

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION HIGHWAY DIVISION

SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	1	55
PROJECT FILE NO.		608640	

TITLE SHEET & INDEX

PLAN AND PROFILE OF
DEPOT STREET OVER BLACKSTONE RIVER
(BRIDGE NO. S-33-004)

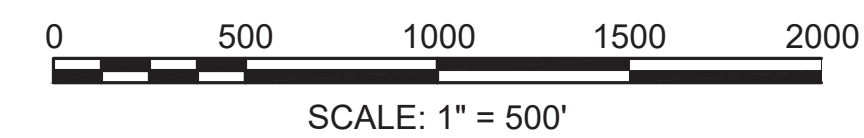
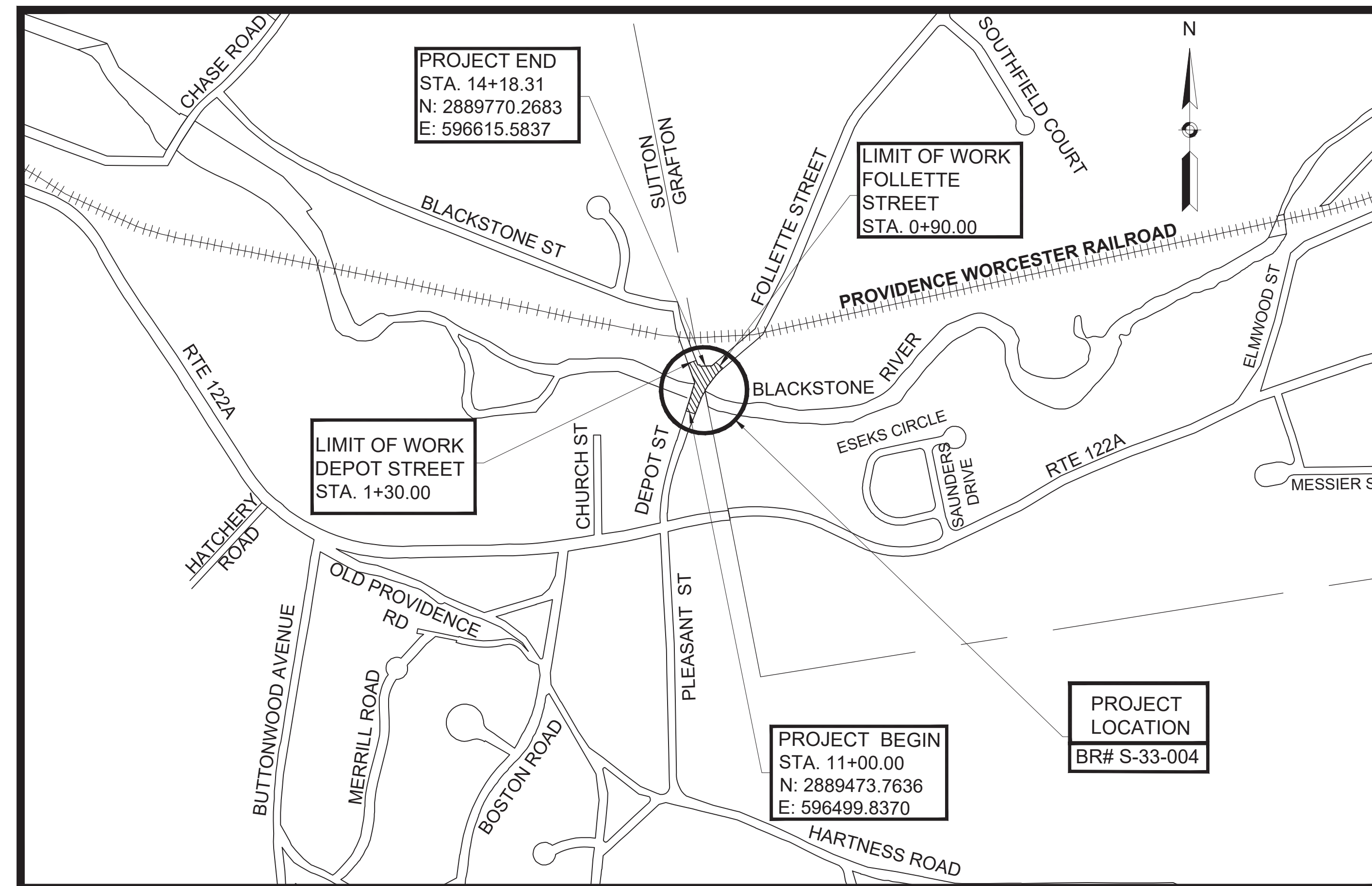
IN THE TOWNS OF
SUTTON & GRAFTON
WORCESTER COUNTY

FEDERAL AID PROJECT NO. STP(BR-OFF)-003S(755)X

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.

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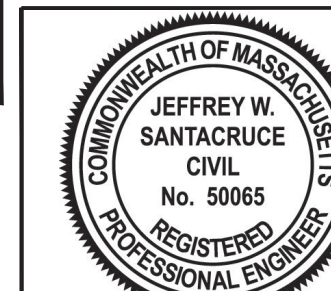
SHEET NO.	DESCRIPTION
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LENGTH OF PROJECT = 318.31 FEET = 0.060 MILES

DESIGN DESIGNATION (DEPOT STREET)

DESIGN SPEED	30 MPH
ADT (2021)	1001
ADT (2028)	1088
K	-
D	50%
T (PEAK HOUR)	4%
T (AVERAGE DAY)	4%
DHV	-
DDHV	-
FUNCTIONAL CLASSIFICATION	URBAN LOCAL



Jeffrey W. Santacrucce
FOR SHEETS 1 TO 18,
48 TO 55



Scott R. Brusco
FOR SHEETS 19 TO 47



Weston & Sampson

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978.532.1900
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DATE	DESCRIPTION	REV #

APPROVED
Carrie Lavalley, P.E.
CHIEF ENGINEER
DATE: 06/27/2024

GENERAL NOTES:

1. THE EXISTING CONDITIONS SHOWN ON THIS BASE MAP ARE THE RESULT OF AN ON-THE-GROUND INSTRUMENT SURVEY PERFORMED BETWEEN JANUARY 15, 2018 AND FEBRUARY 12, 2018 AND ADDITIONAL SURVEY PERFORMED BETWEEN FEBRUARY 2, 2023 AND FEBRUARY 6, 2023 BY GREEN INTERNATIONAL AFFILIATES, INC. (GREEN).
2. HORIZONTAL AND VERTICAL CONTROL WAS ESTABLISHED BY MASSDOT SURVEY, IN BOOK 41570, PAGE 31, ON JANUARY 26, 2018. HORIZONTAL DATUM IS BASED ON THE MASSACHUSETTS STATE PLANE COORDINATE SYSTEM (MAINLAND) NAD83 (2011), 2010.00 EPOCH. VERTICAL DATUM IS NAVD88 (COMPUTED USING GEOID12B) USING THE FOLLOWING CONTROL POINTS:

POINT	GRID NORTHING	GRID EASTING	ELEVATION	COMBINED GROUND TO GRID SCALE FACTOR
438X	287017.074	600181.667	366.322	0.99952493219818
11357	2880529.691	558878.206	537.302	0.999943762585743
MANB	2928580.885	612530.714	321.959	0.999954691812912

MASSDOT ESTABLISHED THE FOLLOWING POINTS FOR THIS PROJECT:

POINT	GRID NORTHING	GRID EASTING	ELEVATION	GRID SCALE FACTOR
2059	2888941.731	596355.119	363.576	0.999946331095739
2060	2869391.892	596453.305	338.792	0.999940768764735

THE UNIT OF MEASUREMENTS IS US FEET. THE PROJECT COMBINED SCALE FACTOR IS 0.999947607.
3. 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 AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES. THE CONTRACTOR SHALL DIG TEST PITS WITH THE LOCATIONS BEING APPROVED BY THE ENGINEER PRIOR TO COMMENCEMENT OF WORK TO EXACTLY LOCATE EXISTING UTILITIES.
4. 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.
5. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF GAS, WATER, ELECTRIC, TELEPHONE AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY OWNER. ANY ALTERATIONS SHALL BE INCIDENTAL TO THE PROJECT. THE CONTRACTOR IS RESPONSIBLE FOR THE TEMPORARY SUPPORT OF ALL UTILITIES TO REMAIN IN PLACE AND SHALL DESCRIBE IN WRITING, TO THE SATISFACTION OF THE ENGINEER, HIS METHOD OF TEMPORARY SUPPORT.
6. AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
7. THE TERM "PROPOSED (PROP)" INDICATES WORK TO BE CONSTRUCTED USING NEW MATERIALS OR, WHERE APPLICABLE, RE-USING EXISTING MATERIALS IDENTIFIED AS "REMOVE AND RESET (R&R)".
8. ALL EXISTING STATE, COUNTY AND TOWN LOCATION LINES AND PRIVATE PROPERTY LINES HAVE BEEN ESTABLISHED FROM AVAILABLE INFORMATION AND THEIR EXACT LOCATION ARE NOT GUARANTEED.
9. ALL EXCESS MATERIAL FROM ROADWAY RECONSTRUCTION OR THE EXCAVATION PROCESS SHALL BE REUSED ON SITE OR REMOVED FROM THE SITE AND DISPOSED OF IN A LEGAL AND PROPER MANNER.
10. THE CONTRACTOR SHALL CALL DIGSAFE AT 1-888-344-7233 AT LEAST 72 HOURS, SATURDAYS, AND HOLIDAYS EXCLUDED, PRIOR TO EXCAVATING AT ANY LOCATION. A COPY OF THE DIGSAFE PROJECT REFERENCE NUMBER(S) SHALL BE GIVEN TO THE TOWN PRIOR TO EXCAVATION.
11. THE CONTRACTOR SHALL VERIFY BY TEST PIT, THE LOCATION OF EXISTING UTILITIES WHICH MAY CONFLICT WITH THE PROPOSED UNDERGROUND UTILITY DESIGN. ANY FIELD ADJUSTMENTS REQUIRED WILL BE MADE AS APPROVED OR DIRECTED BY THE ENGINEER. ONLY AFTER THE CONTRACTOR VERIFIES ELEVATIONS FOR THE CONSTRUCTABILITY OF THE PROPOSED UTILITY SYSTEMS, THE STRUCTURES SHALL BE ORDERED.

12. MASSDOT WILL GENERALLY FURNISH SURVEY WORK AS OUTLINED IN THE 2024 STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, SECTION 5.07: CONSTRUCTION SURVEY CONTROL. THE CONTRACTOR SHALL EMPLOY QUALIFIED ENGINEERING PERSONNEL TO INSURE ADEQUATE CONTROL AND SHALL FURNISH AND SET STAKES OF THE QUALITY USED BY THE DEPARTMENT FOR CONTROL STAKING AND ANY ADDITIONAL LAYOUT.
13. JOINTS BETWEEN HOT MIX ASPHALT TRENCH PAVEMENT AND SAWCUT EXISTING PAVEMENT SHALL BE SEALED WITH HOT MIX ASPHALT JOINT SEALANT.
14. IF DEEMED NECESSARY DUE TO THE WORK, THE CONTRACTOR SHALL COORDINATE WITH THE TOWN OF SUTTON HIGHWAY DEPARTMENT, THE SUTTON FIRE DEPARTMENT, AND THE ENGINEER FOR APPROVAL OF SHUTTING DOWN ANY EXISTING WATER MAINS AND SHALL ALSO OBTAIN APPROVAL FOR DISRUPTING ANY EXISTING SEWER FLOWS.
15. THE CONTRACTOR SHALL BE AWARE THAT ONLY TOWN PERSONNEL ARE ALLOWED TO OPERATE WATER GATES AND HYDRANTS. ANY REQUESTS TO OPERATE THE GATES SHALL BE COORDINATED THROUGH THE ENGINEER.
16. THE CONTRACTOR SHALL COORDINATE ANY WORK FOR THE PROJECT WITH ALL ADJACENT/CONCURRENT PROJECTS AND CONTRACTORS.
17. THE CONTRACTOR SHALL INSTALL PRIOR TO COMMENCEMENT OF WORK, MAINTAIN, AND REMOVE AT THE END OF THE PROJECT INLET SEDIMENT CONTROL BAGS IN ALL CATCH BASINS, WITHIN OR ADJACENT TO THE PROJECT LIMITS. THE CONTRACTOR SHALL ALSO MAINTAIN SILT FENCE AND COMPOST FILTER TUBES AS SHOWN ON THE PLANS THROUGHOUT THE DURATION OF THE PROJECT AND REMOVE AT THE END.
18. ANY GRASS AREAS DISTURBED BY THE WORK SHALL BE RESTORED WITH LOAM AND SEED.
19. ANY LANDSCAPED AREAS DISTURBED BY THE WORK SHALL BE RESTORED TO EXISTING CONDITIONS WITH EXISTING OR NEW GROUND COVER MATERIALS AS DIRECTED BY THE ENGINEER. ANY PLANTS, SHRUBS, OR FLOWERS DISTURBED BY THE WORK SHALL BE RESET TO EXISTING CONDITIONS OR REPLACED WITH NEW PLANTS, SHRUBS, OR FLOWERS AS DIRECTED BY THE ENGINEER. ALL WORK TO RESTORE LANDSCAPE AREAS, NEW GROUND COVER MATERIALS, NEW PLANTS, NEW SHRUBS, OR NEW FLOWERS REQUIRED BY THE ENGINEER SHALL BE INCIDENTAL TO THE PROJECT.
20. CONTRACTOR TO COORDINATE WITH UTILITY POLE OWNERS IN AREAS WHERE UNDERGROUND UTILITY WORK IS WITHIN CLOSE PROXIMITY AND POSSIBLE UTILITY POLE SHORING IS REQUIRED WHILE INSTALLING PROPOSED UTILITIES.
21. RAISE AND ADJUST FRAMES AND GRATES, FRAMES AND COVERS AND GATE BOXES PRIOR TO PAVEMENT OVERLAY, IF REQUIRED.
22. CONTRACTOR IS RESPONSIBLE FOR REPLACING ANY PROPERTY PINS THAT ARE DAMAGED OR DESTROYED DURING CONSTRUCTION, TO THEIR LOCATION JUST PRIOR TO CONSTRUCTION.
23. IN INSTANCES WHERE AN EXISTING MANHOLE, HANDHOLE, OR OTHER SURFACE TYPE STRUCTURE CANNOT BE REMOVED OR RESET WITHIN THE PROPOSED OR EXISTING ACCESSIBLE SURFACE, THE STRUCTURE SHALL BE CAREFULLY ADJUSTED SUCH THAT THE TOPMOST SURFACES OR THE STRUCTURE COVER SHALL BE FLUSH WITH THE CURB RAMP SURFACE.

SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	2	55
PROJECT FILE NO.		608640	

GENERAL NOTES

SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	3	55
PROJECT FILE NO.		608640	

LEGEND AND ABBREVIATIONS

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
		COUNTY BOUND
		GPS POINT
		CABLE MANHOLE
		DRAINAGE MANHOLE
		ELECTRIC MANHOLE
		GAS MANHOLE
		MISC MANHOLE
		SEWER MANHOLE
		TELEPHONE MANHOLE
		WATER MANHOLE
		MASSACHUSETTS HIGHWAY BOUND
		MONUMENT
		STONE BOUND
		TOWN OR CITY BOUND
		TRAVERSE OR TRIANGULATION STATION
		TROLLEY POLE OR GUY POLE
		TRANSMISSION POLE
		UTILITY POLE W/ FIREBOX
		UTILITY POLE WITH DOUBLE LIGHT
		UTILITY POLE W / 1 LIGHT
		UTILITY POLE
		BUSH
		TREE
		STUMP
		SWAMP / MARSH
		WATER GATE
		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
		GUARD RAIL - WOOD POSTS
		CHAIN LINK OR METAL FENCE
		WOOD FENCE
		SEDIMENT CONTROL BARRIER
		TREE LINE
		SAWCUT LINE
		TOP OR BOTTOM OF SLOPE
		LIMIT OF EDGE OF PAVEMENT OR COLD PLANE AND OVERLAY
		BANK OF RIVER OR STREAM
		BORDER OF WETLAND
		100 FT WETLAND BUFFER
		200 FT RIVERFRONT BUFFER
		STATE HIGHWAY LAYOUT
		TOWN OR CITY LAYOUT
		COUNTY LAYOUT
		RAILROAD SIDELINE
		TOWN OR CITY BOUNDARY LINE
		PROPERTY LINE OR APPROXIMATE PROPERTY LINE
		EASEMENT

PAVEMENT MARKINGS SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		SOLID WHITE LINE
		SOLID YELLOW LINE
		BROKEN WHITE LINE
		BROKEN YELLOW LINE
		DOUBLE YELLOW LINE
		STOP LINE

ABBREVIATIONS

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

GENERAL	DESCRIPTION
PUE	PERMANENT UTILITY EASEMENT
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENCY
PVMT	PAVEMENT
PWW	PAVED WATER WAY
R	RADIUS OF CURVATURE
R&D	REMOVE AND DISPOSE
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
RDWY	ROADWAY
REM	REMOVE
RET	RETAIN
RET WALL	RETAINING WALL
ROW	RIGHT OF WAY
RR	RAILROAD
R&R	REMOVE AND RESET
R&S	REMOVE AND STACK
RT	RIGHT
SB	STONE BOUND
SHLD	SHOULDER
SMH	SEWER MANHOLE
ST	STREET
STA	STATION
SSD	STOPPING SIGHT DISTANCE
SHLO	STATE HIGHWAY LAYOUT LINE
SW	SIDEWALK
T	TANGENT DISTANCE OF CURVE/TRUCK %
TAN	TANGENT
TEMP	TEMPORARY
TC	TOP OF CURB
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

SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER

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MA	STP(BR-OFF)-003S(755)X	4	55
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TYPICAL SECTIONS & PAVEMENT NOTES

PAVEMENT NOTES

PROPOSED PAVEMENT MILLING AND RESURFACING:

- 1 1/2" SUPERPAVE BRIDGE SURFACE COURSE - 9.5 (SSC-9.5)
- 1 1/2" PAVEMENT MILLING

PROPOSED FULL DEPTH CONSTRUCTION:

- 1 1/2" SUPERPAVE BRIDGE SURFACE COURSE - 9.5 (SSC-B-9.5) OVER ASPHALT EMULSION FOR TACK COAT OVERLAY
- 2" SUPERPAVE INTERMEDIATE COURSE - 12.5 (SIC-12.5) OVER ASPHALT EMULSION FOR TACK COAT OVERLAY
- 4" SUPERPAVE BASE COURSE - 37.5 (SBC-37.5)
- 4" DENSE GRADED CRUSHED STONE
- 8" GRAVEL BORROW, TYPE B

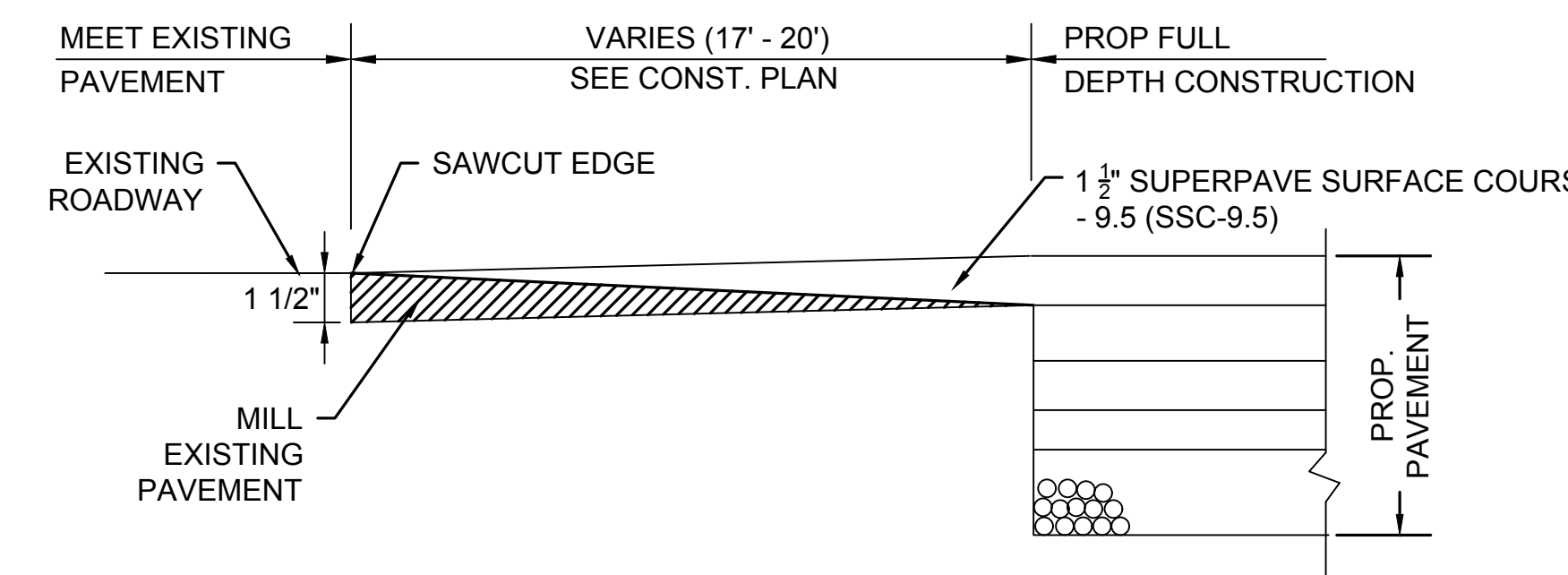
HOT MIX ASPHALT DRIVEWAY OR HOT MIX ASPHALT WALK:

- 1 1/2" SUPERPAVE SURFACE COURSE (SSC-B-9.5) OVER 2 1/2" SUPERPAVE INTERMEDIATE COURSE (SIC-12.5) OVER 8" GRAVEL BORROW, TYPE B

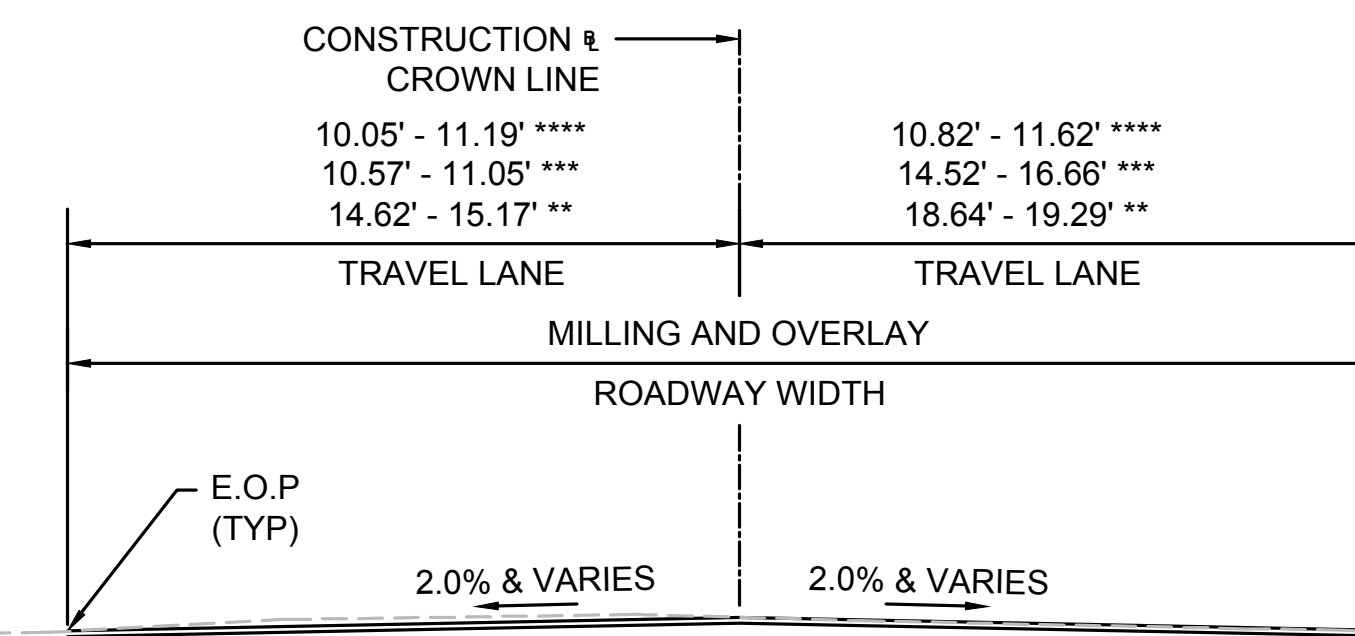
CEMENT CONCRETE WALK AND WHEELCHAIR RAMP:

- 4" CEMENT CONCRETE OVER (4000 PSI 3/4" 610)
- 8" GRAVEL BORROW, TYPE B

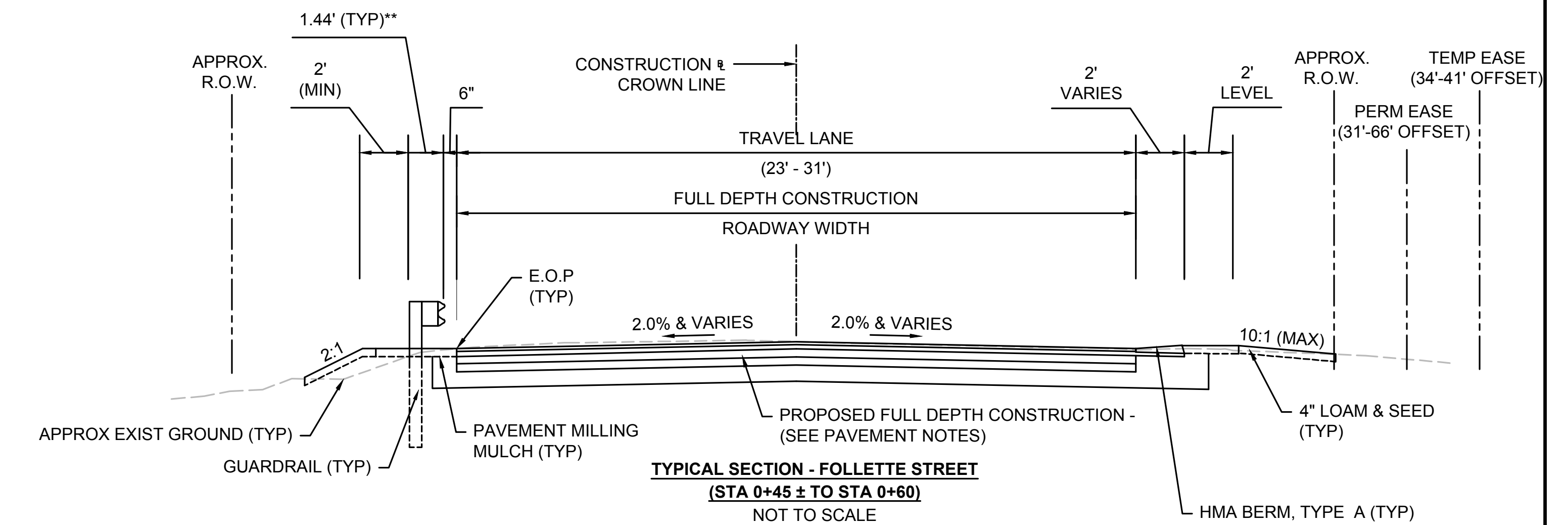
TACK COAT SHALL BE APPLIED AT RATE OF 0.07-0.09 GALLON PER SQUARE YARD OVER MILLED SURFACES AND 0.06-0.08 GALLON PER SQUARE YARD OVER SMOOTH PAVED SURFACES.



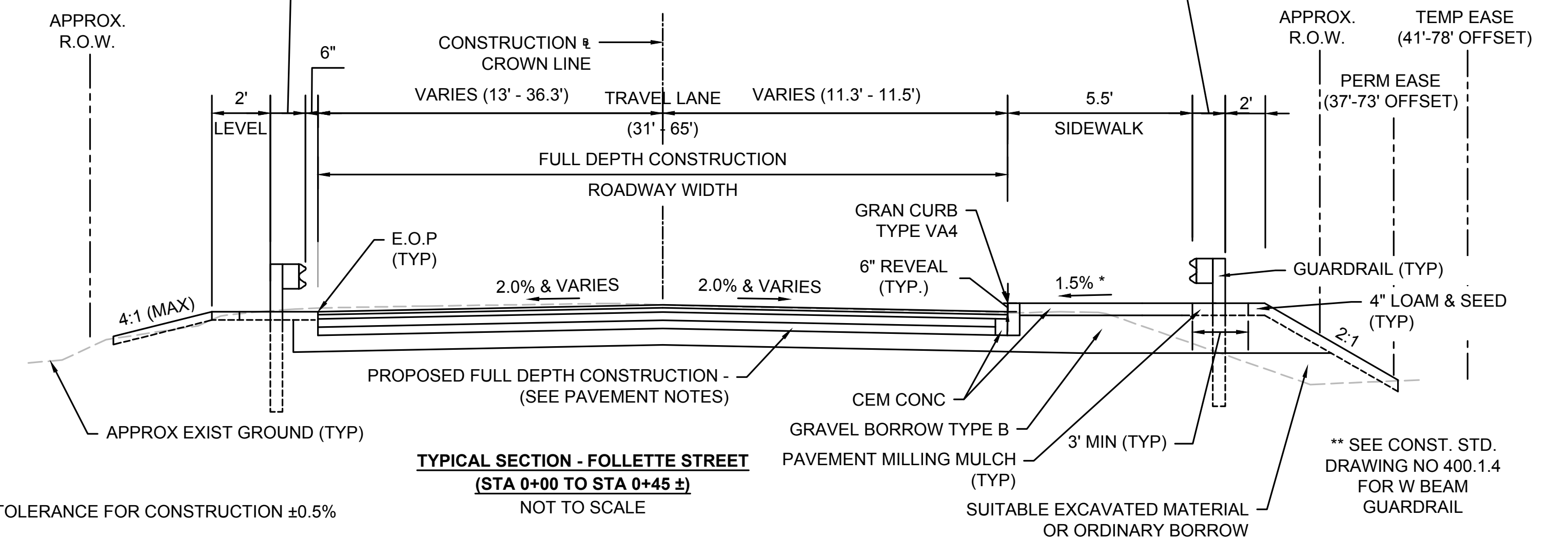
PROPOSED PAVEMENT TRANSITION (LONGITUDINAL SECTION)



TYPICAL SECTION - PAVEMENT MILLING AND OVERLAY
 ** (STA 11+00 TO STA 11+17 - DEPOT STREET)
 *** (STA 1+00 TO STA 1+30 - DEPOT STREET)
 **** (STA 0+60 TO STA 0+90 - FOLLETTE STREET)
 NOT TO SCALE

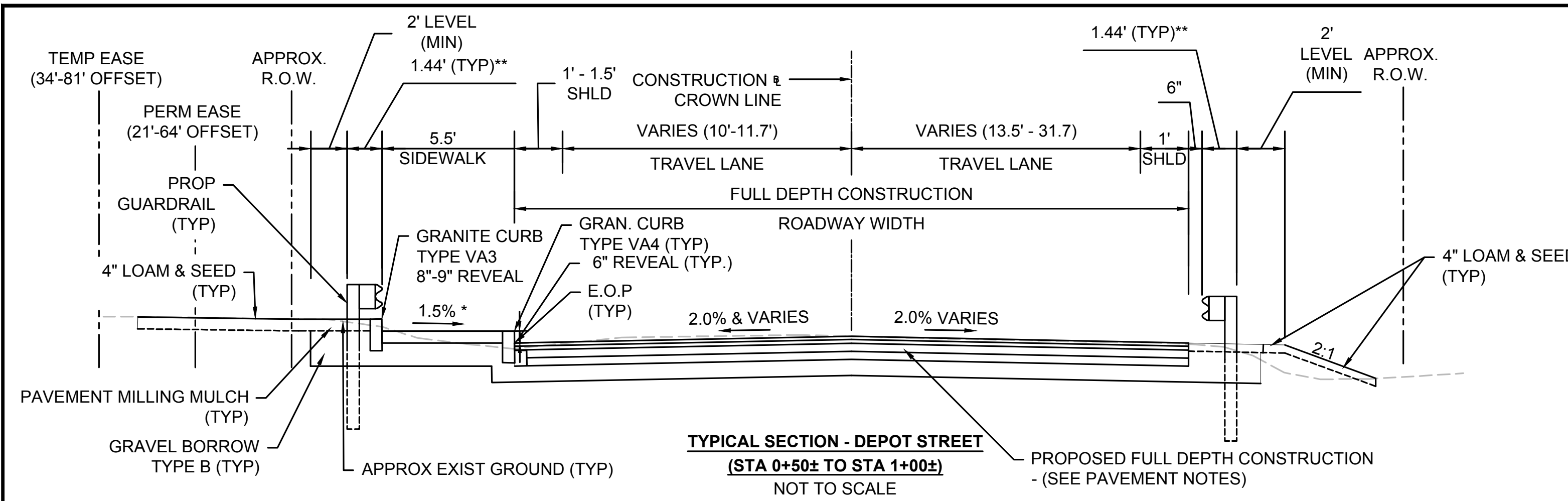


TYPICAL SECTION - FOLLETTE STREET (STA 0+45 ± TO STA 0+60)

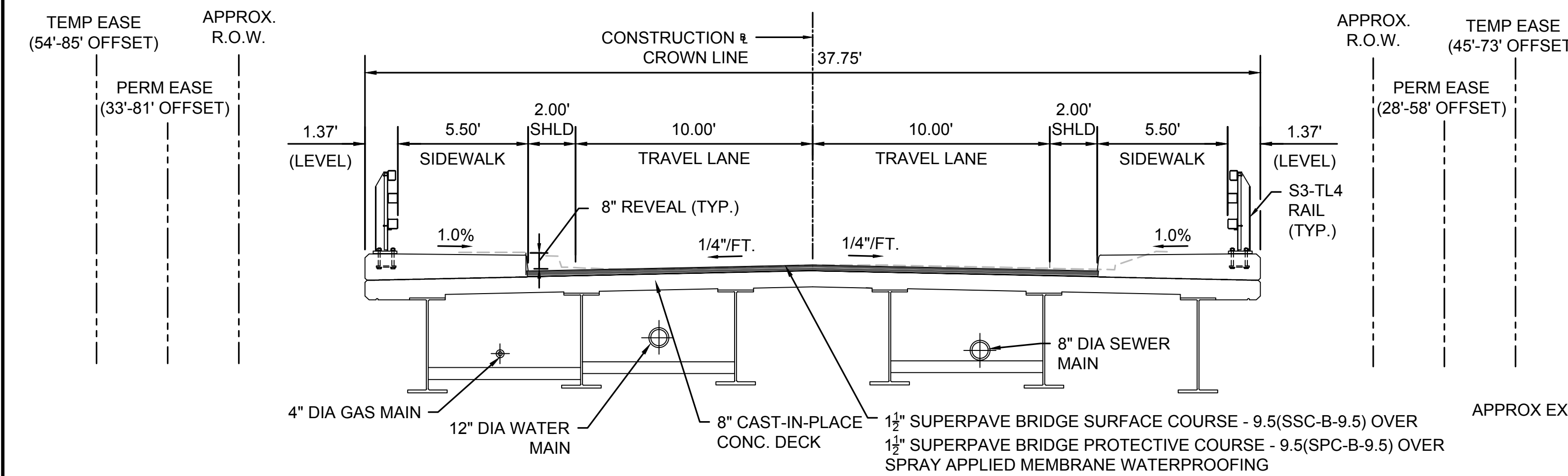


TYPICAL SECTION - FOLLETTE STREET (STA 0+00 TO STA 0+45 ±)

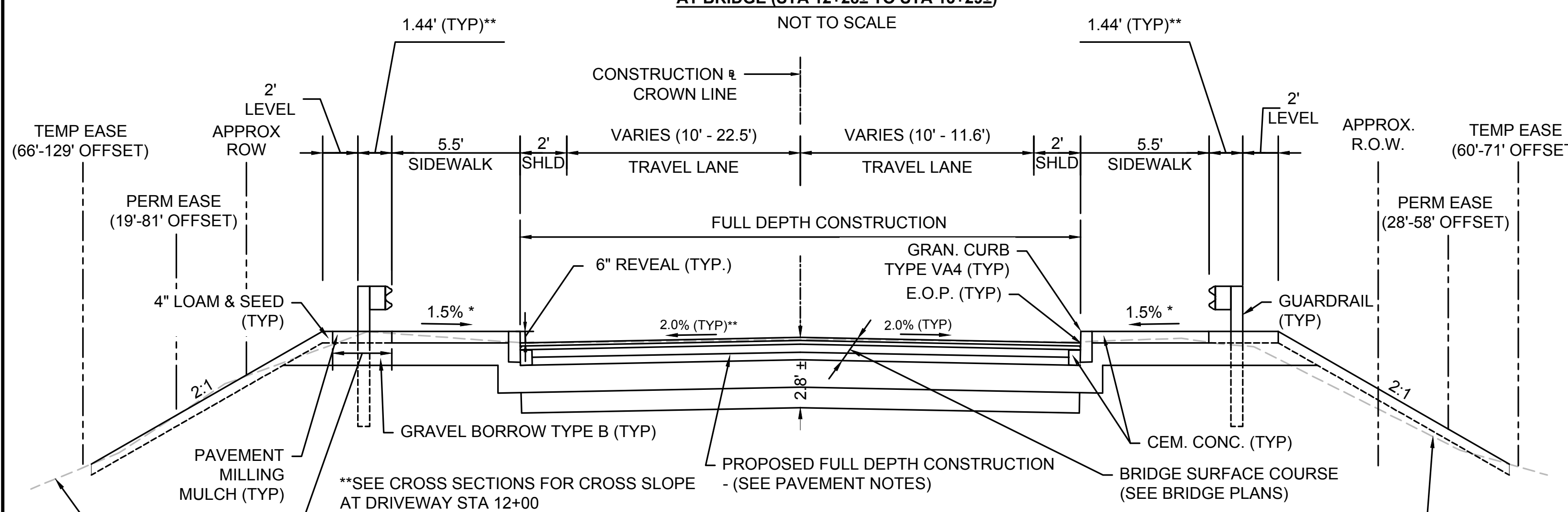
*TOLERANCE FOR CONSTRUCTION ±0.5%



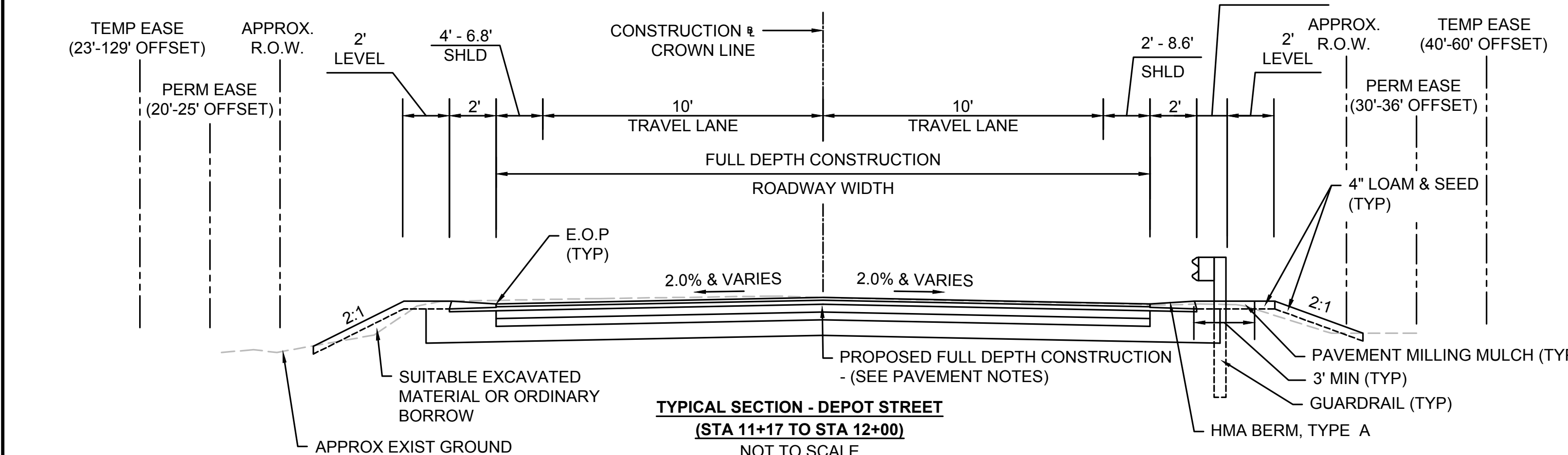
TYPICAL SECTION - DEPOT STREET (STA 0+50 ± TO STA 1+00 ±)



TYPICAL SECTION - DEPOT STREET AT BRIDGE (STA 12+28 ± TO STA 13+29 ±)



TYPICAL SECTION - DEPOT STREET AT BRIDGE APPROACH (STA 12+00 ± TO 12+28 ± AND 13+29 ± TO 13+55 ±)



TYPICAL SECTION - DEPOT STREET (STA 11+17 TO STA 12+00)

HIGHWAY GUARD DETAILS

TRAFFIC SIGNAL CONDUIT

WATER SUPPLY ALTERATIONS

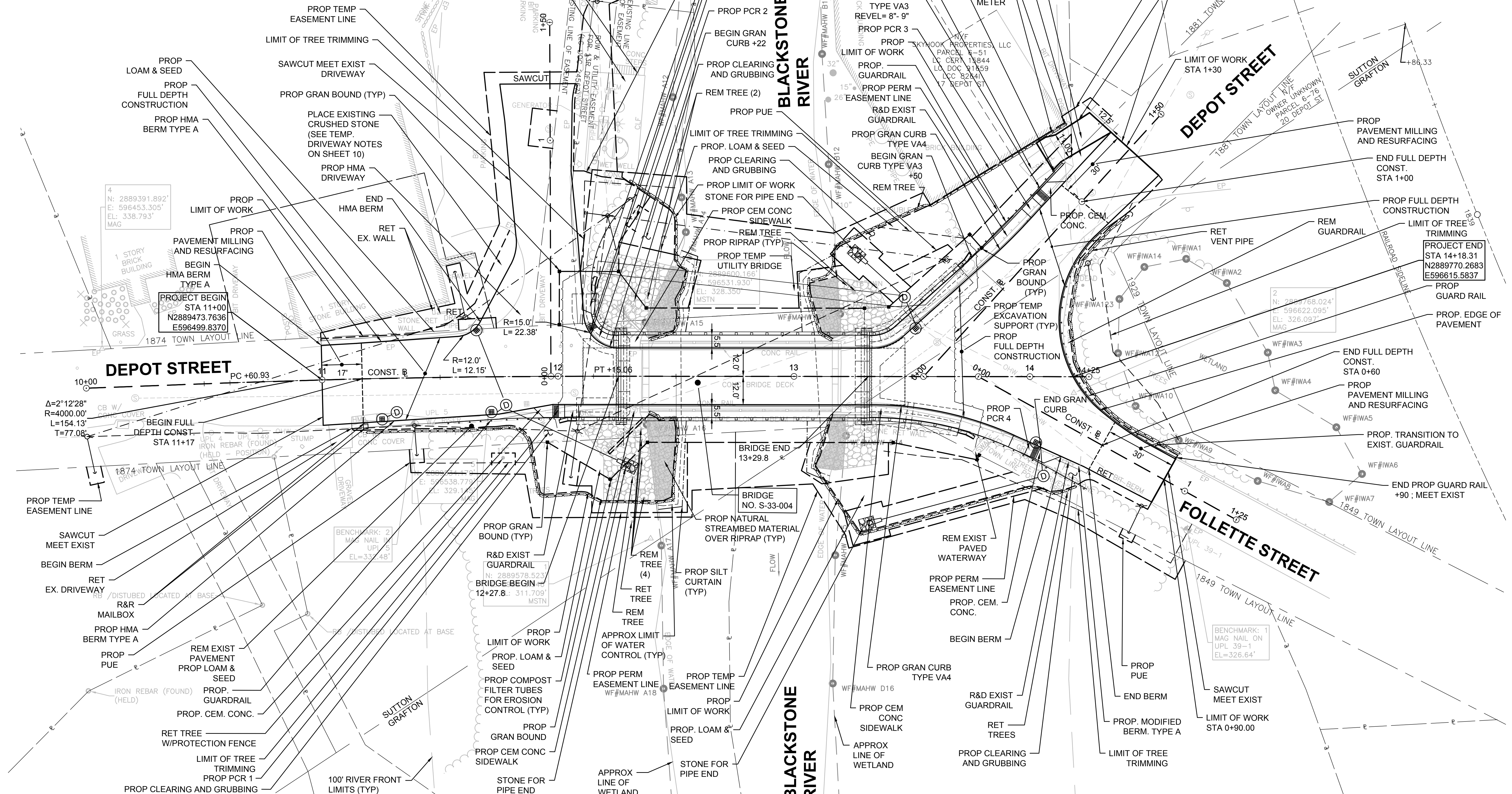
DRAINAGE DETAILS

SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER

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MA	STP(BR-OFF)-003S(755)X	5	55
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CONSTRUCTION PLAN

STA 11+48 RT TO STA 11+60 RT - ITEM 627.82 TANGENT END TREATMENT, TL-2
 STA 11+60 RT TO STA 11+73 RT - ITEM 620.12 GUARDRAIL, TL-2
 STA 11+73 RT TO STA 12+07 RT - ITEM 628.24 TRANSITION TO BRIDGE RAIL
 STA 12+14 LT TO STA 12+24 LT - ITEM 628.24 TRANSITION TO BRIDGE RAIL
 STA 12+24 LT TO STA 12+30 LT - ITEM 627.1 TRAILING ANCHORAGE
 FOLLETTE STREET:
 STA 0+05 RT TO STA 0+38 RT - ITEM 628.24 TRANSITION TO BRIDGE RAIL
 STA 0+38 RT TO STA 0+62 RT - ITEM 627.82 TANGENT END TREATMENT, TL-2
 DEPOT STREET:
 STA 0+46 LT TO STA 0+94 LT - ITEM 628.24 TRANSITION TO BRIDGE RAIL
 STA 0+94 LT TO STA 1+06.5 LT - ITEM 627.82 TANGENT END TREATMENT, TL-2
 STA 1+01 RT TO STA 1+10 RT - ITEM 627.1 TRAILING ANCHORAGE
 STA 1+01 RT TO STA 0+90 LT (FOLLETTE ST) - ITEM 620.12 GUARDRAIL, TL-2



4
 N: 2889391.892'
 E: 596453.305'
 EL: 338.793'
 MAG

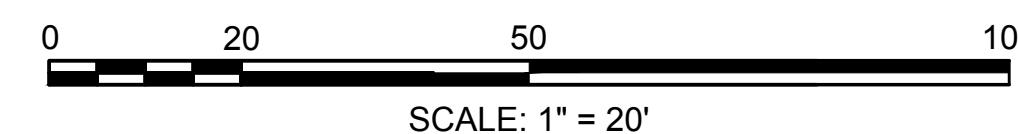
PROJECT BEGIN
 STA 11+00
 N2889473.7636
 E596499.8370

PROJECT END
 STA 14+18.31
 N2889770.2683
 E596615.5837

2
 N: 2889768.024'
 E: 596622.095'
 EL: 326.097'
 MAG

BENCHMARK: 1
 MAG NAIL ON
 UPL 39-1
 EL=326.64'

NOTE:
 THE CONTRACTOR SHALL INSTALL JUTE MESH ALONG ALL EMBANKMENT SLOPES
 GREATER THAN 3H:1V (SEE DETAIL ON SHEET 18). ADDITIONAL SEDIMENT
 CONTROL BARRIERS SHALL BE INSTALLED AT TOP OF SLOPES IN THE AREAS
 WHERE JUTE MESH IS TO BE INSTALLED AT DIRECTION OF THE ENGINEER.

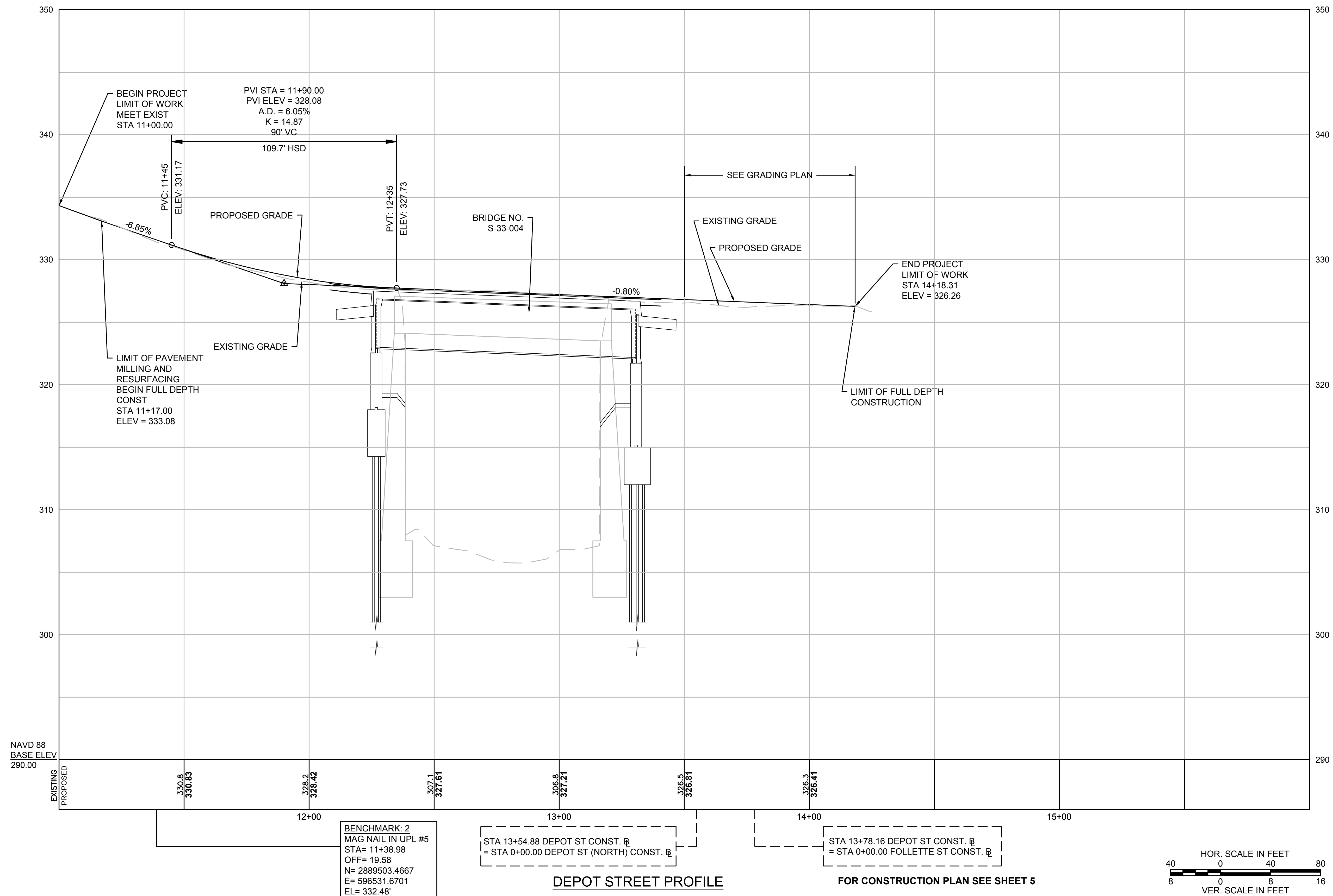


FOR PROFILE SEE SHEET 6 & 7

SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	6	55
PROJECT FILE NO.		608640	

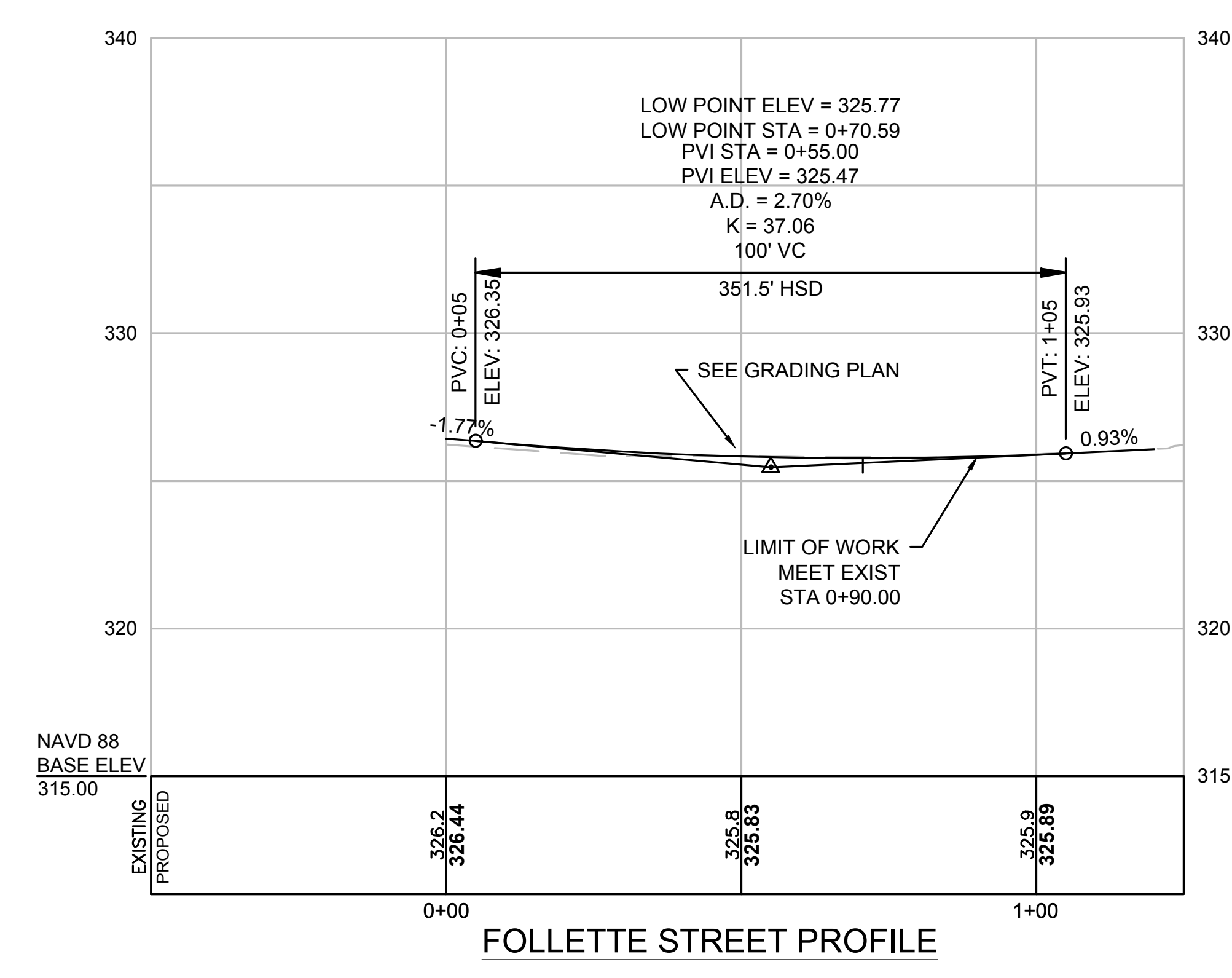
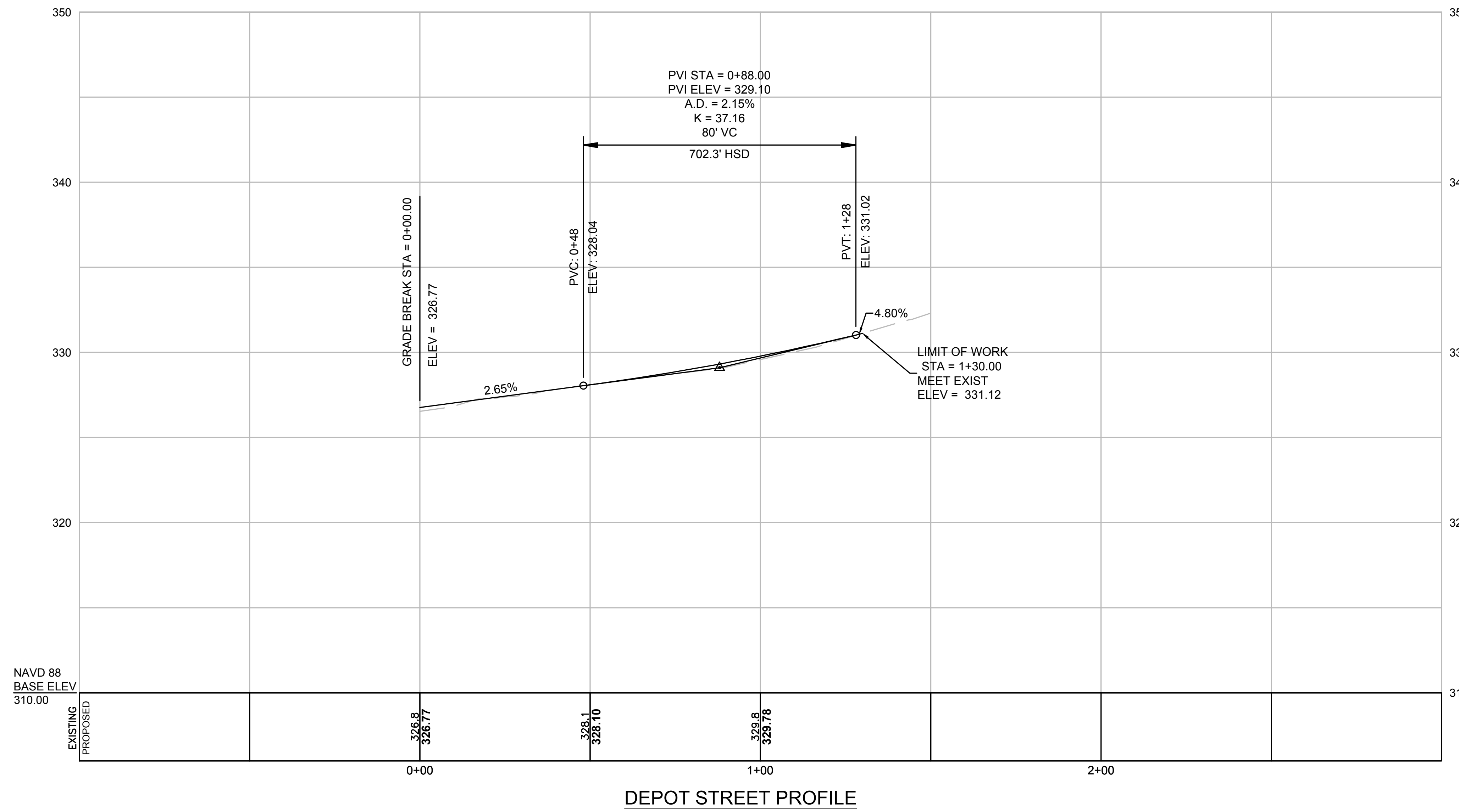
PROFILE
DEPOT STREET



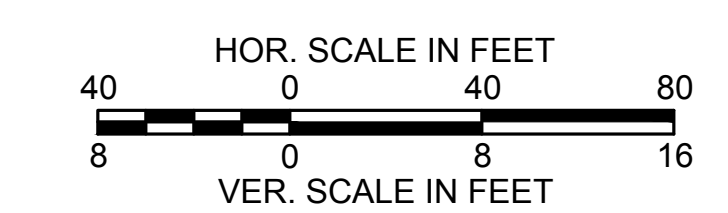
SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	7	55
PROJECT FILE NO.		608640	

PROFILE
DEPOT ST AND FOLLETTE ST



FOR CONSTRUCTION PLAN SEE SHEET 5



SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	8	55
PROJECT FILE NO. 608640			

CURB TIE AND GRADING PLAN

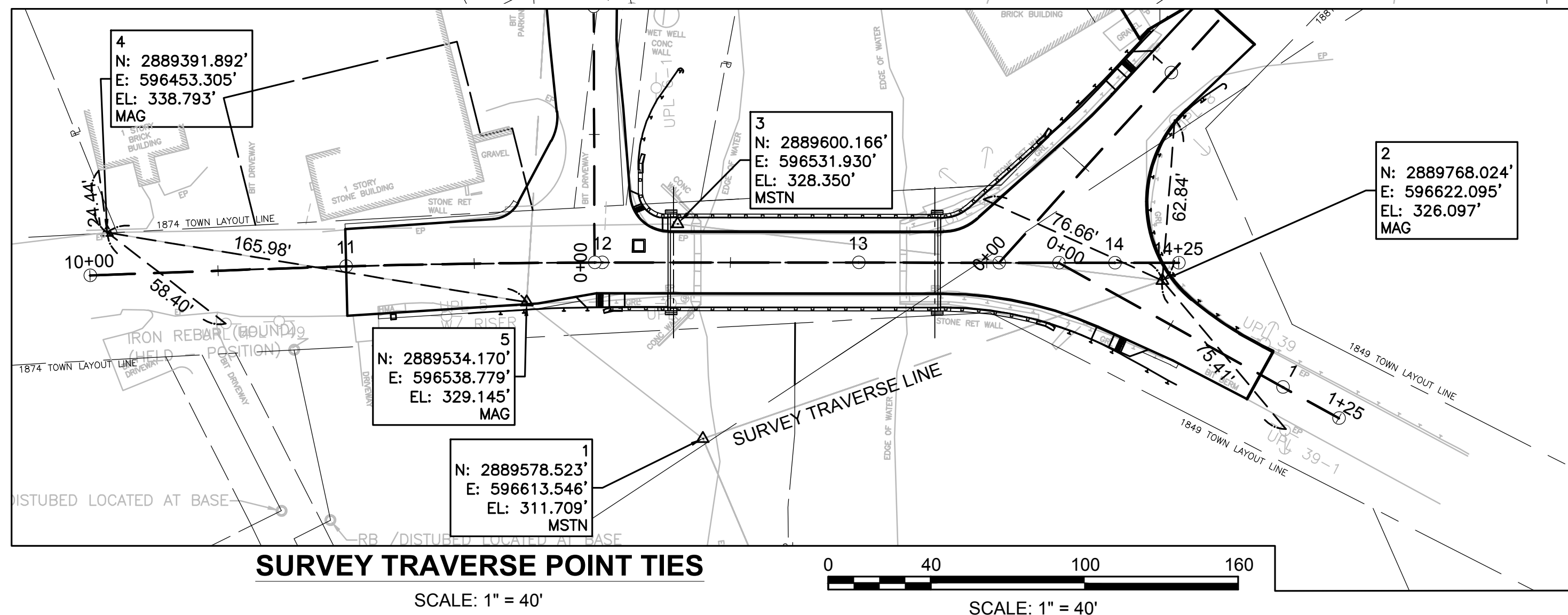
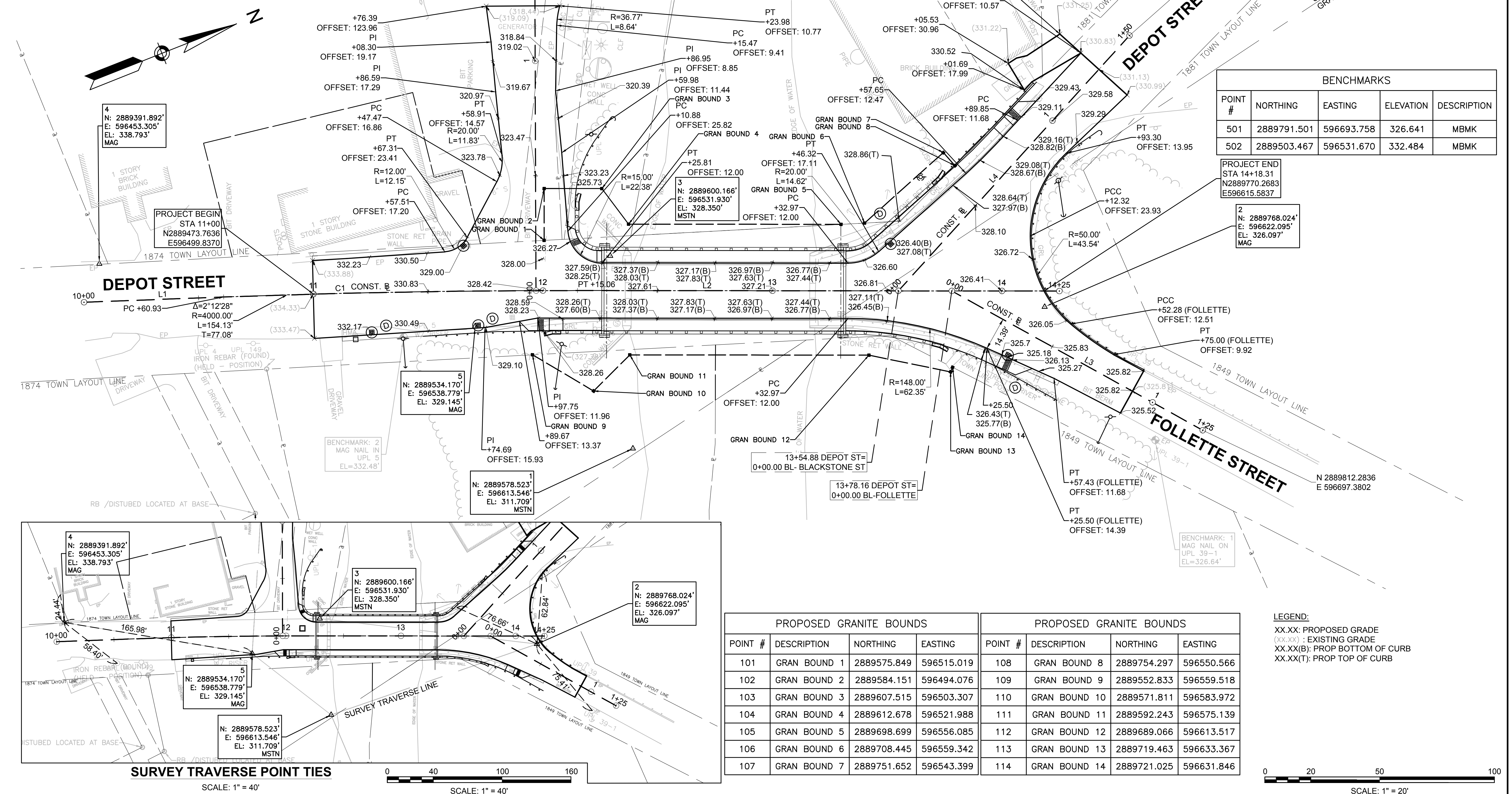
SURVEY POINTS				
Point #	Northing	Easting	Elevation	Raw Description
1	2889578.523	596613.546	311.709	MTRV MSTN
2	2889768.024	596622.095	326.097	MTRV MAG
3	2889600.166	596531.930	328.350	MTRV MSTN
4	2889391.892	596453.305	338.793	MTRV MAG
5	2889534.170	596538.779	329.145	MTRV MAG
209	2889442.813	596522.741	335.772	MREB
501	2889791.501	596693.758	326.641	MBMK
502	2889503.467	596531.670	332.484	MBMK

CONSTRUCTION BASELINE DATA DEPOT ST								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L1	10+00.00	2889379.514	596466.418		N19°24'51"E 60.93'	10+60.93	2889436.977	596486.670
C1	10+60.93	2889436.977	596486.670	R=4000.00 L=154.13' T=77.08'		12+15.06	2889581.324	596540.691
L2	12+15.06	2889581.324	596540.691		N21°37'20"E 209.94'	14+25.00	2889776.490	596618.050

CONSTRUCTION BASELINE DATA BL-FOLLETTE							
NUMBER	STARTING STATION	NORTHING	EASTING	LINE DATA	ENDING STATION	NORTHING	EASTING
L3	0+00.00	2889732.942	596600.789	N50°36'00"E 125.00'	1+25.00	2889812.284	596697.380

CONSTRUCTION BASELINE DATA - DEPOT STREET							
NUMBER	STARTING STATION	NORTHING	EASTING	LINE DATA	ENDING STATION	NORTHING	EASTING
L4	0+00.00	2889711.306	596592.213	N26°16'45"W 150.00'	1+50.00	2889845.803	596525.801

BENCHMARKS				
POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
501	2889791.501	596693.758	326.641	MBMK
502	2889503.467	596531.670	332.484	MBMK



PROPOSED GRANITE BOUNDS				PROPOSED GRANITE BOUNDS			
POINT #	DESCRIPTION	NORTHING	EASTING	POINT #	DESCRIPTION	NORTHING	EASTING
101	GRAN BOUND 1	2889575.849	596515.019	108	GRAN BOUND 8	2889754.297	596550.566
102	GRAN BOUND 2	2889584.151	596494.076	109	GRAN BOUND 9	2889552.833	596559.518
103	GRAN BOUND 3	2889607.515	596503.307	110	GRAN BOUND 10	2889571.811	596583.972
104	GRAN BOUND 4	2889612.678	596521.988	111	GRAN BOUND 11	2889592.243	596575.139
105	GRAN BOUND 5	2889698.699	596556.085	112	GRAN BOUND 12	2889689.066	596613.517
106	GRAN BOUND 6	2889708.445	596559.342	113	GRAN BOUND 13	2889719.463	596633.367
107	GRAN BOUND 7	2889751.652	596543.399	114	GRAN BOUND 14	2889721.025	596631.846

LEGEND:
 XX.XX: PROPOSED GRADE
 (XX.XX): EXISTING GRADE
 XX.XX(B): PROP BOTTOM OF CURB
 XX.XX(T): PROP TOP OF CURB

0 20 50 100
 SCALE: 1" = 20'

SURVEY TRAVERSE POINT TIES

SCALE: 1" = 40'

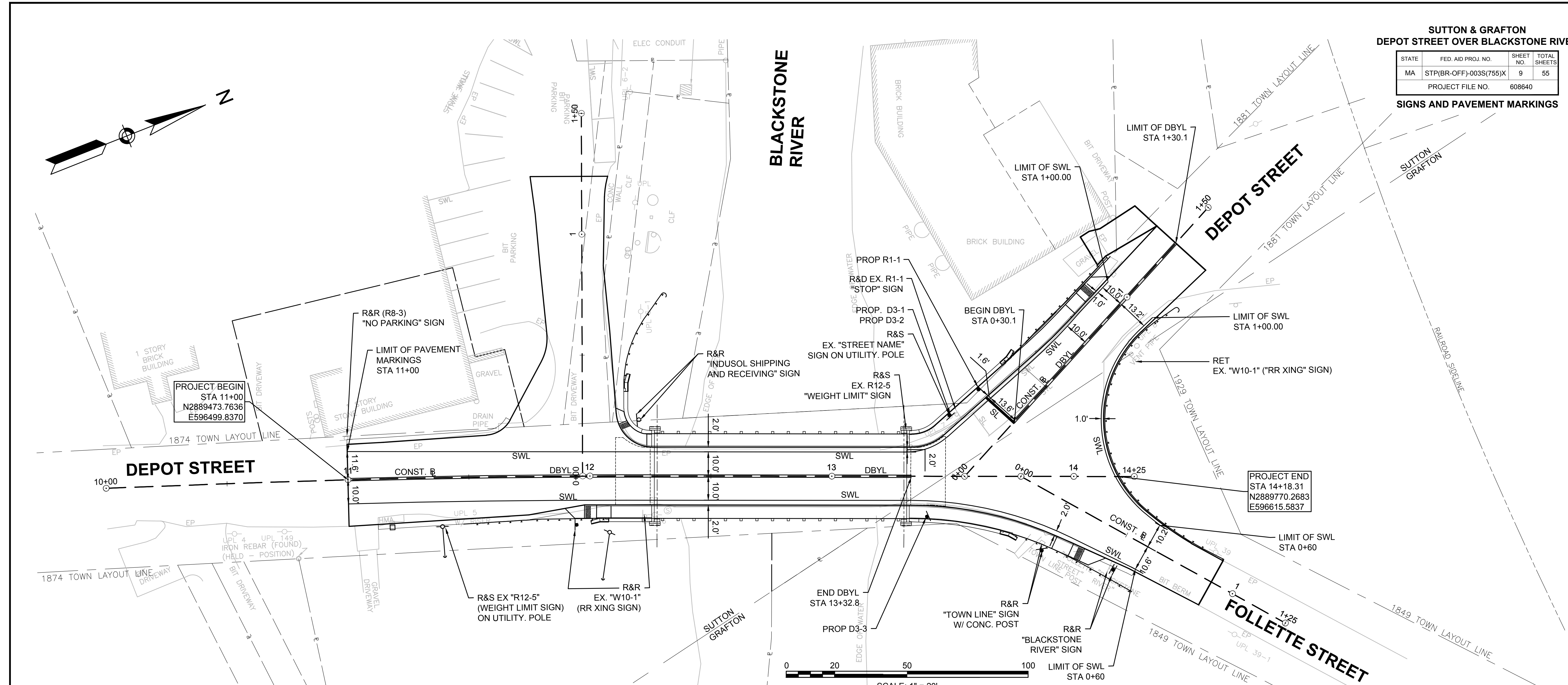
SCALE: 1" = 40'

SCALE: 1" = 20'

**SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER**

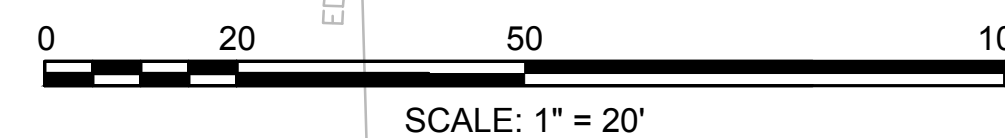
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	9	55
PROJECT FILE NO.		608640	

SIGNS AND PAVEMENT MARKINGS



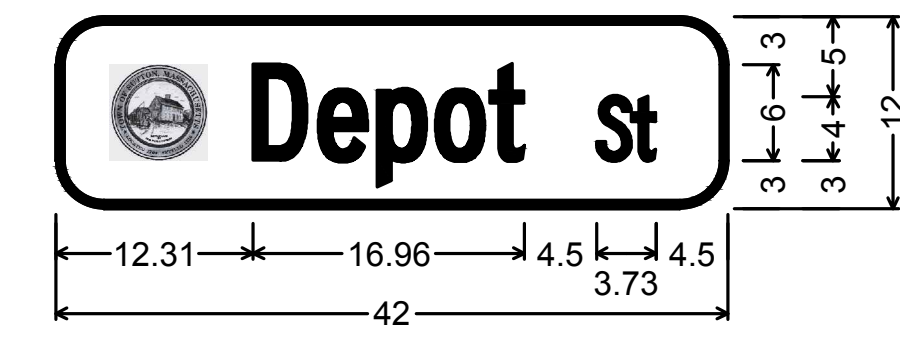
PROJECT BEGIN
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E596499.8370

PROJECT END
STA 14+18.31
N2889770.2683
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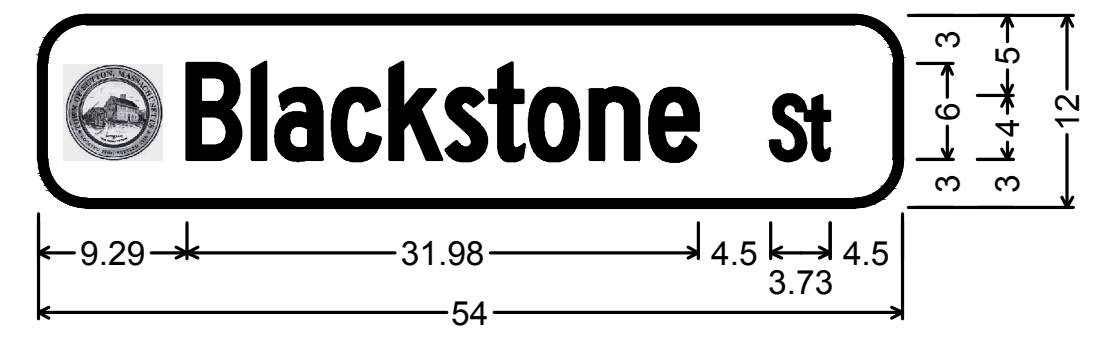


TRAFFIC SIGN SUMMARY

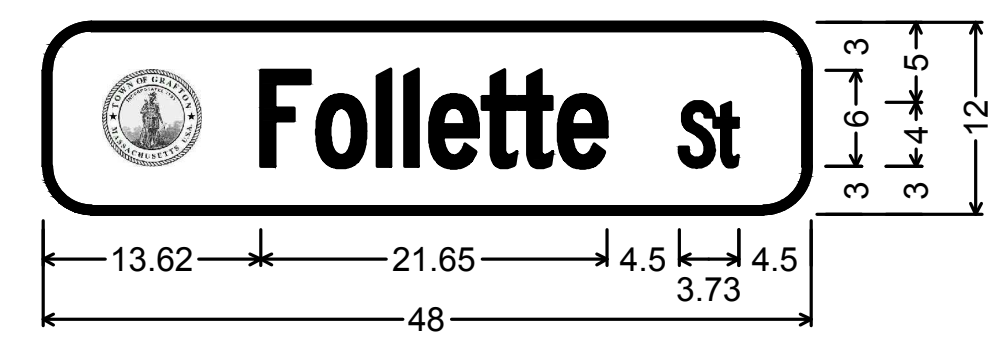
IDENTIFICATION NUMBER	SIZE OF SIGN			TEXT	TEXT DIMENSIONS (INCHES)			NUMBER OF SIGNS REQUIRED	COLOR			POST SIZE AND NUMBER REQUIRED
	WIDTH	HEIGHT	AREA		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.		BACK-GROUND	LEGEND	BORDER	
D3-1	42"	12"	3.5	Depot st	SEE DETAIL THIS SHEET			1	GREEN	WHITE	WHITE	P-5 (1)
D3-2	54"	12"	4.5	Blackstone st	SEE DETAIL THIS SHEET			1	GREEN	WHITE	WHITE	MOUNT W/ D3-1
D3-3	48"	12"	4.0	Follette st	SEE DETAIL THIS SHEET			1	GREEN	WHITE	WHITE	P-5 (1)
R1-1	30"	30"	6.25	STOP	SEE MUTCD STANDARDS			1	RED	WHITE	WHITE	P-5 (1)



D3-1 STREET NAME SIGN



D3-2 STREET NAME SIGN



D3-3 STREET NAME SIGN

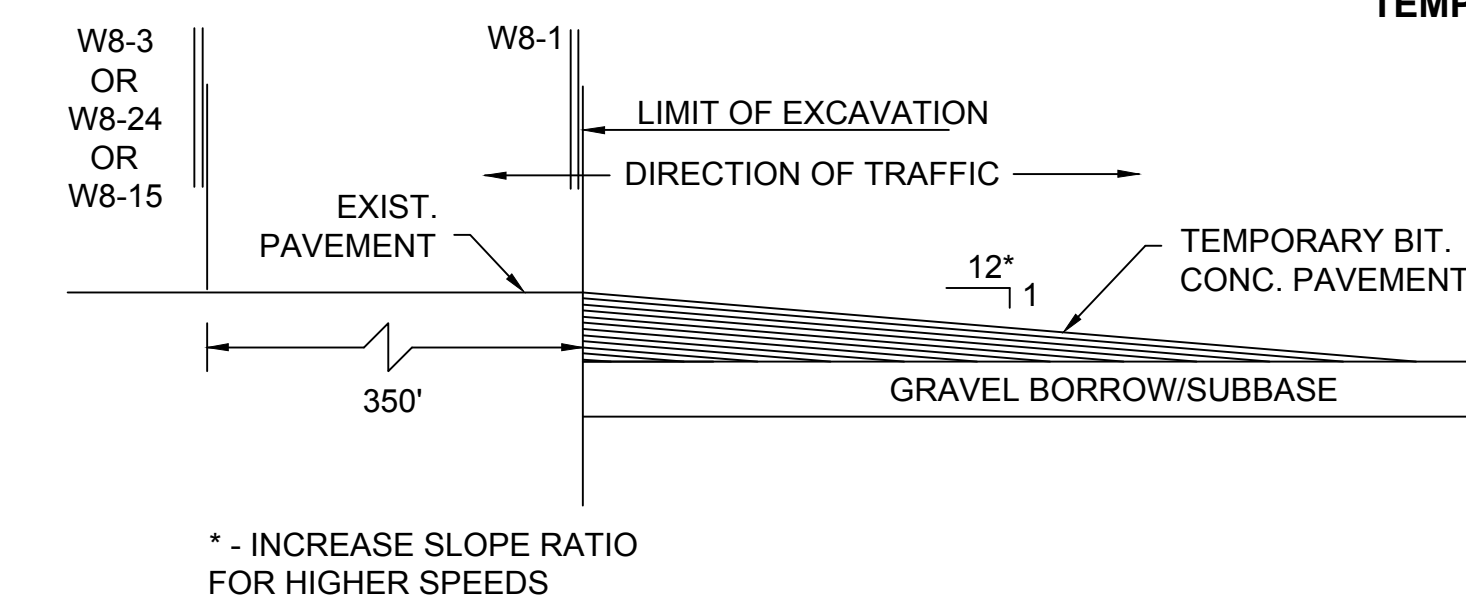
NOTE: THE CONTRACTOR SHALL COORDINATE WITH THE TOWN OF SUTTON AND THE TOWN OF GRAFTON FOR USE OF RELEVANT TOWN SEALS ON STREET SIGNS.

NOTE: ALL STREET NAME SIGN DIMENSIONS SHOWN ARE IN INCHES

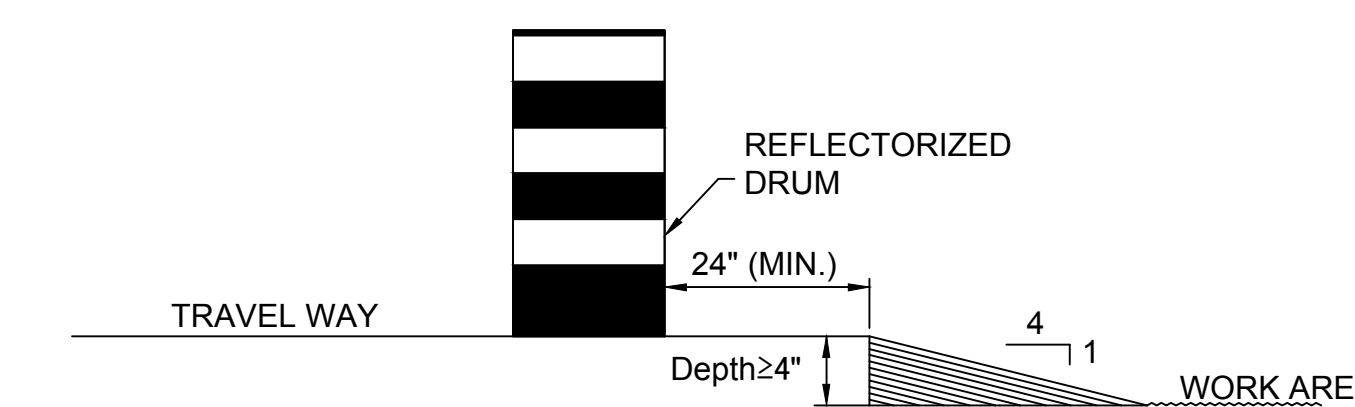
SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	10	55
PROJECT FILE NO.		608640	

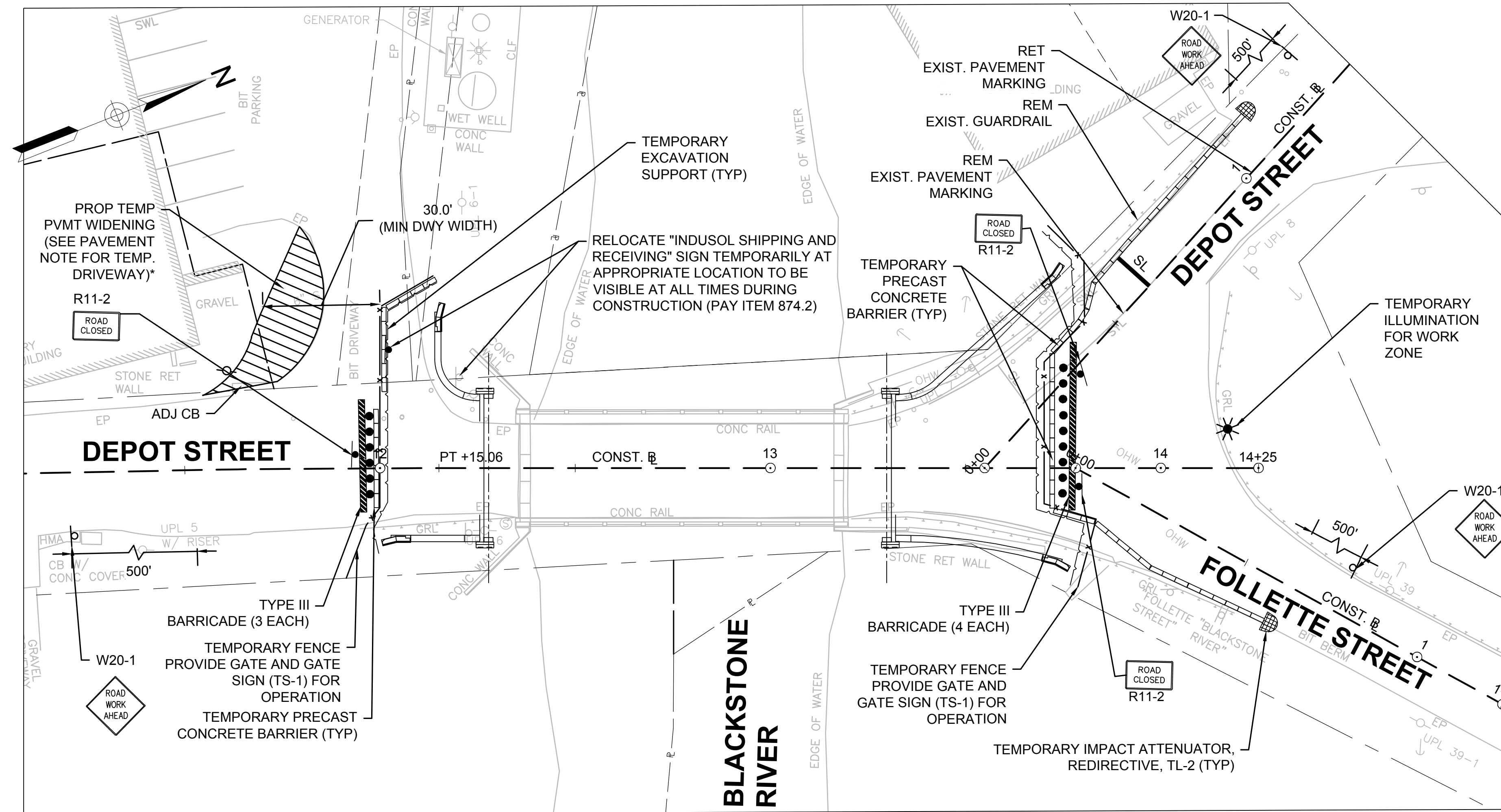
TEMPORARY TRAFFIC CONTROL PLAN
BRIDGE CLOSURE



LONGITUDINAL DROP-OFF DETAIL
 NOT TO SCALE



LATERAL DROP-OFF DETAIL
 NOT TO SCALE



TEMPORARY BRIDGE CLOSURE PLAN
 SCALE: 1" = 20'

NOTES:

- ALL TEMPORARY TRAFFIC CONTROL WORK SHALL CONFORM TO THE LATEST EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) AND ALL REVISIONS, UNLESS SUPERCEDED BY THESE PLANS.
- PLACEMENT OF ALL CONSTRUCTION SIGNS, DRUMS, BARRICADES, TRAFFIC DEVICES AND THE SHAPE, SIZE & COLOR, LEGENDS, BORDERS, AND MOUNTING OF ALL TEMPORARY TRAFFIC SIGNS SHALL CONFORM WITH THE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND AMENDMENTS.
- TEMPORARY CONSTRUCTION SIGNING AND ALL OTHER TRAFFIC CONTROL DEVICES SHALL BE IN PLACE PRIOR TO THE START OF ANY WORK.
- ADVANCE WARNING SIGN PLACEMENT AND TAPER LENGTH SHALL BE ADJUSTED ACCORDING TO STREET CONDITIONS AND DRIVEWAY OPENINGS. ALL DRUMS SHALL BE APPROXIMATELY PLACED AND RELOCATED AS NECESSARY TO MAINTAIN ADEQUATE ABUTTER ACCESS AT ALL TIMES.
- TEMPORARY CONSTRUCTION SIGNING, BARRICADES, AND ALL OTHER NECESSARY WORK ZONE TRAFFIC CONTROL DEVICES SHALL BE REMOVED FROM THE HIGHWAY OR COVERED WHEN THEY ARE NOT REQUIRED FOR CONTROL OF TRAFFIC.
- SIGNS AND SIGN SUPPORTS LOCATED ON OR NEAR THE TRAVELED WAY, CHANNELIZING DEVICES, BARRIERS, AND CRASH ATTENUATORS MUST PASS THE CRITERIA SET FORTH IN NCHRP REPORT 350, "RECOMMENDED PROCEDURES FOR THE SAFETY PERFORMANCE EVALUATION OF HIGHWAY FEATURES" AND/OR "MANUAL FOR ASSESSING SAFETY HARDWARE" (MASH).
- CONTRACTORS SHALL NOTIFY EACH ABUTTER AT LEAST 24 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE THE TEMPORARY CLOSURE OF ACCESS, SUCH AS CONDUIT INSTALLATION, EXISTING PAVEMENT EXCAVATION, TEMPORARY DRIVEWAY PAVEMENT PLACEMENT, AND SIMILAR OPERATIONS.
- NO DIFFERENCE IN ROADWAY LANE ELEVATION WILL BE ALLOWED AT THE END OF THE WORK DAY.
- THE CONTRACTOR SHALL SUBMIT ANY REVISIONS TO THE CONSTRUCTION ZONE SAFETY PLAN TO THE ENGINEER FOR APPROVAL.
- THIS CONSTRUCTION ZONE SAFETY PLAN SHALL NOT RELIEVE THE CONTRACTOR OF HIS SOLE RESPONSIBILITY FOR CONSTRUCTION SITE SAFETY.
- THE CONTRACTOR SHALL COORDINATE WITH THE TOWNS OF SUTTON AND GRAFTON FOR THE DETOUR AND THE TEMPORARY TRAFFIC CONTROL.
- PORTABLE BREAKAWAY BARRICADE TYPE III SHALL HAVE WARNING LIGHTS.
- THE CONTRACTOR SHALL COORDINATE WITH THE LOCAL FIRE DEPARTMENT FOR ACCESS TO FIRE HYDRANTS DURING DIFFERENT STAGES OF CONSTRUCTION AND DURING BRIDGE CLOSURE.
- ADVISORY SPEED PLATES (W13-1p) SHALL BE USED IF APPLICABLE AND AS DIRECTED BY THE ENGINEER.

LEGEND:

- REFLECTORIZED PLASTIC DRUM OR 36" CONE
- P/F POLICE/FLAGGER DETAIL
- ▨ TYPE III BARRICADE
- CHANGEABLE MESSAGE SIGN
- ARROW BOARD
- 🚚 WORK VEHICLE
- 🚛 TRUCK MOUNTED ATTENUATOR
- ▨ WORK ZONE
- ➔ DIRECTION OF TRAFFIC
- 🛑 IMPACT ATTENUATOR
- ▭ MEDIAN BARRIER
- ▭ MEDIAN BARRIER WITH WARNING LIGHTS
- ⬅️ ● TRAFFIC OR PED SIGNAL
- SIGN
- SL STOP LINE

TEMPORARY DRIVEWAY WIDENING:

- 1 1/2" HMA SURFACE COURSE OVER (PAY ITEM 472.)
- 2 1/2" HMA INTERMEDIATE COURSE OVER (PAY ITEM 472.)
- 8" GRAVEL BORROW, TYPE B (PAY ITEM 151.)

*** TEMPORARY DRIVEWAY CONSTRUCTION ACTIVITY:**

- REMOVE EXISTING CRUSHED STONES WITHIN AREA OF TEMPORARY DRIVEWAY WIDENING LIMITS SHOWN WITH HATCH AND STOCKPILE AT THE CORNER OF DRIVEWAY.
- PLACE TEMPORARY DRIVEWAY PAVEMENT.
- REMOVE TEMPORARY HMA PAVEMENT AFTER COMPLETION OF ROADWAY AND BRIDGE CONSTRUCTION.
- PLACE PROPOSED DRIVEWAY PAVEMENT AS PER FINISHED GRADE.
- PLACE STOCKPILED EXISTING PAVEMENT EVENLY BEYOND EDGE OF NEW DRIVEWAY PAVEMENT.

TEMPORARY TRAFFIC SIGN SUMMARY

MUTCD CODE	SIZE OF SIGN		SIGN	NUMBER OF SIGNS REQUIRED	TOTAL AREA (FT)
	WIDTH	HEIGHT			
R11-2	48"	30"	ROAD CLOSED	3	30
TS-1	48"	30"	DANGER AREA CLOSED TO VEHICLE, BICYCLE, AND PEDESTRIAN TRAFFIC	2	20
W8-1	48"	48"	BUMP	1	16
W8-3	48"	48"	PAVEMENT ENDS	1	16
W8-15	48"	48"	GROOVED PAVEMENT	1	16
W8-24	48"	48"	STEEL PLATE AHEAD	1	16
W13-1p	18"	18"	M.P.H.	2	4.5
W20-1	48"	48"	ROAD WORK AHEAD	3	48

* CUSTOM SIGN ON GATE

**SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	11	55
PROJECT FILE NO.		608640	

TEMPORARY TRAFFIC CONTROL PLAN

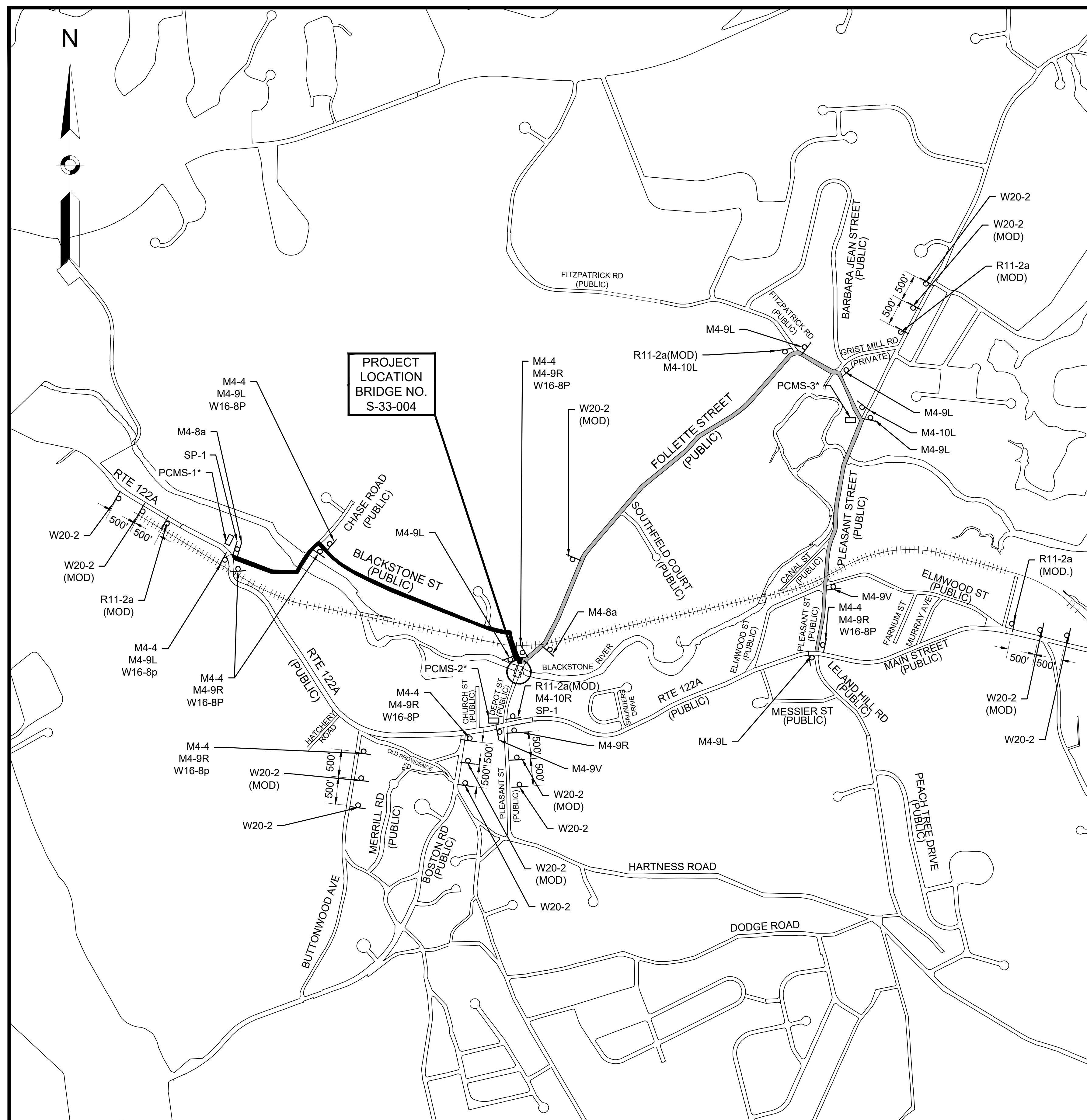
DETOUR SIGN SUMMARY

IDENTIFI- CATION NUMBER	SIZE OF SIGN		SIGN	NUMBER OF SIGNS REQUIRED	TOTAL AREA (SF)
	WIDTH	HEIGHT			
M4-4	36"	18"	TRUCKS	7	31.5
M4-8a	24"	18"	END DETOUR	2	6
M4-9L	48"	36"	DETOUR ←	7	84
M4-9R	48"	36"	DETOUR →	6	72
M4-9V	48"	36"	DETOUR ↑	2	24
M4-10L	48"	18"	← DETOUR	2	12
M4-10R	48"	18"	DETOUR →	1	6
R11-2a (MOD)	60"	30"	BRIDGE CLOSED DEPOT STREET LOCAL TRAFFIC ONLY	5	62.5
SP-1	60"	30"	INDUSOL OPEN DURING CONSTRUCTION	2	25
W16-8p	36"	18"	DEPOT ST	7	31.5
W20-2	36"	36"	DETOUR AHEAD	6	54
W20-2 (MOD)	36"	36"	TRUCKS DETOUR AHEAD	7	63

* EXACT LOCATION OF PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS) TO BE DETERMINED IN THE FIELD BY THE ENGINEER.

PCMS PRIOR TO CONSTRUCTION

MESSAGE #1	MESSAGE #2
DEPOT ST BRIDGE CLOSURE	BEGINS MMM DD

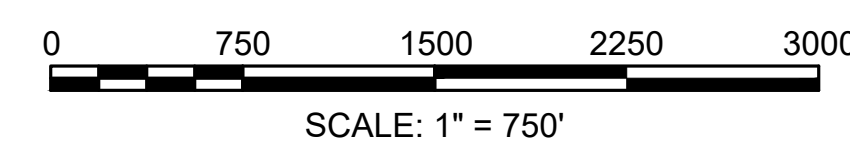


NOTES:

- ALL TEMPORARY TRAFFIC CONTROL SIGNS AND DEVICES ALONG THE DETOUR ROUTE SHALL BE INSTALLED WITHIN THE EXISTING PUBLIC RIGHT OF WAY.
- PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS) SHALL BE INSTALLED NO LESS THAN TWO WEEKS PRIOR TO BEGINNING OF CONSTRUCTION TO ALERT PUBLIC ABOUT BRIDGE CLOSURE AT DEPOT STREET.

LEGEND:

- WORK ZONE
- DETOUR ROUTE
- DETOUR ROUTE - TRUCK
- SIGN
- PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

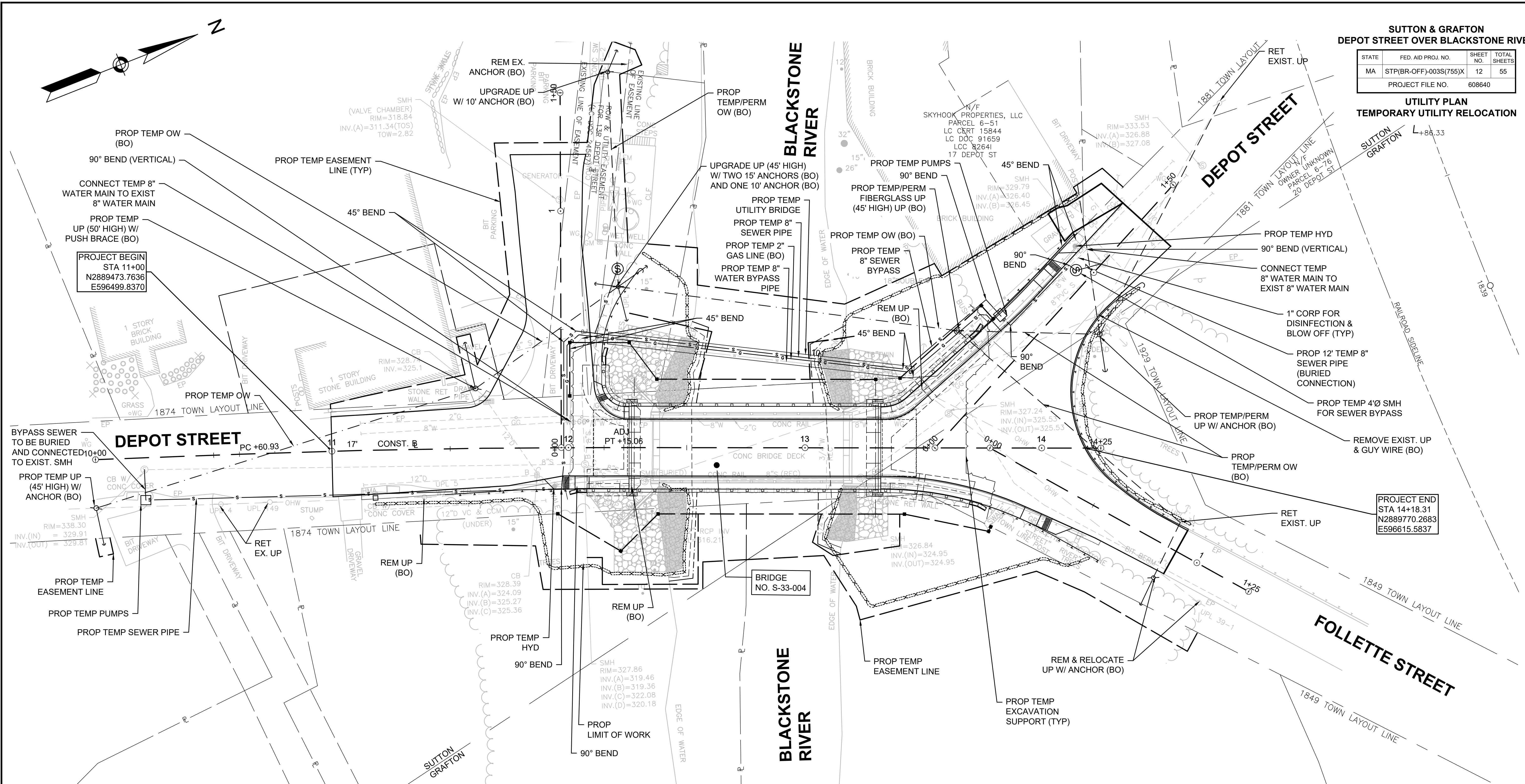


TRAFFIC DETOUR PLAN

**SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	12	55
PROJECT FILE NO.			608640

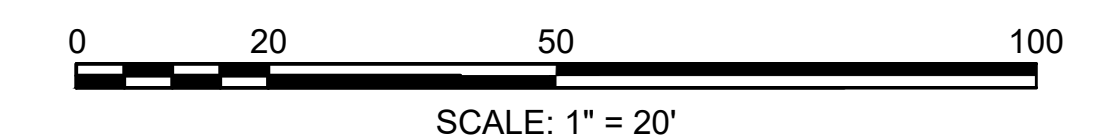
**UTILITY PLAN
TEMPORARY UTILITY RELOCATION**

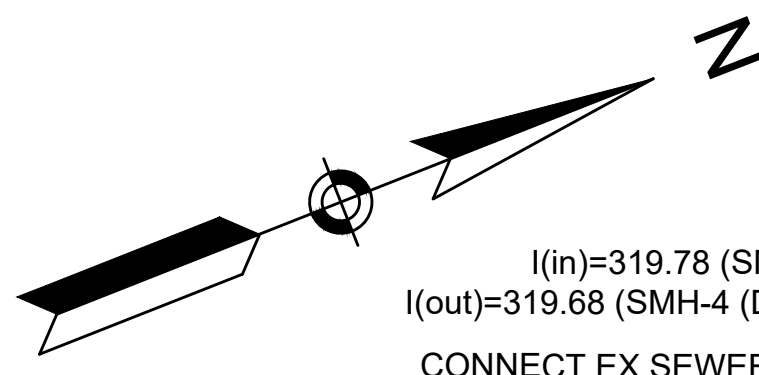


PROPOSED TEMPORARY UTILITY RELOCATION NOTES:

1. EXISTING OVERHEAD LINES AND POLES SHALL BE TEMPORARILY RELOCATED AS SHOWN IN THE UTILITY PLAN. POLE LOCATIONS AND SUPPORT POLE GUY WIRES SHALL BE LOCATED IN THE FIELD WITHIN THE PROPOSED LIMITS OF WORK AND PROPOSED TEMPORARY OR PERMANENT EASEMENT LINES.
2. EXISTING UNDERGROUND UTILITIES PRESENT ON SITE ARE WATER, SEWER AND GAS. A TEMPORARY UTILITY BRIDGE IS PROPOSED TO CARRY EACH UTILITY AS DEFINED BELOW ACROSS THE BLACKSTONE RIVER. CONTRACTOR IS RESPONSIBLE FOR COORDINATION WITH RESPECTIVE UTILITY OWNERS.
 - a. THE 2" GAS LINE THAT RUNS UNDER THE UPSTREAM BAY BETWEEN THE GIRDERS IS EXPECTED TO BE TEMPORARILY RELOCATED TO THE PROPOSED UTILITY BRIDGE. THE GAS LINE IS NOT EXPECTED TO BE ISOLATED.
 - b. THE 8" WATER MAIN THAT RUNS UNDER THE UPSTREAM BAY BETWEEN GIRDERS IS EXPECTED TO BE TEMPORARILY RELOCATED TO THE PROPOSED UTILITY BRIDGE. TEMPORARY HYDRANTS ON EITHER SIDE OF THE BRIDGE WILL BE PROVIDED TO SUPPORT TEMPORARY BYPASS OF THE WATER LINE.
 - c. THE EXISTING 8" GRAVITY SEWER IS PROPOSED TO BE BYPASS PUMPED FROM A NEW MANHOLE LOCATED ON THE NORTH SIDE OF THE BRIDGE TO THE EXISTING MANHOLE ON THE SOUTH SIDE OF THE BRIDGE.
 - d. THE 12" CONDUIT PIPE ALONG THE OUTSIDE, DOWNSTREAM GIRDER APPEARS TO BE ABANDONED. THIS CONDUIT WILL BE DEMOLISHED ALONG THE BRIDGE SUPERSTRUCTURE.
3. EXISTING UNDERGROUND UTILITIES ARE PROPOSED TO BE LOCATED UNDER THE BRIDGE AT THE COMPLETION OF CONSTRUCTION.
4. THE CONTRACTOR SHALL COORDINATE WITH THE LOCAL FIRE DEPARTMENT FOR THE ACCESS TO FIRE HYDRANTS DURING DIFFERENT STAGES OF UTILITY RELOCATION.
5. ALL EXISTING UTILITIES WITHIN THE LIMIT OF BRIDGE EXCAVATION LIMITS SHALL BE RELOCATED AND ALL EXISTING PIPES AND UTILITY STRUCTURES WITHIN BRIDGE EXCAVATION LIMITS SHALL BE REMOVED DURING BRIDGE CONSTRUCTION WORK.
6. THE CONTRACTOR SHALL PERFORM TEST PIT TO LOCATE THE EXISTING SEWER FORCE MAIN EXITS FROM THE PUMP STATION WITHIN THE PROJECT LIMIT.
7. THE CONTRACTOR SHALL MAINTAIN THE EXISTING 6" SEWER SERVICE CONNECTION TO 11 DEPOT STREET AND SHALL KEEP THE SERVICE ACTIVE DURING CONSTRUCTION WORK.

FOR PROPOSED UTILITY LOCATION, SEE SHEET #13

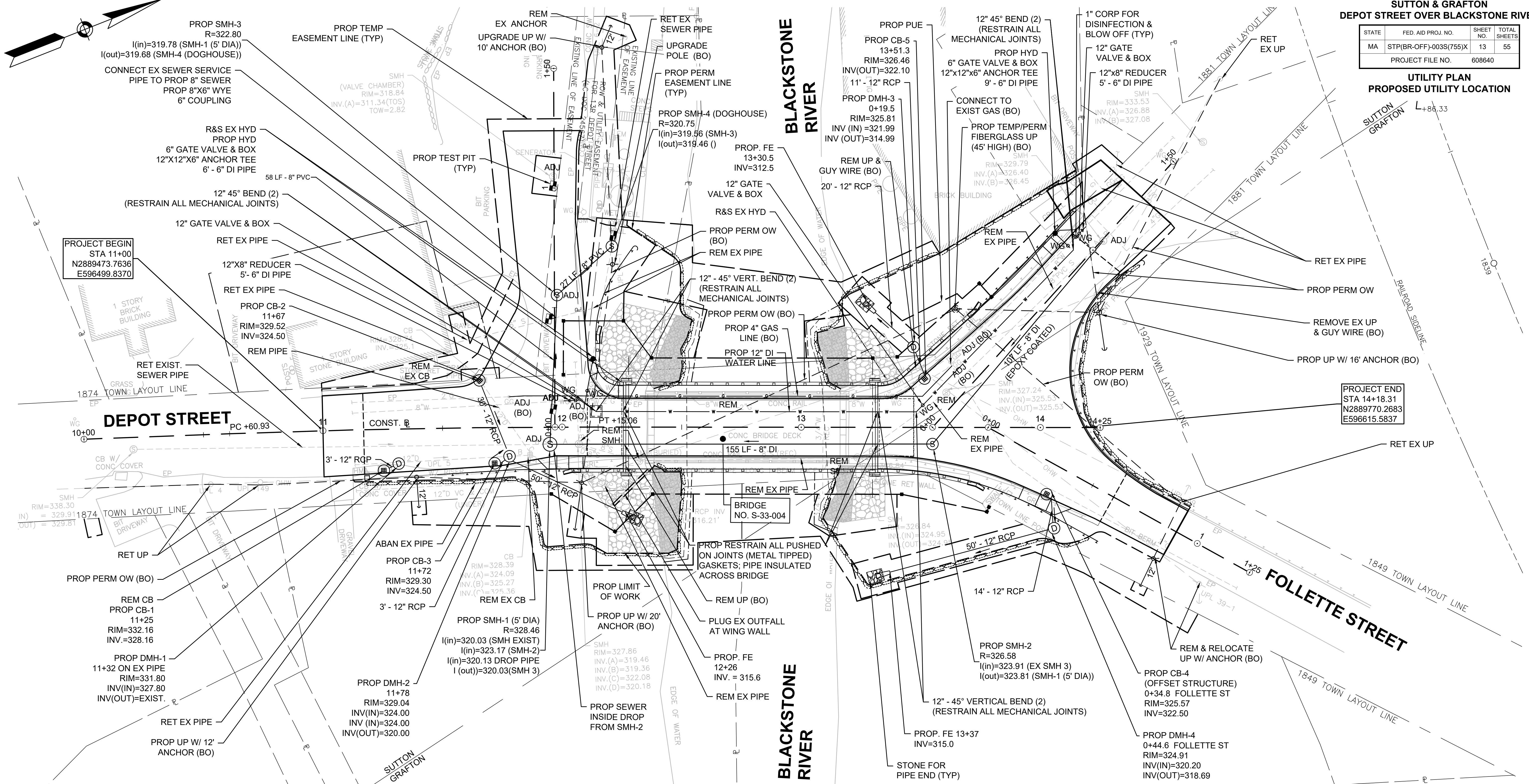




**SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	13	55
PROJECT FILE NO. 608640			

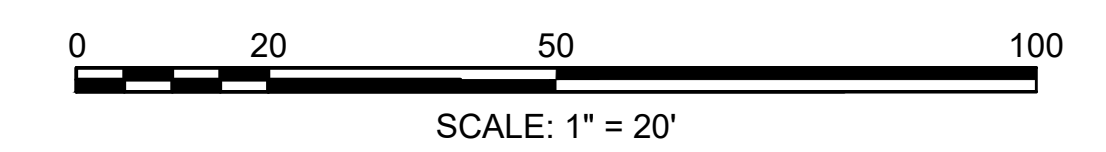
**UTILITY PLAN
PROPOSED UTILITY LOCATION**

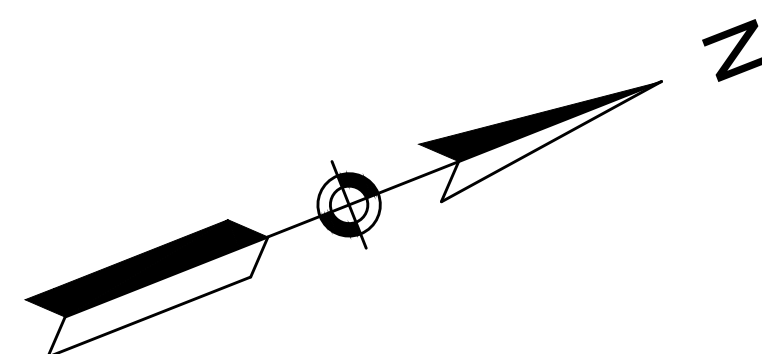


PROJECT BEGIN
STA 11+00
N2889473.7636
E596499.8370

PROJECT END
STA 14+18.31
N2889770.2683
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FOR TEMPORARY UTILITY RELOCATION, SEE SHEET #12

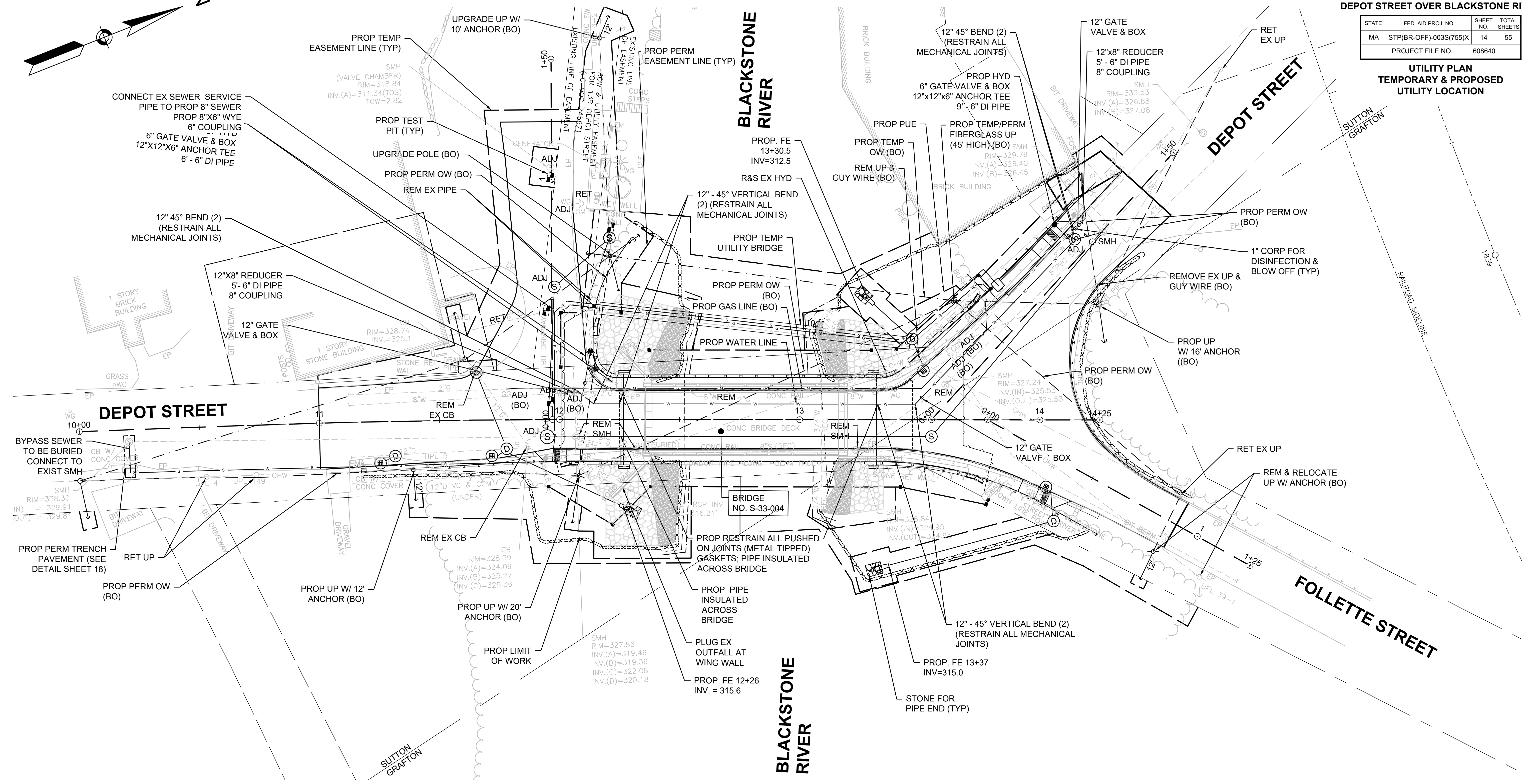




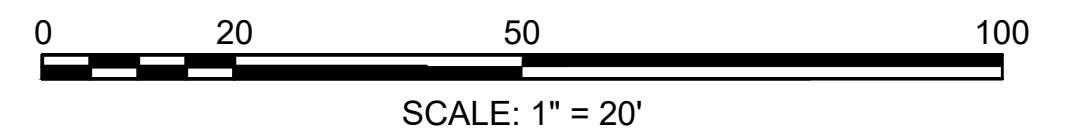
**SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	14	55
PROJECT FILE NO.		608640	

**UTILITY PLAN
TEMPORARY & PROPOSED
UTILITY LOCATION**



FOR TEMPORARY UTILITY RELOCATION, SEE SHEET #12



SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	15	55
PROJECT FILE NO.			608640

CONSTRUCTION DETAILS

TABLE 1 - DUCTILE IRON PIPE

REQUIRED LENGTH OF RESTRAINED JOINTS FROM FITTINGS (FEET)

PIPE SIZE	90° BEND	45° BEND OR WYE BRANCH	22 1/2° BEND	11 1/4° BEND	PLUG, CAP OR IN-LINE VALVE	TEE (BRANCH)
6"	25 (30.5)	10.5 (12.5)	5 (6)	2.5 (3)	43 (64)	34 (51)
8"	33 (40)	13.5 (16.5)	6.5 (8)	3 (4)	55 (82)	47 (70)
10"	40 (48.5)	16.5 (20)	8 (9.5)	4 (5)	67 (100)	58 (87)
12"	47 (56.5)	19.5 (23.5)	9.5 (11.5)	4.5 (5.5)	79 (118)	70 (105)
16"	59.5 (72)	24.5 (30)	12 (14.5)	6 (7)	101 (152)	92 (139)
20"	72 (86.5)	30 (36)	14.5 (17)	7 (8.5)	123 (184)	114 (171)
24"	84 (100)	35 (41)	16.5 (20)	8 (10)	144 (216)	134 (202)
30"	100 (120)	41 (50)	20 (24)	10 (12)	174 (261)	165 (247)

NOTES:

- RESTRAINED LENGTHS LISTED IN PARENTHESES ARE FOR PIPE WRAPPED IN POLYETHYLENE. THE OTHER ASSOCIATED LENGTHS ARE FOR PLAIN UNWRAPPED DUCTILE IRON PIPE.
- THE CONTRACTOR SHALL USE THIS TABLE IN CONJUNCTION WITH THE APPROPRIATE PIPE SPECIFICATION SECTION.

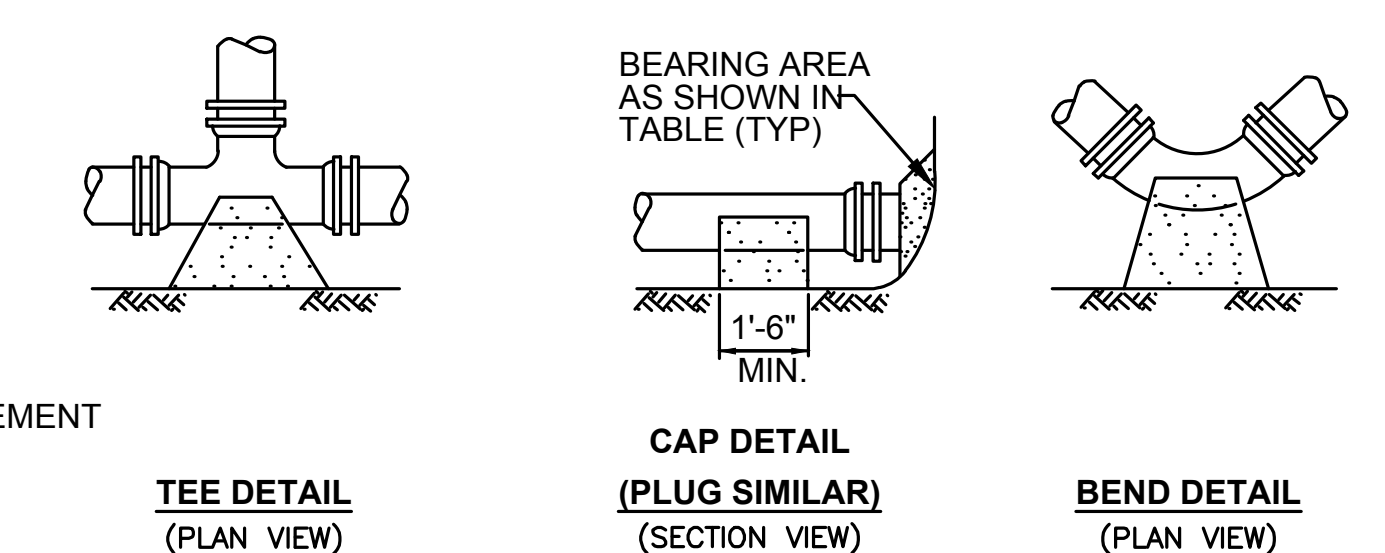
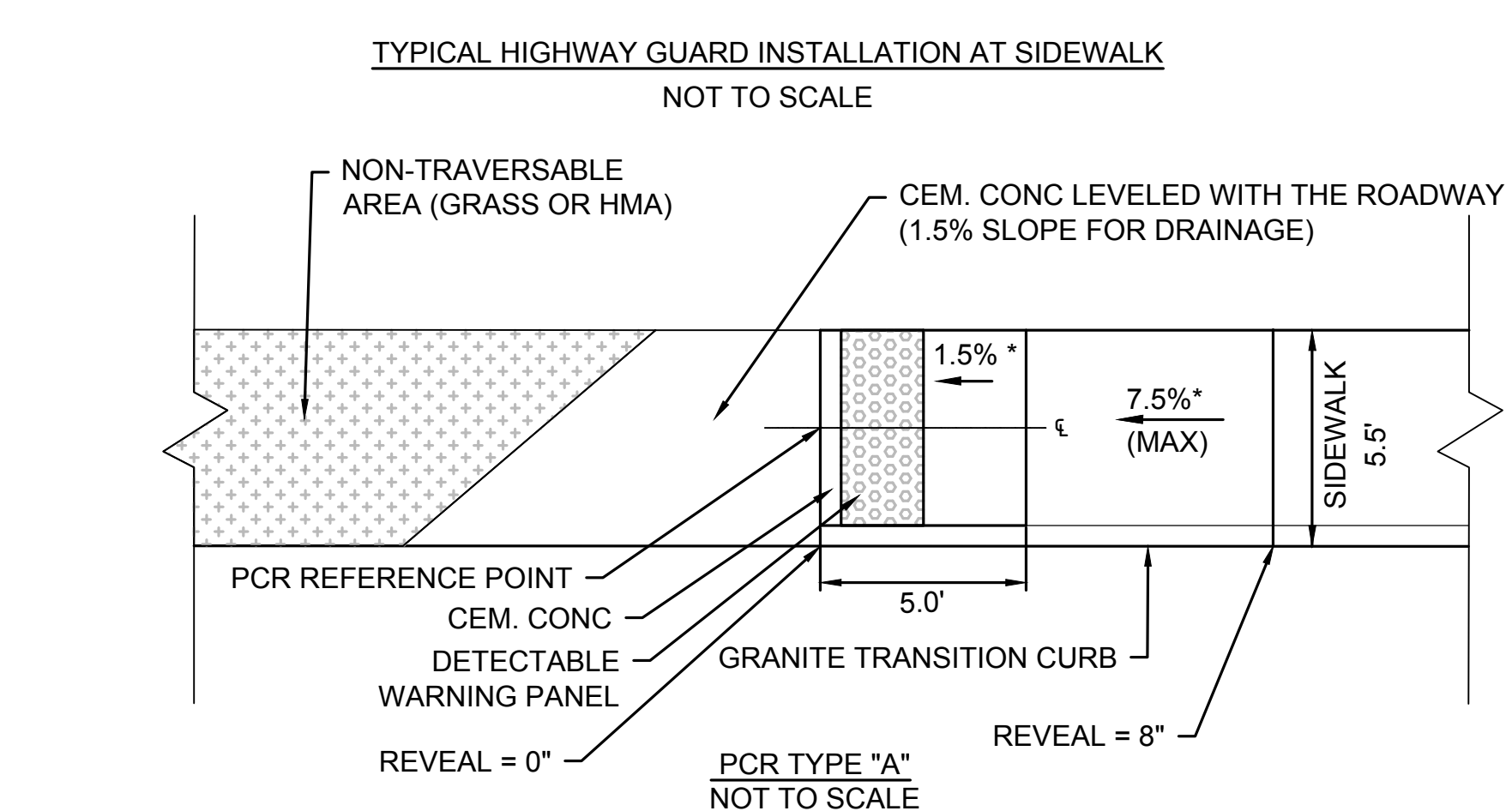
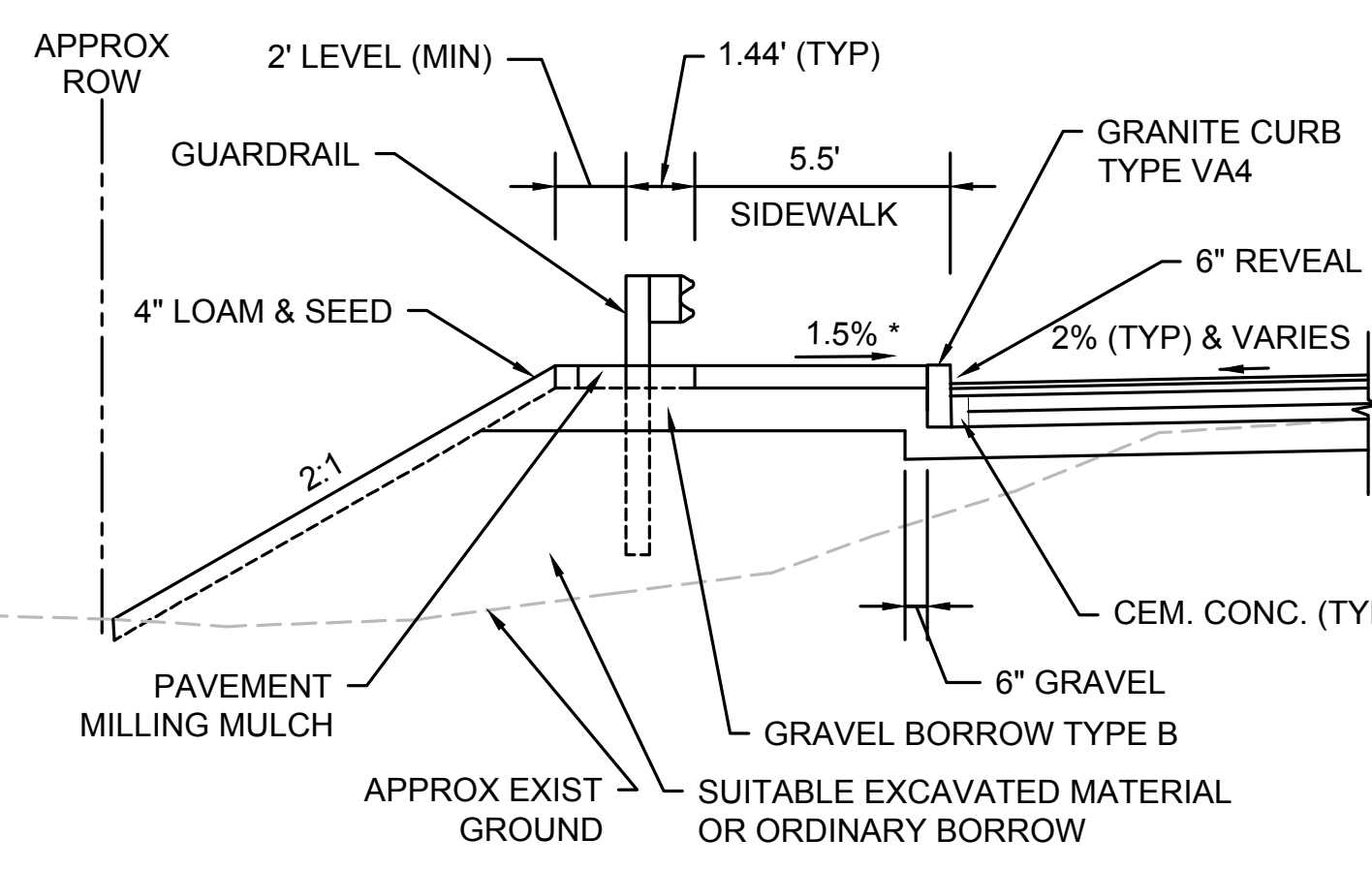
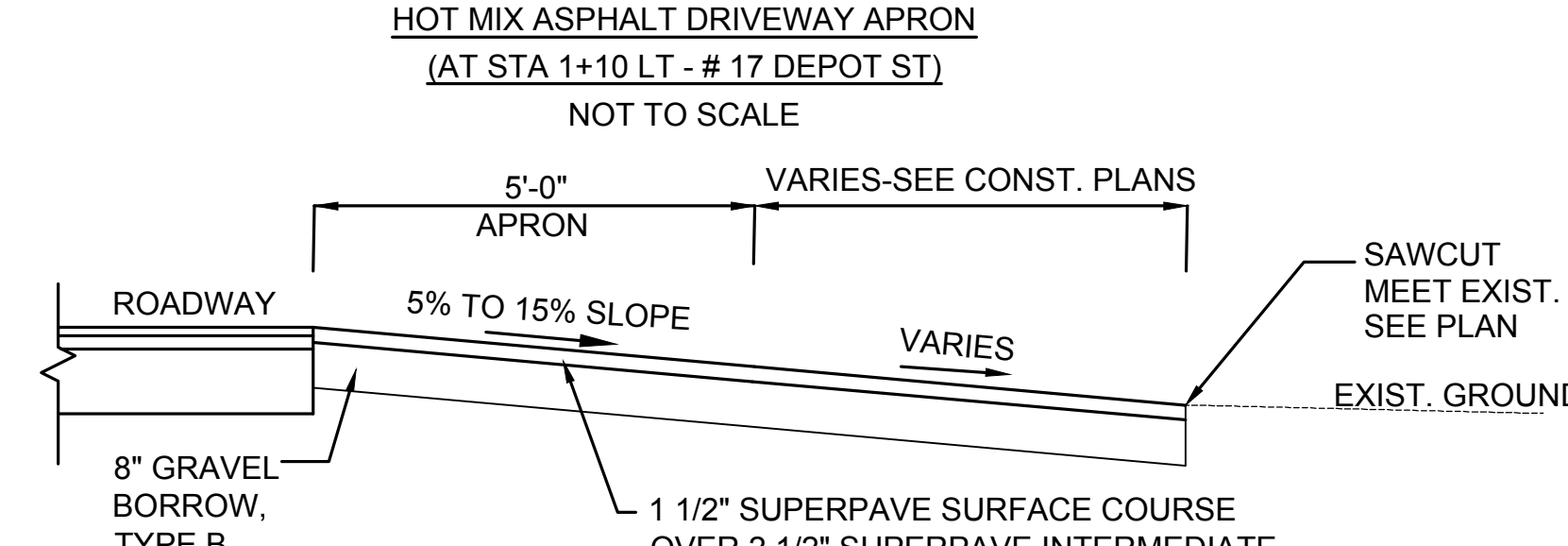
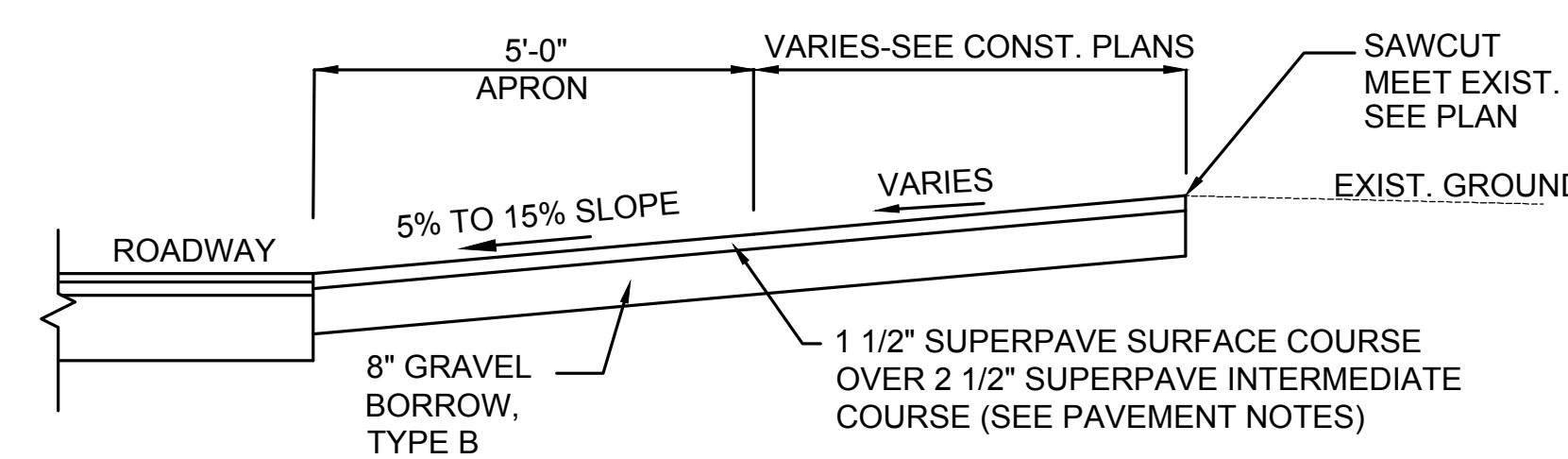
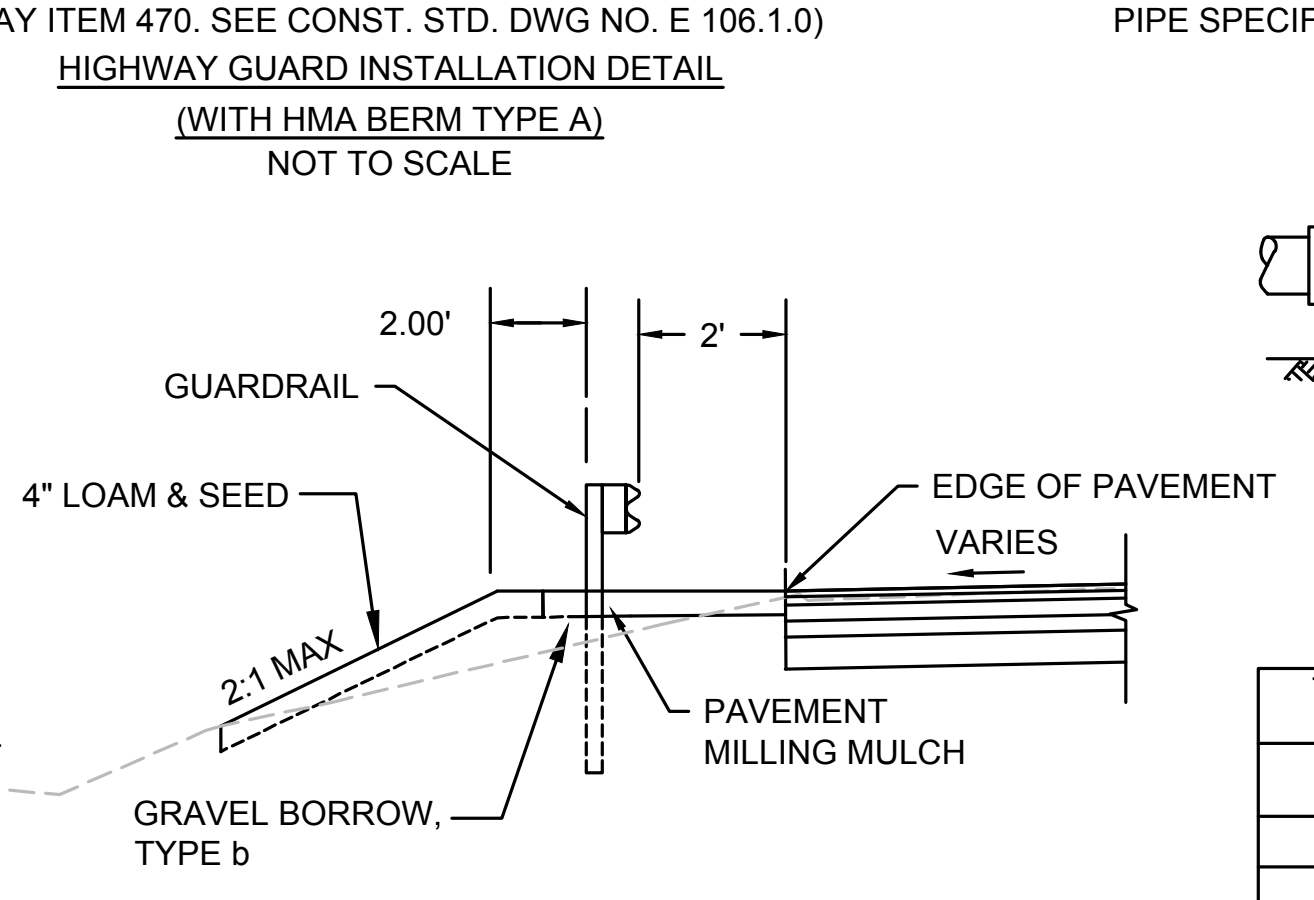
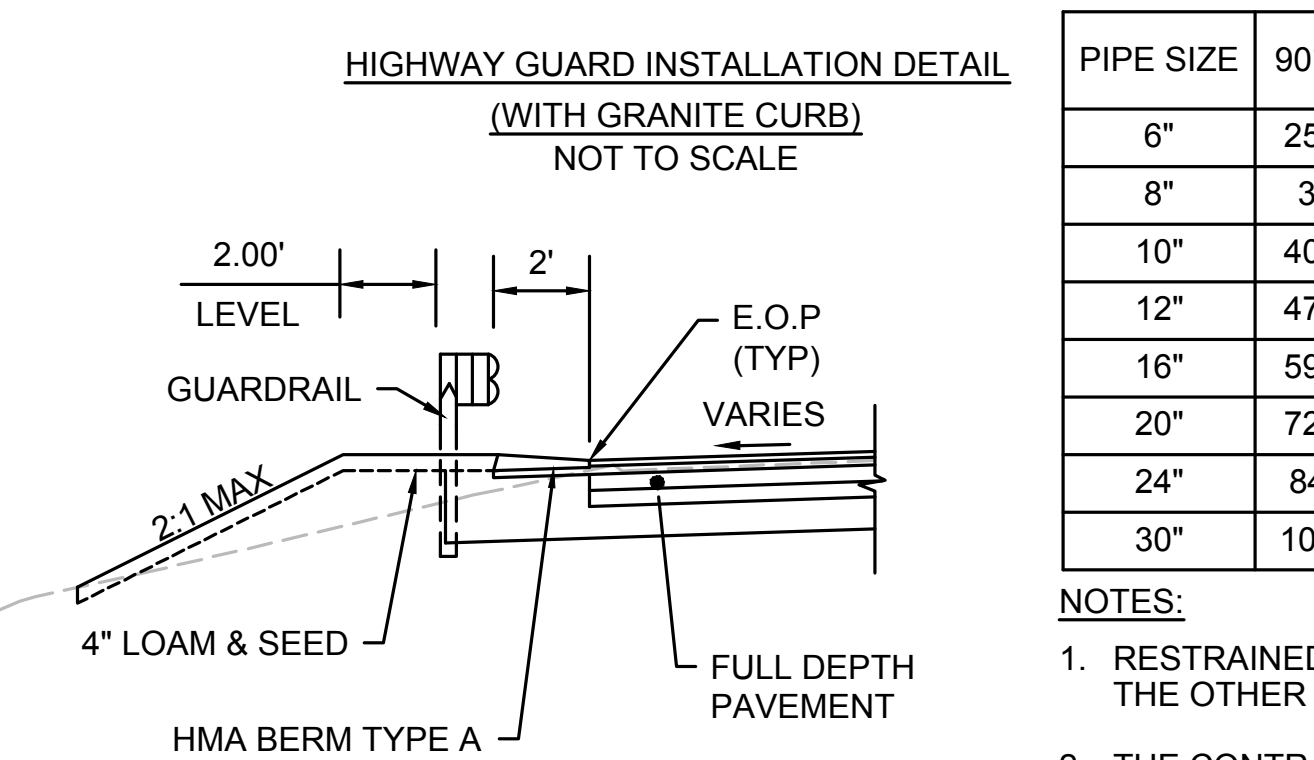
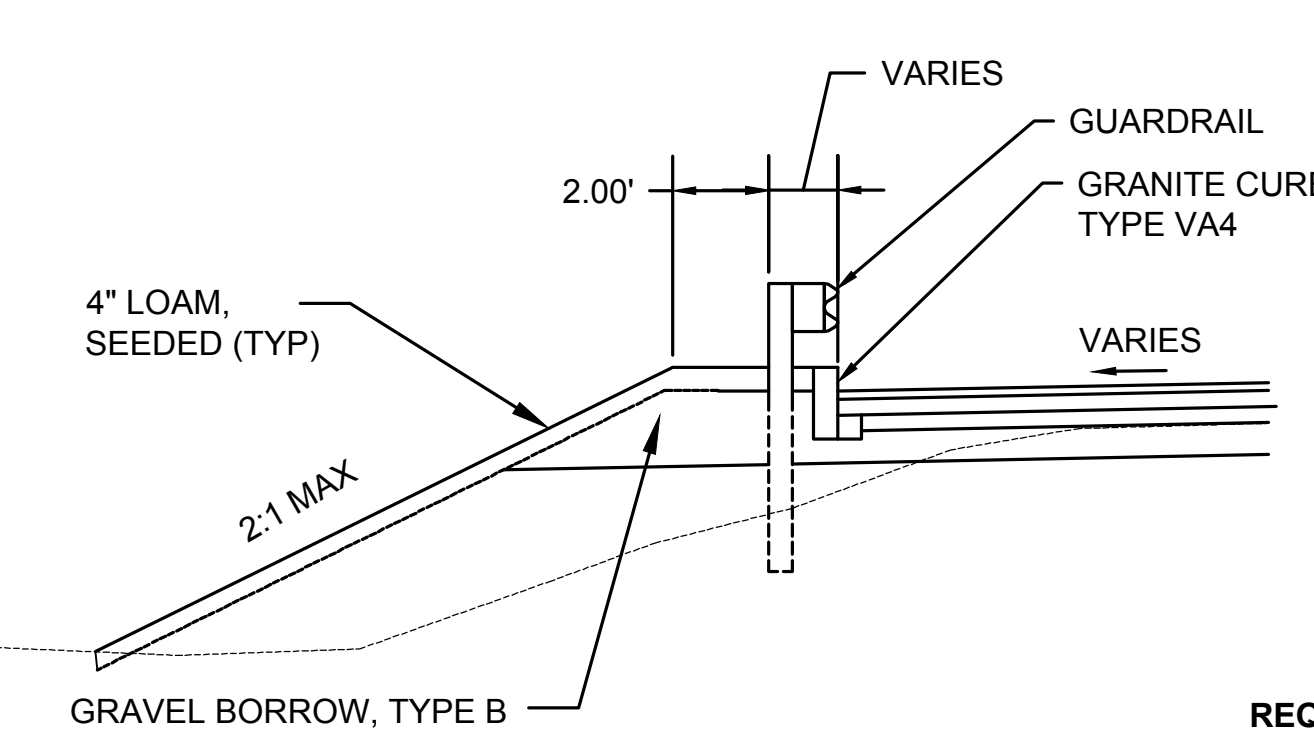
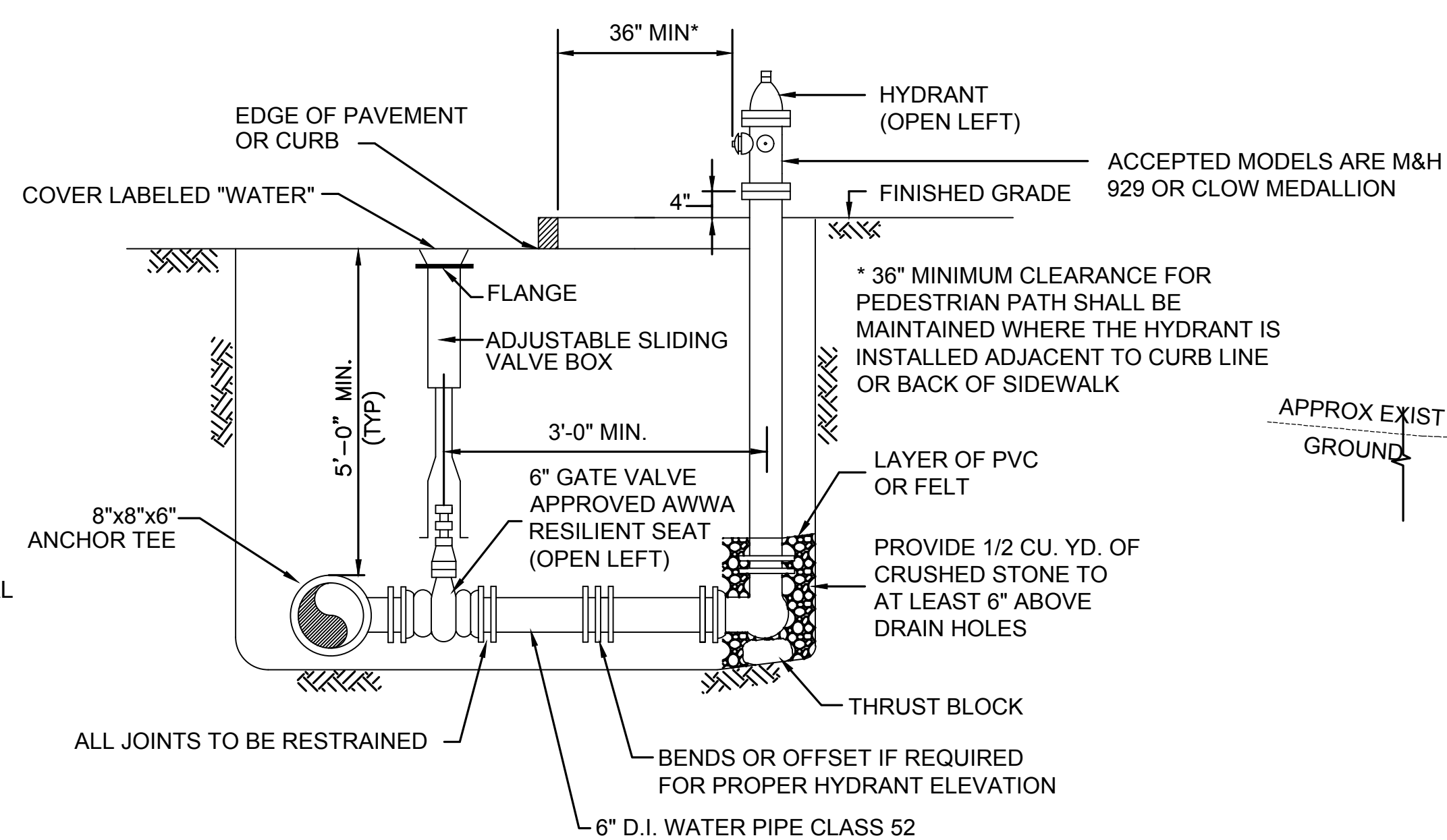
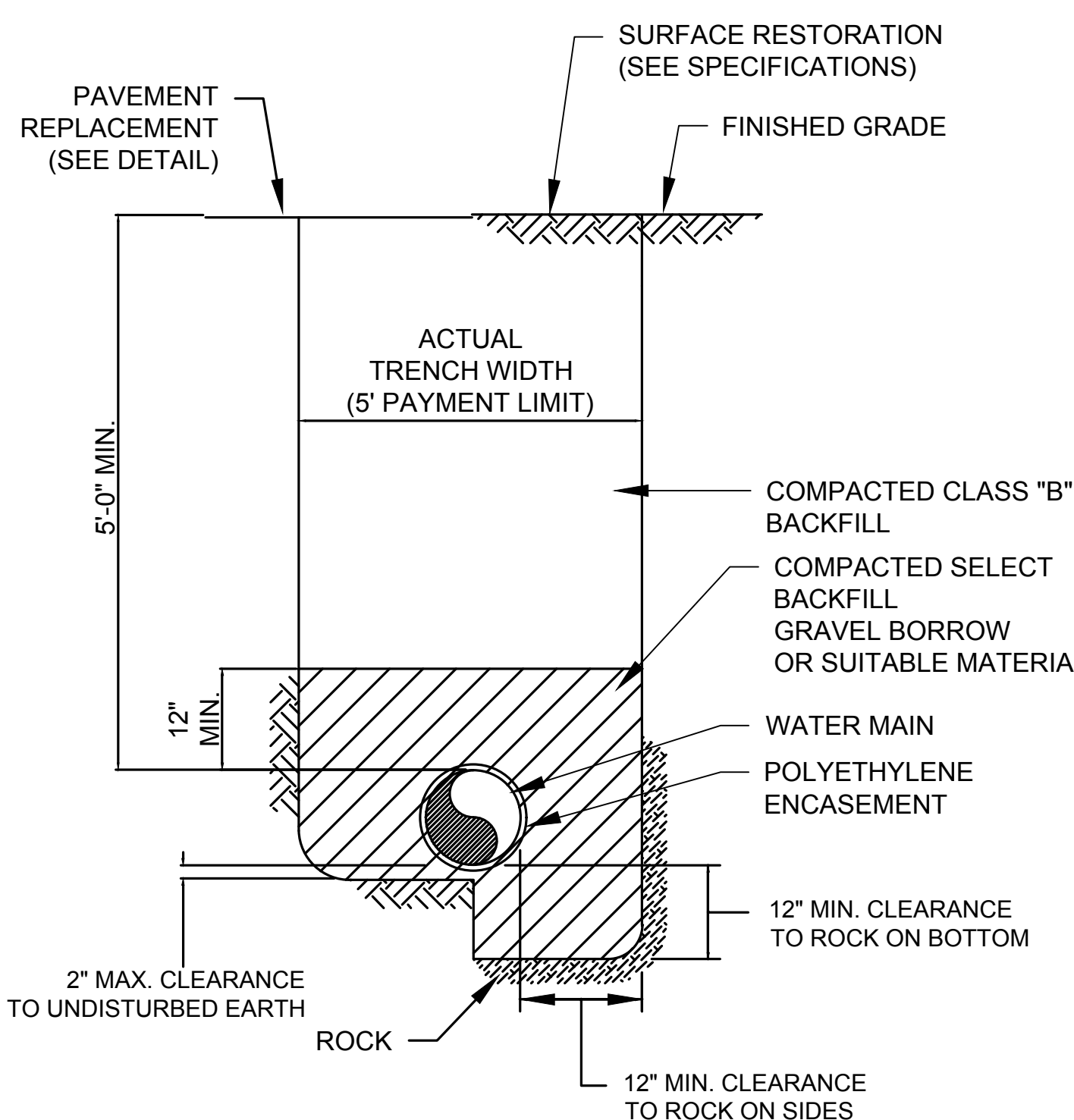


TABLE OF CONCRETE THRUST RESTRAINT MINIMUM BEARING AREAS IN SQUARE FEET AGAINST UNDISTURBED MATERIAL FOR WATER MAIN FITTINGS

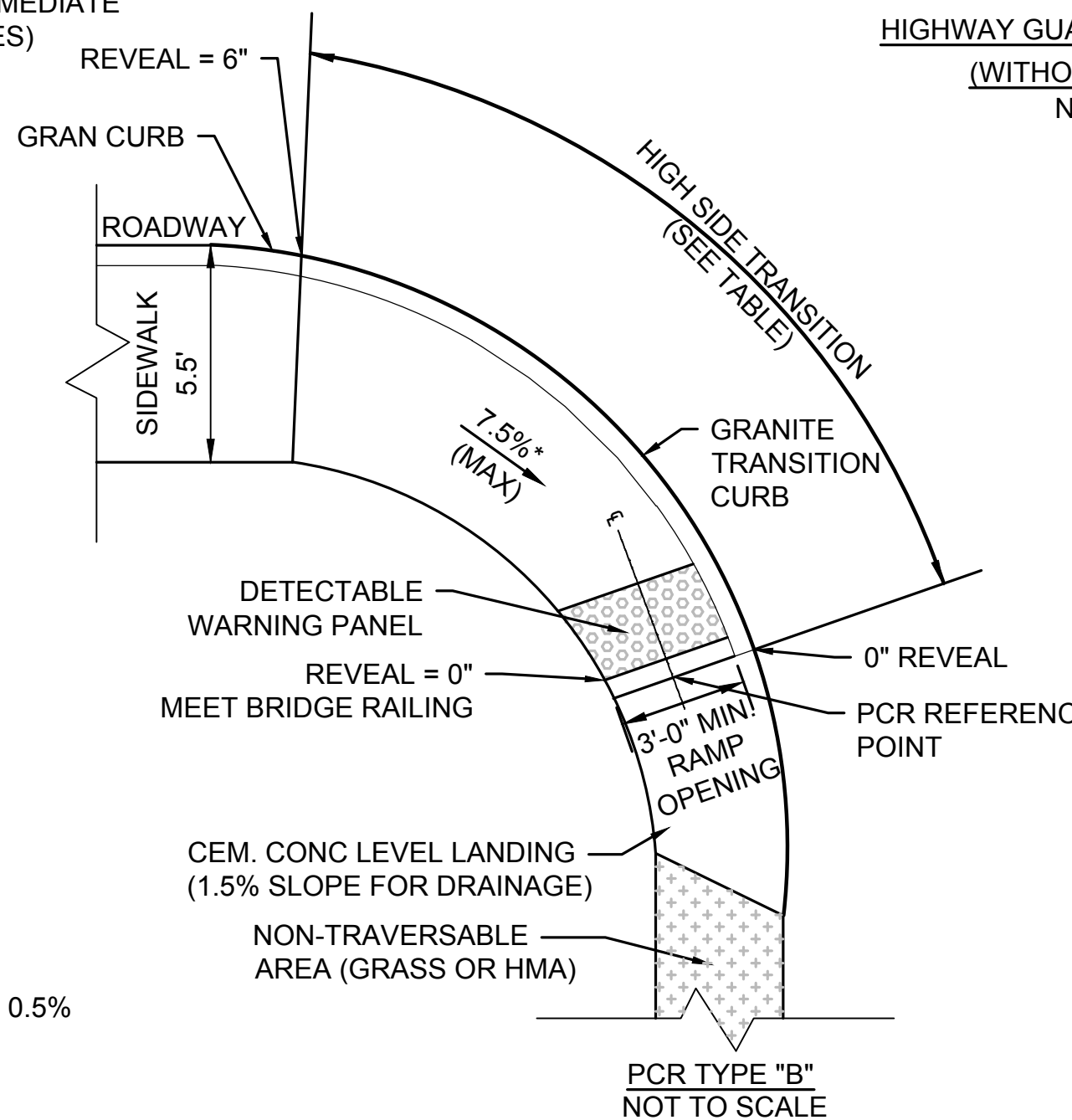
SIZE OF MAIN	90° BENDS, TEES, CAPS AND PLUGS	45° BENDS AND WYES	22-1/2° BENDS	11-1/4° BENDS
6", 8"	5	4	2	2
10", 12"	12	9	5	2

- NOTES:
- 3000 PSI CONCRETE THRUST RESTRAINT SHALL ONLY BE USED WHERE OTHER MEANS OF RESTRAINT ARE NOT FEASIBLE.
 - CONTRACTOR SHALL USE CARE TO AVOID PLACEMENT OF CONCRETE ON THE FITTING JOINTS

CONCRETE THRUST RESTRAINT FOR FITTINGS NOT TO SCALE



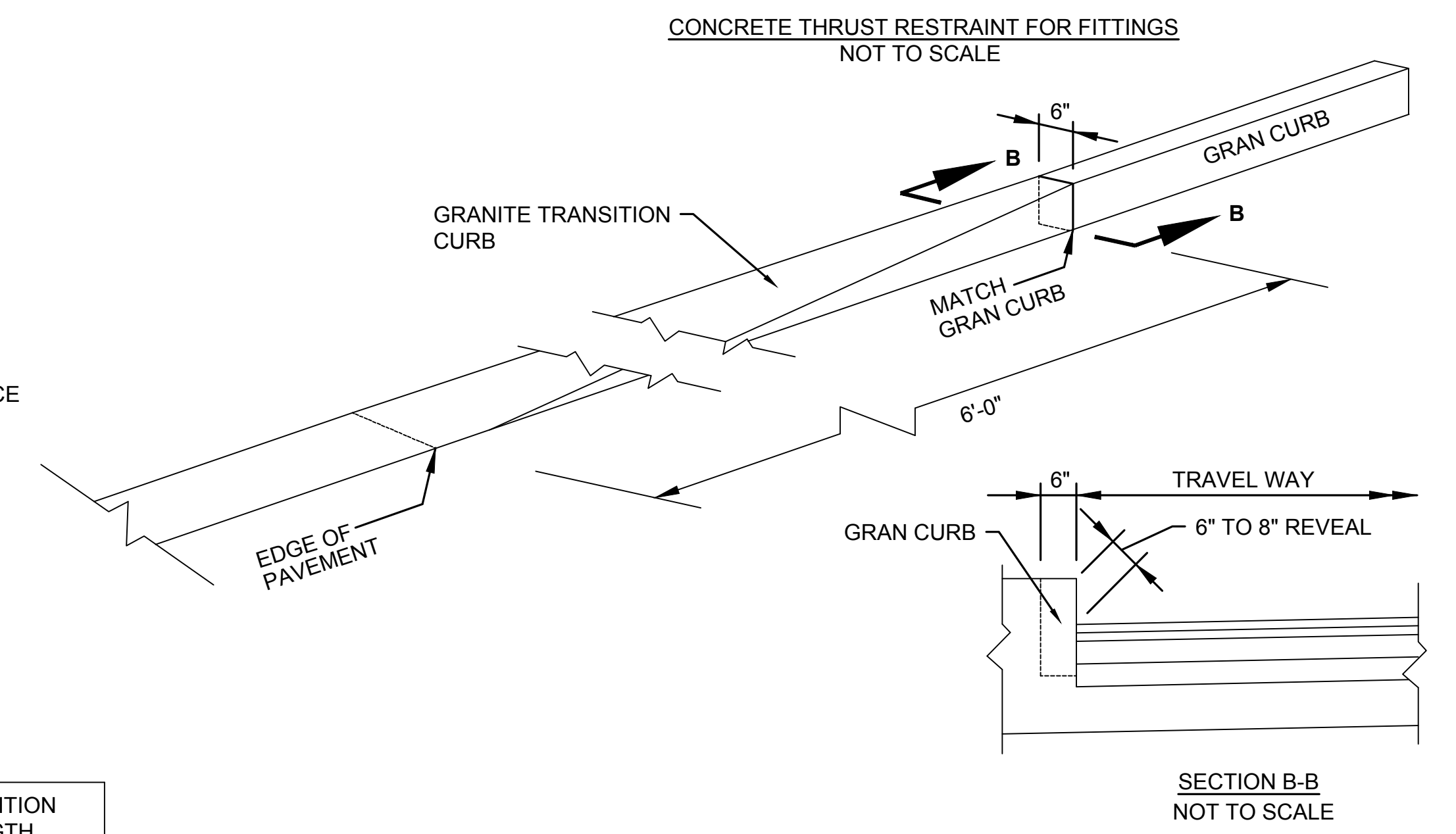
RAMP NO.	RAMP TYPE	RAMP REFERENCE POINT BASELINE		LENGTH OF PRIMARY RAMP	WIDTH OF SIDEWALK	WIDTH OF RAMP	DEPTH OF LEVEL LANDING	ROADWAY GUTTER SLOPE	TRANSITION LENGTH	
		STATION	OFFSET						LEFT	RIGHT
DEPOT STREET										
1	A	11+97.7'	16.2' RT	6.0'	5.5'	5.0'	5.5'	0.8%	6.0'	-
3	A	0+92.1'	13.9' LT	6.5'	5.0'	5.0'	5.5'	2.1%	6.5'	-
FOLLETTE STREET										
4	A	0+37.8'	16.1 RT	5.0'	5.0'	5.0'	5.5'	0.2%	-	7.5'



* TOLERANCE FOR CONSTRUCTION ± 0.5%

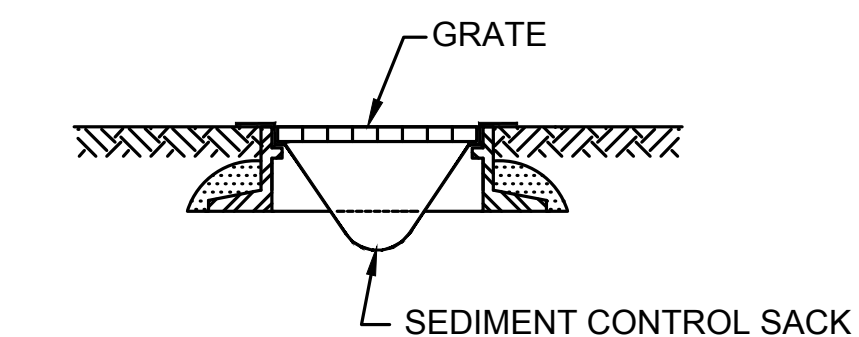
PEDESTRIAN CURB RAMP TABLE

RAMP NO.	RAMP TYPE	RAMP REFERENCE POINT BASELINE		LENGTH OF PRIMARY RAMP	WIDTH OF SIDEWALK	WIDTH OF RAMP	DEPTH OF LEVEL LANDING	ROADWAY GUTTER SLOPE	TRANSITION LENGTH	
		STATION	OFFSET						LEFT	RIGHT
DEPOT STREET										
2	B	12+13.8'	22.2' LT	12.5'	5.5'	5.0'	4.0'	7.5%	-	15.0'



STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	16	55
PROJECT FILE NO.		608640	

CONSTRUCTION DETAILS

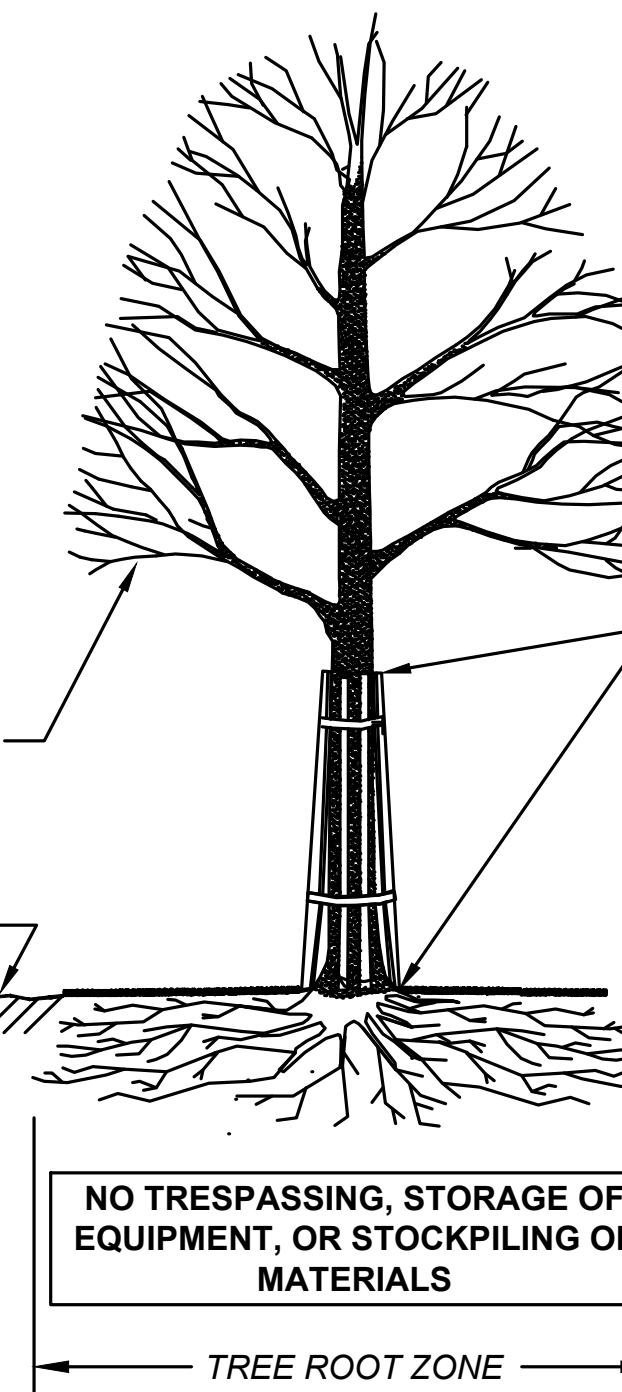


CATCH BASIN PROTECTION DETAIL

NOT TO SCALE

NOTES:

1. INSTALL SILT SACK IN ALL EXISTING AND PROPOSED CATCH BASINS, GUTTER INLETS, AND ALL CURB INLETS PRIOR TO COMMENCEMENT OF WORK AND MAINTAIN UNTIL END OF WORK.
2. SILT SACK SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS. CLEANING AND REPLACEMENT SHALL BE PERFORMED AS NEEDED.



PRUNE CANOPY AS REQUIRED TO PREVENT DAMAGE FROM CONSTRUCTION EQUIPMENT.
 REMOVE DEAD/DAMAGED LIMBS IF AND AS DIRECTED. PRUNING SHALL BE PER ANSI A300 STANDARDS

ARMOR TREES AS SHOWN ON PLANS OR PER ARBORIST

ARMOR FROM BASE OF TREE, INCLUDING ROOT FLARE, TO FIRST BRANCH.

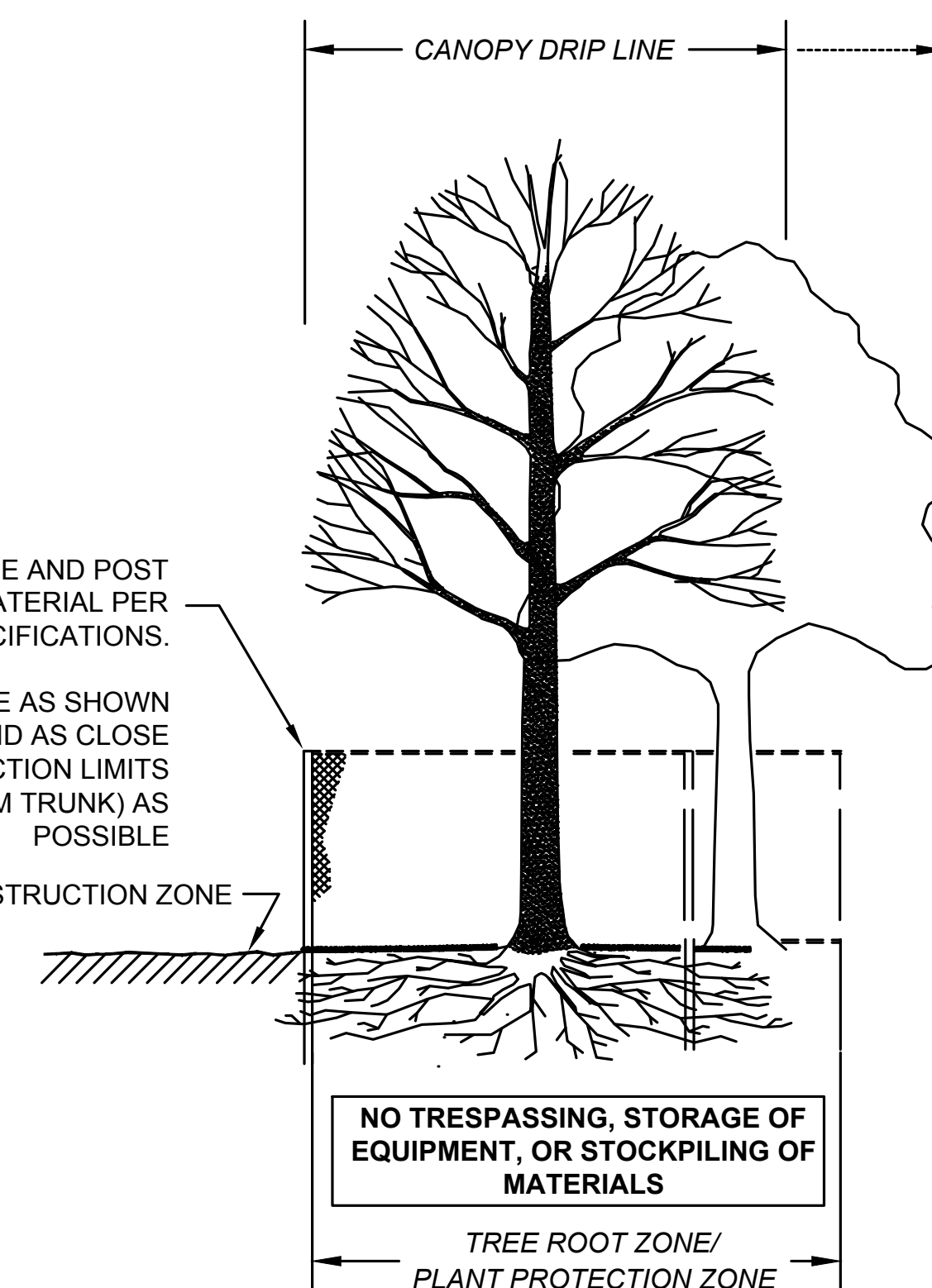
CONSTRUCTION ZONE

NO TRESPASSING, STORAGE OF EQUIPMENT, OR STOCKPILING OF MATERIALS

TREE ROOT ZONE

SECTION - TRUNK ARMORING & PRUNING

TREE PROTECTION - TRUNK



FENCE AND POST MATERIAL PER SPECIFICATIONS.

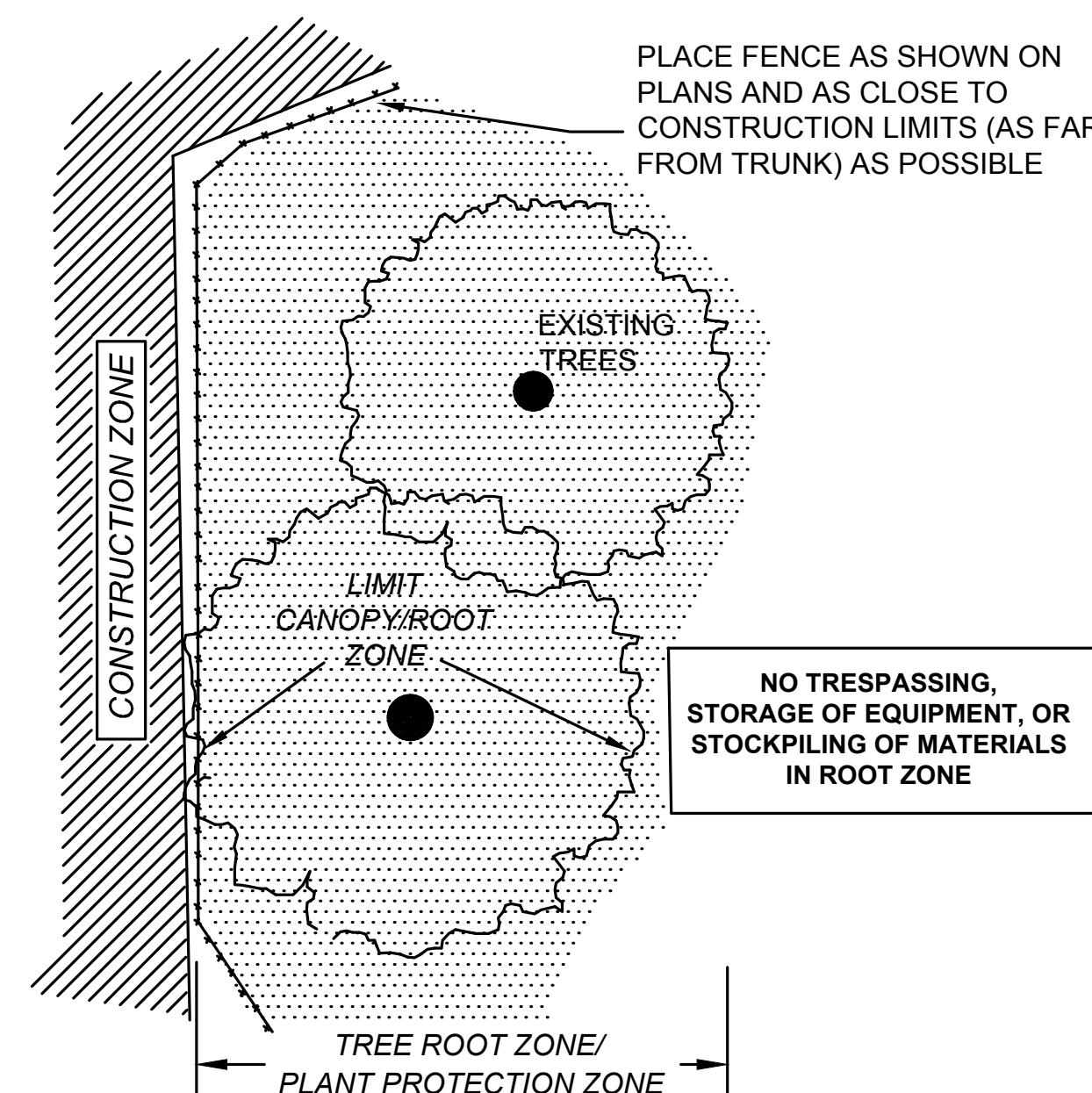
PLACE FENCE AS SHOWN ON PLANS AND AS CLOSE TO CONSTRUCTION LIMITS (AS FAR FROM TRUNK) AS POSSIBLE

CONSTRUCTION ZONE

NO TRESPASSING, STORAGE OF EQUIPMENT, OR STOCKPILING OF MATERIALS

TREE ROOT ZONE/
PLANT PROTECTION ZONE

SECTION - FENCE PROTECTION OF ROOT ZONE



PLACE FENCE AS SHOWN ON PLANS AND AS CLOSE TO CONSTRUCTION LIMITS (AS FAR FROM TRUNK) AS POSSIBLE

EXISTING TREES

LIMIT CANOPY/ROOT ZONE

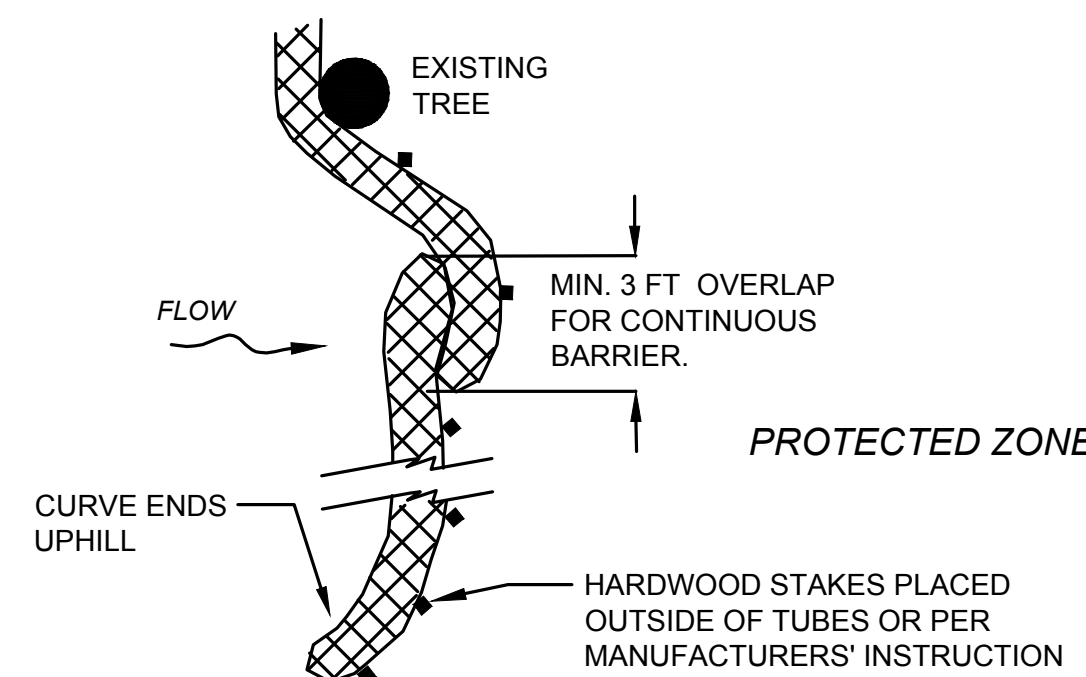
NO TRESPASSING, STORAGE OF EQUIPMENT, OR STOCKPILING OF MATERIALS IN ROOT ZONE

TREE ROOT ZONE/
PLANT PROTECTION ZONE

PLAN VIEW - FENCE PROTECTION OF ROOT ZONE

TREE PROTECTION - ROOT ZONE

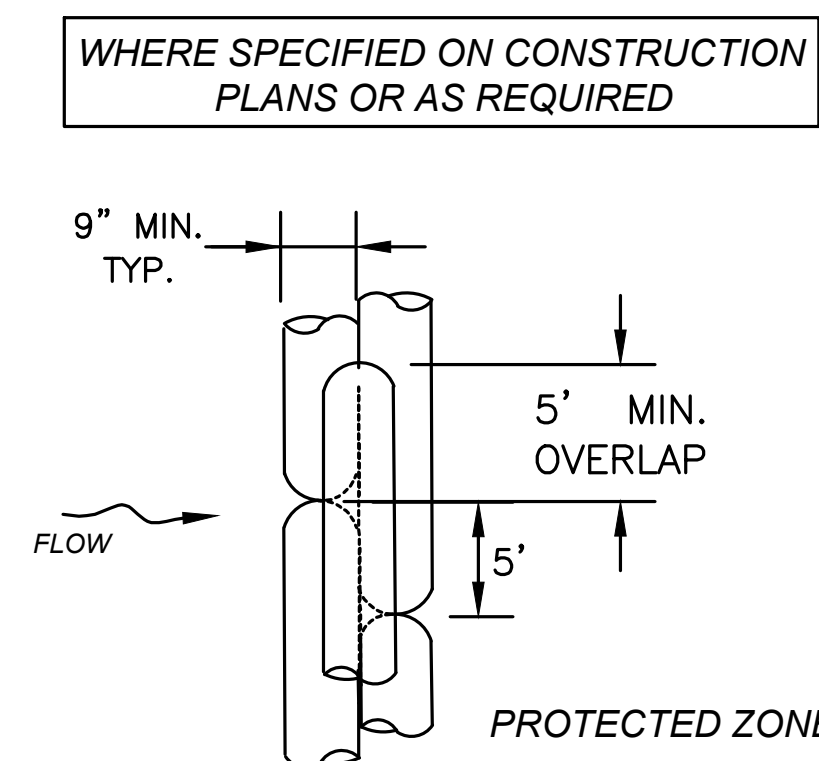
NOT TO SCALE



PLACE TUBE AS CLOSE TO LIMIT OF SOIL DISTURBANCE AS POSSIBLE, ALONG CONTOURS, AND PERPENDICULAR TO FLOW.

ADJUST LOCATION AS REQUIRED FOR OPTIMUM EFFECTIVENESS. DO NOT INSTALL IN WATERWAYS.

PLAN VIEW

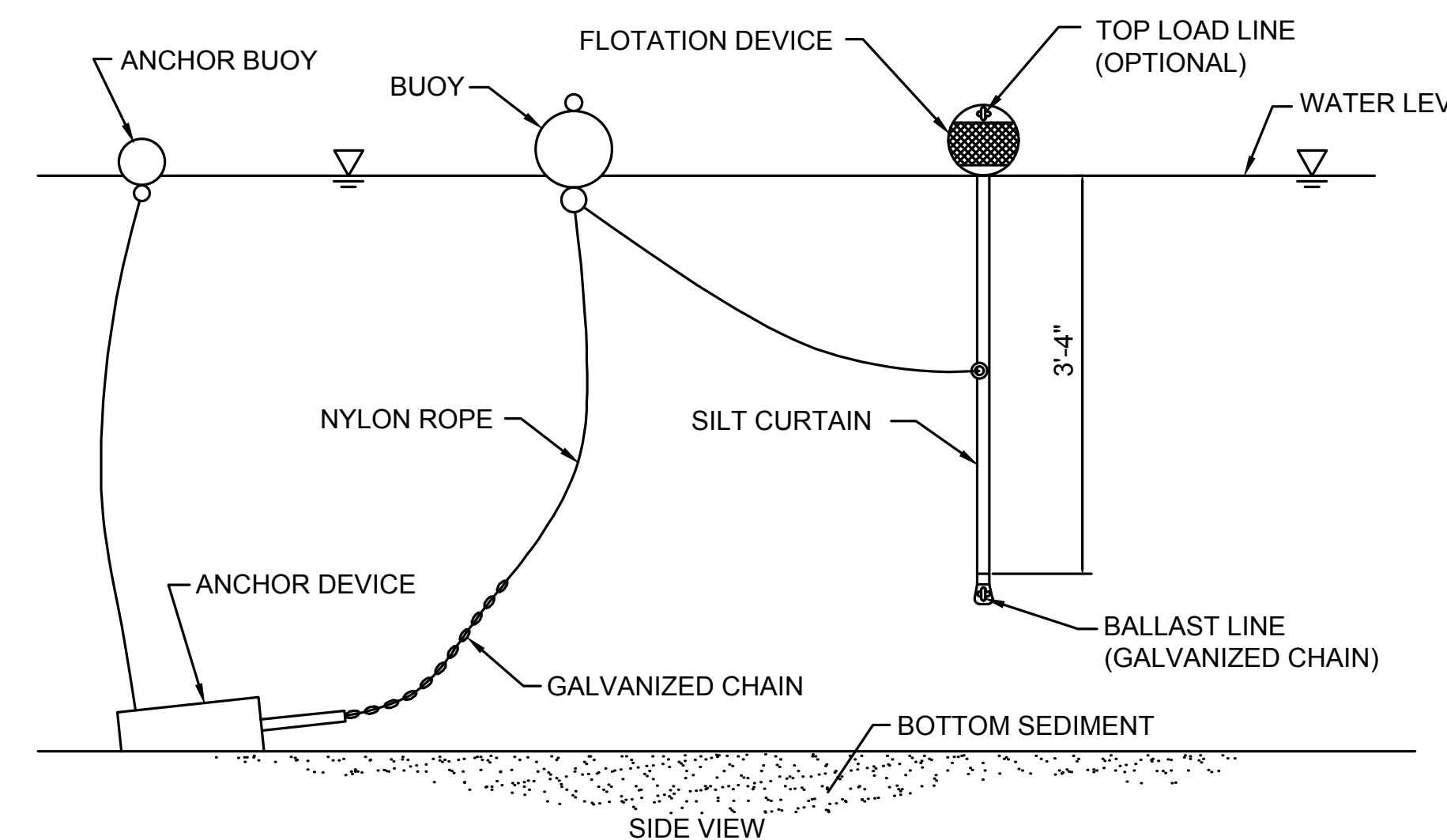


WHERE SPECIFIED ON CONSTRUCTION PLANS OR AS REQUIRED

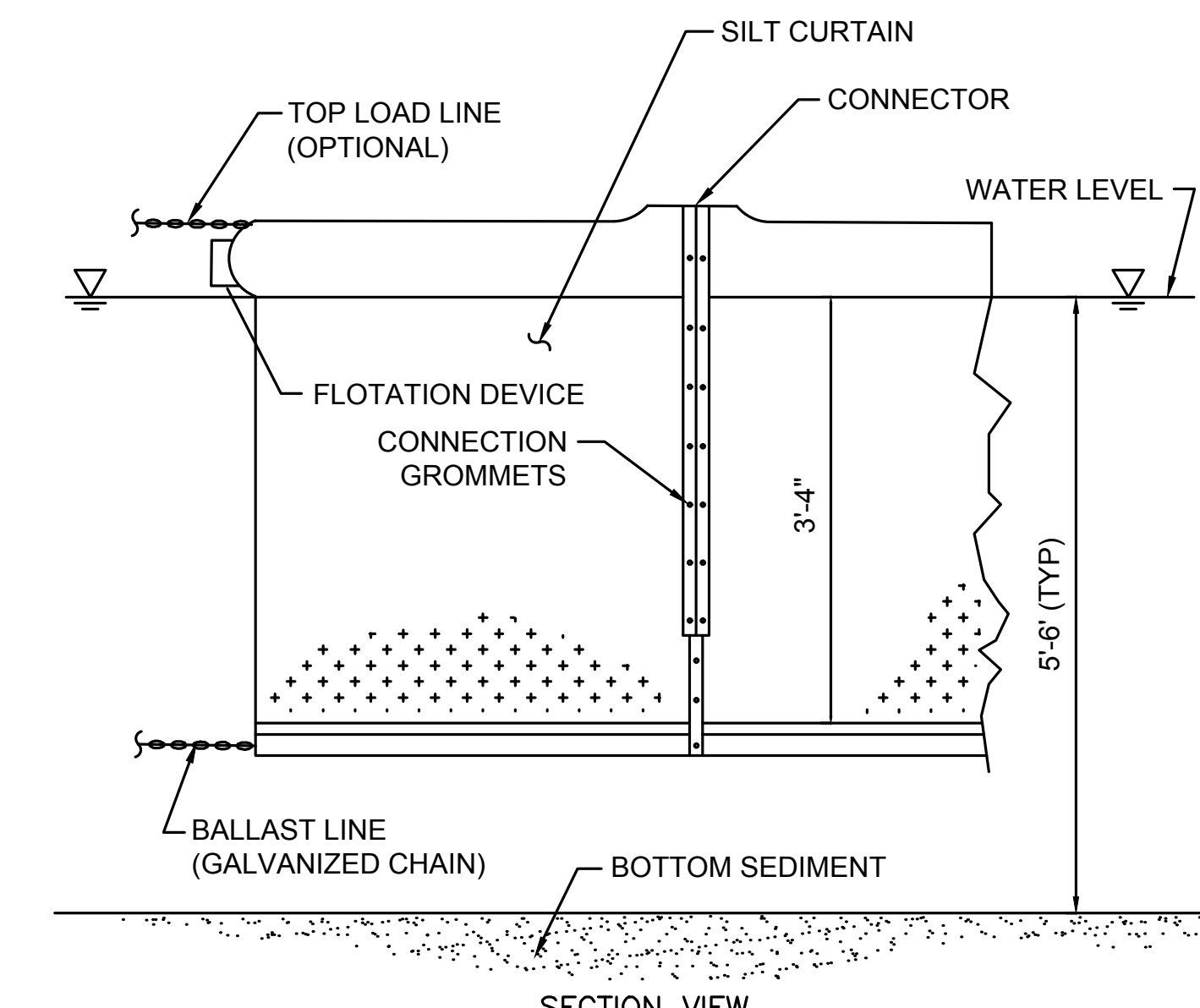
9" MIN. TYP.
5' MIN. OVERLAP
5'

PROTECTED ZONE

PLAN VIEW



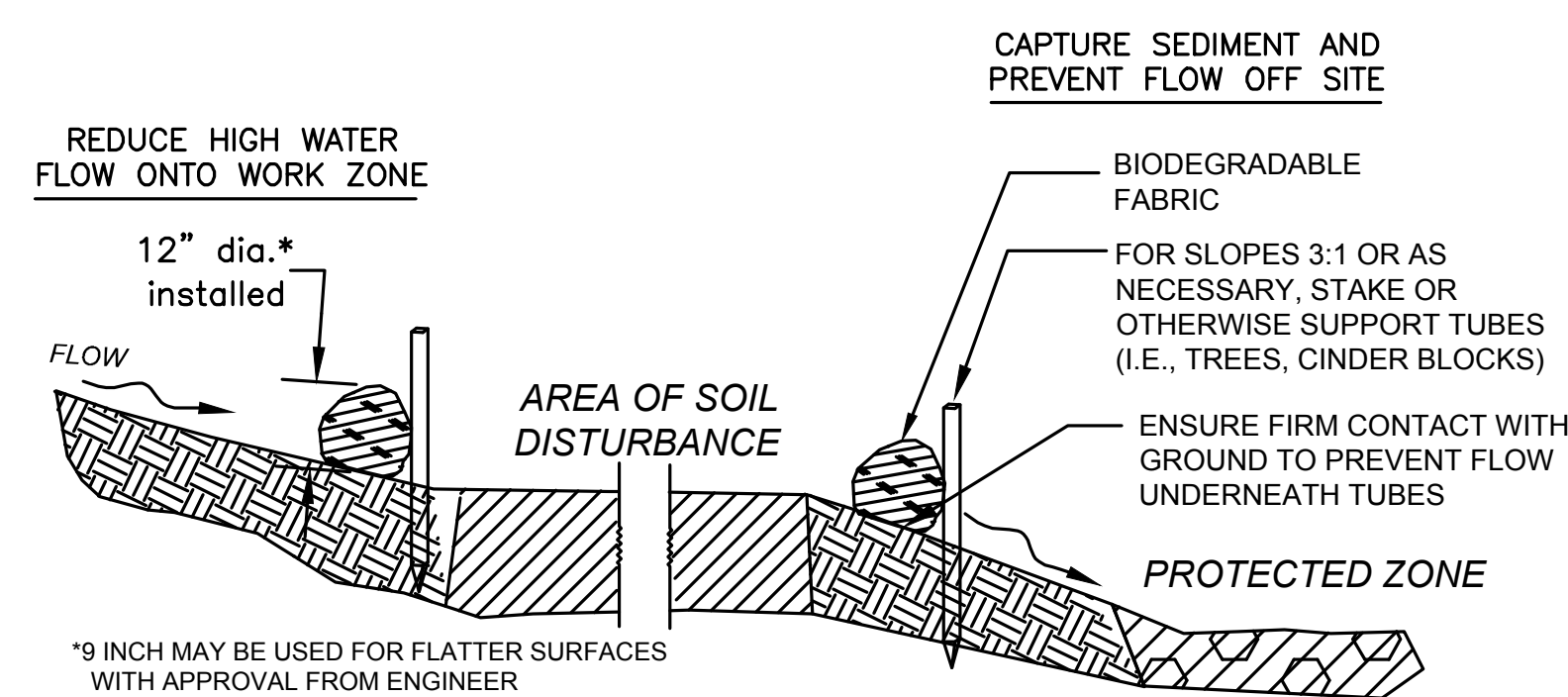
SIDE VIEW



SECTION VIEW

SILT CURTAIN DETAIL

N.T.S.

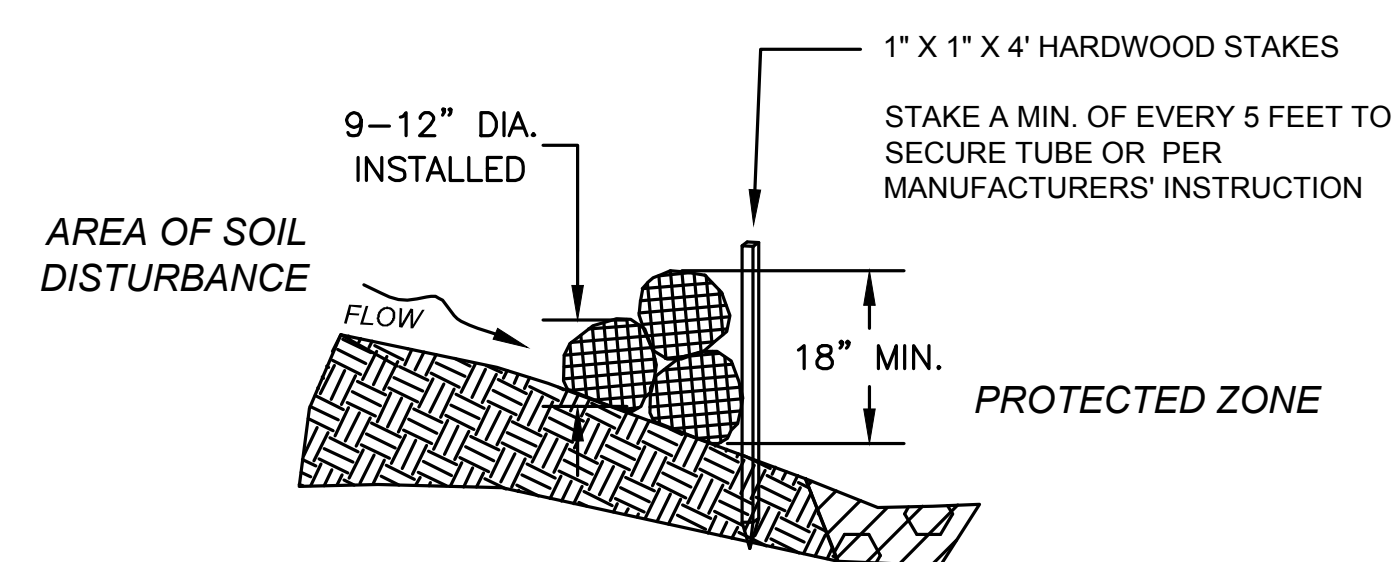


*9 INCH MAY BE USED FOR FLATTER SURFACES WITH APPROVAL FROM ENGINEER

SECTION

SEDIMENT BARRIER - COMPOST FILTER TUBE

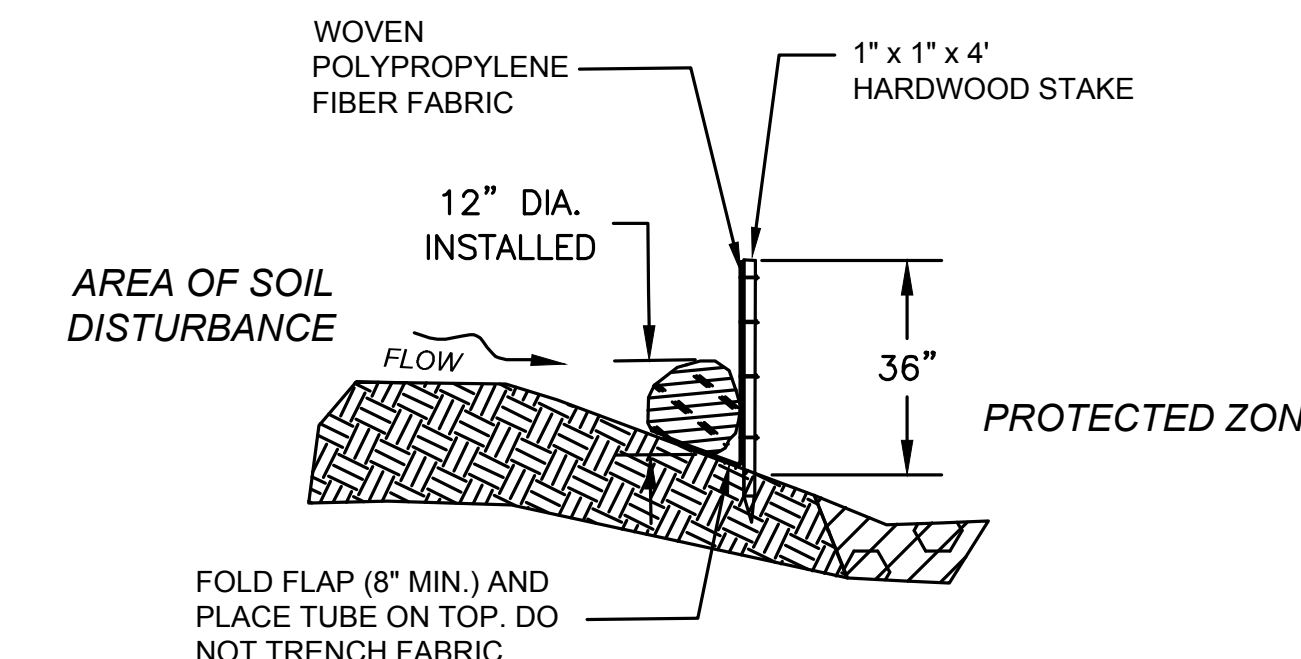
NOT TO SCALE



SECTION

COMPOST FILTER TUBES STACKED

NOT TO SCALE



SECTION

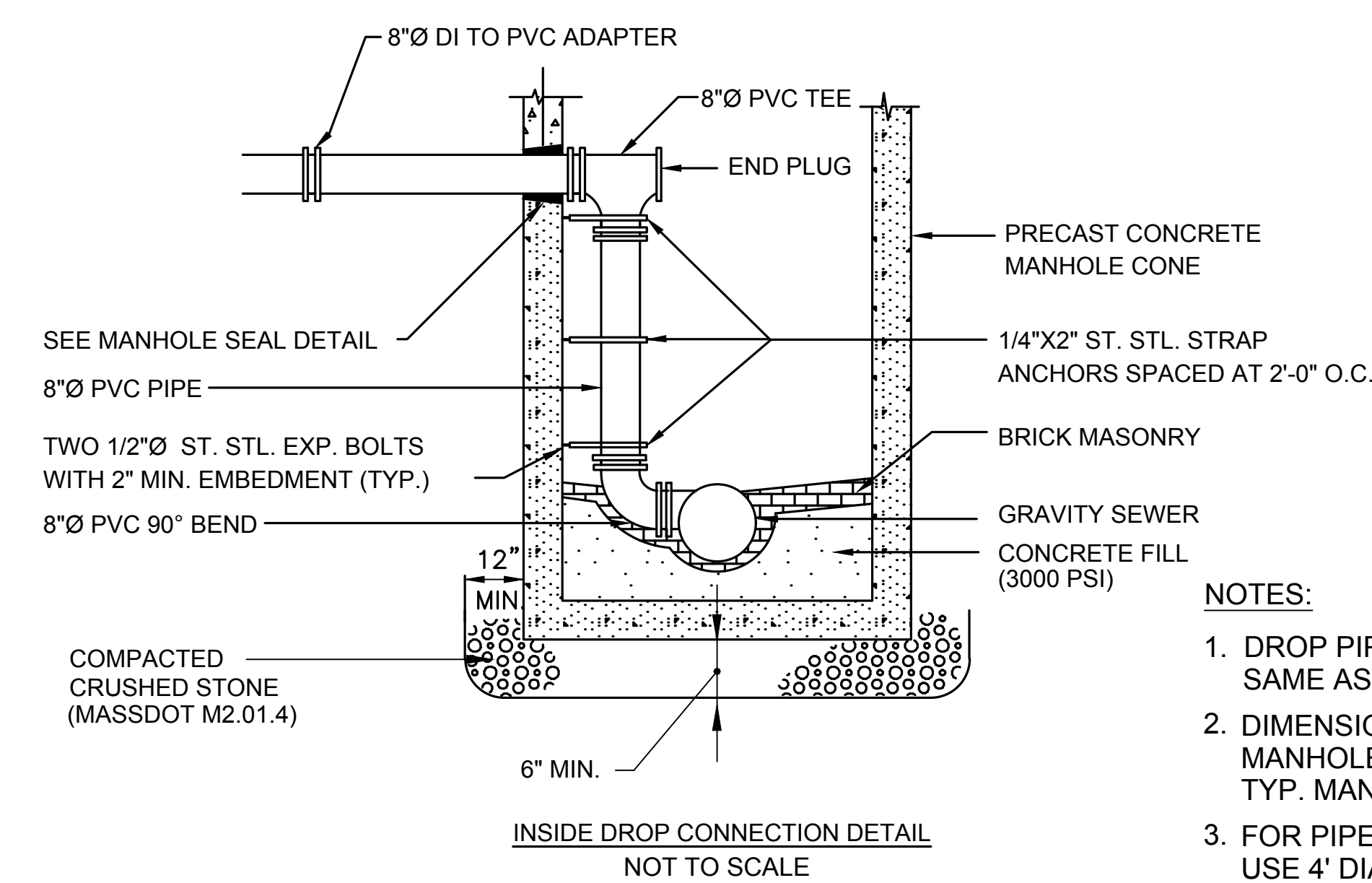
COMPOST FILTER TUBE & SILT FENCE

NOT TO SCALE

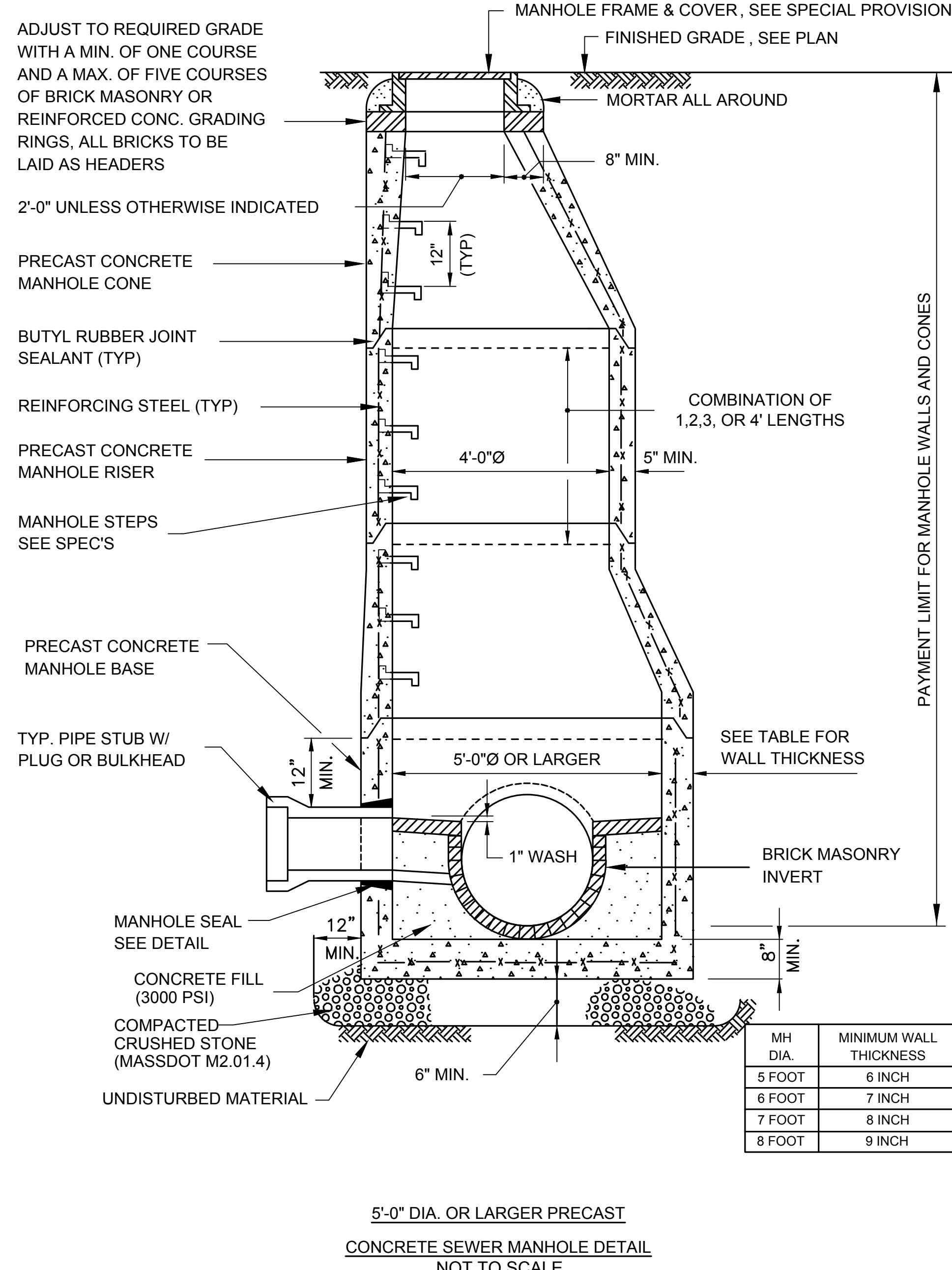
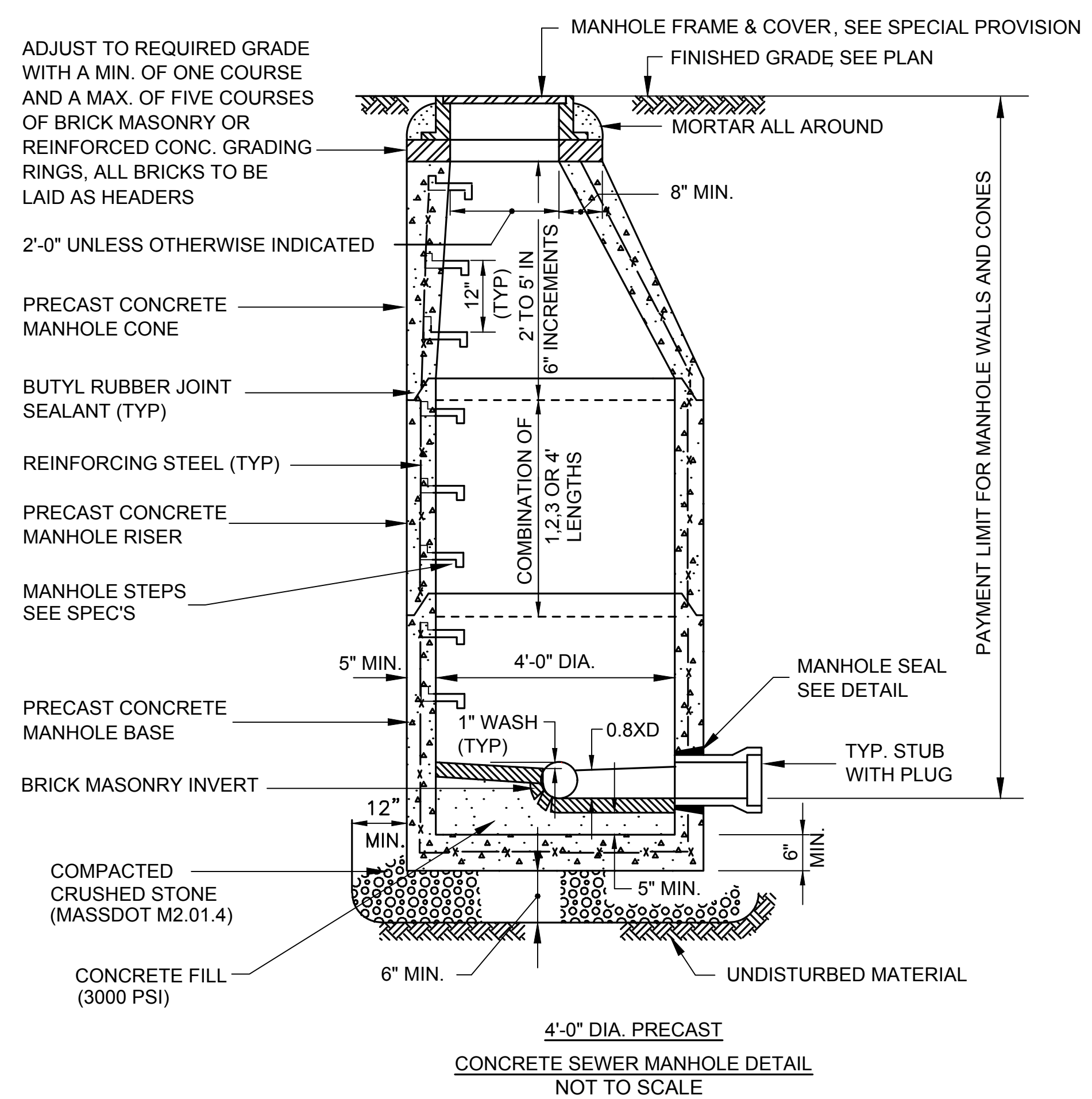
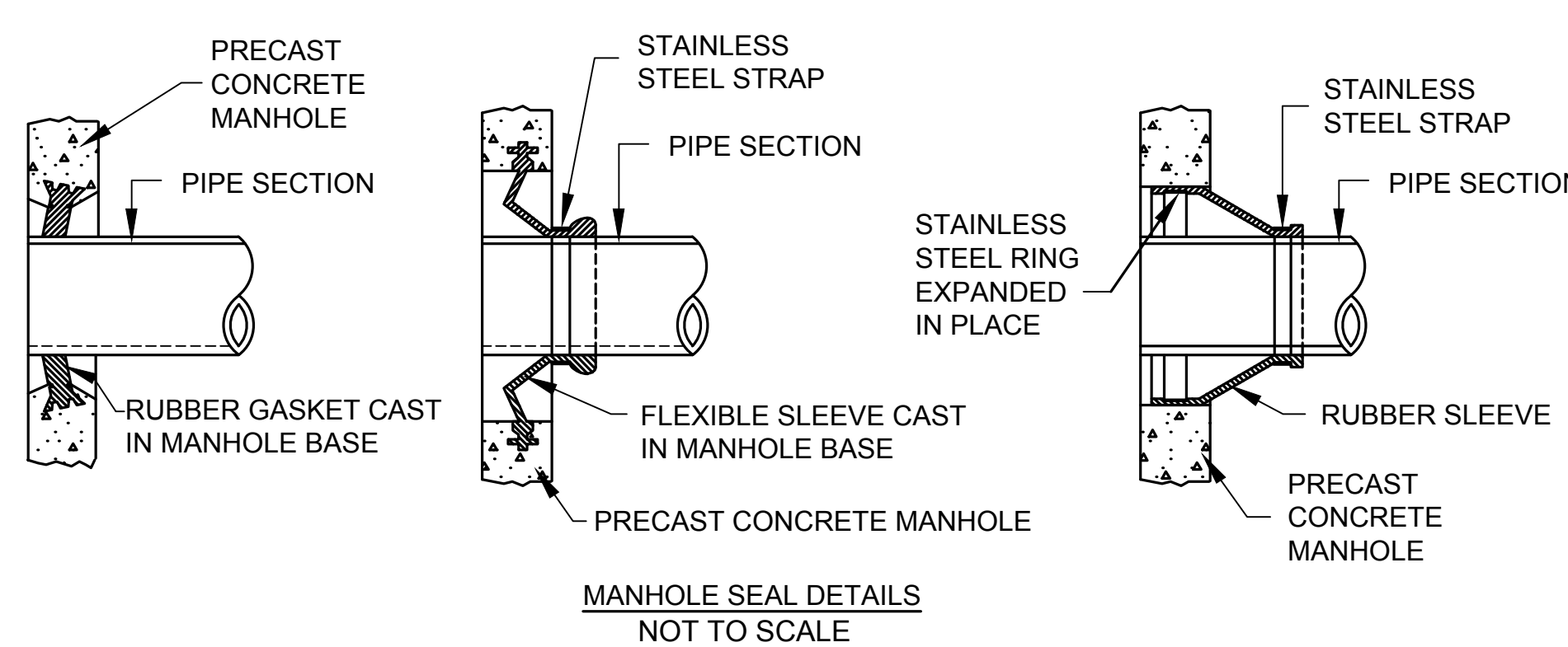
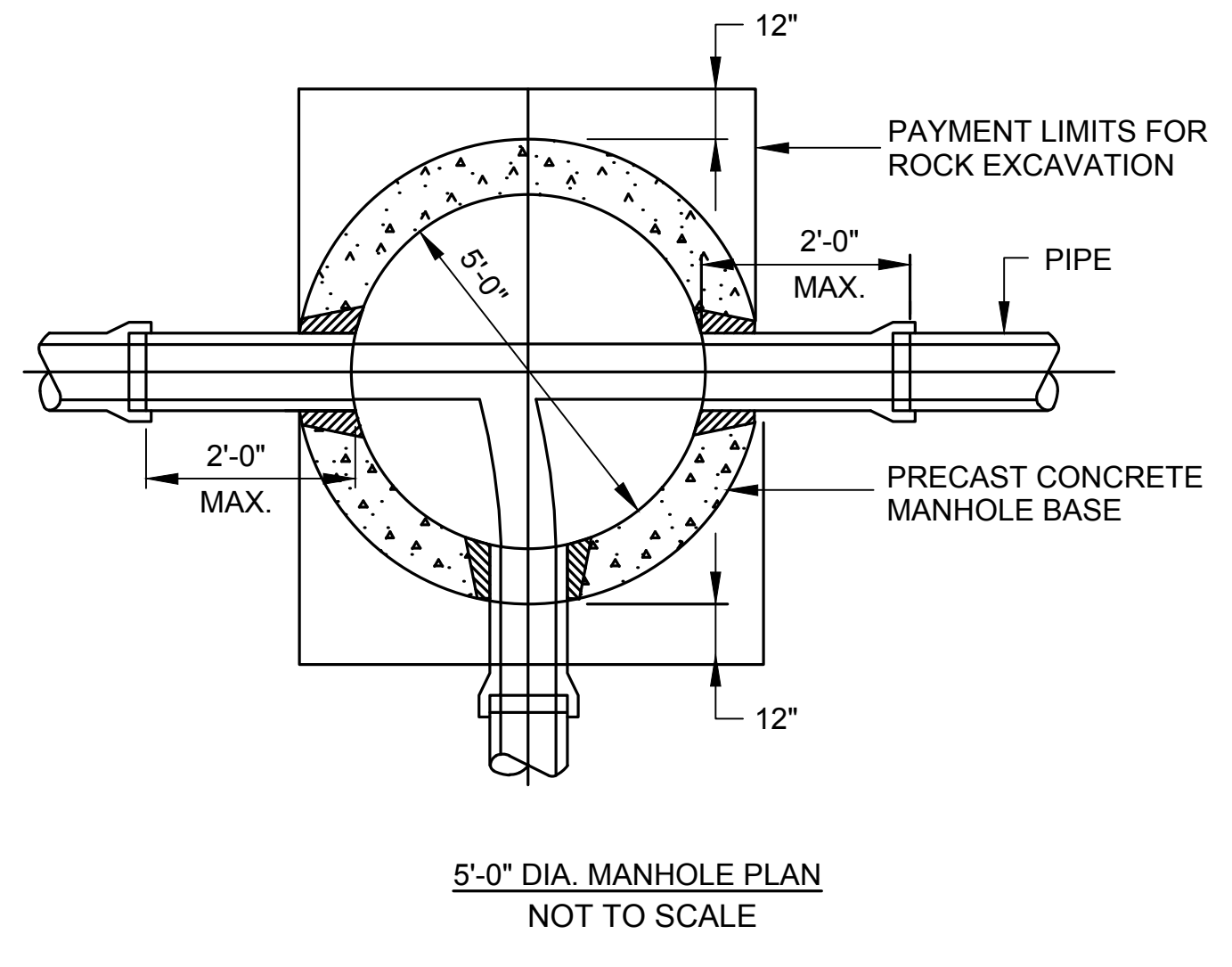
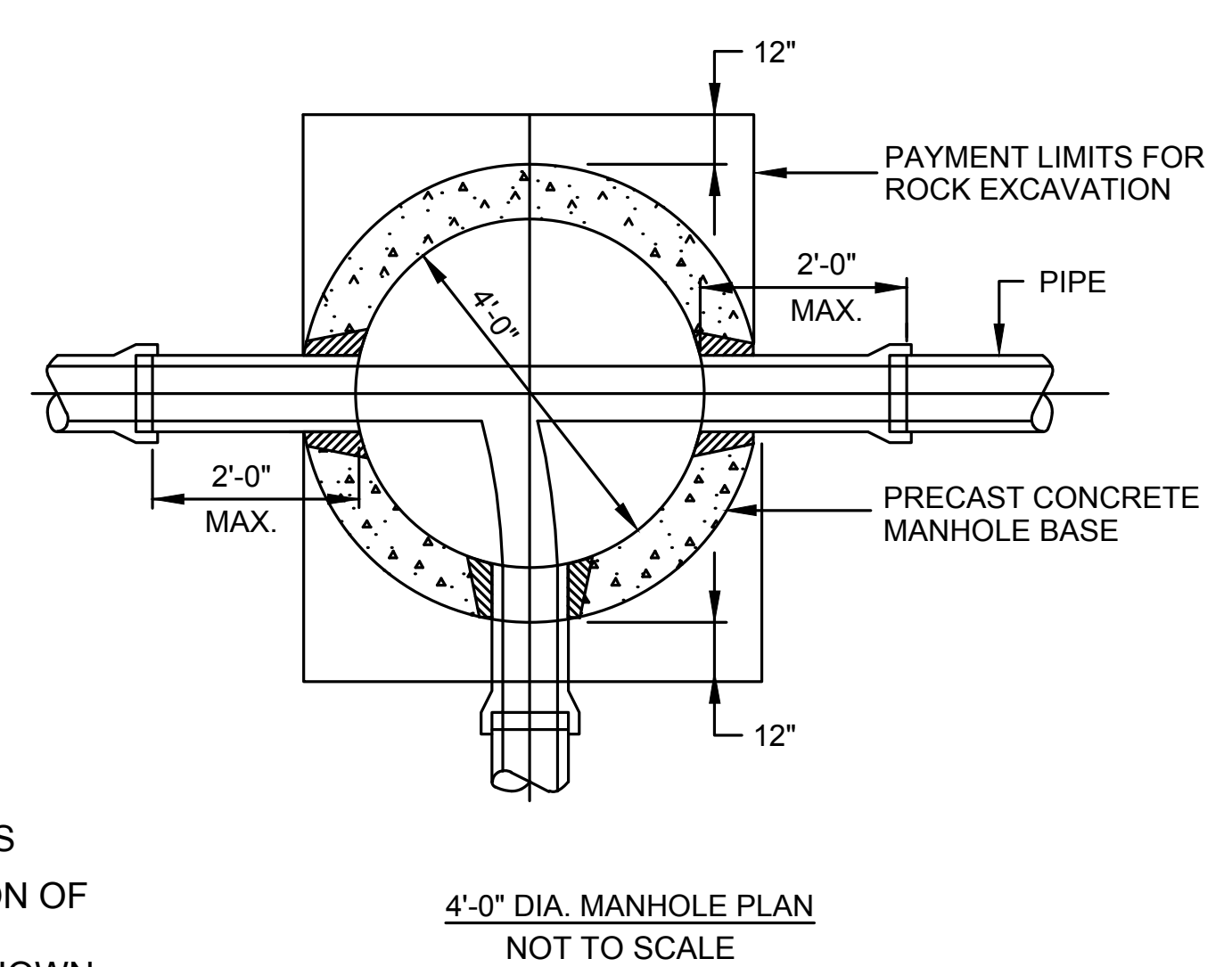
SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	17	55
PROJECT FILE NO. 608640			

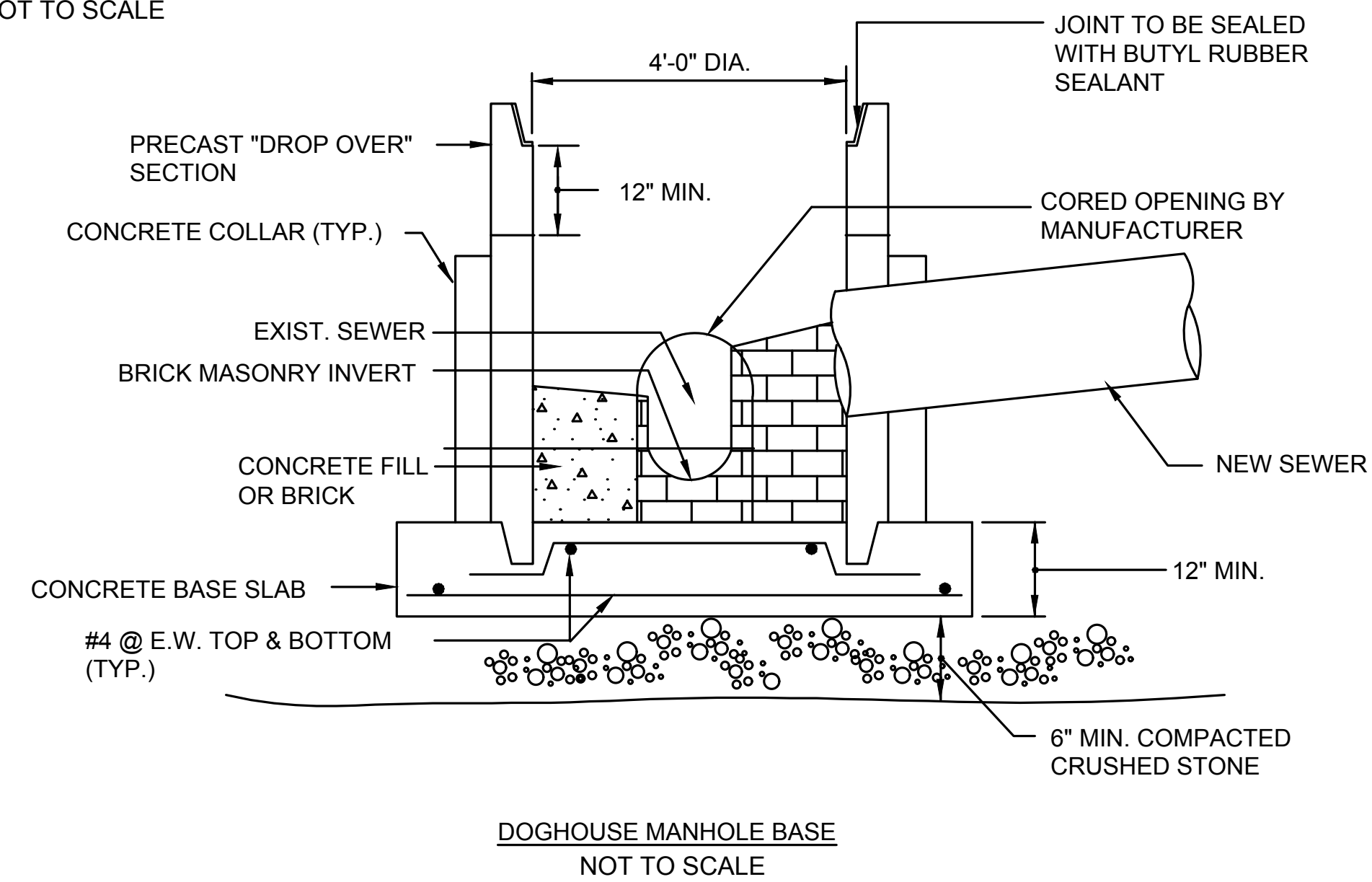
CONSTRUCTION DETAILS



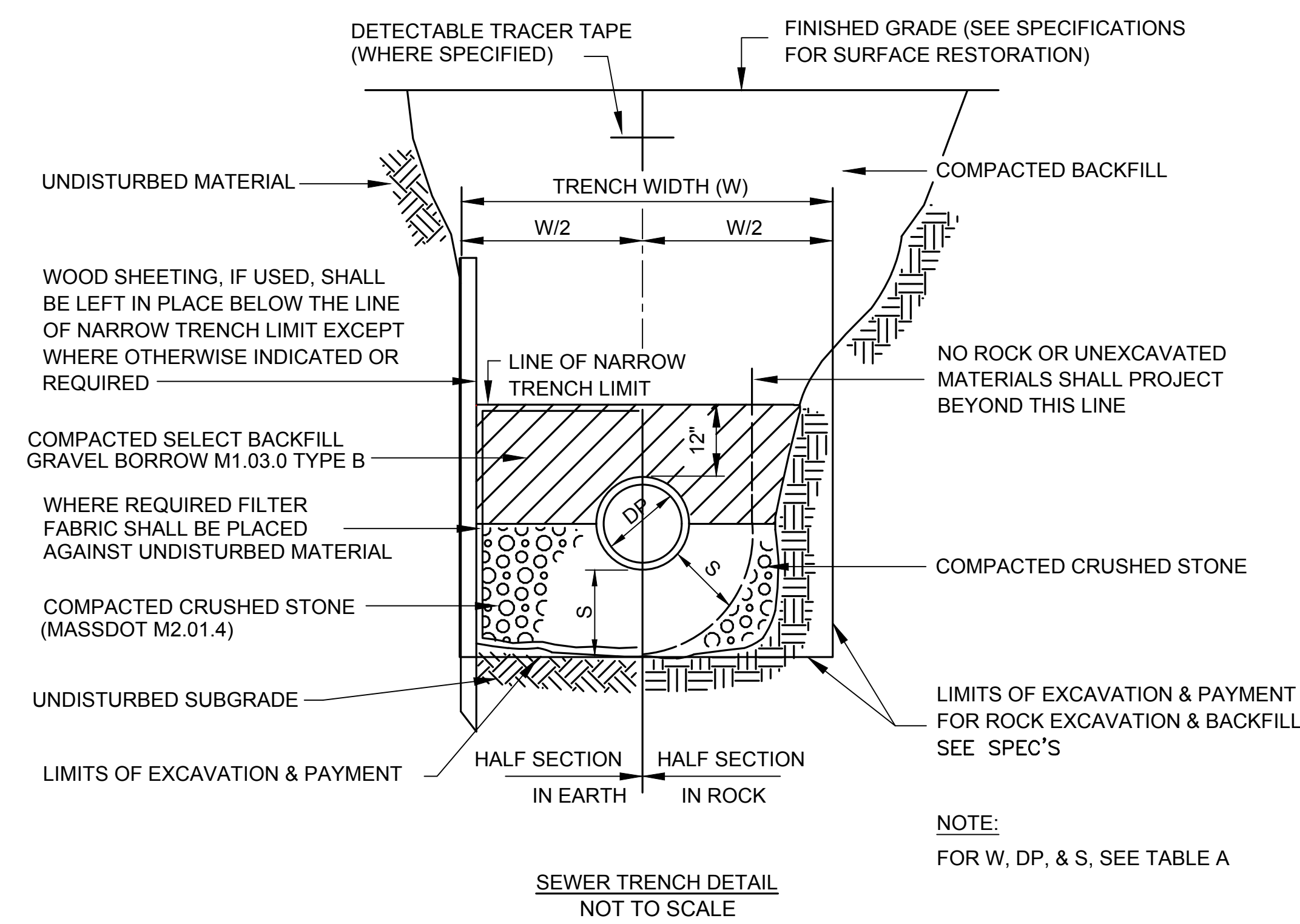
- NOTES:**
1. DROP PIPE MATERIALS TO BE SAME AS PIPELINE MATERIALS
 2. DIMENSIONS & CONSTRUCTION OF MANHOLE TO BE SIMILAR TO TYP. MANHOLE EXCEPT AS SHOWN
 3. FOR PIPE UP TO AND INCLUDING 8", USE 4" DIAMETER MANHOLE; OVER 8", USE 5" DIAMETER MANHOLE



MH DIA.	MINIMUM WALL THICKNESS
5 FOOT	6 INCH
6 FOOT	7 INCH
7 FOOT	8 INCH
8 FOOT	9 INCH



NOTE:
 THE "DOGHOUSE" SECTION SHALL BE INDEPENDENTLY SUPPORTED TO ALLOW FOR PROPER CURING OF THE BASE SLAB

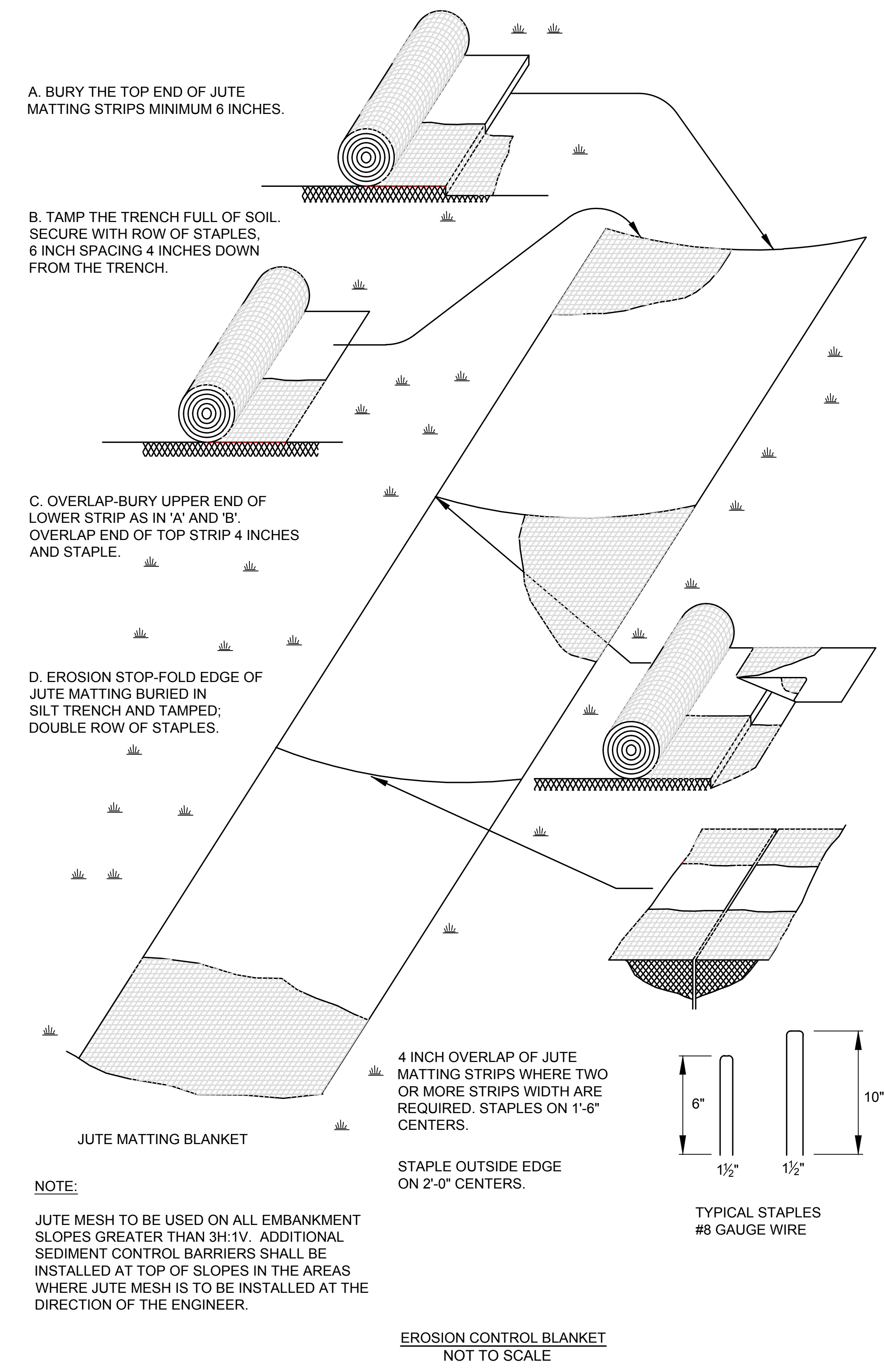
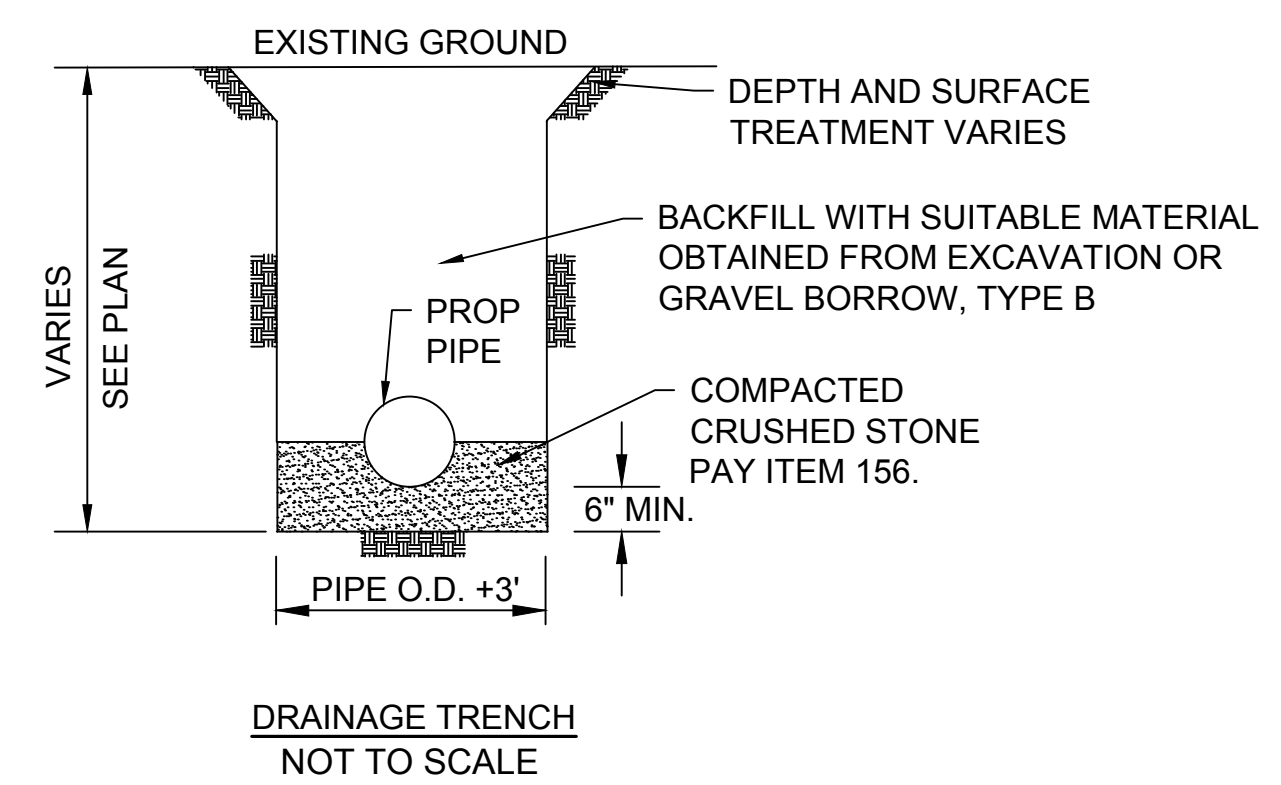
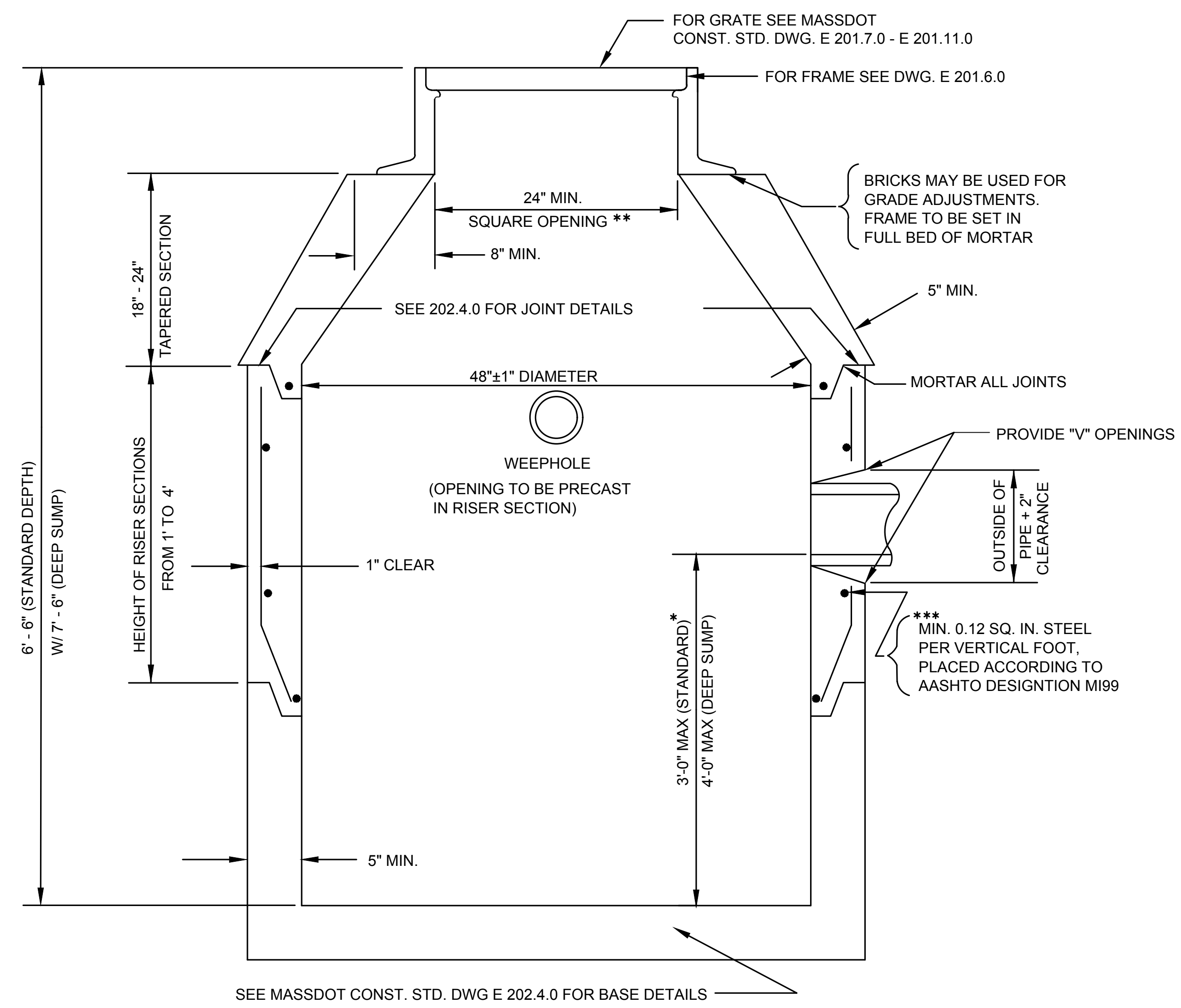


NOTE:
 FOR W, DP, & S, SEE TABLE A

SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER

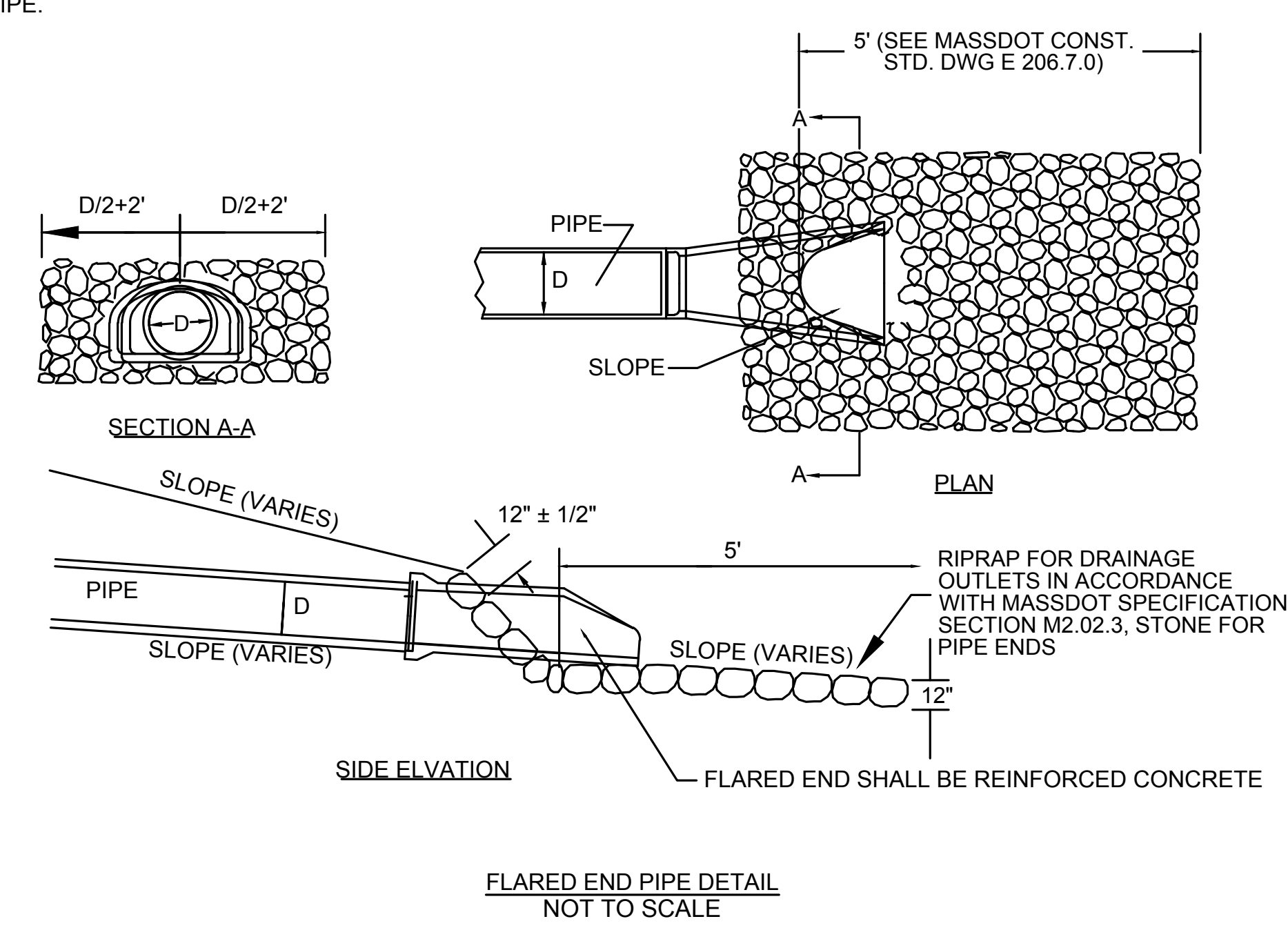
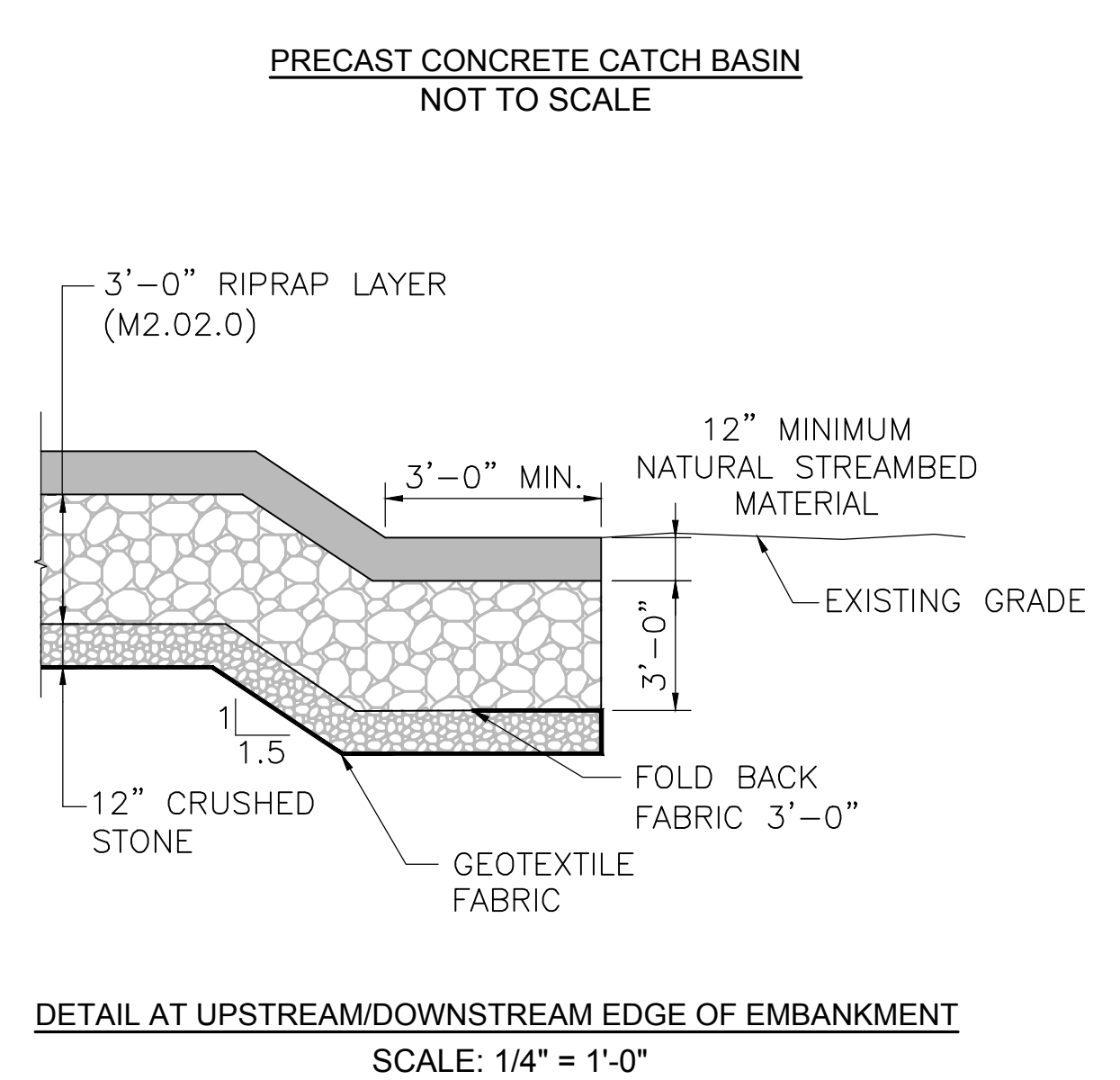
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	18	55
PROJECT FILE NO.		608640	

CONSTRUCTION DETAILS



- * MINIMUM DEPTH OF SUMP TO BE 2'.
- ** WHEN A CURB INLET IS INSTALLED, THE OPENING IS TO BE 24" ± 1" x 27" ± 1"
- *** REINFORCING STEEL BASED ON A WALL THICKNESS OF 5"

- NOTES:
1. DETAILS INDICATED ABOVE ARE TO BE SIMILAR TO THOSE SHOWN ON CONST. STD. DWG E 201.3.0
 2. FACE OF PIPE FLUSH OR NOT TO PROJECT MORE THAN 4" FROM FACE OF WALL ALONG CENTERLINE OF PIPE.
 3. FOR DESCRIPTION, MATERIAL AND CONSTRUCTION METHOD, SEE STD. SPECIFICATIONS.
 4. ALL CONCRETE TO BE AIR ENTRAINED.



NOTE:
 JUTE MESH TO BE USED ON ALL EMBANKMENT SLOPES GREATER THAN 3H:1V. ADDITIONAL SEDIMENT CONTROL BARRIERS SHALL BE INSTALLED AT TOP OF SLOPES IN THE AREAS WHERE JUTE MESH IS TO BE INSTALLED AT THE DIRECTION OF THE ENGINEER.

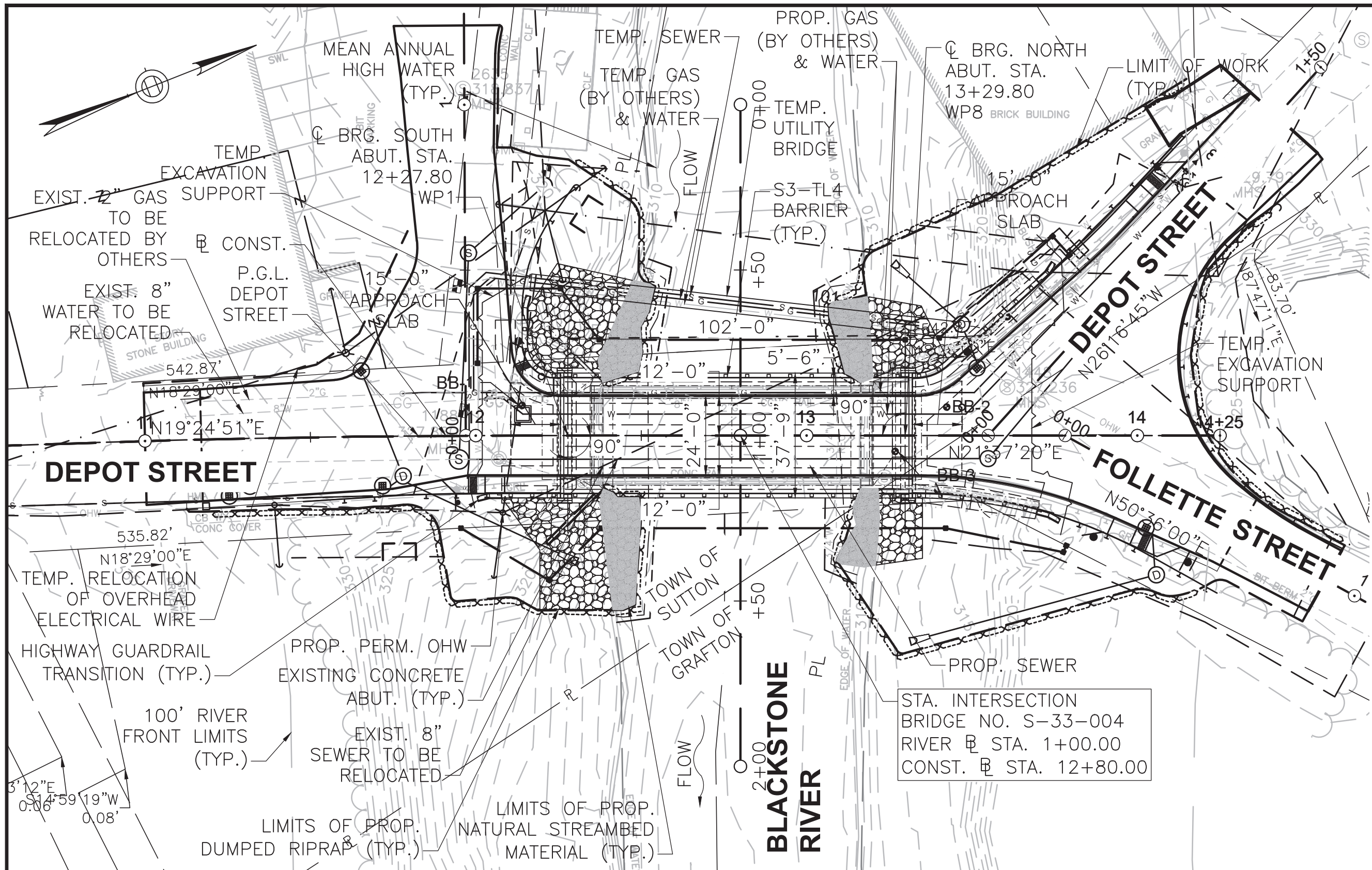
EROSION CONTROL BLANKET NOT TO SCALE

DETAIL AT UPSTREAM/DOWNSTREAM EDGE OF EMBANKMENT
 SCALE: 1/4" = 1'-0"

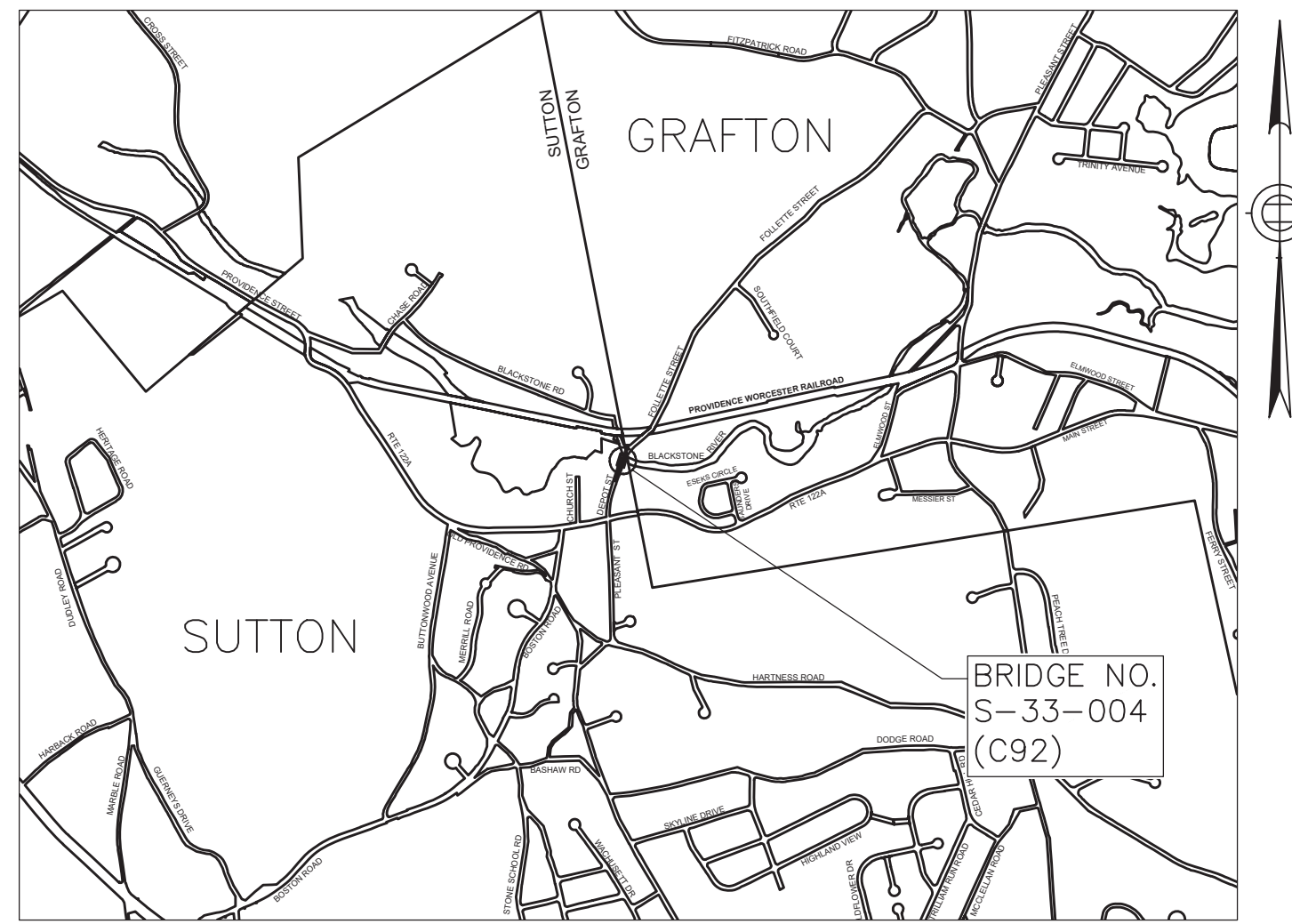
SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	19	55
PROJECT FILE NO. 608640			

KEY PLAN AND PROFILES



KEY PLAN
SCALE: 1" = 30'



LOCUS PLAN
SCALE: 1" = 2000'

ESTIMATED QUANTITIES
(NOT GUARANTEED)

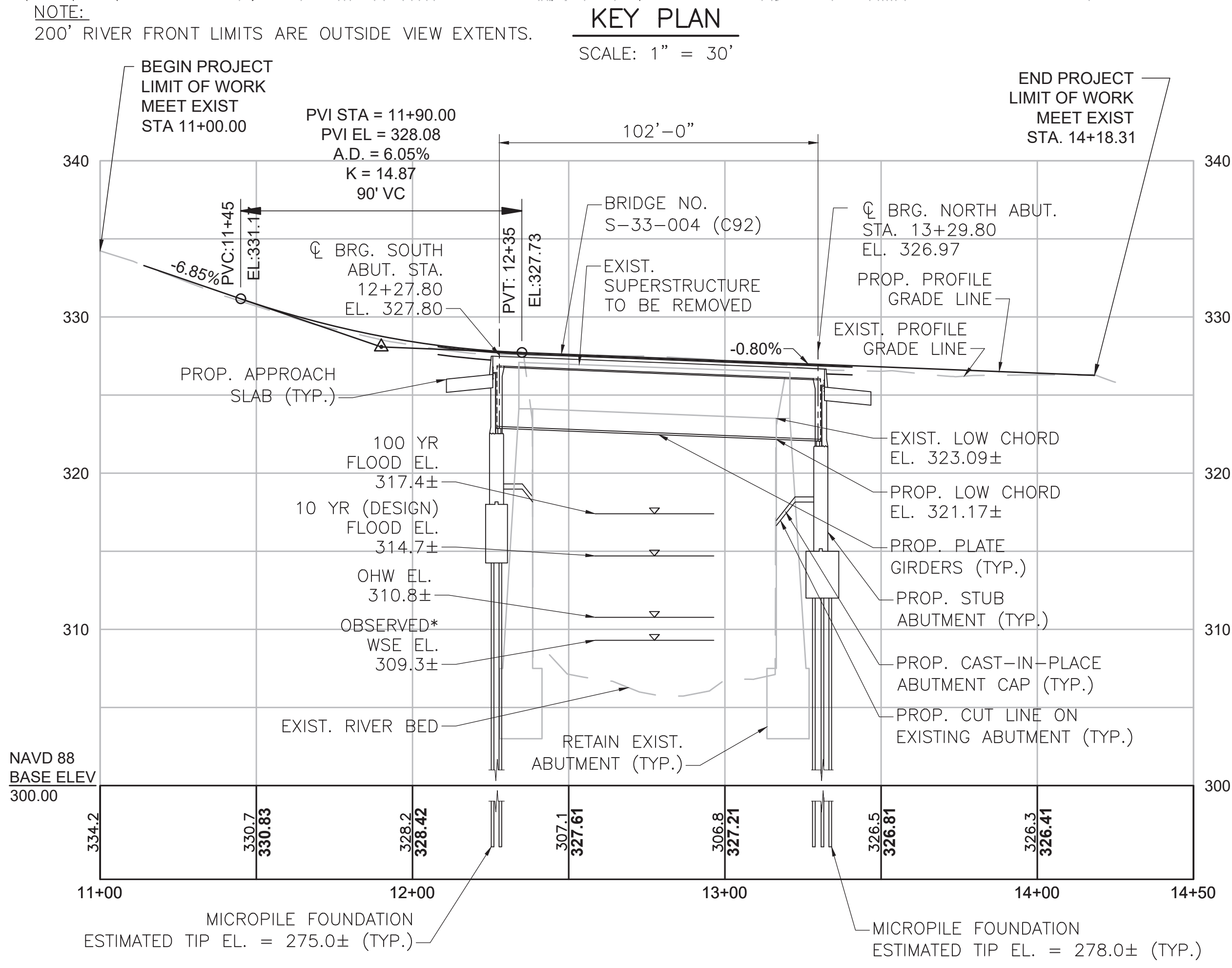
ITEM	QUANTITY	UNIT
DEMOLITION OF SUPERSTRUCTURE OF BRIDGE NO. S-33-004 (1HU).....	1	LS
REINFORCED CONCRETE EXCAVATION.....	180	CY
BRIDGE EXCAVATION.....	1420	CY
CHANNEL EXCAVATION.....	145	CY
CLASS B ROCK EXCAVATION.....	225	CY
GRAVEL BORROW FOR BRIDGE FOUNDATIONS.....	85	CY
GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES.....	890	CY
CONTROLLED DENSITY FILL - NON-EXCAVATABLE.....	25	CY
CRUSHED STONE.....	75	TON
CRUSHED STONE FOR FILTER BLANKET.....	120	CY
SUPERPAVE BRIDGE SURFACE COURSE - 9.5 (SSC-B - 9.5).....	26	TON
SUPERPAVE BRIDGE PROTECTIVE COURSE - 9.5 (SPC-B - 9.5).....	26	TON
SUPERPAVE BRIDGE PROTECTIVE COURSE - 12.5 (SPC-B - 12.5).....	5	TON
SAWING AND SEALING JOINTS IN ASPHALT PAVEMENT AT BRIDGES.....	50	FT
FLOATING SILT FENCE.....	400	FT
GEOTEXTILE FABRIC FOR PERMANENT EROSION CONTROL.....	415	SY
DRILLED MICROPILES.....	4020	FT
MICROPILE VERIFICATION LOAD TEST.....	1	EA
MICROPILE PROOF LOAD TEST.....	6	EA
TEMPORARY SUPPORT OF EXCAVATION.....	1	LS
DUMPED RIPRAP.....	610	TON
STREAMBED RESTORATION.....	1	LS
CONTROL OF WATER - STRUCTURE NO. S-33-004 (C92).....	1	LS
TEMPORARY UTILITY BRIDGE.....	1	LS
BRIDGE STRUCTURE, BRIDGE NO. S-33-004 (C92).....	1	LS

NOTES:

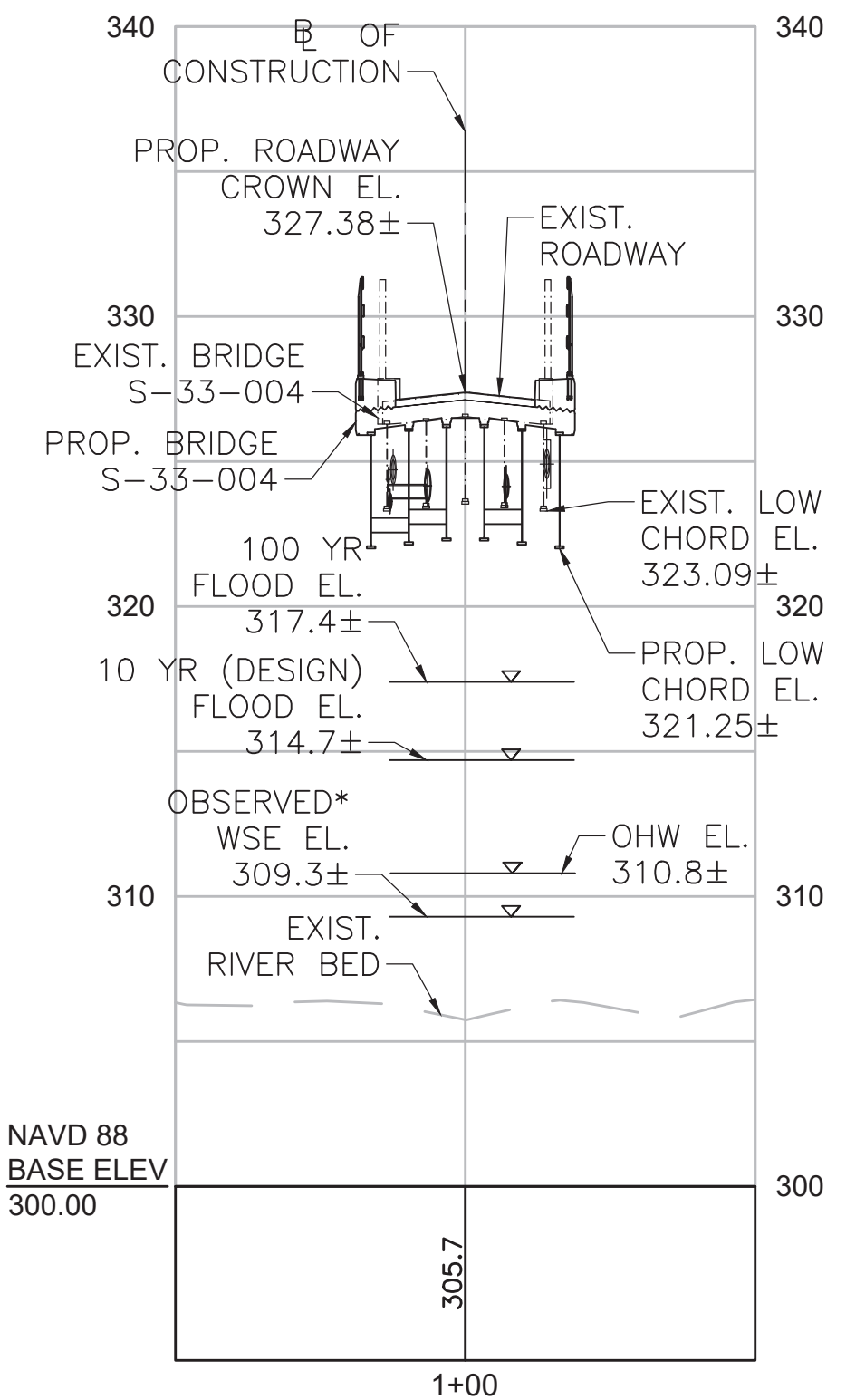
1. FOR GENERAL NOTES, SEE SHEET 2.

INDEX OF BRIDGE SHEETS:

- KEY PLAN AND PROFILES
- GENERAL NOTES
- BORING LOGS (SHEET 1 OF 2)
- BORING LOGS (SHEET 2 OF 2)
- GENERAL PLAN AND ELEVATION
- TEMPORARY UTILITY BRIDGE DETAILS
- EXISTING SUBSTRUCTURE DEMOLITION PLAN
- EXISTING SUBSTRUCTURE DEMOLITION ELEVATION
- MODIFICATIONS TO EXISTING ABUTMENTS
- MICROPILE LAYOUT PLAN
- MICROPILE SECTIONS
- SOUTH ABUTMENT PLAN AND ELEVATION
- NORTH ABUTMENT PLAN AND ELEVATION
- ABUTMENT DETAILS (SHEET 1 OF 3)
- ABUTMENT DETAILS (SHEET 1 OF 3)
- ABUTMENT DETAILS (SHEET 3 OF 3)
- CURTAIN WALL DETAILS
- WINGWALL DETAILS (SHEET 1 OF 2)
- WINGWALL DETAILS (SHEET 2 OF 2)
- BEARING DETAILS
- FRAMING PLAN
- STRUCTURAL STEEL DETAILS (SHEET 1 OF 2)
- STRUCTURAL STEEL DETAILS (SHEET 2 OF 2)
- DECK DETAILS (SHEET 1 OF 2)
- DECK DETAILS (SHEET 2 OF 2)
- APPROACH SLAB DETAILS
- GUARDRAIL TRANSITION DETAILS (SHEET 1 OF 2)
- GUARDRAIL TRANSITION DETAILS (SHEET 2 OF 2)
- BRIDGE RAILING DETAILS



PROFILE - DEPOT STREET
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 6'



PROFILE - BLACKSTONE RIVER
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 6'

* OBSERVED EL. WAS TAKEN ON FEBRUARY 7, 2023



Scott Brusio
Weston & Sampson
Weston & Sampson Engineers, Inc.
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508.698.3034 800.SAMPSON
www.westonandsampson.com

JUNE 29, 2024 ISSUED FOR CONSTRUCTION

PROPOSED BRIDGE
SUTTON
DEPOT STREET
OVER BLACKSTONE RIVER

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION
10 PARK PLAZA BOSTON, MASS

Alexander K. Bardow, P.E. STATE BRIDGE ENGINEER	Carrie Lavallee, P.E. CHIEF ENGINEER
--	---

Digitally signed by Scott Brusio Date: 2024.06.27 15:34:29 -0400
Digitally signed by Alexander K. Bardow, P.E. Date: 2024.06.28 13:47:27 -0400
Digitally signed by Carrie Lavallee, P.E. Date: 2024.07.02 09:49:23 -0400

608640_BRI(KEY PLAN).DWG Plotted on 10-Jun-2024 11:35:AM Final Structural Submittal (SF) 29-JUNE-2024

GENERAL NOTES

DESIGN:

IN ACCORDANCE WITH THE 2020 AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS LRFD BRIDGE DESIGN SPECIFICATIONS WITH CURRENT INTERIM SPECIFICATIONS THROUGH 2022 FOR HL-93 LOADING.

EXISTING BRIDGE PLANS:

IF REQUIRED, THE CONTRACTOR CAN REQUEST PLANS ELECTRONICALLY FOR THE EXISTING BRIDGE NO. S-33-004 (1HU), DATED JUNE 22, 1957, FROM MASSDOT PLANS AND RECORDS.

EXISTING CONDITIONS:

ALL DIMENSIONS AND DETAILS SHOWN FOR THE EXISTING STRUCTURE ARE BASED UPON THE ORIGINAL BRIDGE PLANS AND ARE NOT GUARANTEED. THE CONTRACTOR SHALL DETERMINE AND ESTABLISH ALL DIMENSIONS AND DETAILS NECESSARY FOR COMPLETION OF ALL WORK BY FIELD MEASUREMENT AND SURVEY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ADEQUACY AND ACCURACY THEREOF AND NOT ORDER ANY MATERIAL OR COMMENCE ANY FABRICATION UNTIL THEY HAVE MADE THE REQUIRED MEASUREMENTS ON THE ACTUAL STRUCTURE AND THE EXTENT OF THE PROPOSED WORK HAS BEEN APPROVED BY THE ENGINEER.

THE OBSERVED WATER ELEVATION SHOWN ON THE PLANS WAS MEASURED ON THE DATES OF THE SURVEY AND DOES NOT NECESSARILY REPRESENT THE WATER LEVEL AT THE TIME OF CONSTRUCTION. IT IS THE CONTRACTORS RESPONSIBILITY TO VERIFY THE WATER LEVELS. PARTICULAR ATTENTION SHOULD BE GIVEN TO UPSTREAM OR DOWNSTREAM FACILITIES AND CONTROL STRUCTURES WHICH MAY ADVERSELY AFFECT THE WATER LEVELS WITHIN THE WATER BODY WHICH MASSDOT HAS NO CONTROL OVER. THERE WILL BE NO ADDITIONAL COMPENSATION FOR WORK INVOLVING VARYING WATER LEVELS OR THOSE THAT DIFFER FROM THE INFORMATION RECORDED ON THE PLANS.

MASSDOT BENCHMARK:

MAG NAIL SET UP IN UTILITY POLE #5, ELEVATION = 332.48'

ELEVATIONS ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988, UNLESS NOTED OTHERWISE.

DATE:

TO BE PLACED ON THE INSIDE FACE OF THE NORTHWEST AND SOUTHEAST HIGHWAY GUARDRAIL TRANSITIONS. A SHEET SHOWING SIZE AND CHARACTER OF NUMERALS WILL BE FURNISHED. THE DATE USED SHALL BE THE LATEST YEAR OF CONTRACT COMPLETION AS OF THE DATE THE FIRST HIGHWAY GUARDRAIL TRANSITION IS CONSTRUCTED. BOTH HIGHWAY GUARDRAIL TRANSITIONS SHALL FEATURE THE SAME DATE. SEE SHEET 27 FOR DETAILS.

MASSDOT SURVEY NOTEBOOKS:

ELECTRONIC SURVEY BY GREEN INTERNATIONAL. WETLAND FLAGGING WAS PERFORMED BY WESTON & SAMPSON ON JANUARY 2018. COPIES OF SURVEY FILES MAY OBTAINED FROM MASSDOT. WETLAND FLAGGING WAS UPDATED BY WESTON & SAMPSON ON MARCH 8, 2024.

SCALES:

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

FOUNDATIONS:

FOUNDATIONS MAY BE ALTERED, IF NECESSARY, TO SUIT CONDITIONS ENCOUNTERED DURING CONSTRUCTION, WITH APPROVAL OF THE ENGINEER.

UNSUITABLE MATERIAL:

ALL UNSUITABLE MATERIAL SHALL BE REMOVED WITHIN THE LIMITS OF THE FOUNDATIONS OF THE STRUCTURE, AS DIRECTED BY THE ENGINEER.

ANCHOR BOLTS:

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

CONCRETE MIX:

ALL CONCRETE SHALL BE 5000 HP CONCRETE EXCEPT AS NOTED BELOW:

THE CEMENT CONCRETE SPECIFIED BELOW SHALL BE USED ON THE FOLLOWING BRIDGE COMPONENTS:

4000 PSI, 1 1/2", 565 CEMENT CONCRETE.....ABUTMENT STEMS, ABUTMENT FOOTINGS, APPROACH SLABS, CURTAIN WALLS, KEEPER BLOCKS, WINGWALL STEMS, WINGWALL FOOTINGS

4000 PSI, 3/4", 610 CEMENT CONCRETE.....ABUTMENT BACKWALLS, ABUTMENT CAPS, SHEAR KEYS

5000 PSI, 3/4" 685 HP CEMENT CONCRETE.....DECK SLAB, DECK HAUNCHES, END DIAPHRAGM, SIDEWALKS, WINGWALL COPINGS, PRECAST HIGHWAY GUARDRAIL TRANSITIONS

REINFORCEMENT:

REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M31 GRADE 60. UNLESS OTHERWISE NOTED ON THE CONSTRUCTION DRAWINGS, ALL BARS SHALL BE LAPPED AS FOLLOWS:

MODIFICATION CONDITION	#4 BARS	#5 BARS	#6 BARS	#7 BARS
1. NONE	16"	19"	23"	27"
2. 12" OF CONCRETE BELOW BAR	20"	25"	30"	35"
3. COATED BARS, COVER < 3d _b , OR CLEAR SPACING < 6d _b	23"	29"	34"	40"
4. COATED BARS, ALL OTHER CASES	18"	23"	27"	32"
5. CONDITION 2. AND 3.	26"	32"	39"	52"
6. CONDITION 2. AND 4.	24"	30"	36"	44"

ALL OTHER BARS SHALL BE LAPPED AS SHOWN ON THE CONSTRUCTION DRAWINGS.

EPOXY COATED BARS:

REINFORCING PROTECTION PER ELEMENT SHALL BE AS FOLLOWS:

EPOXY COATED BARS: DECK SLAB, BACKWALL, SELECT BARS IN THE ABUTMENT STEM PER THE DETAILS ON SHEET 15, END DIAPHRAGM, CURTAIN WALL, KEEPER BLOCK, SIDEWALK.

UNCOATED BARS: ABUTMENT STEMS, ABUTMENT FOOTINGS, WINGWALL STEMS, WINGWALL FOOTINGS, APPROACH SLAB.

STRUCTURAL STEEL:

ALL STRUCTURAL STEEL, INCLUDING PLATE GIRDERS, CONNECTION PLATES, STIFFENERS, GUSSET PLATES, DIAPHRAGMS, AND UTILITY SUPPORTS SHALL CONFORM TO AASHTO M270 GRADE 50 UNLESS OTHERWISE NOTED. STEEL FOR RAILINGS, SOLE PLATES, AND BEARINGS SHALL BE GRADE 36 UNLESS OTHERWISE NOTED.

MEMBRANE WATERPROOFING:

ALL MEMBRANE WATERPROOFING USED ON BRIDGE DECKS SHALL BE MEMBRANE WATERPROOFING FOR BRIDGE DECKS - SPRAY APPLIED.

UTILITIES:

LOCATIONS OF EXISTING UTILITIES SHOWN ARE APPROXIMATE. THE CONTRACTOR SHALL LOCATE AND PROTECT FROM DAMAGE ALL EXISTING UTILITIES. THE CONTRACTOR SHALL COORDINATE AND COOPERATE WITH THE RESPECTIVE UTILITY OWNERS FOR ALL UTILITIES THAT ARE TO BE TEMPORARILY OR PERMANENTLY RELOCATED FOR BRIDGE REPLACEMENT WORK.

TRAFFIC:

THE BRIDGE WILL BE CLOSED TO ALL TRAFFIC DURING ALL PHASES OF DEMOLITION AND CONSTRUCTION. TRAFFIC WILL BE CONTROLLED AS SHOWN IN THE TRAFFIC MANAGEMENT PLANS.

SUGGESTED CONSTRUCTION SEQUENCE:

- INSTALL EROSION CONTROLS.
- INSTALL THE DETOUR SIGNAGE AND CLOSE THE ROAD AND BRIDGE.
- CLEAR AND GRUB, REMOVE TREES, AND INSTALL TREE PROTECTION AS INDICATED.
- TEMPORARILY RELOCATE OVERHEAD UTILITIES TO THE WEST (UPSTREAM) SIDE OF THE EXISTING BRIDGE.
- CONSTRUCT TEMPORARY UTILITY BRIDGE TO THE WEST (UPSTREAM) SIDE OF THE EXISTING BRIDGE AND TEMPORARILY RELOCATE EXISTING GAS, WATER, AND SEWER MAINS TO TEMPORARY UTILITY BRIDGE.
NOTE: SEE SPECIAL PROVISIONS FOR UTILITY COMPANY CONTACT INFORMATION FOR COORDINATION PURPOSES.
- INSTALL TEMPORARY PROTECTIVE SHIELDING FOR BRIDGE DEMOLITION.
- DEMOLISH EXISTING GAS, WATER, AND SEWER LINES ALONG THE SPAN OF THE EXISTING BRIDGE.
- DEMOLISH AND REMOVE EXISTING BRIDGE SUPERSTRUCTURE AND GUARDRAIL.
- INSTALL CONTROL OF WATER STRUCTURE AND SUPPORT OF EXCAVATION ON THE SOUTH SIDE OF THE EXISTING BRIDGE.
- EXCAVATE ALL AROUND THE EXISTING CONCRETE SOUTH ABUTMENT AND WINGWALLS.
- DEMOLISH AND REMOVE THE REQUIRED LIMITS FOR THE EXISTING CONCRETE SOUTH ABUTMENT AND WINGWALLS.
- INSTALL CAST-IN-PLACE CONCRETE CAP ON THE EXISTING SOUTH ABUTMENT.
- PREPARE SUBGRADE AND INSTALL DRILLED MICROPILES ON THE SOUTH SIDE OF THE BRIDGE.
- CONSTRUCT THE CAST-IN-PLACE CONCRETE ABUTMENT AND WINGWALL FOOTINGS, ABUTMENT STEM AND WINGWALLS ON THE SOUTH SIDE OF THE BRIDGE.
- BACKFILL BEHIND THE ABUTMENT AND WINGWALLS ON THE SOUTH SIDE OF THE BRIDGE TO THE BOTTOM OF THE APPROACH SLAB ELEVATION.
- INSTALL RIPRAP AND NATURAL STREAMBED MATERIAL AROUND THE PROPOSED SOUTH ABUTMENT AND WINGWALLS TO FINISH GRADES.
- REMOVE CONTROL OF WATER STRUCTURE AND SUPPORT OF EXCAVATION ON THE SOUTH SIDE OF THE BRIDGE
- MOBILIZE TO THE NORTH SIDE OF THE BRIDGE AND REPEAT STEPS 9 THRU 17 ON THE NORTH SIDE OF THE BRIDGE.
NOTE: CONTRACTOR MAY CONSTRUCT BOTH SUBSTRUCTURES AT THE SAME TIME.
- INSTALL PLATE GIRDERS, DIAPHRAGMS AND UTILITY SUPPORTS.
- INSTALL PROPOSED UTILITIES.
- INSTALL REINFORCING AND CONSTRUCT CAST-IN-PLACE CONCRETE DECK AND SIDEWALKS.
- INSTALL PRECAST AND CAST-IN-PLACE HIGHWAY GUARDRAIL TRANSITIONS AND S3-TL4 BRIDGE RAILING.
- INSTALL REINFORCING AND CONSTRUCT CAST-IN-PLACE APPROACH SLABS.
- INSTALL SPRAY-APPLIED MEMBRANE WATERPROOFING AND PAVE PROTECTIVE COURSE ON BRIDGE DECK.
- PERFORM FULL-DEPTH ROADWAY RECONSTRUCTION, GRADING AND ESTABLISH VEGETATION ON NORTH AND SOUTH SIDES OF THE BRIDGE.
- PLACE HMA BASE COURSE, INSTALL GUARDRAIL, PAVE WEARING COURSE AND COMPLETE LINE STRIPING. (COORDINATE REMOVAL AND INSTALLATION OF TEMPORARY AND PERMANENT UTILITY POLES, RESPECTIVELY, BASED ON GUARDRAIL INSTALLATION AND ACCESS).
- REMOVE TEMPORARY UTILITY BRIDGE.
- INSTALL PERMANENT UTILITY POLES AND TRANSFER OVERHEAD UTILITIES TO PERMANENT POLE LOCATIONS.
- REMOVE TEMPORARY UTILITY POLES.
- REMOVE EROSION CONTROLS AND DETOUR SIGNAGE AND OPEN ROADWAY AND BRIDGE TO TRAFFIC.

**SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	20	55
PROJECT FILE NO.		608640	

GENERAL NOTES

TRAFFIC DATA		
	ROADWAY OVER	ROADWAY UNDER
DESIGN YEAR	2028	N/A
AVERAGE DAILY TRAFFIC - PRESENT	1001	N/A
AVERAGE DAILY TRAFFIC - DESIGN YEAR	1088	N/A
DESIGN HOURLY VOLUME	N/A	N/A
DIRECTIONAL DISTRIBUTION	N/A	N/A
TRUCK PERCENTAGE - AVERAGE DAY	4%	N/A
TRUCK PERCENTAGE - PEAK HOUR	4%	N/A
DESIGN SPEED	30 MPH	N/A
DIRECTIONAL DESIGN HOURLY VOLUME	N/A	N/A

SEISMIC DESIGN CRITERIA	
DESIGN RETURN PERIOD:	1000 YR
DESIGN SPECTRA	
As	0.099g
SDs	0.213g
SD1	0.090g
SITE CLASS	D
SEISMIC DESIGN CATEGORY (SDC)	A

HYDRAULIC DESIGN DATA	
DRAINAGE AREA (SQ. MILES)	92.3
DESIGN FLOOD DISCHARGE (C.F.S.)	3510
DESIGN FLOOD FREQUENCY (YEARS)	10
DESIGN FLOOD VELOCITY (F.P.S.)	5.68
DESIGN FLOOD ELEVATION (FEET, NAVD)	314.7
BASE (100-YEAR) FLOOD DATA	
BASE FLOOD DISCHARGE (C.F.S.)	6660
BASE FLOOD ELEVATION (FEET, NAVD)	317.4
DESIGN AND CHECK SCOUR DATA	
DESIGN SCOUR FLOOD EVENT RETURN FREQUENCY (YEARS)	25
DESIGN FLOOD ABUTMENT SCOUR DEPTH (FEET)	3.4
DESIGN FLOOD PIER SCOUR DEPTH (FEET)	N/A
CHECK SCOUR FLOOD EVENT RETURN FREQUENCY (YEARS)	50
CHECK FLOOD ABUTMENT SCOUR DEPTH (FEET)	4.3
CHECK FLOOD PIER SCOUR DEPTH (FEET)	N/A
FLOOD OF RECORD	
DISCHARGE (C.F.S.)	UNKNOWN
FREQUENCY (IF KNOWN, YEARS)	UNKNOWN
MAXIMUM ELEVATION (FEET, NAVD)	UNKNOWN
DATE (MM/YYYY)	08/1955
HISTORY OF ICE FLOES	NONE
EVIDENCE OF SCOUR AND EROSION	NONE

TEMPORARY WATER CONTROL DESIGN DATA	
DESIGN FLOOD DISCHARGE (C.F.S.)	1680
DESIGN FLOOD FREQUENCY (YEARS)	2
DESIGN FLOOD VELOCITY (F.P.S.)	6.89
DESIGN FLOOD ELEVATION (FEET, NAVD)	312.24

NOTE: THE TEMPORARY WATER CONTROL DATA IS BASED ON AN APPROXIMATE 58 FOOT OPENING.

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USE ONLY PRINTS OF LATEST DATE	

SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	21	55
PROJECT FILE NO.		608640	

BORING LOGS (SHEET 1 OF 2)

BORING BB-1

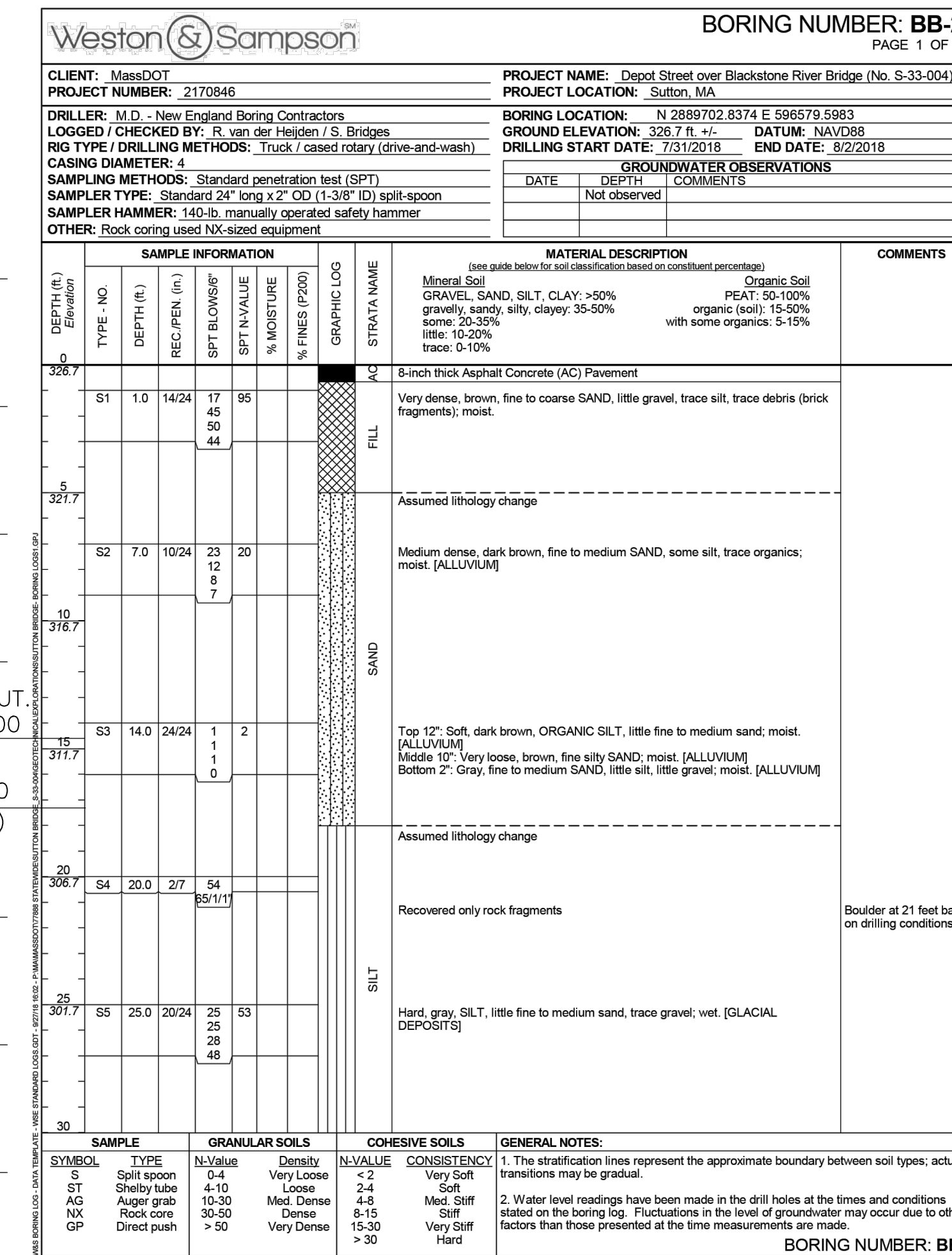
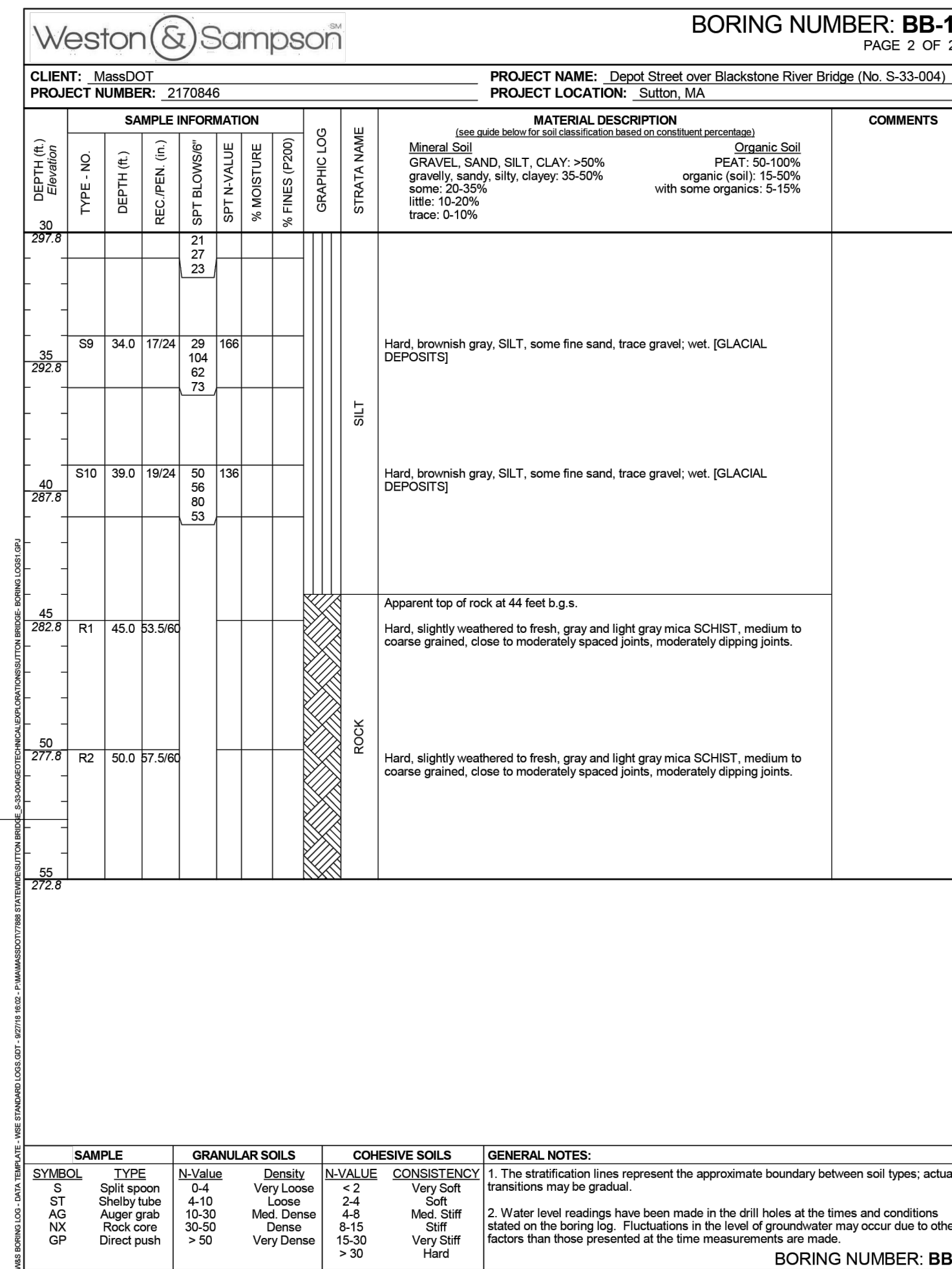
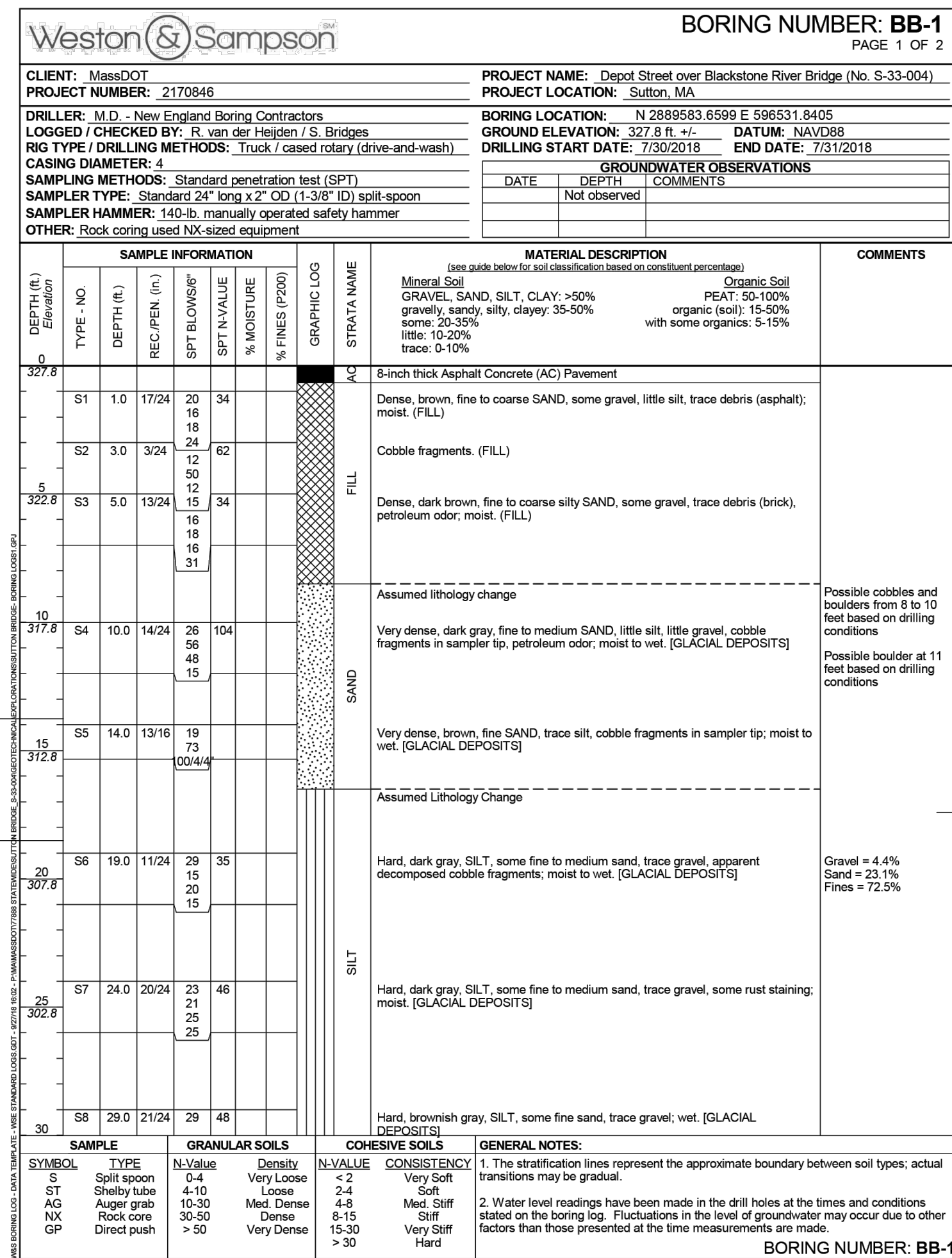
STATION: 12+13.97±
 OFFSET: 9.09' LEFT
 GROUND ELEVATION: 327.78±

BORING BB-1 (CONT.)

STATION: 12+13.97±
 OFFSET: 9.09' LEFT
 GROUND ELEVATION: 327.78±

BORING BB-2

STATION: 13+42.36±
 OFFSET: 8.61' LEFT
 GROUND ELEVATION: 326.66±



BORING/PROBE NOTES:

- LOCATION OF BORING SHOWN ON THE PLAN THUS **BB**
- PROBE REFUSAL DEPTHS WERE INCONCLUSIVE, THEREFORE THEY ARE NOT SHOWN ON THE PLANS (SEE GEOTECHNICAL REPORT FOR MORE INFORMATION).
- BORINGS AND PROBES ARE TAKEN FOR PURPOSE OF DESIGN AND SHOW CONDITIONS AT BORING POINTS AND PROBE POINTS ONLY, BUT DO NOT NECESSARILY SHOW THE NATURE OF THE MATERIALS TO BE ENCOUNTERED DURING CONSTRUCTION.
- WATER LEVELS SHOWN ON THE BORING LOGS WERE OBSERVED AT THE TIME OF TAKING BORINGS AND DO NOT NECESSARILY SHOW THE TRUE GROUND WATER LEVEL.
- FIGURES IN COLUMNS INDICATE NUMBER OF BLOWS REQUIRED TO DRIVE A 1 1/8" I.D. SPLIT SPOON SAMPLER 6" USING A 140 POUND WEIGHT FALLING 30".
- BORING SAMPLES ARE STORED AT A STORAGE FACILITY LOCATED ON ROUTE 114 (219 WINTHROP AVE.) LAWRENCE, MA. THE CONTRACTOR MAY EXAMINE THE SOIL AND ROCK SAMPLES BY CONTACTING THE MASSDOT GEOTECHNICAL SECTION AT 10 PARK PLAZA BOSTON, MA.
- ALL BORINGS AND PROBES WERE MADE BETWEEN JULY 30 AND AUGUST 3, 2018.
- BORINGS AND PROBES WERE MADE BY NEW ENGLAND BORING CONTRACTORS. (40 FORDWAY STREET DERRY, NH 03038)
- THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988 IS USED THROUGHOUT.

BORING LOCATION TABLE		
BORING NUMBER	NORTHING	EASTING
BB-1	2889583.6599	596531.8405
BB-2	2889702.8374	596579.5983
BB-3	2889683.3301	596586.3024

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SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	22	55
PROJECT FILE NO.		608640	

BORING LOGS (SHEET 2 OF 2)

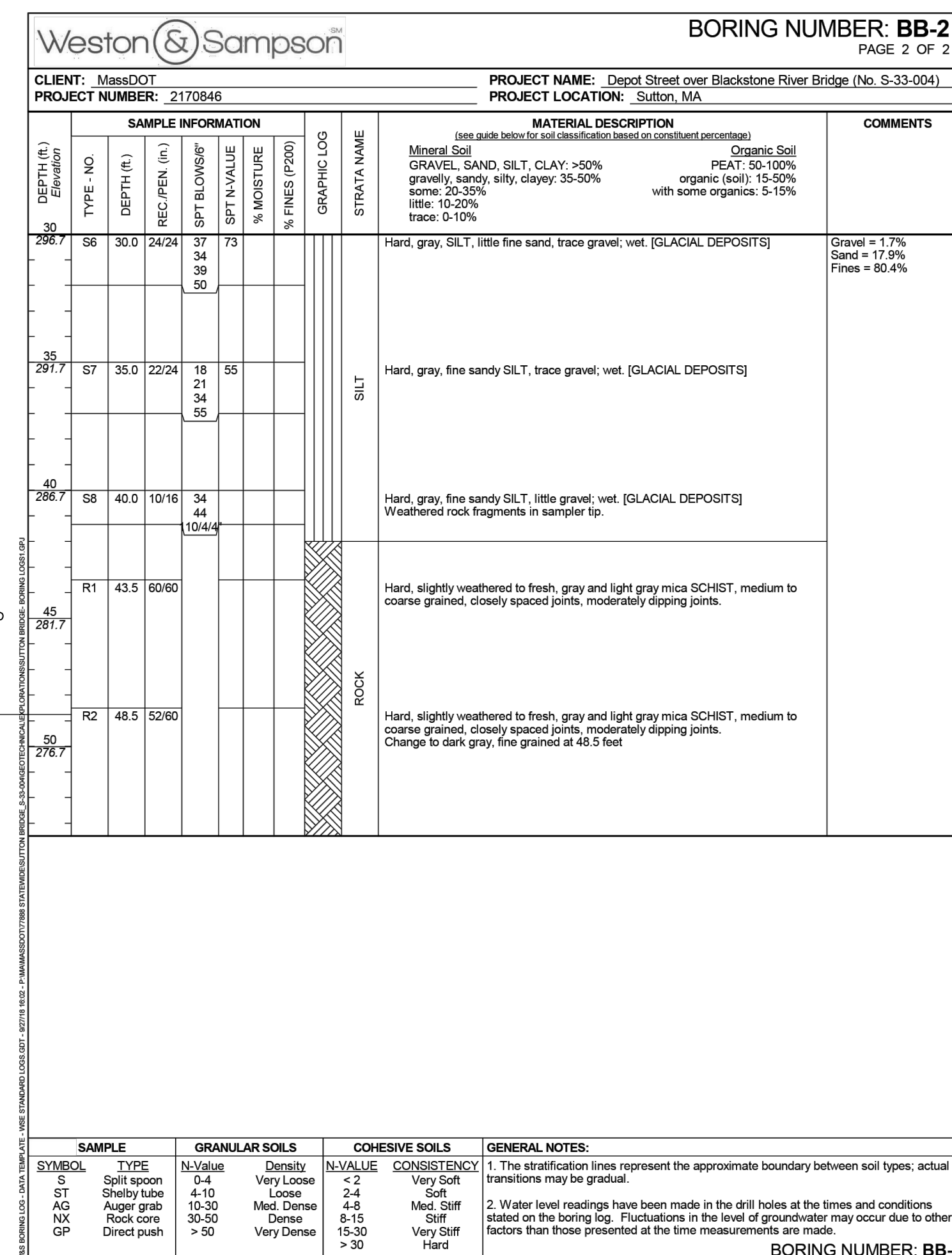
BORING BB-2 (CONT.)

STATION: 13+42.36±
 OFFSET: 8.61' LEFT
 GROUND ELEVATION: 326.66±

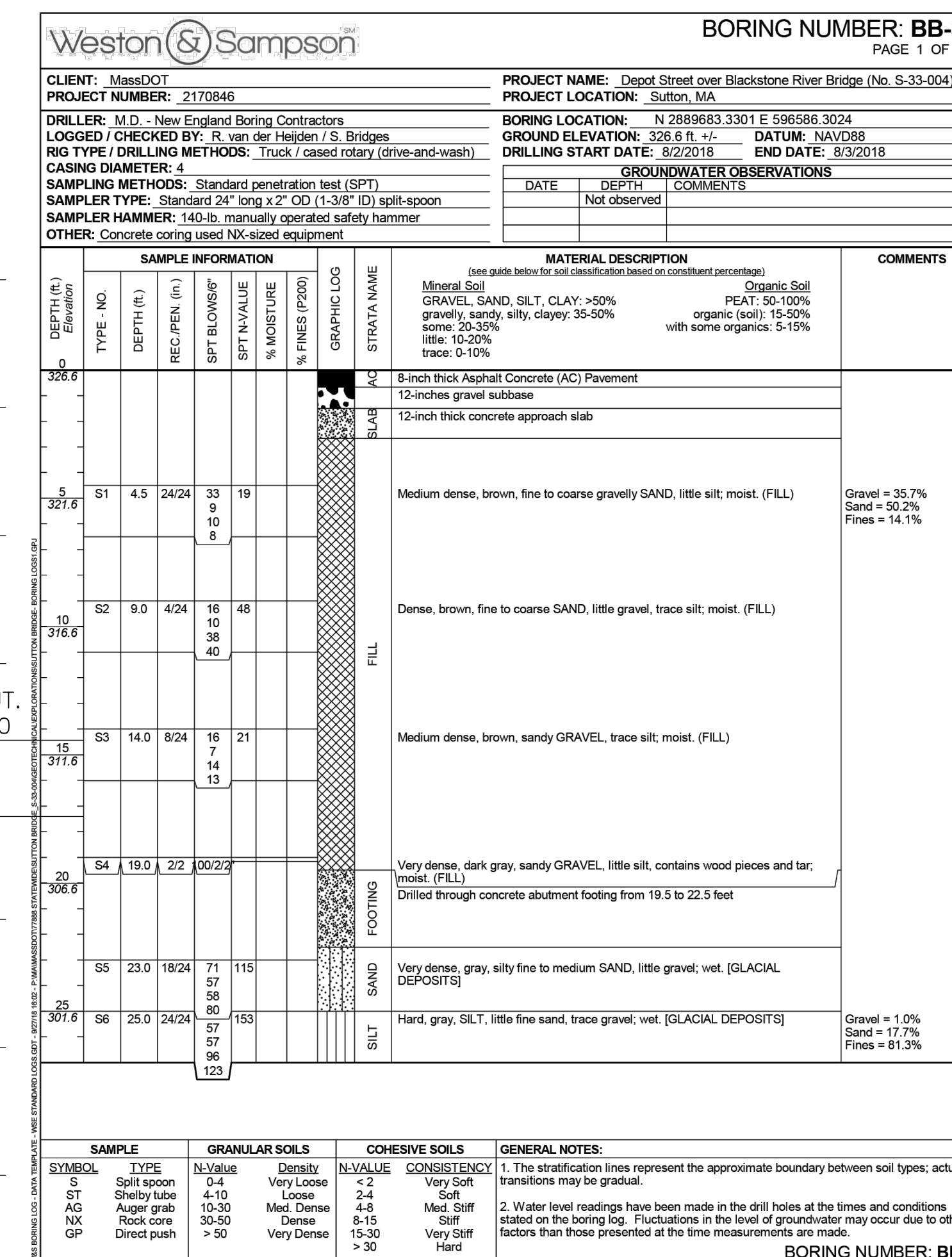
BORING BB-3

STATION: 13+26.70±
 OFFSET: 4.81' RIGHT
 GROUND ELEVATION: 326.56±

EL. 300.00
 EL. 295.00
 EL. 290.00
 EL. 285.00
 ESTIMATED TIP OF N. ABUT. MICROPILES EL. 278.00±
 EL. 275.00



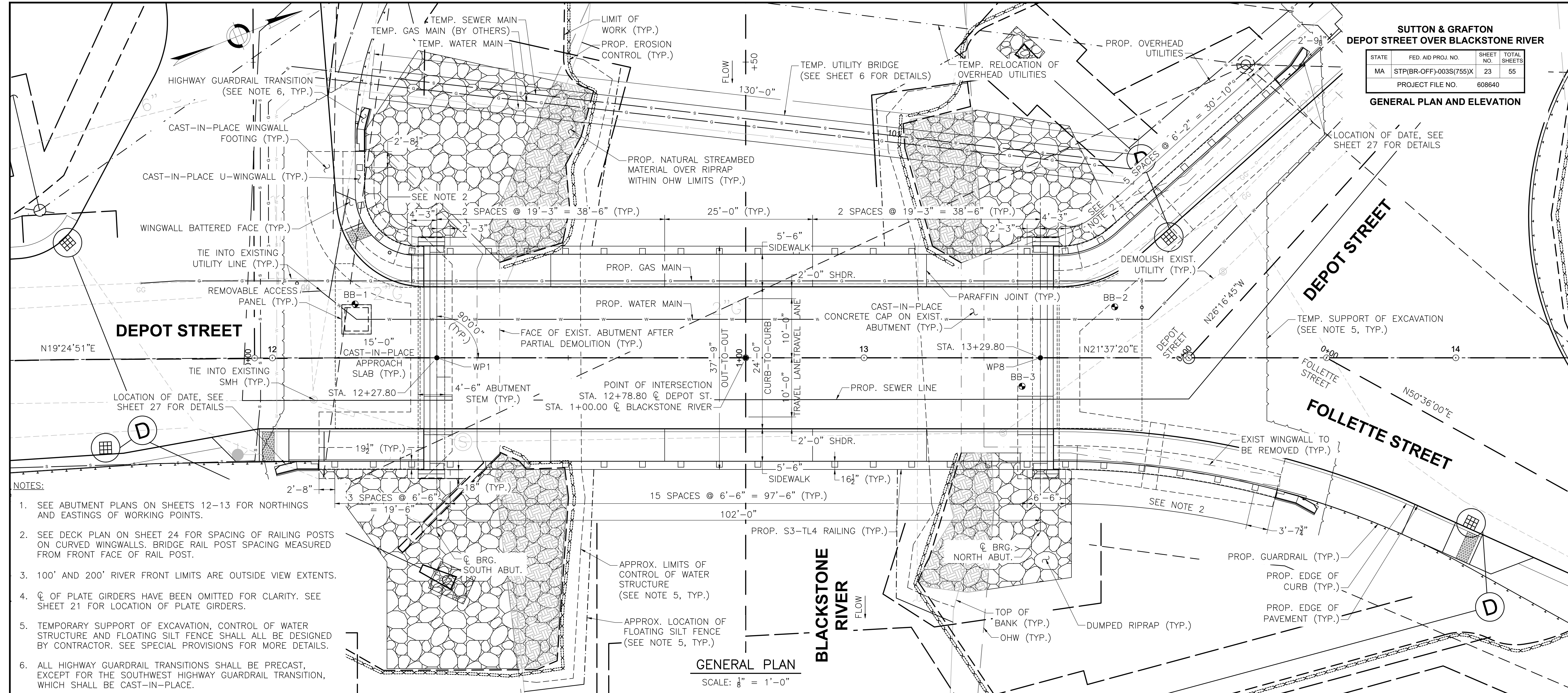
EL. 330.00
 EL. 325.00
 EL. 320.00
 EL. 315.00
 BOT. OF N. ABUT. PILE CAP 312.00
 EL. 309.30 (7/30/18)
 EL. 305.00
 EL. 300.00
 EL. 295.00



BORING/PROBE NOTES:

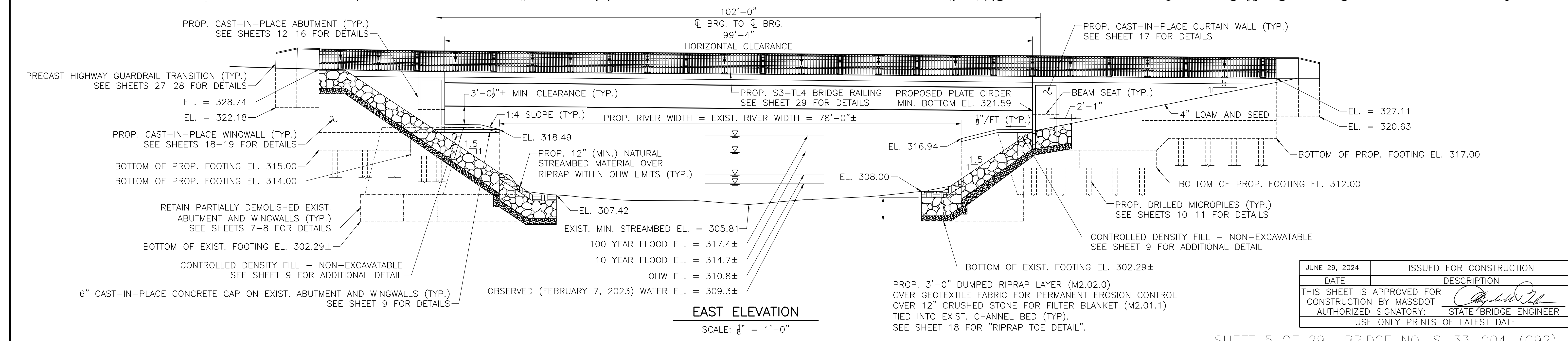
FOR BORING/PROBE NOTES AND BORING LOCATION TABLE, SEE SHEET 3.

JUNE 29, 2024	ISSUED FOR CONSTRUCTION
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- NOTES:**
- SEE ABUTMENT PLANS ON SHEETS 12-13 FOR NORTHINGS AND EASTINGS OF WORKING POINTS.
 - SEE DECK PLAN ON SHEET 24 FOR SPACING OF RAILING POSTS ON CURVED WINGWALLS. BRIDGE RAIL POST SPACING MEASURED FROM FRONT FACE OF RAIL POST.
 - 100' AND 200' RIVER FRONT LIMITS ARE OUTSIDE VIEW EXTENTS.
 - CL OF PLATE GIRDERS HAVE BEEN OMITTED FOR CLARITY. SEE SHEET 21 FOR LOCATION OF PLATE GIRDERS.
 - TEMPORARY SUPPORT OF EXCAVATION, CONTROL OF WATER STRUCTURE AND FLOATING SILT FENCE SHALL ALL BE DESIGNED BY CONTRACTOR. SEE SPECIAL PROVISIONS FOR MORE DETAILS.
 - ALL HIGHWAY GUARDRAIL TRANSITIONS SHALL BE PRECAST, EXCEPT FOR THE SOUTHWEST HIGHWAY GUARDRAIL TRANSITION, WHICH SHALL BE CAST-IN-PLACE.

GENERAL PLAN
 SCALE: 1/8" = 1'-0"



EAST ELEVATION
 SCALE: 1/8" = 1'-0"

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SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	24	55
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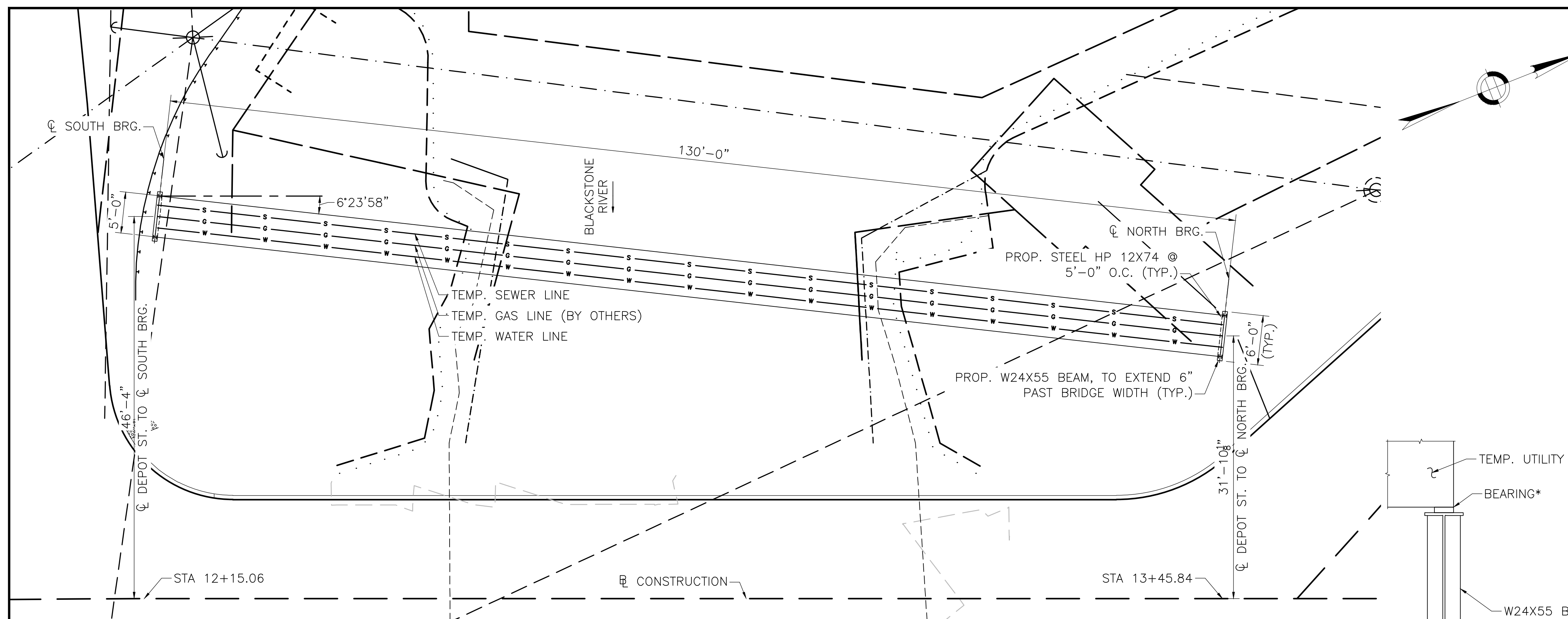
TEMPORARY UTILITY BRIDGE DETAILS

NOTES:

1. THE PLAN AND ELEVATION SHOWN FOR THE TEMPORARY UTILITY BRIDGE IS CONCEPTUAL. THE DEPTH, LENGTH, AND ϕ OF BEARING LOCATIONS MAY BE ADJUSTED AND SHALL BE SUBMITTED FOR REVIEW BY THE ENGINEER. CONTRACTOR SHALL FOLLOW APPROX. DIMENSIONS GIVEN IN "DESIGN CRITERIA FOR UTILITY BRIDGE" AND ELEVATIONS IN "PROFILE - TEMPORARY UTILITY BRIDGE" ON THIS SHEET.
2. CONTRACTOR SHALL RESTORE AREAS IMPACTED BY THE TEMPORARY UTILITY BRIDGE AS SHOWN IN THE CIVIL PLANS.
3. SEE GENERAL PLAN ON SHEET 5 FOR LOCATION OF UTILITIES IN THE FINAL CONDITION.
4. SEE SHEET 22 FOR SUPPORT DETAILS IN THE FINAL CONDITION FOR ALL UTILITIES. CONNECTION DETAILS BETWEEN UTILITY SUPPORTS AND TEMPORARY UTILITY BRIDGE SHALL BE PROVIDED BY THE CONTRACTOR FOR REVIEW BY THE ENGINEER.
5. ALL WORK PERTAINING TO THE TEMPORARY UTILITY BRIDGE, EXCLUDING ANY WORK PERTAINING TO TEMPORARILY MOVING UTILITIES TO/FROM THE TEMPORARY UTILITY BRIDGE, SHALL BE PAID FOR UNDER ITEM 993.2 - TEMPORARY UTILITY BRIDGE. TEMPORARY RELOCATION FOR THE SEWER MAIN SHALL BE PAID FOR UNDER ITEM 251.08 - 8 INCH TEMPORARY SANITARY SEWER HDPE PIPE BYPASS SYSTEM. TEMPORARY RELOCATION FOR THE WATER MAIN SHALL BE PAID FOR UNDER ITEM 345.8 - 8 INCH HDPE TEMPORARY SERVICE PIPE. TEMPORARY GAS MAIN SHALL BE BY OTHERS.

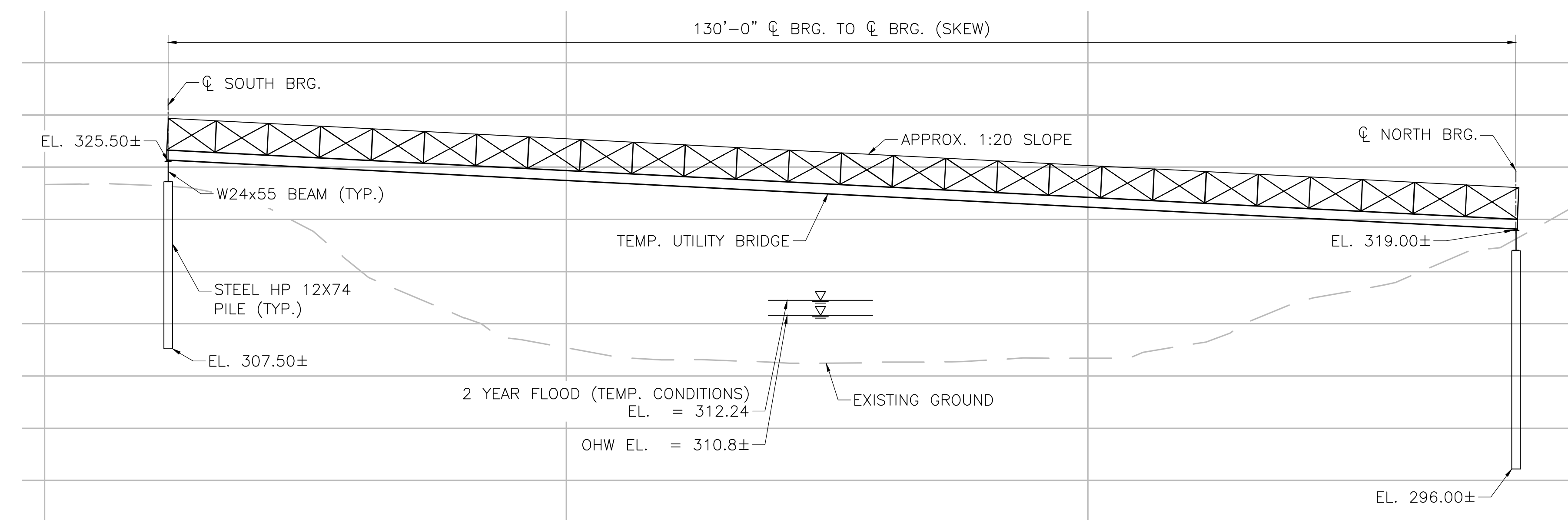
DESIGN CRITERIA FOR UTILITY BRIDGE:

1. TEMPORARY UTILITY BRIDGE APPROX. DIMENSIONS: 130' LONG x 5' WIDE.
2. CONCEPTUAL DESIGN SHOWN CONSISTS OF TEMPORARY UTILITY BRIDGE SUPPORTED ON A STEEL BEAM WITH TWO STEEL H-PILES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLETE DESIGN OF THE TEMPORARY UTILITY BRIDGE BASED ON THE PROPOSED CONCEPT AS SHOWN ON THE PLANS OR ANY ALTERNATIVE CONCEPTS.
3. THE ASSUMED UTILITY LOADS FOR THE TEMPORARY UTILITY BRIDGE ARE AS FOLLOWS:
 TEMPORARY WATER MAIN = 60 LB/FT
 TEMPORARY GAS MAIN = 22 LB/FT
 TEMPORARY SEWER MAIN = 60 LB/FT
4. DEAD LOAD SURCHARGE IN THE AREA OF THE TEMPORARY UTILITY BRIDGE PILE BENTS SHALL NOT EXCEED 1 KSF. THE DEAD LOAD SURCHARGE LIMITS APPLY DURING THE LENGTH OF CONSTRUCTION.
5. CONTRACTOR TO COORDINATE DESIGN OF TEMPORARY UTILITY BRIDGE AND FOUNDATIONS BASED ON ESTIMATED LOADS FROM TEMPORARY UTILITY BRIDGE FABRICATOR.
6. AS PART OF THE TEMPORARY UTILITY BRIDGE, THE CONTRACTOR IS RESPONSIBLE FOR ANY LIMITS IN WHICH UTILITIES ARE NOT SUPPORTED BY THE TEMPORARY UTILITY BRIDGE AND HAVE NOT YET REACHED EXISTING GROUND.



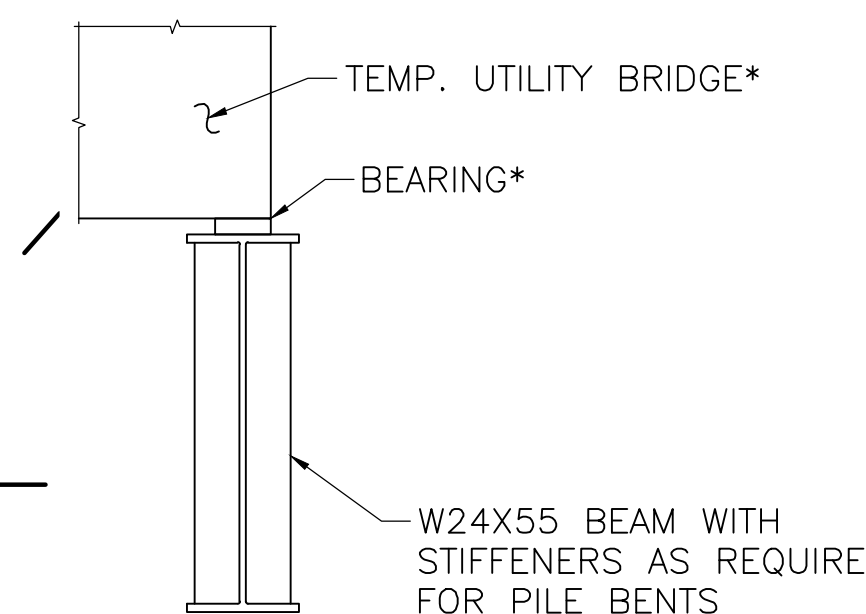
TEMPORARY UTILITY BRIDGE PLAN

SCALE: $\frac{1}{8}'' = 1'-0''$



PROFILE - TEMPORARY UTILITY BRIDGE

SCALE: $\frac{1}{8}'' = 1'-0''$

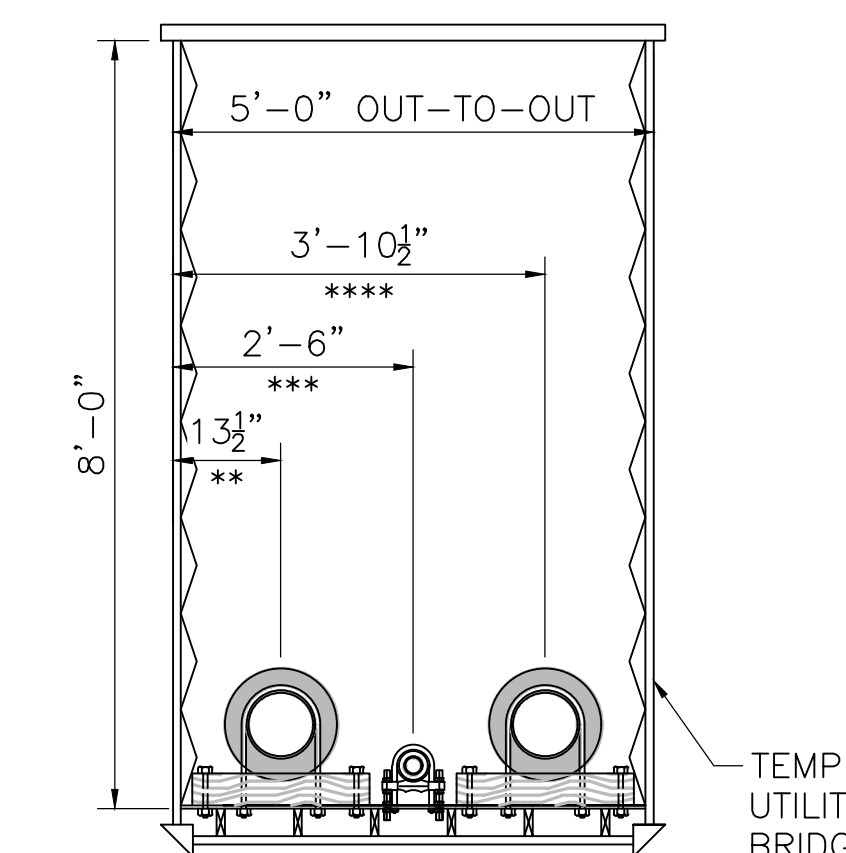


NOTE: NORTH SUPPORT SHOWN, SOUTH SUPPORT SIMILAR.

* TEMP. UTILITY BRIDGE AND BEARINGS SHALL BE DESIGNED BY CONTRACTOR, AND SENT TO ENGINEER FOR APPROVAL.

STEEL BEAM SUPPORT DETAIL

SCALE: $\frac{1}{2}'' = 1'-0''$



* TEMP. UTILITY BRIDGE AND UTILITY SUPPORT SHALL BE DESIGNED BY CONTRACTOR, AND SENT TO ENGINEER FOR APPROVAL.

** TEMP. 8" SEWER MAIN SUPPORTED ON 4"x4" TREATED TIMBER BLOCKS WITH 2" INSULATION AND $\frac{5}{8}''$ U-BOLTS AT 10'-0" (MAX.) SPACING.

*** TEMP. 2" GAS MAIN WITH 4" CASING (3.55" I.D.) WITH $\frac{5}{8}''$ U-BOLTS AND ROLLER SUPPORTS AT 10'-0" (MAX.) SPACING.

**** TEMP. 8" WATER MAIN SUPPORTED ON 4"x4" TREATED TIMBER BLOCKS WITH 2" INSULATION AND $\frac{5}{8}''$ U-BOLTS AT 10'-0" (MAX.) SPACING.

TYPICAL CROSS-SECTION

SCALE: $\frac{1}{2}'' = 1'-0''$

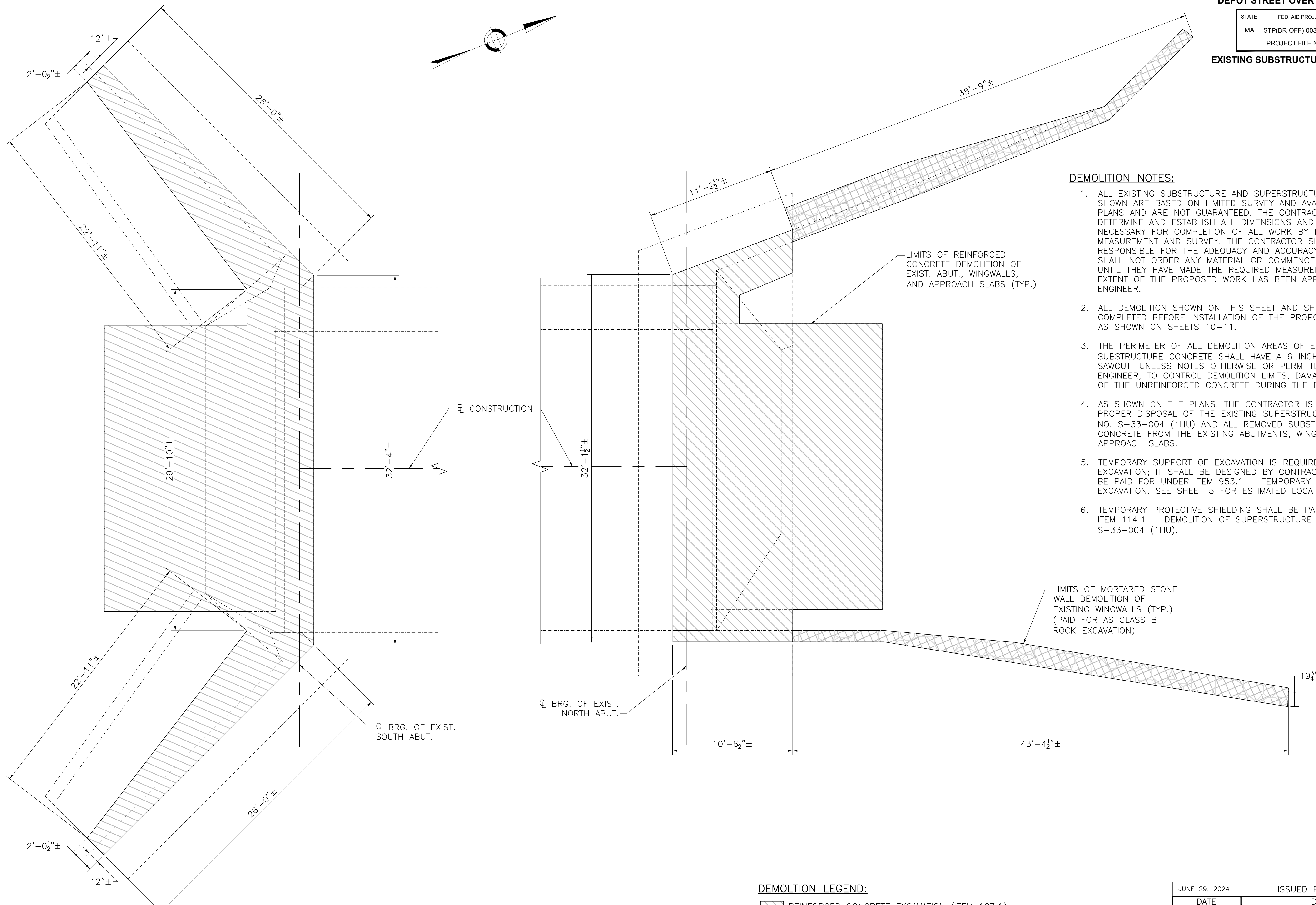
DATE	DESCRIPTION
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AUTHORIZED SIGNATORY:	STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE	

**SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	25	55
PROJECT FILE NO.		608640	

EXISTING SUBSTRUCTURE DEMOLITION PLAN

608640_BR7-9(EXIST ABUT DETAILS).DWG Plotted on 10-Jun-2024 12:05 PM Final Structural Submittal (SF) 29-JUNE-2024



DEMOLITION NOTES:

1. ALL EXISTING SUBSTRUCTURE AND SUPERSTRUCTURE DIMENSIONS SHOWN ARE BASED ON LIMITED SURVEY AND AVAILABLE BRIDGE PLANS AND ARE NOT GUARANTEED. THE CONTRACTOR SHALL DETERMINE AND ESTABLISH ALL DIMENSIONS AND DETAILS NECESSARY FOR COMPLETION OF ALL 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 THEY HAVE MADE THE REQUIRED MEASUREMENTS AND THE EXTENT OF THE PROPOSED WORK HAS BEEN APPROVED BY THE ENGINEER.
2. ALL DEMOLITION SHOWN ON THIS SHEET AND SHEET 8 MUST BE COMPLETED BEFORE INSTALLATION OF THE PROPOSED MICROPILES, AS SHOWN ON SHEETS 10-11.
3. THE PERIMETER OF ALL DEMOLITION AREAS OF EXISTING SUBSTRUCTURE CONCRETE SHALL HAVE A 6 INCH (MIN.) DEEP SAWCUT, UNLESS NOTES OTHERWISE OR PERMITTED BY THE ENGINEER, TO CONTROL DEMOLITION LIMITS, DAMAGE AND CRACKING OF THE UNREINFORCED CONCRETE DURING THE DEMOLITION.
4. AS SHOWN ON THE PLANS, THE CONTRACTOR IS RESPONSIBLE FOR PROPER DISPOSAL OF THE EXISTING SUPERSTRUCTURE OF BRIDGE NO. S-33-004 (1HU) AND ALL REMOVED SUBSTRUCTURE CONCRETE FROM THE EXISTING ABUTMENTS, WINGWALLS AND APPROACH SLABS.
5. TEMPORARY SUPPORT OF EXCAVATION IS REQUIRED DURING EXCAVATION; IT SHALL BE DESIGNED BY CONTRACTOR AND SHALL BE PAID FOR UNDER ITEM 953.1 - TEMPORARY SUPPORT OF EXCAVATION. SEE SHEET 5 FOR ESTIMATED LOCATION.
6. TEMPORARY PROTECTIVE SHIELDING SHALL BE PAID FOR UNDER ITEM 114.1 - DEMOLITION OF SUPERSTRUCTURE OF BRIDGE S-33-004 (1HU).

DEMOLITION LEGEND:

- REINFORCED CONCRETE EXCAVATION (ITEM 127.1)
- CLASS B ROCK EXCAVATION (ITEM 144.)

SUBSTRUCTURE DEMOLITION PLAN

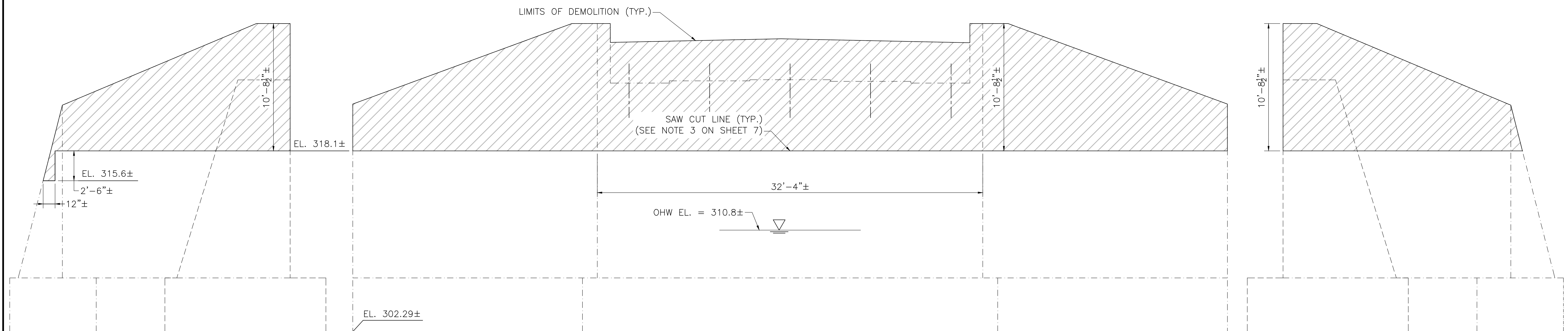
SCALE: 1/4" = 1'-0"

JUNE 29, 2024	ISSUED FOR CONSTRUCTION
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SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	26	55
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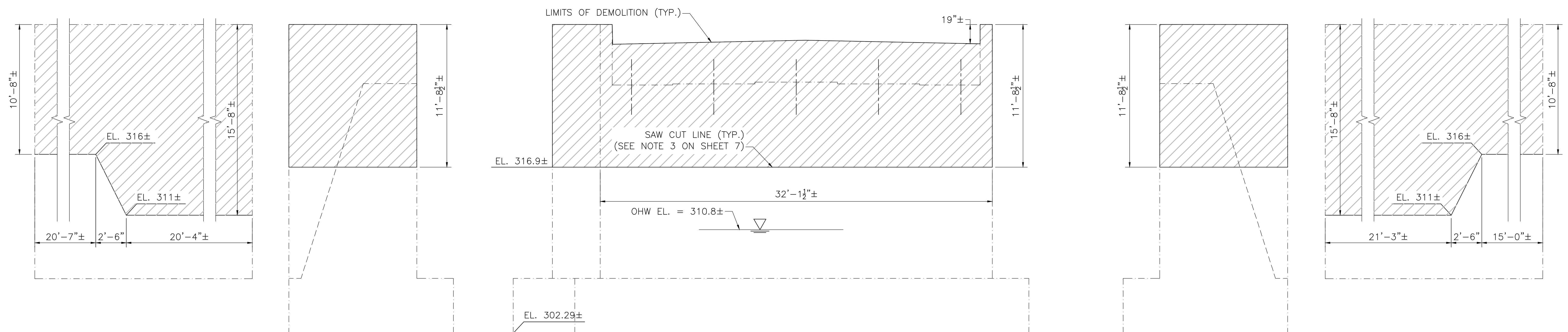
EXISTING SUBSTRUCTURE DEMOLITION ELEVATION



SOUTHEAST WINGWALL

SOUTH ABUTMENT

SOUTHWEST WINGWALL



NORTHWEST WINGWALL

NORTH ABUTMENT

NORTHEAST WINGWALL

NOTES:

1. FOR DEMOLITION NOTES AND LEGEND, SEE SHEET 7.

SUBSTRUCTURE DEMOLITION ELEVATIONS

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

JUNE 29, 2024	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT	
AUTHORIZED SIGNATORY:	STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE	

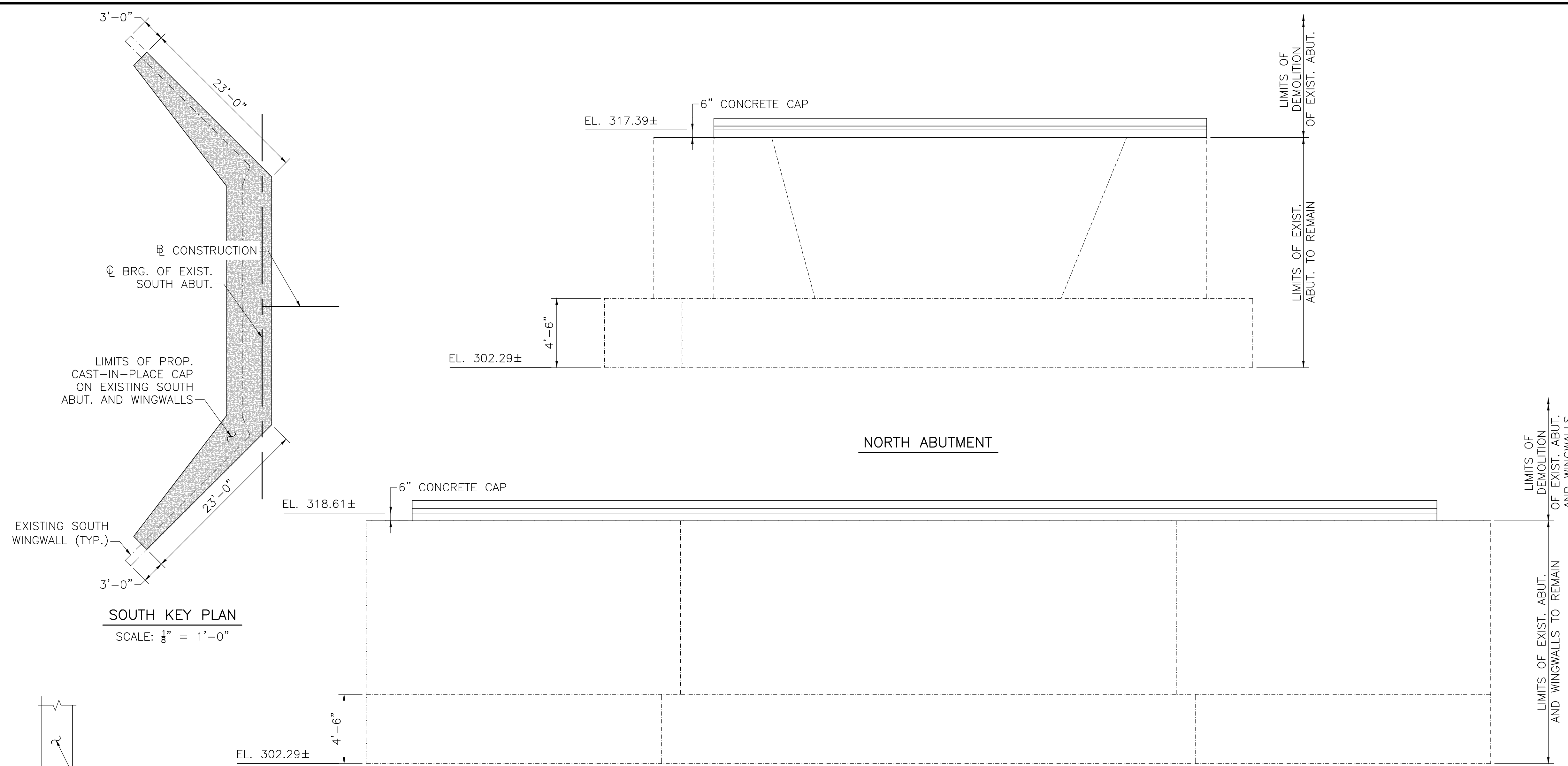
SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	27	55
PROJECT FILE NO.		608640	

MODIFICATIONS TO EXISTING ABUTMENTS

ABUTMENT SURFACE PREPARATION NOTES:

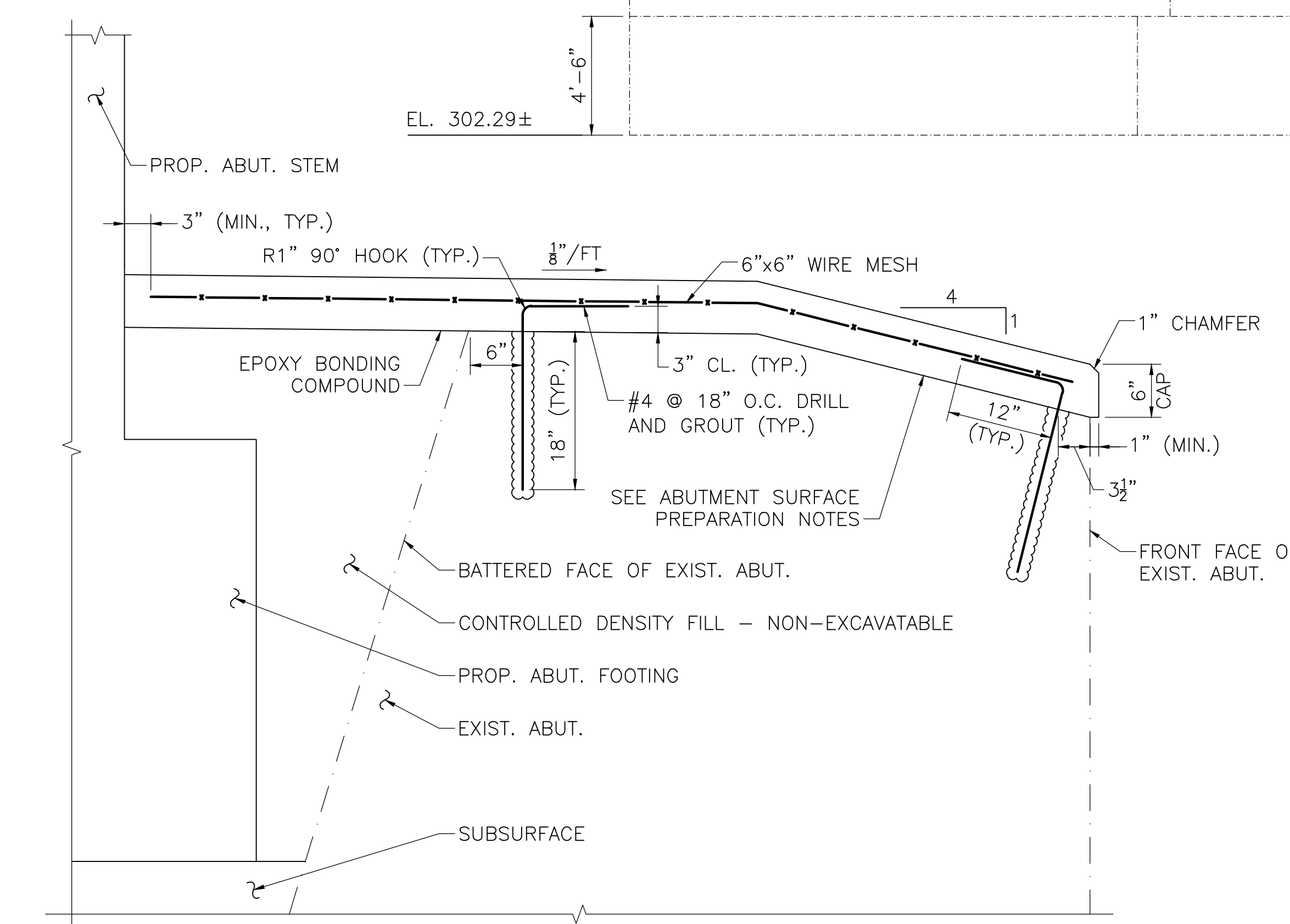
- REMOVE DETERIORATED AND UNSOUND CONCRETE AS WELL AS SOUND CONCRETE WHERE NECESSARY. CUT REINFORCEMENT TO A MINIMUM OF 2" ABOVE SURFACE.
- EXPOSED REINFORCEMENT IS TO BE CLEANED BY MECHANICAL CLEANING AND HIGH PRESSURE WASHING WITH WATER THAT CONTAINS NO DETERGENTS OR BOND INHIBITING CHEMICALS. WHERE ACTIVE CORROSION HAS OCCURRED (THAT WOULD INHIBIT BONDING) SANDBLAST STEEL TO SSPC-SP5.
- REMOVE BOND INHIBITING CHEMICALS (DIRT, GREASE, LOOSELY BONDED AGGREGATE) BY ABRASION PLASTIC OR HIGH PRESSURE WASHING WITH WATER THAT CONTAINS NO DETERGENTS OR BOND INHIBITING CHEMICALS. CHECK THE CONCRETE SURFACES AFTER CLEANING TO INSURE THAT THE SURFACE IS FREE FROM ADDITIONAL LOOSE AGGREGATE OR THAT ADDITIONAL DELAMINATIONS ARE NOT PRESENT.
- ROUGHEN EXISTING CONCRETE SURFACE. SEE SPECIAL PROVISIONS FOR SCARAFIED SURFACE PROFILE REQUIREMENTS.
- PRESOAK CONCRETE SUBSTRATE WITH A WATER HOSE FOR 24 HOURS OR AS LONG AS SITE CONSTRAINTS PERMIT. AT TIME OF CONCRETE PLACEMENT, SUBSTRATE SHALL BE SATURATED SURFACE DRY WITH NO STANDING WATER.
- EPOXY BONDING COMPOUND SHALL BE USED (AS DIRECTED BY THE ENGINEER), THE MATERIALS SHALL MEET AASHTO M235 TYPE V. GRADE AND CLASS SHALL BE SPECIFIED FOR EACH INDIVIDUAL APPLICATION. THE EPOXY COMPOUND SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. IN NO CASE WILL THE EPOXY BONDING COMPOUND BE ALLOWED TO CURE TO A HARDENED STATE PRIOR TO CONCRETE PLACEMENT. IF THIS DOES OCCUR IT MUST BE COMPLETELY REMOVED.



NORTH ABUTMENT

**SOUTH ABUTMENT AND WINGWALLS
 MODIFICATIONS TO EXISTING ABUTMENTS**

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



ABUTMENT MODIFICATION NOTES:

- ALL EXISTING SUBSTRUCTURE AND SUPERSTRUCTURE DIMENSIONS SHOWN ARE BASED ON LIMITED SURVEY AND AVAILABLE BRIDGE PLANS AND ARE NOT GUARANTEED.
- ABUTMENT CAP SHALL BE 4000 PSI, 3/4 IN, 610 CEMENT CONCRETE.
- THE 6" CAST-IN-PLACE CONCRETE CAP ON EXISTING ABUTMENTS EXTENDS ALONG EXISTING WINGWALLS TO FACE OF PROPOSED ABUTMENTS FOR SLOPE PAVING. EXISTING WINGWALLS IN AREA COVERED BY RIPRAP SHALL NOT BE CAPPED.
- THE 6" CAST-IN-PLACE CONCRETE CAP ON EXISTING ABUTMENTS, DRILLED AND GROUTED #4 DOWELS, AND 6"x6" WIRE MESH SHALL ALL BE PAID FOR UNDER ITEM 995.01.
- DRILLING AND GROUTING SHALL BE IN ACCORDANCE WITH THE SPECIAL PROVISIONS. EDGE OF DRILLED HOLES SHALL PROVIDE 2" (MIN.) EDGE DISTANCE UNLESS OTHERWISE NOTED.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGES THAT REQUIRE REPAIRS TO THE EXISTING ABUTMENTS IN THE LIMITS OF WHICH THE ABUTMENTS ARE TO REMAIN. THE CONTRACTOR SHALL SUBMIT PROPOSED REPAIR TO THE ENGINEER FOR REVIEW.
- SEE GENERAL ELEVATION ON SHEET 5 FOR LONGITUDINAL SECTION WITH CONCRETE CAP ON EXISTING ABUTMENTS.
- SEE SHEETS 7-8 FOR THE LIMITS OF DEMOLITION FOR THE EXISTING ABUTMENTS.

NOTE: PROPOSED CAP ON SOUTH ABUTMENT SHOWN; NORTH ABUTMENT SIMILAR.

ABUTMENT CAP DETAIL

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

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USE ONLY PRINTS OF LATEST DATE	

608640_BR7-9(EXIST ABUT DETAILS).DWG Plotted on 10-Jun-2024 12:05 PM 29-JUNE-2024 Final Structural Submittal (SF)

SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	28	55
PROJECT FILE NO.		608640	

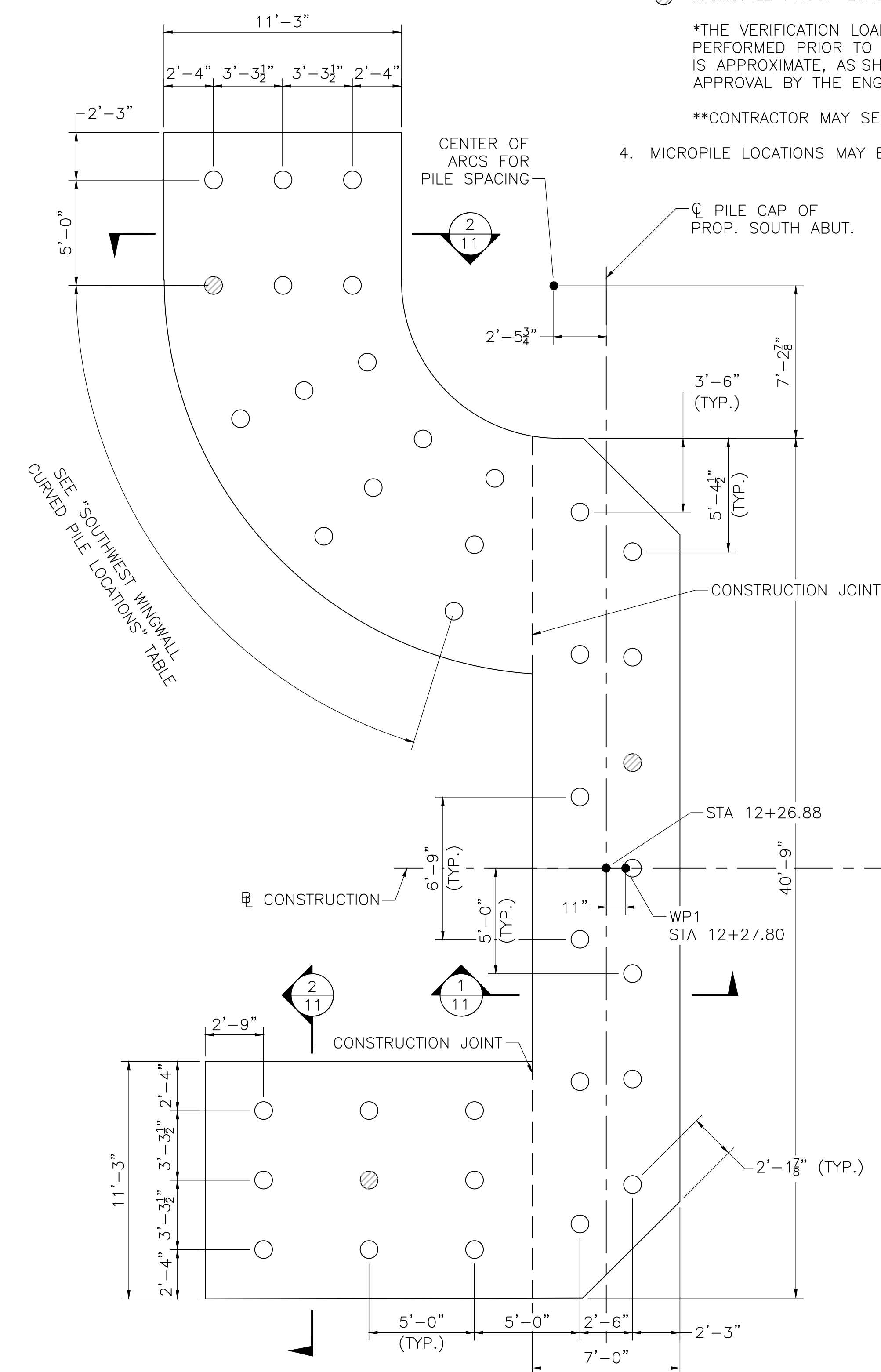
MICROPILE LAYOUT PLAN

NOTES:

- ALL MICROPILES, DEPICTED AS ○, SHALL HAVE A 10.75" OUTSIDE CASING (0.595" WALL THICKNESS), NO. 18 REBAR CORE, AND SHALL BE DRILLED VERTICALLY. SEE DETAILS ON SHEET 11 FOR "MICROPILE VERTICAL SECTION" AND "MICROPILE CROSS-SECTION".
- SEE MICROPILE LAYOUT SECTIONS 1-4 ON SHEET 11 FOR MINIMUM EMBEDMENT DEPTHS INTO PILE CAP AND BEDROCK.
- HATCHED MICROPILES IN LAYOUT PLAN SHALL BE USED FOR LOAD TESTS. SEE LEGEND BELOW.
 - MICROPILE VERIFICATION LOAD TEST* - TO BE PAID FOR UNDER ITEM 948.60
 - ⊗ MICROPILE PROOF LOAD TEST** - TO BE PAID FOR UNDER ITEM 948.61

*THE VERIFICATION LOAD TEST MICROPILE SHALL BE A SACRIFICIAL MICROPILE. THE VERIFICATION LOAD TEST SHALL BE PERFORMED PRIOR TO CONSTRUCTION OF PRODUCTION MICROPILES. THE LOCATION OF THE VERIFICATION LOAD TEST IS APPROXIMATE, AS SHOWN. CONTRACTOR TO SELECT EXACT LOCATION OF VERIFICATION LOAD TEST MICROPILE WITH APPROVAL BY THE ENGINEER.

**CONTRACTOR MAY SELECT A DIFFERENT LOCATION FOR PROOF LOAD TESTS, WITH APPROVAL BY THE ENGINEER.
- MICROPILE LOCATIONS MAY BE SHIFTED, WITH APPROVAL BY THE ENGINEER, IF CONFLICTS WITH UTILITIES OCCUR.



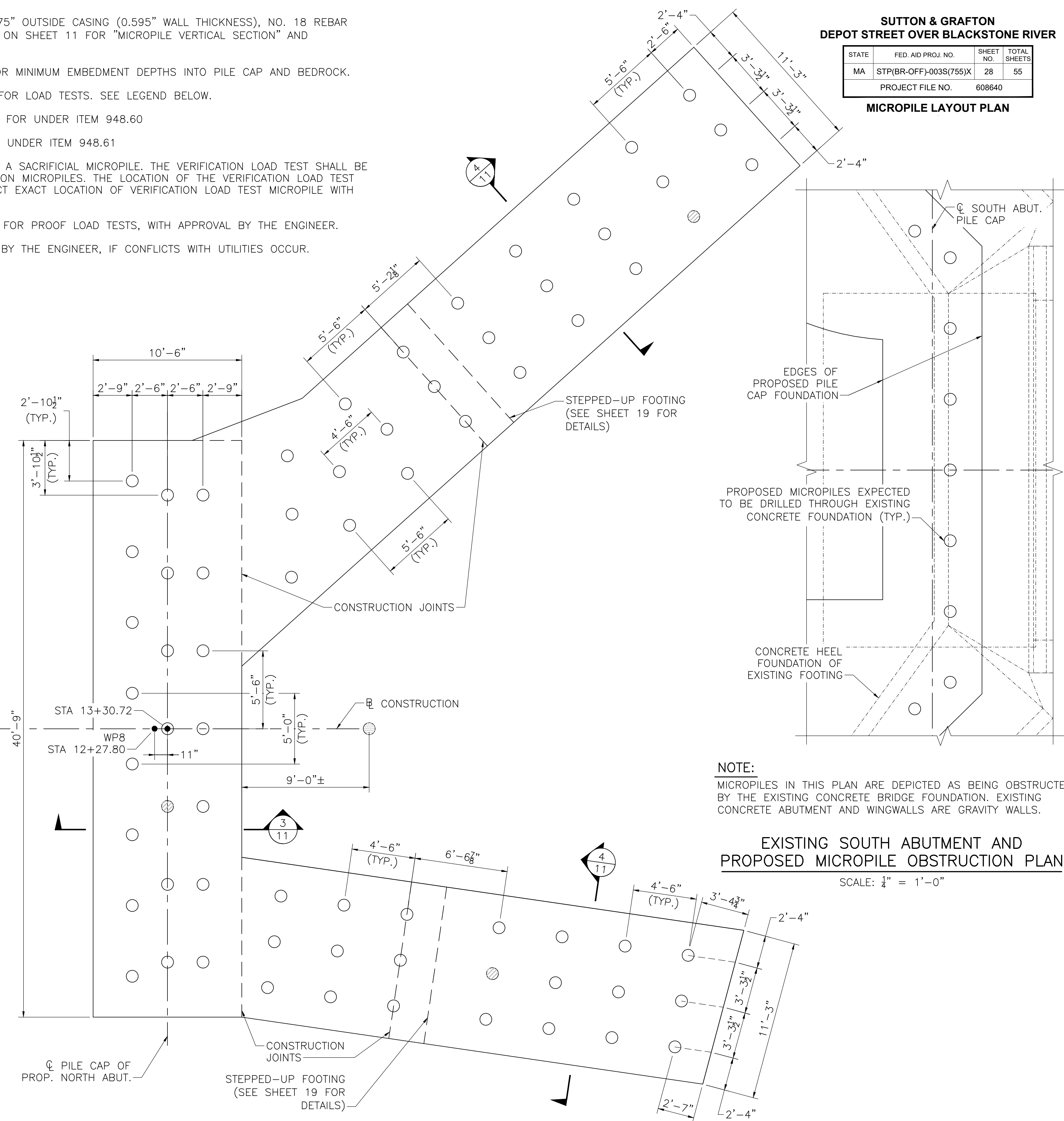
SOUTHWEST WINGWALL CURVED PILE LOCATIONS		
ROW	RADIUS	SPACING
INNER	9'-6 1/2"	3'-8 3/8"
MIDDLE	12'-10 3/8"	5'-1 1/2"
OUTER	16'-1 1/2"	6'-6"

NOTES:

- ALL PILES ARE EQUALLY SPACED PER ROW.
- SPACING IS DETERMINED ALONG THE ARC, FROM THE CENTER TO CENTER OF PILES.

MICROPILE LAYOUT PLAN

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



NOTE:

MICROPILES IN THIS PLAN ARE DEPICTED AS BEING OBSTRUCTED BY THE EXISTING CONCRETE BRIDGE FOUNDATION. EXISTING CONCRETE ABUTMENT AND WINGWALLS ARE GRAVITY WALLS.

EXISTING SOUTH ABUTMENT AND PROPOSED MICROPILE OBSTRUCTION PLAN

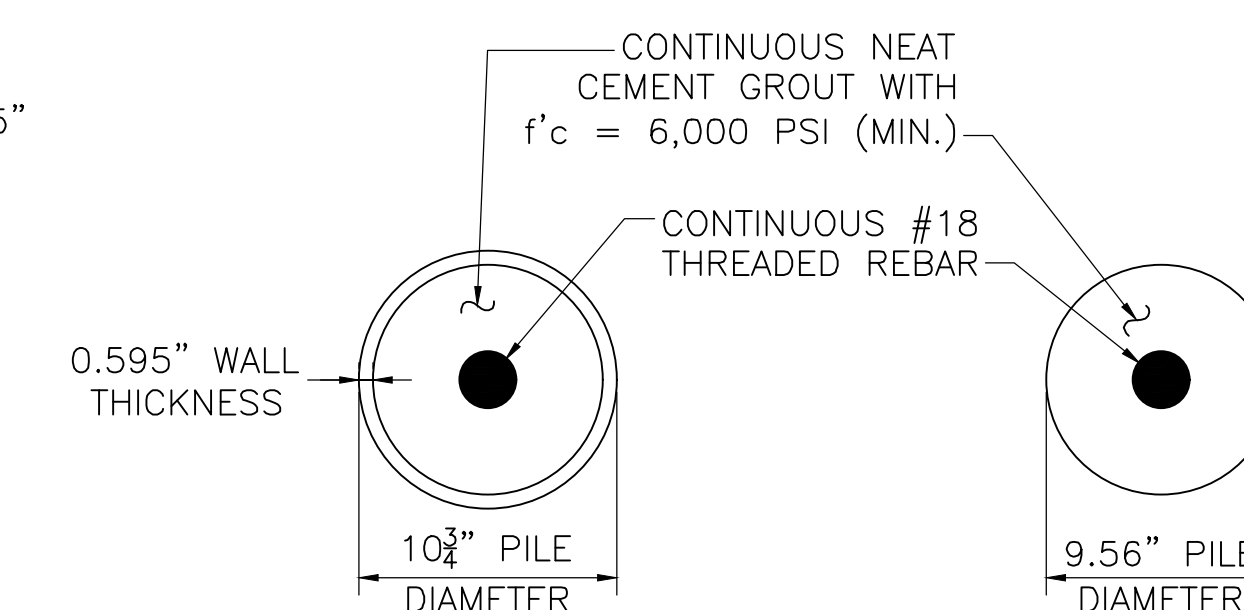
SCALE: 1/4" = 1'-0"

JUNE 29, 2024	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
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AUTHORIZED SIGNATORY:	STATE BRIDGE ENGINEER
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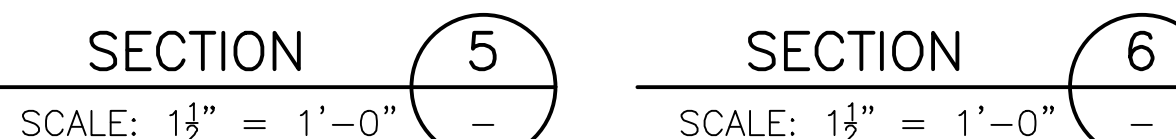
SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	29	55
PROJECT FILE NO.			608640

MICROPILE SECTIONS

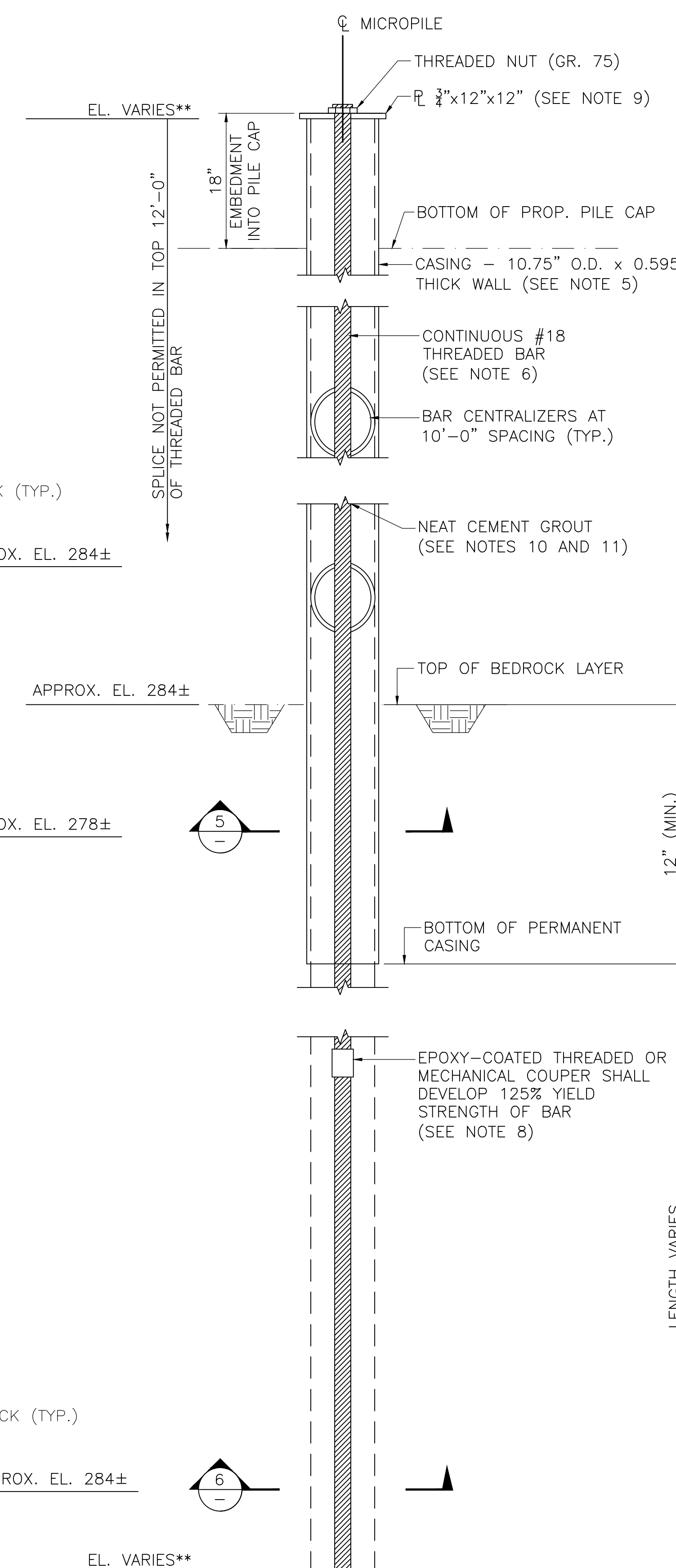


NOTE: PILE DIAMETER IS MIN. FOR BOND ZONE.



NOTES:

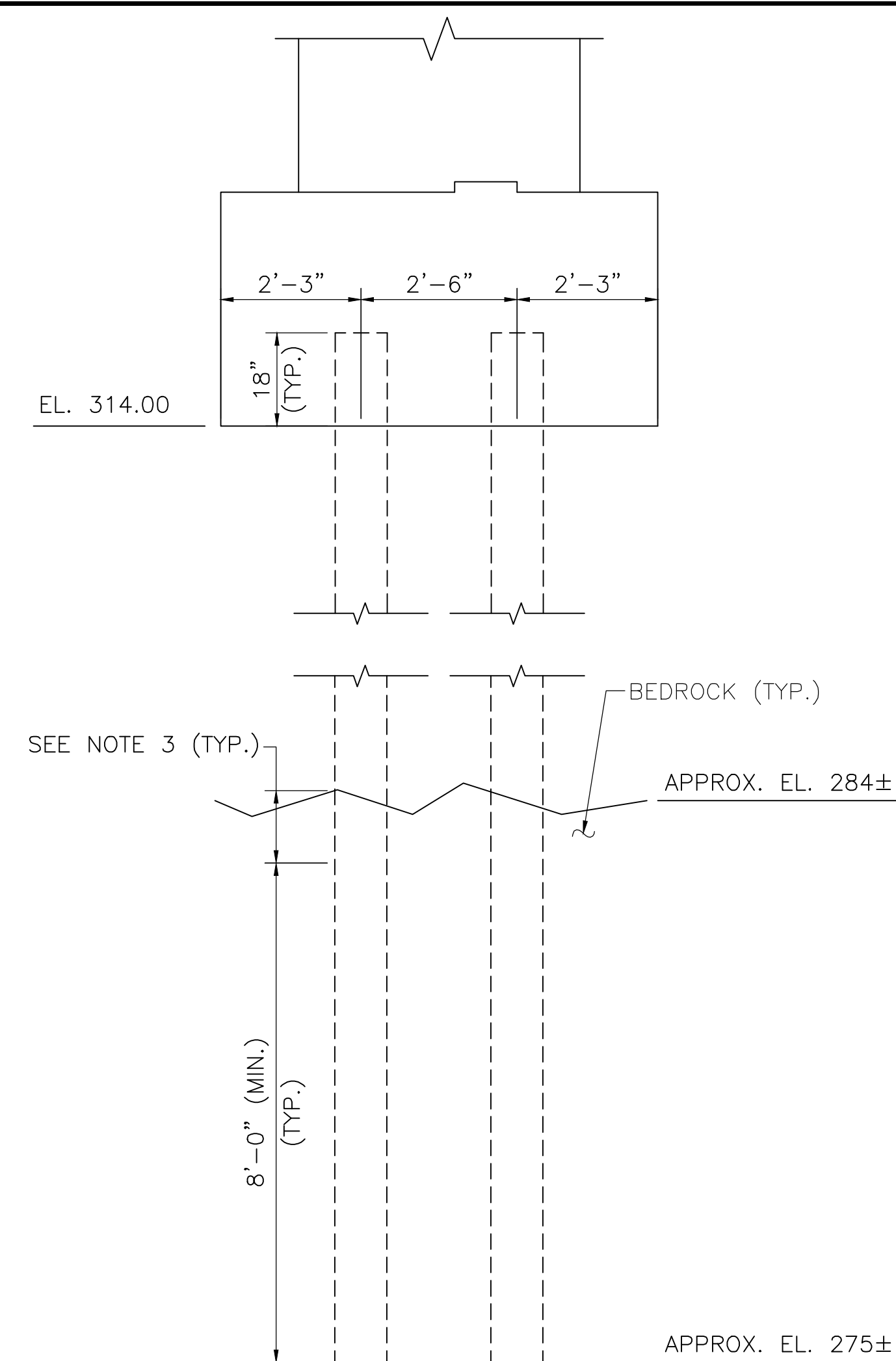
- MICROPILE CAP REINFORCEMENT HAS BEEN OMITTED FOR CLARITY. SEE SHEET 14 FOR ABUTMENT SECTIONS AND SHEET 18 FOR WINGWALL SECTIONS.
- BEDROCK DEPTH IS ESTIMATED ACCORDING TO BORING LOGS (AS SEEN ON SHEETS 3-4); ACTUAL ELEVATION WILL VARY. FIELD MONITORING IS REQUIRED TO EVALUATE ROCK DEPTH DURING CONSTRUCTION.
- THE DIMENSIONS FOR THE ROCK BOND LENGTH, AS SHOWN ON SECTIONS 1-4 ON THIS SHEET, SHALL BEGIN 12" BELOW BEDROCK. THE SPECIALTY CONTRACTOR SHALL DESIGN THE MICROPILES TO MEET THE PERFORMANCE REQUIREMENTS GIVEN IN THE SPECIAL PROVISIONS.
- REFER TO SHEETS 14 AND 18 FOR THE FACTORED PILE RESISTANCE FOR ABUTMENT AND WINGWALL MICROPILES, RESPECTIVELY.
- STEEL CASING SHALL BE PRIME STEEL AND MEET THE REQUIREMENTS OF API 5L PSL1 GRADE 80 KSI WITH SR 15 SUPPLEMENTAL REQUIREMENTS.
- THREADED STEEL BAR SHALL BE CONTINUOUSLY THREADED FOR THE ENTIRE BAR LENGTH CONFORMING TO AASHTO M31, HAVING A MINIMUM YIELD STRENGTH OF 75 KSI.
- NUT AND BAR COUPLING SHALL BE PROVIDED FROM THE SAME MANUFACTURER AS THE THREADED STEEL BAR.
- BAR COUPLING SHALL BE FULLY ENGAGED ON THE THREADED STEEL BAR AND SHALL NOT BE LOCATED IN THE TOP THIRD OF THE MICROPILE LENGTH.
- ANCHOR PLATE SHALL MEET THE REQUIREMENTS OF AASHTO M270 GRADE 50.
- GROUT SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 6,000 PSI AND CEMENT SHALL CONFORM TO AASHTO M85 TYPE III OR IV, SHOULD BE THE PRODUCT OF ONE MANUFACTURER.
- GROUT SHALL BE PLACED USING TREMIE METHODS.
- THE CONTRACTOR SHALL SUBMIT A MICROPILE SCHEDULE, MICROPILE INSTALLATION, AND MICROPILE TESTING PLAN FOR REVIEW AND APPROVAL BY THE ENGINEER.
- SEE SPECIAL PROVISION ITEM 945.10 - DRILLED MICROPILES, ITEM 948.60 - MICROPILE VERIFICATION LOAD TEST, AND ITEM 948.61 - MICROPILE PROOF LOAD TEST FOR ADDITIONAL MICROPILE SPECIFICATIONS.
- SEE SHEET 18 FOR MICROPILE INSTALLATION NOTES.



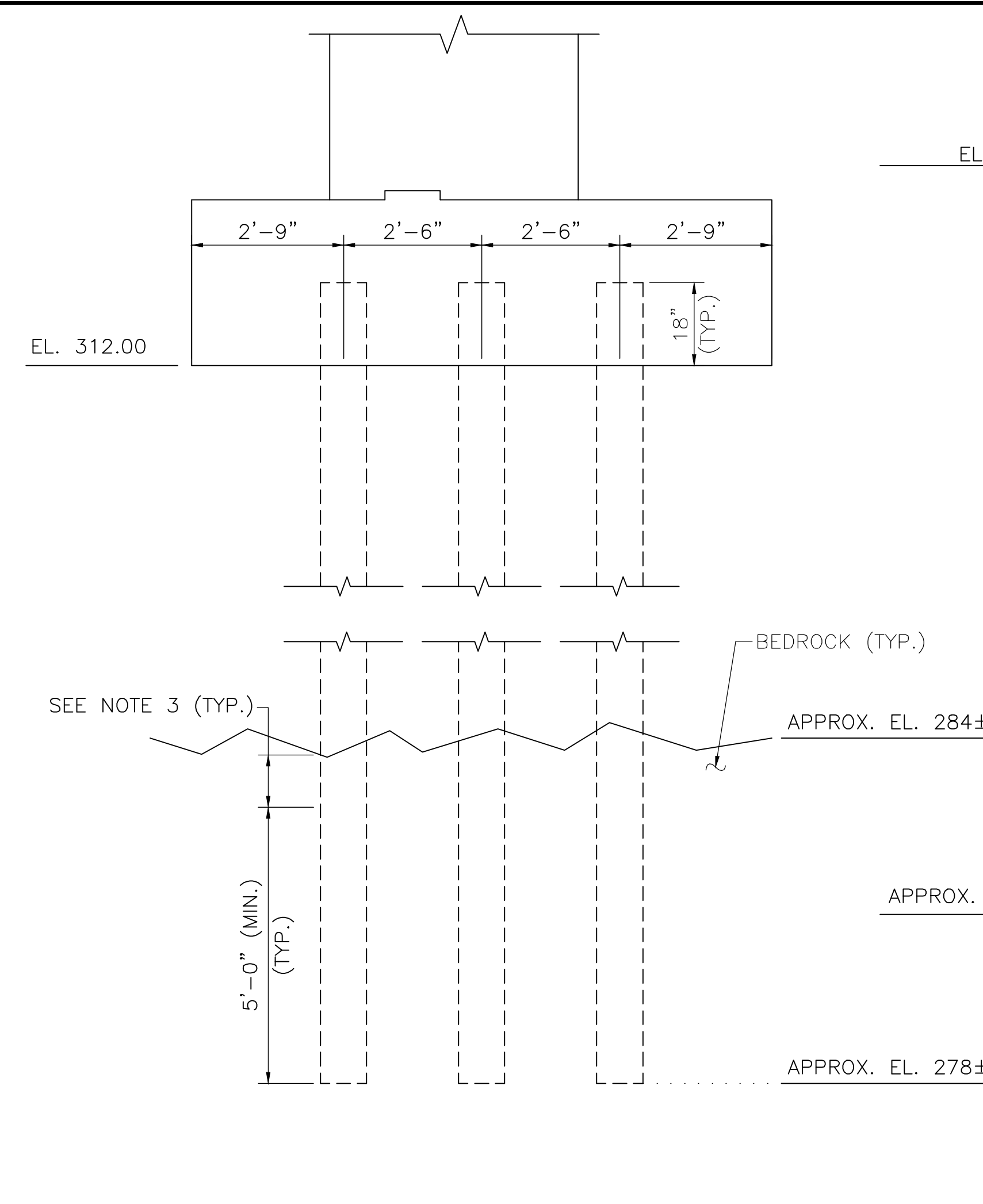
** BOTTOM OF FOOTING AND TIP OF MICROPILE VARIES PER SUBSTRUCTURE ELEMENT. SEE SECTIONS 1-4 ON THIS SHEET FOR ELEVATIONS.

MICROPILE VERTICAL SECTION

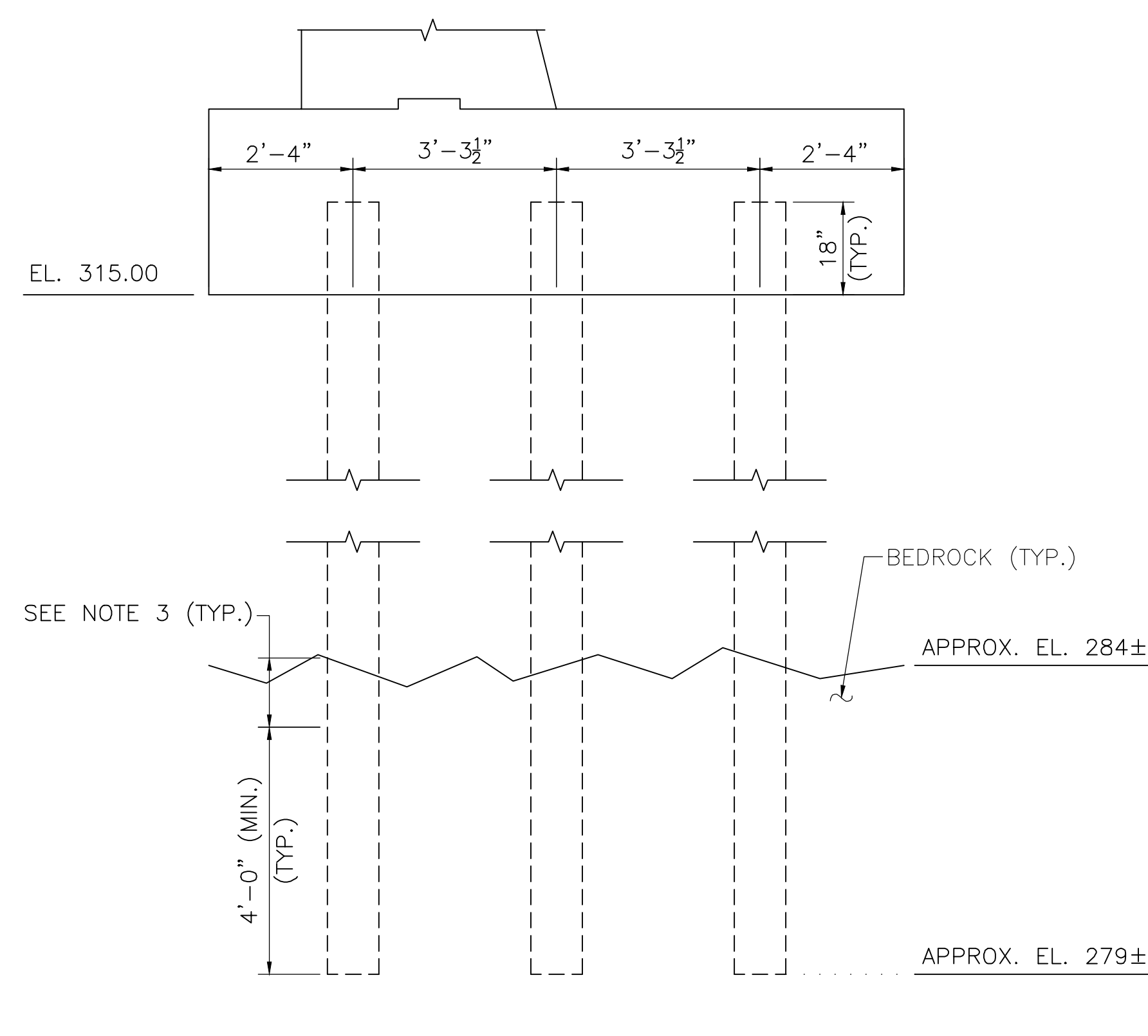
SCALE: 1" = 1'-0"



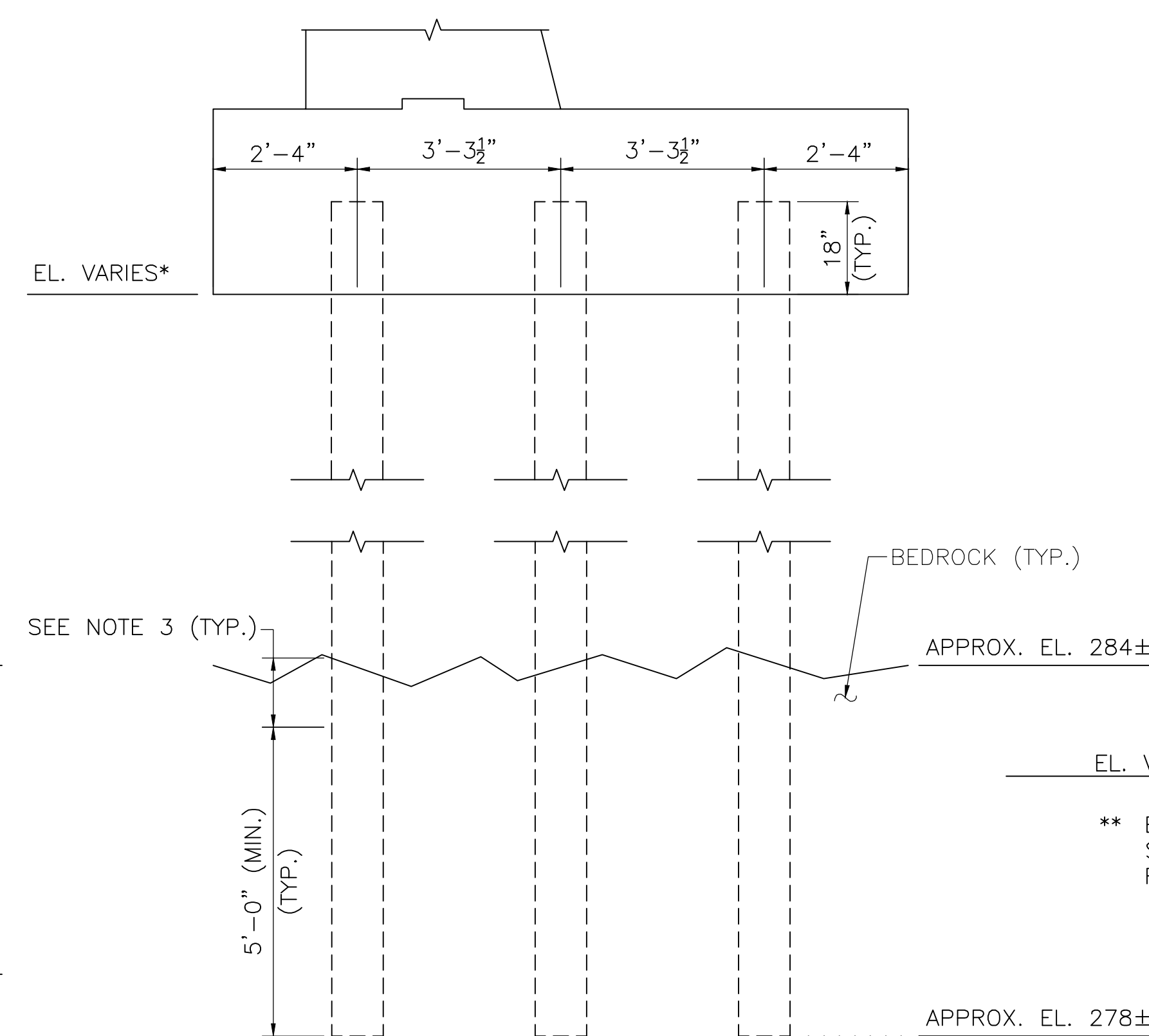
SECTION 1
SCALE: 1/2" = 1'-0"



SECTION 3
SCALE: 1/2" = 1'-0"



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



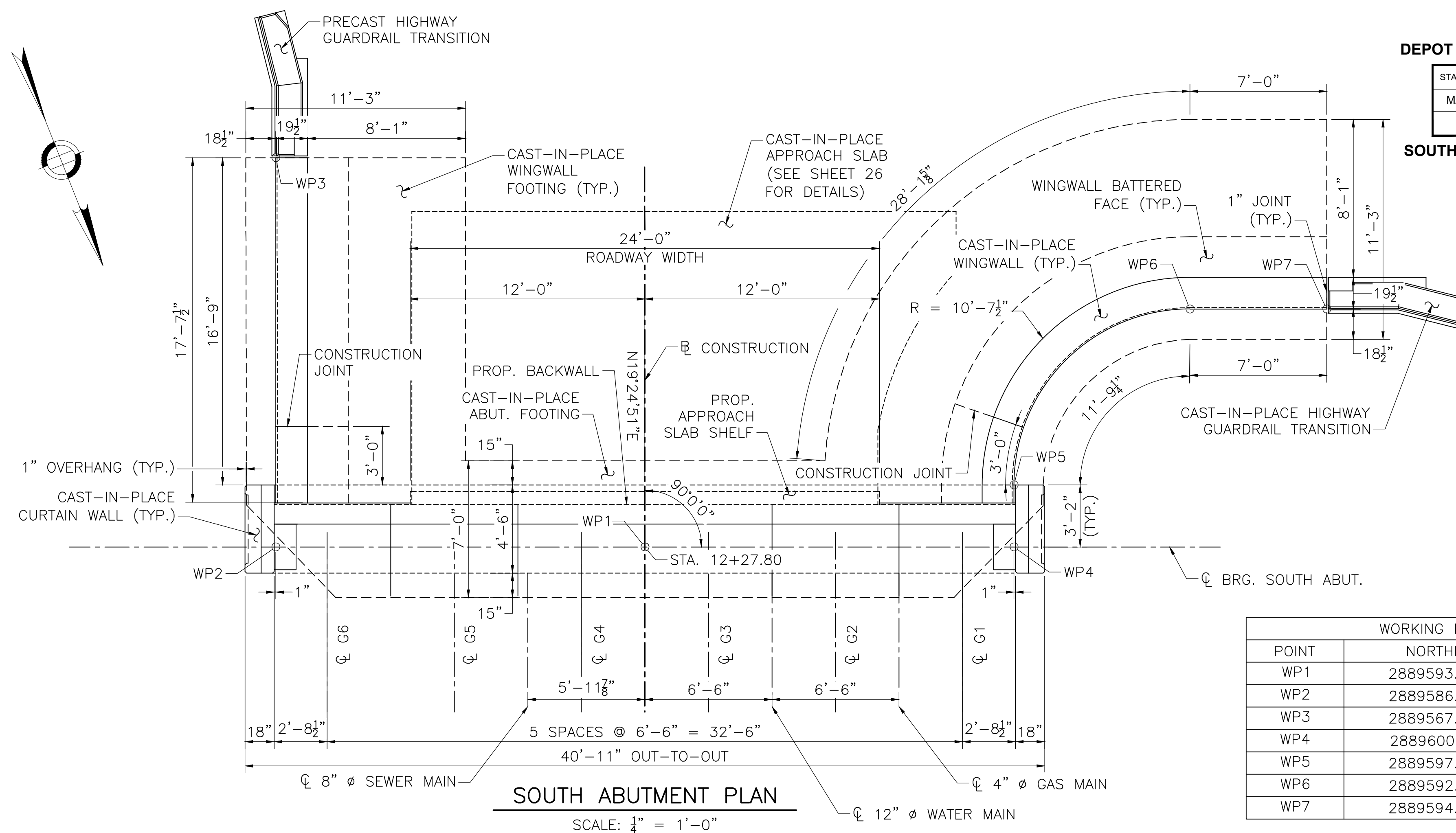
SECTION 4
SCALE: 1/2" = 1'-0"

DATE	DESCRIPTION
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USE ONLY PRINTS OF LATEST DATE	

SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	30	55
PROJECT FILE NO.		608640	

SOUTH ABUTMENT PLAN AND ELEVATION



WORKING POINT COORDINATES		
POINT	NORTHING	EASTING
WP1	2889593.1700	596545.3866
WP2	2889586.2149	596562.9334
WP3	2889567.8673	596555.4769
WP4	2889600.1251	596527.8397
WP5	2889597.1812	596526.6729
WP6	2889592.1309	596514.9898
WP7	2889594.7103	596504.4824

NOTE:
 WORKING POINTS SHALL BE MEASURED TO FACE OF SOUTH ABUTMENT AND WINGWALLS, EXCLUDING THE COPINGS SHOWN ON THIS SHEET.

UTILITIES:

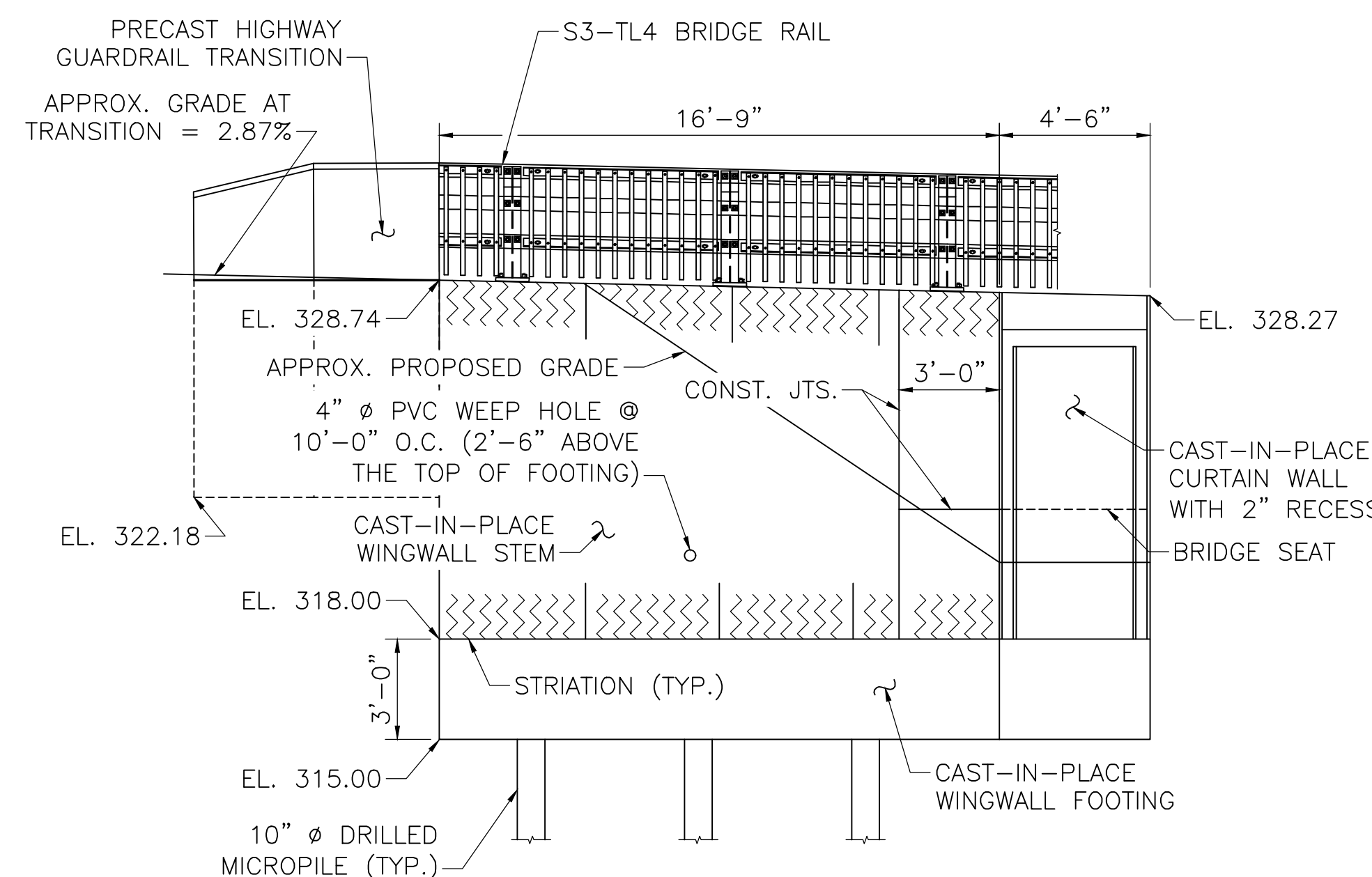
- 4" ϕ GAS MAIN, EL. 323.26, 10.75" ϕ OPENING (10" ϕ STEEL SLEEVE).
- 12" ϕ WATER MAIN, EL. 323.05, 22.00" ϕ OPENING (22" ϕ STEEL SLEEVE).
- 8" ϕ SEWER MAIN, EL. 323.34, 16.00" ϕ OPENING (16" ϕ STEEL SLEEVE).

UTILITY NOTES:

- ALL ELEVATIONS TO ϕ OF UTILITY BLOCKOUT. VERTICAL ELEVATIONS ARE TO BOTTOM OF ABUTMENT PENETRATION.
- PROVIDE STEEL SLEEVES FOR ALL UTILITIES THROUGH BACKWALL. SEE "UTILITY SLEEVE PIPE DIMENSIONS" TABLE ON SHEET 16 FOR EXACT DIMENSIONS.
- SEE SHEET 16 FOR "REINFORCEMENT AND SLEEVE DETAIL AT ABUTMENT PENETRATIONS" AND "UTILITY SLEEVE LONGITUDINAL SECTION" DETAILS.
- PROVIDE SEPARATE SLEEVES FOR ALL UTILITIES THROUGH END DIAPHRAGM. SEE NOTES ON SHEET 16 FOR MORE INFORMATION.

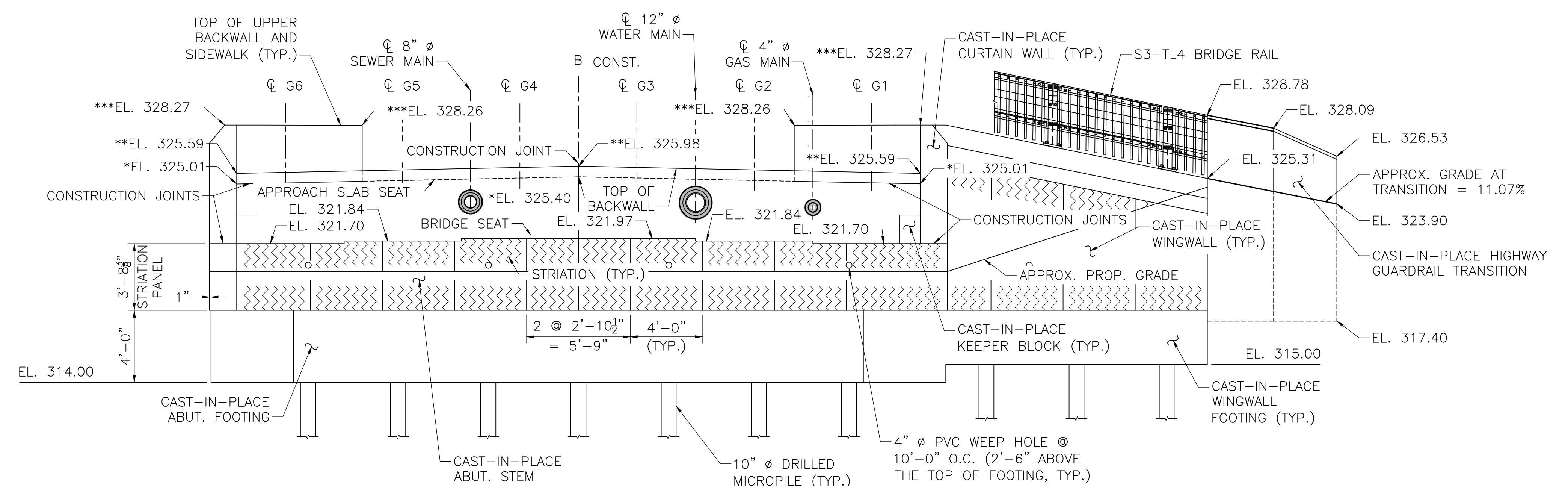
ELEVATION NOTES:

- THE 6" CAST-IN-PLACE CONCRETE ABUTMENT CAP ON THE EXISTING SOUTH ABUTMENT HAS BEEN OMITTED FOR CLARITY. SEE SHEET 9 FOR DETAILS.
- ONLY THE FIRST ROW OF 10" ϕ MICROPILES ON THE SOUTH ABUTMENT AND SOUTH WINGWALLS ARE SHOWN; THE BACK ROW ON THE SOUTH ABUTMENT AND BACK TWO ROWS ON THE SOUTH WINGWALLS HAVE BEEN OMITTED FOR CLARITY. SEE SHEET 10 FOR THE LOCATION OF ALL MICROPILES ON THE SOUTH ABUTMENT AND SHEET 11 FOR SECTION VIEWS AND DETAILS FOR THE MICROPILES.



SOUTHEAST WINGWALL ELEVATION

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



SOUTH ABUTMENT ELEVATION

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

- * ELEVATIONS AT APPROACH SLAB SEAT
- ** ELEVATIONS AT TOP OF BACKWALL
- *** ELEVATIONS AT TOP OF SIDEWALK

SEE DETAILS ON SHEET 15 FOR MORE INFORMATION ON EXACT LOCATIONS OF MEASURING POINTS.

DATE	DESCRIPTION
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SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	31	55
PROJECT FILE NO.		608640	

NORTH ABUTMENT PLAN AND ELEVATION

UTILITIES:

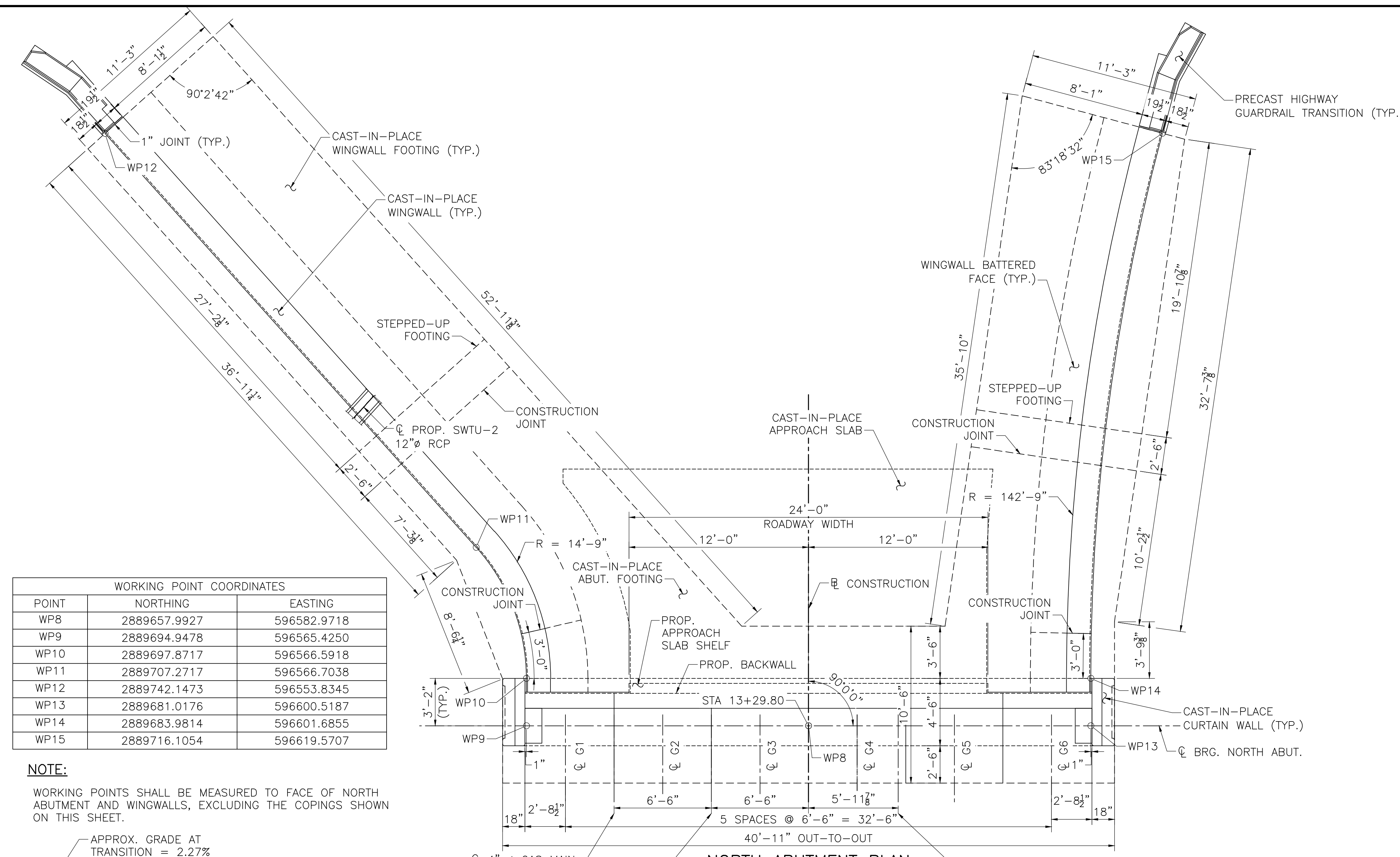
- 4" ϕ GAS MAIN, EL. 322.44, 10.75" ϕ OPENING (10" ϕ STEEL SLEEVE).
- 12" ϕ WATER MAIN, EL. 322.23, 22.00" ϕ OPENING (22" ϕ STEEL SLEEVE).
- 8" ϕ SEWER MAIN, EL. 322.52, 16.00" ϕ OPENING (16" ϕ STEEL SLEEVE).

UTILITY NOTES:

- ALL ELEVATIONS TO ϕ OF UTILITY BLOCKOUT. VERTICAL ELEVATIONS ARE TO BOTTOM OF ABUTMENT PENETRATION.
- PROVIDE STEEL SLEEVES FOR ALL UTILITIES THROUGH BACKWALL. SEE "UTILITY SLEEVE PIPE DIMENSIONS" TABLE ON SHEET 16 FOR EXACT DIMENSIONS.
- SEE SHEET 16 FOR "REINFORCEMENT AND SLEEVE DETAIL AT ABUTMENT PENETRATIONS" AND "UTILITY SLEEVE LONGITUDINAL SECTION" DETAILS.
- PROVIDE SEPARATE SLEEVES FOR ALL UTILITIES THROUGH END DIAPHRAGM. SEE NOTES ON SHEET 16 FOR MORE INFORMATION.

ELEVATION NOTES:

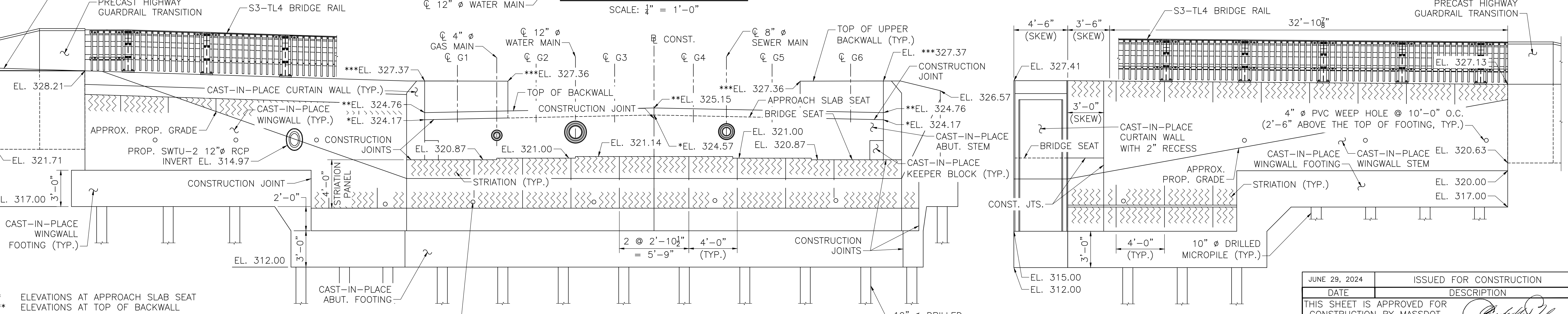
- THE 6" CAST-IN-PLACE CONCRETE ABUTMENT CAP ON THE EXISTING NORTH ABUTMENT HAS BEEN OMITTED FOR CLARITY. SEE SHEET 9 FOR DETAILS.
- ONLY THE FIRST ROW OF 10" ϕ MICROPILES ON THE NORTH ABUTMENT AND NORTH WINGWALLS ARE SHOWN; THE BACK TWO ROWS ON THE NORTH ABUTMENT AND NORTH WINGWALLS HAVE BEEN OMITTED FOR CLARITY. SEE SHEET 10 FOR THE LOCATION OF ALL MICROPILES ON THE NORTH ABUTMENT AND SHEET 11 FOR SECTION VIEWS AND DETAILS FOR THE MICROPILES.



WORKING POINT COORDINATES		
POINT	NORTHING	EASTING
WP8	2889657.9927	596582.9718
WP9	2889694.9478	596565.4250
WP10	2889697.8717	596566.5918
WP11	2889707.2717	596566.7038
WP12	2889742.1473	596553.8345
WP13	2889681.0176	596600.5187
WP14	2889683.9814	596601.6855
WP15	2889716.1054	596619.5707

NOTE:
 WORKING POINTS SHALL BE MEASURED TO FACE OF NORTH ABUTMENT AND WINGWALLS, EXCLUDING THE COPINGS SHOWN ON THIS SHEET.

NORTH ABUTMENT PLAN
 SCALE: 1/4" = 1'-0"



NORTH ABUTMENT ELEVATION
 SCALE: 1/4" = 1'-0"

NORTHEAST WINGWALL ELEVATION
 SCALE: 1/4" = 1'-0"

* ELEVATIONS AT APPROACH SLAB SEAT
 ** ELEVATIONS AT TOP OF BACKWALL
 *** ELEVATIONS AT TOP OF SIDEWALK
 SEE DETAILS ON SHEET 15 FOR MORE INFORMATION ON EXACT LOCATIONS OF MEASURING POINTS.

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608640_BR12-13(ABUTMENT PLANS).DWG Plotted on 10-Jun-2024 12:05 PM 29-JUNE-2024 Final Structural Submittal (SF)

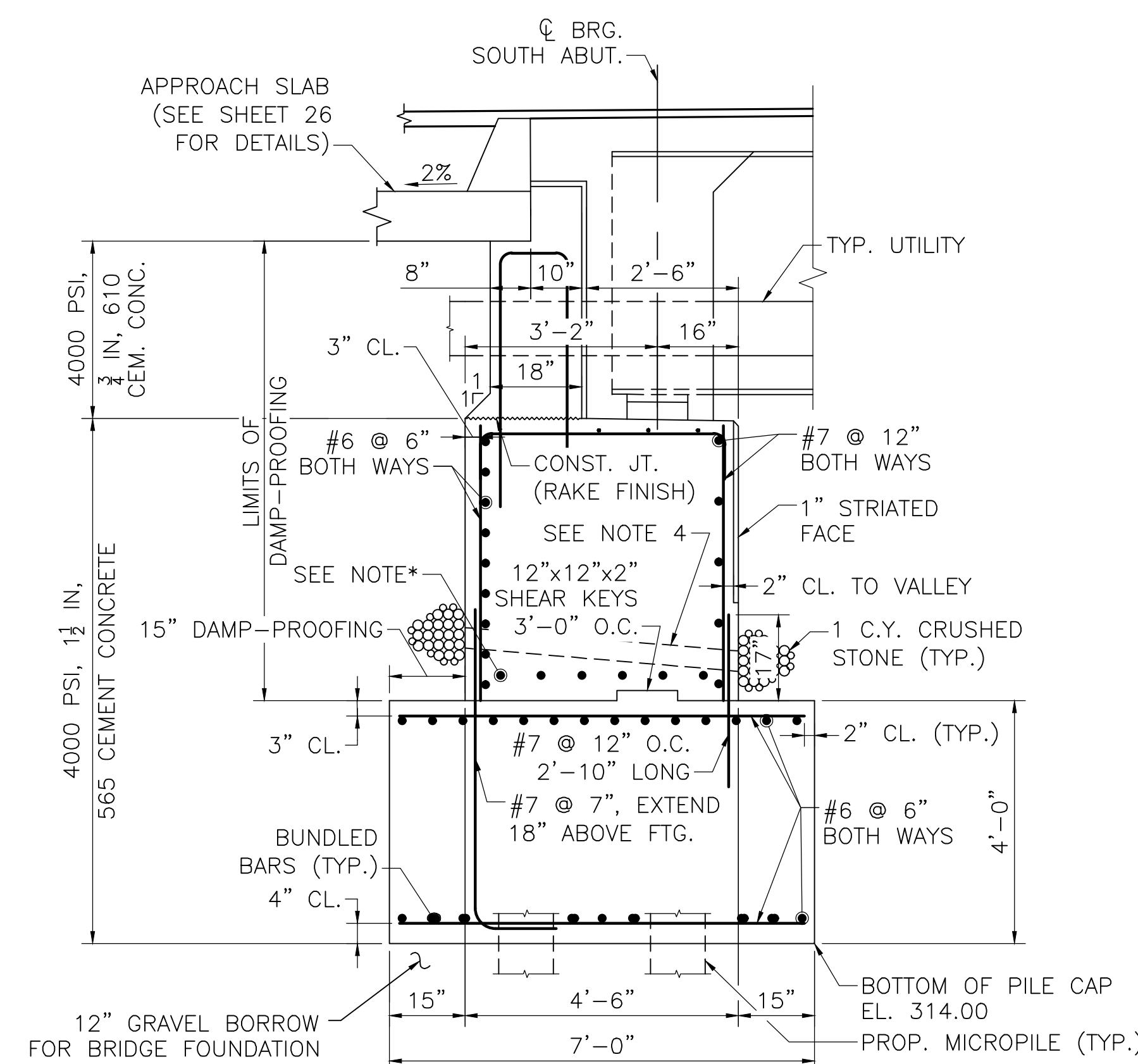
SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	32	55
PROJECT FILE NO.		608640	

ABUTMENT DETAILS (SHEET 1 OF 3)

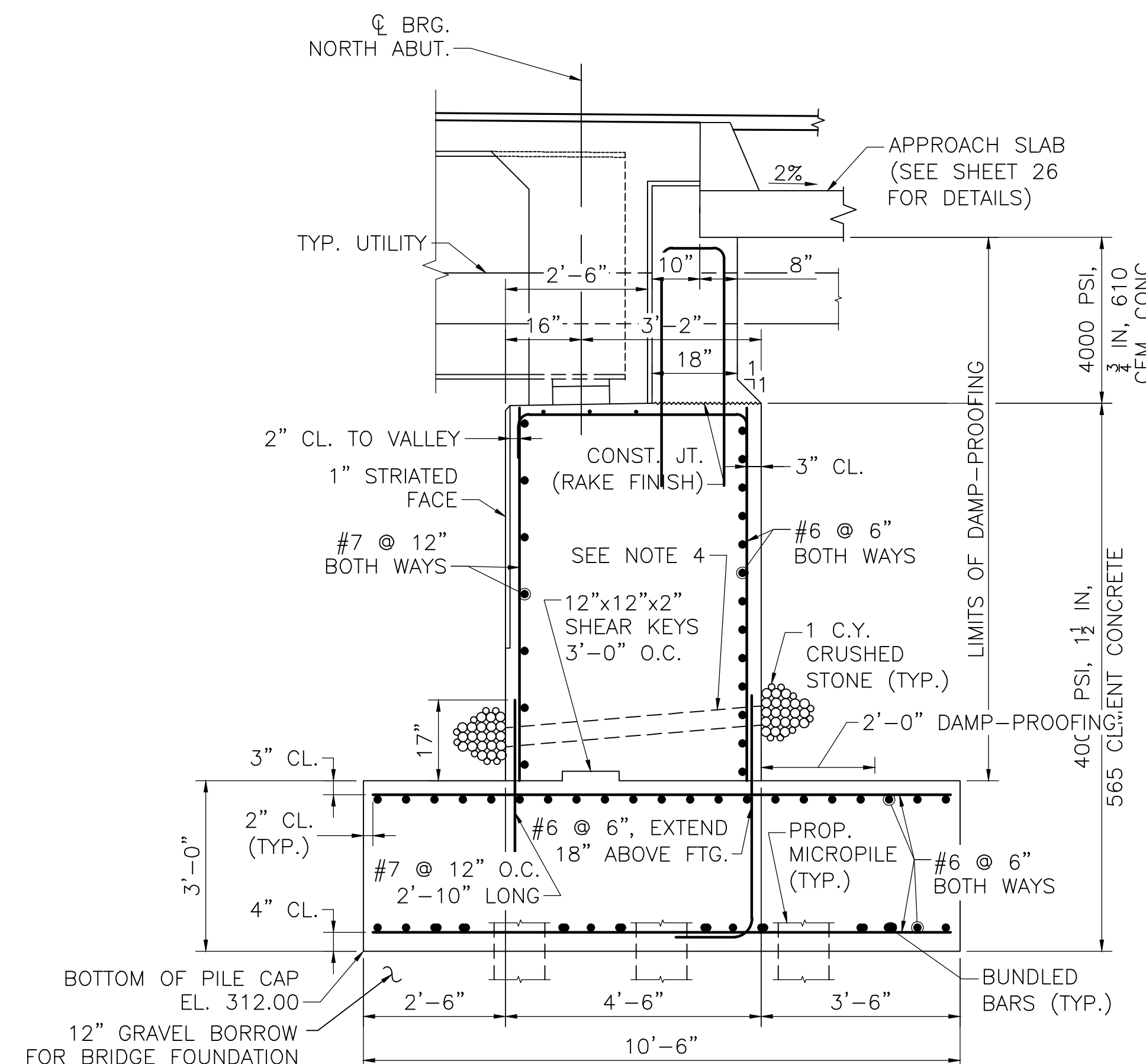
ABUTMENT NOTES:

- DECK END DETAIL AT ROADWAY SHOWN. DECK END AT SIDEWALK SIMILAR. SEE SHEET 15 FOR SIDEWALK SECTION.
- ALL CONCRETE SHALL BE 4000 PSI, 1 1/2 IN. 565 CEMENT CONCRETE EXCEPT THE BACKWALL, WHICH SHALL BE 4000 PSI, 3/4 IN. 610 CEMENT CONCRETE.
- BACKWALL REINFORCEMENT IS OMITTED FOR CLARITY. SEE SHEET 15 FOR DETAILS.
- 4" Ø WEEP HOLES 10'-0" O.C. PROVIDE 1 CUBIC YARD OF CRUSHED STONE AT EACH END OF WEEP HOLE.
- SEE SHEETS 10-11 FOR DETAILS REGARDING ABUTMENT MICROPILES.
- FOR THE SOUTH ABUTMENT, THE FACTORED AXIAL DESIGN LOAD PER MICROPILE IS 217 KIPS AS PER AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS STRENGTH I LOAD COMBINATION.
 THE FACTORED STRUCTURAL RESISTANCE IS 417 KIPS AND IS THE PRODUCT OF THE NOMINAL STRUCTURAL RESISTANCE OF 556 KIPS AND A RESISTANCE FACTOR OF 0.75.
 THE FACTORED GEOTECHNICAL RESISTANCE IS 220 KIPS AND IS THE PRODUCT OF THE NOMINAL GEOTECHNICAL RESISTANCE OF 400 KIPS AND A RESISTANCE FACTOR OF 0.55.
- FOR THE NORTH ABUTMENT, THE FACTORED AXIAL DESIGN LOAD PER MICROPILE IS 128.5 KIPS AS PER AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS STRENGTH I LOAD COMBINATION.
 THE FACTORED STRUCTURAL RESISTANCE IS 417 KIPS AND IS THE PRODUCT OF THE NOMINAL STRUCTURAL RESISTANCE OF 556 KIPS AND A RESISTANCE FACTOR OF 0.75.
 THE FACTORED GEOTECHNICAL RESISTANCE IS 138 KIPS AND IS THE PRODUCT OF THE NOMINAL GEOTECHNICAL RESISTANCE OF 250 KIPS AND A RESISTANCE FACTOR OF 0.55.
- THE ESTIMATED TIP ELEVATION IS 275 FEET FOR THE SOUTH ABUTMENT (9'-0" BELOW TOP OF BEDROCK).
 THE ESTIMATED TIP ELEVATION IS 278 FEET FOR THE NORTH ABUTMENT (6'-0" BELOW TOP OF BEDROCK).



SOUTH ABUTMENT SECTION

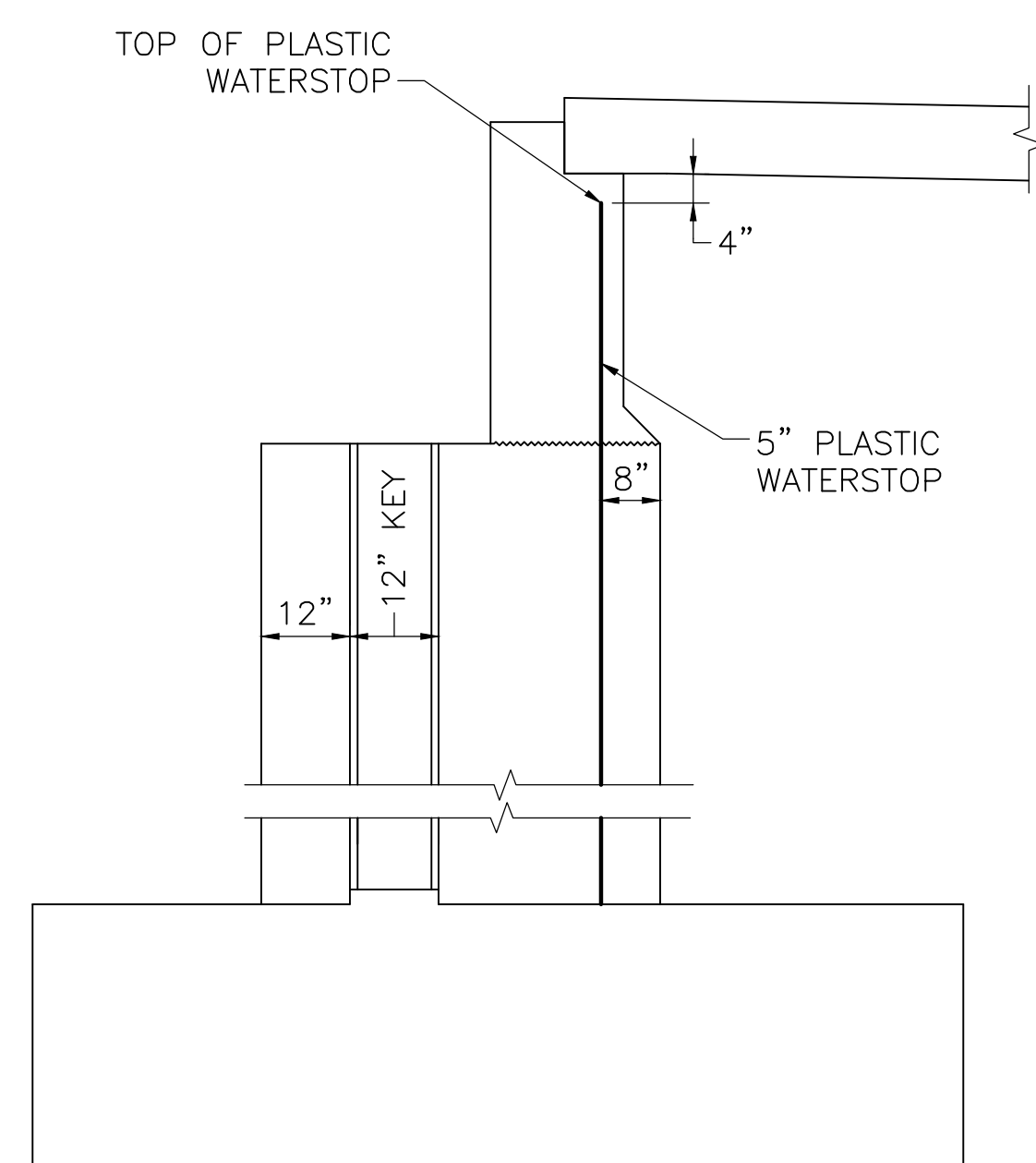
SCALE: 1/2" = 1'-0"



NORTH ABUTMENT SECTION

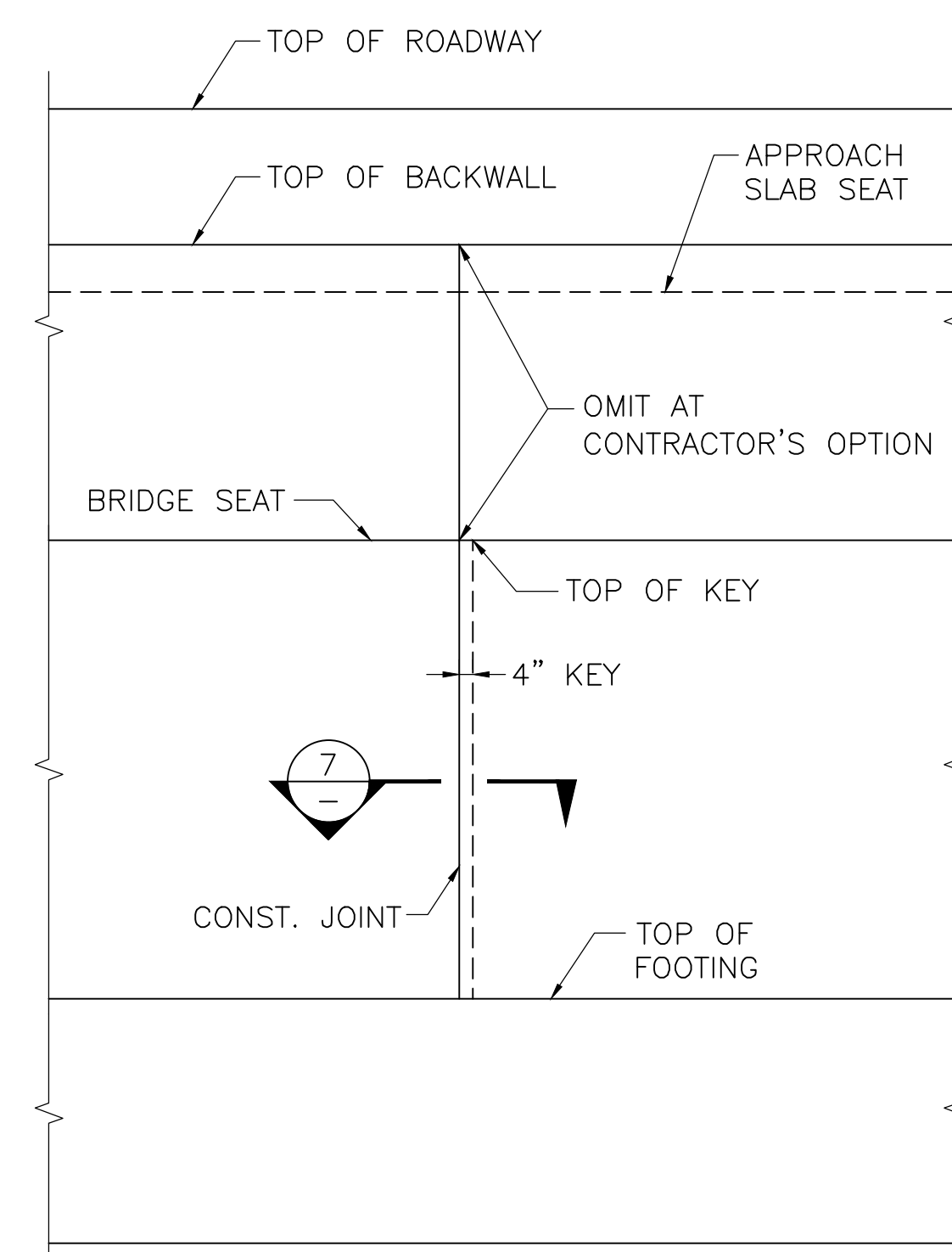
SCALE: 1/2" = 1'-0"

* PROVIDE ADDITIONAL (6) #7 BARS X 6'-0" LONG WHERE THE STEM CANTILEVERS OVER THE EDGE OF THE FOOTING AT BOTH ENDS.



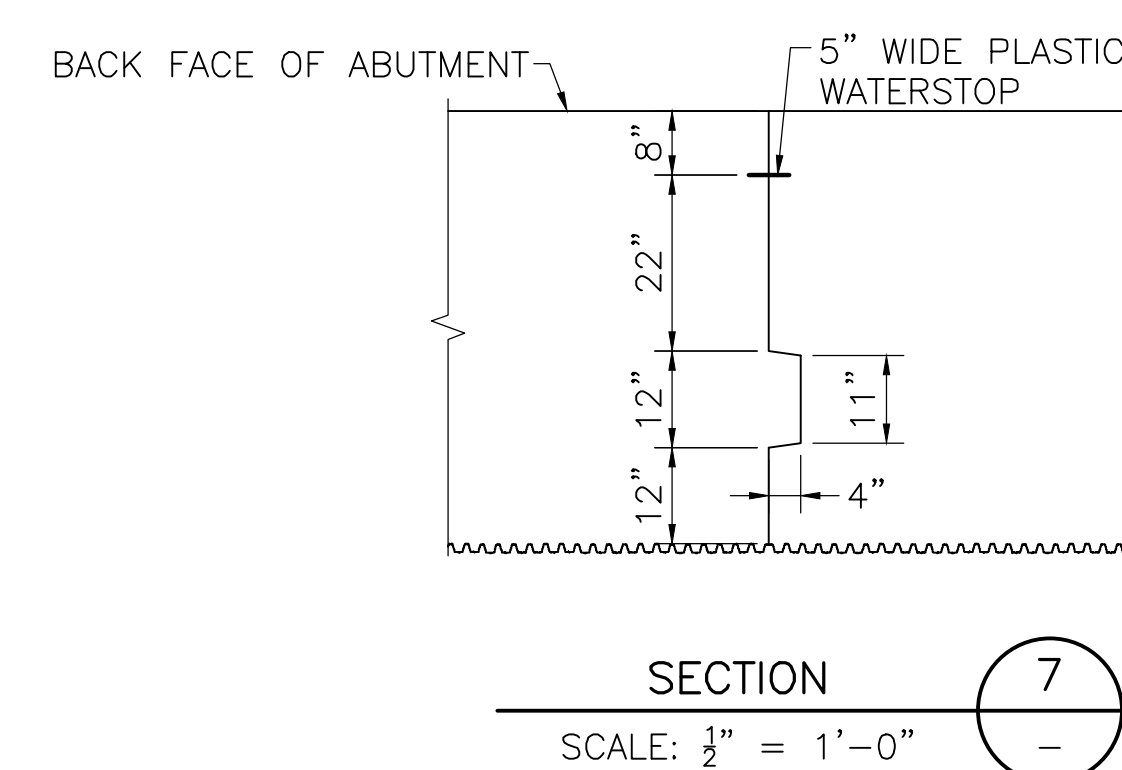
VERTICAL SECTION THRU CONSTRUCTION JOINT

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



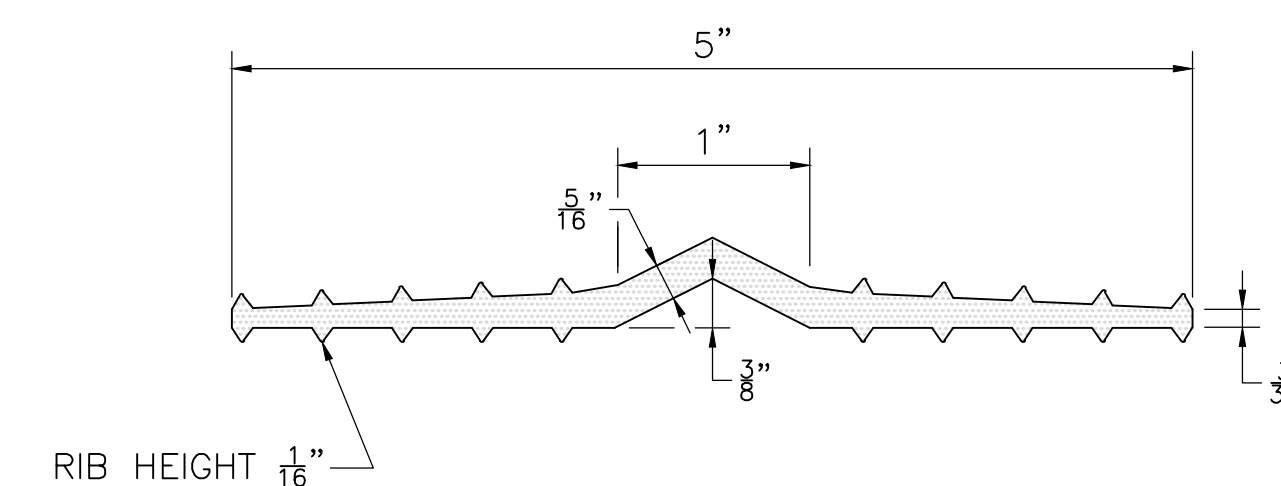
ELEVATION OF ABUTMENT

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



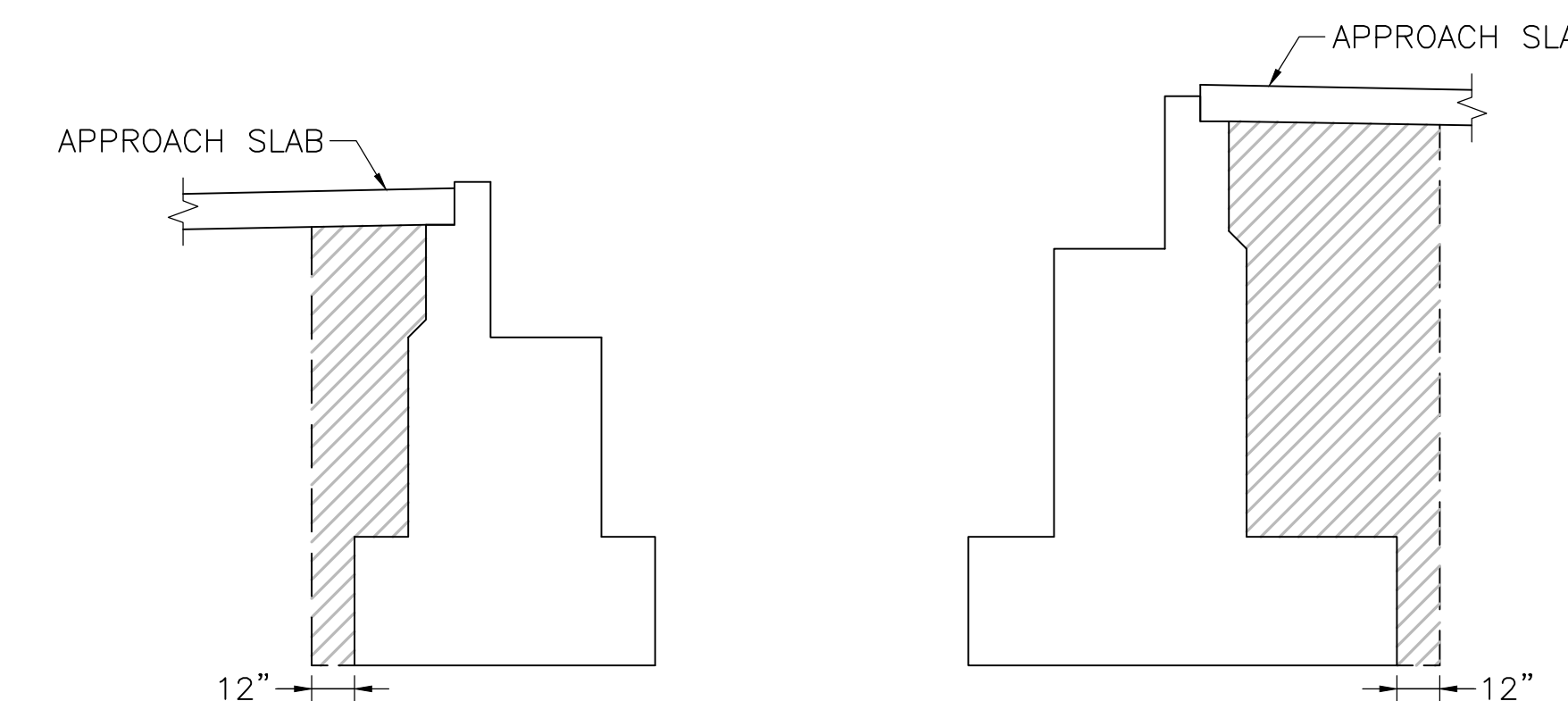
SECTION 7

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



5" WATERSTOP

NOT TO SCALE



SOUTH ABUTMENT

NORTH ABUTMENT

NOTE:
 HATCHED AREA INDICATES LIMITS OF GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES.

LIMITS OF GRAVEL BACKFILL FOR ABUTMENTS

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

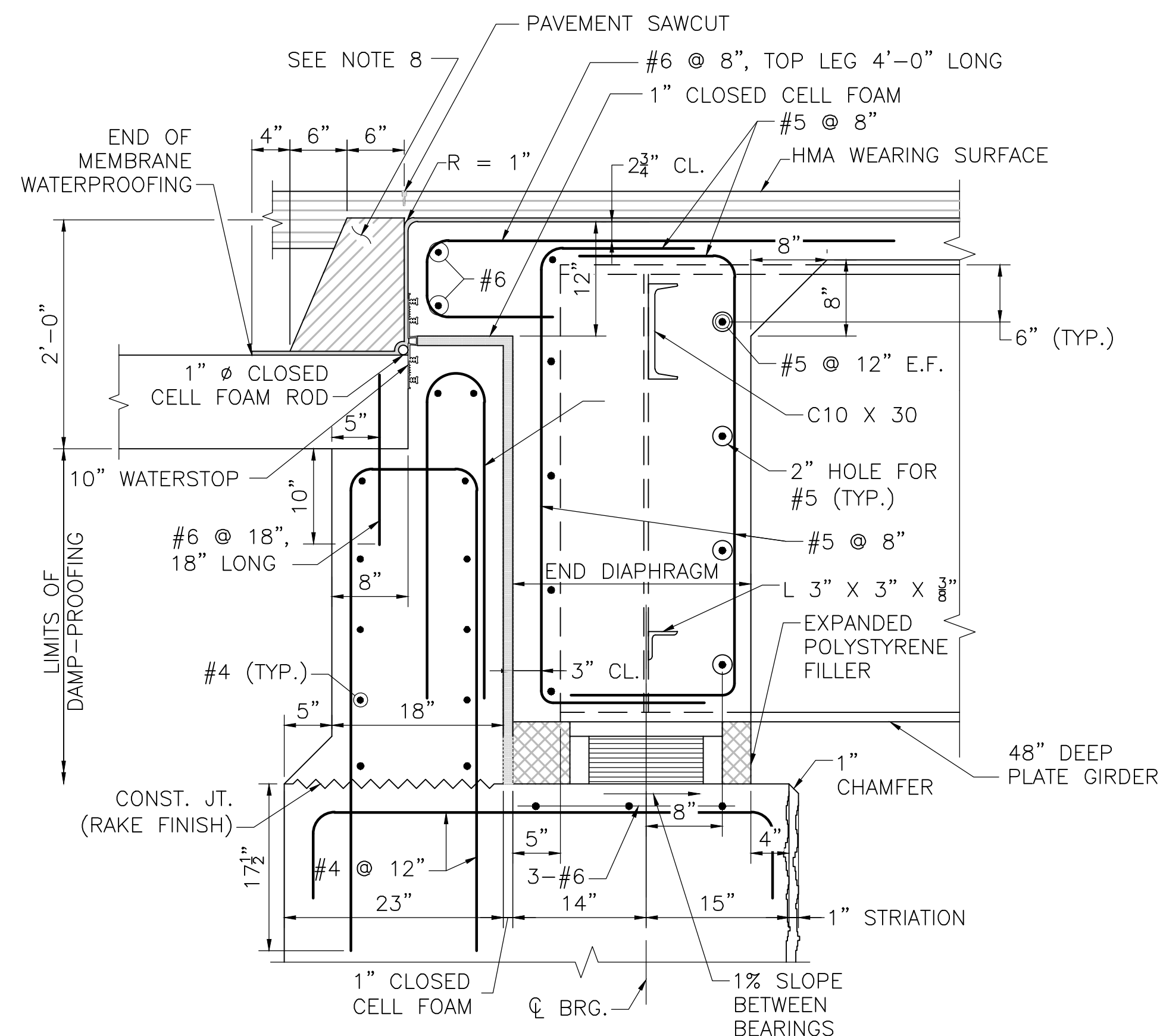
JUNE 29, 2024	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT	
AUTHORIZED SIGNATORY:	STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE	

608640_BR14-16(ABUTMENT DETAILS)DWG Plotted on 10-Jun-2024 12:06 PM 29-JUNE-2024 Final Structural Submittal (SF)

SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER

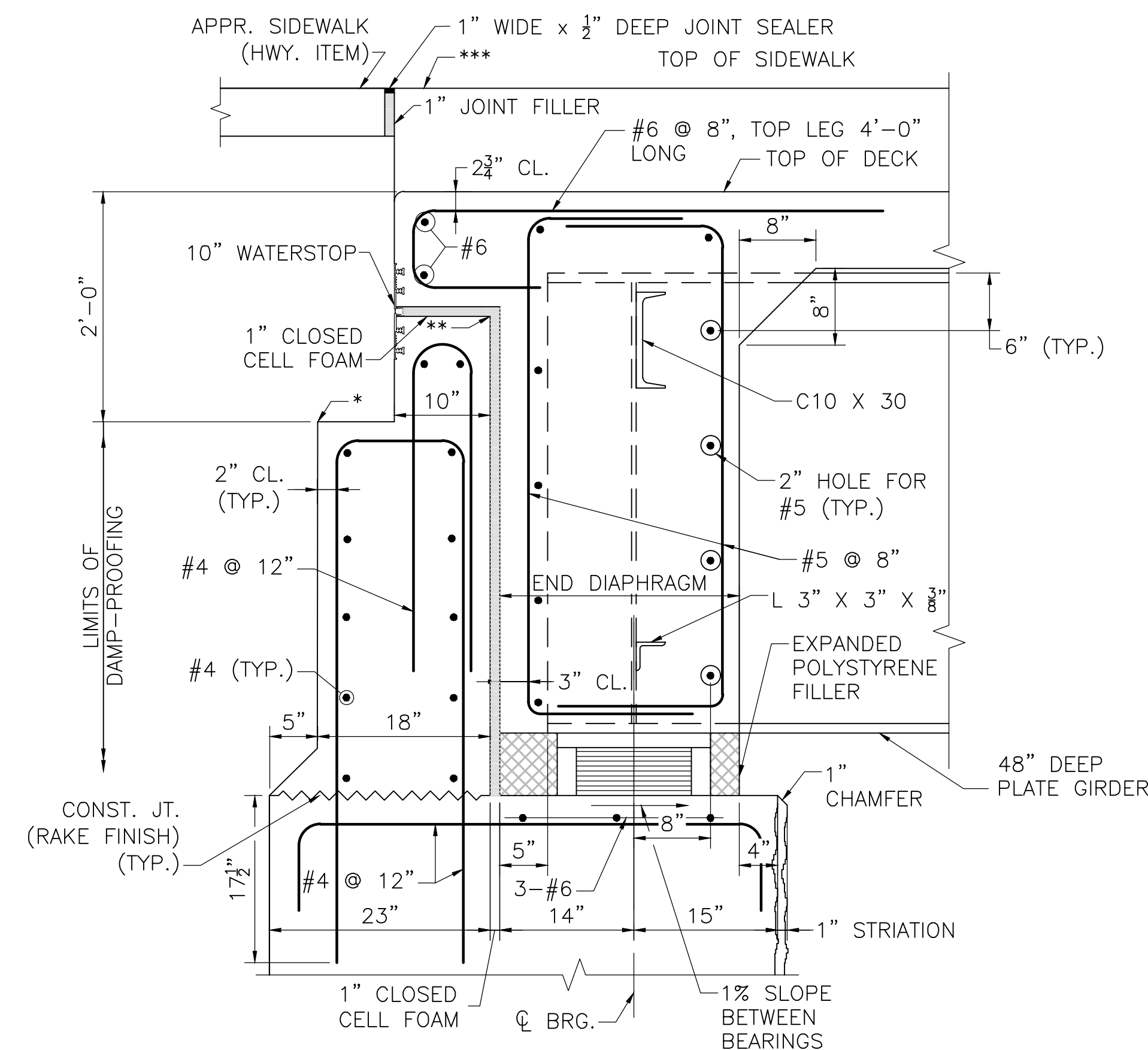
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	33	55
PROJECT FILE NO.		608640	

ABUTMENT DETAILS (SHEET 2 OF 3)



DETAIL AT ABUTMENT - ROADWAY SECTION

SCALE: 1" = 1'-0"



DETAIL AT ABUTMENT - SIDEWALK SECTION

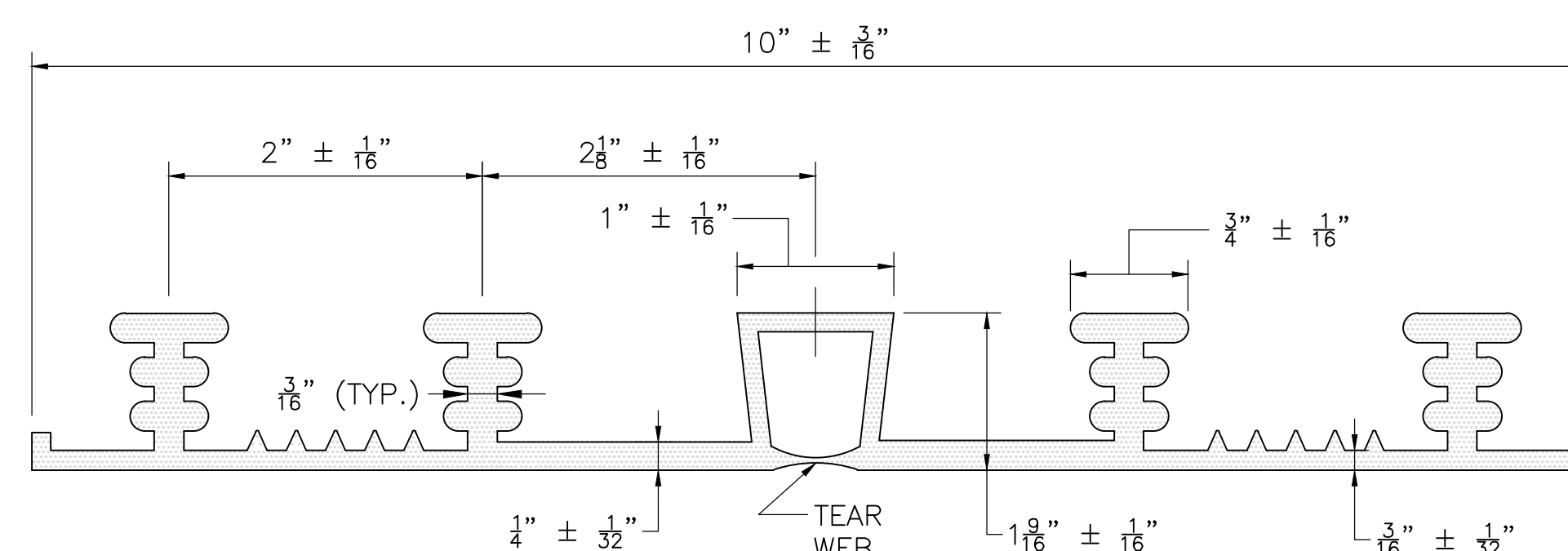
SCALE: 1" = 1'-0"

NOTE:

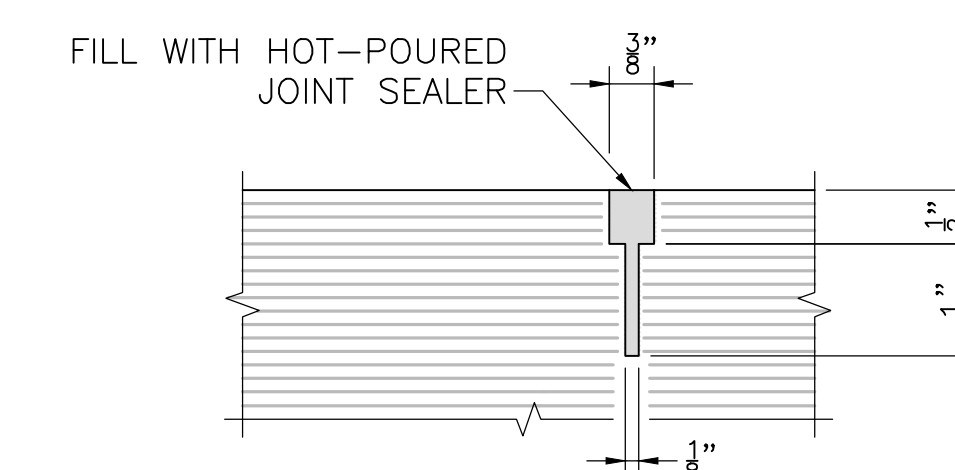
THE LOCATIONS MARKED WITH ASTERISKS (*) IN THIS SECTION ARE MEASURING POINTS AND CORRESPOND TO SPECIFIC LOCATIONS PERPENDICULAR TO THE BASELINE, AS SHOWN ON THE ABUTMENT ELEVATIONS ON SHEETS 12-13.

ROADWAY/SIDEWALK SECTION NOTES:

1. ALL REINFORCEMENT SHOWN IN THIS DETAIL SHALL BE COATED, EXCEPT FOR THE APPROACH SLAB REINFORCEMENT.
2. ALL BACKWALL CONCRETE ABOVE THE CONSTRUCTION JOINT LOCATED AT THE BRIDGE SEAT SHALL BE 4000 PSI, 3/4" IN, 610 CEMENT CONCRETE. THE CONSTRUCTION JOINT SHALL BE GIVEN A RAKE FINISH WITH A 1/4" MINIMUM AMPLITUDE.
3. TOP OF BACKWALL SHALL BE TROWELED SMOOTH PARALLEL TO THE PROFILE GRADE.
4. THE BACKWALL, KEEPER BLOCK, AND CURTAIN WALL CONCRETE MUST BE PLACED AND SUFFICIENTLY CURED PRIOR TO PLACING THE END DIAPHRAGM CONCRETE.
5. THE END DIAPHRAGM CONCRETE SHALL BE 4000 PSI, 3/4" IN, 585 HP CEMENT CONCRETE AND SHALL BE PLACED MONOLITHICALLY WITH THE DECK.
6. PRIOR TO PLACING THE END DIAPHRAGM CONCRETE, CLOSED CELL FOAM OF THE SPECIFIED THICKNESSES SHALL BE ATTACHED WITH ADHESIVE TO ALL SURFACES OF THE BACKWALL, KEEPER BLOCKS, AND CURTAIN WALLS AS SHOWN ON THE PLANS. EXPANDED POLYSTYRENE SHALL BE PLACED UNDER THE BEAM BOTTOM FLANGE AND THE BOTTOM OF THE END DIAPHRAGM SHALL BE FORMED AS SPECIFIED. THE CONTRACTOR SHALL INSURE THAT ALL ABUTMENT CONCRETE IS PROPERLY LINED. END DIAPHRAGM CONCRETE MUST NOT COME IN DIRECT CONTACT WITH THE ABUTMENT CONCRETE.
7. DRAPE MEMBRANE WATERPROOFING OVER CLOSED CELL FOAM BACKER ROD.
8. PROTECTIVE COURSE TO BE SUPERPAVE BRIDGE PROTECTIVE COARSE (SPC-B-12.5), PLACED IN 2" LAYERS AND COMPACTED WITH A MECHANICAL HAND-GUIDED TAMPER WITHIN 12 HOURS AFTER PLACING MEMBRANE WATERPROOFING.



10" WATERSTOP
NOT TO SCALE



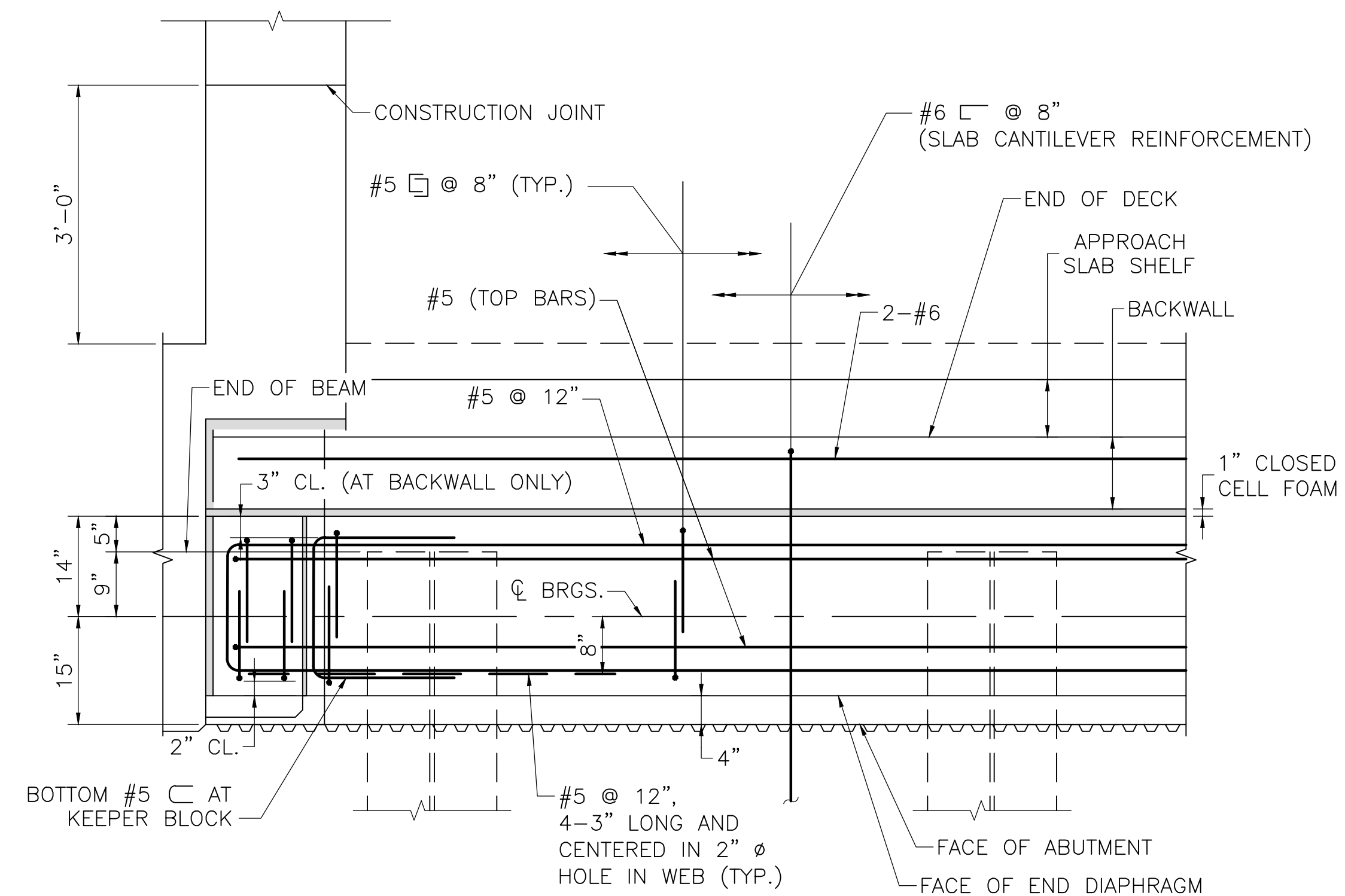
PAVEMENT SAWCUT DETAIL
NOT TO SCALE

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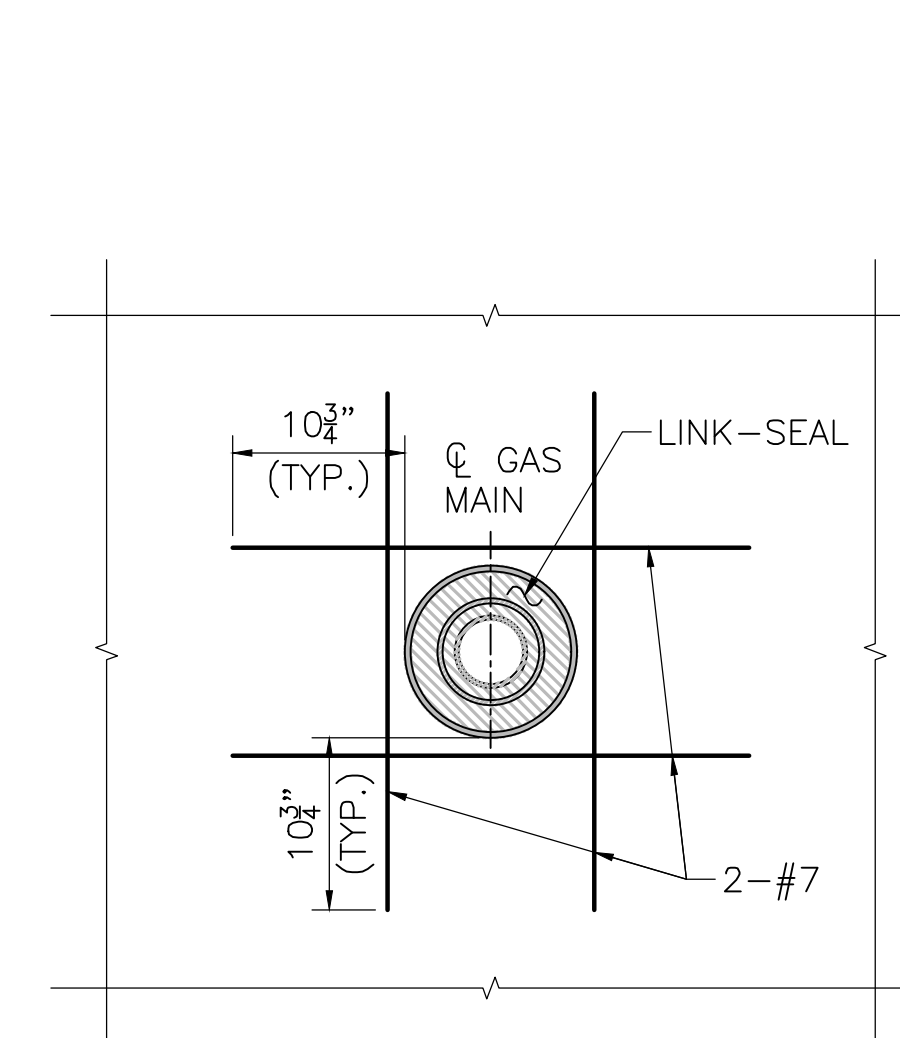
SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	34	55
PROJECT FILE NO.		608640	

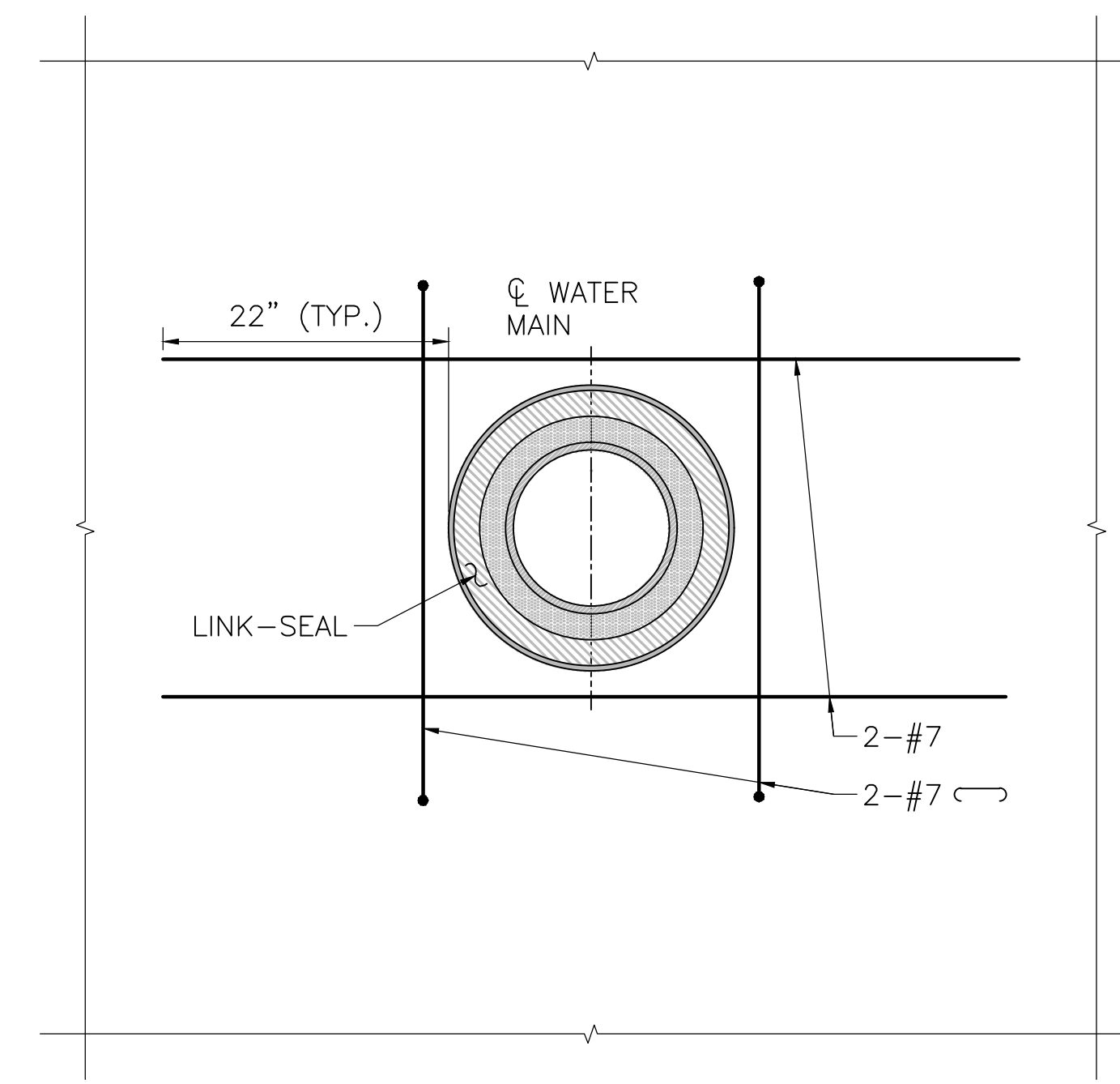
ABUTMENT DETAILS (SHEET 3 OF 3)



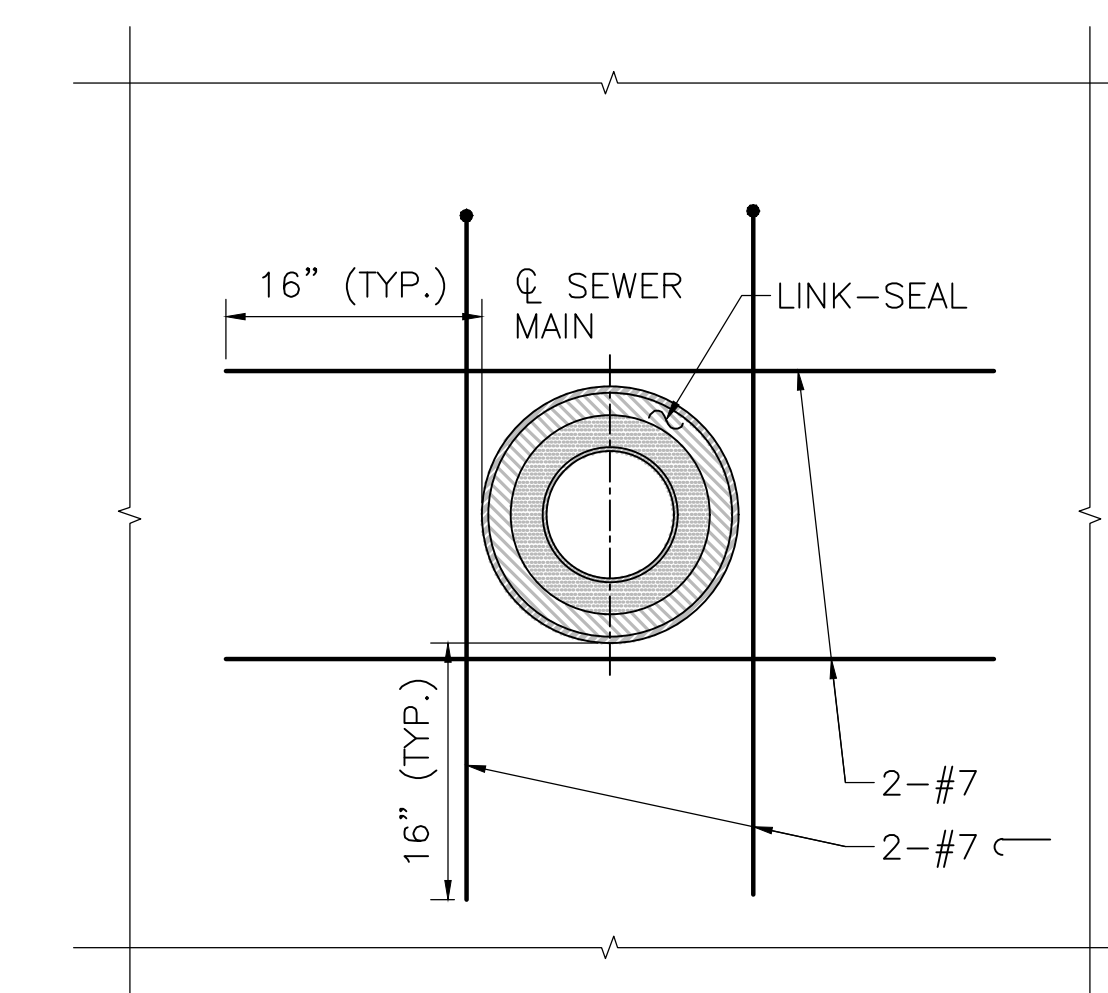
END DIAPHRAGM PLAN
 SCALE: 3/4" = 1'-0"



BAY 1 (GAS)



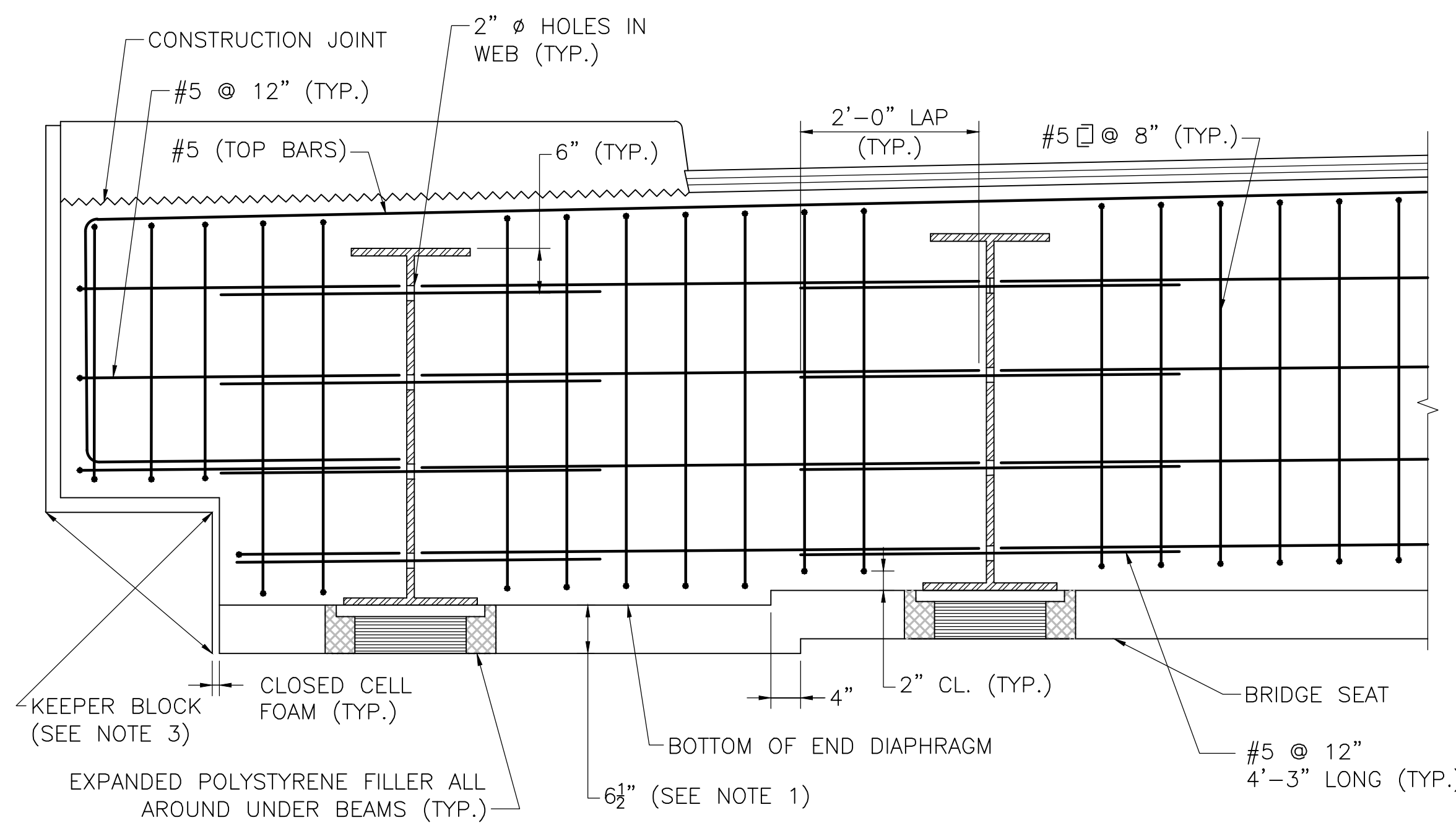
BAY 2 (WATER)



BAY 4 (SEWER)

REINFORCEMENT AND SLEEVE DETAIL AT ABUTMENT PENETRATIONS

SCALE: 1" = 1'-0"



END DIAPHRAGM ELEVATION
 SCALE: 3/4" = 1'-0"

END DIAPHRAGM UTILITY PENETRATION NOTES:

- UTILITY PENETRATIONS AT SOUTH ABUTMENT SHOWN, NORTH ABUTMENT SIMILAR.
- REFER TO "UTILITY SLEEVE PIPE DIMENSIONS" TABLE ON THIS SHEET FOR UTILITY PIPE DIMENSIONS, LINK-SEAL SPECIFICATIONS, AND STEEL WALL SLEEVE DIMENSIONS.
- END DIAPHRAGM AND BACKWALL REBAR TO BE ADJUSTED AROUND UTILITY BLOCKOUTS.
- PROVIDE STEEL SLEEVES AS NOTED ON THIS SHEET FOR ALL UTILITIES THROUGH END DIAPHRAGM. SLEEVES SHALL BE DISCONTINUOUS THROUGH JOINT BETWEEN BACKWALL AND END DIAPHRAGM.
- SLEEVES SHALL BE EXTENDED 4" (MIN.) FROM THE FACE OF THE END DIAPHRAGM TO PERMIT THE INSTALLATION OF THE CASING END SEAL. SEE "UTILITY SLEEVE LONGITUDINAL SECTION" ON THIS SHEET FOR DETAIL.
- UTILITY SLEEVES SHALL BE STEEL PIPE CONFORMING TO ASTM A-53, TYPE S, GRADE B, STANDARD WEIGHT, PLAIN ENDS, HOT-DIP GALVANIZED AND SHALL BE SET IN THE FORMS PRIOR TO PLACING ABUTMENT DIAPHRAGM CONCRETE.

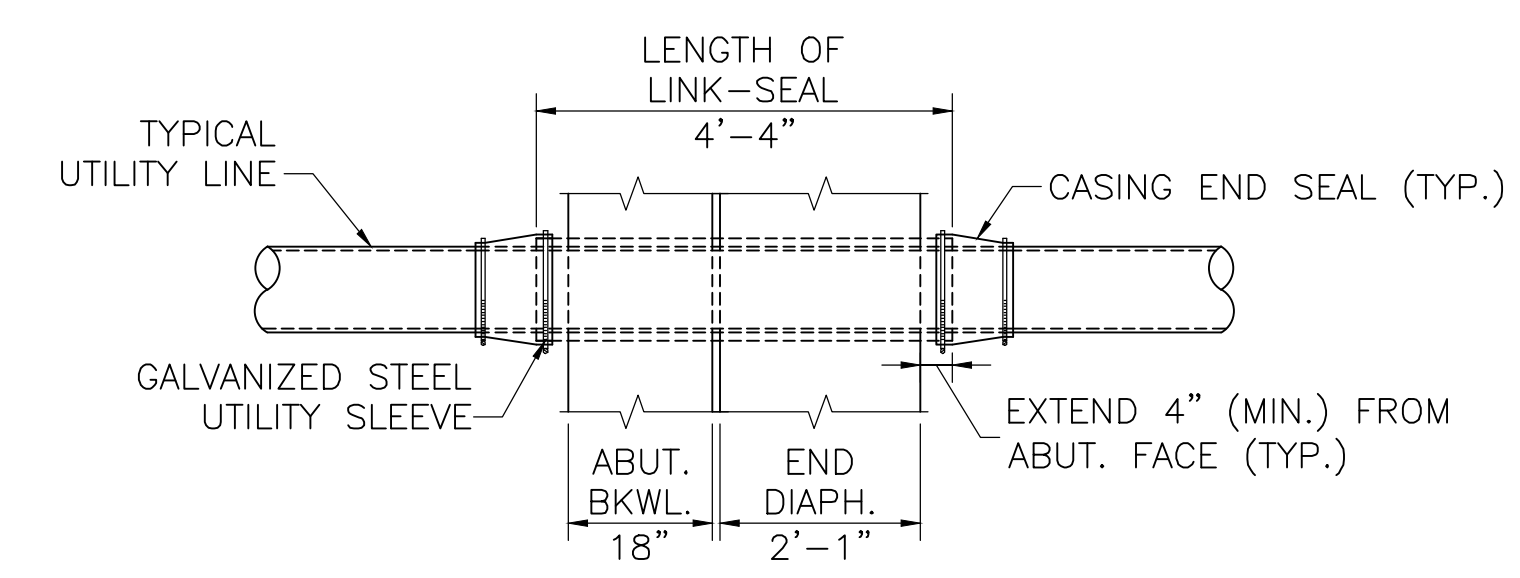
UTILITY	UTILITY PIPE DIMENSIONS		CASING/INSULATION DIMENSIONS*		LINK-SEAL SPECIFICATIONS		STEEL WALL SLEEVE DIMENSIONS	
	I.D.	O.D.	I.D.	O.D.	LINK-SEAL SIZE**	SLEEVE MODEL***	I.D.	O.D.
4" Ø GAS	4.00"	4.50"	6.0625"	6.675"	LS-475-C-10	WS-10-36-S-52"-2	10.02"	10.75"
8" Ø SEWER	7.98"	8.40"	N/A	12.40"	LS-360-C-20	WS-16-37-S-52"-2	15.25"	16.00"
12" Ø WATER	12.00"	13.20"	N/A	17.20"	LS-475-C-23	WS-22-37-S-52"-2	21.25"	22.00"

* THE 4" Ø GAS MAIN WILL HAVE A 6" Ø SLEEVE, WHILE THE 8" Ø SEWER AND 12" Ø WATER MAINS WILL HAVE 2" INSULATION.

THE FOLLOWING INFORMATION IS DERIVED FROM THE LINK-SEAL SIZING CHART ENGINEERING MANUAL. FOR REFERENCE, EXAMPLE FIGURES IN PARENTHESIS ARE FROM THE 4" Ø GAS UTILITY ROW.

** LINK-SEAL MODULAR SEAL SIZE CONSISTS OF THE LINK-SEAL SIZE (LS-475), MODEL TYPE (C - STANDARD TYPE), AND THE NUMBER OF LINKS PER SEAL (10).

*** TO ORDER CORRESPONDING SLEEVE, INDICATE SLEEVE MODEL NUMBER (WS-10-36-S), SLEEVE LENGTH IN INCHES (52"), AND QUANTITY REQUIRED (2).



UTILITY SLEEVE LONGITUDINAL SECTION
 SCALE: 1/2" = 1'-0"

- NOTES:**
- CONTRACTOR MAY USE EXPANDED POLYSTYRENE FILLER OR A REMOVABLE FORM TO FORM THE BOTTOM OF THE END DIAPHRAGM.
 - END CROSS FRAMES AND BEARING STIFFENERS HAVE BEEN OMITTED FOR CLARITY.
 - SEE SHEET 17 FOR END CURTAIN WALL AND KEEPER BLOCK DETAILS.

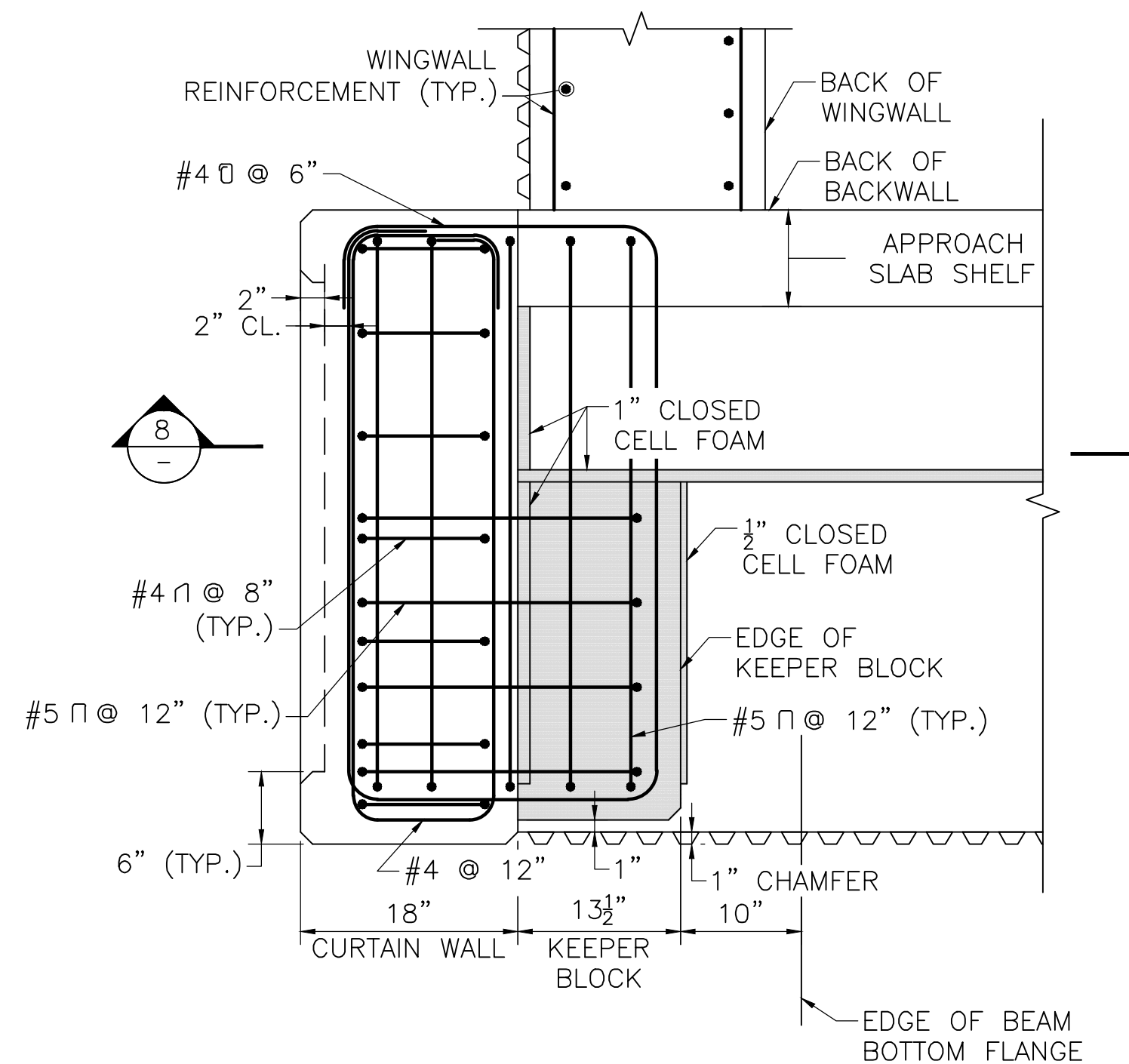
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SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER

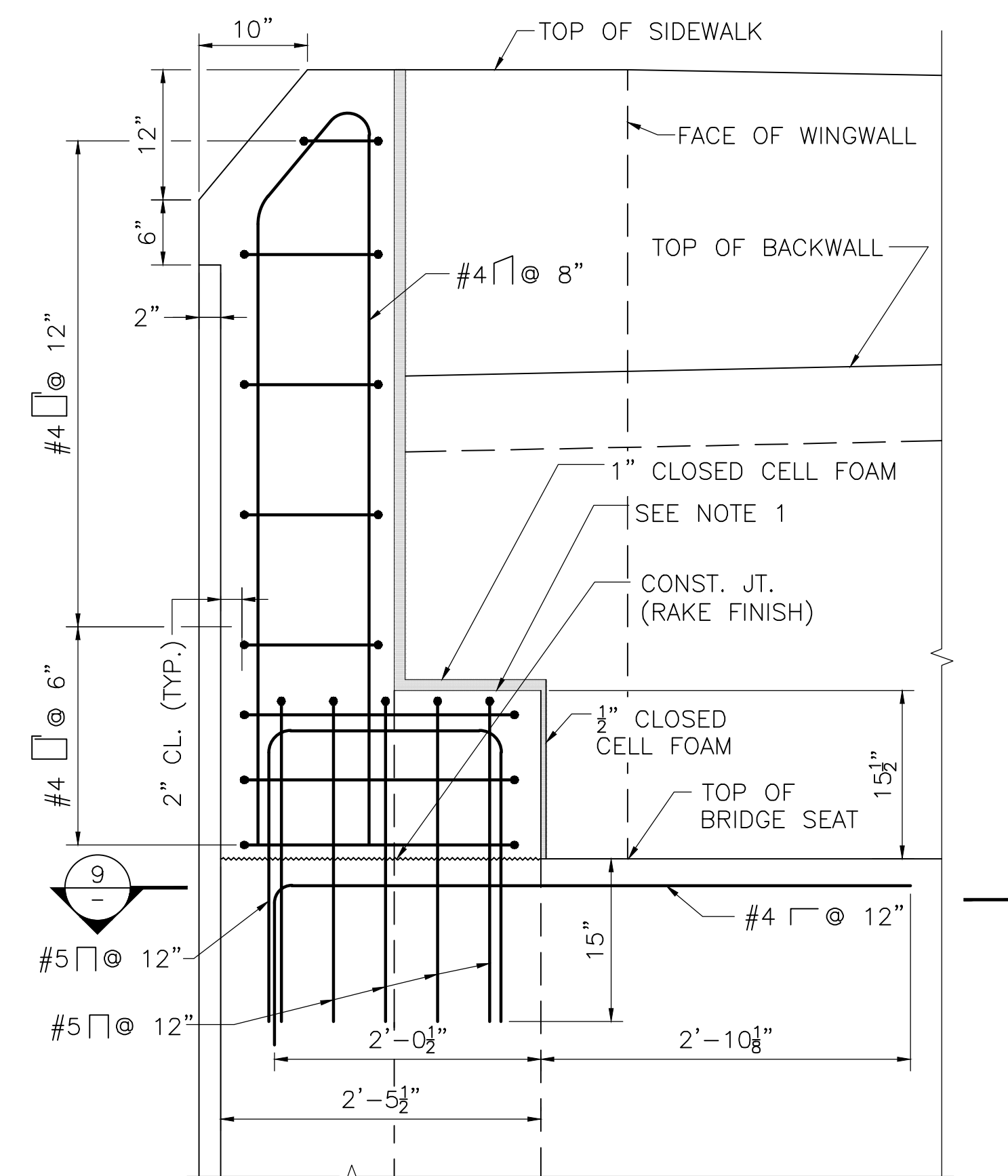
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	35	55
PROJECT FILE NO.		608640	

CURTAIN WALL DETAILS



**CURTAIN WALL AND
KEEPER BLOCK PLAN**

SCALE: 1" = 1'-0"

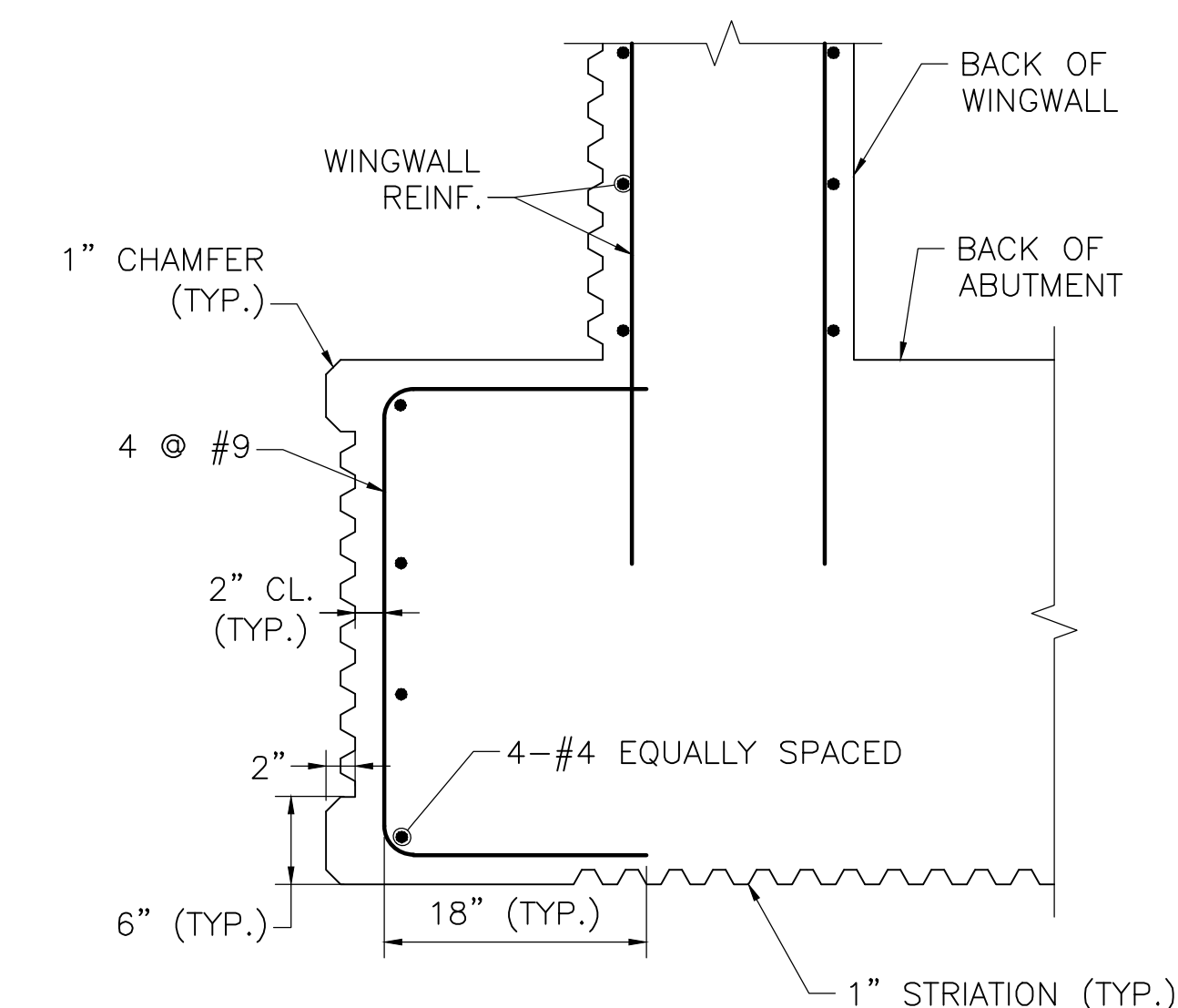


NOTES:

1. TOP OF KEEPER BLOCK SHALL BE TROWELED SMOOTH PARALLEL TO PROFILE GRADE.
2. ABUTMENT REINFORCEMENT BELOW CONSTRUCTION JOINT HAS BEEN OMITTED FOR CLARITY.

SECTION 8

SCALE: 1" = 1'-0"



SECTION 9

SCALE: 1" = 1'-0"

CURTAIN WALL / KEEPER BLOCK NOTES:

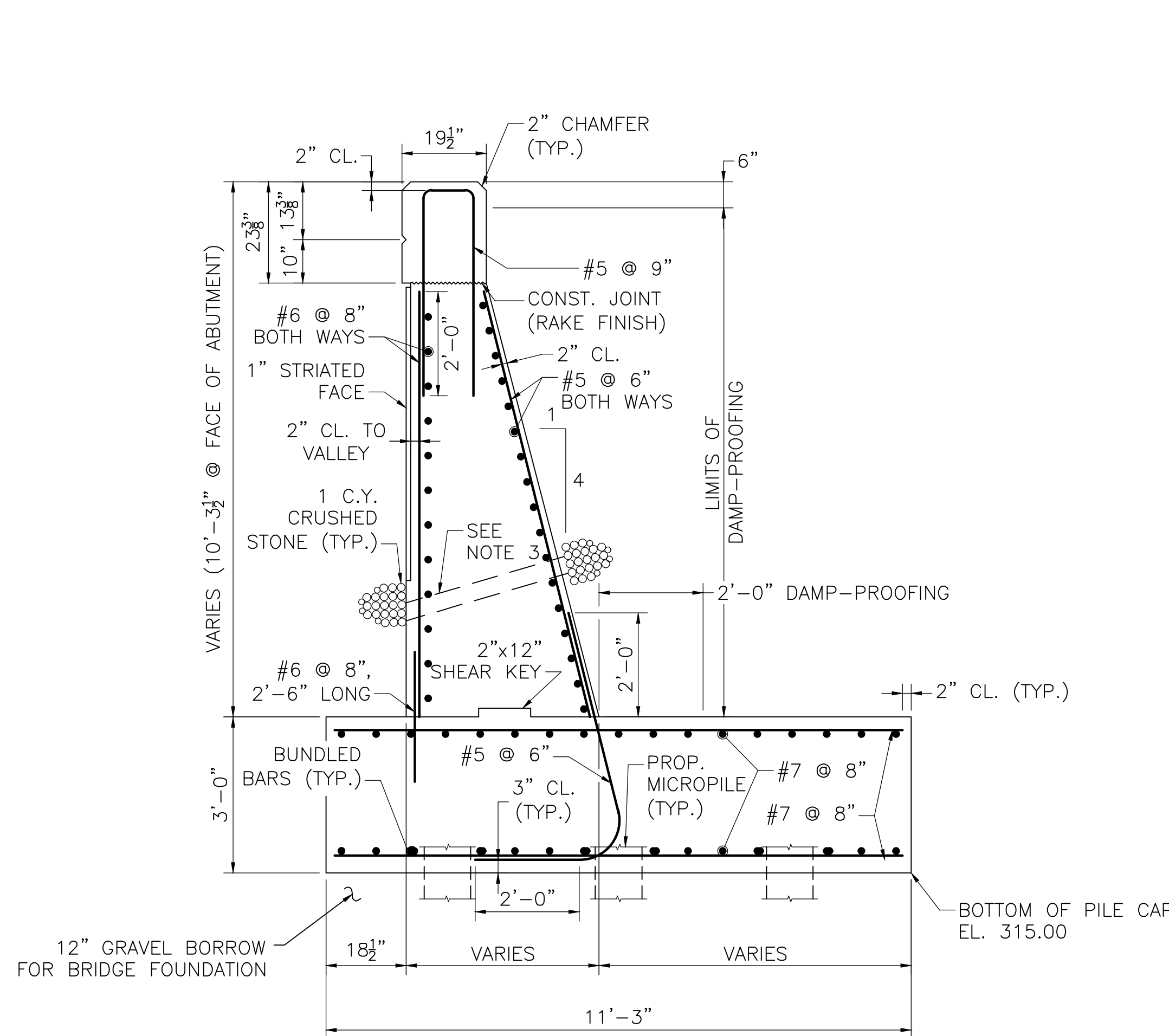
1. NORTHWEST CURTAIN WALL AND KEEPER BLOCK SHOWN, ALL OTHER CURTAIN WALLS AND KEEPER BLOCKS SIMILAR.
2. CURTAIN WALL AND KEEPER BLOCK SHALL BE 4000 PSI, 1 1/2 IN, 565 CEMENT CONCRETE. ALL REINFORCEMENT SHALL BE COATED.

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SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER

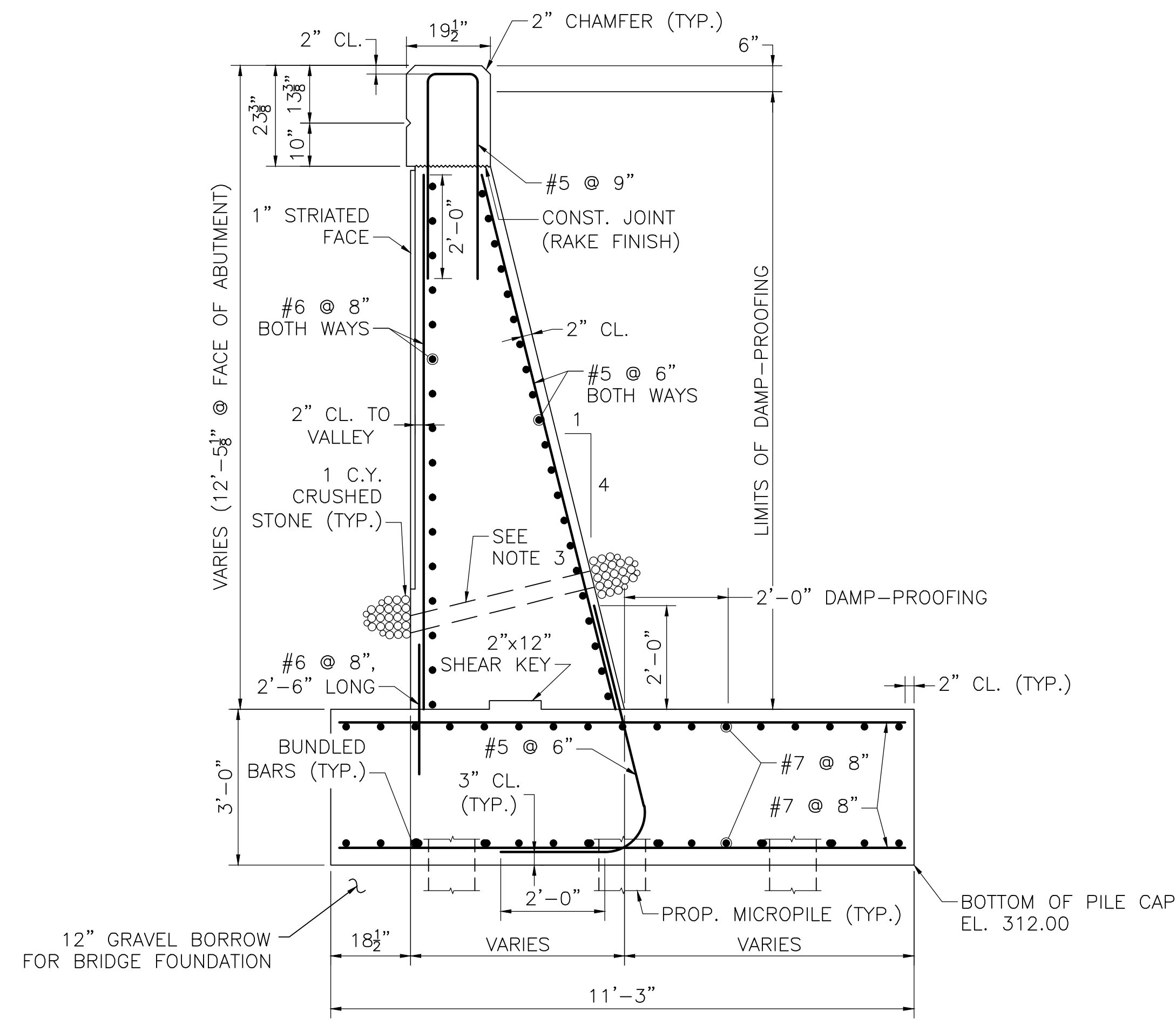
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	36	55
PROJECT FILE NO.			608640

WINGWALL DETAILS (SHEET 1 OF 2)



SOUTH WINGWALL SECTION

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



NORTH WINGWALL SECTION

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

WINGWALL NOTES:

- STEM HEIGHTS OF WINGWALLS VARIES. SHOWN SECTION IS CUT DIRECTLY ADJACENT TO THE RESPECTIVE ABUTMENTS.
- ALL CONCRETE SHALL BE 4000 PSI, 1 1/2 IN, 565 CEMENT CONCRETE, EXCEPT FOR THE WINGWALL COPINGS, WHICH SHALL BE 5000 PSI, 3/4 IN., 685 HP CEMENT CONCRETE.
- 4" Ø WEEP HOLES 10'-0" O.C. PROVIDE 1 CUBIC YARD OF CRUSHED STONE AT EACH END OF WEEP HOLE.
- SEE SHEETS 10-11 FOR DETAILS REGARDING WINGWALL MICROPILES.
- FOR THE SOUTH WINGWALLS, THE FACTORED AXIAL DESIGN LOAD PER MICROPILE IS 83 KIPS AS PER AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS STRENGTH I LOAD COMBINATION.

THE FACTORED STRUCTURAL RESISTANCE IS 417 KIPS AND IS THE PRODUCT OF THE NOMINAL STRUCTURAL RESISTANCE OF 556 KIPS AND A RESISTANCE FACTOR OF 0.75.

THE FACTORED GEOTECHNICAL RESISTANCE IS 94 KIPS AND IS THE PRODUCT OF THE NOMINAL GEOTECHNICAL RESISTANCE OF 170 KIPS AND A RESISTANCE FACTOR OF 0.55.
- FOR THE NORTH WINGWALLS, THE FACTORED AXIAL DESIGN LOAD PER MICROPILE IS 110 KIPS AS PER AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS STRENGTH I LOAD COMBINATION.

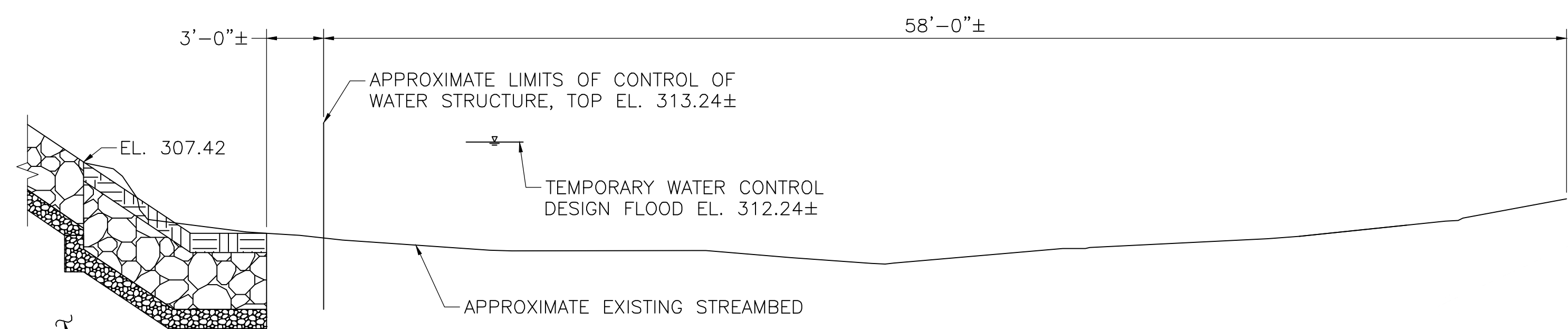
THE FACTORED STRUCTURAL RESISTANCE IS 417 KIPS AND IS THE PRODUCT OF THE NOMINAL STRUCTURAL RESISTANCE OF 556 KIPS AND A RESISTANCE FACTOR OF 0.75.

THE FACTORED GEOTECHNICAL RESISTANCE IS 110 KIPS AND IS THE PRODUCT OF THE NOMINAL GEOTECHNICAL RESISTANCE OF 200 KIPS AND A RESISTANCE FACTOR OF 0.55.
- THE ESTIMATED TIP ELEVATION IS 279 FEET FOR THE SOUTH WINGWALLS (5'-0" BELOW TOP OF BEDROCK).

THE ESTIMATED TIP ELEVATION IS 278 FEET FOR THE NORTH WINGWALLS (6'-0" BELOW TOP OF BEDROCK).

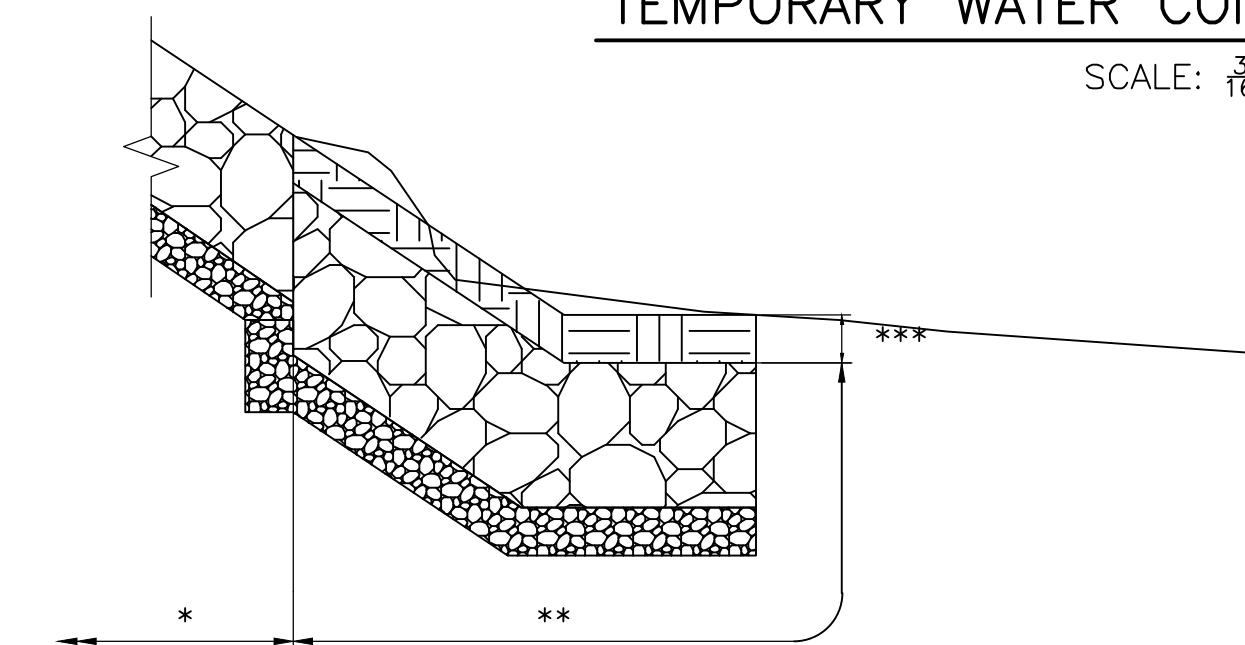
MICROPILE INSTALLATION PROCEDURE:

- ADVANCE STEEL CASING TO A MINIMUM DEPTH OF 12" BELOW TOP OF BEDROCK UTILIZING ROTARY DRILLING TECHNIQUES AND THEN CONTINUE DRILLING, UNCASING, FOR THE MINIMUM BOND LENGTH, AS SPECIFIED BY SECTIONS 1-4 ON SHEET 11.
- PLACE REINFORCING BAR WITH CENTRALIZER CASING.
- TREMIE CASING FULL DEPTH WITH NEAT CEMENT GROUT.
- CEMENT GROUT SHALL BE PLACED UNDER GRAVITY HEAD ONLY.
- NO PRESSURE GROUTING IS TO TAKE PLACE FOR THE INSTALLATION OF THE MICROPILES NOR IS CASING TO EXTEND INTO THE REQUIRED BOND ZONE.
- TRIM TOP OF CASING TO PROPER ELEVATION.
- CONSISTENCY OF PILE INSTALLATION SHALL BE MONITORED AND RECORDED AS DESCRIBED IN THE SPECIAL PROVISIONS. MONITORED AND RECORDED DATA SHALL INCLUDE TOTAL PILE LENGTH, SOIL/ROCK ENCOUNTERED DURING INSTALLATION, AND ANY OBSTRUCTION OR IRREGULARITIES.



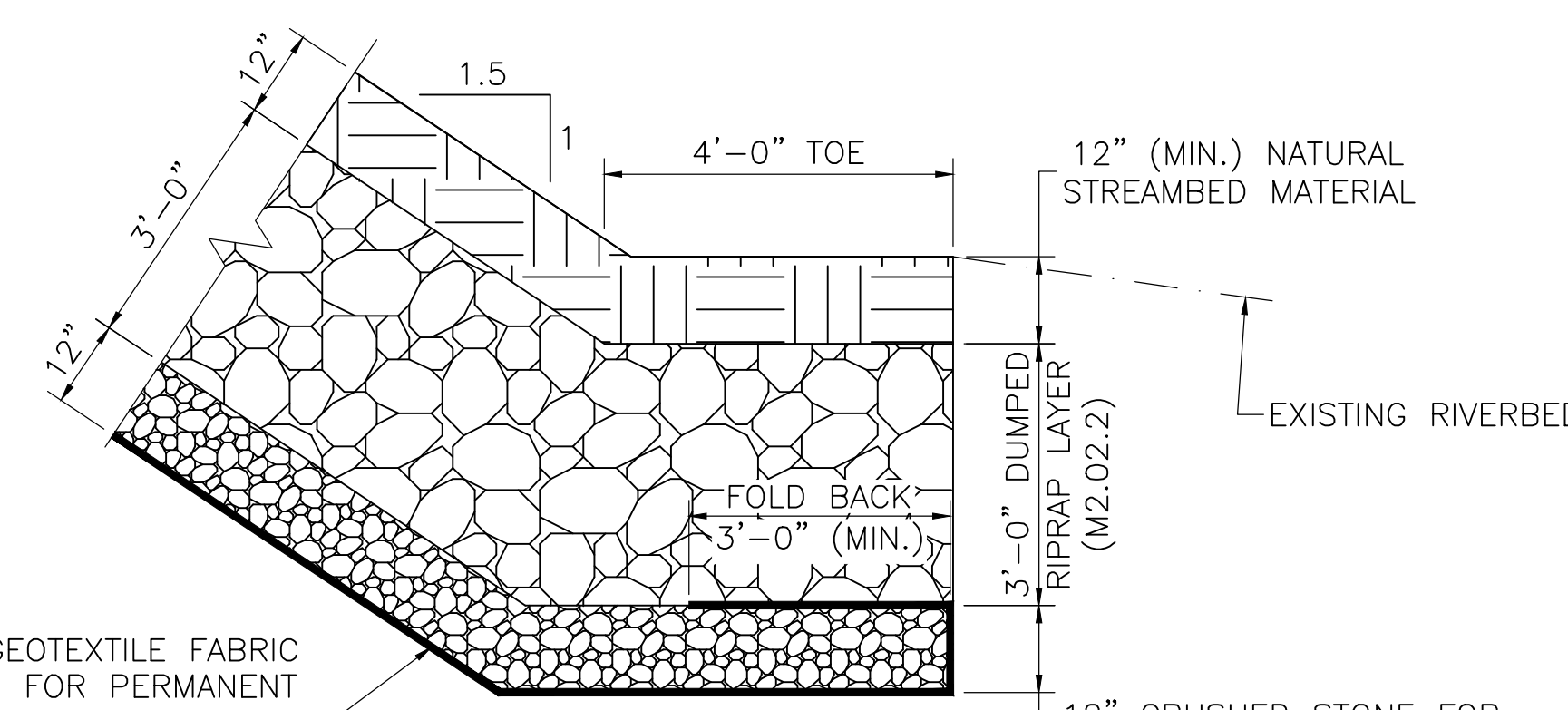
TEMPORARY WATER CONTROL CHANNEL SECTION

SCALE: 3/16" = 1'-0"



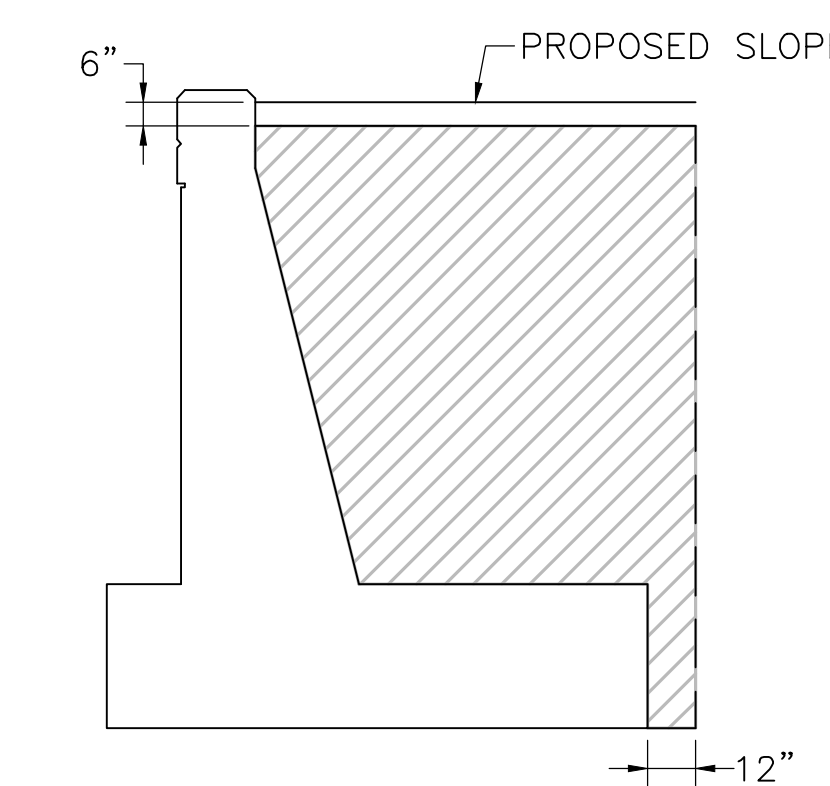
LIMITS OF EXCAVATION DETAIL

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



RIPRAP TOE DETAIL

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



NOTES:

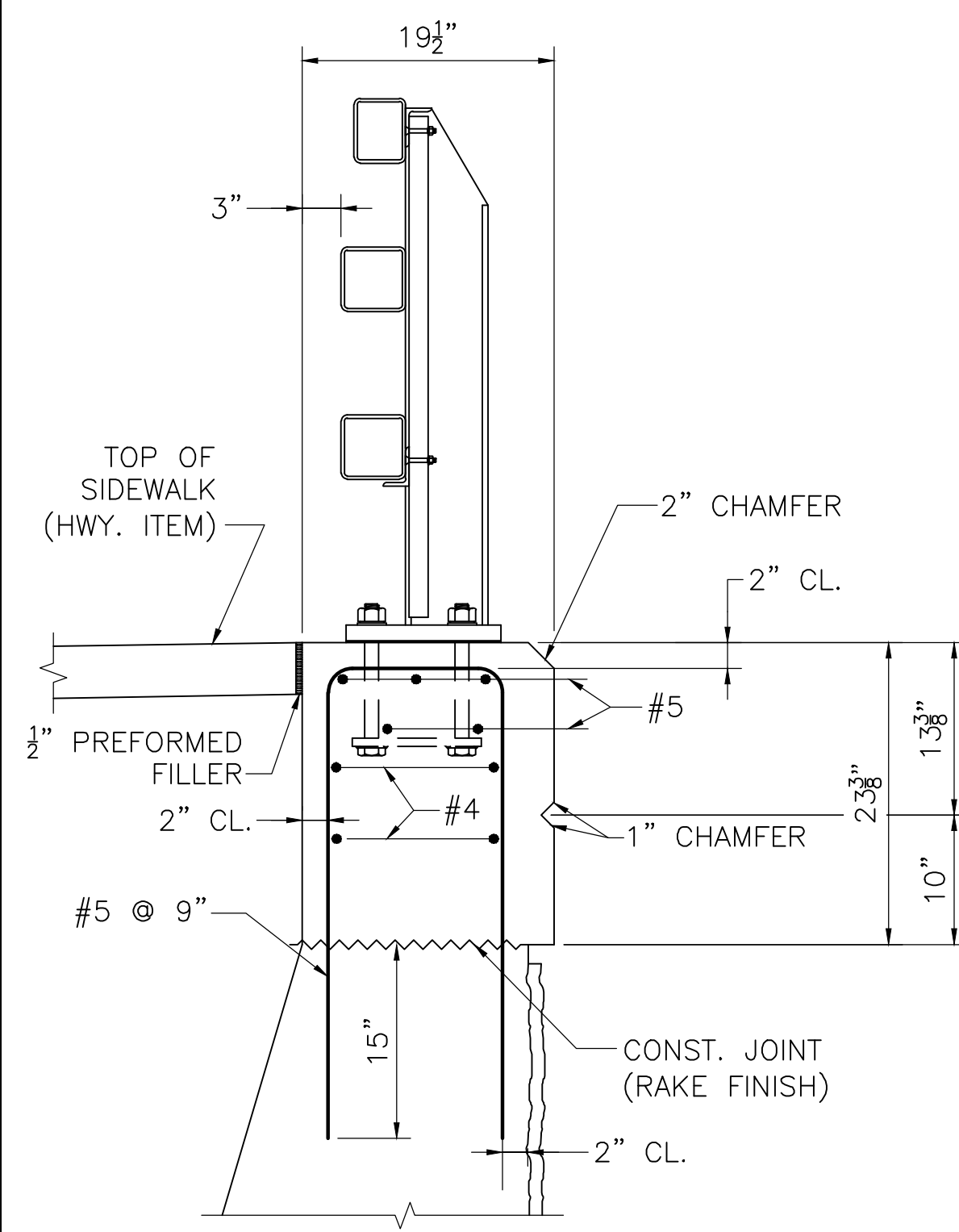
- HATCHED AREA INDICATES LIMITS OF GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES.
- SOUTH WINGWALL SHOWN, NORTH WINGWALL SIMILAR.

LIMITS OF GRAVEL BACKFILL FOR WINGWALLS

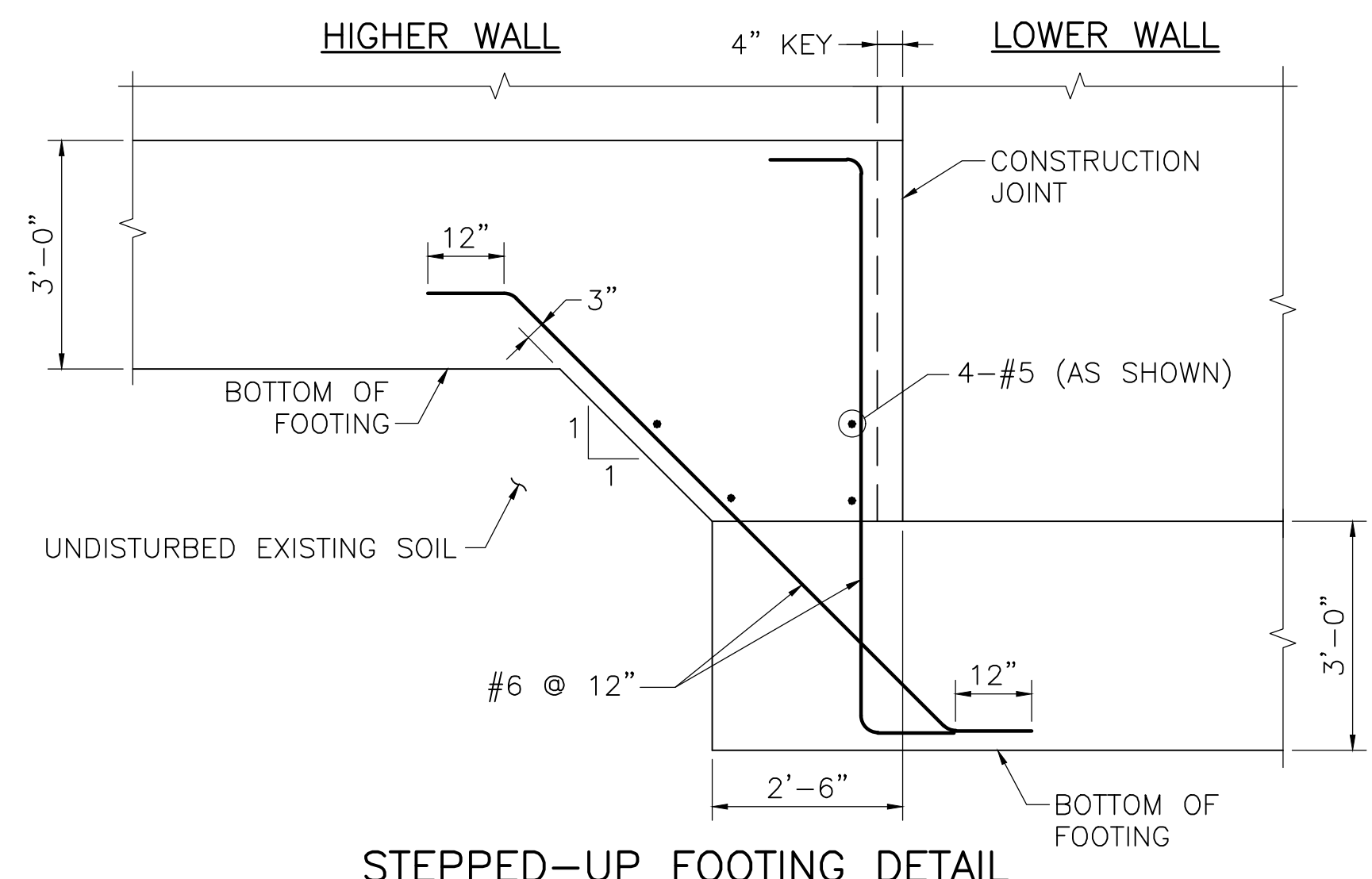
SCALE: 1/4" = 1'-0"

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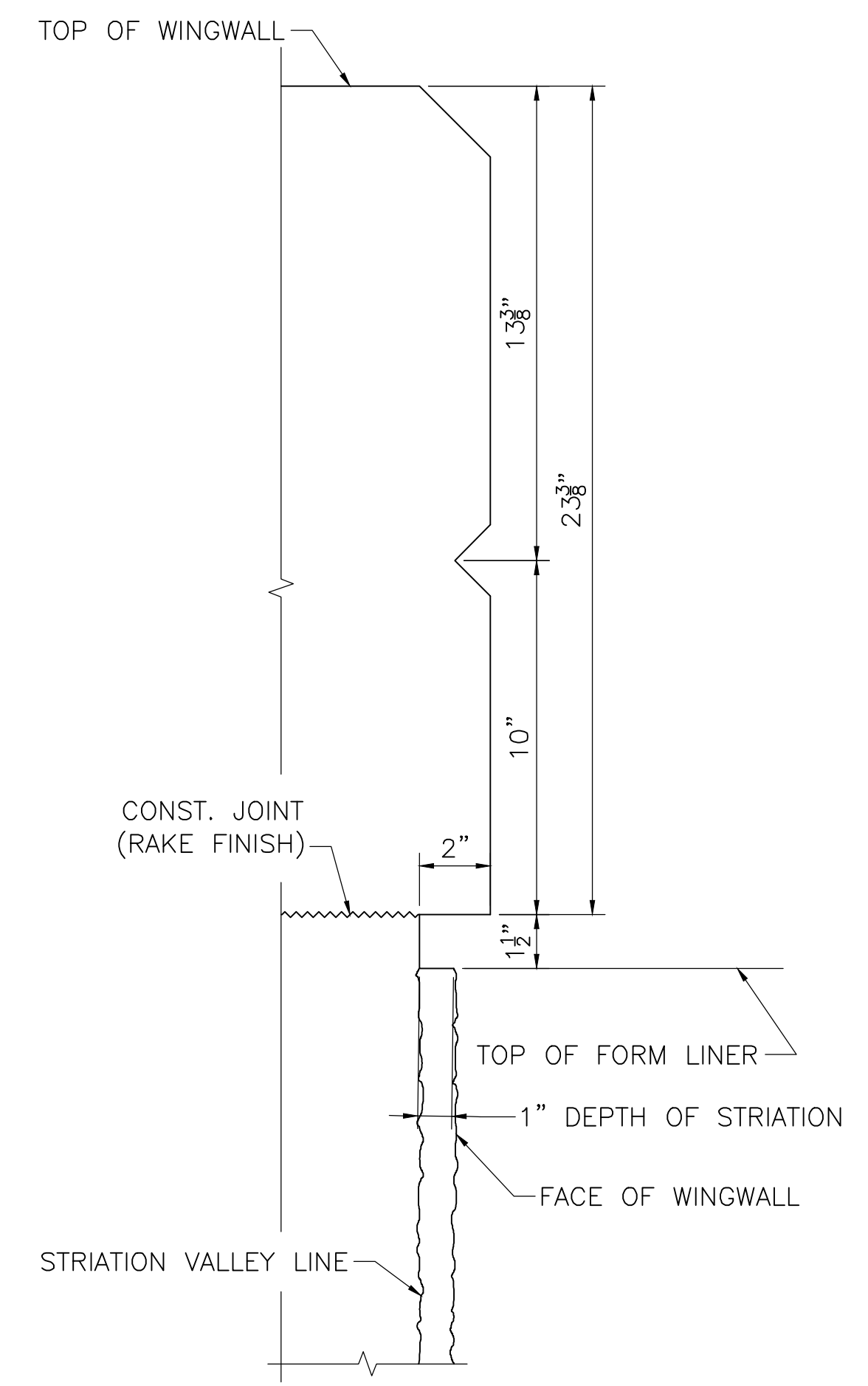
608640_BRI18-19(WINGWALL DETAILS).DWG Plotted on 20-Jun-2024 11:43 AM Final Structural Submittal (SF) 29-JUNE-2024



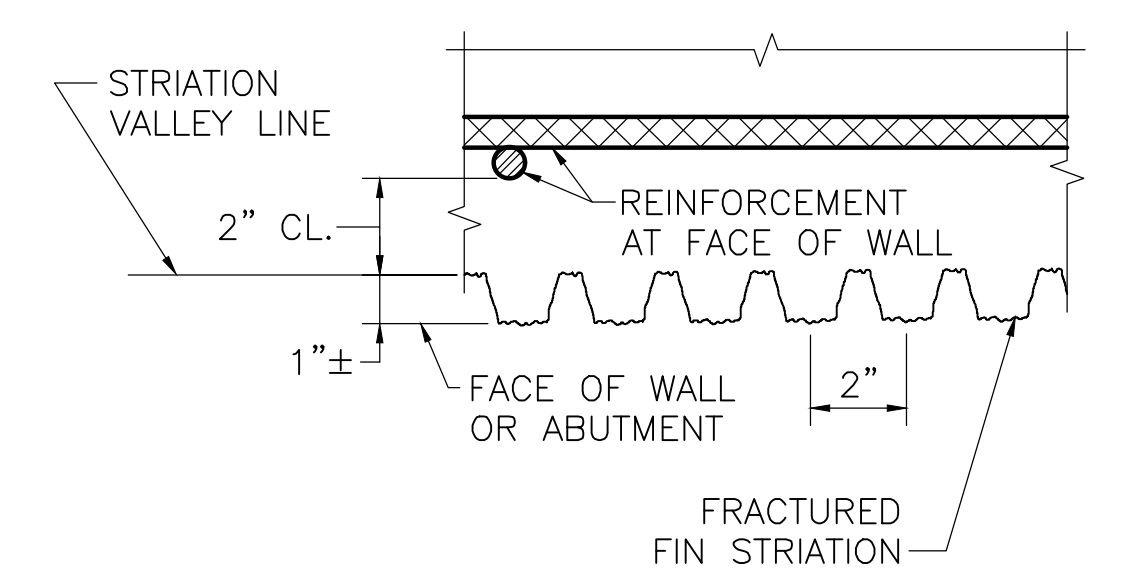
**TOP OF U-WINGWALL
 DETAILS AT SIDEWALK**
 SCALE: 1" = 1'-0"



STEPPED-UP FOOTING DETAIL
 SCALE: 1/2" = 1'-0"



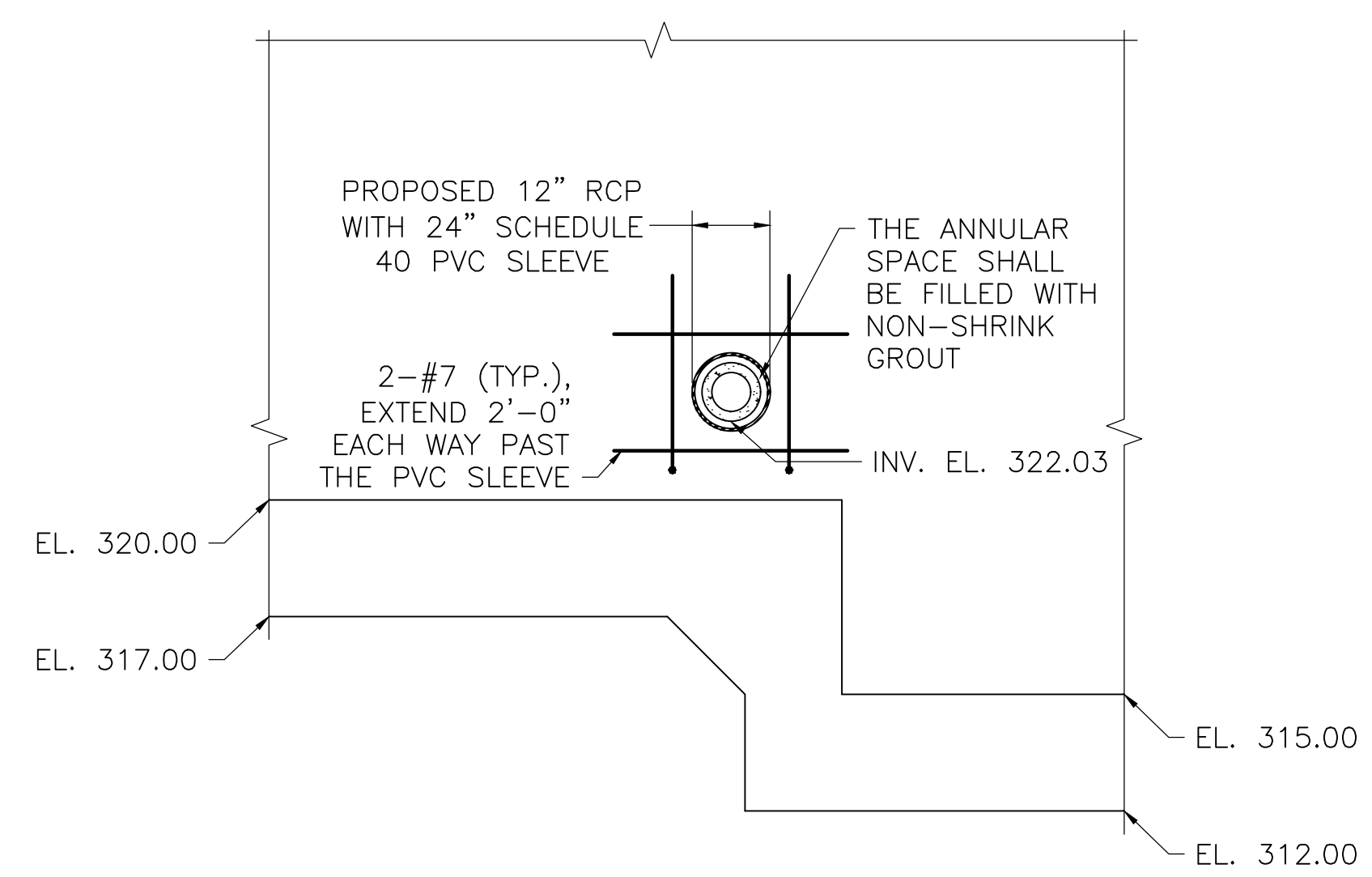
DETAIL AT TOP OF WINGWALL
 SCALE: 3" = 1'-0"



NOTES:

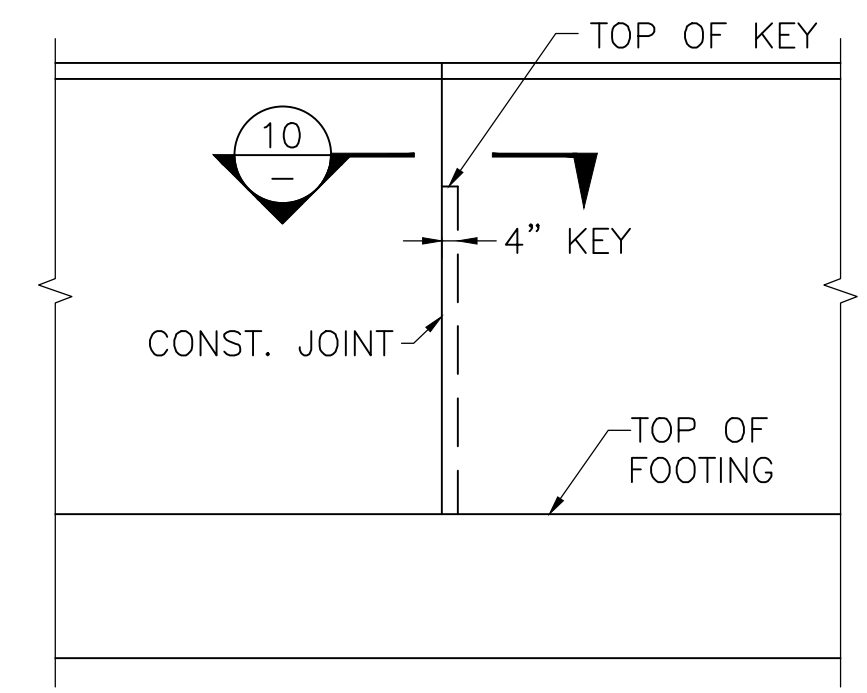
- THE CONTRACTOR SHALL MAKE SURE THAT THE STRIATION FINIS ARE PLUMB AND LINED UP VERTICALLY FROM PANEL TO PANEL FOR THE FULL HEIGHT OF THE WALL.
- THE HORIZONTAL JOINT MAY BE OMITTED IF THE CONTRACTOR CAN DEMONSTRATE THAT THE FORM LINER PANELS CAN BE INSTALLED END TO END WITHOUT CREATING A VISIBLE SEAM IN THE FINAL CAST CONCRETE.

TYPICAL STRIATION DETAIL
 SCALE: 3" = 1'-0"

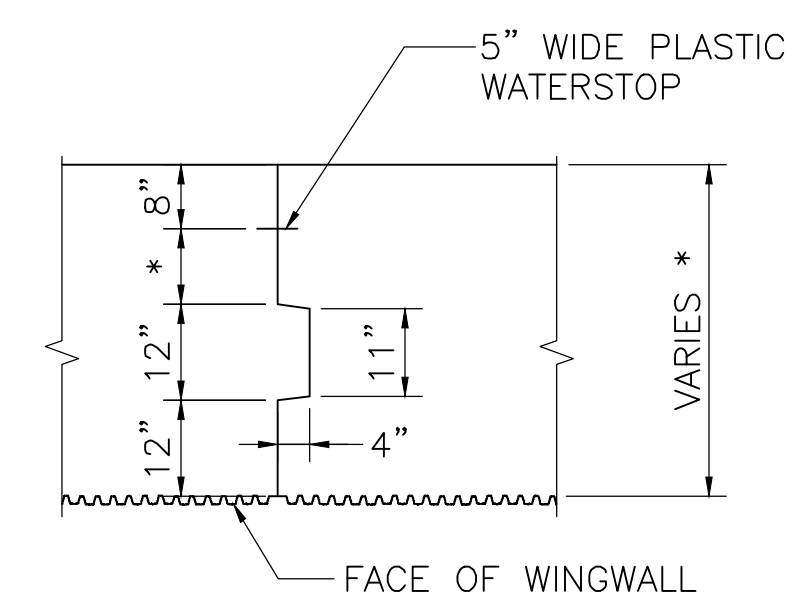


NOTE: WINGWALL REBAR TO BE ADJUSTED AROUND UTILITY BLOCKOUT.

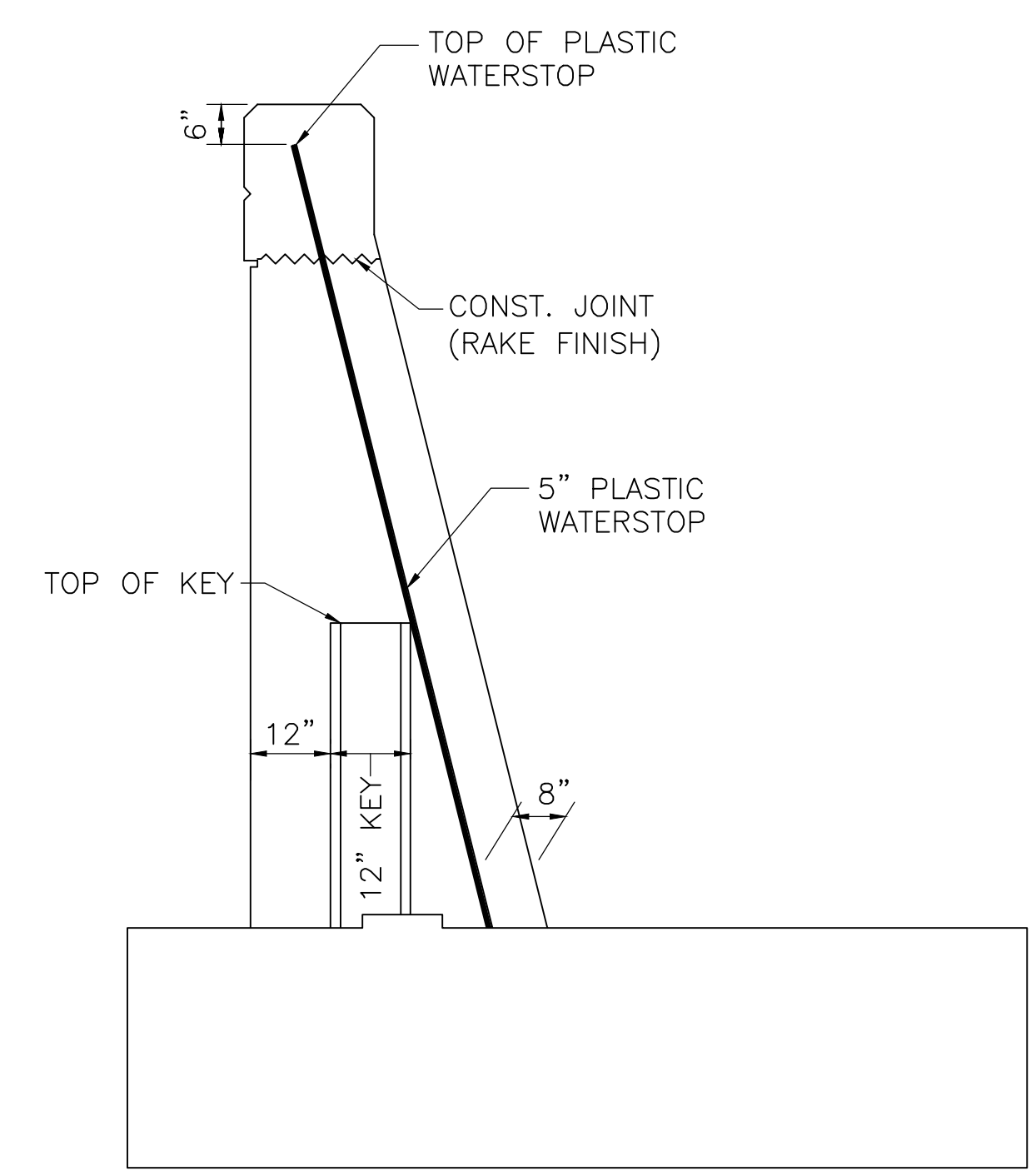
WINGWALL PENETRATION DETAIL
 SCALE: 1/4" = 1'-0"



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



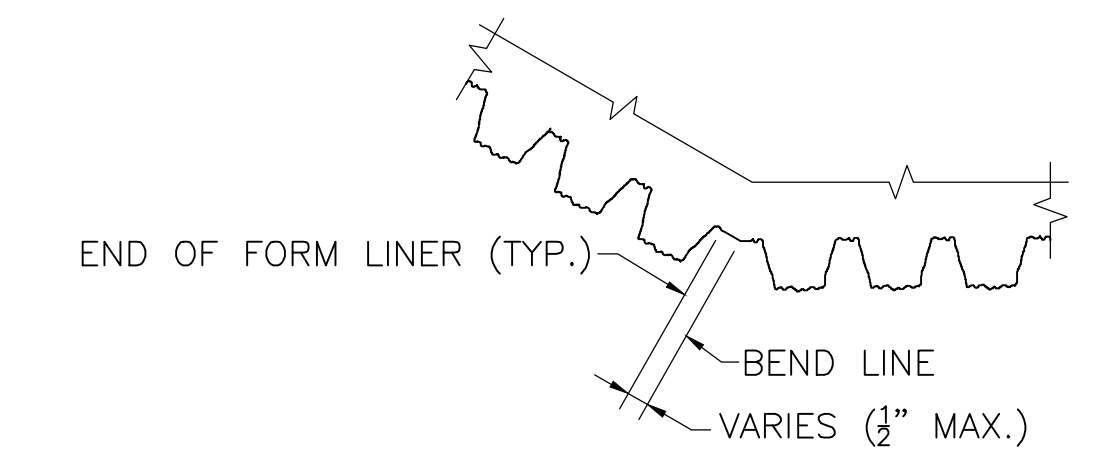
SECTION 10
 SCALE: 1/2" = 1'-0"



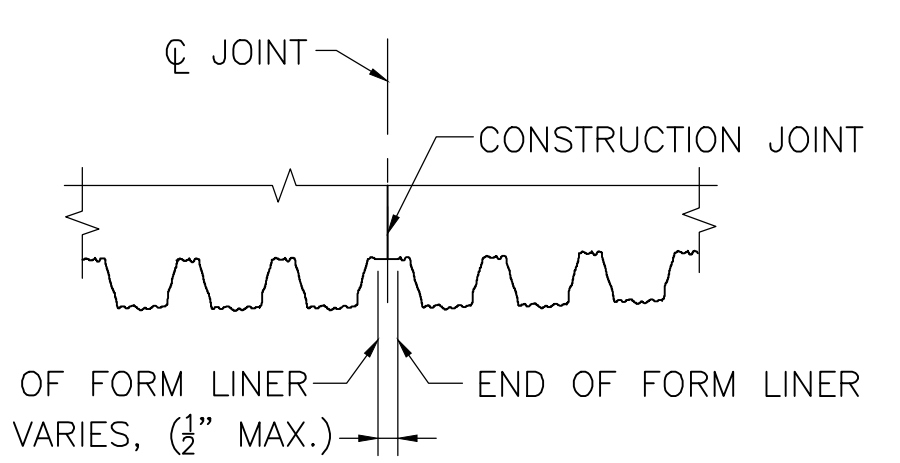
NOTES:

- REINFORCEMENT SHALL BE CONTINUOUS THROUGH CONSTRUCTION JOINTS.
- SOUTH WINGWALL SHOWN, NORTH WINGWALL SIMILAR.

**VERTICAL SECTION THROUGH
 CONSTRUCTION JOINT**
 SCALE: 1/2" = 1'-0"



STRIATION DETAIL AT WALL CORNER
 SCALE: 3" = 1'-0"



STRIATION DETAIL AT CONSTRUCTION JOINT
 SCALE: 3" = 1'-0"

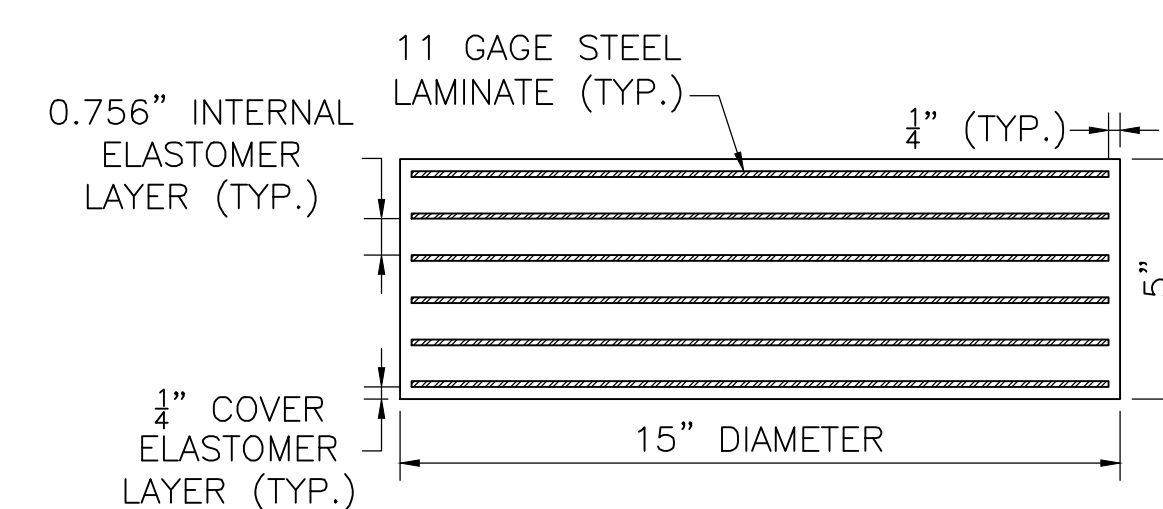
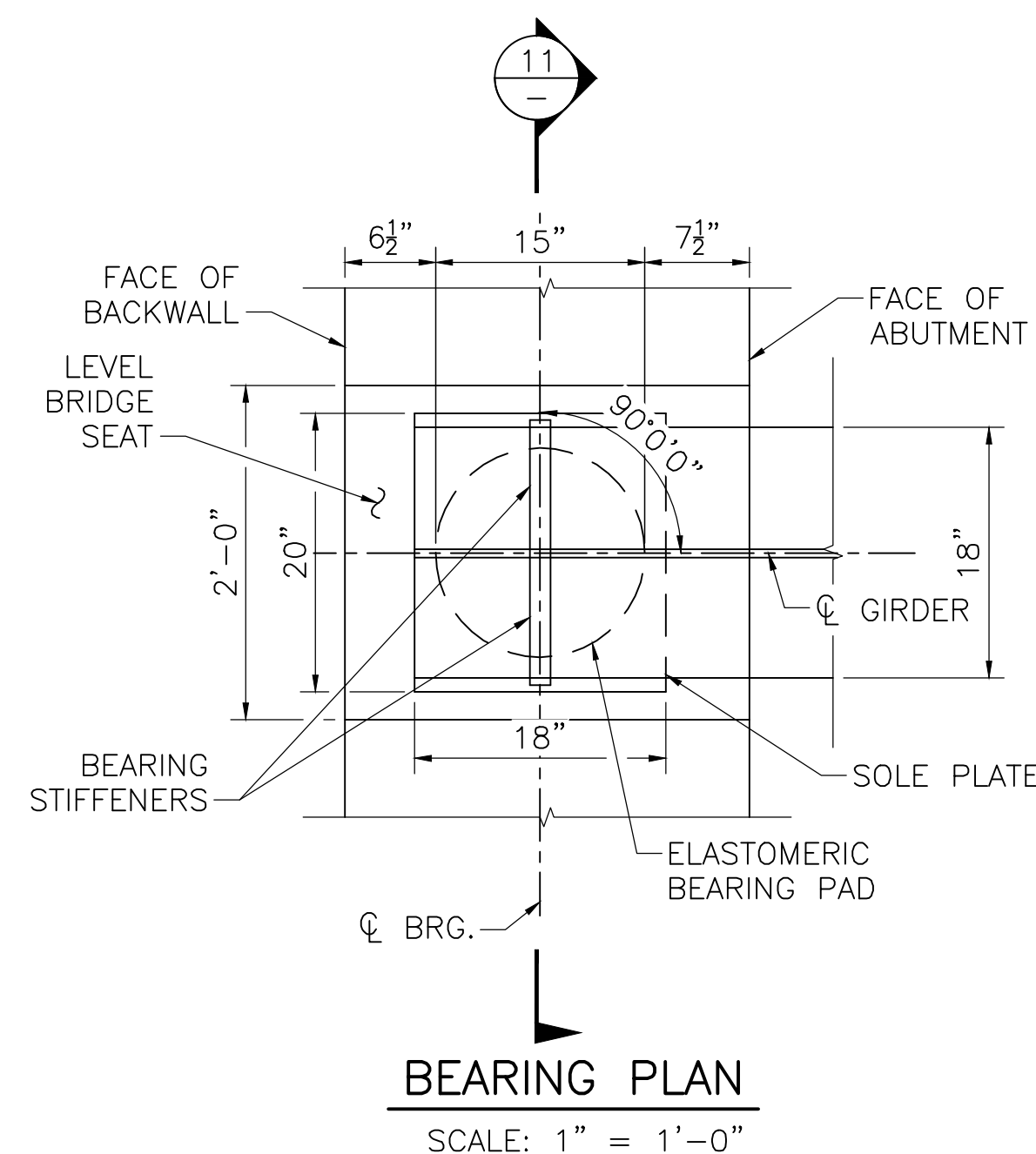
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SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	38	55
PROJECT FILE NO.		608640	

BEARING DETAILS

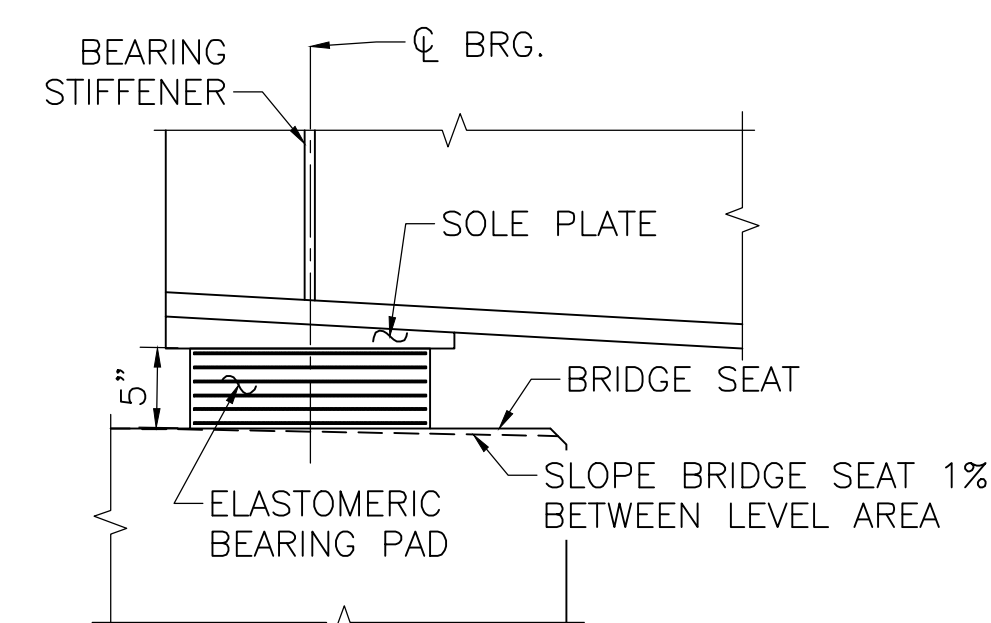
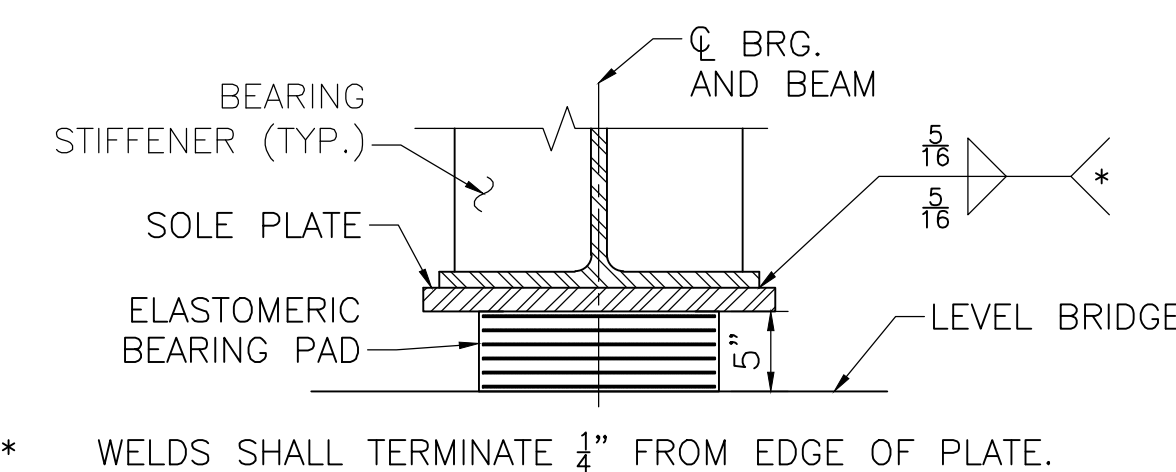


NOTES:

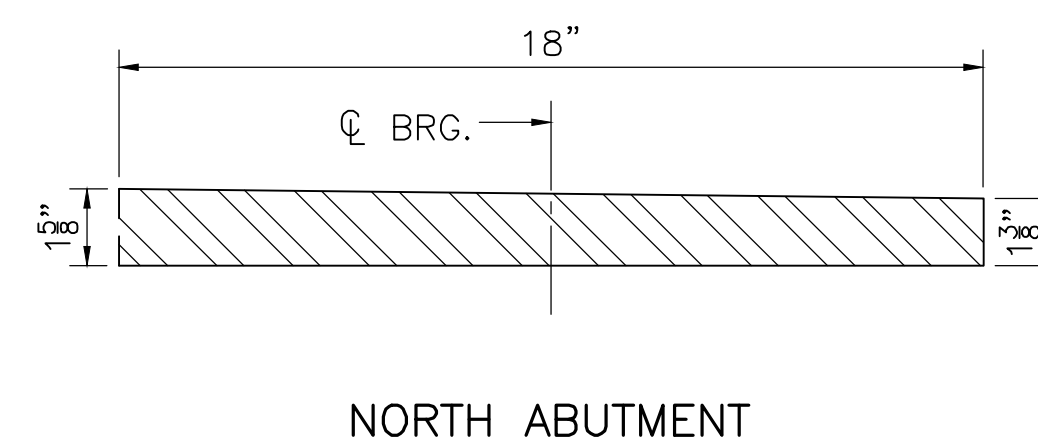
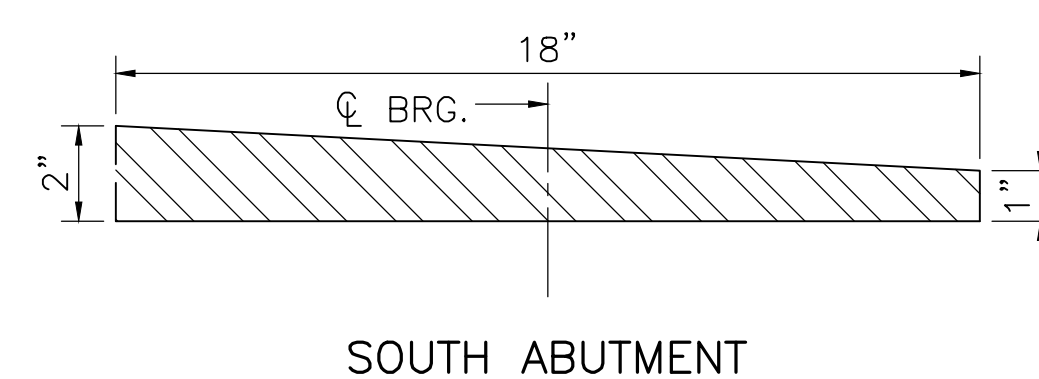
1. ELASTOMER SHALL HAVE A SHEAR MODULUS OF 0.160 KSI.
2. STEEL LAMINATES SHALL CONFORM TO ASTM A 1011 GRADE 36.
3. THE COMPRESSIVE DESIGN LOAD ON THE BEARING PAD IS 139.52 KIPS. THE COMPRESSIVE DESIGN STRESS IS THE RESULT OF DIVIDING THE COMPRESSIVE DESIGN LOAD BY THE AREA OF THE PAD AND IS EQUAL TO 0.789 KSI.
4. ELASTOMERIC BEARING PAD SHALL NOT BE VULCANIZED TO THE SOLE PLATE.

BEARING NOTES:

1. STEEL SOLE PLATE AND SHEAR PLATES SHALL CONFORM TO AASHTO M 270 GRADE 36 AND SHALL BE HOT-DIP GALVANIZED.
2. CENTER THE ELASTOMERIC BEARING PAD UNDER THE SOLE PLATE DURING BEAM ERECTION.
3. BEAMS SHALL BE ERECTED WHEN THE AMBIENT TEMPERATURE IS BETWEEN 50 °F AND 77 °F. IF BEAMS ARE ERECTED AT OTHER AMBIENT TEMPERATURES, THEY WILL HAVE TO BE JACKED AND THE SOLE PLATE ASSEMBLY AND ELASTOMERIC BEARINGS RECENTERED WHEN THE TEMPERATURE RETURNS TO THAT RANGE.



NOTE: SOUTH ABUTMENT SHOWN. NORTH ABUTMENT SIMILAR.



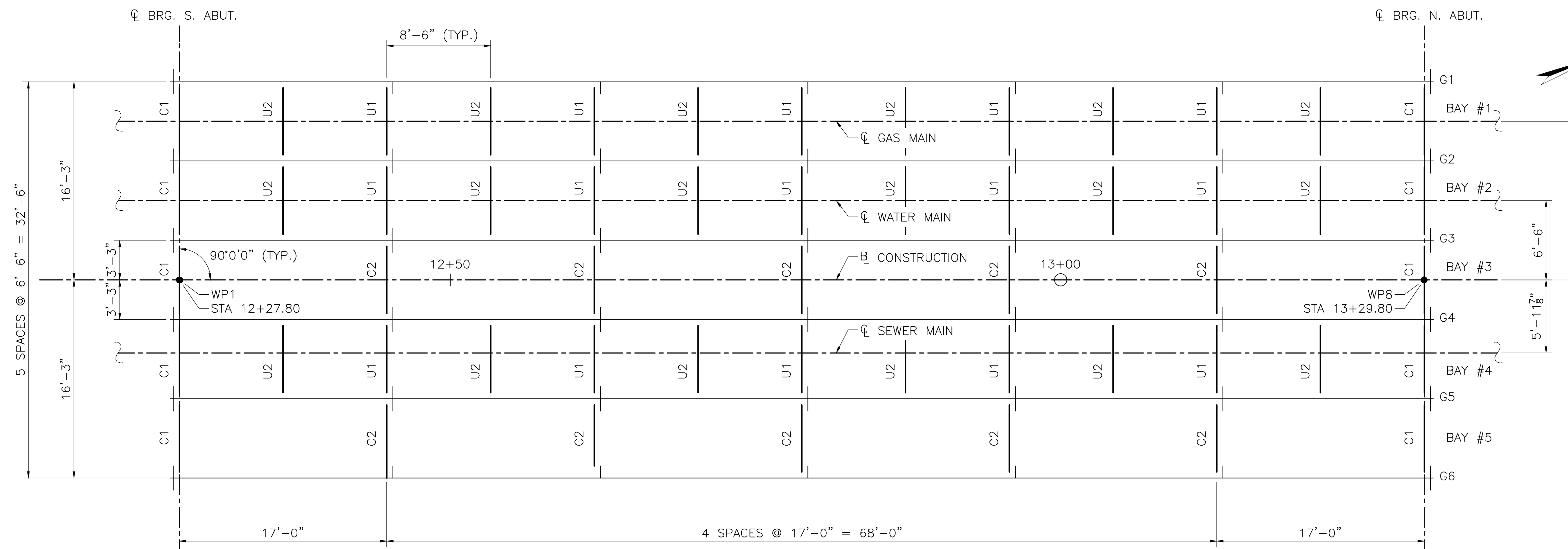
SOLE PLATE DETAILS
 SCALE: 3" = 1'-0"

DATE	DESCRIPTION
JUNE 29, 2024	ISSUED FOR CONSTRUCTION
THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT	
AUTHORIZED SIGNATORY:	STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE	

SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	39	55
PROJECT FILE NO.			608640

FRAMING PLAN



FRAMING PLAN

SCALE: $\frac{3}{16}'' = 1'-0''$

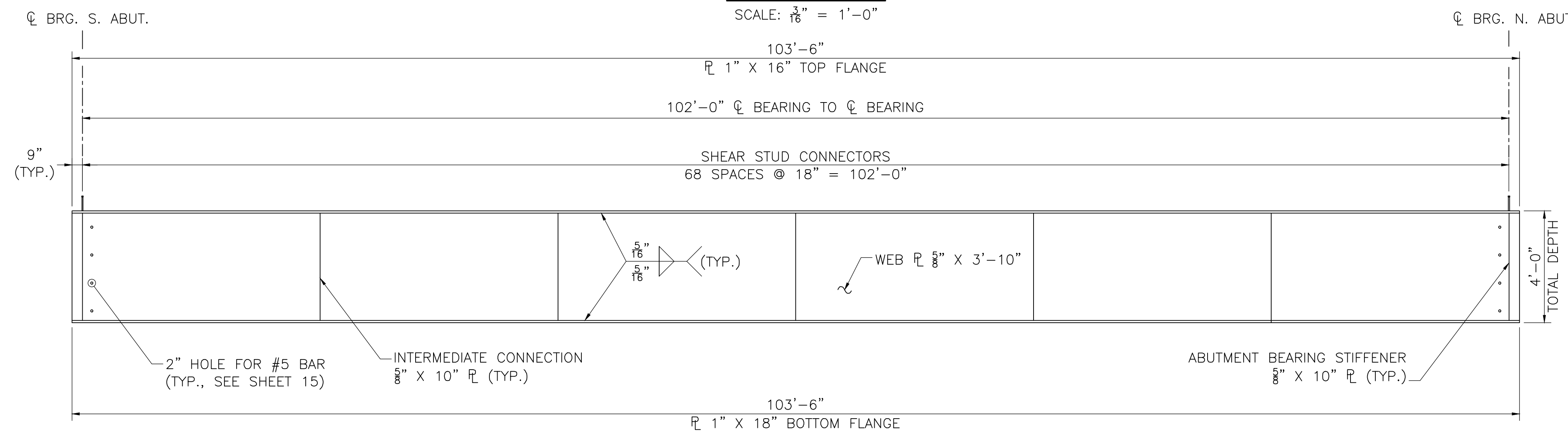
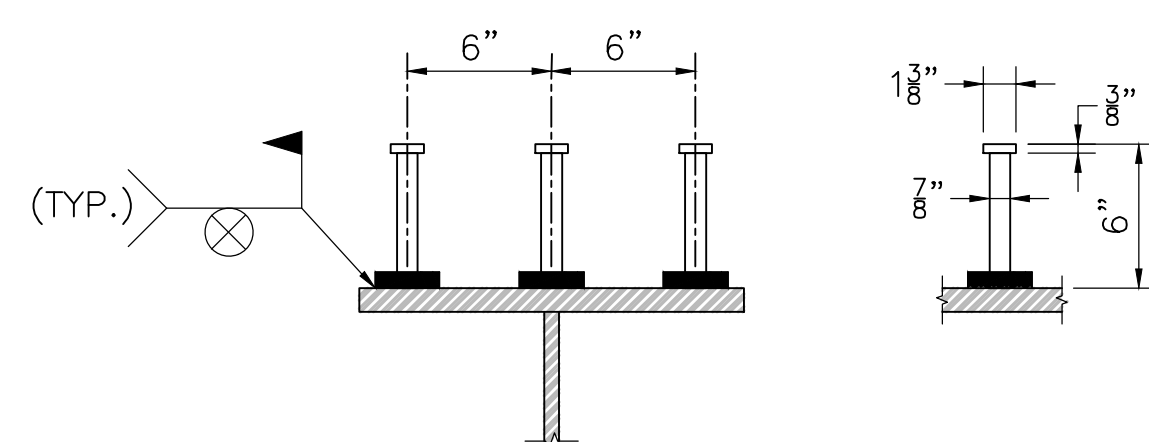
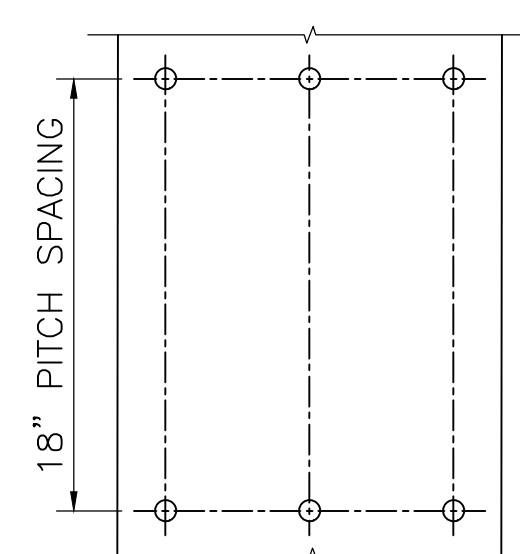


PLATE GIRDER ELEVATION

HORIZONTAL SCALE: $\frac{3}{16}'' = 1'-0''$

VERTICAL SCALE: $\frac{3}{8}'' = 1'-0''$



SHEAR STUD CONNECTORS

SCALE: $\frac{1}{2}'' = 1'-0''$

NOTE:

DESIGN CALLS FOR $\frac{7}{8}''$ STUDS BUT MAY BE SUBSTITUTED FOR $\frac{3}{4}''$ STUDS BY ADJUSTING THE PITCH TO PROVIDE AN EQUIVALENT CROSS-SECTIONAL AREA PER FOOT.

STRUCTURAL STEEL NOTES:

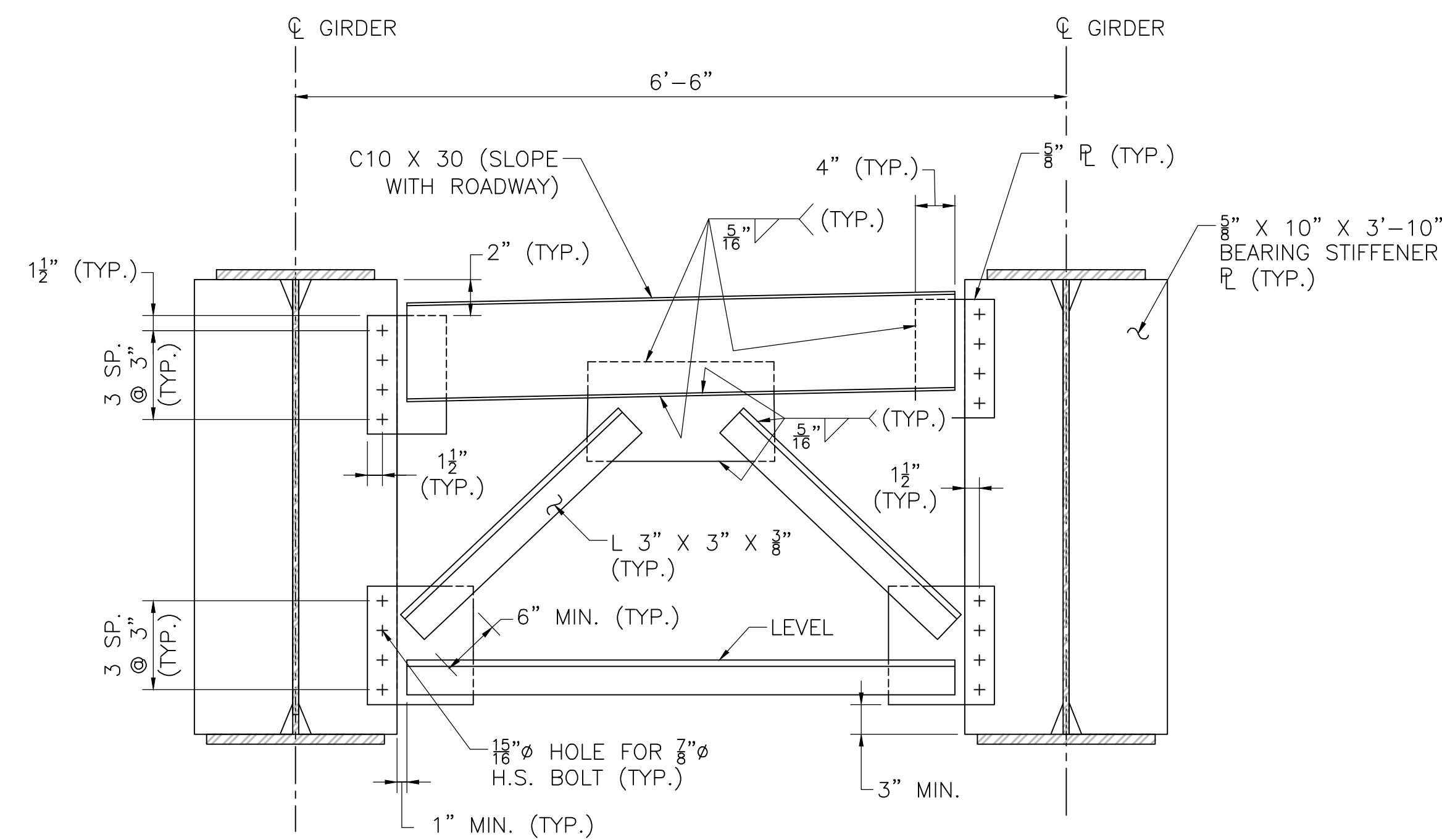
- C1 = TYPICAL END CROSS FRAME
 C2 = TYPICAL INTERMEDIATE CROSS FRAME
 U1 = TYPICAL UTILITY SUPPORT AT CROSS FRAMES
 U2 = TYPICAL UTILITY SUPPORT AT INTERMEDIATE STRUT
- THE MAIN LOAD CARRYING MEMBERS ARE G1 THROUGH G6 SHOWN IN THE FRAMING PLAN.
- SEE SHEET 16 FOR END DIAPHRAGM DETAILS. SEE SHEETS 22-23 FOR CROSS FRAME AND UTILITY SUPPORT DETAILS.
- ALL STRUCTURAL STEEL, INCLUDING PLATE GIRDERS, CONNECTION PLATES, STIFFENERS, GUSSET PLATES, SPLICE PLATES (IF NECESSARY), DIAPHRAGMS, AND FRAMES SHALL CONFORM TO AASHTO M270 GRADE 50 UNLESS OTHERWISE NOTED.
- ALL SURFACES OF PLATE GIRDERS, CONNECTION PLATES, STIFFENERS, GUSSET PLATES, SPLICE PLATES (IF NECESSARY), DIAPHRAGMS, AND FRAMES SHALL BE SHOP METALIZED (M7.15.0) FOR ZONE 2 CONDITIONS, AND FASCIA GIRDERS SHALL BE PAINTED, PER SPECIAL PROVISION 995.01 AFTER FABRICATION IS COMPLETE. ANY DAMAGED FINISH SURFACE SHALL BE SHOP OR FIELD REPAIRED AS DIRECTED BY THE ENGINEER.
- THE LOCATION OF WELDED SHOP SPLICES SHALL BE APPROVED BY THE ENGINEER. WEB SPLICES SHALL BE LOCATED A MINIMUM OF 9 INCHES FROM WELDED FLANGE SPLICES AND A MINIMUM OF 6 INCHES FROM CONNECTION PLATES. THE SHOP DRAWINGS SHALL INDICATE THE METHOD AND SEQUENCE TO BE FOLLOWED IN THE WELDING OF GIRDER COMPONENTS.
- UNLESS OTHERWISE NOTED, ALL BOLTED CONNECTIONS SHALL BE SLIP-CRITICAL (CLASS C) MADE WITH $\frac{7}{8}''$ DIAMETER ASTM A325 HIGH STRENGTH BOLTS IN $\frac{1}{8}''$ DIAMETER STANDARD HOLES. ALL BOLTS, NUTS, AND WASHERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM TYPE III (GALVANIZED).
- SHOP OR FIELD WELDING ATTACHMENTS TO, OR PLACEMENT OF HOLES IN ANY SURFACE OF STRUCTURAL STEEL ELEMENT THAT IS NOT SHOWN OR CALLED FOR IN THE CONSTRUCTION PLANS FOR CONSTRUCTION PURPOSES IS NOT PERMITTED. SHOP OR FIELD ATTACHMENTS TO THE TOP PLATE GIRDER FLANGE OF CONSTRUCTION PURPOSES MUST BE APPROVED BY THE ENGINEER.
- GIRDER ENDS AND BEARING STIFFENERS SHALL BE PLUMB UNDER FULL DEAD LOAD DEFLECTION.
- SCREED RAIL SUPPORTS REQUIRED FOR CONCRETE DECK PLACEMENT SHALL BE LOCATED AT THE CENTERLINE OF GIRDERS.
- STEEL ERECTION SHALL NOT BE PERMITTED UNTIL THE ABUTMENTS HAVE BEEN BACKFILLED AND THOROUGHLY COMPACTED 2 FEET BELOW TOP OF BACKWALL. FILL SHALL BE BROUGHT UP AROUND EACH ABUTMENT SIMULTANEOUSLY AS TO NOT CAUSE THE ABUTMENT TO SHIFT IN ANY HORIZONTAL DIRECTION.
- ALL STRUCTURAL STEEL WELDING AND FABRICATION SHALL BE PERFORMED IN CONFORMANCE WITH THE AASHTO/AWS D1.5-2020 BRIDGE WELDING CODE AND THE MASSDOT STANDARD SPECIFICATIONS.

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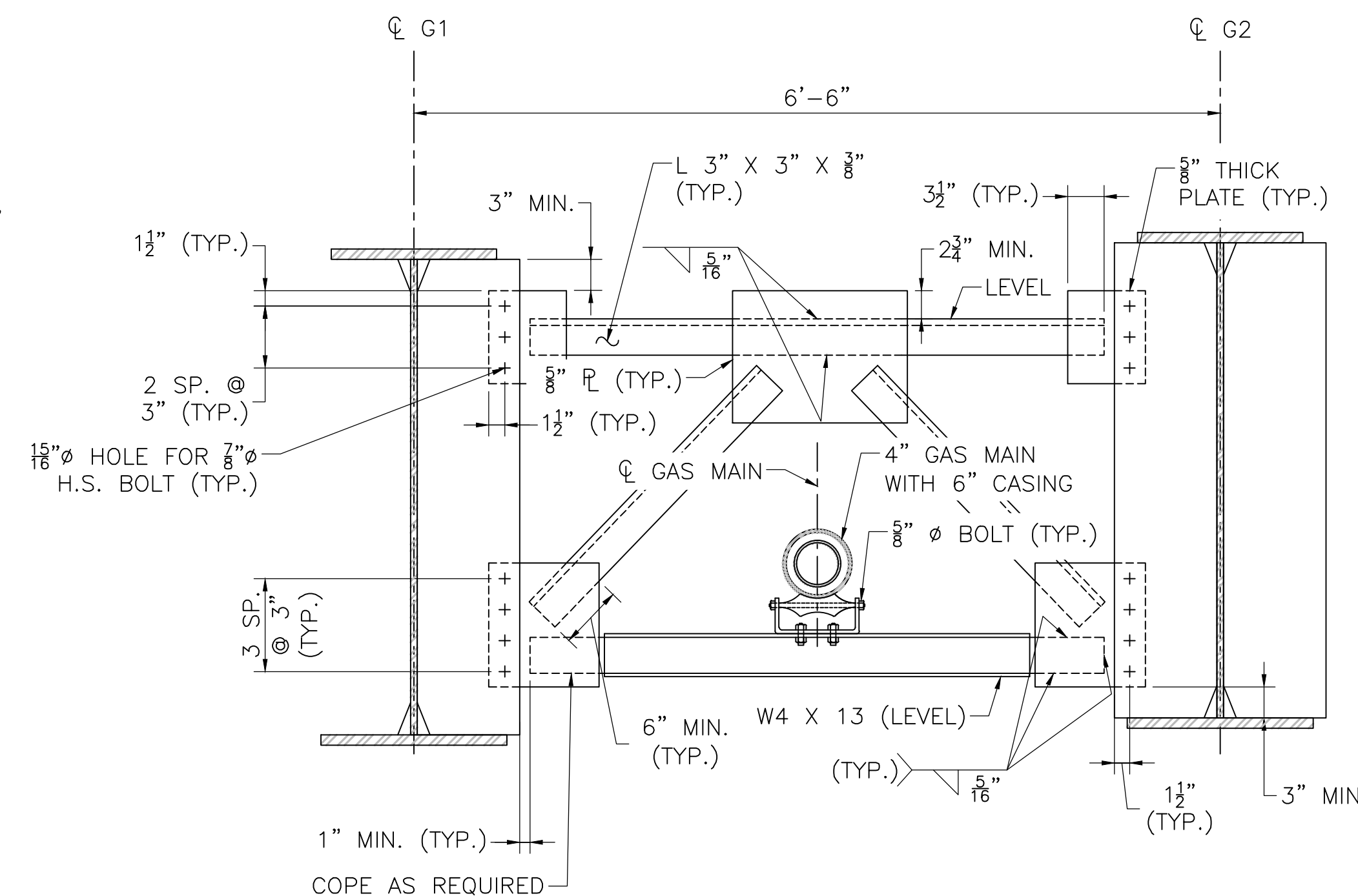
SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	40	55
PROJECT FILE NO.		608640	

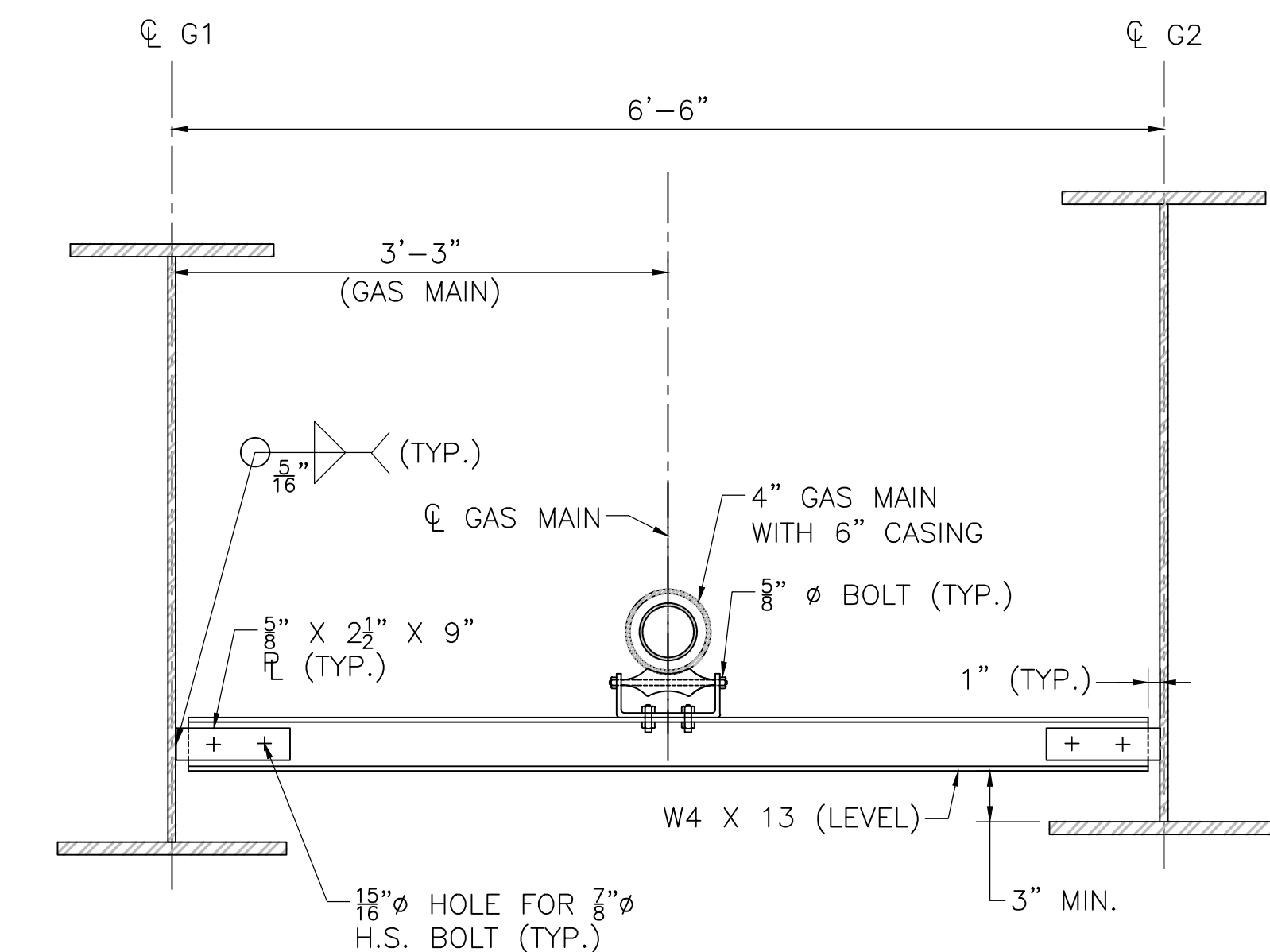
STRUCTURAL STEEL DETAILS (SHEET 1 OF 2)



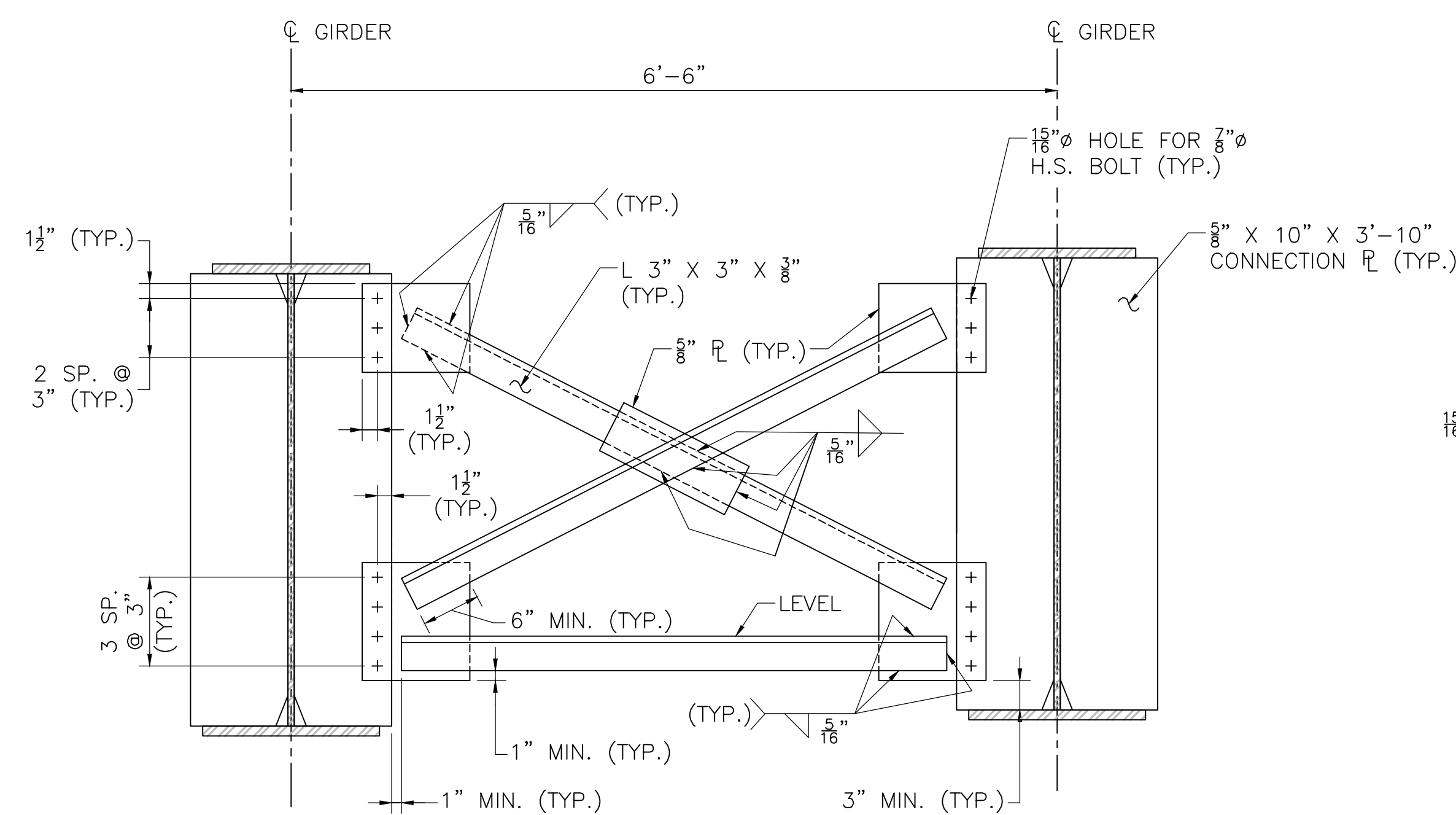
NOTE: BAY 3 SHOWN, BAY 5 SIMILAR.
END CROSS FRAME DETAIL (C1)
 SCALE: 1" = 1'-0"



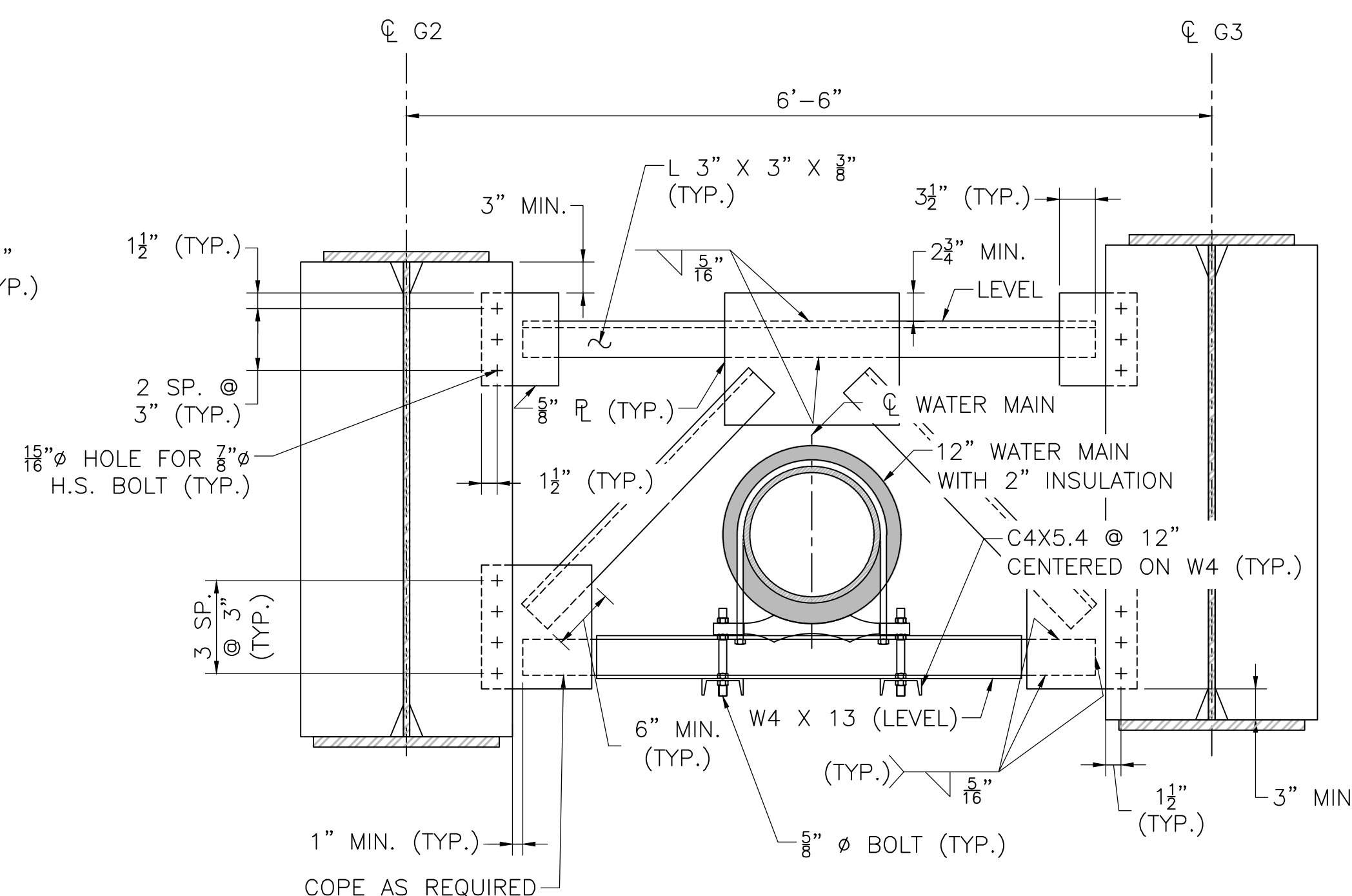
UTILITY SUPPORT DETAIL (U1) - BAY 1
 SCALE: 1" = 1'-0"



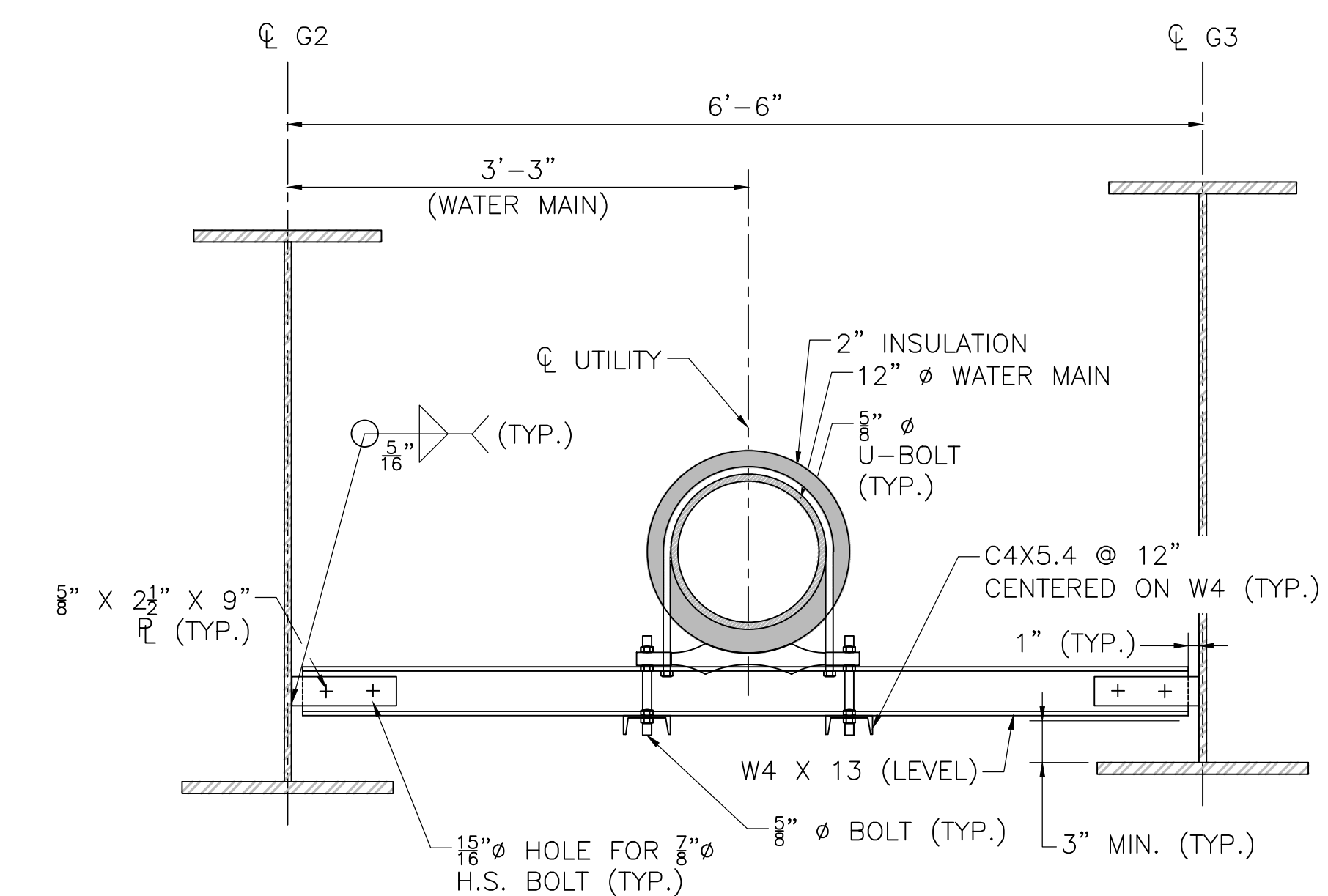
UTILITY SUPPORT DETAIL (U2) - BAY 1
 SCALE: 1" = 1'-0"



NOTE: BAY 3 SHOWN, BAY 5 SIMILAR.
INTERMEDIATE CROSS FRAME DETAIL (C2)
 SCALE: 1" = 1'-0"



UTILITY SUPPORT DETAIL (U1) - BAY 2
 SCALE: 1" = 1'-0"



UTILITY SUPPORT DETAIL (U2) - BAY 2
 SCALE: 1" = 1'-0"

NOTES:

- SEE FRAMING PLAN ON SHEET 21 FOR LOCATIONS OF C1, C2, U1, AND U2.
- SEE SHEET 23 FOR U1 AND U2 DIAPHRAGMS FOR BAY 4.
- SEE CLIP DETAIL ON SHEET 23 FOR CONNECTION / BEARING STIFFENER CLIP AND WELD DETAILS.
- SEE SHEET 23 FOR CONNECTION / BEARING PLATE DETAILS.
- TERMINATE FRAME MEMBER WELDS 1/2" SHORT OF PLATE EDGES.
- THERE SHALL NOT BE A CONNECTION PLATE ON THE EXTERIOR FACE OF GIRDERS IN BAYS 1 AND 5.

UTILITY BAY NOTES:

- ALL HARDWARE USED TO FASTEN THE UTILITIES TO THE STEEL FRAMING SHALL BE HOT DIPPED GALVANIZED AND SHALL CONFORM TO ASTM A307 TYPE B HEAVY HEX HEAD.
- HOLES IN THE STEEL FRAMING FOR THE UTILITY CONNECTIONS SHALL BE FIELD DRILLED STANDARD HOLES. MAINTAIN MINIMUM EDGE DISTANCES PER AASHTO STANDARDS.
- FLAT AND LOCK WASHERS SHALL BE USED FOR ALL UTILITY TO STEEL FRAMING CONNECTIONS.
- SEE "UTILITY SLEEVE PIPE DIMENSIONS" TABLE ON SHEET 16 FOR INNER AND OUTER DIMENSIONS OF EACH UTILITY PIPE.
- SEE ADDITIONAL DETAILS ON SHEET 23 FOR CONNECTION BETWEEN W4 X 13 AND CHANNELS FOR WATER UTILITIES IN BAY 2.

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CAMBER TABLE

GIRDER NUMBER		CL S. BRG.	0.1 L	0.2 L	0.3 L	0.4 L	0.5 L	0.6 L	0.7 L	0.8 L	0.9 L	CL N. BRG.
G1	STEEL DL DEFLECTION	0	0.258	0.488	0.669	0.784	0.822	0.784	0.669	0.488	0.258	0
	CONCRETE DL DEFLECTION	0	0.708	1.340	1.835	2.149	2.257	2.149	1.835	1.340	0.708	0
	S.D.L. DEFLECTION	0	0.348	0.659	0.902	1.056	1.109	1.056	0.902	0.659	0.348	0
	ADDITIONAL CAMBER	0	0.128	0.255	0.382	0.510	0.638	0.510	0.382	0.255	0.128	0
	TOTAL CAMBER	0	1.142	2.743	3.788	4.499	4.826	4.499	3.788	2.743	1.142	0
G2	STEEL DL DEFLECTION	0	0.323	0.611	0.837	0.980	1.029	0.980	0.837	0.611	0.323	0
	CONCRETE DL DEFLECTION	0	0.749	1.417	1.940	2.273	2.386	2.273	1.940	1.417	0.749	0
	S.D.L. DEFLECTION	0	0.273	0.517	0.707	0.828	0.870	0.828	0.707	0.517	0.273	0
	ADDITIONAL CAMBER	0	0.128	0.255	0.382	0.510	0.638	0.510	0.382	0.255	0.128	0
	TOTAL CAMBER	0	1.473	2.800	3.867	4.591	4.923	4.591	3.867	2.800	1.473	0
G3	STEEL DL DEFLECTION	0	0.309	0.585	0.801	0.938	0.986	0.938	0.801	0.585	0.309	0
	CONCRETE DL DEFLECTION	0	0.749	1.417	1.940	2.273	2.386	2.273	1.940	1.417	0.749	0
	S.D.L. DEFLECTION	0	0.160	0.304	0.415	0.487	0.511	0.487	0.415	0.304	0.160	0
	ADDITIONAL CAMBER	0	0.128	0.255	0.382	0.510	0.638	0.510	0.382	0.255	0.128	0
	TOTAL CAMBER	0	1.346	2.561	3.540	4.208	4.521	4.208	3.540	2.561	1.346	0
G4	STEEL DL DEFLECTION	0	0.276	0.522	0.715	0.838	0.880	0.838	0.715	0.522	0.276	0
	CONCRETE DL DEFLECTION	0	0.749	1.417	1.940	2.273	2.386	2.273	1.940	1.417	0.749	0
	S.D.L. DEFLECTION	0	0.160	0.304	0.416	0.487	0.511	0.487	0.416	0.304	0.160	0
	ADDITIONAL CAMBER	0	0.128	0.255	0.382	0.510	0.638	0.510	0.382	0.255	0.128	0
	TOTAL CAMBER	0	1.313	2.498	3.454	4.107	4.415	4.107	3.454	2.498	1.313	0
G5	STEEL DL DEFLECTION	0	0.276	0.522	0.715	0.838	0.880	0.838	0.715	0.522	0.276	0
	CONCRETE DL DEFLECTION	0	0.749	1.417	1.940	2.273	2.386	2.273	1.940	1.417	0.749	0
	S.D.L. DEFLECTION	0	0.273	0.517	0.707	0.828	0.870	0.828	0.707	0.517	0.273	0
	ADDITIONAL CAMBER	0	0.128	0.255	0.382	0.510	0.638	0.510	0.382	0.255	0.128	0
	TOTAL CAMBER	0	1.426	2.711	3.746	4.449	4.774	4.449	3.746	2.711	1.426	0
G6	STEEL DL DEFLECTION	0	0.245	0.463	0.634	0.742	0.779	0.742	0.634	0.463	0.245	0
	CONCRETE DL DEFLECTION	0	0.708	1.340	1.835	2.149	2.257	2.149	1.835	1.340	0.708	0
	S.D.L. DEFLECTION	0	0.348	0.659	0.902	1.056	1.110	1.056	0.902	0.659	0.348	0
	ADDITIONAL CAMBER	0	0.128	0.255	0.382	0.510	0.638	0.510	0.382	0.255	0.128	0
	TOTAL CAMBER	0	1.428	2.717	3.753	4.457	4.782	4.457	3.753	2.717	1.428	0

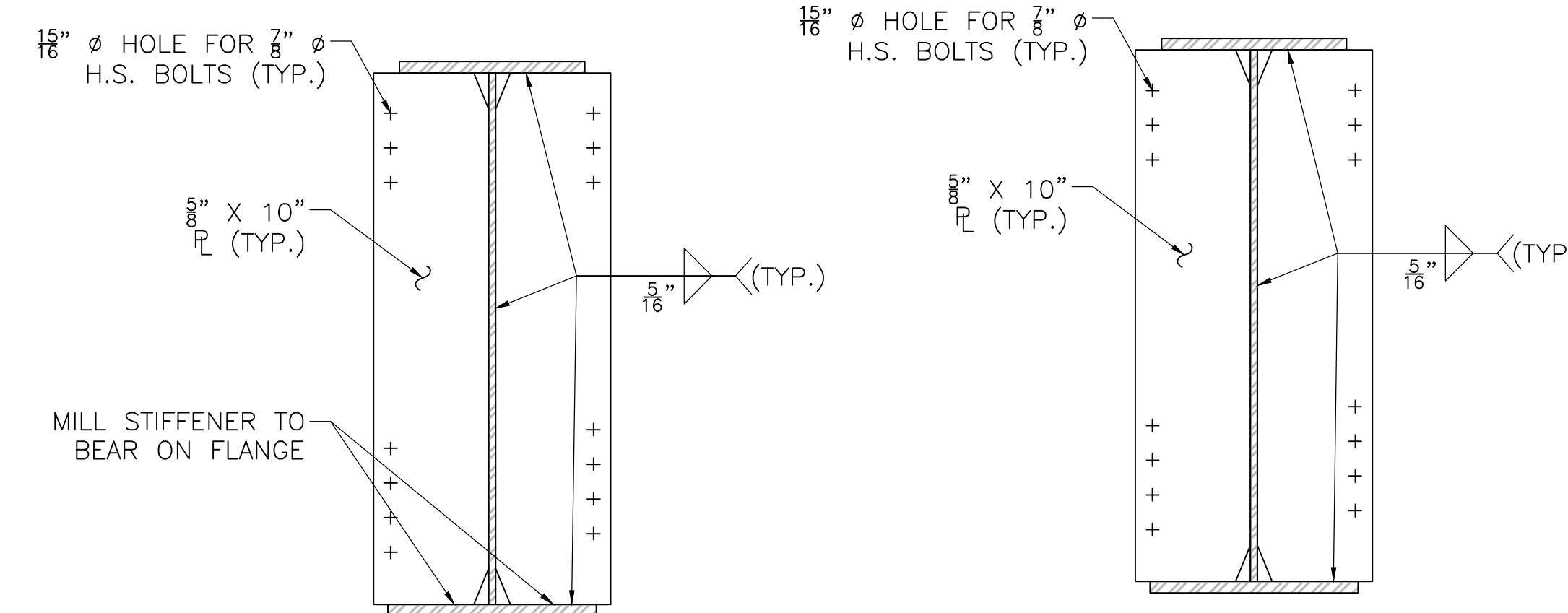
CAMBER TABLE NOTES:

- ALL DEFLECTIONS AND CAMBER VALUES ARE SHOWN IN INCHES.
- POINTS OF DEFLECTIONS AND CAMBER GIVEN ARE LOCATED AT EQUAL SPACES ALONG GIRDER CENTER LINES.
- SEE FRAMING PLAN ON SHEET 21 FOR LOCATIONS OF GIRDERS.

SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	41	55
PROJECT FILE NO.		608640	

STRUCTURAL STEEL DETAILS (SHEET 2 OF 2)



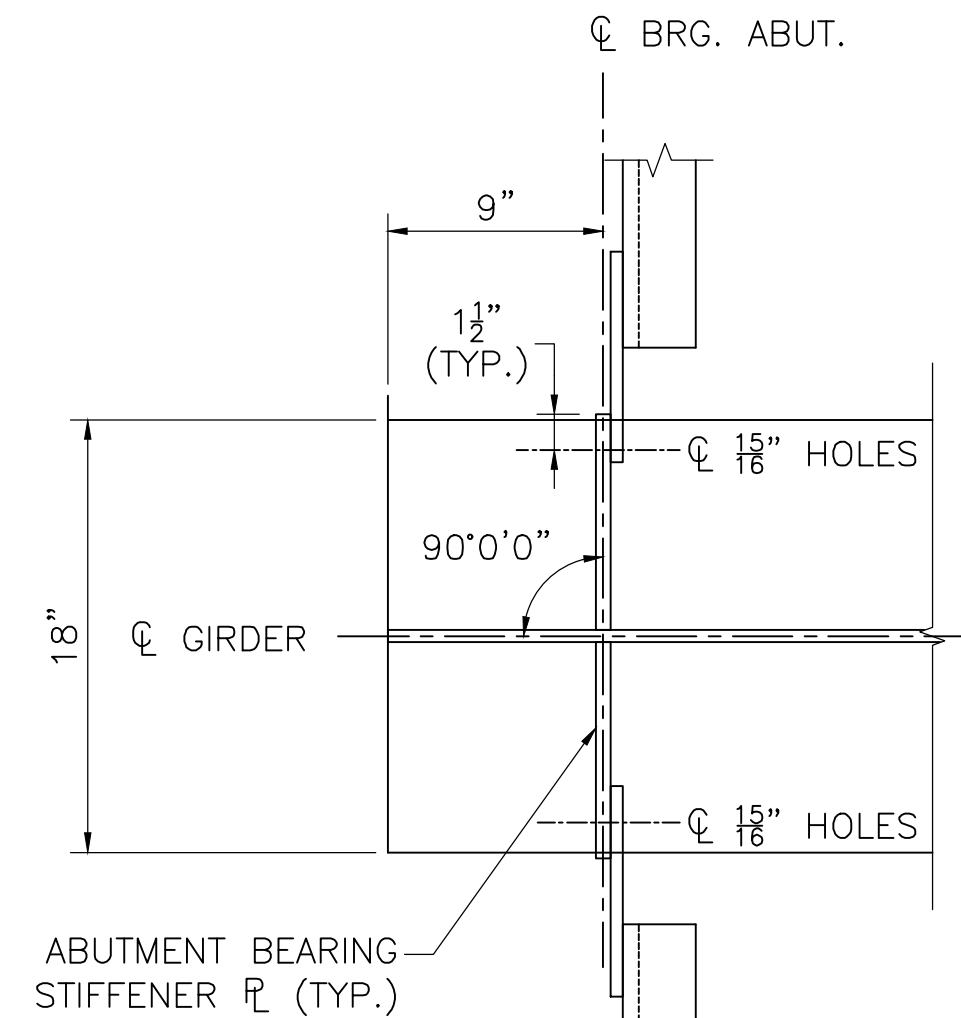
NOTE: SEE "CLIP DETAIL" ON THIS SHEET FOR ADDITIONAL INFORMATION.

BEARING STIFFENER / END CONNECTION PLATE DETAIL

SCALE: 1" = 1'-0"

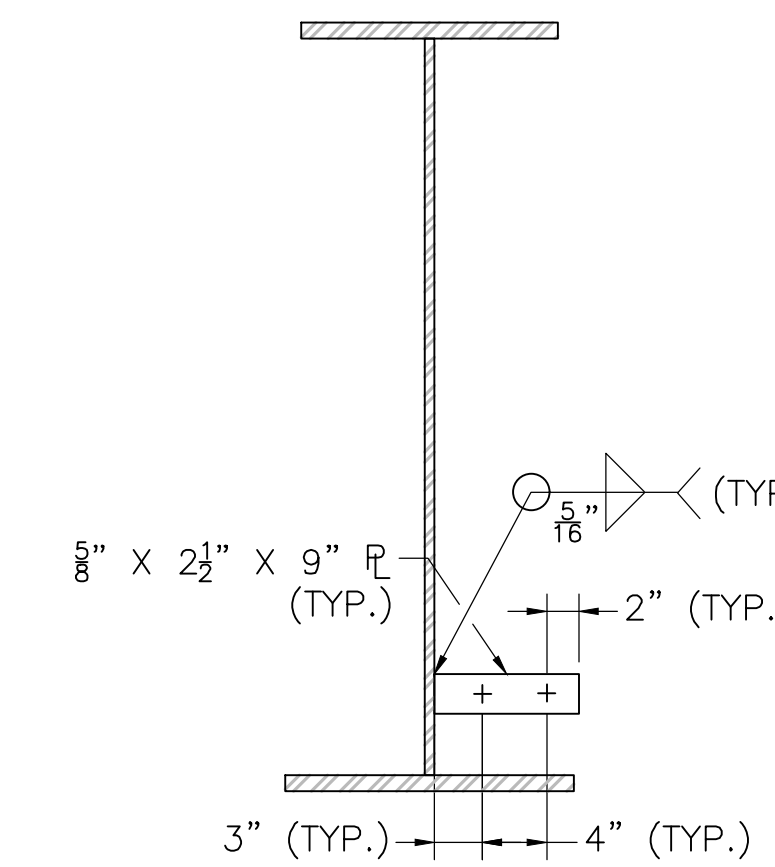
INTERMEDIATE CONNECTION PLATE DETAIL

SCALE: 1" = 1'-0"



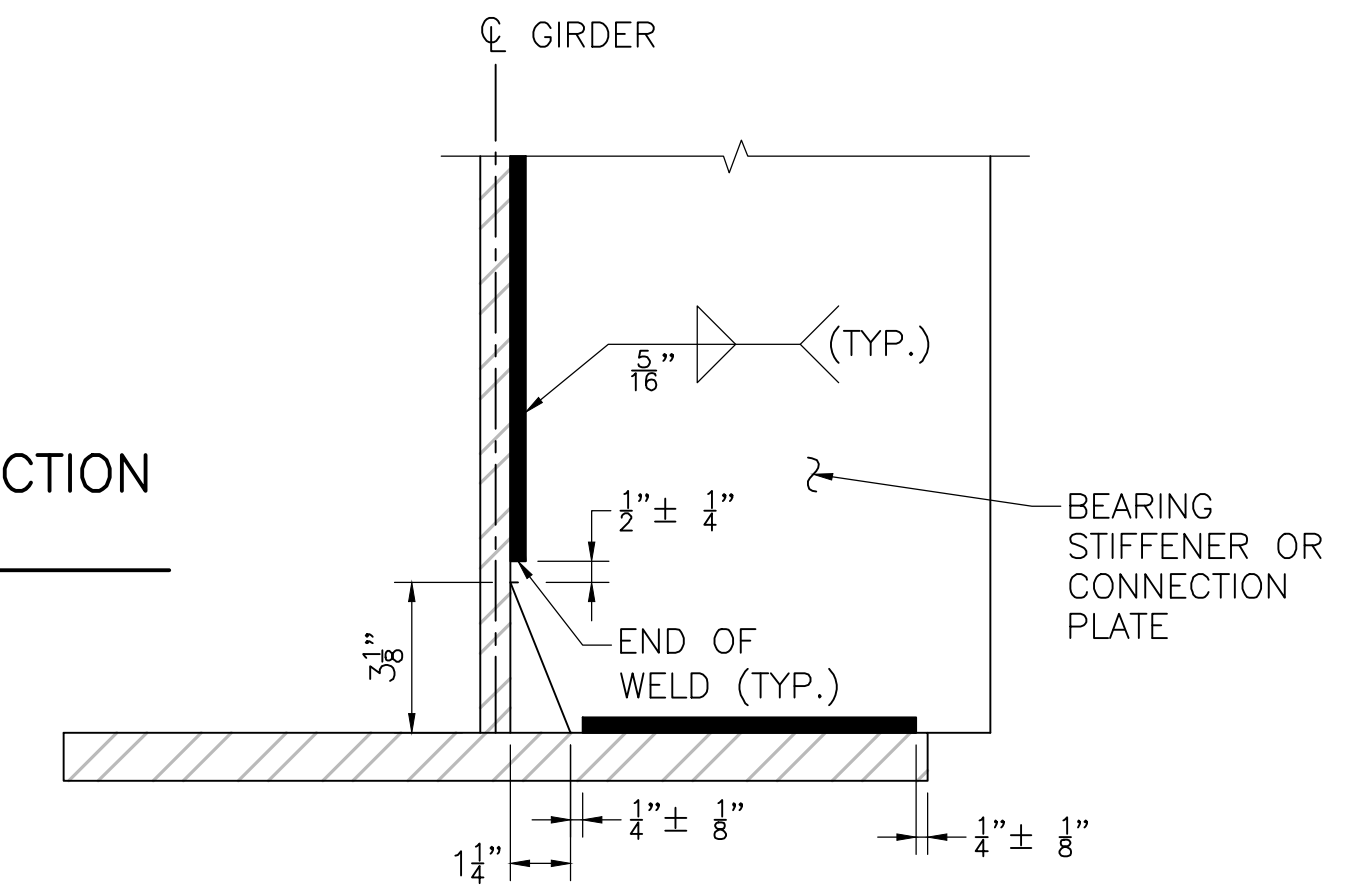
BEARING STIFFENER DETAIL

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



UTILITY STRUT CONNECTION PLATE DETAIL

SCALE: 1" = 1'-0"

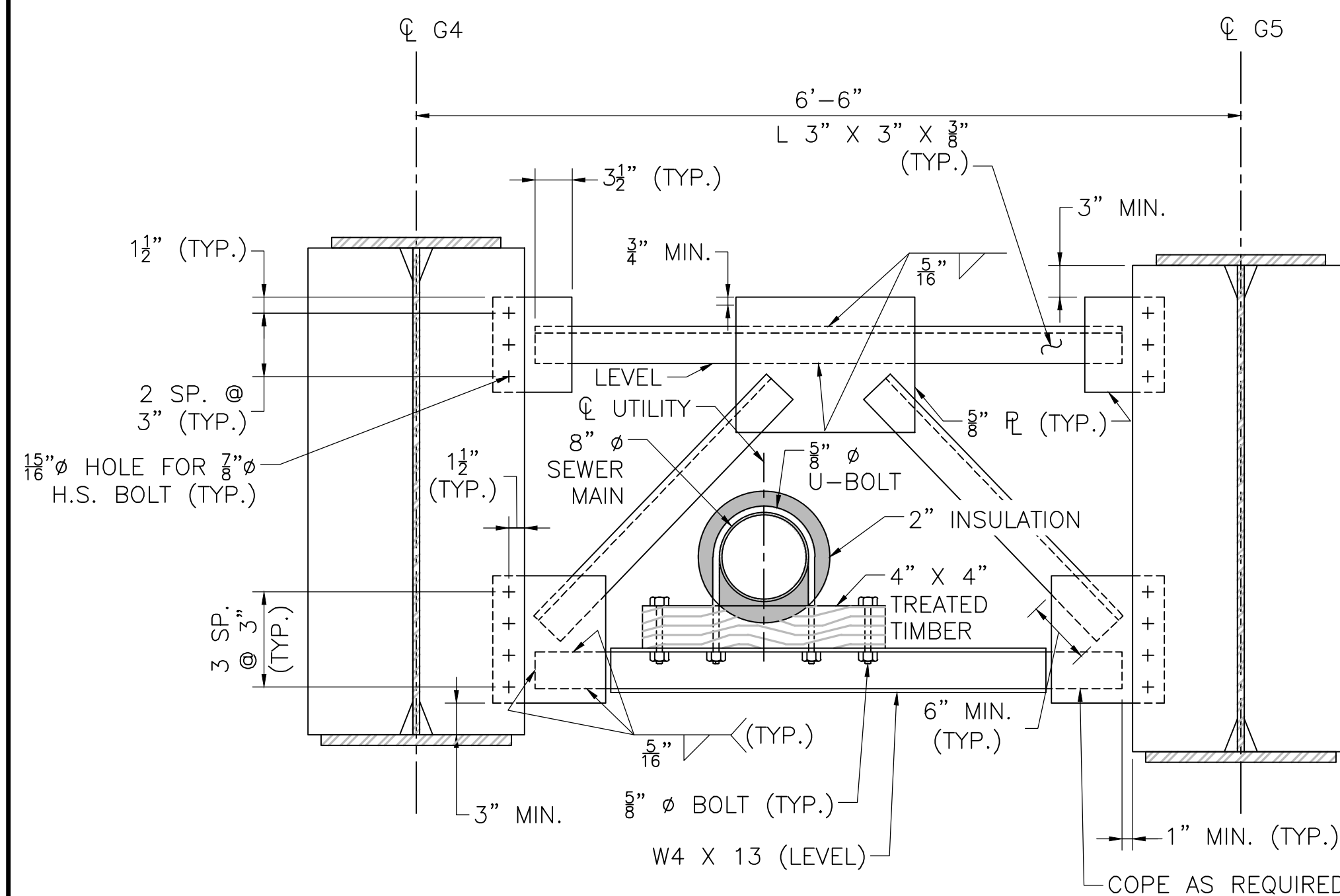


CLIP DETAIL

SCALE: 3" = 1'-0"

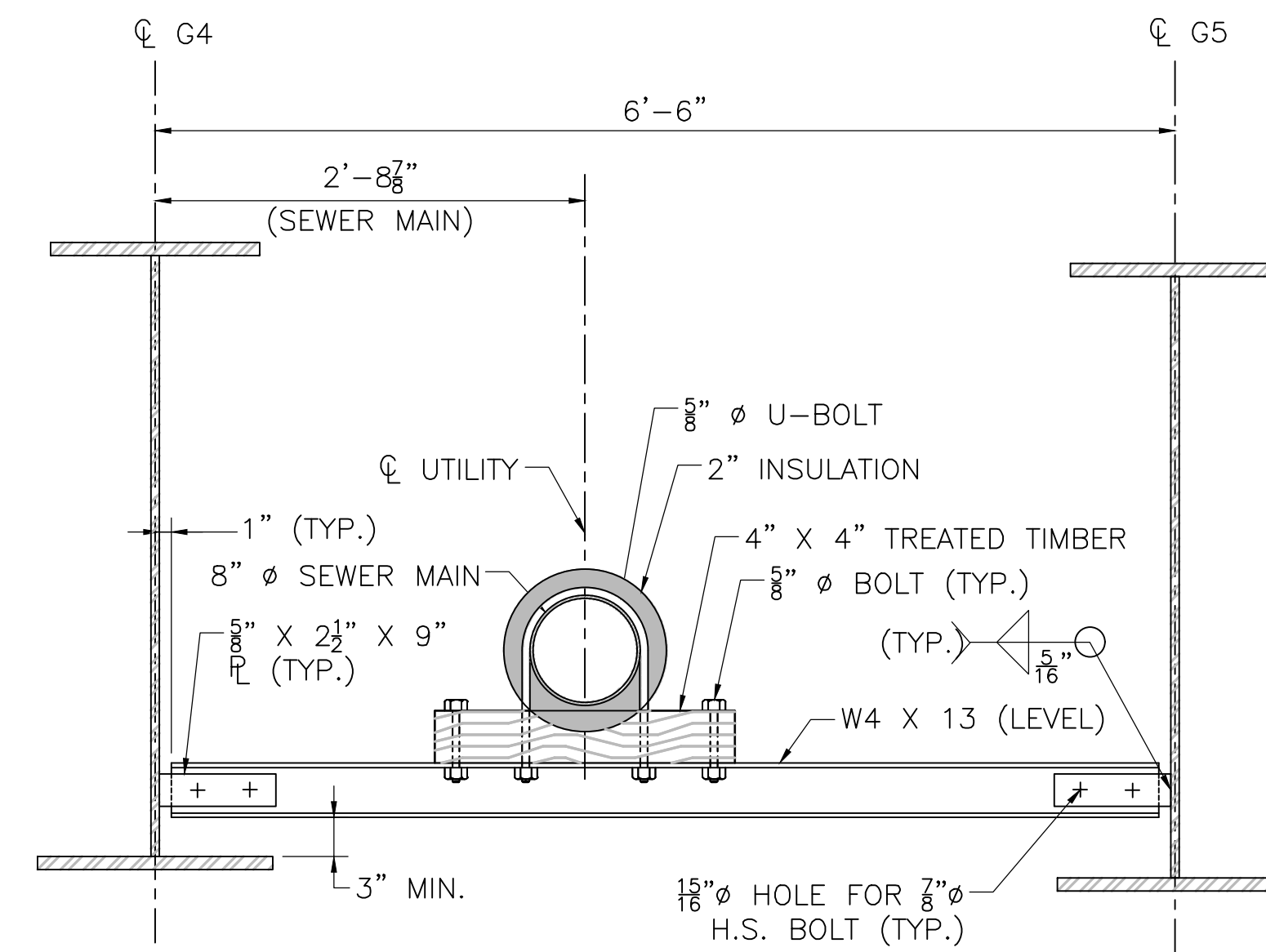
BEARING STIFFENER AND CONNECTION PLATE NOTES:

- BEARING STIFFENERS SHALL BE SET PARALLEL TO CENTERLINE OF BEARING OFF OF THE GIRDER WEB AS SHOWN ON SHEET 20 AND SHALL BE PLUMB AFTER APPLICATION OF FULL DEAD LOAD.
- CONNECTION PLATES SHALL BE SET PERPENDICULAR TO BOTH GIRDER WEB AND FLANGES.
- ALL BEARING STIFFENERS AND CONNECTION PLATES SHALL BE WELDED TO THE GIRDER AS SHOWN IN THE CLIP DETAIL ON THIS SHEET.
- THE BASE OF BEARING STIFFENERS SHALL BE MILLED TO FULLY BEAR ON THE GIRDER BOTTOM FLANGE PRIOR TO WELDING. THE VERTICAL WEB SIDE EDGE OF BEARING STIFFENER SHALL BE MILLED TO SET FLUSH AGAINST THE GIRDER WEB PRIOR TO WELDING.
- SEE SHEET 22 FOR BOLT PATTERN LAYOUT FOR EACH RESPECTIVE BEARING STIFFENER AND CONNECTION PLATE.



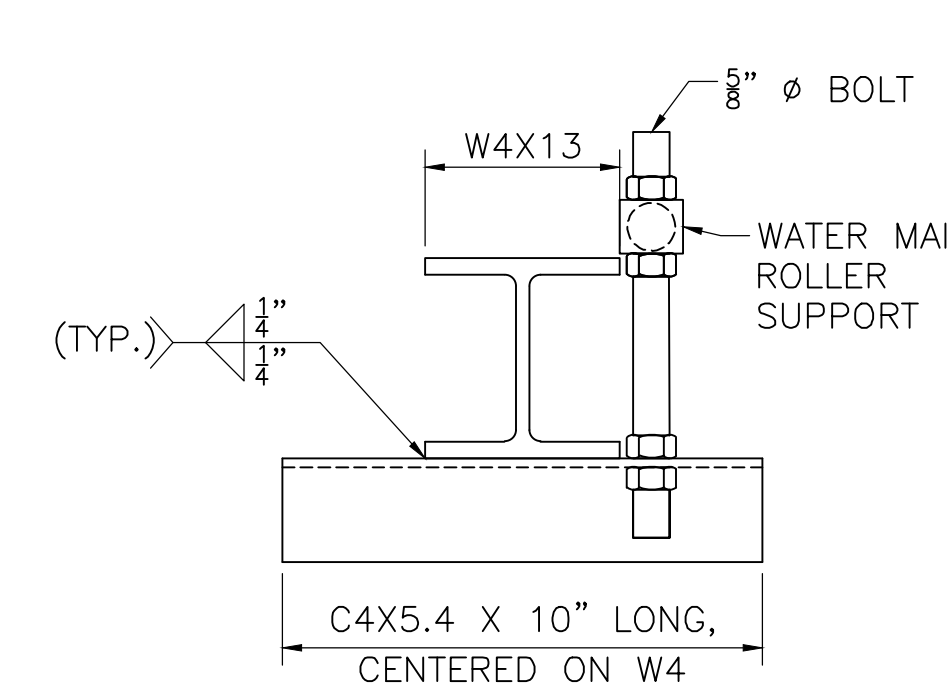
UTILITY SUPPORT DETAIL (U1) - BAY 4

SCALE: 1" = 1'-0"



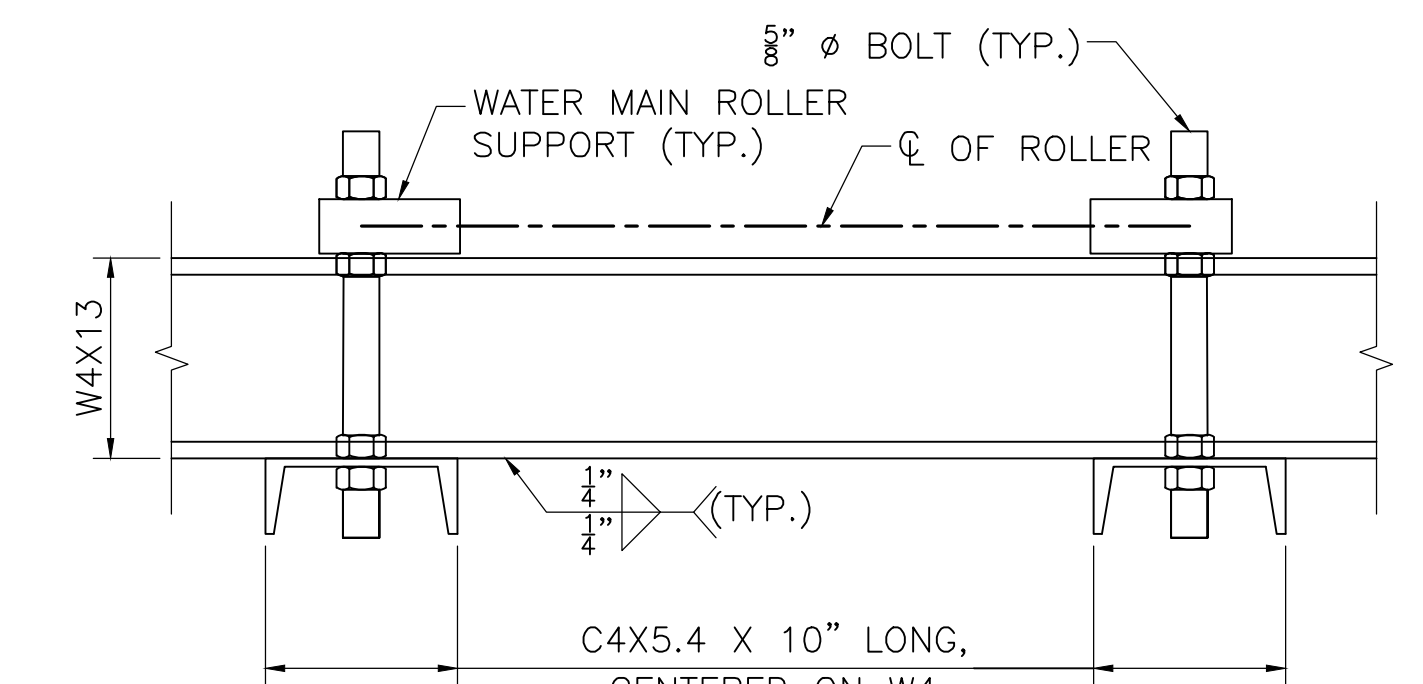
UTILITY SUPPORT DETAIL (U2) - BAY 4

SCALE: 1" = 1'-0"



WATER MAIN UTILITY SUPPORT DETAILS

SCALE: 3" = 1'-0"

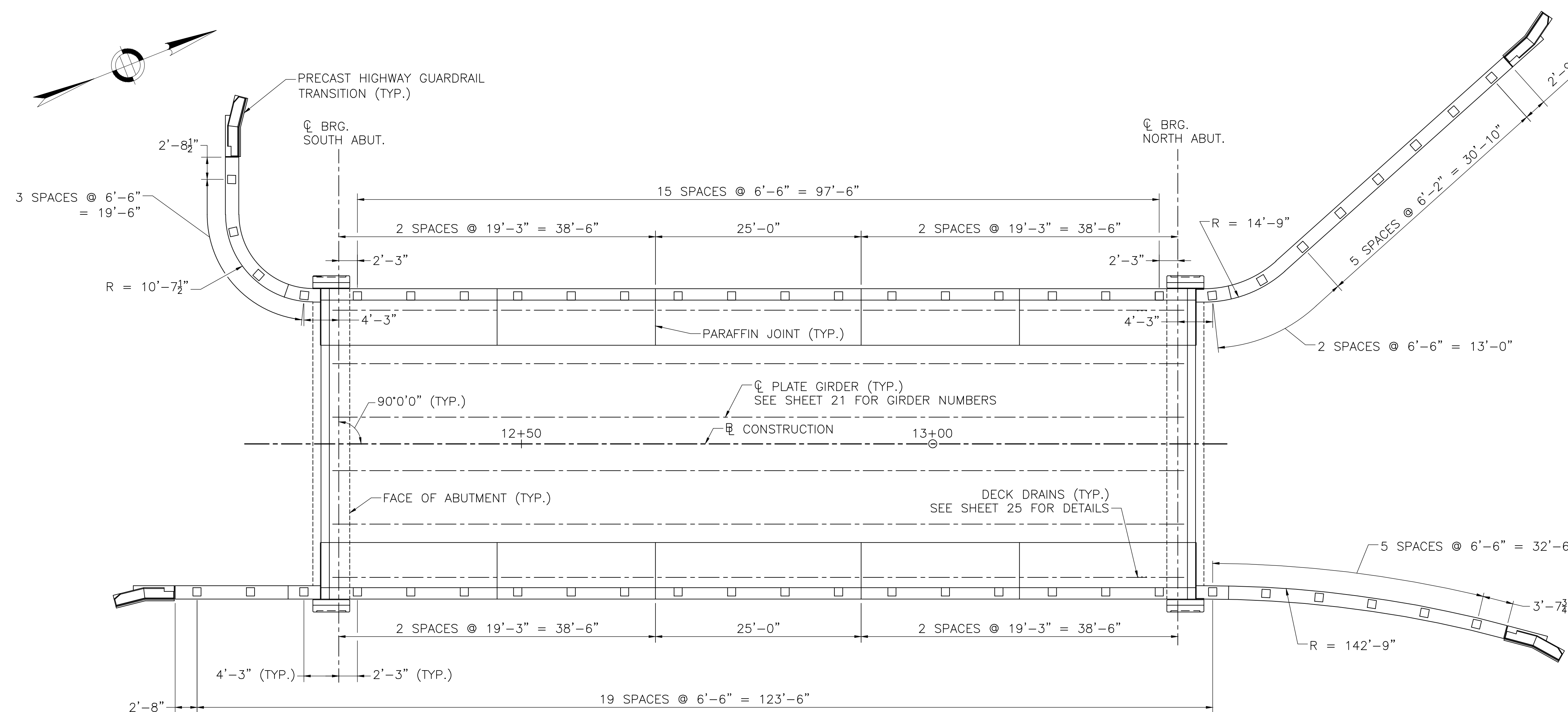


DATE	ISSUED FOR CONSTRUCTION
JUNE 29, 2024	ISSUED FOR CONSTRUCTION
	DESCRIPTION
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AUTHORIZED SIGNATORY:	STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE	

SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	42	55
PROJECT FILE NO.		608640	

DECK DETAILS (SHEET 1 OF 2)

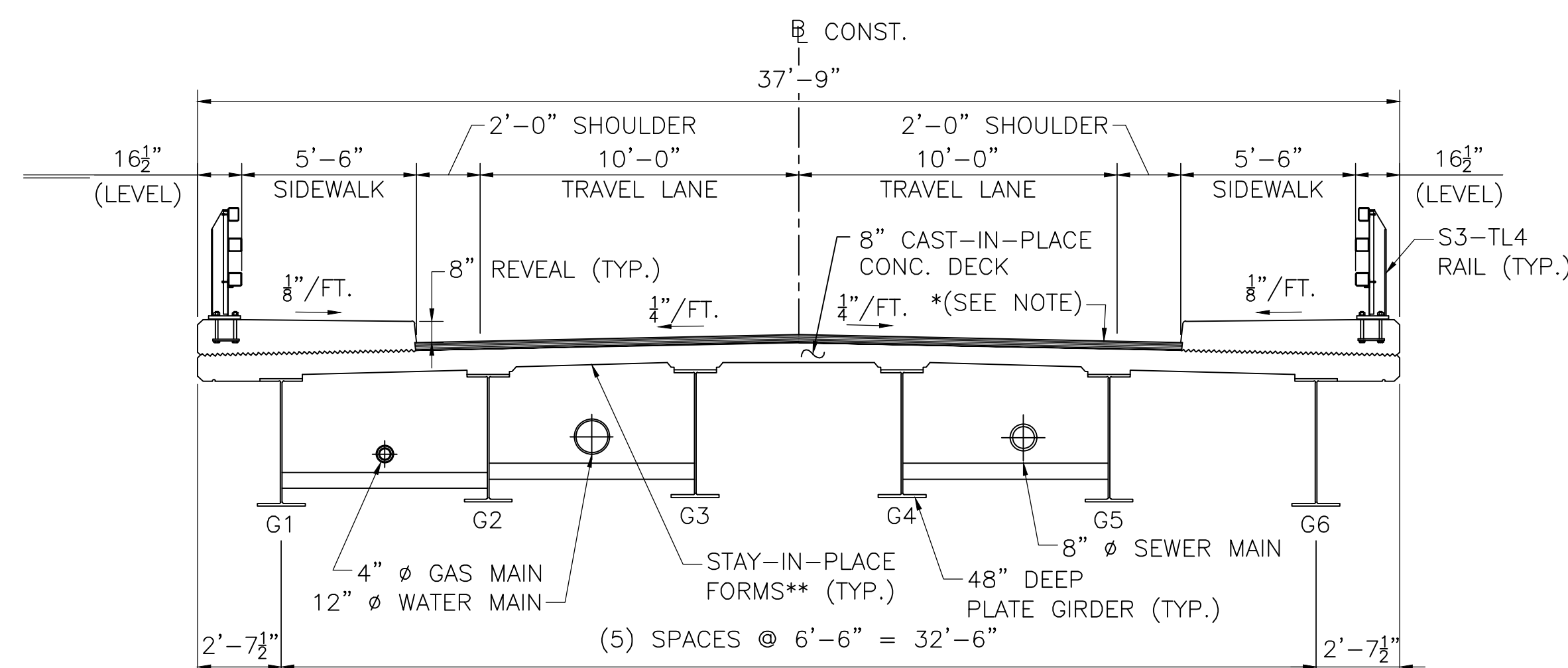


DECK PLAN
 SCALE: $\frac{1}{8}'' = 1'-0''$

DECK NOTES:

- ROADWAY DECK SLAB SHALL BE 5000 PSI, $\frac{3}{4}$ IN., 685 HP CEMENT CONCRETE.
- SIDEWALK SHALL BE 5000 PSI, $\frac{3}{4}$ IN., 685 HP CEMENT CONCRETE.
- BRIDGE DECK SHALL BE PLACED IN ONE CONTINUOUS POUR.
- LONGITUDINAL REINFORCEMENT SHALL BE PLACED PARALLEL TO THE BASELINE OF CONSTRUCTION. TRANSVERSE (PRIMARY) REINFORCEMENT SHALL BE PLACED PERPENDICULAR TO THE BASELINE OF CONSTRUCTION.
- ALL REINFORCEMENT AND SUPPORT DEVICES SHALL BE COATED.
- THE FINISHED SURFACE OF THE BRIDGE DECK SHALL BE SMOOTH AND WITHOUT ANY PROJECTIONS THAT COULD PUNCTURE THE MEMBRANE WATERPROOFING OR DEPRESSIONS THAT COULD RETAIN WATER.
- WHILE MAINTAINING MINIMUM 6" SPACING, SET STIRRUPS TO AVOID CONFLICT WITH RAIL POST ANCHOR PLATES. SET THE ADDITIONAL STIRRUP PER POST AT THE CENTERLINE OF POST.
- STAY-IN-PLACE FORMS SHALL BE USED ON ALL INTERIOR BAYS. SEE SHEET 25 FOR DETAILS.
- SEE SHEET 29 FOR RAIL POST ANCHOR DETAILS.
- BRIDGE RAIL POST SPACING MEASURED FROM FRONT FACE OF RAIL POST.

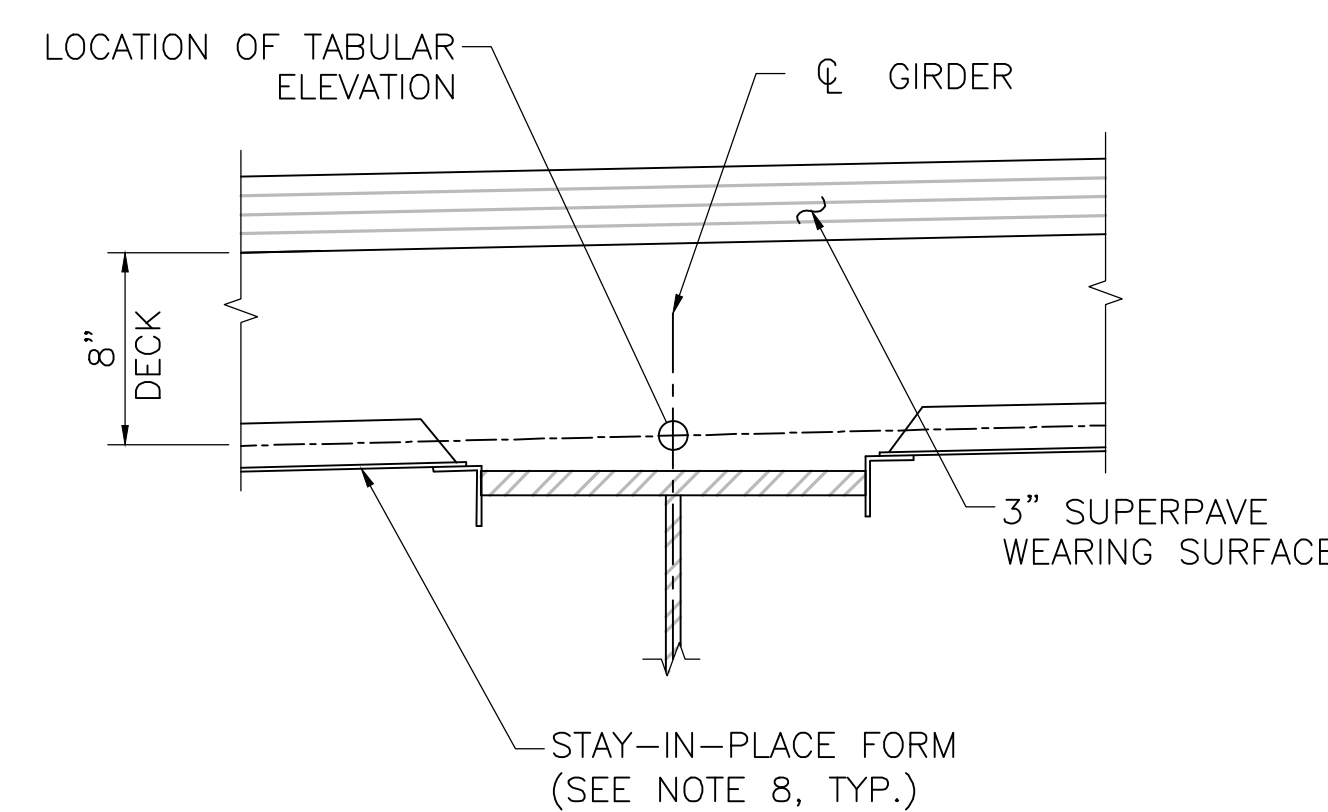
GIRDER NUMBER	TOP OF FORM ELEVATIONS FOR DECK SLAB PRIOR TO PLACEMENT OF CONCRETE									
	INCREASING STATIONS →									
	CL S. BRG.	1/8 PT.	1/4 PT.	3/8 PT.	1/2 PT.	5/8 PT.	3/4 PT.	7/8 PT.	CL N. BRG.	
G1	326.55	326.43	326.32	326.22	326.12	326.02	325.92	325.81	325.71	
G2	326.68	326.56	326.46	326.36	326.26	326.15	326.05	325.95	325.85	
G3	326.82	326.70	326.59	326.49	326.39	326.29	326.19	326.08	325.98	
G4	326.82	326.70	326.59	326.49	326.39	326.29	326.19	326.08	325.98	
G5	326.68	326.56	326.46	326.36	326.26	326.15	326.05	325.95	325.85	
G6	326.55	326.43	326.32	326.22	326.12	326.02	325.92	325.81	325.71	



* $\frac{1}{2}$ " SUPERPAVE BRIDGE SURFACE COURSE - 9.5(SSC-B-9.5) OVER
 $\frac{1}{2}$ " SUPERPAVE BRIDGE PROTECTIVE COURSE - 9.5(SPC-B-9.5) OVER
 SPRAY-APPLIED MEMBRANE WATERPROOFING

** STAY-IN-PLACE FORMS ARE TO ONLY BE INCLUDED ON INTERIOR BAYS
 AND WILL BE OMITTED AT BOTH SIDEWALK BAYS.

TYPICAL BRIDGE SECTION
 SCALE: $\frac{1}{4}'' = 1'-0''$



HAUNCH DETAIL
 SCALE: $\frac{1}{2}'' = 1'-0''$

NOTES:

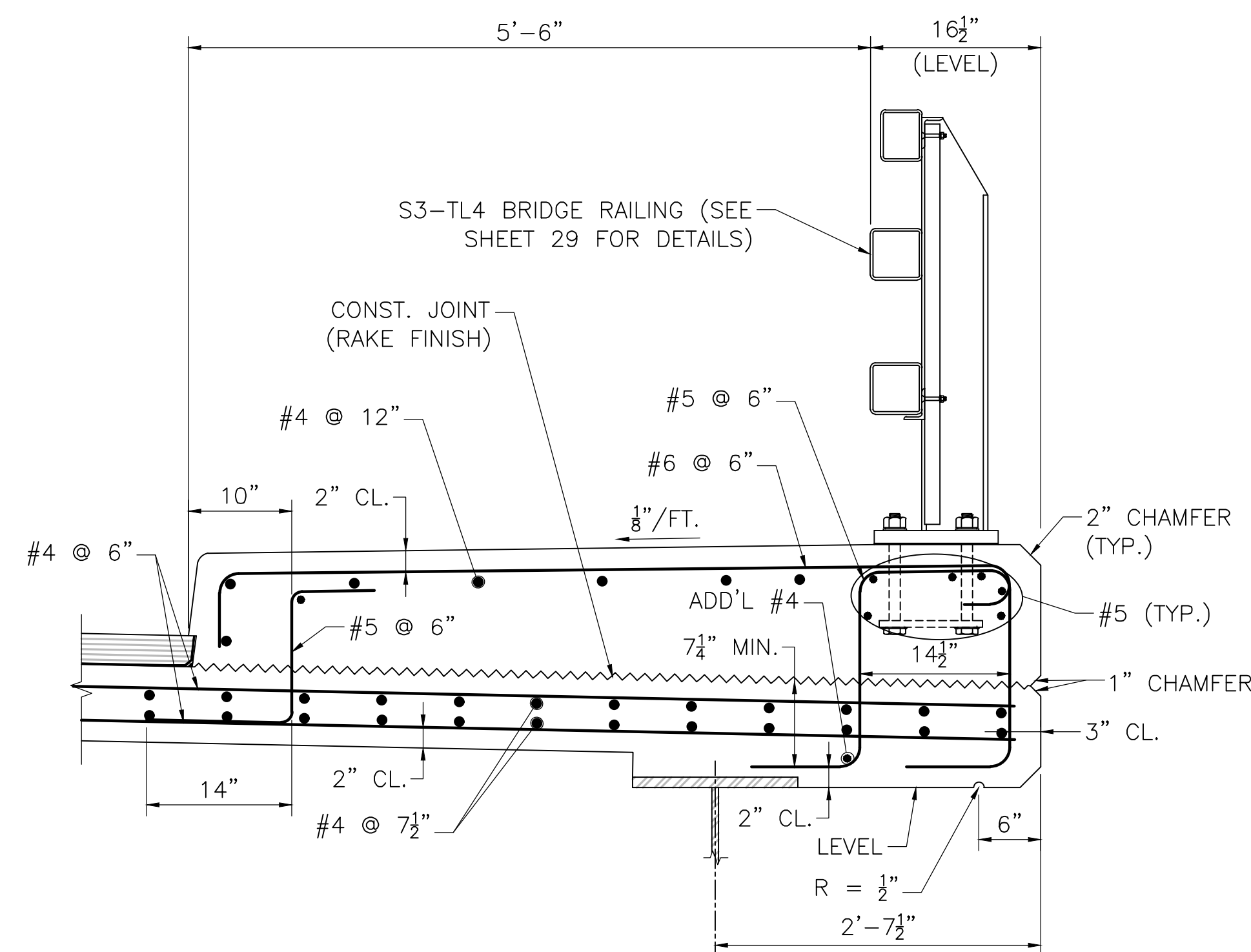
- AFTER THE BEAMS ARE ERECTED BUT BEFORE THE FORMS ARE BUILT, ELEVATIONS ON TOP OF THE FLANGE OF THE BEAMS ARE TO BE OBTAINED AT THE POINTS INDICATED IN THE TABLE. THE DIFFERENCE BETWEEN THE ELEVATIONS OBTAINED AND THOSE SHOWN IN THE TABLE GIVES THE ACTUAL BLOCKING DISTANCE FROM THE TOP OF BEAM TO THE BOTTOM OF THE SLAB AT THE CENTER LINE OF THE BEAM.
- SEE FRAMING PLAN ON SHEET 21 FOR LOCATION OF GIRDERS.

JUNE 29, 2024	ISSUED FOR CONSTRUCTION
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AUTHORIZED SIGNATORY:	STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE	

SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER

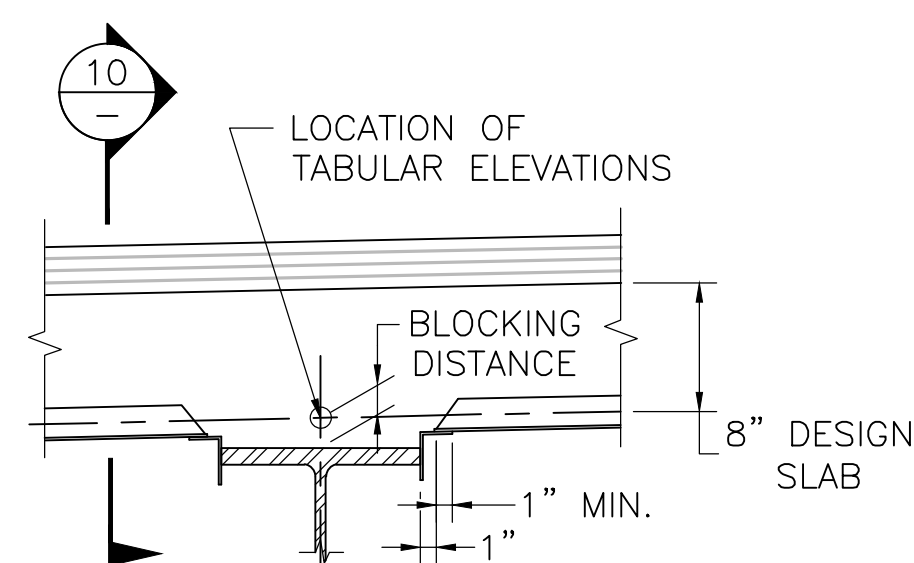
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	43	55
PROJECT FILE NO.		608640	

DECK DETAILS (SHEET 2 OF 2)

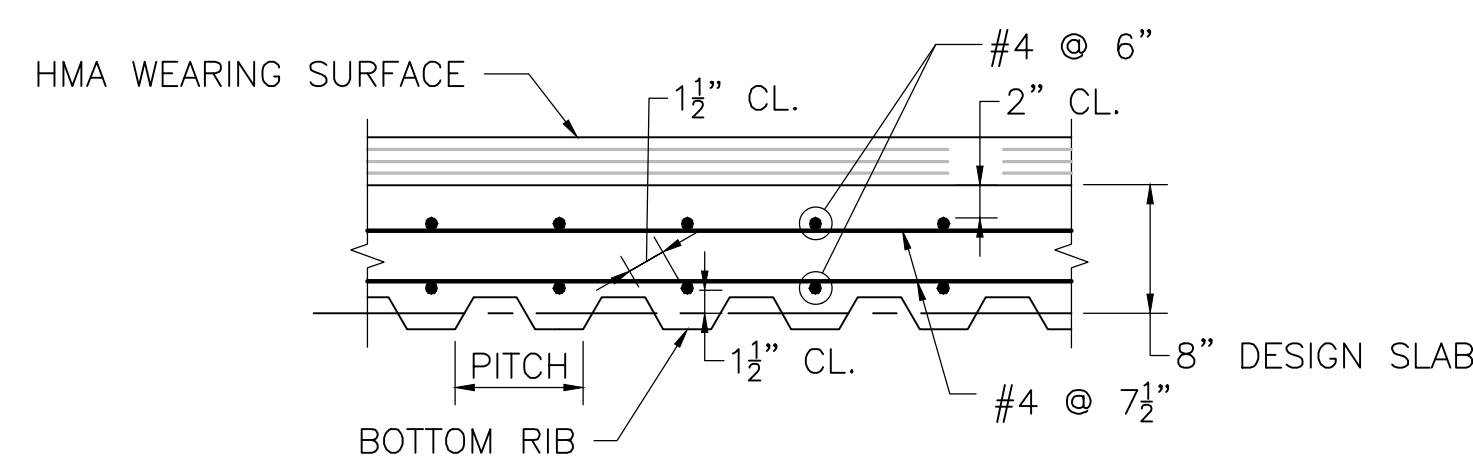


SECTION THROUGH SIDEWALK

SCALE: 1" = 1'-0"



HAUNCH DETAIL AT NON-TENSION FLANGE AREA



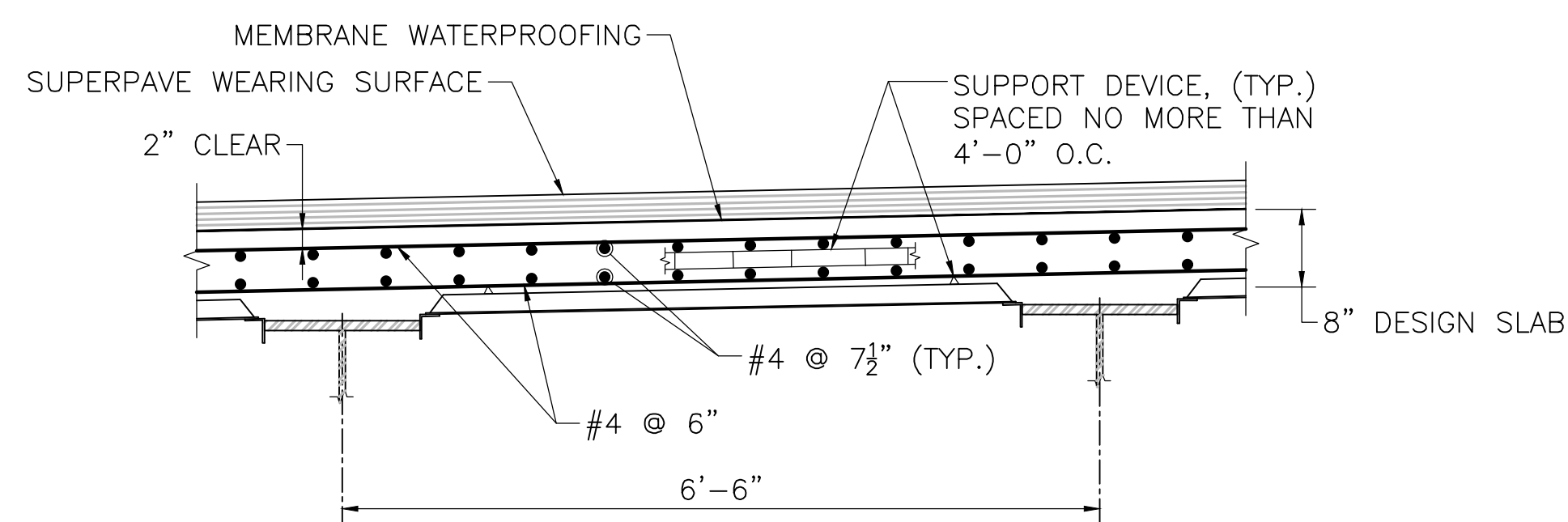
SECTION 10

STAY-IN-PLACE FORM DETAILS

SCALE: 1" = 1'-0"

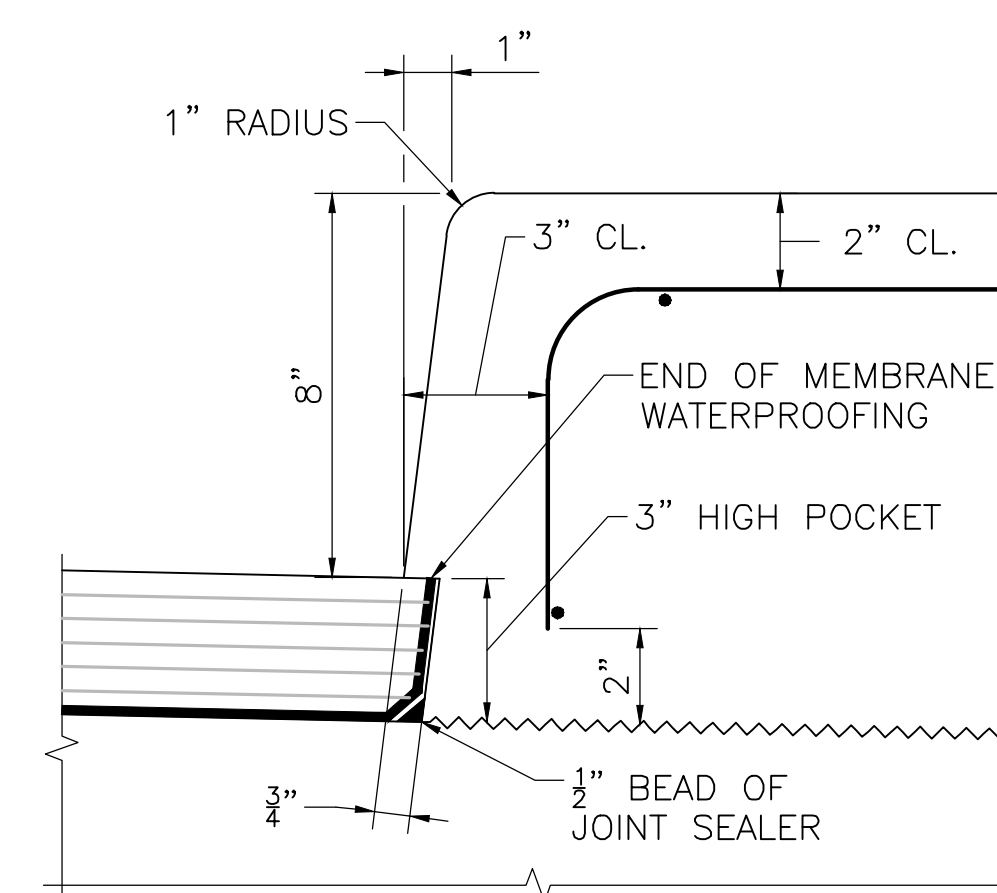
STAY-IN-PLACE FORM NOTES:

- FOR 2" S.I.P. FORM, SET BOTTOM OF FORM 1" BELOW ELEVATION GIVEN IN "TOP OF FORM ELEVATIONS FOR DECK SLAB PRIOR TO PLACEMENT OF CONCRETE" TABLE ON SHEET 24.
- FORM ENDS SHALL BE CRIMPED CLOSED IN A TAPERED MANNER. SEPARATE END CLOSURE PIECES WILL NOT BE ALLOWED.
- SUPPORT ANGLES SHALL BE PLACED IN THE "LEG DOWN" POSITION WHERE POSSIBLE. WHERE "LEG UP" POSITION IS NECESSARY, THE UPPER MOST PORTION OF THE ANGLE SHALL NOT PROJECT MORE THAN 1" ABOVE THE TOP FLANGE OR COVER PLATE. THE CONTRACTOR SHALL HAVE AN ASSORTMENT OF ANGLES OF VARIOUS SIZES AVAILABLE ON THE SITE TO CONFORM TO THIS REQUIREMENT.
- ALL MAIN STEEL REINFORCEMENT IN THE LOWER MAT SHALL BE CENTERED OVER THE VALLEY OF THE S.I.P. FORM.
- CONTRACTOR SHALL DESIGN AND DETAIL ALL ELEMENTS OF THE FORMING SYSTEM AND SHALL SUBMIT TO THE ENGINEER FOR APPROVAL.
- IN CASES WHERE STANDARD 2" DEEP S.I.P. FORMS DO NOT SATISFY DESIGN REQUIREMENTS AN ALTERNATIVE FORMING SYSTEM CONSISTING OF DEEPER S.I.P. FORMS OR REMOVABLE FORMS SHALL BE DESIGNED AND DETAILED BY THE CONTRACTOR AND SUBMITTED TO THE ENGINEER FOR APPROVAL. THE DESIGN THICKNESS OF THE SLAB SHALL NOT BE REDUCED.



TYPICAL DECK REINFORCING

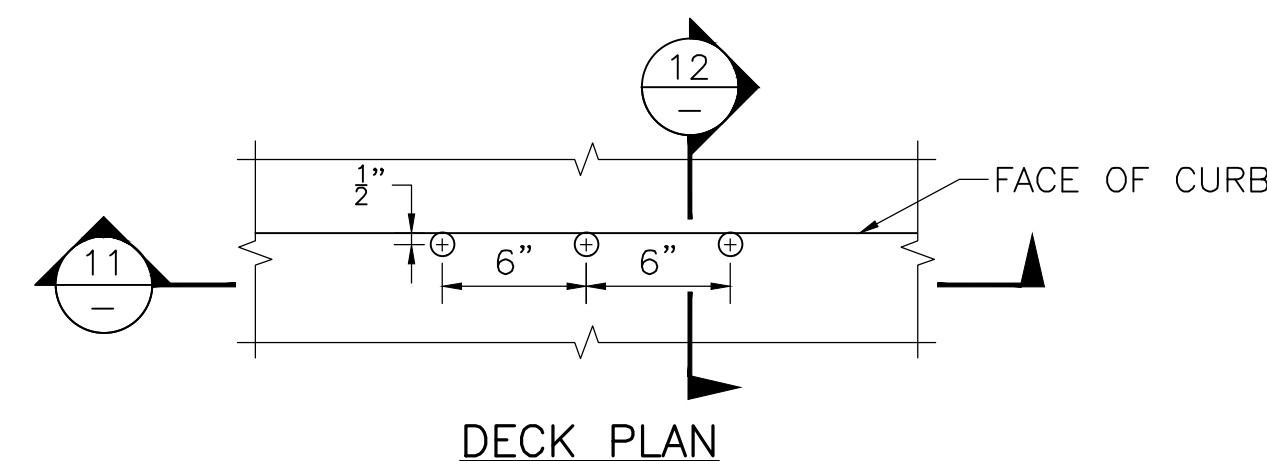
SCALE: 3/4" = 1'-0"



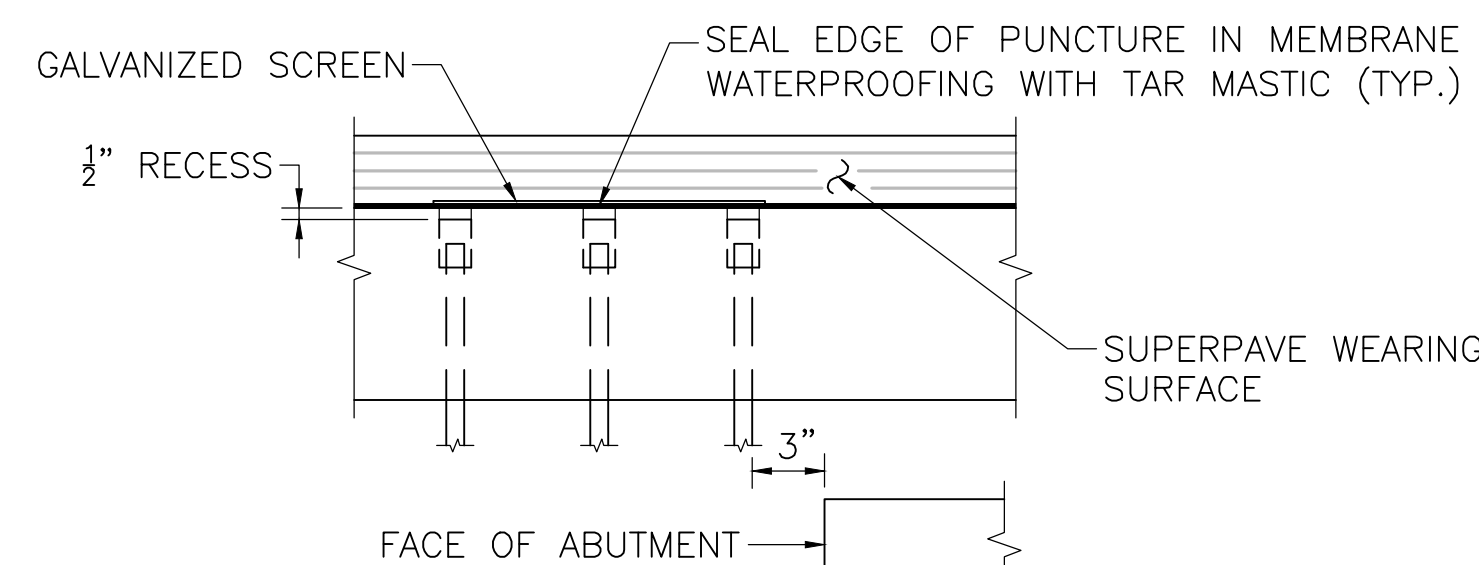
NOTE: TURN MEMBRANE UP INTO 3" HIGH POCKET.

FACE OF SIDEWALK CURB DETAIL

SCALE: 3" = 1'-0"



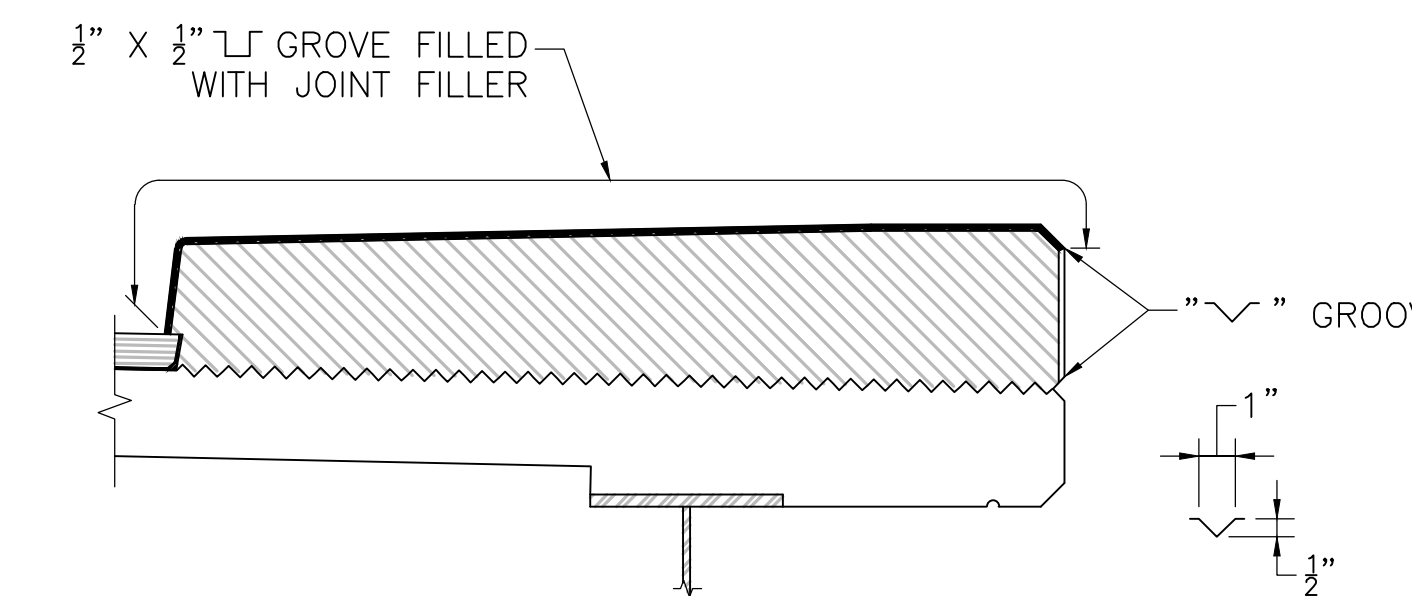
DECK PLAN



SECTION 11

NOTE:

DRAINS SHALL BE LOCATED AT ALL ROADWAY JOINTS AND/OR LOW POINT OF VERTICAL CURVE.

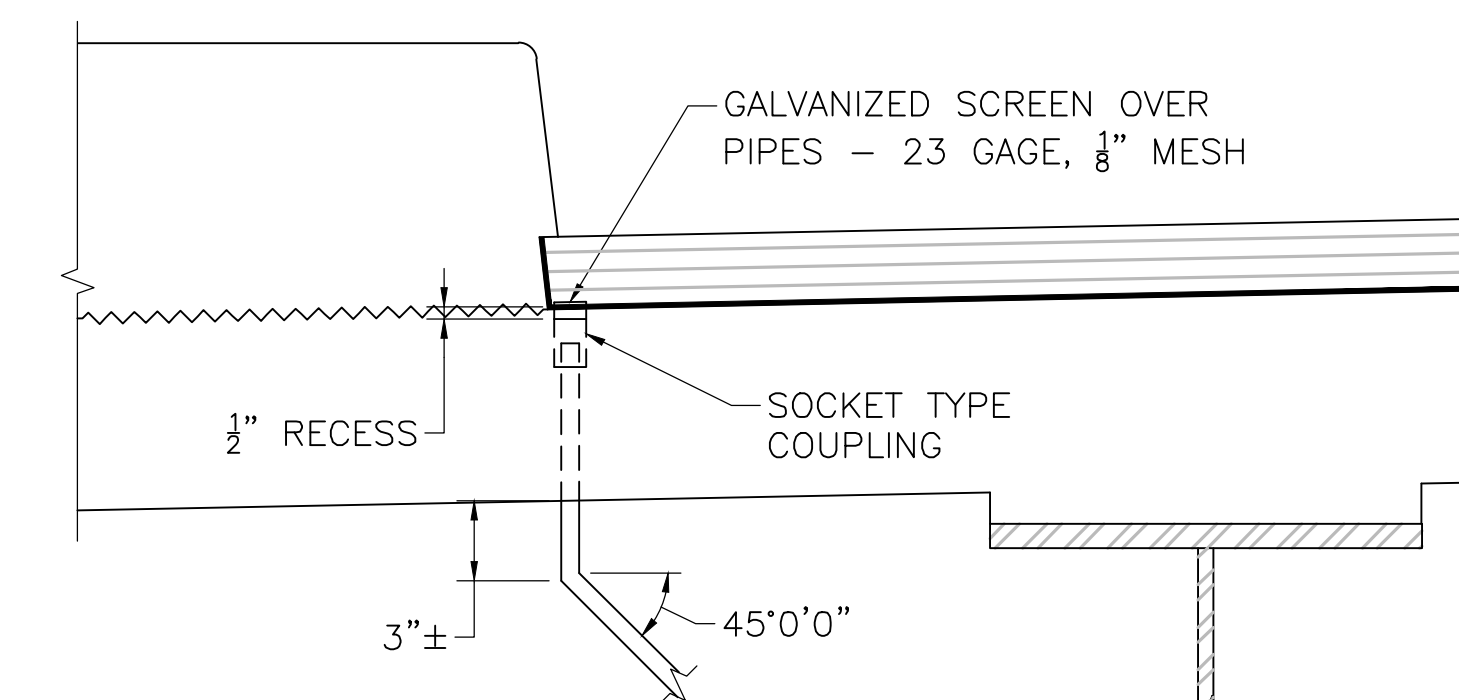


PARAFFIN JOINT DETAIL

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

PARAFFIN JOINT 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 CURB OR COPING.



SECTION 12

DECK DRAIN PIPES

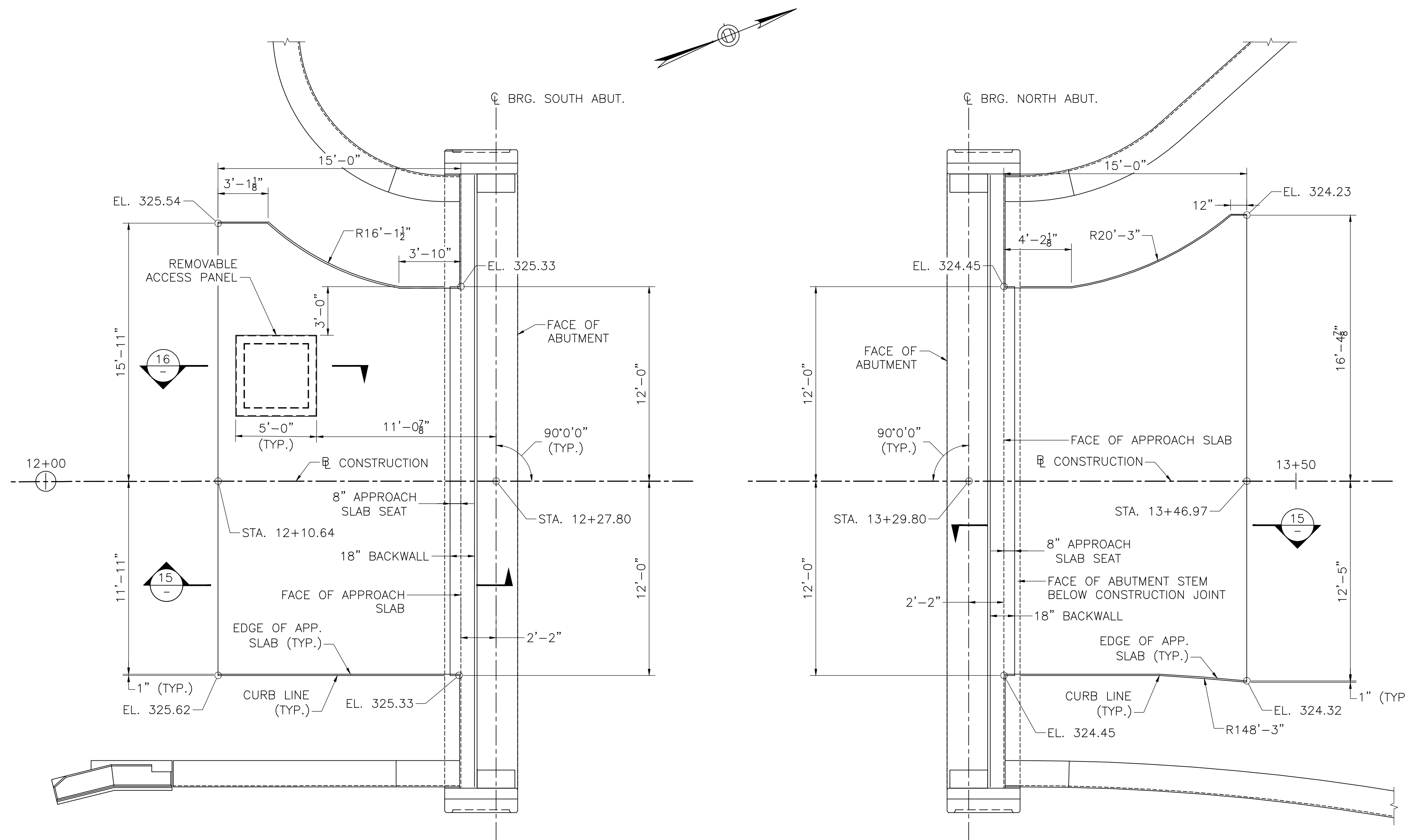
SCALE: 1 1/2" = 1'-0"

DATE	DESCRIPTION
JUNE 29, 2024	ISSUED FOR CONSTRUCTION
THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT	
AUTHORIZED SIGNATORY:	STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE	

SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	44	55
PROJECT FILE NO.		608640	

APPROACH SLAB DETAILS



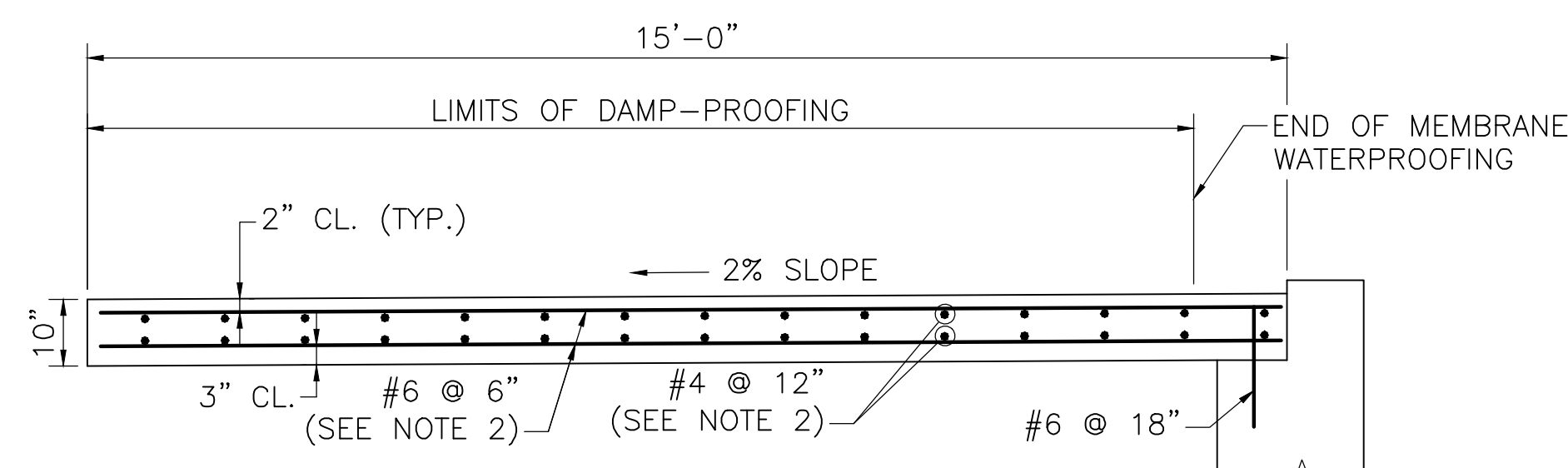
NOTE:
 ELEVATIONS SHOWN ARE DEPICTED AT BOTTOM OF APPROACH SLAB.

SOUTH APPROACH SLAB PLAN

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

NORTH APPROACH SLAB PLAN

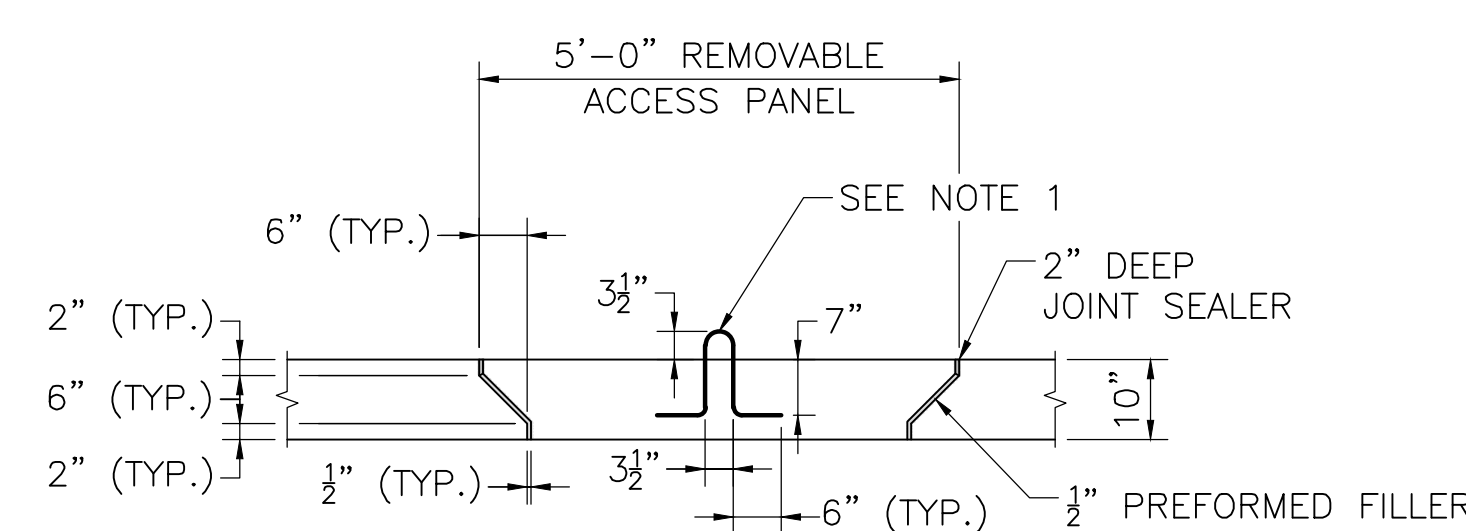
SCALE: 1/4" = 1'-0"



NOTES:

- APPROACH SLAB TO BE 4000 PSI, 1 1/2 IN, 565 CEMENT CONCRETE.
- PLACE LONGITUDINAL REINFORCEMENT PARALLEL TO BASELINE. PLACE TRANSVERSE REINFORCEMENT PARALLEL TO ABUTMENT.

SECTION 15
 SCALE: 1/2" = 1'-0"



NOTES:

- LIFT HOOKS REQUIRED. USE #5 COATED REBAR AT CENTER POINT.
- REINFORCEMENT IS TO BE THE SAME AS THAT USED FOR THE MAIN APPROACH SLAB.
- UTILITY NOT SHOWN. REFER TO UTILITY PLAN SHEETS FOR DETAILS.

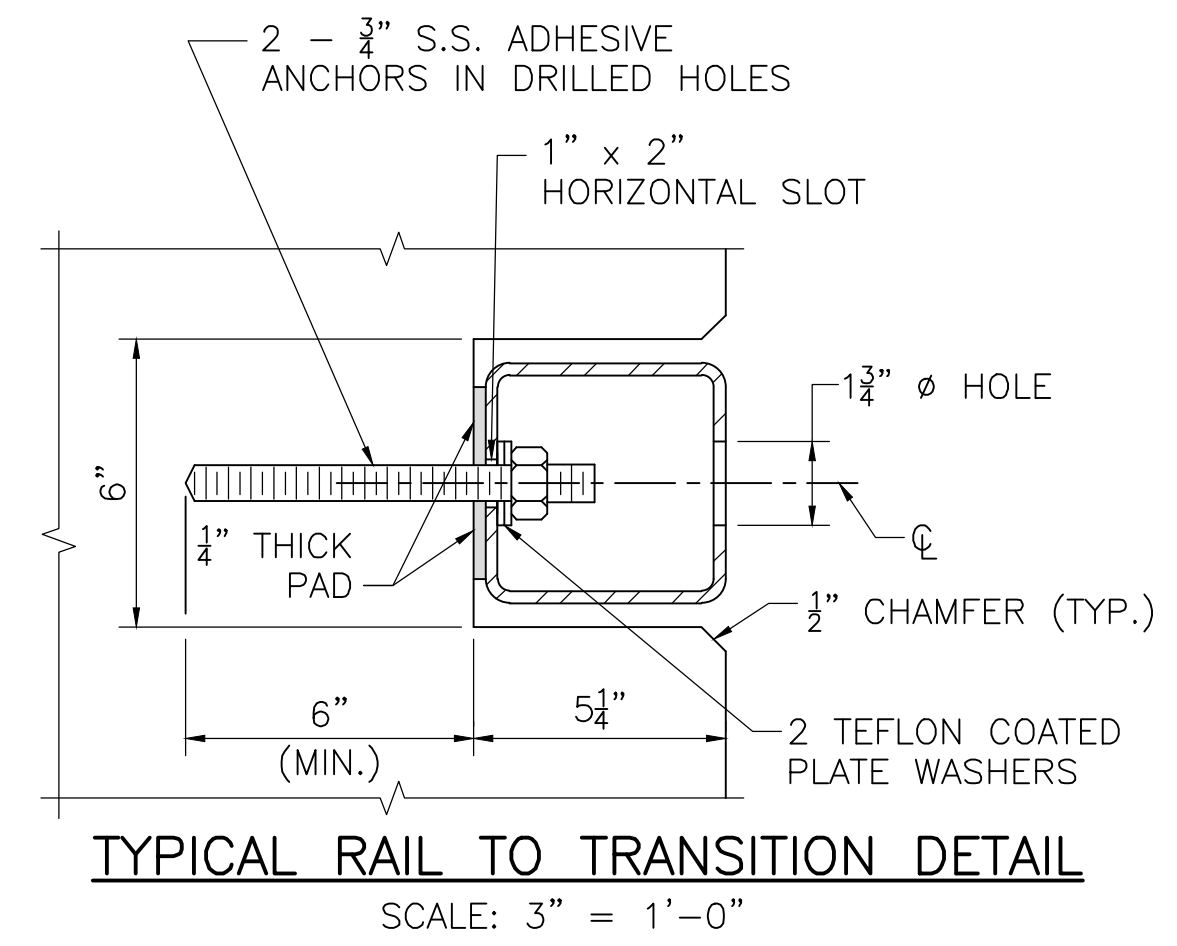
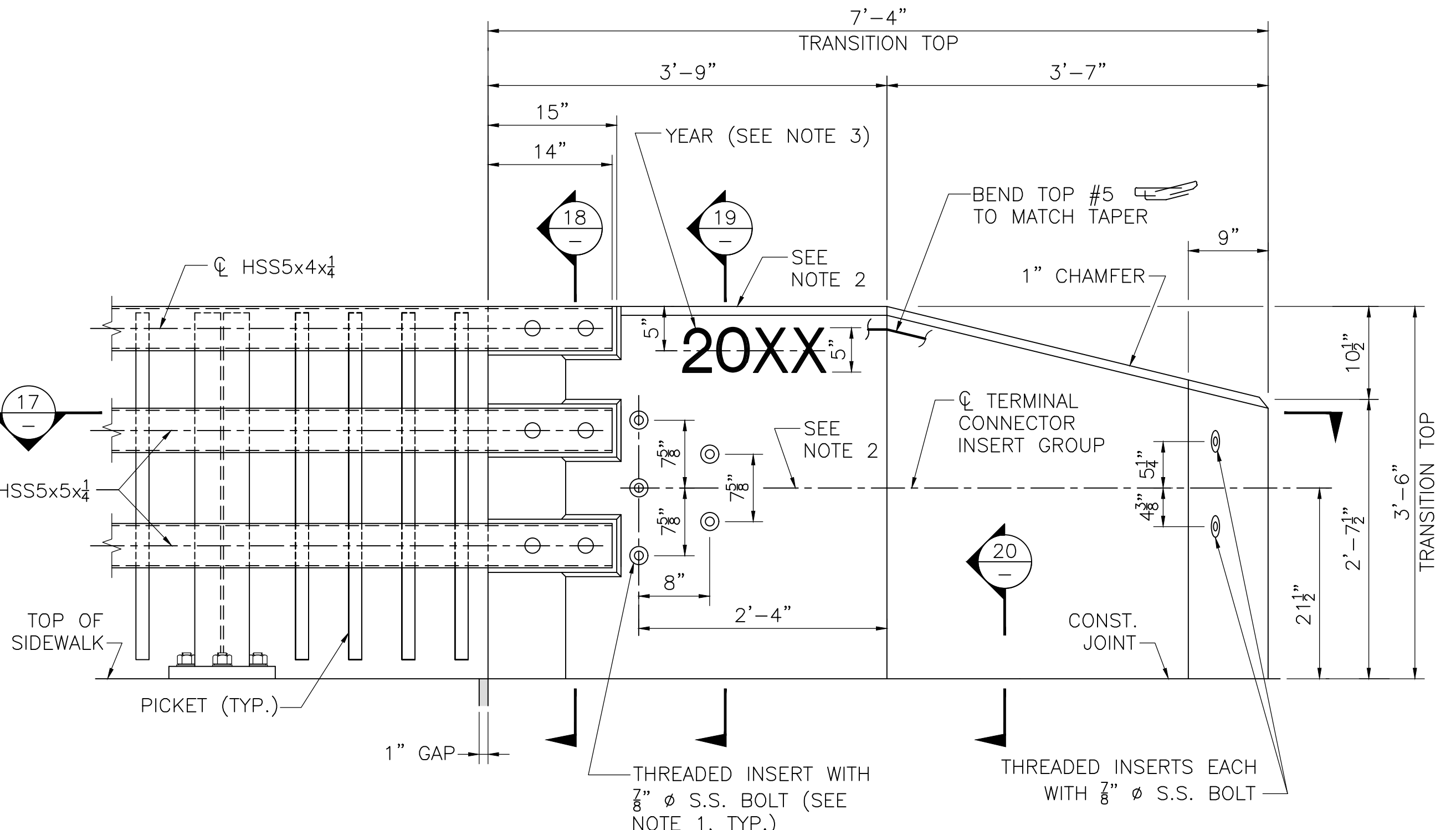
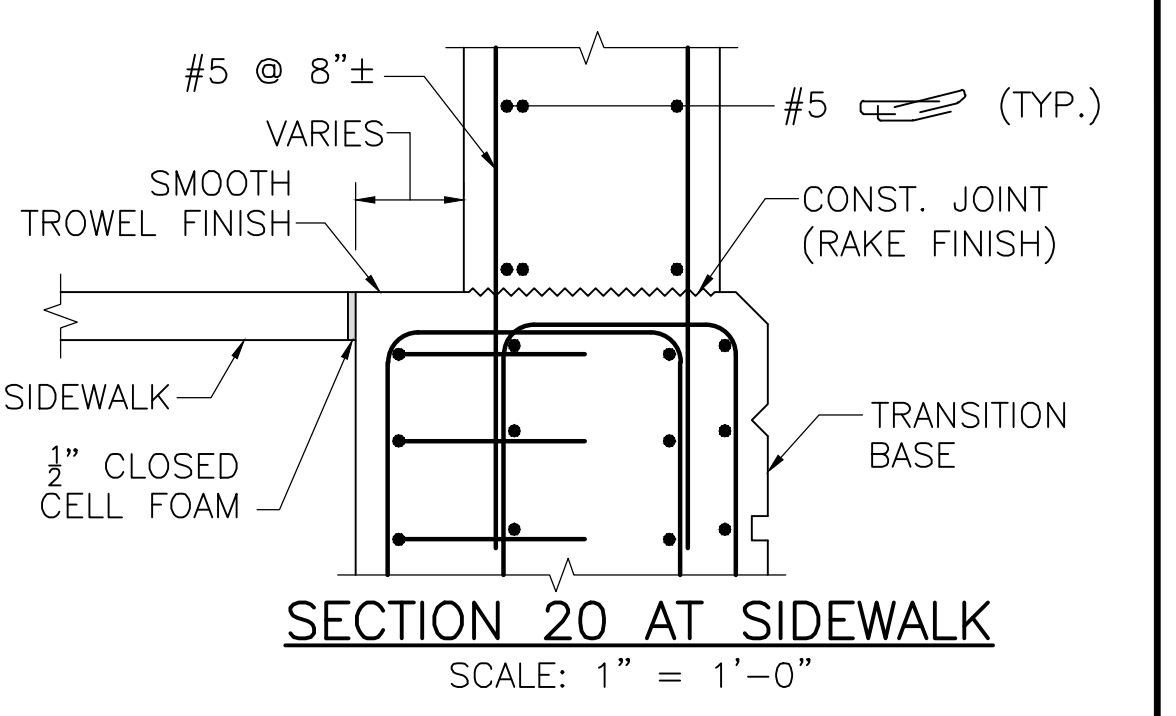
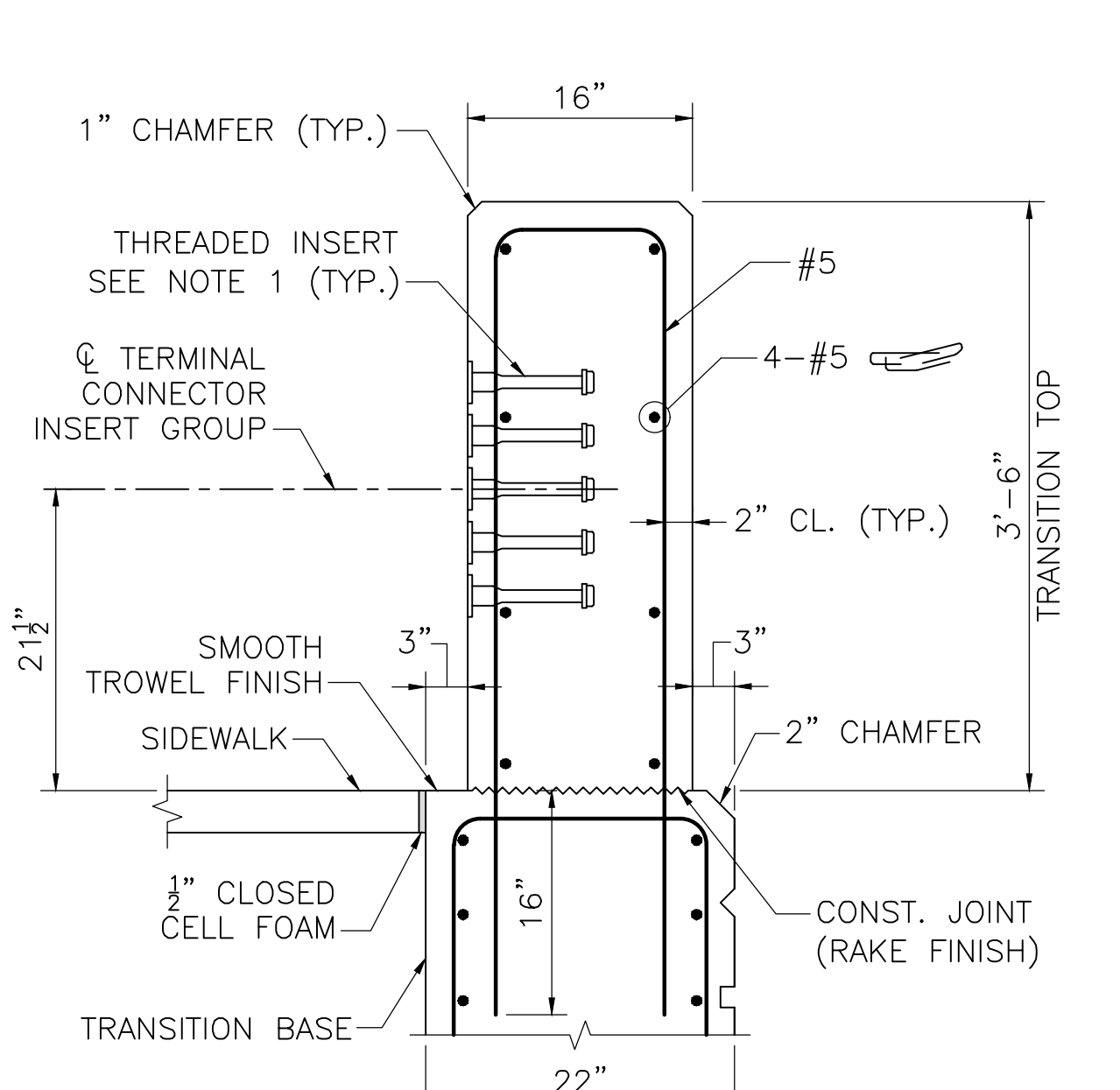
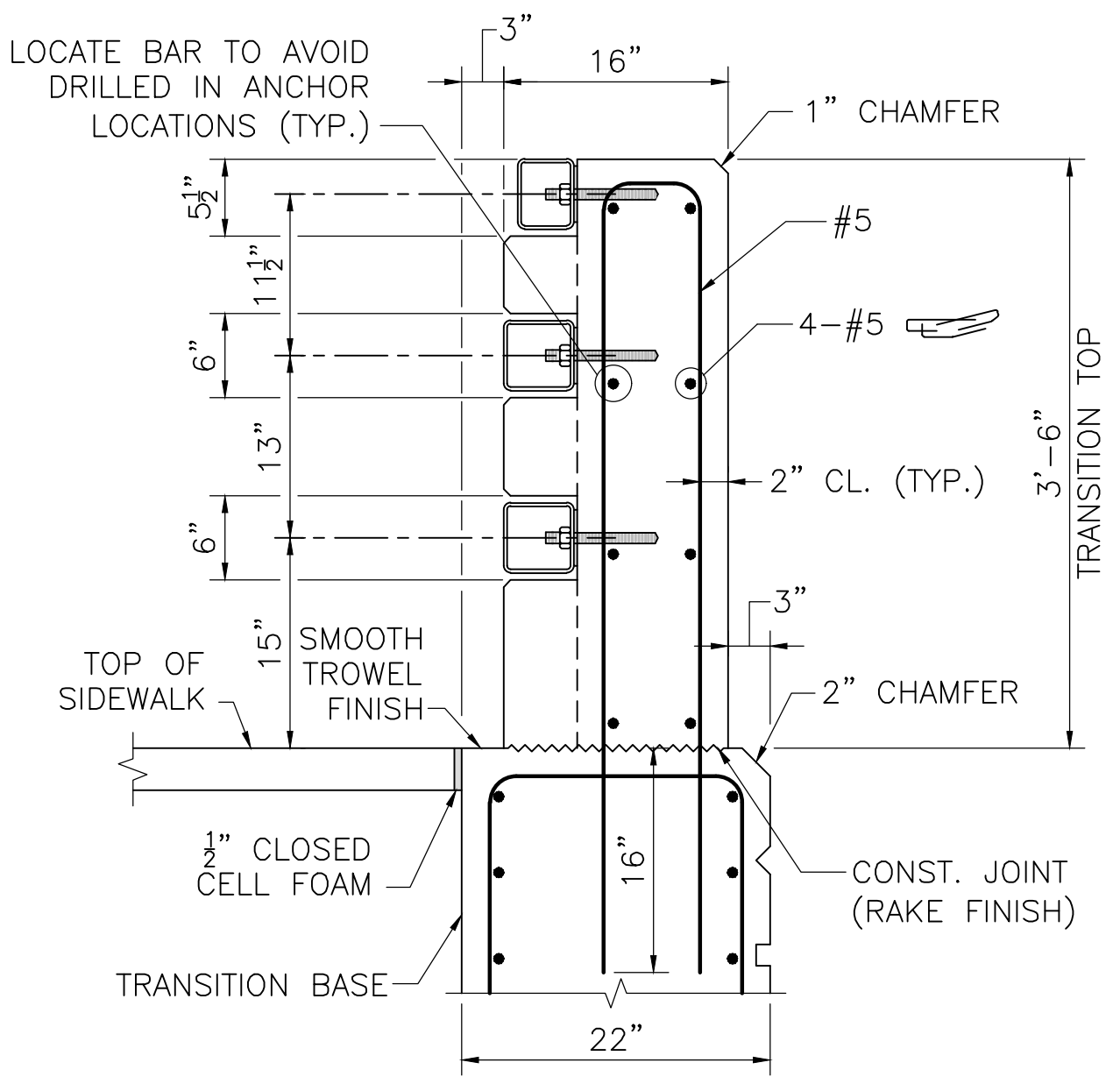
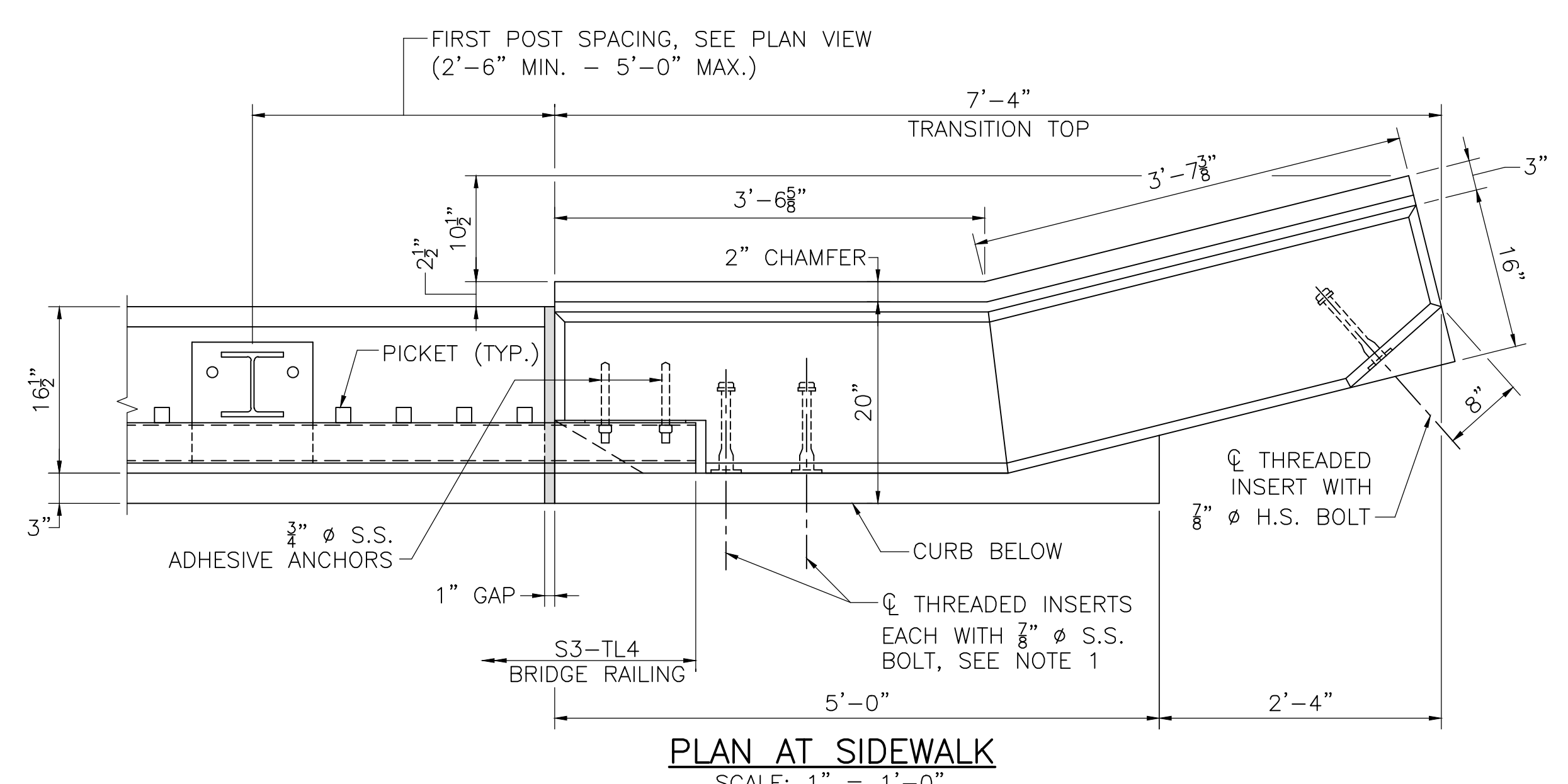
SECTION 16
 SCALE: 1/2" = 1'-0"

DATE	DESCRIPTION
JUNE 29, 2024	ISSUED FOR CONSTRUCTION
THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT	
AUTHORIZED SIGNATORY:	STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE	

SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	45	55
PROJECT FILE NO. 608640			

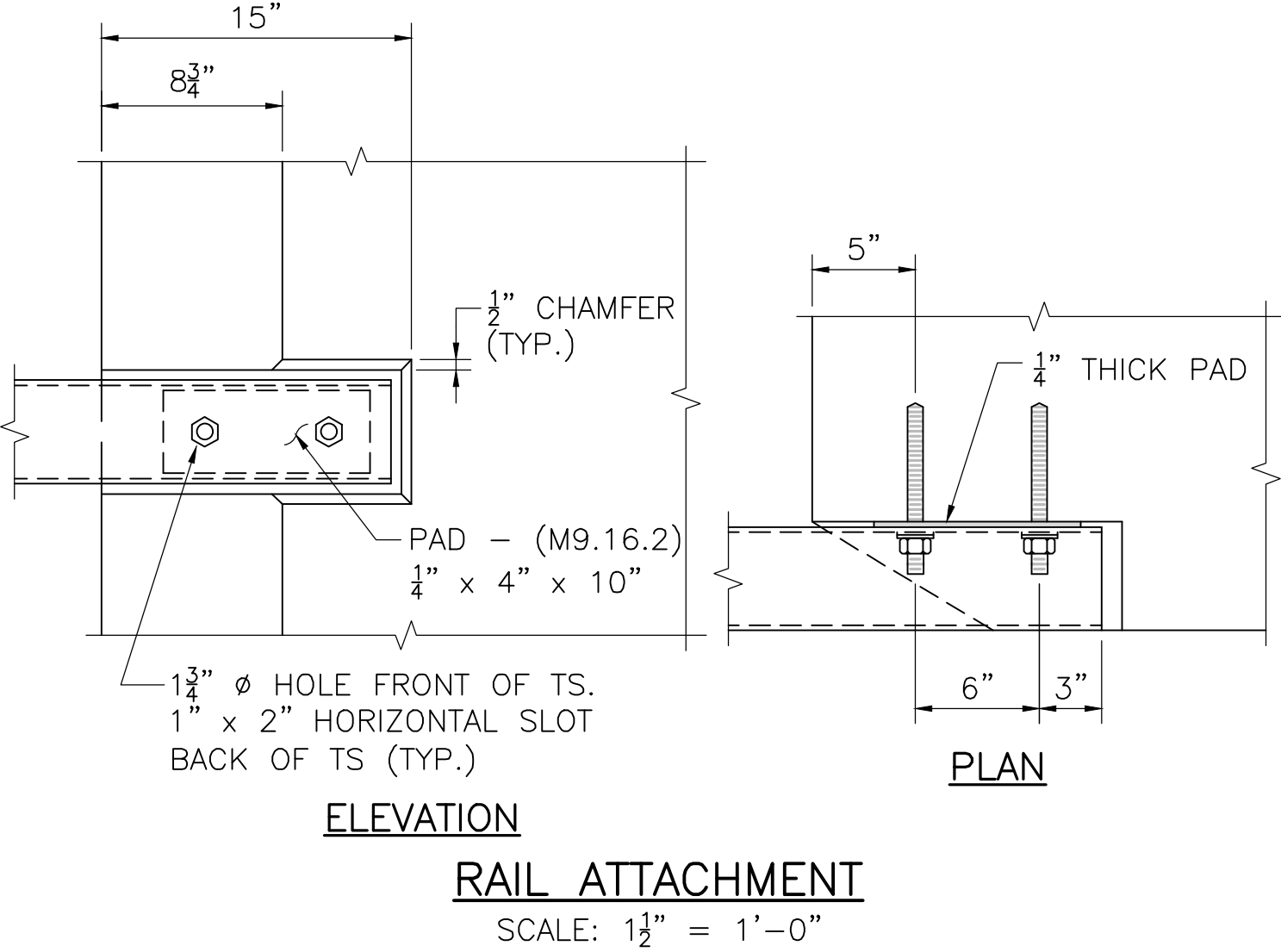
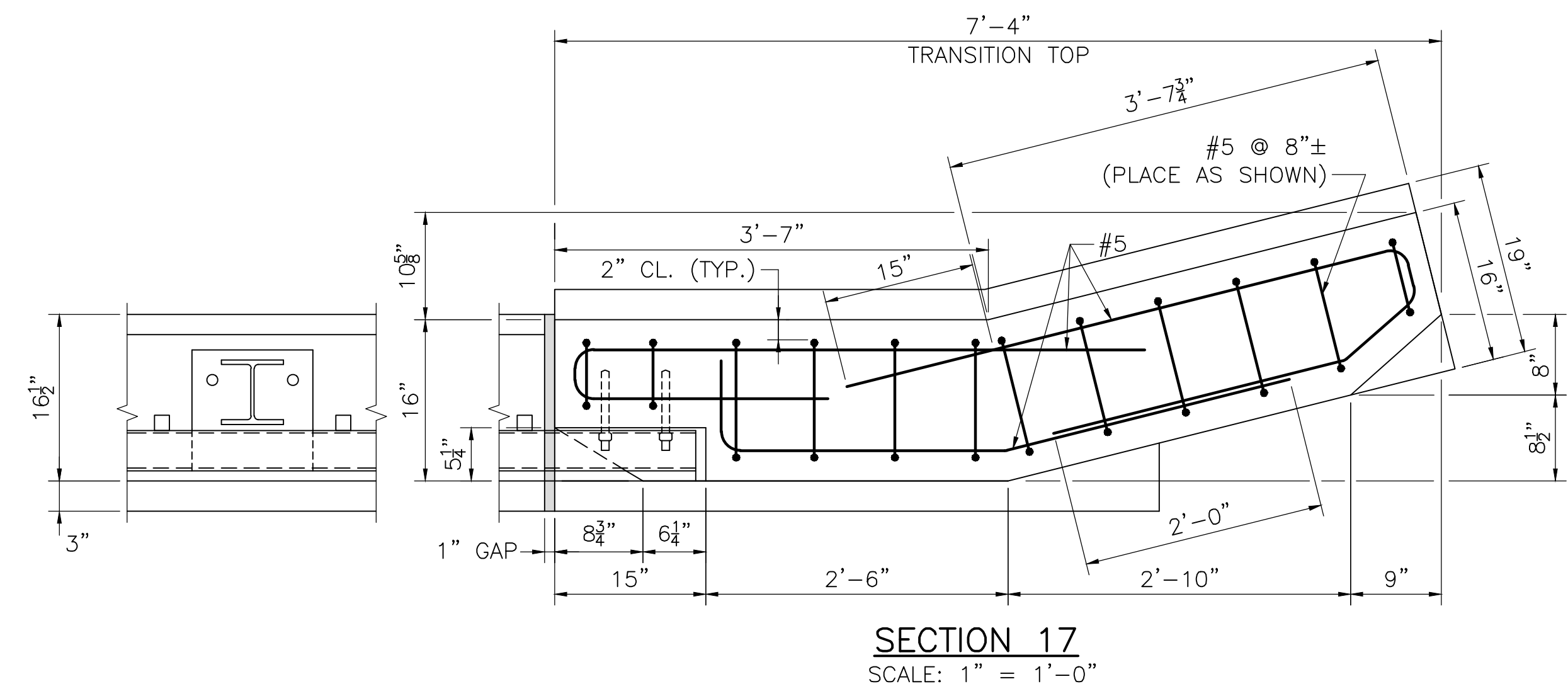
GUARDRAIL TRANSITION DETAILS (SHEET 1 OF 2)



NOTES:

1. THREADED INSERTS SHALL BE PREQUALIFIED BY THE MANUFACTURER AS BEING CAPABLE OF DEVELOPING A NOMINAL SHEAR RESISTANCE OF 20 KIPS PER $\frac{7}{8}$ " ϕ S.S. BOLT. S.S. BOLTS SHALL BE $\frac{7}{8}$ " ϕ x $1\frac{1}{2}$ " LONG FULLY THREADED AISI TYPE 304N STAINLESS STEEL. INSERTS FOR $\frac{7}{8}$ " S.S. BOLTS SHALL BE GALVANIZED AND CAST INTO THE TRANSITION.
2. FOR AN APPROACH GRADE UP TO 3%, THE TRANSITION MAY BE CAST SQUARE AND SET PLUMB WITH THE MINIMUM EMBEDMENT DEPTH SHOWN. THE TERMINAL CONNECTOR INSERT GROUP SHALL BE SQUARE TO THE POST.

 FOR AN APPROACH GRADE IN EXCESS OF 3%, THE TRANSITION TOP AND THE TOP OF CURB SHALL FOLLOW THE APPROACH GRADE. THE HEIGHT OF THE TRANSITION TOP SHALL VARY PROVIDED THAT THE MINIMUM DIMENSIONS SHOWN ON THE CONSTRUCTION DRAWINGS ARE MET. THE BOTTOM OF THE TRANSITION BASE SHALL BE SET LEVEL WITH THE MINIMUM EMBEDMENT DEPTH SHOWN. THE TERMINAL CONNECTOR INSERT GROUP SHALL BE SLOPED TO FOLLOW THE APPROACH GRADE.
3. USE LATEST CONTRACT COMPLETION YEAR IN EFFECT WHEN THE FIRST GUARDRAIL TRANSITION IS CAST. USE THIS YEAR FOR ALL GUARDRAIL TRANSITIONS.
4. ALL CONCRETE FOR THE PRECAST HIGHWAY GUARDRAIL TRANSITION SHALL BE 5000 PSI, $\frac{3}{4}$ ", 685 HP CEMENT CONCRETE.
5. LIFTING DEVICES (NOT SHOWN), INCLUDING THEIR NUMBER AND LOCATION, SHALL BE DESIGNED AND DETAILED BY THE PRECASTER. THEY SHALL BE GALVANIZED AND SHALL BE PLACED AND RECESSED IN POCKETS TO PROVIDE $1\frac{1}{2}$ " CLEAR COVER TO THE FACE OF THE TRANSITION CONCRETE. THESE DEVICES SHALL BE CLEARLY SHOWN ON THE SHOP DRAWINGS ALONG WITH ALL SUPPORTING CALCULATIONS AND/OR CATALOG CUTS. ONCE THE PRECAST TRANSITION IS SET IN PLACE, THE LIFTING DEVICE POCKETS SHALL BE FILLED WITH A NON-SHRINK GROUT THAT MATCHES THE COLOR OF THE TRANSITION CONCRETE WHEN CURED AND THE FILLED POCKETS SHALL BE RUBBED WITH A CORUNDUM STONE TO BLEND OUT THE JOINTS.



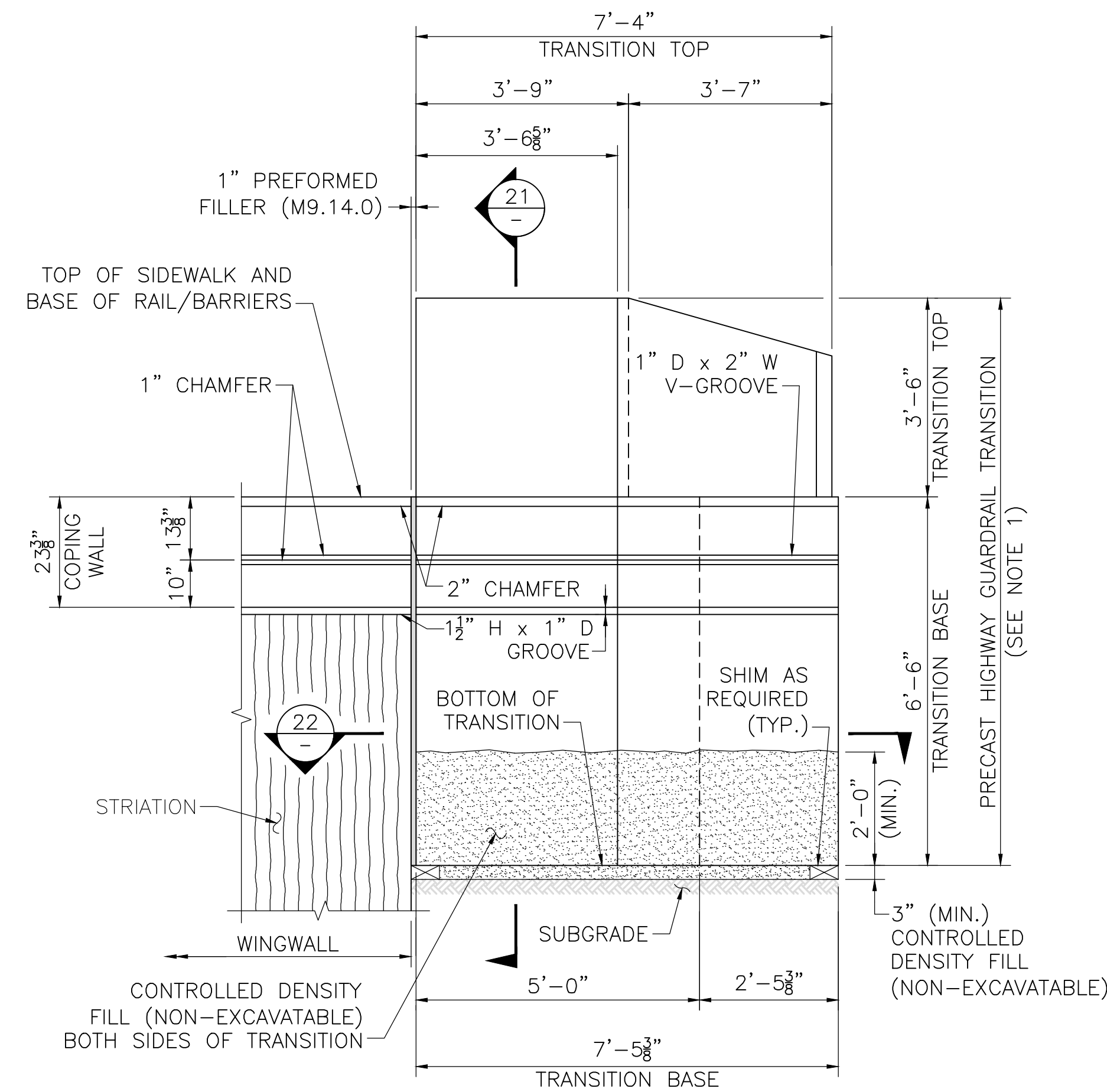
TOP OF PRECAST HIGHWAY GUARDRAIL TRANSITION FOR S3-TL4 RAILING

JUNE 29, 2024	ISSUED FOR CONSTRUCTION
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AUTHORIZED SIGNATORY:	<i>[Signature]</i> STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE	

SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER

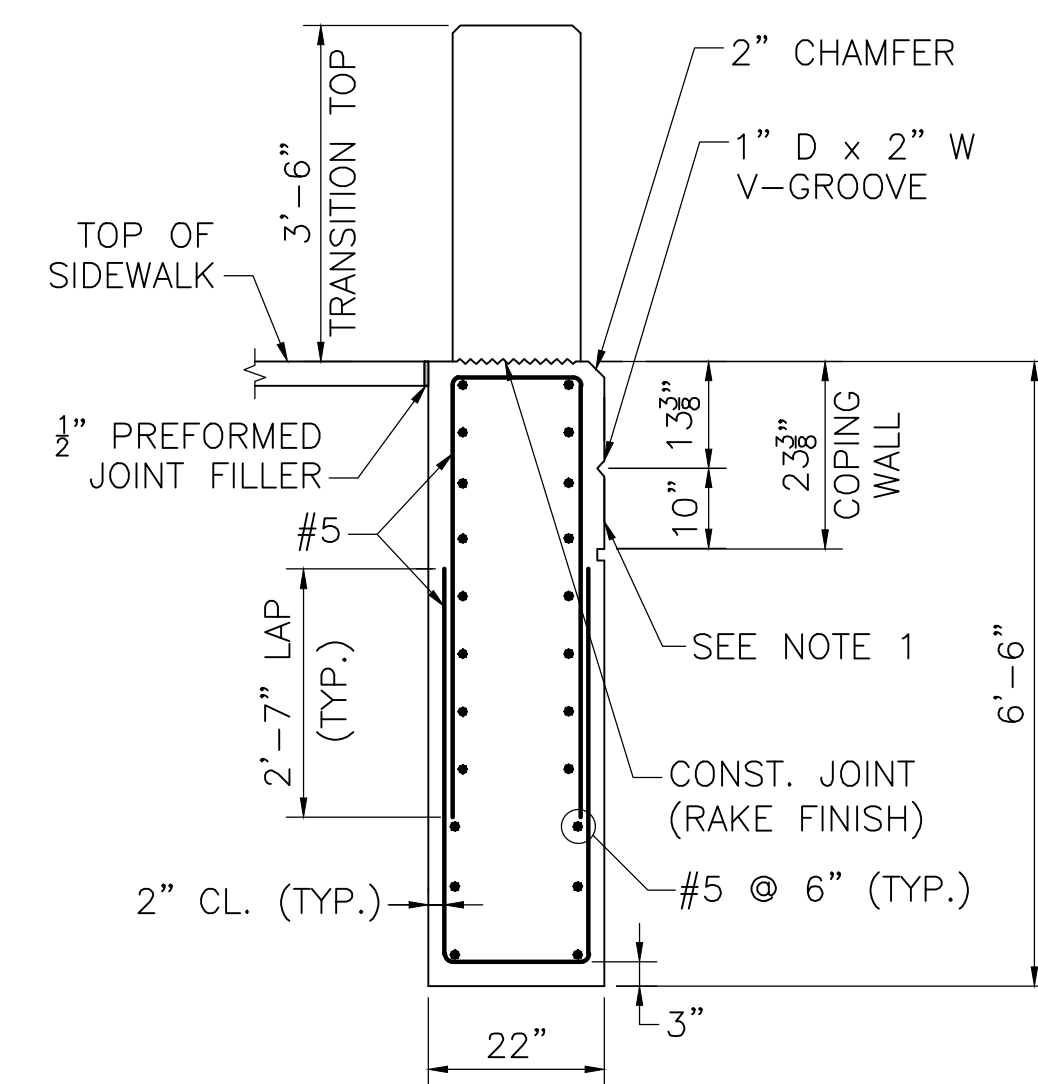
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	46	55
PROJECT FILE NO.		608640	

GUARDRAIL TRANSITION DETAILS (SHEET 2 OF 2)



PRECAST GUARDRAIL TRANSITION
ELEVATION AT U-WINGWALL

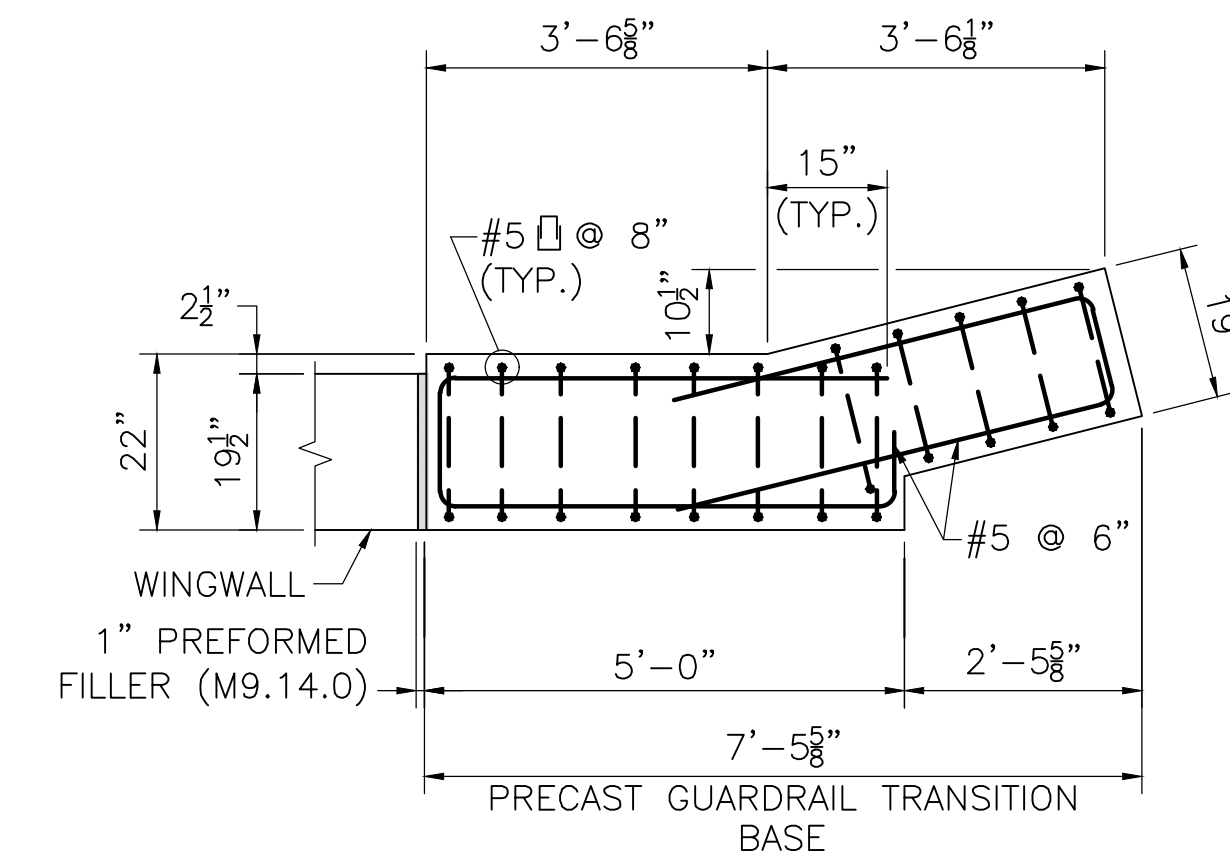
SCALE: 1/2" = 1'-0"



SECTION 21

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

- NOTES:
- 1 1/2" H x 1" D GROOVE. ALIGN WITH GROOVE AT TOP OF STRIATIONS.
 - REINFORCEMENT OF THE TRANSITION TOP IS NOT SHOWN FOR CLARITY.



SECTION 22

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

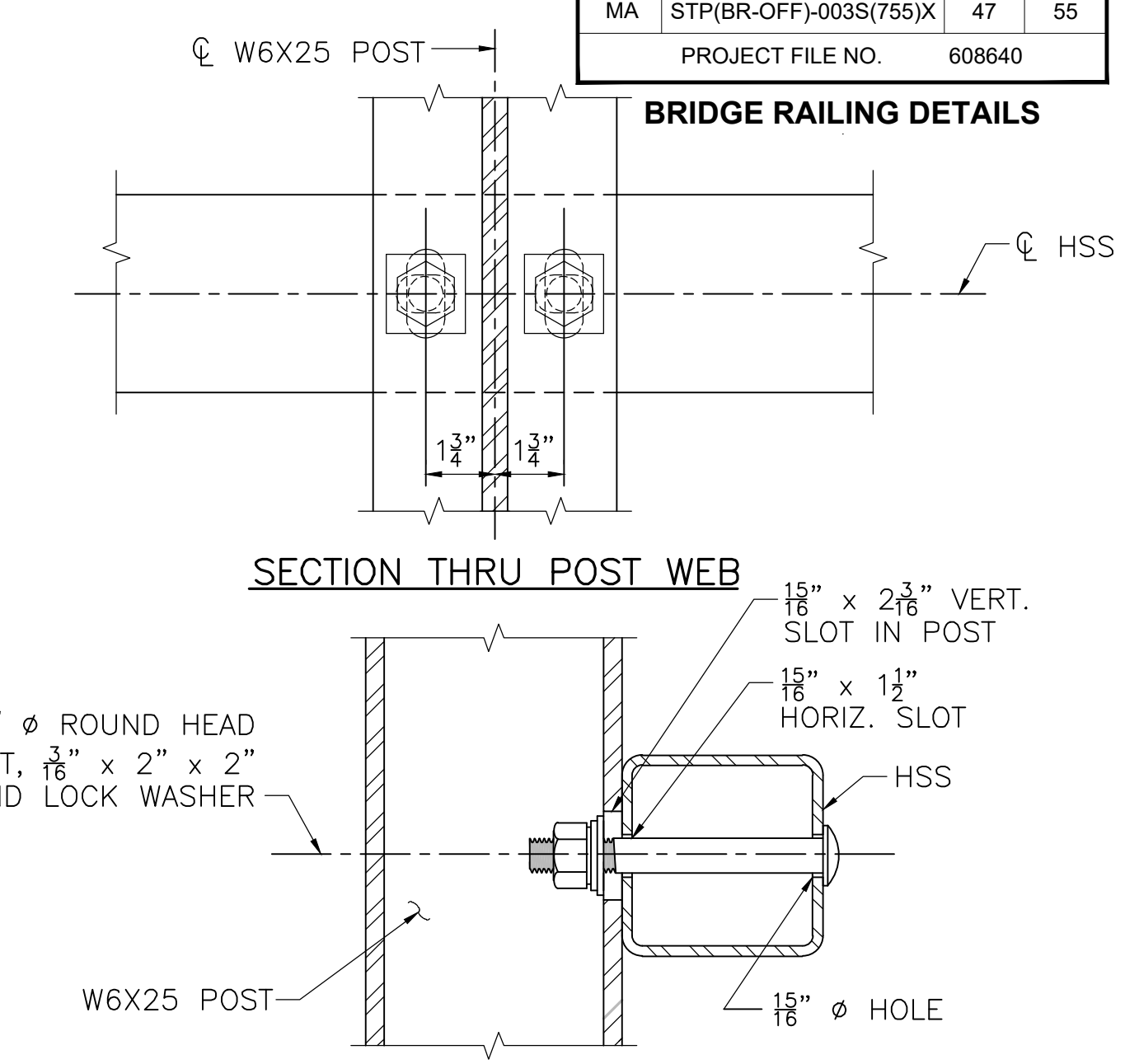
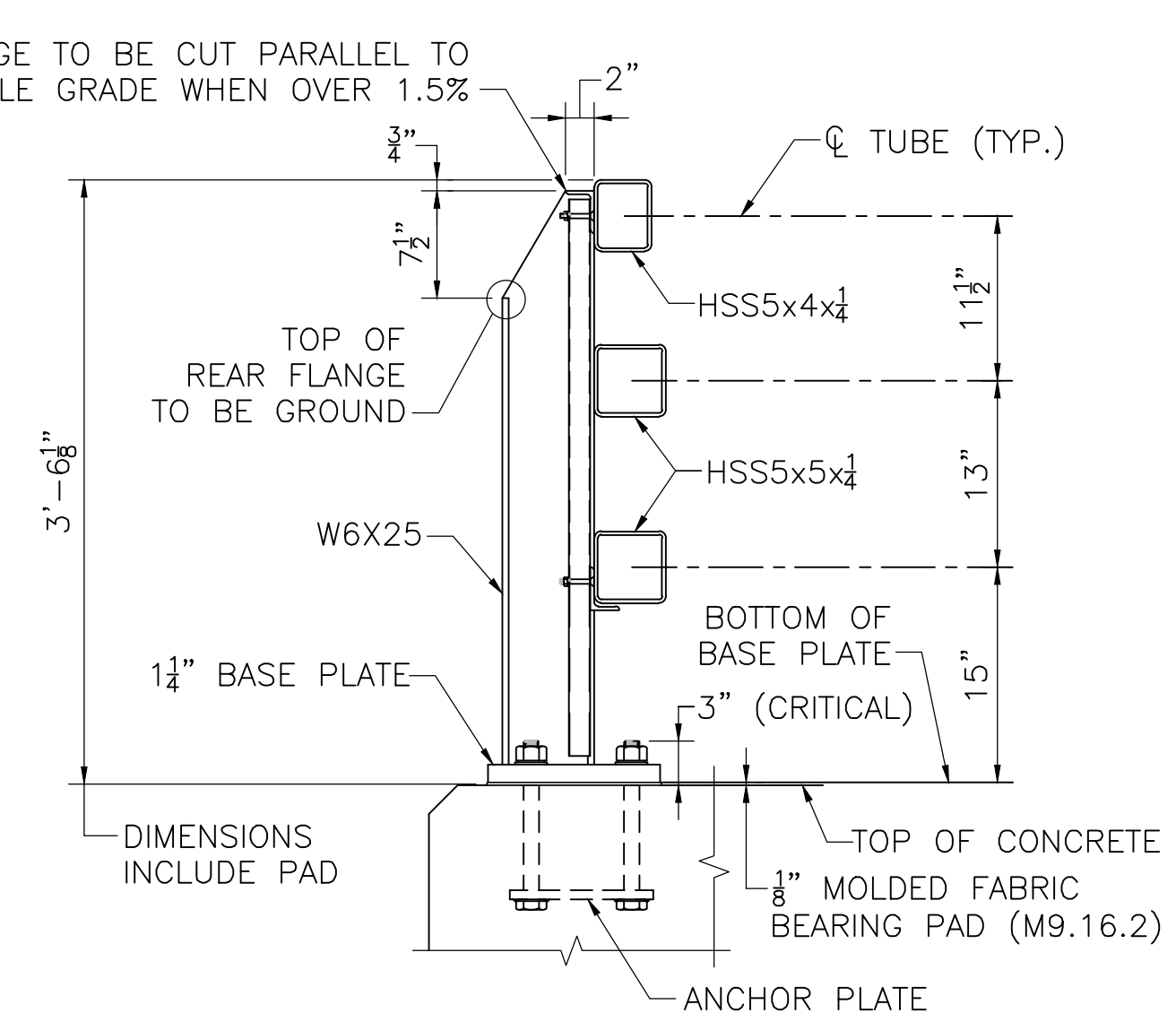
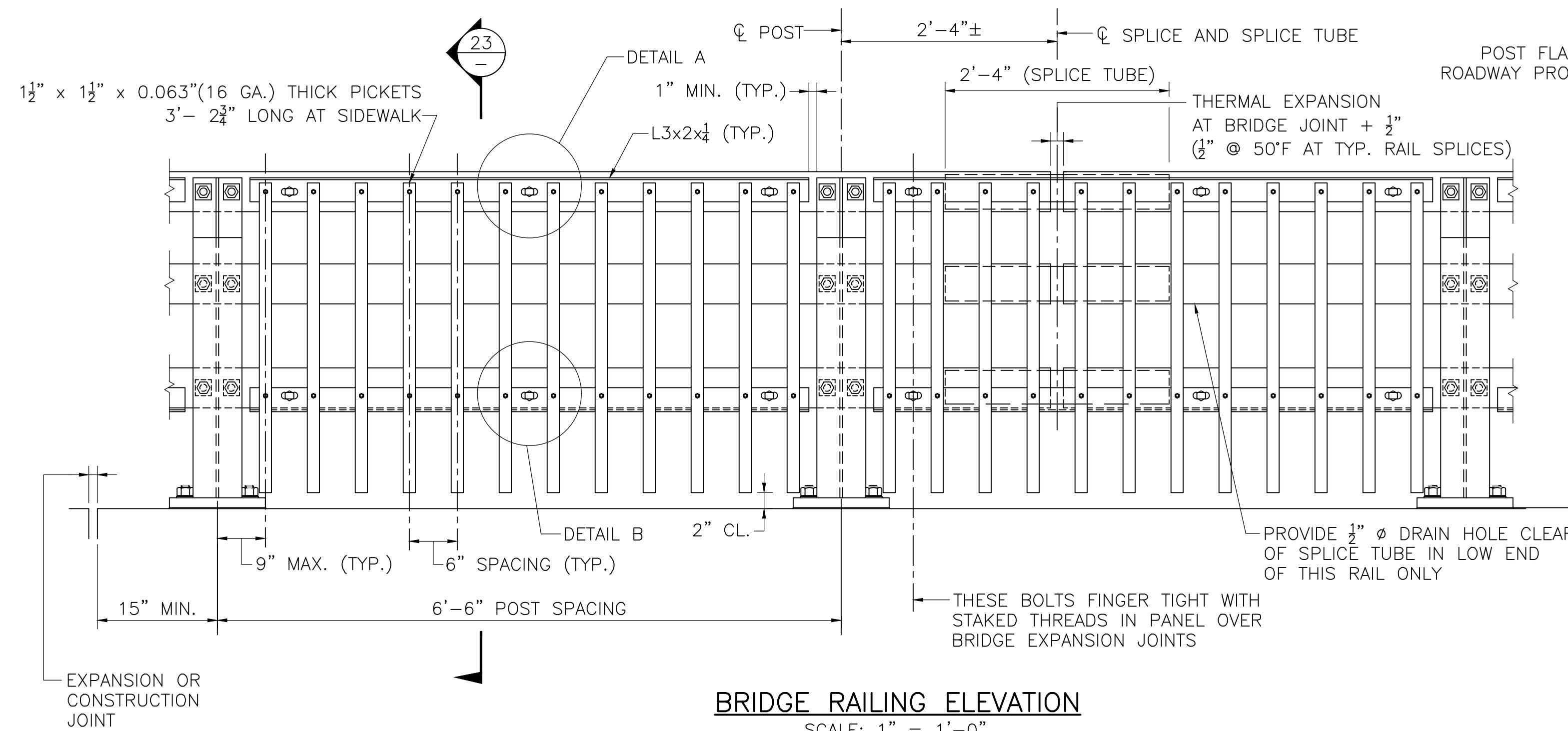
- NOTE:
- WINGWALL REINFORCEMENT AND STRIATIONS NOT SHOWN FOR CLARITY.

NOTES:

1. PRECAST GUARDRAIL TRANSITION SHALL BE 5000 PSI, 3/4 IN, 685 HP CEMENT CONCRETE.
2. GRAVEL BORROW SHALL BE PLACED AND THOROUGHLY COMPACTED TO THE GRADE OF 3" (MIN.) BELOW THE INTENDED BOTTOM OF THE PRECAST GUARDRAIL TRANSITION BASE AND TO A HEIGHT OF 2'-0" (MIN.) ON ALL SIDES OF THE TRANSITION BASE TO FORM A TRENCH IN WHICH TO SET THE TRANSITION. WHERE NO GRAVEL BORROW IS REQUIRED BELOW THE BASE, IT SHALL BE PLACED ON UNDISTURBED SOIL.
3. CONTRACTOR SHALL SET THE PRECAST GUARDRAIL TRANSITION TO THE REQUIRED ELEVATION AND ALIGNMENT, AND BACKFILL PRECAST GUARDRAIL TRANSITION WITH CONTROLLED DENSITY FILL (NON-EXCAVATABLE) TO THE ELEVATION SHOWN.
4. NOTES 1-3 APPLY TO PRECAST GUARDRAIL TRANSITIONS (NORTHEAST, NORTHWEST, SOUTHWEST) ONLY, AND DOES NOT APPLY TO THE CAST-IN-PLACE GUARDRAIL TRANSITION (SOUTHEAST).

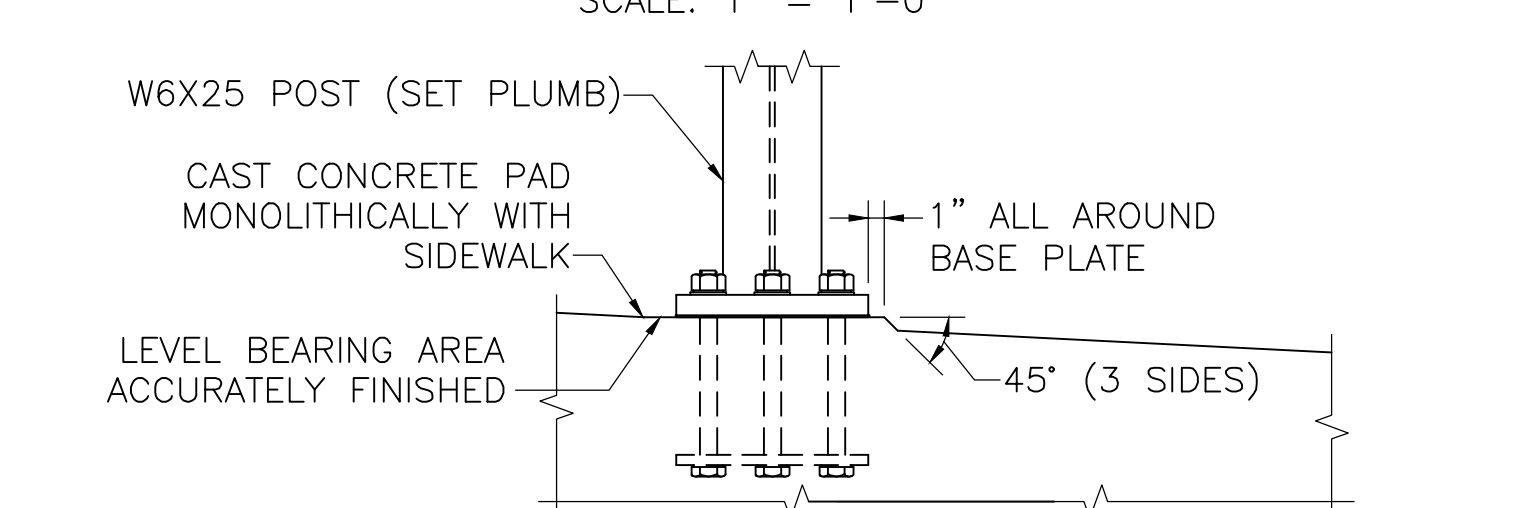
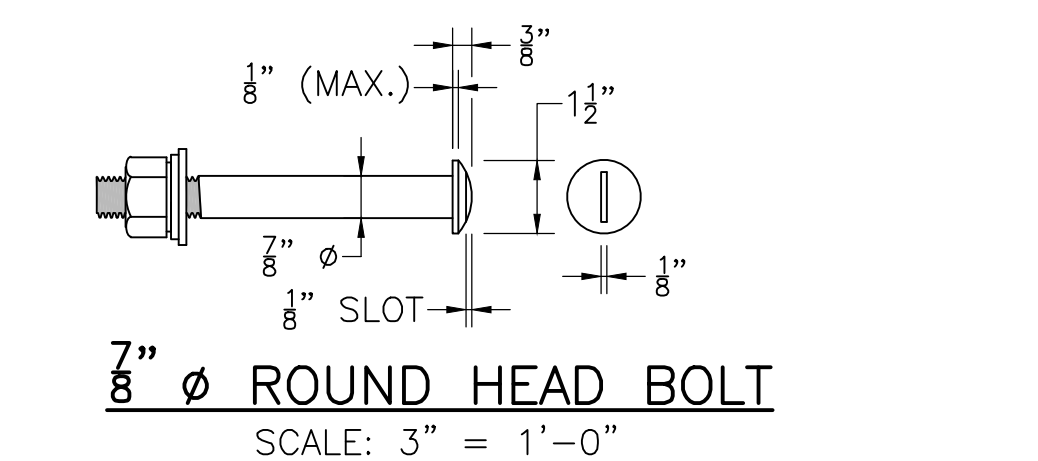
JUNE 29, 2024	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT	
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USE ONLY PRINTS OF LATEST DATE	

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(75)X	47	55
PROJECT FILE NO.		608640	

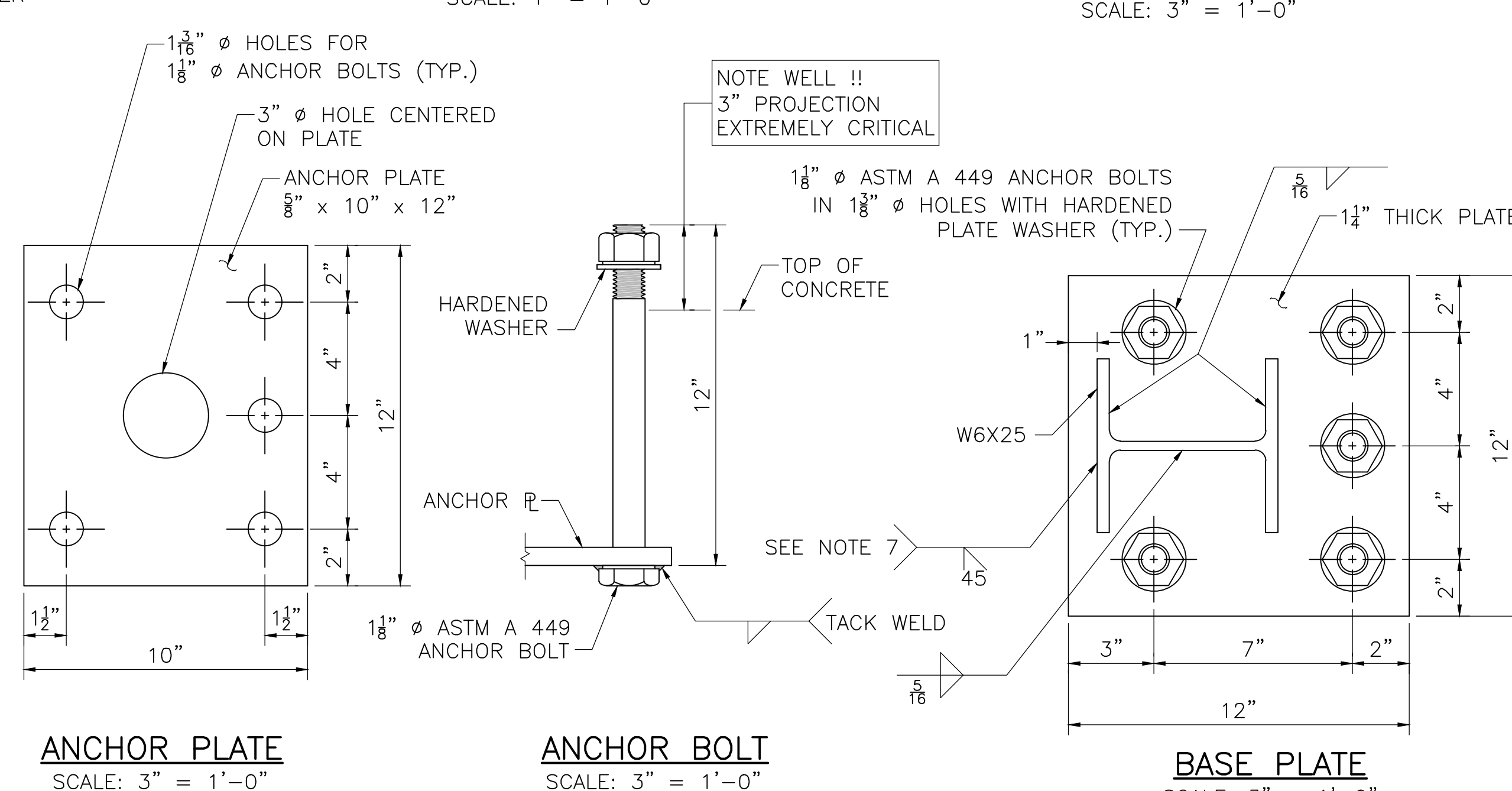
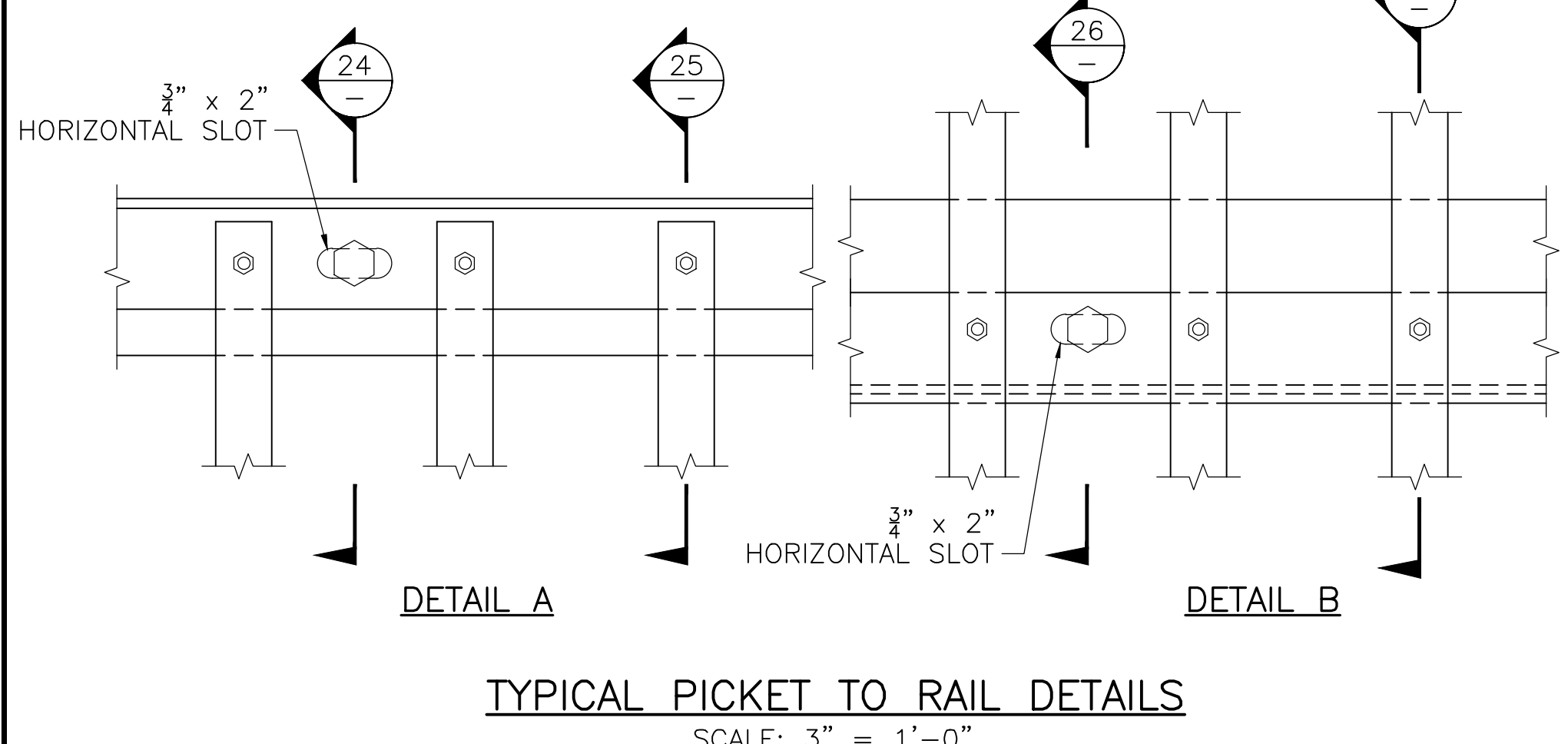
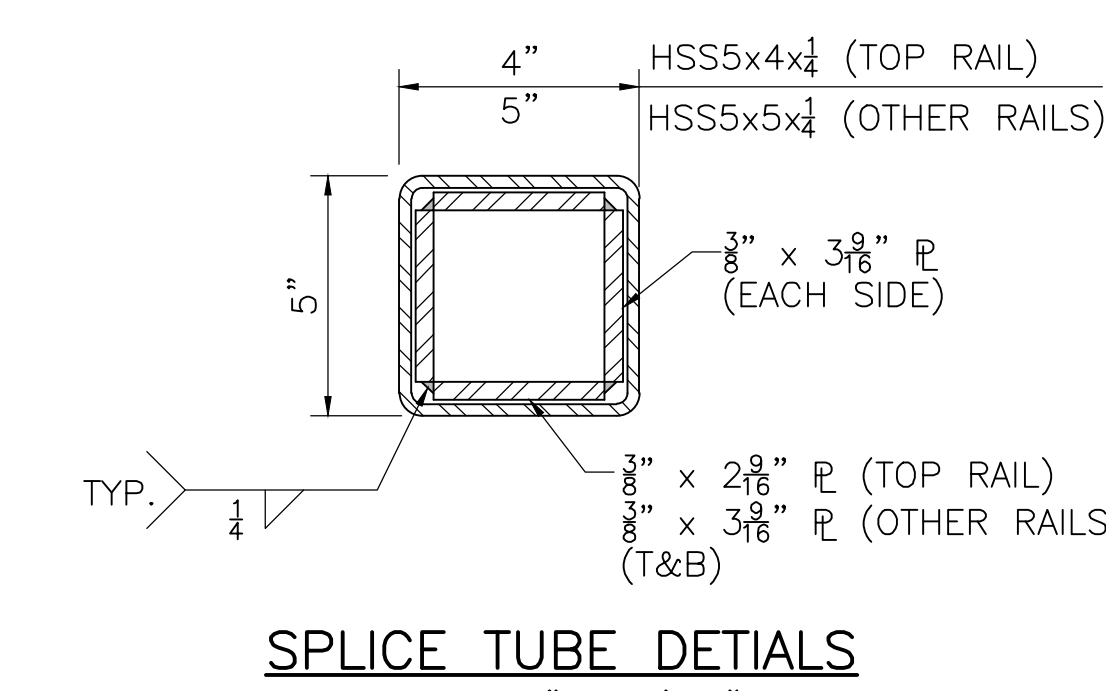
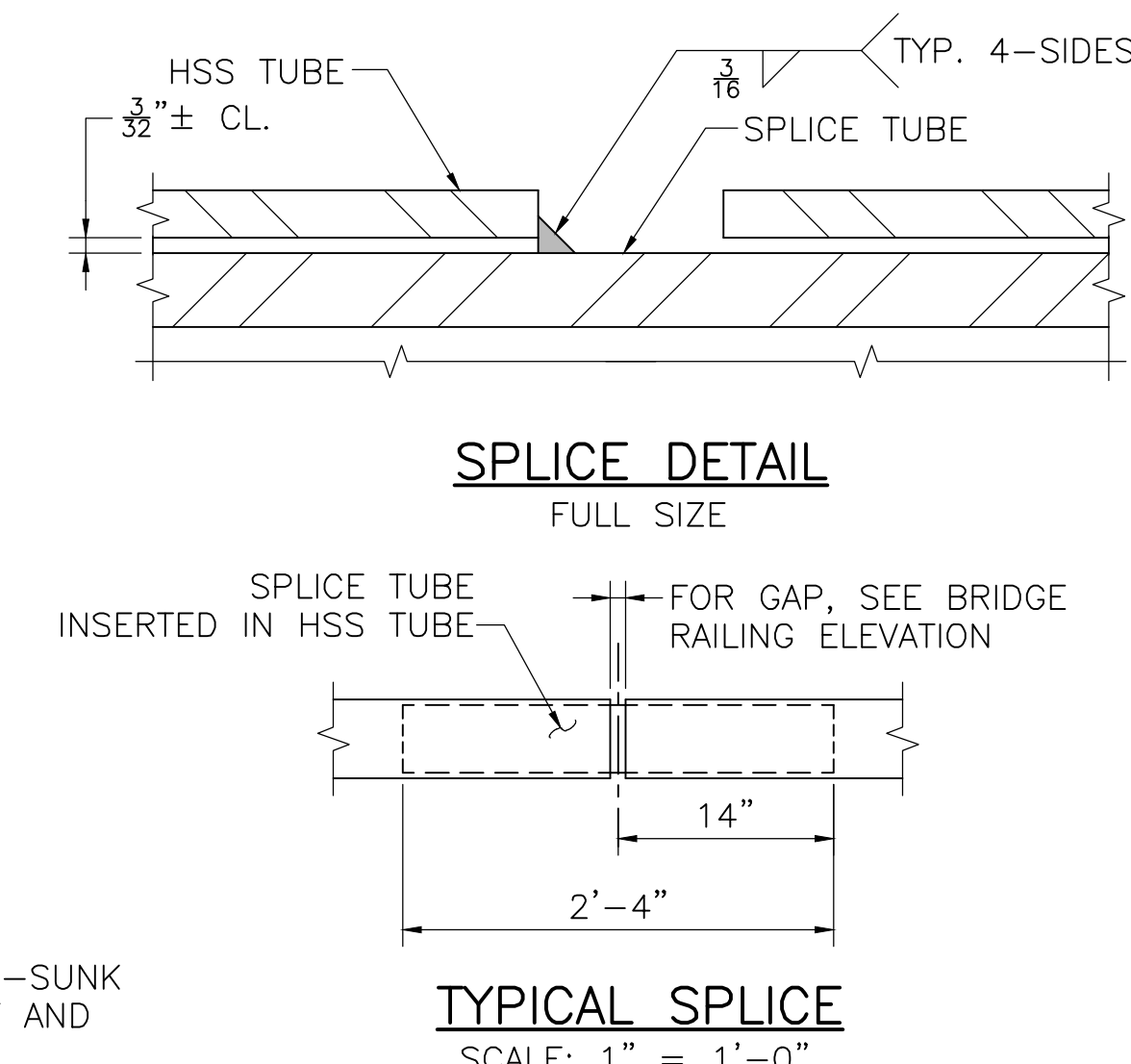
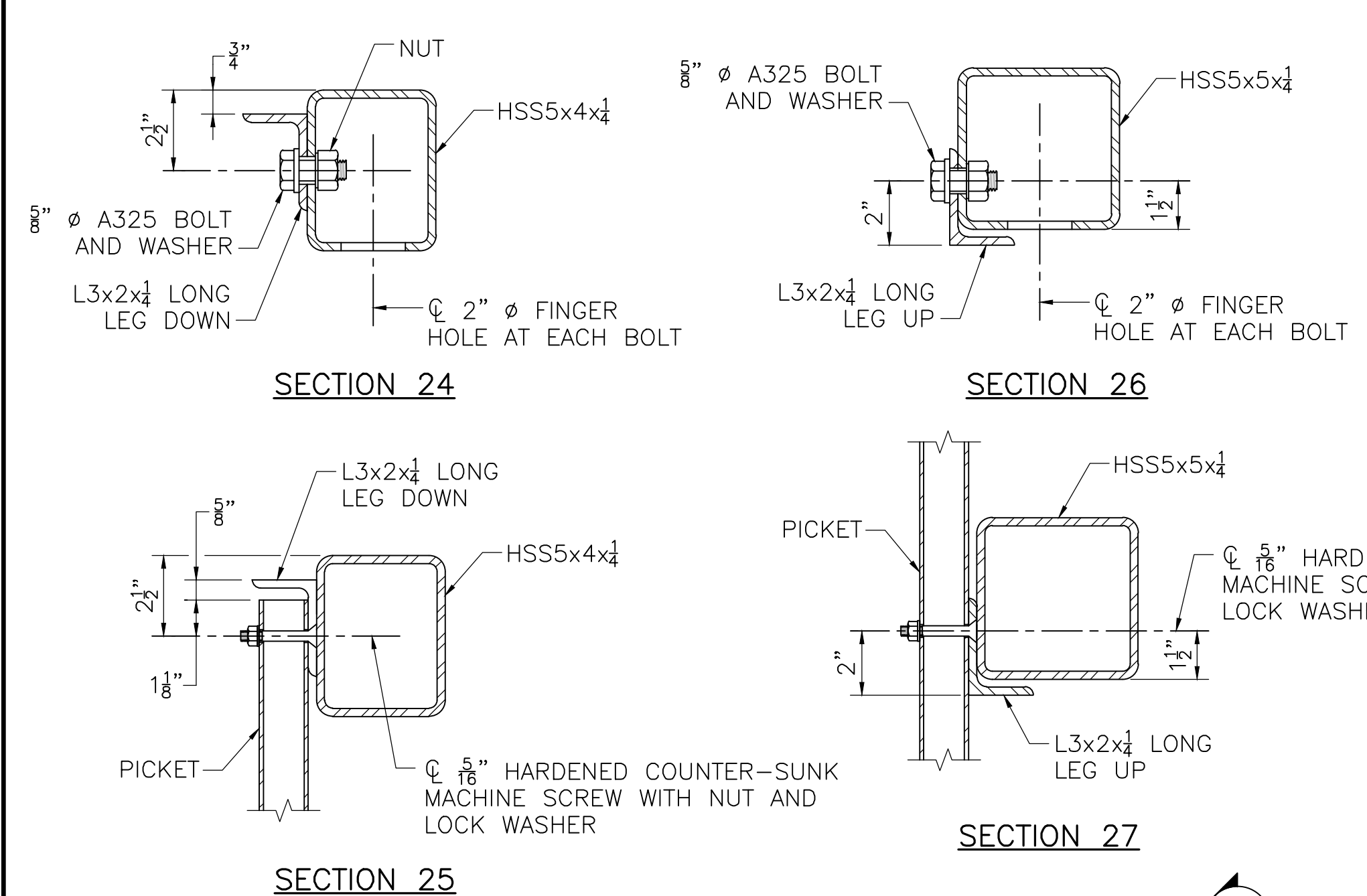


NOTE:
CONNECTIONS AT LOWER RAILS SHOWN.
CONNECTIONS AT TOP RAIL SIMILAR.

TYPICAL RAIL TO POST CONNECTIONS
SCALE: 1" = 1'-0"



- RAILING NOTES:
- RAIL POST AND BASE PLATES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M 270 GRADE 50. HOLLOW RAILING STRUCTURAL TUBING (HSS) SHALL CONFORM TO THE REQUIREMENTS OF ASTM A 500 WITH A CERTIFIED $F_y = 50$ KSI MINIMUM. THE MINIMUM HORIZONTAL BENDING RADIUS OF THE HSS TUBING SHALL BE 8 FEET. PICKET CARRIER ANGLES, ANCHOR PLATES, AND SPLICE TUBE PLATES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M 270 GRADE 36. PICKET TUBING SHALL CONFORM TO ASTM A 513 WITH $F_y = 36$ KSI MIN. OR A 500 GRADE B.
 - ALL STEEL (EXCEPT THE 3/8" ANCHOR PLATE AND FASTENERS) SHALL BE GALVANIZED AND PAINTED BLACK (FEDERAL STD. 595B?? COLOR NO. XXXXX). ANCHOR PLATE SHALL BE GALVANIZED ONLY. HEADS OF 7/8" Ø ROUND HEAD BOLTS SHALL BE PAINTED TO MATCH RAIL.
 - ANCHOR BOLTS SHALL BE SET WITH TEMPLATES. THE NUT SECURING THE POST BASE PLATE TO THE CONCRETE SHALL BE TIGHTENED TO A SNUG FIT AND GIVEN AN ADDITIONAL 1/8 TURN AFTER STEEL IS IN PLACE.
 - RAILS SHALL BE CONTINUOUS OVER A MINIMUM OF FOUR (4) POSTS WITHOUT SPLICES WHERE POSSIBLE. RAILS SHALL BE SPLICED IN THE PANELS OVER EXPANSION JOINT.
 - ENDS OF TUBE SECTIONS SHALL BE SAWED. GRIND SMOOTH EXPOSED EDGES. ALL CUT ENDS SHALL BE TRUE AND SMOOTH.
 - ALL POSTS TO BE PLUMB WHEN PROFILE GRADE EXCEEDS 1.5%. FOR PROFILE GRADES LESS THAN 1.5%, POSTS SHALL BE SET PERPENDICULAR TO GRADE.
 - POST FLANGE WELD DOES NOT REQUIRE MAGNETIC PARTICLE TESTING. WELD SHALL BE BACK-GOUGED ON BACK SIDE EXCEPT AT WEB. WELD IS THE SAME ON BOTH FLANGES.
 - 7/8" Ø ROUND HEAD BOLTS SHALL CONFORM TO THE CHEMICAL AND PHYSICAL REQUIREMENTS OF AASHTO M 164.



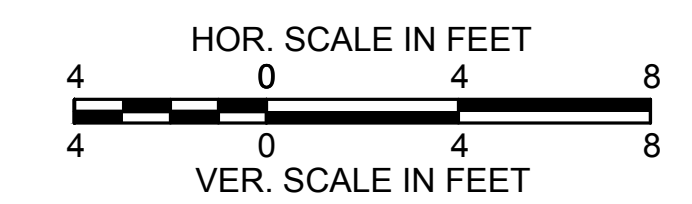
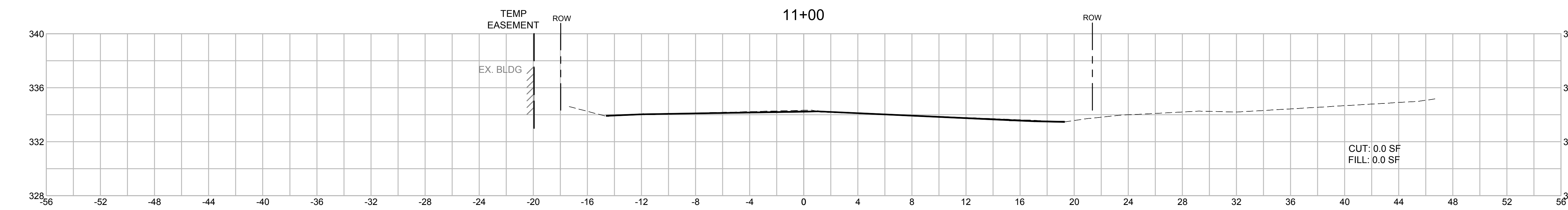
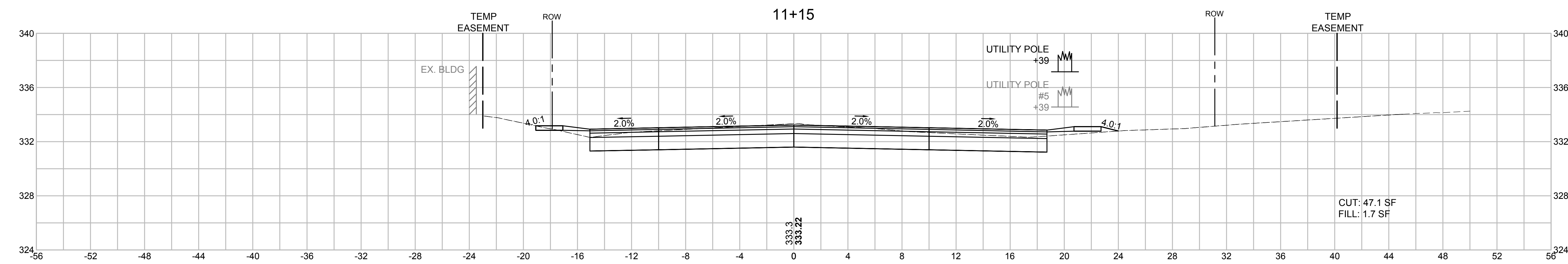
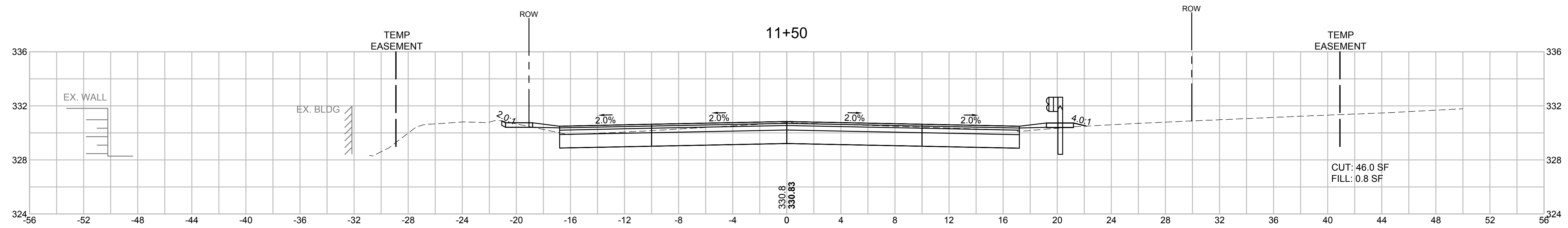
DATE	DESCRIPTION
JUNE 29, 2024	ISSUED FOR CONSTRUCTION
THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT	
AUTHORIZED SIGNATORY:	STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE	

Plotted on 10-Jun-2024 12:12 PM
608640_BR29(RAILING DETAILS)DWG
29-JUNE-2024
Final Structural Submittal (SF)

**SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	48	55
PROJECT FILE NO.		608640	

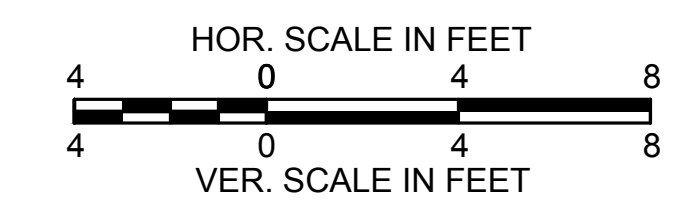
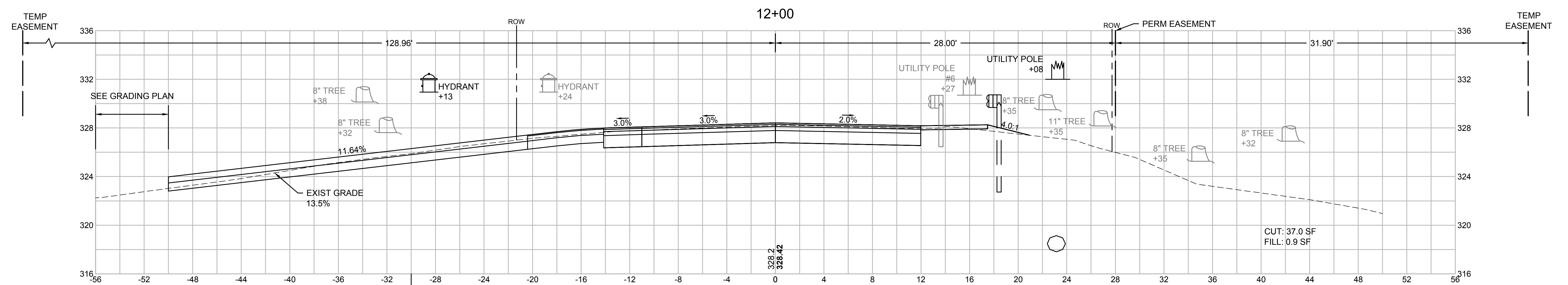
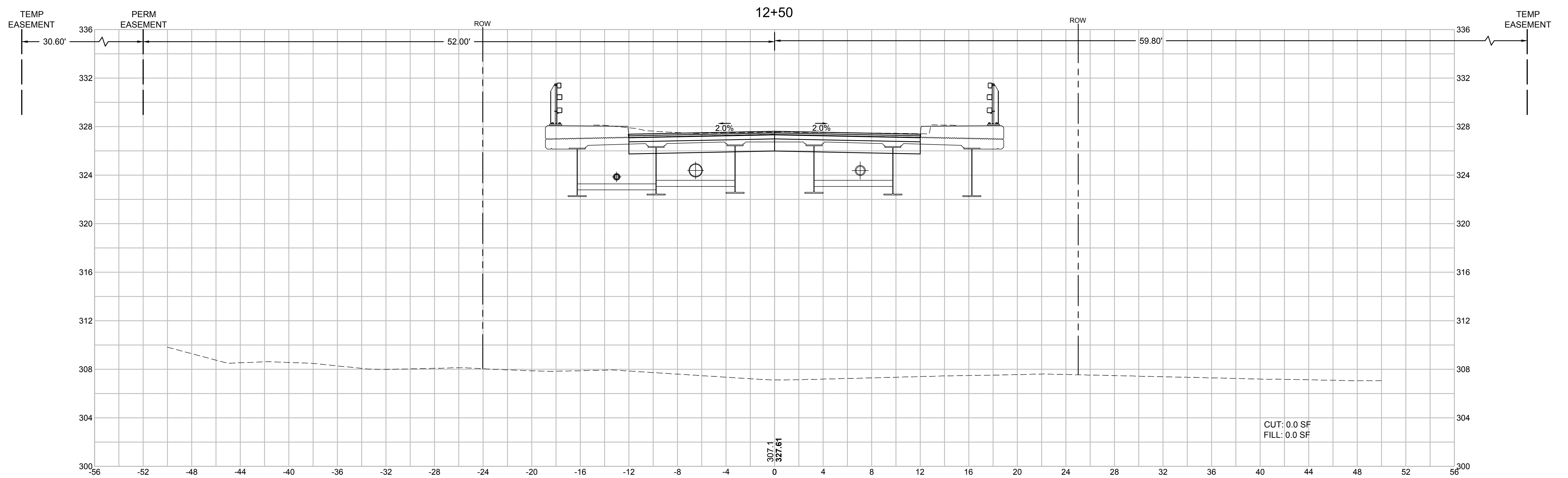
**CROSS SECTIONS
DEPOT STREET**



**SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	49	55
PROJECT FILE NO.		608640	

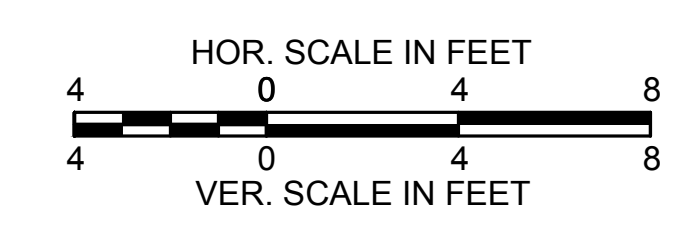
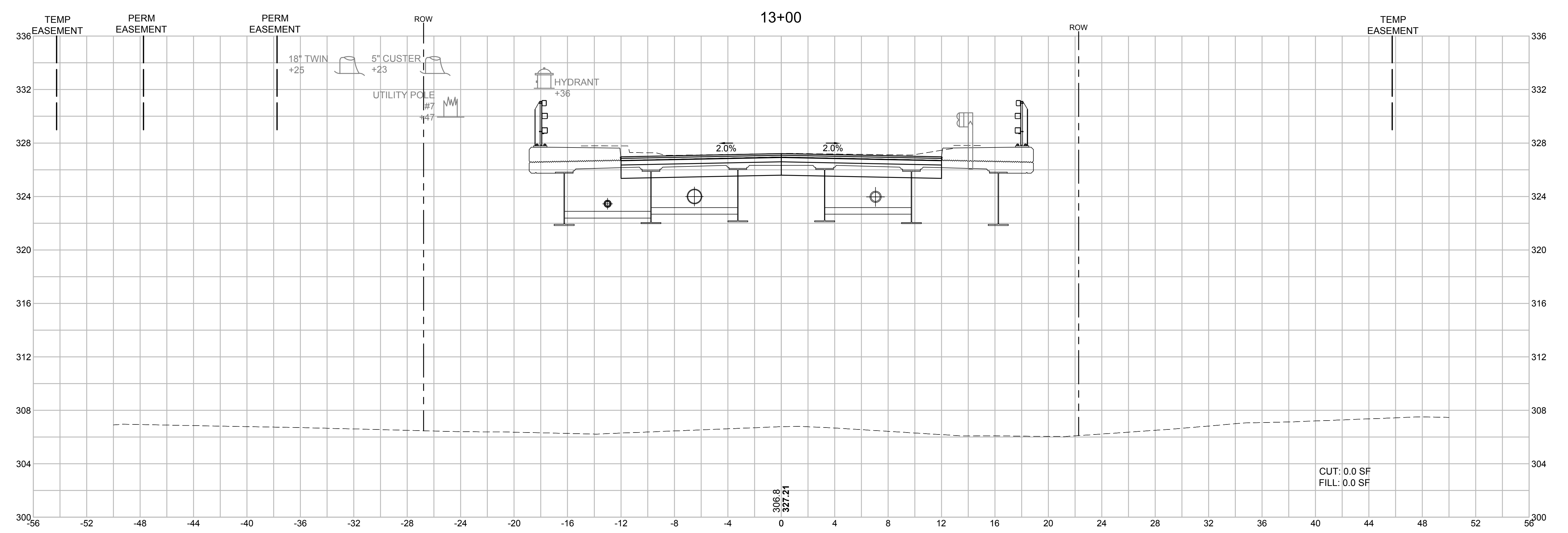
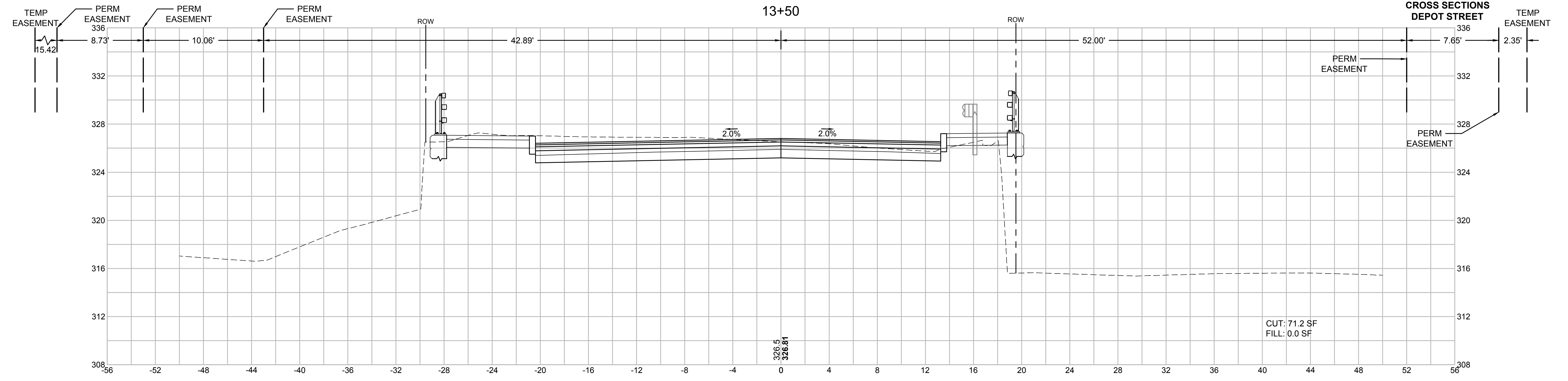
**CROSS SECTIONS
DEPOT STREET**



**SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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PROJECT FILE NO.		608640	

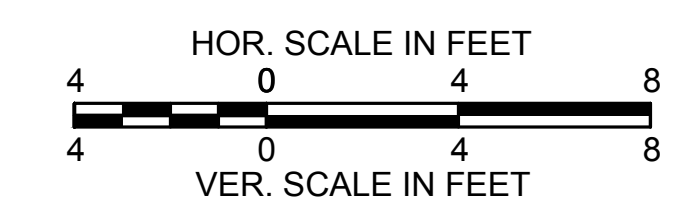
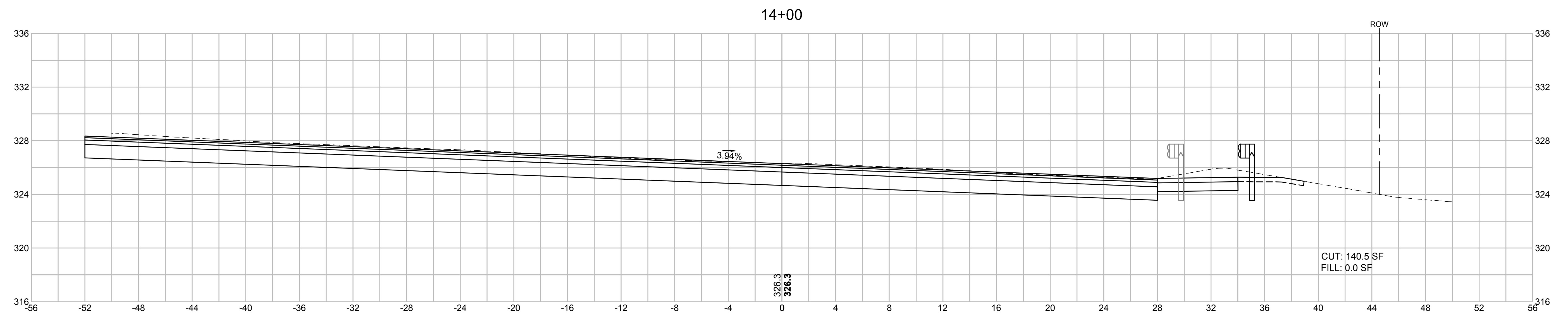
**CROSS SECTIONS
DEPOT STREET**



SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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PROJECT FILE NO.		608640	

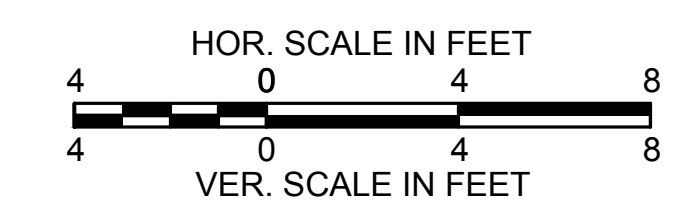
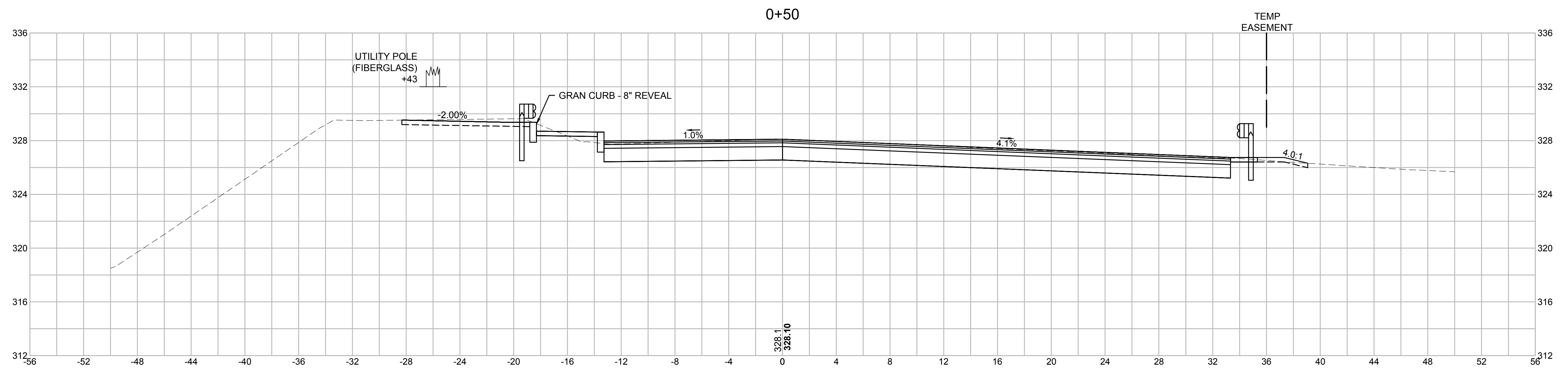
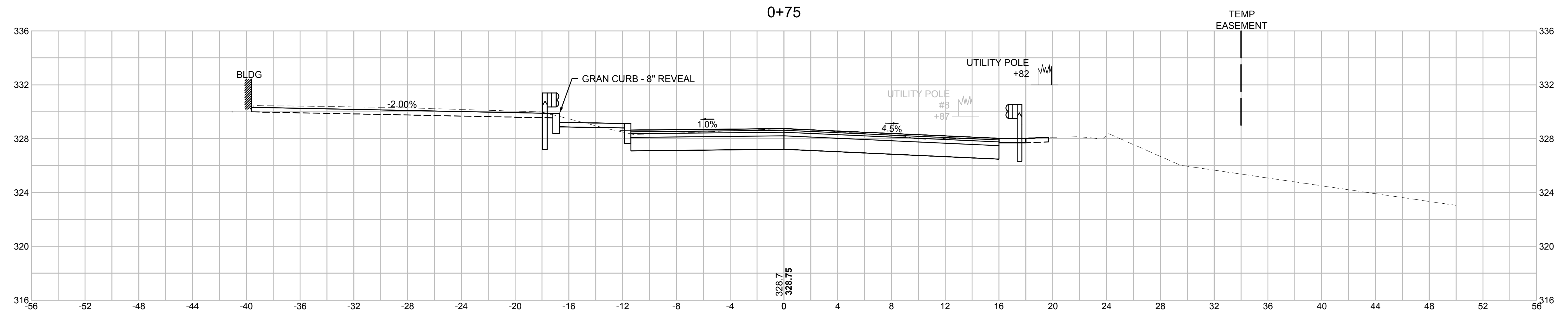
CROSS SECTIONS
DEPOT STREET



SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	52	55
PROJECT FILE NO.		608640	

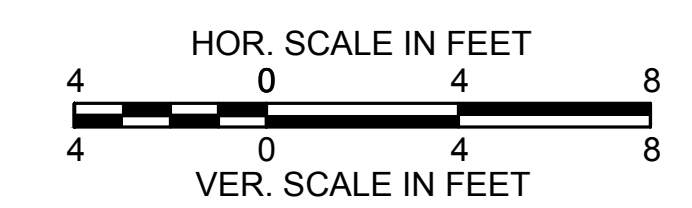
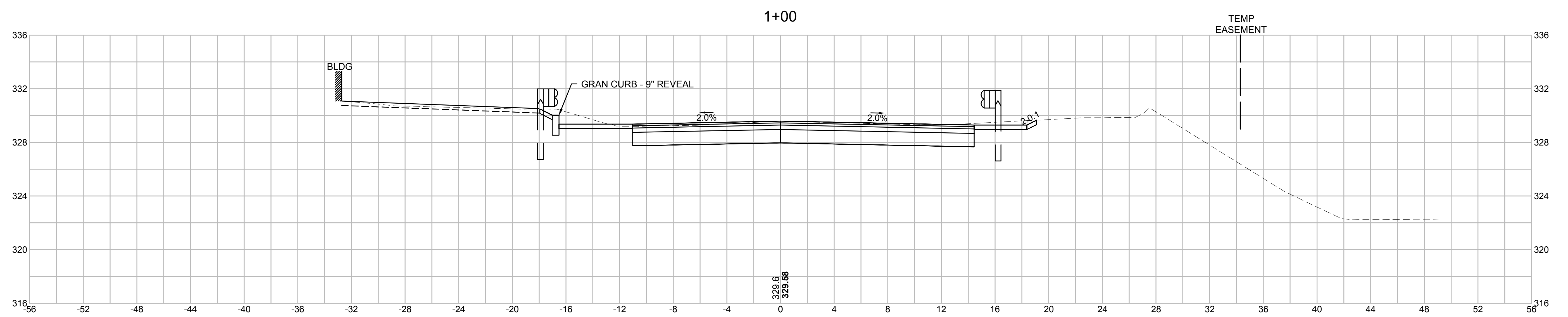
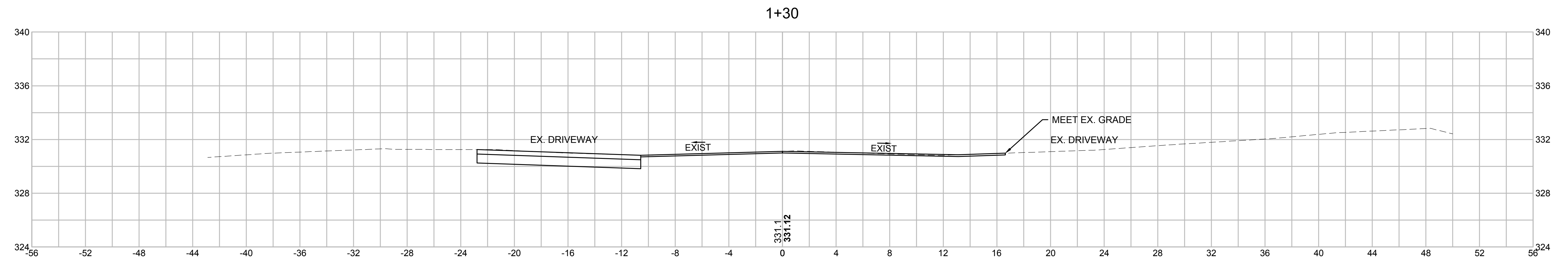
CROSS SECTIONS
DEPOT STREET



**SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	53	55
PROJECT FILE NO.		608640	

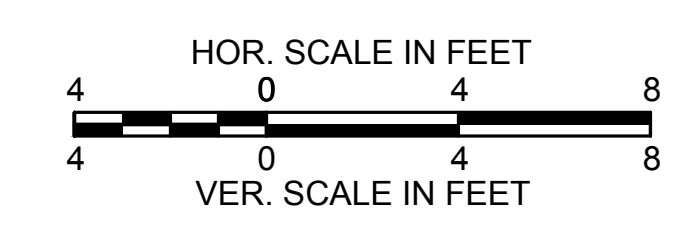
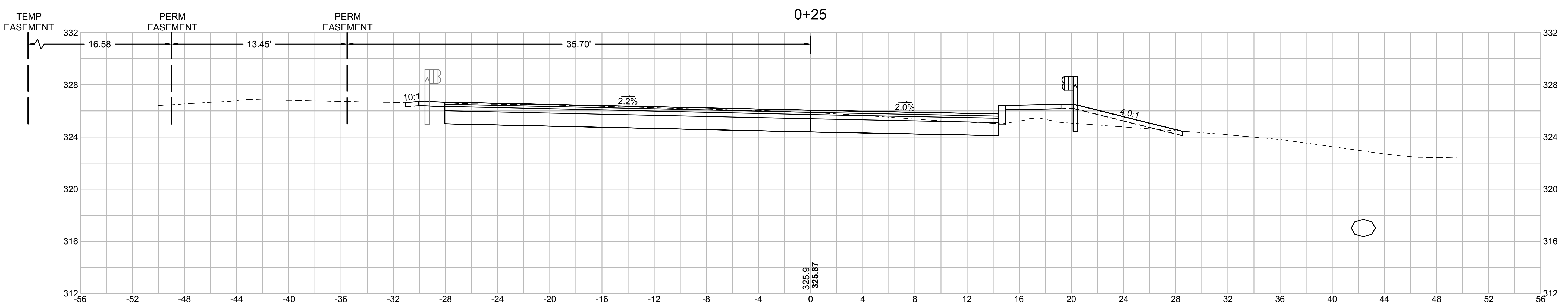
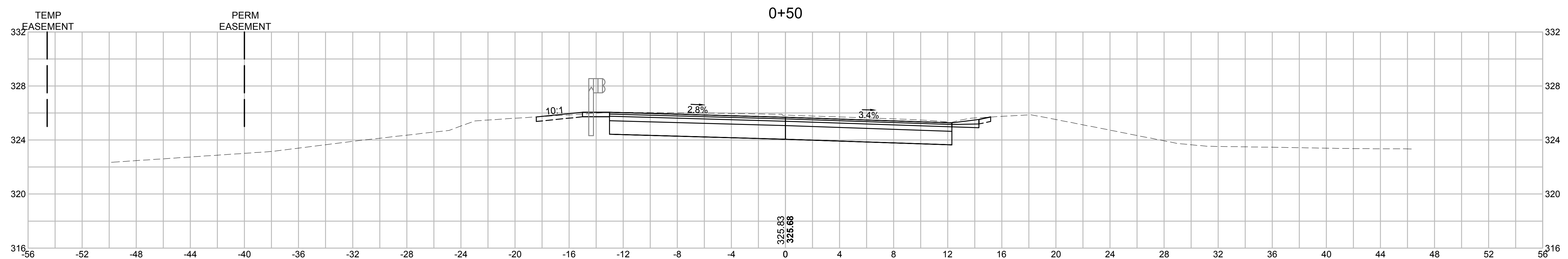
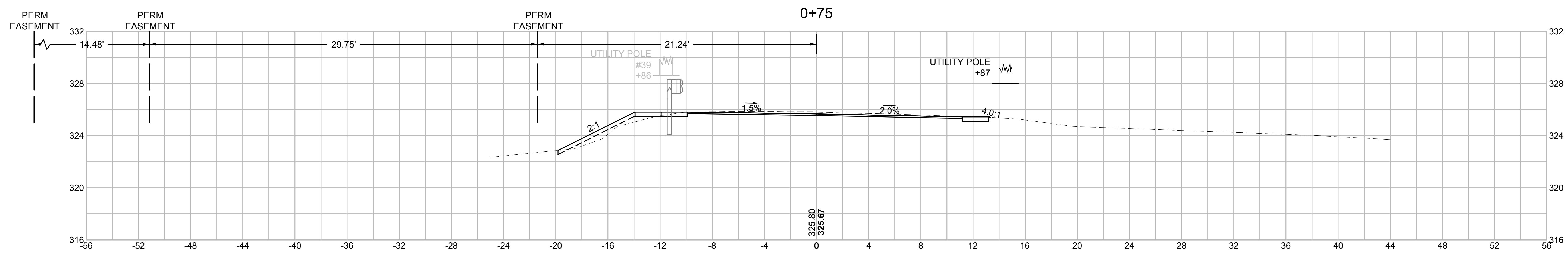
**CROSS SECTIONS
DEPOT STREET**



**SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	54	55
PROJECT FILE NO.		608640	

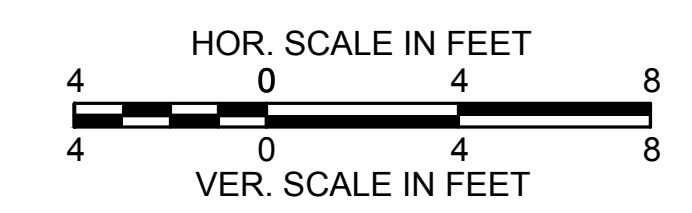
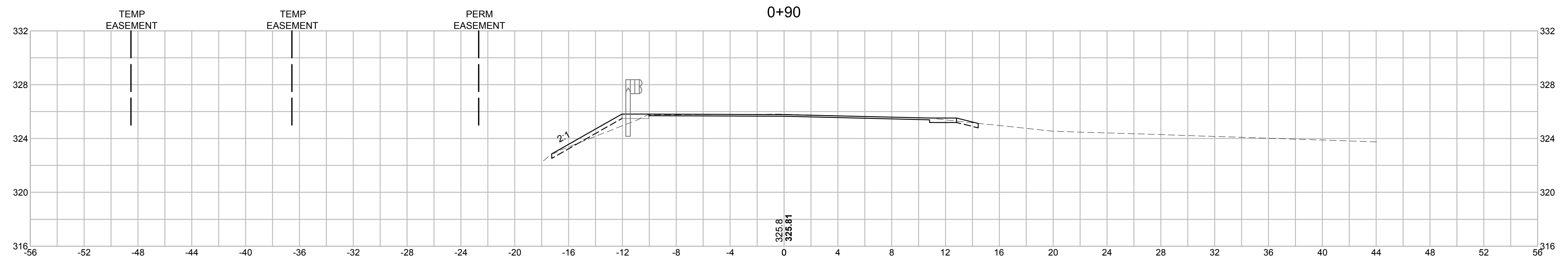
**CROSS SECTIONS
FOLLETTE STREET**

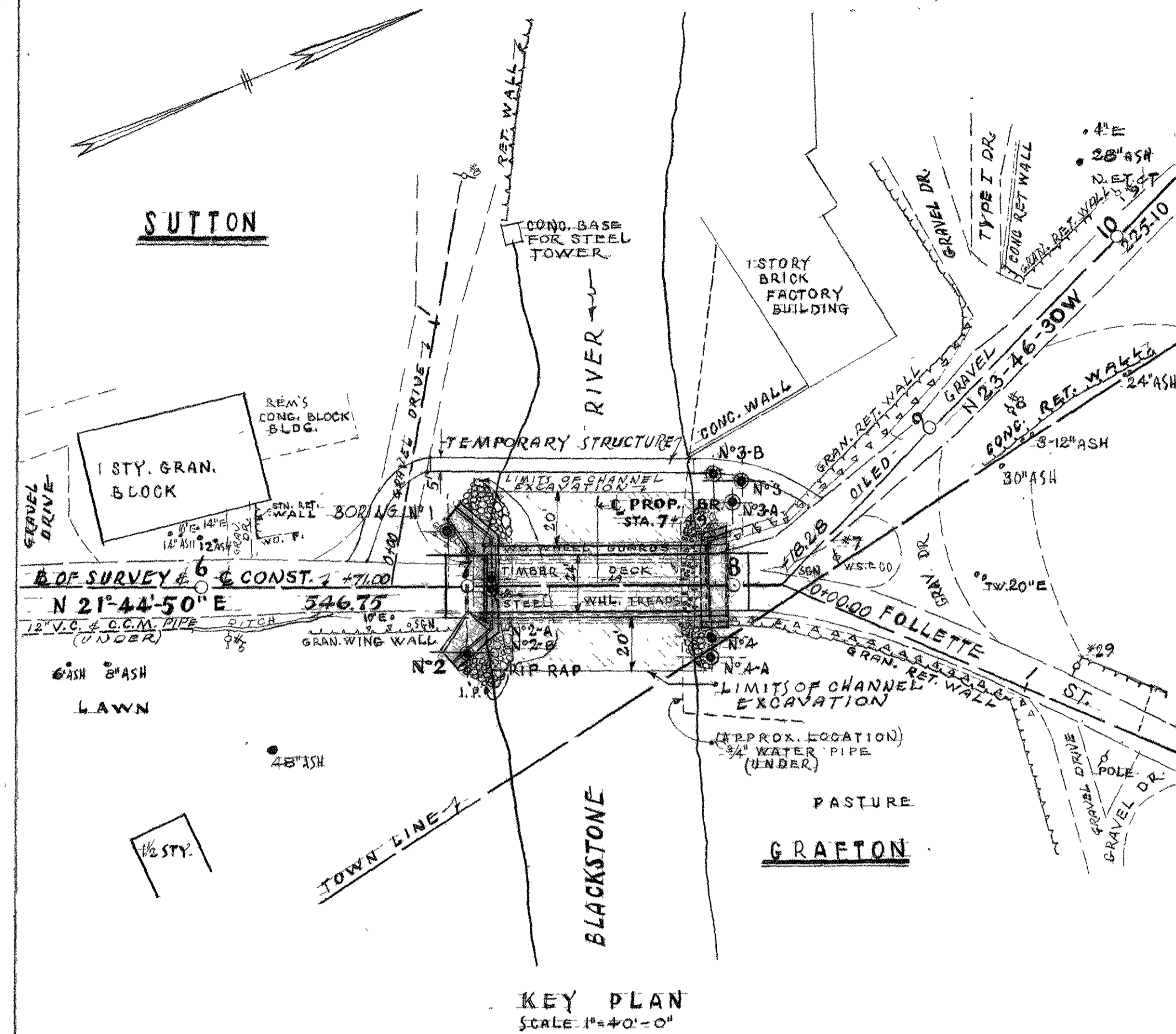


SUTTON & GRAFTON
DEPOT STREET OVER BLACKSTONE RIVER

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(755)X	55	55
PROJECT FILE NO.		608640	

CROSS SECTIONS
FOLLETTE STREET





KEY PLAN
SCALE: 1"=40'-0"

EL. 323.96	EL. 317.3	EL. 314.0	EL. 309.6	EL. 310.1	EL. 309.5	EL. 312.1	EL. 311.6	
LOAM SOME FINE SAND	FINE SAND TRACE OF INORGANIC SILT	DO SAMPLES DROVE ROD TO 510' REFUSAL WITH SLUDGE HAMMER	FINE SAND SOME GRAVEL LOOSE	MEDIUM SAND	REFUSAL	MEDIUM SAND SOME GRAVEL	ORGANIC SILT & PEAT	SOFT
2	6	20	20	20	32	32	32	
310	310	310	310	310	310	310	310	
309.3	309.3	309.6	309.6	309.6	309.5	309.5	309.4	
307.3	307.3	307.3	307.3	307.3	307.3	307.3	307.3	
304.3	304.3	304.3	304.3	304.3	304.3	304.3	304.3	
303.0	303.0	303.0	303.0	303.0	303.0	303.0	303.0	
299.075	299.075	299.120	299.120	299.120	298.5120	299.104	299.104	
REFUSAL		BOULDER CONDITIONS		REFUSAL		REFUSAL		
PROP. BOTTOM OF FOOTINGS								
N1	N2	N2-A	N2-B	N3	N3-A	N3-B	N4	N4-A

BORING DATA

SCALE 1"=4'-0" BORINGS TAKEN JUNE, 1956 BY AMERICAN DRILLING CO. INC.

BORING NOTES

LOCATIONS OF BORINGS SHOWN ON KEY PLAN THUS: (Symbol) N1. BORINGS TAKEN FOR PURPOSE OF DESIGN AND SHOW CONDITIONS AT BORING POINTS ONLY, BUT DO NOT NECESSARILY SHOW NATURE OF MATERIALS TO BE ENCOUNTERED DURING CONSTRUCTION. FIGURES IN COLUMNS INDICATE BLOWS PER FOOT ON ONE INCH ϕ PIPE PRODUCED BY 30 INCH FALL OF 140 POUND HAMMER. BORING SAMPLES MAY BE SEEN AT THE DEPARTMENT'S LABORATORY IN THE MAINTENANCE BUILDING ON ROUTE 9 IN WELLESLEY.

GENERAL NOTES

FOUNDATIONS:

MAY BE ALTERED, IF NECESSARY, TO SUIT CONDITIONS ENCOUNTERED IN CONSTRUCTION.

DATE:

TO BE PLACED ON THE INSIDE FACES OF THE NORTHWESTERLY AND SOUTHEASTERLY END POST AS SHOWN IN DETAIL ON SHEET 3. A SHEET SHOWING SIZE AND CHARACTER OF NUMERALS WILL BE FURNISHED.

DESIGN:

ACCORDING TO SPECIFICATIONS OF THE AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS (1953 ED.) FOR H 20-44 LOADING.

BENCH MARK:

B.M. STA. 8775, RT. 49' VERT. B.S.P. TWIN 18" E.L.M. EL. 326.629. SEA LEVEL DATUM OF 1929.

REINFORCEMENT:

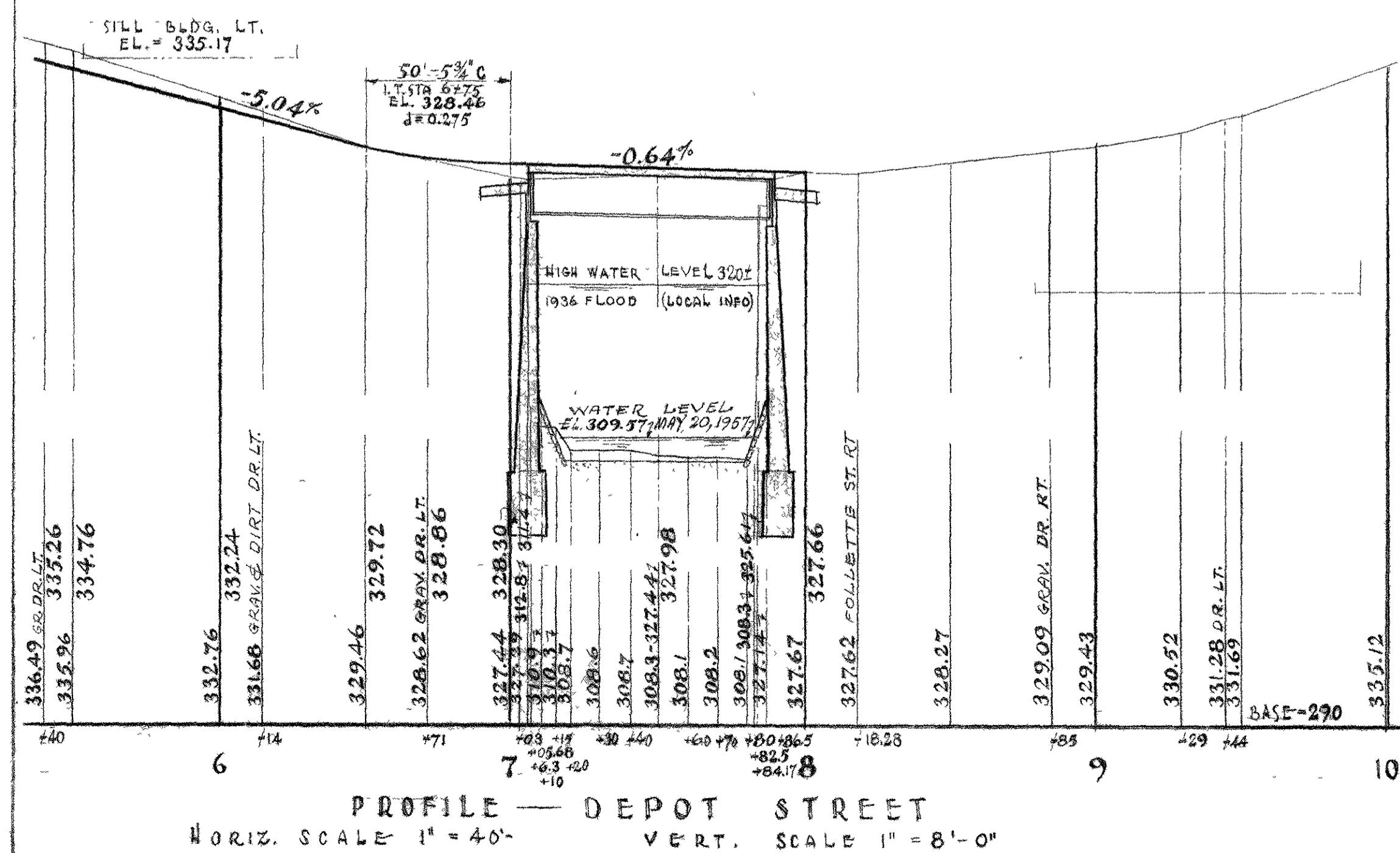
ALL BARS SHALL HAVE DEFORMATIONS CONFORMING TO A.S.T.M. DESIGNATION A305. UNLESS OTHERWISE SHOWN ON THE PLANS, REINFORCING BARS SHALL BE LAPPED 20 DIAMETERS TO MAKE A SPLICE, EXCEPT THAT MAIN REINFORCING BARS NEAR THE TOP OF SLABS AND BEAMS HAVING MORE THAN 12 INCHES OF CONCRETE UNDER THE BARS SHALL BE LAPPED 35 DIAMETERS TO MAKE A SPLICE.

HYDRAULIC DATA:

BRIDGE OPENING PROVIDED FOR A RARE FLOOD. ESTIMATED DISCHARGE = 9220 CU. FT. PER SEC. VELOCITY OF FLOOD FLOW = 8.3 FT. PER SEC. SIZE OF DRAINAGE AREA = 90.4 SQ. MILES.

ESTIMATED QUANTITIES
(NOT GUARANTEED)

CLASS A ROCK EXCAVATION	5 CU. YDS.
BRIDGE EXCAVATION	1000 CU. YDS.
CHANNEL EXCAVATION	70 CU. YDS.
CLASS B ROCK EXCAVATION	5 CU. YDS.
GRAVEL BORROW	460 CU. YDS.
RIP RAP	80 CU. YDS.
TEMPORARY STRUCTURE	1 LUMP SUM
REMOVAL OF PRESENT SUPERSTRUCTURE	1 LUMP SUM
STONE MASONRY WALLS REM. & REB. (CEM.)	50 CU. YDS.
BRIDGE STRUCTURE	1 LUMP SUM



PROFILE - DEPOT STREET
HORIZ. SCALE: 1"=40'-0" VERT. SCALE: 1"=8'-0"

DES. JUNE 22, 1957 ISSUED FOR CONSTRUCTION

DESIGNER: DESPOTOPULOS
D.R. DESPOTOPULOS
SMITH

CHEK. CURRIER

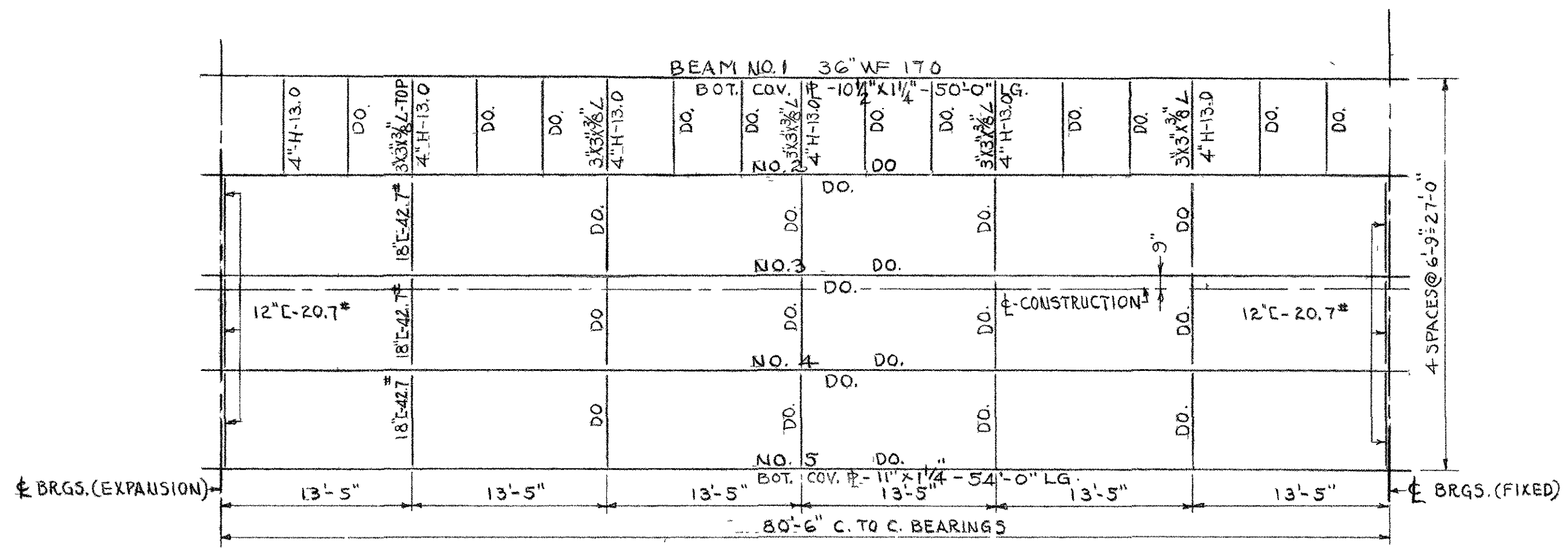
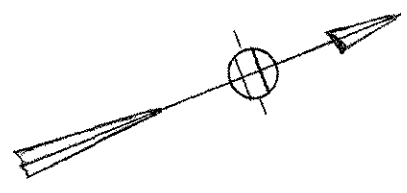
APPROVED FOR DES. [Signature]

ARCH. [Signature]

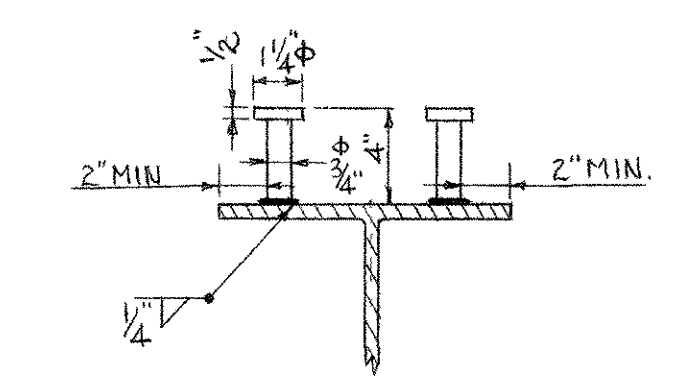
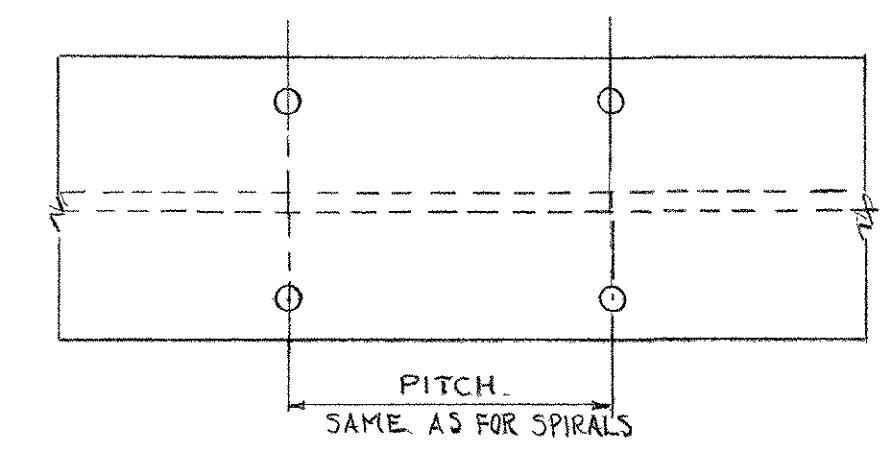
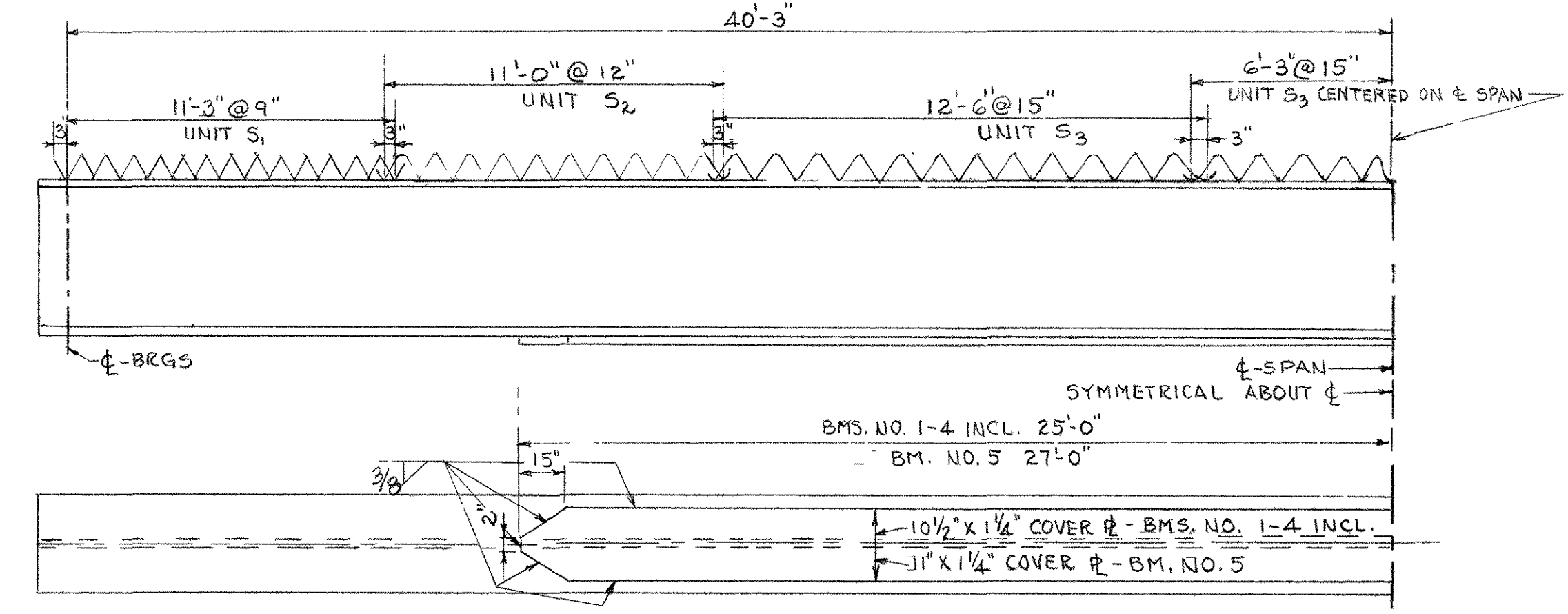
BRIDGE ENGINEER: [Signature]

CHIEF ENGINEER: [Signature]

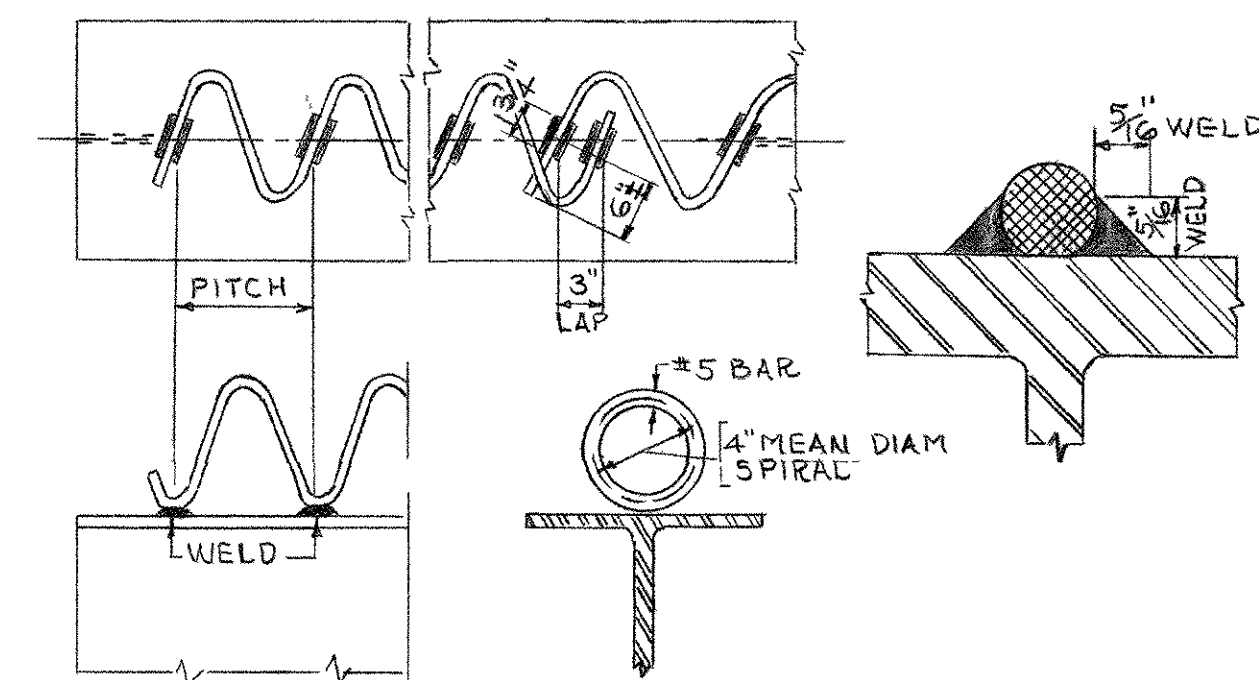
THE COMMONWEALTH OF MASSACHUSETTS
PROPOSED BRIDGE
SUTTON
DEPOT STREET OVER
BLACKSTONE RIVER
SCALES AS NOTED
OFFICE OF
DEPARTMENT OF PUBLIC WORKS
100 NASHUA ST. - BOSTON, MASS
JUNE 1957



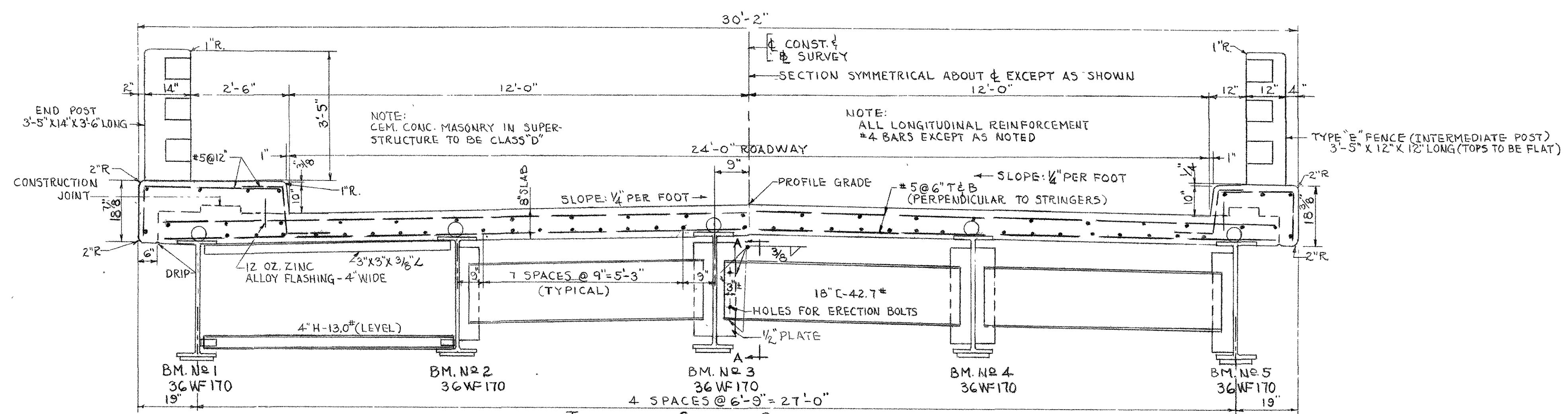
STEEL LAYOUT
SCALE: 1/8" = 1'-0"



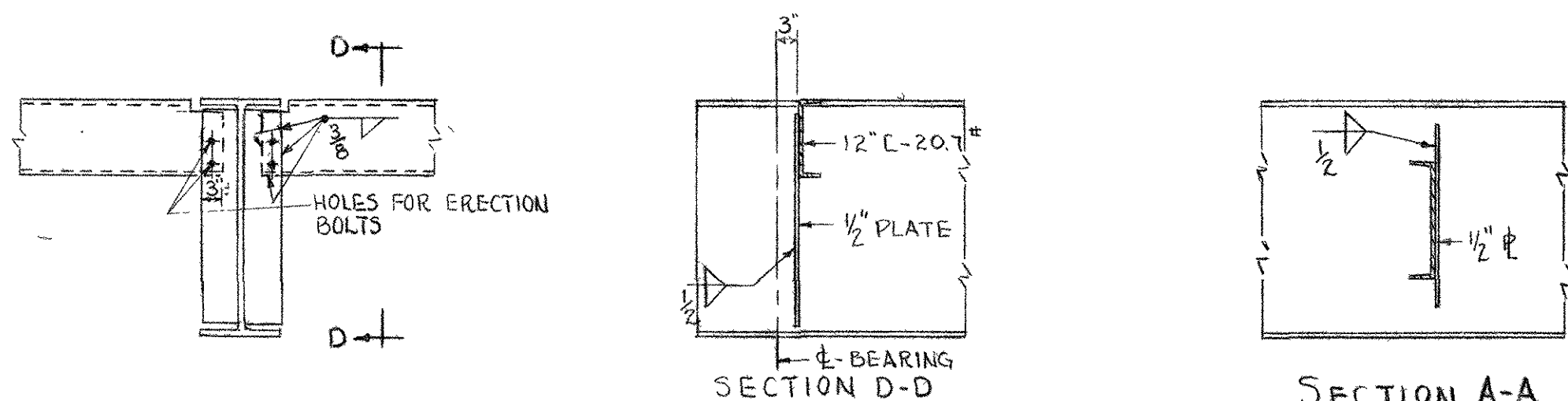
STUD CONNECTOR DETAILS
(ALTERNATE FOR SPIRAL REINF.)
NO SCALE



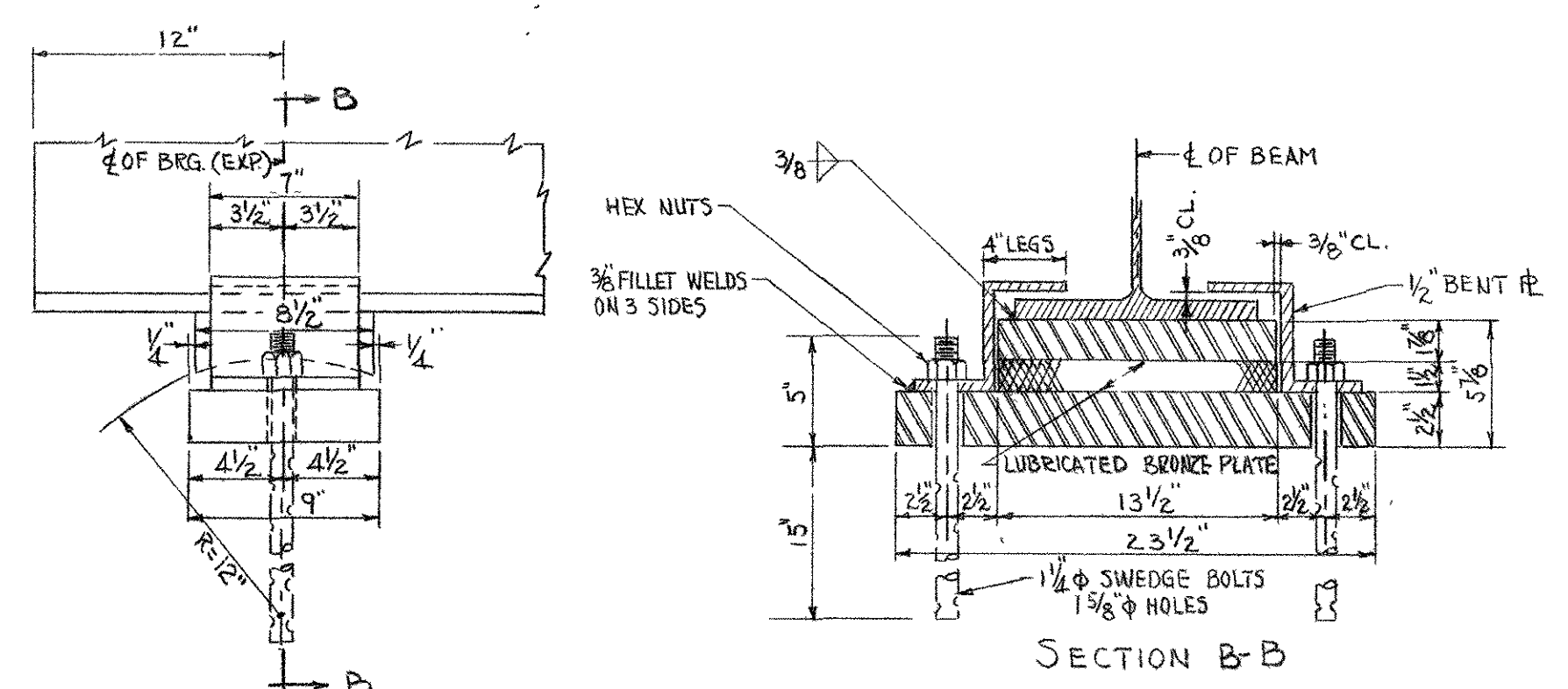
DETAILS OF SPIRAL REINFORCEMENT
NO SCALE



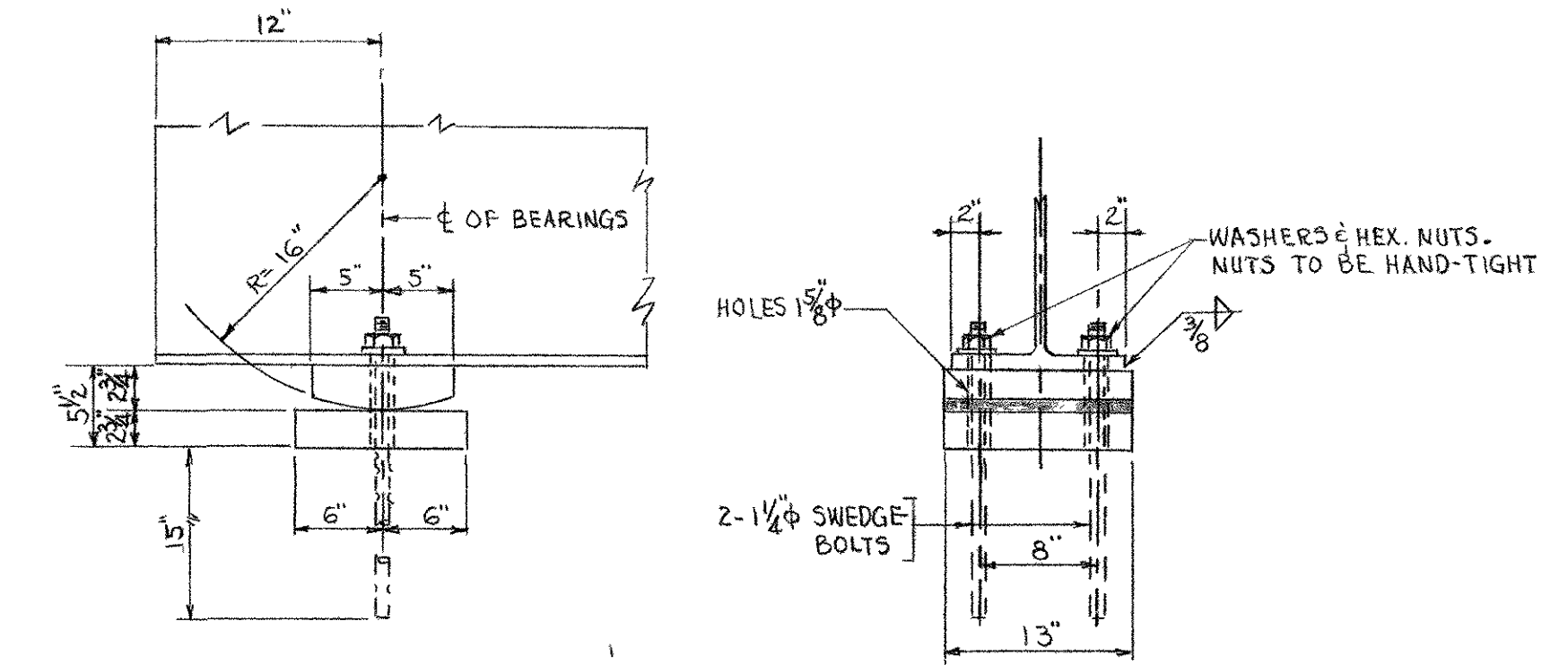
TYPICAL CROSS SECTION
SCALE: 1/2" = 1'-0"



WELDED END DIAPHRAGM CONNECTION
SCALE: 1/2" = 1'-0"

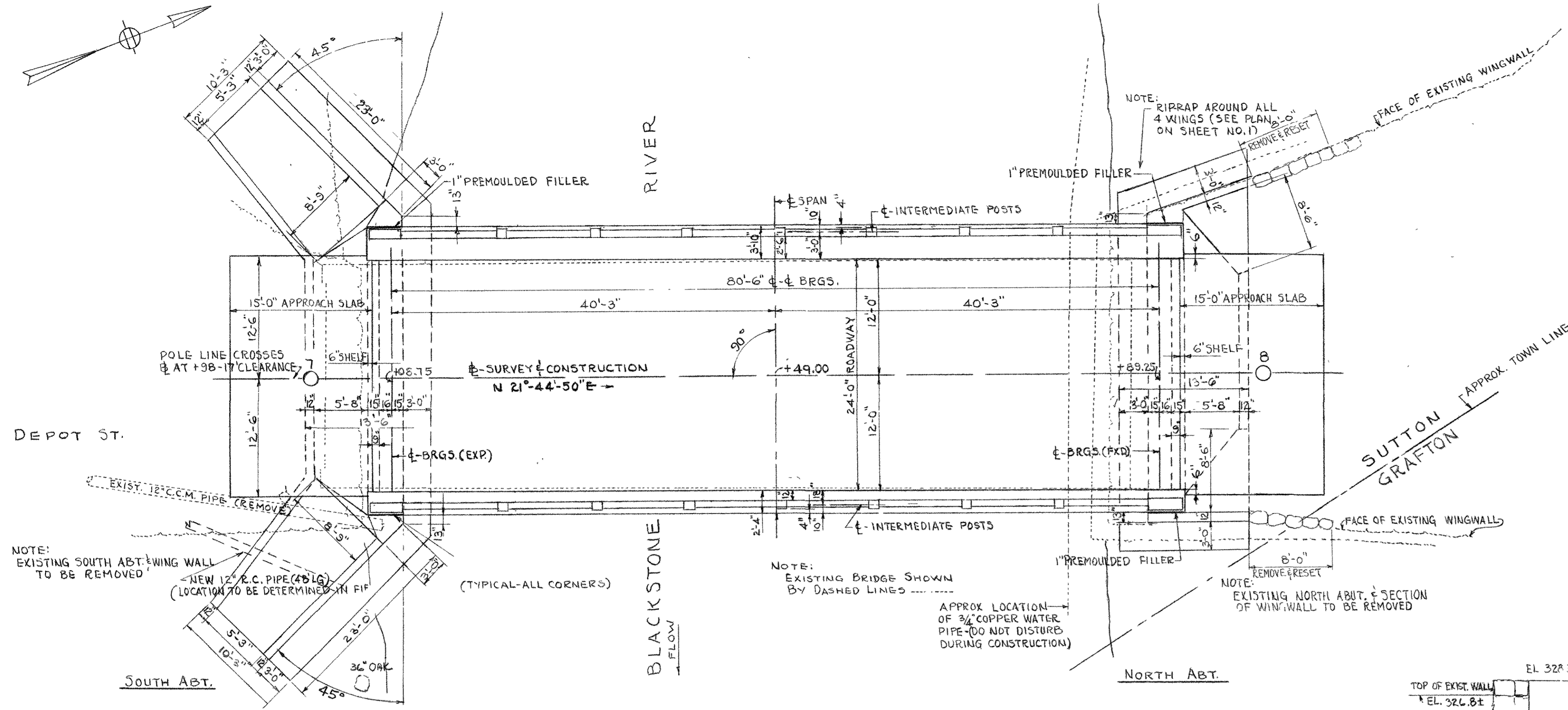


EXPANSION BEARINGS
SCALE: 1/2" = 1'-0"

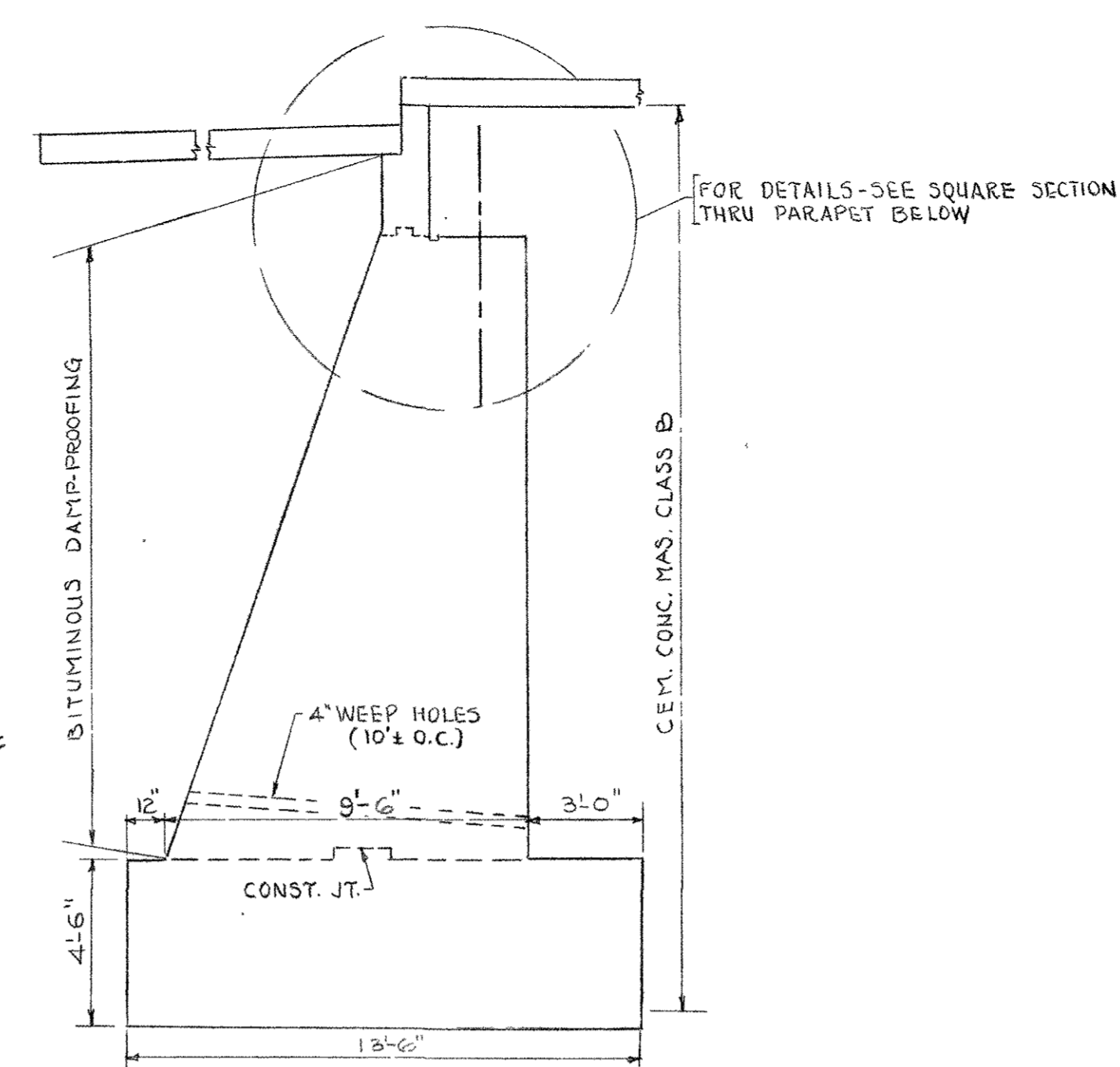


FIXED BEARING DETAILS
SCALE: 1" = 1'-0"

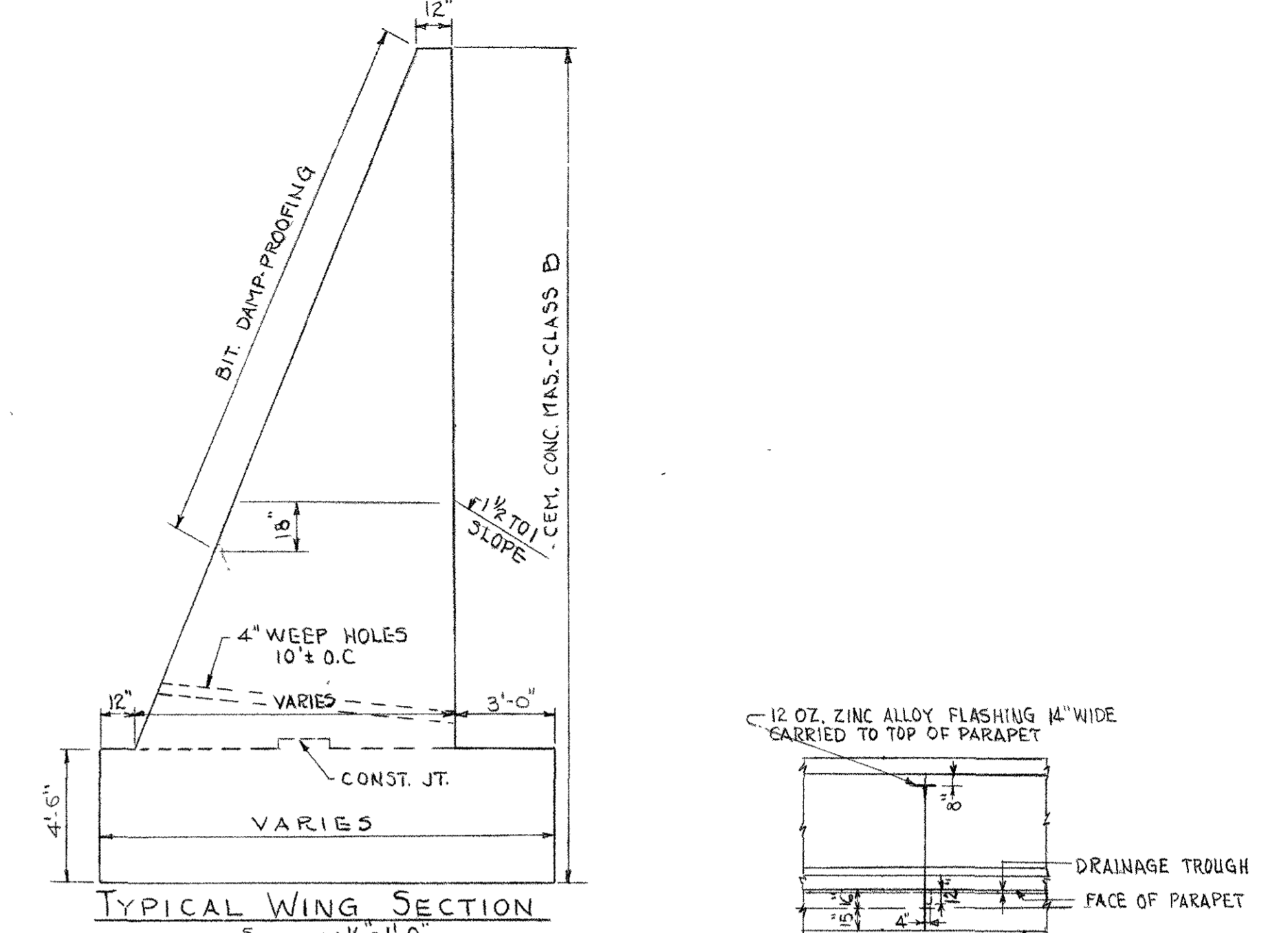
JUNE 22, 1957	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
	USE ONLY PRINTS OF LATEST DATE



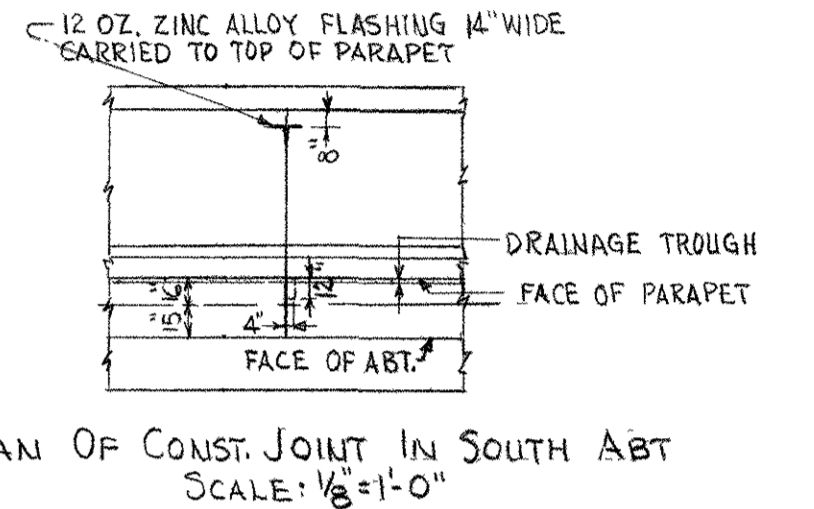
PLAN
SCALE: 1/8" = 1'-0"



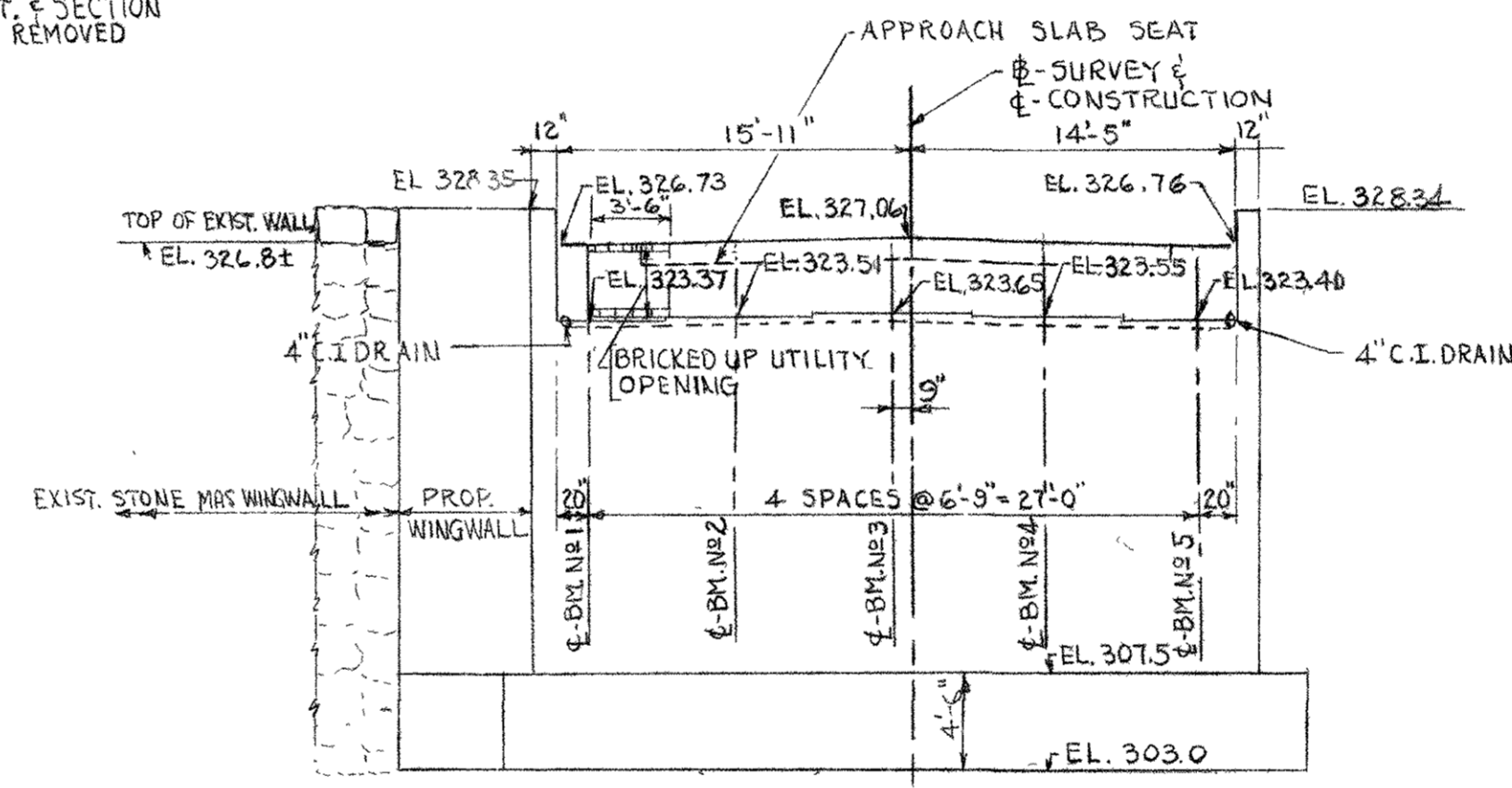
ABUTMENT SQUARE SECTION
SCALE: 1/4" = 1'-0"
MAX. BEARING PRESSURE = 7300^{lb}/FT.²



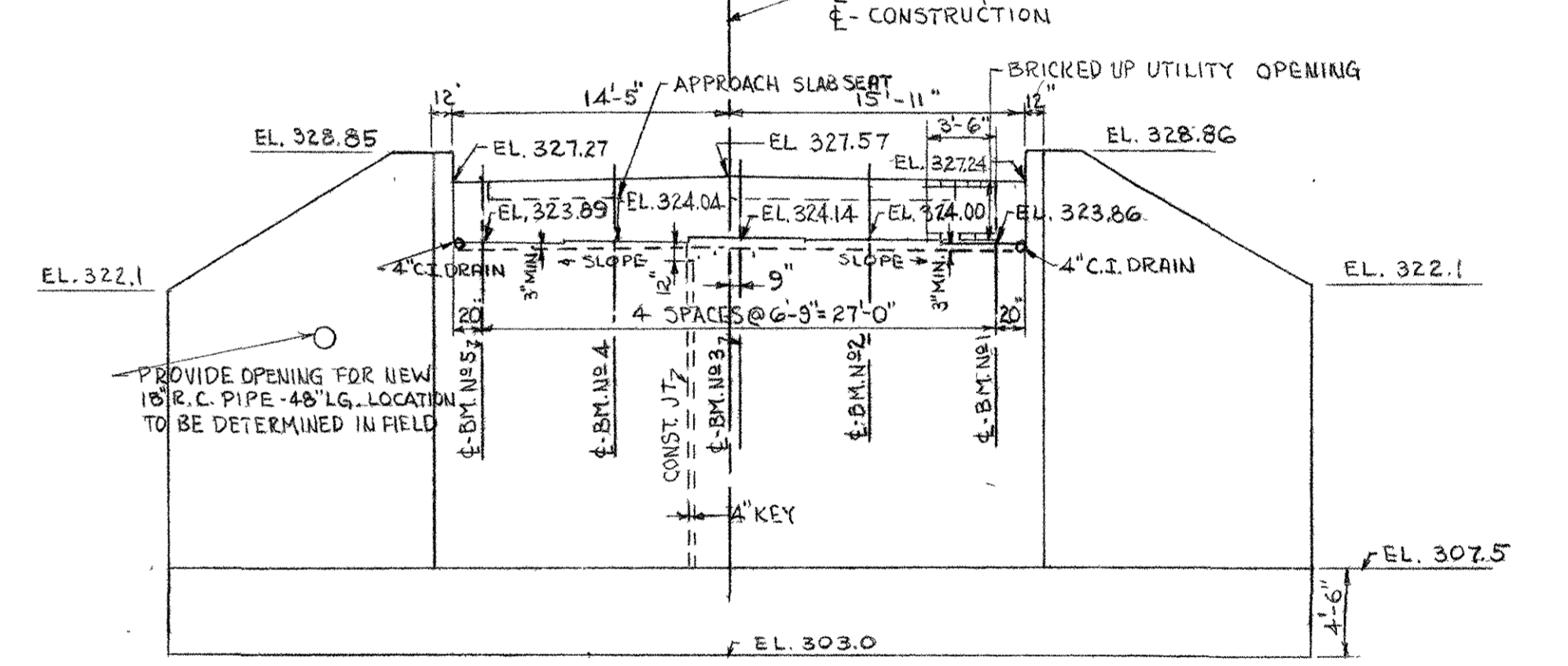
TYPICAL WING SECTION
SCALE: 1/4" = 1'-0"
MAX. BEARING PRESSURE = 6100^{lb}/FT.²



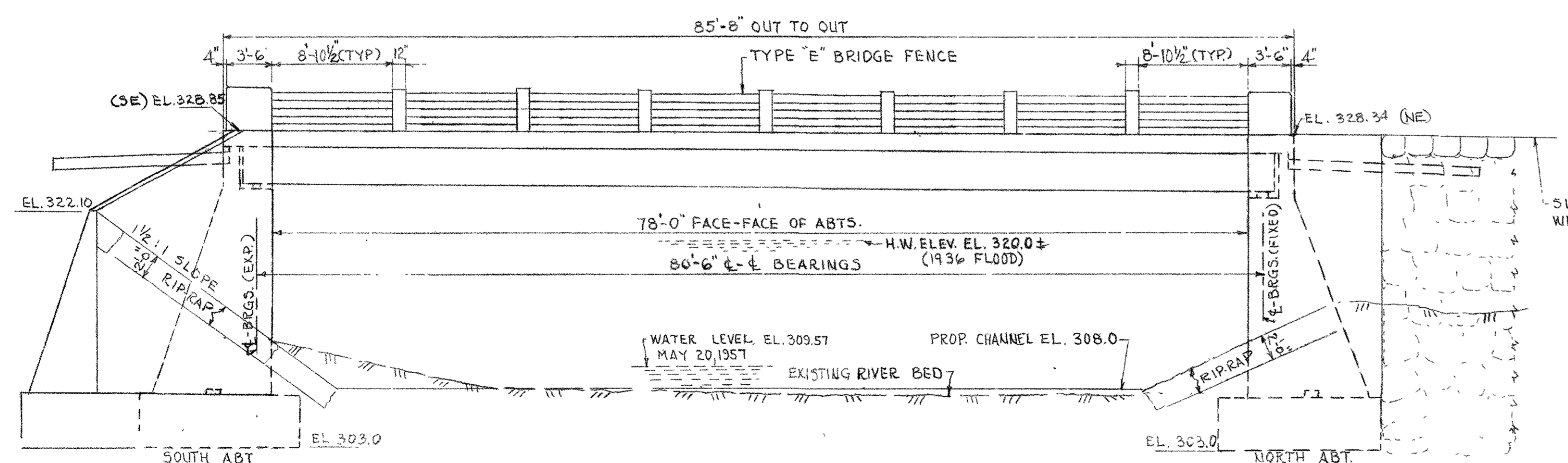
PLAN OF CONST. JOINT IN SOUTH ABT
SCALE: 1/8" = 1'-0"



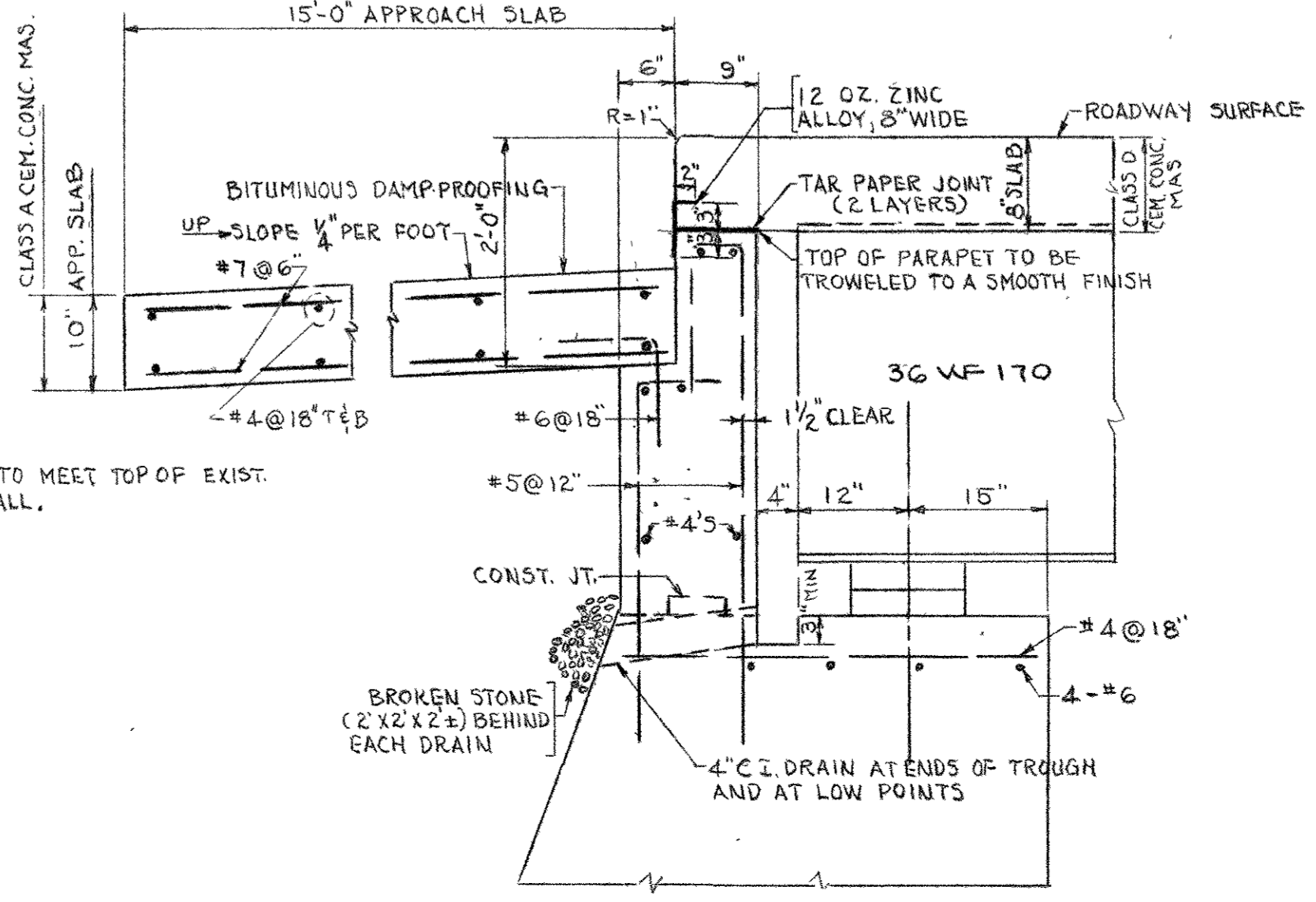
NORTH ABUTMENT ELEVATION
SCALE: 1/8" = 1'-0"



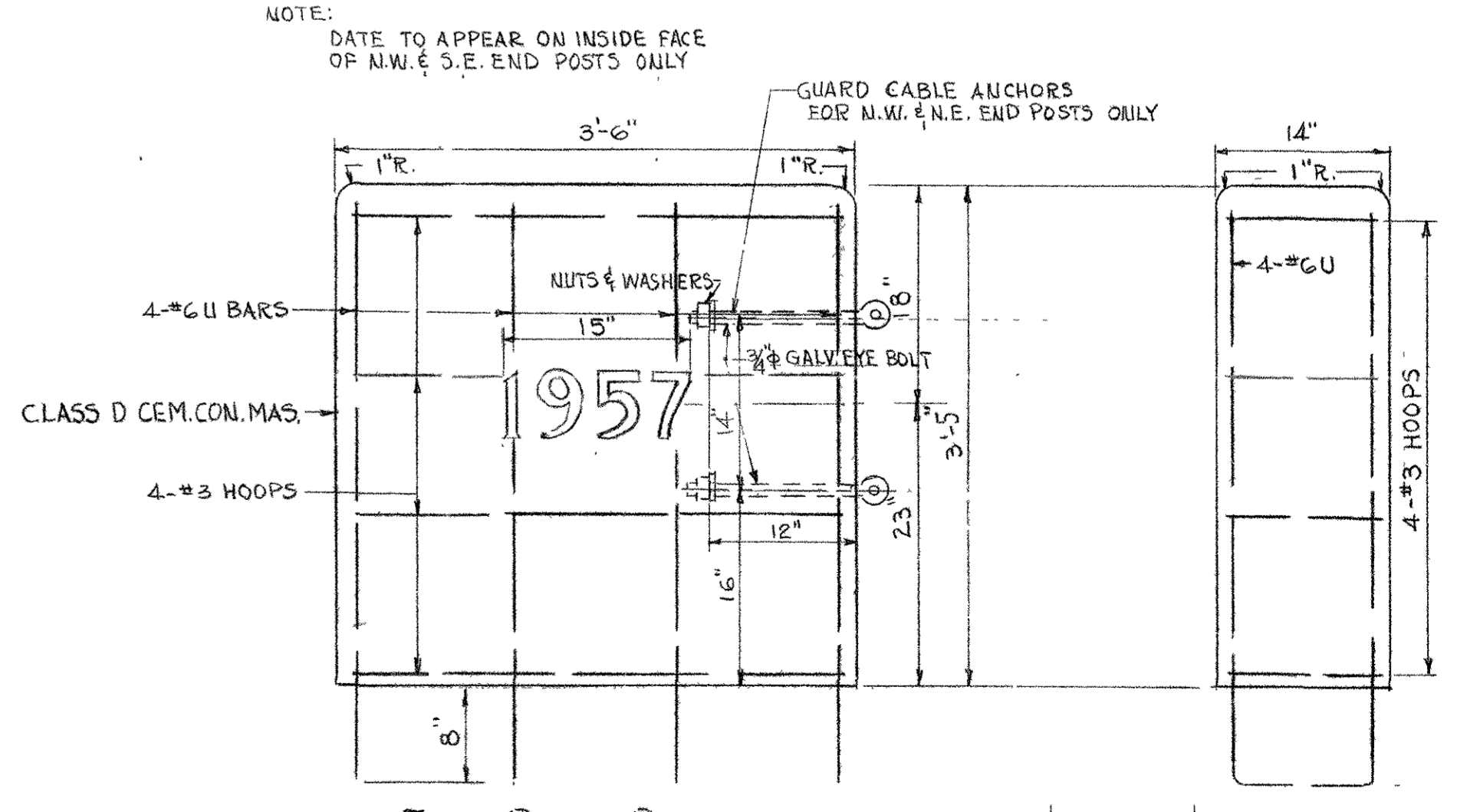
SOUTH ABUTMENT ELEVATION
SCALE: 1/8" = 1'-0"



EASTERLY ELEVATION
SCALE: 1/8" = 1'-0"
WESTERLY ELEVATION OPPOSITE HAND



SQUARE SECTION THRU PARAPET
SCALE: 3/4" = 1'-0"



END POST DETAILS
SCALE: 1" = 1'-0"

JUNE 22, 1957	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
	USE ONLY PRINTS OF LATEST DATE