8-4-06 Letting, Item 076

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 416	05-07128-00-BR	FAYETTE	12	1
FED. ROAD DIST. NO.		ILLINOIS	PROJECT	

CONTRACT NO. 95481

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

SCALES: PROFILE HORIZ. 0' 20' 40' CROSS SECTIONS HORIZ. 0' 10' 20'
PROFILE VERT. 0' 2' 4' CROSS SECTIONS VERT. 0' 5' 10'

SECTION 05-07128-00-BR
PROJECT NO. BROS-051(73)
LONE GROVE ROAD DISTRICT
FAYETTE COUNTY
JOB NO. C-97-101-06

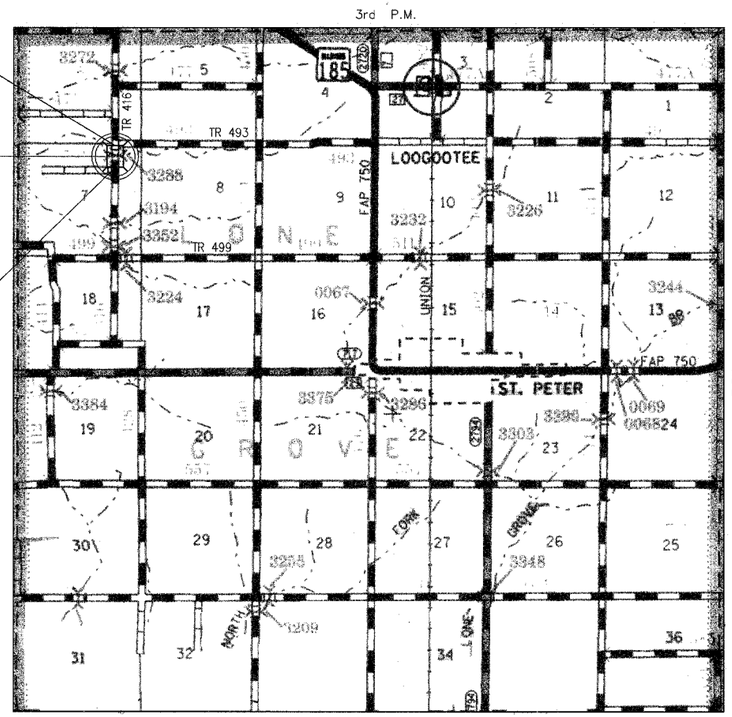
LOCATION OF PROJECT INDICATED THUS – —

INDEX OF SHEETS

END SECTION 05-07128-00-BR
STA. 50+30.75

STA. 50+00 – CONSTRUCT SINGLE SPAN PRECAST PRESTRESSED CONCRETE DECK BEAM BRIDGE (61.50' BK. TO BK. ABUTMENTS) WITH SPILL-THRU PILE BENT ABUTMENTS
0° SKEW, 24' ROADWAY
EXISTING STRUCTURE NO. 026-3288
PROPOSED STRUCTURE NO. 026-3430

BEGIN SECTION 05-07128-00-BR
STA.49+69.25



LOCATION MAP

APPROXIMATE SCALE – 1" = 0.60 MILE
NET LENGTH OF IMPROVEMENTS – 61.50 FEET = 0.012 MILE

APPROVED May 9, 2006.
Michael A. Mahl
COUNTY ENGINEER

PASSED June 9, 2006.
Maureen Kastl
DISTRICT SEVEN ENGINEER OF LOCAL ROADS & STREETS

Releasing For Bid Based on Limited Review June 9, 2006.
Christine M. Reed
DEPUTY DIRECTOR OF HIGHWAYS, REGION FOUR ENGINEER

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

48 HOURS PRIOR TO EXCAVATION CALL J.U.L.I.E.: 1-800-892-0123

CLASS ROAD: RURAL LOCAL ROAD
A.D.T. = 100
30 M.P.H.

STS CONSULTANTS
2524 South Broadway
Salem, Illinois 62881
Ph(618)548-3500
FAX(618)548-5246
IL Design Firm Registration No. 184-001518

STS JOB NO. 30389

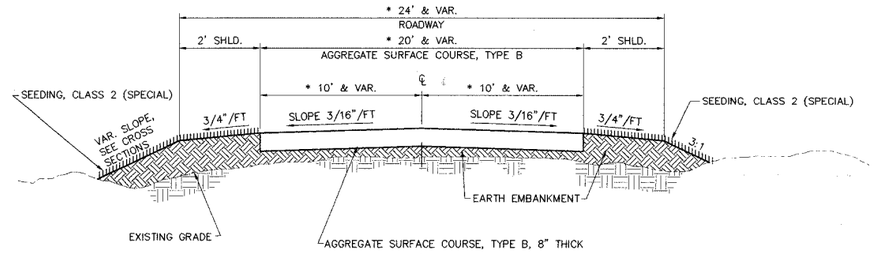
MICHAEL R. QUANDT 62-042283 REGISTERED PROFESSIONAL ENGINEER STATE OF ILLINOIS

5/4/06
LIC. EXP. 11/30/07

L:\30389\DWG\GOV-30389 1=1 5/04/06

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 416	05-07128-00-BR	FAYETTE	12	2
FED. ROAD DIST. NO.	ILLINOIS	PROJECT		

CONTRACT NO. 95481



TYPICAL CROSS-SECTION

* TRANSITION FROM 15.5' EXISTING TO 20' PROPOSED PAVEMENT STA. 49+19.25 TO STA. 49+69.25

* TRANSITION FROM 20' PROPOSED TO 16' EXISTING PAVEMENT STA. 50+30.75 TO STA. 50+80.75

GENERAL NOTES

1. THIS SECTION SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE PLANS, THE SPECIAL PROVISIONS AND THE "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" ADOPTED JANUARY 1, 2002.

2. IF SECTION OR SUBSECTION MONUMENTS ARE ENCOUNTERED, THE ENGINEER SHALL BE NOTIFIED BEFORE SUCH MONUMENTS ARE REMOVED. THE CONTRACTOR SHALL PROTECT AND CAREFULLY PRESERVE ALL PROPERTY MARKERS AND MONUMENTS UNTIL OWNER, AN AUTHORIZED SURVEYOR OR AGENT HAS WITNESSED OR OTHERWISE REFERENCED THEIR LOCATION.

3. THE SHRINKAGE FACTOR FOR EMBANKMENT IS 25%.

4. ALL CLEARING AND GRUBBING IS TO BE INCLUDED IN THE UNIT PRICE BID FOR EARTH EXCAVATION.

5. BITUMINOUS SURFACE TREATMENT (A-2) WILL BE COMPLETED BY THE OWNER.

SUMMARY OF QUANTITIES

X081-2A

CODE NO.	ITEM	QUANTITY	UNIT
20200100	EARTH EXCAVATION	34	CU. YD.
20300100	CHANNEL EXCAVATION	323	CU. YD.
25001000	SEEDING, CLASS 2 (SPECIAL)	0.02	ACRE
28000300	TEMPORARY DITCH CHECKS	1	EACH
28100807	STONE DUMPED RIPRAP, CLASS A4	88	TON
40200800	AGGREGATE SURFACE COURSE, TYPE B	90	TON
50100100	REMOVAL OF EXISTING STRUCTURES	1	EACH
50300225	CONCRETE STRUCTURES	18.2	CU. YD.
50400505	PRECAST PRESTRESSED CONCRETE DECK BEAMS (27" DEPTH)	1440	SQ. FT.
50800105	REINFORCEMENT BARS	2300	POUND
50900205	STEEL RAILING, TYPE S1	120	FOOT
51201400	FURNISHING STEEL PILES HP 10x42	187	FOOT
51202700	DRIVING STEEL PILES	187	FOOT
51203400	TEST PILE STEEL HP 10x42	1	EACH
51204315	CONCRETE ENCASEMENT	2.1	CU. YD.
51500100	NAME PLATES	1	EACH
67100100	MOBILIZATION	1	L. SUM

STS CONSULTANTS
2524 South Broadway
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Fax(618)548-5246
IL Design Firm Reg. No. 184-001518

TR 416, SECTION 05-07128-00-BR
LONE GROVE ROAD DISTRICT
FAYETTE COUNTY, ILLINOIS

TYPICAL CROSS SECTION, GENERAL NOTES AND SUMMARY OF QUANTITIES

SURVEY	CHECKED	DATE
JAS		5/04/06
DESIGN	APPROVED	REVISED
DJC		
DRAWN		JOB NO.
BLT		30389

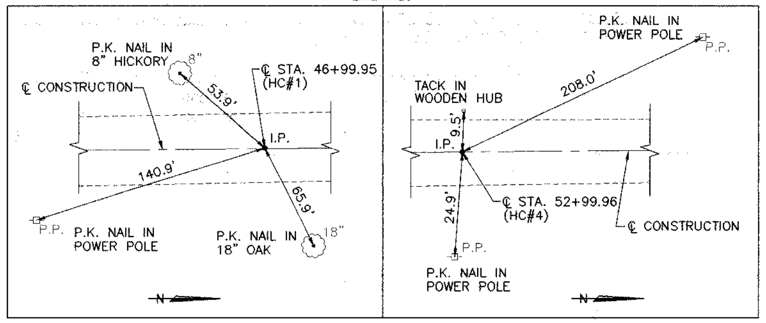
L:\30389\DRWG\TR-30389 1=1 5/04/06

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 416	05-07128-00-BR	FAYETTE	12	3
FED. ROAD DIST. NO.		ILLINOIS	PROJECT	

CONTRACT NO. 95481

CONSTRUCT SEEDING, CLASS 2 (SPECIAL)
STA. 49+19.25 TO STA. 50+80.75 = 0.02 ACRE

LINE TIES

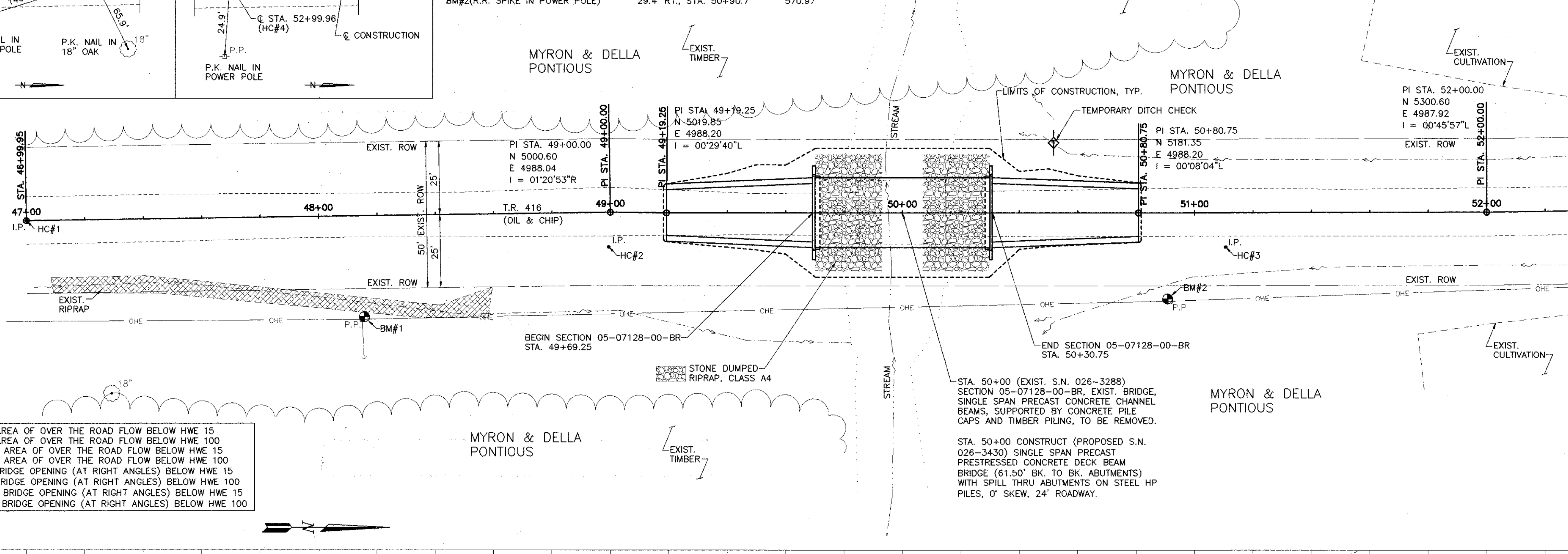


HORIZONTAL CONTROL COORDINATES

POINT	LOCATION	N. COOR.	E. COOR.
HC#1(IRON PIN)	℄ STA. 46+99.95	4800.57	4991.02
HC#2(IRON PIN)	11.95' RT., STA. 48+99.22	5000.00	5000.00
HC#3(IRON PIN)	11.87' RT., STA. 51+10.55	5211.17	5000.00
HC#4(IRON PIN)	℄ STA. 52+99.96	5400.55	4986.35

BENCH MARK COORDINATES

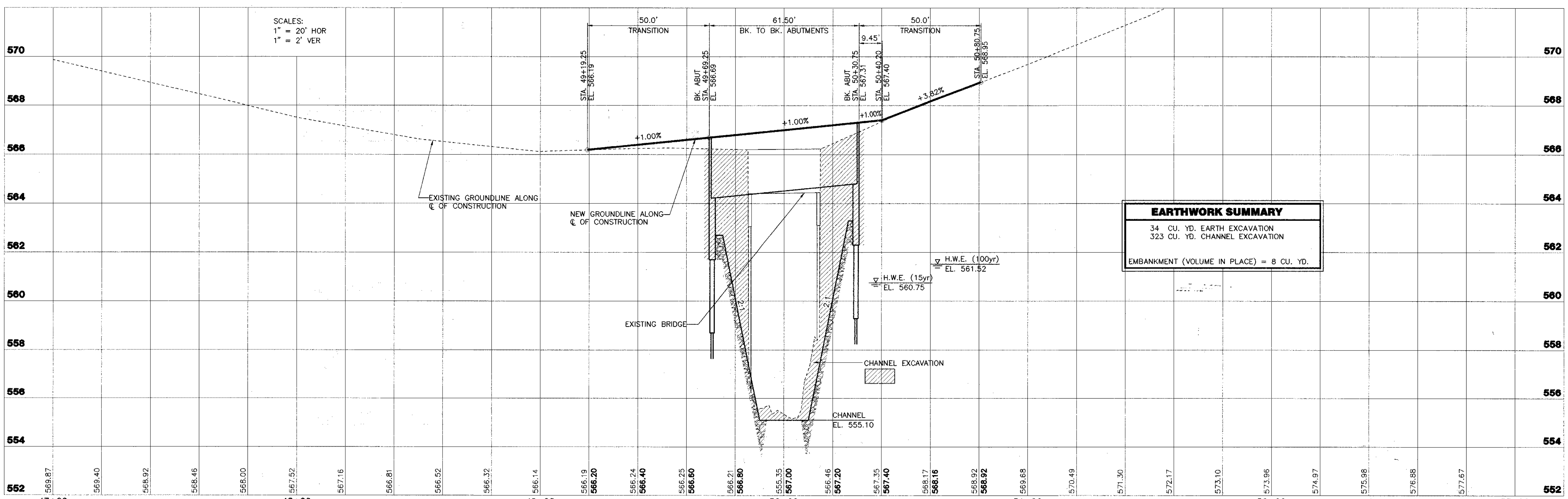
POINT	LOCATION	ELEV.
BM#1(R.R. SPIKE IN POWER POLE)	34.6' RT., STA. 48+15.2	566.59
BM#2(R.R. SPIKE IN POWER POLE)	29.4' RT., STA. 50+90.7	570.97



0 SF EXISTING AREA OF OVER THE ROAD FLOW BELOW HWE 15
0 SF EXISTING AREA OF OVER THE ROAD FLOW BELOW HWE 100
0 SF PROPOSED AREA OF OVER THE ROAD FLOW BELOW HWE 15
0 SF PROPOSED AREA OF OVER THE ROAD FLOW BELOW HWE 100
131 SF EXISTING BRIDGE OPENING (AT RIGHT ANGLES) BELOW HWE 15
152 SF EXISTING BRIDGE OPENING (AT RIGHT ANGLES) BELOW HWE 100
177 SF PROPOSED BRIDGE OPENING (AT RIGHT ANGLES) BELOW HWE 15
211 SF PROPOSED BRIDGE OPENING (AT RIGHT ANGLES) BELOW HWE 100

LEGEND

- P.P. — EXISTING POWER POLE
- EXISTING GUY WIRE
- OHE — EXISTING OVERHEAD ELECTRIC LINE
- 12" — EXISTING TREE
- EXISTING TREE LINE
- I.P. — EXISTING IRON PIN
- EXISTING BENCH MARK
- EXISTING SURFACE DRAINAGE
- EXISTING STREAM
- EXISTING RIPRAP



EARTHWORK SUMMARY

34 CU. YD. EARTH EXCAVATION
323 CU. YD. CHANNEL EXCAVATION

EMBANKMENT (VOLUME IN PLACE) = 8 CU. YD.

STS CONSULTANTS
2524 South Broadway
Salem, Illinois 62881
Ph(618)548-3500
Fax(618)548-5246
IL Design Firm Reg. No. 184-001518

TR 416, SECTION 05-07128-00-BR
LONE GROVE ROAD DISTRICT
FAYETTE COUNTY, ILLINOIS

PLAN AND PROFILE
STA. 47+00 TO STA. 53+00

SURVEY	CHECKED	DATE
JAS		5/04/06
DESIGN DJC	APPROVED	REVISED
DRAWN BLT/DJC		JOB NO. 30389

B.M. - B.M. #1 R.R. spike in Power Pole, 34.6' RT., STA. 48+15.2, EL. 566.59
B.M. #2 R.R. spike in Power Pole, 29.4' RT., STA. 50+90.7, EL. 570.97

Existing Structure - The existing structure is single span with precast concrete channel beams, supported by concrete pile caps and timber piling.

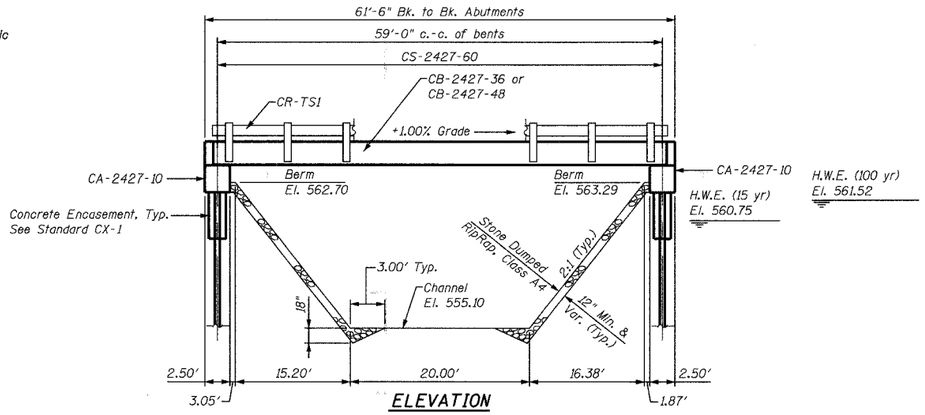
Salvage - None

Existing Known Utilities - Overhead Electric

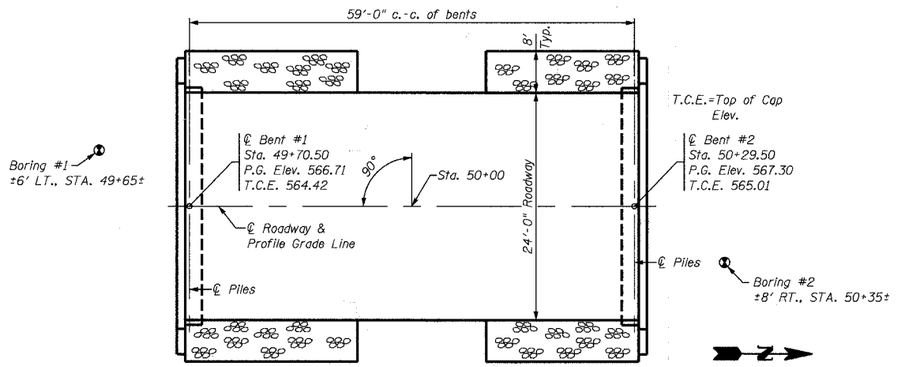
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 416	05-07128-00-BR	FAYETTE	12	4
FED. ROAD DIST. NO.		ILLINOIS	PROJECT	

CONTRACT NO. 95481



ELEVATION



PLAN

GENERAL NOTES

1. The contractor shall drive 1 test pile, 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 Calcium Nitrite Corrosion Inhibitor, as covered in the Special Provisions, shall be used in the concrete for precast prestressed concrete deck beams.
4. The Waterproofing Membrane System and Bituminous Concrete Surface Course Shown on the Standards Shall Not be Provided.

TOTAL BILL OF MATERIAL

Item	Unit	Super	Sub. Piers	Sub. Abuts.	Total
Removal of Existing Structures	Each				1
Concrete Structures	Cu. Yd.			18.2	18.2
Precast Prestressed Concrete Deck Beams (27" Depth)	Sq. Ft.	1440			1440
Steel Railing, Type S-1	Foot	120			120
Reinforcement Bars	Pound			2300	2300
Furnishing Steel Pile HP 10x42	Foot			187	187
Driving Steel Piles	Foot			187	187
Test Pile Steel HP 10x42	Each			1	1
Name Plates	Each			1	1
Concrete Encasement	Cu. Yd.			2.1	2.1

The standard detail sheets for this structure were assembled by me or persons under my direct supervision.

MICHAEL R. QUANDT 62-042883 REGISTERED PROFESSIONAL ENGINEER OF ILLINOIS

Date: 5/4/06

Date of License Expiration: 11/30/07

Signature: Michael R Quandt

I certify these Standard Bridge Plans for foundation treatment only.

WILLIAM D. LUEKING 4341 REGISTERED STRUCTURAL ENGINEER OF ILLINOIS

Date: May 4, 2006

Date of License Expiration: 11-30-06

Signature: William D Lueking

DESIGN SPECIFICATIONS

2002 AASHTO Standard Specifications - 17th ed.

LOADING HS 20-44

Allow 25# / Sq. Ft. for Future Wearing Surface.

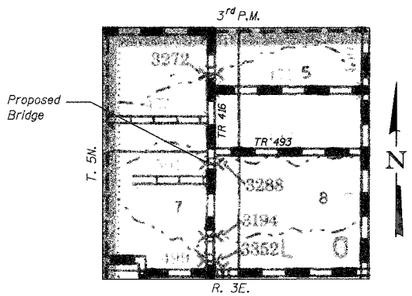
PILE DATA (2-ABUTS.)

Type: Steel Piles, HP10x42
Capacity: 64.5 Tons (Includes 150% of Max. Pile Load for H-Pile In Friction)
Estimated Length: 25 Feet Bent #1, 29 Feet Bent #2
Number Required: 8 (Includes 1 Test Pile located in Bent #2)

STATION 50+00
UNNAMED STREAM
SEC. 05-07128-00-BR BUILT 20__
PROJECT NO. BROS-051(73)
FAYETTE COUNTY
LOADING HS20
STR. NO. 026-3430

LETTERING FOR NAME PLATE

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



LOCATION SKETCH

WATERWAY INFORMATION

Drainage Area = 1.33 Sq. Mi. Low Grade Elev. 566.12 @ Sta. 48+99.94

Flood	Freq. Yr.	Q C.F.S.	Opening Sq. Ft. Exist.	Opening Sq. Ft. Prop.	Nat. H.W.E. Ft.	Head - Ft. Exist.	Head - Ft. Prop.	Headwater Elev. - Ft. Exist.	Headwater Elev. - Ft. Prop.
Design	15	477	131	177	560.75	N/A	0.09	N/A	560.84
Base	100	776	152	211	561.52	N/A	0.12	N/A	561.64
Overtopping									
Max. Calc.	500								

INDEX OF SHEETS

GENERAL PLAN & ELEVATION
TR 416
OVER UNNAMED STREAM
SECTION 05-07128-00-BR
FAYETTE COUNTY
STATION 50+00

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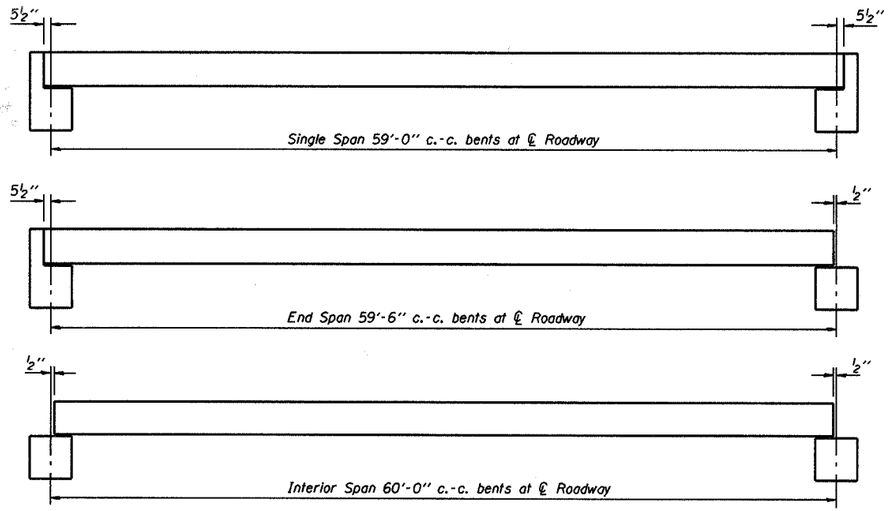
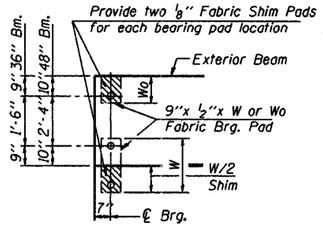
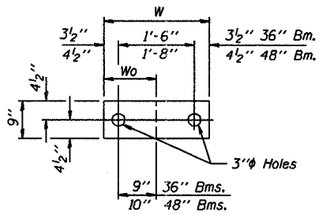
ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 416	05-07128-00-BR	FAYETTE	12	5
FED. ROAD DIST. NO.		ILLINOIS	PROJECT	
		CONTRACT NO. 95481		



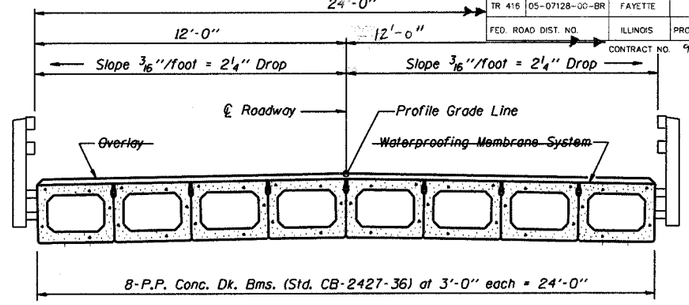
TYPICAL ELEVATIONS



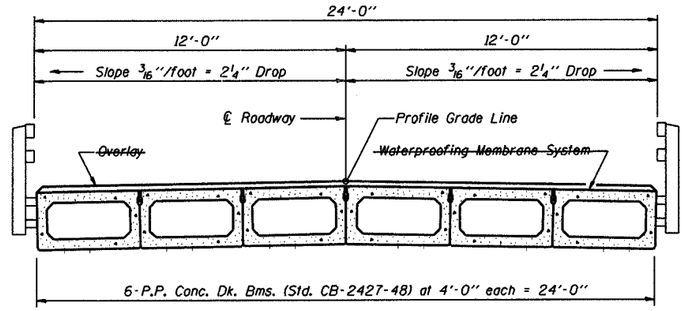


Beam	W	Wo
36"	2'-1"	1'-0½"
48"	2'-5"	1'-2½"

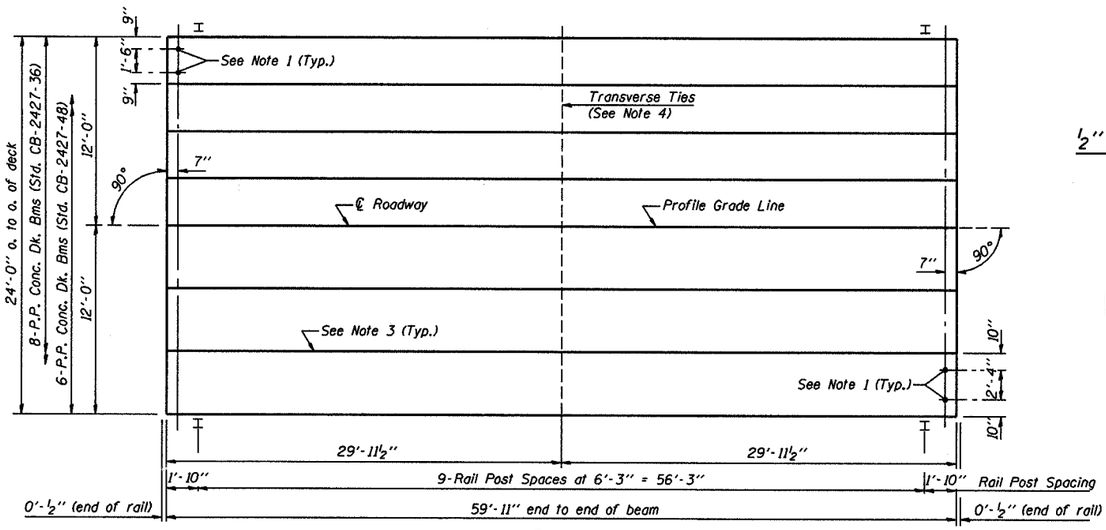
½" FABRIC BRG. PAD DETAILS



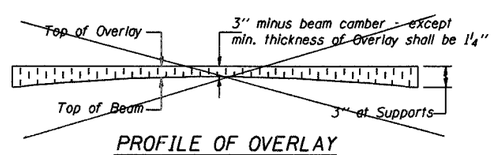
CROSS SECTION



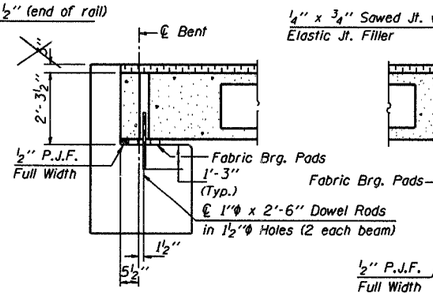
CROSS SECTION



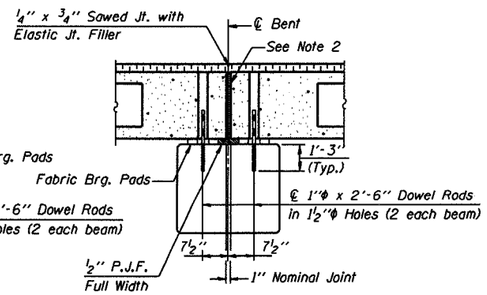
PLAN



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.
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.	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~~		

Illinois Department of Transportation

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

ISSUED 1-1-88

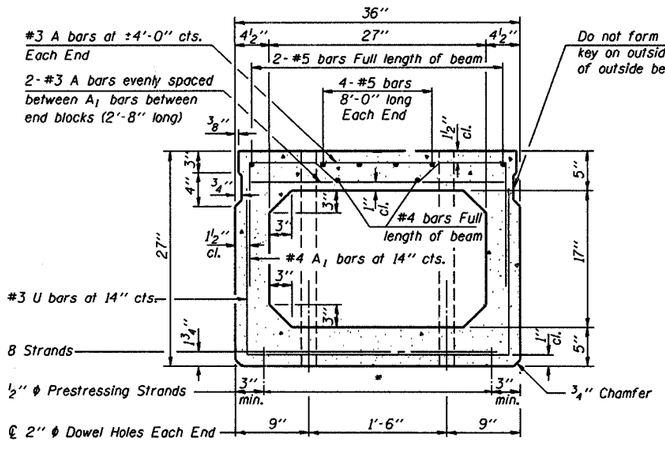
P.P.C. DECK BEAM SUPERSTRUCTURE

24' RDWY.	27" BMS.	60' SPAN	0° SKEW

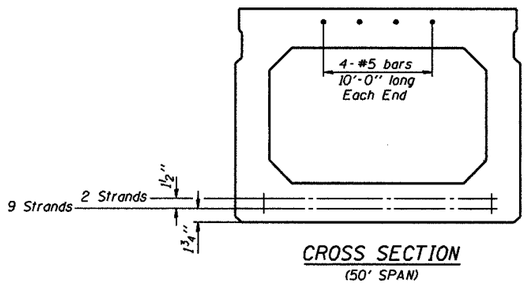
STANDARD CS-2427-60

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 416	05-07128-00-BR	FAYETTE	12	6
FED. ROAD DIST. NO.		ILLINOIS	PROJECT	

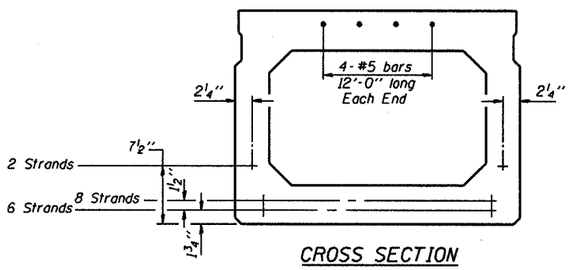
CONTRACT NO. 95481



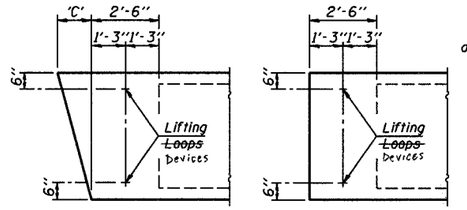
CROSS SECTION
(40' SPAN)



CROSS SECTION
(50' SPAN)

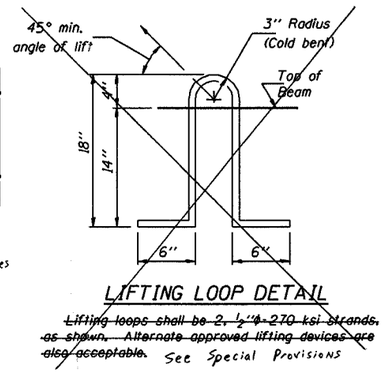


CROSS SECTION
(60' SPAN)



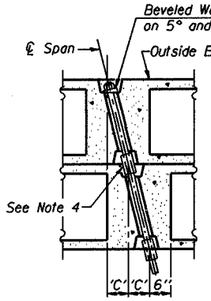
END BLOCK DETAILS

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

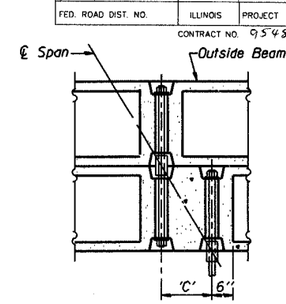


LIFTING LOOP DETAIL

~~Lifting loops shall be 2, ½"ϕ 270 ksi strands, as shown. Alternate approved lifting devices are also acceptable.~~ See Special Provisions



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



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

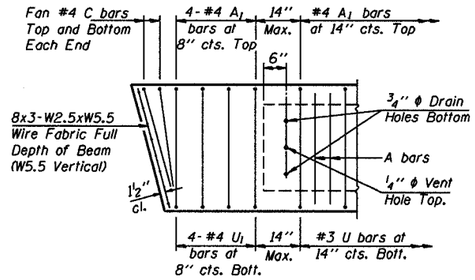
DIMENSION 'C'

Skew Angle 'D'	0°	5°	10°	15°	20°	25°	30°
Dimension 'C' (Inches)	0	3⅛	6⅜	9⅝	13⅛	16¾	20¾

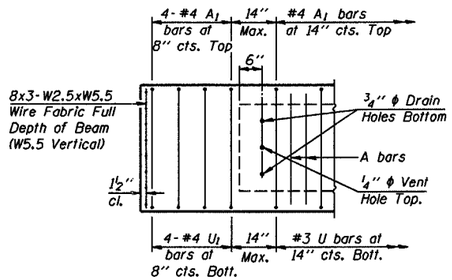
* TRANSVERSE STRAND PLACEMENT GUIDELINES

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".

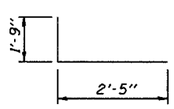
Vertical placement of strands shall not be adjusted to satisfy the above guidelines.



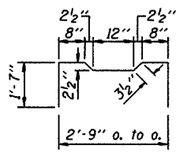
END REINFORCEMENT
(SKEWED)



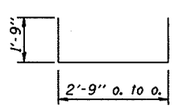
END REINFORCEMENT
(RIGHT ANGLE)



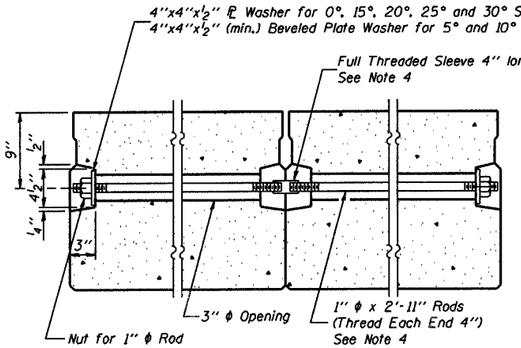
BAR C**



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 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

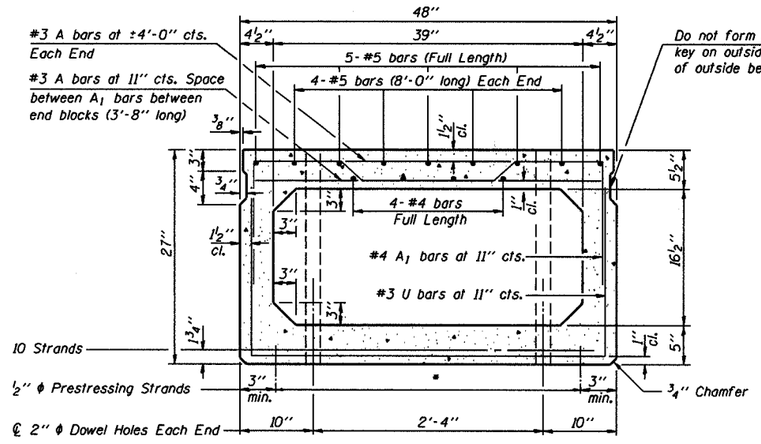
ISSUED 1-1-1981

P.P.C. DECK BEAM DETAILS

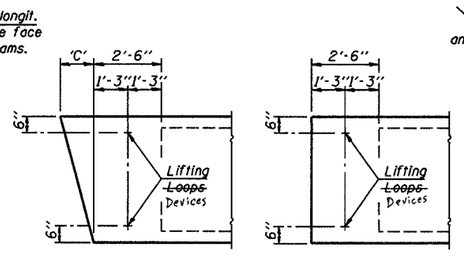
24' ROADWAY | 27" x 36" BEAMS

STANDARD CB-2427-36

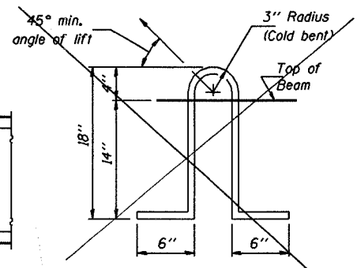
ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 416	05-07128-00-BR	FAYETTE	12	7
FED. ROAD DIST. NO.		ILLINOIS	PROJECT	
		CONTRACT NO. 75481		



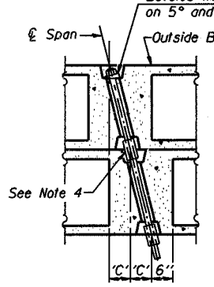
CROSS SECTION
(40' SPAN)



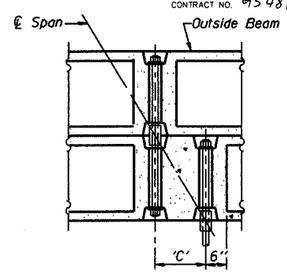
END BLOCK DETAILS
Each beam shall have four Lifting ~~Loops,~~ devices two at each end of beam cast in locations shown above. ~~Loops shall be burned off after beams have been erected.~~



LIFTING LOOP DETAIL
~~Lifting loops shall be 3, ½"ϕ 270 ksi strands, as shown. Alternate approved lifting devices are also acceptable.~~ See Special Provisions.



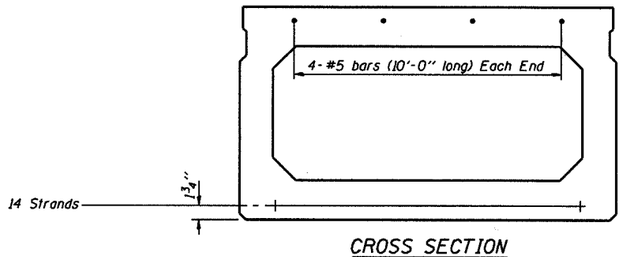
PARTIAL PLAN TRANSVERSE TIE ASSEMBLY
('D'=0°, 5° and 10°)



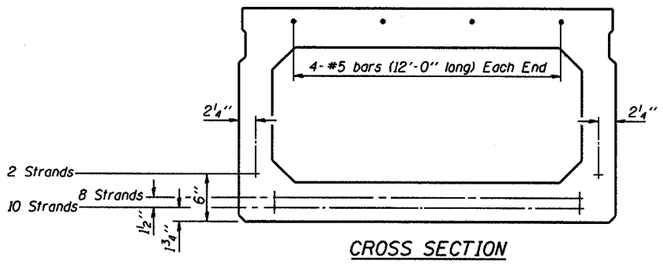
PARTIAL PLAN TRANSVERSE TIE ASSEMBLY
('D'=15°, 20°, 25° and 30°)

DIMENSION 'C'

Skew Angle 'D'	0°	5°	10°	15°	20°	25°	30°
Dimension 'C' (Inches)	0	4¼	8½	12⅞	17½	22⅜	27¾



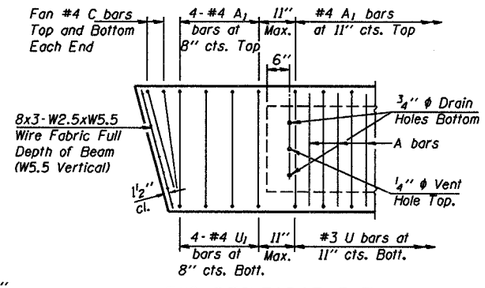
CROSS SECTION
(50' SPAN)



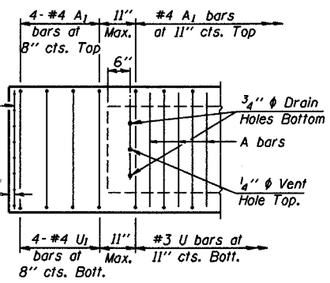
CROSS SECTION
(60' SPAN)

* 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".

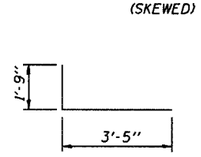
Vertical placement of strands shall not be adjusted to satisfy the above guidelines.



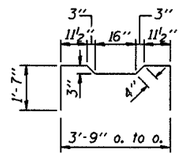
END REINFORCEMENT
(SKEWED)



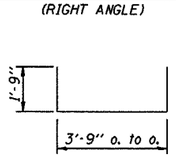
END REINFORCEMENT
(RIGHT ANGLE)



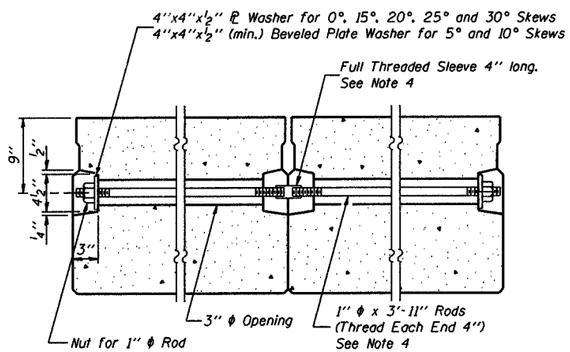
BAR C**



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 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

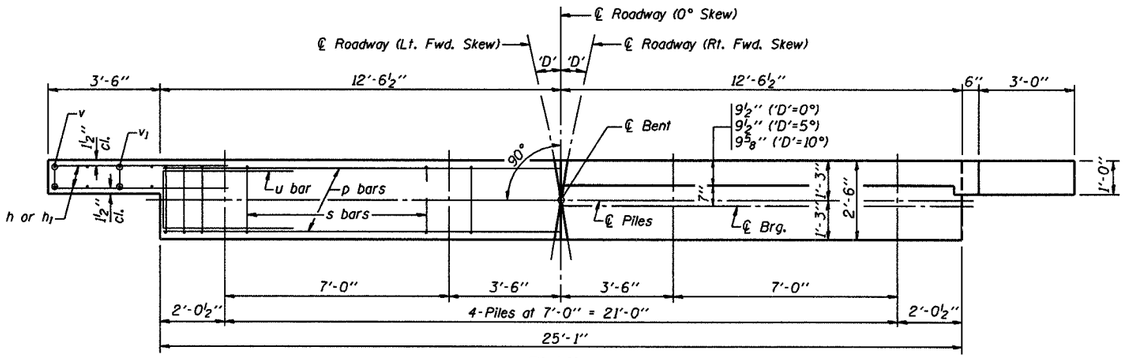
ISSUED 1-1-1981

P.P.C. DECK BEAM DETAILS

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

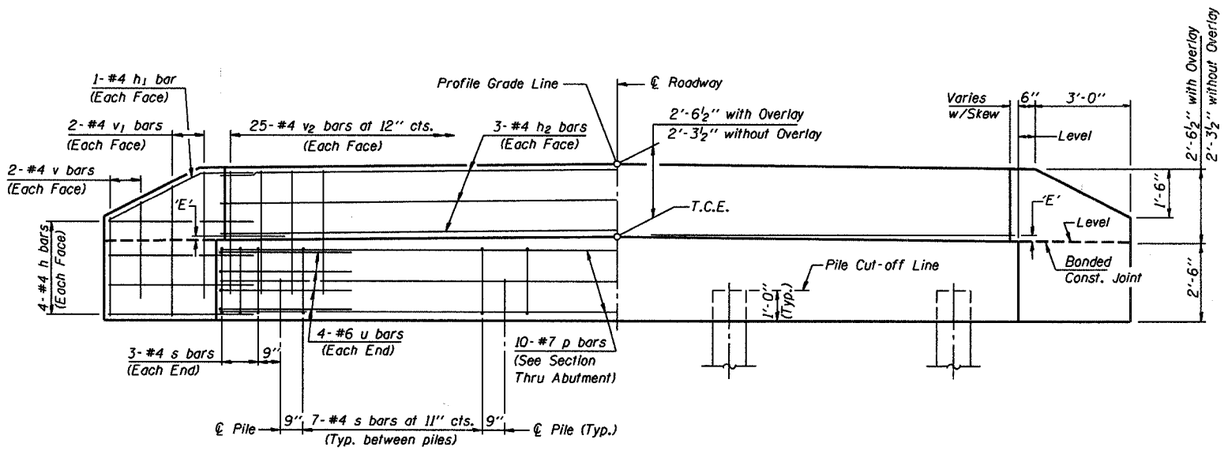
ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 416	05-07128-00-BR	FAYETTE	12	8
FED. ROAD DIST. NO.		ILLINOIS	PROJECT	

CONTRACT NO. 63481

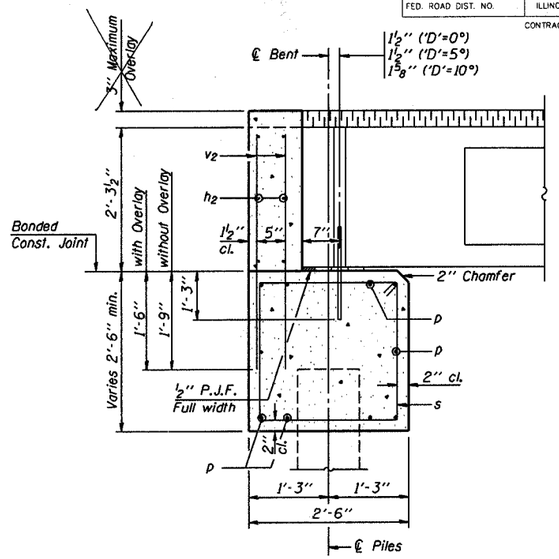


PLAN

('D'=Designated Skew Angle)

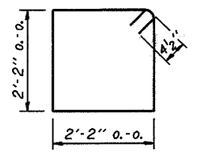


ELEVATION

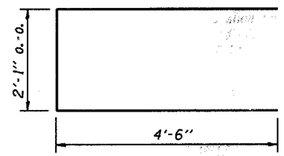


SECTION THRU ABUTMENT

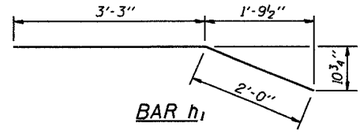
(At Right Angles)



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	3'-2"	
v1	8	#4	4'-2"	
v2	50	#4	3'-11"	
Concrete Structures			9.1 Cu. Yds.	
Reinforcement Bars			1150 Lb.	

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'	34
50'	38
60'	43

DESIGN STRESSES

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

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

24' RDWY.	27" BMS.	'D'=0°, 5° OR 10°

STANDARD CA-2427-10

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 416	05-07128-00-BR	FAYETTE	12	9
FED. ROAD DIST. NO.		ILLINOIS	PROJECT	

Contract No. 95481

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.

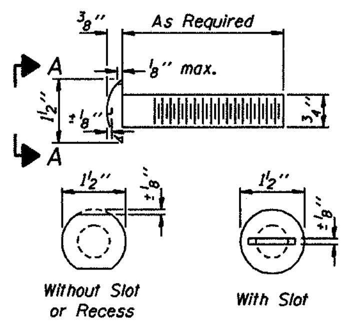
For multi-span bridges, sufficient 1/4" x 6" x 1'-2" galvanized steel shims shall be provided to align rail between adjacent spans. Cost included with STEEL RAILING, TYPE S-1.

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.

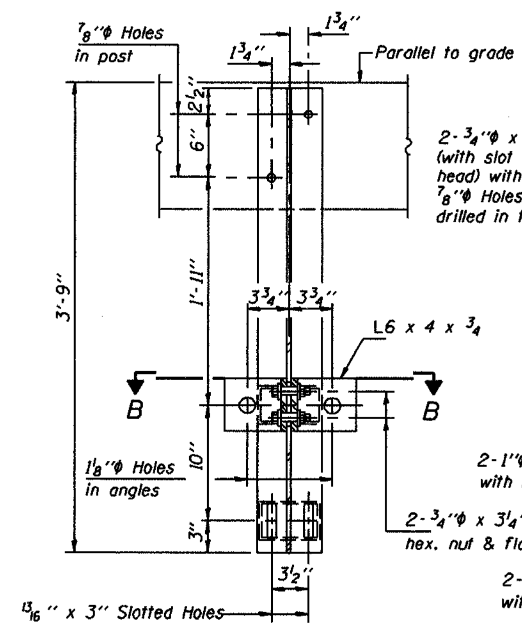
The 3/4"ϕ high strength bolts used to connect the 6 x 4 x 3/4 angles to the post shall be tightened according to Article 505.04 (f)(2) of the Standard Specifications. The 1"ϕ high strength bolts connecting the angles to the concrete shall be tightened to a snug fit and given an additional 1/8 turn. The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

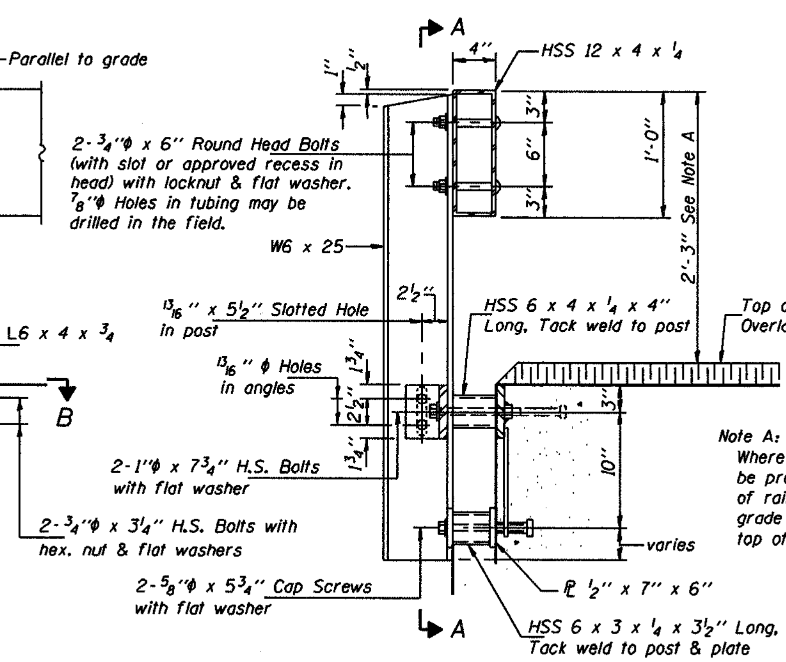


VIEW A-A

ROUND HEAD BOLT

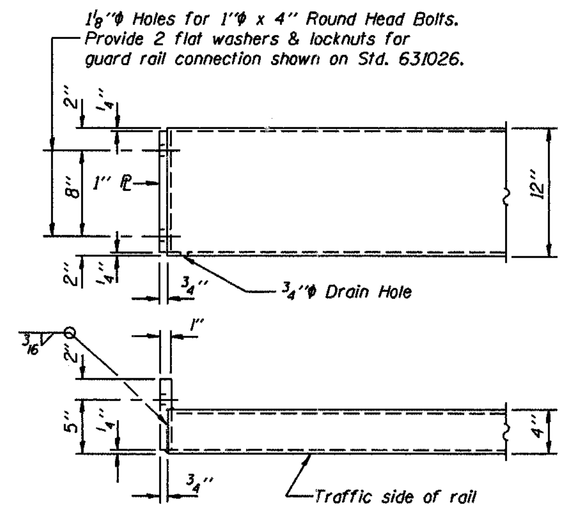


SECTION A-A



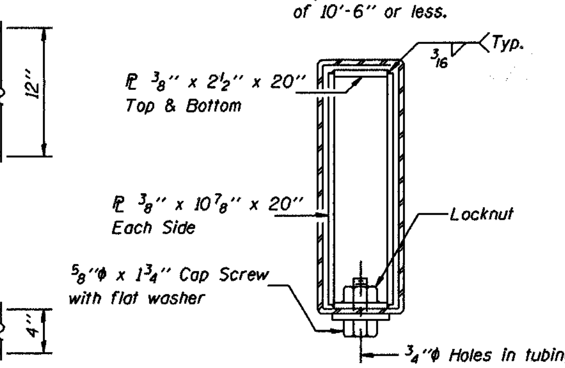
Note A: Where no overlay is to be provided, adjust top of rail to lay parallel to grade 2'-5" max. above top of beam.

SECTION AT RAIL POST



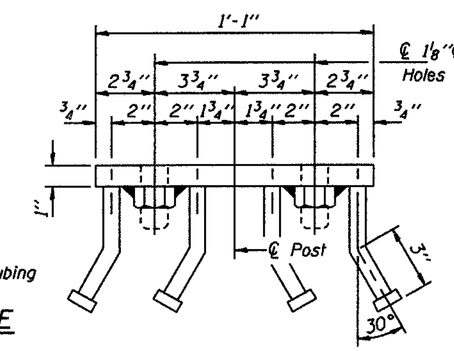
END OF RAIL DETAILS

** 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".

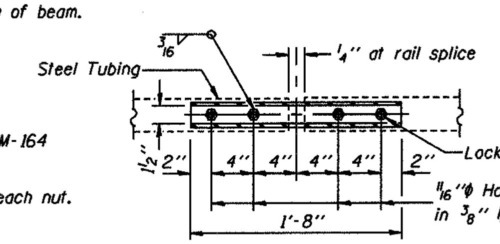


SECTION AT RAIL SPLICE

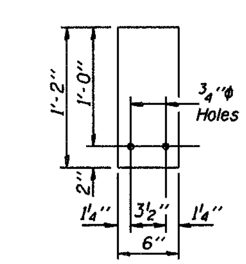
* Threaded areas shall be plugged or blocked off during casting of beam.



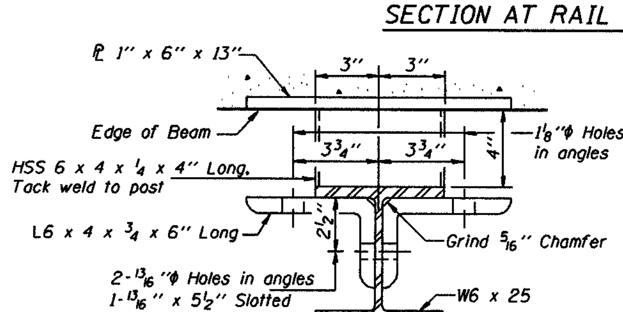
VIEW C-C



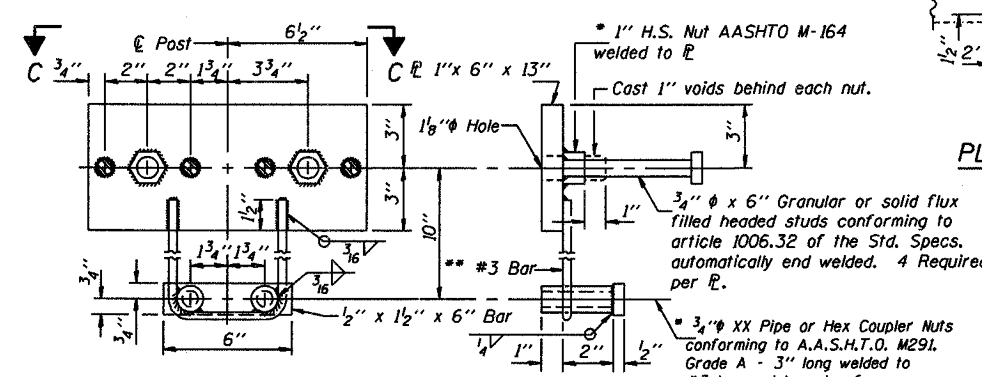
PLAN-BOTT. SPLICE P TYPICAL



1/4" SHIM PLATE



SECTION B-B



ANCHOR DEVICE

Illinois Department of Transportation

PASSED APRIL 4, 2005

Engineer of Bridge Design

APPROVED APRIL 4, 2005

Engineer of Bridges and Structures

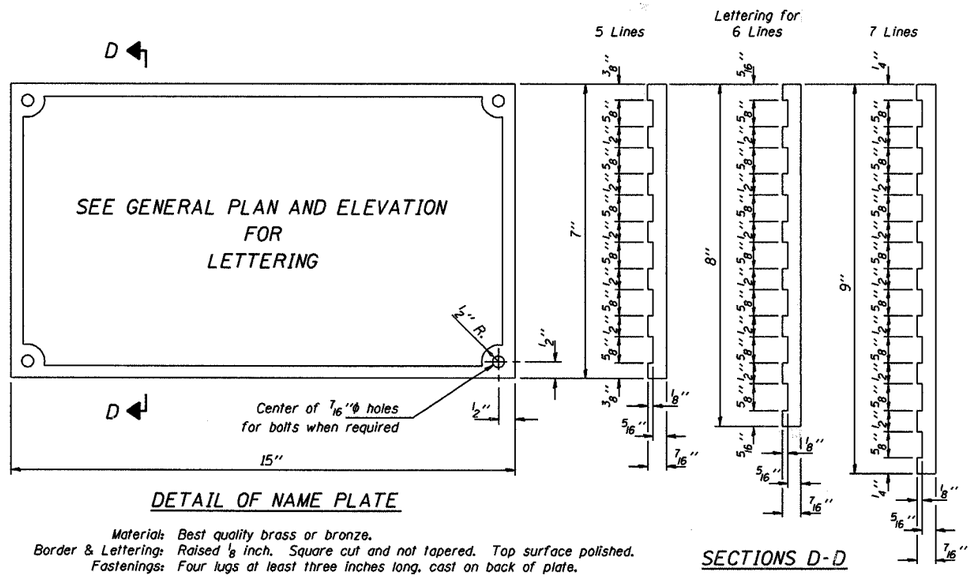
ISSUED 1-1-1991

STEEL RAILING, TYPE S-1

STANDARD CR-TS1

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 416	05-07128-00-BR	FAYETTE	12	10
FED. ROAD DIST. NO.		ILLINOIS	PROJECT	

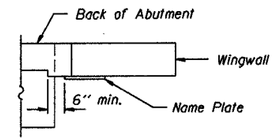
CONTRACT NO. 93448



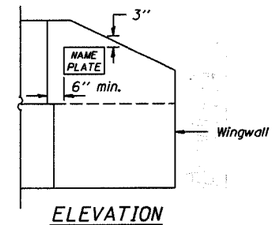
DETAIL OF NAME PLATE

SECTIONS D-D

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.



PLAN



ELEVATION

LOCATION OF NAME PLATE

Illinois Department of Transportation

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

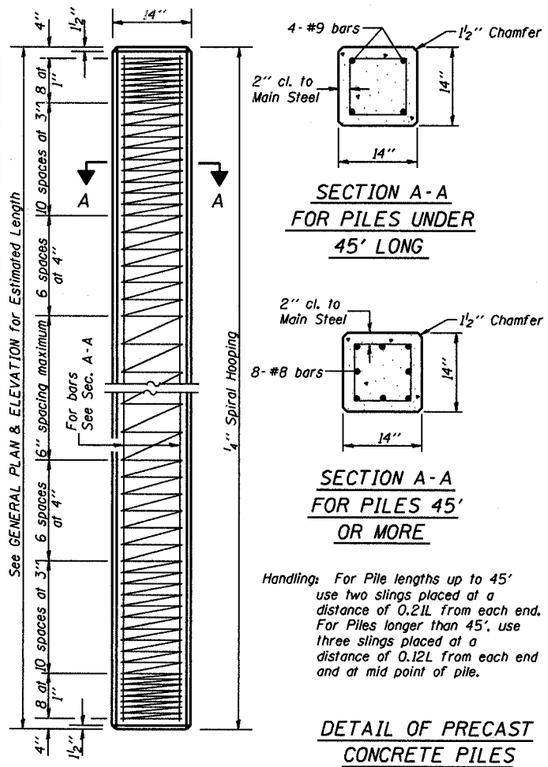
APPROVED APRIL 4, 2005
Ralph E. Anderson
Engineer of Bridges and Structures

ISSUED 1-1-1995

NAME PLATE
STANDARD CN

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 416	05-07128-00-BR	FAYETTE	12	11
FED. ROAD DIST. NO		ILLINOIS	PROJECT	

Contract No. 95481

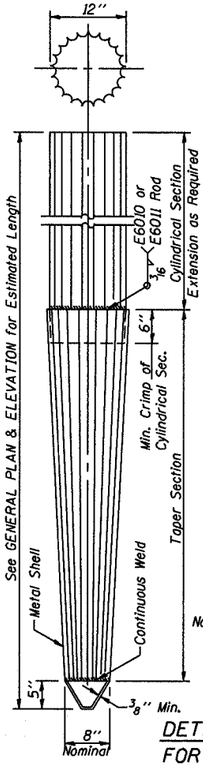


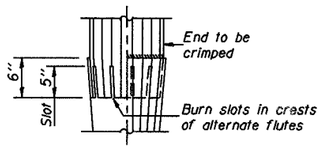
SECTION A-A
FOR PILES UNDER 45' LONG

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.

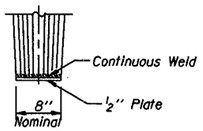
DETAIL OF PRECAST CONCRETE PILES





FIELD CRIMP DETAIL

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



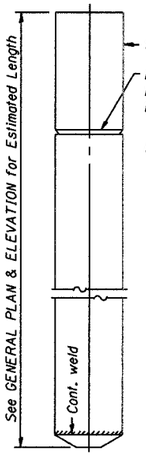
OPTIONAL FLAT END

ALLOWABLE TAPER SECTIONS

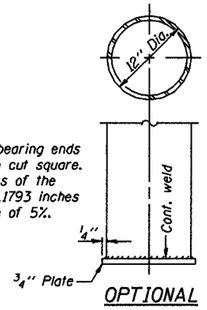
10' Length-Taper 1" in 2'-6"
17' Length-Taper 1" in 4'-0"
25' Length-Taper 1" in 7'-0"
30' Length-Taper 1" in 7'-0"

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%.

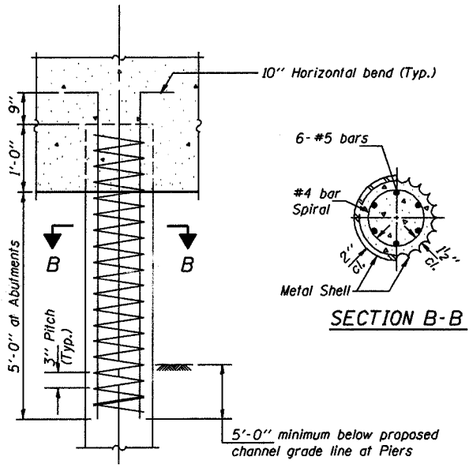


OPTIONAL FLAT END

DETAIL OF CYLINDRICAL STEEL SHELL FOR CAST IN PLACE CONCRETE PILES

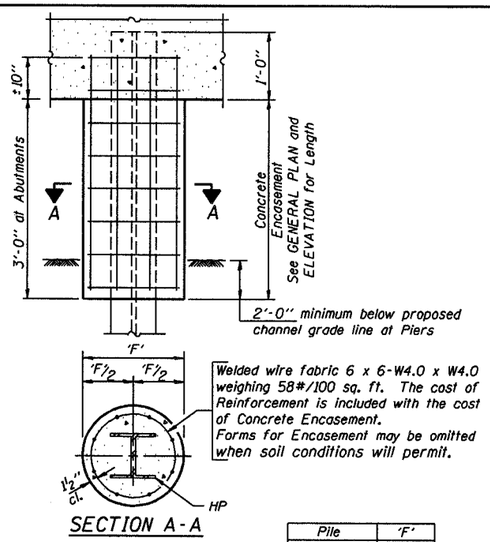
Reinforcement cage shall be omitted when Concrete Encasement is provided.

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



SECTION B-B

DETAIL OF REINFORCEMENT FOR METAL SHELLS

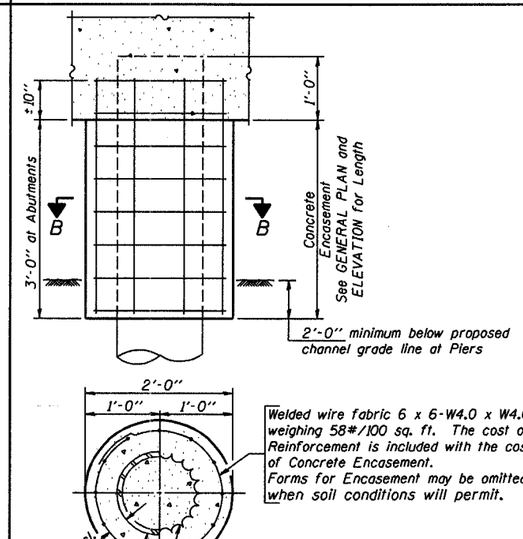


Welded wire fabric 6 x 6-W4.0 x W4.0 weighing 58#/100 sq. ft. The cost of Reinforcement is included with the cost of Concrete Encasement. Forms for Encasement may be omitted when soil conditions will permit.

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

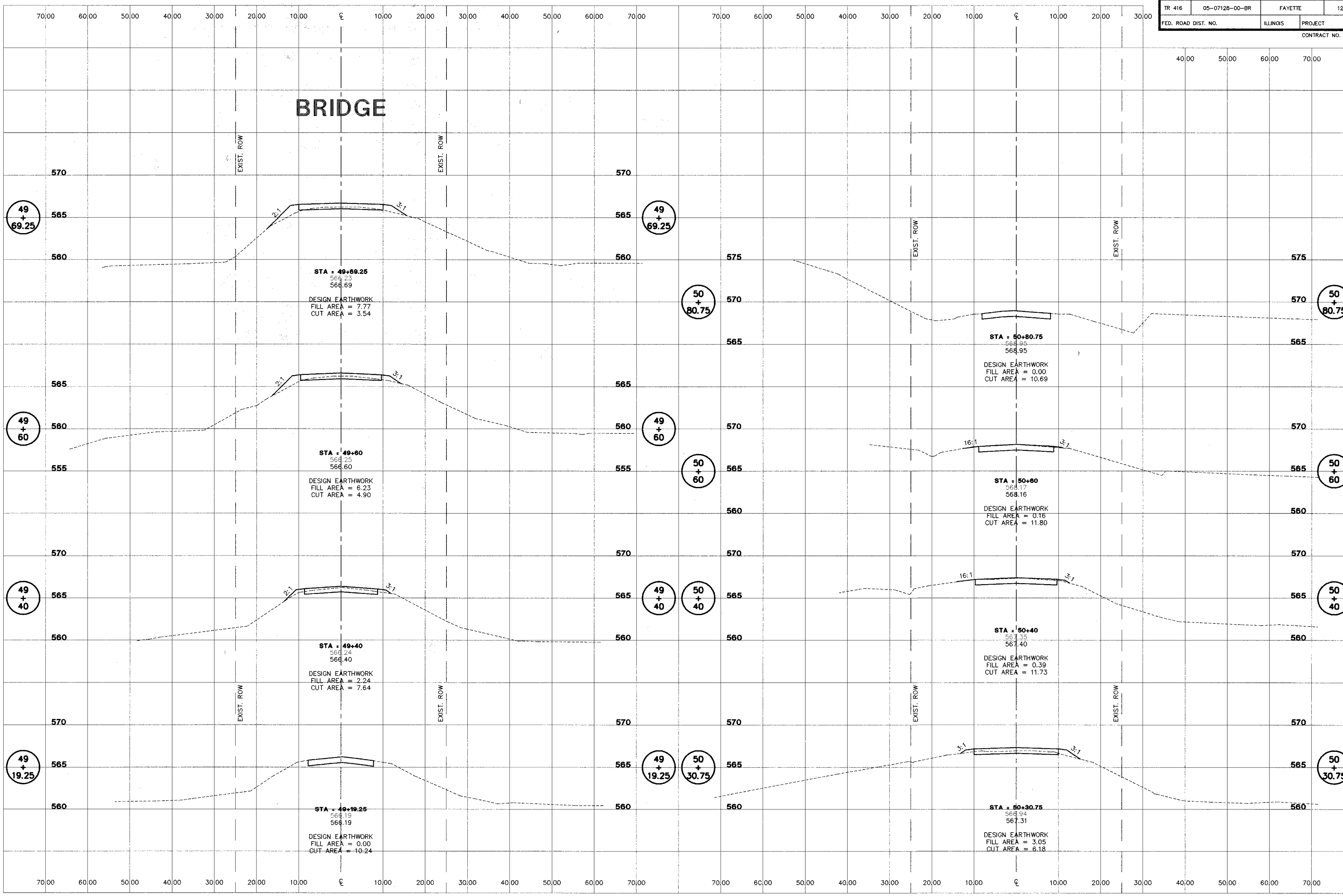
ISSUED 1-1-88

PILE DETAILS

STANDARD CX-1

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 416	05-07128-00-BR	FAYETTE	12	12
FED. ROAD DIST. NO.		ILLINOIS	PROJECT	

CONTRACT NO. 95481



STS CONSULTANTS 2524 South Broadway Salem, Illinois 62881 Ph(618)548-3500 Fax(618)548-5246 IL Design Firm Reg. No. 184-001518	**TR 416, SECTION 05-07128-00-BR** **LONE GROVE ROAD DISTRICT** **FAYETTE COUNTY, ILLINOIS**	**CROSS SECTIONS** **STA. 49+19.25 TO STA. 50+80.75**	SURVEY JAS; CHECKED; DATE 5/04/06 DESIGN DJC; APPROVED; REVISED DRAWN BLT; JOB NO. 30389