



COMMONWEALTH OF MASSACHUSETTS

DEPARTMENT OF CONSERVATION AND RECREATION

DIVISION OF PLANNING

BLACKSTONE RIVER GREENWAY
IN THE TOWN OF BLACKSTONE
MASSACHUSETTS
MIDDLESEX COUNTY

BLACKSTONE GREENWAY SEGMENT 1 PHASE 2
DCR CONTRACT NO. P10-2636-C3A

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.

CHARLES D. BAKER, GOVERNOR

KARYN E. POLITO, LT. GOVERNOR

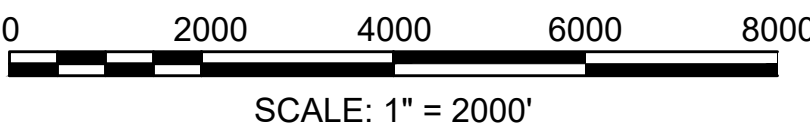
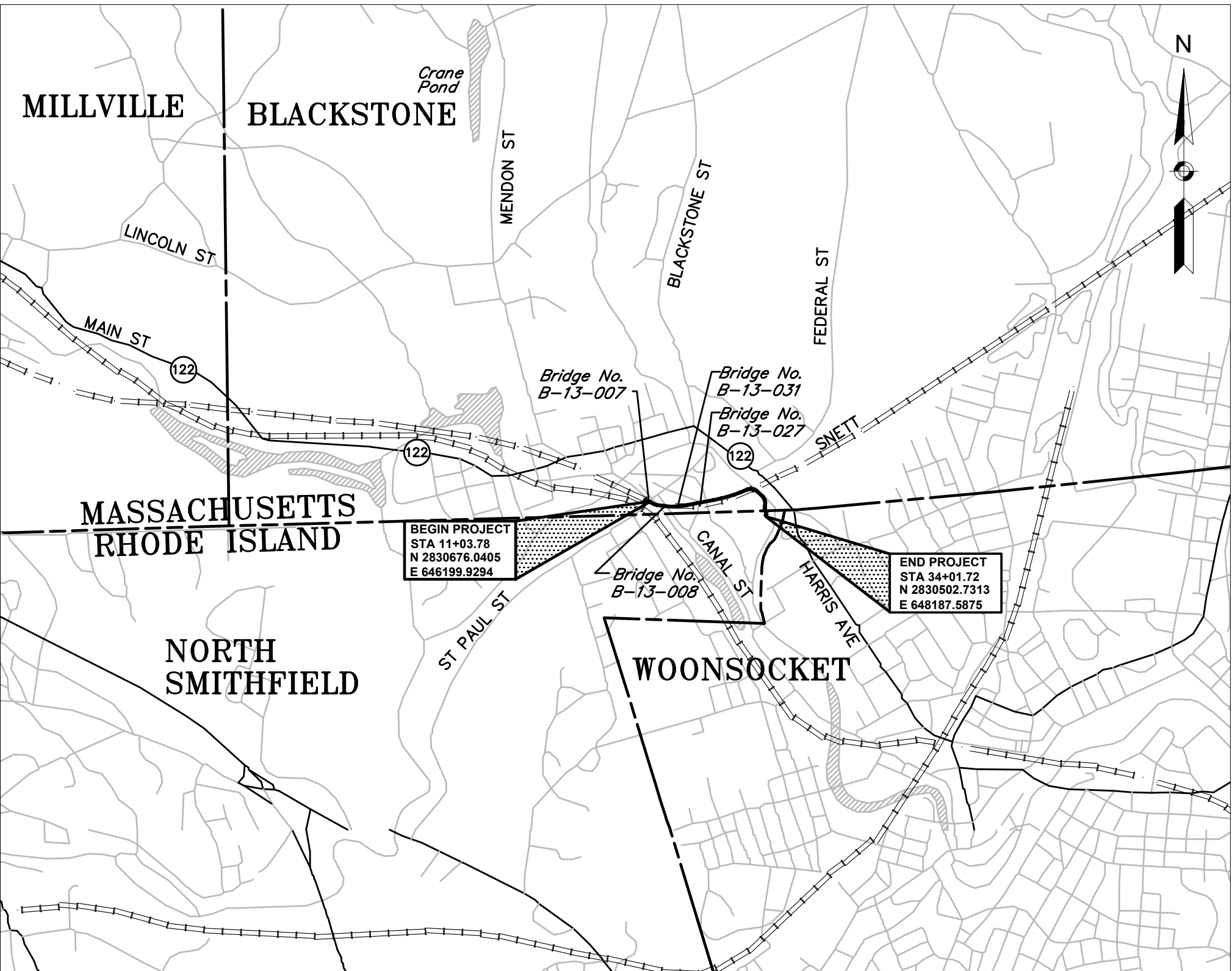
BETHANY A. CARD, SECRETARY,
EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS

DOUGLAS J. RICE, COMMISSIONER
DEPARTMENT OF CONSERVATION & RECREATION

PATRICE KISH, CHIEF ENGINEER
DEPARTMENT OF CONSERVATION & RECREATION

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LENGTH OF PROJECT = 2,297.94 FEET = 0.435 MILES



LANDSCAPE ARCHITECT
IBI — SHEET NOS. L-01 TO L-04 & LD-01 TO LD-05

STRUCTURAL ENGINEER
STANTEC — SHEET NOS. ST-01 TO ST-18



vhb
Transportation Land Development
Environmental Services
101 Walnut St., P.O. Box 9151
Watertown, MA 02472
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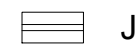









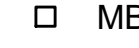





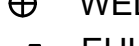





















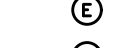

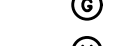



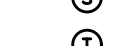

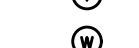














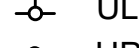














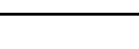
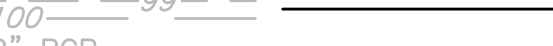
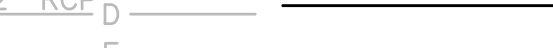



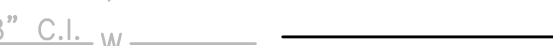

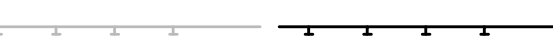

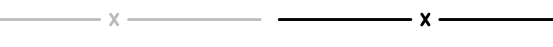
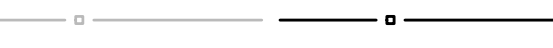

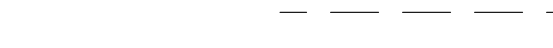
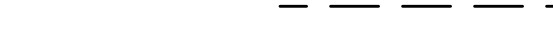





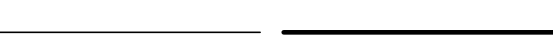
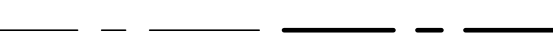
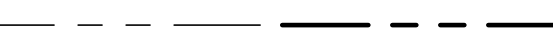
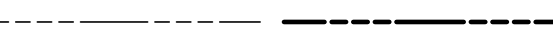
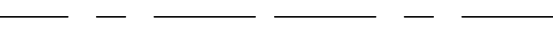

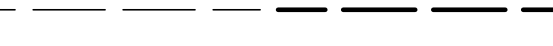









COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION AND RECREATION
DIVISION OF DESIGN AND ENGINEERING AND
BUREAU OF DESIGN AND PROJECT MANAGEMENT

BLACKSTONE GREENWAY SEGMENT 1 PHASE 2

BLACKSTONE GREENWAY
BLACKSTONE, MA

DESIGNER: LSA	TITLE SHEET & INDEX	SHEET NO.
CHECKED: SHK		G-1
DRAWN: LSA	CONT. P10-2636-C3A	SCALE: AS NOTED
CHECKED: SHK	ACC. 104207x	DATE: OCT 2022
		1 OF 1

GENERAL SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		JERSEY BARRIER
		CATCH BASIN
		CATCH BASIN CURB INLET
		FLAG POLE
		GAS PUMP
		MAIL BOX
		POST SQUARE
		POST CIRCULAR
		WELL
		ELECTRIC HANDHOLE
		FENCE GATE POST
		GAS GATE
		BORING HOLE
		MONITORING WELL
		TEST PIT
		HYDRANT
		LIGHT POLE
		CONCRETE BOUND/DRILL HOLE
		GPS POINT
		CABLE MANHOLE
		DRAINAGE MANHOLE
		ELECTRIC MANHOLE
		GAS MANHOLE
		MISC MANHOLE
		SEWER MANHOLE
		TELEPHONE MANHOLE
		WATER MANHOLE
		MASSACHUSETTS HIGHWAY BOUND
		MONUMENT
		STONE BOUND
		TOWN OR CITY BOUND
		TRAVERSE OR TRIANGULATION STATION
		TROLLEY POLE OR GUY POLE
		TRANSMISSION POLE
		UTILITY POLE W/ FIREBOX
		UTILITY POLE WITH DOUBLE LIGHT
		UTILITY POLE W / 1 LIGHT
		UTILITY POLE
		BUSH
		TREE
		STUMP
		SWAMP / MARSH
		WETLAND FLAG
		PARKING METER
		OVERHEAD CABLE/WIRE
		CURBING
		CONTOURS (ON-THE-GROUND SURVEY DATA)
		CONTOURS (PHOTOGRAMMETRIC DATA)
		UNDERGROUND DRAIN PIPE (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND ELECTRIC DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND GAS MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND SEWER MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND TELEPHONE DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND WATER MAIN (DOUBLE LINE 24 INCH AND OVER)
		BALANCED STONE WALL
		GUARD RAIL - STEEL POSTS
		WOOD GUARD RAIL
		CHAIN LINK OR METAL FENCE
		WOOD FENCE
		TREE LINE
		SAWCUT LINE
		TOP OR BOTTOM OF SLOPE
		LIMIT OF EDGE OF PAVEMENT OR COLD PLANE AND OVERLAY
		BANK OF RIVER OR STREAM
		BORDER OF WETLAND
		100 FT WETLAND BUFFER
		100 FT BANK BUFFER
		200 FT RIVERFRONT BUFFER
		STATE HIGHWAY LAYOUT/STATE OWNED LAND
		TOWN OR CITY LAYOUT
		COUNTY LAYOUT
		RAILROAD SIDELINE
		TOWN OR CITY BOUNDARY LINE
		PROPERTY LINE OR APPROXIMATE PROPERTY LINE
		EASEMENT
		COMPOST FILTER TUBE
		TRAVERSE OR TRIANGULATION STATION
		CHECK DAM
		SITE BENCH W/ CONCRETE PAD
		SITE BENCH W/ CONCRETE PAD AND COMPANION SPACE

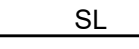
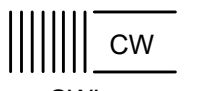
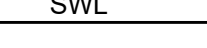
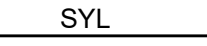



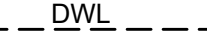
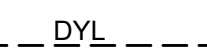

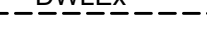
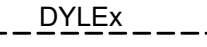
ABBREVIATIONS

GENERAL	
AADT	ANNUAL AVERAGE DAILY TRAFFIC
ABAN	ABANDON
ADJ	ADJUST
APPROX.	APPROXIMATE
A.C.	ASPHALT CONCRETE
ACCM PIPE	ASPHALT COATED CORRUGATED METAL PIPE
BIT.	BITUMINOUS
BC	BOTTOM OF CURB
BD.	BOUND
BL	BASELINE
BLDG	BUILDING
BM	BENCHMARK
BO	BY OTHERS
BOS	BOTTOM OF SLOPE
BR.	BRIDGE
CB	CATCH BASIN
CBCI	CATCH BASIN WITH CURB INLET
CC	CEMENT CONCRETE
CCM	CEMENT CONCRETE MASONRY
CEM	CEMENT
CI	CURB INLET
CIP	CAST IRON PIPE
CLF	CHAIN LINK FENCE
CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
CSP	CORRUGATED STEEL PIPE
CO.	COUNTY
CONC	CONCRETE
CONT	CONTINUOUS
CONST	CONSTRUCTION
CR GR	CROWN GRADE
DHV	DESIGN HOURLY VOLUME
DI	DROP INLET
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DW	STEADY DON'T WALK - PORTLAND ORANGE
DWY	DRIVEWAY
ELEV (or EL.)	ELEVATION
EMB	EMBANKMENT
EOP	EDGE OF PAVEMENT
EXIST (or EX)	EXISTING
EXC	EXCAVATION
F&C	FRAME AND COVER
F&G	FRAME AND GRATE
FDN.	FOUNDATION
FLDSTN	FIELDSTONE
GAR	GARAGE
GD	GROUND
GG	GAS GATE
GI	GUTTER INLET
GIP	GALVANIZED IRON PIPE
GRAN	GRANITE
GRAV	GRAVEL
GRD	GUARD
HDW	HEADWALL
HMA	HOT MIX ASPHALT
HOR	HORIZONTAL
HYD	HYDRANT
INV	INVERT
JCT	JUNCTION
L	LENGTH OF CURVE
LB	LEACH BASIN
LP	LIGHT POLE
LT	LEFT
MAX	MAXIMUM
MB	MAILBOX
MH	MANHOLE
MHB	MASSACHUSETTS HIGHWAY BOUND
MIN	MINIMUM
NIC	NOT IN CONTRACT
NO.	NUMBER
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVATURE
P.G.L.	PROFILE GRADE LINE
PI	POINT OF INTERSECTION
POC	POINT ON CURVE
POT	POINT ON TANGENT
PRC	POINT OF REVERSE CURVATURE
PROJ	PROJECT
PROP	PROPOSED
PSB	PLANTABLE SOIL BORROW
PT	POINT OF TANGENCY
PVC	POINT OF VERTICAL CURVATURE
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENCY
PVMT	PAVEMENT
PWW	PAVED WATER WAY

ABBREVIATIONS (cont.)

GENERAL	
R	RADIUS OF CURVATURE
R&D	REMOVE AND DISPOSE
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
RDWY	ROADWAY
REM	REMOVE
RET	RETAIN
RET WALL	RETAINING WALL
ROW	RIGHT OF WAY
RR	RAILROAD
R&R	REMOVE AND RESET
R&S	REMOVE AND STACK
RT	RIGHT
SB	STONE BOUND
SHLD	SHOULDER
SMH	SEWER MANHOLE
ST	STREET
STA	STATION
SSD	STOPPING SIGHT DISTANCE
SHLO	STATE HIGHWAY LAYOUT LINE
SW	SIDEWALK
T	TANGENT DISTANCE OF CURVE/TRUCK %
TAN	TANGENT
TEMP	TEMPORARY
TC	TOP OF CURB
TOS	TOP OF SLOPE
TYP	TYPICAL
UP	UTILITY POLE
VAR	VARIES
VERT	VERTICAL
VC	VERTICAL CURVE
WCR	WHEEL CHAIR RAMP
WG	WATER GATE
WIP	WROUGHT IRON PIPE
WM	WATER METER/WATER MAIN
X-SECT	CROSS SECTION

PAVEMENT MARKINGS SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		STOP LINE
		CROSSWALK
		SOLID WHITE LINE
		SOLID YELLOW LINE
		BROKEN WHITE LINE
		BROKEN YELLOW LINE
		DOTTED WHITE LINE
		DOTTED YELLOW LINE
		DOTTED WHITE LINE EXTENSION
		DOTTED YELLOW LINE EXTENSION
		DOUBLE WHITE LINE
		DOUBLE YELLOW LINE

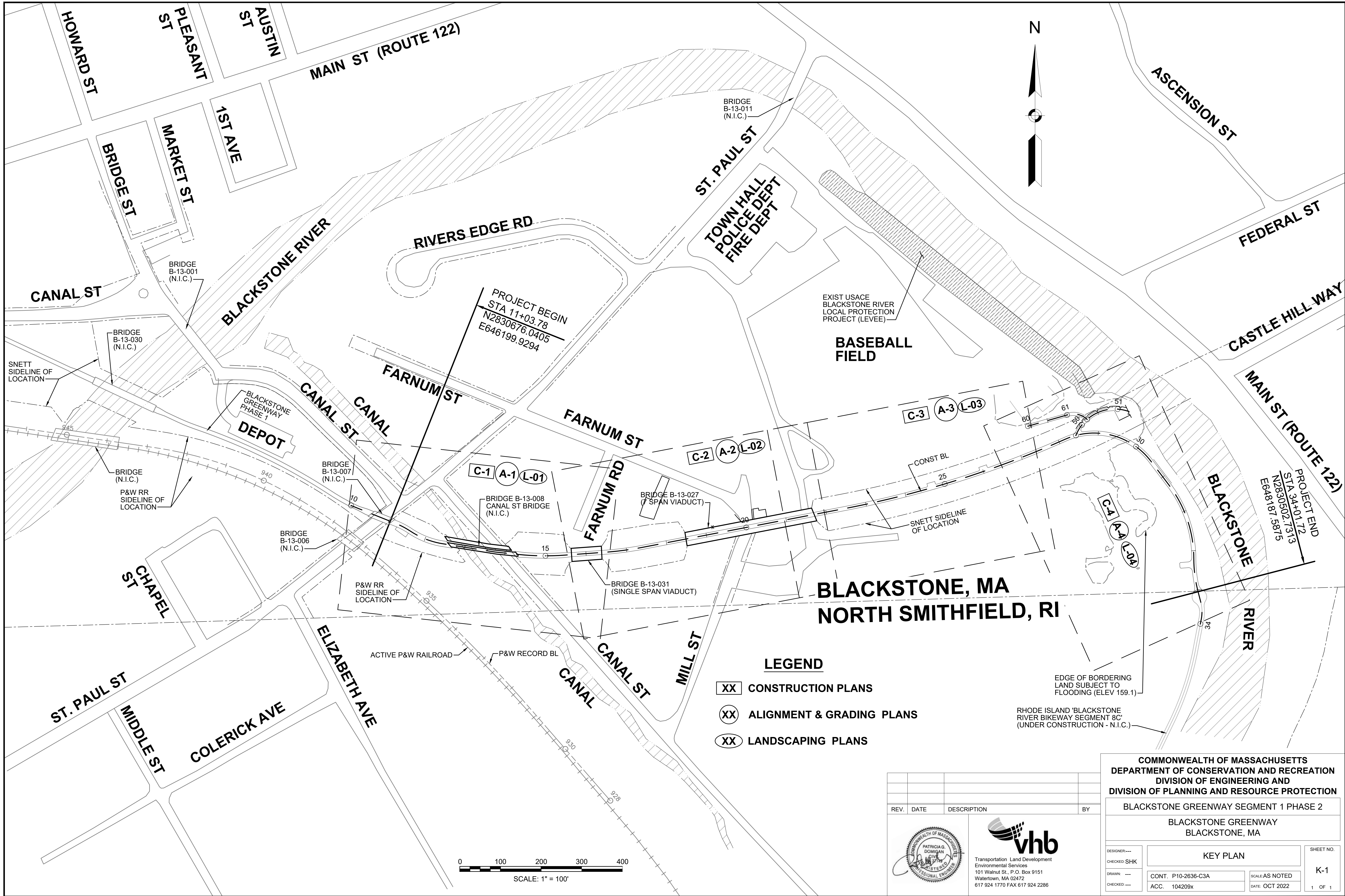
GENERAL NOTES:

- TOPOGRAPHICAL INFORMATION FROM AN ACTUAL FIELD SURVEY CONDUCTED BY VANASSE HANGEN BRUSTLIN, INC. OF WATERTOWN, MA BETWEEN THE DATES OF JULY 2010 AND JUNE 30, 2018.
- THE HORIZONTAL CONTROL IS BASED ON THE MASSACHUSETTS MAINLAND STATE PLANE COORDINATE SYSTEM AND THE NATIONAL GEODETIC SURVEY (NAD83). ALL ELEVATION IS US FEET, REFERENCED TO THE NORTH AMERICA VERTICAL DATUM OF 1988 (NAVD88).
- THE CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND GRADES IN THE FIELD BEFORE COMMENCING WORK AND PROMPTLY NOTIFY THE ENGINEER OF ANY DISCREPANCIES.
- THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.
- WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE ENGINEER FOR RESOLUTION OF THE CONFLICT.
- THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANIES.
- EXISTING UTILITY POLES WILL BE RELOCATED BY OTHERS IF REQUIRED.
- TREES AND SHRUBS WITHIN THE LIMITS OF GRADING SHALL BE REMOVED ONLY UPON APPROVAL OF THE ENGINEER UNLESS NOTED ON THE CONSTRUCTION DOCUMENTS.
- AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT NO EXPENSE TO THE OWNER.
- THE TERM "PROPOSED" (PROP) MEANS WORK TO BE CONSTRUCTED USING NEW MATERIALS OR, WHERE APPLICABLE, RE-USING EXISTING MATERIALS IDENTIFIED AS "REMOVE AND RESET" (R&R).
- ALL EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE RETAINED UNLESS INDICATED OTHERWISE ON THE DRAWINGS.
- ALL EXISTING STATE, COUNTY, CITY, AND TOWN LOCATION LINES AND PRIVATE PROPERTY LINES HAVE BEEN ESTABLISHED FROM AVAILABLE INFORMATION AND THEIR EXACT LOCATIONS ARE NOT GUARANTEED.
- ALL PROPOSED BOUNDS SHALL BE PLACED BY A LICENSED PROFESSIONAL SURVEYOR. THE CONTRACTOR SHALL EXERCISE DUE CARE WHEN WORKING AROUND ALL PROPERTY BOUNDS WHICH ARE TO REMAIN. SHOULD ANY DAMAGE TO A BOUND RESULT FROM THE ACTIONS OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE THE BOUND REPLACED AND/OR REALIGNED BY A LICENSED PROFESSIONAL SURVEYOR AS DIRECTED BY THE ENGINEER AT NO ADDITIONAL COST.
- DISPOSAL OF ALL SURPLUS MATERIAL SHALL BE AS APPROVED BY THE ENGINEER AND OWNER.
- ALL EXISTING RAILROAD BOUNDS, WITHIN THE LIMITS OF WORK, SHALL BE ADJUSTED TO FINISH GRADE. EXISTING BOUNDS WITHIN THE SHARED USE PATH PAVEMENT SHALL BE SET FLUSH WITH THE FINISH PAVEMENT SURFACE. ALL EXISTING DAMAGED BOUNDS SHALL BE REPLACED WITH NEW BOUNDS AND SET TO FINISH GRADE.

COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION DIVISION OF ENGINEERING AND DIVISION OF PLANNING AND RESOURCE PROTECTION			
BLACKSTONE GREENWAY SEGMENT 1 PHASE 2			
BLACKSTONE GREENWAY BLACKSTONE, MA			
DESIGNER: SH	LEGEND ABBREVIATIONS & GENERAL NOTES		SHEET NO.
CHECKED: SHK			LG-1
DRAWN: SH	CONT. P10-2636-C3A	SCALE: NTS	
CHECKED: SHK	ACC. 104208x	DATE: OCT 2022	1 OF 1



Transportation Land Development
Environmental Services
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Watertown, MA 02472
617 924 1770 FAX 617 924 2286



REV.	DATE	DESCRIPTION	BY





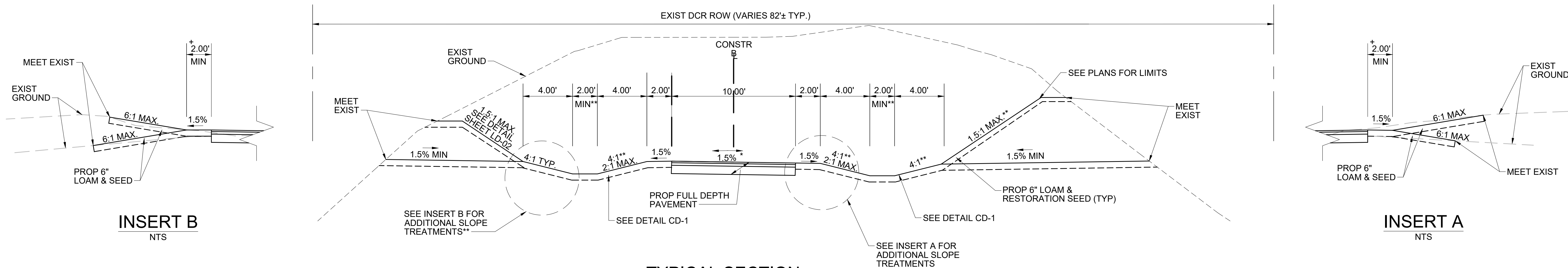
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**COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION AND RECREATION
DIVISION OF ENGINEERING AND
DIVISION OF PLANNING AND RESOURCE PROTECTION**

BLACKSTONE GREENWAY SEGMENT 1 PHASE 2

**BLACKSTONE GREENWAY
BLACKSTONE, MA**

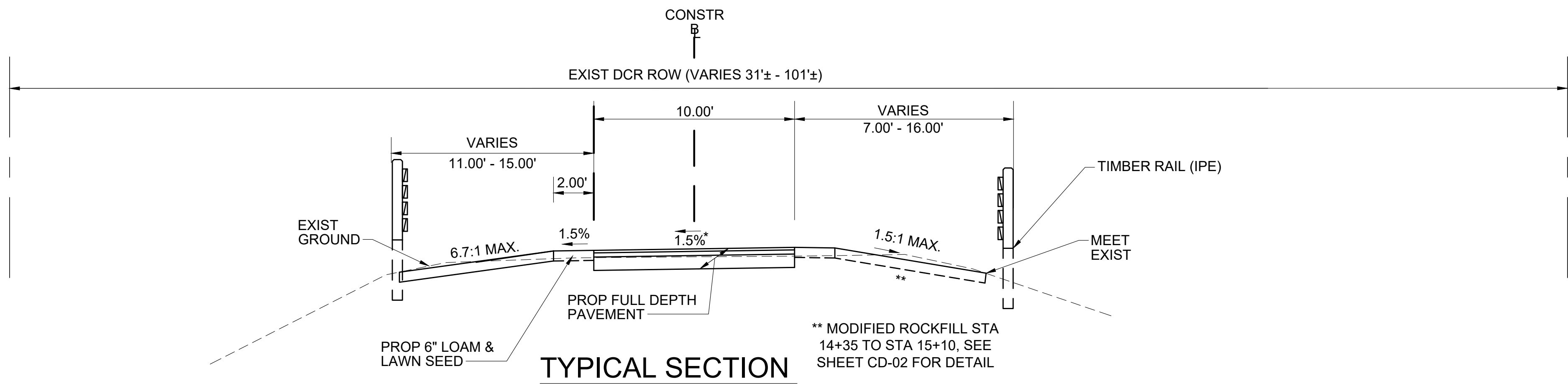
DESIGNER: ---	<p align="center">KEY PLAN</p> <p>CONT. P10-2636-C3A</p> <p>ACC. 104209x</p>	SCALE: AS NOTED	<p>SHEET NO. K-1 1 OF 1</p>
CHECKED: SHK		DATE: OCT 2022	
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TYPICAL SECTION

STA 21+69 +/- TO STA 34+10 +/-
NTS

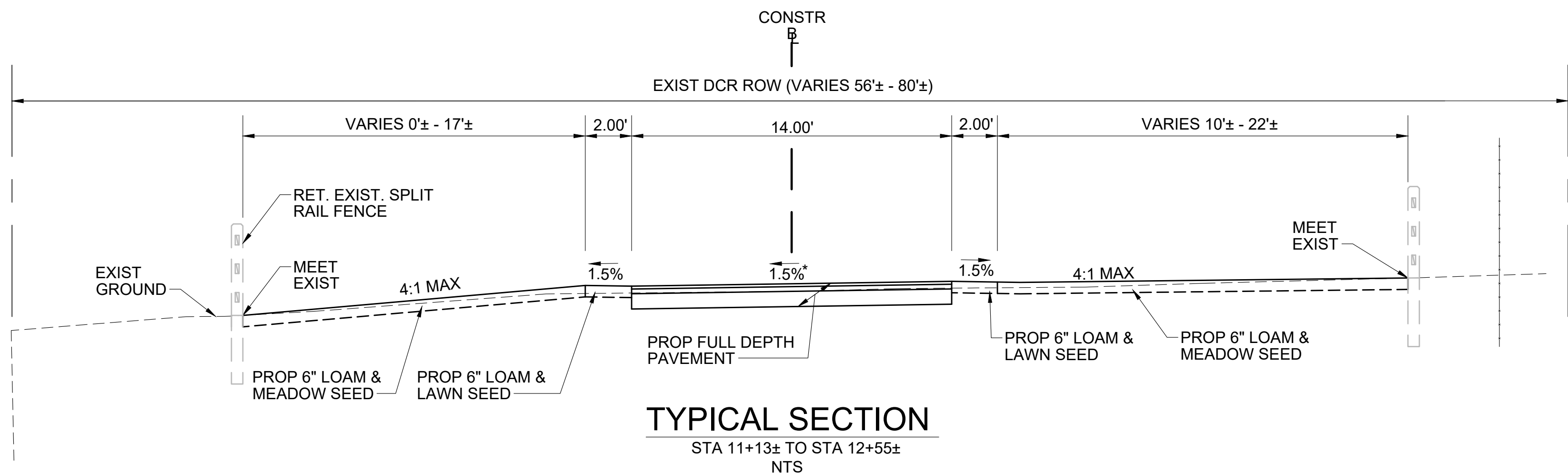
*TOLERANCE FOR CONSTRUCTION ±0.5% - SEE CROSS SECTIONS FOR CROSS SLOPES
**SEE CROSS SECTIONS AND GRADING PLANS FOR MORE INFORMATION



TYPICAL SECTION

STA 14+35± TO STA 15+63±
STA 16+39± TO STA 18+47±
NTS

*TOLERANCE FOR CONSTRUCTION ±0.5%



TYPICAL SECTION

STA 11+13± TO STA 12+55±
NTS

*TOLERANCE FOR CONSTRUCTION ±0.5%

PAVEMENT NOTES

PROPOSED FULL DEPTH PAVEMENT (PATH)

SURFACE: 1.5" SUPERPAVE SURFACE COURSE - 9.5 (SSC - 9.5)
INTERMEDIATE: 2.5" SUPERPAVE INTERMEDIATE COURSE - 12.5 (SIC - 12.5)
SUBBASE: 8" GRAVEL BORROW, TYPE B

PROPOSED LOAM & SEED

6" LOAM BORROW & SEEDING (SEE LANDSCAPE PLANS FOR SEED TYPE)
WITH JUTE MESH EROSION CONTROL FABRIC (2:1 AND STEEPER SLOPES)

PROPOSED HOT MIX ASPHALT DRIVEWAY

SURFACE: 1.5" SUPERPAVE SURFACE COURSE - 9.5 (SSC-9.5)
INTERMEDIATE: 2.5" SUPERPAVE INTERMEDIATE COURSE - 12.5 (SIC-12.5)
SUBBASE: 8" GRAVEL BORROW, TYBE b

PROPOSED CEMENT CONCRETE SIDEWALK AT DRIVEWAY

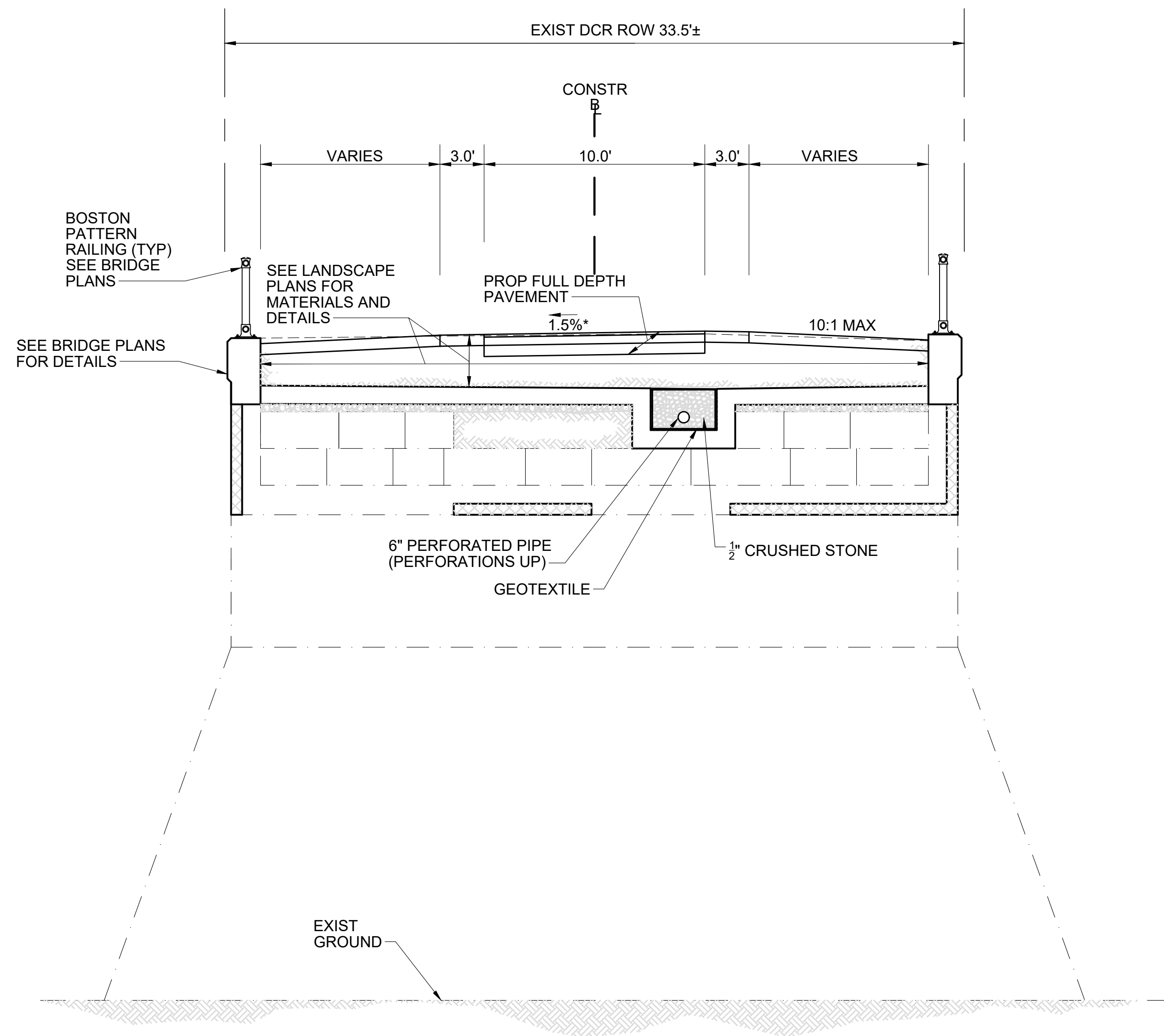
SURFACE: 6" CEMENT CONCRETE
AIR ENTRAINED 4000 PSI, 3/4", 610
SUBBASE: 8" GRAVEL BORROW (TYPE b)

NOTES:

- ALL HOT MIX ASPHALT PAVEMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 250 QUALITY ASSURANCE FOR HMA.
- ASPHALT EMULSION FOR TACK COAT (ITEM 452.) SHALL BE SPRAY APPLIED FOR TRIPLE OVERLAP COVERAGE IN ACCORDANCE WITH THE SUBSECTION 450.43 (G) OF THE STANDARD SPECIFICATIONS.
- HMA JOINT SEALANT (ITEM 453.) SHALL BE APPLIED IN SURFACE COURSE AT ALL VERTICAL COLD JOINTS PRIOR TOP HMA PAVING.
- ALL HOT MIX ASPHALT DRIVEWAYS SHALL BE ESTIMATED AND PAID FOR UNDER ITEM 702. OF STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES.
- SURFACE PAVING TO BE COMPLETED AT THE END OF THE PROJECT AND AS DIRECTED WHEN IT CAN BE PLACED IN ITS ENTIRETY.

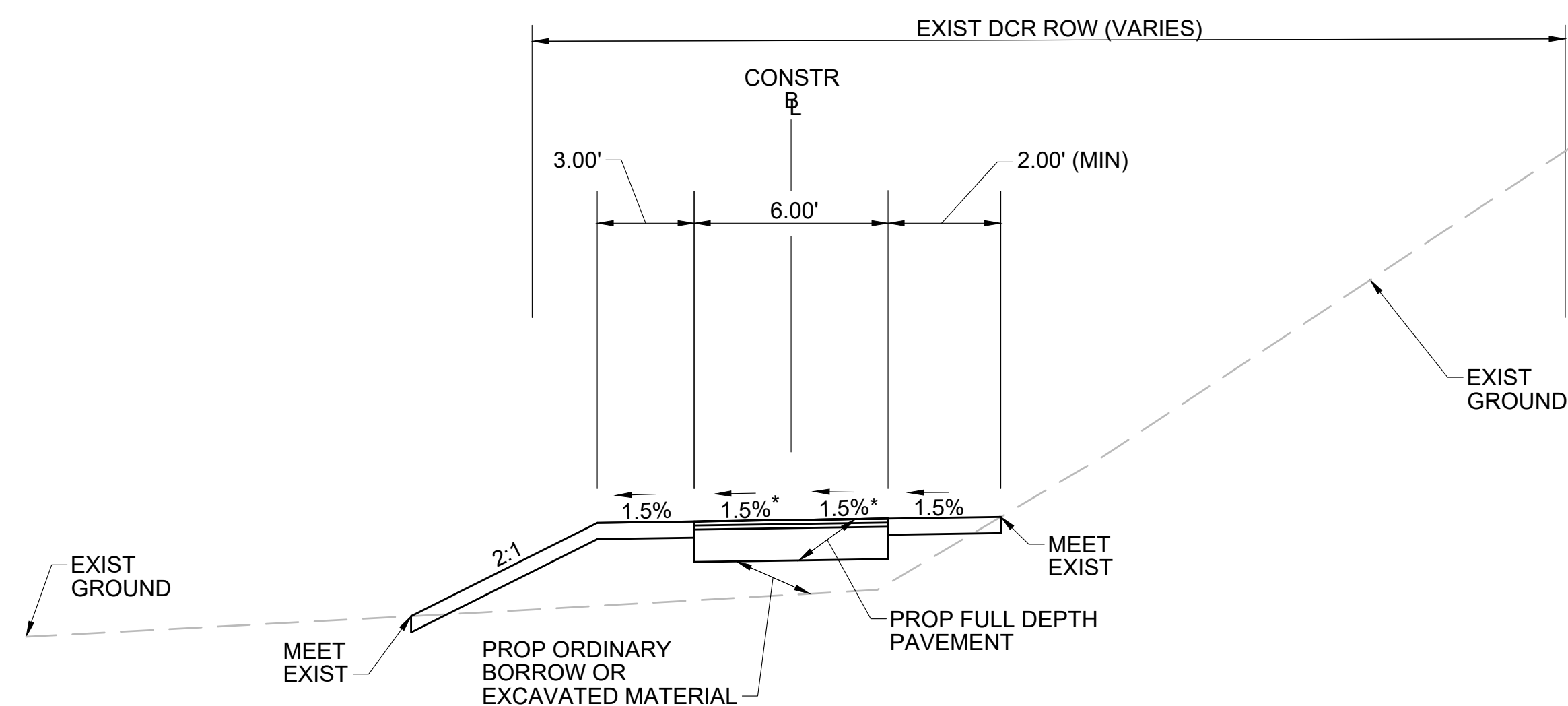
REV.	DATE	DESCRIPTION	BY

COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION DIVISION OF ENGINEERING AND DIVISION OF PLANNING AND RESOURCE PROTECTION			
BLACKSTONE GREENWAY SEGMENT 1 PHASE 2			
BLACKSTONE GREENWAY BLACKSTONE, MA			
DESIGNER: LSA CHECKED: SHK	TYPICAL SECTIONS & PVMT NOTES		SHEET NO.
DRAWN: LSA CHECKED: SHK	CONT. P10-2636-C3A ACC. 104210x	SCALE: AS NOTED DATE: OCT 2022	TS-1 1 OF 2



TYPICAL SECTION - VIADUCT

STA 15+64± TO STA 16+39± SINGLE SPAN VIADUCT
STA 18+47± TO STA 21+69± SEVEN SPAN VIADUCT
NTS
*TOLERANCE FOR CONSTRUCTION ±0.5%



TYPICAL SECTION - SIDEWALK SPUR

STA 60+00± TO STA 61+53±
NTS

*TOLERANCE FOR CONSTRUCTION ±0.5%

REV.	DATE	DESCRIPTION	BY

COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION DIVISION OF ENGINEERING AND DIVISION OF PLANNING AND RESOURCE PROTECTION			
BLACKSTONE GREENWAY SEGMENT 1 PHASE 2			
BLACKSTONE GREENWAY BLACKSTONE, MA			
DESIGNER: LSA	TYPICAL SECTIONS & PVMT NOTES		SHEET NO.
CHECKED: SHK			TS-2
DRAWN: LSA	CONT. P10-2636-C3A	SCALE: AS NOTED	2 OF 2
CHECKED: SHK	ACC. 104211x	DATE: OCT 2022	

BLACKSTONE GREENWAY PHASE 2 CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L1	10+00.00	2830714.7130	646103.6198		S68°07'21"E 118.74'	11+18.74	2830670.4691	646213.8044
C1	11+18.74	2830670.4691	646213.8044	R=200.00' L=40.72' Δ=11°40'00" T=20.43'		11+59.46	2830651.5645	646249.7956
C2	11+59.46	2830651.5645	646249.7956	R=200.00' L=85.73' Δ=24°33'31" T=43.53'		12+45.19	2830620.7108	646329.0745
L2	12+45.19	2830620.7108	646329.0745		S81°00'52"E 130.75'	13+75.94	2830600.2892	646458.2199
L3	13+75.94	2830600.2892	646458.2199		S84°04'54"E 57.01'	14+32.95	2830594.4107	646514.9270
C3	14+32.95	2830594.4107	646514.9270	R=650.00' L=113.84' Δ=10°02'06" T=57.07'		15+46.79	2830592.6231	646628.6112
L4	15+46.79	2830592.6231	646628.6112		N85°53'00"E 100.15'	16+46.94	2830599.8124	646728.5006
C4	16+46.94	2830599.8124	646728.5006	R=800.00' L=94.03' Δ=6°44'04" T=47.07'		17+40.97	2830612.0522	646821.6749
L5	17+40.97	2830612.0522	646821.6749		N79°08'57"E 502.10'	22+43.06	2830706.5742	647314.7936
C5	22+43.06	2830706.5742	647314.7936	R=2500.00' L=573.65' Δ=13°08'50" T=288.09'		28+16.71	2830877.9768	647860.9212
C6	28+16.71	2830877.9768	647860.9212	R=175.00' L=234.79' Δ=76°52'13" T=138.88'		30+51.50	2830823.7329	648071.6208
L6	30+51.50	2830823.7329	648071.6208		S37°07'40"E 74.04'	31+25.54	2830764.6991	648116.3127
C7	31+25.54	2830764.6991	648116.3127	R=300.00' L=193.96' Δ=37°02'39" T=100.51'		33+19.51	2830584.0590	648177.1247
C8	33+19.51	2830584.0590	648177.1247	R=325.00' L=82.22' Δ=14°29'40" T=41.33'		34+01.72	2830502.7313	648187.5876
L7	34+01.72	2830502.7313	648187.5876		S14°34'42"E 26.20'	34+27.93	2830477.3711	648194.1832
C9	34+27.93	2830477.3711	648194.1832	R=95.00' L=41.96' Δ=25°18'24" T=21.33'		34+69.89	2830435.7746	648195.5821

BLACKSTONE GREENWAY II - SPUR CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
C10	49+70.00	2830887.1737	647886.9718	R=102.44' L=158.83' Δ=88°50'00" T=100.38'		51+28.83	2830945.8861	648017.7966

BLACKSTONE GREENWAY II- SIDEWALK SPUR CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L9	60+00.00	2830910.0159	647768.9892		N74°00'38"E 102.38'	61+02.38	2830938.2175	647867.4082
C11	61+02.38	2830938.2175	647867.4082	R=49.00' L=50.88' Δ=59°29'42" T=28.00'		61+53.26	2830926.6532	647914.6386

NOTE:
1. FOR CONSTRUCTION BASELINE SEE SHEETS A-1 - A-4.

REV.	DATE	DESCRIPTION	BY



TRANSPORTATION
LAND DEVELOPMENT
ENVIRONMENTAL SERVICES
101 WALNUT ST., P.O. BOX 9151
WATERTOWN, MA 02472
617 924 1770 FAX 617 924 2286



COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION AND RECREATION
DIVISION OF ENGINEERING AND
DIVISION OF PLANNING AND RESOURCE PROTECTION

BLACKSTONE GREENWAY SEGMENT 1 PHASE 2

BLACKSTONE GREENWAY
BLACKSTONE, MA

DESIGNER:LSA
CHECKED: SHK

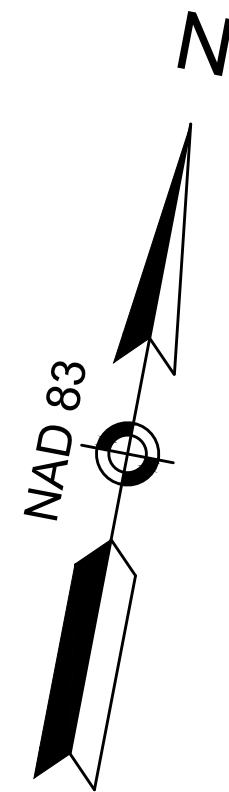
DRAWN: SH
CHECKED: SHK

BASELINE & TRAVERSE DATA

CONT. P10-2636-C3A
ACC. 104212x

SCALE: NTS
DATE: OCT 2022

SHEET NO.
BL-1
1 OF 1



FARNUM RD

FARNUM ST

MILL ST

BLACKSTONE, MA
NORTH SMITHFIELD, RI

0 20 50 100
SCALE: 1" = 20'

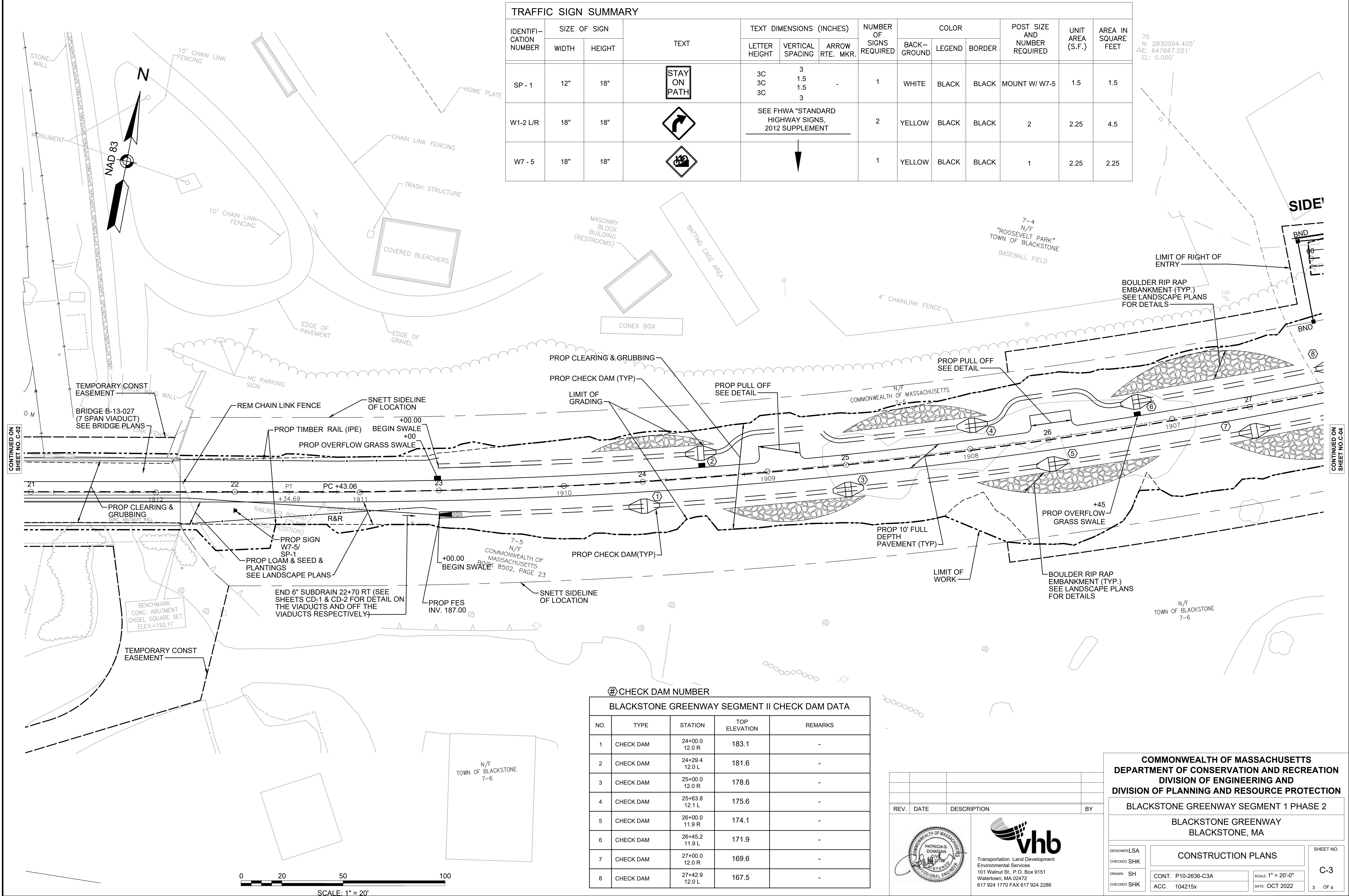




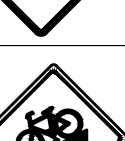
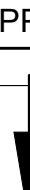
vhb
Transportation Land Development
Environmental Services
101 Walnut St., P.O. Box 9151
Watertown, MA 02472
617 924 1770 FAX 617 924 2286

COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION DIVISION OF ENGINEERING AND DIVISION OF PLANNING AND RESOURCE PROTECTION			
BLACKSTONE GREENWAY SEGMENT 1 PHASE 2			
BLACKSTONE GREENWAY BLACKSTONE, MA			
CONSTRUCTION PLANS			
DESIGNER:LSA	SHEET NO.		C-2 2 OF 4
CHECKED: SHK			
DRAWN: SH			
CHECKED: SHK			
CONT. P10-2636-C3A		SCALE: 1" = 20'-0"	
ACC. 104214x		DATE: OCT 2022	

CONTINUED ON
SHEET NO. C-01

CONTINUED ON
SHEET NO. C-03



TRAFFIC SIGN SUMMARY													
IDENTIFI- CATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (INCHES)			NUMBER OF SIGNS REQUIRED	COLOR			POST SIZE AND NUMBER REQUIRED	UNIT AREA (S.F.)	AREA IN SQUARE FEET
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.		BACK- GROUND	LEGEND	BORDER			
SP - 1	12"	18"		3C 3C 3C	3 1.5 1.5 3	-	1	WHITE	BLACK	BLACK	MOUNT W/ W7-5	1.5	1.5
W1-2 L/R	18"	18"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2012 SUPPLEMENT"			2	YELLOW	BLACK	BLACK	2	2.25	4.5
W7 - 5	18"	18"					1	YELLOW	BLACK	BLACK	1	2.25	2.25

BLACKSTONE GREENWAY SEGMENT II CHECK DAM DATA				
NO.	TYPE	STATION	TOP ELEVATION	REMARKS
1	CHECK DAM	24+00.0 12.0 R	183.1	-
2	CHECK DAM	24+29.4 12.0 L	181.6	-
3	CHECK DAM	25+00.0 12.0 R	178.6	-
4	CHECK DAM	25+63.8 12.1 L	175.6	-
5	CHECK DAM	26+00.0 11.9 R	174.1	-
6	CHECK DAM	26+45.2 11.9 L	171.9	-
7	CHECK DAM	27+00.0 12.0 R	169.6	-
8	CHECK DAM	27+42.9 12.0 L	167.5	-

REV.	DATE	DESCRIPTION	BY

Transportation Land Development
Environmental Services
101 Walnut St., P.O. Box 9151
Watertown, MA 02472
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COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION AND RECREATION
DIVISION OF ENGINEERING AND
DIVISION OF PLANNING AND RESOURCE PROTECTION

BLACKSTONE GREENWAY SEGMENT 1 PHASE 2

BLACKSTONE GREENWAY
BLACKSTONE, MA

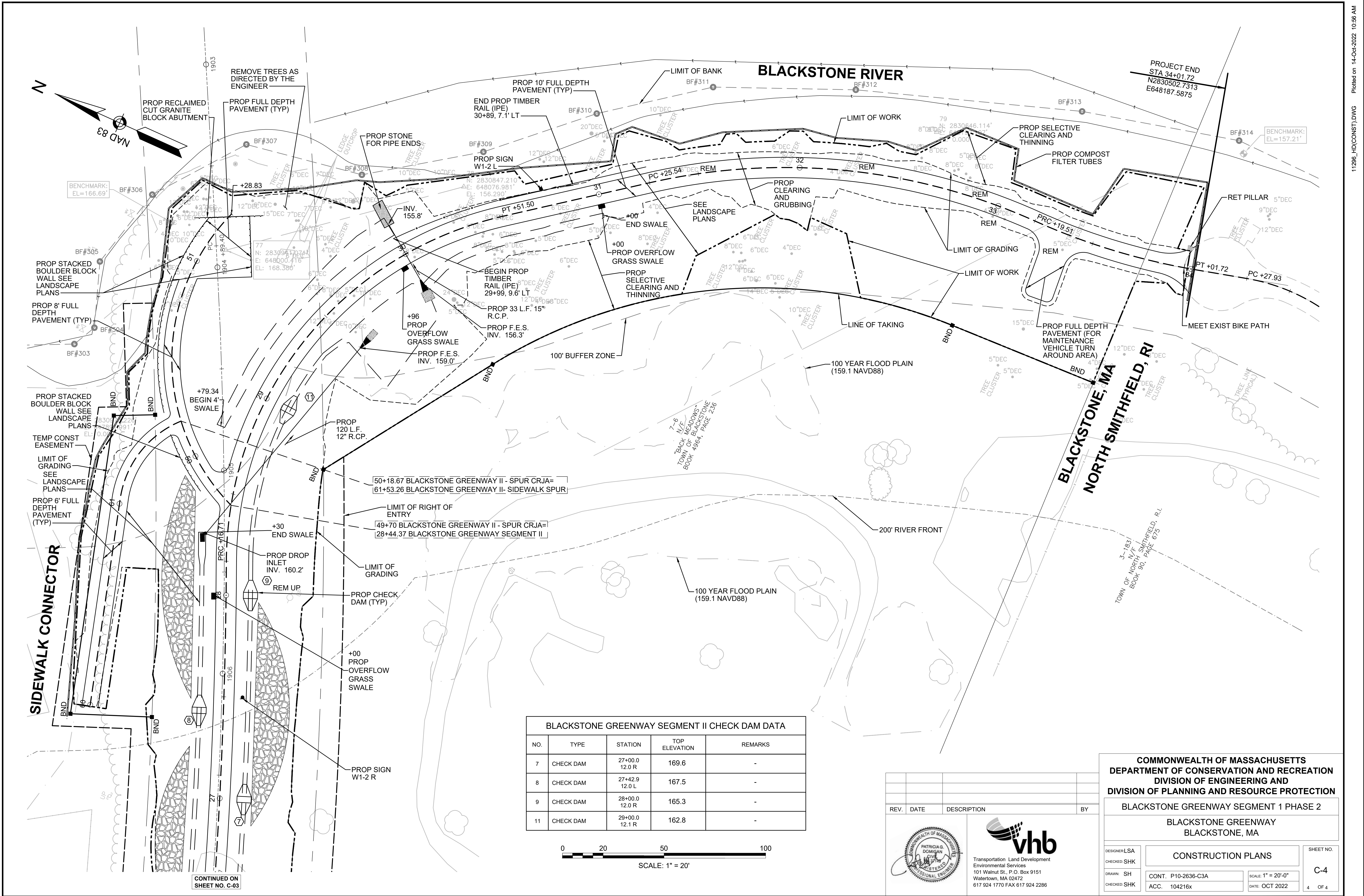
DESIGNER: LSA
CHECKED: SHK

DRAWN: SH
CHECKED: SHK

CONT: P10-2636-C3A
ACC: 104215x

SCALE: 1" = 20'-0"
DATE: OCT 2022


SHEET NO.
C-3
3 OF 4



BLACKSTONE GREENWAY SEGMENT II CHECK DAM DATA				
NO.	TYPE	STATION	TOP ELEVATION	REMARKS
7	CHECK DAM	27+00.0 12.0 R	169.6	-
8	CHECK DAM	27+42.9 12.0 L	167.5	-
9	CHECK DAM	28+00.0 12.0 R	165.3	-
11	CHECK DAM	29+00.0 12.1 R	162.8	-

0 20 50 100
SCALE: 1" = 20'

REV. DATE DESCRIPTION BY



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Environmental Services
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617 924 1770 FAX 617 924 2286

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION AND RECREATION
DIVISION OF ENGINEERING AND
DIVISION OF PLANNING AND RESOURCE PROTECTION

BLACKSTONE GREENWAY SEGMENT 1 PHASE 2

BLACKSTONE GREENWAY
BLACKSTONE, MA

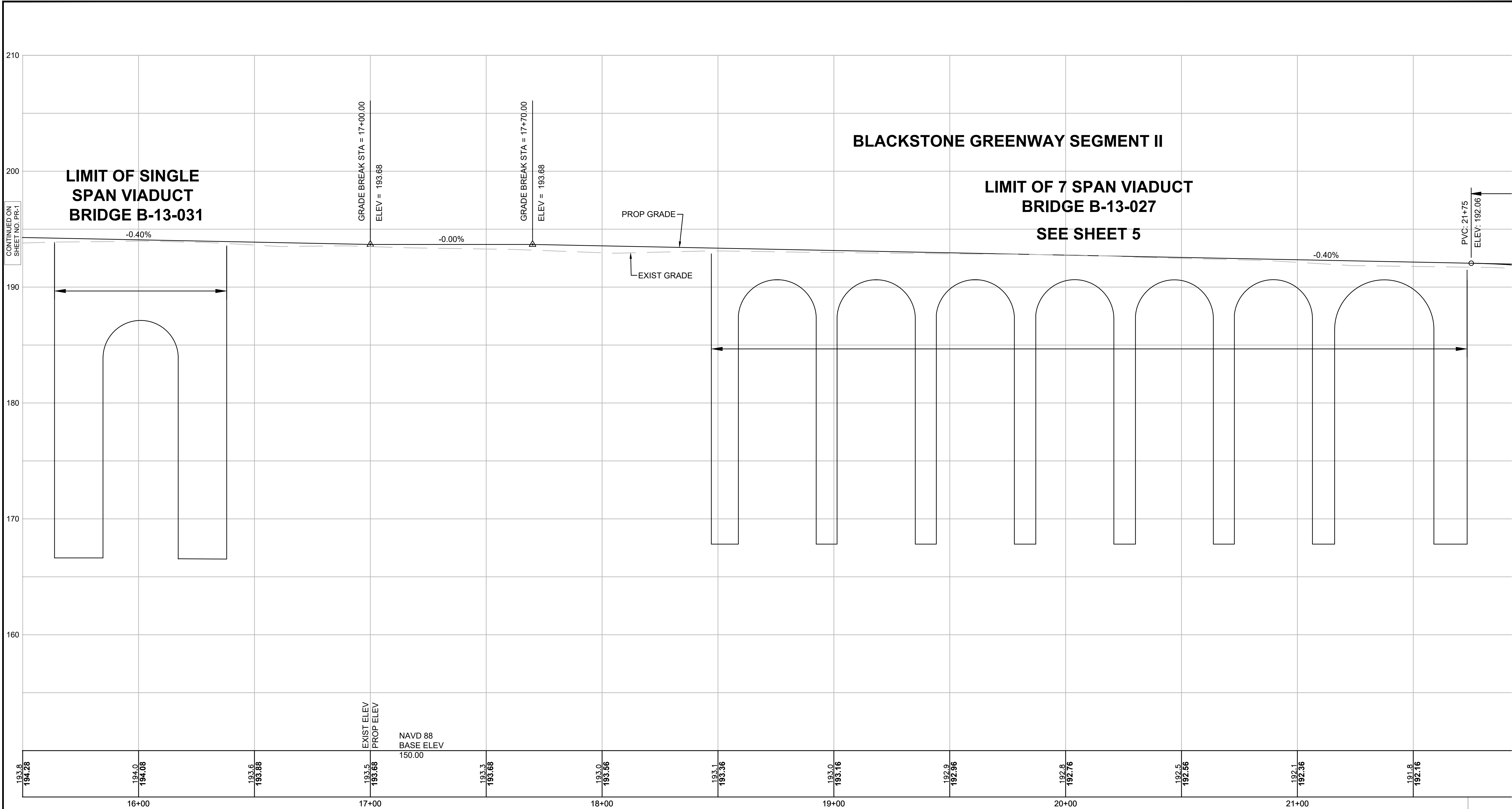
DESIGNER: LSA
CHECKED: SHK
DRAWN: SH
CHECKED: SHK

CONSTRUCTION PLANS

CONT: P10-2636-C3A
ACC: 104216x

SCALE: 1" = 20'-0"
DATE: OCT 2022

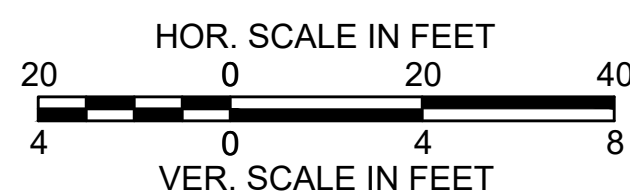
SHEET NO.
C-4
4 OF 4



CONTINUED ON
SHEET NO. PR-1

CONTINUED ON
SHEET NO. PR-3

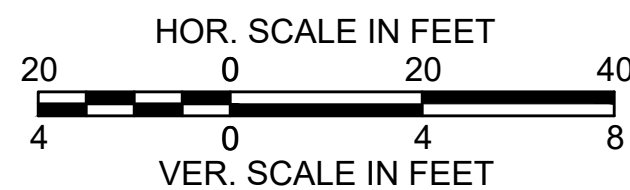
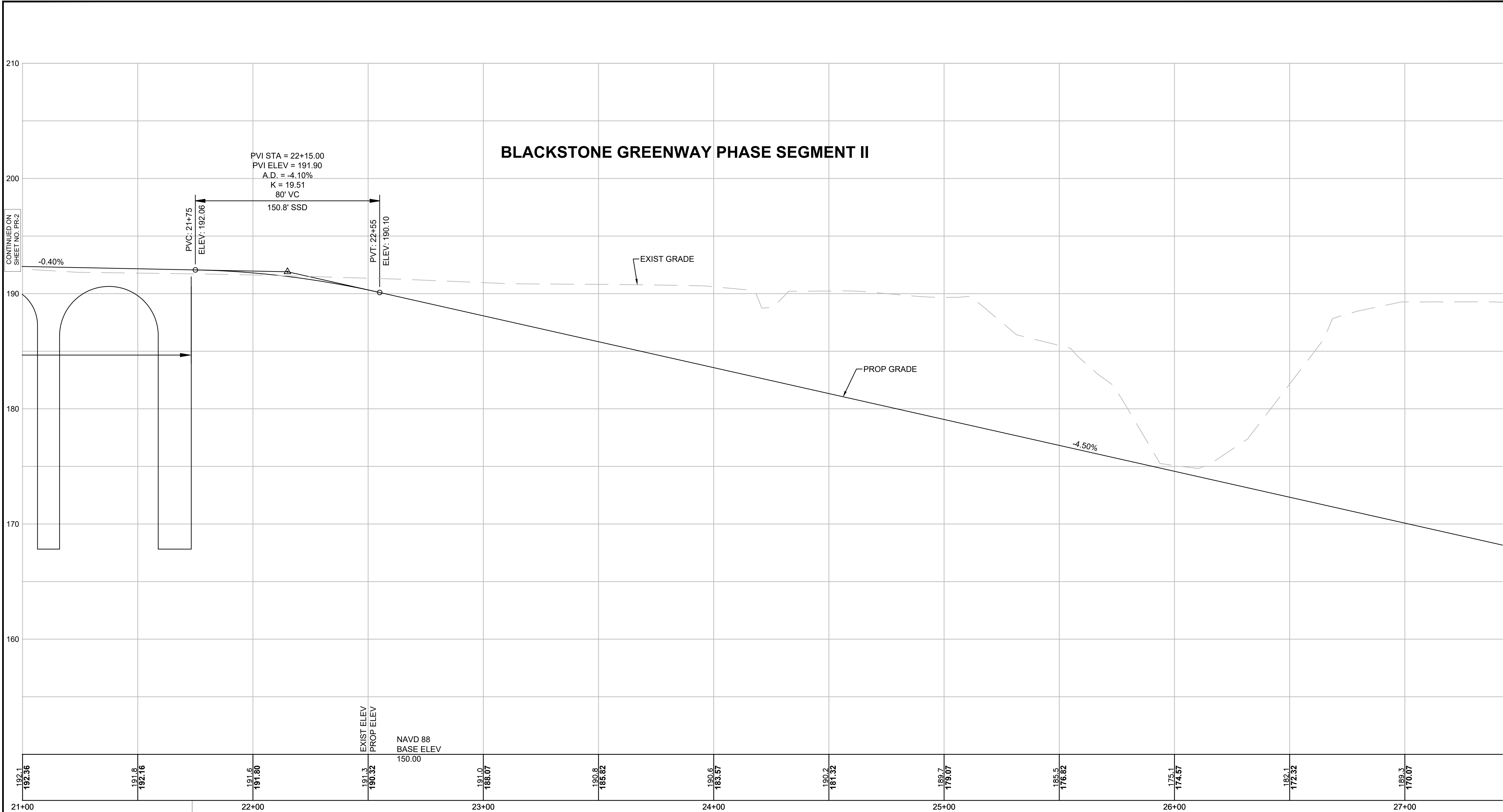
Temp. Benchmark
Conc. Abutment
Chisel Square Set
Elevation = 192.11'
Sta. 21+73.62, 16.28' RT



FOR CONSTRUCTION PLANS:
SEE SHEETS C-1 - C-2

REV.	DATE	DESCRIPTION	BY

COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION DIVISION OF ENGINEERING AND DIVISION OF PLANNING AND RESOURCE PROTECTION		
BLACKSTONE GREENWAY SEGMENT 1 PHASE 2		
BLACKSTONE GREENWAY BLACKSTONE, MA		
DESIGNER: LSA	PROFILES	SHEET NO. PR-2 2 OF 6
CHECKED: SHK		
DRAWN: SH		
CHECKED: SHK		
CONT. P10-2636-C3A ACC. 104218x		SCALE: 1"=20' H/ 1"=4' V DATE: OCT 2022



FOR CONSTRUCTION PLANS:
SEE SHEETS C-3

REV.	DATE	DESCRIPTION	BY



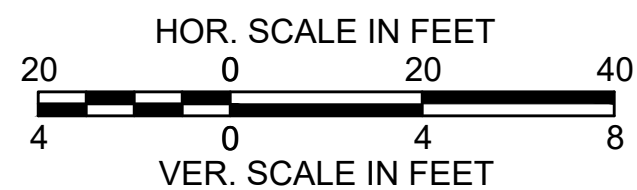
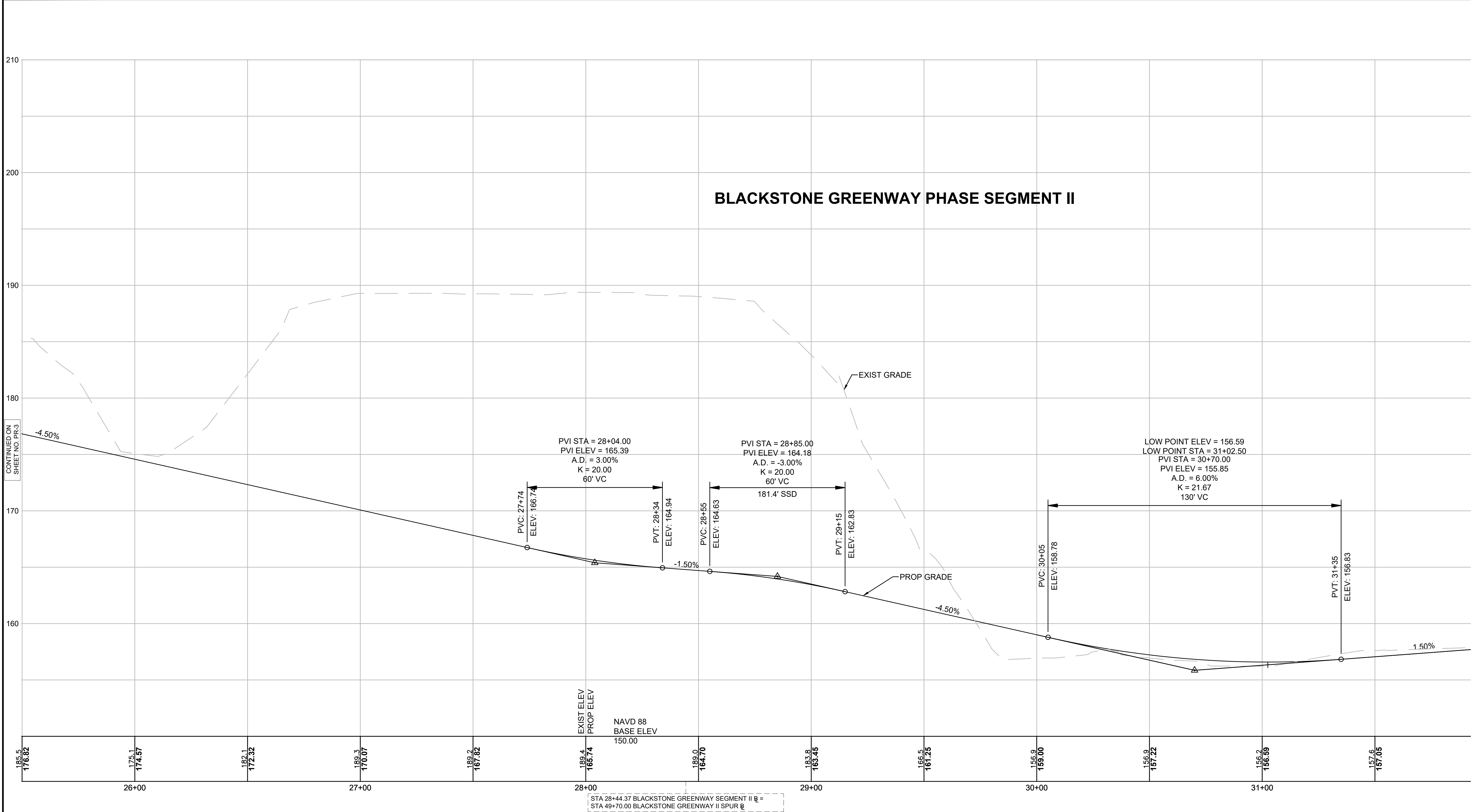
Transportation Land Development
Environmental Services
101 Walnut St., P.O. Box 9151
Watertown, MA 02472
617 924 1770 FAX 617 924 2286

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION AND RECREATION
DIVISION OF ENGINEERING AND
DIVISION OF PLANNING AND RESOURCE PROTECTION

BLACKSTONE GREENWAY SEGMENT 1 PHASE 2

BLACKSTONE GREENWAY
BLACKSTONE, MA

DESIGNER: LSA	PROFILES	SHEET NO. PR-3 3 OF 6
CHECKED: SHK		
DRAWN: SH		
CHECKED: SHK	CONT. P10-2636-C3A ACC. 104219x	SCALE: 1"=20' H/ 1"=4' V DATE: OCT 2022



FOR CONSTRUCTION PLANS:
SEE SHEETS C-3 - C-4

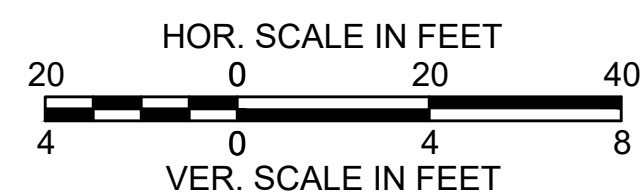
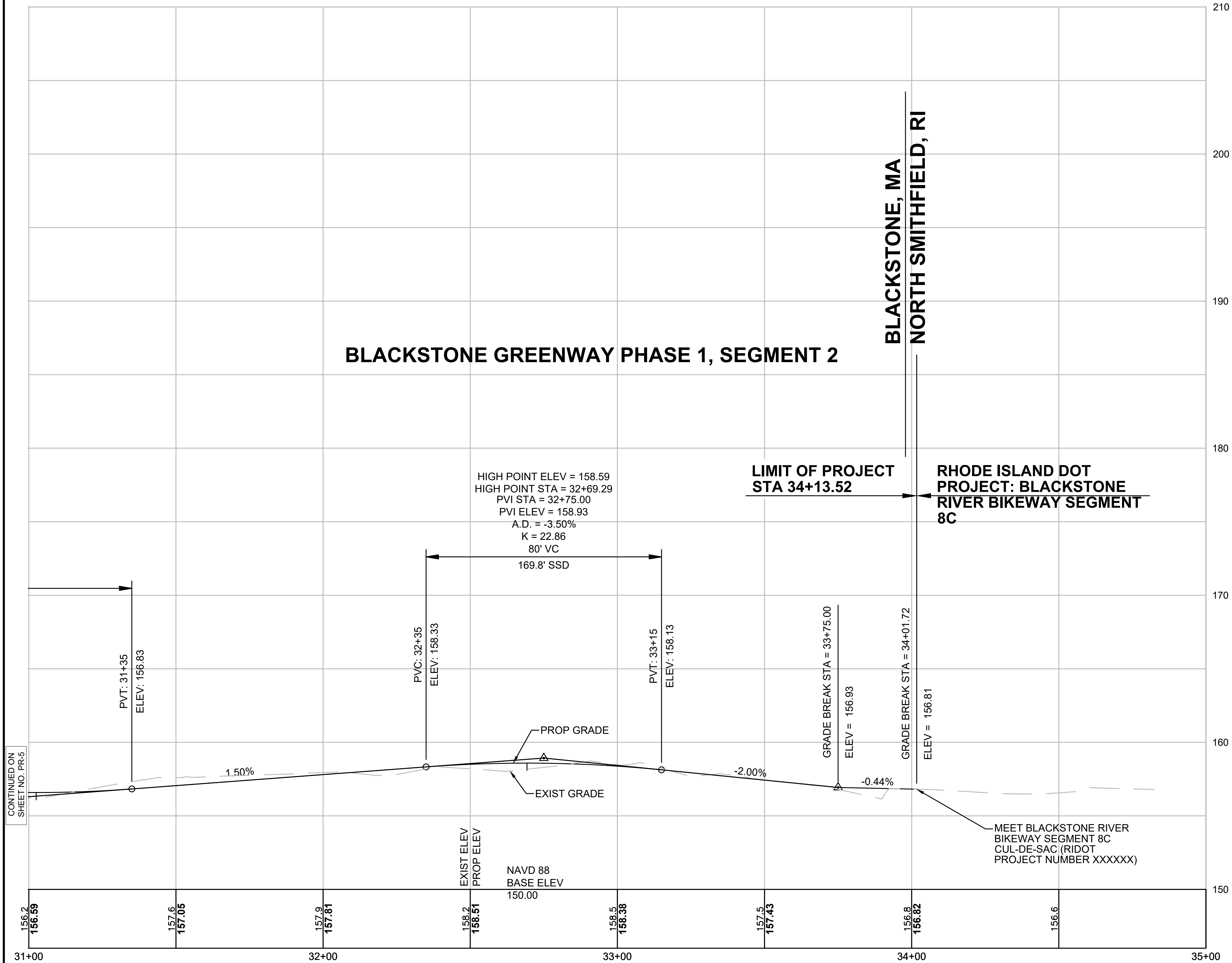
REV.	DATE	DESCRIPTION	BY





Transportation Land Development
Environmental Services
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617 924 1770 FAX 617 924 2286

COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION DIVISION OF ENGINEERING AND DIVISION OF PLANNING AND RESOURCE PROTECTION			
BLACKSTONE GREENWAY SEGMENT 1 PHASE 2			
BLACKSTONE GREENWAY BLACKSTONE, MA			
DESIGNER: LSA	PROFILES		SHEET NO.
CHECKED: SHK			PR-4
DRAWN: SH	CONT. P10-2636-C3A	SCALE: 1"=20' H/ 1"=4' V	4 OF 6
CHECKED: SHK	ACC. 104220x	DATE: OCT 2022	



FOR CONSTRUCTION PLANS:
SEE SHEET C-4

REV.	DATE	DESCRIPTION	BY



Transportation Land Development
Environmental Services
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Watertown, MA 02472
617 924 1770 FAX 617 924 2286

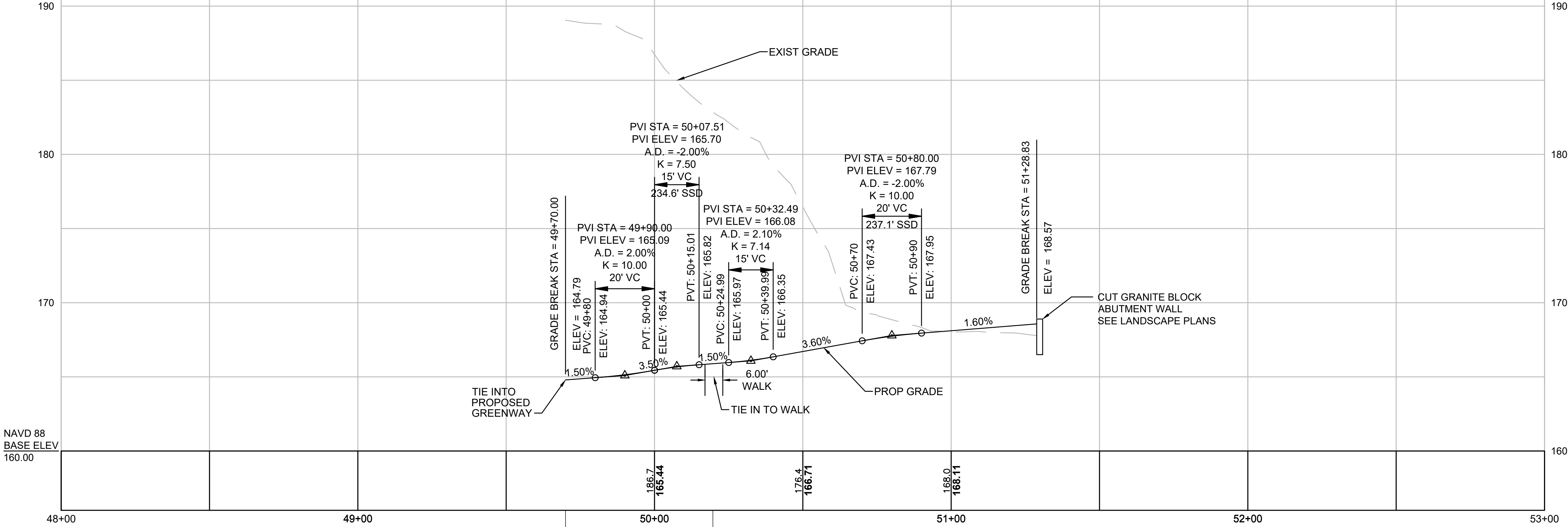
COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION AND RECREATION
DIVISION OF ENGINEERING AND
DIVISION OF PLANNING AND RESOURCE PROTECTION

BLACKSTONE GREENWAY SEGMENT 1 PHASE 2

BLACKSTONE GREENWAY
BLACKSTONE, MA

DESIGNER:LSA	PROFILES	SHEET NO. PR-5 5 OF 6
CHECKED: SHK		
DRAWN: SH		
CHECKED: SHK		
CONT. P10-2636-C3A	SCALE: 1"=20' H/ 1"=4' V	DATE: OCT 2022
ACC. 104221x		

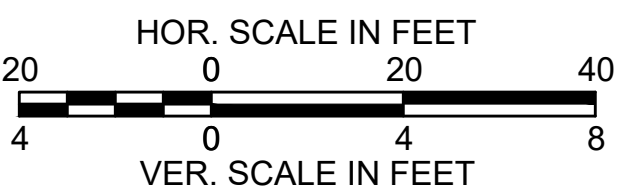
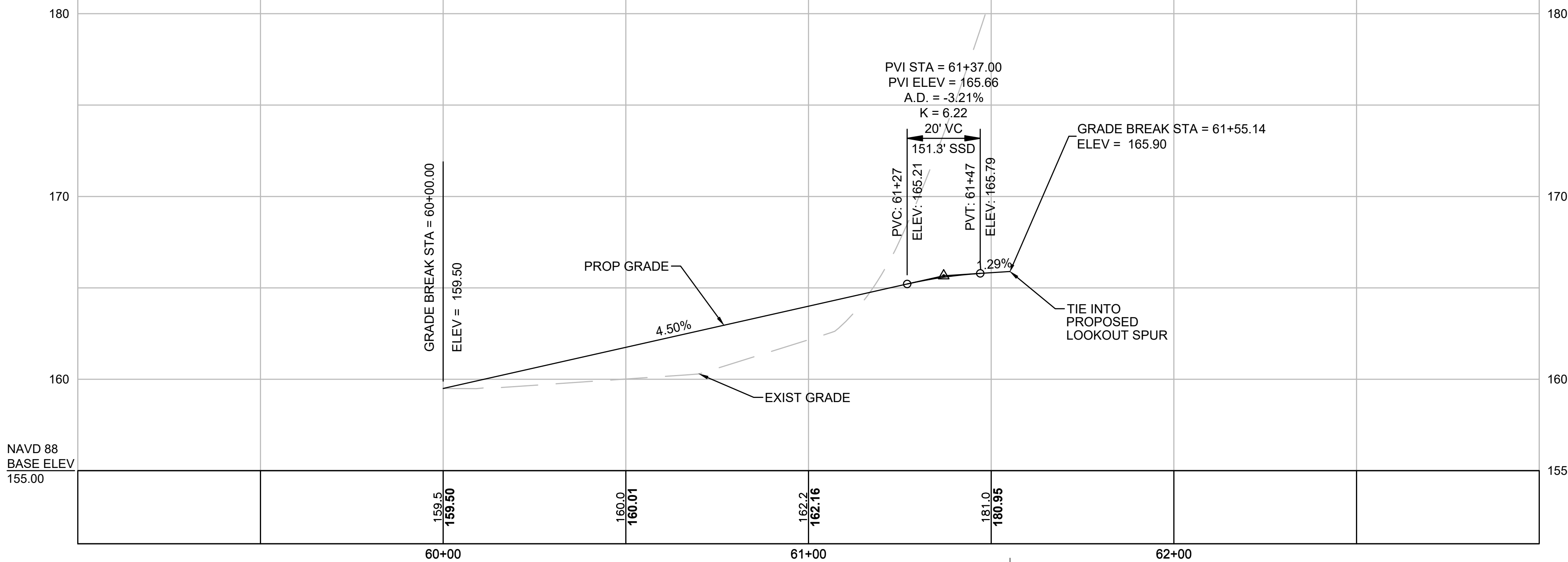
BLACKSTONE GREENWAY PHASE 1, SEGMENT 2
- LOOKOUT SPUR



STA 28+44.37 BLACKSTONE GREENWAY SEGMENT II SPUR
STA 49+70.00 BLACKSTONE GREENWAY II SPUR

50+19.67 BLACKSTONE GREENWAY II - SPUR
61+55.14 BLACKSTONE GREENWAY II - SIDEWALK SPUR

BLACKSTONE GREENWAY PHASE 1, SEGMENT 2
- SIDEWALK CONNECTOR

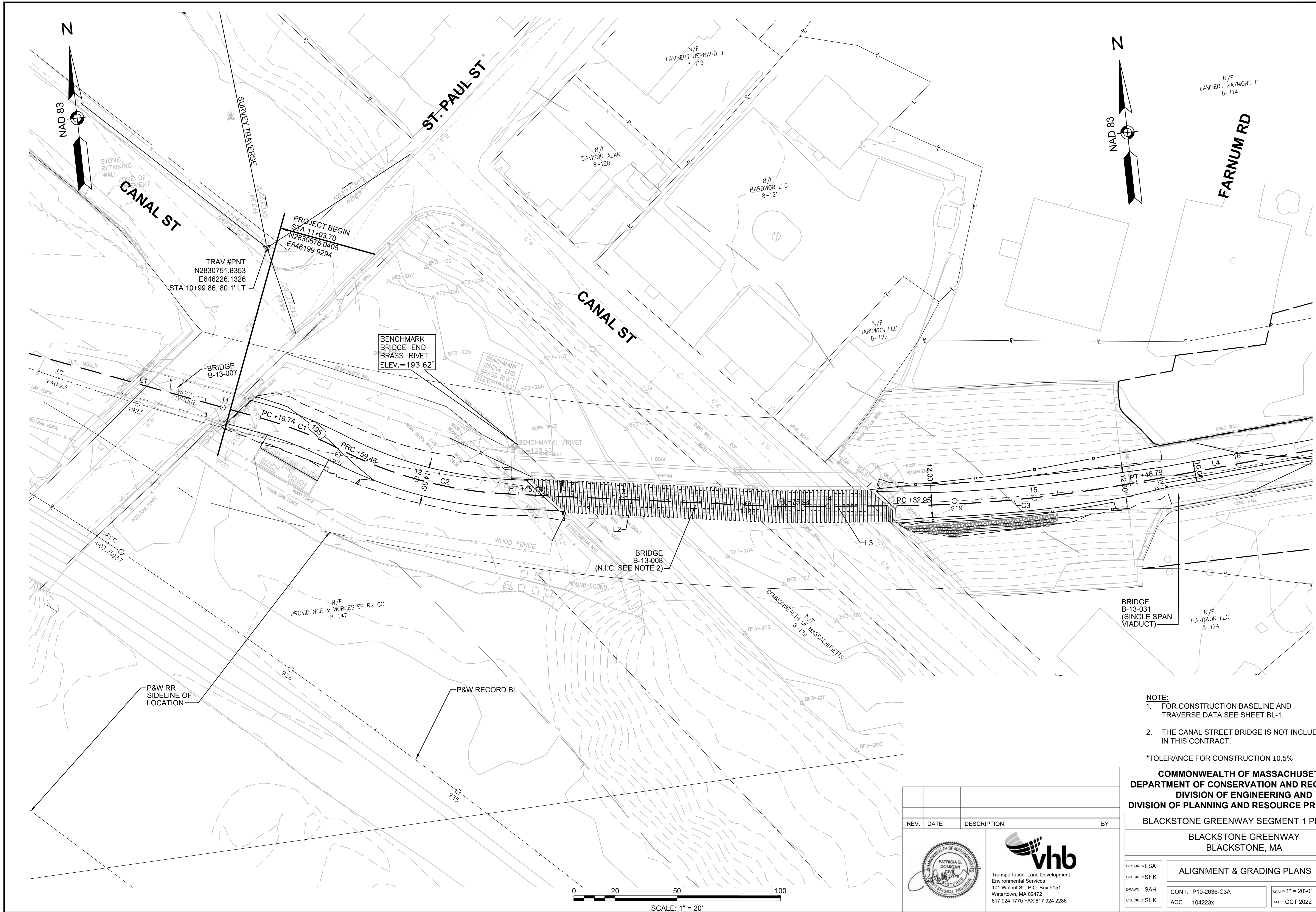


50+19.67 BLACKSTONE GREENWAY II - SPUR
61+55.14 BLACKSTONE GREENWAY II - SIDEWALK SPUR

FOR CONSTRUCTION PLANS:
SEE SHEET C-4



COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION DIVISION OF ENGINEERING AND DIVISION OF PLANNING AND RESOURCE PROTECTION			
BLACKSTONE GREENWAY SEGMENT 1 PHASE 2			
BLACKSTONE GREENWAY BLACKSTONE, MA			
DESIGNER: LSA	PROFILES		SHEET NO.
CHECKED: SHK			PR-6
DRAWN: SH	CONT. P10-2636-C3A	SCALE: 1"=20' H/ 1"=4' V	
CHECKED: SHK	ACC. 104222x	DATE: OCT 2022	6 OF 6



- NOTE:
- FOR CONSTRUCTION BASELINE AND TRAVERSE DATA SEE SHEET BL-1.
 - THE CANAL STREET BRIDGE IS NOT INCLUDED IN THIS CONTRACT.

*TOLERANCE FOR CONSTRUCTION $\pm 0.5\%$

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION AND RECREATION
DIVISION OF ENGINEERING AND
DIVISION OF PLANNING AND RESOURCE PROTECTION

BLACKSTONE GREENWAY SEGMENT 1 PHASE 2

BLACKSTONE GREENWAY
BLACKSTONE, MA

ALIGNMENT & GRADING PLANS

DESIGNER: LSA
CHECKED: SHK
DRAWN: SAH
CHECKED: SHK

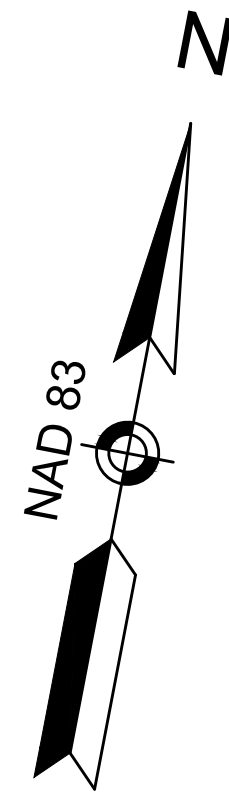
CONT. P10-2636-C3A
ACC. 104223x

SCALE: 1" = 20'-0"
DATE: OCT 2022

SHEET NO.
A-1
1 OF 4

REV.	DATE	DESCRIPTION	BY

CONTINUED ON
SHEET NO. C-2



N/F
LAMBERT RAYMOND H
8-114

FARNUM RD

FARNUM ST

TRAV PNT
N2830751.6822
E646971.2939
STA 19+14.2, 108.967' LT

N/F
HARRIS CALVIN
8-108

N/F
SCHIAVONE ROBERT M
8-109

N/F
MARCHAND RICHARD
8-111

8-112
N/F
LEO & ELAINE
COUTU
BOOK 9673, PAGE 378

TRAV PNT
N2830852.6326
E647228.0954
STA 21+85.41, 159.768' RT

SURVEY TRAVERSE

STONE WALL

MONUMENT

BLOCK WING WALL

CHAIN LINK FENCE

N/F
TORREY SAMUEL S III
8-113

BRIDGE B-13-027
(7 SPAN VIADUCT)

N/F
COUTU LEO M
8-112

BENCHMARK CONC.
ABUTMENT CHISEL
SQUARE SET
ELEV.=192.11'

NOTE:
1. FOR CONSTRUCTION BASELINE AND
TRAVERSE DATA SEE SHEET BL-1.
*TOLERANCE FOR CONSTRUCTION $\pm 0.5\%$

BLACKSTONE, MA
NORTH SMITHFIELD, RI

MILL ST

0 20 50 100
SCALE: 1" = 20'

REV.	DATE	DESCRIPTION	BY

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION AND RECREATION
DIVISION OF ENGINEERING AND
DIVISION OF PLANNING AND RESOURCE PROTECTION

BLACKSTONE GREENWAY SEGMENT 1 PHASE 2
BLACKSTONE GREENWAY
BLACKSTONE, MA

DESIGNER:LSA
CHECKED: SHK
DRAWN: SAH
CHECKED: SHK

CONT: P10-2636-C3A
ACC: 104224x

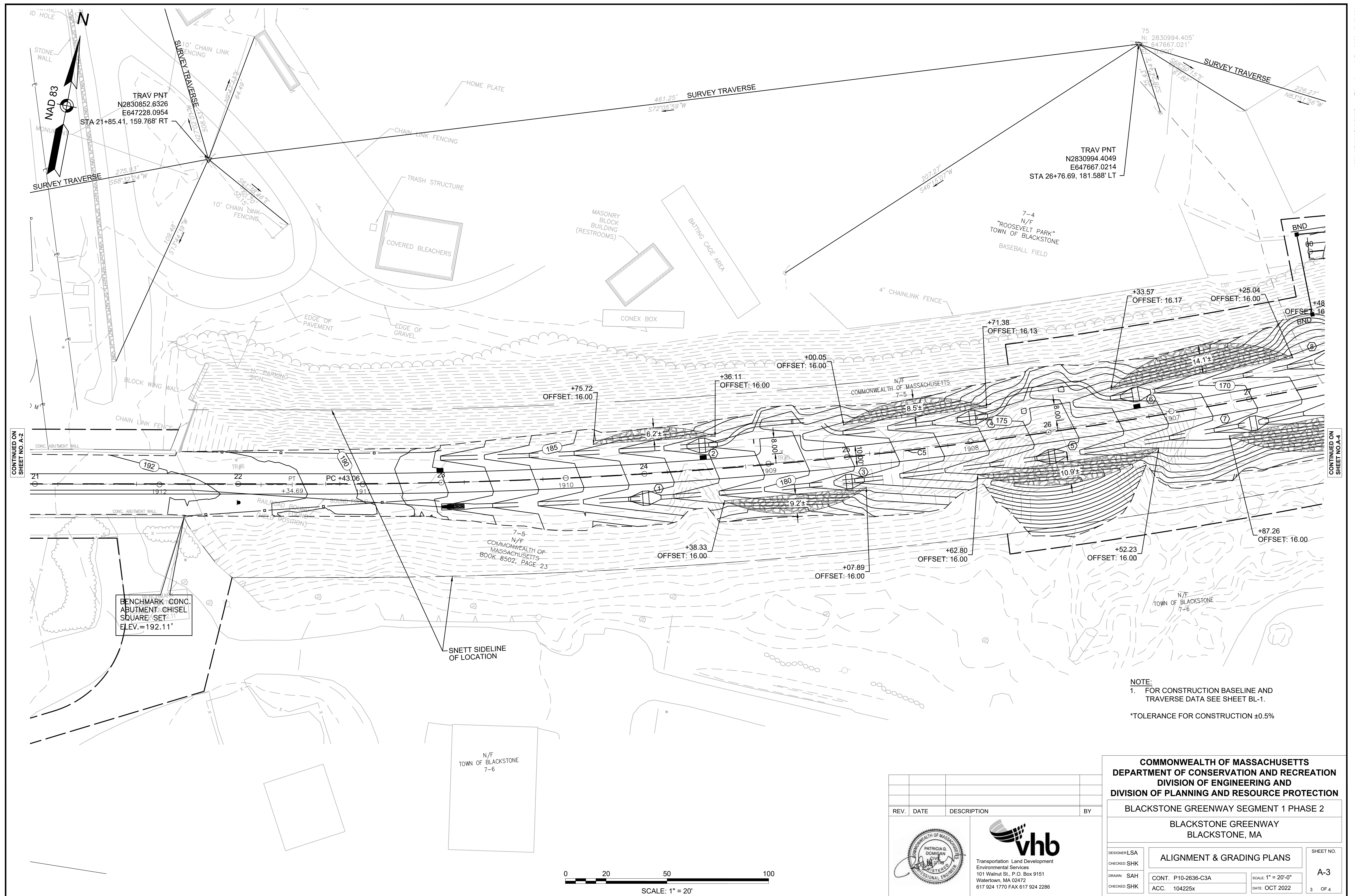
SCALE: 1" = 20'-0"
DATE: OCT 2022

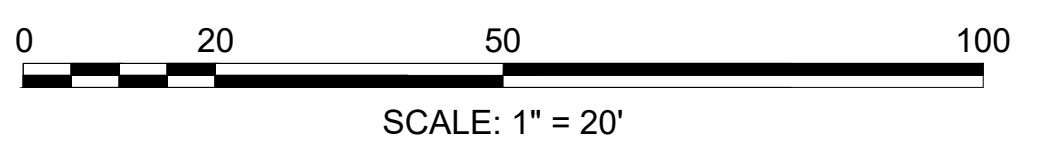
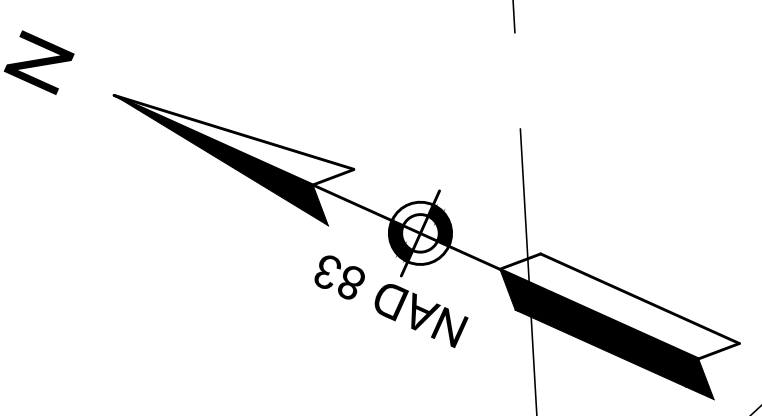
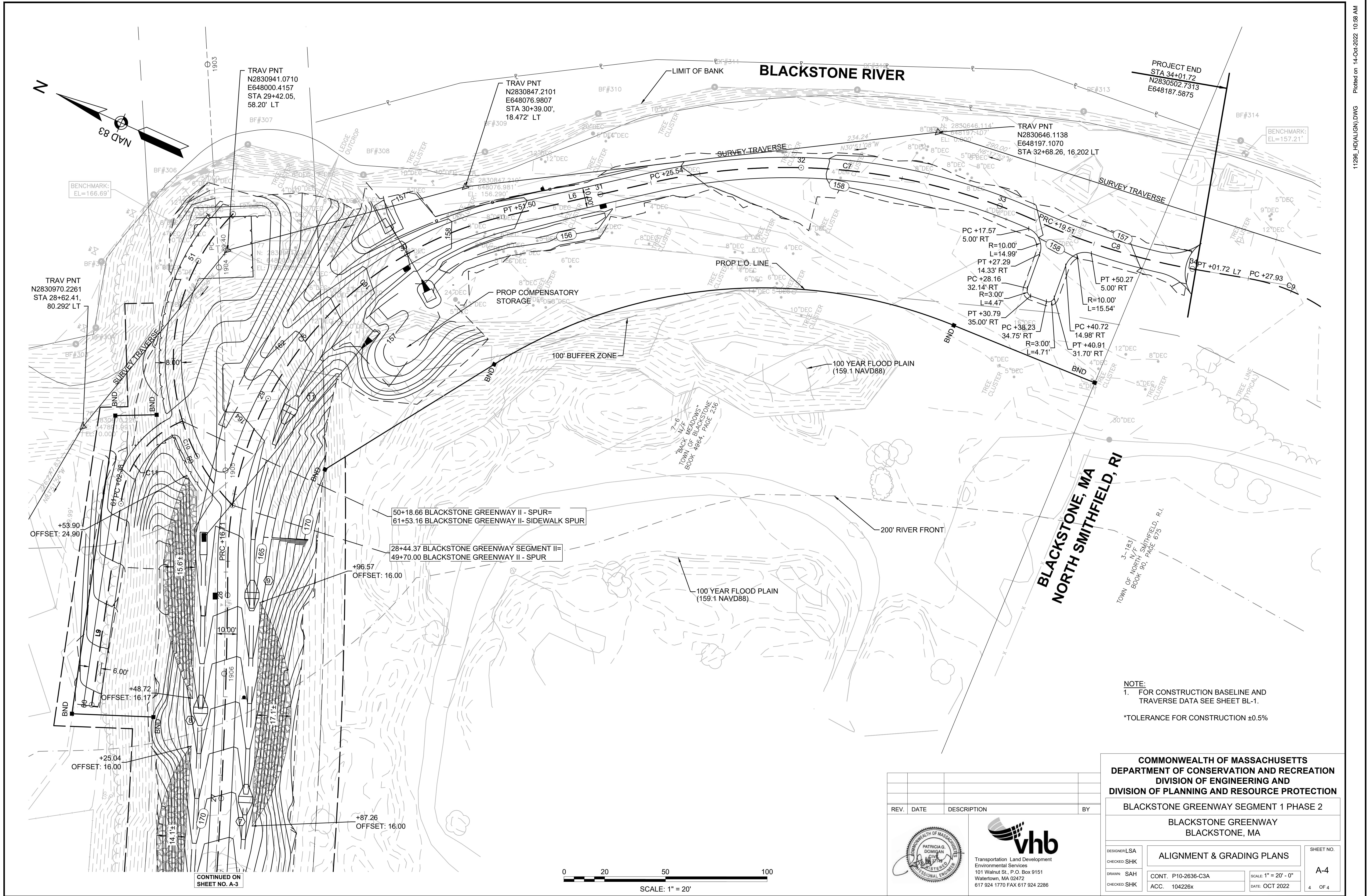
ALIGNMENT & GRADING PLANS

SHEET NO.
A-2
2 OF 4

CONTINUED ON
SHEET NO. A-1

CONTINUED ON
SHEET NO. A-3





NOTE:
1. FOR CONSTRUCTION BASELINE AND TRAVERSE DATA SEE SHEET BL-1.
*TOLERANCE FOR CONSTRUCTION $\pm 0.5\%$

REV.	DATE	DESCRIPTION	BY



vhb
Transportation Land Development
Environmental Services
101 Walnut St., P.O. Box 9151
Watertown, MA 02472
617 924 1770 FAX 617 924 2286

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION AND RECREATION
DIVISION OF ENGINEERING AND
DIVISION OF PLANNING AND RESOURCE PROTECTION

BLACKSTONE GREENWAY SEGMENT 1 PHASE 2

BLACKSTONE GREENWAY
BLACKSTONE, MA

DESIGNER: LSA
CHECKED: SHK
DRAWN: SAH
CHECKED: SHK

CONT. P10-2636-C3A
ACC. 104226x

SCALE: 1" = 20' - 0"
DATE: OCT 2022

SHEET NO.
A-4
4 OF 4

GENERAL NOTES

- ALL CONSTRUCTION SIGNING, TEMPORARY TRAFFIC CONTROL DEVICES, AND ROADSIDE ELEMENTS SHALL CONFORM WITH THE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AS AMENDED, THE MASSDOT STANDARD DETAILS AND DRAWINGS FOR THE DEVELOPMENT OF TEMPORARY TRAFFIC CONTROL PLANS, THE LATEST REVISIONS OF THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, (AASHTO) ROADSIDE DESIGN GUIDE, AASHTO POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS, AND NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (NCHRP) REPORT 350 OR THE AASHTO MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).
- ALL TEMPORARY PEDESTRIAN PATHWAYS SHALL COMPLY FULLY WITH ALL REQUIREMENTS OF THE MUTCD AND ALL APPLICABLE MASSACHUSETTS ARCHITECTURAL ACCESS BOARD (MAAB) AND AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES (ADAAG) REQUIREMENTS.
- WORK HOURS SHALL BE 7:00AM TO 3:00PM MONDAY THROUGH FRIDAY UNLESS OTHERWISE APPROVED BY THE ENGINEER. WORK SHALL NOT AFFECT TRAFFIC PATTERNS DURING PEAK TRAFFIC PERIODS. PEAK TRAFFIC PERIODS ARE DEFINED AS MONDAY THROUGH FRIDAY 7:00AM-9:00AM AND 3:00PM-6:00PM. THESE TIME RESTRICTIONS APPLY TO ALL WORK WITHIN THE PUBLIC WAY.
- NO WORK SHALL OCCUR WITHIN THE PUBLIC WAY ON STATE RECOGNIZED HOLIDAYS UNLESS OTHERWISE APPROVED BY THE ENGINEER.
- ALL DRUMS OUTSIDE TAPERS SHALL BE SET AT 20' ON CENTER MAX. UNLESS OTHERWISE NOTED OR ADJUSTED BY THE ENGINEER.
- ALL DRUMS SHALL BE APPROXIMATELY PLACED AND MOVED AS NECESSARY TO MAINTAIN SAFE AND REASONABLE ABUTTER ACCESS. WORK MAY REQUIRE ADDITIONAL SIGNS, DRUMS AND OTHER TRAFFIC CONTROL DEVICES, GRADING AND TEMPORARY PAVEMENT FOR PASSAGE OF PEDESTRIAN, VEHICULAR AND EMERGENCY TRAFFIC THROUGH THE WORK AREAS, BOTH DURING AND AFTER WORKING HOURS, TO MAINTAIN SUCH ACCESS.
- CONTRACTOR SHALL NOTIFY EACH ABUTTER AT LEAST 24 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE THE TEMPORARY CLOSURE OR RESTRICTION OF ACCESS.
- FOR DROP-OFFS 4" OR LESS WITHIN THE CLEAR ZONE, CONDITION MAY BE MITIGATED WITH W8-9 (LOW SHOULDER) SIGN OR TEMPORARY CHANNELIZATION DEVICES. FOR DROP-OFFS GREATER THAN 4" BUT NO MORE THAN 12", DETERMINE WHETHER IT IS MORE COST EFFECTIVE TO INSTALL BOTH TEMPORARY CHANNELIZATION DEVICES AND A 1V:4H (MIN) TO 1V:6H (DESIRED) WEDGE OR TO SHIELD IT. FOR DROP-OFFS GREATER THAN 12" BUT NO MORE THAN 24", DETERMINE WHETHER IT IS MORE COST EFFECTIVE TO MAINTAIN AN ADDITIONAL 5' OF SHOULDER WIDTH AND INSTALL BOTH TEMPORARY CHANNELIZATION DEVICES AND A 1V:6H (DESIRE) WEDGE OR TO REMOVE THE HAZARD. FOR DROP-OFFS 24" OR GREATER USE BARRIER IN ACCORDANCE WITH MASSDOT WORK ZONE POSITIVE PROTECTION GUIDELINES.
- CONTRACTOR SHALL STAGE WORK SUCH THAT A DROP-OFF OF NO MORE THAN 12" AT THE END OF EACH WORK DAY EXISTS WITHIN THE CLEAR ZONE AT ANY TIME AND ENSURE DROP-OFF IS MITIGATED WITHOUT BARRIER PER NOTE 8.
- 11' MINIMUM LANE WIDTHS SHALL BE MAINTAINED UNLESS OTHERWISE NOTED.
- NON-ESSENTIAL TRAFFIC CONTROL DEVICES AND SIGNS SHALL BE COVERED OR REMOVED DURING NON-WORKING HOURS WHEN NOT IN USE.
- SIGNS INSTALLED ON PORTABLE STANDS REQUIRE 12 INCH MINIMUM MOUNTING HEIGHT FROM THE ROADWAY SURFACE TO THE BOTTOM OF THE SIGN.
- SIGNS INSTALLED ON PORTABLE STANDS PLACED AMONG CHANNELIZATION DEVICES REQUIRE A 36 INCH MINIMUM MOUNTING HEIGHT FROM THE ROADWAY SURFACE TO THE BOTTOM OF THE SIGN.
- SIGNS MOUNTED ON P5 POSTS REQUIRE A MINIMUM 84 INCH MOUNTING HEIGHT FROM THE ROADWAY OR SIDEWALK SURFACE TO THE BOTTOM OF THE SIGN.
- ALL SIGNS SHALL BE MOUNTED ON THEIR OWN NCHRP 350 AND/OR MASH CRASH TESTED SIGN SUPPORTS AND INSTALLED IN ACCORDANCE WITH THE MUTCD.
- THE FIRST 10 REFLECTORIZED DRUMS IN THE TAPER SHALL BE MOUNTED WITH SEQUENTIAL FLASHING WARNING LIGHTS.
- REFLECTORIZED CONES SHALL BE A MINIMUM OF 36 INCHES IN HEIGHT.
- CONES MAY BE USED IN LIEU OF DRUMS OUTSIDE OF TAPER AREAS.
- MA-W20-7b SIGNS SHALL BE REPLACED BY W20-7 SIGNS WHEN FLAGGERS ARE USED IN LIEU OF POLICE OFFICER DETAILS.
- CONTRACTOR SHALL SECURE WORK AREAS TO PREVENT UNAUTHORIZED ACCESS AT ALL TIMES.
- CONSTRUCTION CLEAR ZONE SHALL BE IN ACCORDANCE WITH MASSDOT BOSTON TRAFFIC GUIDELINES AS FOLLOWS:
4' IF POSTED SPEED IS LESS THAN 35 MPH
8' IF POSTED SPEED IS 35 MPH
15' IF POSTED SPEED IS 40 MPH
- TEMPORARY MARKINGS SHALL BE SURFACE-APPLIED REMOVEBLE TAPE.
- ALL TEMPORARY STOP LINES SHALL BE 12 INCHES WIDE.

LEGEND	
	FLAGGER
	POLICE OFFICER
	TRAFFIC SIGNAL
	REFLECTORIZED DRUM
	REFLECTORIZED DRUM WITH SEQUENTIAL FLASHING WARNING LIGHT (SEE NOTE 15)
	TEMPORARY CONSTRUCTION SIGN
	TRAFFIC CONE
	TYPE III BARRICADE
	ARROW BOARD (AB) (RIGHT OR LEFT)
	WORK AREA (PUBLIC ACCESS RESTRICTED)
	TRAFFIC FLOW
	PEDESTRIAN/ BIKE ROUTE
	CONSTRUCTION FENCE
	TEMPORARY CONCRETE BARRIER WITH CHAIN LINK FENCE
NTS	NOT TO SCALE
	PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BUFFER SPACING	
SPEED (MPH)	DISTANCE (FEET)
15	80
20	115
25	155
30	200
35	250
40	305

ROADWAYS	DISTANCE BETWEEN SIGNS (FEET)			
	A	B	C	D
FRESH POND PARKWAY	500	250	500	500
ARLINGTON ST, NICHOLS AVE, COOLIDGE HILL RD & CRAWFORD ST	350	150	350	350
ALL OTHER ROADWAYS	100	50	100	100

LANE TAPER LENGTH FORMULAS

L= TAPER LENGTH IN FEET











W= WIDTH OF ROADWAY TO BE SHIFTED OR REDIRECTED IN FEET

S= POSTED SPEED LIMIT IN MPH

POSTED SPEED

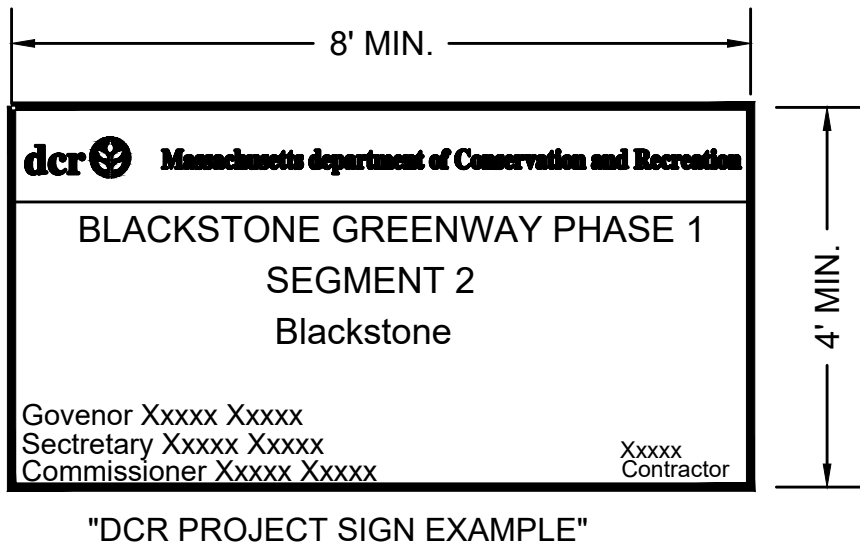
40 MPH OR LESS

$$L = \frac{WS^2}{60}$$

TEMPORARY TRAFFIC SIGN SUMMARY									
IDENTIFI- CATION NUMBER	SIZE OF SIGN		TEXT	COLOR			TEXT DIMENSIONS (INCHES)		
	WIDTH	HEIGHT		BACK- GROUND	LEGEND	BORDER	LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.
M4-8a	24"	12"		FLUOR- ESCENT ORANGE	WHITE	WHITE	SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED		
M4-9R	30"	24"		FLUOR- ESCENT ORANGE	WHITE	WHITE			
M4-9V	30"	30"		FLUOR- ESCENT ORANGE	WHITE	WHITE			
R9-9	24"	12"		WHITE	BLACK	BLACK			
R11-2	48"	30"		WHITE	BLACK	BLACK			
R11-3f	60"	30"		WHITE	BLACK	BLACK			

NOTES:

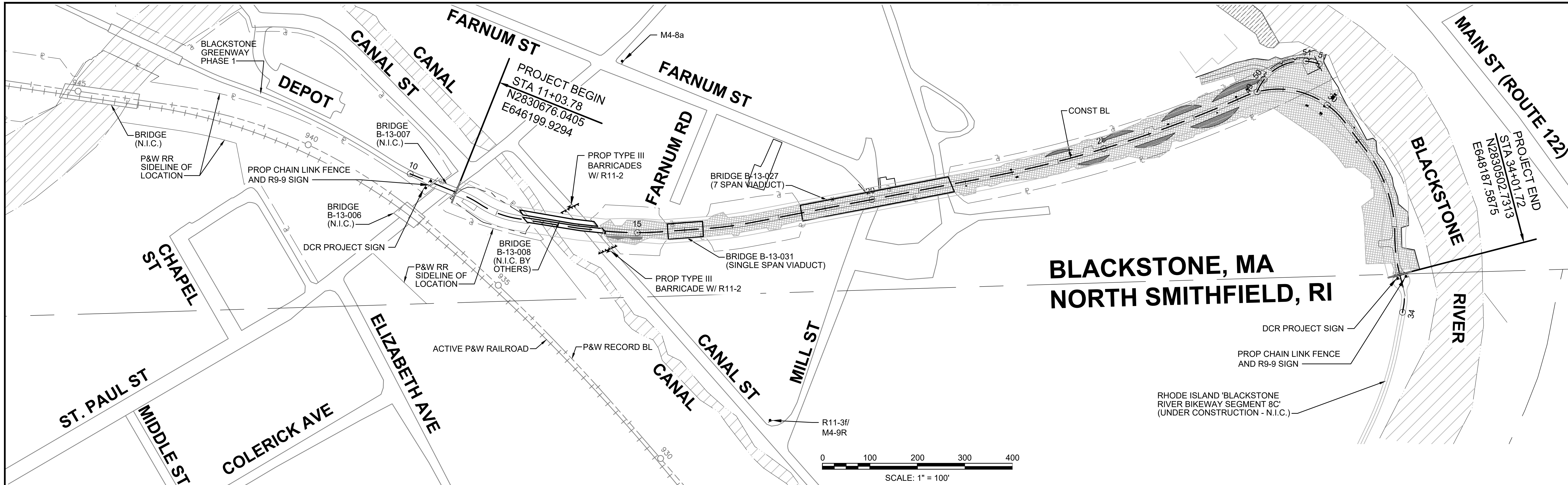
- HIGH INTENSITY REFLECTIVE SHEETING SHALL BE USED FOR ALL SIGNS. SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION" FOR TEXT DIMENSIONS, AS AMENDED; THE 1977 MASSHIGHWAY DEPARTMENT CONSTRUCTION AND TRAFFIC STANDARD DETAILS, AS AMENDED, FOR SIGNS AND SUPPORTS; THE MASSHIGHWAY DEPARTMENT SIGN LISTINGS 1993 EDITION, AS AMENDED; AND THE 2017 MASSDOT STANDARD SIGNS BOOK, AS AMENDED.
- ALL SIGNS SHOWN GRAPHICALLY FOR INFORMATION ONLY. SIGN VENDOR SHALL FABRICATE ALL SIGNS IN ACCORDANCE WITH THE APPLICABLE STANDARDS.
- DCR PROJECT SIGN TO BE INSTALLED AT START OF WORK IN LOCATION APPROVED BY THE ENGINEER. SIGN SHALL BE SUBMITTED TO THE PROJECT ENGINEER FOR REVIEW AND APPROVAL, REFER TO SPECIAL PROVISIONS.



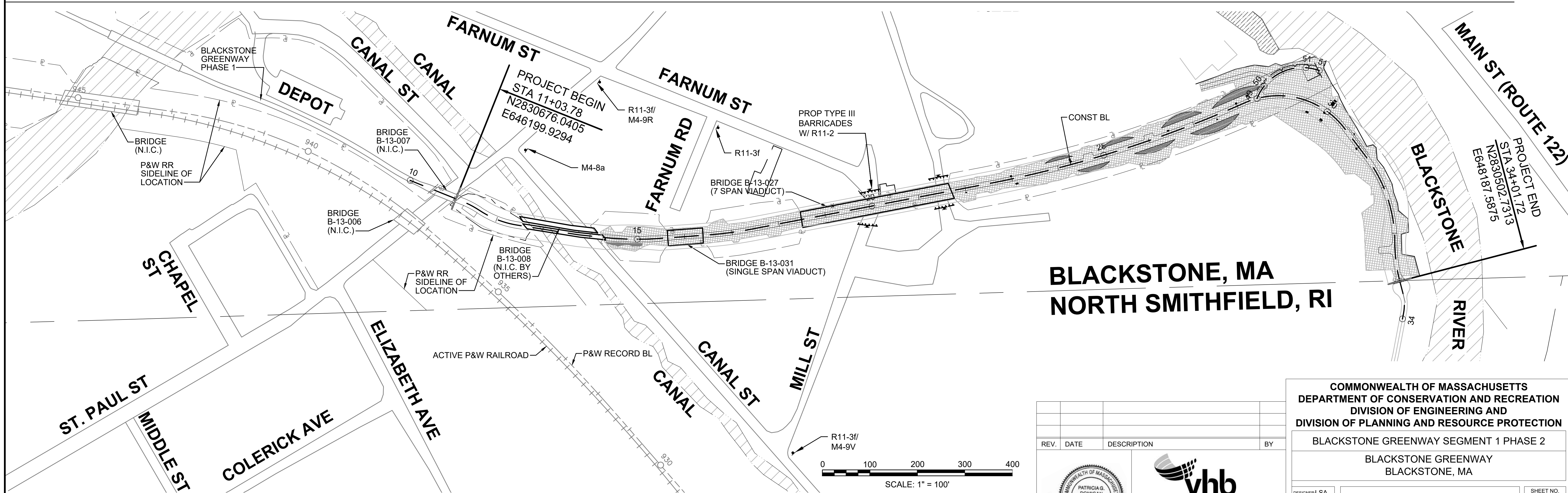
"DCR PROJECT SIGN EXAMPLE"

REV.	DATE	DESCRIPTION	BY	
		 Transportation Land Development Environmental Services 101 Walnut St., P.O. Box 9151 Watertown, MA 02472 617 924 1770 FAX 617 924 2286		

COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION DIVISION OF ENGINEERING AND DIVISION OF PLANNING AND RESOURCE PROTECTION			
BLACKSTONE GREENWAY SEGMENT 1 PHASE 2			
BLACKSTONE GREENWAY BLACKSTONE, MA			
DESIGNER: LSA	TEMPORARY TRAFFIC CONTROL PLAN		SHEET NO.
CHECKED: SHK			T-1
DRAWN: LSA	CONT. P10-2636-C3A	SCALE: NTS	
CHECKED: SHK	ACC. 104227x	DATE: OCT 2022	1 OF 2



CANAL STREET BRIDGE CONSTRUCTION AND DETOUR FOR WORK OVER CANAL STREET



VIADUCT CONSTRUCTION AND DETOUR FOR WORK OVER PUBLIC ROADWAYS

REV.	DATE	DESCRIPTION	BY

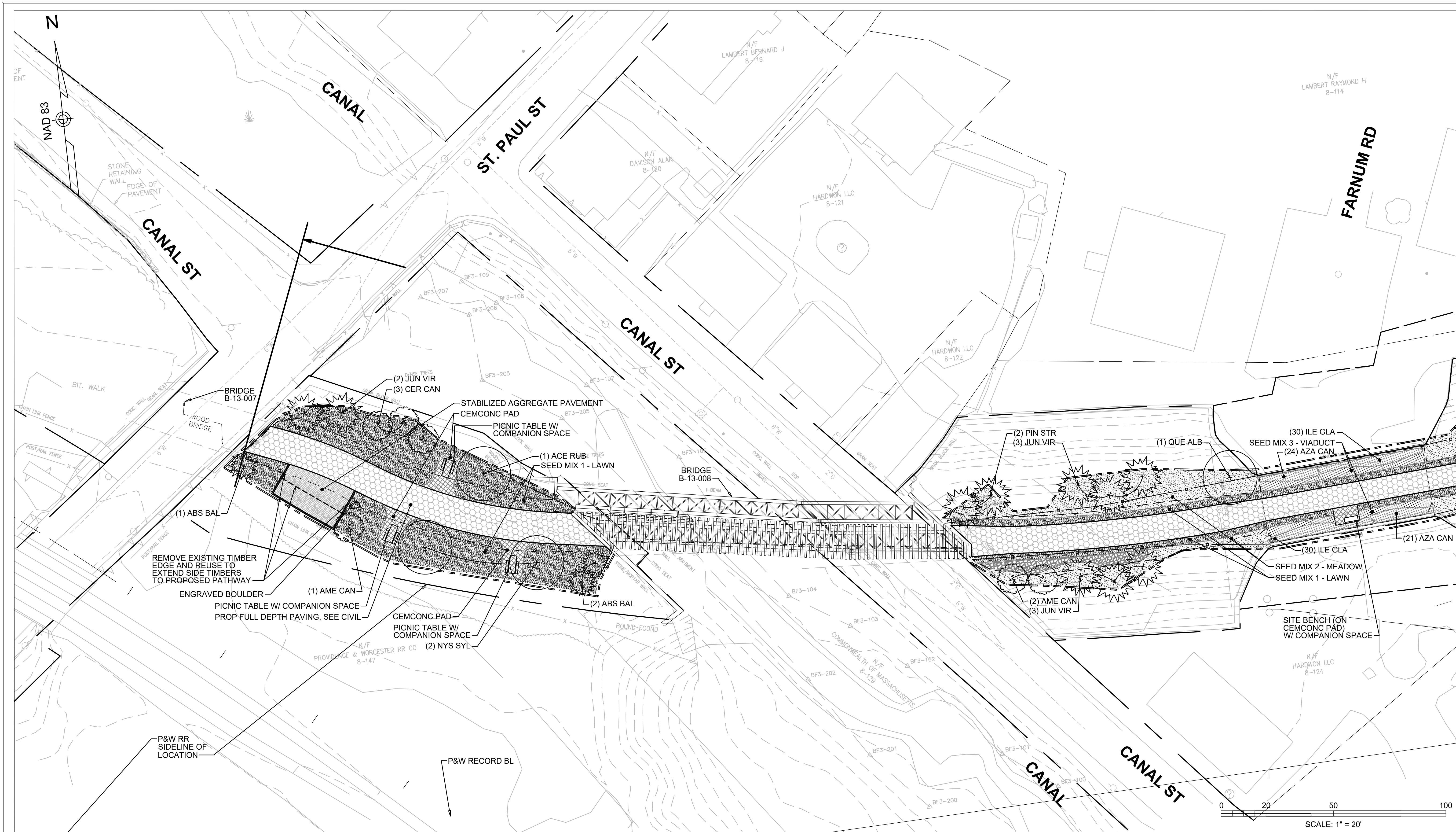
Transportation Land Development
Environmental Services
101 Walnut St., P.O. Box 9151
Watertown, MA 02472
617 924 1770 FAX 617 924 2286

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION AND RECREATION
DIVISION OF ENGINEERING AND
DIVISION OF PLANNING AND RESOURCE PROTECTION

BLACKSTONE GREENWAY SEGMENT 1 PHASE 2

BLACKSTONE GREENWAY
BLACKSTONE, MA

DESIGNER: LSA	TEMPORARY TRAFFIC CONTROL PLAN	SHEET NO. T-2 2 OF 2
CHECKED: SHK		
DRAWN: LSA		
CHECKED: SHK	CONT: P10-2636-C3A ACC: 104228x	SCALE: AS NOTED DATE: OCT 2022



LEGEND

LIMIT OF WORK	SITE BENCH (ON CEMCONC PAD) WITH COMPANION SPACE	CUT SLOPE STONE EMBANKMENT - USING SALVAGED CLASS B ROCK	SEED MIX 1 - LAWN
PROPERTY LINE	PICNIC TABLE W/ COMPANION SPACE	STACKED BOULDER BLOCK WALL - USING SALVAGED CLASS B ROCK	SEED MIX 2 - MEADOW
CEMCONC PAVING, SEE CIVIL	BIKE RACK	CUT GRANITE BLOCK 'ABUTMENT' WALL - USING NEW STONE	SEED MIX 3 - VIADUCT
PROP FULL DEPTH PAVING, SEE CIVIL	ENGRAVED BOULDER		DECIDUOUS TREE
CONCRETE UNIT PAVING			EVERGREEN TREE
STABILIZED AGGREGATE PAVEMENT			FLOWERING TREE
			SHRUB / GROUNDCOVER PLANTING

NOTE: REFER TO SHEET LD-05 FOR PLANTING SCHEDULE

REV.	DATE	DESCRIPTION	BY

21 Cushman House Street, Boston, MA 02110
tel +1 617 896 2500 www.BGGroup.com

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION AND RECREATION
DIVISION OF ENGINEERING AND
DIVISION OF PLANNING AND RESOURCE PROTECTION

BLACKSTONE GREENWAY SEGMENT 1 PHASE 2

BLACKSTONE GREENWAY
BLACKSTONE, MA

LANDSCAPE PLANS

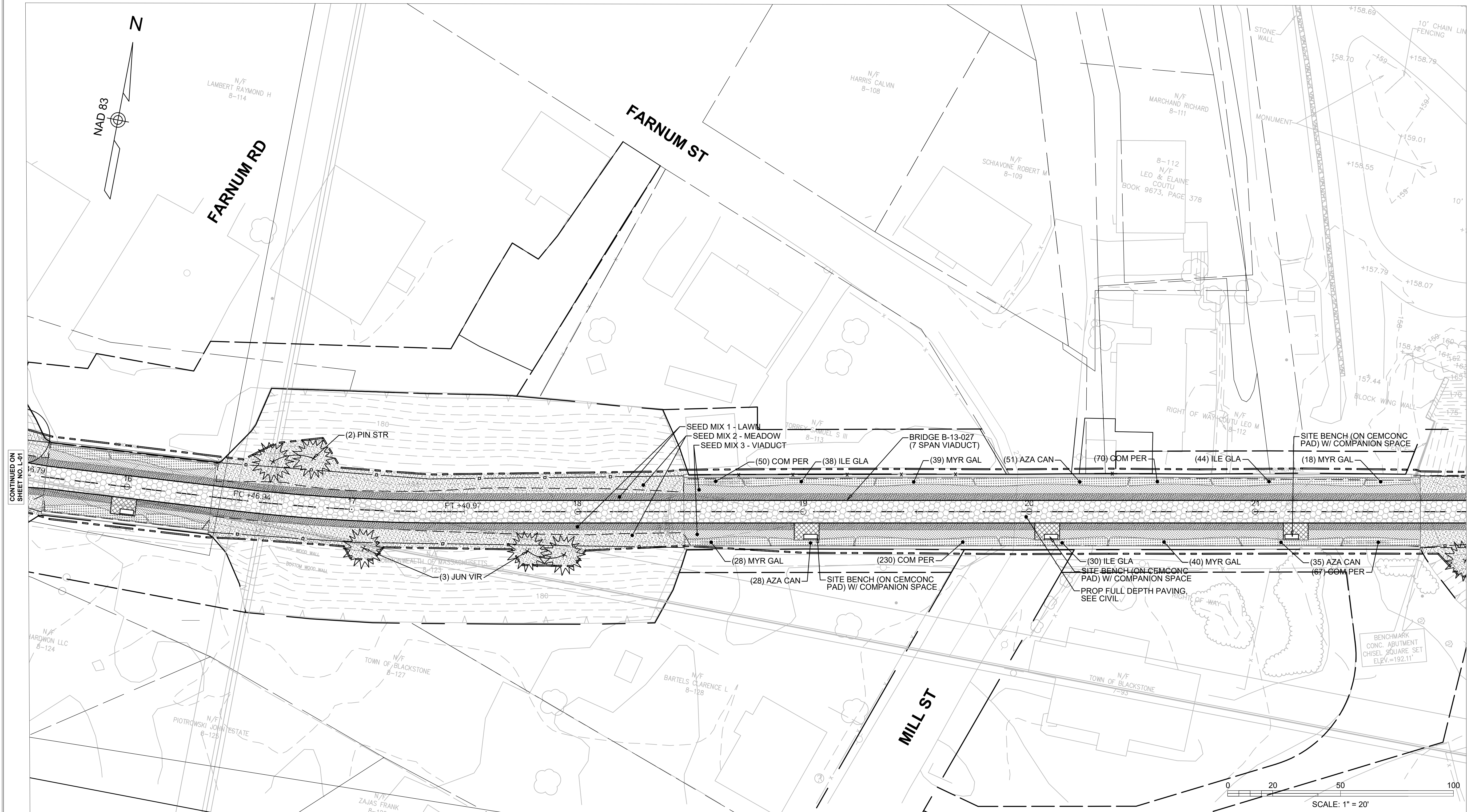
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CHECKED: JA
DRAWN: TS
CHECKED: RW

CONT: P10-2636-C3A
ACC. 104229X

SCALE: 1" = 20'-0"
DATE: OCT 2022

SHEET NO.
L-01
1 OF 4

CONTINUED ON
SHEET NO. L-02



LEGEND

	LIMIT OF WORK
	PROPERTY LINE
	CEMCONC PAVING, SEE CIVIL
	PROP FULL DEPTH PAVING, SEE CIVIL
	CONCRETE UNIT PAVING
	STABILIZED AGGREGATE PAVEMENT

	SITE BENCH (ON CEMCONC PAD) WITH COMPANION SPACE
	PICNIC TABLE W/ COMPANION SPACE
	BIKE RACK
	ENGRAVED BOULDER

	CUT SLOPE STONE EMBANKMENT - USING SALVAGED CLASS B ROCK
	STACKED BOULDER BLOCK WALL - USING SALVAGED CLASS B ROCK
	CUT GRANITE BLOCK 'ABUTMENT' WALL - USING NEW STONE

NOTE: REFER TO SHEET LD-05 FOR PLANTING SCHEDULE

	SEED MIX 1 - LAWN
	SEED MIX 2 - MEADOW
	SEED MIX 3 - VIADUCT
	DECIDUOUS TREE
	EVERGREEN TREE
	FLOWERING TREE
	SHRUB / GROUNDCOVER PLANTING

REV.	DATE	DESCRIPTION	BY
1	10/10/2022	10/10/2022	10/10/2022
2	10/10/2022	10/10/2022	10/10/2022
3	10/10/2022	10/10/2022	10/10/2022
4	10/10/2022	10/10/2022	10/10/2022
5	10/10/2022	10/10/2022	10/10/2022
6	10/10/2022	10/10/2022	10/10/2022
7	10/10/2022	10/10/2022	10/10/2022
8	10/10/2022	10/10/2022	10/10/2022
9	10/10/2022	10/10/2022	10/10/2022
10	10/10/2022	10/10/2022	10/10/2022

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION AND RECREATION
DIVISION OF ENGINEERING AND
DIVISION OF PLANNING AND RESOURCE PROTECTION

BLACKSTONE GREENWAY SEGMENT 1 PHASE 2

BLACKSTONE GREENWAY
BLACKSTONE, MA

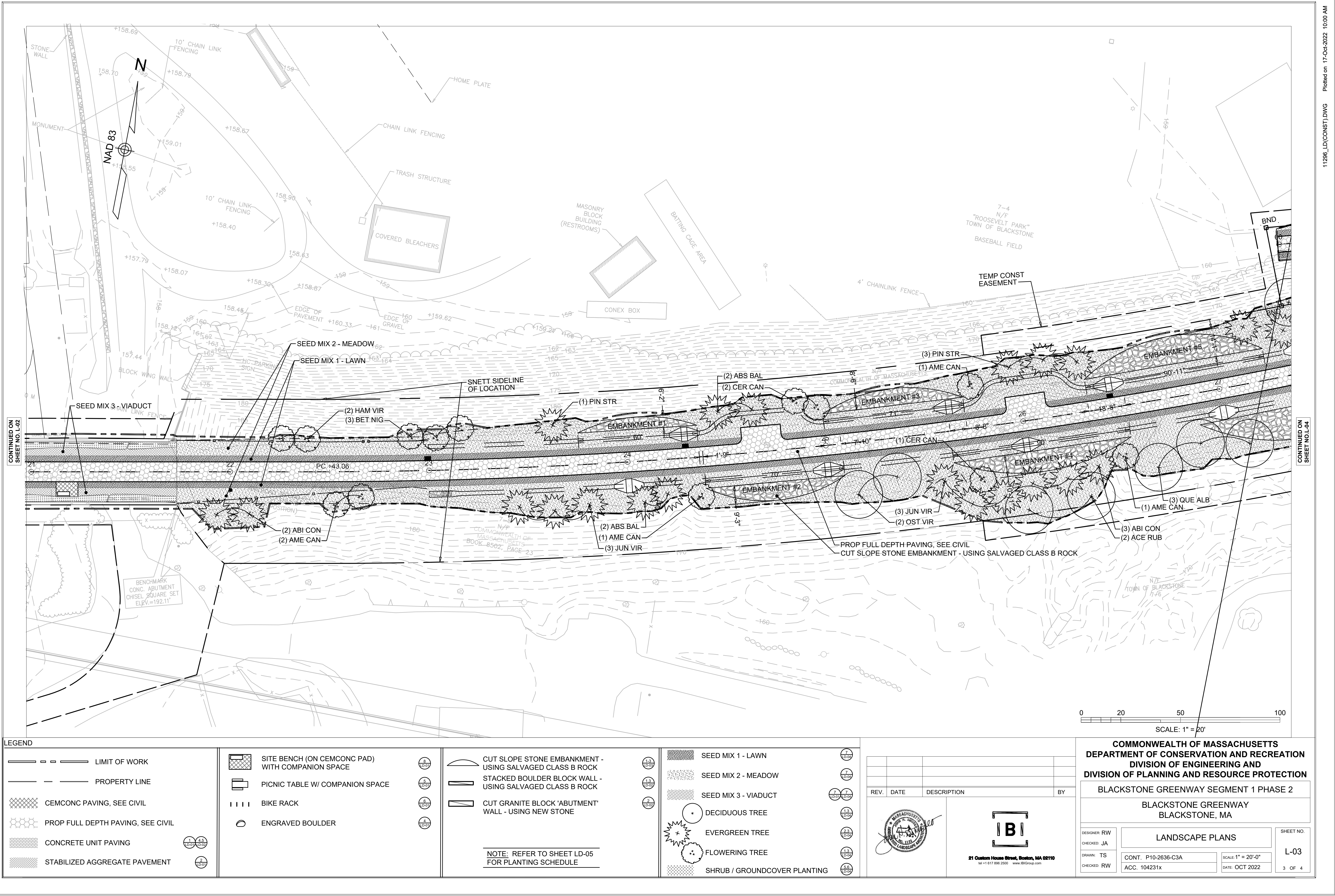
LANDSCAPE PLANS

DESIGNER: RW
CHECKED: JA
DRAWN: TS
CHECKED: RW

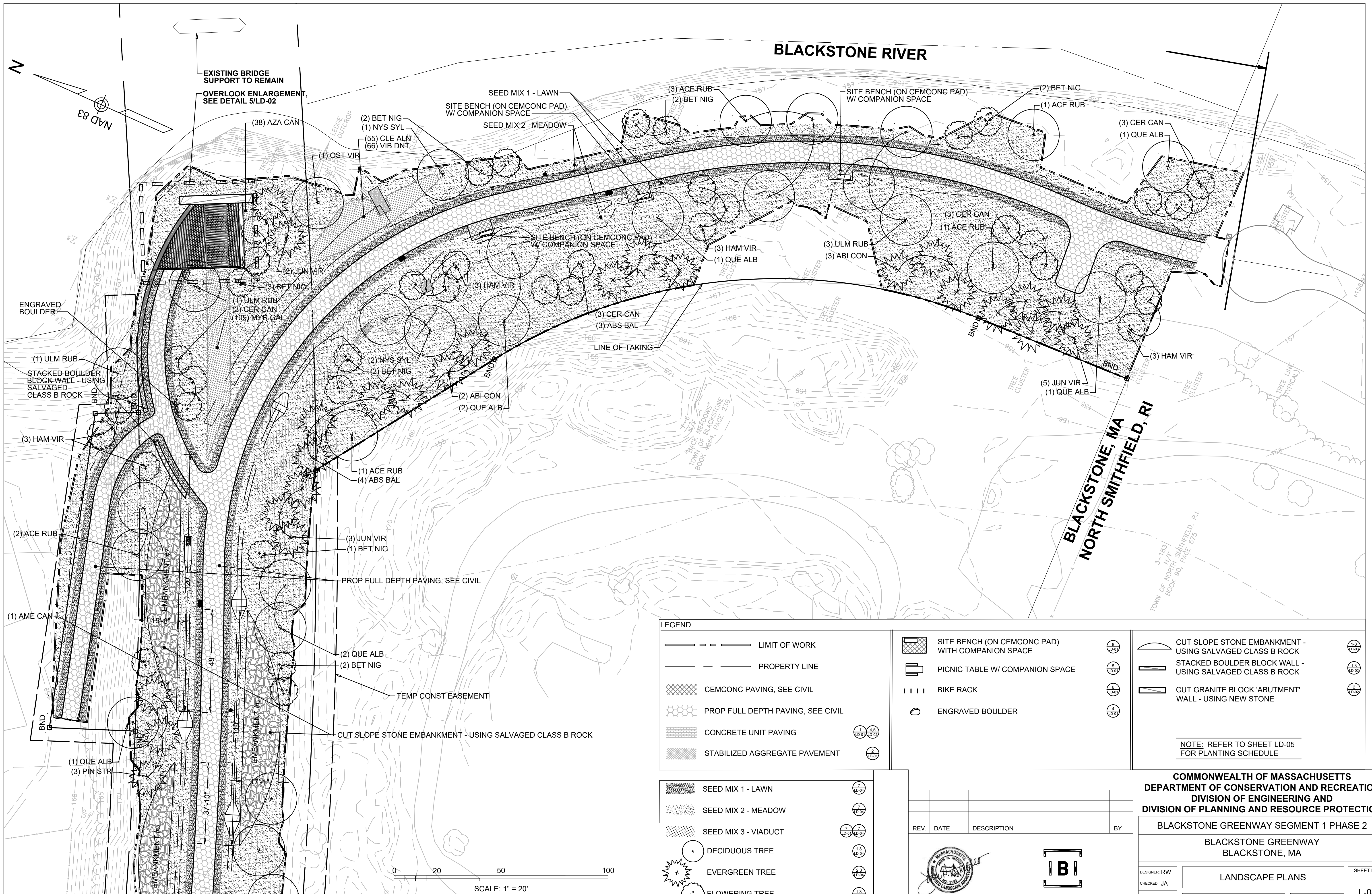
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ACC. 104230X

SCALE: 1" = 20'-0"
DATE: OCT 2022

SHEET NO.
L-02
2 OF 4



CONTINUED ON
SHEET NO. L-03



LEGEND

- LIMIT OF WORK
- PROPERTY LINE
- CEMCONC PAVING, SEE CIVIL
- PROP FULL DEPTH PAVING, SEE CIVIL
- CONCRETE UNIT PAVING
- STABILIZED AGGREGATE PAVEMENT

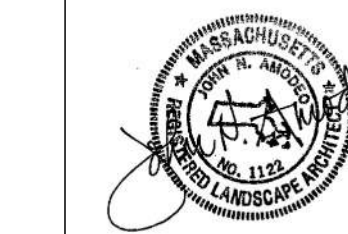
- SITE BENCH (ON CEMCONC PAD) WITH COMPANION SPACE
- PICNIC TABLE W/ COMPANION SPACE
- BIKE RACK
- ENGRAVED BOULDER

- CUT SLOPE STONE EMBANKMENT - USING SALVAGED CLASS B ROCK
- STACKED BOULDER BLOCK WALL - USING SALVAGED CLASS B ROCK
- CUT GRANITE BLOCK 'ABUTMENT' WALL - USING NEW STONE

NOTE: REFER TO SHEET LD-05
FOR PLANTING SCHEDULE

- SEED MIX 1 - LAWN
- SEED MIX 2 - MEADOW
- SEED MIX 3 - VIADUCT
- DECIDUOUS TREE
- EVERGREEN TREE
- FLOWERING TREE
- SHRUB / GROUND COVER PLANTING

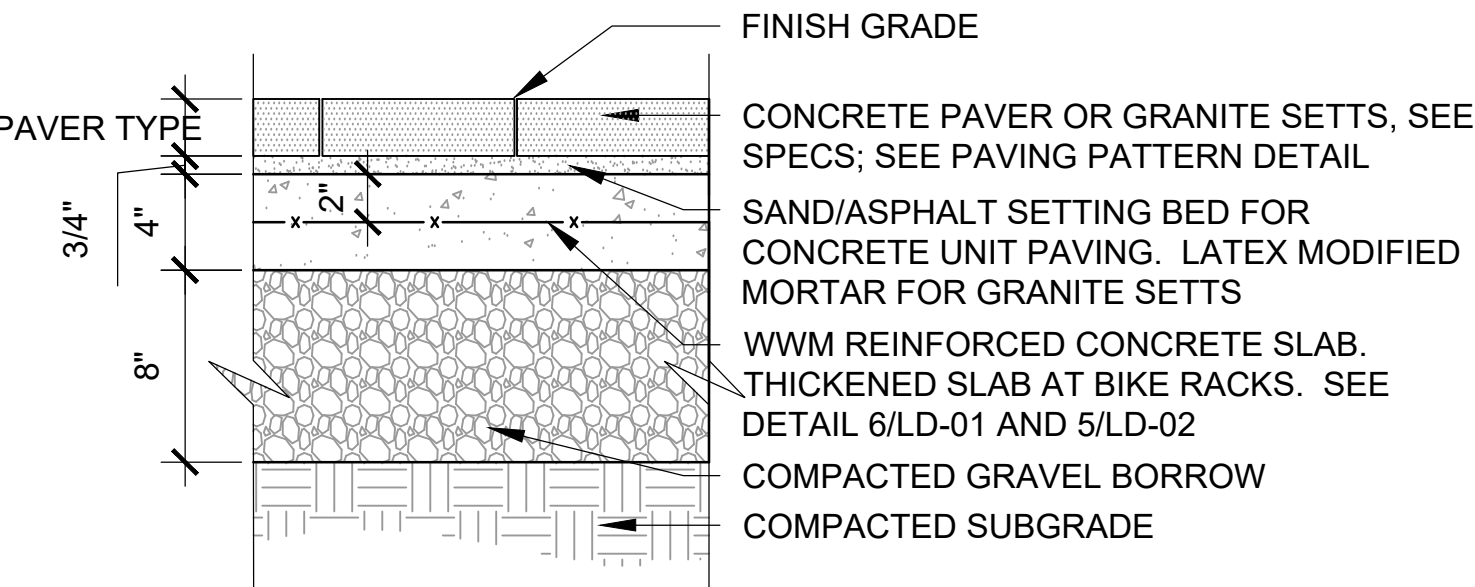
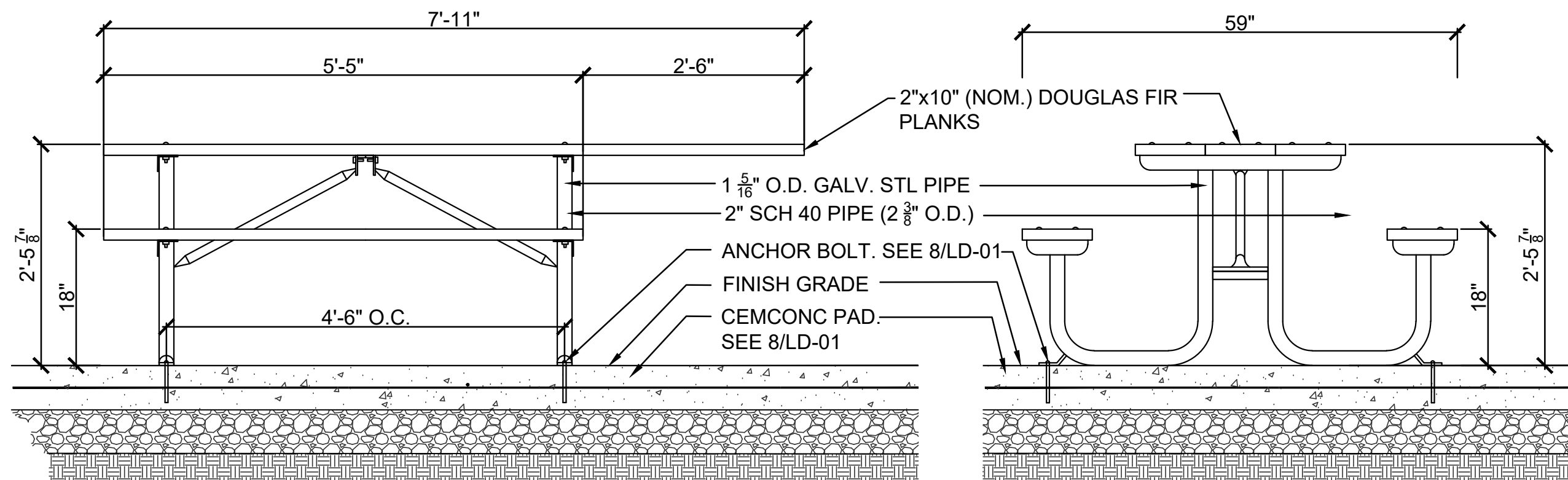
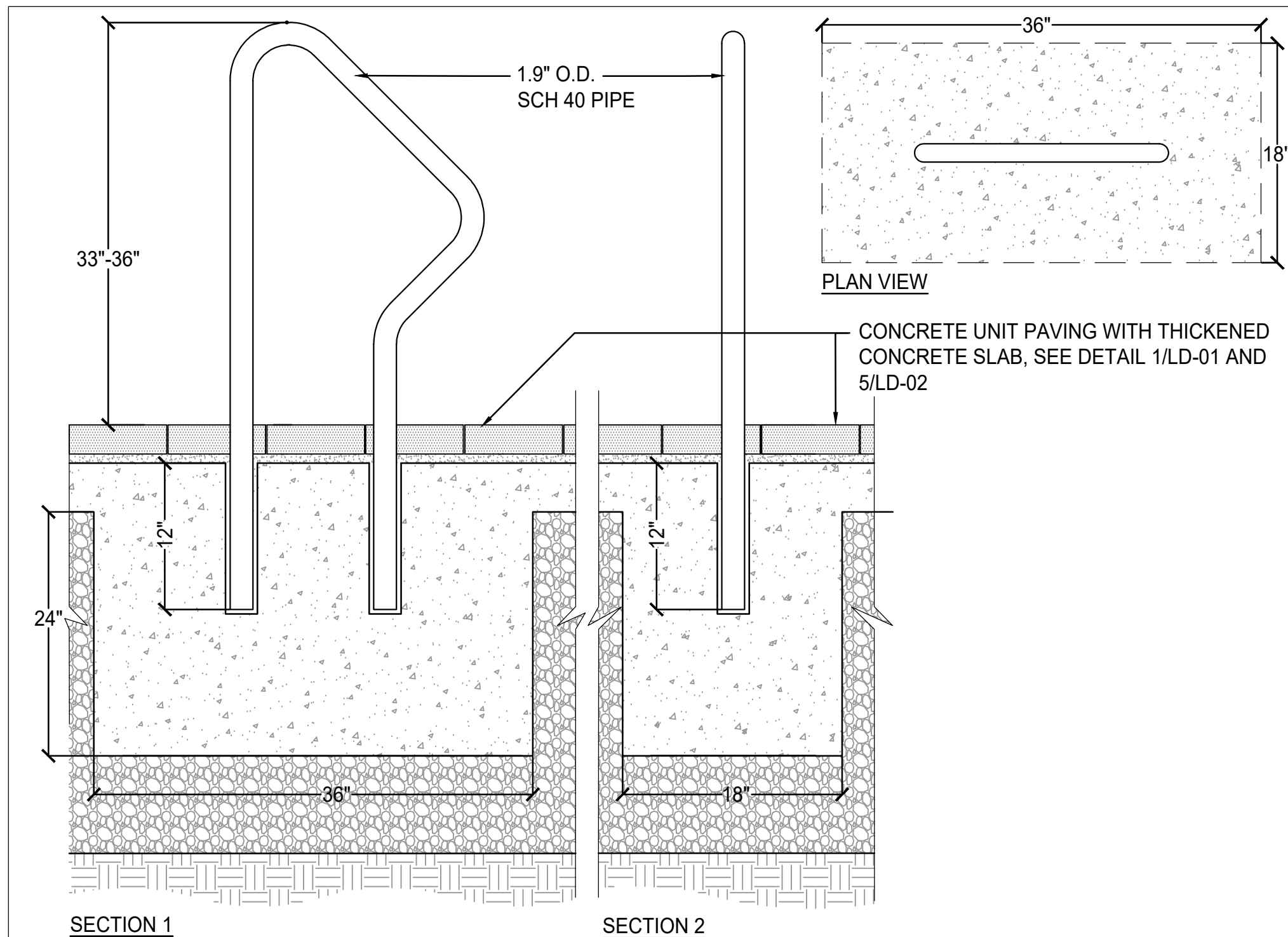
REV.	DATE	DESCRIPTION	BY



B

21 Custom House Street, Boston, MA 02110
Tel: 617.898.2500 www.BIGroup.com

COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION DIVISION OF ENGINEERING AND DIVISION OF PLANNING AND RESOURCE PROTECTION	
BLACKSTONE GREENWAY SEGMENT 1 PHASE 2	
BLACKSTONE GREENWAY BLACKSTONE, MA	
DESIGNER: RW CHECKED: JA DRAWN: TS CHECKED: RW	LANDSCAPE PLANS
CONT: P10-2636-C3A ACC: 104232X	SCALE: 1" = 20'-0" DATE: OCT 2022
SHEET NO. L-04 4 OF 4	

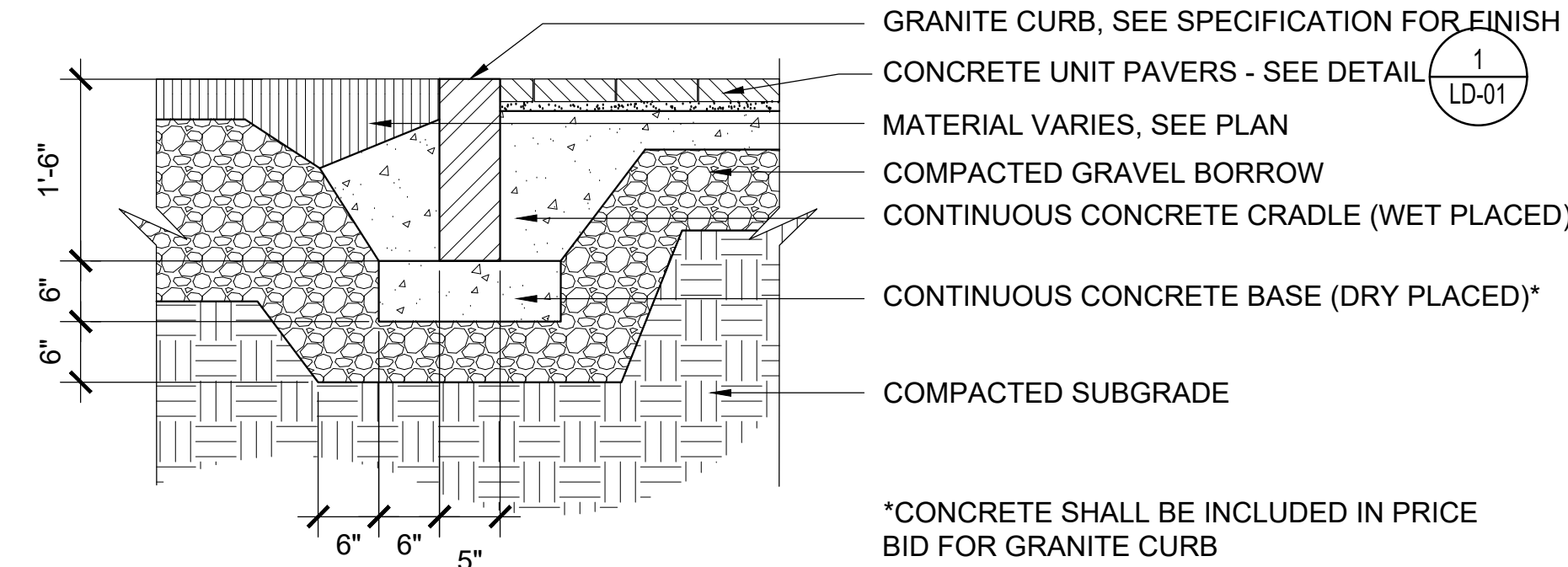
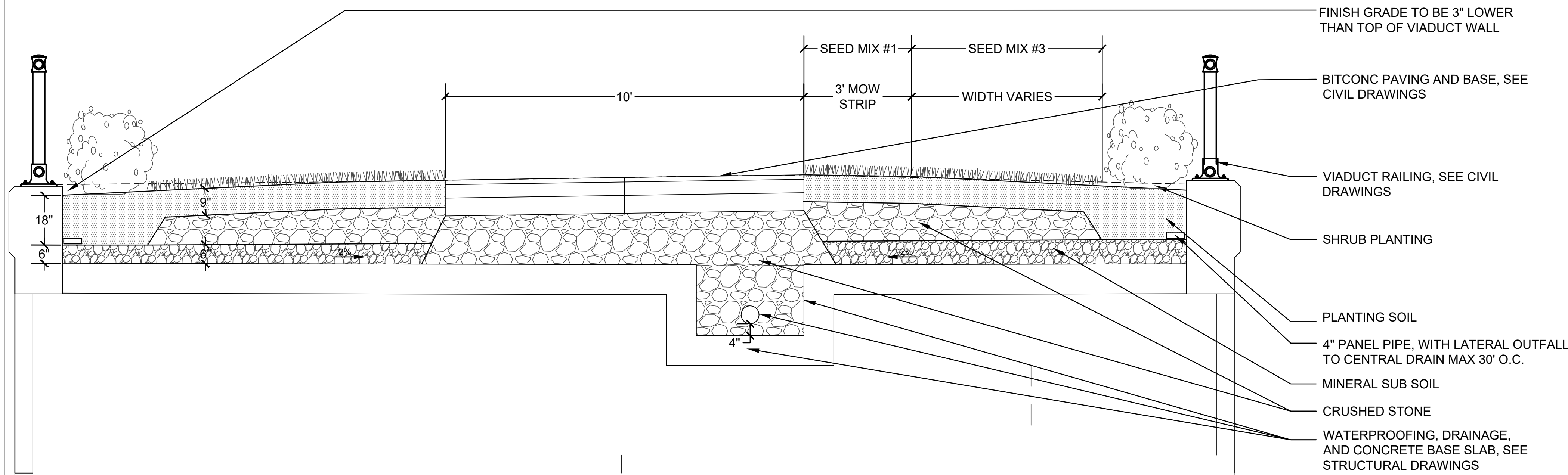


6 DCR STANDARD BIKE RACK; DERO 'SWERVE' RACK
SCALE: N.T.S.

5 DCR STANDARD PICNIC TABLE; DUMOR '77-68-1'
SCALE: N.T.S.

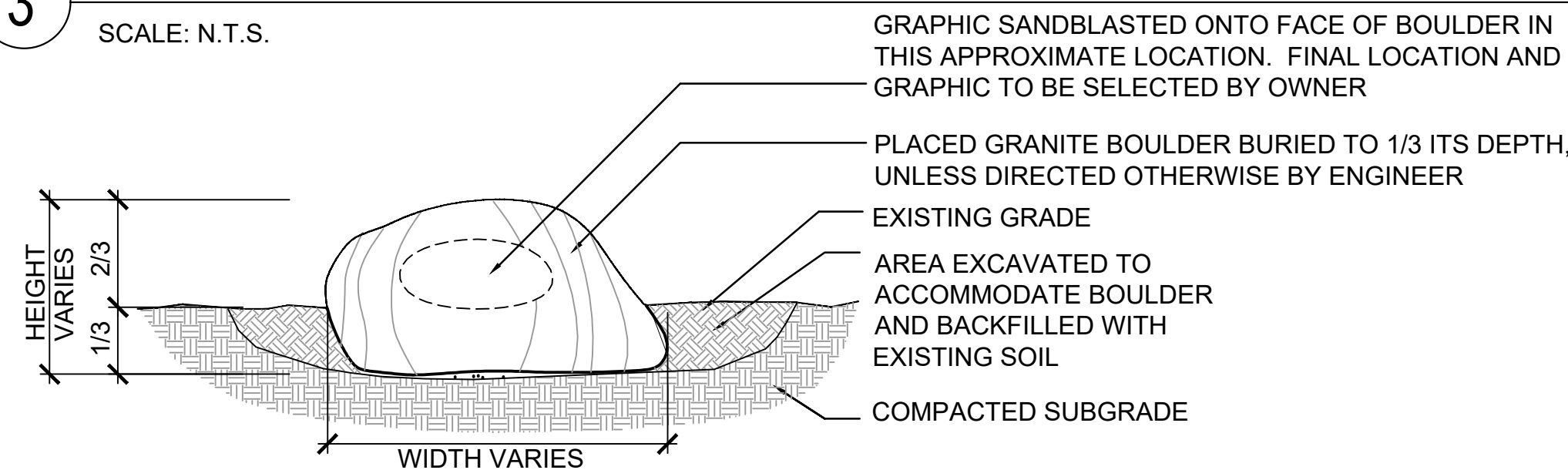
1 CONCRETE UNIT PAVING
SCALE: 1/8" = 1'-0"

2 STABILIZED AGGREGATE PAVEMENT
SCALE: N.T.S.

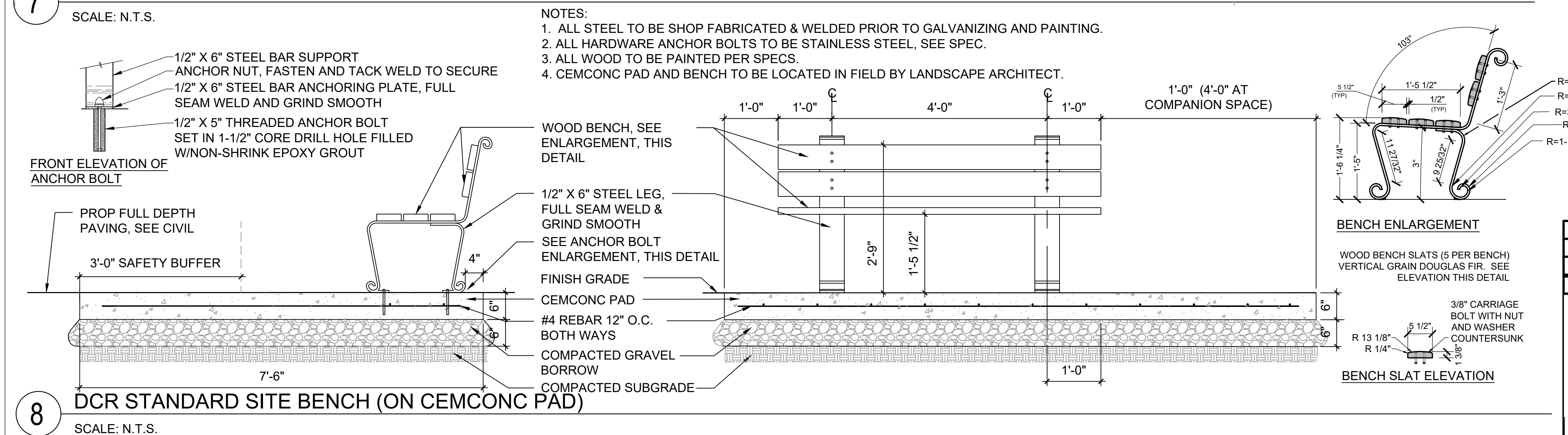


7 PLANTING PROFILE ON VIADUCT
SCALE: N.T.S.

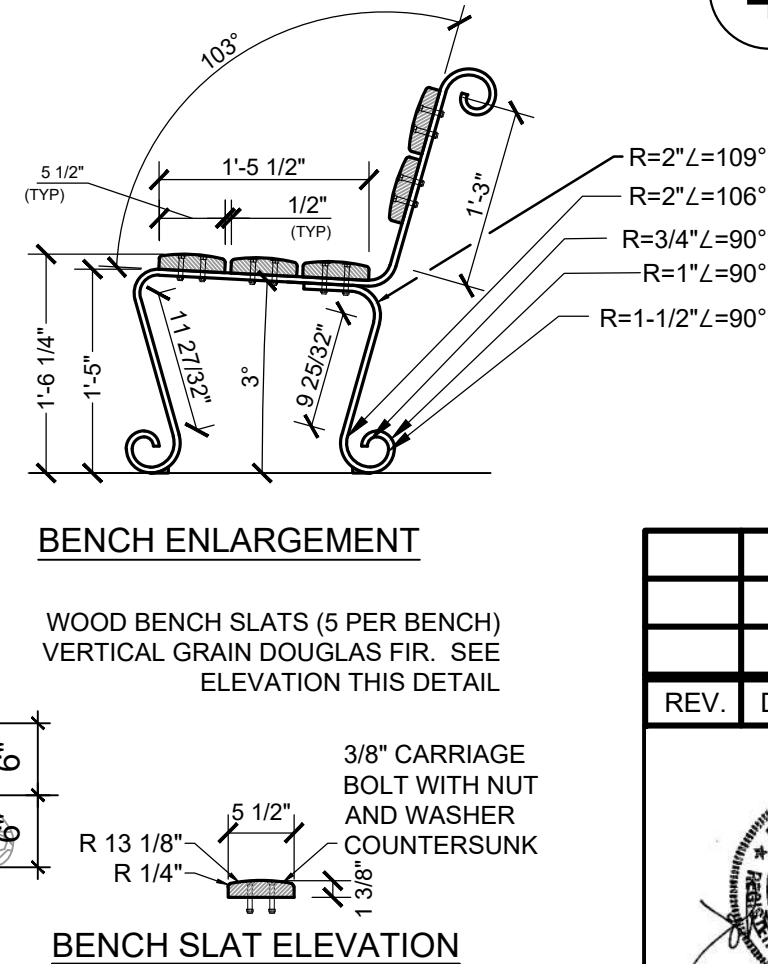
3 FLUSH GRANITE CURB
SCALE: N.T.S.



4 ENGRAVED BOULDER
SCALE: N.T.S.



8 DCR STANDARD SITE BENCH (ON CEMCONC PAD)
SCALE: N.T.S.



REV.	DATE	DESCRIPTION	BY

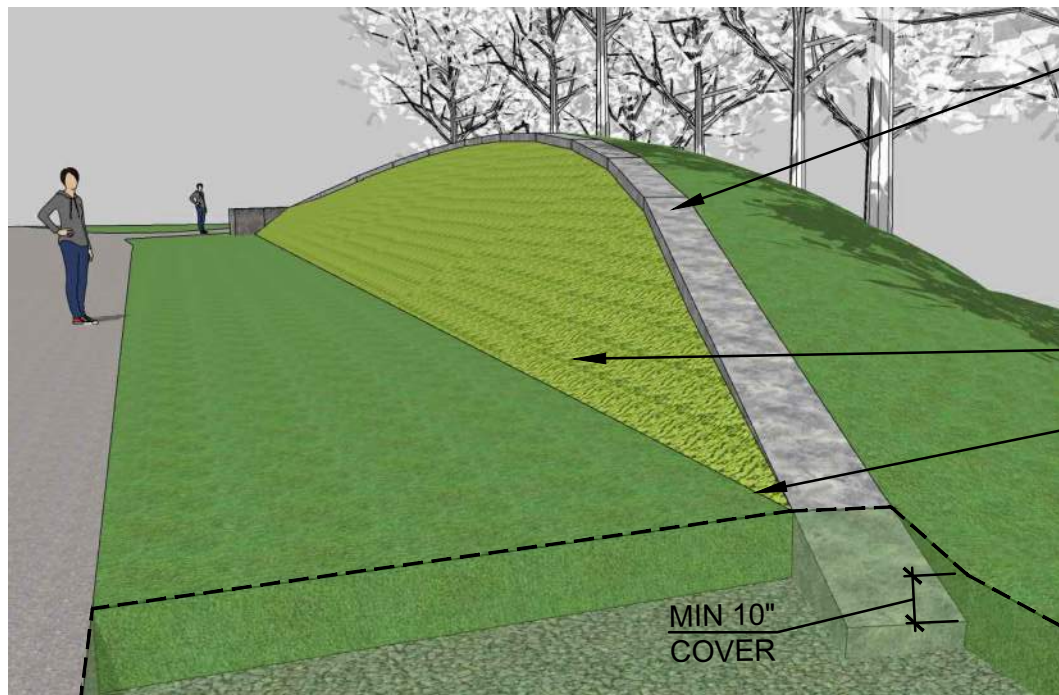
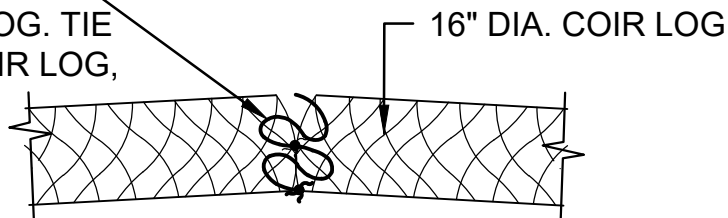
21 Custom House Street, Boston, MA 02109
tel +1 617 896 2500 www.IBISign.com

COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION DIVISION OF ENGINEERING AND DIVISION OF PLANNING AND RESOURCE PROTECTION			
BLACKSTONE GREENWAY SEGMENT 1 PHASE 2			
BLACKSTONE GREENWAY BLACKSTONE, MA			
DESIGNER: RW CHECKED: JA	LANDSCAPE DETAILS		SHEET NO. LD-01
DRAWN: TS CHECKED: RW	CONT. P10-2636-C3A ACC. 104233X	SCALE: AS NOTED DATE: OCT 2022	1 OF 5

ORNAMENTAL GRASSES			
Location	QTY	Botanical Name	Common Name
Embankment 1	250	Deschampsia flexuosa	Wavy Hair Grass
Embankment 2	435	Schizachyrium scoparium	Little Bluestem
Embankment 3	405	Sporobolus heterolepis	Prairie Dropseed
Embankment 4	660	Carex pensylvanica	Pennsylvania Sedge
Embankment 5	865	Schizachyrium scoparium	Little Bluestem
Embankment 6	1274	Sporobolus heterolepis	Prairie Dropseed
Embankment 7	1225	Deschampsia flexuosa	Wavy Hair Grass

NOTE: DETAIL IS REPRESENTATIVE ONLY. PURPOSE IS TO SHOW DESIGN INTENT. PRIOR TO PLANT INSTALLATION PLANT LAYOUT SHALL BE STAKED OUT BY CONTRACTOR AND APPROVED BY OWNER'S REPRESENTATIVE.

PLAN VIEW: END-TO-END TYING
COCONUT FIBER CORD LACED THROUGH OUTER WRAP OF LOG. TIE 10 OVERHAND KNOTS PER COIR LOG, MIN.



PERSPECTIVE

PATH SIDE SWALE, SEE CIVIL
PLANTING LOAM

SALVAGED CLASS B ROCK HEADSTONE COURSE, PROVIDE CONSISTENT BAND WIDTH BASED ON AVAILABLE STONE, LENGTHS VARY. DRESS STONES TO FIT.

ORNAMENTAL GRASSES
FINISH GRADE

1.5
SLOPE

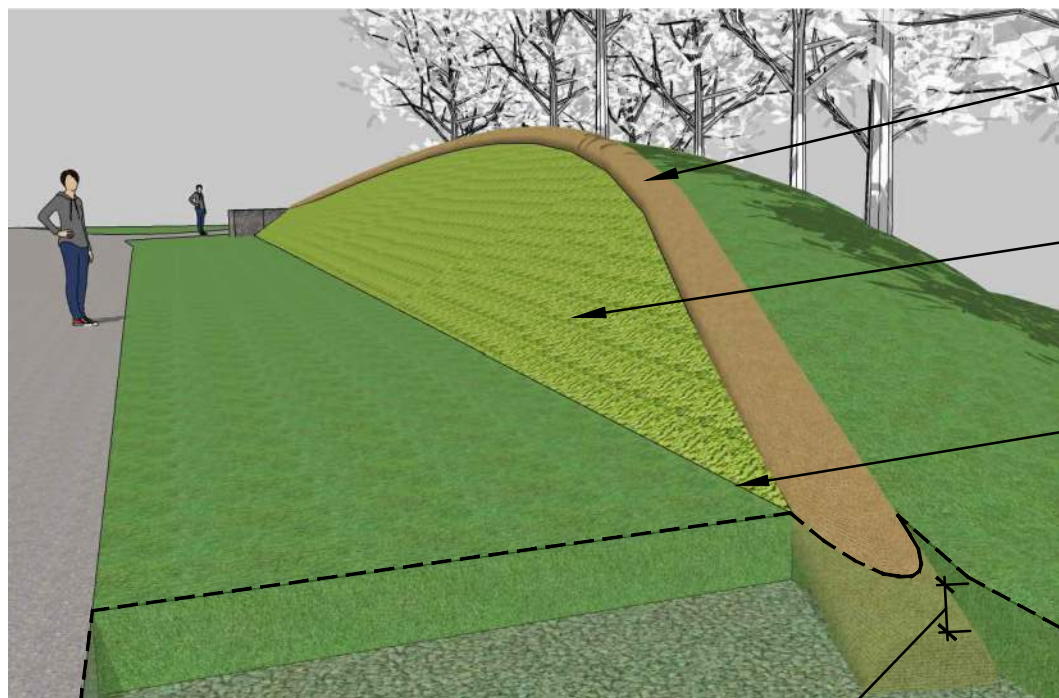
MIN 10" COVER

COIR MAT STAPLES STAGGERED AT 24" O.C.
COIR MAT, SEE SPECS
COMPACTED / UNDISTURBED SUBGRADE

TOE IN COIR MAT, MIN 12"

SECTION

2 CUT SLOPE STONE EMBANKMENT



PERSPECTIVE

PATH SIDE SWALE, SEE CIVIL
PLANTING LOAM

ORNAMENTAL GRASSES
FINISH GRADE

1.5
SLOPE

MIN 10" COVER

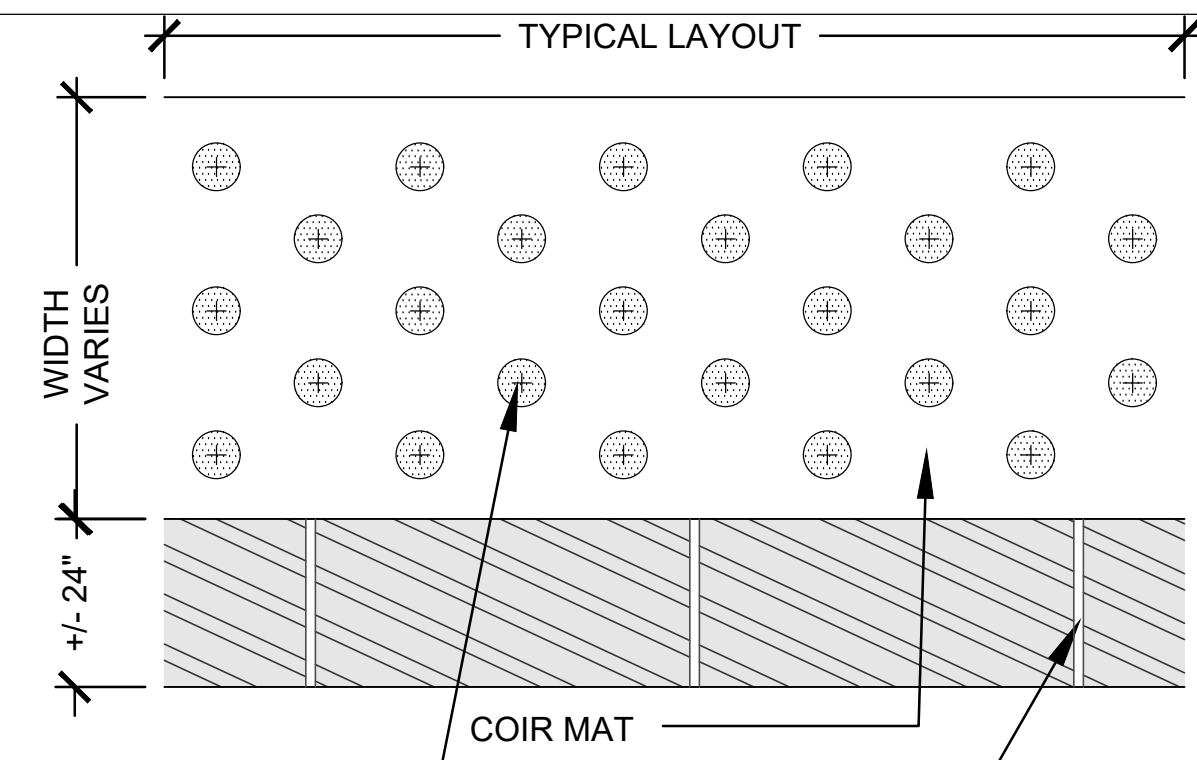
16" DIAMETER COIR LOGS, SEE SPECS. FOR ADJACENT COIR LOGS, REFER TO END-TO-END TYING DETAIL, THIS SHEET.

WRAP COIR MAT FULLY UNDER COIR LOG
2"x2"x4.5' WOOD STAKE BOTH SIDES, 3'-0" O.C.
COIR MAT STAPLES STAGGERED AT 24" O.C.
COIR MAT, SEE SPECS
COMPACTED / UNDISTURBED SUBGRADE

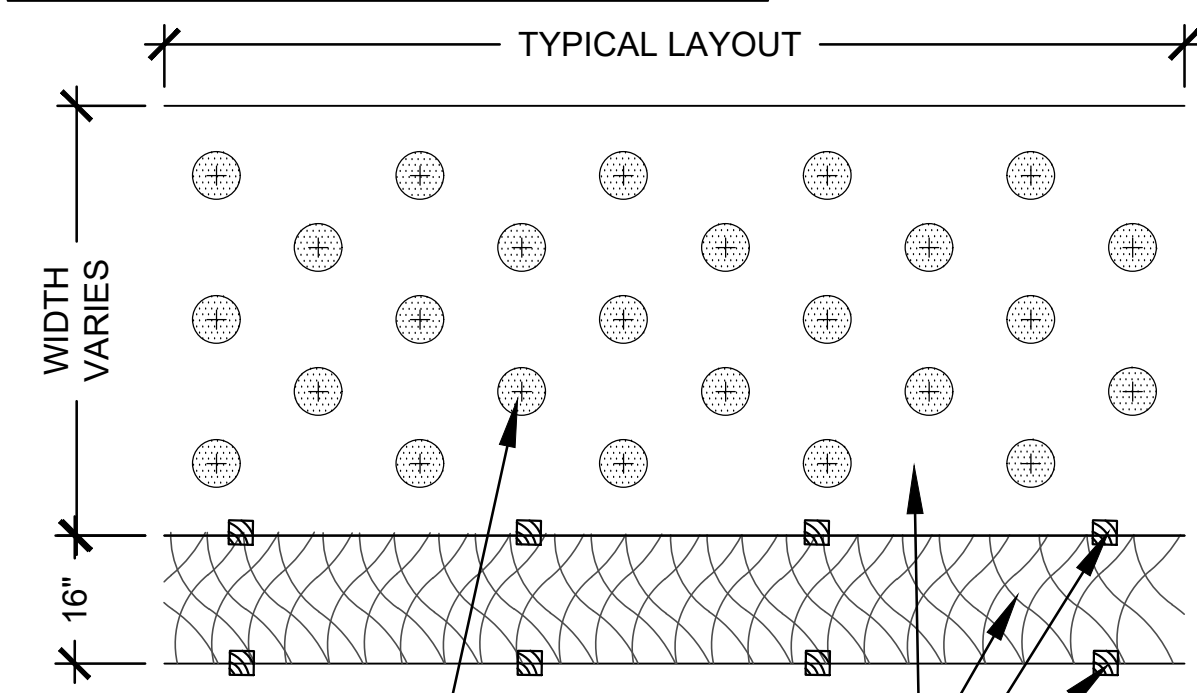
TOE IN COIR MAT, MIN 12"

SECTION

3 CUT SLOPE STONE EMBANKMENT



ORNAMENTAL GRASS, SEE PLANT SCHEDULE FOR SPECIES
ROCK HEADSTONE AND COIR MAT PLAN VIEW



ORNAMENTAL GRASS, SEE PLANT SCHEDULE FOR SPECIES
COIR LOG AND COIR MAT PLAN VIEW

SALVAGED CLASS B ROCK SCHEDULE (Estimated Salvaged and Proposed)

Stacked Boulder Block Wall	Length (ft.)	Courses	Total
Long wall	103.5	2	207
Short Wall	30	2	60
Total	133.5		267

Linear Feet of ~18" wide Class B Rock Required
400.5 Square Feet of Class B Rock Required

Embankment Top Band (Outside Dimension)	Arc Length (ft.)
Embankment 1	82
Embankment 2	96
Embankment 3	96
Embankment 4	120
Embankment 5	124
Embankment 6	148
Embankment 7	144
Total	810

Linear Feet of ~24" wide Class B Rock Required
1620 Square Feet of Class B Rock Required

Embankment Slope Face	Area (sq. ft.)
Embankment 1	288
Embankment 2	513
Embankment 3	478
Embankment 4	780
Embankment 5	1030
Embankment 6	1513
Embankment 7	1428
Total	6030

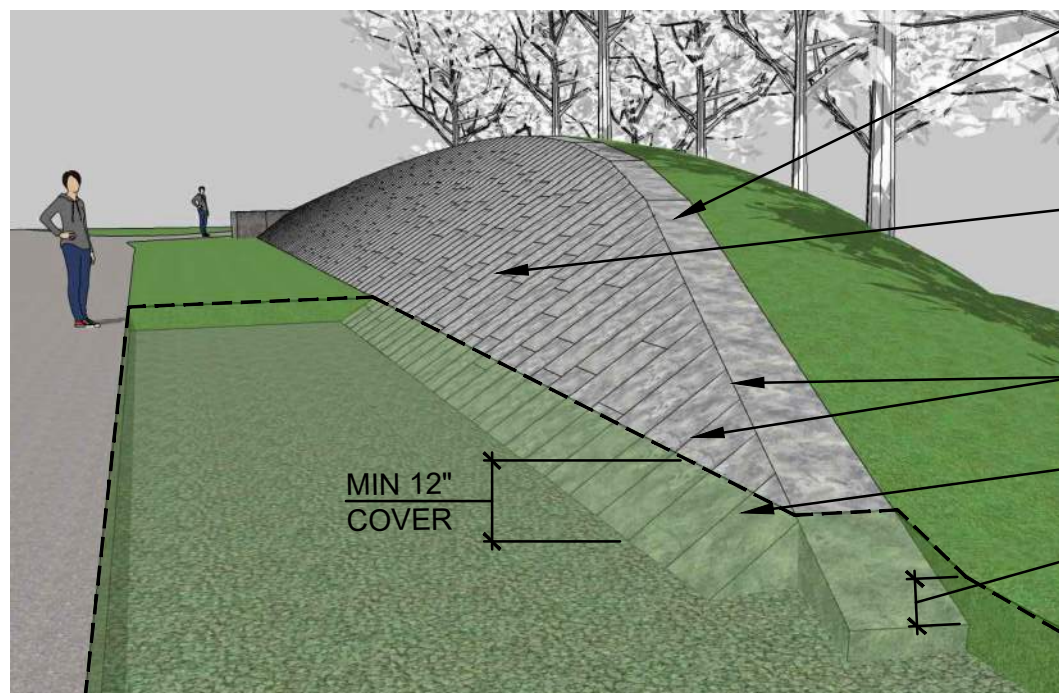
Square Feet of Class B Rock Required

Expected Granite to be Stockpiled on Site	Length (ft.)	Width (ft.)	Courses	Area (sq. ft.)
7 Span Viaduct	325	11	2	7150
1 Span Viaduct	74	11	2	1628
Total				8778

Sq. Ft. of Granite Expected to be Stockpiled

Expected Granite Utilization	Area (sq. ft.)
Expected to be stockpiled	8778
Stacked Boulder Block Wall	-400.5
Embankment Top Band	-1620
Embankment Slope Face	-6030
Total	727.5

Sq. Ft. of Expected Surplus Stockpiled Granite



PERSPECTIVE

PATH SIDE SWALE, SEE CIVIL
PLANTING LOAM

SALVAGED CLASS B ROCK HEADSTONE COURSE, PROVIDE CONSISTENT BAND WIDTH BASED ON AVAILABLE STONE, LENGTHS VARY. HAND DRESS STONES TO FIT.

SALVAGED CLASS B ROCK STACKED VERTICALLY IN RUNNING BOND PATTERN / STAGGERED JOINTS. RANDOM BAND WIDTH BASED ON AVAILABLE STONE, SIZES VARY

HAND DRESS STONES TO FIT. CUT AS NEEDED FOR TIGHT FIT, SEE SPEC
FINISH GRADE

MIN 10" COVER

MIN 12" COVER

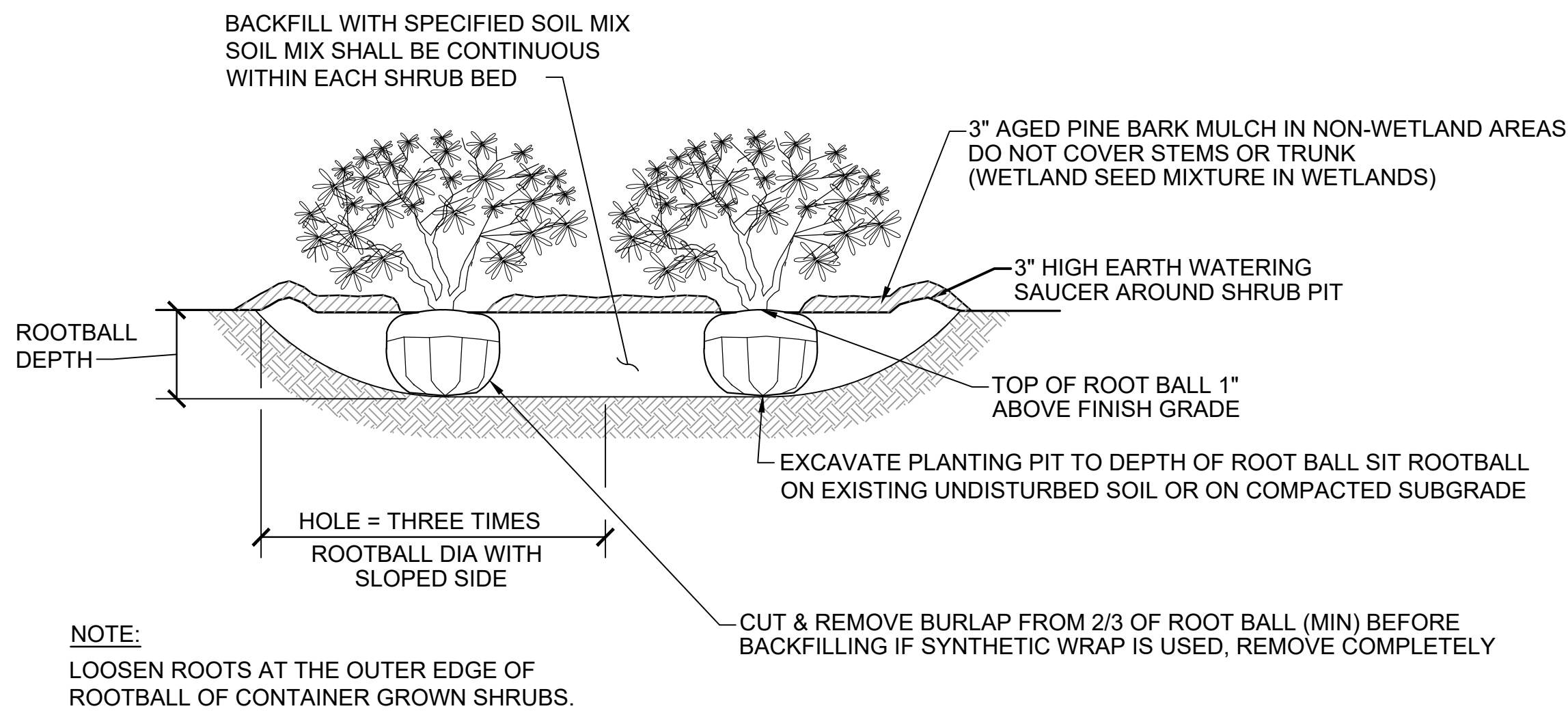
1.5
SLOPE

COMPACTED AGGREGATE BASE
FILTER FABRIC
COMPACTED / UNDISTURBED SUBGRADE
3/4" MAX. JOINT TYPICAL WITH SWEEP PEASTONE IN JOINTS
TOE IN BOTTOM COURSE OF STONE

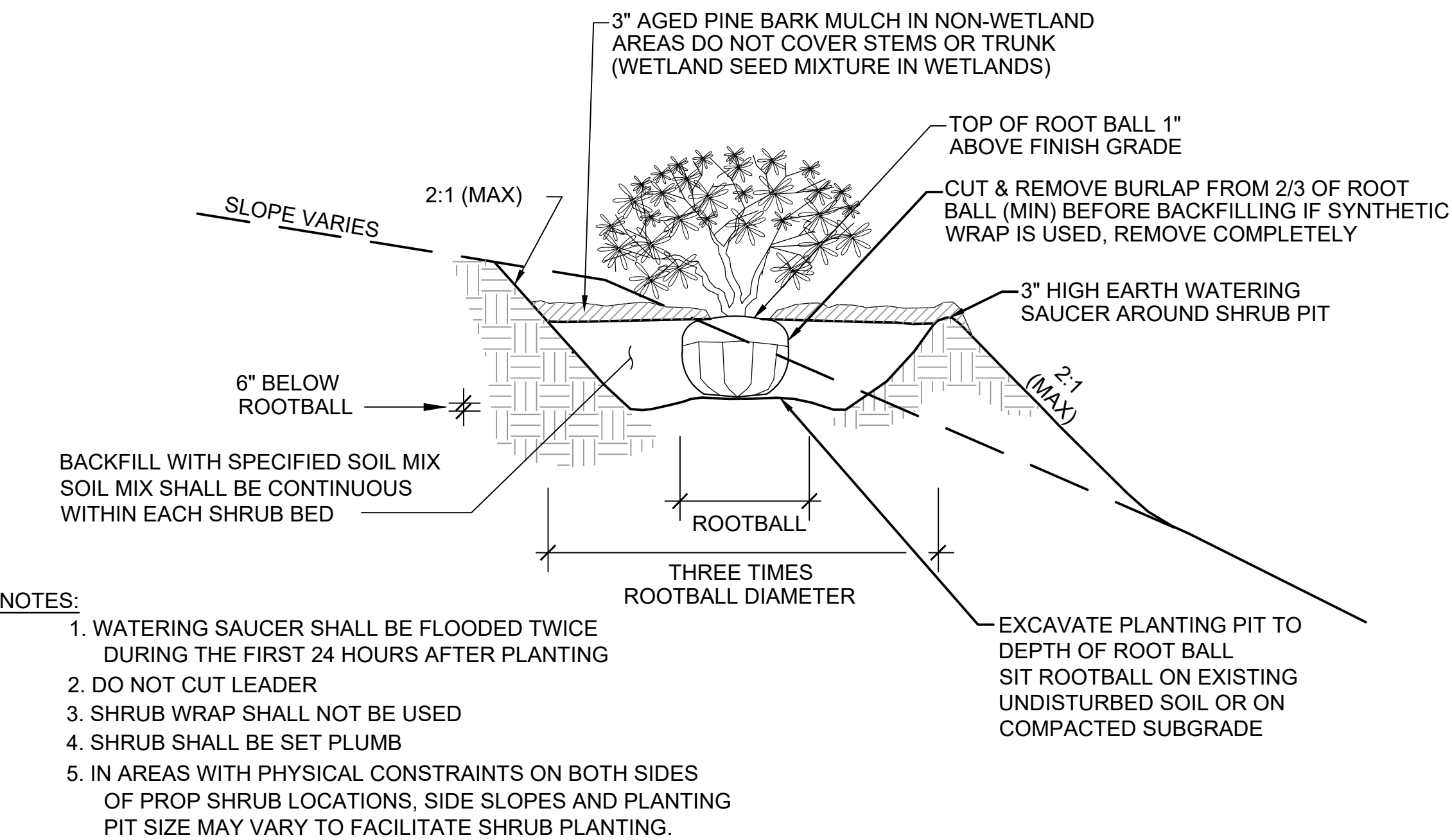
SECTION

1 CUT SLOPE STONE EMBANKMENT

COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION DIVISION OF ENGINEERING AND DIVISION OF PLANNING AND RESOURCE PROTECTION			
BLACKSTONE GREENWAY SEGMENT 1 PHASE 2			
BLACKSTONE GREENWAY BLACKSTONE, MA			
DESIGNER: RW CHECKED: JA	LANDSCAPE DETAILS		SHEET NO. LD-03
DRAWN: TS CHECKED: RW	CONT. P10-2636-C3A ACC. 104235X	SCALE: AS NOTED DATE: OCT 2022	3 OF 5



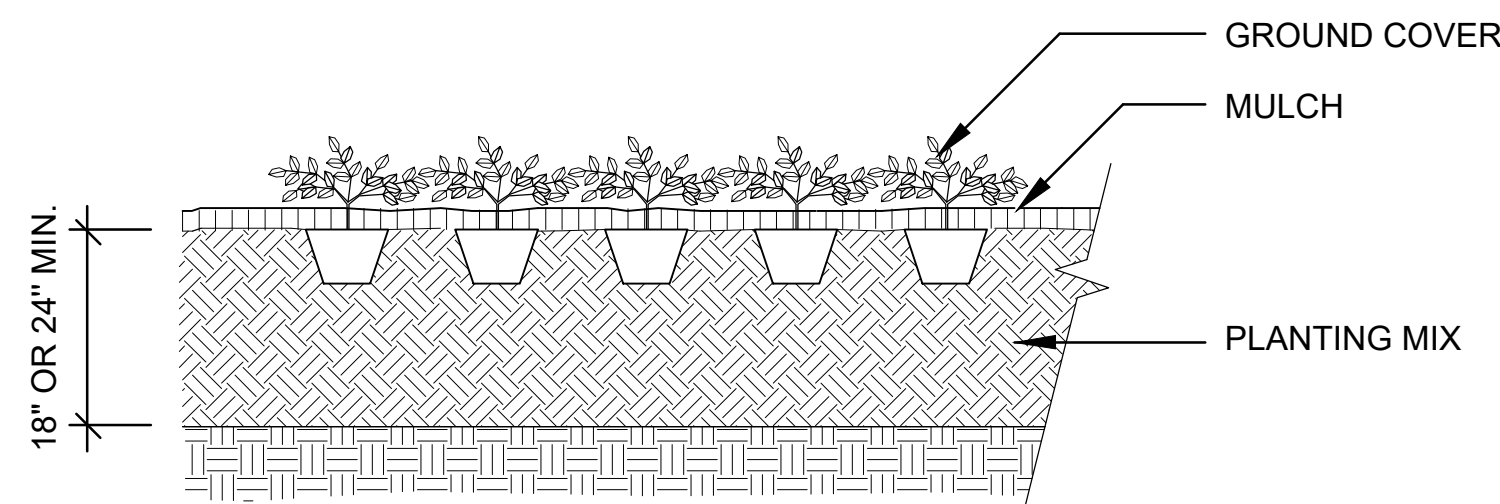
SHRUB PLANTING BED



SHRUB PLANTING IN SLOPE OR ON LEVEL GROUND

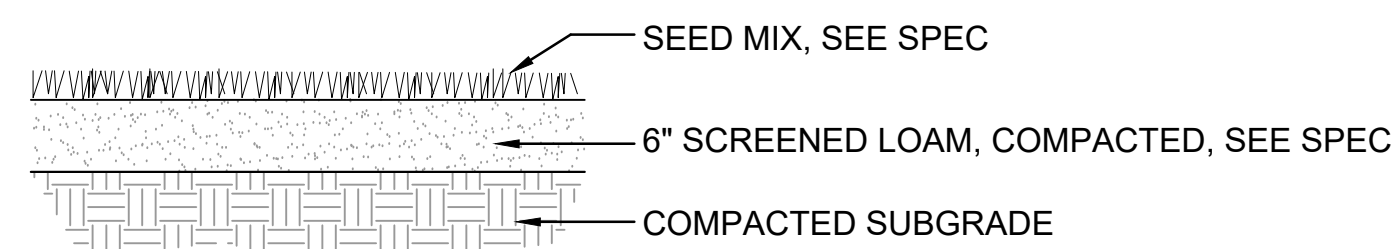
5 SHRUB PLANTING

SCALE: N.T.S.



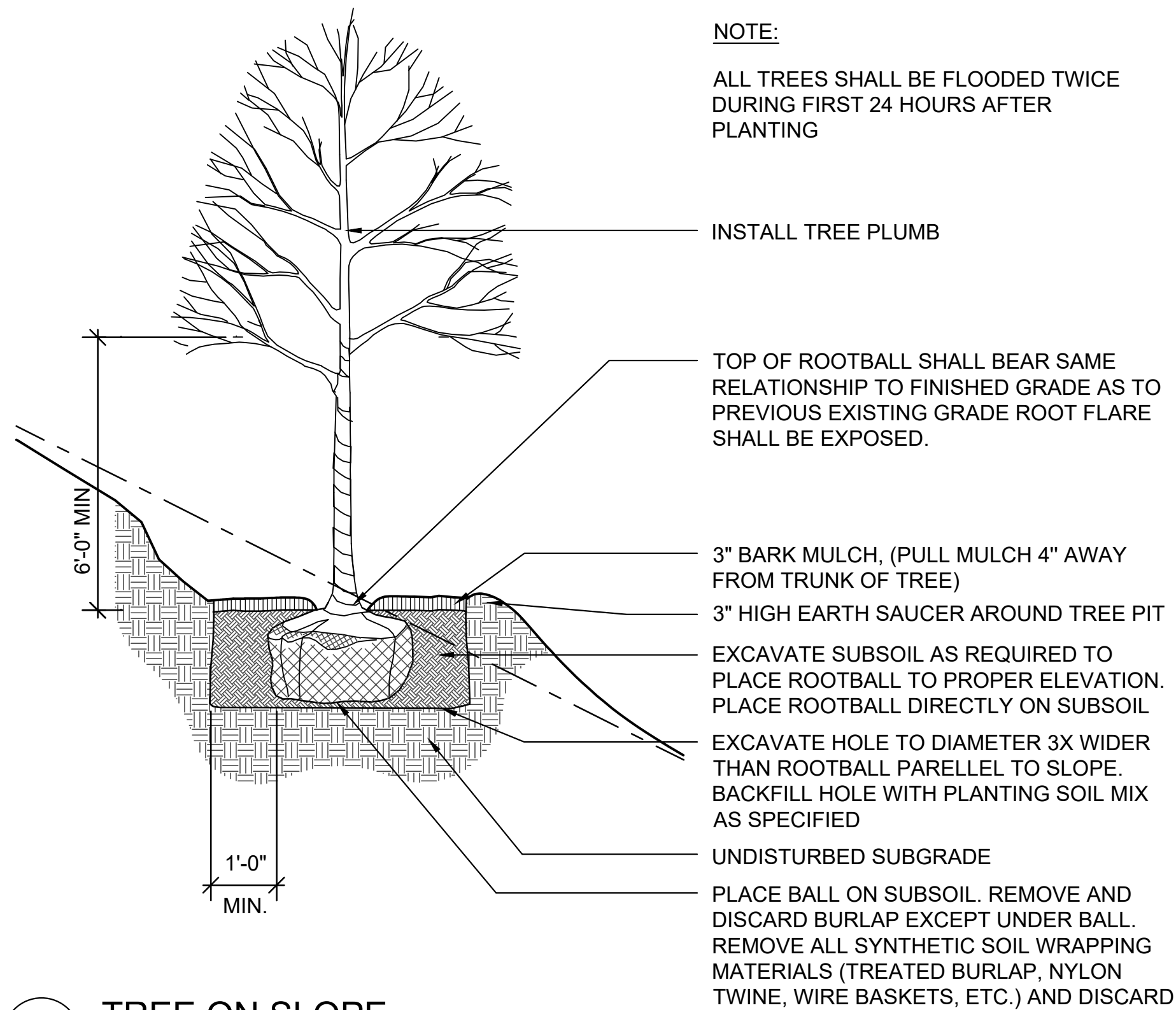
6 GROUND COVER PLANTING

SCALE: N.T.S.



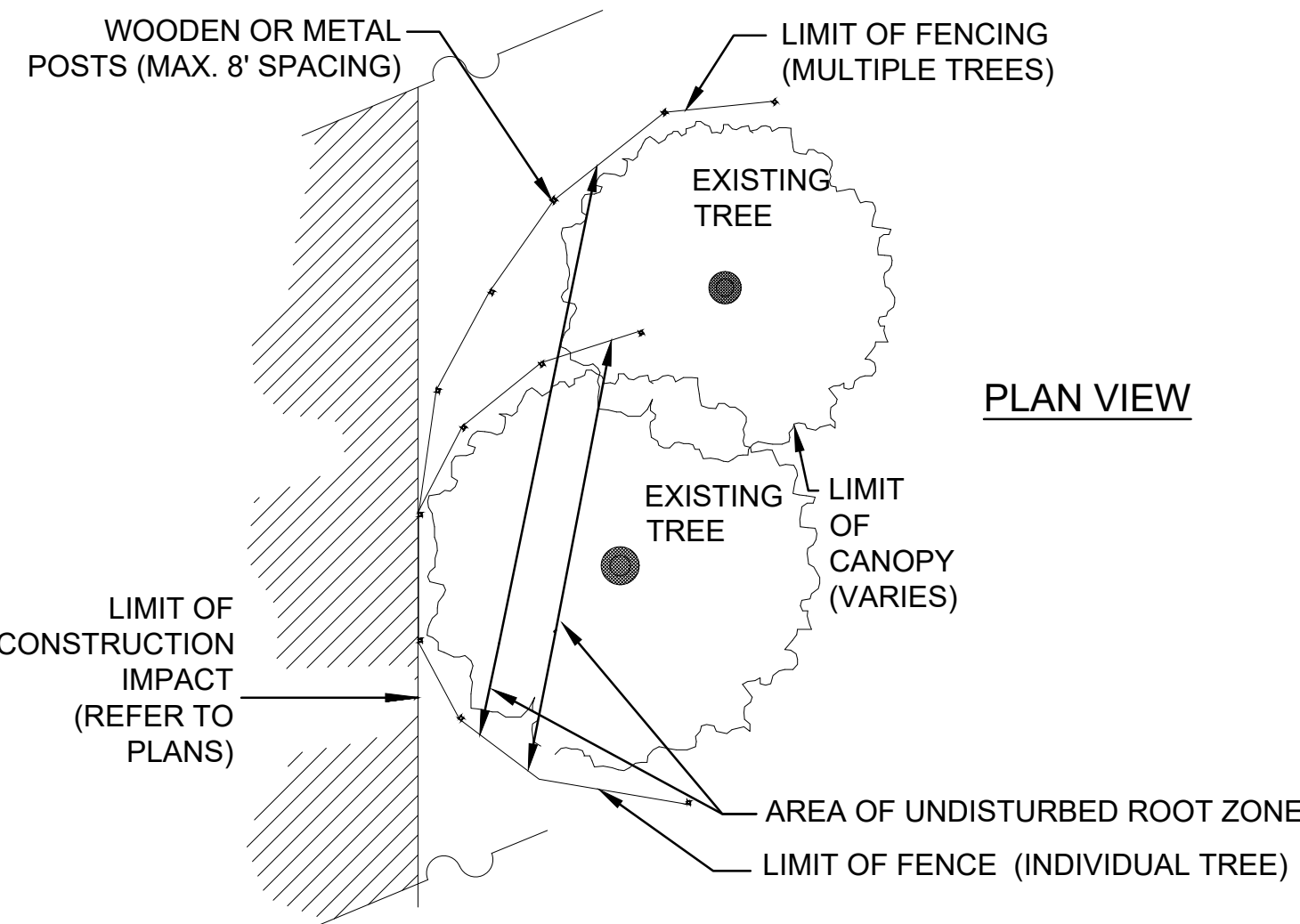
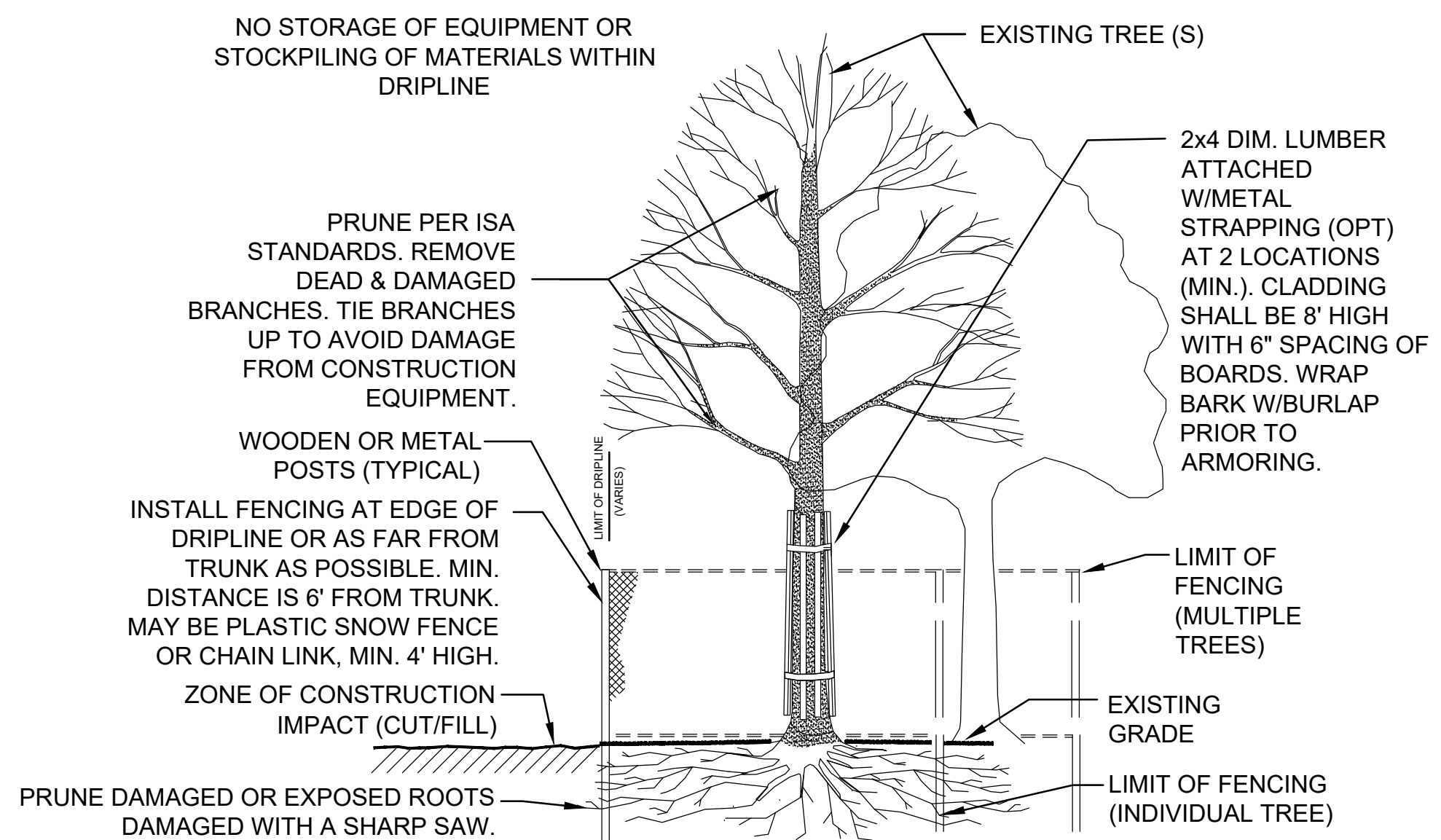
7 SEEDING

SCALE: N.T.S.



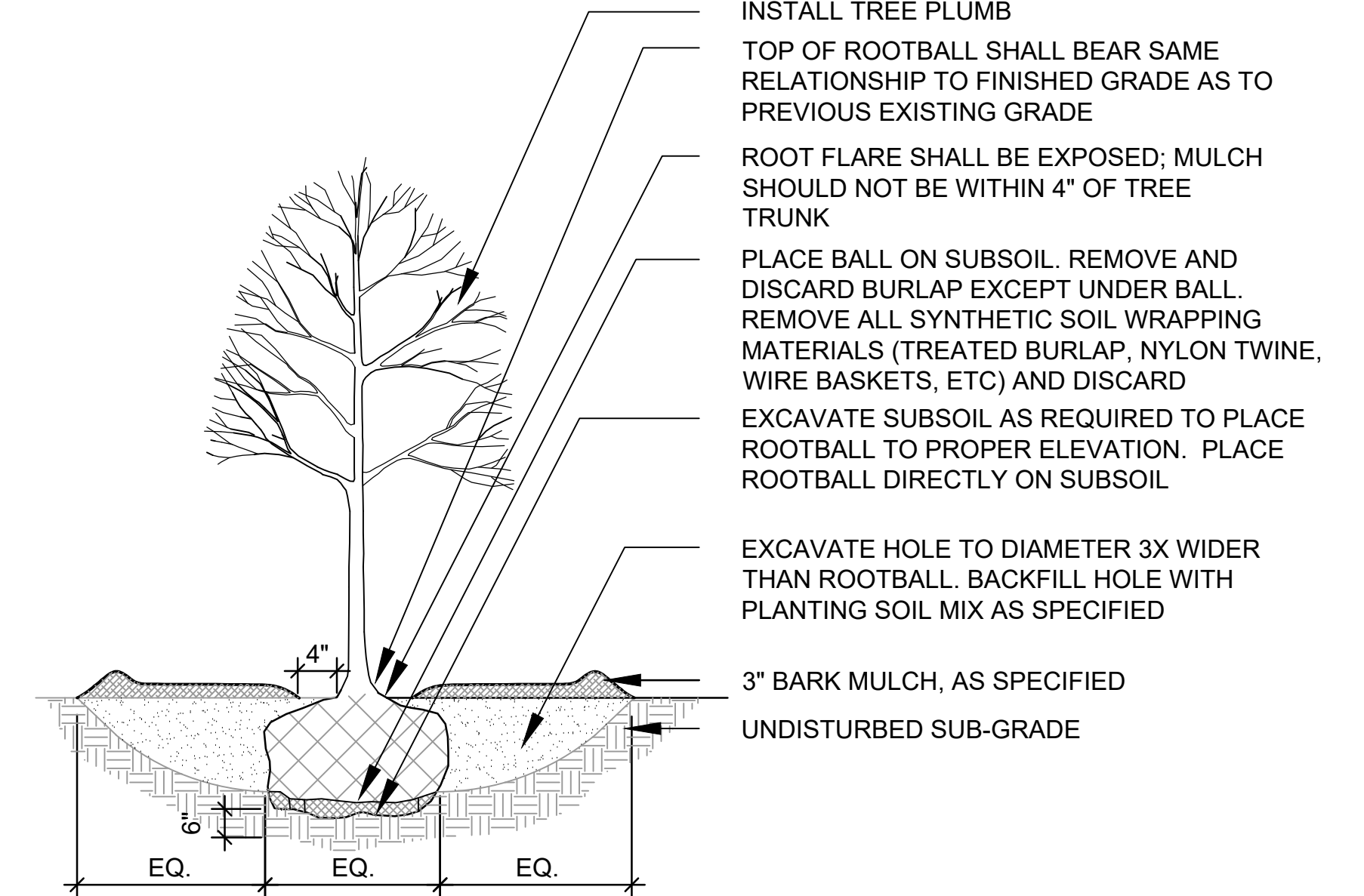
3 TREE ON SLOPE

SCALE: N.T.S.



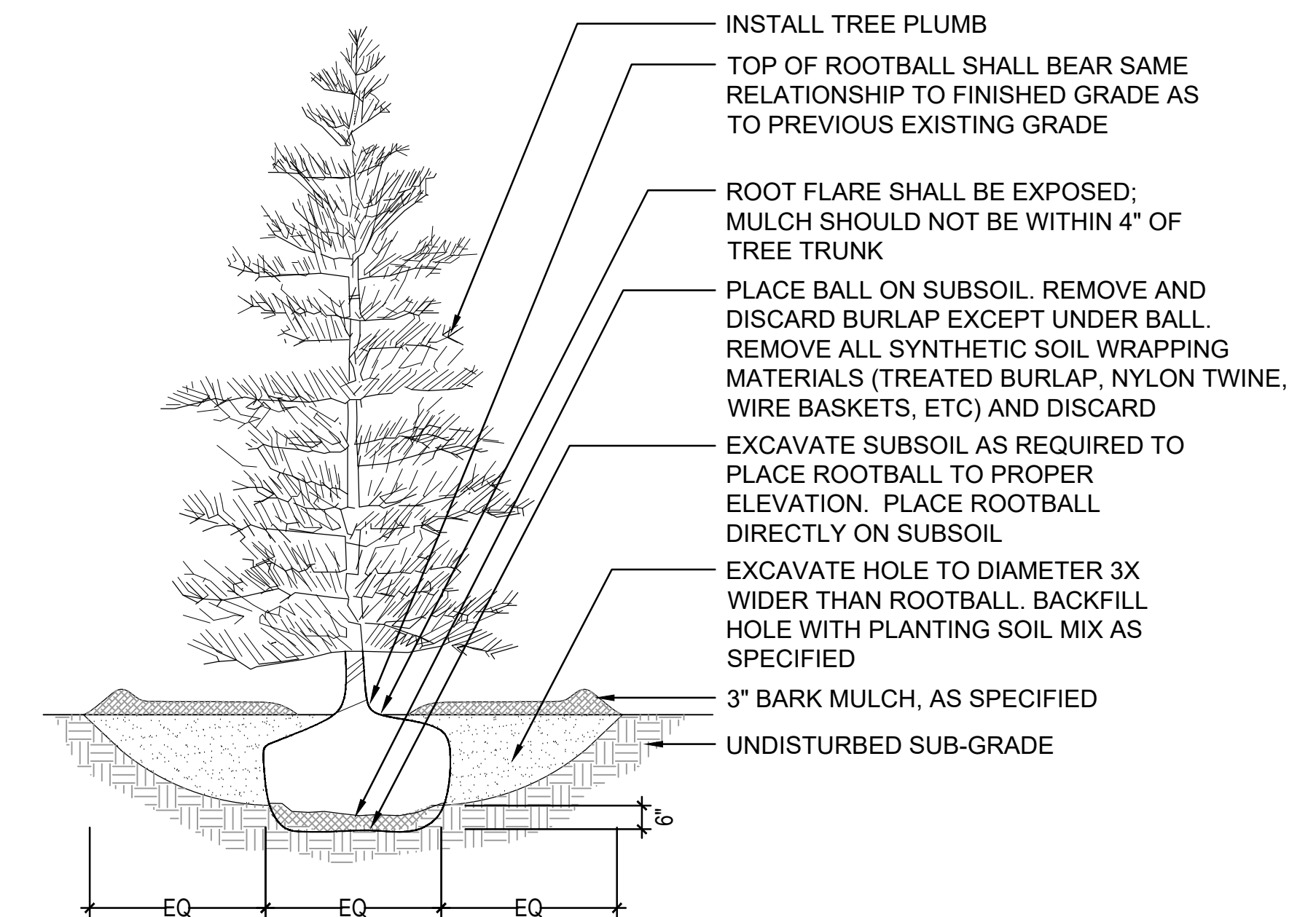
4 EXISTING TREE PROTECTION

SCALE: N.T.S.



1 DECIDUOUS TREE PLANTING

SCALE: N.T.S.



2 EVERGREEN TREE PLANTING

SCALE: N.T.S.

COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION DIVISION OF ENGINEERING AND DIVISION OF PLANNING AND RESOURCE PROTECTION			
BLACKSTONE GREENWAY SEGMENT 1 PHASE 2			
BLACKSTONE GREENWAY BLACKSTONE, MA			
DESIGNER: RW CHECKED: JA		SHEET NO. LD-04	
DRAWN: TS CHECKED: RW		CONT. P10-2636-C3A ACC. 104236X	
SCALE: AS NOTED DATE: OCT 2022		4 OF 5	

REV.	DATE	DESCRIPTION	BY

21 Custom House Street, Boston, MA 02110
tel +1 617 896 2500 www.BIGroup.com

PLANT SCHEDULE						
KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	COMMENTS
DECIDUOUS TREES						
ACE RUB	11	Acer rubrum	Red Maple	1.5–2” cal.	As shown	Spring planting only
AME CAN	9	Amelanchier canadensis	Shadblow Serviceberry	8–10’ B&B	As shown	Clump form
BET NIG	17	Betula nigra	River Birch	1.5 –2” cal.	As shown	
CER CAN	18	Cercis canadensis	Eastern Redbud	1.5–2” cal.	As shown	Spring planting only
HAM VIR	14	Hamamelis virginiana	Whitchhazel	5–7’ B&B	As shown	
NYS SYL	5	Nyssa sylvatica	Black Tupelo	1.5–2” cal.	As shown	Spring planting only
OST VIR	3	Ostrya virginiana	Eastern Hop–Hornbeam	1.5–2” cal.	As shown	Spring planting only
QUE ALB	12	Quercus alba	White Oak	1.5–2” cal.	As shown	Spring planting only
ULM RUB	5	Ulmus rubra	Slippery Elm	1.5–2” cal.	As shown	Spring planting only
EVERGREEN TREES						
ABS BAL	14	Abies balsamea	Balsam Fir	7–8’ B&B	As shown	
ABI CON	10	Abies concolor	White Fir	7–8’ B&B	As shown	
JUN VIR	27	Juniperus virginiana	Eastern Red Cedar	7–8’ B&B	As shown	Include 1 male of species for pollination
PIN STR	11	Pinus strobus	Eastern White Pine	7–8’ B&B	As shown	
SHRUBS						
AZA CAN	197	Azalea canadense	Rosebay Rhododendron	7 gal.	24” O.C.	Spring planting only, Include 1 male of species in each massing for pollination
CLE ALN	55	Clethra alnifolia	Summersweet	7 gal.	36” O.C.	
COM PER	417	Comptomia peregrina	Sweet Fern	1 gal.	15” O.C.	
MYR GAL	230	Myrica gale	Sweetgale	7 gal.	30” O.C.	
ILX GLA	172	Ilex glabra	Inkberry	7 gal.	30” O.C.	
VIB DNT	66	Viburnum dentatum	Arrowwood Viburnum	7 gal.	30” O.C.	
ORNAMENTAL GRASSES - SEE SHEET LD-03						
	660	Carex pensylvanica	Pennsylvania Sedge	2” Plug	12” O.C.	See LD–03 for locations
	1475	Deschampsia flexuosa	Wavy Hair Grass	2” Plug	12” O.C.	See LD–03 for locations
	1300	Schizachyrium scoparium	Little Bluestem	2” Plug	12” O.C.	See LD–03 for locations
	1679	Sporobolus heterolepis	Prairie Dropseed	2” Plug	12” O.C.	See LD–03 for locations

PLANTING NOTES:

- EXISTING CONDITIONS, INCLUDING WETLAND DELINEATION, ARE TAKEN FROM SURVEY PLAN AS PREPARED BY CULLINAN ENGINEERING OF BOSTON, MA FOR VANASSE HANGEN BRUSTLIN INC. OF WATERTOWN, MA.
- PRIOR TO COMMENCING ANY EXCAVATION WORK, THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES IN ACCORDANCE WITH THE "DIG SAFE" NOTIFICATION PROCEDURES PROMOTED BY RESPECTIVE UTILITY COMPANIES. THE DIG SAFE TELEPHONE NUMBER FOR MASSACHUSETTS IS 1-800-322-4844.
- IF DISCREPANCIES EXIST BETWEEN THE NUMBER OF PLANTS DRAWN ON THE PLANTING PLAN AND THE NUMBER OF PLANTS IN THE PLANT SCHEDULE, THE PLANTING PLAN SHALL GOVERN.
- ALL NEW PLANT MATERIAL SHALL CONFORM TO THE MINIMUM GUIDELINES ESTABLISHED FOR NURSERY STOCK PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN, INC. IN ADDITION, ALL NEW PLANT MATERIAL FOR THE PROJECT SHALL BE OF SPECIMEN QUALITY.
- ALL NEW PLANTS TO BE BALLED AND BURLAPPED OR CONTAINER-GROWN, UNLESS OTHERWISE NOTED ON THE PLANT LIST. THE CONTRACTOR SHALL SUPPLY ALL NEW PLANT MATERIAL IN QUANTITIES SUFFICIENT TO COMPLETE THE PLANTING SHOWN ON THE DRAWINGS.
- ANY PROPOSED SUBSTITUTIONS OF PLANT SPECIES SHALL BE MADE WITH PLANTS OF EQUIVALENT OVERALL FORM, HEIGHT, BRANCHING HABIT, FLOWER, LEAF, COLOR, FRUIT AND CULTURE, AND ONLY AFTER WRITTEN APPROVAL OF THE ENGINEER.
- ALL NEW PLANTS SHALL BE TAGGED AND APPROVED BY THE ENGINEER AT THE NURSERY PRIOR TO DIGGING OR DELIVERY TO THE SITE.
- CONTRACTOR SHALL LOCATE AND VERIFY ALL EXISTING UTILITY LINES PRIOR TO PLANTING AND SHALL REPORT ANY CONFLICTS TO THE ENGINEER. STAKE LOCATION OF ALL PROPOSED PLANTING FOR APPROVAL BY LANDSCAPE ARCHITECT PRIOR TO THE COMMENCEMENT OF PLANTING.
- NEW SHRUBS AND GROUND COVER SHALL BEAR THE SAME RELATIONSHIP TO GRADE AS IT BORE TO PREVIOUS GRADE. TREES SHALL BE SET 3" HIGHER THAN PREVIOUS GRADE. NO TREES SHALL BE PLANTED BEFORE ACCEPTANCE OF ROUGH GRADING. ALL PLANT BEDS TO RECEIVE TWO INCHES (2") OR THREE INCHES (3") OF BARK MULCH AS PER SPECIFICATIONS.
- ALL EXISTING TREES TO REMAIN SHALL BE PROPERLY PROTECTED DURING CONSTRUCTION. PROTECTION TECHNIQUES SHALL BE REVIEWED AND APPROVED BY THE ENGINEER.
- PRUNE TREES IN ACCORDANCE WITH THE SPECIFICATIONS.
- CONTRACTOR SHALL PROVIDE FULL DEPTHS OF LOAM AS NOTED ON DETAILS AND AS SPECIFIED, FOR ALL PLANTING.
- CONTRACTOR SHALL COORDINATE LOCATION OF ALL UTILITIES (LINES, DUCTS, CONDUITS, SLEEVES, FOOTINGS, ETC.) WITH LOCATIONS OF PROPOSED LANDSCAPE ELEMENTS (WALLS, FENCE, FOOTINGS, TREE ROOTBALLS, PROPOSED LIGHTING FOOTINGS, ETC.). CONTRACTOR SHALL REPORT ANY DISCREPANCIES TO ENGINEER PRIOR TO CONTINUING WORK.
- CONTRACTOR SHALL OBTAIN ARCHITECT'S APPROVAL OF ALL SUB-GRADE AREAS, PRIOR TO INSTALLATION OF PLANTING SOILS IN ALL PLANTED AREAS. SUB-GRADE SHALL MEET SPECIFIED COMPACTION AND PERCOLATION RATES. ANY AREAS NOT COMPLIANT SHALL BE REMEDIATED AND TESTED UNTIL COMPLIANT, AT NO COST TO OWNER.
- LIMIT OF WORK LINE IS NOTED ON CIVIL DRAWINGS ONLY. CONTRACTOR IS RESPONSIBLE FOR ALL DAMAGE DUE TO OPERATIONS INSIDE AND OUTSIDE OF THE CONTRACT LIMIT LINE. ANY AREAS OUTSIDE THE LIMIT OF WORK THAT ARE DISTURBED SHALL BE RESTORED TO ITS ORIGINAL CONDITION AT NO COST TO THE OWNER



PLAN NOTES:

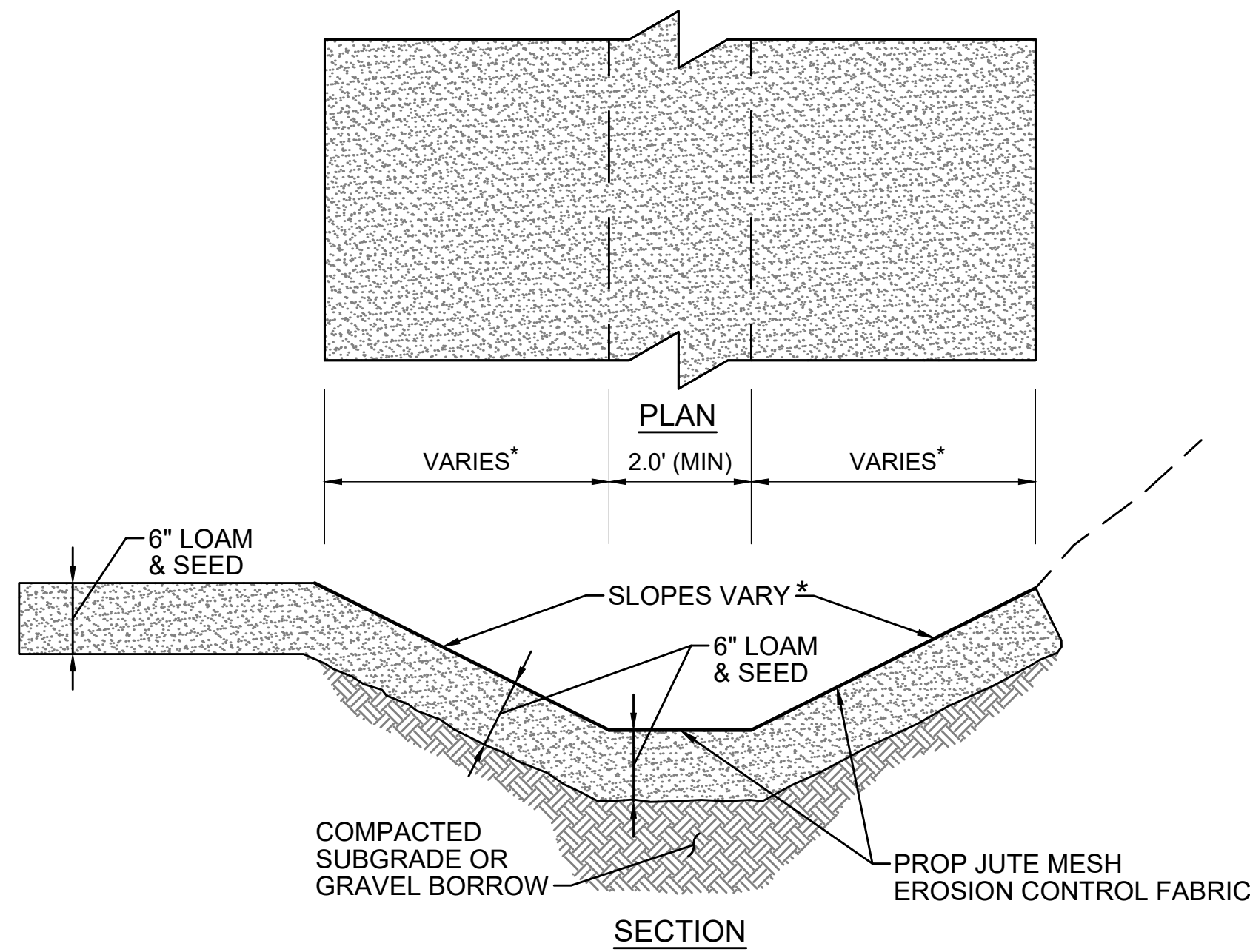
- ALL AREAS PREVIOUSLY SEEDED UNDER MAINTENANCE CONTRACT DISTURBED DURING CONSTRUCTION PROCESS SHALL BE SPREAD WITH LOAM AND RE-SEEDED WITH SEED MIX 2.

SEEDING:
SEED MIXES BASED ON THOSE MANUFACTURED BY NEW ENGLAND WETLAND PLANTS, INC.

SEED MIX 1: LAWN
SEED MIX 2: MEADOW
SEED MIX 3: VIADUCT

REFER TO SEEDING SPECIFICATION FOR SPECIFIC SEED BLEND CONTENTS

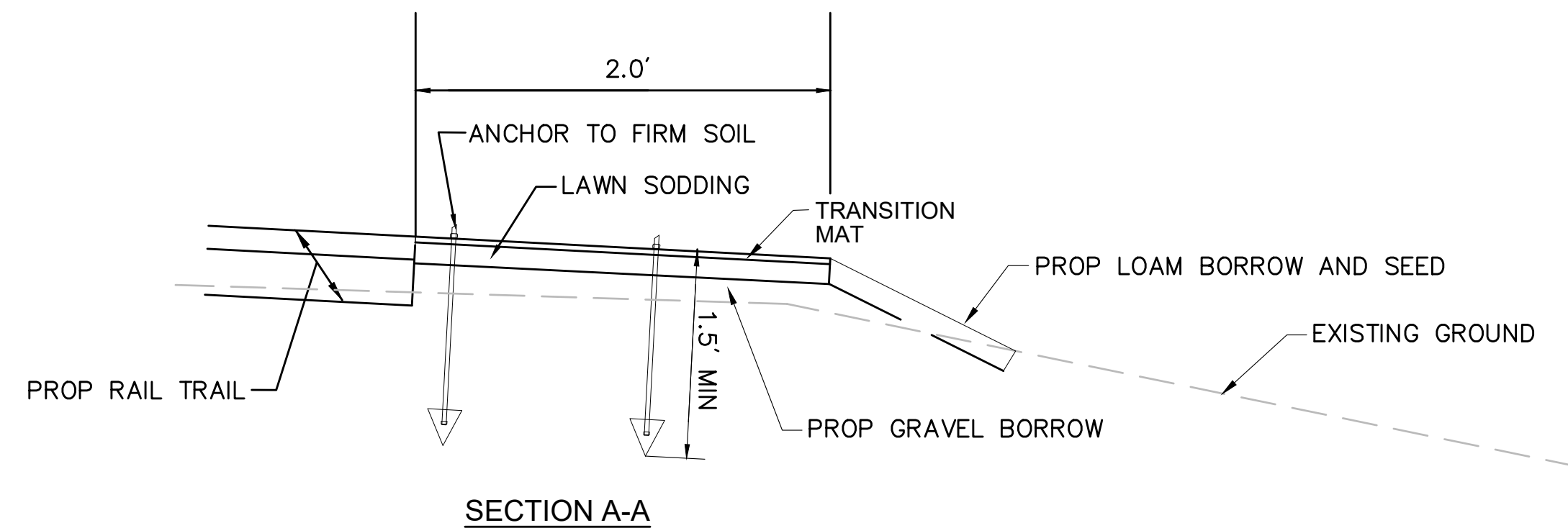
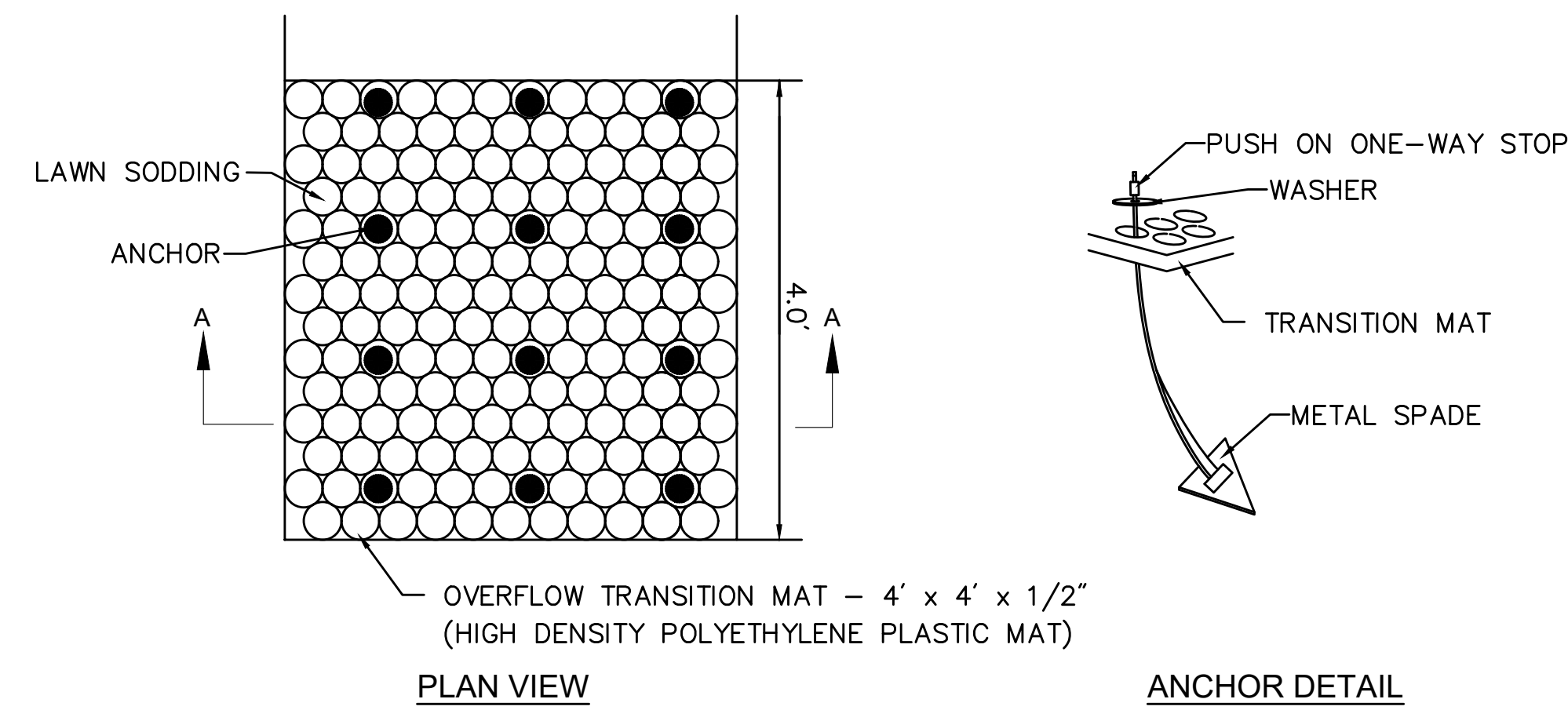
REV.	DATE	DESCRIPTION			BY
		 21 Canton Village Street, Boston, MA 02119 tel +1 617 896 2500 www.IBGroup.com			
<div>COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION DIVISION OF ENGINEERING AND DIVISION OF PLANNING AND RESOURCE PROTECTION</div> <div>BLACKSTONE GREENWAY SEGMENT 1 PHASE 2</div> <div>BLACKSTONE GREENWAY BLACKSTONE, MA</div> <div>DESIGNER: RW CHECKED: JA</div> <div>DRAWN: TS CHECKED: RW</div> <div>PLANTING SCHEDULE</div> <div>CONT. P10-2636-C3A ACC. 104237X</div> <div>SCALE: AS NOTED DATE: OCT 2022</div> <div>SHEET NO. LD-05 5 OF 5</div>					



*SEE TYPICAL SECTIONS & CROSS SECTIONS FOR ADDITIONAL INFORMATION

SWALE

SCALE: NTS



PROPOSED OVERFLOW GRASS SWALE

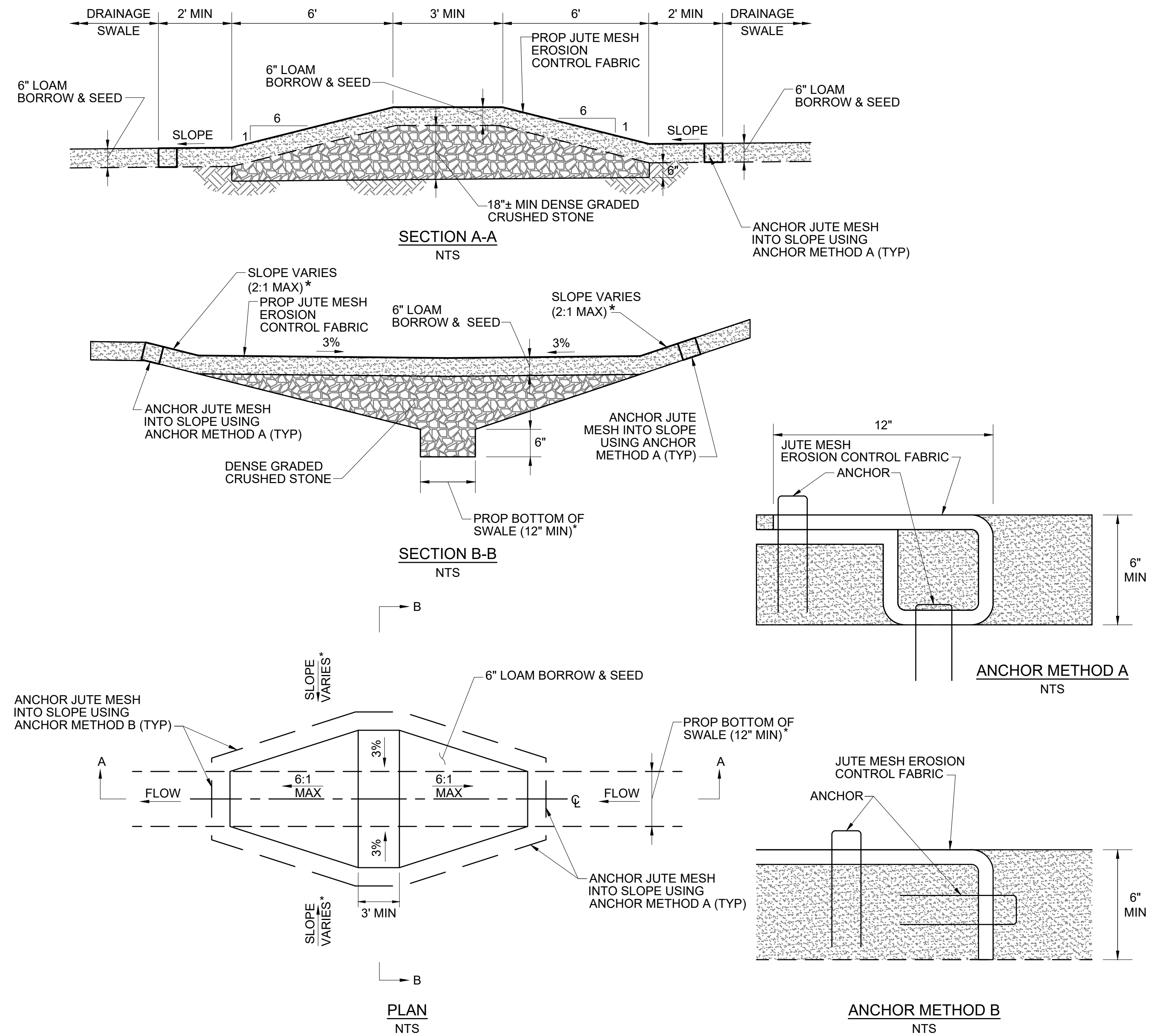
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NOTES:

- EXISTING MATERIAL OBTAINED FROM EXCAVATION THAT IS DETERMINED TO BE SUITABLE AND APPROVED BY THE ENGINEER SHALL BE USED. STONES LARGER THAN 6" SHALL NOT BE USED. BACKFILL SHALL BE PLACED IN 6" MAX LIFTS AND COMPACTED.
- SOFT OR UNSUITABLE MATERIAL EXISTING BELOW THE BEDDING GRADE SHALL BE REMOVED A MINIMUM OF 6" AND AS DIRECTED. REPLACEMENT CRUSHED STONE (M2.01.4) SHALL BE COMPACTED.

6" SUBDRAIN TRENCH DETAIL

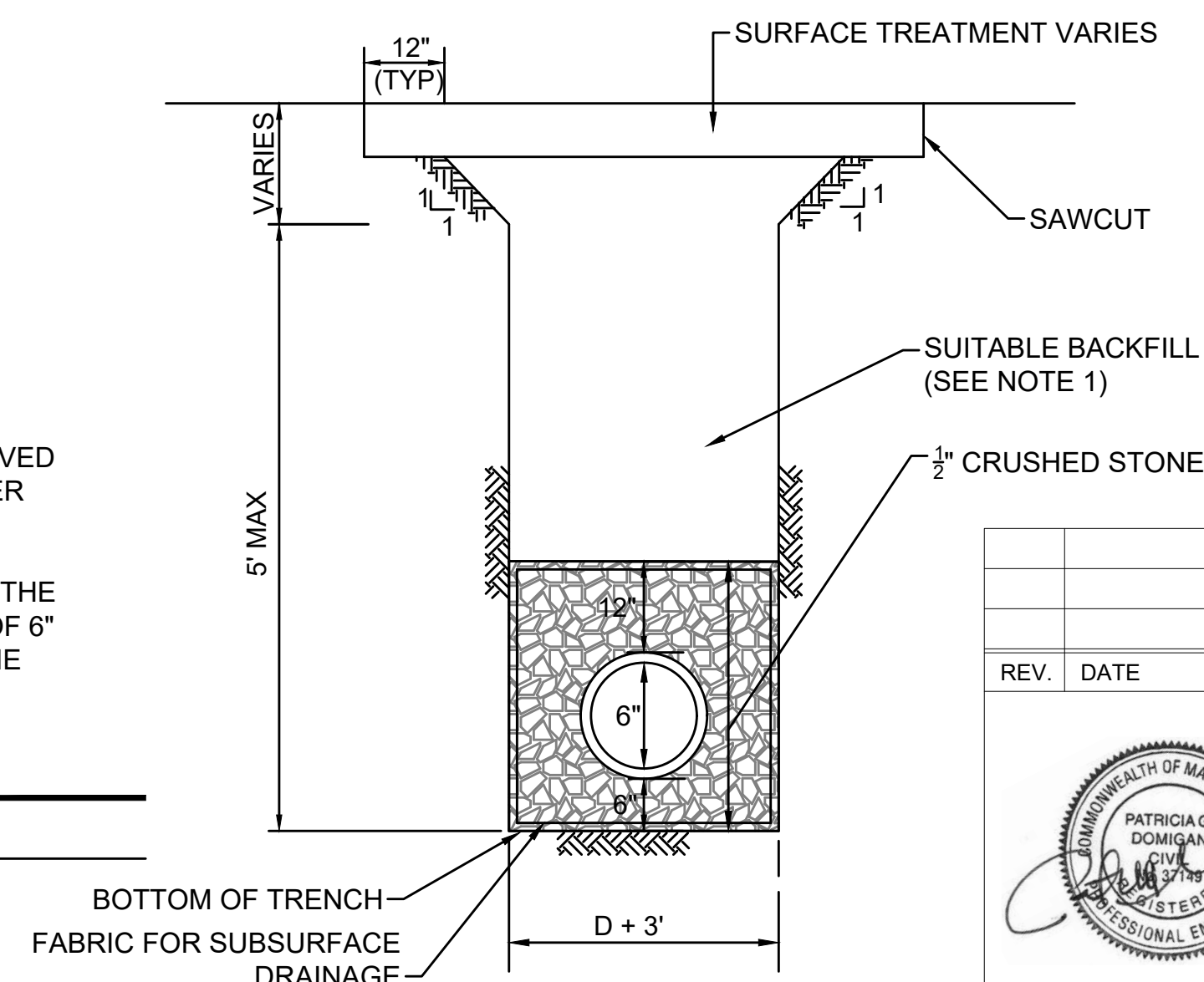
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*SEE CROSS SECTIONS FOR ADDITIONAL INFORMATION

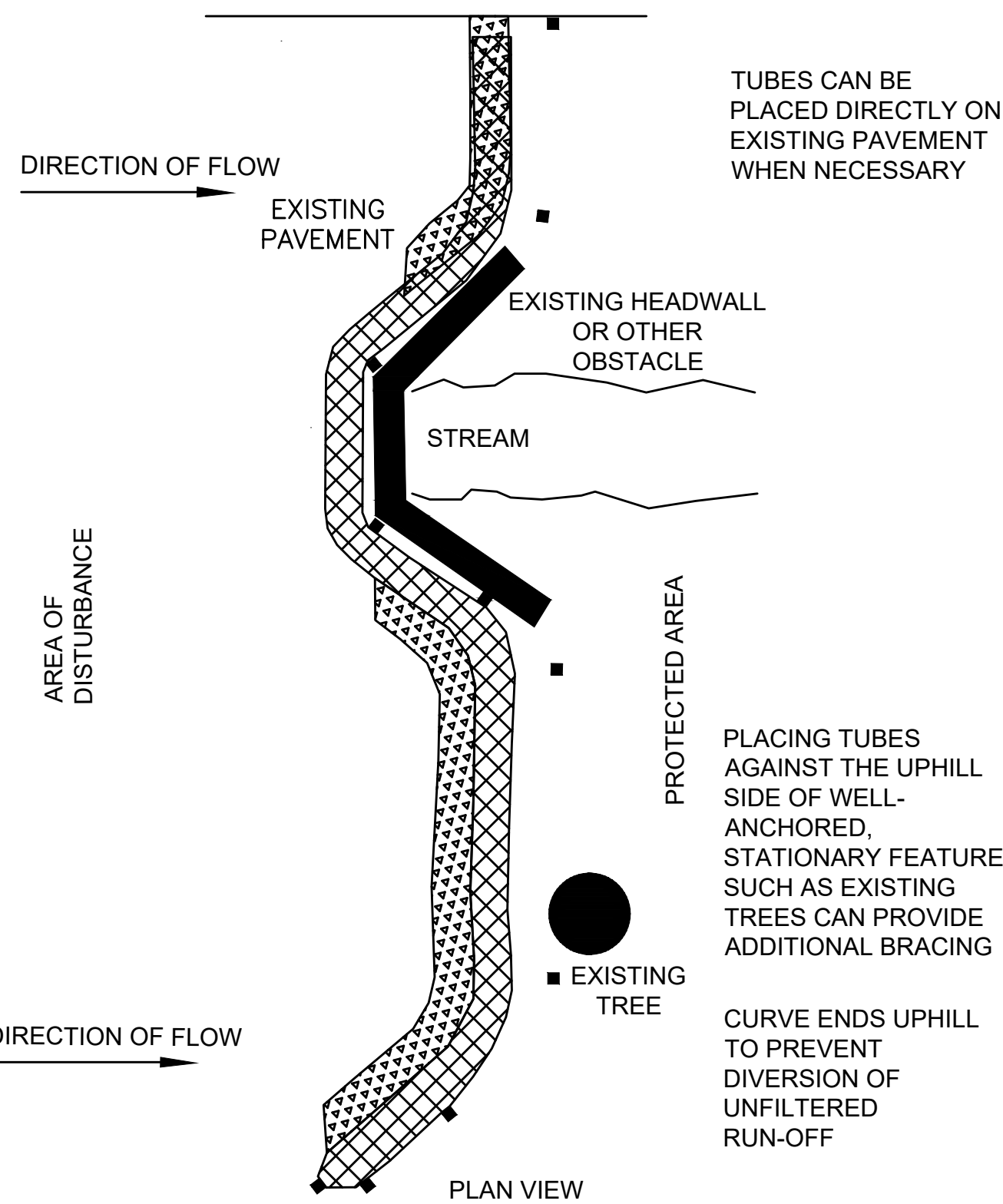
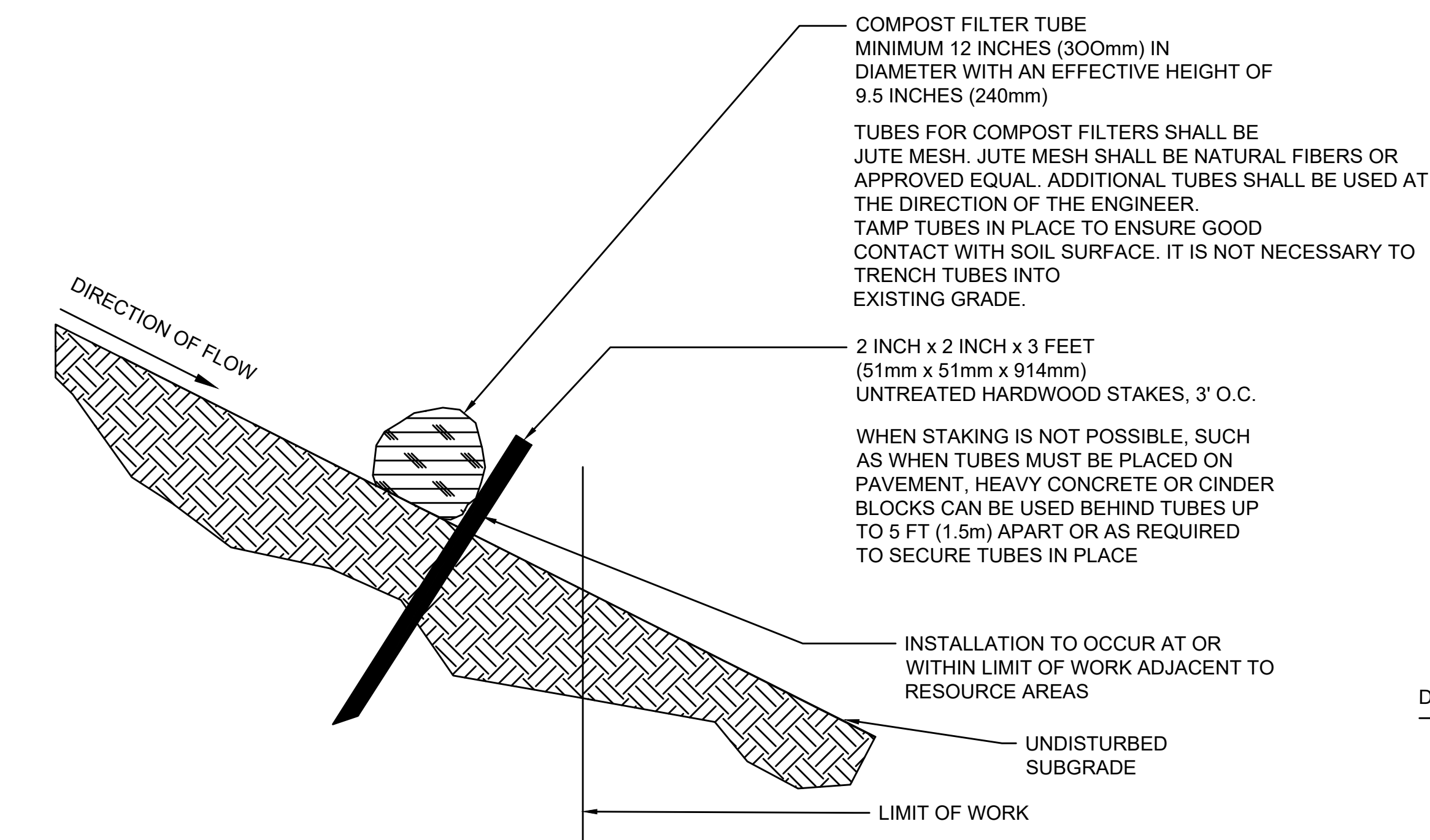
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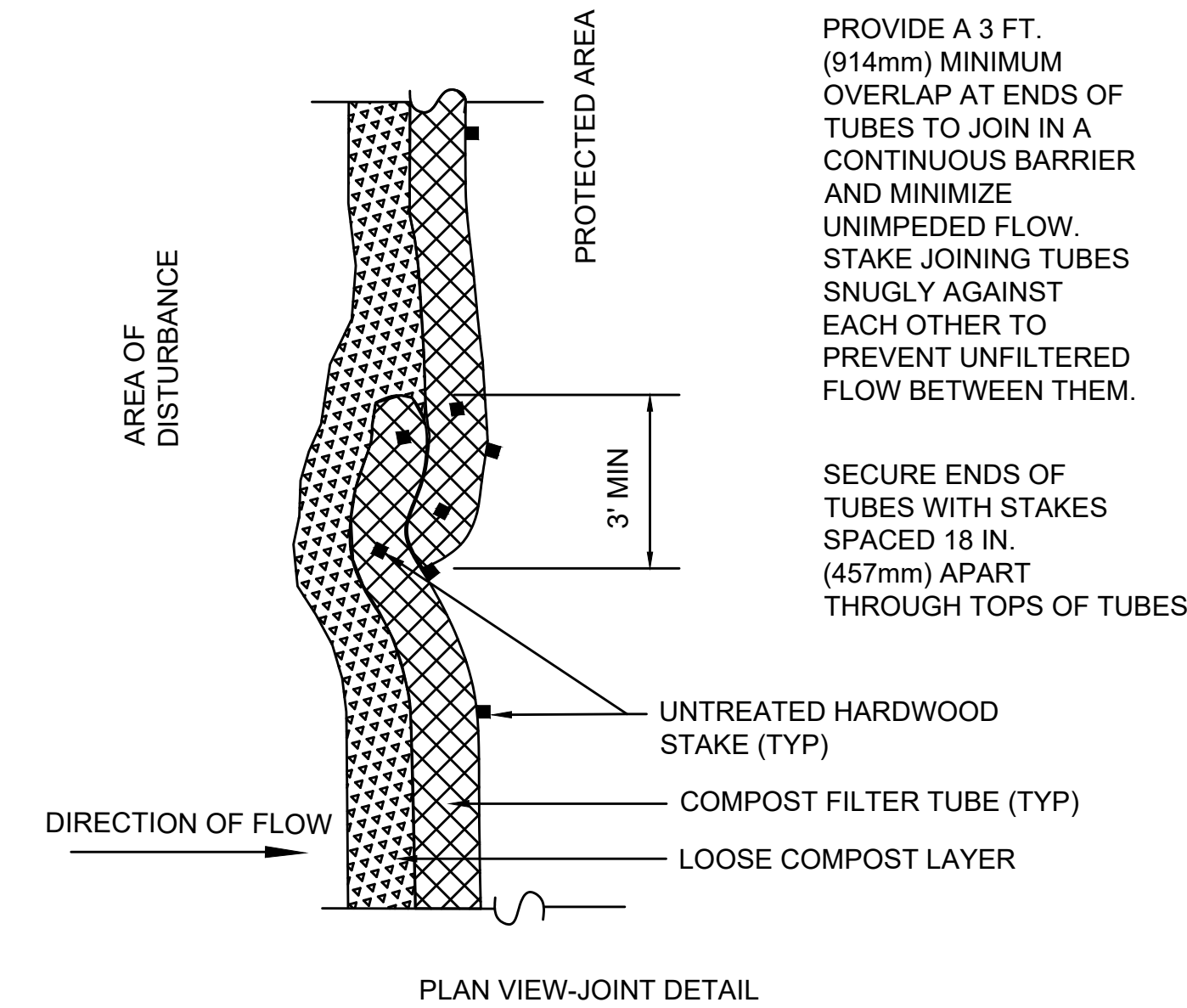


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BLACKSTONE GREENWAY SEGMENT 1 PHASE 2			
BLACKSTONE GREENWAY BLACKSTONE, MA			
DESIGNER: SAH	CONSTRUCTION DETAILS		SHEET NO.
CHECKED: SHK	CONT: P10-2636-C3A		CD-1
DRAWN: SAH	ACC: 104238x		1 OF 3
CHECKED: LSA	SCALE: AS NOTED		DATE: OCT 2022

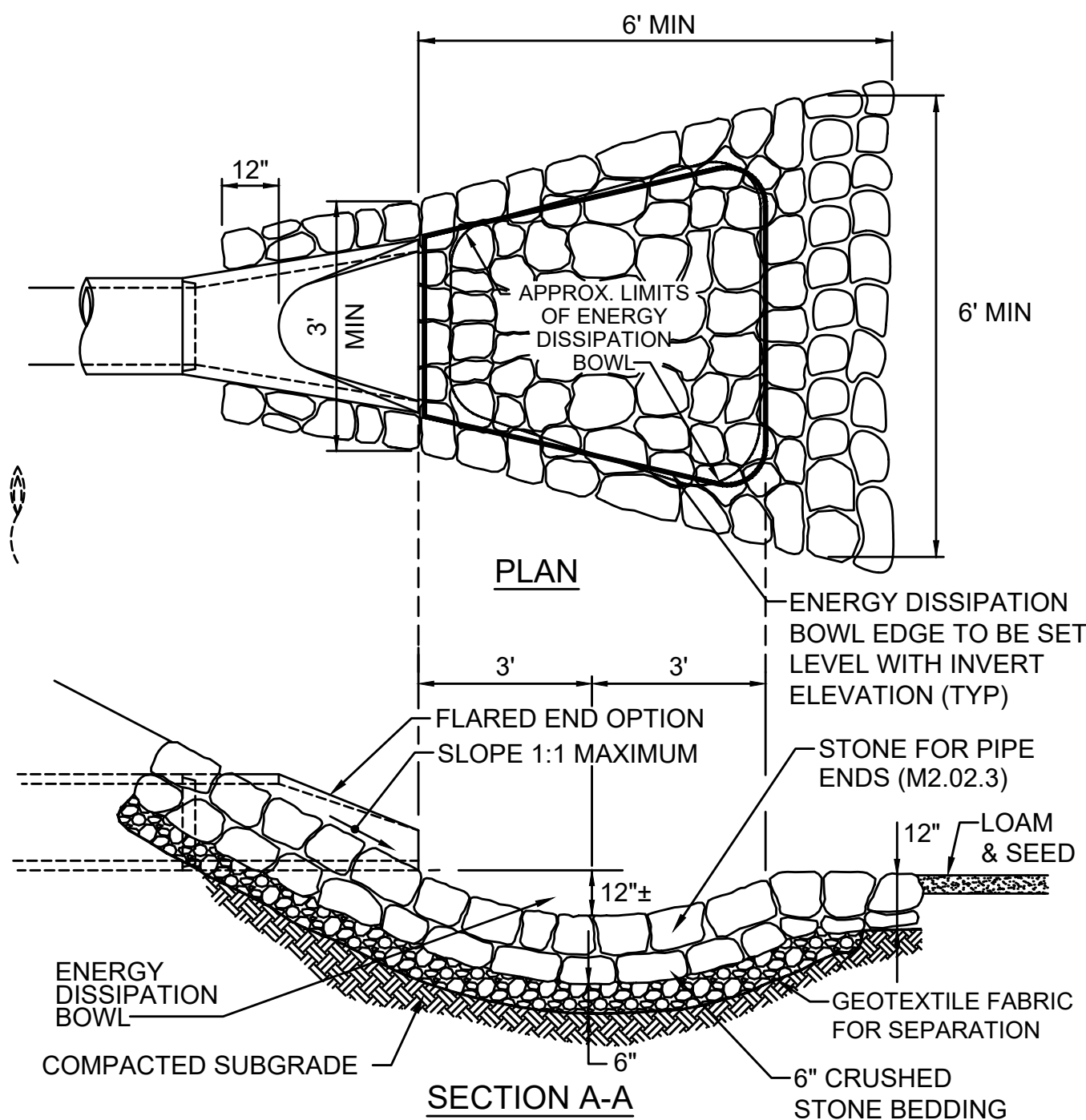


- GENERAL NOTES:
1. PROVIDE A MINIMUM TUBE DIAMETER OF 12 INCHES (300mm) FOR SLOPES UP TO 50 FEET (15.24m) IN LENGTH WITH A SLOPE RATIO OF 3H:1V OR STEEPER. LONGER SLOPES OF 3H:1V MAY REQUIRE LARGER TUBE DIAMETER OR ADDITIONAL COURSING OF FILTER TUBES TO CREATE A FILTER BERM. REFER TO MANUFACTURER'S 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.



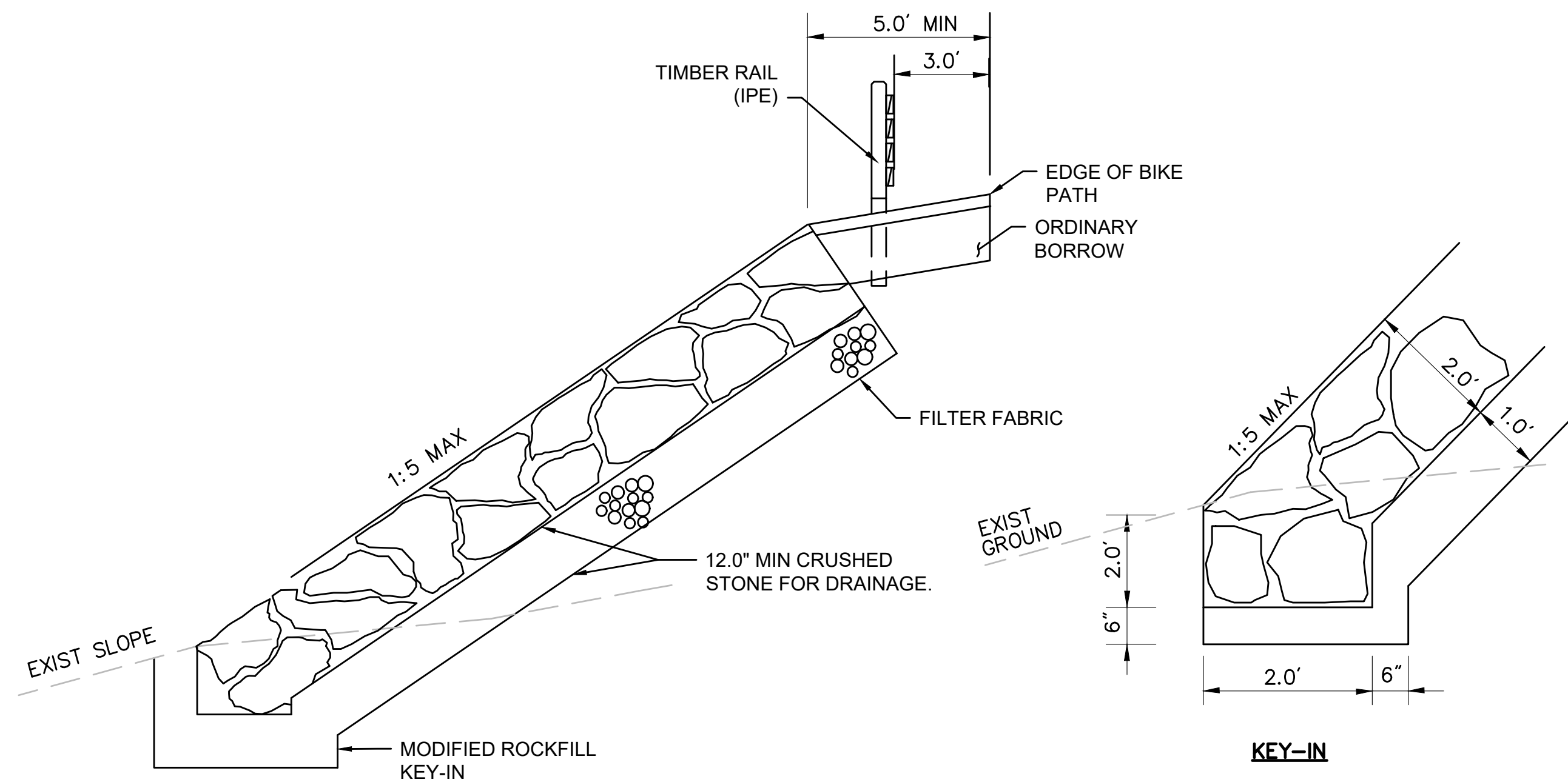
SINGLE COMPOST FILTER TUBE DETAIL

SCALE: N.T.S.



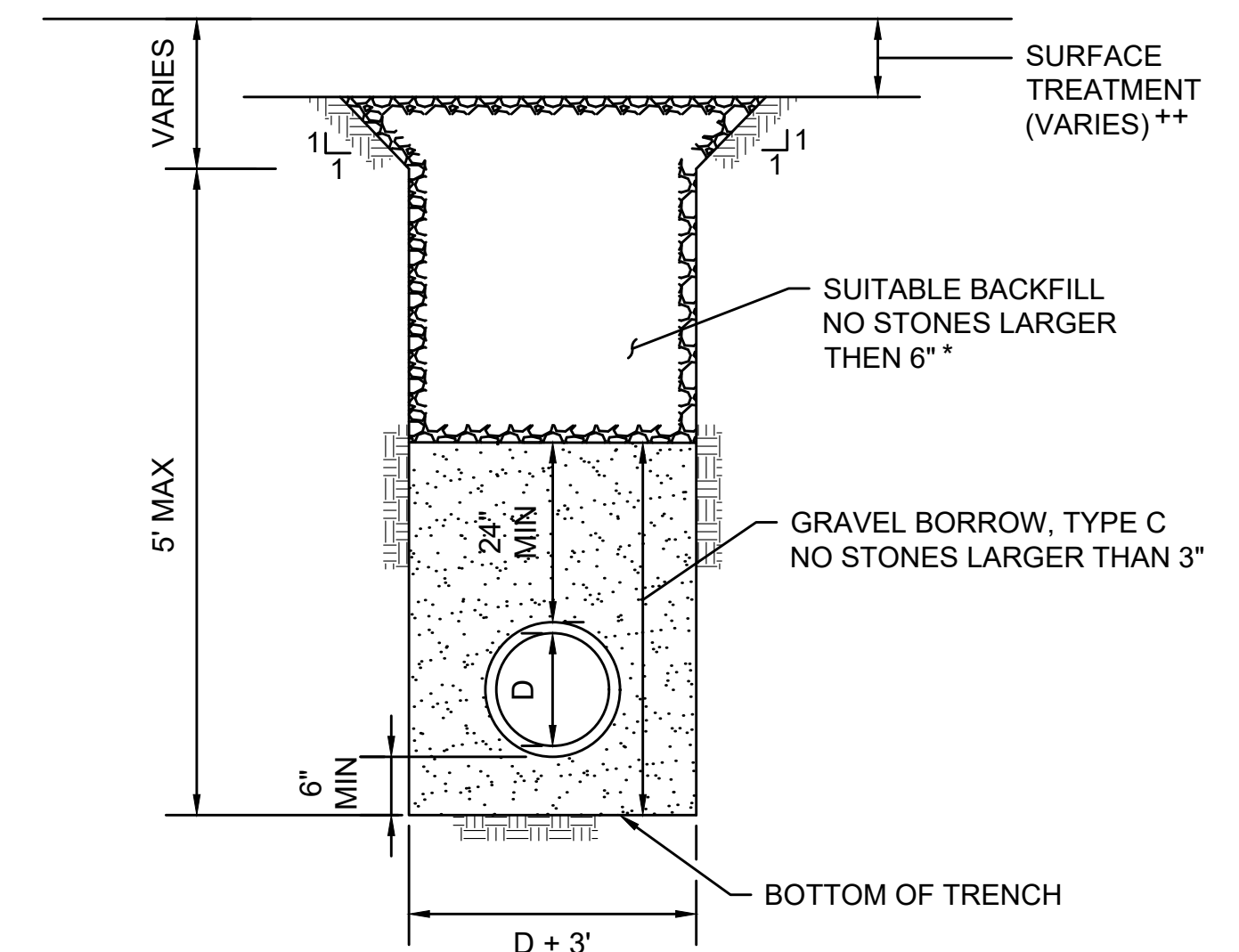
STONE PROTECTION AT FLARED END

SCALE: NTS



MODIFIED ROCKFILL SLOPE

SCALE: NTS



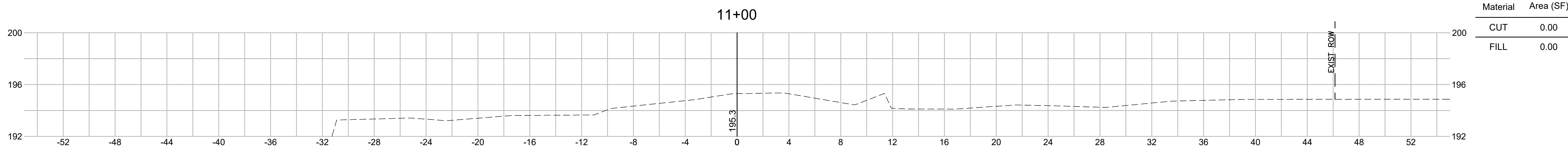
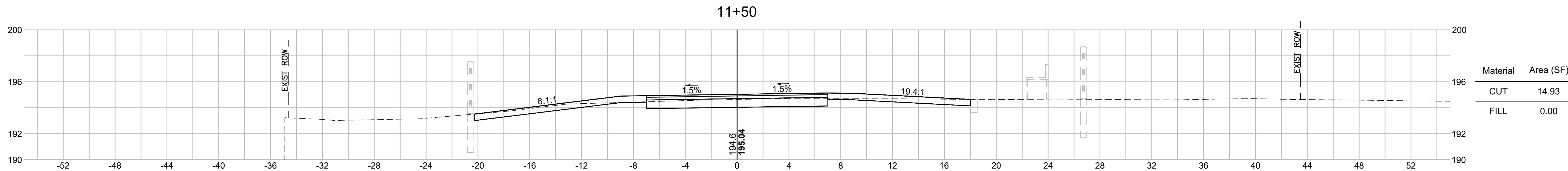
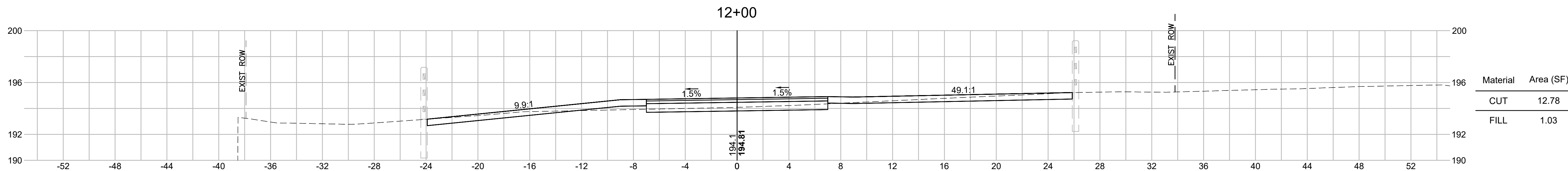
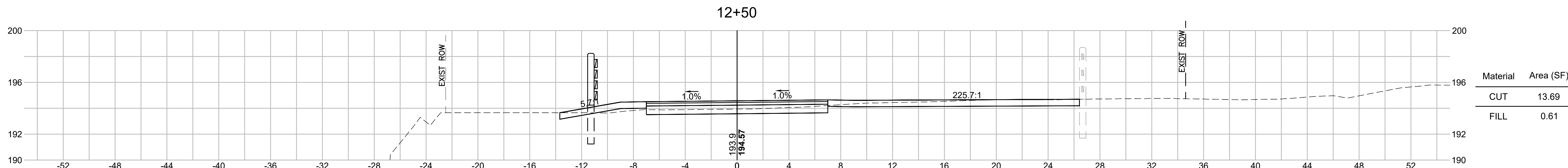
- GENERAL NOTES:
1. CRUSHED STONE TO BE USED DURING WET CONDITIONS AS DIRECTED BY THE ENGINEER.

TRENCH

SCALE: NTS

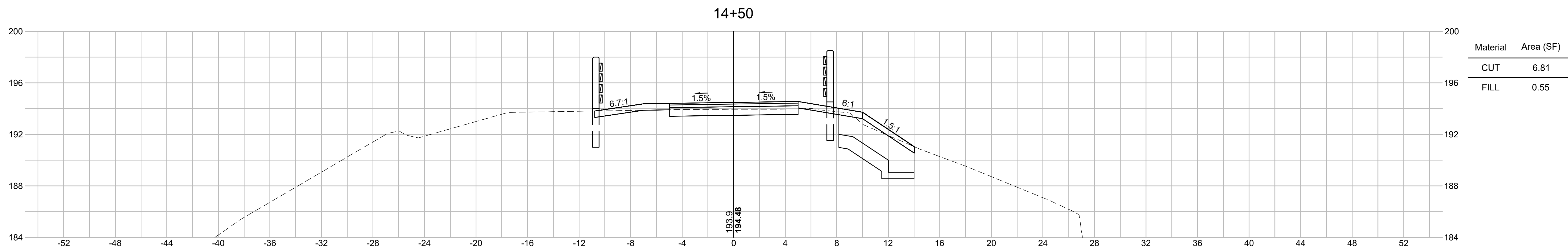
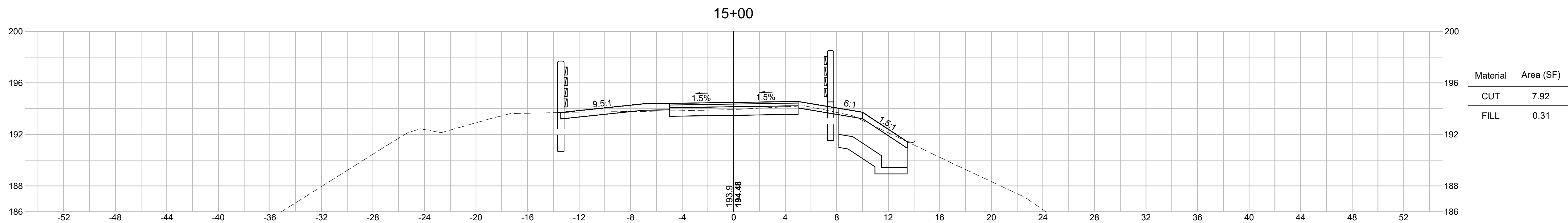
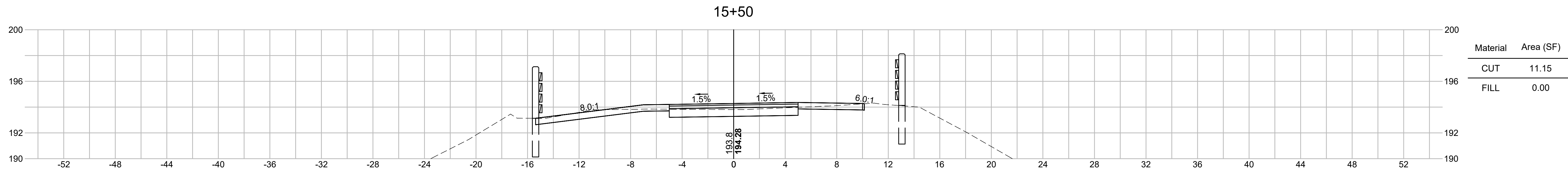
REV.	DATE	DESCRIPTION	BY

COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION DIVISION OF ENGINEERING AND DIVISION OF PLANNING AND RESOURCE PROTECTION			
BLACKSTONE GREENWAY SEGMENT 1 PHASE 2			
BLACKSTONE GREENWAY BLACKSTONE, MA			
DESIGNER: SAH	CONSTRUCTION DETAILS		SHEET NO.
CHECKED: SHK	CONT: P10-2636-C3A		CD-2
DRAWN: SAH	ACC: 104239x	SCALE: AS NOTED	2 OF 3
CHECKED: LSA	DATE: OCT 2022		



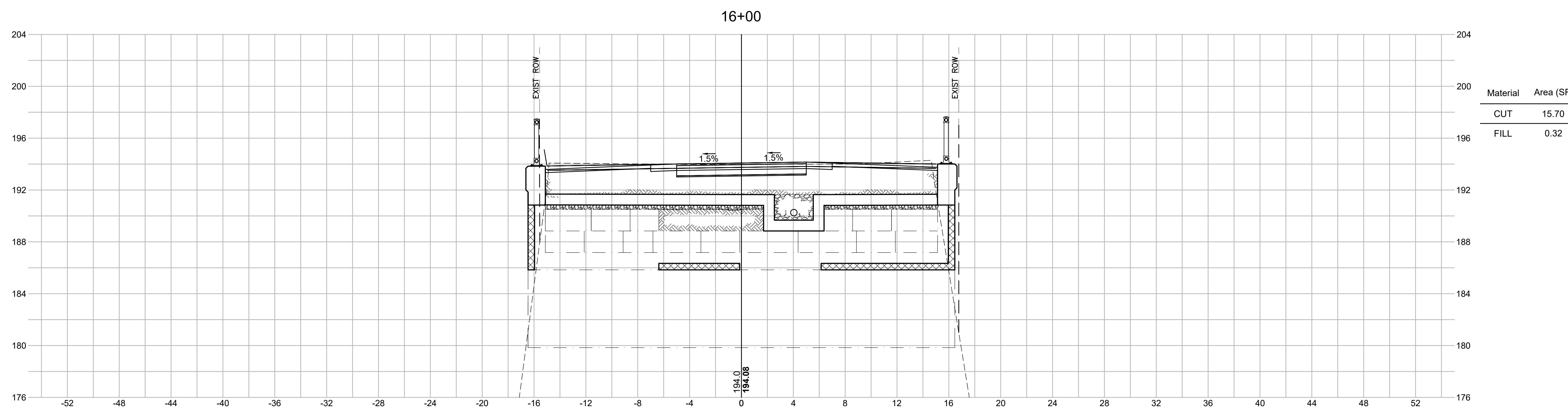
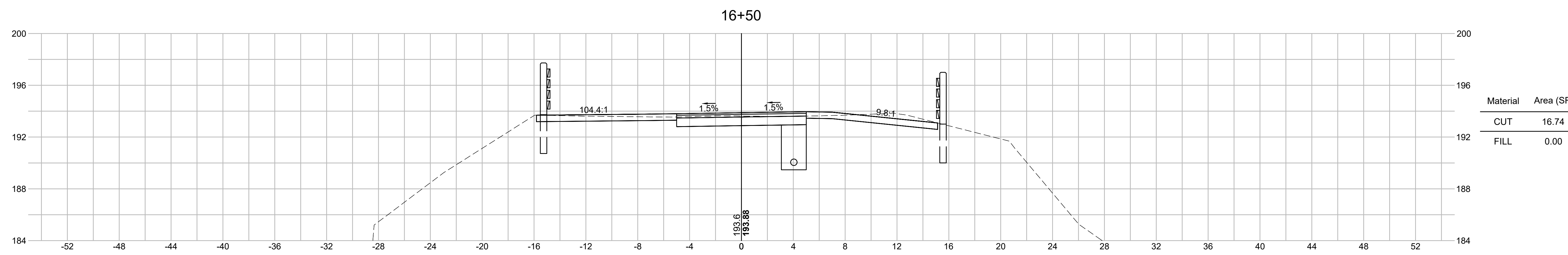
COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION DIVISION OF ENGINEERING AND DIVISION OF PLANNING AND RESOURCE PROTECTION		
BLACKSTONE GREENWAY SEGMENT 1 PHASE 2		
BLACKSTONE GREENWAY BLACKSTONE, MA		
DESIGNER: LSA CHECKED: SHK	CONT: P10-2636-C3A ACC: 104241x	SHEET NO. XS-01
DRAWN: SH CHECKED: SHK		SCALE: 1" = 4'-0" DATE: OCT 2022

Transportation Land Development
Environmental Services
101 Walnut St., P.O. Box 9151
Watertown, MA 02472
617 924 1770 FAX 617 924 2286



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COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION DIVISION OF ENGINEERING AND DIVISION OF PLANNING AND RESOURCE PROTECTION							
BLACKSTONE GREENWAY SEGMENT 1 PHASE 2							
BLACKSTONE GREENWAY BLACKSTONE, MA							
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CROSS SECTIONS							
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ACC. 104242x	DATE: OCT 2022						
SHEET NO. XS-02							
2 OF 23							



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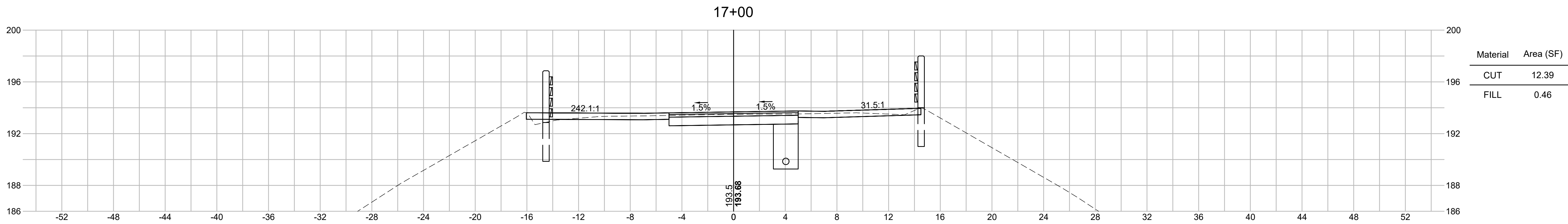
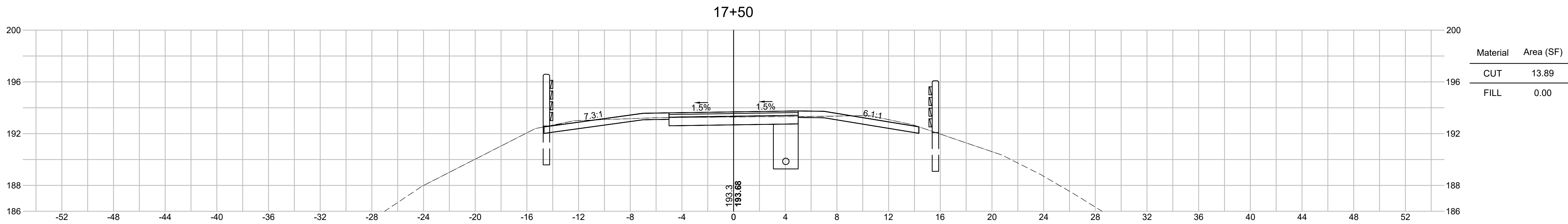
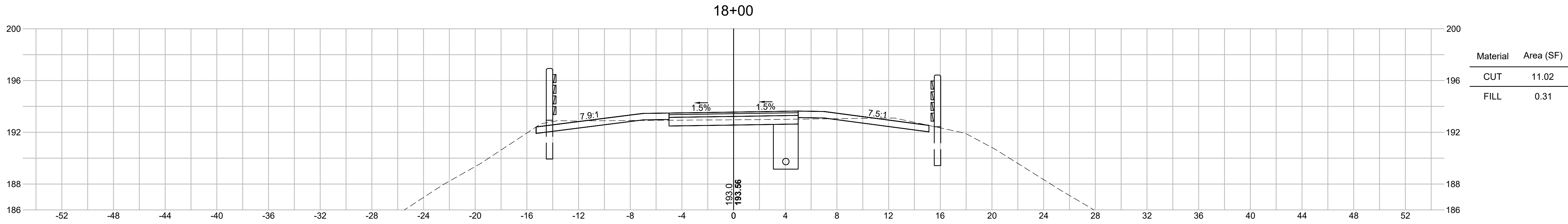
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617 924 1770 FAX 617 924 2286

**COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION AND RECREATION
DIVISION OF ENGINEERING AND
DIVISION OF PLANNING AND RESOURCE PROTECTION**

BLACKSTONE GREENWAY SEGMENT 1 PHASE 2

**BLACKSTONE GREENWAY
BLACKSTONE, MA**

DESIGNER: LSA	CROSS SECTIONS	SHEET NO. XS-03 3 OF 23
CHECKED: SHK		
DRAWN: SH		
CHECKED: SHK	CONT. P10-2636-C3A ACC. 104243x	SCALE: 1" = 4'-0" DATE: OCT 2022



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617 924 1770 FAX 617 924 2286

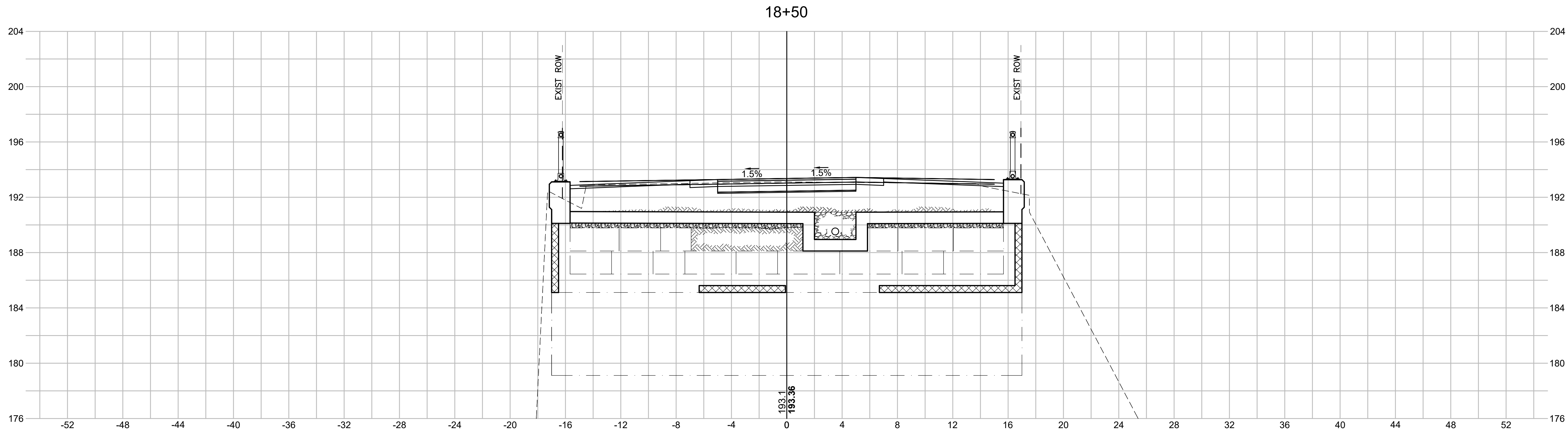
COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION AND RECREATION
DIVISION OF ENGINEERING AND
DIVISION OF PLANNING AND RESOURCE PROTECTION

BLACKSTONE GREENWAY SEGMENT 1 PHASE 2

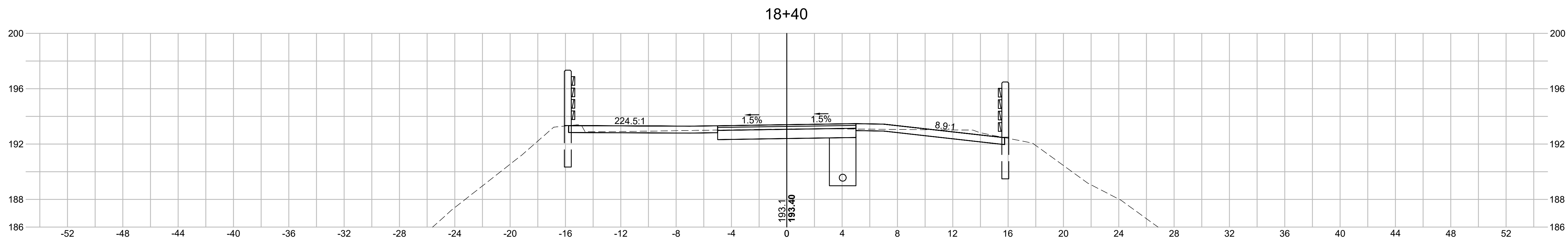
BLACKSTONE GREENWAY
BLACKSTONE, MA

DESIGNER: LSA	CROSS SECTIONS	SHEET NO. XS-04
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4 OF 23



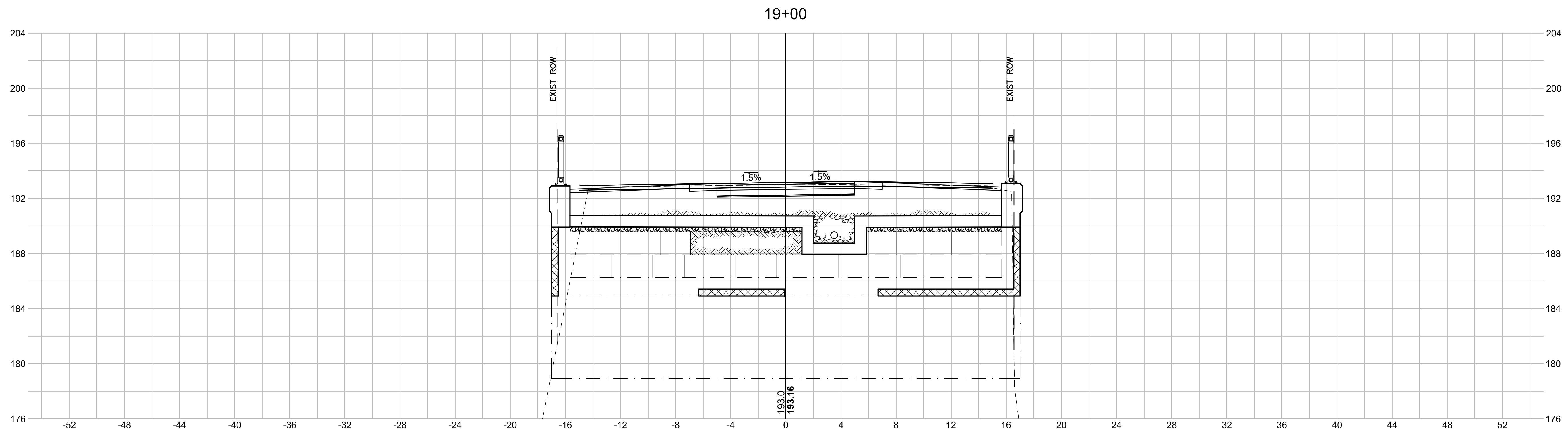
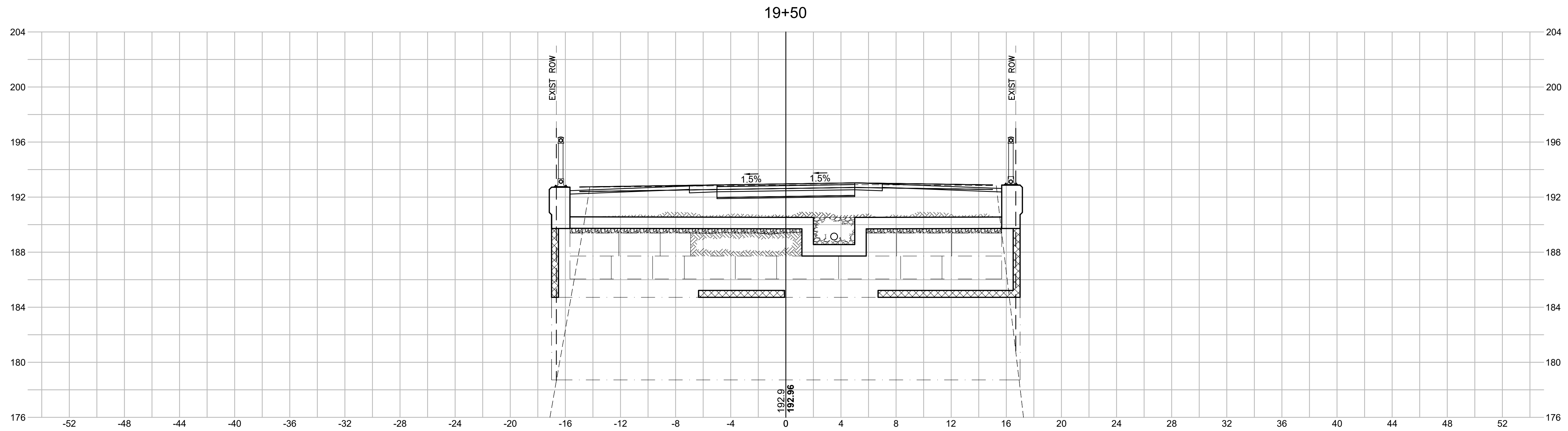
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CUT	7.31
FILL	0.31



Material	Area (SF)
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FILL	0.00

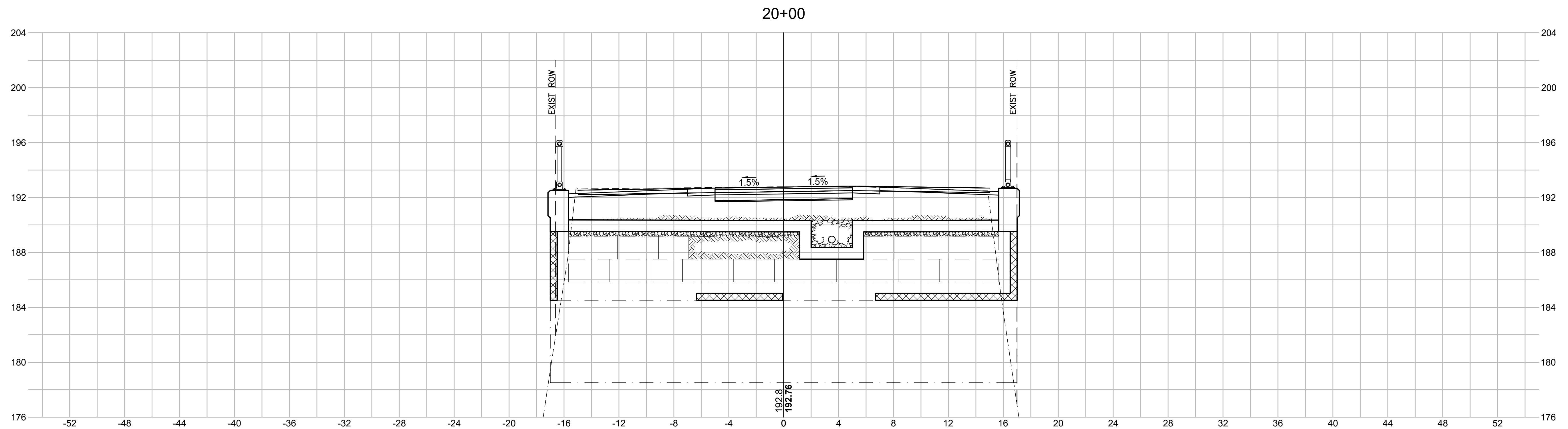
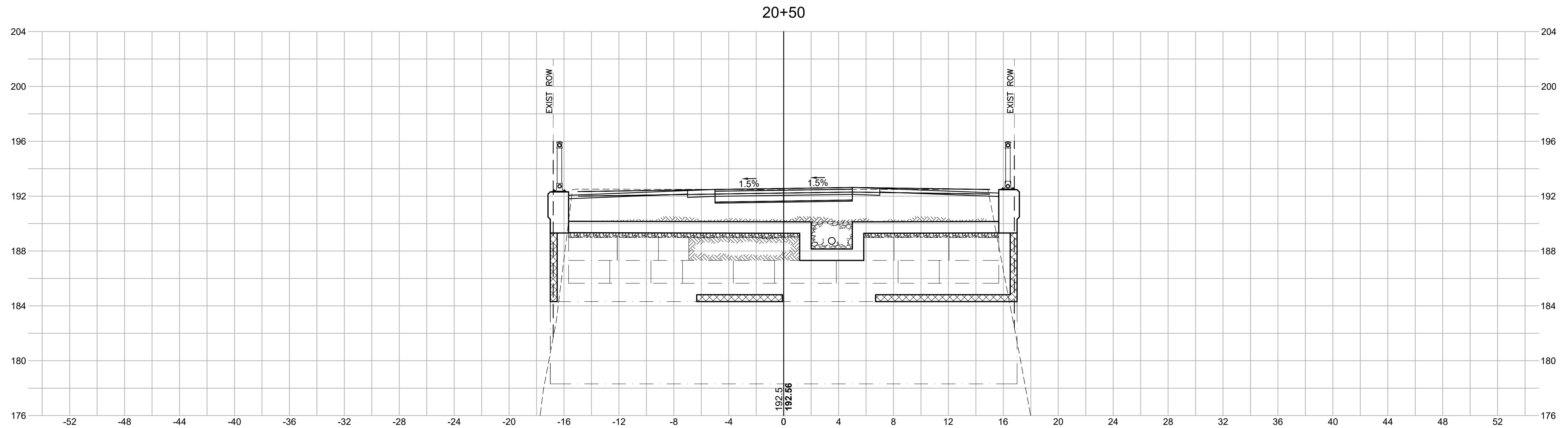
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COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION DIVISION OF ENGINEERING AND DIVISION OF PLANNING AND RESOURCE PROTECTION			
BLACKSTONE GREENWAY SEGMENT 1 PHASE 2			
BLACKSTONE GREENWAY BLACKSTONE, MA			
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REV.	DATE	DESCRIPTION	BY

COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION DIVISION OF ENGINEERING AND DIVISION OF PLANNING AND RESOURCE PROTECTION	
BLACKSTONE GREENWAY SEGMENT 1 PHASE 2	
BLACKSTONE GREENWAY BLACKSTONE, MA	
DESIGNER: LSA CHECKED: SHK	CROSS SECTIONS
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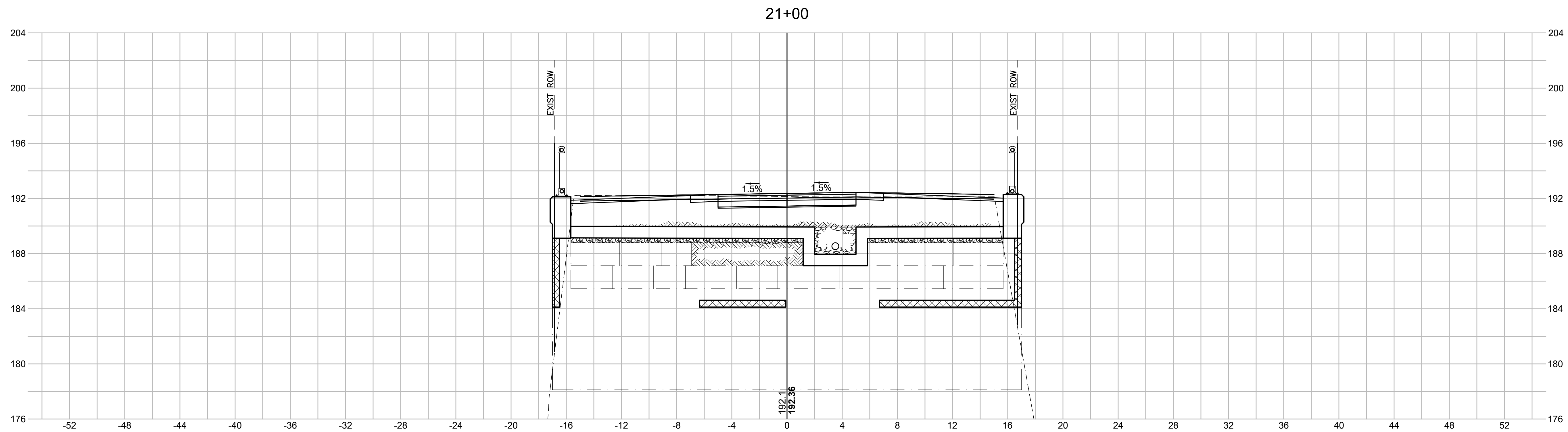
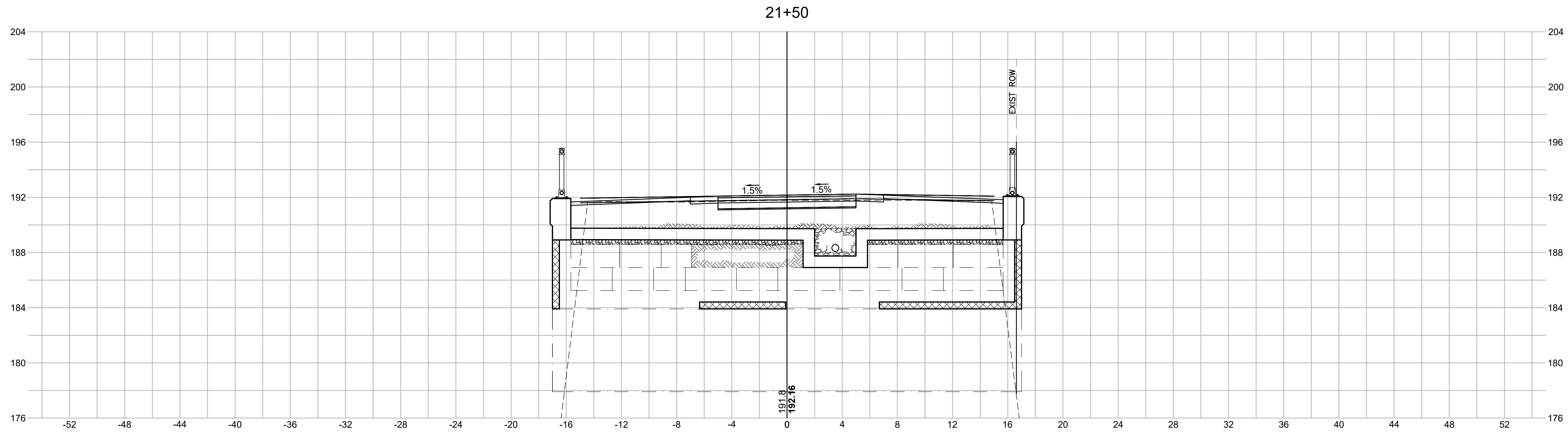


COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION DIVISION OF ENGINEERING AND DIVISION OF PLANNING AND RESOURCE PROTECTION		
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BLACKSTONE GREENWAY BLACKSTONE, MA		
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CHECKED: SHK	ACC. 104247x	DATE: OCT 2022
7		OF 23

REV.	DATE	DESCRIPTION	BY

Patricia G. Donigan
Civil Engineer
No. 9715
State of Massachusetts

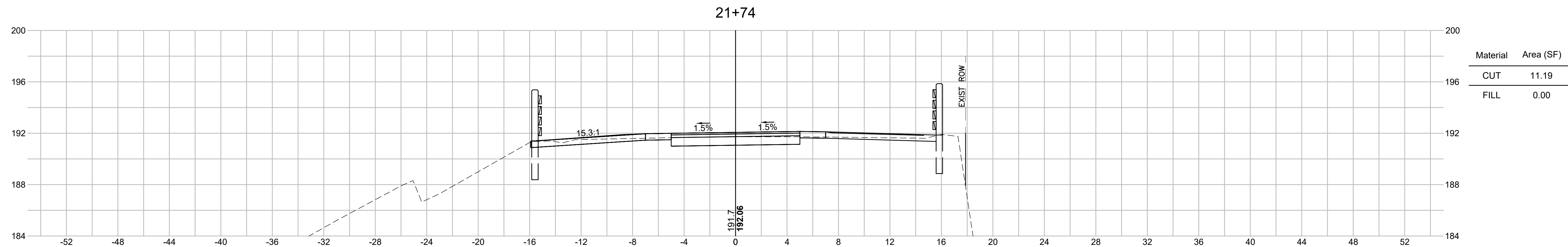
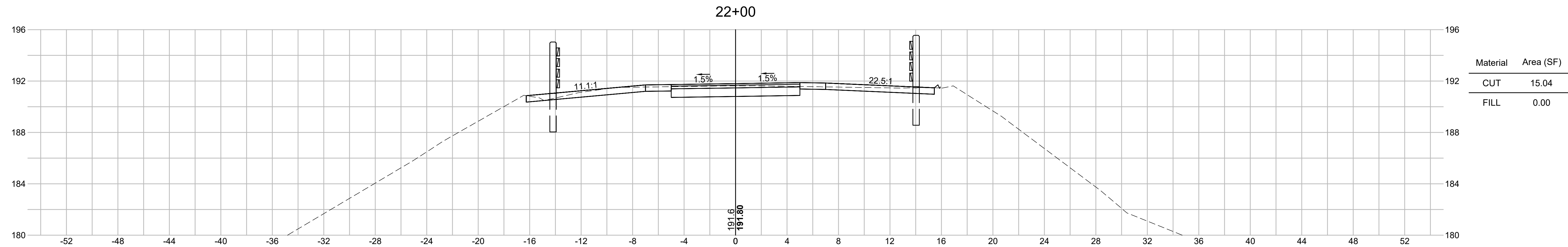
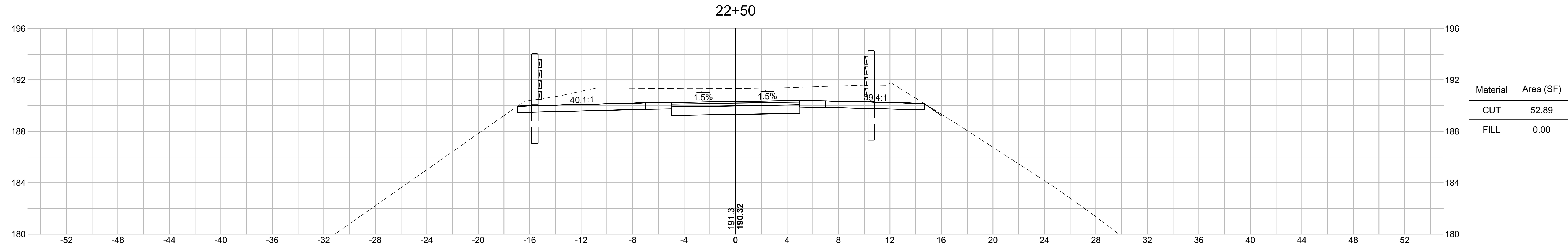
Transportation Land Development
Environmental Services
101 Walnut St., P.O. Box 9151
Watertown, MA 02472
617 924 1770 FAX 617 924 2286



REV.	DATE	DESCRIPTION	BY

vhb
Transportation Land Development
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COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION DIVISION OF ENGINEERING AND DIVISION OF PLANNING AND RESOURCE PROTECTION					
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BLACKSTONE GREENWAY BLACKSTONE, MA					
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SHEET NO. XS-08 8 OF 23					



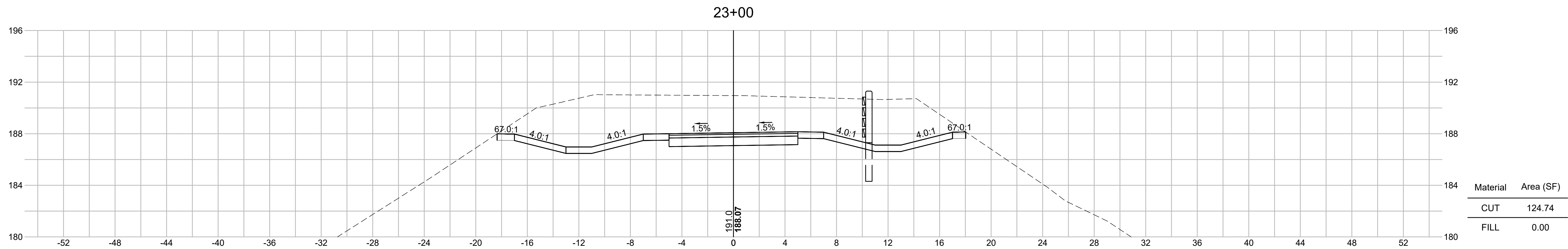
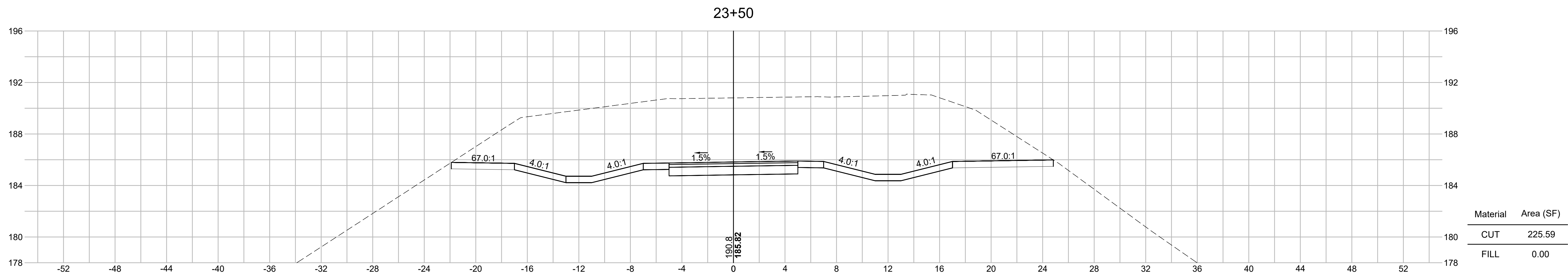
REV.	DATE	DESCRIPTION	BY

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION AND RECREATION
DIVISION OF ENGINEERING AND
DIVISION OF PLANNING AND RESOURCE PROTECTION

BLACKSTONE GREENWAY SEGMENT 1 PHASE 2

BLACKSTONE GREENWAY
BLACKSTONE, MA

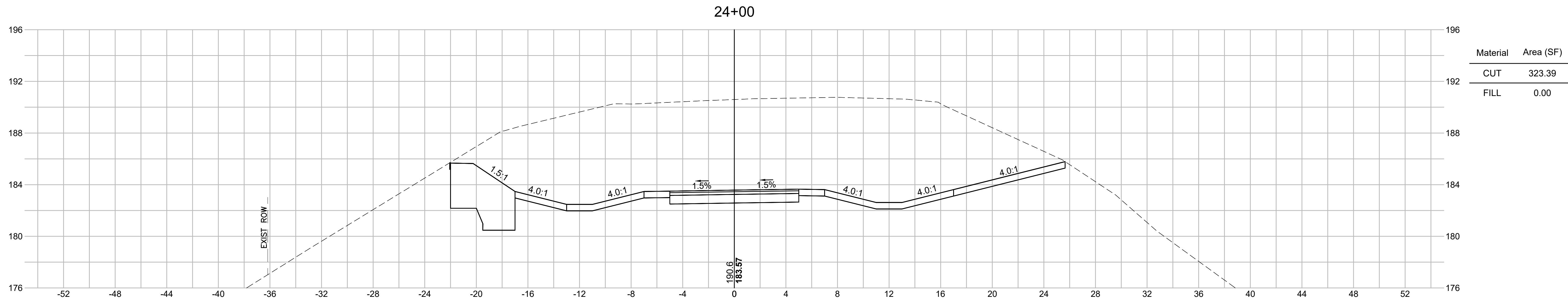
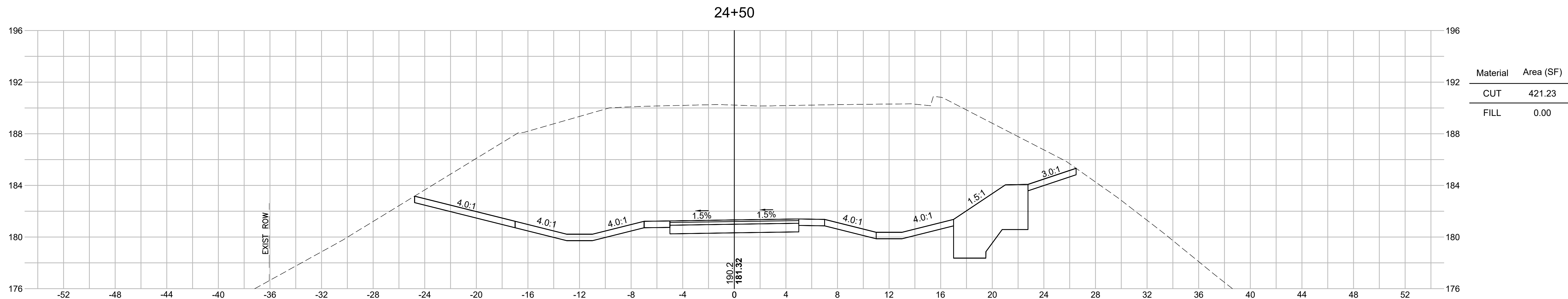
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COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION DIVISION OF ENGINEERING AND DIVISION OF PLANNING AND RESOURCE PROTECTION		
BLACKSTONE GREENWAY SEGMENT 1 PHASE 2		
BLACKSTONE GREENWAY BLACKSTONE, MA		
DESIGNER: LSA	CROSS SECTIONS	
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CHECKED: SHK	ACC. 104250x	DATE: OCT 2022

REV.	DATE	DESCRIPTION	BY

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3.0:1

REV.	DATE	DESCRIPTION	BY

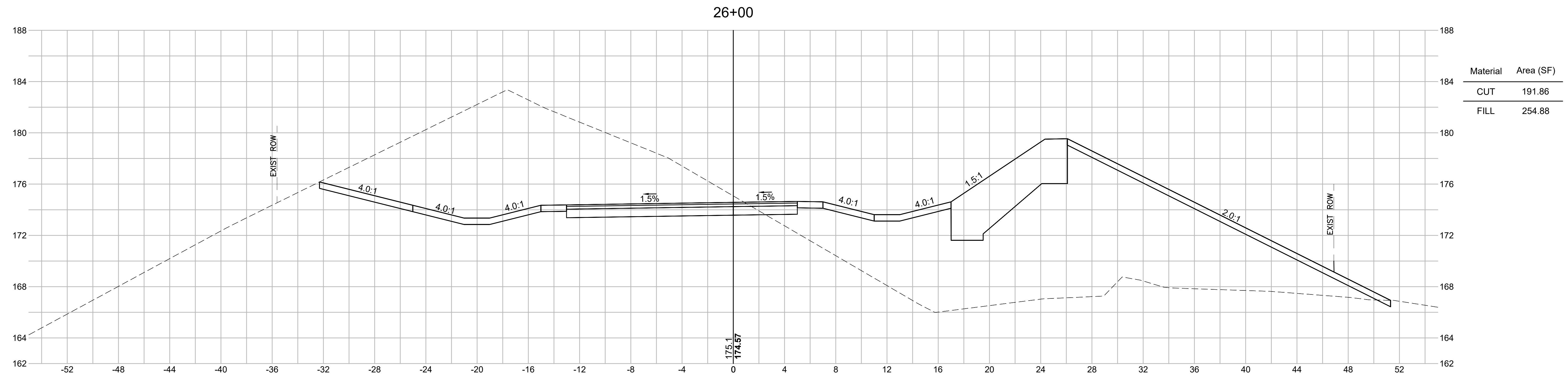
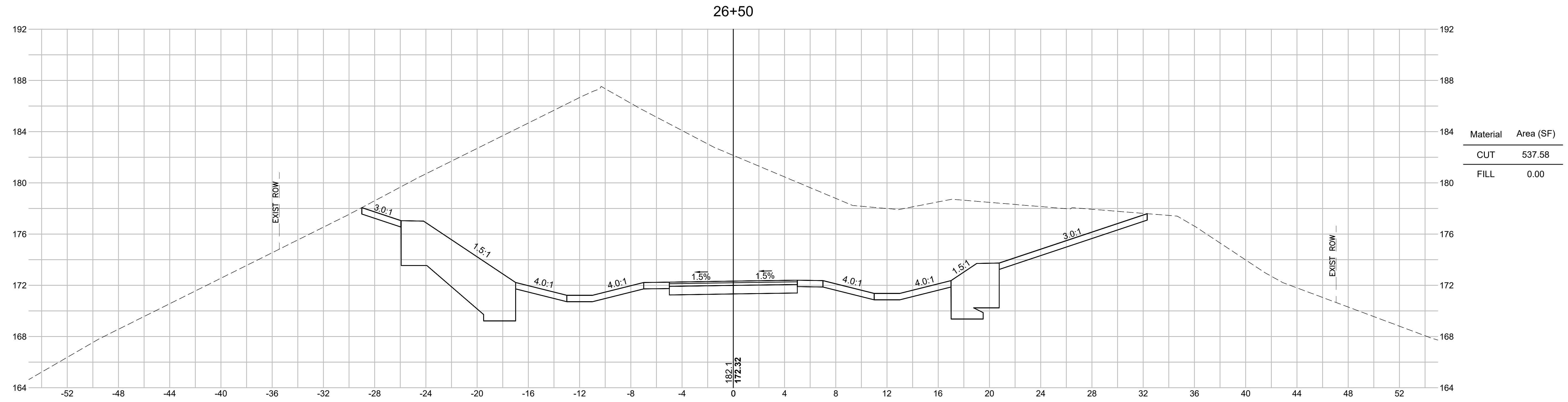
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DEPARTMENT OF CONSERVATION AND RECREATION
DIVISION OF ENGINEERING AND
DIVISION OF PLANNING AND RESOURCE PROTECTION

BLACKSTONE GREENWAY SEGMENT 1 PHASE 2

BLACKSTONE GREENWAY
BLACKSTONE, MA

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DATE: OCT 2022		



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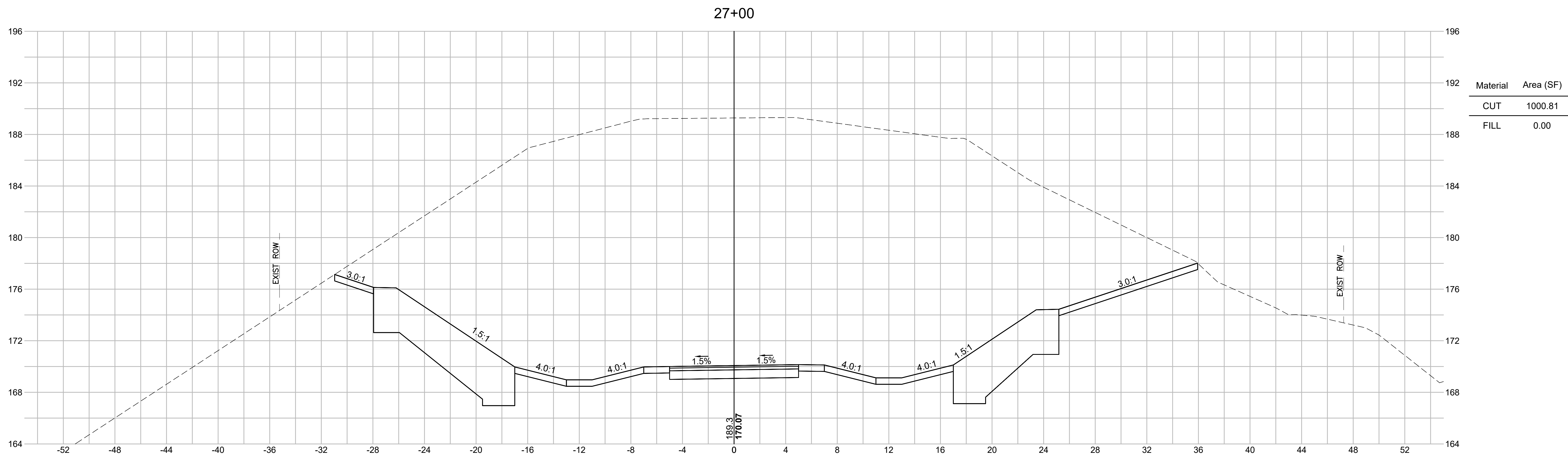
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DEPARTMENT OF CONSERVATION AND RECREATION
DIVISION OF ENGINEERING AND
DIVISION OF PLANNING AND RESOURCE PROTECTION

BLACKSTONE GREENWAY SEGMENT 1 PHASE 2

BLACKSTONE GREENWAY
BLACKSTONE, MA

DESIGNER: LSA	CROSS SECTIONS	SHEET NO. XS-13 13 OF 23
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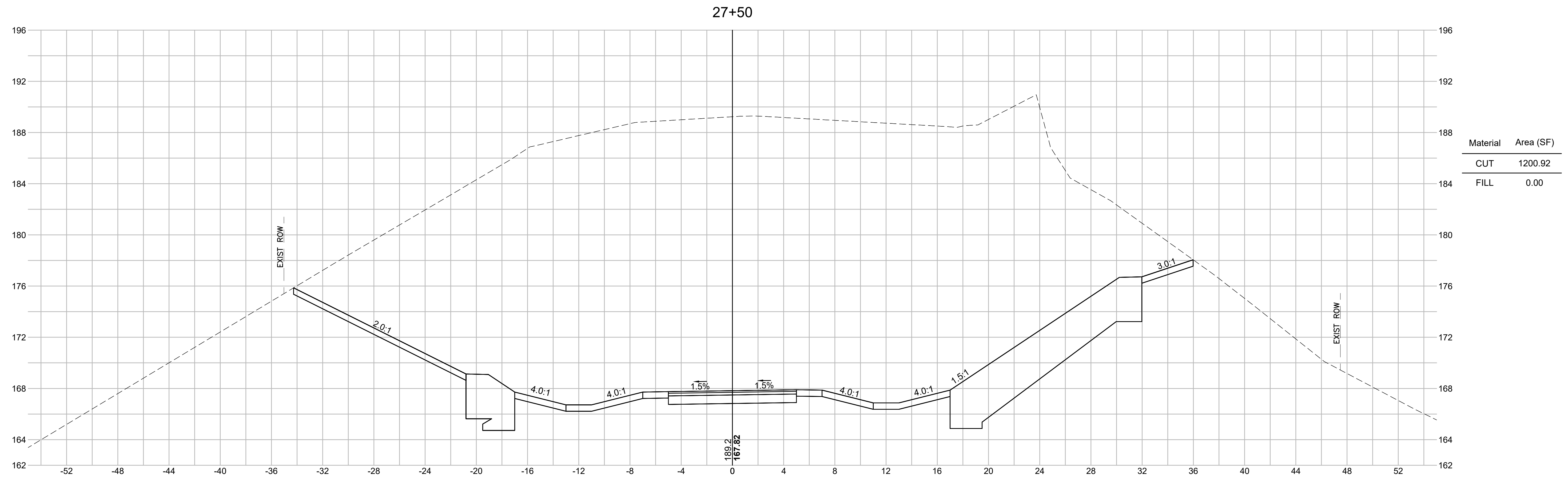
COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION AND RECREATION
DIVISION OF ENGINEERING AND
DIVISION OF PLANNING AND RESOURCE PROTECTION

BLACKSTONE GREENWAY SEGMENT 1 PHASE 2

BLACKSTONE GREENWAY
BLACKSTONE, MA

DESIGNER: LSA CHECKED: SHK	CROSS SECTIONS	SHEET NO. XS-14 14 OF 23
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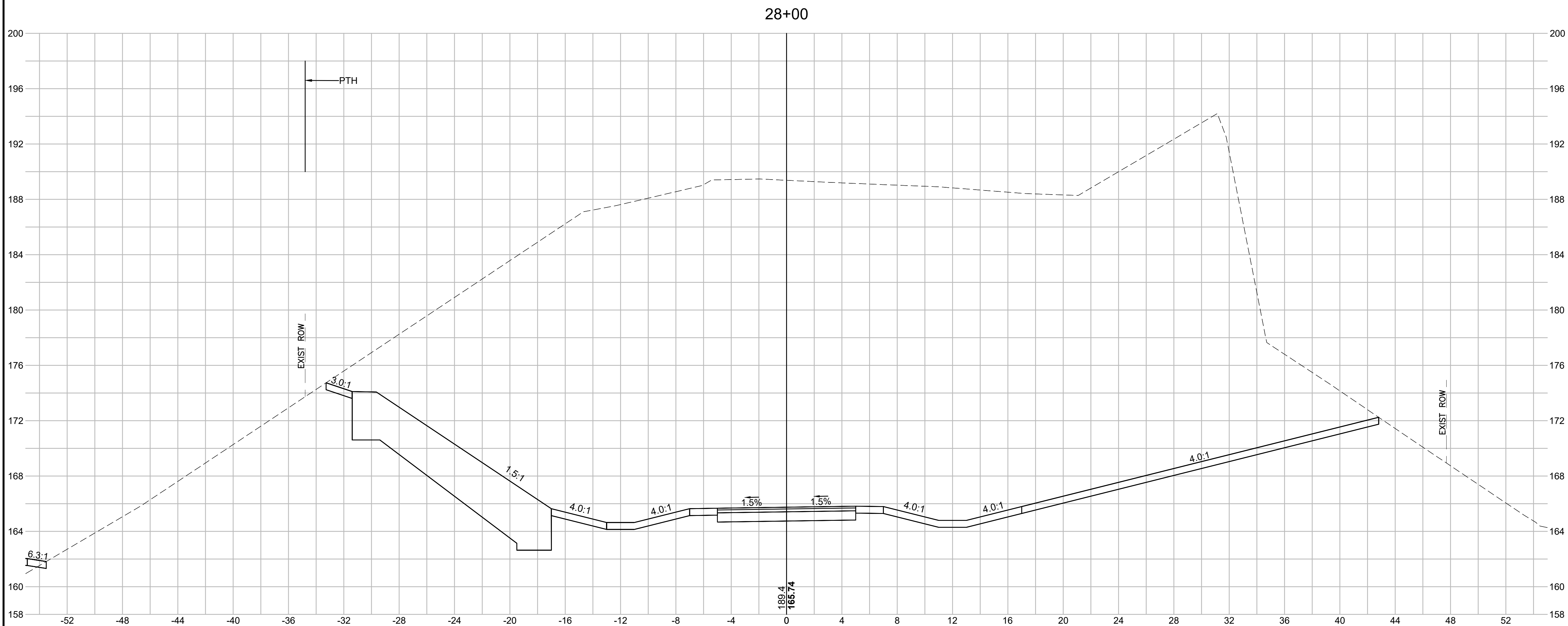
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ACC. 104254x	DATE: OCT 2022



COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION DIVISION OF ENGINEERING AND DIVISION OF PLANNING AND RESOURCE PROTECTION		
BLACKSTONE GREENWAY SEGMENT 1 PHASE 2		
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REV.	DATE	DESCRIPTION	BY

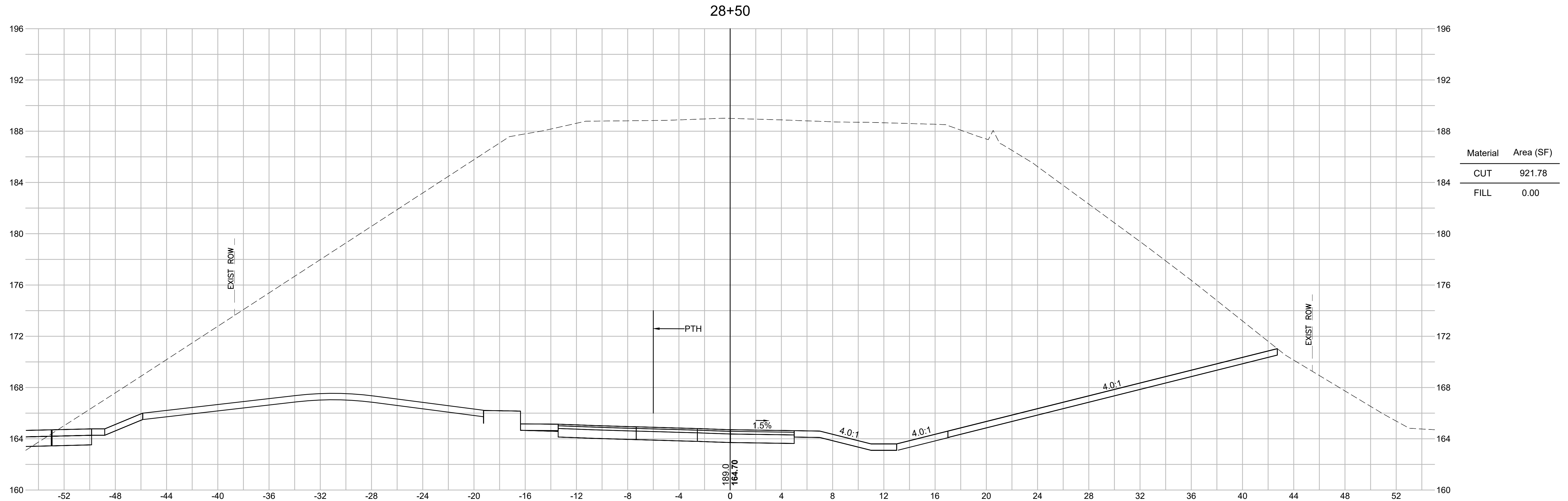
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617 924 1770 FAX 617 924 2286



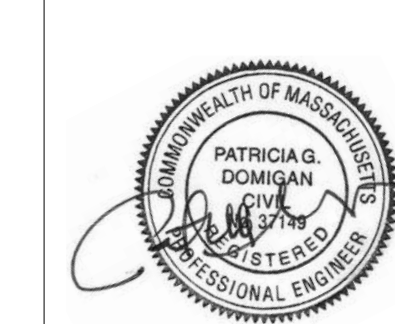
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FILL	0.00

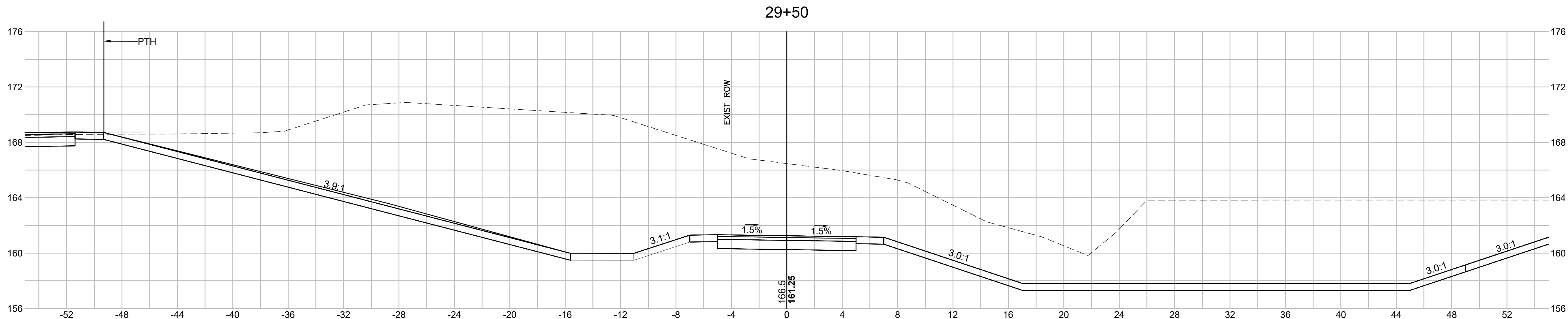
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COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION DIVISION OF ENGINEERING AND DIVISION OF PLANNING AND RESOURCE PROTECTION					
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BLACKSTONE GREENWAY BLACKSTONE, MA					
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SHEET NO. XS-16 16 OF 23					

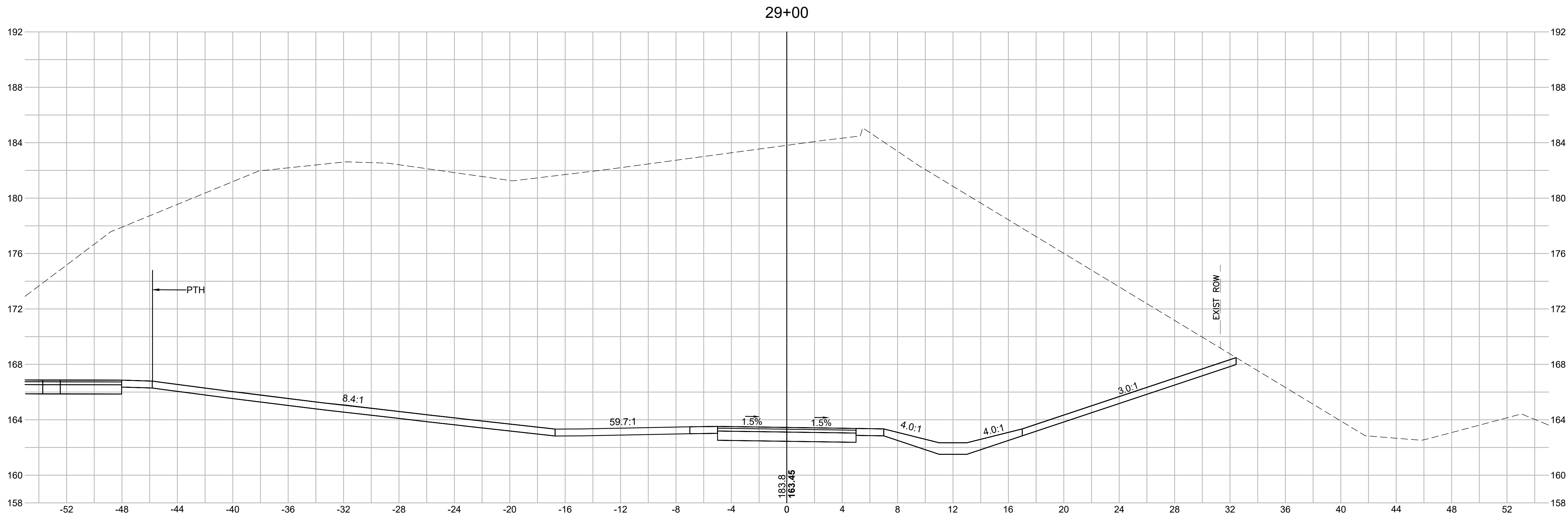


COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION DIVISION OF ENGINEERING AND DIVISION OF PLANNING AND RESOURCE PROTECTION		
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BLACKSTONE GREENWAY BLACKSTONE, MA		
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CHECKED: SHK	ACC. 104257x	DATE: OCT 2022





Material	Area (SF)
CUT	625.25
FILL	0.00



Material	Area (SF)
CUT	1287.26
FILL	0.00

REV.	DATE	DESCRIPTION	BY

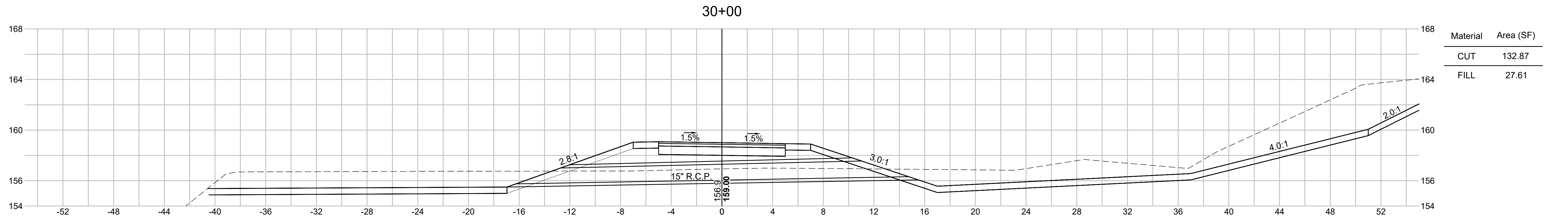
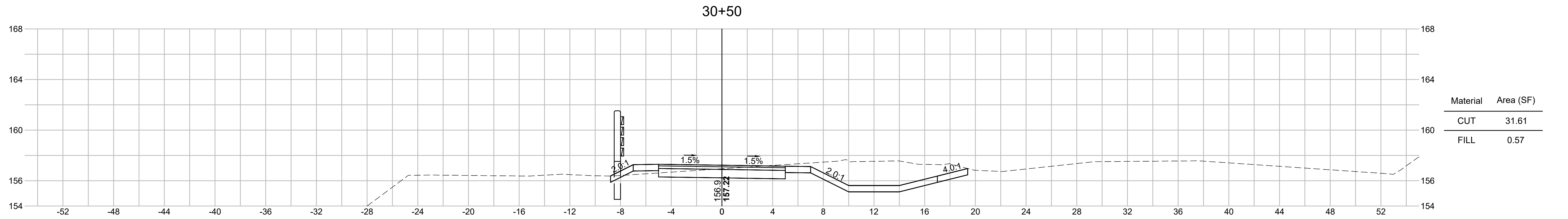
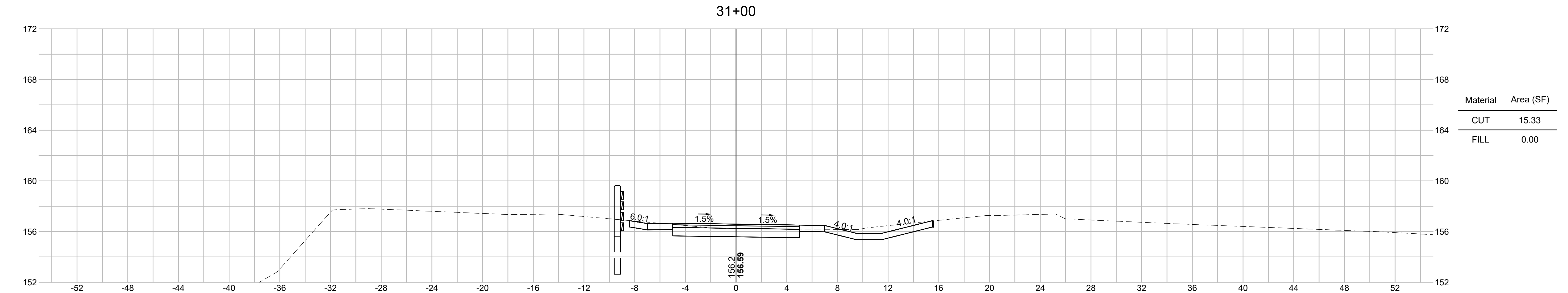
COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION AND RECREATION
DIVISION OF ENGINEERING AND
DIVISION OF PLANNING AND RESOURCE PROTECTION

BLACKSTONE GREENWAY SEGMENT 1 PHASE 2

BLACKSTONE GREENWAY
BLACKSTONE, MA

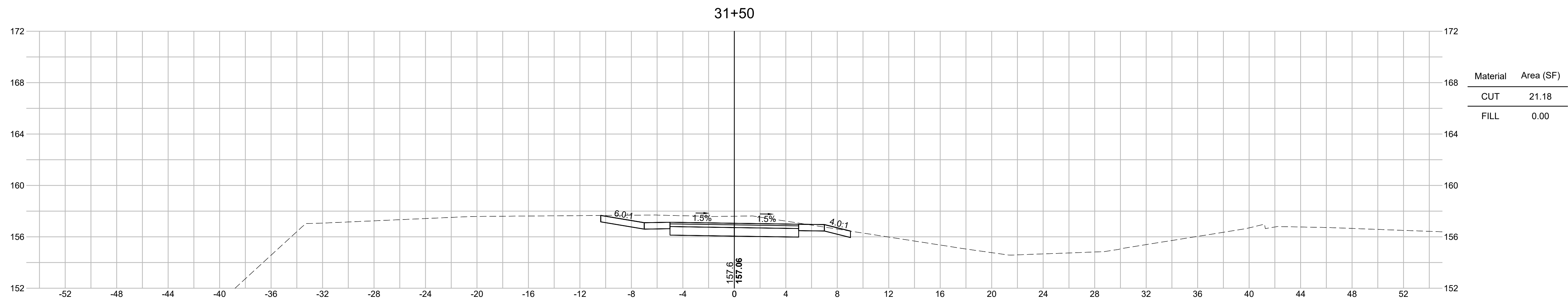
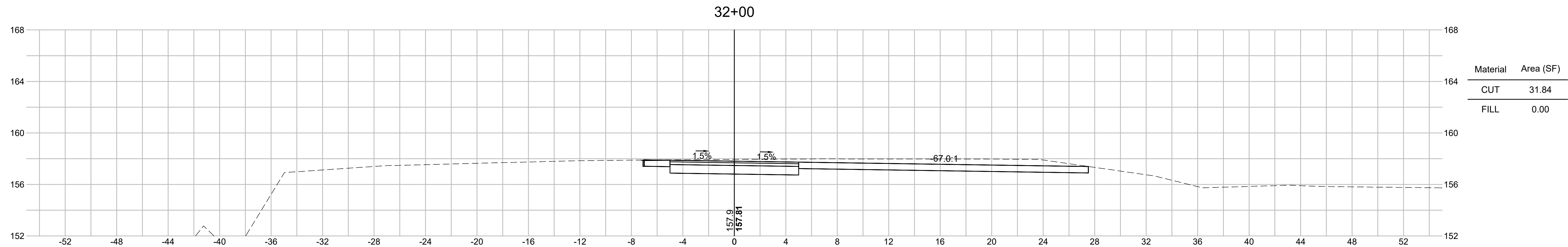
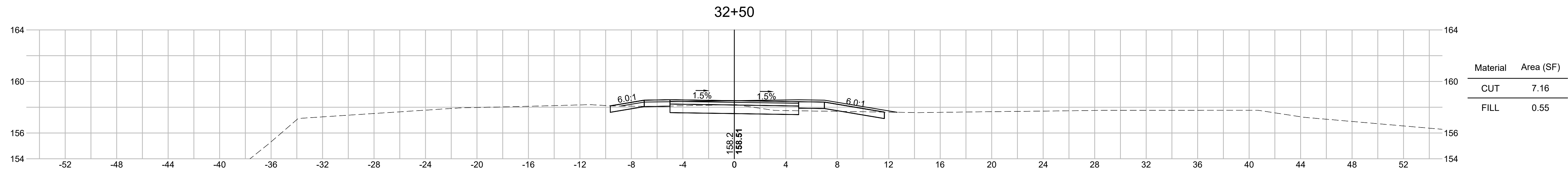
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ACC: 104258x	DATE: OCT 2022



COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION DIVISION OF ENGINEERING AND DIVISION OF PLANNING AND RESOURCE PROTECTION		
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DESIGNER: LSA	CROSS SECTIONS	SHEET NO. XS-19 19 OF 23
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Transportation Land Development
Environmental Services
101 Walnut St., P.O. Box 9151
Watertown, MA 02472
617 924 1770 FAX 617 924 2286

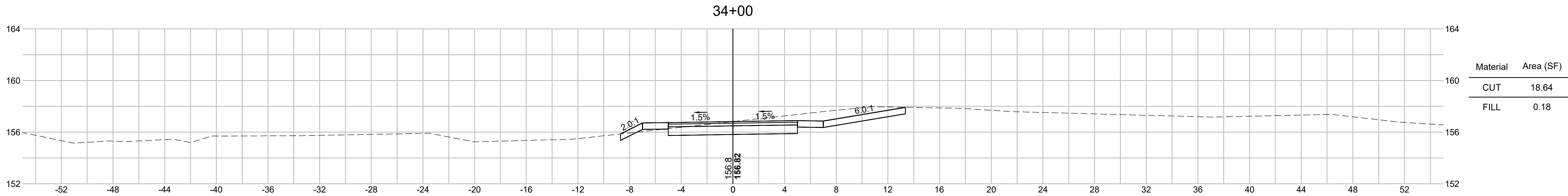


COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION DIVISION OF ENGINEERING AND DIVISION OF PLANNING AND RESOURCE PROTECTION		
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BLACKSTONE GREENWAY BLACKSTONE, MA		
DESIGNER: LSA CHECKED: SHK	CROSS SECTIONS	SHEET NO. XS-20
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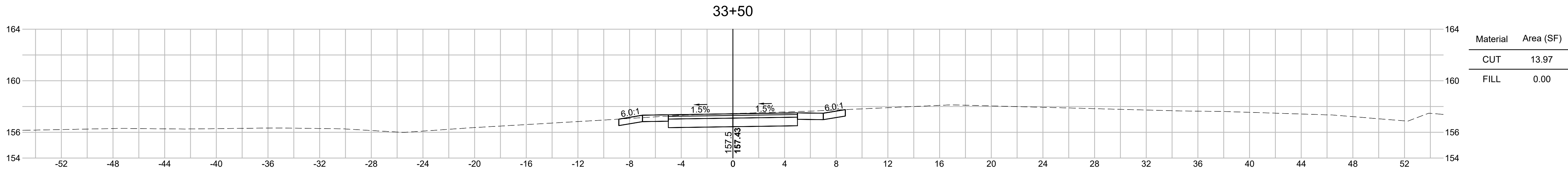
REV. DATE DESCRIPTION BY

PATRICIA G. DOMIGAN
CIVIL ENGINEER
PROFESSIONAL ENGINEER

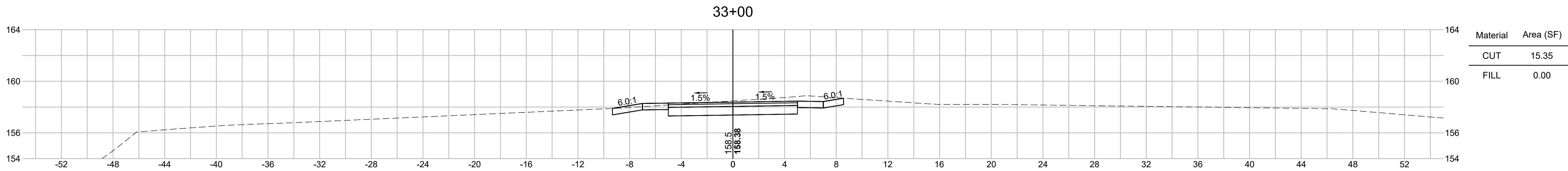
vhb
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Environmental Services
101 Walnut St., P.O. Box 9151
Watertown, MA 02472
617 924 1770 FAX 617 924 2286



Material	Area (SF)
CUT	18.64
FILL	0.18

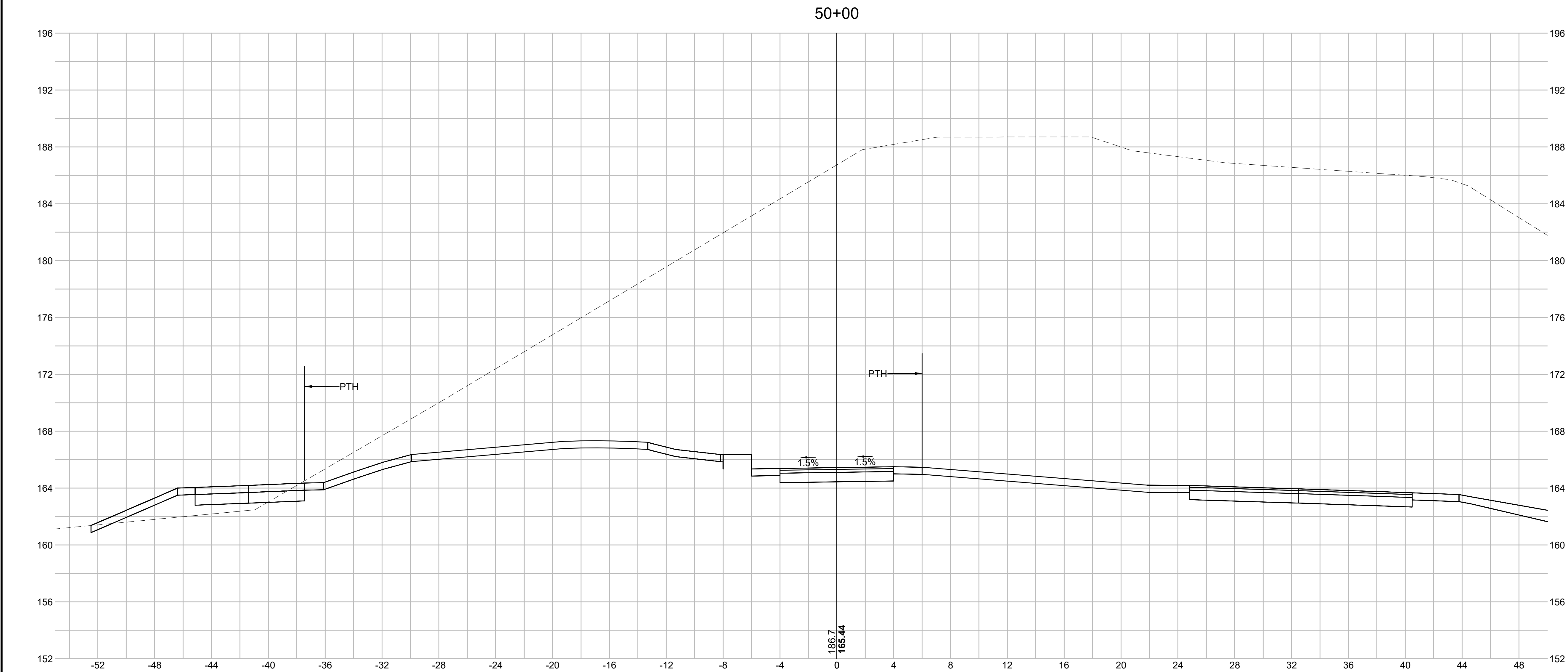


Material	Area (SF)
CUT	13.97
FILL	0.00





Material	Area (SF)
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FILL	0.00

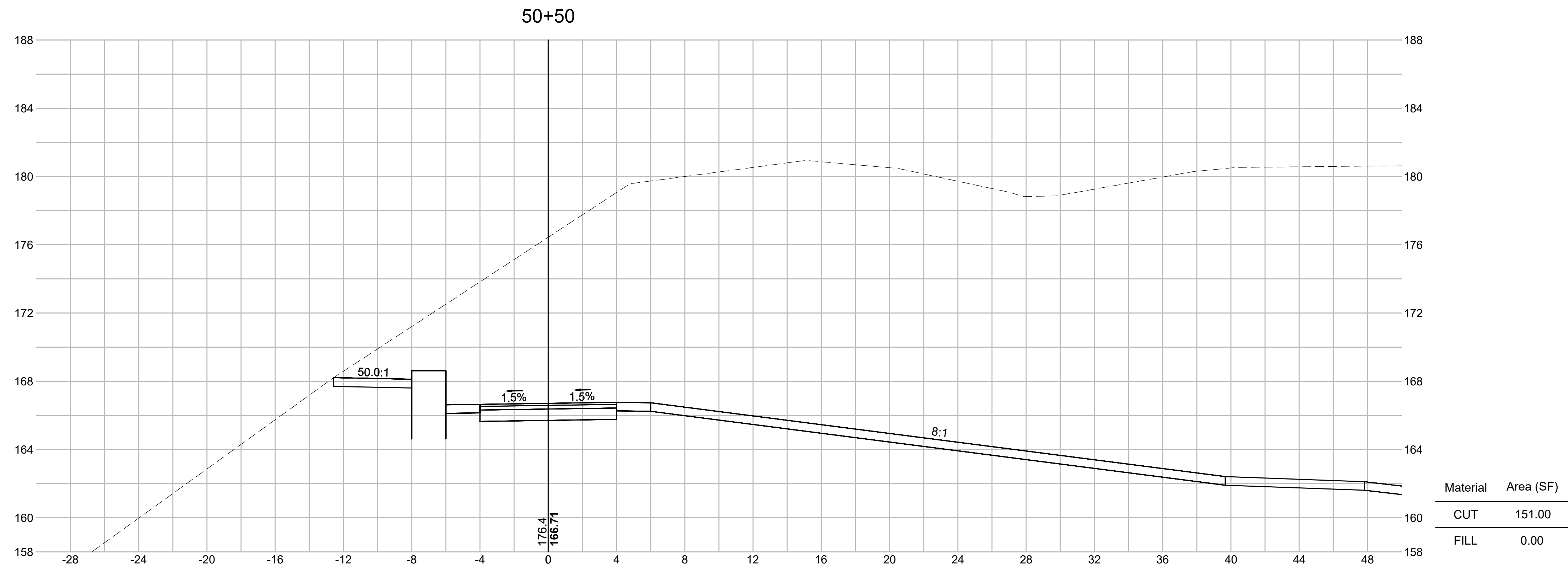
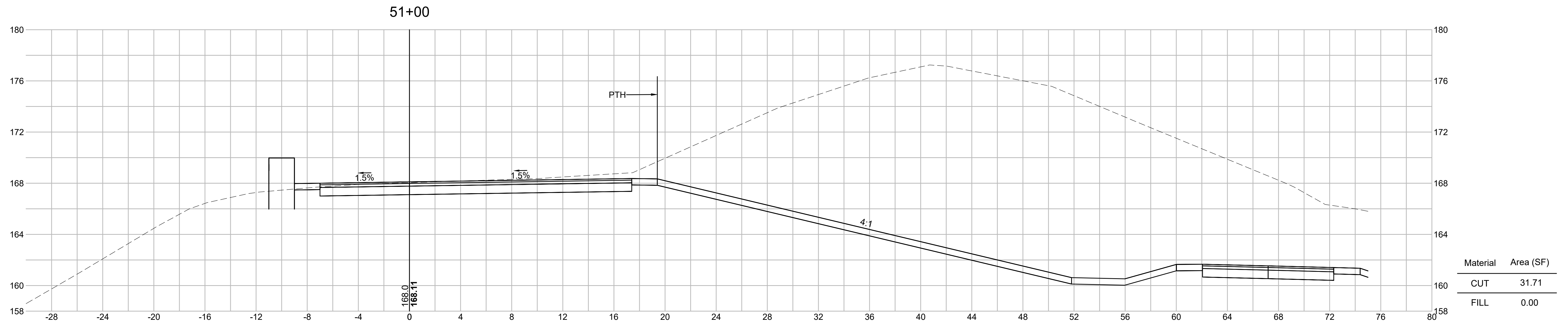
COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION DIVISION OF ENGINEERING AND DIVISION OF PLANNING AND RESOURCE PROTECTION		
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BLACKSTONE GREENWAY BLACKSTONE, MA		
DESIGNER: LSA	<div>CROSS SECTIONS</div>	SHEET NO. XS-21 21 OF 23
CHECKED: SHK		
DRAWN: SH		
CHECKED: SHK		
<div><p>Transportation Land Development Environmental Services 101 Walnut St., P.O. Box 9151 Watertown, MA 02472 617 924 1770 FAX 617 924 2286</p></div>		CONT. P10-2636-C3A ACC. 104261x SCALE: 1" = 4'-0" DATE: OCT 2022



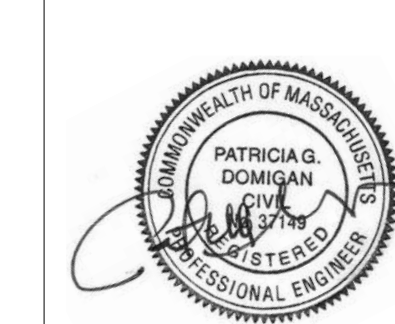
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FILL	0.00

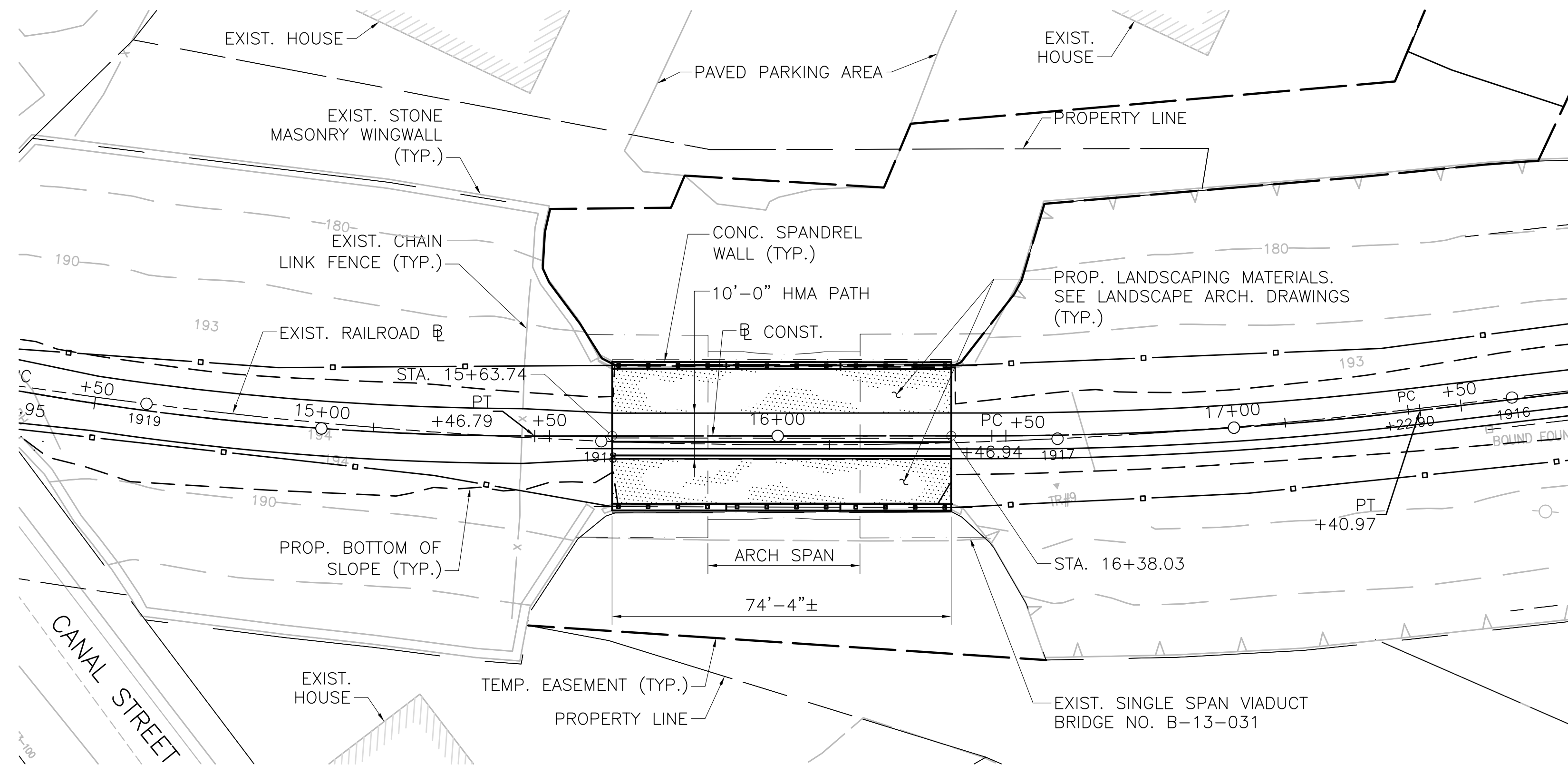
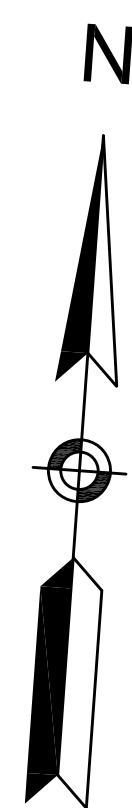
COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION DIVISION OF ENGINEERING AND DIVISION OF PLANNING AND RESOURCE PROTECTION		
BLACKSTONE GREENWAY SEGMENT 1 PHASE 2		
BLACKSTONE GREENWAY BLACKSTONE, MA		
DESIGNER: LSA	CROSS SECTIONS	
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CHECKED: SHK	ACC. 104262x	DATE: OCT 2022
22		OF 23

REV.	DATE	DESCRIPTION	BY
			
			
Transportation Land Development Environmental Services 101 Walnut St., P.O. Box 9151 Watertown, MA 02472 617 924 1770 FAX 617 924 2286			



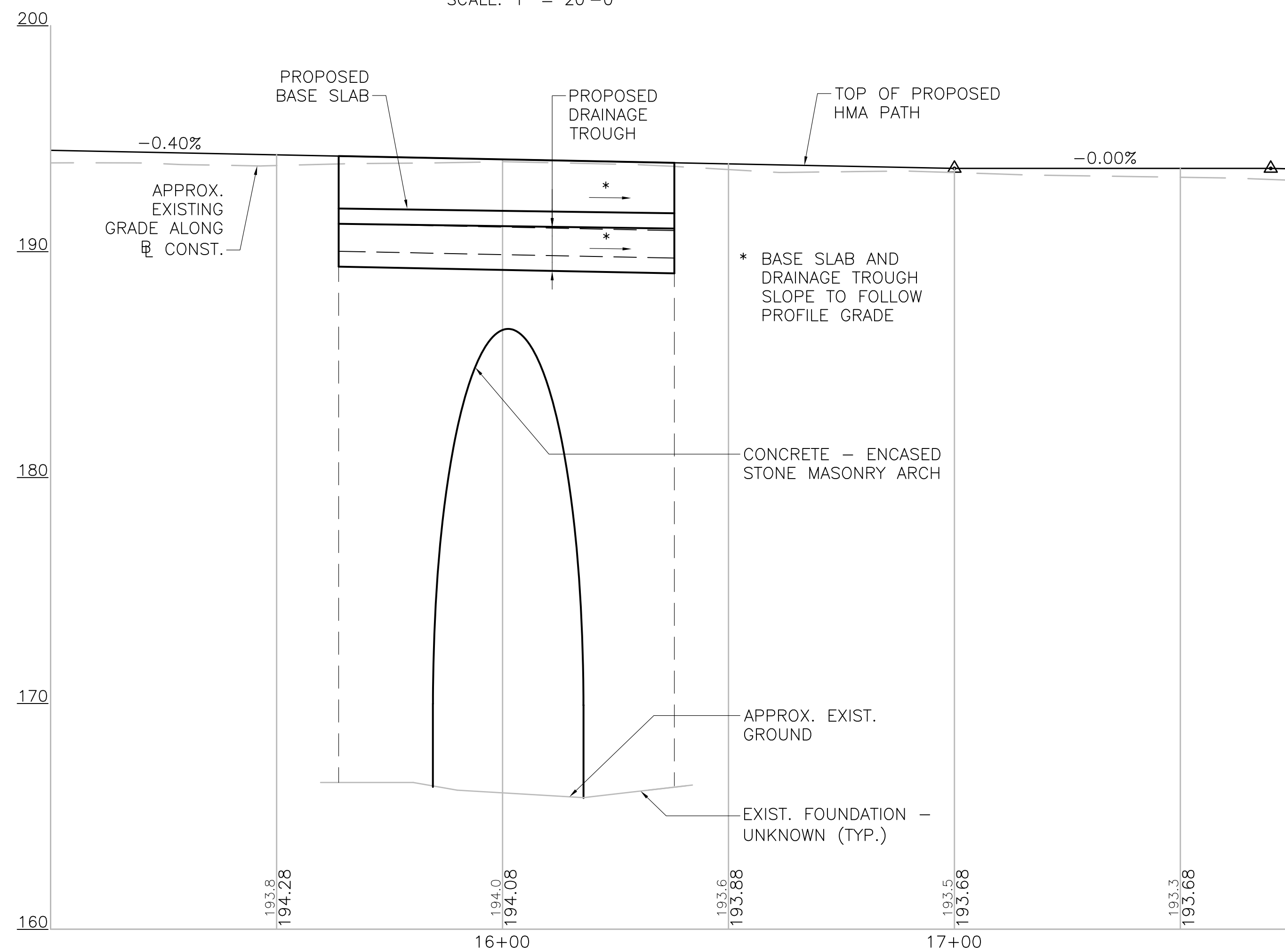
COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION DIVISION OF ENGINEERING AND DIVISION OF PLANNING AND RESOURCE PROTECTION		
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BLACKSTONE GREENWAY BLACKSTONE, MA		
DESIGNER: LSA CHECKED: SHK	CROSS SECTIONS	SHEET NO. XS-23
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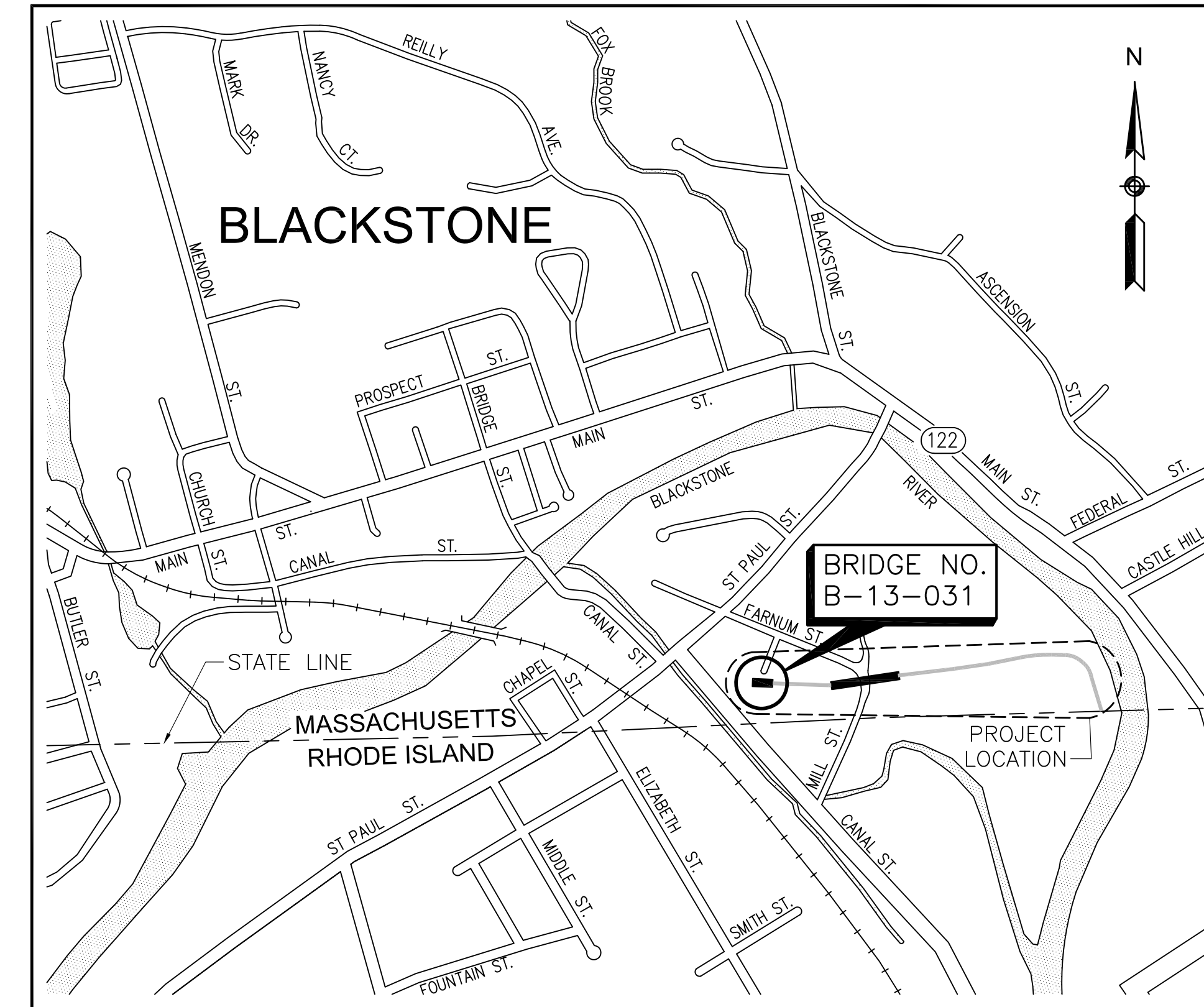
KEY PLAN

SCALE: 1" = 20'-0"



PROFILE

HORIZ. SCALE: 1" = 20'-0"
VERT. SCALE: 1" = 4'



LOCUS

SCALE: 1" = 500'

INDEX TO DRAWINGS

SHEET NUMBER	SHEET TITLE
ST-1	KEY PLAN, PROFILE, AND LOCUS
ST-2	GENERAL NOTES AND ESTIMATED QUANTITIES
ST-3	GENERAL PLAN AND ELEVATION
ST-4	TYPICAL TRANSVERSE SECTION
ST-5	DEMOLITION AND REMOVAL LIMITS
ST-6	CONCRETE REPAIR DETAILS - PART 1 OF 2
ST-7	CONCRETE REPAIR DETAILS - PART 2 OF 2
ST-8	CONCRETE PARAPET AND BASE SLAB DETAILS
ST-9	ORNAMENTAL RAILING

DESIGNER: CMS	CHECKED: MM	DRAWN: AMS	CHECKED: MM
Stantec 45 NETWORK DRIVE BURLINGTON, MA			

COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION DIVISION OF ENGINEERING AND DIVISION OF PLANNING AND RESOURCE PROTECTION			
SINGLE SPAN VIADUCT, BRIDGE NO. B-13-031			
BLACKSTONE GREENWAY SEGMENT 1 PHASE 2 BLACKSTONE, MA			
KEY PLAN, PROFILE, AND LOCUS			SHEET NO.
CONT. P10-2636-C3A			ST-1
ACC. 104264X			1 OF 18
DATE: OCT. 2022			

DESIGN

EXISTING CONDITIONS AND DIMENSIONS

BENCH MARKSURVEY NOTEBOOKS

SCALES

ANCHOR BOLTS

REINFORCING DOWELS

REINFORCEMENT

<u>MODIFICATION</u>	<u>CONDITION</u>	<u>#4 BARS</u>	<u>#5 BARS</u>
1.	NONE	21"	26"
2.	12" OF CONCRETE BELOW BAR	29"	36"
3.	COATED BARS, COVER < 3db, OR CLEAR SPACING < 6db	31"	39"
4.	COATED BARS, ALL OTHER CASES	25"	31"
5.	CONDITION 2. AND 3.	35"	44"
6.	CONDITION 2. AND 4.	34"	43"

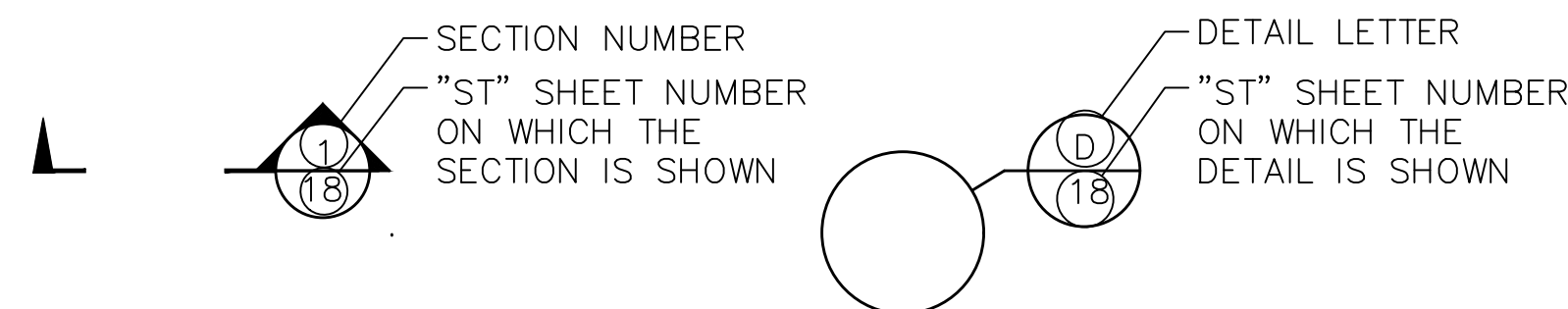
CONCRETE

- ## ANTI-GRAFFITI COATING


UTILITIES

CONSTRUCTION WORK AREA

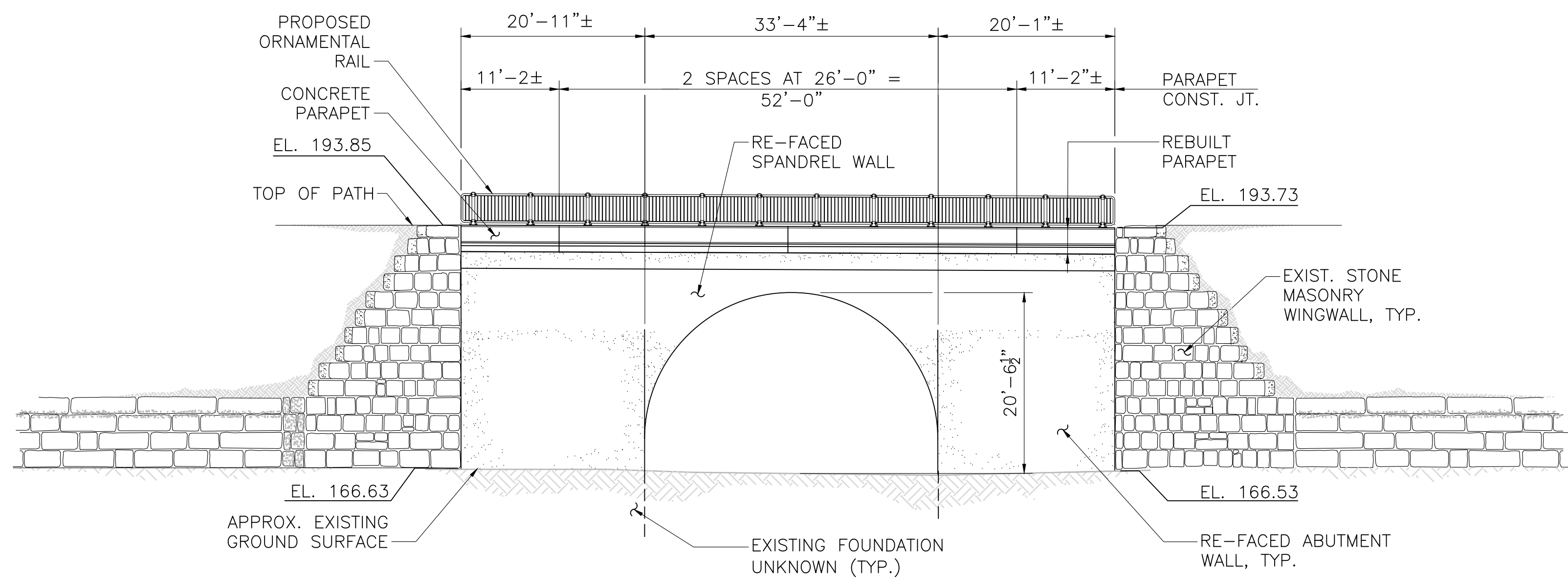
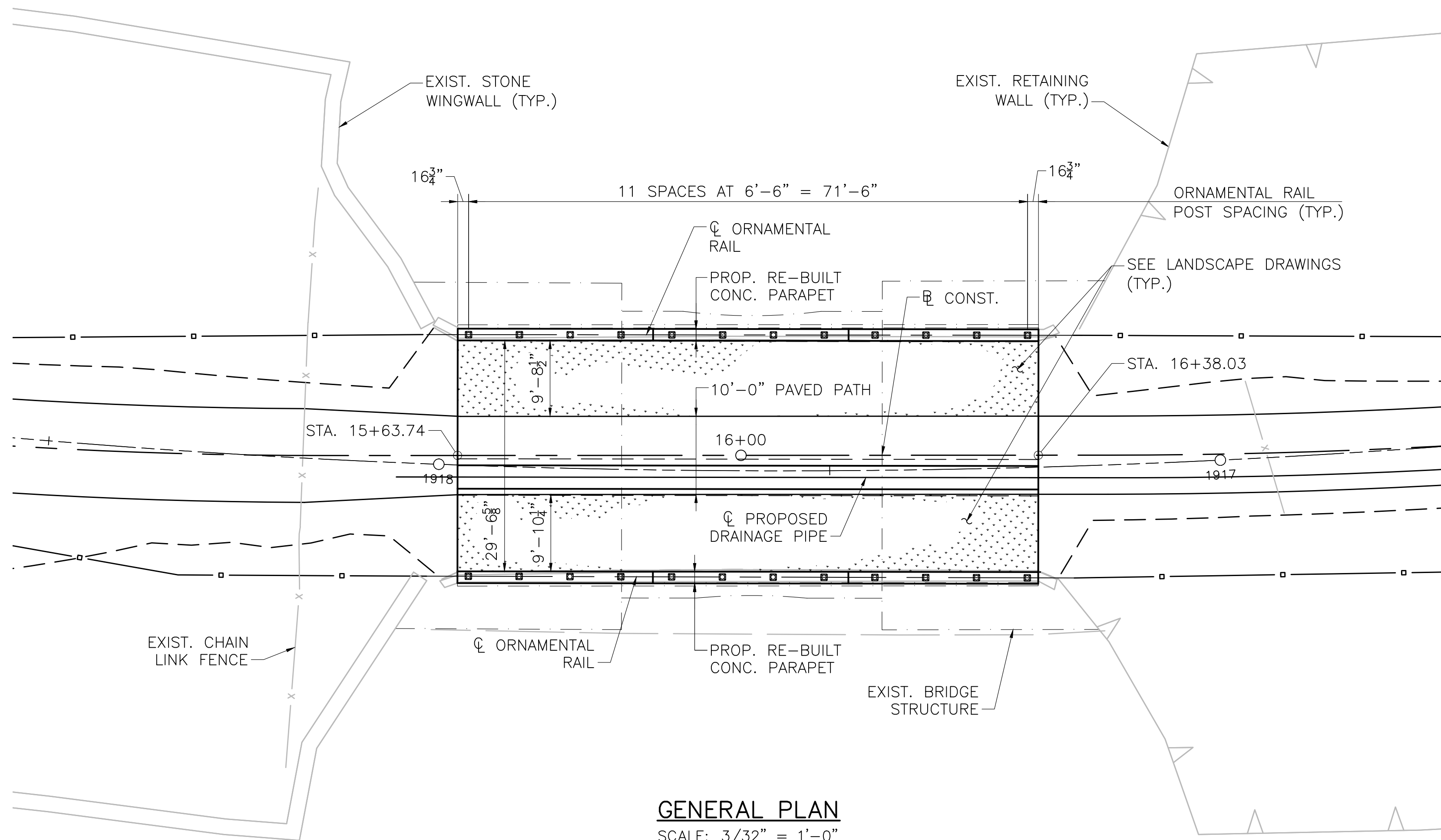
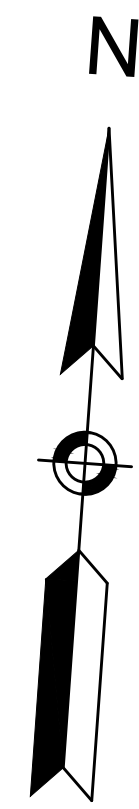
SECTION & DETAIL MARK



ESTIMATED QUANTITIES (NOT GUARANTEED)		
ITEM DESCRIPTION	QUANTITY	UNITS
PRESSURE INJECTION OF CRACKS	300	FT
UNCLASSIFIED EXCAVATION	200	CY
REINFORCED CONCRETE EXCAVATION	160	CY
CLASS B ROCK EXCAVATION	120	CY
CLEAN AND REPOINT EXISTING MASONRY	3,200	SF
4000 PSI, $\frac{3}{4}$ ", 610 CEMENT CONCRETE	90	CY
5000 PSI, $\frac{3}{4}$ ", 685 HP CEMENT CONCRETE	30	CY
4000 PSI, $\frac{3}{4}$ ", 585 HP CEMENT CONCRETE	130	CY
STEEL REINFORCEMENT FOR STRUCTURES – EPOXY COATED	30,000	LB
METAL ORNAMENTAL RAILING (BOSTON PATTERN)	150	FT
ANTI–GRAFFITI COATING	5,000	SF
EPOXY BONDING COMPOUND	5,300	SF
MEMBRANE WATERPROOFING FOR BRIDGE DECKS – SPRAY APPLIED	2,630	SF

REV.	DATE	DESCRIPTION			BY
			 Stantec 45 NETWORK DRIVE BURLINGTON, MA		


<p align="center">COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION DIVISION OF ENGINEERING AND DIVISION OF PLANNING AND RESOURCE PROTECTION</p>			
<p align="center">SINGLE SPAN VIADUCT, BRIDGE NO. B-13-031</p>			
<p align="center">BLACKSTONE GREENWAY SEGMENT 1 PHASE 2 BLACKSTONE, MA</p>			
DESIGNER: CMS CHECKED: MM	<p align="center">GENERAL NOTES AND ESTIMATED QUANTITIES</p>		SHEET NO. <p align="center">ST-2</p>
DRAWN: AMS CHECKED: MM	CONT. P10-2636-C3A ACC. 104265X	SCALE: AS NOTED DATE: OCT. 2022	2 OF 18



NOTE:
SOUTH ELEVATION IS SHOWN,
NORTH IS SIMILAR.

ELEVATION
SCALE: 3/32" = 1'-0"

REV.	DATE	DESCRIPTION	BY



45 NETWORK DRIVE
BURLINGTON, MA

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION AND RECREATION
DIVISION OF ENGINEERING AND
DIVISION OF PLANNING AND RESOURCE PROTECTION

SINGLE SPAN VIADUCT, BRIDGE NO. B-13-031

BLACKSTONE GREENWAY SEGMENT 1 PHASE 2
BLACKSTONE, MA

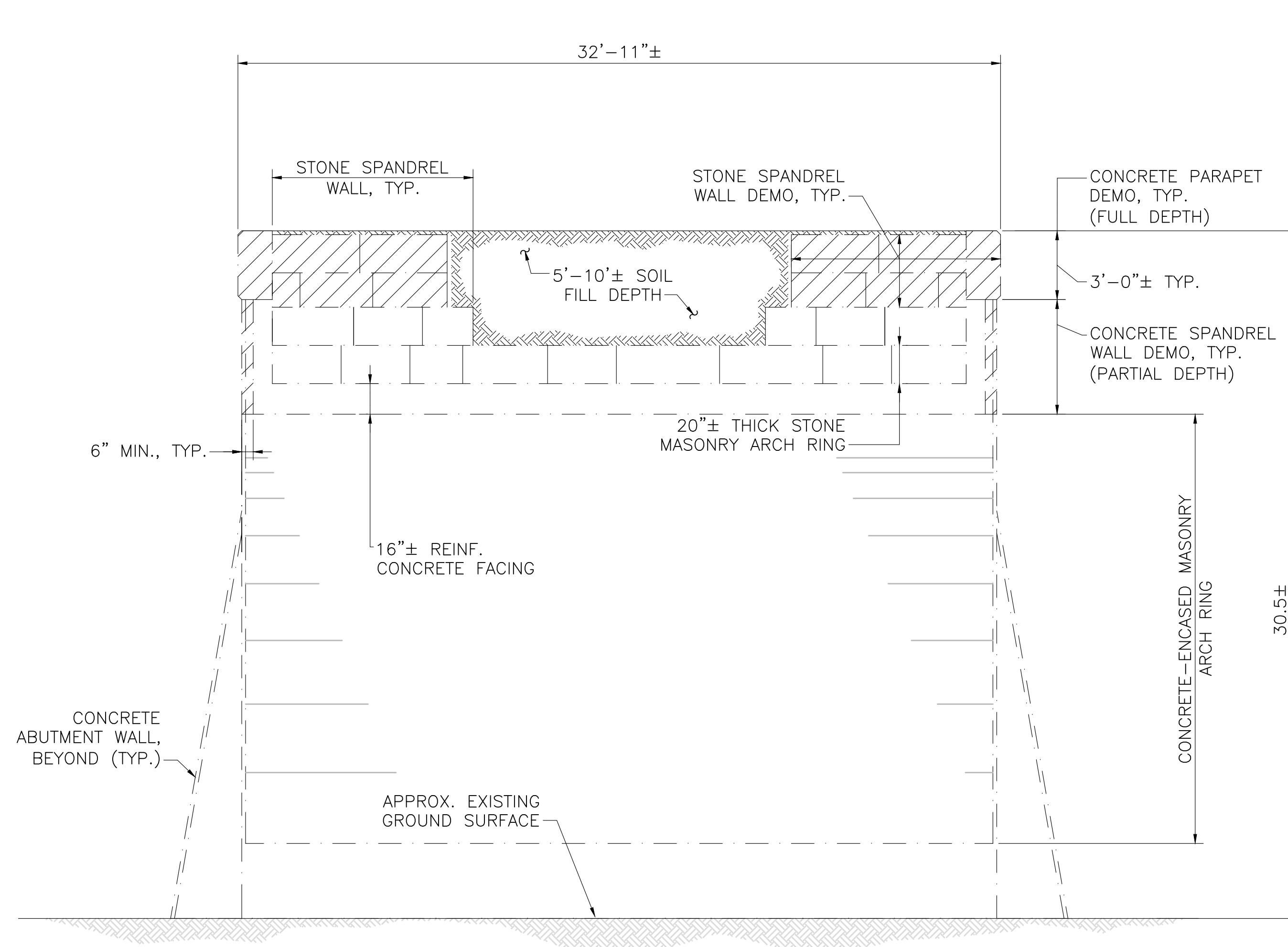
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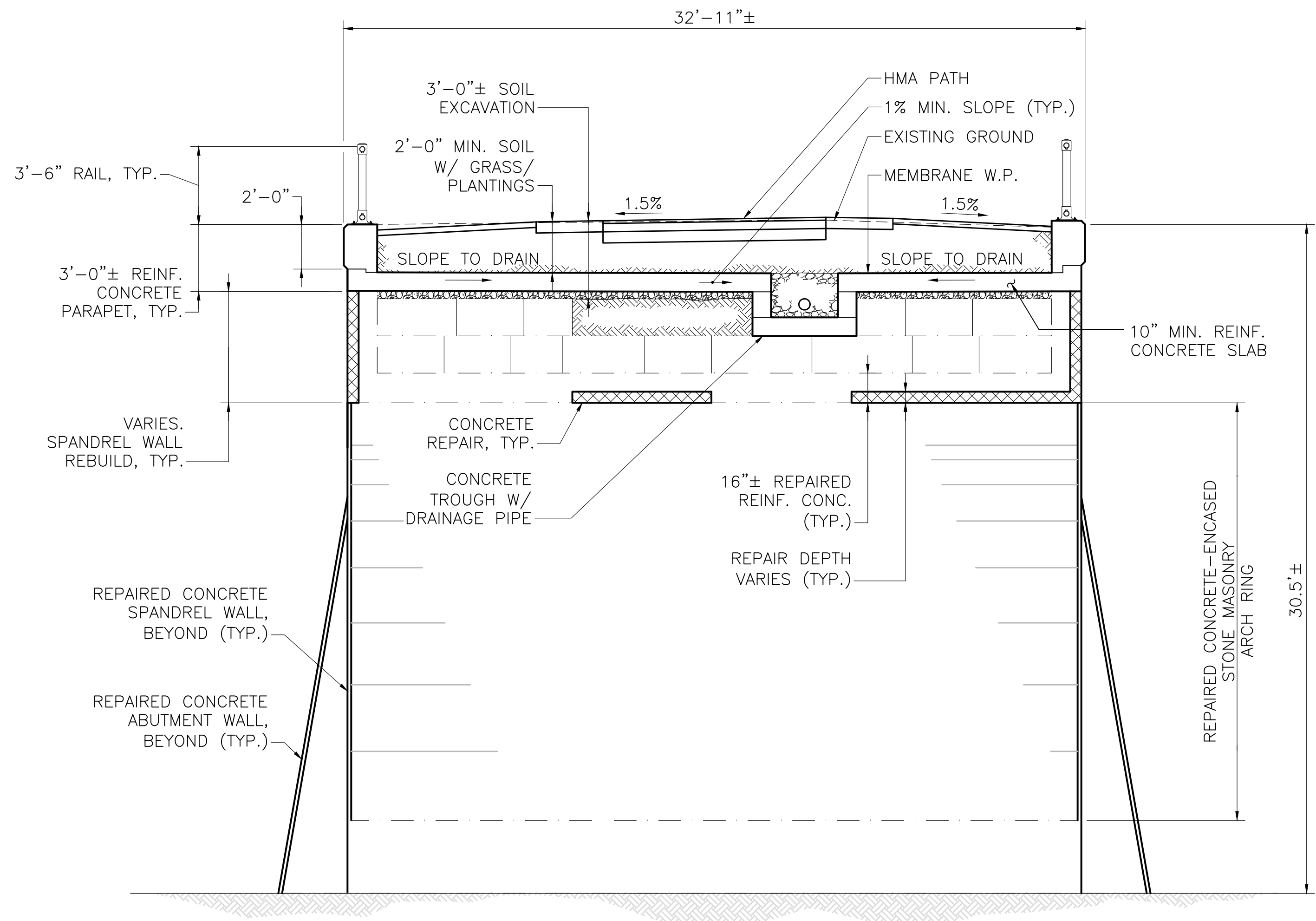
CONT. P10-2636-C3A
ACC. 104266X

SCALE: AS NOTED
DATE: OCT. 2022

SHEET NO.
ST-3
3 OF 18



EXISTING TRANSVERSE SECTION
SCALE: 1/4" = 1'-0"




PROPOSED TRANSVERSE SECTION
SCALE: 1/4" = 1'-0"

LEGEND

- — — — — DENOTES EXISTING BRIDGE STRUCTURE
- — — — — DENOTES PROPOSED BRIDGE COMPONENTS/STRUCTURE
- ▨ DENOTES EXISTING BRIDGE COMPONENTS TO BE DEMOLISHED
- ▩ DENOTES PROPOSED CONCRETE REPAIR

REV.	DATE	DESCRIPTION	BY



45 NETWORK DRIVE
BURLINGTON, MA

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION AND RECREATION
DIVISION OF ENGINEERING AND
DIVISION OF PLANNING AND RESOURCE PROTECTION

SINGLE SPAN VIADUCT, BRIDGE NO. B-13-031

BLACKSTONE GREENWAY SEGMENT 1 PHASE 2
BLACKSTONE, MA

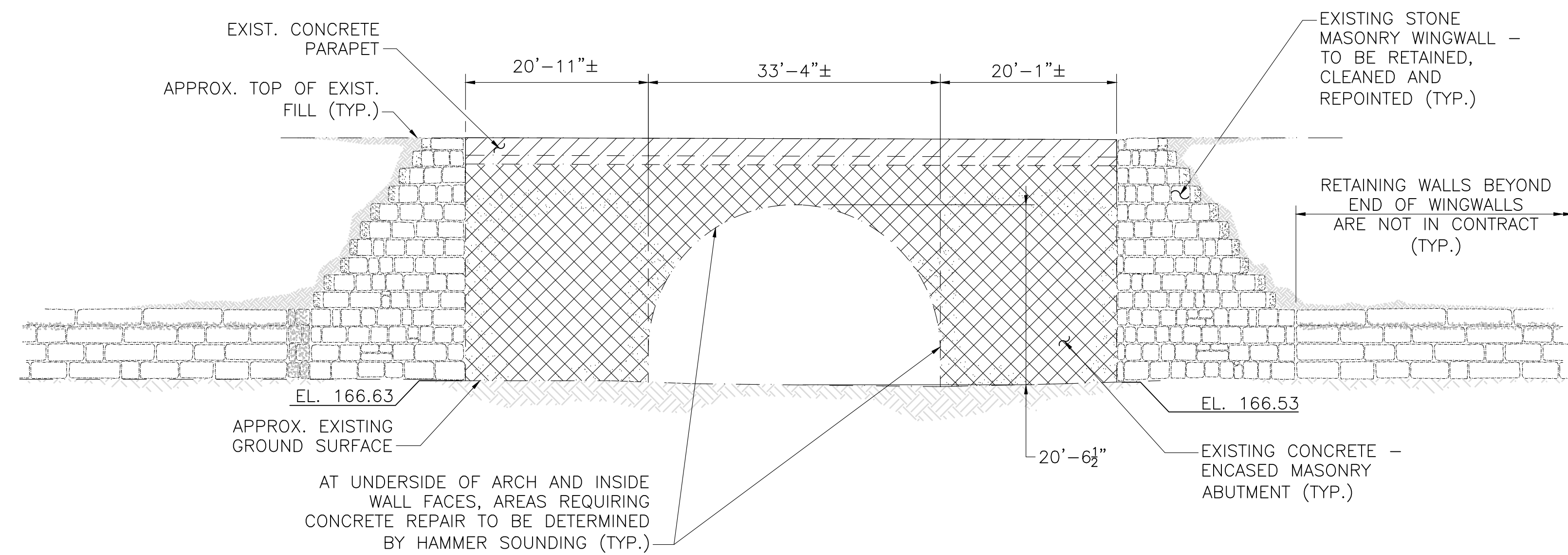
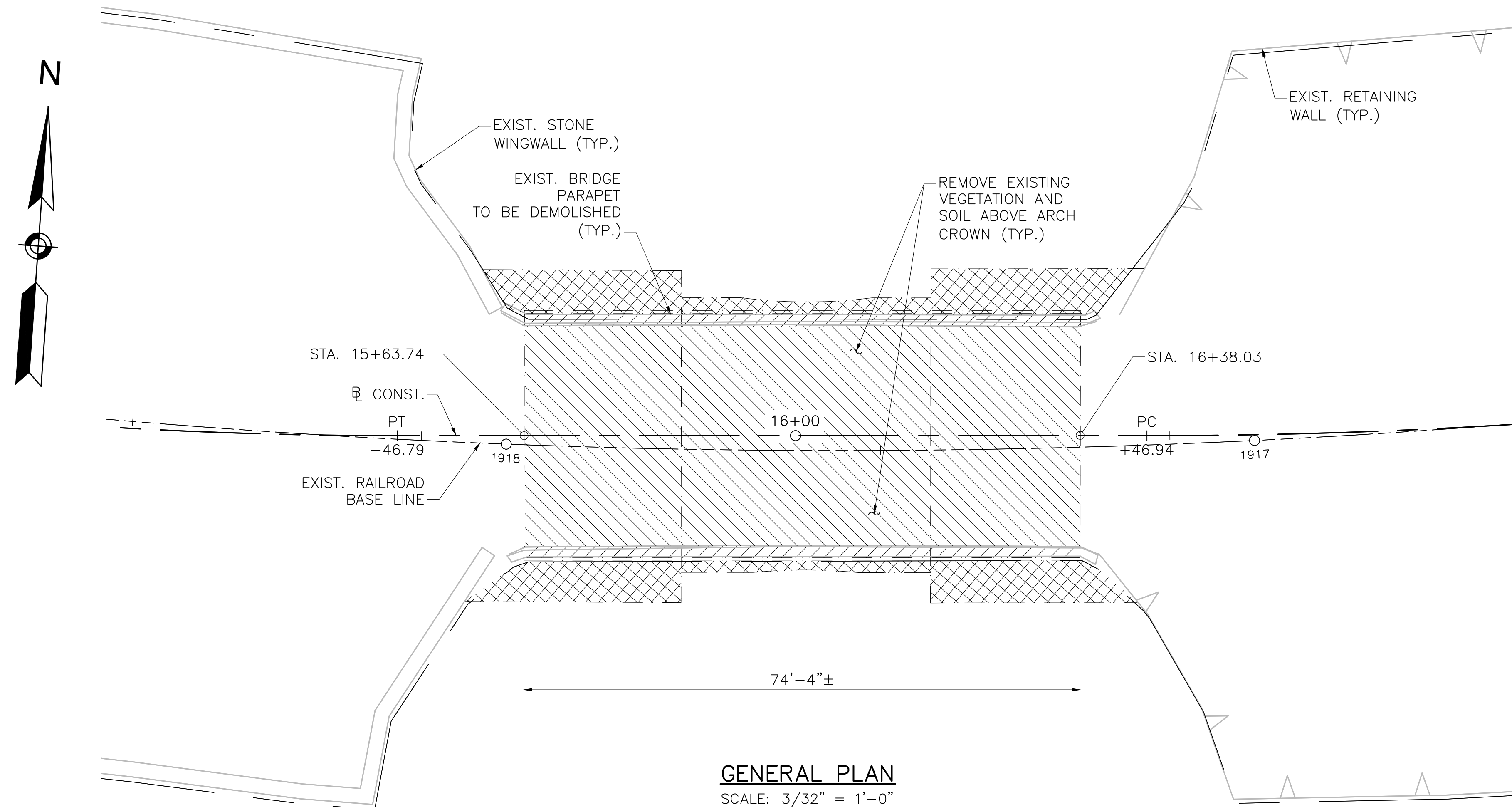
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CHECKED: MM

DRAWN: AMS
CHECKED: MM

CONT. P10-2636-C3A
ACC. 104267X

SCALE: AS NOTED
DATE: OCT. 2022

SHEET NO.
ST-4
4 OF 18



NOTE:

SOUTH ELEVATION SHOWN.
NORTH ELEVATION IS SIMILAR.

LEGEND

- — — — — DENOTES EXISTING BRIDGE COMPONENTS/STRUCTURE
- DENOTES EXISTING BRIDGE COMPONENTS TO BE DEMOLISHED
- DENOTES PROPOSED CONCRETE REPAIR
- DENOTES EXISTING SOIL AND VEGETATION TO BE REMOVED

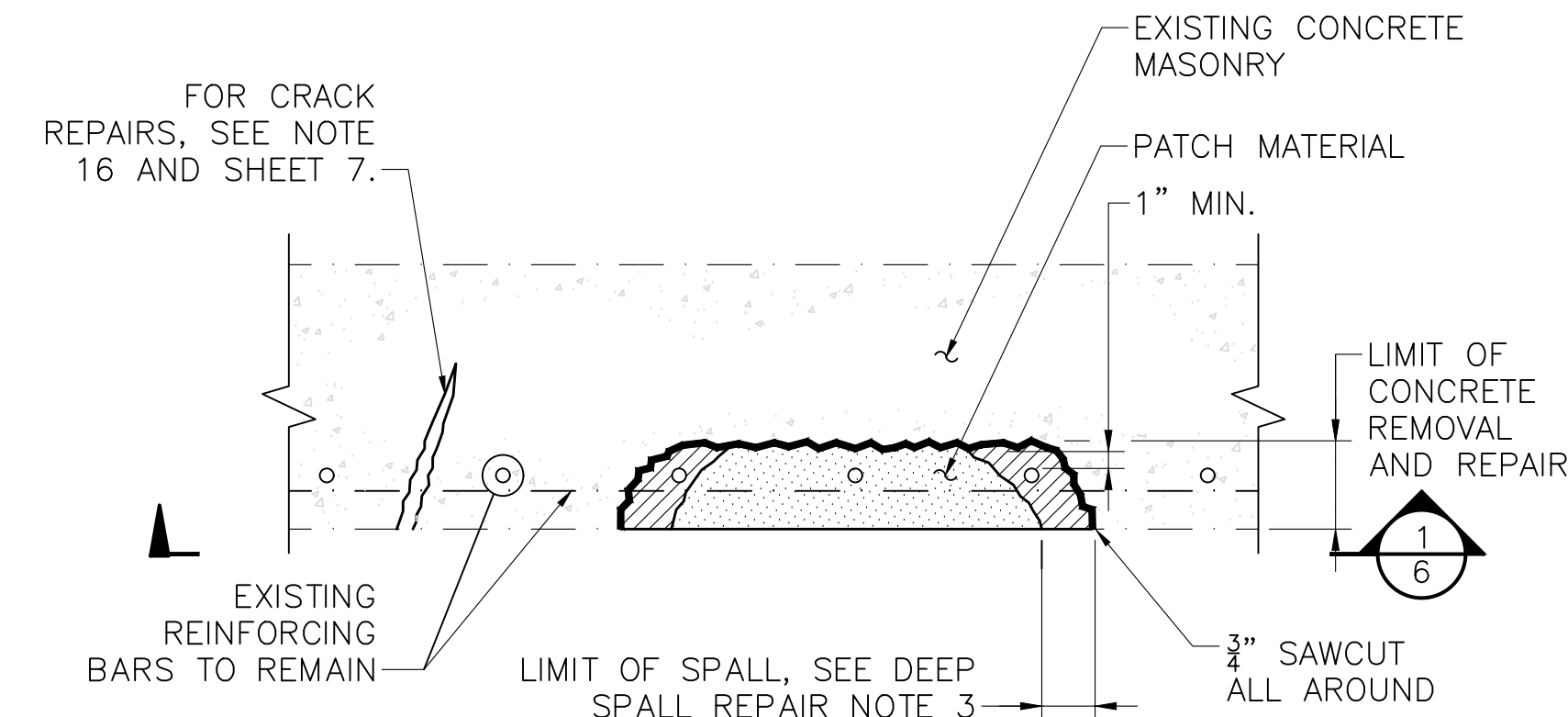
REV.	DATE	DESCRIPTION	BY

Stantec
45 NETWORK DRIVE
BURLINGTON, MA

COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION DIVISION OF ENGINEERING AND DIVISION OF PLANNING AND RESOURCE PROTECTION			
SINGLE SPAN VIADUCT, BRIDGE NO. B-13-031			
BLACKSTONE GREENWAY SEGMENT 1 PHASE 2 BLACKSTONE, MA			
DESIGNER: CMS CHECKED: MM	DEMOLITION AND REMOVAL LIMITS		SHEET NO. ST-5
DRAWN: AMS CHECKED: MM	CONT. P10-2636-C3A ACC. 104268X	SCALE: AS NOTED DATE: OCT. 2022	5 OF 18

CONCRETE REPAIR NOTES FOR ARCH SOFFIT AND INTERIOR WALLS:

1. THE CONTRACTOR SHALL ESTABLISH LIMITS OF VARIOUS REPAIRS AS SHOWN ON THIS SHEET AND AT THE DIRECTION OF THE ENGINEER. FOR ARCH SOFFIT AND INTERIOR WALLS EXTENT, LOCATION AND REPAIR TYPE OF ALL CONCRETE REPAIRS SHALL BE FIELD VERIFIED AND APPROVED BY THE ENGINEER AFTER THE CONTRACTOR HAS SOUNDED AND MARKED OUT THE REPAIR AREAS. REPAIR CONFIGURATIONS SHALL BE KEPT AS SIMPLE AS POSSIBLE, PREFERABLY WITH SQUARE CORNERS. THE ENGINEER SHALL DETERMINE THE LOCATIONS REQUIRING FULL DEPTH REPAIR. IF UNSOUND CONCRETE IS ENCOUNTERED BEYOND A DEPTH OF 8 INCHES, THE CONTRACTOR SHALL STOP CONCRETE REMOVAL AND NOTIFY THE ENGINEER. THE ENGINEER SHALL DETERMINE IF THE AREA REQUIRES FULL DEPTH REPAIR OR DEEP SPALL REPAIR, AND HE SHALL DIRECT THE CONTRACTOR ACCORDINGLY. SEE SPECIAL PROVISIONS.
2. THE LIMITS OF THE REPAIRS SHALL BE SAWCUT ALONG NEAT LINES WHERE PRACTICAL TO PRODUCE A CLEAN EDGE.
3. REMOVE DETERIORATED AND UNSOUND CONCRETE. IF REINFORCEMENT BARS ARE COMPLETELY EXPOSED, THE REMOVAL SHALL EXTEND A MINIMUM OF 1" BEYOND THE BAR. UNDERCUT EXPOSED REINFORCING STEEL TO PROVIDE MINIMUM CLEARANCE OF 1" AROUND BARS. REMOVE ADDITIONAL CONCRETE AS NECESSARY TO PROVIDE MINIMUM REQUIRED THICKNESS OF REPAIR MATERIAL.
4. MISSING OR DETERIORATED (25% OR MORE SECTION LOSS) REINFORCING STEEL SHALL BE REPLACED AS DIRECTED BY THE ENGINEER.
5. ALL SPALL REPAIRS SHALL BE 4" DEEP, MINIMUM, UP TO FULL DEPTH REPAIRS. (AT EXTERIOR WALLS, ALL SPALL REPAIRS SHALL BE 6" DEEP, MINIMUM.) USE 4000 PSI, 3/4", 585 HP CEMENT CONCRETE FOR ALL REPAIRS.
6. IF REINFORCING STEEL IS EXPOSED, THEN CLEAN BY MECHANICAL CLEANING AND HIGH PRESSURE WASHING WITH WATER THAT CONTAINS NO DETERGENTS OR BOND INHIBITING CHEMICALS. WHERE ACTIVE CORROSION HAS OCCURRED (THAT WOULD INHIBIT BONDING) GRITBLAST STEEL TO NEAR WHITE METAL FINISH.
7. AFTER EDGE PREPARATION AND REMOVAL OF CONCRETE ARE COMPLETE, REMOVE BOND INHIBITING MATERIALS (DIRT, GREASE, LOOSELY BONDED AGGREGATE) BY ABRASION BLASTING OR HIGH PRESSURE WATER BLASTING WITH WATER THAT CONTAINS NO DETERGENTS OR BOND INHIBITING CHEMICALS. CHECK THE CONCRETE SURFACES AFTER CLEANING TO ENSURE THAT THE SURFACE IS FREE FROM ADDITIONAL LOOSE AGGREGATE OR THAT ADDITIONAL DELAMINATIONS ARE NOT PRESENT.
8. WHERE NEW CONCRETE IS PLACED IN CONTACT WITH EXISTING CONCRETE, THE SURFACE OF THE PREVIOUSLY CAST CONCRETE SHALL BE BLAST CLEANED, ROUGHENED, AND PREPARED WITH AN EPOXY BONDING COMPOUND SUITABLE FOR BONDING FRESH CONCRETE TO HARDENED CONCRETE FOR LOAD BEARING APPLICATIONS. THE EPOXY BONDING COMPOUND SHALL CONFORM TO AASHTO M 235 TYPE V AND SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
9. IN LIEU OF USING AN EPOXY BONDING COMPOUND, THE SURFACE OF THE PREVIOUSLY CAST CONCRETE MAY BE WETTED WITH CLEAN WATER AND THEN FLUSHED WITH A MORTAR COMPOSED OF EQUAL PARTS OF THE CEMENT AND SAND SPECIFIED FOR THE NEW CONCRETE, BEFORE NEW CONCRETE IS PLACED ADJACENT THERETO. MORTAR SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. NEW CONCRETE SHALL BE PLACED BEFORE MORTAR HAS TAKEN INITIAL SET.
10. ALL SURFACES SHALL BE RUBBED TO PRODUCE A SMOOTH FINISH TO MATCH EXISTING SURFACES. ALL FORM-TIE AND ANCHOR HOLES IN FINISHED WORK SHALL BE FILLED WITH REPAIR MORTAR AND RUBBED SIMILARLY. CUT FORM TIES AND ANCHORS 1" MIN. BELOW FINISHED SURFACE.
11. THE EXISTING CRACKS IDENTIFIED TO BE SEALED SHALL BE DONE IN ACCORDANCE WITH THE SPECIAL PROVISIONS AND AS DETAILED ON SHEET 7.
12. PROVIDE A MINIMUM OF 72 HOURS WET CURE.
13. TEMPERATURE OF BOTH AIR AND SUBSTRATE SHALL BE 45 DEGREES AND RISING DURING APPLICATION OF REPAIR MATERIALS. TEMPERATURE DURING THE FIRST THREE DAYS OF CURING MUST BE PROJECTED TO REMAIN ABOVE 45 DEGREES. PREPARATION WORK MAY BE DONE AT ANY TEMPERATURE PRIOR TO THE APPLICATION OF BONDING COMPOUND.
14. THE CONTRACTOR SHALL CONTROL ALL MATERIALS USED FOR THE REPAIR, AND SHALL PREVENT ANY MATERIALS FROM REPAIR AND DEMOLITION FROM FALLING INTO ADJACENT PROPERTIES.
15. FOR REMOVAL OF UNSOUND CONCRETE SEE SPECIAL PROVISIONS ITEM 127.1, REINFORCED CONCRETE EXCAVATION FOR REPAIRS. FOR REPAIR OF UNSOUND CONCRETE SEE SPECIAL PROVISIONS ITEM 904.4, 4000 PSI, 3/4 INCH, 585 HP CEMENT CONCRETE.
16. FOR EXISTING CRACKS WITHIN THE AREAS OF UNSOUND CONCRETE, THE UNSOUND CONCRETE SHALL BE REMOVED AND PAID FOR UNDER ITEM 127.1, REINFORCED CONCRETE EXCAVATION FOR REPAIRS; THE CRACKS SHALL BE REPAIRED AND PAID FOR UNDER ITEM 107.855, PRESSURE INJECTION OF CRACKS (SEE SHEET 7); THEN THE UNSOUND CONCRETE AREA SHALL BE REPAIRED AND PAID FOR UNDER ITEM 904.4, 4000 PSI, 3/4 INCH, 585 HP CEMENT CONCRETE.

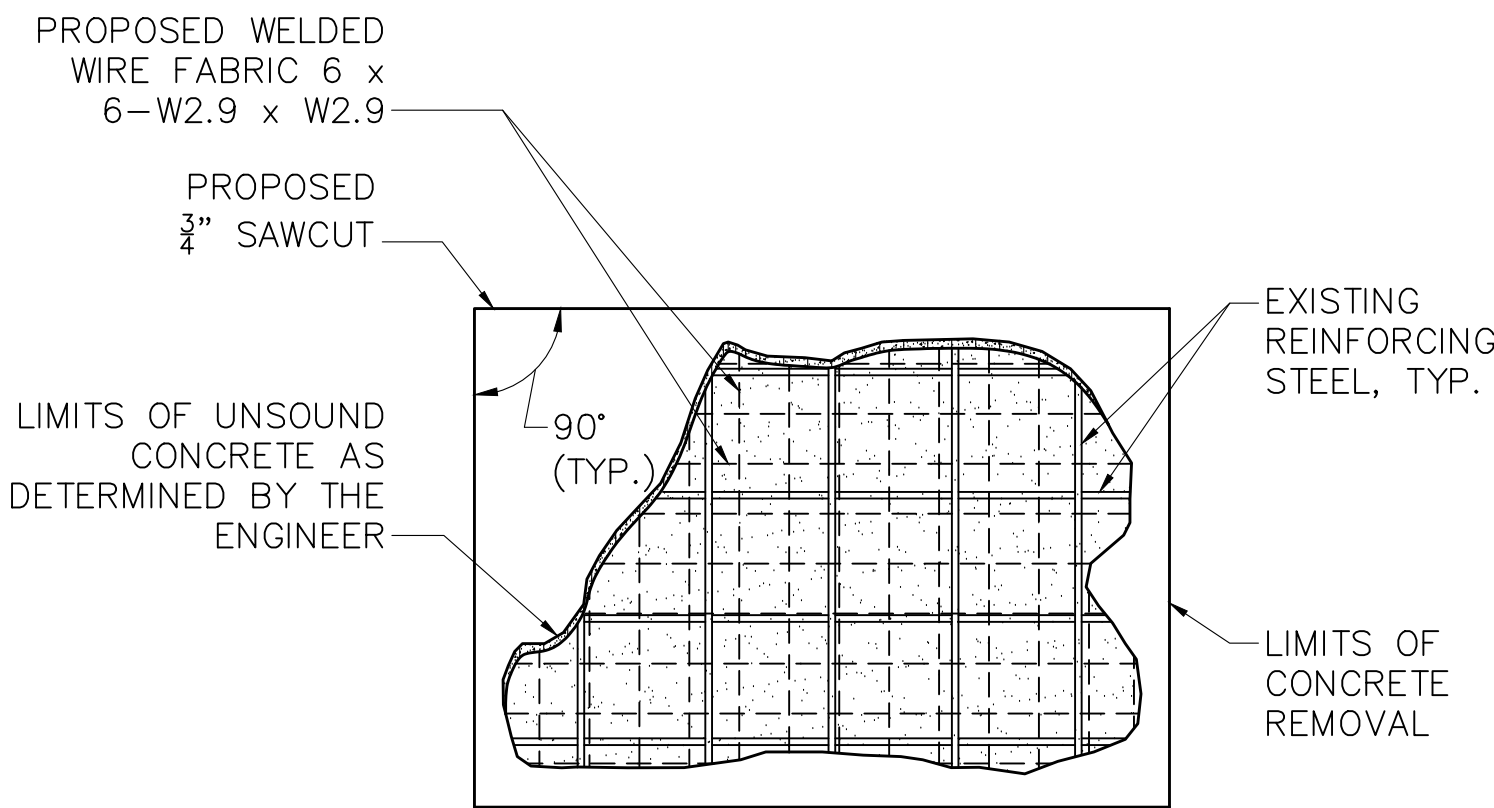


DEEP SPALL REPAIR PROCEDURE:

1. REPAIR DEPTH SHALL NOT BE LESS THAN 1" BEYOND EXISTING REINFORCEMENT.
2. SAWCUT 3/4" DEEP AROUND DELAMINATED AREA.
3. REPAIR AREA SHALL BE A MINIMUM 3" BEYOND LIMITS OF SPALL.
4. REMOVE LOOSE OR HOLLOW SOUNDING CONCRETE TO OBTAIN A MINIMUM SURFACE PROFILE OF 1/4"±.
5. REMOVE ALL DIRT AND DUST BY AIR BLASTING AND PREPARE SURFACE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION.
6. WHERE REINFORCING BAR IS ENCOUNTERED, THE CONCRETE ALL AROUND THE BARS (BOTH TOP LAYERS OF STEEL) SHALL BE CHIPPED OUT TO A DEPTH WHERE THE BARS CAN BE COVERED WITH AT LEAST 1" OF REQUIRED REPAIR MATERIALS. SEE CONCRETE REPAIR NOTE 3.
7. CLEAN REINFORCING STEEL AND CONCRETE FOR INSPECTION BY SANDBLASTING.
8. REINFORCING BARS THAT HAVE BEEN REDUCED IN AREA MORE THAN 25% DUE TO CORROSION SHALL BE SPLICED WITH A NEW REINFORCING BAR AT THE PROPER LENGTH (SEE DETAIL THIS SHEET).
9. SANDBLAST REINFORCING BARS TO NEAR WHITE METAL FINISH.
10. COAT EXISTING AND NEW REINFORCING BARS AND CONCRETE WITH AN EPOXY BONDING COMPOUND.
11. PATCH MATERIAL SHALL BE 4000 PSI, 3/4 IN., 585 HP CEMENT CONCRETE, UNLESS OTHERWISE APPROVED BY THE ENGINEER.

DEEP SPALL REPAIR – ARCH SOFFIT AND INTERIOR WALLS (REINFORCMENT EXPOSED)

NOT TO SCALE

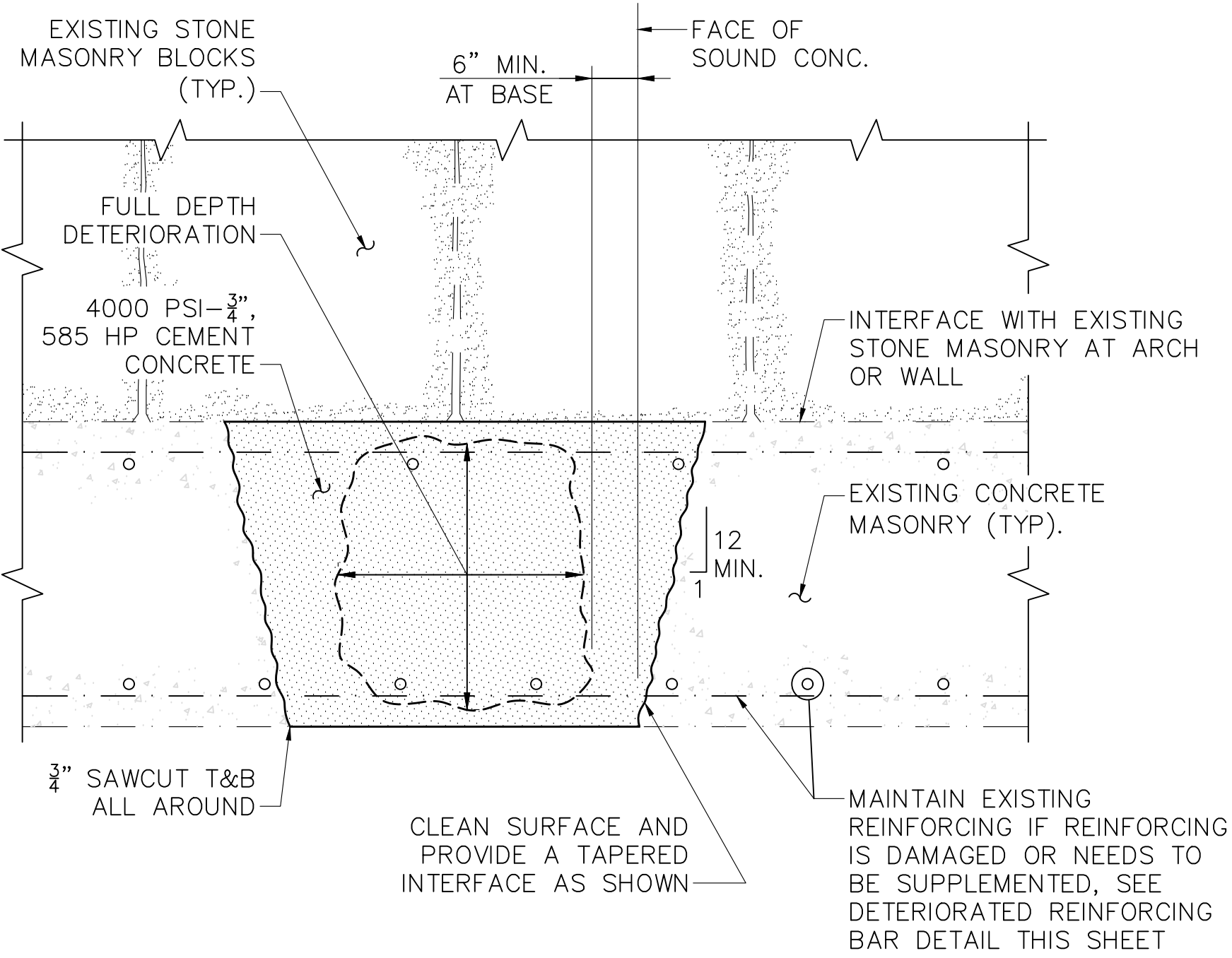


NOTE:

SEE DETERIORATED REINFORCING BAR REPAIR DETAIL THIS SHEET IF EXISTING REINFORCING IS DETERIORATED.

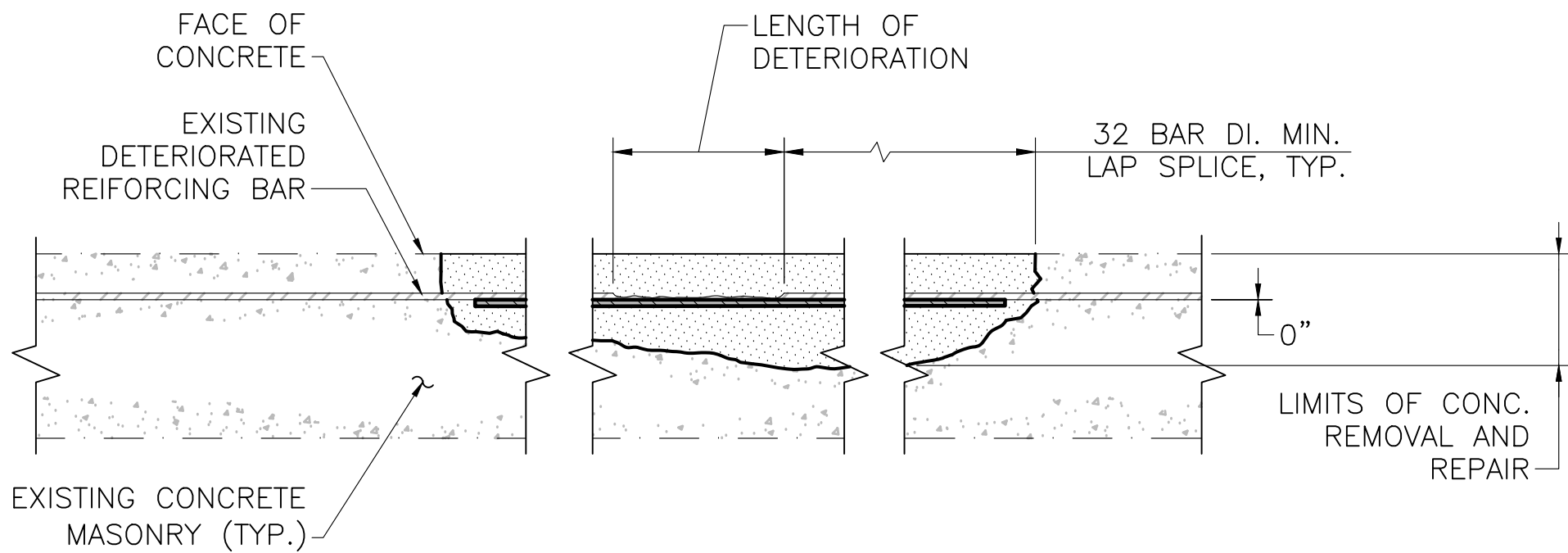
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SCALE: 1" = 1'-0"



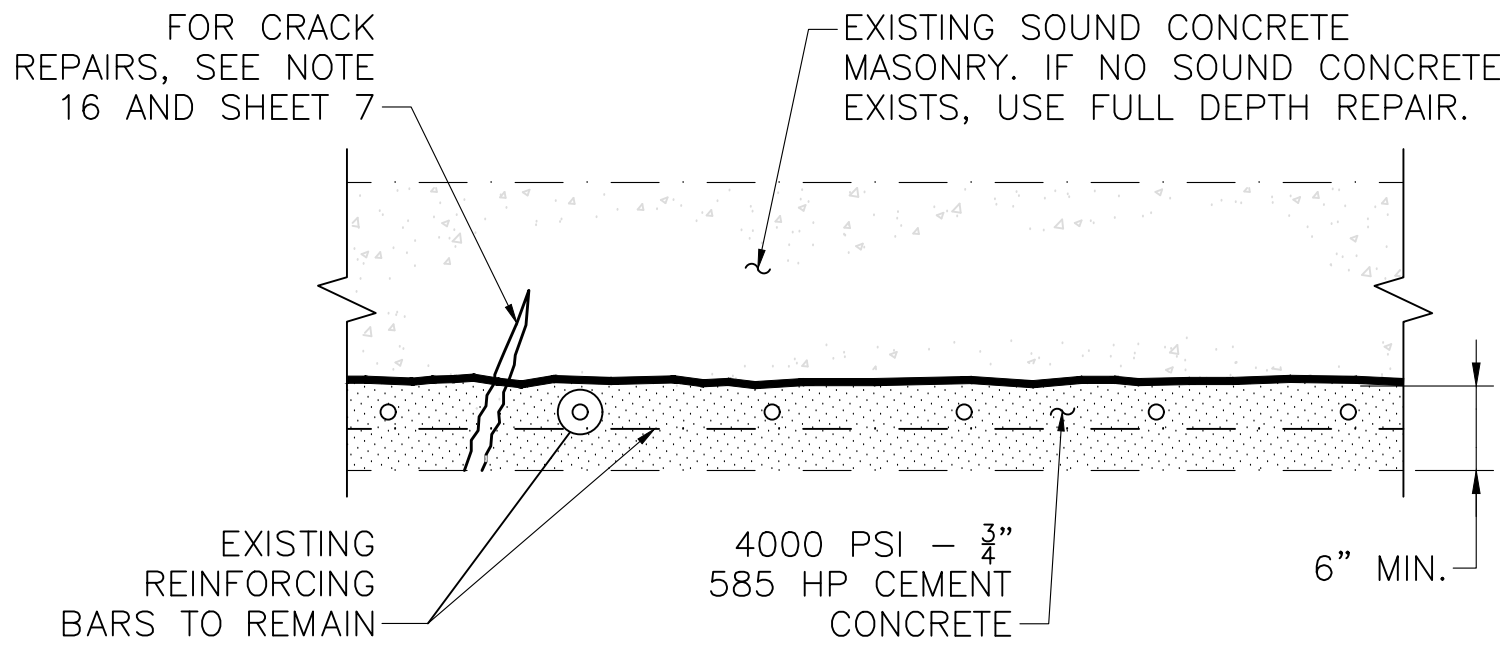
FULL DEPTH REPAIR AREA DETAIL

SCALE: NOT TO SCALE




DETERIORATED REINFORCING BAR REPAIR DETAIL

SCALE: NOT TO SCALE



TYPICAL EXTERIOR WALL REPAIR DETAIL

SCALE: NOT TO SCALE

REV.	DATE	DESCRIPTION	BY
 45 NETWORK DRIVE BURLINGTON, MA			

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION AND RECREATION
DIVISION OF ENGINEERING AND
DIVISION OF PLANNING AND RESOURCE PROTECTION

SINGLE SPAN VIADUCT, BRIDGE NO. B-13-031

BLACKSTONE GREENWAY SEGMENT 1 PHASE 2
BLACKSTONE, MA

DESIGNER: CMS

CHECKED: MM

DRAWN: AMS

CHECKED: MM

CONCRETE REPAIR DETAILS -
PART 1 OF 2

CONT. P10-2636-C3A

ACC. 104269X

SCALE: AS NOTED

DATE: OCT. 2022

SHEET NO.

ST-6

6 OF 18

CRACK INJECTION REPAIR PROCEDURE:

1. THE CONTRACTOR SHALL ESTABLISH LIMITS OF VARIOUS REPAIRS AS SHOWN ON THIS SHEET AND AT THE DIRECTION OF THE ENGINEER. THE EXTENT, LOCATION AND REPAIR TYPE OF ALL CONCRETE REPAIRS SHALL BE FIELD VERIFIED AND APPROVED BY THE ENGINEER AFTER THE CONTRACTOR HAS SOUNDED AND MARKED OUT THE REPAIR AREAS.

2. PRIOR TO SEALING THE CRACKS BY PRESSURE INJECTION, WATER BLASTING OF THE CONCRETE SHALL BE DONE TO THOROUGHLY CLEAN THE CONCRETE SURFACE. ANY REMAINING MINERAL DEPOSITS NOT REMOVED BY WATER BLASTING SHALL BE REMOVED BY GRINDING.

3. BEFORE DRILLING THE INJECTION HOLES, LOCATE REBAR AND CONDUIT, AND PLAN THE PATTERN TO MINIMIZE DAMAGING THE CONCRETE OR REBARS DURING DRILLING.

4. THE DIAMETER OF THE INJECTION HOLES SHALL BE 1/2 INCH OR 5/8 INCH DEPENDING ON THE PACKER USED. HOLES SHALL BE STAGGERED FROM ONE SIDE OF THE CRACK TO THE OTHER. THE DISTANCE OF THE DRILLED HOLES TO EACH OTHER SHALL BE BETWEEN 6 INCHES AND 20 INCHES. DRILL BITS WITH HOLES AND A VACUUM SYSTEM SHALL BE USED TO PREVENT DEBRIS FROM ENTERING THE CRACK DURING DRILLING.

5. THE ANGLE OF DRILLING SHALL BE 45 DEGREES TO THE SURFACE AND TOWARDS THE CRACK. THE DEPTH OF THE DRILL HOLE INTERSECTING THE CRACK SHALL BE APPROXIMATELY AT MID-DEPTH OF THE CONCRETE COMPONENT, UNLESS OTHERWISE INDICATED. IF THE REINFORCING IS HIGHLY CONGESTED, PREVENTING DIAGONAL DRILLING, OR IF THE CONCRETE THICKNESS IS 6 INCHES OR LESS, DO NOT ATTEMPT DIAGONAL DRILLING. SET THE PACKERS STRAIGHT INTO THE FACE OF THE CRACK.

6. METAL-RUBBER TYPE MECHANICAL PACKERS SHALL BE USED AND BE CAPABLE OF PRESSURES UP TO 5000 PSI.

7. PLACE THE PACKERS IN THE PREVIOUSLY DRILLED HOLE SO THAT THE TOP OF THE RUBBER SLEEVE IS BELOW THE CONCRETE SURFACE. IF THE PACKER CAN NOT BE PUSHED INTO THE HOLE, TAP IT IN. TIGHTEN THE PACKER WITH A WRENCH AS TIGHT AS NECESSARY.
8. ONCE THE PACKERS ARE IN PLACE, THE CRACK AND PORTS SHALL BE SEALED WITH AN EPOXY SEALING GEL.

9. PRIOR TO INJECTION OF SEALANT, THE CRACKS SHALL BE FLUSHED WITH WATER. START AT THE LOWEST PACKER ON A VERTICAL CRACK, OR AT THE NARROWEST PART OF A CRACK OF A HORIZONTAL OR INCLINED SURFACE AND PROCEED FROM PACKER TO PACKER IN SEQUENCE. AFTER COMPLETION OF FLUSHING, ALLOW CRACKS TO DRY BEFORE INJECTION OF SEALANT.

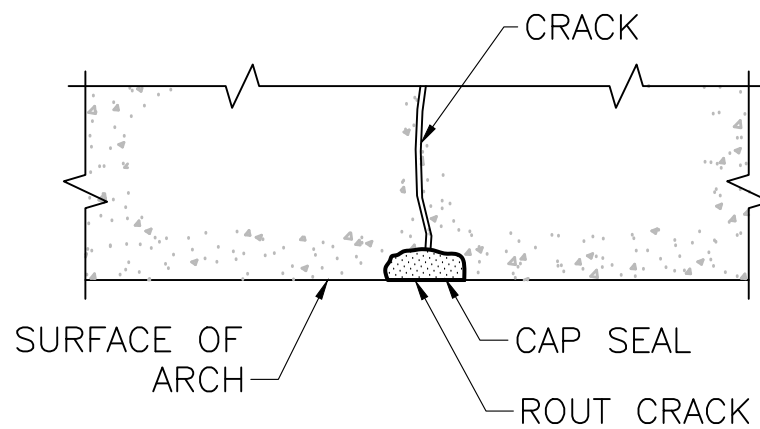
10. WHEN ALL OF THE PREPARATION WORK IS COMPLETED, MAKE SURE THE INJECTION PUMP IS IN GOOD WORKING ORDER. ALL EQUIPMENT THAT COMES IN CONTACT WITH THE CHEMICALS MUST BE ABSOLUTELY DRY.

11. FOLLOW THE MANUFACTURER’S RECOMMENDATION FOR MIXING AND APPLICATION PROCEDURES FOR THE SPECIFIC INJECTION MATERIAL USED.

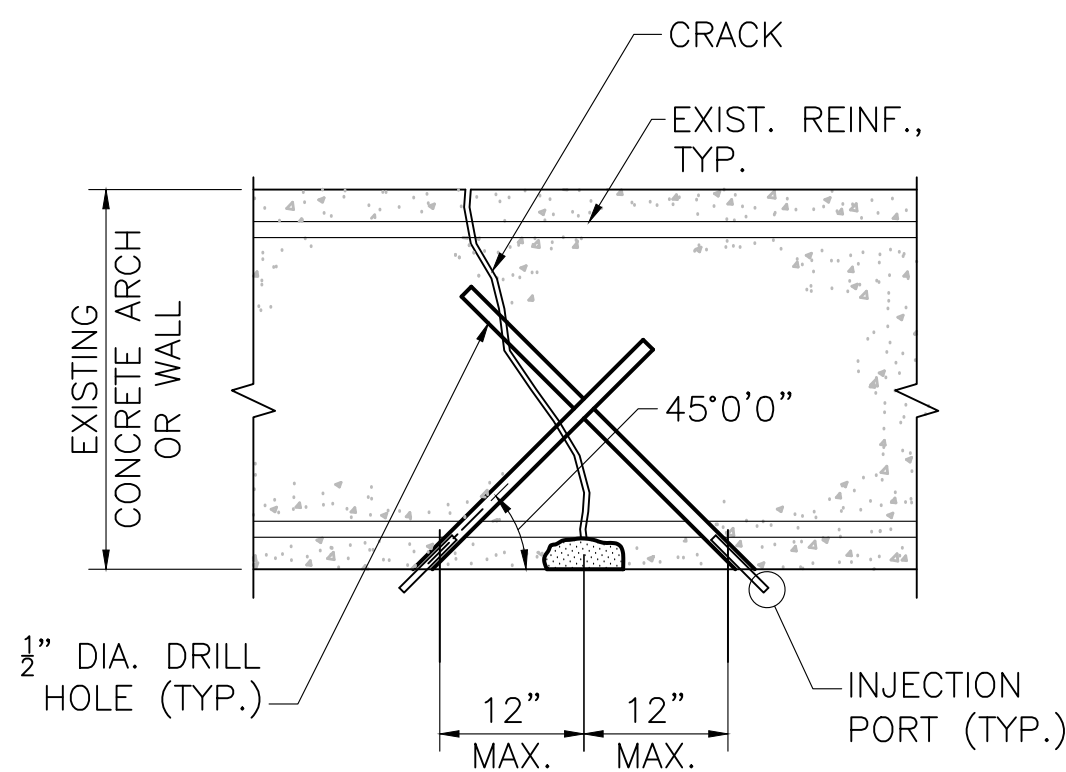
12. THE PACKERS SHALL BE REMOVED WITHIN 24 HOURS AFTER INJECTION AND THE HOLES SHALL BE PATCHED. THE SURFACE SEAL SHALL ALSO BE REMOVED BY GRINDING AND THE ENTIRE WORKED SURFACE SHALL BE FINISHED TO MATCH THE EXISTING SURFACES.

13. FOR CRACK REPAIRS, SEE SPECIAL PROVISIONS ITEM 107.855, PRESSURE INJECTION OF CRACKS.

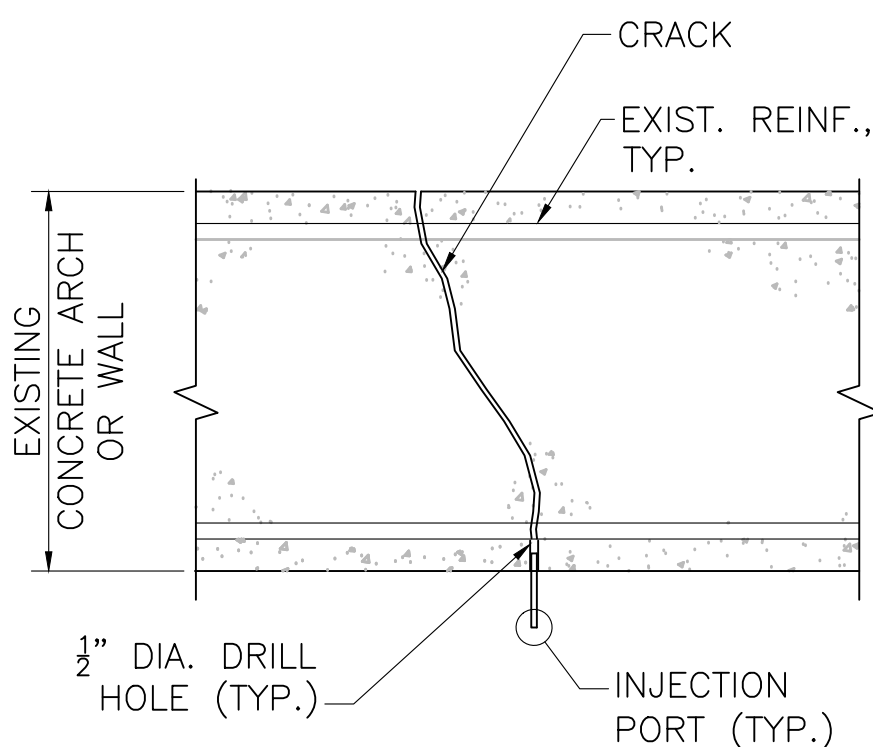
14. FOR EXISTING CRACKS WITHIN THE AREA OF UNSOUND CONCRETE, THE UNSOUND CONCRETE SHALL BE REMOVED AND PAID FOR UNDER ITEM 127.1 REINFORCED CONCRETE EXCAVATION; THE CRACKS SHALL BE REPAIRED AND PAID FOR UNDER ITEM 107.855 PRESSURE INJECTION OF CRACKS; THEN THE UNSOUND CONCRETE AREA SHALL BE REPAIRED AND PAID FOR UNDER ITEM 904.4, 4000 PSI, 3/4 INCH, 585 HP CEMENT CONCRETE.



CAP SEAL DETAIL



ORIENTATION OF INJECTION PORT



ALTERNATE ORIENTATION OF INJECTION PORT

CRACK INJECTION REPAIR PROCEDURE:

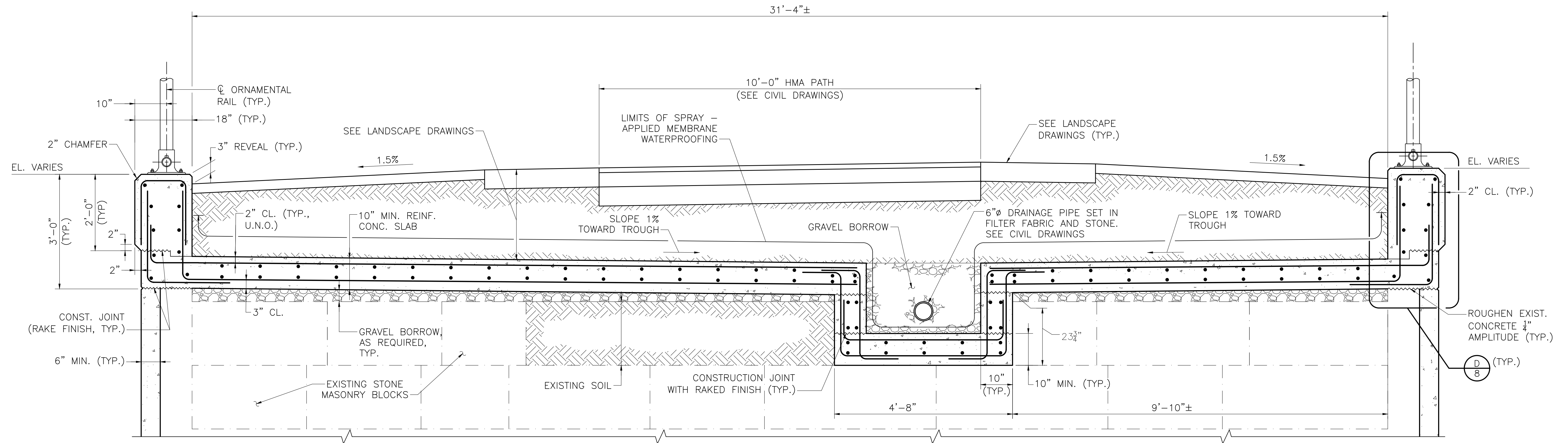
NOT TO SCALE

SUGGESTED REPAIR SEQUENCE

1. THE CONTRACTOR SHALL REPAIR THE CRACK IN ACCORDANCE WITH THE MANUFACTURER’S REQUIREMENTS, SEQUENCE, AND PROCEDURES.
2. LOCATE CRACKS TO BE REPAIRED AND ROUT CRACKS.
3. PLACE EPOXY CAP SEAL IN ROUTED AREA OF CRACK.
4. LOCATE, DRILL, AND PLACE INJECTION PORTS IN ACCORDANCE WITH PRODUCT MANUFACTURER’S RECOMMENDATIONS.
5. FLUSH CRACKS WITH WATER.
6. ALLOW CRACKS TO DRY IN ACCORDANCE WITH PRODUCT MANUFACTURER’S RECOMMENDATION.
7. INJECT EPOXY FOR CRACK REPAIR.
8. ALLOW INJECTION EPOXY TO SET.
9. REMOVE INJECTION PORTS.
10. STRIKE OFF CAP SEAL AND GRIND SMOOTH.

REV.	DATE	DESCRIPTION	BY
		<div><div><div></div><div>Stantec</div><div>45 NETWORK DRIVE BURLINGTON, MA</div></div></div>	

COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION DIVISION OF ENGINEERING AND DIVISION OF PLANNING AND RESOURCE PROTECTION			
SINGLE SPAN VIADUCT, BRIDGE NO. B-13-031			
BLACKSTONE GREENWAY SEGMENT 1 PHASE 2 BLACKSTONE, MA			
DESIGNER: CMS	CONCRETE REPAIR DETAILS - PART 2 OF 2		SHEET NO.
CHECKED: MM			ST-7
DRAWN: AMS	CONT. P10-2636-C3A	SCALE: AS NOTED	
CHECKED: MM	ACC. 104270X	DATE: OCT. 2022	7 OF 18

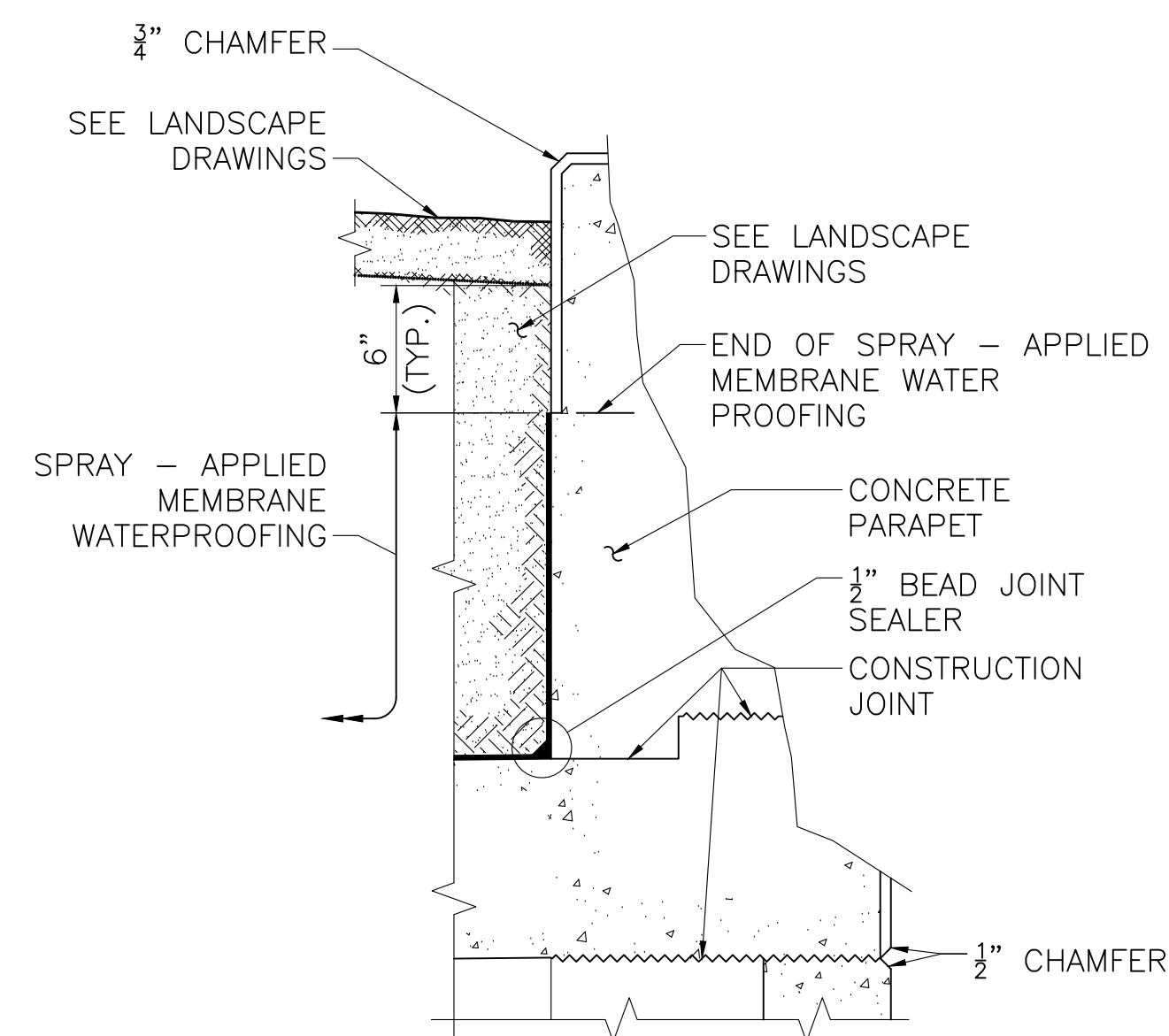


CONCRETE BASE SLAB

SCALE: 3/4" = 1'-0"

NOTE:

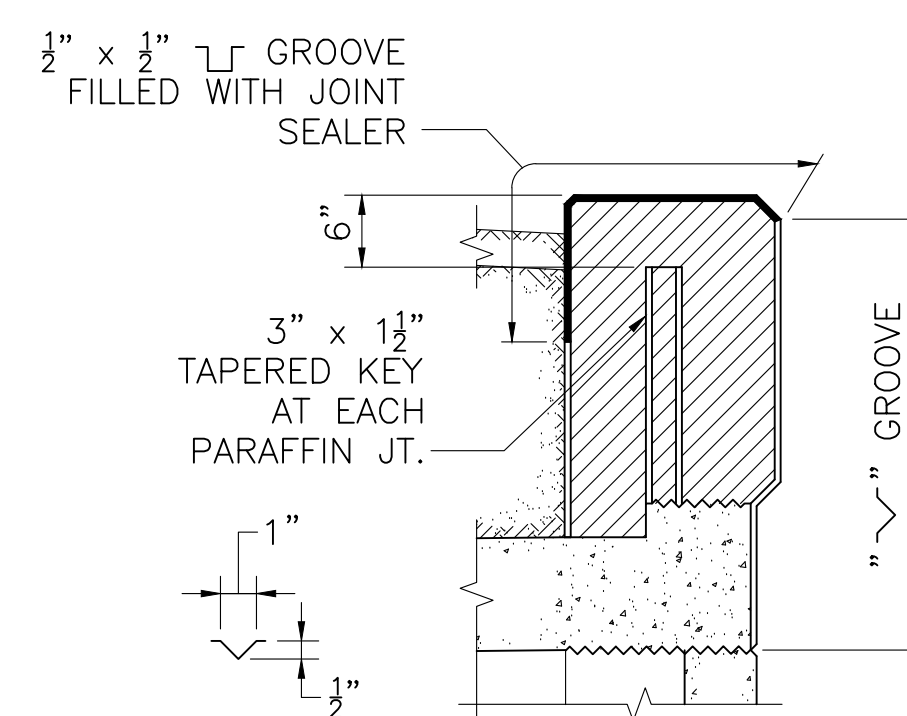
ALL REINFORCEMENT FOR THE CONCRETE BASE SLAB AND PARAPET SHALL BE #5 @ 8", EPOXY COATED, EACH WAY, EACH FACE, UNLESS NOTED OR SHOWN OTHERWISE.



PARAPET DETAIL

SCALE: 1 1/2" = 1'-0"

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8



NOTES:

- ALL CONCRETE ABOVE SLAB SHALL BE POURED IN ALTERNATING SECTIONS WITH NOT LESS THAN 3 DAYS BETWEEN POURS.
- DO NOT CARRY LONGITUDINAL BARS THROUGH THE PARAFFIN JOINTS. END THE REINFORCEMENT 2" CLEAR OF JOINT.
- JOINT SHALL BE SQUARE TO FACE OF PARAPET.

PARAFFIN JOINT DETAIL

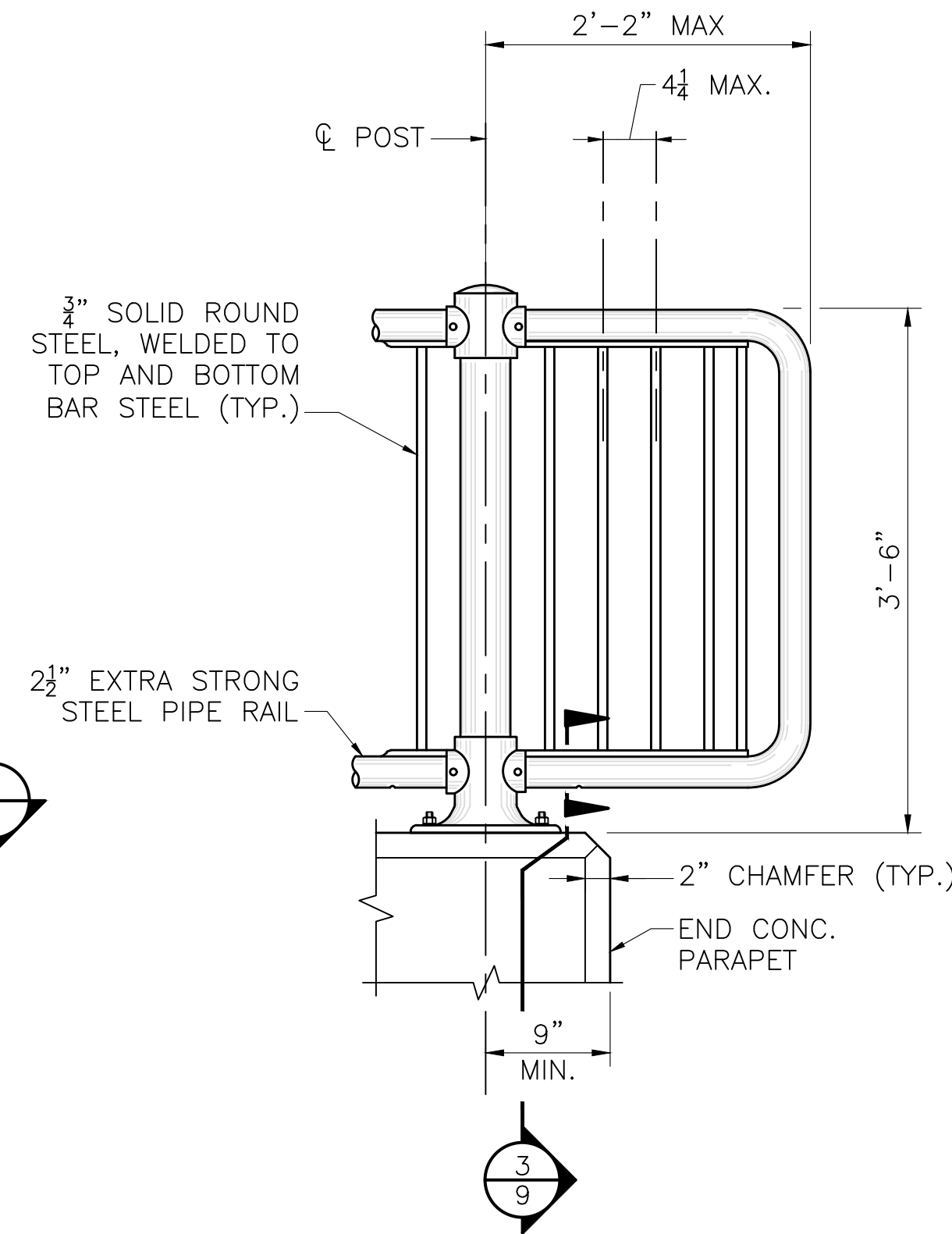
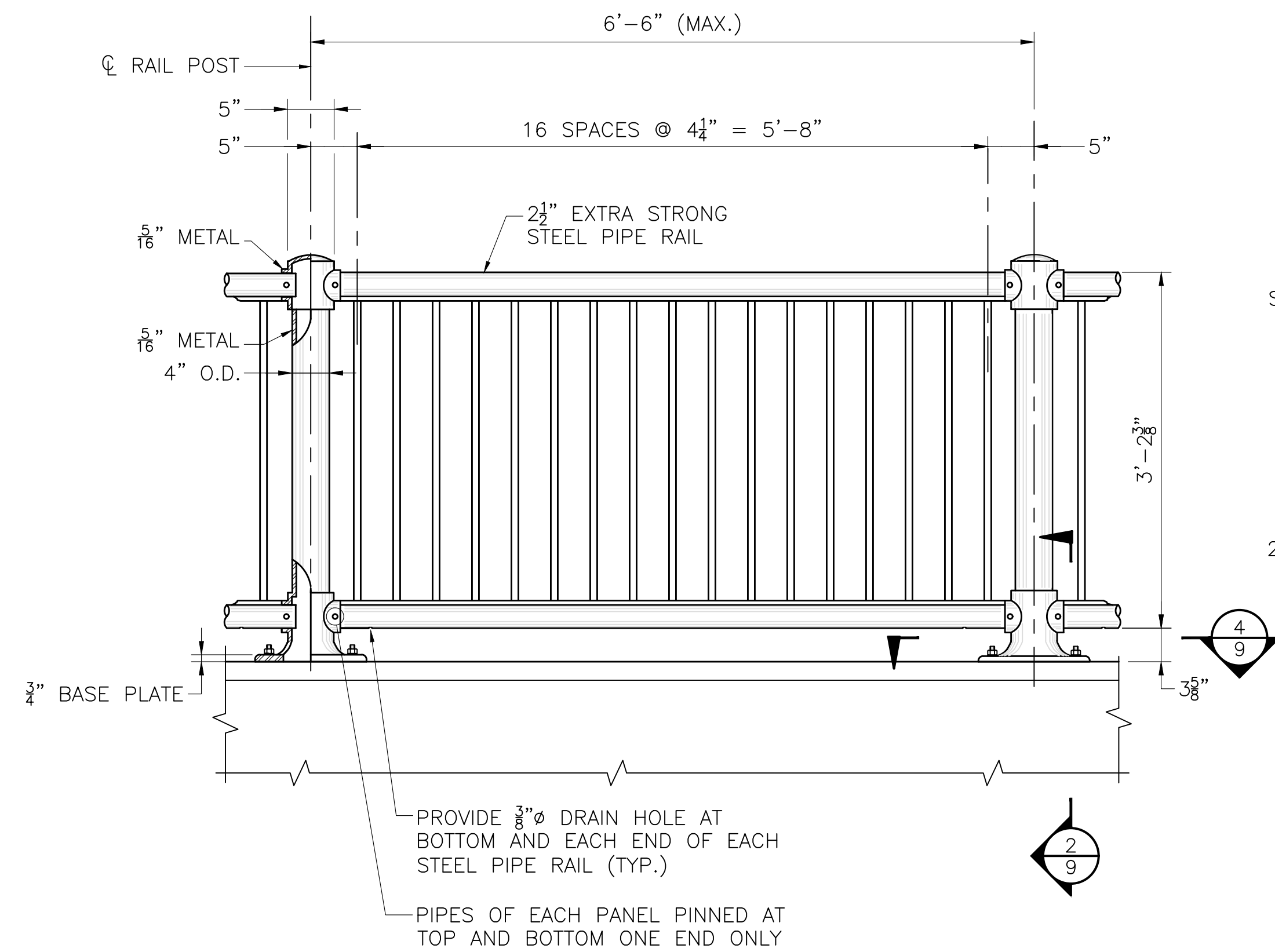
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REV.	DATE	DESCRIPTION	BY

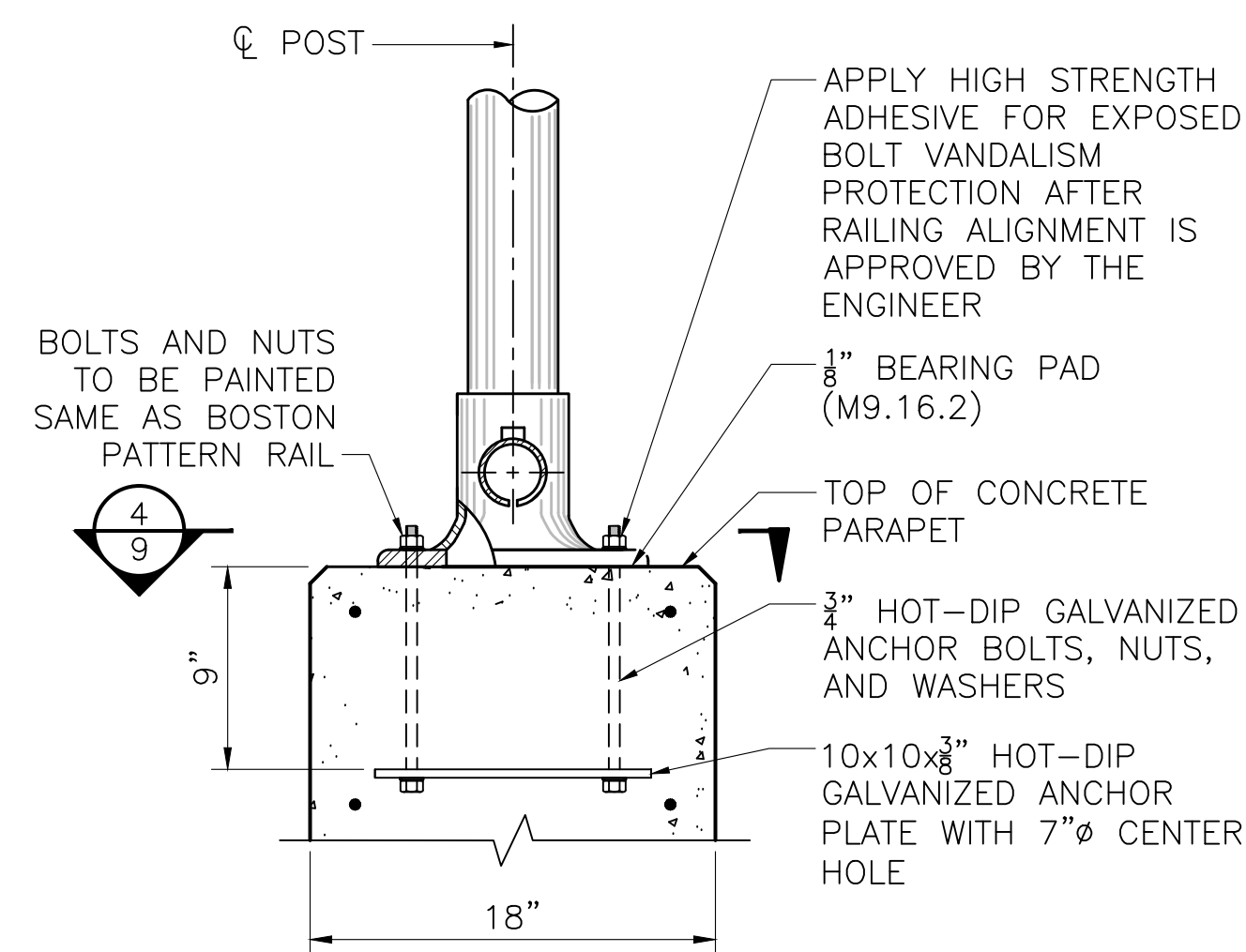
45 NETWORK DRIVE
BURLINGTON, MA

COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION DIVISION OF ENGINEERING AND DIVISION OF PLANNING AND RESOURCE PROTECTION			
SINGLE SPAN VIADUCT, BRIDGE NO. B-13-031			
BLACKSTONE GREENWAY SEGMENT 1 PHASE 2 BLACKSTONE, MA			
DESIGNER: CMS	CONCRETE PARAPET AND BASE SLAB DETAILS		SHEET NO.
CHECKED: MM			ST-8
DRAWN: AMS	CONT. P10-2636-C3A	SCALE: AS NOTED	8 OF 18
CHECKED: MM	ACC. 104271X	DATE: OCT. 2022	



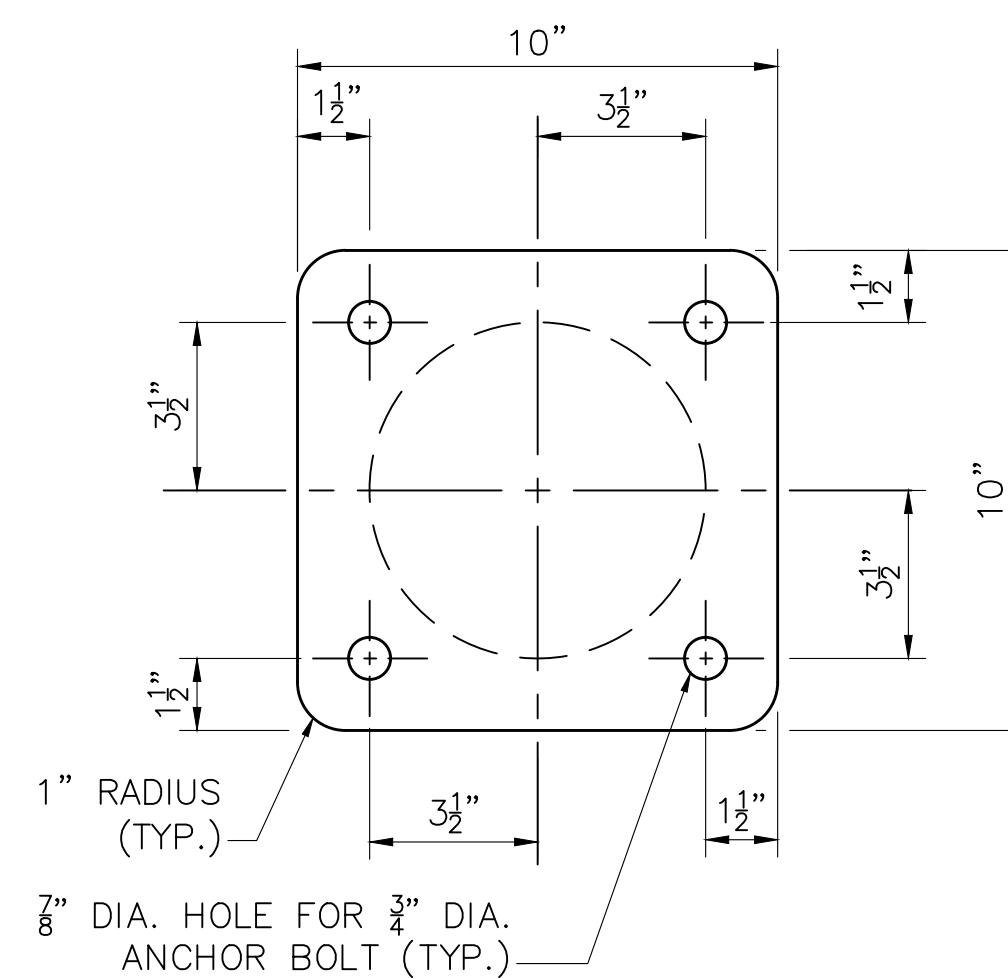
ELEVATION

SCALE: 1" = 1'-0"



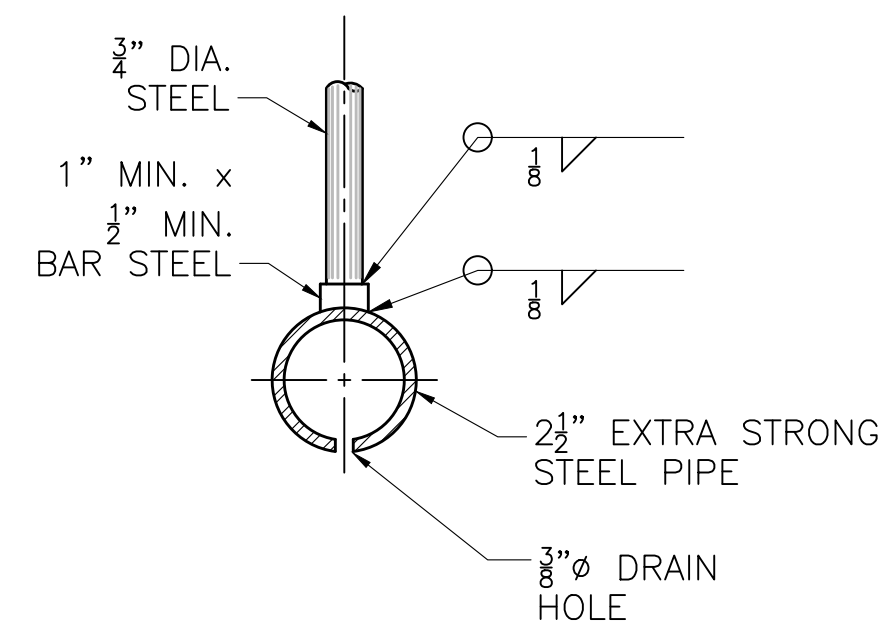
SECTION AT POST ANCHORAGE

SCALE: 1 1/2" = 1'-0"



SECTION - BASE PLATE

SCALE: 3" = 1'-0"



SECTION AT BOTTOM PIPE RAIL

SCALE: 3" = 1'-0"

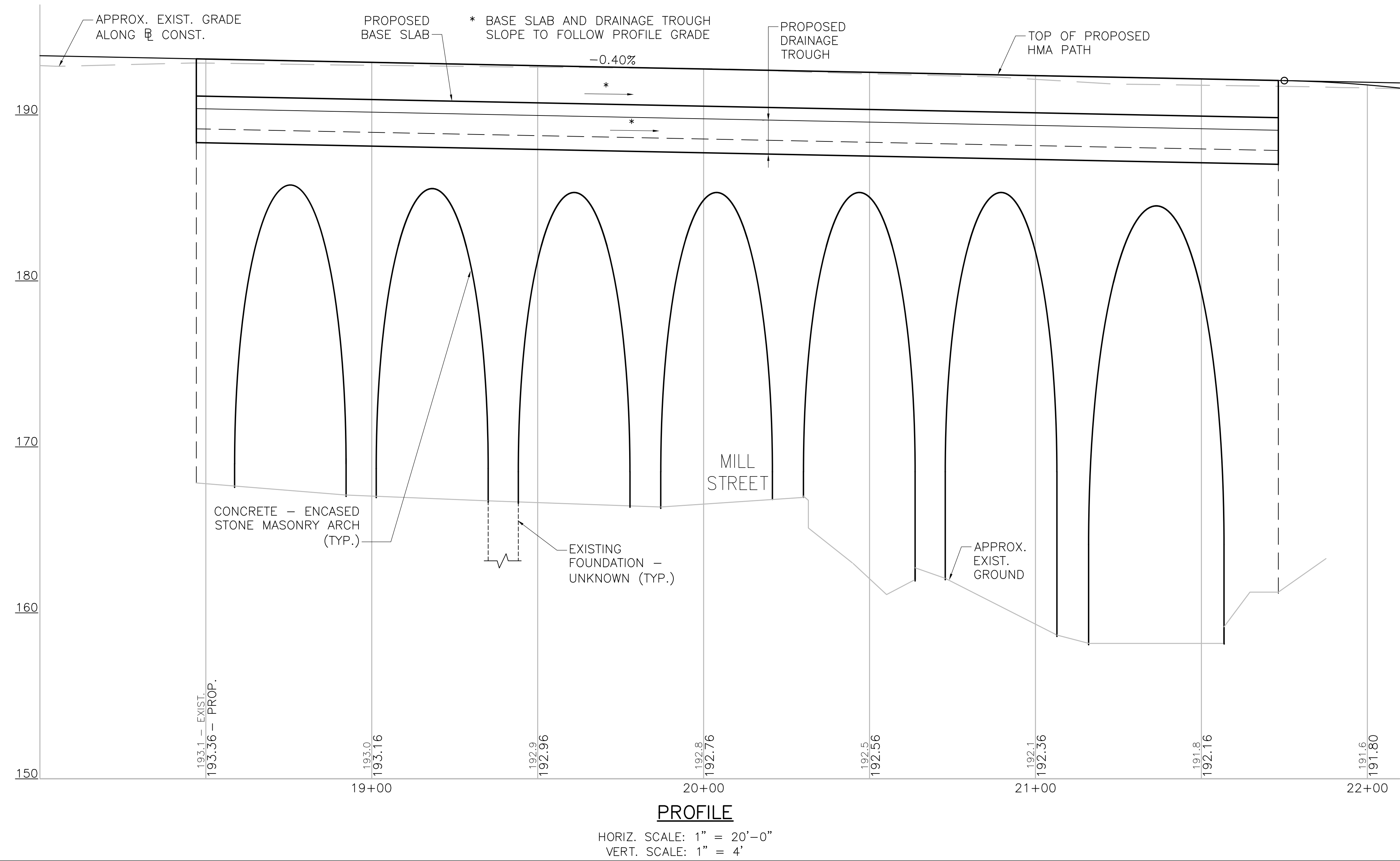
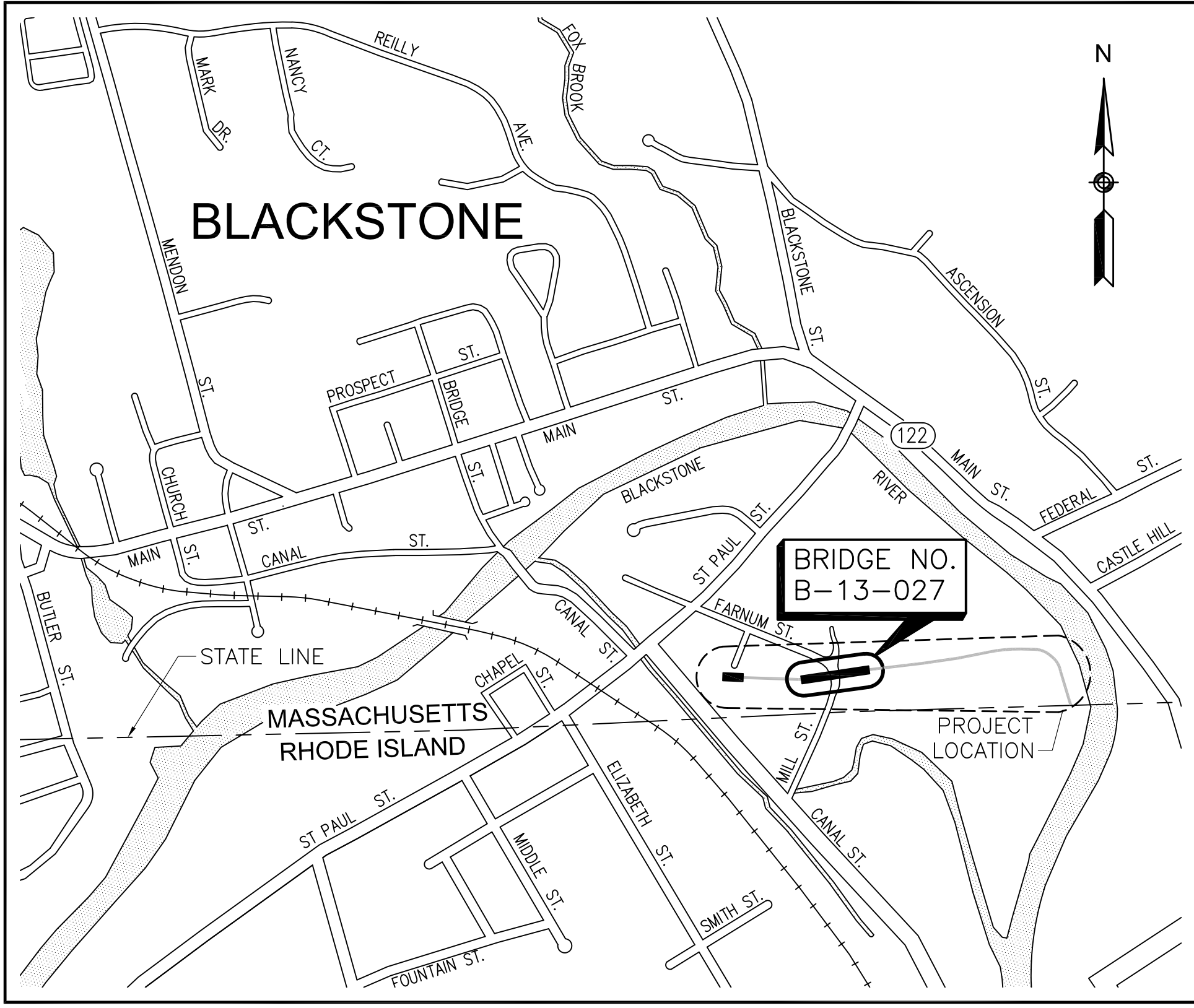
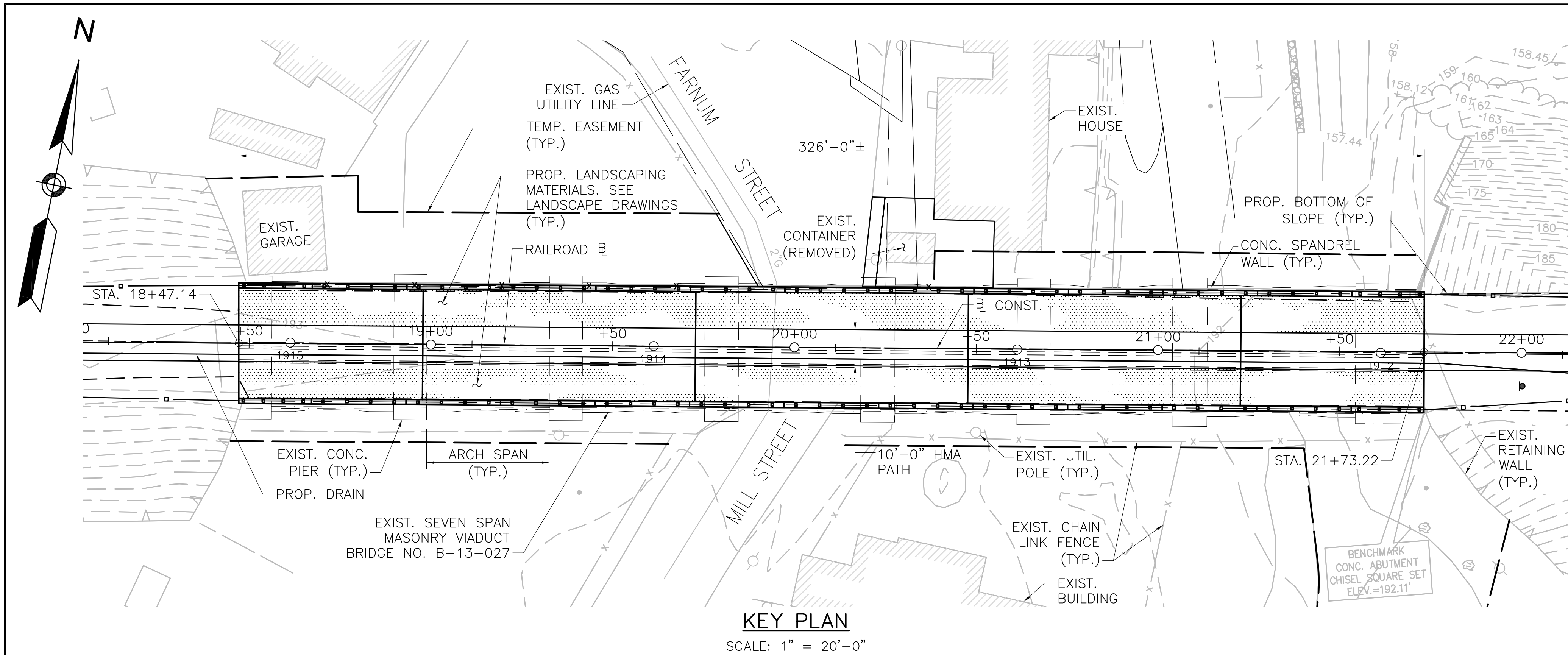
NOTE:

FIELD CONNECTIONS SHALL BE SEALED WITH A CLEAR SEALANT.

REV.	DATE	DESCRIPTION	BY

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COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION DIVISION OF ENGINEERING AND DIVISION OF PLANNING AND RESOURCE PROTECTION			
SINGLE SPAN VIADUCT, BRIDGE NO. B-13-031			
BLACKSTONE GREENWAY SEGMENT 1 PHASE 2 BLACKSTONE, MA			
DESIGNER: CMS CHECKED: MM	ORNAMENTAL RAILING		SHEET NO.
DRAWN: AMS CHECKED: MM	CONT. P10-2636-C3A ACC. 104272X	SCALE: AS NOTED DATE: OCT. 2022	ST-9 9 OF 18



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SHEET NUMBER	SHEET TITLE
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ST-11	GENERAL NOTES AND ESTIMATED QUANTITIES
ST-12	GENERAL PLAN AND ELEVATION
ST-13	TYPICAL TRANSVERSE SECTION
ST-14	DEMOLITION AND REMOVAL LIMITS
ST-15	CONCRETE REPAIR DETAILS - PART 1 OF 2
ST-16	CONCRETE REPAIR DETAILS - PART 2 OF 2
ST-17	CONCRETE PARAPET AND BASE SLAB DETAILS
ST-18	ORNAMENTAL RAILING

REV.	DATE	DESCRIPTION	BY

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION AND RECREATION
DIVISION OF ENGINEERING AND
DIVISION OF PLANNING AND RESOURCE PROTECTION

SEVEN SPAN VIADUCT, BRIDGE NO. B-13-027
BLACKSTONE GREENWAY SEGMENT 1 PHASE 2
BLACKSTONE, MA

DESIGNER: CMS
CHECKED: MM
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CHECKED: MM

KEY PLAN, PROFILE, AND LOCUS

CONT. P10-2636-C3A
ACC. 104273X

SCALE: AS NOTED
DATE: OCT. 2022

SHEET NO.
ST-10
10 OF 18

GENERAL NOTES:

DESIGN

IN ACCORDANCE WITH 2017 AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) LRFD BRIDGE DESIGN SPECIFICATIONS.
TRAIL LIVE LOAD = 90 PSF

EXISTING CONDITIONS AND DIMENSIONS

ALL DIMENSION AND DETAILS SHOWN FOR THE EXISTING STRUCTURE ARE NOT GUARANTEED. THE CONTRACTOR SHALL DETERMINE AND ESTABLISH ALL DIMENSIONS AND DETAILS NECESSARY FOR COMPLETION OF ALL THE WORK BY FIELD MEASUREMENT AND SURVEY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ADEQUACY AND ACCURACY THEREOF, AND SHALL NOT ORDER ANY MATERIAL OR COMMENCE ANY FABRICATION UNTIL HE HAS VERIFIED AND COMPLETED THE REQUIRED MEASUREMENTS ON THE ACTUAL STRUCTURE AND THE EXTENT OF THE PROPOSED WORK HAS BEEN APPROVED BY THE ENGINEER.

BENCH MARK

CONCRETE ABUTMENT CHISEL SQUARE SET EL. 192.11.

SURVEY NOTEBOOKS

COPIES OF ELECTRONIC FILES MAY BE OBTAINED FROM VHB, 101 WALNUT ST., WATERTOWN MA 02472

SCALES

SCALES NOTED ON THE PLANS ARE NOT APPLICABLE TO REDUCED SIZE PRINTS. DIVIDE SCALES BY 2 FOR HALF-SIZE PRINTS (A3).

ANCHOR BOLTS

ALL ANCHOR BOLTS SHALL BE SET BY TEMPLATE BEFORE CONCRETE IS PLACED.

REINFORCING DOWELS

ALL DOWELS TO BE DRILLED AND GROUTED INTO THE EXISTING SUBSTRUCTURE SHALL BE SET BY TEMPLATE BEFORE THE CONCRETE IS PLACED. DOWELS AND GROUT SHALL BE ON THE MASSDOT QUALIFIED CONSTRUCTION MATERIALS LIST.

REINFORCEMENT

REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M 31 GRADE 60. UNLESS OTHERWISE NOTED ON THE PLANS, ALL BARS SHALL BE EPOXY COATED AND LAPPED AS FOLLOWS:

MODIFICATION CONDITION	#4 BARS	#5 BARS
1. NONE	21"	26"
2. 12" OF CONCRETE BELOW BAR	29"	36"
3. COATED BARS, COVER < 3db, OR CLEAR SPACING < 6db	31"	39"
4. COATED BARS, ALL OTHER CASES	25"	31"
5. CONDITION 2. AND 3.	35"	44"
6. CONDITION 2. AND 4.	34"	43"

IF THE ABOVE BARS ARE SPACED 6" OR MORE ON CENTER, THE LAP LENGTH SHALL BE 80% OF THE LAP LENGTH GIVEN ABOVE. ALL OTHER BARS SHALL BE LAPPED AS SHOWN ON THE PLANS.

CONCRETE

1. ALL EXPOSED EDGE CORNERS SHALL BE FINISHED WITH A 3/4" CHAMFER UNLESS OTHERWISE NOTED OR DIRECTED.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PREVENTING CONCRETE STAINS AND DISCOLORATION DURING CONSTRUCTION UNTIL SUCH TIME AS THE SURFACES ARE APPROVED AND ACCEPTED. ANY CONCRETE STAINS AND DISCOLORATION OCCURRING PRIOR TO ACCEPTANCE OF THE SURFACES SHALL BE REMOVED BY THE CONTRACTOR AT ITS OWN EXPENSE USING AN APPROVED PROCEDURE.
3. CONCRETE SHALL BE AS FOLLOWS, UNLESS OTHERWISE NOTED:

4000 PSI, 3/4 IN., 610 CEMENT CONCRETE: BASE SLABS/TROUGHS

4000 PSI, 3/4 IN., 585 HP CEMENT CONCRETE: WALL/ARCH REPAIRS/RE-FACING

5000 PSI, 3/4 IN., 685 HP CEMENT CONCRETE: PARAPETS
4. MORTAR SHALL BE LISTED ON THE CURRENT MASSDOT QUALIFIED MATERIALS LIST.

ANTI-GRAFFITI COATING

ALL EXPOSED CONCRETE SURFACES OF THE COMPLETED STRUCTURE (EXISTING, REPAIRED, OR NEW CONCRETE) SHALL BE COATED WITH A CLEAR ANTI-GRAFFITI COATING. SEE SPECIFICATIONS.

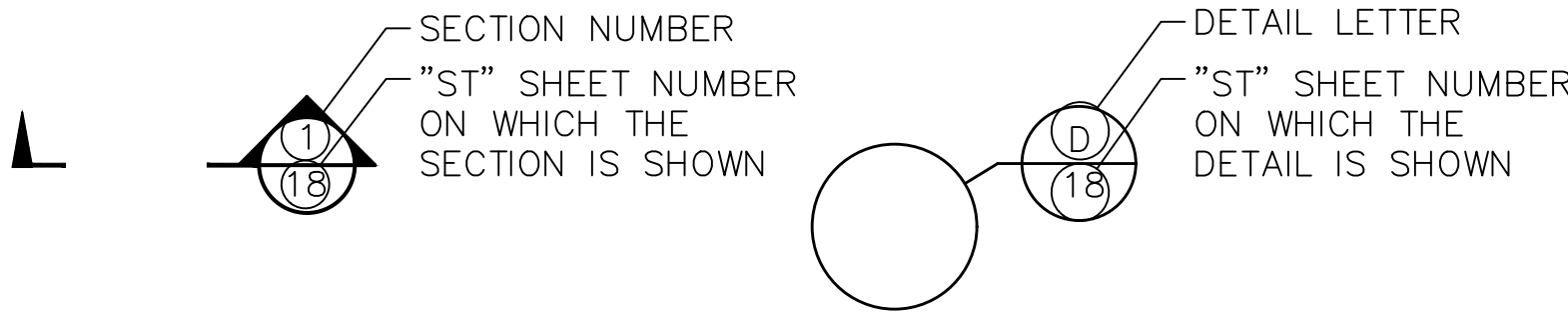
UTILITIES

ALL EXISTING UTILITIES SHALL BE LOCATED AND PROTECTED BY THE CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH UTILITY OWNERS TO COMPLETE THE PROPOSED UTILITY WORK.

CONSTRUCTION WORK AREA


THERE IS LIMITED CONSTRUCTION STAGING AREA AT THE JOB SITE DESIGNATED FOR SUCH USE. AS REQUIRED, THE CONTRACTOR SHALL OBTAIN HIS OWN OFF-SITE STAGING AREA, AT NO ADDITIONAL COST TO THE DEPARTMENT.

SECTION & DETAIL MARK



ESTIMATED QUANTITIES (NOT GUARANTEED)		
ITEM DESCRIPTION	QUANTITY	UNITS
PRESSURE INJECTION OF CRACKS	1,280	FT
UNCLASSIFIED EXCAVATION	900	CY
REINFORCED CONCRETE EXCAVATION	680	CY
CLASS B ROCK EXCAVATION	490	CY
CLEAN AND REPOINT EXISTING MASONRY	3,360	SF
4000 PSI, ¾", 610 CEMENT CONCRETE	360	CY
5000 PSI, ¾", 685 HP CEMENT CONCRETE	110	CY
4000 PSI, ¾", 585 HP CEMENT CONCRETE	570	CY
STEEL REINFORCEMENT FOR STRUCTURES – EPOXY COATED	90,000	LB
METAL ORNAMENTAL RAILING (BOSTON PATTERN)	660	FT
ANTI–GRAFFITI COATING	24,100	SF
EPOXY BONDING COMPOUND	23,000	SF
MEMBRANE WATERPROOFING FOR BRIDGE DECKS – SPRAY APPLIED	11,500	SF

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COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CONSERVATION AND RECREATION
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DIVISION OF PLANNING AND RESOURCE PROTECTION

SEVEN SPAN VIADUCT, BRIDGE NO. B-13-027

BLACKSTONE GREENWAY SEGMENT 1 PHASE 2
BLACKSTONE, MA

DESIGNER: CMS
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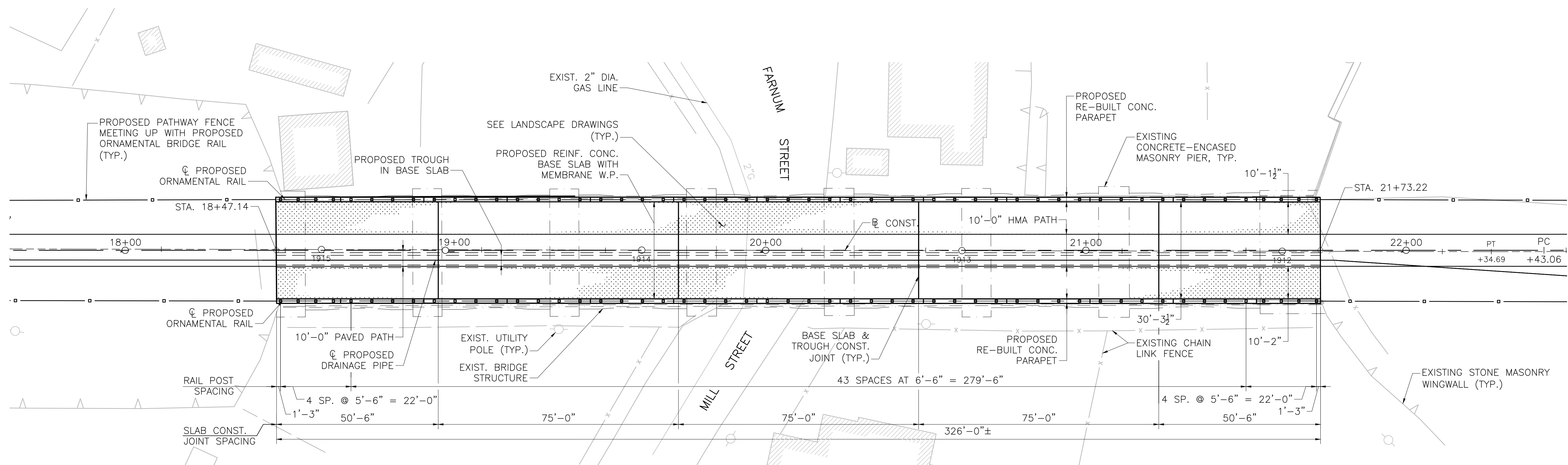
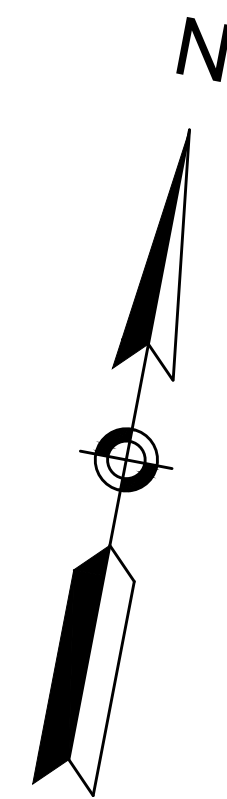
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GENERAL NOTES AND
ESTIMATED QUANTITIES

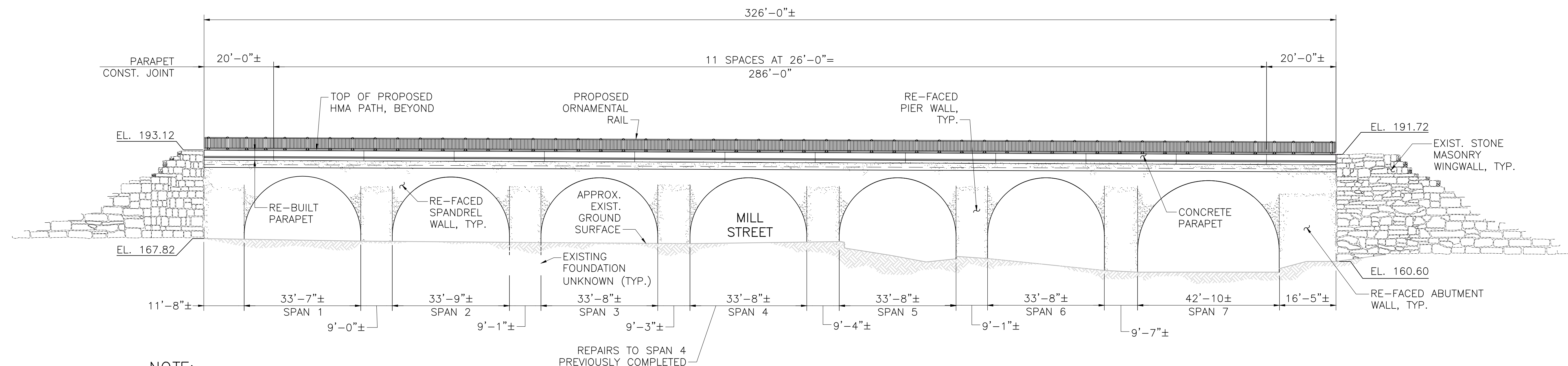
CONT. P10-2636-C3A
ACC. 104274X

SCALE: AS NOTED
DATE: OCT. 2022

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GENERAL PLAN
SCALE: 1/16" = 1'-0"




NOTE:

SOUTH ELEVATION IS SHOWN,
NORTH ELEVATION SIMILAR.

ELEVATION
SCALE: 1/16" = 1'-0"

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SEVEN SPAN VIADUCT, BRIDGE NO. B-13-027

BLACKSTONE GREENWAY SEGMENT 1 PHASE 2
BLACKSTONE, MA

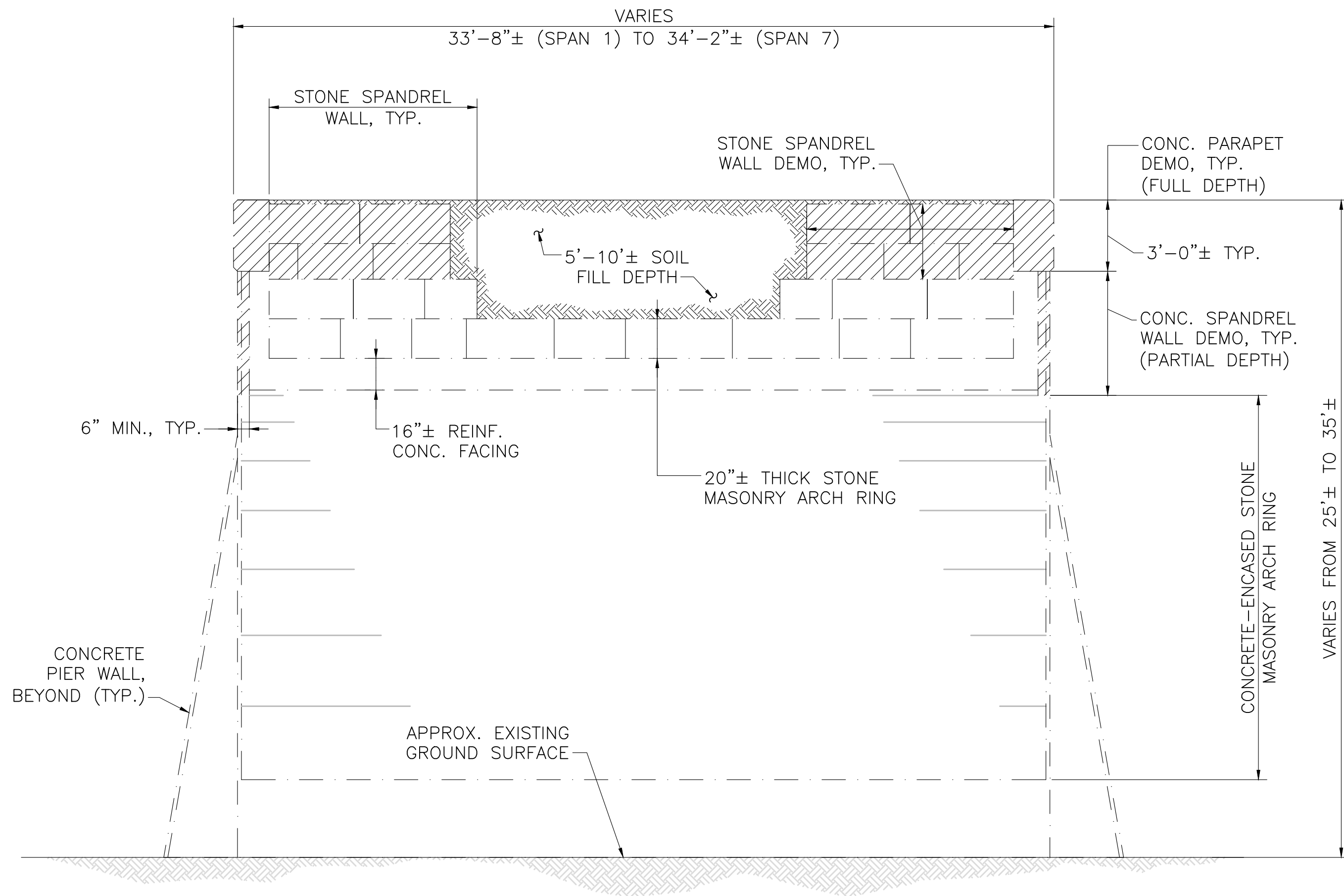
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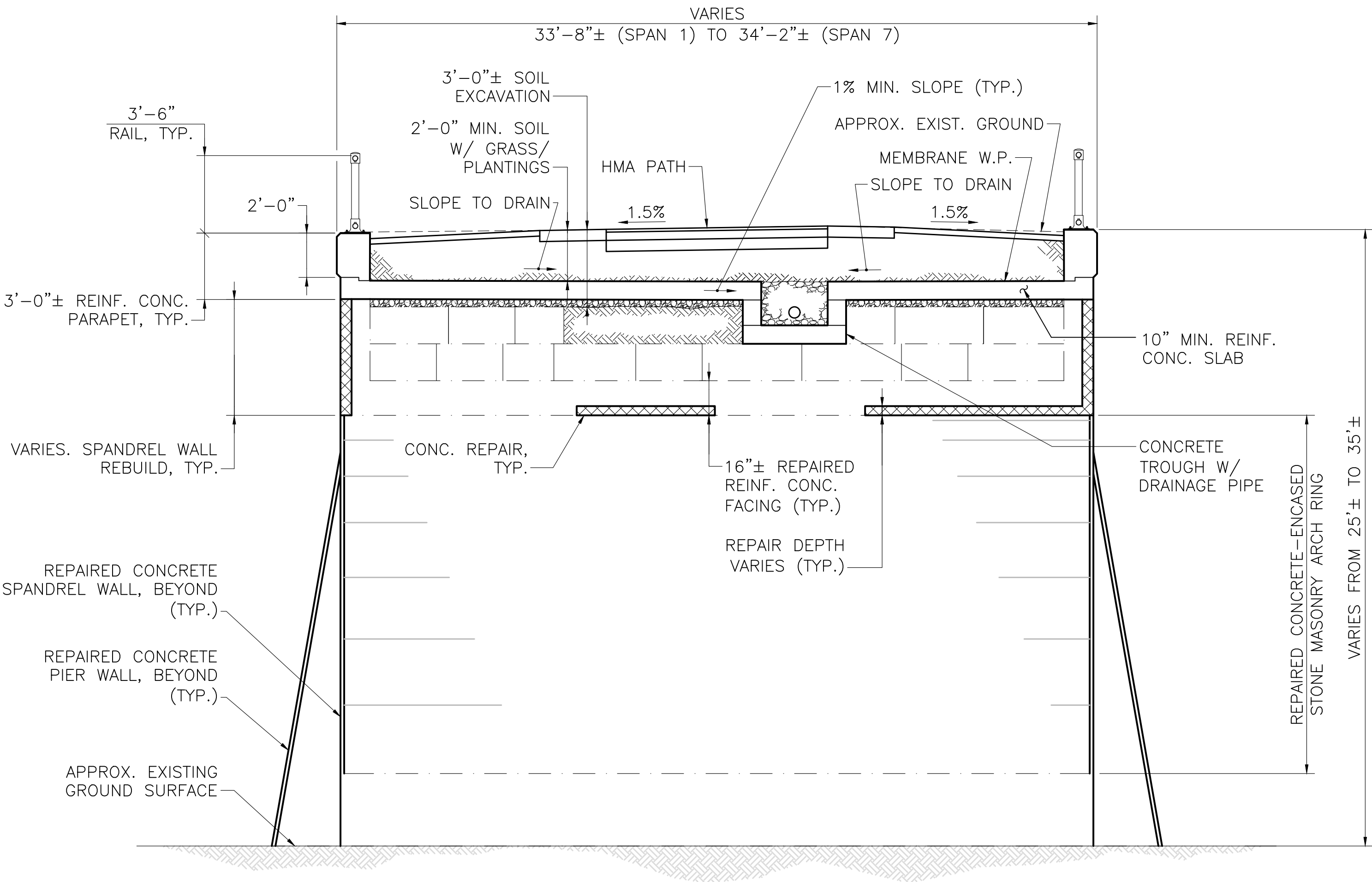
SCALE: AS NOTED
DATE: OCT. 2022

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EXISTING TRANSVERSE SECTION

SCALE: 1/4" = 1'-0"



PROPOSED TRANSVERSE SECTION

SCALE: 1/4" = 1'-0"

LEGEND

- — — — — DENOTES EXISTING BRIDGE STRUCTURE
- — — — — DENOTES PROPOSED BRIDGE COMPONENTS/STRUCTURE
- ▨ DENOTES EXISTING BRIDGE COMPONENTS TO BE DEMOLISHED
- ▤ DENOTES PROPOSED CONCRETE REPAIR

REV.	DATE	DESCRIPTION	BY



COMMONWEALTH OF MASSACHUSETTS
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SEVEN SPAN VIADUCT, BRIDGE NO. B-13-027

BLACKSTONE GREENWAY SEGMENT 1 PHASE 2
BLACKSTONE, MA

TYPICAL TRANSVERSE SECTION

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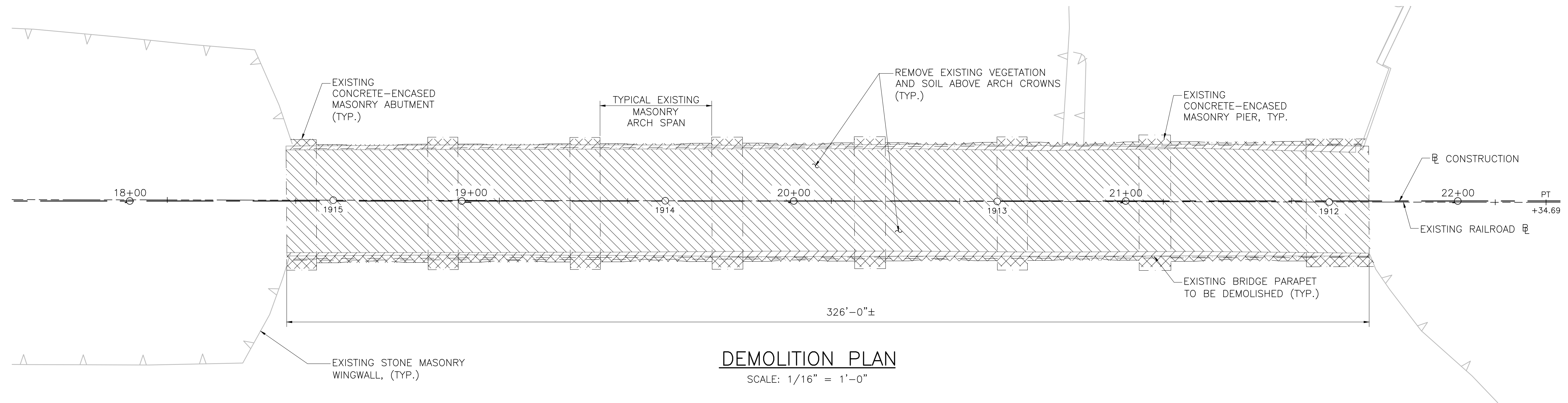
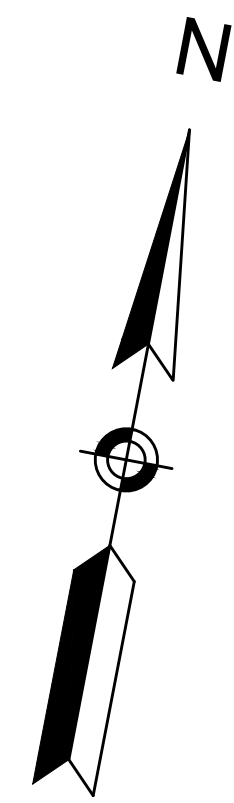
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DATE: OCT. 2022

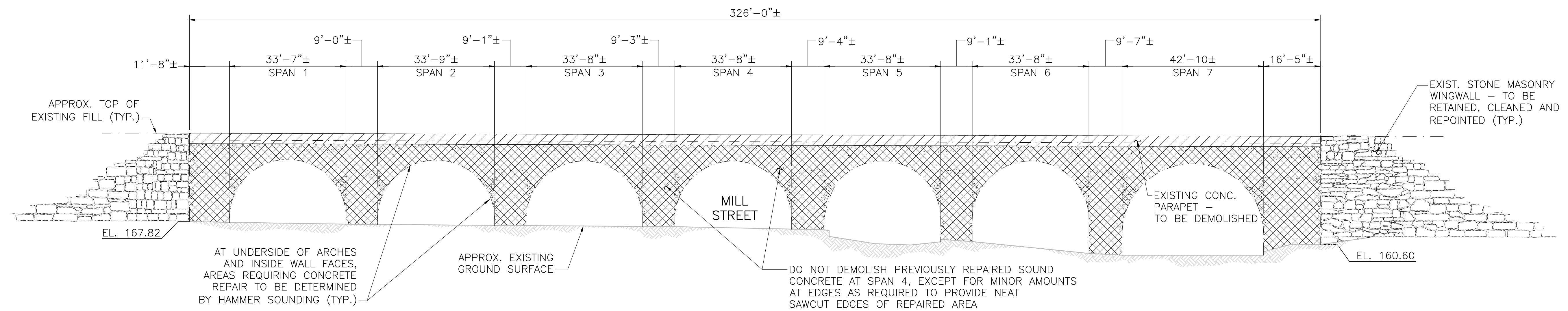
SHEET NO.

ST-13

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DEMOLITION PLAN
SCALE: 1/16" = 1'-0"



ELEVATION
SCALE: 1/16" = 1'-0"

NOTE:

SOUTH ELEVATION SHOWN.
NORTH ELEVATION IS SIMILAR.

LEGEND

- — — — — DENOTES EXISTING BRIDGE COMPONENTS/STRUCTURE
- DENOTES EXISTING BRIDGE COMPONENTS TO BE DEMOLISHED
- DENOTES PROPOSED CONCRETE REPAIR
- DENOTES EXISTING SOIL AND VEGETATION TO BE REMOVED

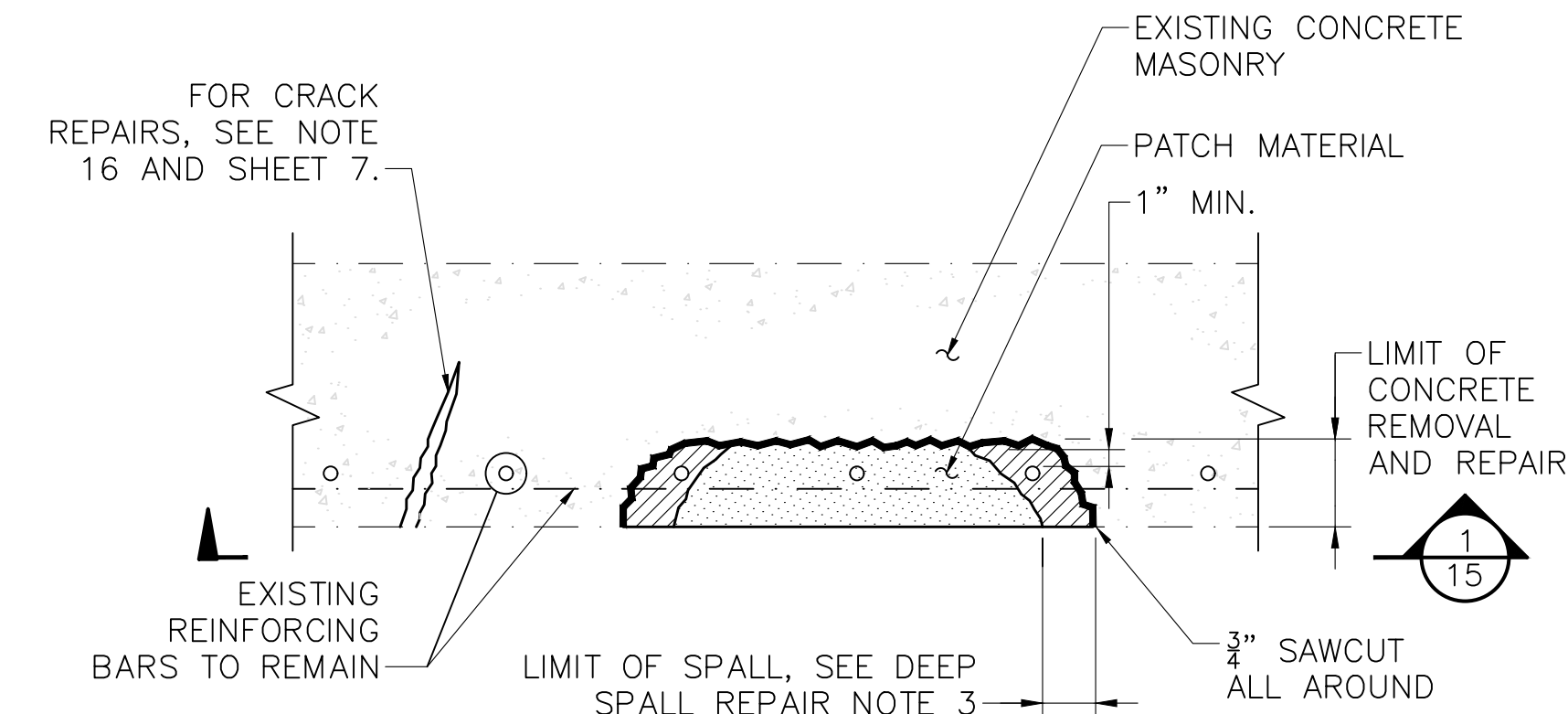
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COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION DIVISION OF ENGINEERING AND DIVISION OF PLANNING AND RESOURCE PROTECTION			
SEVEN SPAN VIADUCT, BRIDGE NO. B-13-027			
BLACKSTONE GREENWAY SEGMENT 1 PHASE 2 BLACKSTONE, MA			
DESIGNER: CMS CHECKED: MM	DEMOLITION AND REMOVAL LIMITS		SHEET NO.
DRAWN: AMS CHECKED: MM	CONT. P10-2636-C3A ACC. 104277X	SCALE: AS NOTED DATE: OCT. 2022	ST-14 14 OF 18

CONCRETE REPAIR NOTES FOR ARCH SOFFIT AND INTERIOR WALLS:

1. THE CONTRACTOR SHALL ESTABLISH LIMITS OF VARIOUS REPAIRS AS SHOWN ON THIS SHEET AND AT THE DIRECTION OF THE ENGINEER. FOR ARCH SOFFIT AND INTERIOR WALLS EXTENT, LOCATION AND REPAIR TYPE OF ALL CONCRETE REPAIRS SHALL BE FIELD VERIFIED AND APPROVED BY THE ENGINEER AFTER THE CONTRACTOR HAS SOUNDED AND MARKED OUT THE REPAIR AREAS. REPAIR CONFIGURATIONS SHALL BE KEPT AS SIMPLE AS POSSIBLE, PREFERABLY WITH SQUARE CORNERS. THE ENGINEER SHALL DETERMINE THE LOCATIONS REQUIRING FULL DEPTH REPAIR. IF UNSOUND CONCRETE IS ENCOUNTERED BEYOND A DEPTH OF 8 INCHES, THE CONTRACTOR SHALL STOP CONCRETE REMOVAL AND NOTIFY THE ENGINEER. THE ENGINEER SHALL DETERMINE IF THE AREA REQUIRES FULL DEPTH REPAIR OR DEEP SPALL REPAIR, AND HE SHALL DIRECT THE CONTRACTOR ACCORDINGLY. SEE SPECIAL PROVISIONS.
2. THE LIMITS OF THE REPAIRS SHALL BE SAWCUT ALONG NEAT LINES WHERE PRACTICAL TO PRODUCE A CLEAN EDGE.
3. REMOVE DETERIORATED AND UNSOUND CONCRETE. IF REINFORCEMENT BARS ARE COMPLETELY EXPOSED, THE REMOVAL SHALL EXTEND A MINIMUM OF 1" BEYOND THE BAR. UNDERCUT EXPOSED REINFORCING STEEL TO PROVIDE MINIMUM CLEARANCE OF 1" AROUND BARS. REMOVE ADDITIONAL CONCRETE AS NECESSARY TO PROVIDE MINIMUM REQUIRED THICKNESS OF REPAIR MATERIAL.
4. MISSING OR DETERIORATED (25% OR MORE SECTION LOSS) REINFORCING STEEL SHALL BE REPLACED AS DIRECTED BY THE ENGINEER.
5. ALL SPALL REPAIRS SHALL 4" BE DEEP, MINIMUM, UP TO FULL DEPTH REPAIRS. (AT EXTERIOR WALLS, ALL SPALL REPAIRS SHALL BE 6" DEEP MINIMUM.) USE 4000 PSI, 3/4", 585 HP CEMENT CONCRETE FOR ALL REPAIRS.
6. IF REINFORCING STEEL IS EXPOSED, THEN CLEAN BY MECHANICAL CLEANING AND HIGH PRESSURE WASHING WITH WATER THAT CONTAINS NO DETERGENTS OR BOND INHIBITING CHEMICALS. WHERE ACTIVE CORROSION HAS OCCURRED (THAT WOULD INHIBIT BONDING) GRITBLAST STEEL TO NEAR WHITE METAL FINISH.
7. AFTER EDGE PREPARATION AND REMOVAL OF CONCRETE ARE COMPLETE, REMOVE BOND INHIBITING MATERIALS (DIRT, GREASE, LOOSELY BONDED AGGREGATE) BY ABRASION BLASTING OR HIGH PRESSURE WATER BLASTING WITH WATER THAT CONTAINS NO DETERGENTS OR BOND INHIBITING CHEMICALS. CHECK THE CONCRETE SURFACES AFTER CLEANING TO ENSURE THAT THE SURFACE IS FREE FROM ADDITIONAL LOOSE AGGREGATE OR THAT ADDITIONAL DELAMINATIONS ARE NOT PRESENT.
8. WHERE NEW CONCRETE IS PLACED IN CONTACT WITH EXISTING CONCRETE, THE SURFACE OF THE PREVIOUSLY CAST CONCRETE SHALL BE BLAST CLEANED, ROUGHENED, AND PREPARED WITH AN EPOXY BONDING COMPOUND SUITABLE FOR BONDING FRESH CONCRETE TO HARDENED CONCRETE FOR LOAD BEARING APPLICATIONS. THE EPOXY BONDING COMPOUND SHALL CONFORM TO AASHTO M 235 TYPE V AND SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
9. IN LIEU OF USING AN EPOXY BONDING COMPOUND, THE SURFACE OF THE PREVIOUSLY CAST CONCRETE MAY BE WETTED WITH CLEAN WATER AND THEN FLUSHED WITH A MORTAR COMPOSED OF EQUAL PARTS OF THE CEMENT AND SAND SPECIFIED FOR THE NEW CONCRETE, BEFORE NEW CONCRETE IS PLACED ADJACENT THERETO. MORTAR SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. NEW CONCRETE SHALL BE PLACED BEFORE MORTAR HAS TAKEN INITIAL SET.
10. ALL SURFACES SHALL BE RUBBED TO PRODUCE A SMOOTH FINISH TO MATCH EXISTING SURFACES. ALL FORM-TIE AND ANCHOR HOLES IN FINISHED WORK SHALL BE FILLED WITH REPAIR MORTAR AND RUBBED SIMILARLY. CUT FORM TIES AND ANCHORS 1" MIN. BELOW FINISHED SURFACE.
11. THE EXISTING CRACKS IDENTIFIED TO BE SEALED SHALL BE DONE IN ACCORDANCE WITH THE SPECIAL PROVISIONS AND AS DETAILED ON SHEET 7.
12. PROVIDE A MINIMUM OF 72 HOURS WET CURE.
13. TEMPERATURE OF BOTH AIR AND SUBSTRATE SHALL BE 45 DEGREES AND RISING DURING APPLICATION OF REPAIR MATERIALS. TEMPERATURE DURING THE FIRST THREE DAYS OF CURING MUST BE PROJECTED TO REMAIN ABOVE 45 DEGREES. PREPARATION WORK MAY BE DONE AT ANY TEMPERATURE PRIOR TO THE APPLICATION OF BONDING COMPOUND.
14. THE CONTRACTOR SHALL CONTROL ALL MATERIALS USED FOR THE REPAIR, AND SHALL PREVENT ANY MATERIALS FROM REPAIR AND DEMOLITION FROM FALLING INTO ADJACENT PROPERTIES.
15. FOR REMOVAL OF UNSOUND CONCRETE SEE SPECIAL PROVISIONS ITEM 127.1, REINFORCED CONCRETE EXCAVATION FOR REPAIRS. FOR REPAIR OF UNSOUND CONCRETE SEE SPECIAL PROVISIONS ITEM 904.4, 4000 PSI, 3/4 INCH, 585 HP CEMENT CONCRETE.
16. FOR EXISTING CRACKS WITHIN THE AREAS OF UNSOUND CONCRETE, THE UNSOUND CONCRETE SHALL BE REMOVED AND PAID FOR UNDER ITEM 127.1, REINFORCED CONCRETE EXCAVATION FOR REPAIRS; THE CRACKS SHALL BE REPAIRED AND PAID FOR UNDER ITEM 107.855, PRESSURE INJECTION OF CRACKS (SEE SHEET 7); THEN THE UNSOUND CONCRETE AREA SHALL BE REPAIRED AND PAID FOR UNDER ITEM 904.4, 4000 PSI, 3/4 INCH, 585 HP CEMENT CONCRETE.

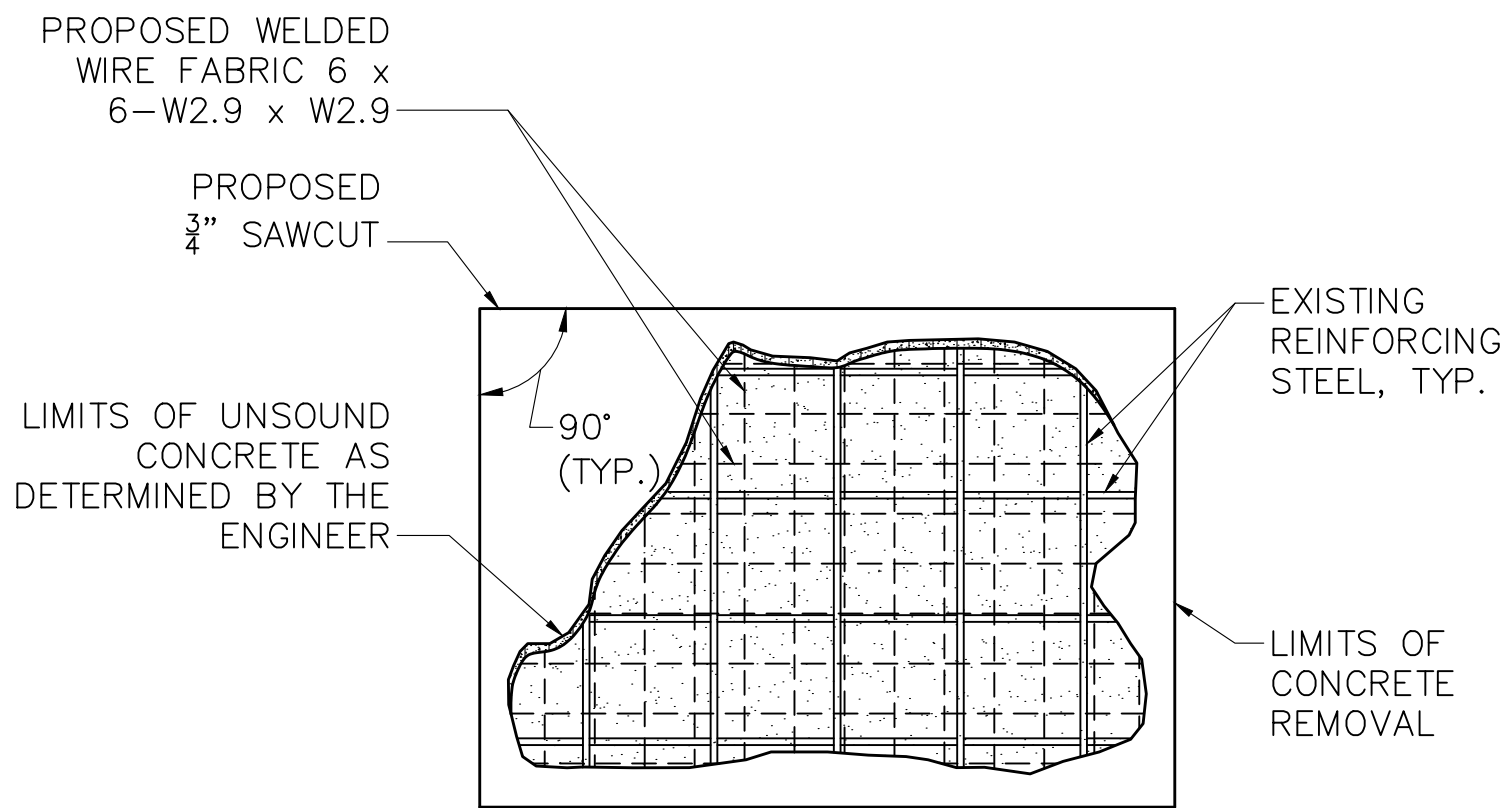


DEEP SPALL REPAIR PROCEDURE:

1. REPAIR DEPTH SHALL NOT BE LESS THAN 1" BEYOND EXISTING REINFORCEMENT.
2. SAWCUT 3/4" DEEP AROUND DELAMINATED AREA.
3. REPAIR AREA SHALL BE A MINIMUM 3" BEYOND LIMITS OF SPALL.
4. REMOVE LOOSE OR HOLLOW SOUNDING CONCRETE TO OBTAIN A MINIMUM SURFACE PROFILE OF 1/4"±.
5. REMOVE ALL DIRT AND DUST BY AIR BLASTING AND PREPARE SURFACE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION.
6. WHERE REINFORCING BAR IS ENCOUNTERED, THE CONCRETE ALL AROUND THE BARS (BOTH TOP LAYERS OF STEEL) SHALL BE CHIPPED OUT TO A DEPTH WHERE THE BARS CAN BE COVERED WITH AT LEAST 1" OF REQUIRED REPAIR MATERIALS. SEE CONCRETE REPAIR NOTE 3.
7. CLEAN REINFORCING STEEL AND CONCRETE FOR INSPECTION BY SANDBLASTING.
8. REINFORCING BARS THAT HAVE BEEN REDUCED IN AREA MORE THAN 25% DUE TO CORROSION SHALL BE SPLICED WITH A NEW REINFORCING BAR AT THE PROPER LENGTH (SEE DETAIL THIS SHEET).
9. SANDBLAST REINFORCING BARS TO NEAR WHITE METAL FINISH.
10. COAT EXISTING AND NEW REINFORCING BARS AND CONCRETE WITH AN EPOXY BONDING COMPOUND.
11. PATCH MATERIAL SHALL BE 4000 PSI, 3/4 IN., 585 HP CEMENT CONCRETE, UNLESS OTHERWISE APPROVED BY THE ENGINEER.

DEEP SPALL REPAIR – ARCH SOFFIT AND INTERIOR WALLS (REINFORCEMENT EXPOSED)

NOT TO SCALE



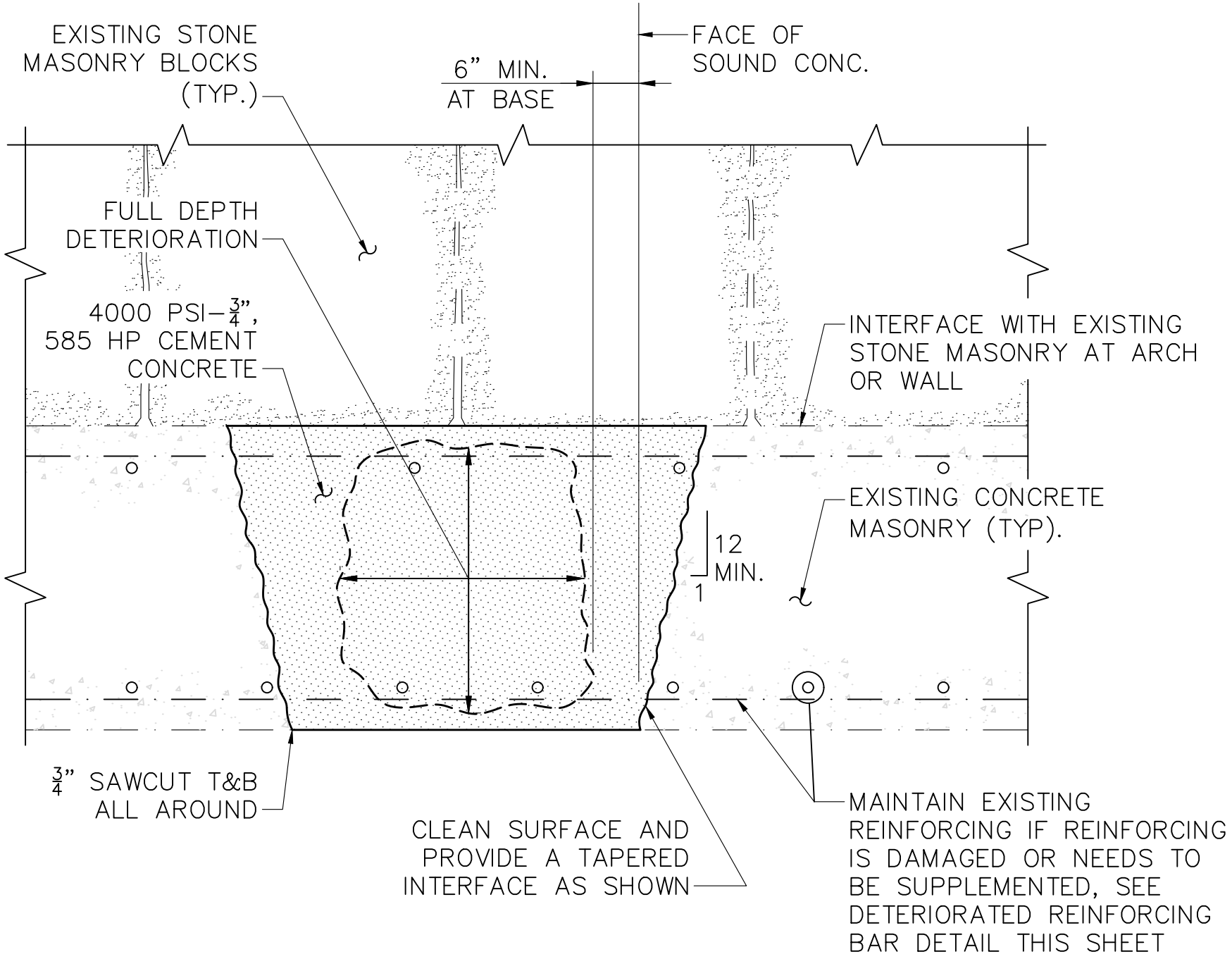
NOTE:

SEE DETERIORATED REINFORCING BAR REPAIR DETAIL THIS SHEET IF EXISTING REINFORCING IS DETERIORATED.

SECTION – DEEP SPALL REPAIR

SCALE: 1" = 1'-0"

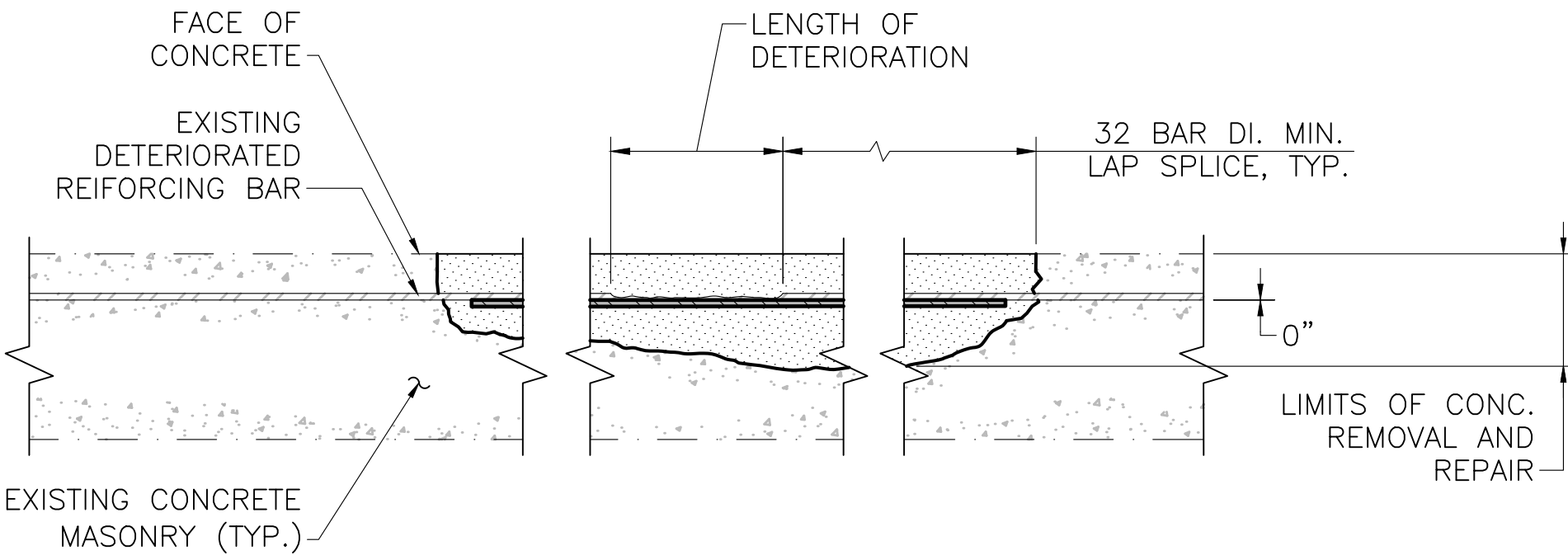
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FULL DEPTH REPAIR AREA DETAIL

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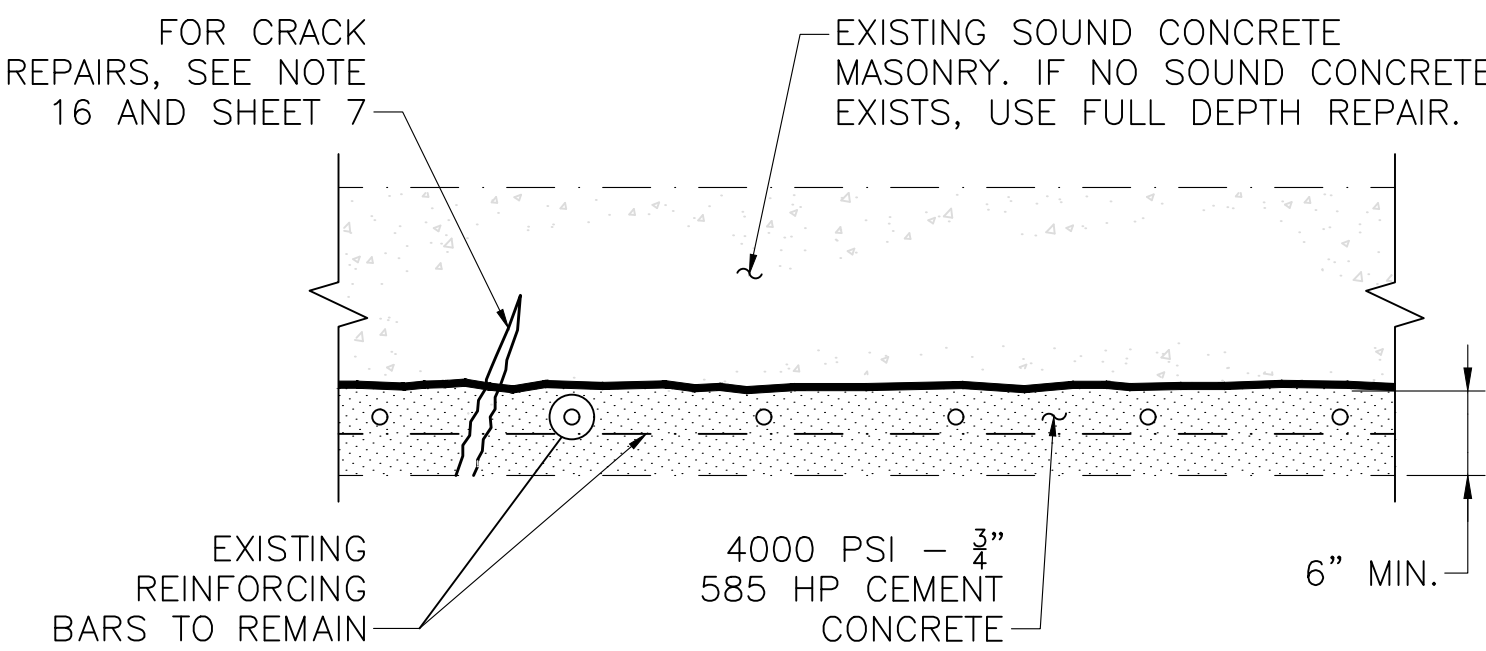
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DETERIORATED REINFORCING BAR REPAIR DETAIL

SCALE: NOT TO SCALE

B
15



TYPICAL EXTERIOR WALL REPAIR DETAIL

SCALE: NOT TO SCALE

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15

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DEPARTMENT OF CONSERVATION AND RECREATION
DIVISION OF ENGINEERING AND
DIVISION OF PLANNING AND RESOURCE PROTECTION

SEVEN SPAN VIADUCT, BRIDGE NO. B-13-027

BLACKSTONE GREENWAY SEGMENT 1 PHASE 2
BLACKSTONE, MA

DESIGNER: CMS
CHECKED: MM
DRAWN: AMS
CHECKED: MM

CONCRETE REPAIR DETAILS -
PART 1 OF 2

CONT. P10-2636-C3A
ACC. 104278X

SCALE: AS NOTED
DATE: OCT. 2022

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ST-15
15 OF 18

CRACK INJECTION REPAIR PROCEDURE:

1. THE CONTRACTOR SHALL ESTABLISH LIMITS OF VARIOUS REPAIRS AS SHOWN ON THIS SHEET AND AT THE DIRECTION OF THE ENGINEER. THE EXTENT, LOCATION AND REPAIR TYPE OF ALL CONCRETE REPAIRS SHALL BE FIELD VERIFIED AND APPROVED BY THE ENGINEER AFTER THE CONTRACTOR HAS SOUNDED AND MARKED OUT THE REPAIR AREAS.

2. PRIOR TO SEALING THE CRACKS BY PRESSURE INJECTION, WATER BLASTING OF THE CONCRETE SHALL BE DONE TO THOROUGHLY CLEAN THE CONCRETE SURFACE. ANY REMAINING MINERAL DEPOSITS NOT REMOVED BY WATER BLASTING SHALL BE REMOVED BY GRINDING.

3. BEFORE DRILLING THE INJECTION HOLES, LOCATE REBAR AND CONDUIT, AND PLAN THE PATTERN TO MINIMIZE DAMAGING THE CONCRETE OR REBARS DURING DRILLING.

4. THE DIAMETER OF THE INJECTION HOLES SHALL BE 1/2 INCH OR 5/8 INCH DEPENDING ON THE PACKER USED. HOLES SHALL BE STAGGERED FROM ONE SIDE OF THE CRACK TO THE OTHER. THE DISTANCE OF THE DRILLED HOLES TO EACH OTHER SHALL BE BETWEEN 6 INCHES AND 20 INCHES. DRILL BITS WITH HOLES AND A VACUUM SYSTEM SHALL BE USED TO PREVENT DEBRIS FROM ENTERING THE CRACK DURING DRILLING.

5. THE ANGLE OF DRILLING SHALL BE 45 DEGREES TO THE SURFACE AND TOWARDS THE CRACK. THE DEPTH OF THE DRILL HOLE INTERSECTING THE CRACK SHALL BE APPROXIMATELY AT MID-DEPTH OF THE CONCRETE COMPONENT, UNLESS OTHERWISE INDICATED. IF THE REINFORCING IS HIGHLY CONGESTED, PREVENTING DIAGONAL DRILLING, OR IF THE CONCRETE THICKNESS IS 6 INCHES OR LESS, DO NOT ATTEMPT DIAGONAL DRILLING. SET THE PACKERS STRAIGHT INTO THE FACE OF THE CRACK.

6. METAL-RUBBER TYPE MECHANICAL PACKERS SHALL BE USED AND BE CAPABLE OF PRESSURES UP TO 5000 PSI.

7. PLACE THE PACKERS IN THE PREVIOUSLY DRILLED HOLE SO THAT THE TOP OF THE RUBBER SLEEVE IS BELOW THE CONCRETE SURFACE. IF THE PACKER CAN NOT BE PUSHED INTO THE HOLE, TAP IT IN. TIGHTEN THE PACKER WITH A WRENCH AS TIGHT AS NECESSARY.
8. ONCE THE PACKERS ARE IN PLACE, THE CRACK AND PORTS SHALL BE SEALED WITH AN EPOXY SEALING GEL.

9. PRIOR TO INJECTION OF SEALANT, THE CRACKS SHALL BE FLUSHED WITH WATER. START AT THE LOWEST PACKER ON A VERTICAL CRACK, OR AT THE NARROWEST PART OF A CRACK OF A HORIZONTAL OR INCLINED SURFACE AND PROCEED FROM PACKER TO PACKER IN SEQUENCE. AFTER COMPLETION OF FLUSHING, ALLOW CRACKS TO DRY BEFORE INJECTION OF SEALANT.

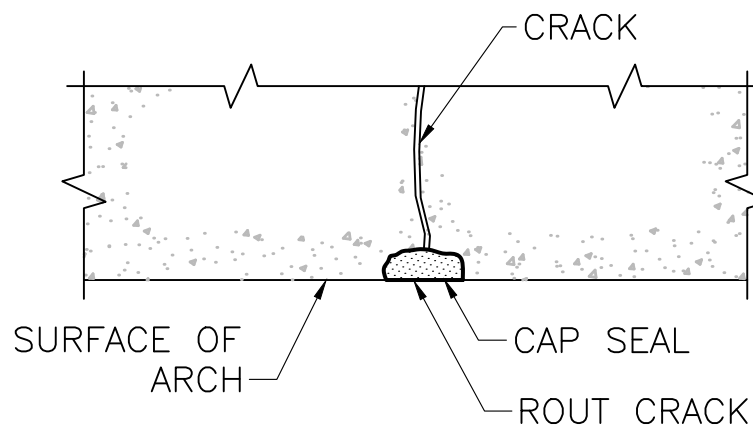
10. WHEN ALL OF THE PREPARATION WORK IS COMPLETED, MAKE SURE THE INJECTION PUMP IS IN GOOD WORKING ORDER. ALL EQUIPMENT THAT COMES IN CONTACT WITH THE CHEMICALS MUST BE ABSOLUTELY DRY.

11. FOLLOW THE MANUFACTURER’S RECOMMENDATION FOR MIXING AND APPLICATION PROCEDURES FOR THE SPECIFIC INJECTION MATERIAL USED.

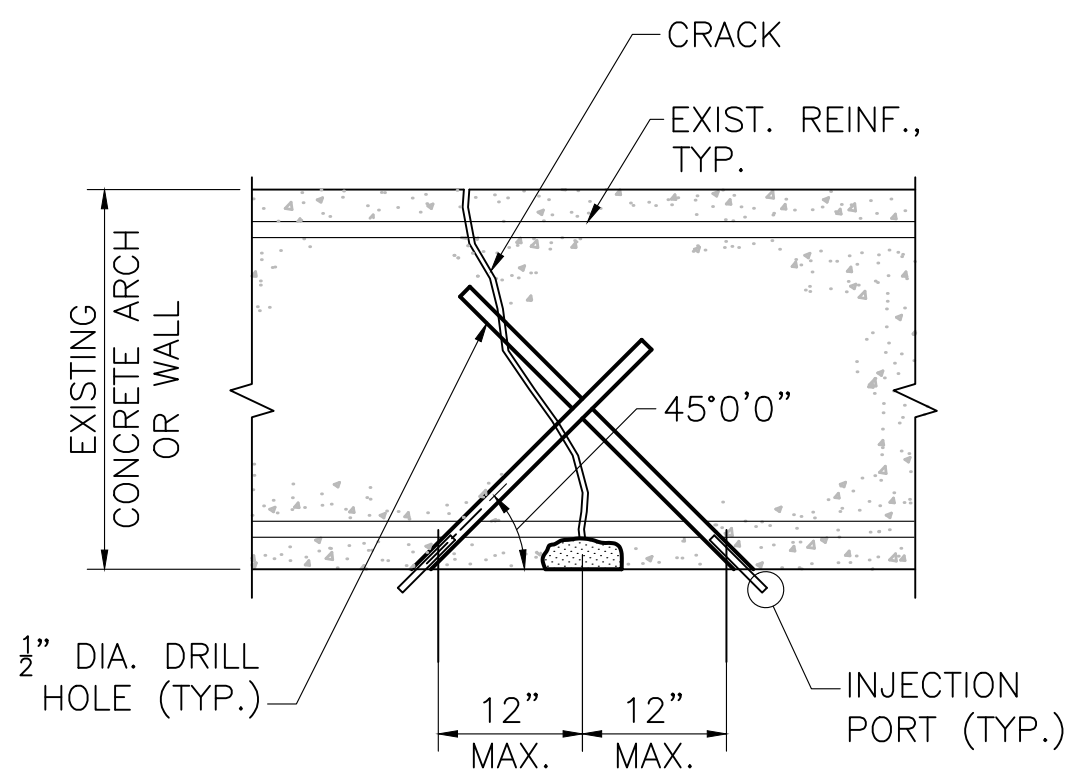
12. THE PACKERS SHALL BE REMOVED WITHIN 24 HOURS AFTER INJECTION AND THE HOLES SHALL BE PATCHED. THE SURFACE SEAL SHALL ALSO BE REMOVED BY GRINDING AND THE ENTIRE WORKED SURFACE SHALL BE FINISHED TO MATCH THE EXISTING SURFACES.

13. FOR CRACK REPAIRS, SEE SPECIAL PROVISIONS ITEM 107.855 PRESSURE INJECTION OF CRACKS.

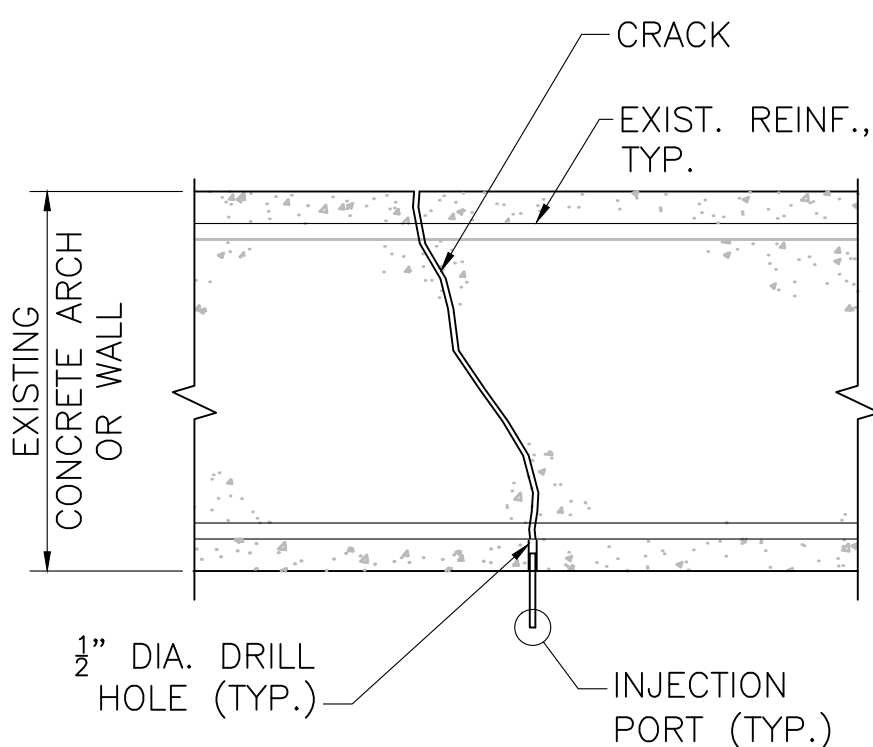
14. FOR EXISTING CRACKS WITHIN THE AREA OF UNSOUND CONCRETE, THE UNSOUND CONCRETE SHALL BE REMOVED AND PAID FOR UNDER ITEM 127.1 REINFORCED CONCRETE EXCAVATION; THE CRACKS SHALL BE REPAIRED AND PAID FOR UNDER ITEM 107.855 PRESSURE INJECTION OF CRACKS; THEN THE UNSOUND CONCRETE AREA SHALL BE REPAIRED AND PAID FOR UNDER ITEM 904.4, 4000 PSI, 3/4 INCH, 585 HP CEMENT CONCRETE.



CAP SEAL DETAIL



ORIENTATION OF INJECTION PORT



ALTERNATE ORIENTATION OF INJECTION PORT

CRACK INJECTION REPAIR PROCEDURE:

NOT TO SCALE

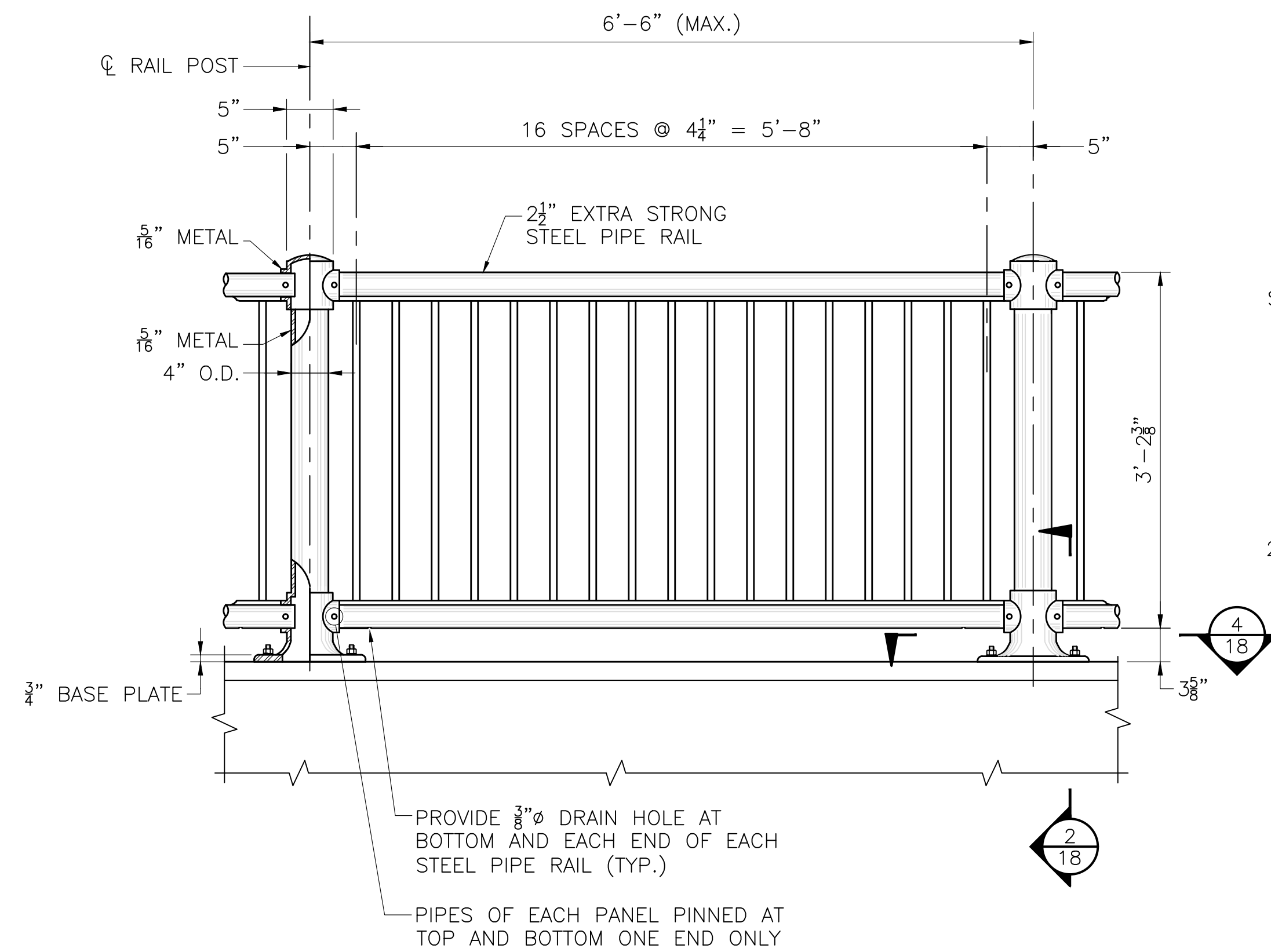
SUGGESTED REPAIR SEQUENCE

1. THE CONTRACTOR SHALL REPAIR THE CRACK IN ACCORDANCE WITH THE MANUFACTURER’S REQUIREMENTS, SEQUENCE, AND PROCEDURES.
2. LOCATE CRACKS TO BE REPAIRED AND ROUT CRACKS.
3. PLACE EPOXY CAP SEAL IN ROUTED AREA OF CRACK.
4. LOCATE, DRILL, AND PLACE INJECTION PORTS IN ACCORDANCE WITH PRODUCT MANUFACTURER’S RECOMMENDATIONS.
5. FLUSH CRACKS WITH WATER.
6. ALLOW CRACKS TO DRY IN ACCORDANCE WITH PRODUCT MANUFACTURER’S RECOMMENDATION.
7. INJECT EPOXY FOR CRACK REPAIR.
8. ALLOW INJECTION EPOXY TO SET.
9. REMOVE INJECTION PORTS.
10. STRIKE OFF CAP SEAL AND GRIND SMOOTH.

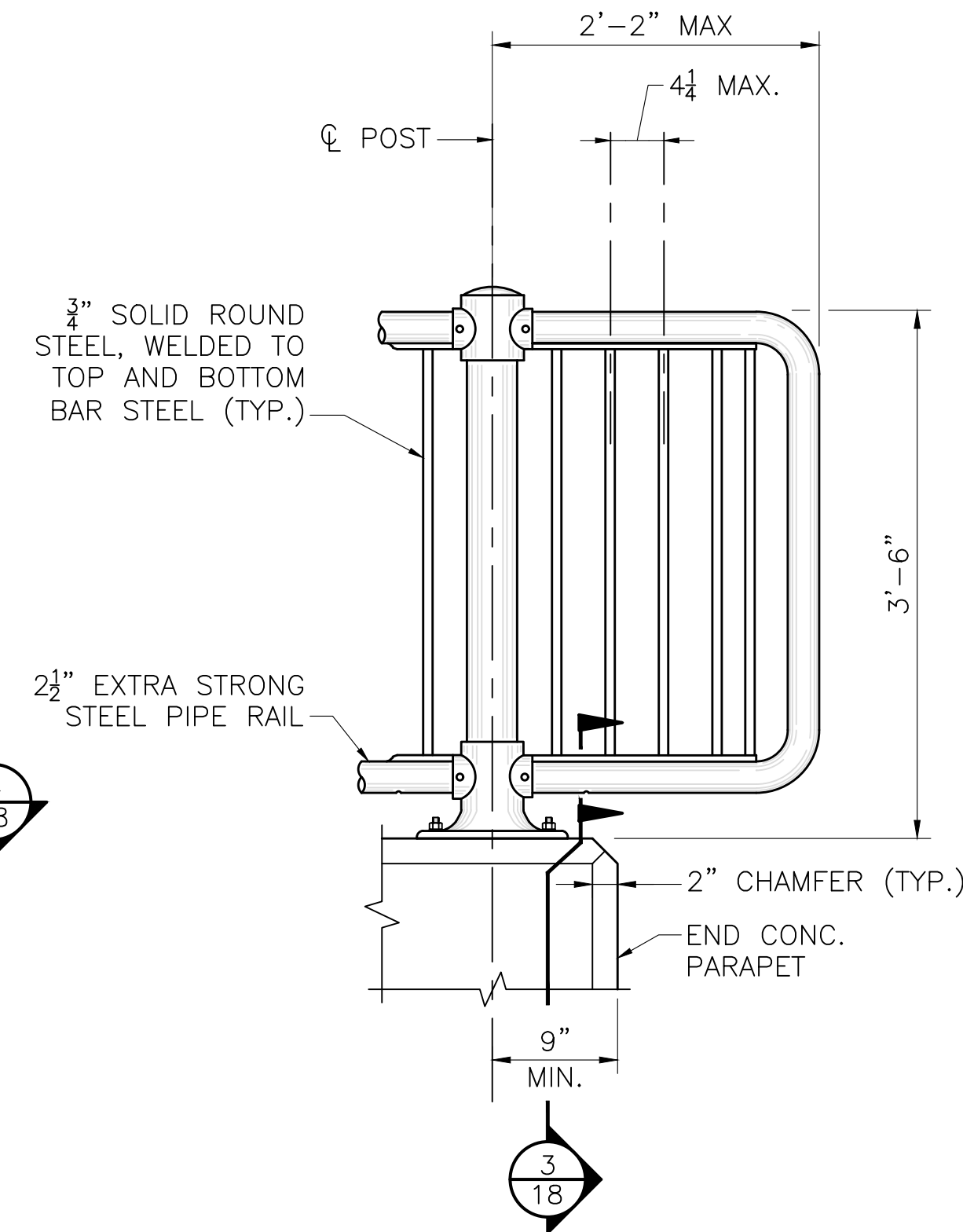
REV.	DATE	DESCRIPTION	BY
		<div><div><div><div></div><div>Stantec</div><div>45 NETWORK DRIVE BURLINGTON, MA</div></div></div></div>	

COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION DIVISION OF ENGINEERING AND DIVISION OF PLANNING AND RESOURCE PROTECTION			
SEVEN SPAN VIADUCT, BRIDGE NO. B-13-027			
BLACKSTONE GREENWAY SEGMENT 1 PHASE 2 BLACKSTONE, MA			
DESIGNER: CMS CHECKED: MM	CONCRETE REPAIR DETAILS - PART 2 OF 2		SHEET NO.
DRAWN: AMS CHECKED: MM	CONT. P10-2636-C3A ACC. 104279X	SCALE: AS NOTED DATE: OCT. 2022	ST-16 16 OF 18

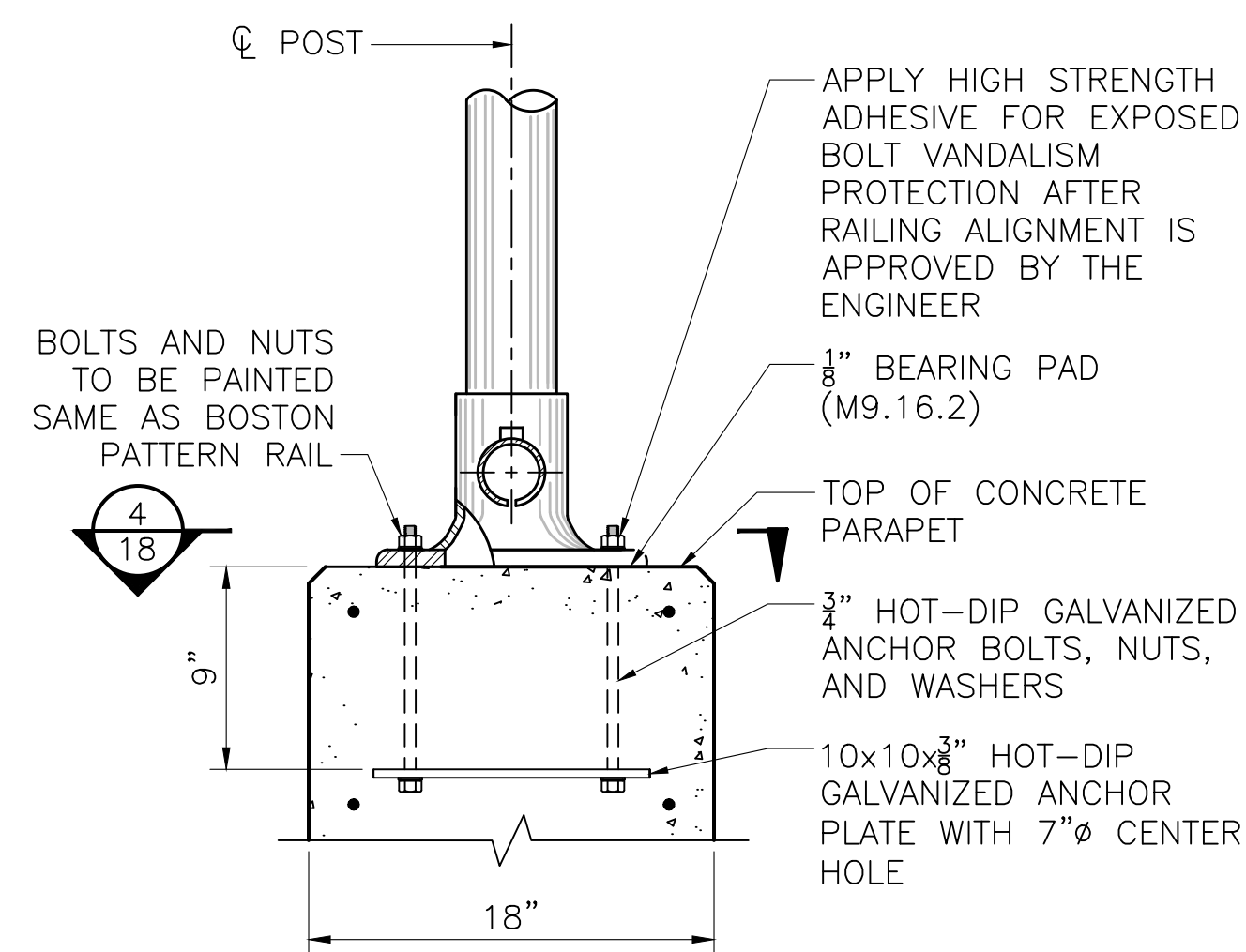




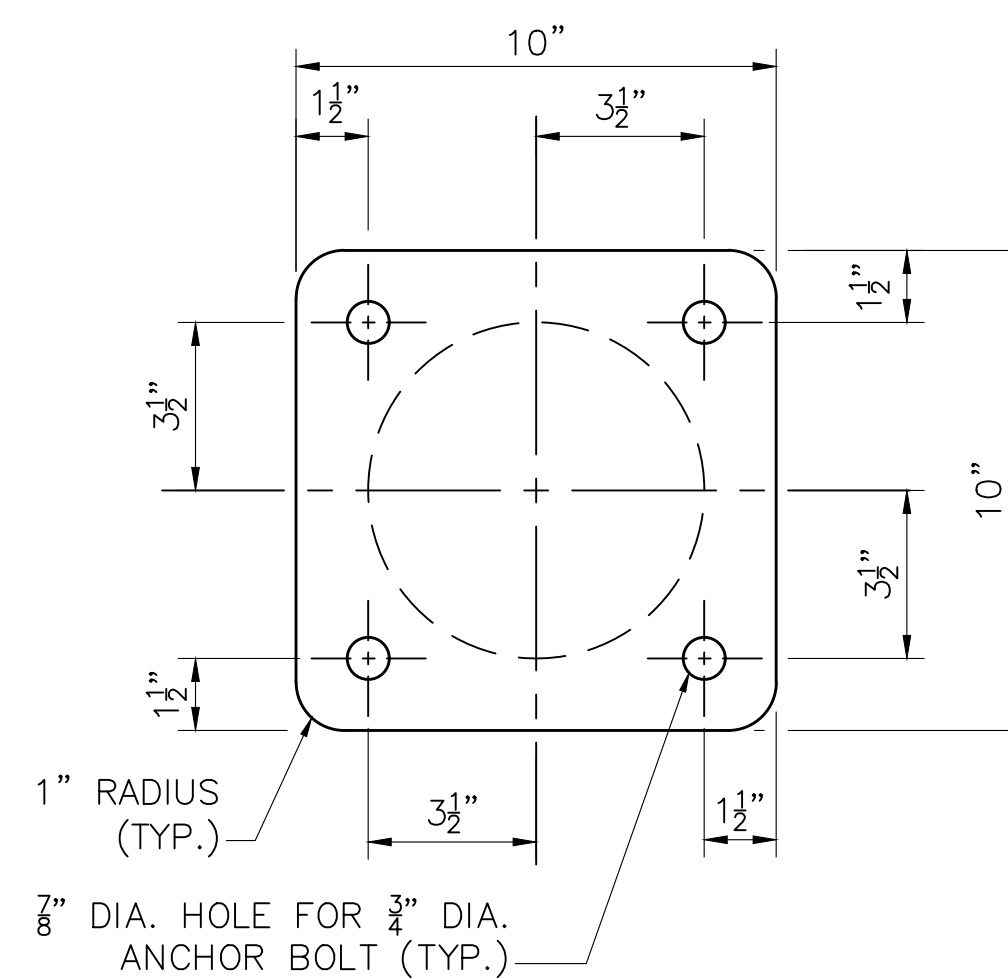
TYPICAL ELEVATION
SCALE: 1" = 1'-0"



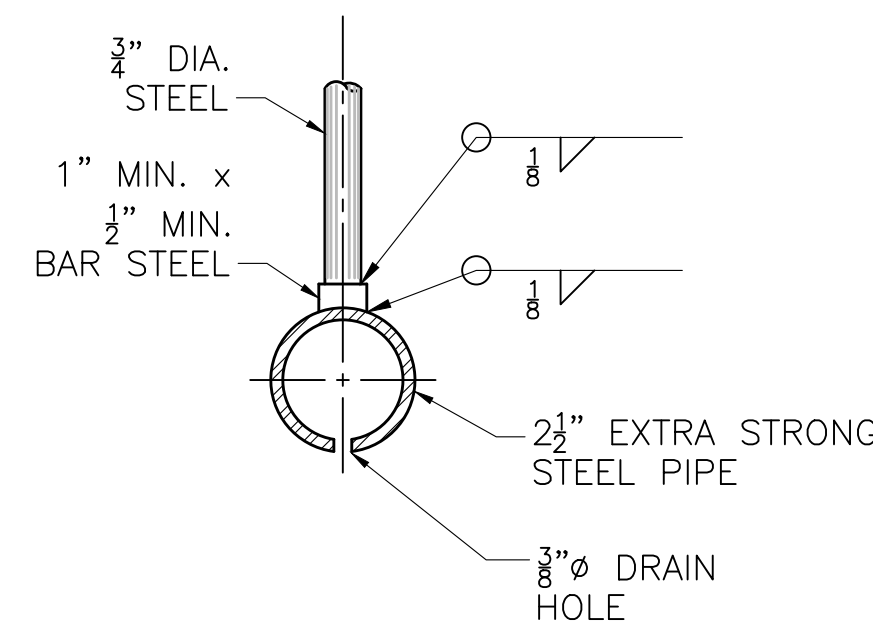
TYPICAL END RAILING
SCALE: 1" = 1'-0"



SECTION AT POST ANCHORAGE
SCALE: 1 1/2" = 1'-0"



SECTION - BASE PLATE
SCALE: 3" = 1'-0"



NOTE: TOP CONNECTION IS SIMILAR.

SECTION AT BOTTOM PIPE RAIL
SCALE: 3" = 1'-0"

NOTE:

FIELD CONNECTIONS SHALL BE SEALED WITH A CLEAR SEALANT.

REV.	DATE	DESCRIPTION	BY



COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION DIVISION OF ENGINEERING AND DIVISION OF PLANNING AND RESOURCE PROTECTION			
SEVEN SPAN VIADUCT, BRIDGE NO. B-13-027			
BLACKSTONE GREENWAY SEGMENT 1 PHASE 2 BLACKSTONE, MA			
DESIGNER: CMS	ORNAMENTAL RAILING		SHEET NO.
CHECKED: MM			ST-18
DRAWN: AMS	CONT. P10-2636-C3A	SCALE: AS NOTED	
CHECKED: MM	ACC. 104281X	DATE: OCT. 2022	18 OF 18