

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAU 9901	06-01186-00-BR	UNION	10	1
PROJECT NO. ARA-0181(048)		CONTRACT NO. 99352		

AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009

FAU ROUTE 9901 (KRATZINGER HOLLOW ROAD)

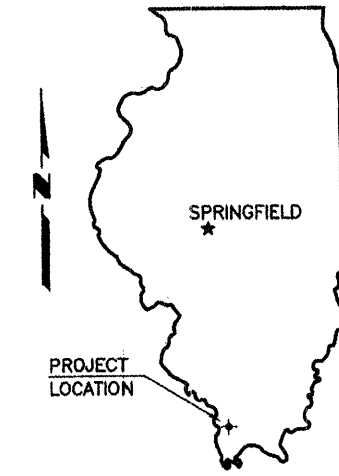
SECTION 06-01186-00-BR

PROJECT NO. **ARA-0181(048)**

JOB NO. C-99-510-09

GREEN CREEK

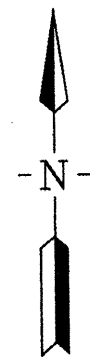
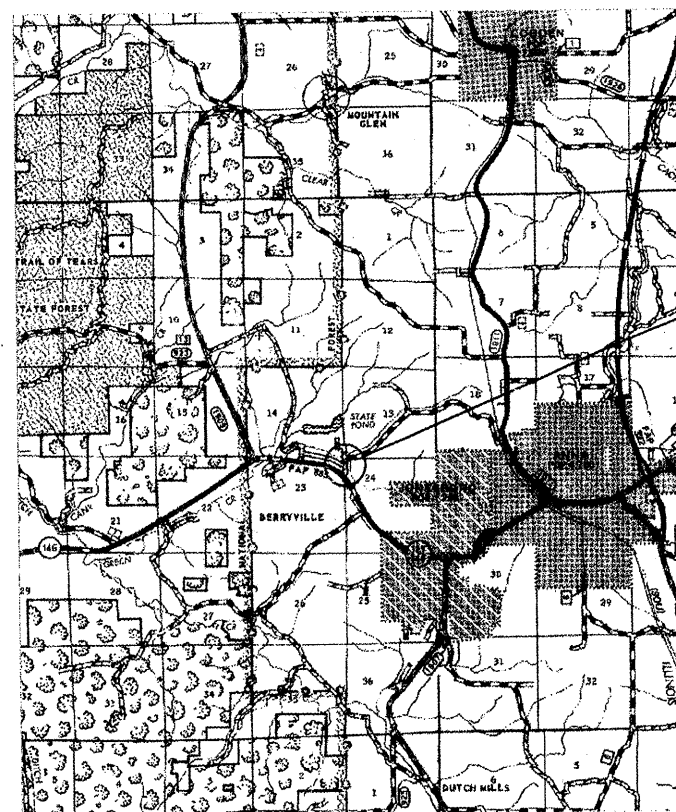
UNION COUNTY



SUMMARY OF QUANTITIES

CODE NO.	PAY ITEM	UNIT	TOTAL
20200100	EARTH EXCAVATION	CU YD	16
20300100	CHANNEL EXCAVATION	CU YD	56
20400100	BORROW EXCAVATION	CU YD	243
25000200	SEEDING CLASS 2	ACRE	0.2
25000400	NITROGEN FERTILIZER NUTRIENT	POUND	18
25000500	PHOSPHORUS FERTILIZER NUTRIENT	POUND	18
25000600	POTASSIUM FERTILIZER NUTRIENT	POUND	18
25000700	AGRICULTURAL GROUND LIMESTONE	TON	0.4
* 25100120	MULCH, METHOD 2	TON	0.4
28100809	STONE DUMPED RIPRAP, CLASS A5	TON	205
40200800	AGGREGATE SURFACE COURSE, TYPE B	TON	119
50100100	REMOVAL OF EXISTING STRUCTURES	EACH	1
50105220	PIPE CULVERT REMOVAL	FOOT	24
50200100	STRUCTURE EXCAVATION	CU YD	64
50300225	CONCRETE STRUCTURES	CU YD	16.8
50300280	CONCRETE ENCASEMENT	CU YD	2.7
50400405	PRECAST PRESTRESSED CONCRETE DECK BEAMS (21" DEPTH)	SQ FT	1,392
50800105	REINFORCEMENT BARS	POUND	2,252
Δ 50900205	STEEL RAILING, TYPE S1	FOOT	118
51201400	FURNISHING STEEL PILES HP10X42	FOOT	172
51202305	DRIVING PILES	FOOT	172
51203400	TEST PILE STEEL HP10X42	EACH	1
51204650	PILE SHOES	EACH	8
51500100	NAME PLATES	EACH	1
54200223	PIPE CULVERTS, CLASS D, TYPE 1 18"	FOOT	22
Δ 63000002	STEEL PLATE BEAM GUARD RAIL, TYPE A 6.75 FOOT POSTS	FOOT	75
Δ 63100075	TRAFFIC BARRIER TERMINAL, TYPE 5A	EACH	2
*Δ 63100167	TRAFFIC BARRIER TERMINAL, TYPE 1 (SPECIAL) TANGENT	EACH	2
67100100	MOBILIZATION	L SUM	1
*Δ 78201000	TERMINAL MARKER - DIRECT APPLIED	EACH	4

* SEE SPECIAL PROVISIONS Δ SPECIALITY ITEMS



PROPOSED IMPROVEMENT

INDEX OF SHEETS

1. COVER SHEET
 2. PLAN AND PROFILE
 3. GENERAL PLAN AND ELEVATION
 4. 21" X 48" PPC DECK BEAM
 5. 21" X 48" PPC DECK BEAM DETAILS
 6. ABUTMENT
 7. STEEL RAILING, TYPE S-1
 8. NAME PLATES
 9. PILING DETAILS
 10. CROSS SECTIONS
- STANDARDS 000001-05 STANDARD SYMBOLS, ABBREVIATIONS AND PATTERNS
- 280001-05 TEMPORARY EROSION CONTROL SYSTEMS
- 630301-05 SHOULDER WIDENING FOR TYPE 1, (SPECIAL) GUARDRAIL TERMINALS
- 635006-03 REFLECTOR AND TERMINAL MARKER PLACEMENT
- 701901-01 TRAFFIC CONTROL DEVICES
- BLR 21-8 TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES
- BLR 26-2 STEEL PLATE BEAM GUARD RAIL 27 1/2" HEIGHT
- BLR 27-1 TRAFFIC BARRIER TERMINAL TYPE 5A

CLASSIFICATION : COLLECTOR (URBAN)
ADT : 200
DESIGN SPEED : 30 MPH

CONTRACT NO. 99352

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



Edward W. Miller
Edward W. Miller
REGISTERED PROFESSIONAL ENGINEER
#062-025277
EXPIRES NOV. 30, 2011

LOCATION MAP

SCALE: 1" = 2 MILES

NET LENGTH OF IMPROVEMENT = 365.00 FT. = 0.0691 MILES

CALL 811 OR
1-800-892-0123



UNION COUNTY	
Approved	<i>Dustin Grammer</i> August 10, 2009 Union County Engineer
Passed	<i>Richard W. Melcher</i> Oct 14, 2009 District 9 Engineer of Local Roads and Streets
Releasing for Bid Based on Limited Review	<i>Mary C. Lamin</i> 10-14-09 Deputy Director of Highways, Region 5 Engineer Illinois Department of Transportation

B.M. - RR Spike in Telephone Pole
 16' Lt. Station 15+37
 Assumed Elev. 435.00

Existing Structure - Timber deck with
 steel stringers on closed timber
 pile bent abutments & one
 timber pile bent pier.
 20.1' Wide x 50.2' Long

CURVE DATA

D = 24°49'57"
 R = 230.73'

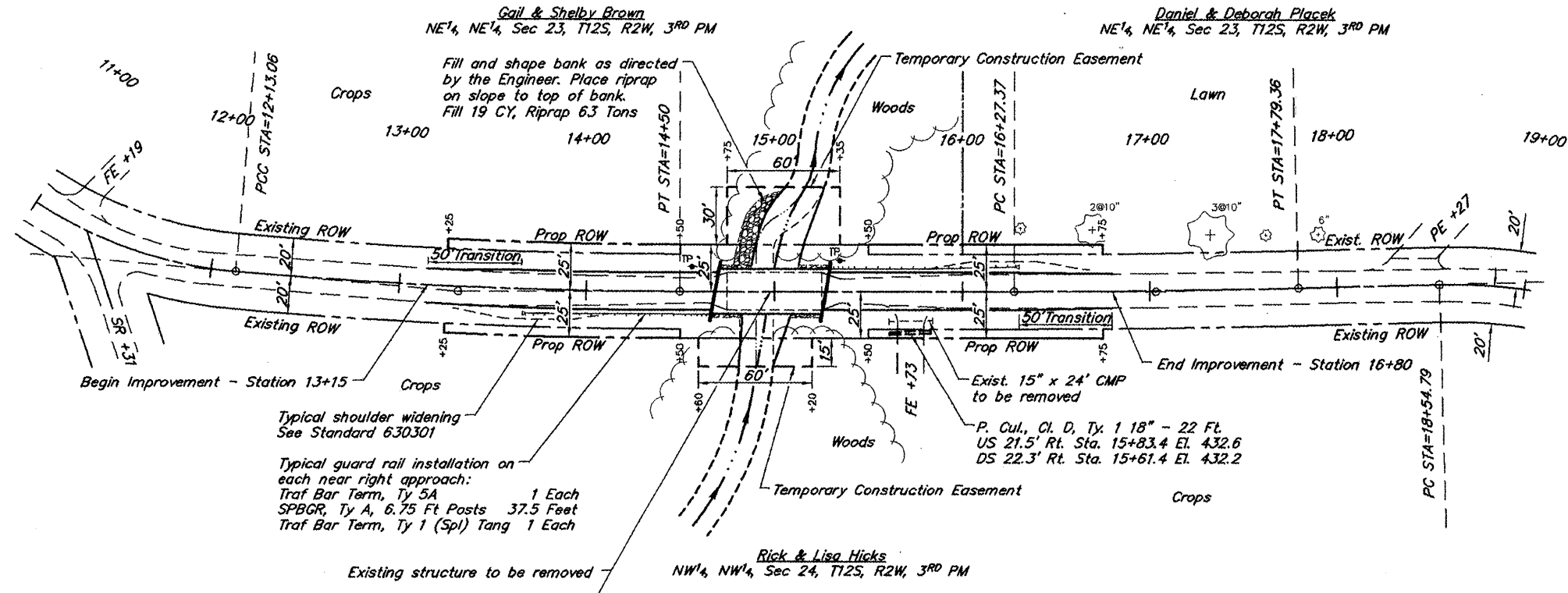
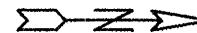
CURVE DATA

PI STA=13+31.60
 $\Delta = 5°02'34"$ T = 118.55'
 D = 2°07'42" L = 236.94'
 R = 2,692.10' E = 2.61'
 Normal Crown

CURVE DATA

PI STA=17+03.37
 $\Delta = 1°35'00"$ T = 76.00'
 D = 1°02'30" L = 151.99'
 R = 5,500.04' E = 0.53'
 Normal Crown

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Fill and shape bank as directed
 by the Engineer. Place riprap
 on slope to top of bank.
 Fill 19 CY, Riprap 6.3 Tons

Gail & Shelby Brown
 NE 1/4, NE 1/4, Sec 23, T12S, R2W, 3RD PM

Daniel & Deborah Placek
 NE 1/4, NE 1/4, Sec 23, T12S, R2W, 3RD PM

Rick & Lisa Hicks
 NW 1/4, NW 1/4, Sec 24, T12S, R2W, 3RD PM

Typical shoulder widening
 See Standard 6.30301

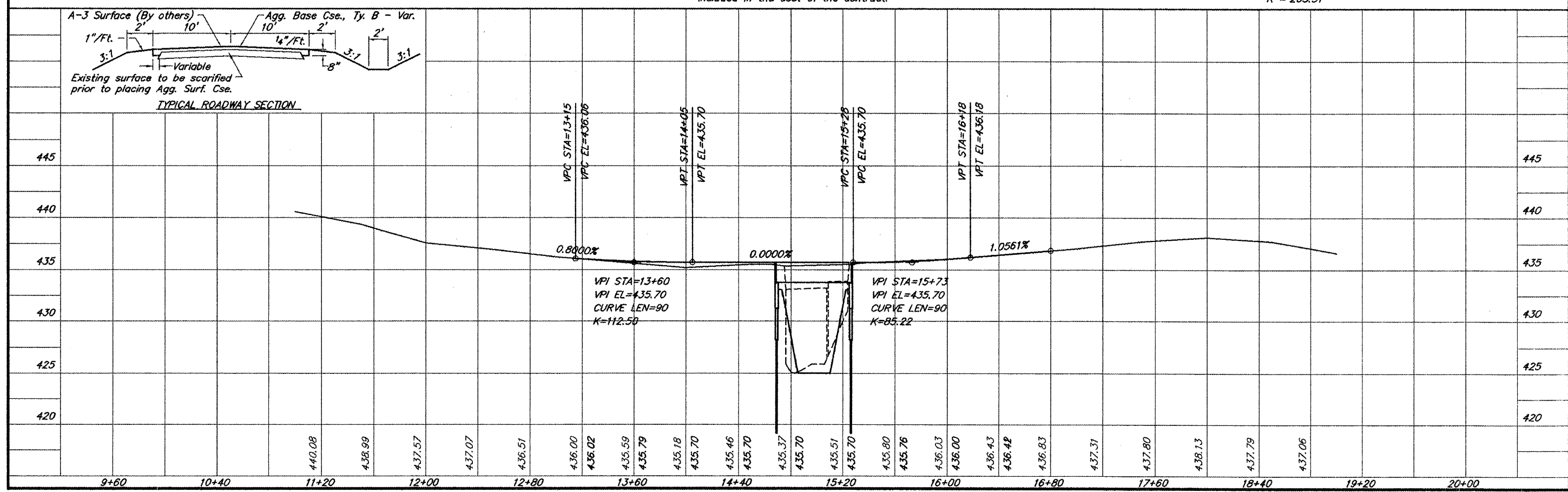
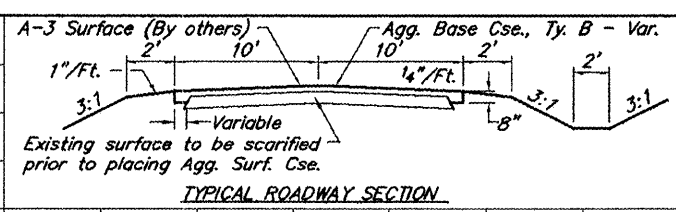
Typical guard rail installation on
 each near right approach:
 Traf Bar Term, Ty 5A 1 Each
 SPBGR, Ty A, 6.75 Ft Posts 37.5 Feet
 Traf Bar Term, Ty 1 (Spl) Tang 1 Each

Existing structure to be removed
 Station 14+97.8 - Single span precast
 prestressed concrete deck beam
 bridge 59.63' bk-bk Abutments
 Skewed 10° Forward Left

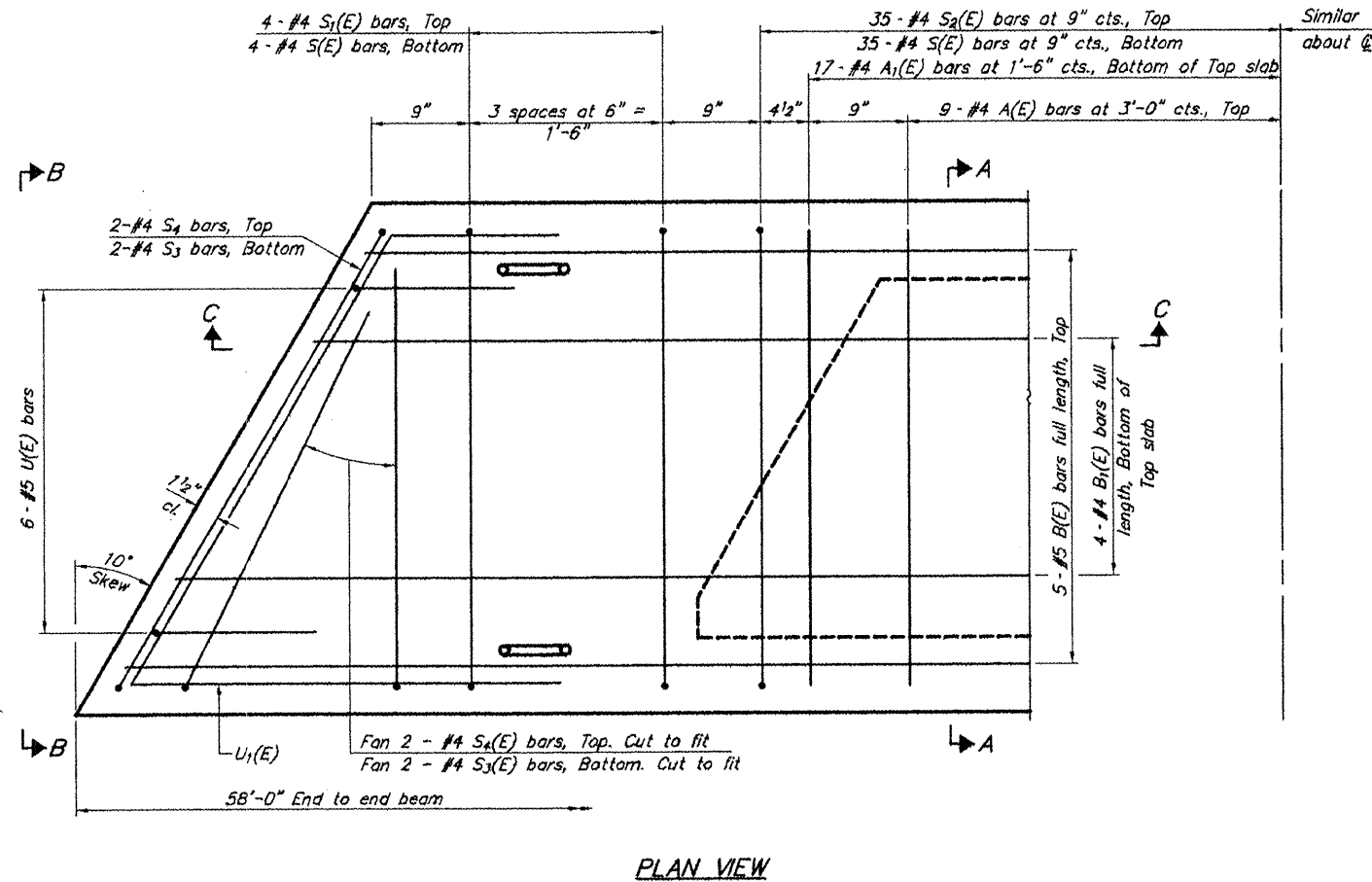
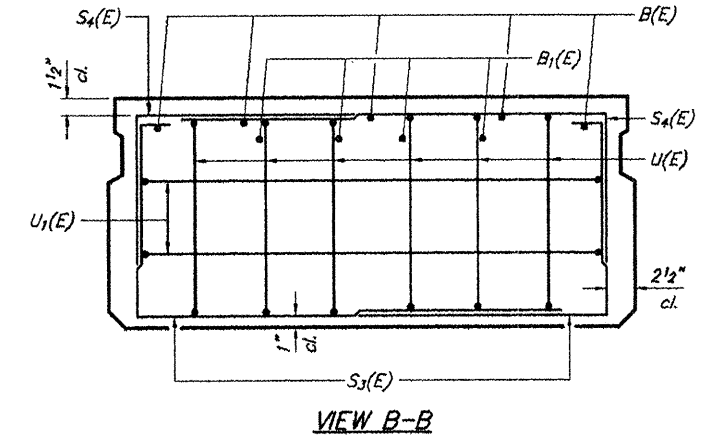
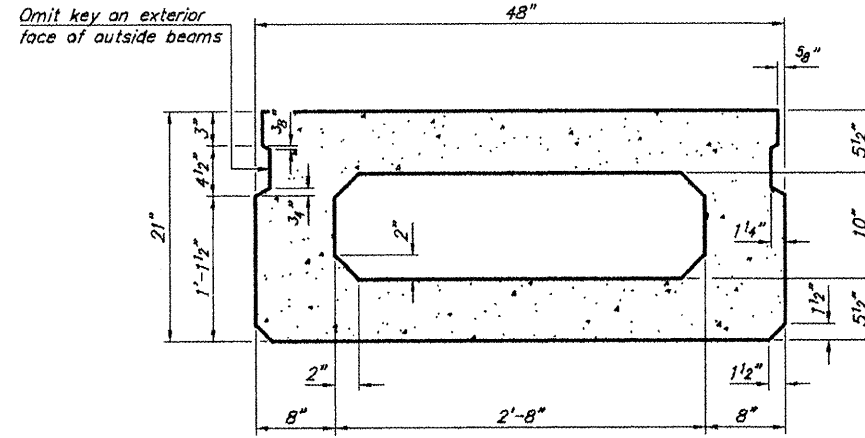
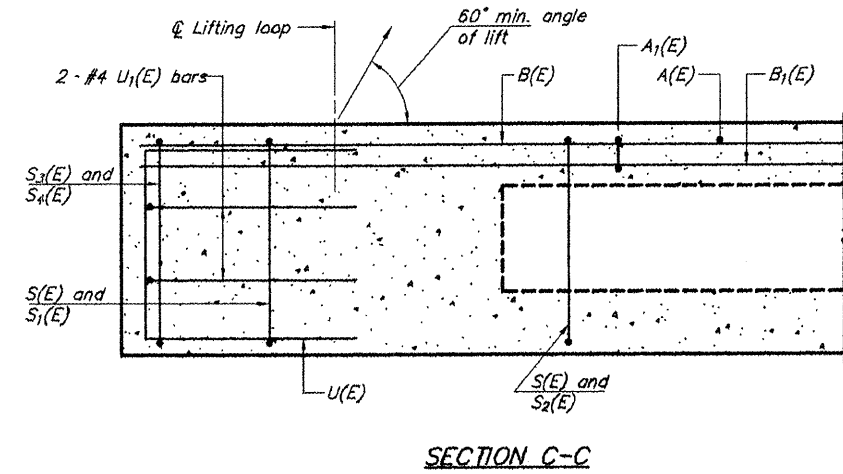
Note: Any necessary tree removal will not
 be paid for separately but shall be
 included in the cost of the contract.

CURVE DATA
 D = 21°35'45"
 R = 265.31'

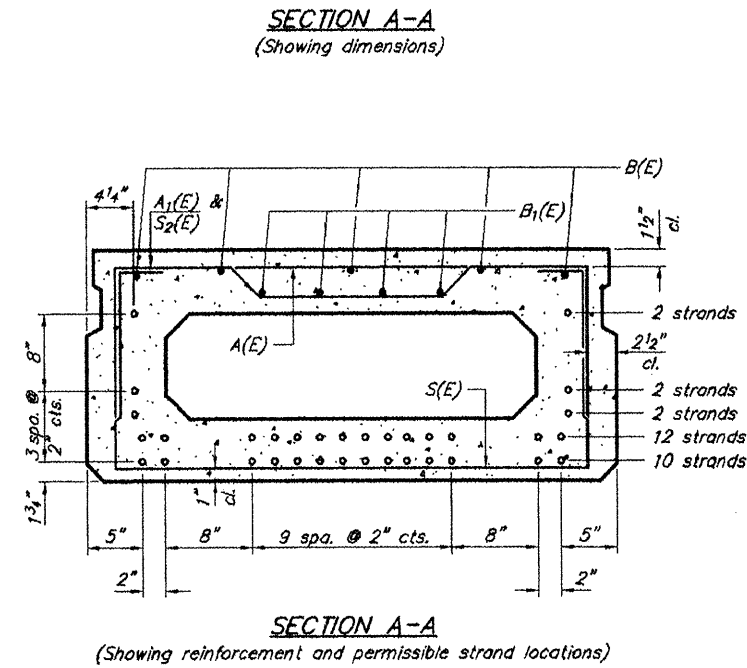
SCALES:
 1" = 80' HOR
 1" = 10' VER



ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO
FAU 9901	06-01186-00-BR	UNION	10	4
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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 black outs for the transverse ties.



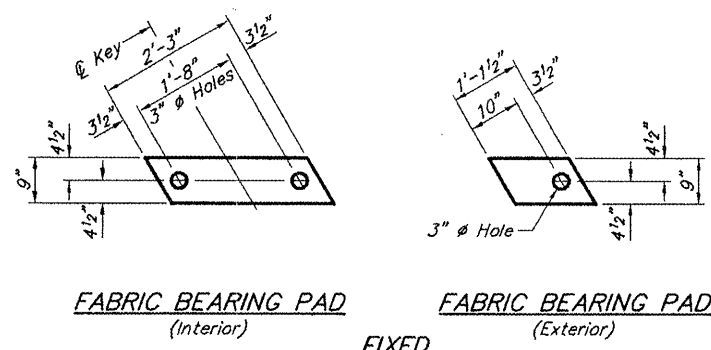
Note: Place the number of strands specified in each row symmetrically about the centerline of beam in the permissible strand locations shown.

BAR LIST
ONE BEAM ONLY
(For information only)

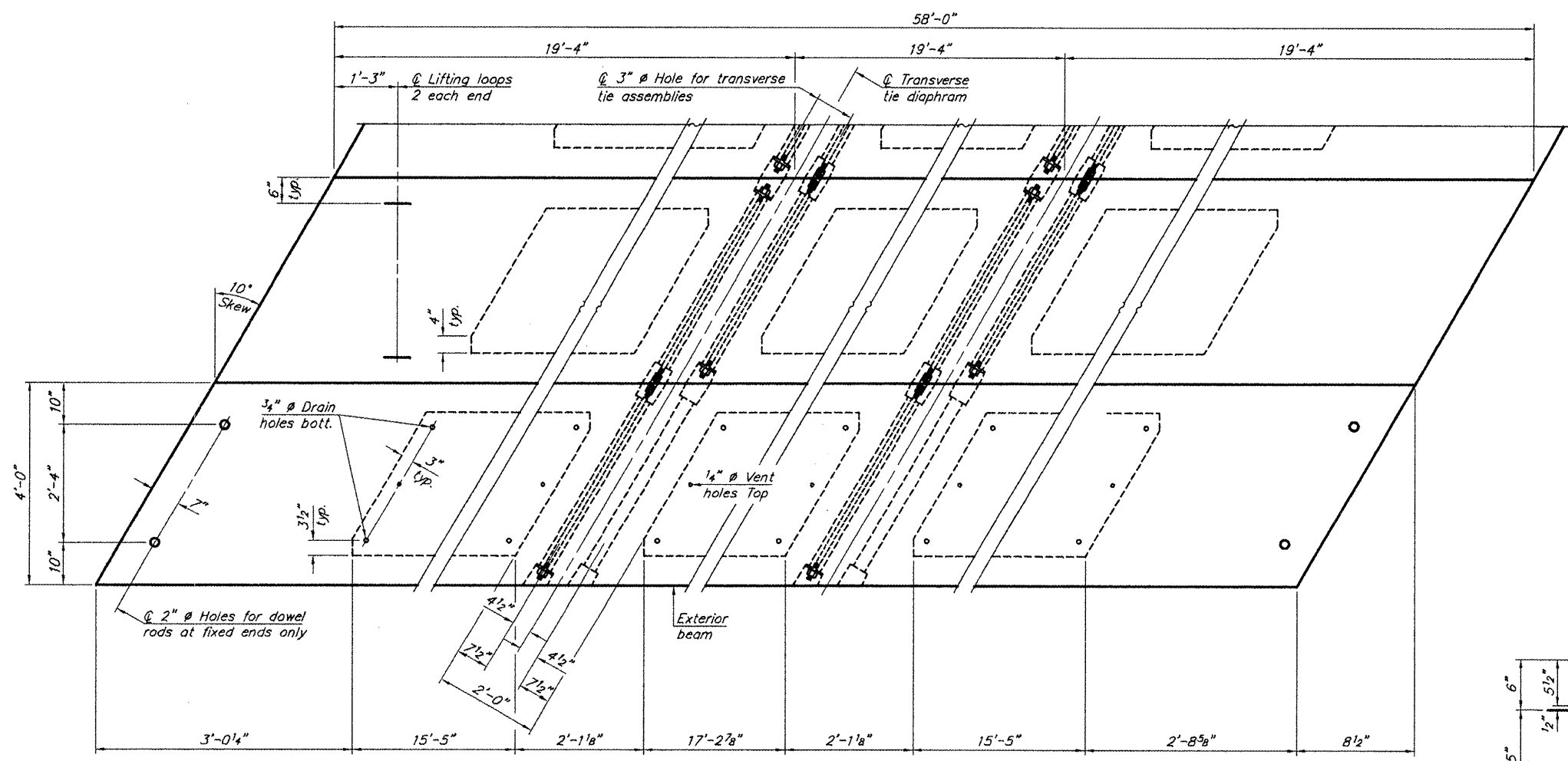
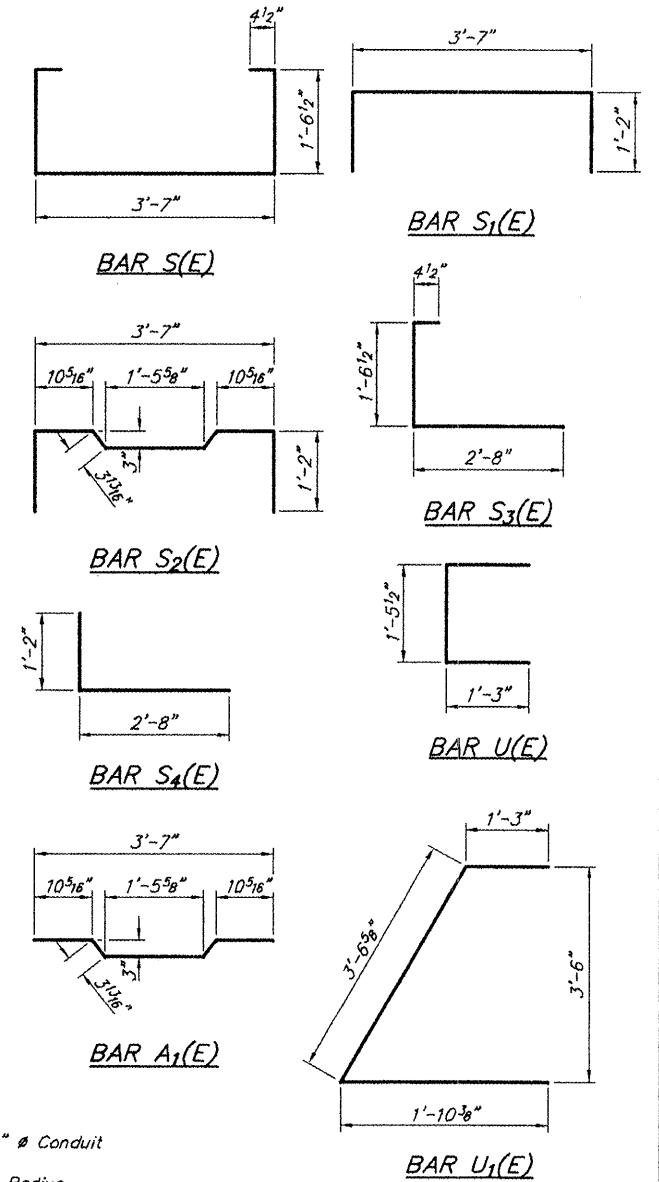
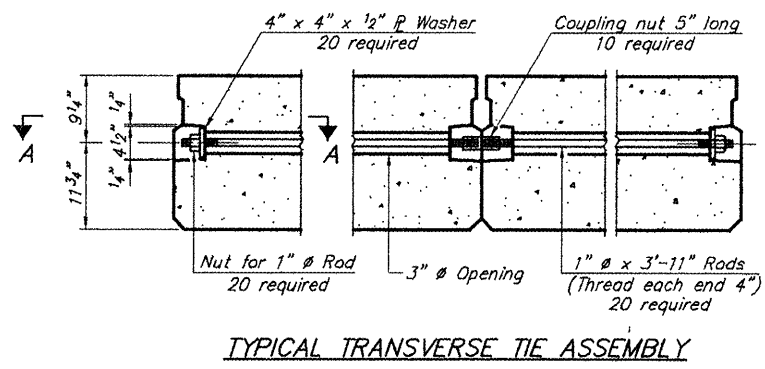
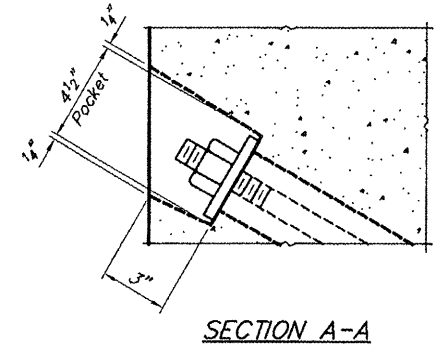
Bar	No.	Size	Length	Shape
A(E)	18	#4	3'-7"	—
A1(E)	34	#4	3'-10"	—
B(E)	5	#5	57'-8"	—
B1(E)	4	#4	57'-8"	—
S(E)	78	#4	7'-5"	□
S1(E)	8	#4	5'-11"	□
S2(E)	70	#4	6'-2"	□
S3(E)	8	#4	4'-7"	□
S4(E)	8	#4	3'-10"	□
U(E)	12	#5	4'-0"	□
U1(E)	4	#4	6'-8"	□

21" X 48" PPC DECK BEAM
FAU ROUTE 9901 (KRATZINGER HOLLOW RD)
GREEN CREEK
SECTION 06-01186-00-BR
UNION COUNTY
STRUCTURE NO. 091-3229

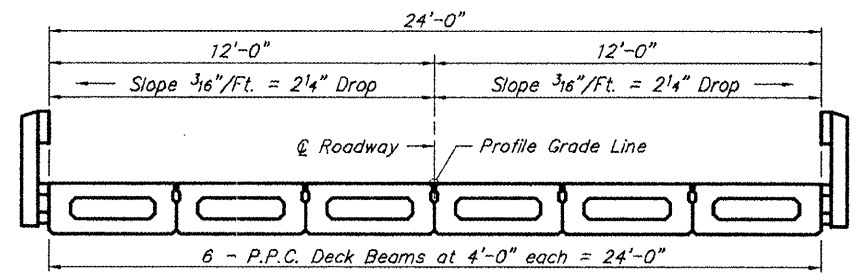
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO
FAU 9901	06-01186-00-BR	UNION	10	5
PROJECT NO. ARA-BRS-0181(048)			CONTRACT NO. 99352	



FIXED
 Note: Omit holes when using expansion bearings.

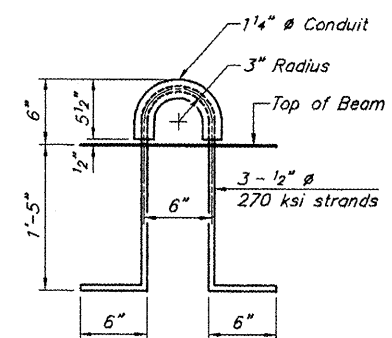


Note: Connect beams in pairs with the transverse tie configuration shown.



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" 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.

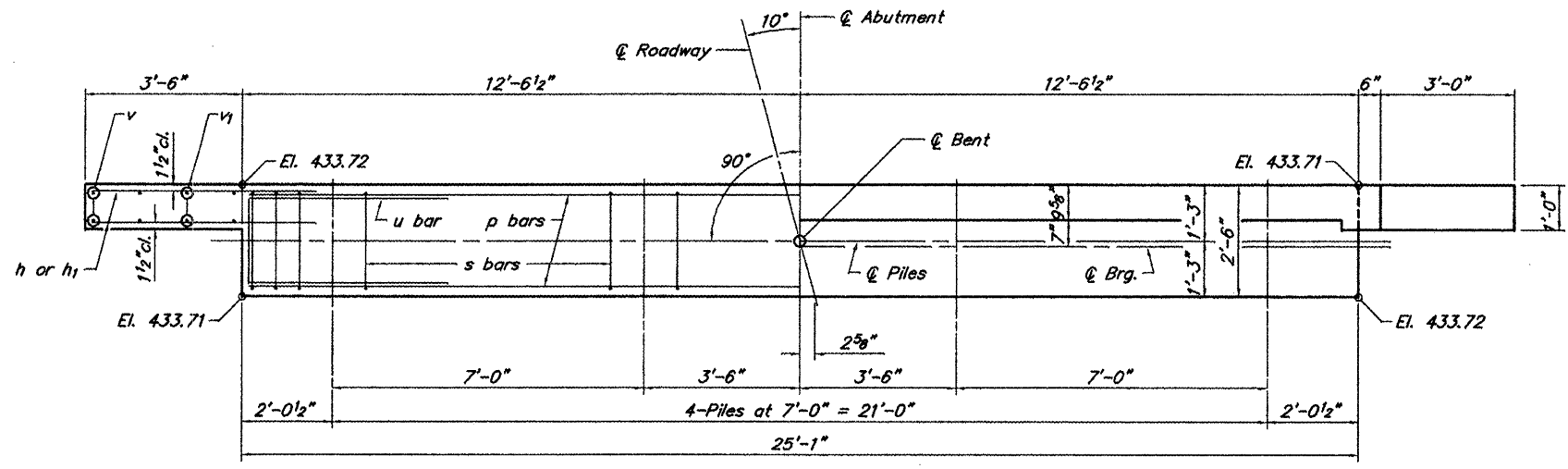


BILL OF MATERIAL

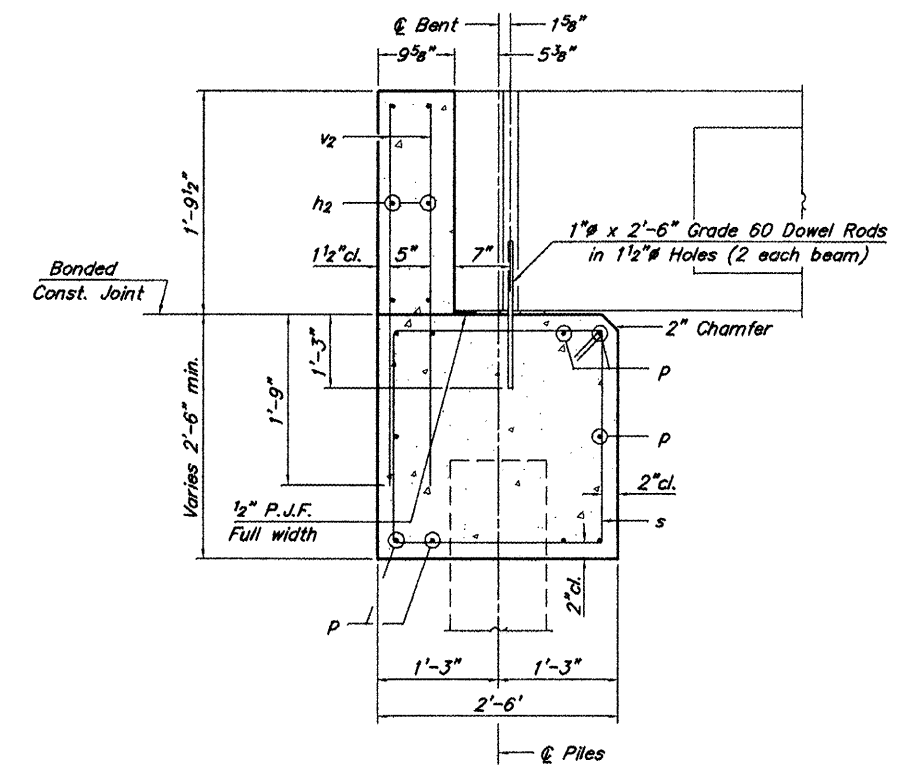
Precast Prestressed Conc. Deck Bms. (21" depth)	Sq. Ft.	1,392
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21" X 48" PPC DECK BEAM DETAILS
 FAU ROUTE 9901 (KRATZINGER HOLLOW RD)
 GREEN CREEK
 SECTION 06-01186-00-BR
 UNION COUNTY
 STRUCTURE NO. 091-3229

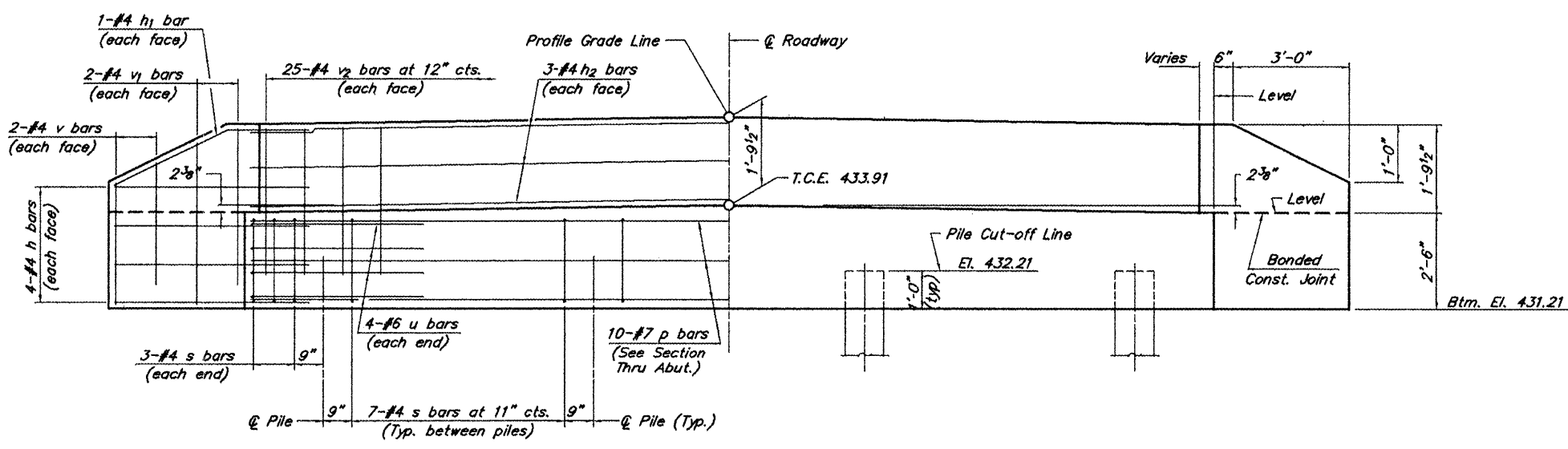
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO
FAU 9901	06-01186-00-BR	UNION	10	6
PROJECT NO. ARA-BRS-0181(048)			CONTRACT NO. 99352	



PLAN



SECTION THRU ABUT.
(At Right Angles)



ELEVATION

BILL OF MATERIAL FOR ONE ABUTMENT

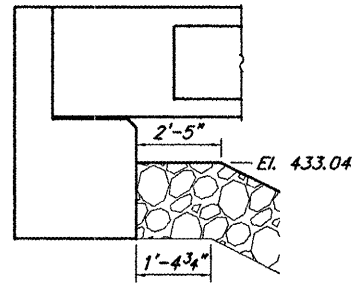
Bar	No.	Size	Length	Shape
h	16	#4	5'-0"	—
h1	4	#4	5'-0"	—
h2	6	#4	24'-9"	—
p	10	#7	24'-9"	—
s	27	#4	9'-5"	□
u	8	#6	11'-1"	—
v	8	#4	3'-2"	—
v1	8	#4	3'-10"	—
v2	50	#4	3'-5"	—
Concrete Structures			8.4	Cu. Yds.
Reinforcement Bars			1,126	Lbs.

NOTES

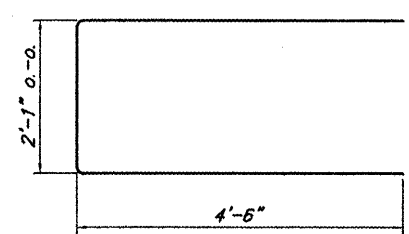
- The Backwall and the portion of the Wingwalls above the bonded construction joint shall be cast against the in-place beam.
- Reinforcement bars shall conform to A.A.S.H.T.O. M-31, M-42 or M-53, Grade 60.

DESIGN STRESSES

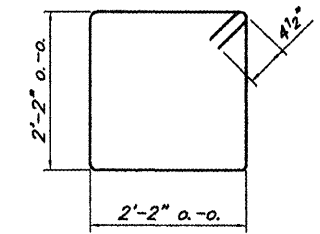
$f'_c = 3,500 \text{ psi}$
 $f_y = 60,000 \text{ psi}$



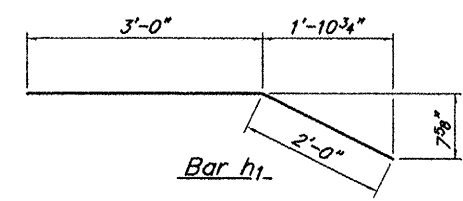
BERM DETAIL



Bar u



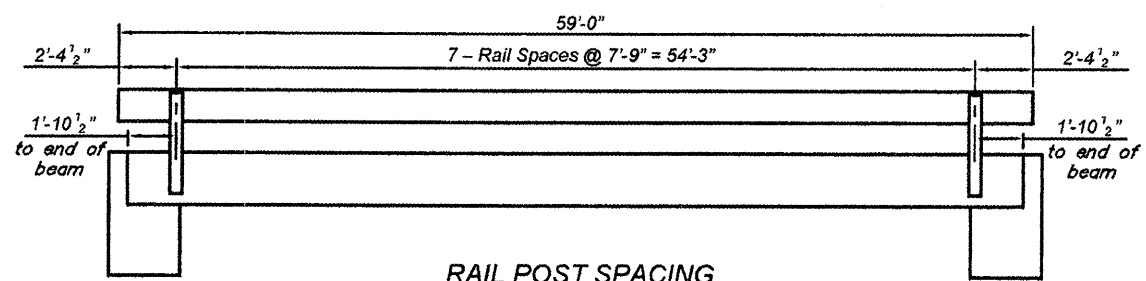
Bar s



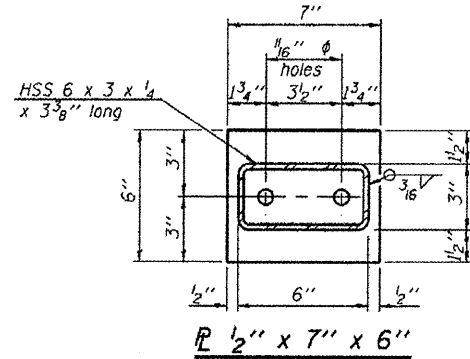
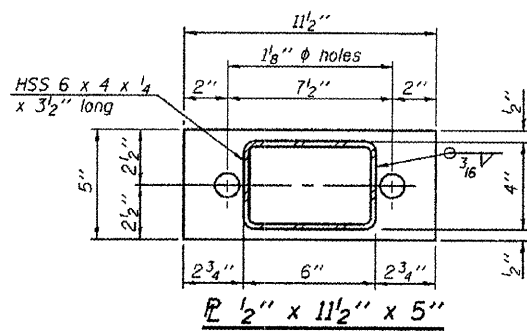
Bar h1

ABUTMENT
FAU ROUTE 9901 (KRATZINGER HOLLOW RD)
GREEN CREEK
SECTION 06-01186-00-BR
UNION COUNTY
STRUCTURE NO. 091-3229

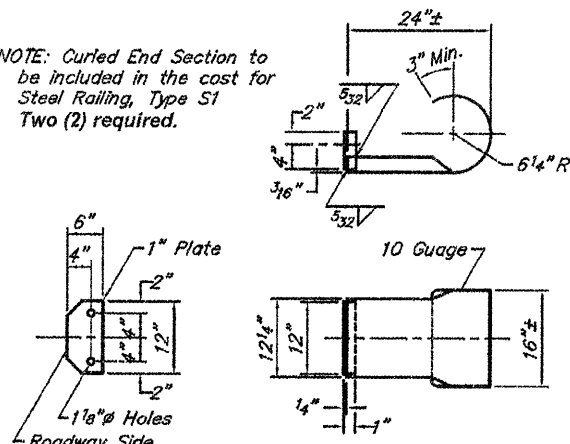
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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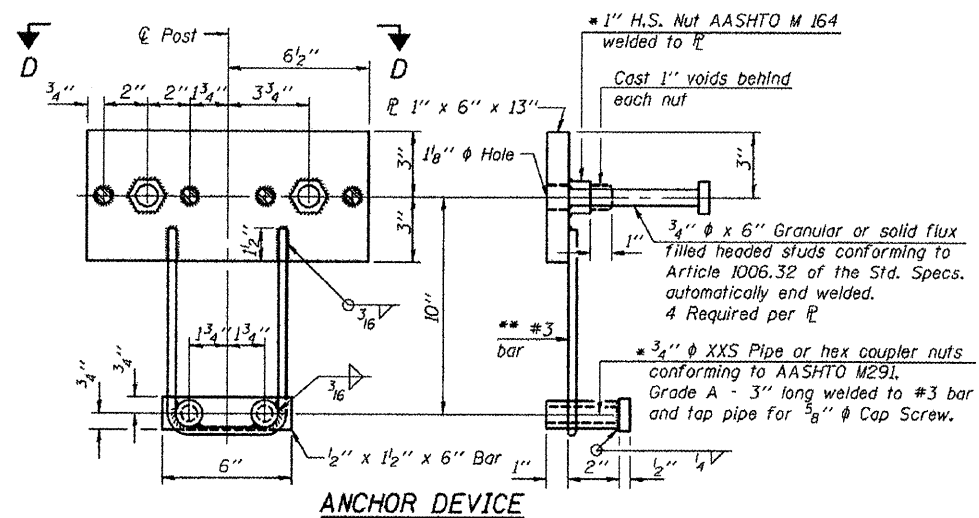
RAIL POST SPACING



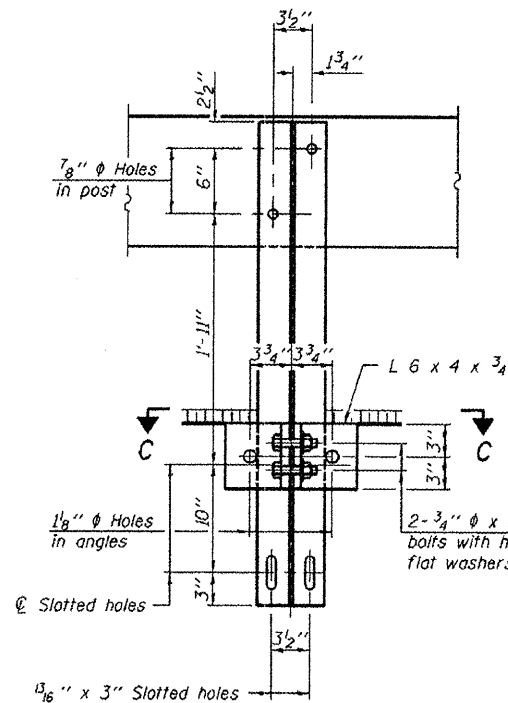
NOTE: Curled End Section to be included in the cost for Steel Railing, Type S1 Two (2) required.



CURLLED END SECTION DETAILS

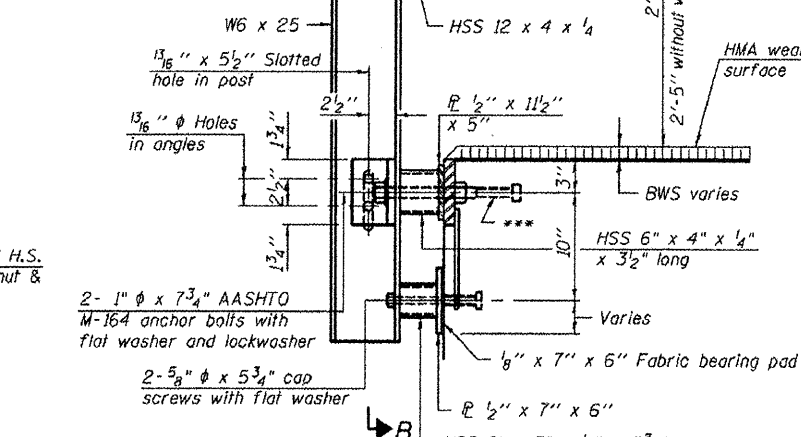


ANCHOR DEVICE

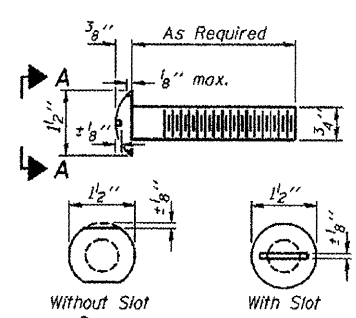


SECTION B-B

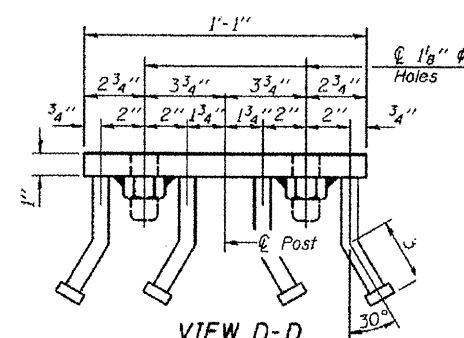
2-3/4" ϕ x 6" Round Head Bolts (With slot or approved recess in head) with locknut & flat washer. 7/8" ϕ holes in hollow structural section may be drilled in the field.



SECTION AT RAILING POST



VIEW A-A ROUND HEAD BOLT

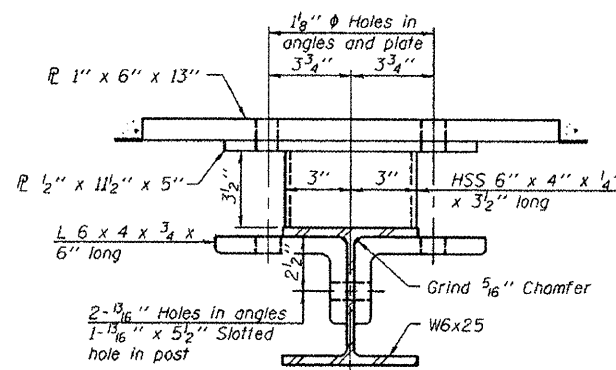


VIEW D-D

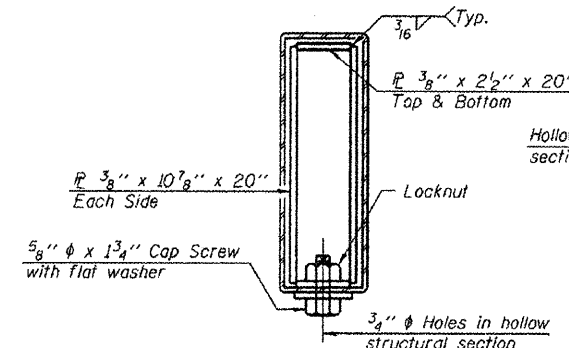
Notes:
 All field drilled holes shall be coated with an approved zinc rich paint before erection.
 For multi-span bridges, sufficient 1/4" x 6" x 1'-2" galvanized steel shims shall be provided to align rail between adjacent spans. Cost Included with Steel Railing, Type S-1.
 All steel rail elements shall 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	118

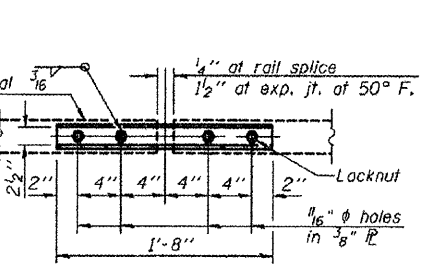


SECTION C-C

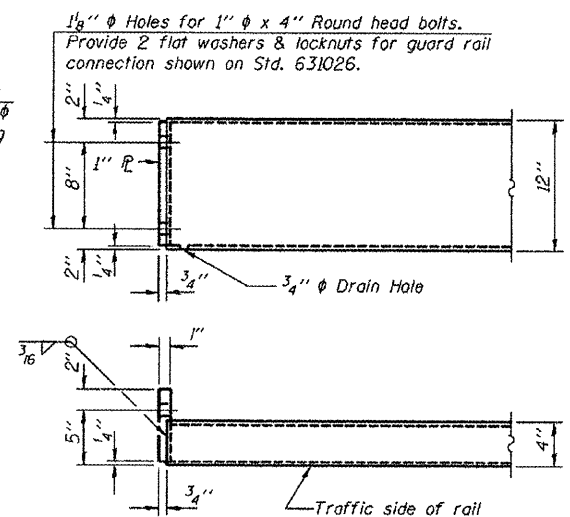


SECTIONS AT RAIL SPLICE

RAIL SPLICE CONNECTION AT EXPANSION JT.



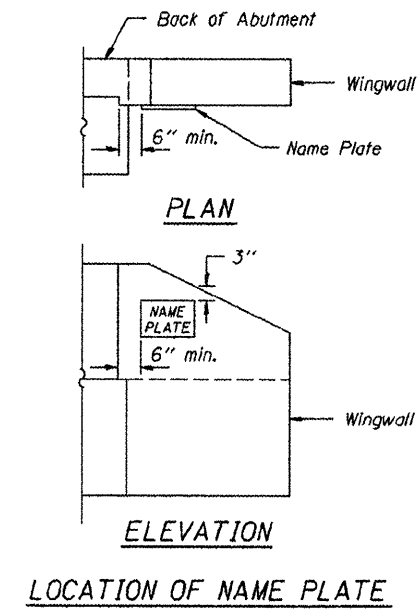
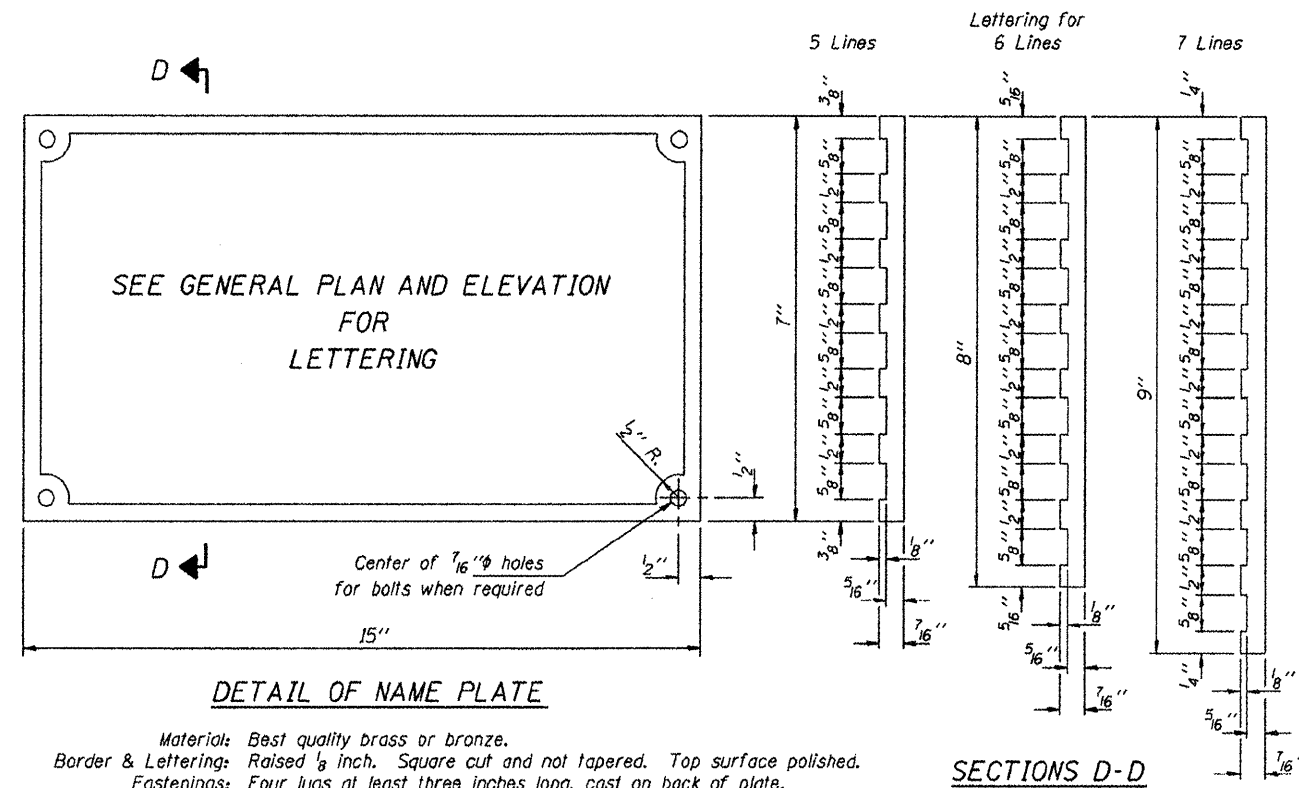
PLAN-BOTT. SPLICE TYPICAL



END OF RAIL DETAILS

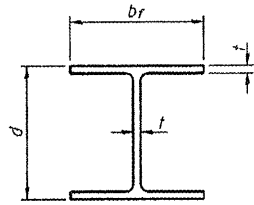
STEEL RAILING, TYPE S-1
FAU ROUTE 9901 (KRATZINGER HOLLOW RD)
GREEN CREEK
SECTION 06-01186-00-BR
UNION COUNTY
STRUCTURE NO. 091-3229

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NAME PLATES
 FAU ROUTE 9901 (KRATZINGER HOLLOW RD)
 GREEN CREEK
 SECTION 06-01186-00-BR
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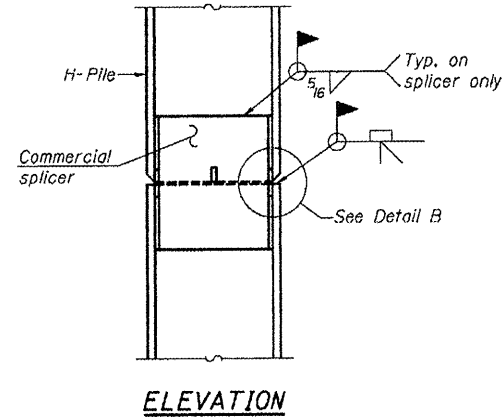
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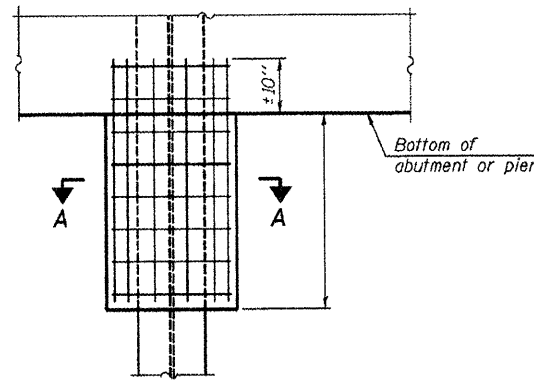
STEEL PILE TABLE

Designation	Depth d	Flange width br	Web and Flange thickness t	Encasement diameter A	Encasement Quantity/Ft. C.Y.
HP 14x117	14 1/4"	14 7/8"	13/16"	30"	0.173
x102	14"	14 3/4"	1/16"	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 12x84	12 1/4"	12 1/4"	1/16"	24"	0.110
x74	12 1/2"	12 1/4"	5/8"	24"	0.111
x63	12"	12 1/8"	1/2"	24"	0.112
x53	11 3/4"	12"	7/16"	24"	0.112
HP 10x57	10"	10 1/4"	9/16"	24"	0.112
x42	9 3/4"	10 1/8"	7/16"	24"	0.113
HP 8x36	8"	8 1/2"	7/16"	18"	0.063

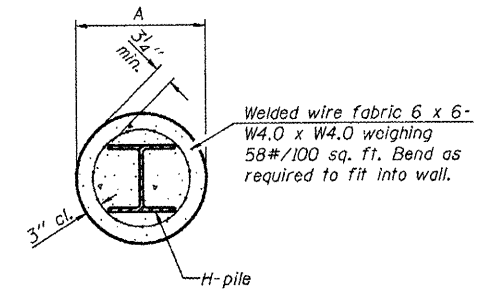
Note: The steel H-piles shall be according to AASHTO M270 Grade 50.



ELEVATION



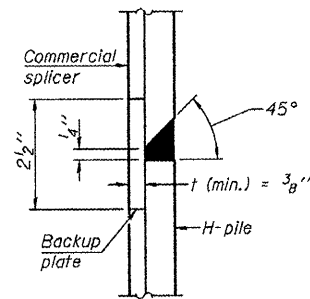
ELEVATION



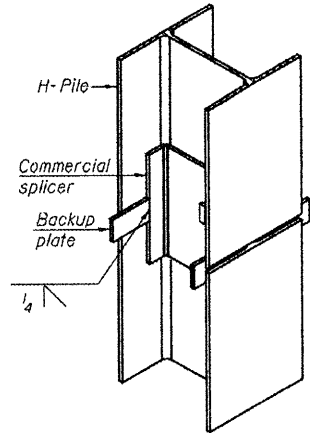
SECTION A-A

Note: Forms for encasement may be omitted when soil conditions permit.

PILE ENCASEMENT

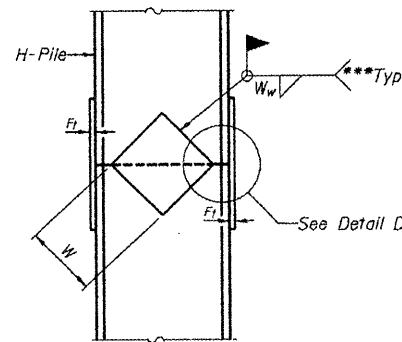


DETAIL "B"

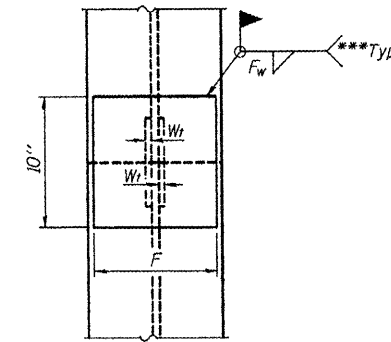


ISOMETRIC VIEW

WELDED COMMERCIAL SPLICE

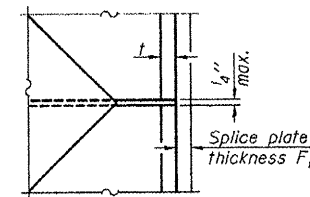


ELEVATION



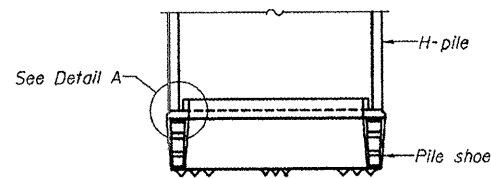
END VIEW

Designation	F	F _t	F _w	W	W _t	W _w
HP 14x117	12 1/2"	1"	7/8"	7 3/4"	5 1/2"	1 1/2"
x102	12 1/2"	7/8"	3/4"	7 3/4"	5 1/2"	1 1/2"
x89	12 1/2"	3/4"	1/16"	7 3/4"	5 1/2"	1 1/2"
x73	12 1/2"	5/8"	9/16"	7 3/4"	5 1/2"	1 1/2"
HP 12x84	10"	7/8"	1/16"	6 1/2"	5 1/2"	1 1/2"
x74	10"	7/8"	1/16"	6 1/2"	5 1/2"	1 1/2"
x63	10"	5/8"	1/2"	6 1/2"	5 1/2"	3/8"
x53	10"	5/8"	1/2"	6 1/2"	5 1/2"	3/8"
HP 10x57	8"	3/4"	9/16"	5 1/4"	5 1/2"	3/8"
x42	8"	5/8"	9/16"	5 1/4"	5 1/2"	3/8"
HP 8x36	7"	5/8"	1/16"	4 1/4"	5 1/2"	3/8"

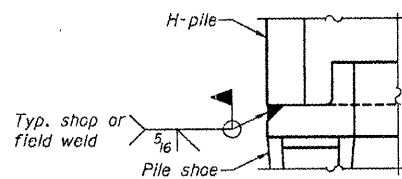


DETAIL D

WELDED PLATE FIELD SPLICE

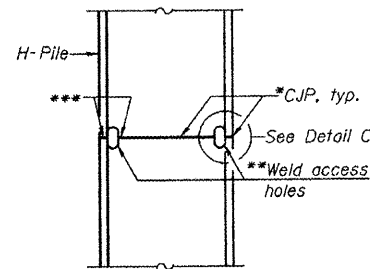


ELEVATION

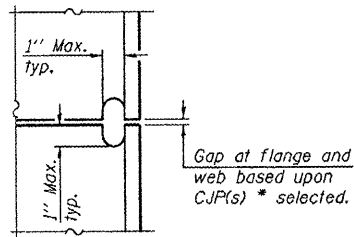


DETAIL A

H-PILE SHOE ATTACHMENT



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.

PILING DETAILS
FAU ROUTE 9901 (KRATZINGER HOLLOW RD)
GREEN CREEK
SECTION 06-01186-00-BR
UNION COUNTY
STRUCTURE NO. 091-3229

