ROUTE	SECTION	COUNTY	TOWNSHIP	TOTAL SHEETS	SHEET NUMBER
T.R. 51	04-01182-00-BR	UNION	SEC. 31, T11S, R2W	15	1
JOB NO. C-99-549-04			PROJECT NO. BROS-181 (26)		
RHINE ROAD			CONTRACT NO. 99216		

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
PLANS FOR PROPOSED
BRIDGE REPLACEMENT & REHABILITATION PROGRAM
SECTION 04-01182-00-BR UNION COUNTY
TOWNSHIP ROAD 51 - RHINE ROAD
JOB NO. C-99-549-04
PROJECT NO. BROS-181 (26)
CONTRACT NO. 99216
TRIBUTARY TO CLEAR CREEK

INDEX OF SHEETS

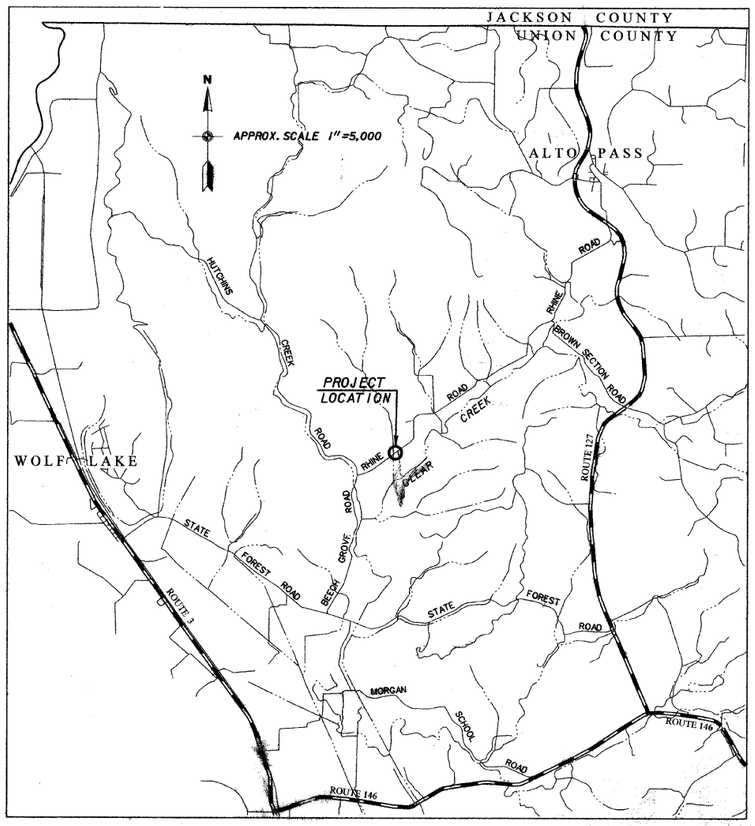
LIST OF STANDARDS

STD. NO.	DESCRIPTION
280001-05	TEMPORARY EROSION CONTROL SYSTEMS
635006-03	REFLECTOR AND TERMINAL MARKER PLACEMENT
701901-01	TRAFFIC CONTROL DEVICES
720011-01	METAL POST FOR SIGNS, MARKERS & DELINEATORS
729001-01	APPLICATIONS OF TYPES A&B METAL POSTS (FOR SIGNS & MARKERS)
B.L.R. 21-8	TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES FOR CONSTRUCTION ON RURAL LOCAL HIGHWAYS

SUMMARY OF QUANTITIES

CODE NO.	ITEM	UNIT	X081-2A AWARDED QUANTITY	AS-BUILT QUANTITY
20100210	TREE REMOVAL (OVER 15 UNITS DIAMETER)	UNIT	62	
20100500	TREE REMOVAL, ACRES	ACRE	0.1	
20200410	EARTH EXCAVATION (SPECIAL)	CU YD	420	
20400800	FURNISHED EXCAVATION	CU YD	1,150	
25001000	SEEDING, CLASS 2 (SPECIAL)	ACRE	0.9	
28000250	TEMPORARY EROSION CONTROL SEEDING	POUND	90	
28000305	TEMPORARY DITCH CHECKS	FOOT	44	
28000400	PERIMETER EROSION BARRIER	FOOT	550	
28100807	STONE DUMPED RIPRAP, CLASS A4	TON	300	
40200800	AGGREGATE SURFACE COURSE, TYPE B	TON	600	
50100100	REMOVAL OF EXISTING STRUCTURES	EACH	1	
50300225	CONCRETE STRUCTURES	CU YD	21.4	
50300280	CONCRETE ENCASEMENT	CU YD	2.1	
50400505	PRECAST PRESTRESSED CONCRETE DECK BEAMS (27" DEPTH)	SQ FT	1,200	
50800105	REINFORCEMENT BARS	POUND	2,620	
* 50900205	STEEL RAILING, TYPE S1	FOOT	100	
51200957	FURNISHING METAL SHELL PILES 12"X 0.250"	FOOT	360	
51202305	DRIVING PILES	FOOT	360	
51203200	TEST PILE METAL SHELLS	EACH	2	
51500100	NAME PLATES	EACH	1	
67100100	MOBILIZATION	L SUM	1	
70101700	TRAFFIC CONTROL AND PROTECTION	L SUM	1	
72000100	SIGN PANEL - TYPE 1	SQ FT	12.5	
72900210	METAL POST - TYPE B	EACH	2	
* 78201000	TERMINAL MARKER-DIRECT APPLIED	EACH	4	

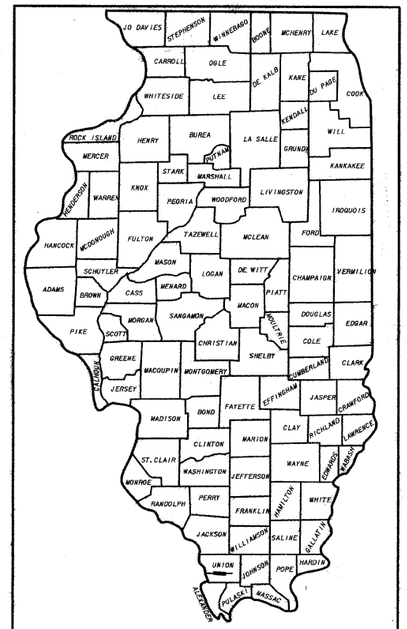
* SPECIALTY ITEMS



LAYOUT
APPROXIMATE SCALE: 1 INCH = 0.947 MILE
NET LENGTH OF PROJECT =600 FT. = 0.11 MI.

SCALES

PLAN	1 INCH = 20 FEET
PROFILE	1 INCH = 20 FEET HORZ.
PROFILE	1 INCH = 5 FEET VERT.
CROSS SECTIONS	1 INCH = 5 FEET HORZ.
CROSS SECTIONS	1 INCH = 5 FEET VERT.



LOCATION OF SECTION INDICATED THUS:-

J.U.L.I.E - 1-800-892-0123
CLASSIFICATION - LOCAL ROAD
A.D.T. - 50
DESIGN SPEED - 30MPH

BOOK 461-N

SCALE	PLANS PREPARED BY	FILE NO.
AS SHOWN	J. T. BLANKINSHIP, INC.	E-8580
DATE	CONSULTING ENGINEERS	SHEET NO.
JAN. 2008	401 S. 17TH STREET MURPHYSBORO, ILLINOIS	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

APPROVED March 5 20 10
Kevin Grammer
KEVIN GRAMMER - UNION COUNTY ENGINEER

PASSED MARCH 17 20 10
Dennis W. Hillebrenner
DENNIS HILLEBRENNER-DISTRICT 9
ENGINEER OF LOCAL ROADS & STREETS

RELEASING FOR BID
BASED ON LIMITED REVIEW March 24 20 10
Mary C. Lamie
MARY C. LAMIE, P.E. - DEPUTY DIRECTOR OF HIGHWAYS
REGION FIVE ENGINEER

Ted R. Beggs
TED R. BEGGS, P.E.
REG.NO. 062-053736
DATE 02/04/10
EXPIRES 11-30-11

ROUTE	SECTION	COUNTY	TOWNSHIP	TOTAL SHEETS	SHEET NUMBER
T.R. 51	04-01182-00-BR	UNION	SEC.31,T11S,R1W	15	2
JOB NO. C-99-549-04			PROJECT NO. BROS-181 (26)		
RHINE ROAD			CONTRACT NO. 99216		

SCALE: 1" = 20'

AGGREGATE SURFACE TRANSITION
FROM STA. 7+25 (16')TO STA. 8+00 (20')

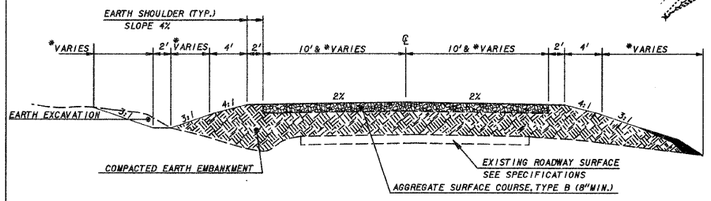
PROPOSED RIGHT-OF-WAY
STA. 7+00 35'LT.
ROW OF SMALL FLOWERING TREES
PROPOSED IMPROVEMENT BEGINS @ STA. 7+00
STA. 7+00 35'RT.
PROPOSED RIGHT-OF-WAY
RHINE ROAD
(GRAVEL)
EDGE OF FIELD
AGRICULTRAL FIELD

CURVE DATA:
Δ = 08°30'00" P.C. 7+65.94
R = 1240.67' P.I. 8+58.14
T = 92.20' P.T. 9+50
L = 184.06'

INSTALL STONE DUMPED RIPRAP CLASS A4 (18"MIN.THICKNESS - 360 TONS) SEE SPECIFICATIONS
EXISTING STRUCTURE TO BE REMOVED
18"BLACK CHERRY
20"ELM
STA. 10+21.45 35'LT.
B1-S
24" SOFT ELDER
18" OAK
℄ OF PROPOSED 24'X50' STRUCTURE SKEWED 30° LEFT FORWARD STA. 10+00
STA. 10+10 35'RT.
INSTALL STEEL CURLED END SECTIONS ON ALL FOUR CORNERS OF NEW STEEL RAILING, TYPE S-1. SEE DETAILS ON SHEET 11.
STA. 10+10 100'RT.
STA. 11+15 100'RT.
TEMPORARY USE PERMIT
STA. 11+15 35'RT.
PROPOSED RIGHT-OF-WAY
TEMPORARY USE PERMIT
STA. 10+49.24 70'LT.
STA. 11+50 70'LT.
STA. 11+50 35'LT.
FIELD ACCESS
60°
STA. 13+00 35'RT.
PROPOSED IMPROVEMENT ENDS @ STA. 13+00
AGRICULTRAL FIELD

CURVE DATA:
Δ = 13°40'00" P.C. 12+50
R = 709.32'
T = 85.00'
L = 169.19'
SE. = 0.06 FT./FT. TO BE ATTAINED FROM STA. 11+75 TO 12+25

LEGEND
- POWER POLE
- TELEPHONE POLE
- TP□ — TELEPHONE PEDESTAL
- ANCHOR
- SIGN
- CMP — CORRUGATED METAL PIPE CULVERT
- FL — FLOWLINE
- TD — TOP OF BRIDGE DECK
- TW — TOP OF WINGWALL
- OE — OVERHEAD ELECTRICAL LINE
- FENCE LINE
- TREE LINE
- EXISTING RIGHT-OF-WAY LINE
- PROPOSED RIGHT-OF-WAY LINE
- 570 — EXISTING CONTOUR
- 570 — PROPOSED CONTOUR
- ×570.00 — PROPOSED FINISH GRADE
- B1-S — BORING W/ DESIGNATION
- TREE REMOVAL LIMITS
- PROPOSED STONE DUMPED RIPRAP



TYPICAL SECTION - ROADWAY
NOT TO SCALE

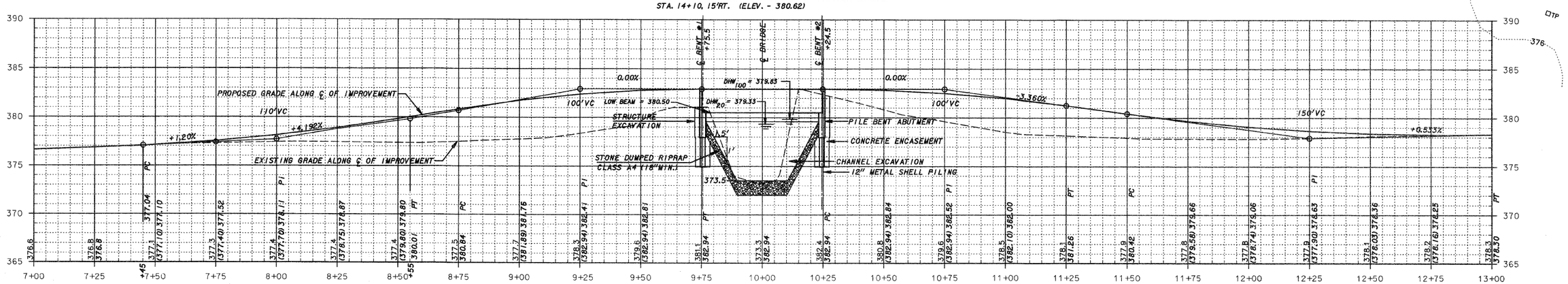
*SEE PLAN VIEW AND CROSS SECTIONS.

BENCHMARKS

B.M. NO.1 - RAILROAD SPIKE SET IN SOUTH SIDE POWER POLE ON NORTH SIDE OF RHINE ROAD ± 300' SOUTHWEST OF MAIN BRIDGE. STA. 7+10, 25'RT. (ELEV. - 377.12)

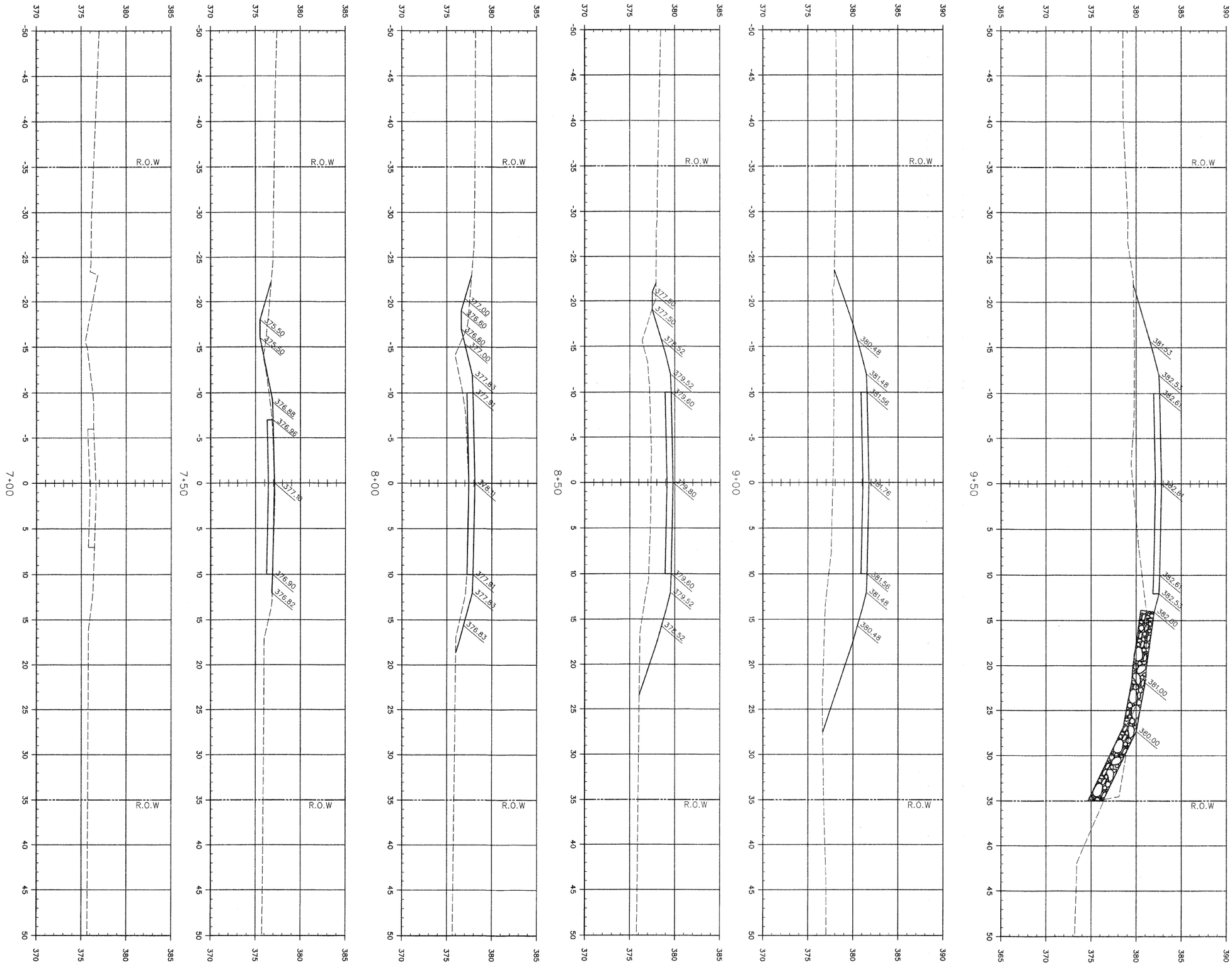
B.M. NO.2 - RAILROAD SPIKE SET IN SOUTH SIDE POWER POLE ON NORTH SIDE OF RHINE ROAD ± 400' NORTHEAST OF MAIN BRIDGE AND JUST WEST OF NORTHWEST CORNER OF ANOTHER BRIDGE. STA. 14+10, 15'RT. (ELEV. - 380.62)

AGGREGATE SURFACE TRANSITION
FROM STA. 12+75 (20')TO STA. 13+00 (19')



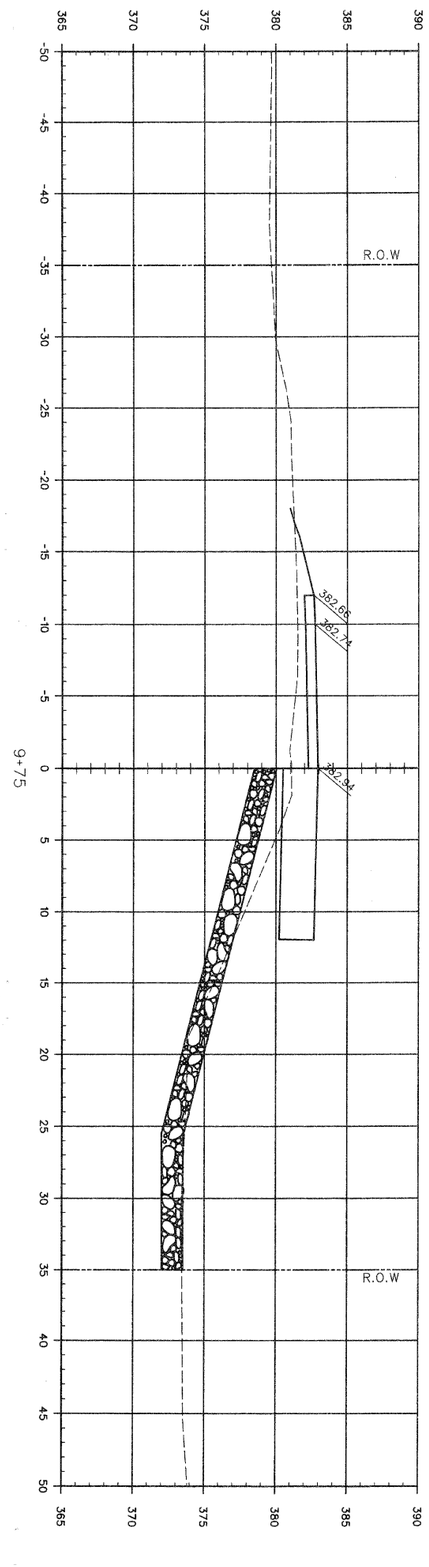
UNION COUNTY HIGHWAY DEPARTMENT
UNION COUNTY, ILLINOIS
RHINE ROAD
PLAN AND PROFILE

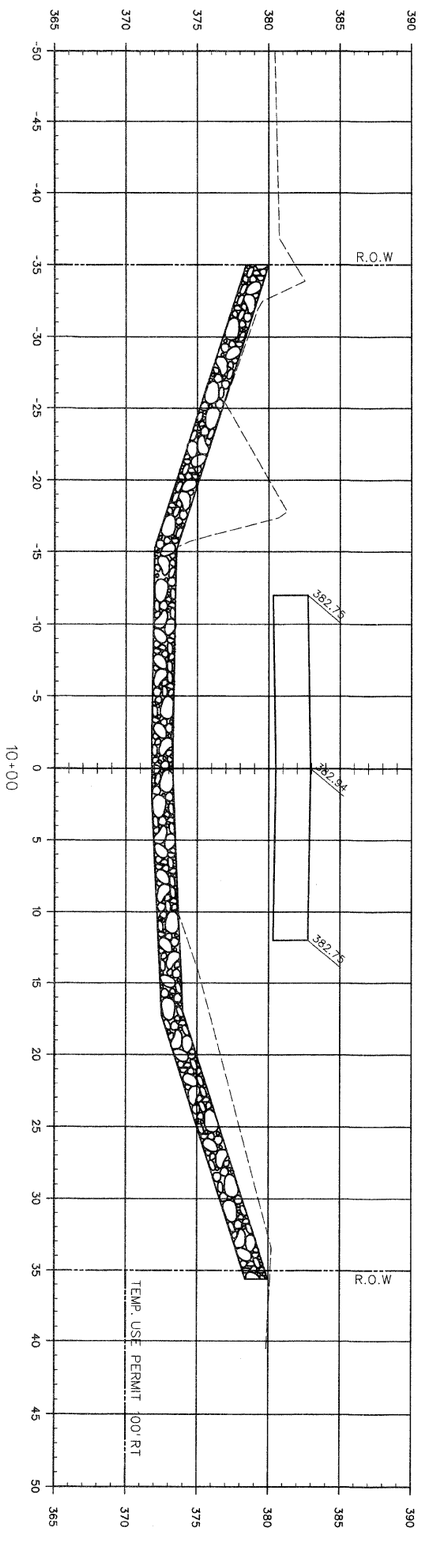
ROUTE	SECTION	COUNTY	TOWNSHIP	TOTAL SHEETS	SHEET NUMBER
T.R. 51	04-01182-00-BR	UNION	SEC 31, T11S, R1W	15	3
JOB NO. C-99-549-04			PROJECT NO. BROS-181(26)		
RHINE ROAD			CONTRACT NO. 99216		

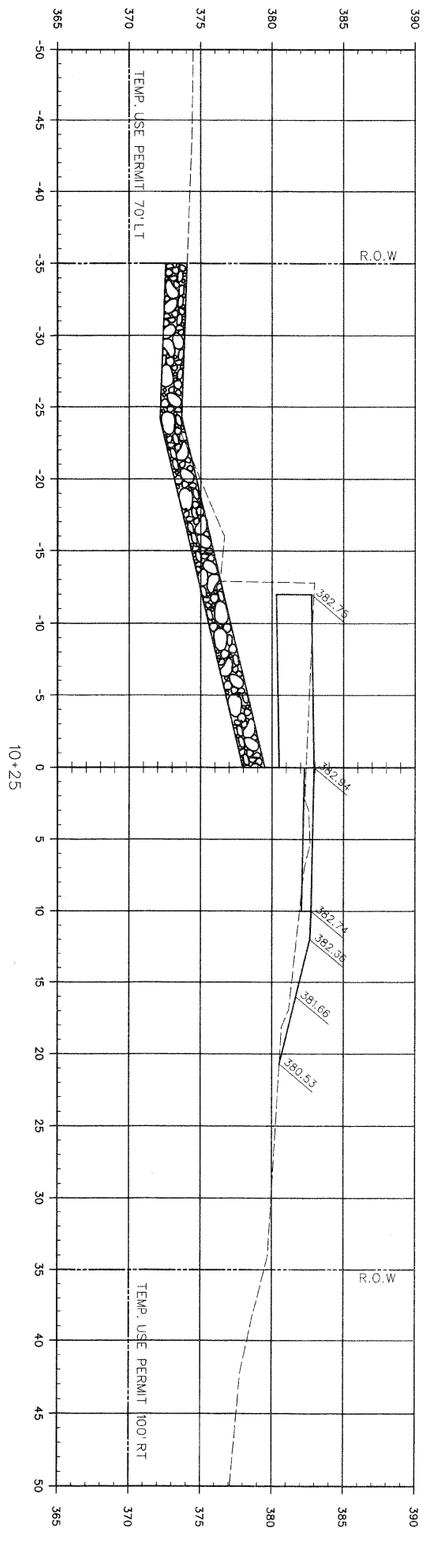


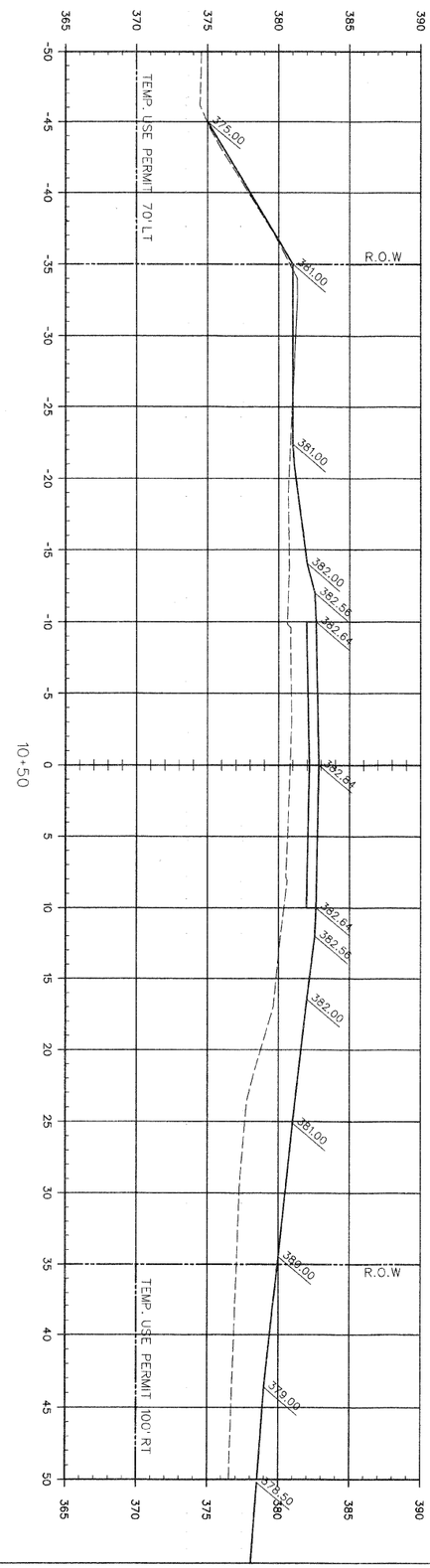
UNION COUNTY HIGHWAY DEPARTMENT
UNION COUNTY, ILLINOIS
RHINE ROAD
CROSS SECTION

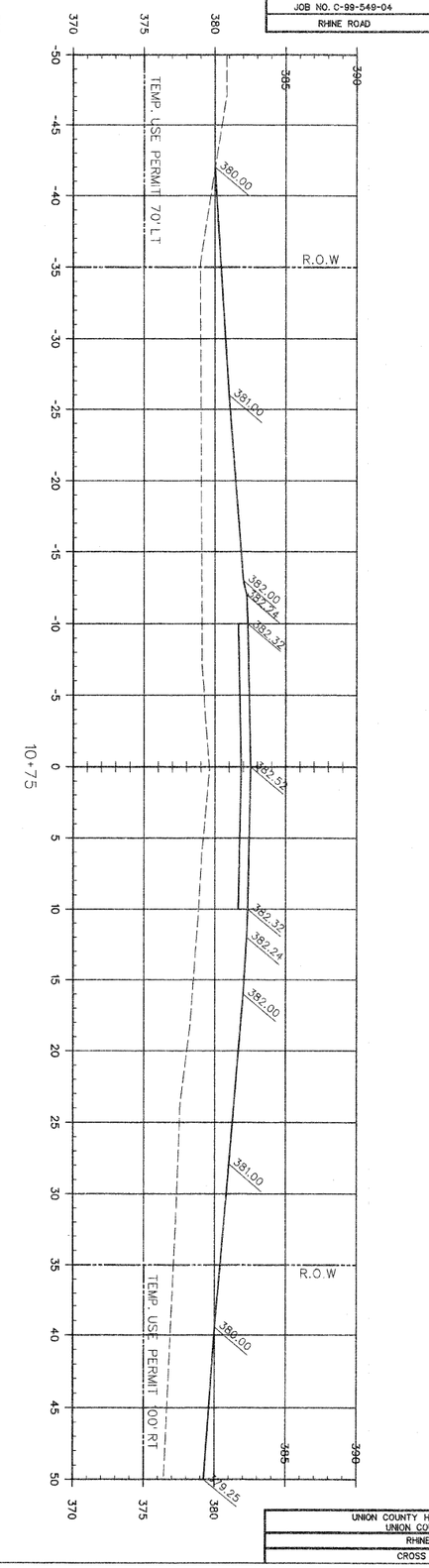
ROUTE	SECTION	COUNTY	TOWNSHIP	TOTAL SHEETS	SHEET NUMBER
T.R. 51	04-01182-00-BR	UNION	SEC. 31, T11S, R1W	15	4
JOB NO. C-99-549-04			PROJECT NO. BROS-181(28)		
RHINE ROAD			CONTRACT NO. 99216		





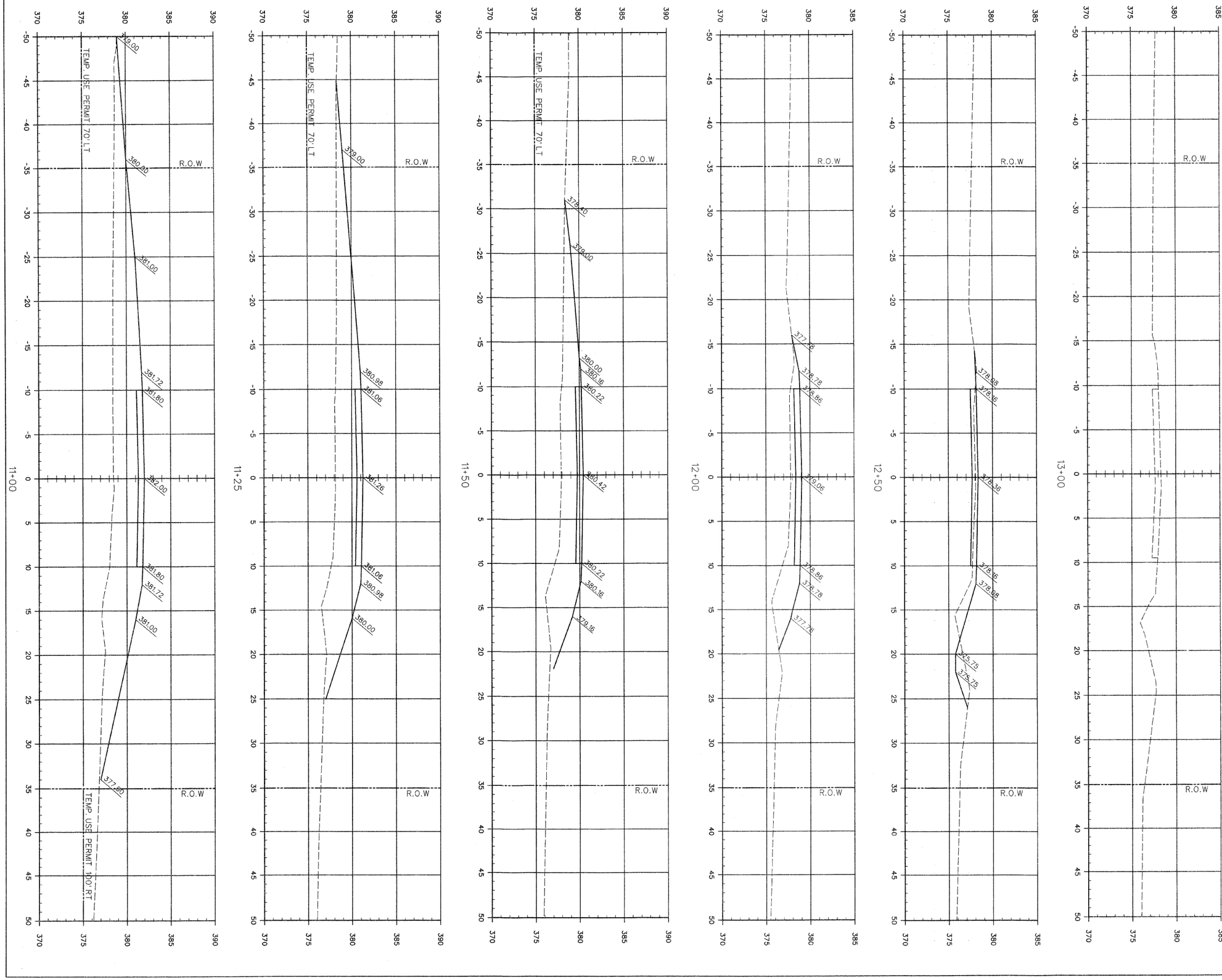






UNION COUNTY HIGHWAY DEPARTMENT
UNION COUNTY, ILLINOIS
RHINE ROAD
CROSS SECTION

ROUTE	SECTION	COUNTY	TOWNSHIP	TOTAL SHEETS	SHEET NUMBER
T.R. 51	04-01182-00-BR	UNION	SEC 31, T11S, R1W	15	5
JOB NO. C-99-549-04			PROJECT NO. BROS-181 (26)		
RHINE ROAD			CONTRACT NO. 99216		

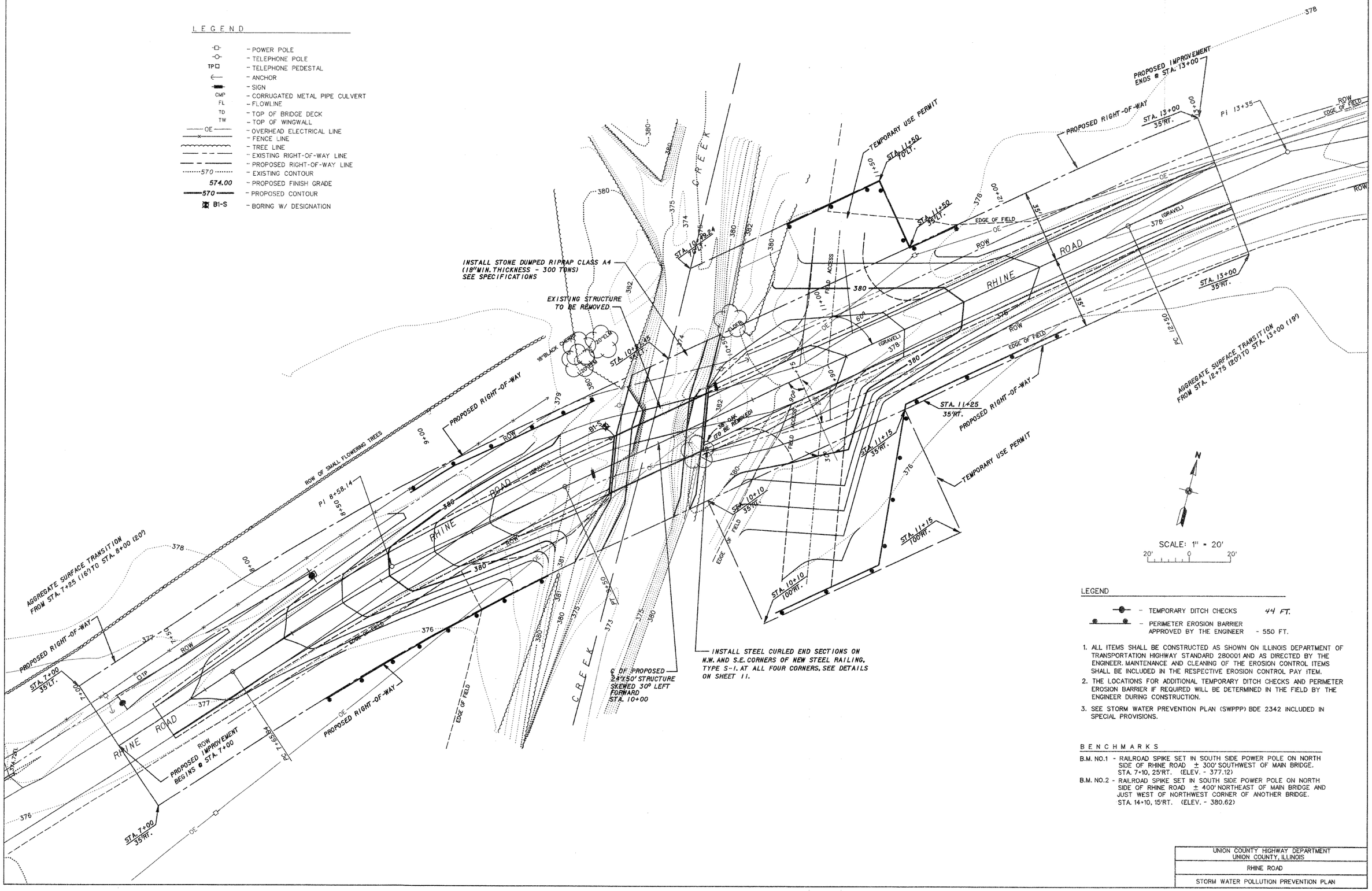


UNION COUNTY HIGHWAY DEPARTMENT
UNION COUNTY, ILLINOIS
RHINE ROAD
CROSS SECTION

ROUTE	SECTION	COUNTY	TOWNSHIP	TOTAL SHEETS	SHEET NUMBER
T.R. 51	04-01182-00-BR	UNION	SEC. 31, T11S, R1W	15	6
JOB NO. C-99-549-04			PROJECT NO. BROS-181 (26)		
RHINE ROAD			CONTRACT NO. 99216		

LEGEND

- POWER POLE
- TELEPHONE POLE
- TP□ – TELEPHONE PEDESTAL
- ANCHOR
- SIGN
- CMP – CORRUGATED METAL PIPE CULVERT
- FL – FLOWLINE
- TD – TOP OF BRIDGE DECK
- TW – TOP OF WINGWALL
- OE – OVERHEAD ELECTRICAL LINE
- FENCE LINE
- TREE LINE
- EXISTING RIGHT-OF-WAY LINE
- PROPOSED RIGHT-OF-WAY LINE
- 570 – EXISTING CONTOUR
- 574.00 – PROPOSED FINISH GRADE
- 570 – PROPOSED CONTOUR
- B1-S – BORING W/ DESIGNATION



LEGEND

- TEMPORARY DITCH CHECKS 44 FT.
- PERIMETER EROSION BARRIER APPROVED BY THE ENGINEER - 550 FT.

1. ALL ITEMS SHALL BE CONSTRUCTED AS SHOWN ON ILLINOIS DEPARTMENT OF TRANSPORTATION HIGHWAY STANDARD 280001 AND AS DIRECTED BY THE ENGINEER. MAINTENANCE AND CLEANING OF THE EROSION CONTROL ITEMS SHALL BE INCLUDED IN THE RESPECTIVE EROSION CONTROL PAY ITEM.
2. THE LOCATIONS FOR ADDITIONAL TEMPORARY DITCH CHECKS AND PERIMETER EROSION BARRIER IF REQUIRED WILL BE DETERMINED IN THE FIELD BY THE ENGINEER DURING CONSTRUCTION.
3. SEE STORM WATER PREVENTION PLAN (SWPPP) BDE 2342 INCLUDED IN SPECIAL PROVISIONS.

BENCHMARKS

B.M. NO.1 - RAILROAD SPIKE SET IN SOUTH SIDE POWER POLE ON NORTH SIDE OF RHINE ROAD ± 300' SOUTHWEST OF MAIN BRIDGE. STA. 7+10, 25'RT. (ELEV. - 377.12)

B.M. NO.2 - RAILROAD SPIKE SET IN SOUTH SIDE POWER POLE ON NORTH SIDE OF RHINE ROAD ± 400' NORTHEAST OF MAIN BRIDGE AND JUST WEST OF NORTHWEST CORNER OF ANOTHER BRIDGE. STA. 14+10, 15'RT. (ELEV. - 380.62)

UNION COUNTY HIGHWAY DEPARTMENT
UNION COUNTY, ILLINOIS

RHINE ROAD

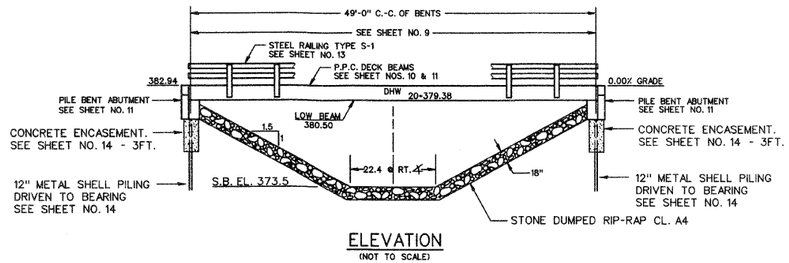
STORM WATER POLLUTION PREVENTION PLAN

ROUTE	SECTION	COUNTY	TOWNSHIP	TOTAL SHEETS	SHEET NUMBER
T.R. 51	04-01182-00-BR	UNION	SEC.31,T11S,R1W	15	7
JOB NO. C-99-549-04			PROJECT NO. BROS-181 (28)		
RHINE ROAD			CONTRACT NO. 99216		

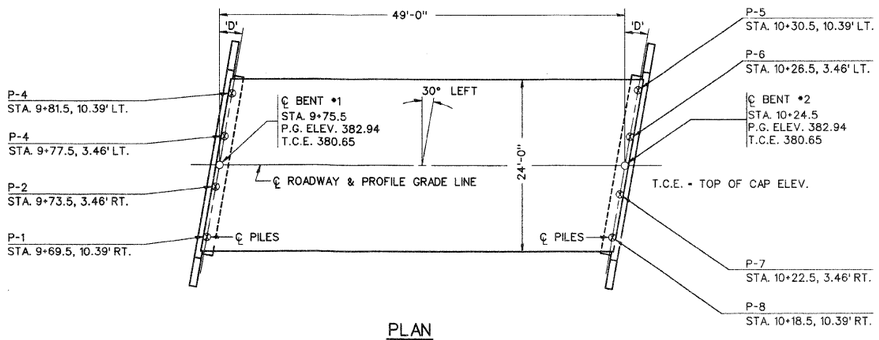
B.M - RAILROAD SPIKE SET IN SOUTH SIDE POWER POLE ON NORTH SIDE OF RHINE ROAD ± 300' SOUTHWEST OF MAIN BRIDGE. STA. 7+10, 25' RT. (ELEV.- 377.12)

EXISTING STRUCTURE —— STA. 10+06, 6' LT., 26' SPAN, 15' WIDTH,

SALVAGE —— CONTRACTOR TO SALVAGE STEEL I-BEAM STRINGERS AND DELIVER TO UNION COUNTY HIGHWAY DEPARTMENT IN JONESBORO, ILLINOIS.



ELEVATION
(NOT TO SCALE)



PLAN

SKEW ANGLE 'D' = 30° LEFT FORWARD

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 SHEET 15 FOR BORING LOGS.
3. AFTER DECK BEAMS HAVE BEEN SET, THE DECK SURFACE SHALL BE INSPECTED. A WATERPROOFING MEMBRANE SYSTEM AND A BITUMINOUS CONCRETE WEARING SURFACE MAY BE REQUIRED TO PROVIDE A SMOOTH UNIFORM RIDING SURFACE. PAYMENT FOR THIS WORK, IF REQUIRED, WILL BE MADE BY A CHANGE ORDER TO THE CONTRACT.

TOTAL BILL OF MATERIAL

ITEM	UNIT	SUPER	SUB.		TOTAL
			PIERS	ABUTS	
REMOVAL OF EXISTING STRUCTURES	EACH				1
STONE DUMPED RIP-RAP, CLASS A-4	TON				300
CONCRETE STRUCTURES	CU. YD.			21.4	21.4
PRECAST PRESTRESSED CONCRETE DECK BEAMS (27" DEPTH)	SQ. FT.	1200			1200
STEEL RAILING, TYPE S-1	FOOT	100			100
REINFORCEMENT BARS	POUND			2,620	2,620
FURNISHING METAL PILE SHELLS 12"	FOOT			360	360
DRIVING AND FILLING SHELLS	FOOT			360	360
TEST PILE METAL SHELLS	EACH			2	2
NAME PLATES	EACH	1			1
CONCRETE ENCASEMENT	CU. YD.			2.1	2.1

INDEX OF SHEETS

PILE NOTES

1. THE METAL SHELL PILES SHALL BE ACCORDING TO ASTM A 252 GRADE 3.
2. THE TEST PILES SHALL BE DRIVEN TO 110 PERCENT OF THE NOMINAL REQUIRED BEARING INDICATED IN THE PILE DATA INFORMATION.

PILE DATA (2-ABUTS.)

TYPE & SIZE: METAL SHELL - 12IN. DIA. X 0.25 IN. WALLS.
NOMINAL REQUIRED BEARING: 240 KIPS.
ALLOWABLE RESISTANCE AVAILABLE: 80 KIPS.
ESTIMATED LENGTH: 60 FEET EACH.
NUMBER REQUIRED: 8 (INCLUDES 1 TEST PILE IN EACH BENT)

SEISMIC DATA

SEISMIC PERFORMANCE CATEGORY (SPC) - 0.15
BEDROCK ACCELERATION COEFFICIENT (A) - B
SITE COEFFICIENT (S) - 1.5

LOADING HS20 - 44

ALLOW 25#/SQ. FT. FOR FUTURE WEARING SURFACE.

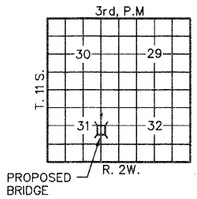
DESIGN SPECIFICATIONS

2002 AASHTO STANDARD SPECIFICATIONS - 17th ED.

A TRIBUTARY TO
CLEAR CREEK
SEC.04-01184-00-BR BUILT 200...
TR-51-RHINE ROAD
UNION COUNTY
LOADING HS20
STR. NO. 091-3227

LETTERING FOR NAME PLATE

LOCATE NAME PLATE AT SOUTHWEST CORNER OF BRIDGE (SEE SHEET NO. 13)



LOCATION SKETCH

WATERWAY INFORMATION

DRAINAGE AREA = 2.62 SQ. MI. LOW GRADE ELEV. = 375.8 @ STA. 6+00										
FLOOD	FREQ. YR.	Q C.F.S.	OPENING SQ.FT. EXIST.	OPENING SQ.FT. PROP.	NAT. H.W.E	HEAD - FT. EXIST	HEAD - FT. PROP	HEADWATER EL. EXIST.	HEADWATER EL. PROP.
DESIGN	20	1741	165	181.4	378.25	3.32	1.08	381.57	379.33
BASE	100	2601	165	201.5	378.72	2.64	1.11	381.36	379.83
OVERTOPPING									
MAX. CALC.	500	3432							

STRUCTURAL CERTIFICATION

I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF, THE REVISED STANDARD DETAIL SHEETS AND/OR SPECIAL COMPONENT SHEETS INCLUDED WITH THE STANDARD BRIDGE DETAIL SHEETS ARE STRUCTURALLY ADEQUATE FOR THE DESIGN LOADING SHOWN ON THE PLANS AND COMPLY WITH THE REQUIREMENTS OF THE CURRENT AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES.

4/4/07
DATE

ZEYN B. UZMAN
S.E. #81-4745
EXPIRES NOV. 30, 2010

LICENSED STRUCTURAL ENGINEER
ZEYN
UZMAN
4745
STATE OF ILLINOIS
(SEAL)

GENERAL PLAN & ELEVATION

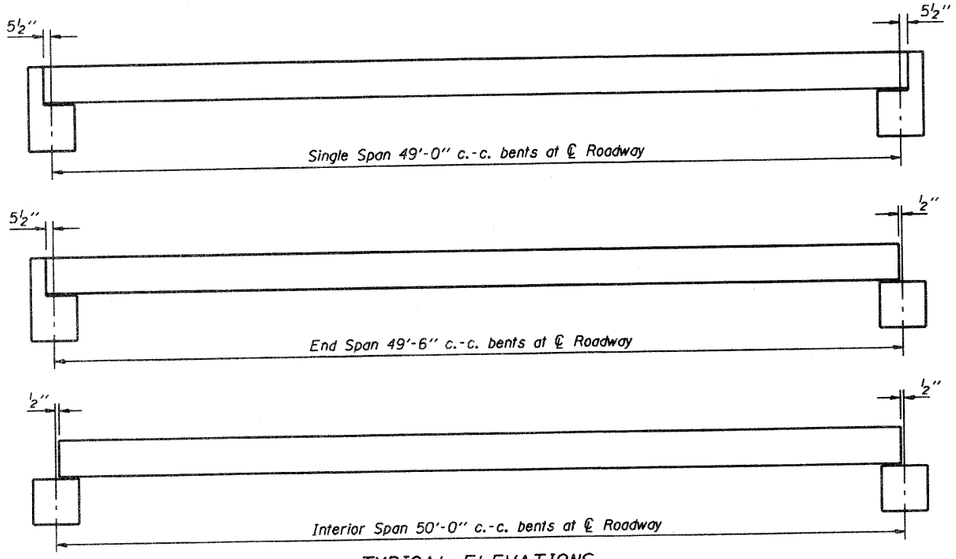
TR 51-RHINE ROAD
OVER TRIBUTARY TO CLEAR CREEK

SECTION 04-01182-00-BR

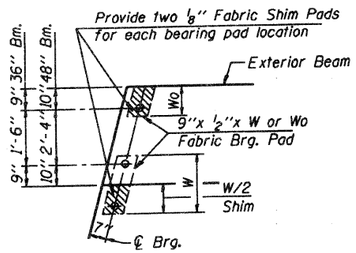
UNION COUNTY

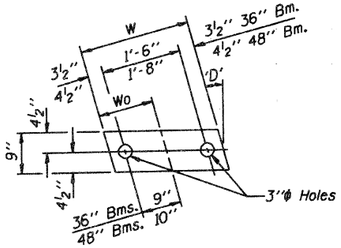
STATION 10+00

ROUTE	SECTION	COUNTY	TOWNSHIP	TOTAL SHEETS	SHEET NUMBER
T.R. 51	04-01182-00-BR	UNION	SEC 31, T1IS, R1W	15	6
JOB NO. C-99-549-04			PROJECT NO. BROS-151 (26)		
RHINE ROAD			CONTRACT NO. 99216		



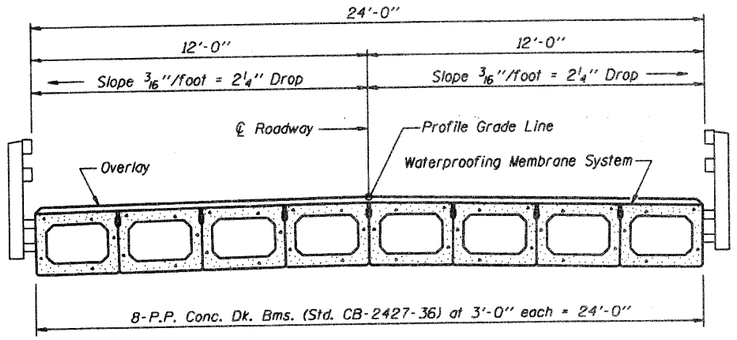
TYPICAL ELEVATIONS



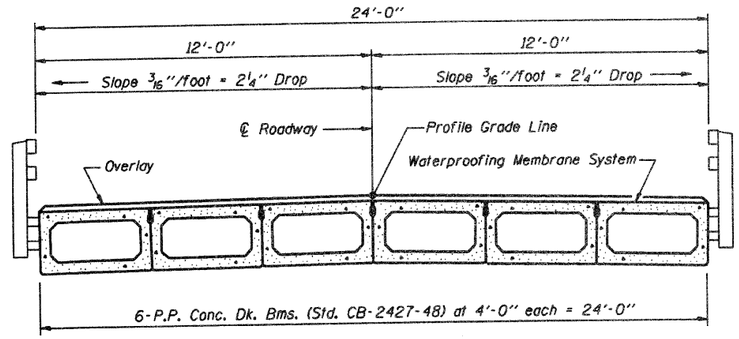


Beam	W	Wo
36"	2'-1"	1'-0½"
48"	2'-5"	1'-2½"

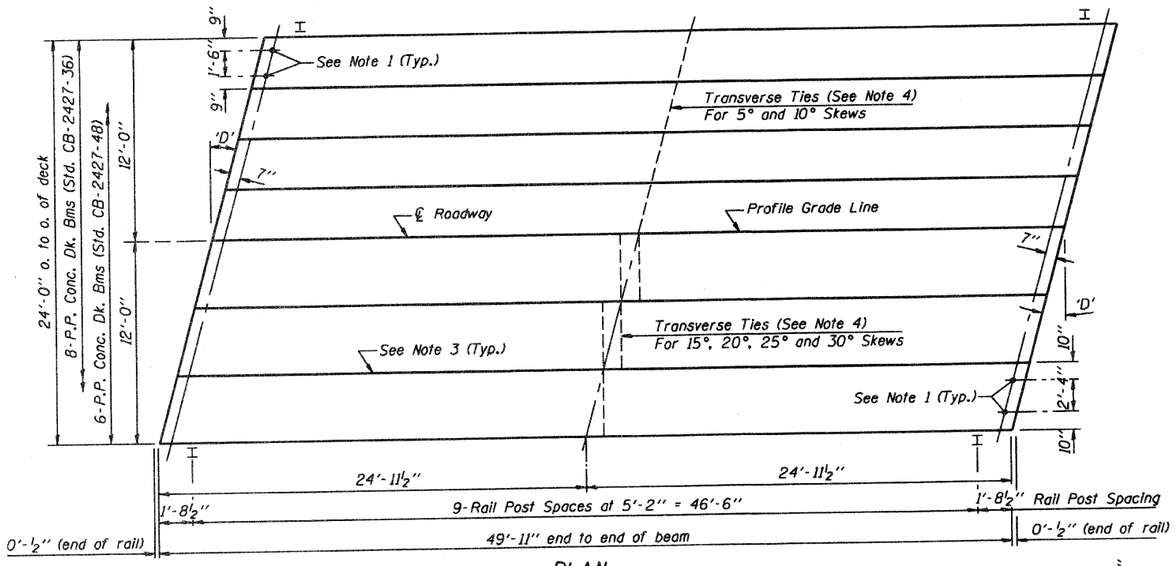
½" FABRIC BRG. PAD DETAILS



CROSS SECTION

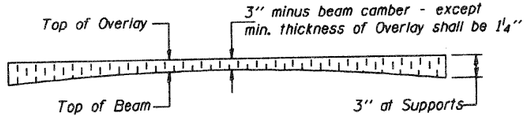


CROSS SECTION



PLAN

('D' = Designated Skew Angle)



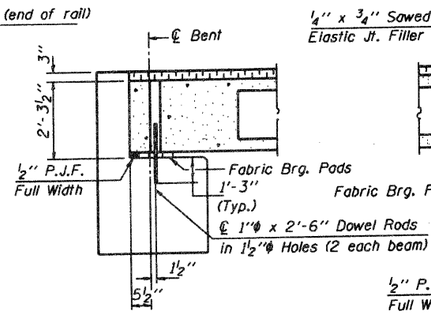
PROFILE OF OVERLAY

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"

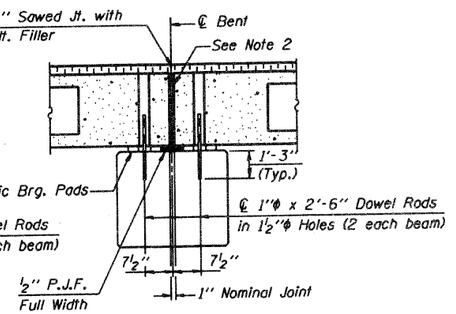
NOTES

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)

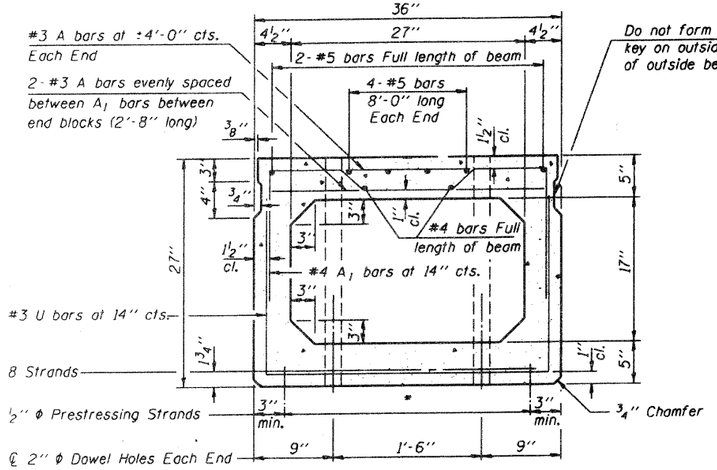
QUANTITIES FOR ONE SPAN

P.P. Conc. Dk. Bm. 27" Dp.	1200 Sq. Ft.	
Steel Railing	100 Ft.	
Waterproofing Membrane System	133.3 Sq. Yds.	
Portland Cement Mortar	350 Ft.	36"
Fairing Course	250 Ft.	48"

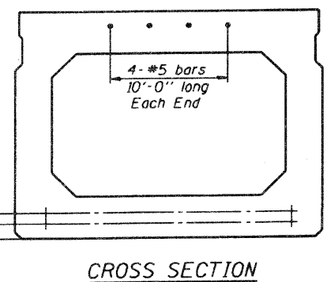
Note: Quantity of overlay for one span = 18.2 Tons

P.P.C. DECK BEAM SUPERSTRUCTURE			
24' RDWY.	27" BMS.	50' SPAN	LEFT
STANDARD CS-2427-50L			

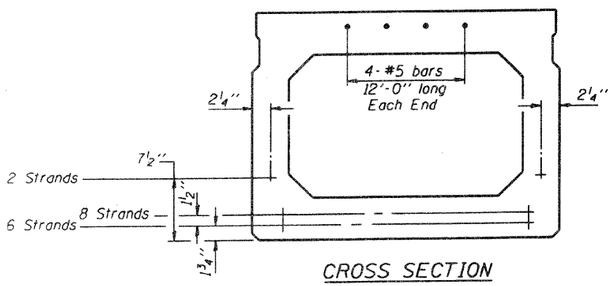
ROUTE	SECTION	COUNTY	TOWNSHIP	TOTAL SHEETS	SHEET NUMBER
T.R. 51	04-01182-00-BR	UNION	SEC. 31, T11S, R1W	15	9
JOB NO. C-99-549-04			PROJECT NO. BROS-181 (26)		
RHINE ROAD			CONTRACT NO. 99216		



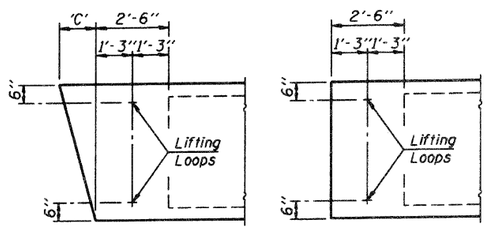
CROSS SECTION
(40' SPAN)



CROSS SECTION
(50' SPAN)

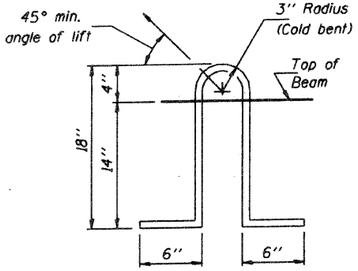


CROSS SECTION
(60' SPAN)



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.

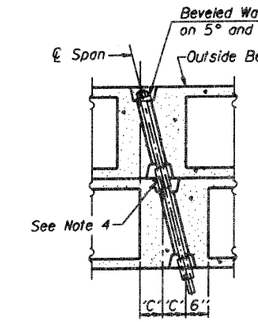


LIFTING LOOP DETAIL

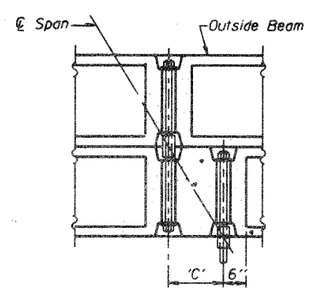
Lifting loops shall be 2. ½"ϕ-270 ksi strands. as shown. Alternate approved lifting devices are also acceptable.

DIMENSION 'C'

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



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

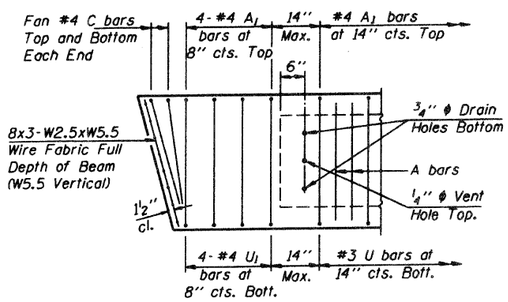


PARTIAL PLAN TRANSVERSE TIE ASSEMBLY
('D'=15°, 20°, 25° and 30°)

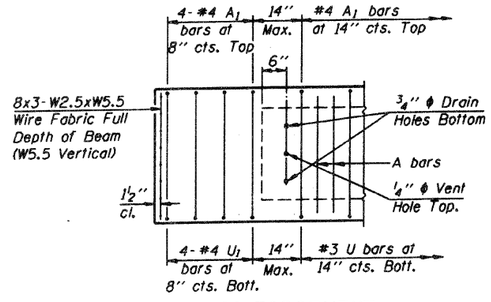
* TRANSVERSE STRAND PLACEMENT GUIDELINES

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".

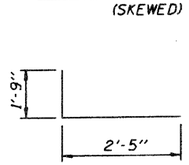
Vertical placement of strands shall not be adjusted to satisfy the above guidelines.



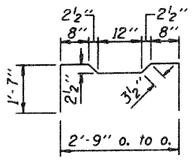
END REINFORCEMENT
(SKEWED)



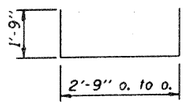
END REINFORCEMENT
(RIGHT ANGLE)



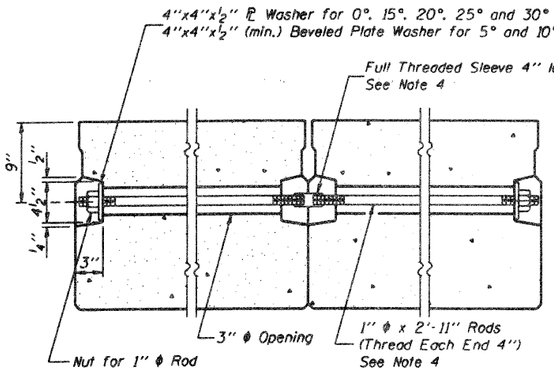
BAR C**



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.

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

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

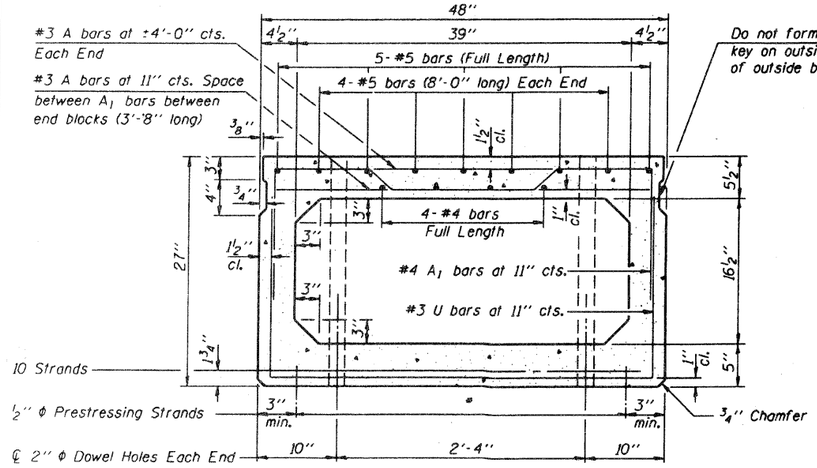
#4 bars = 1'-4"
#5 bars = 1'-8"

P.P.C. DECK BEAM DETAILS

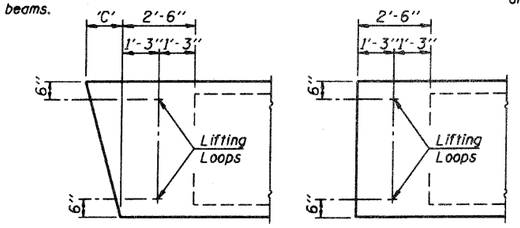
24' ROADWAY | 27" x 36" BEAMS

STANDARD CB-2427-36

ROUTE	SECTION	COUNTY	TOWNSHIP	TOTAL SHEETS	SHEET NUMBER
T.R. 51	04-01182-00-BR	UNION	SEC 31, T11S, R1W	15	10
JOB NO. C-99-549-04			PROJECT NO. BROS-181(26)		
RHINE ROAD			CONTRACT NO. 99216		

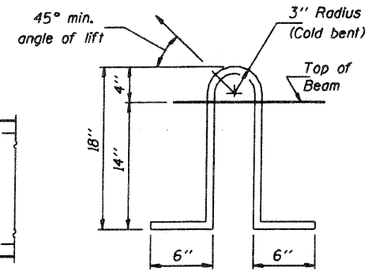


CROSS SECTION
(40' SPAN)



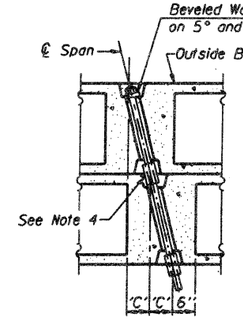
END BLOCK DETAILS

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

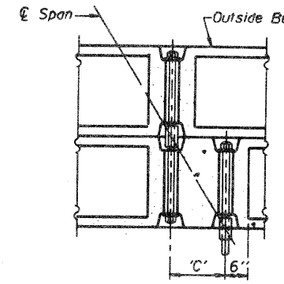


LIFTING LOOP DETAIL

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



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



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

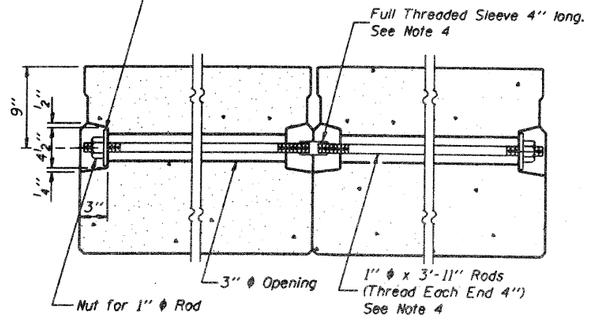
DIMENSION 'C'

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

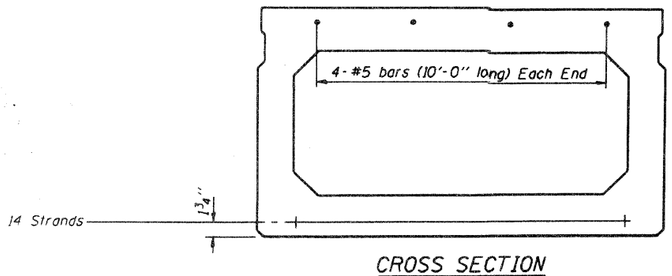
* TRANSVERSE STRAND PLACEMENT GUIDELINES

1. Place strands symmetrically about centerline of beam.
2. The minimum distance from center to center of strands in all directions shall be 2".
3. The minimum clearance from strand to dowel hole shall be ½".
4. The minimum clearance from strand to void shall be 1½".

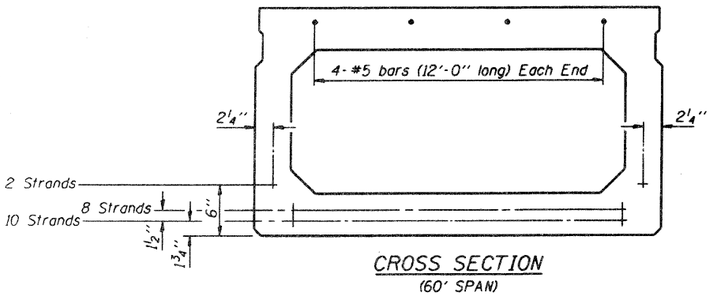
Vertical placement of strands shall not be adjusted to satisfy the above guidelines.



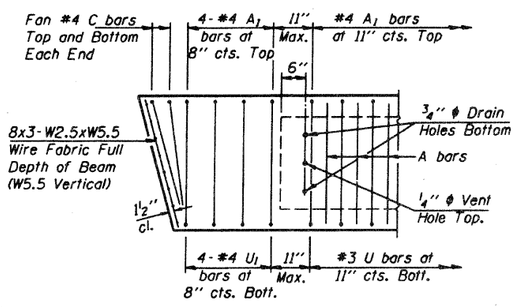
SECTION ALONG TRANSVERSE TIE ASSEMBLY
(REQUIRED FOR 50' & 60' SPANS ONLY)



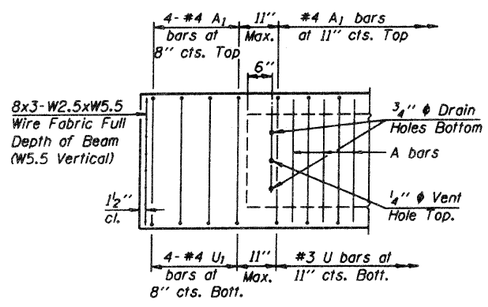
CROSS SECTION
(50' SPAN)



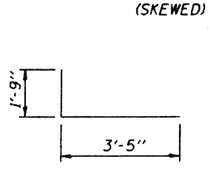
CROSS SECTION
(60' SPAN)



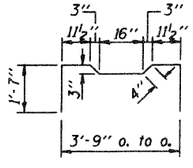
END REINFORCEMENT
(SKEWED)



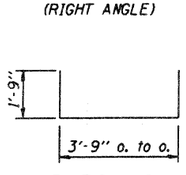
END REINFORCEMENT
(RIGHT ANGLE)



BAR C**



BAR A1



BARS U & U1

NOTES

1. Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270.
2. The nominal diameter shall be ½" and the nominal cross-sectional area shall be 0.153 square inches.
3. Reinforcement bars shall conform to the requirements of AASHTO M-31 or M-322, Grade 60.
4. On 0°, 5° and 10° skews, alternate appoved transverse tie rods of increased segmental length are acceptable.
5. Rail Post anchor devices shall be cast into outside beam as elsewhere specified.
6. When a Waterproofing Membrane System is specified, the top surface of the beams shall be screeded with a straightedge and finished with a hand float. The finished surface shall be free of depressions or high spots with sharp corners and the top edge of keys shall be rounded or chamfered a minimum of ¼".
7. Keyway surfaces shall be cleaned to remove form oil or other bond breaking material prior to shipment of the beams. Cleaning shall be done by sandblasting the keyway areas between the top of the beam and the bottom edge of the key.

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

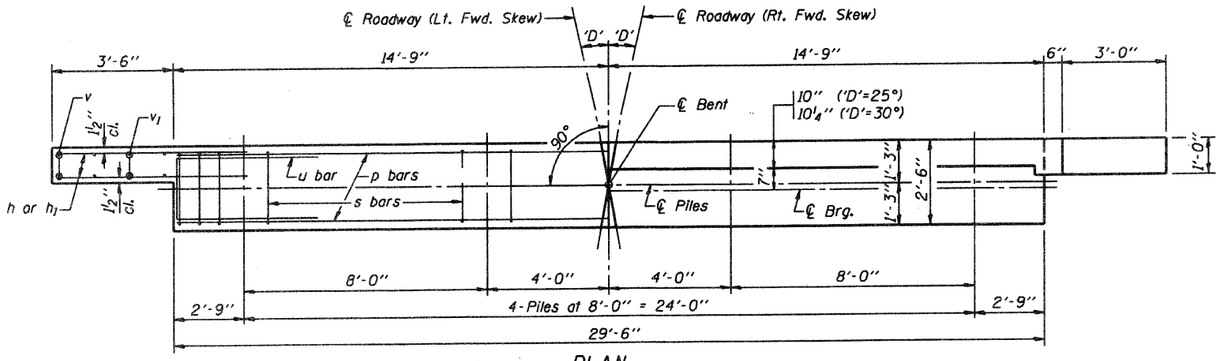
DESIGN STRESSES

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"

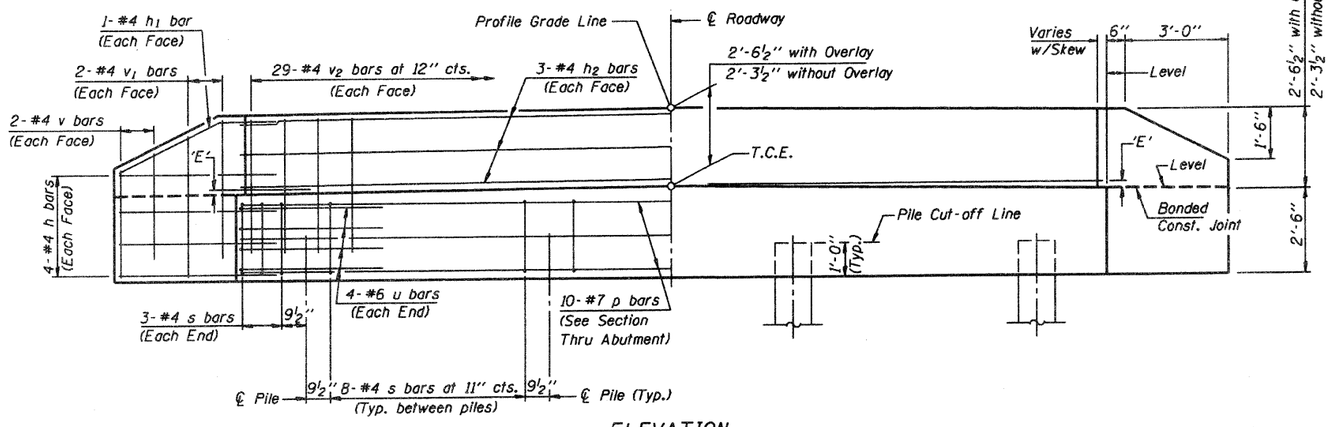
P.P.C. DECK BEAM DETAILS
24' ROADWAY | 27" x 48" BEAMS
STANDARD CB-2427-48

ROUTE	SECTION	COUNTY	TOWNSHIP	TOTAL SHEETS	SHEET NUMBER
T.R. 51	04-01182-00-BR	UNION	SEC 31, T11S, R1W	15	11
JOB NO. C-99-549-04			PROJECT NO. BROS-181 (26)		
RHINE ROAD			CONTRACT NO. 99216		

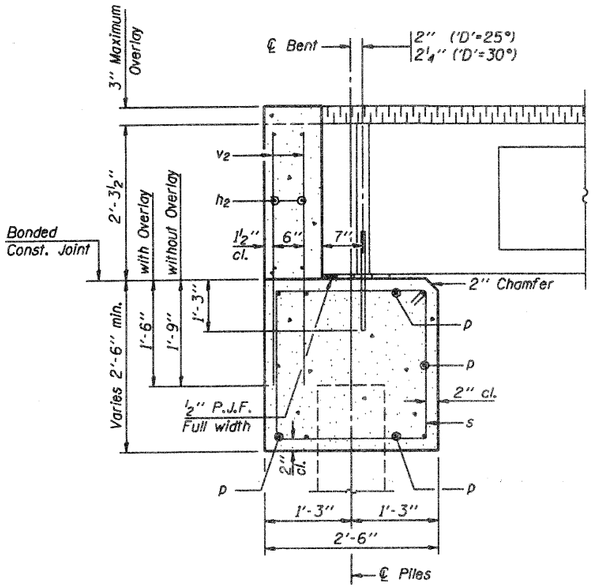


PLAN

('D'=Designated Skew Angle)



ELEVATION



SECTION THRU ABUTMENT

(At Right Angles)

DIMENSION 'E'

GRADE	'D'=25°		'D'=30°	
	UPGRADE END	DOWNGRADE END	UPGRADE END	DOWNGRADE END
0%	2½"	2½"	2 3/8"	2 3/8"
Over 0% to 1%	2⅛"	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%	⅝"	4 3/8"	⅛"	4 5/8"
Over 3% to 4%	0"	5⅛"	——	——

NOTES

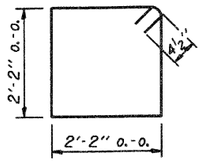
1. The Backwall and the portion of the Wingwalls above the bonded construction joint shall be cast against the in-place beam.
2. Reinforcement bars shall conform to the requirements of A.A.S.H.T.O. M-31 or M-322, Grade 60.
3. Space reinforcement in cap to miss anchor bolts.

MAXIMUM PILE LOADS

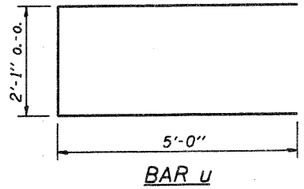
SPAN	TONS
40'	34
50'	38
60'	43

DESIGN STRESSES

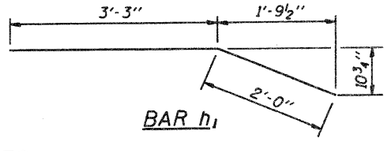
f'c = 3,500 psi
fy = 60,000 psi



BAR s



BAR u



BAR h1

BILL OF MATERIAL FOR ONE ABUTMENT

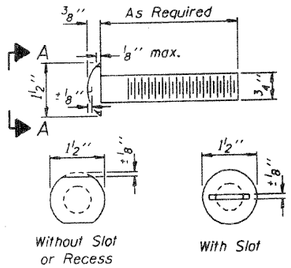
Bar	No.	Size	Length	Shape
h	16	#4	5'-0"	——
h1	4	#4	5'-3"	——
h2	6	#4	29'-2"	——
p	10	#7	29'-2"	——
s	30	#4	9'-5"	□
u	8	#6	12'-1"	⊏
v	8	#4	3'-2"	——
v1	8	#4	4'-2"	——
v2	58	#4	3'-11"	——
Concrete Structures			10.7 Cu. Yds.	
Reinforcement Bars			1310 Lb.	

P.P.C. DECK BEAMS
PILE BENT ABUTMENT

24' RDWY.	27" BMS.	'D'=25° OR 30°

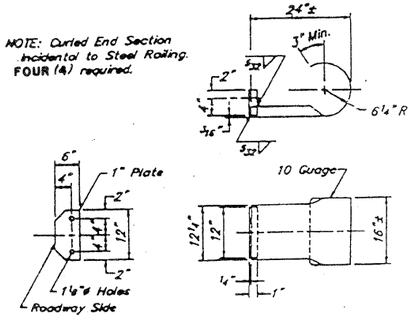
STANDARD CA-2427-30

ROUTE	SECTION	COUNTY	TOWNSHIP	SHEETS	NUMBER
T.R. 51	04-01182-00-BR	UNION	SEC 31, T11S, R1W	15	12
JOB NO. C-99-549-04			PROJECT NO. BROS-151 (25)		
RHINE ROAD			CONTRACT NO. 99215		

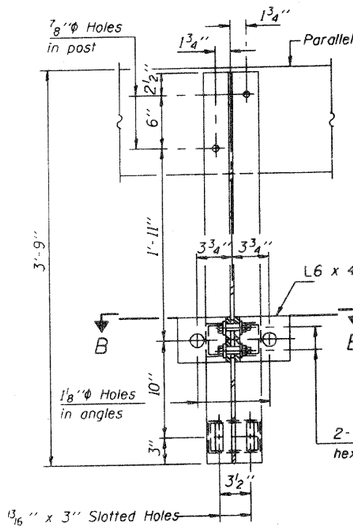


VIEW A-A

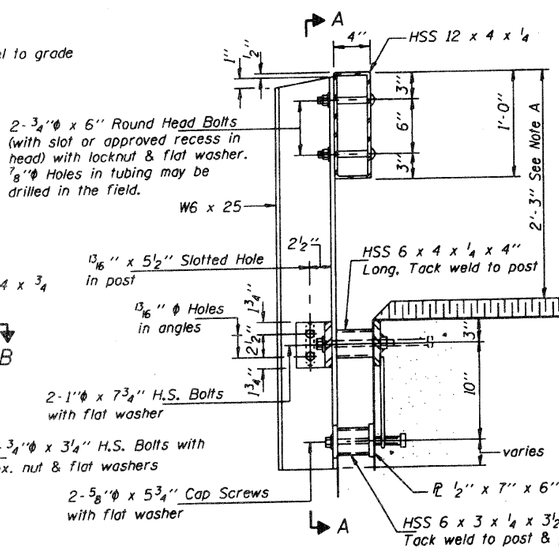
ROUND HEAD BOLT



CURLED END SECTION DETAILS

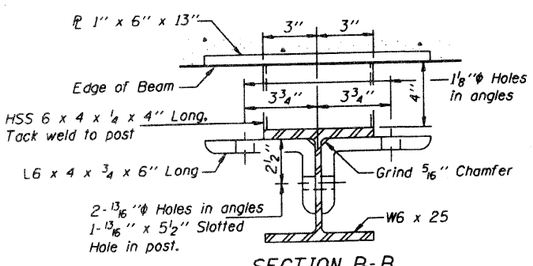


SECTION A-A



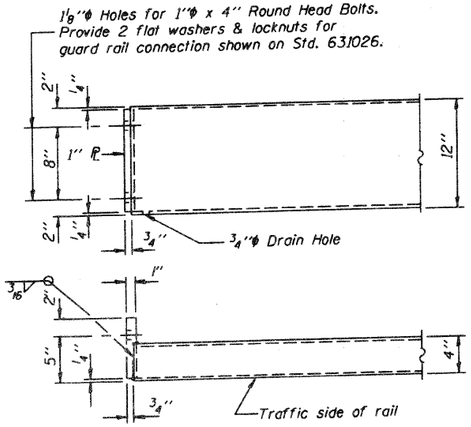
SECTION AT RAIL POST

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.



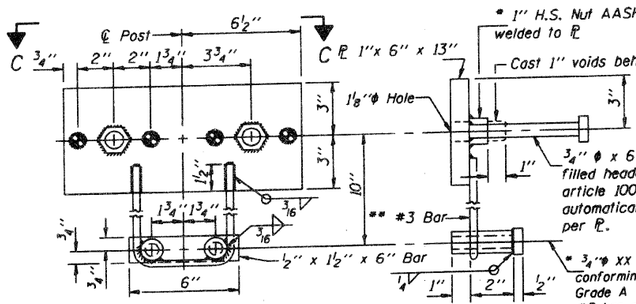
SECTION B-B

1 1/8"ø Holes for 1"ø x 4" Round Head Bolts. Provide 2 flat washers & locknuts for guard rail connection shown on Std. 631026.



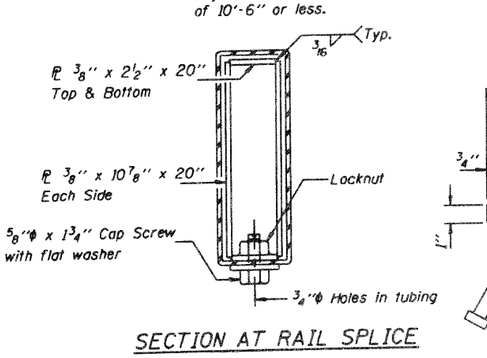
END OF RAIL DETAILS

** 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".

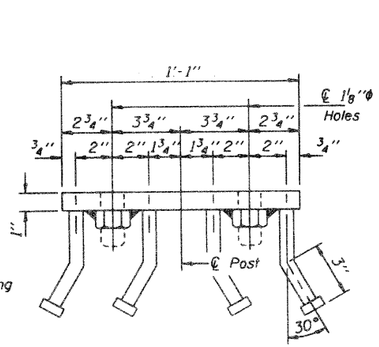


ANCHOR DEVICE

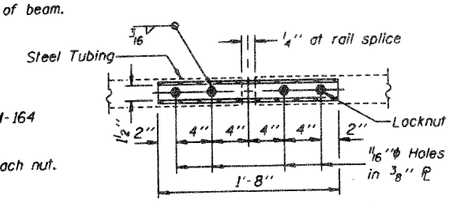
* Threaded areas shall be plugged or blocked off during casting of beam.



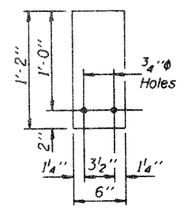
SECTION AT RAIL SPLICE



VIEW C-C



PLAN-BOTT. SPLICE PL TYPICAL



1/4" SHIM PLATE

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"ø 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"ø 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"ø cap screws in bottom of posts shall be tightened to a snug fit only.

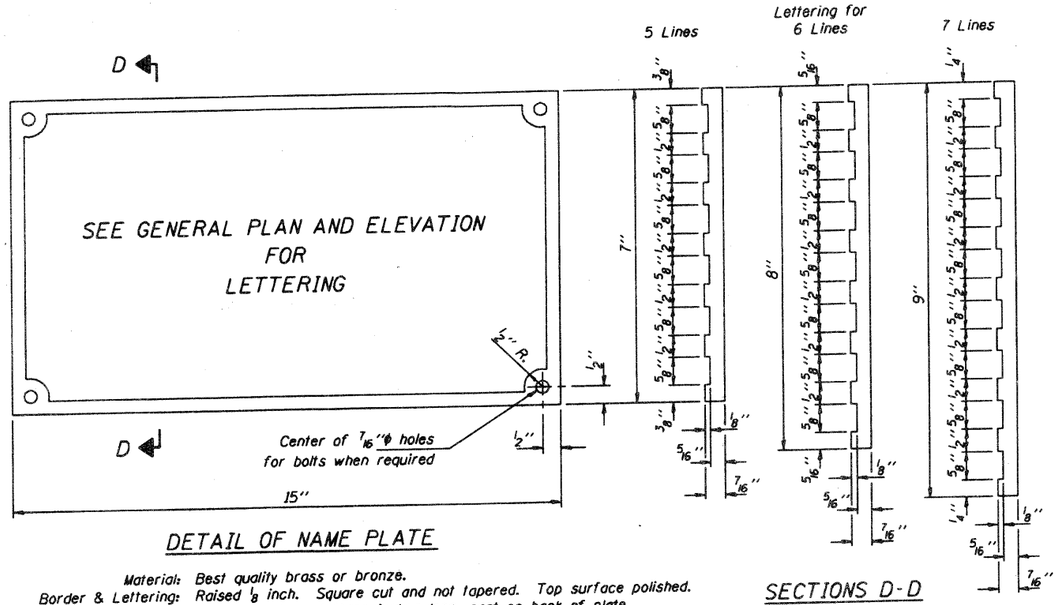
The maximum allowable rail post spacing shall be 10'-6". The rail post spacing shown elsewhere in the plans is based on the allowable spacing for another type of rail. When this type of rail is used, the number of posts may be decreased and the post spacing increased to provide equal post spaces of 10'-6"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

STEEL RAILING, TYPE S-1

STANDARD CR-TS1

VI-1

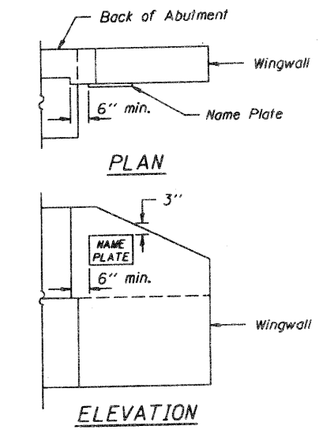
ROUTE	SECTION	COUNTY	TOWNSHIP	TOTAL SHEETS	SHEET NUMBER
T.R. 51	04-01182-00-BR	UNION	SEC 31, T11S, R1W	15	13
JOB NO. C-99-549-04			PROJECT NO. BROS-181(26)		
RHINE ROAD			CONTRACT NO. 99216		



DETAIL OF NAME PLATE

SECTIONS D-D

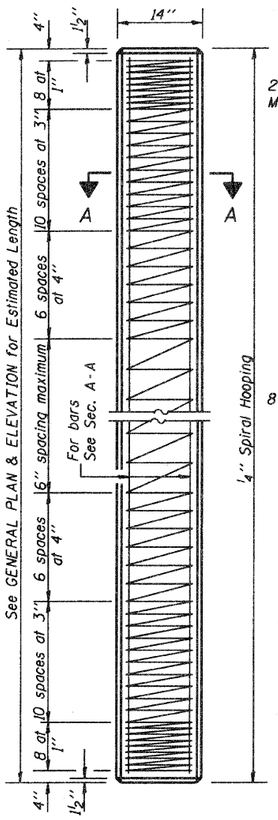
Material: Best quality brass or bronze.
Border & Lettering: Raised 1/8 inch. Square cut and not tapered. Top surface polished.
Fastenings: Four lugs at least three inches long, cast on back of plate.

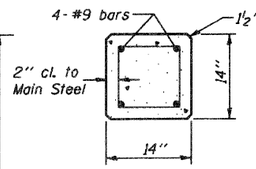


LOCATION OF NAME PLATE

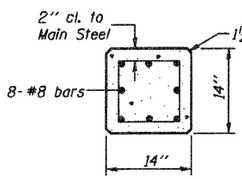
NAME PLATE
STANDARD CN

ROUTE	SECTION	COUNTY	TOWNSHIP	TOTAL SHEETS	SHEET NUMBER
T.R. 51	04-01182-00-BR	UNION	SEC. 31, T11S, R1W	15	14
JOB NO. C-99-549-04			PROJECT NO. BROS-181 (26)		
RHINE ROAD			CONTRACT NO. 99216		





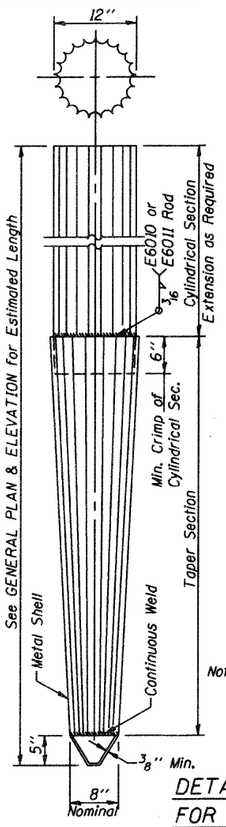
SECTION A-A
FOR PILES UNDER 45' LONG

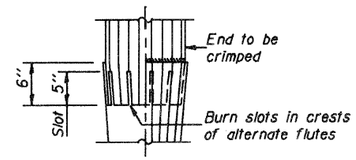


SECTION A-A
FOR PILES 45' OR MORE

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.

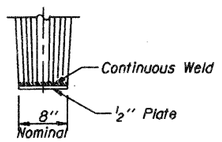
DETAIL OF PRECAST CONCRETE PILES





FIELD CRIMP DETAIL

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



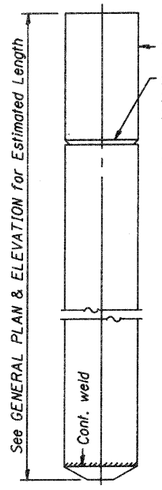
OPTIONAL FLAT END

ALLOWABLE TAPER SECTIONS

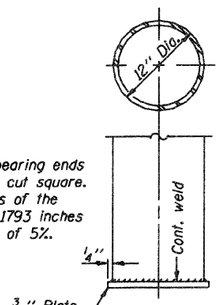
10' Length-Taper 1" in 2'-6"
17' Length-Taper 1" in 4'-0"
25' Length-Taper 1" in 7'-0"
30' Length-Taper 1" in 7'-0"

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%.

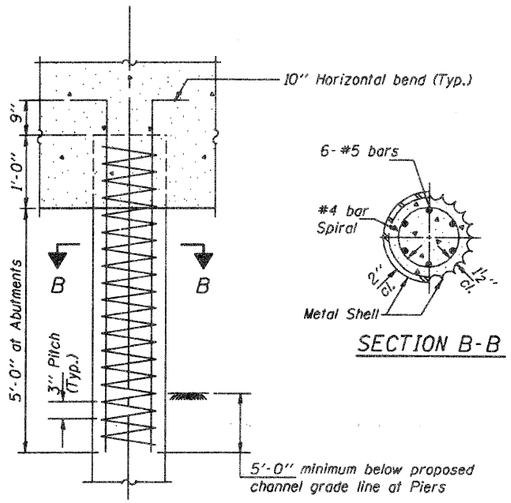


OPTIONAL FLAT END

DETAIL OF CYLINDRICAL STEEL SHELL FOR CAST IN PLACE CONCRETE PILES

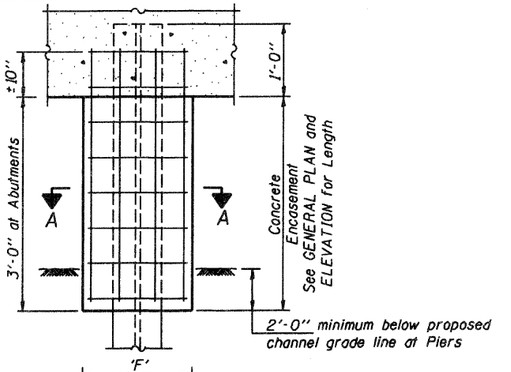
Reinforcement cage shall be omitted when Concrete Encasement is provided.

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



SECTION B-B

DETAIL OF REINFORCEMENT FOR METAL SHELLS

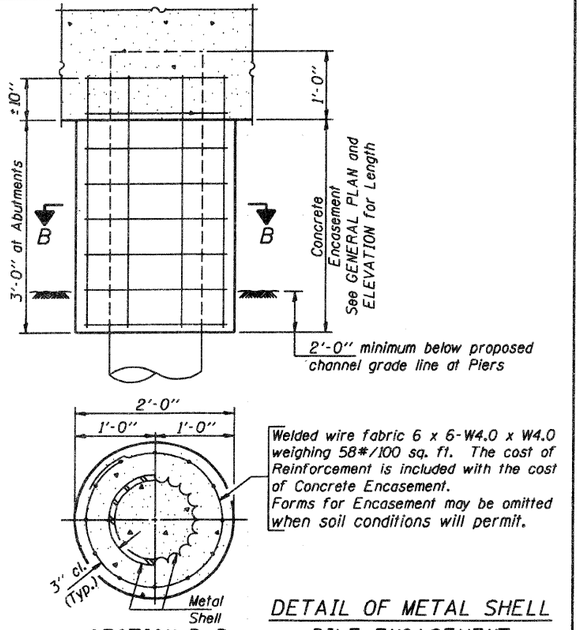


Welded wire fabric 6 x 6-W4.0 x W4.0 weighing 58#/100 sq. ft. The cost of Reinforcement is included with the cost of Concrete Encasement. Forms for Encasement may be omitted when soil conditions will permit.

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.

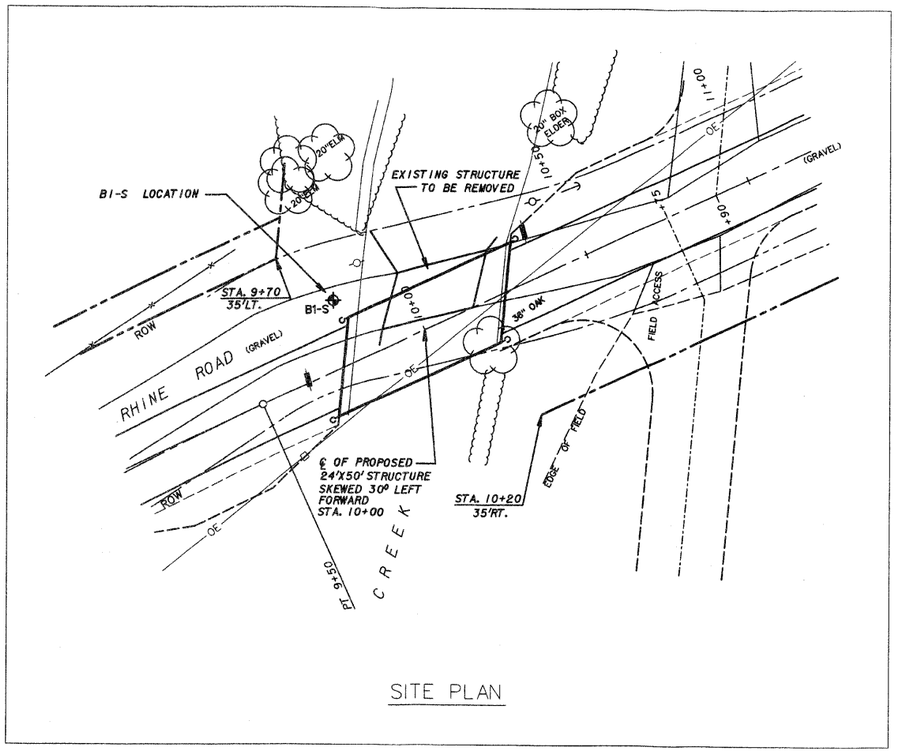
(METAL SHELL PILES)

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

PILE DETAILS

STANDARD CX-1

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NUMBER
T.R. 51	04-01182-00-BR	UNION	15	15
JOB NO. C-99-549-04		PROJECT NO. BROS-181 (26)		
RHINE ROAD		CONTRACT NO. 99216		



SITE PLAN

ILLINOIS DEPARTMENT OF TRANSPORTATION
District Nine Materials

TR 51 (Rhine Road) Over Creek

Route: Structure Number: 091-3227 Date

Section 04-01182-00-BR Bored By:

County: Union Location: 4.6 M SW of Alto Pass Checked By:

Boring No 1-S
Station 9+80
Offset 18' N CL
Ground Surface 382.0 Ft

DEPTH	BLOW	Qu tsf	W%	DEPTH
Dense, damp, brown, Sandy Gravel				
	4			
	26			
	10			
377.0	5.0			
Soft, wet to very moist, brown, Silty Clay Loam A-6 with some Gravel	1			
	4	0.3B	34	
	1			
374.5				
Very soft, wet , brown, Silty Clay Loam A-6	WH			
	3	0.1B	29	
	2			
372.0	10.0			
Soft, very moist, brown, Silty Clay Loam A-6 with Gravel	WH			
	1	0.3B	27	
	1			
369.5				
Stiff, very moist, brown, Silty Clay Loam A-6 with Gravel Layers	1			
	3	1.9S	27	
	5			
367.0	15.0			
Medium, very moist, brown, Silty Clay Loam A-6 with Gravel Layers	WH			
	6	0.9S	28	
	8			
364.5				
Medium, wet, brown to grey, Sandy Gravel 18% Sand 16% Silt 6% Clay 60% Gravel	3			
	9		24	
	7			
357.0	25.0			

Surf Wat Elev: 373.0
Ground Water Elevation
when Drilling 372
At Completion
At: Hrs:

DEPTH
Loose, wet, grey, Sandy Gravel 18% Sand; 16% Silt 6% Clay; 60% Gravel
354.5
Medium, wet, grey, Sandy Gravel 18% Sand; 16% Silt 6% Clay; 60% Gravel
352.0 30.0
Very stiff, very moist, grey, Silty Clay Loam A-6
347.0 35.0
Stiff, very moist, brown, Silty Clay Loam A-6 with Sand Gravel Layers
344.5
Medium, very moist, brown, Silty Clay Loam A-6 with Sandy Gravel Layers
342.0 40.0
Medium, very moist, brown, Clay A7-6 with Sandy Gravel Layers
337.0 45.0
Loose, wet, tan, Sandy Gravel with Clay Seams 21% Sand 19% Silt 17% Clay 43% Gravel
332.0 50.0

N-Std Pentr Test: 2" OD Sampler,
140# Hammer, 30" Fall (Type Fail. B-Bulge S-Shear E-Estimated P-Penetrometer)

Route:
Section: 04-01182-00-BR
County: Union

Date

Boring No: 1-S
Station: 9+80
Offset: 18' N CL
Ground Surface: 382.0 Ft

DEPTH	BLOW	Qu tsf	W%	DEPTH
Medium, wet, tan, Sandy Gravel	1			
with Clay Seams	13		42	
21% Sand	10			
19% Silt				
17% Clay				
43% Gravel				
327.0	55.0			80.0
Dense, wet, tan, Sandy Gravel	3			
with Clay Layers	20		42	
21% Sand	28			
19% Silt				
17% Clay				
43% Gravel				
322.0	60.0			85.0
Medium, wet, Sandy Gravel	8			
	12			
320.5	12			
Bottom of hole = 61.5 ft.				
ESF = 72.1 Tons				
Free water observed at 10.0 ft				
	65.0			90.0
Elevation referenced to Center of Existing Structure; Assumed Elevation = 100.0 ft.				
To convert "N" values to "N60" values multiply by 1.25.				
	70.0			95.0
	75.0			100.0

N-Std Pentr Test: 2" OD Sampler,
140# Hammer, 30" Fall (Type Fail. B-Bulge S-Shear E-Estimated P-Penetrometer)

UNION COUNTY HIGHWAY DEPARTMENT
UNION COUNTY, ILLINOIS
RHINE ROAD BRIDGE REPLACEMENT
SOIL BORING LOGS