

**INDEX OF SHEETS**

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1	TITLE SHEET & SUMMARY OF QUANTITIES
2	PLAN & PROFILE, TYPICAL SECTIONS, GENERAL NOTES & CURLED END SECTIONS
3-12	BRIDGE DESIGN

**STANDARDS**

000001-05	STANDARD SYMBOLS, ABBREVIATIONS & PATTERNS (6 SHEETS)
280001-04	TEMPORARY EROSION CONTROL SYSTEMS (2 SHEETS)
701901	TRAFFIC CONTROL DEVICES
B.L.R. 21-7	TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES FOR CONSTRUCTION ON RURAL LOCAL HIGHWAYS
B.L.R. 22-5	TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES FOR CONSTRUCTION ON RURAL LOCAL HIGHWAYS (TWO-LANE TWO-WAY RURAL TRAFFIC) (ROAD CLOSED TO THRU TRAFFIC)

**SUMMARY OF QUANTITIES**

QUANTITY	UNIT	ITEM	CODE NO.
142.00	CU YD	CHANNEL EXCAVATION	20300100
19.00	TON	AGGREGATE (EROSION CONTROL)	28001000
230.00	TON	STONE DUMPED RIPRAP, CLASS A4	28100807
50.00	TON	AGGREGATE SURFACE COURSE, TYPE B	40200800
1.00	EACH	REMOVAL OF EXISTING STRUCTURES	50100100
31.40	CU YD	CONCRETE STRUCTURES	50300225
11.40	CU YD	CONCRETE ENCASEMENT	50300280
1920.00	SQ. FT.	PRECAST PRESTRESSED CONCRETE DECK BEAMS (17" DEPTH)	50400305
32.00	EACH	STUD SHEAR CONNECTORS	50500505
4080.00	POUND	REINFORCEMENT BARS	50800105
160.00	FOOT	STEEL RAILING, TYPE S1	50900205
808.00	FOOT	FURNISHING STEEL PILES HP10X42	51201400
808.00	FOOT	DRIVING PILES	51202305
1.00	EACH	NAME PLATES	51500100
1.00	L SUM	MOBILIZATION	67100100



DESIGN DESIGNATION:  
DESIGN SPEED: 30 MPH  
HIGHWAY CLASS - LOCAL ROAD  
EXISTING STRUCTURE NO.: 024-3086  
PROPOSED STRUCTURE NO.: 024-3135  
CURRENT A.D.T. = 125  
CONTRACT NO. 95547

**J.U.L.I.E.**  
**JOINT UTILITY LOCATION INFORMATION FOR EXCAVATION**  
**1-800-892-0123**

**STATE OF ILLINOIS**

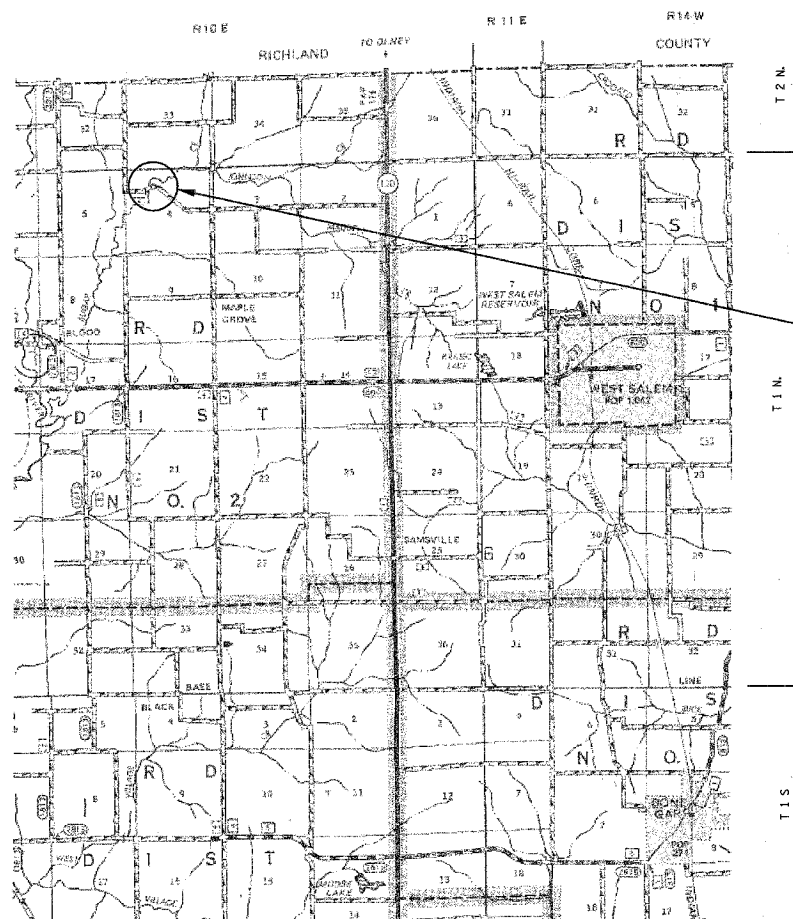
**DEPARTMENT OF TRANSPORTATION**

**PLANS FOR PROPOSED  
FEDERAL AID - H.B.P. PROJECT**

**T.R. 31 EDWARDS COUNTY SECTION 06-02116-00-BR**

**PROJECT NO. BROS-047(030) JOB NO. C-97-064-08**

**CONTRACT #95547 SUGAR CREEK**

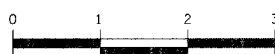


SECTION 06-02116-00-BR  
BEGINS STATION 4+55

STATION 5+00, STRUCTURE NO. 024-3135  
A 80' TRIPLE SPAN (36', 30', 25') PRECAST  
PRESTRESSED CONCRETE DECK BEAM BRIDGE  
(17" DEPTH), 24' ROADWAY, 2.77% GRADE,  
0° SKEW.

SECTION 06-02116-00-BR  
ENDS STATION 5+45

LAYOUT  
APPROXIMATE SCALE 1 INCH = 1 MILE



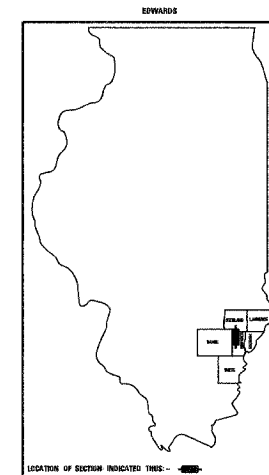
GROSS LENGTH	90.00 FT	0.017 MILES
OMISSIONS	0.00 FT	0.00 MILES
NET LENGTH	90.00 FT	0.017 MILES

PLAN	1" = 50'	
PROFILE	1" = 50'	
PROFILE VERT.	1" = 5'	

APPROVED	<i>March 17<sup>th</sup></i>	20 08
	<i>[Signature]</i>	COUNTY ENGINEER
PASSED	<i>3/31</i>	20 08
	<i>[Signature]</i>	DISTRICT SEVEN ENGINEER OF LOCAL ROADS & STREETS
Releasing For Bid Based on Limited Review	<i>3/31</i>	20 08
	<i>[Signature]</i>	DEPUTY DIRECTOR OF HIGHWAYS, REGION FOUR ENGINEER
STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION		

T.R.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
31	06-02116-00-BR	EDWARDS	12	1

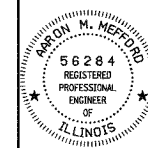
323 W. 3RD ST.  
P.O. BOX 160  
MT. CARMEL, IL  
62863  
PHONE:  
(618)-262-8651  
(618)-263-3327



405 W. STATE ST.  
SUITE 1  
FRANCETON, IN  
47670  
PHONE:  
(812)-386-7611  
FAX:  
(812)-385-2612



PROFESSIONAL  
DESIGN FIRM  
LAND SURVEY &  
PROFESSIONAL  
ENGINEERING  
CORPORATION  
184-000887  
(62-032436)(35-002769)



AARON M. MEFFORD  
NAME  
*[Signature]*  
SIGNATURE  
DATE  
3-17-08  
11-30-09  
EXPIRES

TOWNSHIP ROUTE 31  
OVER SUGAR CREEK  
EDWARDS COUNTY, ILLINOIS

SHEET TITLE:  
TITLE SHEET

SCALE:	VIRES
BY:	AMM
DATE:	3/18
REV:	

1 OF 12  
SHEETS  
SHEET NO.  
1

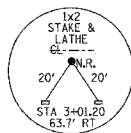
**GENERAL NOTES:**

THIS SECTION SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE PLANS, SPECIAL PROVISIONS AND "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION", ADOPTED JANUARY 1, 2007.

THE WORK INVOLVED ON THIS SECTION CONSISTS OF THE REMOVAL OF THE EXISTING STRUCTURE, THE CONSTRUCTION OF A 80 FOOT LONG TRIPLE SPAN PRECAST, PRESTRESSED CONCRETE DECK BEAM BRIDGE, EARTH APPROACHES, AGGREGATE SURFACE COURSE AND OTHER MISCELLANEOUS ITEMS NECESSARY TO COMPLETE THIS SECTION.

ALL ELEVATIONS ARE BASED ON U.S.G.S. MEAN SEA LEVEL DATUM.

IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CONTACT ALL THE UTILITIES, AFFECTING THE PROJECT, PRIOR TO CONSTRUCTION.



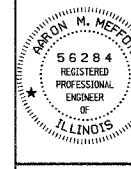
T.R.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
31	06-02116-00-BR	EDWARDS	12	2
FED. ROAD DIST. NO. 7 ILLINOIS		FED. AID PROJECT		
PROJECT# BROS-047(030)		CONTRACT# 95547		
JOB NO. C-97-064-08		SUGAR CREEK		
LEC JOB # H061009D				

323 W. 3RD ST.  
P.O. BOX 160  
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62863  
PHONE:  
(618)-262-8651  
FAX:  
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PRINCETON, IN  
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PHONE:  
(812)-386-7611  
FAX:  
(812)-385-2812



PROFESSIONAL DESIGN FIRM  
LAND SURVEY & PROFESSIONAL ENGINEERING CORPORATION  
184-00087  
(62-032435)(85-002769)



AARON M. MEFFORD  
NAME  
SIGNATURE  
3-17-08  
DATE  
11-30-09 EXPIRES

TOWNSHIP ROUTE 31  
OVER SUGAR CREEK  
EDWARDS COUNTY, ILLINOIS

SHEET TITLE:

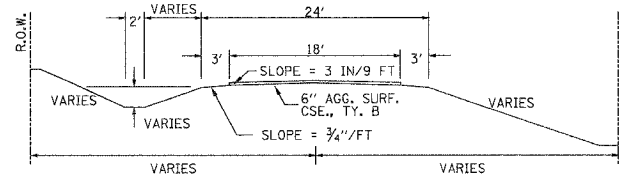
PLAN & PROFILE

SCALE:	VARIES
BY:	AMM
DATE:	3/16/08
REV:	

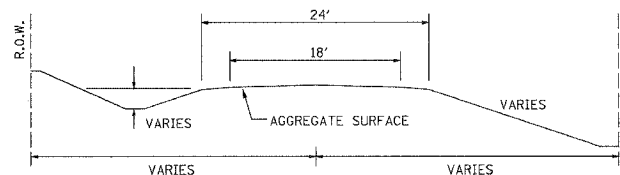
2 OF 12 SHEETS

SHEET NO. 2

**TYPICAL CROSS SECTION PROPOSED**



**TYPICAL CROSS SECTION EXISTING**



**UTILITIES:**

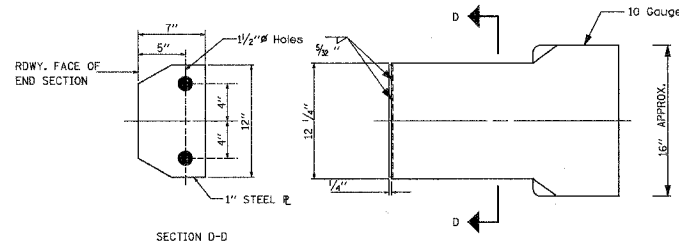
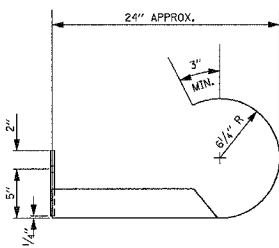
JULL.T.E. 1-800-892-0123

VERIZON  
618-395-6189

WAYNE-WHITE ELECTRIC CO-OP  
618-842-2196

ELLERY WATER CORP.  
618-445-2858

**CURLED END SECTION DETAIL**



ALL OTHER STEEL SHAPES AND PLATES SHALL CONFORM TO THE REQUIREMENTS OF A.A.S.H.T.O. DESIGNATION M-183 EXCEPT POSTS AND ANGLES SHALL CONFORM TO A.A.S.H.T.O. M-223, GRADE 50.

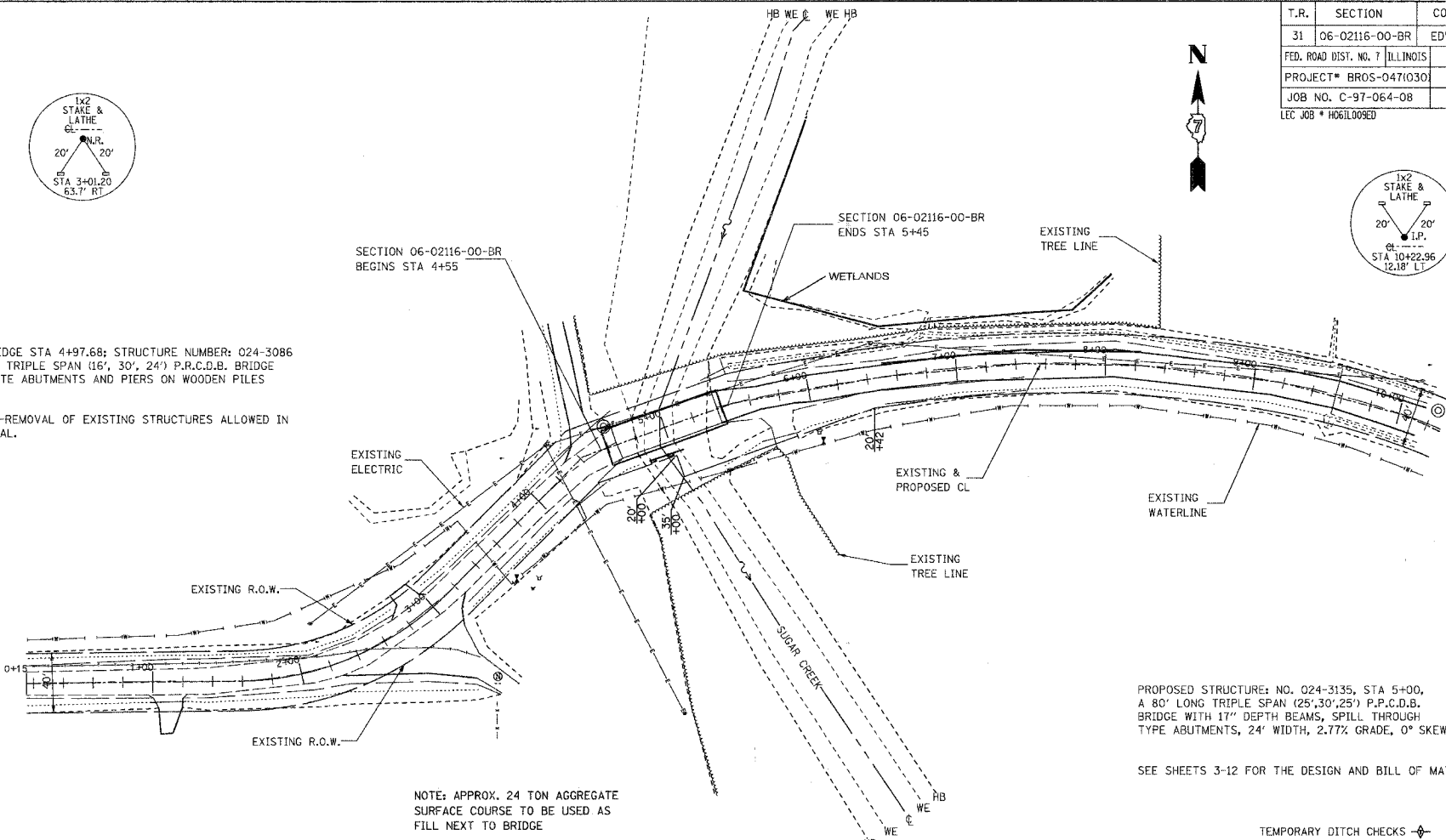
BOLTS, CAP SCREWS, AND NUTS SHALL CONFORM TO THE REQUIREMENT OF A.S.T.M. DESIGNATION A-307 EXCEPT FOR HIGH STRENGTH BOLTS, NUTS, AND WASHERS NOTED WHICH SHALL CONFORM TO A.A.S.H.T.O. DESIGNATION M-164.

ALL BOLTS, NUTS, CAP SCREWS, WASHERS, AND LOCK WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH A.A.S.H.T.O. DESIGNATION M-232.

ALL FIELD DRILLED HOLES SHALL BE COATED WITH AN APPROVED ZINC RICH PAINT BEFORE ERECTION.

EXISTING BRIDGE STA 4+97.68; STRUCTURE NUMBER: 024-3086  
A 71.6' LONG TRIPLE SPAN (16', 30', 24') P.P.C.D.B. BRIDGE WITH CONCRETE ABUTMENTS AND PIERS ON WOODEN PILES

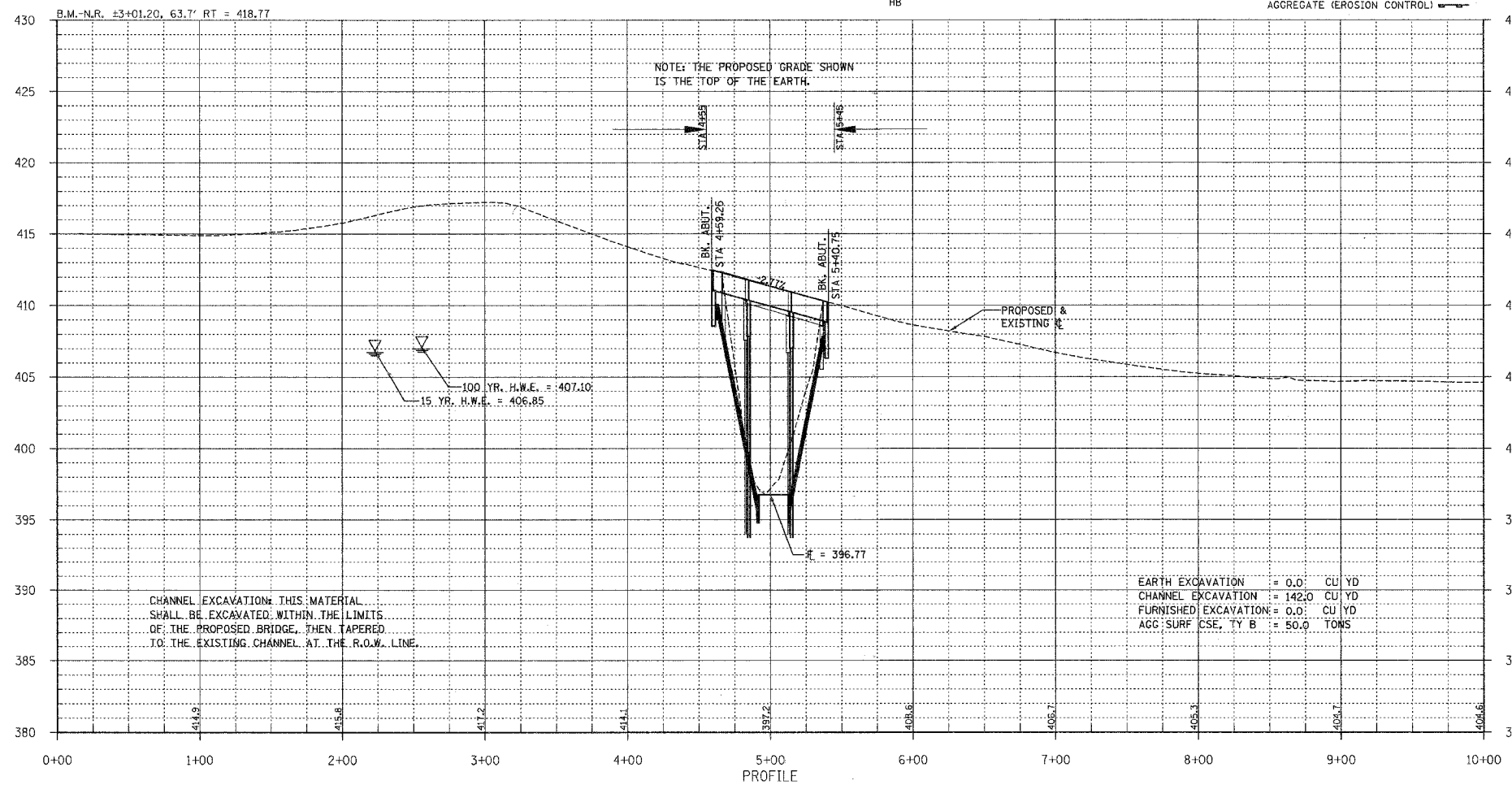
ONE (1) EACH-REMOVAL OF EXISTING STRUCTURES ALLOWED IN THIS PROPOSAL.



NOTE: APPROX. 24 TON AGGREGATE SURFACE COURSE TO BE USED AS FILL NEXT TO BRIDGE

PROPOSED STRUCTURE: NO. 024-3135, STA 5+00, A 80' LONG TRIPLE SPAN (25', 30', 25') P.P.C.D.B. BRIDGE WITH 17" DEPTH BEAMS, SPILL THROUGH TYPE ABUTMENTS, 24' WIDTH, 2.77% GRADE, 0° SKEW.

SEE SHEETS 3-12 FOR THE DESIGN AND BILL OF MATERIALS.

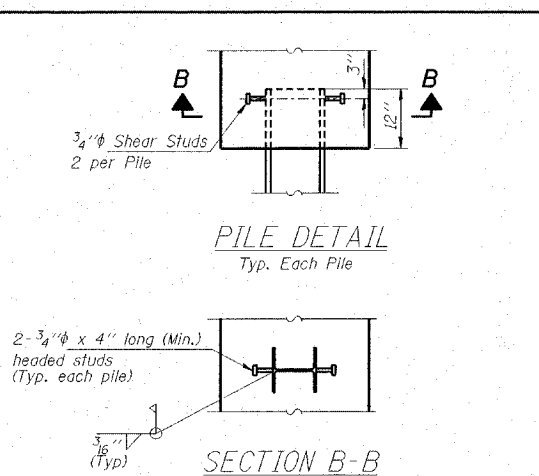
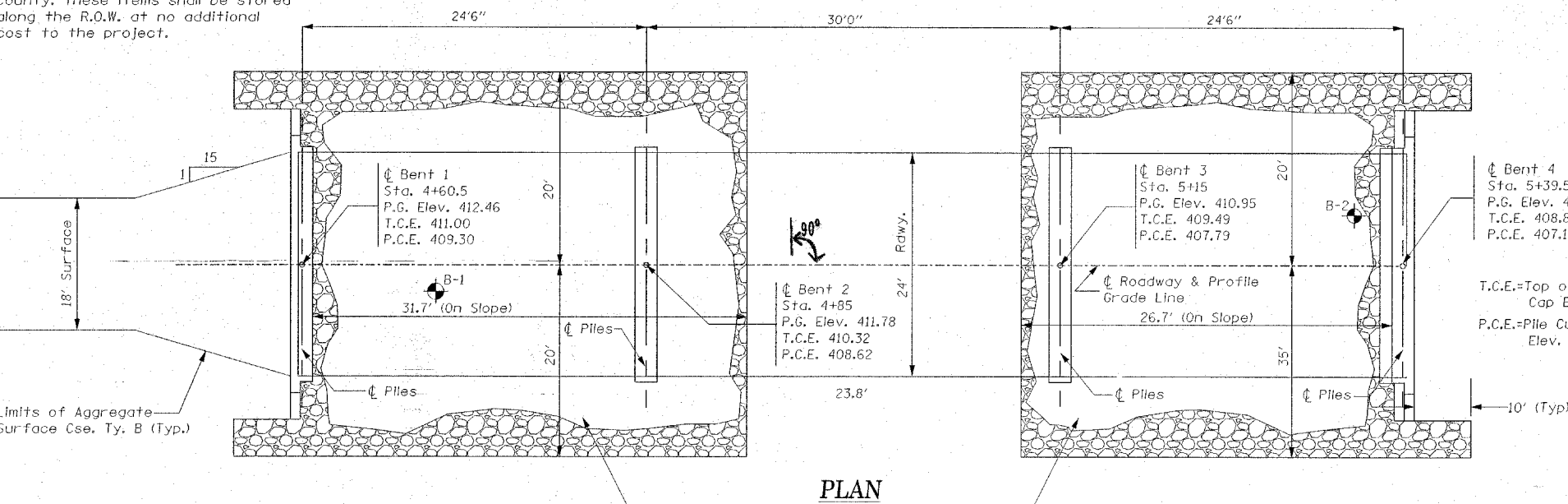
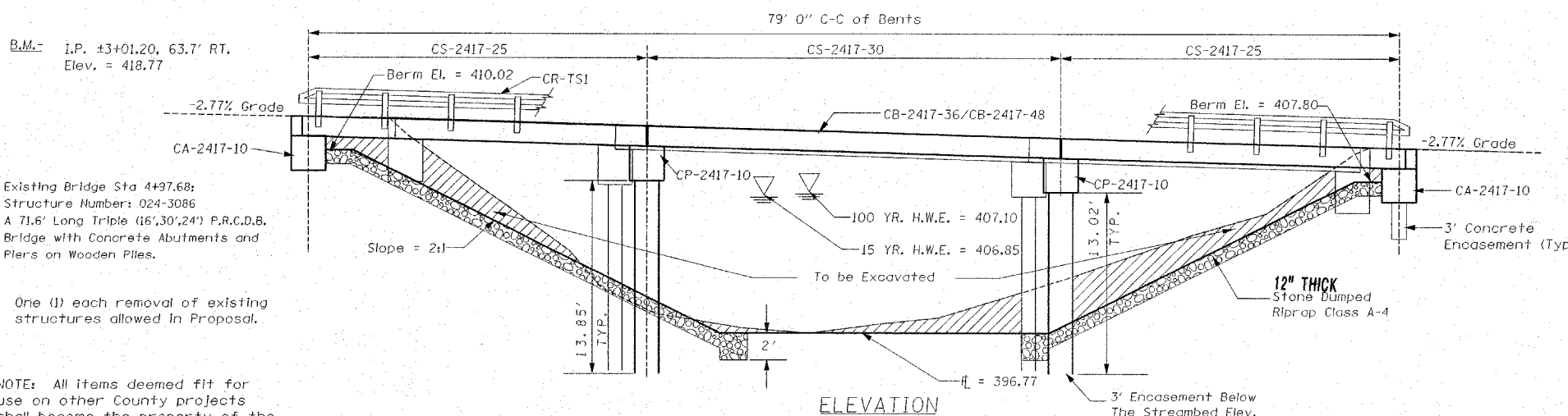


**GENERAL NOTES**

- 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 Special Provisions, shall be used in the concrete for Precast Prestressed Concrete Deck Beams.
- The Hot-Mix Asphalt Surf. Cse. and the Waterproofing Membrane System shown in these Plans shall not be provided.

Item	Unit	Super	Sub. Piers	Abuts.	Total
Removal of Existing Structures	L. Sum				1
Hot Mix Asphalt Surf. Cse.	Tons				
Waterproofing Membrane System	Sq.Yds.				
Concrete Structures	Cu.Yds.		14.8	16.6	31.4
P.P. Conc. Dk. Bm. 17" Dp.	Sq.Ft.	1920			1920
Steel Railing, Type S1	Lin.Ft.	160			160
Reinforcement Bars	Lbs.		1860	2220	4080
Furnishing Steel Piles HP10X42	Lin.Ft.	508	300		808
Driving Piles	Lin.Ft.	508	300		808
Name Plates	Each		1		1
Concrete Encasement	Cu.Yds.		9.3	2.1	11.4
Stud Shear Connectors	Each		16	16	32

NOTE: Four (4) Each Curled End Sections required. Item to be included in Steel Railing SEE DETAILS SHEET 2



**SEISMIC DATA**  
Seismic Performance Category (SPC) = B  
Bedrock Acceleration Coefficient (A) = 0.091g  
Site Coefficient (S) = 1.2

*Steven W. Meigs* 2/10/08  
ILLINOIS STRUCTURAL NO. 6064  
Expires 11-30-08  
Complies with 2002 AASHTO Specifications for Seismic Design of Bridges.

**PILE DATA (WEST PIER)**

Type: Steel Piles HP10X42  
Nominal Required Bearing: 335 Kips  
Allowable Resistance Available: 112 Kips  
Estimated Length: 62 Feet/Pile  
Number Required: 4

**PILE DATA (WEST ABUT)**

Type: Steel Piles HP10X42  
Nominal Required Bearing: 150 Kips  
Allowable Resistance Available: 50 Kips  
Estimated Length: 30 Feet/Pile  
Number Required: 4

**PILE DATA (EAST PIER)**

Type: Steel Piles HP10X42  
Nominal Required Bearing: 335 Kips  
Allowable Resistance Available: 112 Kips  
Estimated Length: 65 Feet/Pile  
Number Required: 4

**PILE DATA (EAST ABUT)**

Type: Steel Piles HP10X42  
Nominal Required Bearing: 150 Kips  
Allowable Resistance Available: 50 Kips  
Estimated Length: 45 Feet/Pile  
Number Required: 4

**DESIGN SPECIFICATIONS**

2002 AASHTO HS 20-44 Loading, Load Factor Design

NOTE: The Article or Section Numbers Referencing the Standard Specifications for Road and Bridge Construction as shown on the Standard Bridge Plan Sheets included with the contract plans should be interpreted as referring to the current edition of the Standard Specification (Adopted January 1, 2007) as shown in the "Article/Section No. Reference Table."

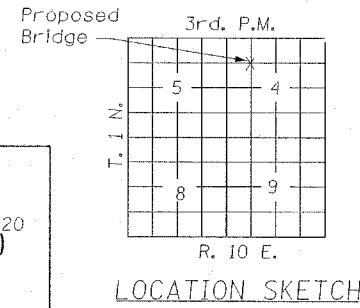
**ARTICLE/SECTION NO. REFERENCE TABLE**

Previous No.	Current No.
504.06	504.06
505.04	505.04
1006.05	1006.05
1006.32	1006.32
1060.07	1060.07
STD 631026	STD 631026

STATION 5+00  
SUGAR CREEK  
SEC. 06-02116-00-BR BUILT 20  
PROJECT NO. BROS-047(030)  
EDWARDS COUNTY  
LOADING HS 20-44  
STR. NO. 024-3135

**LETTERING FOR NAME PLATE**

Locate Name Plate at the Southwest Corner of the Bridge (See Sd. CN)

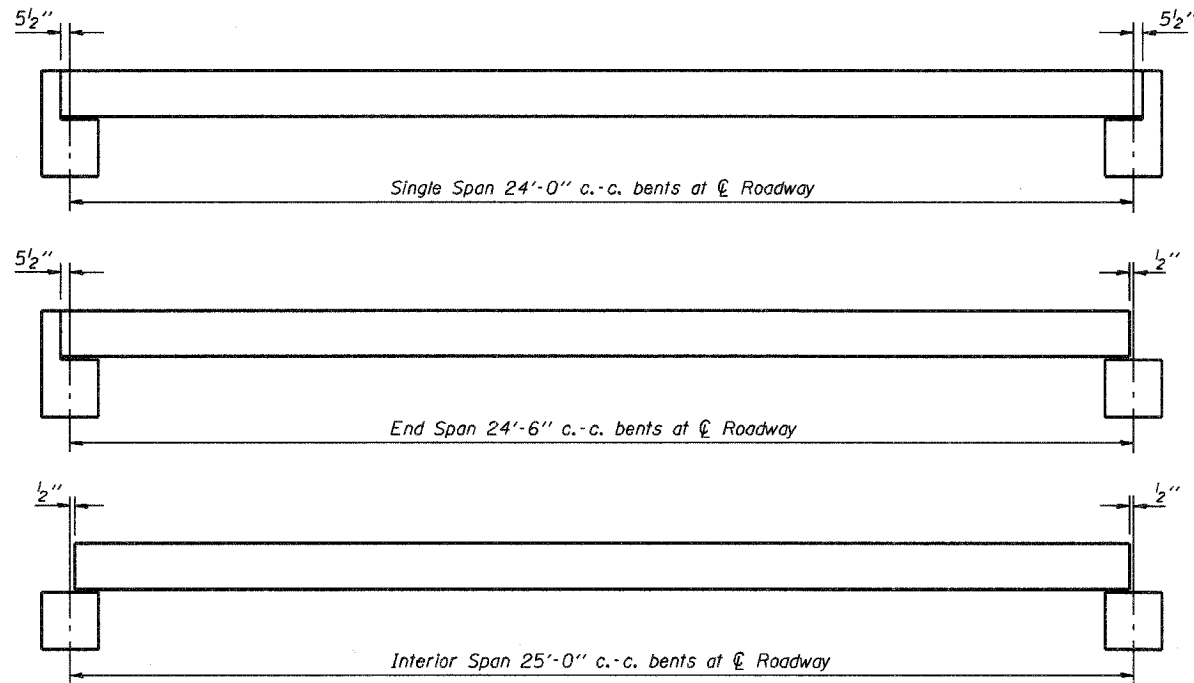


**WATERWAY INFORMATION**

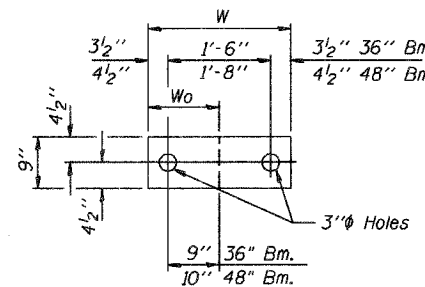
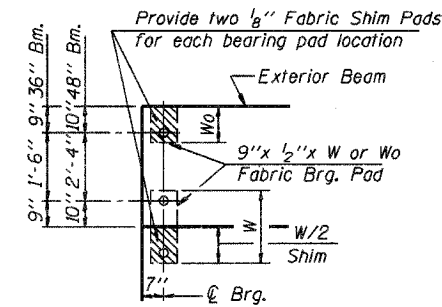
Drainage Area = 26.9 Sq. Mi. Low Grade Elev. = 404.7 At Sta. 9+00						
Flood	Freq. Yr.	0 C.F.S.	Opening Sq.Ft. Exist. Prop.	Natural H.W.E.	Head-Ft. Exist. Prop.	Headwater El. Exist. Prop.
Design	15	3413	373 443.7	406.85	0.62 0.49	407.47 407.34
Base	100	5394	387.5 459.8	407.1	1.30 0.98	408.4 408.08
Overtopping						
Max. Calc.	500	7009				

**GENERAL PLAN & ELEVATION**

TOWNSHIP ROUTE 31  
OVER SUGAR CREEK  
SECTION 06-02116-00-BR  
EDWARDS COUNTY  
STATION 5+00

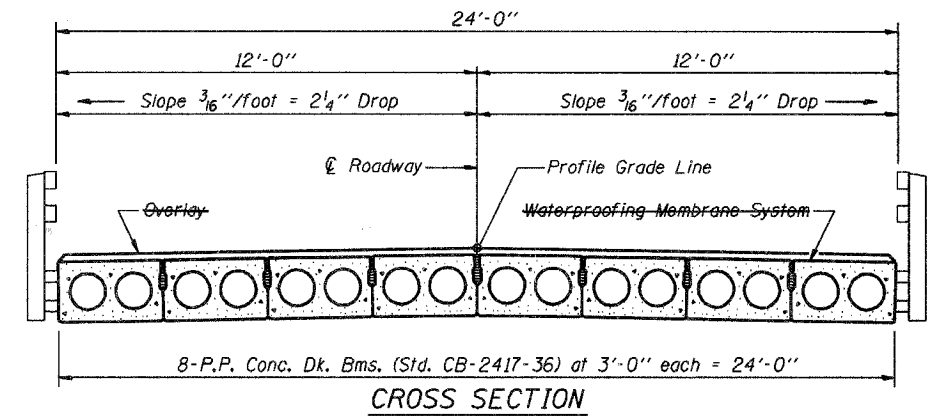


TYPICAL ELEVATIONS

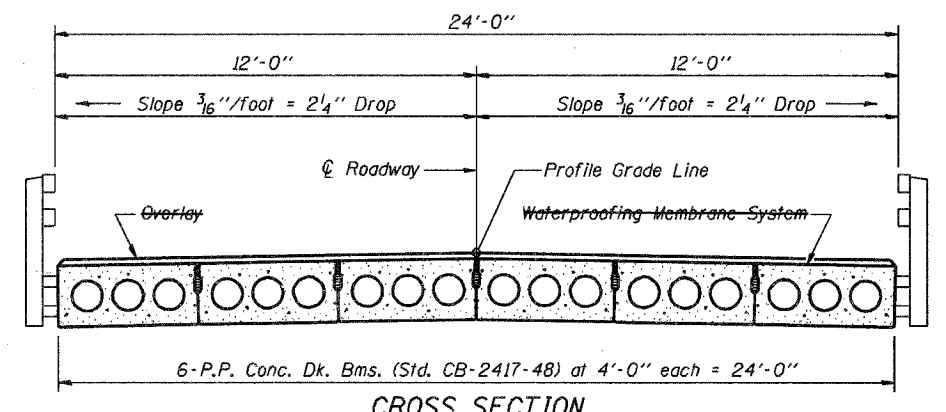


Beam	W	W0
36"	2'-1"	1'-0 1/2"
48"	2'-5"	1'-2 1/2"

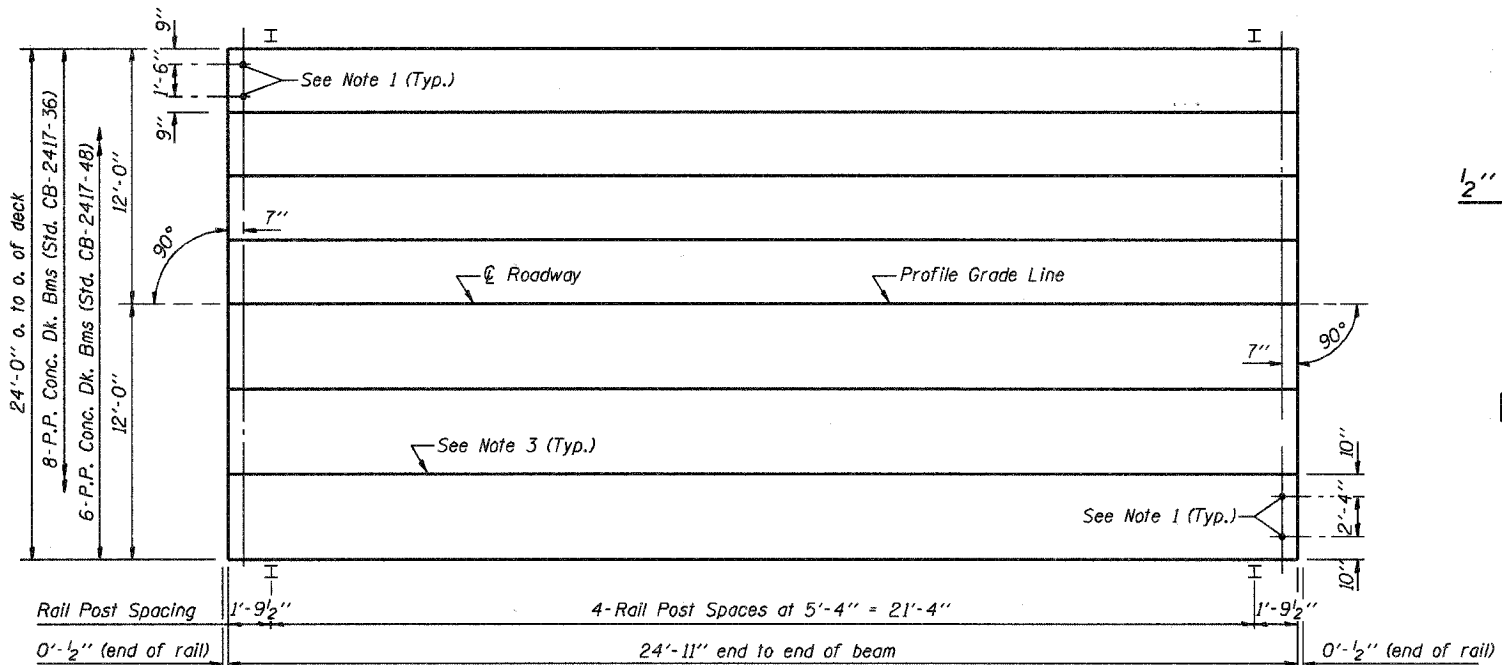
1/2" FABRIC BRG. PAD DETAILS



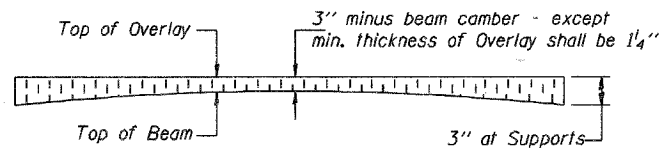
CROSS SECTION



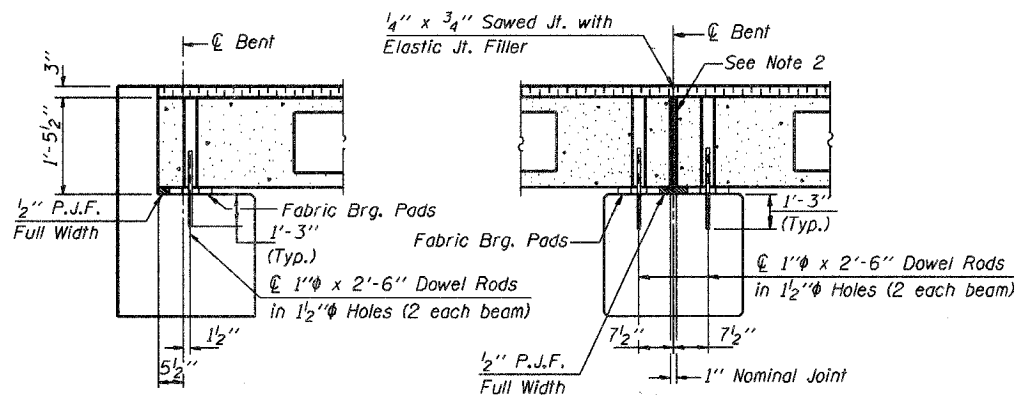
CROSS SECTION



PLAN



PROFILE OF OVERLAY



SECTION AT ABUTS.  
(Along centerline of Beams)

SECTION AT PIERS  
(Along centerline of Beams)

NOTES

- 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 min. 24 hrs. prior to grouting the shear keys.
- Nominal 1" joint at centerline of Pier shall be filled with non-shrink grout.
- Longitudinal keys shall be grouted.

QUANTITIES FOR ONE SPAN

P.P. Conc. Dk. Bm. 17" Dp.	600 Sq. Ft.
Steel Railing	50 Ft.
Waterproofing Membrane System	66.7 Sq. Yds.
Portland Cement Mortar	175 Ft. 36"
Fairing Course	125 Ft. 48"

Note: Quantity of overlay for one span = 10.5 Tons

P.P.C. DECK BEAM SUPERSTRUCTURE			
24' RDWY.	17" BMS.	25' SPAN	0° SKEW
STANDARD CS-2417-25			

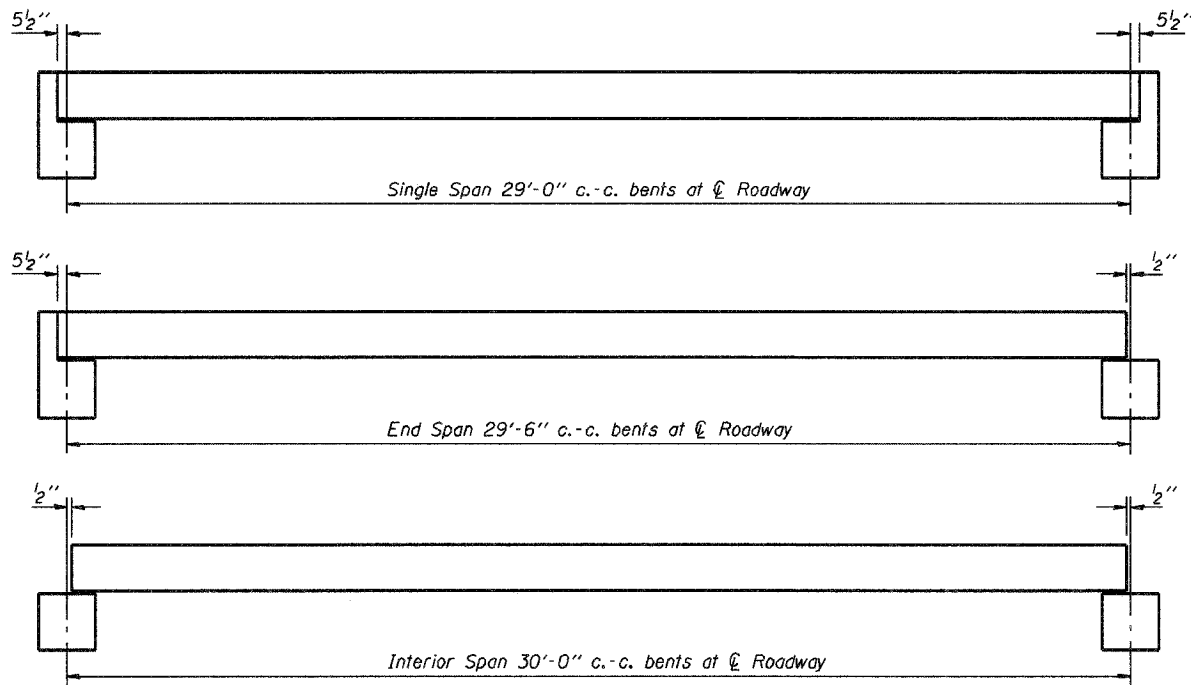
Illinois Department of Transportation

PASSED APRIL 4, 2005

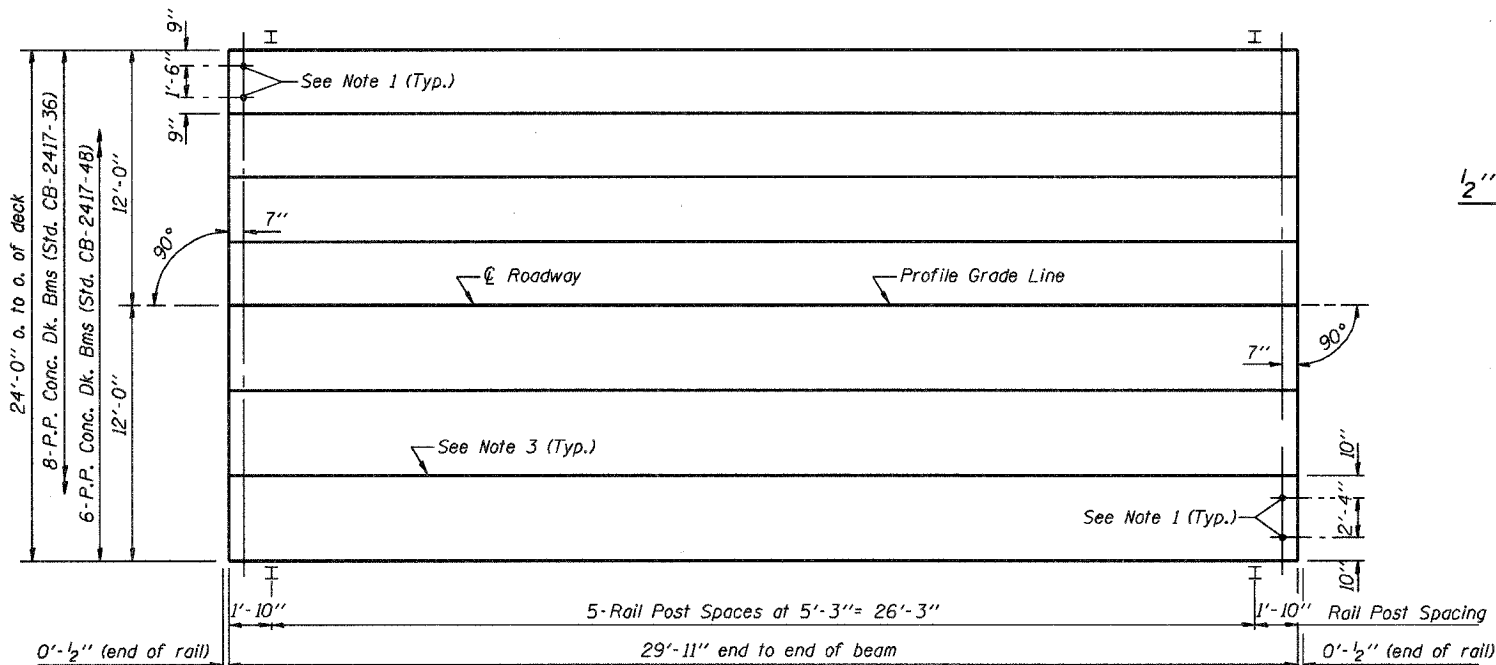
Theresa J. (Suzanne) ...  
Engineer of Bridge Design

APPROVED APRIL 4, 2005

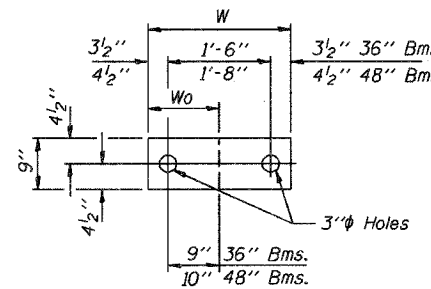
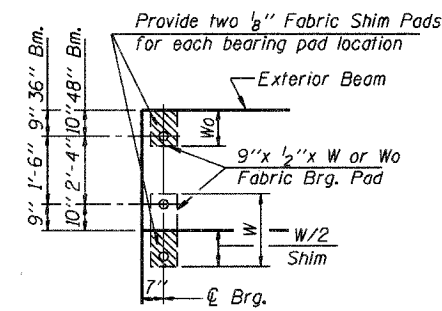
Ralph E. ...  
Engineer of Bridges and Structures



TYPICAL ELEVATIONS

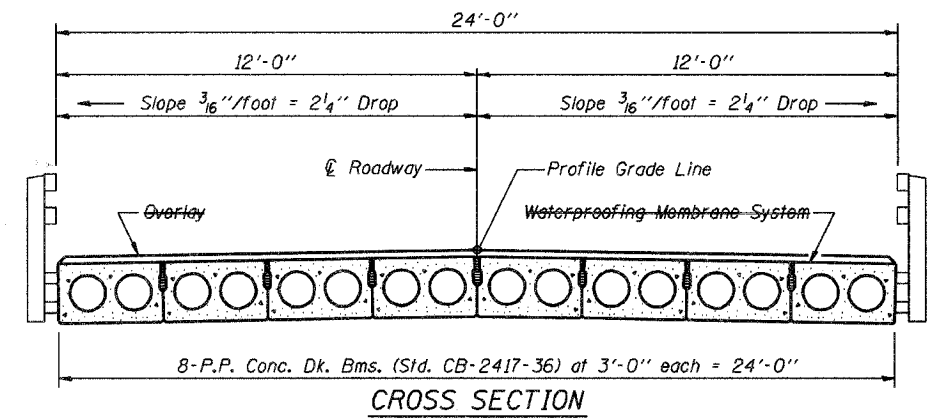


PLAN

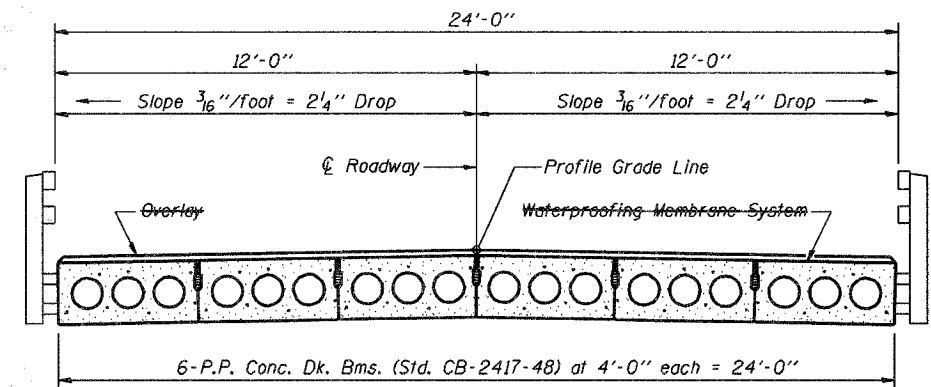


Beam	W	Wo
36"	2'-1"	1'-0 1/2"
48"	2'-5"	1'-2 1/2"

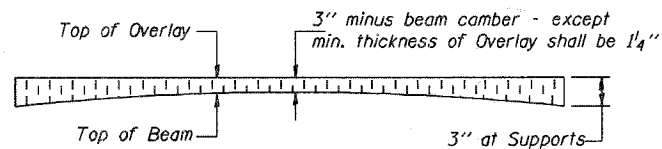
1/2" FABRIC BRG. PAD DETAILS



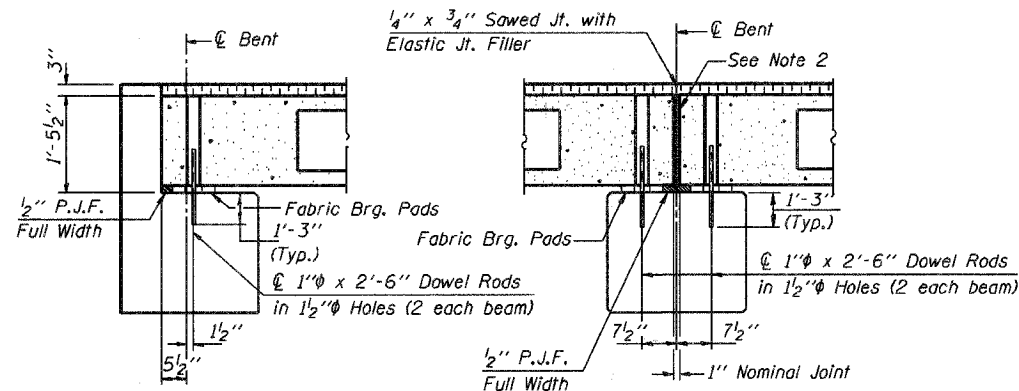
CROSS SECTION



CROSS SECTION



PROFILE OF OVERLAY



SECTION AT ABUTS.  
(Along centerline Beams)

SECTION AT PIERS  
(Along centerline Beams)

QUANTITIES FOR ONE SPAN

P.P. Conc. Dk. Bm. 17" Dp.	720 Sq. Ft.
Steel Railing	60 Ft.
Waterproofing Membrane System	80.0 Sq. Yds.
Portland Cement Mortar	210 Ft. <sup>3</sup>
Fairing Course	150 Ft. <sup>3</sup>

Note: Quantity of overlay for one span = 12.0 Tons

NOTES

- 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 min. 24 hrs. prior to grouting the shear keys.
- Nominal 1" joint at centerline Pier shall be filled with non-shrink grout.
- Longitudinal keys shall be grouted.

Illinois Department of Transportation

PASSED APRIL 4, 2005

Theresa J. Romagnolo  
Engineer of Bridge Design

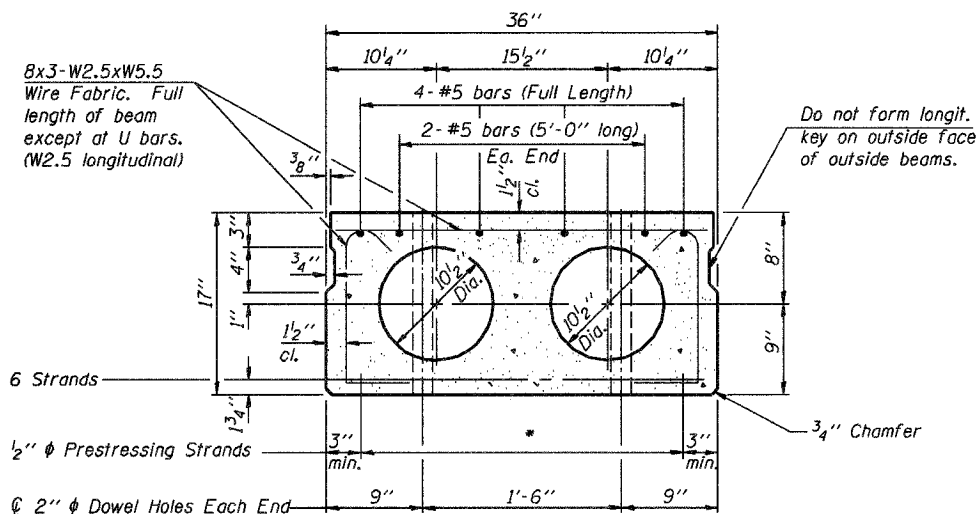
APPROVED APRIL 4, 2005

Ralph E. Anderson  
Engineer of Bridges and Structures

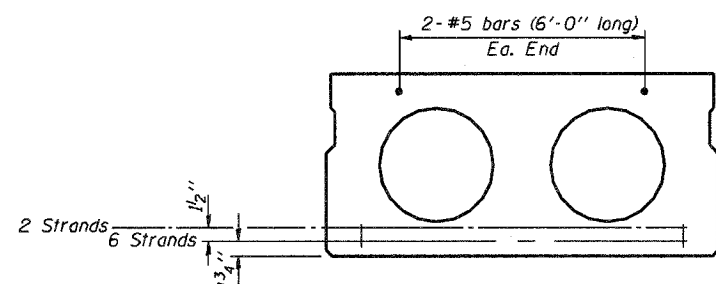
P.P.C. DECK BEAM  
SUPERSTRUCTURE

24' RDWY.	17" BMS.	30' SPAN	0° SKEW
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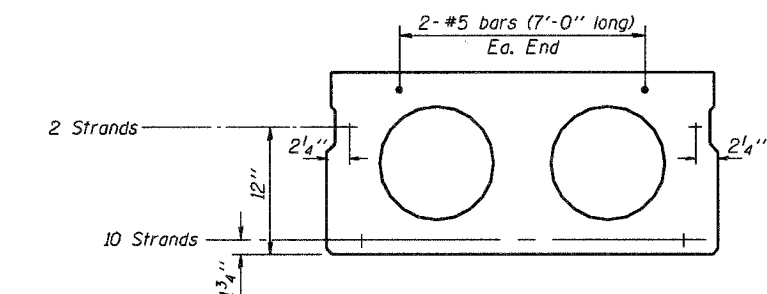
STANDARD CS-2417-30



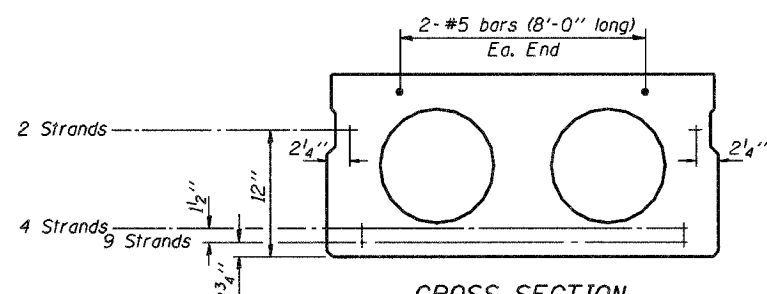
**CROSS SECTION**  
(25' SPAN)



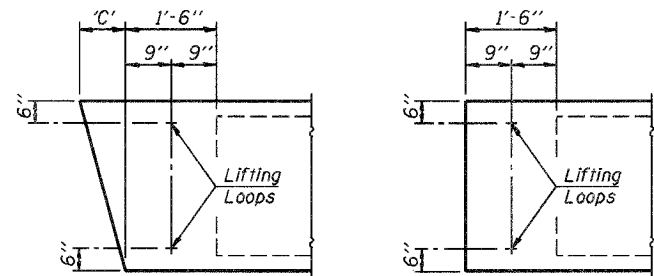
**CROSS SECTION**  
(30' SPAN)



**CROSS SECTION**  
(35' SPAN)

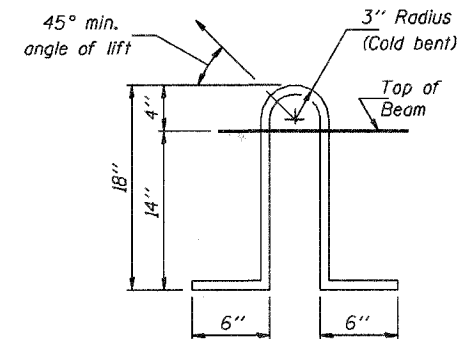


**CROSS SECTION**  
(40' SPAN)



**END BLOCK DETAILS**

Each beam shall have four Lifting Loops, two at each end of beam cast in locations shown above. Loops shall be burned off after beams have been erected.



**LIFTING LOOP DETAIL**

Lifting loops shall be 2, 1/2-inch diameter 270 ksi strands, as shown. Alternate approved lifting devices are also acceptable.

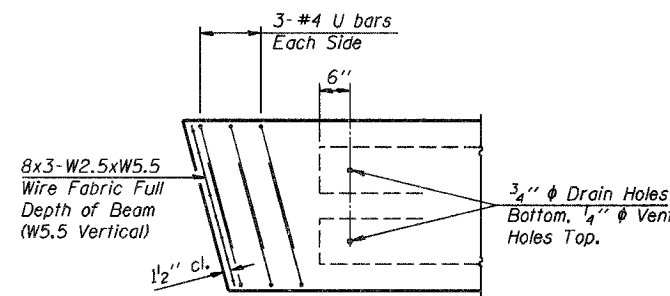
**DIMENSION 'C'**

Skew Angle 'D'	0°	5°	10°	15°	20°	25°	30°
Dimension 'C' (Inches)	0	3 1/8	6 3/8	9 5/8	13 1/8	16 3/4	20 3/4

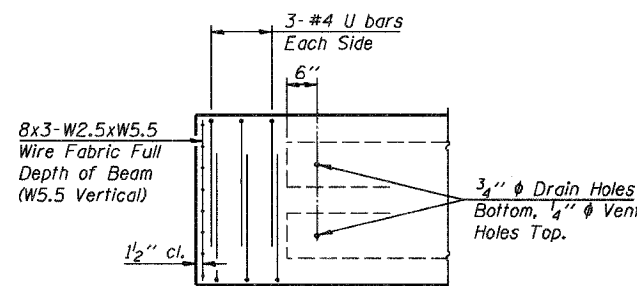
**\* TRANSVERSE STRAND PLACEMENT GUIDELINES**

1. Place strands symmetrically about centerline of beam.
2. The minimum distance from center to center of strands in all directions shall be 2".
3. The minimum clearance from strand to dowel hole shall be 1/2".
4. The minimum clearance from strand to void shall be 1/2".

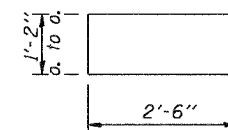
Vertical placement of strands shall not be adjusted to satisfy the above guidelines.



**END REINFORCEMENT**  
(SKEWED)



**END REINFORCEMENT**  
(RIGHT ANGLE)



**BAR U**

**MIN. BAR LAP**

#5 bars = 1'-8"

**DESIGN STRESSES**

- $f'_c = 5,000$  p.s.i.
- $f'_d = 4,000$  p.s.i.
- $f'_s = 270,000$  p.s.i. (1/2"  $\phi$  Strand)
- $f_{sl} = 201,960$  p.s.i. (1/2"  $\phi$  Strand)
- $f_y = 60,000$  p.s.i.

**NOTES**

1. Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270.
2. The nominal diameter shall be 1/2" and the nominal cross-sectional area shall be 0.153 square inches.
3. Reinforcement bars shall conform to the requirements of AASHTO M-31 or M-322, Grade 60.
4. Rail Post anchor devices shall be cast into outside beam as elsewhere specified.
5. When a Waterproofing Membrane System is specified, the top surface of the beams shall be screeded with a straightedge and finished with a hand float. 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 minimum of 1/4".
6. 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.

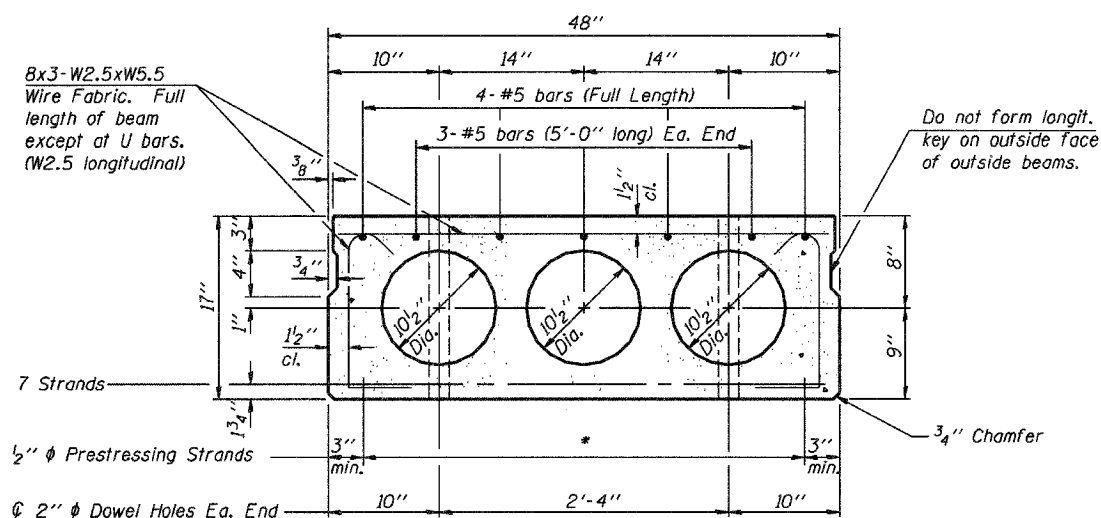
**NOTE**

The std. reinf. and dimensions shown on the 25' span cross section is typical for all spans, except as shown.

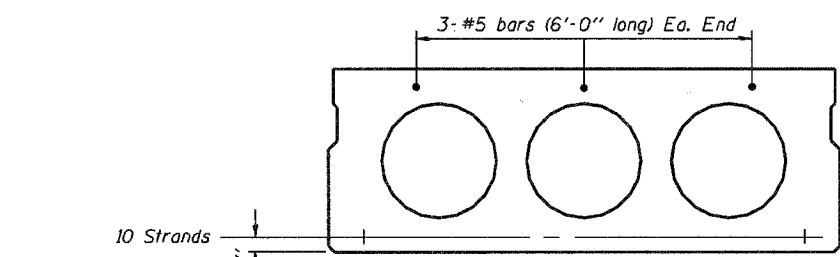
Illinois Department of Transportation  
 PASSED APRIL 4, 2005  
 Engineer of Bridge Design  
 APPROVED APRIL 4, 2005  
 Engineer of Bridges and Structures

**P.P.C. DECK BEAM DETAILS**

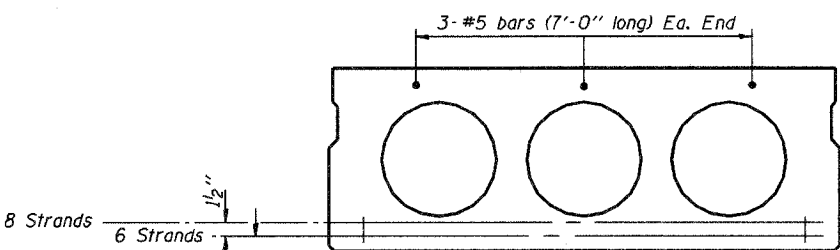
24' ROADWAY	17" x 36" BEAMS
STANDARD CB-2417-36	



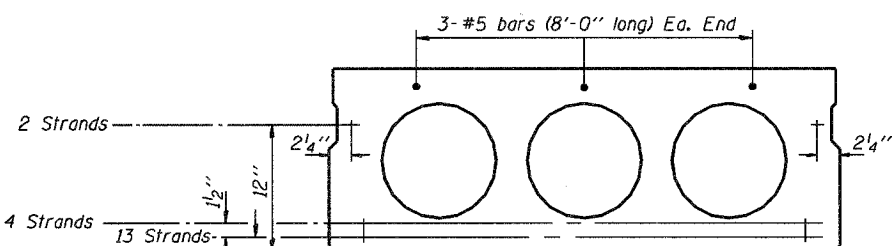
**CROSS SECTION**  
(25' SPAN)



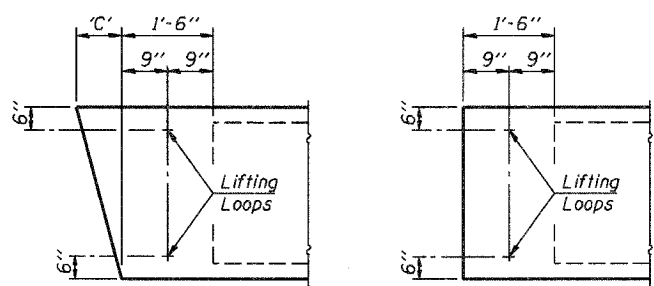
**CROSS SECTION**  
(30' SPAN)



**CROSS SECTION**  
(35' SPAN)

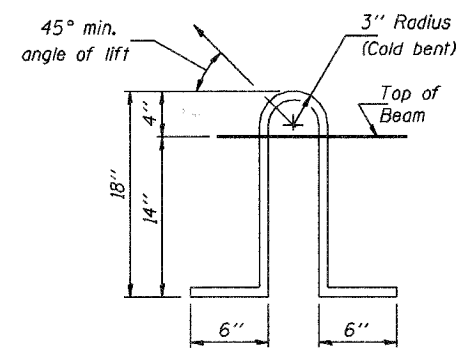


**CROSS SECTION**  
(40' SPAN)



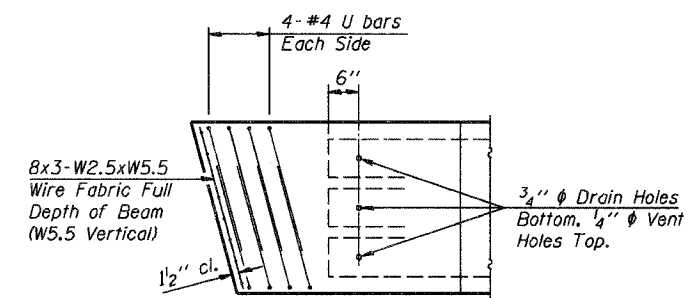
**END BLOCK DETAILS**

Each beam shall have four Lifting Loops, two at each end of beam cast in locations shown above. Loops shall be burned off after beams have been erected.

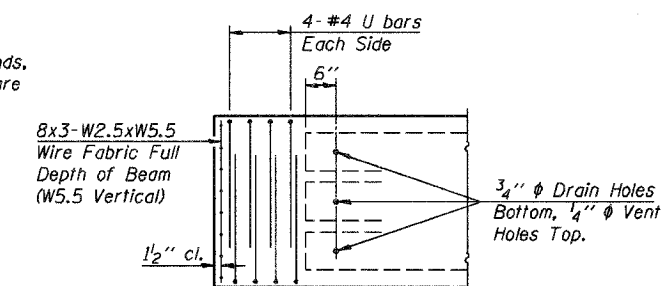


**LIFTING LOOP DETAIL**

Lifting loops shall be 2, 1/2 inch diameter 270 ksi strands, as shown. Alternate approved lifting devices are also acceptable.



**END REINFORCEMENT**  
(SKEWED)



**END REINFORCEMENT**  
(RIGHT ANGLE)

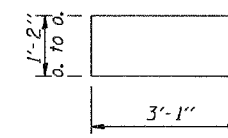
**DIMENSION 'C'**

Skew Angle 'D'	0°	5°	10°	15°	20°	25°	30°
Dimension 'C' (Inches)	0	4 1/4	8 1/2	12 7/8	17 1/2	22 3/8	27 3/4

**\* TRANSVERSE STRAND PLACEMENT GUIDELINES**

1. Place strands symmetrically about centerline of beam.
2. The minimum distance from center to center of strands in all directions shall be 2".
3. The minimum clearance from strand to dowel hole shall be 1/2".
4. The minimum clearance from strand to void shall be 1 1/2".

Vertical placement of strands shall not be adjusted to satisfy the above guidelines.



**BAR U**

**MIN. BAR LAP**

#5 bars = 1'-8"

**DESIGN STRESSES**

- $f'_c = 5,000$  p.s.i.
- $f'_{ci} = 4,000$  p.s.i.
- $f'_s = 270,000$  p.s.i. (1/2" diameter Strand)
- $f_{si} = 201,960$  p.s.i. (1/2" diameter Strand)
- $f_y = 60,000$  p.s.i.

**NOTES**

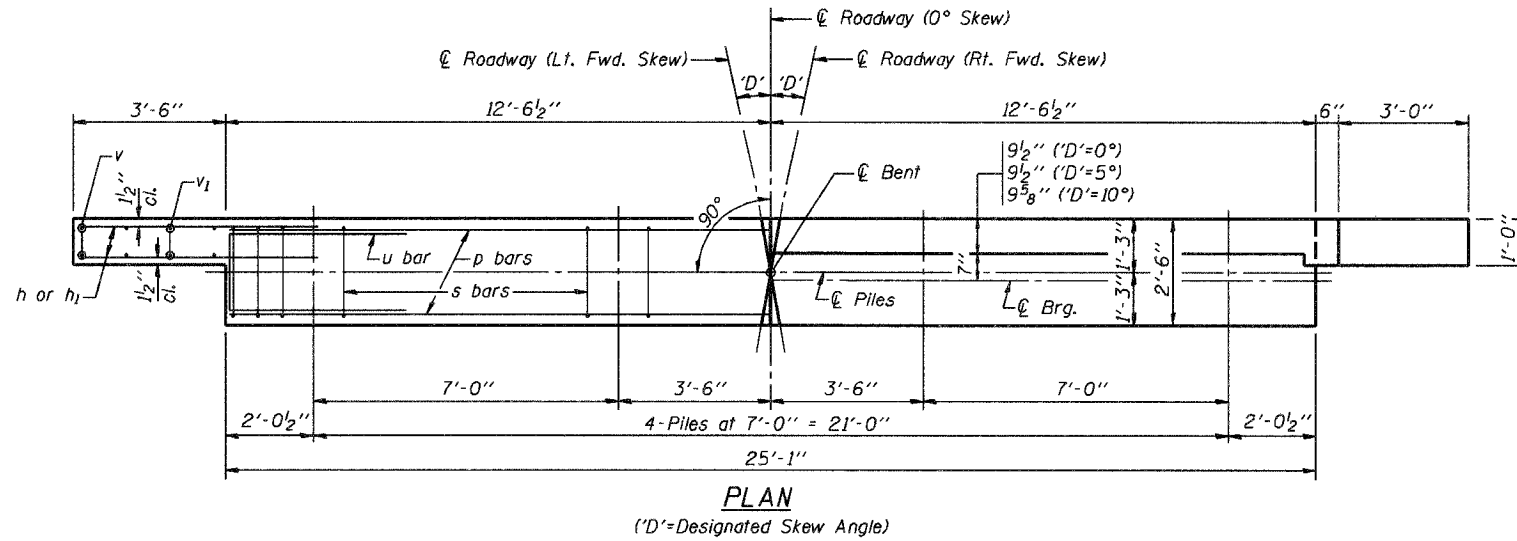
1. Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270.
2. The nominal diameter shall be 1/2" and the nominal cross-sectional area shall be 0.153 square inches.
3. Reinforcement bars shall conform to the requirements of AASHTO M-31 or M-322, Grade 60.
4. Rail Post anchor devices shall be cast into outside beam as elsewhere specified.
5. When a Waterproofing Membrane System is specified, the top surface of the beams shall be screeded with a straightedge and finished with a hand float. 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 minimum of 1/4".
6. 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.

**NOTE**

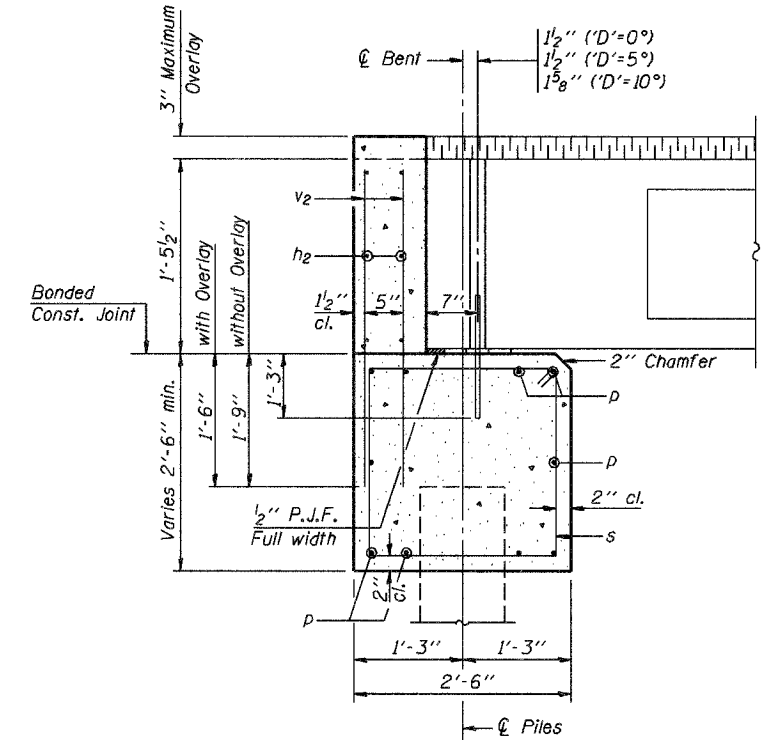
The std. reinf. and dimensions shown on the 25' span cross section is typical for all spans, except as shown.

Illinois Department of Transportation  
 PASSED APRIL 4, 2005  
 Thomas S. Nagayuki  
 Engineer of Bridge Design  
 APPROVED APRIL 4, 2005  
 Ralph E. Anderson  
 Engineer of Bridges and Structures

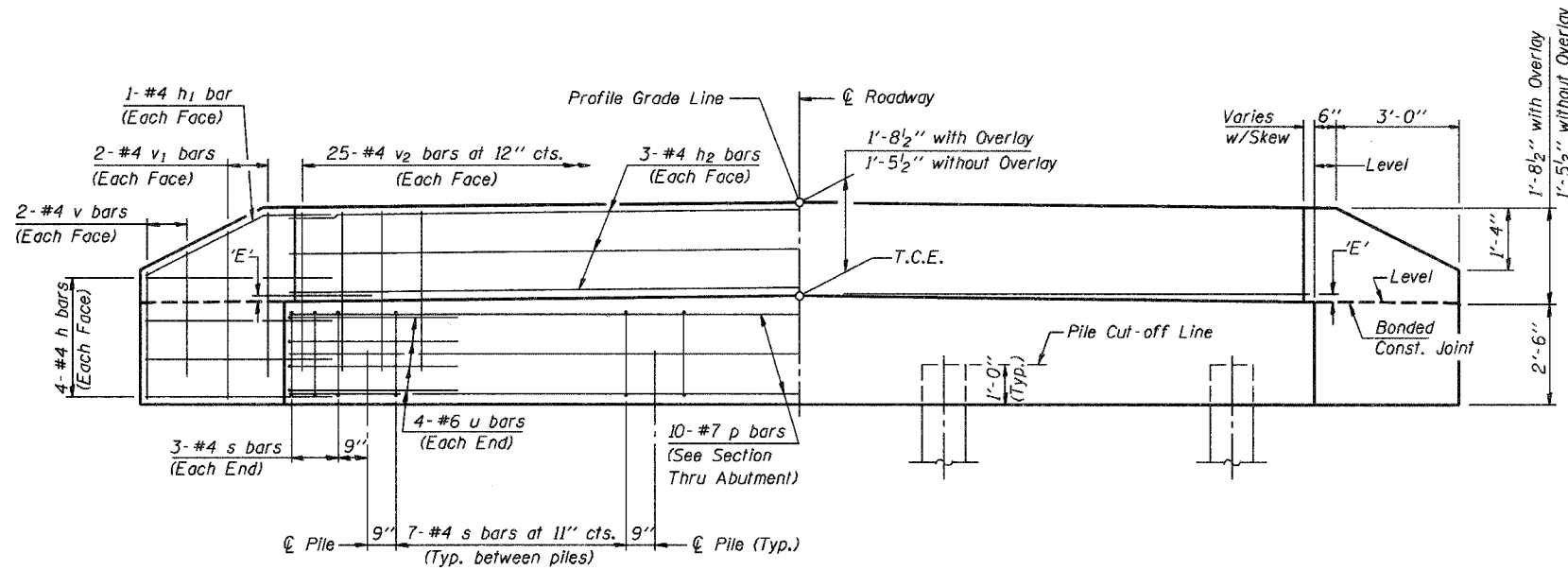
**P.P.C. DECK BEAM DETAILS**  
 24' ROADWAY | 17" x 48" BEAMS  
 STANDARD CB-2417-48



PLAN  
(D'=Designated Skew Angle)



SECTION THRU ABUTMENT  
(At Right Angles)



ELEVATION

DIMENSION 'E'

GRADE	D'=0°		D'=5°		D'=10°	
	UPGRADE END	DOWNGRADE END	UPGRADE END	DOWNGRADE END	UPGRADE END	DOWNGRADE END
0%	2 3/8"	2 3/8"	2 3/8"	2 3/8"	2 3/8"	2 3/8"
Over 0% to 1%	2 3/8"	2 3/8"	2 1/4"	2 3/8"	2 1/8"	2 1/2"
Over 1% to 2%	2 3/8"	2 3/8"	2 1/8"	2 1/2"	1 7/8"	2 3/4"
Over 2% to 3%	2 3/8"	2 3/8"	2"	2 5/8"	1 5/8"	3"
Over 3% to 4%	2 3/8"	2 3/8"	1 7/8"	2 3/4"	1 3/8"	3 1/4"

NOTES

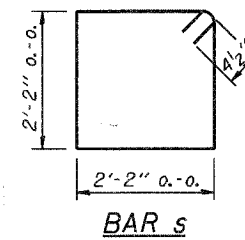
- The Backwall and the portion of the Wingwalls above the bonded construction joint shall be cast against the in-place beam.
- Reinforcement bars shall conform to the requirements of A.A.S.H.T.O. M-31 or M-322, Grade 60.
- Space reinforcement in cap to miss anchor bolts.

MAXIMUM PILE LOADS

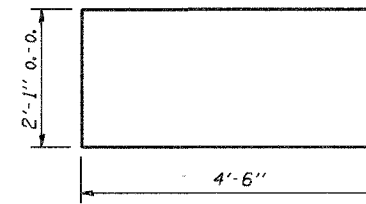
SPAN	TONS
25'	25
30'	26
35'	28
40'	30

DESIGN STRESSES

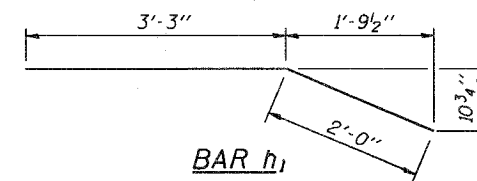
f'c = 3,500 psi  
fy = 60,000 psi



BAR s



BAR u



BAR h1

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'-6"	—
v1	8	#4	3'-5"	—
v2	50	#4	3'-1"	—
Concrete Structures			8.3 Cu. Yds.	
Reinforcement Bars			1110 Lb.	

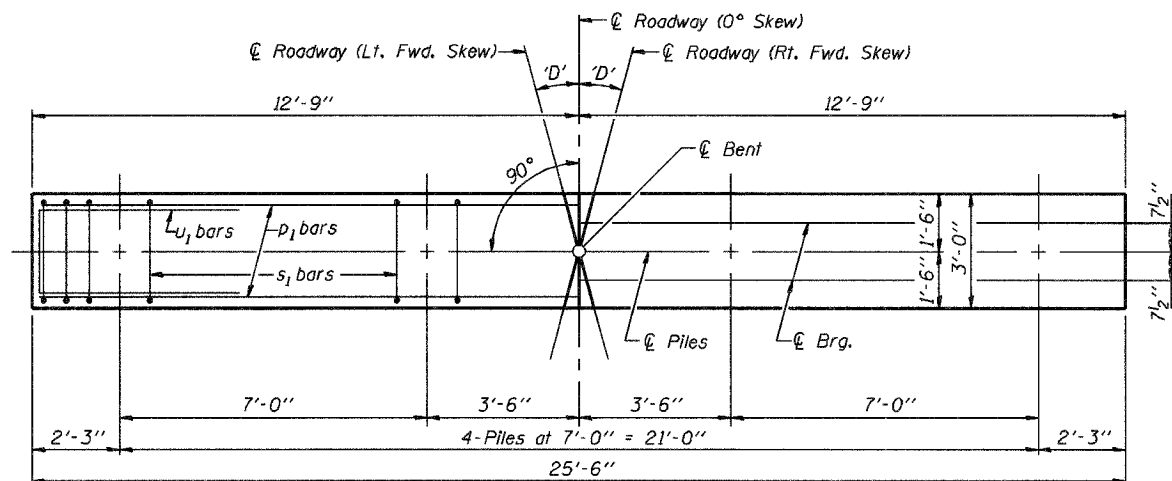
P.P.C. DECK BEAMS  
PILE BENT ABUTMENT

24' RDWY. | 17" BMS. | D'=0°, 5° OR 10°

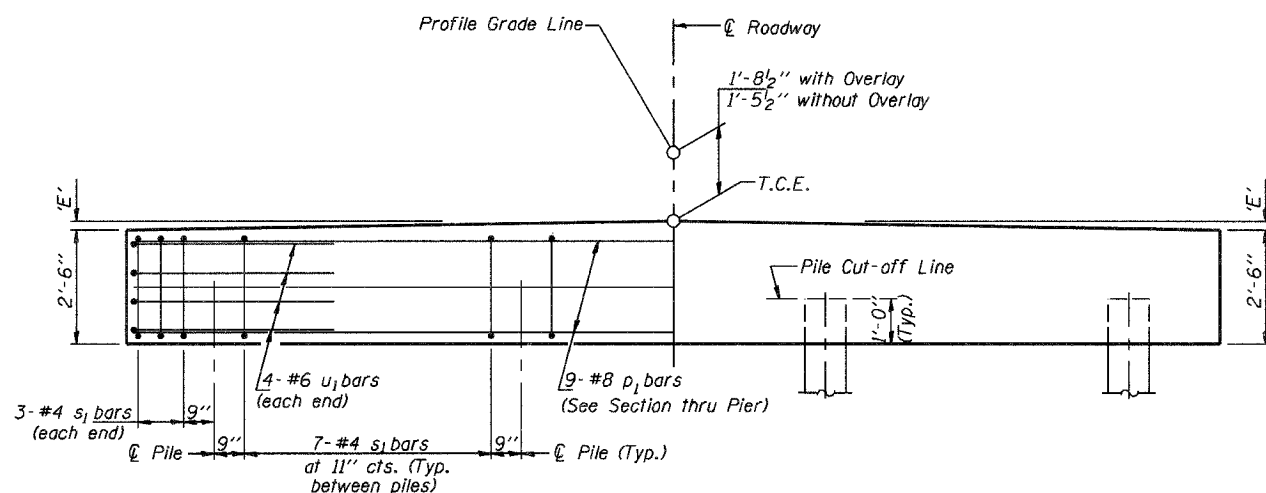
STANDARD CA-2417-10

Illinois Department of Transportation  
 PASSED APRIL 4, 2005  
 Thomas S. [Signature]  
 Engineer of Bridge Design  
 APPROVED APRIL 4, 2005  
 Ralph E. [Signature]  
 Engineer of Bridges and Structures





**PLAN**  
 ('D' = Designated Skew Angle)



**ELEVATION**

**DIMENSION 'E'**

GRADE	'D'=0°		'D'=5°		'D'=10°	
	UPGRADE END	DOWNGRADE END	UPGRADE END	DOWNGRADE END	UPGRADE END	DOWNGRADE END
0%	2 <sup>3</sup> / <sub>8</sub> "	2 <sup>3</sup> / <sub>8</sub> "	2 <sup>3</sup> / <sub>8</sub> "	2 <sup>3</sup> / <sub>8</sub> "	2 <sup>3</sup> / <sub>8</sub> "	2 <sup>3</sup> / <sub>8</sub> "
Over 0% to 1%	2 <sup>3</sup> / <sub>8</sub> "	2 <sup>3</sup> / <sub>8</sub> "	2 <sup>1</sup> / <sub>4</sub> "	2 <sup>3</sup> / <sub>8</sub> "	2 <sup>1</sup> / <sub>2</sub> "	2 <sup>1</sup> / <sub>2</sub> "
Over 1% to 2%	2 <sup>3</sup> / <sub>8</sub> "	2 <sup>3</sup> / <sub>8</sub> "	2 <sup>1</sup> / <sub>2</sub> "	2 <sup>1</sup> / <sub>2</sub> "	1 <sup>7</sup> / <sub>8</sub> "	2 <sup>3</sup> / <sub>4</sub> "
Over 2% to 3%	2 <sup>3</sup> / <sub>8</sub> "	2 <sup>3</sup> / <sub>8</sub> "	2"	2 <sup>5</sup> / <sub>8</sub> "	1 <sup>5</sup> / <sub>8</sub> "	3"
Over 3% to 4%	2 <sup>3</sup> / <sub>8</sub> "	2 <sup>3</sup> / <sub>8</sub> "	1 <sup>7</sup> / <sub>8</sub> "	2 <sup>3</sup> / <sub>4</sub> "	1 <sup>3</sup> / <sub>8</sub> "	3 <sup>1</sup> / <sub>4</sub> "

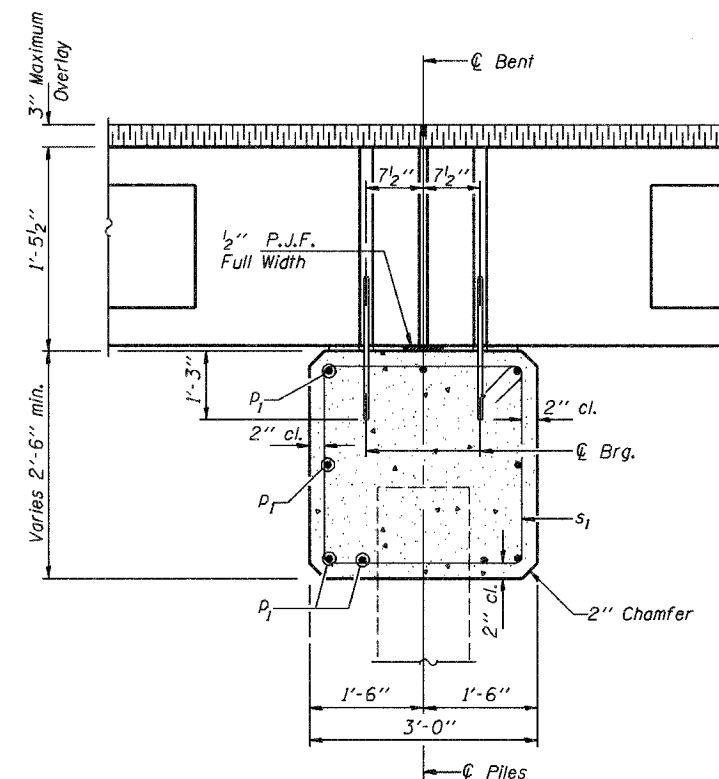
**MAXIMUM PILE LOADS**

SPAN	TONS
25'	34
30'	38
35'	42
40'	45

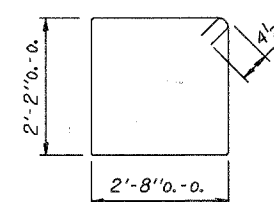
Longer of Either Span Supported by Pier.

**DESIGN STRESSES**

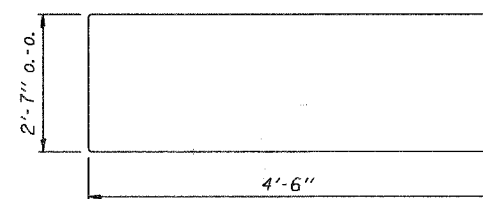
f'c = 3,500 psi  
 fy = 60,000 psi



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



**BAR s<sub>1</sub>**



**BAR u<sub>1</sub>**

**BILL OF MATERIAL FOR ONE PIER**

Bar	No.	Size	Length	Shape
p <sub>1</sub>	9	#8	25'-2"	—
s <sub>1</sub>	27	#4	10'-5"	□
u <sub>1</sub>	8	#6	11'-7"	▭
Concrete Structures			7.4	Cu. Yds.
Reinforcement Bars			930	Lb.

**NOTE**

Reinforcement bars shall conform to the requirements of A.A.S.H.T.O. M-31 or M-322, Grade 60.

P.P.C. DECK BEAMS PILE BENT PIER		
24' RDWY.	17" BMS.	'D'=0°, 5° OR 10°
STANDARD CP-2417-10		

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

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.

Bolts, 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.

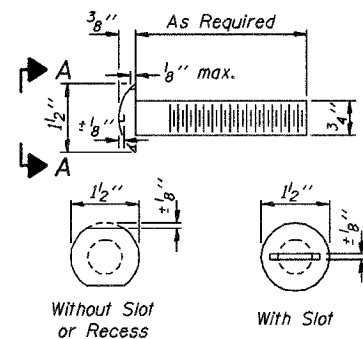
For multi-span bridges, sufficient 1/4" x 6" x 1'-2" galvanized steel shims shall be provided to align rail between adjacent spans. Cost included with STEEL RAILING, TYPE S-1.

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

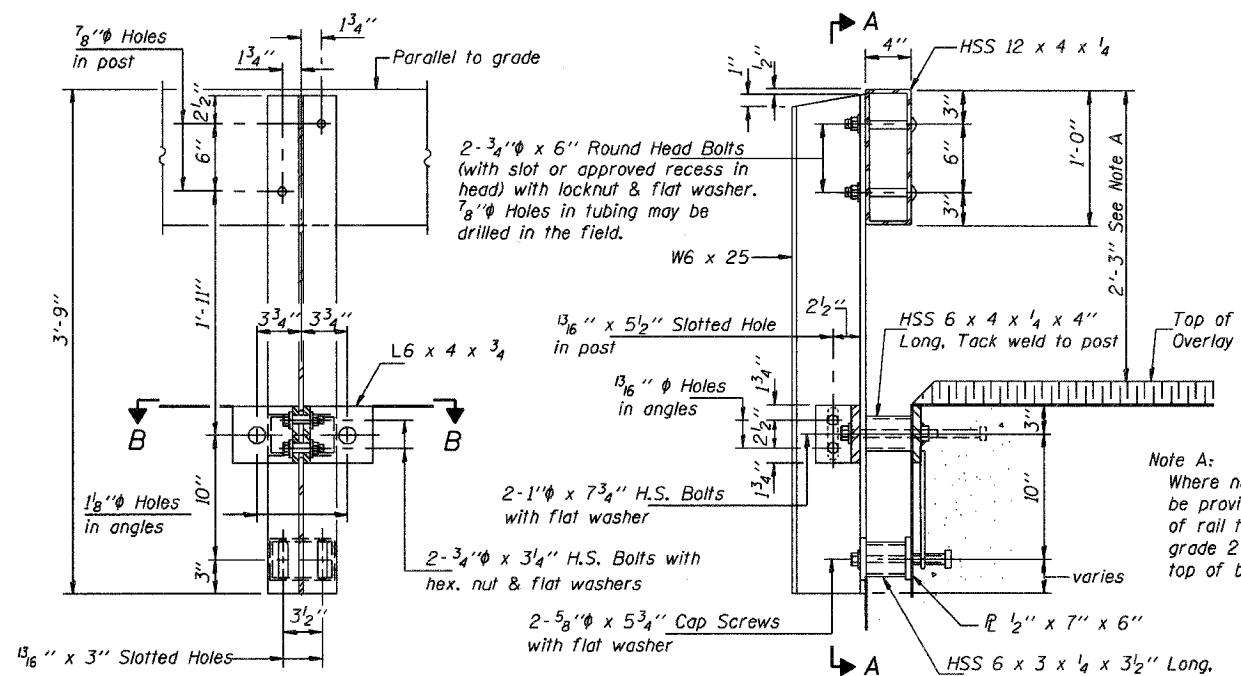
The 1/2" x 7" x 6" plates that come in contact with concrete shall either receive two coats of asphalt paint conforming to Section 1060.07 Type II, or 3/8" fabric bearing pads shall be placed between the plates and concrete.

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 (FX2) 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 1/8 turn. The 5/8" cap screws in bottom of posts shall be tightened to a snug fit only.

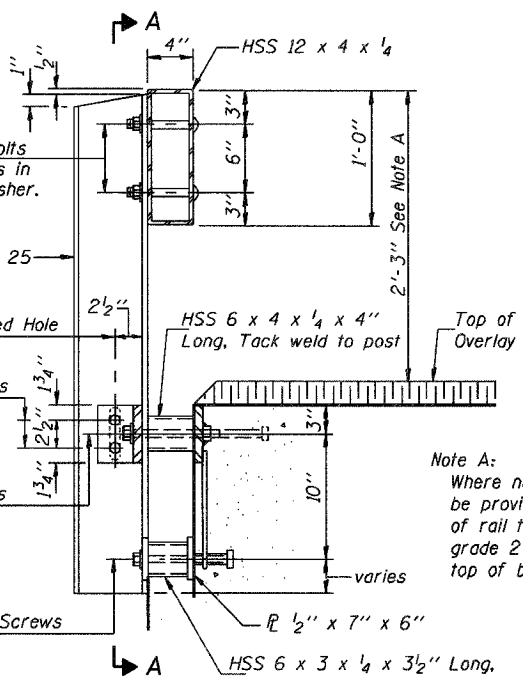
The maximum allowable rail post spacing shall be 10'-6". The rail post spacing shown elsewhere in the plans is based on the allowable spacing for another type of rail. When this type of rail is used, the number of posts may be decreased and the post spacing increased to provide equal post spaces of 10'-6"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



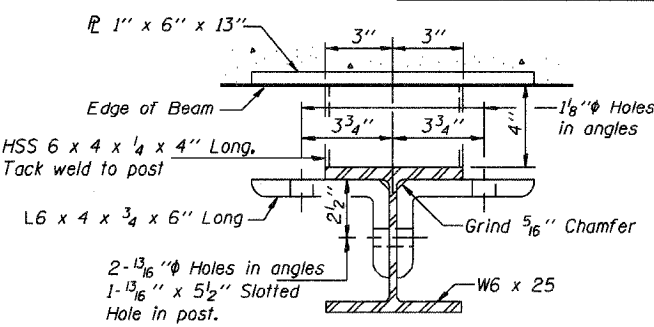
VIEW A-A  
ROUND HEAD BOLT



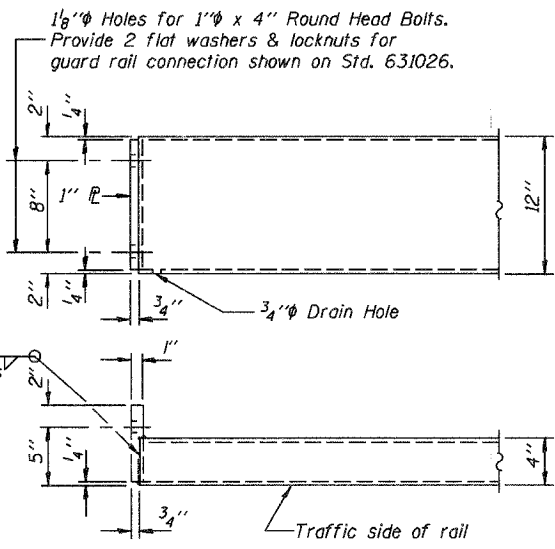
SECTION A-A



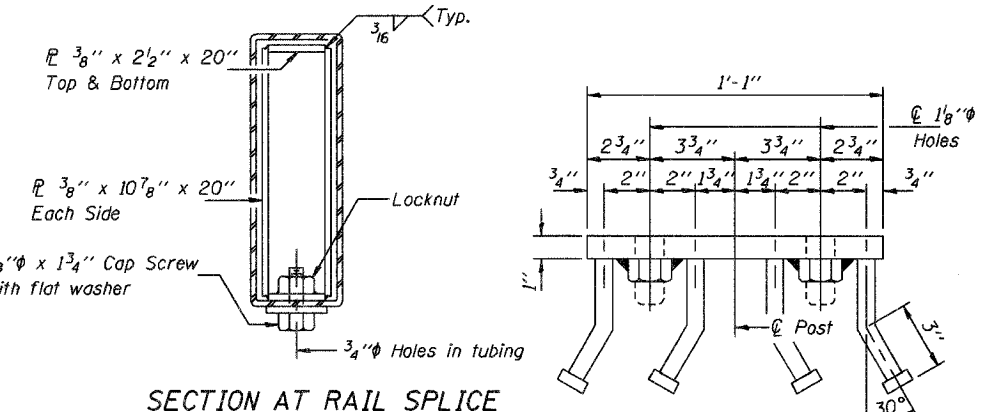
SECTION AT RAIL POST



SECTION B-B

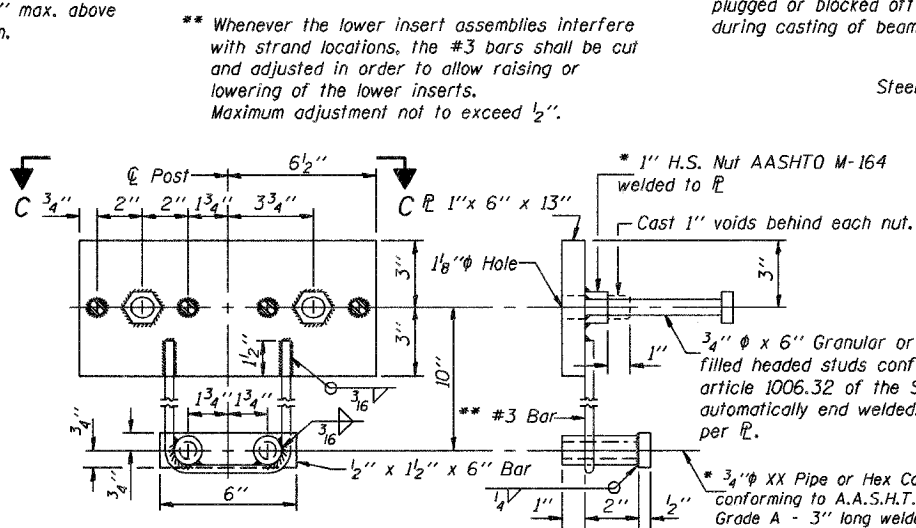


END OF RAIL DETAILS

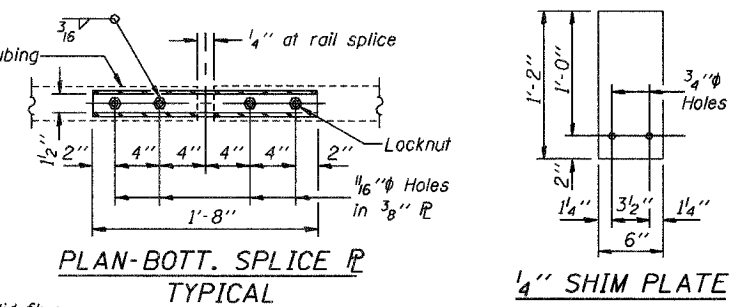


SECTION AT RAIL SPLICE

VIEW C-C



ANCHOR DEVICE



PLAN-BOTT. SPLICE R TYPICAL

1/4" SHIM PLATE

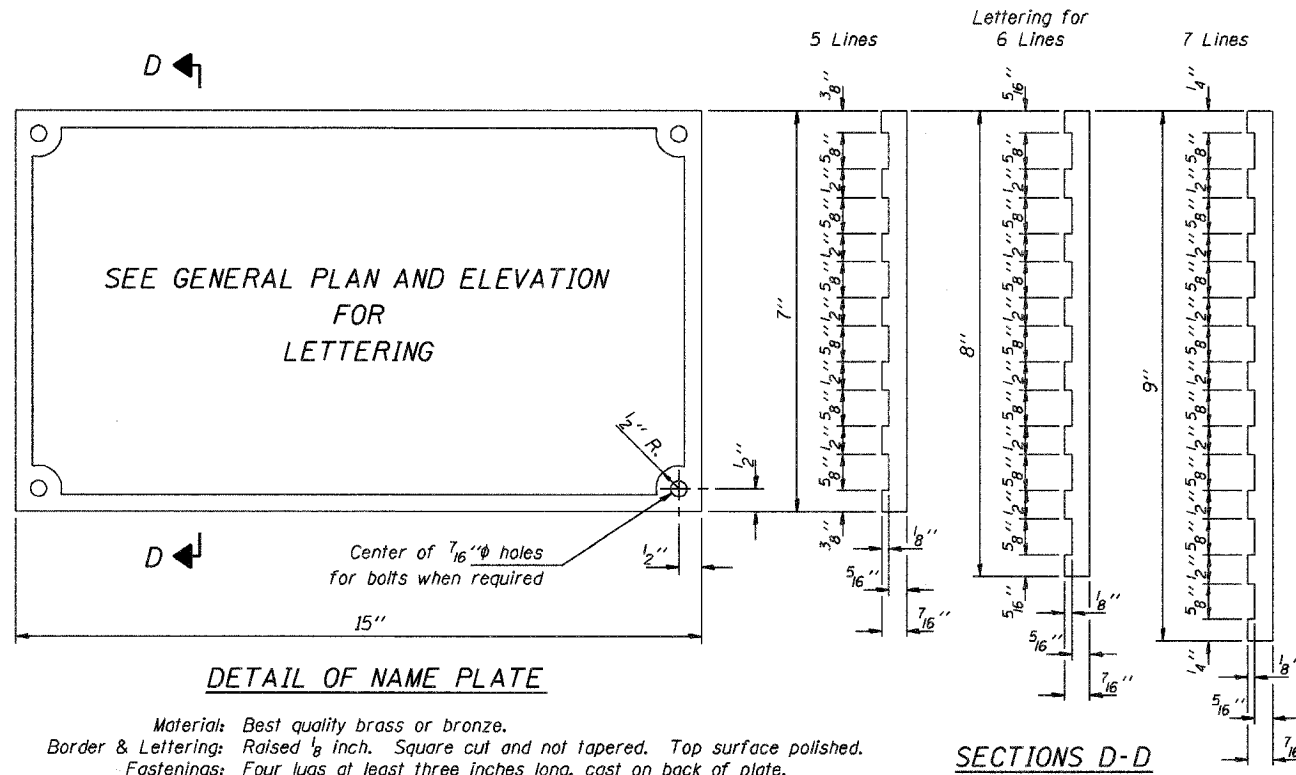
\* Threaded areas shall be plugged or blocked off during casting of beam.

\*\* 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".

Note A:  
Where no overlay is to be provided, adjust top of rail to lay parallel to grade 2'-5" max. above top of beam.

Illinois Department of Transportation  
 PASSED APRIL 4, 2005  
 Approved by: *Thomson Samalaki*  
 Engineer of Bridge Design  
 APPROVED APRIL 4, 2005  
 Approved by: *Ralph E. Anderson*  
 Engineer of Bridges and Structures

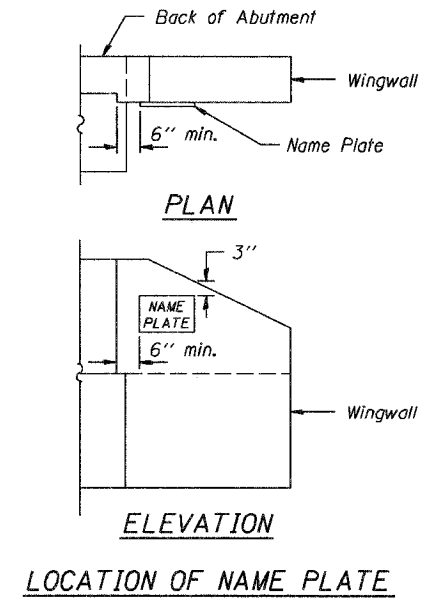
STEEL RAILING, TYPE S-1  
 STANDARD CR-TS1



DETAIL OF NAME PLATE

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

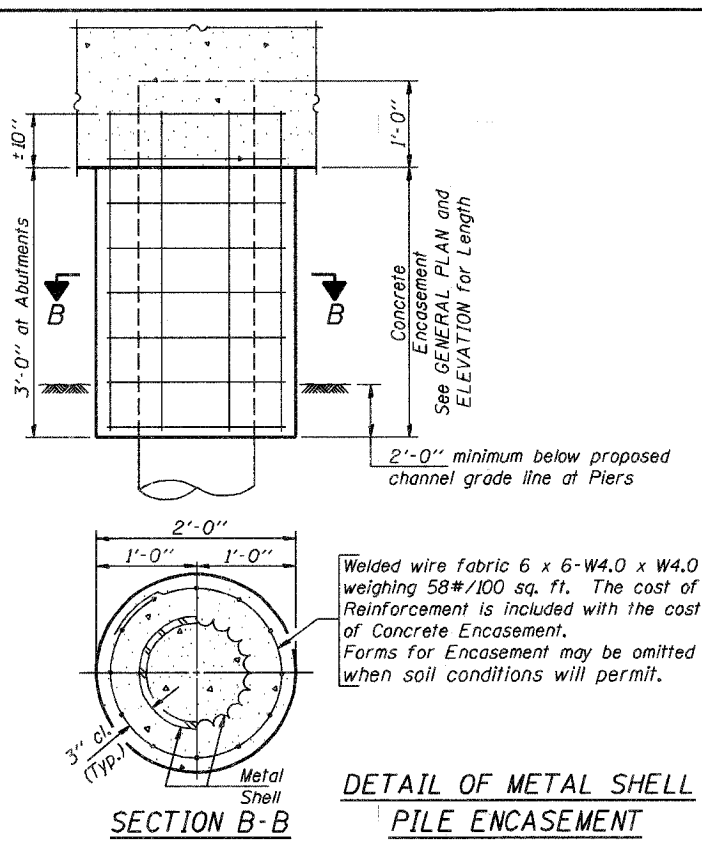
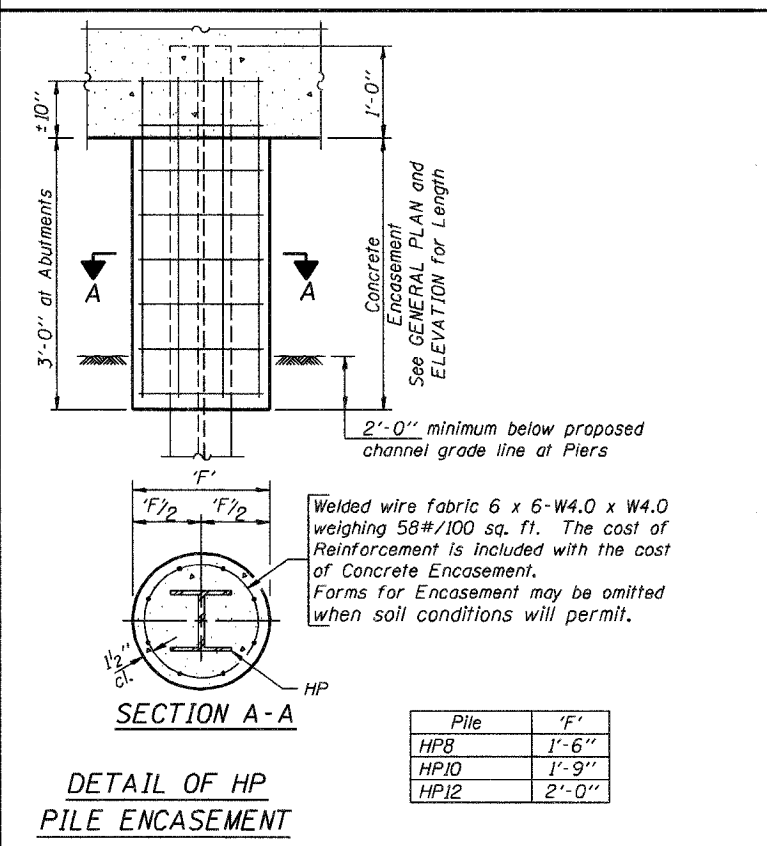
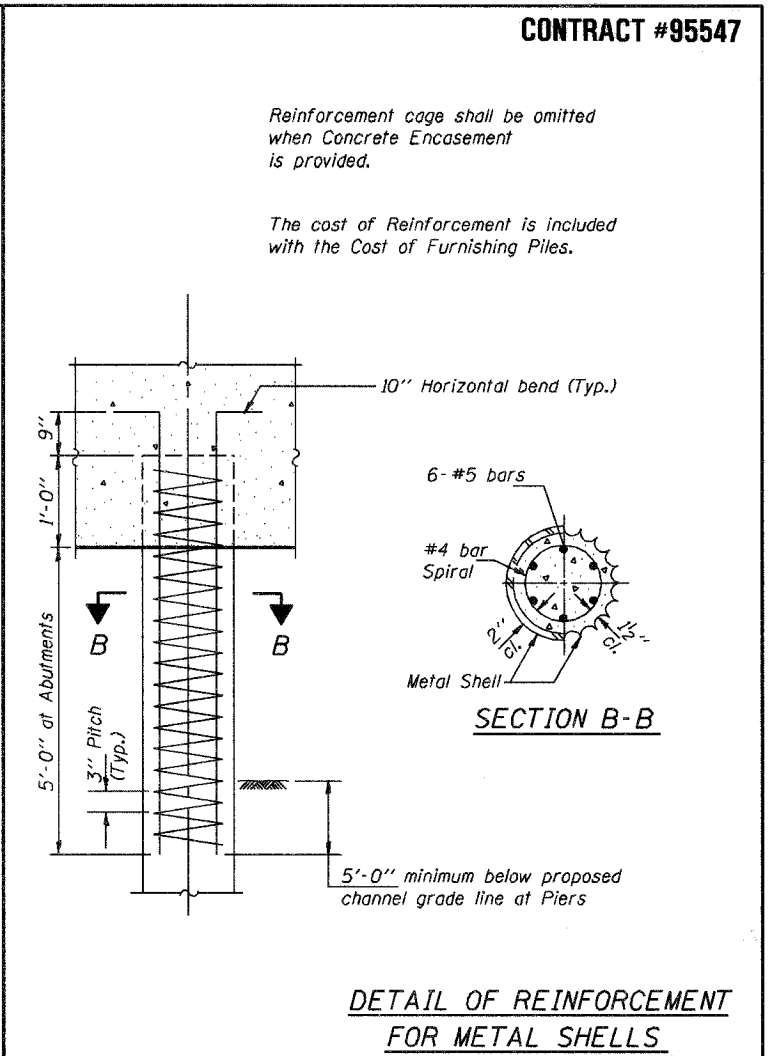
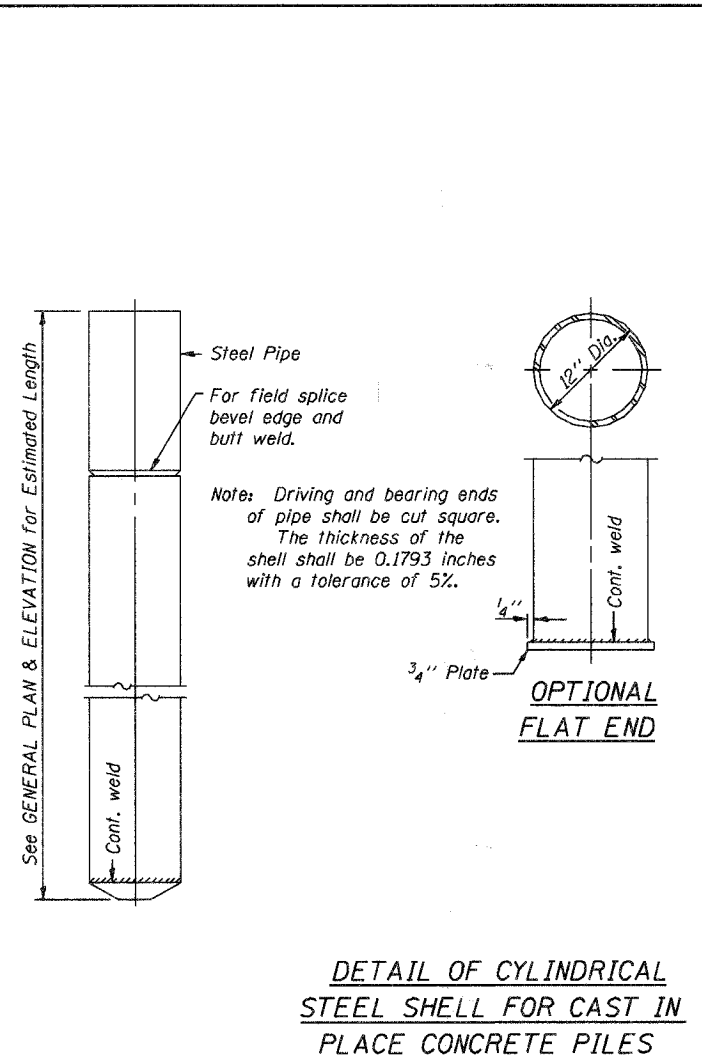
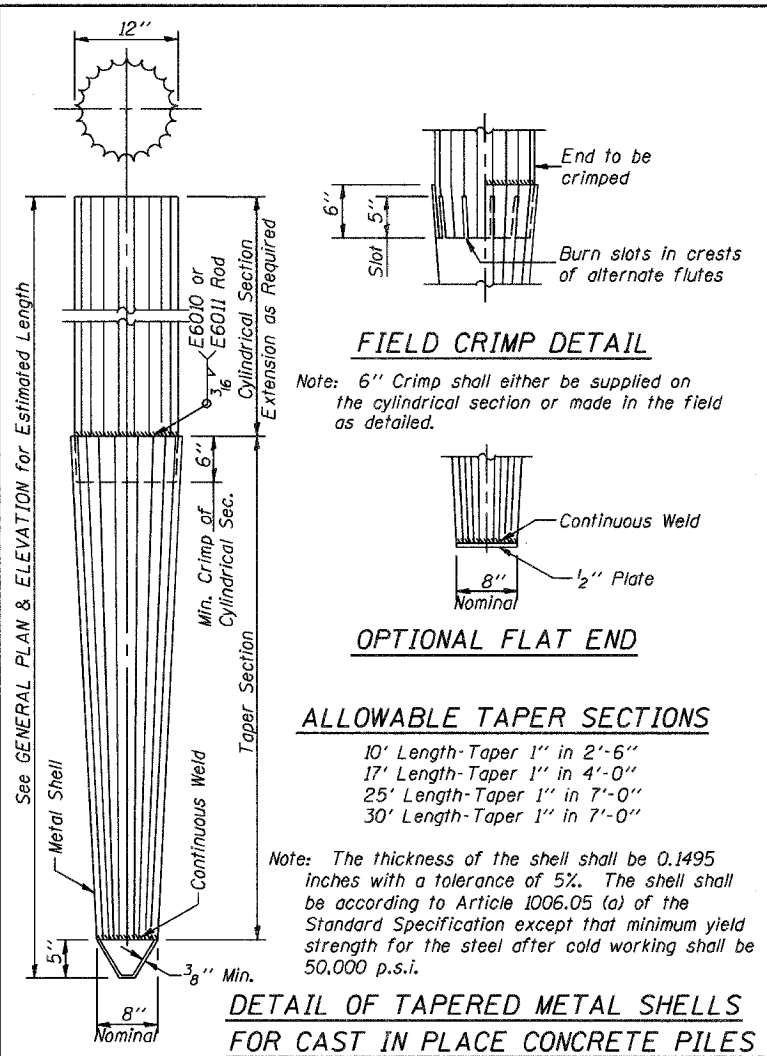
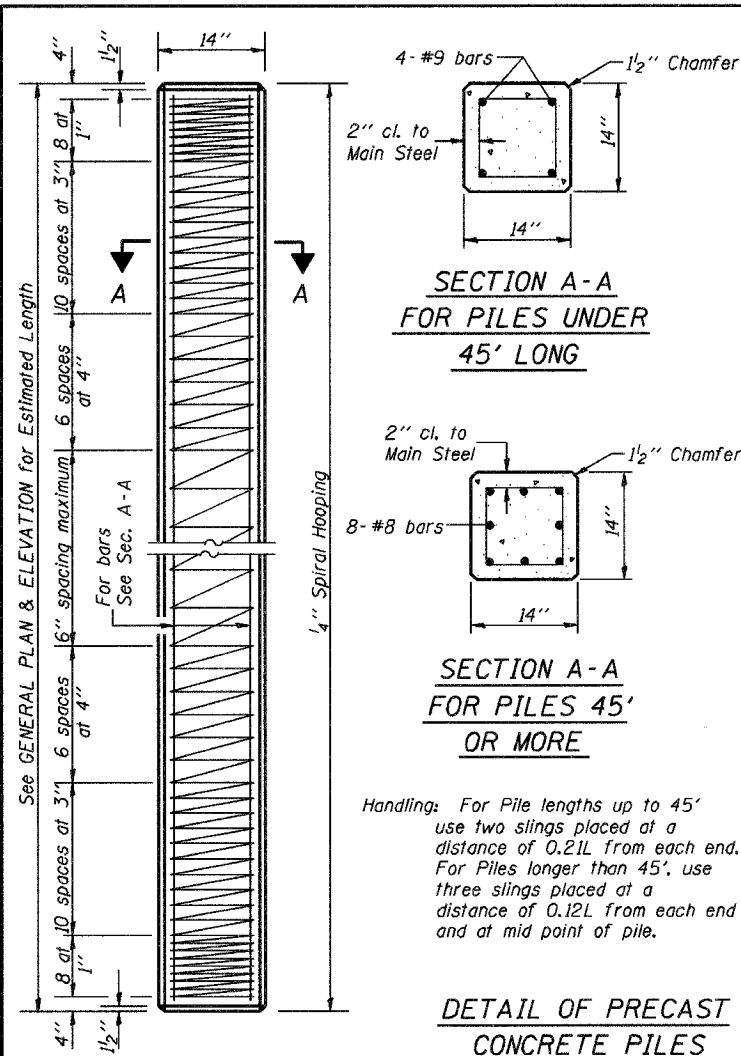
SECTIONS D-D



LOCATION OF NAME PLATE

Illinois Department of Transportation	
PASSED APRIL 4, 2005 <i>Thomas S. Kamagaki</i> Engineer of Bridge Design	ISSUED 7-1-895
APPROVED APRIL 4, 2005 <i>Ralph E. Anderson</i> Engineer of Bridges and Structures	

NAME PLATE
STANDARD CN



**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**

Illinois Department of Transportation

PASSED FEBRUARY 1, 2000

Thomas J. Donaghy  
Engineer of Bridge Design

APPROVED FEBRUARY 1, 2000

Ralph E. Anderson  
Engineer of Bridges and Structures