PUBLIC NOTICE

US Army Corps of Engineers ®
New England District
696 Virginia Road
Concord, MA 01742-2751

Comment Period Begins: April 27, 2021
Comment Period Ends: May 27, 2021
File Number: NAE-2014-02585
In Reply Refer To: Dan Vasconcelos
Phone: (978) 318-8653
E-mail: daniel.b.vasconcelos@usace.army.mil

The District Engineer has received a permit application to conduct work in waters of the United States from the Massachusetts Department of Transportation (MassDOT) – Highway Division, 10 Park Plaza, Boston, Massachusetts 02116**.** This work is proposed in the Sudbury River, Whitehall Brook, an unnamed perennial stream, nine unnamed intermittent streams, and associated vegetated wetlands at the Interstate 90/Interstate 495 Interchange, extending approximately one mile in each direction from the interchange, and including Fruit Street and Flanders Road, in Hopkinton and Westborough, Massachusetts. The site coordinates are: Latitude 42°16'00"N, Longitude 71°33'51.00"W.

The work includes the discharge of fill material into waters of the United States, including 97,801 square feet (2.2 acres) of permanent impacts to vegetated wetlands, 239,002 square feet (5.5 acres) of temporary impacts to vegetated wetlands, 7,506 square feet (0.2 acres) of permanent stream impacts, and 13,247 square feet (0.3 acres) of temporary stream impacts, resulting from improvements to the I-90/I-495 Interchange. Included in the temporary wetland impacts are 982 square feet of temporary impacts to a vernal pool. The purpose of this project is to improve the safety and operational efficiency of the interchange, including reducing crashes, congestion, and queuing, and eliminating the need for all vehicles to pass through the former toll plaza. The proposed work includes the following components:

- Roadway widening on I-90 and I-495 to accommodate increased shoulder widths
- Widening of I-495 NB between I-90 and Route 9 EB off-ramp to accommodate an auxiliary lane
- Construction of seven new direct and semi-direct ramps between I-90 and I-495
- Reconstruction of existing ramp between I-495 SB to I-90 EB
- Removal of existing I-90 WB on- and off-ramps, I-495 NB on- and off-ramps, and three associated culverts
- Replacement of the following existing bridges:
    - I-495 over the MBTA Worcester line and I-90
    - I-90 over the MBTA Worcester line
    - Fruit Street over I-495
    - I-495 NB over Flanders Road
- Replacement/extension of the following existing culverts:
    - I-90 over Whitehall Brook
    - I-495 over unnamed intermittent stream
    - Former toll plaza ramps over unnamed intermittent streams
    - Former toll plaza ramp over vegetated wetland
- Construction of four new bridge span crossings over unnamed intermittent streams and the Sudbury River
- Bank stabilization/stream channel improvements at stream crossings
- Improvements to the existing roadway drainage system

Permanent Section 404 impacts associated with this project would result primarily from roadway widening, ramp and bridge construction, culvert replacement/extension, retaining wall construction, slope grading, vegetated apron construction, and installation of scour protection measures. Temporary Section 404 impacts would result primarily from temporary work zones and construction access.

The work is shown on the enclosed plans entitled "MASSACHUSETTS DEPARTMENT OF TRANSPORTATION HIGHWAY DIVISION PLAN AND PROFILE OF RECONSTRUCTION OF THE I-495 / I-90 INTERCHANGE IN THE TOWNS OF HOPKINTON AND WESTBOROUGH MIDDLESEX AND WORCESTER COUNTIES", on 55 sheets, and dated "APRIL 2021".

The project has been designed to avoid and minimize impacts to waters of the United States, including wetlands, through the use of various best management practices, including the installation of erosion and sedimentation controls at the project limits, the use of steeper slopes or retaining walls adjacent to wetlands wherever feasible, using bridge spans to cross waterways and wetlands where feasible, limiting the number of bridge piers within wetlands, and designing replacement culverts to meet stream crossing standards. As mitigation for unavoidable impacts, the applicant proposes onsite wetland restoration where existing loop ramps are being removed, including the daylighting of three streams, and stormwater improvements.

AUTHORITY

Permits are required pursuant to:

____ Section 10 of the Rivers and Harbors Act of 1899
__X__ Section 404 of the Clean Water Act
____ Section 103 of the Marine Protection, Research and Sanctuaries Act.

The decision whether to issue a permit will be based on an evaluation of the probable impact of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit which may reasonably accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered, including the cumulative effects thereof; among those are: conservation, economics, aesthetics, general environmental concerns, wetlands, cultural value, fish and wildlife values, flood hazards, flood plain value, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food production and, in general, the needs and welfare of the people.

The U.S. Army Corps of Engineers, New England District (Corps), is soliciting comments from the public; Federal, state, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. The Corps will consider all comments received to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

Where the activity involves the discharge of dredged or fill material into waters of the United States or the transportation of dredged material for the purpose of disposing it in ocean waters, the evaluation of the impact

of the activity in the public interest will also include application of the guidelines promulgated by the Administrator, U.S Environmental Protection Agency, under authority of Section 404(b) of the Clean Water Act, and/or Section 103 of the Marine Protection Research and Sanctuaries Act of 1972, as amended.

NATIONAL HISTORIC PRESERVATION ACT

The Federal Highway Administration (FHWA) is the lead federal agency responsible for coordination pursuant to Section 106 of the National Historic Preservation Act. MassDOT has concluded coordination with the State Historic Preservation Officer (SHPO) and relevant Tribal Historic Preservation Officers (THPOs) on behalf of the FHWA. Although FHWA has taken the lead on this consultation, based on his initial review, the District Engineer has determined that little likelihood exists for the proposed work to impinge upon properties with cultural or Native American significance, or listed in, or eligible for listing in, the National Register of Historic Places. The Corps will continue review and consultation as required to fulfil the requirements of the National Historic Preservation Act as part of the permit review process.

ENDANGERED SPECIES CONSULTATION

FHWA is the lead federal agency responsible for coordination pursuant to Section 7 of the Endangered Species Act. Although FHWA is the lead federal agency, the Corps has reviewed the application for the potential impact on Federally-listed threatened or endangered species and their designated critical habitat pursuant to section 7 of the Endangered Species Act as amended. It is our preliminary determination that the proposed activity for which authorization is being sought is designed, situated or will be operated/used in such a manner that it is not likely to adversely affect a listed species or their critical habitat. FHWA is coordinating with the U.S. Fish and Wildlife Service on listed species under their jurisdiction and the ESA consultation will be concluded prior to the final decision.

OTHER GOVERNMENT AUTHORIZATIONS

The following authorizations have been applied for, or have been, or will be obtained:

(X) Permit, license or assent from State.
(X) Permit from local wetland agency or conservation commission.
(X) Water Quality Certification in accordance with Section 401 of the Clean Water Act.

COMMENTS

In order to properly evaluate the proposal, we are seeking public comment. Anyone wishing to comment is encouraged to do so. Comments should be submitted in writing by the above date. If you have any questions, please contact Dan Vasconcelos at (978) 318-8653, (800) 343-4789 or (800) 362-4367, if calling from within Massachusetts.

Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider the application. Requests for a public hearing shall specifically state the reasons for holding a public hearing. The Corps holds public hearings for the purpose of obtaining public comments when that is the best means for understanding a wide variety of concerns from a diverse segment of the public.

The initial determinations made herein will be reviewed in light of facts submitted in response to this notice. All comments will be considered a matter of public record. Copies of letters of objection will be forwarded to the applicant who will normally be requested to contact objectors directly in an effort to reach an understanding.

THIS NOTICE IS NOT AN AUTHORIZATION TO DO ANY WORK.

for **Paul M. Maniccia**
Chief, Permits and Enforcement Branch
Regulatory Division

If you would prefer not to continue receiving Public Notices by email, please contact Ms. Tina Chaisson at (978) 318-8058 or e-mail her at bettina.m.chaisson@usace.army.mil. You may also check here ( ) and return this portion of the Public Notice to: Bettina Chaisson, Regulatory Division, U.S. Army Corps of Engineers, 696 Virginia Road, Concord, MA 01742-2751.

NAME: _____
ADDRESS: _____
PHONE: _____

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

PLAN AND PROFILE OF

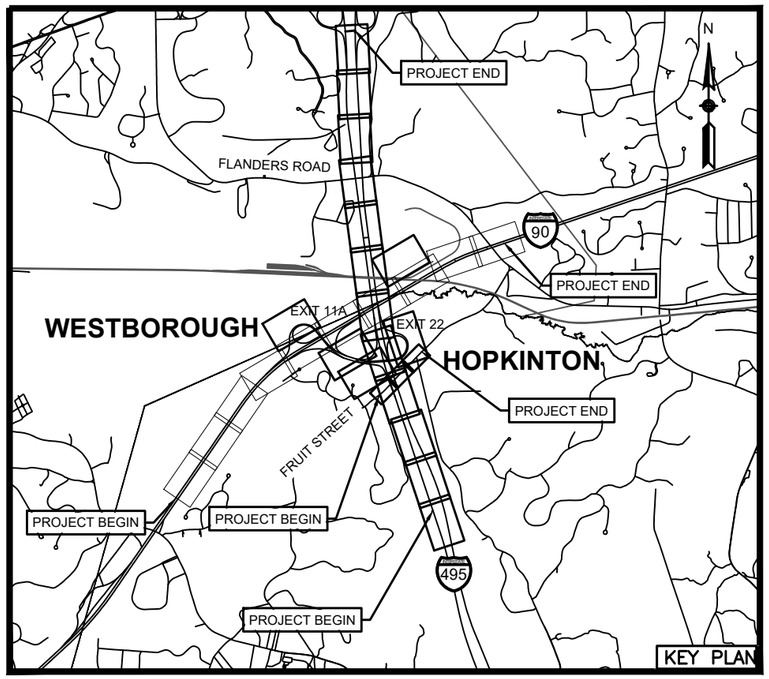
RECONSTRUCTION OF THE I-495 / I-90 INTERCHANGE

IN THE TOWNS OF

HOPKINTON AND WESTBOROUGH

MIDDLESEX AND WORCESTER COUNTIES

FEDERAL AID PROJECT NO.



4000 0 4000 8000 12000

SCALE: 1" = 4000'

LENGTH OF PROJECT = 12,900 FEET = 2.443 MILES (I-495)
LENGTH OF PROJECT = 10,175 FEET = 1.927 MILES (I-90)
LENGTH OF PROJECT = 1,433.44 FEET = 0.271 MILES (FRUIT STREET)

APPLICATION FOR USACE INDIVIDUAL SECTION 10/404 PERMIT

APRIL 2021

LEGEND

EXISTING	PROPOSED	DESCRIPTION
CB	CB	CATCH BASIN
		CATCH BASIN CURB INLET
		FLARED END SECTION
MB	MB	MAIL BOX
WELL	WELL	WELL
EHH	EHH	ELECTRIC HANDHOLE
GG	GG	GAS GATE
		HYDRANT
		LIGHT POLE
C	C	CABLE MANHOLE
D	D	DRAINAGE MANHOLE
E	E	ELECTRIC MANHOLE
G	G	GAS MANHOLE
M	M	MISC MANHOLE
OT	OT	OPTICAL TELECOM
S	S	SEWER MANHOLE
T	T	TELEPHONE MANHOLE
W	W	WATER MANHOLE
UPL	UPL	UTILITY POLE
		BUSH
SIZE & TYPE		TREE
WF #		WETLAND FLAGS
WG	WG	WATER GATE
12 IN RCP	12 IN RCP	DRAINAGE PIPE
15 IN RCP	15 IN RCP	DRAINAGE PIPE LARGER THAN 12 IN
	12 IN DI WATER	WATER MAIN
		BALANCED STONE WALL
		GUARD RAIL - STEEL POSTS
		GUARD RAIL - WOOD POSTS
		CHAIN LINK OR METAL FENCE
		WOOD FENCE
		SEDIMENT CONTROL BARRIER
		TREE LINE
		SAWCUT LINE
		TOP OR BOTTOM OF SLOPE
		EDGE OF PAVEMENT
		LIMIT OF MICROMILLING AND OVERLAY
		BANK OF RIVER OR STREAM
		BORDER OF WETLAND
		STATE HIGHWAY LAYOUT
		TOWN OR CITY LAYOUT
		COUNTY LAYOUT
		RAILROAD SIDELINE
		TOWN OR CITY BOUNDARY LINE
		PROPERTY LINE OR APPROXIMATE PROPERTY LINE
		EASEMENT
		PROPOSED MODIFIED ROCKFILL
		MAST ARM, SHAFT AND BASE (ARM LENGTH AS NOTED)
		SIGN AND POST
		SIGN AND POST (2 POSTS)

	PERMANENT VEGETATED WETLAND IMPACT
	TEMPORARY VEGETATED WETLAND IMPACT
	EMERGENT HABITAT RESTORATION
	FOREST HABITAT RESTORATION
	AQUATIC BED HABITAT RESTORATION
	SCRUB SHRUB HABITAT RESTORATION
	TEMPORARY VERNAL POOL IMPACT
	PERMANENT WATERWAY IMPACT
	TEMPORARY WATERWAY IMPACT
	WATERWAY MITIGATION (ENHANCEMENT)
	WATERWAY MITIGATION (CREATION)
	EMERGENT HABITAT WETLAND MITIGATION
	FOREST HABITAT WETLAND MITIGATION

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.

INDEX

ABBREVIATIONS

BL	BASELINE	NB	NORTHBOUND
BOS	BOTTOM OF SLOPE	PERM	PERMANENT
CEM	CEMENT	PROP	PROPOSED
CONC	CONCRETE	RET	RETAIN
CONST	CONSTRUCTION	SB	SOUTHBOUND
EXIST	EXISTING	SHLO	STATE HIGHWAY LAYOUT
EOP	EDGE OF PAVEMENT	TEMP	TEMPORARY
GRAN	GRANITE	TOS	TOP OF SLOPE
HMA	HOT MIX ASPHALT	TYP	TYPICAL

CONVENTIONAL SIGNS

STATE HIGHWAY LAYOUT LINE
COUNTY, CITY, OR TOWN BOUNDARY
COUNTY, CITY, OR TOWN SIDE LINE
BASE LINE OR SURVEY LINE — S36°04'20"W 53.578 — 2+00
RIGHT OF WAY LINE
CULVERT

ELEVATIONS — PROPOSED SURFACE / PRESENT SURFACE — PRES. 90.7 — PROP. 90.91 — 10+50

HNTB

TETRA TECH

HOWARD STEIN HUDSON

GREEN INTERNATIONAL AFFILIATES, INC.

DATE	DESCRIPTION	REV #

MassDOT Massachusetts Department of Transportation Highway Division

RECOMMENDED FOR APPROVAL

CHIEF ENGINEER ____ DATE ____

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

DIVISION ADMINISTRATOR ____ DATE ____

APPROVED

HIGHWAY ADMINISTRATOR ____ DATE ____

607977_EV_USACE(CV)-BTC.DWG

I-495 / I-90 Interchange
Hopkinton - Westborough, MA
Key Plan
Sheet 2 of 55

NAD 83

N

FEMA FLOOD ZONE

BOUNDARY OF WETLAND

WHITEHALL BROOK
WATERWAY (R2)

UNNAMED INTERMITTENT
STREAM WATERWAY (R4)

UNNAMED INTERMITTENT
STREAM WATERWAY (R4)

CONTINUED ON
SHEET NO. 4

CONTINUED ON
SHEET NO. 3

I-90

RAMP WS

RAMP SE

RAMP ES

RAMP EN

RAMP NW

I-495 SB

I-495 NB

PROJECT BEGIN
I-495 SB
STA 2103+00.00
N 2917219.7767
E 640171.4717

MEET EXISTING
I-495 NB
STA 3114+50.00
N 2917857.0457
E 640246.2868

PROJECT BEGIN
FRUIT STREET
STA 2114+72.96
N 2919851.2024
E 639894.2153

PROJECT END
FRUIT STREET
STA 36+59.30
N 2920916.5875
E 639892.4710

FRUIT STREET

UNNAMED INTERMI
STREAM WATERWA

0 400 800 1200 1600

SCALE: 1" = 400'

PLAN VIEW NUMBER	1	2	3	4	5	6	19	24	25	26	33
SHEET NUMBER											
EXISTING AND PROPOSED CONDITIONS PLANS	6	7	8	9	10	11	24	29	30	31	-
MITIGATION PLANS	-	-	-	-	-	-	-	-	-	-	34

607977_EV_USACE(KEY_PLAN)-BTC.DWG

PLAN VIEW NUMBER	6	7	8	9	10	11	12	18	19	20	27
SHEET NUMBER											
EXISTING AND PROPOSED CONDITIONS PLANS	11	12	13	14	15	16	17	23	24	25	32
MITIGATION PLANS	-	-	-	-	-	-	-	-	-	-	-

I-495 / I-90 Interchange
Hopkinton - Westborough, MA
Key Plan
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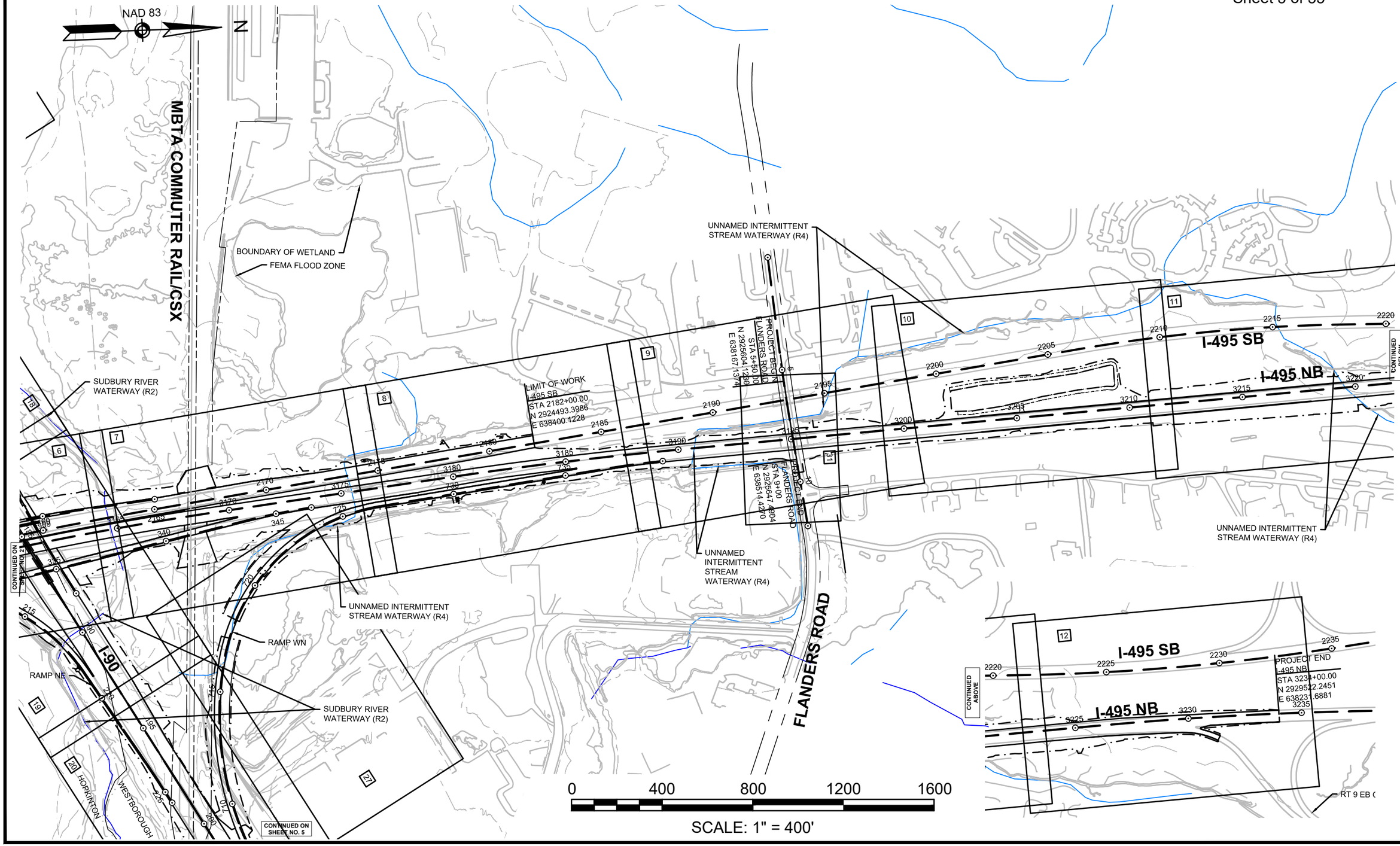
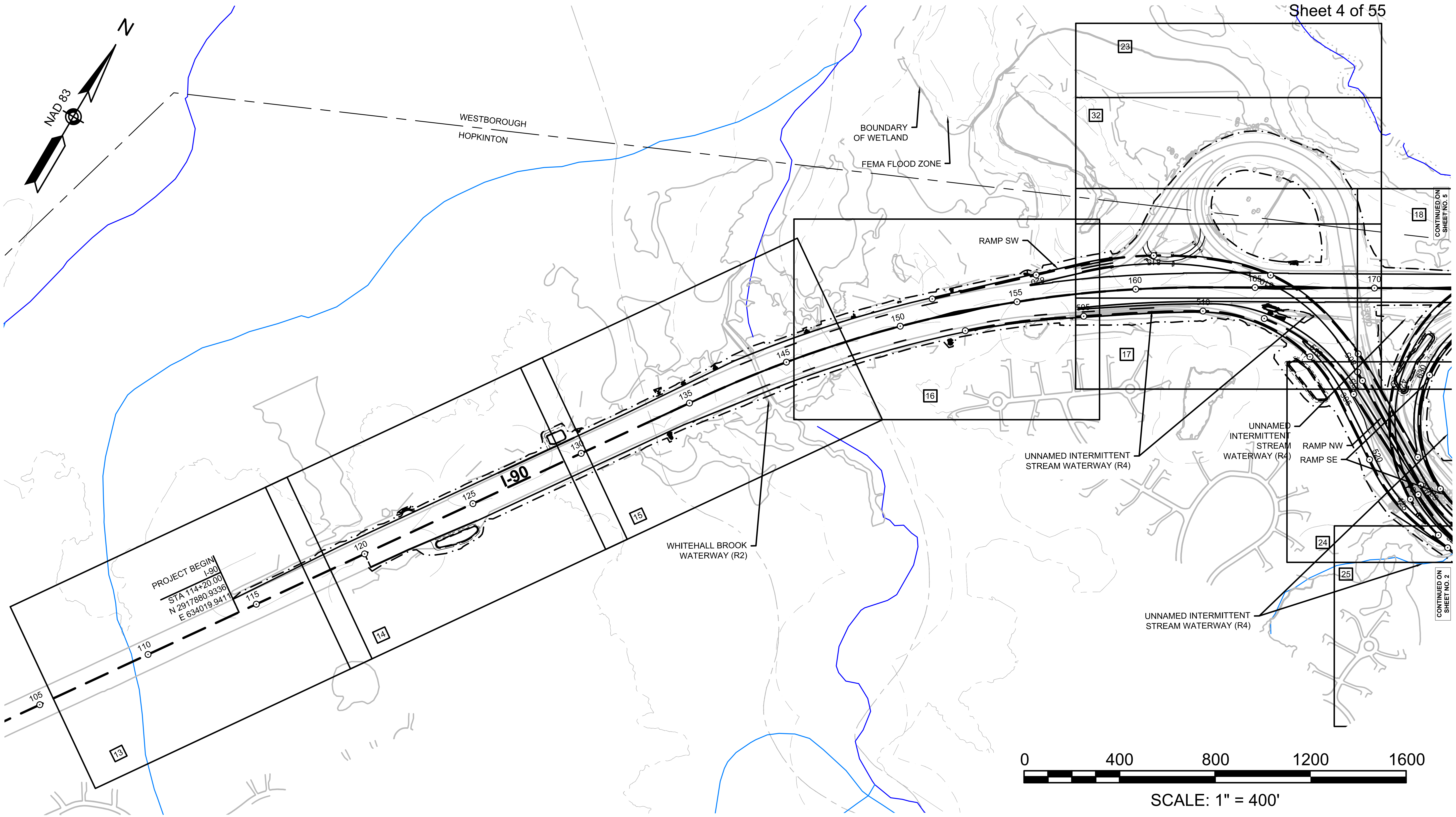


607977_EV_USACE(KEY_PLAN)-BTC.DWG

I-495 / I-90 Interchange
Hopkinton - Westborough, MA
Key Plan



PLAN VIEW NUMBER	13	14	15	16	17	18	23	24	25	32
	SHEET NUMBER									
EXISTING AND PROPOSED CONDITIONS PLANS	18	19	20	21	22	23	28	29	30	-
MITIGATION PLANS	-	-	-	-	-	-	-	-	-	33

607977_EV_USACE(KEY_PLAN)-BTC.DWG

I-495 / I-90 Interchange
Hopkinton - Westborough, MA
Key Plan
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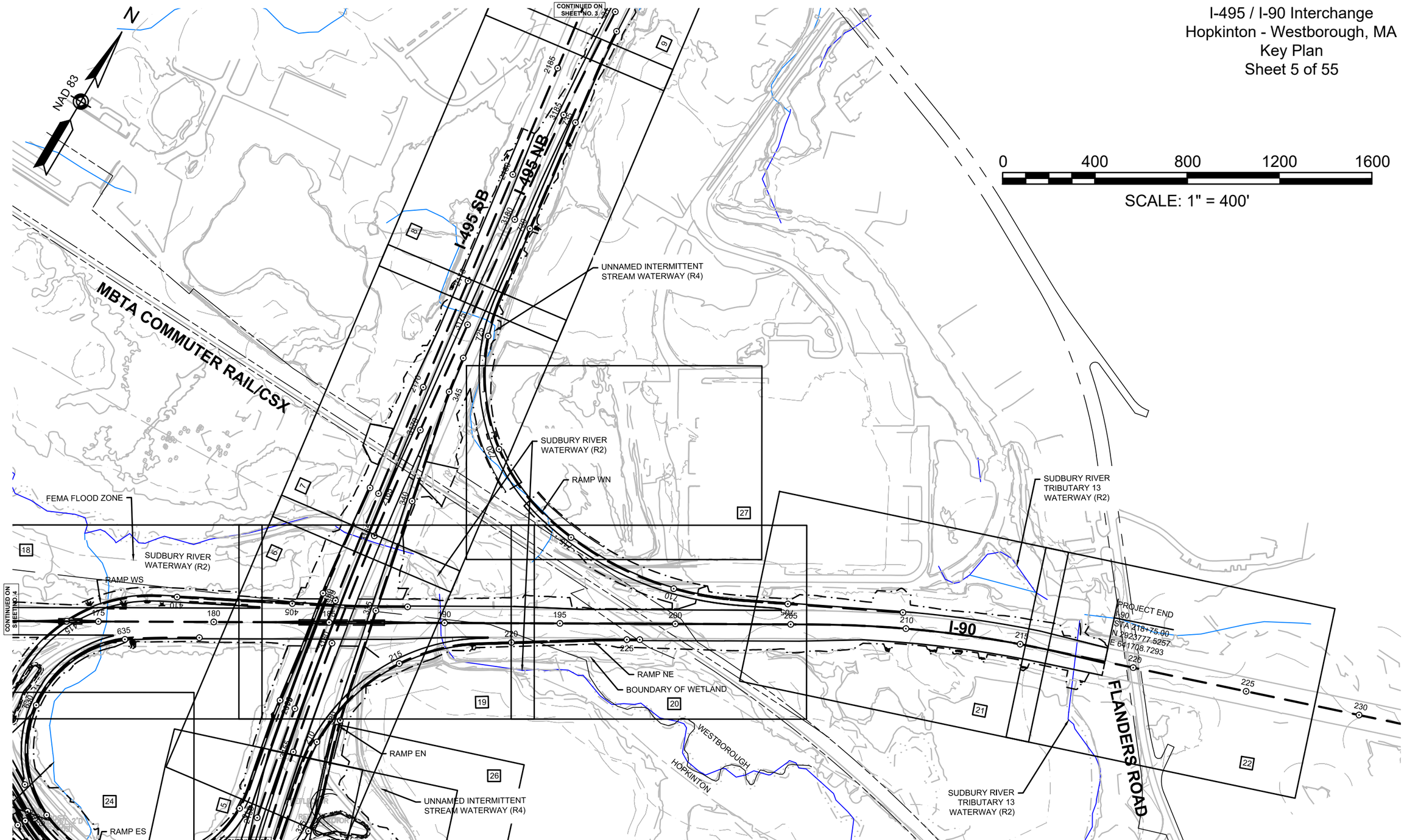

PLAN VIEW NUMBER	5	6	7	8	9	18	19	20	21	22	24	26	27
SHEET NUMBER													
EXISTING AND PROPOSED CONDITIONS PLANS	10	11	12	13	14	23	24	25	26	27	29	31	32
MITIGATION PLANS	-	-	-	-	-	-	-	-	-	-	-	-	-

607977_EV_USACE(KEY_PLAN)-BTC.DWG

I-495 / I-90 Interchange
Hopkinton - Westborough, MA
Existing and Proposed Conditions Plan
Sheet 6 of 55

NAD 83

N

WHITEHALL BROOK
WATERWAY (R2)

DEPT. OF ENVIRONMENTAL MGMT.
PARCEL ID R23-495-0

EXISTING SHLO LINE
NO ACCESS

PROP LIMIT OF WORK ZONE

PROP LIMIT OF GRADING

PROP SEDIMENT
CONTROL BARRIER

PROPOSED STORMWATER
MITIGATION

PROP GUARDRAIL

BOS

INFILTRATION
BASIN 3

BEGIN PROP
HMA BERM

PROP HMA BERM

PROP EOP

PROP EOP

PROP PVMT
MICROMILLING &
RESURFACING

VW T01 W52

VW T01 W55

I-495 SB

PC 81.28

PROP I-495 SB
CONST BL

EXIST ROADWAY

PROJECT BEGIN
I-495 SB
STA 2103+00
N 2917219.7761
E 640171.4717

MEET EXISTING
I-495 SB
STA 2105+00
N 2917039.5454
E 640231.3242

BORDER OF WETLAND (TYP)

I-495 NB

PC +96.78

PROP I-495 NB
CONST BL

EXIST ROADWAY

CONTINUED ON
SHEET NO. 7

DEPT. OF ENVIRONMENTAL MGMT.
PARCEL ID R23-495-0

EXISTING SHLO LINE
NO ACCESS

LEGEND

- PERMANENT VEGETATED WETLAND IMPACT
- TEMPORARY VEGETATED WETLAND IMPACT
- TEMPORARY VERNAL POOL IMPACT
- PERMANENT WATERWAY IMPACT
- TEMPORARY WATERWAY IMPACT

0 80 200 300

SCALE: 1" = 80'

NOTES:
1. MITIGATION FOR PERMANENT IMPACTS SHOWN ON SHEETS 33 TO 36
2. TEMPORARY IMPACTS (1:1) WILL BE MITIGATED BY RESTORATION OF THE AREA DISTURBED
3. FOR MITIGATION OF TEMPORARY IMPACTS EXCEEDING (1:1), SEE MITIGATION PLANS ON SHEETS 33 TO 36

I-495 / I-90 Interchange
Hopkinton - Westborough, MA
Existing and Proposed Conditions Plan
Sheet 7 of 55

NAD 83

DEPT. OF ENVIRONMENTAL MGMT.
PARCEL ID R23-495-0

INTERMITTENT STREAM WATERWAY (R4)

NOEL OLEARY
PARCEL ID R2-12-C
38 HUCKLEBERRY RD

EXISTING SHLO LINE
NO ACCESS

VEGETATED WETLAND T01 W47 (PFO1)
HOPKINTON
226 SF TEMP IMPACT FOR DRAINAGE OUTFALL RECONSTRUCTION
SEE SHEET 49 FOR CROSS SECTION

VW T01 W47

PROP SEDIMENT CONTROL BARRIER (TYP)

PROP LIMIT OF GRADING (TYP)

PROP LIMIT OF WORK ZONE (TYP)

PROP RETAINING WALL

BOS

PROP GUARDRAIL (TYP)

SAWCUT

PROP PVMT MICROMILLING & RESURFACING

PROP HMA BERM

END PROP HMA BERM

PROP EOP

SAWCUT

PROP FULL DEPTH PAVEMENT WIDENING

I-495 SB

2105 2106 2107 2108 2109 2110 2111 2112 2113 2114 2115 2116 2117

PROP I-495 SB CONST BL

71.00'

PROP FULL DEPTH PAVEMENT WIDENING

PROP BANK STABILIZATION LOCATION NO. 5B SEE SHEET 37 FOR DETAILS

CONTRACTOR TO USE TURBIDITY CURTAIN OR OTHER APPROVED MEANS TO MINIMIZE IMPACTS TO DOWNSTREAM AREAS

PROP EOP

PROP FULL DEPTH PAVEMENT WIDENING

BOS

VW T01 W49

PROP SCOUR COUNTERMEASURE FOR STREAMS WITH STREAM BED MATERIAL SEE SHEET 38 FOR DETAILS

BOS

CONTINUED ON SHEET NO. 6

VEGETATED WETLAND T01 W49 (PFO1)
HOPKINTON
2,012 SF PERM IMPACT FOR VEGETATED CHANNEL AND BANK STABILIZATION
2,375 SF TEMP IMPACT FOR WORK ZONE
2 CY FILL FOR ROADWAY EMBANKEMNT
SEE SHEET 49 FOR CROSS SECTION

ORDINARY HIGH WATER

WATERWAY DS-W (R4)
HOPKINTON
694 SF TEMP IMPACT FOR VEGETATED CHANNEL
SEE SHEET 54 FOR CROSS SECTION

REMOVE EXISTING PAVED WATERWAY
PROP VEGETATED CHANNEL
SEE SHEET 38 FOR DETAILS

PROP SCOUR COUNTERMEASURE FOR STREAMS WITH STREAM BED MATERIAL SEE SHEET 38 FOR DETAILS

BORDER OF WETLAND (TYP)

LIMIT OF WORK MEET EXISTING I-495 NB
STA 3114+50
N 2917857.0413
E 640246.2882

PROP BANK STABILIZATION LOCATION NO. 5A SEE SHEET 37 FOR DETAILS

INTERMITTENT STREAM WATERWAY DS-W (R4)

3107 3108 3109 3110 3111 3112 3113 3114 3115 3116 3117 3118 3119

EXIST ROADWAY

REMOVE AND REPLACE EXISTING CMP PIPE END SECTION AND NEXT ADJACENT SECTION OF CMP

36"D" ACCMP

I-495 NB

PROP PVMT MICROMILLING & RESURFACING

BOS

SAWCUT

PROP EOP

PROP FULL DEPTH PAVEMENT WIDENING

PROP I-495 NB CONST BL

68.00'

BEGIN PROP HMA BERM

INFILTRATION BASIN 4

TOS/BOS

PROP FULL DEPTH PAVEMENT WIDENING

BOS

VW T01 W53

PROP HMA BERM

BOS/TOS

TOS

PROPOSED STORMWATER MITIGATION

CONTINUED ON SHEET NO. 8

LEGEND

- PERMANENT VEGETATED WETLAND IMPACT
- TEMPORARY VEGETATED WETLAND IMPACT
- TEMPORARY VERNAL POOL IMPACT
- PERMANENT WATERWAY IMPACT
- TEMPORARY WATERWAY IMPACT

0 80 200 300

SCALE: 1" = 80'

NOTES:
1. MITIGATION FOR PERMANENT IMPACTS SHOWN ON SHEETS 33 TO 36
2. TEMPORARY IMPACTS (1:1) WILL BE MITIGATED BY RESTORATION OF THE AREA DISTURBED
3. FOR MITIGATION OF TEMPORARY IMPACTS EXCEEDING (1:1), SEE MITIGATION PLANS ON SHEETS 33 TO 36

I-495 / I-90 Interchange
Hopkinton - Westborough, MA
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NAD 83

DEPT. OF ENVIRONMENTAL MGMT.
PARCEL ID R23-495-0

EXISTING SHLO LINE
NO ACCESS

PROP SEDIMENT CONTROL BARRIER (TYP)

PROP LIMIT OF GRADING (TYP)

PROP LIMIT OF WORK ZONE (TYP)

PROP FULL DEPTH PAVEMENT WIDENING

BOS/TOS

TOS

PROP EOP

EXIST ROADWAY PROP PVMT MICROMILLING & RESURFACING

PROP I-495 NB CONST BL

I-495 SB

2117 2118 2119 2120 2121 2122 2123 2124 2125 2126 2127 2128 2129

71.00'

81.50'

BOS

PROP EOP

PROP FULL DEPTH PAVEMENT WIDENING

SAWCUT

PROP FULL DEPTH PAVEMENT WIDENING

3119 3120 3121 3122 3123 3124 3125 3126 3127 3128 3129 3130 3131

68.00'

57.50'

PROP I-495 NB CONST BL

BOS

PROP EOP

SAWCUT

EXIST ROADWAY PROP PVMT MICROMILLING & RESURFACING

I-495 NB

3+92.77

100+00

101

102

103

104

PC

REM

PROP RAMP NW CONST BL

RAMP NW

PROP FULL DEPTH PAVEMENT

END PROP HMA BERM

PROP BARRIER

BOS/TOS

RET

BOS

PROP GUARDRAIL (TYP)

PROP EOP

TOS

EXISTING SHLO LINE
NO ACCESS

DEPT. OF ENVIRONMENTAL MGMT.
PARCEL ID R23-495-0

CONTINUED ON SHEET NO.7

CONTINUED ON SHEET NO.9

LEGEND

- PERMANENT VEGETATED WETLAND IMPACT
- TEMPORARY VEGETATED WETLAND IMPACT
- TEMPORARY VERNAL POOL IMPACT
- PERMANENT WATERWAY IMPACT
- TEMPORARY WATERWAY IMPACT

NOTES:
1. MITIGATION FOR PERMANENT IMPACTS SHOWN ON SHEETS 33 TO 36
2. TEMPORARY IMPACTS (1:1) WILL BE MITIGATED BY RESTORATION OF THE AREA DISTURBED
3. FOR MITIGATION OF TEMPORARY IMPACTS EXCEEDING (1:1), SEE MITIGATION PLANS ON SHEETS 33 TO 36

0 80 200 300

SCALE: 1" = 80'

I-495 / I-90 Interchange
Hopkinton - Westborough, MA
Existing and Proposed Conditions Plan
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NAD 83

DUNN KEVIN
PARCEL ID R2-12-C
173 FRUIT ST

DEPT. OF ENVIRONMENTAL MGMT.
PARCEL ID R23-495-0

PROP LIMIT OF WORK ZONE (TYP)
PROP LIMIT OF GRADING (TYP)
EXISTING SHLO LINE
NO ACCESS
TOS
PROP EOP
PROP FULL DEPTH PAVEMENT WIDENING
EXIST ROADWAY PROP PVMT MICROMILLING & RESURFACING
PROP FULL DEPTH PAVEMENT
PROP GUARDRAIL (TYP)
PROP GRAN EDGING
PROP FRUIT STREET BRIDGE OVER I-495 AND RAMP NW
PROP HMA BERM
PROP PAVEMENT REMOVAL
RAMP ES
FRUIT STREET
I-495 SB
I-495 NB
PROP I-495 NB CONST BL
SAWCUT
REM
PROP BARRIER
PROP RETAINING WALL (TYP)
RAMP NW
PROP GRAN EDGING
ABAN
PROP LIMIT OF GRADING (TYP)
PROP LIMIT OF WORK (TYP)
PROP FRUIT ST BL
PROP TOWN LO LINE
CONTINUED ON SHEET NO. 8
CONTINUED ON SHEET NO. 10

PC +12.30
PC +33.46
PT +25.36
PC +158.69
540+43.85
+63.21

LEGEND
- PERMANENT VEGETATED WETLAND IMPACT
- TEMPORARY VEGETATED WETLAND IMPACT
- TEMPORARY VERNAL POOL IMPACT
- PERMANENT WATERWAY IMPACT
- TEMPORARY WATERWAY IMPACT

NOTES:
1. MITIGATION FOR PERMANENT IMPACTS SHOWN ON SHEETS 33 TO 36
2. TEMPORARY IMPACTS (1:1) WILL BE MITIGATED BY RESTORATION OF THE AREA DISTURBED
3. FOR MITIGATION OF TEMPORARY IMPACTS EXCEEDING (1:1), SEE MITIGATION PLANS ON SHEETS 33 TO 36

0 80 200 300

SCALE: 1" = 80'

I-495 / I-90 Interchange
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CONTINUED ON SHEET NO. 29

VEGETATED WETLAND T02 W06 (PEM1)
HOPKINTON
27,348 SF PERM IMPACT FOR RAMP ES ROADWAY AND EMBANKMENT
8,834 SF TEMP IMPACT FOR WORK ZONE
1,092 CY FILL FOR RAMP ES ROADWAY AND EMBANKMENT
SEE SHEET 53 FOR CROSS SECTION

VW T02 W06

RAMP ES

PROP FULL DEPTH PAVEMENT

PROP GUARDRAIL (TYP)

PROP PAVEMENT REMOVAL

PROP SHLO LINE

PROP PAVEMENT REMOVAL

PROP GRAN EDGING

PROP GUARDRAIL (TYP)

INFILTRATION BASIN 6

PROPOSED STORMWATER MITIGATION

PROP HMA BERM

PROP FULL DEPTH PAVEMENT

ABAN

RAMP NW

PROP RAMP NW BRIDGE OVER I-495

PROP BARRIER

PROP LIMIT OF GRADING (TYP)

PROP LIMIT OF WORK ZONE (TYP)

PROP PAVEMENT REMOVAL

EXISTING SHLO LINE NO ACCESS

PROP BARRIER (TYP)

ABAN

PROP EOP

PROP FULL DEPTH PAVEMENT

EXISTING CONNECTOR BRIDGE OVER I-495 TO BE DEMOLISHED

PROP PAVEMENT REMOVAL

VEGETATED WETLAND T02 W03 (PEM1)
HOPKINTON
25,966 SF TEMP IMPACT FOR WETLAND MITIGATION AREA CONSTRUCTION
SEE SHEET 55 FOR CROSS SECTION

VW T02 W03

VEGETATED WETLAND T02 W02 (PSS1)
HOPKINTON
3,944 SF TEMP IMPACT FOR WORK ZONE
SEE SHEET 52 FOR CROSS SECTION

VW T02 W02

SEDIMENT CONTROL BARRIER (TYP)

RAMP EN

PROP RAMP EN BRIDGE OVER I-495, RAMP NE AND RAMP NW

I-495 SB

PROP EOP

PROP I-495 NB CONST BL

PROP I-495 NB CONST BL

VW T01 W48

I-495 NB

PROP BARRIER

PROP FULL DEPTH PVMT

VEGETATED WETLAND T01 W01 (PEM1)
HOPKINTON
23,590 SF PERM IMPACT FOR RAMP SE ROADWAY AND EMBANKMENT
17,500 SF TEMP IMPACT FOR WORK ZONE
1,193 CY FILL FOR ROADWAY AND EMBANKMENT
SEE SHEET 53 FOR CROSS SECTION

VEGETATED WETLAND T01 W48 (PEM1)
HOPKINTON
17,052 SF PERM IMPACT FOR REALIGNMENT OF I-495 NB
747 CY FILL FOR REALIGNMENT OF I-495 NB
SEE SHEET 49 FOR CROSS SECTION

VW T01 W01

RAMP SE

PROP FULL DEPTH PAVEMENT

PROP CEM CONC MEDIAN ISLAND

PROP PAVEMENT REMOVAL

PROP RAMP SE CONSTR

RAMP SE

PROP HMA BERM

BEGIN HMA BERM

RAMP NE

PROP RAMP NE CONST BL

PROP BARRIER

PROP GRAN EDGING

PROP PAVEMENT REMOVAL

PROPOSED STORMWATER MITIGATION

PROP PVMT REMOVAL

PROP FULL DEPTH PVMT

INFILTRATION BASIN 2

CONTINUED ON SHEET NO. 9

CONTINUED ON SHEET NO. 11

0 80 200 300

SCALE: 1" = 80'

LEGEND
- PERMANENT VEGETATED WETLAND IMPACT
- TEMPORARY VEGETATED WETLAND IMPACT
- TEMPORARY VERNAL POOL IMPACT
- PERMANENT WATERWAY IMPACT
- TEMPORARY WATERWAY IMPACT

NOTES:
1. MITIGATION FOR PERMANENT IMPACTS SHOWN ON SHEETS 33 TO 36
2. TEMPORARY IMPACTS (1:1) WILL BE MITIGATED BY RESTORATION OF THE AREA DISTURBEDFOR MITIGATION OF TEMPORARY IMPACTS EXCEEDING (1:1), SEE MITIGATION PLANS ON SHEETS 33 TO 36

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VEGETATED WETLAND T01 W01 (PEM1)
HOPKINTON
23,590 SF PERM IMPACT FOR ROADWAY EMBANKMENT
17,500 SF TEMP IMPACT FOR WORK ZONE
1,193 CY FILL FOR ROADWAY AND EMBANKMENT
SEE SHEET 55 FOR CROSS SECTION

VEGETATED WETLAND T01 W48A (PEM1)
HOPKINTON
5,810 SF PERM IMPACT FOR REALIGNMENT OF I-495 NB
209 CY FILL FOR REALIGNMENT OF I-495 NB
SEE SHEET 49 FOR CROSS SECTION

VEGETATED WETLAND T01 W48 (PEM1)
HOPKINTON
17,052 SF PERM IMPACT FOR REALIGNMENT OF I-495 NB
747 CY FILL FOR REALIGNMENT OF I-495 NB
SEE SHEET 49 FOR CROSS SECTION

DEPT. OF ENVIRONMENTAL MGMT.
PARCEL ID R23-495-0

TOWN OF WESTBOROUGH
PARCEL ID 23-2-0

VW T01 W14

VEGETATED WETLAND T01 W14 (PEM1/PSS1/PFO1)
HOPKINTON
1,871 SF PERM IMPACT FOR RAMP WS ROADWAY AND BRIDGE PIERS
25,582 SF TEMP IMPACT FOR WORK ZONE
2,425 SF TEMP IMPACT FOR WETLAND MITIGATION AREA CONSTRUCTION
46 CY FILL FOR RAMP WS ROADWAY AND BRIDGE PIERS
WESTBOROUGH
3,576 SF TEMP IMPACT FOR WORK ZONE
4,276 SF TEMP IMPACT FOR WETLAND MITIGATION AREA CONSTRUCTION
SEE SHEET 53 FOR CROSS SECTION

VEGETATED WETLAND T01 W09 (PSS1)
HOPKINTON
6,400 SF TEMP IMPACT FOR WETLAND MITIGATION AREA CONSTRUCTION
2,558 SF TEMP IMPACT FOR WORK ZONE
SEE SHEET 52 FOR CROSS SECTION

WATERWAY TT KBK C/D (R4)
HOPKINTON
4,992 SF TEMP IMPACT FOR WORK ZONE

INTERMITTENT STREAM
WATERWAY TT KBK C/D (R4)

VEGETATED WETLAND T01 W35 (PFO1)
WESTBOROUGH
102 SF PERM IMPACT FOR BANK STABILIZATION
1,530 SF TEMP IMPACT FOR WORK ZONE
SEE SHEET 52 FOR CROSS SECTION

CONTINUED ON SHEET NO. 23

CONTINUED ON SHEET NO. 10

CONTINUED ON SHEET NO. 12

CONTINUED ON SHEET NO. 25

RAMP SE
RAMP NE
RAMP EN
RAMP WS
I-495 SB
I-495 NB
I-90 (MASSACHUSETTS TURNPIKE)
SUDBURY RIVER WATERWAY (R2)
WESTBOROUGH
HOPKINTON
UNNAMED STREAM

BORDER OF WETLAND (TYP)
PROP LIMIT OF WORK ZONE (TYP)
PROP LIMIT OF GRADING (TYP)
PROP SEDIMENT CONTROL BARRIER (TYP)
PROPOSED I-495 BRIDGE OVER I-90
PROP CEM CONC MEDIAN
PROP RAMP SE CONST BL
PROP GRAN EDGING
PROP FULL DEPTH PAVEMENT
PROP BARRIER
PROP I-495 SB CONST BL
PROP BARRIER (TYP)
PROP I-495 NB CONST BL
PROP HMA BERM
PROP HMA BERM
PROP PAVEMENT REMOVAL
PROP RAMP EN BRIDGE OVER RAMP NE
PROP GUARDRAIL (TYP)
PROP RAMP NE CONST BL
PROP GRAN EDGING (TYP)
PROP FULL DEPTH PVMT
PROP GUARDRAIL (TYP)
PROP RET WALL (TYP)
PROP PAVEMENT REMOVAL
PROP GRAN EDGING
PROPOSED STORMWATER MITIGATION
PROP SHEETING WITHIN LIMITS OF FLOWING WATER FOR FOUNDATION CONSTRUCTION. CONTRACTOR TO MAINTAIN CHANNEL FLOW BY APPROPRIATE MEANS
ORDINARY HIGH WATER
PROP RAMP NE BRIDGE OVER INTERMITTENT STREAM AND SUDBURY RIVER
PROP RAMP EN BRIDGE OVER I=495
PROP PAVEMENT REMOVAL
PROP RAMP EN CONST BL
PROP FULL DEPTH PVMT
PROP GRAN EDGING
PROP EOP
PROP EOP
PROP FULL DEPTH PVMT
RETAIN EXIST DOUBLE 15' WIDE BY 17.5' HIGH CONCRETE CULVERTS
EXIST SHILO LINE NO ACCESS

VW T01 W01
VW T01 W48
VW T01 W48A
VW T01 W09
VW T01 W35

LEGEND
- PERMANENT VEGETATED WETLAND IMPACT
- TEMPORARY VEGETATED WETLAND IMPACT
- TEMPORARY VERNAL POOL IMPACT
- PERMANENT WATERWAY IMPACT
- TEMPORARY WATERWAY IMPACT

0 80 200 300

SCALE: 1" = 80'

NOTES:
1. MITIGATION FOR PERMANENT IMPACTS SHOWN ON SHEETS 33 TO 36
2. TEMPORARY IMPACTS (1:1) WILL BE MITIGATED BY RESTORATION OF THE AREA DISTURBED
3. FOR MITIGATION OF TEMPORARY IMPACTS EXCEEDING (1:1), SEE MITIGATION PLANS ON SHEETS 33 TO 36

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NAD 83

N

TOWN OF WESTBOROUGH PARCEL ID 23-2-0

ORDINARY HIGH WATER

VW T01 W14

PROP GUARDRAIL (TYP)

PROP CONC MEDIAN BARRIER (TYP)

ORDINARY HIGH WATER

RETAIN EXIST DOUBLE 15' WIDE BY 17.5' HIGH CONCRETE CULVERTS

VARIES

60.00'

CONTINUED ON SHEET NO. 11

PROP FULL DEPTH PAVEMENT

PROP PVMT REMOVAL

RAMP EN

92.00'

PROP GUARDRAIL (TYP)

PROP I-495 BRIDGE OVER RR

PROP RAMP EN CONST BL

PROP RAMP EN BRIDGE OVER RR

MBTA/CSX RR

PROP BANK STABILIZATION LOCATION NO. 6 (SEE SHEET 37 FOR DETAILS)

EXISTING SHLO LINE NO ACCESS

SUDBURY RIVER WATERWAY (R2)

ORDINARY HIGH WATER

VW T01 W35

VW T02 W10

MASS DEPT OF TRANSPORTATION PARCEL ID 23-7-0

PROP PERM HIGHWAY EASEMENT

VEGETATED WETLAND T01 W35 (PEM1)
WESTBOROUGH
102 SF PERM IMPACT FOR BANK STABILIZATION
1,530 SF TEMP IMPACT FOR WORK ZONE
SEE SHEET 52 FOR CROSS SECTION

VEGETATED WETLAND T02 W10 (PFO1/PEM1/PAB1/PSS1)
WESTBOROUGH
200 SF PERM IMPACT FOR RAMP WN BRIDGE PIERS
64,316 SF TEMP IMPACT FOR WORK ZONE
385 SF TEMP IMPACT FOR DRAINAGE OUTFALL RECONSTRUCTION WITH VELOCITY DISSIPATING APRON
7 CY FILL FOR RAMP WN BRIDGE PIERS
SEE SHEET 54 FOR CROSS SECTION

PROP TURBIDITY CURTAIN FOR WORK WITHIN STAGNANT WATER

PROP LIMIT OF GRADING (TYP)

CONTRACTOR TO USE TURBIDITY CURTAIN OR OTHER APPROVED MEANS TO MINIMIZE IMPACTS TO DOWNSTREAM AREAS

VW T02 W26

VEGETATED WETLAND T02 W26 (PEM1)
WESTBOROUGH
38 SF TEMP IMPACT FOR DRAINAGE OUTFALL RECONSTRUCTION WITH VELOCITY DISSIPATING APRON
SEE SHEET 49 FOR CROSS SECTION

PROP LIMIT OF WORK ZONE (TYP)

SEDIMENT CONTROL BARRIER (TYP)

EXISTING SHLO LINE NO ACCESS

PROP LIMIT OF GRADING (TYP).

PROP GUARDRAIL (TYP)

ARE-MA REGION NO 26 LLC
26 WALKUP DR
PARCEL ID 23-16-0

VW T01 W27

EXISTING SHLO LINE NO ACCESS

SAWCUT (TYP)

PROP EOP

LIMIT OF GRADING (TYP).

PROP I-495 SB CONST BL

PROP EOP

PROP PVMT MICROMILLING & RESURFACING

RET

CONNECT TO EXIST

69.50'

CONTINUED ON SHEET NO. 13

I-495 SB

I-495 NB

PROP I-495 NB CONST BL

PROP GRANITE EDGING (TYP)

PROP EOP

PROP FULL DEPTH PAVEMENT

PROP 42" CULVERT

PROP PAVEMENT REMOVAL

124.00'

ABAN

VW T01 W15

PROP RAMP WN CONST BL

WATERWAY T02 W10 (R4)
WESTBOROUGH
1,344 SF TEMP IMPACT FOR WORK ZONE
5 CY DREDGE FOR CONSTRUCTION OF RELOCATED HEADWALL
SEE SHEET 54 FOR CROSS SECTION

ORDINARY HIGH WATER

VEGETATED WETLAND T01 W15 (PEM1)
WESTBOROUGH
5,877 SF PERM IMPACT FOR REALIGNMENT OF I-495 NB
282 CY FILL FOR REALIGNMENT OF I-495 NB
SEE SHEET 49 FOR CROSS SECTION

RAMP WN

CUMBERLAND FARMS INC
PARCEL ID 31-7-0

PROP RAMP WN BRIDGE OVER WETLAND

PROP TEMP HIGHWAY EASEMENT

CONTINUED ON SHEET NO. 32

LEGEND

- PERMANENT VEGETATED WETLAND IMPACT
- TEMPORARY VEGETATED WETLAND IMPACT
- TEMPORARY VERNAL POOL IMPACT
- PERMANENT WATERWAY IMPACT
- TEMPORARY WATERWAY IMPACT

0 80 200 300

SCALE: 1" = 80'

NOTES:
1. MITIGATION FOR PERMANENT IMPACTS SHOWN ON SHEETS 33 TO 36
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3. FOR MITIGATION OF TEMPORARY IMPACTS EXCEEDING (1:1), SEE MITIGATION PLANS ON SHEETS 33 TO 36

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VW T01 W27

ARE-MA REGION
NO 26 LLC
20 WALKUP DR
PARCEL ID 23-15-0

VEGETATED WETLAND T01 W15 (PEM1)
WESTBOROUGH
5,877 SF PERM IMPACT FOR REALIGNMENT OF I-495 NB
282 CY FILL FOR REALIGNMENT OF I-495 NB
SEE SHEET 49 FOR CROSS SECTION

VEGETATED WETLAND T01 W27 (PEM1)
WESTBOROUGH
89 TEMP IMPACT FOR DRAINAGE OUTFALL
RECONSTRUCTION WITH VELOCITY DISSIPATING APRON
SEE SHEET 49 FOR CROSS SECTION

VEGETATED WETLAND T01 W16 (PEM1)
WESTBOROUGH
5,283 PERM IMPACT FOR REALIGNMENT OF I-495 NB
135 CY FILL FOR REALIGNMENT OF I-495 NB
SEE SHEET 49 FOR CROSS SECTION

VEGETATED WETLAND T01 W17 (PEM1/PFO1)
WESTBOROUGH
240 PERM IMPACT FOR ROADWAY EMBANKMENT
284 SF TEMP IMPACT FOR WORK ZONE
1 CY FILL FOR ROADWAY EMBANKMENT
SEE SHEET 49 FOR CROSS SECTION

CONTINUED ON SHEET NO. 12

PROP PAVEMENT MICROMILLING & RESURFACING

PROP FULL DEPTH PAVEMENT

LIMIT OF WORK
MEET EXISTING
I-495 SB
STA 2182+00
N 2924493.3986
E 638400.1228

EXISTING SHLO LINE
NO ACCESS

PROP EOP

PROP GUARDRAIL (TYP)

SAWCUT (TYP)

I-495 SB

PROP I-495 SB CONST BL

VW T01 W17

CONTINUED ON SHEET NO. 14

VW T01 W15

VW T01 W16

PROP I-495 NB CONST BL

I-495 NB

PROP CEM CONC MEDIAN

PROP GRANITE EDGING (TYP)

PROP PVMT MICOMILLING & RESURFACING

PROP RAMP WN CONST BL

RAMP WN

PROP FULL DEPTH PVMT

UNNAMED STREAM
WATERWAY (R4)

PROP LIMIT OF GRADING (TYP)

PROP LIMIT OF WORK ZONE (TYP)

PROP SEDIMENT CONTROL BARRIER (TYP)

ORDINARY HIGH WATER

BORDER OF WETLAND (TYP)

EXISTING SHLO LINE
NO ACCESS

SAWCUT (TYP)

ORDINARY HIGH WATER

VW T02 W10

VW T02 W07

CUMBERLAND
FARMS INC
PARCEL ID 31-7-0

VEGETATED WETLAND T02 W10 (PFO1/PEM1/PAB1/PSS1)
WESTBOROUGH
200 SF PERM IMPACT FOR RAMP WN BRIDGE PIERS
64,316 SF TEMP IMPACT FOR WORK ZONE
386 SF TEMP IMPACT FOR DRAINAGE OUTFALL
RECONSTRUCTION WITH VELOCITY DISSIPATING APRON
7 CY FILL FOR RAMP WN BRIDGE PIERS
SEE SHEET 54 FOR CROSS SECTION

LEGEND
- PERMANENT VEGETATED WETLAND IMPACT
- TEMPORARY VEGETATED WETLAND IMPACT
- TEMPORARY VERNAL POOL IMPACT
- PERMANENT WATERWAY IMPACT
- TEMPORARY WATERWAY IMPACT

NOTES:
1. MITIGATION FOR PERMANENT IMPACTS SHOWN ON SHEETS 33 TO 36
2. TEMPORARY IMPACTS (1:1) WILL BE MITIGATED BY RESTORATION OF THE AREA DISTURBED
3. FOR MITIGATION OF TEMPORARY IMPACTS EXCEEDING (1:1), SEE MITIGATION PLANS ON SHEETS 33 TO 36

0 80 200 300

SCALE: 1" = 80'

607977_EV_USACE(EXISTING AND PROPOSED CONDITIONS PLANS_495)-BTC.DWG

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NAD 83

N

FLANDERS ROAD

PC +05.124

I-495 SB

I-495 NB

PROP I-495 SB CONST BL

PROP I-495 NB CONST BL

RET

SAWCUT (TYP)

BORDER OF WETLAND (TYP)

VW T01 W26

VEGETATED WETLAND T01 W17 (PEM1/PFO1)
WESTBOROUGH
240 PERM IMPACT FOR ROADWAY EMBANKMENT
284 SF TEMP IMPACT FOR WORK ZONE
1 CY FILL FOR ROADWAY EMBANKEMNT
SEE SHEET 49 FOR CROSS SECTION

WATERWAY TT KBK F/H (R4)
WESTBOROUGH
76 SF PERM IMPACT FOR CHANNEL AND BANK STABILIZATION
4 CY DREDGE FOR SCOUR COUNTERMEASURE CONSTRUCTION
SEE SHEET 54 FOR CROSS SECTION

PROP SCOUR COUNTERMEASURE FOR STREAMS WITH STREAM BED MATERIAL, SEE SHEET 38 FOR DETAILS

PROP BANK STABILIZATION LOCATION NO. 7 (SEE SHEET 37 FOR DETAILS)

PROP BOULDERS TO BE COORDINATED WITH THE WETLAND SCIENTIST IN THE FIELD

EXISTING SHLO LINE
NO ACCESS

UNNAMED INTERMITTENT STREAM WATERWAY (R4)

VW T01 W29

VW T01 W17

UNNAMED INTERMITTENT STREAM WATERWAY (R4)

ORDINARY HIGH WATER

PROP FULL DEPTH PAVEMENT

INTERMITTENT STREAM WATERWAY TT KBK F/H (R4)

ORDINARY HIGH WATER

UNNAMED INTERMITTENT STREAM WATERWAY (R4)

VW T01 W31

VW T01 W21

CONTRACTOR TO USE TURBIDITY CURTAIN OR OTHER APPROVED MEANS TO MINIMIZE IMPACTS TO DOWNSTREAM AREAS

VEGETATED WETLAND T01 W21 (PEM1)
WESTBOROUGH
301 PERM IMPACT FOR BANK STABILIZATION
61 SF TEMP IMPACT FOR WORK ZONE
SEE SHEET 49 FOR CROSS SECTION

PROP SAWCUT (TYP)

PROP SEDIMENT CONTROL BARRIER (TYP)

69.50'

PROP FULL DEPTH PAVEMENT

EXISTING SHLO LINE
NO ACCESS

PROP LIMIT OF WORK ZONE (TYP)

PROP PAVEMENT MICROMILLING & RESURFACING

PROP LIMIT OF GRADING (TYP)

VW T02 W07

PROP PAVEMENT MICROMILLING & RESURFACING

PROP GUARDRAIL (TYP)

UNNAMED INTERMITTENT STREAM WATERWAY (R4)

ORDINARY HIGH WATER

CONTRACTOR TO USE TURBIDITY CURTAIN OR OTHER APPROVED MEANS TO MINIMIZE IMPACTS TO DOWNSTREAM AREAS

CUMBERLAND FARMS INC
PARCEL ID 31-7-0

PROP I-495 BRIDGE OVER FLANDERS ROAD RECONSTRUCTION & WIDENING

ORDINARY HIGH WATER

FORTY WASHINGTON LLC
40 WASHINGTON ST
PARCEL ID 30-8-0

VEGETATED WETLAND T02 W07 (PEM1)
WESTBOROUGH
85 SF TEMP IMPACT FOR WORK ZONE
SEE SHEET 54 FOR CROSS SECTION

CONTINUED ON SHEET NO. 13

CONTINUED ON SHEET NO. 15

0 80 200 300

SCALE: 1" = 80'

LEGEND

- PERMANENT VEGETATED WETLAND IMPACT
- TEMPORARY VEGETATED WETLAND IMPACT
- TEMPORARY VERNAL POOL IMPACT
- PERMANENT WATERWAY IMPACT
- TEMPORARY WATERWAY IMPACT

NOTES:
1. MITIGATION FOR PERMANENT IMPACTS SHOWN ON SHEETS 33 TO 36
2. TEMPORARY IMPACTS (1:1) WILL BE MITIGATED BY RESTORATION OF THE AREA DISTURBED
3. FOR MITIGATION OF TEMPORARY IMPACTS EXCEEDING (1:1), SEE MITIGATION PLANS ON SHEETS 33 TO 36

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UNNAMED INTERMITTENT STREAM WATERWAY (R4)

EXISTING SHLO LINE NO ACCESS

VW T01 W29

VW T01 W28

BORDER OF WETLAND (TYP)

PC +28.02

I-495 SB

PROP I-495 SB CONST BL

PROPOSED STORMWATER MITIGATION

INFILTRATION SWALE 7

CONTINUED ON SHEET NO. 14

CONTINUED ON SHEET NO. 16

PROP HMA BERM

PROP I-495 NB CONST BL

PROP GUARDRAIL (TYP)

BEGIN PROP HMA BERM

SAWCUT (TYP)

PROP PAVEMENT MICROMILLING & RESURFACING

I-495 NB

BOS

EXISTING SHLO LINE NO ACCESS

PROP LIMIT OF GRADING (TYP)

PROP SEDIMENT CONTROL BARRIER (TYP)

PROP LIMIT OF WORK ZONE (TYP)

PROP FULL DEPTH PAVEMENT

FORTY WASHINGTON LLC
40 WASHINGTON ST
PARCEL ID 30-8-0

LEGEND

- PERMANENT VEGETATED WETLAND IMPACT
- TEMPORARY VEGETATED WETLAND IMPACT
- TEMPORARY VERNAL POOL IMPACT
- PERMANENT WATERWAY IMPACT
- TEMPORARY WATERWAY IMPACT

0 80 200 300

SCALE: 1" = 80'

NOTES
1. MITIGATION FOR PERMANENT IMPACTS SHOWN ON SHEETS 33 TO 36
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3. FOR MITIGATION OF TEMPORARY IMPACTS EXCEEDING (1:1), SEE MITIGATION PLANS ON SHEETS 33 TO 36

607977_EV_USACE(EXISTING AND PROPOSED CONDITIONS PLANS_495)-BTC.DWG

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NAD 83

WATERWAY B09 (R4)
160 SF PERM IMPACT
FOR CHANNEL AND BANK STABILIZATION
9 CY DREDGE FOR SCOUR
COUNTERMEASURE CONSTRUCTION
SEE SHEET 54 FOR CROSS SECTION

PROP SCOUR COUNTERMEASURE FOR STREAMS WITH STREAM BED MATERIAL, SEE SHEET 38 FOR DETAILS

VEGETATED WETLAND T01 W30 (PEM1)
WESTBOROUGH
200 PERM IMPACT FOR CHANNEL AND BANK STABILIZATION
SEE SHEET 54 FOR CROSS SECTION

VW T01 W30

EXISTING SHLO LINE
NO ACCESS

INTERMITTENT STREAM WATERWAY B09 (R4)

ORDINARY HIGH WATER

PROP BOULDERS TO BE COORDINATED WITH THE WETLAND SCIENTIST IN THE FIELD

CONTRACTOR TO USE TURBIDITY CURTAIN OR OTHER APPROVED MEANS TO MINIMIZE IMPACTS TO DOWNSTREAM AREAS

PROP BANK STABILIZATION LOCATION NO. 8 (SEE SHEET 37 FOR DETAILS)

2210 2211 2212 2213 2214 **I-495 SB** 2215 2216 2217 2218 2219 2220 2221

PROP I-495 SB CONST BL

PT +13.52

PC +12.86

CONTINUED ON SHEET NO. 15

VEGETATED WETLAND T01 W32 (PEM1)
WESTBOROUGH
265 PERM IMPACT FOR ROADWAY EMBANKMENT
865 SF TEMP IMPACT FOR WORK ZONE
2 CY FILL FOR ROADWAY EMBANKMENT
SEE SHEET 49 FOR CROSS SECTION

INTERMITTENT STREAM WATERWAY TT KBK R/S/T (R4)

BORDER OF WETLAND (TYP)

VW T01 W32

CONTINUED ON SHEET NO. 17

ORDINARY HIGH WATER

VW T01 W33

VW T01 W34

PROP GUARDRAIL (TYP)

SEDIMENT CONTROL BARRIER (TYP)

UNNAMED INTERMITTENT STREAM WATERWAY (R4)

PROP HMA BERM

3212 3213 3214 3215 3216 3217 3218 3219 3220 3221 3222 3223

PROP I-495 NB CONST BL

I-495 NB

RET

END PROP BERM

END PROP HMA BERM

68.00'

70.50'

SAWCUT (TYP)

CONNECT TO EXIST

VW T01 W22

EXISTING SHLO LINE
NO ACCESS

FORTY WASHINGTON LLC
40 WASHINGTON ST
PARCEL ID 30-8-0

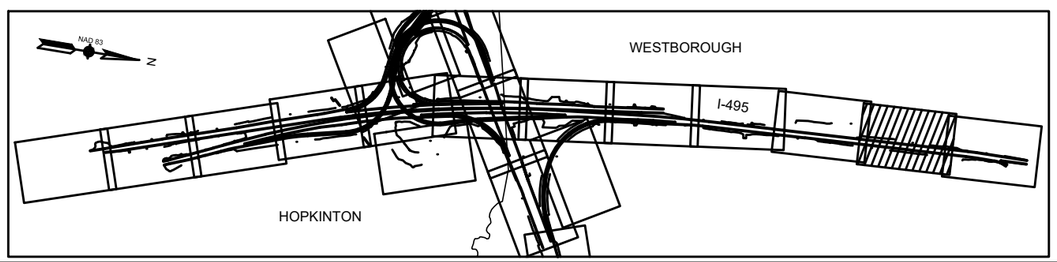
PROP LIMIT OF GRADING (TYP)

SEDIMENT CONTROL BARRIER (TYP)

PROP LIMIT OF WORK ZONE (TYP)

PROP PAVEMENT MICROMILLING & RESURFACING

PROP FULL DEPTH PAVEMENT



0 80 200 300

SCALE: 1" = 80'

LEGEND

- PERMANENT VEGETATED WETLAND IMPACT
- TEMPORARY VEGETATED WETLAND IMPACT
- TEMPORARY VERNAL POOL IMPACT
- PERMANENT WATERWAY IMPACT
- TEMPORARY WATERWAY IMPACT

NOTES:
1. MITIGATION FOR PERMANENT IMPACTS SHOWN ON SHEETS 33 TO 36
2. TEMPORARY IMPACTS (1:1) WILL BE MITIGATED BY RESTORATION OF THE AREA DISTURBED
3. FOR MITIGATION OF TEMPORARY IMPACTS EXCEEDING (1:1), SEE MITIGATION PLANS ON SHEETS 33 TO 36

I-495 / I-90 Interchange
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NAD 83

EXISTING SHLO LINE
NO ACCESS

I-495 SB

PROP I-495 SB
CONST BL

I-495 NB

PROP I-495 NB
CONST BL

PROP FULL
DEPTH PVMT

PROP MICROMILLING &
RESURFACING

LIMIT OF WORK
MEET EXISTING
I-495 NB
STA 3234+00
N 2929522.2451
E 638231.6881

SAWCUT (TYP)

BEGIN PROP
GRANITE EDGING

PROP LIMIT OF
GRADING (TYP)

PROP LIMIT OF
WORK (TYP)

PROP FULL
DEPTH PVMT

PROP GUARDRAIL (TYP)

SEDIMENT CONTROL
BARRIER (TYP)

PROP GRAN EDGING (TYP)

SAWCUT AT
LIMIT OF WORK

EXISTING SHLO LINE
NO ACCESS

VEGETATED WETLAND T01 W22 (PEM1)
WESTBOROUGH
92 SF TEMP IMPACT FOR DRAINAGE OUTFALL
RECONSTRUCTION WITH VELOCITY DISSIPATING APRON
SEE SHEET 49 FOR CROSS SECTION

ORDINARY HIGH WATER

BORDER OF
WETLAND (TYP)

FORTY WASHINGTON LLC
40 WASHINGTON ST
PARCEL ID 30-8-0

VW T01 W32

CONTINUED ON
SHEET NO. 16

VW T01 W22

LEGEND

- PERMANENT VEGETATED WETLAND IMPACT
- TEMPORARY VEGETATED WETLAND IMPACT
- TEMPORARY VERNAL POOL IMPACT
- PERMANENT WATERWAY IMPACT
- TEMPORARY WATERWAY IMPACT

0 80 200 300

SCALE: 1" = 80'

NOTES:
1. MITIGATION FOR PERMANENT IMPACTS SHOWN ON SHEETS 33 TO 36
2. TEMPORARY IMPACTS (1:1) WILL BE MITIGATED BY RESTORATION OF THE AREA DISTURBED
3. FOR MITIGATION OF TEMPORARY IMPACTS EXCEEDING (1:1), SEE MITIGATION PLANS ON SHEETS 33 TO 36

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NAD 83

COMMONWEALTH OF MASS,
DEPT OF CONSERVATION &
RECREATION
PARCEL ID R1-1-0

PROJECT BEGIN
MEET EXISTING
I-90
STA 114+20
N 2917880.9336
E 634019.9411

HARVEY, JANE W +
THOMPSON, D H
PARCEL ID R1-2-0

PROP LIMIT
OF WORK ZONE
PROP LIMIT
OF GRADING
PROP SEDIMENT
CONTROL BARRIER

EXIST SHLO LINE
NO ACCESS

BORDER OF WETLAND

VW TT KE

BOS

PROP GUARDRAIL
(TYP)

GRASS
EP

I-90 WB

106 107 108 109 110 111 112 113 114 115 116 117

PROP I-90
CONST BL

60.00'

61.00'

36" D RCP

HH

JB

WIDTH VARIES

I-90 EB

CONTINUED ON
SHEET NO. 19

EXIST SHLO LINE
NO ACCESS

LEGEND

- PERMANENT VEGETATED WETLAND IMPACT
- TEMPORARY VEGETATED WETLAND IMPACT
- TEMPORARY VERNAL POOL IMPACT
- PERMANENT WATERWAY IMPACT
- TEMPORARY WATERWAY IMPACT

NOTES:
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2. TEMPORARY IMPACTS (1:1) WILL BE MITIGATED BY RESTORATION OF THE AREA DISTURBED
3. FOR MITIGATION OF TEMPORARY IMPACTS EXCEEDING (1:1), SEE MITIGATION PLANS ON SHEETS 33 TO 36

0 80 200 300

SCALE: 1" = 80'

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NAD 83

HARVEY, JANE W +
THOMPSON, D H
PARCEL ID R1-2-0

VEGETATED WETLAND TT KE (PFO1)
HOPKINTON
301 SF PERM IMPACT FOR VEGETATED APRON
SEE SHEET 50 FOR CROSS SECTION

VW TT KE

PROP VEGETATED APRON FOR
SEE SHEET 38 FOR DETAILS

BORDER OF WETLAND

EXIST SHLO LINE
NO ACCESS

VEGETATED WETLAND T01 W24 (PEM1)
HOPKINTON
145 SF PERM IMPACT FOR ROADWAY EMBANKMENT
139 SF TEMP IMPACT FOR WORK ZONE
2 CY FILL FOR ROADWAY EMBANKMENT
SEE SHEET 50 FOR CROSS SECTION

VW T01 W24

PROPOSED
STORMWATER
MITIGATION

INFILTRATION
BASIN 5

WIDTH VARIES

PROP GUARDRAIL
(TYP)

PROP BANK
STABILIZATION LOCATION
NO. 1 (SEE SHEET 37 FOR
DETAILS)

SAWCUT

PROP EOP

PROP FULL DEPTH
PAVEMENT

END PROP
HMA BERM

BOS

PROP PAVEMENT
MICROMILLING AND
RESURFACING

71.00'

73.00'

CONTINUED ON
SHEET NO. 20

I-90 WB

118 119 PROP I-90
CONST BL 120 122 123 124 125 126 127 PROP I-90
CONST BL 128 129 13

RET 36" D RCP

I-90 EB

BEGIN PROP
HMA (TYP)

RETAIN EXISTING
CONCRETE MEDIAN
BARRIER

END PROP
HMA BERM

SAWCUT

PROP EOP

BOS

PROP FULL DEPTH
PAVEMENT

INFILTRATION
BASIN 8

EXIST SHLO LINE
NO ACCESS

PROP LIMIT OF GRADING (TYP)

PROP SEDIMENT
CONTROL BARRIER

PROP LIMIT OF WORK
ZONE (TYP)

PROPOSED
STORMWATER
MITIGATION

CONTINUED ON
SHEET NO. 18

VW TT KG

LIMIT OF WORK
MEET EXISTING
I-90
STA 121+75
N 2918502.3142
E 634448.7898

LEGEND

- PERMANENT VEGETATED WETLAND IMPACT
- TEMPORARY VEGETATED WETLAND IMPACT
- TEMPORARY VERNAL POOL IMPACT
- PERMANENT WATERWAY IMPACT
- TEMPORARY WATERWAY IMPACT

NOTES:
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0 80 200 300

SCALE: 1" = 80'

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NAD 83

COMMONWEALTH OF MASS, DEPT OF CONSERVATION & RECREATION PARCEL ID R1-1-0

COMMONWEALTH OF MASS, DEPT OF CONSERVATION & RECREATION PARCEL ID R2-1-0

PROPOSED STORMWATER MITIGATION

INFILTRATION BASIN 5

VW T01 W23A

EXIST SHLO LINE NO ACCESS

PROP GUARDRAIL (TYP)

PROP. EOP

BOS

SAWCUT

CONTRACTOR TO USE TURBIDITY CURTAIN OR OTHER APPROVED MEANS TO MINIMIZE IMPACTS TO DOWNSTREAM AREAS

VEGETATED WETLAND T01 W23A (PEM1)
HOPKINTON
359 SF TEMP IMPACT FOR DRAINAGE OUTFALL RECONSTRUCTION WITH VELOCITY DISSIPATING APRON
686 SF TEMP IMPACT FOR WORK ZONE
SEE SHEET 50 FOR CROSS SECTION

ORDINARY HIGH WATER

WHITEHALL BROOK WATERWAY (R2)

WHITEHALL BROOK WATERWAY (R2) IMPACT
HOPKINTON
1,210 SF TEMPORARY IMPACT
250 CY DREDGE FOR SCOUR COUNTERMEASURE
SEE SHEET 50 FOR CROSS SECTION

ORDINARY HIGH WATER

CONTRACTOR TO USE TURBIDITY CURTAIN OR OTHER APPROVED MEANS TO MINIMIZE IMPACTS TO DOWNSTREAM AREAS

WATERWAY TT KBK N (R4) IMPACT
HOPKINTON
317 SF TEMPORARY IMPACT
SEE SHEET 50 FOR CROSS SECTION

VW T01 W23

PROP SCOUR COUNTERMEASURE FOR STREAMS WITH STREAM BED MATERIAL, SEE SHEET 38 FOR DETAILS (SUB-SURFACE SCOUR COUNTERMEASURE DESIGN PER BRIDGE PLANS)

I-90 WB

I-90 EB

PROP I-90 CONST BL

PROP PAVEMENT MICROMILLING AND RESURFACING

CONTRACTOR TO USE TURBIDITY CURTAIN OR OTHER APPROVED MEANS TO MINIMIZE IMPACTS TO DOWNSTREAM AREAS

PROP. FULL DEPTH PAVEMENT

PROP FULL DEPTH PAVEMENT
PROP CONCRETE MEDIAN BARRIER

CONTRACTOR TO USE TURBIDITY CURTAIN OR OTHER APPROVED MEANS TO MINIMIZE IMPACTS TO DOWNSTREAM AREAS

PROP CONCRETE MEDIAN BARRIER

PROP FULL DEPTH PAVEMENT

DEMOLISH EXISTING 15' WIDE BY 16.5' HIGH CULVERT (7' HYDRAULIC OPENING HEIGHT)

PROP 30' WIDE BY 7' HIGH OPEN BOTTOM BOX CULVERT WITH NATURAL STREAMBED MATERIAL

PROP FULL DEPTH PAVEMENT

PROP I-90 CONST BL

PROP GUARDRAIL (TYP)

PROP. EOP

EXIST SHLO LINE NO ACCESS

PROP LIMIT OF GRADING (TYP.)

PROP SEDIMENT CONTROL BARRIER (TYP)

PROP LIMIT OF WORK ZONE (TYP)

VW T01 W36

VEGETATED WETLAND T01 W36 (PSS1)
HOPKINTON
3,237 SF TEMP IMPACT FOR WORK ZONE
SEE SHEET 50 FOR CROSS SECTION

STA 130+46.81 BACK = STA 131+05.86 AHEAD

PROP STREAMBED RESTORATION LOCATION NO. 1

ORDINARY HIGH WATER

ORDINARY HIGH WATER

PROP SCOUR COUNTERMEASURE FOR STREAMS WITH STREAM BED MATERIAL, SEE SHEET 38 FOR DETAILS (SUB-SURFACE SCOUR COUNTERMEASURE DESIGN PER BRIDGE PLANS)

WHITEHALL BROOK WATERWAY (R2) IMPACT
HOPKINTON
719 SF TEMPORARY IMPACT
195 CY DREDGE FOR SCOUR COUNTERMEASURE
SEE SHEET 50 FOR CROSS SECTION

WHITEHALL BROOK WATERWAY (R2)

VW T01 W37

ORDINARY HIGH WATER

VEGETATED WETLAND T01 W23 (PSS1)
HOPKINTON
21 SF PERM IMPACT FOR ROADWAY WIDENING AND EMBANKMENT
3,442 SF TEMP IMPACT FOR WORK ZONE
16 CY FILL FOR ROADWAY AND EMBANKMENT
SEE SHEET 50 FOR CROSS SECTION

130 131 132 133 134 135 PC +05.86 142 143 144 145 146 147

71.00' 73.00' 84.00' 85.00'

CONTINUED ON SHEET NO. 19

CONTINUED ON SHEET NO. 21

LEGEND

- PERMANENT VEGETATED WETLAND IMPACT
- TEMPORARY VEGETATED WETLAND IMPACT
- TEMPORARY VERNAL POOL IMPACT
- PERMANENT WATERWAY IMPACT
- TEMPORARY WATERWAY IMPACT

NOTES:
1. MITIGATION FOR PERMANENT IMPACTS SHOWN ON SHEETS 33 TO 36
2. TEMPORARY IMPACTS (1:1) WILL BE MITIGATED BY RESTORATION OF THE AREA DISTURBED
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0 80 200 300

SCALE: 1" = 80'

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N

NAD 83

VEGETATED WETLAND T01 W23 (PSS1)
HOPKINTON
21 SF PERM IMPACT FOR ROADWAY WIDENING AND EMBANKMENT
3,442 SF TEMP IMPACT FOR WORK ZONE
16 CY FILL FOR ROADWAY AND EMBANKMENT
SEE SHEET 50 FOR CROSS SECTION

VW T01 W23

CONTRACTOR TO USE TURBIDITY CURTAIN OR OTHER APPROVED MEANS TO MINIMIZE IMPACTS TO DOWNSTREAM AREAS

WATERWAY TT KBK N (R4)
HOPKINTON
317 SF TEMPORARY IMPACT
SEE SHEET 50 FOR CROSS SECTION

ORDINARY HIGH WATER

VW T01 W20

COMMONWEALTH OF MASS, DEPT OF CONSERVATION & RECREATION
PARCEL ID R2-1-0

VEGETATED WETLAND T01 W19 (PEM1)
HOPKINTON
692 SF TEMP IMPACT FOR WORK ZONE
SEE SHEET 54 FOR CROSS SECTION

VW T01 W19

EXIST SHLO LINE NO ACCESS

BOS

PROP RAMP SW

CONST BL

SAWCUT

PROP BARRIER

PROP GRANITE EDGING (TYP)

PROP RET WALL

CONTINUED ON SHEET NO. 22

PROP GUARDRAIL (TYP)

PROP CONCRETE MEDIAN BARRIER

PROP I-90 CONST BL

I-90 WB

PROP PAVEMENT MICROMILLING AND RESURFACING

PROP EOP

PROP. FULL DEPTH PVMT WIDENING

VERNAL POOL VP-14

PROP FULL DEPTH PVMT WIDENING

PROP RAMP ES

PROP GUARDRAIL, (TYP)

PROP BARRIER

VERNAL POOL BOUNDARY

100' VERNAL POOL BUFFER

CONTINUED ON SHEET NO. 20

PROP I-90 CONST BL

I-90 EB

PROP. FULL DEPTH PVMT

PROP. EOP

BOS

SAWCUT

EXIST SHLO LINE NO ACCESS

VW T01 W38

VERNAL POOL VP-14 IMPACT
HOPKINTON
982 SF TEMP IMPACT FOR WORK ZONE

VEGETATED WETLAND T01 W37 (PSS1)
HOPKINTON
15 SF PERM IMPACT FOR ROADWAY EMBANKMENT
774 SF TEMP IMPACT FOR WORK ZONE
1 CY FILL FOR ROADWAY EMBANKMENT
SEE SHEET 50 FOR CROSS SECTION

VEGETATED WETLAND T01 W38 (PSS1)
HOPKINTON
3,036 SF PERM IMPACT FOR ROADWAY WIDENING
4,654 SF TEMP IMPACT FOR WORK ZONE
104 CY FILL FOR ROADWAY WIDENING
SEE SHEET 50 FOR CROSS SECTION

BORDER OF WETLAND

ORDINARY HIGH WATER

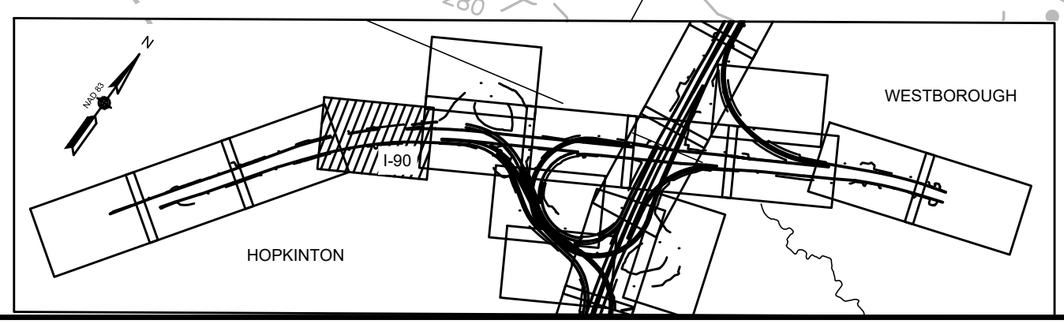
PROP LIMIT OF WORK ZONE (TYP)

PROP SEDIMENT CONTROL BARRIER (TYP)

PROP LIMIT OF GRADING (TYP.)

ROOSEVELT FARMS ASSOCIATION
PARCEL ID R2-102-0

PAPADOPOULOS, KAREN B.
PARCEL ID R2-89-0
5 BULLMOOSE RUN



LEGEND
- PERMANENT VEGETATED WETLAND IMPACT
- TEMPORARY VEGETATED WETLAND IMPACT
- TEMPORARY VERNAL POOL IMPACT
- PERMANENT WATERWAY IMPACT
- TEMPORARY WATERWAY IMPACT

0 80 200 300

SCALE: 1" = 80'

NOTES:
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2. TEMPORARY IMPACTS (1:1) WILL BE MITIGATED BY RESTORATION OF THE AREA DISTURBED
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PROP PVMT REMOVAL

100' VERNAL POOL BUFFER

VERNAL POOL VP-2

VW TT KB

VEGETATED WETLAND TT KA (PEM1)
HOPKINTON
1,395 SF PERM IMPACT FOR RAMP SW ROADWAY
28 CY FILL FOR RAMP SW ROADWAY
SEE SHEET 50 FOR CROSS SECTION

BOS

EXIST SHLO LINE NO ACCESS

PROP RAMP SW CONST BL

RAMP SW

VW TT KA

PROP. EOP

PROP RET WALL

CONTINUED ON SHEET NO. 21

PROP FULL DEPTH PVMT

I-90 WB

PROP I-90 CONST BL

PROP PAVEMENT MICROMILLING AND RESURFACING

PROP GRANITE EDGING (TYP)

PROP GUARDRAIL (TYP)

SAWCUT

PROP RAMP ES CONST BL

INTERMITTENT STREAM WATERWAY TT KD (R4)

EXIST SHLO LINE NO ACCESS

WATERWAY TT KD (R4) IMPACT
5266 SF PERM IMPACT
261 CY FILL FOR RAMP ES ROADWAY
SEE SHEET 50 FOR CROSS SECTION

PROP SWALE

DEPT. OF ENVIRONMENTAL MGMT. PARCEL ID R23-495-0

ROOSEVELT FARMS ASSOCIATION PARCEL ID R2-64-0
2 ROOSEVELT LN

PROP PVMT REMOVAL

VW TT KC

VEGETATED WETLAND TT KC (PEM1)
HOPKINTON
1,214 SF TEMP IMPACT FOR WORK ZONE
SEE SHEET 54 FOR CROSS SECTION

PROP RAMP SW BRIDGE OVER I-90

I-90 EB

PROP CEM CONC MEDIAN

PROP LIMIT OF GRADING (TYP)

EXIST WETLAND LINE

LIMIT OF GRADING (TYP.)

VEGETATED WETLAND T01 W39 (PSS1)
HOPKINTON
1,695 SF PERM IMPACT FOR ROADWAY EMBANKMENT
784 SF TEMP IMPACT FOR WORK ZONE
31 CY FILL FOR ROADWAY EMBANKMENT
SEE SHEET 53 FOR CROSS SECTION

VW T01 W39

PROP LIMIT OF WORK ZONE (TYP)

VEGETATED WETLAND TT KB (PEM1)
HOPKINTON
18,014 SF TEMP IMPACT FOR WETLAND MITIGATION AREA CONSTRUCTION
1,043 SF PERM IMPACT FOR RAMP SW ROADWAY
WESTBOROUGH
2,195 SF TEMP IMPACT FOR WETLAND MITIGATION AREA CONSTRUCTION
SEE SHEET 50, 55 FOR CROSS SECTIONS

WESTBOROUGH
HOPKINTON

CONTINUED ON SHEET NO. 28

VW T02 W05

EXIST WETLAND LINE

PROP SEDIMENT CONTROL BARRIER (TYP)

EXIST SHLO LINE NO ACCESS

VEGETATED WETLAND T02 W05 (PEM1)
HOPKINTON
5,057 SF TEMP IMPACT FOR WETLAND MITIGATION AREA CONSTRUCTION
WESTBOROUGH
14,722 SF TEMP IMPACT FOR WETLAND MITIGATION AREA CONSTRUCTION
SEE SHEET 55 FOR CROSS SECTION

37' SHLO LINE TO ACCESS

VW T01 W14

PROP PVMT REMOVAL

PROP PAVEMENT MICROMILLING AND RESURFACING

PROP RAMP SW CONST BL

PROP I-90 CONST BL

PROP CONC MEDIAN BARRIER

INTERMITTENT STREAM WATERWAY TT KBK A (R4)

VW T02 W01

WATERWAY MITIGATION

CONTINUED ON SHEET NO. 23

PROP GUARDRAIL (TYP)

RAMP SW

RAMP EN

RAMP ES

RAMP NW

PROP FULL DEPTH PVMT

PROP PAVEMENT REMOVAL

PROP RAMP EN CONST BL

PROP RAMP ES CONST BL

VEGETATED WETLAND T02 W01 (PEM1)
HOPKINTON
1,449 SF TEMP IMPACT FOR WORK ZONE
SEE SHEET 52 FOR CROSS SECTION

WATERWAY (R4) IMPACT
1,141 SF TEMPORARY IMPACT

PROPOSED STORMWATER MITIGATION

INFILTRATION BASIN 1

PROP SELECTIVE CLEARING AND GARBAGE REMOVAL WITHIN LIMITS OF CHANNEL ONLY 30 FEET UPSTREAM OF PROPOSED HEADWALL (INCIDENTAL TO ITEM 101. CLEARING AND CRUBBING)

CONTINUED ON SHEET NO. 29

PT +00.30

PC +87.00

PC +37.00

300.00' RET

NAD 83

N

LEGEND

- PERMANENT VEGETATED WETLAND IMPACT
- TEMPORARY VEGETATED WETLAND IMPACT
- TEMPORARY VERNAL POOL IMPACT
- PERMANENT WATERWAY IMPACT
- TEMPORARY WATERWAY IMPACT

0 80 200 300

SCALE: 1" = 80'

NOTES:
1. MITIGATION FOR PERMANENT IMPACTS SHOWN ON SHEETS 33 TO 36
2. TEMPORARY IMPACTS (1:1) WILL BE MITIGATED BY RESTORATION OF THE AREA DISTURBED
3. FOR MITIGATION OF TEMPORARY IMPACTS EXCEEDING (1:1), SEE MITIGATION PLANS ON SHEETS 33 TO 36

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CONTINUED ON SHEET NO. 28

N

NAD 83

EXIST SHLOLINE NO ACCESS

VW T01 W14

WESTBOROUGH
HOPKINTON

COMMONWEALTH OF MASSACHUSETTS PARCEL ID 23-1-0

ORDINARY HIGH WATER

CONTRACTOR TO USE TURBIDITY CURTAIN OR OTHER APPROVED MEANS TO MINIMIZE IMPACTS TO DOWNSTREAM AREAS

EXIST SHLO LINE NO ACCESS

VEGETATED WETLAND T01 W14 (PEM1/PSS1/PFO1)
HOPKINTON
1,871 SF PERM IMPACT FOR RAMP WS ROADWAY AND BRIDGE PIERS
25,582 SF TEMP IMPACT FOR WORK ZONE
2,425 SF TEMP IMPACT FOR WETLAND MITIGATION AREA CONSTRUCTION
46 CY FILL FOR RAMP WS AND BRIDGE PIERS
WESTBOROUGH
3,576 SF TEMP IMPACT FOR WORK ZONE
4,276 SF TEMP IMPACT FOR WETLAND MITIGATION AREA CONSTRUCTION
SEE SHEET 53 FOR CROSS SECTION

COMMONWEALTH OF MASS PARCEL ID 23-1-0

VW T01 W14

BOS

PROP PAVEMENT MICROMILLING AND RESURFACING

PROP RAMP WS BRIDGE OVER I-90

RET

CONTRACTOR TO USE TURBIDITY CURTAIN OR OTHER APPROVED MEANS TO MINIMIZE IMPACTS TO DOWNSTREAM AREAS

PROP GUARDRAIL (TYP)

PROP EOP

PROP RET WALL

PROP CONC BARRIER (TYP)

PROP RAMP WS CONST BL

169 170 171 172 173 174 175 177 178 179 180 181

I-90 WB

I-90 EB

PROP I-90 CONST BL

CONTINUED ON SHEET NO. 22

WATERWAY MITIGATION

PROP CONCRETE MEDIAN (TYP)

PROP RAMP WS CONST BL

PROP SCOUR COUNTERMEASURE FOR STREAMS WITH STREAM BED MATERIAL, SEE SHEET 38 FOR DETAILS

PROP LIMIT OF GRADING (TYP)

PC +27.91 PT +33.63 PT +45.98 +22.78

BOS

PROP RAMP SE CONST BL

SAWCUT

PROP EOP

CONTINUED ON SHEET NO. 24

WATERWAY (R4) IMPACT
79 SF TEMP IMPACT

CONTRACTOR TO USE TURBIDITY CURTAIN OR OTHER APPROVED MEANS TO MINIMIZE IMPACTS TO DOWNSTREAM AREAS

RAMP WS

PROP GRANITE EDGING (TYP)

EXIST SHLO LINE NO ACCESS

EXIST WETLAND LINE

PROP SEDIMENT CONTROL BARRIER (TYP)

PROP LIMIT OF WORK (TYP)

VEGETATED WETLAND T01 W01 (PEM1)
HOPKINTON
23,590 SF PERM IMPACT FOR RAMP SE ROADWAY AND EMBANKMENT
17,500 SF TEMP IMPACT FOR WORK ZONE
1,193 CY FILL FOR ROADWAY AND EMBANKMENT
SEE SHEET 53 FOR CROSS SECTION

PROP FULL DEPTH PVMT

VW T01 W02

PROPOSED STORMWATER MITIGATION

INFILTRATION BASIN 9

EXIST CULVERT TO BE REMOVED
PROP 36" RCP

PROP STREAMBED RESTORATION LOCATION NO. 6

VEGETATED WETLAND T01 W02 (PEM1)
HOPKINTON
8,466 SF TEMP IMPACT FOR WORK ZONE
SEE SHEET 53 FOR CROSS SECTION

PROP FULL DEPTH PVMT

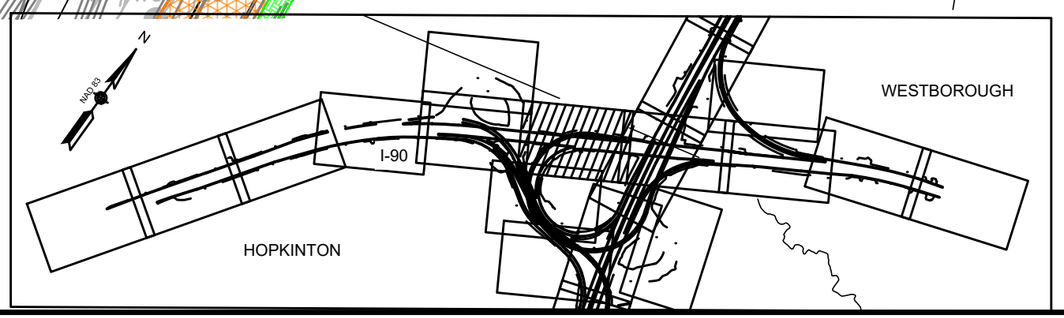
PROP PAVEMENT REMOVAL

RAMP NW

RAMP SE

VW T01 W01

CONTINUED ON SHEET NO. 29



LEGEND

- PERMANENT VEGETATED WETLAND IMPACT
- TEMPORARY VEGETATED WETLAND IMPACT
- TEMPORARY VERNAL POOL IMPACT
- PERMANENT WATERWAY IMPACT
- TEMPORARY WATERWAY IMPACT

0 80 200 300

SCALE: 1" = 80'

NOTES:
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2. TEMPORARY IMPACTS (1:1) WILL BE MITIGATED BY RESTORATION OF THE AREA DISTURBED
3. FOR MITIGATION OF TEMPORARY IMPACTS EXCEEDING (1:1), SEE MITIGATION PLANS ON SHEETS 33 TO 36

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VEGETATED WETLAND T01 W14 (PEM1/PSS1/PFO1)
HOPKINTON
1,871 SF PERM IMPACT FOR RAMP WS ROADWAY AND BRIDGE PIERS
25,582 SF TEMP IMPACT FOR WORK ZONE
2,425 SF TEMP IMPACT FOR WETLAND MITIGATION AREA CONSTRUCTION
46 CY FILL FOR RAMP WS ROADWAY AND BRIDGE PIERS
WESTBOROUGH
3,576 SF TEMP IMPACT FOR WORK ZONE
4,276 SF TEMP IMPACT FOR WETLAND MITIGATION AREA CONSTRUCTION
SEE SHEET 53 FOR CROSS SECTION

VW T01 W14

VEGETATED WETLAND T01 W01 (PEM1)
HOPKINTON
23,590 SF PERM IMPACT FOR RAMP SE ROADWAY AND EMBANKMENT
17,500 SF TEMP IMPACT FOR WORK ZONE
1,193 CY FILL FOR ROADWAY AND EMBANKMENT
SEE SHEET 53 FOR CROSS SECTION

VW T01 W01

CONTINUED ON SHEET NO. 11

CONTINUED ON SHEET NO. 12

CONTINUED ON SHEET NO. 23

CONTINUED ON SHEET NO. 25

VEGETATED WETLAND T01 W35 (PFO1)
WESTBOROUGH
102 SF PERM IMPACT FOR BANK STABILIZATION
1,530 SF TEMP IMPACT FOR WORK ZONE
SEE SHEET 52 FOR CROSS SECTION

VEGETATED WETLAND T01 W10 (PEM1)
HOPKINTON
743 SF TEMP IMPACT FOR WORK ZONE
SEE SHEET 52 FOR CROSS SECTION

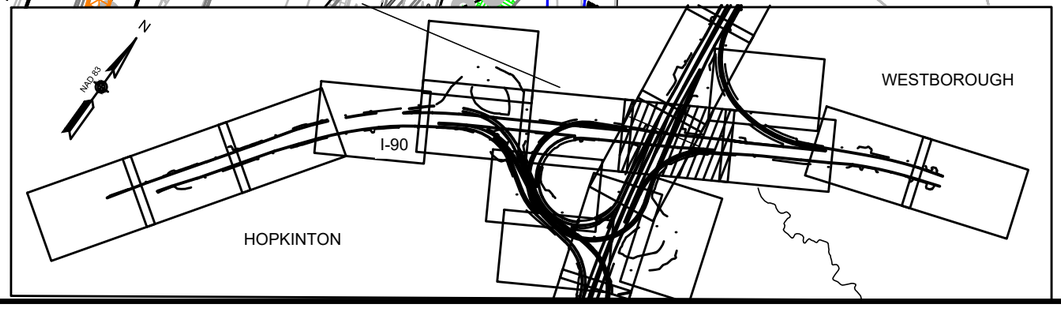
SUDBURY RIVER WATERWAY (R2) IMPACT
1,780 SF TEMPORARY IMPACT
SEE SHEET 52 FOR CROSS SECTION

WATERWAY TT KBK C/D (R4)
4,992 SF TEMPORARY IMPACT FOR WORK ZONE
SEE SHEET 52 FOR CROSS SECTION

COMMONWEALTH OF MASS, DEPT OF CONSERVATION & RECREATION
PARCEL ID R2-15-0

RAMP WS
RAMP SE
RAMP NE
I-90 WB
I-90 EB
I-495 SB
I-495 NB
SUDBURY RIVER WATERWAY (R2)
WESTBOROUGH
HOPKINTON

EXIST SHLO LINE NO ACCESS
ORDINARY HIGH WATER
RET
RETAIN EXIST 30' WIDE BY 17.5' HIGH CONCRETE CULVERT
PROP I-90 CONST BL
PROP PAVEMENT MICROMILLING AND RESURFACING
PROP CONCRETE MEDIAN BARRIER
PROP GRANITE EDGING (TYP)
PROP FULL DEPTH PVMT
PROP EOP
PROP RAMP NE CONST BL
PROP RAMP SE CONST BL
PROP I-495 SB CONST BL
PROP I-495 NB CONST BL
PROP RAMP EN BRIDGE OVER I-90
PROP I-495 BRIDGE OVER I-90
PROP RAMP NE BRIDGE OVER INTERMITTENT STREAM AND SUDBURY RIVER
PROP BRIDGE EN OVER RAMP NE
PROP PIER PROTECTION BARRIER
PROP SHEETING WITHIN LIMITS OF FLOWING WATER FOR FOUNDATION CONSTRUCTION
PROP RET WALL
INTERMITTENT STREAM WATERWAY TT KBK C/D (R4)
CONTRACTOR TO USE TURBIDITY CURTAIN OR OTHER APPROVED MEANS TO MINIMIZE IMPACTS TO DOWNSTREAM AREAS
ABAN
BOS
SAWCUT
36"D RCP (ABAN)
58.50'
73.00'
72.50'



0 80 200 300

SCALE: 1" = 80'

LEGEND
- PERMANENT VEGETATED WETLAND IMPACT
- TEMPORARY VEGETATED WETLAND IMPACT
- TEMPORARY VERNAL POOL IMPACT
- PERMANENT WATERWAY IMPACT
- TEMPORARY WATERWAY IMPACT

NOTES:
1. MITIGATION FOR PERMANENT IMPACTS SHOWN ON SHEETS 33 TO 36
2. TEMPORARY IMPACTS (1:1) WILL BE MITIGATED BY RESTORATION OF THE AREA DISTURBED
3. FOR MITIGATION OF TEMPORARY IMPACTS EXCEEDING (1:1), SEE MITIGATION PLANS ON SHEETS 33 TO 36

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CONTINUED ON SHEET NO. 32

CONTINUED ON SHEET NO. 24

CONTINUED ON SHEET NO. 26

RAMP WN

I-90 WB

I-90 EB

PC 204+84

PT 225+55.99

708 PC 715.30

SUDBURY RIVER WATERWAY (R2)

WESTBOROUGH

HOPKINTON

CUMBERLAND FARMS INC
PARCEL ID 31-7-0

COMMONWEALTH OF MASS, DEPT OF CONSERVATION & RECREATION
PARCEL ID R2-15-0

BARTOLINI JOHN A
PARCEL ID 24-1-0

EXIST RR LAYOUT LINE

EXIST SHLO LINE
NO ACCESS

PROP PERMANENT HWY EASEMENT

PROP TEMPORARY EASEMENT

PROP RAMP WN CONST BL

PROP RAMP WN BRIDGE OVER WETLAND

VW T02 W21

VW T02 W22

VW T01 W09

VW T02 W24

PROP FULL DEPTH PVMT

PROP RET WALL (TYP)

PROP GUARDRAIL (TYP)

PROP CONCRETE MEDIAN BARRIER (TYP)

VEGETATED WETLAND T02 W21 (PSS1)
WESTBOROUGH
644 SF TEMP IMPACT FOR WORK ZONE
SEE SHEET 54 FOR CROSS SECTION

PROP HMA BERM

PROP PAVEMENT MICROMILLING AND RESURFACING

PROP I-90 BRIDGE OVER RR

PROP I-90 CONST BL

PROP CONC MEDIAN BARRIER

VARIES

SAWCUT

PROP RAMP NE CONST BL

EXIST WETLAND (TYP)

ORDINARY HIGH WATER

PROP LIMIT OF WORK (TYP)

73.00'

PROP EOP

PROP LIMIT OF GRADING (TYP)

PROP SEDIMENT CONTROL BARRIER (TYP)

VEGETATED WETLAND T02 W24 (PEM1)
WESTBOROUGH
269 SF TEMP IMPACT FOR WORK ZONE
SEE SHEET 51 FOR CROSS SECTION

LEGEND

- PERMANENT VEGETATED WETLAND IMPACT
- TEMPORARY VEGETATED WETLAND IMPACT
- TEMPORARY VERNAL POOL IMPACT
- PERMANENT WATERWAY IMPACT
- TEMPORARY WATERWAY IMPACT

0 80 200 300

SCALE: 1" = 80'

NOTES:
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N

NAD 83

VEGETATED WETLAND T02 W23 (PEM1)
WESTBOROUGH
15 SF TEMP IMPACT FOR COMPENSATORY FLOOD STORAGE CONSTRUCTION
SEE SHEET 54 FOR CROSS SECTION

VW T02 W23

VW T02 W20

VW T02 W22

ORDINARY HIGH WATER

EXIST SHLO LINE
NO ACCESS

BOS

PROP FULL DEPTH PVMT

BOS
PROP EOP

PROP RAMP WN CONST BL

PROP GUARDRAIL (TYP)

PROP PAVEMENT MICROMILLING AND RESURFACING

PROP RAMP WN CONST BL

RAMP WN

SAWCUT

PROP FULL DEPTH PVMT

VARIES

I-90 WB

I-90 EB

PC +95.06

PROP I-90 CONST BL

73.00'

RET

SAWCUT

PROP GUARDRAIL (TYP)

PROP EOP

BOS

PROP FULL DEPTH PVMT

PROP CONCRETE MEDIAN BARRIER (TYP)

PROP HMA BERM

BOS

CONTINUED ON SHEET NO. 25

CONTINUED ON SHEET NO. 27

VEGETATED WETLAND T02 W24 (PEM1)
WESTBOROUGH
269 SF TEMP IMPACT FOR DRAINAGE OUTFALL RECONSTRUCTION
SEE SHEET 51 FOR CROSS SECTION

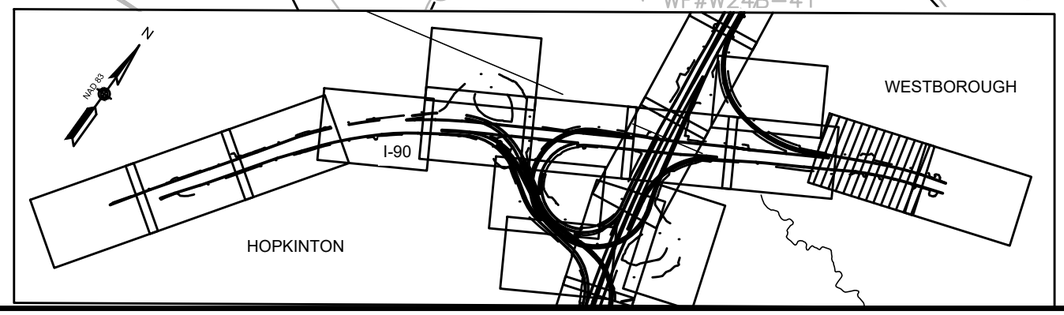
VW T02 W27

VW T02 W24

VW T02 W24

BARTOLINI JOHN A
PARCEL ID 24-1-0

VEGETATED WETLAND T02 W27 (PEM1)
WESTBOROUGH
40 SF TEMP IMPACT FOR DRAINAGE OUTFALL RECONSTRUCTION WITH VELOCITY DISSIPATING APRON
SEE SHEET 51 FOR CROSS SECTION



LEGEND

- PERMANENT VEGETATED WETLAND IMPACT
- TEMPORARY VEGETATED WETLAND IMPACT
- TEMPORARY VERNAL POOL IMPACT
- PERMANENT WATERWAY IMPACT
- TEMPORARY WATERWAY IMPACT

0 80 200 300

SCALE: 1" = 80'

NOTES:
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PROP BOULDERS TO BE COORDINATED WITH THE WETLAND SCIENTIST IN THE FIELD

PROP SCOUR COUNTERMEASURE FOR STREAMS WITH STREAM BED MATERIAL, SEE SHEET 38 FOR DETAILS

205 FLANDERS ROAD LLC
PARCEL ID 23-14-0
205 FLANDERS RD

SUDBURY RIVER WATERWAY (R2) TRIBUTARY 13

SUDBURY RIVER WATERWAY (R2) TRIBUTARY 13 WESTBOROUGH
953 SF PERM IMPACT FOR BANK AND CHANNEL STABILIZATION
351 SF TEMP IMPACT FOR WORK ZONE
144 CY DREDGE FOR SCOUR COUNTERMEASURE
SEE SHEET 51 FOR CROSS SECTION

CONTRACTOR TO USE TURBIDITY CURTAIN OR OTHER APPROVED MEANS TO MINIMIZE IMPACTS TO DOWNSTREAM AREAS

VW T02 W20

VW T02 W29

VW T02 W28

EXIST SHLO LINE
NO ACCESS

NAD 83

PROP FULL DEPTH PVMT

PROJECT END
MEET EXISTING
I-90
STA 218+75
N 2923777.5256
E 641708.7290

SAWCUT
PROP EOP

PROP GUARDRAIL (TYP)

PROP PAVEMENT MILLING AND RESURFACING

71.00'

63.00'

216 PT +08.42 217 218 219 220 221 222 223 224 225 226 227

I-90 WB

I-90 EB

PROP I-90 CONST BL

CONTINUED ON SHEET NO. 26

PROP CONCRETE MEDIAN BARRIER

PROP PAVEMENT MILLING AND RESURFACING

PROP HMA BERM

PROP SCOUR COUNTERMEASURE FOR STREAMS WITH STREAM BED MATERIAL, SEE SHEET 38 FOR DETAILS

PROP BANK STABILIZATION LOCATION NO. 4B (SEE SHEET 141 FOR DETAILS)

LIMIT OF GRADING (TYP)

VEGETATED WETLAND T02 W24 (PEM1) WESTBOROUGH
269 SF TEMP IMPACT FOR DRAINAGE OUTFALL RECONSTRUCTION
SEE SHEET 51 FOR CROSS SECTION

VW T02 W24

PROP SEDIMENT CONTROL BARRIER (TYP)

LIMIT OF WORK (TYP)

VW T01 W42

EXIST SHLO LINE
NO ACCESS

SUDBURY RIVER WATERWAY (R2) TRIBUTARY 13

SUDBURY RIVER WATERWAY (R2) TRIBUTARY 13 WESTBOROUGH
957 SF PERM IMPACT FOR BANK AND CHANNEL STABILIZATION
145 CY DREDGE FOR SCOUR COUNTERMEASURE
SEE SHEET 51 FOR CROSS SECTION

ORDINARY HIGH WATER

CONTRACTOR TO USE TURBIDITY CURTAIN OR OTHER APPROVED MEANS TO MINIMIZE IMPACTS TO DOWNSTREAM AREAS

PROP BOULDERS TO BE COORDINATED WITH THE WETLAND SCIENTIST IN THE FIELD

LEGEND

- PERMANENT VEGETATED WETLAND IMPACT
- TEMPORARY VEGETATED WETLAND IMPACT
- TEMPORARY VERNAL POOL IMPACT
- PERMANENT WATERWAY IMPACT
- TEMPORARY WATERWAY IMPACT

0 80 200 300

SCALE: 1" = 80'

NOTES:
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COMMONWEALTH OF MASS
PARCEL ID 22-2-0

TOWN OF WESTBOROUGH
PARCEL ID 23-2-0

ORDINARY HIGH WATER

COMMONWEALTH OF MASSACHUSETTS
PARCEL ID 23-1-0

COMMONWEALTH OF MASS.
PARCEL ID 22-3-0

EXIST WETLAND LINE

EXIST SHLO LINE

VW T01 W14

ORDINARY HIGH WATER

PROP LIMIT OF WORK ZONE (TYP)

PROP SEDIMENT CONTROL BARRIER (TYP)

PROP LIMIT OF GRADING (TYP)

PROP PAVEMENT REMOVAL

INTERMITTENT STREAM
WATERWAY TT KBK P (R4)

CONTRACTOR TO USE TURBIDITY CURTAIN OR OTHER APPROVED MEANS TO MINIMIZE IMPACTS TO DOWNSTREAM AREAS

WATERWAY TTKBKP (R4)
WESTBOROUGH
620 SF TEMP IMPACT
FOR WETLAND MITIGATION AREA CONSTRUCTION
SEE SHEET 55 FOR CROSS SECTION

VW T01 W14

VERNAL POOL VP-2

VEGETATED WETLAND TT KB (PEM1)
HOPKINTON
18,014 SF TEMP IMPACT FOR WETLAND MITIGATION AREA CONSTRUCTION
1,043 SF PERM IMPACT FOR WETLAND MITIGATION AREA CONSTRUCTION
WESTBOROUGH
2,195 SF TEMP IMPACT FOR WETLAND MITIGATION AREA CONSTRUCTION
SEE SHEET 50, 55 FOR CROSS SECTIONS

VEGETATED WETLAND T01 W14 (PEM1/PSS1/PFO1)
HOPKINTON
1,871 SF PERM IMPACT FOR RAMP WS ROADWAY AND BRIDGE PIERS
25,582 SF TEMP IMPACT FOR WORK ZONE
2,425 SF TEMP IMPACT FOR WETLAND MITIGATION AREA CONSTRUCTION
46 CY FILL FOR RAMP WS ROADWAY AND BRIDGE PIERS
WESTBOROUGH
3,576 SF TEMP IMPACT FOR WORK ZONE
4,276 SF TEMP IMPACT FOR WETLAND MITIGATION AREA CONSTRUCTION
SEE SHEET 53 FOR CROSS SECTION

VW TTKB

VEGETATED WETLAND T02 W05 (PEM1)
HOPKINTON
5,057 SF TEMP IMPACT FOR WETLAND MITIGATION AREA CONSTRUCTION
WESTBOROUGH
14,722 SF TEMP IMPACT FOR WETLAND MITIGATION AREA CONSTRUCTION
SEE SHEET 55 FOR CROSS SECTION

VW T02 W05

WESTBOROUGH
HOPKINTON

CONTINUED ON SHEET NO. 22

LEGEND

- PERMANENT VEGETATED WETLAND IMPACT
- TEMPORARY VEGETATED WETLAND IMPACT
- TEMPORARY VERNAL POOL IMPACT
- PERMANENT WATERWAY IMPACT
- TEMPORARY WATERWAY IMPACT

NOTES:
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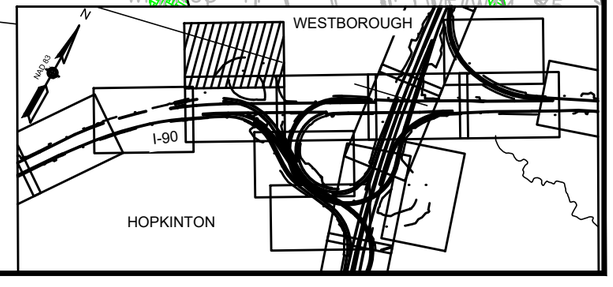
3. FOR MITIGATION OF TEMPORARY IMPACTS EXCEEDING (1:1), SEE MITIGATION PLANS ON SHEETS 33 TO 36

0 80 200 300

SCALE: 1" = 80'



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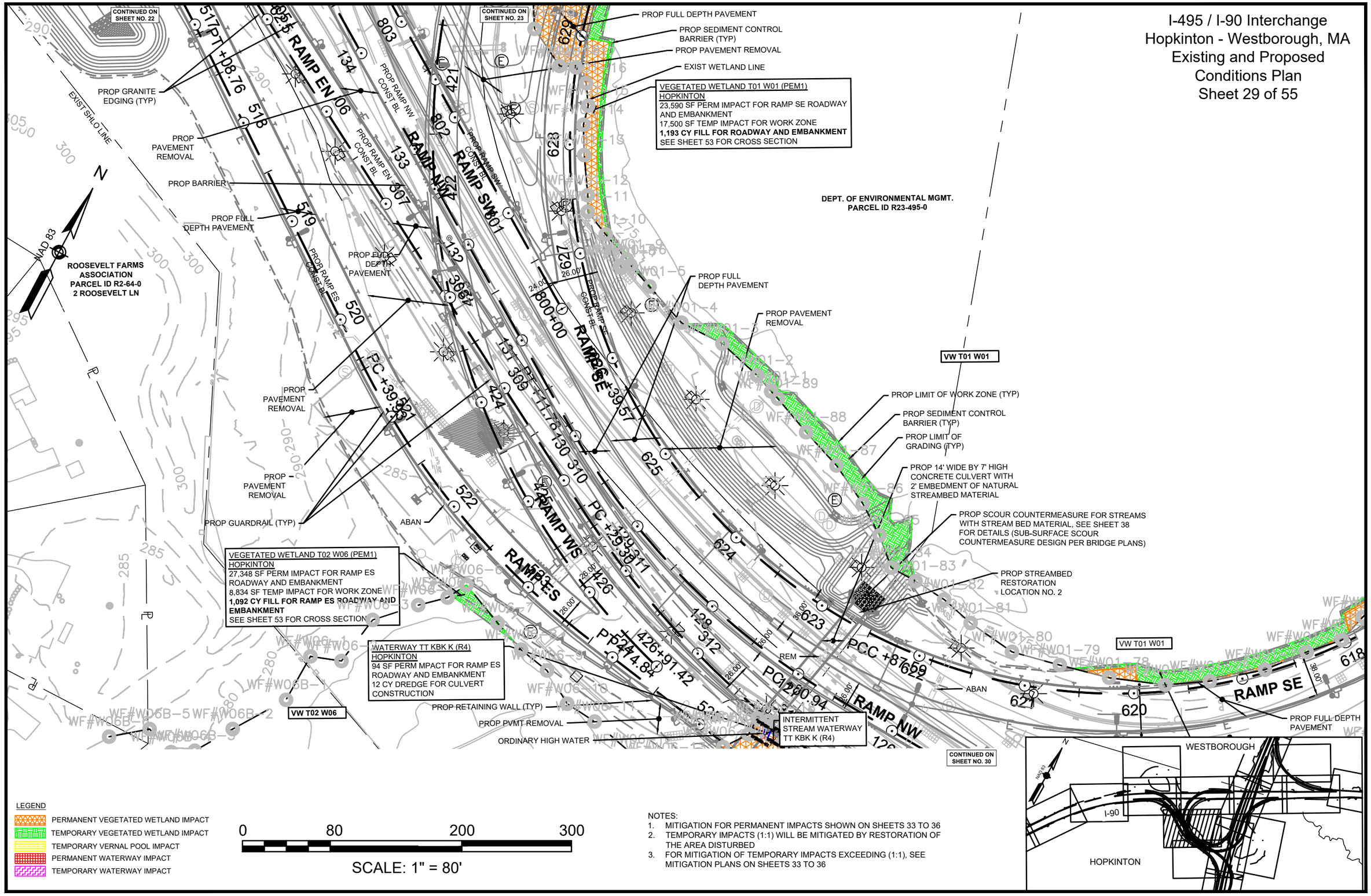

LEGEND

- PERMANENT VEGETATED WETLAND IMPACT
- TEMPORARY VEGETATED WETLAND IMPACT
- TEMPORARY VERNAL POOL IMPACT
- PERMANENT WATERWAY IMPACT
- TEMPORARY WATERWAY IMPACT

0 80 200 300

SCALE: 1" = 80'

NOTES:
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Hopkinton - Westborough, MA
Existing and Proposed Conditions Plan
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CONTINUED ON SHEET NO. 29

PROP RETAINING WALL (TYP)

PROP PVMT REMOVAL

ORDINARY HIGH WATER

PROP SCOUR COUNTERMEASURE FOR STREAMS WITH STREAM BED MATERIAL, SEE SHEET 38 FOR DETAILS (SUB-SURFACE SCOUR COUNTERMEASURE DESIGN PER BRIDGE PLANS)

PROP STREAMBED RESTORATION LOCATION NO. 2

INTERMITTENT STREAM WATERWAY TT KBK K (R4)

WATERWAY TT KBK K (R4)
HOPKINTON
94 SF PERM IMPACT FOR RAMP ES ROADWAY AND EMBANKMENT
12 CY DREDGE FOR CULVERT CONSTRUCTION

PROP PVMT REMOVAL

PROP FULL DEPTH PVMT

PROP BARRIER

PROP TURBIDITY CURTAIN FOR WORK WITHIN STAGNANT WATER

VEGETATED WETLAND T01 W01 (PEM1)
HOPKINTON
23,590 SF PERM IMPACT FOR RAMP SE ROADWAY AND EMBANKMENT
17,500 SF TEMP IMPACT FOR WORK ZONE
1,193 CY FILL FOR ROADWAY AND EMBANKMENT
SEE SHEET 51 FOR CROSS SECTION

VEGETATED WETLAND T02 W06 (PEM1)
HOPKINTON
27,348 SF PERM IMPACT FOR RAMP ES ROADWAY AND EMBANKMENT
8,834 SF TEMP IMPACT FOR WORK ZONE
1,092 CY FILL FOR RAMP ES ROADWAY AND EMBANKMENT
SEE SHEET 53 FOR CROSS SECTION

PROP PVMT REMOVAL

VW T02 W06

EXIST SHLO LINE

EXIST WETLAND LINE

BEGIN PROP SHLO

PROP LIMIT OF WORK ZONE (TYP)

PROP SEDIMENT CONTROL BARRIER (TYP)

PROP LIMIT OF GRADING (TYP)

PROP TEMPORARY EASEMENT

END PROP SHLO

PROP GUARDRAIL (TYP)

CONTINUED ON SHEET NO. 9

ABAN

PROP PAVEMENT REMOVAL

RAMP SE

PROP FULL DEPTH PAVEMENT

PROP PVMT REMOVAL

LIMIT OF GRADING (TYP)

VW T02 W02

VEGETATED WETLAND T02 W02 (PSS1)
HOPKINTON
2,383 SF TEMP IMPACT FOR WORK ZONE
SEE SHEET 52 FOR CROSS SECTION

EXIST WETLAND LINE

RAMP EN

PROP PVMT REMOVAL

PROPOSED STORMWATER MITIGATION

INFILTRATION BASIN 6

PROP PVMT REMOVAL

CONTINUED ON SHEET NO. 10

PROP I-495 SB CONST BL

PROP I-495 NB CONST BL

PROP RAMP NW CONST BL

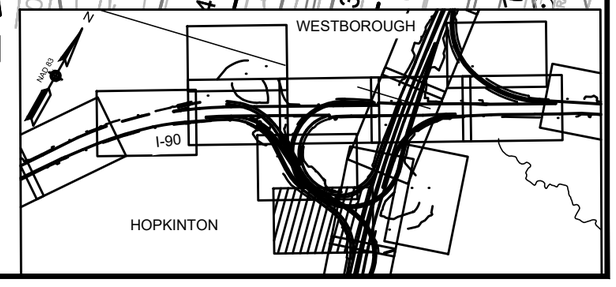
PROP RAMP ES CONST BL

PC 1+68.55

PC 1+52.04

PC 1+31.69

PCC 1+82.30



LEGEND

- PERMANENT VEGETATED WETLAND IMPACT
- TEMPORARY VEGETATED WETLAND IMPACT
- TEMPORARY VERNAL POOL IMPACT
- PERMANENT WATERWAY IMPACT
- TEMPORARY WATERWAY IMPACT

NOTES:
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3. FOR MITIGATION OF TEMPORARY IMPACTS EXCEEDING (1:1), SEE MITIGATION PLANS ON SHEETS 33 TO 36

0 80 200 300

SCALE: 1" = 80'

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CONTINUED ON SHEET NO. 10

DEPT. OF ENVIRONMENTAL MGMT.
PARCEL ID R23-495-0

EXIST WETLAND LINE

VW T02 W03

PROPOSED STORMWATER MITIGATION

INFILTRATION BASIN 2

VEGETATED WETLAND T02 W03 (PEM1)
HOPKINTON
25,966 SF TEMP IMPACT FOR WETLAND MITIGATION AREA CONSTRUCTION
SEE SHEET 55 FOR CROSS SECTION

PROP LIMIT OF WORK ZONE (TYP)

PROP SEDIMENT CONTROL BARRIER (TYP)

PROP LIMIT OF GRADING (TYP)

PROP PAVEMENT REMOVAL

VW T01 W09

VEGETATED WETLAND T01 W09 (PSS1)
HOPKINTON
6,400 SF TEMP IMPACT FOR WETLAND MITIGATION AREA CONSTRUCTION
2,558 SF TEMP IMPACT FOR WORK ZONE
SEE SHEET 52 FOR CROSS SECTION

INTERMITTENT STREAM WATERWAY (R4)

ORDINARY HIGH WATER

FRUIT STREET

PROP PAVEMENT REMOVAL

VEGETATED WETLAND T01 W09 (PFO1)
HOPKINTON
6,400 SF TEMP IMPACT FOR WETLAND MITIGATION AREA CONSTRUCTION
2,558 SF TEMP IMPACT FOR WORK ZONE
SEE SHEET 55 FOR CROSS SECTION

VW T01 W09

EXIST SHLO LINE

COMMONWEALTH OF MASS, DEPT OF CONSERVATION & RECREATION
PARCEL ID R2-15-0

LEGEND

- PERMANENT VEGETATED WETLAND IMPACT
- TEMPORARY VEGETATED WETLAND IMPACT
- TEMPORARY VERNAL POOL IMPACT
- PERMANENT WATERWAY IMPACT
- TEMPORARY WATERWAY IMPACT

NOTES:
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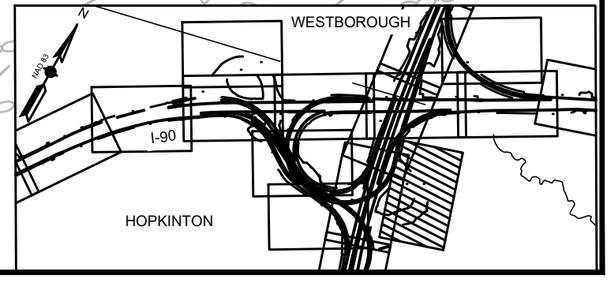
0 80 200 300

SCALE: 1" = 80'



607977_EV_USACE(EXISTING AND PROPOSED CONDITIONS PLANS_RAMPS)-BTC.DWG

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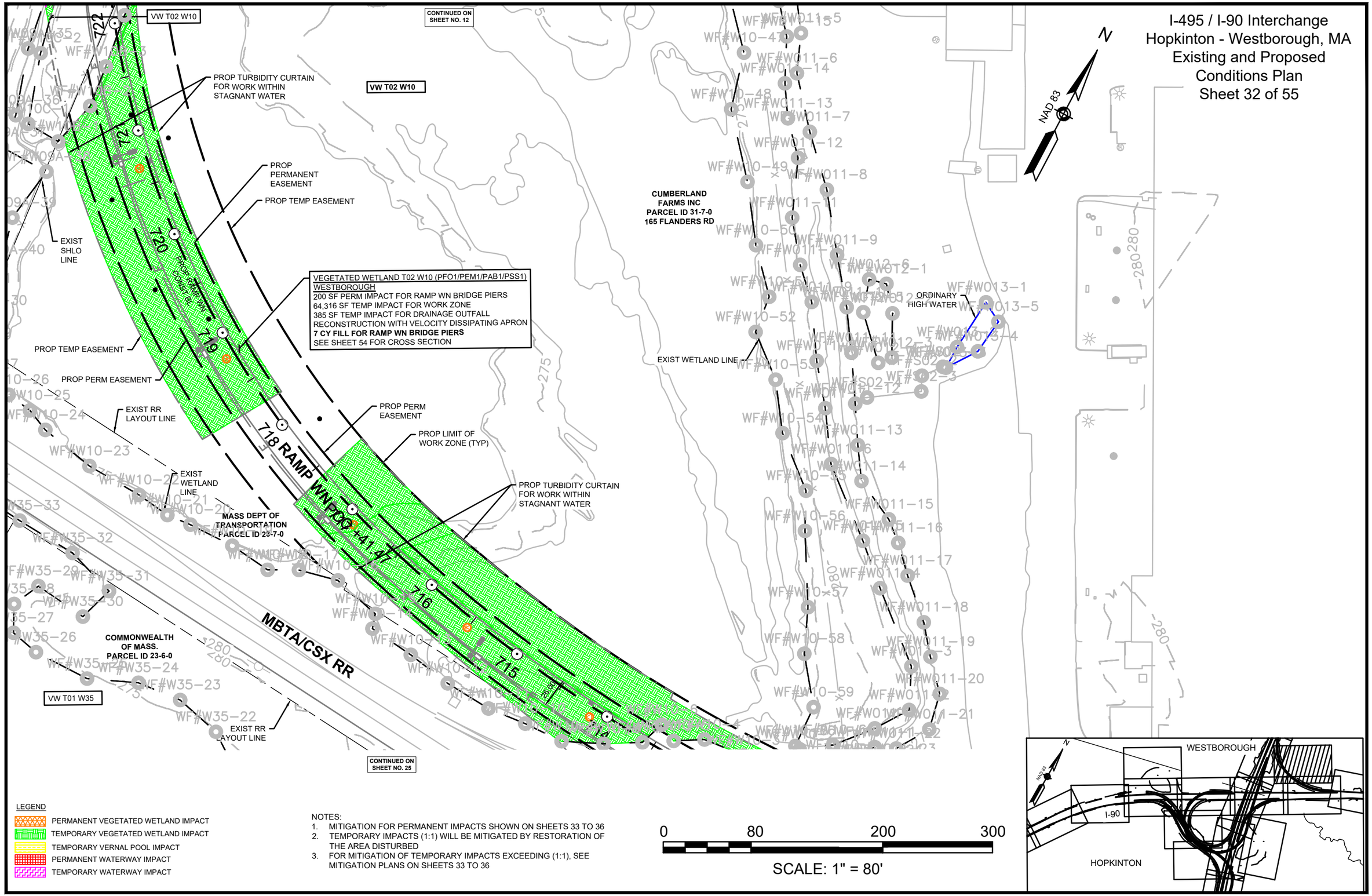

LEGEND

- PERMANENT VEGETATED WETLAND IMPACT
- TEMPORARY VEGETATED WETLAND IMPACT
- TEMPORARY VERNAL POOL IMPACT
- PERMANENT WATERWAY IMPACT
- TEMPORARY WATERWAY IMPACT

NOTES:

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0 80 200 300

SCALE: 1" = 80'

607977_EV_USACE(EXISTING AND PROPOSED CONDITIONS PLANS_RAMPS)-BTC.DWG

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Wetland Mitigation Area A Plan
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GROWING SEASON GROUNDWATER ELEVATIONS				
	OW-101	OW-102	OW-101A	OW-1
Average	273.76	273.67	273.65	277.06
High	274.75	274.72	275.43	279.39
Low	272.43	272.42	272.60	274.74

LEGEND
- EMERGENT HABITAT RESTORATION
- FOREST HABITAT RESTORATION
- AQUATIC BED HABITAT RESTORATION
- SCRUB SHRUB HABITAT RESTORATION
- WATERWAY MITIGATION (ENHANCEMENT)
- WATERWAY MITIGATION (CREATION)
- EMERGENT HABITAT WETLAND MITIGATION
- FOREST HABITAT WETLAND MITIGATION

PROP LIMIT OF WORK ZONE (TYP)
PROP SEDIMENT CONTROL BARRIER (TYP)
PROP LIMIT OF GRADING (TYP)
EXIST WETLAND LINE
EXIST SHLO LINE
WETLAND RESTORATION AREA 9
EXIST ATLANTIC WHITE CEDAR TREE (TYP)
FINAL DESIGN TO PROVIDE GRADING TO PRESERVE EXISTING ATLANTIC WHITE CEDAR TREES
WETLAND RESTORATION AREA 9
WETLAND RESTORATION AREA 29
WATERWAY MITIGATION
PROP EMERGENT HABITAT WETLAND MITIGATION (TYP)
WESTBOROUGH
110,137 SF
HOPKINTON
41,818 SF
PROP PAVEMENT REMOVAL
WETLAND RESTORATION AREA 9
PROP FOREST HABITAT WETLAND MITIGATION (TYP)
WESTBOROUGH
28,147 SF
HOPKINTON
11,651 SF
SUDBURY RIVER WATERWAY (R2)
VERNAL POOL VP-2
RAMP SW
I-90 WB
WESTBOROUGH
HOPKINTON
WETLAND RESTORATION AREA 27
WETLAND RESTORATION AREA 28
PROP RAMP SW BRIDGE OVER I-90
EXIST CONNECTOR BRIDGE OVER I-90 TO BE DEMOLISHED
VW T01 W14
VW T01 W18
VW T02 W05
VW TT KA
VW TT KB
VW TT KC
OW-101A
OW-101
OW-102
OW-1
NAD 83
N
0 80 200 300
SCALE: 1" = 80'

607977_EV_USACE(WETLAND_MITIGATION_PLANS)-BTC.DWG

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LEGEND
- EMERGENT HABITAT RESTORATION
- FOREST HABITAT RESTORATION
- AQUATIC BED HABITAT RESTORATION
- SCRUB SHRUB HABITAT RESTORATION
- WATERWAY MITIGATION (ENHANCEMENT)
- WATERWAY MITIGATION (CREATION)
- EMERGENT HABITAT WETLAND MITIGATION
- FOREST HABITAT WETLAND MITIGATION

I-495 NB
RAMP SE
RAMP EN
EXIST CONNECTOR BRIDGE OVER I-495 TO BE DEMOLISHED
PROP PAVEMENT REMOVAL
PROP RAMP EN BRIDGE OVER I-495 RAMP NE AND RAMP NW
PROP FOREST HABITAT WETLAND MITIGATION (TYP)
HOPKINTON
15,563 SF
PROP LIMIT OF WORK ZONE (TYP)
PROP SEDIMENT CONTROL BARRIER (TYP)
PROP LIMIT OF GRADING (TYP)
EXIST WETLAND LINE
WETLAND RESTORATION AREA 5
WETLAND RESTORATION AREA 7
INFILTRATION BASIN 2
PROP PAVEMENT REMOVAL
PROP EMERGENT HABITAT WETLAND MITIGATION (TYP)
HOPKINTON
87,634 SF
WATERWAY MITIGATION
INTERMITTENT STREAM WATERWAY (R4)
VW T02 W03
VW T01 W09
OW-103
OW-104
OW3
FRUIT STREET
NAD 83
N
0+00
7+96.77
PT +46.48
PC +46.79
327+85.80
PC 332.429

GROWING SEASON GROUNDWATER ELEVATIONS			
	OW-103	OW-104	OW-3
Average	273.38	273.31	274.57
High	274.18	274.13	276.86
Low	272.63	272.59	273.34

0 80 200 300
SCALE: 1" = 80'

Herbaceous Wetland Seed Mix (20 LB/ACRE)		
Swamp milkweed	*Asclepias incarnata*	OBL
Bur marigold	*Bidens cernua*	FACW
Blue joint grass	*Calamagrostis canadensis*	OBL
Fringed sedge	*Carex crinite*	OBL
Bladder sedge	*Carex intumescens*	FACW
Shallow sedge	*Carex lurida*	OBL
Broom sedge	*Carex scoparia*	FACW
Tussock sedge	*Carex stricta*	OBL
Joe-pye weed	*Eutrochium maculatum*	OBL
Boneset	*Eupatorium perfoliatum*	FACW
Rattle snake grass	*Glyceria candensis*	OBL
Soft rush	*Juncus effuses*	OBL
Rice cutgrass	*Leersia oryzoides*	OBL
Cardinal flower	*Lobelia cardinalis*	OBL
Sensitive fern	*Onoclea sensibilis*	FACW
Green bulrush	*Scirpus atrovirens*	OBL
Cottongrass bulrush	*Scirpus cyperinus*	OBL
Soft-stem bulrush	*Schoenoplectus tabernaemonta*	OBL
New England aster	*Symphyotrichum novae-anglia*	FACW
Blue vervain	*Verbena hastata*	FACW

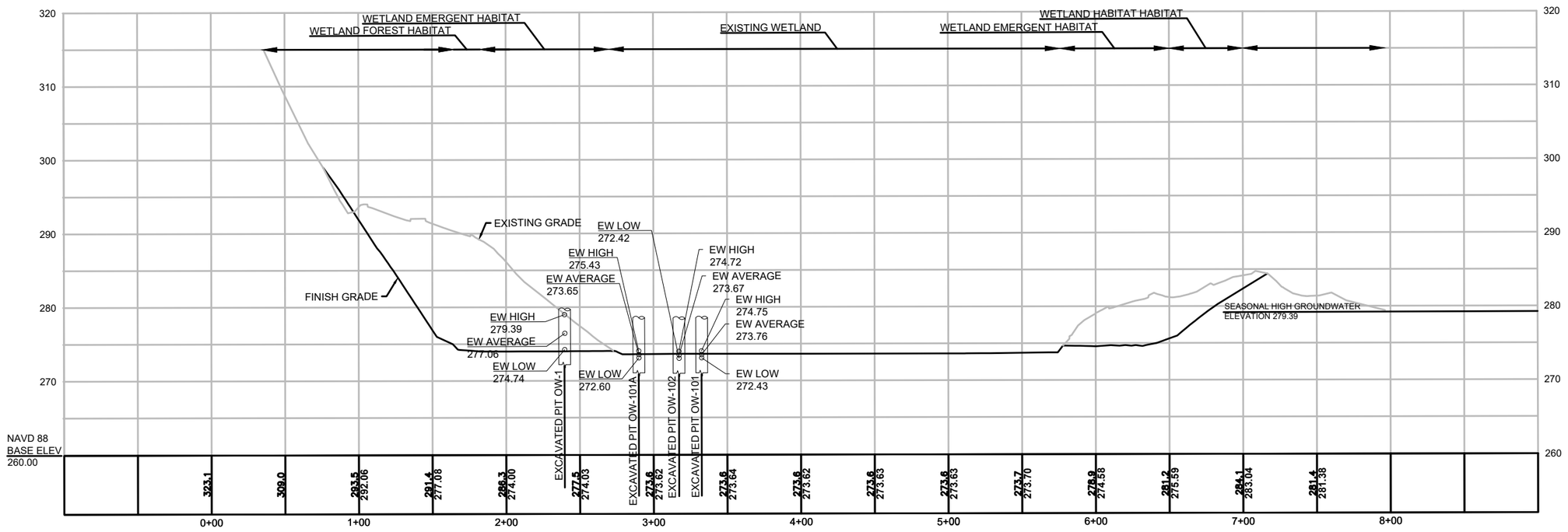
WETLAND MITIGATION AREA SITE A (APPROX. 4.3 ACRES)

Forest Cover Type				
Common Name	**Scientific Name**	**Indicator Status**	**Minimum Size**	**Percentage**
Trees (400 per acre)				
Red maple	*Acer rubrum*	FAC	4 feet	40%
Atlantic white cedar	*Chamaecyparis thyoides*	OBL	4 feet	10%
Black tupelo	*Nyssa sylvatica*	FAC	4 feet	30%
Swamp white oak	*Quercus bicolor*	FACW	4 feet	10%
Pin oak	*Quercus palustris*	FACW	4 feet	5%
Black willow	*Salix nigra*	OBL	4 feet	5%
			Total	**100%**
Shrubs (200 per acre)				
Speckled alder	*Alnus incana*	FACW	1.5 feet	15%
Red-osier dogwood	*Cornus alba*	FACW	1.5 feet	15%
Spicebush	*Lindera benzoin*	FACW	1.5 feet	5%
Pussy willow	*Salix discolor*	FACW	1.5 feet	20%
Elderberry	*Sambucus nigra*	FACW	1.5 feet	5%
Steeplebush	*Spiraea tomentosa*	FACW	1.5 feet	10%
Highbush blueberry	*Vaccinium corymbosum*	FACW	1.5 feet	20%
Wild raisin	*Viburnum nudum*	FACW	1.5 feet	10%
			Total	**100%**
Herbaceous Plugs (1,000 per acre) - To be placed throughout Forest and Emergent Cover Types				
Swamp milkweed	*Asclepias incarnata*	OBL	2-inch plug	8%
Blue joint grass	*Calamagrostis canadensis*	OBL	2-inch plug	5%
Shallow sedge	*Carex lurida*	OBL	2-inch plug	5%
Hop sedge	*Carex lupulina*	FACW	2-inch plug	8%
Broom sedge	*Carex scoparia*	FACW	2-inch plug	5%
Virginia wildrye	*Elymus virginicus*	FACW	2-inch plug	5%
Joe-pye weed	*Eutrochium maculatum*	OBL	2-inch plug	8%
Boneset	*Eupatorium perfoliatum*	FACW	2-inch plug	8%
Rattle snake grass	*Glyceria candensis*	OBL	2-inch plug	7%
Rice cutgrass	*Leersia oryzoides*	OBL	2-inch plug	5%
Cardinal flower	*Lobelia cardinalis*	OBL	2-inch plug	8%
Green bulrush	*Scirpus atrovirens*	OBL	2-inch plug	5%
Soft-stem bulrush	*Schoenoplectus tabernaemonti*	OBL	2-inch plug	7%
New England aster	*Symphyotrichum novae-angliae*	FACW	2-inch plug	8%
Blue vervain	*Verbena hastata*	FACW	2-inch plug	8%
			Total	**100%**
Additional Trees/Shrubs for Emergent Cover Type - To be placed in discrete clusters at 25 per acre for total Emergent Cover Type at each site				
Swamp white oak	*Quercus bicolor*	FACW	4 feet	20%
Pin oak	*Quercus palustris*	FACW	4 feet	20%
Black willow	*Salix nigra*	OBL	4 feet	20%
Buttonbush	*Cephalanthus occidentialis*	OBL	1.5 feet	20%
Speckled alder	*Alnus incana*	FACW	1.5 feet	20%
			Total	**100%**
Wetland Seed Mix (20 pounds per acre)				

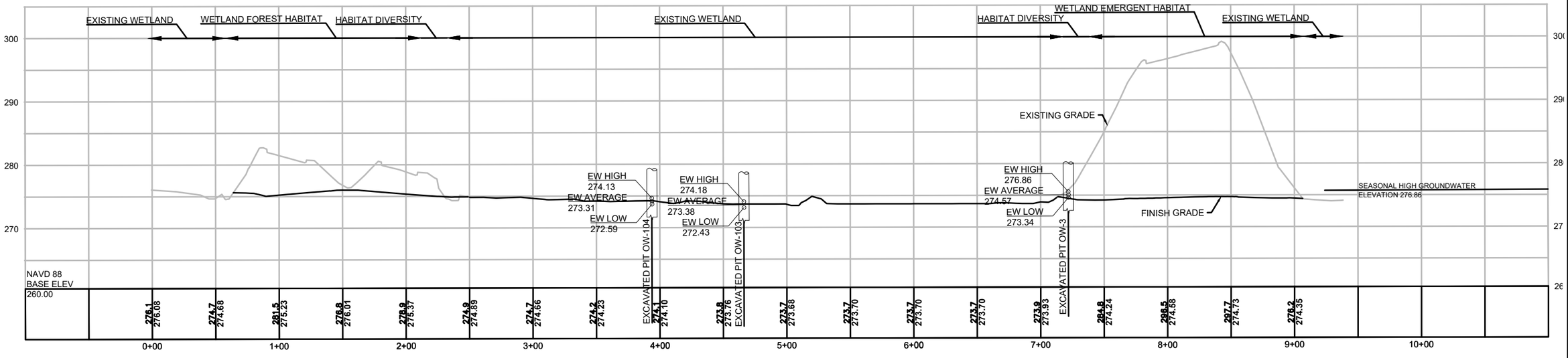
WETLAND MITIGATION AREA SITE B (APPROX. 2.4 ACRES)

Forest				
Common Name	**Scientific Name**	**Indicator Status**	**Minimum Size**	**Percentage**
Trees (400 per acre)				
Red maple	*Acer rubrum*	FAC	4 feet	40%
Atlantic white cedar	*Chamaecyparis thyoides*	OBL	4 feet	10%
Black tupelo	*Nyssa sylvatica*	FAC	4 feet	30%
Swamp white oak	*Quercus bicolor*	FACW	4 feet	10%
Pin oak	*Quercus palustris*	FACW	4 feet	5%
Black willow	*Salix nigra*	OBL	4 feet	5%
			Total	**100%**
Shrubs (200 per acre)				
Speckled alder	*Alnus incana*	FACW	1.5 feet	15%
Red-osier dogwood	*Cornus alba*	FACW	1.5 feet	15%
Spicebush	*Lindera benzoin*	FACW	1.5 feet	5%
Pussy willow	*Salix discolor*	FACW	1.5 feet	20%
Elderberry	*Sambucus nigra*	FACW	1.5 feet	5%
Steeplebush	*Spiraea tomentosa*	FACW	1.5 feet	10%
Highbush blueberry	*Vaccinium corymbosum*	FACW	1.5 feet	20%
Wild raisin	*Viburnum nudum*	FACW	1.5 feet	10%
			Total	**100%**
Herbaceous Plugs (1,000 per acre) - To be placed throughout Forest and Emergent Cover Types				
Swamp milkweed	*Asclepias incarnata*	OBL	2-inch plug	8%
Blue joint grass	*Calamagrostis canadensis*	OBL	2-inch plug	5%
Shallow sedge	*Carex lurida*	OBL	2-inch plug	5%
Hop sedge	*Carex lupulina*	FACW	2-inch plug	8%
Broom sedge	*Carex scoparia*	FACW	2-inch plug	5%
Virginia wildrye	*Elymus virginicus*	FACW	2-inch plug	5%
Joe-pye weed	*Eutrochium maculatum*	OBL	2-inch plug	8%
Boneset	*Eupatorium perfoliatum*	FACW	2-inch plug	8%
Rattle snake grass	*Glyceria candensis*	OBL	2-inch plug	7%
Rice cutgrass	*Leersia oryzoides*	OBL	2-inch plug	5%
Cardinal flower	*Lobelia cardinalis*	OBL	2-inch plug	8%
Green bulrush	*Scirpus atrovirens*	OBL	2-inch plug	5%
Soft-stem bulrush	*Schoenoplectus tabernaemonti*	OBL	2-inch plug	7%
New England aster	*Symphyotrichum novae-angliae*	FACW	2-inch plug	8%
Blue vervain	*Verbena hastata*	FACW	2-inch plug	8%
			Total	**100%**
Additional Trees/Shrubs for Emergent Cover Type - To be placed in discrete clusters at 25 per acre for total Emergent Cover Type at each site				
Red maple	*Acer rubrum*	FAC	4 feet	15%
Swamp white oak	*Quercus bicolor*	FACW	4 feet	15%
Pin oak	*Quercus palustris*	FACW	4 feet	14%
Black willow	*Salix nigra*	OBL	4 feet	14%
Buttonbush	*Cephalanthus occidentialis*	OBL	1.5 feet	14%
Speckled alder	*Alnus incana*	FACW	1.5 feet	14%
Pussy willow	*Salix discolor*	FACW	1.5 feet	14%
			Total	**100%**
Wetland Seed Mix (20 pounds per acre)				

I-495 / I-90 Interchange
Hopkinton - Westborough, MA
Wetland Mitigation and Restoration Typical Sections
Sheet 36 of 55



PROPOSED WETLAND MITIGATION
AREA B
SECTION B-B



PROPOSED WETLAND MITIGATION
AREA A
SECTION A-A

HOR. SCALE IN FEET
80 0 80 160
16 0 16 32
VER. SCALE IN FEET

607977_EV_USACE(WETLAND_MITIGATION_PLANS)-BTC.DWG

I-495 / I-90 Interchange
Hopkinton - Westborough, MA
Construction Details
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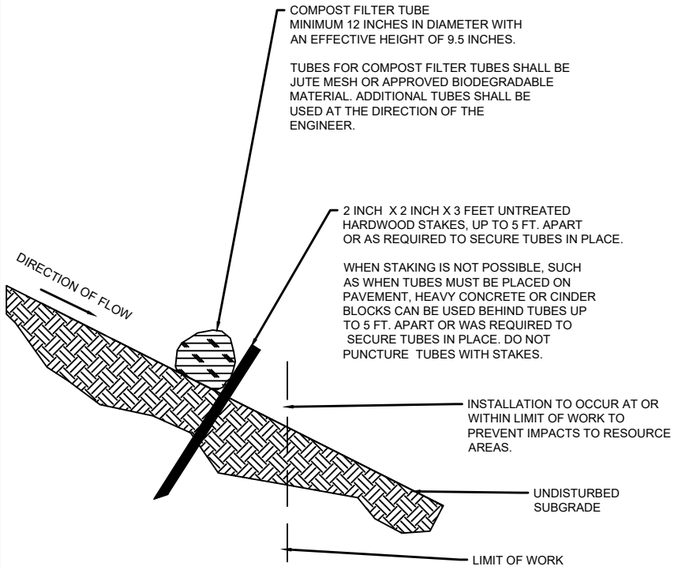
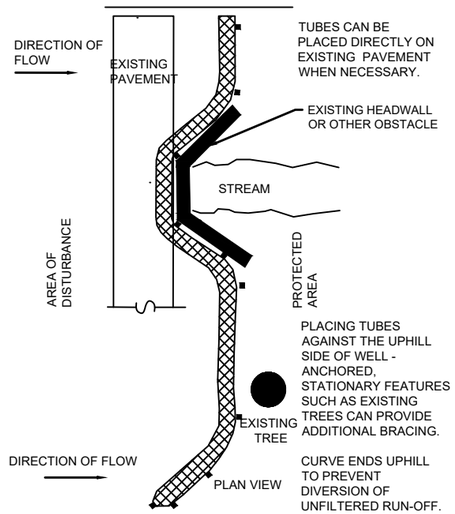
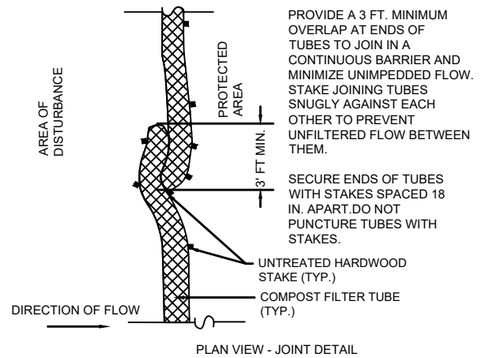




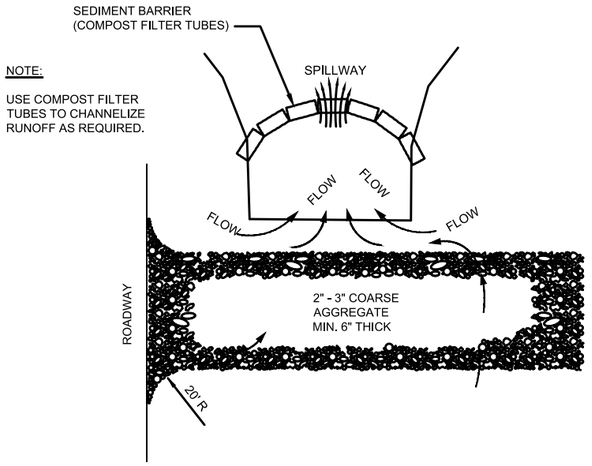
SINGLE COMPOST FILTER TUBE DETAIL
NTS

GENERAL NOTES:

1. PROVIDE A MINIMUM TUBE DIAMETER OF 12 INCHES FOR SLOPES UP TO 50 FEET IN LENGTH WITH A SLOPE RATIO OF 3H:1V OR STEEPER. LONGER SLOPES OF 3H:1V MAY REQUIRED LARGER TUBE DIAMETER OR ADDITIONAL COURSING OF FILTER TUBES TO CREATE A FILTER BERM. REFER TO MANUFACTURER'S RECOMMENDATIONS FOR SITUATIONS WITH LONGER OR STEEPER SLOPES.
2. INSTALL TUBES ALONG CONTOURS AND PERPENDICULAR TO SHEET OR CONCENTRATED FLOW.
3. DO NOT INSTALL IN PERENNIAL, EPHEMERAL OR INTERMITTENT STREAMS.
4. CONFIGURE TUBES AROUND EXISTING SITE FEATURES TO MINIMIZE SITE DISTURBANCE AND MAXIMIZE CAPTURE AREA OF STORMWATER RUN-OFF.



PLAN VIEW - JOINT DETAIL



PLAN

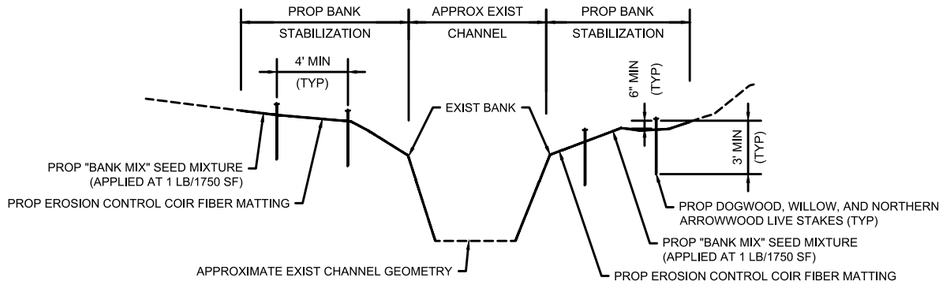
NOTE:

USE COMPOST FILTER TUBES TO CHANNELIZE RUNOFF AS REQUIRED.

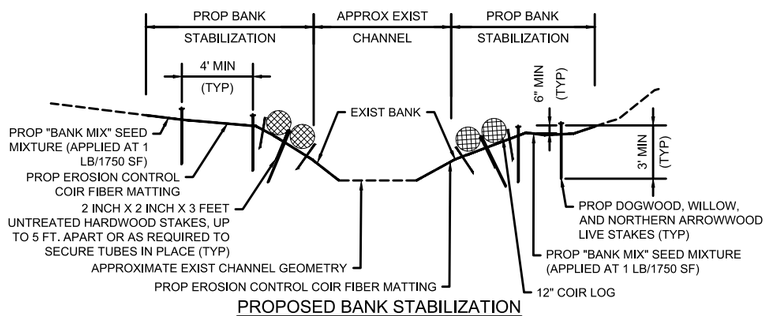
NOTE:

THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT OUT OF THE CONSTRUCTION AREA. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.

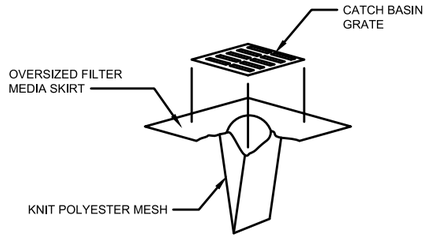
TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT
NTS



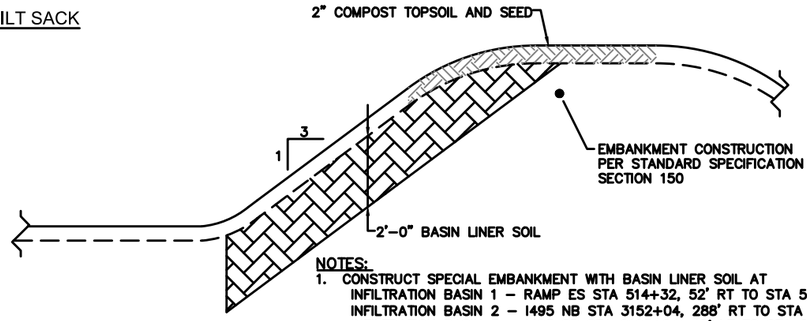
PROPOSED BANK STABILIZATION
FOR PERENNIAL STREAMS (SUDBURY RIVER AND TRIBUTARY 13)
NTS



PROPOSED BANK STABILIZATION



CATCH BASIN SILT SACK
NTS

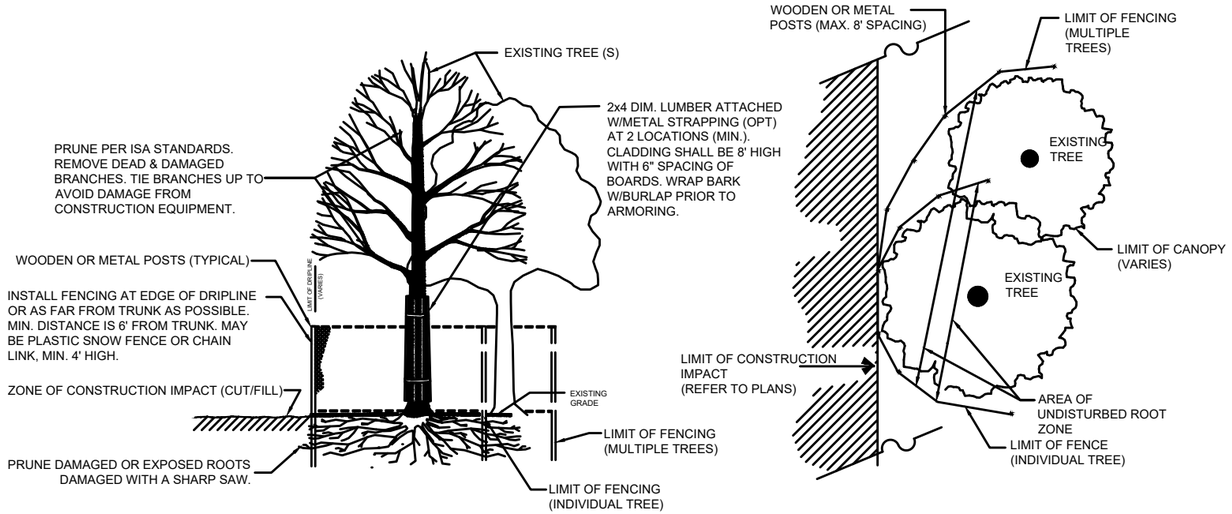


NOTES:

1. CONSTRUCT SPECIAL EMBANKMENT WITH BASIN LINER SOIL AT
   INFILTRATION BASIN 1 – RAMP ES STA 514+32, 52' RT TO STA 517+20, 52' RT (260 LF)
   INFILTRATION BASIN 2 – I495 NB STA 3152+04, 288' RT TO STA 3153+72, 322' RT (160 LF)
   INFILTRATION BASIN 3 – I495 SB STA 2103+84, 45' LT TO STA 2105+71, 50' LT (190 LF)
   INFILTRATION BASIN 4 – I495 NB STA 3114+86, 71' RT TO STA 3116+86, 61' RT (200 LF)
   INFILTRATION BASIN 5 – I90 STA 128+74, 96' LT TO STA 129+92, 92' LT (120 LF)
   INFILTRATION BASIN 7 – I495 NB STA 3201+89, 31' LT TO STA 3209+80, 39' LT (790 LF)
2. BASIN LINER SOIL SHALL BE PLACED AND COMPACTED IN ACCORDANCE WITH STANDARD SPECIFICATION SECTION 150.

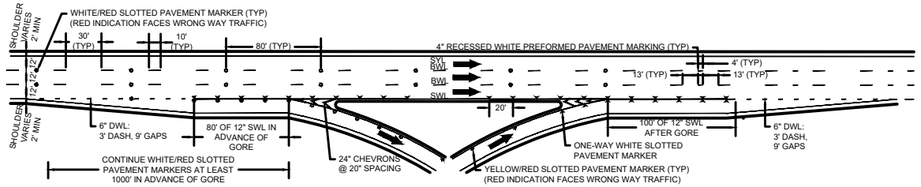
SPECIAL EMBANKMENT CONSTRUCTION
NTS

I-495 / I-90 Interchange
Hopkinton - Westborough, MA
Construction Details
Sheet 38 of 55

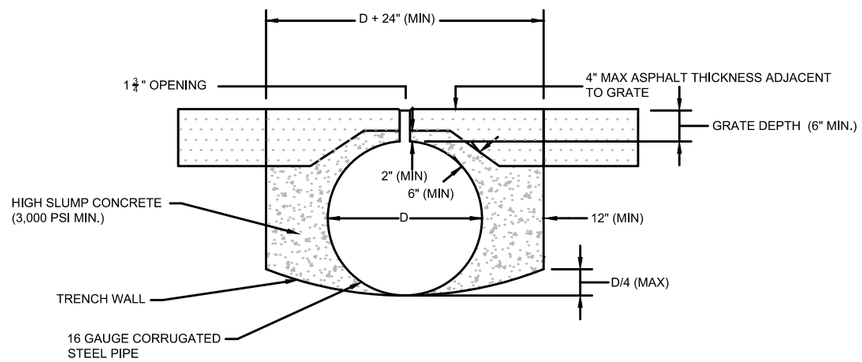


TREE PROTECTION EXISTING TREE(S)
NTS

PIPE DIAMETER (D)	WIDTH OF RIPRAP APRON	
	W1	W2
12"	3'-0"	5'-8"
15"	3'-9"	7'-1"
18"	4'-6"	8'-6"
24"	6'-0"	11'-4"
30"	7'-6"	14'-2"
36"	9'-0"	17'-0"



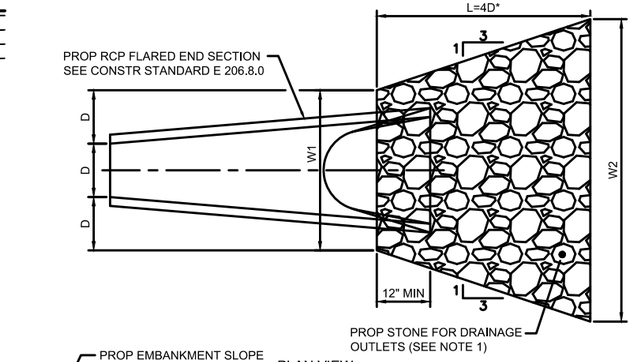
TYPICAL PAVEMENT MARKING DETAIL



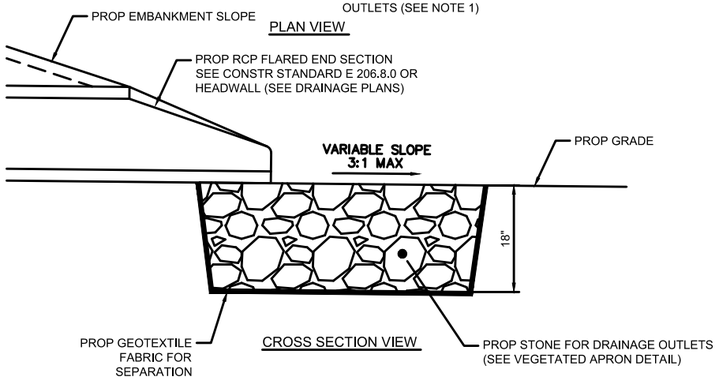
NOTES:

1. INSTALLATION AND FABRICATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
2. CONTRACTOR SHALL RECESS THE TOP OF THE GRATE ONE-QUARTER INCH (1/4") BELOW THE FINISHED GRADE OF THE TEMPORARY PAVEMENT.
3. HIGH EARLY STRENGTH CEMENT CONCRETE SHALL BE USED.
4. SLOTTED DRAIN GRATE SHALL BE PAINTED BLACK TO MINIMIZE REFLECTIVENESS.

SLOTTED DRAIN
NTS

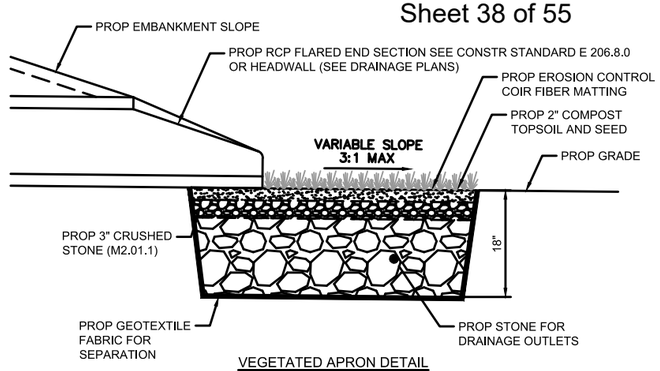


PLAN VIEW



CROSS SECTION VIEW

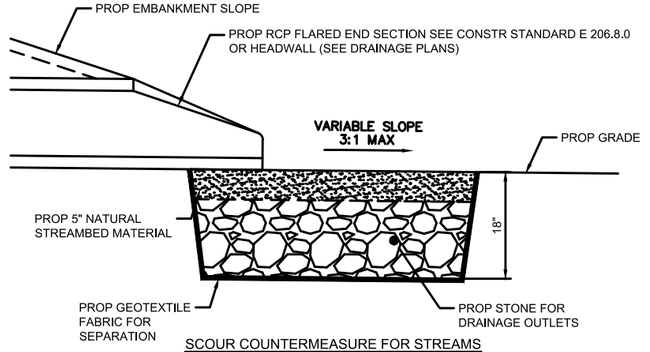
DRAINAGE OUTLET APRON DETAIL
NTS



VEGETATED APRON DETAIL
(SEE NOTE 1 BELOW)

NOTE:

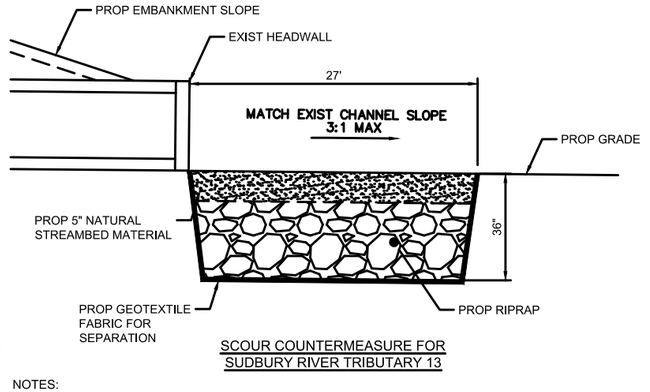
1. **VEGETATED APRON SHALL BE CONSTRUCTED AT OUTFALLS TO RESOURCE AREAS AS SHOWN ON PLANS.**



SCOUR COUNTERMEASURE FOR STREAMS

NOTES:

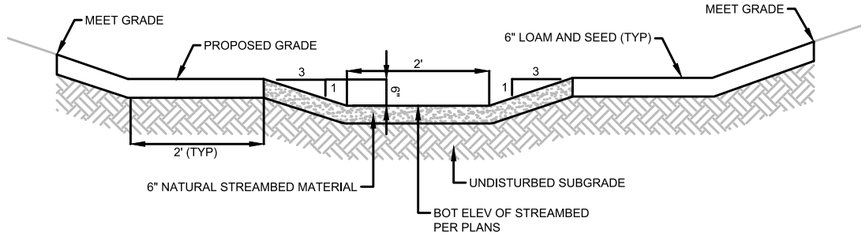
1. THE APRON WIDTH WITHIN A STREAMBED SHALL BE CONTAINED WITHIN THE BANKS.
2. A LOW FLOW CHANNEL MAY BE REQUIRED TO MATCH EXISTING STREAMBED GEOMETRY. THE WIDTH OF THE LOW FLOW CHANNEL SHALL BE COORDINATED WITH THE WETLAND SCIENTIST IN THE FIELD AND SHALL NOT EXCEED 5 INCHES IN DEPTH TO PRESERVE THE ENERGY DISSIPATING RIPRAP BELOW THE STREAMBED MATERIAL.



SCOUR COUNTERMEASURE FOR SUDBURY RIVER TRIBUTARY 13

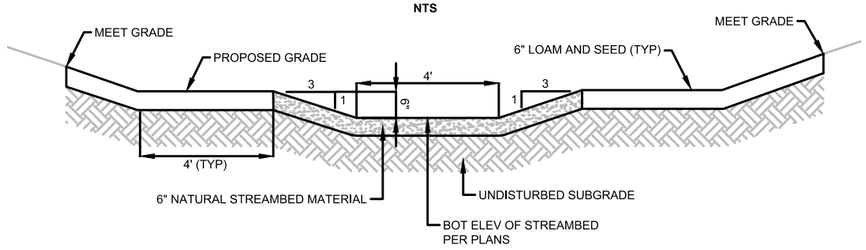
NOTES:

1. THE APRON WIDTH WITHIN A STREAMBED SHALL BE CONTAINED WITHIN THE BANKS.
2. A LOW FLOW CHANNEL MAY BE REQUIRED TO MATCH EXISTING STREAMBED GEOMETRY. THE WIDTH OF THE LOW FLOW CHANNEL SHALL BE COORDINATED WITH THE WETLAND SCIENTIST IN THE FIELD AND SHALL NOT EXCEED 5 INCHES IN DEPTH TO PRESERVE THE ENERGY DISSIPATING RIPRAP BELOW THE STREAMBED MATERIAL.



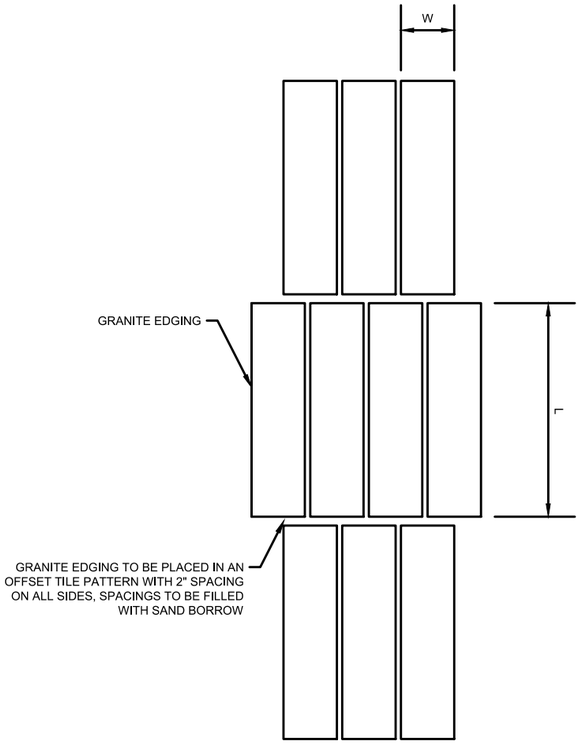
PROPOSED STREAMBED RESTORATION LOCATION NO. 3 AND NO. 4

SECTION
NTS

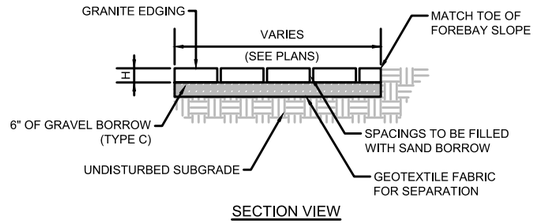


PROPOSED STREAMBED RESTORATION LOCATION NO. 5

SECTION
NTS



PLAN VIEW



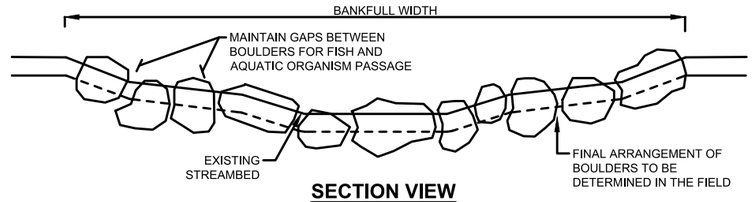
SECTION VIEW

NOTE:

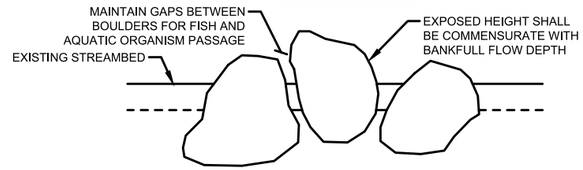
1. MINIMUM LENGTH (L) = 24", MINIMUM WIDTH (W) = 12", MINIMUM HEIGHT (H) = 4"

SEDIMENT FOREBAY PAVING

NTS



SECTION VIEW



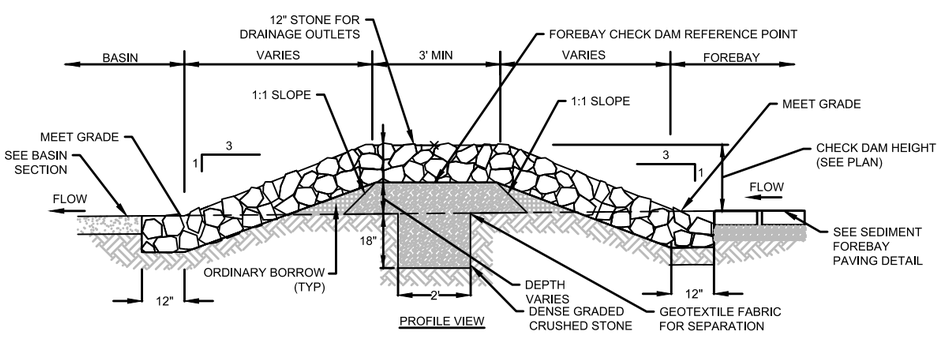
PROFILE VIEW

NOTES:

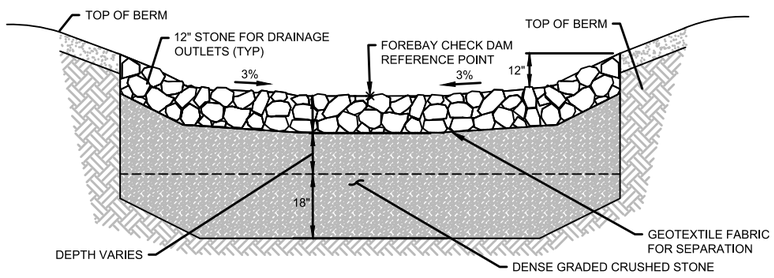
1. SOURCE OR SALVAGE BOULDERS FROM WITHIN THE CHANNEL AND ADJACENT FLOODPLAIN AREA DURING CONSTRUCTION, IF POSSIBLE. IF IMPORTED, USE WEATHERED NATURALLY-FORMED BOULDERS.
2. FINAL ELEVATION AND PLACEMENT OF BOULDERS WILL BE DETERMINED IN THE FIELD BY THE WETLAND SCIENTIST.

BOULDER PILES FOR STREAM RESTORATION

NTS



PROFILE VIEW



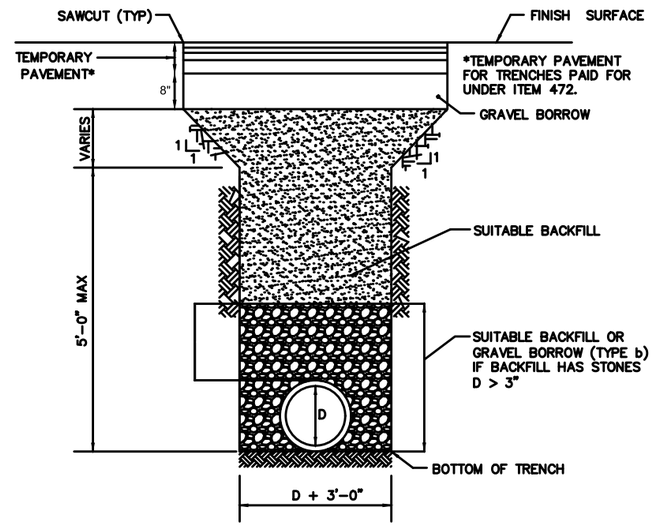
BREADTH SECTION VIEW

NOTE:

1. DESIGN BUILDER SHALL FIELD VERIFY THAT THE DIFFERENCE BETWEEN CHECK DAM REFERENCE POINT ELEVATION AND ADJACENT ROADWAY ELEVATION IS NOT LESS THAN 1-FOOT. IF FIELD CONDITIONS DO NOT RESULT IN 1-FOOT ELEVATION DIFFERENCE BETWEEN PROVIDED CHECK DAM REFERENCE POINT AND ADJACENT ROADWAY ELEVATION AT EDGE OF PAVEMENT, DESIGN BUILDER SHALL NOTIFY ENGINEER.

FOREBAY CHECK DAM DETAIL

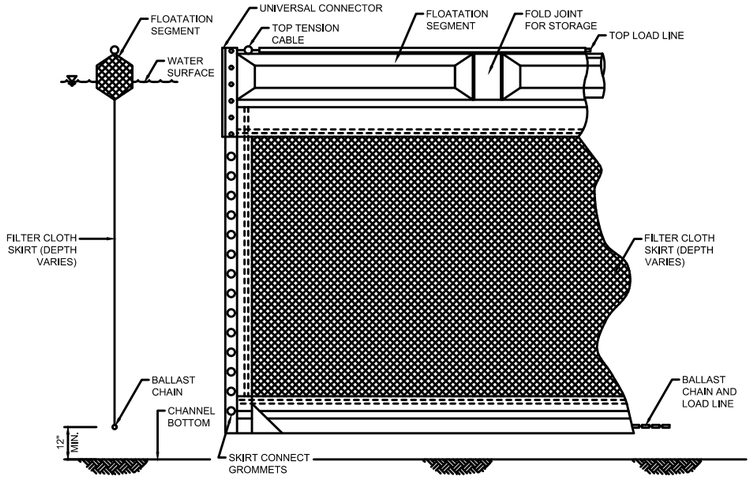
NTS



TRENCH DETAIL IN PAVEMENT MILLING AND OVERLAY AREA

NTS

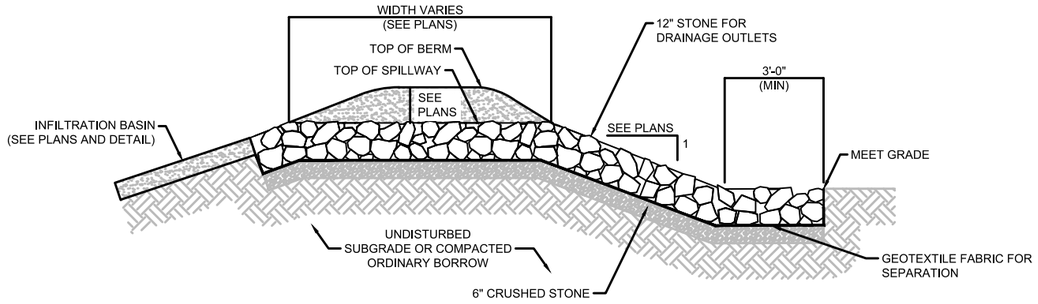
NTS



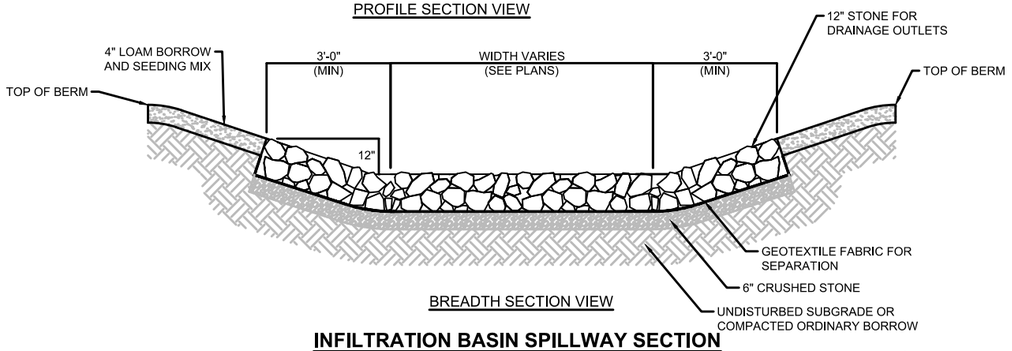
FLOATING TURBIDITY CURTAIN

LEGEND

FLOATING TURBIDITY CURTAIN



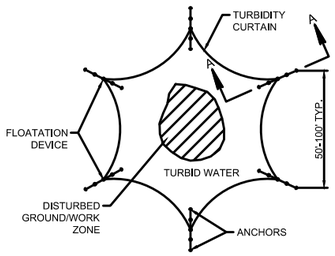
PROFILE SECTION VIEW



BREADTH SECTION VIEW

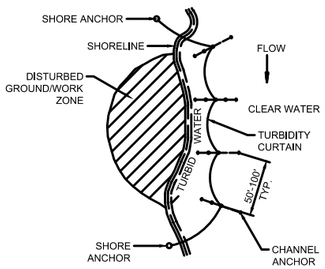
INFILTRATION BASIN SPILLWAY SECTION

NTS



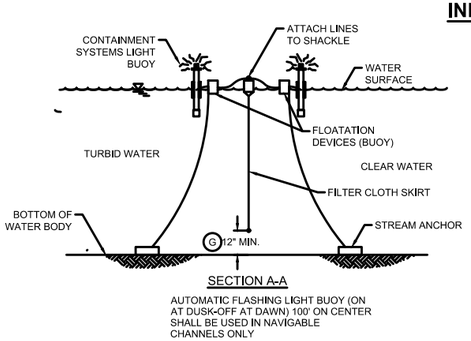
PLAN VIEW

TYPICAL ANCHORING PLAN FOR MID CHANNEL WORK (BRIDGE PIER, CAISSON, ETC.)



PLAN VIEW

TYPICAL ANCHORING PLAN FOR SHORELINE/RIVER EDGE WORK



SECTION A-A

AUTOMATIC FLASHING LIGHT BUOY (ON AT DUSK-OFF AT DAWN) 100' ON CENTER SHALL BE USED IN NAVIGABLE CHANNELS ONLY

TYPICAL ANCHORING SECTION

FLOATING TURBIDITY BARRIER

NTS

FLOATING TURBIDITY CURTAIN GENERAL NOTES

A. FLOATING TURBIDITY CURTAINS (ALSO KNOWN AS TURBIDITY BARRIERS OR SILT CURTAINS) CREATE A BARRIER TO PREVENT TURBID WATER FROM ENTERING CLEAR WATER. FLOATING TURBIDITY CURTAINS SHOULD BE USED TO ISOLATE ACTIVE CONSTRUCTION AREAS WITHIN OR ADJACENT TO A BODY OF WATER TO MINIMIZE THE MIGRATION OF SILT LADEN WATER OUT OF THE CONSTRUCTION ZONE.

B. TURBIDITY CURTAINS SHALL NOT BE INSTALLED PERPENDICULAR ACROSS THE MAIN FLOW OF A SIGNIFICANT BODY OF MOVING WATER.

C. FLOATING TURBIDITY CURTAINS SHALL NO BE USED WHERE THE ANTICIPATED FLOW VELOCITIES WILL EXCEED 5 FT/SEC.

D. TURBIDITY CURTAINS SHALL BE ANCHORED TO PREVENT DRIFT SHOREWARD OR DOWNSTREAM. ANCHORAGE SHALL BE INSTALLED ON BOTH SHORE AND STREAM SIDE. CURTAINS SHALL BE INSTALLED AS CLOSE TO PROJECT SITE AS POSSIBLE. BARRIERS SHOULD BE A BRIGHT COLOR (YELLOW OR "INTERNATIONAL" ORANGE ARE RECOMMENDED) THAT WILL ATTRACT THE ATTENTION OF NEARBY BOATERS.

E. SHORE ANCHORS SHALL CONSIST OF A POST WITH DEADMAN OR APPROVED EQUAL. STREAM ANCHORS SHALL BE OF SUFFICIENT SIZE TO STABILIZE THE BARRIER WITH NUMBER AND SPACING DEPENDENT ON WATERWAY VELOCITIES AND MANUFACTURER'S RECOMMENDATIONS.

F. IN SHALLOW WATER (2 FEET OF DEPTH OR LESS) A TURBIDITY CURTAIN MAY BE INSTALLED ON STAKES DRIVEN INTO THE BED OF THE WATER BODY.

G. FABRIC SECTIONS SHALL BE CONNECTED END TO END WITH MINIMUM 5/8" DIAMETER POLYPROPYLENE ROPE. FABRIC SHALL BE SEAMED TOGETHER IN A MANNER THAT RETAINS THE OVERALL TENSILE STRENGTH.

H. DESIGN OF CURTAIN AND ANCHORAGE SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. FILTER CLOTH SKIRT SHOULD BE ABLE TO WITHSTAND THE FORCES IMPARTED ON IT DUE TO THE EXPECTED WIND VELOCITY OR STREAM VELOCITY. FABRIC SHALL BE MADE OF A NON-DETERIORATING MATERIAL, SUCH AS PLASTIC OR NYLON, WHICH WILL ALLOW WATER TO PASS THROUGH WHILE STILL RETAINING SEDIMENT.

I. THE TURBIDITY CURTAIN AND ADJACENT WORK AREAS SHALL NOT BE DISTURBED 12 HOURS PRIOR TO REMOVAL FROM WATER BODY. MAINTENANCE SHALL BE PERFORMED AS NEEDED. CONTRACTOR SHALL REMOVE THE CURTAIN AT COMPLETION OF WORK IN A MANNER THAT WILL PREVENT SILTATION OF THE WATERWAY. DURING REMOVAL, EXTREME CARE SHOULD BE TAKEN NOT TO DISTURB ANY SEDIMENT DEPOSITS.

J. MAINTAIN 12" MINIMUM GAP BETWEEN SKIRT BOTTOM AND CHANNEL BOTTOM TO PREVENT ACCUMULATED SEDIMENT FROM PULLING TOP OF CURTAIN BELOW WATER SURFACE.

K. IN WIND OR WAVE ACTION SITUATIONS, THE MAXIMUM DEPTH OF THE CURTAIN SHALL BE 12 FEET.

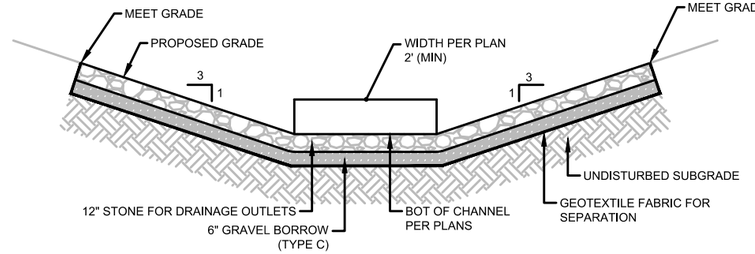
L. CONCENTRATED FLOWS SHALL NOT DISCHARGE BEYOND FLOATING TURBIDITY CURTAIN. CURTAINS ARE NOT TO BE INSTALLED ACROSS FLOWING BODY OF WATER.

M. WHEN INSTALLED IN A NAVIGABLE WATERWAY, BUOYS SHOULD BE LIT ACCORDING TO REGULATORY AGENCY STANDARDS.

N. WHEN ESTIMATING THE LENGTH OF TURBIDITY CURTAIN, ALLOW 10 TO 20 PERCENT VARIANCE IN STRAIGHT LINE MEASUREMENT.

O. PAYMENT FOR FLOATING TURBIDITY CURTAIN SHALL INCLUDE ALL MATERIAL AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TURBIDITY CURTAINS

P. ONLY FLOATING TURBIDITY CURTAINS LISTED ON THE APPROVED PRODUCTS LIST MAY BE USED.

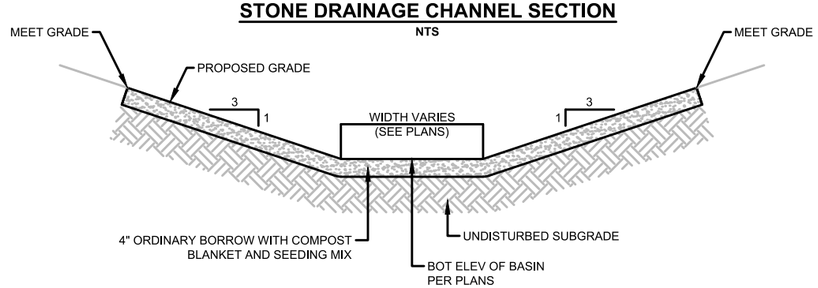


NOTES:

1. SLOPE PER GRADING PLAN

STONE DRAINAGE CHANNEL SECTION

NTS

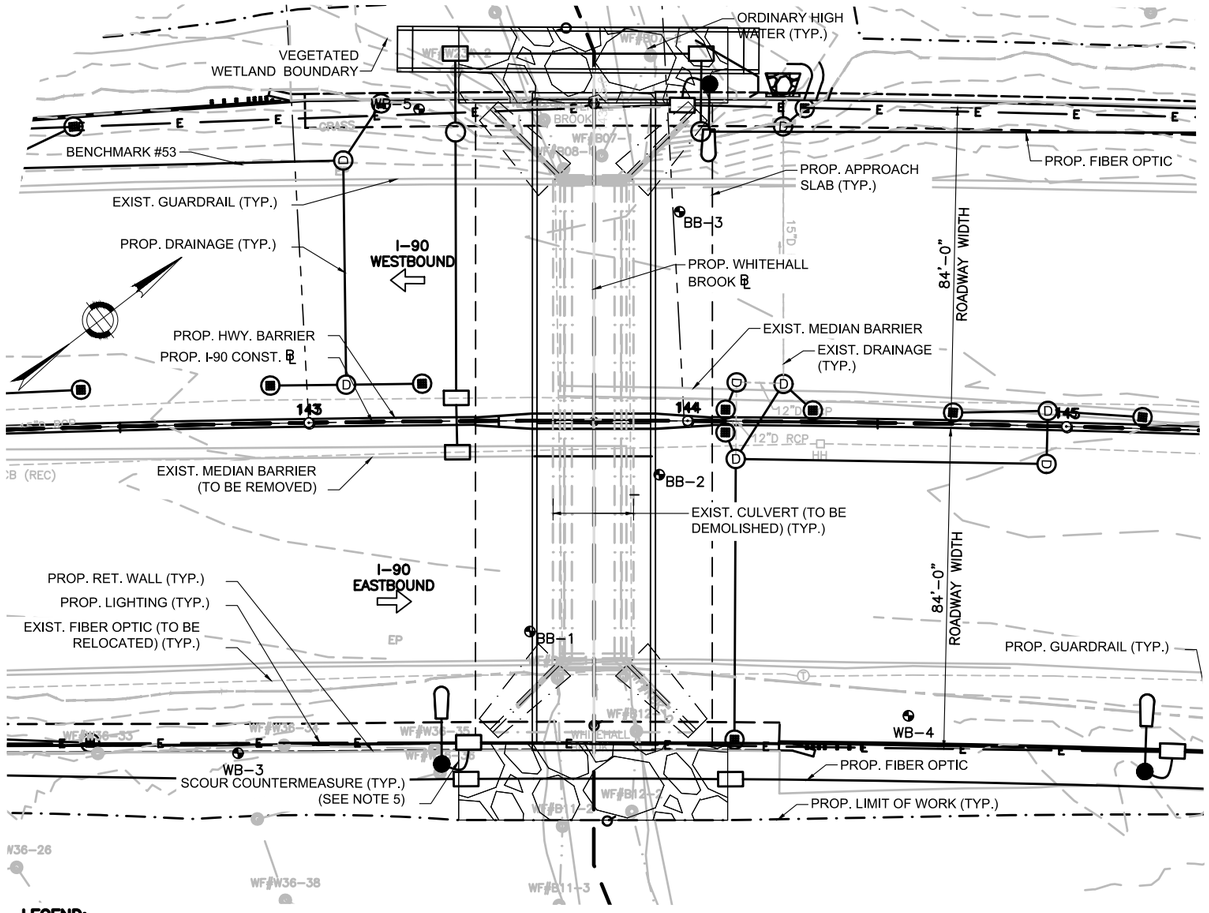


NOTES:

1. DESIGN BUILDER SHALL TAKE EXTRA PRECAUTION NOT TO OVER COMPACT BASIN BOTTOM OR EMBANKMENTS AND REDUCE THE INFILTRATIVE CAPACITY OF THE SOILS.
2. DESIGN BUILDER SHALL MINIMIZE THE WEIGHT AND USE OF CONSTRUCTION EQUIPMENT ON THE BASIN BOTTOM.
3. DESIGN BUILDER SHALL DEEPLY TILL SUBBASE MATERIAL AT THE BASIN BOTTOM PRIOR TO ADDITION OF ORDINARY BORROW. TILLING SHALL BE TO A MINIMUM DEPTH OF 18 INCHES.

INFILTRATION BASIN SECTION

NTS



KEY PLAN
SCALE: 1" = 40'

LEGEND:

- 2019 BRIDGE BORINGS (BB)
- 2019 WALL BORINGS (WB)

GENERAL NOTES		
PROJECT FILE NO.: 607977		
PROJECT DESCRIPTION: PROPOSED BRIDGE		
BRIDGE DESIGN LOADING: HL-93		
SURVEY: SEE HIGHWAY DRAWING GENERAL NOTES		
ELEVATION REFERENCE: NAVD OF 1988		
TRAFFIC DATA		
	ROADWAY OVER	ROADWAY UNDER
DESIGN YEAR	2040	N/A
AVERAGE DAILY TRAFFIC - PRESENT	95,100	N/A
AVERAGE DAILY TRAFFIC - DESIGN YEAR	108,900	N/A
DESIGN HOURLY VOLUME	8,400	N/A
DIRECTIONAL DISTRIBUTION	50%	N/A
TRUCK PERCENTAGE - AVERAGE DAY	16%	N/A
TRUCK PERCENTAGE - PEAK HOUR	11%	N/A
DESIGN SPEED	70 MPH	N/A
DIRECTIONAL DESIGN HOURLY VOLUME	4,250	N/A

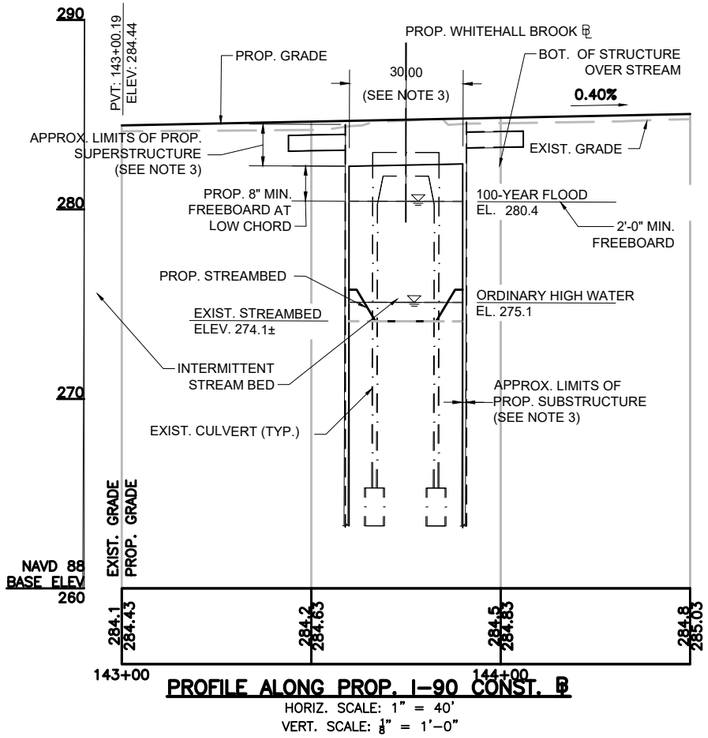
BENCH MARK: #53 STAKE AND NAIL
N2919816.583 E635276.653 EL. 284.20'
STA. 142+83.57, 68.37' LT

DESIGN

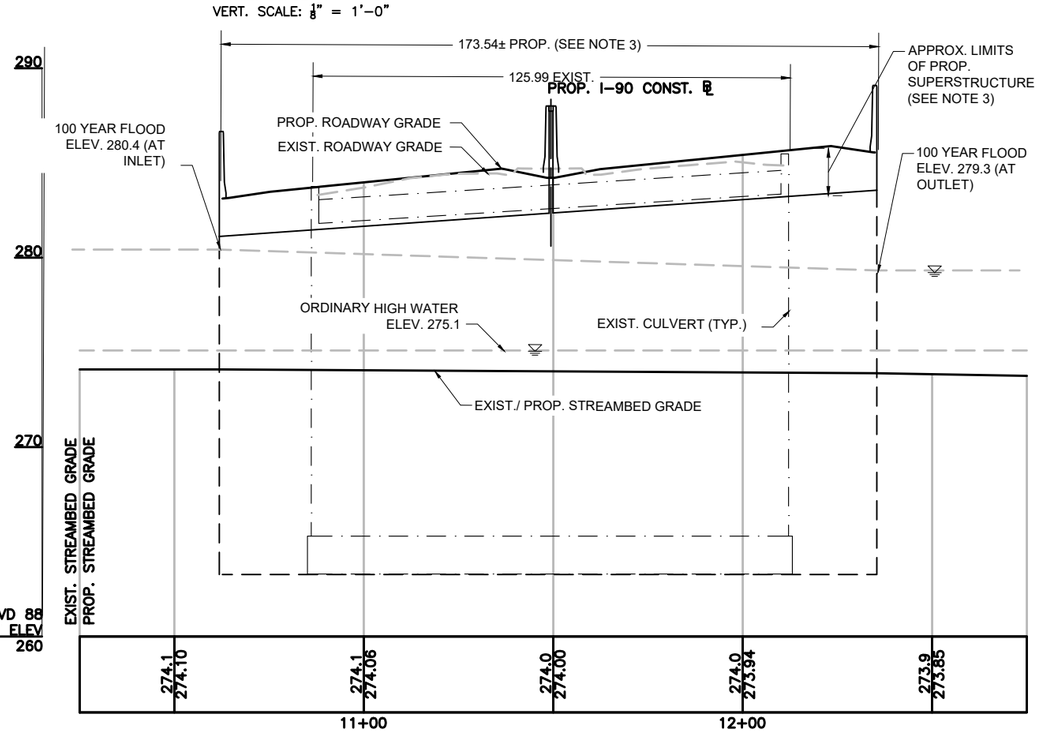
IN ACCORDANCE WITH THE 2017 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS WITH INTERIM SPECIFICATIONS THROUGH 2018 FOR HL-93 LOADING AND THE MASSDOT LRFD BRIDGE DESIGN MANUAL - 2013 EDITION.

NOTES

1. MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE MASSDOT LRFD BRIDGE MANUAL.
2. SEE APPENDIX X FOR GEOTECHNICAL DATA SHEET. SEE RFP FOR FURTHER GEOTECHNICAL INFORMATION AND REQUIREMENTS.
3. HYDRAULIC OPENING SHOWN SHALL BE MAINTAINED BY THE DESIGN BUILDER FOR HYDRAULIC AND ECOLOGICAL CROSSING. STRUCTURAL ELEMENTS SHOWN ARE FOR SCHEMATIC PURPOSES ONLY. IT IS THE RESPONSIBILITY OF THE DESIGN BUILDER TO DETERMINE APPROPRIATE STRUCTURE TYPES BASED ON THE DESIGN REFERENCES NOTED ABOVE AND ON THE AVAILABLE GEOTECHNICAL INFORMATION PROVIDED. DESIGN BUILDER IS RESPONSIBLE FOR FINAL BRIDGE CONFIGURATION.
4. REFER TO HIGHWAY DRAWINGS FOR DRAINAGE, UTILITY AND LIGHTING REQUIREMENTS.
5. REFER TO HYDRAULIC STUDY FOR WHITEHALL BROOK PREPARED BY TETRA TECH DATED JULY 2020 AND THE RFP SCOUR REPORT FOR DETAILED DATA AND REQUIREMENTS. IF THE DESIGN BUILDER PROPOSES ANY CHANGES TO THE HYDRAULIC OPENING OR SCOUR PROTECTION DEPTH, AS SHOWN ON SHEET 3, AN ADDITIONAL HYDRAULIC STUDY AND SCOUR REPORT MUST BE PROVIDED.
6. FOR HYDRAULIC AND CURVE DATA SEE SHEET 3.
7. NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988 IS USED THROUGHOUT.
8. IF A STEEL SUPERSTRUCTURE IS PROPOSED, ALL MEMBERS SHALL BE HOT DIP GALVANIZED.



PROFILE ALONG PROP. I-90 CONST. ℄
HORIZ. SCALE: 1" = 40'
VERT. SCALE: 1/8" = 1'-0"

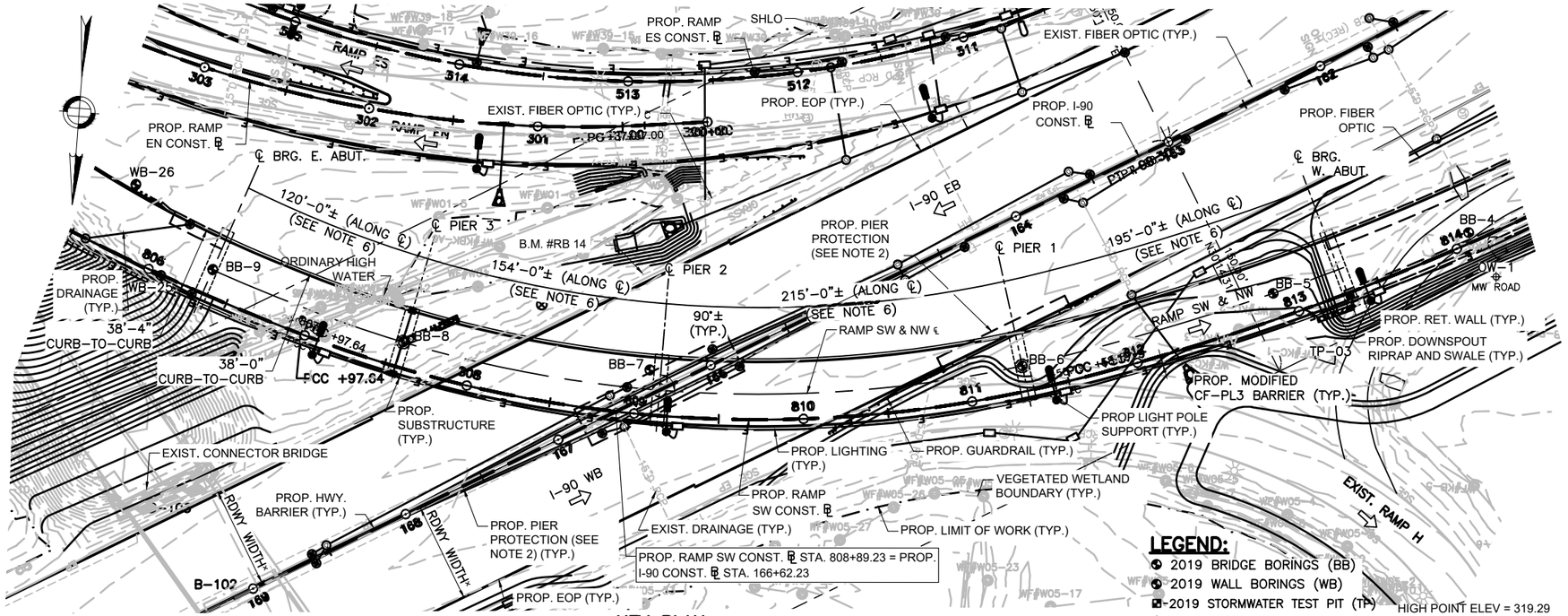


PROFILE ALONG PROP. WHITEHALL BROOK CONST. ℄
HORIZ. SCALE: 1" = 40'
VERT. SCALE: 1/8" = 1'-0"

I-495 / I-90 Interchange
Hopkinton - Westborough, MA
Profile
Sheet 41 of 55
I-90 Over Whitehall Brook

607977_USACE(PROFILES)-BTC.DWG

I-495 / I-90 Interchange
Hopkinton - Westborough, MA
Profile
Sheet 42 of 55
Ramp SW & NW Over I-90



*I-90 EB: VARIES FROM 55.2'± TO 58.5'±
I-90 WB: VARIES FROM 52.9'± TO 59.5'±

KEY PLAN
SCALE: 1" = 80'-0"

LEGEND:
- 2019 BRIDGE BORINGS (BB)
- 2019 WALL BORINGS (WB)
- 2019 STORMWATER TEST PIT (TP)
- 2019 OBSERVATION WELL (OW)

HIGH POINT ELEV = 319.29
HIGH POINT STA = 810+63.11
PVI STA = 810+65.00
PVI ELEV = 324.41
A.D. = -7.71%
K = 68.70
530' VC
385.1' SSD

GENERAL NOTES

PROJECT FILE NO.: 607977	
PROJECT DESCRIPTION: PROPOSED BRIDGE	
BRIDGE DESIGN LOADING: HL-93	
SURVEY: SEE HIGHWAY DRAWING GENERAL NOTES	
ELEVATION REFERENCE: NAVD OF 1988	

TRAFFIC DATA

	ROADWAY OVER	ROADWAY UNDER
DESIGN YEAR	2040	2040
AVERAGE DAILY TRAFFIC – PRESENT	15,800	95,100
AVERAGE DAILY TRAFFIC – DESIGN YEAR	13,300*	108,900
DESIGN HOURLY VOLUME	900	8,400
DIRECTIONAL DISTRIBUTION	100%	50%
TRUCK PERCENTAGE – AVERAGE DAY	26%	16%
TRUCK PERCENTAGE – PEAK HOUR	15%	11%
DESIGN SPEED	45 MPH	70 MPH
DIRECTIONAL DESIGN HOURLY VOLUME	900	4,250

* CONTROLLED BY RAMP SW. RAMP NW IS 5,200.

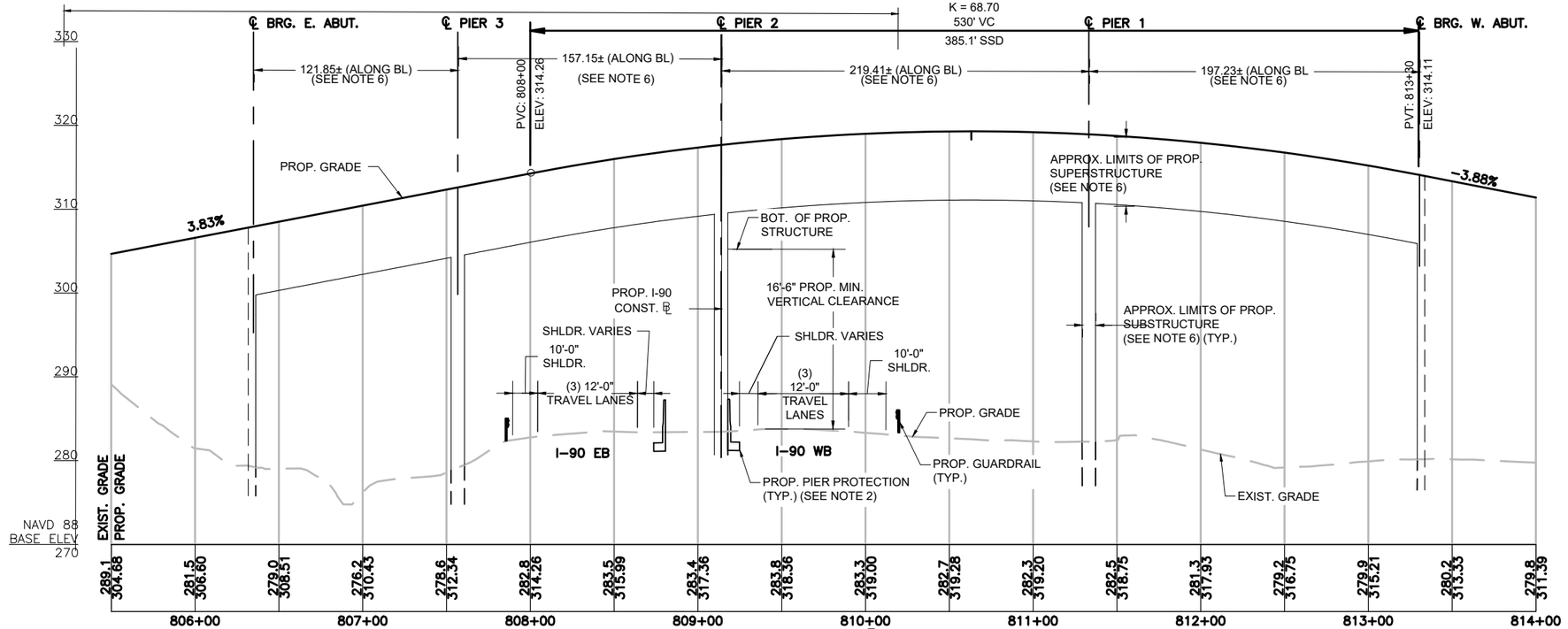
BENCH MARK: #RB 14 N2921212.240 E637127.652 EL. 282.71 STA. 166+12.96, 64.94' RT (PROP. I-90 CONST. ℄)

DESIGN

IN ACCORDANCE WITH THE 2017 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS WITH INTERIM SPECIFICATIONS THROUGH 2018 FOR HL-93 LOADING AND THE MASSDOT LRFD BRIDGE DESIGN MANUAL – 2013 EDITION.

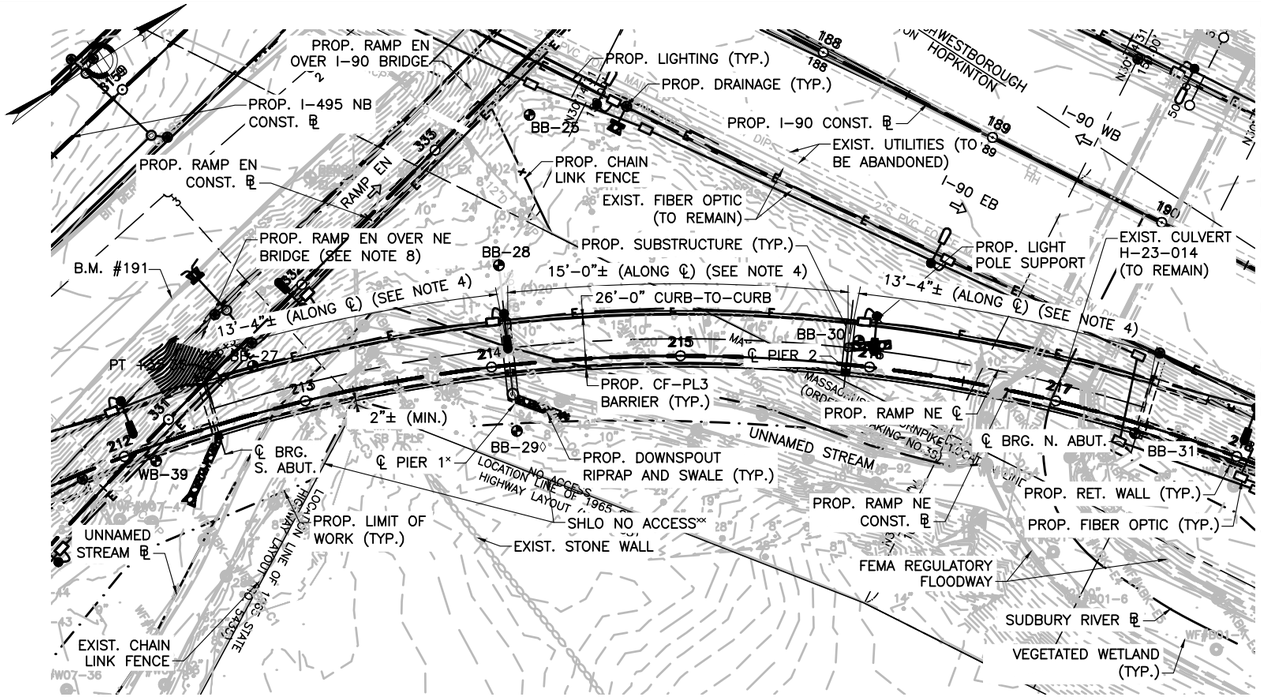
NOTES

1. MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE MASSDOT LRFD BRIDGE DESIGN MANUAL.
2. PROTECTION OF BRIDGE PIERS AND ABUTMENTS SHALL FOLLOW MASSDOT ENGINEERING DIRECTIVE E-19-002 DATED JUNE 20, 2019.
3. FOR CURVE DATA, SEE SHEET 2.
4. FOR PROFILE ALONG PROP. I-90 CONST. ℄, SEE SHEET 2.
5. SEE APPENDIX X FOR GEOTECHNICAL DATA SHEET. SEE RFP FOR FURTHER GEOTECHNICAL INFORMATION AND REQUIREMENTS.
6. DIMENSIONS SHOWN ARE CONCEPTUAL AND MAY BE ADJUSTED BY THE DESIGN BUILDER. SUPERSTRUCTURE AND SUBSTRUCTURE ELEMENTS SHOWN ARE FOR SCHEMATIC PURPOSES ONLY. IT IS THE RESPONSIBILITY OF THE DESIGN BUILDER TO DETERMINE APPROPRIATE STRUCTURE TYPES BASED ON THE DESIGN REFERENCES NOTED ABOVE AND ON THE AVAILABLE GEOTECHNICAL INFORMATION PROVIDED. DESIGN BUILDER IS RESPONSIBLE FOR FINAL BRIDGE CONFIGURATION.
7. REFER TO HIGHWAY DRAWINGS FOR DRAINAGE, UTILITY AND LIGHTING REQUIREMENTS.
8. THE MINIMUM PROPOSED VERTICAL CLEARANCES SHOWN, SHALL BE ACCOMMODATED IN FINAL BRIDGE DESIGN. MINIMUM EXISTING VERTICAL CLEARANCES SHALL BE MAINTAINED WITHOUT ENCROACHMENT DURING CONSTRUCTION AT ALL TIMES.
9. NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988 IS USED THROUGHOUT.



PROFILE ALONG PROP. RAMP SW CONST. ℄
HORIZONTAL SCALE: 1" = 80'-0"
VERTICAL SCALE: 1/8" = 1'-0"

I-495 / I-90 Interchange
Hopkinton - Westborough, MA
Profile
Sheet 43 of 55
Ramp NE Over Sudbury River & Unnamed Stream



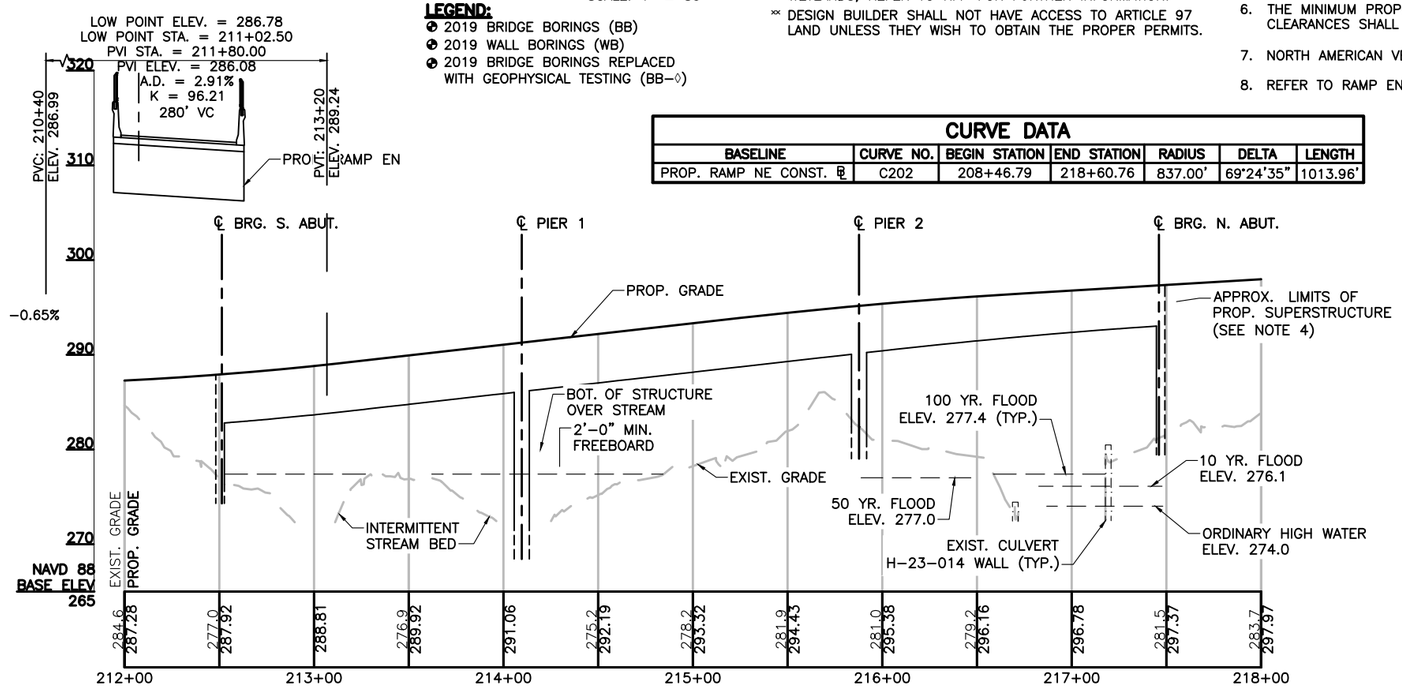
KEY PLAN

SCALE: 1" = 80'

LEGEND:
- ◓ 2019 BRIDGE BORINGS (BB)
- ◓ 2019 WALL BORINGS (WB)
- ◓ 2019 BRIDGE BORINGS REPLACED WITH GEOPHYSICAL TESTING (BB-◊)

× CONCEPTUAL PIER IS A CONCRETE STRADDLE BENT TO AVOID WETLANDS, REFER TO RFP FOR FURTHER INFORMATION.

×× DESIGN BUILDER SHALL NOT HAVE ACCESS TO ARTICLE 97 LAND UNLESS THEY WISH TO OBTAIN THE PROPER PERMITS.



PROFILE ALONG PROP. RAMP NE CONST. ℄

HORIZ. SCALE: 1" = 80'
VERT. SCALE: 1/16" = 1'-0"

CURVE DATA

BASELINE	CURVE NO.	BEGIN STATION	END STATION	RADIUS	DELTA	LENGTH
PROP. RAMP NE CONST. ℄	C202	208+46.79	218+60.76	837.00'	69°24'35"	1013.96'

HYDRAULIC DESIGN DATA (UNNAMED STREAM)

DRAINAGE AREA:	0.1 SQUARE MILES
DESIGN FLOOD DISCHARGE:	153 CUBIC FEET PER SECOND
DESIGN FLOOD FREQUENCY:	100 YEARS
DESIGN FLOOD VELOCITY:	1.3 FEET PER SECOND
DESIGN FLOOD ELEVATION:	277.4 FEET, NAVD88

HYDRAULIC DESIGN DATA (SUDBURY RIVER)

DRAINAGE AREA:	17.6 SQUARE MILES
DESIGN FLOOD DISCHARGE:	1900 CUBIC FEET PER SECOND
DESIGN FLOOD FREQUENCY:	100 YEARS
DESIGN FLOOD VELOCITY:	4.2 FEET PER SECOND
DESIGN FLOOD ELEVATION:	277.4 FEET, NAVD88

BASE (100-YEAR) FLOOD DATA

BASE FLOOD DISCHARGE:	1900 CUBIC FEET PER SECOND
BASE FLOOD ELEVATION:	277.4 FEET, NAVD88

DESIGN AND CHECK SCOUR DATA

DESIGN SCOUR FLOOD EVENT RETURN FREQUENCY:	200 YEARS
CHECK SCOUR FLOOD EVENT RETURN FREQUENCY:	500 YEARS

FLOOD OF RECORD

FLOOD OF RECORD NOT AVAILABLE FOR THIS LOCATION.

HISTORY OF ICE FLOES:	NONE
EVIDENCE OF SCOUR AND EROSION:	NONE

DESIGN

IN ACCORDANCE WITH THE 2017 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS WITH INTERIM SPECIFICATIONS THROUGH 2018 FOR HL-93 LOADING AND THE MASSDOT LRFD BRIDGE DESIGN MANUAL - 2013 EDITION.

NOTES

1. MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE MASSDOT LRFD BRIDGE MANUAL.
2. FOR PROFILE ALONG UNNAMED STREAM ℄, SEE SHEET 2.
3. SEE APPENDIX X FOR GEOTECHNICAL DATA SHEET. SEE RFP FOR FURTHER GEOTECHNICAL INFORMATION AND REQUIREMENTS.
4. DIMENSIONS SHOWN ARE CONCEPTUAL AND MAY BE ADJUSTED BY THE DESIGN BUILDER. SUPERSTRUCTURE AND SUBSTRUCTURE ELEMENTS SHOWN ARE FOR SCHEMATIC PURPOSES ONLY. IT IS THE RESPONSIBILITY OF THE DESIGN BUILDER TO DETERMINE APPROPRIATE STRUCTURE TYPES BASED ON THE DESIGN REFERENCES NOTED ABOVE AND ON THE AVAILABLE GEOTECHNICAL INFORMATION PROVIDED. DESIGN BUILDER IS RESPONSIBLE FOR FINAL BRIDGE CONFIGURATION.
5. REFER TO HIGHWAY DRAWINGS FOR DRAINAGE, UTILITY AND LIGHTING REQUIREMENTS.
6. THE MINIMUM PROPOSED VERTICAL CLEARANCES SHOWN SHALL BE ACCOMMODATED IN FINAL BRIDGE DESIGN. MINIMUM EXISTING VERTICAL CLEARANCES SHALL BE MAINTAINED WITHOUT ENCROACHMENT DURING CONSTRUCTION AT ALL TIMES.
7. NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988 IS USED THROUGHOUT.
8. REFER TO RAMP EN OVER RAMP NE BRIDGE BASE TECHNICAL CONCEPT PLANS FOR FURTHER INFORMATION.

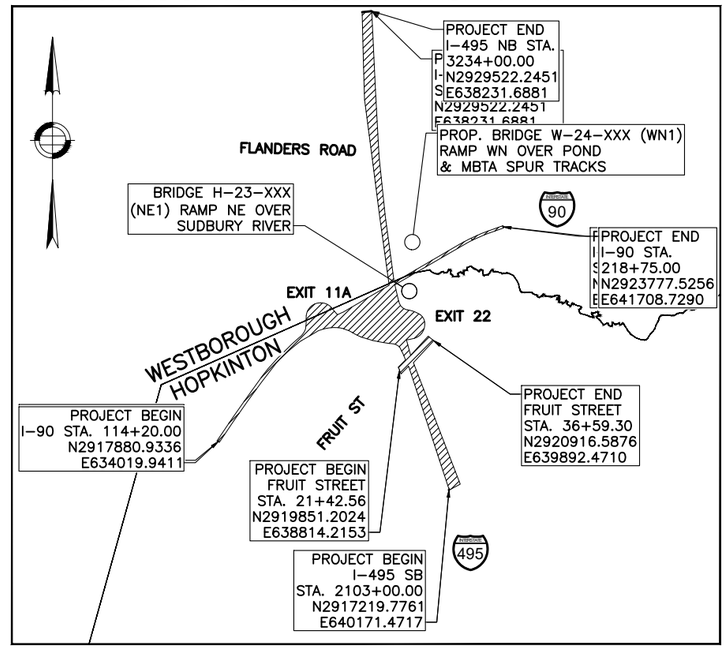
GENERAL NOTES

PROJECT FILE NO.: 607977	
PROJECT DESCRIPTION: PROPOSED BRIDGE	
BRIDGE DESIGN LOADING: HL-93	
SURVEY: SEE HIGHWAY DRAWING GENERAL NOTES	
ELEVATION REFERENCE: NAVD OF 1988	

TRAFFIC DATA

	ROADWAY OVER	ROADWAY UNDER
DESIGN YEAR	2040	N/A
AVERAGE DAILY TRAFFIC - PRESENT	19,700	N/A
AVERAGE DAILY TRAFFIC - DESIGN YEAR	15,400	N/A
DESIGN HOURLY VOLUME	900	N/A
DIRECTIONAL DISTRIBUTION	100%	N/A
TRUCK PERCENTAGE - AVERAGE DAY	5%	N/A
TRUCK PERCENTAGE - PEAK HOUR	6%	N/A
DESIGN SPEED	50 MPH	N/A
DIRECTIONAL DESIGN HOURLY VOLUME	900	N/A

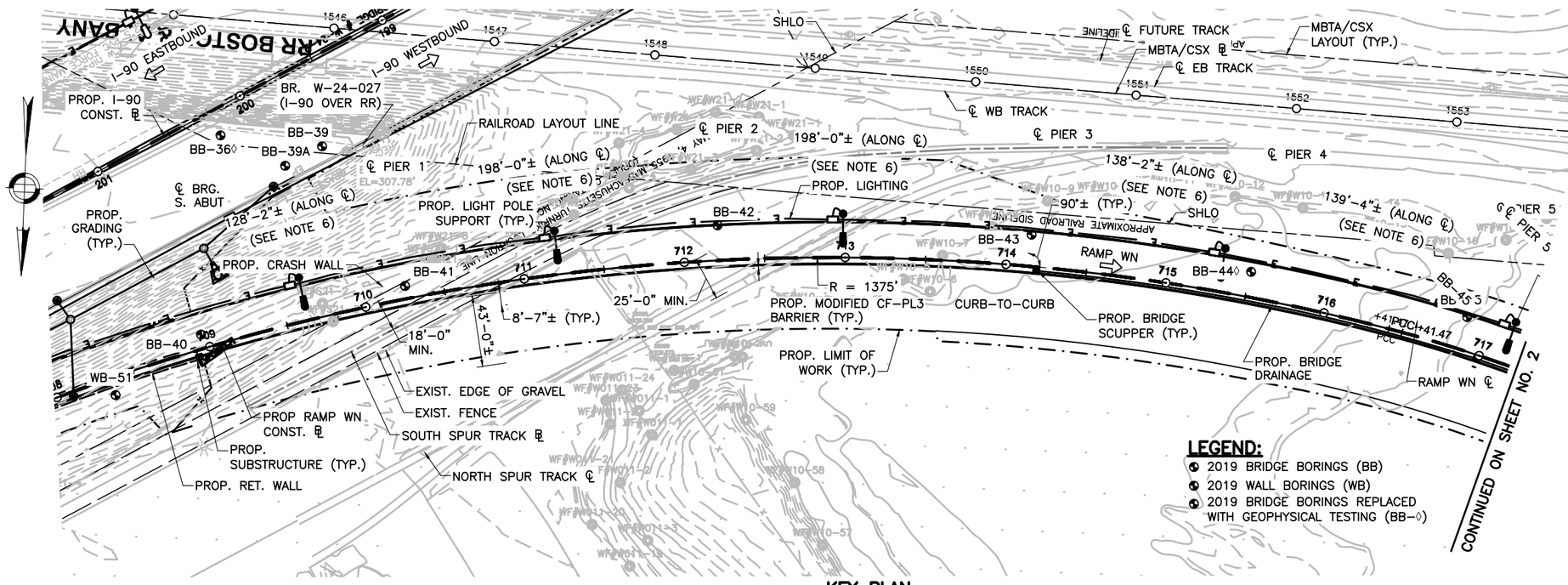
BENCH MARK: #191 STAKE AND NAIL
N2922009.100 E638908.471 EL. 305.14'
STA. 3158+40.79, 100.47' RT (PROP. I-495 NB CONST. ℄)



LOCUS

SCALE: 1" = 4000'

I-495 / I-90 Interchange
Hopkinton - Westborough, MA
Profile
Sheet 44 of 55
Ramp WN Over Pond, Unnamed Stream & MBTA Spur Tracks



LEGEND:
- 2019 BRIDGE BORINGS (BB)
- 2019 WALL BORINGS (WB)
- 2019 BRIDGE BORINGS REPLACED WITH GEOPHYSICAL TESTING (BB-◊)

KEY PLAN
SCALE: 1" = 80'-0"

GENERAL NOTES

PROJECT FILE NO.: 607977
PROJECT DESCRIPTION: PROPOSED BRIDGE
BRIDGE DESIGN LOADING: HL-93
SURVEY: SEE HIGHWAY DRAWING GENERAL NOTES
ELEVATION REFERENCE: NAVD OF 1988

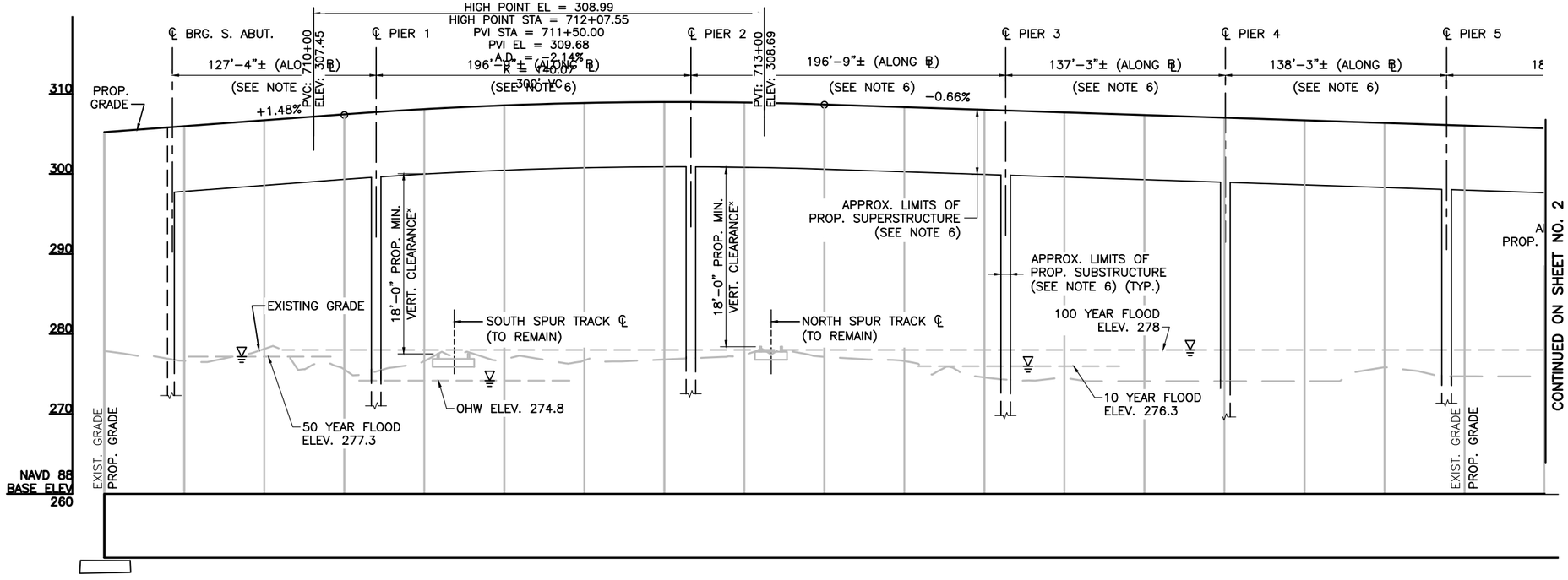
TRAFFIC DATA

	ROADWAY OVER	ROADWAY UNDER
DESIGN YEAR	2040	N/A
AVERAGE DAILY TRAFFIC – PRESENT	N/A	N/A
AVERAGE DAILY TRAFFIC – DESIGN YEAR	5,200	N/A
DESIGN HOURLY VOLUME	750	N/A
DIRECTIONAL DISTRIBUTION	100%	N/A
TRUCK PERCENTAGE – AVERAGE DAY	5%	N/A
TRUCK PERCENTAGE – PEAK HOUR	5%	N/A
DESIGN SPEED	50 MPH	N/A
DIRECTIONAL DESIGN HOURLY VOLUME	750	N/A

BENCH MARK: #124 N2923469.134 E638702.644 EL. 294.76 STA. 3173+23.00, 95.92' RT (PROP. I-495NB CONST. BL.)

DESIGN
IN ACCORDANCE WITH THE 2017 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS WITH INTERIM SPECIFICATIONS THROUGH 2018 FOR HL-93 LOADING AND THE MASSDOT LRFD BRIDGE DESIGN MANUAL – 2013 EDITION.

NOTES
1. MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE MASSDOT LRFD BRIDGE DESIGN MANUAL.
2. PROTECTION OF BRIDGE PIERS AND ABUTMENTS SHALL FOLLOW MASSDOT ENGINEERING DIRECTIVE E-19-002 DATED JUNE 20, 2019.
3. FOR CURVE DATA, SEE SHEET 3.
4. FOR PROFILE ALONG SOUTH SPUR TRACK ℄, SEE SHEET 3.
5. SEE APPENDIX X FOR GEOTECHNICAL DATA SHEET. SEE RFP FOR FURTHER GEOTECHNICAL INFORMATION AND REQUIREMENTS.
6. DIMENSIONS SHOWN ARE CONCEPTUAL AND MAY BE ADJUSTED BY THE DESIGN BUILDER. SUPERSTRUCTURE AND SUBSTRUCTURE ELEMENTS SHOWN ARE FOR SCHEMATIC PURPOSES ONLY. IT IS THE RESPONSIBILITY OF THE DESIGN BUILDER TO DETERMINE APPROPRIATE STRUCTURE TYPES BASED ON THE DESIGN REFERENCES NOTED ABOVE AND ON THE AVAILABLE GEOTECHNICAL INFORMATION PROVIDED. DESIGN BUILDER IS RESPONSIBLE FOR FINAL BRIDGE CONFIGURATION.
7. REFER TO HIGHWAY DRAWINGS FOR DRAINAGE, UTILITY AND LIGHTING REQUIREMENTS.
8. THE MINIMUM PROPOSED VERTICAL CLEARANCES SHOWN, SHALL BE ACCOMMODATED IN FINAL BRIDGE DESIGN. MINIMUM EXISTING VERTICAL CLEARANCES SHALL BE MAINTAINED WITHOUT ENCROACHMENT DURING CONSTRUCTION AT ALL TIMES.
9. NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988 IS USED THROUGHOUT.

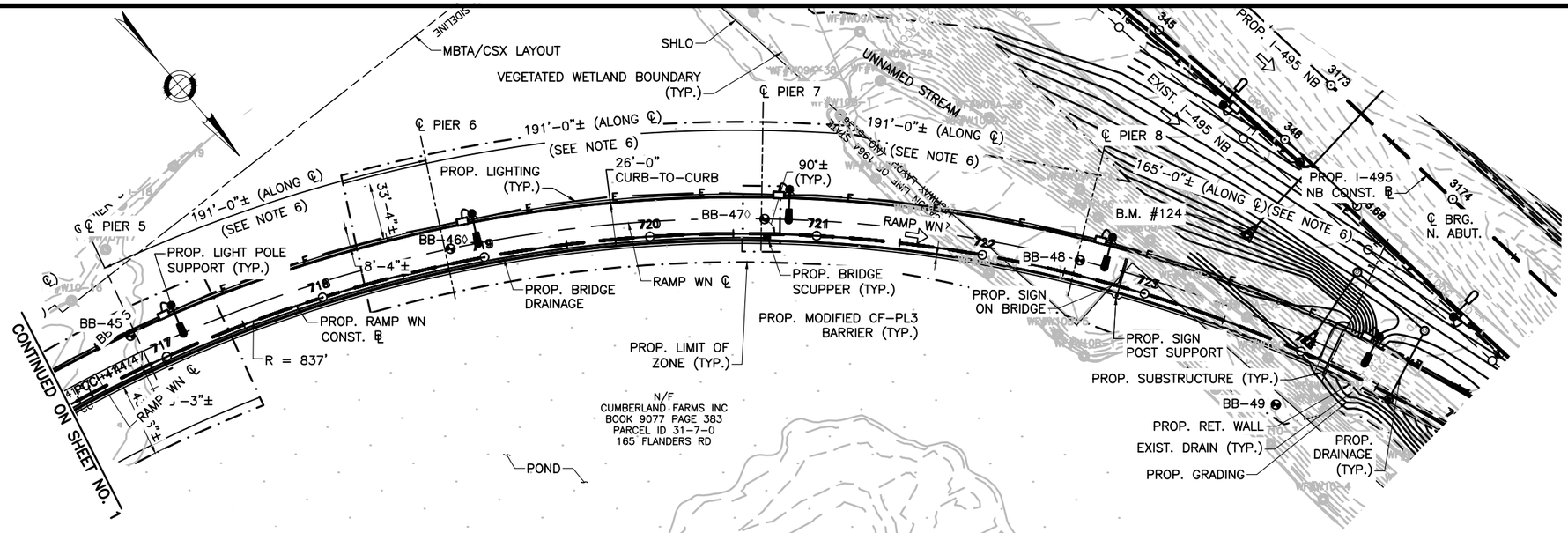


× VERTICAL CLEARANCES TO PROVIDE 9'-0" OFFSET FROM ℄ OF TRACK.

PROFILE ALONG PROP. RAMP WN CONST. ℄
HORIZONTAL SCALE: 1" = 80'-0"
VERTICAL SCALE: 1/16" = 1'-0"

607977_USACE(PROFILES)-BTC.DWG

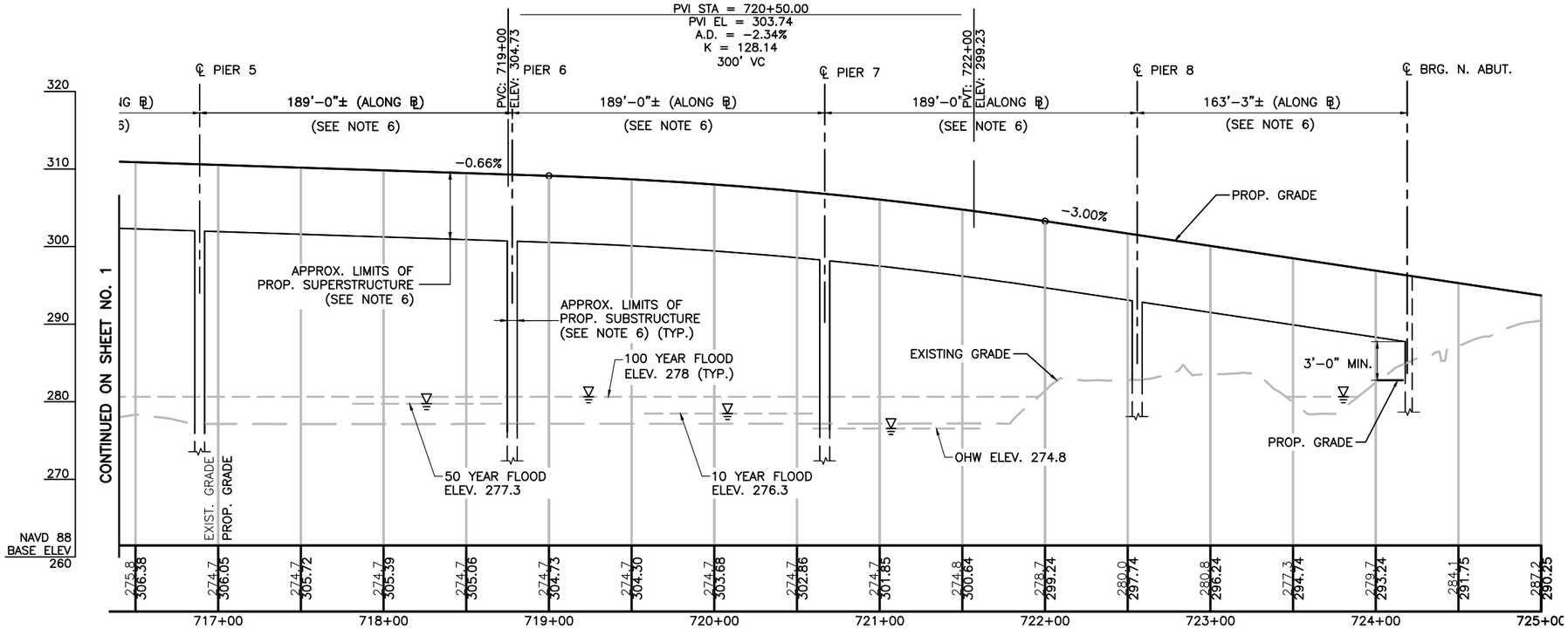
I-495 / I-90 Interchange
Hopkinton - Westborough, MA
Profile
Sheet 45 of 55
Ramp WN Over Pond, Unnamed Stream & MBTA Spur Tracks



LEGEND:

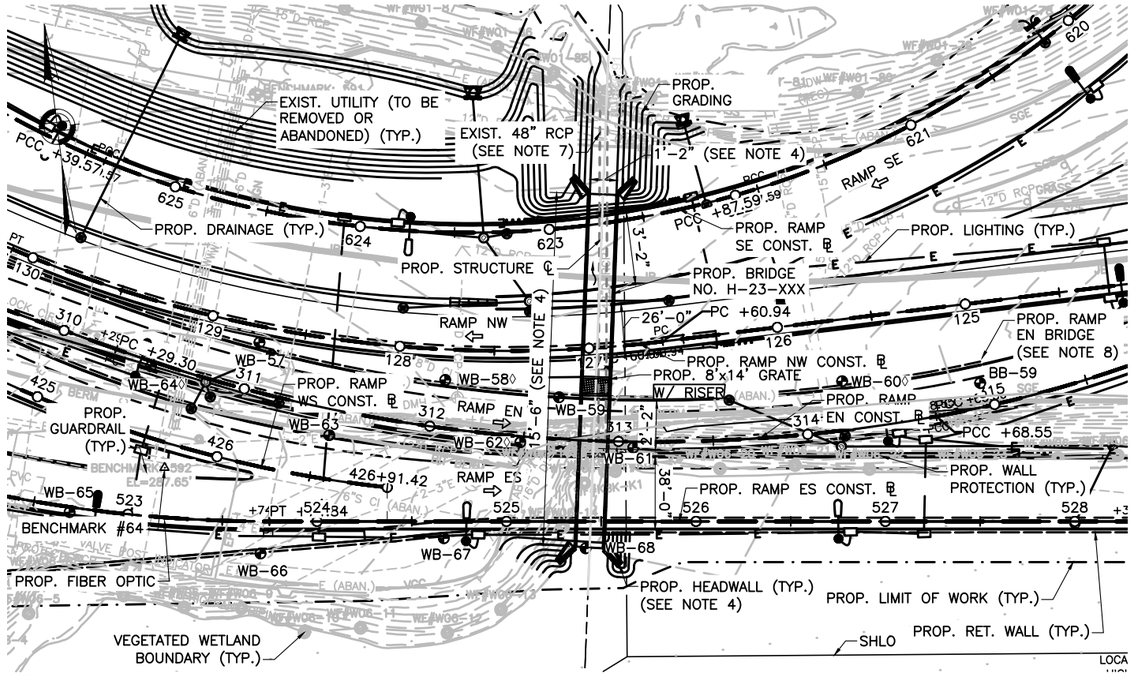
- ◉ – 2019 BRIDGE BORINGS (BB)
- ◉ – 2019 WALL BORINGS (WB)
- ◉ – 2019 BRIDGE BORINGS REPLACED WITH GEOPHYSICAL TESTING (BB-◊)

KEY PLAN (CONT.)
SCALE: 1" = 80'-0"



PROFILE ALONG PROP. RAMP WN CONST. ℄ (CONT.)
HORIZONTAL SCALE: 1" = 80'-0"
VERTICAL SCALE: 1/16" = 1'-0"

NOTE:
SEE SHEET 1 FOR NOTES.



KEY PLAN

SCALE: 1" = 80'

LEGEND:

- 2019 BRIDGE BORINGS (BB)
- 2019 WALL BORINGS (WB)
- 2019 WALL BORINGS REPLACED WITH GEOPHYSICAL TESTING (WB-◊)

NOTES:

1. DESIGN BUILDER SHALL PERFORM ADDITIONAL BORING(S) FOR THIS STRUCTURE IN ACCORDANCE WITH THE BRIDGE MANUAL.
2. REFER TO SHEET 3 AND HYDRAULIC REPORT DATED FEBRUARY 2020 FOR REVETMENT REQUIREMENTS.

GENERAL NOTES

PROJECT FILE NO.: 607977
PROJECT DESCRIPTION: PROPOSED BRIDGE
BRIDGE DESIGN LOADING: HL-93
SURVEY: SEE HIGHWAY DRAWING GENERAL NOTES
ELEVATION REFERENCE: NAVD OF 1988

TRAFFIC DATA

	ROADWAY OVER (RAMP ES)	ROADWAY OVER (RAMP WS)	ROADWAY OVER (RAMP EN)	ROADWAY OVER (RAMP NW)	ROADWAY OVER (RAMP SE)	ROADWAY UNDER
DESIGN YEAR	2040	2040	2040	2040	2040	N/A
AVERAGE DAILY TRAFFIC – PRESENT	16,300×	19,800×	16,300×	15,800×	19,700×	N/A
AVERAGE DAILY TRAFFIC – DESIGN YEAR	5,900	15,400	12,900	5,200	7,400	N/A
DESIGN HOURLY VOLUME	900	1,350	1,150	900	750	N/A
DIRECTIONAL DISTRIBUTION	100%	100%	100%	100%	100%	N/A
TRUCK PERCENTAGE – AVERAGE DAY	25%	5%	25%	26%	5%	N/A
TRUCK PERCENTAGE – PEAK HOUR	23%	5%	21%	15%	19%	N/A
DESIGN SPEED	45 MPH	45 MPH	45 MPH	45 MPH	40 MPH	N/A
DIRECTIONAL DESIGN HOURLY VOLUME	900	1,350	1,150	900	750	N/A

BENCH MARK: #64 DH
N2920732.109 E638069.718 EL. 287.520'
STA. 522+67.30, 26.24' LT (PROP. RAMP ES CONST. ℄)

×PRESENT RAMP ADT IS COMBINED WITH OTHER RAMP PER EXISTING CONDITIONS, REFER TO HIGHWAY DRAWINGS.

CURVE DATA

BASELINE	CURVE NO.	BEGIN STATION	END STATION	RADIUS	DELTA	LENGTH
PROP. RAMP NW CONST. ℄	C104	126+60.94	130+11.78	665.02'	30°13'38"	350.84'
PROP. RAMP EN CONST. ℄	C302	310+29.80	314+69.06	843.00'	29°51'17"	439.26'
PROP. RAMP SE CONST. ℄	C603	621+53.55	625+14.32	512.00'	40°22'19"	360.77'

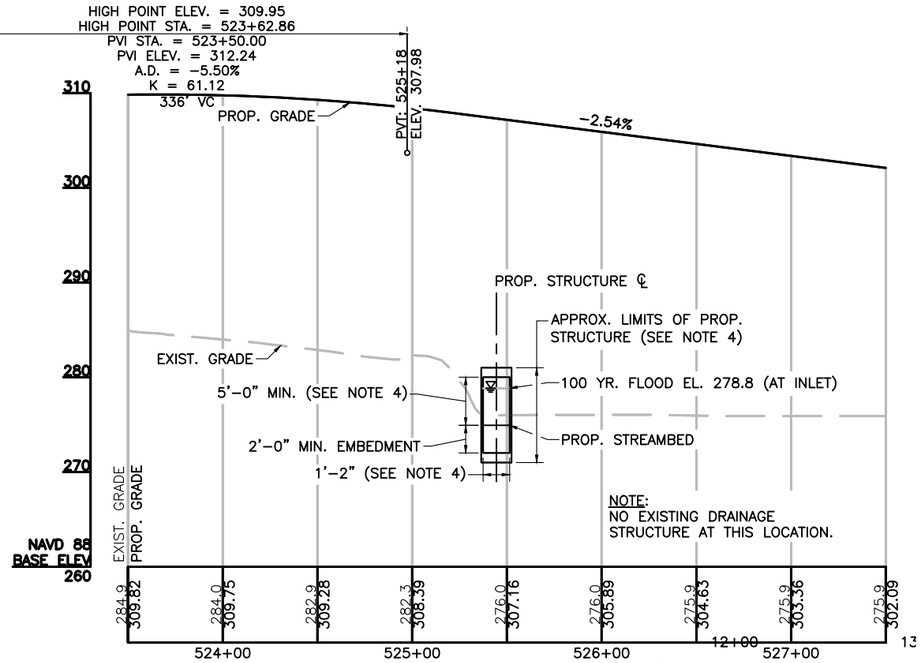
I-495 / I-90 Interchange
Hopkinton - Westborough, MA
Profile
Sheet 46 of 55
Ramps ES, EN, NW & SE
Over Water

DESIGN

IN ACCORDANCE WITH THE 2017 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS WITH INTERIM SPECIFICATIONS THROUGH 2018 FOR HL-93 LOADING AND THE MASSDOT LRFD BRIDGE DESIGN MANUAL – 2013 EDITION.

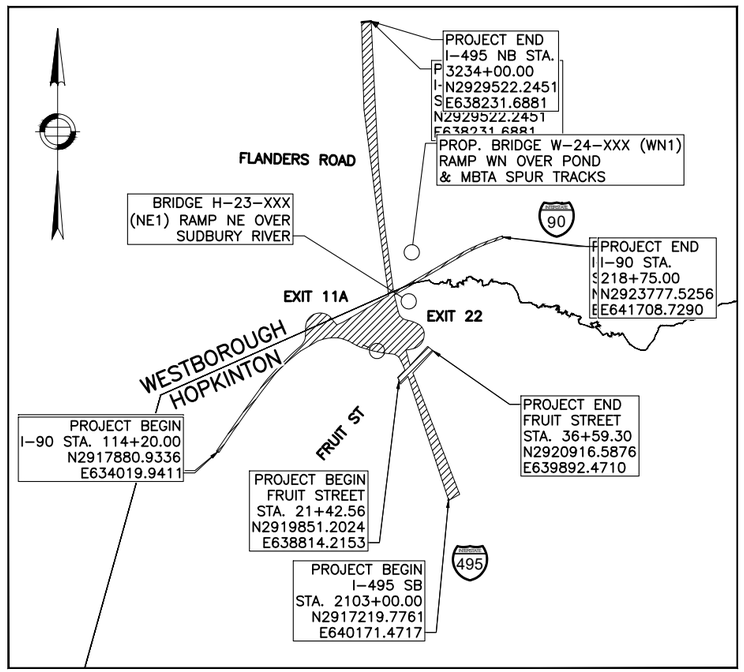
NOTES

1. MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE MASSDOT LRFD BRIDGE MANUAL.
2. FOR PROFILE ALONG PROP. RAMPS EN, NW AND SE CONST. ℄, SEE SHEETS 2 AND 3.
3. SEE APPENDIX X FOR GEOTECHNICAL DATA SHEET. SEE RFP FOR FURTHER GEOTECHNICAL INFORMATION AND REQUIREMENTS.
4. HYDRAULIC OPENING SHOWN SHALL BE MAINTAINED BY THE DESIGN BUILDER. STRUCTURAL ELEMENTS SHOWN ARE FOR SCHEMATIC PURPOSES ONLY. IT IS THE RESPONSIBILITY OF THE DESIGN BUILDER TO DETERMINE APPROPRIATE STRUCTURE TYPES BASED ON THE DESIGN REFERENCES NOTED ABOVE AND ON THE AVAILABLE GEOTECHNICAL INFORMATION PROVIDED. DESIGN BUILDER IS RESPONSIBLE FOR FINAL BRIDGE CONFIGURATION.
5. REFER TO HIGHWAY DRAWINGS FOR DRAINAGE, UTILITY AND LIGHTING REQUIREMENTS.
6. NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988 IS USED THROUGHOUT.
7. DESIGN BUILDER SHALL MAINTAIN DRAINAGE BETWEEN EXISTING AND PROPOSED STRUCTURES THROUGHOUT ALL STAGES OF CONSTRUCTION.
8. REFER TO RAMP EN OVER I-495 BRIDGE BASE TECHNICAL CONCEPT PLANS FOR FURTHER INFORMATION.



PROFILE ALONG PROP. RAMP ES CONST. ℄

HORIZ. SCALE: 1" = 80'
VERT. SCALE: 1/16" = 1'-0"



LOCUS

SCALE: 1" = 4000'

HYDRAULIC DESIGN DATA

DRAINAGE AREA:	0.08 SQUARE MILES
DESIGN FLOOD DISCHARGE:	206 CUBIC FEET PER SECOND
DESIGN FLOOD FREQUENCY:	100 YEARS
DESIGN FLOOD VELOCITY:	3.8 FEET PER SECOND
DESIGN FLOOD ELEVATION:	278.8 FEET, NAVD88

BASE (100-YEAR) FLOOD DATA

BASE FLOOD DISCHARGE:	206 CUBIC FEET PER SECOND
BASE FLOOD ELEVATION:	278.8 FEET, NAVD88

DESIGN AND CHECK SCOUR DATA

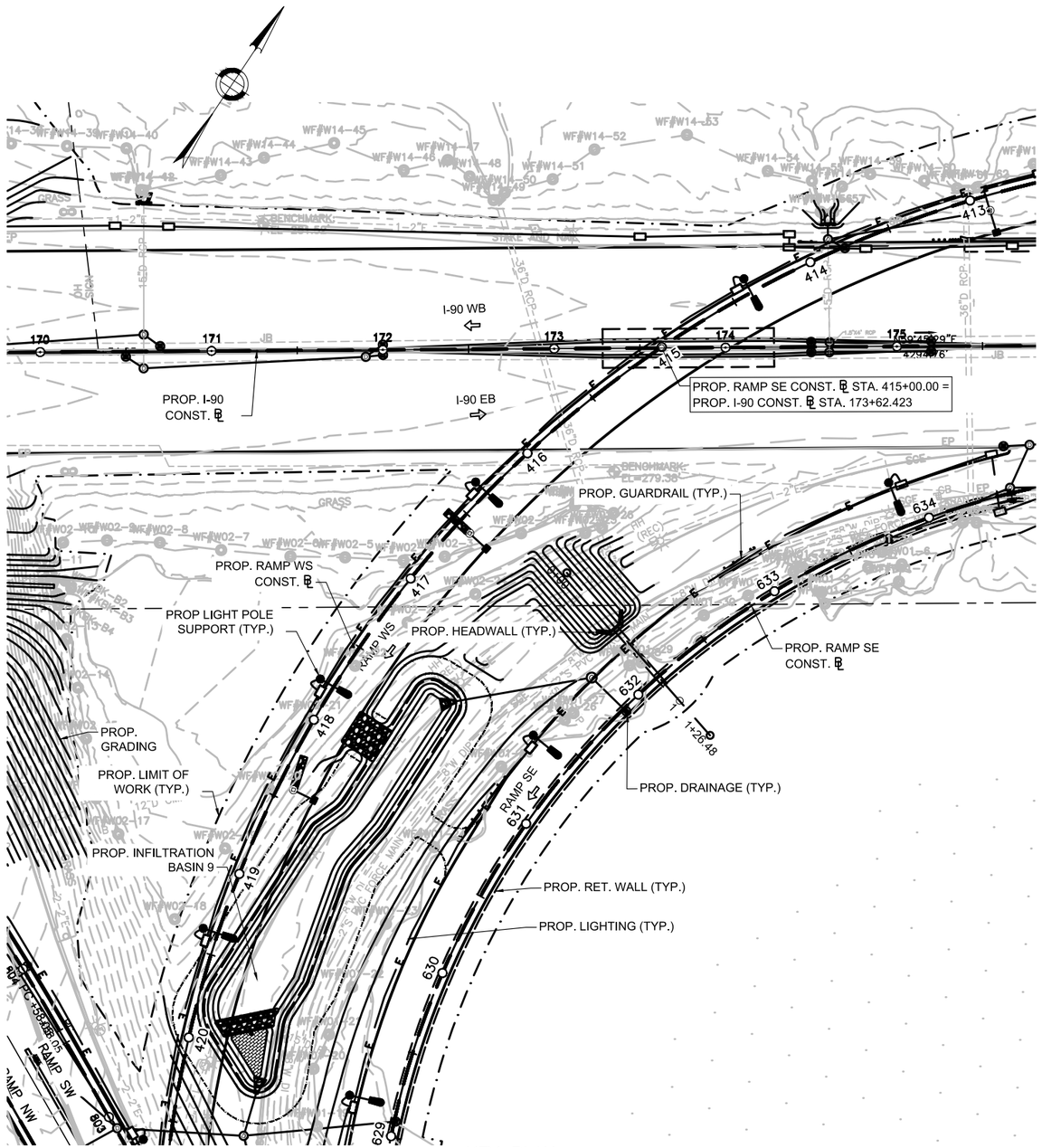
DESIGN SCOUR FLOOD EVENT RETURN FREQUENCY:	200
CHECK SCOUR FLOOD EVENT RETURN FREQUENCY:	500

FLOOD OF RECORD

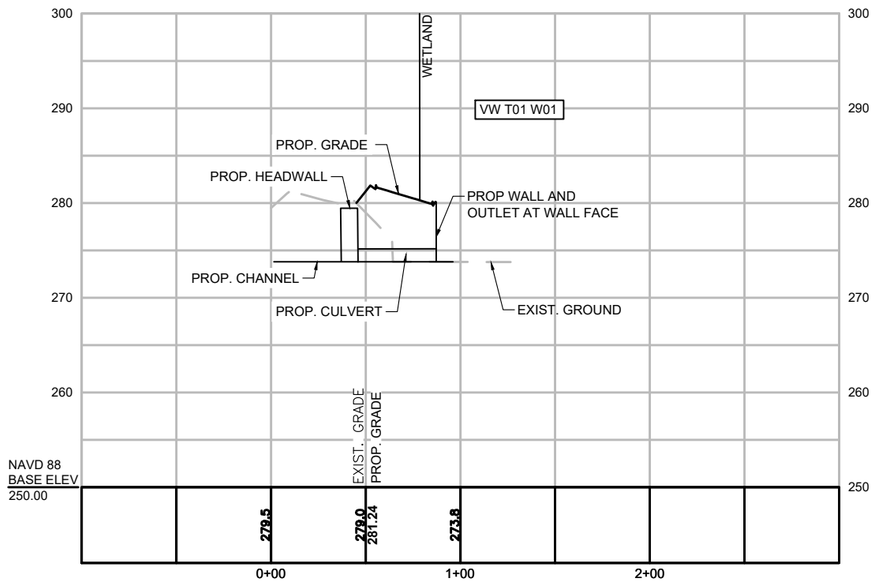
FLOOD OF RECORD NOT AVAILABLE FOR THIS LOCATION.

HISTORY OF ICE FLOES	NONE
EVIDENCE OF SCOUR AND EROSION	NONE

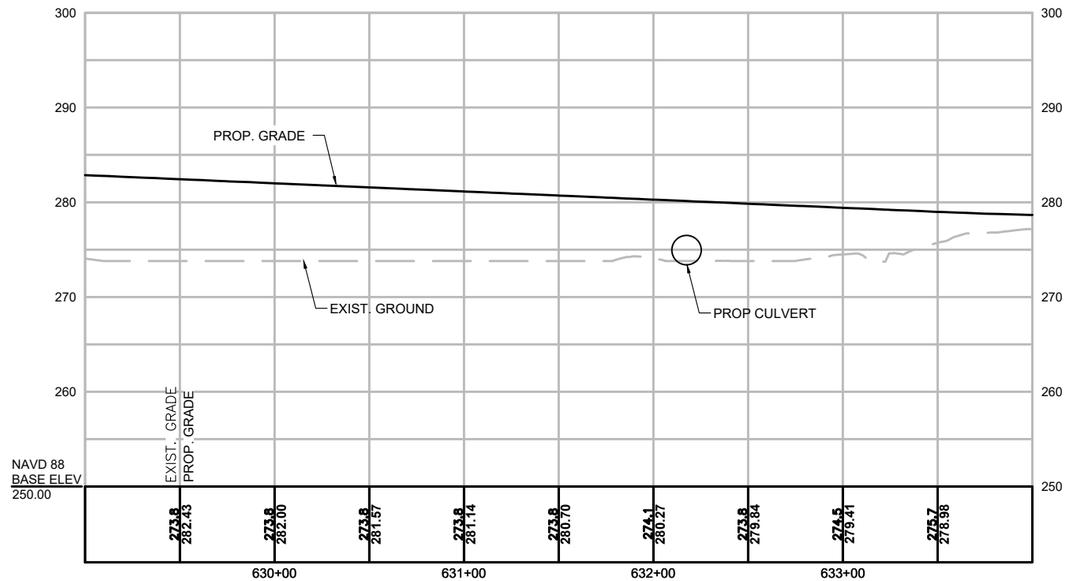
I-495 / I-90 Interchange
Hopkinton - Westborough, MA
Profile
Sheet 47 of 55
Ramp WS & SE



KEY PLAN
SCALE: 1" = 80'

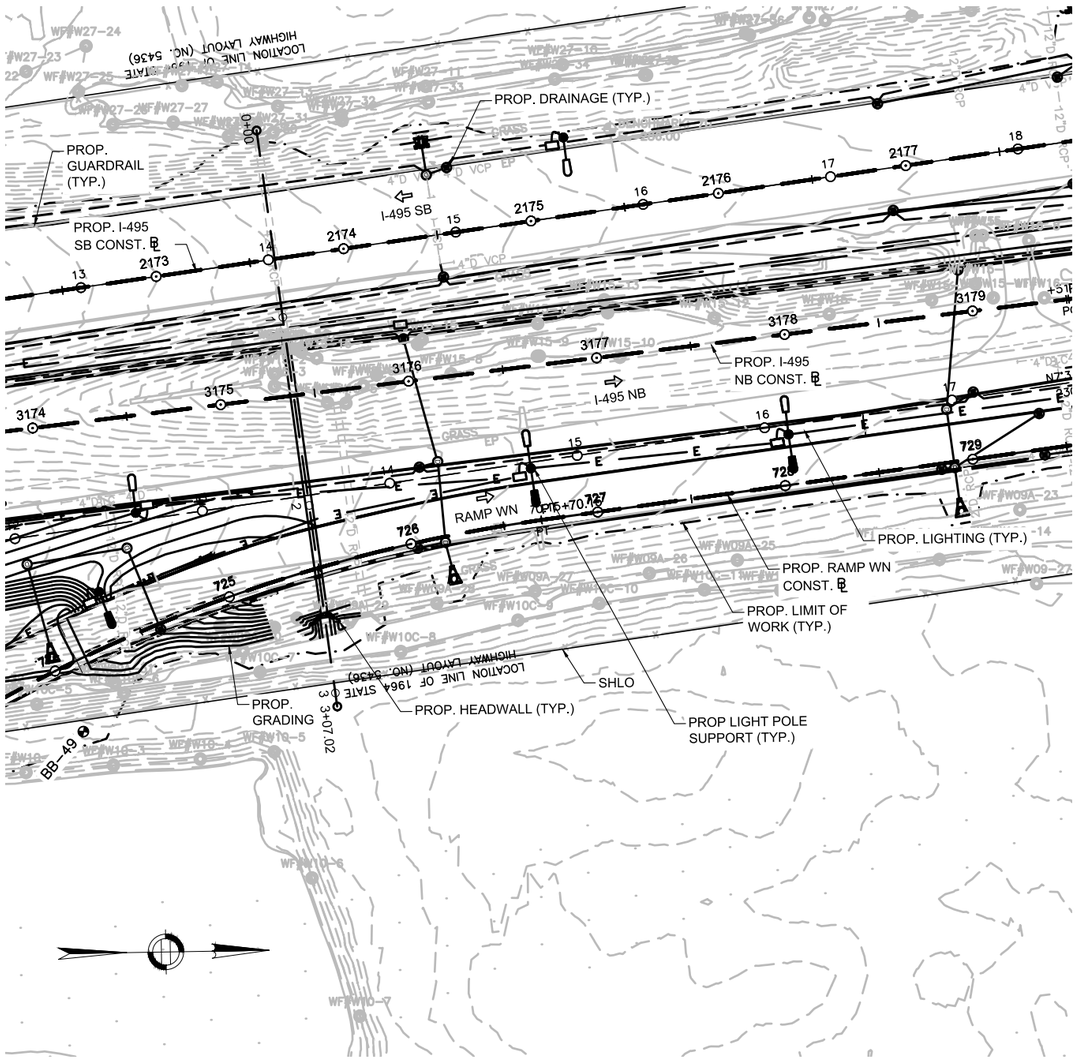


PROFILE ALONG PROP. CULVERT CONSTR. ℄
HORIZ. SCALE: 1" = 80'
VERT. SCALE: 1/16" = 1'–0"

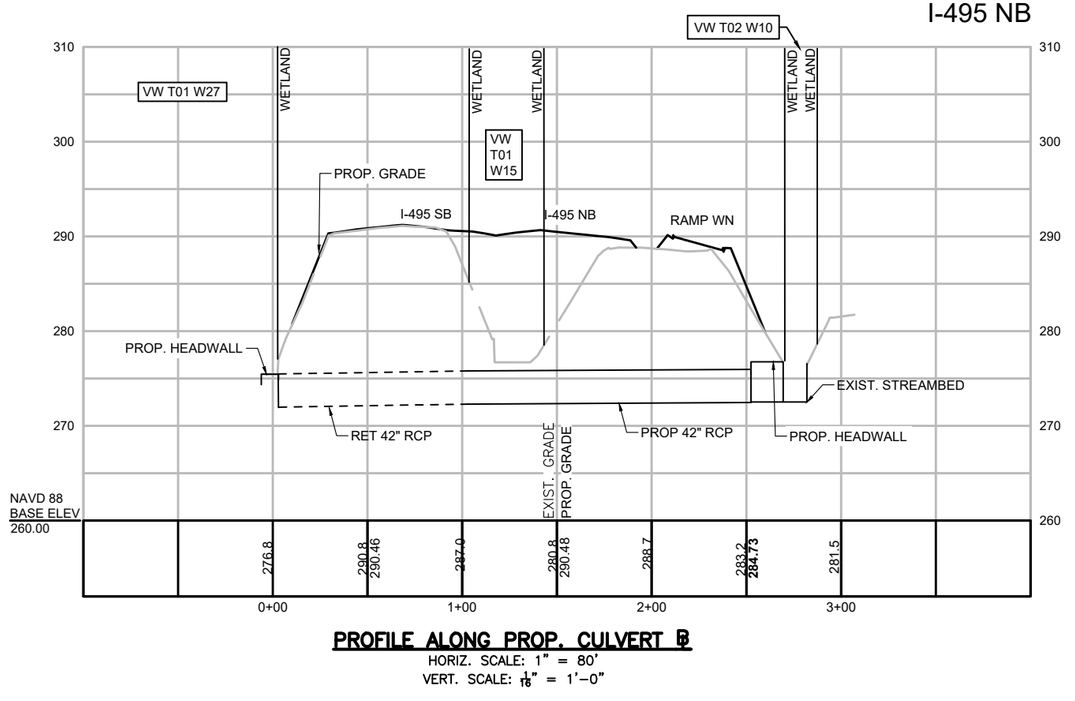


PROFILE ALONG PROP. RAMP SE CONSTR. ℄
HORIZ. SCALE: 1" = 80'
VERT. SCALE: 1/16" = 1'–0"

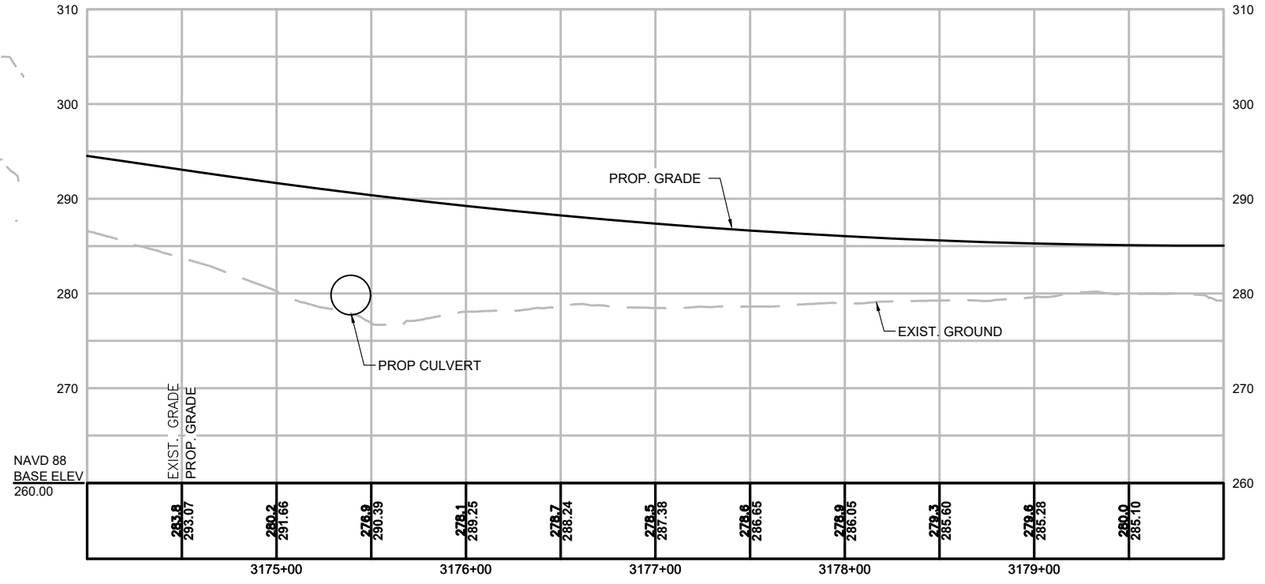
I-495 / I-90 Interchange
Hopkinton - Westborough, MA
Profile
Sheet 48 of 55
I-495 NB



KEY PLAN
SCALE: 1" = 80'



PROFILE ALONG PROP. CULVERT ℄
HORIZ. SCALE: 1" = 80'
VERT. SCALE: 1/16" = 1'–0"



PROFILE ALONG PROP. I–495 NB ℄
HORIZ. SCALE: 1" = 80'
VERT. SCALE: 1/16" = 1'–0"

607977_USACE(PROFILES)-BTC.DWG

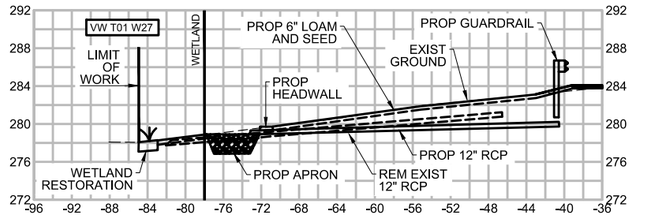
0 16 40 60

SCALE: 1" = 16'

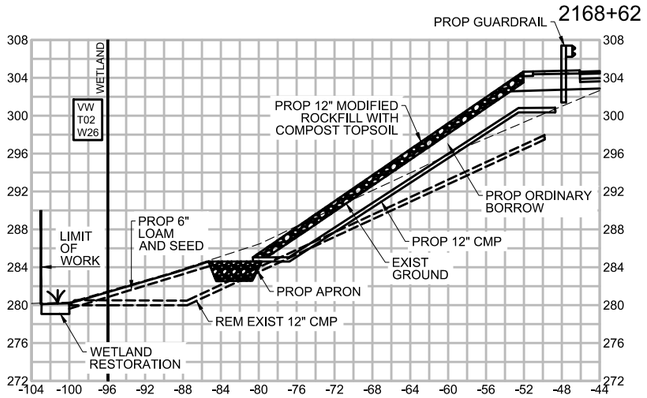
I-495 / I-90 Interchange
Hopkinton - Westborough, MA
Wetland Impact -Typical Section
Sheet 49 of 55

I-495 SB & I-495 NB

2178+00



2168+62



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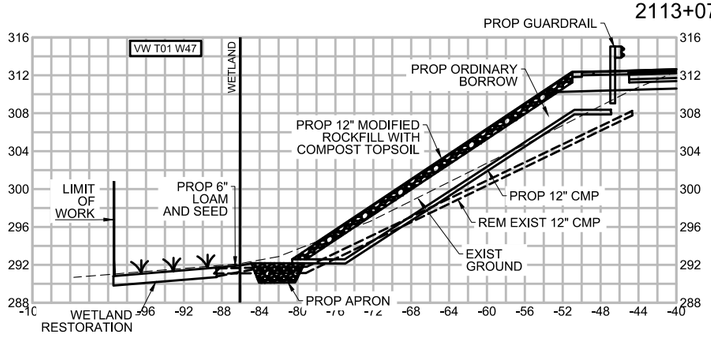
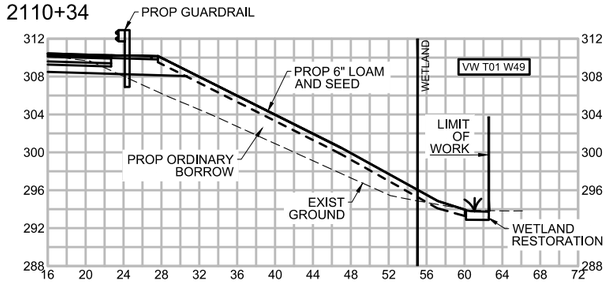
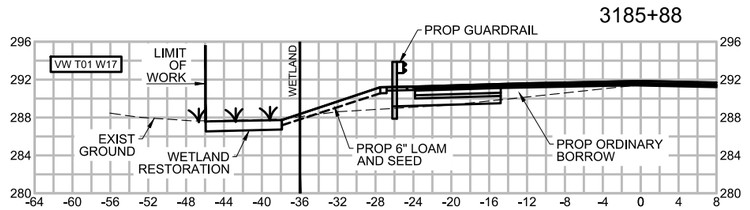


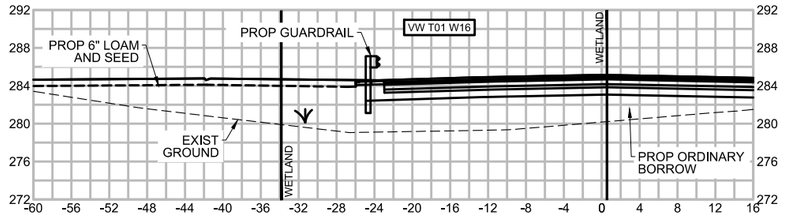
2110+34



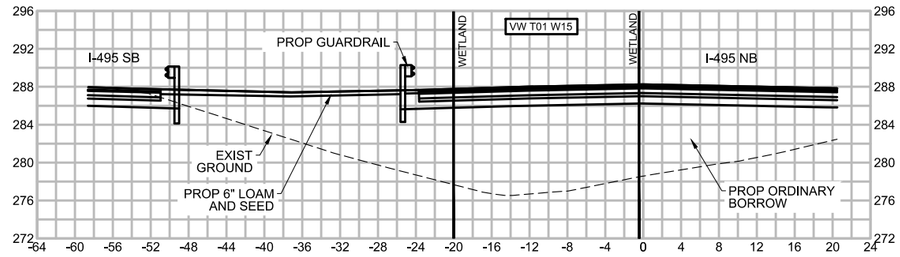
3185+88



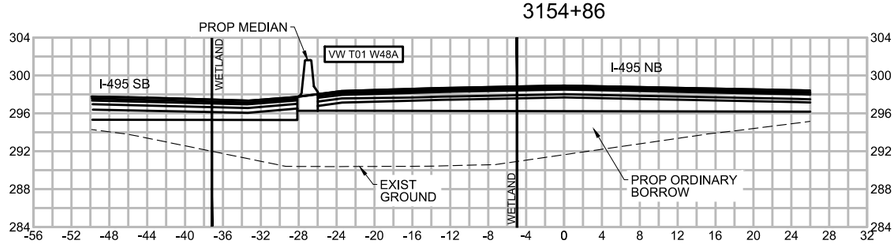
3180+51



3176+50



3154+86



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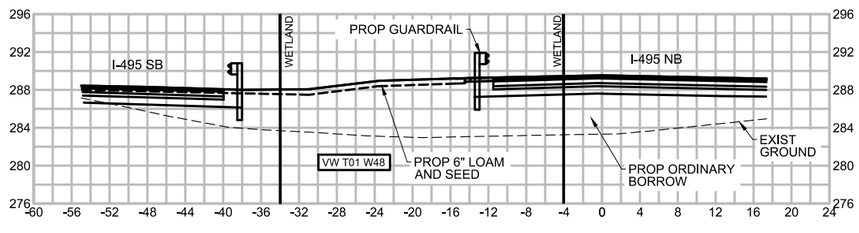

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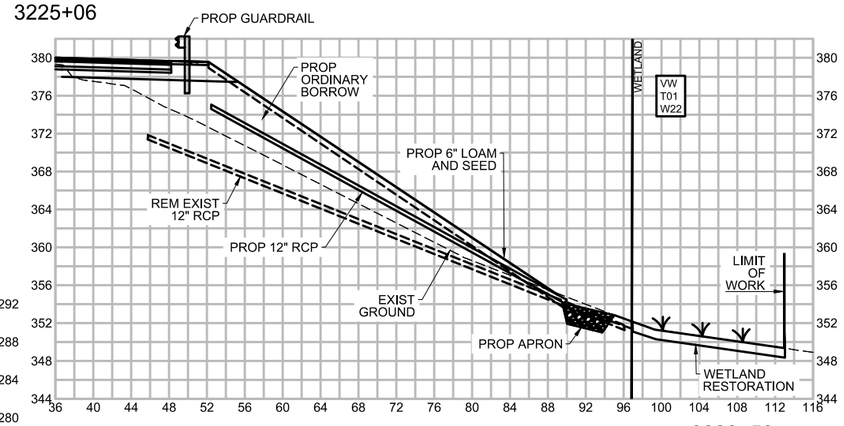

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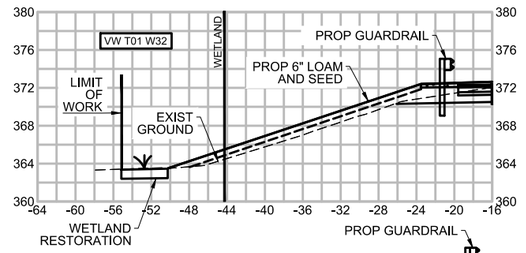

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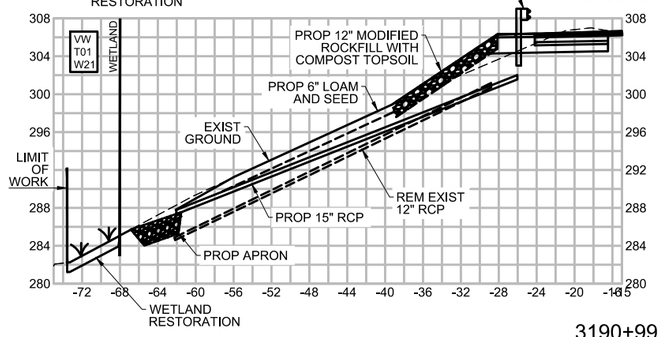

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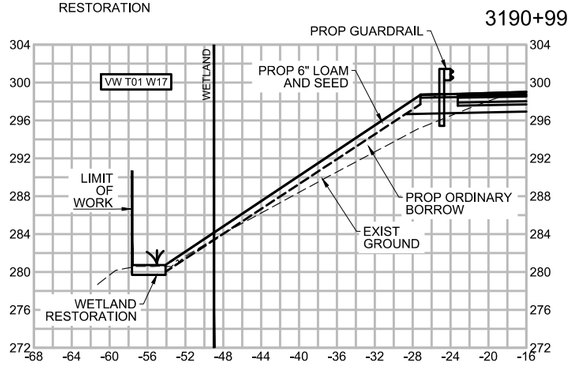


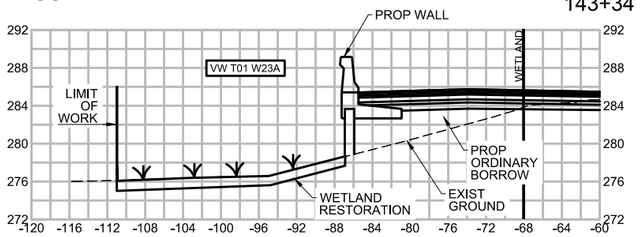
0 16 40 60

SCALE: 1" = 16'

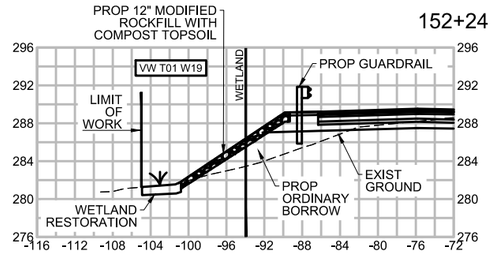
I-495 / I-90 Interchange
Hopkinton - Westborough, MA
Wetland Impact -Typical Section
Sheet 50 of 55

I-90

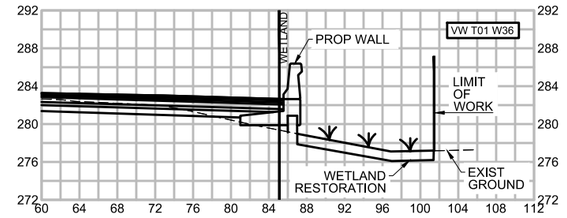
143+34



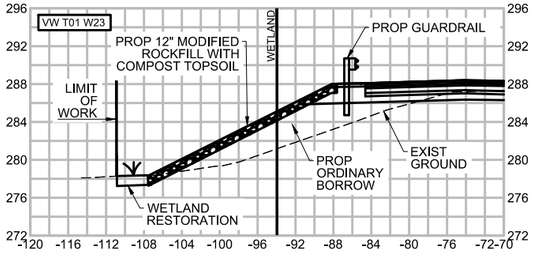
152+24



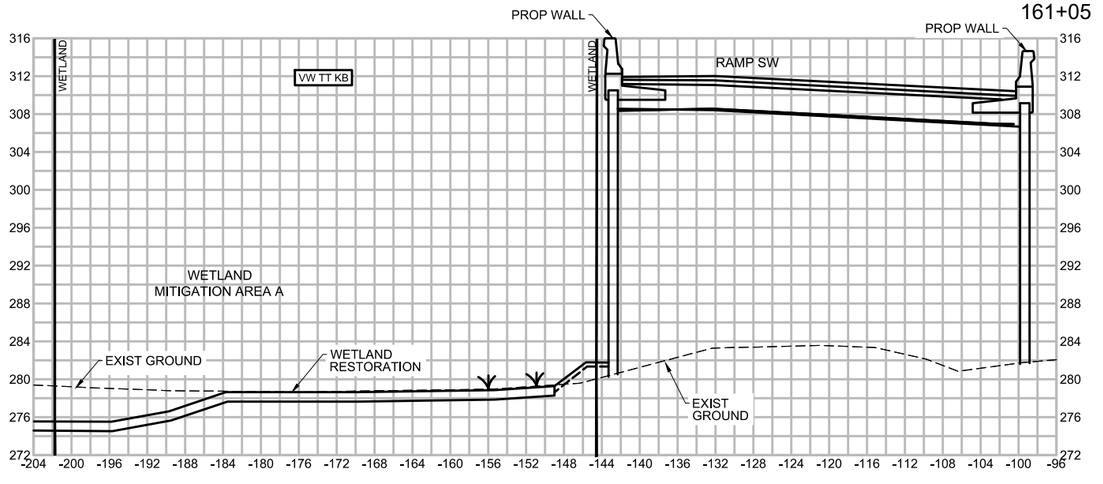
142+40



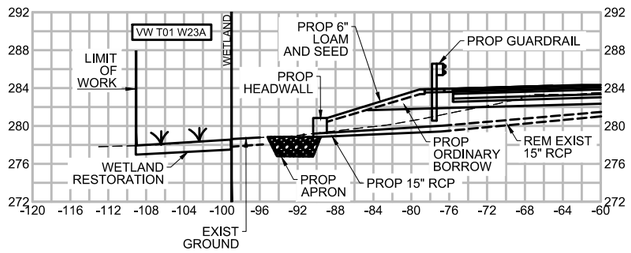
150+20



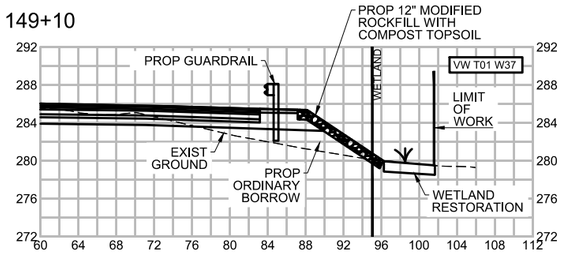
161+05



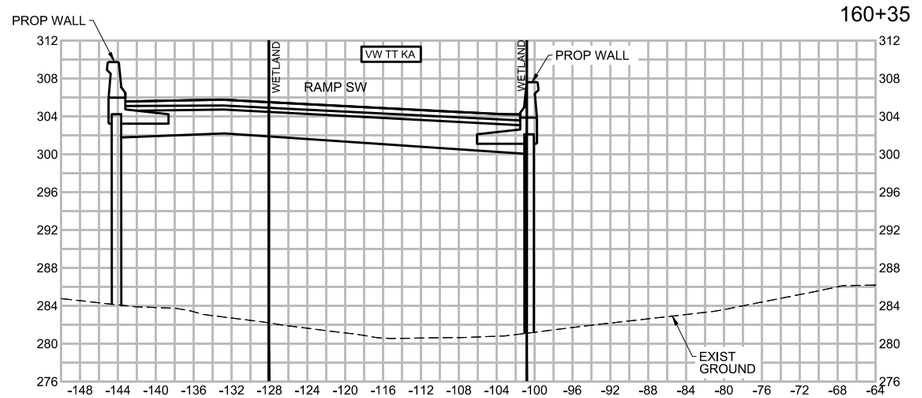
134+12



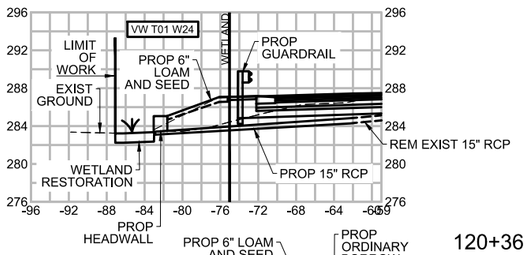
149+10



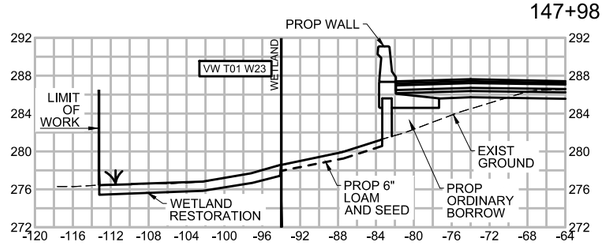
160+35



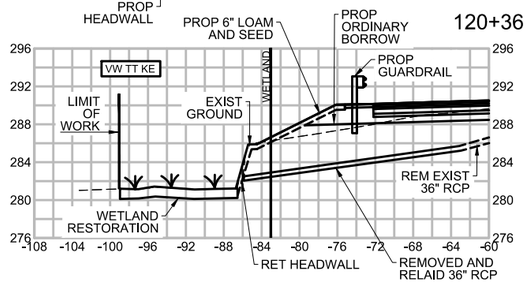
126+30



147+98



120+36



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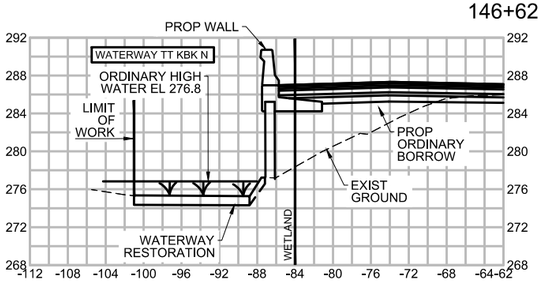

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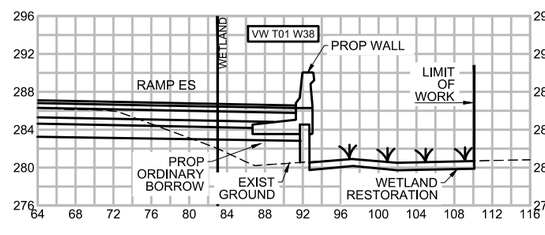
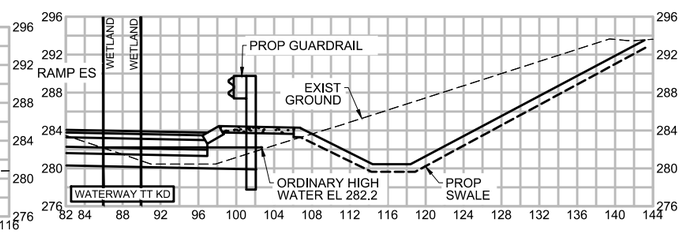


160+00



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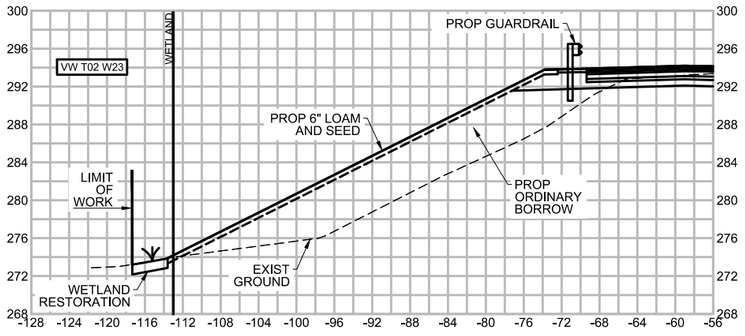
0 16 40 60

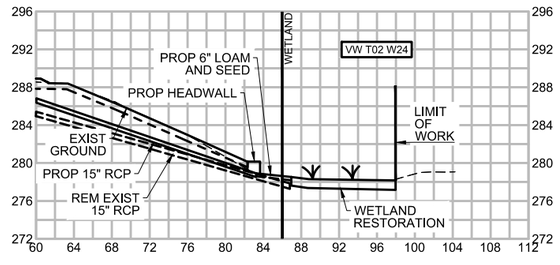
SCALE: 1" = 16'

I-90

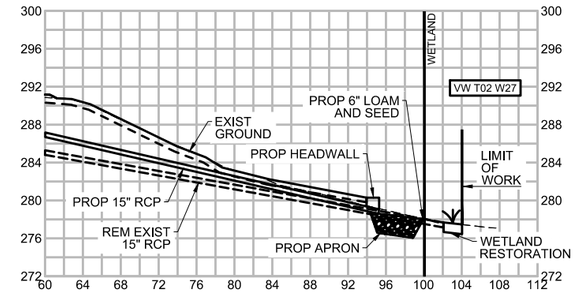
216+30



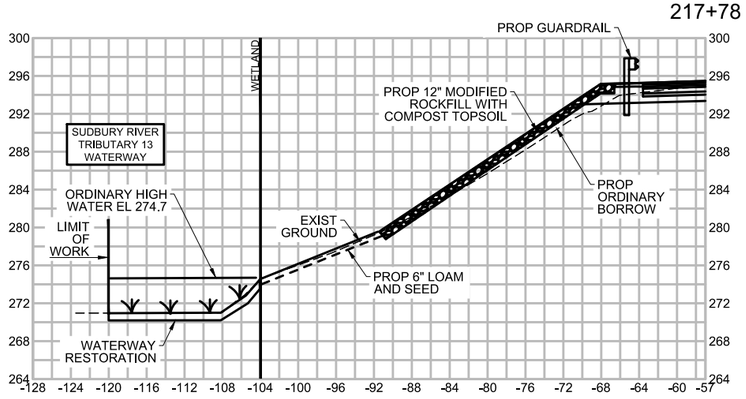
211+28



209+32



217+78



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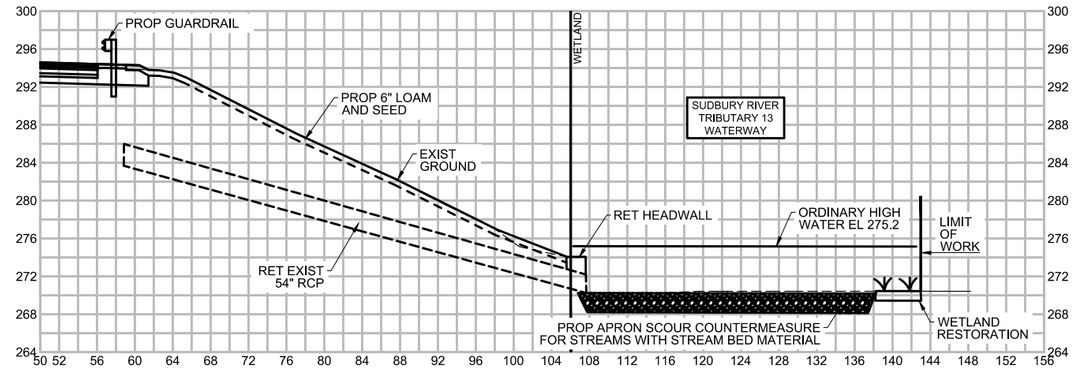
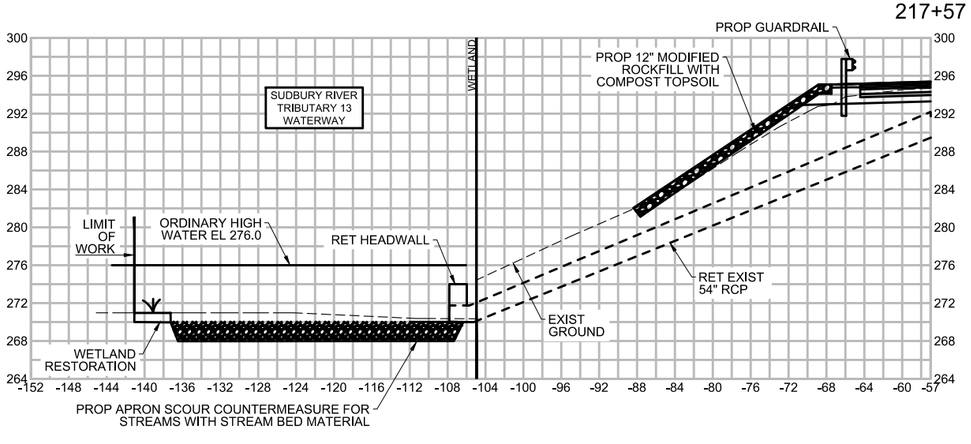


217+57



0 16 40 60

SCALE: 1" = 16'

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Hopkinton - Westborough, MA
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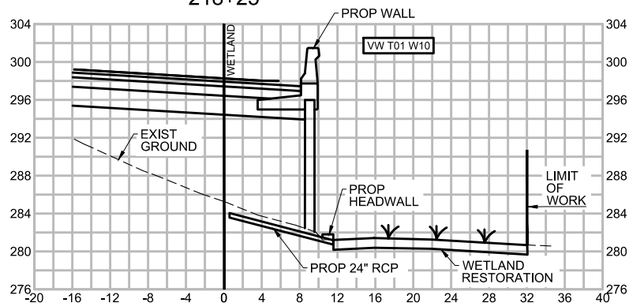
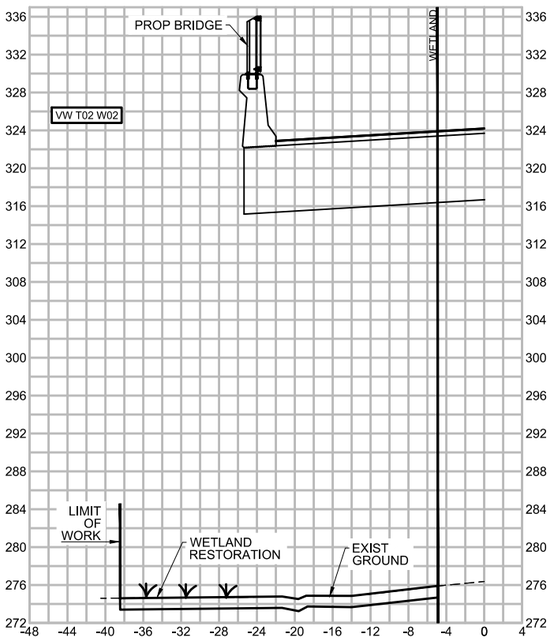
RAMP NE

218+25

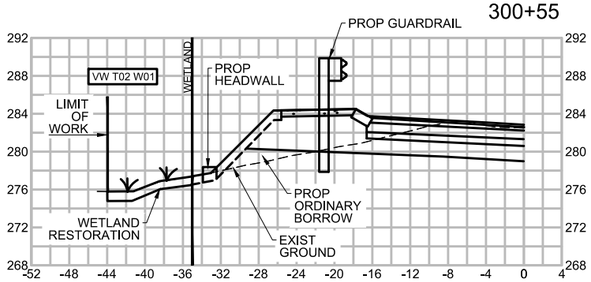


RAMP EN

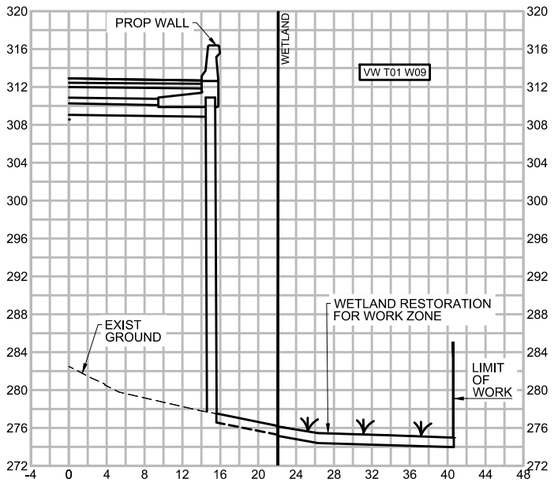
319+32



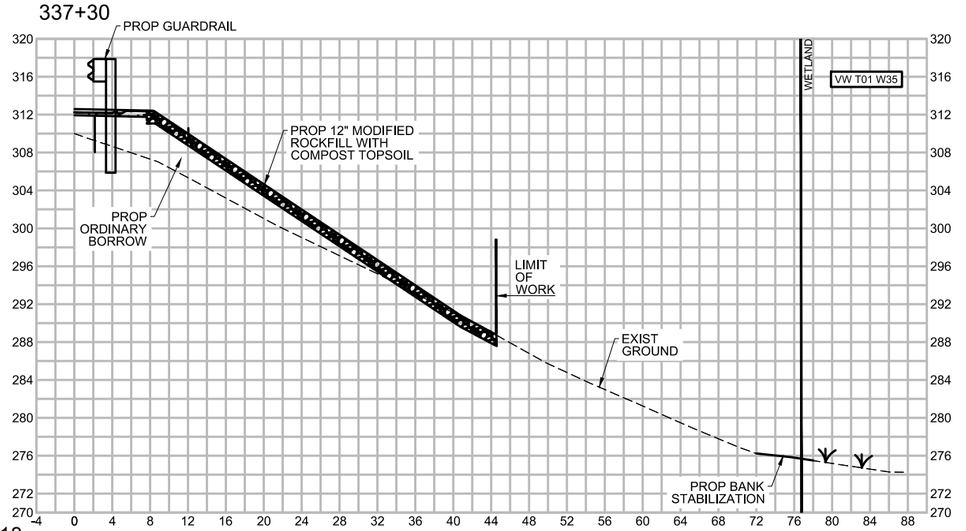
300+55



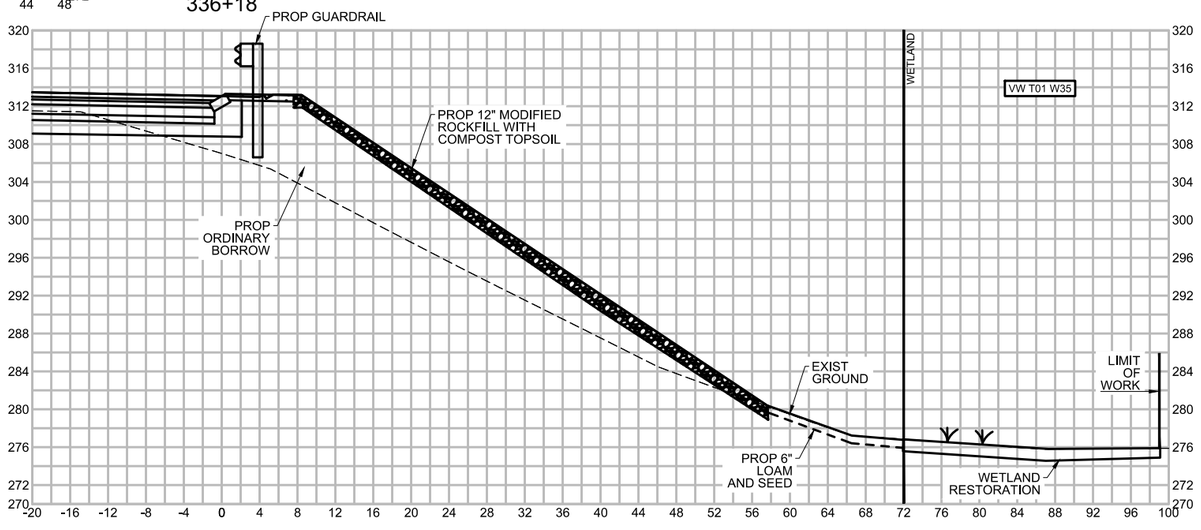
329+74



337+30



336+18



0 16 40 60

SCALE: 1" = 16'

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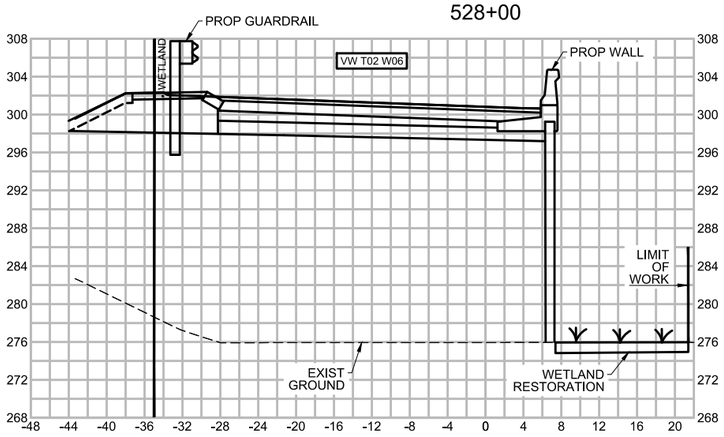
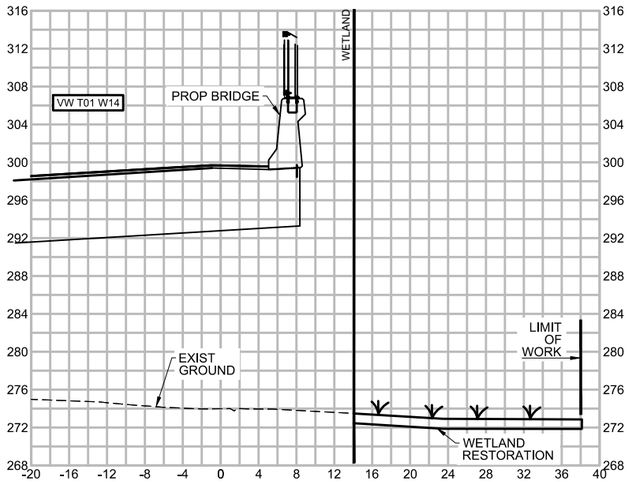
RAMP ES

528+00

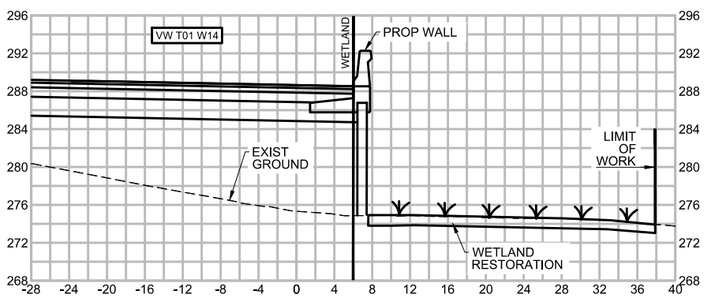


RAMP WS

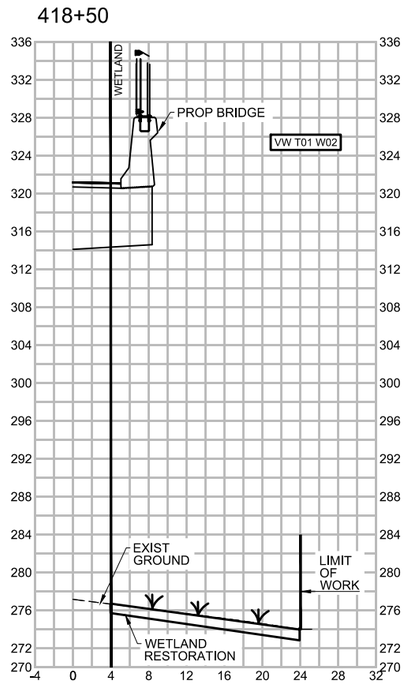
411+20



408+38

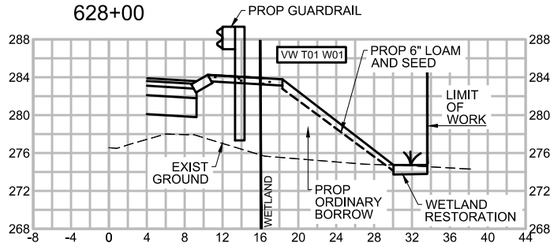


418+50

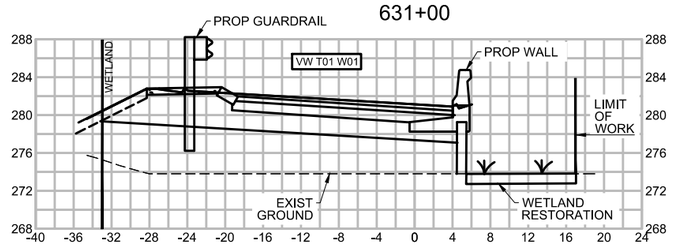


RAMP SE

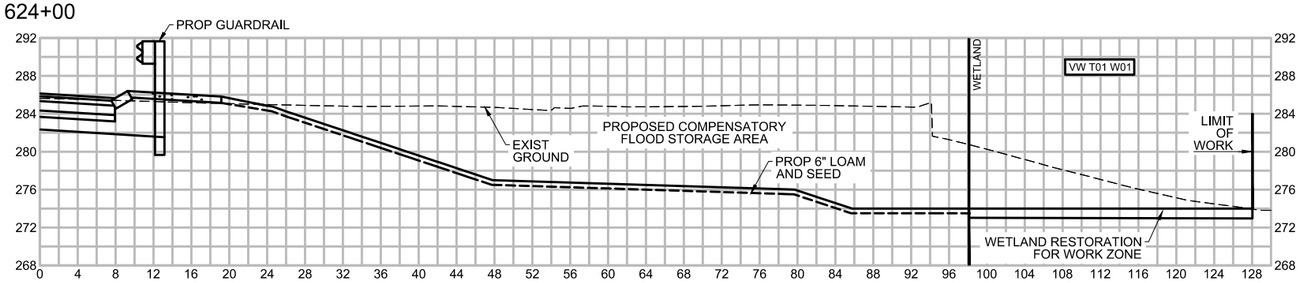
628+00



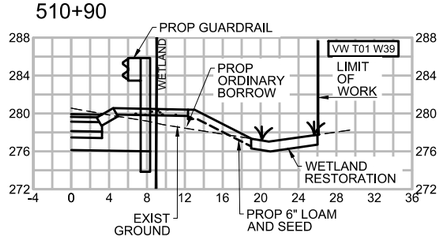
631+00



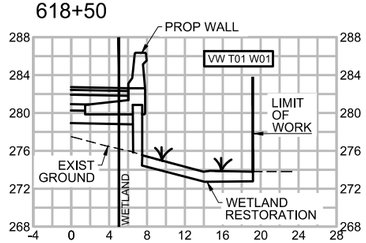
624+00



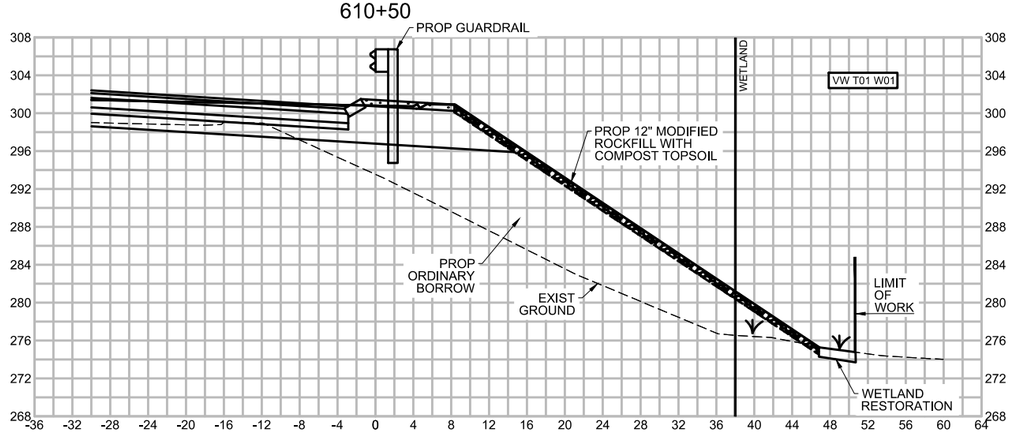
510+90



618+50



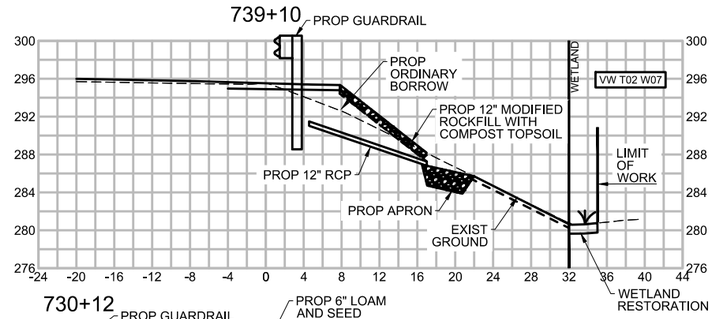
610+50

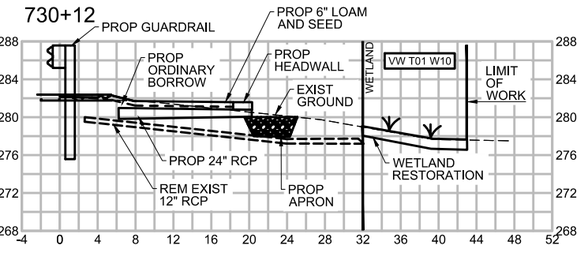


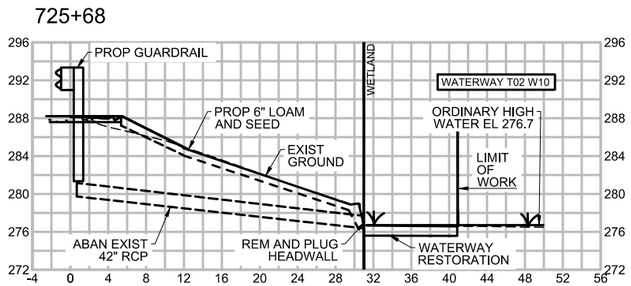
0 16 40 60

SCALE: 1" = 16'

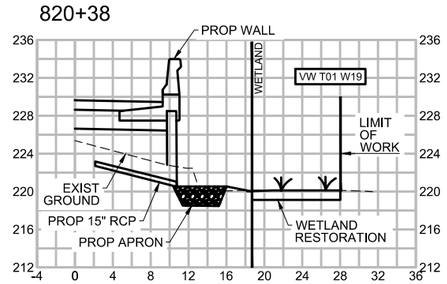
RAMP WN

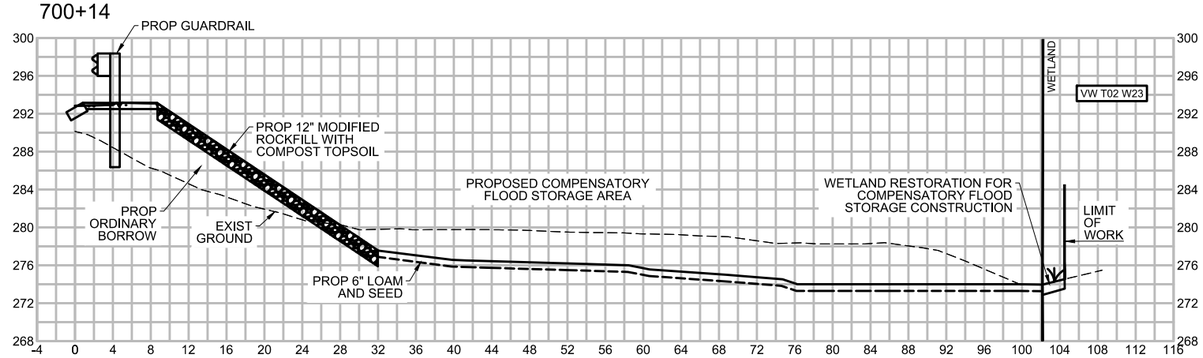




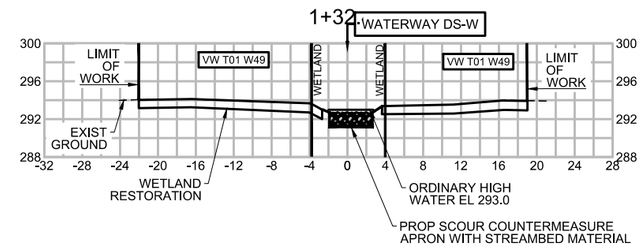


RAMP SW

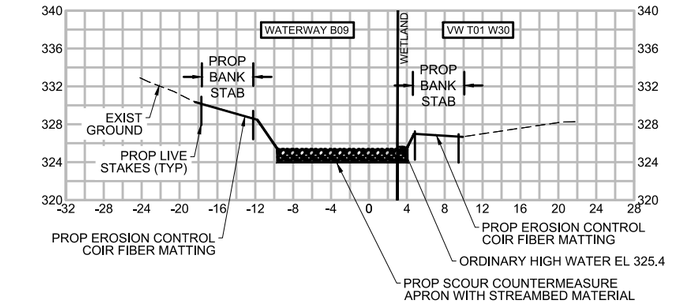




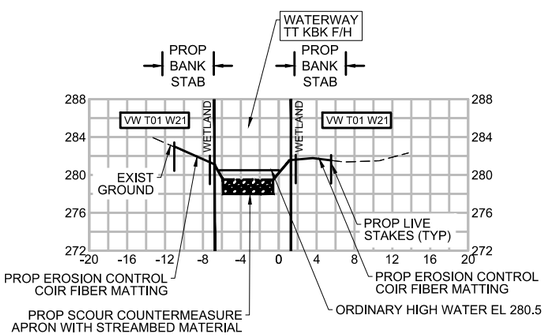
WATERWAY DS-W



WATERWAY B09



WATERWAY TT KBK F/H



0 16 40 60

SCALE: 1" = 16'

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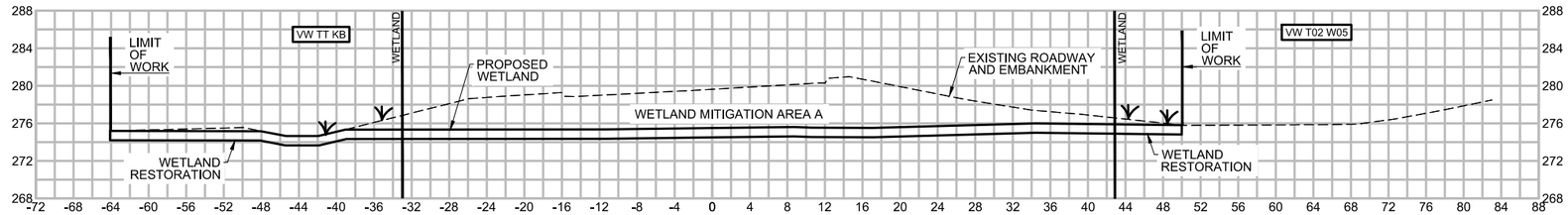
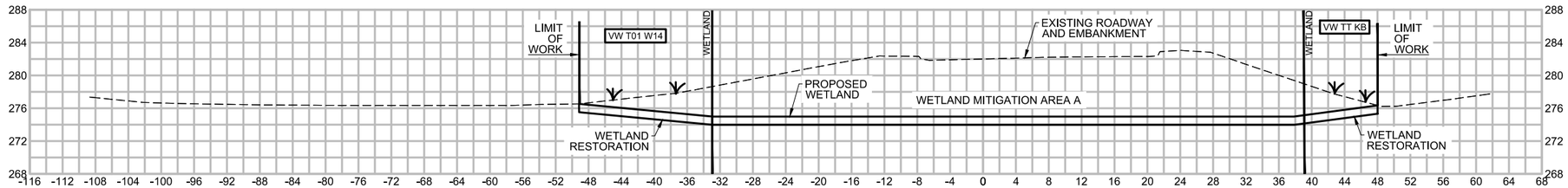
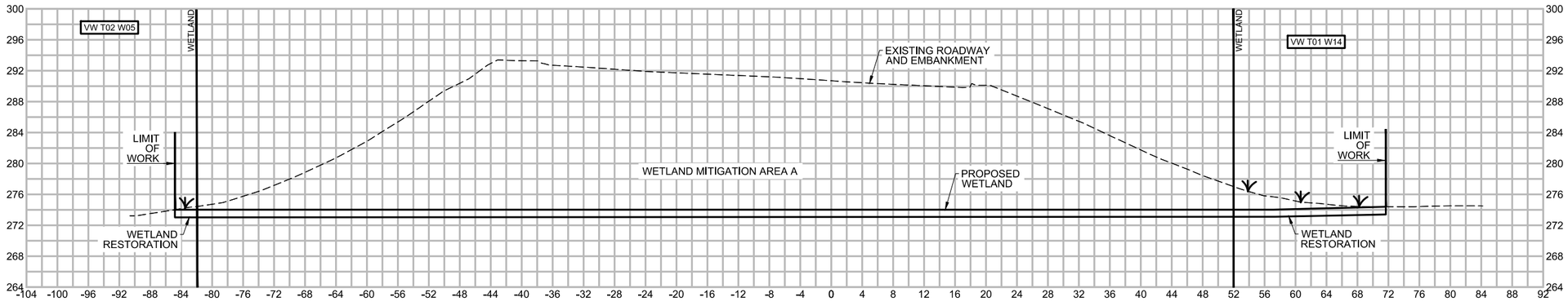
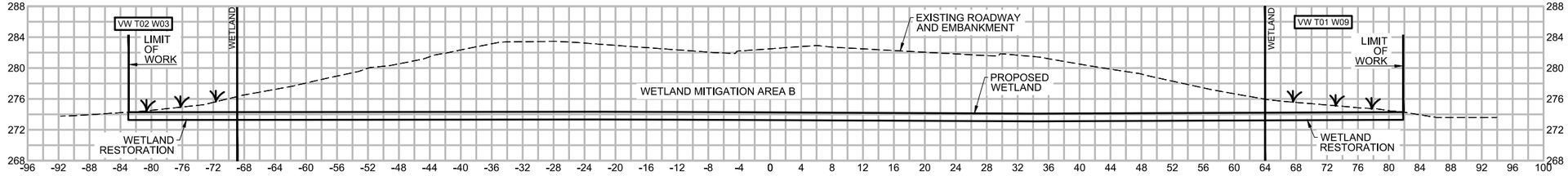
WETLAND MITIGATION AREA A







WETLAND MITIGATION AREA B



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