

TR	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
71	07-01114-00-BR	WHITE	13	1
FED. ROAD DIST. NO. 9 ILLINOIS				
PROJECT # BROS-193(34)			FED. AID PROJECT CONTRACT # 99321	
JOB # C-99-542-07			LIMEKILN CREEK	

323 W. 3RD ST.  
P.O. BOX 160  
MT. CARMEL, IL 62863  
PHONE: (618)-262-8651  
FAX: (618)-263-3327  
LEC JOB # H07L011WH

### INDEX OF SHEETS

SHEET NO.	DESCRIPTION
1	TITLE SHEET & SUMMARY OF QUANTITIES
2	PLAN & PROFILE, TYPICAL SECTIONS & GENERAL NOTES
3-4	ROADWAY CROSS SECTIONS
5-12	BRIDGE DESIGN
13	CURLED END SECTIONS & STONE RIPRAP DITCH DESIGN

**THE FOLLOWING STANDARDS ARE A PART OF THESE PLANS AND ARE INCLUDED IN THE PROPOSAL:**

000001-05	STANDARD SYMBOLS, ABBREVIATIONS & PATTERNS
280001-04	TEMPORARY EROSION CONTROL SYSTEMS
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

CODE NO.	ITEM	UNIT	QUANTITY
20100500	TREE REMOVAL, ACRES	ACRE	0.10
20200100	EARTH EXCAVATION	CU YD	410.00
20300100	CHANNEL EXCAVATION	CU YD	301.00
20400800	FURNISHED EXCAVATION	CU YD	1261.00
25001000	SEEDING, CLASS 2 (SPECIAL)	ACRE	0.50
28000300	TEMPORARY DITCH CHECKS	EACH	3.00
28001000	AGGREGATE (EROSION CONTROL)	TON	15.00
28100807	STONE DUMPED RIPRAP, CLASS A4	TON	640.00
28102600	STONE RIPRAP DITCH	TON	105.00
40200800	AGGREGATE SURFACE COURSE, TYPE B	TON	360.00
50100100	REMOVAL OF EXISTING STRUCTURES	EACH	1.00
50300225	CONCRETE STRUCTURES	CU YD	21.40
50300280	CONCRETE ENCASEMENT	CU YD	2.10
50400505	PRECAST PRESTRESSED CONCRETE DECK BEAMS (27" DEPTH)	SQ FT	1440.00
50800105	REINFORCEMENT BARS	POUND	2620.00
50900205	STEEL RAILING, TYPE S1	FOOT	120.00
51201400	FURNISHING STEEL PILES HP10X42	FOOT	384.00
51202305	DRIVING PILES	FOOT	384.00
51500100	NAME PLATES	EACH	1.00
54200220	PIPE CULVERTS, CLASS D, TYPE 1 15"	FOOT	40.00
67100100	MOBILIZATION	L SUM	1.00

DESIGN DESIGNATION:  
DESIGN SPEED: 30 MPH  
HIGHWAY CLASS - LOCAL ROAD  
EXISTING STRUCTURE NO.: 097-3053  
PROPOSED STRUCTURE NO.: 097-3263  
CURRENT A.D.T. = 50  
CONTRACT NO. 99321

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

## STATE OF ILLINOIS

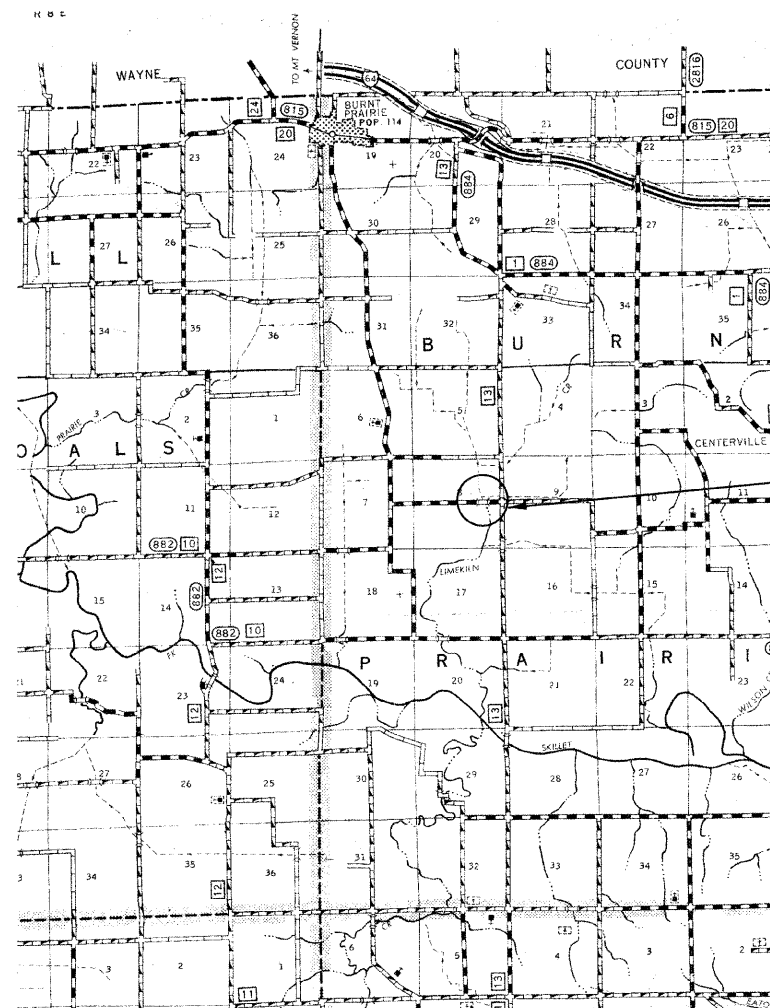
### DEPARTMENT OF TRANSPORTATION

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

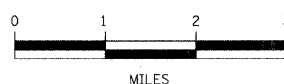
T.R. 71 WHITE COUNTY SECTION 07-01114-00-BR

PROJECT NO. BROS-193(34) JOB NO. C-99-542-07

CONTRACT # 99321 LIMEKILN CREEK



LAYOUT  
APPROXIMATE SCALE 1 INCH = 1 MILE



GROSS LENGTH	600.00 FT	0.114 MILES
OMISSIONS	0.00 FT	0.000 MILES
NET LENGTH	600.00 FT	0.114 MILES

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

SECTION 07-01114-00-BR  
BEGINS STATION 2+00

STATION 5+00, STRUCTURE NO. 097-3263  
A 60' LONG SINGLE SPAN PRECAST  
PRESTRESSED CONCRETE DECK BEAM  
BRIDGE (27" DEPTH), 24' ROADWAY, 0.00%  
GRADE, 25° RT FWD SKEW.

SECTION 07-01114-00-BR  
ENDS STATION 8+00

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

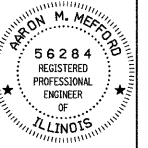
APPROVED 1/11/08  
*Brian A. Kay*  
COUNTY ENGINEER

PASSED Jan. 22, 2008  
*Dennis W. Hillman*  
ENGINEER OF LOCAL ROADS AND STREETS

RELEASING FOR BID  
BASED ON LIMITED  
REVIEW: Jan 22, 2008  
*Mary C. Lamie*  
MARY C. LAMIE, P.E.  
DEPUTY DIRECTOR OF HIGHWAY  
REGION FIVE ENGINEER



PROFESSIONAL DESIGN FIRM  
LAND SURVEY & PROFESSIONAL ENGINEERING CORPORATION  
184-00887  
(62-032435)(35-002769)



AARON M. MEFFORD  
NAME  
*Aaron M. Mefford*  
SIGNATURE  
1-11-08  
DATE  
11-30-09  
EXPIRES

TOWNSHIP ROUTE 71  
OVER LIMEKILN CREEK  
WHITE COUNTY, ILLINOIS

SHEET TITLE:

TITLE SHEET

SCALE:	VARIABLE
BY:	AMM
DATE:	12/17/07
REV.	

1 OF 13

SHEETS

SHEET NO.

1

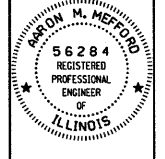
TR	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
71	07-01114-00-BR	WHITE	13	2
FED. ROAD DIST. NO. 9 ILLINOIS		LIMEKILN CREEK		
PROJECT * BROS-193134		CONTRACT * 99321		
LEC JOB * H071011WH				

323 W. 3RD ST.  
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(812)-386-2812



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LAND SURVEY & PROFESSIONAL ENGINEERING CORPORATION  
184-00087  
(62-032435)(35-002769)



AARON M. MEFFORD  
NAME  
*Aaron Mefford*  
SIGNATURE  
1-14-08  
DATE  
11-30-09  
EXPIRES

TOWNSHIP ROUTE 71  
OVER LIMEKILN CREEK  
WHITE COUNTY, ILLINOIS

SHEET TITLE:

PLAN & PROFILE

SCALE:	VARIES
BY:	AMM
DATE:	12/07
REV:	

2 OF 13 SHEETS

SHEET NO. 2

NOTE: CONSTRUCTION TRANSITIONS  
STA. 2+00 TO STA 2+50  
STA 7+50 TO STA 8+00  
ALL QUANTITIES ARE INCLUDED IN THE PROPOSAL

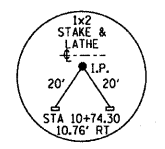
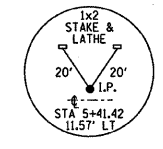
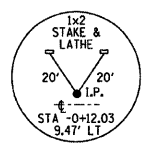
**GENERAL NOTES:**

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

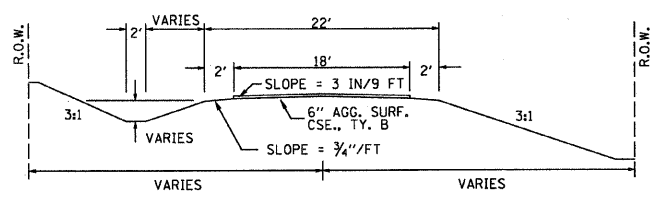
THE WORK INVOLVED ON THIS SECTION CONSISTS OF THE REMOVAL OF THE EXISTING STRUCTURE, THE CONSTRUCTION OF A 60 FOOT LONG SINGLE SPAN PRECAST, PRESTRESSED CONCRETE DECK BEAM BRIDGE, EARTH APPROACHES, AGGREGATE SURFACE COURSE AND OTHER MISCELLANEOUS ITEMS NECESSARY TO COMPLETE THIS SECTION.

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

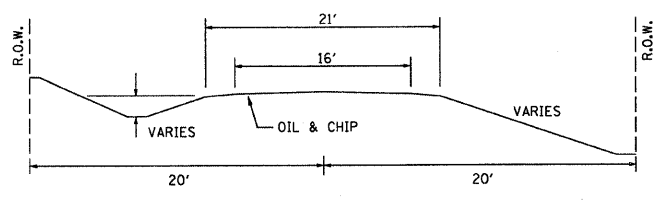
IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CONTACT ALL THE UTILITIES, AFFECTING THE PROJECT, PRIOR TO CONSTRUCTION.



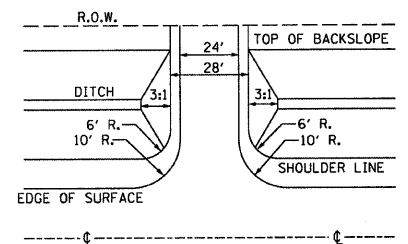
TYPICAL CROSS SECTION PROPOSED



TYPICAL CROSS SECTION EXISTING



FIELD ENTRANCE DETAIL



NOTE: CONSTRUCT SPECIAL DITCH

- STA 2+00 TO STA 4+84 RT
- STA 3+00 TO STA 4+60 LT
- STA 5+20 TO STA 7+50 RT
- STA 5+06 TO STA 6+00 LT

NOTE: CONSTRUCT STONE RIPRAP DITCH

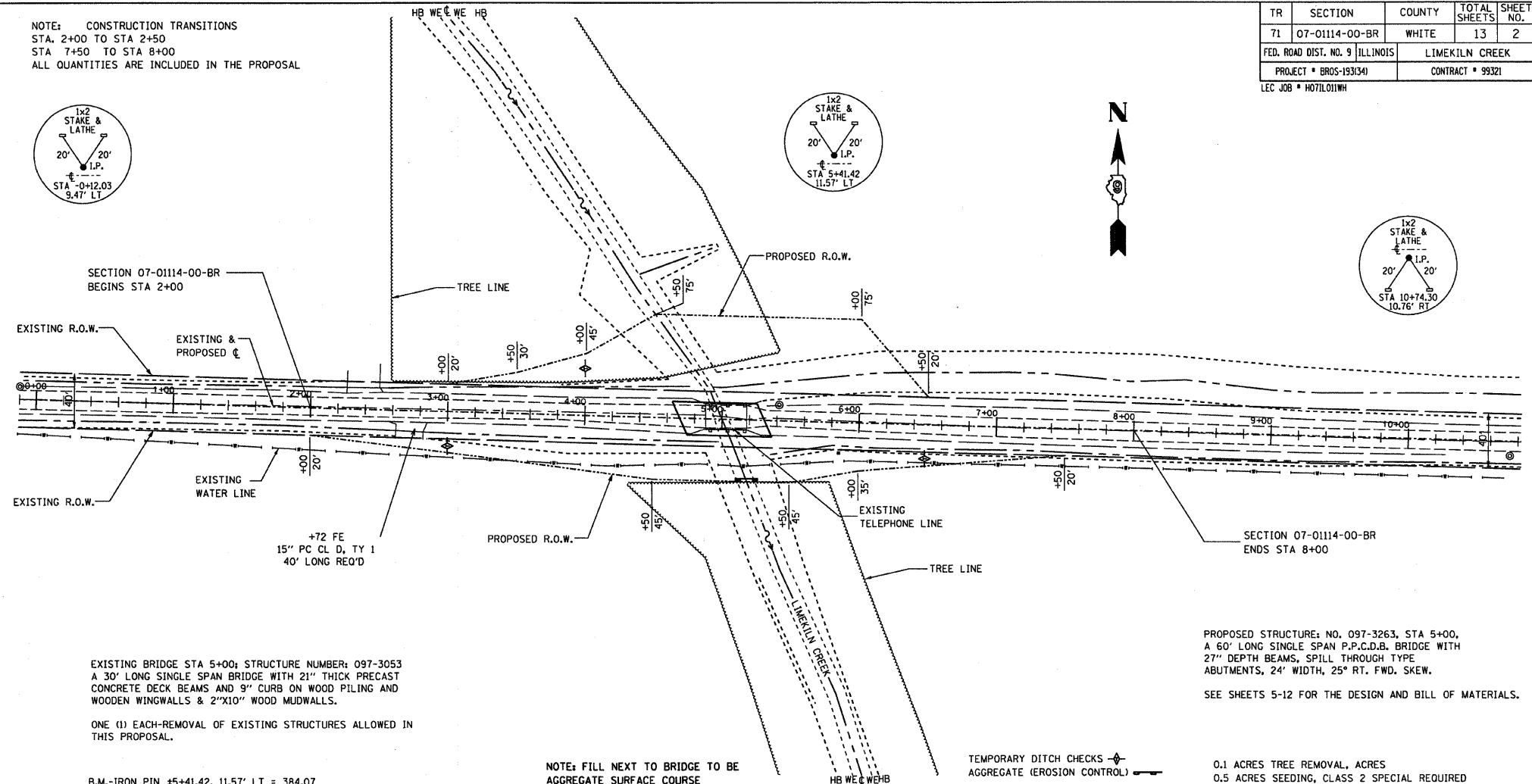
- STA 4+50 TO STA 4+84 RT (0.62 TON/LIN FT)
- STA 4+50 TO STA 4+60 LT (0.62 TON/LIN FT)
- STA 5+20 TO STA 5+50 RT (0.62 TON/LIN FT)
- STA 5+06 TO STA 6+00 LT (0.62 TON/LIN FT)
- 105 TON STONE RIPRAP DITCH ALLOWED IN PROPOSAL.

SEE SHEET NO. 13 FOR STONE RIPRAP DITCH DETAIL.

UTILITIES:  
J.U.L.I.E. 1-800-892-0123

BROWNSVILLE WATER  
1-618-265-3820

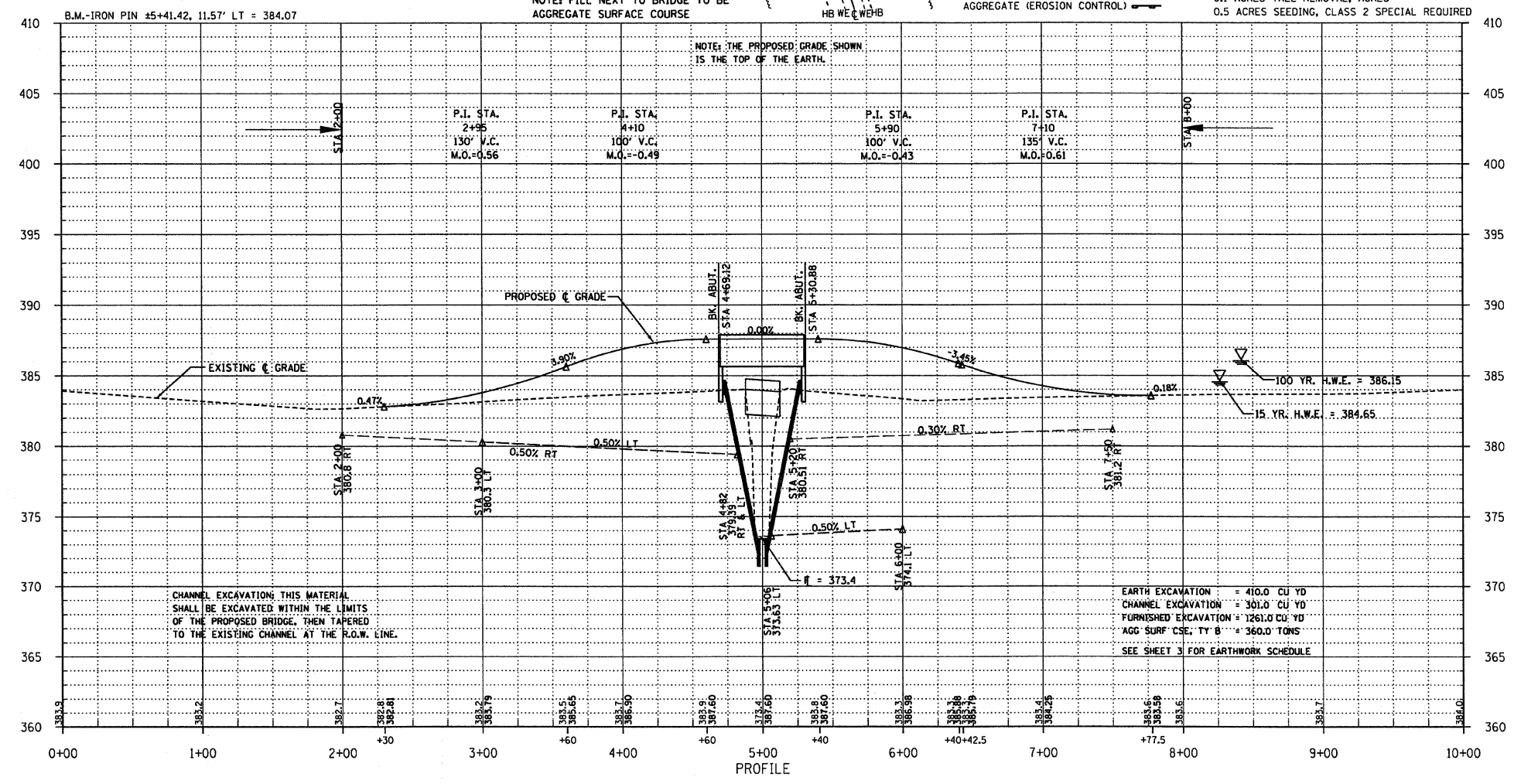
VERIZON  
1-618-395-6189



EXISTING BRIDGE STA 5+00; STRUCTURE NUMBER: 097-3053  
A 30' LONG SINGLE SPAN BRIDGE WITH 21" THICK PRECAST CONCRETE DECK BEAMS AND 9" CURB ON WOOD PILING AND WOODEN WINGWALLS & 2"x10" WOOD MUDWALLS.

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

NOTE: FILL NEXT TO BRIDGE TO BE AGGREGATE SURFACE COURSE  
TEMPORARY DITCH CHECKS -> AGGREGATE (EROSION CONTROL)  
0.1 ACRES TREE REMOVAL, ACRES 0.5 ACRES SEEDING, CLASS 2 SPECIAL REQUIRED



CHANNEL EXCAVATION THIS MATERIAL SHALL BE EXCAVATED WITHIN THE LIMITS OF THE PROPOSED BRIDGE, THEN TAPERED TO THE EXISTING CHANNEL AT THE R.O.W. LINE.

EARTH EXCAVATION = 410.0 CU YD  
CHANNEL EXCAVATION = 301.0 CU YD  
FURNISHED EXCAVATION = 1261.0 CU YD  
AGG SURF CSE, TY B = 360.0 TONS  
SEE SHEET 3 FOR EARTHWORK SCHEDULE

TR	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
71	07-01114-00-BR	WHITE	13	3
FED. ROAD DIST. NO. 9 ILLINOIS		LIMEKILN CREEK		
PROJECT * BR05-193(34)		CONTRACT * 99321		
LEC JOB * HD71011WH				

323 W. 3RD ST.  
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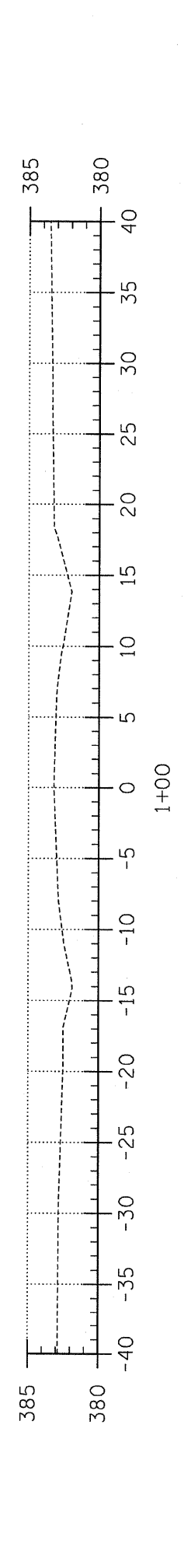
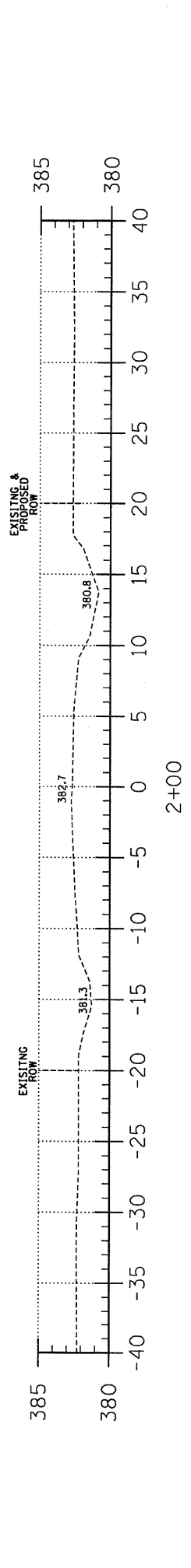
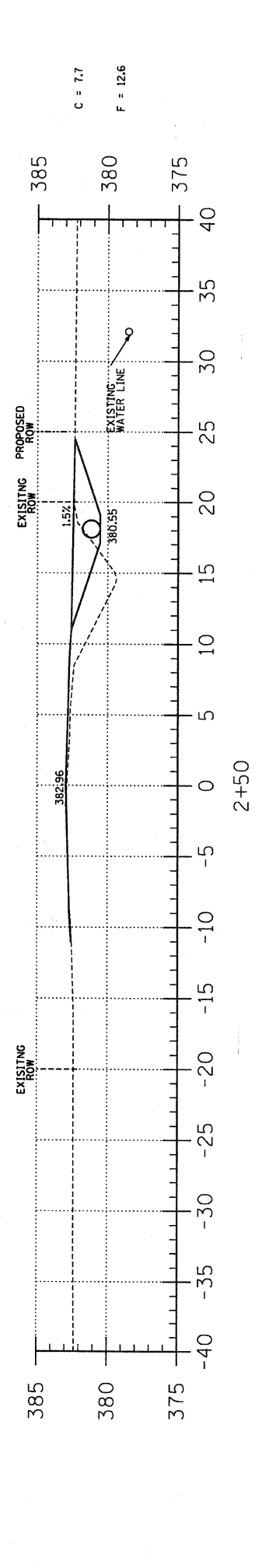
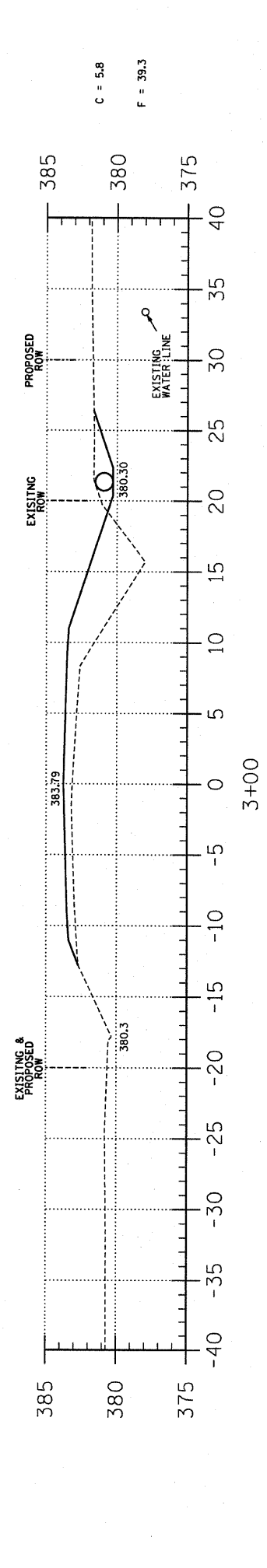
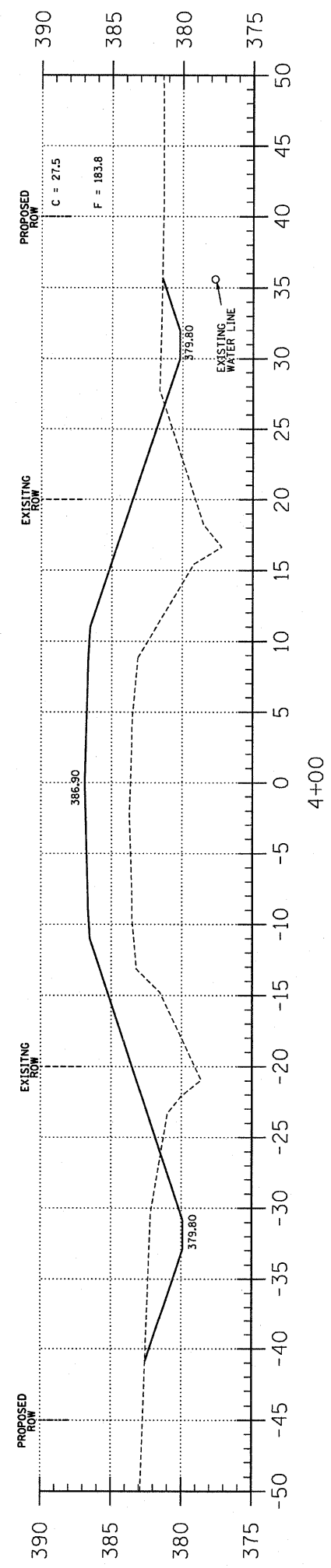
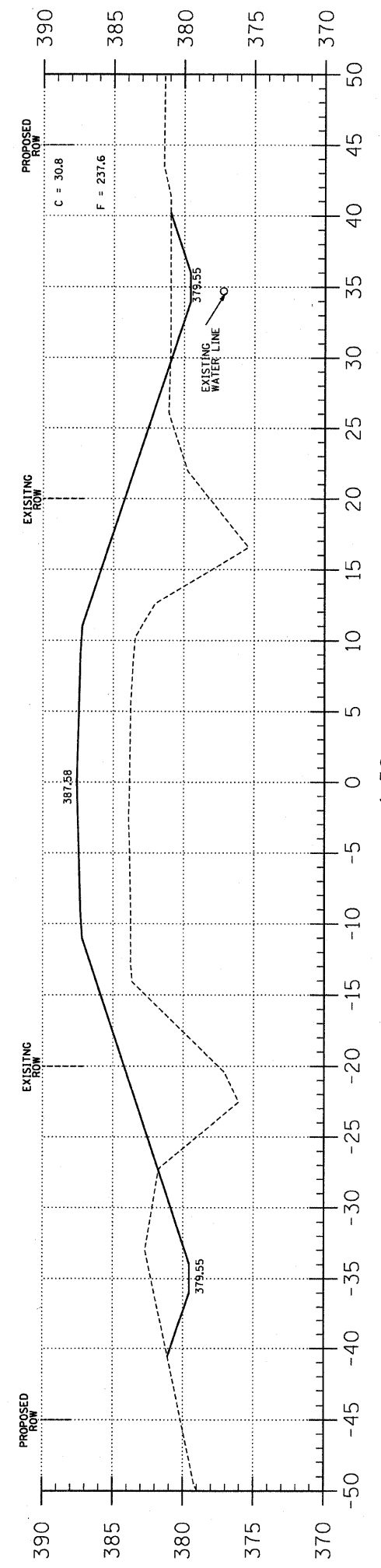
405 W. STATE ST  
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DESIGN FIRM  
LAND SURVEY &  
PROFESSIONAL  
ENGINEERING  
CORPORATION  
184-00087  
(62-032435)(35-002769)

AARON M. MEFFORD  
NAME  
SIGNATURE  
1-14-08  
DATE  
11-30-09  
EXPIRES

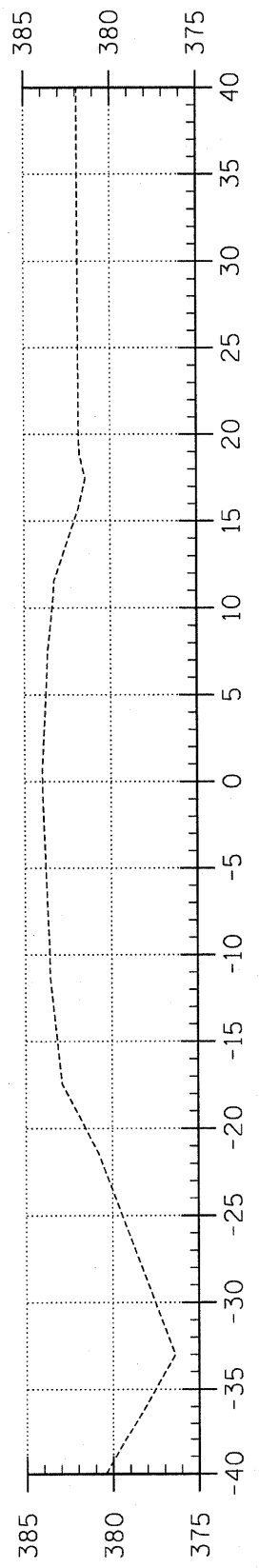
TOWNSHIP ROUTE 71  
OVER LIMEKILN CREEK  
WHITE COUNTY, ILLINOIS

SHEET TITLE:  
CROSS-SECTIONS  
SCALE: 1" = 5'  
BY: AMM  
DATE: 12/07  
REV:  
3 OF 13  
SHEETS  
SHEET NO.  
3

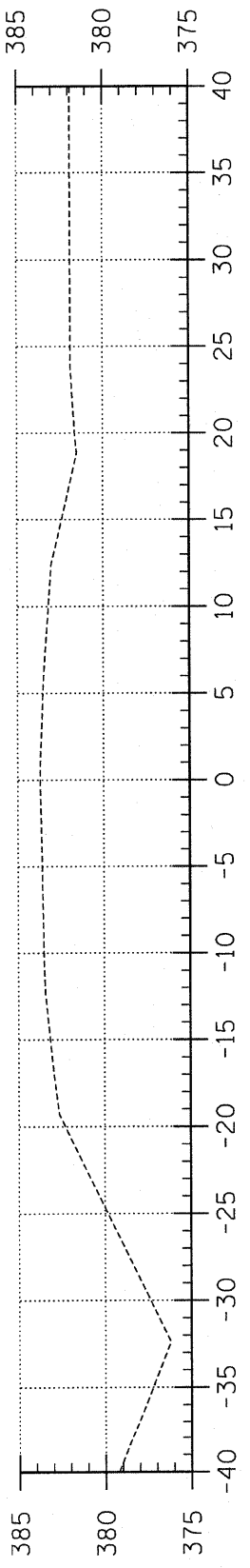


EARTHWORK SCHEDULE

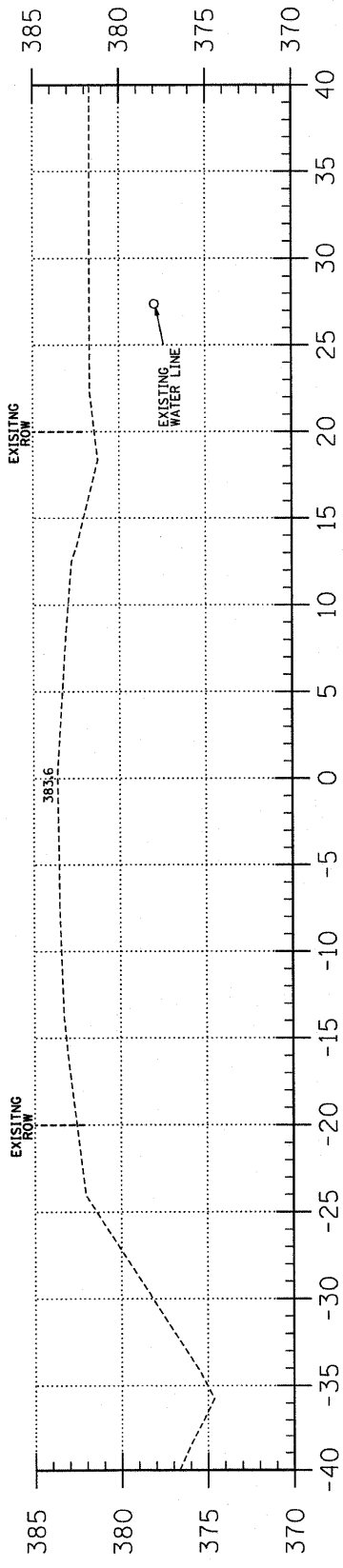
LOCATION	EARTH EXCAVATION	CHANNEL EXCAVATION	ESTIMATED UNSUITABLE MATERIAL	SUITABLE MATERIAL ADJUSTED FOR SHRINKAGE	EMBANKMENT	EARTHWORK BALANCE WASTE (+) OR SHORTAGE (-)
	CUBIC YARD	CUBIC YARD	CUBIC YARD	CUBIC YARD	CUBIC YARD	CUBIC YARD
STA 0+00 TO 4+69.1	135.2	0.0	0.0	101.4	931.9	-830.5
STA 4+69.1 TO 5+30.8	0.0	300.7	150.35	112.7	0.0	-12.7
STA 5+30.8 TO 10+00	274.5	0.0	0.0	205.9	731.1	-525.2
I FIELD ENTRANCE	0.0	0.0	0.0	0.0	17.5	-17.5
TOTAL	409.7	300.7	150.35	420.0	1680.5	-1260.5



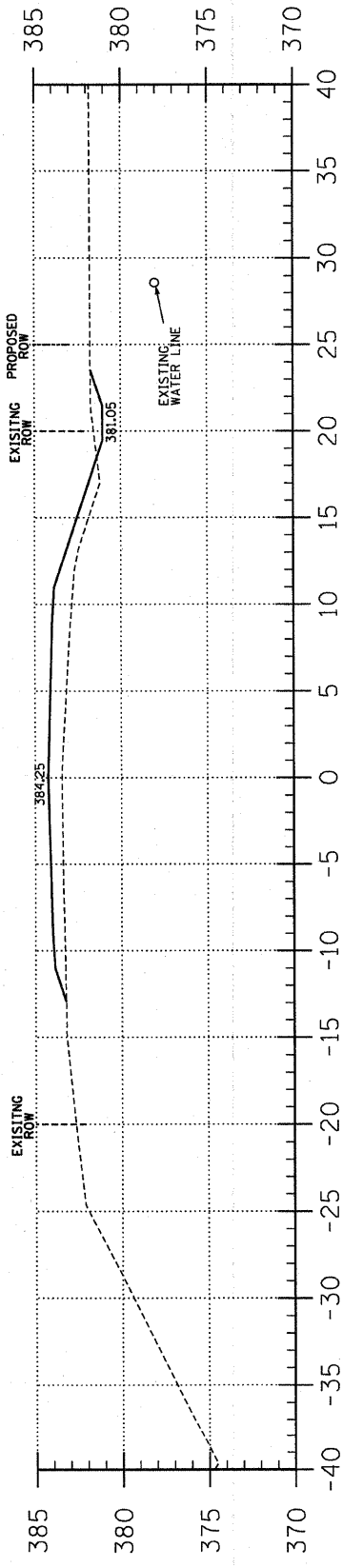
10+00



9+00

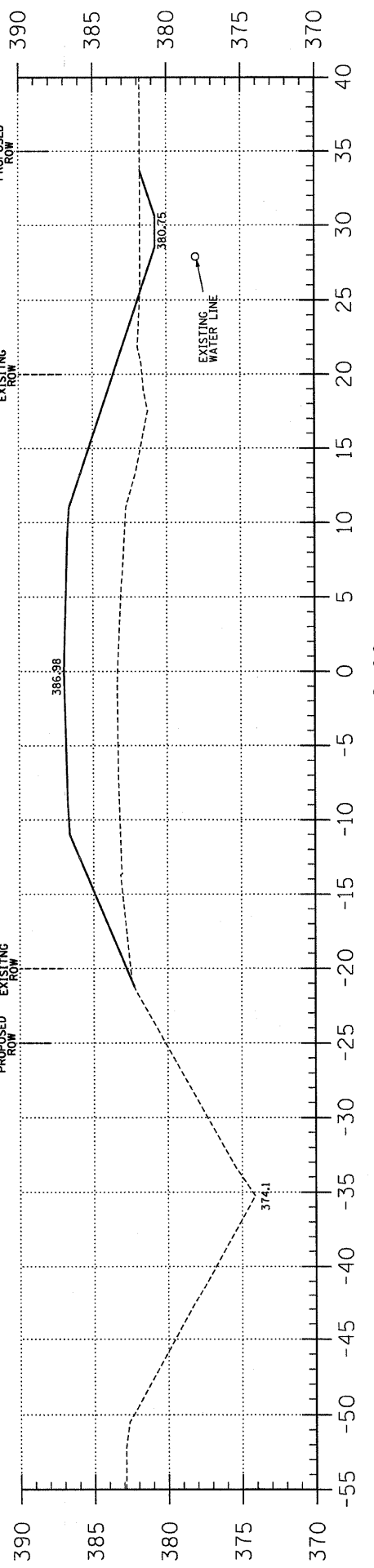


8+00



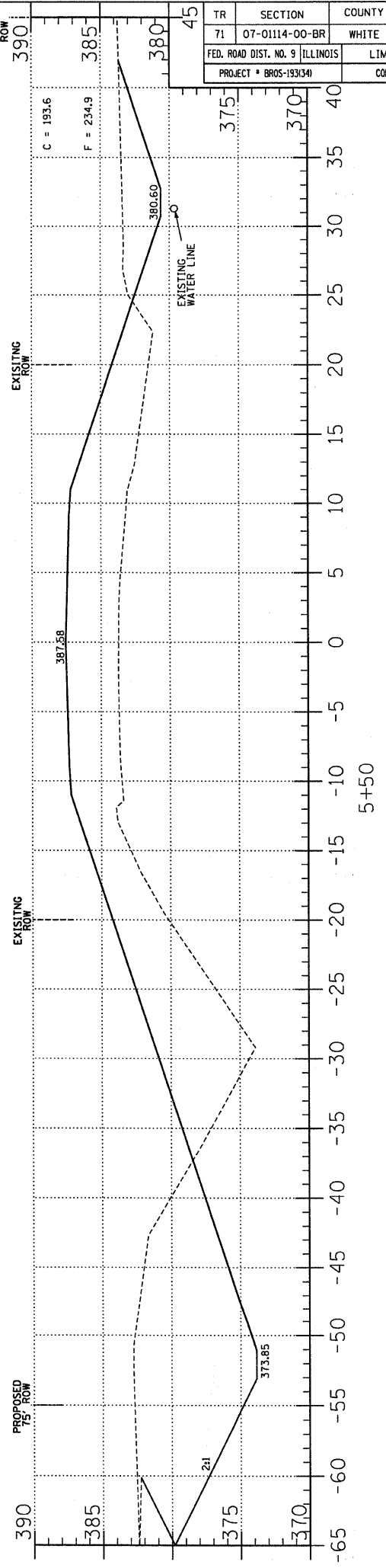
7+00

C = 2.1  
F = 24.0



6+00

C = 5.2  
F = 130.1



5+50

TR	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
71	07-01114-00-BR	WHITE	13	4

FED. ROAD DIST. NO. 9 ILLINOIS  
PROJECT \* BR05-193341

LIMEKILN CREEK  
CONTRACT \* 99321

LEC JOB \* H071011W

323 W. 3RD ST.  
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PROFESSIONAL DESIGN FIRM  
LAND SURVEY & PROFESSIONAL ENGINEERING CORPORATION

184-00087  
(62-032435)(35-002769)

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

TOWNSHIP ROUTE 71  
OVER LIMEKILN CREEK  
WHITE COUNTY, ILLINOIS

SHEET TITLE:  
CROSS-SECTIONS

SCALE: 1" = 5'  
BY: AMM  
DATE: 12/10/07  
REV:

4 OF 13 SHEETS

SHEET NO.  
4

TR	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
71	07-01114-00-BR	WHITE	13	5
FED. ROAD DIST. NO. 9 ILLINOIS		LIMEKILN CREEK		
PROJECT • BROS-193(34)		CONTRACT NO. 99321		
LEC JOB # HOTEL01WH				

323 W. 3RD ST.  
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FIRM  
048-00082  
PROFESSIONAL  
ENGINEERING  
CORPORATION:  
184-00087



AARON M. MEFFORD  
NAME  
*Aaron Mefford*  
SIGNATURE  
1-14-08  
DATE  
11-30-09  
EXPIRES

TOWNSHIP ROUTE 71  
OVER LIMEKILN CREEK  
WHITE COUNTY, ILLINOIS

SHEET TITLE:

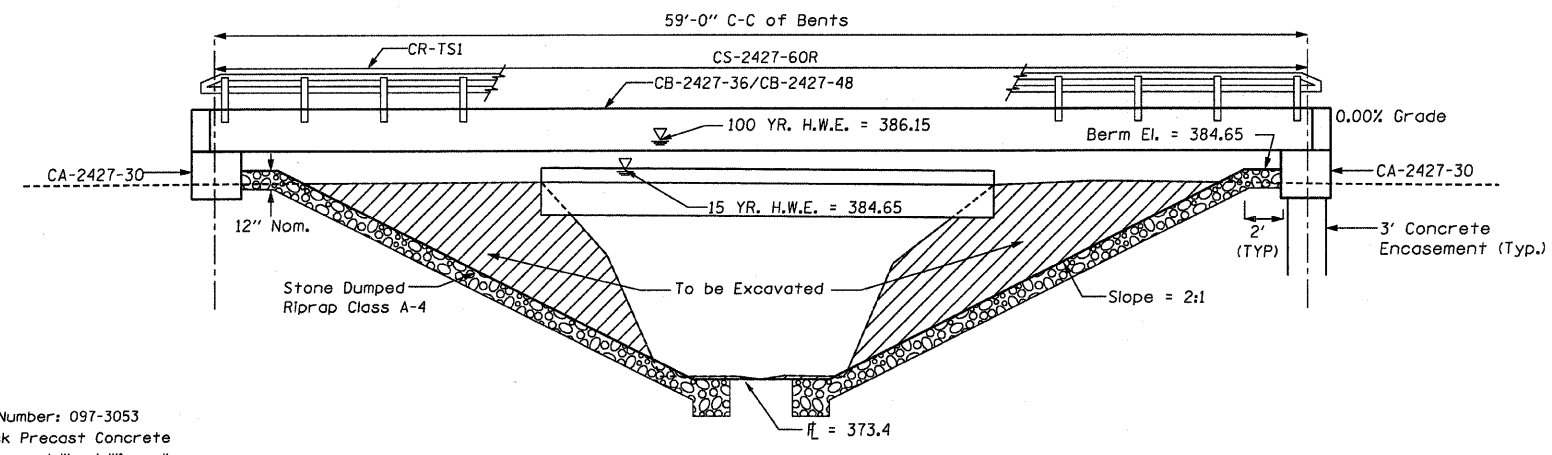
GENERAL PLAN  
AND ELEVATION

SCALE: NONE  
BY: A.M.M.  
DATE: 01/08  
REV:

5 OF 13  
SHEETS

SHEET NO.  
5

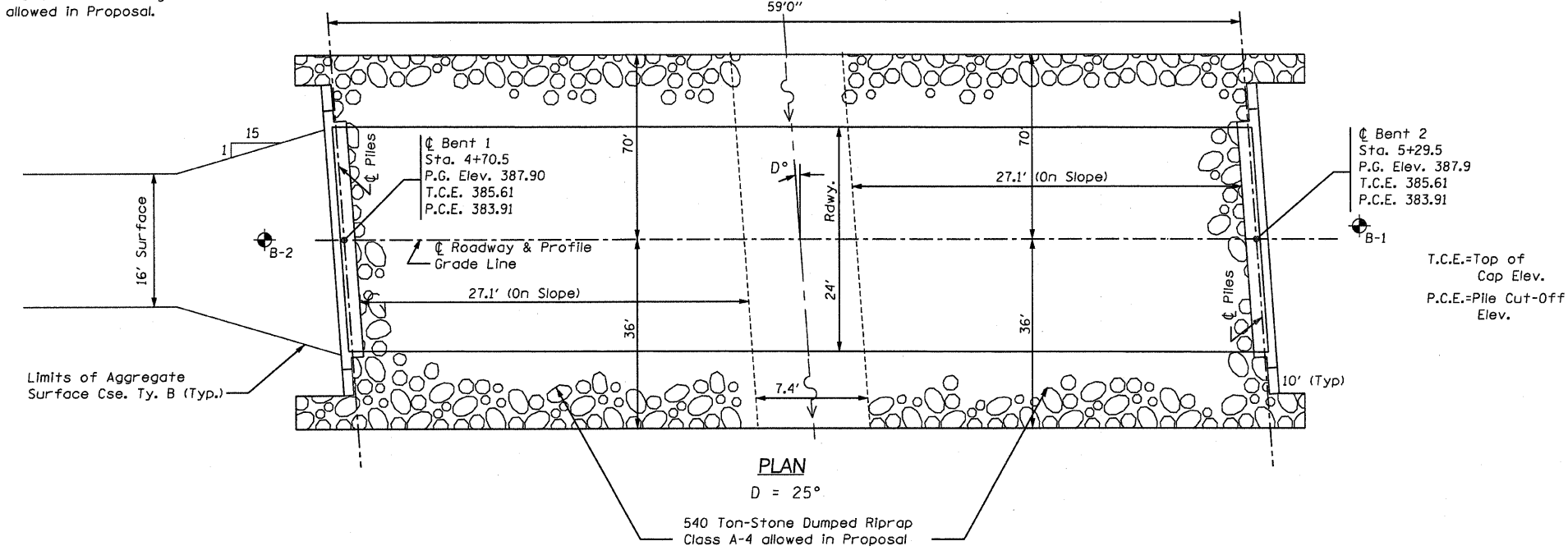
B.M.: I.P. ±5+41.42, 11.57' LT.  
Elev. = 384.07



ELEVATION

Existing Bridge Sta 5+00; Structure Number: 097-3053  
A 30' Single Span Bridge with 21" Thick Precast Concrete Deck Beams and 9" Curb on Wood Piling and Wood Wingwalls & 2"x10" Wood Mudwalls.

One (1) each removal of existing structures allowed in Proposal.



PLAN

NOTE: All items deemed fit for use on other County projects shall become the property of the County. These items shall be stored along the R.O.W. at no additional cost to the project.

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."

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

**DESIGN SPECIFICATIONS**  
2002 AASHTO  
HS 20-44 Loading, Load Factor Design

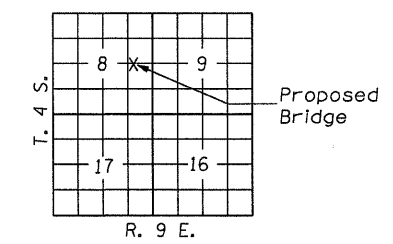
**ABUT. PILE DATA**

Type: Steel Piles HP10X42  
Nominal Required Bearing: 335 Kips  
Allowable Resistance Available: 112 Kips  
Estimated Length: 48 Feet/Pile  
Number Required: 8

STATION 5+00  
LIMEKILN CREEK  
SEC. 07-01114-00-BR BUILT 20  
PROJECT NO. BROS-193(34)  
WHITE COUNTY  
LOADING HS 20-44  
STR. NO. 097-3263

**LETTERING FOR NAME PLATE**

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



LOCATION SKETCH

**INDEX OF SHEETS**

1. General Plan & Elevation
2. Standard CS-2427-60R
3. Standard CB-2427-36
4. Standard CB-2427-48
5. Standard CA-2427-30
6. Standard CR-TS1
7. Standard CN
8. Standard CX-1

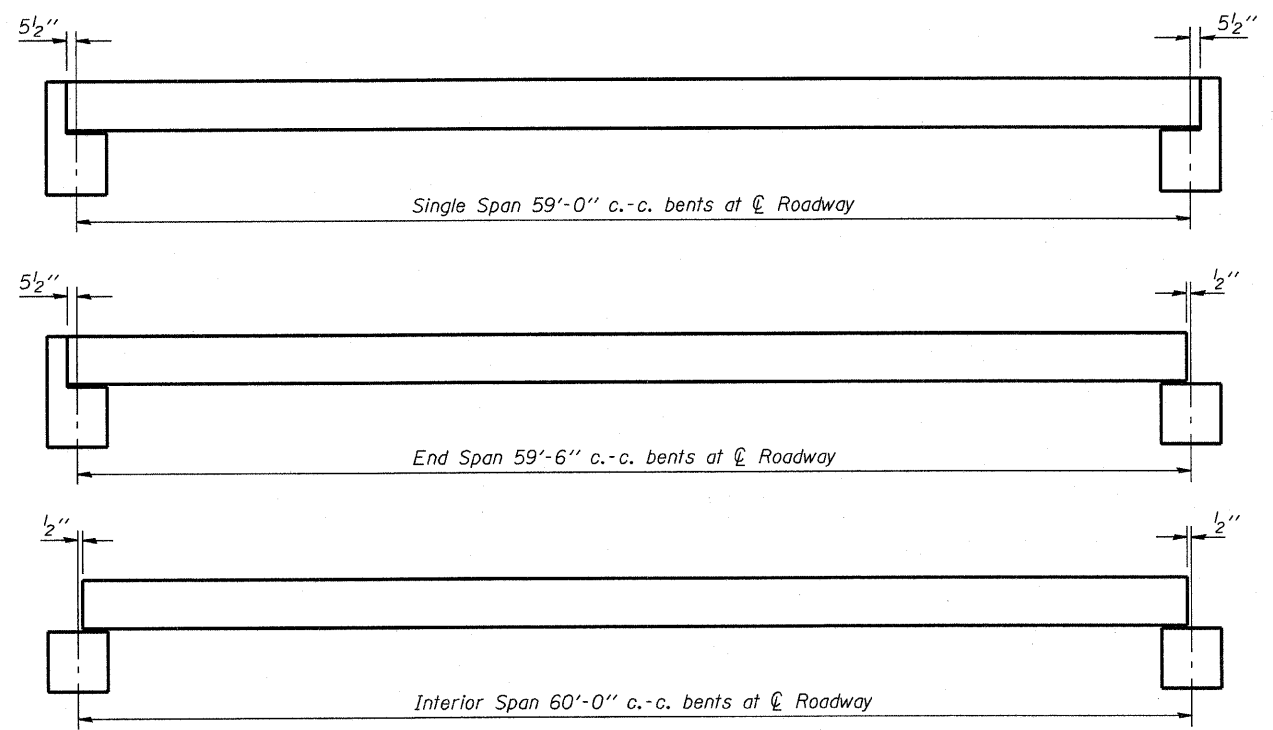
Item	Unit	Super	Sub. Piers	Abuts.	Total
Removal of Existing Structures	LSum				1
Bit. Conc. Surf. Cse. Superpave	Tons				
Waterproofing Membrane System	Sq.Yds.				
Concrete Structures	Cu.Yds.		21.4		21.4
P.P. Conc. Dk. Bm. 27" Dp.	Sq.Ft.	1440			1440
Steel Ralling, Type S1	Lin.Ft.	120			120
Reinforcement Bars	Lbs.		2620		2620
Furnishing Steel Piles HP10X42	Lin.Ft.		384		384
Driving Piles	Lin.Ft.		384		384
Name Plates	Each		1		1
Concrete Encasement	Cu.Yds.		2.1		2.1

NOTE: Four (4) Curled End Sections required. Item to be included in the Steel Ralling.

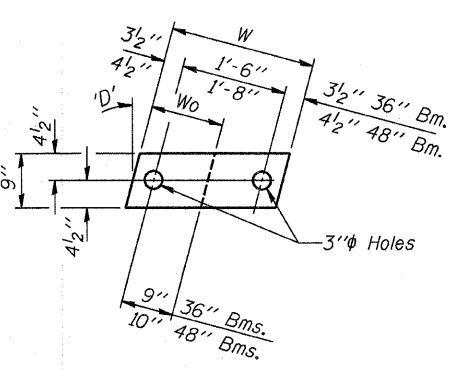
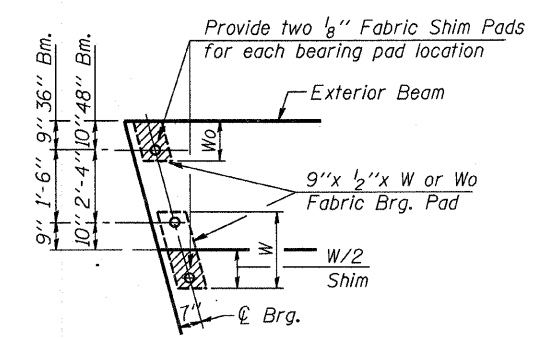
**WATERWAY INFORMATION**

Drainage Area = 7.0 Sq. Mi. Low Grade Elev. = 387.7 At Sta. 2+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	1634	110.3	304.5	384.65		0.19		384.84
Base	100	2636	110.3	355.6	386.15	0.07	0.41	386.22	386.56
Max. Calc.	500	3464							

**GENERAL PLAN & ELEVATION**  
TOWNSHIP ROUTE 71  
OVER LIMEKILN CREEK  
SECTION 07-01114-00-BR  
WHITE COUNTY  
STATION 5+00

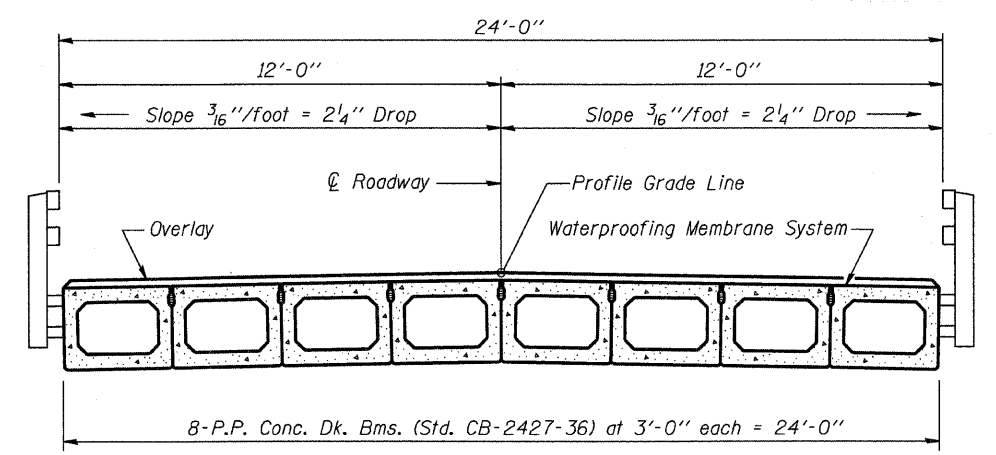


TYPICAL ELEVATIONS

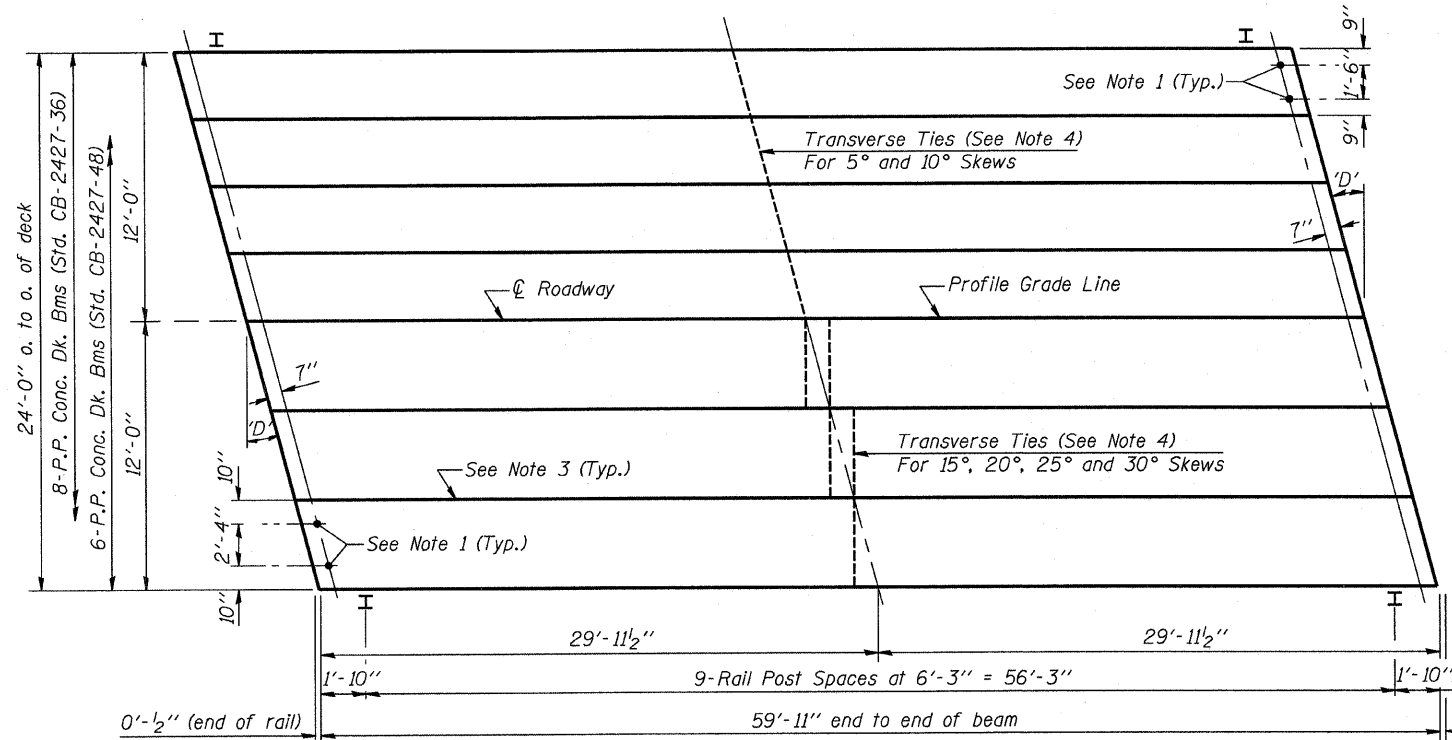
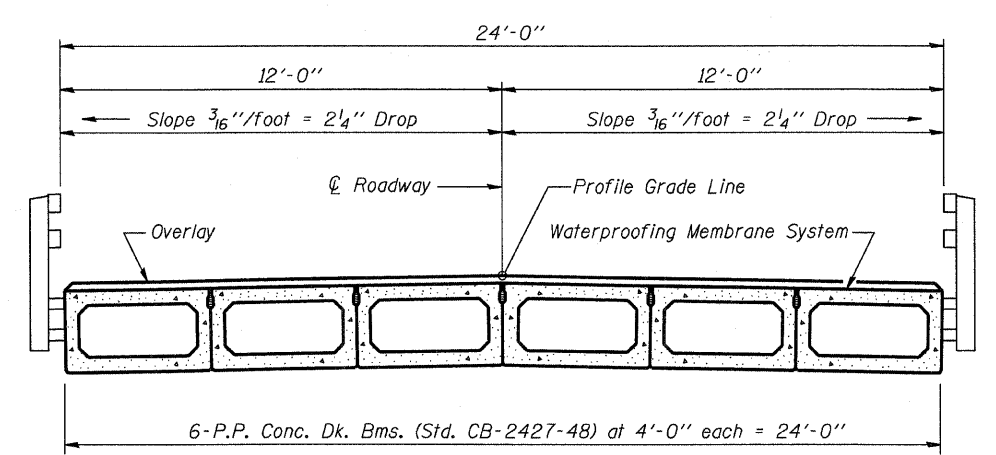


Beam	W	Wo
36"	2'-1"	1'-0 1/2"
48"	2'-5"	1'-2 1/2"

1/2" FABRIC BRG. PAD DETAILS

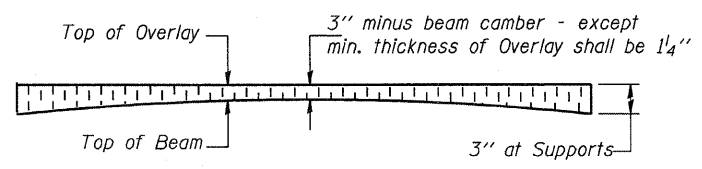


CROSS SECTION



PLAN

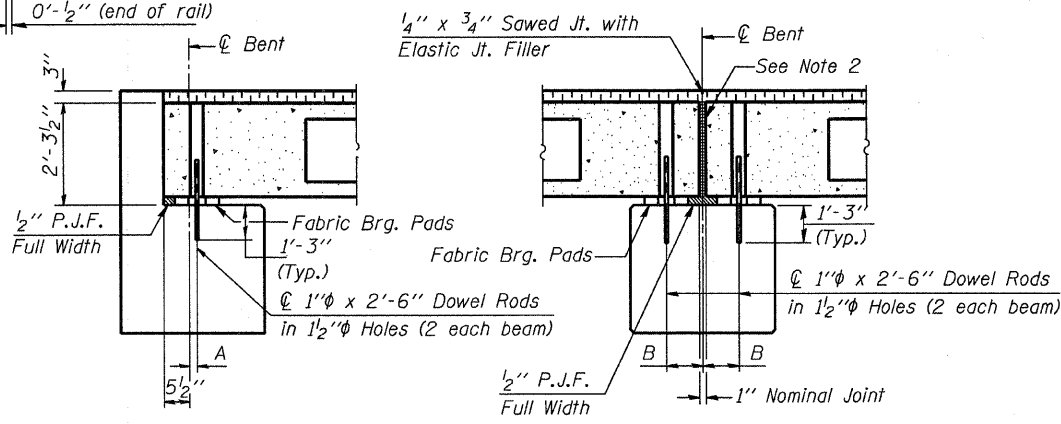
('D' = Designated Skew Angle)



PROFILE OF OVERLAY

DIMENSIONS 'A' AND 'B'

'D'	5°	10°	15°	20°	25°	30°
A	1 1/2"	1 5/8"	1 3/4"	1 7/8"	2 1/4"	2 5/8"
B	7 1/2"	7 5/8"	7 3/4"	8"	8 1/4"	8 5/8"



SECTION AT ABUTS.  
(Along centerline Beams)

SECTION AT PIERS  
(Along centerline 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 Pier shall be filled with non-shrink grout.
  - Longitudinal keys shall be grouted.
  - The 1" diameter 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.	1440 Sq. Ft.
Steel Railing	120 Ft.
Waterproofing Membrane System	160.0 Sq. Yds.
Portland Cement Mortar	420 Ft. 36"
Fairing Course	300 Ft. 48"

Note: Quantity of overlay for one span = 18.0 Tons

P.P.C. DECK BEAM SUPERSTRUCTURE			
24' RDWY.	27" BMS.	60' SPAN	RIGHT
STANDARD CS-2427-60R			

Illinois Department of Transportation

PASSED APRIL 4, 2005

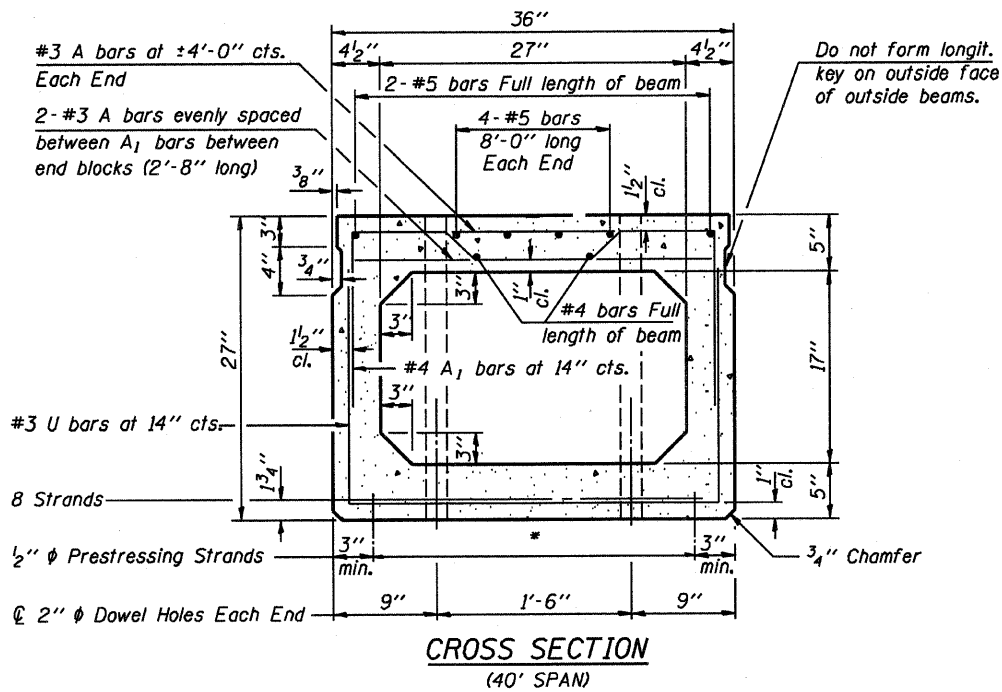
Thomas S. Demagala  
Engineer of Bridge Design

APPROVED APRIL 4, 2005

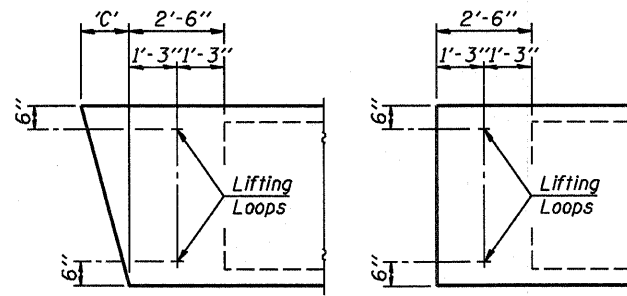
Ralph E. Anderson  
Engineer of Bridges and Structures

ISSUES



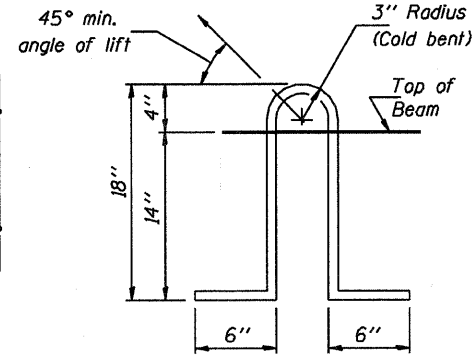


**CROSS SECTION**  
(40' SPAN)



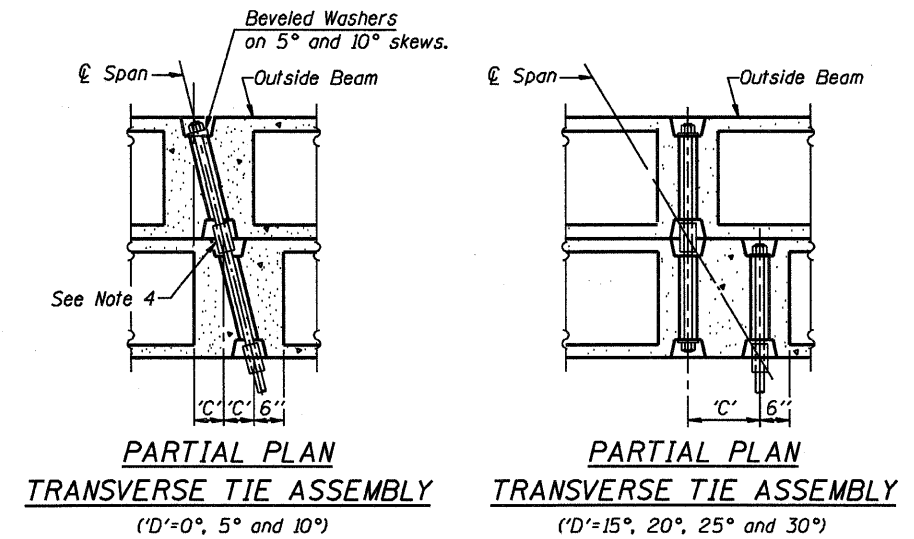
**END BLOCK DETAILS**

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" phi - 270 ksi strands, as shown. Alternate approved lifting devices are also acceptable.



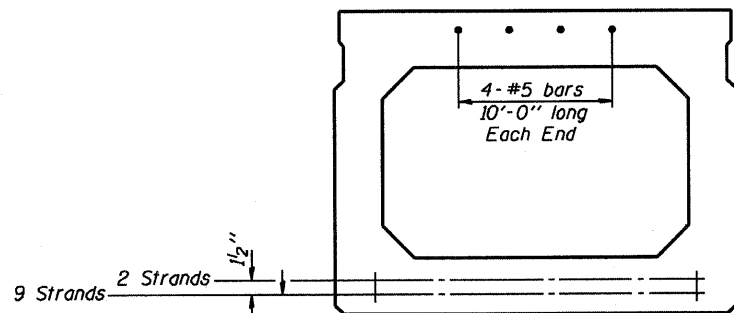
**DIMENSION 'C'**

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

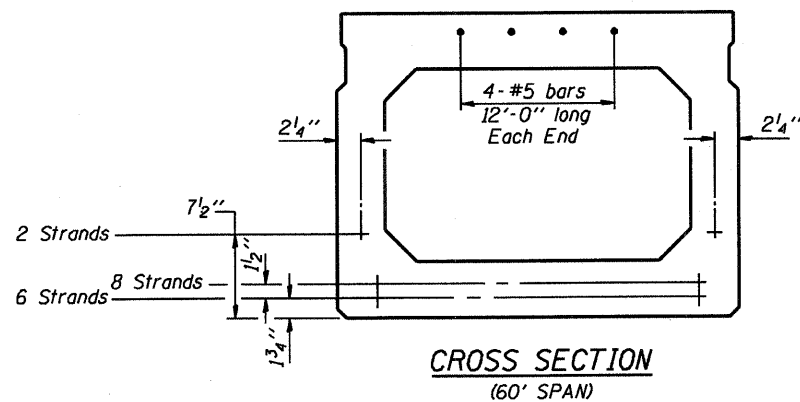
**\* TRANSVERSE STRAND PLACEMENT GUIDELINES**

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 1/2".

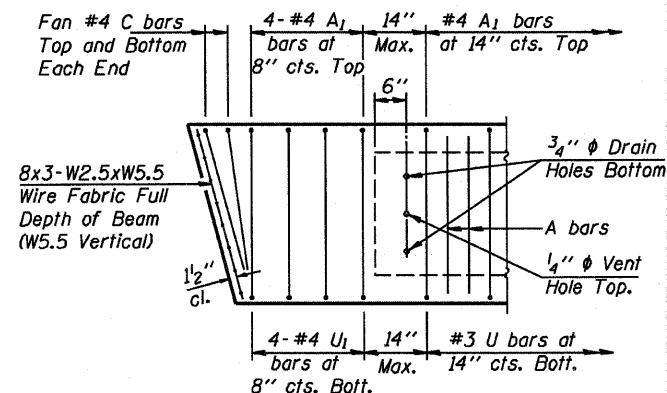
Vertical placement of strands shall not be adjusted to satisfy the above guidelines.



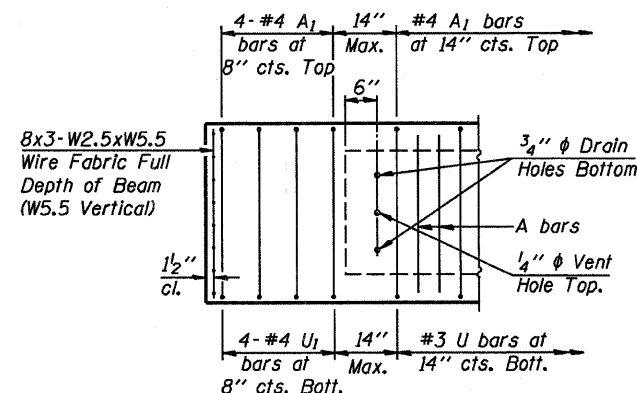
**CROSS SECTION**  
(50' SPAN)



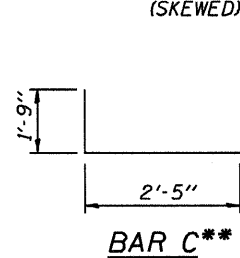
**CROSS SECTION**  
(60' SPAN)



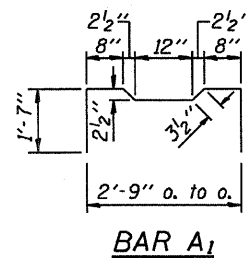
**END REINFORCEMENT**  
(SKEWED)



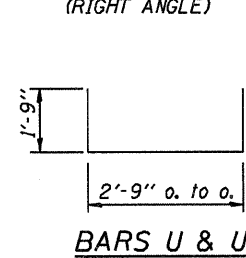
**END REINFORCEMENT**  
(RIGHT ANGLE)



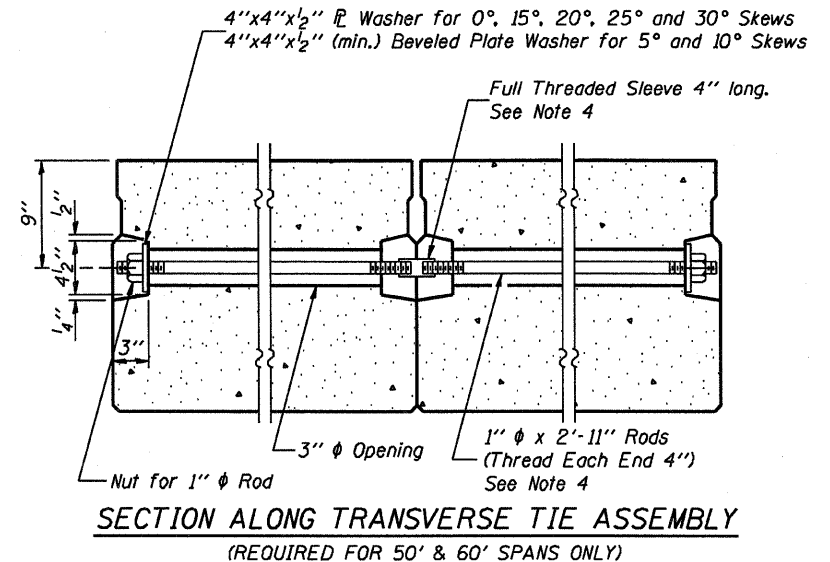
**BAR C\*\***



**BAR A1**



**BARS U & U1**



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

**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. On 0°, 5° and 10° skewers, alternate approved 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 1/4".
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. (1/2" phi Strand)  
 $f_{sl} = 201,960$  p.s.i. (1/2" phi 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.

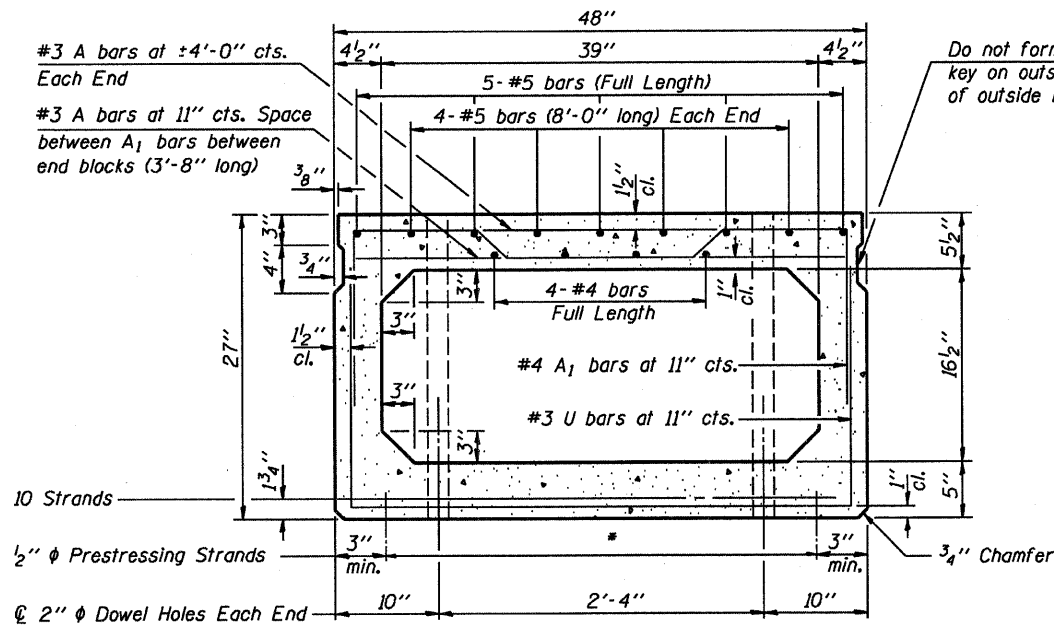
**\*\*NOTE:**

The following number of C bars shall be used:  
 Skew No.  
 5° and 10° — 1  
 15° and 20° — 2  
 25° and 30° — 3

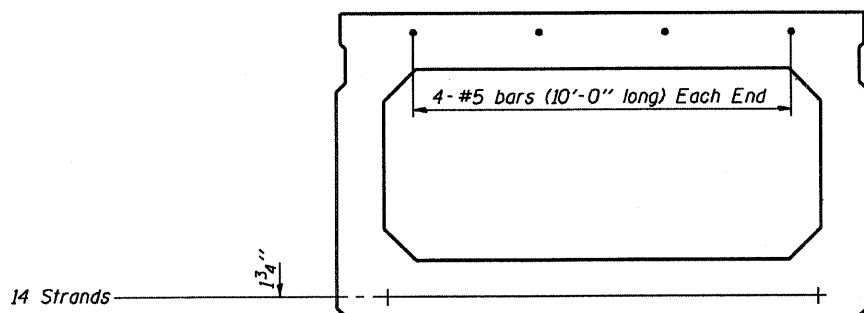
Illinois Department of Transportation  
 PASSED APRIL 4, 2005  
 Thomas J. Hennig  
 Engineer of Bridge Design  
 APPROVED APRIL 4, 2005  
 Ralph E. Anderson  
 Engineer of Bridges and Structures

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

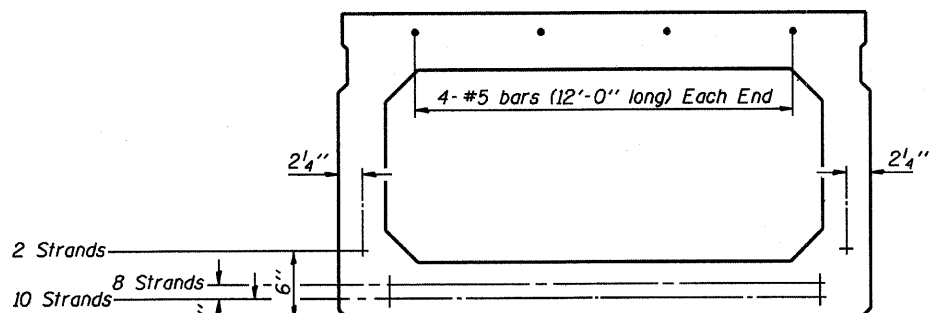
24' ROADWAY	27" x 36" BEAMS
STANDARD CB-2427-36	



**CROSS SECTION**  
(40' SPAN)

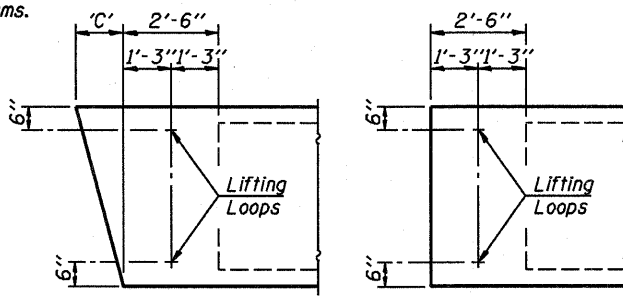


**CROSS SECTION**  
(50' SPAN)



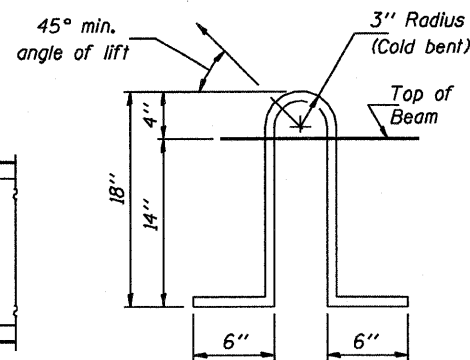
**CROSS SECTION**  
(60' SPAN)

Do not form longit. key on outside face of outside beams.



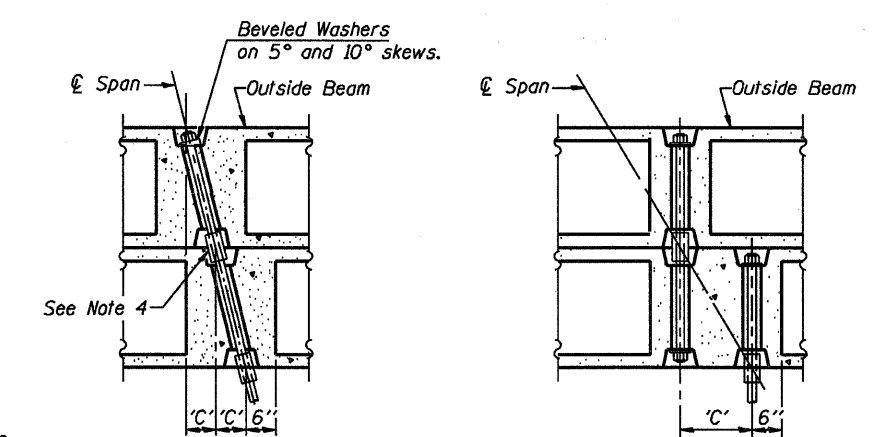
**END BLOCK DETAILS**

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, 1/2 inch diameter 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°)

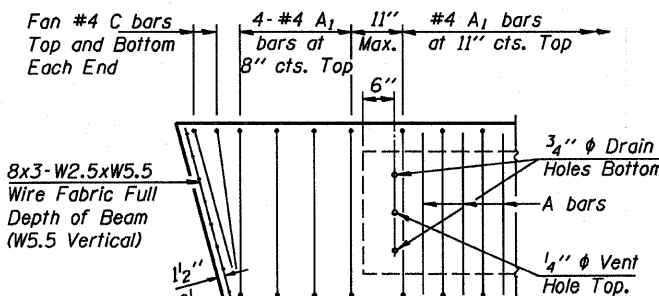
**DIMENSION 'C'**

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

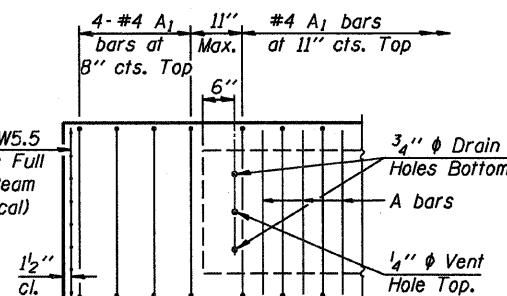
**\* TRANSVERSE STRAND PLACEMENT GUIDELINES**

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".

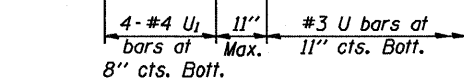
Vertical placement of strands shall not be adjusted to satisfy the above guidelines.



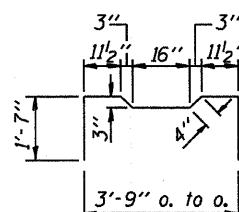
**END REINFORCEMENT**  
(SKEWED)



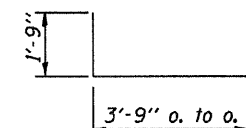
**END REINFORCEMENT**  
(RIGHT ANGLE)



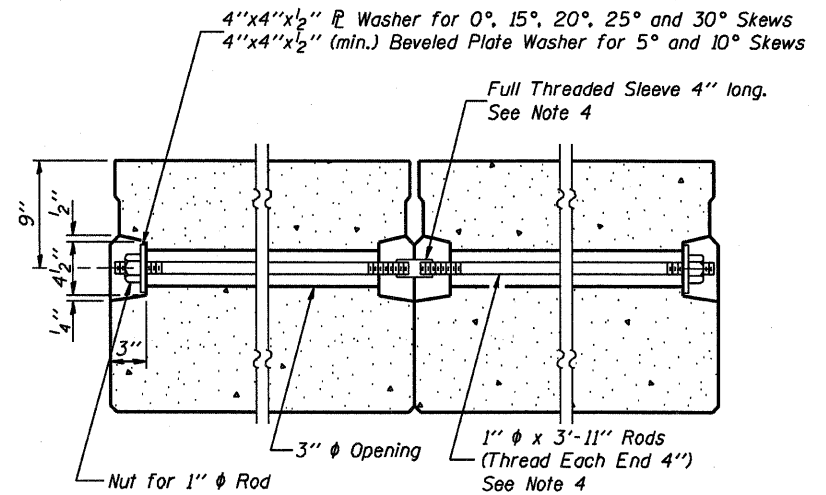
**BAR C\*\***



**BAR A1**



**BARS U & U1**



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

**NOTES**

1. Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270.
2. The nominal diameter shall be 1/2 inch 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 approved 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 1/4 inch.
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<sub>c</sub> = 5,000 p.s.i.
- f<sub>ci</sub> = 4,000 p.s.i.
- f<sub>s</sub> = 270,000 p.s.i. (1/2 inch diameter Strand)
- f<sub>sl</sub> = 201,960 p.s.i. (1/2 inch diameter Strand)
- f<sub>y</sub> = 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:

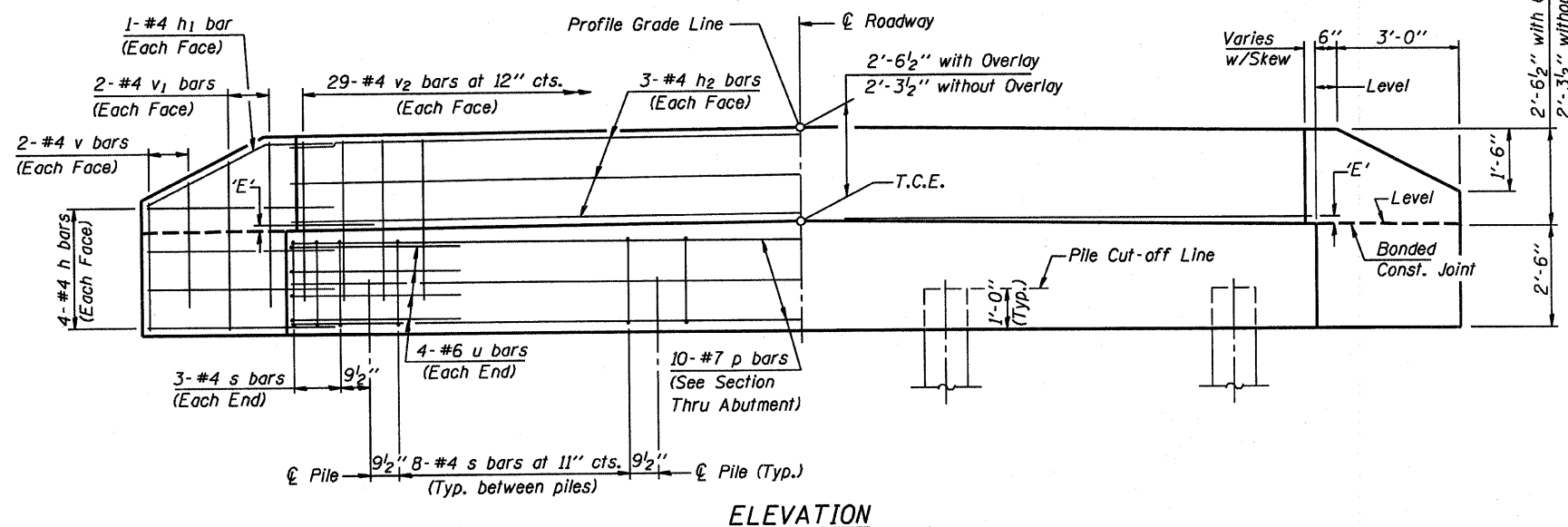
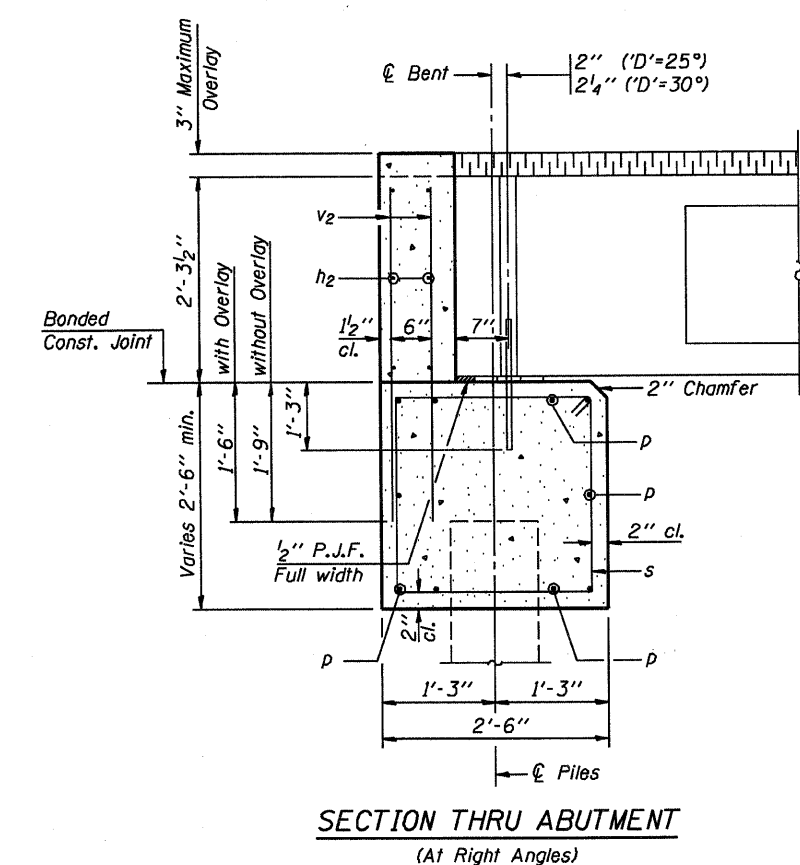
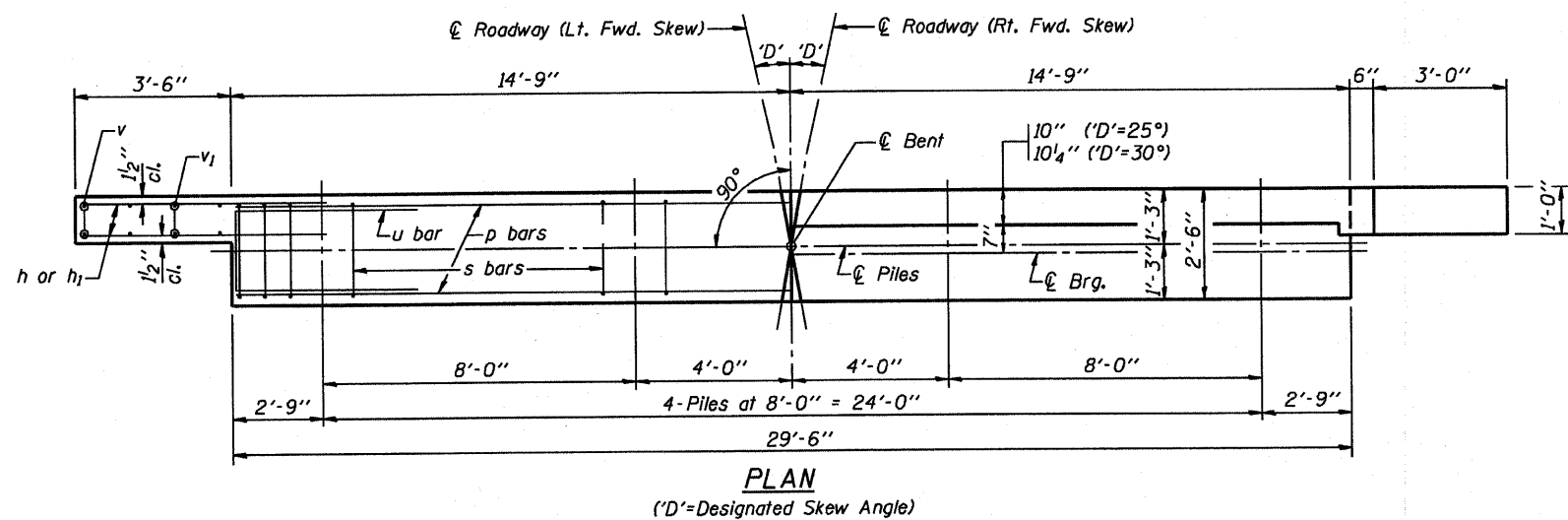
Skew	No.
5° and 10°	1
15° and 20°	2
25° and 30°	3

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

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

24' ROADWAY	27" x 48" BEAMS
STANDARD CB-2427-48	





**DIMENSION 'E'**

GRADE	<i>D</i> '=25°		<i>D</i> '=30°	
	UPGRADE END	DOWNGRADE END	UPGRADE END	DOWNGRADE END
0%	2 1/2"	2 1/2"	2 3/8"	2 3/8"
Over 0% to 1%	2 7/8"	2 7/8"	2"	2 7/8"
Over 1% to 2%	1 3/8"	3 5/8"	1"	3 3/4"
Over 2% to 3%	5/8"	4 3/8"	1/8"	4 5/8"
Over 3% to 4%	0"	5 1/8"		

**NOTES**

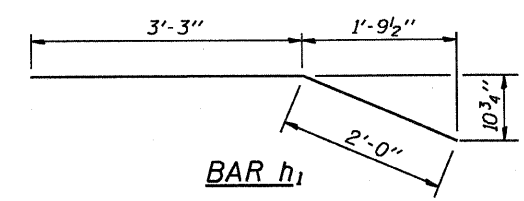
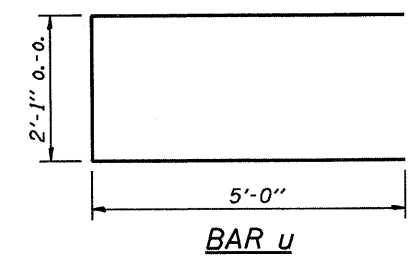
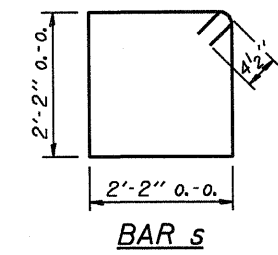
- The Backwall and the portion of the Wingwalls above the bonded construction joint shall be cast against the in-place beam.
- Reinforcement bars shall conform to the requirements of A.A.S.H.T.O. M-31 or M-322, Grade 60.
- Space reinforcement in cap to miss anchor bolts.

**MAXIMUM PILE LOADS**

SPAN	TONS
40'	34
50'	38
60'	43

**DESIGN STRESSES**

*f*'c = 3,500 psi  
*f*y = 60,000 psi



**BILL OF MATERIAL FOR ONE ABUTMENT**

Bar	No.	Size	Length	Shape
h	16	#4	5'-0"	—
h1	4	#4	5'-3"	—
h2	6	#4	29'-2"	—
p	10	#7	29'-2"	—
s	30	#4	9'-5"	□
u	8	#6	12'-1"	▭
v	8	#4	3'-2"	—
v1	8	#4	4'-2"	—
v2	58	#4	3'-11"	—
Concrete Structures			10.7 Cu. Yds.	
Reinforcement Bars			1310 Lb.	

**P.P.C. DECK BEAMS  
PILE BENT ABUTMENT**

24' RDWY.	27" BMS.	<i>D</i> '=25° OR 30°
-----------	----------	-----------------------

**STANDARD CA-2427-30**

Illinois Department of Transportation

PASSED APRIL 4, 2005  
Thomas J. Namaszaki  
Engineer of Bridge Design

APPROVED APRIL 4, 2005  
Ralph E. Anderson  
Engineer of Bridges and Structures

ISSUED 1-1-1981

**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.

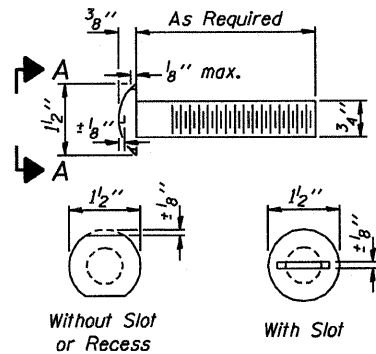
For multi-span bridges, sufficient 1/4" x 6" x 1'-2" galvanized steel shims shall be provided to align rail between adjacent spans. Cost included with STEEL RAILING, TYPE S-1.

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

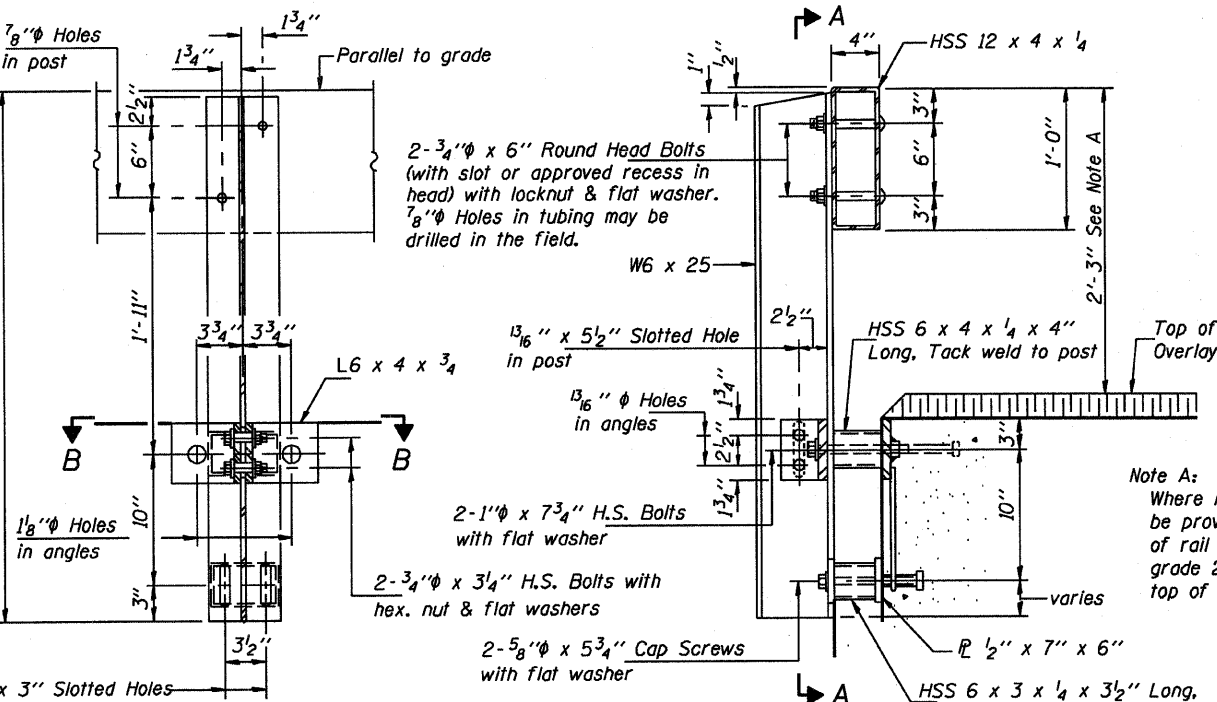
The 1/2" x 7" x 6" plates that come in contact with concrete shall either receive two coats of asphalt paint conforming to Section 1060.07 Type II, or 1/2" fabric bearing pads shall be placed between the plates and concrete.

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.

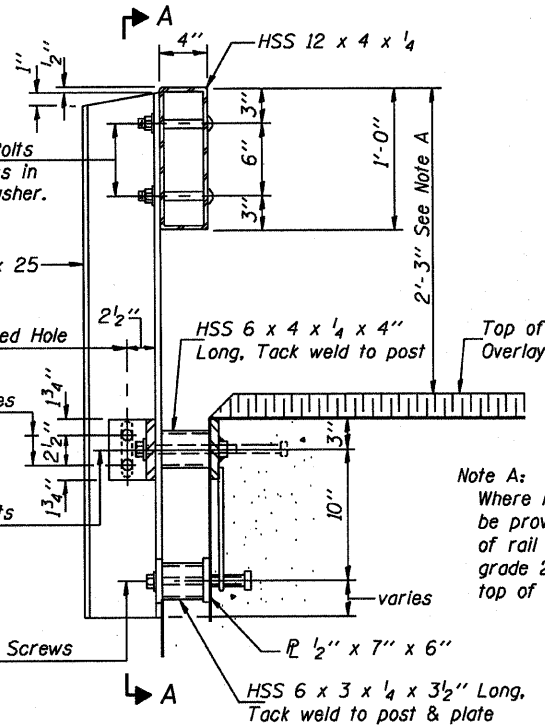
The maximum allowable rail post spacing shall be 10'-6". The rail post spacing shown elsewhere in the plans is based on the allowable spacing for another type of rail. When this type of rail is used, the number of posts may be decreased and the post spacing increased to provide equal post spaces of 10'-6"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



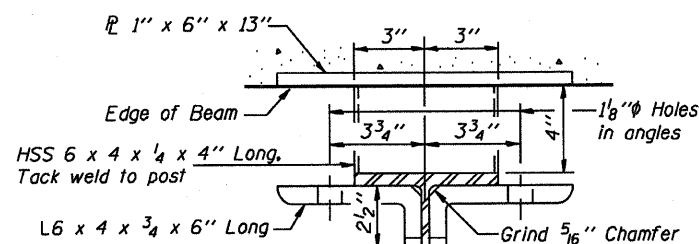
**VIEW A-A  
ROUND HEAD BOLT**



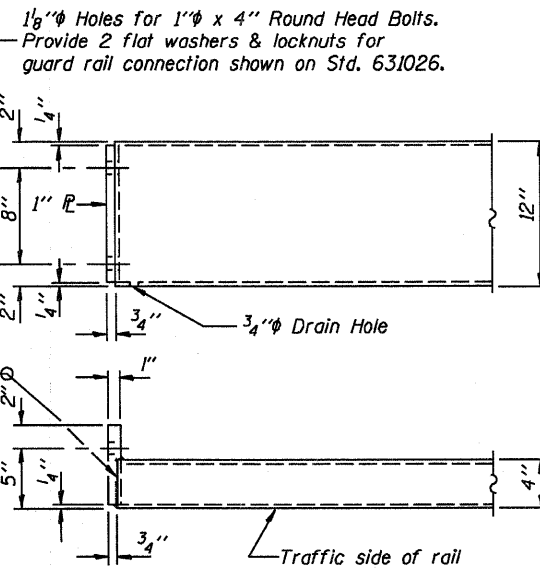
**SECTION A-A**



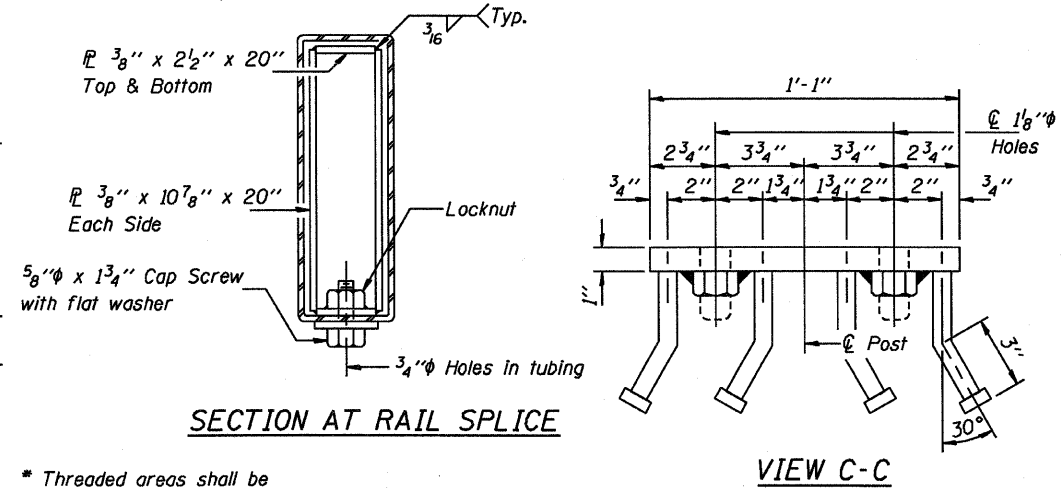
**SECTION AT RAIL POST**



**SECTION B-B**

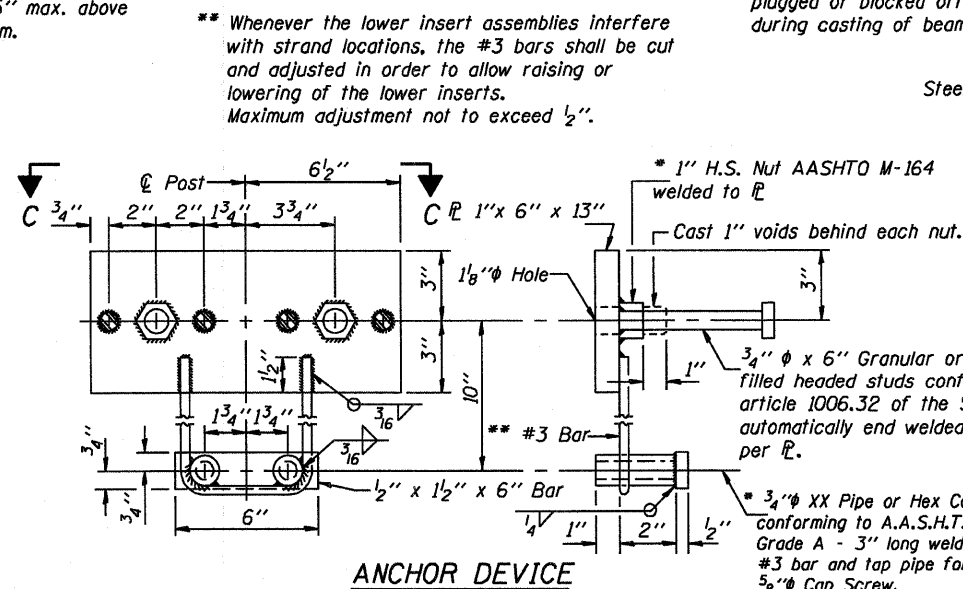


**END OF RAIL DETAILS**

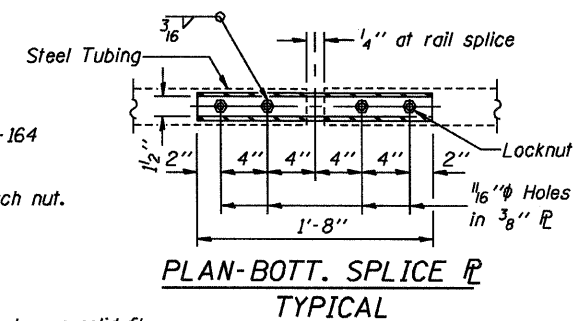


**SECTION AT RAIL SPLICE**

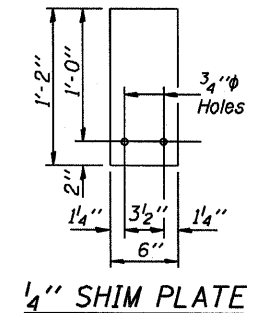
**VIEW C-C**



**ANCHOR DEVICE**



**PLAN-BOTT. SPLICE TYPICAL**



**1/4\"/>**

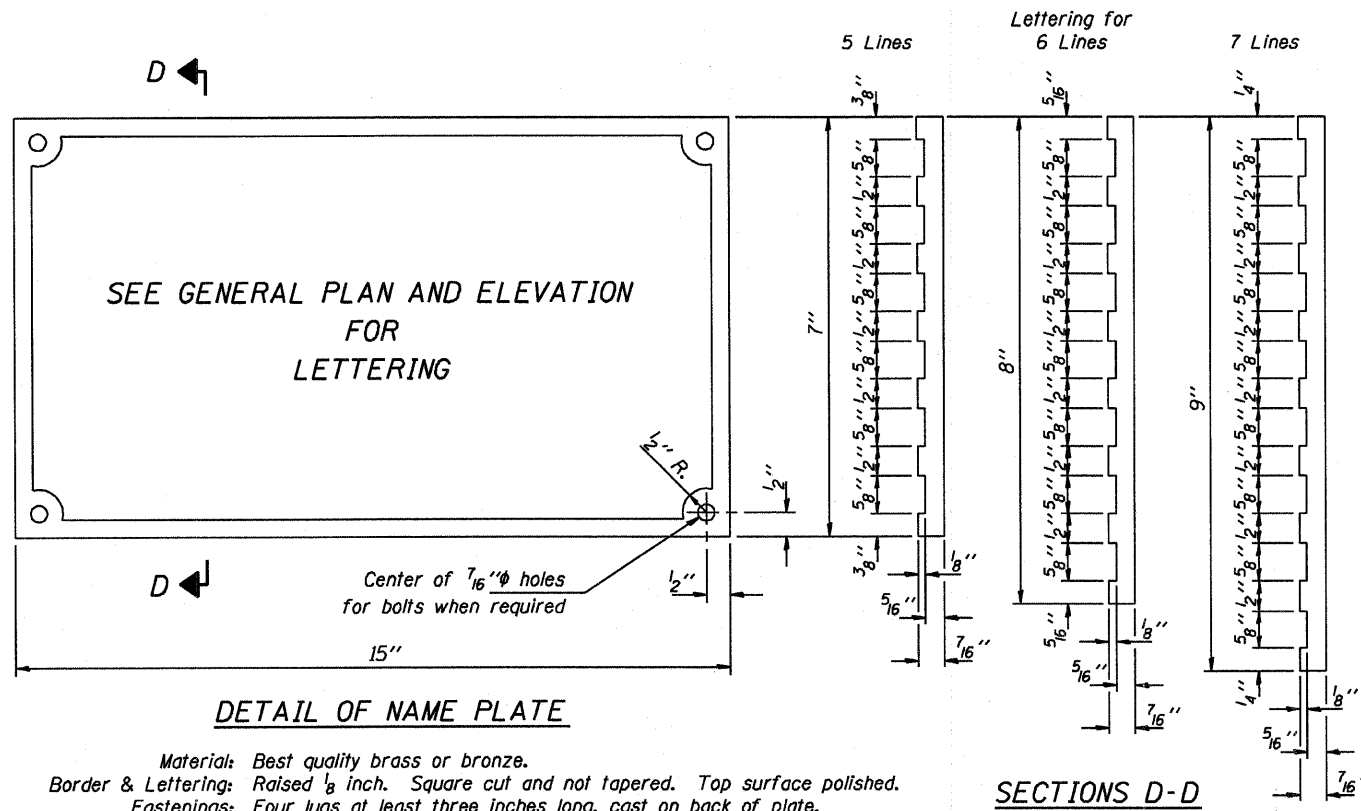
\* Threaded areas shall be plugged or blocked off during casting of beam.

\*\* 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\"/>

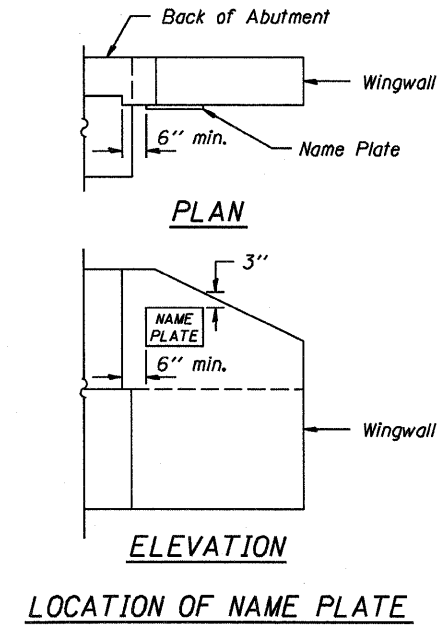
\* 1" H.S. Nut AASHTO M-164 welded to PL  
Cast 1" voids behind each nut.  
3/4" x 6" Granular or solid flux filled headed studs conforming to article 1006.32 of the Std. Specs. automatically end welded. 4 Required per PL.  
3/4" XX Pipe or Hex Coupler Nuts conforming to A.A.S.H.T.O. M291. Grade A - 3" long welded to #3 bar and top pipe for 5/8" Cap Screw.

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

**STEEL RAILING, TYPE S-1  
STANDARD CR-TS1**



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.



Illinois Department of Transportation

PASSED APRIL 4, 2005

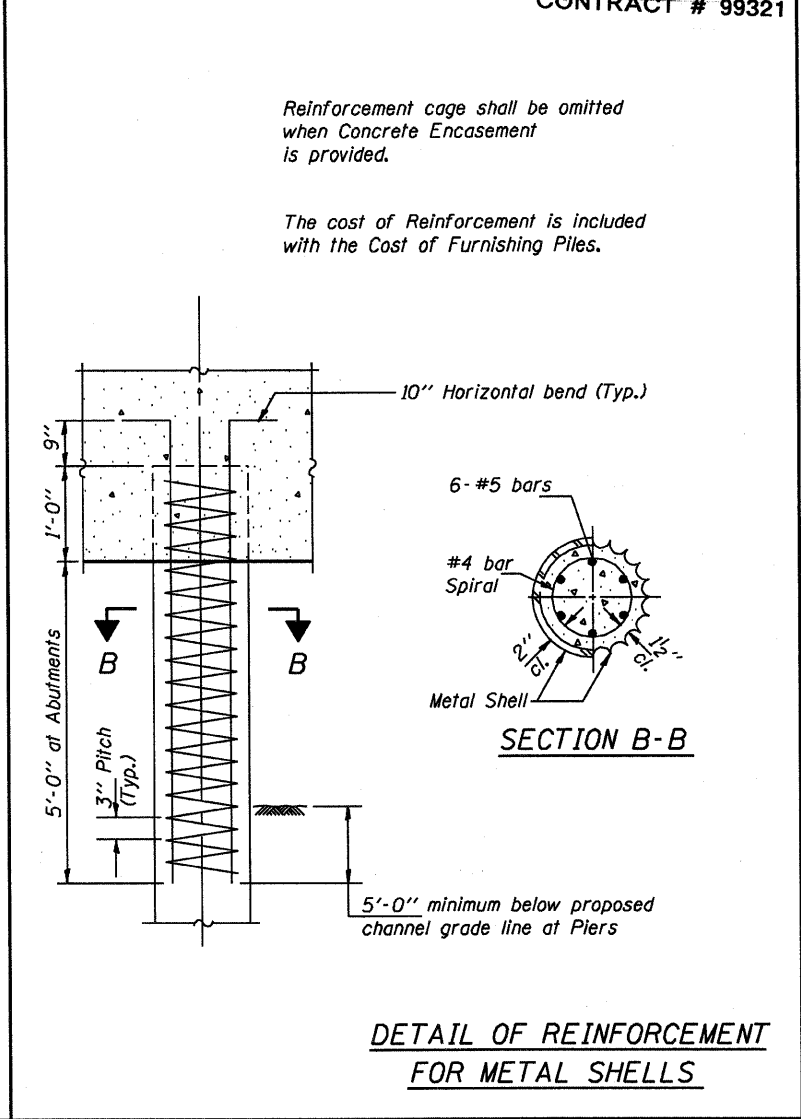
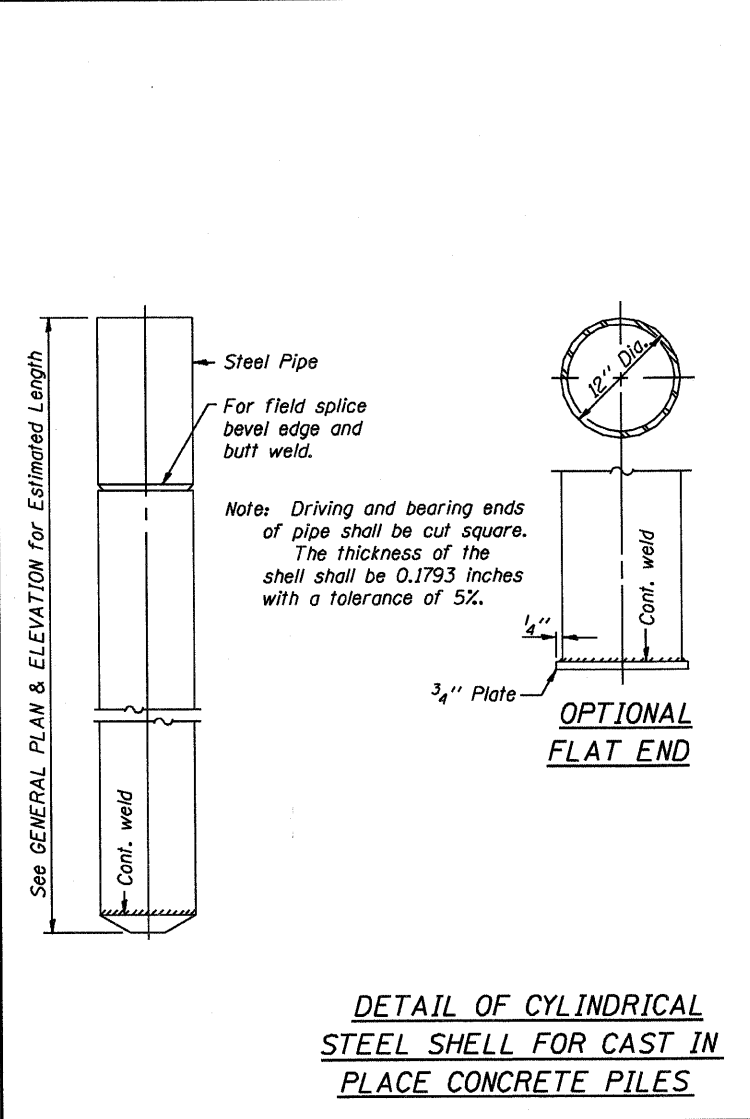
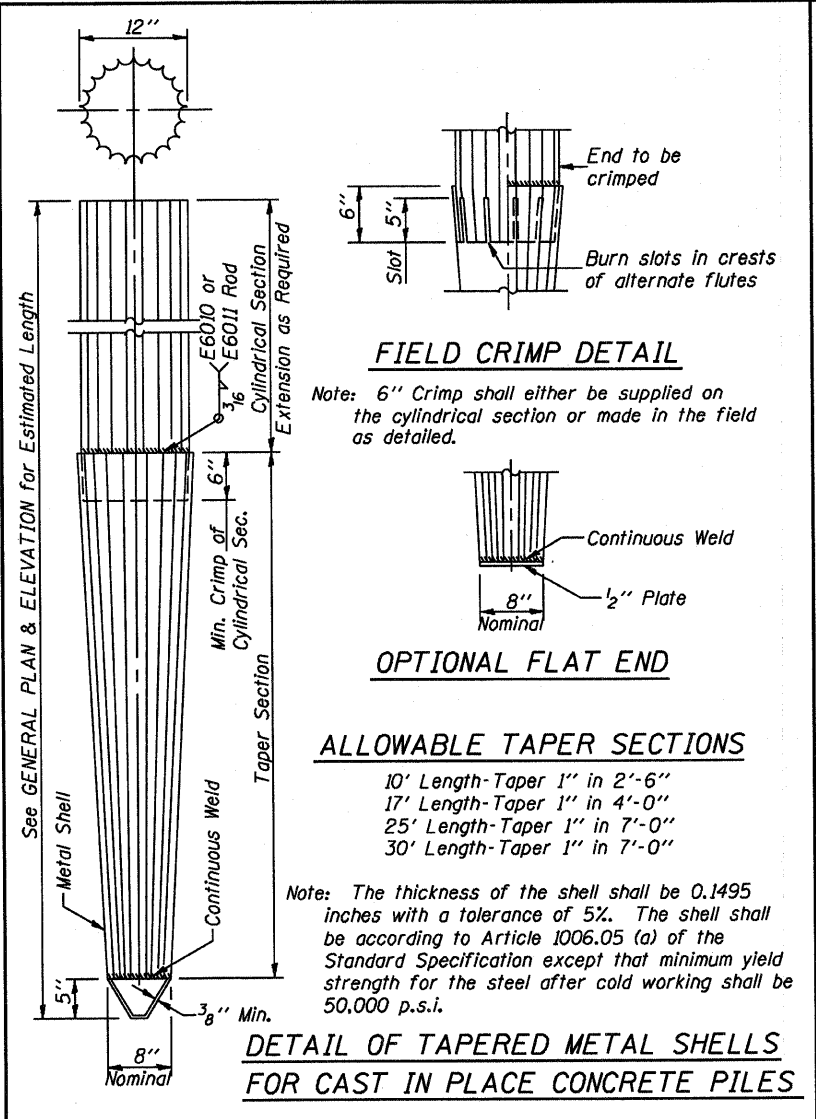
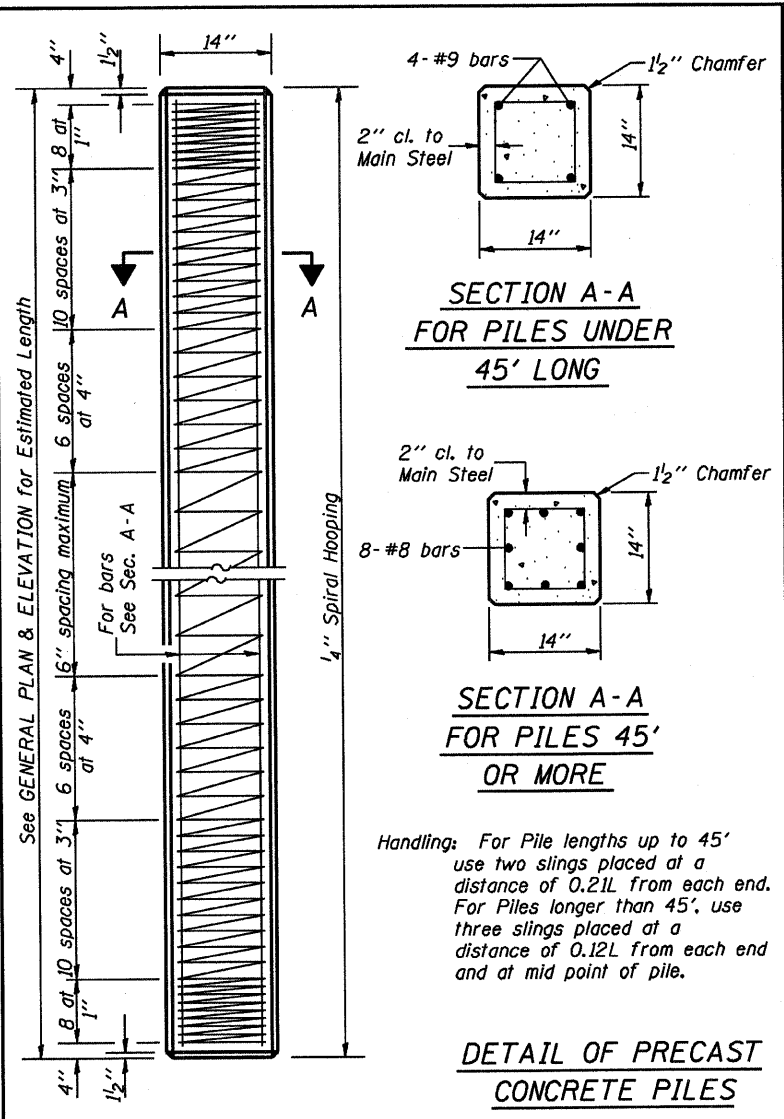
*Thomas S. Demagala*  
 Engineer of Bridge Design

APPROVED APRIL 4, 2005

*Ralph E. Anderson*  
 Engineer of Bridges and Structures

ISSUED 7-1-995

NAME PLATE
STANDARD CN

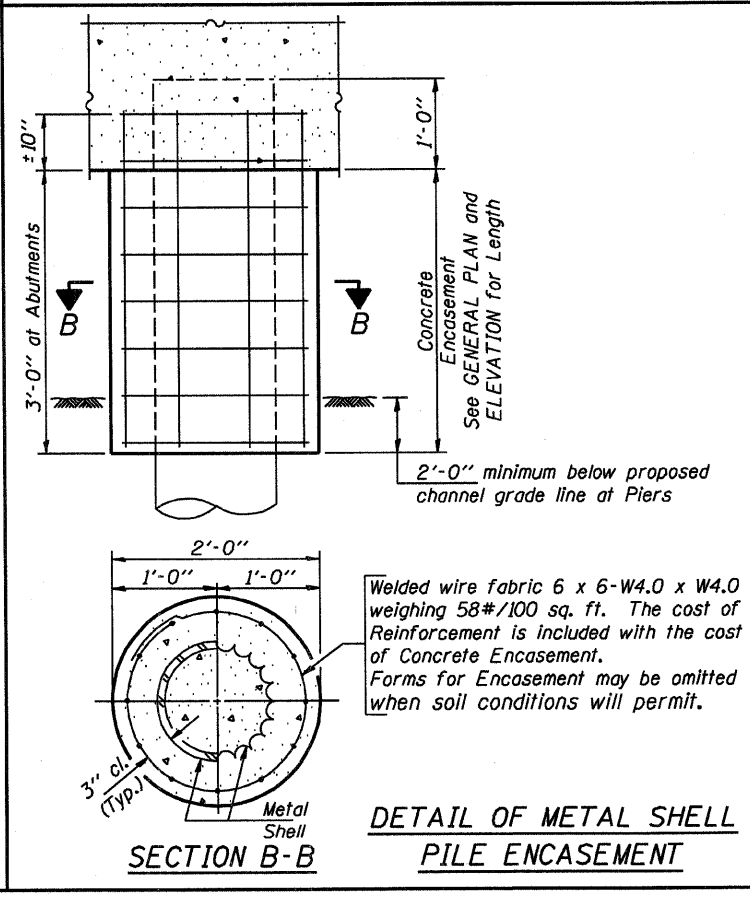
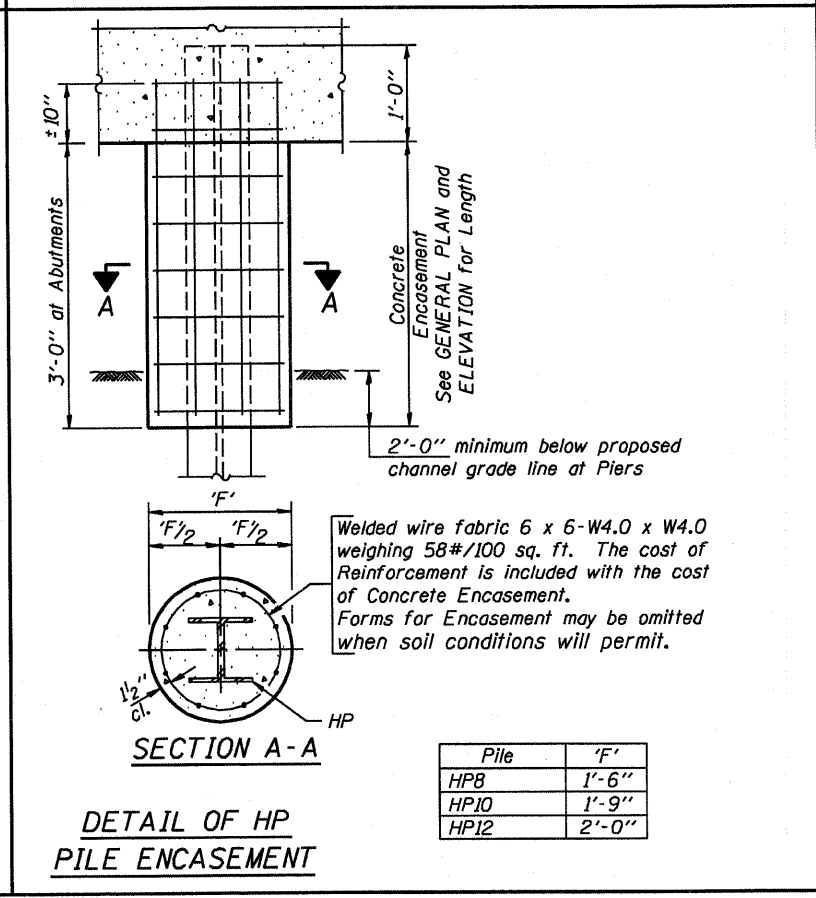


Illinois Department of Transportation

PASSED FEBRUARY 1, 2000  
Thomas J. Domagala  
Engineer of Bridge Design

APPROVED FEBRUARY 1, 2000  
Ralph E. Anderson  
Engineer of Bridges and Structures

1865-H-0285S



**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.

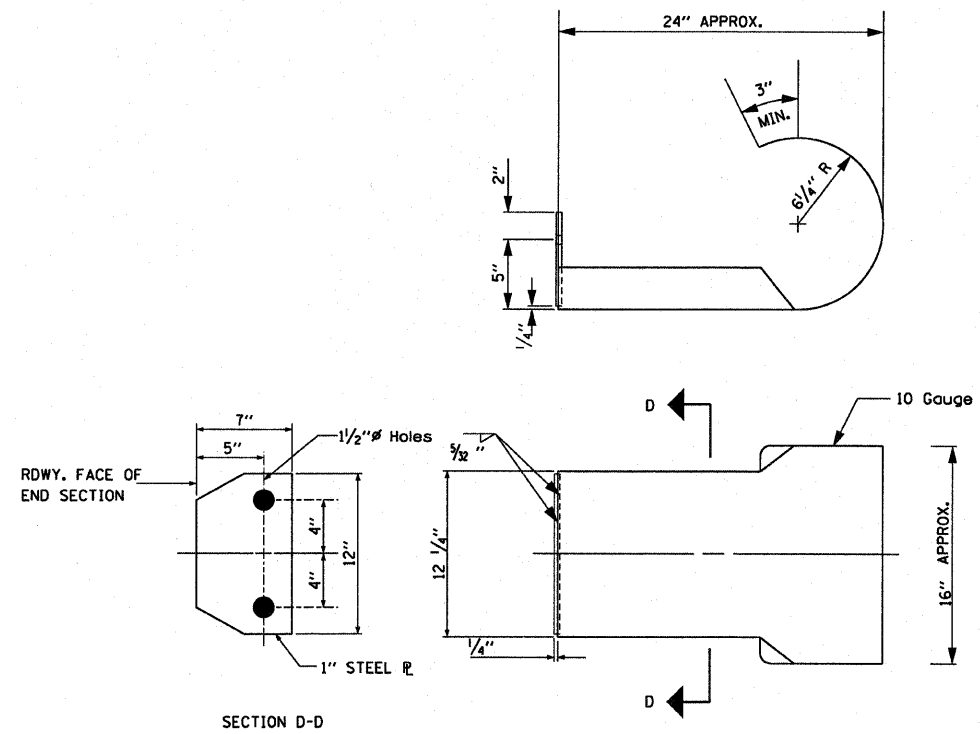
**(METAL SHELL PILES)**

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

**PILE DETAILS**

**STANDARD CX-1**

CURLED END SECTION DETAIL



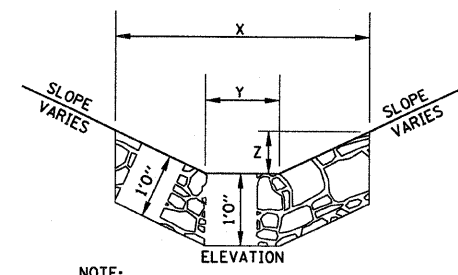
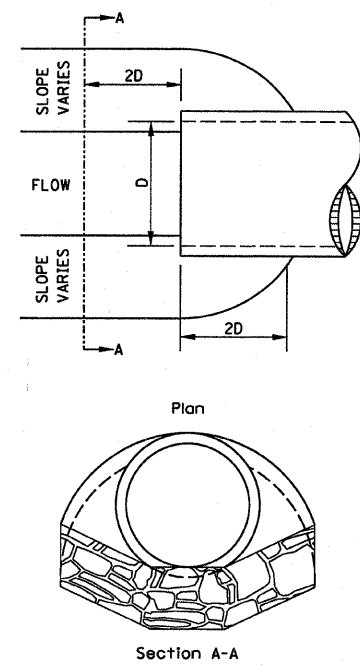
ALL OTHER STEEL SHAPES AND PLATES SHALL CONFORM TO THE REQUIREMENTS OF A.A.S.H.T.O. DESIGNATION M-183 EXCEPT POSTS AND ANGLES SHALL CONFORM TO A.A.S.H.T.O. M-223, GRADE 50.

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 GALVINIZED 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 ERRECTION.

STONE RIPRAP DITCH DESIGN



NOTE:

BOTTOM OF DITCH	SLOPE			TON/LIN. FT
	1 1/2:1	2:1	3:1	
2 FT	X= 5 FT	6 FT	8 FT	
	Y= 2 FT	2 FT	2 FT	
	Z= 1 FT	1 FT	1 FT	
	0.40	0.48	0.62	TON/LIN. FT

NOTE: FOR PLACEMENT, QUALITY GRADATION AND OTHER MISCELLANEOUS REQUIREMENTS FOR STONE RIPRAP DITCH-SEE SPECIAL PROVISIONS.

BOTTOM OF DITCH	SLOPE			TON/LIN. FT
	1 1/2:1	2:1	3:1	
3 FT	X= 6 FT	7 FT	9 FT	
	Y= 3 FT	3 FT	3 FT	
	Z= 1 FT	1 FT	1 FT	
	0.48	0.56	0.70	TON/LIN. FT

BOTTOM OF DITCH	SLOPE			TON/LIN. FT
	1 1/2:1	2:1	3:1	
4 FT	X= 7 FT	8 FT	10 FT	
	Y= 4 FT	4 FT	4 FT	
	Z= 1 FT	1 FT	1 FT	
	0.56	0.64	0.78	TON/LIN. FT