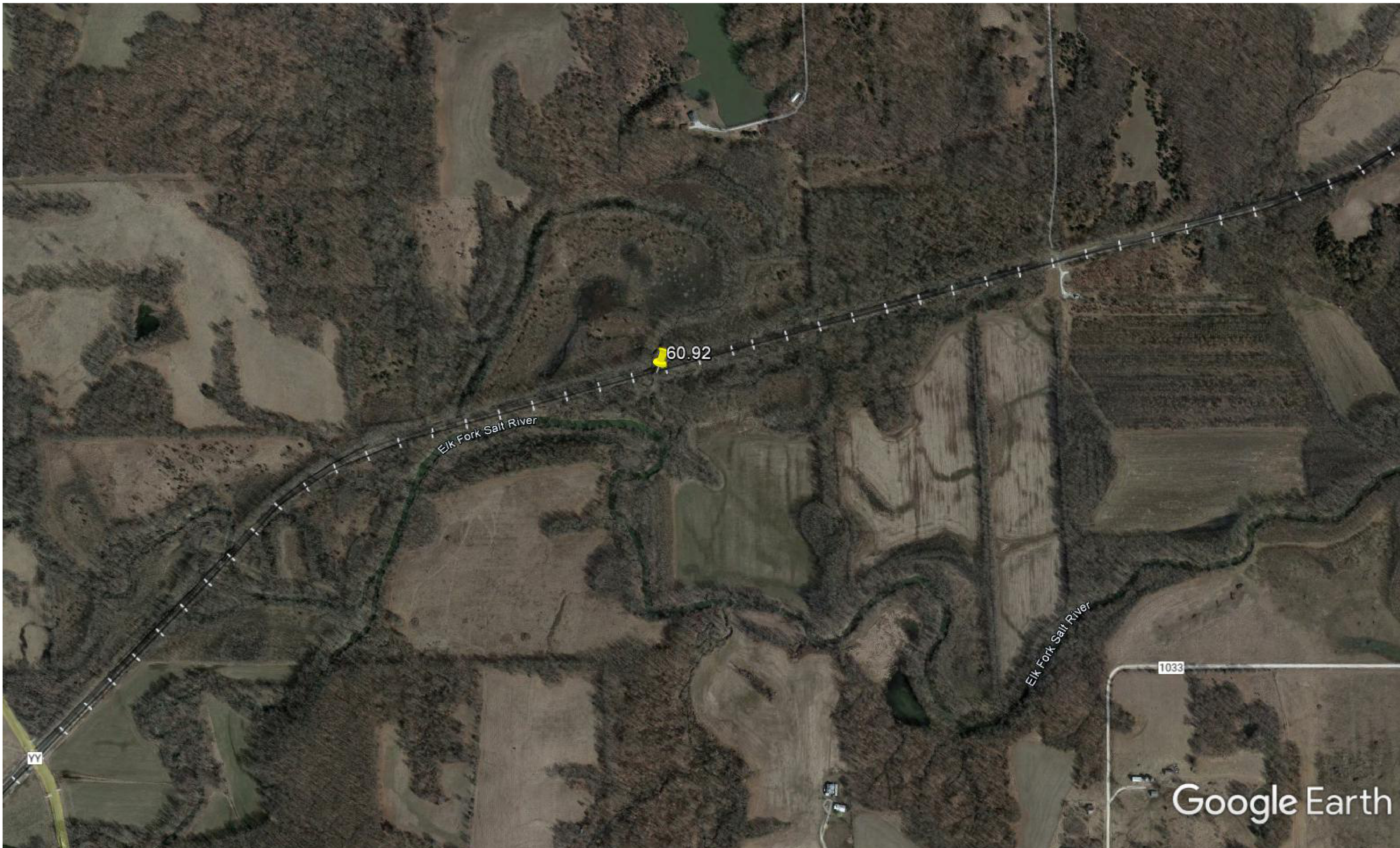


NORFOLK SOUTHERN RAILWAY
HANNIBAL DISTRICT MP 60.92



LOCATION MAP LATITUDE: 39.45382°
LONGITUDE: -92.28681°

LIST OF DRAWINGS - BR. IL-H-60.92	
SHEET NO.	TITLE
01	COVER PAGE
02	GENERAL PLAN & ELEVATION
03	PILE PLAN
04	TYPICAL SECTIONS (1 OF 2) & MISCELLANEOUS DETAILS
05	TYPICAL SECTIONS (2 OF 2)
06	BILL OF MATERIAL & TABLE OF ELEVATIONS
07	BORING LOGS

- GENERAL NOTES:
- NEW CONSTRUCTION SHOWN IN HEAVY LINES.
EXISTING STRUCTURE SHOWN IN LIGHT LINES.
 - SPECIFICATIONS: AREMA MANUAL FOR RAILWAY
ENGINEERING, DATED 2020.
CHAPTER 8 - CONCRETE STRUCTURES
CHAPTER 15 - STEEL STRUCTURES

NORFOLK SOUTHERN PUBLIC IMPROVEMENTS
PROJECTS MANUAL, 2022 & NORFOLK SOUTHERN
STANDARD DRAWINGS, 2009.
 - LIVE LOADING: COOPER E80 WITH DIESEL IMPACT.
 - SURVEY: SURVEY BY COLDWATER ENGINEERING,
DATED NOVEMBER 2023, TO CONVERT TO NAVD '88,
ADD 646.82 FEET TO ELEVATIONS. STATIONING
ESTABLISHED AT RR EAST ABUTMENT CENTERLINE
OF RR TRACK (STA. 10+00).
 - BENCHMARKS: CP01 = 93.91, ½" REBAR, STA. 12+58.69, LEFT 23.4'
CP02 = 95.94, ½" REBAR, STA. 9+34.76, RIGHT 20.0'
 - UTILITIES:
THE IMPLIED PRESENCE OR ABSENCE OF UTILITIES IS
NOT TO BE CONSTRUED BY THE OWNER, ENGINEER,
CONTRACTOR OR SUBCONTRACTOR TO BE AN ACCURATE AND
COMPLETE REPRESENTATION OF UTILITIES THAT MAY OR
MAY NOT EXIST ON THE CONSTRUCTION SITE. BURIED
AND ABOVE GROUND UTILITY LOCATION, IDENTIFICATION
AND MARKING ARE THE SOLE RESPONSIBILITY OF THE
CONTRACTOR. REROUTING, DISCONNECTION, PROTECTION,
ETC. OF ANY UTILITIES MUST BE COORDINATED AMONG
THE CONTRACTOR, UTILITY COMPANY, AND OWNER. SITE
SAFETY, INCLUDING THE AVOIDANCE OF HAZARDS,
ASSOCIATED WITH BURIED AND ABOVE GROUND UTILITIES
REMAINS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
 - STREAM FLOW DIVERSION:
IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO
DIVERT STREAM FLOW DURING CONSTRUCTION AS
REQUIRED IN ORDER TO KEEP THE CONSTRUCTION AREA
FREE OF WATER. THE METHOD OF DIVERSION SHALL BE
APPROVED BY THE ENGINEER.

ABBREVIATIONS:	
BR.	BRIDGE
BRG.	BEARING
CONC.	CONCRETE
CP	CONTROL POINT
DIA.	DIAMETER
ELEV.	ELEVATION
E.S.	EACH SIDE
EXIST.	EXISTING
F.S.	FAR SIDE
G/L	GROUNDLINE
NO.	NUMBER
N.S.	NEAR SIDE
O.D.	OUTSIDE DIAMETER
PCS.	PIECES
P/S	PRESTRESSED
PROP.	PROPOSED
REQ.	REQUIRED
STA.	STATION
TYP.	TYPICAL
T/TIE	TOP OF TIE
U.N.O.	UNLESS NOTED OTHERWISE
WSE	WATER SURFACE ELEVATION



NORFOLK SOUTHERN RAILWAY

HANNIBAL DISTRICTILLINOIS DIV.

IL-H-60.92 BRIDGE REPLACEMENT

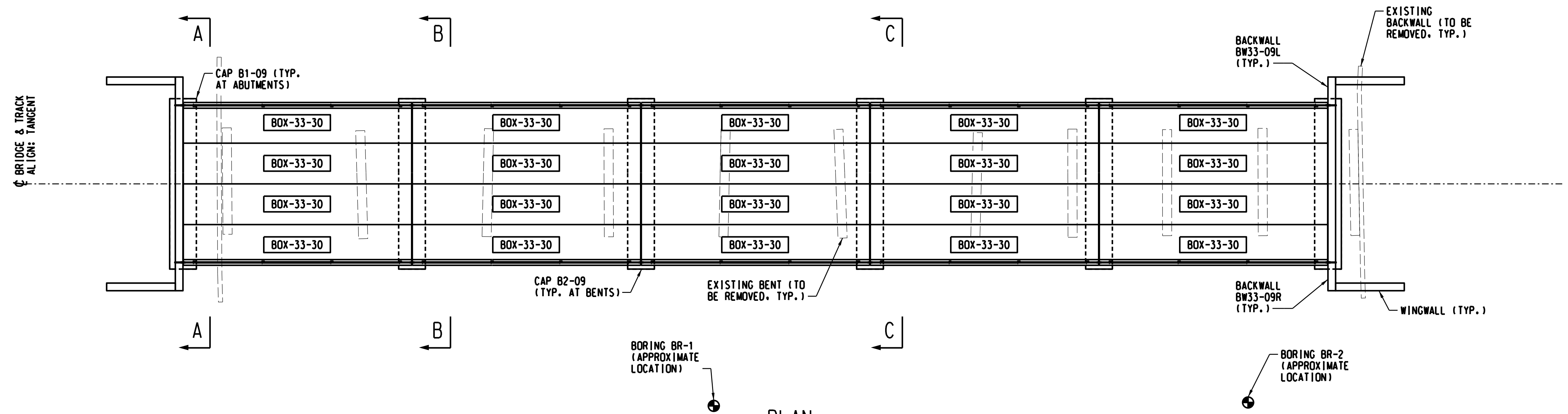
EVANSVILLE, MO

OFFICE OF CHIEF ENGINEER - BRIDGES & STRUCTURESATLANTA, GA.

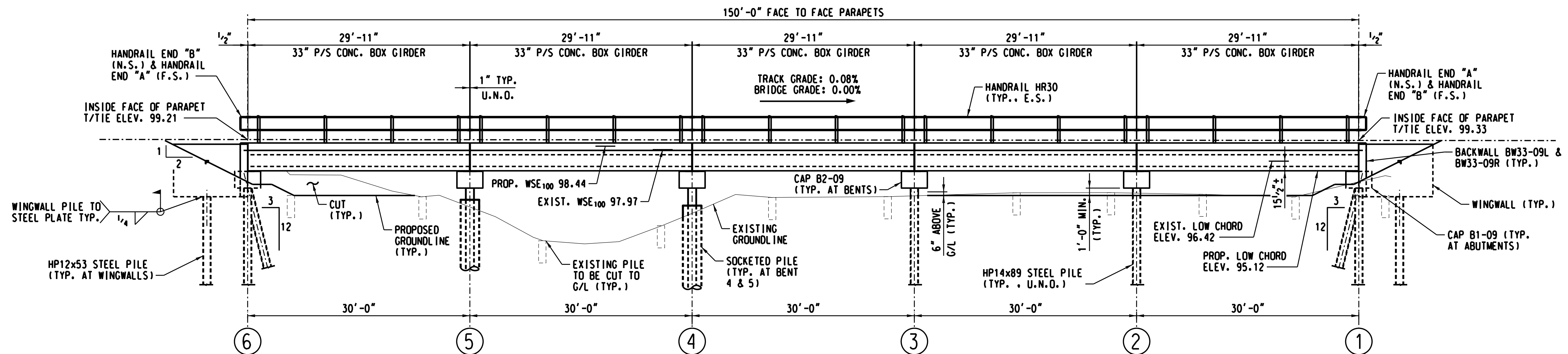
DRAWING TITLE:COVER PAGE

DGN	EB	VAL	SEC	MAP	MILE POST	H-60.92
CHK	TK	FILE	BR6092-0001		DATE	04/11/2024
SHEET NUMBER				1 OF 7	DRAWING NUMBER H-60.92-0001	

0 DECATUR →



EXISTING SPANS NOT SHOWN FOR CLARITY

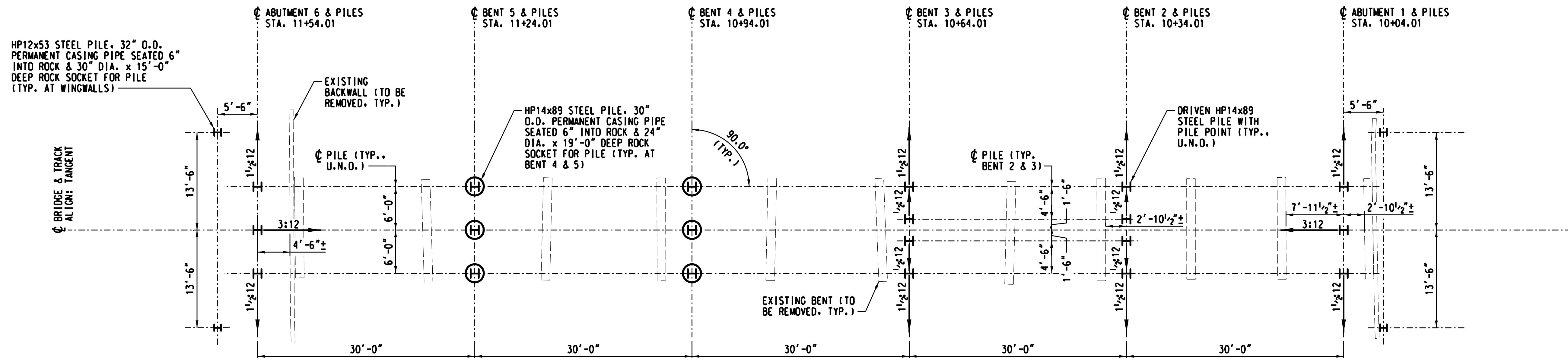
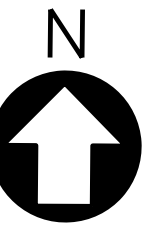


EXISTING SPANS NOT SHOWN FOR CLARITY

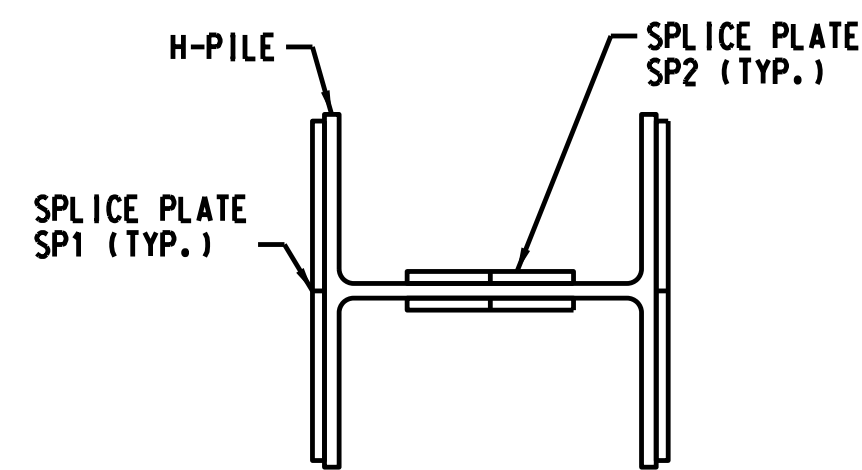
				NORFOLK SOUTHERN	
HANNIBAL DISTRICT				ILLINOIS DIV.	
NORFOLK SOUTHERN RAILWAY					
IL-H-60.92 BRIDGE REPLACEMENT					
EVANSVILLE, MO					
OFFICE OF CHIEF ENGINEER – BRIDGES & STRUCTURES				ATLANTA, GA.	
DRAWING TITLE: GENERAL PLAN & ELEVATION					
DGN	EB	VAL	SEC	MAP	MILE POST H-60.92
CHK	TK	FILE	BR6092-0001		DATE 04/11/2024
SHEET NUMBER		2 OF 7		DRAWING NUMBER H-60.92-0001	

TO KANSAS CITY

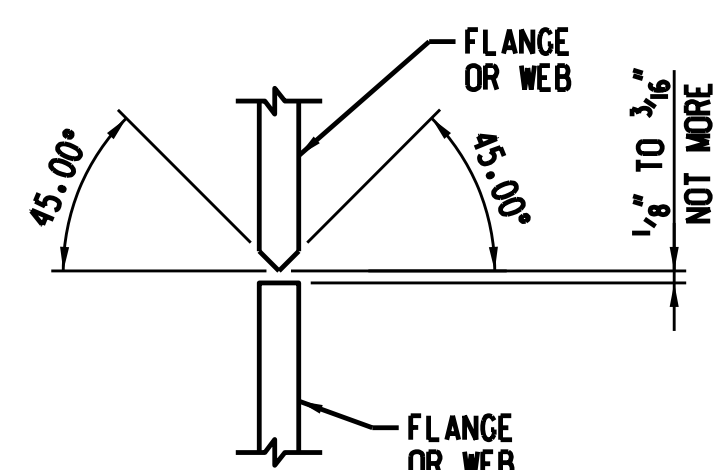
TO DECATUR



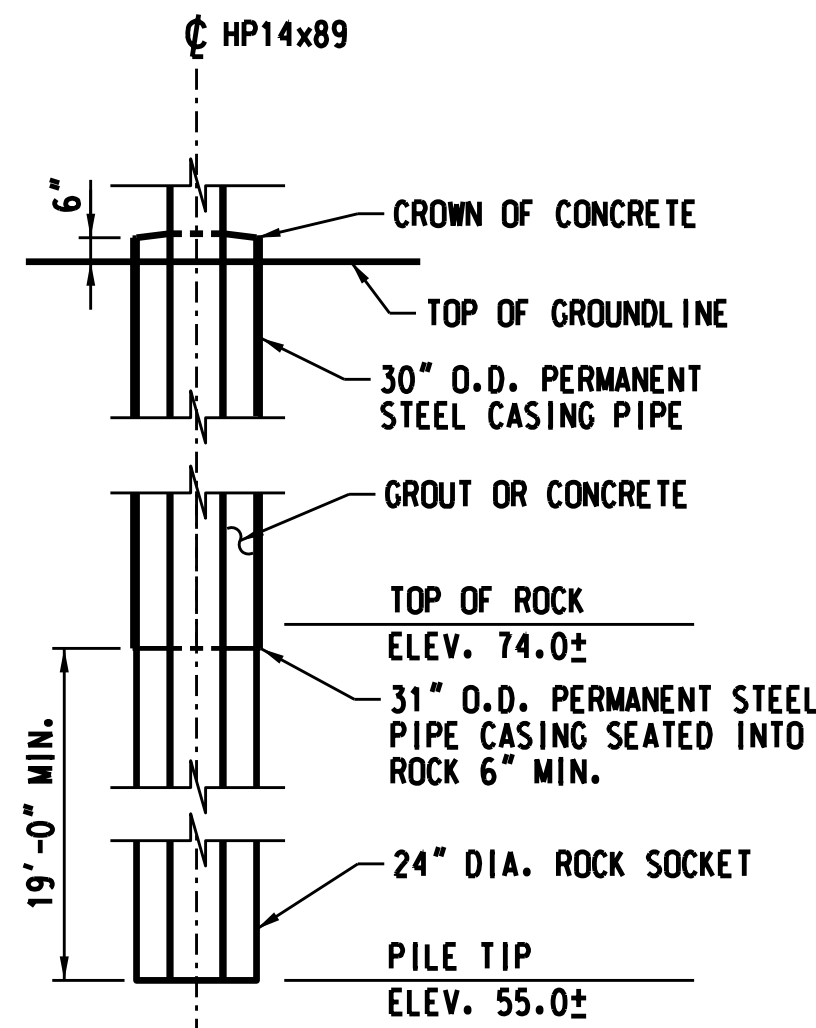
PILE PLAN



PLAN



SECTION F-F



SOCKETED BENT PILE DETAIL

PILE NOTES:

1. STEEL PILE SHALL BE ASTM A572, GRADE 50.
2. ALL PILES TO BE HP14x89.
3. WELDING SHALL BE PERFORMED BY PERSONNEL QUALIFIED PER TH A.W.S. WELDING CODE D1.3.
4. PILE SPLICES, IF USED, SHALL BE LOCATED A MINIMUM DEPTH OF 15 FEET BELOW GROUND ELEVATION.
5. BEFORE REINFORCING PLATES ARE INSTALLED, GRIND THE WELD CONTOURS WHICH WILL BE COVERED BY THE REINFORCING PLATES.
6. PILES SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST VERSION OF THE NS STANDARD SPECIFICATIONS.

DRIVEN PILE NOTES:

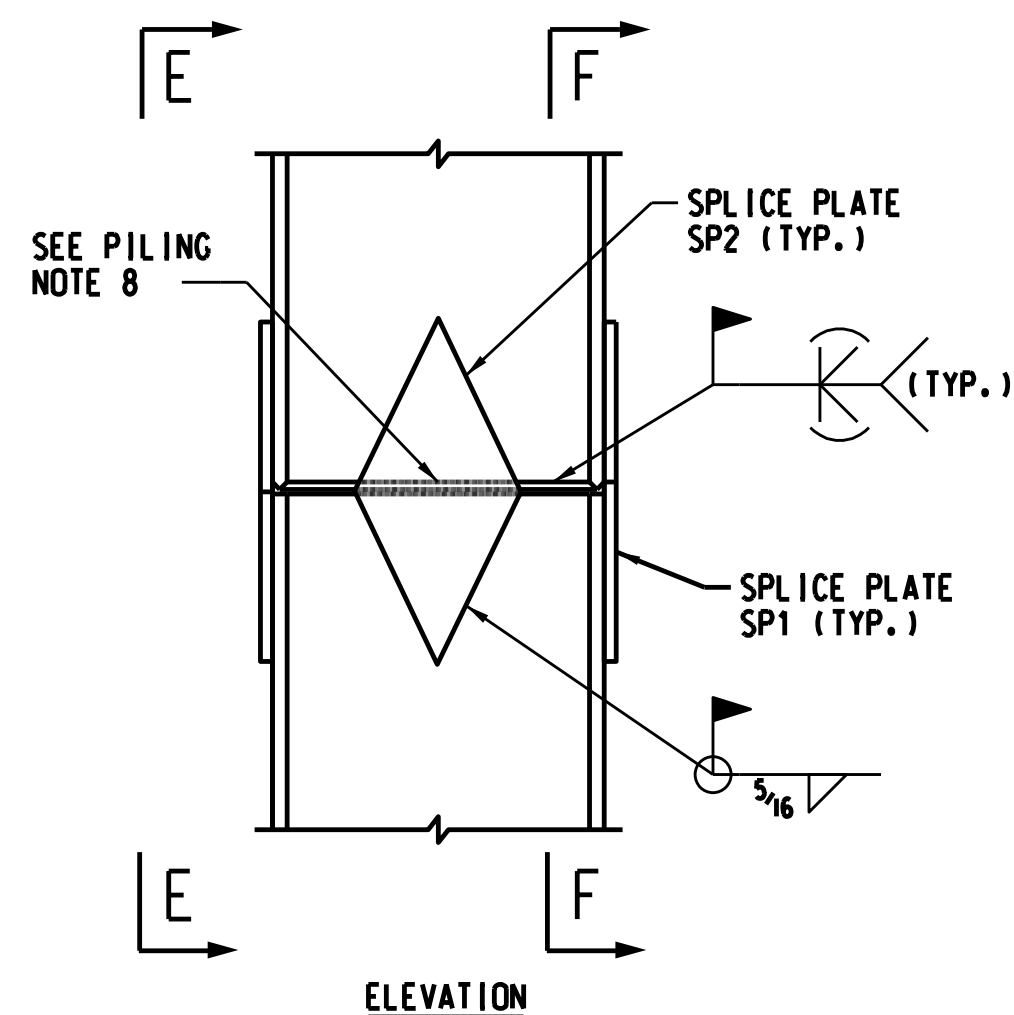
1. PILES ARE TO BE DRIVEN WITH REINFORCED TIPS (PILE POINTS).
2. SYMBOL X:12 SHOWS DIRECTION AND AMOUNT OF BATTER.
3. PILES SHALL BE DRIVEN TO A MINIMUM DEPTH OF 20 FEET BELOW GROUND ELEVATION.
4. PILES SHALL BE DRIVEN TO REFUSAL IF POSSIBLE OR TO A MINIMUM ULTIMATE RESISTANCE OF 250 TONS FOR HP14x89 PILES, AS DETERMINED BY THE ENGINEERING NEWS RECORD FORMULA. IF REFUSAL IS NOT ACHIEVED, THE CONTRACTOR SHALL CONTACT THE ENGINEER.
5. ESTIMATED PILE LENGTH BELOW CUTOFF = 26 FEET. IF PENETRATION OF 25 FEET BELOW NATURAL OR FINISHED GROUND LINE, WHICHEVER IS LOWER, CANNOT BE ACHIEVED, CONTACT THE ENGINEER.
6. THE FIRST PILE DRIVEN AT EACH ABUTMENT AND BENT SHALL BE DRIVEN AND RECORDED AS A TEST PILE.
7. CONTRACTOR SHALL SUBMIT PILE DRIVING HAMMER FOR APPROVAL TO MEET ABOVE CRITERIA, INCLUDING BLOW COUNT INFORMATION. ONCE APPROVED, HAMMER MAY NOT BE SUBSTITUTED WITHOUT RE-APPROVAL BY ENGINEER.

PILE REINFORCED TIP INSTALLATION:

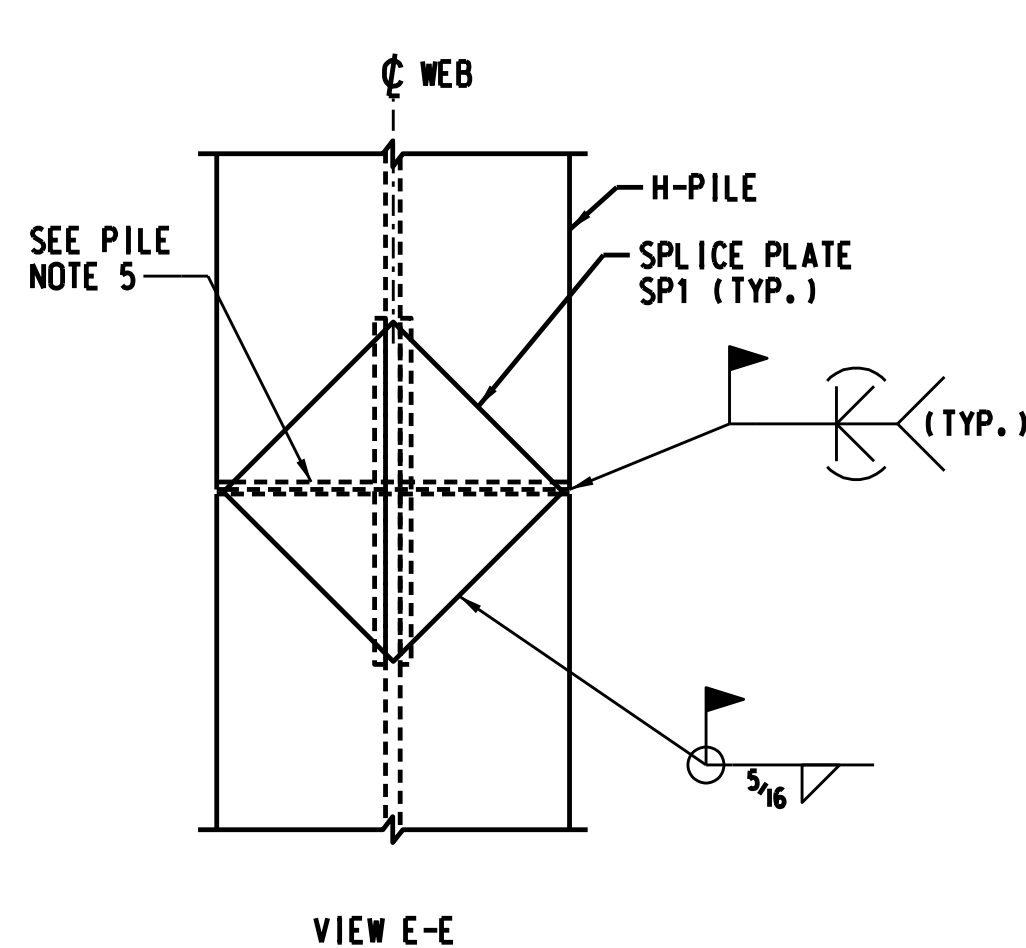
1. FIT POINTS ONTO THE END OF A SQUARE CUT PILE END.
2. WELD POINT TO THE PILE IN EITHER FLAT OR VERTICAL POSITION USING E70XX ELECTRODES.
3. FILL AREA ACROSS BOTH FLANGES WITH WELD.

SOCKETED PILE NOTES:

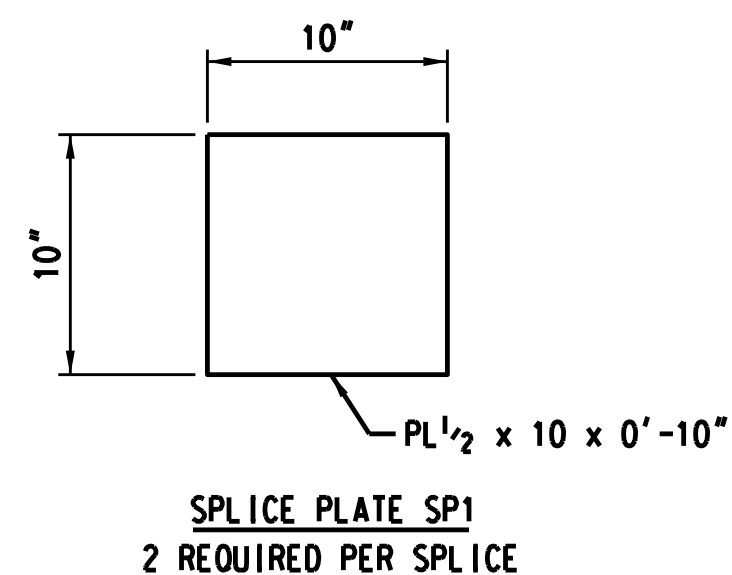
1. PILE SOCKET CONCRETE SHALL BE CLASS 40, SULFATE RESISTANT CONCRETE WITH A SLUMP OF 6" TO 9".
2. ALL WATER OBSERVED WITHIN THE PRE-DRILLED PILE EXCAVATION SHOULD BE REMOVED PRIOR TO PLACEMENT OF CONCRETE.
3. FOR DRY EXCAVATIONS, CONCRETE SHALL BE PLACED BY TREMIE OR FREE FALL METHODS. THE CONCRETE SHALL BE PUMPED OR PLACED WITH A TREMIE IF GROUND WATER CANNOT BE ADEQUATELY CONTROLLED, OR IF CONCRETE CANNOT BE DIRECTED VERTICALLY DOWN THE SHAFT. THE BOTTOM OF THE TREMIE SHALL BE KEPT INITIALLY AS NEAR AS POSSIBLE TO THE BOTTOM OF THE SHAFT AND ALWAYS AT LEAST 5'-0" BELOW THE TOP OF THE COLUMN OF CONCRETE.
4. THE CONCRETE SHALL BE PREVENTED FROM HITTING THE SIDES OF THE HOLE OR THE STEEL PILE BY DIRECTING THE POUR THROUGH A HOPPER OR USING THE TREMIE METHOD.
5. CROWN THE TOP OF THE SOCKET TO PROVIDE 1" WASH AWAY FROM THE STEEL H-PILE.
6. THE BASE OF ALL PRE-DRILLED EXCAVATIONS SHOULD BE FREE OF ALL WATER AND LOOSE MATERIAL PRIOR TO PLACING THE PILE.
7. ANY LOOSE MATERIAL WHICH SEEPS INTO THE DRILLED SOCKETS MUST BE REMOVED PRIOR TO PLACEMENT OF PILES AND CONCRETE SUCH THAT NO MORE THAN 1/2" REMAINS. THE H-PILES MUST BE CLEAN AND FREE OF EXCESS RUST, OIL, SCALE OR DEBRIS.
8. THE STEEL H-PILES SHALL BE CENTERED AND PLACED IN THE PRE-DRILLED HOLES BY TAPPING OR SETTING THE PILE IN THE BOTTOM OF THE HOLE.
9. PRE-DRILLING, PILE PLACEMENT AND CONCRETE PLACEMENT SHALL OCCUR ON THE SAME DAY.
10. CONCRETE SHALL REACH A MINIMUM COMPRESSIVE STRENGTH OF 2,500 PSI PRIOR TO INSTALLING PRECAST CAPS AND GIRDERS. CONCRETE SHALL REACH FULL STRENGTH PRIOR TO PUTTING BRIDGE IN SERVICE.



ELEVATION

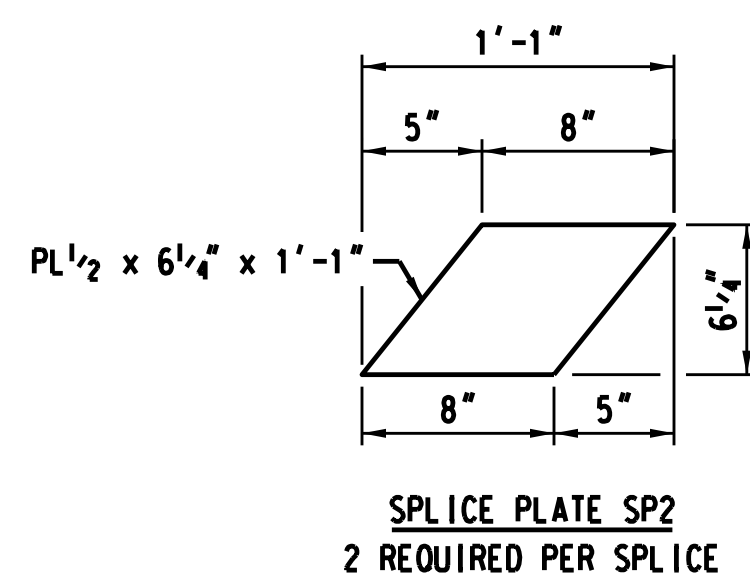
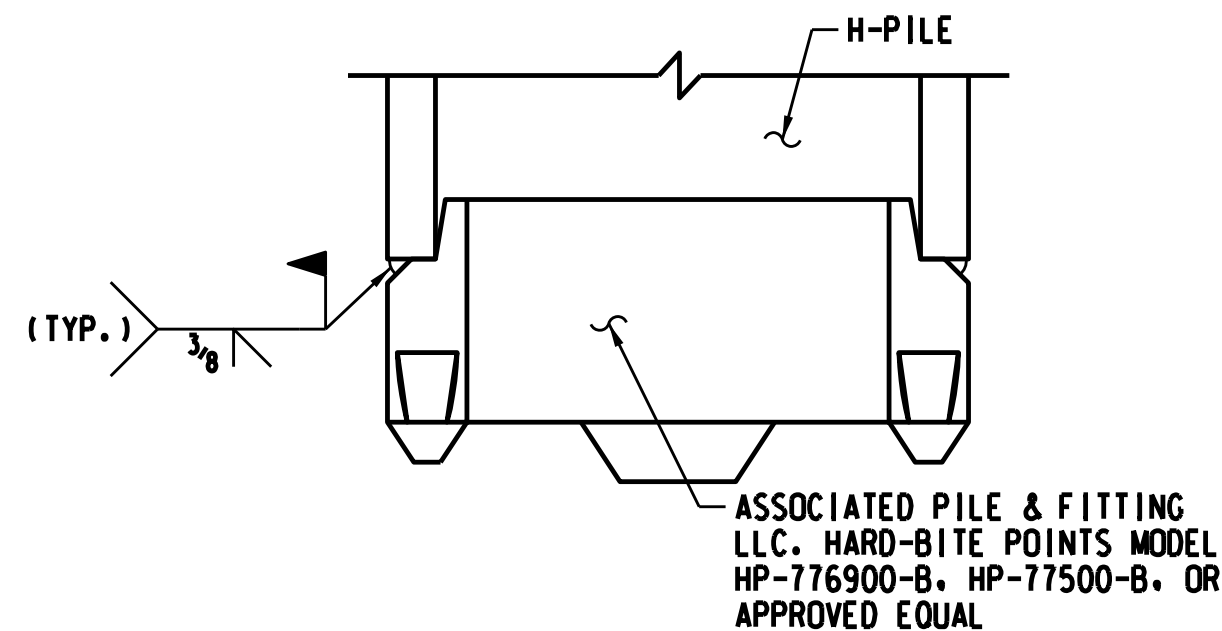


VIEW E-E

SPLICE PLATE SP1
2 REQUIRED PER SPLICE

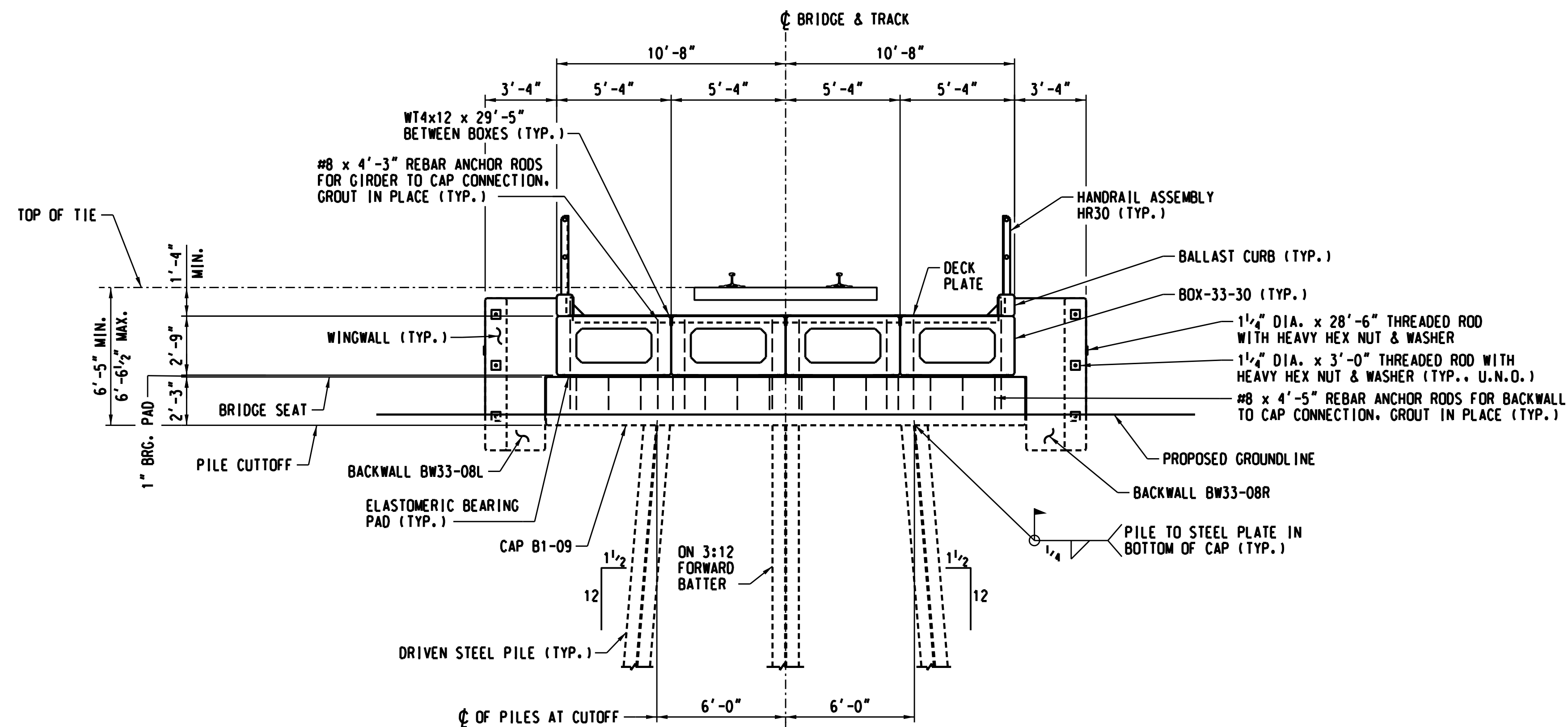
REINFORCED PLATE PILE SPLICE

FOR USE WHEN SPLICE IS LESS THAN 15'-0" BELOW GROUND LINE

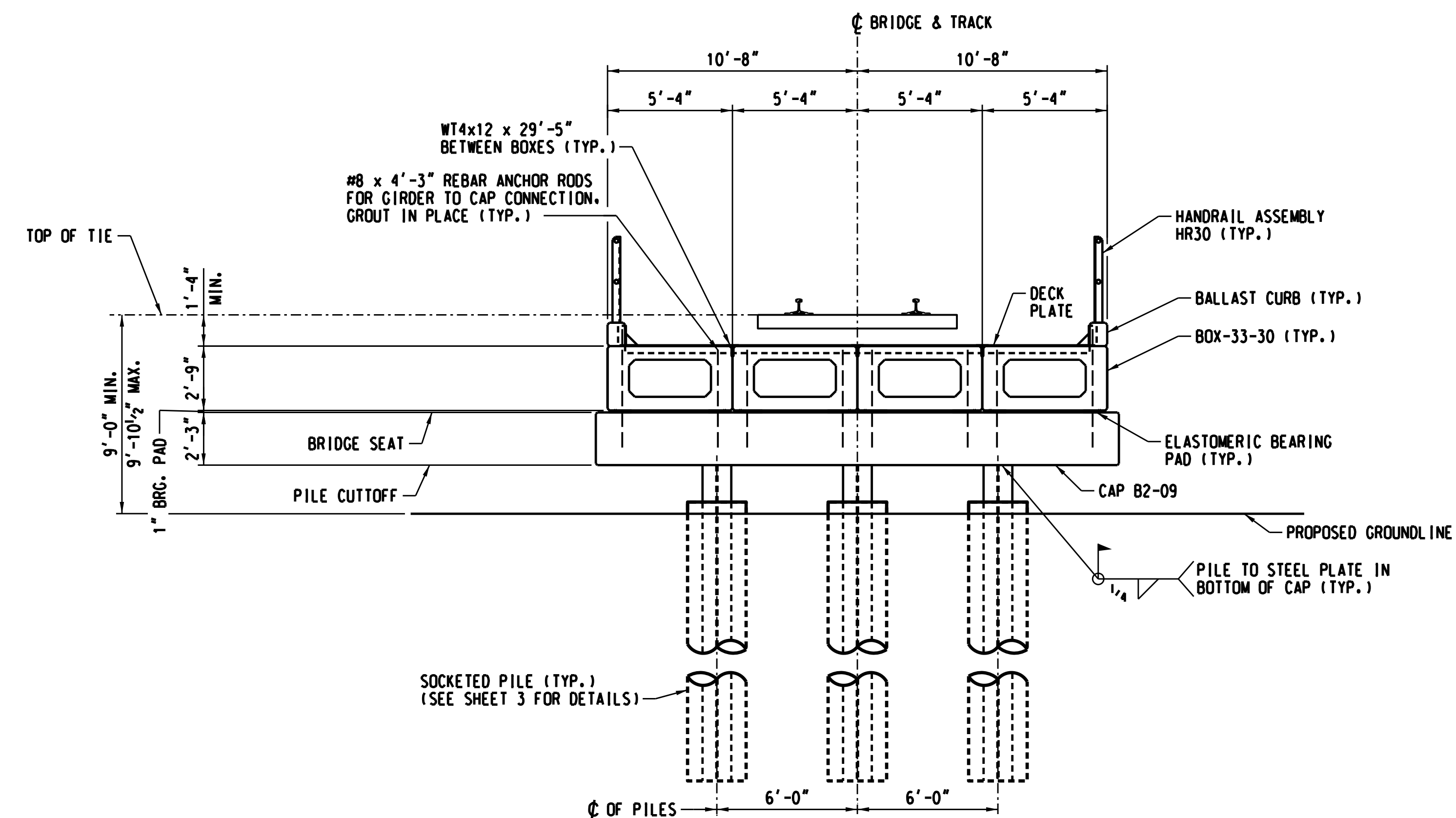
SPLICE PLATE SP2
2 REQUIRED PER SPLICE

H-PILE SHOE DETAIL

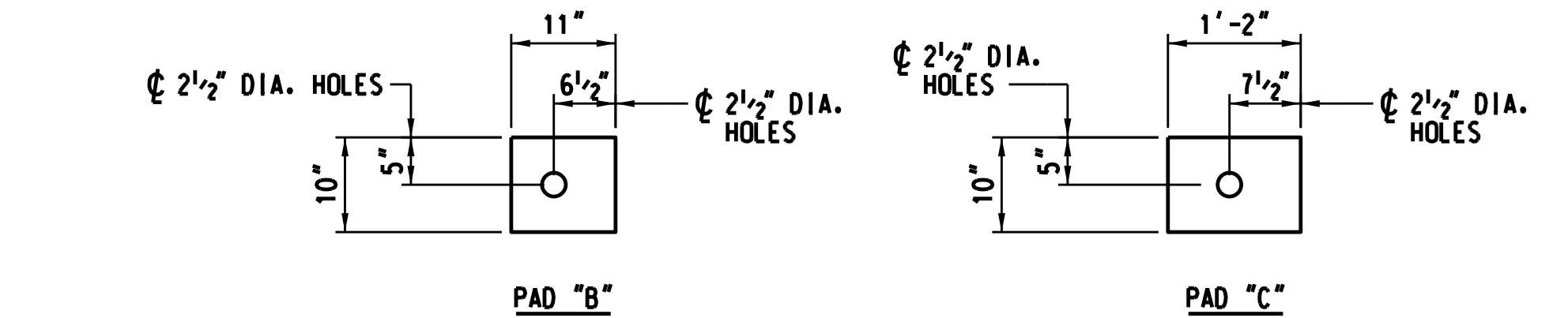
NORFOLK SOUTHERN RAILWAY			
HANNIBAL DISTRICT		ILLINOIS DIV.	
IL-H-60.92 BRIDGE REPLACEMENT			
EVANSVILLE, MO			
OFFICE OF CHIEF ENGINEER - BRIDGES & STRUCTURES			
ATLANTA, GA.			
DRAWING TITLE:			
PILE PLAN			
DGN	EB	VAL SEC	MAP
CHK		TK	FILE
SHEET NUMBER		DRAWING NUMBER	
3 OF 7		H-60.92-0002	



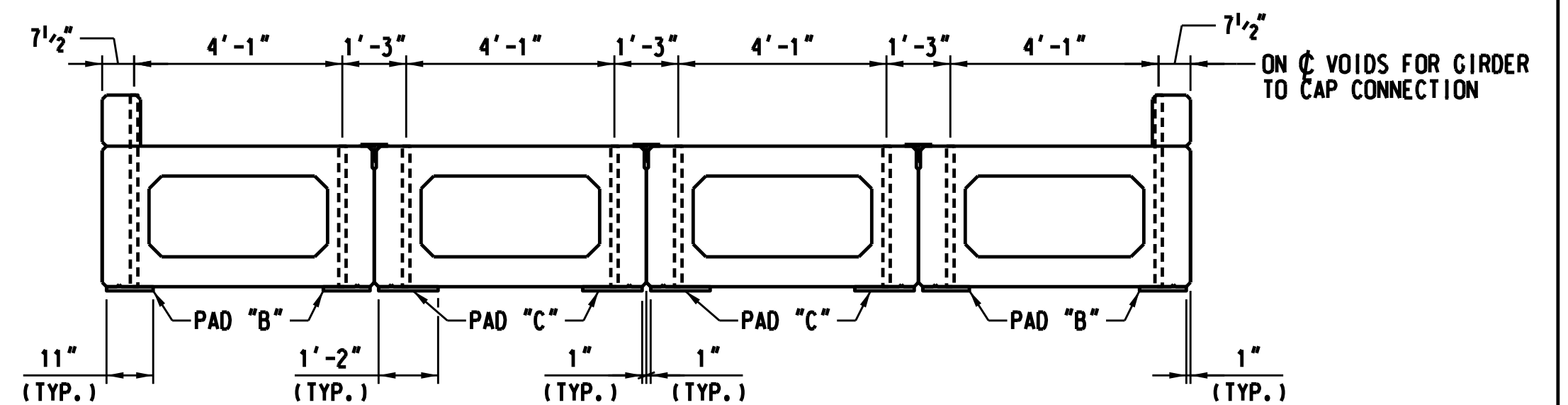
SECTION A-A
WINGWALL PILES NOT SHOWN.
ABUTMENT 6 SHOWN. ABUTMENT 1 SIMILAR.



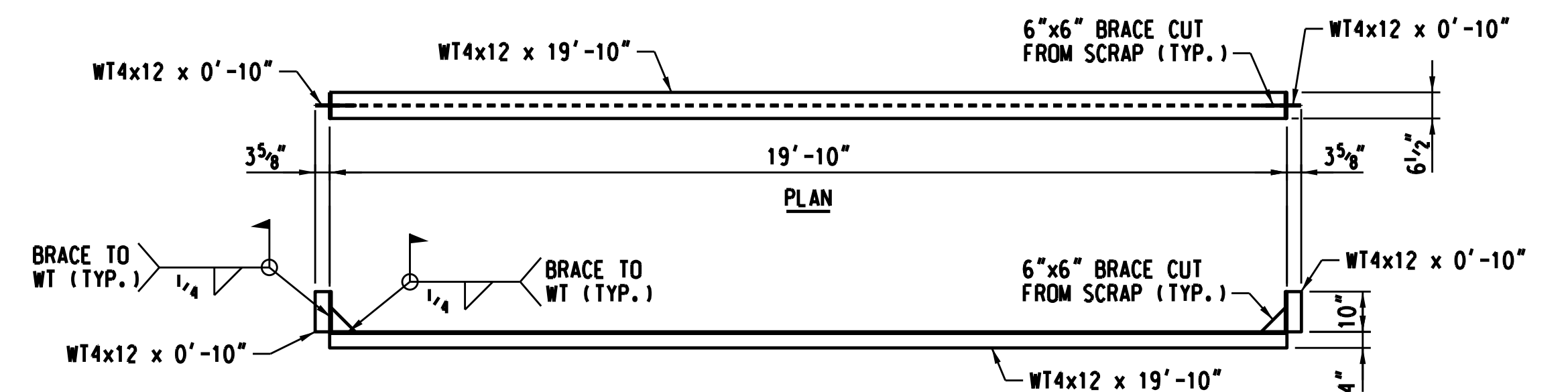
SECTION B-B
BENT 5 SHOWN. BENT 4 SIMILAR



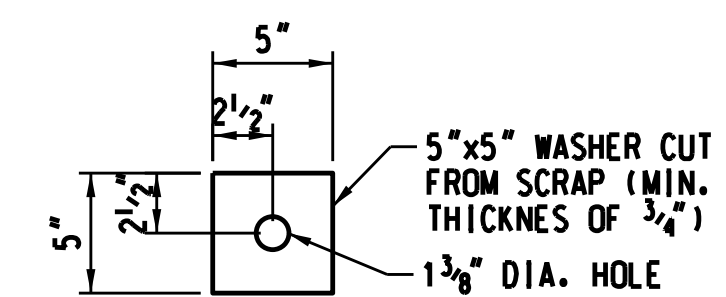
ELASTOMERIC BEARING PAD DETAILS
EPOXY BEARING PADS TO BOTTOM OF SPANS



BEARING PAD LAYOUT

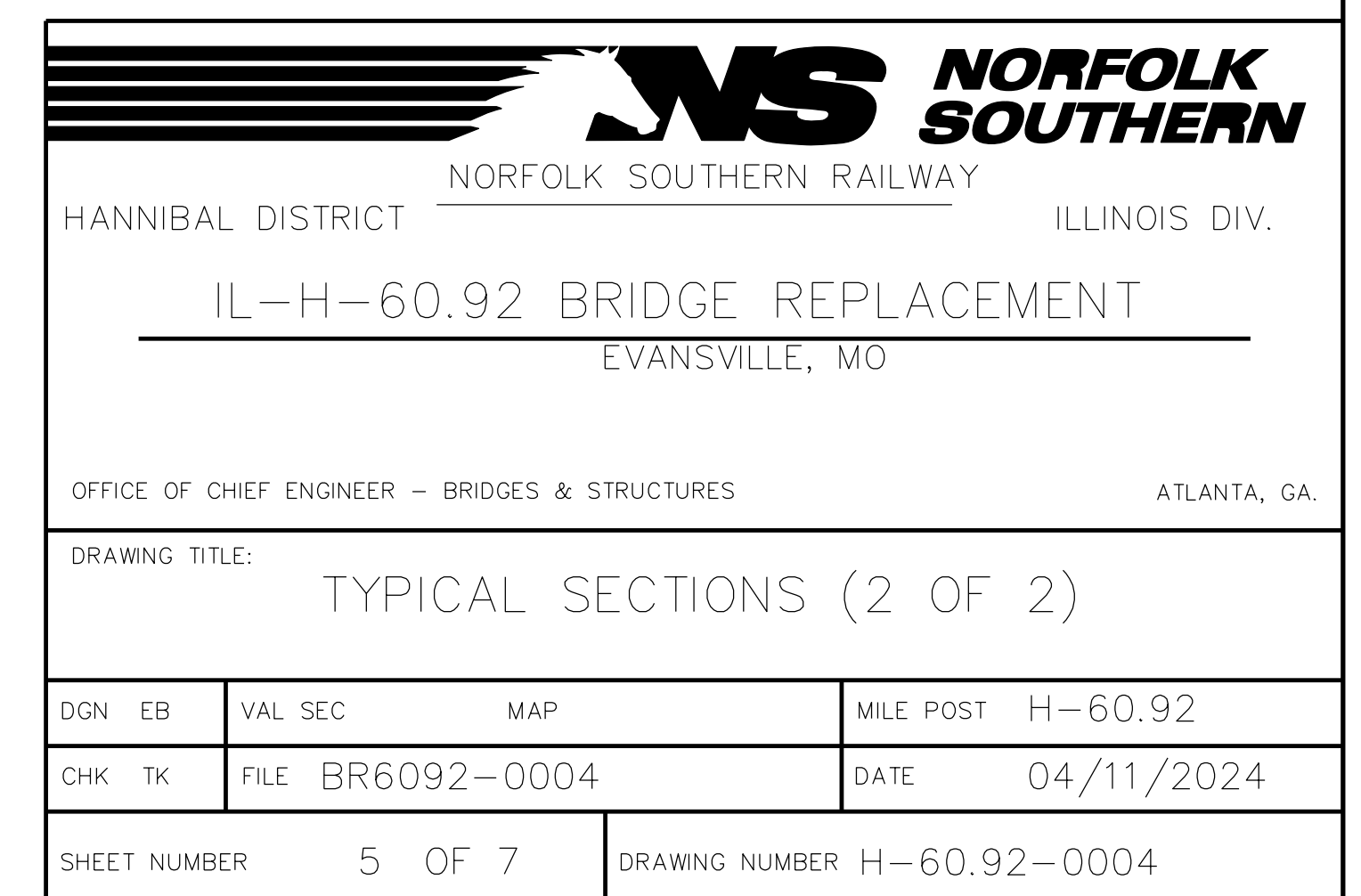


DECK PLATE



WASHER DETAIL

HANNIBAL DISTRICT			
ILLINOIS DIV.			
IL-H-60.92 BRIDGE REPLACEMENT			
EVANSVILLE, MO			
OFFICE OF CHIEF ENGINEER - BRIDGES & STRUCTURES			
ATLANTA, GA.			
DRAWING TITLE:			
TYPICAL SECTIONS (1 OF 2)			
& MISCELLANEOUS DETAILS			
DGN	EB	VAL SEC	MAP
CHK	TK	FILE	BR6092-0003
SHEET NUMBER		DRAWING NUMBER	
4 OF 7		H-60.92-0003	



BILL OF MATERIAL							
LINE	QUANTITY	UNITS	DESCRIPTION	MARK	SIZE	LENGTH	REMARKS
1	20	EA.	P/S CONC. BOX GIRDER, SINGLE VOIDED BOX	BOX-33-30	33" x 5'-4"	29'-11"	
2	4	EA.	PRECAST CONC. INTERMEDIATE CAP	B2-09	27" x 3'-6"	22'-4"	
3	2	EA.	PRECAST CONC. END CAP	B1-09	27" x 3'-6"	22'-4"	
4	4	EA.	PRECAST CONC. WINGWALL		12" x 7'-1"	9'-0"	
5	2	EA.	PRECAST CONC. BACKWALL	BW33-09R		14'-0"	
6	2	EA.	PRECAST CONC. BACKWALL	BW33-09L		14'-0"	
7							
8	1	LOT	PILE SOCKET MATERIAL & PERMANENT CASING (4,000 PSI CONC.)				
9	80,100	LBS.	STEEL PILE (20 PCS.)		HP14x89	45'-0"	ASTM A572 GR.50
10	9,540	LBS.	STEEL PILE (4 PCS.)		HP12X53	45'-0"	ASTM A572 GR.50
11	18	EA.	PILE POINTS		HP14x89		
12							
13	6	EA.	DECK PLATE, WT4x12		WT4x12	19'-10"	BETWEEN SPANS
14	15	EA.	WT4x12		WT4x12	29'-5"	BETWEEN BOXES
15	192	EA.	ANCHOR BARS		#8 BAR	4'-3"	GIRDER TO CAP
16	28	EA.	ANCHOR BARS		#8 BAR	4'-5"	BACKWALL TO END CAP
17							
18	2	EA.	HANDRAIL END "A"				
19	2	EA.	HANDRAIL END "B"				
20	10	EA.	HANDRAIL ASSEMBLY	HR30		29'-11"	
21							
22	16	EA.	WASHER		3⁄4" x 0'-5"	0'-5"	
23	16	EA.	HEAVY HEX NUT		1 1⁄4" DIA.		
24	12	EA.	THREADED ROD		1 1⁄4" DIA.	3'-0"	BACKWALL TO WINGWALL
25	2	EA.	THREADED ROD		1 1⁄4" DIA.	28'-6"	WINGWALL TO WINGWALL
26							
27	40	EA.	ELASTOMERIC BEARING PAD "A", 70 DUROMETER		1"x11"	0'-10"	
28	40	EA.	ELASTOMERIC BEARING PAD "B", 70 DUROMETER		1"x14"	0'-10"	
29							

TABLE OF ELEVATIONS				
LOCATION	TOP/TIE	TOP/CAP	PILE CUTOFF	T/T TO PILE CUTOFF
⌀ ABUT. 1	99.33	95.04	92.79	6'-6 1⁄2"
⌀ BENT 2	99.31	95.04	92.79	6'-6 1⁄8"
⌀ BENT 3	99.28	95.04	92.79	6'-5 7⁄8"
⌀ BENT 4	99.26	95.04	92.79	6'-5 5⁄8"
⌀ BENT 5	99.23	95.04	92.79	6'-5 1⁄4"
⌀ ABUT. 6	99.21	95.04	92.79	6'-5"



NORFOLK SOUTHERN RAILWAY

HANNIBAL DISTRICT

ILLINOIS DIV.

IL-H-60.92 BRIDGE REPLACEMENT

EVANSVILLE, MO

OFFICE OF CHIEF ENGINEER – BRIDGES & STRUCTURES

ATLANTA, GA.

DRAWING TITLE:

BILL OF MATERIAL & TABLE OF ELEVATIONS

DGN	EB	VAL	SEC	MAP	MILE POST	H-60.92	
CHK	TK	FILE	BR6092-0005			DATE	04/11/2024

SHEET NUMBER

6 OF 7

DRAWING NUMBER

H-60.92-0005



LOG OF BORING

Project Number B2310281 Geotechnical Evaluation NS Bridge 60.92 Illinois Division Near Moberly, Missouri				BORING: BR-1 LOCATION: Top of Rail at East Abutment, EL: 100 feet DATUM: WGS 84 LATITUDE: 39.45382 LONGITUDE: -92.28891 START DATE: 12/05/23 END DATE: 12/05/23				
DRILLER: RC Drilling		LOGGED BY: I. Vazquez-Navarez		SURFACING: Grass		WEATHER: Overcast, 40s		
SURFACE ELEVATION: 93.9 ft		RIG: Subcontractor	METHOD: SSA					
Elev./Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)		Sample	Blows (N-Value) Recovery	q _s tsf	MC %	Tests or Remarks
		LEAN CLAY (CL), brown, moist, soft to medium			1-1-1 (2) 15"		28	LL=39, PL=21, PI=18
		With sand			3-1-4 (5) 18"		23	Drilling method switched to mud rotary at 5.0 feet
					1-2-2 (4) 18"		32	
80.4		SANDY LEAN CLAY (CL), gray, moist, soft			0-0-2 (2) WOH/18"		35	P200=76%
13.5		SHALE, dark gray, moderately weathered, moderately hard			35-50/4" (REF) 8"		22	
		SANDSTONE, dark gray, moderately weathered, moderately hard			2-27-50/2" (REF) 14"		18	
77.0					50/2" (REF) 0"		20	
16.9								
15.4								
18.5								
Continued on next page								
Braun Interiors Corporation				Print Date: 12/13/2023		BR-1 page 1 of 2		



LOG OF BORING

Project Number B2310281 Geotechnical Evaluation NS Bridge 60.92 Illinois Division Near Moberly, Missouri				BORING: BR-1 LOCATION: Top of Rail at East Abutment, EL: 100 feet DATUM: WGS 84 LATITUDE: 39.45382 LONGITUDE: -92.28891 START DATE: 12/05/23 END DATE: 12/05/23				
DRILLER: RC Drilling		LOGGED BY: I. Vazquez-Navarez		SURFACING: Grass		WEATHER: Overcast, 40s		
SURFACE ELEVATION: 93.9 ft		RIG: Subcontractor	METHOD: SSA					
Elev./Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)		Sample	Blows (N-Value) Recovery	q _s tsf	MC %	Tests or Remarks
60.4		SANDSTONE, dark gray, moderately weathered, moderately hard			50/3" (REF)		22	
33.5		SHALE, very dark gray, moderately weathered to slightly weathered, hard						

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests ^A					Soil Classification	
					Group Symbol	Group Name ^B
Coarse-grained Soils (more than 50% retained on No. 200 sieve)	Gravels (More than 50% of coarse fraction retained on No. 4 sieve)	Clean Gravels (Less than 5% fines ^C)	$C_u \geq 4$ and $1 \leq C_c \leq 3^D$	GW	Well-graded gravel ^E	
			$C_u < 4$ and/or ($C_c < 1$ or $C_c > 3$) ^D	GP	Poorly graded gravel ^E	
	Gravels with Fines (More than 12% fines ^C)	Fines classify as ML or MH		GM	Silty gravel ^{EFG}	
		Fines Classify as CL or CH		GC	Clayey gravel ^{EFG}	
	Sands (50% or more coarse fraction passes No. 4 sieve)	Clean Sands (Less than 5% fines ^H)	$C_u \geq 6$ and $1 \leq C_c \leq 3^D$	SW	Well-graded sand ^I	
			$C_u < 6$ and/or ($C_c < 1$ or $C_c > 3$) ^D	SP	Poorly graded sand ^I	
Fine-grained Soils (50% or more passes the No. 200 sieve)	Silts and Clays (Liquid limit less than 50)	Inorganic	PI > 7 and plots on or above "A" line ^J	CL	Lean clay ^{KLM}	
			PI < 4 or plots below "A" line ^J	ML	Silt ^{KLM}	
		Organic	Liquid Limit – oven dried	<0.75	OL	Organic clay ^{KLMN}
			Liquid Limit – not dried			Organic silt ^{KLMQ}
	Silts and Clays (Liquid limit 50 or more)	Inorganic	PI plots on or above "A" line	CH	Fat clay ^{KLM}	
			PI plots below "A" line	MH	Elastic silt ^{KLM}	
		Organic	Liquid Limit – oven dried	<0.75	OH	Organic clay ^{KLMP}
			Liquid Limit – not dried			Organic silt ^{KLMQ}
Highly Organic Soils		Primarily organic matter, dark in color, and organic odor			PT	Peat

BORING NOTE:

1. SEE SHEET 1 FOR APPROXIMATE LOCATION OF BORINGS.



LOG OF BORING

Project Number B2310281 Geotechnical Evaluation NS Bridge 60.92 Illinois Division Near Moberly, Missouri				BORING:		BR-2	
				LOCATION: Top of Rail at East Abutment, EL: 100 feet			
				DATUM: WGS 84			
				LATITUDE: 39.45385		LONGITUDE: -92.28889	
DRILLER: RC Drilling		LOGGED BY: I. Vazquez-Navarez		START DATE: 12/05/23		END DATE: 12/05/23	
SURFACING: Topsoil		WEATHER: Overcast, 40s					
Elev./ Depth ft		Water Level		Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)		Sample	
						Blows (N-Value) Recovery	
						q _s tsf	
						MC %	
						Tests or Remarks	



LOG OF BORING

Project Number B2310281 Geotechnical Evaluation NS Bridge 60.92 Illinois Division Near Moberly, Missouri				BORING: BR-2 LOCATION: Top of Rail at East Abutment, EL: 100 feet DATUM: WGS 84 LATITUDE: 39.45385 LONGITUDE: -92.28889 START DATE: 12/05/23 END DATE: 12/05/23 SURFACING: Topsoil WEATHER: Overcast, 40s				
DRILLER: RC Drilling		LOGGED BY: I. Vazquez-Navarez						
BORING ELEVATION: 92.9 ft		RIG: Subcontractor	METHOD: SSA					
Elev./Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)		Sample	Blows (N-Value) Recovery	q _s tsf	MC %	Tests or Remarks
59.9		SANDY SHALE, dark gray, highly weathered to moderately weathered, moderately hard			50/2" (REF) 2"		18	
33.0					50/2" (REF) 2"		19	
		END OF BORING Boring immediately backfilled			50/0" (REF) 0"			Auger met refusal at 40.9 feet. Water not observed while drilling.
51.9								
41.0								

NORFOLK SOUTHERN RAILWAY		
HANNIBAL DISTRICT	ILLINOIS DIV.	
IL-H-60.92 BRIDGE REPLACEMENT		
EVANSVILLE, MO		
OFFICE OF CHIEF ENGINEER – BRIDGES & STRUCTURES		
ATLANTA, GA.		
DRAWING TITLE:		
BORING LOGS		
DGN EB	VAL SEC MAP	MPLE POST H-60.92
CHK TK	FILE BR6092-0006	DATE 04/11/2024
SHEET NUMBER 7 OF 7		DRAWING NUMBER H-60.92-0006