



STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

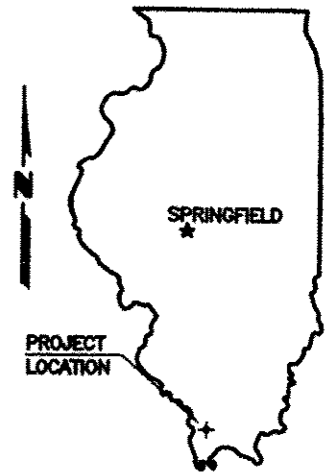
PLANS FOR PROPOSED  
SURFACE TRANSPORTATION PROGRAM

OFF SYSTEM BRIDGE  
TOWNSHIP ROUTE 193 (SADLER ROAD)

SECTION 08-01189-00-BR  
PROJECT NO. BROS-0181(46)  
JOB NO. C-99-541-08  
LITTLE CREEK

UNION COUNTY

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 193	08-01189-00-BR	UNION	10	1
PROJECT NO. BROS-181(46)			CONTRACT NO. 99537	



SUMMARY OF QUANTITIES

CODE NO.	PAY ITEM	UNIT	TOTAL
* X2501000	SEEDING, CLASS 2 (SPECIAL)	ACRE	0.3
* Δ X6300135	STEEL PLATE BEAM GUARDRAIL, TYPE B (SPECIAL)	FOOT	12.5
* Δ X6311205	TRAFFIC BARRIER TERMINAL, TYPE 5A (SPECIAL)	EACH	1
* XX006465	DOMESTIC WATER METER VAULT TO BE ADJUSTED (SPECIAL)	EACH	1
* 20048665	RAILROAD PROTECTIVE LIABILITY INSURANCE	L SUM	1
* Δ 20053600	RESET BENCH MONUMENT	EACH	1
20200100	EARTH EXCAVATION	CU YD	38
* 20400100	BORROW EXCAVATION	CU YD	1,027
* 28100809	STONE DUMPED RIPRAP, CLASS A5	TON	145
* 40200800	AGGREGATE SURFACE COURSE, TYPE B	TON	356
* 50100100	REMOVAL OF EXISTING STRUCTURES	EACH	1
50200100	STRUCTURE EXCAVATION	CU YD	51
50300225	CONCRETE STRUCTURES	CU YD	35.0
50300280	CONCRETE ENCASEMENT	CU YD	2.7
50400305	PRECAST PRESTRESSED CONCRETE DECK BEAMS (17" DEPTH)	SQ FT	768
50800105	REINFORCEMENT BARS	POUND	4,004
Δ 50900205	STEEL RAILING, TYPE S1	FOOT	66
51201400	FURNISHING STEEL PILES HP10X42	FOOT	371
51202305	DRIVING PILES	FOOT	371
51203400	TEST PILE STEEL HP10X42	EACH	1
51500100	NAME PLATES	EACH	1
54205485	PIPE CULVERTS, CLASS C, TYPE 1 EQUIVALENT ROUND-SIZE 30"	FOOT	36
Δ 63100075	TRAFFIC BARRIER TERMINAL, TYPE 5A	EACH	1
67100100	MOBILIZATION	L SUM	1
72000100	SIGN PANEL - TYPE 1	SQ FT	15
72800100	TELESCOPING STEEL SIGN SUPPORT	FOOT	33
* Δ 78201000	TERMINAL MARKER - DIRECT APPLIED	EACH	2

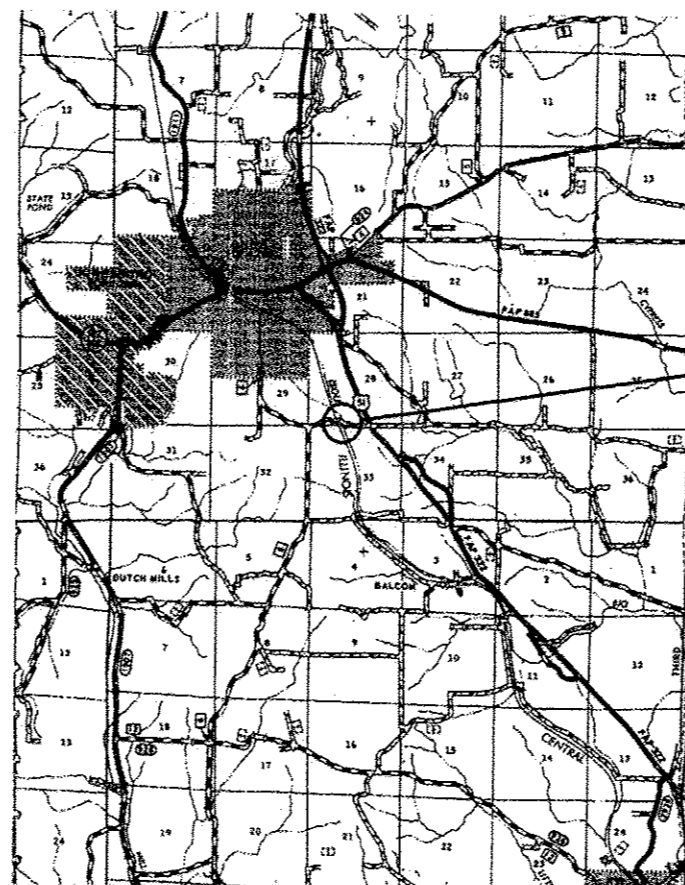
\* SEE SPECIAL PROVISIONS    Δ SPECIALTY ITEMS



CONTRACT NO. 99537

**E. MILLER ENGINEERING, INC.**  
CONSULTING ENGINEERS  
HARRISBURG, ILLINOIS

*John S. Peradotti 12/30/15*  
**John S. Peradotti**  
PROFESSIONAL ENGINEER  
#062-050510  
EXPIRES NOV. 30, 2015



LOCATION MAP

SCALE: 1" = 2 MILES

NET LENGTH OF IMPROVEMENT = 386.00 FT. = 0.0731 MILES

INDEX OF SHEETS

- COVER SHEET
  - PLAN AND PROFILE
  - GENERAL PLAN AND ELEVATION
  - 17' X 48" PPC DECK BEAM
  - 17' X 48" PPC DECK BEAM DETAILS
  - ABUTMENT
  - STEEL RAILING, TYPE S1
  - NAME PLATES
  - PILING DETAILS
  - CROSS SECTIONS
- STANDARDS 000001-06 STANDARD SYMBOLS, ABBREVIATIONS AND PATTERNS
- 280001-07 TEMPORARY EROSION CONTROL SYSTEMS
- 635006-03 REFLECTOR AND TERMINAL MARKER PLACEMENT
- 701901-04 TRAFFIC CONTROL DEVICES
- 720001-01 SIGN PANEL MOUNTING DETAILS
- 720006-04 SIGN PANEL ERECTION DETAILS
- 728001-01 TELESCOPING STEEL SIGN SUPPORT
- BLR 21-9 TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES
- BLR 26-3 STEEL PLATE BEAM GUARDRAIL 29" HEIGHT
- BLR 27-1 TRAFFIC BARRIER TERMINAL, TYPE 5A

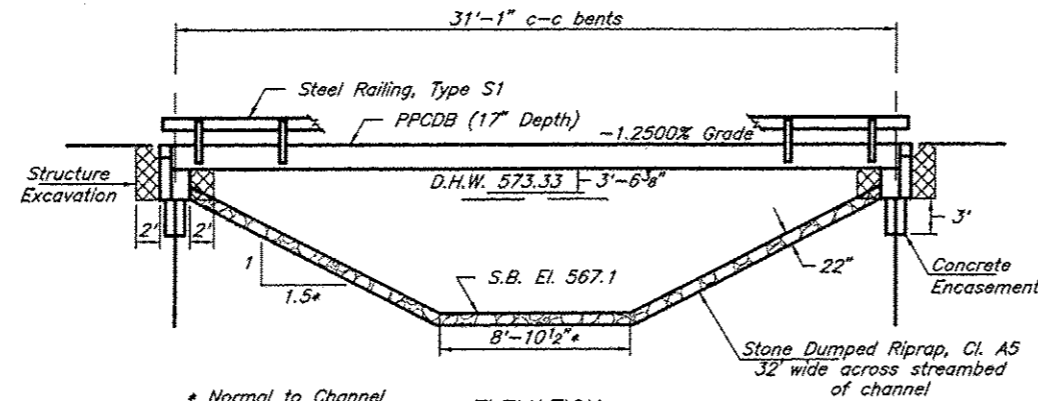
CLASSIFICATION : LOCAL ROAD (RURAL)  
ADT : 375  
DESIGN SPEED : 40 MPH

ILLINOIS DEPARTMENT OF TRANSPORTATION	
Approved	<u>11/13/15</u> <i>Dwain Hammett</i> Union County Engineer
Passed	<u>12/7/2015</u> <i>Dennis W. Hill</i> District 9 Engineer of Local Roads and Streets
Releasing for Bid Based on Limited Review	<u>12/7/15</u> <i>Jeffrey L. Kain</i> Deputy Director of Highways, Region 5 Engineer Illinois Department of Transportation



B.M. - USGS Marker in North  
end of West backwall  
Elev. 573.68

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 193	08-01189-00-BR	UNION	10	3
PROJECT NO. BROS-181(46)			CONTRACT NO. 99537	

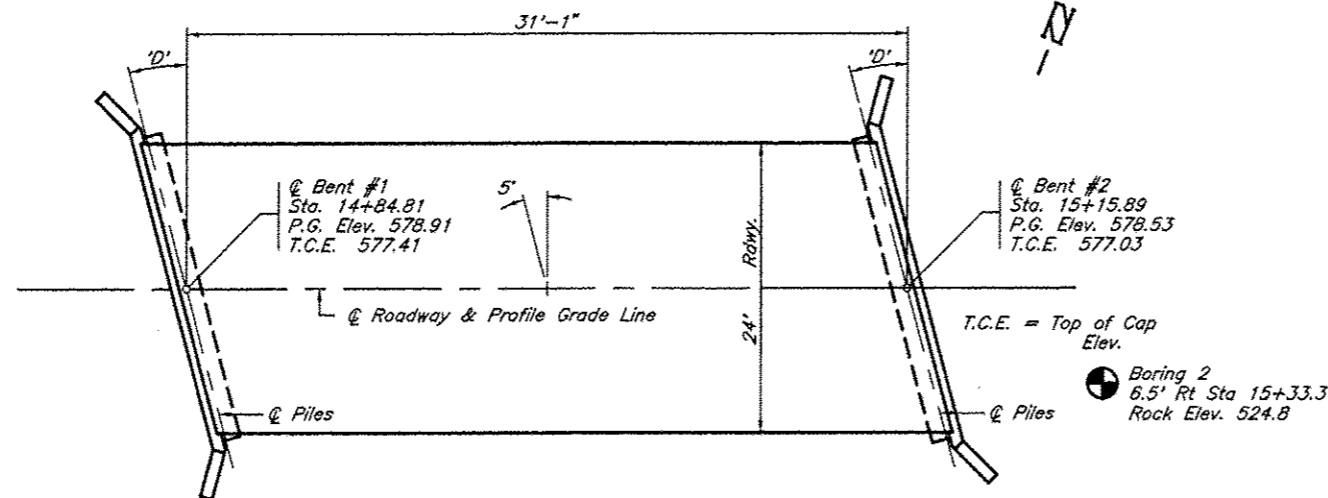


Existing Structure - Wood deck with steel stringers on closed concrete abutments. 16.0' Wide x 26.8' Long

\* Normal to Channel

ELEVATION

Boring 1  
25.0' Lt Sta 14+69.7



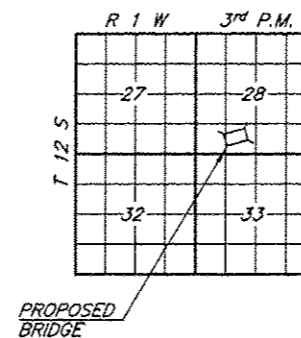
PLAN

Skew Angle "D" = 5' Right Forward

LITTLE CREEK  
SEC. 08-01189-00-BR BUILT 20\_\_\_\_  
COUNTY UNIT ROAD DISTRICT  
UNION COUNTY  
LOADING HL-93  
STR. NO. 091-3233

LETTERING FOR NAME PLATE

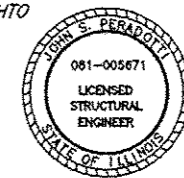
Locate Name Plate at southwest  
Corner of Bridge (See Sheet 8)



LOCATION SKETCH

I certify that to the best of my knowledge, information and belief, this bridge design is structurally adequate for the design loading shown on the plans. The design is an economical one for the type of structure and comply with the requirements of the current AASHTO LRFD Specifications.

John S. Peradotti  
S.E. #81-5671  
Expires Nov. 30, 2016



PILE DATA (2-ABUTS.)

Type & Size : HP10X42  
Nominal Required Bearing : 213 kips  
Factored Resistance Available : Refusal  
Estimated Length : 53 Feet  
Number Required : 8 (Includes 1 Test Pile located in Bent #1)

DESIGN SPECIFICATIONS

2014 AASHTO LRFD Bridge Design Specifications and all applicable interims.

LOADING HL-93

Allow 50#/sq. ft. for future wearing surface

SEISMIC DATA

Soil Site Class = D  
Design Spectral Acceleration at 0.2 sec. (S<sub>ps</sub>) = 1.173  
Design Spectral Acceleration at 1.0 sec. (S<sub>p1</sub>) = 0.513  
Seismic Performance Zone (SPZ) = 4

WATERWAY INFORMATION

Drainage Area = 1.35 Sq. Mi.		Low Grade Elev. = 574.44		At Sta. 0+69 PE					
Flood	Freq. Yr.	Q C.F.S.	Opening Sq. Ft. Exist.	Prop.	Natural H.W.E.	Head-Ft. Exist.	Prop.	Headwater El. Exist.	Prop.
Design	20	868	103.3'	113.5	573.33	0.65	0.84	573.98	574.17
Base	100	1250	103.3'	128.7'	573.87	0.99	0.52	574.86	574.32
Overtopping									
Max. Calc.	500								

Over Road Flow (Sq Ft): Exist. 44.6' 111.9' Prop. 27.0'  
1 Over Road 2 Over Road and PE 3 Over PE

GENERAL NOTES

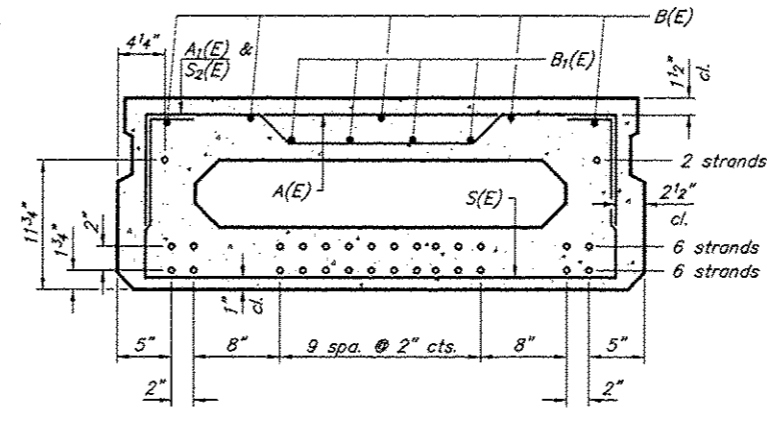
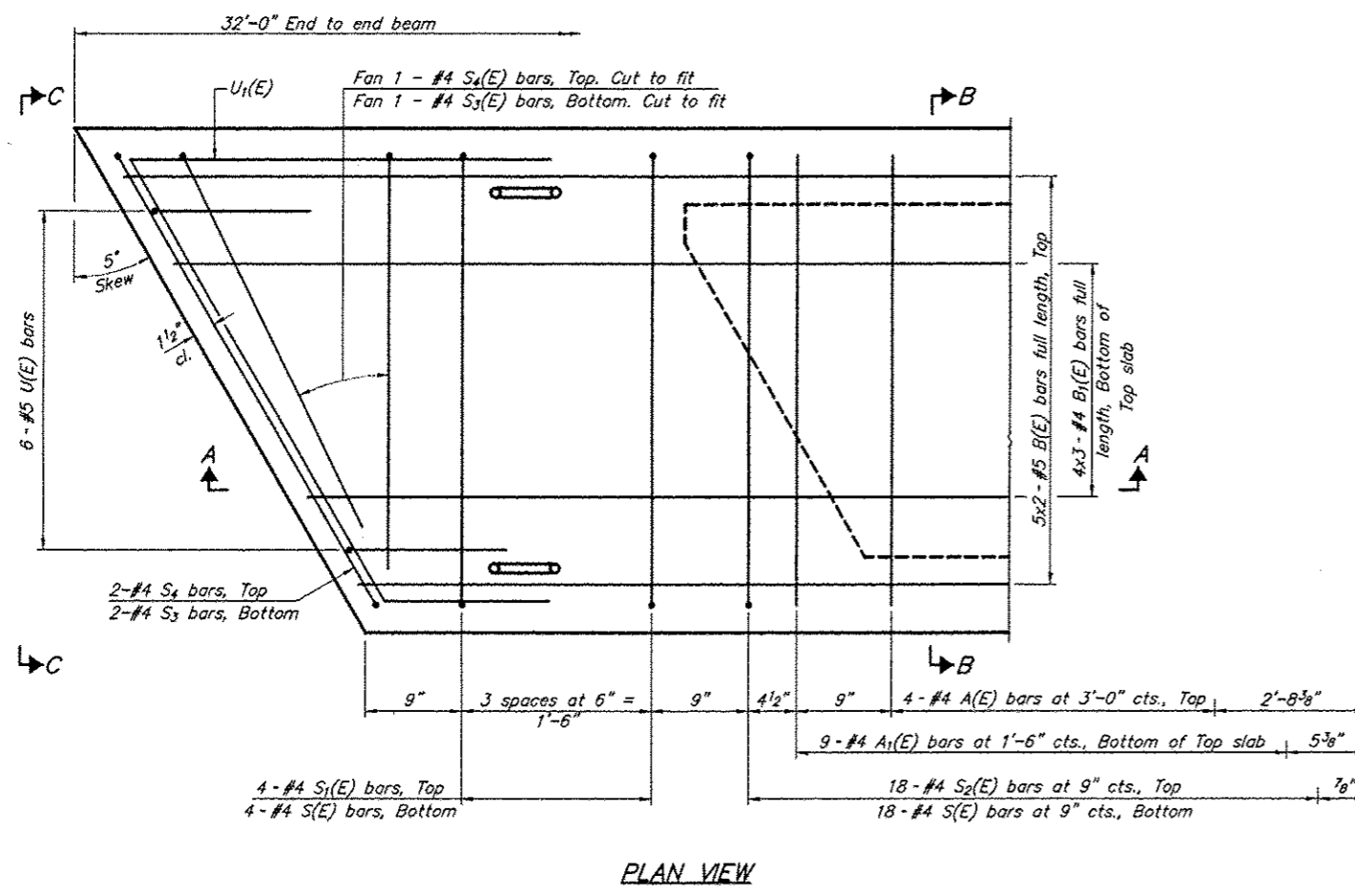
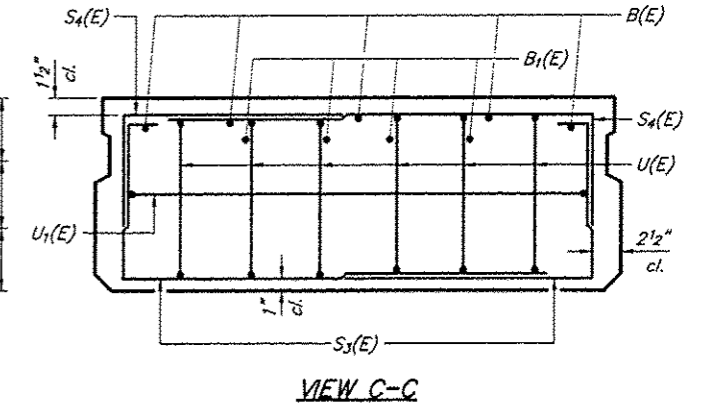
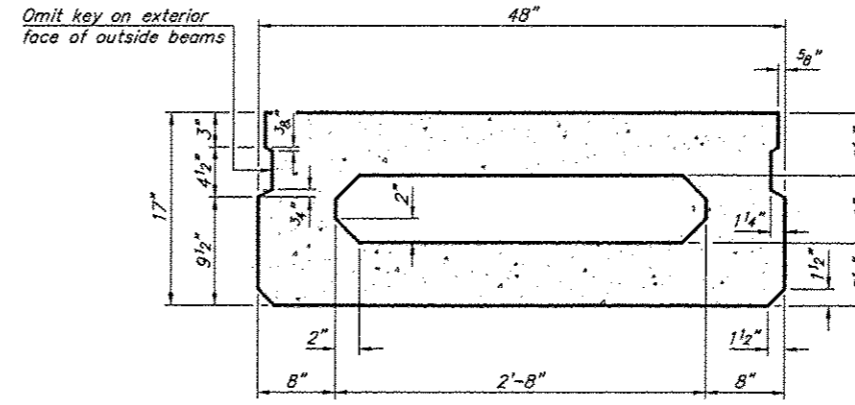
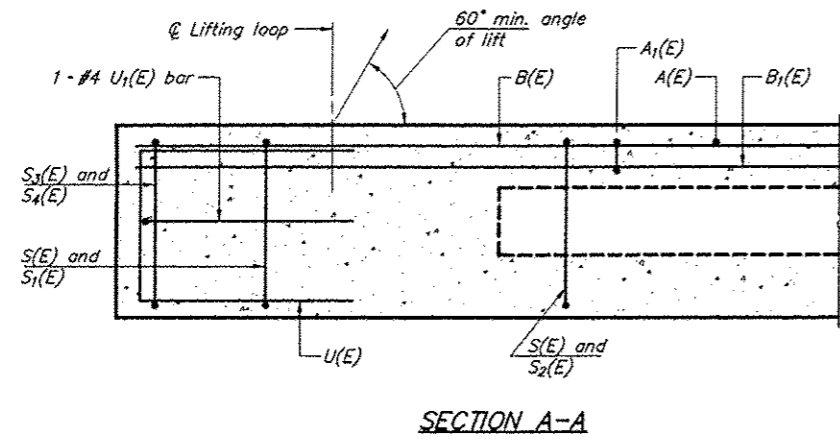
- Steel H piles shall meet AASHTO M270 Grade 50 specifications.
- Test Piles shall be driven to 110% of the Nominal Required Bearing indicated in the pile data.
- The Contractor shall drive one test pile, as specified, in a permanent location as directed by the Engineer before ordering the remaining piles.
- See special provisions for boring logs.
- A Corrosion inhibitor, as covered in the Standard Specifications, shall be used in the precast prestressed concrete deck beams.

TOTAL BILL OF MATERIAL

Item	Unit	Super	Sub.		Total
			Piers	Abuts.	
Stone Dumped Riprap, Cl. A5	Tons			145	145
Removal of Existing Structures	Each				1
Structure Excavation	Cu. Yds.			51	51
Concrete Structures	Cu. Yds.			35.0	35.0
Concrete Encasement	Cu. Yds.			2.7	2.7
P.P. Conc. Dk. Bm. 17" Dp.	Sq. Ft.	768			768
Reinforcement Bars	Pound			4004	4004
Steel Railing, Type S1	Foot	66			66
Furnishing Steel Piles HP10X42	Foot			371	371
Driving Piles	Foot			371	371
Test Pile Steel HP10X42	Each			1	1
Name Plates	Each			1	1

GENERAL PLAN & ELEVATION  
TOWNSHIP ROUTE 193 (SADLER ROAD)  
LITTLE CREEK  
SECTION 08-01189-00-BR  
UNION COUNTY  
STRUCTURE NO. 091-3233

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO
TR 193	08-01189-00-BR	UNION	10	4
PROJECT NO. BROS-181(46)			CONTRACT NO. 99537	



**SECTION B-B**  
(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)	8	#4	3'-7"	—
A1(E)	18	#4	3'-10"	—
B(E)	10	#5	17'-1"	—
B1(E)	12	#4	11'-11"	—
S(E)	44	#4	6'-9"	□
S1(E)	8	#4	5'-3"	□
S2(E)	36	#4	5'-6"	□
S3(E)	6	#4	4'-3"	□
S4(E)	6	#4	3'-6"	□
U(E)	12	#5	3'-8"	□
U1(E)	2	#4	6'-4"	□

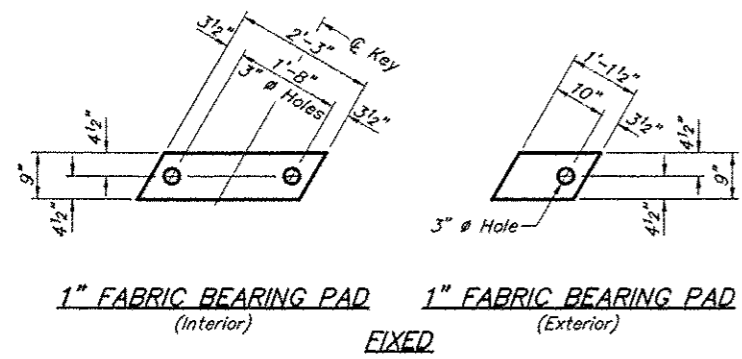
See sheet 5 of 10 for additional details and Bill of Materials.  
Bars noted thus 4x2-#5 etc. indicates 4 lines of bars with 2 lengths per line.

**PLAN VIEW**  
Note: Spacing of S(E) and S2(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.

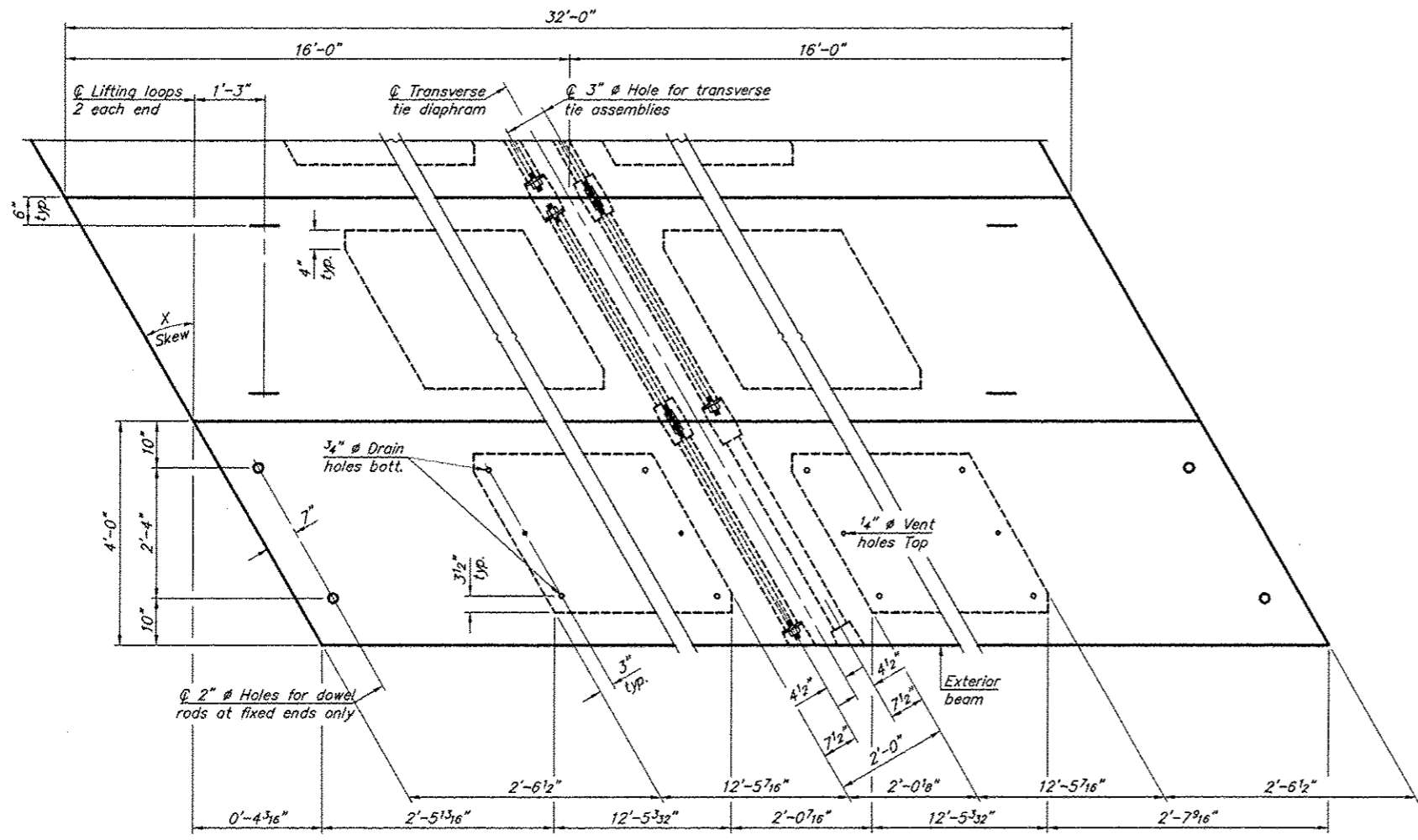
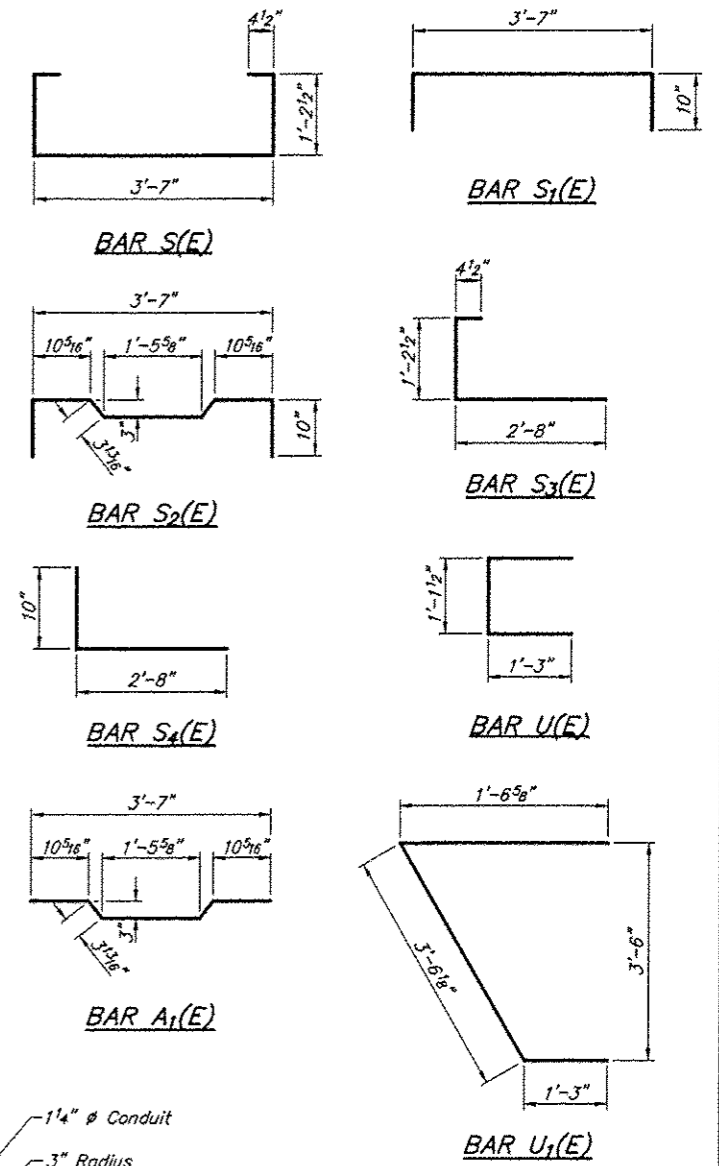
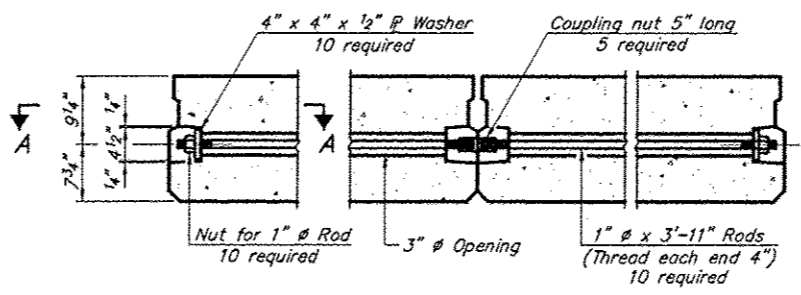
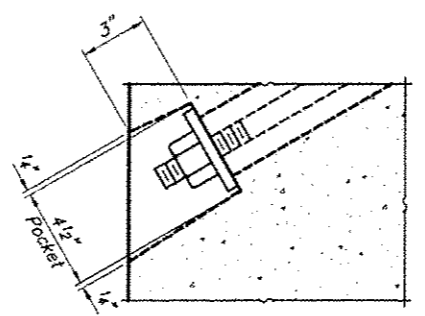
Similar about  $\bar{C}$   
**MINIMUM BAR LAP**  
#4 bar = 2'-0"  
#5 bar = 2'-6"

17" X 48" PPC DECK BEAM  
TOWNSHIP ROUTE 193 (SADLER ROAD)  
LITTLE CREEK  
SECTION 08-01189-00-BR  
UNION COUNTY  
STRUCTURE NO. 091-3233

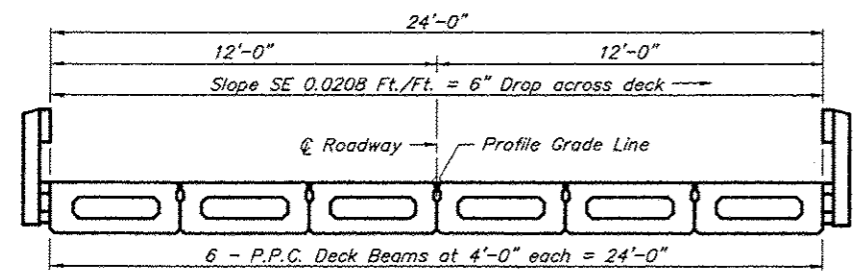
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO
TR 193	08-01189-00-BR	UNION	10	5
PROJECT NO. BROS-181(46)			CONTRACT NO. 99537	



**FIXED**  
 Note: Omit holes when using expansion bearings.

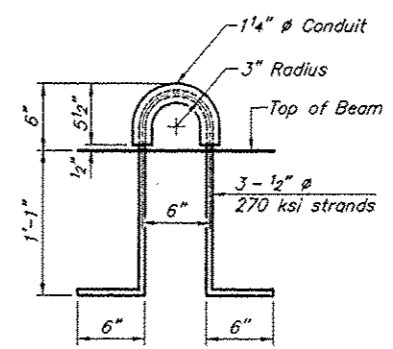


Note: Connect beams in pairs with the transverse tie configuration shown.



**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" diameter 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" diameter 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<sub>c</sub>, shall be 6000 psi.  
 Compressive strength of prestressed concrete at release, f<sub>ci</sub>, shall be 5000 psi.

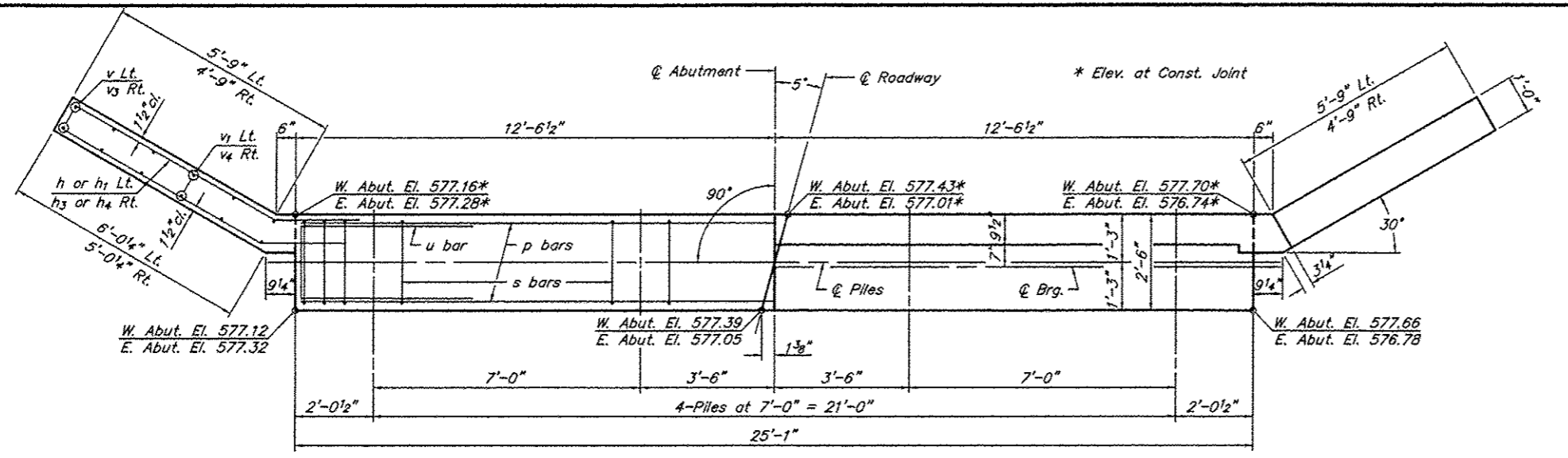


**BILL OF MATERIAL**

Precast Prestressed Conc. Deck Bms. (17" depth)	Sq. Ft.	768
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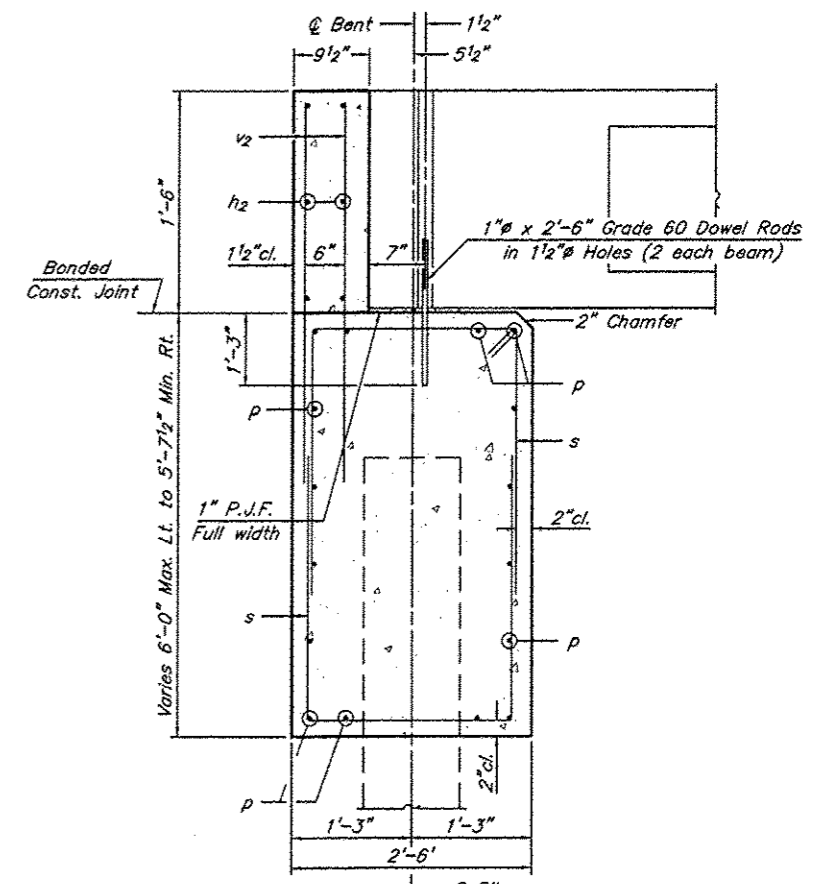
**17" X 48" PPC DECK BEAM DETAILS**  
 TOWNSHIP ROUTE 193 (SADLER ROAD)  
 LITTLE CREEK  
 SECTION 08-01189-00-BR  
 UNION COUNTY  
 STRUCTURE NO. 091-3233

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO
TR 193	08-01189-00-BR	UNION	10	6
PROJECT NO. BROS-181(46)			CONTRACT NO. 99537	

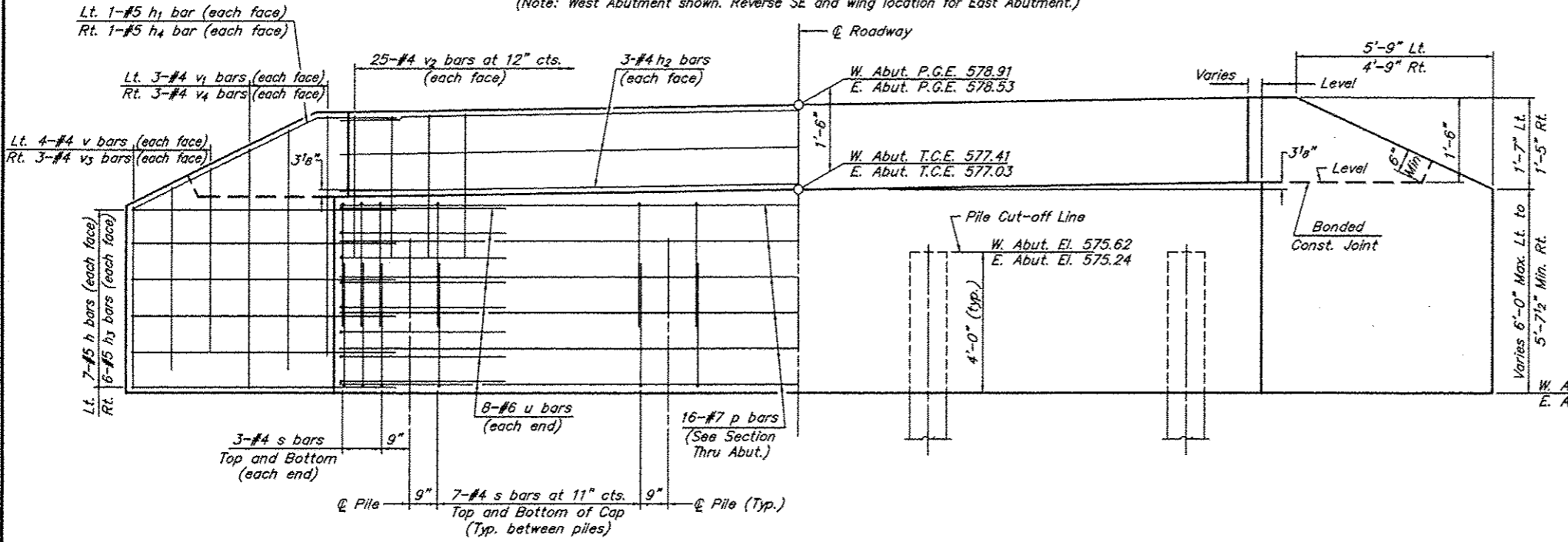


**PLAN**

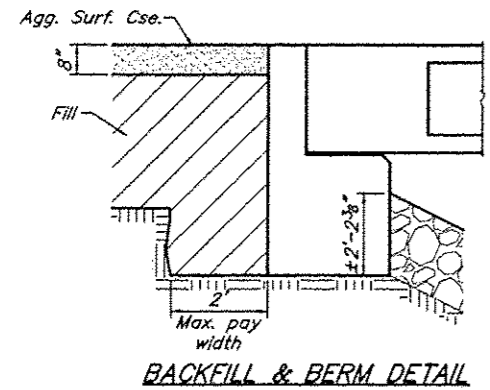
(Note: West Abutment shown. Reverse SE and wing location for East Abutment.)



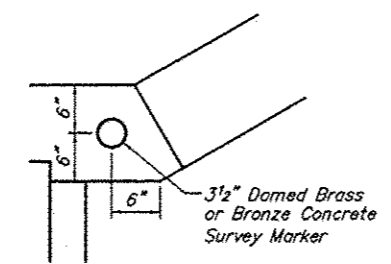
**SECTION THRU ABUTMENT**  
(At Right Angles)



**ELEVATION**



**BACKFILL & BERM DETAIL**



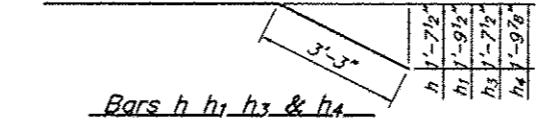
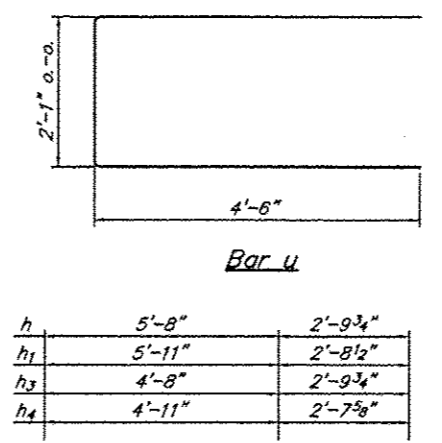
**RESET BENCH MONUMENT**  
Set disk in north end of west Abutment

**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 A.A.S.H.T.O. M-31, M-42 or M-53, Grade 60.

**DESIGN STRESSES**

$f'_c = 3,500 \text{ psi}$   
 $f_y = 60,000 \text{ psi}$

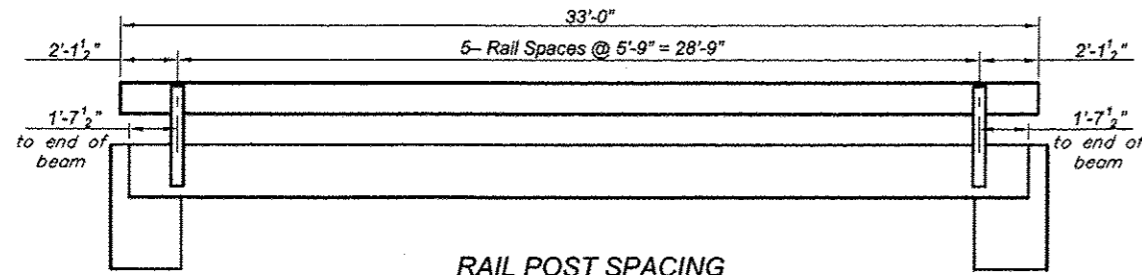


**BILL OF MATERIAL FOR ONE ABUTMENT**

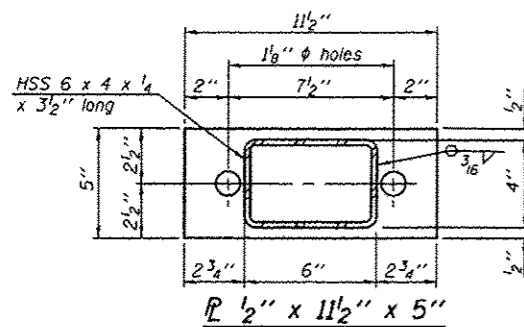
Bar	No.	Size	Length	Shape
h	14	#5	8'-11"	—
h1	2	#5	9'-2"	—
h2	6	#4	24'-9"	—
h3	12	#5	7'-11"	—
h4	2	#5	8'-2"	—
p	16	#7	24'-9"	—
s	54	#4	9'-10"	U
u	16	#6	11'-1"	—
v	8	#4	5'-8"	—
v1	6	#4	6'-10"	—
v2	50	#4	3'-1"	—
v3	6	#4	5'-4"	—
v4	6	#4	6'-3"	—
Concrete Structures			17.5	Cu. Yds.
Reinforcement Bars			2002	Lbs.

**ABUTMENT**  
TOWNSHIP ROUTE 193 (SADLER ROAD)  
LITTLE CREEK  
SECTION 08-01189-00-BR  
UNION COUNTY  
STRUCTURE NO. 091-3233

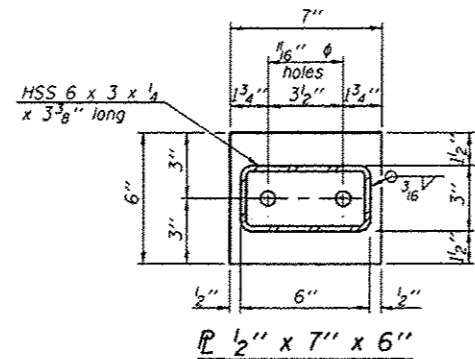
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 193	08-01189-00-BR	UNION	10	7
PROJECT NO. BROS-181(46)			CONTRACT NO. 99537	



**RAIL POST SPACING**

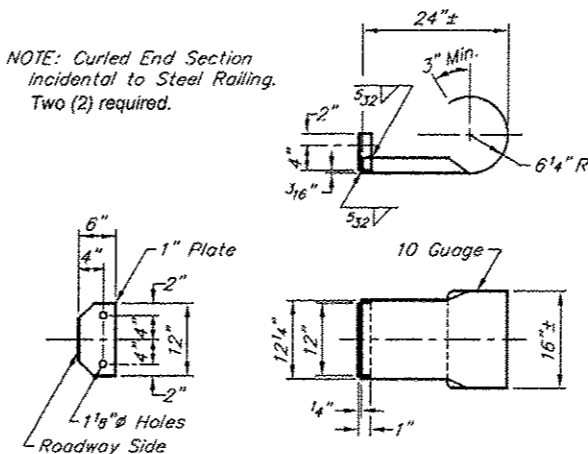


**PL 1/2" x 11 1/2" x 5"**

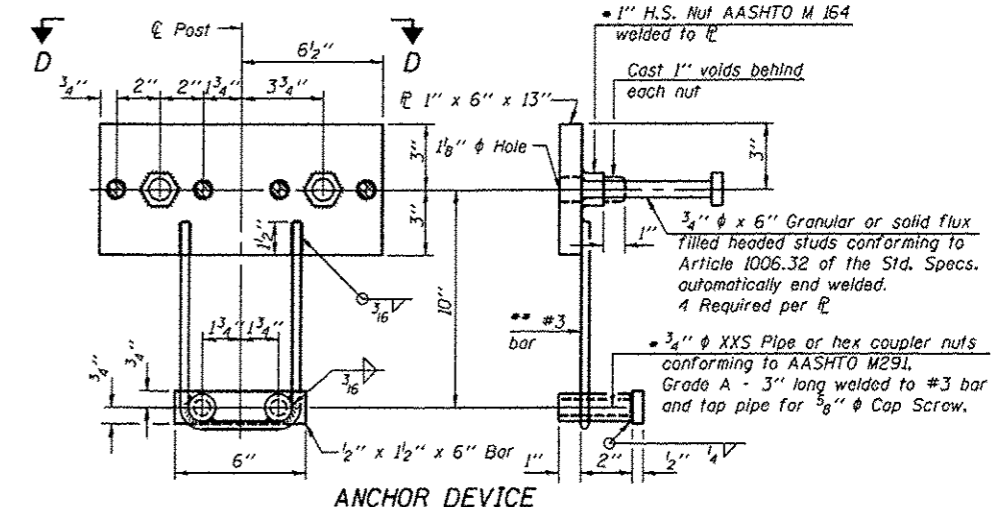


**PL 1/2" x 7" x 6"**

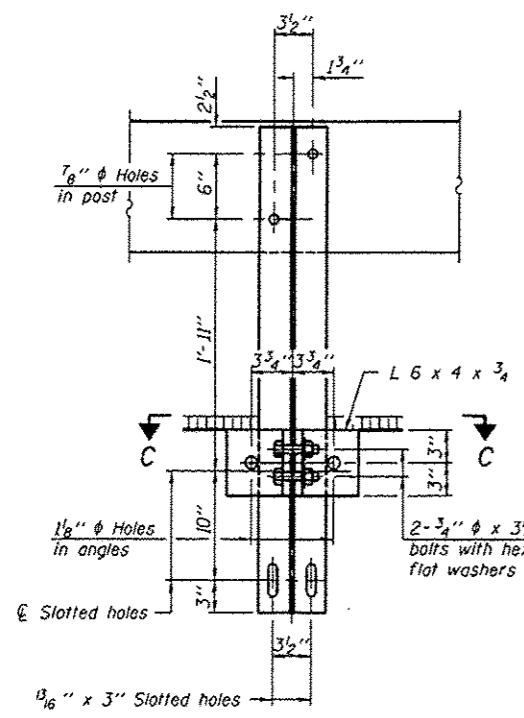
NOTE: Curled End Section incidental to Steel Rolling. Two (2) required.



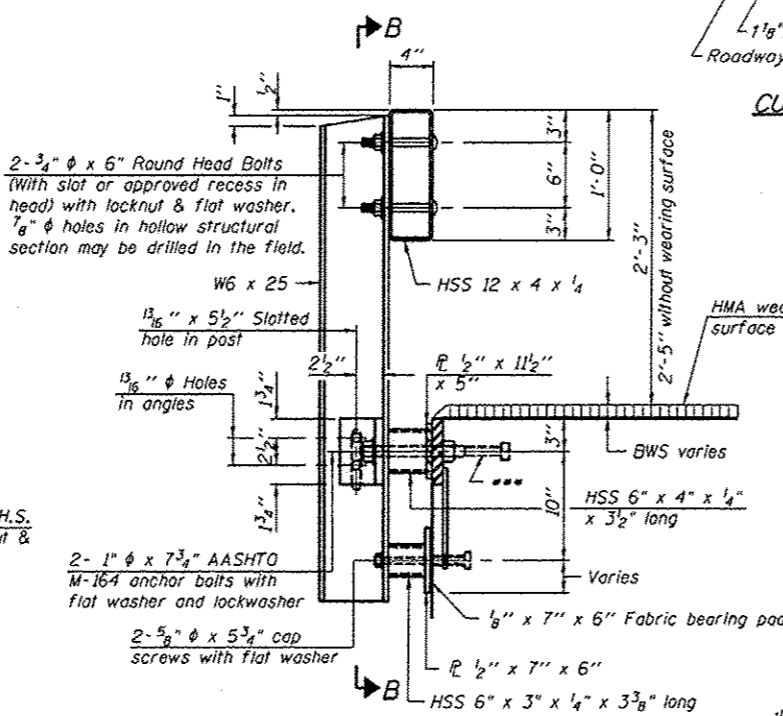
**CURLLED END SECTION DETAILS**



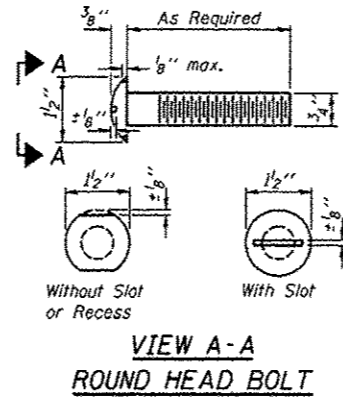
**ANCHOR DEVICE**



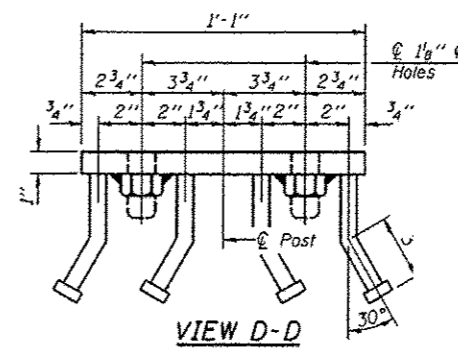
**SECTION B-B**



**SECTION AT RAILING POST**



**VIEW A-A ROUND HEAD BOLT**

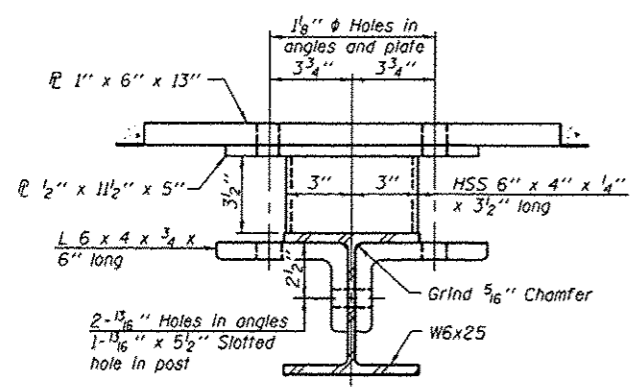


**VIEW D-D**

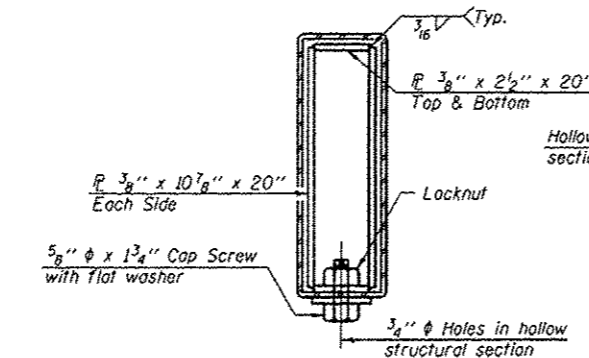
- Notes:
- All field drilled holes shall be coated with an approved zinc rich paint before erection.
  - For multi-span bridges, sufficient 1/4" x 6" x 1'-2" galvanized steel shims shall be provided to align rail between adjacent spans. Cost included with Steel Railing, Type S-1.
  - All steel rail elements shall be galvanized according to Article 509.05 of the Standard Specifications.
  - Threaded areas shall be plugged or blocked off during casting of beam.
  - 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".
  - 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.
  - 10'-9" Maximum Post Spacing

**BILL OF MATERIAL**

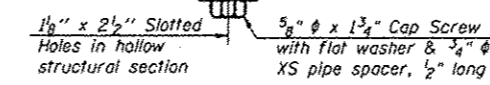
Item	Unit	Quantity
Steel Railing, Type S-1	Foot	66



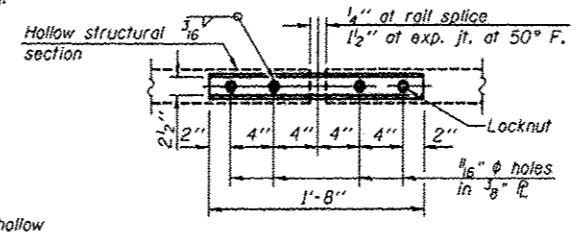
**SECTION C-C**



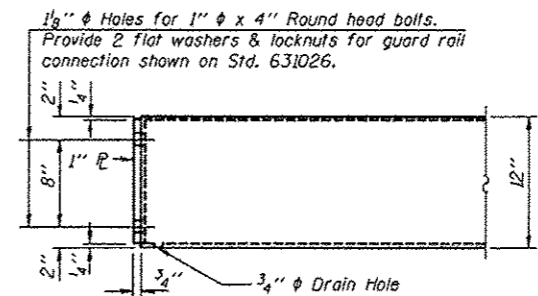
**SECTIONS AT RAIL SPLICE**



**RAIL SPLICE CONNECTION AT EXPANSION JT.**



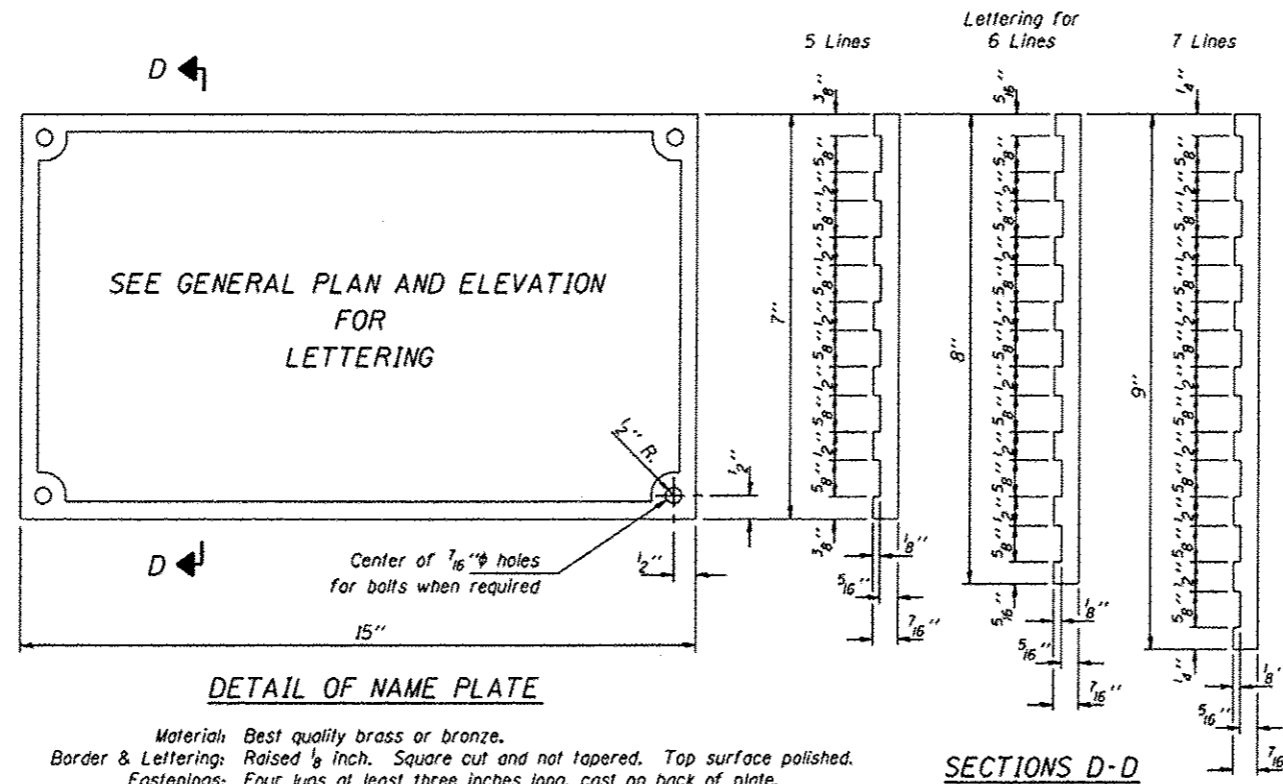
**PLAN-BOTT. SPLICE P TYPICAL**



**END OF RAIL DETAILS**

**STEEL RAILING, TYPE S-1**  
**TOWNSHIP ROUTE 193 (SADLER ROAD)**  
**LITTLE CREEK**  
**SECTION 08-01189-00-BR**  
**UNION COUNTY**  
**STRUCTURE NO. 091-3233**

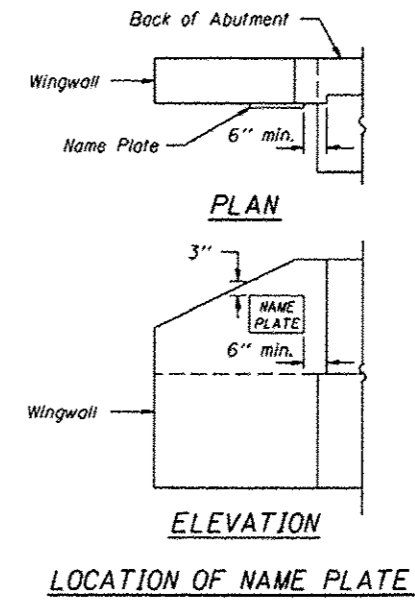
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 193	08-01189-00-BR	UNION	10	8
PROJECT NO. BROS-181(46)			CONTRACT NO. 99537	



**DETAIL OF NAME PLATE**

Material: Best quality brass or bronze.  
 Border & Lettering: Raised 1/8 inch. Square cut and not tapered. Top surface polished.  
 Fastenings: Four lugs at least three inches long, cast on back of plate.

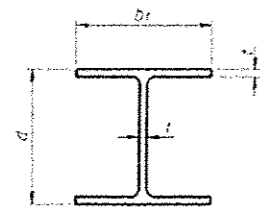
**SECTIONS D-D**



**LOCATION OF NAME PLATE**

NAME PLATES  
 TOWNSHIP ROUTE 193 (SADLER ROAD)  
 LITTLE CREEK  
 SECTION 08-01189-00-BR  
 UNION COUNTY  
 STRUCTURE NO. 091-3233

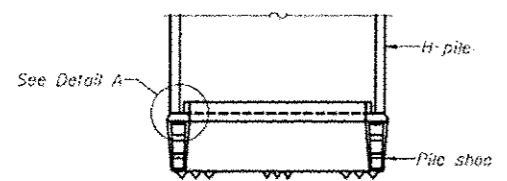




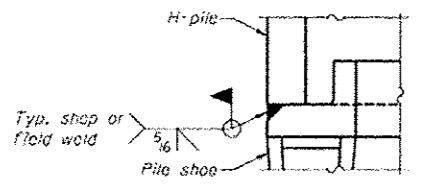
**STEEL PILE TABLE**

Designation	Depth d	Flange width b <sub>f</sub>	Web and Flange thickness t	Encasement diameter A	Encasement Quantity/Ft. C.Y.
HP 14x117	14 1/2"	14 1/8"	1 1/8"	30"	0.173
x102	14"	14 3/4"	1 1/8"	30"	0.174
x89	13 7/8"	14 3/4"	5/8"	30"	0.175
x73	13 5/8"	14 5/8"	1/2"	30"	0.176
HP 12x94	12 1/2"	12 1/4"	1 1/8"	24"	0.110
x74	12 1/8"	12 1/4"	5/8"	24"	0.111
x63	12"	12 1/8"	1/2"	24"	0.112
x53	11 1/4"	12"	5/16"	24"	0.112
HP 10x57	10"	10 1/4"	1 1/8"	24"	0.112
x42	9 3/4"	10 1/8"	7/16"	24"	0.113
HP 8x36	8"	8 1/8"	1/2"	18"	0.063

Note: The steel H-piles shall be according to AASHTO M270 Grade 50.

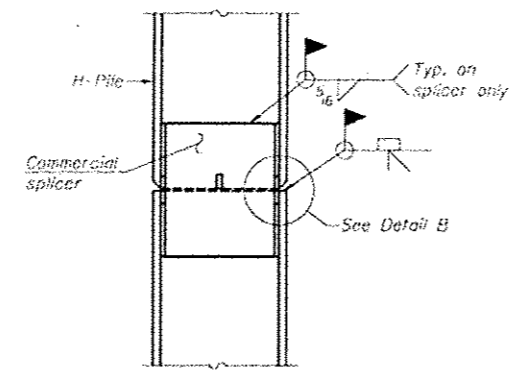


**ELEVATION**

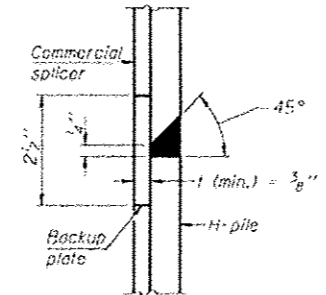


**DETAIL A**

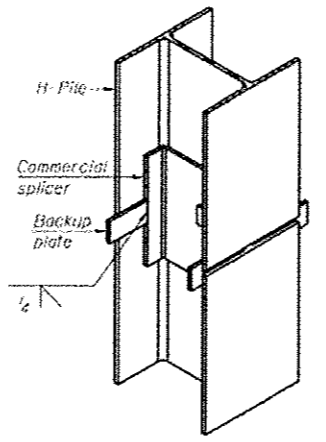
**H-PILE SHOE ATTACHMENT**



**ELEVATION**

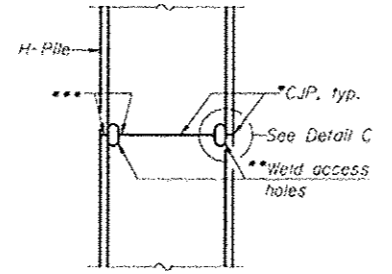


**DETAIL "B"**

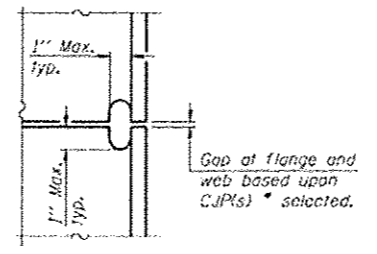


**ISOMETRIC VIEW**

**WELDED COMMERCIAL SPLICE**



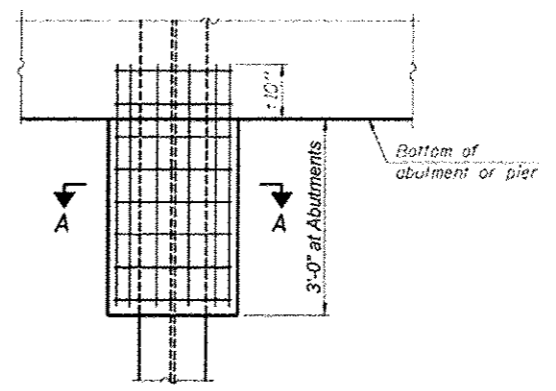
**ELEVATION**



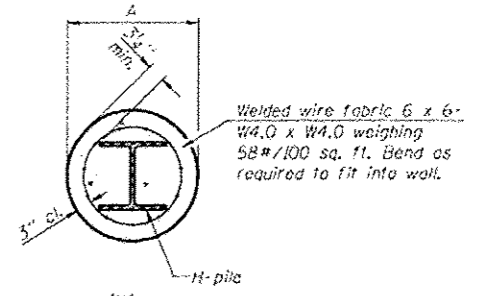
**DETAIL C**

**COMPLETE PENETRATION WELD SPLICE**

\*Use joint conforming to Figure 3.4 in AWS D1.1, Structure Welding Code - Steel.  
 \*\*Preparation per Fig. 5.2 in AWS D1.1, Structure Welding Code - Steel.  
 \*\*\*Interrupt welds 1/4" from end of each pile.

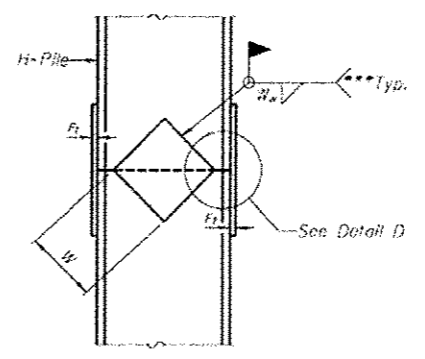


**ELEVATION**

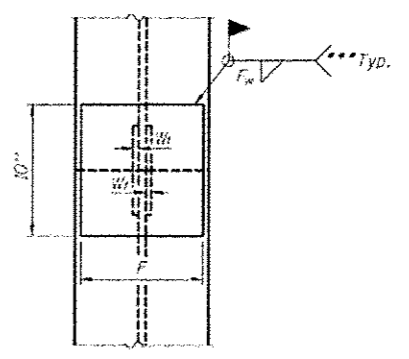


**SECTION A-A**

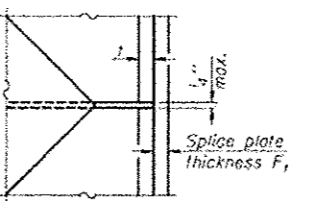
**PILE ENCASEMENT**



**ELEVATION**



**END VIEW**



**DETAIL D**

**WELDED PLATE FIELD SPLICE**

Designation	F	F <sub>1</sub>	F <sub>w</sub>	W	W <sub>1</sub>	W <sub>w</sub>
HP 14x117	12 1/2"	1"	7/8"	7 3/4"	5/8"	1/2"
x102	12 1/2"	7/8"	3/4"	7 3/4"	5/8"	1/2"
x89	12 1/2"	5/4"	5/16"	7 3/4"	5/8"	1/2"
x73	12 1/2"	5/8"	9/16"	7 3/4"	5/8"	1/2"
HP 12x94	10"	7/8"	5/16"	6 1/2"	5/8"	1/2"
x74	10"	7/8"	5/16"	6 1/2"	5/8"	1/2"
x63	10"	5/8"	1/2"	6 1/2"	1/2"	3/8"
x53	10"	5/8"	1/2"	6 1/2"	1/2"	3/8"
HP 10x57	8"	3/4"	9/16"	5 1/4"	1/2"	3/8"
x42	8"	5/8"	9/16"	5 1/4"	1/2"	3/8"
HP 8x36	7"	5/8"	7/16"	4 1/4"	1/2"	3/8"

**PIILING DETAILS**  
 TOWNSHIP ROUTE 193 (SADLER ROAD)  
 LITTLE CREEK  
 SECTION 08-01189-00-BR  
 UNION COUNTY  
 STRUCTURE NO. 091-3233

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 193	08-01189-00-BR	UNION	10	10
PROJECT NO. BROS-181(46)			CONTRACT NO. 99537	

