

ROUTE	SECTION	COUNTY	TOWNSHIP	TOTAL SHEETS	SHEET NUMBER
T.R. 182	04-01180-00-BR	UNION	SEC 14, T11S, R11W	12	1
JOB NO. C-99-547-04			PROJECT NO. BROS-181 (24)		
BETHEL CHURCH ROAD			CONTRACT NO. 99215		

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
PLANS FOR PROPOSED

BRIDGE REPLACEMENT & REHABILITATION PROGRAM

SECTION 04-01180-00-BR UNION COUNTY
TOWNSHIP ROAD 182 - BETHEL CHURCH ROAD
JOB NO. C-99-547-04
PROJECT NO. BROS-181 (24)
CONTRACT NO. 99215
TRIBUTARY TO BRADSHAW CREEK

INDEX OF SHEETS

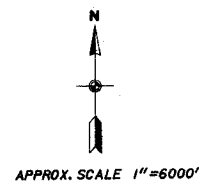
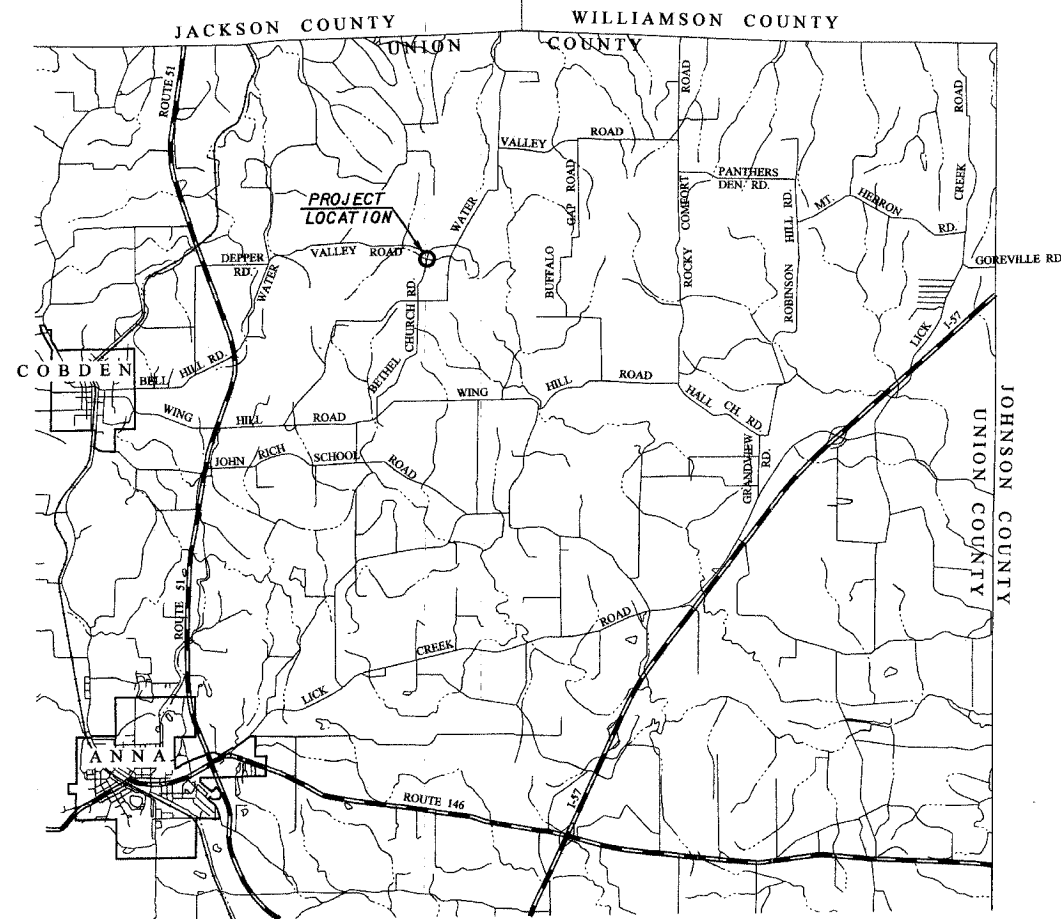
SHEET NO	DESCRIPTION
1	TITLE AND COVER SHEET INDEX OF SHEETS SUMMARY OF QUANTITIES
2	PLAN AND PROFILE TYPICAL SECTION
3-5	CROSS SECTIONS
6	GENERAL PLAN AND ELEVATION
7	P.P.C. DECK BEAM SUPERSTRUCTURE 24' ROADWAY - 27" BEAMS - 60' SPAN 0° SKEW
8	P.P.C. DECK BEAM DETAILS 24' ROADWAY - 27" X 36" BEAMS
9	P.P.C. DECK BEAM DETAILS 24' ROADWAY - 27" X 48" BEAMS
10	P.P.C. DECK BEAMS - PILE BENT ABUTMENT 24' ROADWAY - 27" BEAMS - 0° SKEW
11	STEEL RAILING, TYPE S1
12	NAME PLATE - BORING LOGS

LIST OF STANDARDS

STD. NO.	DESCRIPTION
631026-02	TRAFFIC BARRIER TERMINAL TYPE 5 & 5A
702001-06	TRAFFIC CONTROL DEVICES
B.L.R. 21-6	ROAD CLOSED TO ALL TRAFFIC
B.L.R. 23-1	TRAFFIC BARRIER TERMINAL TYPE 1

SUMMARY OF QUANTITIES

CODE NO.	ITEM	UNIT	X081-2A AWARDED QUANTITY	AS-BUILT QUANTITY
20100500	TREE REMOVAL, ACRES	ACRE	0.18	
20200100	EARTH EXCAVATION	CU YD	950	
25001000	SEEDING, CLASS 2 (SPECIAL)	ACRE	0.5	
28100807	STONE DUMPED RIPRAP, CLASS A4	TON	275	
40200800	AGGREGATE SURFACE COURSE, TYPE B	TON	1,100	
50100100	REMOVAL OF EXISTING STRUCTURES	EACH	1	
50300225	CONCRETE STRUCTURES	CU YD	18.2	
50400505	PRECAST PRESTRESSED CONCRETE DECK BEAMS (27" DEPTH)	SQ FT	1,440	
50800105	REINFORCEMENT BARS	POUND	2,300	
50900205	STEEL RAILING, TYPE S1	FOOT	120	
51201400	FURNISHING STEEL PILES HP10X42	FOOT	125	
51204315	CONCRETE ENCASEMENT	CU YD	8.0	
51500100	NAME PLATES	EACH	1	
63100075	TRAFFIC BARRIER TERMINAL, TYPE 5A	EACH	2	
66503100	BARBED WIRE FENCE, FOUR STRAND	FOOT	470	
67100100	MOBILIZATION	L SUM	1	
70101700	TRAFFIC CONTROL AND PROTECTION	L SUM	1	
72000100	SIGN PANEL TYPE 1	SQ FT	6	
72900200	METAL POST TYPE B	FOOT	30	
LR631020	TRAFFIC BARRIER TERMINAL, TYPE 1	EACH	2	
Z0065000	SETTING PILES IN ROCK	EACH	8	



LAYOUT
APPROXIMATE SCALE: 1 INCH = 1.136 MILE
NET LENGTH OF PROJECT - 425 FT. - 0.080 MI.

SCALES
PLAN 1 INCH = 20 FEET
PROFILE 1 INCH = 20 FEET HORIZ.
1 INCH = 5 FEET VERT.
CROSS SECTIONS 1 INCH = 5 FEET HORIZ.
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. - 100
DESIGN SPEED - 30MPH



TED R. BEGGS, P.E.
REG. NO. 062-553738
DATE 10/26/05
EXPIRES 11-30-08

APPROVED December 15, 2005
Paul R. Bond, P.E.
COUNTY ENGINEER - UNION COUNTY

APPROVED JANUARY 4, 2006
Dem W. Hill
DISTRICT ENGINEER OF LOCAL ROADS & STREETS

APPROVED Mary C. Lame, P.E. 2006
Jan 6, 2006
MARY C. LAME, P.E.
DEPUTY DIRECTOR OF HIGHWAYS
REGION FIVE ENGINEER

SCALE AS SHOWN	PLANS PREPARED BY J. T. BLANKINSHIP AND ASSOCIATES CONSULTING ENGINEERS 401 S. 17TH STREET MURPHYSBORO, ILLINOIS	BOOK 461-N FILE NO. E*8575 SHEET NO. 1 OF 12
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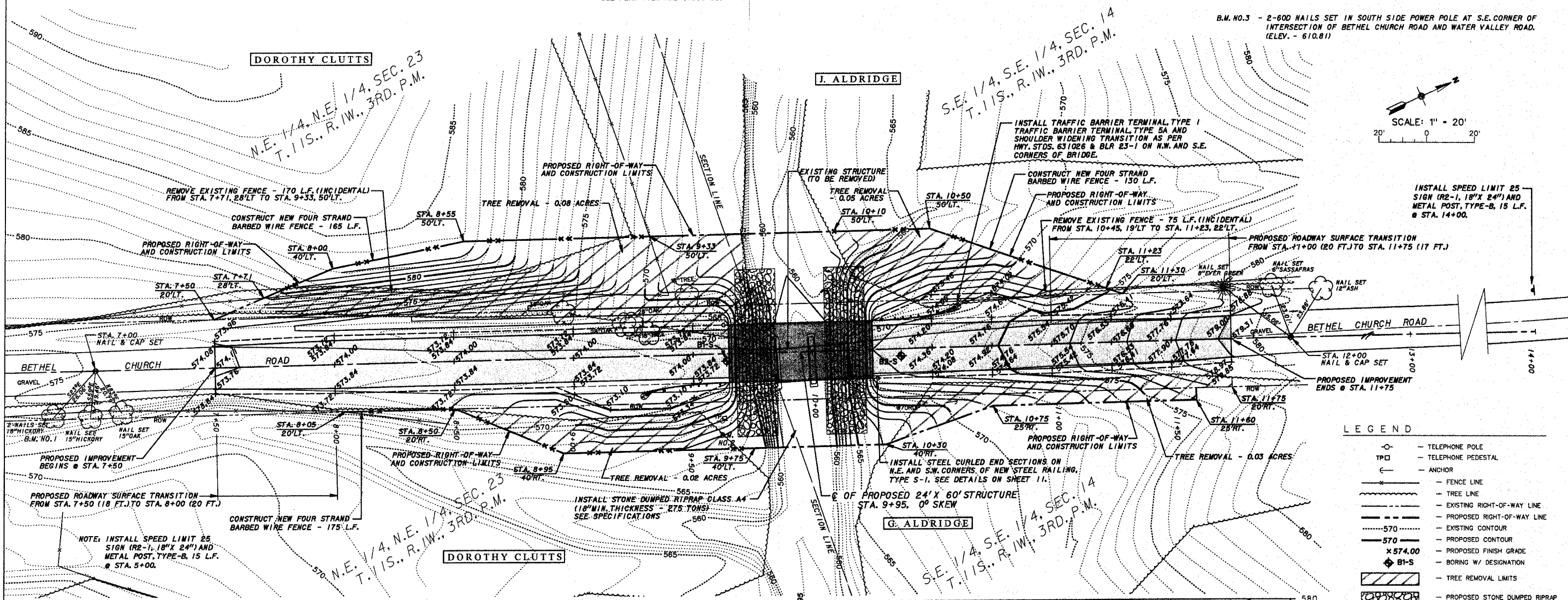
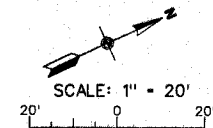
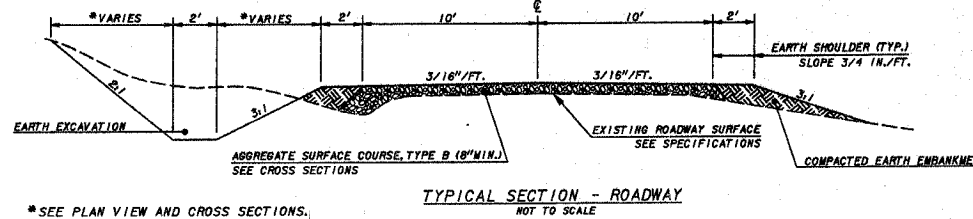
NOTES

1. ALL PHYSICAL FEATURES DEPICTED BY THIS SURVEY WERE CONDITIONS AS OF JUNE 2004.
2. THE ACCURACY OF THE HORIZONTAL AND VERTICAL TOPOGRAPHIC FEATURES DEPICTED HEREON WERE DERIVED BY SURVEY METHODS THAT EXCEED THE ACCURACY OF THE PLOTTED DOCUMENT AS DEFINED BY THE MAP SCALE. THE USE OF THIS SURVEY INFORMATION IN A DIGITAL ENVIRONMENT, CAD OR GIS SHALL NOT BE RELIED UPON TO AN ACCURACY GREATER THAN THAT OF THE MAP SCALE.
3. NO UNDERGROUND UTILITIES WERE LOCATED BY THIS SURVEY. THE POSITION OF ALL UNDERGROUND UTILITIES ARE APPROXIMATE AS SHOWN. THE LOCATIONS HAVE BEEN DETERMINED FROM THE BEST AVAILABLE INFORMATION. THE EXISTENCE AND POSITION OF ANY UNDERGROUND UTILITIES SHOULD BE VERIFIED PRIOR TO ANY CONSTRUCTION.

ROUTE	SECTION	COUNTY	TOWNSHIP	TOTAL SHEETS	SHEET NUMBER
T.R. 182	04-0180-00-BR	UNION	SEC 14, T15S, R14W	12	2
JOB NO. C-98-547-04			PROJECT NO. BR05-181 (24)		
BETHEL CHURCH ROAD			CONTRACT NO. 99215		

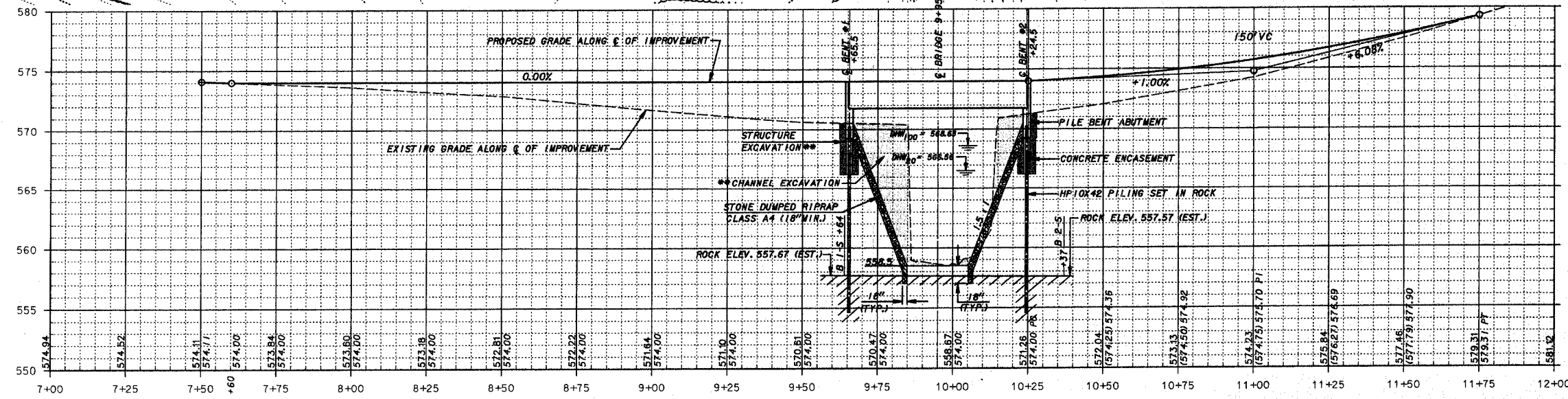
BENCHMARKS

- B.M. NO.1 - 2-60D NAILS SET IN WEST SIDE 18" DIA. HICKORY ON EAST SIDE OF BETHEL CHURCH ROAD ± 850' SOUTH OF INTERSECTION OF BETHEL CHURCH ROAD AND WATER VALLEY ROAD. CENTERLINE OF PROPOSED IMPROVEMENT STA. 6+80 - 20'RT. (ELEV. - 575.37)
- B.M. NO.2 - 2-60D NAILS SET IN WEST SIDE TELEPHONE POLE ON EAST SIDE OF BETHEL CHURCH ROAD JUST SOUTH OF BRIDGE ± 550' SOUTH OF INTERSECTION OF BETHEL CHURCH ROAD AND WATER VALLEY ROAD. CENTERLINE OF PROPOSED IMPROVEMENT STA. 9+60 - 30'RT. (ELEV. - 569.49)
- B.M. NO.3 - 2-60D NAILS SET IN SOUTH SIDE POWER POLE AT S.E. CORNER OF INTERSECTION OF BETHEL CHURCH ROAD AND WATER VALLEY ROAD. (ELEV. - 610.81)



LEGEND

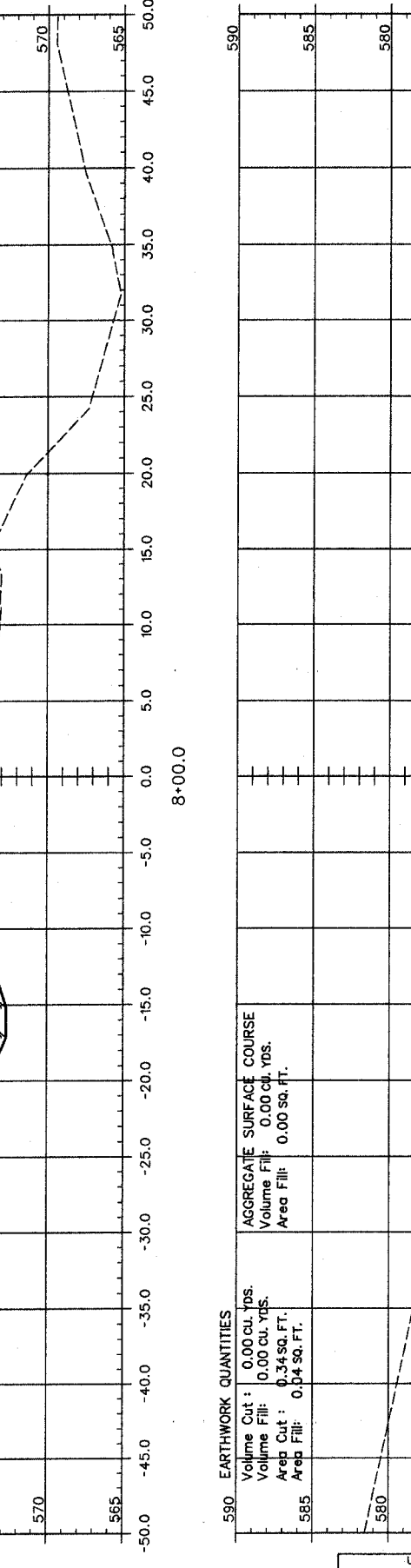
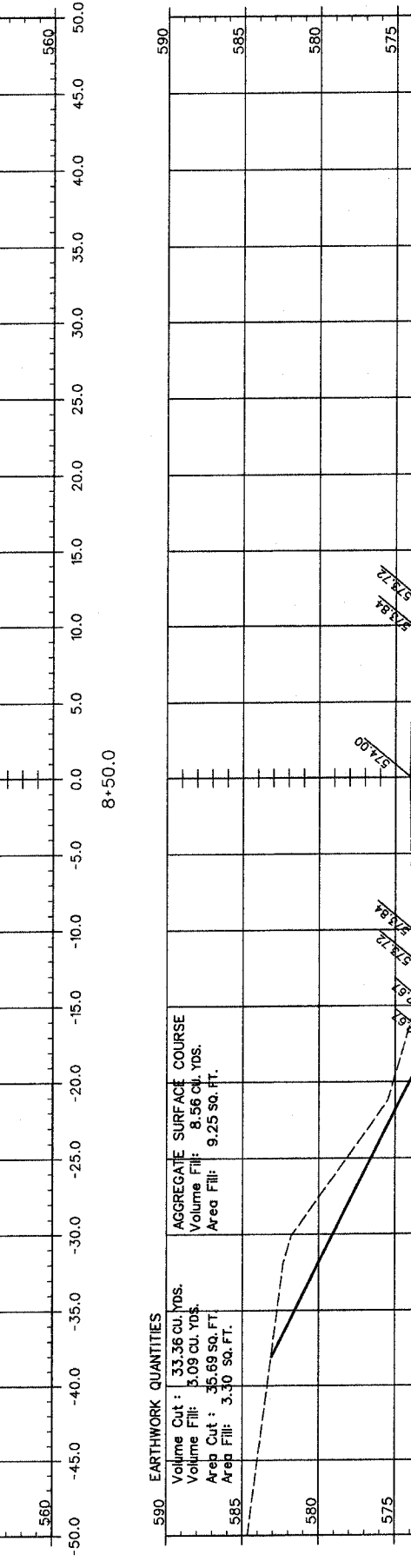
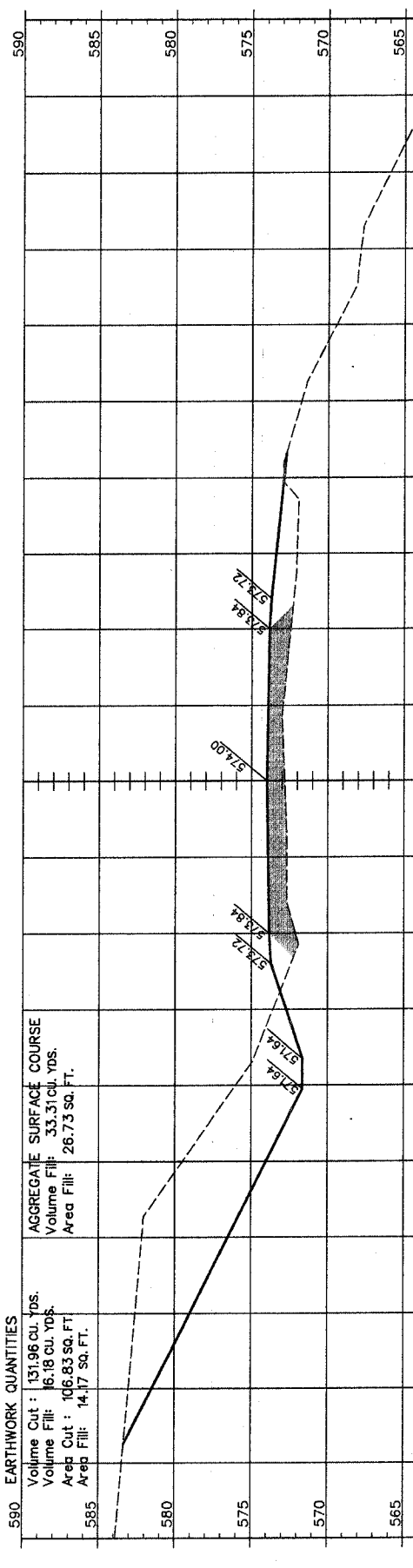
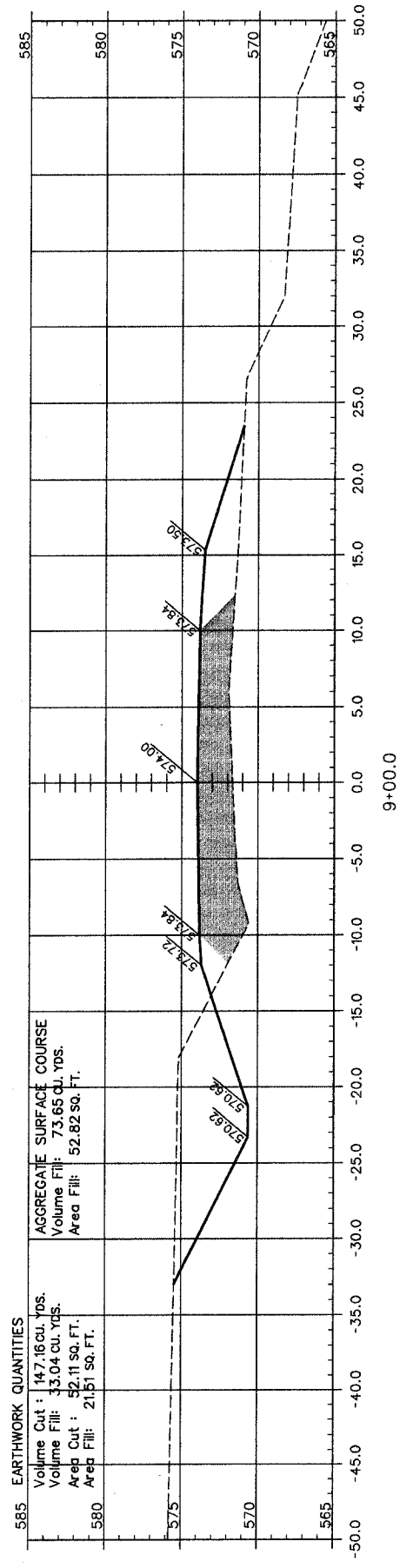
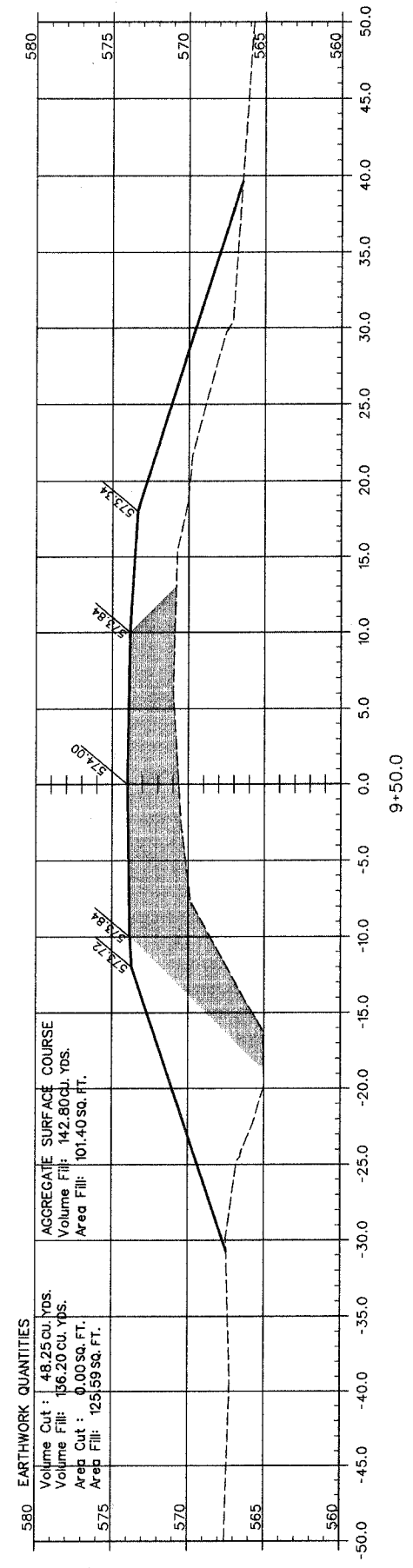
- TELEPHONE POLE
- TELEPHONE PEDESTAL
- ANCHOR
- FENCE LINE
- TREE LINE
- EXISTING RIGHT-OF-WAY LINE
- PROPOSED RIGHT-OF-WAY LINE
- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED FINISH GRADE
- BORING W/ DESIGNATION
- TREE REMOVAL LIMITS
- PROPOSED STONE DUMPED RIPRAP



THE TOTAL QUANTITY (CU. YDS.) OF STRUCTURE EXCAVATION AND CHANNEL EXCAVATION REQUIRED TO COMPLETE THE PROPOSED PROJECT SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE PER CU. YD. FOR EARTH EXCAVATION. ESTIMATED QUANTITIES:
 STRUCTURE EXCAVATION - 80 CU. YDS.
 CHANNEL EXCAVATION - 325 CU. YDS.

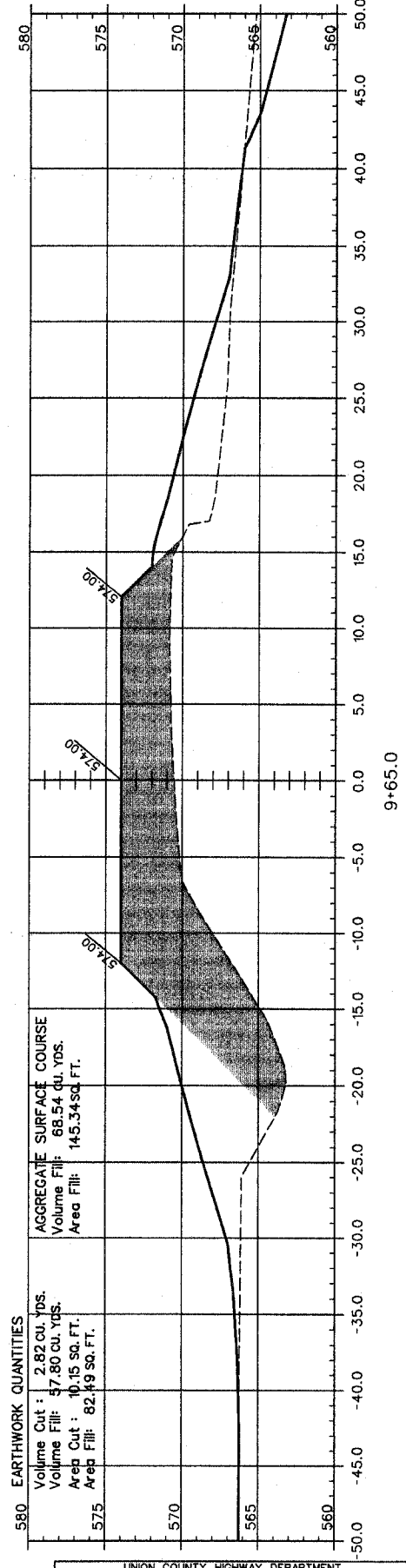
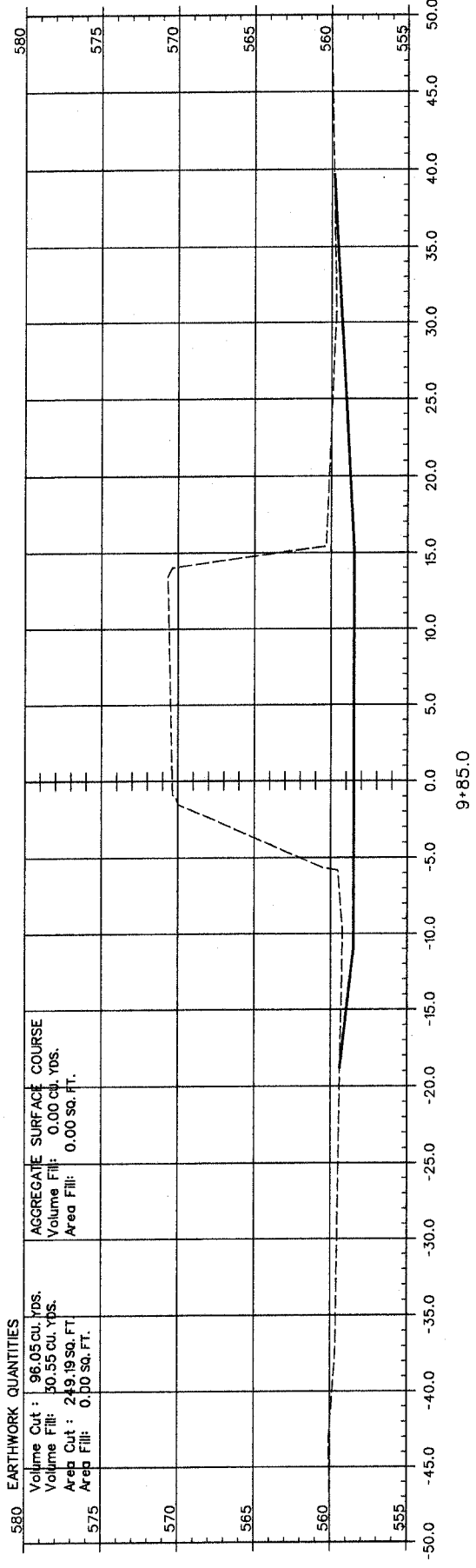
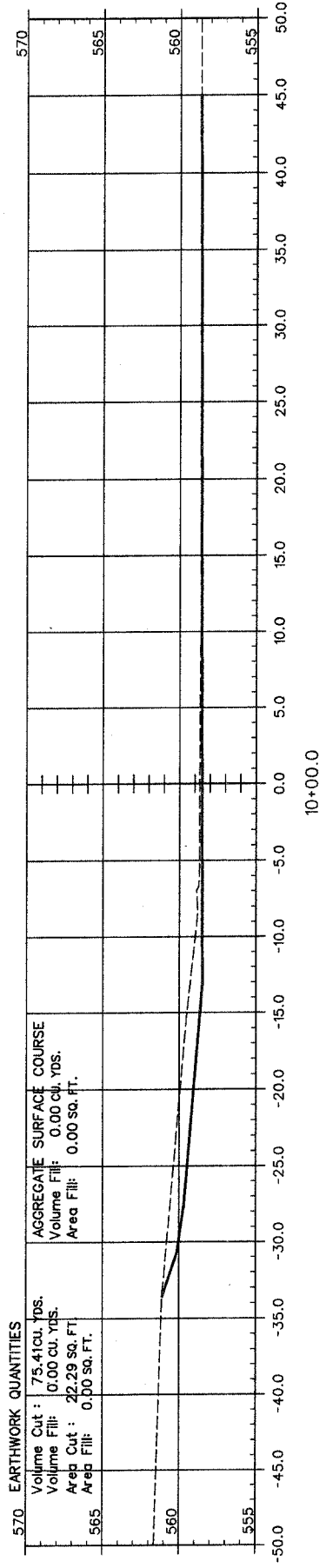
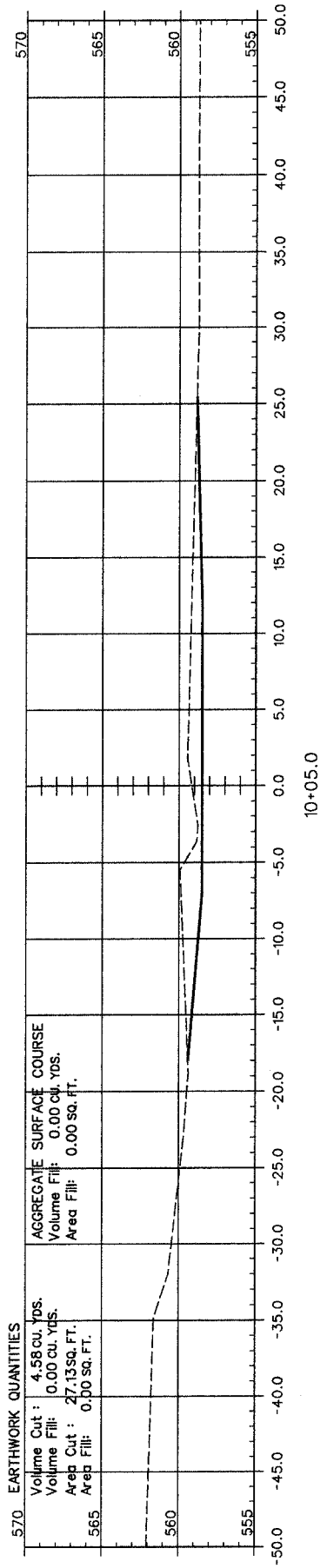
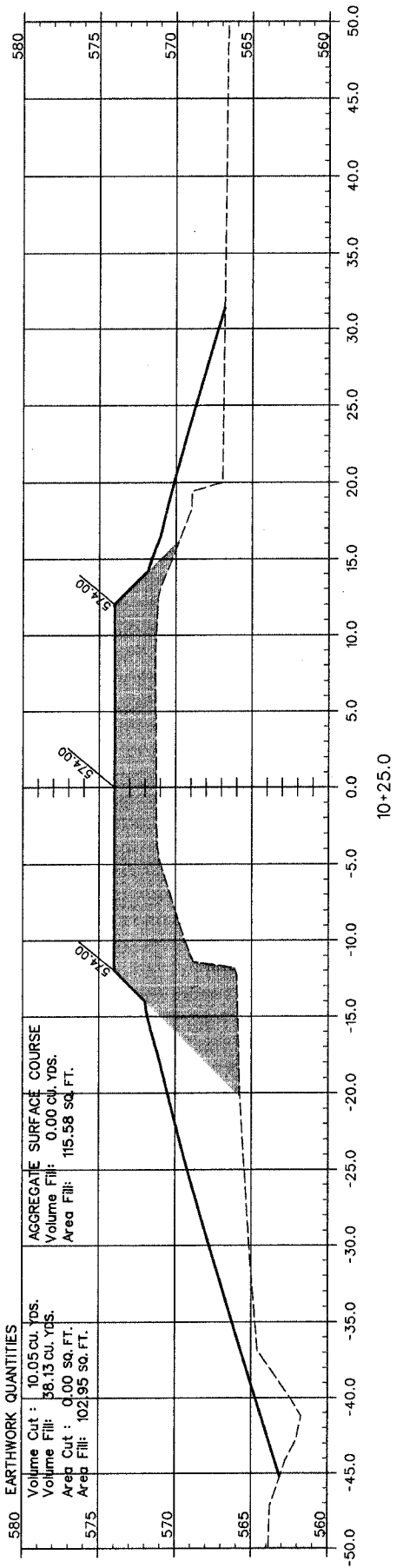
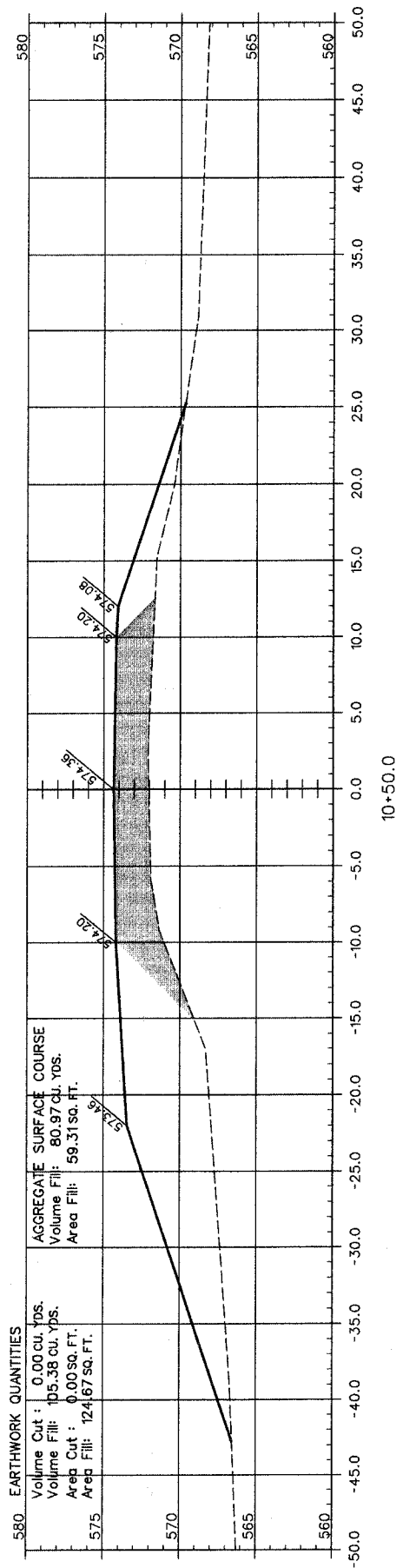
UNION COUNTY HIGHWAY DEPARTMENT
BETHEL CHURCH ROAD
PLAN AND PROFILE

ROUTE	SECTION	COUNTY	TOWNSHIP	TOTAL SHEETS	SHEET NUMBER
T.R. 182	04-01180-00-BR	UNION	SEC 14, T11S, R1W	12	3
JOB NO. C-99-547-04				PROJECT NO. BR05-181 (24)	
BETHEL CHURCH ROAD				CONTRACT NO. 9921B	



NOTE: SHADED AREA DENOTES AGGREGATE SURFACE COURSE.

ROUTE	SECTION	COUNTY	TOWNSHIP	TOTAL SHEETS	SHEET NUMBER
T.R. 182	04-0180-00-BR	UNION	SEC 14, T11S, R11W	12	4
JOB NO. C-99-547-04			PROJECT NO. BROS-181 (24)		
BETHEL CHURCH ROAD			CONTRACT NO. 99215		



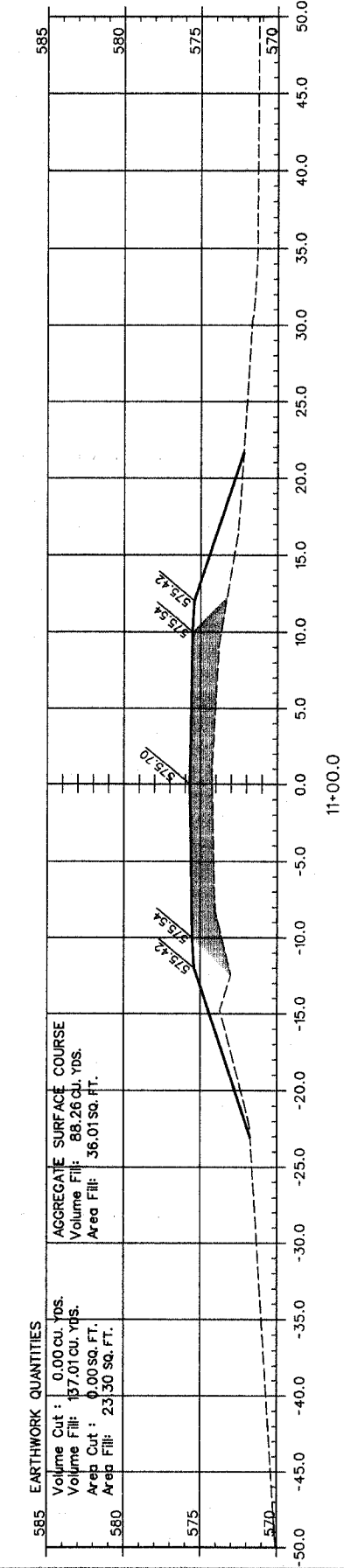
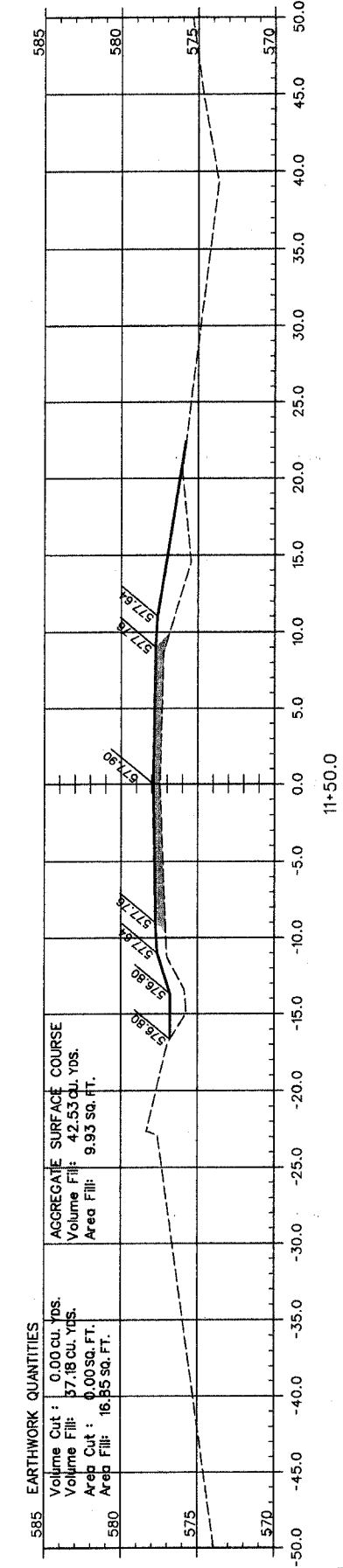
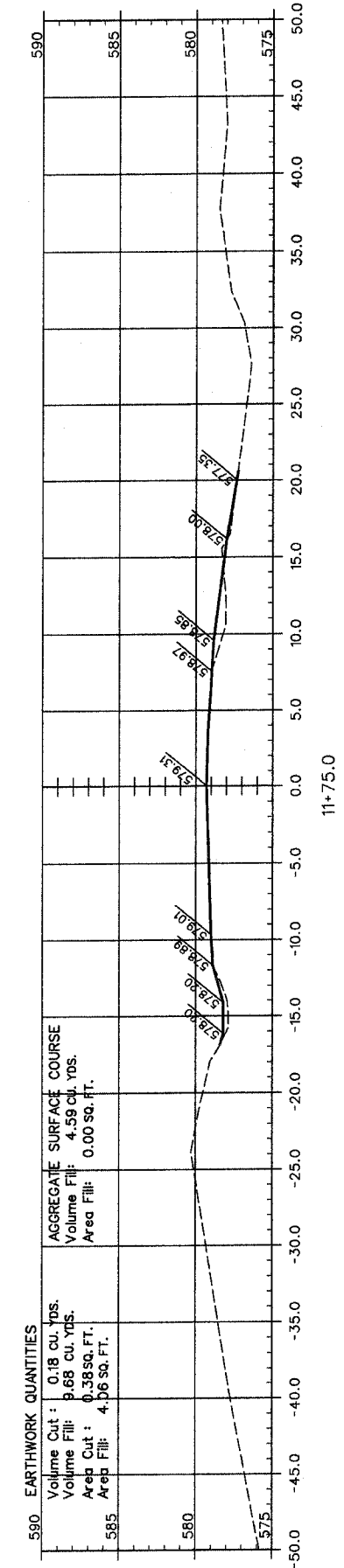
NOTE: SHADED AREA DENOTES AGGREGATE SURFACE COURSE.

UNION COUNTY HIGHWAY DEPARTMENT
UNION COUNTY, ILLINOIS
BETHEL CHURCH ROAD
CROSS SECTIONS

ROUTE	SECTION	COUNTY	TOWNSHIP	TOTAL SHEETS	SHEET NUMBER
T.R. 182	04-01B0-00-0R	UNION	SEC 14, T1S, R1W	12	5
JOB NO. C-99-547-04			PROJECT NO. BROS-181 (24)		
BETHEL CHURCH ROAD			CONTRACT NO. 99215		

ESTIMATED AGREGATE SURFACE COURSE - 550 CU. YDS.

ESTIMATED EARTHWORK QUANTITIES:
 EARTH EXCAVATION - 550 CU. YDS.
 STRUCTURE EXCAVATION - 80 CU. YDS.
 CHANNEL EXCAVATION - 325 CU. YDS.
 FILL - 600 CU. YDS.
 WASTE - 120 CU. YDS. @ 25% SHRINKAGE FACTOR



NOTE: SHADED AREA DENOTES AGREGATE SURFACE COURSE.

ROUTE	SECTION	COUNTY	TOWNSHIP	TOTAL SHEETS	SHEET NUMBER
T.R. 182	04-01180-00-BR	UNION	SEC 14, T11S, R11W	12	6
JOB NO. C-99-547-04			PROJECT NO. BROS-181 (24)		
BETHEL CHURCH ROAD			CONTRACT NO. 89215		

B.M. - 2-60 D NAILS SET IN T.P. - STA. 9+63, 27' RT. ELEV. 569.49

Existing Structure - STA. 9+85 - STA. 10+15 DUAL 15' SPANS, 14' WIDTH, TIMBER RUNNERS AND DECK, STEEL I-BEAM STRINGERS. ONE STONE AND MORTAR PIER, STONE AND MORTAR ABUTMENTS. PILING UNKNOWN.

SALVAGE - CONTRACTOR TO SALVAGE STONE FROM EXISTING STONE AND MORTAR PIER AND ABUTMENTS. STONE TO BE DELIVERED TO UNION COUNTY HIGHWAY DEPARTMENT IN JONESBORO, IL.

DESIGN SPECIFICATIONS

2002 AASHTO Standard Specifications - 17th ed.

LOADING HS20-44

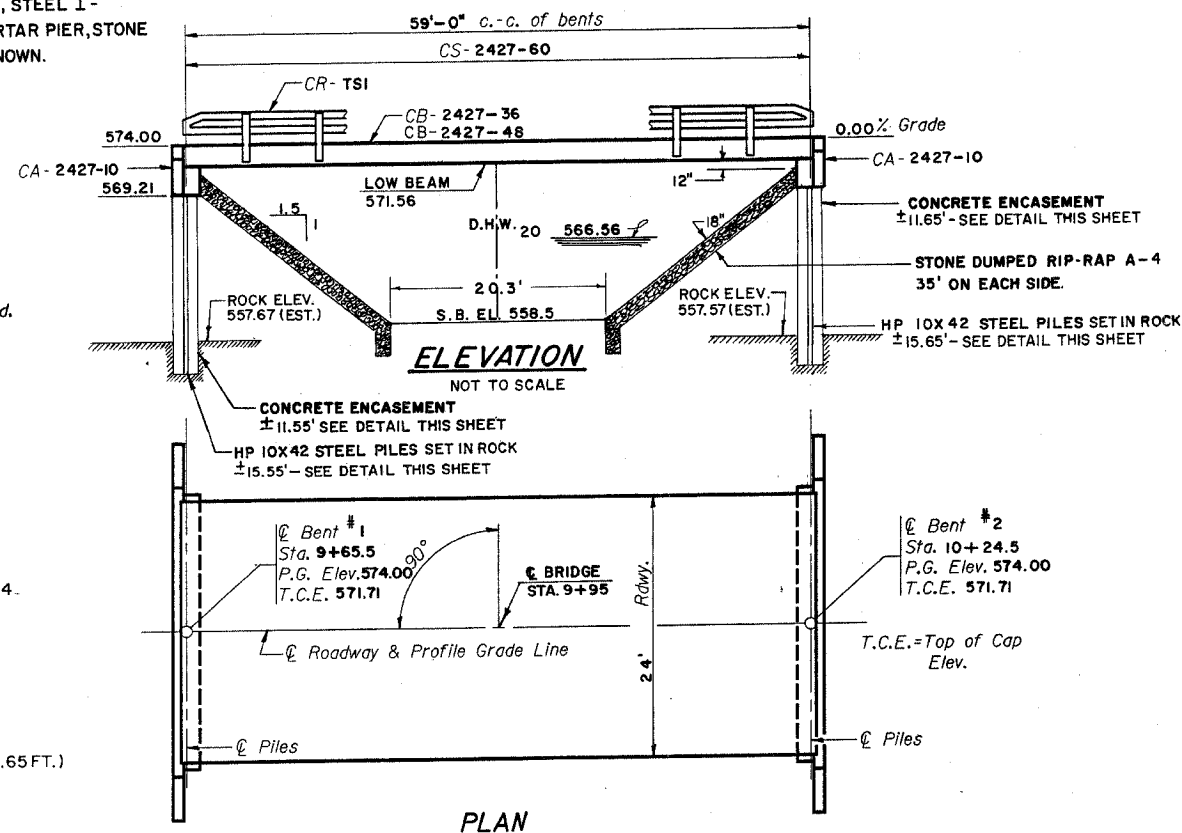
Allow 25#/sq. ft. for future wearing surface.

SEISMIC DATA

Seismic Performance Category (SPC) = B
Bedrock Acceleration Coefficient (A) = 0.14
Site Coefficient (S) = 1.0

PILE DATA (2-ABUTS.)

TYPE	HP 10X42 STEEL PILES SET PILES IN ROCK
CAPACITY	125 FEET (4 @ 15.55 FT. + 4 @ 15.65 FT.)
ESTIMATED LENGTH	8 EACH
NUMBER REQUIRED	



GENERAL NOTES

- See Special Provisions for boring logs.
- A Corrosion inhibitor, as covered in the Special Provisions, shall be used in the concrete for precast prestressed concrete deck beams.
- 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.

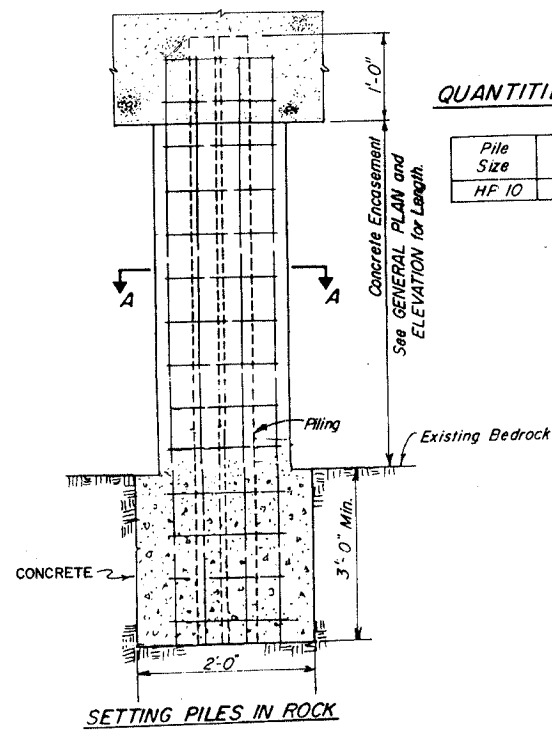
TOTAL BILL OF MATERIAL

Item	Unit	Super	Sub.		Total
			Piers	Abuts.	
Removal of Existing Structures	Each				1
STONE DUMPED RIP-RAP, CLASS A-4	Ton				275
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 PILES HP 10X42	Foot			125	125
SETTING PILES IN ROCK	Each			8	8
Name Plates	Each	1			1
CONCRETE ENCASEMENT	Cu. Yd.			8.0	8.0

NOTE: CHANNEL AND STRUCTURE EXCAVATION TO BE PAID FOR AS EARTH EXCAVATION.

QUANTITIES / LIN. FT. OF ENCASEMENT (STEEL PILES)

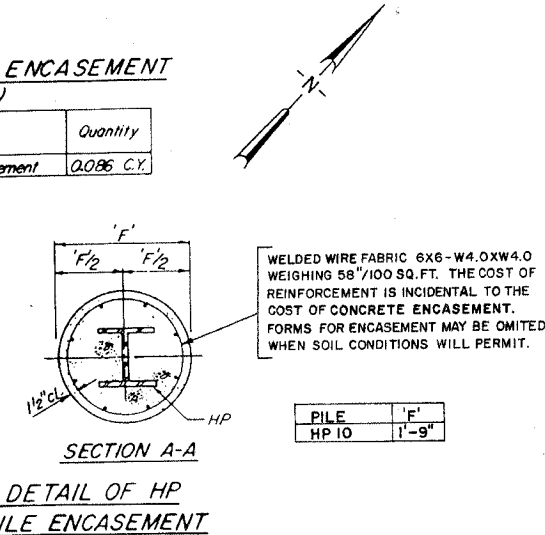
Pile Size	Item	Quantity
HP 10	Concrete Encasement	0.085 C.Y.



SETTING PILES IN ROCK

CONCRETE ENCASEMENT TO BE CONSTRUCTED FROM EXISTING BEDROCK TO BOTTOM OF BENT WHEN PILES ARE SET IN ROCK.

PILE DETAILS



SECTION A-A

DETAIL OF HP PILE ENCASEMENT

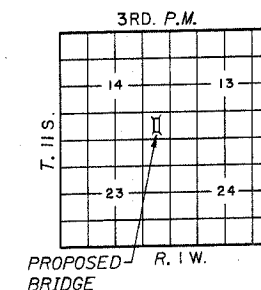
WELDED WIRE FABRIC 6X6-W4.0XW4.0 WEIGHING 58"/100 SQ. FT. THE COST OF REINFORCEMENT IS INCIDENTAL TO THE COST OF CONCRETE ENCASEMENT. FORMS FOR ENCASEMENT MAY BE OMITTED WHEN SOIL CONDITIONS WILL PERMIT.

PILE	1'-9"
HP 10	

A TRIBUTARY TO BRADSHAW CREEK
SEC. 04-01180-00-BR BUILT 2006
TR-182-BETHEL CHURCH ROAD
UNION COUNTY
LOADING HS20
STR. NO. 091-3225

LETTERING FOR NAME PLATE

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



LOCATION SKETCH

WATERWAY INFORMATION

Drainage Area = 1.77 SQ. MI.		Low Grade Elev. = 574.0		Sta. 7+60 TO 10+40		
Flood	Freq. Yr.	Q C.F.S.	Opening Sq. Ft. Exist. Prop.	Nat. H.W.E.	Head - Ft. Exist. Prop.	Headwater El. Exist. Prop.
Design	20	1127	208 261	565.31	3.54 1.25	568.85 566.56
Base	100	1167	223 360	566.39	4.81 2.24	571.20 568.63
Overtopping						
Max. Calc.	500	2191				

INDEX OF SHEETS

- STANDARD CS-2427-60
- STANDARD CB-2427-36
- STANDARD CB-2427-48
- STANDARD CA-2427-10
- STANDARD CR-TSI
- STANDARD CN

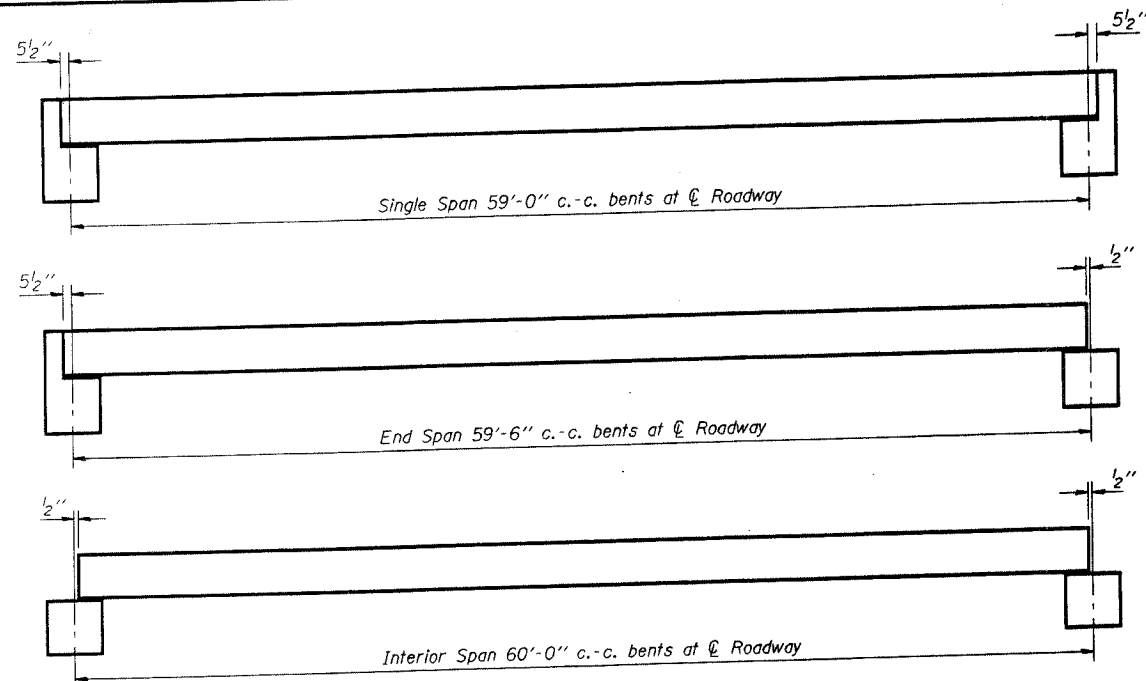
GENERAL PLAN & ELEVATION

TR182-BETHEL CHURCH ROAD
OVER TRIBUTARY TO BRADSHAW CREEK

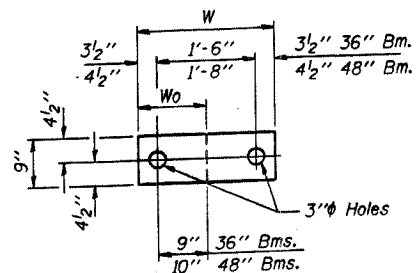
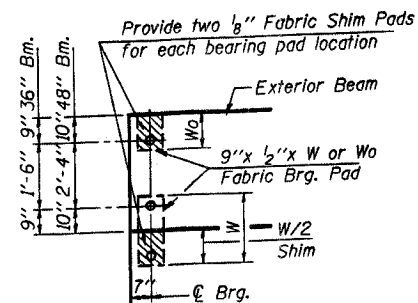
SECTION 04-01180-00-BR

UNION COUNTY

STATION 9+95

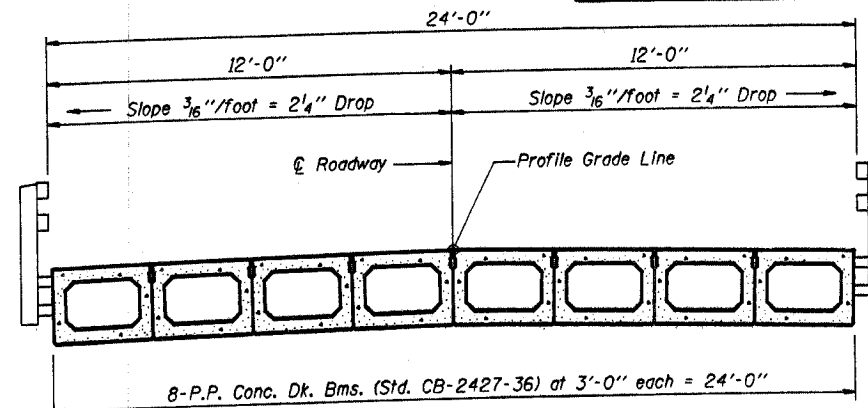


TYPICAL ELEVATIONS

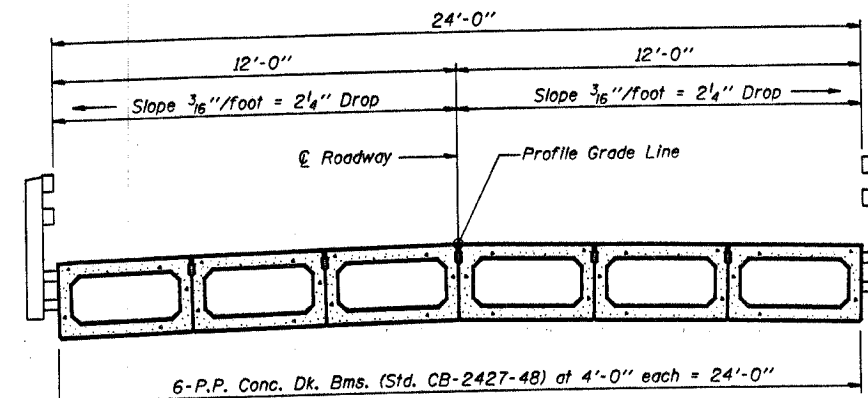


Beam	W	Wo
36"	2'-1"	1'-0 1/2"
48"	2'-5"	1'-2 1/2"

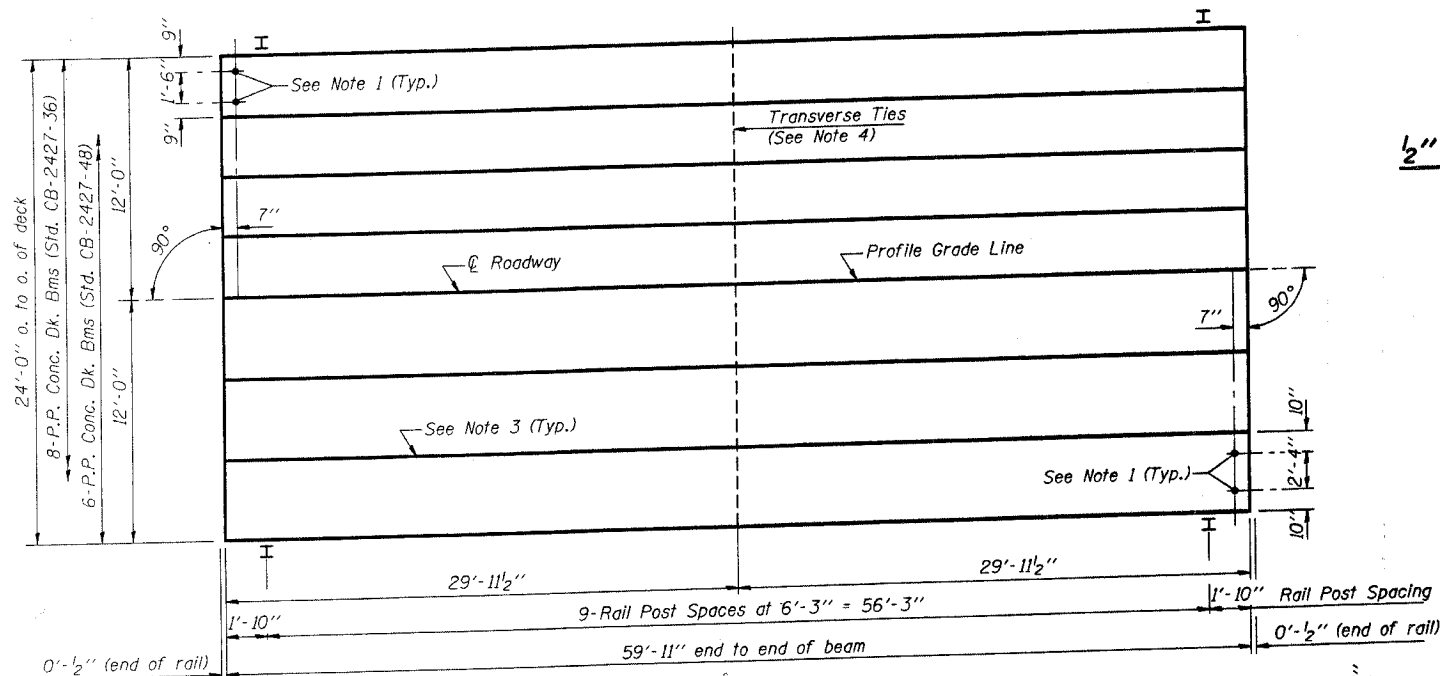
1/2" FABRIC BRG. PAD DETAILS



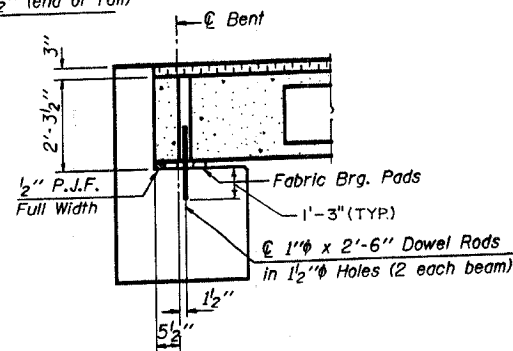
CROSS SECTION



CROSS SECTION



PLAN



SECTION AT ABUTS.
(Along centerline of Beams)

QUANTITIES FOR ONE SPAN

P.P. Conc. Dk. Bm. 27" Dp.	1440 Sq. Ft.
Steel Railing	120 Ft.

**P.P.C. DECK BEAM
SUPERSTRUCTURE**

24' RDWY. 27" BMS. 60' SPAN 0° SKEW

STANDARD CS-2427-60

- NOTES**
- After beams have been erected, holes shall be drilled into substructure and anchor dowels placed. Dowel holes shall be filled with non-shrink grout to top of beam and allowed to cure min. 24 hrs. prior to grouting the shear keys.
 - Nominal 1" joint at centerline of Pier shall be filled with non-shrink grout.
 - Longitudinal keys shall be grouted.
 - The 1" diameter rods in the transverse tie assembly shall be tightened to a snug fit and the threads set. Pockets that receive transverse tie bar outside shall be filled with grout after transverse tie assembly is in place.

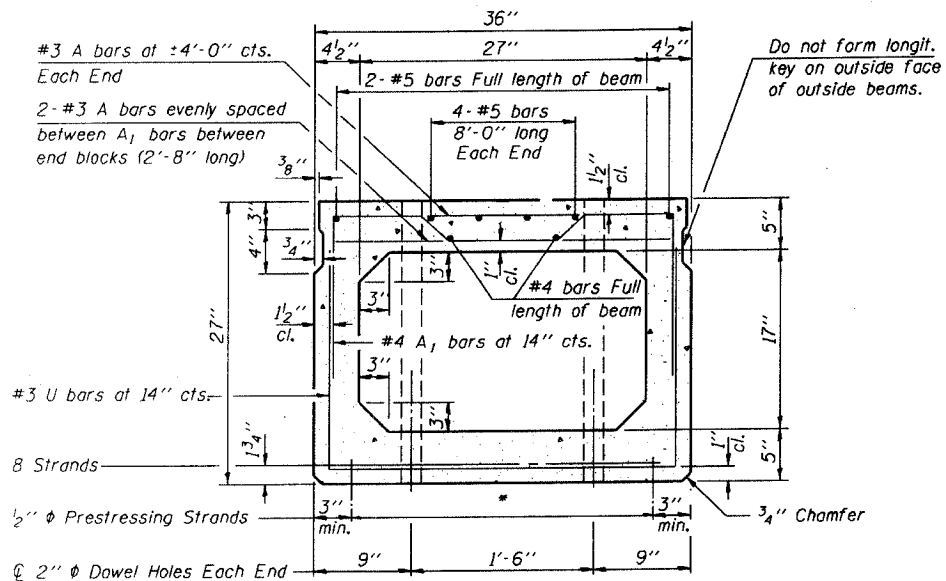
Illinois Department of Transportation

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

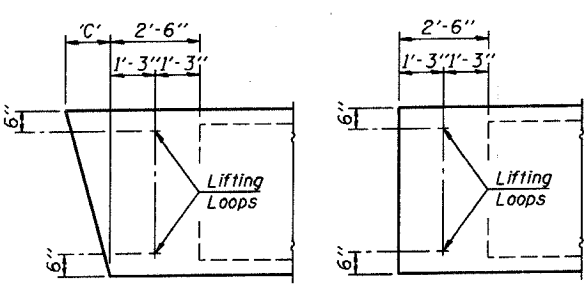
APPROVED APRIL 4, 2005
Ralph E. Robinson
 Engineer of Bridges and Structures

ISSUED 01-1-1 086-1-1

ROUTE	SECTION	COUNTY	TOWNSHIP	TOTAL SHEETS	SHEET NUMBER
T.R. 182	04-0180-00-BR	UNION	SEC 14, T1S, R1W	12	8
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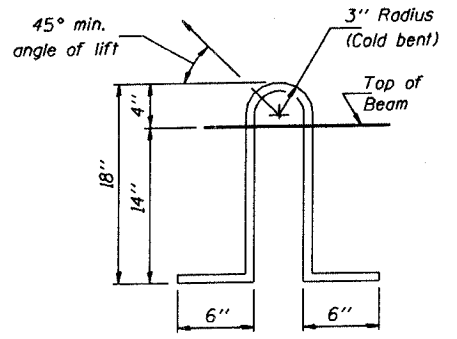


CROSS SECTION
(40' SPAN)



END BLOCK DETAILS

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



LIFTING LOOP DETAIL

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

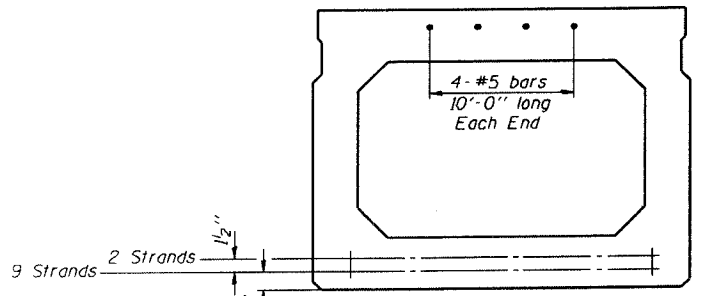
DIMENSION 'C'

Skew Angle 'D'	0°	5°	10°	15°	20°	25°	30°
Dimension 'C' (Inches)	0	3 1/8	6 3/8	9 5/8	13 3/8	16 3/4	20 3/4

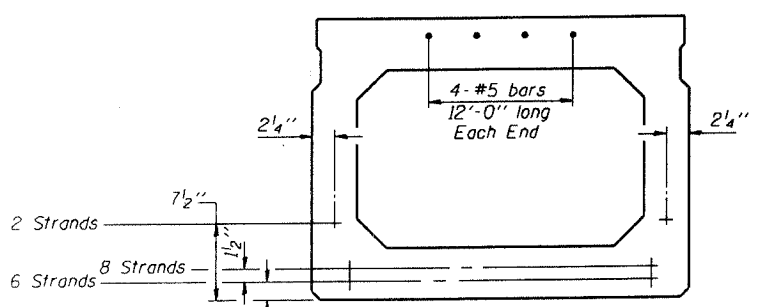
*** TRANSVERSE STRAND PLACEMENT GUIDELINES**

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

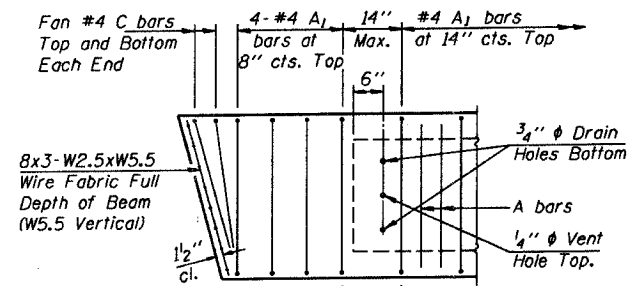
Vertical placement of strands shall not be adjusted to satisfy the above guidelines.



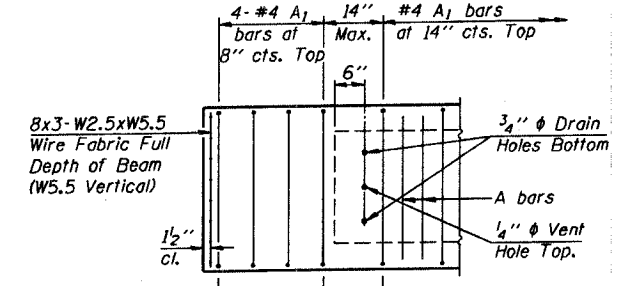
CROSS SECTION
(50' SPAN)



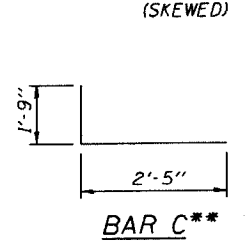
CROSS SECTION
(60' SPAN)



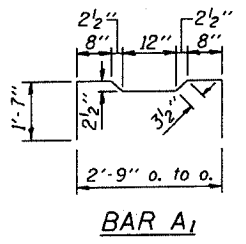
END REINFORCEMENT
(SKEWED)



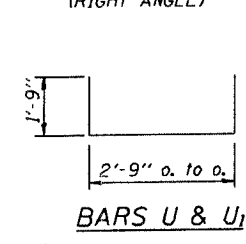
END REINFORCEMENT
(RIGHT ANGLE)



BAR C**



BAR A1



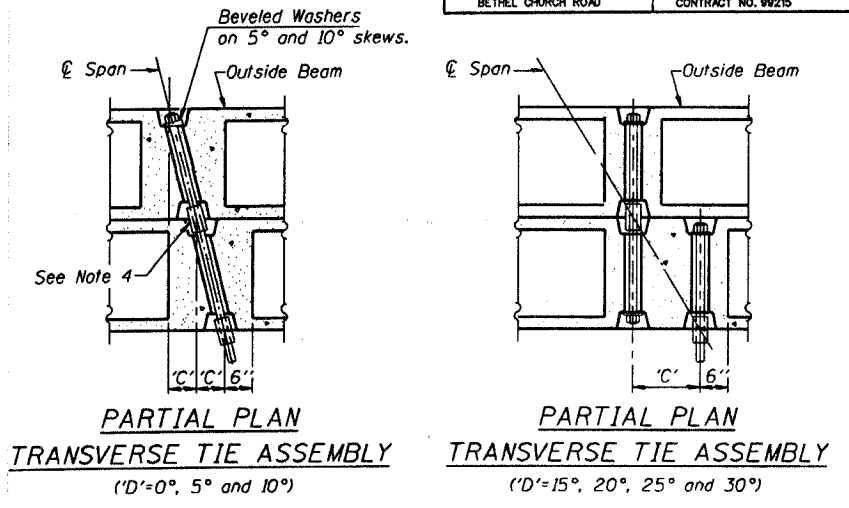
BARS U & U1

DESIGN STRESSES

- $f'_c = 5,000$ p.s.i.
- $f'_{ci} = 4,000$ p.s.i.
- $f'_s = 270,000$ p.s.i. (1/2" diameter Strand)
- $f_{si} = 201,960$ p.s.i. (1/2" diameter Strand)
- $f_y = 60,000$ p.s.i.

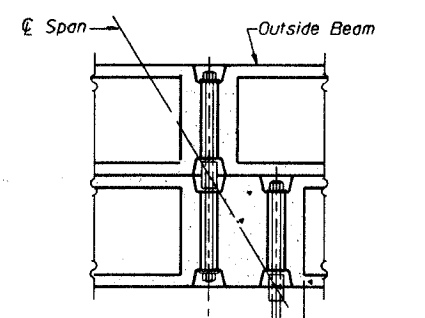
MIN. BAR LAP

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



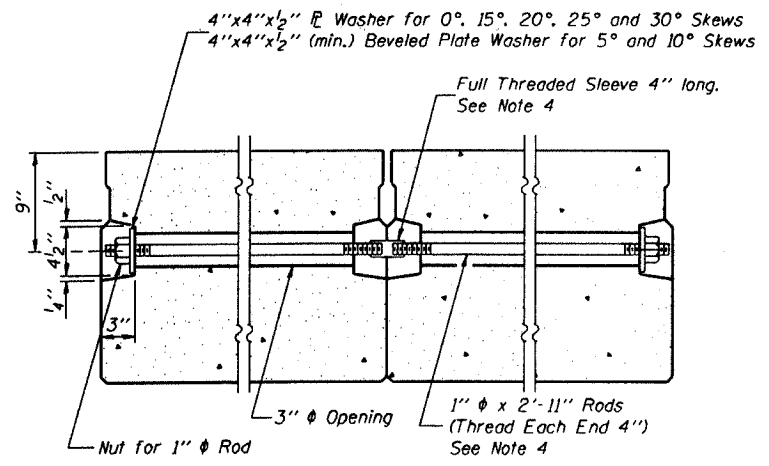
PARTIAL PLAN TRANSVERSE TIE ASSEMBLY

('D' = 0°, 5° and 10°)



PARTIAL PLAN TRANSVERSE TIE ASSEMBLY

('D' = 15°, 20°, 25° and 30°)



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

NOTES

1. Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270.
2. The nominal diameter shall be 1/2" and the nominal cross-sectional area shall be 0.153 square inches.
3. Reinforcement bars shall conform to the requirements of AASHTO M-31 or M-322, Grade 60.
4. On 0°, 5° and 10° skews, alternate approved transverse tie rods of increased segmental length are acceptable.
5. Rail Post anchor devices shall be cast into outside beam as elsewhere specified.
6. When a Waterproofing Membrane System is specified, the top surface of the beams shall be screeded with a straightedge and finished with a hand float. The finished surface shall be free of depressions or high spots with sharp corners and the top edge of keys shall be rounded or chamfered a minimum of 1/4".
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.

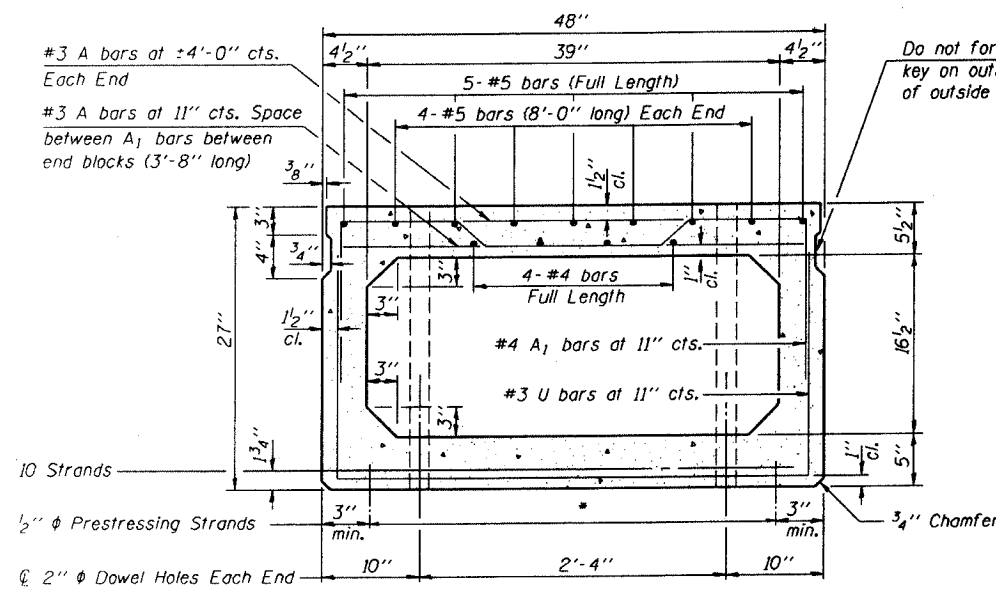
Illinois Department of Transportation
 PASSED APRIL 4, 2005
 Thomas S. Demagala
 Engineer of Bridge Design
 APPROVED APRIL 4, 2005
 Ralph E. Anderson
 Engineer of Bridges and Structures

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

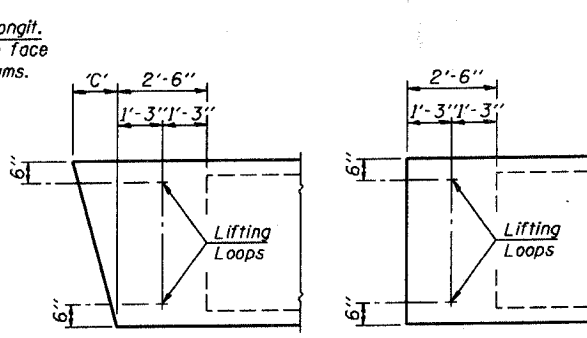
****NOTE:**
 The following number of C bars shall be used:
 Skew No.
 5° and 10° — 1
 15° and 20° — 2
 25° and 30° — 3

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. 182	D4-D180-00-BR	UNION	SEC 14, T11S, R1W	12	9
JOB NO. C-99-547-04				PROJECT NO. BR05-181 (24)	
BETHEL CHURCH ROAD				CONTRACT NO. 99215	

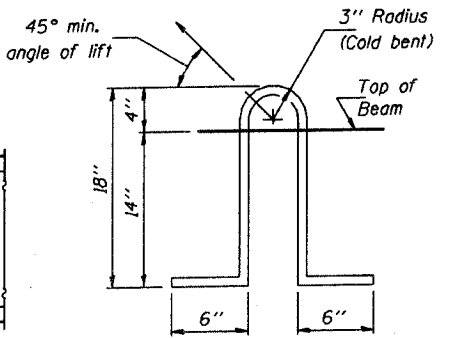


CROSS SECTION
(40' SPAN)



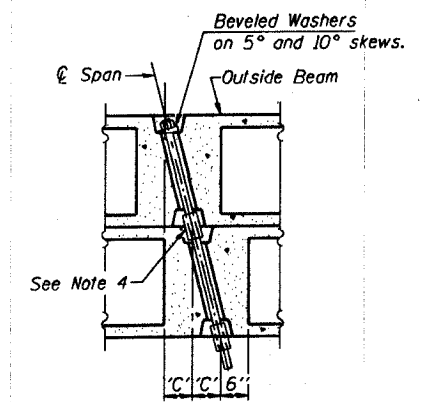
END BLOCK DETAILS

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.

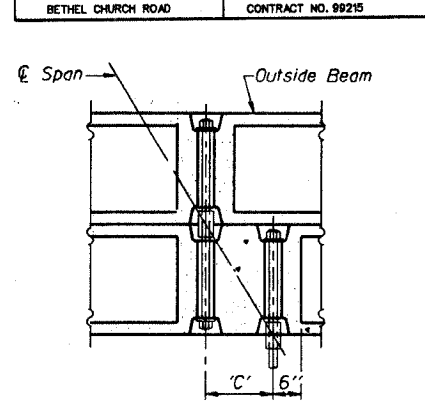


LIFTING LOOP DETAIL

Lifting loops shall be 3, 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°)

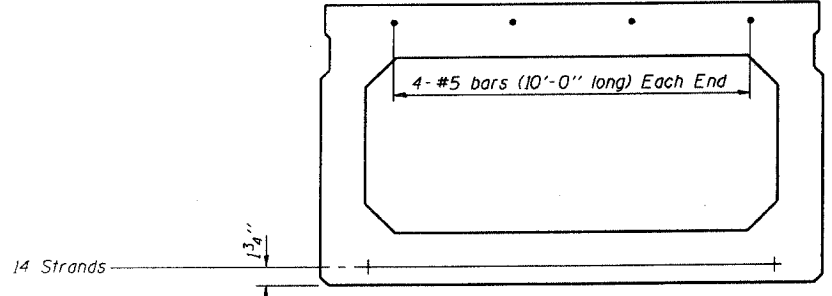
DIMENSION 'C'

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

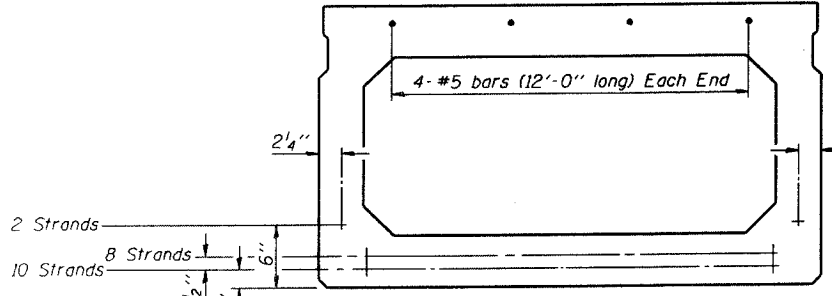
*** TRANSVERSE STRAND PLACEMENT GUIDELINES**

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

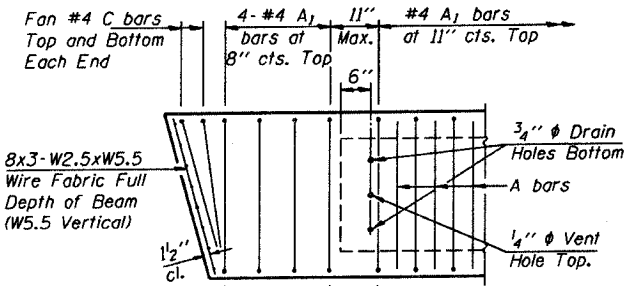
Vertical placement of strands shall not be adjusted to satisfy the above guidelines.



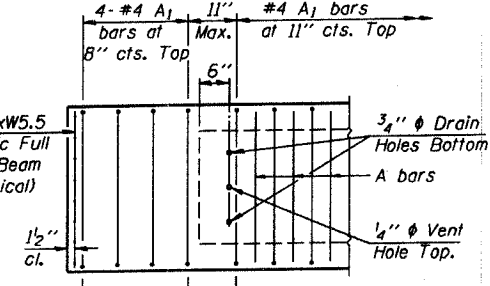
CROSS SECTION
(50' SPAN)



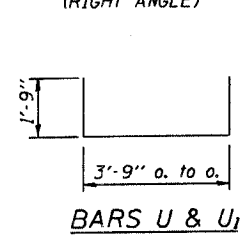
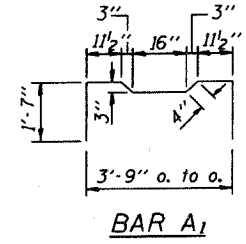
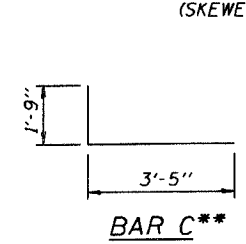
CROSS SECTION
(60' SPAN)



END REINFORCEMENT
(SKEWED)



END REINFORCEMENT
(RIGHT ANGLE)

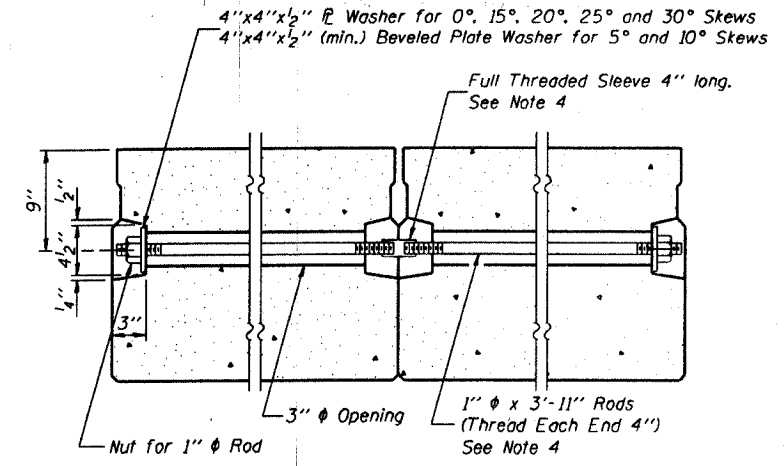


DESIGN STRESSES

- $f'_c = 5,000$ p.s.i.
- $f'_{ci} = 4,000$ p.s.i.
- $f'_s = 270,000$ p.s.i. (1/2" φ Strand)
- $f_{si} = 201,960$ p.s.i. (1/2" φ Strand)
- $f_y = 60,000$ p.s.i.

MIN. BAR LAP

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



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

NOTES

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

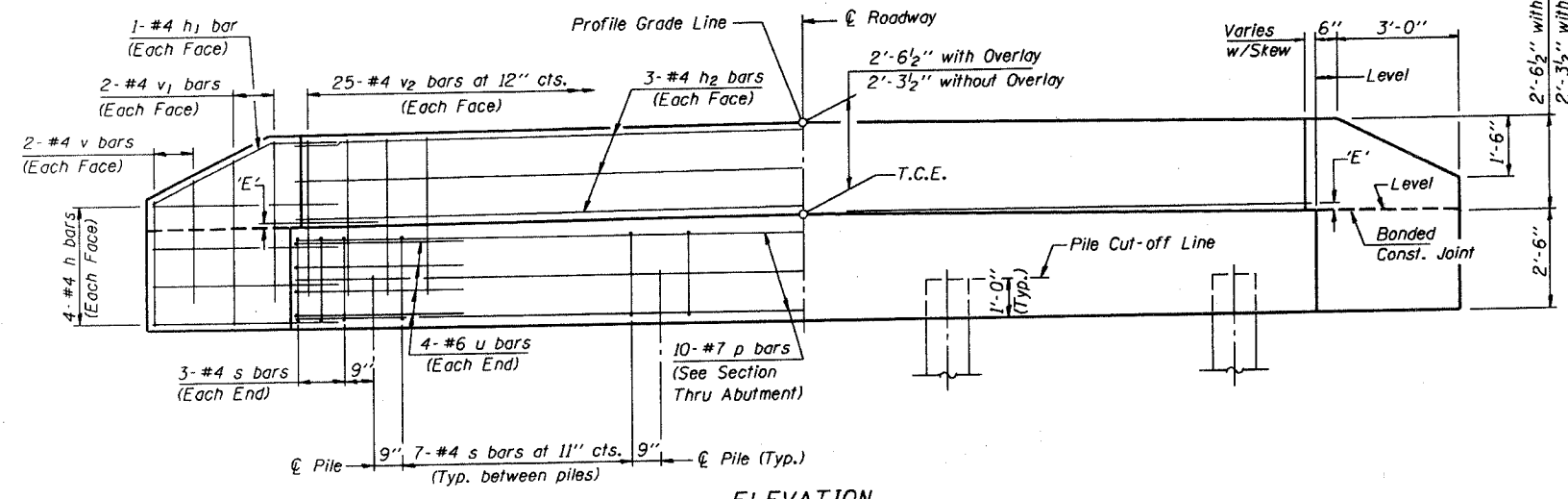
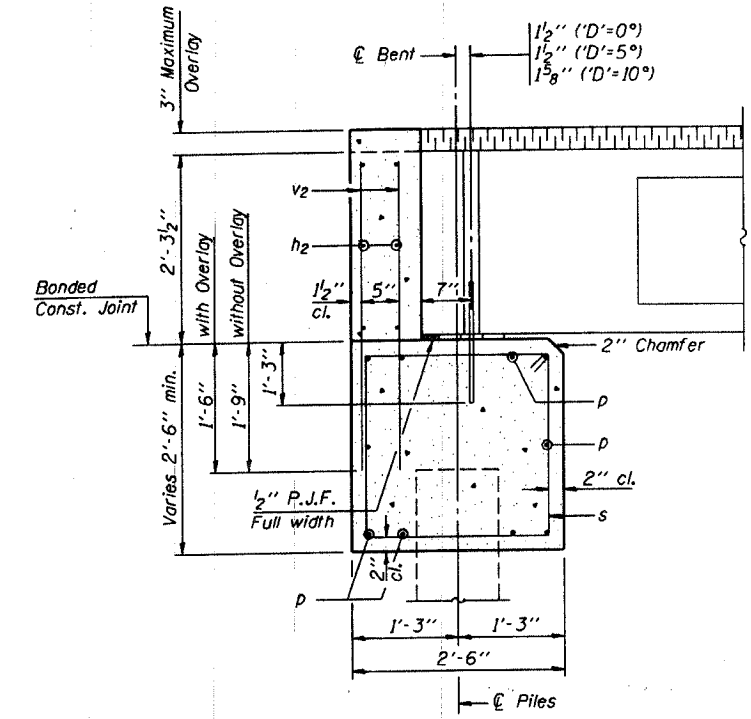
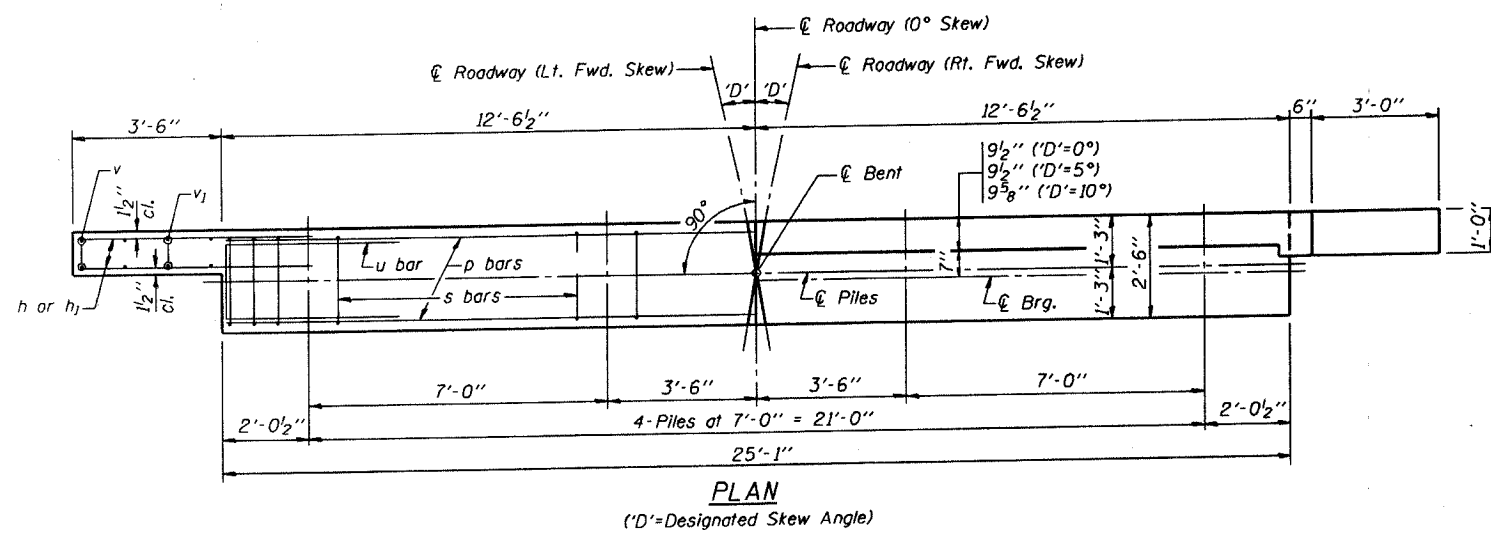
Illinois Department of Transportation
 PASSED APRIL 4, 2005
 Thomas S. Noma
 Engineer of Bridge Design
 APPROVED APRIL 4, 2005
 Ralph E. Carlson
 Engineer of Bridges and Structures

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

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. 182	04-0180-00-BR	UNION	SEC 14, T1S, R1W	12	10
JOB NO. C-99-547-04				PROJECT NO. BROS-181 (24)	
BETHEL CHURCH ROAD				CONTRACT NO. 99215	



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

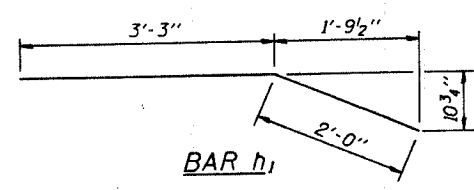
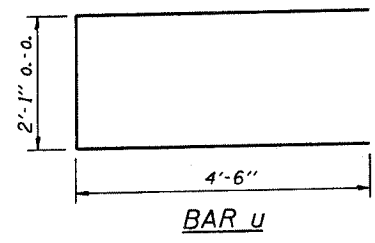
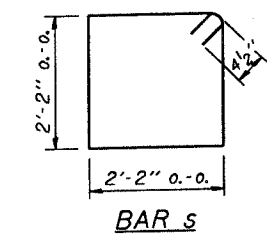
- The Backwall and the portion of the Wingwalls above the bonded construction joint shall be cast against the in-place beam.
- Reinforcement bars shall conform to the requirements of A.A.S.H.T.O. M-31 or M-322, Grade 60.
- Space reinforcement in cap to miss anchor bolts.

MAXIMUM PILE LOADS

SPAN	TONS
40'	34
50'	38
60'	43

DESIGN STRESSES

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



BILL OF MATERIAL FOR ONE ABUTMENT

Bar	No.	Size	Length	Shape
h	16	#4	5'-0"	—
h1	4	#4	5'-3"	—
h2	6	#4	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.	

P.P.C. DECK BEAMS PILE BENT ABUTMENT			
24' RDWY.	27' BMS.	'D'=0°, 5° OR 10°	
STANDARD CA-2427-10			

Illinois Department of Transportation

PASSED APRIL 4, 2005

Thomas J. Romagosa
Engineer of Bridge Design

APPROVED APRIL 4, 2005

Ralph E. Anderson
Engineer of Bridges and Structures

1861-1-1 (REVISED)

ROUTE	SECTION	COUNTY	TOWNSHIP	TOTAL SHEETS	SHEET NUMBER
T.R. 152	D4-0780-00-BR	UNION	SEC 14, T15, R1W	12	11
JOB NO. C-99-547-04			PROJECT NO. BR03-01 (24)		
BETHEL CHURCH ROAD			CONTRACT NO. 0925		

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.

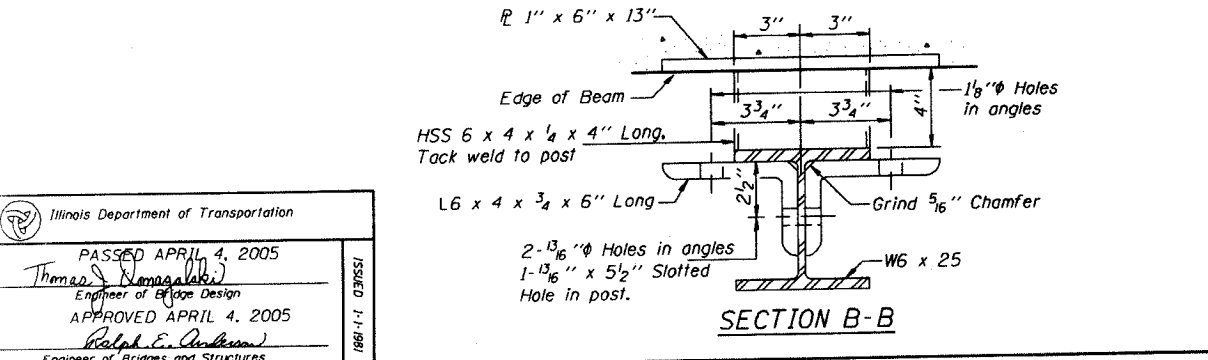
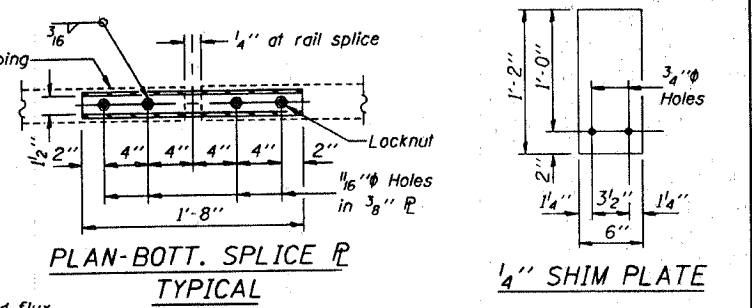
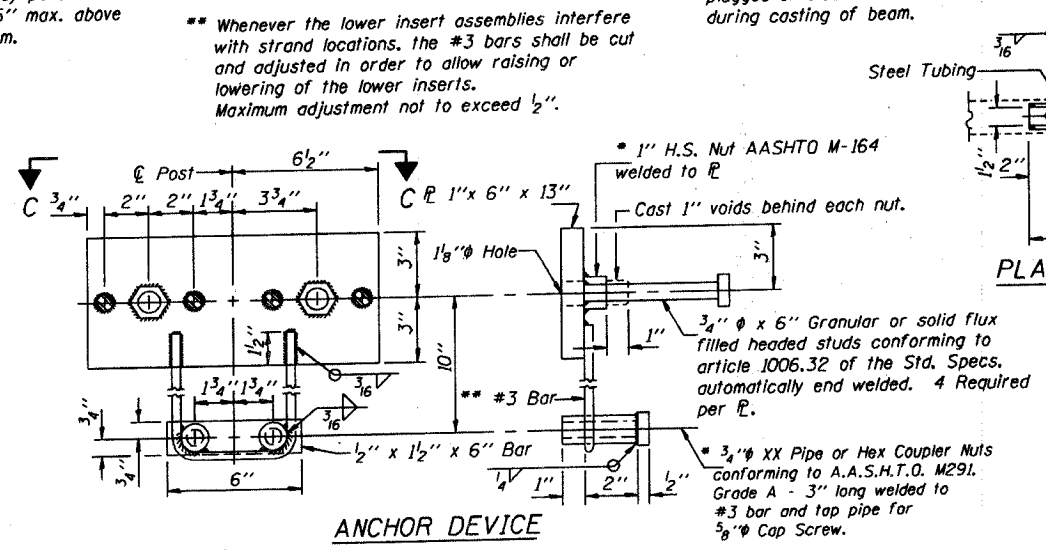
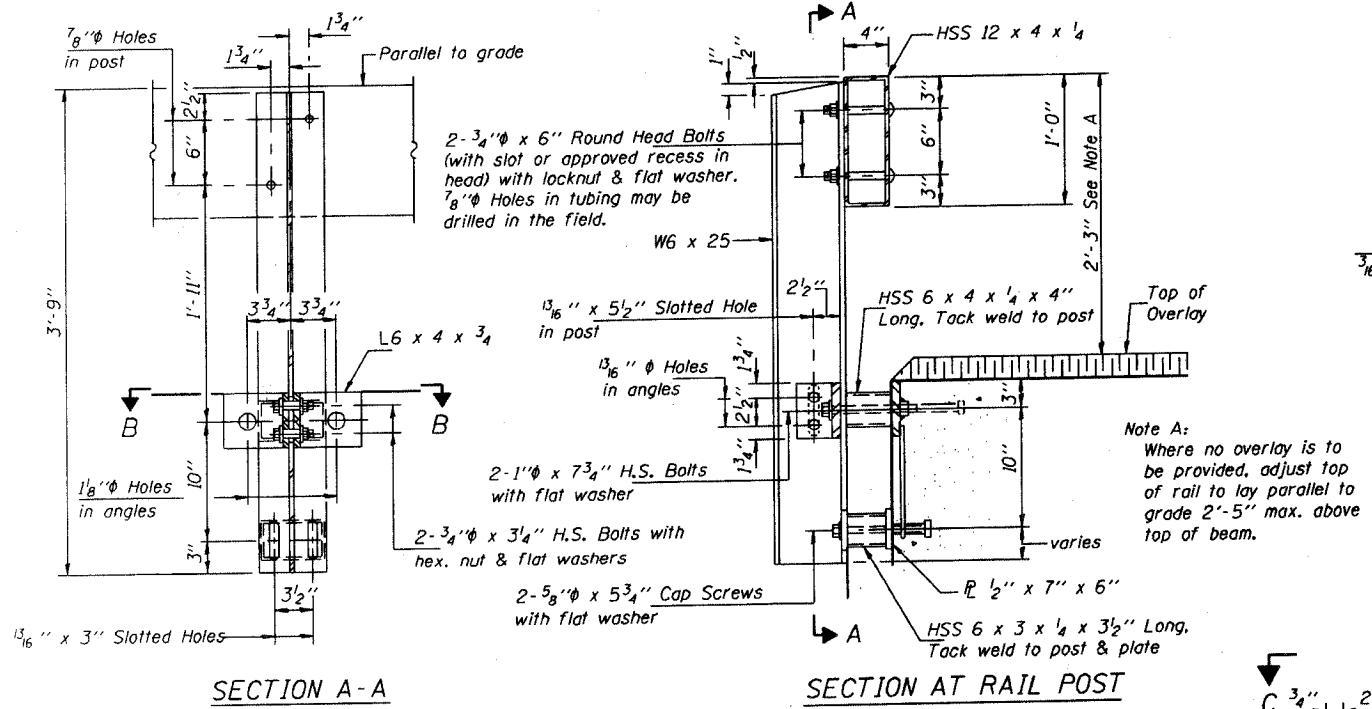
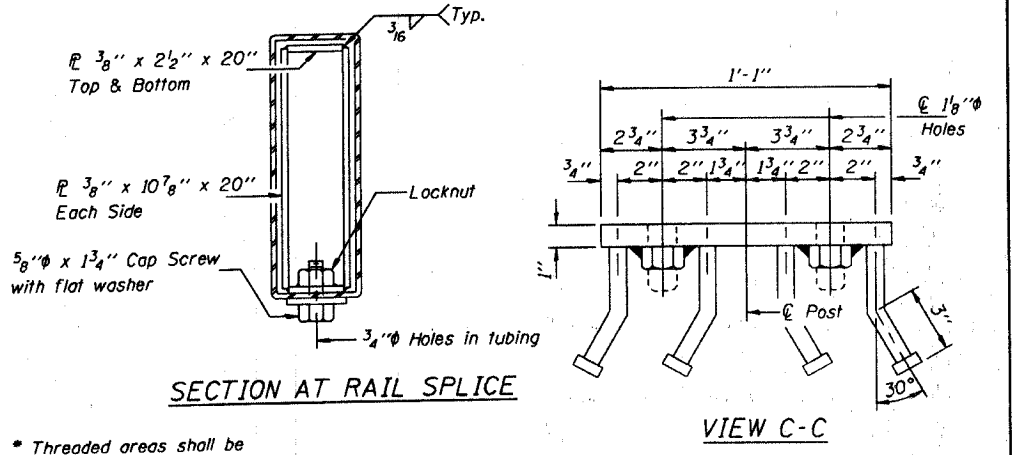
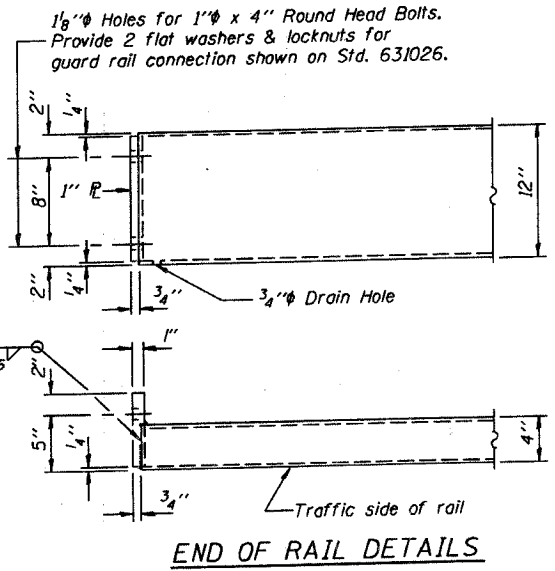
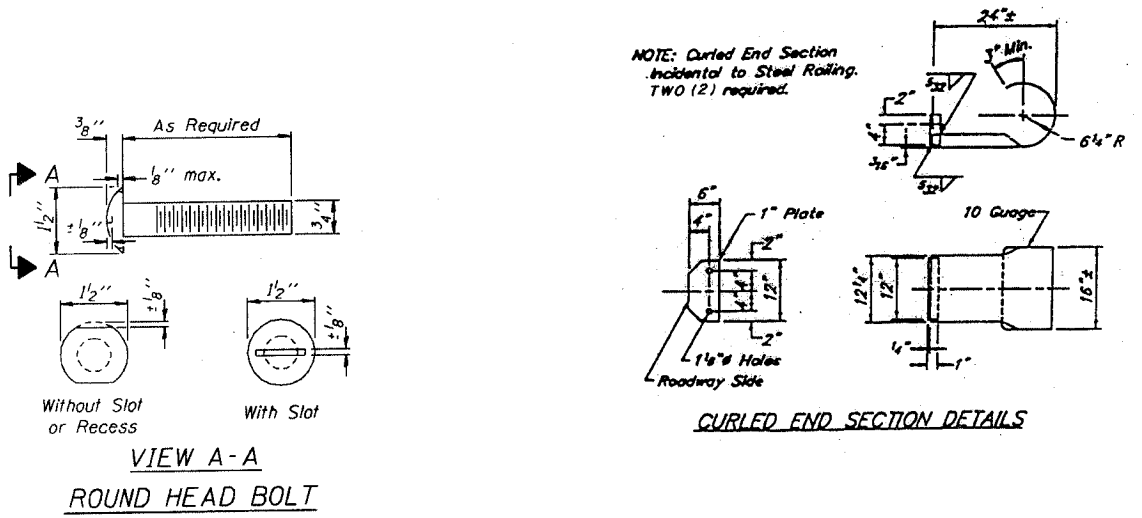
For multi-span bridges, sufficient 1/4" x 6" x 1'-2" galvanized steel shims shall be provided to align rail between adjacent spans. Cost included with STEEL RAILING, TYPE S-1.

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

The 3/4" high strength bolts used to connect the 6 x 4 x 3/4 angles to the post shall be tightened according to Article 505.04 (f)(2) of the Standard Specifications. The 1" high strength bolts connecting the angles to the concrete shall be tightened to a snug fit and given an additional 1/8 turn. The 5/8" cap screws in bottom of posts shall be tightened to a snug fit only.

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



Illinois Department of Transportation

PASSED APRIL 4, 2005

Thomas J. Demas (Signature)

Engineer of Bridge Design

APPROVED APRIL 4, 2005

Ralph E. Anderson (Signature)

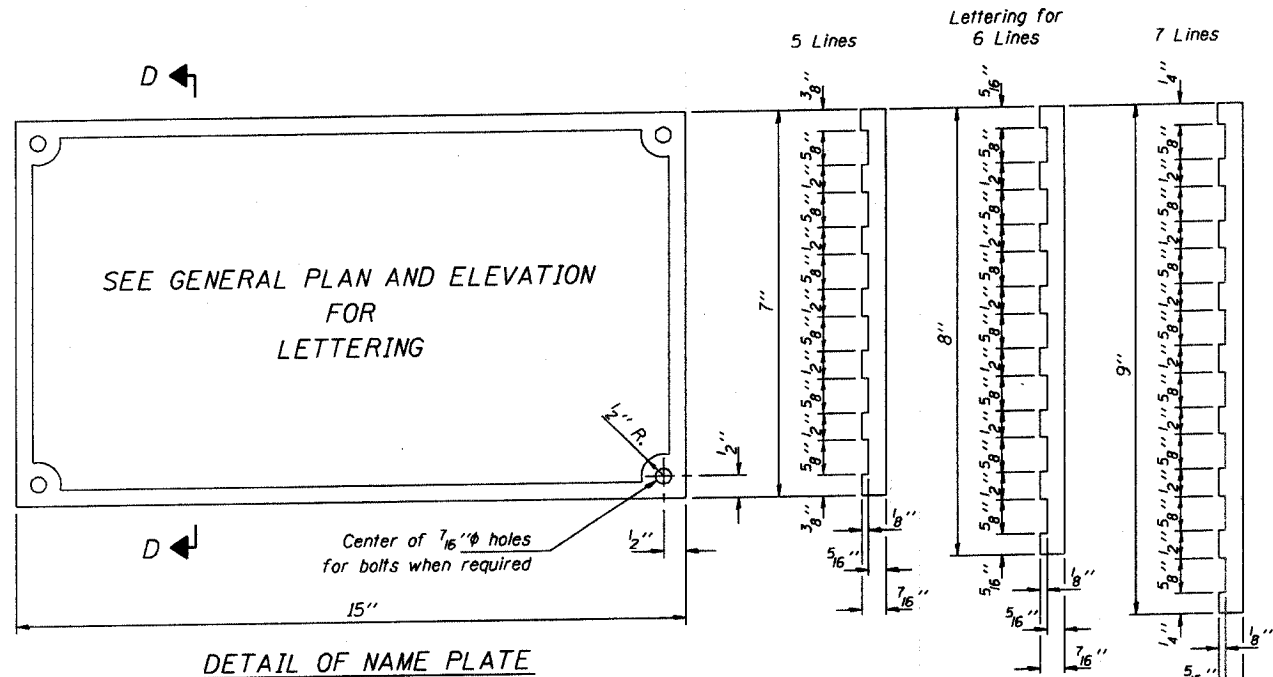
Engineer of Bridges and Structures

1861-1-1 (BRSS)

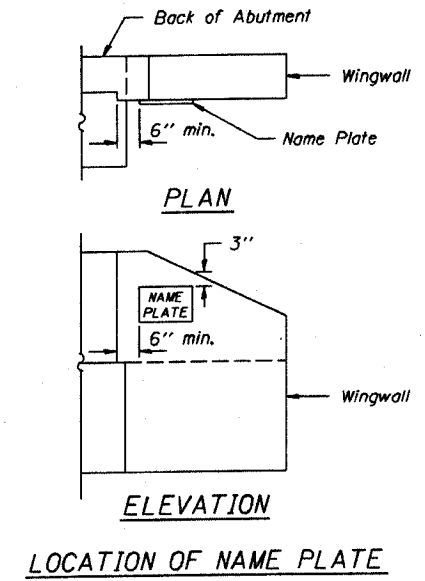
STEEL RAILING, TYPE S-1

STANDARD CR-TS1

ROUTE	SECTION	COUNTY	TOWNSHIP	TOTAL SHEETS	SHEET NUMBER
T.A. 152	04-0180-00-BR	UNION	SEC 14, T15S, R1W	12	12
JOB NO. C-89-647-04			PROJECT NO. BR08-101 (24)		
BETHEL CHURCH ROAD			CONTRACT NO. 8925		



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.



ILLINOIS DEPARTMENT OF TRANSPORTATION
 Bridge Foundation
 Station: 257+00.00 to 257+00.00
 Section: 257+00.00 to 257+00.00
 Checked By: Tom Stewart

Depth (ft)	Soil Description	Penetration (lb-ft)	Remarks
0.00 - 0.50	Very soft, moist, brown, silty clay	1.50	
0.50 - 1.00	Soft, moist, brown, silty clay	1.25	
1.00 - 1.50	Soft, very moist, brown, silty clay	0.50	
1.50 - 2.00	Soft to medium, very moist, brown, silty clay	0.50	
2.00 - 2.50	Stiff, dry, brown, sandstone	1000	Back Elev = 557.57

ILLINOIS DEPARTMENT OF TRANSPORTATION
 Bridge Foundation
 Station: 257+00.00 to 257+00.00
 Section: 257+00.00 to 257+00.00
 Checked By: Tom Stewart

Depth (ft)	Soil Description	Penetration (lb-ft)	Remarks
0.00 - 0.50	Very soft, moist, brown, silty clay	1.50	
0.50 - 1.00	Soft, moist, brown, silty clay	1.25	
1.00 - 1.50	Soft, very moist, brown, silty clay	0.50	
1.50 - 2.00	Soft to medium, very moist, brown, silty clay	0.50	
2.00 - 2.50	Stiff, dry, brown, sandstone	1000	Back Elev = 557.67

SOIL BORINGS

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

NAME PLATE
 STANDARD CN