

01-19-2024 LETTING ITEM 127

STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION PLANS FOR PROPOSED NORTH IRON FURNACE ROAD BRIDGE ILLINOIS FEDERAL LAND ACCESS PROGRAM

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 52	19-01167-00-BR	HARDIN	10	1
CONTRACT 99719		N IRON FURNACE RD		

FUNCTIONAL CLASS: LOCAL ROAD
ADT (2020): 225
DESIGN SPEED: 30 MPH

INDEX TO SHEETS

1. COVER
2. SUMMARY OF QUANTITIES & TYPICAL SECTION
3. PLAN & PROFILE
4. GENERAL PLAN & ELEVATION
5. SUPERSTRUCTURE
6. DECK BEAM DETAILS - 17"x36"
7. ABUTMENT DETAILS
8. STEEL RAILING
- 9.-10. CROSS SECTIONS

HARDIN COUNTY
TOWNSHIP ROAD 52
SECTION 19-01167-00-BR
PROJECT NVXL(197)
JOB NO. C-99-049-23
CONTRACT 99719



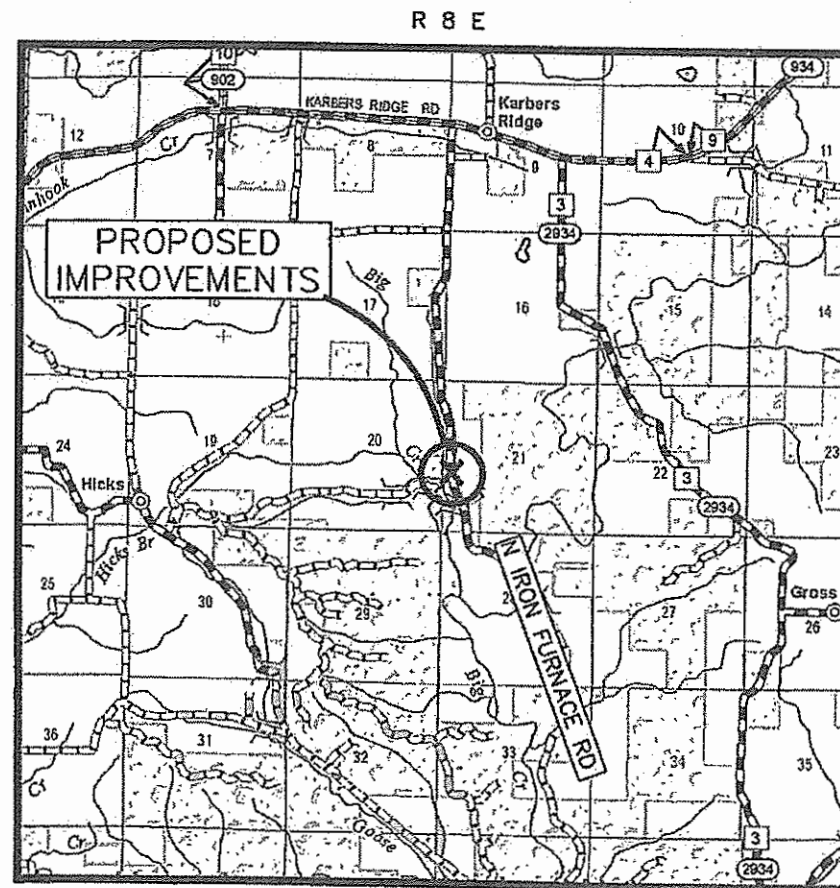
STANDARDS

280001-07	701901-09
515001-04	BLR 21-9
630001-13	
631006-08	
631026-06	

SCALES

PLAN HORIZ.	
PROFILE HORIZ.	
PROFILE VERT.	
CROSS SECTIONS	

ALL EXISTING UTILITIES AND LOCATIONS
TO BE CONFIRMED BY J.U.L.I.E.
800-892-0123



LOCATION MAP

Not to Scale

Length Of Improvements = 450 ft (0.085 mi)

BRI Job No. 19057

KIRK H. BROWN, P.E.
 PRESIDENT
 President of Brown & Roberts, Inc. Date 10/25/2023
 Illinois Professional Design Firm
 Land Survey & Prof. Eng. Corp
 Number 184-002518
 Expires April 30, 2025

STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	
APPROVED	<u>10/26/23</u> LOCAL AGENCY REPRESENTATIVE
PASSED	<u>11/9/23</u> DISTRICT 3 ENGINEER OF LOCAL ROADS & STREETS
RELEASING FOR BID BASED ON LIMITED REVIEW	<u>11/9/23</u> KIRK H. BROWN, P.E. REGION FIVE ENGINEER

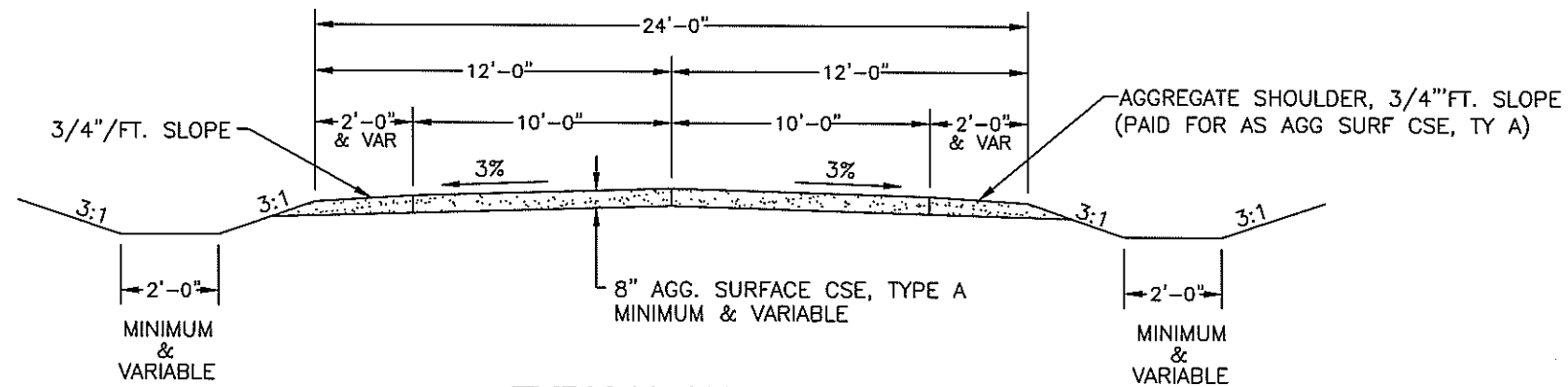
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 52	19-01167-00-BR	HARDIN	10	2
CONTRACT 99719		N IRON FURNACE RD		

SUMMARY OF QUANTITIES

CODE NUMBER	ITEM DESCRIPTION	UNIT	QUANTITY
20200100	EARTH EXCAVATION	CU YD	125
20400100	BORROW EXCAVATION	CU YD	220
28000250	TEMPORARY EROSION CONTROL SEED	POUND	50
28000305	TEMPORARY DITCH CHECKS	FOOT	120
28000400	PERIMETER EROSION BARRIER	FOOT	600
28100807	STONE DUMPED RIPRAP, CLASS A4	TON	230
40200100	AGGREGATE SURFACE COURSE, TYPE A	TON	486
50100200	REMOVAL OF EXISTING STRUCTURES	L SUM	1
50105220	PIPE CULVERT REMOVAL	FOOT	21
50300225	CONCRETE STRUCTURES	CU YD	77.6
50300280	CONCRETE ENCASEMENT	CU YD	20.3
50400305	PRECAST PRESTRESSED CONCRETE DECK BEAMS (17" DEPTH)	SQ FT	960
50800105	REINFORCEMENT BARS	POUND	5350

CODE NUMBER	ITEM DESCRIPTION	UNIT	QUANTITY
* 50900205	STEEL RAILING, TYPE S1	FOOT	80
51201400	FURNISH STEEL PILES HP10X42	FOOT	195
51265002	DRILLING AND SETTING PILES (IN ROCK)	CU FT	157
51500100	NAME PLATES	EACH	1
* 63000001	SPBGR TY A 6FT POSTS	FOOT	90
* 63100041	TRAF BAR TERM T1B	EACH	1
* 63100070	TRAF BAR TERM T5	EACH	1
67100100	MOBILIZATION	L SUM	1
* 72501000	TERMINAL MARKER - DIRECT APPLIED	EACH	4
X1200207	REMOVE AND RELAY PIPE CULVERTS (SPECIAL)	FOOT	24
X2501000	SEEDING, CLASS 2 (SPECIAL)	ACRE	0.4
X7010216	TRAFFIC CONTROL & PROTECTION (SPECIAL)	L SUM	1

* SPECIALTY ITEMS



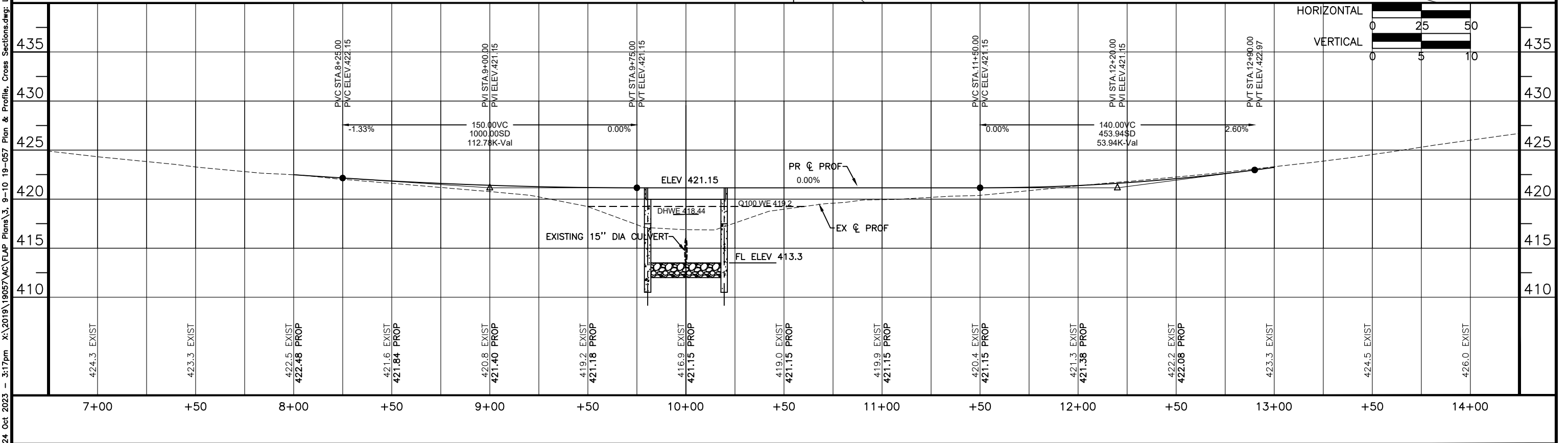
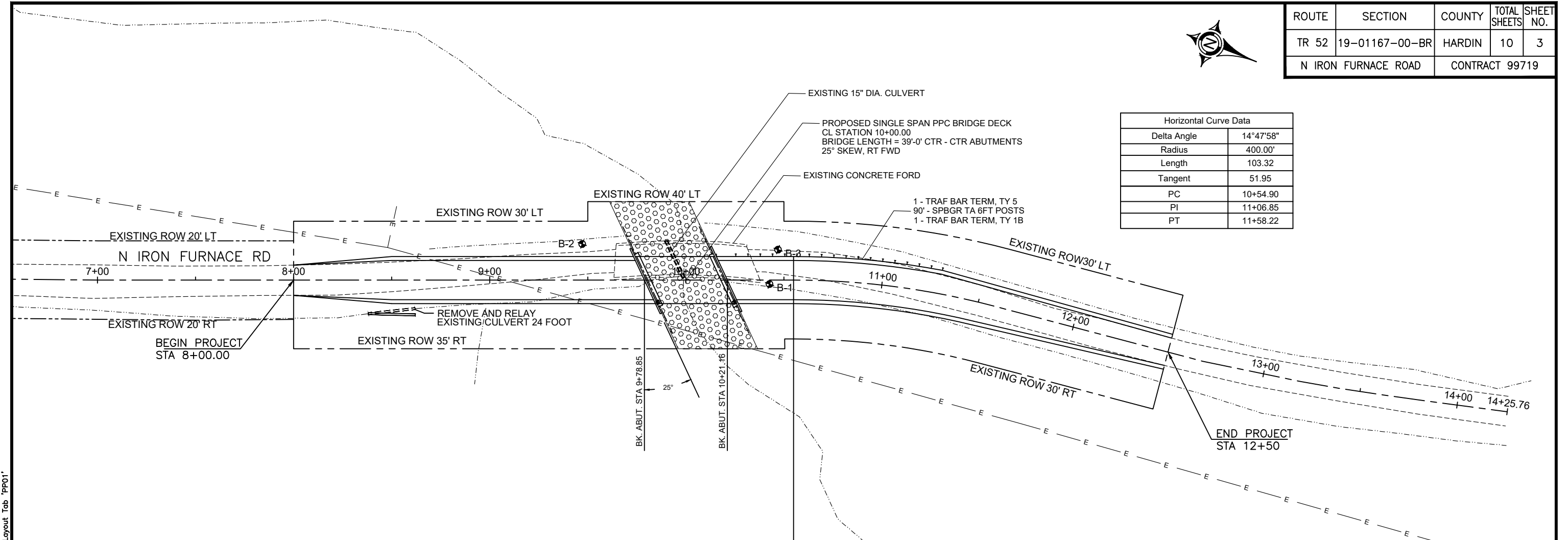
TYPICAL SECTION

NO SCALE



ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 52	19-01167-00-BR	HARDIN	10	3
N IRON FURNACE ROAD		CONTRACT 99719		

Horizontal Curve Data	
Delta Angle	14°47'58"
Radius	400.00'
Length	103.32
Tangent	51.95
PC	10+54.90
PI	11+06.85
PT	11+58.22

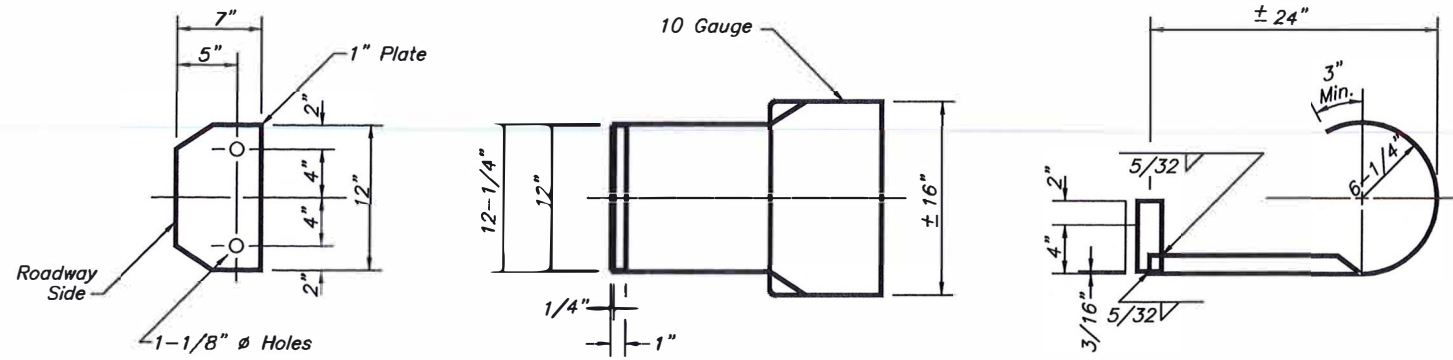


24 Oct 2023 - 3:17pm X:\2019\19057\AC\FLAP Plans\3_9-10 19-057 Plan & Profile, Cross Sections.dwg: Layout Tab 'PP01'

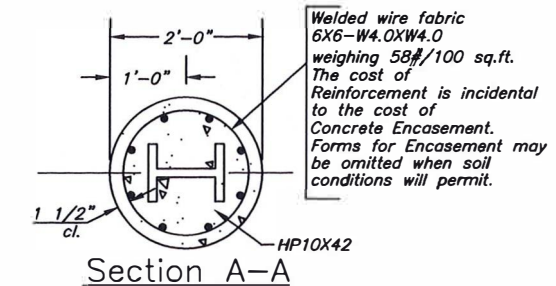
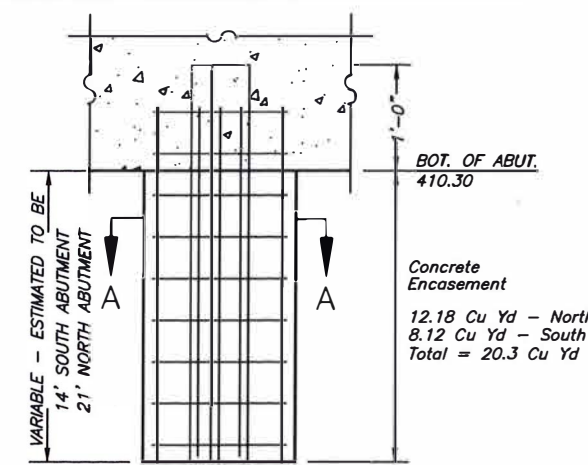
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 52	19-01167-00-BR	HARDIN	10	4
CONTRACT 99719		N IRON FURNACE RD		

CURLED END SECTION DETAILS

Note: Curled End Sections Shall Be Incidental To The Contract Price.



DETAIL OF HP PILE ENCASEMENT



QUANTITIES/LIN. FT. OF ENCASEMENT

PILE SIZE	ITEM	QUANTITY
HP 10	CONCRETE ENCASEMENT	0.116 C.Y.

DESIGN SPECIFICATIONS

2020 LRFD Specification - 9th ed.

SEISMIC DATA

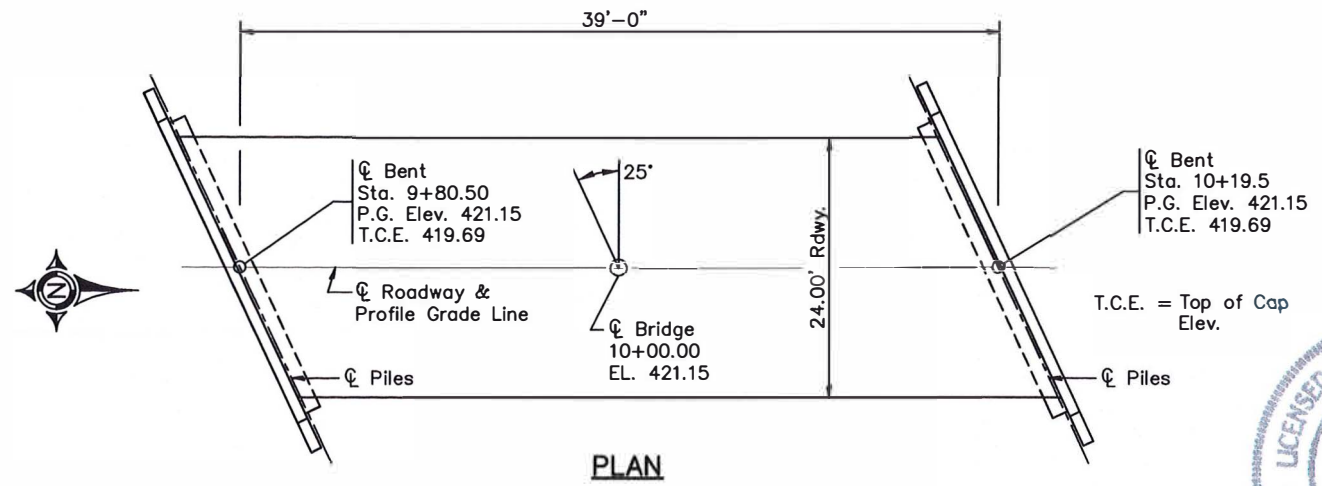
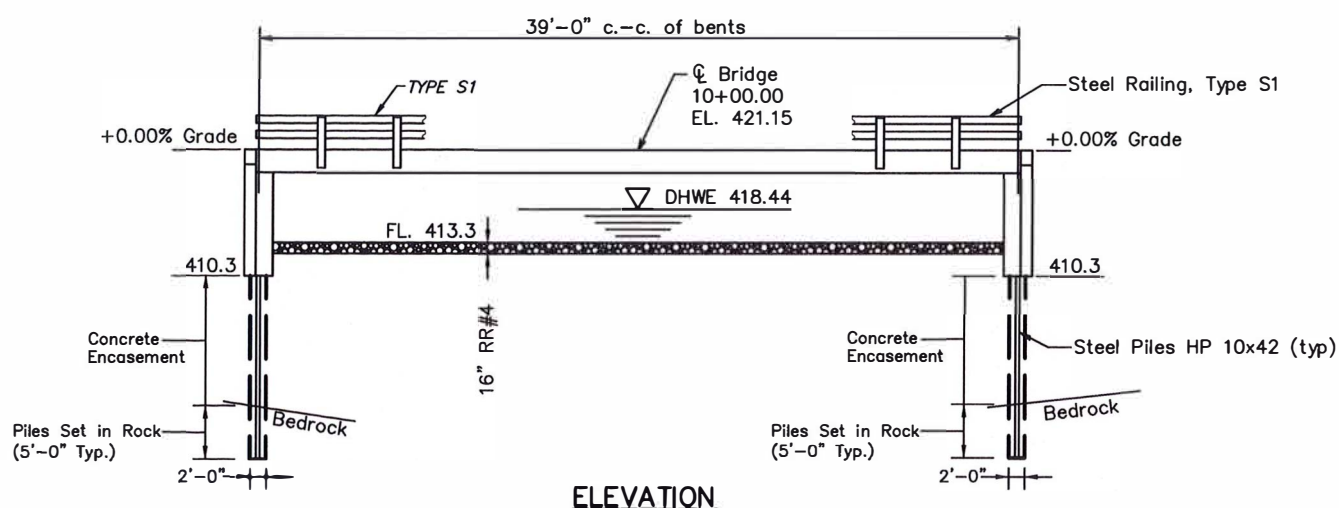
Seismic Performance Zone (SPZ) = 2
 Design Spectral Acceleration at 1.0 sec. (S_{D1}) = 0.256
 Design Spectral Acceleration at 0.2 sec (S_{D5}) = 0.703
 Site Soil Class = C

PILE DATA (2-ABUTS.)

Type	STEEL HP 10X42
Estimated Length	23 Feet (North Abut.) 16 Feet (South Abut.)
Number Required	5 (North Abut.) 5 (South Abut.)
Nominal Required Bearing	335 KIPS
Allowable Resistance Available	184 KIPS

LOADING HL-93

ALLOW 50#/SQ.FT. FOR FUTURE WEARING SURFACE



GENERAL NOTES

- The Contractor shall drive 0 test piles, as specified, in a permanent location as directed by the Engineer before ordering the remaining piles.
- See Special Provisions for boring logs.
- A Corrosion inhibitor, as covered in the Special Provisions, shall be used in the concrete for precast prestressed concrete deck beams.
- The Steel H-piles shall be according to AASHTO M270 Grade 50.

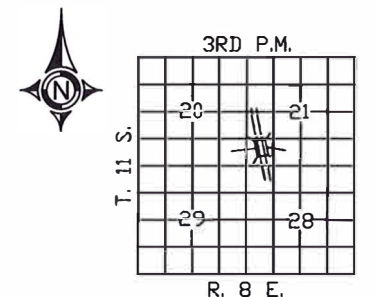
TOTAL BILL OF MATERIAL

Item	Unit	Super	Sub.		Total
			Piers	Abuts.	
Concrete Structures	Cu. Yd.			77.6	77.6
Precast Prestressed Concrete Deck Beams (17" Depth)	Sq. Ft.	960			960
Steel Railing, Type S-1	Foot	80			80
Reinforcement Bars	Pound			5350	5350
Furnishing Steel Piles HP 10X42	Foot			195	195
Drilling and Setting Piles (in Rock)	Cu. Yd.			5.8	5.8
Name Plates	Each			1.0	1.0
Concrete Encasement	Cu. Yd.			20.3	20.3

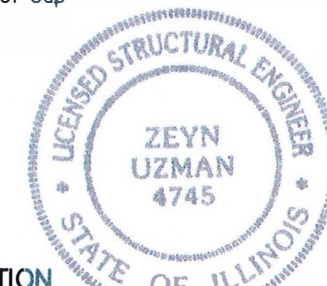
STATION 10+00
 UNNAMED TRIBUTARY TO BIG CREEK
 SEC. 19-01167-00-BR BUILT 2021
 HARDIN COUNTY
 LOADING HL93
 STR. NO. 035-3059

LETTERING FOR NAME PLATE

Locate Name Plate at SOUTHWEST Corner of Bridge



LOCATION SKETCH



I certify that to the best of knowledge, information and belief, this bridge/box culvert design is structurally adequate for the design loading shown on the plans. The design is an economical one for the style of structure and complies with requirements of the current AASHTO Standard Specifications for Highway Bridges.

Illinois Structural No. 4745
 Expires 11/30/2022

WATERWAY INFORMATION

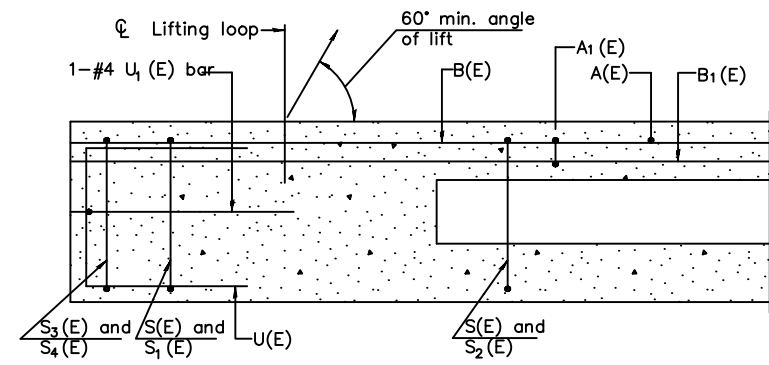
Drainage Area = 0.53 S.M. Low Grade Elev. = 421.15 Sta. 10+00									
Flood	Freq. Yr.	Q C.F.S.	Opening	Sq. Ft.	Nat. H.W.E.	Head - Ft.	Headwater El.	Exist.	Prop.
Design	15	553	1.2	184	418.44	0.43	0.00		
Base	100	916	1.2	214	419.24	0.35	0.13		
Max. Calc.	500	1250	1.2	233	419.51	1.09	0.19		

GENERAL PLAN & ELEVATION

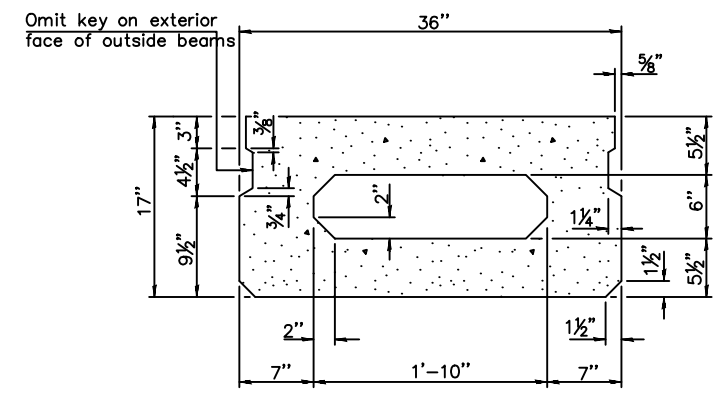
TR 52 OVER
 TRIBUTARY TO BIG CREEK
 SECTION 19-01167-00-BR
 HARDIN COUNTY
 STATION 10+00

28 Apr 2021 - 2:11pm X:\2019\19057\AC\Plans\4 19-057 General Plan and Elevation.dwg: Layout Tab 'Layout1'

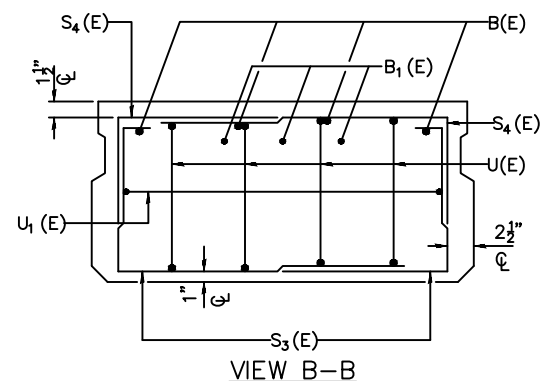
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 52	19-01167-00-BR	HARDIN	10	5
CONTRACT 99719		N IRON FURNACE RD		



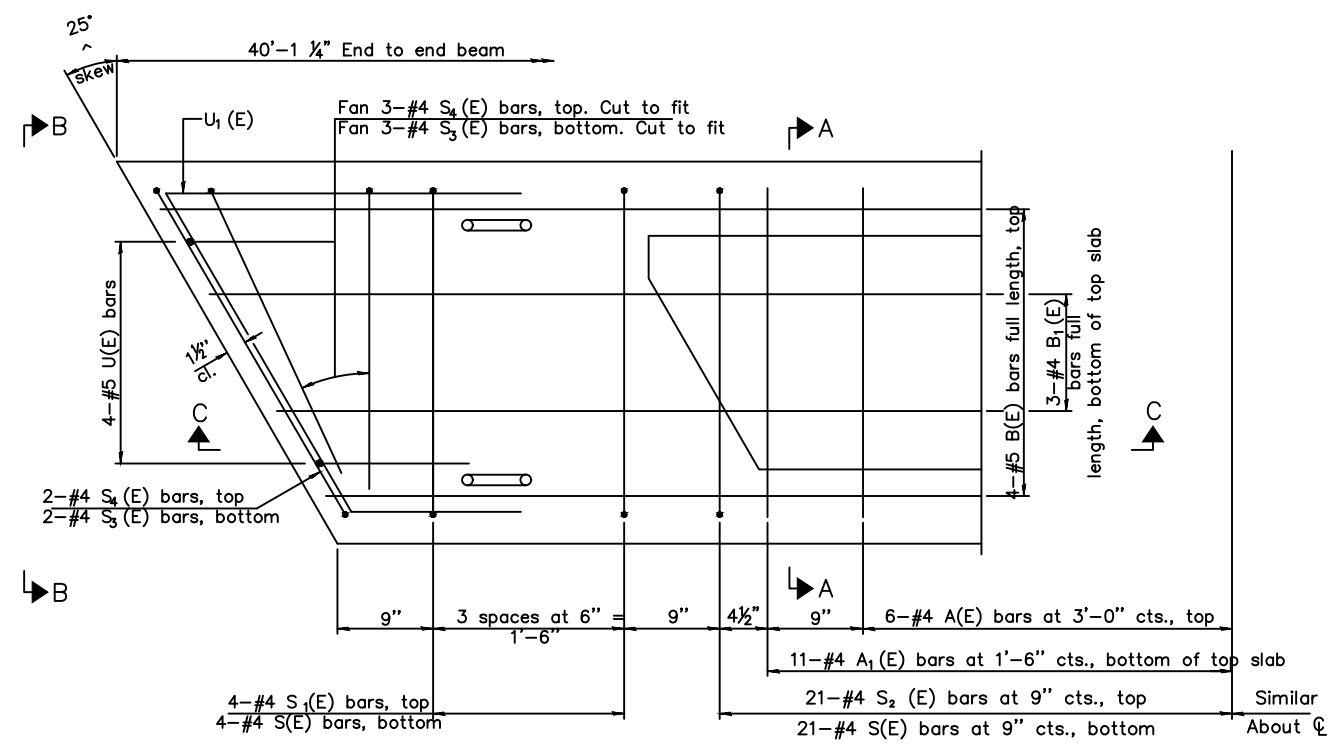
SECTION C-C



SECTION A-A
(Showing dimensions)

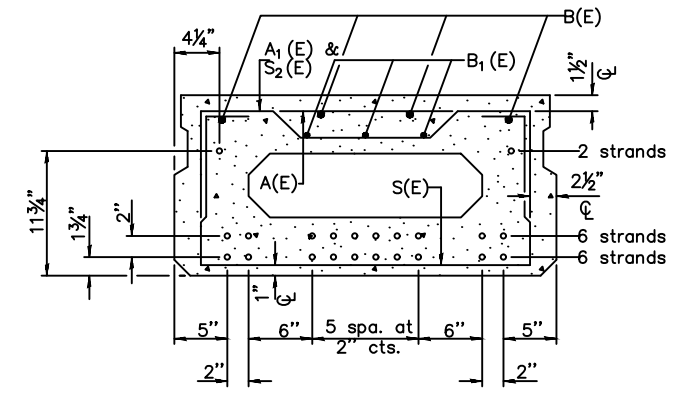


VIEW B-B



PLAN VIEW

Note: Spacing of S(E) and S (E) bars may be adjusted up to 4" in the immediate area of the transverse tie diaphragms to miss the block outs for the transverse ties.



SECTION A-A
(Showing reinforcement and permissible strand locations)

Note: Place the number of strands specified in each row symmetrically about the centerline of beam in the permissible strand locations shown.

BAR LIST
ONE BEAM ONLY
(For information only)

Bar	No.	Size	Length	Shape
A(E)	12	#4	2'-7"	—
A1(E)	22	#4	2'-10"	—
B(E)	8	#5	21'-6"	—
B1(E)	6	#4	21'-4"	—
S(E)	50	#4	5'-9"	□
S1(E)	8	#4	4'-3"	□
S2(E)	42	#4	4'-6"	□
S3(E)	10	#4	4'-4"	□
S4(E)	10	#4	3'-7"	□
U(E)	8	#5	3'-8"	□
U1(E)	2	#4	6'-5"	□

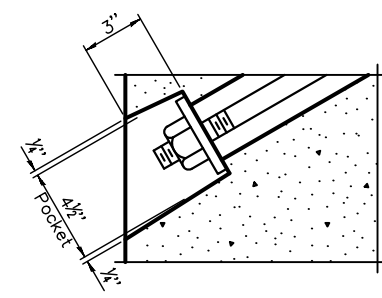
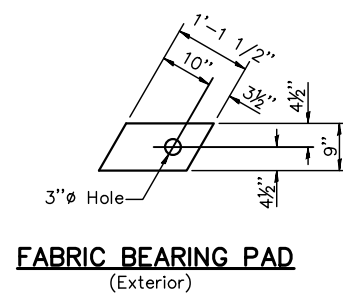
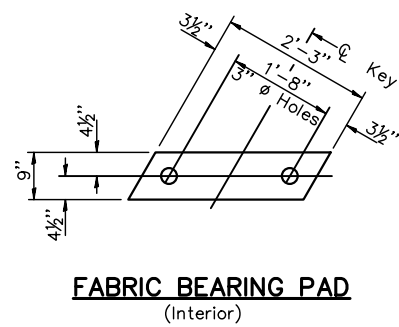
Note: See sheet 7 of 10 for additional details and Bill of Material.

17" X 36" PPC DECK BEAM
STRUCTURE NO. 035-3059

PD-1736-R 10-1-08

17" X 36" PPC DECK BEAM
TR 52 OVER
TRIBUTARY TO BIG CREEK
SECTION 19-01167-00-BR
HARDIN COUNTY
STATION 10+00

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 52	19-01167-00-BR	HARDIN	10	6
CONTRACT 99719		N IRON FURNACE RD		



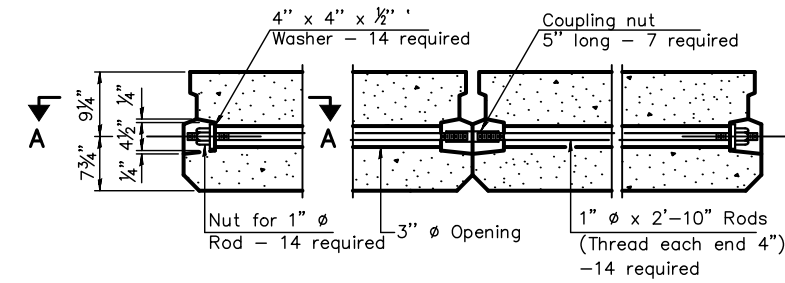
FABRIC BEARING PAD
(Interior)

FABRIC BEARING PAD
(Exterior)

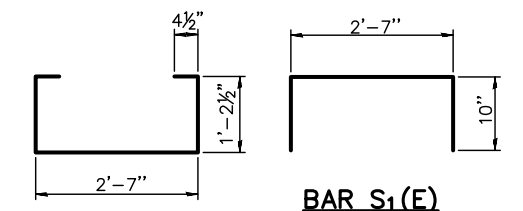
FIXED

Note: Omit holes when using expansion bearings.

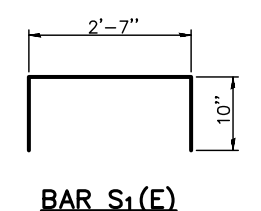
SECTION A-A



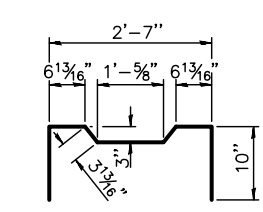
TYPICAL TRANSVERSE TIE ASSEMBLY



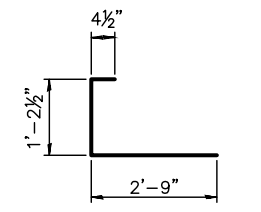
BAR S(E)



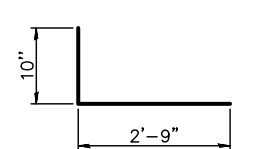
BAR S1(E)



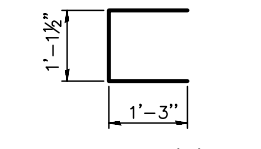
BAR S2(E)



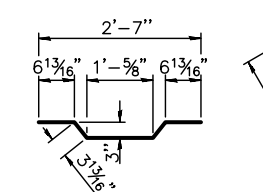
BAR S3(E)



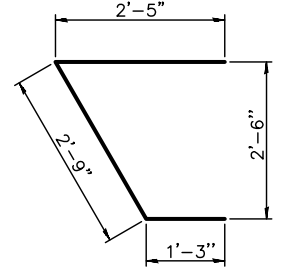
BAR S4(E)



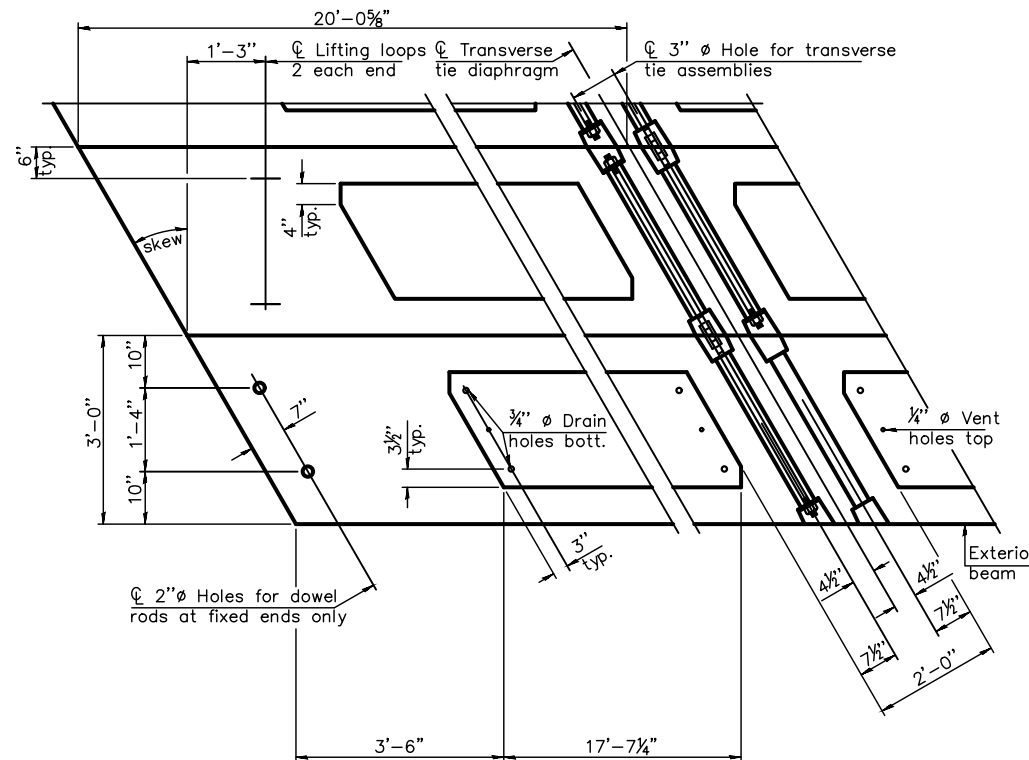
BAR U(E)



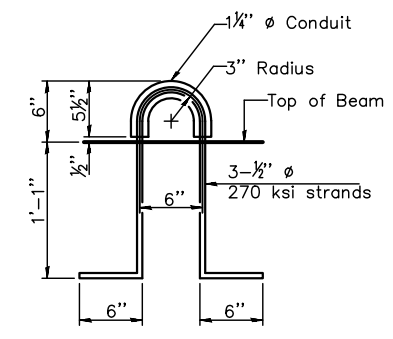
BAR A1(E)



BAR U1(E)



PLAN VIEW



LIFTING LOOP DETAIL

Note: Connect beams in pairs with the transverse tie configuration shown.

NOTES

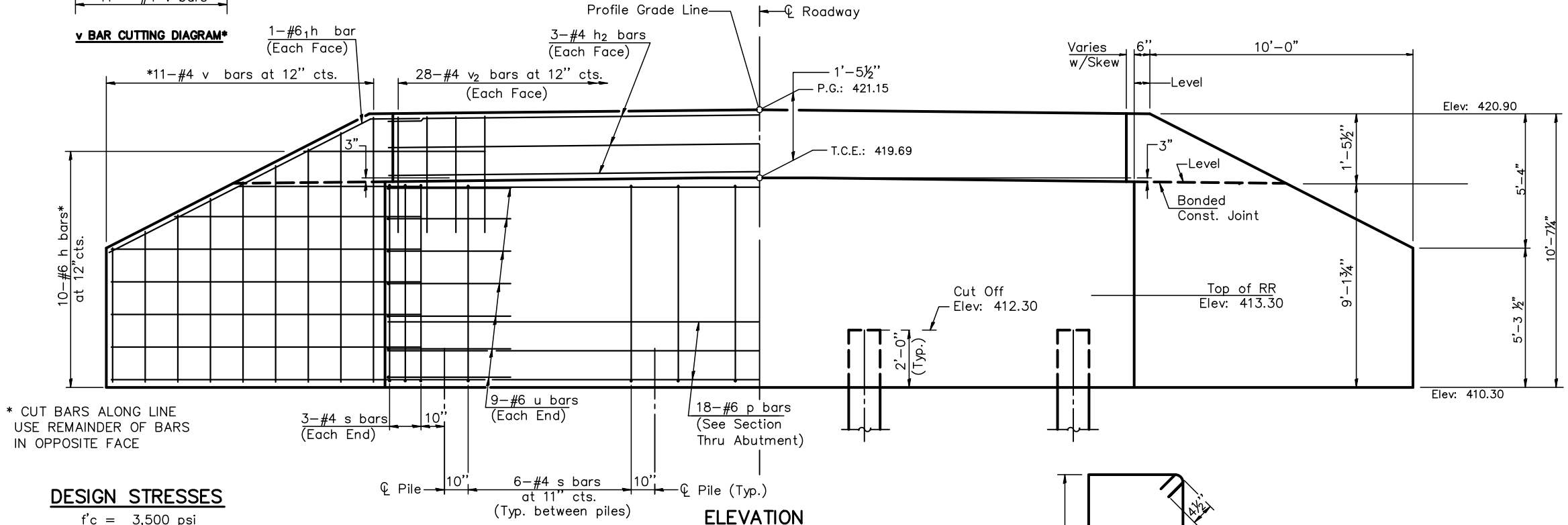
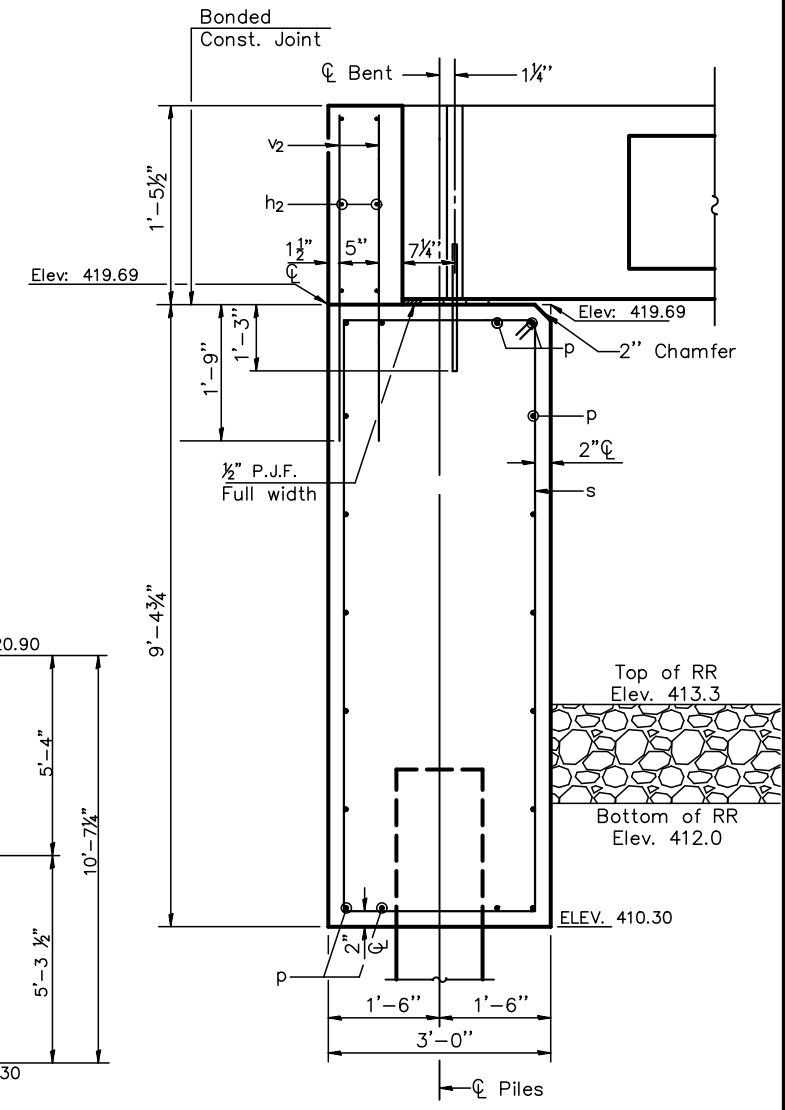
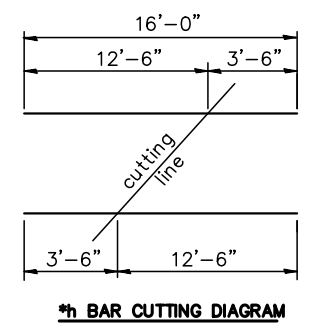
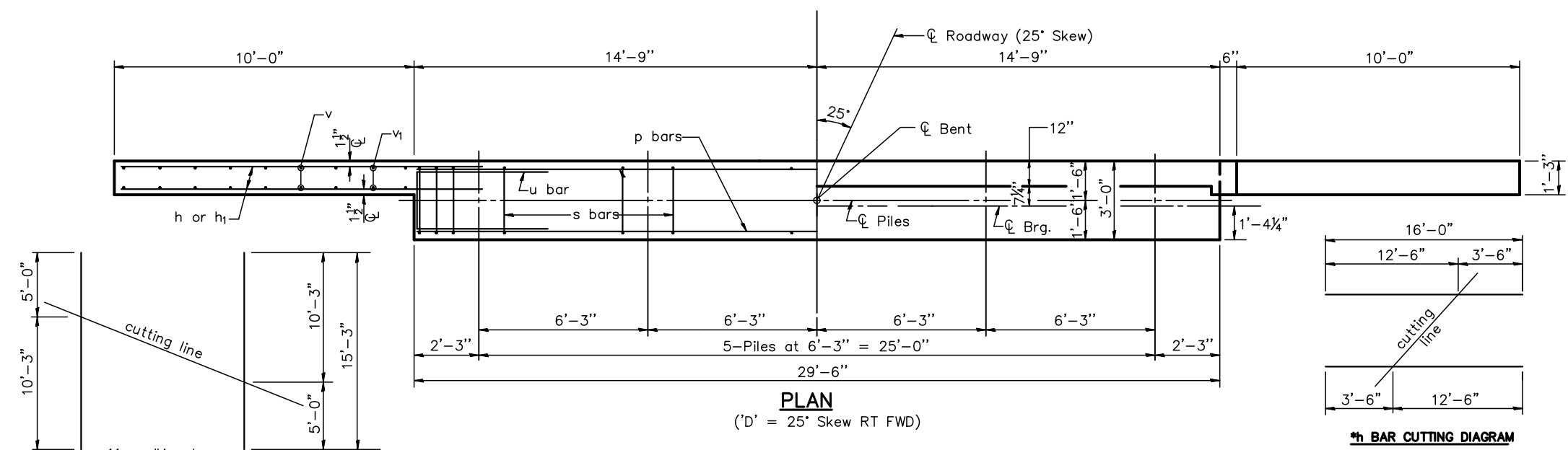
- Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal diameter shall be 1/2" and the nominal cross-sectional area shall be 0.153 sq. in.
- The 1" rods in the transverse tie assembly shall be tightened to a snug fit and the threads set. Pockets on exterior faces of bridge shall be filled with grout after transverse tie assembly is in place.
- Reinforcement bars shall conform to ASTM A 706, Grade 60. (See Special Provisions).
- Two 1/8" fabric adjusting shims of the dimensions of the exterior bearing pad shall be provided for each bearing pad location.
- A minimum 2 1/2" lifting pin shall be used to engage the lifting loops during handling.
- Corrosion Inhibitor, per Article 1020.05(b)(12) and 1021.06 of the Standard Specifications, shall be used in the concrete for precast prestressed concrete deck beams.
- Compressive strength of prestressed concrete, f'c, shall be 6000 psi.
- Compressive strength of prestressed concrete at release, f'ci, shall be 5000 psi.

BILL OF MATERIAL

Precast Prestressed Conc. Deck Bms. (17" depth)	Sq. Ft.	960
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17" X 36" PPC DECK BEAM
TR 52 OVER
TRIBUTARY TO BIG CREEK
SECTION 19-01167-00-BR
HARDIN COUNTY
STATION 10+00

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 52	19-01167-00-BR	HARDIN	10	7
CONTRACT 99719		N IRON FURNACE RD		

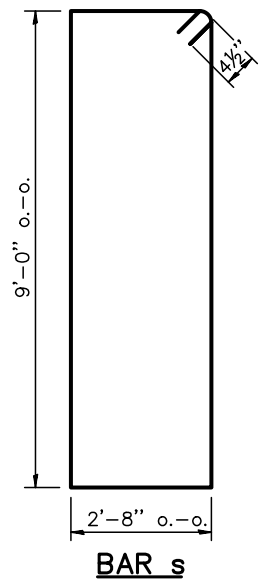
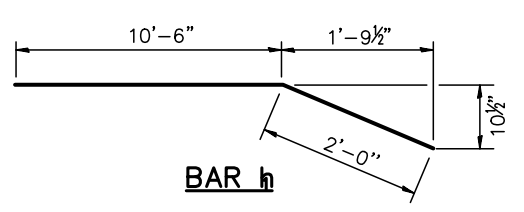
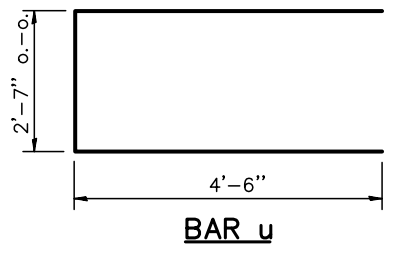


* CUT BARS ALONG LINE
USE REMAINDER OF BARS
IN OPPOSITE FACE

DESIGN STRESSES
f'c = 3,500 psi
fy = 60,000 psi

NOTES

- The Backwall and the portion of the Wingwalls above the bonded construction joint shall be cast against the in-place beam.
- Reinforcement bars shall conform to the requirements of A.A.S.H.T.O. M-31 or M-322, Grade 60.
- Space reinforcement in cap to miss anchor bolts.



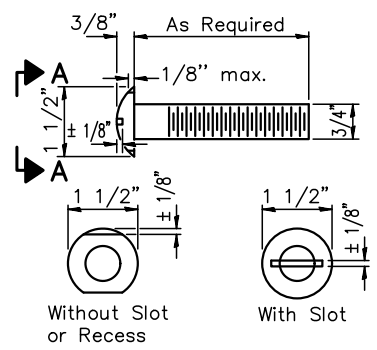
BILL OF MATERIAL FOR EACH ABUTMENT

Bar	No.	Size	Length	Shape
h	20	#6	16'-0"	—
h1	4	#6	12'-6"	—
h2	6	#4	29'-0"	—
p	18	#6	29'-0"	—
s	34	#4	24'-8"	□
u	18	#6	11'-7"	—
v	22	#4	15'-3"	—
v2	56	#4	3'-3"	—
Concrete Structures			38.8 Cu. Yds.	
Reinforcement Bars			2675 Lb.	

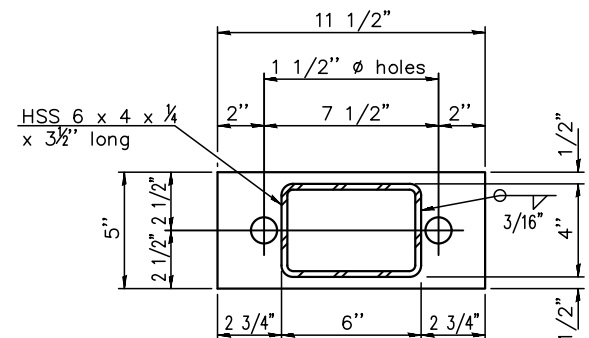
ABUTMENT DETAILS		
TR 52 OVER		
TRIBUTARY TO BIG CREEK		
SECTION 19-01167-00-BR		
HARDIN COUNTY		
24' RDWY.	17" BMS.	'D'=25'

24 Oct 2023 - 3:23pm X:\2019\19057\AC\FLAP Plans\19-057 Abutment Details.dwg: Layout Tab 'Layout 1'

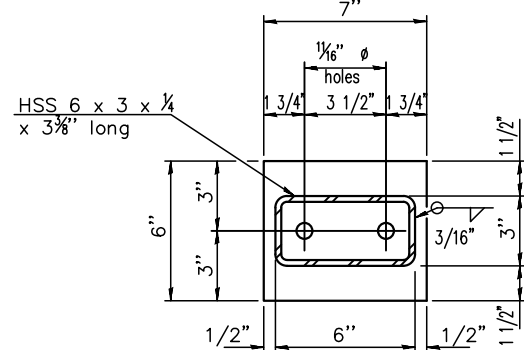
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 52	19-01167-00-BR	HARDIN	10	8
CONTRACT 99719		N IRON FURNACE RD		



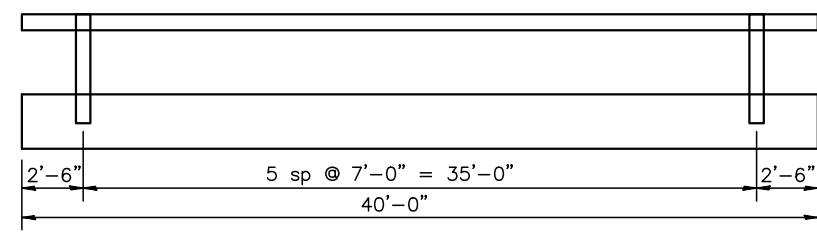
VIEW A-A
ROUND HEAD BOLT



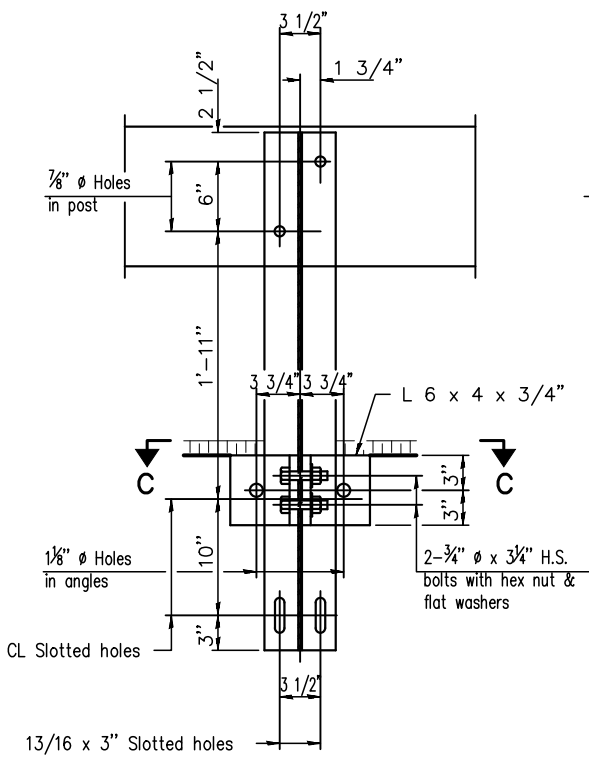
PL 1/2" x 11 1/2" x 5"



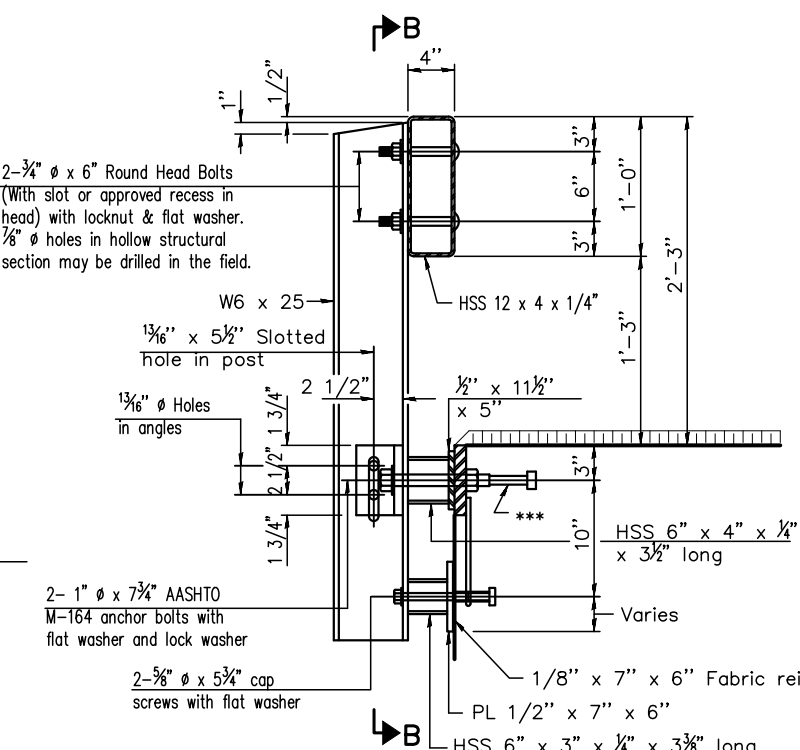
PL 1/2" x 7" x 6"



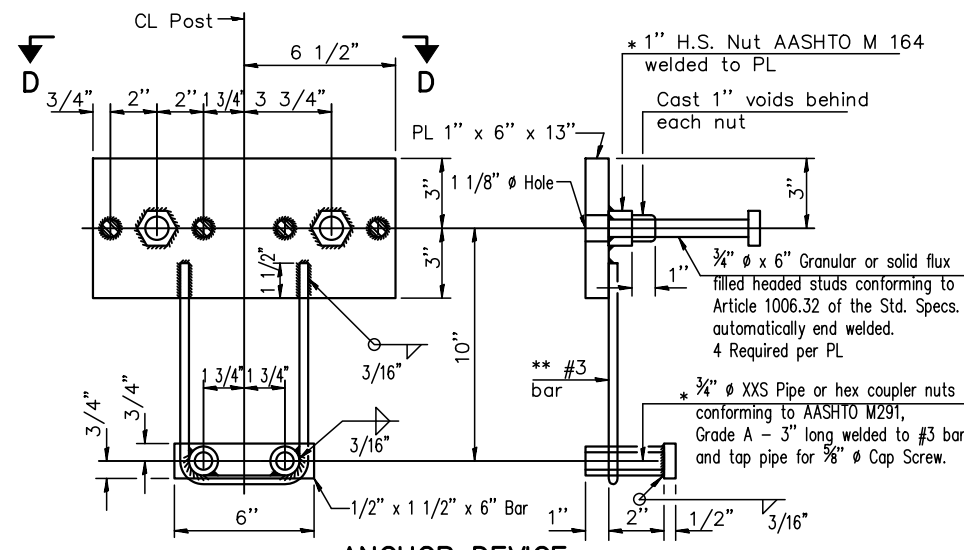
ELEVATION OF RAILING



SECTION B-B

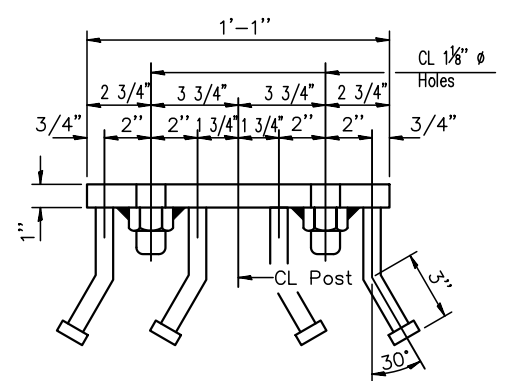


SECTION AT RAILING POST

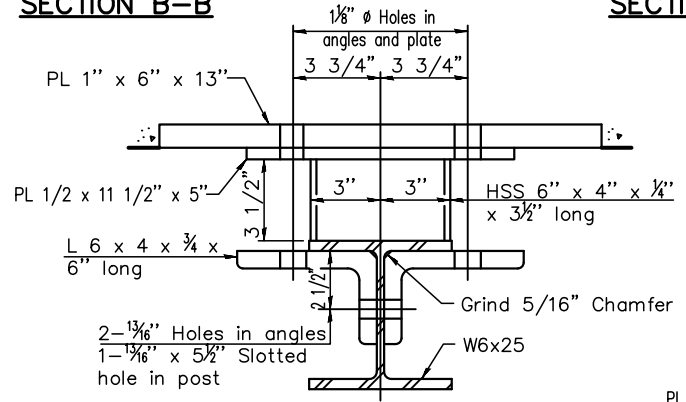


ANCHOR DEVICE

Notes:
 All field drilled holes shall be coated with an approved zinc rich paint before erection.
 For multi-span bridges, sufficient 1/4" x 6" x 1'-2" galvanized steel shims shall be provided to align rail between adjacent spans. Cost included with Steel Railing, Type S-1.
 All steel rail elements shall be galvanized according to Article 509.05 of the Standard Specifications.
 *** The studs of the anchor devices shall be placed below the top reinforcement bars and the outermost longitudinal reinforcement bar shall be placed directly above the studs of the rail post anchor device.

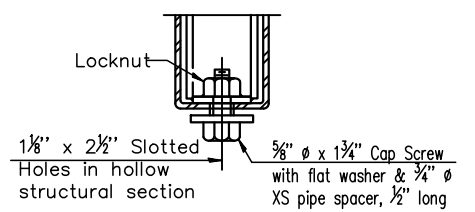


VIEW D-D

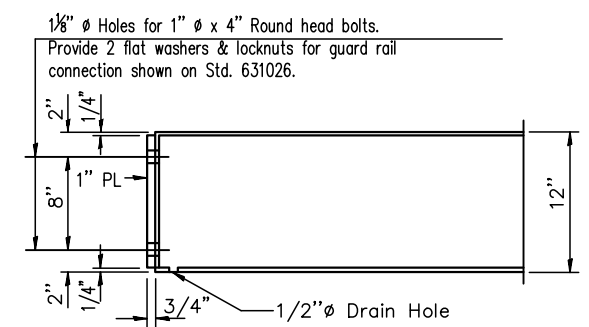


SECTION C-C

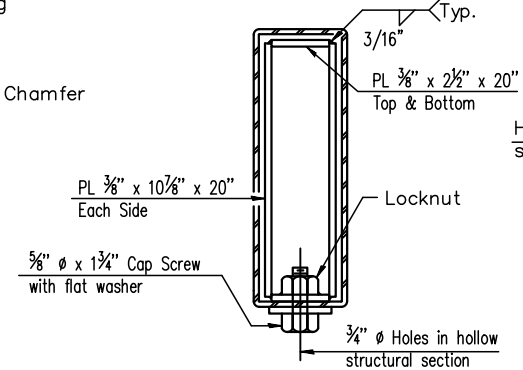
** Whenever the lower insert assemblies interfere with strand locations, the #3 bars shall be cut and adjusted in order to allow raising or lowering of the lower inserts. Maximum adjustment not to exceed 1/2".



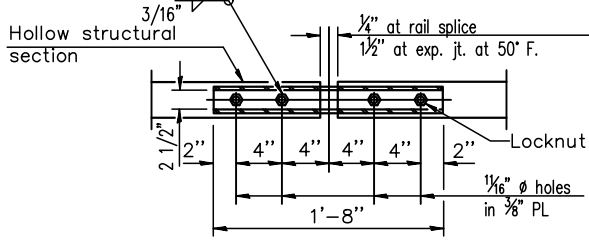
RAIL SPLICE CONNECTION AT EXPANSION JT.



END OF RAIL DETAILS



SECTIONS AT RAIL SPLICE



PLAN-BOTT. SPLICE TYPICAL

BILL OF MATERIAL

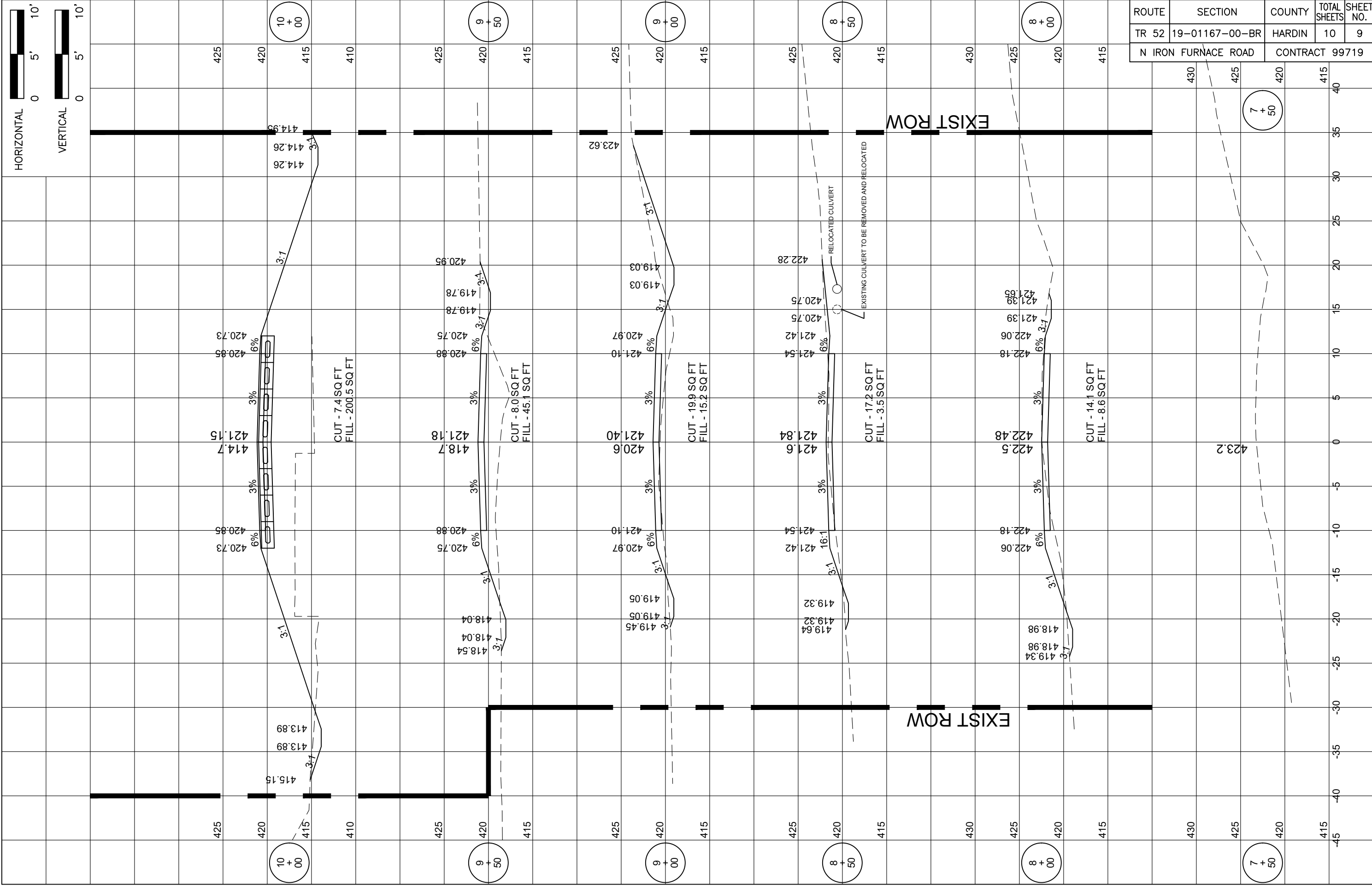
Item	Unit	Quantity
Steel Railing, Type S-1	Foot	80

STEEL RAILING, TYPE S-1

TR 52 OVER
 TRIBUTARY TO BIG CREEK
 SECTION 19-01167-00-BR
 HARDIN COUNTY
 STATION 10+00

(10'-9" Maximum Post Spacing)

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 52	19-01167-00-BR	HARDIN	10	9
N IRON FURNACE ROAD		CONTRACT 99719		



ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 52	19-01167-00-BR	HARDIN	10	10
N IRON FURNACE ROAD		CONTRACT 99719		

