Stantec Consulting Services Inc.
65 Network Drive, 2nd Floor, Burlington, MA 01803

March 3, 2021
File: MassDOT Project No. 606635 / 109597

Submitted via e-mail to Newton Conservation Commission on March 3, 2021

Attention: Jennifer Steel, Conservation Agent
Newton Planning and Development Department
1000 Commonwealth Avenue
Newton, MA 02459

Dear Ms. Steel,

Reference: Request for Amendment to Order of Conditions (MassDEP File No. 239-815)
Reconstruction of Needham Street and Winchester Street, Newton Massachusetts

On behalf of the Massachusetts Department of Transportation (MassDOT) Highway Division, Stantec is submitting this Request for an Amended Order of Conditions (AOOC) to MassDEP File No. 239-815 for necessary changes and clarifications to the work associated with the Needham Street and Winchester Street reconstruction project in Newton. The Newton Conservation Commission issued an Order of Conditions (OOC) and Certificate of Understanding for this project on October 16, 2018 under MassDEP File No. 239-815.

PROJECT OVERVIEW

The goal of the project approved under the OOC is to improve pedestrian and bicycle safety and accessibility, increase roadway capacity, and provide a consistent roadway cross-section (i.e. with accessible sidewalk and designated bicycle lane accommodation) and improved intersection geometry. The project also includes rehabilitation of the Highland Avenue/Needham Street Bridge over the Charles River at the Needham/Newton border.

REQUEST FOR AOOC

The project has commenced construction and some changes to the project approach have become necessary due to the need for temporary utility poles and overhead wires at the bridge, clarification of "overlapping" work between this project and adjacent City project, and contractor means and methods. The proposed changes under this Request for an AOOC are for tree removal and regrading in the Riverfront Area, tree removal and planting in Bordering Land Subject to Flooding (BLSF), and installation of footings and sandbags in Land Under Water Bodies and Waterways (LUWW). This Request for AOOC is supported by drawings depicting the proposed plan modifications, including a Landscape Plan, Grading Plan, and graphics for bridge work. We appreciate your feedback on the project changes and we have incorporated additional information and details based on recent discussions with you and Mark Welch, City Forester.

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PROPOSED ADDITIONAL ACTIVITIES

The following project changes are requested under this AOOC due to their necessity for the success of the project.

1. *Vegetation Removal and Planting*- A temporary utility pole is required on the NW quadrant of the bridge to temporarily relocate the overhead wires to be a minimum of 10 feet away from construction equipment and material required to construct the cantilevered sidewalk on both sides of the bridge as well as to maintain continuity of electrical power services during construction. A clear path of 10 feet is needed for Contractor crews and equipment to access the stone arches on the underside of the bridge for both the NW and NE quadrants of the bridge. On the NE quadrant, installation of the temporary utility pole will require cutting and stumping of two mature trees (26" and 32" in diameter at breast height) and the clearing of other vegetation located within the footprint. On the NW quadrant, contractor access for a crane required for the installation of the cantilevered sidewalk will require cutting and stumping of two 10" diameter trees and the clearing of other vegetation located within the footprint (including a twin 14" tree that has fallen). There is an existing 36" diameter Oak tree located on the NW side slope that is in conflict with the construction of the proposed concrete end post for the bridge as well as in a 1.5-foot fill area and will need to be removed.

   To mitigate the loss of vegetation, MassDOT is proposing to replace the trees with woody vegetation at a 3:1 ratio. Trees that will interfere with the cantilevered sidewalk system when at full height are not practical or desirable and will be avoided in this location and shrubs will be planted. We coordinated with Mark Welch on the species and location of additional trees and shrubs and the attached a revised Landscape Plan reflects his valuable input. This work is to take place in BLSF, Riverfront Area and the 100- foot buffer zone. See Figures 1 – 5.

2. *Relocating Sidewalk and Roadway Alignment*- we would like to take this opportunity to clarify the "overlapping" work between this project and adjacent City project. The NOI excluded Riverfront Area impact/disturbance from the adjacent Needham Street/Oak Street/Christina Street intersection project. It was assumed that the two projects would be constructed concurrently and MassDOT did not want to double count impact areas. The adjacent Oak/Christina project was substantially complete just before the Covid-19 shutdown occurred in 2020, therefore, there is no concurrent work and the impacts related to this project have been clarified. This work is to take place in Riverfront Area and 100-foot buffer zone.

3. *Installation of Temporary Support of Existing Stone Arches*- Additional support shield structures on the underside of North Span and Center Span of the bridge is required to complete construction for the cantilevered sidewalk system on both sides of the bridge.

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Construction staging within the river is necessary to support this effort. For the northern span, a 3,000 SF area will need to be established in LUWW to install a temporary support shield. Existing rocks and debris will be removed from under the arch and the area dewatered to place concrete footings to support the construction. Sandbags will be set up at the perimeter of the dewatering area and used for dewatering control. See Figures 6-9.

A turbidity curtain will be used on the downstream side of the northern arch. For the center span, a concept design being considered for the temporary support in the center span uses floating wooden rafts (8'x15') and a power boat for installation and demolition of the temporary supports. It is likely the navigable way will be closed to users during the installation and demolition. This work is to take place in BLSF and LUWW. See Figures 8 and 10.

Dewatering discharge location will be composed of straw bales and likely a stone velocity dissipator at a location to be determined during the pre-construction meeting. See Figure 15.

4. *Stone Repointing*-A concept being considered for repointing activities is to use scaffolding and/or a small electric lift in the north span and scaffolding in the center span (roughly 100 sf of temp impacts to LUWW for footings/legs of scaffolding located within the same footprint of the Temporary Support of Existing Stone Arches). This work is to take place in BLSF and LUWW.

5. *Roadway/Swale Slope Stabilization*- The swale located on the NW quadrant of the project conducts stormwater from the project site and is designed to meet the need to effectively convey water, so the channel design remains as originally proposed with rockfill. However, based on comments from Jennifer Steel, an option is to apply a native seed mix to the 1:5:1 slope immediately upgradient of the swale and to then use a spray matting consisting of mechanically bonded fiber matrix that is 100% biodegradable for permanent slope stabilization as the seeded vegetation becomes established. This will provide enhanced wildlife habitat benefits as the area will be vegetated with wildflower mix and provide pervious ground for additional stormwater infiltration. Trees will be planted in the 2:1 slope, just upgradient of the steeper portion above the swale as part of the overall site mitigation. All toe of slope sedimentation controls that are in place during construction will remain in place until the slopes are stabilized and have at least 75% vegetative coverage. See Figure 5.

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RESOURCE AREA IMPACT ASSESSMENT

Authorization for work within jurisdictional resource include LUWW, BLSF, and Riverfront Area associated with the Charles River and South Meadow Brook, and the 100-foot Buffer Zone to Banks of the Charles River and South Meadow Brook. See Table 1 for a summary of what temporary and permanent resource alterations were authorized under the OOC and the proposed changes requested under this AOOC. See Figures 8 and 12-14 for an overview of temporary impact locations in each jurisdictional resource area.

Land Under Waterbodies and Waterways

Temporary impacts to LUWW under the center and northern span of the bridge will result in no adverse effects to LUWW. Disturbance will be minimized, and the area restored to its original condition at the completion of work so that the proposed new work meets the Performance Standards.

Bordering Land Subject to Flooding

As outlined in the original NOI application, project implementation will result in the net increase of 165.6 CY of flood storage. The additional work proposed in BLSF will not change the volume of flood capacity and, therefore, the proposed changes will result in no adverse effects to BLSF.

Riverfront Area

Temporary impacts will result in no adverse effects as the work includes resurfacing an existing roadway and side slope regrading. Permanent impacts include the area of retaining walls required to hold up the cantilevered sidewalks and a strip of roadway widening.

100' Buffer Zone

Approximately 25,100 SF of temporary impacts are anticipated for the work in the area from the Charles River to Oak Street. The noted impacts to Buffer Zone overlap with the impacts to Riverfront Area and approximately 9,800 SF are within the footprint of the already disturbed impervious roadway layout. Temporary impacts within the 100-foot buffer zone are not expected to result in adverse effects.

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Reconstruction of Needham Street and Winchester Street, Newton Massachusetts

TABLE I
SUMMARY OF WETLAND RESOURCE IMPACTS*
NEWTON, MA

WETLAND RESOURCE	*PREVIOUSLY APPROVED IMPACTS*		PROPOSED ADDITIONAL IMPACTS		TOTAL IMPACTS	
	Temporary	*Permanent*	Temporary	Permanent	Temporary	Permanent
Land Under Water Bodies and Waterways	*200*	*0*	3,000	0	3,200	0
Bank (Linear Feet)	*0*	*0*	0	0	0	0
Bordering Vegetated Wetland	*0*	*0*	0	0	0	0
Bordering Land Subject to Flooding	*0*	*2,442.2 CY***	0 CY (A=850 SF)	0	0 CY (A=850 SF)	2,442.2 CY**
Riverfront Area	*1,224****	*372****	15,376	413	16,600	785

* *All impact areas are in square feet unless indicated otherwise.*
** *Proposed improvements will replace all affected BLSF on a foot-for-foot basis plus create an additional 165.5 yd^3 of flood storage.*
*** *Excludes Riverfront Area impact/disturbance from the adjacent Needham Street/Oak Street/Christina Street intersection project.*

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MITIGATION AND RESTORATION

Trees that are required to be removed will be replaced at a 3:1 ratio with woody vegetation in the same vicinity. New plantings will be of native species that are already included in the base contract, where possible. Large shrubs (growth height 10-15 feet) are proposed in the vicinity of the cantilevered sidewalk to help eliminate overgrowth into the wires or onto the sidewalk. Medium trees (growth height 20-25 feet) are proposed near the bridge and on the side slope on the eastern side where the overhead wires will be located. See Figure 3.

LEGAL ADVERTISEMENT AND ABUTTER NOTIFICATION

We understand that the Conservation Agent will place a legal advertisement in the Newton Tab and bill Stantec for this cost. This notice will be published in the Newton Tab, no later than 5 days prior to the March 11, 2021 public hearing. Please note abutter notification is not required for projects proposed by MassDOT, as cited under 310 CMR 10.05(4)(a) of the Massachusetts Wetlands Protection Act Regulations. We are submitting a copy of this Request for AOOC to the MassDEP Northeast Regional Office, Wetlands and Waterways division.

If you have any questions regarding the proposed project, please feel free to contact me at 781-221-1246 or marie.sullivan@stantec.com.

Regards,

STANTEC CONSULTING SERVICES INC.

Marie J. Sullivan, PE, Principal
Phone: 781-221-1246
Attachment: Plans (pdfs via email)

CC: MassDEP- Northeast Regional Office, Wetlands and Waterways
Debbie Anderson, Needham Conservation Commission
Charles Labbee III, MassDOT
Eric Feeley, MassDOT
Charles Sabella, MassDOT

FIGURE 1

Newton - NW Quadrant - proposed tree removal

FIGURE 2

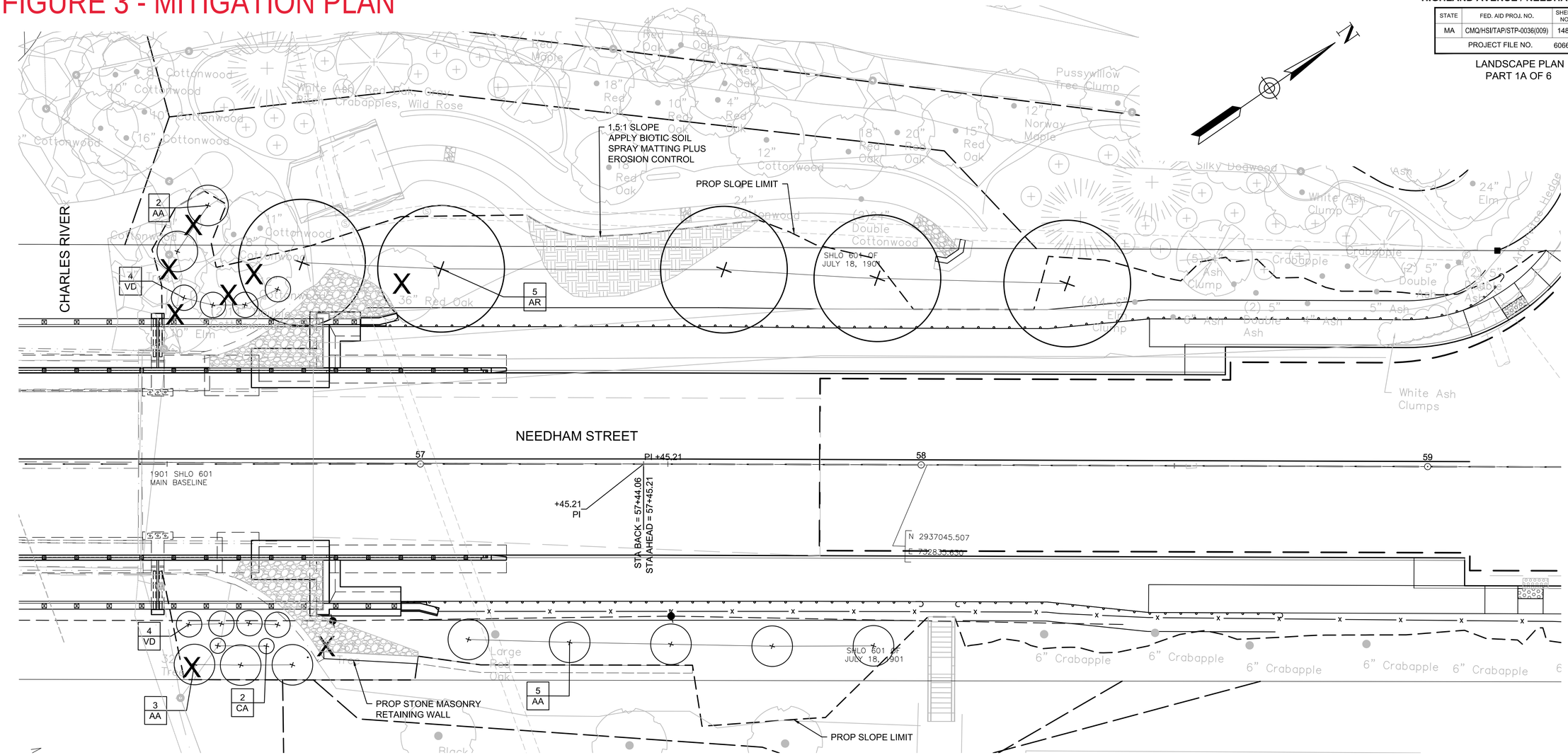
Newton - NE Quadrant - proposed tree removal

FIGURE 3 - MITIGATION PLAN

NEEDHAM / NEWTON
HIGHLAND AVENUE / NEEDHAM STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/HSI/TAP/STP-0036(009)	148A	412
	PROJECT FILE NO.	606635	

LANDSCAPE PLAN
PART 1A OF 6



PLANT LIST					
QTY.	ID	BOTANICAL NAME	COMMON NAME	SIZE	COMMENT
DECIDUOUS TREES					
5	AR	ACER RUBRUM	RED MAPLE	2-1/2" - 3" CAL	B&B
10	AA	AMELANCHIER ARBOREA	SHAD TREE - DOWNY	2" - 2-1/2" CAL	
SHRUBS					
2	CA	CLETHRA ALNIFOLIA	SUMMERSWEET	2-3 HT.	
8	VD	VIBURNUM DENTATUM	ARROWWOOD VIBURNUM	3-4 HT.	

LEGEND

PROPOSED TREE / SHRUB

REM EXIST TREE

0 10 20 30 40
SCALE: 1" = 10'

REV. NO	DESCRIPTION	DATE
0	NEW SHEET FOR CON COMM AMENDMENT	03/04/2021

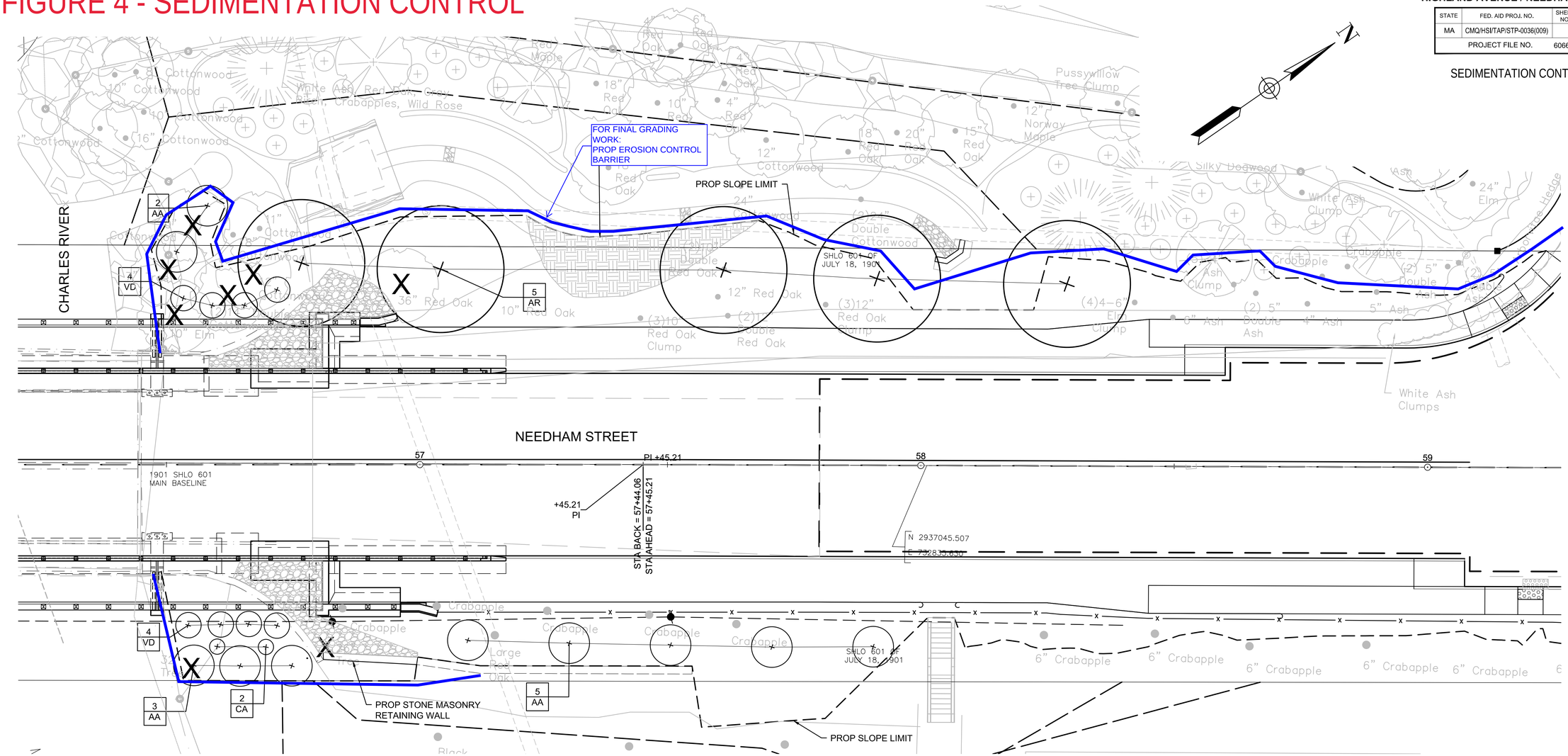
606635_UT(PLANTING PLAN).DWG Plotted on 3-Mar-2021 8:13 PM

FIGURE 4 - SEDIMENTATION CONTROL

NEEDHAM / NEWTON
HIGHLAND AVENUE / NEEDHAM STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/HSI/TAP/STP-0036(009)		412
	PROJECT FILE NO. 606635		

SEDIMENTATION CONTROL



SCALE: 1" = 10'

REV. NO	DESCRIPTION	DATE
0	NEW SHEET FOR CON COMM AMENDMENT	03/04/2021

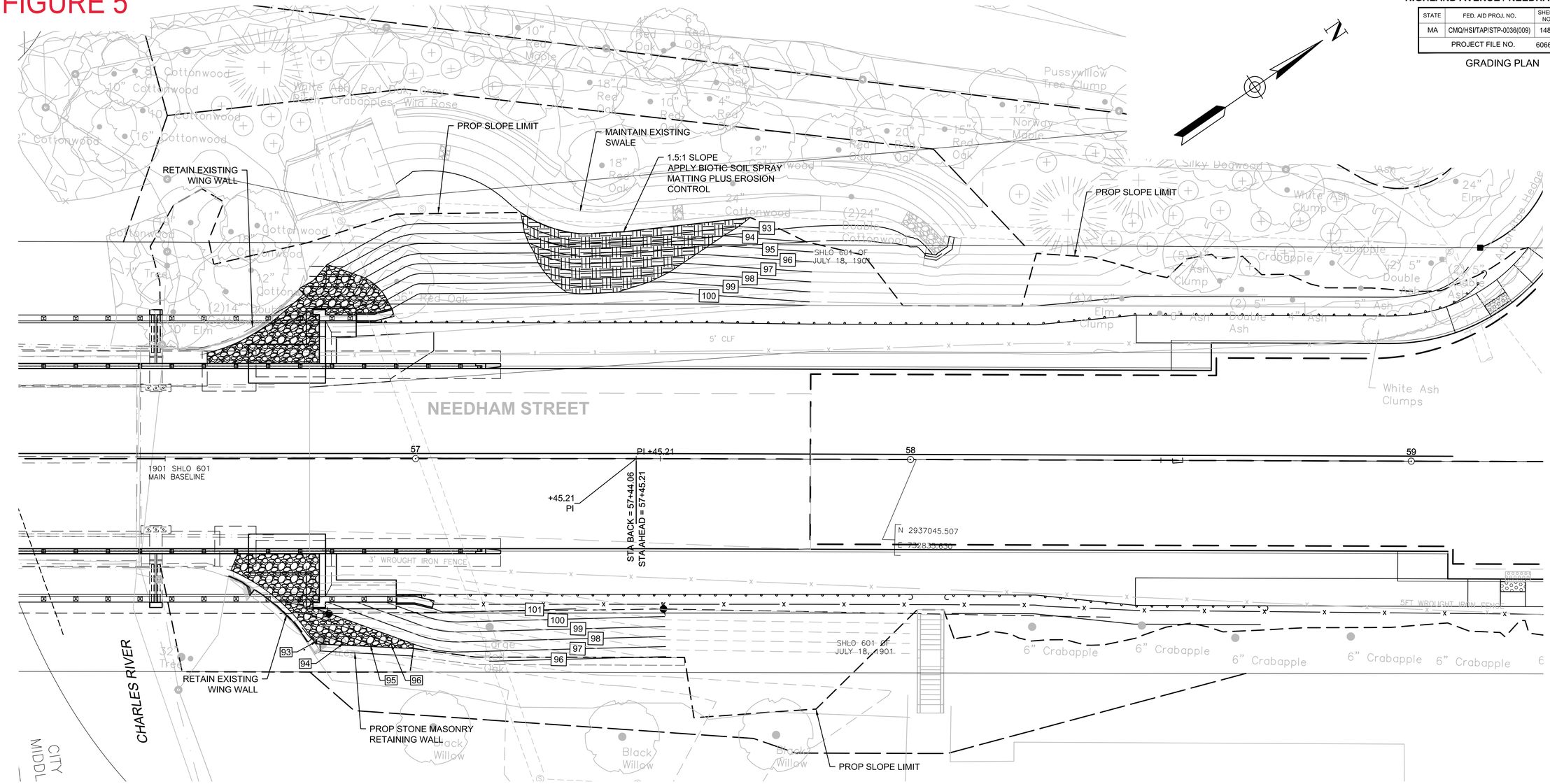
606635_UT(PLANTING PLAN).DWG Plotted on 3-Mar-2021 1:09 PM

FIGURE 5

NEEDHAM / NEWTON
HIGHLAND AVENUE / NEEDHAM STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/HSI/TAP/STP-0036(009)	148A	412
	PROJECT FILE NO.	606635	

GRADING PLAN



SCALE: 1" = 10'

REV. NO	DESCRIPTION	DATE
0	NEW SHEET FOR CON COMM AMENDMENT	03/04/2021

606635_LIT GRADING NEWTON BRIDGE.DWG Plotted on 3-Mar-2021 7:57 PM

FIGURE 6
CONSTRUCTION STAGING FOR TEMP SUPPORTS AND ARCH RE-POINTING - CENTER SPAN

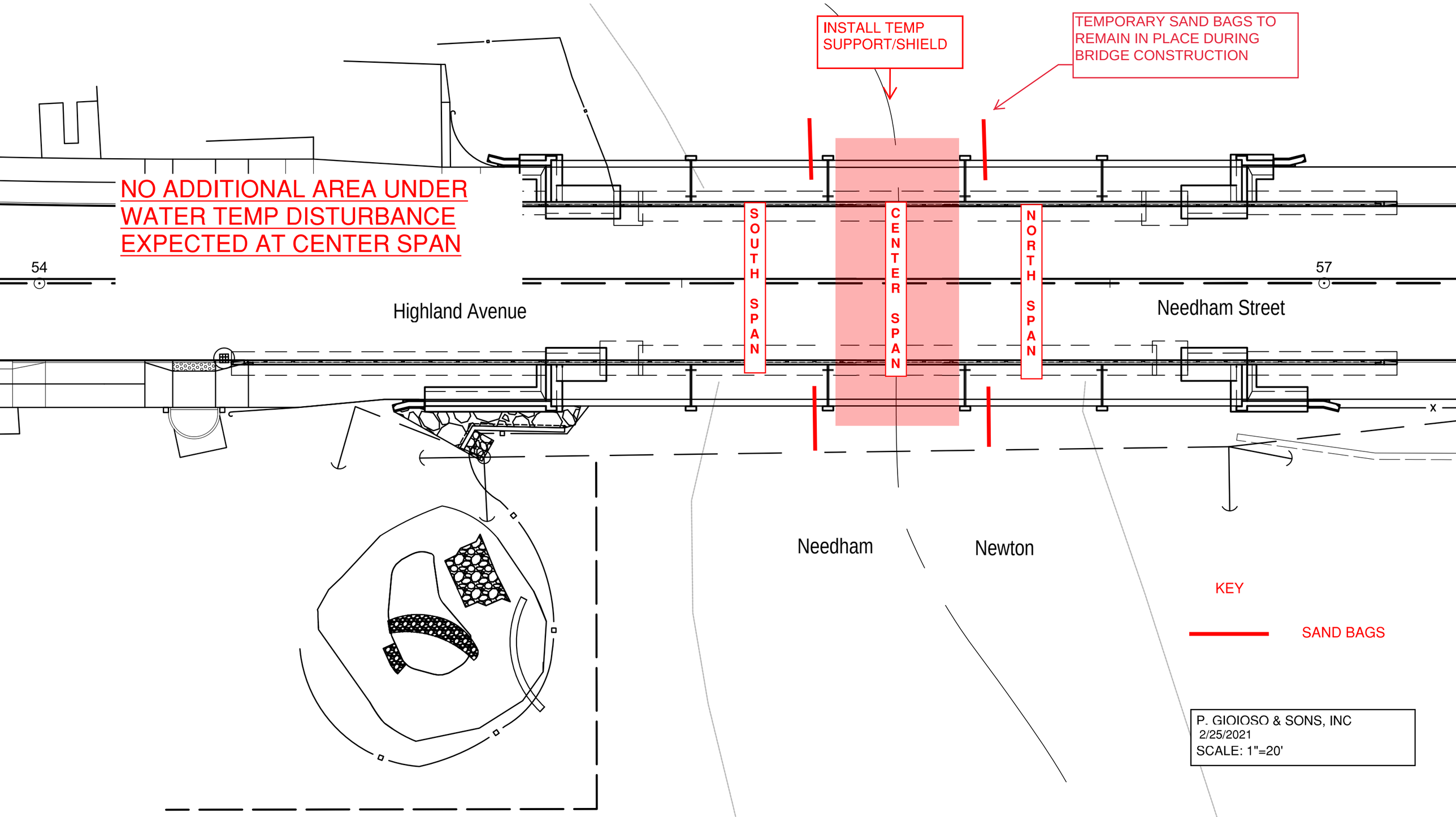
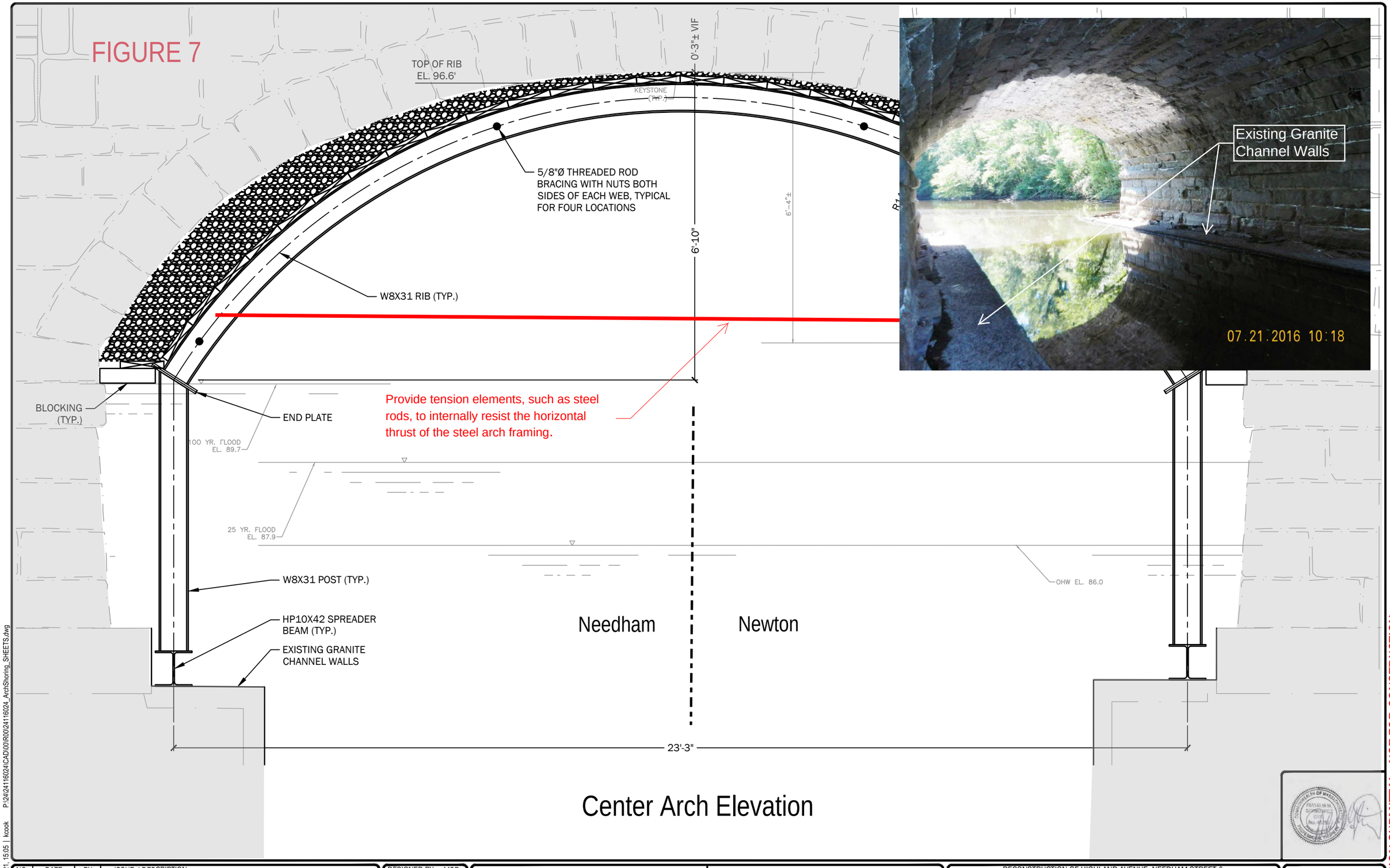


FIGURE 7



Center Arch Elevation

Plotted: 02/04/2021, 15:05 | kcook P:\24\24116024\CAD\00\R00\24116024_ArchShoring_SHEETS.dwg

NO.	DATE	BY	ISSUE / DESCRIPTION

DESIGNED BY:	MSB
DRAWN BY:	KMC
APPROVED BY:	FMG
REVISION NO.:	00
DATE:	02/03/21

GeoEngineers USA

PREPARED FOR:
P. GIOIOSO & SONS, INC.

RECONSTRUCTION OF HIGHLAND AVENUE, NEEDHAM STREET & CHARLES RIVER BRIDGE, N-04-002=N-12-002
NEEDHAM/NEWTON, MA
TEMPORARY ARCH SHORING
CENTER ELEVATION

DRAWING NUMBER:
AS-4
SHEET: 4 OF 5

30% DESIGN SUBMITTAL - NOT FOR CONSTRUCTION

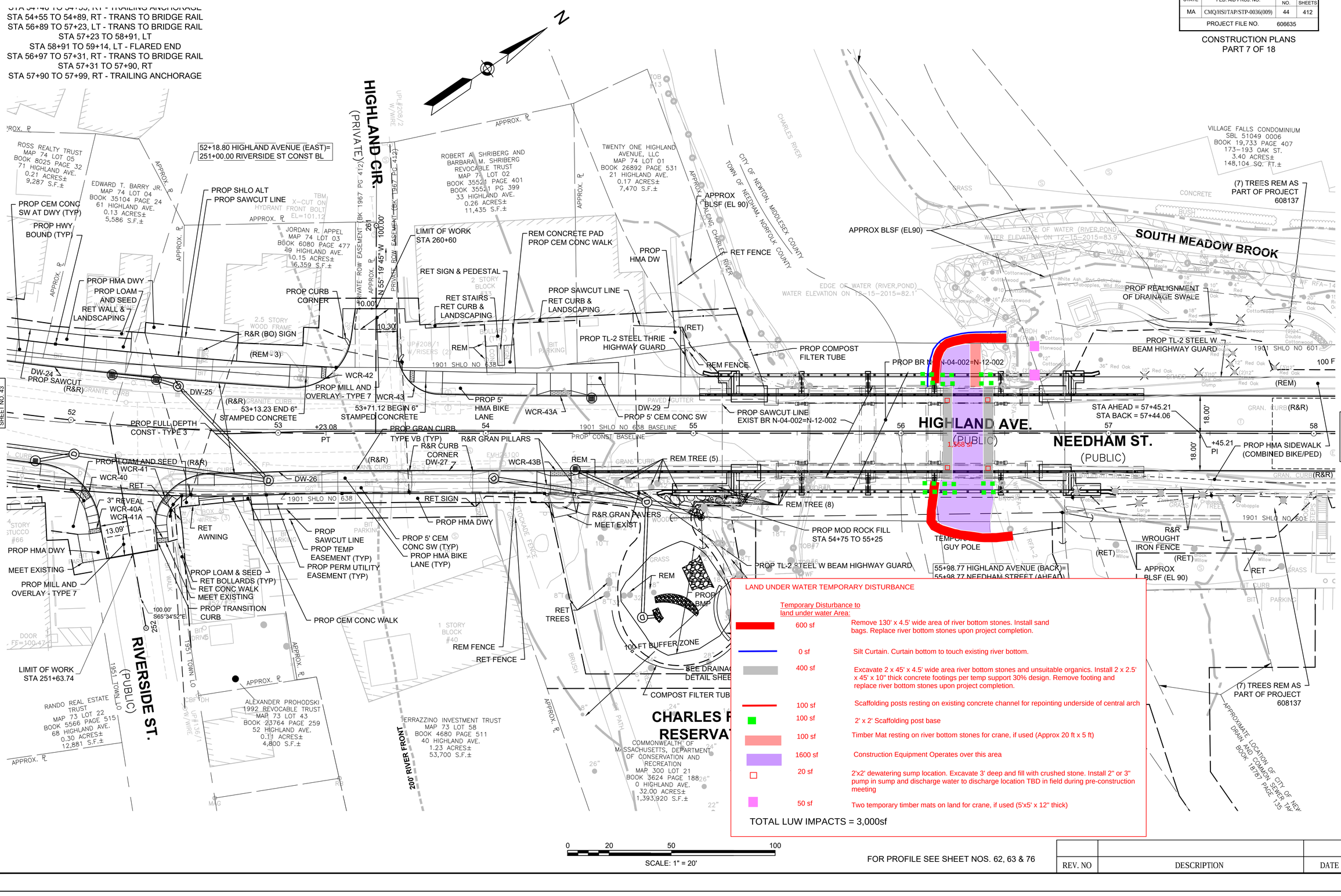
FIGURE 8 - CONSTRUCTION STAGING FOR TEMP SUPPORTS AND ARCH RE-POINTING - NORTH SPAN

NEEDHAM / NEWTON
HIGHLAND AVENUE / NEEDHAM STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/HSI/TAP/STP-0036(009)	44	412
PROJECT FILE NO.	606635		

CONSTRUCTION PLANS
PART 7 OF 18

STA 54+40 TO 54+55, RT - TRAILING ANCHORAGE
STA 54+55 TO 54+89, RT - TRANS TO BRIDGE RAIL
STA 56+89 TO 57+23, LT - TRANS TO BRIDGE RAIL
STA 57+23 TO 58+91, LT
STA 58+91 TO 59+14, LT - FLARED END
STA 56+97 TO 57+31, RT - TRANS TO BRIDGE RAIL
STA 57+31 TO 57+90, RT
STA 57+90 TO 57+99, RT - TRAILING ANCHORAGE



LAND UNDER WATER TEMPORARY DISTURBANCE

Temporary Disturbance to land under water Area:	
600 sf	Remove 130' x 4.5' wide area of river bottom stones. Install sand bags. Replace river bottom stones upon project completion.
0 sf	Silt Curtain. Curtain bottom to touch existing river bottom.
400 sf	Excavate 2 x 45' x 4.5' wide area river bottom stones and unsuitable organics. Install 2 x 2.5' x 45' x 10" thick concrete footings per temp support 30% design. Remove footing and replace river bottom stones upon project completion.
100 sf	Scaffolding posts resting on existing concrete channel for repointing underside of central arch
100 sf	2' x 2' Scaffolding post base
100 sf	Timber Mat resting on river bottom stones for crane, if used (Approx 20 ft x 5 ft)
1600 sf	Construction Equipment Operates over this area
20 sf	2'x2' dewatering sump location. Excavate 3' deep and fill with crushed stone. Install 2" or 3" pump in sump and discharge water to discharge location TBD in field during pre-construction meeting
50 sf	Two temporary timber mats on land for crane, if used (5'x5' x 12" thick)

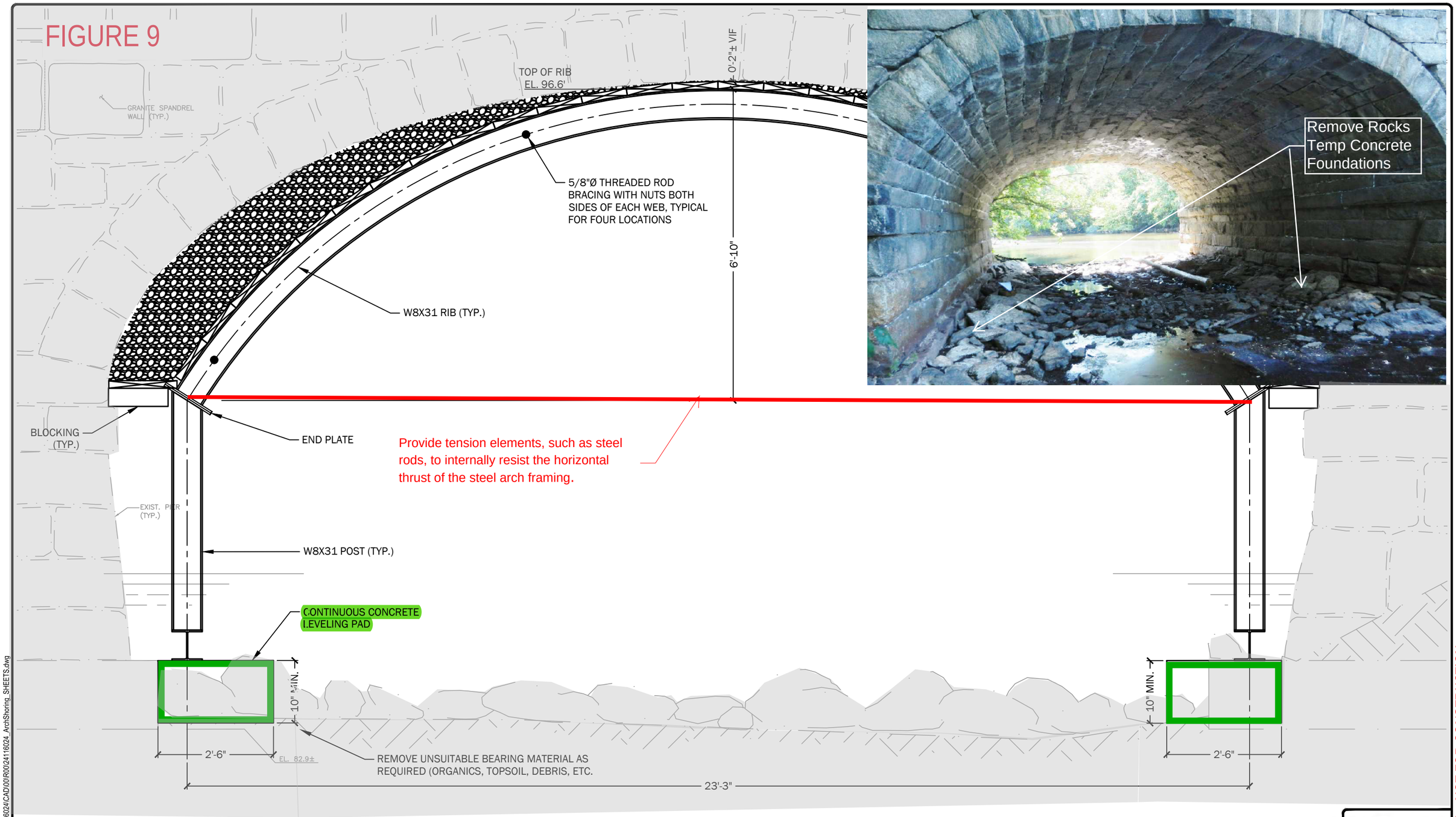
TOTAL LUW IMPACTS = 3,000sf

FOR PROFILE SEE SHEET NOS. 62, 63 & 76

REV. NO	DESCRIPTION	DATE

606635_HDI(CONST PLANS 1-8).DWG Plotted on 4-Jun-2020 5:06 PM

FIGURE 9



North Arch Elevation - Newton

NO.	DATE	BY	ISSUE / DESCRIPTION

DESIGNED BY:	MSB
DRAWN BY:	KMC
APPROVED BY:	FMG
REVISION NO.:	00
DATE:	02/02/21

GeoEngineers USA

PREPARED FOR:

P. GIOIOSO & SONS, INC.

RECONSTRUCTION OF HIGHLAND AVENUE, NEEDHAM STREET & CHARLES RIVER BRIDGE, N-04-002=N-12-002
NEEDHAM/NEWTON, MA

TEMPORARY ARCH SHORING NORTH ELEVATION

DRAWING NUMBER:

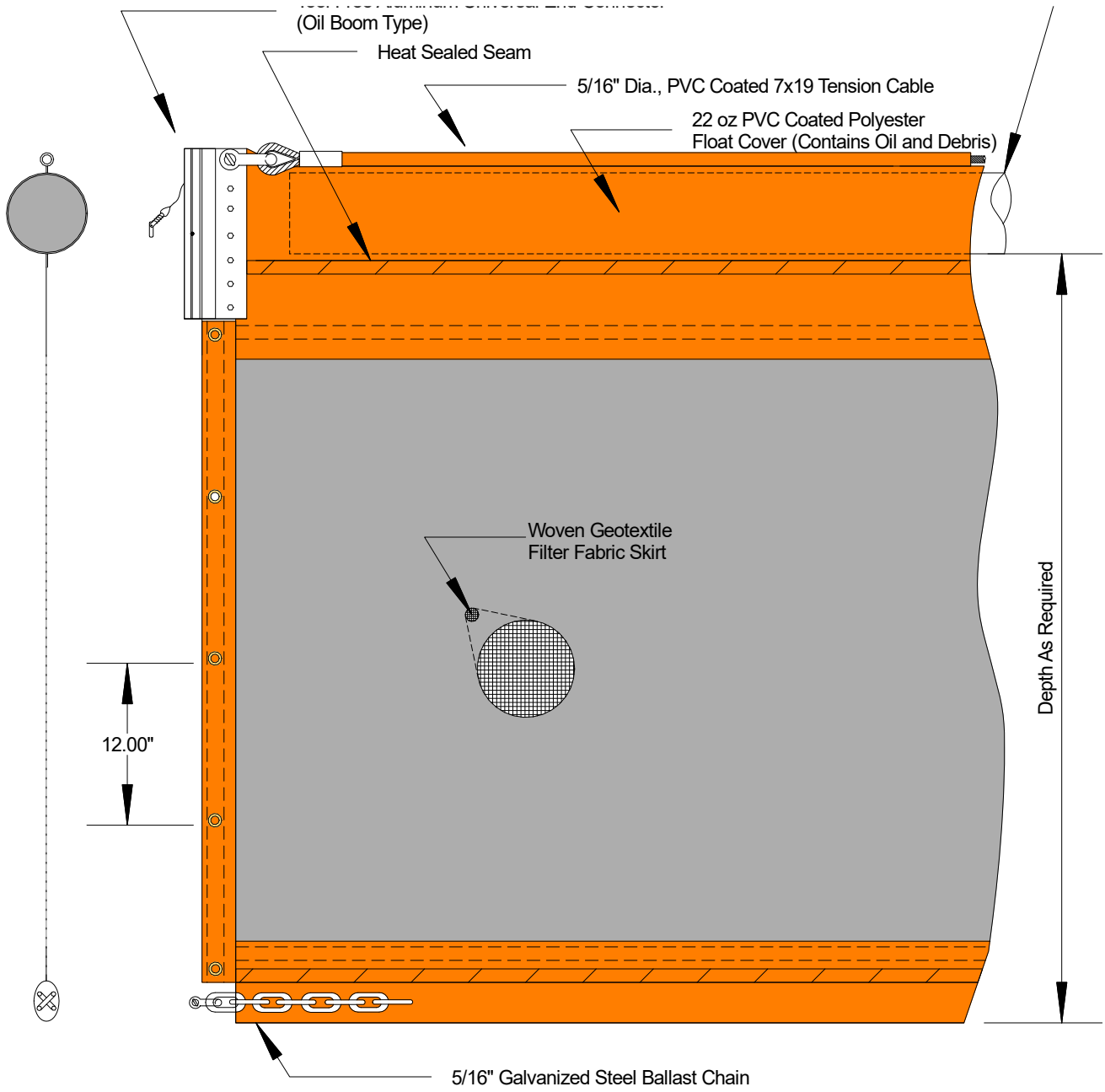
AS-5

SHEET: 5 OF 5

30% DESIGN SUBMITTAL - NOT FOR CONSTRUCTION

Plotted: 02/04/2021, 15:05 | kcook P:\24\24116024\CAD\00\R00\24116024_ArchShoring_SHEETS.dwg

FIGURE 10 - FLOATING TURBIDITY BARRIER



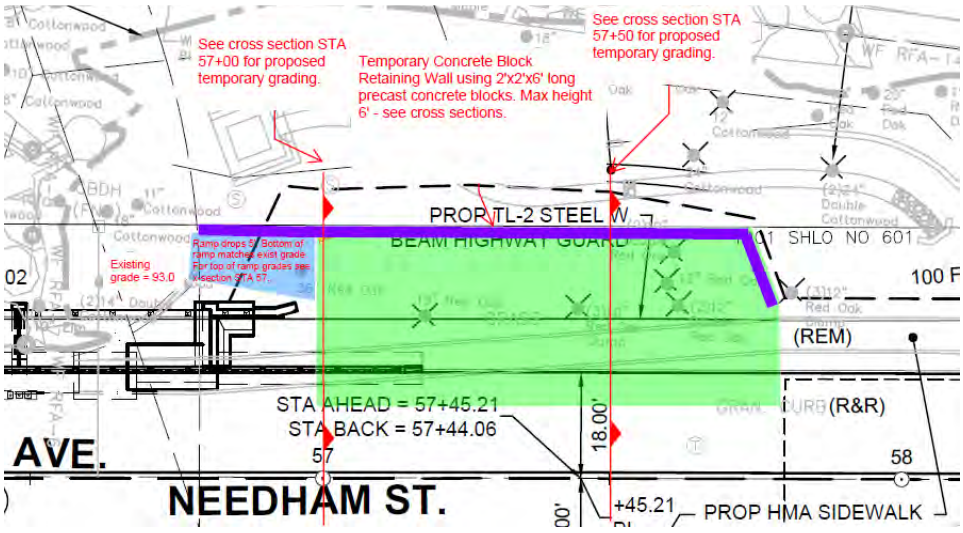
FLOATING TURBIDITY BARRIERS
Semi-Permeable Turbidity Barrier
With Aluminum Universal End Connectors

US Construction Fabrics, LLC
PO Box 505
Windham, NH 03087
603-893-5480 Fax 603-893-2154

Construction Fabrics, Liners & Environmental Products

PROJECT:	
LOCATION:	
SHEET NO.: 1 of 1	DATE:
SCALE: Not To Scale	DRAWN BY: TJP

FIGURE 11 - TEMPORARY STAGING AREA



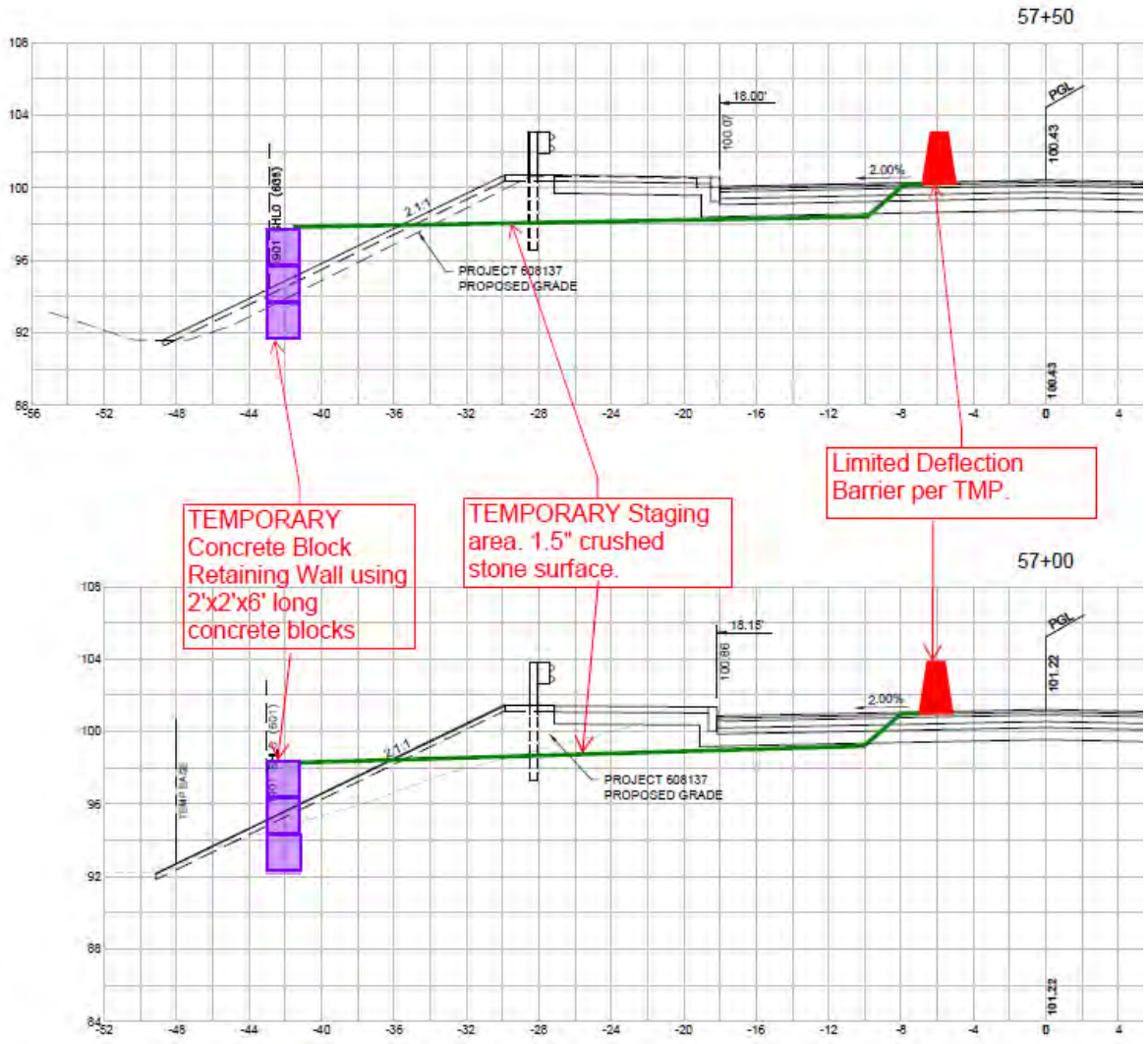
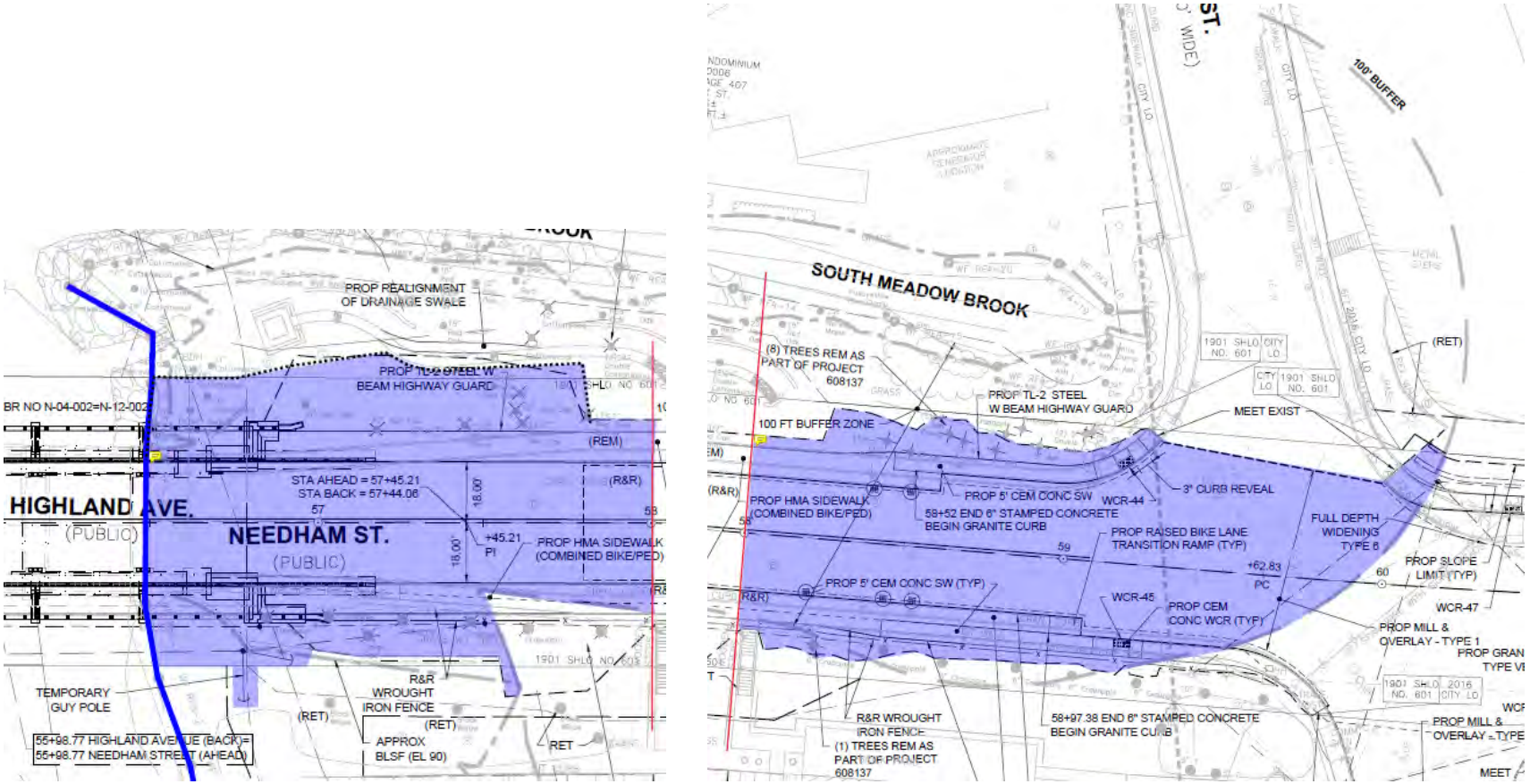


FIGURE 12 – IMPACT AREA

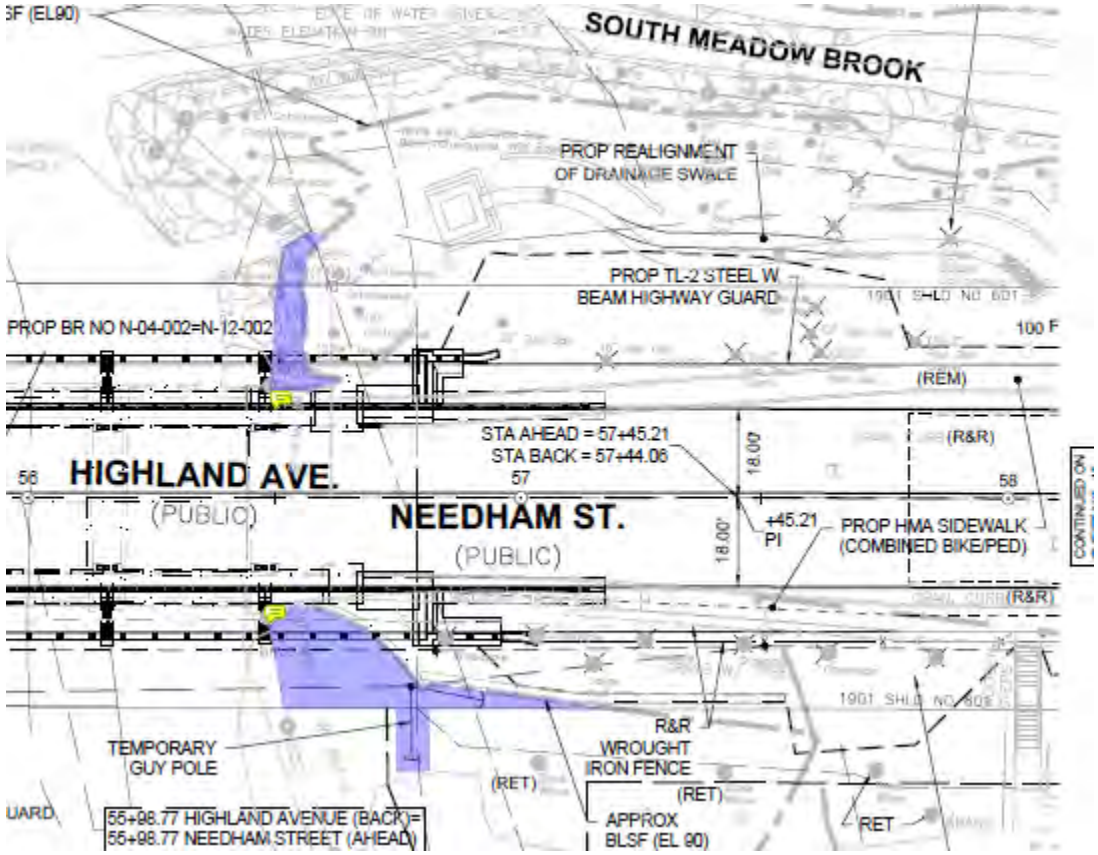
100-FT BUFFER ZONE



Area of work within 100-foot buffer zone = 25,100 sf

FIGURE 13 – IMPACT AREA

BORDERING LAND SUBJECT TO FLOODING

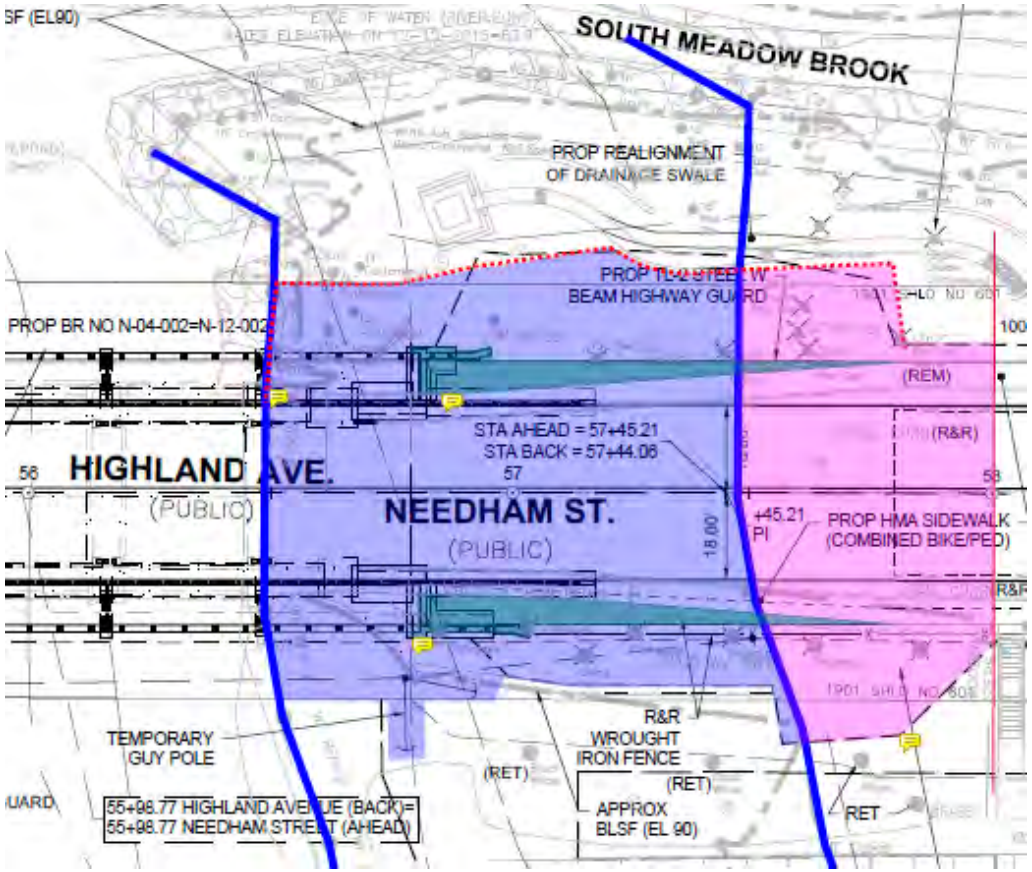


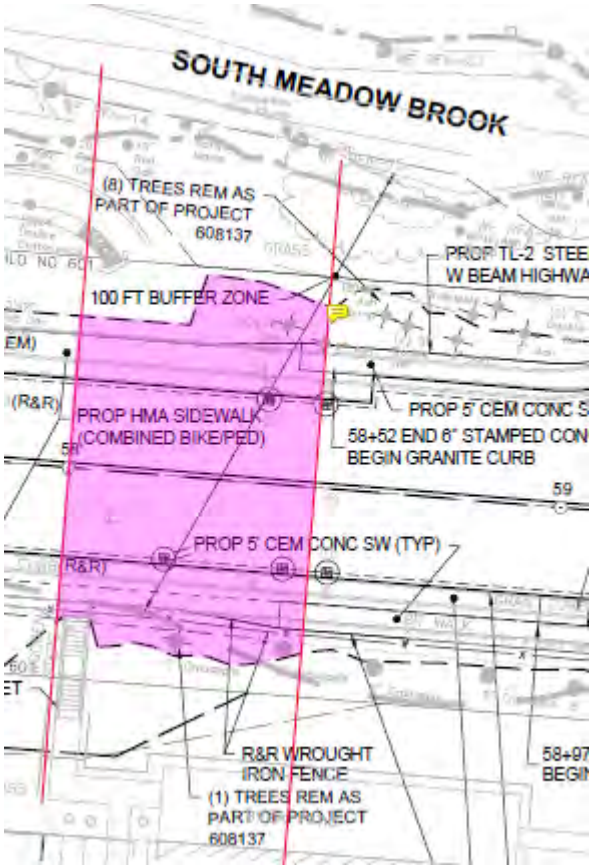
Area of work within BLSF = 850 sf (No change in flood storage elev)

FIGURE 14 – IMPACT AREA

RIVERFRONT AREA

Total impacts = 16,600 sf
Temporary impacts = 15,815 sf
Permanent impacts = 785 sf





Work within 100 ft riverfront area = 8,750 sf — Temporary impacts = 8,030 sf — Permanent impacts = 720 sf

Work within 100-200 ft riverfront area = 7,850 sf — Temporary impacts = 7,785 sf — Permanent impacts = 65 sf

FIGURE 15

DEWATERING DISCHARGE BASIN