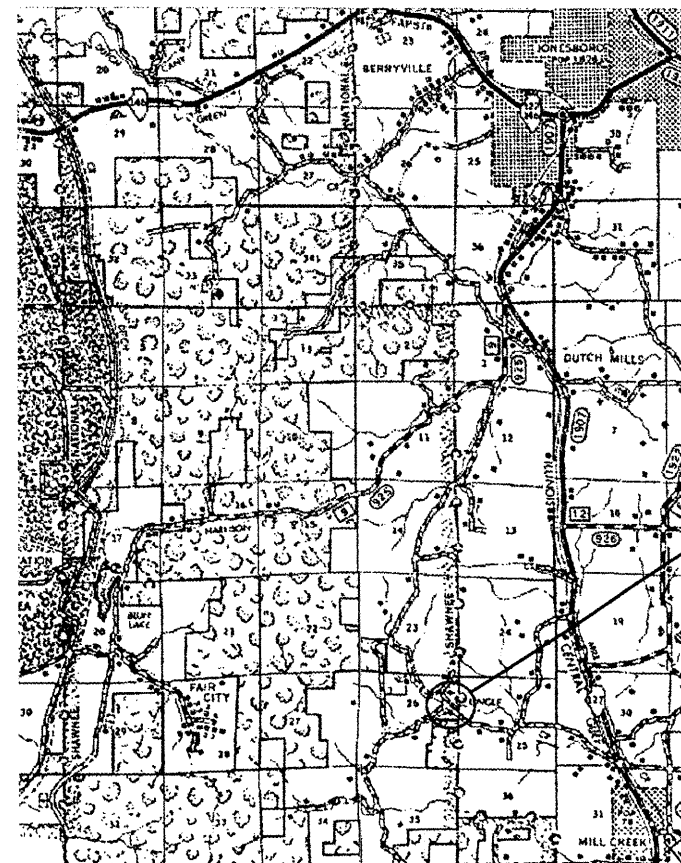


STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED
HIGHWAY BRIDGE PROGRAM

TOWNSHIP ROUTE 265 (LINGLE CREEK ROAD)
COUNTY UNIT ROAD DISTRICT
SECTION 04-01183-00-BR
PROJECT NO. BROS-181(43)
JOB NO. C-99-550-04
LINGLE CREEK

UNION COUNTY

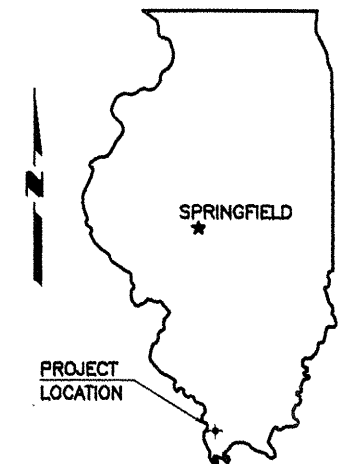


LOCATION MAP

SCALE: 1" = 2 MILES

NET LENGTH OF IMPROVEMENT = 612.00 FT. = 0.1159 MILES

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 265	04-01183-00-BR	UNION	10	1
PROJECT NO. BROS-181(43)		CONTRACT NO. 99252		



INDEX OF SHEETS

- COVER SHEET
 - PLAN AND PROFILE
 - GENERAL PLAN AND ELEVATION
 - DECK BEAMS 21" X 36"
 - DECK BEAMS 21" X 48"
 - ABUTMENTS
 - STEEL RAILING
 - NAME PLATES
 - PILE DETAILS
 - CROSS SECTIONS
- STANDARDS 000001-05 STANDARD SYMBOLS, ABBREVIATIONS AND PATTERNS
280001-04 TEMPORARY EROSION CONTROL SYSTEMS
701901-01 TRAFFIC CONTROL DEVICES
BLR-21-8 TRAFFIC CONTROL

CLASSIFICATION : LOCAL ROAD
ADT : 100
DESIGN SPEED : 30 MPH

SUMMARY OF QUANTITIES			
CODE NO.	PAY ITEM	UNIT	TOTAL
20100110	TREE REMOV 6-15	UNIT	59
20100210	TREE REMOV OVER 15	UNIT	71
20200100	EARTH EXCAVATION	CU YD	446
20300100	CHANNEL EXCAVATION	CU YD	67
25000200	SEEDING, CLASS 2	ACRE	0.4
25000400	NITROGEN FERTILIZER NUTRIENT	POUND	36
25000500	PHOSPHORUS FERTILIZER NUTRIENT	POUND	36
25000600	POTASSIUM FERTILIZER NUTRIENT	POUND	36
25000700	AGRICULTURAL GROUND LIMESTONE	TON	0.8
25100120	MULCH, METHOD 2	TON	0.8
28100809	STONE DUMPED RIPRAP, CLASS A5	TON	217
40200800	AGGREGATE SURFACE COURSE, TYPE B	TON	842
50100100	REMOVAL OF EXISTING STRUCTURES	EACH	1
50200100	STRUCTURE EXCAVATION	CU YD	48
50300225	CONCRETE STRUCTURES	CU YD	16.6
50300280	CONCRETE ENCASEMENT	CU YD	2.1
50400405	PRECAST PRESTRESSED CONCRETE DECK BEAMS (21" DEPTH)	SQ FT	1198
50800105	REINFORCEMENT BARS	POUND	2240
* 50900205	STEEL RAILING, TYPE S1	FOOT	100
51201400	FURNISHING STEEL PILES HP10X42	FOOT	244
51202305	DRIVING PILES	FOOT	244
51500100	NAME PLATES	EACH	1
54200223	PIPE CULVERTS, CLASS D, TYPE 1 18"	FOOT	46
67100100	MOBILIZATION	L SUM	1

* SPECIALTY ITEMS

JOINT UTILITY LOCATION INFORMATION
FOR EXCAVATION
J.U.L.I.E. 1-800-892-0123
CONTACT 48 HOURS BEFORE EXCAVATING

CONTRACT NO. 99252

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



Edward W. Miller
PROFESSIONAL ENGINEER
#062-025277
EXPIRES NOV. 30, 2009

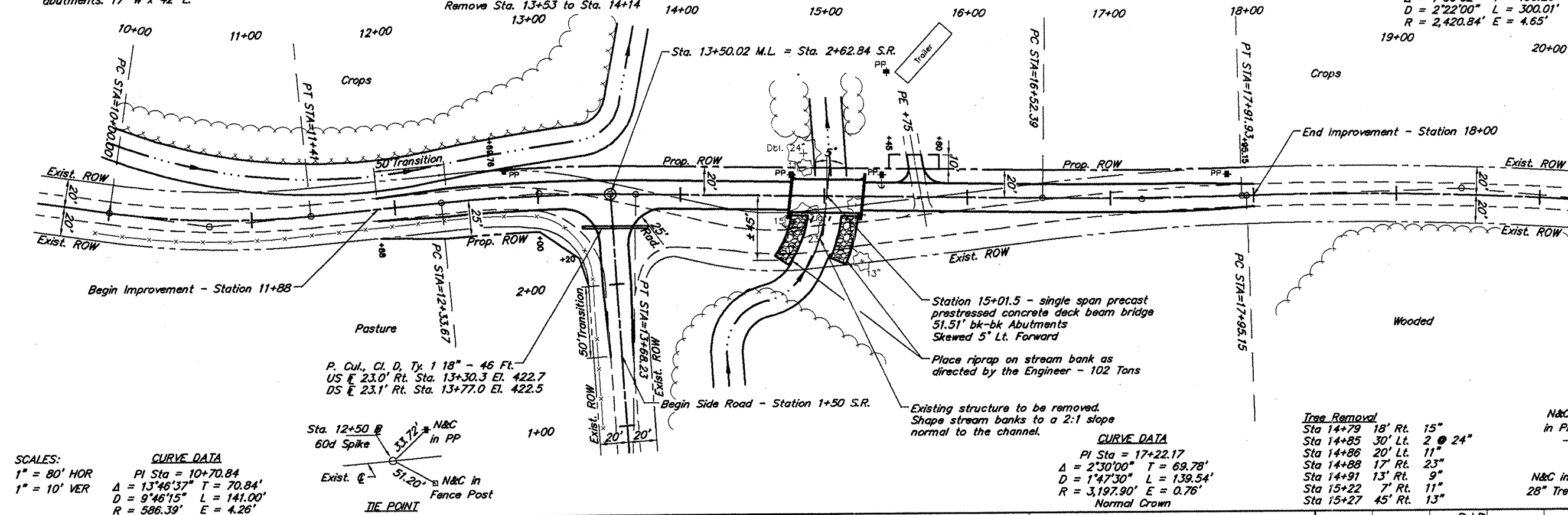
ILLINOIS DEPARTMENT OF TRANSPORTATION	
Approved	<u>February 27, 2008</u> <u>Bruce L. Boyd</u> Union County Engineer
Passed	<u>12-16-08</u> <u>Karl Miley</u> District 9 Engineer of Local Roads and Streets
Releasing for Bid Based on Limited Review	<u>12-16-08</u> <u>Mary C. Harris</u> Deputy Director of Highways, Region 5 Engineer

B.M. - RR Spike in PP
14' Lt. Sta. 14+76
Assumed Elev. 425.00

Existing Structure - Timber deck on
steel stringers with closed timber
abutments. 17' W x 42' L.

CURVE DATA

PI Sta = 13+01.02
 $\Delta = 6^\circ 23' 30''$ $T = 67.35'$
 $D = 4^\circ 45' 00''$ $L = 134.56'$
 $R = 1,206.23'$ $E = 1.88'$
 $S.E. = 0.025'/ft.$
Attain Sta. 11+88 to Sta. 12+49
Remove Sta. 13+53 to Sta. 14+14



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

CURVE DATA

PI Sta = 10+70.84
 $\Delta = 13^\circ 46' 37''$ $T = 70.84'$
 $D = 9^\circ 46' 15''$ $L = 141.00'$
 $R = 586.39'$ $E = 4.26'$

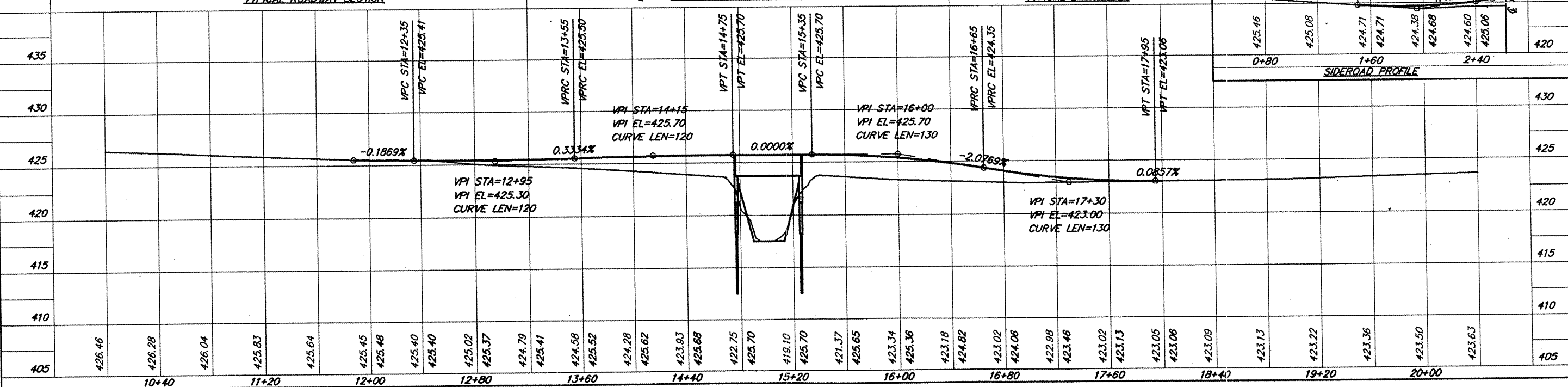
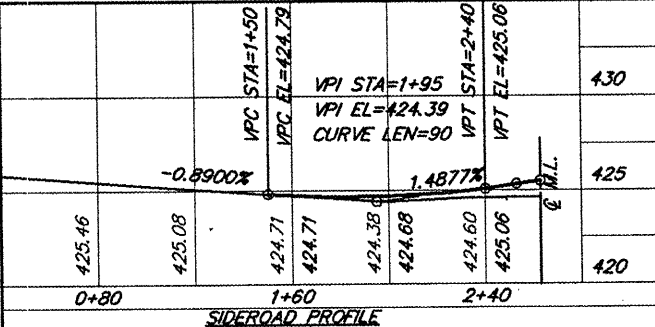
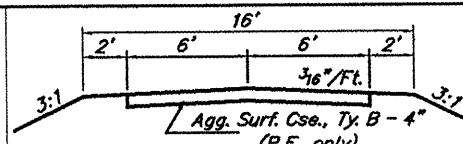
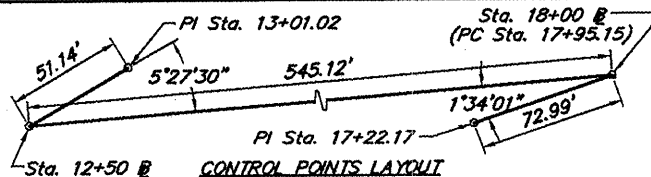
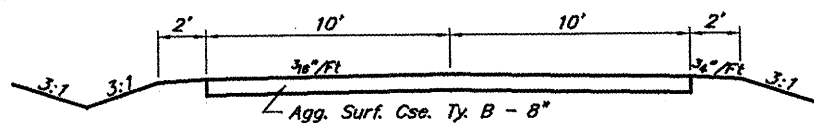
Sta. 12+50 @
60d Spike
N&C in PP
Exist. @
N&C in
Fence Post
TIE POINT

CURVE DATA

PI Sta = 17+22.17
 $\Delta = 2^\circ 30' 00''$ $T = 69.78'$
 $D = 1^\circ 47' 30''$ $L = 139.54'$
 $R = 3,197.90'$ $E = 0.76'$
Normal Crown

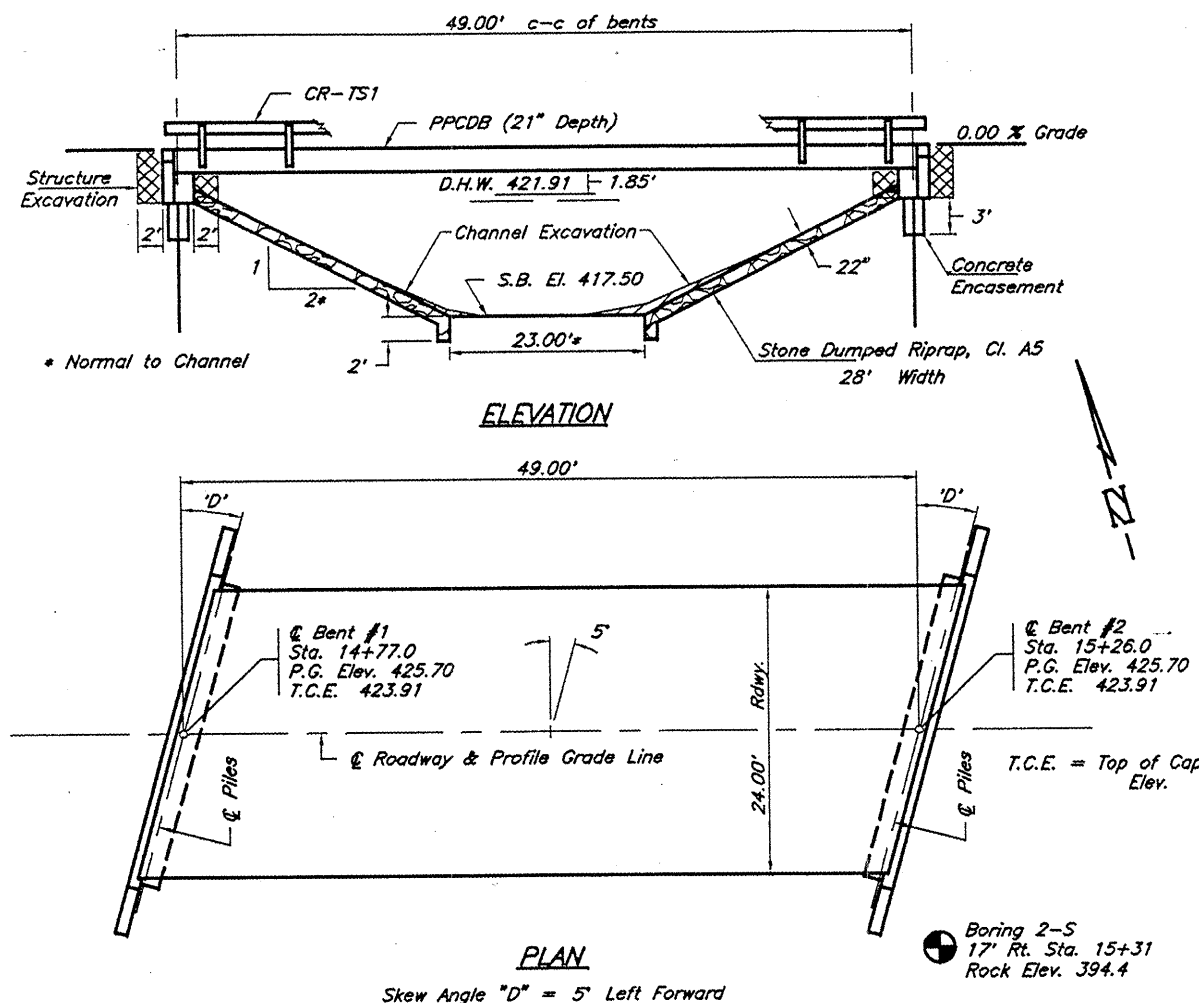
Tree Removal
Sta 14+79 18' Rt. 15"
Sta 14+85 30' Lt. 2 @ 24"
Sta 14+86 20' Lt. 11"
Sta 14+88 17' Rt. 23"
Sta 14+91 13' Rt. 9"
Sta 15+22 7' Rt. 11"
Sta 15+27 45' Rt. 13"

N&C in PP
Exist. @
Sta. 18+00 @
60d Spike
N&C in
28" Tree
TIE POINT



B.M. - RR Spike in Power Pole
14' Lt. of Station 14+26
Assumed Elev. 425.00

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 265	04-01183-00-BR	UNION	10	3
PROJECT NO. BROS-181(43)			CONTRACT NO. 99252	



Existing Structure - timber deck on steel stringers
with closed timber abutments 17' W X 42' L

GENERAL NOTES

- Steel H piles shall meet AASHTO M270 Grade 50 specifications.
- 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.	
Removal of Existing Structures	Each				1
Concrete Structures	Cu. Yds.			16.6	16.6
P.P. Conc. Dk. Bm. 21" Dp.	Sq. Ft.	1198			1198
Steel Railing, Type S1	Foot	100			100
Reinforcement Bars	Pound			2240	2240
Furnishing Steel Piles HP10X42	Foot			244	244
Driving Steel Piles	Foot			244	244
Concrete Encasement	Cu. Yds.			2.1	2.1
Name Plates	Each			1	1
Structure Excavation	Cu. Yds.			48	48
Channel Excavation	Cu. Yds.			67	67
Stone Dumped Riprap, Class A5	Tons			115	115

Boring 1-S
43' Rt. Sta. 14+65
Rock Elev. 400.9

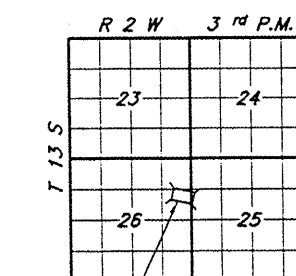
PILE DATA (2-ABUTS.)

Type & Size : HP10X42
Nominal Required Bearing : 335 kips
Allowable Resistance Available : 112 kips
Estimated Length : 29 Feet Bent #1, 32 Feet Bent #2
Number Required : 8

LINGLE CREEK
SEC. 04-01183-00-BR BUILT 20
COUNTY UNIT ROAD DISTRICT
UNION COUNTY
LOADING HS20
STR. NO. 091-3228

LETTERING FOR NAME PLATE

Locate Name Plate at southwest
Corner of Bridge (See Std. CN)

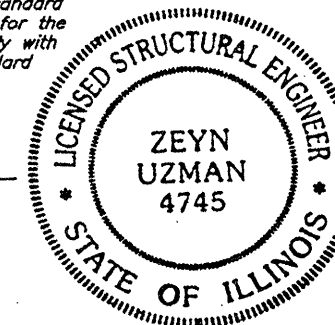


PROPOSED
BRIDGE

LOCATION SKETCH

I certify that to the best of my knowledge, information and belief, the revised standard detail sheets and/or special component sheets included with the standard bridge detail sheets are structurally adequate for the design loading shown on the plans and comply with the requirements of the current AASHTO Standard Specifications for Highway Bridges.

Zeyn B. Uzman
S.E. #81-1745
Expires Nov. 30, 2008



DESIGN SPECIFICATIONS

2002 AASHTO Standard Specifications - 17th ed.

LOADING HS20-44

Allow 25#/sq. ft. for future wearing surface

SEISMIC DATA

Seismic Performance Category (SPC) = B
Bedrock Acceleration Coefficient (A) = 16.4%
Site Coefficient (S) = 1.0

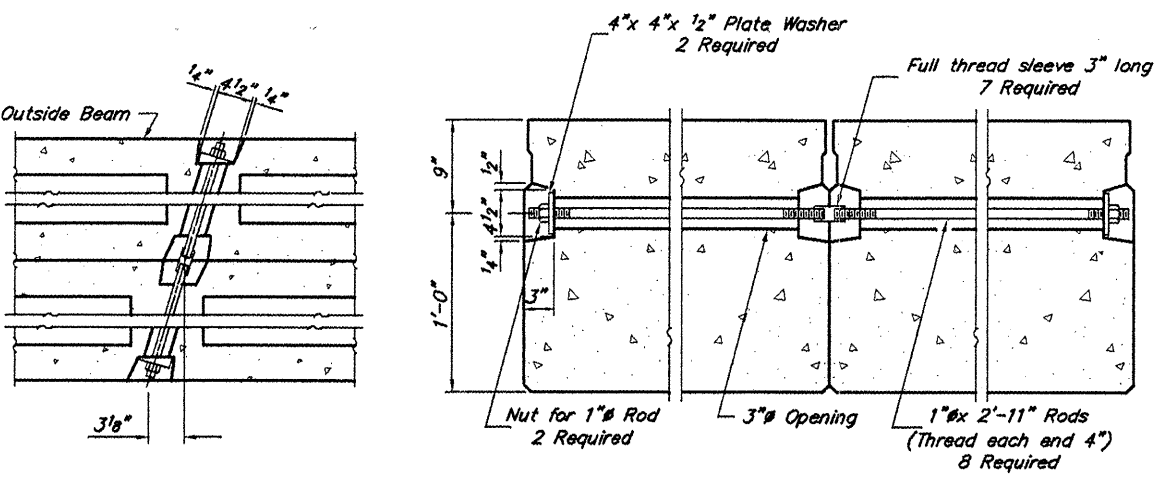
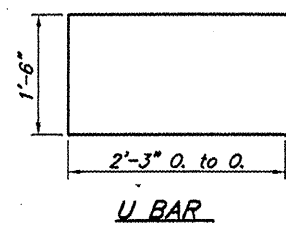
WATERWAY INFORMATION

Drainage Area = 2.290 Sq. Mi. Low Grade Elev. = 423.1 At Sta. 18+00									
Flood	Freq. Yr.	Q C.F.S.	Opening Sq. Ft.		Natural H.W.E.	Head-Ft.		Headwater El.	
			Exist.	Prop.		Exist.	Prop.	Exist.	Prop.
Design	15	1356	131.7	141.6	421.91	0.30	0.01	422.21	421.92
Base	100	2191	179.0	195.8	423.16	0.83	0.08	423.99	423.24
Overtopping									
Max. Calc.	500	2883	210.9	223.6	423.98	1.81	0.81	425.79	424.79

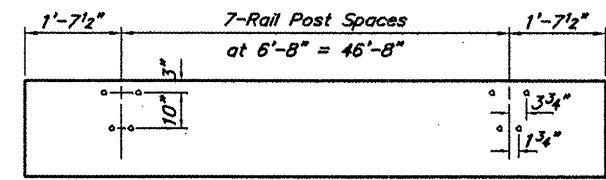
Deck elevation used for overtopping calculations to allow for future raising of the approach roadways.

GENERAL PLAN & ELEVATION
TOWNSHIP ROUTE 265
LINGLE CREEK
SECTION 04-01183-00-BR
UNION COUNTY
STATION 15+01.5

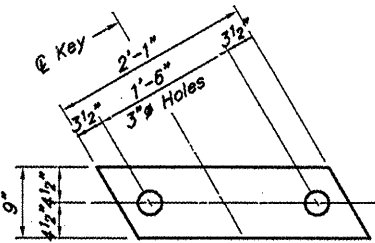
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 265	04-01183-00-BR	UNION	10	4
PROJECT NO. BROS-181(43)			CONTRACT NO. 99252	



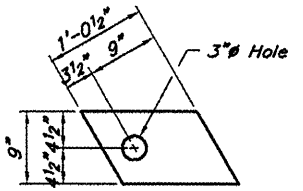
TYPICAL TRANSVERSE TIE ASSEMBLY



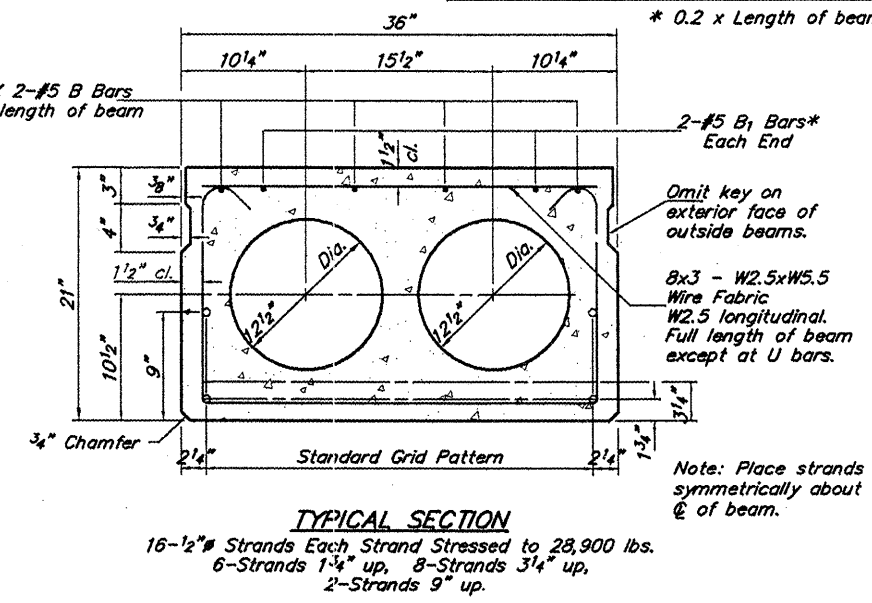
RAIL POST SPACING



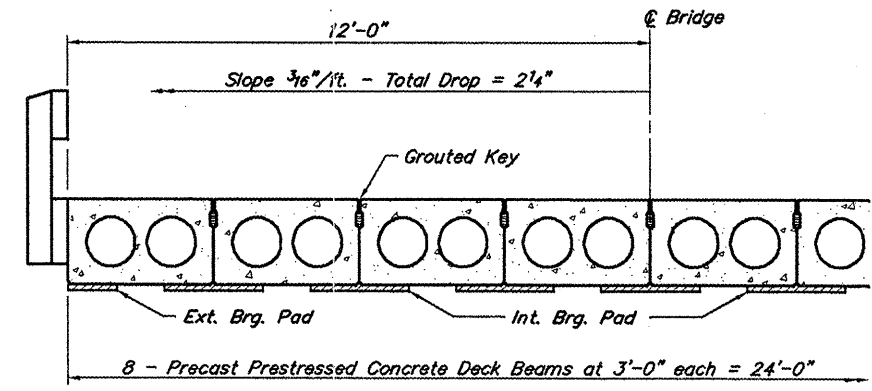
FABRIC BEARING PAD (Interior)



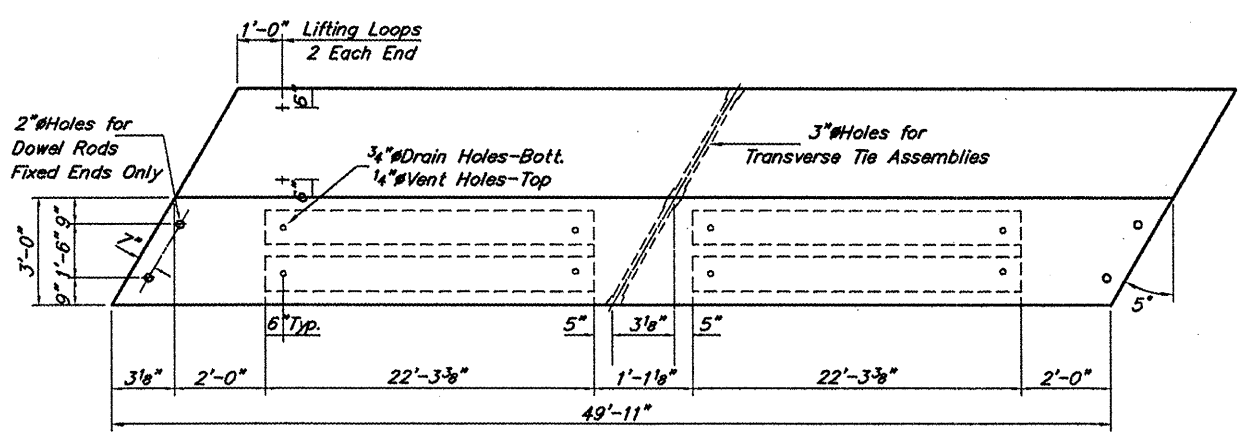
FABRIC BEARING PAD (Exterior)



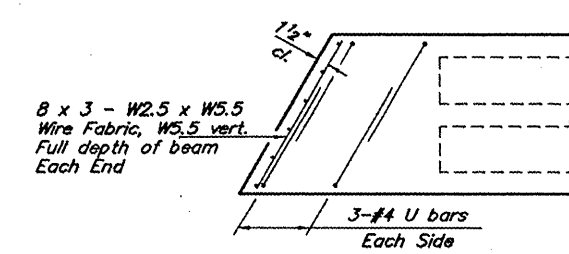
TYPICAL SECTION



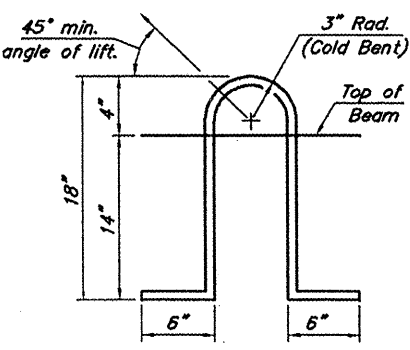
HALF CROSS SECTION



PLAN



END PLAN



LIFTING LOOP DETAIL

NOTES

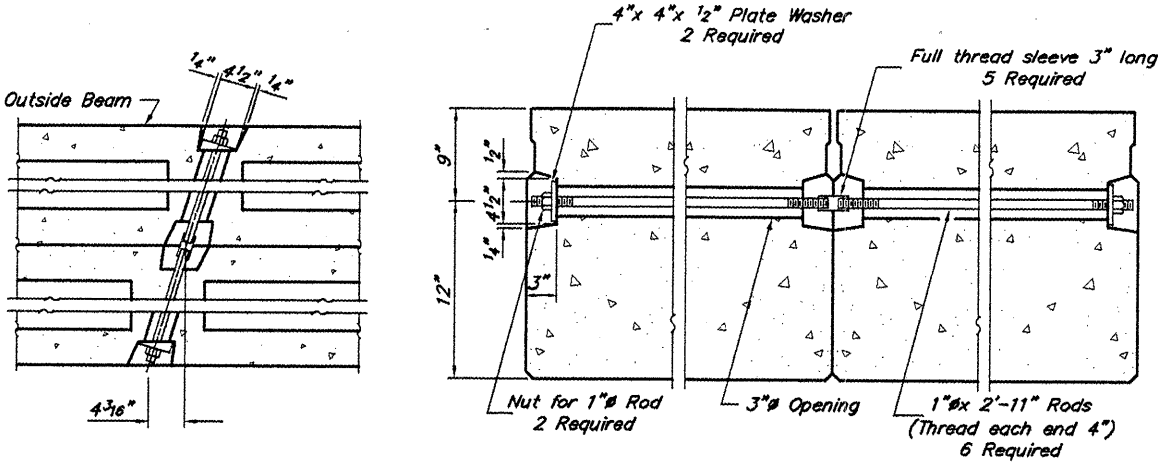
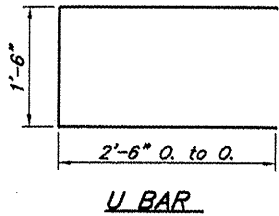
Reinforcement bars shall conform to AASHTO M-31 or M-322, Grade 60.
 Prestressing steel shall be uncoated high strength, stress-relieved 7-wire strand, Grade 270. The nominal diameter shall be 1/2" and the nominal cross-sectional area shall be 0.153 sq. in. Required release strength, f_{ci} , shall be 4,000 p.s.i.
 An equal substitution of the low-relaxation strands for the stress-relieved strands will be permitted.
 Lifting loops shall be 5/8" diameter, 6x25 class wire rope with fiber core and shall have a minimum ultimate tensile strength of 33,000 lbs. or 2-1/2"-270 ksi strands, as shown.
 Keyway surfaces shall be cleaned to remove form oil or other bond breaking material prior to shipment of the beams. Cleaning shall be done by sandblasting the keyway areas between the top of the beam and the bottom edge of the key.
 The 1" rods in the transverse tie assembly shall be tightened to a snug fit and the threads set. Pockets that receive transverse tie bar on outside shall be filled with grout after transverse tie assembly is in place.
 The bearing seat surfaces shall be adjusted by shimming to assure firm and even bearing. Two 1/8" fabric adjusting shims of the dimensions of the Exterior Bearing Pad shall be provided for each bearing.
 After beams have been erected, holes shall be drilled into substructure and anchor dowels placed. Dowel holes shall be filled with non-shrink grout to top of beam and allowed to cure a minimum of 24 hours prior to grouting the shear keys.
 Nominal 1" joint at C Pier shall be filled with non-shrink grout.
 Rail Post Anchor Devices shall be cast into exterior face of outside beams as elsewhere specified.
 Cost of reinforcement and accessories cast into the beam, of bearing pads, and of grouting longitudinal shear keys is incidental to Precast Prestressed Concrete Deck Beams.
 When Waterproofing Membrane System is specified, the top surface of the beams shall be finished in accordance with Article 504.06 of the Standard Specifications except that the surface shall not be roughened by brooming. The finished surface shall be free of depressions or high spots with sharp corners, and the top edge of keys shall be rounded or chamfered a min. of 1/4".

BILL OF MATERIAL

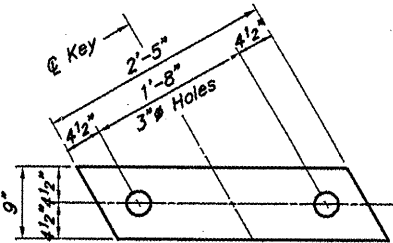
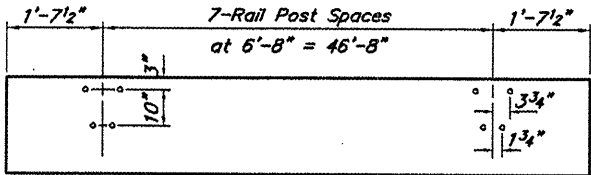
Bar	No.	Size	Length	Shape
B	8	#5	25'-8"	—
B1	4	#5	10'-0"	—
U	12	#4	6'-0"	—
Precast Prestressed Concrete Deck Beams			Sq. Ft.	1,198

DECK BEAMS 21" X 36"
 LINGLE CREEK
 SECTION 04-01183-00-BR
 UNION COUNTY

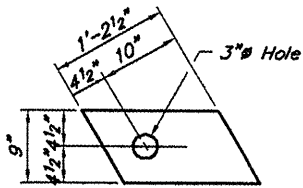
*ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 265	04-01183-00-BR	UNION	10	5
PROJECT NO. BROS-181(43)			CONTRACT NO. 99252	



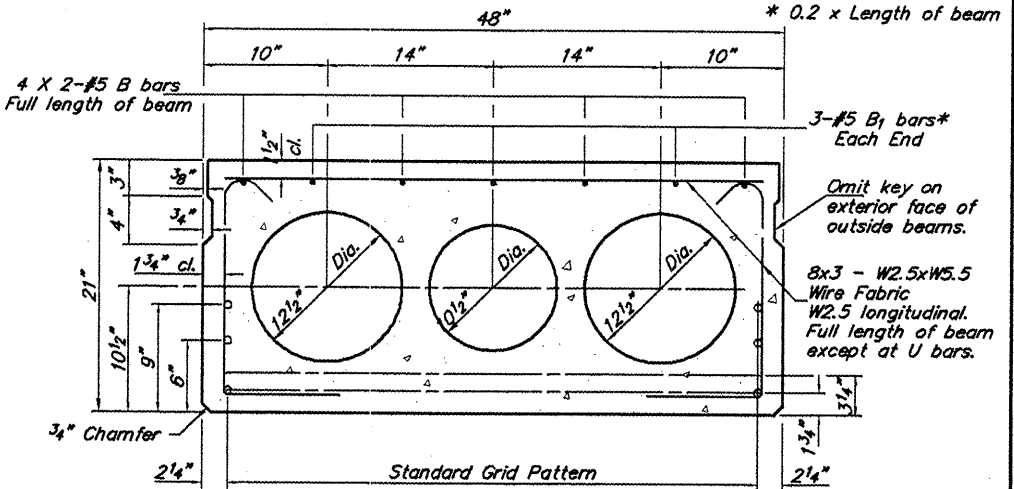
TYPICAL TRANSVERSE TIE ASSEMBLY



FABRIC BEARING PAD (Interior)

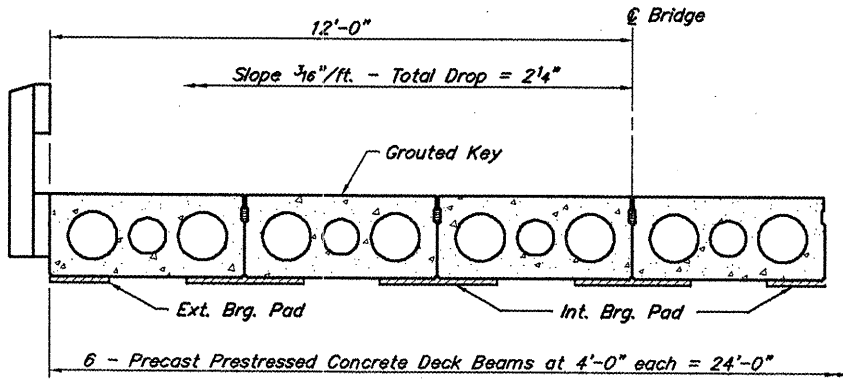


FABRIC BEARING PAD (Exterior)

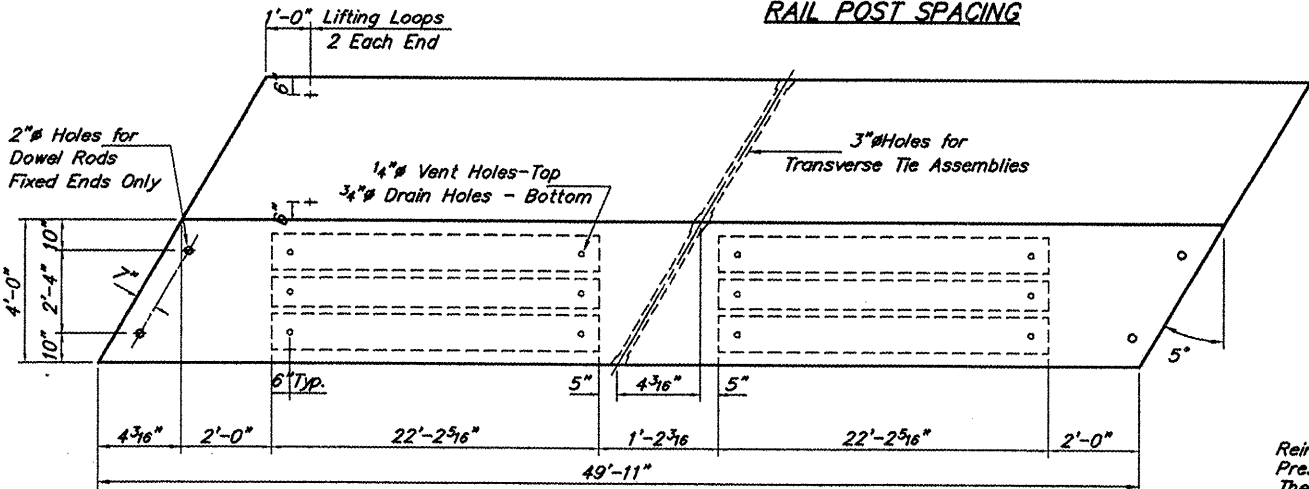


TYPICAL SECTION
21-1/2" Strands Each Strand Stressed to 28,900 lbs.
12-Strands 1 3/4" up, 5-Strands 3 1/4" up,
2-Strands 6" up, 2-Strands 9" up.

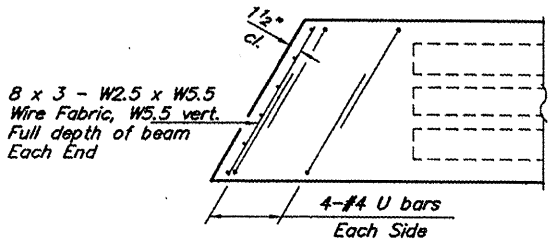
Note: Place strands symmetrically about C of beam.



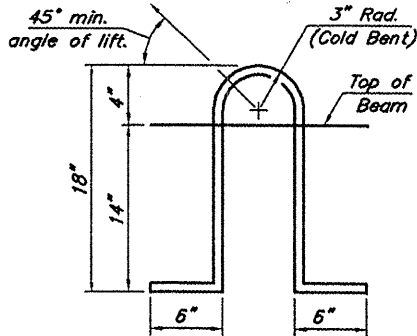
HALF CROSS SECTION



PLAN



END PLAN



LIFTING LOOP DETAIL

NOTES

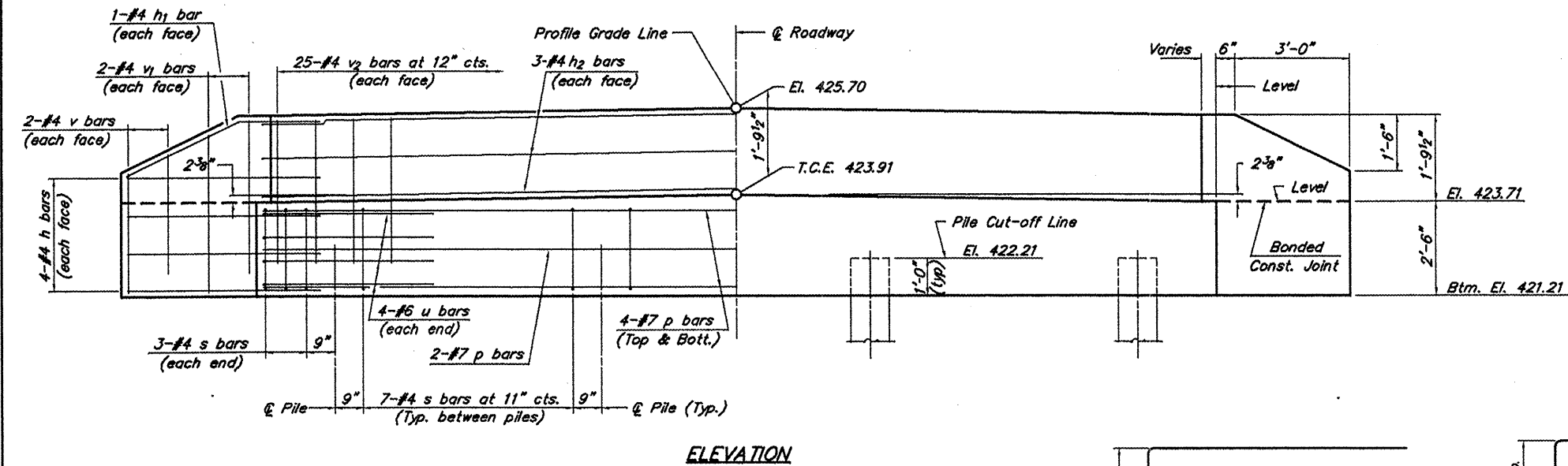
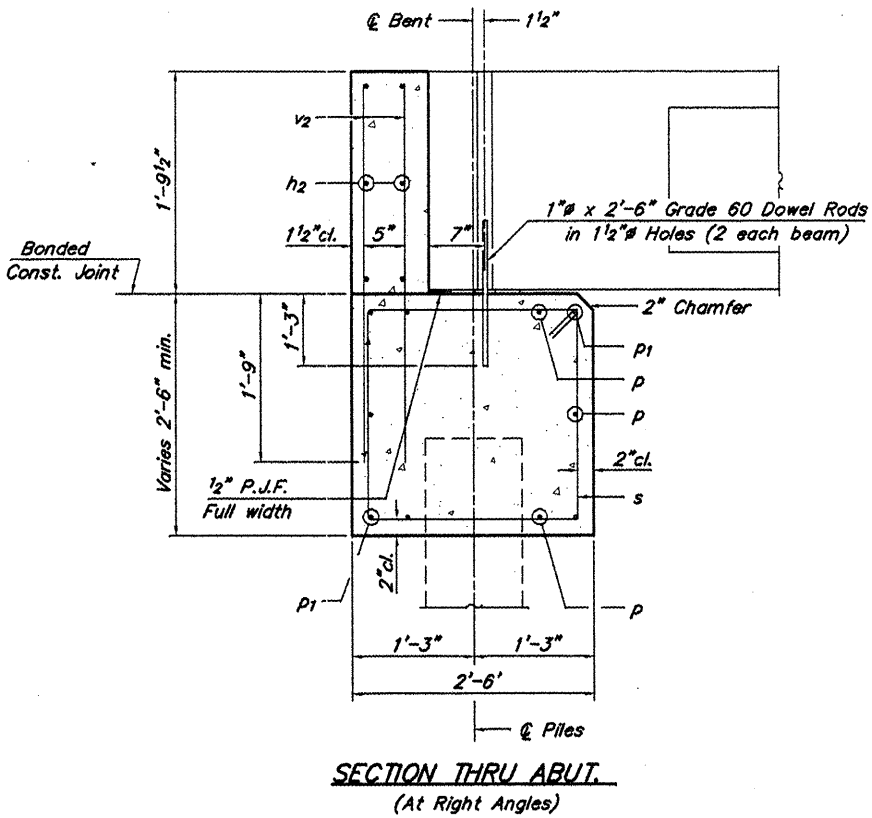
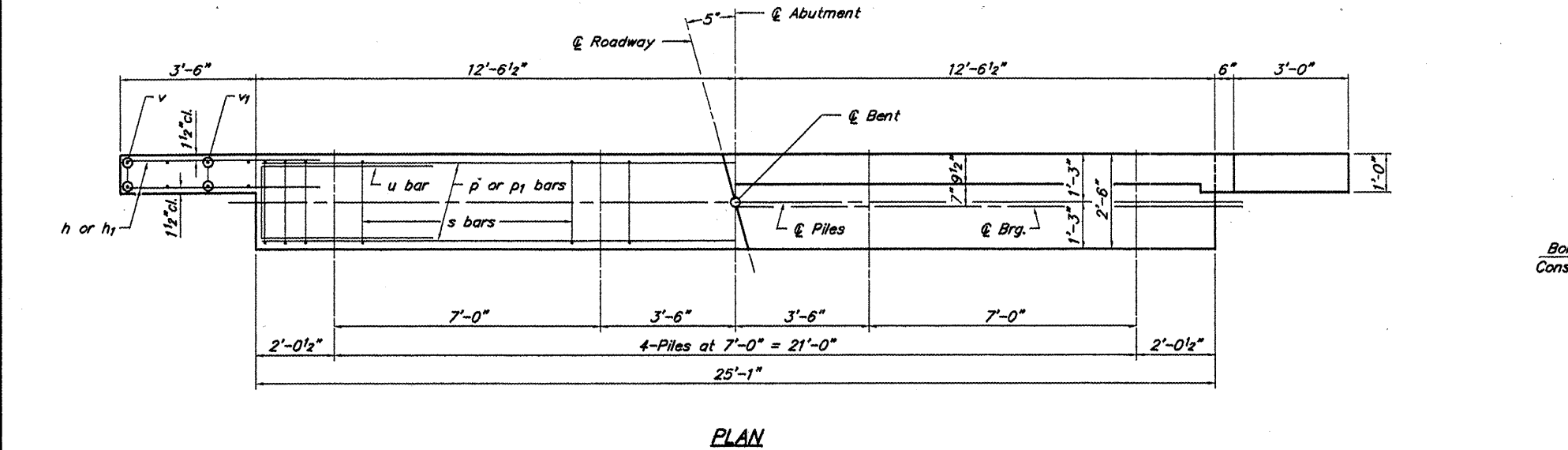
Reinforcement bars shall conform to AASHTO M-31 or M-322, Grade 60. Prestressing steel shall be uncoated high strength, stress-relieved 7-wire strand, Grade 270. The nominal diameter shall be 1/2" and the nominal cross-sectional area shall be 0.153 sq. in. Required release strength, fci, shall be 4,000 p.s.i. An equal substitution of the low-relaxation strands for the stress-relieved strands will be permitted. Lifting loops shall be 3/4" diameter, 6x25 class wire rope with fiber core and shall have a minimum ultimate tensile strength of 46,000 lbs. or 2-1/2"-270 ksi strands, as shown. Keyway surfaces shall be cleaned to remove form oil or other bond breaking material prior to shipment of the beams. Cleaning shall be done by sandblasting the keyway areas between the top of the beam and the bottom edge of the key. The 1" rods in the transverse tie assembly shall be tightened to a snug fit and the threads set. Pockets that receive transverse tie bar on outside shall be filled with grout after transverse tie assembly is in place. The bearing seat surfaces shall be adjusted by shimming to assure firm and even bearing. Two 1/8" fabric adjusting shims of the dimensions of the Exterior Bearing Pad shall be provided for each bearing. After beams have been erected, holes shall be drilled into substructure and anchor dowels placed. Dowel holes shall be filled with non-shrink grout to top of beam and allowed to cure a minimum of 24 hours prior to grouting the shear keys. Nominal 1" joint at C of Pier shall be filled with non-shrink grout. Rail Post Anchor Devices shall be cast into exterior face of outside beams as elsewhere specified. Cost of reinforcement and accessories cast into the beam, of bearing pads, and of grouting longitudinal shear keys is incidental to Precast Prestressed Concrete Deck Beams. When Waterproofing Membrane System is specified, the top surface of the beams shall be finished in accordance with Article 504.06 of the Standard Specifications except that the surface shall not be roughened by brooming. The finished surface shall be free of depressions or high spots with sharp corners, and the top edge of keys shall be rounded or chamfered a min. of 1/4".

BILL OF MATERIAL

Bar	No.	Size	Length	Shape
B	8	#5	25'-8"	—
B1	6	#5	10'-0"	—
U	16	#4	6'-6"	┐
Precast Prestressed Concrete Deck Beams			Sq. Ft.	1,198

DECK BEAMS 21" X 48"
LINGLE CREEK
SECTION 04-01183-00-BR
UNION COUNTY

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 265	04-01183-00-BR	UNION	10	6
PROJECT NO. BROS-181(30)			CONTRACT NO. 99252	



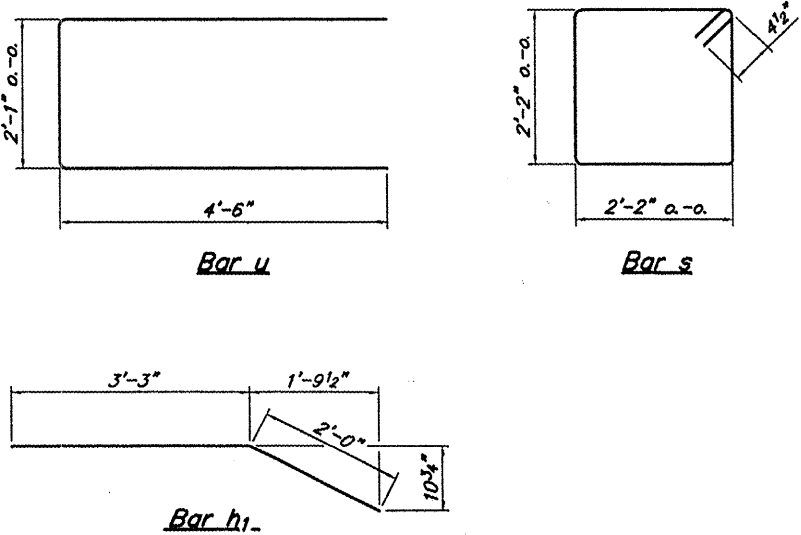
BILL OF MATERIAL FOR ONE ABUTMENT

Bar	No.	Size	Length	Shape
h	16	#4	5'-0"	—
h1	4	#4	5'-3"	—
h2	6	#4	24'-9"	—
p	10	#7	24'-9"	—
s	27	#4	9'-5"	□
u	8	#6	11'-1"	—
v	8	#4	2'-8"	—
v1	8	#4	3'-8"	—
v2	50	#4	3'-5"	—
Concrete Structures			8.3	Cu. Yds.
Reinforcement Bars			1120	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

$f_c = 3,500$ psi
 $f_y = 60,000$ psi



ABUTMENTS
 LINGLE CREEK
 SECTION 04-01183-00-BR
 UNION COUNTY

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 265	04-01183-00-BR	UNION	10	7
PROJECT NO. BROS-181(43)			CONTRACT NO. 99252	

NOTES

Hollow structural steel tubing shall conform to the requirements of ASTM designation A500 Grade B Structural Steel Tubing and shall meet the longitudinal CVN requirements of 15 ft.-lbs. at 0° F.

All other steel shapes and plates shall conform to the requirements of AASHTO M 270 Grade 36 except posts and angles shall conform to AASHTO M 270 Grade 50.

Boils, cap screws, and nuts shall conform to the requirement of ASTM designation A307 except for high strength bolts, nuts and washers noted which shall conform to AASHTO M 164.

All bolts, nuts, cap screws, washers and lock washers shall be galvanized according to AASHTO M 232.

All posts, railing, rail splices, anchor devices and angles shall be galvanized after shop fabrication according to AASHTO M-111 and ASTM A 385. Galvanized rail shall not be painted.

Railing shall be according to Section 509 of the Standard Specifications, except as noted, and will be paid for at the contract unit price per foot for STEEL RAILING, TYPE S-1.

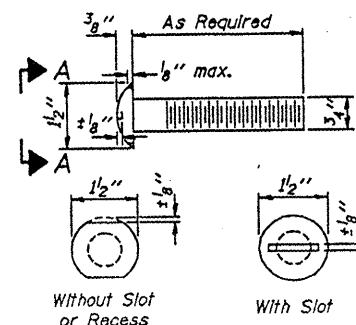
For multi-span bridges, sufficient 1/4" x 6" x 1'-2" galvanized steel shims shall be provided to align rail between adjacent spans. Cost included with STEEL RAILING, TYPE S-1.

All field drilled holes shall be coated with an approved zinc rich paint before erection.

The 2" x 7" x 6" plates that come in contact with concrete shall either receive two coats of asphalt paint conforming to Section 1060.07 Type II, or 1/8" fabric bearing pads shall be placed between the plates and concrete.

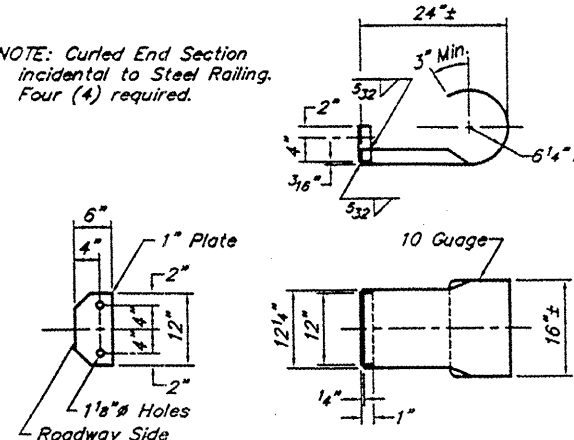
The 3/4" high strength bolts used to connect the 6 x 4 x 3/4 angles to the post shall be tightened according to Article 505.04 (IX2) of the Standard Specifications. The 1" high strength bolts connecting the angles to the concrete shall be tightened to a snug fit and given an additional 1/2 turn. The 5/8" cap screws in bottom of posts shall be tightened to a snug fit only.

The maximum allowable rail post spacing shall be 10'-6". The rail post spacing shown elsewhere in the plans is based on the allowable spacing for another type of rail. When this type of rail is used, the number of posts may be decreased and the post spacing increased to provide equal post spaces of 10'-6" or less.



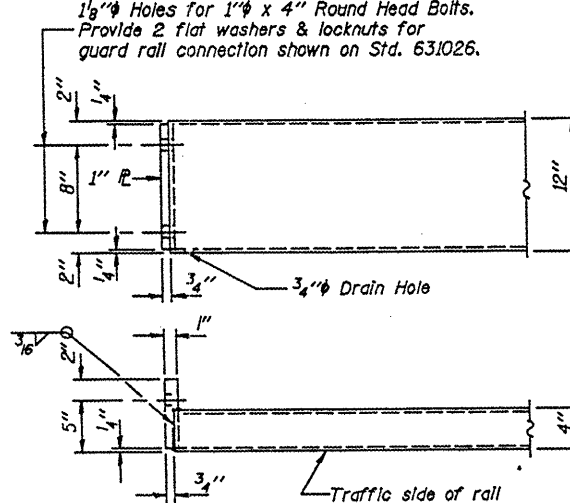
VIEW A-A
ROUND HEAD BOLT

NOTE: Curled End Section
incidental to Steel Railing.
Four (4) required.

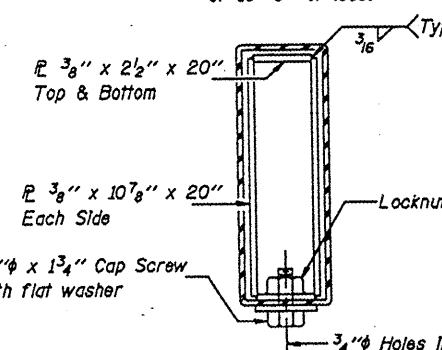


CURLED END SECTION DETAILS

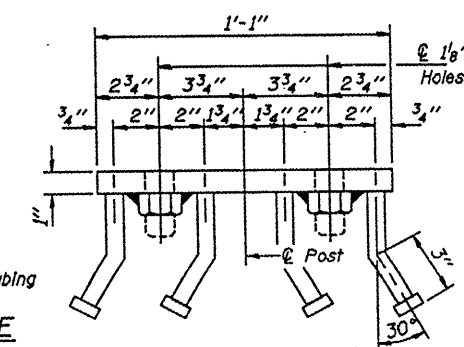
1/8" Holes for 1" x 4" Round Head Bolts.
Provide 2 flat washers & locknuts for
guard rail connection shown on Std. 631026.



END OF RAIL DETAILS



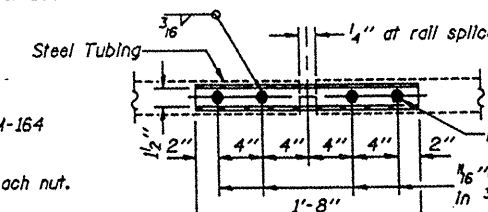
SECTION AT RAIL SPLICE



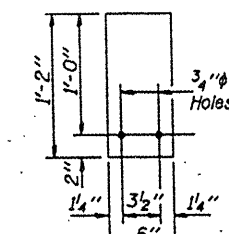
VIEW C-C

* Threaded areas shall be
plugged or blocked off
during casting of beam.

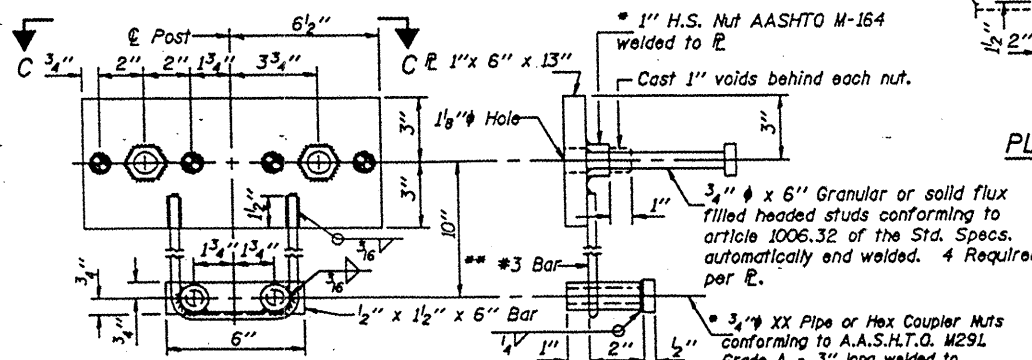
** Whenever the lower insert assemblies interfere
with strand locations, the #3 bars shall be cut
and adjusted in order to allow raising or
lowering of the lower inserts.
Maximum adjustment not to exceed 1/2".



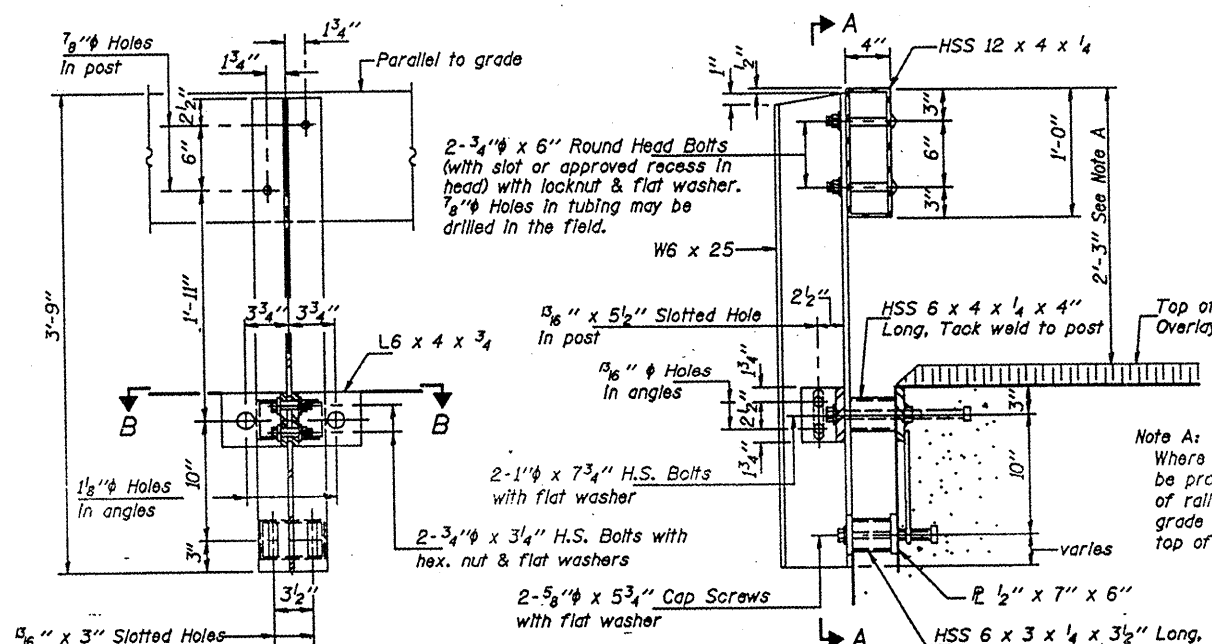
PLAN-BOTT. SPLICE R
TYPICAL



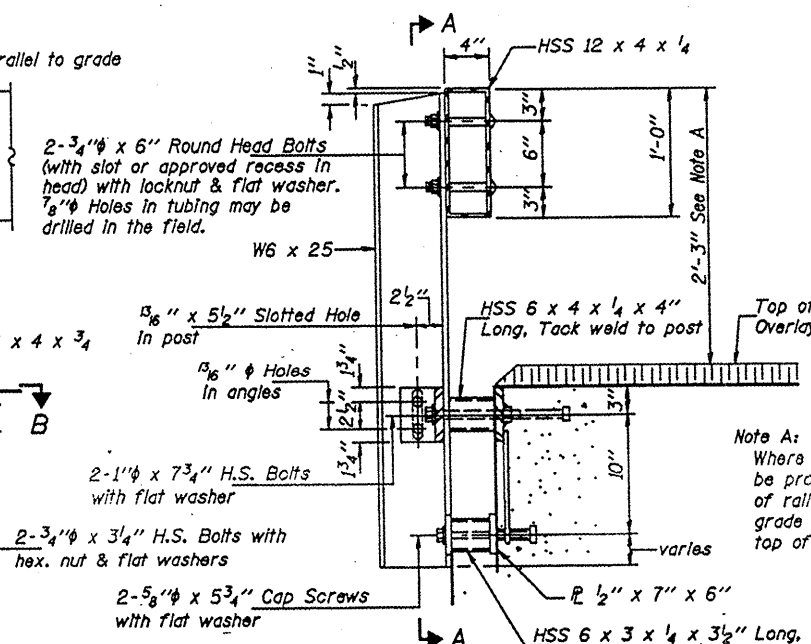
1/4 SHIM PLATE



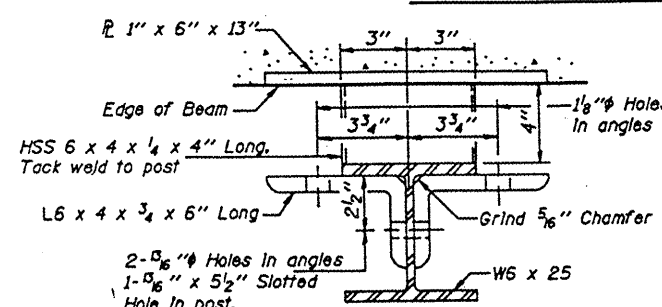
ANCHOR DEVICE



SECTION A-A



SECTION AT RAIL POST



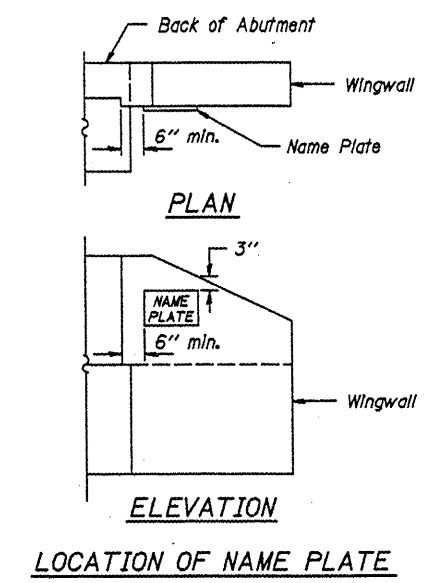
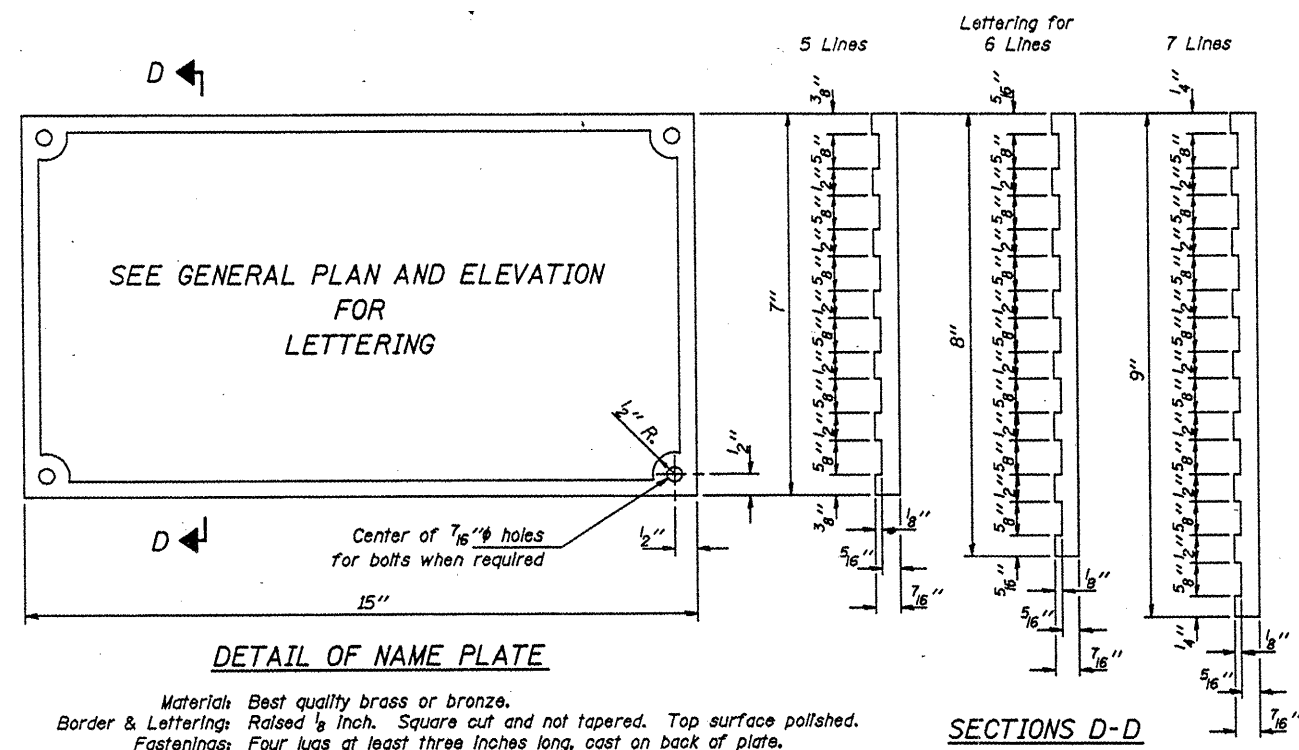
SECTION B-B

Illinois Department of Transportation
PASSED APRIL 4, 2005
Theresa J. Duggan
Engineer of Bridge Design
APPROVED APRIL 4, 2005
Ralph E. Anderson
Engineer of Bridges and Structures

STEEL RAILING, TYPE S-1

STANDARD CR-TS1

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 265	04-01183-00-BR	UNION	10	8
PROJECT NO. BROS-181(43)			CONTRACT NO. 99252	



Illinois Department of Transportation

PASSED APRIL 4, 2005

Theresa J. [Signature]

Engineer of Bridge Design

APPROVED APRIL 4, 2005

Ralph E. [Signature]

Engineer of Bridges and Structures

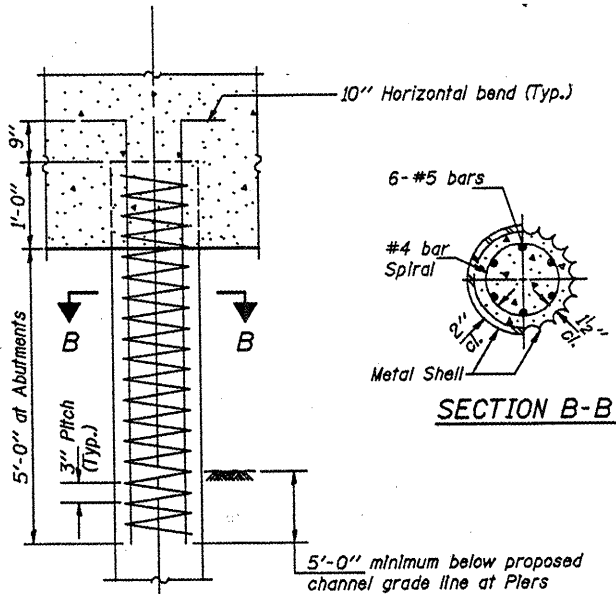
NAME PLATE

STANDARD CN

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 265	04-01183-00-BR	UNION	10	9
PROJECT NO. BROS-181(43)			CONTRACT NO. 99252	

Reinforcement cage shall be omitted when Concrete Encasement is provided.

The cost of Reinforcement is included with the Cost of Furnishing Piles.



DETAIL OF REINFORCEMENT FOR METAL SHELLS

QUANTITIES/FT. OF ENCASEMENT (STEEL PILES)

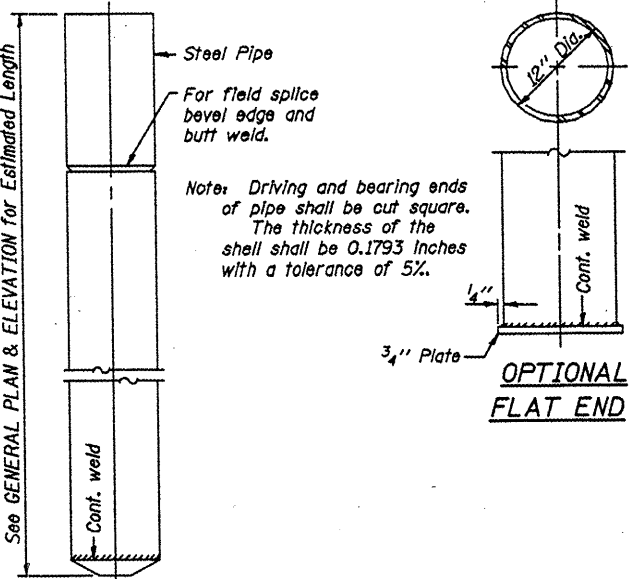
Pile Size	Item	Quantity
HP8	Concrete Encasement	0.063 C.Y.
HP10	Concrete Encasement	0.086 C.Y.
HP12	Concrete Encasement	0.112 C.Y.

(METAL SHELL PILES)

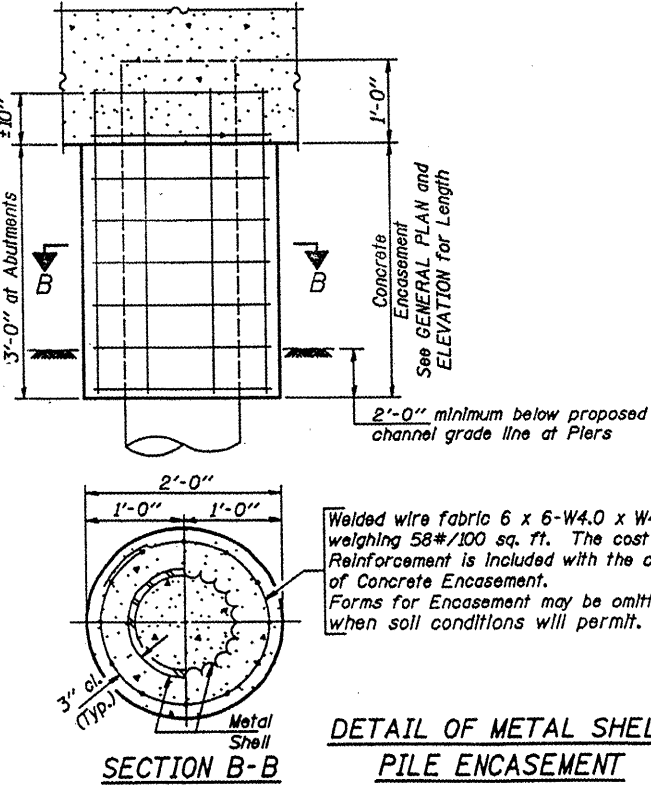
Pile Size	Item	Quantity
12" Dia.	Concrete Encasement	0.087 C.Y.

PILE DETAILS

STANDARD CX-1



DETAIL OF CYLINDRICAL STEEL SHELL FOR CAST IN PLACE CONCRETE PILES



DETAIL OF METAL SHELL PILE ENCASEMENT

FIELD CRIMP DETAIL

Note: 6" Crimp shall either be supplied on the cylindrical section or made in the field as detailed.

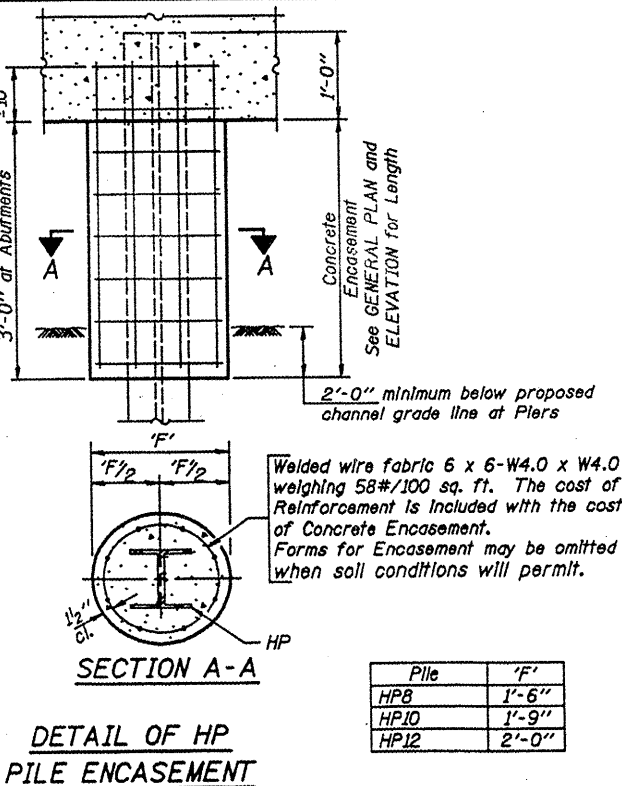
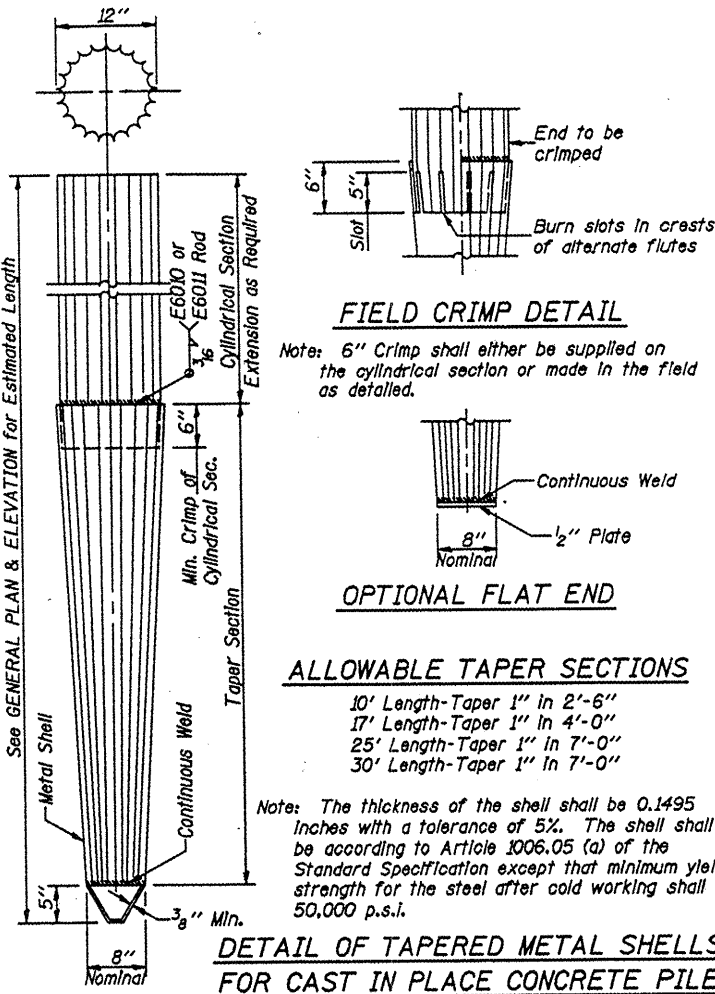
OPTIONAL FLAT END

ALLOWABLE TAPER SECTIONS

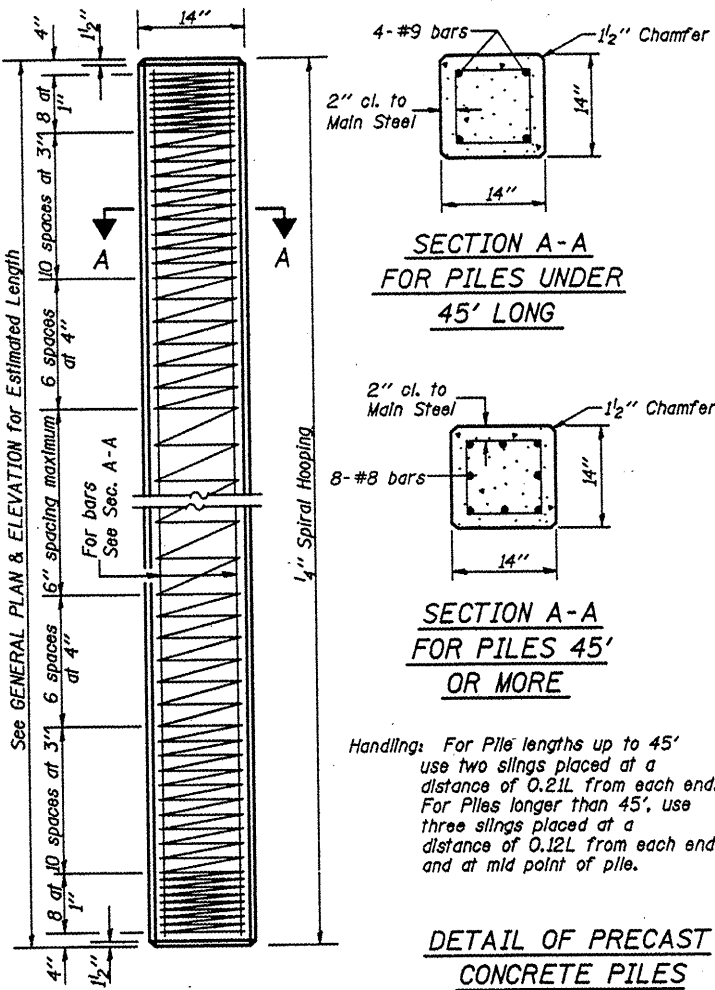
- 10' Length-Taper 1" in 2'-6"
- 17' Length-Taper 1" in 4'-0"
- 25' Length-Taper 1" in 7'-0"
- 30' Length-Taper 1" in 7'-0"

Note: The thickness of the shell shall be 0.1495 inches with a tolerance of 5%. The shell shall be according to Article 1006.05 (a) of the Standard Specification except that minimum yield strength for the steel after cold working shall be 50,000 p.s.i.

DETAIL OF TAPERED METAL SHELLS FOR CAST IN PLACE CONCRETE PILES



DETAIL OF HP PILE ENCASEMENT



DETAIL OF PRECAST CONCRETE PILES

Illinois Department of Transportation

PASSED FEBRUARY 1, 2000

APPROVED FEBRUARY 1, 2000

Engineer of Bridges and Structures

