

STATE OF NEW HAMPSHIRE
INTER-DEPARTMENT COMMUNICATION

DATE: February 22, 2024

FROM: Joshua R. Brown
Wetlands Program Analyst

AT (OFFICE): Department of
Transportation
Bureau of
Environment

SUBJECT: Response to Request for More Information
Nashua-Merrimack-Bedford, 13761A
NHDES File Number: 2023-03176

TO: Karl Benedict, Wetlands Specialist
New Hampshire Wetlands Bureau
29 Hazen Drive, P.O. Box 95
Concord, NH 03302-0095

Forwarded herewith is the Response to the NHDES Request for More Information dated February 8, 2024.

1. Please identify what is the specification for Item 585.23 Stone Fill Modified Class B (3' thick) referenced per Abutment Sections and Details plan sheet.

RESPONSE: Please find the attached SPECIAL PROVISION AMENDMENT TO SECTION 585 – STONE FILL Item 585.23 – Stone Fill Class B (Modified) which will be included in the contract documents.

2. Noting that a final clean water bypass and turbidity controls plan would be required as a Condition of any NHDES wetland permit for the project, please identify any available project strategies and specifications related to how turbidity will be managed. Final turbidity control plans would ultimately need to include specific locations of BMPs and implementation of any proposed strategies and specifications for the project.

RESPONSE: Language from the contract documents providing details of the project strategies and turbidity management measures which will be employed during construction has been included below. Please also find the attached SPECIAL PROVISION SECTION 645 -- EROSION CONTROL Item 645.0001 - Turbidity Barrier which provides the specifications related to installation of the turbidity barrier. Please also find the attached causeway fill detail sheet #38 and Bridge Plan sheet # 53 for additional information.

Earthwork and Embankment

The project includes construction of embankment fill within the existing Pennichuck Brook back-water area approaching the Pennichuck Brook Bridge. This work will include placing Item 585.23 – Stone Fill Class B (Modified) on the bottom of the existing brook up to elevation 179.00 as shown in the plan details. A 12-inch thick lift of Item 585.4 – Stone Fill Class D will be constructed to chink any voids in the

Class B (modified) Stone Fill, Item 593.221 will be placed on top of the Class D Stone Fill prior to having the roadway embankment completed with Item 203.6 – Embankment-In-Place (F). The outer portion of the slopes will use Item 593.411 – Geotextile Non-Woven, and will be covered with 3-feet of Item 585.2 – Stone Fill, Class B.

Ground Improvements

The following summarizes required ground improvement measures associated with addressing the existing organic deposits identified during the geotechnical investigations for this project in the Pennichuck Brook Bridge and causeway fill area at Bowers Pond.

FEET NB Station 814+00 to 819+00 Rt.:

This location includes placement of fill material to construct the roadway embankment in muck and unsuitable material areas and waiting period. More specifically, sequencing is as follows.

- *Construct Item 645.0001 – Turbidity Barrier (row #1) located approx. 20-feet downstream from the toe of slope across the waterway to minimize turbidity impacts downstream. This turbidity curtain shall be firmly secured to the bottom of the ponded area. The Contractor shall construct a secondary Turbidity Barrier (row #2) in front of the first turbidity barrier approx. 5-feet from the first turbidity barrier as directed by the engineer, prior to placing the Item 585.23 materials.*
- *The Contractor shall carefully place Item 585.23 – Class B Stone Fill (Modified) on the bottom of the ponded area by excavator bucket and tamping in place. This stone fill placement shall continue until the material is brought up to elevation 179.00 to 1-foot above OHW line.*
- *The Contractor will then construct Item 585.4 – Class D 12” deep above the Class B (modified) materials to fill in gaps and holes in the top layer of the Class B Modified Stone Fill.*
- *Item 593.211 – Geotextile Permanent Erosion Control, Class 1, Non-Woven is then placed on top of the Class D stone.*
- *The Contractor shall install Item 210.1 - Settlement Monitoring Platforms as directed by the Engineer prior to placement of the embankment in place. The Contractor shall take survey readings of all points for initial readings.*
- *Construct the remaining embankment material using Item 203.6 – Embankment-In-Place (F) up to subgrade. The Contractor may then construct the roadway structural section (and temporary widening) with the appropriate items.*
- *Survey of all settlement monitoring points will be completed by the Contractor at the beginning of the waiting period and at intervals as directed by the engineer during the settlement period. The Contractor shall re-survey the control points at the end of the waiting period, as directed by the Engineer. Shim/regrade the embankment as required, to match the proposed template surface (paid as Item 203.601 – Embankment-In-Place).*

- *Construct remainder of roadway elements (drainage, OHSS foundation, roadway base materials, stone slope protection, etc.) following a 180-day waiting period or after settlement has stopped.*

3. In accordance with RSA 482-A:11, IV, the department shall not approve impacts in a prime wetland unless the result will not significantly create a net loss of the designated functions and values of the prime wetland. The following functions and values have been designated for Pennichuck Brook: groundwater recharge, groundwater discharge, floodflow alteration, sediment/toxicant retention, nutrient removal, wildlife diversity, and uniqueness/heritage. The application information states that the proposed project will not result in a net loss of the functions and values of Pennichuck Brook and will not significantly alter the functions and values that were designated. Please provide any comments or coordination from the municipality (City of Nashua) relative to the designated prime wetland impacts and proposed loss.

RESPONSE: The Department has been and continues to coordinate extensively with the City of Nashua as well as the other municipalities associated with this project corridor through the public outreach process. During the initial phase of the environmental project review, letters were sent to officials from the City of Nashua identifying the initiation of the project and requesting input regarding any natural resource concerns including concerns related to prime wetlands. The City of Nashua did not respond with any concerns related to prime wetland impacts or the functions and values of Pennichuck Brook. Project details including the identification of potential impacts and fill within Pennichuck Brook was also reviewed at the following public meetings to which officials from the City of Nashua were notified and encouraged to attend to provide input on the project design:

- *Public Officials Meetings:*
 - *Town of Merrimack Town Council: November 17, 2016*
 - *Town of Bedford Town Council: December 14, 2016*
 - *Nashua Regional Planning Commission – Transportation Technical Advisory Committee meeting (including officials from the City of Nashua): January 10, 2018*
 - *Town of Merrimack Director of Public Works and Town Engineer: January 9, 2018*
- *Public Informational Meetings*
 - *Town of Bedford: March 29, 2018*
 - *City of Nashua: April 3, 2018*
 - *Town of Merrimack: May 1, 2018*
- *Public Hearing - October 3, 2018*

Presentation Materials, project plans, meeting minutes and other materials from these meetings can be found on the project website at: <http://www.everettturnpikewidening.com/Meetings.htm>. Officials from the City of Nashua did not express concerns related to prime wetland impacts or the functions and values of Pennichuck Brook.

In accordance with RSA 482-A: 3, four copies of the Dredge and Fill Application which identified impacts within Pennichuck Brook, were sent via certified mail to the City of Nahua on December 1, 2023 for distribution to the Conservation Commission, Planning Board, and Board of Selectmen (and Mayor or City Manager). To date the Department has not received any follow up correspondence from the City of Nashua regarding the application materials.

Nashua-Merrimack-Bedford
13761A

February 7, 2024

SPECIAL PROVISION

AMENDMENT TO SECTION 585 – STONE FILL

Item 585.23 – Stone Fill Class B (Modified)

Add to 2.1

2.1.6 Stone Fill Class B (Modified) shall be irregular in shape with approximately 60 percent of the mass having a minimum volume of 3 ft³ (0.08 m³), and approximately 40 percent of the mass having a volume between 1 and 3 ft³ (0.03 and 0.08 m³). Stone particles that are smaller than the above range of sizes shall be removed from the stone fill, prior to placement of the stone fill below water within the proposed causeway.

2.1.6.1 The Contractor shall provide an approved quality assurance program for testing the gradation of the Stone Fill Class B (Modified) prior to placement within the causeway throughout the entire construction phase. The quality assurance program may include sampling from stockpiles, sampling dumped truck loads, or other methods as approved or as directed.

Add to Construction Requirements

3.5 Placement of Stone Fill Class B (Modified).

3.5.1 Causeway Stone Fill Installation Plan Submittal. At least 4 weeks prior to beginning construction of the causeway with the Stone Fill Class B (Modified), the Contractor shall submit an installation plan to the Engineer for review in accordance with 105.02. The submittal shall include the following information:

- a. A description of the Stone Fill Class B (Modified) source, and the proposed method for achieving the required gradation of the stone fill.
- b. A description of the proposed method for quality assurance testing of the Stone Fill Class B (Modified) gradation throughout the construction of the causeway.
- c. A description of the stone fill placement procedures including methods to achieve the design slope.

3.5.2 Stone Fill Class B (Modified) shall be placed with machinery, as described in the Geotechnical Report. Due to the steep slope angles that can occur with stone fill placed in this

manner, it may be necessary for the Contractor to excavate and reposition stone fill along the side slope of the initially placed stone fill to achieve the design slope as part of the work.

3.5.3 The Contractor shall provide the means necessary to accurately measure the in-place configuration of the stone fill causeway below water.

Add to 4.1

4.1.1 Stone Fill Class B (Modified) will be measured in accordance with 4.1. All work associated with excavating or repositioning the stone fill as described in 3.5.2 and for quality assurance testing of the stone fill gradation will not be measured.

Add to 5.1

5.1.1 Stone Fill Class B (Modified) will be paid in accordance with 5.1. All work associated with excavating or repositioning the stone fill as described in 3.5.2 and for quality assurance testing of the stone fill gradation will not be paid.

Add to Pay items and units:

585.23	Stone Fill Class B (Modified)	Cubic Yards (Cubic Meters)
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**NASHUA-MERRIMACK-BEDFORD
13761A**

November 28, 2023

**SPECIAL PROVISION
SECTION 645 -- EROSION CONTROL
Item 645.0001 - Turbidity Barrier**

Add to Materials:

2.12 Turbidity Barrier

- A. Siltation fence shall be made of 5 mil industrial polypropylene 71g/sy (85g/m²). Coefficient of permeability shall be 0.009 cm/sec with a water flow rate of 18 gal/min/ft² (114 L/min/m). Opening size shall be a maximum of 20 (U.S. Standard Sieve) with a minimum retention efficiency of 75%. Fabric shall be stable against ultraviolet radiation. Fabric width shall be 36 in. (0.91m).
- B. The turbidity barrier shall consist of a woven and calendared polypropylene geotextile fabric suspended from a floatation device and sealed against the bottom of the water body by ballast sewn into the bottom of the geotextile. All seams shall have a minimum of 2 rows of stitches (Federal Stitch Type 401, 2 thread stitch). Stitch count shall be between 2 and 3 stitches per centimeter. Seam strength shall develop at least 50 percent of Wide Width Tensile Strength of the geotextile when tested in accordance with ASTM D4884.

The geotextile fabric shall be woven and calendared polypropylene manufactured to form a stable network such that the filaments retain their relative positions. The specific gravity of the fabric shall be 0.95 or greater.

The geotextile fabric shall have the following properties based upon minimum average roll values:

Property	Test Method	Unit	Value
Percent Open Area	CWO-22125	Percent	4 to 6
Apparent Opening Size	ASTM D4751-87	U. S. Sieve	70-100
Permittivity	ASTM D4491-92	sec-1	0.25 to 0.30
Puncture	ASTM D4833-88	kgs.	greater than 60
Mullen Burst	ASTM D3786-87	kg/centimeter ²	greater than 32
Trapezoidal Tear	ASTM D4533-91	kgs.	greater than 43 x 25
Grab/Tensile	ASTM D4632-91	kgs.	greater than 159 x 113
Wide Width Tensile	ASTM D4595	kg/centimeter	greater than 38 (MD) x 24 (XD)
UV Resistance	ASTM D4355 (after 150 hours)	percent	greater than 90

The barrier shall be assembled according to manufacturers recommendations. High water and high wind conditions shall be considered in the determination of the necessary lengths and widths of the barrier. Connections between adjacent sections of floatation booms shall be designed to withstand all stresses and movements and shall be tightly sealed to prevent flow of turbid water through the barrier. All splices in the geotextile shall be sewn except at connections between adjacent segments of the barrier. Geotextile splices at connections must form a closure as tight as the sewn stitch specified. Open stitching or splicing through widely spaced grommets are not permitted.

- C. "Booms", logs or other types or floats that may be used to suspend flexible fabric filter membrane enclosing areas of excavation, trenching, etc., along or out into the bodies of water shall be standard products normally used in this type of work and shall be approved by the Engineer prior to their use.

Add to Construction Requirements:

3.10 Turbidity Barrier. The Contractor is advised that stream flows and water levels of resource areas may vary substantially due to climatic and seasonal conditions and shall be responsible for controlling and handling ground and/or surface water regardless of the volume of water and regardless of whether this flow is due to flood waters from storms.

3.10.1 Erosion and Turbidity Control.

- A. The Contractor shall take every precaution to minimize and control erosion and turbidity within the project area. These precautions shall be subject to approval by the Engineer and shall include, but not be limited to, the following:
 - 1. The turbidity barrier shall be installed as noted in the Prosecution of Work or the Plans to contain suspended material disturbed by the construction activities. The turbidity barrier shall be anchored to prevent significant movement resulting from wind, water currents or construction activities. The bottom of the barrier shall be held tight against the bottom by the ballast chain, supplemented by sand bags or other weights where necessary. There shall be sufficient slack in the barrier and anchorage system to allow movement with shifts in water current or wind and changes in water depth without causing submergence of the flotation devices or lifting of the bottom of the barrier off the bottom of the water body. The barrier shall be so designed and installed to prevent movement of turbid water over, under or through the barrier during all conditions of weather, construction activities or other circumstances.

The area contained by the turbidity barrier shall not be used as a sedimentation basin for site runoff.

The Contractor shall inspect the turbidity barrier and adjacent water for signs of leakage at least once per day during period of construction activities and more frequently during periods of adverse weather. The Contractor shall perform any necessary repairs immediately. If water quality outside of the barrier exceeds the maximum allowable turbidity levels specified in 107.01, the Contractor shall cease all activities which may be contributing to the excessive turbidity and notify the Engineer. The Contractor shall perform the necessary repairs to the turbidity barrier or change operations to return the turbidity to within acceptable levels. The cost of all inspection/monitoring by the Contractor of the turbidity barrier shall be paid under Item 645.0001.

The turbidity barrier shall be kept in place until the turbidity is below the maximum allowable levels specified 107.01. The Contractor shall then remove all components of the barrier and dispose of them offsite.

2. If for any reason the turbidity barrier becomes damaged or drops below the water surface or is found to be lifting off the bottom, the Contractor shall immediately make all necessary repairs to insure proper turbidity control. If the Contractor fails to make immediate repairs, all work shall be stopped until repairs have been made and the Contractor shall assume all costs related to the work stoppage for nonconformance to these requirements.

Amend 4.5 to read:

4.5 The silt fence and turbidity barrier will be measured by the linear foot (linear meter) to the nearest 1 foot. Measurement will be along the top of the barrier for each continuous run in place.

Amend 5.5 to read:

5.5 The accepted quantity of silt fence and turbidity barrier will be paid for at the contract price per linear foot installed, complete in place. Relocating barriers on the project will not be measured. No payment will be made for overlaps or splices.

5.5.1 Removing sediment deposits will be paid for under Item 699.

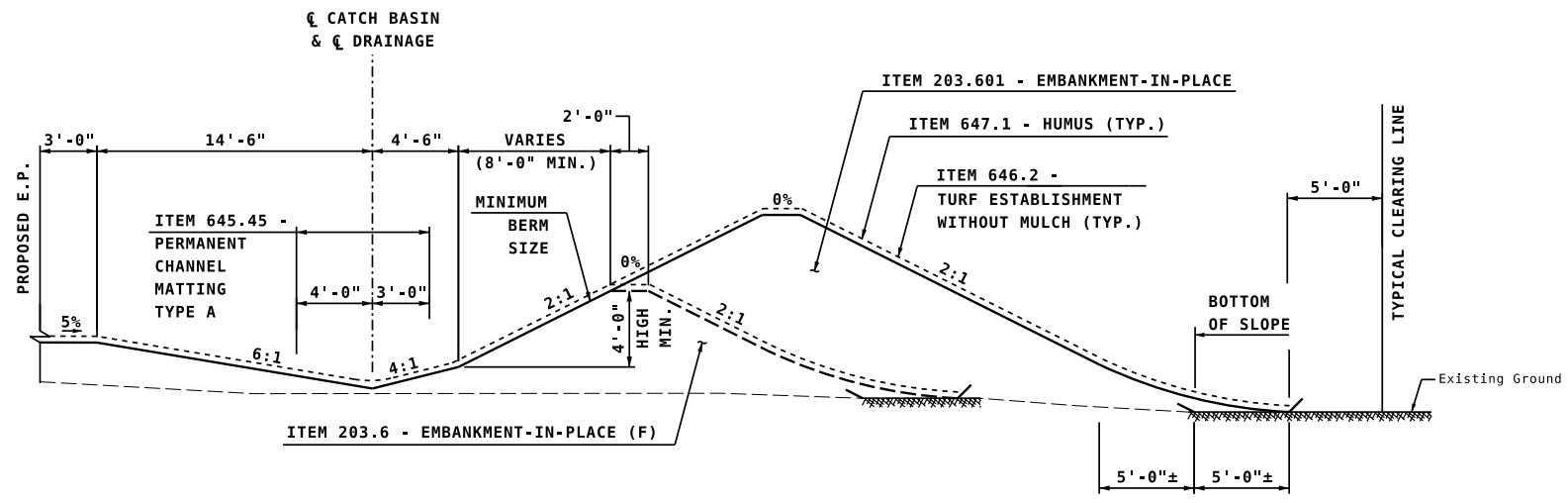
5.5.2 Replacement of silt fence and turbidity barrier, as ordered and approved by the Engineer, will be paid for in accordance with 5.5.

Pay Items and Units:

645.0001	Turbidity Barrier	Linear Foot
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SDR PROCESSED	NHDOT	DATE	7/2021
NEW DESIGN	VHB TEAM	DATE	10/31/2023
SHEET CHECKED	C. GREGORY/B. MARTIN	DATE	10/31/2023
AS BUILT DETAILS		DATE	

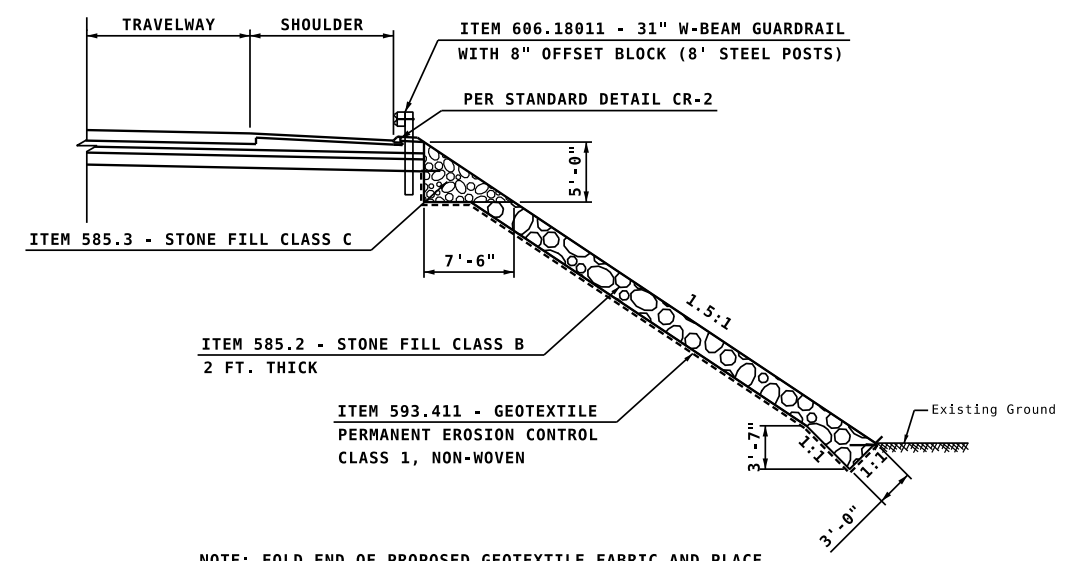
PPS & E PLANS
SUBJECT TO CHANGE
DATE 10/31/2023



EARTHEN BERM DETAIL

NOT TO SCALE

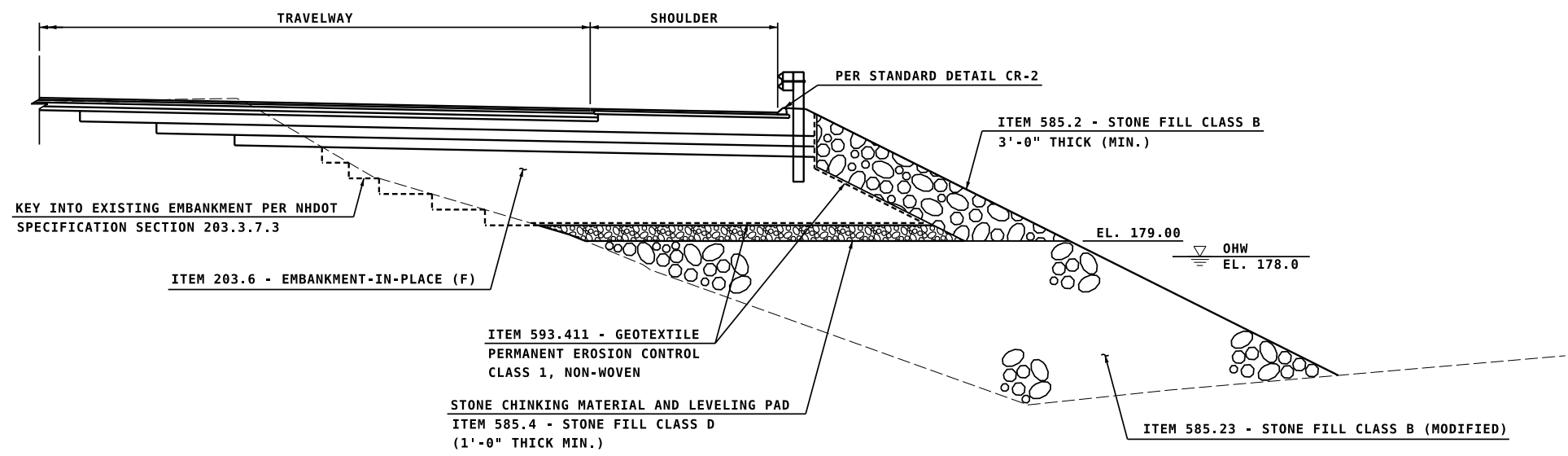
- | | |
|--------------------------------|--------------------------------|
| STA. 783+25 TO STA. 785+75, LT | STA. 780+25 TO STA. 782+45, RT |
| STA. 793+50 TO STA. 796+50, LT | STA. 784+05 TO STA. 787+95, RT |
| STA. 802+75 TO STA. 808+75, LT | STA. 792+90 TO STA. 800+05, RT |
| STA. 825+80 TO STA. 836+25, LT | STA. 804+75 TO STA. 806+45, RT |
| STA. 843+40 TO STA. 845+60, LT | STA. 806+55 TO STA. 808+60, RT |
| STA. 850+75 TO STA. 854+25, LT | STA. 832+40 TO STA. 836+30, RT |
| | STA. 838+50 TO STA. 842+50, RT |
| | STA. 846+00 TO STA. 852+75, RT |



ARMORED EMBANKMENT SLOPE FOR 1.5:1 SIDE SLOPES

STA. 789+45 TO STA. 790+40

NOT TO SCALE



SEE BRIDGE PLANS FOR ADDITIONAL INFORMATION.

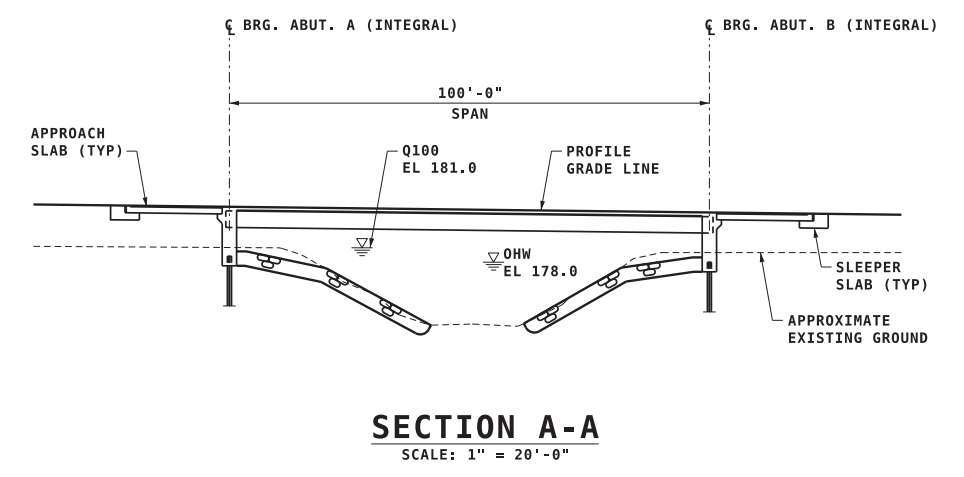
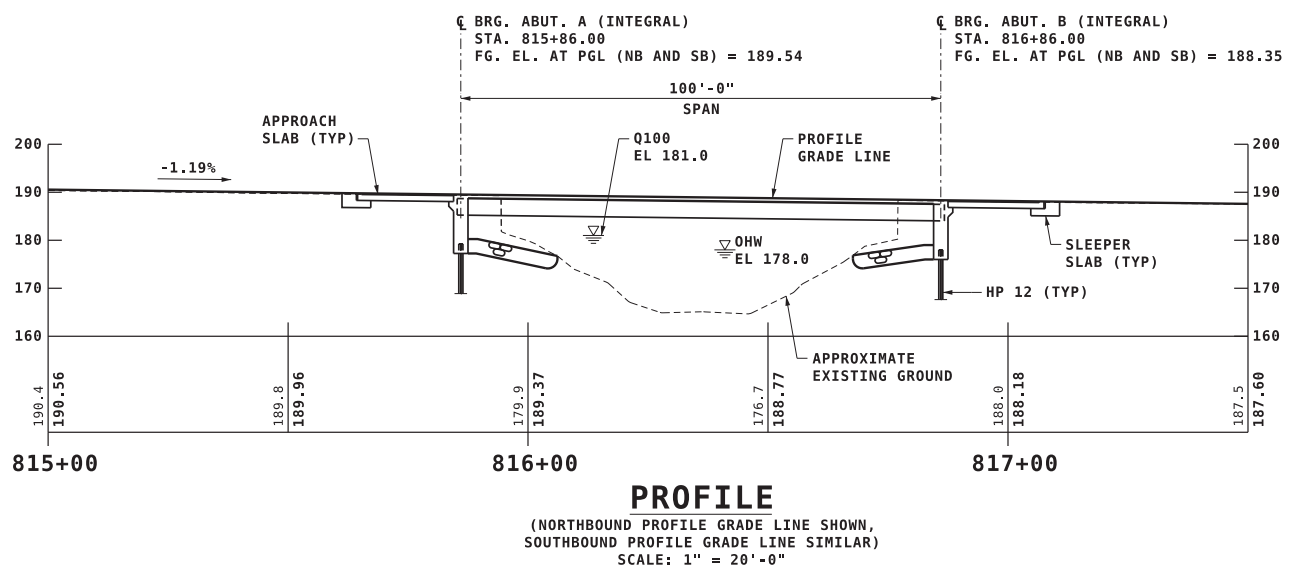
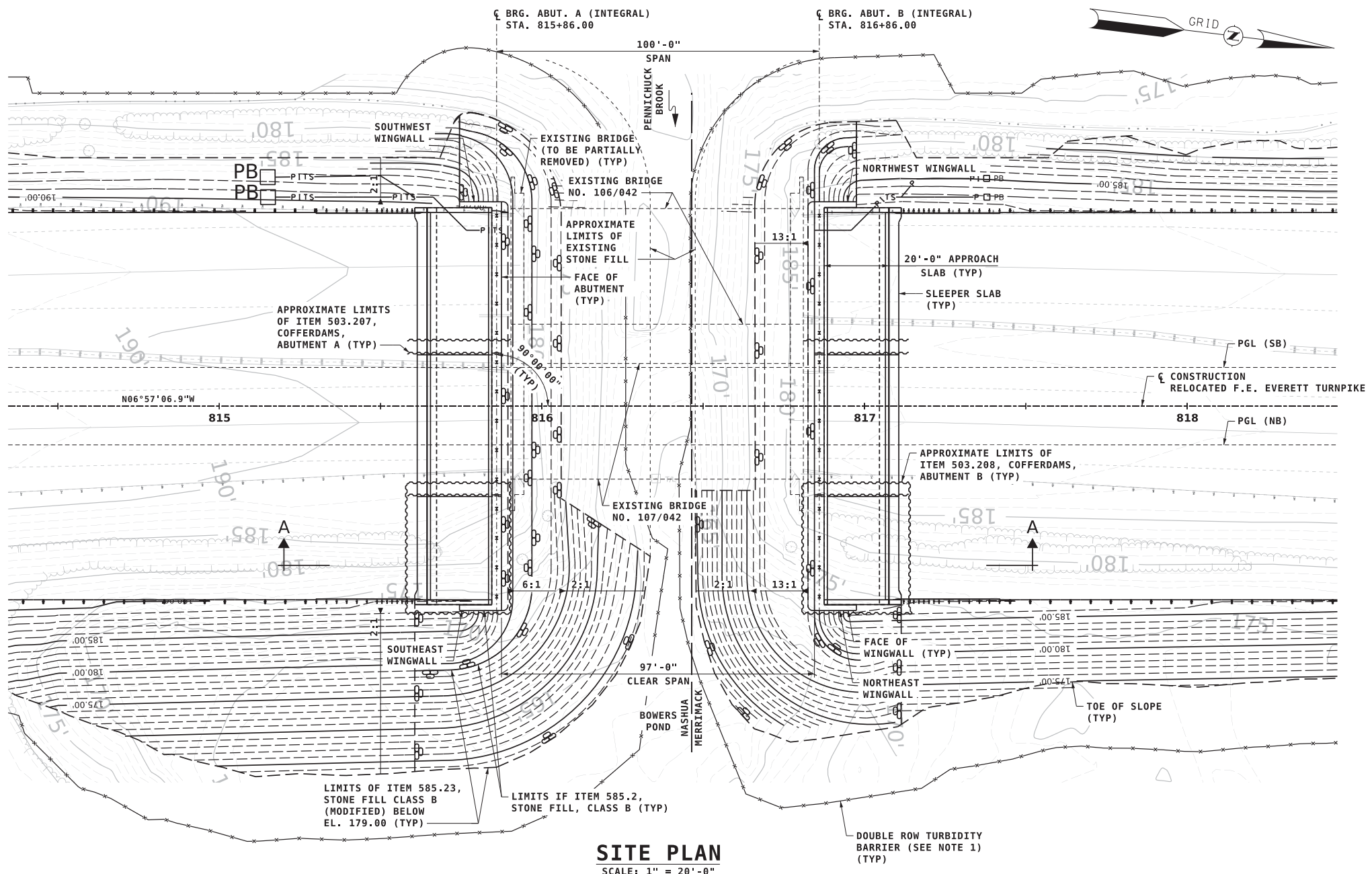
TYPICAL CAUSEWAY EMBANKMENT SLOPE

- STA. 814+32 TO STA. 815+60, RT
STA. 817+11 TO STA. 819+40, RT

NOT TO SCALE



STATE OF NEW HAMPSHIRE NASHUA & MERRIMACK					
DEPARTMENT OF TRANSPORTATION			BUREAU OF HIGHWAY DESIGN		
MISCELLANEOUS DETAILS					
DATE PLOTTED	VHB PROJECT NO.	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
10/31/2023	52775.00	13761A_Det_07	13761A	38	514



NOTE:
1. PERIMETER CONTROLS IN THE FORM OF A DOUBLE ROW OF TURBIDITY CURTAIN SHALL BE INSTALLED FOR THE WORK THAT FALLS WITHIN PENNICHUCK BROOK AND BOWERS POND. TURBIDITY CURTAIN SHALL BE SET A MAXIMUM OF 20'-0" OFF THE TOE OF SLOPE. SEE WETLAND PERMIT FOR ADDITIONAL INFORMATION.

STATE OF NEW HAMPSHIRE									
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN									
TOWN	MERRIMACK AND NASHUA	BRIDGE NO.	107/043 AND 108/043	STATE PROJECT	13761A				
LOCATION	F.E. EVERETT TURNPIKE OVER PENNICHUCK BROOK								
SITE PLAN AND PROFILE								BRIDGE SHEET	5 OF 29
DESIGNED	AMS	DATE	9/23	CHECKED	KCD	DATE	9/23	FILE NUMBER	143-44
DRAWN	KDW	DATE	10/23	CHECKED	JGM	DATE	10/23	QUANTITIES	CHECKED
ISSUE DATE		FEDERAL PROJECT NO.		SHEET NO.	53	TOTAL SHEETS	514		
REV. DATE									

PPS&E
SUBJECT TO CHANGE
DATE 10/31/2023

SUBDIRECTORY	DGN LOCATOR	SHEET SCALE
BRC	18021_site	AS NOTED