6-17-05 Letting, Item 079

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 181	03-01112-00-BR	MARION	12	1
FED. ROAD DIST. NO.		ILLINOIS	PROJECT	

CONTRACT NO. 95428

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PLANS FOR PROPOSED BRIDGE REPLACEMENT AND REHABILITATION PROGRAM AND TOWNSHIP BRIDGE PROGRAM

LOCATION OF PROJECT INDICATED THUS – —

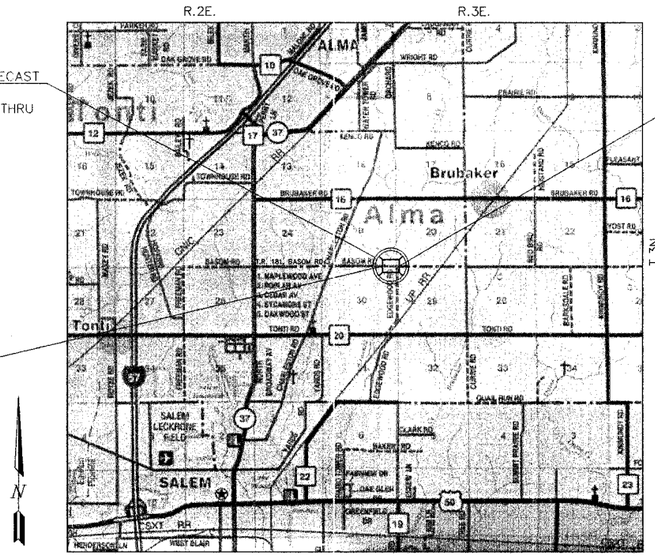
INDEX OF SHEETS

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

SECTION 03-01112-00-BR
PROJECT NO. BROS-121(41)
MARION COUNTY
JOB NO. C-97-030-05
ALMA ROAD DISTRICT

STA. 50+00 – CONSTRUCT SINGLE SPAN PRECAST PRESTRESSED CONCRETE DECK BEAM BRIDGE (51.59' BK. TO BK. ABUTMENTS) WITH SPILL THRU ABUTMENTS ON STEEL H PILES,
15° SKEW, 24' ROADWAY
EXISTING STRUCTURE NO. 061–3098
PROPOSED STRUCTURE NO. 061–3298

BEGIN SECTION 03-01112-00-BR
STA. 49+69.21



END SECTION 03-01112-00-BR
STA. 50+30.80

LOCATION MAP

APPROXIMATE SCALE – 1" = 1.0 MILES
NET LENGTH OF IMPROVEMENTS = 61.59 FOOT = 0.012 MILE

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

APPROVED 3-09, 2005
LOCAL AGENCY REPRESENTATIVE

PASSED 4/1, 2005.
DISTRICT ENGINEER OF LOCAL ROADS AND STREETS

APPROVED 4/1, 2005.
CHRISTINE M. REED, P.E.
DEPUTY DIRECTOR OF HIGHWAYS
REGION FOUR ENGINEER

THE ACCEPTANCE OF THIS PROJECT IS BASED ON THE MINIMUM DESIGN CRITERIA FOR A FEDERAL–AID BRIDGE REPLACEMENT AND REHABILITATION PROGRAM

DISTRICT ENGINEER OF LOCAL ROADS AND STREETS

PLANS PREPARED BY CLARK ENGINEERS, INC.
DATE 3/2, 2005

MICHAEL R. QUANDT, P.E.

62-062880 REGISTERED PROFESSIONAL ENGINEER OF ILLINOIS

REVIEWED 3/3, 2005
BY
COUNTY ENGINEER
MARION COUNTY, ILLINOIS

REVIEWED 3-3, 2005
BY
ROAD COMMISSIONER
ALMA ROAD DISTRICT
MARION COUNTY, ILLINOIS

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

CLASS ROAD: RURAL LOCAL ROAD
A.D.T. = 75
DESIGN SPEED = NONE

CLARK ENGINEERS, INC.
2524 South Broadway
Salem, Illinois 62881
PH(618)548–3500
FAX(618)548–5246
IL Design Firm Registration No. 184–00871

CE JOB NO. MAHD0007

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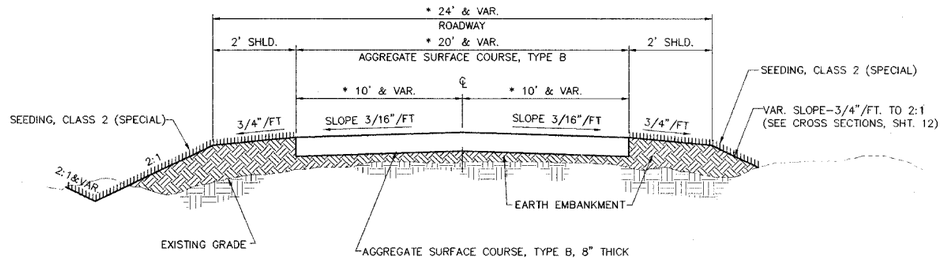
ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 181	03-01112-00-BR	MARION	12	2
FED. ROAD DIST. NO.		ILLINOIS	PROJECT	

CONTRACT NO. 95428



TYPICAL CROSS-SECTION (ROADWAY)

* TRANSITION FROM 12' EXISTING TO 20' PROPOSED PAVEMENT STA. 49+19.21 TO STA. 49+69.21

* TRANSITION FROM 20' PROPOSED TO 11' EXISTING PAVEMENT STA. 50+30.80 TO STA. 50+80.80

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. ALL EXISTING SIGNS AND SIGN POSTS SHALL BE SALVAGED TO THE COUNTY.
4. THE SHRINKAGE FACTOR FOR EMBANKMENT IS 25%.
5. ALL CLEARING AND GRUBBING IS TO BE INCLUDED IN THE UNIT PRICE BID FOR EARTH EXCAVATION.
6. BITUMINOUS SURFACE TREATMENT (A-2) WILL BE COMPLETED BY THE OWNER.

SUMMARY OF QUANTITIES

X080-2A

CODE NO.	ITEM	QUANTITY	UNIT
20200100	EARTH EXCAVATION	43	CU. YD.
20300100	CHANNEL EXCAVATION	98	CU. YD.
20400800	FURNISHED EXCAVATION	36	CU. YD.
25001000	SEEDING, CLASS 2 (SPECIAL)	0.05	ACRE
28000300	TEMPORARY DITCH CHECKS	3	EACH
28100807	STONE DUMPED RIPRAP, CLASS A4	105	TON
40200800	AGGREGATE SURFACE COURSE, TYPE B	85	TON
50100100	REMOVAL OF EXISTING STRUCTURES	1	EACH
50300225	CONCRETE STRUCTURES	18.4	CU. YD.
50400405	PRECAST PRESTRESSED CONCRETE DECK BEAMS (21" DEPTH)	1200	SQ. FT.
50800105	REINFORCEMENT BARS	2040	POUND
50900205	STEEL RAILING, TYPE S1	100	FOOT
51201400	FURNISHING STEEL PILES HP10x42	231	FOOT
51202700	DRIVING STEEL PILES	231	FOOT
51203400	TEST PILE STEEL HP10x42	2	EACH
51204315	CONCRETE ENCASEMENT	2.1	CU. YD.
51500100	NAME PLATES	1	EACH

CLARK ENGINEERS, INC.
2524 South Broadway
Salem, Illinois 62881
Ph(618)548-3500
FAX(618)548-5246
IL Design Firm Registration
No. 184-00871

T.R. 181 SECTION 03-01112-00-BR
ALMA ROAD DISTRICT
MARION COUNTY, ILLINOIS

TYPICAL CROSS SECTION, GENERAL NOTES AND SUMMARY OF QUANTITIES

SURVEY	CHECKED	DATE
JAS		03/02/05
DESIGN MRQ	APPROVED MRQ	REVISED
DRAWN BLT		JOB NO. MAH00007

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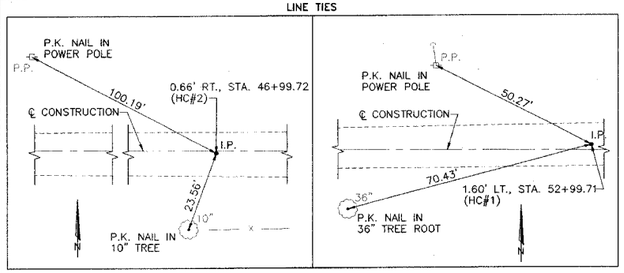
ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 181	03-01112-00-BR	MARION	12	3
FED. ROAD DIST. NO.		ILLINOIS	PROJECT	

CONTRACT NO. 95428

LINE TIES



HORIZONTAL CONTROL COORDINATES

POINT	LOCATION	N. COOR.	E. COOR.
HC#1(IRON PIN)	1.60' LT., STA. 52+99.71	5000.00	5000.00
HC#2(IRON PIN)	0.66' RT., STA. 46+99.72	5000.00	4400.00

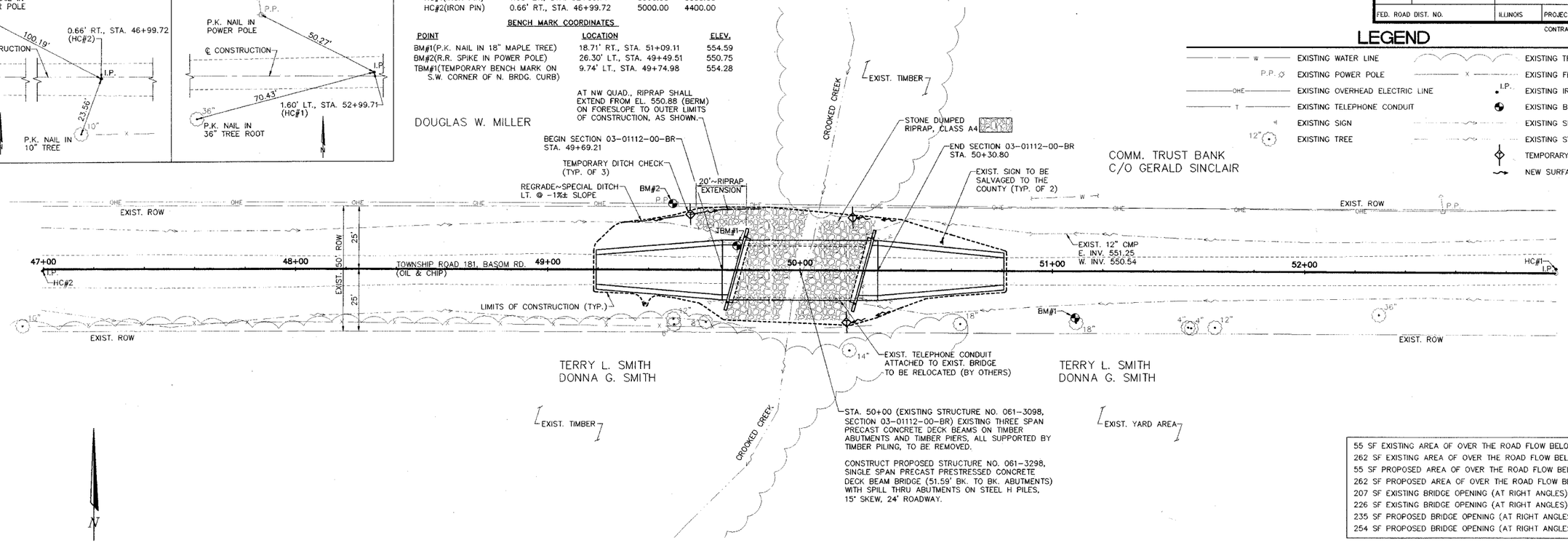
BENCH MARK COORDINATES

POINT	LOCATION	ELEV.
BM#1(P.K. NAIL IN 18" MAPLE TREE)	18.71' RT., STA. 51+09.11	554.59
BM#2(R.R. SPIKE IN POWER POLE)	26.30' LT., STA. 49+49.51	550.75
TBM#1(TEMPORARY BENCH MARK ON S.W. CORNER OF N. BRDG. CURB)	9.74' LT., STA. 49+74.98	554.28

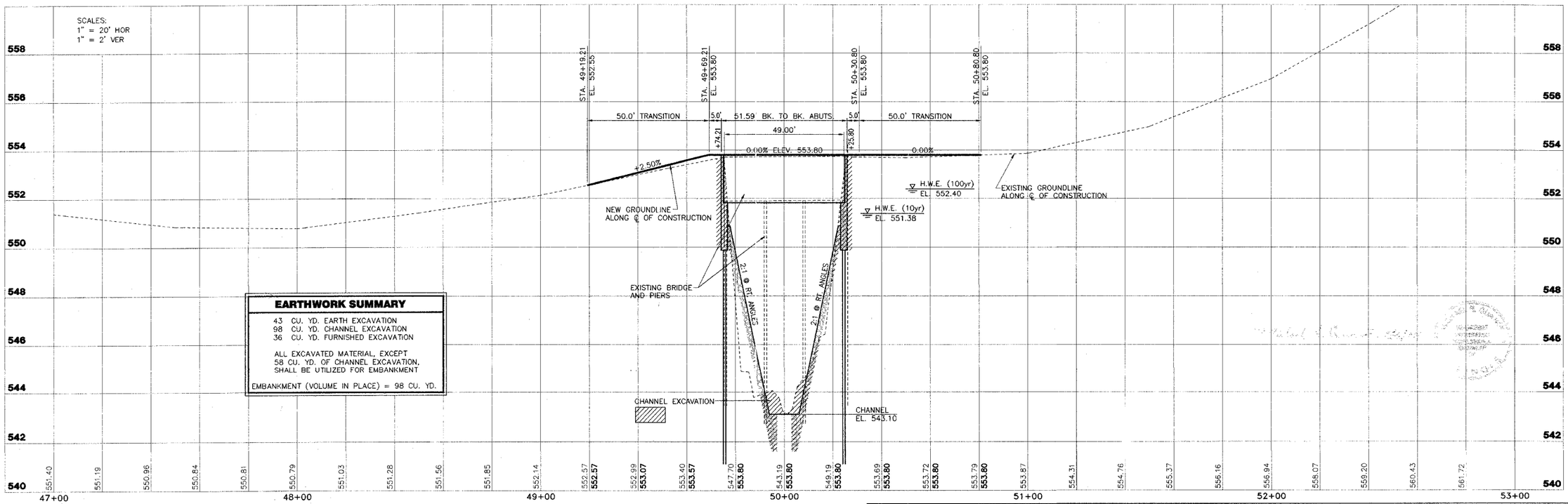
CONSTRUCT SEEDING, CLASS 2 (SPECIAL)
STA. 49+19.21 TO STA. 50+80.79 = 0.05 ACRE

LEGEND

- EXISTING WATER LINE
- EXISTING POWER POLE
- EXISTING OVERHEAD ELECTRIC LINE
- EXISTING TELEPHONE CONDUIT
- EXISTING SIGN
- EXISTING TREE
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING IRON PIN
- EXISTING BENCH MARK
- EXISTING SURFACE DRAINAGE
- EXISTING STREAM
- TEMPORARY DITCH CHECK
- NEW SURFACE DRAINAGE



55 SF EXISTING AREA OF OVER THE ROAD FLOW BELOW HWE 10
262 SF EXISTING AREA OF OVER THE ROAD FLOW BELOW HWE 100
55 SF PROPOSED AREA OF OVER THE ROAD FLOW BELOW HWE 10
262 SF PROPOSED AREA OF OVER THE ROAD FLOW BELOW HWE 100
207 SF EXISTING BRIDGE OPENING (AT RIGHT ANGLES) BELOW HWE 10
226 SF EXISTING BRIDGE OPENING (AT RIGHT ANGLES) BELOW HWE 100
235 SF PROPOSED BRIDGE OPENING (AT RIGHT ANGLES) BELOW HWE 10
254 SF PROPOSED BRIDGE OPENING (AT RIGHT ANGLES) BELOW HWE 100



EARTHWORK SUMMARY

43 CU. YD. EARTH EXCAVATION
98 CU. YD. CHANNEL EXCAVATION
36 CU. YD. FURNISHED EXCAVATION

ALL EXCAVATED MATERIAL, EXCEPT 58 CU. YD. OF CHANNEL EXCAVATION, SHALL BE UTILIZED FOR EMBANKMENT

EMBANKMENT (VOLUME IN PLACE) = 98 CU. YD.

CLARK ENGINEERS, INC.
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IL Design Firm Registration No. 184-00871

T.R. 181 SECTION 03-01112-00-BR
ALMA ROAD DISTRICT
MARION COUNTY, ILLINOIS

PLAN AND PROFILE
STA. 47+00 TO STA. 52+90

SURVEY	CHECKED	DATE
JAS		03/02/05
DESIGN	APPROVED	REVISED
MRQ	MRQ	
DRAWN		JOB NO.
BLT		MAHD0007

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ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 181	03-01112-00-BR	MARION	12	4
FED. ROAD DIST. NO.		ILLINOIS		

CONTRACT NO. 95428

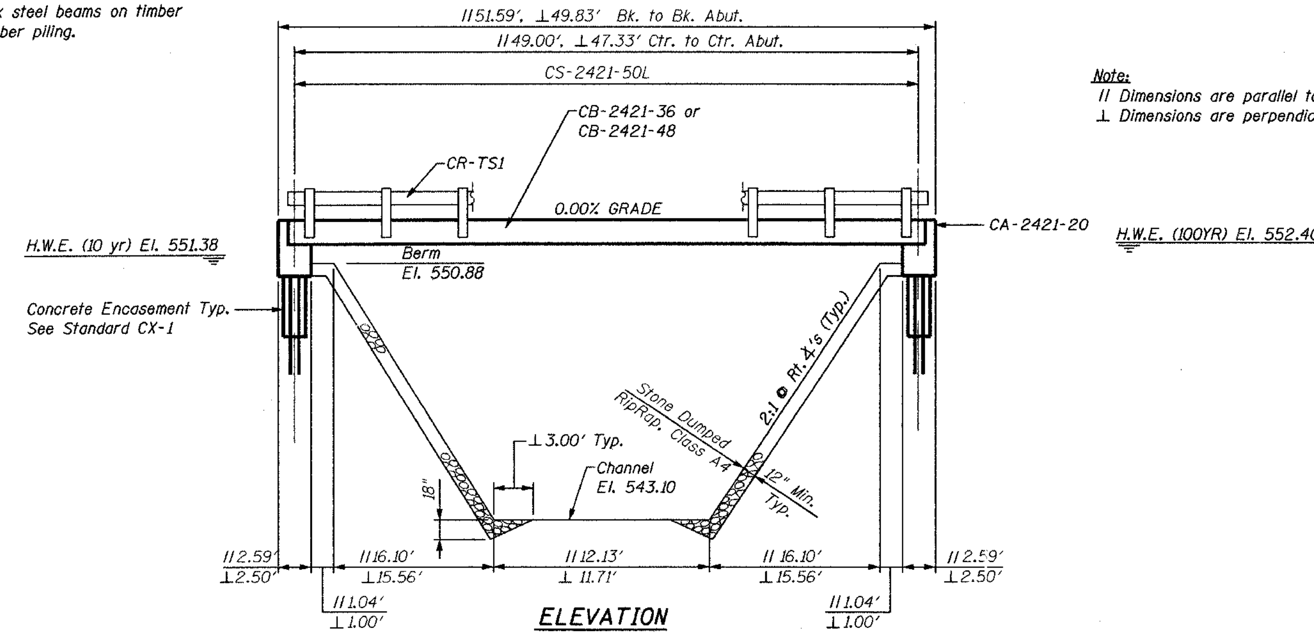
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

B.M. - B.M. #1, P.K. Nail in 18" Maple Tree, 18.71' RT., STA. 51+09.11, EL. 554.59
B.M. #2, R.R. Spike in Power Pole, 26.30' LT., STA. 49+49.51, EL. 550.75
TBM #1, Temp. Bench Mark on S.W. Corner of N. Brdg. Curb, 9.74' LT., STA. 49+74.98, EL. 554.28

Existing Structure - Three span precast concrete deck steel beams on timber abutments and timber piers, supported by timber piling.

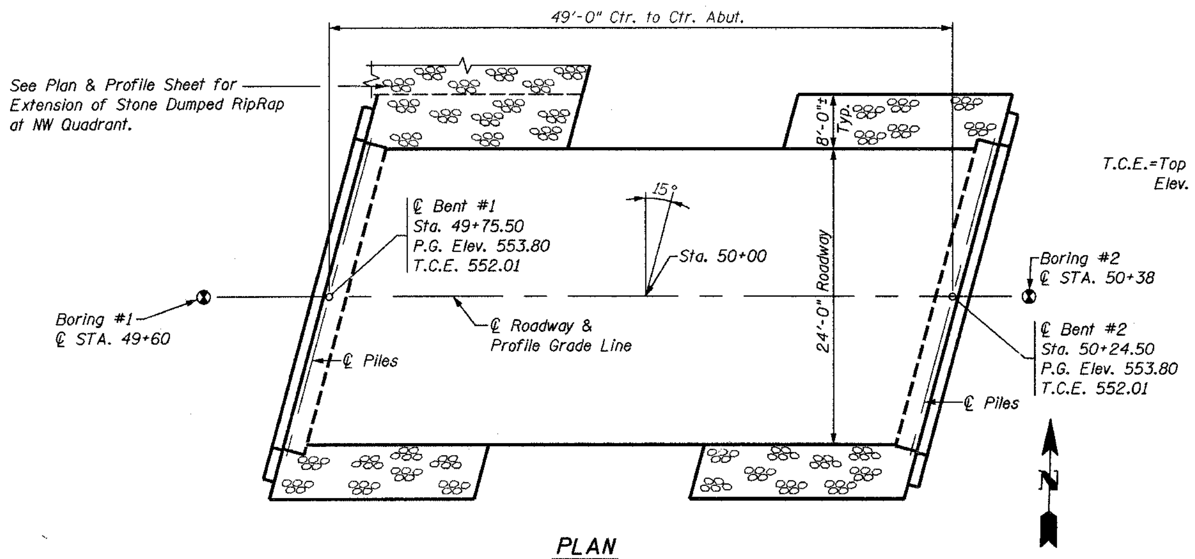
Salvage - Signs & Sign Posts

Existing Utilities - Overhead electric, Telephone, Water



ELEVATION

Note:
// Dimensions are parallel to roadway
⊥ Dimensions are perpendicular to channel



PLAN

T.C.E.=Top of Cap Elev.

GENERAL NOTES

1. The contractor shall drive 2 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 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.		Total
			Piers	Abuts.	
Removal of Existing Structures	Each				1
Concrete Structures	Cu. Yd.			18.4	18.4
Precast Prestressed Concrete Deck Beams (21" Depth)	Sq. Ft.	1200			1200
Steel Railing, Type S-1	Foot	100			100
Reinforcement Bars	Pound			2040	2040
Furnishing Steel Piles HP10x42	Foot			231	231
Driving Steel Piles	Foot			231	231
Test Pile Steel HP10x42	Each			2	2
Name Plates	Each			1	1
Concrete Encasement	Cu. Yd.			2.1	2.1

INDEX OF SHEETS

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 contract plans should be interpreted as referring to the current edition of the Standard Specification (Adopted January 1, 2002) as shown in the "Article/Section No. Reference Table".

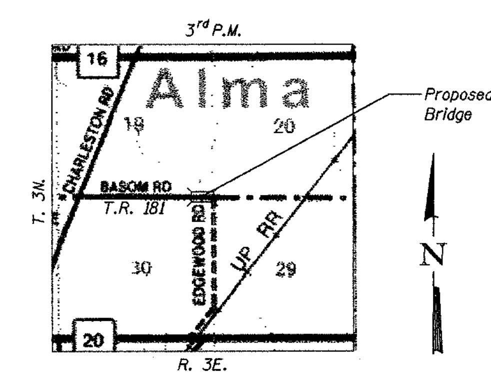
ARTICLE/SECTION NO. REFERENCE TABLE

Previous No.	Current No.
504.06	504.06
505.04	505.04
706.05	1006.05
706.32	1006.32
760.07	1060.07

STATION 50+00
CROOKED CREEK
SEC. 03-01112-00-BR BUILT 20_ _
PROJECT NO. BROS-121(41)
MARION COUNTY
LOADING HS20
STR. NO. 061-3298

LETTERING FOR NAME PLATE

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



LOCATION SKETCH

These plans were prepared by me or by a full-time member of my staff working under my personal supervision.

Michael R. Quandt 3/2/05
Michael R. Quandt, P.E.
Illinois Licensed Professional Engineer
License No. 062-042893
Expiration Date: 11/30/2005

MICHAEL R. QUANDT 062-042893 REGISTERED PROFESSIONAL ENGINEER OF ILLINOIS

PILE DATA (2-ABUTS.)

Type: Steel Piles, HP10x42
Capacity: 56 Tons (Includes 150% of Max. Pile Load for H-Pile In Friction)
Estimated Length: 53 Feet Bent #1, 24 Feet Bent #2
Number Required: 8 (Includes 1 Test Pile located in Bent #1 and 1 Test Pile located in Bent #2)

DESIGN SPECIFICATIONS

1996 AASHTO, 1997 Thru 2002 Interims
HS20-44 Loading. Load Factor Design.

WATERWAY INFORMATION

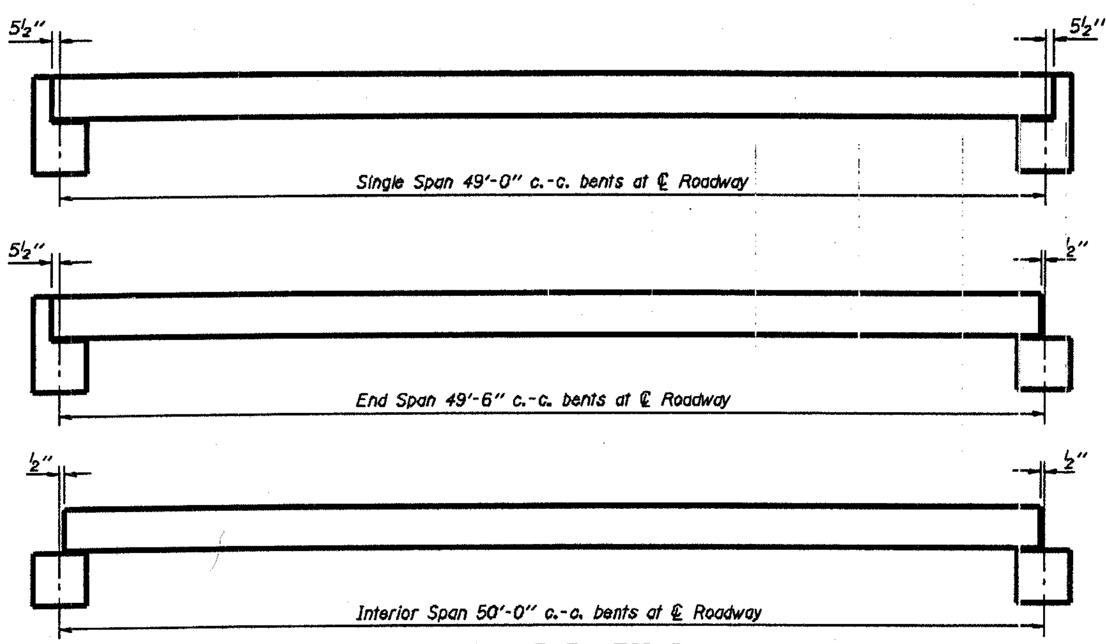
Drainage Area = 8.29 Sq. Mi. Low Grade Elev. 550.79 @ Sta. 48+00

Flood	Freq. Yr.	Q C.F.S.	Opening Sq. Ft.		Nat. H.W.E. Ft.	Head - Ft.		Headwater Elev. - Ft.	
			Exist.	Prop.		Exist.	Prop.	Exist.	Prop.
Design	10	1609	207	235	551.38	N/A	0.49	N/A	551.87
Base	100	2865	226	254	552.40	N/A	0.87	N/A	553.27
Overtopping									
Max. Calc.	500								

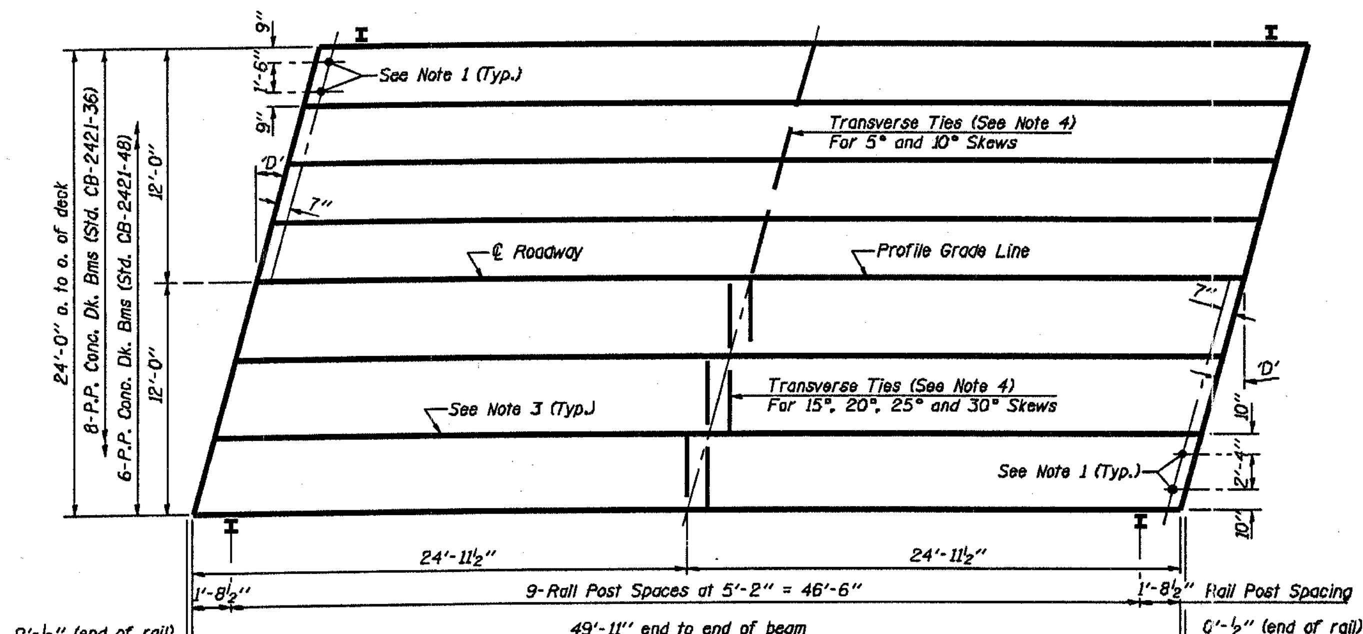
GENERAL PLAN & ELEVATION
T.R. 181
OVER CROOKED CREEK
SECTION 03-01112-00-BR
MARION COUNTY
STATION 50+00

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 181	03-01112-00-BR	MARION	12	5
FED. ROAD DIST. NO.	ILLINOIS PROJECT			

CONTRACT No. 95428

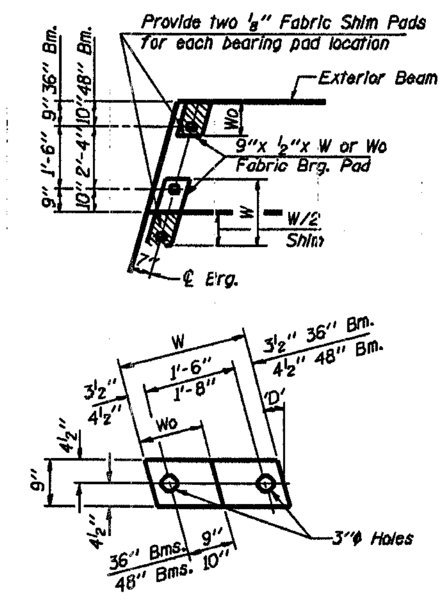


TYPICAL ELEVATIONS



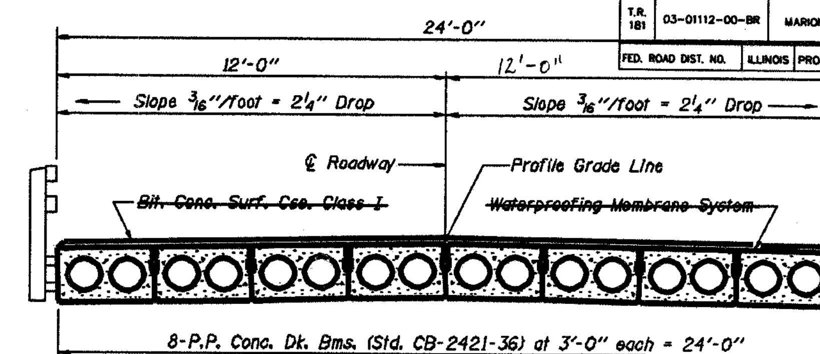
PLAN

('D' = Designated Skew Angle)

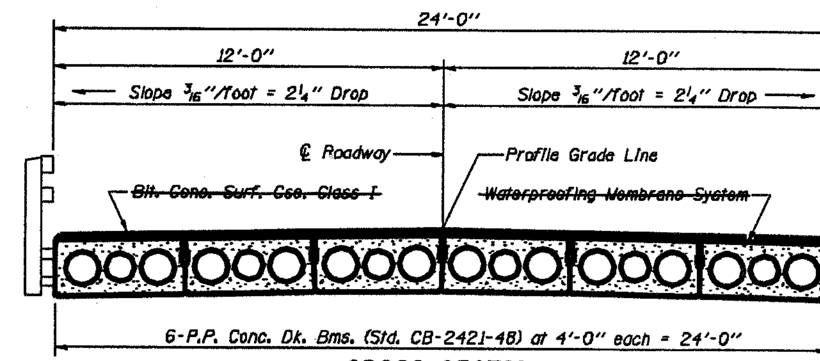


Beam	W	Wo
36"	2'-1"	1'-0½"
48"	2'-5"	1'-2½"

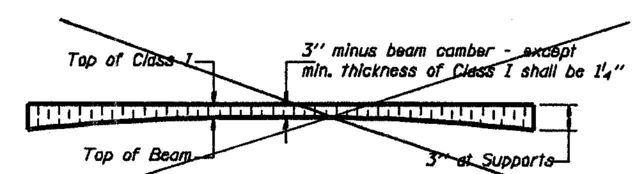
½" FABRIC BRG. PAD DETAILS



CROSS SECTION



CROSS SECTION



PROFILE OF OVERLAY

DIMENSIONS 'A' AND 'B'

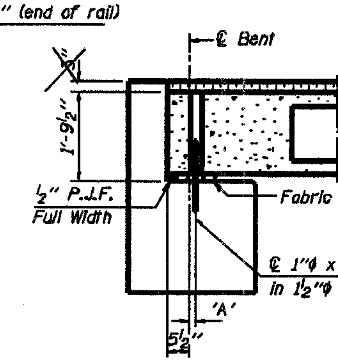
'D'	5°	10°	15°	20°	25°	30°
A	1½"	1⅝"	1¾"	1⅞"	2¼"	2⅝"
B	7½"	7⅝"	7¾"	8"	8¼"	8⅝"

QUANTITIES FOR ONE SPAN

P.P. Conc. Dk. Bm. 21" Dp.	1200 Sq. Ft.
Steel Railing	100 Ft.
~~Bit. Conc. Surf. Cse. Class I~~	~~15.0 Tons~~
~~Waterproofing Membrane System~~	~~133.3 Sq. Yds.~~

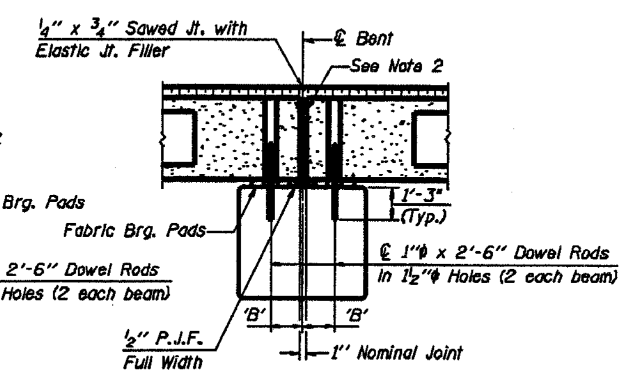
NOTES

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.



SECTION AT ABUTS.

(Along ℄ Beams)



SECTION AT PIERS

(Along ℄ Beams)

Illinois Department of Transportation

PASSED NOVEMBER 1, 1995
Engineer of Bridge Design
APPROVED NOVEMBER 1, 1995
Engineer of Bridges and Structures

ISSUED 11-1-95

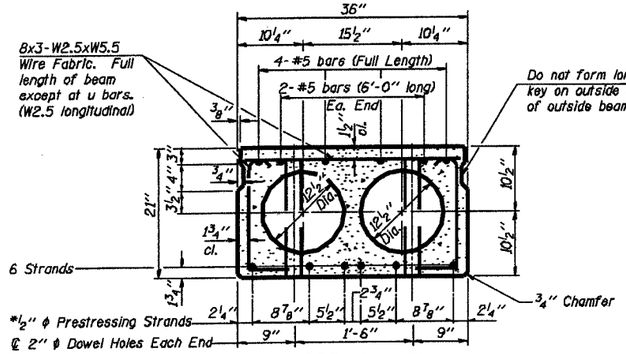
P.P.C. DECK BEAM SUPERSTRUCTURE

24' RDWY.	21" BMS.	50' SPAN	LEFT

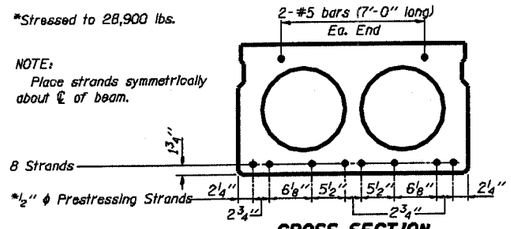
STANDARD CS-2421-50L

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 181	03-01112-00-BR	MARION	12	6
FED. ROAD DIST. NO.	ILLINOIS	PROJECT		

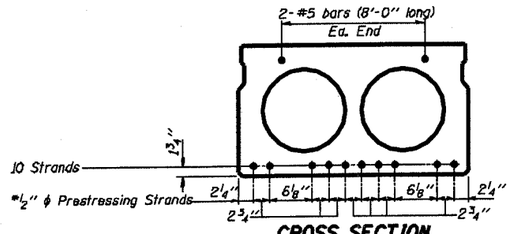
CONTRACT No. 95428



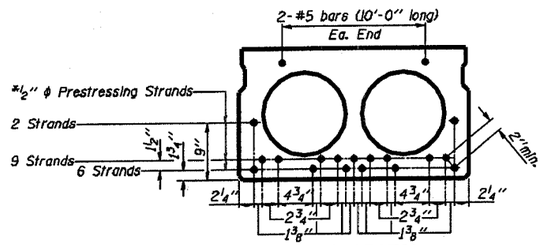
CROSS SECTION
(30' SPAN)



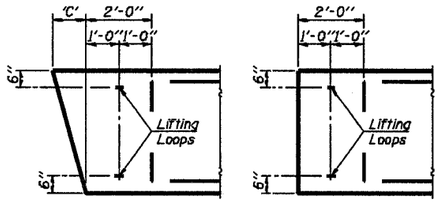
CROSS SECTION
(35' SPAN)



CROSS SECTION
(40' SPAN)

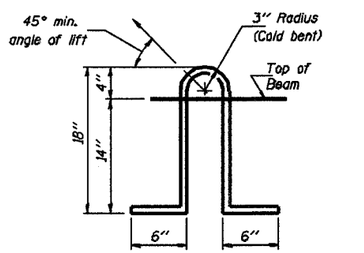


CROSS SECTION
(50' SPAN)



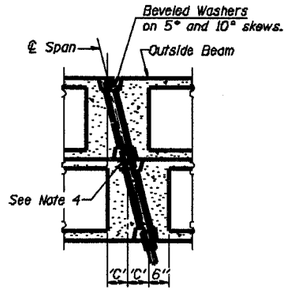
END BLOCK DETAILS

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.

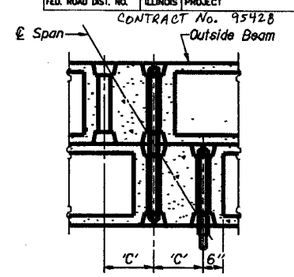


LIFTING LOOP DETAIL

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



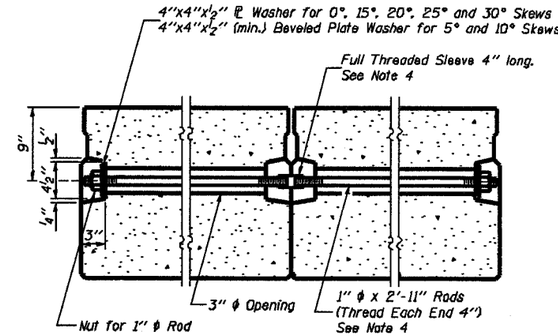
PARTIAL PLAN TRANSVERSE TIE ASSEMBLY
('D'=0°, 5° and 10°)



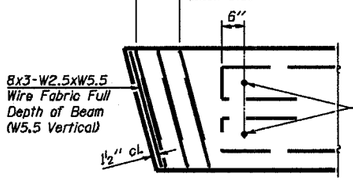
PARTIAL PLAN TRANSVERSE TIE ASSEMBLY
('D'=15°, 20°, 25° and 30°)

DIMENSION 'C'

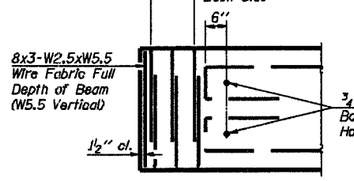
Skew Angle 'D'	0°	5°	10°	15°	20°	25°	30°
Dimension 'C' (Inches)	0	3½	6⅜	9⅝	13⅛	16¾	20¾



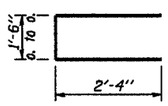
SECTION ALONG TRANSVERSE TIE ASSEMBLY
(REQUIRED FOR 50' SPAN ONLY)



END REINFORCEMENT
(SKEWED)



END REINFORCEMENT
(RIGHT ANGLE)



BAR U

NOTES

1. Prestressing steel shall be uncoated high strength, stress relieved 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 AASHTO M-31, M-42 or M-53, 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 Waterproofing Membrane System is specified, the top surface of the beams shall be finished in accordance with Article 504.06 of the Standard Specifications except that the surface shall not be roughened by brooming. The finished surface shall be free of depressions or high spots with sharp corners, and the top edge of keys shall be rounded or chamfered a minimum of ¼".
7. Low relaxation strands may be substituted for the stress relieved strands. The initial prestressing force applied to each strand shall be the same as for the stress relieved strands (28,900 lbs.).
8. 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} = (See Required Release Strength Table)
f'_s = 270,000 p.s.i. (½" ϕ Strand)
f_{si} = 189,000 p.s.i. (½" ϕ Strand)
f_y = 60,000 p.s.i.

REQUIRED RELEASE STRENGTH

Span	f'_{ci} (psi)
30'	4,000
35'	4,000
40'	4,200
50'	4,100

Illinois Department of Transportation
PASSED NOVEMBER 1, 1995
Engineer of Bridge Design
APPROVED NOVEMBER 1, 1995
Engineer of Bridges and Structures
ISSUED 11-91

NOTE
The std. reinf. shown on the 30' span cross section is typical for all spans, except as shown.

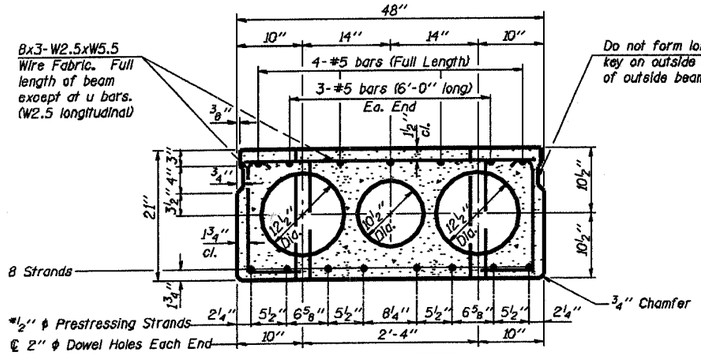
P.P.C. DECK BEAM DETAILS

24' ROADWAY | **21" x 36" BEAMS**

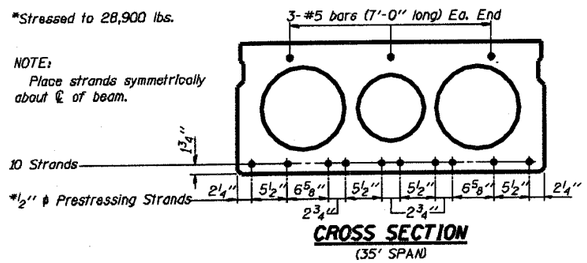
STANDARD CB-2421-36

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 181	03-01112-00-BR	MARION	12	7
FED. ROAD DIST. NO.	ILLINOIS	PROJECT		

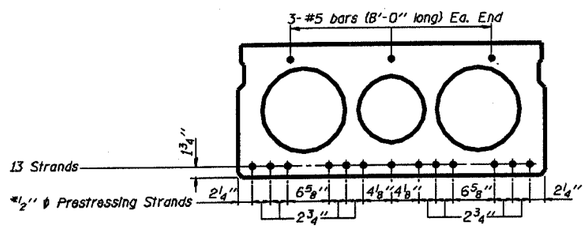
CONTRACT No. 95428



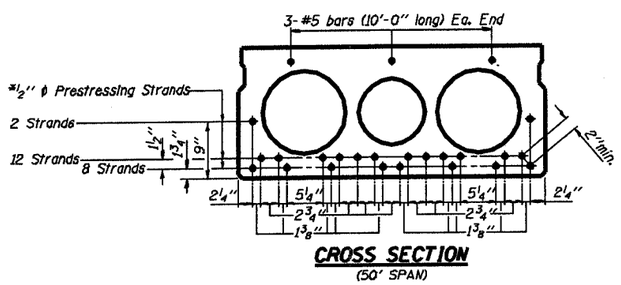
CROSS SECTION
(30' SPAN)



CROSS SECTION
(35' SPAN)

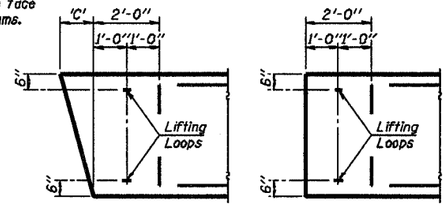


CROSS SECTION
(40' SPAN)



CROSS SECTION
(50' SPAN)

NOTE
The std. reinf. shown on the 30' span cross section is typical for all spans, except as shown.



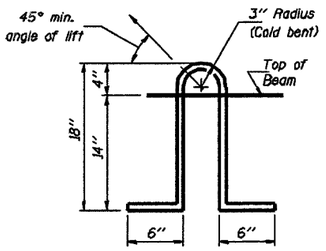
END BLOCK DETAILS
Each beam shall have four Lifting Loops, two at each end of beam cast in locations shown above. Loops shall be burned off after beams have been erected.

DIMENSION 'C'

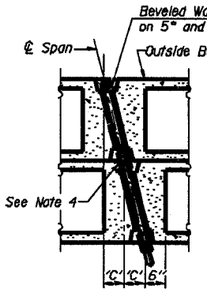
Skew Angle 'D'	0°	5°	10°	15°	20°	25°	30°
Dimension 'C' (Inches)	0	4 1/4	8 1/2	12 7/8	17 1/2	22 3/8	27 3/4

END REINFORCEMENT
(SKEWED)

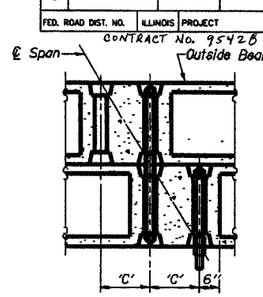
END REINFORCEMENT
(RIGHT ANGLE)



LIFTING LOOP DETAIL
Lifting loops shall be 2, 1/2"ϕ-270 ksi strands, as shown. Alternate approved lifting devices are also acceptable.

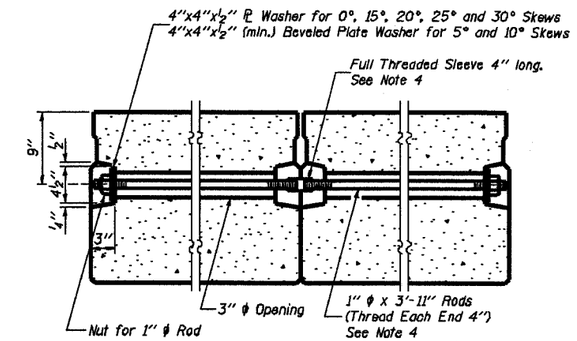


PARTIAL PLAN TRANSVERSE TIE ASSEMBLY
('D'=0°, 5° and 10°)



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

BAR U



SECTION ALONG TRANSVERSE TIE ASSEMBLY
(REQUIRED FOR 50' SPAN ONLY)

NOTES
1. Prestressing steel shall be uncoated high strength, stress relieved 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 AASHTO M-31, M-42 or M-53, 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 Waterproofing Membrane System is specified, the top surface of the beams shall be finished in accordance with Article 504.06 of the Standard Specifications except that the surface shall not be roughened by brooming. The finished surface shall be free of depressions or high spots with sharp corners, and the top edge of keys shall be rounded or chamfered a minimum of 1/4".
7. Low relaxation strands may be substituted for the stress relieved strands. The initial prestressing force applied to each strand shall be the same as for the stress relieved strands (28,900 lbs.).
8. Keyway surfaces shall be cleaned to remove farm 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} = (See Required Release Strength Table)
f'_s = 270,000 p.s.i. (1/2" ϕ Strand)
f_{si} = 189,000 p.s.i. (1/2" ϕ Strand)
f_y = 60,000 p.s.i.

REQUIRED RELEASE STRENGTH

Span	f'_{ci} (psi)
30'	4,000
35'	4,000
40'	4,000
50'	4,200

Illinois Department of Transportation

PASSED NOVEMBER 1, 1995
Engineer of Bridge Design
APPROVED NOVEMBER 1, 1995
Engineer of Bridges and Structures

ISSUED H-1-96

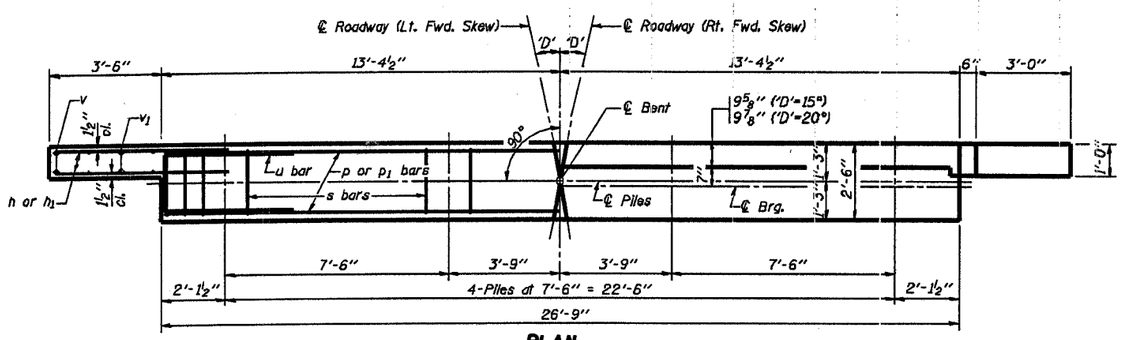
P.P.C. DECK BEAM DETAILS

24' ROADWAY | **21" x 48" BEAMS**

STANDARD CB-2421-48

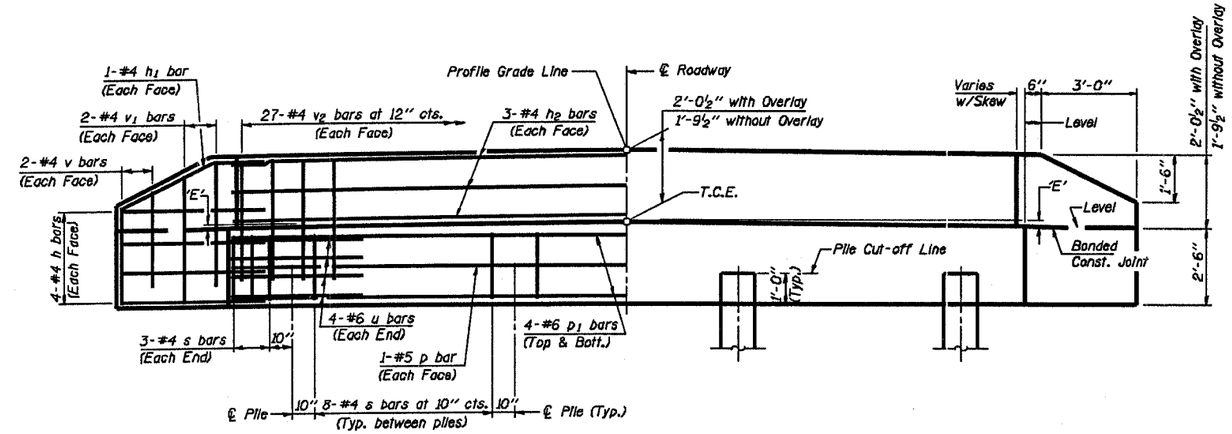
RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 181	03-01112-00-BR	MARION	12	8
FED. ROAD DIST. NO.	ILLINOIS	PROJECT		

CONTRACT No. 95428

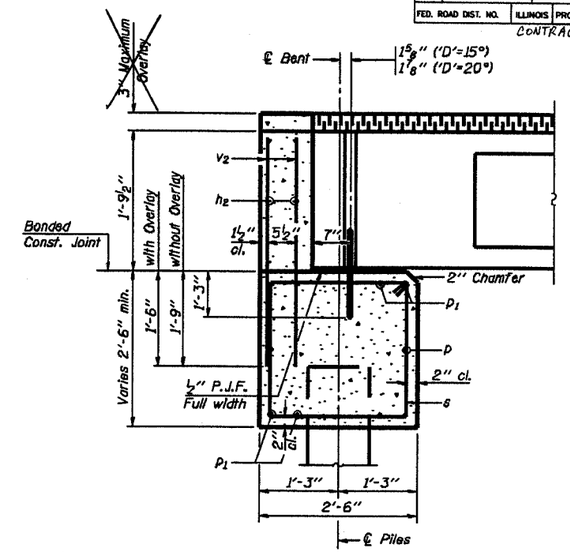


PLAN

('D'=Designated Skew Angle)



ELEVATION



SECTION THRU ABUTMENT

(At Right Angles)

DIMENSION 'E'

GRADE	'D'=15°		'D'=20°	
	UPGRADE END	DOWNGRADE END	UPGRADE END	DOWNGRADE END
0%	2 3/8"	2 3/8"	2 3/8"	2 3/8"
Over 0% to 1%	2 1/4"	2 5/8"	2 1/8"	2 5/8"
Over 1% to 2%	1 3/4"	3"	1 1/2"	3 1/8"
Over 2% to 3%	1 3/8"	3 1/2"	1"	3 3/4"
Over 3% to 4%	1"	3 7/8"	3/8"	4 1/4"

NOTES

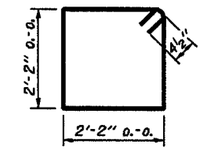
1. The Backwall and the portion of the Wingwalls above the bonded construction joint shall be cast against the in-place beam.
2. Reinforcement bars shall conform to A.A.S.H.T.O. M-31, M-42 or M-53, Grade 60.

MAXIMUM PILE LOADS

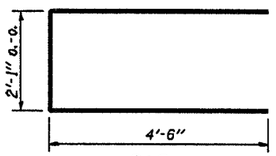
SPAN	TONS
30'	27
35'	30
40'	32
50'	37

DESIGN STRESSES

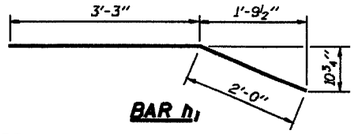
f'c = 3,500 psi
fy = 60,000 psi



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	26'-5"	
p	2	#5	26'-5"	
p1	8	#6	26'-5"	
s	30	#4	9'-5"	
u	8	#6	11'-1"	
v	8	#4	2'-8"	
v1	8	#4	3'-8"	
v2	54	#4	3'-5"	
Concrete Structures			9.2 Cu. Yds.	
Reinforcement Bars			1020 Lbs.	

Illinois Department of Transportation

PASSED November 1, 1995
Engineer of Bridge Design

APPROVED November 1, 1995
Engineer of Bridges and Structures

ISSUED 1-1-96

P.P.C. DECK BEAMS
PILE BENT ABUTMENT

24' RDWY.	21" BMS.	'D'=15° OR 20°

STANDARD CA-2421-20

SEC.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 181	03-01112-00-BR	MARION	12	9
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT NO.		

CONTRACT No. 95428

NOTES

Hollow structural steel tubing shall conform to the requirements of ASTM designation A-500 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 A-307 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 in accordance with AASHTO M-232.

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

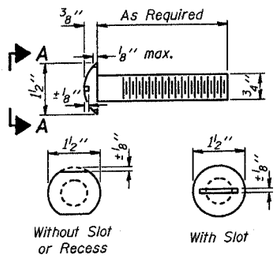
For multi-span bridges, sufficient $\frac{1}{4}$" x 6" x 1'-2" galvanized steel shims shall be provided to align rail between adjacent spans. Cost incidental to Steel Railing, Type S-1.

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

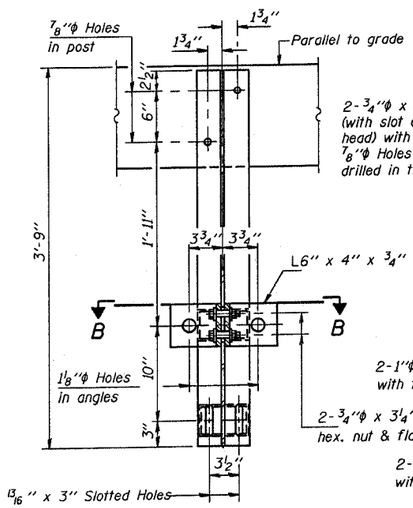
The $\frac{1}{2}$" x 7" x 6" plates that come in contact with concrete shall receive two coats of asphalt paint conforming to Section 760.07 Type II or place $\frac{1}{8}$" fabric bearing pads between the plates and concrete.

The $\frac{3}{4}$"ϕ high strength bolts used to connect the 6" x 4" x $\frac{3}{4}$" angles to the post shall be tightened in accordance with Article 505.04 (f) (3) 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 $\frac{1}{8}$ turn. The $\frac{5}{8}$"ϕ cap screws in bottom of posts shall be tightened to a snug fit only.

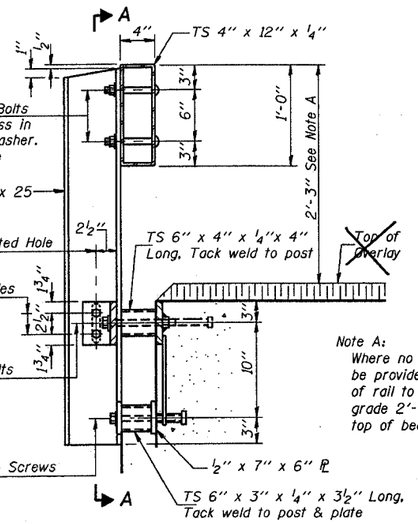
The maximum allowable rail post spacing shall be 10'-6". The rail post spacing shown elsewhere in the plans is based on the allowable spacing for another type of rail. When this type of rail is used, the number of posts may be decreased and the post spacing increased to provide equal post spaces of 10'-6"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



VIEW A-A
ROUND HEAD BOLT

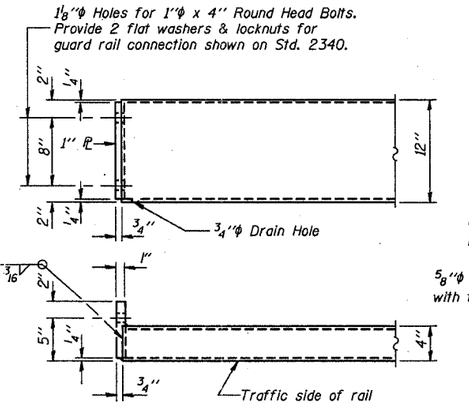


SECTION A-A



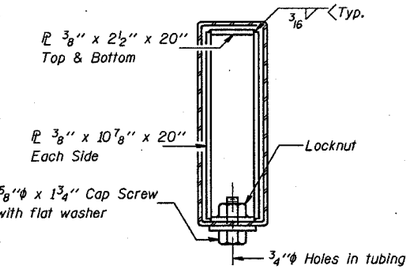
SECTION AT RAIL POST

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.



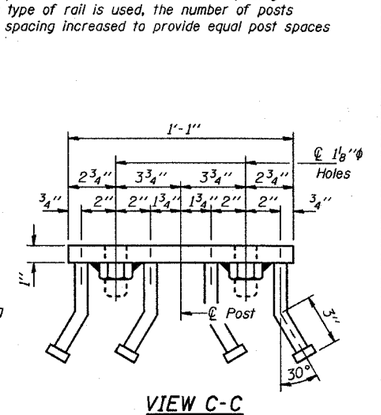
END OF RAIL DETAILS

** 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 $\frac{1}{2}$".

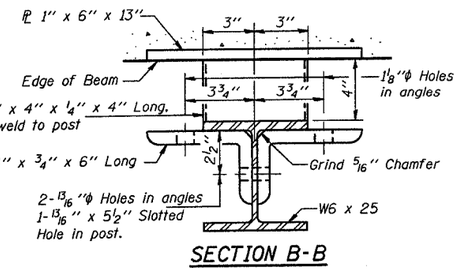


SECTION AT RAIL SPLICE

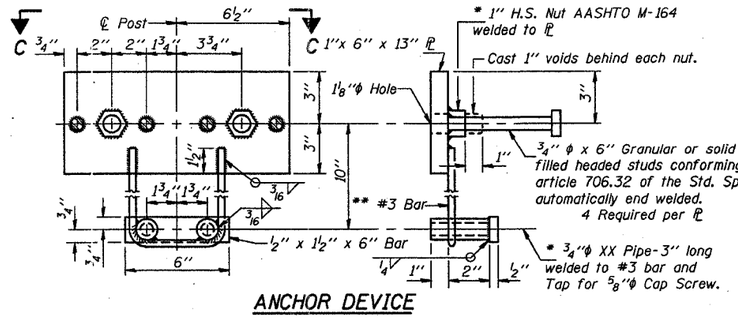
* Threaded areas shall be plugged or blocked off during casting of beam.



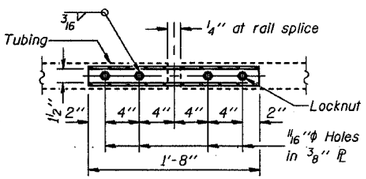
VIEW C-C



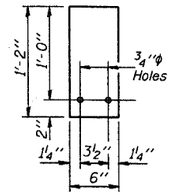
SECTION B-B



ANCHOR DEVICE



PLAN-BOTT. SPLICE PL TYPICAL



1/4" SHIM PLATE

Illinois Department of Transportation

PASSED November 1, 1995
Engineer of Bridge Design

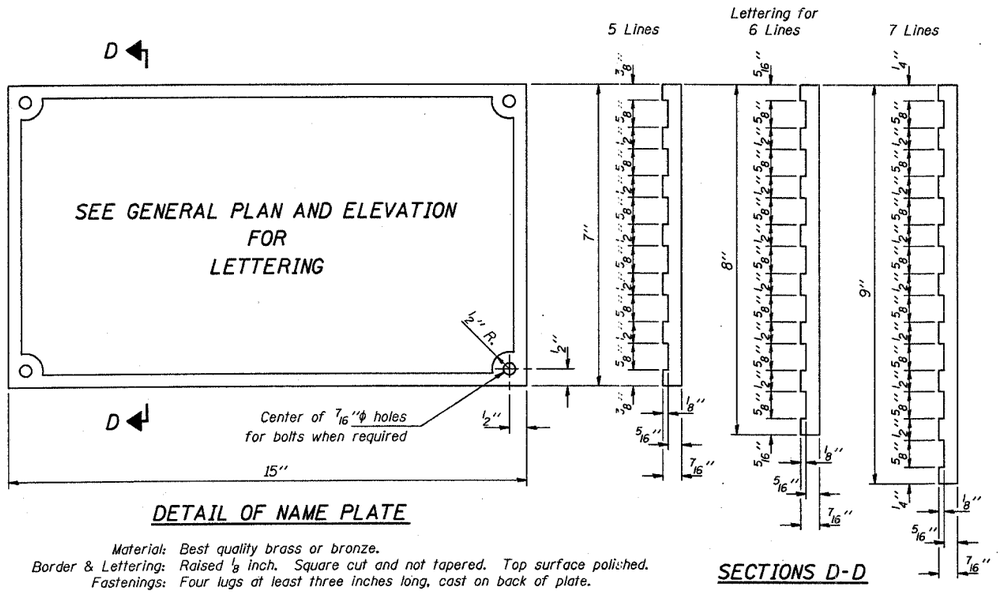
APPROVED November 1, 1995
Engineer of Bridges and Structures

ISSUED 1-1-96

STEEL RAILING, TYPE S-1
STANDARD CR-TS1

SEC.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 181	03-01112-00-BR	MARION	12	10
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT NO.		

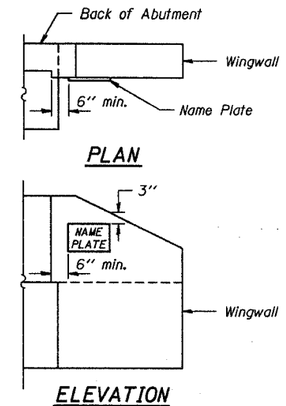
CONTRACT No. 95428



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

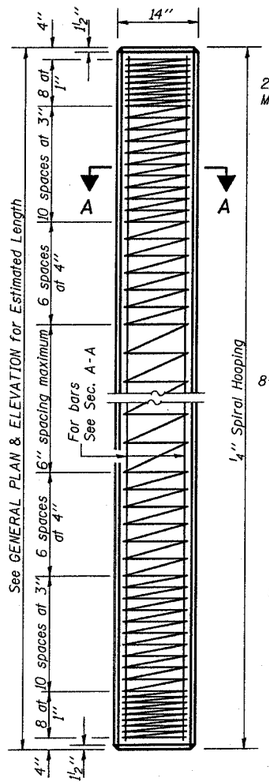
Illinois Department of Transportation

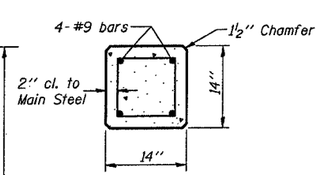
PASSED November 1, 1995
Engineer of Bridge Design

APPROVED November 1, 1995
Engineer of Bridges and Structures

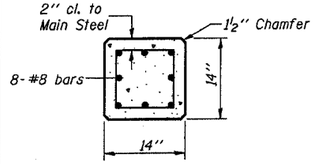
ISSUED 7-1-95

NAME PLATE
STANDARD CN





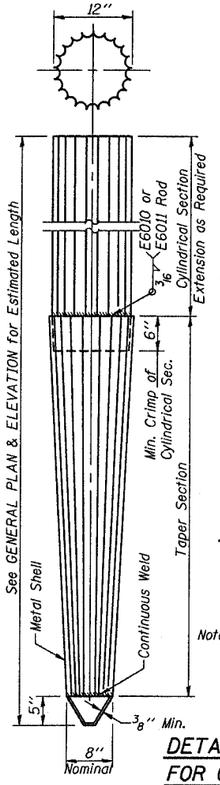
SECTION A-A FOR PILES UNDER 45' LONG

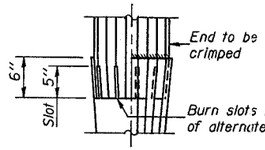


SECTION A-A FOR PILES 45' OR MORE

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.

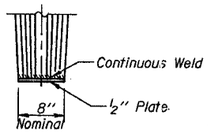
DETAIL OF PRECAST CONCRETE PILES





FIELD CRIMP DETAIL

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



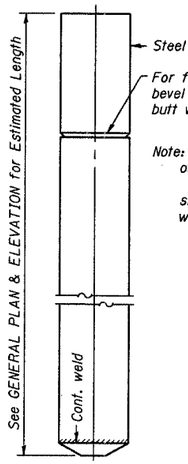
OPTIONAL FLAT END

ALLOWABLE TAPER SECTIONS

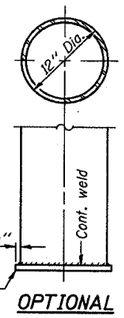
10' Length-Taper 1" in 2'-6"
17' Length-Taper 1" in 4'-0"
25' Length-Taper 1" in 7'-0"
30' Length-Taper 1" in 7'-0"

Note: The thickness of the shell shall be 0.1495 inches with a tolerance of 5%. The shell shall be in accordance with Article 706.05 (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%.

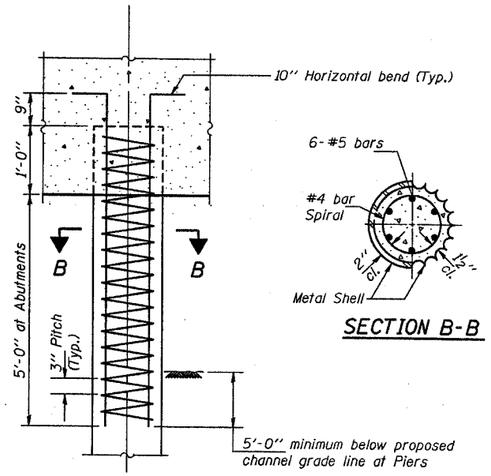


OPTIONAL FLAT END

DETAIL OF CYLINDRICAL STEEL SHELL FOR CAST IN PLACE CONCRETE PILES

Reinforcement cage shall be omitted when ~~Class SI~~ Concrete Encasement is provided.

The cost of Reinforcement is incidental to the Cost of Furnishing Piles.



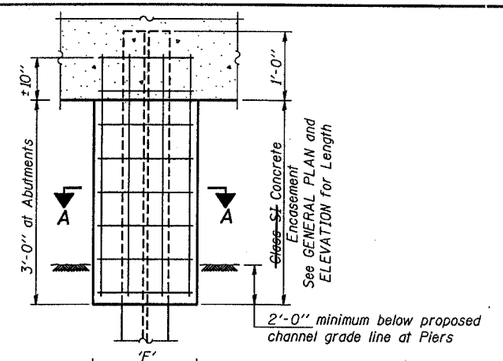
SECTION B-B

5'-0" minimum below proposed channel grade line at Piers

DETAIL OF REINFORCEMENT FOR METAL SHELLS

SEC.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 181	03-01112-00-BR	MARION	12	11
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT NO.		

CONTRACT No. 95428

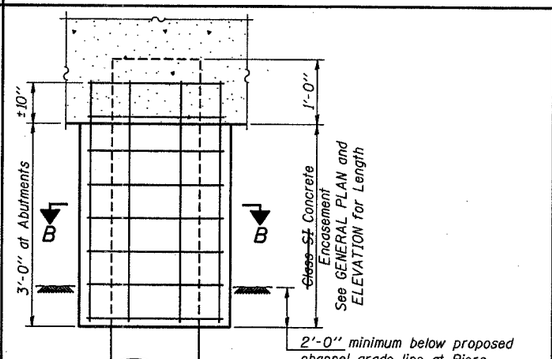


Welded wire fabric 6 x 6-W4.0 x W4.0 weighing 58#/100 sq. ft. The cost of Reinforcement is incidental to the cost of ~~Class SI~~ Concrete Encasement. Forms for Encasement may be omitted when soil conditions will permit.

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 incidental to the cost of ~~Class SI~~ Concrete Encasement. Forms for Encasement may be omitted when soil conditions will permit.

SECTION B-B

DETAIL OF METAL SHELL PILE ENCASEMENT

QUANTITIES/LIN. FT. OF ENCASEMENT

(STEEL PILES)

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

(METAL SHELL PILES)

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

Illinois Department of Transportation

PASSED November 1, 1995
Engineer of Bridge Design

APPROVED November 1, 1995
Engineer of Bridges and Structures

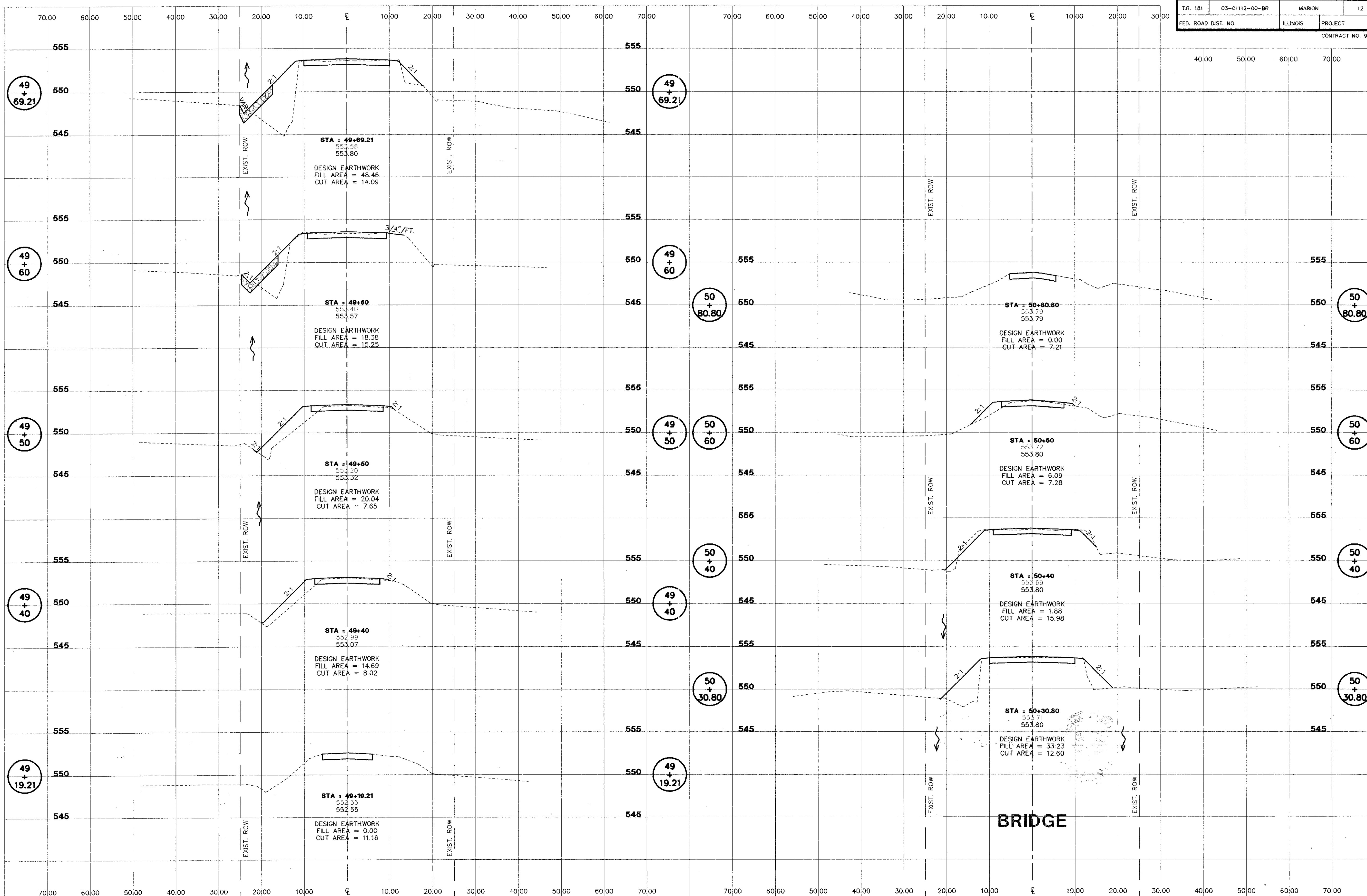
ISSUED 11-81

PILE DETAILS

STANDARD CX-1

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 181	03-01112-00-BR	MARION	12	12
FED. ROAD DIST. NO.		ILLINOIS	PROJECT	

CONTRACT NO. 95428



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IL Design Firm Registration
No. 184-00871

T.R. 181 SECTION 03-01112-00-BR
ALMA ROAD DISTRICT
MARION COUNTY, ILLINOIS

CROSS SECTIONS
STA. 49+19.21 TO STA. 50+80.80

SURVEY	CHECKED	DATE
JAS		03/02/05
DESIGN MRQ	APPROVED MRQ	REVISED
DRAWN BLT		JOB NO. MAHD0007