04-28-06 Letting, Item 068

INDEX OF SHEETS

1	COVER SHEET
2	PLAN & PROFILE
3– 9	BRIDGE PLANS

STANDARDS:

702001-06 – TRAFFIC
BLR 21-6 – TRAFFIC
BLR 22-4 – TRAFFIC

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PLANS FOR PROPOSED
FEDERAL–AID B.R.R. PROGRAM

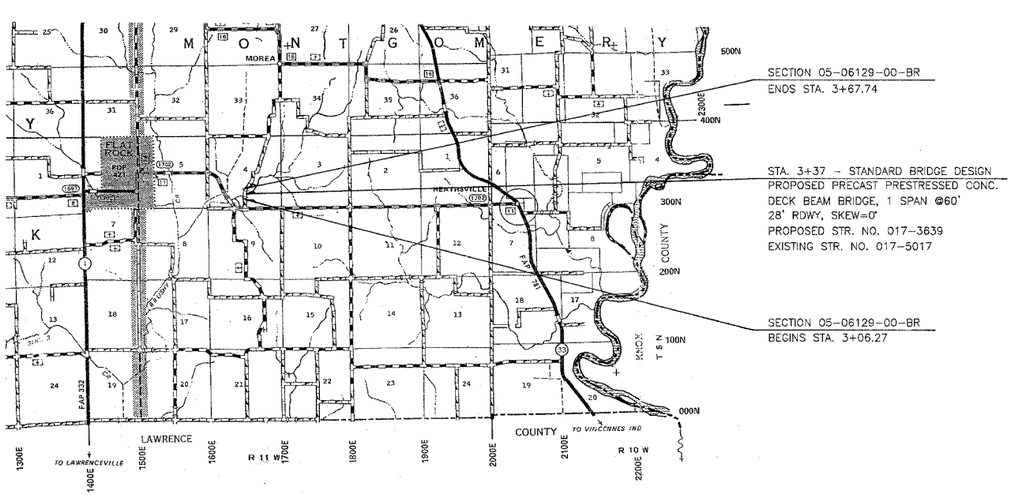
CRAWFORD COUNTY
SECTION 05–06129–00–BR
MONTGOMERY ROAD DISTRICT
STRUCTURE NO. 017–3639
PROJECT NO. BROS–33–(44)
JOB NO. C–97–011–06
TR 284

SCALES

PLAN	1 INCH = 50 FEET
PROFILE HORZ.	1 INCH = 50 FEET
PROFILE VERT.	1 INCH = 10 FEET

SUMMARY OF QUANTITIES

QUANTITY	UNIT	ITEM	CODE NO.
356	CU YD	CHANNEL EXCAVATION	20300100
103	TON	STONE DUMPED RIPRAP, CLASS A4	28100807
1	EACH	REMOVAL OF EXISTING STRUCTURES	50100100
20.8	CU YD	CONCRETE STRUCTURES	50300225
1680	SQ FT	PRECAST PRESTRESSED CONCRETE DECK BEAMS (27" DEPTH)	50400505
2580	POUND	REINFORCEMENT BARS	50800105
120	FOOT	STEEL RAILING, TYPE S1	50900205
270	FOOT	FURNISHING STEEL PILES HP 10X42	51201400
270	FOOT	DRIVING STEEL PILES	51202700
1	EACH	TEST PILE STEEL HP 10X42	51203400
2.6	CU YD	CONCRETE ENCASEMENT	51204315
1	EACH	NAME PLATES	51500100
1	L SUM	MOBILIZATION	67100100
1	L SUM	TRAFFIC CONTROL AND PROTECTION	70101700



FUNCTIONAL CLASS: RURAL LOCAL ROAD
ADT = 75

LOCATION MAP

APPROXIMATE SCALE: 1 INCH = 1 MILE
NET LENGTH = 61.47 FT. =0.012 MILES

TOLL FREE JOINT UTILITY LOCATING
INFORMATION FOR EXCAVATORS (J.U.L.I.E.)
TELEPHONE NO. 1–800–892–0123

CONTRACT NO. 95445

PROFESSIONAL DESIGN FIRM #184–000832

Michael J. Connor 1/13/2006
ILLINOIS REGISTERED PROFESSIONAL ENGINEER # 31350
LICENSE EXPIRES NOVEMBER 30, 2007

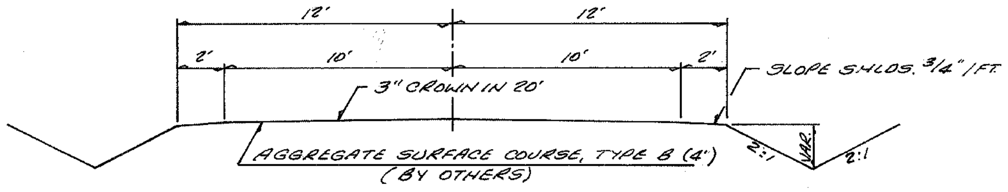
APPROVED 1-13-2006, 2006
Justin R. Childs, P.E.
COUNTY ENGINEER

PASSED 2/23, 2006
Maureen D. Carroll
DISTRICT SEVEN ENGINEER
OF LOCAL ROADS & STREETS

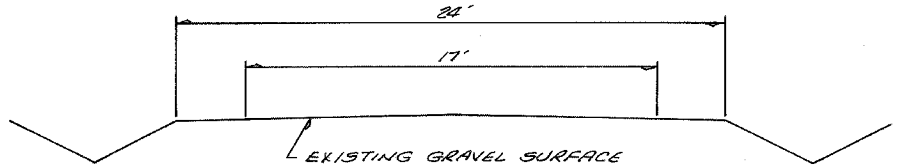
RELEASING FOR BID BASED ON LIMITED REVIEW
2/23, 2006
Christine M. Reed
DEPUTY DIRECTOR OF HIGHWAYS
REGION FOUR ENGINEER
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

CONTRACT NO. 95445

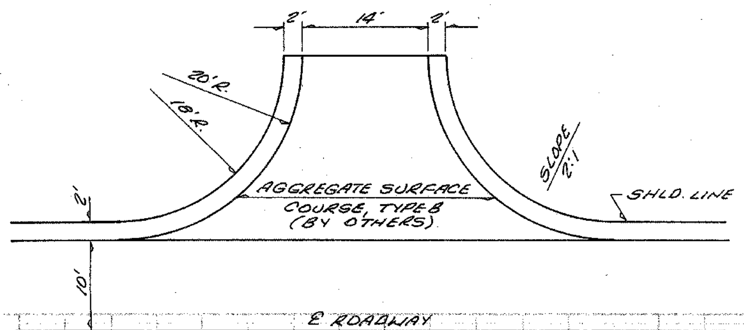
F.A.S. ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET
	05-06129-00-BR	CRAWFORD	9	2
STA. 0+00		TO STA. 8+00		
FED. ROAD DIST. NO.	ILLINOIS	PROJECT		



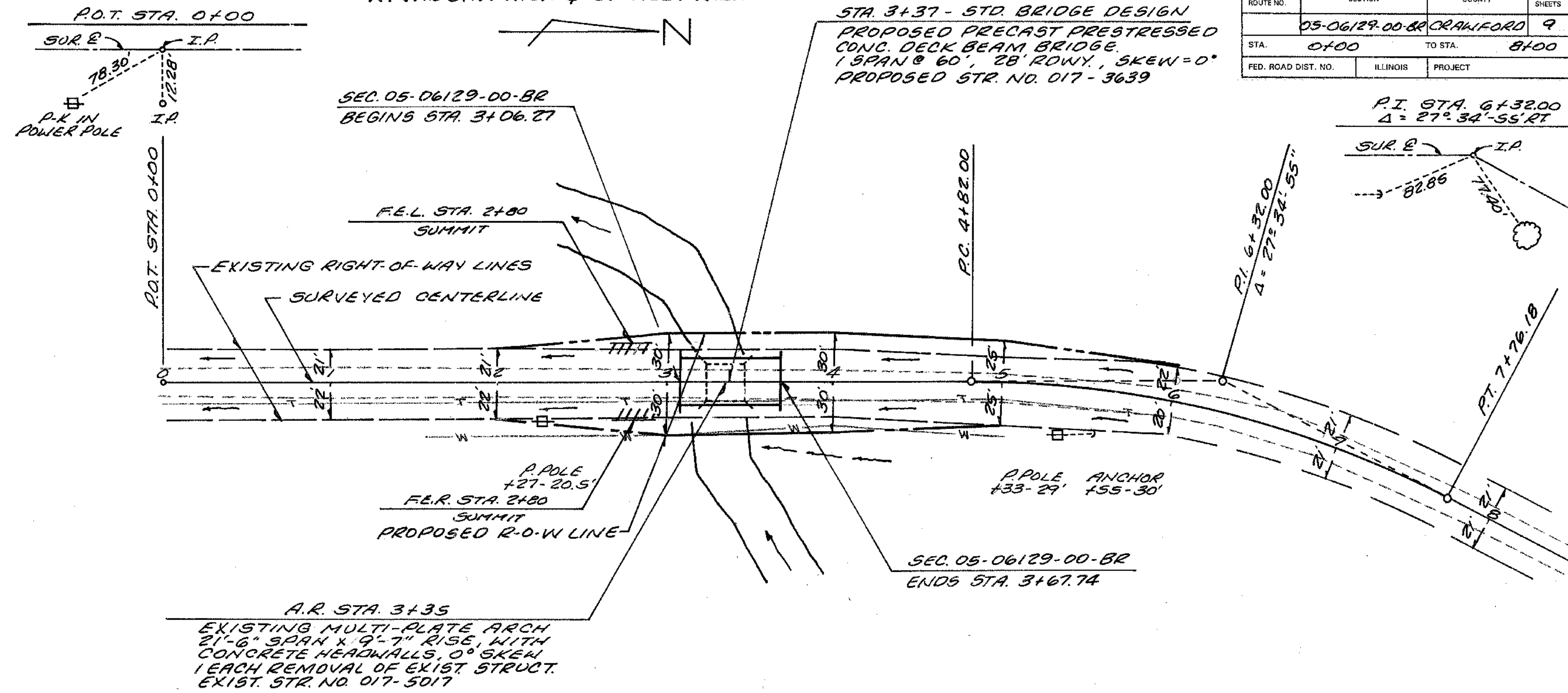
TYPICAL SECTION OF PROPOSED IMPROVEMENT
(BY OTHERS)



DETAIL OF EXISTING ROADWAY



DETAIL OF FIELD ENTRANCES
(BY OTHERS)



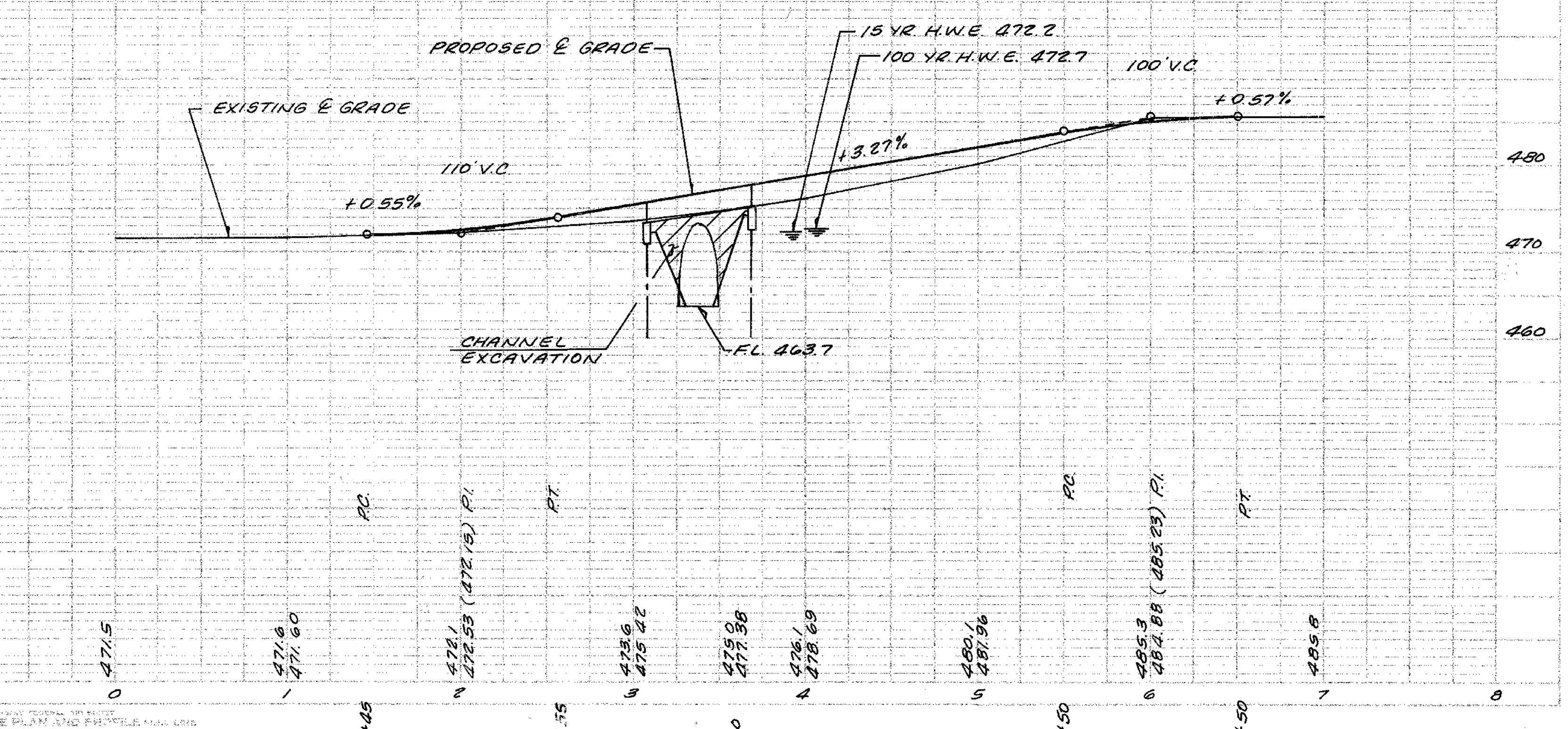
CURVE DATA
P.I. STA. 6+32.00
Δ = 27° 34' 55"
D = 9° 22' 33"
R = 611.11'
T = 150.00'
L = 294.18'
E = 18.14'

PARCEL NO. 2
DOUG PIFER, MELINDA PIFER, STEPHEN PIFER & KAREN PIFER

B.M. #1 ELEV. 471.45
P-K IN POWER POLE
RT. STA. 0-78

CHANNEL EXCAVATION = 356 CU. YD.

B.M. #2 ELEV. 484.40
P-K IN POWER POLE
RT. STA. 5+33



UTILITIES

ELECTRIC: NORRIS ELECTRIC COOP.
PH. 618-783-8765

TELEPHONE: FLAT ROCK TELEPHONE CO.
PH. 618-584-3211

WATER: HARDINVILLE WATER CO.
PH. 618-557-3556

CONTRACT NO. 95445

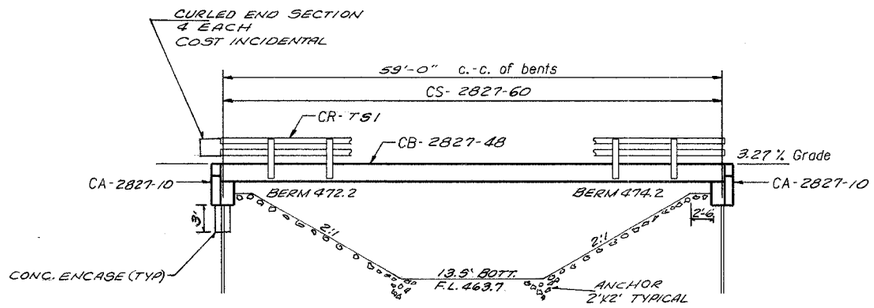
ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
		CRAWFORD	9	3
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT-	

SEC. 05-06129-00-BR

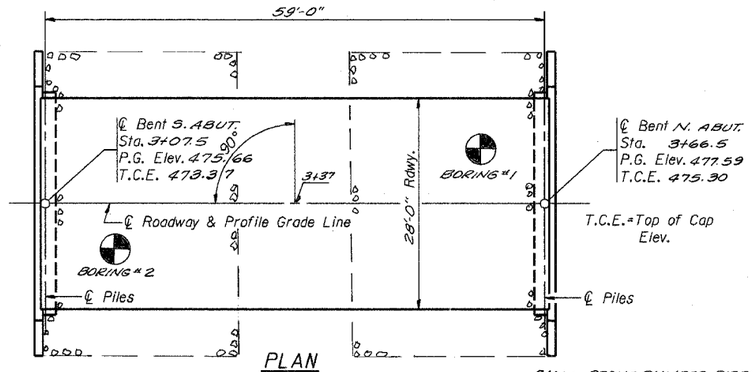
~~B.M.~~

~~Existing Structure~~

~~Salvage~~



ELEVATION



PLAN

STONE DUMPED RIPRAP CL A-4 12" MIN. THICKNESS
S. ABUT = 47 TON
N. ABUT = 56 TON

GENERAL NOTES

1. The Contractor shall drive 1 test piles, as specified, in a permanent location as directed by the Engineer before ordering the remaining piles.
2. See Special Provisions for boring logs.
3. ~~A Corrosion Inhibitor, as covered in the Special Provisions, shall be used in the concrete for precast prestressed concrete deck beams.~~

TOTAL BILL OF MATERIAL

Item	Unit	Super	Sub. Piers	Sub. Abuts.	Total
Removal of Existing Structures	Each				1
~~Bituminous Concrete Surface Course, Superpave~~	~~Ton~~				
~~Waterproofing Membrane System~~	~~Sq. Yd.~~				
Concrete Structures	Cu. Yd.			20.8	20.8
Precast Prestressed Concrete Deck Beams (27" Depth)	Sq. Ft.	1680			1680
~~Steel Bridge Rail, Type SM~~	~~Foot~~				
Steel Railing, Type S-1	Foot	120			120
Reinforcement Bars	Pound			2580	2580
Furnishing STEEL PILES HP10X42	Foot			270	270
Driving STEEL PILES	Foot			270	270
Test Piles STEEL HP10X42	Each			1	1
Name Plates	Each			1	1
Concrete Encasement	Cu. Yd.			2.6	2.6
~~Portland Cement Mortar Fairing Course~~	~~Foot~~				
STONE DUMPED RIPRAP CL A-4	TON			103	103

INDEX OF SHEETS

1. General Plan & Elevation
2. Standard CS-2827-60
3. Standard CB-2827-48
4. Standard CA-2827-10
5. Standard CR-751
6. Standard CN
7. Standard CX-1
8. Standard
9. Standard

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) =
Bedrock Acceleration Coefficient (A) =
Site Coefficient (S) =

PILE DATA (2-ABUTS.)

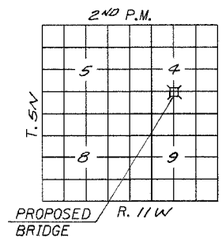
Type STEEL HP 10X42
Capacity Tons REFUSAL
Estimated Length 30 Feet
Number Required 10 (Includes 1 Test Pile located in Bent #1) S. ABUT.

STATION 31+37
PROJECT NO. BROS-033(44)
SEC. 05-06129-00-BR BUILT 20

CRAWFORD COUNTY
LOADING HS20
STR. NO. 017-3639

LETTERING FOR NAME PLATE

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



LOCATION SKETCH

WATERWAY INFORMATION

Drainage Area = 3.39 Sq. Mi. Low Grade Elev. = 471.5 @ Sta. 0+00

Flood	Freq. Yr.	Q C.F.S.	Opening Sq. Ft. Exist.	Opening Sq. Ft. Prop.	Nat. H.W.E.	Head - Ft. Exist.	Head - Ft. Prop.	Headwater El. Exist.	Headwater El. Prop.	Approach Opening Exist	Approach Opening Prop
Design	15	1051	153	259	472.2	1.0	0	473.2	472.2	401	400
Base	100	1713	158	285	472.7	3.2	0.7	475.9	473.4	702	694
Overtopping											
Max. Calc.	500	2259			473.0		1.4		474.4		

GENERAL PLAN & ELEVATION

TR ROUTE 284

OVER

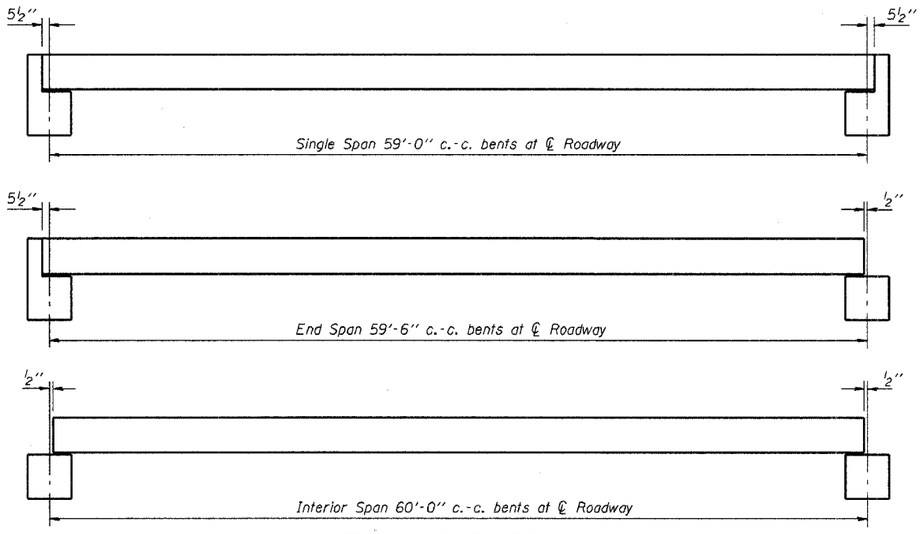
SECTION 05-06129-00-BR

CRAWFORD COUNTY

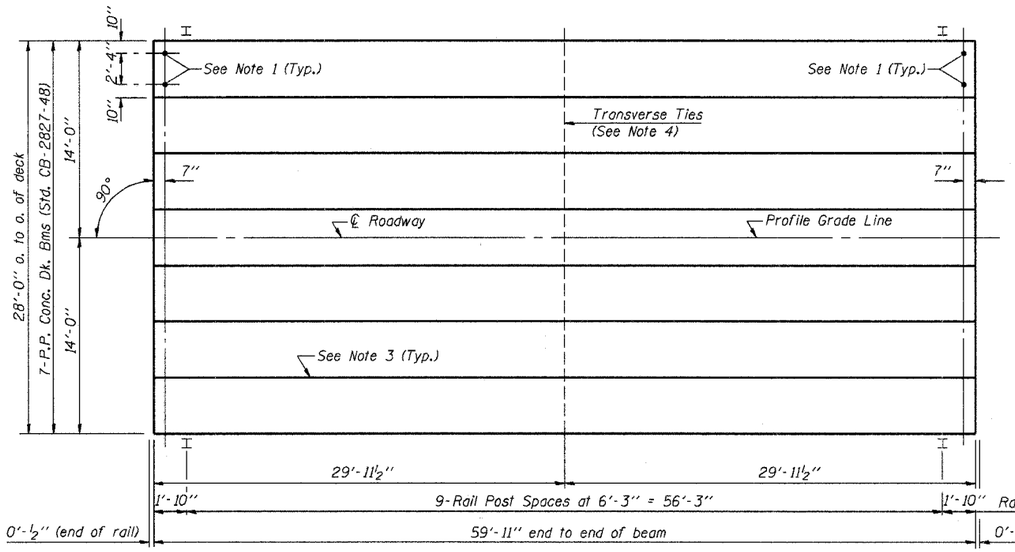
STATION 31+37

GP-1 (04-04-05)

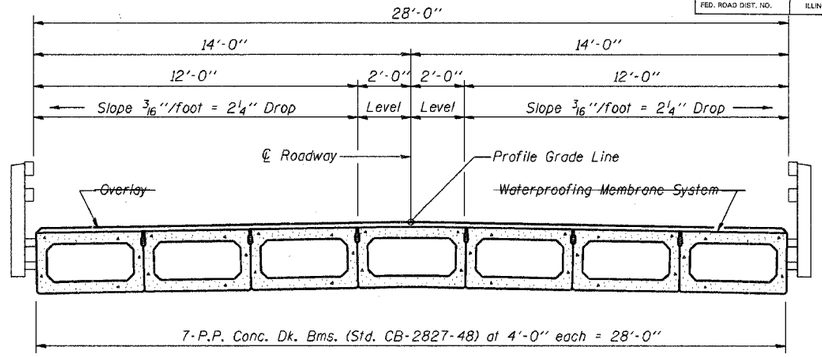
F.A.S. ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET
	05-06129-00-BR	CRAWFORD	9	4
STA.	TO STA.			
FED. ROAD DIST. NO.	ILLINOIS	PROJECT		



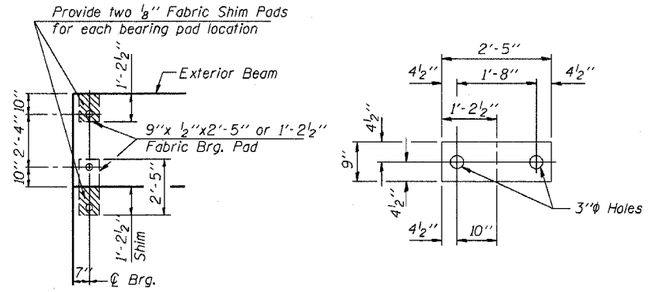
TYPICAL ELEVATIONS



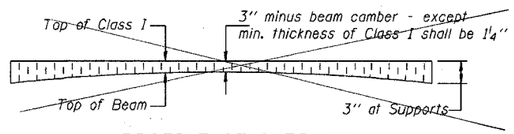
PLAN



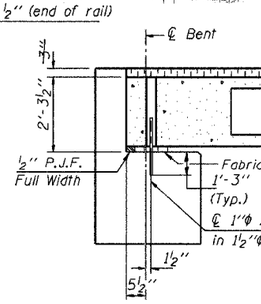
CROSS SECTION



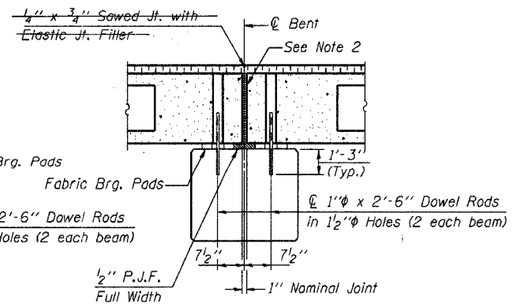
½" FABRIC BRG. PAD DETAILS



PROFILE OF OVERLAY



SECTION AT ABUTS.
(Along ℄ Beams)



SECTION AT PIERS
(Along ℄ Beams)

NOTES

1. 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.
2. Nominal 1" joint at ℄ Pier shall be filled with non-shrink grout.
3. Longitudinal keys shall be grouted WITH NON-SHRINK GROUT
4. The 1" ϕ rods in the transverse tie assembly shall be tightened to a snug fit and the threads set. Pockets that receive transverse tie bar outside shall be filled with grout after transverse tie assembly is in place.

QUANTITIES FOR ONE SPAN

P.P. Conc. Dk. Bm. 27" Dp.	1680 Sq. Ft.
Steel Railing	120 Ft.
~~Waterproofing Membrane System~~	~~186.7 Sq. Yds.~~
~~Portland Cement Mortar Fairing Course~~	~~360 Ft.~~

Note: Quantity of overlay for one span = 21.9 Tons

Illinois Department of Transportation

PASSED APRIL 4, 2005
Thomas S. Domagalski
Engineer of Bridge Design
APPROVED APRIL 4, 2005
Ralph E. Anderson
Engineer of Bridges and Structures

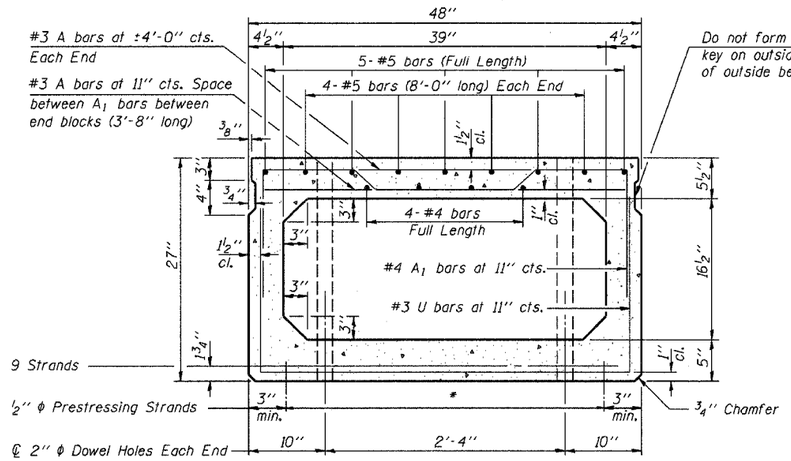
ISSUED 1-1-05

P.P.C. DECK BEAM SUPERSTRUCTURE

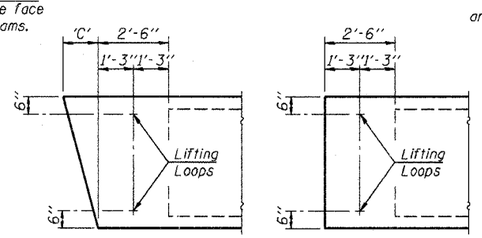
28' RDWY.	27" BMS.	60' SPAN	0° SKEW

STANDARD CS-2827-60

F.A.S. ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET
	05-06129-00-BR	CRAWFORD	9	5
STA.	TO STA.			
FED. ROAD DIST. NO.	ILLINOIS	PROJECT		

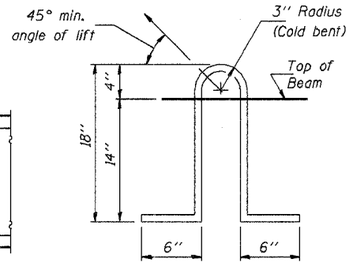


CROSS SECTION
(40' SPAN)



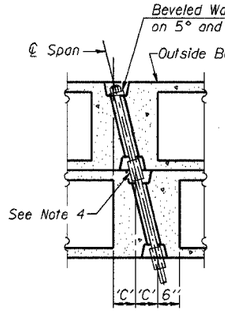
END BLOCK DETAILS

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.

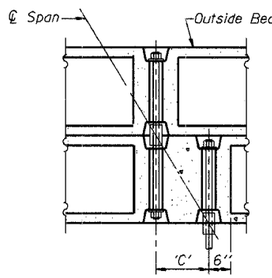


LIFTING LOOP DETAIL

Lifting loops shall be 3, ½''φ-270 ksi strands, as shown. Alternate approved lifting devices are also acceptable.



PARTIAL PLAN TRANSVERSE TIE ASSEMBLY
('D'=0°, 5° and 10°)



PARTIAL PLAN TRANSVERSE TIE ASSEMBLY
('D'=15°, 20°, 25° and 30°)

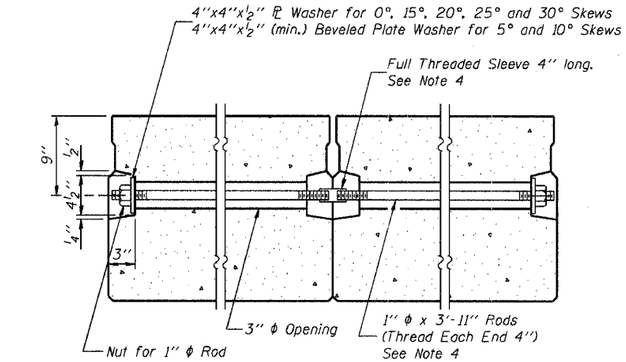
DIMENSION 'C'

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

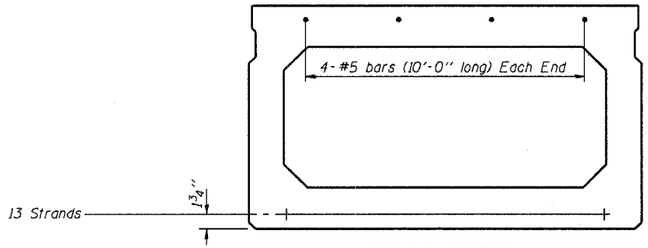
* TRANSVERSE STRAND PLACEMENT GUIDELINES

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 ½''.
4. The minimum clearance from strand to void shall be 1½''.

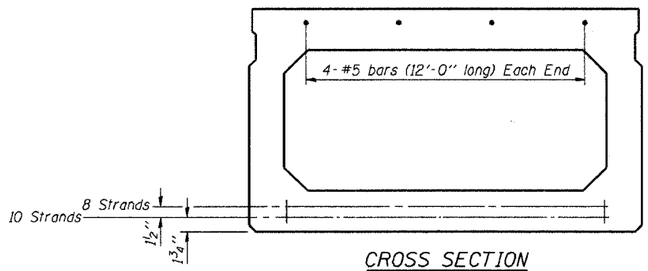
Vertical placement of strands shall not be adjusted to satisfy the above guidelines.



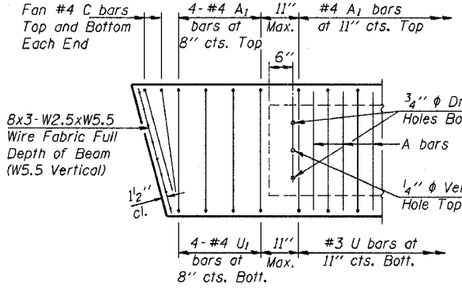
SECTION ALONG TRANSVERSE TIE ASSEMBLY
(REQUIRED FOR 50' & 60' SPANS ONLY)



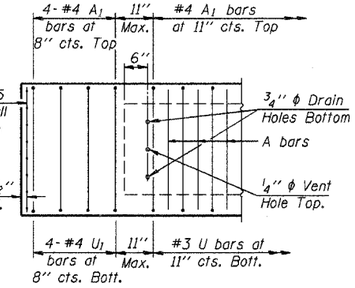
CROSS SECTION
(50' SPAN)



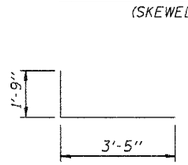
CROSS SECTION
(60' SPAN)



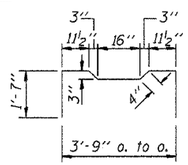
END REINFORCEMENT
(SKEWED)



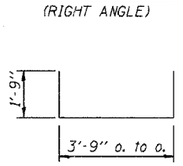
END REINFORCEMENT
(RIGHT ANGLE)



BAR C**



BAR A1



BARS U & U1

NOTES

1. Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270.
2. The nominal diameter shall be ½'' 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. On 0°, 5° and 10° skews, alternate appoved transverse tie rods of increased segmental length are acceptable.
5. Rail Post anchor devices shall be cast into outside beam as elsewhere specified.
6. 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 ¼''.
7. 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.

DESIGN STRESSES

f'_c = 5,000 p.s.i.
f'_{ci} = 4,000 p.s.i.
f'_s = 270,000 p.s.i. (½'' φ Strand)
f_{si} = 201,960 p.s.i. (½'' φ Strand)
f_y = 60,000 p.s.i.

MIN. BAR LAP

#4 bars = 1'-4''
#5 bars = 1'-8''

NOTE
The std. reinf. and dimensions shown on the 40' span cross section is typical for all spans, except as shown.

**NOTE:
The following number of C bars shall be used:

Skew	No.
5° and 10°	1
15° and 20°	2
25° and 30°	3

Illinois Department of Transportation

PASSED APRIL 4, 2005
Thomas J. Domagalski
Engineer of Bridge Design
APPROVED APRIL 4, 2005
Ralph E. Anderson
Engineer of Bridges and Structures

ISSUED 1-1-1981

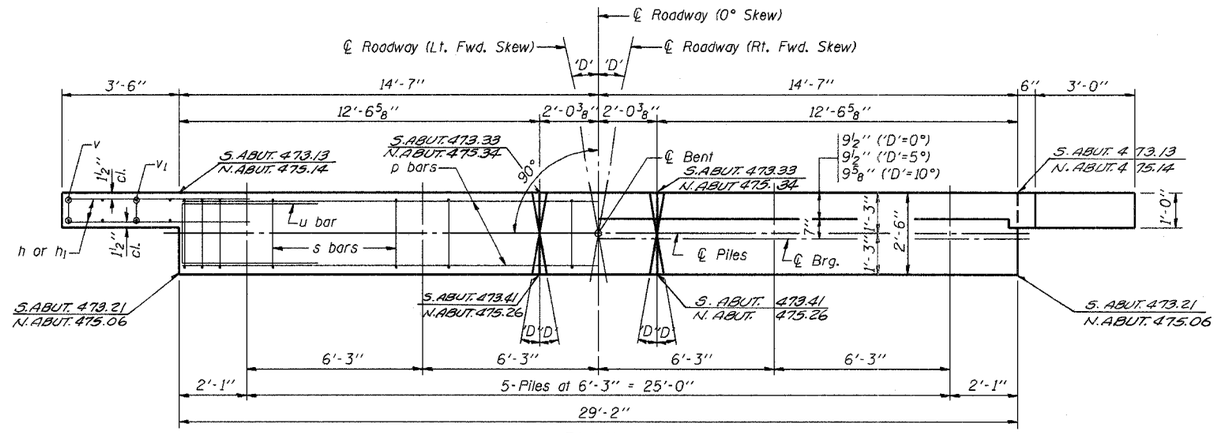
P.P.C. DECK BEAM DETAILS

28' ROADWAY | 27'' x 48'' BEAMS

STANDARD CB-2827-48

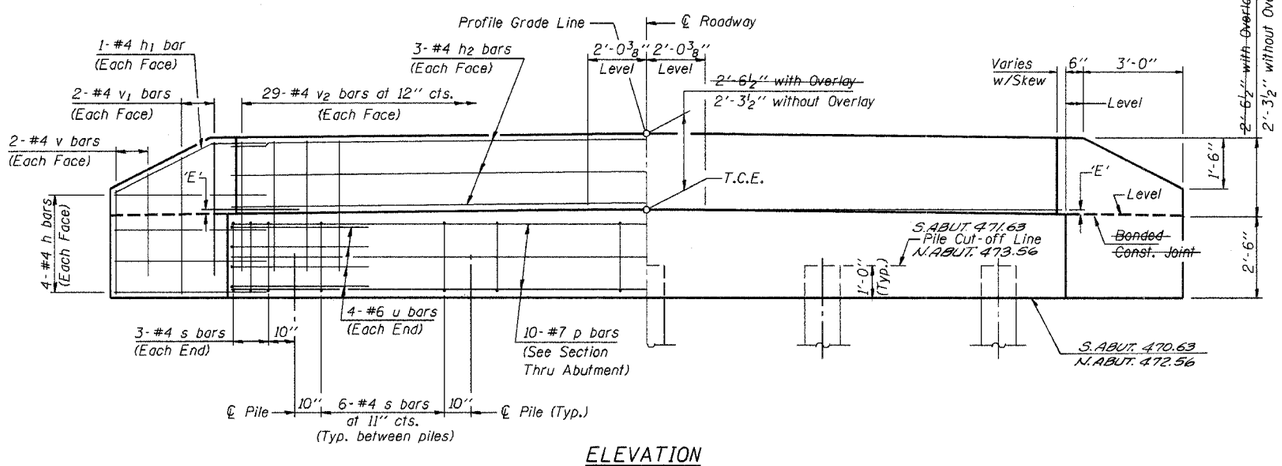
CONTRACT NO. 95445

F.A.S. ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET
	05-06/29-00-BR	CRAWFORD	9	6
STA.	TO STA.			
FED. ROAD DIST. NO.	ILLINOIS	PROJECT		

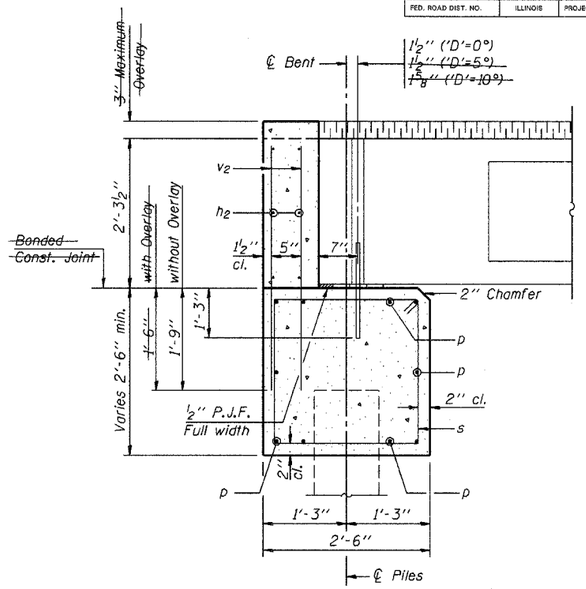


PLAN

('D'=Designated Skew Angle)



ELEVATION



SECTION THRU ABUTMENT

(At Right Angles)

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

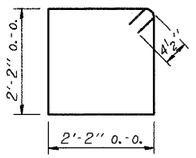
1. The Backwall and the portion of the Wingwalls above the bonded construction joint shall be cast against the in-place beam.
2. Reinforcement bars shall conform to the requirements of A.A.S.H.T.O. M-31 or M-322, Grade 60.
3. Space reinforcement in cap to miss anchor bolts.

MAXIMUM PILE LOADS

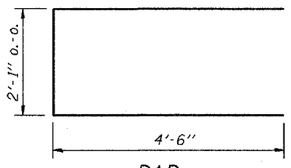
SPAN	TONS
40'	29
50'	33
60'	37

DESIGN STRESSES

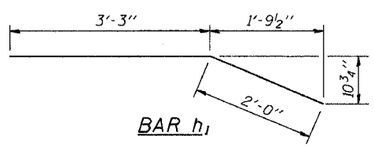
f'c = 3,500 psi
fy = 60,000 psi



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	28'-10"	——
p	10	#7	28'-10"	——
s	30	#4	9'-5"	□
u	8	#6	11'-1"	⌐
v	8	#4	3'-2"	——
v1	8	#4	4'-2"	——
v2	58	#4	3'-11"	——
Concrete Structures			10.4 Cu. Yds.	
Reinforcement Bars			1290 Lb.	

Illinois Department of Transportation

PASSED APRIL 4, 2005
Thomas S. Domagalski
Engineer of Bridge Design
APPROVED APRIL 4, 2005
Ralph E. Anderson
Engineer of Bridges and Structures

ISSUED 1-1-1981

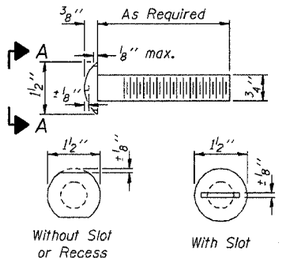
P.P.C. DECK BEAMS
PILE BENT ABUTMENT

28' RDWY.	27" BMS.	'D'=0°, 5° OR 10°

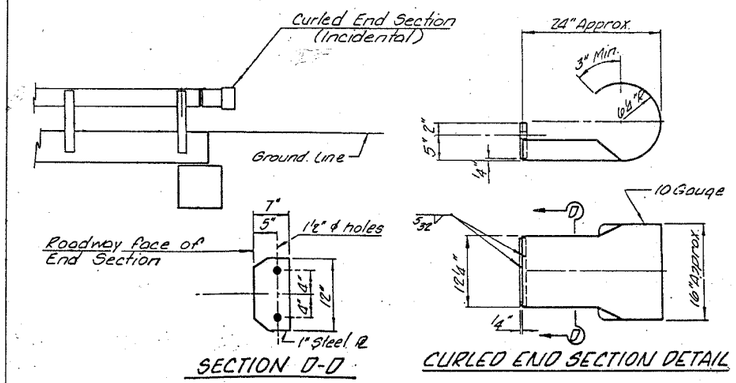
STANDARD CA-2827-10

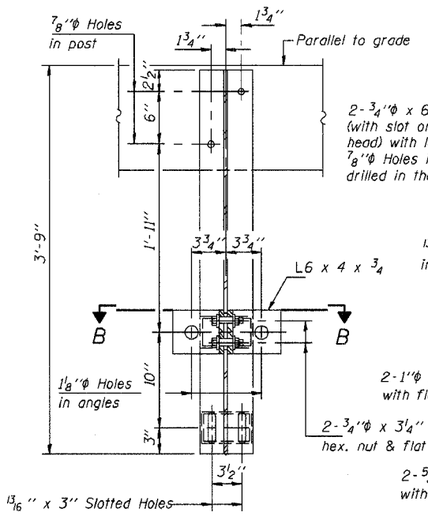
CONTRACT NO. 95445

F.A.S. ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET
	05-06129-00-BR	CRAWFORD	9	7
STA.	TO STA.			
FED. ROAD DIST. NO.	ILLINOIS	PROJECT		

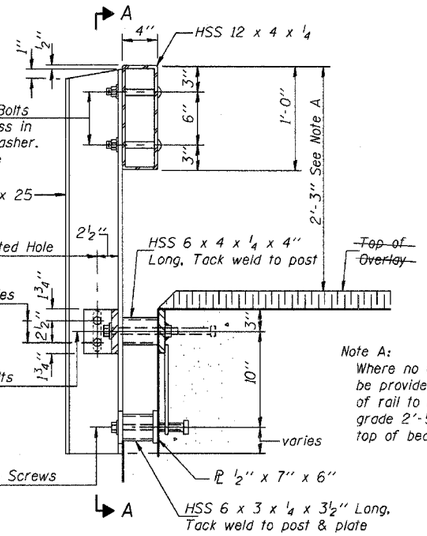


VIEW A-A
ROUND HEAD BOLT



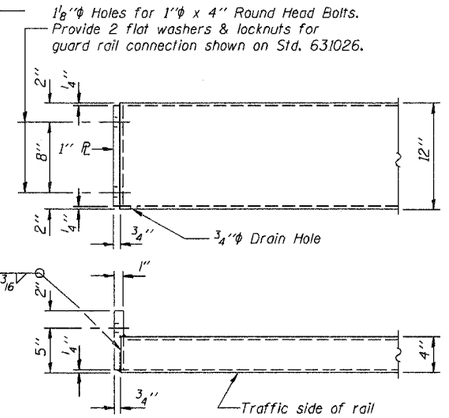


SECTION A-A

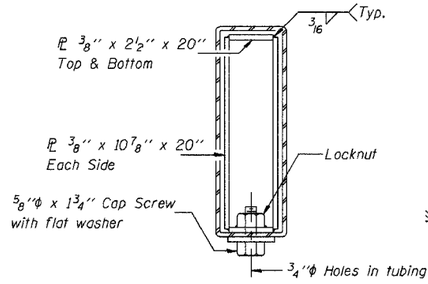


SECTION AT RAIL POST

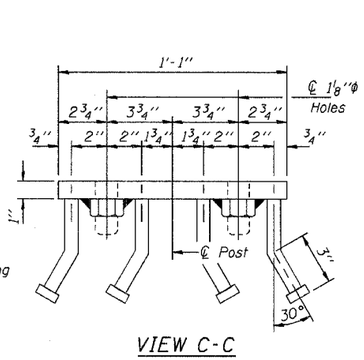
Note A:
Where no overlay is to be provided, adjust top of rail to lay parallel to grade 2'-5" max. above top of beam.



END OF RAIL DETAILS



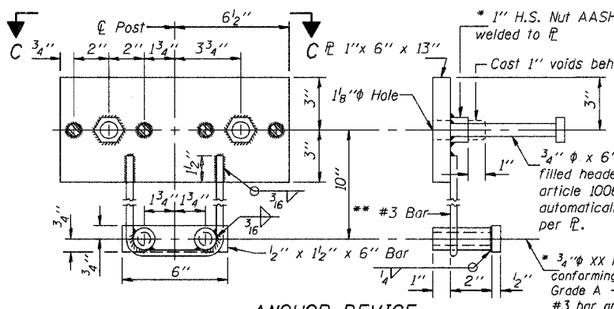
SECTION AT RAIL SPLICE



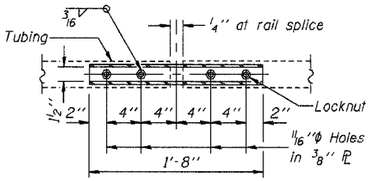
VIEW C-C

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

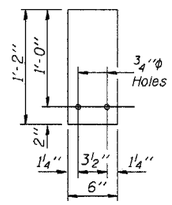
** Whenever the lower insert assemblies interfere with strand locations, the #3 bars shall be cut and adjusted in order to allow raising or lowering of the lower inserts. Maximum adjustment not to exceed 1/2".



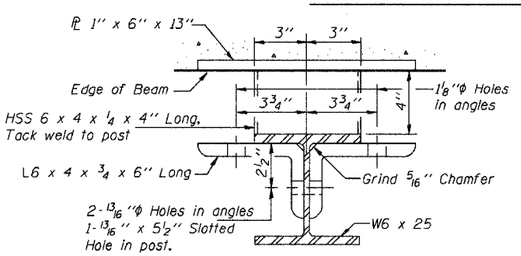
ANCHOR DEVICE



PLAN-BOTT. SPLICE ℙ
TYPICAL



1/4" SHIM PLATE



SECTION B-B

REVISED

Illinois Department of Transportation
PASSED APRIL 4, 2005
Thomas S. Domagalski
Engineer of Bridge Design
APPROVED APRIL 4, 2005
Ralph E. Anderson
Engineer of Bridges and Structures
ISSUED 1-1-98

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 1/8" fabric bearing pads shall be placed between the plates and concrete.

The 3/4"ϕ 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 (f)(2) of the Standard Specifications. The 1"ϕ 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"ϕ cap screws in bottom of posts shall be tightened to a snug fit only.

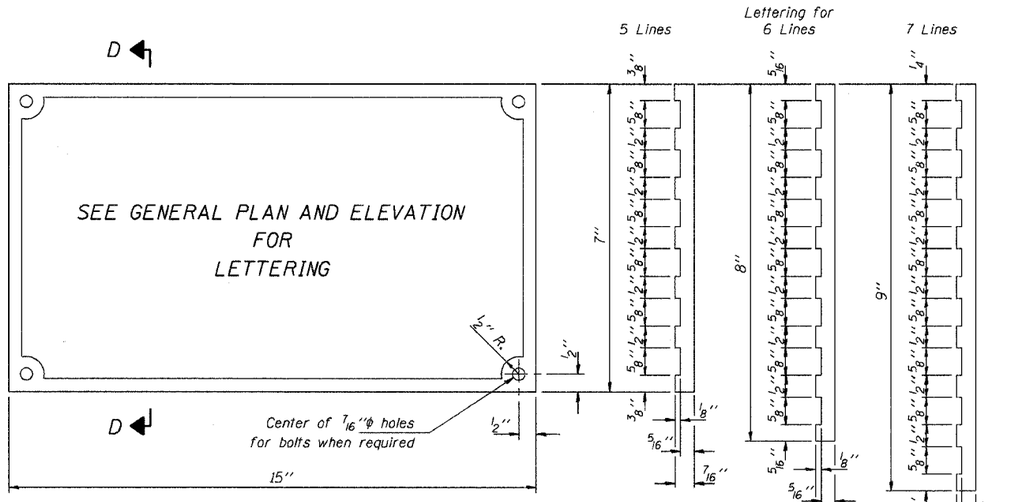
The maximum allowable rail post spacing shall be 10'-6". The rail post spacing shown elsewhere in the plans is based on the allowable spacing for another type of rail. When this type of rail is used, the number of posts may be decreased and the post spacing increased to provide equal post spaces of 10'-6"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

STEEL RAILING, TYPE S-1

STANDARD CR-TS1

CONTRACT NO. 95425

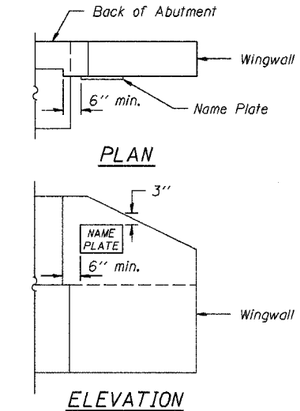
F.A.S. ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET
	05-06129-00-BR	CRAWFORD	9	8
STA.	TO STA.			
FED. ROAD DIST. NO.	ILLINOIS	PROJECT		



DETAIL OF NAME PLATE

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

SECTIONS D-D



LOCATION OF NAME PLATE

Illinois Department of Transportation

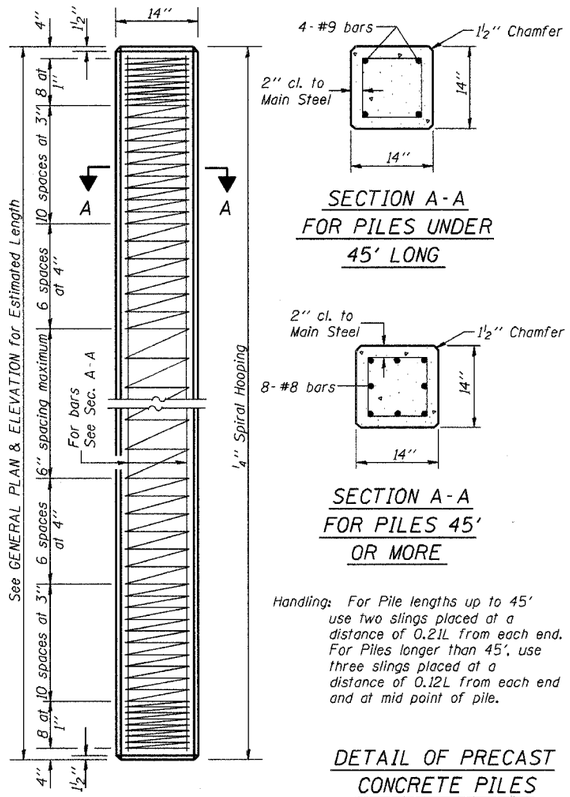
PASSED APRIL 4, 2005
Thomas J. Domagalski
Engineer of Bridge Design
APPROVED APRIL 4, 2005
Ralph E. Anderson
Engineer of Bridges and Structures

ISSUED 7-1-1995

NAME PLATE
STANDARD CN

CONTRACT NO. 95445

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET
	05-06129-00-BR	CRAWFORD	9	9
STA.	TO STA.			
FED. ROAD DIST. NO.	ILLINOIS	PROJECT		

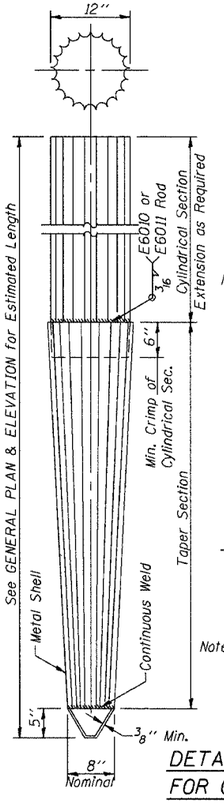


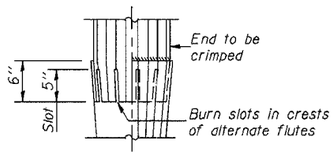
SECTION A-A FOR PILES UNDER 45' LONG

SECTION A-A FOR PILES 45' OR MORE

Handling: For Pile lengths up to 45' use two slings placed at a distance of 0.21L from each end. For Piles longer than 45', use three slings placed at a distance of 0.12L from each end and at mid point of pile.

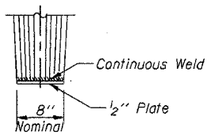
DETAIL OF PRECAST CONCRETE PILES





FIELD CRIMP DETAIL

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



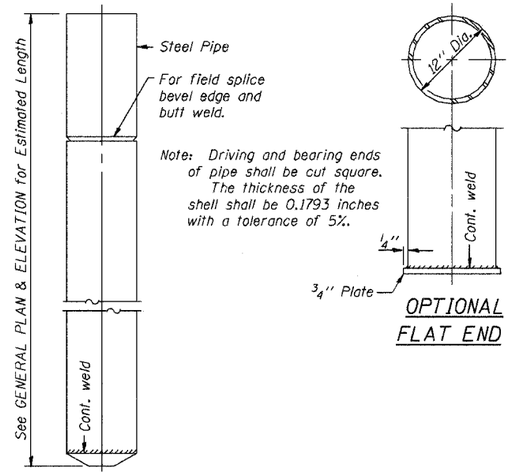
OPTIONAL FLAT END

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



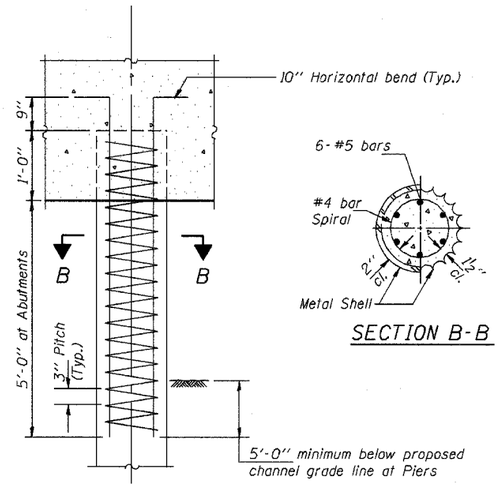
Note: Driving and bearing ends of pipe shall be cut square. The thickness of the shell shall be 0.1793 inches with a tolerance of 5%.

OPTIONAL FLAT END

DETAIL OF CYLINDRICAL STEEL SHELL FOR CAST IN PLACE CONCRETE PILES

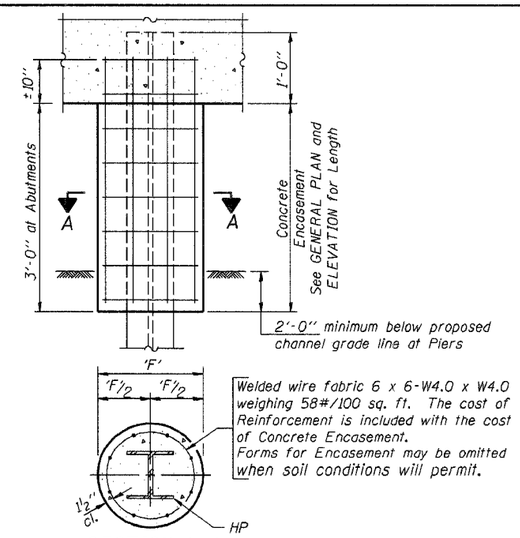
Reinforcement cage shall be omitted when Concrete Encasement is provided.

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



SECTION B-B

DETAIL OF REINFORCEMENT FOR METAL SHELLS

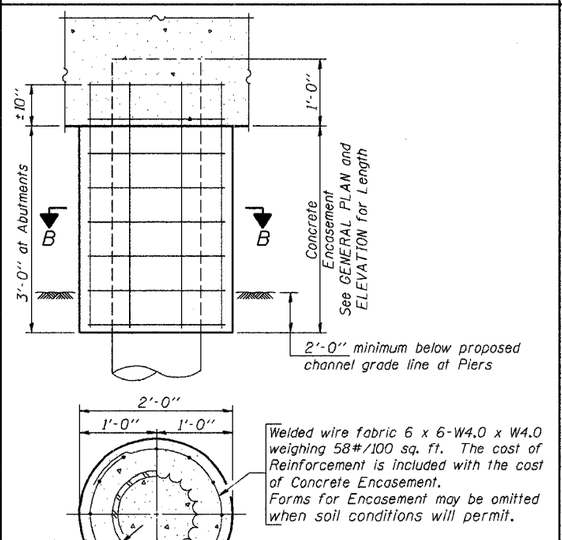


Welded wire fabric 6 x 6-W4.0 x W4.0 weighing 58#/100 sq. ft. The cost of Reinforcement is included with the cost of Concrete Encasement. Forms for Encasement may be omitted when soil conditions will permit.

SECTION A-A

Pile	'F'
HP8	1'-6"
HP10	1'-9"
HP12	2'-0"

DETAIL OF HP PILE ENCASEMENT



Welded wire fabric 6 x 6-W4.0 x W4.0 weighing 58#/100 sq. ft. The cost of Reinforcement is included with the cost of Concrete Encasement. Forms for Encasement may be omitted when soil conditions will permit.

SECTION B-B

DETAIL OF METAL SHELL PILE ENCASEMENT

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.

Illinois Department of Transportation

PASSED FEBRUARY 1, 2000
Thomas J. Domagalski
Engineer of Bridge Design
APPROVED FEBRUARY 1, 2000
Ralph E. Anderson
Engineer of Bridges and Structures

ISSUED 1-1-98

PILE DETAILS

STANDARD CX-1