herbaceous seed mixes that will provide additional value to wildlife as sources of food. Details regarding plantings and seed mixes are provided on sheet 131 of the plans provided in Attachment B of the NOI. Because of the surrounding food plants that will not be disturbed and the supplemental woody plantings and seed mixes, the Project will not reduce the capacity of upland/wetland plants in the area of the Project to provide food for wildlife or result in an adverse effect to wildlife habitat either on a local or regional scale.

3.3.1.2 Standing Dead Trees

The following standing dead trees were identified within WIAs S3, S5, and S6 during the WHE site visits:

- › WIA S3 had one standing dead tree that is within the 6- to 12-inch diameter at breast height ("dbh") range;
- › WIA S5 had eight standing dead trees that were within the 6- to 12-inches dbh and two standing dead trees that were within the 18- to 14-inches dbh; and
- › WIA S6 has two standing dead trees that were within the 6 to 12-inches dbh.

Adverse Effects Analysis and Restoration

All standing dead trees that will be removed during construction will be reinstalled within the immediate vicinity of the WIA to avoid resulting in a loss of this important wildlife habitat feature. Details for reinstalling the standing dead trees are provided in Attachment K of the NOI.

3.3.1.3 Tree Cavities in Trunks or Limbs

One tree was observed to contain one cavity at the base of the tree that is within the 6- to 12-inch dbh range within S5. Construction activities in this area will require that the tree containing this cavity be removed. However, birds are unlikely to use a cavity that is at the base of a tree.

Adverse Effects Analysis and Restoration

One cavity was observed within WIA S5 but by the nature of forested area on the Project Locus near the WIA, opportunities exist for other such tree cavities. The loss of the tree with the cavity in this WIA is negligible and will not result in an adverse effect to wildlife habitat due to cavities that will remain on Project Locus outside of the limits of disturbance and in the immediate area beyond the Project Locus.

3.3.1.4 Large Woody Debris on the Ground

There is limited scattered large woody debris on the ground throughout WIAs S3, S4, S5, and S6. However, none of it is substantial (e.g., large trees, logs or large brush piles). There is larger and more abundant large woody debris on the ground outside of the WIA on the Project Locus and beyond.

Adverse Effects Analysis and Restoration

Although there is some large woody debris present in WIAs S3-S6, the amounts of this material are not substantial. Areas in the vicinity of these WIAs on the Project Locus and beyond contain an abundant amount of this important wildlife habitat feature. Overall, the loss of the minor amounts of large woody debris in these WIAs is negligible compared to the amount of this feature in the surrounding area and will not result in an adverse effect to wildlife habitat either in the immediate area of the Project Locus and/or the region. This conclusion is based on observations of undeveloped forest and the presence of large woody debris in greater amounts on the Project Locus outside of the limits of work and in the immediate area beyond the Project Locus. Accordingly, the loss of large woody debris in the WIA is not expected to have an adverse effect on the availability of important wildlife habitat either on a local or regional scale.

Regardless of the no adverse effect determination, brush piles will be created within the vicinity of these WIAs. Based on Natural Resources Conservation Service guidance for the creation of brush piles, brush piles will be created along the length of these WIAs at a frequency of one per 200 to 300 feet. The brush piles will be created using appropriate salvaged woody debris presently on the ground within the area of impact and/or some of the logs and slash that will be generated during the vegetation clearing process. Information provided in Attachment K the NOI for the Project describes the creation of brush pile as restoration of the loss of this habitat feature.

3.3.1.5 Live or Dead Standing Vegetation Overhanging or Offering Good Visibility of Open Water

WIAs S3, S4, S5, and S6 contain live or dead standing woody vegetation that will be removed during construction that either overhangs or provides visibility of open water in Hop Brook and the associated marsh. In WIAs S3 and S6, vegetation that provides this habitat value is generally located in thin strips at the outer limits of work and includes small trees, saplings, and tall shrubs. Beyond the limits of work in WIAs S3 and S6. (north and south), similar vegetation will remain in greater amounts to that which will be removed and will continue to provide this important wildlife habitat feature. In WIAs S4 and S5, because of the need to place crane mats for safe use of cranes needed to work on the bridge across Hop Brook, all the woody vegetation that currently resides beneath the mat footprints will be removed. The approximate total number of trees, tall shrubs, and dead standing trees that overhang or provide a view of open water that will be removed in each WIA is:

- › S3 has approximately 12 trees;
- › S4 has approximately 29 live trees, 4 snags, and abundant shrubs;

- › S5 has approximately 35 live trees and 10 snags ; and
- › S6 has approximately 5 trees.

Adverse Effects Analysis and Restoration

Following the removal of the woody vegetation in WIAs S3 and S6, undisturbed areas on the elevated railroad berm beyond the limit of work will continue to have tall woody, living and dead vegetation providing views to open water in quantities much greater than what will be removed. Overall the loss of these features in WIAs S3 and S6 are not expected to result in an adverse effect to wildlife habitat either in the immediate area of the site or the region. This conclusion is based on the observation that similar features will remain on the Project Locus in the immediate vicinity of those WIAs. Accordingly, the loss of live or dead standing vegetation overhanging or offering good visibility of open water in these WIAs is not expected to have an adverse effect on the availability of important wildlife habitat either on a local or regional scale.

As restoration for the loss of this important wildlife habitat feature within WIAs S3 through S6, tree and shrub species will be planted in equivalent quantities to those being lost. As shown on sheet 131 in the plans provided in Attachment B of this NOI, 45 trees and 30 shrubs will be planted from Station 397+70 to 400+10 (S3 and S4) and 40 trees and 40 shrubs will be planted from Station 400+60 to 401+60 (S5 and S6). All plantings will be installed in a naturalized condition to provide wildlife habitat and will not be planted in a linear manner. Once mature, these woody species will offer views to and perches over open water in the adjacent marsh at a value that will, at a minimum, be equal to what will be lost. Based on proposed mitigation, removal of live or dead standing vegetation within these WIAs will not reduce the capacity of the area to provide this important wildlife habitat feature and not expected to have an adverse effect on the availability of important wildlife habitat either on a local or regional scale.

3.3.1.6 Rocks, Crevices, Fallen Logs, Overhanging Branches, or Hummocks at, or within 1m above the water surface

WIA S5 contains two fallen logs that are within one meter above the water's surface. These features, which potentially provide basking habitat for turtles or feeding perches for green herons, will be lost during construction from the placement of timber mats that will be needed for crane use in this area.

Adverse Effects Analysis and Restoration

Following construction in the area, these features will be replicated in the same general location using logs that will be generated by Project tree clearing activities. Based on proposed mitigation within these WIAs, the Project will not reduce the capacity of the area to provide this important wildlife habitat feature and is not expected to have an adverse effect on the availability of important wildlife habitat either on a local or regional scale.

3.3.1.7 Exposed Areas of Well-Drained, Sandy Soil Suitable for Turtle Nesting

On the south side of WIA S5 there is one small patch of open sand and loose gravel that is approximately 200 square feet at the water's edge that will be temporarily disturbed by the placement of crane mats. This wildlife habitat feature appears to be suitable for turtle nesting; however, observed foot traffic in this area by people and dogs accessing the water's edge act to limit its value as turtle nesting habitat.

Adverse Effects Analysis and Restoration

Although there is a small amount of turtle nesting habitat present in S5, the size and quality are not significant. Areas in the vicinity of the WIA contain larger and more suitable nesting habitat, particularly the sand pit area southwest on SVT property. Overall, the loss of this small area of turtle nesting habitat in the WIA is not expected to result in an adverse effect to wildlife habitat. This conclusion is based on observations of the current use of the turtle nesting area (for example, people and dogs using it to access Hop Brook) and the presence of turtle nesting habitat within the vicinity of the WIA.

3.4 Wetland Impact Area S7

WIA S7 is a Sudbury jurisdictional WIA because it is AURA that is associated with five wetlands (Wetlands 39-43) and vernal pools (Vernal Pools 9-13) on both sides of the elevated railroad berm. The area extends from approximately Station 405+00 to 416+40 between Hop Brook and Dutton Road. In this location the railroad track was primarily built on fill and is higher than the adjacent areas.

The WIA primarily encompasses areas that were previously developed from the historic construction and operation of the rail line and is mostly 22 feet wide and 1,040 feet long. There is approximately 29,721 square feet of proposed AURA impacts that would result from vegetation removal, site grading, installing the underground transmission line, and paving the MCRT. Most of the impacts will occur along the elevated railroad bed that includes the inactive track, fill material, and ballast. The railroad tracks and ties are still present and there is a well-defined footpath immediately north of the tracks within the WIA. The area is heavily traveled by people walking with or without their dogs, mountain bikers, and horseback riders. The WIA also abuts established trails associated with the Memorial Forest and is maintained by the SVT. One trail is shown as "Blueberry Trail" and the other is unnamed on SVT's trail map. Other disturbances include proximity to Dutton Road, which is approximately 40 feet east of the WIA; an adjacent horse farm where horseback riders come directly out onto the tracks and footpath; and surrounding single-family residences.

The location where impacts will occur is upland and is sparsely vegetated primarily with trees, saplings, shrubs, and some limited herbaceous growth. Dominant plants observed growing in this area include eastern white pine, tree oaks, black huckleberry, and glossy false buckthorn.

In summary, the Project will not result in a substantial reduction or result in an adverse effect of important wildlife habitat features found in WIA S7. Restoration measures were

incorporated into the Project in this location where appropriate, which includes reinstalling standing dead trees that will be removed, creating brush piles, and restoring all disturbed areas outside of the 10-foot-wide paved MCRT with a native seed mix which will provide dense herbaceous cover. Overall, following construction and the implementation of restoration measures, the Project will not reduce the capacity of the area to provide important wildlife habitat features or have an adverse effect on the availability of important wildlife habitat either on a local or regional scale.

3.4.1 Important Wildlife Habitat Features, Impacts, and Proposed Restoration

WIA S7 was evaluated to determine whether important wildlife habitat features were present and if so, whether the Project would result in adverse impacts to those features. Within WIA S7, three important wildlife habitat features were identified:

- › Upland/Wetland Food Plants;
- › Standing Dead Trees; and
- › Large Woody Debris on the Ground.

Below is a discussion of each feature that was identified and evaluated within the WIA followed by an adverse effect analysis and any proposed mitigation measures.

3.4.1.1 Upland/Wetland Food Plants

Within WIA S7, there are upland plant species (hard mast and fruit/berry producers) that can provide food for wildlife, including tree oaks and black huckleberry. Glossy false buckthorn an invasive plant species that can also provide a source of food to wildlife was also seen there.

Adverse Effects Analysis and Restoration

Individually, none of the food plants noted within the WIA S7 are particularly unique to the WIA and all of these species can be found outside of the WIA on the Project Locus and beyond. Because of the presence of similar food plants in greater quantities in areas near locations where loss of some food plants from the Project will occur, Project-related losses are negligible and will not result in an adverse effect or reduce the capacity of the area to provide the important wildlife habitat value that this feature provides. Restoration or mitigation is not proposed at this location for food plants and the no adverse effect standard is met.

3.4.1.2 Standing Dead Trees

In WIA 7, a total of 7 standing dead trees with a dbh ranging from 6- to 12-inches will be removed as part of construction activities. None of the trees appeared to contained cavities.

Adverse Effects Analysis and Restoration

All standing dead trees that will be removed during construction will be reinstalled within the immediate vicinity of the WIA to avoid resulting in a loss of this important wildlife habitat feature. Details for reinstalling the standing dead trees are provided in Attachment K of the NOI.

3.4.1.3 Large Woody Debris on the Ground

There is limited scattered large woody debris on the ground throughout the WIA. However, none of it is substantial (for example, large trees, logs or large brush piles). There is larger and more abundant large woody debris on the ground outside of the WIA on the Project Locus and beyond.

Adverse Effects Analysis and Restoration

Although there is some large woody debris present in S7, the amount of this material is not significant. Areas in the vicinity of the WIA on the Project Locus and beyond contain an abundant amount of this wildlife habitat feature. Overall, the loss of the large woody debris in the WIA is not expected to result in an adverse effect to wildlife habitat in the immediate area of the Project Locus and/or the region. This conclusion is based on observations of undeveloped forest and the presence of large woody debris on the Project Locus outside of the limits of disturbance and in the immediate area beyond the Project Locus.

Regardless of the no adverse effect determination, brush piles will be created within the Project Locus. Based on Natural Resources Conservation Service guidance for the creation of brush piles, brush piles will be created along the length of the WIA on the Project Locus at a frequency of one per 200 to 300 feet. The brush piles will be created using appropriate salvaged woody debris presently on the ground within the area of impact and/or some of the logs and slash that will be generated during the vegetation clearing process. Information provided in Attachment K the NOI for the Project describes the creation of brush pile as mitigation of the loss of this habitat feature.

3.5 Wetland Impact Area S8

WIA S8 is a Sudbury jurisdictional WIA because it is AURA and RFA based on Sudbury's Bylaw only. It is associated with an unnamed stream and Wetlands 36, 37, and 38 and extends from approximately Station 515+00 to 522+90 between Dutton Road and Peakham Road. In this location the railroad track was built on fill and is higher than the adjacent areas.

The WIA is located within areas that were previously developed from the historic construction and operation of the rail line and is mostly 25 feet wide. There is approximately 14,677 square feet of Bylaw RFA impacts and 17,647 square feet of AURA impacts. Impacts at this location would result from vegetation removal, site grading, installing the underground transmission line and paving of the MCRT. The railroad tracks and ties are still present, there is a well-defined footpath immediately south of the tracks within the WIA, and single-family residences are within the immediate vicinity.

The location where impacts will occur is upland and is vegetated primarily with saplings, shrubs, and some limited herbaceous growth. Dominant plants observed growing include red maple, tree oaks, American elm (*Ulmus americana*), glossy false buckthorn, Asian bittersweet (*Celastrus orbiculatus*), and spotted henbit (*Lamium maculatum*).

Forms of past and current human activities noted within and near the WIA here include derelict railroad infrastructure (railroad ties and tracks) and a well-worn foot trail south and parallel to the train track. Observations made during site visits include foot traffic by people, and people walking dogs.

In summary, the Project will not result in a substantial reduction or result in an adverse effect of important wildlife habitat features found in WIA S8. Restoration measures were incorporated into the Project in this location where appropriate, which includes reinstalling all standing dead trees that will be removed, restoring all disturbed areas outside of the 10-foot-wide paved MCRT with a native seed mix which will provide dense herbaceous cover, and creating brush piles. Overall, following construction and the implementation of restoration measures, the Project will not reduce the capacity of the area to provide important wildlife habitat features or have an adverse effect on the availability of important wildlife habitat either on a local or regional scale.

3.5.1 Important Wildlife Habitat Features, Impacts, and Proposed Restoration

WIA S8 was evaluated to determine whether important wildlife habitat features were present and if so, whether the Project would result in adverse impacts to those features. Within WIA S8, six important wildlife habitat features were identified:

- › Upland/Wetland Food Plants;
- › Standing Dead Trees;
- › Tree Cavities in Trunks or Limbs;
- › Small Mammal Burrows;
- › Dense Herbaceous Cover; and
- › Large Woody Debris on the Ground;

Below is a discussion of each feature that was identified and evaluated within the WIA followed by an adverse effect analysis and any proposed restoration measures.

3.5.1.1 Upland/Wetland Food Plants

Within WIA S8, there are several upland plant species (hard mast and fruit/berry producers) that can provide food for wildlife. These species include black cherry, tree oaks, and whiplash dewberry, glossy false buckthorn, Japanese barberry (*Berberis thunbergii*) Asian bittersweet, winged euonymus (*Euonymus alatus*) and Morrow's honeysuckle.

Adverse Effects Analysis and Restoration

Individually, none of the food plants noted within the WIA S8 are unique to the WIA and all of these species can be found outside of the WIA on the Project Locus and beyond. Because of the presence of similar food plants in greater quantities in areas near locations where loss of some food plants from the Project will occur, Project-related losses are not expected to reduce the capacity of the area to provide the important wildlife habitat value that this feature provides. Restoration or mitigation is not proposed at this location for this habitat feature and the no adverse effect standard is met.

3.5.1.2 Standing Dead Trees

In WIAs 8, a total of four dead trees with a dbh ranging from 6- to 12-inches will be removed. None of the trees appeared to contain cavities.

Adverse Effects Analysis and Restoration

All standing dead trees that will be removed during construction will be reinstalled within the immediate vicinity of the WIA to avoid resulting in a loss of this important wildlife habitat feature. Details for reinstalling the standing dead trees are provided in Attachment K of the NOI.

3.5.1.3 Tree Cavities in Trunks or Limbs

One cavity was seen in a black cherry tree within WIA S8. The cavity was estimated to be less than 6 inches in diameter and was likely created by a woodpecker. Construction activities in this area will require that the tree containing this cavity be removed.

Adverse Effects Analysis and Restoration

One cavity was observed within the WIA but by the nature of forested area on the Project Locus near the WIA, opportunities exist for other tree cavities. The loss of the tree with the one cavity in this WIA will not result in an adverse effect to wildlife habitat due to the cavities that will remain on Project Locus outside of the limits of disturbance and in the immediate area beyond the Project Locus.

3.5.1.4 Small Mammal Burrows

One potential small mammal burrow was seen in the foot path that parallels the railroad track at approximately Station 517+25. The hole was about 2- to 3-inches in diameter and was found in an area that was open and exposed. The burrow was in soil material that was likely brought there for construction of the railroad bed and was dense and compacted.

Adverse Effects Analysis and Restoration

Construction of the Project will result in the loss of the one small mammal burrow that was seen within WIA 8. Many chipmunks were observed along the entire Project Locus and it is assumed that small mammal burrows are ubiquitous within the surrounding wooded areas that are outside of the limits of work but within the Project Locus (also beyond the limits of the Project Locus). Very few small mammal burrows were identified during the WHE because

the Project is primarily limited to the railroad embankment which consists of compacted soils, railroad ballast, railroad ties, and tracks. The lack of similar burrows in this location and in general along the entire railroad bed associated with this Project would suggest that this material is not especially suited for small mammal burrow development, possibly because of its compacted nature or the nature of the material used to build the railroad bed. Overall, the loss of the one burrow will not have a significant effect to small mammals either on a local or regional level and will not result in an adverse effect to wildlife habitat.

3.5.1.5 Dense Herbaceous Cover

WIA 8 contains a large patch of spotted henbit, a non-native herbaceous plant species, growing across the railroad track near Station 522+70. Construction of the Project will require that this feature be removed.

Adverse Effects Analysis and Restoration

Dense herbaceous vegetation can provide cover, food, and nesting habitats for a variety of small mammals, amphibians, reptiles, and bird species. Construction activities associated with the Project will remove this insignificant amount of dense herbaceous vegetation where it presently grows. However, removing this small area of dense herbaceous cover will not adversely affect the wildlife habitat functions it provides due to its size and because additional, larger areas of dense herbaceous vegetation are present beyond the WIA and within the Project Locus (i.e., project site in the Bylaw Regulations).

Irrespective of this no adverse effect determination, the Project includes restoring all areas within the Project Site that will not be paved for the 10-foot-wide MCRT with a seed mix consisting of native herbaceous species. Within this WIA, it includes approximately 13,266 square feet of restoration with native species. Consequently, the seeding with a native herbaceous seed mix will greatly offset that which will be lost, thereby providing additional habitat value for wildlife and will not result in an adverse effect. Please refer to Planting Schedule B: Priority Habitat on sheet 131 in the plans in Attachment B of the NOI for the planting schedule.

3.5.1.6 Large Woody Debris on the Ground

A large quantity of large woody debris is present in WIA 8. This material is also located outside of the WIA within the Project Locus and beyond. Most of this material appears to have been purposely placed. Some of it has been cut, probably with a chain saw, and has been stacked between the train tracks. In other locations the woody material has been stacked in linear piles generally parallel to the tracks. All of this material, though not naturally occurring, has some value for wildlife. Construction activities here will require removing this material from the limits of work. That which is beyond the limits of work will remain.

Adverse Effects Analysis and Restoration

A large amount of this material on the Project Locus that will remain untouched by construction activities, therefore the loss of large woody debris in the WIA is not expected to

have an adverse effect on the availability of important wildlife habitat either on a local or regional scale. Consequently, restoration or mitigation for the loss of large woody debris on the ground in WIA 8 is not planned and the no adverse effect standard is met.

Regardless of the no adverse effect determination, brush piles will be created within the Project Locus. Based on Natural Resources Conservation Service guidance for the creation of brush piles, brush piles will be created along the length of the WIA on the Project Locus at a frequency of one per 200 to 300 feet. The brush piles will be created using appropriate salvaged woody debris presently on the ground within the area of impact and/or some of the logs and slash that will be generated during the vegetation clearing process. Information provided in Attachment K the NOI for the Project describes the creation of brush pile as restoration of the loss of this habitat feature.

3.6 Wetland Impact Area S9

WIA S9 is a Sudbury jurisdictional WIA only because it is AURA and RFA based on Sudbury's Bylaw only. It is associated with Wetlands 33 through 35, Vernal Pools 7 and 8, and an unnamed stream on both sides of the raised railroad embankment. It is just east of WIA S8 and extends from approximately Station 523+00 to 530+90. The majority of the WIA is located west of Peakham Road, with a small portion of AURA east of Peakham Rd. In this location the railroad track was primarily built on fill and is higher than the adjacent areas.

The WIA is within areas that were previously developed from the historic construction and operation of the rail line and is mostly 22 feet wide. There is 10,018 square feet of Bylaw RFA impact and 19,175 square feet of AURA impact. Impacts at this location would result from vegetation removal, site grading, installing the underground transmission line and paving of the MCRT. The railroad tracks and ties are still present and there is a well-defined footpath immediately south of the tracks within the WIA. In addition, single-family residences and roadways are within the immediate vicinity.

The location where impacts will occur is upland and is vegetated primarily with trees, saplings, shrubs, and some limited herbaceous growth. Dominant plants observed growing include in this area include eastern white pine, red maple, glossy false buckthorn, Asian bittersweet, and wild sarsaparilla (*Aralia nudicaulis*).

Forms of past and current human activities noted within and near the WIA here include derelict railroad infrastructure (railroad ties and tracks) and a well-worn foot trail south and parallel to the train track. Observations made during site visits include foot traffic by people and people walking dogs.

In summary, the Project will not result in a substantial reduction or result in an adverse effect of important wildlife habitat features found in WIA S9. Restoration measures were incorporated into the Project in this location where appropriate, which includes reinstalling all standing dead trees that will be removed, restoring all disturbed areas outside of the 10-foot-wide paved MCRT with a native seed mix which will provide a dense herbaceous cover, and creating brush piles. Overall, following construction and the implementation of restoration measures, the Project will not reduce the capacity of the area to provide

important wildlife habitat features or have an adverse effect on the availability of important wildlife habitat either on a local or regional scale.

3.6.1 Important Wildlife Habitat Features, Impacts, and Proposed Restoration

WIA S9 was evaluated to determine whether important wildlife habitat features were present and if so, whether the Project would result in adverse impacts to those features. Within WIA S9, four important wildlife habitat features were identified:

- › Upland/Wetland Food Plants;
- › Standing Dead Trees;
- › Small Mammal Burrows; and
- › Large Woody Debris on the Ground.

Below is a discussion of each feature that was identified and evaluated within the WIA followed by an adverse effect analysis and any proposed restoration or mitigation measures.

3.6.1.1 Upland/Wetland Food Plants

Within WIA S9, there are several upland plant species (hard mast and fruit/berry producers) that can provide food for wildlife. These species include black cherry, tree oaks, black huckleberry, and lowbush blueberry. Glossy false buckthorn, Japanese barberry, Asian bittersweet, and winged euonymus, invasive plant species that can also provide a source of food to wildlife, were also observed within the WIA.

Adverse Effects Analysis and Restoration

Individually, none of the food plants noted within the WIA S9 are particularly unique to the WIA or the surrounding area and all of these species can be found outside of the WIA on the Project Locus and beyond. Because of the presence of similar food plants in areas near locations where loss of some food plants from the Project will occur, Project-related losses are not expected to reduce the capacity of the area to provide the important wildlife habitat value that this feature provides. Restoration or mitigation is not proposed at this location for this habitat feature and the no adverse effect standard is met.

3.6.1.2 Standing Dead Trees

In WIAs 9, a total of three standing dead trees with a dbh ranging from 6 – to 12-inches will be removed. None of the trees appeared to contain cavities.

Adverse Effects Analysis and Restoration

All standing dead trees that will be removed during construction will be reinstalled within the immediate vicinity of the WIA to avoid resulting in a loss of this important wildlife habitat feature. Details for reinstalling the standing dead trees are provided in Attachment K of the NOI.

3.6.1.3 Small Mammal Burrows

One small mammal burrow was observed in soil material that was likely brought there for construction of the railroad bed.

Adverse Effects Analysis and Restoration

Construction of the Project will result in the loss of the one small mammal burrow that was observed within WIA S9. Many chipmunks were observed along the entire Project Locus and it is assumed that small mammal burrows are ubiquitous within the surrounding wooded areas that are outside of the Project limits but within the Project Locus (also beyond the limits of the Project Locus). Very few small mammal burrows were identified during the WHE because the Project is primarily limited to the railroad embankment which consists of compacted soils, railroad ballast, railroad ties, and tracks. The lack of similar burrows in this location and in general along the entire railroad bed associated with this Project would suggest that this material is not especially suited for small mammal burrow development possibly by its compacted nature or the nature of the material used to build the railroad bed. Overall, the loss of one burrow will not have a significant effect to small mammals either on a local or regional level and will not result in an adverse effect to wildlife habitat.

3.6.1.4 Large Woody Debris on the Ground

There is limited scattered large woody debris on the ground throughout the WIA. However, none of it is substantial (large trees, logs or large brush piles). There is larger and more abundant large woody debris on the ground outside of the WIA on the Project Locus and beyond. Although this material was not enumerated, it is more abundant than within the WIA.

Adverse Effects Analysis and Restoration

Although there is some large woody debris present in S9, the amount of this material is not significant. Areas in the vicinity of the WIA on the Project Locus and beyond contained an abundant amount of this important wildlife habitat feature. Overall, the loss of the large woody debris in the WIA is not expected to result in an adverse effect to wildlife habitat either in the immediate area of the Project Locus and/or the region. This conclusion is based on observations of undeveloped forest and the presence of large woody debris on the Project Locus outside of the limits of disturbance and in the immediate area beyond the Project Locus.

Regardless of the no adverse effect determination, brush piles will be created within the Project Locus. Based on Natural Resources Conservation Service guidance for the creation of brush piles, brush piles will be created along the length of the WIA on the Project Locus at a frequency of one per 200 to 300 feet. The brush piles will be created using appropriate salvaged woody debris presently on the ground within the area of impact and/or some of the logs and slash that will be generated during the tree clearing process. Information provided in Attachment K the NOI for the Project describes the creation of brush pile as restoration for the loss of this habitat feature.

3.7 Wetland Impact Area S10

WIA S10 is MWPA RFA and Sudbury AURA primarily associated with Dudley Brook and Wetlands 30 and 31 on both sides of the railroad embankment. The area is located east of Peakham Road from approximately Station 533+60 to 543+90. In this location the railroad track was built on fill and is higher than the adjacent areas.

The WIA is within areas that were previously developed from the historic construction and operation of the rail line and is mostly 22 feet wide. There is a total of approximately MWPA 24,272 square feet of RFA impacts and 23,334 square feet of AURA impacts. Impacts at this location would result from vegetation removal, site grading, installing the underground transmission line, and paving of the MCRT.

The railroad tracks and ties are still present and at the western end of the WIA there is a footpath immediately south of the tracks that switches to the north side partway through the WIA; at this point the footpath becomes wider and more well-defined as it continues to the east.

The location where impacts will occur is upland and is vegetated primarily with trees, saplings, shrubs, and some limited herbaceous growth. Dominant plants observed growing include in this area include eastern white pine, red maple, Pennsylvania sedge, eastern poison Ivy (*Toxicodendron radicans*), Virginia creeper (*Parthenocissus quinquefolia*) glossy false buckthorn, and Asian bittersweet.

Forms of past and current human activities noted within and near the WIA here include derelict railroad infrastructure (railroad ties and tracks) and a well-worn foot trail that parallels the train tracks. Observations made during site visits include foot traffic by people and people walking dogs.

In summary, the Project will not result in a substantial reduction or result in an adverse effect of important wildlife habitat features found in WIA S10. Restoration measures were incorporated into the Project in this location where appropriate, which includes reinstalling all standing dead trees that will be removed, restoring all disturbed areas outside of the 10-foot-wide paved MCRT with a native seed mix which will provide a dense herbaceous cover, and creating brush piles. Overall, following construction and the implementation of restoration measures, the Project will not reduce the capacity of the area to provide important wildlife habitat features or have an adverse effect on the availability of important wildlife habitat either on a local or regional scale.

3.7.1 Important Wildlife Habitat Features, Impacts, and Proposed Restoration

WIA S10 was evaluated to determine whether important wildlife habitat features were present and if so, whether the Project would result in adverse impacts to those features. Within WIA S10, five important wildlife habitat features were identified:

- › Upland/Wetland Food Plants;
- › Standing Dead Trees;
- › Tree Cavities in Trunks or Limbs;

- › Small Mammal Burrow; and
- › Large Woody Debris on the Ground.

Below is a discussion of each feature that was identified and evaluated within the WIA followed by an adverse effect analysis and any proposed restoration measures.

3.7.1.1 Upland/Wetland Food Plants

Within WIA S10, there are several upland plant species (hard mast and fruit/berry producers) that can provide food for wildlife. These species include black cherry, tree oaks, black huckleberry, and lowbush blueberry. Glossy false buckthorn, Japanese barberry, Asian bittersweet, and winged euonymus, invasive plant species that can also provide a source of food to wildlife, was also observed within the WIA.

Adverse Effects Analysis and Restoration

Individually, none of the food plants noted within the WIA S10 are particularly unique to the WIA and all of these species can be found outside of the WIA on the Project Locus and beyond. Because of the presence of similar food plants in greater quantities in areas near the locations where loss of some food plants from the Project will occur, Project-related losses are not expected to reduce the capacity of the area to provide the important wildlife habitat value that this feature provides. Restoration or mitigation is not proposed at this location for this habitat feature and the no adverse effect standard is met.

3.7.1.2 Standing Dead Trees

In WIA S10, a total of two standing dead trees with a dbh of 6- to 12-inches will be removed. None of the tree appeared to contain cavities.

Adverse Effects Analysis and Restoration

All standing dead trees that will be removed during construction will be reinstalled within the immediate vicinity of the WIA to avoid resulting in a loss of this important wildlife habitat feature. Details for reinstalling the standing dead trees are provided in Attachment K of the NOI.

3.7.1.3 Tree Cavities in Trunks or Limbs

One 10-inch dbh red maple was observed to contain one cavity that likely formed after a branch broke off. Construction activities in this area will require that the tree containing this cavity be removed.

Adverse Effects Analysis and Restoration

One tree with a cavity was observed within the WIA but, by the nature of forested area on the Project Site near the WIA, opportunities exist for other such tree cavities. The loss of the tree with the cavities in this WIA will not result in an adverse effect to wildlife habitat due to

cavities that will remain on Project Locus outside of the limits of disturbance and in the immediate area beyond the Project Locus.

3.7.1.4 Small Mammal Burrow

One small mammal burrow was observed in soil material that was likely brought there for construction of the railroad bed.

Adverse Effects Analysis and Restoration

Construction of the Project will result in the loss of the one small mammal burrow that was seen within WIA S10. The material where the burrow was found is generally dense and compacted.

Many chipmunks were observed along the entire Project Locus and it is assumed that small mammal burrows are ubiquitous within the surrounding wooded areas that are outside of the Project limits but within the Project Locus (also beyond the limits of the Project Locus). Very few small mammal burrows were identified during the WHE because the Project is primarily limited to the railroad embankment which consists of compacted soils, railroad ballast, railroad ties, and tracks. The lack of similar burrows in this location and in general along the entire railroad bed associated with this Project would suggest that this material is not especially suited for small mammal burrow development possibly by its compacted nature or the nature of the material used to build the railroad bed. Overall, the loss of one burrow will not have a significant effect to small mammals either on a local or regional level and will not result in an adverse effect to wildlife habitat.

3.7.1.5 Large Woody Debris on the Ground

There is limited scattered large woody debris on the ground in WIA S10. However, none of it is substantial (large trees, logs or large brush piles). There is larger and more abundant coarse woody debris on the ground outside of the WIA on the Project Locus and beyond.

Adverse Effects Analysis and Restoration

Although there is some large woody debris present in S10, the amount of this material is not significant. Areas in the vicinity of the WIA on the Project Locus and beyond contained an abundant amount of this wildlife habitat feature. Overall, the loss of the large woody debris in the WIA is not expected to result in an adverse effect to wildlife habitat either in the immediate area of the Project Locus and/or the region. This conclusion is based on observations of undeveloped forest and the presence of large woody debris on the Project Locus outside of the limits of disturbance and in the immediate area beyond the Project Locus.

Regardless of the no adverse effect determination regarding the loss of large woody debris found in limited amounts in the WIA, brush piles will be created within the Project Locus. Based on Natural Resources Conservation Service guidance for the creation of brush piles, brush piles will be created along the length of the WIA on the Project Locus at a frequency of one per 200 to 300 feet. The brush piles will be created using appropriate salvaged woody

debris presently on the ground within the area of impact and/or some of the logs and slash that will be generated during the tree clearing process. Information provided in Attachment K the NOI for the Project describes in detail the creation of brush pile as restoration of the loss of this habitat feature.

3.8 Wetland Impact Area S11

WIA S11 is a Sudbury jurisdictional WIA only because it is AURA and RFA based on Sudbury's Bylaw only. It is associated with an unnamed stream and Wetlands 27, 28, and 29 on both sides of the railroad tracks. It is east of Horse Pond Road and extends from approximately Station 558+10 to 564+20. In this location the railroad track was built on fill and is higher than the adjacent areas.

The WIA is within previously developed areas from the historic construction and operation of the rail line and is mostly 22 feet wide. There is 11,515 square feet of Bylaw RFA impact and 14,482 square feet of AURA impact. Impacts at this location would result from vegetation removal, site grading, installing the underground transmission line, and paving of the MCRT. The railroad tracks and ties are still present and there is a well-defined footpath immediately north of the tracks within the WIA. There are single-family residences and roadways within the vicinity, particularly Horse Pond Road which is approximately 230 feet west of the WIA.

The location where impacts will occur is upland and is vegetated primarily with saplings, shrubs, and some limited herbaceous growth. Dominant plants observed growing include in this area include white pine, red oak, glossy false buckthorn, eastern poison Ivy, and Asian bittersweet.

Forms of past and current human activities noted within and near the WIA here include derelict railroad infrastructure (railroad ties and tracks) and a well-worn foot trail located to the north of the train tracks. Observations made during site visits include foot traffic by people and people walking dogs.

In summary, the Project will not result in a substantial reduction or result in an adverse effect of important wildlife habitat features found in WIA S11. Restoration measures were incorporated into the Project in this location where appropriate, which includes reinstalling all standing dead trees that will be removed, restoring all disturbed areas outside of the 10-foot-wide paved MCRT with a native seed mix which will provide dense herbaceous cover, and creating brush piles. Overall, following construction and the implementation of restoration measures, the Project will not reduce the capacity of the area to provide important wildlife habitat features or have an adverse effect on the availability of important wildlife habitat either on a local or regional scale.

3.8.1 Important Wildlife Habitat Features, Impacts, and Proposed Restoration

WIA S11 was evaluated to determine whether important wildlife habitat features were present and if so, whether the Project would result in adverse impacts to those features. Within WIA S11, four important wildlife habitat features were identified:

- › Upland/Wetland Food Plants;
- › Standing Dead Trees;
- › Dense Herbaceous Cover; and
- › Large Woody Debris on the Ground.

Below is a discussion of each feature that was identified and evaluated within the WIA followed by an adverse effect analysis and any proposed restoration measures.

3.8.1.1 Upland/Wetland Food Plants

Within WIA S11, there are several upland plant species (hard mast and fruit/berry producers) that can provide food for wildlife. These species include black cherry, red oak, whiplash dewberry and lowbush blueberry; however, only red oak was noted as dominant. Glossy false buckthorn, and Asian bittersweet, invasive plant species that can also provide a source of food to wildlife, were also observed within the WIA.

Adverse Effects Analysis and Restoration

Individually, none of the food plants noted within the WIA S11 are unique to the WIA and all of these species can be found outside of the WIA on the Project Locus and beyond. Because of the presence of similar food plants in areas near locations where loss of some food plants from the Project will occur, Project-related losses are not expected to reduce the capacity of the area to provide the important wildlife habitat value that this feature provides and as such, the no adverse effect standard is met.

3.8.1.2 Standing Dead Trees

In WIA S11, there is one standing dead tree with a dbh within the 6- to 12-inch range that will be removed. This tree did not appear to contain cavities.

Adverse Effects Analysis and Restoration

All standing dead trees that will be removed during construction will be reinstalled within the immediate vicinity of the WIA to avoid resulting in a loss of this important wildlife habitat feature. Details for reinstalling the standing dead trees are provided in Attachment K of the NOI.

3.8.1.3 Dense Herbaceous Cover

There is a small patch approximately 100 square feet in size (5' x 20') of Pennsylvania sedge growing within the limits of disturbance. Construction of the Project will require that this feature be removed.

Adverse Effects Analysis and Restoration

Dense herbaceous vegetation can provide cover, food, and nesting habitats for a variety of small mammals, amphibians, reptiles, and bird species. Construction activities associated with the Project will remove this insignificant amount of dense herbaceous vegetation where

it presently grows. However, removing this small area of dense herbaceous cover will not adversely affect the wildlife habitat functions it provides due to its size and because additional, larger areas of dense herbaceous vegetation are present beyond the WIA and within the Project Locus (i.e., project site in the Bylaw Regulations).

Irrespective of this no adverse effect determination, the Project includes restoring all areas within the Project Site that will not be paved for the 10-foot-wide MCRT with a seed mix consisting of native herbaceous species. Within this WIA, it includes approximately 8,403 square feet of restoration with native species. Consequently, the seeding with a native herbaceous seed mix will greatly offset that which will be lost, thereby providing additional habitat value for wildlife and will not result in an adverse effect. Please refer to seed mix on sheet 131 in the plans in Attachment B of the NOI for the planting schedule.

3.8.1.4 Large Woody Debris on the Ground

There is limited scattered large woody debris on the ground in WIA 11; however, none of it is substantial (large trees, logs or large brush piles). There is larger and more abundant coarse woody debris on the ground outside of the WIA on the Project Locus and beyond.

Adverse Effects Analysis and Restoration

Although there is some large woody debris present in S11, the amount of this material is not significant. Areas in the vicinity of the impact area on the Project Locus and beyond, contained an abundant amount of this wildlife habitat feature. Overall, the loss of the large woody debris in the WIA is not expected to result in an adverse effect to wildlife habitat either in the immediate area of the Project Locus and/or the region. This conclusion is based on observations of undeveloped forest and the presence of large woody debris on the Project Locus outside of the limits of disturbance and in the immediate area beyond the Project Locus.

Regardless of the no adverse effect determination, brush piles will be created within the Project Locus. Based on Natural Resources Conservation Service guidance for the creation of brush piles, brush piles will be created along the length of the WIA on the Project Locus at a frequency of one per 200 to 300 feet. The brush piles will be created using appropriate salvaged woody debris presently on the ground within the area of impact and/or some of the logs and slash that will be generated during the tree clearing process. Information provided in Attachment K the NOI for the Project describes the creation of brush pile as restoration of the loss of this habitat feature.

3.9 Wetland Impact Area S12

WIA S12 is AURA associated with Wetland 25, which is on the northern side of the railroad tracks. The area extends from approximately Station 576+10 to 580+00 and is north of the Meadow Walk development. In this location the railroad track was built on fill and is higher than the adjacent areas.

The WIA is within areas that were previously developed from the historic construction and operation of the rail line and is mostly 22 feet wide. There is a total of approximately 10,051 square feet of AURA impacts. Impacts at this location would result from vegetation removal, site grading, installing the underground transmission line, and paving of the MCRT. The railroad tracks and ties are still present and at the western end of the WIA there is a footpath immediately north of the tracks within the WIA. The WIA is also within close proximity to surrounding multi-family residences (townhomes) and the commercial portion of the Meadow Walk development including Whole Foods.

The location where impacts will occur is upland and is vegetated primarily with saplings, shrubs, and some limited herbaceous growth. Dominant plants observed growing in this area include eastern white pine, red oak, glossy false buckthorn, hay-scented fern (*Dennstaedtia punctilobula*), eastern poison Ivy and Asian bittersweet.

In summary, the Project will not result in a substantial reduction or result in an adverse effect of important wildlife habitat features found in WIA S12. Restoration measures were incorporated into the Project in this location where appropriate, which includes restoring all disturbed areas outside of the 10-foot-wide paved MCRT with a native seed mix which will provide dense herbaceous cover and creating brush piles. Overall, following construction and the implementation of restoration measures, the Project will not reduce the capacity of the area to provide important wildlife habitat features or have an adverse effect on the availability of important wildlife habitat either on a local or regional scale.

3.9.1 Important Wildlife Habitat Features, Impacts, and Proposed Restoration

WIA S12 was evaluated to determine whether important wildlife habitat features were present and if so, whether the Project would result in adverse impacts to those features. Within WIA S12, four important wildlife habitat features were identified:

- › Upland/Wetland Food Plants;
- › Small Mammal Burrows;
- › Dense Herbaceous Cover; and
- › Large Woody Debris on the Ground.

Below is a discussion of each feature that was identified and evaluated within the WIA followed by an adverse effect analysis and any proposed restoration measures.

3.9.1.1 Upland/Wetland Food Plants

Within WIA S12, there are several upland plant species (hard mast and fruit/berry producers) that can provide food for wildlife including black cherry and red oak. Glossy false buckthorn, Asian bittersweet, and Morrow's honeysuckle, invasive plant species that can also provide a source of food to wildlife were also seen there.

Adverse Effects Analysis and Restoration

Individually, none of the food plants noted within the WIA S12 are unique to the WIA and all of these species can be found outside of the WIA on the Project Locus and beyond. Because of the presence of similar food plants in areas near locations where loss of some food plants from the Project will occur, Project-related losses are not expected to reduce the capacity of the area to provide the important wildlife habitat value that this feature provides and restoration is not proposed at this location for this habitat feature and the no adverse effect standard is met.

3.9.1.2 Small Mammal Burrows

One small mammal burrow was seen at approximately station 578+50 in soil material that was likely brought there for construction of the railroad bed.

Adverse Effects Analysis and Restoration

Construction of the Project will result in the loss of the one small mammal burrow that was observed within WIA S12. The material where the burrow was found is generally dense and compacted.

Many chipmunks were observed along the entire Project Locus and it is assumed that small mammal burrows are ubiquitous within the surrounding wooded areas that are outside of the limits of work but within the Project Locus (also beyond the limits of the Project Locus). Very few small mammal burrows were identified during the WHE because the Project is primarily limited to the railroad embankment which consists of compacted soils, railroad ballast, railroad ties, and tracks. The lack of similar burrows in this location and in general along the entire railroad bed associated with this Project would suggest that this material is not especially suited for small mammal burrow development possibly by its compacted nature or the nature of the material used to build the railroad bed. Although mitigation for this one small mammal burrow is not proposed, it will not adversely affect small mammals on either a local or regional level and the no adverse effect standard is met.

3.9.1.3 Dense Herbaceous Cover

There is a small patch approximately 120 square feet in size (2' x 60') of Pennsylvania sedge growing within the limits of disturbance. Construction of the Project will require that this feature be removed.

Adverse Effects Analysis and Restoration

Dense herbaceous vegetation can provide cover, food, and nesting habitats for a variety of small mammals, amphibians, reptiles, and bird species. Construction activities associated with the Project will remove this insignificant amount of dense herbaceous vegetation where it presently grows. However, removing this small area of dense herbaceous cover will not adversely affect the wildlife habitat functions it provides due to its size and because additional, larger areas of dense herbaceous vegetation are present beyond the WIA and within the Project Locus (i.e., project site in the Bylaw Regulations).

Irrespective of this no adverse effect determination, the Project includes restoring all areas within the Project Site that will not be paved for the 10-foot-wide MCRT with a seed mix consisting of native herbaceous species. Within this WIA, it includes approximately 6,382 square feet of restoration with native species. Consequently, the seeding with a native herbaceous seed mix will greatly offset that which will be lost, thereby providing additional habitat value for wildlife and will not result in an adverse effect. Please refer to seed mix on sheet 131 in the plans in Attachment B of the NOI for the planting schedule.

3.9.1.4 Large Woody Debris on the Ground

There is limited scattered large woody debris on the ground in WIA 12. However, none of it is substantial (large trees, logs or large brush piles). There is larger and more abundant large woody debris on the ground outside of the WIA on the Project Locus and beyond. Although this material was not enumerated, it is more abundant than within the WIA.

Adverse Effects Analysis and Restoration

Although there is some large woody debris present in S12, the amount of this material is not significant. Areas in the vicinity of the WIA on the Project Locus and beyond, contained an abundant amount of this wildlife habitat feature. Overall, the loss of the large woody debris in the WIA is not expected to result in an adverse effect to wildlife habitat either in the immediate area of the Project Locus and/or the region. This conclusion is based on observations of undeveloped forest and the presence of large woody debris on the Project Locus outside of the limits of disturbance and in the immediate area beyond the Project Locus.

Regardless of the no adverse effect determination, brush piles will be created within the immediate vicinity of this WIA. Based on Natural Resources Conservation Service guidance for the creation of brush piles, brush piles will be created along the length of the WIA on the Project Locus at a frequency of one per 200 to 300 feet. The brush piles will be created using appropriate salvaged woody debris presently on the ground within the area of impact and/or some of the logs and slash that will be generated during the tree clearing process. Information provided in Attachment K the NOI for the Project describes the creation of brush pile as restoration of the loss of this habitat feature.

3.10 Wetland Impact Area S13

WIA S13 is a Sudbury jurisdictional WIA because it is AURA and Sudbury Bylaw RFA only. It is associated with an unnamed stream and apparent stormwater ditch that runs parallel to the tracks, as well as Wetlands 24 and 24A which are north of the railroad tracks. It is west of Union Avenue and extends from approximately Station 585+25 to 599+90. A commercial development is located immediately south of the WIA. In this location the railroad track is at the same elevation as adjacent areas.

The WIA is within areas that were previously developed from the historic construction and operation of the rail line and is mostly 22 feet wide. There is 25,319 square feet of Bylaw RFA impact and 33,564 square feet of AURA impact. Impacts at this location would result from

vegetation removal, site grading, installing the underground transmission line, and paving of the MCRT. The railroad tracks and ties are still present and there is a well-defined footpath immediately north of the tracks within the WIA.

The location where impacts will occur is upland and is vegetated primarily with saplings, shrubs, and some limited herbaceous growth. Dominant plants observed growing in this area include white pine, red oak, glossy false buckthorn, hay-scented fern (*Dennstaedtia punctilobula*), eastern poison Ivy and Asian bittersweet.

In summary, the Project will not result in a substantial reduction or result in an adverse effect of important wildlife habitat features found in WIA S13. Restoration measures were incorporated into the Project in this location where appropriate, which includes restoring all disturbed areas outside of the 10-foot-wide paved MCRT with a native seed mix which will provide a dense herbaceous cover and creating brush piles. Overall, following construction and the implementation of restoration measures, the Project will not reduce the capacity of the area to provide important wildlife habitat features or have an adverse effect on the availability of important wildlife habitat either on a local or regional scale.

3.10.1 Important Wildlife Habitat Features, Impacts, and Proposed Restoration

WIA S13 was evaluated to determine whether important wildlife habitat features were present and if so, whether the Project would result in adverse impacts to those features. Within WIA S13, three important wildlife habitat features were identified:

- › Upland/Wetland Food Plants;
- › Small Mammal Burrows; and
- › Large Woody Debris on the Ground.

Below is a discussion of each feature that was identified and evaluated within the WIA followed by an adverse effect analysis and any proposed restoration measures.

3.10.1.1 Upland/Wetland Food Plants

Within WIA S13, there are several upland plant species (hard mast and fruit/berry producers) that can provide food for wildlife. These species include black cherry and red oak. Glossy false buckthorn, Asian bittersweet, and Morrow's honeysuckle, invasive plant species that can also provide a source of food to wildlife, were also observed within the WIA.

Adverse Effects Analysis and Restoration

Individually, none of the food plants noted within the WIA S13 are particularly unique to the WIA and all of these species can be found outside of the WIA on the Project Locus and beyond. Because of the presence of similar food plants in areas near locations where loss of some food plants from the Project will occur, Project-related losses are not expected to reduce the capacity of the area to provide the important wildlife habitat value that this feature provides and as such, neither restoration or mitigation is proposed at this location for this habitat feature and the no adverse effect standard is met.

3.10.1.2 Small Mammal Burrows

One small mammal burrow was observed at approximately station 593+80 in soil material that was likely brought there for construction of the railroad bed.

Adverse Effects Analysis and Restoration

Construction of the Project will result in the loss of the one small mammal burrow that was seen within WIA 13. The material where the burrow was found is generally dense and compacted.

Many chipmunks were observed along the entire Project Locus and it is assumed that small mammal burrows are ubiquitous within the surrounding wooded areas that are outside of the Project limits but within the Project Locus (also beyond the limits of the Project Locus). Very few small mammal burrows were identified during the WHE because the Project is primarily limited to the railroad embankment which consists of compacted soils, railroad ballast, railroad ties, and tracks. The lack of similar burrows in this location and in general along the entire railroad bed associated with this Project would suggest that this material is not especially suited for small mammal burrow development possibly by its compacted nature or the nature of the material used to build the railroad bed. Overall the loss of the one burrow is not expected to have a significant effect to small mammals either on a local or regional level and will not result in an adverse effect to wildlife habitat.

3.10.1.3 Large Woody Debris on the Ground

There is limited scattered large woody debris on the ground in WIA S13. However, none of it is substantial (large trees, logs or large brush piles). There is larger and more abundant coarse woody debris on the ground outside of the WIA on the Project Locus and beyond.

Adverse Effects Analysis and Restoration

Although there is some large woody debris present in S13, the amount of this material is not significant. Areas in the vicinity of the WIA on the Project Locus and beyond contained an abundant amount of this wildlife habitat feature. Overall, the loss of the large woody debris in the WIA is not expected to result in an adverse effect to wildlife habitat either in the immediate area of the Project Locus and/or the region. This conclusion is based on observations of undeveloped forest and the presence of large woody debris on the Project Locus outside of the limits of disturbance and in the immediate area beyond the Project Locus.

Regardless of the no adverse effect determination, brush piles will be created within the immediate vicinity of this WIA. Based on Natural Resources Conservation Service guidance for the creation of brush piles, brush piles will be created along the length of the WIA on the Project Locus at a frequency of one per 200 to 300 feet. The brush piles will be created using appropriate salvaged woody debris presently on the ground within the area of impact and/or some of the logs and slash that will be generated during the tree clearing process. Information provided in Attachment K the NOI for the Project describes the creation of brush pile as mitigation of the loss of this habitat feature.

3.11 Wetland Impact Area S14

WIA S14 is a Sudbury jurisdictional WIA because it is AURA and Sudbury Bylaw RFA only. It is associated with an unnamed stream/drainage ditch that runs parallel to Station Road and is to the north of the Project limits. The area extends from approximately Station 600+50 to 602+25 and is west of Union Avenue. In this location the railroad track is at the same elevation as the adjacent areas.

The WIA is located within areas that were previously developed from the historic construction and operation of the rail line as well as Union Avenue. There is a total of approximately 4,986 square feet of Bylaw RFA impacts and 1,544 square feet of AURA impacts from vegetation removal, site grading, installing the underground transmission line, and paving of the MCRT. The railroad tracks and ties are still present within the wooded portion of the WIA, with the remaining area consisting of lawn. There is noise disturbance from surrounding commercial properties and Union Avenue.

Dominant vegetation in the wooded portion of the impact area is dominated by white pine, red oak, common wormwood (*Artemisia vulgaris*), glossy false buckthorn and Asian bittersweet. The lawn area is dominated by native and non-native grasses and various herbaceous species.

In summary, the Project will not result in a substantial reduction or result in an adverse effect of important wildlife habitat features found in WIA S14. Restoration measures were incorporated into the Project in this location where appropriate, which includes reinstalling all standing dead trees that will be removed and restoring all disturbed areas outside of the 10-foot-wide paved MCRT with a native seed mix which will provide a dense herbaceous cover. Overall, following construction and the implementation of restoration measures, the Project will not reduce the capacity of the area to provide important wildlife habitat features or have an adverse effect on the availability of important wildlife habitat either on a local or regional scale.

3.11.1 Important Wildlife Habitat Features, Impacts, and Proposed Restoration

WIA S14 was evaluated to determine whether important wildlife habitat features were present and if so, whether the Project would result in adverse impacts to those features. Within WIA S14 two important wildlife habitat features were identified:

- › Upland Food Plants; and a
- › Standing Dead Tree.

Below is a discussion of each feature that was identified and evaluated within the WIA followed by an adverse effect analysis and any proposed mitigation measures.

3.11.1.1 Upland/Wetland Food Plants

Within WIA S14, red oak, an upland plant species that can provide food for wildlife (hard mast and fruit/berry producers), is present. Glossy false buckthorn and Asian bittersweet,

invasive plant species that can also provide a source of food to wildlife, were also seen observed within the WIA.

Adverse Effects Analysis and Restoration

Individually, none of the food plants noted within the WIA S14 are particularly unique to the WIA. Most of these species can be found outside of the WIA on the Project Locus and beyond. Because of the presence of similar food plants in areas near locations where loss of some food plants from the Project will occur, Project-related losses are not expected to reduce the capacity of the area to provide the important wildlife habitat value that this feature provides. Restoration or mitigation is not proposed at this location for this habitat feature and the no adverse effect standard is met.

3.11.1.2 Standing Dead Trees

In WIA 14, there is one standing dead tree with a dbh range of 12- to 18-inches that will be removed. This tree did not appear to contain cavities.

Adverse Effects Analysis and Restoration

The standing dead tree that will be removed during construction will be reinstalled within the immediate vicinity of the WIA to avoid resulting in a loss of this important wildlife habitat feature. Details for reinstalling the standing dead trees are provided in Attachment K of the NOI.

3.12 Wetland Impact Area S15

WIA S15 is a Sudbury WIA only from approximately Station 602+50 to 705+30 and is a MWPA and Sudbury WIA from Station 705+30 to 711+30. It includes BLSF, LUWW, RFA, AURA, and Bank associated with the unnamed stream/stormwater ditch that parallels Station Road, Hop Brook, and Wetlands 20, 21, and 22. The WIA is parallel to Station Road between Union Avenue and Route 20/Boston Post Road and extends from approximately Station 602+40 to 711+30. In this location the railroad track at the same elevation as the commercial property to the south but is higher than the ditch.

The WIA is within areas that were previously developed from the historic construction and operation of the rail line as well as commercial operations on both sides of the MBTA ROW such as Sudbury Lumber and Station Road Auto Body & Garage. In this location there is 1,791 square feet of BLSF impacts, 11,759 square feet of Bylaw Regulations RFA impacts, 13,630 square feet of MWPA RFA impacts, and 25,375 square feet of AURA impacts. Impacts at this location would result from vegetation removal, site grading, installing the underground transmission line, and paving of the MCRT. The railroad tracks and ties are still present and there is noise disturbance from surrounding commercial properties and Union Avenue.

The location where impacts will occur is upland and is vegetated primarily with trees, saplings, shrubs, and some limited herbaceous growth. Dominant plants observed growing include in this area include red maple, black oak, glossy false buckthorn, and poison ivy.

In summary, the Project will not result in a substantial reduction or result in an adverse effect of important wildlife habitat features found in WIA S15. Restoration measures were incorporated into the Project in this location where appropriate, which includes reinstalling all standing dead trees that will be removed, restoring all disturbed areas outside of the 10-foot-wide paved MCRT with a native seed mix that will provide dense herbaceous cover, and creating brush piles. Overall, following construction and the implementation of restoration measures, the Project will not reduce the capacity of the area to provide important wildlife habitat features or have an adverse effect on the availability of important wildlife habitat either on a local or regional scale.

3.12.1 Important Wildlife Habitat Features, Impacts, and Proposed Restoration

WIA S15 was evaluated to determine whether important wildlife habitat features were present and if so, whether the Project would result in adverse impacts to those features. Within WIA S15 three important wildlife habitat features were identified:

- › Upland/Wetland Food Plants;
- › Standing Dead Trees; and
- › Large Woody Debris.

Below is a discussion of each feature that was identified and evaluated within the WIA followed by an adverse effect analysis and any proposed restoration or mitigation measures.

3.12.1.1 Upland/Wetland Food Plants

Within WIA S15, there are several upland plant species (hard mast and fruit/berry producers) that can provide food for wildlife. These species include tree oaks, common winterberry, black cherry, and grape (*Vitis* sp.). Glossy false buckthorn, Japanese barberry, autumn olive (*Elaeagnus umbellata*), Morrow's honeysuckle, and Asian bittersweet, invasive plant species that can also provide a source of food to wildlife, were also observed within the WIA.

Adverse Effects Analysis and Restoration

Individually, none of the food plants noted within the WIA S15 are unique to the WIA. Most of these species can be found outside of the WIA on the Project Locus and beyond. Because of the presence of similar food plants in areas near locations where loss of some food plants from the Project will occur, Project-related losses are not expected to reduce the capacity of the area to provide the important wildlife habitat value that this feature provides.

Restoration or mitigation is not proposed at this location for this habitat feature and the no adverse effect standard is met.

3.12.1.2 Standing Dead Trees

In WIA S15, nine standing dead trees with a dbh range of 6- to 12-inches and four with a dbh range of 12- to 16-inches will be removed. These trees did not appear to contain cavities.

Adverse Effects Analysis and Restoration

The standing dead trees that will be removed during construction will be reinstalled within the immediate vicinity of the WIA to avoid resulting in a loss of this important wildlife habitat feature. Details for reinstalling the standing dead trees are provided in Attachment K of the NOI.

3.12.1.3 Large Woody Debris on the Ground

There is limited scattered large woody debris on the ground in WIA 15. However, none of it is substantial (large trees, logs or large brush piles). There is larger and more abundant large woody debris on the ground outside of the WIA on the Project Locus and beyond.

Adverse Effects Analysis and Restoration

Although there is some large woody debris present in S15, the amount of this material is not substantial and areas in the vicinity of the WIA on the Project Locus and beyond contained an abundant amount of this wildlife habitat feature. Overall, the loss of the large woody debris in the WIA is not expected to result in an adverse effect to wildlife habitat either in the immediate area of the Project Locus and/or the region. This conclusion is based on observations of undeveloped forest and the presence of large woody debris on the Project Locus outside of the limits of disturbance and in the immediate area beyond the Project Locus.

Regardless of the no adverse effect determination, brush piles will be created within the immediate vicinity of the WIA. Based on Natural Resources Conservation Service guidance for the creation of brush piles, brush piles will be created along the length of the WIA on the Project Locus at a frequency of one per 200 to 300 feet. The brush piles will be created using appropriate salvaged woody debris presently on the ground within the area of impact and/or some of the logs and slash that will be generated during the tree clearing process. Information provided in Attachment K the NOI for the Project describes the creation of brush pile as restoration of the loss of this habitat feature.

3.13 Wetland Impact Areas S16, 17, 18, and 19

WIAs S16, S17, S18, and S19 are discussed together because they are associated with the Hop Brook wetland complex located from Station 711+70 to 753+15, east of Route 20/Boston Post Road. These WIAs are located within and in close proximity to Wetlands 15-19 and Hop Brook.

Within these WIAs, the terrain varies from sections where the railroad track was built on fill and is higher than the adjacent areas to areas where the railroad is at the same elevation.

The railroad tracks and ties are still present. The channel of Hop Brook crosses the Project from approximately Station 725+10 to 725+50 and flows in a southerly direction beneath an existing steel girder railroad bridge that is currently partially submerged.

The proposed Project footprint in this area averages 18 to 22 feet in width and is approximately 4,135 feet in length. WIA S16 extends from approximately Station 711+70 to 724+40, WIA S17 extends from approximately Station 724+40 to 725+05, WIA S18 extends from approximately 725+70 to 726+30, and S19 extends from approximately 726+30 to 753+15.

Crane mats will be temporarily placed within a portion of WIA S17 on the west side of Hop Brook from approximately Station 724+40 to 724+95. The Project limits within this crane mat area are approximately 40 feet wide (north to south) and 50 feet long (east to west). Timber mats may also be temporarily placed on the east side of Hop Brook within a portion of WIA S18 from approximately Station 725+70 to 726+30. The Project limits within this crane mat area are approximately 40 feet wide (north to south) in this location and 60 feet long (east to west).

Most of the impacts in this area will occur along the elevated railroad bed that includes the inactive railroad track, fill material, and ballast. Work that will result in disturbance to wetland resource areas include vegetation removal, site grading, replacement of the Hop Brook bridge (Bridge 127), temporary placement of crane mats, installing the underground transmission line, and paving the MCRT. In locations where the crane mats are proposed, it will be necessary to remove all woody vegetation, possibly including tree stumps, to ensure that the mats are installed properly to ensure a safe, stable, and level work platform for the crane that will be used in this location. The timber mats are required to facilitate replacement of the Hop Brook bridge and will result in temporary impacts to LUWW, BVW, AURA, BLSF, and RFA that will be restored once replacement of the bridge is complete and the timber mats are removed. For details regarding crane mat restoration, please refer to Planting Schedule A: Crane Mat Restoration Areas on sheet 131 of the plans included in Attachment B of the NOI.

WIAs S17 and S18 are located immediately west and east of Hop Brook respectively. WIA S17 includes approximately 178 square feet of BVW impact, 596 square feet of LUW impact, 1,738 square feet of BLSF impact, 2,122 square feet of MWPA RFA impact, 124 linear feet of Bank impacts, and 1,947 square feet of AURA impact. WIA S18 includes approximately 118 square feet of BVW impact, 550 square feet of LUW impact, 2,154 square feet of BLSF impact, 2,277 square feet of MWPA RFA impact, 122 linear feet of Bank impacts and 2,160 square feet of AURA impact. These WIAs occur in areas where the Project footprint is expanded to accommodate the temporary crane mats needed to replace the existing bridge. Dominant vegetation within WIA17 includes glossy false buckthorn, black oak, and highbush blueberry (*Vaccinium corymbosum*). Dominant vegetation within S18 includes gray birch, velvet sedge (*Carex vestita*), glossy false buckthorn, and eastern white pine.

WIAs S16 and S19 are located west and east of Hop Brook respectively, beyond the limits of the crane mats. WIA S16 includes approximately 31 square feet of BVW impact, 877 square feet of BLSF impact, of 32,745 square feet of MWPA RFA impact, and 32,285 square feet of

AURA impact. WIA S19 includes approximately 3,576 square feet of BLSF impact, 61,522 square feet of MWPA RFA impact, 222 square of Bylaw RFA impact, 71,713 square feet of AURA impact, and 303 square feet of Bylaw IVW impact. Dominant vegetation in S16 includes Norway maple (*Acer platanoides*), glossy false buckthorn, and eastern poison ivy. Dominant vegetation in S19 includes red maple, Pennsylvania sedge, Asian bittersweet, glossy false buckthorn, and eastern white pine.

Forms of past and current human activities noted within and near these WIAs here include derelict railroad infrastructure (railroad ties and tracks). Observations made during site visits include moderate foot traffic by people.

In summary, the Project will not result in a substantial reduction of wildlife habitat for any of the important wildlife habitat features found in WIAs S16 – S19. Restoration measures were incorporated into the Project in these locations where appropriate and include measures such as plantings to offset the loss of food plants, reinstalling standing dead trees that will be removed during construction, creating brush piles to replace the loss of some large woody debris on the ground, and plantings to offset the loss of vegetation overhanging open water and providing good visibility of open water. Overall, following construction and the implementation of restoration measures, the Project will not reduce the capacity of the area to provide important wildlife habitat features or have an adverse effect on the availability of important wildlife habitat either on a local or regional scale.

3.13.1 Important Wildlife Habitat Features, Impacts, and Proposed Restoration

WIAs S16, S17, S18, and S19 were evaluated to determine whether important wildlife habitat features were present and if so, whether the Project would result in adverse impacts to those features.

Within this group of WIAs seven important wildlife habitat features were identified. These include;

- › Important Upland/Wetland Food Plants;
- › Standing Dead Trees;
- › Tree Cavities in Trunks or Limbs;
- › Large Woody Debris on the Ground;
- › Rocks, Crevices, Fallen Logs, Overhanging Branches, or Hummocks at or Within 1m Above the Water's Surface;
- › Live or Dead Standing Vegetation Overhanging or Offering Good Visibility of Open Water; and
- › Standing Water Present At least Part of the Growing Season Suitable for use by Breeding Amphibians, Non-Breeding Amphibians, Turtles, or Foraging Waterfowl.

The following subsections detail the important wildlife habitat features found in WIAs S16, S17, S18, and S19.

3.13.1.1 Upland/Wetland Food Plants

Within WIAs S16, S17, S18, and S19 there is a variety of upland plant species that provide wildlife value as source of food for a variety of species. These species include tree oaks, black cherry, Allegheny blackberry (*Rubus allegheniensis*), highbush blueberry, Canada service berry, common winterberry, whiplash dewberry, and grapes. Glossy false buckthorn, Japanese barberry, autumn olive, Asian bittersweet and Morrow's honeysuckle, invasive plant species that can also provide a source of food to wildlife were also seen there.

Adverse Effects Analysis and Restoration

While none of these plants are individually abundant in the areas where work is planned, when regarded as a group they can provide value to wildlife. Although food plants will be removed within these WIAs, these same species are present in abundance on areas of the berm that will not be affected by the Project and around the perimeter of the marsh beyond the limits of the Project Locus. In addition, as restoration for the total loss of vegetation within the locations where crane mats will be placed in WIAs 17 and 18, tree and shrub species will be planted in equivalent quantities to replace those being lost. These species will be native to New England and that are known to be valuable sources of wildlife food. Furthermore, all disturbed areas except for the 10-foot-wide paved MCRT will be seeded with herbaceous seed mixes that will provide additional value to wildlife as sources of food. Details regarding plantings and seed mixes are provided on sheet 131 in the plans in Attachment B of the NOI. Because of the surrounding food plants that will not be disturbed and the supplemental woody plantings and seed mixes, the Project will not reduce the capacity of upland/wetland plants in the area of the Project to provide food for wildlife or result in an adverse effect to wildlife habitat either on a local or regional scale.

3.13.1.2 Standing Dead Trees

WIAs 16 through 19 had the following standing dead trees:

- › WIA S16 had 8 trees that ranged from 6- to 12-inches dbh and 2 trees that ranged from 12- to 18-inches dbh;
- › WIA S17 had 6 trees that ranged from 6- to 12-inches dbh;
- › WIA S18 had 1 tree that ranged from 6- to 12-inches dbh; and
- › WIA S19 had 12 trees that ranged from 6- to 12-inches dbh and 1 tree that ranged from 12- to 18-inches dbh.

None of the trees appeared to contain cavities.

Adverse Effects Analysis and Restoration

The standing dead trees that will be removed during construction will be reinstalled within the immediate vicinity of the WIA to avoid resulting in a loss of this important wildlife habitat feature. Details for reinstalling the standing dead trees are provided in Attachment K of the NOI.

3.13.1.3 Tree Cavities in Trunks or Limbs

WIAs S16, S17, and S19 had the following cavities:

- › S16 had 16 cavities, most of which were under six inches;
- › S17 had eight cavities, most of which were six inches or less; and
- › S19 had eight cavities, most of which were six inches or less.

All the cavities for S16 and S19 were noted to be near the edge of the limit of work. Construction activities in this area will require that the tree containing this cavity be removed.

Adverse Effects Analysis and Restoration

Although cavities were identified within WIAs S16, S17, and S19, the nature of forested area on the Project Locus near the WIAs present opportunities for other tree cavities to exist. The loss of the trees with the cavities in these WIAs will not result in an adverse effect to wildlife habitat due to cavities that will remain on Project Locus outside of the limits of disturbance and in the immediate area beyond the Project Locus.

3.13.1.4 Large Woody Debris on the Ground

Scattered large woody debris on the ground is present within WIAs 16 -19. This material will be removed to accommodate grading that is necessary to complete the Project. The amount of this material is limited and scattered throughout the Impact Areas. However, none of it is substantial (large trees, logs or large brush piles). There is larger and more abundant coarse woody debris on the ground outside of the Impact Area on the Project Locus and beyond.

Adverse Effects Analysis and Restoration

Although there is some large woody debris present in the WIAs, the amount of this material is not substantial and areas in the vicinity of the impact area on the Project Locus and beyond contained an abundant amount of this wildlife habitat feature. Overall, the loss of the large woody debris in the WIAs is not expected to result in an adverse effect to wildlife habitat either in the immediate area of the Project Locus and/or the region. This conclusion is based on observations of undeveloped forest and the presence of large woody debris on the Project Locus outside of the limits of disturbance and in the immediate area beyond the Project Locus.

Regardless of the no adverse effect determination, brush piles will be created within the Project Locus. Based on Natural Resources Conservations Service guidance for the creation of brush piles, brush piles will be created along the length of the WIAs on the Project Locus at a frequency of one per 200 to 300 feet. The brush piles will be created using appropriate salvaged woody debris presently on the ground within the area of impact and/or some of the logs and slash that will be generated during the tree clearing process. Information provided in Attachment K the NOI for the Project describes the creation of brush pile as mitigation of the loss of this habitat feature.

3.13.1.5 Live or Dead Standing Vegetation Overhanging or Offering Good Visibility of Open Water

WIAs S16, S17, S18, and S19 contain live or dead standing woody vegetation that will be removed during construction that either overhangs or provides visibility of open water in Hop Brook and the associated marsh. In WIAs S16 and S19, vegetation that provides this habitat value is generally located in thin strips at the outer limits of work and includes small trees, saplings, and tall shrubs. Beyond the limits of work in WIAs S16 and S19, similar vegetation will remain in greater amounts to that which will be removed and will continue to provide this important wildlife habitat feature. In WIAs S17 and S18, because of the need to place crane mats for safe use of cranes needed to work on the bridge across Hop Brook, all the woody vegetation that currently resides beneath the mat footprints will be removed. The approximate total number of trees, tall shrubs, and dead standing trees that overhang or provide a view of open water that will be removed in each WIA is:

- › S16 has approximately 9 trees;
- › S17 has approximately 25 trees and abundant shrubs;
- › S18 has approximately 8 trees and few shrubs; and
- › S19 has approximately 29 trees and abundant shrubs.

Adverse Effects Analysis and Restoration

Following the removal of tall woody vegetation in WIAs 16 and 19, undisturbed areas on the elevated railroad berm beyond the limits of work will continue to have tall woody vegetation providing views to open water in quantities much greater than what will be removed. Overall the loss of these features in WIAs S16 and S19 are not expected to result in an adverse effect to wildlife habitat either in the immediate area of the site or the region. This conclusion is based on the observation that similar features will remain on the Project Locus in the immediate vicinity of those WIAs. Accordingly, the loss of live or dead standing vegetation overhanging or offering good visibility of open water in these WIAs is not expected to have an adverse effect on the availability of important wildlife habitat either on a local or regional scale.

As restoration for the loss of this important wildlife habitat feature within WIAs S16 through S19, tree and shrub species will be planted in equivalent quantities to those being lost. As shown on sheet 131 in the plans provided in Attachment B of this NOI, 34 trees and 45 shrubs will be planted from Station 723+70 to 725+05 (S16 and S17), and 12 trees and 30 shrubs will be planted from Station 725+70 to 726+30 (S18), and 32 trees and 60 shrubs will be planted from Station 726+30 to 729+00 (S19). All plantings will be installed in a naturalized condition to provide wildlife habitat and will not be planted in a linear manner. Once mature, these woody species will offer views to and perches over open water in the adjacent marsh at a value that will, at a minimum, be equal to what will be lost. Based on proposed restoration, removal of live or dead standing vegetation within these WIAs will not reduce the capacity of the area to provide this important wildlife habitat feature and not expected to have an adverse effect on the availability of important wildlife habitat either on a local or regional scale.

3.13.1.6 Rocks, Crevices, Fallen Logs, Overhanging Branches, or Hummocks at or Within 1m Above the Water's Surface

WIA S17 had approximately 10 tall shrubs with branches that overhung the water and WIA S18 had approximately three fallen logs that are within one meter above the water's surface. These features will be lost during construction by the placement of timber mats that will be needed for crane use in this area.

Adverse Effects Analysis and Restoration

Following construction in the area, these fallen logs in S18 will be replicated in the same general location using logs that will be generated by Project vegetation clearing activities. In addition, as discussed in Section 3.13.1.5, several trees and shrubs will be planted within S17 as restoration. Based on proposed restoration within these WIAs, the Project will not reduce the capacity of the area to provide this important wildlife habitat feature and is not expected to have an adverse effect on the availability of important wildlife habitat either on a local or regional scale.

3.13.1.7 Standing Water Present for at Least Part of the Growing Season Suitable for use by Breeding Amphibians, Non-Breeding Amphibians, Turtles, or Foraging Waterfowl

WIAs S17 and S18 contain standing water during seasonal high water that can be used by breeding and non-breeding amphibians, turtles, and foraging waterfowl. This important wildlife habitat feature will only be temporarily impacted from the placement of crane mats to facilitate the replacement of Bridge 127.

Adverse Effects Analysis and Restoration

Once the bridge is reconstructed, the crane mats will be removed, and the area will be restored to its current condition. Based on the proposed restoration, the Project will not reduce the capacity of the area to provide this important wildlife habitat feature and is not expected to have an adverse effect on the availability of important wildlife habitat either on a local or regional scale.

3.14 Wetland Impact Area S20

WIA S20 is AURA associated with Wetlands 3, 3A and 4 on either side of the railroad tracks. The area is between Landham Road and the Sudbury Substation and extends from approximately Station 760+60 to 766+45. In this location the railroad track was primarily built on fill and is slightly higher than the adjacent areas.

The WIA is located within areas that were previously developed from the historic construction and operation of the rail line and is mostly 22 feet wide. There is 286 square feet of BVW impacts and 16,668 square feet of AURA impacts. Impacts at this location would result from vegetation removal, site grading, installing the underground transmission line, paving of the MCRT, and construction the wetland replication area. The railroad tracks and ties are still present and the area directly adjacent to the tracks is dominated by invasive

species, particularly glossy false buckthorn and Asian bittersweet. The WIA has scattered refuse/garbage such as disposed tires throughout.

The majority of the WIA has a relatively closed canopy. Herbaceous vegetation is also present throughout the Impact Area and becomes more dominant between Stations 760+60 and 761+80 where the canopy opens up. In this section, the portion of the Impact Area over the tracks is relatively open with little to no canopy cover and the vegetation beyond the tracks consist of very thick multiflora rose (*Rosa multiflora*). Dominant plant species here include red oak, glossy false buckthorn, multiflora rose and Asian bittersweet.

In summary, the Project will not result in a substantial reduction or result in an adverse effect of important wildlife habitat features found in WIA S20. Restoration measures were incorporated into the Project in this location where appropriate, which includes reinstalling all standing dead trees that will be removed, restoring all disturbed areas outside of the 10-foot-wide paved MCRT with a native seed mix that will provide dense herbaceous cover, and creating brush piles. Overall, following construction and the implementation of restoration measures, the Project will not reduce the capacity of the area to provide important wildlife habitat features or have an adverse effect on the availability of important wildlife habitat either on a local or regional scale.

3.14.1 Important Wildlife Habitat Features, Impacts, and Proposed Restoration

WIA S20 was evaluated to determine whether important wildlife habitat features were present and if so, whether the Project would result in adverse impacts to those features. Within WIA S20 five important wildlife habitat features were identified:

- › Upland Food Plants;
- › Standing Dead Trees;
- › Dense Herbaceous Vegetation;
- › Large Woody Debris; and
- › Standing Water Present At least Part of the Growing Season.

Below is a discussion of each feature that was identified and evaluated within the WIA followed by an adverse effect analysis and any proposed restoration measures.

3.14.1.1 Upland/Wetland Food Plants

Within WIA S20, there are several upland plant species (hard mast and fruit/berry producers) that, although not dominant, can provide food for wildlife. These species include tree oaks, silky dogwood (*Cornus amomum*), common winterberry, black cherry, Virginia creeper () and grape. Glossy false buckthorn, Morrow's honeysuckle, multiflora rose and Asian bittersweet, invasive plant species that can also provide a source of food to wildlife, were also observed within the WIA.

Adverse Effects Analysis and Restoration

Individually, none of the food plants noted within the WIA S20 are particularly unique to the WIA. Most of these species can be found outside of the WIA on the Project Locus and beyond. Because of the presence of similar food plants in areas near locations where loss of some food plants from the Project will occur, Project-related losses are not expected to reduce the capacity of the area to provide the important wildlife habitat value that this feature provides. As such, restoration or mitigation is not proposed at this location for this habitat feature and the no adverse effect standard is met.

3.14.1.2 Dense Herbaceous Vegetation

Dense herbaceous vegetation potentially providing habitat cover for a variety of small mammals and some reptiles and amphibians was noted within WIA S20. In this WIA dense herbaceous vegetation included a dense mix of species that also includes Virginia creeper. Construction of the Project will require that this feature be removed.

Adverse Effects Analysis and Restoration

Dense herbaceous vegetation can provide cover, food, and nesting habitats for a variety of small mammals, amphibians, reptiles, and bird species. Construction activities associated with the Project will remove this insignificant amount of dense herbaceous vegetation where it presently grows. However, removing this small area of dense herbaceous cover will not adversely affect the wildlife habitat functions it provides due to its size and because additional, larger areas of dense herbaceous vegetation are present beyond the WIA and within the Project Locus (i.e., project site in the Bylaw Regulations).

Irrespective of this no adverse effect determination, the Project includes restoring all areas within the Project Site that will not be paved for the 10-foot-wide MCRT with a seed mix consisting of native herbaceous species. Within this WIA, it includes approximately 10,212 square feet of restoration with native species. Consequently, the seeding with a native herbaceous seed mix will greatly offset that which will be lost, thereby providing additional habitat value for wildlife and will not result in an adverse effect. Please refer to seed mix on sheet 131 in the plans in Attachment B of the NOI for the planting schedule.

3.14.1.3 Large Woody Debris

There is limited scattered large woody debris on the ground in WIA 20. However, none of it is substantial (large trees, logs or large brush piles). There is larger and more abundant coarse woody debris on the ground outside of the WIA on the Project Locus and beyond.

Adverse Effects Analysis and Restoration

Although there is some large woody debris present in S20, the amount of this material is not substantial. Areas in the vicinity of the impact area on the Project Locus and beyond contained an abundant amount of this wildlife habitat feature. Overall, the loss of the large woody debris in the WIA is not expected to result in an adverse effect to wildlife habitat either in the immediate area of the Project Locus and/or the region. This conclusion is based

on observations of undeveloped forest and the presence of large woody debris on the Project Locus outside of the limits of disturbance and in the immediate area beyond the Project Locus.

Regardless of the no adverse effect determination, brush piles will be created within the immediate vicinity of the WIA. Based on Natural Resources Conservation Service guidance for the creation of brush piles, brush piles will be created along the length of the WIA on the Project Locus at a frequency of one per 200 to 300 feet. The brush piles will be created using appropriate salvaged woody debris presently on the ground within the area of impact and/or some of the logs and slash that will be generated during the tree clearing process. Information provided in Attachment K the NOI for the Project describes the creation of brush pile as mitigation of the loss of this habitat feature.

3.14.1.4 Standing Dead Trees

In WIA 20, four standing dead trees with a dbh range of 6- to 12-inches will be removed. These trees did not appear to contain cavities.

Adverse Effects Analysis and Restoration

The standing dead trees that will be removed during construction will be reinstalled within the immediate vicinity of the WIA to avoid resulting in a loss of this important wildlife habitat feature. Details for reinstalling the standing dead trees are provided in Attachment K of the NOI.

3.14.1.5 Standing Water Present for at Least Part of the Growing Season Suitable for use by Breeding Amphibians, Non-Breeding Amphibians, Turtles, or Foraging Waterfowl

Wetland 4, which is located to the south of the tracks at approximately Station 764+50, has standing water in it for at least part of the growing season that could potentially be utilized by non-breeding amphibians.

Adverse Effects Analysis and Restoration

Approximately 85 square feet of this BVW will be permanently filled for grading; this area also includes four square feet of pavement for the MCRT. This area is adjacent to the proposed wetland replication and no loss of this important wildlife feature will occur. Conversely, the proposed replication will expand this wetland area and will maintain currently hydrology. As such, the Project will not result in adverse effects to this important wildlife habitat feature.

3.15 Wetland Impact Area S21

WIA S21 is a small area of AURA (172 square feet) immediately adjacent to the existing gravel access road to Eversource's Sudbury Substation. The area is located at approximately Station 767+00, is approximately 50 feet long and varies in width, with the widest portion approximately 12 feet wide and the narrowest portion less than one foot. Impacts at this

location would total approximately 172 square feet and would result from minor grading to provide sufficient road width for construction vehicles to enter and exit the MBTA ROW.

The AURA is associated with BVW east of the Project Locus and is previously developed from the historic construction and operation of the rail line and construction of the gravel access road. Signs of human disturbance here include the migration of gravel into the area from the gravel access road to the Eversource substation. Vegetation dominant in this WIA include glossy false buckthorn, Morrow's honeysuckle, and Asian bittersweet.

3.15.1 Important Wildlife Habitat Features, Impacts, and Proposed Restoration

WIA S21 was evaluated to determine whether important wildlife habitat features were present and if so, whether the Project would result in adverse impacts to those features. Within WIA S21 upland/wetland food plants was the only important wildlife habitat feature identified. Below is a discussion of this feature followed by an adverse effect analysis and any proposed restoration measures.

Within WIA S21, bristly blackberry (*Rubus hispidus*) is present that can provide an upland food source for wildlife Glossy false buckthorn, Morrow's honeysuckle (*Lonicera morrowii*), and Asian bittersweet, invasive plant species that can also provide a source of food to wildlife were also seen there.

Adverse Effects Analysis and Restoration

Individually, none of the food plants noted within the WIA S20 are unique to the WIA. Most of these species can be found outside of the WIA on the Project Locus and beyond. Because of the presence of similar food plants in areas near locations where loss of some food plants from the Project will occur, Project-related losses are not expected to reduce the capacity of the area to provide the important wildlife habitat value that this feature provides and as such, mitigation is not proposed at this location for this habitat feature.

3.16 Landscape Context and Habitat Connectivity

Habitat connectivity within the landscape is an important feature that takes into consideration wildlife migratory behavior and requirements. To characterize the connectivity relationship of the WIAs to surrounding habitats, five categories of habitat connectivity were considered based on the Guidance. These include:

1. No direct connections to adjacent areas of wildlife habitat (little connectivity function);
2. Connectors numerous or WIA is imbedded in a large area of natural habitat (limited connectivity function);
3. WIA contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function);
4. WIA serves as part of a sole connector to adjacent areas of habitat (important for connectivity function); and

5. WIA serves as the only connector to adjacent areas of habitat (very important for connectivity function).

From a topographic perspective, the railroad line corridor may be used by some wildlife as a corridor along its length. Across its width there are few apparent wildlife corridors with possibly the exception of corridors that include areas where streams cross the Project Locus. Animal movements across the Project Locus are likely scattered across its length by species common to the area. Because of the presence of the railroad track and ties, movements by some reptile and amphibian species may be partially restricted. Removing the tracks and ties during construction will remove this barrier and improve wildlife movement.

There are also no special features present within each of these WIAs different from adjacent areas that would provide wildlife a distinct corridor especially favorable for wildlife use or passage. From that perspective, wildlife would apparently be as likely to pass through any of the WIAs as they would through other areas not impacted along the Project. For this reason, all of the WIAs except for S15 are regarded as having limited connectivity function. S15 is in a developed area and is surrounded by roadways and commercial properties and therefore has little connectivity function.



4

Summary and Conclusions

The Project Locus in Sudbury is approximately 4.3 miles long and includes the entire width of the MBTA ROW from the Hudson/Sudbury municipal border to the Sudbury Substation off Route 20. The Project Locus width is variable but averages 82 feet wide in most locations and travels past residential areas, commercial developments, wooded areas, and roadways. It is important to note that this WHE only evaluated Project-related impacts to wetland resource areas within the MBTA ROW and not the Sudbury Substation because it is already constructed and does not contain natural habitat.

The Project will result in impacts to BVW, Bank, LUWW, BLSF, RFA that is jurisdictional under both the MWPA and Bylaw Regulations, RFA that is jurisdictional under the Bylaw Regulations only, and Sudbury's local AURA and IVW. However, it is important to note that 310 CMR 10.57(1)(a)(3) states that railroad tracks, including embankment and ballast, have effectively eliminated wildlife habitat functions. In addition, although LUWW impacts do not exceed the threshold and a WHE is not required for previously developed RFA and there are no performance standards at 310 CMR 10.58(5) for wildlife habitat. Regardless, all WIAs, including BLSF, RFA, and LUWW, were evaluated. To evaluate these impacts, 21 WIAs (WIAs S1-S21) were identified and a Detailed WHE ("Appendix B") was completed at each WIA, which is the most rigorous and comprehensive type of WHE required under MWPA and the Bylaw Regulations. Of the 21 WIAs, S1, S2, S7, S8, S9, S11, S12, S13, S14, a portion of S15, and S21 are within Sudbury's jurisdiction only.

Each of the 21 WIAs in Sudbury was visited throughout 2019 to make field observations and document the presence of important wildlife habitat features that would be impacted by Project activities (see Table 3 in Section 3). As described in Section 3, there is an abundance of important wildlife habitat features beyond the actual construction footprint of the Project on the remainder of the Project Locus. These features are also present within areas beyond the Project Locus in quantities such that the minor losses attributed to the Project will not have an adverse effect on wildlife habitat in the local area or region. Regardless of these findings, the Project incorporates restoration measures on the Project Locus to replace some of the lost important wildlife habitat features within the construction footprint and to supplement important wildlife habitat features in the area. Restoration and mitigation measures proposed for important wildlife habitat features within the construction footprint for the Project include:

- › Removing the existing rails and ties, which are an impediment to wildlife movement;
- › Reinstallation all standing dead trees that will be removed during construction;
- › Creating brush piles to replace coarse dead wood on the ground;
- › Restoring all disturbed areas with an herbaceous seed mix consisting of native species to promote growth of herbaceous vegetation; and
- › Planting tree, shrub, and aquatic species within both Hop Brook crossings to replace those that will be removed in the crane mat locations.

For all proposed plantings, species have been selected to provide sources of food for wildlife and to promote replacement of trees and shrubs overhanging water and offering good views of open water in the area.

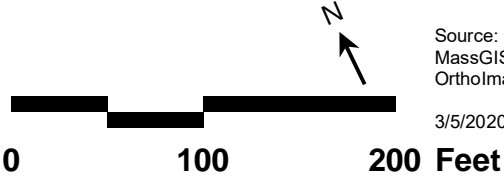
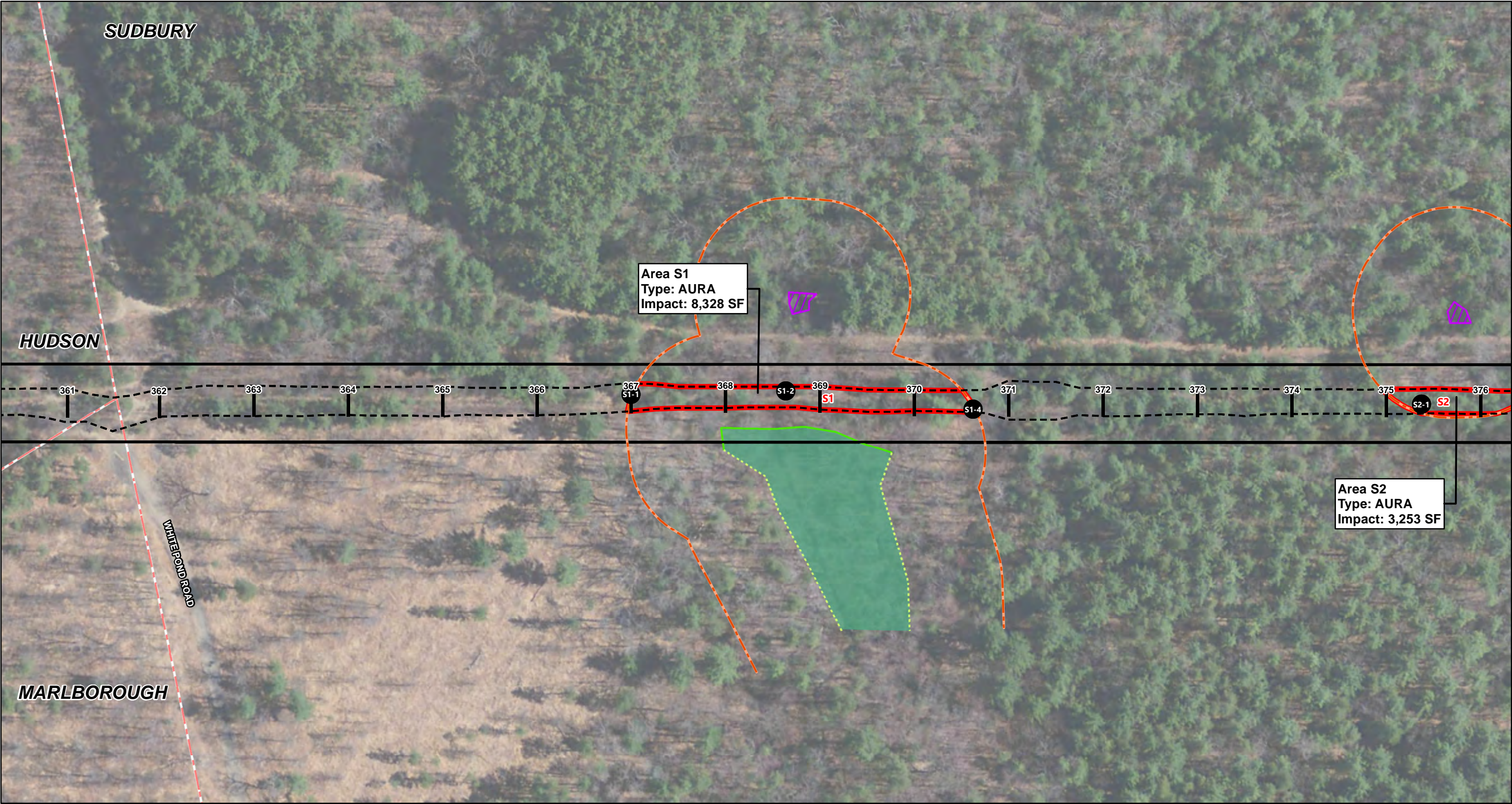
As demonstrated in Section 3, the Project will have no adverse effects on important wildlife habitat, as determined by procedures contained in 310 CMR 10.60, the Guidance, and Sudbury's Bylaw Regulations. The completed WHE demonstrates that although certain important habitat features exist within the WIAs, adverse effects will be avoided because the Project will not substantially reduce the capacity of the Project Locus or the affected resource areas to provide the important wildlife habitat functions listed in 310 CMR 10.60(2) including food, shelter, migratory and breeding areas. As described in the Preface to the 1987 Revisions to the Massachusetts Wetlands Regulations, this "no substantial reduction" standard is met where "important wildlife habitat functions are substantially restored" during Project construction, or it is otherwise demonstrated that "the proposed alterations will have no adverse effects on wildlife habitat" because the important features identified in a particular study area (such as snags, food sources, large woody debris, etc.) are common to the site, so that the number of habitat features lost, as a result of construction of the Project, are insignificant when compared to the amount of similar habitat that will remain within or adjacent to the Project Locus.

In conclusion, within the proposed limits of work, certain important wildlife habitat features have been identified and evaluated consistent with the approach detailed in the MWPA, the Guidance, and the Bylaw Regulations. Restoration for important wildlife habitat features that were identified within WIAs is being provided to supplement remaining habitat on the Project Locus and to replace features that will be lost. In the Guidance, it is explained that by ensuring that important habitat features are identified, and adverse impacts are avoided or minimized and restored and mitigated, the goal of no adverse effect will be met.

Accordingly, the Project has been designed to meet the requirements described in the Guidance and the Bylaw Regulations and will not have an adverse effect on important wildlife habitat either locally or in the region. In addition, the Bylaw Regulations state that "no project may have a significant project/site-specific impact or adverse cumulative impact on wildlife habitat for more than two growing seasons." As demonstrated throughout this WHE, the Project will not result in a significant project/site-specific or cumulative impact on wildlife habitat due to the proposed restoration measures and the prevalence of the important wildlife habitat features beyond the limit of work.

Attachment A – Wildlife Habitat Evaluation Figures

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Source:
MassGIS, 2015
OrthoImagery, VHB
3/5/2020



**Sudbury-Hudson Transmission Reliability and
Mass Central Rail Trail Project**

**Wildlife Habitat Evaluation Impact Areas
Sudbury, Massachusetts**





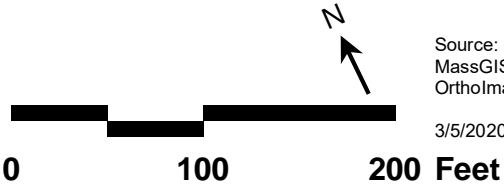
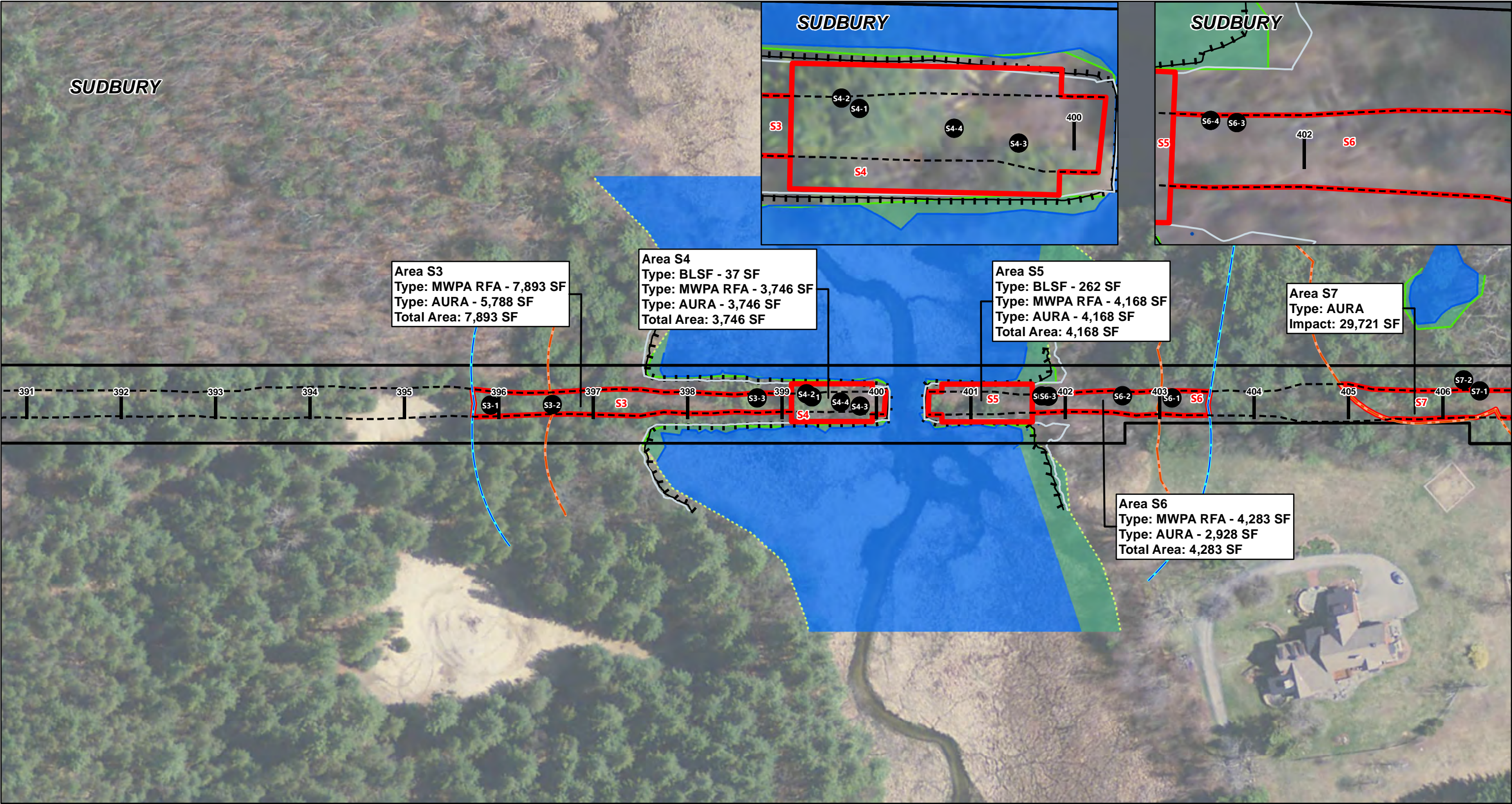
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|--------------------------------------|--------------------------------|---|
| — MBTA ROW Boundary | — Delineated Wetland Edge | — 100' Adjacent Upland Resource Area |
| - - - Limit of Grading | - - - Approximate Wetland Edge | — 200-ft Sudbury RFA |
| — Town Boundaries | — Delineated Top of Bank | — 200-ft MWPA RFA |
| — Bordering Land Subject to Flooding | — Delineated Vernal Pool Edge | — Wildlife Habitat Evaluation Impact Area |
| — 10-year Floodplain | — Perennial Stream | — Photo Location |
| | — Wetland Area | |
| | — Land Under Water | |
| | — Wetland Replication Area | |
| | — Vernal Pool Area | |

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**Sudbury-Hudson Transmission Reliability and
Mass Central Rail Trail Project**

**Wildlife Habitat Evaluation Impact Areas
Sudbury, Massachusetts**





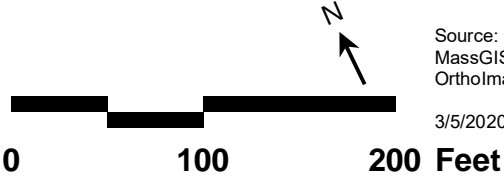
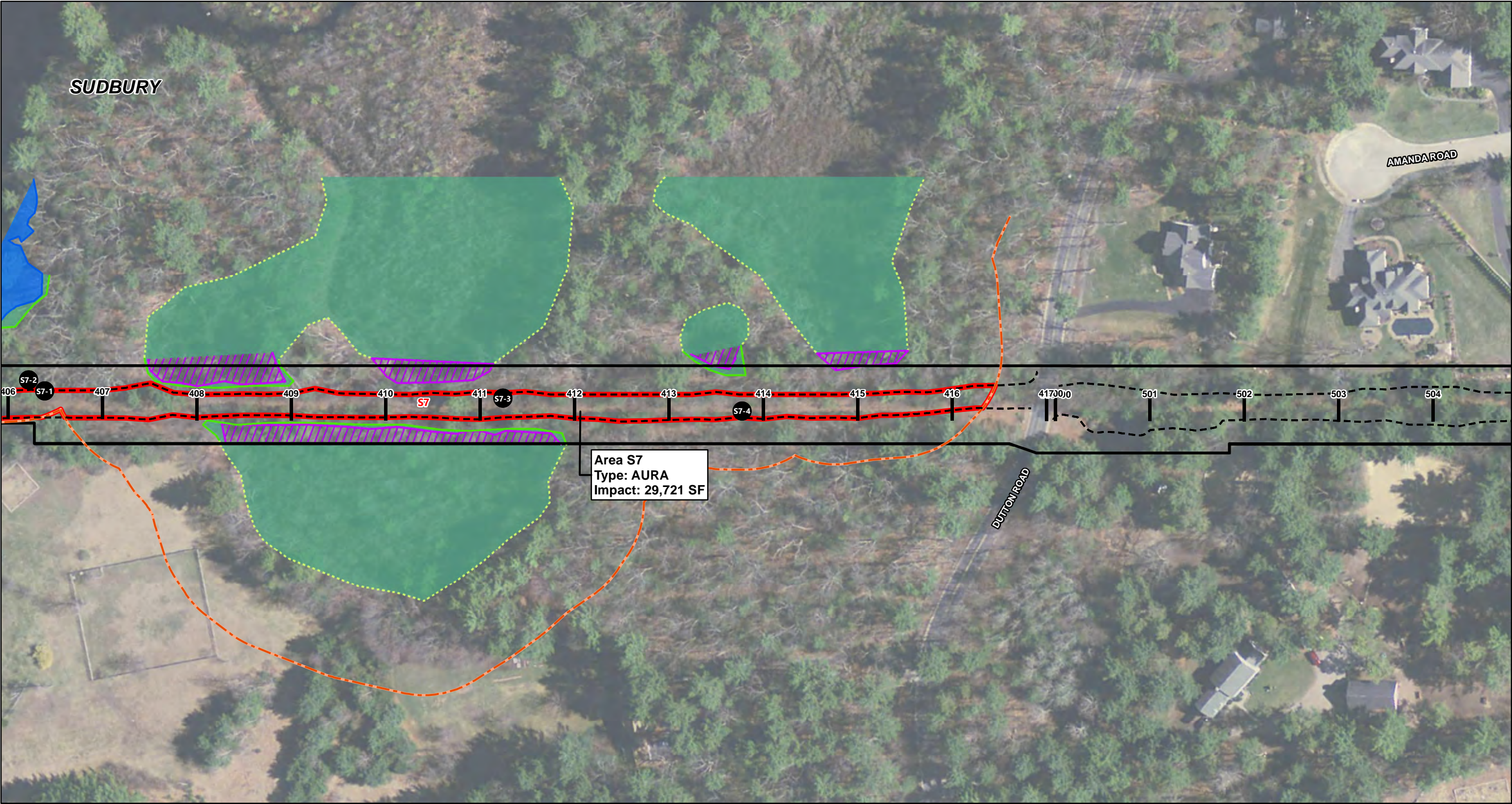
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3/5/2020



**Sudbury-Hudson Transmission Reliability and
Mass Central Rail Trail Project**

**Wildlife Habitat Evaluation Impact Areas
Sudbury, Massachusetts**





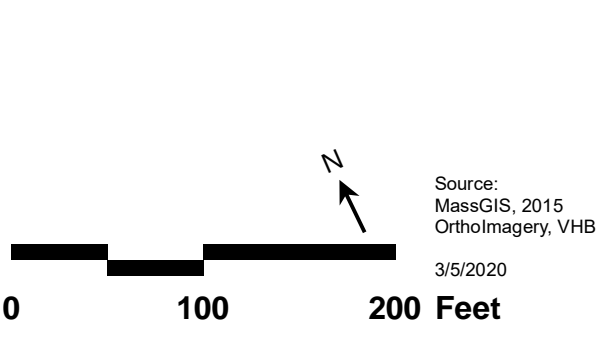
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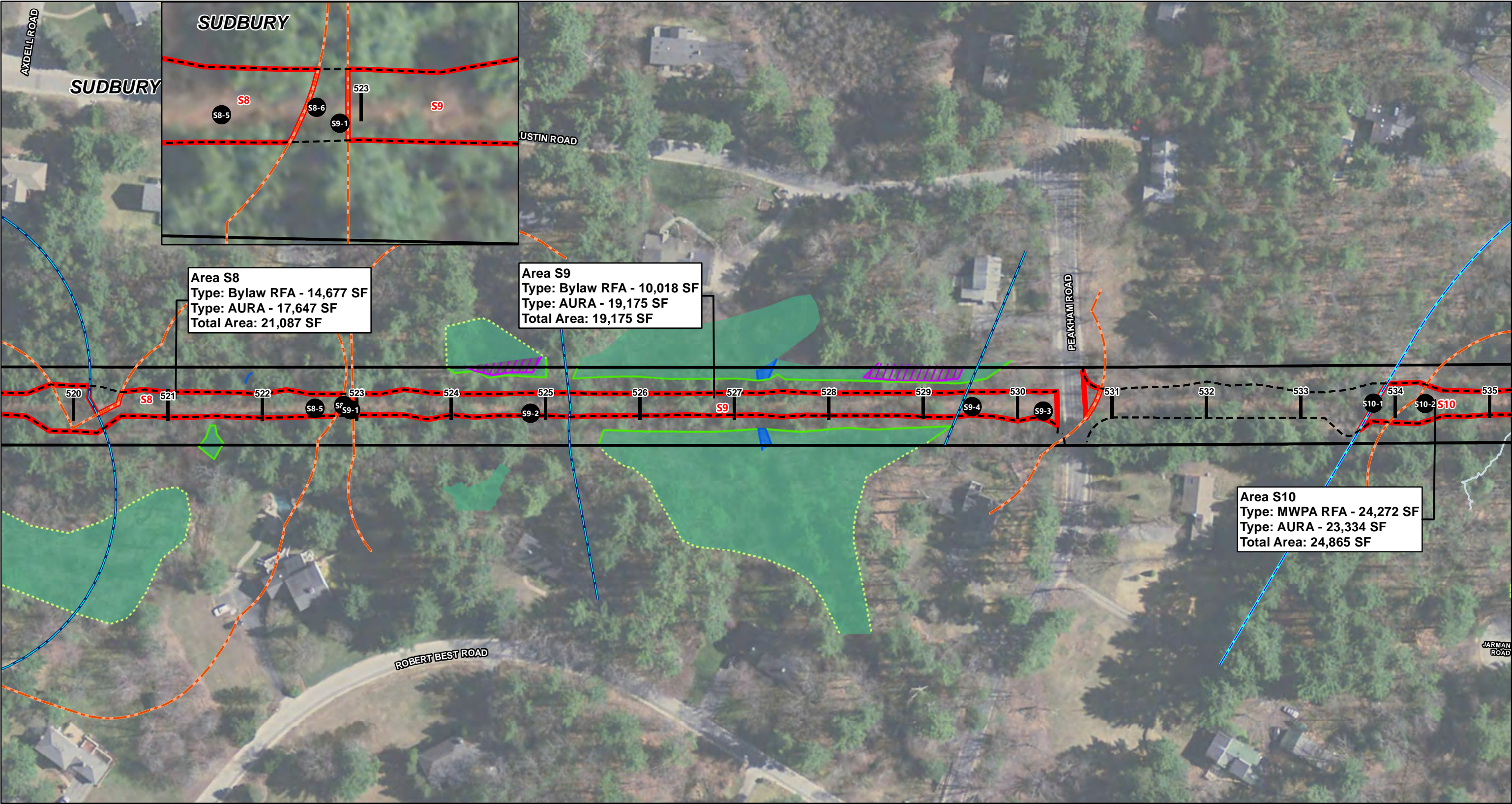
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**Sudbury-Hudson Transmission Reliability and
Mass Central Rail Trail Project**

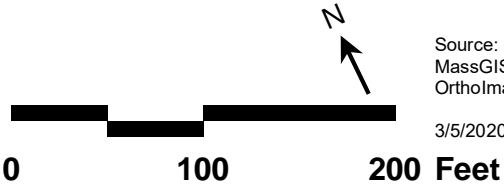
**Wildlife Habitat Evaluation Impact Areas
Sudbury, Massachusetts**







- MBTA ROW Boundary
- - - Limit of Grading
- Town Boundaries
- Bordering Land Subject to Flooding
- 10-year Floodplain
- Delineated Wetland Edge
- Approximate Wetland Edge
- Delineated Top of Bank
- Delineated Vernal Pool Edge
- Perennial Stream
- Wetland Area
- Land Under Water
- Wetland Replication Area
- Vernal Pool Area
- 100' Adjacent Upland Resource Area
- 200-ft Sudbury RFA
- 200-ft MWPA RFA
- Wildlife Habitat Evaluation Impact Area
- # Photo Location



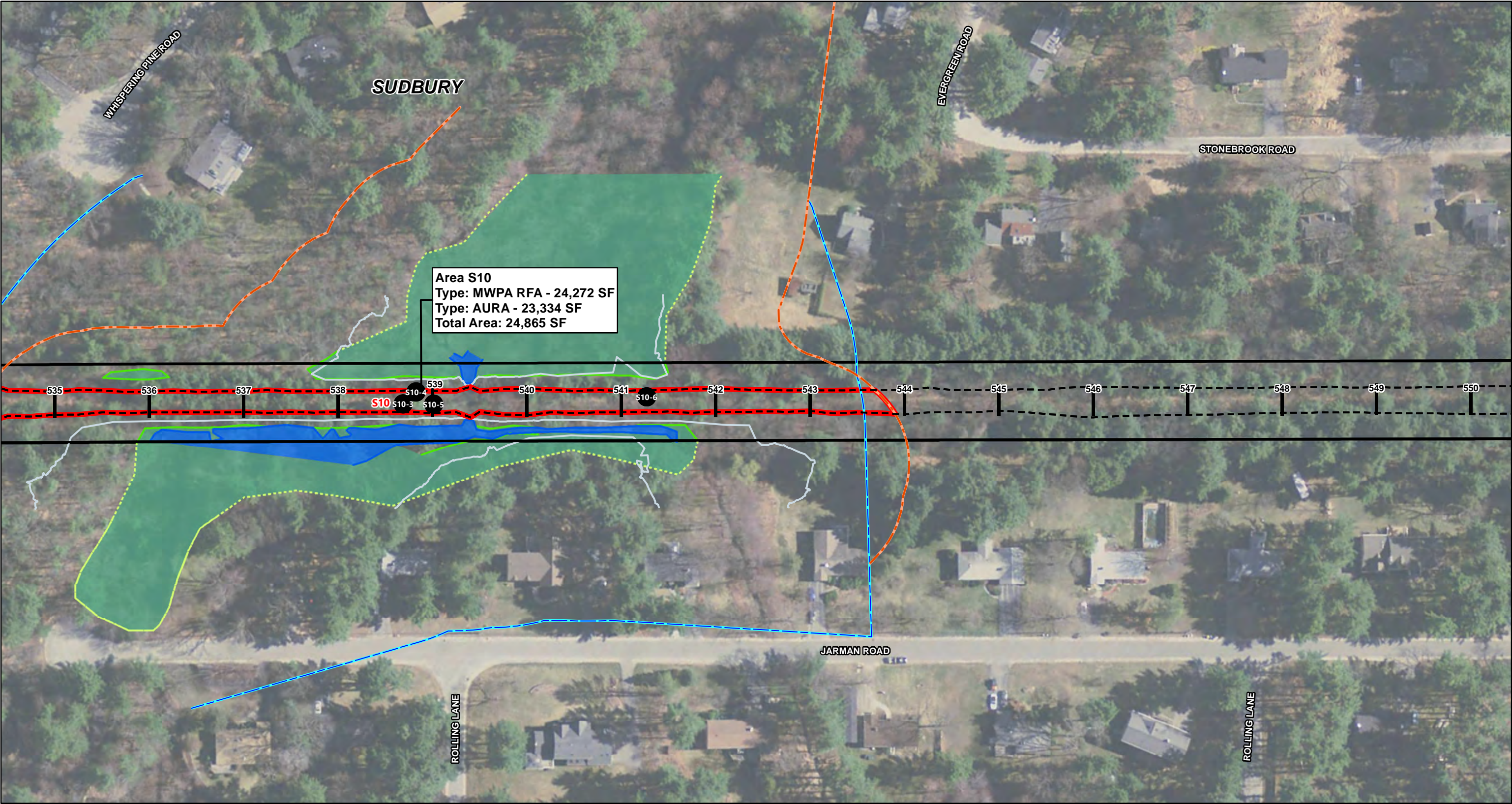
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**Sudbury-Hudson Transmission Reliability and
Mass Central Rail Trail Project**

**Wildlife Habitat Evaluation Impact Areas
Sudbury, Massachusetts**

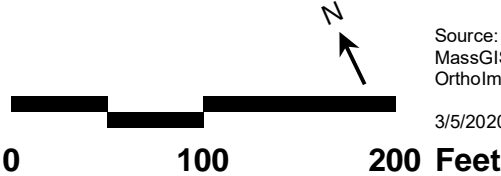


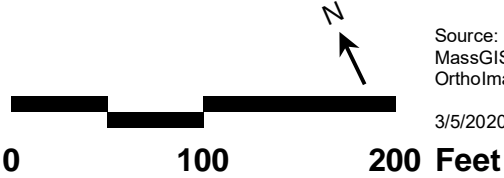


Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project

Wildlife Habitat Evaluation Impact Areas
Sudbury, Massachusetts

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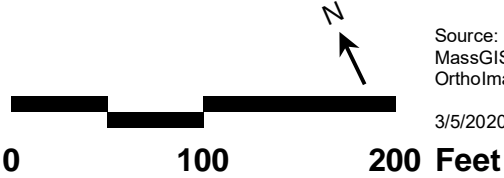


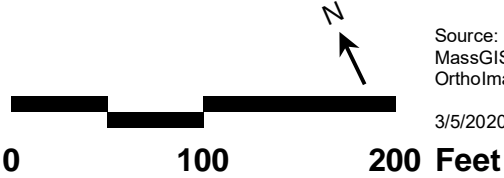
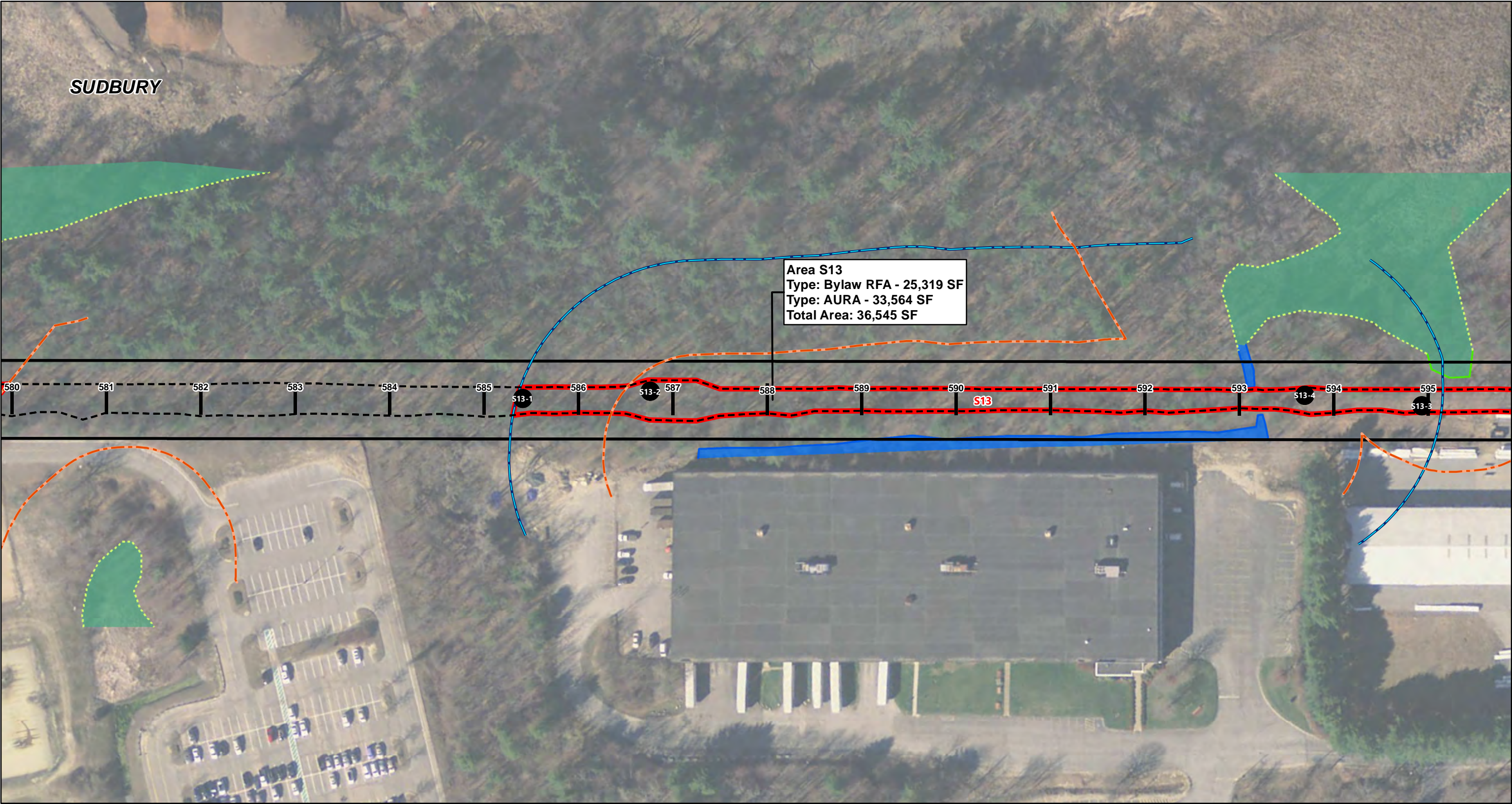
Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project

Wildlife Habitat Evaluation Impact Areas
Sudbury, Massachusetts



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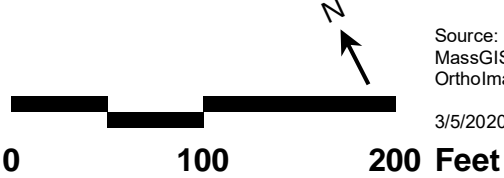
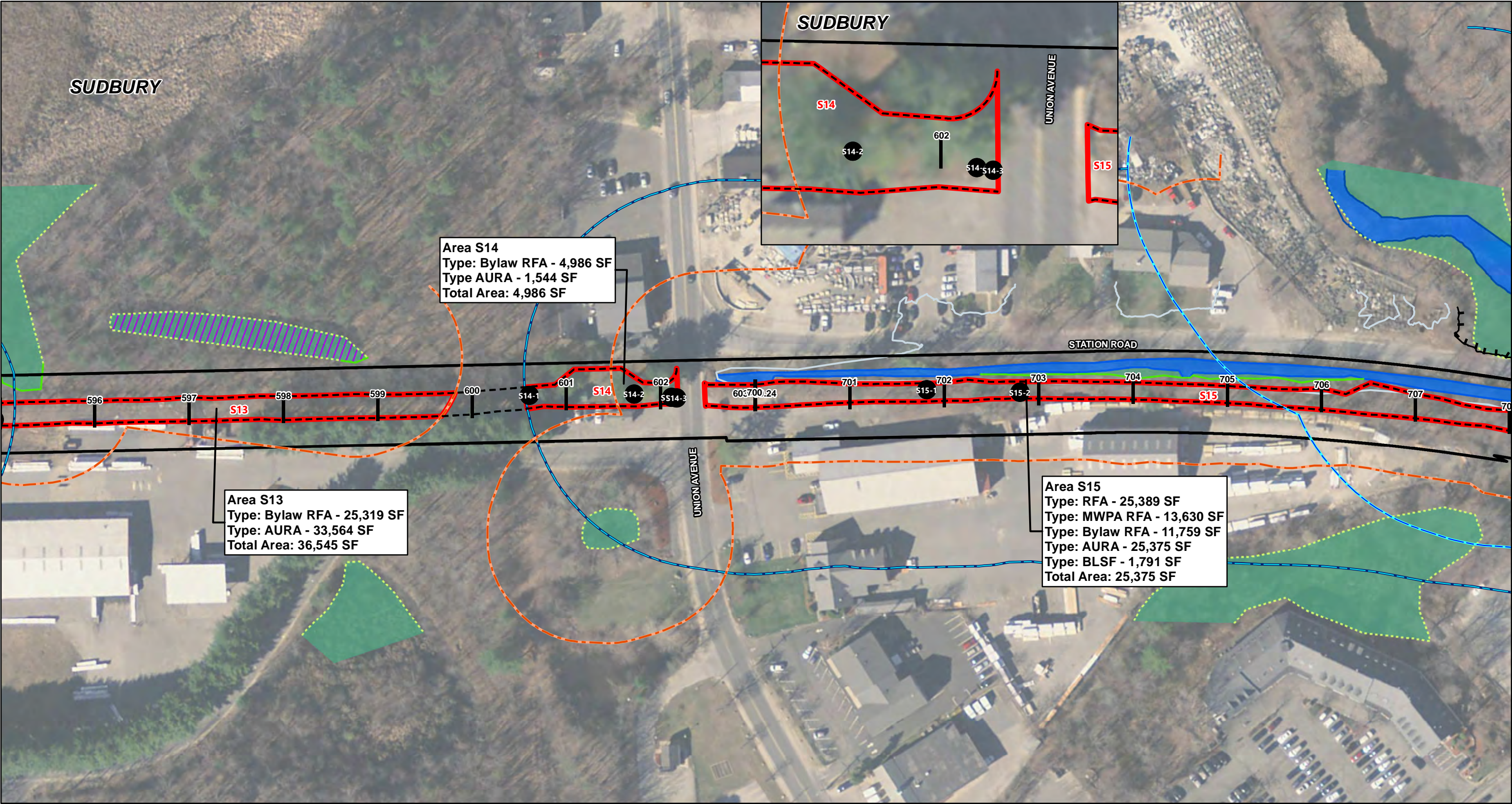
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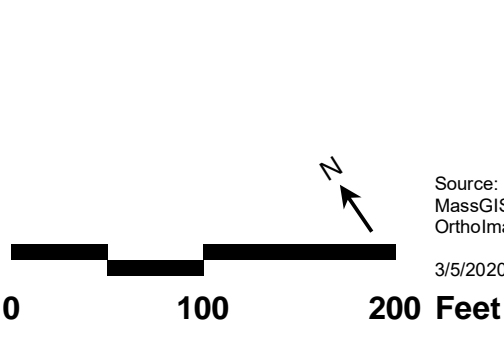
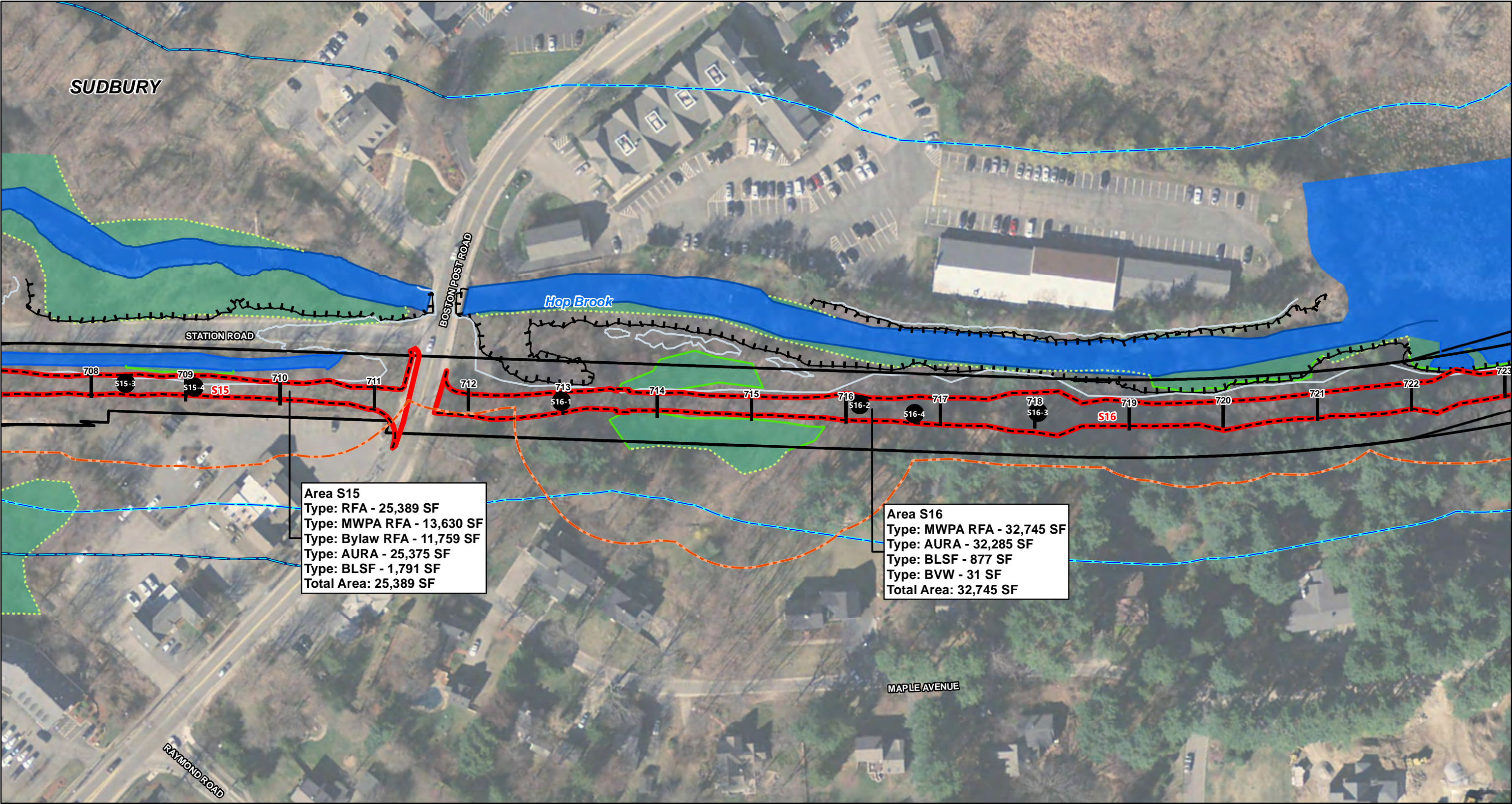


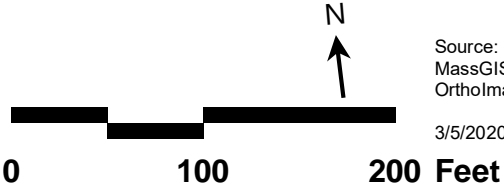
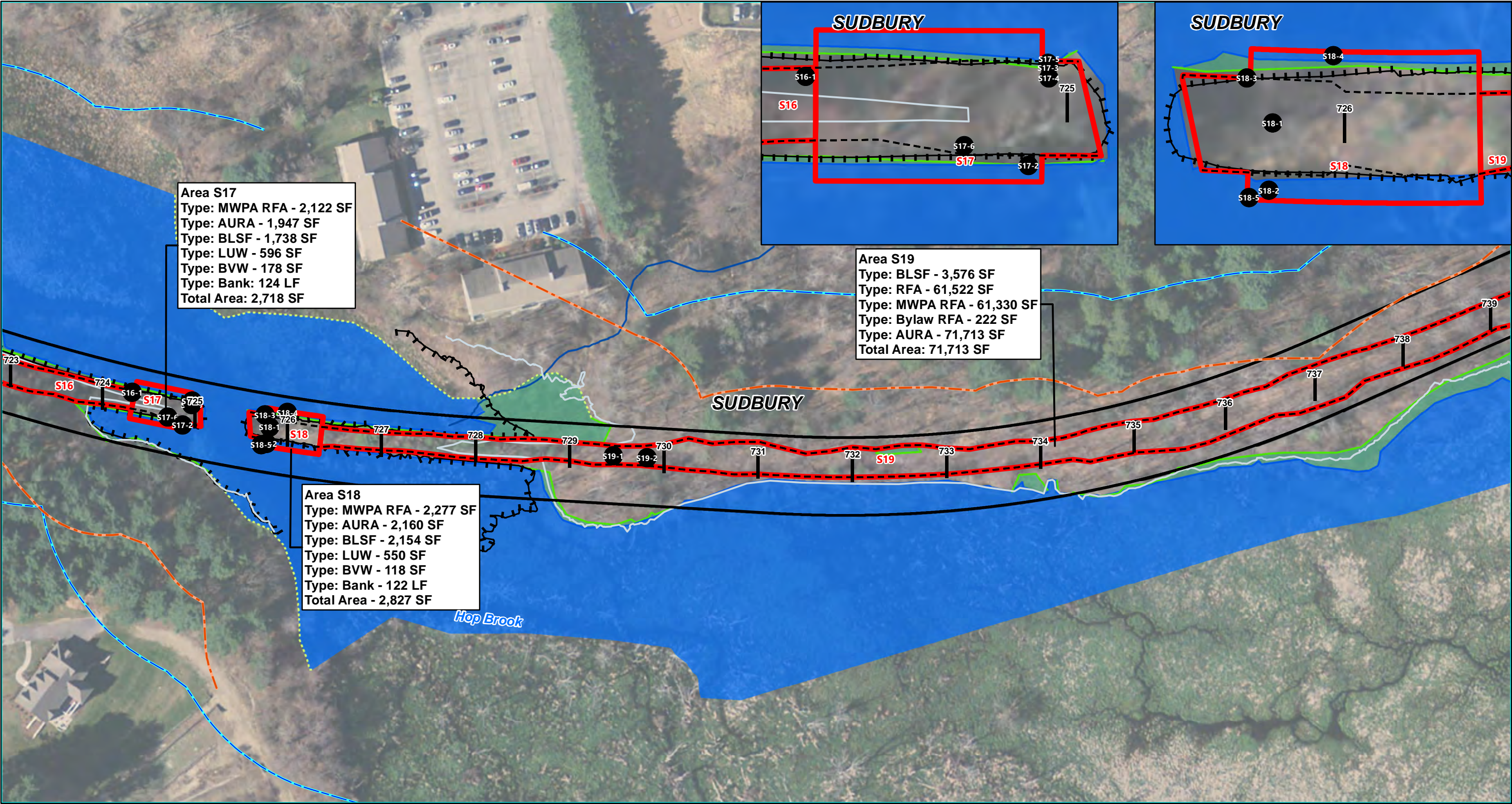
Sudbury-Hudson Transmission Reliability and
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Wildlife Habitat Evaluation Impact Areas
Sudbury, Massachusetts









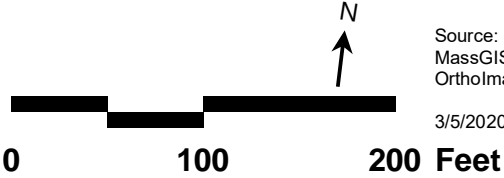
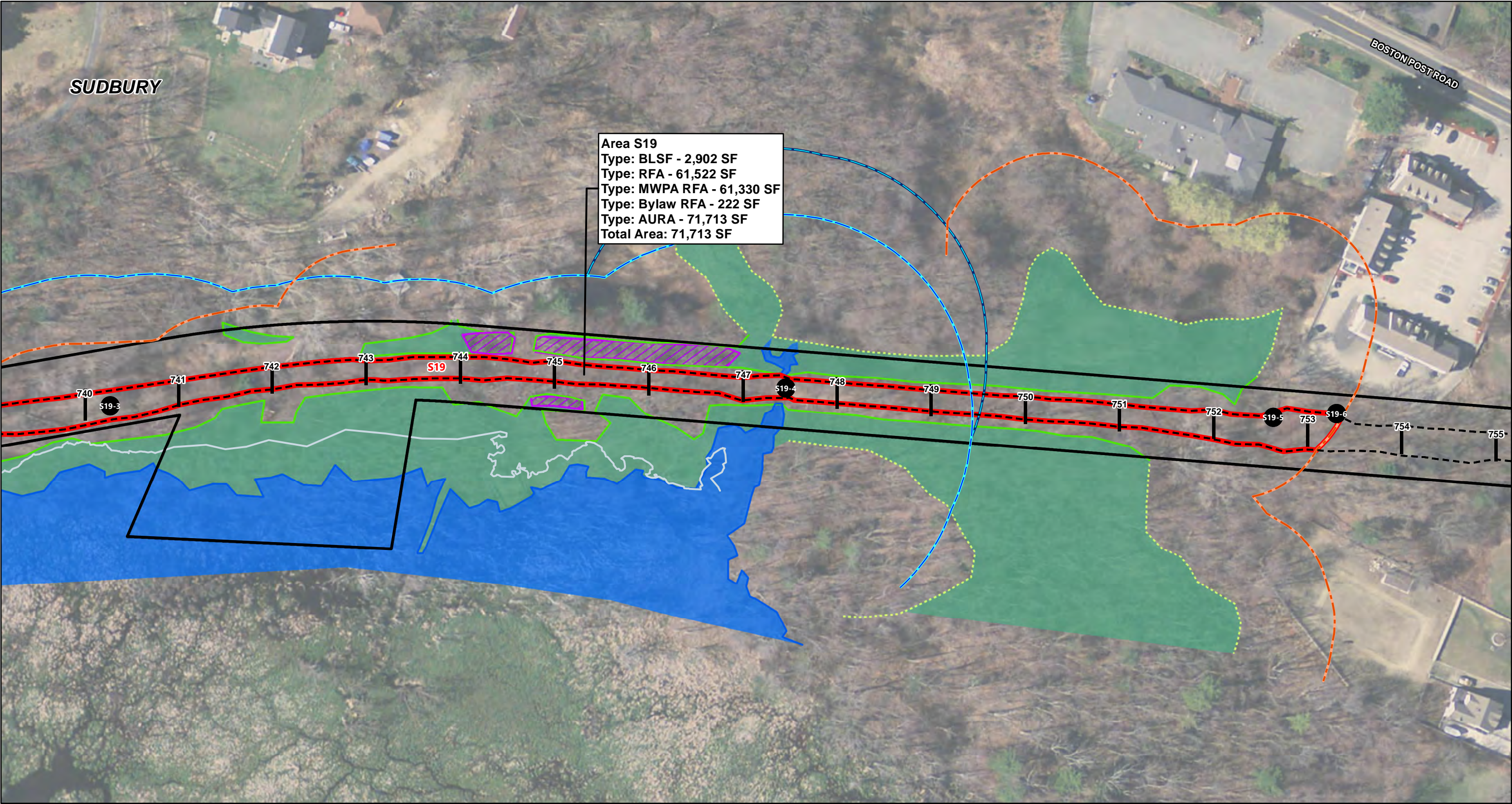
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Sudbury-Hudson Transmission Reliability and
Mass Central Rail Trail Project

Wildlife Habitat Evaluation Impact Areas
Sudbury, Massachusetts





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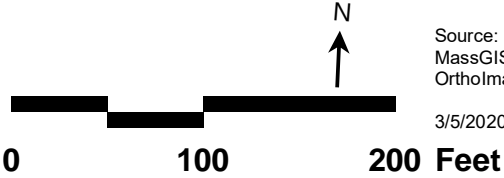
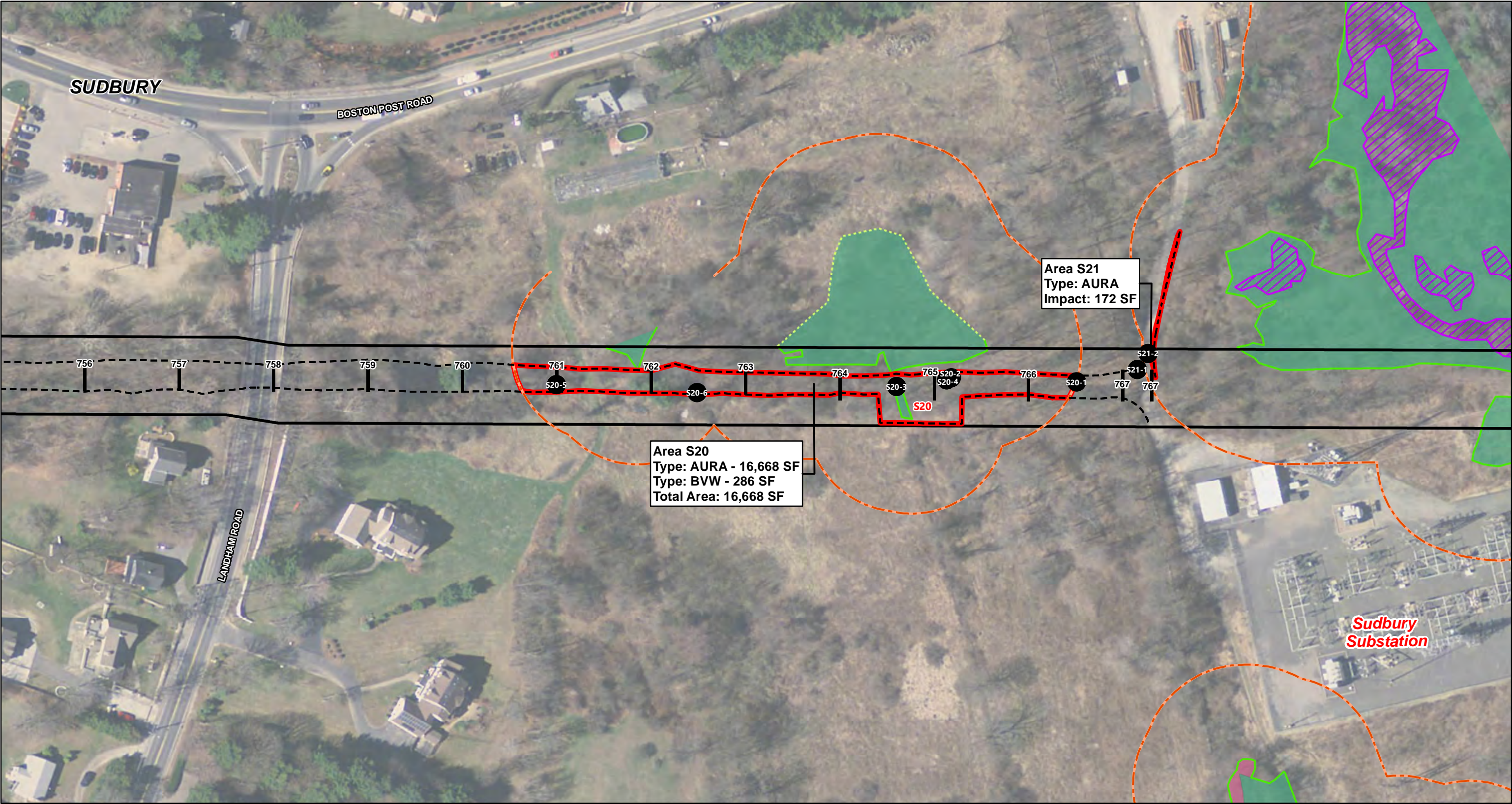
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**Sudbury-Hudson Transmission Reliability and
Mass Central Rail Trail Project**

**Wildlife Habitat Evaluation Impact Areas
Sudbury, Massachusetts**

Sheet 14 of 15





Source:
MassGIS, 2015
Orthoimagery, VHB
3/5/2020

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**Sudbury-Hudson Transmission Reliability and
Mass Central Rail Trail Project**

**Wildlife Habitat Evaluation Impact Areas
Sudbury, Massachusetts**

Sheet 15 of 15



Attachment B – WHE Forms, Vegetation Lists, and Photos

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Wetland Impact Area S1

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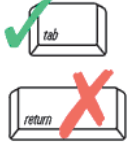


Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important:
When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



Sudbury-Hudson Transmission Reliability Project

Project Name

Sudbury, Stow, Marlborough, Hudson

Location

8,328 square feet

4/17/19 and 11/1/19

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Bylaw S1 - AURA			8,328	8,328
2.				
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF **Partially Overlaps ***Completely Overlaps

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

See impact area description in attached narrative

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Sudbury, Massachusetts

Project Location (from NOI page 1)

S1 - AURA Impact Area from approximately Station 367+00 to 370+70

Impact Area (number/name)

April 17, 2019 and November 1, 2019

Date(s) of Site Visit(s) and Data Collection

50's and overcast/40's and partly cloudy

Weather Conditions During Site Visit (if snow cover, include depth)

John Vieira and Katie Kinsella

1/15/19

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: N/A - Upland Area

Subsystem:

Class:

Subclass:

Hydrology/Water Regime

☐ Permanently flooded

☐ Saturated

☐ Intermittently exposed

☐ Temporarily flooded

☐ Semi-permanently flooded

☐ Intermittently flooded

☐ Seasonally flooded

☐ Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

N/A - Impact Area is mostly railroad track bed/disturbed so neither upland classification system applies

Community Name

See narrative and attached plant list

Vegetation Description

See narrative

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

Daubenmire midpoints used for vegetative percent cover. Vegetation mostly north and south of train track. Foot path north of track and track have less vegetation.	% Cover:	85	37.5			37.5
		Trees (> 20')	Shrubs (< 20')	Woody vines	Mosses	Herbaceous
	Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):					
	Strata	Plant Species	Strata	Plant Species		
	See attached list					

Soils in impact
area historically
disturbed and
filled from
construction and
operation of the
rail line and
therefore differ
from the
mapped soil unit

C. Inventory (Soils)

Carver loamy coarse sand

Soil Survey Unit

Drainage Class

Texture (upper part)

Depth

Depth to Water Table

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

☐ Abundant

☐ Present

☒ Absent

Few oaks and
blueberries

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

☐ Abundant

☒ Present

☐ Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

☐ Present

☒ Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

☐ Present

☒ Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
6-12" dbh	12-18" dbh	18-24" dbh	> 24" dbh

Number of Tree Cavities in trunks or limbs of:

<u>0</u>
6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)
<u>0</u>
12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)
<u>0</u>
>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

☐ Abundant ☐ Present ☒ Absent

Cover/Perches/Basking/Denning/Nesting Habitat

- ☒ Dense herbaceous cover (voles, small mammals, amphibians & reptiles) Small area (approximately 6'x25' of Pennsylvania sedge located to the south of the tracks within the easterly edge of the Impact Area. The sedge continues outside of the Impact Area to the south of the Project limits.
- ☐ Large woody debris on the ground (small mammals, mink, amphibians & reptiles)
- ☐ Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)
- ☐ Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)
- ☐ Rock piles, crevices, or hollow logs suitable for:
- | | | | | | |
|--------------------------------|-------------------------------|------------------------------------|-------------------------------|---------------------------------|---|
| <input type="checkbox"/> otter | <input type="checkbox"/> mink | <input type="checkbox"/> porcupine | <input type="checkbox"/> bear | <input type="checkbox"/> bobcat | <input type="checkbox"/> turkey vulture |
|--------------------------------|-------------------------------|------------------------------------|-------------------------------|---------------------------------|---|
- ☐ Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

☐ Present ☒ Absent

Standing water present at least part of the growing season, suitable for use by

- | | |
|--|---|
| <input type="checkbox"/> Breeding amphibians | <input type="checkbox"/> Non-breeding amphibians (foraging, re-hydration) |
| <input type="checkbox"/> Turtles | <input type="checkbox"/> Foraging waterfowl |

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

☐ Present ☒ Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

☐ Present ☐ Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

☐ Present ☐ Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

☐ Present ☐ Absent

Undercut or overhanging banks (small mammals, mink, weasels)

☐ Present ☐ Absent

Vertical sandy banks (bank swallow, kingfisher)

☐ Present ☐ Absent

Areas of ice-free open water in winter

☐ Present ☐ Absent

Mud flats

☐ Present ☐ Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

☐ Present ☐ Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

☐ Present ☐ Absent

Bank swallow colony

☐ Present ☐ Absent

Nest(s) present of

☐ Bald Eagle

☐ Osprey

☐ Great Blue Heron

Den(s) present of

☐ Otter

☐ Mink

☐ Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- ☐ 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- ☐ 200' of Great Blue Heron or osprey nest(s)
- ☐ 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (pied-billed grebe) ☐ Present ☒ Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

Is the impact area part of an emergent marsh at least 1.0 acre in size? ☐ Yes ☒ No

(marsh and waterbirds) 2.0 acres in size? ☐ Yes ☐ No

The impact area is not part of an
emergent marsh of any size

5.0 acres in size? ☐ Yes ☐ No

10.0 acres in size? ☐ Yes ☐ No

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Is the impact area part of a wetland complex at least	2.5 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
(turtles, frogs, waterfowl, mammals)	5.0 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
The impact area is not part of a wetland complex of any size.	10.0 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	25.0 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No

For upland resource areas is the impact area part of contiguous forested habitat at least

(forest interior nesting birds)	50 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Although the Impact Area is embedded within a contiguous area of forested habitat that is at least 500 acres, MassDEP GIS mapping shows interior forest mapped approximately 1,000 feet to the south of the Impact Area.	100 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	250 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	500 acres in size?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
	(grassland nesting birds)	> 1.0 acre in size?	<input type="checkbox"/> Yes
(special habitat such as gallery floodplain forest, alder thicket, etc.)	> 1.0 acre in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

B. Connectivity with adjoining natural habitats

- ☐ No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- ☒ Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- ☐ Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- ☐ Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- ☐ Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- ☐ Evidence of significant chemical contamination
- ☐ Evidence of significant levels of dumping
- ☐ Evidence of significant erosion or sedimentation problems
- ☐ Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- ☐ Disturbance from roads or highways
- ☒ Other human disturbance
- ☐ Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.

Recreational use: evidence/ observations of people (walking and on bikes), dogs and horses and a well-defined foot path within the Impact Area on the north side of the tracks. Other established trails within the immediate vicinity.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8
Dense herbaceous veg	Approximately 50 SF	Some areas abundant	See note below
Upland food plants	Scattered and limited	Some areas abundant	See note below

Vegetation found within Wetland Impact Area*

Impact Area S1
Survey Date: 4/17/19 and 11/1/19

Scientific Name ¹	Common Name ¹	Stratum				Wetland Indicator Status ¹	Native or Introduced ²	Invasive ³
		Tree	Sapling-Shrub	Herb	Vine			
<i>Acer rubrum</i>	Red Maple	X				FAC	N	
<i>Betula populifolia</i>	Gray Birch	X	X	X		FAC	N	
<i>Carex pensylvanica</i>	Pennsylvania Sedge			X†		UPL	N	
<i>Frangula alnus</i>	Glossy False Buckthorn		X†			FAC	I	X
<i>Pinus rigida</i>	Pitch Pine	X				FACU	N	
<i>Pinus strobus</i>	Eastern White Pine	X†	X†	X†		FACU	N	
<i>Pteridium aquilinum</i>	Northern Braken Fern			X		FACU	N	
<i>Quercus velutina</i>	Black Oak	X				UPL	N	
<i>Rubus hispidus</i>	Bristly Dewberry			X		FACW	N	
<i>Solidago canadensis</i>	Canada Goldenrod			X		FACU	N	
<i>Vaccinium angustifolium</i>	Late Lowbush Blueberry			X		FACU	N	

* This list only contains species that comprise 10% or more of cover.
† Represents plant species dominate within the wetland impact area.

¹ Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. The National Wetland Plant List: 2016 wetland ratings. Phytoneuron 2016-30: 1-17. (Massachusetts List) Published 28 April 2016. ISSN 2153 733X (http://wetland-plants.usace.army.mil/nwpl_static/data/DOC/lists_2016/States/pdf/MA_2016v1.pdf)

OBL: Obligate
FACW: Facultative Wetland
FAC: Facultative
FACU: Facultative Upland
UPL: Upland

²The Vascular Plants of Massachusetts: A County Checklist, The Vascular Plants of Massachusetts A County Checklist, First Revision, 2011. Published by Natural Heritage and Endangered Species Program. 269 pp.
N: Native
I: Introduced

³The Evaluation of Non-Native Plant Species for Invasiveness in Massachusetts (with annotated list).Massachusetts Invasive Plant Advisory Group. 2005. (https://massnrc.org/mipag/docs/MIPAG_FINDINGS_FINAL_042005.pdf)



Photo 1 - Looking east down the at the beginning of the Impact Area near Station 367+00. The well-defined foot path that is to the north of the tracks is visible.



Photo 2 – Representative picture of scattered saplings/woody debris on the ground within the Impact Area near Station 368+70

Impact Area S1 (AURA) in Sudbury, MA

Wildlife Habitat Evaluations Photographs

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Photo 3 – Representative picture of large woody debris on the ground outside the Impact Area near Station 369+90



Photo 4 – Looking at the narrow area of dense herbaceous vegetation (Pennsylvania sedge) near Station 370+70. The southern boundary of the Impact Area is demarcated by the pink pin flag that is visible in the southern portion of the photo. As can be observed, the dense herbaceous vegetation continues south outside of the Impact Area within and beyond the MBTA ROW.

Impact Area S1 (AURA) in Sudbury, MA

Wildlife Habitat Evaluations Photographs

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Wetland Impact Area S2

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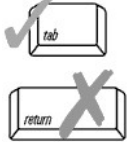


Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important:
When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



Sudbury-Hudson Transmission Reliability Project

Project Name

Sudbury, Stow, Marlborough, Hudson

Location

3,253 square feet

4/17/19

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Bylaw S2 - AURA			3,253	3,253
2.				
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Sudbury, Massachusetts

Project Location (from NOI page 1)

S2 - AURA Impact Area from approximately Station 375+00 to 376+50

Impact Area (number/name)

April 17, 2019

Date(s) of Site Visit(s) and Data Collection

50's and overcast

Weather Conditions During Site Visit (if snow cover, include depth)

John Vieira and Katie Kinsella

May 1, 2019

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: N/A - Upland Area

Subsystem: _____

Class: _____

Subclass: _____

Hydrology/Water Regime

☐ Permanently flooded

☐ Saturated

☐ Intermittently exposed

☐ Temporarily flooded

☐ Semi-permanently flooded

☐ Intermittently flooded

☐ Seasonally flooded

☐ Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

N/A - Impact Area is mostly railroad track bed/disturbed so neither upland classification system applies

Community Name

See narrative and attached plant list

Vegetation Description

See narrative

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover:	85.5	10.5	0	0	10.5
	Trees (> 20')	Shrubs (< 20')	Woody vines	Mosses	Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
See attached list			

C. Inventory (Soils)

Hinckley loamy sand

Soil Survey Unit	Drainage Class
Texture (upper part)	Depth
Depth to Water Table	

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

☐ Abundant ☐ Present ☒ Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

☐ Abundant ☒ Present ☐ Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

☐ Present ☒ Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

☐ Present ☒ Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
6-12" dbh	12-18" dbh	18-24" dbh	> 24" dbh

Number of Tree Cavities in trunks or limbs of:

<u>0</u>
6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)
<u>0</u>
12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)
<u>0</u>
>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

☐ Abundant ☐ Present ☒ Absent

Cover/Perches/Basking/Denning/Nesting Habitat

- ☐ Dense herbaceous cover (voles, small mammals, amphibians & reptiles)
- ☐ Large woody debris on the ground (small mammals, mink, amphibians & reptiles)
- ☐ Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)
- ☐ Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)
- ☐ Rock piles, crevices, or hollow logs suitable for:
- | | | | | | |
|--------------------------------|-------------------------------|------------------------------------|-------------------------------|---------------------------------|---|
| <input type="checkbox"/> otter | <input type="checkbox"/> mink | <input type="checkbox"/> porcupine | <input type="checkbox"/> bear | <input type="checkbox"/> bobcat | <input type="checkbox"/> turkey vulture |
|--------------------------------|-------------------------------|------------------------------------|-------------------------------|---------------------------------|---|
- ☐ Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

☐ Present ☒ Absent

Standing water present at least part of the growing season, suitable for use by

- | | |
|--|---|
| <input type="checkbox"/> Breeding amphibians | <input type="checkbox"/> Non-breeding amphibians (foraging, re-hydration) |
| <input type="checkbox"/> Turtles | <input type="checkbox"/> Foraging waterfowl |

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

☐ Present ☒ Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

☐ Present ☒ Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

☐ Present ☒ Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

☐ Present ☒ Absent

Undercut or overhanging banks (small mammals, mink, weasels)

☐ Present ☒ Absent

Vertical sandy banks (bank swallow, kingfisher)

☐ Present ☒ Absent

Areas of ice-free open water in winter

☐ Present ☒ Absent

Mud flats

☐ Present ☒ Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

☐ Present ☒ Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

☐ Present ☒ Absent

Bank swallow colony

☐ Present ☒ Absent

Nest(s) present of

☐ Bald Eagle

☐ Osprey

☐ Great Blue Heron

Den(s) present of

☐ Otter

☐ Mink

☐ Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- ☐ 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- ☐ 200' of Great Blue Heron or osprey nest(s)
- ☐ 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (pied-billed grebe) ☐ Present ☒ Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|---|---------------------|------------------------------|--|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Is the impact area part of a wetland complex at least	2.5 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(turtles, frogs, waterfowl, mammals)	5.0 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	10.0 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	25.0 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
For upland resource areas is the impact area part of contiguous forested habitat at least			
(forest interior nesting birds)	50 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	100 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	250 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	500 acres in size?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
(grassland nesting birds)	> 1.0 acre in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(special habitat such as gallery floodplain forest, alder thicket, etc.)	> 1.0 acre in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

B. Connectivity with adjoining natural habitats

- ☐ No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- ☒ Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- ☐ Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- ☐ Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- ☐ Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- ☐ Evidence of significant chemical contamination
- ☐ Evidence of significant levels of dumping
- ☐ Evidence of significant erosion or sedimentation problems
- ☐ Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- ☐ Disturbance from roads or highways
- ☒ Other human disturbance
- ☐ Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8
Upland Food plants	Minimal, mostly overhanging branches from adjacent trees	Greater than Impact Area	See note below

Vegetation found within Wetland Impact Area*

Impact Area S2
Survey Date: 4/17/19

Scientific Name ¹	Common Name ¹	Stratum				Wetland Indicator Status ¹	Native or Introduced ²	Invasive ³
		Tree	Sapling-Shrub	Herb	Vine			
<i>Betula populifolia</i>	Gray Birch	X†	X			FAC	N	
<i>Chimaphila maculata</i>	Striped Pipsissewa			X		UPL	N	
<i>Dendrolycopodium obscurum</i>	Princess-Pine			X		FACU	N	
<i>Frangula alnus</i>	Glossy False Buckthorn		X†	X		FAC	I	X
<i>Gaylussacia baccata</i>	Black Huckleberry		X†			FACU	N	
<i>Pinus strobus</i>	Eastern White Pine	X†	X†	X†		FACU	N	
<i>Quercus cocconeae</i>	Scarlet Oak	X†				UPL	N	
<i>Quercus velutina</i>	Black Oak	X†				UPL	N	
<i>Rubus flagellaris</i>	Whiplash Dewberry			X		FACU	N	

* This list only contains species that comprise 10% or more of cover.
† Represents plant species dominate within the wetland impact area.

¹ Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. The National Wetland Plant List: 2016 wetland ratings. Phytoneuron 2016-30: 1-17. (Massachusetts List) Published 28 April 2016. ISSN 2153 733X (http://wetland-plants.usace.army.mil/nwpl_static/data/DOC/lists_2016/States/pdf/MA_2016v1.pdf)

OBL: Obligate
FACW: Facultative Wetland
FAC: Facultative
FACU: Facultative Upland
UPL: Upland

²The Vascular Plants of Massachusetts: A County Checklist, The Vascular Plants of Massachusetts A County Checklist, First Revision, 2011. Published by Natural Heritage and Endangered Species Program. 269 pp.
N: Native
I: Introduced

³The Evaluation of Non-Native Plant Species for Invasiveness in Massachusetts (with annotated list).Massachusetts Invasive Plant Advisory Group. 2005. (https://massnrc.org/mipag/docs/MIPAG_FINDINGS_FINAL_042005.pdf)



Photo 1 - Looking east down the at the beginning of the Impact Area near Station 375+40. The well-defined foot path that is to the north of the tracks is visible.



Photo 2 – View east of the Impact Area near Station 376+20

Impact Area S2 (AURA) in Sudbury, MA

Wildlife Habitat Evaluations Photographs

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Wetland Impact Area S3

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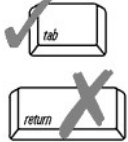
Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important:
When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



Sudbury-Hudson Transmission Reliability Project

Project Name

S3 Impact Area - Sudbury, Massachusetts

Location

7,893 square feet

4/17/19

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. AURA**			5,788	5,788
2. MWPA RFA**			7,893	7,893
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Sudbury, Massachusetts

Project Location (from NOI page 1)

S3 - RFA and AURA Impact Area from approximately Station 395+75 to 399+10

Impact Area (number/name)

April 17, 2019

Date(s) of Site Visit(s) and Data Collection

50's and partly cloudy

Weather Conditions During Site Visit (if snow cover, include depth)

John Vieira and Katie Kinsella

May 3, 2019

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: N/A - Upland Area

Subsystem: _____

Class: _____

Subclass: _____

Hydrology/Water Regime

☐ Permanently flooded

☐ Saturated

☐ Intermittently exposed

☐ Temporarily flooded

☐ Semi-permanently flooded

☐ Intermittently flooded

☐ Seasonally flooded

☐ Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

N/A - Impact Area is mostly railroad track bed/disturbed so neither upland classification system applies

Community Name

See narrative and attached plant list

Vegetation Description

See narrative

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 85.5 20.5 10.5
Trees (> 20') Shrubs (< 20') Woody vines Mosses Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
See attached list			

C. Inventory (Soils)

Freetown muck/Carver loamy sand

Soil Survey Unit

Drainage Class

Texture (upper part)

Depth

Depth to Water Table

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

☐ Abundant ☐ Present ☒ Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

☐ Abundant ☒ Present ☐ Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

☐ Present ☒ Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

☐ Present ☒ Absent

Limited oaks



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>
6-12" dbh	12-18" dbh	18-24" dbh	> 24" dbh

Number of Tree Cavities in trunks or limbs of:

<u>0</u>
6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)
<u>0</u>
12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)
<u>0</u>
>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

☐ Abundant ☐ Present ☒ Absent

Cover/Perches/Basking/Denning/Nesting Habitat

- ☐ Dense herbaceous cover (voles, small mammals, amphibians & reptiles)
- ☒ Large woody debris on the ground (small mammals, mink, amphibians & reptiles)
- ☐ Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)
- ☐ Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)
- ☐ Rock piles, crevices, or hollow logs suitable for:
- | | | | | | |
|--------------------------------|-------------------------------|------------------------------------|-------------------------------|---------------------------------|---|
| <input type="checkbox"/> otter | <input type="checkbox"/> mink | <input type="checkbox"/> porcupine | <input type="checkbox"/> bear | <input type="checkbox"/> bobcat | <input type="checkbox"/> turkey vulture |
|--------------------------------|-------------------------------|------------------------------------|-------------------------------|---------------------------------|---|
- ☒ Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

☐ Present ☒ Absent

Standing water present at least part of the growing season, suitable for use by

- | | |
|--|---|
| <input type="checkbox"/> Breeding amphibians | <input type="checkbox"/> Non-breeding amphibians (foraging, re-hydration) |
| <input type="checkbox"/> Turtles | <input type="checkbox"/> Foraging waterfowl |

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

☐ Present ☒ Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

☐ Present ☒ Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

☐ Present ☒ Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

☐ Present ☒ Absent

Undercut or overhanging banks (small mammals, mink, weasels)

☐ Present ☒ Absent

Vertical sandy banks (bank swallow, kingfisher)

☐ Present ☒ Absent

Areas of ice-free open water in winter

☐ Present ☒ Absent

Mud flats

☐ Present ☒ Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

☐ Present ☒ Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

☐ Present ☒ Absent

Bank swallow colony

☐ Present ☒ Absent

Nest(s) present of

☐ Bald Eagle

☐ Osprey

☐ Great Blue Heron

Den(s) present of

☐ Otter

☐ Mink

☐ Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- ☐ 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- ☐ 200' of Great Blue Heron or osprey nest(s)
- ☐ 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (pied-billed grebe) ☐ Present ☒ Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|---|---------------------|------------------------------|--|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Is the impact area part of a wetland complex at least	2.5 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(turtles, frogs, waterfowl, mammals)	5.0 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	10.0 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	25.0 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
For upland resource areas is the impact area part of contiguous forested habitat at least			
(forest interior nesting birds)	50 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	100 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	250 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	500 acres in size?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
(grassland nesting birds)	> 1.0 acre in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(special habitat such as gallery floodplain forest, alder thicket, etc.)	> 1.0 acre in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

B. Connectivity with adjoining natural habitats

- ☐ No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- ☒ Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- ☐ Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- ☐ Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- ☐ Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- ☐ Evidence of significant chemical contamination
- ☐ Evidence of significant levels of dumping
- ☐ Evidence of significant erosion or sedimentation problems
- ☐ Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- ☐ Disturbance from roads or highways
- ☒ Other human disturbance
- ☐ Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8
Upland Food Plants	Limited, Scattered	Some areas abundant	See note below
Standing Dead Trees	1 (6-12" dbh)	Some areas abundant	See note below
Woody Veg Offering View	12 trees, 1 snag	Some areas abundant	See note below
of open water			

Vegetation found within Wetland Impact Area*

Impact Area S3
Survey Date: 4/17/19

Scientific Name ¹	Common Name ¹	Stratum				Wetland Indicator Status ¹	Native or Introduced ²	Invasive ³
		Tree	Sapling-Shrub	Herb	Vine			
<i>Acer rubrum</i>	Red Maple	X	X †			FAC	N	
<i>Betula populifolia</i>	Gray Birch	X				FAC	N	
<i>Carex pensylvanica</i>	Pennsylvania Sedge			X		UPL	N	
<i>Frangula alnus</i>	Glossy False Buckthorn		X	X		FAC	I	X
<i>Lonicera morrowii</i>	Morrow's Honeysuckle		X †	X †		FACU	I	X
<i>Maianthemum canadense</i>	False Lily-of-the-Valley			X		FACU	N	
<i>Pinus strobus</i>	Eastern White Pine	X †				FACU	N	
<i>Prunus serotina</i>	Black Cherry	X	X	X		FACU	N	
<i>Quercus velutina</i>	Black Oak	X				UPL	N	
<i>Ulmus americana</i>	American Elm	X		X		FACW	N	

* This list only contains species that comprise 10% or more of cover.
† Represents plant species dominate within the wetland impact area.

¹ Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. The National Wetland Plant List: 2016 wetland ratings. Phytoneuron 2016-30: 1-17. (Massachusetts List) Published 28 April 2016. ISSN 2153 733X (http://wetland-plants.usace.army.mil/nwpl_static/data/DOC/lists_2016/States/pdf/MA_2016v1.pdf)

OBL: Obligate
FACW: Facultative Wetland
FAC: Facultative
FACU: Facultative Upland
UPL: Upland

²The Vascular Plants of Massachusetts: A County Checklist, The Vascular Plants of Massachusetts A County Checklist, First Revision, 2011. Published by Natural Heritage and Endangered Species Program. 269 pp.
N: Native
I: Introduced

³The Evaluation of Non-Native Plant Species for Invasiveness in Massachusetts (with annotated list).Massachusetts Invasive Plant Advisory Group. 2005. (https://massnrc.org/mipag/docs/MIPAG_FINDINGS_FINAL_042005.pdf)



Photo 1 - Looking east down the at the beginning of the Impact Area near Station 395+90. The well-defined foot path that is to the north of the tracks is visible.



Photo 2 – View east down the center of the tracks within the Impact Area near Station 396+60

Impact Area S3 (RFA and AURA) in Sudbury, MA

Wildlife Habitat Evaluations Photographs

EVERSOURCE
ENERGY

vhb



Photo 3 – Looking west down the rail line within the Impact Area near Station 398+75. The well-defined foot path is visible in the right side of the photograph.

Impact Area S3 (RFA and AURA) in Sudbury, MA

Wildlife Habitat Evaluations Photographs

EVERSOURCE
ENERGY

 **vhb**



Photo 4 – View of one snag that is within the Impact Area near

Impact Area S3 (RFA and AURA) in Sudbury, MA

Wildlife Habitat Evaluations Photographs

EVERSOURCE
ENERGY



Wetland Impact Area S4

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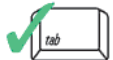
Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important:
When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



Sudbury-Hudson Transmission Reliability Project

Project Name

S4 Impact Area - Sudbury, MA

Location

3,746 SF Crane mat area

4/17/19

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. BLSF**			37	37
2. MWPA RFA***			3,746	3,746
3. Bylaw AURA***			3,746	3,746
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF **Partially Overlaps ***Completely Overlaps

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

See the attached Sheet with the description of the site.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Sudbury, Massachusetts

Project Location (from NOI page 1)

S4 - BLSF, RFA, and AURA from approximately Station 399+10 to 400+10 Crane Mat Area

Impact Area (number/name)

April 17, 2019

Date(s) of Site Visit(s) and Data Collection

50's and partly cloudy

Weather Conditions During Site Visit (if snow cover, include depth)

John Vieira and Katie Kinsella

May 3, 2019

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: N/A Upland Area

Subsystem: _____

Class: _____

Subclass: _____

Hydrology/Water Regime

☐ Permanently flooded

☐ Saturated

☐ Intermittently exposed

☐ Temporarily flooded

☐ Semi-permanently flooded

☐ Intermittently flooded

☐ Seasonally flooded

☐ Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

N/A - Impact Area is mostly railroad track bed / disturbed so neither classification system applies

Community Name

See narrative and attached plant list

Vegetation Description

See narrative

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

Daubenmire
midpoints used for
vegetative percent
cover. Vegetation
mostly north and
south of train track.
Foot path north of
track and track
have less
vegetation

% Cover:	85.5	38.0			38.0
	Trees (> 20')	Shrubs (< 20')	Woody vines	Mosses	Herbaceous
Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):					
Strata	Plant Species	Strata	Plant Species		
See attached plant list					

Soils in impact
area historically
disturbed and
filled from
construction and
operation of the
railroad line and
therefore differ
from the mapped
soil unit

C. Inventory (Soils)

Mapped as Freetown Muck	N/A
Soil Survey Unit	Drainage Class
Texture (upper part)	Depth
Depth to Water Table	

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

☐ Abundant ☐ Present ☒ Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

☐ Abundant ☒ Present ☐ Absent

Some oaks and
black cherry

Shrub thickets or streambeds with abundant earthworms (American woodcock)

☐ Present ☒ Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

☐ Present ☒ Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
6-12" dbh	12-18" dbh	18-24" dbh	> 24" dbh

Number of Tree Cavities in trunks or limbs of:

<u>0</u>
6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)
<u>0</u>
12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)
<u>0</u>
>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

☐ Abundant ☐ Present ☒ Absent

Cover/Perches/Basking/Denning/Nesting Habitat

☐ Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

☒ Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

☐ Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

☐ Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

☐ Rock piles, crevices, or hollow logs suitable for:

☐ otter ☐ mink ☐ porcupine ☐ bear ☐ bobcat ☐ turkey vulture

☒ Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

☐ Present ☒ Absent

Standing water present at least part of the growing season, suitable for use by

☐ Breeding amphibians ☐ Non-breeding amphibians (foraging, re-hydration)

☐ Turtles ☐ Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

☐ Present ☒ Absent

Minor and insignificant amount

Approx. 29
Trees > 6" dbh
and 4 snags
< 6" dbh.
Included north
and south side
of area
evaluated.
Tall shrubs also
abundant.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

☐ Present ☒ Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

☐ Present ☒ Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

☐ Present ☒ Absent

Undercut or overhanging banks (small mammals, mink, weasels)

☐ Present ☒ Absent

Vertical sandy banks (bank swallow, kingfisher)

☐ Present ☒ Absent

Areas of ice-free open water in winter

☐ Present ☒ Absent

Mud flats

☐ Present ☒ Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

☐ Present ☒ Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

☐ Present ☒ Absent

Bank swallow colony

☐ Present ☒ Absent

Nest(s) present of

☐ Bald Eagle

☐ Osprey

☐ Great Blue Heron

Den(s) present of

☐ Otter

☐ Mink

☐ Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- ☐ 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- ☐ 200' of Great Blue Heron or osprey nest(s)
- ☐ 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (pied-billed grebe) ☐ Present ☒ Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|---|---------------------|------------------------------|--|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Is the impact area part of a wetland complex at least	2.5 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(turtles, frogs, waterfowl, mammals)	5.0 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	10.0 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	25.0 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
For upland resource areas is the impact area part of contiguous forested habitat at least			
(forest interior nesting birds)	50 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	100 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	250 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	500 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(grassland nesting birds)	> 1.0 acre in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(special habitat such as gallery floodplain forest, alder thicket, etc.)	> 1.0 acre in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

B. Connectivity with adjoining natural habitats

- ☐ No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- ☒ Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- ☐ Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- ☐ Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- ☐ Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

Recreational use: evidence/ observations of people (walking and on bikes), dogs and horses and a well-defined foot path within the Impact Area on the north side of the tracks. Other established trails within the immediate vicinity.

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- ☐ Evidence of significant chemical contamination
- ☐ Evidence of significant levels of dumping
- ☐ Evidence of significant erosion or sedimentation problems
- ☒ Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- ☐ Disturbance from roads or highways
- ☒ Other human disturbance
- ☐ Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8
Upland /wetland food plants	Scattered	Some areas abundant	See note below
Large woody debris	Limited	Some areas abundant	See note below
Woody Veg Offering View	Present Scattered along	Some present beyond	See note below
of open water	N & S edges #29 > 6"	impact area	
			See note below

Vegetation found within Wetland Impact Area*

Impact Area S4
Survey Date: 4/17/19

Scientific Name ¹	Common Name ¹	Stratum				Wetland Indicator Status ¹	Native or Introduced ²	Invasive ³
		Tree	Sapling-Shrub	Herb	Vine			
<i>Acer rubrum</i>	Red Maple	X †	X			FAC	N	
<i>Betula populifolia</i>	Gray Birch	X				FAC	N	
<i>Carex pensylvanica</i>	Pennsylvania Sedge			X		UPL	N	
<i>Frangula alnus</i>	Glossy False Buckthorn		X	X		FAC	I	X
<i>Lonicera morrowii</i>	Morrow's Honeysuckle		X †	X †		FACU	I	X
<i>Maianthemum canadense</i>	False Lily-of-the-Valley			X		FACU	N	
<i>Pinus strobus</i>	Eastern White Pine	X †				FACU	N	
<i>Prunus serotina</i>	Black Cherry	X	X †			FACU	N	
<i>Quercus velutina</i>	Black Oak	X				UPL	N	
<i>Ulmus americana</i>	American Elm	X				FACW	N	
<i>Vaccinium angustifolium</i>	Late Lowbush Blueberry			X		FACU	N	

* This list only contains species that comprise 10% or more of cover.
† Represents plant species dominate within the wetland impact area.

¹ Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. The National Wetland Plant List: 2016 wetland ratings. Phytoneuron 2016-30: 1-17. (Massachusetts List) Published 28 April 2016. ISSN 2153 733X (http://wetland-plants.usace.army.mil/nwpl_static/data/DOC/lists_2016/States/pdf/MA_2016v1.pdf)

- OBL:** Obligate
- FACW:** Facultative Wetland
- FAC:** Facultative
- FACU:** Facultative Upland
- UPL:** Upland

²The Vascular Plants of Massachusetts: A County Checklist, The Vascular Plants of Massachusetts A County Checklist, First Revision, 2011. Published by Natural Heritage and Endangered Species Program. 269 pp.

- N:** Native
- I:** Introduced

³The Evaluation of Non-Native Plant Species for Invasiveness in Massachusetts (with annotated list).Massachusetts Invasive Plant Advisory Group. 2005. (https://massnrc.org/mipag/docs/MIPAG_FINDINGS_FINAL_042005.pdf)



Photo 1 - Looking east down the Impact Area towards the foot bridge near Station 399+35. The well-defined foot path that is to the north of the tracks is visible.



Photo 2 – View east at vegetation overhanging water within the northern edge of the Impact Area near Station 399+30

**Impact Area S4 (BLSF, RFA and AURA) in
Sudbury, MA**

Wildlife Habitat Evaluations Photographs

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Photo 3 – Looking west down the rail line within the Impact Area near Station 399+85. The well-defined foot path is visible in the right side of the photograph.



Photo 4 – View east of vegetation overhanging water within the southern edge of the Impact Area near Station 399+60.

**Impact Area S4 (BLSF, RFA and AURA) in
Sudbury, MA**

Wildlife Habitat Evaluations Photographs

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Wetland Impact Area S5

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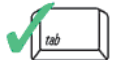
Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important:
When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



Sudbury-Hudson Transmission Reliability Project

Project Name

S5 Impact Area - Sudbury, MA

Location

4,168 SF Crane mat area

5/1/19

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. BLSF**			262	262
2. MWPA RFA***			4,168	4,168
3. Bylaw AURA***			4,168	4,168
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF **Partially Overlaps ***Completely Overlaps

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

See the attached Sheet with the description of the site.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Sudbury, Massachusetts

Project Location (from NOI page 1)

S5 - BLSF, RFA, and AURA from approximately Station 400+60 to 401+65

Impact Area (number/name)

May 1, 2019

Date(s) of Site Visit(s) and Data Collection

60's and partly cloudy

Weather Conditions During Site Visit (if snow cover, include depth)

John Vieira and Katie Kinsella

May 3, 2019

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: N/A Upland Area

Subsystem:

Class:

Subclass:

Hydrology/Water Regime

☐ Permanently flooded

☐ Saturated

☐ Intermittently exposed

☐ Temporarily flooded

☐ Semi-permanently flooded

☐ Intermittently flooded

☐ Seasonally flooded

☐ Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

N/A - Impact Area is mostly railroad track bed / disturbed so neither classification system applies

Community Name

See narrative and attached plant list

Vegetation Description

See narrative

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

Daubenmire midpoints used for vegetative percent cover. Vegetation mostly north and south of train track. Foot path north of track and track have less vegetation.

% Cover:	63.0	38.0		38.0
	Trees (> 20')	Shrubs (< 20')	Woody vines	Mosses
	Herbaceous			
Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):				
Strata	Plant Species	Strata	Plant Species	
See attached plant list				

Soils in impact area historically disturbed and filled from construction and operation of the railroad line and therefore differ from the mapped soil unit

C. Inventory (Soils)

Mapped as Freetown Muck	N/A
Soil Survey Unit	Drainage Class
Texture (upper part)	Depth
Depth to Water Table	

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

☐ Abundant ☐ Present ☒ Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

☐ Abundant ☒ Present ☐ Absent

Some present - black cherry, service berry

Shrub thickets or streambeds with abundant earthworms (American woodcock)

☐ Present ☒ Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

☐ Present ☒ Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

<u>8</u>	<u>2</u>	<u>0</u>	<u>0</u>
6-12" dbh	12-18" dbh	18-24" dbh	> 24" dbh

Number of Tree Cavities in trunks or limbs of:

1 base of tree

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

0

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

0

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

☐ Abundant ☐ Present ☒ Absent

Cover/Perches/Basking/Denning/Nesting Habitat

☐ Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

☒ Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

☐ Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

☒ Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

☐ Rock piles, crevices, or hollow logs suitable for:

☐ otter

☐ mink

☐ porcupine

☐ bear

☐ bobcat

☐ turkey vulture

☒ Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

☐ Present

☒ Absent

Standing water present at least part of the growing season, suitable for use by

☐ Breeding amphibians

☐ Non-breeding amphibians (foraging, re-hydration)

☐ Turtles

☐ Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

☐ Present

☒ Absent

Minor and insignificant amount

Two fallen logs

35 Trees > 6" dbh and 10 snags. Included north and south side of area evaluated



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

☐ Present ☒ Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

☐ Present ☒ Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

☐ Present ☒ Absent

Undercut or overhanging banks (small mammals, mink, weasels)

☐ Present ☒ Absent

Vertical sandy banks (bank swallow, kingfisher)

☐ Present ☒ Absent

Areas of ice-free open water in winter

☐ Present ☒ Absent

Mud flats

☐ Present ☒ Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

☒ Present ☐ Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

☐ Present ☒ Absent

Bank swallow colony

☐ Present ☒ Absent

Nest(s) present of

☐ Bald Eagle

☐ Osprey

☐ Great Blue Heron

Den(s) present of

☐ Otter

☐ Mink

☐ Beaver

On southern side of impact area. Compromised by foot traffic and dogs. Approx. 10'x20'.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- ☐ 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- ☐ 200' of Great Blue Heron or osprey nest(s)
- ☐ 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (pied-billed grebe) ☐ Present ☒ Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|---|---------------------|------------------------------|--|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Is the impact area part of a wetland complex at least	2.5 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(turtles, frogs, waterfowl, mammals)	5.0 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	10.0 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	25.0 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
For upland resource areas is the impact area part of contiguous forested habitat at least			
(forest interior nesting birds)	50 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	100 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	250 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	500 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(grassland nesting birds)	> 1.0 acre in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(special habitat such as gallery floodplain forest, alder thicket, etc.)	> 1.0 acre in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

B. Connectivity with adjoining natural habitats

- ☐ No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- ☒ Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- ☐ Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- ☐ Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- ☐ Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- ☐ Evidence of significant chemical contamination
- ☐ Evidence of significant levels of dumping
- ☐ Evidence of significant erosion or sedimentation problems
- ☒ Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- ☐ Disturbance from roads or highways
- ☒ Other human disturbance
- ☐ Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.

Recreational use: evidence/ observations of people (walking and on bikes), dogs and horses and a well-defined foot path within the Impact Area on the north side of the tracks. Other established trails within the immediate vicinity.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8
Upland /wetland food plants	Scattered	Some areas abundant	See note below
Large woody / Coarse debris	Scattered/Limited	Some areas abundant	See note below
Woody Veg Offering View	35 trees, 10 snags along	Some present beyond	See note below
of open water	N & S edges	impact area	
Potential turtle nesting hab.	200 sf (estimate)	Significantly more on SVT	See note below
Woody veg. 1M over water	1 log	Some areas abundant	See note below
Standing dead trees	6"-12"(6) 12"-18"(2)	Some areas abundant	See note below

Vegetation found within Wetland Impact Area*

Impact Area S5
Survey Date: 5/1/19

Scientific Name ¹	Common Name ¹	Stratum				Wetland Indicator Status ¹	Native or Introduced ²	Invasive ³
		Tree	Sapling-Shrub	Herb	Vine			
<i>Acer rubrum</i>	Red Maple	X †	X			FAC	N	
<i>Achillea millefolium</i>	Common yarrow			X		FACU	I	
<i>Amelanchier canadensis</i>	Canada Service-Berry		X	X		FAC	N	
<i>Athyrium angustum</i>	Northern Lady Fern			X		FAC	N	
<i>Carex pensylvanica</i>	Pennsylvania Sedge			X †		UPL	N	
<i>Frangula alnus</i>	Glossy False Buckthorn		X †	X		FAC	I	X
<i>Lonicera morrowii</i>	Morrow's Honeysuckle		X †			FACU	I	X
<i>Maianthemum canadense</i>	False Lily-of-the-Valley			X †		FACU	N	
<i>Pinus strobus</i>	Eastern White Pine	X †	X			FACU	N	
<i>Prunus serotina</i>	Black Cherry	X	X			FACU	N	
<i>Salix nigra</i>	Black Willow	X	X			OBL	N	
<i>Ulmus americana</i>	American Elm	X				FACW	N	

* This list only contains species that comprise 10% or more of cover.

† Represents plant species dominate within the wetland impact area.

¹ Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. The National Wetland Plant List: 2016 wetland ratings.

- OBL:** Obligate
- FACW:** Facultative Wetland
- FAC:** Facultative
- FACU:** Facultative Upland
- UPL:** Upland

²The Vascular Plants of Massachusetts: A County Checklist, The Vascular Plants of Massachusetts A County Checklist, First Revision, 2011. Published by Natural

- N:** Native
- I:** Introduced



Photo 1 – Small mammal burrow within Impact Area near Station 401+45



Photo 2 – Cavity at the base of a tree within WIA S5

**Impact Area S5 (BLSF, RFA and AURA) in
Sudbury, MA**

Wildlife Habitat Evaluations Photographs

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Photo 3 – Trees providing an open view of water within WIA S5. The well-defined foot path is visible in the right side of this photograph.



Photo 4 – Picture of potential nesting area adjacent to the Fort Meadow Brook bridge. Dogs were observed using this area to enter and swim within Hop Brook.

**Impact Area S5 (BLSF, RFA and AURA) in
Sudbury, MA**

Wildlife Habitat Evaluations Photographs

EVERSOURCE
ENERGY

vhb

Wetland Impact Area S6

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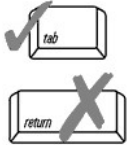
Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important:
When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



Sudbury-Hudson Transmission Reliability Project

Project Name

S6 Impact Area - Sudbury, MA

Location

4,283 SF Crane mat area

5/1/19

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. MWPA RFA**			4,283	4,283
2. Bylaw AURA**			2,928	2,928
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

See the attached Sheet with the description of the site.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Sudbury, Massachusetts

Project Location (from NOI page 1)

S6 - RFA and AURA from approximately Station 401+65 to 403+50

Impact Area (number/name)

May 1, 2019

Date(s) of Site Visit(s) and Data Collection

60's and partly cloudy

Weather Conditions During Site Visit (if snow cover, include depth)

John Vieira and Katie Kinsella

May 3, 2019

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: N/A Upland Area

Subsystem: _____

Class: _____

Subclass: _____

Hydrology/Water Regime

☐ Permanently flooded

☐ Saturated

☐ Intermittently exposed

☐ Temporarily flooded

☐ Semi-permanently flooded

☐ Intermittently flooded

☐ Seasonally flooded

☐ Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

N/A - Impact Area is mostly railroad track bed / disturbed so neither classification system applies

Community Name

See narrative and attached plant list

Vegetation Description

See narrative

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover:	63.0	38.0			38.0
	Trees (> 20')	Shrubs (< 20')	Woody vines	Mosses	Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; “*” designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
See attached plant list			

C. Inventory (Soils)

Mapped as Freetown Muck	N/A
Soil Survey Unit	Drainage Class
Texture (upper part)	Depth
Depth to Water Table	

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

☐ Abundant ☐ Present ☒ Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

☐ Abundant ☒ Present ☐ Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

☐ Present ☒ Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

☐ Present ☒ Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

<u>2</u>	<u>0</u>	<u>0</u>	<u>0</u>
6-12" dbh	12-18" dbh	18-24" dbh	> 24" dbh

Number of Tree Cavities in trunks or limbs of:

<u>0</u>
6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)
<u>0</u>
12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)
<u>0</u>
>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

☐ Abundant ☐ Present ☒ Absent

Cover/Perches/Basking/Denning/Nesting Habitat

☐ Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

☒ Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

☐ Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

☐ Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

☐ Rock piles, crevices, or hollow logs suitable for:

☐ otter ☐ mink ☐ porcupine ☐ bear ☐ bobcat ☐ turkey vulture

☒ Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

☐ Present ☒ Absent

Standing water present at least part of the growing season, suitable for use by

☐ Breeding amphibians ☐ Non-breeding amphibians (foraging, re-hydration)

☐ Turtles ☐ Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

☐ Present ☒ Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

☐ Present ☒ Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

☐ Present ☒ Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

☐ Present ☒ Absent

Undercut or overhanging banks (small mammals, mink, weasels)

☐ Present ☒ Absent

Vertical sandy banks (bank swallow, kingfisher)

☐ Present ☒ Absent

Areas of ice-free open water in winter

☐ Present ☒ Absent

Mud flats

☐ Present ☒ Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

☐ Present ☒ Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

☐ Present ☒ Absent

Bank swallow colony

☐ Present ☒ Absent

Nest(s) present of

☐ Bald Eagle

☐ Osprey

☐ Great Blue Heron

Den(s) present of

☐ Otter

☐ Mink

☐ Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- ☐ 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- ☐ 200' of Great Blue Heron or osprey nest(s)
- ☐ 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (pied-billed grebe) ☐ Present ☒ Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|---|---------------------|------------------------------|--|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Is the impact area part of a wetland complex at least	2.5 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(turtles, frogs, waterfowl, mammals)	5.0 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	10.0 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	25.0 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
For upland resource areas is the impact area part of contiguous forested habitat at least			
(forest interior nesting birds)	50 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	100 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	250 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	500 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(grassland nesting birds)	> 1.0 acre in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(special habitat such as gallery floodplain forest, alder thicket, etc.)	> 1.0 acre in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

B. Connectivity with adjoining natural habitats

- ☐ No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- ☒ Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- ☐ Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- ☐ Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- ☐ Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- ☐ Evidence of significant chemical contamination
- ☐ Evidence of significant levels of dumping
- ☐ Evidence of significant erosion or sedimentation problems
- ☒ Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- ☐ Disturbance from roads or highways
- ☒ Other human disturbance
- ☐ Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8
Upland /wetland food plants	Scattered	Some areas abundant	See note below
Large woody debris	Limited/scattered	Some areas abundant	See note below
Woody Veg Offering View	5 Present scattered along	Some present beyond	See note below
of open water	S edge	impact area	
Standing dead trees	6"-12"(2)	Some areas abundant	See note below

Vegetation found within Wetland Impact Area*

Impact Area S6
Survey Date: 5/1/19

Scientific Name ¹	Common Name ¹	Stratum				Wetland Indicator Status ¹	Native or Introduced ²	Invasive ³
		Tree	Sapling-Shrub	Herb	Vine			
<i>Acer rubrum</i>	Red Maple	X†				FAC	N	
<i>Betula populifolia</i>	Gray Birch	X				FAC	N	
<i>Carex pensylvanica</i>	Pennsylvania Sedge			X†		UPL	N	
<i>Frangula alnus</i>	Glossy False Buckthorn		X†	X†	X†	FAC	I	X
<i>Lonicera morrowii</i>	Morrow's Honeysuckle		X			FACU	I	X
<i>Pinus strobus</i>	Eastern White Pine	X†	X			FACU	N	
<i>Quercus alba</i>	Northern White Oak	X				FACU	N	
<i>Quercus velutina</i>	Black Oak	X†				UPL	N	
<i>Solidago canadensis</i>	Canada Goldenrod			X		FACU	N	

* This list only contains species that comprise 10% or more of cover.
† Represents plant species dominate within the wetland impact area.

¹ Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. The National Wetland Plant List: 2016 wetland ratings. Phytoneuron 2016-30: 1-17. (Massachusetts List) Published 28 April 2016. ISSN 2153 733X (http://wetland-plants.usace.army.mil/nwpl_static/data/DOC/lists_2016/States/pdf/MA_2016v1.pdf)

OBL: Obligate
FACW: Facultative Wetland
FAC: Facultative
FACU: Facultative Upland
UPL: Upland

²The Vascular Plants of Massachusetts: A County Checklist, The Vascular Plants of Massachusetts A County Checklist, First Revision, 2011. Published by Natural Heritage and Endangered Species Program. 269 pp.
N: Native
I: Introduced

³The Evaluation of Non-Native Plant Species for Invasiveness in Massachusetts (with annotated list).Massachusetts Invasive Plant Advisory Group. 2005. (https://massnrc.org/mipag/docs/MIPAG_FINDINGS_FINAL_042005.pdf)



Photo 1 – Looking east down the Impact Area near Station 403+15. The well-defined foot path is visible in the left side of this photograph.



Photo 2 – Looking west down the Impact Area near Station 402+60 with the well-defined foot path on the right.

**Impact Area S6 (BLSF, RFA and AURA) in
Sudbury, MA**

Wildlife Habitat Evaluations Photographs

EVERSOURCE
ENERGY

vhb



Photo 3 – Large woody debris within and extending outside of the Impact Area near Station 401+80



Photo 4 – Another view of large woody debris within and extending outside the Impact Area near Station 401+75

**Impact Area S6 (BLSF, RFA and AURA) in
Sudbury, MA**

Wildlife Habitat Evaluations Photographs

EVERSOURCE
ENERGY

vhb

Wetland Impact Area S7

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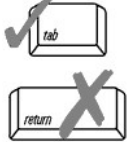
Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important:
When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



Sudbury-Hudson Transmission Reliability Project

Project Name

Sudbury, Stow, Marlborough, Hudson

Location

29,721 square feet

5/1/19

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Bylaw AURA			29,721	29,721
2.				
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

See the attached sheet with the description of the site.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Sudbury, Massachusetts

Project Location (from NOI page 1)

S7 - AURA Impact Area from approximately Station 405+00 to 416+40

Impact Area (number/name)

May 1, 2019

Date(s) of Site Visit(s) and Data Collection

60's and partly cloudy

Weather Conditions During Site Visit (if snow cover, include depth)

John Vieira and Katie Kinsella

May 3, 2019

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: N/A - Upland Area

Subsystem: _____

Class: _____

Subclass: _____

Hydrology/Water Regime

☐ Permanently flooded

☐ Saturated

☐ Intermittently exposed

☐ Temporarily flooded

☐ Semi-permanently flooded

☐ Intermittently flooded

☐ Seasonally flooded

☐ Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

N/A - Impact Area is mostly railroad track bed/disturbed so neither upland classification system applies

Community Name

See narrative and attached plant list

Vegetation Description

See narrative

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 85.5 10.5 3.0 10.5
Trees (> 20') Shrubs (< 20') Woody vines Mosses Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
See attached list			

C. Inventory (Soils)

Hinckley loamy sand/Freetown muck

Soil Survey Unit

Drainage Class

Texture (upper part)

Depth

Depth to Water Table

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

☐ Abundant ☐ Present ☒ Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

☐ Abundant ☒ Present ☐ Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

☐ Present ☒ Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

☐ Present ☒ Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

<u>7</u>	<u>0</u>	<u>0</u>	<u>0</u>
6-12" dbh	12-18" dbh	18-24" dbh	> 24" dbh

Number of Tree Cavities in trunks or limbs of:

<u>0</u>
6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)
<u>0</u>
12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)
<u>0</u>
>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

☐ Abundant ☐ Present ☒ Absent

Cover/Perches/Basking/Denning/Nesting Habitat

- ☐ Dense herbaceous cover (voles, small mammals, amphibians & reptiles)
- ☒ Large woody debris on the ground (small mammals, mink, amphibians & reptiles)
- ☐ Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)
- ☐ Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)
- ☐ Rock piles, crevices, or hollow logs suitable for:
- | | | | | | |
|--------------------------------|-------------------------------|------------------------------------|-------------------------------|---------------------------------|---|
| <input type="checkbox"/> otter | <input type="checkbox"/> mink | <input type="checkbox"/> porcupine | <input type="checkbox"/> bear | <input type="checkbox"/> bobcat | <input type="checkbox"/> turkey vulture |
|--------------------------------|-------------------------------|------------------------------------|-------------------------------|---------------------------------|---|
- ☐ Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

☐ Present ☒ Absent

Standing water present at least part of the growing season, suitable for use by

- | | |
|--|---|
| <input type="checkbox"/> Breeding amphibians | <input type="checkbox"/> Non-breeding amphibians (foraging, re-hydration) |
| <input type="checkbox"/> Turtles | <input type="checkbox"/> Foraging waterfowl |

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

☐ Present ☒ Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

☐ Present ☒ Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

☐ Present ☒ Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

☐ Present ☒ Absent

Undercut or overhanging banks (small mammals, mink, weasels)

☐ Present ☒ Absent

Vertical sandy banks (bank swallow, kingfisher)

☐ Present ☒ Absent

Areas of ice-free open water in winter

☐ Present ☒ Absent

Mud flats

☐ Present ☒ Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

☐ Present ☒ Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

☐ Present ☒ Absent

Bank swallow colony

☐ Present ☒ Absent

Nest(s) present of

☐ Bald Eagle

☐ Osprey

☐ Great Blue Heron

Den(s) present of

☐ Otter

☐ Mink

☐ Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- ☐ 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- ☐ 200' of Great Blue Heron or osprey nest(s)
- ☐ 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (pied-billed grebe) ☐ Present ☒ Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|---|---------------------|------------------------------|--|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Is the impact area part of a wetland complex at least	2.5 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(turtles, frogs, waterfowl, mammals)	5.0 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	10.0 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	25.0 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
For upland resource areas is the impact area part of contiguous forested habitat at least			
(forest interior nesting birds)	50 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	100 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	250 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	500 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
(grassland nesting birds)	> 1.0 acre in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(special habitat such as gallery floodplain forest, alder thicket, etc.)	> 1.0 acre in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

B. Connectivity with adjoining natural habitats

- ☐ No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- ☒ Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- ☐ Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- ☐ Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- ☐ Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- ☐ Evidence of significant chemical contamination
- ☐ Evidence of significant levels of dumping
- ☐ Evidence of significant erosion or sedimentation problems
- ☐ Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- ☒ Disturbance from roads or highways
- ☒ Other human disturbance
- ☐ Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8
Large Woody Debris	Limited/Scattered	Scattered	See note below
Standing Dead Trees	7 (6-12")	Greater than Impact Area	See note below
Upland Food Plants	Minimal, scattered	Greater than Impact Area	See note below

Vegetation found within Wetland Impact Area*

Impact Area S7
Survey Date: 5/1/19

Scientific Name ¹	Common Name ¹	Stratum				Wetland Indicator Status ¹	Native or Introduced ²	Invasive ³
		Tree	Sapling-Shrub	Herb	Vine			
<i>Acer rubrum</i>	Red Maple		X			FAC	N	
<i>Carex pensylvanica</i>	Pennsylvania Sedge			X		UPL	N	
<i>Chimaphila maculata</i>	Striped Pipsissewa					UPL	N	
<i>Clethra alnifolia</i>	Coast Sweet-Pepperbush		X	X		FAC	N	
<i>Frangula alnus</i>	Glossy False Buckthorn		X†	X†		FAC	I	X
<i>Gaylussacia baccata</i>	Black Huckleberry		X			FACU	N	
<i>Pinus strobus</i>	Eastern White Pine	X†	X	X		FACU	N	
<i>Quercus alba</i>	Northern White Oak	X				FACU	N	
<i>Quercus cocconeae</i>	Scarlet Oak	X†				UPL	N	
<i>Quercus rubra</i>	Northern Red Oak	X				FACU	N	
<i>Quercus velutina</i>	Black Oak	X†	X			UPL	N	
<i>Smilax glauca</i>	Sawbrier				X†	FACU	N	
<i>Solidago canadensis</i>	Canada Goldenrod			X		FACU	N	

* This list only contains species that comprise 10% or more of cover.
† Represents plant species dominate within the wetland impact area.

¹ Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. The National Wetland Plant List: 2016 wetland ratings.
OBL: Obligate
FACW: Facultative Wetland
FAC: Facultative
FACU: Facultative Upland
UPL: Upland

²The Vascular Plants of Massachusetts: A County Checklist, The Vascular Plants of Massachusetts A County Checklist, First Revision, 2011. Published by Natural
N: Native
I: Introduced



Photo 1 - Looking east at a piece of large woody debris within the Impact Area near Station 406+40.
The well-defined foot path that is to the north of the tracks is visible.



Photo 2 – View of additional large woody debris on the ground outside of the Impact Area near Station 406+20

Impact Area S7 (AURA) in Sudbury, MA

Wildlife Habitat Evaluations Photographs

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Photo 3 – Looking west down the Impact Area near Station 411+20. The Impact Area is open with a well-defined foot path to the north of the tracks and is heavily used for recreation.



Photo 4 – Alternate view looking west down the Impact Area near Station 413+80

Impact Area S7 (AURA) in Sudbury, MA

Wildlife Habitat Evaluations Photographs

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Wetland Impact Area S8

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Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important:
When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



Sudbury-Hudson Transmission Reliability Project

Project Name

Sudbury, Stow, Marlborough, Hudson

Location

21,087 SF

5/31/19

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Bylaw RFA**			14,677	14,677
2. Bylaw AURA**			17,647	17,647
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Sudbury, Massachusetts

Project Location (from NOI page 1)

S8 - AURA and RFA from approximately Station 515+00 to 522+90

Impact Area (number/name)

5-31-2019

Date(s) of Site Visit(s) and Data Collection

Partly sunny, 70s

Weather Conditions During Site Visit (if snow cover, include depth)

John Vieira

September 16, 2019

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: N/A - Upland Area

Subsystem:

Class:

Subclass:

Hydrology/Water Regime

☐ Permanently flooded

☐ Saturated

☐ Intermittently exposed

☐ Temporarily flooded

☐ Semi-permanently flooded

☐ Intermittently flooded

☐ Seasonally flooded

☐ Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

N/A - Impact Area is mostly railroad track bed/disturbed so neither upland classification system applies

Community Name

See narrative above

Vegetation Description

See narrative and attached plant list.

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover:	85.5	63.0	3.0		38.0
	Trees (> 20')	Shrubs (< 20')	Woody vines	Mosses	Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
See attached list			

C. Inventory (Soils)

Mapped as mostly Windsor loamy sand	N/A
Soil Survey Unit	Drainage Class
N/A disturbed /railroad ballast and fill material	N/A
Texture (upper part)	Depth
N/A	
Depth to Water Table	

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

☐ Abundant ☐ Present ☒ Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

☐ Abundant ☒ Present ☐ Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

☐ Present ☒ Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

☐ Present ☒ Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

<u>4</u>	<u>0</u>	<u>0</u>	<u>0</u>
6-12" dbh	12-18" dbh	18-24" dbh	> 24" dbh

Number of Tree Cavities in trunks or limbs of:

<u>1 (black cherry)</u>
6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)
<u>0</u>
12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)
<u>0</u>
>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

☐ Abundant ☒ Present ☐ Absent

Cover/Perches/Basking/Denning/Nesting Habitat

☒ Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

☒ Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

☐ Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

☐ Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

☐ Rock piles, crevices, or hollow logs suitable for:

☐ otter ☐ mink ☐ porcupine ☐ bear ☐ bobcat ☐ turkey vulture

☐ Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

☐ Present ☒ Absent

Standing water present at least part of the growing season, suitable for use by

☐ Breeding amphibians ☐ Non-breeding amphibians (foraging, re-hydration)

☐ Turtles ☐ Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

☐ Present ☒ Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

☐ Present ☒ Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

☐ Present ☒ Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

☐ Present ☒ Absent

Undercut or overhanging banks (small mammals, mink, weasels)

☐ Present ☒ Absent

Vertical sandy banks (bank swallow, kingfisher)

☐ Present ☒ Absent

Areas of ice-free open water in winter

☐ Present ☒ Absent

Mud flats

☐ Present ☒ Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

☐ Present ☒ Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

☐ Present ☒ Absent

Bank swallow colony

☐ Present ☒ Absent

Nest(s) present of

☐ Bald Eagle

☐ Osprey

☐ Great Blue Heron

Den(s) present of

☐ Otter

☐ Mink

☐ Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- ☐ 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- ☐ 200' of Great Blue Heron or osprey nest(s)
- ☐ 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (pied-billed grebe) ☐ Present ☒ Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|---|---------------------|------------------------------|--|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Is the impact area part of a wetland complex at least	2.5 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(turtles, frogs, waterfowl, mammals)	5.0 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	10.0 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	25.0 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
For upland resource areas is the impact area part of contiguous forested habitat at least			
(forest interior nesting birds)	50 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	100 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	250 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	500 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(grassland nesting birds)	> 1.0 acre in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(special habitat such as gallery floodplain forest, alder thicket, etc.)	> 1.0 acre in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

B. Connectivity with adjoining natural habitats

- ☐ No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- ☒ Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- ☐ Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- ☐ Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- ☐ Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- ☐ Evidence of significant chemical contamination
- ☒ Evidence of significant levels of dumping
- ☐ Evidence of significant erosion or sedimentation problems
- ☒ Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- ☐ Disturbance from roads or highways
- ☒ Other human disturbance
- ☐ Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8
Important upland food	Scattered	Some areas abundant	See note below
Standing dead trees		Some areas abundant	See note below
Dense herbaceous cover		Some areas abundant	See note below
Large woody debris		Some areas abundant	See note below
Tree cavities	1	Present	See note below
Small mammal burrow	1	Present	See note below

Vegetation found within Wetland Impact Area*

Impact Area S8
Survey Date: 5/31/2019

Scientific Name ¹	Common Name ¹	Stratum				Wetland Indicator Status ¹	Native or Introduced ²	Invasive ³
		Tree	Sapling-Shrub	Herb	Vine			
<i>Acer platanoides</i>	Norway Maple	X				UPL	I	X
<i>Acer rubrum</i>	Red Maple	X†		X		FAC	N	
<i>Alliaria petiolata</i>	Garlic-Mustard			X		FACU	I	X
<i>Arisaema triphyllum</i>	Jack-in-the-Pulpit			X		FAC	N	
<i>Athyrium angustum</i>	Northern Lady Fern			X		FAC	N	
<i>Berberis thunbergii</i>	Japanese Barberry		X			FACU	I	X
<i>Carex pensylvanica</i>	Pennsylvania Sedge			X		UPL	N	
<i>Celastrus orbiculatus</i>	Asian Bittersweet				X†	UPL	I	X
<i>Chelidonium majus</i>	Greater Celandine			X		UPL	I	
<i>Circaea canadensis</i>	Broad-Leaf Enchanter's-Nightshade			X		FACU	N	
<i>Dryopteris carthusiana</i>	Spinulose Wood Fern			X		FACW	N	
<i>Euonymus alatus</i>	Winged Euonymus, Burning Bush		X			UPL	I	X
<i>Frangula alnus</i>	Glossy False Buckthorn		X†			FAC	I	X
<i>Fraxinus americana</i>	White Ash		X			FACU	N	
<i>Geranium maculatum</i>	Spotted Crane's-Bill			X		FACU	N	
<i>Impatiens capensis</i>	Spotted Touch-Me-Not			X		FACW	N	
<i>Lamium maculatum</i>	Spotted Henbit			X†		UPL	I	
<i>Lonicera morrowii</i>	Morrow's Honeysuckle		X			FACU	I	X
<i>Maianthemum canadense</i>	False Lily-of-the-Valley			X		FACU	N	
<i>Onoclea sensibilis</i>	Sensitive Fern			X		FACW	N	
<i>Parthenocissus quinquefolia</i>	Virginia-Creeper				X	FACU	N	
<i>Pinus strobus</i>	Eastern White Pine	X	X	X		FACU	N	
<i>Prunus serotina</i>	Black Cherry	X	X	X		FACU	N	
<i>Quercus alba</i>	Northern White Oak	X†	X			FACU	N	
<i>Quercus rubra</i>	Northern Red Oak	X†				FACU	N	
<i>Quercus velutina</i>	Black Oak		X			UPL	N	
<i>Rosa multiflora</i>	Rambler Rose		X			FACU	I	X
<i>Rubus flagellaris</i>	Whiplash Dewberry			X		FACU	N	
<i>Toxicodendron radicans</i>	Eastern Poison Ivy				X	FAC	N	
<i>Ulmus americana</i>	American Elm	X†	X			FACW	N	

* This list only contains species that comprise 10% or more of cover.
† Represents plant species dominate within the wetland impact area.

¹ Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. The National Wetland Plant List: 2016 wetland ratings. Phytoneuron 2016-30: 1-17. (Massachusetts List) Published 28 April 2016. ISSN 2153 733X (http://wetland-plants.usace.army.mil/nwpl_static/data/DOC/lists_2016/States/pdf/MA_2016v1.pdf)

Vegetation found within Wetland Impact Area*

Impact Area S8
Survey Date: 5/31/2019

Impact Area S8

Survey Date: 5/31/2019

[illegible]

OBL: Obligate

FACW: Facultative Wetland

FAC: Facultative

FACU: Facultative Upland

UPL: Upland

²The Vascular Plants of Massachusetts: A County Checklist, The Vascular Plants of Massachusetts A County Checklist, First Revision, 2011. Published by Natural

N: Native

- : Introduced

³The Evaluation of Non-Native Plant Species for Invasiveness in Massachusetts (with annotated list).Massachusetts Invasive Plant Advisory Group. 2005.



Photo 1 – Looking west down the Impact Area near Station 516+50. A well-defined foot path is located to the south of the tracks.



Photo 2 – Photo of a cavity within a black cherry tree within the Impact Area near Station 516+85

**Impact Area S8 (AURA) in
Sudbury, MA**

Wildlife Habitat Evaluations Photographs

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Photo 3 – Small mammal burrow within the Impact Area near Station 517+25



Photo 4 – Large woody debris within the Impact Area near Station 517+90

**Impact Area S8 (AURA) in
Sudbury, MA**

Wildlife Habitat Evaluations Photographs

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Photo 5 – Dense herbaceous vegetation within the Impact Area near Station 522+70



Photo 6 – Looking west at the Impact Area from approximately Station 522+90

**Impact Area S8 (AURA) in
Sudbury, MA**

Wildlife Habitat Evaluations Photographs

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Wetland Impact Area S9

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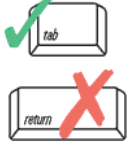
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Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important:
When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



Sudbury-Hudson Transmission Reliability Project

Project Name

Sudbury, Stow, Marlborough, Hudson

Location

S9 - 19,175 sf total

5/31/2019

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Bylaw RFA**			10,018	10,018
2. Bylaw AURA**			19,175	19,175
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF **Partially Overlaps ***Completely Overlaps

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

See attached narrative

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Sudbury, Massachusetts mostly between Dutton & Peakham Roads. Some extends east of the later road.

Project Location (from NOI page 1)

S9 - AURA and RFA from approximately Station 523+00 to 530+90

Impact Area (number/name)

5/31/2019

Date(s) of Site Visit(s) and Data Collection

Partly cloudy, 70s

Weather Conditions During Site Visit (if snow cover, include depth)

John Vieira

6/14/2019

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: N/A Upland Subsystem: _____

Class: _____ Subclass: _____

Hydrology/Water Regime N/A Upland

☐ Permanently flooded

☐ Saturated

☐ Intermittently exposed

☐ Temporarily flooded

☐ Semi-permanently flooded

☐ Intermittently flooded

☐ Seasonally flooded

☐ Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

N/A - Impact Area is mostly railroad track bed/disturbed so neither upland classification system applies

Community Name

See attached narrative

Vegetation Description

See narrative and attached plant list.

Physical Description



Massachusetts Department of Environmental Protection
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Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Daubenmire
midpoints used for
vegetative percent
cover

B. Inventory (Plant community)

% Cover:	63.0 Trees (> 20')	38.0 Shrubs (< 20')	10.5 Woody vines	Mosses	20.5 Herbaceous
----------	-----------------------	------------------------	---------------------	--------	--------------------

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
See attached list			

Soils historically
disturbed and filled
from construction
and operation of the
rail line and therefore
differ from the
mapped soil unit

C. Inventory (Soils)

Mapped as Hinckley Loamy Sand	N/A
Soil Survey Unit	Drainage Class
N/A Disturbed /Railroad Ballast and fill material	N/A
Texture (upper part)	Depth
N/A	
Depth to Water Table	

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

☐ Abundant ☐ Present ☒ Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

☐ Abundant ☒ Present ☐ Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

☐ Present ☒ Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

☐ Present ☒ Absent

Oaks dominant in
tree stratum. Black
cherry and
invasive glossy
false buckhorn
also provide
sources of wildlife
food.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

<u>3</u>	<u>0</u>	<u>0</u>	<u>0</u>
6-12" dbh	12-18" dbh	18-24" dbh	> 24" dbh

Number of Tree Cavities in trunks or limbs of:

<u>0</u>
6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)
<u>0</u>
12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)
<u>0</u>
>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

☐ Abundant ☒ Present ☐ Absent

Only one clearly noted. Impact area is mostly of railroad ballast that is likely not favorable to small mammals.

Cover/Perches/Basking/Denning/Nesting Habitat

☐ Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

☒ Large woody debris on the ground (small mammals, mink, amphibians & reptiles) Scattered

☐ Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

☐ Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

☐ Rock piles, crevices, or hollow logs suitable for:

☐ otter ☐ mink ☐ porcupine ☐ bear ☐ bobcat ☐ turkey vulture

☐ Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

☐ Present ☒ Absent

Standing water present at least part of the growing season, suitable for use by

☐ Breeding amphibians ☐ Non-breeding amphibians (foraging, re-hydration)

☐ Turtles ☐ Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

☐ Present ☒ Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

☐ Present ☒ Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

☐ Present ☒ Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

☐ Present ☒ Absent

Undercut or overhanging banks (small mammals, mink, weasels)

☐ Present ☒ Absent

Vertical sandy banks (bank swallow, kingfisher)

☐ Present ☒ Absent

Areas of ice-free open water in winter

☐ Present ☒ Absent

Mud flats

☐ Present ☒ Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

☐ Present ☒ Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

☐ Present ☒ Absent

Bank swallow colony

☐ Present ☒ Absent

Nest(s) present of

☐ Bald Eagle

☐ Osprey

☐ Great Blue Heron

Den(s) present of

☐ Otter

☐ Mink

☐ Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- ☐ 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- ☐ 200' of Great Blue Heron or osprey nest(s)
- ☐ 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (pied-billed grebe) ☐ Present ☒ Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|---|---------------------|------------------------------|--|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Is the impact area part of a wetland complex at least	2.5 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(turtles, frogs, waterfowl, mammals)	5.0 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	10.0 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	25.0 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

For upland resource areas is the impact area part of contiguous forested habitat at least

(forest interior nesting birds)	50 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	100 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	250 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	500 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(grassland nesting birds)	> 1.0 acre in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(special habitat such as gallery floodplain forest, alder thicket, etc.)	> 1.0 acre in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

B. Connectivity with adjoining natural habitats

- ☐ No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- ☒ Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- ☐ Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- ☐ Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- ☐ Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

Dumping consists of a large # of logs and woody debris that has been stacked on the impact area including within the old railroad tracks.

Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- ☐ Evidence of significant chemical contamination
- ☒ Evidence of significant levels of dumping
- ☐ Evidence of significant erosion or sedimentation problems
- ☒ Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)

Peakham Road at the eastern end of the Impact Area

- ☒ Disturbance from roads or highways
- ☒ Other human disturbance
- ☐ Is the site the only resource area in the vicinity of an otherwise developed area

A well-defined foot path is located to the south of the tracks

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8
Important upland food	oaks, blk cherry, lbush BB	Some areas abundant	See note below
Standing dead trees	3 (6"-12")	Some areas abundant	See note below
Large woody debris	Limited and scattered	Some areas abundant	See note below

Vegetation found within Wetland Impact Area*

Impact Area S9
Survey Date: 5/31/2019

Scientific Name ¹	Common Name ¹	Stratum				Wetland Indicator Status ¹	Native or Introduced ²	Invasive ³
		Tree	Sapling-Shrub	Herb	Vine			
<i>Acer platanoides</i>	Norway Maple	X				UPL	I	X
<i>Acer rubrum</i>	Red Maple		X †			FAC	N	
<i>Aralia nudicaulis</i>	Wild Sarsaparilla		X †	X		FACU	N	
<i>Athyrium angustum</i>	Northern Lady Fern			X		FAC	N	
<i>Berberis thunbergii</i>	Japanese Barberry		X			FACU	I	X
<i>Betula lenta</i>	Sweet Birch		X			FACU		
<i>Carex pensylvanica</i>	Pennsylvania Sedge			X		UPL	N	
<i>Celastrus orbiculatus</i>	Asian Bittersweet				X †	UPL	I	X
<i>Chimaphila maculata</i>	Striped Pipsissewa			X		UPL	N	
<i>Dennstaedtia punctilobula</i>	Hay-Scented Fern			X		UPL	N	
<i>Euonymus alatus</i>	Winged euonymus, burning bush		X			UPL	I	X
<i>Frangula alnus</i>	Glossy False Buckthorn		X †			FAC	I	X
<i>Gaylussacia baccata</i>	Black Huckleberry		X			FACU	N	
<i>Maianthemum canadense</i>	False Lily-of-the-Valley			X		FACU	N	
<i>Parthenocissus quinquefolia</i>	Virginia-Creeper				X	FACU	N	
<i>Pinus strobus</i>	Eastern White Pine	X †	X †	X †		FACU	N	
<i>Prunus serotina</i>	Black Cherry			X		FACU	N	
<i>Quercus alba</i>	Northern White Oak			X		FACU	N	
<i>Quercus rubra</i>	Northern Red Oak	X				FACU	N	
<i>Quercus velutina</i>	Black Oak	X				UPL	N	
<i>Rosa multiflora</i>	Rambler Rose		X			FACU	I	X
<i>Solidago canadensis</i>	Canada Goldenrod			X		FACU	N	
<i>Toxicodendron radicans</i>	Eastern Poison Ivy				X	FAC	N	
<i>Ulmus americana</i>	American Elm			X		FACW	N	
<i>Vaccinium angustifolium</i>	Late Lowbush Blueberry			X		FACU	N	

* This list only contains species that comprise 10% or more of cover.
† Represents plant species dominate within the wetland impact area.

¹ Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. The National Wetland Plant List: 2016 wetland ratings.
OBL: Obligate
FACW: Facultative Wetland
FAC: Facultative
FACU: Facultative Upland
UPL: Upland

²The Vascular Plants of Massachusetts: A County Checklist, The Vascular Plants of Massachusetts A County Checklist, First Revision, 2011. Published by Natural Heritage and Endangered Species Program. 269 pp.
N: Native
I: Introduced



Photo 1 – Looking east down the Impact Area near Station 522+95. A well-defined foot path is located to the south of the tracks.



Photo 2 – Photo of a standing dead tree within the Impact Area near Station 524+85

**Impact Area S9 (RFA and AURA) in
Sudbury, MA**

Wildlife Habitat Evaluations Photographs

EVERSOURCE
ENERGY

vhb



Photo 3 – Looking west down the Impact Area near Station 530+30



Photo 4 – Limited large woody debris within the Impact Area near Station 529+50

**Impact Area S9 (RFA and AURA) in
Sudbury, MA**

Wildlife Habitat Evaluations Photographs

EVERSOURCE
ENERGY

vhb



Photo 5 – Snags leaning into the Impact Area near Station 527+90



Photo 6 – Looking east at Peakham Road from the eastern edge of the Impact Area near Station 530+30

**Impact Area S9 (RFA and AURA) in
Sudbury, MA**

Wildlife Habitat Evaluations Photographs

EVERSOURCE
ENERGY

vhb

Wetland Impact Area S10

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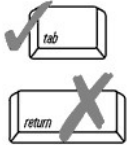
Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important:
When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



Sudbury-Hudson Transmission Reliability Project

Project Name

Sudbury, Stow, Marlborough, Hudson

Location

24,865 SF

5/31/19

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. MWPA RFA**			24,272	24,272
2. Bylaw AURA**			23,334	23,334
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

See attached narrative

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Sudbury, Massachusetts mostly between Dutton & Peakham Roads. Some extends east of the later road.

Project Location (from NOI page 1)

S10 - AURA and RFA from approximately Station 533+60 to 543+90

Impact Area (number/name)

May 31, 2019

Date(s) of Site Visit(s) and Data Collection

Partly sunny, 70s

Weather Conditions During Site Visit (if snow cover, include depth)

John Vieira

September 16, 2019

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System:	N/A Upland	Subsystem:	N/A
Class:	N/A	Subclass:	N/A

Hydrology/Water Regime

- | | |
|---|---|
| <input type="checkbox"/> Permanently flooded | <input type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

N/A - Impact Area is mostly railroad track bed/disturbed so neither upland classification system applies

Community Name

See attached narrative

Vegetation Description

See narrative and attached plant list

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 63.0 38.0 3.0 20.5
Trees (> 20') Shrubs (< 20') Woody vines Mosses Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
See attached list			

C. Inventory (Soils)

Mapped as Windsor loamy Sand	N/A
Soil Survey Unit	Drainage Class
N/A Disturbed /Railroad Ballast and fill material	N/A
Texture (upper part)	Depth
N/A	
Depth to Water Table	

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

☐ Abundant ☐ Present ☒ Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

☐ Abundant ☒ Present ☐ Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

☐ Present ☒ Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

☐ Present ☒ Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

<u>2</u>	<u>0</u>	<u>0</u>	<u>0</u>
6-12" dbh	12-18" dbh	18-24" dbh	> 24" dbh

Number of Tree Cavities in trunks or limbs of:

<u>1 - 10" red maple, with one cavity</u>
<u>6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)</u>
<u>0</u>
<u>12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)</u>
<u>0</u>
<u>>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)</u>

Small mammal burrows

☐ Abundant ☒ Present ☐ Absent

Cover/Perches/Basking/Denning/Nesting Habitat

- ☐ Dense herbaceous cover (voles, small mammals, amphibians & reptiles)
- ☒ Large woody debris on the ground (small mammals, mink, amphibians & reptiles)
- ☐ Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)
- ☐ Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)
- ☐ Rock piles, crevices, or hollow logs suitable for:
- | | | | | | |
|--------------------------------|-------------------------------|------------------------------------|-------------------------------|---------------------------------|---|
| <input type="checkbox"/> otter | <input type="checkbox"/> mink | <input type="checkbox"/> porcupine | <input type="checkbox"/> bear | <input type="checkbox"/> bobcat | <input type="checkbox"/> turkey vulture |
|--------------------------------|-------------------------------|------------------------------------|-------------------------------|---------------------------------|---|
- ☐ Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

☐ Present ☒ Absent

Standing water present at least part of the growing season, suitable for use by

- | | |
|--|---|
| <input type="checkbox"/> Breeding amphibians | <input type="checkbox"/> Non-breeding amphibians (foraging, re-hydration) |
| <input type="checkbox"/> Turtles | <input type="checkbox"/> Foraging waterfowl |

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

☐ Present ☒ Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

☐ Present ☒ Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

☐ Present ☒ Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

☐ Present ☒ Absent

Undercut or overhanging banks (small mammals, mink, weasels)

☐ Present ☒ Absent

Vertical sandy banks (bank swallow, kingfisher)

☐ Present ☒ Absent

Areas of ice-free open water in winter

☐ Present ☒ Absent

Mud flats

☐ Present ☒ Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

☐ Present ☒ Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

☐ Present ☒ Absent

Bank swallow colony

☐ Present ☒ Absent

Nest(s) present of

☐ Bald Eagle

☐ Osprey

☐ Great Blue Heron

Den(s) present of

☐ Otter

☐ Mink

☐ Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- ☐ 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- ☐ 200' of Great Blue Heron or osprey nest(s)
- ☐ 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (pied-billed grebe) ☐ Present ☒ Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|---|---------------------|------------------------------|--|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Is the impact area part of a wetland complex at least	2.5 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(turtles, frogs, waterfowl, mammals)	5.0 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	10.0 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	25.0 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
For upland resource areas is the impact area part of contiguous forested habitat at least			
(forest interior nesting birds)	50 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	100 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	250 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	500 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(grassland nesting birds)	> 1.0 acre in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(special habitat such as gallery floodplain forest, alder thicket, etc.)	> 1.0 acre in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

B. Connectivity with adjoining natural habitats

- ☐ No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- ☒ Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- ☐ Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- ☐ Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- ☐ Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- ☐ Evidence of significant chemical contamination
- ☒ Evidence of significant levels of dumping
- ☐ Evidence of significant erosion or sedimentation problems
- ☒ Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- ☒ Disturbance from roads or highways
- ☒ Other human disturbance
- ☐ Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8
Important upland food	Scattered	Some areas abundant	See note below
Standing dead trees	2 (6"-12")	Some areas abundant	See note below
Large woody debris and brush piles	Abundant and scattered	Some areas abundant	See note below
Trees with cavities	1 tree with 6 cavities	Some areas abundant	See note below

Vegetation found within Wetland Impact Area*

Impact Area S10
Survey Date: 5/31/2019

Scientific Name ¹	Common Name ¹	Stratum				Wetland Indicator Status ¹	Native or Introduced ²	Invasive ³
		Tree	Sapling-Shrub	Herb	Vine			
<i>Acer platanoides</i>	Norway Maple	X				UPL	I	X
<i>Acer rubrum</i>	Red Maple	X†	X	X		FAC	N	
<i>Berberis thunbergii</i>	Japanese Barberry		X			FACU	I	X
<i>Carex pensylvanica</i>	Pennsylvania Sedge			X†		UPL	N	
<i>Celastrus orbiculatus</i>	Asian Bittersweet				X†	UPL	I	X
<i>Cypripedium acaule</i>	Pink Lady's-Slipper			X		FACW	N	
<i>Dennstaedtia punctilobula</i>	Hay-Scented Fern			X		UPL	N	
<i>Dryopteris carthusiana</i>	Spinulose Wood Fern			X		FACW	N	
<i>Euonymus alatus</i>	Winged euonymus, burning bush			X		UPL	I	X
<i>Frangula alnus</i>	Glossy False Buckthorn		X†	X†		FAC	I	X
<i>Gaylussacia baccata</i>	Black Huckleberry		X			FACU	N	
<i>Impatiens capensis</i>	Spotted Touch-Me-Not			X		FACW	N	
<i>Maianthemum canadense</i>	False Lily-of-the-Valley			X		FACU	N	
<i>Parthenocissus quinquefolia</i>	Virginia-Creeper				X†	FACU	N	
<i>Pinus strobus</i>	Eastern White Pine	X†	X†			FACU	N	
<i>Prunus serotina</i>	Black Cherry		X	X		FACU	N	
<i>Quercus alba</i>	Northern White Oak	X	X			FACU	N	
<i>Quercus velutina</i>	Black Oak	X				UPL	N	
<i>Toxicodendron radicans</i>	Eastern Poison Ivy			X†		FAC	N	
<i>Vaccinium angustifolium</i>	Late Lowbush Blueberry			X		FACU	N	
<i>Vaccinium corymbosum</i>	Highbush Blueberry		X			FACW	N	

* This list only contains species that comprise 10% or more of cover.
† Represents plant species dominate within the wetland impact area.

¹ Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. The National Wetland Plant List: 2016 wetland ratings.
OBL: Obligate
FACW: Facultative Wetland
FAC: Facultative
FACU: Facultative Upland
UPL: Upland

²The Vascular Plants of Massachusetts: A County Checklist, The Vascular Plants of Massachusetts A County Checklist, First Revision, 2011. Published by Natural Heritage and Endangered Species Program. 269 pp.
N: Native
I: Introduced



Photo 1 – Looking east down the Impact Area near Station 533+80. A well-defined foot path is located to the south of the tracks.



Photo 2 – Limited large woody debris on the ground within the Impact Area near Station 534+30

**Impact Area S10 (RFA and AURA) in
Sudbury, MA**

Wildlife Habitat Evaluations Photographs

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Photo 3 – Small mammal burrow within the Impact Area near Station 538+70



Photo 4 – Small tree cavity within a red maple that is within the Impact Area near Station 538+80

**Impact Area S10 (RFA and AURA) in
Sudbury, MA**

Wildlife Habitat Evaluations Photographs

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Photo 5 – Looking east down the Impact Area with an open understory near Station 539+00



Photo 6 – Large woody debris on the ground within the Impact Area near Station 541+20

**Impact Area S10 (RFA and AURA) in
Sudbury, MA**

Wildlife Habitat Evaluations Photographs

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Wetland Impact Area S11

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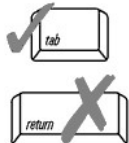
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Bureau of Resource Protection - Wetlands Program

Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important:
When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



Sudbury-Hudson Transmission Reliability Project

Project Name

Sudbury, Stow, Marlborough, Hudson

Location

14,482 square feet (RFA completely overlaps with AURA)

6/6/19

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Bylaw RFA**			11,515	11,515
2. Bylaw AURA**			14,482	14,482
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Sudbury, Massachusetts

Project Location (from NOI page 1)

S11 - RFA and AURA Impact Area from approximately Station 558+10 to 564+20

Impact Area (number/name)

June 6, 2019

Date(s) of Site Visit(s) and Data Collection

60's and partly cloudy

Weather Conditions During Site Visit (if snow cover, include depth)

John Vieira and Katie Kinsella

6/25/2019

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: N/A - Upland Area

Subsystem: _____

Class: _____

Subclass: _____

Hydrology/Water Regime

☐ Permanently flooded

☐ Saturated

☐ Intermittently exposed

☐ Temporarily flooded

☐ Semi-permanently flooded

☐ Intermittently flooded

☐ Seasonally flooded

☐ Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

N/A - Impact Area is mostly railroad track bed/disturbed so neither upland classification system applies

Community Name

See narrative and attached plant list

Vegetation Description

See narrative

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 62.5 37.5 2.5 0 62.5
Trees (> 20') Shrubs (< 20') Woody vines Mosses Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
See attached list			

C. Inventory (Soils)

Windsor loamy sand/Freetown muck

Soil Survey Unit

Drainage Class

Texture (upper part)

Depth

Depth to Water Table

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

☐ Abundant ☐ Present ☒ Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

☐ Abundant ☒ Present ☐ Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

☐ Present ☒ Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

☐ Present ☒ Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>
6-12" dbh	12-18" dbh	18-24" dbh	> 24" dbh

Number of Tree Cavities in trunks or limbs of:

<u>0</u>
6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)
<u>0</u>
12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)
<u>0</u>
>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

☐ Abundant ☐ Present ☒ Absent

Cover/Perches/Basking/Denning/Nesting Habitat

☒ Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

☒ Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

☐ Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

☐ Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

☐ Rock piles, crevices, or hollow logs suitable for:

☐ otter ☐ mink ☐ porcupine ☐ bear ☐ bobcat ☐ turkey vulture

☐ Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

☐ Present ☒ Absent

Standing water present at least part of the growing season, suitable for use by

☐ Breeding amphibians ☐ Non-breeding amphibians (foraging, re-hydration)

☐ Turtles ☐ Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

☐ Present ☒ Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

☐ Present ☒ Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

☐ Present ☒ Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

☐ Present ☒ Absent

Undercut or overhanging banks (small mammals, mink, weasels)

☐ Present ☒ Absent

Vertical sandy banks (bank swallow, kingfisher)

☐ Present ☒ Absent

Areas of ice-free open water in winter

☐ Present ☒ Absent

Mud flats

☐ Present ☒ Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

☐ Present ☒ Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

☐ Present ☒ Absent

Bank swallow colony

☐ Present ☒ Absent

Nest(s) present of

☐ Bald Eagle

☐ Osprey

☐ Great Blue Heron

Den(s) present of

☐ Otter

☐ Mink

☐ Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- ☐ 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- ☐ 200' of Great Blue Heron or osprey nest(s)
- ☐ 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (pied-billed grebe) ☐ Present ☒ Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|---|---------------------|------------------------------|--|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Is the impact area part of a wetland complex at least	2.5 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(turtles, frogs, waterfowl, mammals)	5.0 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	10.0 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	25.0 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
For upland resource areas is the impact area part of contiguous forested habitat at least			
(forest interior nesting birds)	50 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	100 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	250 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	500 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
(grassland nesting birds)	> 1.0 acre in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(special habitat such as gallery floodplain forest, alder thicket, etc.)	> 1.0 acre in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

B. Connectivity with adjoining natural habitats

- ☐ No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- ☒ Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- ☐ Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- ☐ Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- ☐ Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- ☐ Evidence of significant chemical contamination
- ☐ Evidence of significant levels of dumping
- ☐ Evidence of significant erosion or sedimentation problems
- ☒ Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- ☒ Disturbance from roads or highways
- ☒ Other human disturbance
- ☐ Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8
Large woody/coarse debris	Scattered	Scattered	See note below
Standing Dead Trees 6-12"	1	Greater than Impact Area	See note below
Upland Food Plants	Scattered	Greater than Impact Area	See note below
Dense herb.vegetation	1 small area (5'x20')	Greater than Impact Area	See note below

Vegetation found within Wetland Impact Area*

Impact Area S11
Survey Date: 6/6/2019

Scientific Name ¹	Common Name ¹	Stratum				Wetland Indicator Status ¹	Native or Introduced ²	Invasive ³
		Tree	Sapling-Shrub	Herb	Vine			
<i>Acer rubrum</i>	Red Maple	X	X			FAC	N	
<i>Alliaria petiolata</i>	Garlic-Mustard			X		FACU	I	X
<i>Athyrium angustum</i>	Northern Lady Fern			X		FAC	N	
<i>Betula populifolia</i>	Gray Birch		X			FAC	N	
<i>Carex pensylvanica</i>	Pennsylvania Sedge			X		UPL	N	
<i>Celastrus orbiculatus</i>	Asian Bittersweet				X†	UPL	I	X
<i>Circaea canadensis</i>	Broad-Leaf Enchanter's-Nightshade			X		FACU	N	
<i>Frangula alnus</i>	Glossy False Buckthorn		X†	X†		FAC	I	X
<i>Impatiens capensis</i>	Spotted Touch-Me-Not			X		FACW	N	
<i>Pinus strobus</i>	Eastern White Pine	X†	X†			FACU	N	
<i>Prunus serotina</i>	Black Cherry	X	X			FACU	N	
<i>Quercus Rubra</i>	Northern Red Oak	X†				FACU	N	
<i>Rosa multiflora</i>	Rambler Rose		X			FACU	I	X
<i>Rubus flagellaris</i>	Whiplash Dewberry			X		FACU	N	
<i>Toxicodendron radicans</i>	Eastern Poison Ivy			X†		FAC	N	
<i>Vaccinium angustifolium</i>	Late Lowbush Blueberry			X		FACU	N	

* This list only contains species that comprise 10% or more of cover.

† Represents plant species dominate within the wetland impact area.

¹ Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. The National Wetland Plant List: 2016 wetland ratings.

OBL: Obligate
FACW: Facultative Wetland
FAC: Facultative
FACU: Facultative Upland
UPL: Upland

²The Vascular Plants of Massachusetts: A County Checklist, The Vascular Plants of Massachusetts A County Checklist, First Revision, 2011. Published by Natural Heritage and Endangered Species Program. 269 pp.

N: Native
I: Introduced



Photo 1 - Looking east down the Impact Area at the well-defined foot path near Station 558+20



Photo 2 – Small area of Pennsylvania sedge within the Impact Area near Station 558+90

Impact Area S11 (RFA and AURA) in Sudbury, MA

Wildlife Habitat Evaluations Photographs

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Photo 3 – Looking east down Impact Area and center of tracks in area dominated by glossy buckthorn near Station 559+15



Photo 4 – Looking east down Impact Area after the stream crossing where the shrub layer begins to open up; near Station 560+90

Impact Area S11 (RFA and AURA) in Sudbury, MA

Wildlife Habitat Evaluations Photographs

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Photo 5 – Looking at the snag within the Impact Area that will be removed with a residence in close proximity in the background near Station 562+80



Photo 6 – Very limited woody debris on the ground near Station 563+40

Impact Area S11 (RFA and AURA) in Sudbury, MA

Wildlife Habitat Evaluations Photographs

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Wetland Impact Area S12

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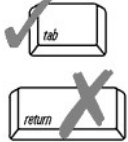
Massachusetts Department of Environmental Protection
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Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important:
When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



Sudbury-Hudson Transmission Reliability Project

Project Name

Sudbury, Stow, Marlborough, Hudson

Location

10,051 square feet

6/6/19

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Bylaw AURA			10,051	10,051
2.				
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Sudbury, Massachusetts

Project Location (from NOI page 1)

S12 - AURA Impact Area from approximately Station 576+10 to 580+00

Impact Area (number/name)

June 6, 2019

Date(s) of Site Visit(s) and Data Collection

60's and partly cloudy

Weather Conditions During Site Visit (if snow cover, include depth)

John Vieira and Katie Kinsella

6/25/19

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: N/A - Upland Area

Subsystem:

Class:

Subclass:

Hydrology/Water Regime

☐ Permanently flooded

☐ Saturated

☐ Intermittently exposed

☐ Temporarily flooded

☐ Semi-permanently flooded

☐ Intermittently flooded

☐ Seasonally flooded

☐ Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

N/A - Impact Area is mostly railroad track bed/disturbed so neither upland classification system applies

Community Name

See narrative and attached plant list

Vegetation Description

See narrative

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover:	85.0	37.5	0	0	62.5
	Trees (> 20')	Shrubs (< 20')	Woody vines	Mosses	Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
See attached list			

C. Inventory (Soils)

Deerfield loamy fine sand	N/A
Soil Survey Unit	Drainage Class
N/A	
Texture (upper part)	Depth
N/A	
Depth to Water Table	

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

☐ Abundant ☐ Present ☒ Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

☐ Abundant ☒ Present ☐ Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

☐ Present ☒ Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

☐ Present ☒ Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
6-12" dbh	12-18" dbh	18-24" dbh	> 24" dbh

Number of Tree Cavities in trunks or limbs of:

<u>0</u>
6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)
<u>0</u>
12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)
<u>0</u>
>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

☐ Abundant ☒ Present ☐ Absent

Cover/Perches/Basking/Denning/Nesting Habitat

☒ Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

☒ Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

☐ Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

☐ Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

☐ Rock piles, crevices, or hollow logs suitable for:

☐ otter ☐ mink ☐ porcupine ☐ bear ☐ bobcat ☐ turkey vulture

☐ Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

☐ Present ☒ Absent

Standing water present at least part of the growing season, suitable for use by

☐ Breeding amphibians ☐ Non-breeding amphibians (foraging, re-hydration)

☐ Turtles ☐ Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

☐ Present ☒ Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

☐ Present ☒ Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

☐ Present ☒ Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

☐ Present ☒ Absent

Undercut or overhanging banks (small mammals, mink, weasels)

☐ Present ☒ Absent

Vertical sandy banks (bank swallow, kingfisher)

☐ Present ☒ Absent

Areas of ice-free open water in winter

☐ Present ☒ Absent

Mud flats

☐ Present ☒ Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

☐ Present ☒ Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

☐ Present ☒ Absent

Bank swallow colony

☐ Present ☒ Absent

Nest(s) present of

☐ Bald Eagle

☐ Osprey

☐ Great Blue Heron

Den(s) present of

☐ Otter

☐ Mink

☐ Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- ☐ 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- ☐ 200' of Great Blue Heron or osprey nest(s)
- ☐ 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (pied-billed grebe) ☐ Present ☒ Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|---|---------------------|------------------------------|--|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Is the impact area part of a wetland complex at least	2.5 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(turtles, frogs, waterfowl, mammals)	5.0 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	10.0 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	25.0 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
For upland resource areas is the impact area part of contiguous forested habitat at least			
(forest interior nesting birds)	50 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	100 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	250 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	500 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
(grassland nesting birds)	> 1.0 acre in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(special habitat such as gallery floodplain forest, alder thicket, etc.)	> 1.0 acre in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

B. Connectivity with adjoining natural habitats

- ☐ No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- ☒ Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- ☐ Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- ☐ Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- ☐ Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- ☐ Evidence of significant chemical contamination
- ☐ Evidence of significant levels of dumping
- ☐ Evidence of significant erosion or sedimentation problems
- ☒ Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- ☒ Disturbance from roads or highways
- ☒ Other human disturbance
- ☐ Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8
Large woody/coarse debris	Scattered	Scattered	See note below
Small Mammal Burrow	1	Ubiquitous	See note below
Upland Food Plants	Scattered	Greater than Impact Area	See note below
Dense herb.vegetation	1 small area (2'x60')	Greater than Impact Area	See note below

Vegetation found within Wetland Impact Area*

Impact Area S12

Survey Date: 6/6/19

Scientific Name ¹	Common Name ¹	Stratum				Wetland Indicator Status ¹	Native or Introduced ²	Invasive ³
		Tree	Sapling-Shrub	Herb	Vine			
<i>Acer rubrum</i>	Red Maple	X				FAC	N	
<i>Alliaria petiolata</i>	Garlic-Mustard			X		FACU	I	X
<i>Carex pensylvanica</i>	Pennsylvania Sedge			X		UPL	N	
<i>Celastrus orbiculatus</i>	Asian Bittersweet				X†	UPL	I	X
<i>Dennstaedtia punctilobula</i>	Hay-Scented Fern			X†		UPL	N	
<i>Frangula alnus</i>	Glossy False Buckthorn		X†	X		FAC	I	X
<i>Lonicera morrowii</i>	Morrow's Honeysuckle		X			FACU	I	X
<i>Maianthemum canadense</i>	False Lily-of-the-Valley			X		FACU	N	
<i>Pinus strobus</i>	Eastern White Pine	X†	X†			FACU	N	
<i>Prunus serotina</i>	Black Cherry		X			FACU	N	
<i>Quercus rubra</i>	Northern Red Oak	X†				FACU	N	
<i>Rosa multiflora</i>	Rambler Rose		X			FACU	I	X
<i>Toxicodendron radicans</i>	Eastern Poison Ivy			X†		FAC	N	

* This list only contains species that comprise 10% or more of cover.

† Represents plant species dominate within the wetland impact area.

¹ Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. The National Wetland Plant List: 2016 wetland ratings.

- OBL:** Obligate
- FACW:** Facultative Wetland
- FAC:** Facultative
- FACU:** Facultative Upland
- UPL:** Upland

²The Vascular Plants of Massachusetts: A County Checklist, The Vascular Plants of Massachusetts A County Checklist, First Revision, 2011. Published by Natural Heritage and Endangered Species Program. 269 pp.

- N:** Native
- I:** Introduced



Photo 1 - Looking east down the Impact Area at the well-defined foot path near Station 576+90



Photo 2 – Looking west down the Impact Area near Station 579+70; the well-defined foot path is visible

Impact Area S12 (AURA) in Sudbury, MA

Wildlife Habitat Evaluations Photographs

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Photo 3 – Small mammal burrow that was identified within the Impact area near Station 578+50; the pen is in the picture to provide a reference of scale



Photo 4 – View of the thin strip of Pennsylvania sedge; photo was taken near Station 577+90


	<p><u>Impact Area S12 (AURA) in Sudbury, MA</u></p> <p>Wildlife Habitat Evaluations Photographs</p>	<p>EVERSOURCE ENERGY</p> <p></p>
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Photo 5 – Large woody debris on the ground within the Impact Area and continuing outside the Impact Area near Station 576+60

Impact Area S12 (AURA) in Sudbury, MA

Wildlife Habitat Evaluations Photographs

EVERSOURCE
ENERGY



Wetland Impact Area S13

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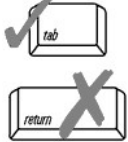
Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important:
When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



Sudbury-Hudson Transmission Reliability Project

Project Name

Sudbury, Stow, Marlborough, Hudson

Location

36,545 square feet

6/6/19

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Bylaw AURA**			33,564	33,564
2. Bylaw RFA**			25,319	25,319
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Sudbury, Massachusetts

Project Location (from NOI page 1)

S13 - RFA and AURA Impact Area from approximately Station 585+25 to 599+90

Impact Area (number/name)

June 6, 2019

Date(s) of Site Visit(s) and Data Collection

60's and partly cloudy

Weather Conditions During Site Visit (if snow cover, include depth)

John Vieira and Katie Kinsella

6/25/19

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: N/A - Upland Area

Subsystem:

Class:

Subclass:

Hydrology/Water Regime

☐ Permanently flooded

☐ Saturated

☐ Intermittently exposed

☐ Temporarily flooded

☐ Semi-permanently flooded

☐ Intermittently flooded

☐ Seasonally flooded

☐ Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

N/A - Impact Area is mostly railroad track bed/disturbed so neither upland classification system applies

Community Name

See narrative and attached plant list

Vegetation Description

See narrative

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover:	85.0	37.5	10.5	0	62.5
	Trees (> 20')	Shrubs (< 20')	Woody vines	Mosses	Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
See attached list			

C. Inventory (Soils)

Deerfield loamy fine sand

Soil Survey Unit

Drainage Class

Texture (upper part)

Depth

Depth to Water Table

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

☐ Abundant ☐ Present ☒ Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

☐ Abundant ☒ Present ☐ Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

☐ Present ☒ Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

☐ Present ☒ Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
6-12" dbh	12-18" dbh	18-24" dbh	> 24" dbh

Number of Tree Cavities in trunks or limbs of:

<u>0</u>
6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)
<u>0</u>
12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)
<u>0</u>
>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

☐ Abundant ☒ Present ☐ Absent

Cover/Perches/Basking/Denning/Nesting Habitat

☐ Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

☒ Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

☐ Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

☐ Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

☐ Rock piles, crevices, or hollow logs suitable for:

☐ otter ☐ mink ☐ porcupine ☐ bear ☐ bobcat ☐ turkey vulture

☐ Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

☐ Present ☒ Absent

Standing water present at least part of the growing season, suitable for use by

☐ Breeding amphibians ☐ Non-breeding amphibians (foraging, re-hydration)

☐ Turtles ☐ Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

☐ Present ☒ Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

☐ Present ☒ Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

☐ Present ☒ Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

☐ Present ☒ Absent

Undercut or overhanging banks (small mammals, mink, weasels)

☐ Present ☒ Absent

Vertical sandy banks (bank swallow, kingfisher)

☐ Present ☒ Absent

Areas of ice-free open water in winter

☐ Present ☒ Absent

Mud flats

☐ Present ☒ Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

☐ Present ☒ Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

☐ Present ☒ Absent

Bank swallow colony

☐ Present ☒ Absent

Nest(s) present of

☐ Bald Eagle

☐ Osprey

☐ Great Blue Heron

Den(s) present of

☐ Otter

☐ Mink

☐ Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- ☐ 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- ☐ 200' of Great Blue Heron or osprey nest(s)
- ☐ 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (pied-billed grebe) ☐ Present ☒ Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|---|---------------------|------------------------------|--|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Is the impact area part of a wetland complex at least	2.5 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(turtles, frogs, waterfowl, mammals)	5.0 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	10.0 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	25.0 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
For upland resource areas is the impact area part of contiguous forested habitat at least			
(forest interior nesting birds)	50 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	100 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	250 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	500 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
(grassland nesting birds)	> 1.0 acre in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(special habitat such as gallery floodplain forest, alder thicket, etc.)	> 1.0 acre in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

B. Connectivity with adjoining natural habitats

- ☐ No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- ☒ Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- ☐ Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- ☐ Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- ☐ Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- ☐ Evidence of significant chemical contamination
- ☐ Evidence of significant levels of dumping
- ☐ Evidence of significant erosion or sedimentation problems
- ☒ Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- ☒ Disturbance from roads or highways
- ☒ Other human disturbance
- ☐ Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8
Large woody debris	Scattered	Scattered	See note below
Small Mammal Burrow	1	Ubiquitous	See note below
Upland Food Plants	Scattered	Greater than Impact Area	See note below

Vegetation found within Wetland Impact Area*

Impact Area S13
Survey Date: 6/6/19

Scientific Name ¹	Common Name ¹	Stratum				Wetland Indicator Status ¹	Native or Introduced ²	Invasive ³
		Tree	Sapling-Shrub	Herb	Vine			
<i>Acer rubrum</i>	Red Maple	X				FAC	N	
<i>Alliaria petiolata</i>	Garlic-Mustard			X		FACU	I	X
<i>Carex pensylvanica</i>	Pennsylvania Sedge			X		UPL	N	
<i>Celastrus orbiculatus</i>	Asian Bittersweet				X†	UPL	I	X
<i>Dennstaedtia punctilobula</i>	Hay-Scented Fern			X†		UPL	N	
<i>Frangula alnus</i>	Glossy False Buckthorn			X†	X†	FAC	I	X
<i>Lonicera morrowii</i>	Morrow's Honeysuckle			X		FACU	I	X
<i>Maianthemum canadense</i>	False Lily-of-the-Valley				X	FACU	N	
<i>Pinus strobus</i>	Eastern White Pine	X†	X†			FACU	N	
<i>Prunus serotina</i>	Black Cherry		X			FACU	N	
<i>Quercus rubra</i>	Northern Red Oak	X†				FACU	N	
<i>Rosa multiflora</i>	Rambler Rose		X			FACU	I	X
<i>Toxicodendron radicans</i>	Eastern Poison Ivy			X†		FAC	N	

* This list only contains species that comprise 10% or more of cover.
† Represents plant species dominate within the wetland impact area.

¹ Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. The National Wetland Plant List: 2016 wetland ratings.
OBL: Obligate
FACW: Facultative Wetland
FAC: Facultative
FACU: Facultative Upland

²The Vascular Plants of Massachusetts: A County Checklist, The Vascular Plants of Massachusetts A County Checklist, First Revision, 2011. Published by Natural
N: Native
I: Introduced



Photo 1 - Looking east down the Impact Area at the well-defined foot path near Station 585+40



Photo 2 – Snag and one piece of large woody debris on the ground along the edge of the Impact Area near Station 586+85

Impact Area S13 (RFA and AURA) in Sudbury, MA

Wildlife Habitat Evaluations Photographs

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Photo 3 – View of the commercial development located to the immediate south of the Impact Area near Station 594+95



Photo 4 – View of a small mammal burrow near the edge of the remnant tracks near Station 593+80

Impact Area S13 (RFA and AURA) in Sudbury, MA

Wildlife Habitat Evaluations Photographs

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Wetland Impact Area S14

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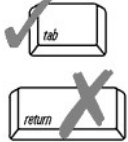
Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important:
When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



Sudbury-Hudson Transmission Reliability Project

Project Name

Sudbury, Stow, Marlborough, Hudson

Location

4,986 square feet

6/6/19

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Bylaw AURA**			1,544	1,544
2. Bylaw RFA**			4,986	4,986
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Sudbury, Massachusetts

Project Location (from NOI page 1)

S14 - RFA and AURA Impact Area from approximately Station 600+50 to 602+25

Impact Area (number/name)

June 6, 2019

Date(s) of Site Visit(s) and Data Collection

upper 70's, partly cloudy

Weather Conditions During Site Visit (if snow cover, include depth)

Katie Kinsella

6/25/19

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: N/A - Upland Area

Subsystem: N/A

Class: N/A

Subclass: N/A

Hydrology/Water Regime

☐ Permanently flooded

☐ Saturated

☐ Intermittently exposed

☐ Temporarily flooded

☐ Semi-permanently flooded

☐ Intermittently flooded

☐ Seasonally flooded

☐ Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

N/A - Impact Area is mostly railroad track bed/disturbed so neither upland classification system applies

Community Name

See narrative and attached plant list

Vegetation Description

See narrative

Physical Description



Appendix B: Detailed Wildlife Habitat Evaluation

B. Inventory (Plant community)

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; “*” designates a dominant plant species for the strata):

C. Inventory (Soils)

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

☐ Abundant ☐ Present ☒ Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

☐ Abundant ☒ Present ☐ Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

☐ Present ☒ Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

☐ Present ☒ Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

<u>0</u>	<u>1</u>	<u>0</u>	<u>0</u>
6-12" dbh	12-18" dbh	18-24" dbh	> 24" dbh

Number of Tree Cavities in trunks or limbs of:

<u>0</u>
6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)
<u>0</u>
12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)
<u>0</u>
>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

☐ Abundant ☐ Present ☒ Absent

Cover/Perches/Basking/Denning/Nesting Habitat

- ☐ Dense herbaceous cover (voles, small mammals, amphibians & reptiles)
- ☐ Large woody debris on the ground (small mammals, mink, amphibians & reptiles)
- ☐ Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)
- ☐ Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)
- ☐ Rock piles, crevices, or hollow logs suitable for:
- | | | | | | |
|--------------------------------|-------------------------------|------------------------------------|-------------------------------|---------------------------------|---|
| <input type="checkbox"/> otter | <input type="checkbox"/> mink | <input type="checkbox"/> porcupine | <input type="checkbox"/> bear | <input type="checkbox"/> bobcat | <input type="checkbox"/> turkey vulture |
|--------------------------------|-------------------------------|------------------------------------|-------------------------------|---------------------------------|---|
- ☐ Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

☐ Present ☒ Absent

Standing water present at least part of the growing season, suitable for use by

- | | |
|--|---|
| <input type="checkbox"/> Breeding amphibians | <input type="checkbox"/> Non-breeding amphibians (foraging, re-hydration) |
| <input type="checkbox"/> Turtles | <input type="checkbox"/> Foraging waterfowl |

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

☐ Present ☒ Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

☐ Present ☒ Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

☐ Present ☒ Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

☐ Present ☒ Absent

Undercut or overhanging banks (small mammals, mink, weasels)

☐ Present ☒ Absent

Vertical sandy banks (bank swallow, kingfisher)

☐ Present ☒ Absent

Areas of ice-free open water in winter

☐ Present ☒ Absent

Mud flats

☐ Present ☒ Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

☐ Present ☒ Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

☐ Present ☒ Absent

Bank swallow colony

☐ Present ☒ Absent

Nest(s) present of

☐ Bald Eagle

☐ Osprey

☐ Great Blue Heron

Den(s) present of

☐ Otter

☐ Mink

☐ Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- ☐ 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- ☐ 200' of Great Blue Heron or osprey nest(s)
- ☐ 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (pied-billed grebe) ☐ Present ☒ Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|---|---------------------|------------------------------|--|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Is the impact area part of a wetland complex at least	2.5 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(turtles, frogs, waterfowl, mammals)	5.0 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	10.0 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	25.0 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
For upland resource areas is the impact area part of contiguous forested habitat at least			
(forest interior nesting birds)	50 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	100 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	250 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	500 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
(grassland nesting birds)	> 1.0 acre in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(special habitat such as gallery floodplain forest, alder thicket, etc.)	> 1.0 acre in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

B. Connectivity with adjoining natural habitats

- ☐ No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- ☒ Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- ☐ Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- ☐ Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- ☐ Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- ☐ Evidence of significant chemical contamination
- ☐ Evidence of significant levels of dumping
- ☐ Evidence of significant erosion or sedimentation problems
- ☒ Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- ☒ Disturbance from roads or highways
- ☒ Other human disturbance
- ☐ Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8
Standing Dead Tree	1	Greater than Impact Area	See note below
Important upland food	Minimal, oaks	Greater than Impact Area	See note below

Vegetation found within Wetland Impact Area*

Impact Area S14
Survey Date:

Scientific Name ¹	Common Name ¹	Stratum				Wetland Indicator Status ¹	Native or Introduced ²	Invasive ³
		Tree	Sapling-Shrub	Herb	Vine			
<i>Artemisia vulgaris</i>	Common Wormwood			X [†]		UPL	I	
<i>Celastrus orbiculatus</i>	Asian Bittersweet				X [†]	UPL	I	X
<i>Frangula alnus</i>	Glossy False Buckthorn			X [†]		FAC	I	X
<i>Pinus strobus</i>	Eastern White Pine	X [†]				FACU	N	
<i>Populus tremuloides</i>	Quaking Aspen	X				FAC	N	
<i>Quercus rubra</i>	Northern Red Oak		X [†]			FACU	N	

* This list only contains species that comprise 10% or more of cover.
† Represents plant species dominate within the wetland impact area.

¹ Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. The National Wetland Plant List: 2016 wetland ratings.
OBL: Obligate
FACW: Facultative Wetland
FAC: Facultative
FACU: Facultative Upland
UPL: Upland

²The Vascular Plants of Massachusetts: A County Checklist, The Vascular Plants of Massachusetts A County Checklist, First Revision, 2011. Published by Natural Heritage and Endangered Species Program. 269 pp.
N: Native
I: Introduced



Photo 1 - Looking east down the Impact Area towards Union Avenue and the open grassy area near Station 600+55



Photo 2 – Snag within the Impact Area near Station 601+80

Impact Area S14 (RFA and AURA) in Sudbury, MA

Wildlife Habitat Evaluations Photographs

EVERSOURCE
ENERGY

vhb



Photo 3 – Looking north at Union Avenue from the western edge of the Impact Area near Station 602+20



Photo 4 – Looking west at the open, grassy area within the Impact Area near Station 602+10

Impact Area S14 (RFA and AURA) in Sudbury, MA

Wildlife Habitat Evaluations Photographs

EVERSOURCE
ENERGY

vhb

Wetland Impact Area S15

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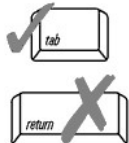
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Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important:
When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



Sudbury-Hudson Transmission Reliability Project

Project Name

S15 Impact Area - Sudbury, MA

Location

25,375 sf

10/16/2019

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. BLSF**			1,791	1,791
2. MWPA RFA***			13,630	13,630
3. Bylaw RFA***			11,759	11,759
4. Bylaw AURA***			25,375	25,375
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

See the attached sheet with the description of the site.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Sudbury, Massachusetts

Project Location (from NOI page 1)

S15 - 602+50 to 711+30

Impact Area (number/name)

10/16/2019

Date(s) of Site Visit(s) and Data Collection

Mostly cloudy, 40s

Weather Conditions During Site Visit (if snow cover, include depth)

John Vieira

11/8/2019

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: N/A Upland Area

Subsystem: N/A

Class: N/A

Subclass: N/A

Hydrology/Water Regime

☐ Permanently flooded

☐ Saturated

☐ Intermittently exposed

☐ Temporarily flooded

☐ Semi-permanently flooded

☐ Intermittently flooded

☐ Seasonally flooded

☐ Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

N/A - Impact Area is mostly railroad track bed / disturbed so neither classification system applies

Community Name

See narrative and attached plant list

Vegetation Description

See narrative

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 85.5 63 10.5 38.0
Trees (> 20') Shrubs (< 20') Woody vines Mosses Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
See attached plant list			

C. Inventory (Soils)

Udorthents- Urban land complex, Freetown Muck	N/A
Soil Survey Unit	Drainage Class
N/A	N/A
Texture (upper part)	Depth
N/A	
Depth to Water Table	

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

☐ Abundant ☐ Present ☒ Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

☐ Abundant ☒ Present ☐ Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

☐ Present ☒ Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

☐ Present ☒ Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

<u>9</u>	<u>4</u>	<u>0</u>	<u>0</u>
6-12" dbh	12-18" dbh	18-24" dbh	> 24" dbh

Number of Tree Cavities in trunks or limbs of:

<u>0</u>
6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)
<u>0</u>
12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)
<u>0</u>
>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

☐ Abundant ☐ Present ☒ Absent

Cover/Perches/Basking/Denning/Nesting Habitat

☐ Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

☒ Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

☐ Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

☐ Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

☐ Rock piles, crevices, or hollow logs suitable for:

☐ otter ☐ mink ☐ porcupine ☐ bear ☐ bobcat ☐ turkey vulture

☐ Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

☐ Present ☒ Absent

Standing water present at least part of the growing season, suitable for use by

☐ Breeding amphibians ☐ Non-breeding amphibians (foraging, re-hydration)

☐ Turtles ☐ Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

☐ Present ☒ Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

☐ Present ☒ Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

☐ Present ☒ Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

☐ Present ☒ Absent

Undercut or overhanging banks (small mammals, mink, weasels)

☐ Present ☒ Absent

Vertical sandy banks (bank swallow, kingfisher)

☐ Present ☒ Absent

Areas of ice-free open water in winter

☐ Present ☒ Absent

Mud flats

☐ Present ☒ Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

☐ Present ☐ Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

☐ Present ☒ Absent

Bank swallow colony

☐ Present ☒ Absent

Nest(s) present of

☐ Bald Eagle

☐ Osprey

☐ Great Blue Heron

Den(s) present of

☐ Otter

☐ Mink

☐ Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- ☐ 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- ☐ 200' of Great Blue Heron or osprey nest(s)
- ☐ 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (pied-billed grebe) ☐ Present ☒ Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

Is the impact area part of an emergent marsh at least 1.0 acre in size? ☐ Yes ☒ No

(marsh and waterbirds) 2.0 acres in size? ☐ Yes ☒ No

5.0 acres in size? ☐ Yes ☒ No

10.0 acres in size? ☐ Yes ☒ No

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Is the impact area part of a wetland complex at least	2.5 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(turtles, frogs, waterfowl, mammals)	5.0 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	10.0 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	25.0 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
For upland resource areas is the impact area part of contiguous forested habitat at least			
(forest interior nesting birds)	50 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	100 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	250 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	500 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(grassland nesting birds)	> 1.0 acre in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(special habitat such as gallery floodplain forest, alder thicket, etc.)	> 1.0 acre in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

B. Connectivity with adjoining natural habitats

- ☒ No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- ☐ Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- ☐ Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- ☐ Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- ☐ Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- ☐ Evidence of significant chemical contamination
- ☒ Evidence of significant levels of dumping
- ☐ Evidence of significant erosion or sedimentation problems
- ☒ Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- ☒ Disturbance from roads or highways
- ☒ Other human disturbance
- ☒ Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8
Upland food plants	Scattered	Some areas abundant	See note below
Large woody debris	Limited	Some areas abundant	See note below
Dead standing trees	9 (6"-12"), 4 (12"-18")	Some areas abundant	See note below

Vegetation found within Wetland Impact Area*

Impact Area S15
Survey Date: 10/16/2019

Scientific Name ¹	Common Name ¹	Stratum				Wetland Indicator Status ¹	Native or Introduced ²	Invasive ³
		Tree	Sapling-Shrub	Herb	Vine			
<i>Acer platanoides</i>	Norway Maple	X	X			UPL	I	X
<i>Acer rubrum</i>	Red Maple	X†				FAC	N	
<i>Ailanthus altissima</i>	Tree-of-Heaven	X				UPL	N	
<i>Alliaria petiolata</i>	Garlic-Mustard			X		FACU	I	X
<i>Berberis thunbergii</i>	Japanese Barberry		X			FACU	I	X
<i>Betula populifolia</i>	Gray Birch	X				FAC	N	
<i>Carex pensylvanica</i>	Pennsylvania Sedge			X†		UPL	N	
<i>Celastrus orbiculatus</i>	Asian Bittersweet				X	UPL	I	X
<i>Chimaphila maculata</i>	Striped Pipsissewa			x		UPL	N	
<i>Elaeagnus umbellata</i>	Autumn Olive		X			UPL	I	X
<i>Fagus grandifolia</i>	American Beech	X				FACU	N	
<i>Frangula alnus</i>	Glossy False Buckthorn		X†	X†		FAC	I	X
<i>Ilex verticillata</i>	Common Winterberry		X			FACW	N	
<i>Lonicera morrowii</i>	Morrow's Honeysuckle		X			FACU	I	X
<i>Onoclea sensibilis</i>	Sensitive Fern			X		FACW	N	
<i>Parthenocissus quinquefolia</i>	Virginia-Creeper				X	FACU	N	
<i>Pinus strobus</i>	Eastern White Pine	X	X			FACU	N	
<i>Populus tremuloides</i>	Quaking Aspen		X			FAC	N	
<i>Prunus serotina</i>	Black Cherry	X	X			FACU	N	
<i>Quercus alba</i>	Northern White Oak	X				FACU	N	
<i>Quercus velutina</i>	Black Oak	X†				UPL	N	
<i>Rosa multiflora</i>	Rambler Rose		X			FACU	I	X
<i>Solidago rugosa</i>	Wrangled -Leaf Goldenrod			X		FAC	N	
<i>Solidago spp.</i>	Goldenrods			X		-	N	
<i>Symphyotrichum novae-angliae</i>	New England American-aster			X		FACW	N	
<i>Toxicodendron radicans</i>	Eastern Poison Ivy				X†	FAC	N	
<i>Ulmus americana</i>	American Elm	X				FACW	N	
<i>Vitis sp.</i>	Grape				X	-	N	

* This list only contains species that comprise 10% or more of cover.
† Represents plant species dominate within the wetland impact area.

Vegetation found within Wetland Impact Area*

Impact Area S15
Survey Date: 10/16/2019

Scientific Name ¹	Common Name ¹	Stratum				Wetland Indicator Status ¹	Native or Introduced ²	Invasive ³
		Tree	Sapling-Shrub	Herb	Vine			

¹ Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. The National Wetland Plant List: 2016 wetland ratings. Phytoneuron 2016-30: 1-17. (Massachusetts List) Published 28 April 2016. ISSN 2153 733X (http://wetland-plants.usace.army.mil/nwpl_static/data/DOC/lists_2016/States/pdf/MA_2016v1.pdf)

OBL: Obligate
FACW: Facultative Wetland
FAC: Facultative
FACU: Facultative Upland
UPL: Upland

²The Vascular Plants of Massachusetts: A County Checklist, The Vascular Plants of Massachusetts A County Checklist, First Revision, 2011. Published by Natural Heritage and Endangered Species Program. 269 pp.

N: Native
I: Introduced

³The Evaluation of Non-Native Plant Species for Invasiveness in Massachusetts (with annotated list).Massachusetts Invasive Plant Advisory Group. 2005. (https://massnrc.org/mipag/docs/MIPAG_FINDINGS_FINAL_042005.pdf)



Photo 1 – Looking east down the Impact Area near Station 701+85



Photo 2 – Looking east down the Impact Area within the Impact Area near Station 702+70

**Impact Area S15 (RFA, BLSF, LUWW, and AURA) in
Sudbury, MA**

Wildlife Habitat Evaluations Photographs

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Photo 3 – Large woody debris on the ground within the Impact Area near Station 708+40



Photo 4 – Looking east within the Impact Area with two sets of railroad tracks visible near Station 709+10

**Impact Area S15 (RFA, BLSF, LUWW, and AURA) in
Sudbury, MA**

Wildlife Habitat Evaluations Photographs

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Wetland Impact Area S16

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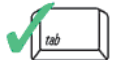
Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important:
When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



Sudbury-Hudson Transmission Reliability Project

Project Name

S16 Impact Area - Sudbury, MA

Location

32,745 SF

5/8/19

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. BLSF**			877	877
2. MWPA RFA**			32,745	32,745
3. Bylaw AURA**			32,285	32,285
4. BVW		31		31
5.				
6.				
7.				

*Riverfront Area/BLSF

**Impacts overlap. BLSF, BVW, and AURA are entirely overlapped by RFA .

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

See the attached sheet with the description of the site.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Sudbury, Massachusetts

Project Location (from NOI page 1)

S16 - BLSF, RFA, and AURA from approximately Station 711+70 to 724+40

Impact Area (number/name)

May 8, 2019

Date(s) of Site Visit(s) and Data Collection

50s, partly cloudy

Weather Conditions During Site Visit (if snow cover, include depth)

John Vieira and Katie Kinsella

May 10, 2019

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

For BVW impact only

1. For Wetland Resource Areas, complete the following:

System: P - Palustrine

Subsystem: N/A

Class: SS - Scrub Shrub

Subclass: 3 - Broad-leaved Deciduous

Hydrology/Water Regime

☐ Permanently flooded

☒ Saturated **Seasonally Saturated**

☐ Intermittently exposed

☐ Temporarily flooded

☐ Semi-permanently flooded

☐ Intermittently flooded

☐ Seasonally flooded

☐ Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

N/A - Impact Area is mostly railroad track bed / disturbed so neither classification system applies

Community Name

See narrative and attached plant list

Vegetation Description

See narrative

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

Daubenmire
midpoints used for
vegetative percent
cover

% Cover: 85.5 38 10.5 38.0
Trees (> 20') Shrubs (< 20') Woody vines Mosses Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
See attached plant list			

Soils in impact
area historically
disturbed and
filled from
construction and
operation of the
railroad line and
therefore differ
from the mapped
soil unit

C. Inventory (Soils)

Scarboro mucky fine sandy loam	N/A
Soil Survey Unit	Drainage Class
N/A	N/A
Texture (upper part)	Depth
N/A	
Depth to Water Table	

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

☐ Abundant ☐ Present ☒ Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

☐ Abundant ☒ Present ☐ Absent

Some present - black
cherry, oaks, and grape

Shrub thickets or streambeds with abundant earthworms (American woodcock)

☐ Present ☒ Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

☐ Present ☒ Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

<u>8</u>	<u>2</u>	<u>0</u>	<u>0</u>
6-12" dbh	12-18" dbh	18-24" dbh	> 24" dbh

Number of Tree Cavities in trunks or limbs of:

16 (most cavities are small, < 6")

6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

0

12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

0

>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

☐ Abundant ☐ Present ☒ Absent

Cover/Perches/Basking/Denning/Nesting Habitat

☐ Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

☒ Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

Moderately abundant

☐ Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

☐ Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

☐ Rock piles, crevices, or hollow logs suitable for:

☐ otter ☐ mink ☐ porcupine ☐ bear ☐ bobcat ☐ turkey vulture

9 along berm

☒ Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

☐ Present ☒ Absent

Standing water present at least part of the growing season, suitable for use by

☐ Breeding amphibians ☐ Non-breeding amphibians (foraging, re-hydration)

☐ Turtles ☐ Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

☐ Present ☒ Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

☐ Present ☒ Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

☐ Present ☒ Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

☐ Present ☒ Absent

Undercut or overhanging banks (small mammals, mink, weasels)

☐ Present ☒ Absent

Vertical sandy banks (bank swallow, kingfisher)

☐ Present ☒ Absent

Areas of ice-free open water in winter

☐ Present ☒ Absent

Mud flats

☐ Present ☒ Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

☐ Present ☒ Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

☐ Present ☒ Absent

Bank swallow colony

☐ Present ☒ Absent

Nest(s) present of

☐ Bald Eagle

☐ Osprey

☐ Great Blue Heron

Den(s) present of

☐ Otter

☐ Mink

☐ Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- ☐ 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- ☐ 200' of Great Blue Heron or osprey nest(s)
- ☐ 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (pied-billed grebe) ☐ Present ☒ Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|---|---------------------|------------------------------|--|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

- | | | | |
|---|---------------------|------------------------------|--|
| Is the impact area part of a wetland complex at least | 2.5 acres in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals) | 5.0 acres in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| | 25.0 acres in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least | | | |
| (forest interior nesting birds) | 50 acres in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| | 100 acres in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| | 250 acres in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| | 500 acres in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| (grassland nesting birds) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.) | > 1.0 acre in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |

B. Connectivity with adjoining natural habitats

- ☐ No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- ☒ Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- ☐ Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- ☐ Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- ☐ Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

Sign of human use on path adjacent to train track. Western end of Impact Area is immediately adjacent to Boston Post Road. Single-family residences and commercial properties in immediate vicinity.

- ☐ Evidence of significant chemical contamination
- ☐ Evidence of significant levels of dumping
- ☐ Evidence of significant erosion or sedimentation problems
- ☒ Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- ☒ Disturbance from roads or highways
- ☒ Other human disturbance
- ☐ Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8
Upland food plants	Scattered	Some areas abundant	See note below
Large woody debris	Limited	Some areas abundant	See note below
Dead standing trees	8 (6"-12"), 2(12"-18")	Some areas abundant	See note below
Cavities in Trees	Approx. 16 at outer limits of work	Common and scattered	See note below
Woody Veg Providing	9 at outer limits of work	Common	See note below
Views of Open Water			

Vegetation found within Wetland Impact Area*

Impact Area S16
Survey Date: 5/18/2019

Scientific Name ¹	Common Name ¹	Stratum				Wetland Indicator Status ¹	Native or Introduced ²	Invasive ³
		Tree	Sapling-Shrub	Herb	Vine			
<i>Acer platanoides</i>	Norway Maple	X	X †			UPL	I	X
<i>Acer rubrum</i>	Red Maple	X †				FAC	N	
<i>Berberis thunbergii</i>	Japanese Barberry			X		FACU	I	X
<i>Betula populifolia</i>	Gray Birch	X				FAC	N	
<i>Chelidonium majus</i>	Greater Celandine			X		UPL	I	
<i>Frangula alnus</i>	Glossy False Buckthorn		X †	X †		FAC	I	X
<i>Fraxinus americana</i>	White Ash		X	X		FACU	N	
<i>Lonicera morrowii</i>	Morrow's Honeysuckle			X		FACU	I	X
<i>Pinus strobus</i>	Eastern White Pine	X †				FACU	N	
<i>Prunus serotina</i>	Black Cherry		X			FACU	N	
<i>Quercus velutina</i>	Black Oak	X				UPL	N	
<i>Rosa multiflora</i>	Rambler Rose		X			FACU	I	X
<i>Rubus flagellaris</i>	Whiplash Dewberry				X	FACU	N	
<i>Toxicodendron radicans</i>	Eastern Poison Ivy				X †	FAC	N	
<i>Ulmus americana</i>	American Elm	X				FACW	N	
<i>Vitis sp.</i>	Grape				X	-	N	

* This list only contains species that comprise 10% or more of cover.
† Represents plant species dominate within the wetland impact area.

¹ Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. The National Wetland Plant List: 2016 wetland ratings. Phytoneuron 2016-30: 1-17. (Massachusetts List) Published 28 April 2016. ISSN 2153 733X (http://wetland-plants.usace.army.mil/nwpl_static/data/DOC/lists_2016/States/pdf/MA_2016v1.pdf)
OBL: Obligate
FACW: Facultative Wetland
FAC: Facultative
FACU: Facultative Upland
UPL: Upland

²The Vascular Plants of Massachusetts: A County Checklist, The Vascular Plants of Massachusetts A County Checklist, First Revision, 2011. Published by Natural Heritage and Endangered Species Program. 269 pp.
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³The Evaluation of Non-Native Plant Species for Invasiveness in Massachusetts (with annotated list).Massachusetts Invasive Plant Advisory Group. 2005. (https://massnrc.org/mipag/docs/MIPAG_FINDINGS_FINAL_042005.pdf)



Photo 1 – Looking east down the Impact Area near Station 713+00



Photo 2 – Large woody debris on the ground within the Impact Area near Station 716+15

**Impact Area S16 (RFA, BLSF, BVW, and AURA) in
Sudbury, MA**

Wildlife Habitat Evaluations Photographs

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Photo 3 – Looking west down the Impact Area near Station 718+25



Photo 4 – View of a standing dead tree within the Impact Area near Station 716+70

**Impact Area S16 (RFA, BLSF, BVW, and AURA) in
Sudbury, MA**

Wildlife Habitat Evaluations Photographs

EVERSOURCE
ENERGY

vhb

Wetland Impact Area S17

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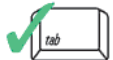
Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important:
When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



Sudbury-Hudson Transmission Reliability Project

Project Name

S17 Impact Area - Sudbury, MA

Location

2,718 SF Crane mat area

5/8/19

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. MWPA RFA**			2,122	2,122
2. Bylaw AURA**			1,947	1,947
3. BLSF***			1,738	1,738
4. LUWW	596			596
5. BVW**		178		178
6. Bank	124 LF			124
7.				

*Riverfront Area/BLSF ** Partially Overlaps ***Completely Overlaps

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

See the attached sheet with the description of the site.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Sudbury, Massachusetts

Project Location (from NOI page 1)

S17 - Sta 724+40 to 725+05

Impact Area (number/name)

May 8, 2019

Date(s) of Site Visit(s) and Data Collection

50s, partly cloudy

Weather Conditions During Site Visit (if snow cover, include depth)

John Vieira and Katie Kinsella

May 10, 2019

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: P - Palustrine

Subsystem: N/A

Class: E - Emergent

Subclass: 1 - Persistent/2 - Non-persistent

Hydrology/Water Regime

☐ Permanently flooded

☐ Saturated

☐ Intermittently exposed

☐ Temporarily flooded

☐ Semi-permanently flooded

☐ Intermittently flooded

☒ Seasonally flooded

☐ Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

N/A - Impact Area is mostly railroad track bed / disturbed so neither classification system applies

Community Name

See narrative and attached plant list

Vegetation Description

See narrative

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 63.0 63.0 38.0
Trees (> 20') Shrubs (< 20') Woody vines Mosses Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u>See attached plant list</u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>

C. Inventory (Soils)

Mapped as Scarboro mucky fine sand	<u>N/A</u>
Soil Survey Unit	Drainage Class
<u>N/A</u>	<u>N/A</u>
Texture (upper part)	Depth
<u>N/A</u>	<u> </u>
Depth to Water Table	<u> </u>

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

☐ Abundant ☐ Present ☒ Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

☐ Abundant ☒ Present ☐ Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

☐ Present ☒ Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

☐ Present ☒ Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

<u>6</u>	<u>0</u>	<u>0</u>	<u>0</u>
6-12" dbh	12-18" dbh	18-24" dbh	> 24" dbh

Number of Tree Cavities in trunks or limbs of:

8 (cavities mostly small, 6" or less)

0 6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

0

0 12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

0

0 >18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

☐ Abundant ☐ Present ☒ Absent

Cover/Perches/Basking/Denning/Nesting Habitat

☐ Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

☐ Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

☐ Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

☒ Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

☐ Rock piles, crevices, or hollow logs suitable for:

☐ otter ☐ mink ☐ porcupine ☐ bear ☐ bobcat ☐ turkey vulture

☒ Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

☐ Present ☒ Absent

Standing water present at least part of the growing season, suitable for use by

☒ Breeding amphibians ☒ Non-breeding amphibians (foraging, re-hydration)

☒ Turtles ☒ Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

☐ Present ☒ Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

☐ Present ☒ Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

☐ Present ☒ Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

☐ Present ☒ Absent

Undercut or overhanging banks (small mammals, mink, weasels)

☐ Present ☒ Absent

Vertical sandy banks (bank swallow, kingfisher)

☐ Present ☒ Absent

Areas of ice-free open water in winter

☐ Present ☒ Absent

Mud flats

☐ Present ☒ Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

☐ Present ☒ Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

☐ Present ☒ Absent

Bank swallow colony

☐ Present ☒ Absent

Nest(s) present of

☐ Bald Eagle

☐ Osprey

☐ Great Blue Heron

Den(s) present of

☐ Otter

☐ Mink

☐ Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- ☐ 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- ☐ 200' of Great Blue Heron or osprey nest(s)
- ☐ 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (pied-billed grebe) ☐ Present ☒ Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|---|---------------------|------------------------------|--|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Is the impact area part of a wetland complex at least	2.5 acres in size?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
(turtles, frogs, waterfowl, mammals)	5.0 acres in size?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
	10.0 acres in size?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
	25.0 acres in size?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
For upland resource areas is the impact area part of contiguous forested habitat at least			
(forest interior nesting birds)	50 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	100 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	250 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	500 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(grassland nesting birds)	> 1.0 acre in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(special habitat such as gallery floodplain forest, alder thicket, etc.)	> 1.0 acre in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

B. Connectivity with adjoining natural habitats

- ☐ No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- ☒ Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- ☐ Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- ☐ Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- ☐ Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- ☐ Evidence of significant chemical contamination
- ☐ Evidence of significant levels of dumping
- ☐ Evidence of significant erosion or sedimentation problems
- ☒ Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- ☐ Disturbance from roads or highways
- ☒ Other human disturbance
- ☐ Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8
Upland /wetland food plants	Scattered	Some areas abundant	See note below
Standing dead trees	6"-12"(6)	Some areas abundant	See note below
Woody Veg Offering View	Present Scattered along	Some present beyond	See note below
of open water	N&S, 21 trees 6"-12" dbh	impact area	
	4 trees 12"-18" dbh		
	Numerous shrubs 6'+ tall		
Trees with Cavities	8 (small cavities 6" or less)	Scattered but relatively common	See note below
Woody Veg 1m Over Water	Mostly tall shrubs N side	Common along berm	See note below
Standing Water	596 SF	Extends along berm	Temporary impact; see note below

Vegetation found within Wetland Impact Area*

Impact Area S17
Survey Date: 5/18/2019

Scientific Name ¹	Common Name ¹	Stratum				Wetland Indicator Status ¹	Native or Introduced ²	Invasive ³
		Tree	Sapling-Shrub	Herb	Vine			
<i>Acer rubrum</i>	Red Maple	X				FAC	N	
<i>Amelanchier canadensis</i>	Canada Service-Berry		X			FAC	N	
<i>Carex vestita</i>	Velvet Sedge			X				
<i>Elaeagnus umbellata</i>	Autumn Olive			X		UPL	I	X
<i>Frangula alnus</i>	Glossy False Buckthorn		X†	X†		FAC	I	X
<i>Onoclea sensibilis</i>	Sensitive Fern			X		FACW	N	
<i>Pinus strobus</i>	Eastern White Pine	X	X	X		FACU	N	
<i>Quercus alba</i>	Northern White Oak			X		FACU	N	
<i>Quercus cocconeae</i>	Scarlet Oak	X	X			UPL	N	
<i>Quercus velutina</i>	Black Oak	X†				UPL	N	
<i>Vaccinium corymbosum</i>	Highbush Blueberry		X†			FACW	N	

* This list only contains species that comprise 10% or more of cover.
† Represents plant species dominate within the wetland impact area.

¹ Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. The National Wetland Plant List: 2016 wetland ratings. Phytoneuron 2016-30: 1-17. (Massachusetts List) Published 28 April 2016. ISSN 2153 733X (http://wetland-plants.usace.army.mil/nwpl_static/data/DOC/lists_2016/States/pdf/MA_2016v1.pdf)

OBL: Obligate
FACW: Facultative Wetland
FAC: Facultative
FACU: Facultative Upland
UPL: Upland

²The Vascular Plants of Massachusetts: A County Checklist, The Vascular Plants of Massachusetts A County Checklist, First Revision, 2011. Published by Natural Heritage and Endangered Species Program. 269 pp.
N: Native
I: Introduced

³The Evaluation of Non-Native Plant Species for Invasiveness in Massachusetts (with annotated list).Massachusetts Invasive Plant Advisory Group. 2005. (https://massnrc.org/mipag/docs/MIPAG_FINDINGS_FINAL_042005.pdf)



Photo 1 – Looking east at the Impact Area near Station 724+40



Photo 2 – Looking east down southern bank near Station 724+90. Crane mats will be temporarily placed along the bank and within BVW and LUWW.

Impact Area S17 (RFA, BLSF, BVW, LUW, Bank and AURA) in Sudbury, MA

Wildlife Habitat Evaluations Photographs

EVERSOURCE
ENERGY





Photo 3 – Looking west down the northern bank near Station 724+95. Crane mats will be temporarily placed along the bank and within BVW and LUWW.



Photo 4 – Looking west down the Impact Area near Station 724+90

Impact Area S17 (RFA, BLSF, BVW, LUW, Bank and AURA) in Sudbury, MA

Wildlife Habitat Evaluations Photographs

EVERSOURCE
ENERGY





Photo 5 – Looking at vegetation overhanging water within the Impact Area near Station 724+95



Photo 6 – Looking west at a foot path that is to the south of the tracks within the Impact Area near Station 724+70

Impact Area S17 (RFA, BLSF, BVW, LUW, Bank and AURA) in Sudbury, MA

Wildlife Habitat Evaluations Photographs

EVERSOURCE
ENERGY



Wetland Impact Area S18

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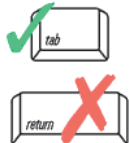
Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important:
When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



Sudbury-Hudson Transmission Reliability Project

Project Name

S18 Impact Area - Sudbury, MA

Location

2,827 SF Crane mat area

10/16/19

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. MWPA RFA**			2,277	2,277
2. Bylaw AURA**			2,160	2,160
3. BLSF**			2,154	2,154
4. LUWW**	550			550
5. BVW**		118		118
6. Bank	122 LF			122 LF
7.				

*Riverfront Area/BLSF **Partially Overlaps ***Completely Overlaps

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

See the attached sheet with the description of the site.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Sudbury, Massachusetts

Project Location (from NOI page 1)

S18 - Station 725+70 to 726+30

Impact Area (number/name)

October 16, 2019

Date(s) of Site Visit(s) and Data Collection

50s, cloudy

Weather Conditions During Site Visit (if snow cover, include depth)

John Vieira and Katie Kinsella

October 18, 2019

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: P - Palustrine

Subsystem: N/A

Class: E - Emergent

Subclass: 1 - Persistent/2 - Non-persistent

Hydrology/Water Regime

☐ Permanently flooded

☐ Saturated

☐ Intermittently exposed

☐ Temporarily flooded

☐ Semi-permanently flooded

☐ Intermittently flooded

☒ Seasonally flooded

☐ Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

N/A - Impact Area is mostly railroad track bed / disturbed so neither classification system applies

Community Name

See narrative and attached plant list

Vegetation Description

See narrative

Physical Description

Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover:	85.5	38.0			38.0
	Trees (> 20')	Shrubs (< 20')	Woody vines	Mosses	Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; “*” designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
See attached plant list			

C. Inventory (Soils)

Mapped as Scarboro mucky fine sand	N/A
Soil Survey Unit	Drainage Class
N/A	N/A
Texture (upper part)	Depth
N/A	
Depth to Water Table	

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

☐ Abundant ☐ Present ☒ Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

☐ Abundant ☒ Present ☐ Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

☐ Present ☒ Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

☐ Present ☒ Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>
6-12" dbh	12-18" dbh	18-24" dbh	> 24" dbh

Number of Tree Cavities in trunks or limbs of:

<u>0</u>
6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)
<u>0</u>
12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)
<u>0</u>
>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

☐ Abundant ☐ Present ☒ Absent

Cover/Perches/Basking/Denning/Nesting Habitat

☒ Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

☐ Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

☐ Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

☒ Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

☐ Rock piles, crevices, or hollow logs suitable for:

☐ otter ☐ mink ☐ porcupine ☐ bear ☐ bobcat ☐ turkey vulture

☒ Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

☐ Present ☒ Absent

Standing water present at least part of the growing season, suitable for use by

☒ Breeding amphibians ☒ Non-breeding amphibians (foraging, re-hydration)

☒ Turtles ☒ Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

☐ Present ☒ Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

☐ Present ☒ Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

☐ Present ☒ Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

☐ Present ☒ Absent

Undercut or overhanging banks (small mammals, mink, weasels)

☐ Present ☒ Absent

Vertical sandy banks (bank swallow, kingfisher)

☐ Present ☒ Absent

Areas of ice-free open water in winter

☐ Present ☒ Absent

Mud flats

☐ Present ☒ Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

☐ Present ☒ Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

☐ Present ☒ Absent

Bank swallow colony

☐ Present ☒ Absent

Nest(s) present of

☐ Bald Eagle

☐ Osprey

☐ Great Blue Heron

Den(s) present of

☐ Otter

☐ Mink

☐ Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- ☐ 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- ☐ 200' of Great Blue Heron or osprey nest(s)
- ☐ 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (pied-billed grebe) ☐ Present ☒ Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|---|---------------------|------------------------------|--|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Is the impact area part of a wetland complex at least	2.5 acres in size?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
(turtles, frogs, waterfowl, mammals)	5.0 acres in size?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
	10.0 acres in size?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
	25.0 acres in size?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
For upland resource areas is the impact area part of contiguous forested habitat at least			
(forest interior nesting birds)	50 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	100 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	250 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	500 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(grassland nesting birds)	> 1.0 acre in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(special habitat such as gallery floodplain forest, alder thicket, etc.)	> 1.0 acre in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

B. Connectivity with adjoining natural habitats

- ☐ No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- ☒ Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- ☐ Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- ☐ Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- ☐ Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- ☐ Evidence of significant chemical contamination
- ☐ Evidence of significant levels of dumping
- ☐ Evidence of significant erosion or sedimentation problems
- ☒ Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- ☐ Disturbance from roads or highways
- ☒ Other human disturbance
- ☐ Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8
Upland /wetland food plants	Scattered	Some areas abundant	See note below
Standing dead trees	6"-12"(2)	Some areas abundant	See note below
Woody Veg Offering View	Present Scattered along	Some present beyond	See note below
of open water	N&S side; 6"-12"(6),	impact area	
	12"-18"(2), few tall shrubs		
Dense herbaceous veg	Carex sp. on N&S sides	Some areas abundant	See note below
Standing water	551 SF	More along berm	See note below
Woody Veg 1m Over Water	3	Few along berm	See note below

Vegetation found within Wetland Impact Area*

Impact Area S18
Survey Date: 10/16/2019

Scientific Name ¹	Common Name ¹	Stratum				Wetland Indicator Status ¹	Native or Introduced ²	Invasive ³
		Tree	Sapling-Shrub	Herb	Vine			
<i>Acer rubrum</i>	Red Maple	X				FAC	N	
<i>Betula populifolia</i>	Gray Birch	X	X †	X		FAC	N	
<i>Carex vestita</i>	Velvet Sedge			X †				
<i>Dennstaedtia punctilobula</i>	Hay-Scented Fern			X		UPL	N	
<i>Dichanthelium clandestinum</i>	Deer-Tongue Rosette-Panicgrass			X		FACW	N	
<i>Euthamia graminifolia</i>	Grass-Leaved Goldenrod			X		FAC	N	
<i>Frangula alnus</i>	Glossy False Buckthorn		X	X †		FAC	I	X
<i>Phalaris arundinacea</i> FACW	Reed Canary Grass			X		FACW	I	X
<i>Pinus strobus</i>	Eastern White Pine	X †	X †	X		FACU	N	
<i>Prunus serotina</i>	Black Cherry	X				FACU	N	
<i>Quercus velutina</i>	Black Oak	X				UPL	N	
<i>Solidago rugosa</i>	Canada Goldenrod			X		FAC	N	
<i>Solidago canadensis</i>	Goldenrods			X		FACU	N	
<i>Ulmus americana</i>	American Elm	X				FACW	N	
<i>Vaccinium corymbosum</i>	Highbush Blueberry		X			FACW	N	

* This list only contains species that comprise 10% or more of cover.
† Represents plant species dominate within the wetland impact area.

¹ Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. The National Wetland Plant List: 2016 wetland ratings. Phytoneuron 2016-30: 1-17. (Massachusetts List) Published 28 April 2016. ISSN 2153 733X (http://wetland-plants.usace.army.mil/nwpl_static/data/DOC/lists_2016/States/pdf/MA_2016v1.pdf)
OBL: Obligate
FACW: Facultative Wetland
FAC: Facultative
FACU: Facultative Upland
UPL: Upland

²The Vascular Plants of Massachusetts: A County Checklist, The Vascular Plants of Massachusetts A County Checklist, First Revision, 2011. Published by Natural Heritage and Endangered Species Program. 269 pp.
N: Native
I: Introduced

³The Evaluation of Non-Native Plant Species for Invasiveness in Massachusetts (with annotated list).Massachusetts Invasive Plant Advisory Group. 2005. (https://massnrc.org/mipag/docs/MIPAG_FINDINGS_FINAL_042005.pdf)



Photo 1 – Looking east at the Impact Area near Station 725+65. Some live standing vegetation providing a view of open water is visible in this photograph



Photo 2 – A small mammal burrow is present on the southern side of the rail line within the Impact Area near Station 725+65

Impact Area S18 (RFA, BLSF, BVW, LUW, Bank and AURA) in Sudbury, MA

Wildlife Habitat Evaluations Photographs

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Photo 3 – Looking west down the northern bank near Station 725+60. Crane mats will be temporarily placed along the bank and within BVW and LUWW.



Photo 4 – A small mammal burrow is present on the northern side of the rail line within the Impact Area near Station 726+00

Impact Area S18 (RFA, BLSF, BVW, LUW, Bank and AURA) in Sudbury, MA

Wildlife Habitat Evaluations Photographs

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Photo 5 – Looking west down the southern bank near Station 725+60. Crane mats will be temporarily placed along the bank and within BVW and LUWW.

Impact Area S18 (RFA, BLSF, BVW, LUW, Bank and AURA) in Sudbury, MA

Wildlife Habitat Evaluations Photographs

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Wetland Impact Area S19

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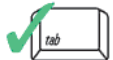
Massachusetts Department of Environmental Protection
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Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important:
When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



Sudbury-Hudson Transmission Reliability Project

Project Name

S19 Impact Area - Sudbury, MA

Location

71,713 sf

10/16/19

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. MWPA RFA**			61,330	61,330
2. Bylaw RFA**			222	222
3. BLSF**			3,576	3,576
4. AURA***			71,713	71,713
5. Bylaw IVW		303		303
6.				
7.				

*Riverfront Area/BLSF **Partially Overlaps ***Completely Overlaps

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

See the attached sheet with the description of the site.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Sudbury, Massachusetts

Project Location (from NOI page 1)

S19 - Station 726+30 to 753+15

Impact Area (number/name)

October 16, 2019

Date(s) of Site Visit(s) and Data Collection

50s, cloudy

Weather Conditions During Site Visit (if snow cover, include depth)

John Vieira and Katie Kinsella

October 18, 2019

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: N/A Upland Area

Subsystem: N/A

Class: N/A

Subclass: N/A

Hydrology/Water Regime

☐ Permanently flooded

☐ Saturated

☐ Intermittently exposed

☐ Temporarily flooded

☐ Semi-permanently flooded

☐ Intermittently flooded

☐ Seasonally flooded

☐ Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))

b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

N/A - Impact Area is mostly railroad track bed / disturbed so neither classification system applies

Community Name

See narrative and attached plant list

Vegetation Description

See narrative

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover: 85.5 63.0 10.5 38.0
Trees (> 20') Shrubs (< 20') Woody vines Mosses Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
<u>See attached plant list</u>	<u></u>	<u></u>	<u></u>
<u></u>	<u></u>	<u></u>	<u></u>
<u></u>	<u></u>	<u></u>	<u></u>
<u></u>	<u></u>	<u></u>	<u></u>
<u></u>	<u></u>	<u></u>	<u></u>

C. Inventory (Soils)

Scarboro MFS, Freetown Muck, Hollis, Charlt

N/A

Soil Survey Unit

Drainage Class

N/A

N/A

Texture (upper part)

Depth

N/A

Depth to Water Table

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

☐ Abundant ☐ Present ☒ Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

☐ Abundant ☒ Present ☐ Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

☐ Present ☒ Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

☐ Present ☒ Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

<u>12</u>	<u>1</u>	<u>0</u>	<u>0</u>
6-12" dbh	12-18" dbh	18-24" dbh	> 24" dbh

Number of Tree Cavities in trunks or limbs of:

8 (most cavities small, 6" or less)

0 6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

0

0 12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

0

0 >18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

☐ Abundant ☐ Present ☒ Absent

Cover/Perches/Basking/Denning/Nesting Habitat

☐ Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

☒ Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

☐ Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

☐ Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

☐ Rock piles, crevices, or hollow logs suitable for:

☐ otter ☐ mink ☐ porcupine ☐ bear ☐ bobcat ☐ turkey vulture

☒ Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

☐ Present ☒ Absent

Standing water present at least part of the growing season, suitable for use by

☐ Breeding amphibians ☐ Non-breeding amphibians (foraging, re-hydration)

☐ Turtles ☐ Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

☐ Present ☒ Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

☐ Present ☒ Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

☐ Present ☒ Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

☐ Present ☒ Absent

Undercut or overhanging banks (small mammals, mink, weasels)

☐ Present ☒ Absent

Vertical sandy banks (bank swallow, kingfisher)

☐ Present ☒ Absent

Areas of ice-free open water in winter

☐ Present ☒ Absent

Mud flats

☐ Present ☒ Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

☐ Present ☒ Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

☐ Present ☒ Absent

Bank swallow colony

☐ Present ☒ Absent

Nest(s) present of

☐ Bald Eagle

☐ Osprey

☐ Great Blue Heron

Den(s) present of

☐ Otter

☐ Mink

☐ Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- ☐ 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- ☐ 200' of Great Blue Heron or osprey nest(s)
- ☐ 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (pied-billed grebe) ☐ Present ☒ Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|---|---------------------|------------------------------|--|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Is the impact area part of a wetland complex at least	2.5 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(turtles, frogs, waterfowl, mammals)	5.0 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	10.0 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	25.0 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
For upland resource areas is the impact area part of contiguous forested habitat at least			
(forest interior nesting birds)	50 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	100 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	250 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	500 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(grassland nesting birds)	> 1.0 acre in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(special habitat such as gallery floodplain forest, alder thicket, etc.)	> 1.0 acre in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

B. Connectivity with adjoining natural habitats

- ☐ No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- ☒ Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- ☐ Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- ☐ Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- ☐ Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- ☐ Evidence of significant chemical contamination
- ☐ Evidence of significant levels of dumping
- ☐ Evidence of significant erosion or sedimentation problems
- ☒ Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- ☐ Disturbance from roads or highways
- ☐ Other human disturbance
- ☐ Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8
Upland /wetland food plants	Scattered	Some areas abundant	See note below
Standing dead trees	12 - 6"-12", 1 - 12"-18"	Some areas abundant	See note below
Woody Veg Offering View	Present Scattered	Some present beyond	See note below
of open water	Apx 29 trees, abundant tall shrubs	impact area	
Large woody debris	Scattered and abundant	Some areas abundant	See note below
Trees with Cavities	8	Some areas abundant	See note below

Vegetation found within Wetland Impact Area*

Impact Area S19
Survey Date: 10/16/2019

Scientific Name ¹	Common Name ¹	Stratum				Wetland Indicator Status ¹	Native or Introduced ²	Invasive ³
		Tree	Sapling-Shrub	Herb	Vine			
<i>Acer rubrum</i>	Red Maple	X†				FAC	N	
<i>Alliaria petiolata</i>	Garlic-Mustard			X		FACU	I	X
<i>Berberis thunbergii</i>	Japanese Barberry		X			FACU	I	X
<i>Betula populifolia</i>	Gray Birch		X			FAC	N	
<i>Carex pensylvanica</i>	Pennsylvania Sedge			X†		UPL	N	
<i>Catalpa speciosa</i>	Northern Catalpa	X				FACU	I	
<i>Celastrus orbiculatus</i>	Asian Bittersweet				X†	UPL	I	X
<i>Dennstaedtia punctilobula</i>	Hay-Scented Fern			X		UPL	N	
<i>Frangula alnus</i>	Glossy False Buckthorn		X†	X†		FAC	I	X
<i>Ilex verticillata</i>	Common Winterberry		X			FACW	N	
<i>Latuca sp.</i>	Wild Lettuce			X		-	N	
<i>Lonicera morrowii</i>	Morrow's Honeysuckle		X			FACU	I	X
<i>Onoclea sensibilis</i>	Sensitive Fern			X		FACW	N	
<i>Pilea pumila</i>	Canada Clearweed			X		FACW	N	
<i>Pinus strobus</i>	Eastern White Pine	X†				FACU	N	
<i>Populus tremuloides</i>	Quaking Aspen	X				FAC	N	
<i>Pteridium aquilinum</i>	Northern Braken Fern			X		FACU	N	
<i>Quercus rubra</i>	Northern Red Oak	X				FACU	N	
<i>Quercus velutina</i>	Black Oak	X				UPL	N	
<i>Rosa multiflora</i>	Rambler Rose		X			FACU	I	X
<i>Rubus allegheniensis</i>	Allegheny Blackberry		X			FACU	N	
<i>Solidago rugosa</i>	Wrinkled -Leaf Goldenrod			X		FAC	N	
<i>Solidago canadensis</i>	Canada Goldenrod			X		FACU	N	
<i>Ulmus americana</i>	American Elm	X				FACW	N	
<i>Vitis sp.</i>	Grape				X	-	N	

* This list only contains species that comprise 10% or more of cover.
† Represents plant species dominate within the wetland impact area.

¹ Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. The National Wetland Plant List: 2016 wetland ratings. Phytoneuron 2016-30: 1-17. (Massachusetts List) Published 28 April 2016. ISSN 2153 733X (http://wetland-plants.usace.army.mil/nwpl_static/data/DOC/lists_2016/States/pdf/MA_2016v1.pdf)
OBL: Obligate
FACW: Facultative Wetland
FAC: Facultative
FACU: Facultative Upland
UPL: Upland

Vegetation found within Wetland Impact Area*

Impact Area S19
Survey Date: 10/16/2019

Scientific Name ¹	Common Name ¹	Stratum				Wetland Indicator Status ¹	Native or Introduced ²	Invasive ³
		Tree	Sapling-Shrub	Herb	Vine			

²The Vascular Plants of Massachusetts: A County Checklist, The Vascular Plants of Massachusetts A County Checklist, First Revision, 2011. Published by Natural Heritage and Endangered Species Program. 269 pp.
N: Native
I: Introduced

³The Evaluation of Non-Native Plant Species for Invasiveness in Massachusetts (with annotated list).Massachusetts Invasive Plant Advisory Group. 2005. (https://massnrc.org/mipag/docs/MIPAG_FINDINGS_FINAL_042005.pdf)



Photo 1 - Looking east down the Impact Area near Station 729+50



Photo 2 – Small mammal burrow within the Impact Area near Station 729+80

**Impact Area S19 (RFA, AURA, and BLSF) in
Sudbury, MA**

Wildlife Habitat Evaluations Photographs

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Photo 3 – Large woody debris on the ground within the Impact Area near Station 740+20



Photo 4 – Looking west down the Impact Area near Station 747+50

**Impact Area S19 (RFA, AURA, and BLSF) in
Sudbury, MA**

Wildlife Habitat Evaluations Photographs

EVERSOURCE
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Photo 5 – View of commercial property to the north the Impact Area near Station 752+60



Photo 6 – Looking west at the eastern end of the Impact Area near Station 753+15

**Impact Area S19 (RFA, AURA, and BLSF) in
Sudbury, MA**

Wildlife Habitat Evaluations Photographs

EVERSOURCE
ENERGY

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Wetland Impact Area S20

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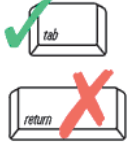
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Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important:
When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



Sudbury-Hudson Transmission Reliability Project

Project Name

Sudbury, Stow, Marlborough, Hudson

Location

16,668 square feet

6/23/19

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Bylaw AURA			16,668	16,668
2. BVW		286		286
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

See impact area description in attached narrative

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Sudbury, Massachusetts

Project Location (from NOI page 1)

S20 - AURA and BVW Impact Area from approximately Station 760+60 to 766+45

Impact Area (number/name)

June 23, 2019

Date(s) of Site Visit(s) and Data Collection

80's and mostly sunny

Weather Conditions During Site Visit (if snow cover, include depth)

John Vieira and Katie Kinsella

June 25, 2019

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System:	<u>P - Palustrine</u>	Subsystem:	<u>None</u>
Class:	<u>SS - Scrub Shrub</u>	Subclass:	<u>1 - Broad-leaved Deciduous</u>

Hydrology/Water Regime

- | | |
|--|---|
| <input type="checkbox"/> Permanently flooded | <input type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input checked="" type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

N/A - Impact Area is mostly railroad track bed/disturbed so neither upland classification system applies

Community Name

See narrative and attached plant list

Vegetation Description

See narrative

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover:	62.5	37.5	0	0	97.5
	Trees (> 20')	Shrubs (< 20')	Woody vines	Mosses	Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Vegetation list attached			

C. Inventory (Soils)

Windsor loamy sand/Udorthents urban land complex

Soil Survey Unit	Drainage Class
Texture (upper part)	Depth
Depth to Water Table	

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

☐ Abundant ☐ Present ☒ Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

☐ Abundant ☒ Present ☐ Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

☐ Present ☒ Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

☐ Present ☒ Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

<u>4</u>	<u>0</u>	<u>0</u>	<u>0</u>
6-12" dbh	12-18" dbh	18-24" dbh	> 24" dbh

Number of Tree Cavities in trunks or limbs of:

<u>0</u>
6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)
<u>0</u>
12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)
<u>0</u>
>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

☐ Abundant ☐ Present ☒ Absent

Cover/Perches/Basking/Denning/Nesting Habitat

☒ Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

☒ Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

☐ Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

☐ Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

☐ Rock piles, crevices, or hollow logs suitable for:

☐ otter ☐ mink ☐ porcupine ☐ bear ☐ bobcat ☐ turkey vulture

☐ Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

☐ Present ☒ Absent

Standing water present at least part of the growing season, suitable for use by

☐ Breeding amphibians ☒ Non-breeding amphibians (foraging, re-hydration)

☐ Turtles ☐ Foraging waterfowl

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

☐ Present ☒ Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

☐ Present ☒ Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

☐ Present ☒ Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

☐ Present ☒ Absent

Undercut or overhanging banks (small mammals, mink, weasels)

☐ Present ☒ Absent

Vertical sandy banks (bank swallow, kingfisher)

☐ Present ☒ Absent

Areas of ice-free open water in winter

☐ Present ☒ Absent

Mud flats

☐ Present ☒ Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

☐ Present ☒ Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

☐ Present ☒ Absent

Bank swallow colony

☐ Present ☒ Absent

Nest(s) present of

☐ Bald Eagle

☐ Osprey

☐ Great Blue Heron

Den(s) present of

☐ Otter

☐ Mink

☐ Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- ☐ 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- ☐ 200' of Great Blue Heron or osprey nest(s)
- ☐ 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (pied-billed grebe) ☐ Present ☒ Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|---|---------------------|------------------------------|--|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Is the impact area part of a wetland complex at least	2.5 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(turtles, frogs, waterfowl, mammals)	5.0 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	10.0 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	25.0 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
For upland resource areas is the impact area part of contiguous forested habitat at least			
(forest interior nesting birds)	50 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	100 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	250 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	500 acres in size?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
(grassland nesting birds)	> 1.0 acre in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(special habitat such as gallery floodplain forest, alder thicket, etc.)	> 1.0 acre in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

B. Connectivity with adjoining natural habitats

- ☐ No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- ☒ Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- ☐ Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- ☐ Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- ☐ Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- ☐ Evidence of significant chemical contamination
- ☐ Evidence of significant levels of dumping
- ☐ Evidence of significant erosion or sedimentation problems
- ☒ Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- ☒ Disturbance from roads or highways
- ☒ Other human disturbance
- ☐ Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8
Dense herbaceous veg	Approximately 50 SF	Greater than Impact Area	See note below
Large woody/coarse debris	Scattered	Scattered	See note below
Dead standing trees	4	Greater than Impact Area	See note below
Upland food plants	Scattered	Greater than Impact Area	See note below

Vegetation found within Wetland Impact Area*

Impact Area S20
Survey Date: 6/23/2019

Scientific Name ¹	Common Name ¹	Stratum				Wetland Indicator Status ¹	Native or Introduced ²	Invasive ³
		Tree	Sapling-Shrub	Herb	Vine			
<i>Alliaria petiolata</i>	Garlic-Mustard			X		FACU	I	X
<i>Betula populifolia</i>	Gray Birch	X				FAC	N	
<i>Celastrus orbiculatus</i>	Asian Bittersweet				X †	UPL	I	X
<i>Euthamia graminifolia</i>	Grass-Leaved Goldenrod			X		FAC	N	
<i>Frangula alnus</i>	Glossy False Buckthorn		X †	X †		FAC	I	X
<i>Fraxinus americana</i>	White Ash	X				FACU	N	
<i>Lonicera morrowii</i>	Morrow's Honeysuckle			X+		FACU	I	X
<i>Parthenocissus quinquefolia</i>	Virginia Creeper				X	FACU	N	
<i>Pinus strobus</i>	Eastern White Pine	X				FACU	N	
<i>Quercus rubra</i>	Northern Red Oak	X †				FACU	N	
<i>Rosa multiflora</i>	Rambler Rose		X	X		FACU	I	X
<i>Rubus allegheniensis</i>	Allegheny Blackberry		X			FACU	N	
<i>Solidago rugosa</i>	Wringled -Leaf Goldenrod			X		FAC	N	
<i>Toxicodendron radicans</i>	Eastern Poison Ivy			X		FAC	N	
<i>Vitis sp.</i>	Grape				X	-	N	

* This list only contains species that comprise 10% or more of cover.
† Represents plant species dominate within the wetland impact area.

¹ Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. The National Wetland Plant List: 2016 wetland ratings. Phytoneuron 2016-30: 1-17. (Massachusetts List) Published 28 April 2016. ISSN 2153 733X (http://wetland-plants.usace.army.mil/nwpl_static/data/DOC/lists_2016/States/pdf/MA_2016v1.pdf)

OBL: Obligate
FACW: Facultative Wetland
FAC: Facultative
FACU: Facultative Upland
UPL: Upland

²The Vascular Plants of Massachusetts: A County Checklist, The Vascular Plants of Massachusetts A County Checklist, First Revision, 2011. Published by Natural Heritage and Endangered Species Program. 269 pp.
N: Native
I: Introduced

³The Evaluation of Non-Native Plant Species for Invasiveness in Massachusetts (with annotated list).Massachusetts Invasive Plant Advisory Group. 2005. (https://massnrc.org/mipag/docs/MIPAG_FINDINGS_FINAL_042005.pdf)



Photo 1 - Looking west down the ROW at the eastern end of the Impact Area near Station 766+50



Photo 2 – Representative picture of a snag within the Impact Area near Station 765+20


	<p><u>Impact Area S20 (AURA and BVW) in Sudbury, MA</u></p> <p>Wildlife Habitat Evaluations Photographs</p>	<p>EVERSOURCE ENERGY</p> <p> vhb</p>
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Photo 3 – BVW with standing water at the time of the evaluation that is within the Impact Area near Station 764+60



Photo 4 – Minimal large woody debris on the ground inside the Impact Area near Station 765+10


	<p><u>Impact Area S20 (AURA and BVW) in Sudbury, MA</u></p> <p>Wildlife Habitat Evaluations Photographs</p>	<p>EVERSOURCE ENERGY</p> <p> vhb</p>
--	---	---



Photo 5 – Looking west at dense herbaceous woody vegetation inside the Impact Area near Station 761+00



Photo 6 – Looking at refuse/a disposed tire within the Impact Area near Station 762+50

Impact Area S20 (AURA and BVW) in Sudbury, MA

Wildlife Habitat Evaluations Photographs

EVERSOURCE
ENERGY



Wetland Impact Area S21

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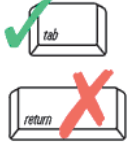
Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important:
When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



Sudbury-Hudson Transmission Reliability Project

Project Name

S21 Impact Area - Sudbury, MA

Location

172 square feet

6/23/19

Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Bylaw AURA			172	172
2.				
3.				
4.				
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

See impact area description in attached narrative

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Typed or Printed Name



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

Sudbury, Massachusetts

Project Location (from NOI page 1)

S21 Sta 767+00

Impact Area (number/name)

6/23/19

Date(s) of Site Visit(s) and Data Collection

Mostly sunny, 80s

Weather Conditions During Site Visit (if snow cover, include depth)

John Vieira and Katie Kinsella

6/25/19

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System:	N/A Upland Area	Subsystem:	N/A
Class:	N/A	Subclass:	N/A

Hydrology/Water Regime

- | | |
|---|---|
| <input type="checkbox"/> Permanently flooded | <input type="checkbox"/> Saturated |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Intermittently flooded |
| <input type="checkbox"/> Seasonally flooded | <input type="checkbox"/> Artificially flooded |

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following.

Use a terrestrial classification system such as one of the two listed below:

- "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. ([Department of Fish & Game Website](#))
- "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

N/A - Impact Area is mostly railroad track bed / disturbed so neither classification system applies

Community Name

See narrative and attached plant list

Vegetation Description

See narrative

Physical Description



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover:	63.0	85.5	10.5		38.0
	Trees (> 20')	Shrubs (< 20')	Woody vines	Mosses	Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
See attached plant list			

C. Inventory (Soils)

Mapped as Udorthents

N/A

Soil Survey Unit

Drainage Class

N/A

N/A

Texture (upper part)

Depth

N/A

Depth to Water Table

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

☐ Abundant ☐ Present ☒ Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

☐ Abundant ☒ Present ☐ Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

☐ Present ☒ Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

☐ Present ☒ Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
6-12" dbh	12-18" dbh	18-24" dbh	> 24" dbh

Number of Tree Cavities in trunks or limbs of:

<u>0</u>
6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)
<u>0</u>
12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)
<u>0</u>
>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

☐ Abundant ☐ Present ☒ Absent

Cover/Perches/Basking/Denning/Nesting Habitat

- ☐ Dense herbaceous cover (voles, small mammals, amphibians & reptiles)
- ☐ Large woody debris on the ground (small mammals, mink, amphibians & reptiles)
- ☐ Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)
- ☐ Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)
- ☐ Rock piles, crevices, or hollow logs suitable for:
- | | | | | | |
|--------------------------------|-------------------------------|------------------------------------|-------------------------------|---------------------------------|---|
| <input type="checkbox"/> otter | <input type="checkbox"/> mink | <input type="checkbox"/> porcupine | <input type="checkbox"/> bear | <input type="checkbox"/> bobcat | <input type="checkbox"/> turkey vulture |
|--------------------------------|-------------------------------|------------------------------------|-------------------------------|---------------------------------|---|
- ☐ Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

☐ Present ☒ Absent

Standing water present at least part of the growing season, suitable for use by

- | | |
|--|---|
| <input type="checkbox"/> Breeding amphibians | <input type="checkbox"/> Non-breeding amphibians (foraging, re-hydration) |
| <input type="checkbox"/> Turtles | <input type="checkbox"/> Foraging waterfowl |

Sphagnum hummocks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

☐ Present ☒ Absent



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

☐ Present ☐ Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

☐ Present ☐ Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

☐ Present ☐ Absent

Undercut or overhanging banks (small mammals, mink, weasels)

☐ Present ☐ Absent

Vertical sandy banks (bank swallow, kingfisher)

☐ Present ☐ Absent

Areas of ice-free open water in winter

☐ Present ☐ Absent

Mud flats

☐ Present ☐ Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

☐ Present ☐ Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

☐ Present ☐ Absent

Bank swallow colony

☐ Present ☐ Absent

Nest(s) present of

☐ Bald Eagle

☐ Osprey

☐ Great Blue Heron

Den(s) present of

☐ Otter

☐ Mink

☐ Beaver



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

- ☐ 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- ☐ 200' of Great Blue Heron or osprey nest(s)
- ☐ 1400' of a Bald Eagle nest¹

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (pied-billed grebe) ☐ Present ☒ Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

Fine-leaved emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm ☐ Present ☒ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☒ Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

- | | | | |
|---|---------------------|------------------------------|--|
| Is the impact area part of an emergent marsh at least | 1.0 acre in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| (marsh and waterbirds) | 2.0 acres in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| | 5.0 acres in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| | 10.0 acres in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |

¹ 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Is the impact area part of a wetland complex at least	2.5 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(turtles, frogs, waterfowl, mammals)	5.0 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	10.0 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	25.0 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
For upland resource areas is the impact area part of contiguous forested habitat at least			
(forest interior nesting birds)	50 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	100 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	250 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	500 acres in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(grassland nesting birds)	> 1.0 acre in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(special habitat such as gallery floodplain forest, alder thicket, etc.)	> 1.0 acre in size?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

B. Connectivity with adjoining natural habitats

- ☐ No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- ☒ Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- ☐ Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- ☐ Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- ☐ Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- ☐ Evidence of significant chemical contamination
- ☐ Evidence of significant levels of dumping
- ☐ Evidence of significant erosion or sedimentation problems
- ☒ Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- ☐ Disturbance from roads or highways
- ☒ Other human disturbance
- ☐ Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.



Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12" dbh	4	12	8
Upland food plants	Scattered	Some areas abundant	See note below

Vegetation found within Wetland Impact Area*

Impact Area S21
Survey Date: 6/23/19

Scientific Name ¹	Common Name ¹	Stratum				Wetland Indicator Status ¹	Native or Introduced ²	Invasive ³
		Tree	Sapling-Shrub	Herb	Vine			
<i>Catalpa speciosa</i>	Northern Catalpa		X			FACU	I	
<i>Celastrus orbiculatus</i>	Asian Bittersweet				X †	UPL	I	X
<i>Circaea lutetiana</i>	Broadleaf Enchanter's Nightshade			X		NL	N	
<i>Frangula alnus</i>	Glossy False Buckthorn		X †			FAC	I	X
<i>Lonicera morrowii</i>	Morrow's Honeysuckle		X †			FACU	I	X
<i>Rosa multiflora</i>	Rambler Rose		X			FACU	I	X
<i>Rubus hispidus</i>	Bristly Blackberry				X	FACW	N	
<i>Solidago canadensis</i>	Canada Goldenrod			X		FACU	N	
<i>Toxicodendron radicans</i>	Eastern Poison Ivy			X		FAC	N	
<i>Vitis sp.</i>	Grape			X		FACU	N	

* This list only contains species that comprise 10% or more of cover.
† Represents plant species dominate within the wetland impact area.

¹ Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. The National Wetland Plant List: 2016 wetland ratings. Phytoneuron 2016-30: 1-17. (Massachusetts List) Published 28 April 2016. ISSN 2153 733X (http://wetland-plants.usace.army.mil/nwpl_static/data/DOC/lists_2016/States/pdf/MA_2016v1.pdf)

OBL: Obligate
FACW: Facultative Wetland
FAC: Facultative
FACU: Facultative Upland
UPL: Upland

²The Vascular Plants of Massachusetts: A County Checklist, The Vascular Plants of Massachusetts A County Checklist, First Revision, 2011. Published by Natural Heritage and Endangered Species Program. 269 pp.

N: Native
I: Introduced


³The Evaluation of Non-Native Plant Species for Invasiveness in Massachusetts (with annotated list).Massachusetts Invasive Plant Advisory Group. 2005. (https://massnrc.org/mipag/docs/MIPAG_FINDINGS_FINAL_042005.pdf)



Photo 1 - Looking across the Substation access road at the Impact Area near Station 767+20



Photo 2 – Looking at gravel and garbage within the western edge of the Impact Area near Station 767+40

	<p><u>Impact Area S21 (AURA) in Sudbury, MA</u></p> <p>Wildlife Habitat Evaluations Photographs</p>	<p>EVERSOURCE ENERGY</p> <p></p>
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Attachment C - Resumes

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John Vieira Jr., PWS, NHCWS

Senior Project Manager/Senior Ecologist

Mr. Vieira is a senior scientist and project manager with more than 39 years of experience who joined VHB/Vanasse Hangen Brustlin, Inc., in February 2009. His experience includes wetland ecology, conservation biology, natural resource planning, impact statement preparation, and environmental regulatory analysis. He has worked both in the public and private sectors. In the public sector, he worked as a biologist with the US Army Corps of Engineers managing ecological field studies on federal flood control projects throughout New England. In the private sector, he has worked for a variety of clients throughout the Northeast designing and implementing scientific investigations. Special areas of expertise include wetland delineation and functional assessment, wildlife habitat evaluation, rare species surveys, vegetation community mapping, vernal pool identification, and reptile and amphibian ecology. Environmental permitting experience includes the full range of federal, state, and local environmental regulations. This includes projects involving the Federal Energy Regulatory Commission, the US Army Corps of Engineers (USACE), the US Environmental Protection Agency (EPA), and a variety of state and local regulatory agencies.

A representative sample of Mr. Vieira's experience includes the following:

Eversource / Sudbury to Hudson

Mr. Vieira acts as senior scientist for the project and has been involved with many aspects of this complicated and contentious project. He has been responsible for managing and leading numerous field studies that included mapping wetlands, mapping and documenting vernal pools (over 3 years), completing wildlife habitat studies, and completing comprehensive rare turtle telemetry studies. As part of his responsibilities he regularly contributed to various permitting efforts that include submissions to the Energy Facility Siting Board (EFSB), Local Conservation Commissions (Sudbury, Hudson, and Stow), the Massachusetts Environmental Policy Act (MEPA), and the Natural Heritage and Endangered Species Program (NHESP). During the EFSB evidentiary hearings, John provided guidance to Eversource witnesses on technical and regulatory matters. He was also instrumental in regularly coordinating rare species studies with NHESP and obtaining a "no-take" determination from that agency. Presently he continues to track and monitor the presence of rare reptile species on and adjacent to Project site using radio telemetry techniques.

National Grid / Scobie to Tewksbury

John acted as Project Manager for the project. His responsibilities included managing and leading wetland delineation and wildlife habitat and rare species field studies along the Project in Massachusetts and New Hampshire. He also contributed to EFSB, MEPA, Massachusetts Endangered Species Act (MESA), and Local Conservation (Tewksbury, Andover, and Dracut) permitting efforts. John was also responsible for regularly providing environmental training to Project contractors and managing a team of environmental monitors.

Mr. Vieira is wetland scientist and senior project manager/ecologist with more than 39 years of experience. His experience includes facility siting, planning, permit work, and compliance inspection services for a wide variety of energy, land development, and transportation clients.

Eversource / Line 125 Realignment

Mr. Vieira was the lead ecologist for the project and was responsible for managing and leading numerous field studies to identify and map a variety of rare plant and animal species on the Project right-of-way (ROW) in Orleans, Eastham, and Wellfleet, Massachusetts. His expertise with rare species and excellent working relationship with NHESP allowed for smooth coordination with that agency allowing the Project to move forward without extensive permitting. He also worked to develop site-specific constraint mapping for on-site use by Project contractors. To further ensure smooth completion of the Project, John provided regular "rare species" training to contractors and worked with on-site environmental monitors overseeing the project. He was also responsible for implementing and completing wetland field studies that delineated and mapped freshwater and coastal wetlands on the Project site.

National Grid / East Main Street Substation Expansion & Supply Line Project

John was Project Manager for implementing environmental field studies and permitting of a substation expansion and new 0.3-mile, 115 kV electric transmission line project in Westborough, Massachusetts. Key environmental reviews and permits for the project included a MEPA Environmental Notification Form, wetland permits subject to the Massachusetts Wetland Protection Act (MWPA) from the Westborough Conservation Commission, Federal Clean Water Act individual permits (Sections 401 and 404) from the USACE and Massachusetts Department of Environmental Protection (MassDEP), Massachusetts Department of Public Utilities (DPU) Section 72 Certificate, and EPA Construction General Permit. Responsibilities also included public hearing presentations, expert witness testimony, wetland mitigation negotiations, preparation of the project Storm Water Pollution Prevention Plan (SWPPP), and management of environmental permit compliance inspections during active construction.

National Grid / Z126 115 kV Transmission Line and A127/B128 Reconductoring

John was Project Manager for implementing environmental field studies, wildlife habitat evaluations, and permitting of a new 7-mile, 115 kV electric transmission line project in Millbury, Auburn, Leicester, and Worcester, Massachusetts. Key environmental reviews and permits for the project included a MEPA Environmental Notification Form and Environmental Impact Report, wetland permits subject to the MWPA from the Auburn and Millbury Conservation Commissions, Federal Clean Water Act individual permits (Sections 401 and 404) from the USACE and MassDEP, Massachusetts DPU Section 72 Certificate, and EPA Construction General Permit. Responsibilities also included public hearing presentations, expert witness testimony, wetland mitigation negotiations, preparation of the project SWPPP, and management of environmental permit compliance inspections during active construction.

National Grid / A127/B128 and Webster Street Tap 115 kV Reconductoring Project

John was Project Manager for implementing field studies and permitting for a 9-mile, 115 kV electric transmission line project located in Millbury, Auburn, Leicester, and Worcester, Massachusetts. Key environmental reviews and permits for the project included individual wetland permits subject to the Federal Clean Water Act (Sections 401 and 404) from the USACE and MassDEP and EPA Construction General Permit. Responsibilities also included public hearing presentations, preparation of the project SWPPP, and management of environmental permit compliance inspections during active construction.

NSTAR / ROW 13 Tree Clearing Project

Mr. Vieira was the Project Manager responsible for permitting and implementing field studies for NSTAR's ROW 13 Tree Clearing Project located in Uxbridge, Mendon, and Bellingham, Massachusetts. Work associated with this project occurred within mapped habitats of 4 NHESP listed species that include eastern box turtle (*Terrapene carolina*), wood turtle (*Glyptemys insculpta*), marbled salamander (*Ambystoma opacum*), and American brook lamprey (*Lamptera appendix*). NHESP determined the project would result in a "take" of eastern box turtle requiring a Conservation and Management Permit (CMP) and MEPA review. Mr. Vieira identified a marble salamander breeding pool, completed habitat evaluations for each of the listed species and obtained a CMP. One condition of the CMP required capture and telemetric tracking of eastern box turtle (wood turtle subsequently included) and determination of hibernacula prior to work activities during the winter of 2014. Upon completion of this project 18 eastern box turtles and 6 wood turtles were successfully recaptured and transmitters removed.

Massachusetts Municipal Wholesale Electric Company

Mr. Vieira assisted MMWEC in identifying a site for a new electric generating plant on their Stony Brook Facility in Ludlow, Massachusetts. Specific concerns on the site included vernal pool and wetland impacts and the known occurrence of two state-protected species, blue-spotted salamander (*Ambystoma laterale*) and climbing fern (*Lygodium palmatum*). Responsibilities included the design and implementation of surveys for protected species including a trapping program for blue-spotted salamanders, wetland delineation, vegetation community mapping, development of mitigation strategies, permitting and expert testimony before the EFSB.

National Grid / New England East-West Solutions (NEEWS) Project

Mr. Vieira was responsible for coordinating and implementing ongoing protected species studies and coordinating project review with MA NHESP for a 15.2-mile, 345-kv electric transmission line project in Millbury, Massachusetts, and West Farnum (North Smithfield), Rhode Island. As part of these responsibilities he also participated in preliminary surveys for two MA-protected plant species, papillose

nut-sedge (*Scleria pauciflora*) and tall nut sedge (*Scleria triglomerata*), and completed a habitat assessment for wood turtle (*Glyptemys insculpta*).

Noble Environmental Energy / Wethersfield Windpark, 230 kV Transmission Line Project

Mr. Vieira was responsible for managing and implementing environmental field studies for a 5.5-mile, 230 kV electric transmission line in Wethersfield and Orangeville, New York, for Noble's 84-turbine, 126 MW Windpark. Field studies included identification of project route alternatives, wetland delineation, vernal pool identification, rare species surveys for vernal pool-dependent species such as Jefferson salamander (*Ambystoma jeffersonianum*), and identification and mapping of ROW access roads. Mr. Vieira was also responsible for developing NY Public Service Commission (PSC) application documents for the facility under Article VII of the New York State Public Service Law and USACE section 404 permit process. Mr. Vieira was also responsible for providing expert testimony during the PSC evidentiary hearings and developed a mitigation strategy to offset potential impacts to Jefferson salamander and vernal pool habitat, and developed a long term vegetation management plan and major elements of the Environmental Management and Construction Plan (EM&CP) for the project.

DCR / Myles Standish State Forest, Trails and Resource Management Plan and Natural Resource Inventory

Mr. Vieira was the Project manager for the development of a Trails and Resource Management Plan for Myles Standish State Forest. Responsibilities included research of existing natural resource information to identify information and site data gaps; implementation of field surveys to map vegetation communities, identify vernal pools, and locate rare species and their habitats; development of a zoning map designed to identify and protect sensitive habitats; and development of Trails and Resource Management Plan that also provided recommendations for changes to the existing trail network in the forest.

Block Island Airport Master Plan Revision Project

Mr. Vieira acted as Project Manager assisting the airport engineer in updating the airport master plan and developing the Environmental Assessment for the plan. Responsibilities included identification and assessment of wetlands and natural plant communities, sensitive habitats including globally ranked morainal grasslands, and rare species habitat at the Airport. Rare species of concern at the airport included New England blazing star (*Liatris scariosa* var. *novae-angliae*) and the federally endangered American burying beetle (*Nicrophorus americanus*). Other responsibilities included discussions and consultations with the local environmental groups, attendance of Technical Advisory Committee meetings, and assessment of potential impacts.

Nantucket Memorial Airport Improvement Project

Mr. Vieira was responsible for the coordination and implementation of rare species surveys. Rare species included sandplain flax (*Linum intercursum*), lion's foot (*Nabalus serpentarius*), sandplain blue-eyed grass (*Sisyrinchium fuscatum*), Nantucket shadbush (*Amelanchier nantucketensis*), purple needlegrass (*Aristida purpurascens*), broom crowberry (*Corema conradii*), and bushy rockrose (*Crocanthemum dumosum*). He also developed a vegetation community map for the airport and prepared a Rare Species Conservation Permit Application for rare species impacts potentially caused by proposed airport improvements.

Barnstable County Jail and House of Correction

Mr. Vieira prepared sections in the Draft and Final Environmental Impact Reports for a new County Jail and House of Corrections on the Massachusetts Military Reservation. Rare species of concern included eastern box turtle and several moth species endemic to pine barren communities. As part of the Environmental Impact Reports, Mr. Vieira developed a conservation plan to offset potential impacts to eastern box turtle (*Terrapene carolina*). In support of the Environmental Impact Reports Mr. Vieira conducted on-site field studies to locate eastern box turtle and to characterize site vegetation for potential suitability for rare moth species.

Swansea Desalination Project

Mr. Vieira was responsible for wetland delineation and the development and implementation of a rare plant survey designed to locate the presence of 5 state-protected freshwater tidal plant species. These species included Long's bitter-cress (*Cardamine longii*), river arrowhead (*Sagittaria subulata*), salt reedgrass (*Spartina cynosuroides*), and pygmyweed (*Tillaea aquatica*). Based on a report that Mr. Vieira developed describing rare plant survey results, NHESP determined that the project would not result in a "take" of rare plant species.

Williams College

Mr. Vieira was the Project Manager responsible for designing and implementing rare plant surveys on two sites where Williams College planned construction activities. Rare plants that were searched for and located included hairy-fruited sedge (*Carex trichocarpa*) and crooked-stem aster (*Symphyotrichum prenanthoide*). Mr. Vieira prepared reports describing survey results documenting the location of rare plant species for submission to NHESP.

Worcester County Horticultural Society

Mr. Vieira was the Project Manager for the development of a half-acre wildlife pond at the Tower Hill Botanic Garden. He had many responsibilities, including regulatory reconnaissance, wetland delineation, project feasibility evaluation, and environmental permitting. As part of this project Mr. Vieira completed a survey for adder's-tongue fern (*Ophioglossum pusillum*) and helped to resolve a project conflict caused by inaccuracies in NHESP's Priority Habitat map of the project site.

**Former
Employment**

BSC, Worcester, MA
Epsilon Associates, Maynard, MA
Earth Tech, Concord, MA
Associated Environmental Scientists, West Springfield, MA
US Army Corps of Engineers, Water Quality Laboratory, Hubbardston, MA

Education

Graduate Studies, Wildlife Biology and Landscape Architecture, University of
Massachusetts
BS, Biology, University of Massachusetts, Dartmouth

Affiliations

Conservation Commission, Princeton, MA
Society of Wetland Scientists
Association of Massachusetts Wetland Scientists (Charter Member)
New Hampshire Association of Natural Resource Scientists

**Registrations
and
Certifications**

New Hampshire Certified Wetland Scientist, NH Joint Board of Licensure and
Certification, 2000, NHCWS 143
Professional Wetland Scientist, Society of Wetland Scientists, 1995, PWS 000858
Certified in Habitat Evaluation Procedures (HEP), U.S. Fish and Wildlife Service, 1984

Katie Kinsella

Senior Environmental Scientist

Education

MS, Resource Management
and Conservation, Antioch
University New England,
2016

BS, Environmental Studies,
Stockton University, 2004

Registrations/Certifications

Professional Wetland
Scientist (reg. #2477)

Affiliations/Memberships

Association of State Wetland
Managers

New Hampshire Association
of Natural Resource Scientists

Katie is a Senior Environmental Scientist working in the Massachusetts Energy Group. She is a professional wetland scientist and has experience with wetlands delineation, mitigation, and permitting; rare, threatened and endangered species habitat evaluations and directed species surveys; and environmental permitting and evaluation on the state and federal level. She is also experienced in GPS and GIS and integrates both into projects for data collection and analysis.

14 years of professional experience

Employment History

- VHB, Senior Environmental Scientist, 2017-Present
- Sovereign Consulting, Inc, Senior Environmental Scientist/Project Manager, 2013-2017
- T&M Associates, Senior Environmental Scientist / Task Manager, 2010-2013
- Michael Baker Jr. Corp., Environmental Scientist, 2010
- Trident Environmental Consultants, Senior Environmental Scientist/Biologist/Project Manager, 2004-2010

Grawtown Road Bridge Replacement, Ocean County, New Jersey

As Supervisory Environmental Scientist, Katie identified all environmental constraints and conducted a rare, threatened, and endangered species habitat. She worked with both NJDEP and Pinelands Commission to prepare, submit and receive all required permit authorizations. This work was performed prior to joining VHB. (2016-2017)

Commercial Development, New Jersey

As Project Manager and Supervisory Environmental Scientist, Katie provided lead and backup support for threatened and endangered species surveys performed on an approximately 1,200-acre site in New Jersey. The project involved coordination with the U.S. Fish and Wildlife Service (USFWS), Pinelands Commission, and New Jersey Endangered and Nongame Species Program. Katie was responsible for preparing and submitting all survey protocols and reports to the applicable agencies, as well as obtaining all necessary scientific collecting permits. In addition, she performed the initial habitat assessment to identify the targeted species and performed subsequent field surveys for various species. This work was performed prior to joining VHB. (2007-2009)

Habitat Surveys, Commercial Development, Pennsylvania

As Project Manager and Supervisory Environmental Scientist, Katie provided lead and backup support for Indiana bat (*Myotis sodalis*) and bog turtle (*Glyptemys muhlenbergii*) surveys performed on an approximately 280-acre former vacation property in Pennsylvania. The project involved coordination with the U.S. Fish and Wildlife Service (USFWS), Pennsylvania Game Commission, and the Pennsylvania Fish and Boat Commission. Katie was responsible for preparing and submitting all survey protocols and final survey reports to the applicable agencies, as well as obtaining the necessary scientific collecting permits. In addition, she performed field survey for various species and collected habitat data and detailed inventory lists for the site. This work was performed prior to joining VHB. (2009)

Hurricane Irene Emergency Repairs, Union County, NJ

As Task Manager and Supervisory Environmental Scientist, Katie delineated the extent of freshwater wetlands, riparian corridors, and waterways in an area surrounding a stream where a roadway and bridge had failed due to flooding from Hurricane Irene. The stream had undermined and scoured the roadway, and it had eroded the footings of the bridge causing it to become structurally unsound and lose its bearing capacity. Katie coordinated detailed information with the NJDEP to obtain emergency permit authorizations to allow for the immediate stabilization and repair of the roadway and bridge, which included placing grout beneath the footings to restore load bearing capacity. This prevented further damage and collapse of the roadway and allowed vehicles to utilize the structure. Katie also prepared and submitted follow-up permit applications and planting plans to restore and stabilize the area from future erosion and scouring. This work was performed prior to joining VHB. (2011)

Indiana Bat Survey for a Proposed Runway Expansion at a County Airport

As Environmental Scientist, Katie provided threatened and endangered species support by conducting mist net surveys with areas surrounding a proposed runway expansion and sight line clearing for a county airport. The project was successful in capturing, identifying, and banding an Indiana Bat. This work was performed prior to joining VHB. (2009)

Large-Scale Improvements to a County College, New Jersey

As Task Manager and Supervisory Environmental Scientist, Katie evaluated environmental impacts and regulatory requirements associated with large-scale improvements to a county college in New Jersey. Various permit applications and supplemental documents including a Freshwater Wetlands Individual Permit, Flood Hazard Individual Permit, Functional Value Analysis for Impacts to A Special Water Resource Protection Area Buffer, alternative analysis, and a mitigation proposal were submitted to the NJDEP. This work was performed prior to joining VHB. (2010-2013)

Large-Scale Wind Turbine Development, Carbon County, PA

As Task Manager and Supervisory Environmental Scientist, Katie delineated the extent of freshwater wetlands, riparian corridors, and waterways on an approximately 4,500-acre site in support of a large-scale wind turbine development on a mountain in Pennsylvania. In addition to being the sole delineator, Katie trained interns and junior staff while on site, coordinated with subconsultants for various services, reviewed and provided guidance to design engineers, consulted with regulatory agencies, and prepared permit documentation. This work was performed prior to joining VHB. (2012)

Master Service Agreement, Utility Company, MD, DE, PA, VA and NJ

Katie served as Project Manager and Senior Environmental Scientist in support of a Master Service Agreement for a major utility company throughout New Jersey, Delaware, Maryland, Pennsylvania, and Virginia. Her responsibilities included developing proposals, delineating wetlands, supervising junior staff, coordinating subconsultant work, agency consultation, and submitting and preparing various permit applications to regulatory agencies. This work was performed prior to joining VHB. (2013-2017)

New Truck Bypass Construction, Middlesex County, NJ

As Task Manager and Supervisory Environmental Scientist Katie delineated the extent of freshwater wetlands, riparian corridors, and waterways for a new truck bypass through environmentally sensitive habitat. She worked closely with design engineers and

provided direction and support to ensure that the project remained in compliance with various regulations. Permit applications were prepared and submitted to NJDEP for approval. The truck bypass route was a plan that the municipality had in place since 1981 and had various consultants working on it but failed to obtain approvals due to the complexity of the project and level of environmentally sensitive habitat. The project was approved and will divert heavy traffic from an industrial area onto a major highway to alleviate traffic queuing and safety hazards on local roads. This work was performed prior to joining VHB. (2012-2013)

Superstorm Sandy Restoration and Construction Projects

Prior to joining VHB, as Task Manager and Supervisory Environmental Scientist, Katie led several restoration and emergency construction projects following the coastal destruction in New Jersey that resulted from Superstorm Sandy. (2012-2013) A representative sample includes:

- An evaluation of the beach and dune systems following Superstorm Sandy in a coastal-lying municipality was conducted to identify damage. A borough-wide permit application was submitted to NJDEP to remove debris from the oceanfront, restore the dune system, stabilize the dunes by planting vegetation. Katie also coordinated with the U.S. Fish and Wildlife Service (USFWS) to ensure that the restoration activities would not adversely impact seabeach amaranth (*Amaranthus pumilus*).
- Katie coordinated with the design engineers and NJDEP to facilitate reconstruction of the Point Pleasant Boardwalk.
- Katie prepared various permit applications for several roadways, bulkhead, and pump stations that were destroyed during Superstorm Sandy.
- Katie coordinated all efforts to identify temporary debris management areas for several municipalities in Ocean and Monmouth Counties to secure NJDEP Solid Waste Permits. Permitting efforts included identifying suitable sites outside of environmentally sensitive areas; coordinating with local sheriff offices, municipal officials, engineers, and offices of emergency management; preparation of site mapping; determination of storage capacities; and closing out sites with state and local government agencies.
- Katie coordinated all emergency permitting with NJDEP, U.S. Army Corps of Engineers, National Marine Fisheries Service, and U.S. Fish and Wildlife Service to expedite the complete reconstruction of the Atlantic Highlands Municipal marina. She also coordinated with the design engineers to expedite preparation of construction plans while minimizing environmental impacts and maintaining regulatory compliance.
- Katie prepared several Superstorm Sandy inventory submissions for various municipalities throughout Ocean and Monmouth Counties in accordance with the Administrative Order released by Governor Christie. The Administrative Order allowed government agencies to submit a detailed inventory for in-kind replacement of damaged infrastructure to expedite the approval process and obtain FEMA funding. Katie coordinated with municipalities and NJDEP to submit and expedite the approval process.

Threatened and Endangered Species Surveys for Federally and State Protected Species at a Former Vacation Resort – Resort/Commercial Development, Monroe County, PA

As Environmental Scientist, Katie provided lead and backup support for threatened and endangered species surveys, including the bog turtle (*Glyptemys muhlenbergii*) and Indiana bat (*Myotis sodalis*) throughout an approximately 280-acre former vacation resort. The project involved coordination with the U.S. Fish and Wildlife Service (USFWS), Pennsylvania Game Commission, and the Pennsylvania Fish and Boat Commission. Katie was responsible for preparing and submitting all survey protocols and final survey reports to the applicable agencies, as well as obtaining the necessary scientific collecting permits. In addition, she performed field survey for various species and collected habitat data and detailed inventory lists for the site. This work was performed prior to joining VHB. (2008)

Wetland Delineation, Coordination of Permitting Compliance and Submission of Applications for a Large-Scale Solar Array Development

Katie delineated an approximately 700-acre site for a solar array facility. She identified all environmental constraints and provided consultation support to the design engineers to avoid or minimize environmental impacts. She also prepared and submitted various permit applications to the NJDEP. In addition, Katie coordinated efforts for a Threatened and Endangered Species Habitat Suitability Assessment for various species throughout the project limits. This work was performed prior to joining VHB. (2010-2011)

Professional Development Activities

Wetland Delineation and Jurisdiction in Agricultural Settings, NH Association of Natural Resource Scientists, 2016

Evaluating Wetland Condition Using the Ecological Integrity Assessment Method, NH Natural Heritage Bureau, 2015

Pinelands Short Courses, Pinelands Preservation Alliance, 2015

Bog Turtle Phase I Habitat Assessment Training, Pennsylvania Department of Transportation, 2014

Hydrology of Wetlands, Rutgers Continuing Education Program, 2012

NEPA and Transportation Decision-Making, National Highway Institute, 2012

Regional Supplement Training–Atlantic and Gulf Coastal Plain, U.S. Army Corps of Engineers, 2010

Advanced Wetlands Delineation, Rutgers Continuing Education Program, 2006

Threatened/Endangered Plants of the New Jersey Pineland, Pinelands Preservation Alliance, 2005

Attachment D – Wildlife Habitat Evaluation Tables

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Food Availability

Habitat Impact Area	Wetland / Aquatic Food	Upland / Wetland Food	Earthworm Habitat
1	A	P	A
2	A	P	A
3	A	P	A
4	A	P	A
5	A	P	A
6	A	P	A
7	A	P	A
8	A	P	A
9	A	P	A
10	A	P	A
11	A	P	A
12	A	P	A
13	A	P	A
14	A	P	A
15	A	P	A
16	A	P	A
17	A	P	A
18	A	P	A
19	A	P	A
20	A	P	A
21	A	P	A

Legend:

A = Absent

P = Present

Nests, Perches, Basking, Cover, and Foraging

Habitat Impact Area	Veery Nesting Habitat	Number of Dead/Live Trees Over 30" DBH	Number/ Density of Standing Dead Trees				Number of tree cavities in trunks of limbs			Small Mammal Burrows	Dense Herbaceous Cover	Large Woody Debris on the Ground	Rocks Crevaces Logs Roots and/or Hummocks Under Water	Rocks Crevaces Logs Roots and/or Hummocks 1m Above Water	Rock Piles, Crevaces, Hollow Logs as Dens for*						Live/Dead Standing Vegetation Overhanging Water	Depression with Potential to be Vernal Pools*	Standing Water During Part of Growing Season for Breeding Amphibians	Standing Water During Part of Growing Season for Non-Breeding Amphibian	Standing Water During Part of Growing Season for Turtles	Standing Water During Part of Growing Season for Foraging Waterfowl	Sphagnum Hummocks/Mats and/or Moss Covered Logs Overhanging/Adjacent to Standing Water
			6-12" dbh	12-18" dbh	18-24" dbh	>24" dbh	6-12" dbh	12-18" dbh	>18" dbh						Otter	Mink	Porcupine	Bear	Bobcat	Turkey Vulture							
1	A	0	0	0	0	0	0	0	0	A	P	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
2	A	0	0	0	0	0	0	0	0	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
3	A	0	1	0	0	0	0	0	0	A	A	P	A	A	A	A	A	A	A	A	P	A	A	A	A	A	A
4	A	0	0	0	0	0	0	0	0	A	A	P	A	A	A	A	A	A	A	A	P	A	A	A	A	A	A
5	A	0	8	2	0	0	1	0	0	A	A	P	A	P	A	A	A	A	A	A	P	A	A	A	A	A	A
6	A	0	2	0	0	0	0	0	0	A	A	P	A	P	A	A	A	A	A	A	P	A	A	A	A	A	A
7	A	0	7	0	0	0	0	0	0	A	A	P	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
8	A	0	4	0	0	0	1	0	0	P	P	P	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
9	A	0	3	0	0	0	0	0	0	P	A	P	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
10	A	0	2	0	0	0	1	0	0	P	A	P	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
11	A	0	1	0	0	0	0	0	0	A	P	P	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
12	A	0	0	0	0	0	0	0	0	P	P	P	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
13	A	0	0	0	0	0	0	0	0	P	A	P	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
14	A	0	0	1	0	0	0	0	0	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
15	A	0	9	4	0	0	0	0	0	A	A	P	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
16	A	0	8	2	0	0	16	0	0	A	A	P	A	A	A	A	A	A	A	A	P	A	A	A	A	A	A
17	A	0	6	0	0	0	8	0	0	A	A	A	A	P	A	A	A	A	A	A	P	A	P	P	P	P	A
18	A	0	1	0	0	0	0	0	0	A	P	A	A	P	A	A	A	A	A	A	P	A	P	P	P	P	A
19	A	0	12	1	0	0	8	0	0	A	A	P	A	A	A	A	A	A	A	A	P	A	A	A	A	A	A
20	A	0	4	0	0	0	0	0	0	A	P	P	A	A	A	A	A	A	A	A	A	A	P	A	A	A	A
21	A	0	0	0	0	0	0	0	0	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A

Legend:

A = Absent

P = Present

Important Habitat Characteristics Associated with Streams

Habitat Impact Area	Medium/Large flat rocks within stream	Flat rocks and logs on Bank or within exposed portion of streambed	Fine Silt/Clay Under Water Banks	Undercut or Overhanging Banks	Vertical Sandy Banks	Areas of Ice-free Water in Winter	Mudflats	Exposed Areas of Well-Drained Soils
1	A	A	A	A	A	A	A	A
2	A	A	A	A	A	A	A	A
3	A	A	A	A	A	A	A	A
4	A	A	A	A	A	A	A	A
5	A	A	A	A	A	A	A	P
6	A	A	A	A	A	A	A	A
7	A	A	A	A	A	A	A	A
8	A	A	A	A	A	A	A	A
9	A	A	A	A	A	A	A	A
10	A	A	A	A	A	A	A	A
11	A	A	A	A	A	A	A	A
12	A	A	A	A	A	A	A	A
13	A	A	A	A	A	A	A	A
14	A	A	A	A	A	A	A	A
15	A	A	A	A	A	A	A	A
16	A	A	A	A	A	A	A	A
17	A	A	A	A	A	A	A	A
18	A	A	A	A	A	A	A	A
19	A	A	A	A	A	A	A	A
20	A	A	A	A	A	A	A	A
21	A	A	A	A	A	A	A	A

Legend:

A = Absent

P = Present

Wildlife Dens and Nests

Habitat Impact Area	Turtle Nesting Sites	Bank Swallow Colony*	Nests Within Impact Area			Dens Within Impact Area			Project Area is within 100 feet of Beaver, Mink, Otter Dens, Bank Swallow Colony, or Turtle Nesting Site	Project Area is within 200 feet of a Great Blue Heron or Osprey Nests	Project Area is within 1,400 feet of Bald Eagle Nest
			Bald Eagle	Osprey	Great Blue Heron	Otter	Mink	Beaver			
1	A	A	A	A	A	A	A	A	A	A	A
2	A	A	A	A	A	A	A	A	A	A	A
3	A	A	A	A	A	A	A	A	A	A	A
4	A	A	A	A	A	A	A	A	A	A	A
5	A	A	A	A	A	A	A	A	A	A	A
6	A	A	A	A	A	A	A	A	A	A	A
7	A	A	A	A	A	A	A	A	A	A	A
8	A	A	A	A	A	A	A	A	A	A	A
9	A	A	A	A	A	A	A	A	A	A	A
10	A	A	A	A	A	A	A	A	A	A	A
11	A	A	A	A	A	A	A	A	A	A	A
12	A	A	A	A	A	A	A	A	A	A	A
13	A	A	A	A	A	A	A	A	A	A	A
14	A	A	A	A	A	A	A	A	A	A	A
15	A	A	A	A	A	A	A	A	A	A	A
16	A	A	A	A	A	A	A	A	A	A	A
17	A	A	A	A	A	A	A	A	A	A	A
18	A	A	A	A	A	A	A	A	A	A	A
19	A	A	A	A	A	A	A	A	A	A	A
20	A	A	A	A	A	A	A	A	A	A	A
21	A	A	A	A	A	A	A	A	A	A	A

Legend:

A = Absent

P = Present

Emergent Wetlands

Habitat Impact Area	Seasonally Flooded During Growing Season		Persistent Emergent Vegetation Seasonally Flooded During Growing Season		Cattail Emergent Wetland Seasonally Flooded During Growing Season		Fine-leaved Emergent Wetland Vegetation Seasonally Flooded During Growing Season	
	5cm	25cm	5cm	25cm	5cm	25cm	5cm	25cm
1	A	A	A	A	A	A	A	A
2	A	A	A	A	A	A	A	A
3	A	A	A	A	A	A	A	A
4	A	A	A	A	A	A	A	A
5	A	A	A	A	A	A	A	A
6	A	A	A	A	A	A	A	A
7	A	A	A	A	A	A	A	A
8	A	A	A	A	A	A	A	A
9	A	A	A	A	A	A	A	A
10	A	A	A	A	A	A	A	A
11	A	A	A	A	A	A	A	A
12	A	A	A	A	A	A	A	A
13	A	A	A	A	A	A	A	A
14	A	A	A	A	A	A	A	A
15	A	A	A	A	A	A	A	A
16	A	A	A	A	A	A	A	A
17	A	A	A	A	A	A	A	A
18	A	A	A	A	A	A	A	A
19	A	A	A	A	A	A	A	A
20	A	A	A	A	A	A	A	A
21	A	A	A	A	A	A	A	A

Legend:

A = Absent

P = Present

Landscape Context and Habitat Continuity

Habitat Impact Area	Portion of Impact Area Emergent Marsh				Portion of Impact Area Part of Wetland Complex				Portion of Impact Area Part of Contiguous Forest				Includes Grassland Habitat > 1 acre	Special Habitat
	1.0 acre	2.0 acres	5.0 acres	10.0 acres	2.5 acres	5.0 acres	10.0 acres	25.0 acres	50 acres	100 acres	250 acres	500 acres		
1	N	N	N	N	N	N	N	N	N	N	N	Y	N	N
2	N	N	N	N	N	N	N	N	N	N	N	Y	N	N
3	N	N	N	N	N	N	N	N	N	N	N	Y	N	N
4	N	N	N	N	N	N	N	N	N	N	N	N	N	N
5	N	N	N	N	N	N	N	N	N	N	N	N	N	N
6	N	N	N	N	N	N	N	N	N	N	N	N	N	N
7	N	N	N	N	N	N	N	N	N	N	N	N	N	N
8	N	N	N	N	N	N	N	N	N	N	N	N	N	N
9	N	N	N	N	N	N	N	N	N	N	N	N	N	N
10	N	N	N	N	N	N	N	N	N	N	N	N	N	N
11	N	N	N	N	N	N	N	N	N	N	N	N	N	N
12	N	N	N	N	N	N	N	N	N	N	N	N	N	N
13	N	N	N	N	N	N	N	N	N	N	N	N	N	N
14	N	N	N	N	N	N	N	N	N	N	N	N	N	N
15	N	N	N	N	N	N	N	N	N	N	N	N	N	N
16	N	N	N	N	N	N	N	N	N	N	N	N	N	N
17	N	N	N	N	Y	Y	Y	Y	N	N	N	N	N	N
18	N	N	N	N	Y	Y	Y	Y	N	N	N	N	N	N
19	N	N	N	N	N	N	N	N	N	N	N	N	N	N
20	N	N	N	N	N	N	N	N	N	N	N	N	N	N
21	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Legend: Y = Yes N = No

Connectivity with Adjacent Habitats

Habitat Impact Area	Little Connectivity Function to Adjacent Habitat	Limited Connectivity to Adjacent Habitat	Somewhat Important for Connectivity to Adjacent Habitat	Important for Connectivity to Adjacent Habitat	Very Important for Connectivity
1	N	Y	N	N	N
2	N	Y	N	N	N
3	N	Y	N	N	N
4	N	Y	N	N	N
5	N	Y	N	N	N
6	N	Y	N	N	N
7	N	Y	N	N	N
8	N	Y	N	N	N
9	N	Y	N	N	N
10	N	Y	N	N	N
11	N	Y	N	N	N
12	N	Y	N	N	N
13	N	Y	N	N	N
14	N	Y	N	N	N
15	Y	N	N	N	N
16	N	Y	N	N	N
17	N	Y	N	N	N
18	N	Y	N	N	N
19	N	Y	N	N	N
20	N	Y	N	N	N
21	N	Y	N	N	N

Legend:

Y = Yes

N = No

Habitat Degredation

Habitat Impact Area	Significant Chemical Contamination	Significant Dumping	Significant Erosion / Sedimentation	Significant Invasives	Highway / Road Disturb.	Only Resource Area In Vacinity	Other Human Disturbance
1	A	A	A	A	A	A	P
2	A	A	A	A	A	A	P
3	A	A	A	A	A	A	P
4	A	A	A	P	A	A	P
5	A	A	A	P	A	A	P
6	A	A	A	P	A	A	P
7	A	A	A	A	P	A	P
8	A	P	A	P	A	A	P
9	A	P	A	P	P	A	P
10	A	P	A	P	P	A	P
11	A	A	A	P	P	A	P
12	A	A	A	P	P	A	P
13	A	A	A	P	P	A	P
14	A	A	A	P	P	A	P
15	A	P	A	P	P	P	P
16	A	A	A	P	P	A	P
17	A	A	A	P	A	A	P
18	A	A	A	P	A	A	P
19	A	A	A	P	A	A	A
20	A	A	A	P	P	A	P
21	A	A	A	P	A	A	P

Legend:

A = Absent

P = Present