

INDEX OF SHEETS

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

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

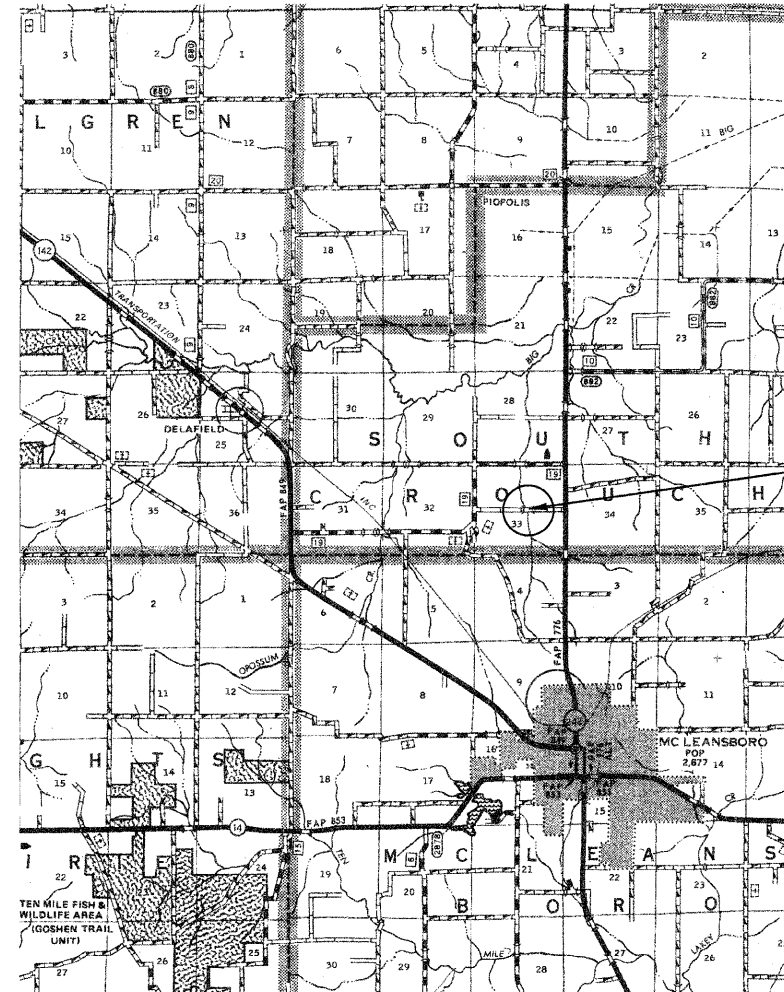
000001-05	STANDARD SYMBOLS, ABBREVIATIONS & PATTERNS
280001-04	TEMPORARY EROSION CONTROL SYSTEMS
701901	TRAFFIC CONTROL DEVICES
B.L.R. 21-7	TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES FOR CONSTRUCTION ON RURAL LOCAL HIGHWAYS
B.L.R. 22-5	TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES FOR CONSTRUCTION ON RURAL LOCAL HIGHWAYS (TWO-LANE TWO-WAY RURAL TRAFFIC) (ROAD CLOSED TO THRU TRAFFIC)

SUMMARY OF QUANTITIES

CODE NO.	ITEM	UNIT	X081-2A QUANTITY
20100500	TREE REMOVAL, ACRES	ACRE	0.07
20200100	EARTH EXCAVATION	CU YD	734.00
20300100	CHANNEL EXCAVATION	CU YD	271.00
20400800	FURNISHED EXCAVATION	CU YD	131.00
25001000	SEEDING, CLASS 2 (SPECIAL)	ACRE	0.40
28000300	TEMPORARY DITCH CHECKS	EACH	5.00
28001000	AGGREGATE (EROSION CONTROL)	TON	11.00
28100807	STONE DUMPED RIPRAP, CLASS A4	TON	250.00
28102600	STONE RIPRAP DITCH	TON	86.00
40200800	AGGREGATE SURFACE COURSE, TYPE B	TON	325.00
50100100	REMOVAL OF EXISTING STRUCTURES	EACH	1.00
50105220	PIPE CULVERT REMOVAL	FOOT	80.00
50300225	CONCRETE STRUCTURES	CU YD	19.40
50300280	CONCRETE ENCASEMENT	CU YD	2.10
50400505	PRECAST PRESTRESSED CONCRETE DECK BEAMS (27" DEPTH)	SO FT	1440.00
50800105	REINFORCEMENT BARS	POUND	2440.00
50900205	STEEL RAILING, TYPE S1	FOOT	120.00
51201400	FURNISHING STEEL PILES HP10X42	FOOT	195.00
51202305	DRIVING PILES	FOOT	195.00
51203400	TEST PILE STEEL HP10X42	EACH	1.00
51500100	NAME PLATES	EACH	1.00
67100100	MOBILIZATION	L SUM	1.00

DESIGN DESIGNATION:
 DESIGN SPEED: 30 MPH
 HIGHWAY CLASS - LOCAL ROAD
 EXISTING STRUCTURE NO.: 033-3188
 PROPOSED STRUCTURE NO.: 033-3305
 CURRENT A.D.T. = 80
 CONTRACT NO. 99301

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



LAYOUT
 APPROXIMATE SCALE 1 INCH = 1 MILE

GROSS LENGTH	540.00 FT	0.102 MILES
OMISSIONS	0.00 FT	0.000 MILES
NET LENGTH	540.00 FT	0.102 MILES

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

SECTION 04-09112-00-BR
 BEGINS STATION 2+10

STATION 5+00, STRUCTURE NO. 033-3305
 A 60' LONG SINGLE SPAN PRECAST
 PRESTRESSED CONCRETE DECK BEAM
 BRIDGE (27" DEPTH), 24' ROADWAY,
 0.00% GRADE, 20° RT. FWD. SKEW.

SECTION 04-09112-00-BR
 ENDS STATION 7+50

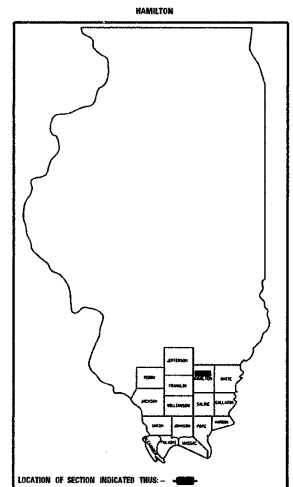
STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

APPROVED 9/25/2007
Kim Peltzer
 COUNTY ENGINEER

PASSED 10/1/07
Dennis W. Hillbrenner
 ENGINEER OF LOCAL ROADS AND STREETS

RELEASING FOR BID
 BASED ON LIMITED
 REVIEW 10-2-07
Mary C. Lamie
 MARY C. LAMIE, P.E.
 DEPUTY DIRECTOR OF HIGHWAY
 REGION FIVE ENGINEER

T.R.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	323 W. 3RD ST. P.O. BOX 160 MT. CARMEL, IL 62863
149	04-09112-00-BR	HAMILTON	13	1	PHONE: (618)-262-8661 FAX: (618)-263-3327
FED. ROAD DIST. NO. 9 ILLINOIS		FED. AID PROJECT		PROJECT * BROS-065(039) CONTRACT * 99301	
JOB * C-99-563-06		BIG CREEK TRIB		LEC JOB * H061019HM	
405 W. STATE ST. SUITE 1 PRINCETON, IN 47670 PHONE: (812)-386-7611 FAX: (812)-385-2812					
LAMAC ENGINEERING CO.					
PROFESSIONAL DESIGN FIRM LAND SURVEY & PROFESSIONAL ENGINEERING CORPORATION 184-000887 (62-032435)(35-002769)					
AARON M. MEFFORD NAME <i>Aaron Mefford</i> SIGNATURE DATE 11-30-09 EXPIRES					
TOWNSHIP ROUTE 149 OVER BIG CREEK TRIBUTARY HAMILTON COUNTY, ILLINOIS					
SHEET TITLE: TITLE SHEET					
SCALE: VARIES					
BY: AMM					
DATE: 9/20/07					
REV:					
1 OF 13 SHEETS					
SHEET NO. 1					



T.R.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
149	04-09112-00-BR	HAMILTON	13	2
FED. ROAD DIST. NO. 9 ILLINOIS		FED. AID PROJECT		
PROJECT# BROS-065(039)		CONTRACT# 99301		
JOB NO. C-99-563-06		BIG CREEK TRIB		
LEC JOB # H061019HW				

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PROFESSIONAL DESIGN FIRM
LAND SURVEY &
PROFESSIONAL
ENGINEERING
CORPORATION
184-00087
(62-032435)(95-002769)



AARON M. MEFFORD
NAME
SIGNATURE
9-28-07
DATE
11-30-09
EXPIRES

TOWNSHIP ROUTE 149
OVER BIG CREEK TRIBUTARY
HAMILTON COUNTY, ILLINOIS

SHEET TITLE:

PLAN & PROFILE

SCALE: VARIES
BY: AMM
DATE: 02/07
REV:

2 OF 13
SHEETS

SHEET NO.
2

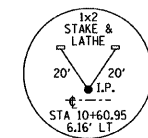
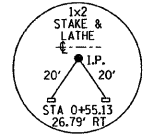
GENERAL NOTES:

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

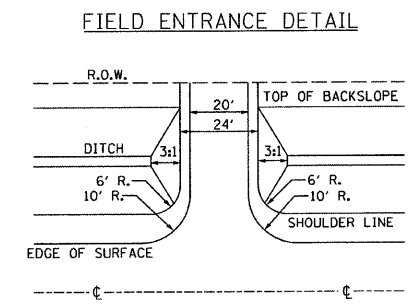
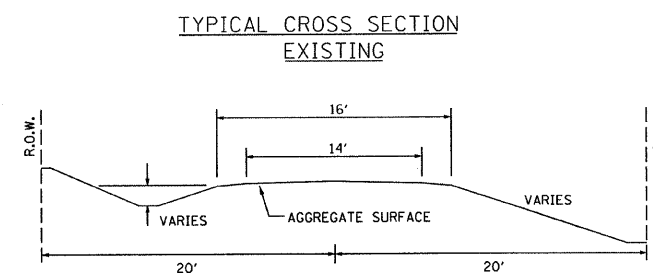
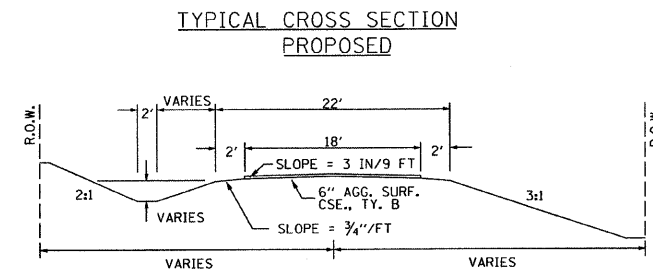
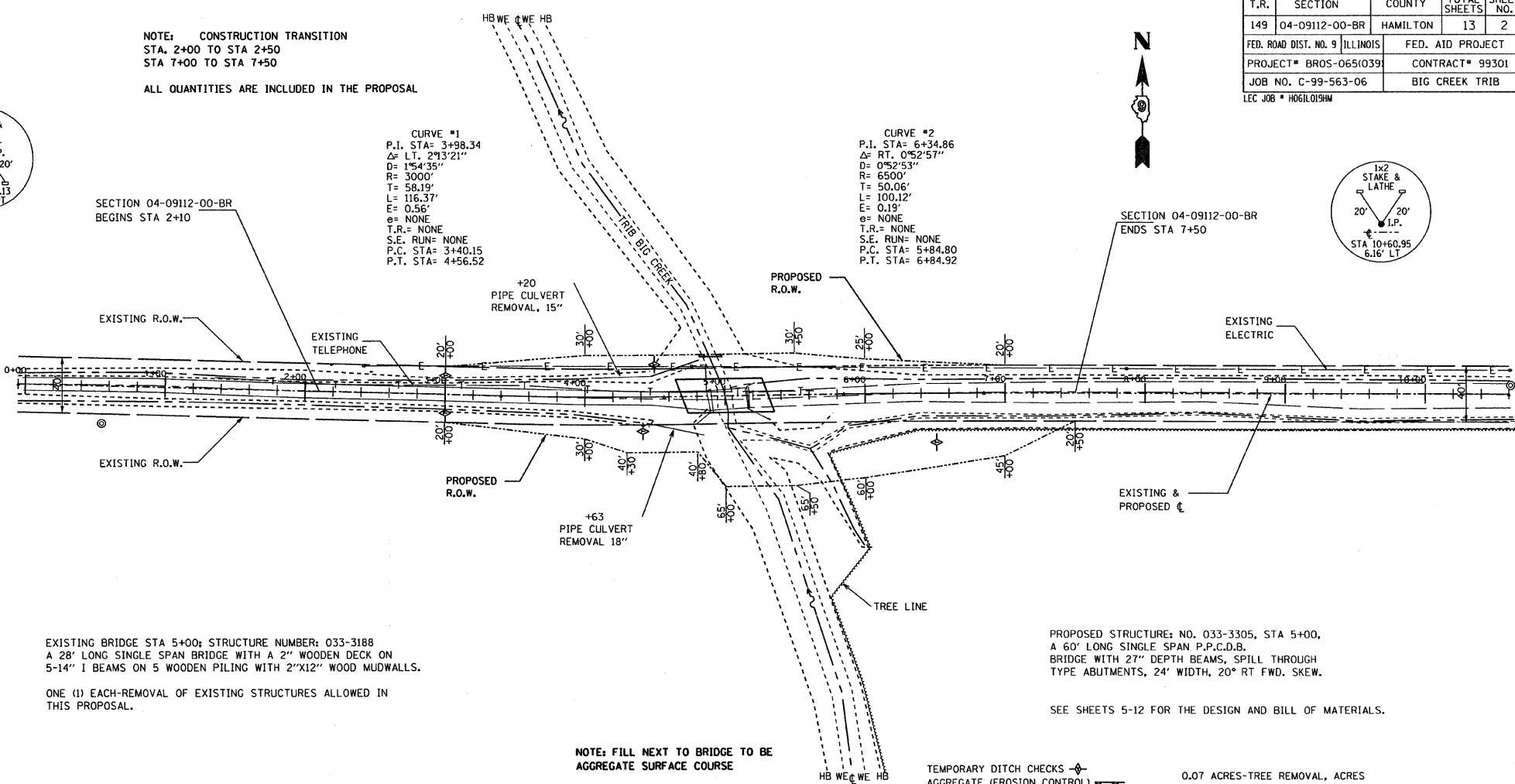
THE WORK INVOLVED ON THIS SECTION CONSISTS OF THE REMOVAL OF THE EXISTING STRUCTURE, THE CONSTRUCTION OF A 60 FOOT LONG SINGLE SPAN PRECAST, PRESTRESSED CONCRETE DECK BEAM BRIDGE, EARTH APPROACHES, AGGREGATE SURFACE COURSE AND OTHER MISCELLANEOUS ITEMS NECESSARY TO COMPLETE THIS SECTION.

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

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



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



NOTE: CONSTRUCT SPECIAL DITCH

STA 2+00 TO STA 4+60 LT
STA 2+00 TO STA 4+46 RT
STA 5+50 TO STA 7+50 LT
STA 5+50 TO STA 7+50 RT

NOTE: CONSTRUCT STONE RIPRAP DITCH

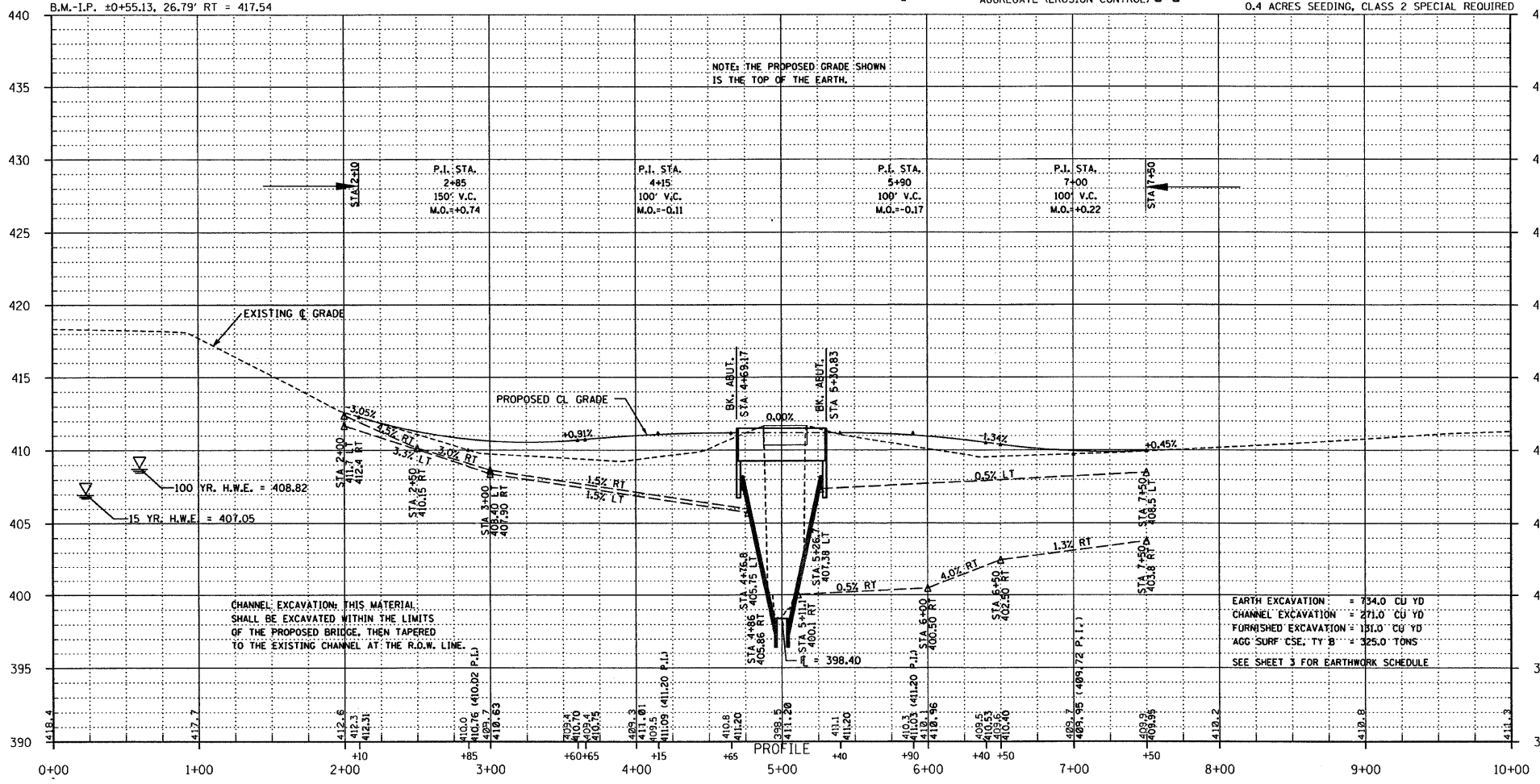
STA 5+11 TO STA 6+50 RT (0.62 TON/LIN FT)
86 TON STONE RIPRAP DITCH ALLOWED IN PROPOSAL.

SEE SHEET NO. 13 FOR STONE RIPRAP DITCH DETAIL.

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

WAYNE-WHITE ELECTRIC
618-842-2196

VERIZON
618-395-6189



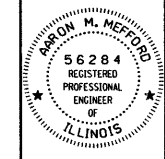
T.R.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
149	04-09112-00-BR	HAMILTON	13	3
FED. ROAD DIST. NO. 9 ILLINOIS		FED. AID PROJECT		
PROJECT* BROS-0650039		CONTRACT* 99301		
JOB NO. C-99-563-06		BIG CREEK TRIB		

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EXPIRES

TOWNSHIP ROUTE 149
OVER BIG CREEK TRIBUTARY
HAMILTON COUNTY, ILLINOIS

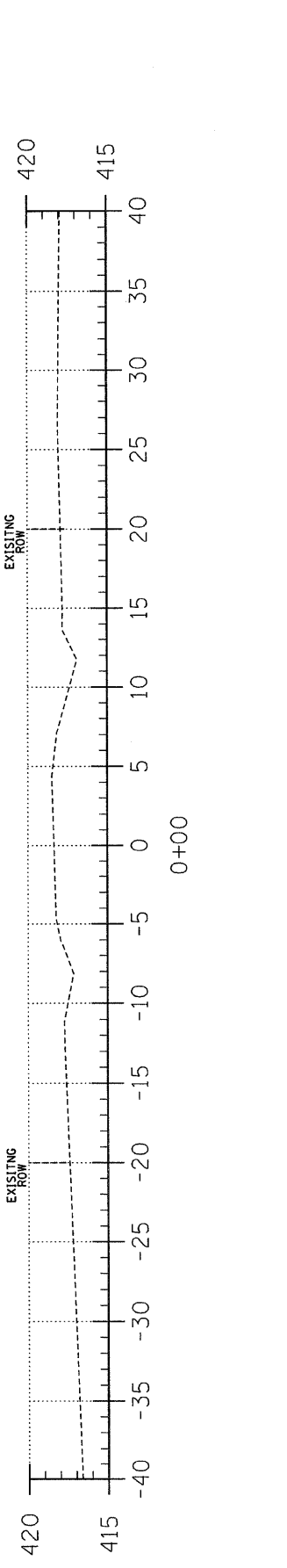
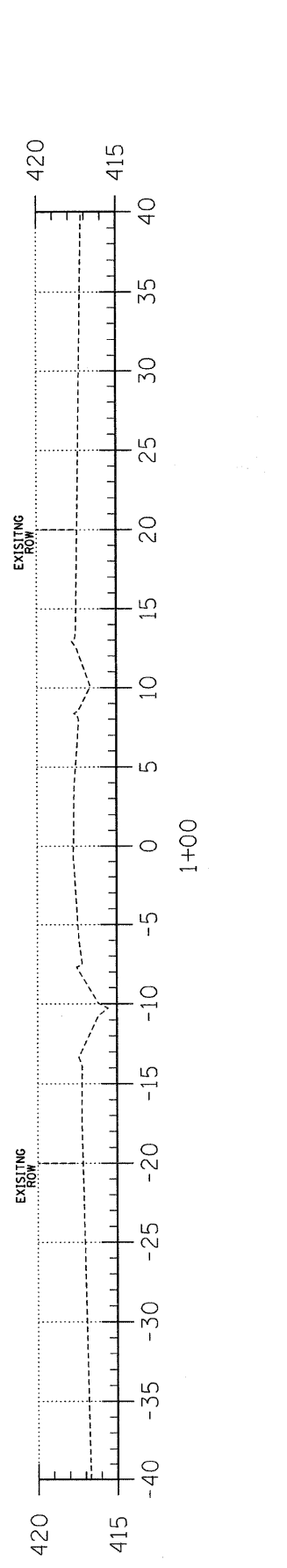
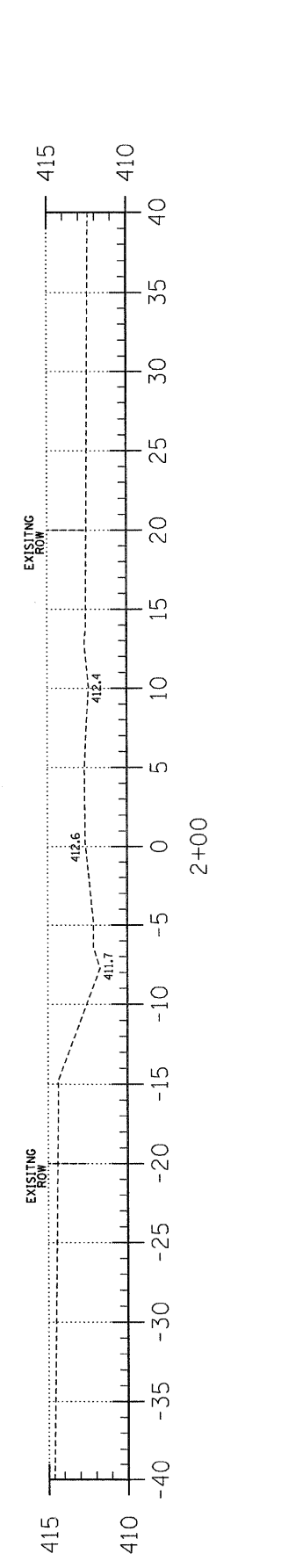
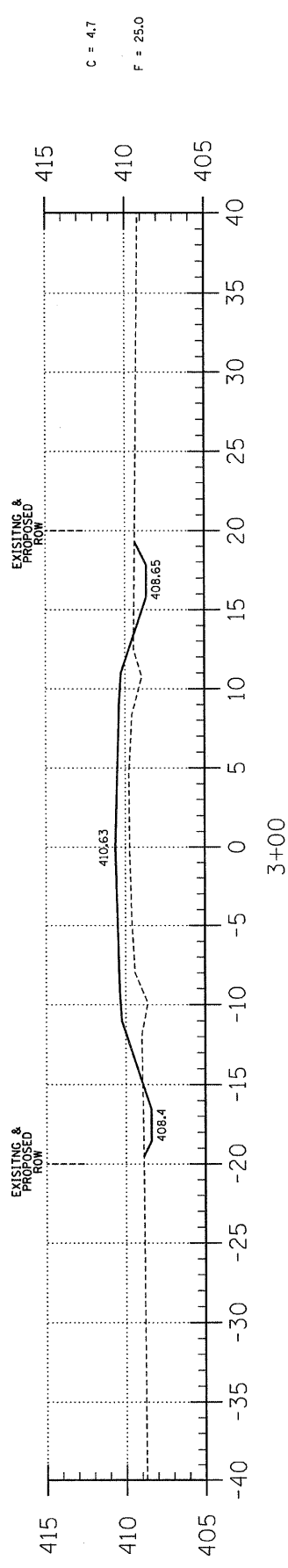
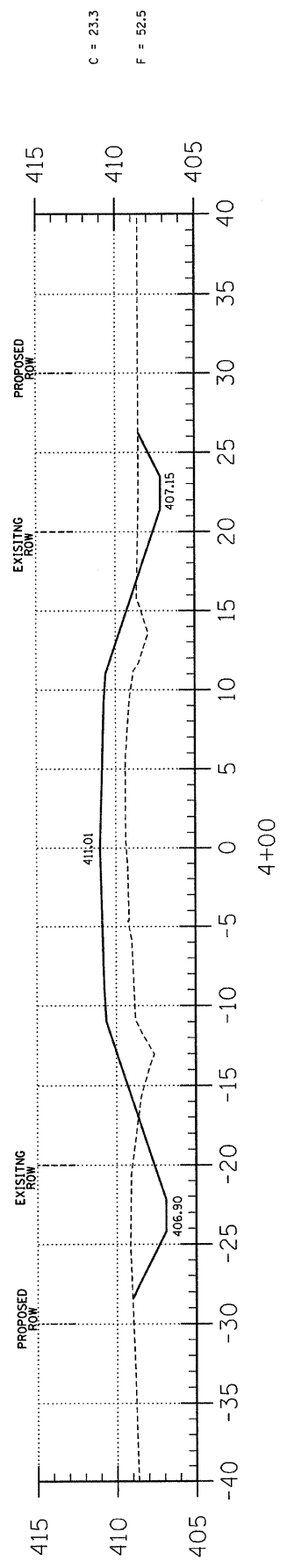
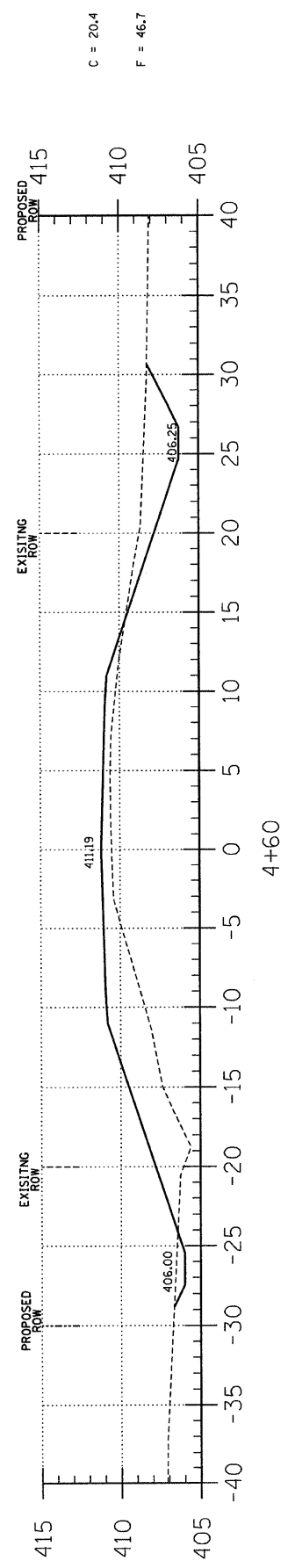
SHEET TITLE:

CROSS-SECTIONS

SCALE: 1" = 5'
BY: AMM
DATE: 02/07
REV: MLG

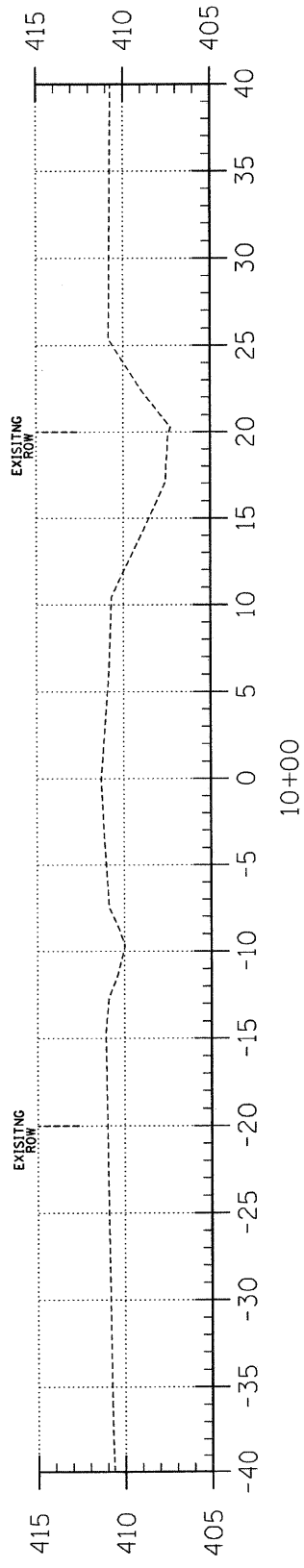
3 OF 13 SHEETS

SHEET NO. 3

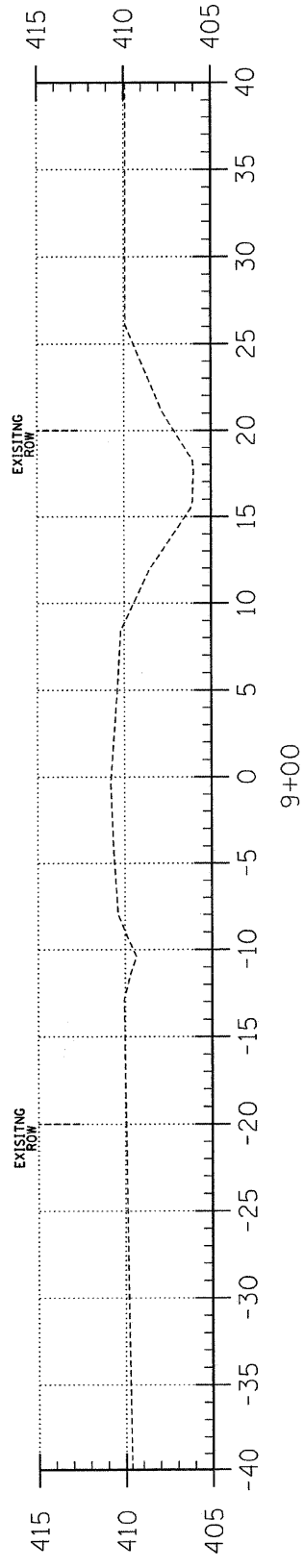


EARTHWORK SCHEDULE

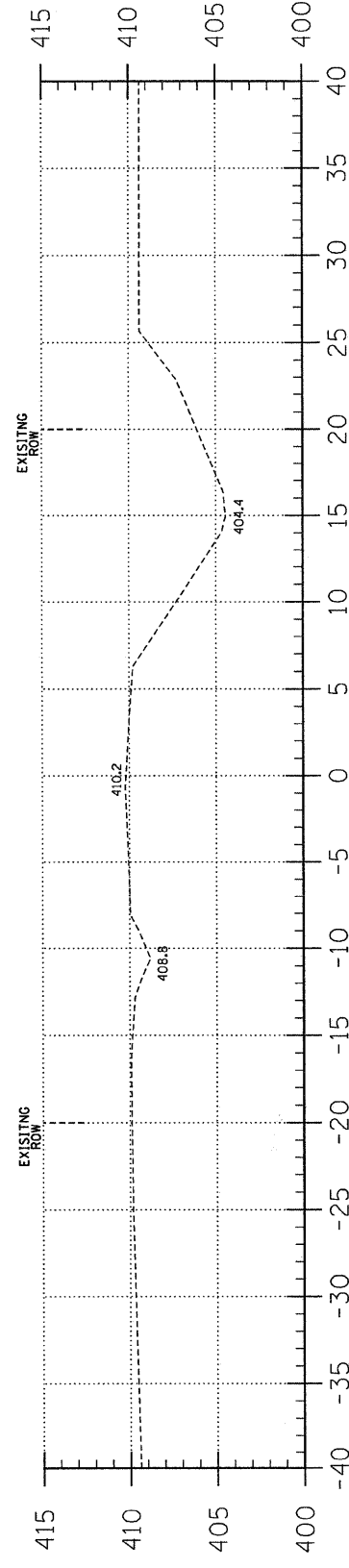
LOCATION	EARTH EXCAVATION		CHANNEL EXCAVATION		ESTIMATED UNSUITABLE MATERIAL		SUITABLE MATERIAL ADJUSTED FOR SHRINKAGE		EMBANKMENT		EARTHWORK BALANCE WASTE (+) OR SHORTAGE (-)	
	CUBIC YARD		CUBIC YARD		CUBIC YARD		CUBIC YARD		CUBIC YARD		CUBIC YARD	
STA 0+00 TO 4+65.2	111.2		0.0		0.0		83.4		286.6		-203.2	
STA 4+69.2 TO 5+30.8	0.0		270.6		135.3		101.5		0.0		101.5	
STA 5+30.8 TO 10+00	623.1		0.0		0.0		467.3		496.6		-23.3	
	0.0		0.0		0.0		0.0		0.0		0.0	
TOTAL	734.3		270.6		135.3		652.2		783.2		-131.0	



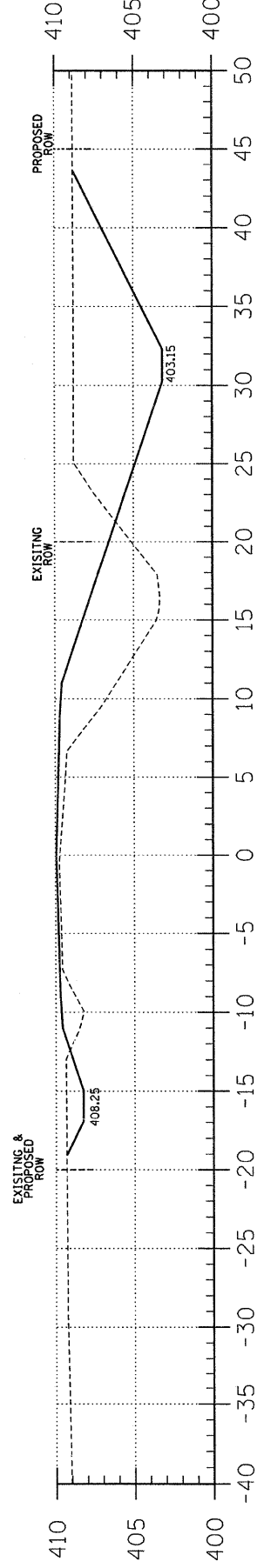
10+00



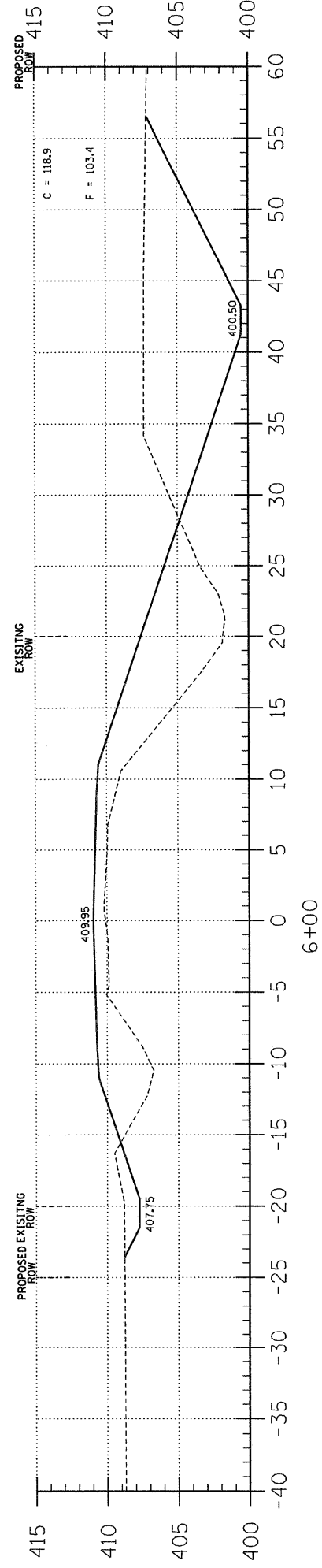
9+00



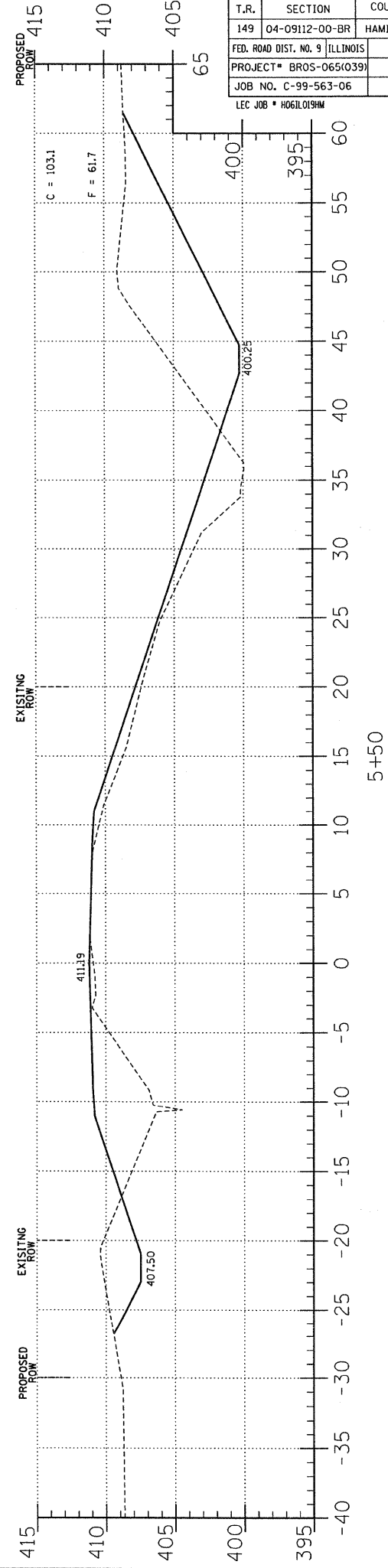
8+00



7+00



6+00



5+50

T.R.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
149	04-09112-00-BR	HAMILTON	13	4
FED. ROAD DIST. NO. 9 ILLINOIS		FED. AID PROJECT		
PROJECT* BR05-065(039)		CONTRACT# 99301		
JOB NO. C-99-563-06		BIG CREEK TRIB		
LEC JOB # H0610194M				

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AARON M. MEFFORD
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SIGNATURE
9-28-07
DATE
11-30-09
EXPIRES

TOWNSHIP ROUTE 149
OVER BIG CREEK TRIBUTARY
HAMILTON COUNTY, ILLINOIS

SHEET TITLE:

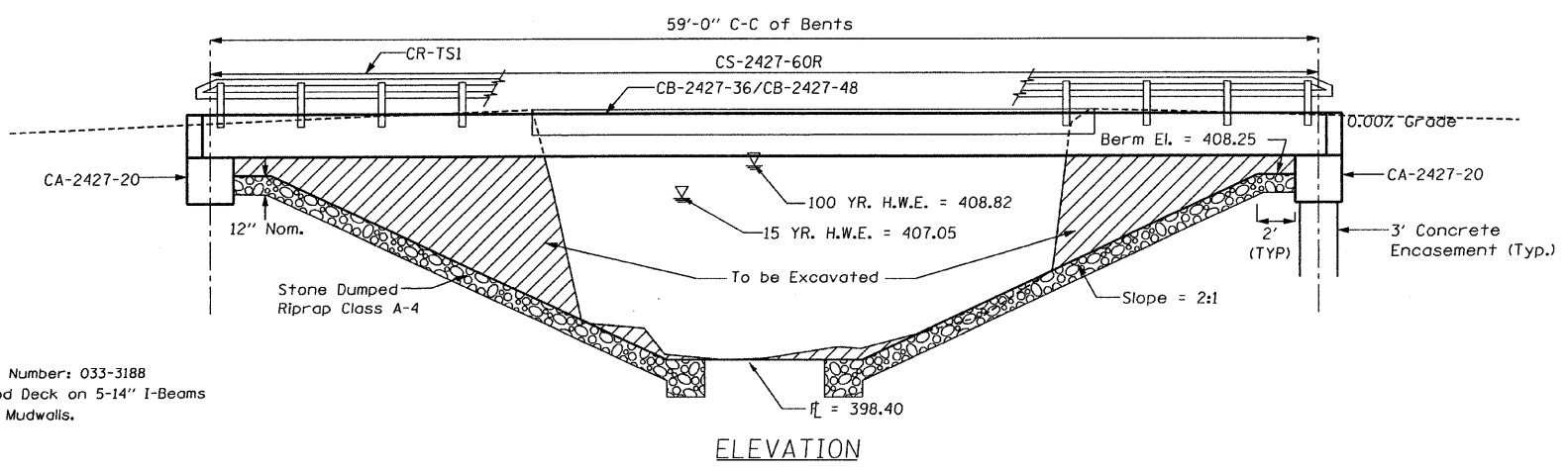
CROSS-SECTIONS

SCALE:	1" = 5'
BY:	AMM
DATE:	02/07
REV:	MLG

4 OF 13
SHEETS

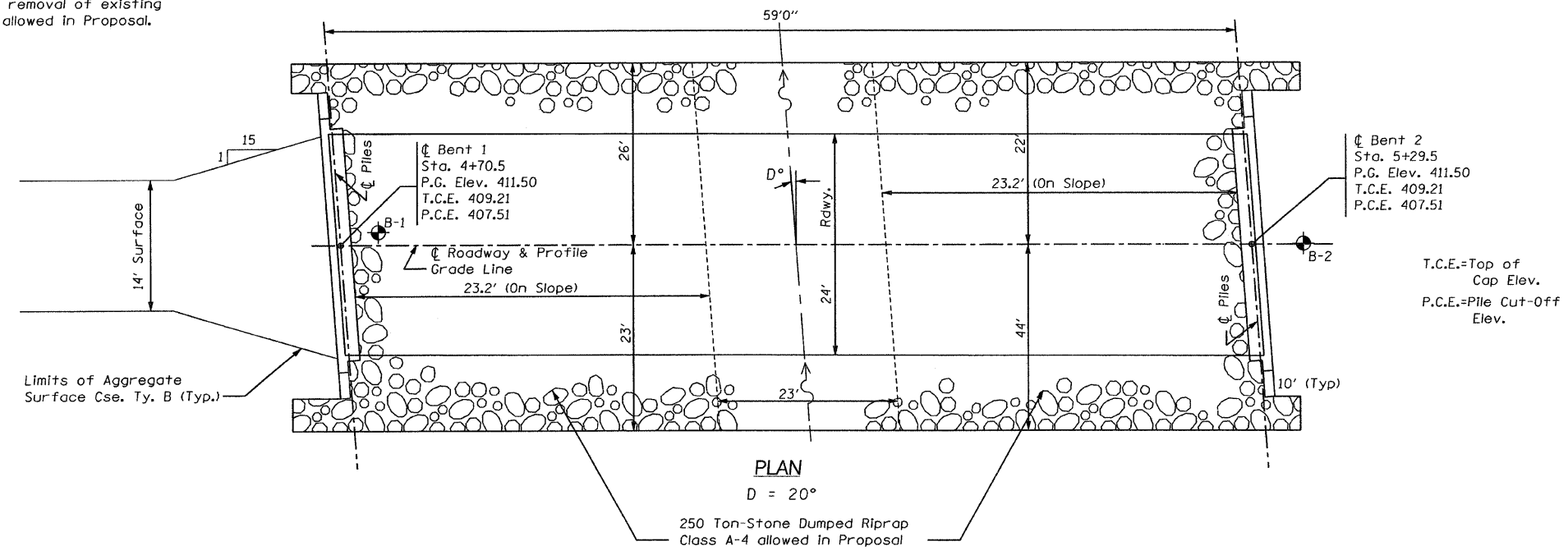
SHEET NO.
4

B.M.: I.P. ±0+55.13, 26.79' RT.
Elev. = 417.54



Existing Bridge Sta 5+00; Structure Number: 033-3188
A 28' Single Span Bridge with 2" Wood Deck on 5-14" I-Beams on 5 Wooden Piling with 2"x12" Wood Mudwalls.

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



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

NOTE: The Article or Section Numbers Referencing the Standard Specifications for Road and Bridge Construction as shown on the Standard Bridge Plan Sheets included with the contract plans should be interpreted as referring to the current edition of the Standard Specification (Adopted January 1, 2007) as shown in the "Article/Section No. Reference Table."

Previous No.	Current No.
504.06	504.06
505.04	505.04
1006.05	1006.05
1006.32	1006.32
1060.07	1060.07
STD 631026	STD 631026

WEST ABUT. PILE DATA

Type:	Steel Piles HP10X42
Nominal Required Bearing:	258 Kips
Allowable Resistance Available:	86 Kips
Estimated Length:	27 Feet/Pile
Number Required:	4

EAST ABUT. PILE DATA

Type:	Steel Piles HP10X42
Nominal Required Bearing:	258 Kips
Allowable Resistance Available:	86 Kips
Estimated Length:	29 Feet/Pile
Number Required:	3 (Includes 1 Test Pile)

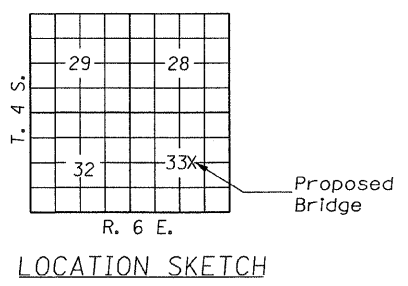
DESIGN SPECIFICATIONS
2002 AASHTO
HS 20-44 Loading, Load Factor Design

STATION 5+00
BIG CREEK TRIBUTARY
SEC. 04-09112-00-BR BUILT 20
PROJECT NO. BROS-065(039)
HAMILTON COUNTY
LOADING HS 20-44
STR. NO. 033-3305

LETTERING FOR NAME PLATE
Locate Name Plate at the Southwest Corner of the Bridge (See Sd. CN)

WATERWAY INFORMATION
Drainage Area = 2.9 Sq. Mi. Low Grade Elev. = 409.89 At Sta. 7+25

Flood	Freq. Yr.	0 C.F.S.	Opening Sq.Ft.		Natural H.W.E.	Head-Ft.		Headwater El.	
			Exist.	Prop.		Exist.	Prop.	Exist.	Prop.
Design	15	1009	201	256	407.05		0.19		407.24
Base	100	1578	239	353	408.82	0.55	0.48	409.37	409.3
Max. Calc.	500	2034							

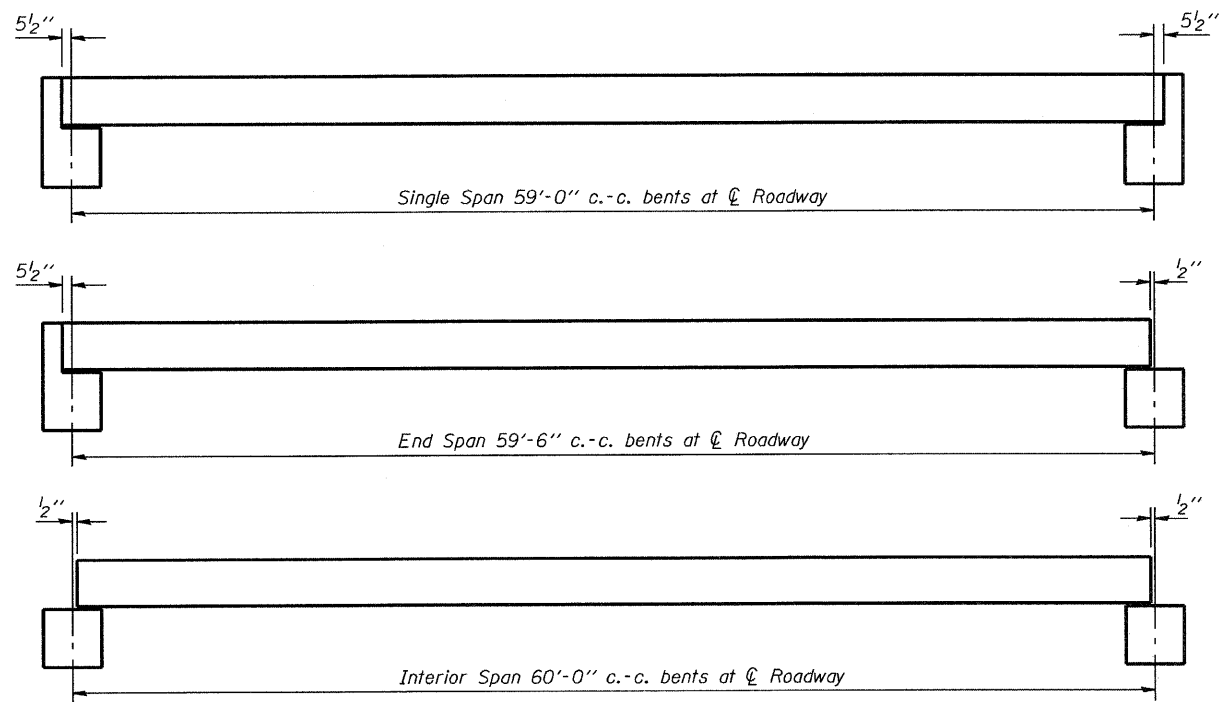


GENERAL NOTES

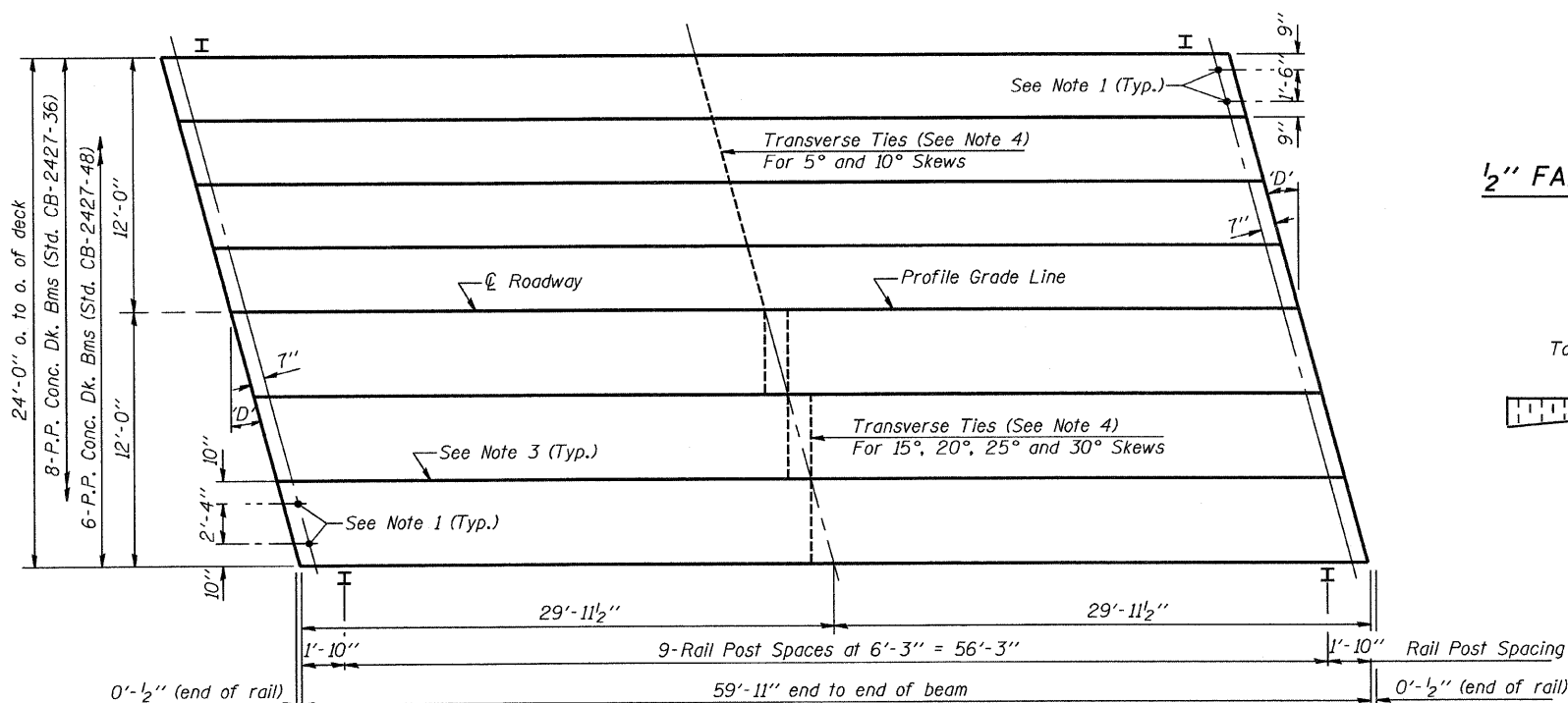
- The Contractor shall drive one test pile, as specified, in a permanent location as directed by the Engineer before ordering the remaining piles.
- See Special Provisions for boring logs.
- A Corrosion Inhibitor, as covered in the Special Provisions, shall be used in the concrete for Precast Prestressed Concrete Deck Beams.
- The Bit. Conc. Surf. Cse. Superpave and the Waterproofing Membrane System shown in these Plans shall not be provided.
- The Steel H-Piles shall be according to AASHTO M270 Grade 50.
- All HP piles shall be oriented with the strong axis along the centerline of the abutment.

Item	Unit	Super	Sub.		Total
			Piers	Abuts.	
Removal of Existing Structures	L Sum				1
Bit. Conc. Surf. Cse. Superpave	Tons				
Waterproofing Membrane System	Sq.Yds.				
Concrete Structures	Cu.Yds.			19.4	19.4
P.P. Conc. Dk. Bm. 27" Dp.	Sq.Ft.	1440			1440
Steel Railing, Type S1	Lin.Ft.	120			120
Reinforcement Bars	Lbs.			2440	2440
Furnishing Steel Piles HP10X42	Lin.Ft.			195	195
Driving Piles	Lin.Ft.			195	195
Test Pile Steel HP10X42	Each			1	1
Name Plates	Each			1	1
Concrete Encasement	Cu.Yds.			2.1	2.1

NOTE: See sheet two (2) of these plans for the Schedules of Traffic Barriers and Curled End Sections required on this Section.



TYPICAL ELEVATIONS

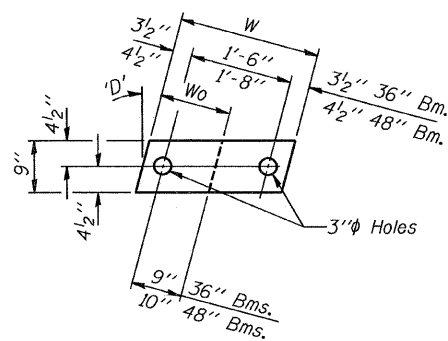
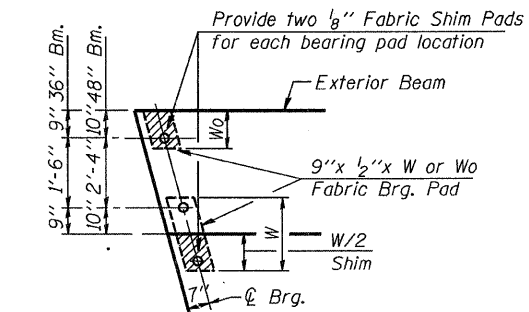


PLAN

('D' = Designated Skew Angle)

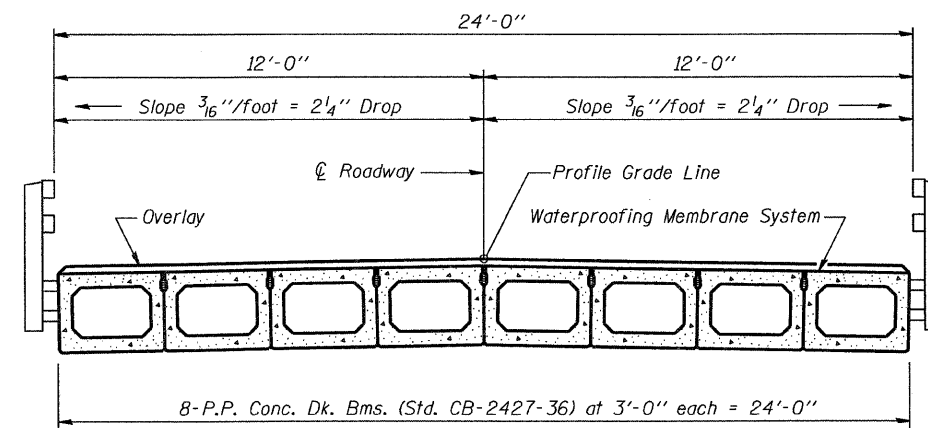
NOTES

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 centerline 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.

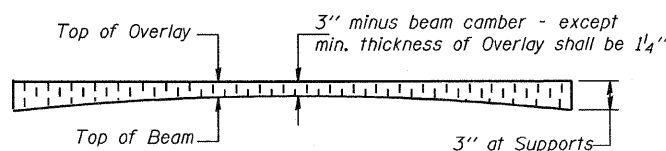
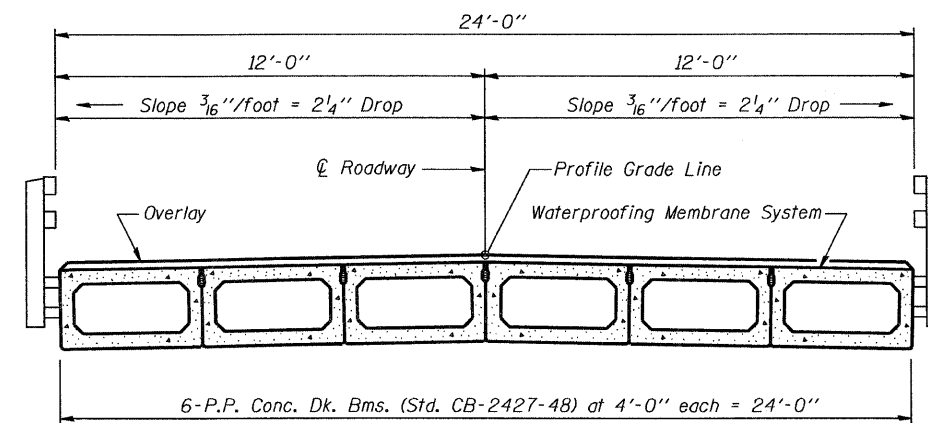


Beam	W	Wo
36"	2'-1"	1'-0 1/2"
48"	2'-5"	1'-2 1/2"

1/2" FABRIC BRG. PAD DETAILS



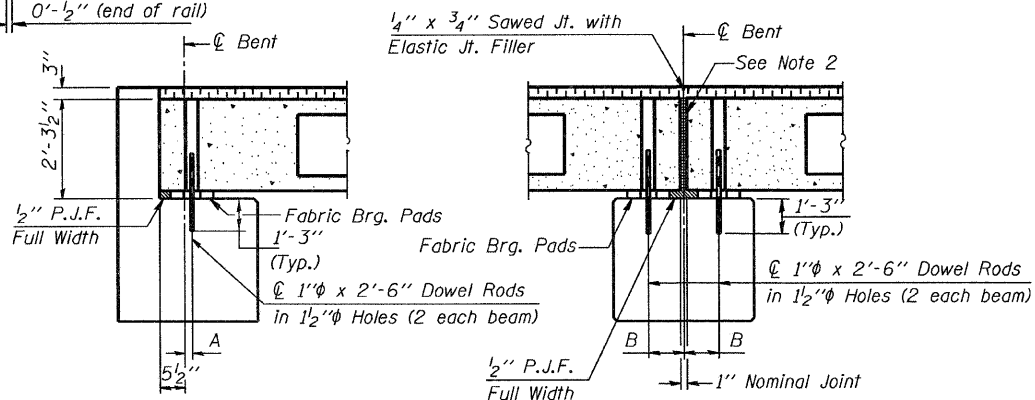
CROSS SECTION



PROFILE OF OVERLAY

DIMENSIONS 'A' AND 'B'

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



SECTION AT ABUTS.
(Along centerline Beams)

SECTION AT PIERS
(Along centerline Beams)

QUANTITIES FOR ONE SPAN

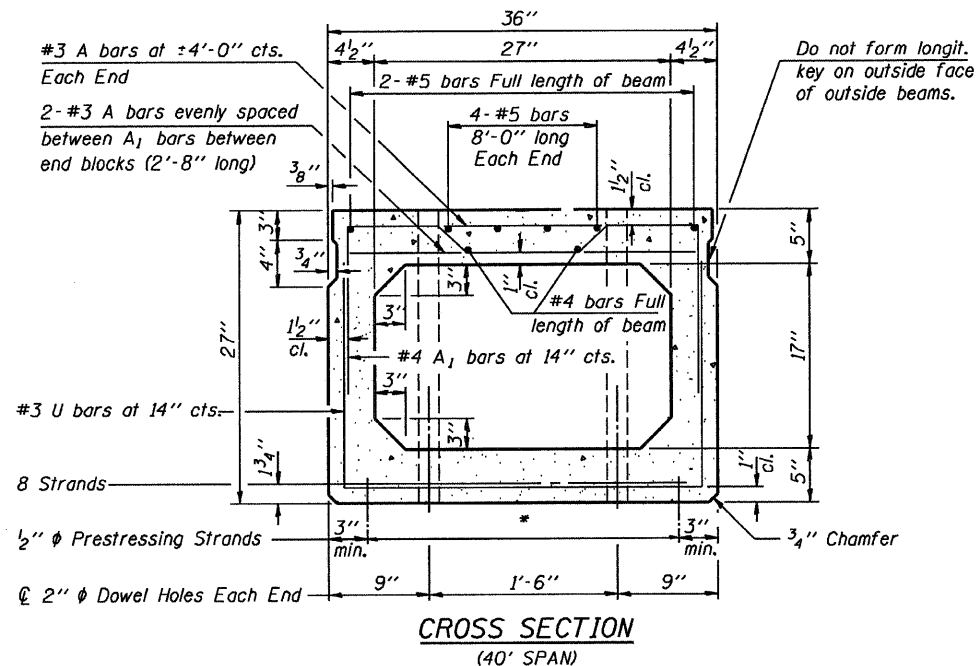
P.P. Conc. Dk. Bm. 27" Dp.	1440 Sq. Ft.
Steel Railing	120 Ft.
Waterproofing Membrane System	160.0 Sq. Yrds.
Portland Cement Mortar	420 Ft. 36"
Fairing Course	300 Ft. 48"

Note: Quantity of overlay for one span = 18.0 Tons

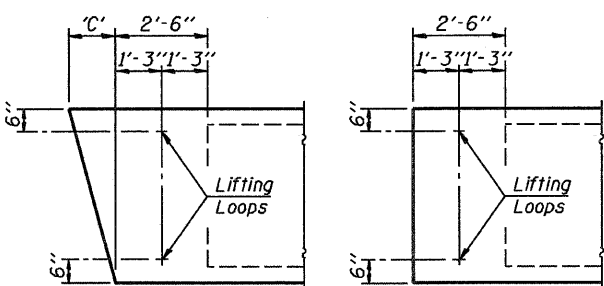
P.P.C. DECK BEAM
SUPERSTRUCTURE

24' RDWY.	27" BMS.	60' SPAN	RIGHT
STANDARD CS-2427-60R			

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

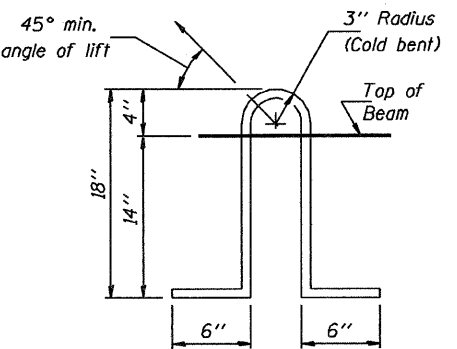


CROSS SECTION
(40' SPAN)



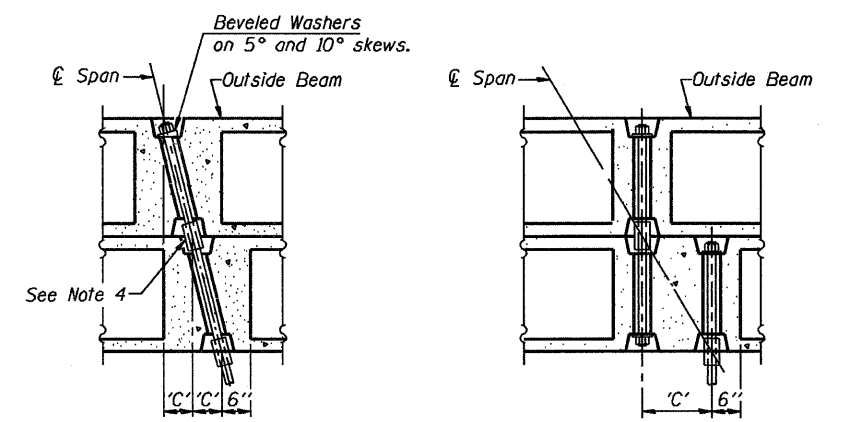
END BLOCK DETAILS

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 inch diameter -270 ksi strands, as shown. Alternate approved lifting devices are also acceptable.



PARTIAL PLAN TRANSVERSE TIE ASSEMBLY
(D=0°, 5° and 10°) **PARTIAL PLAN TRANSVERSE TIE ASSEMBLY**
(D=15°, 20°, 25° and 30°)

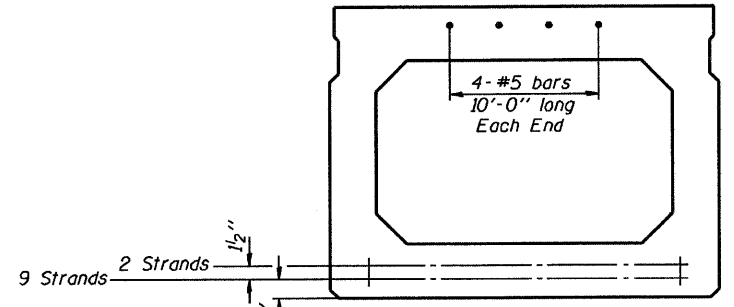
DIMENSION 'C'

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

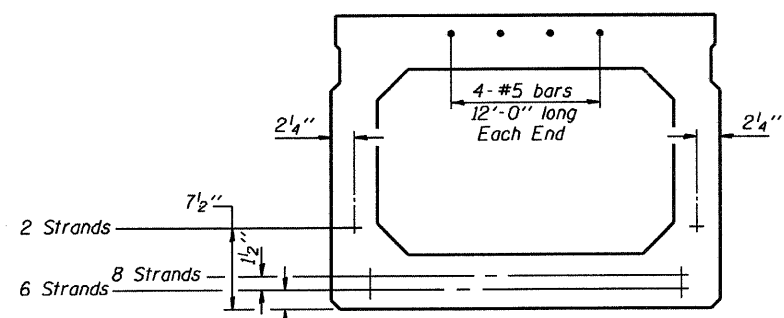
*** TRANSVERSE STRAND PLACEMENT GUIDELINES**

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

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



CROSS SECTION
(50' SPAN)

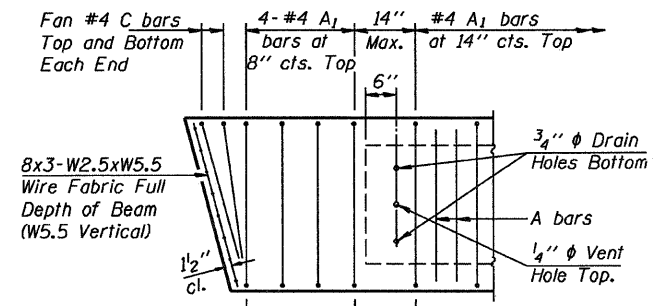


CROSS SECTION
(60' SPAN)

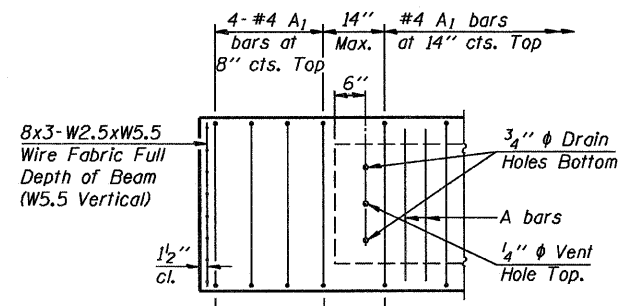
*** TRANSVERSE STRAND PLACEMENT GUIDELINES**

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

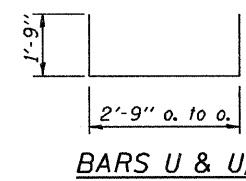
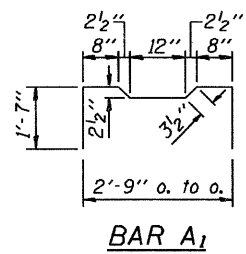
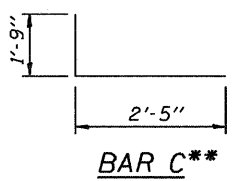
Vertical placement of strands shall not be adjusted to satisfy the above guidelines.



END REINFORCEMENT
(SKEWED)



END REINFORCEMENT
(RIGHT ANGLE)

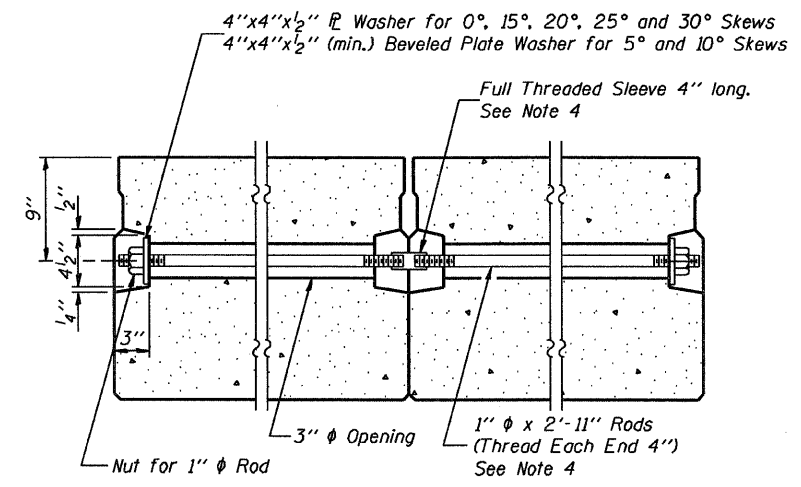


DESIGN STRESSES

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



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

NOTES

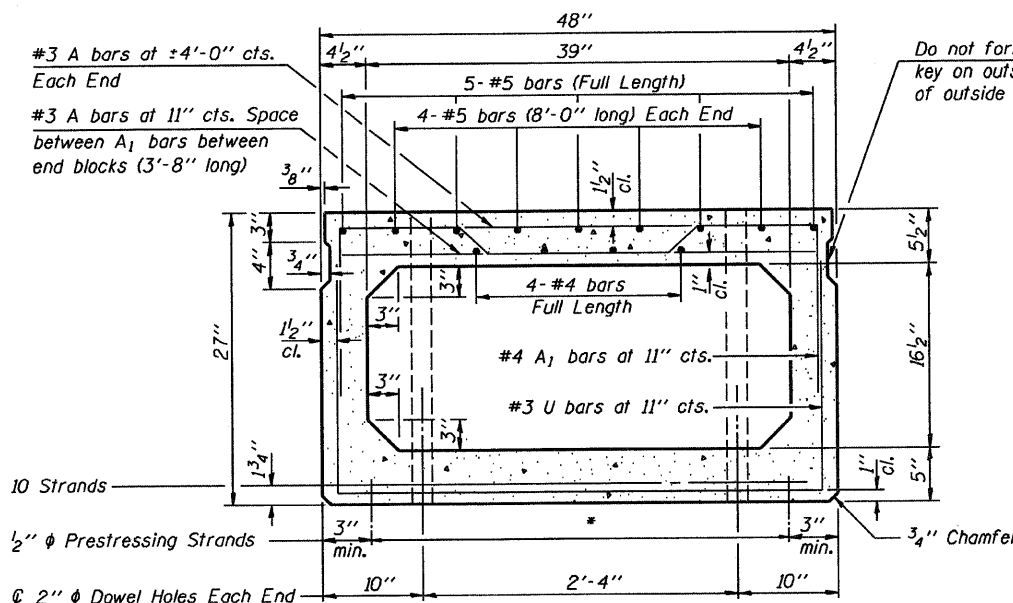
1. Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270.
2. The nominal diameter shall be 1/2" and the nominal cross-sectional area shall be 0.153 square inches.
3. Reinforcement bars shall conform to the requirements of AASHTO M-31 or M-322, Grade 60.
4. On 0°, 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.

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

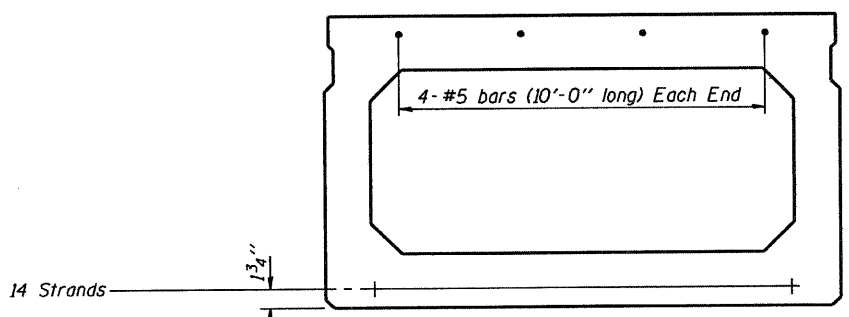
****NOTE:**
The following number of C bars shall be used:
Skew No.
5° and 10° — 1
15° and 20° — 2
25° and 30° — 3

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

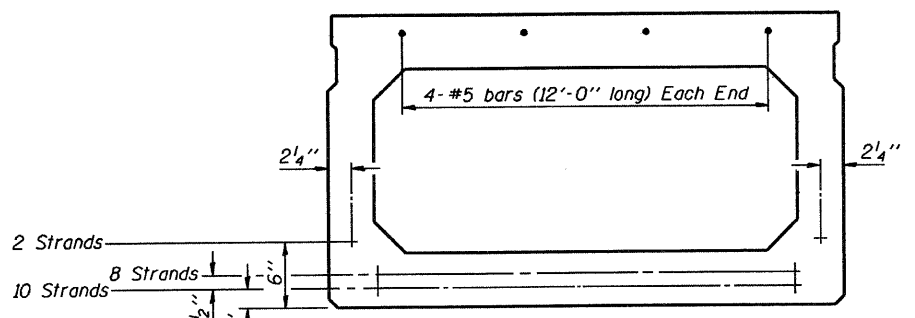
P.P.C. DECK BEAM DETAILS
24' ROADWAY 27" x 36" BEAMS
STANDARD CB-2427-36



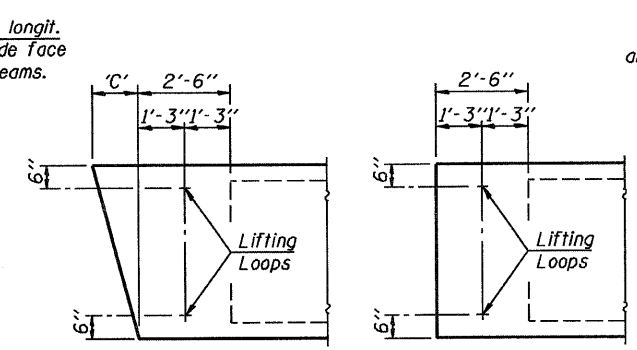
CROSS SECTION
(40' SPAN)



CROSS SECTION
(50' SPAN)

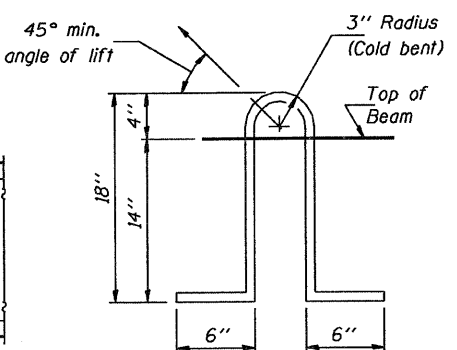


CROSS SECTION
(60' SPAN)



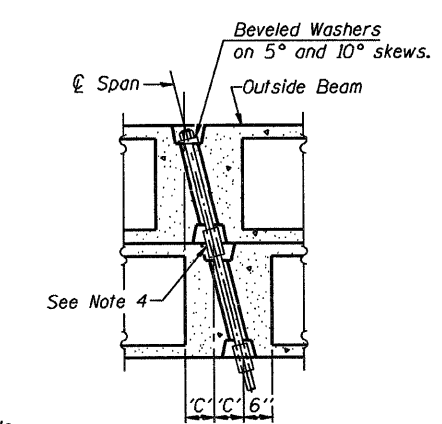
END BLOCK DETAILS

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

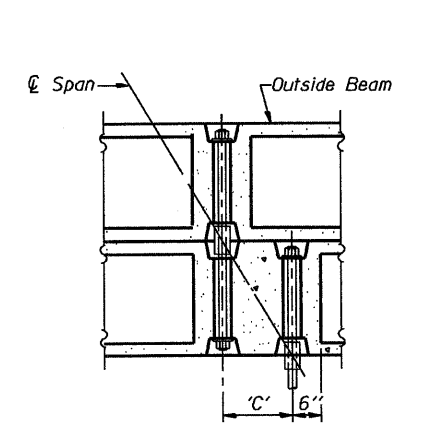


LIFTING LOOP DETAIL

Lifting loops shall be 3, 1/2 inch diameter 270 ksi strands, as shown. Alternate approved lifting devices are also acceptable.



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



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

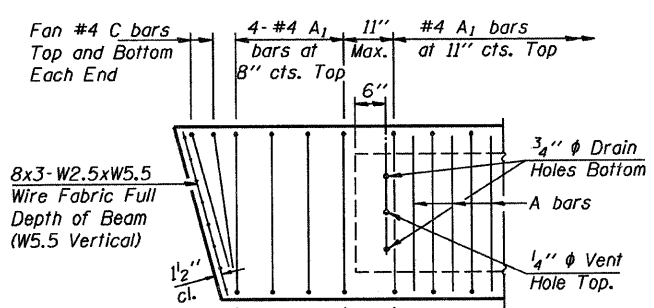
DIMENSION 'C'

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

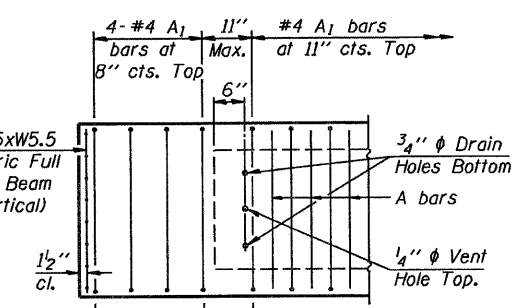
*** TRANSVERSE STRAND PLACEMENT GUIDELINES**

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

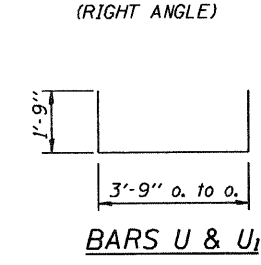
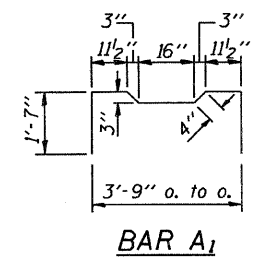
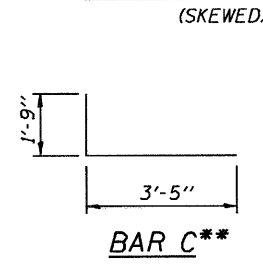
Vertical placement of strands shall not be adjusted to satisfy the above guidelines.



END REINFORCEMENT
(SKEWED)



END REINFORCEMENT
(RIGHT ANGLE)

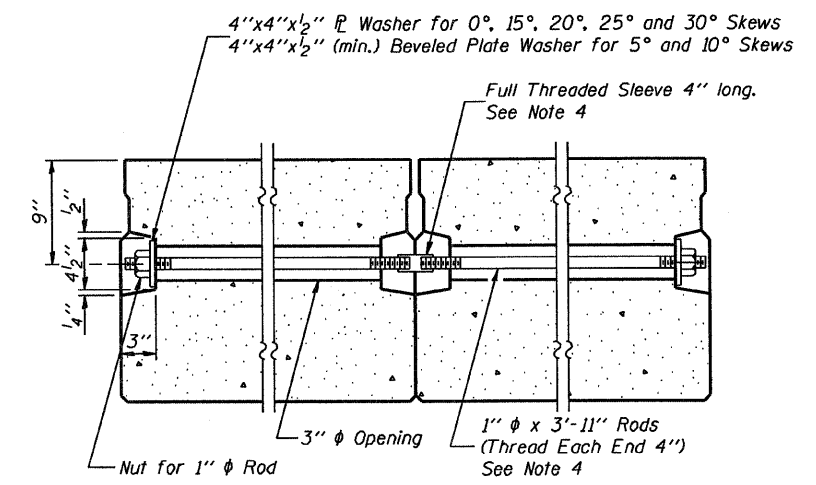


DESIGN STRESSES

- $f_c = 5,000$ p.s.i.
- $f_{ci} = 4,000$ p.s.i.
- $f_s = 270,000$ p.s.i. (1/2 inch diameter Strand)
- $f_{sl} = 201,960$ p.s.i. (1/2 inch diameter 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

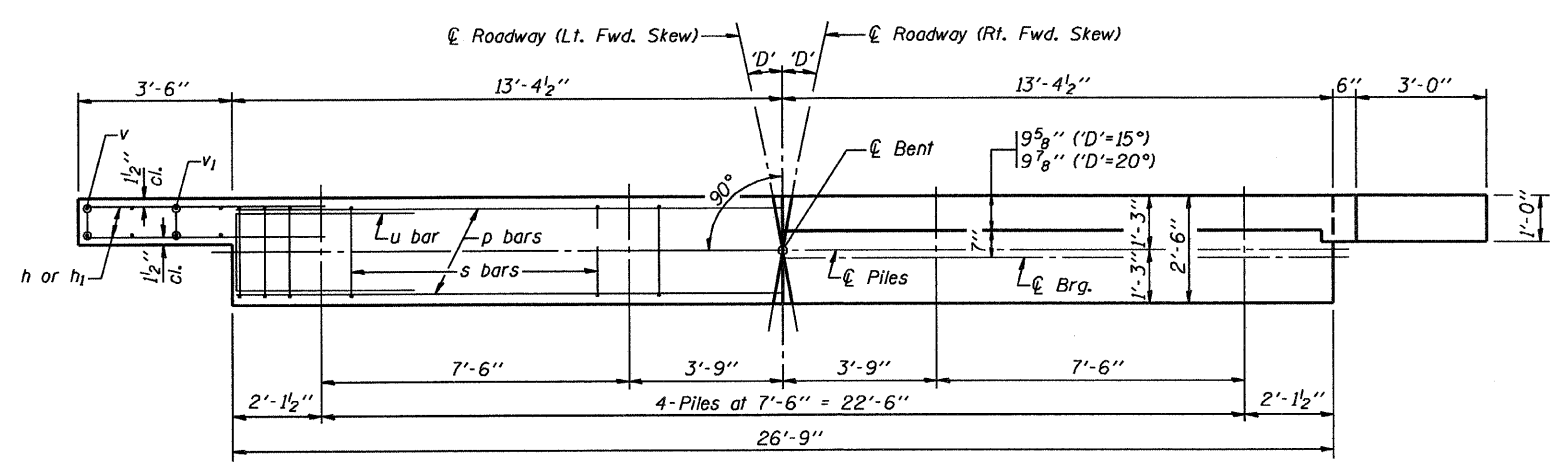
1. Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270.
2. The nominal diameter shall be 1/2 inch and the nominal cross-sectional area shall be 0.153 square inches.
3. Reinforcement bars shall conform to the requirements of AASHTO M-31 or M-322, Grade 60.
4. On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

Illinois Department of Transportation
PASSED APRIL 4, 2005
Thomas S. Nemagalski
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APPROVED APRIL 4, 2005
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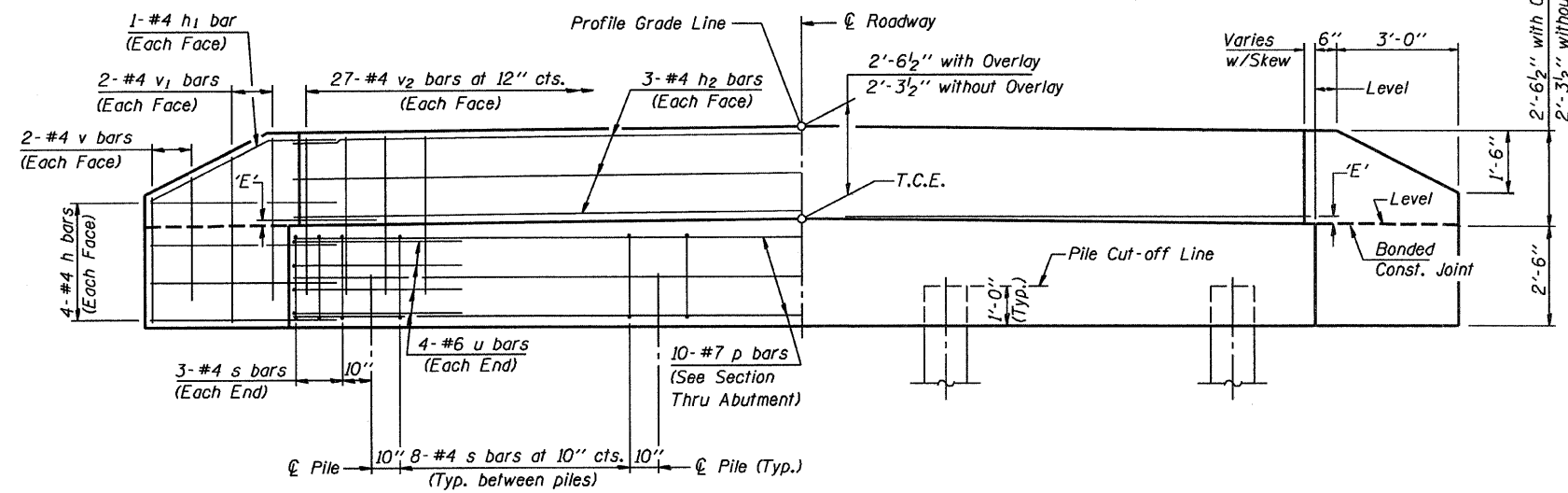
NOTE
The std. reinf. and dimensions shown on the 40' span cross section is typical for all spans, except as shown.

****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



PLAN
(D'=Designated Skew Angle)



ELEVATION

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

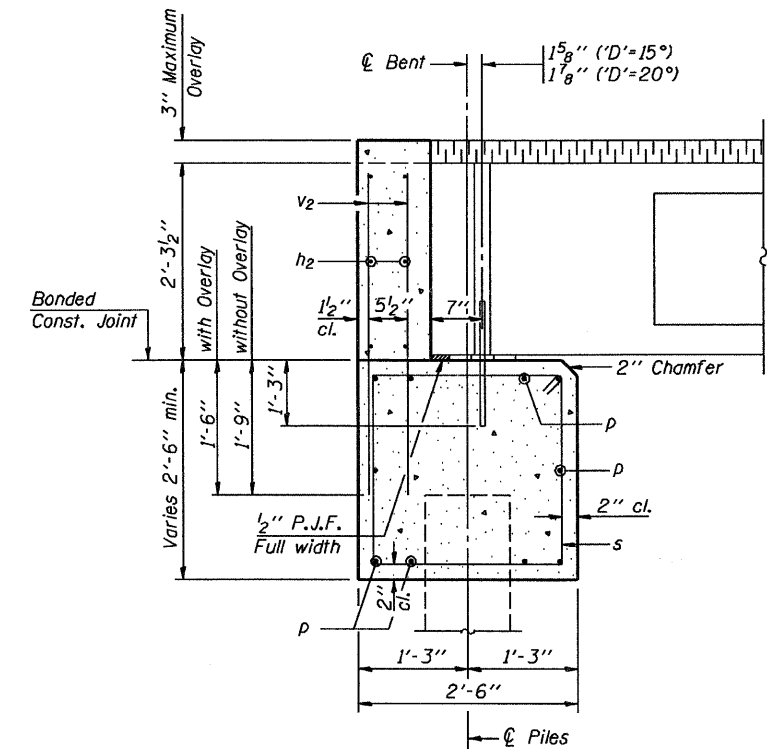
- The Backwall and the portion of the Wingwalls above the bonded construction joint shall be cast against the in-place beam.
- Reinforcement bars shall conform to the requirements of A.A.S.H.T.O. M-31 or M-322, Grade 60.
- Space reinforcement in cap to miss anchor bolts.

MAXIMUM PILE LOADS

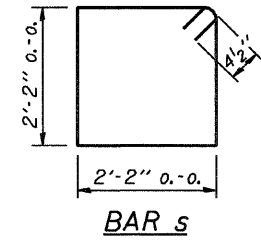
SPAN	TONS
40'	34
50'	38
60'	43

DESIGN STRESSES

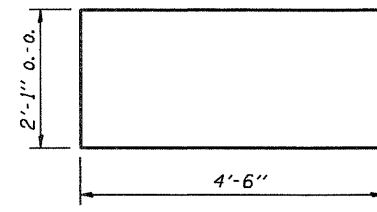
f'c = 3,500 psi
fy = 60,000 psi



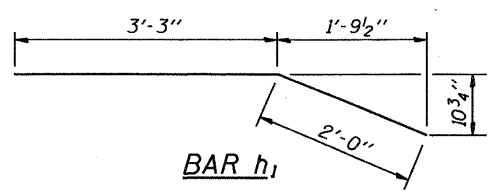
SECTION THRU ABUTMENT
(At Right Angles)



BAR s



BAR u



BAR h1

BILL OF MATERIAL FOR ONE ABUTMENT

Bar	No.	Size	Length	Shape
h	16	#4	5'-0"	—
h1	4	#4	5'-3"	—
h2	6	#4	26'-5"	—
p	10	#7	26'-5"	—
s	30	#4	9'-5"	□
u	8	#6	11'-1"	□
v	8	#4	3'-2"	—
v1	8	#4	4'-2"	—
v2	54	#4	3'-11"	—
Concrete Structures			9.7 Cu. Yds.	
Reinforcement Bars			1220 Lb.	

P.P.C. DECK BEAMS PILE BENT ABUTMENT		
24' RDWY.	27" BMS.	'D'=15° OR 20°
STANDARD CA-2427-20		

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

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.

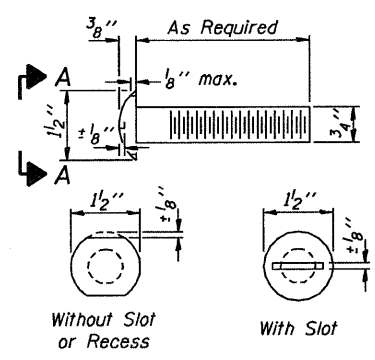
For multi-span bridges, sufficient 1/4" x 6" x 1'-2" galvanized steel shims shall be provided to align rail between adjacent spans. Cost included with STEEL RAILING, TYPE S-1.

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

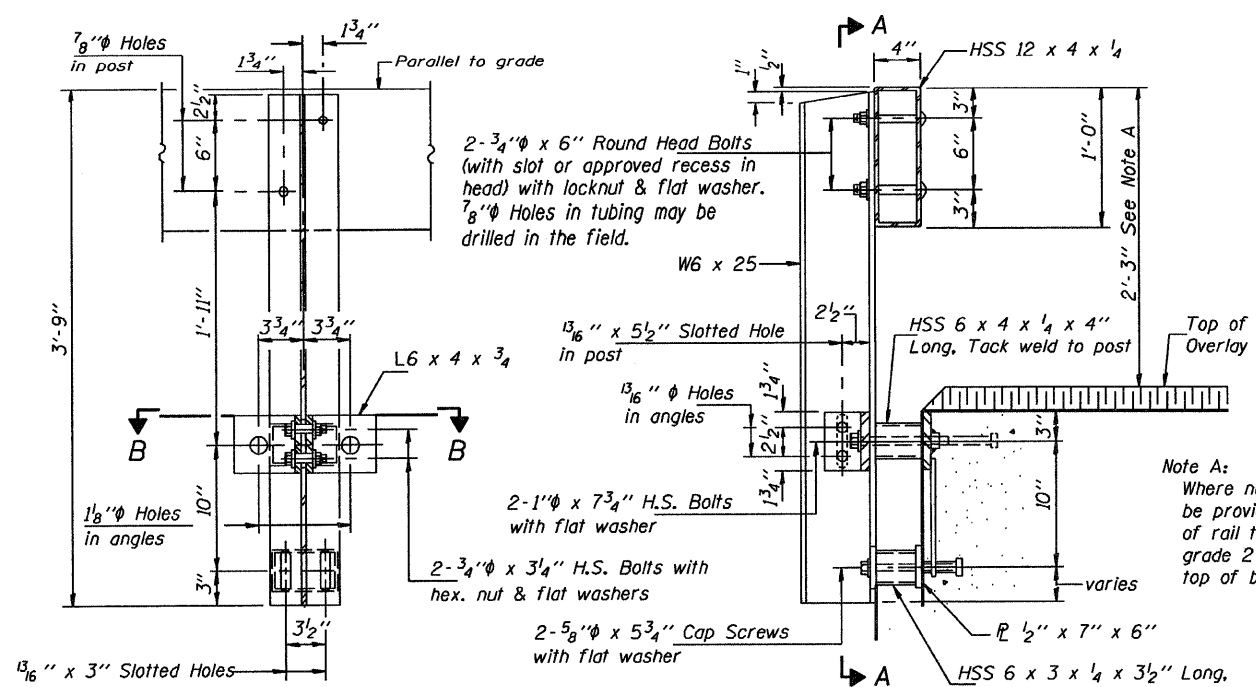
The 1/2" x 7" x 6" plates that come in contact with concrete shall either receive two coats of asphalt paint conforming to Section 1060.07 Type II, or 1/8" fabric bearing pads shall be placed between the plates and concrete.

The 3/4" 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.

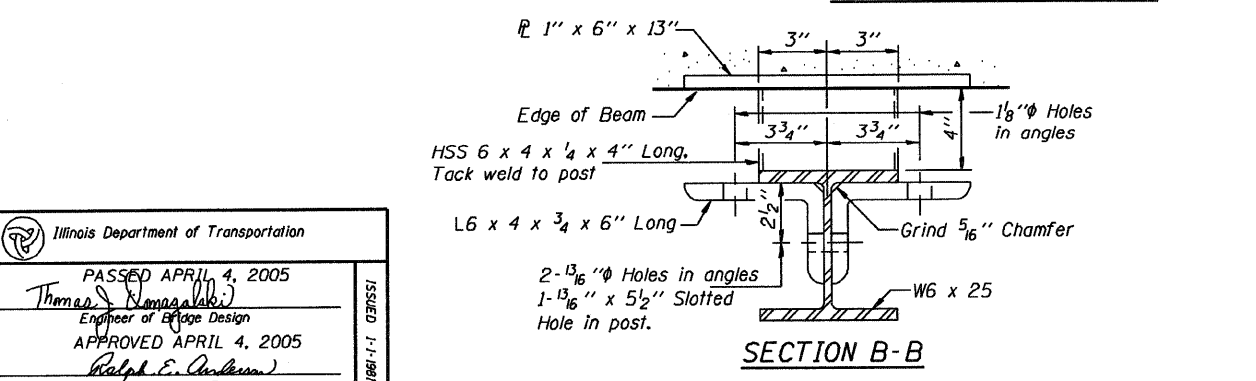


VIEW A-A
ROUND HEAD BOLT



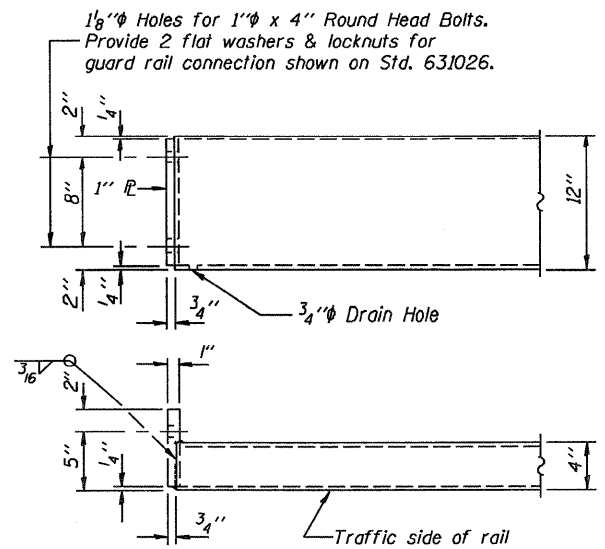
SECTION A-A

SECTION AT RAIL POST

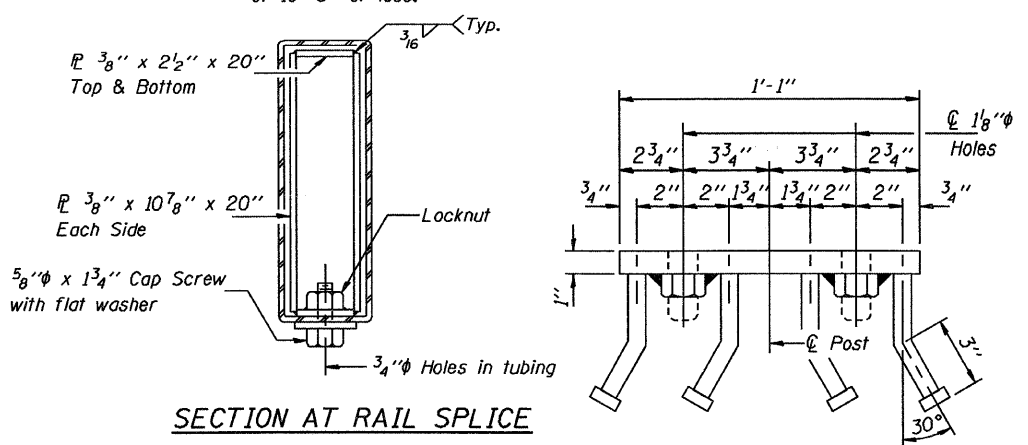


SECTION B-B

ANCHOR DEVICE

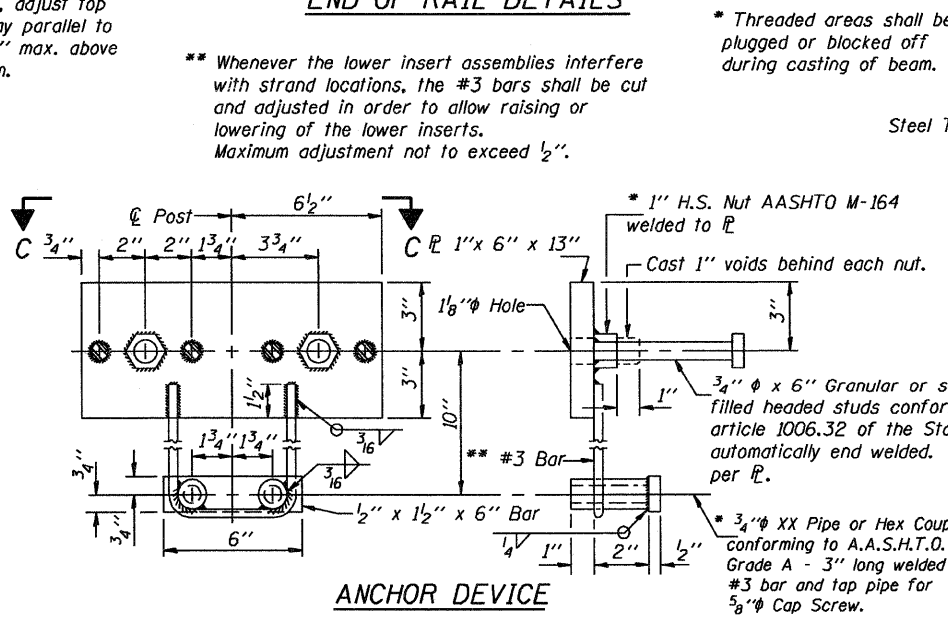


END OF RAIL DETAILS



SECTION AT RAIL SPLICE

VIEW C-C



PLAN-BOTT. SPLICE TYPICAL

1/4" SHIM PLATE

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.

** 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".

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

* 1" H.S. Nut AASHTO M-164 welded to PL

* Cast 1" voids behind each nut.

* 3/4" XX Pipe or Hex Coupler Nuts conforming to A.A.S.H.T.O. M291, Grade A - 3" long welded to #3 bar and top pipe for 5/8" Cap Screw.

Illinois Department of Transportation

PASSED APRIL 4, 2005

Theresa J. Romagosa

Engineer of Bridge Design

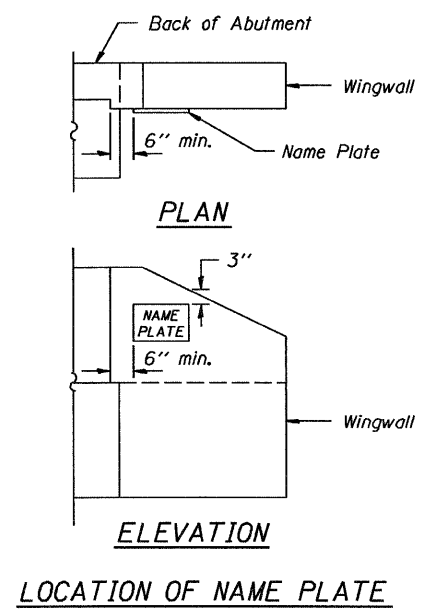
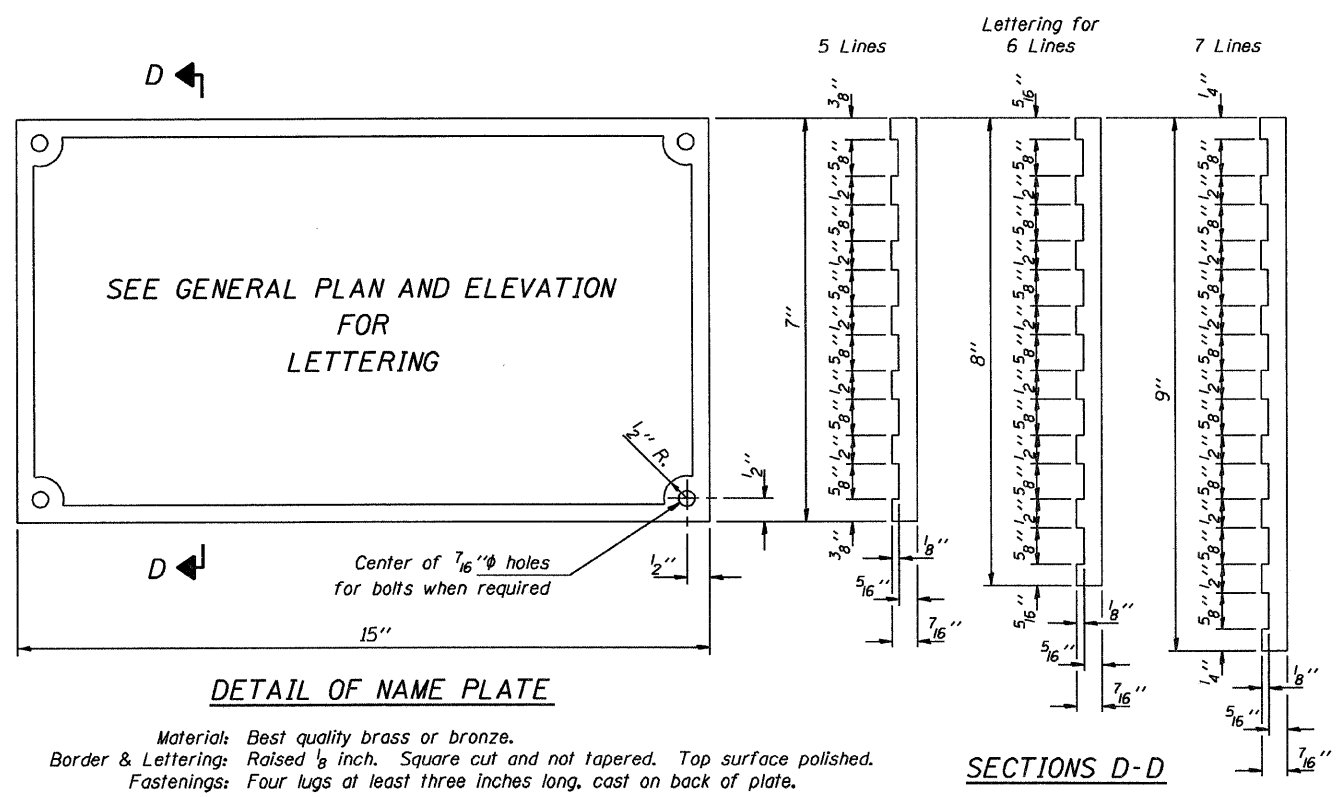
APPROVED APRIL 4, 2005

Ralph E. Anderson

Engineer of Bridges and Structures

STEEL RAILING, TYPE S-1

STANDARD CR-TS1



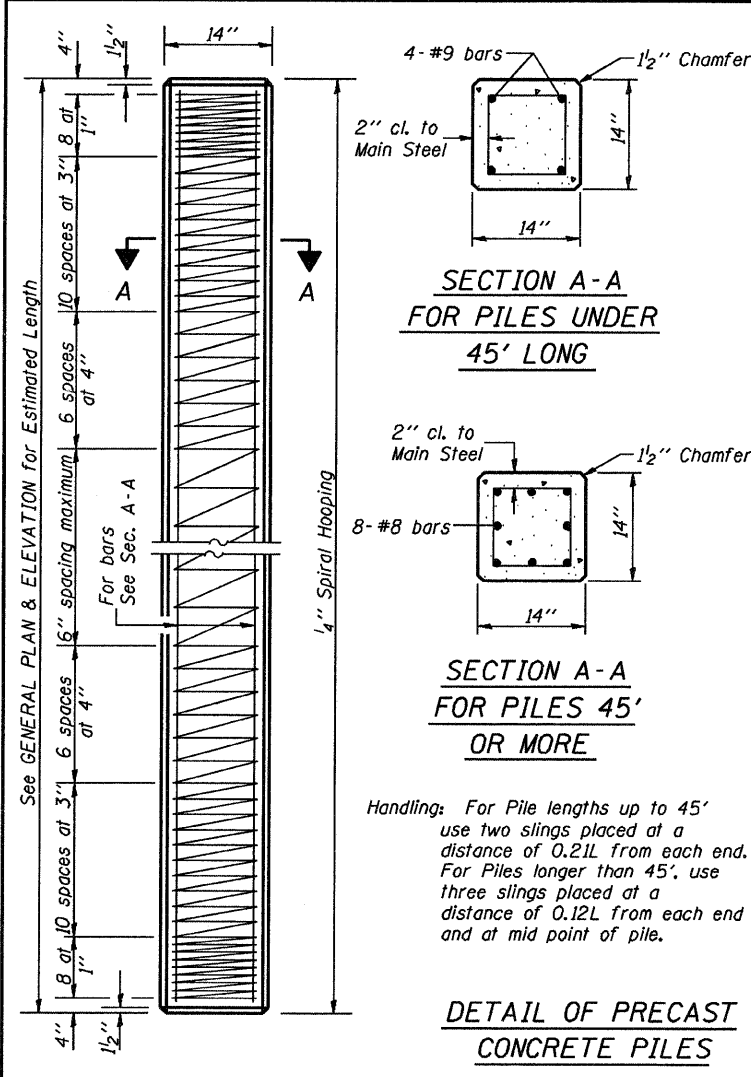
Illinois Department of Transportation

PASSED APRIL 4, 2005
Thomas J. Romagosa
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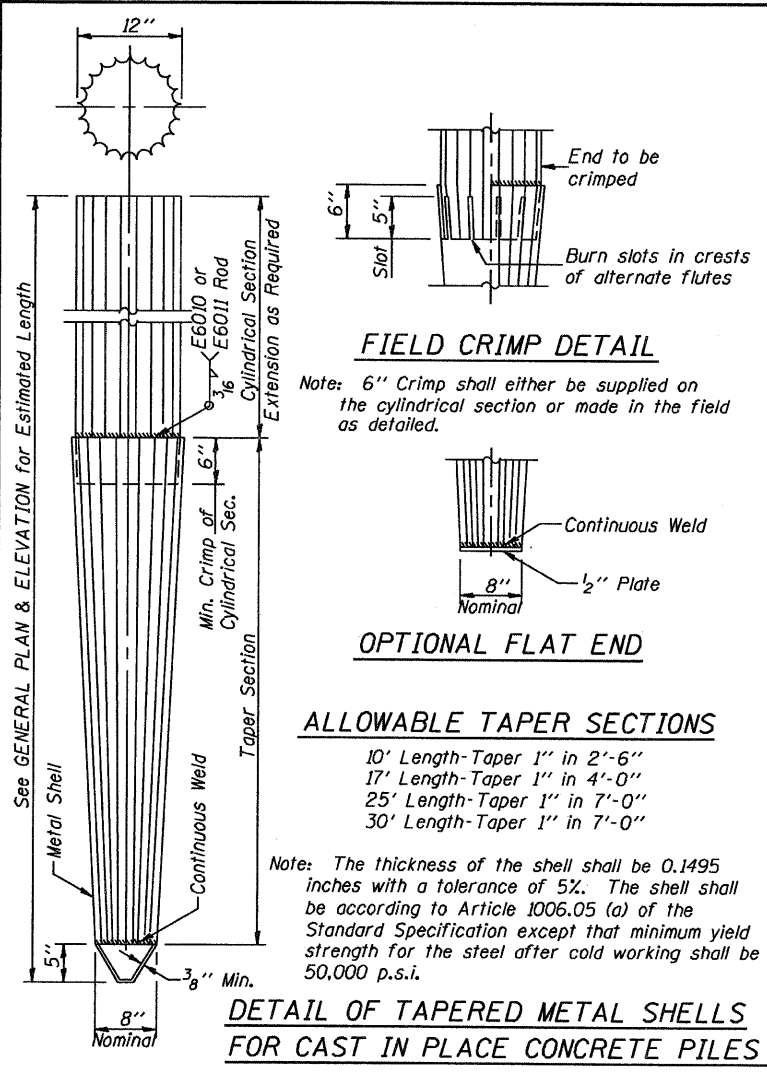
APPROVED APRIL 4, 2005
Ralph E. Anderson
 Engineer of Bridges and Structures

ISSUED 7-1-8895

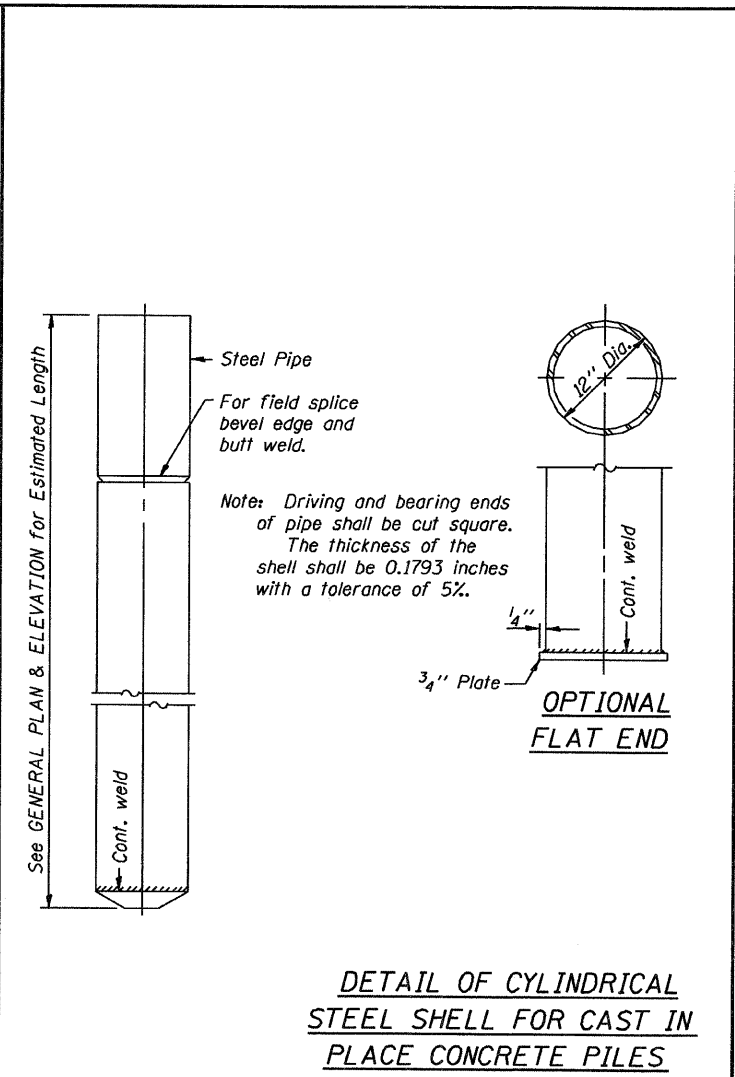
NAME PLATE
 STANDARD CN



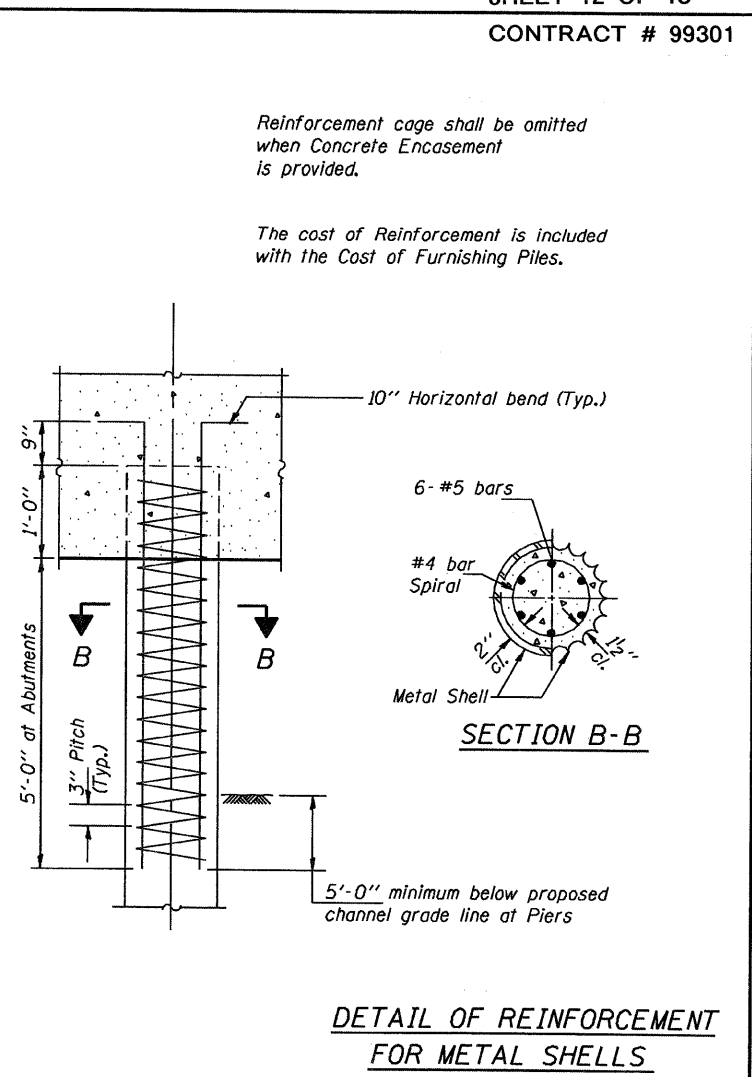
DETAIL OF PRECAST CONCRETE PILES



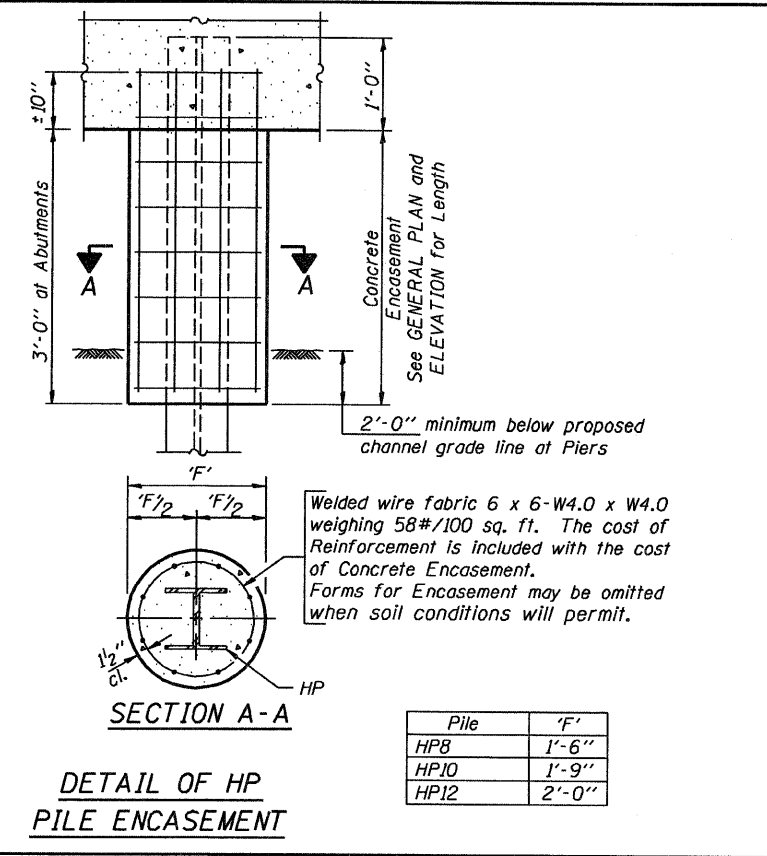
DETAIL OF TAPERED METAL SHELLS FOR CAST IN PLACE CONCRETE PILES



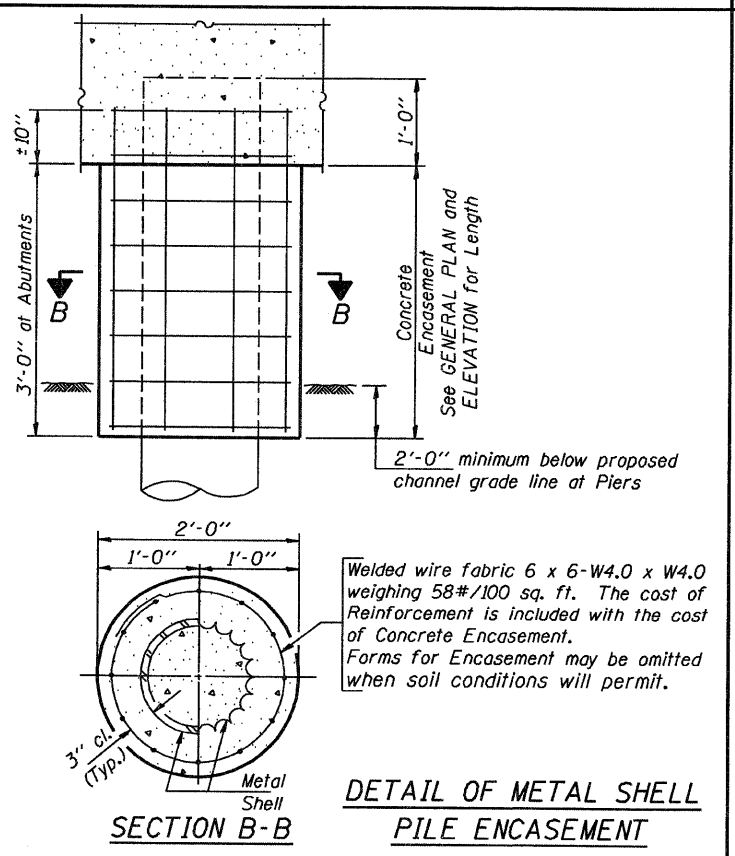
DETAIL OF CYLINDRICAL STEEL SHELL FOR CAST IN PLACE CONCRETE PILES



DETAIL OF REINFORCEMENT FOR METAL SHELLS



DETAIL OF HP PILE ENCASEMENT



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

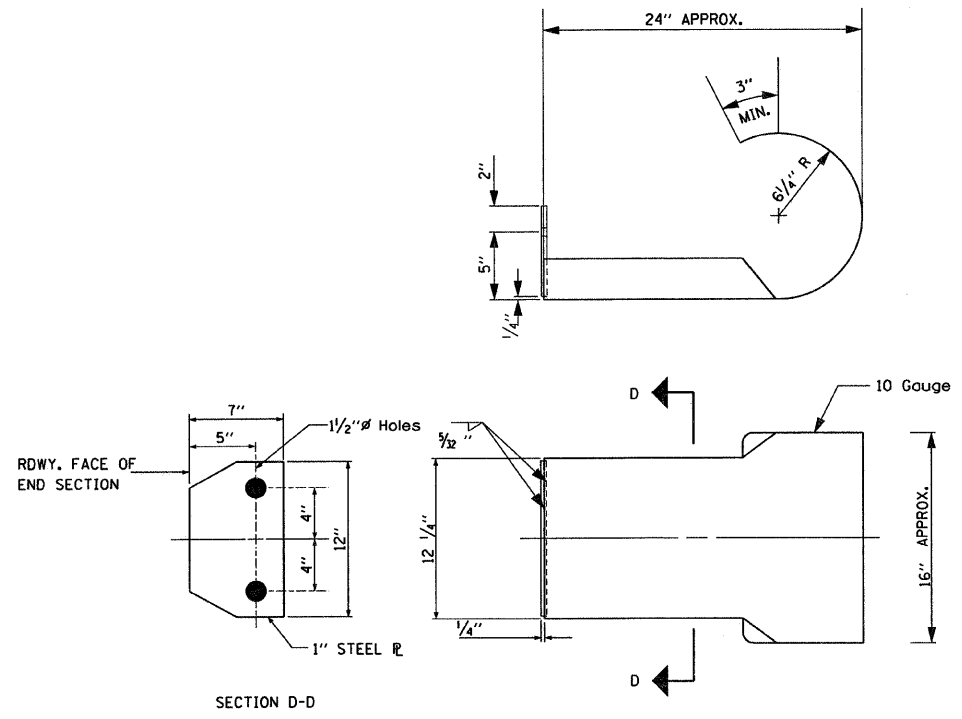
Illinois Department of Transportation

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

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

BBE-H Q3155

CURLED END SECTION DETAIL



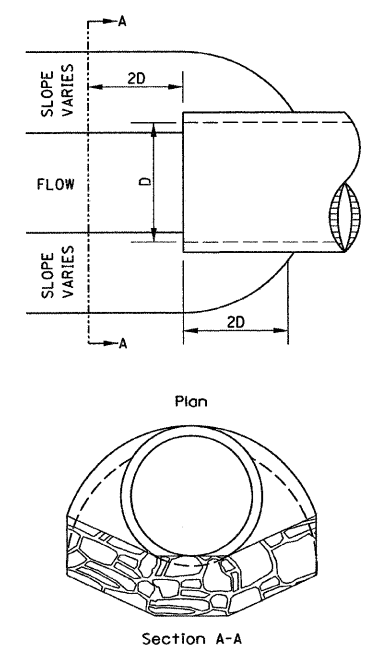
ALL OTHER STEEL SHAPES AND PLATES SHALL CONFORM TO THE REQUIREMENTS OF A.A.S.H.T.O. DESIGNATION M-183 EXCEPT POSTS AND ANGLES SHALL CONFORM TO A.A.S.H.T.O. M-223, GRADE 50.

BOLTS, CAP SCREWS, AND NUTS SHALL CONFORM TO THE REQUIREMENT OF A.S.T.M. DESIGNATION A-307 EXCEPT FOR HIGH STRENGTH BOLTS, NUTS, AND WASHERS NOTED WHICH SHALL CONFORM TO A.A.S.H.T.O. DESIGNATION M-164.

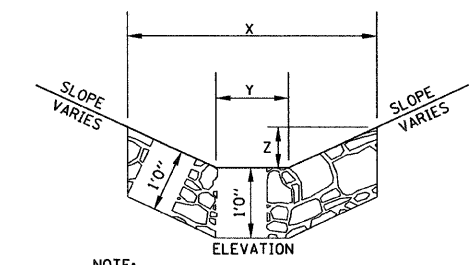
ALL BOLTS, NUTS, CAP SCREWS, WASHERS, AND LOCK WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH A.A.S.H.T.O. DESIGNATION M-232.

ALL FIELD DRILLED HOLES SHALL BE COATED WITH AN APPROVED ZINC RICH PAINT BEFORE ERRECTION.

STONE RIPRAP DITCH DESIGN



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



NOTE:

BOTTOM OF DITCH	SLOPE			
	1 1/2:1	2:1	3:1	
2 FT	X= 5 FT	6 FT	8 FT	
	Y= 2 FT	2 FT	2 FT	
	Z= 1 FT	1 FT	1 FT	
	0.40	0.48	0.62	TON/LIN. FT
<hr/>				
3 FT	X= 6 FT	7 FT	9 FT	
	Y= 3 FT	3 FT	3 FT	
	Z= 1 FT	1 FT	1 FT	
	0.48	0.56	0.70	TON/LIN. FT
<hr/>				
4 FT	X= 7 FT	8 FT	10 FT	
	Y= 4 FT	4 FT	4 FT	
	Z= 1 FT	1 FT	1 FT	
	0.56	0.64	0.78	TON/LIN. FT