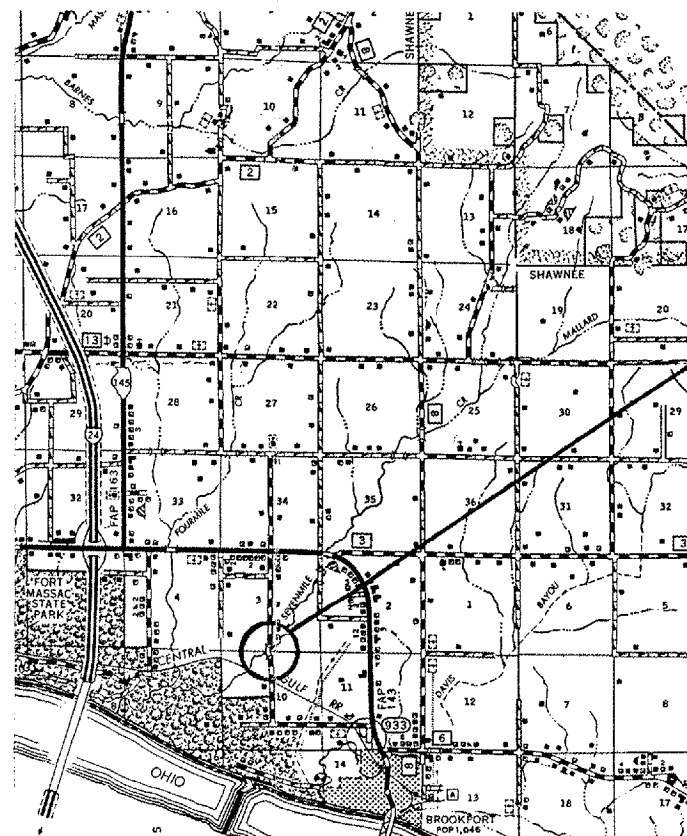


STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
PLANS FOR PROPOSED  
**HIGHWAY BRIDGE PROGRAM**

TOWNSHIP ROUTE 110 (STRAWBERRY ROAD)  
SECTION 83-01171-00-BR  
PROJECT NO. BR-OS-127(12)  
JOB NO. C-99-066-84  
SEVENMILE CREEK

**MASSAC COUNTY**

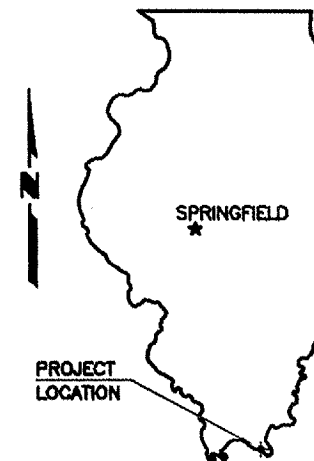


LOCATION MAP

SCALE: 1" = 2 MILES

NET LENGTH OF IMPROVEMENT = 870.00 FT. = 0.1648 MILES

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 110	83-01171-00-BR	MASSAC	15	1
PROJECT NO. BR-OS-127(12)			CONTRACT NO. 99282	



SUMMARY OF QUANTITIES

CODE NO.	PAY ITEM	UNIT	TOTAL
20100110	TREE REMOVAL (6 TO 15 UNITS DIAMETER)	UNIT	62
20100210	TREE REMOVAL (OVER 15 UNITS DIAMETER)	UNIT	322
20101000	TEMPORARY FENCE	FOOT	60
20200100	EARTH EXCAVATION	CU YD	197
20300100	CHANNEL EXCAVATION	CU YD	769
20400100	BORROW EXCAVATION	CU YD	2,388
25000200	SEEDING, CLASS 2	ACRE	0.8
25000400	NITROGEN FERTILIZER NUTRIENT	POUND	72
25000500	PHOSPHORUS FERTILIZER NUTRIENT	POUND	72
25000600	POTASSIUM FERTILIZER NUTRIENT	POUND	72
25000700	AGRICULTURAL GROUND LIMESTONE	TON	4
25100630	EROSION CONTROL BLANKET	SQ YD	3,330
28000250	TEMPORARY EROSION CONTROL SEEDING	POUND	70
28000300	TEMPORARY DITCH CHECKS	EACH	6
28000400	PERIMETER EROSION BARRIER	FOOT	560
28000500	INLET AND PIPE PROTECTION	EACH	2
28100807	STONE DUMPED RIPRAP, CLASS A4	TON	205
40200800	AGGREGATE SURFACE COURSE, TYPE B	TON	780
50100100	REMOVAL OF EXISTING STRUCTURES	EACH	1
50200100	STRUCTURE EXCAVATION	CU YD	7
50300225	CONCRETE STRUCTURES	CU YD	37.6
50300280	CONCRETE ENCASEMENT	CU YD	17.3
50400405	PRECAST PRESTRESSED CONCRETE DECK BEAMS (21" DEPTH)	SQ FT	2,640
50800105	REINFORCEMENT BARS	POUND	4,340
50900205	STEEL RAILING, TYPE S1	FOOT	220
51201005	FURNISHING METAL SHELL PILES 12"	FOOT	658
51202305	DRIVING PILES	FOOT	658
51203200	TEST PILE METAL SHELL	EACH	2
51500100	NAME PLATES	EACH	1
54200220	PIPE CULVERTS, CLASS D, TYPE 1 15"	FOOT	22
* 63000000	STEEL PLATE BEAM GUARD RAIL, TYPE A	FOOT	50
* 63100075	TRAFFIC BARRIER TERMINAL TYPE 5A	EACH	2
* 63100167	TRAFFIC BARRIER TERMINAL, TYPE 1, SPECIAL (TANGENT)	EACH	2
67100100	MOBILIZATION	L SUM	1
* 78201000	TERMINAL MARKER - DIRECT APPLIED	EACH	4

\* SPECIALTY ITEMS

JOINT UTILITY LOCATION INFORMATION FOR EXCAVATION  
J.U.L.I.E. 1-800-892-0123  
CONTACT 48 HOURS BEFORE EXCAVATING

CONTRACT NO. 99282

**E. MILLER ENGINEERING, INC.**  
CONSULTING ENGINEERS  
HARRISBURG, ILLINOIS



*Edward W. Miller*  
11-14-06

Edward W. Miller  
PROFESSIONAL ENGINEER  
#062-025277  
EXPIRES NOV. 30, 2007

INDEX OF SHEETS

1. COVER SHEET
  2. PLAN AND PROFILE
  3. EROSION CONTROL PLAN
  4. GENERAL PLAN AND ELEVATION
  5. SUPERSTRUCTURE SPAN 1 & 3
  6. SUPERSTRUCTURE SPAN 2
  7. DECK BEAMS 21" X 36"
  8. DECK BEAMS 21" X 48"
  9. ABUTMENTS
  10. PIERS
  11. STEEL RAILING
  12. NAME PLATES
  13. PILE DETAILS
  - 14.-15. CROSS SECTIONS
- STANDARDS 280001-03 TEMPORARY EROSION CONTROL  
630301-04 SHOULDER WIDENING  
631026-03 TRAFFIC BARRIER TERMINAL TYPE 5  
635006-02 TERMINAL MARKER PLACEMENT  
702001-06 TRAFFIC CONTROL DEVICES  
BLR-21-6 TRAFFIC CONTROL

CLASSIFICATION : LOCAL ROAD  
ADT : 275  
DESIGN SPEED : 40 MPH

STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION		
APPROVED	<i>Ray J. Blum</i> Co. Engineer	12-6-06
LOCAL AGENCY REPRESENTATIVE		
PASSED	<i>Dem. W. Hillel</i> 1/17/07	
ENGINEER OF LOCAL ROADS AND STREETS		
APPROVED	<i>Mary C. Lamie</i> 1/18/07	
MARY C. LAMIE, P.E. DEPUTY DIRECTOR OF HIGHWAYS REGION FIVE ENGINEER		

B.M. - Top of NW wingwall  
10' Lt. Station 15+16  
Assumed Elev. 199.46

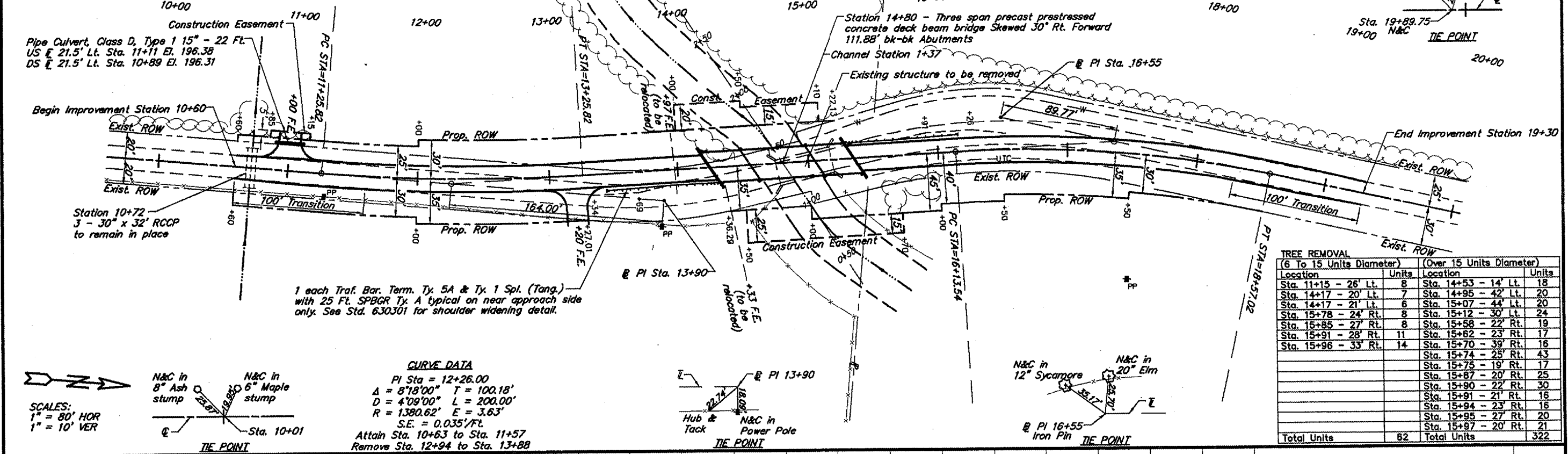
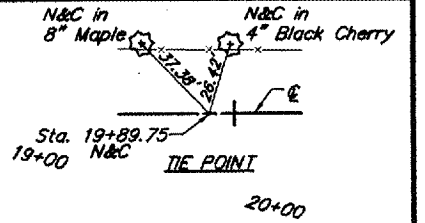
Existing Structure - Concrete thru girder  
with closed concrete abutments.  
20.2' W x 42.8' L

Pipe Culvert, Class D, Type 1 15" - 22 Ft.  
US  $\bar{E}$  21.5' Lt. Sta. 11+11 El. 196.38  
DS  $\bar{E}$  21.5' Lt. Sta. 10+89 El. 196.31

**CURVE DATA**

PI Sta = 17+36.04  
 $\Delta = 15^{\circ}38'00''$  T = 122.50'  
D = 6'25'15" L = 243.48'  
R = 892.35' E = 8.37'  
S.E. = 0.040'/ft.  
Attain Sta. 15+44 to Sta. 16+48  
Remove Sta. 18+22 to Sta. 19+26  
17+00

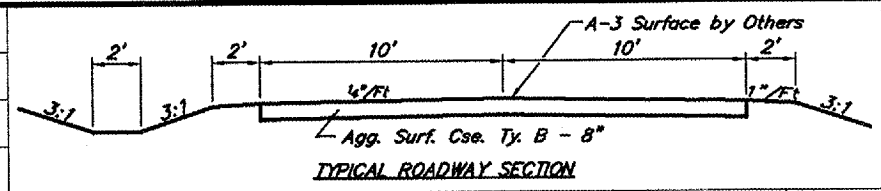
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 110	83-01171-00-BR	MASSAC	15	2
PROJECT NO. BR-OS-127(12)		CONTRACT NO. 99282		



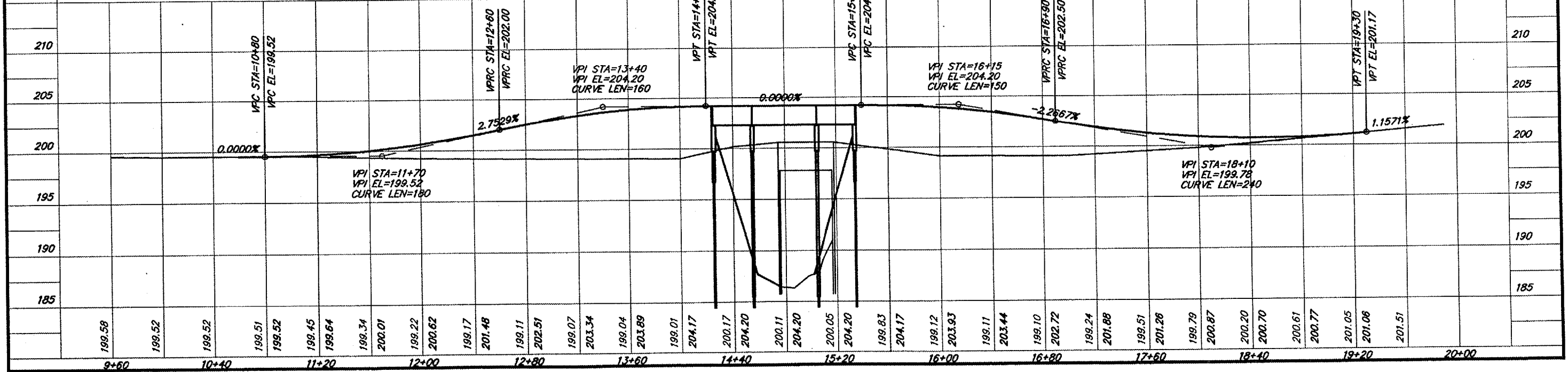
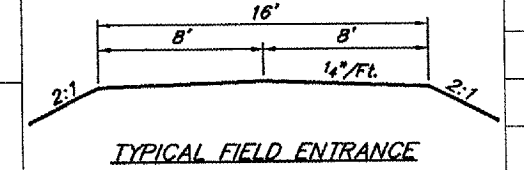
TREE REMOVAL		(Over 15 Units Diameter)	
(6 To 15 Units Diameter)	Units	Location	Units
Sta. 11+15 - 26' Lt.	8	Sta. 14+53 - 14' Lt.	18
Sta. 14+17 - 20' Lt.	7	Sta. 14+95 - 42' Lt.	20
Sta. 14+17 - 21' Lt.	6	Sta. 15+07 - 44' Lt.	20
Sta. 15+78 - 24' Rt.	8	Sta. 15+12 - 30' Lt.	24
Sta. 15+85 - 27' Rt.	8	Sta. 15+58 - 22' Rt.	19
Sta. 15+91 - 28' Rt.	11	Sta. 15+62 - 23' Rt.	17
Sta. 15+96 - 33' Rt.	14	Sta. 15+70 - 39' Rt.	18
		Sta. 15+74 - 25' Rt.	43
		Sta. 15+75 - 19' Rt.	17
		Sta. 15+87 - 20' Rt.	25
		Sta. 15+90 - 22' Rt.	30
		Sta. 15+91 - 21' Rt.	16
		Sta. 15+94 - 23' Rt.	16
		Sta. 15+95 - 27' Rt.	20
		Sta. 15+97 - 20' Rt.	21
<b>Total Units</b>	<b>82</b>	<b>Total Units</b>	<b>322</b>

**CURVE DATA**  
PI Sta = 12+26.00  
 $\Delta = 8^{\circ}18'00''$  T = 100.18'  
D = 4'09'00" L = 200.00'  
R = 1380.62' E = 3.63'  
S.E. = 0.035'/ft.  
Attain Sta. 10+63 to Sta. 11+57  
Remove Sta. 12+94 to Sta. 13+88

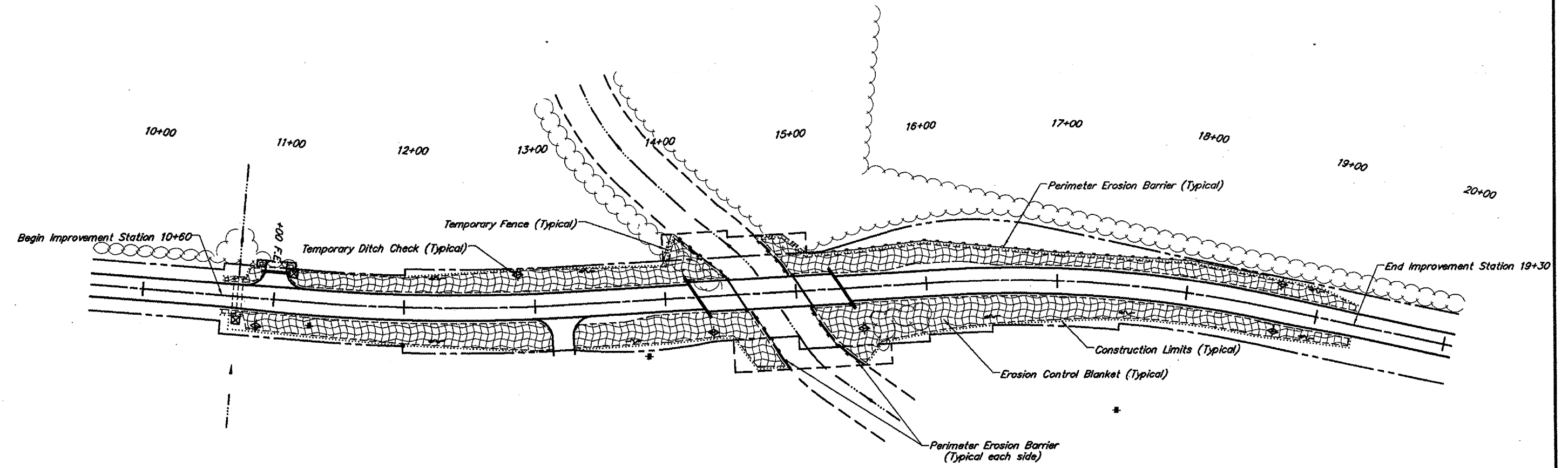
SCALES:  
1" = 80' HOR  
1" = 10' VER



Earth Excavation	95 CY	Earth Excavation	102 CY
Channel Excavation	686 CY	Channel Excavation	83 CY
Embankment	1512 CY	Embankment	1854 CY
Borrow Excavation	722 CY	Borrow Excavation	1666 CY



ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 110	83-01171-00-BR	MASSAC	15	3
PROJECT NO. BR-OS-127(12)			CONTRACT NO. 99282	



SCALE: 1" = 80'

LEGEND	
Clearing & Grading Limits	.....
Perimeter Erosion Barrier	— — — — —
Temporary Fence	- - - - -
Temporary Ditch Check	◆
Flow Indicator	~ ~ ~
Erosion Control Blanket	▨
Inlet & Pipe Protection	⊠

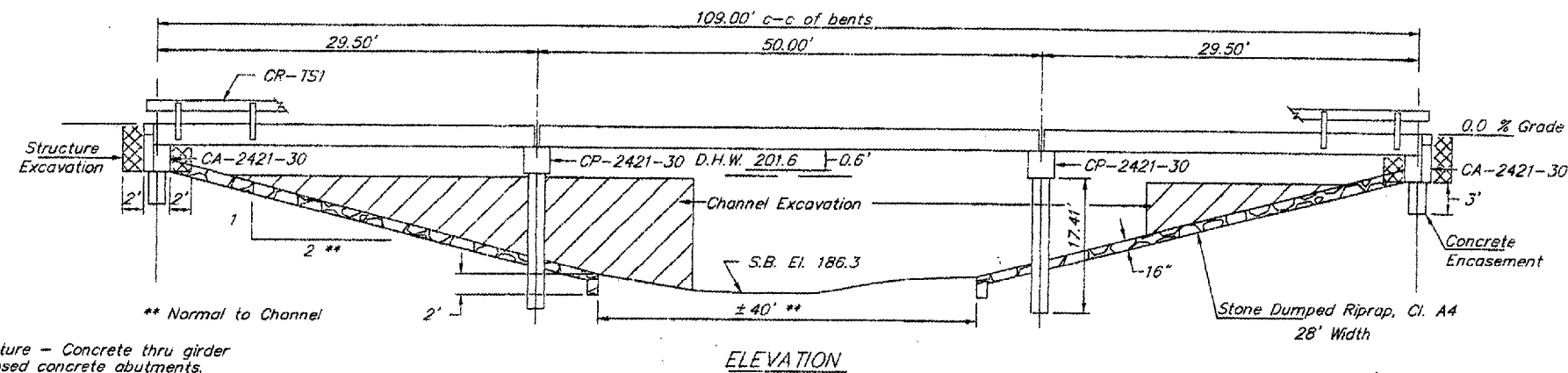
**TOTAL BILL OF MATERIAL**

Item	Unit	Total
Temporary Fence	Foot	60
Erosion Control Blanket	Sq. Yd.	3,330
Temporary Erosion Control Seeding	Pound	70
Temporary Ditch Checks	Each	6
Perimeter Erosion Barrier	Foot	560
Inlet & Pipe Protection	Each	2

EROSION CONTROL PLAN  
 TOWNSHIP ROUTE 110  
 SEVENMILE CREEK  
 SECTION 83-01171-00-BR  
 MASSAC COUNTY

B.M. - Top of NW wingwall  
10' Lt. Station 15+16  
Assumed Elev. 199.46

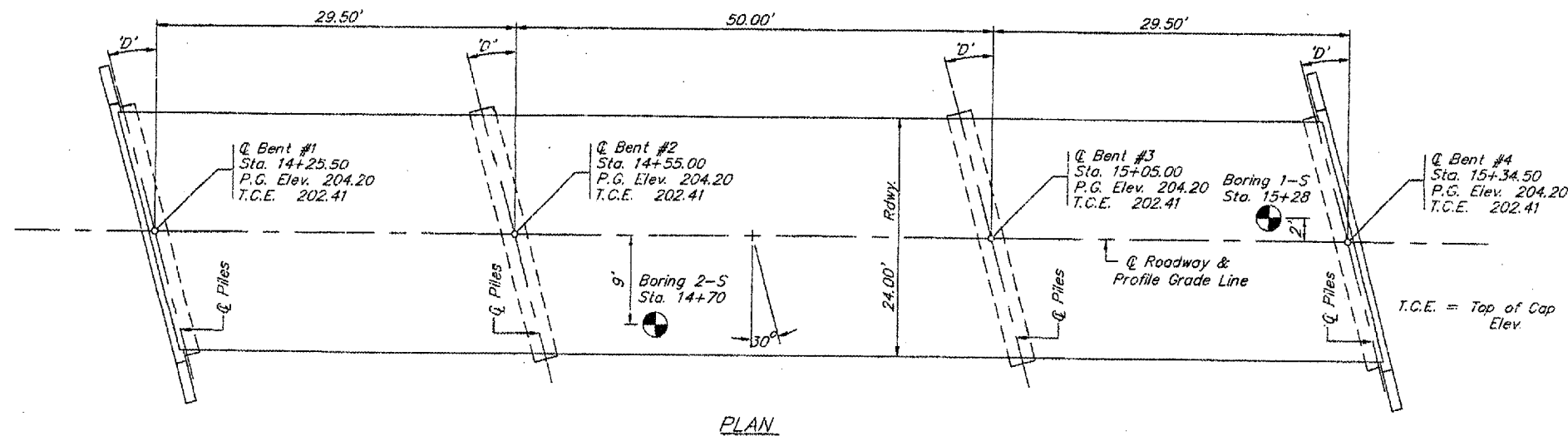
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 110	83-01171-00-BR	MASSAC	15	4
PROJECT NO. BR-05-127(12)			CONTRACT NO. 99282	



Existing Structure - Concrete thru girder  
with closed concrete abutments.  
20.2' W x 42.8' L

**GENERAL NOTES**

1. Metal Shell piles shall meet ASTM A 252 Grade 3 specifications
2. Test Piles shall be driven to 110% of the Nominal Required Bearing indicated in the pile data.
3. The Contractor shall drive two test piles, as specified, in a permanent location as directed by the Engineer before ordering the remaining piles.
4. See special provisions for boring logs.
5. A Corrosion inhibitor, as covered in the Standard Specifications, shall be used in the precast prestressed concrete deck beams.
6. Layout of the slope protection may be varied in the field to suit ground conditions as directed by the Engineer.



**PLAN**

Skew Angle 'D' = 30° Right Forward

**PILE DATA (2-PIERS)**

Type & Size : Metal Shell - 12 in. dia. x 0.25 in. walls  
Nominal Required Bearing : 270 kips  
Allowable Resistance Available : 90 kips  
Estimated Length : 42 Feet  
Number Required : 10 (Includes 1 Test Pile located in Bent #3)

**PILE DATA (2-ABUTS.)**

Type & Size : Metal Shell - 12 in. dia. x 0.25 in. walls  
Nominal Required Bearing : 162 kips  
Allowable Resistance Available : 54 kips  
Estimated Length : 40 Feet  
Number Required : 8 (Includes 1 Test Pile located in Bent #1)

**DESIGN SPECIFICATIONS**

2002 AASHTO Standard Specifications - 17th ed.

**LOADING HS20-44**

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

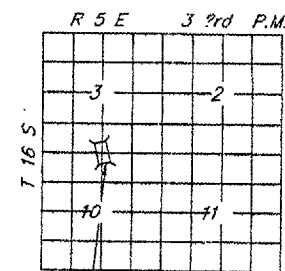
**SEISMIC DATA**

Seismic Performance Category (SPC) = B  
Bedrock Acceleration Coefficient (A) = 15.0%  
Site Coefficient (S) = 1.2

SEVENMILE CREEK  
SEC. 83-01171-00-BR BUILT 20  
COUNTY UNIT ROAD DISTRICT  
MASSAC COUNTY  
LOADING HS20  
STR. NO. 064-3119

**LETTERING FOR NAME PLATE**

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



PROPOSED BRIDGE  
**LOCATION SKETCH**

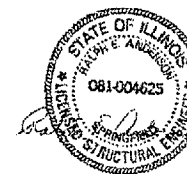
**WATERWAY INFORMATION**

Drainage Area = 14.45 Sq. Mi.		Low Grade Elev. = 199.52		At Sta. 10+80					
Flood	Freq. Yr.	Q C.F.S.	Opening Sq. Ft. Exist.	Prop.	Natural H.W.E.	Head-Ft. Exist.	Prop.	Headwater El. Exist.	Prop.
Design	15	3040	480	840*	201.6	<0.5			
Base	100	4710			202.8	<1.0			
Overtopping									
Max. Calc.	500	6130			203.5				

\*Plus over the road flow of 1900 Sq. Ft.

**TOTAL BILL OF MATERIAL**

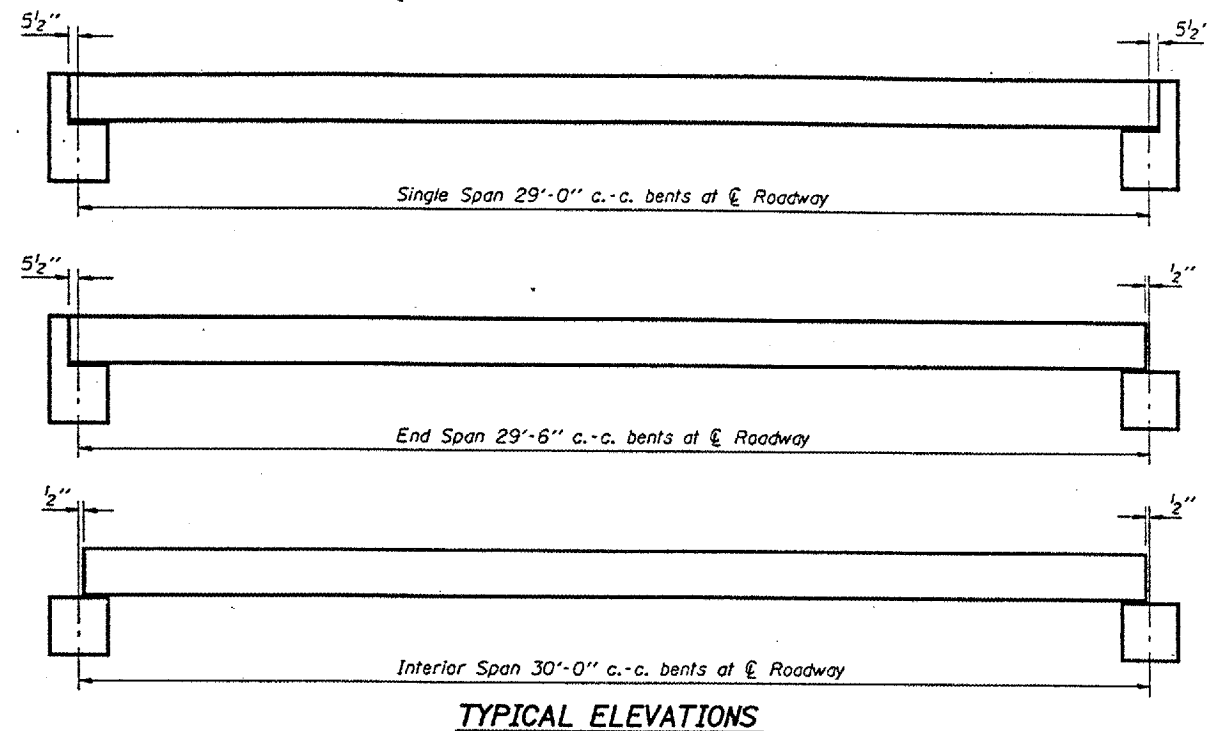
Item	Unit	Super	Sub.		Total
			Piers	Abuts.	
Removal of Existing Structures	Each				1
Concrete Structures	Cu. Yds.		17.4	20.2	37.6
P.P. Conc. Dk. Bm. 21" Dp.	Sq. Ft.	2640			2640
Steel Railing, Type S1	Foot	220			220
Reinforcement Bars	Pound		1780	2560	4340
Furnishing Metal Shell Piles 12"	Foot		378	280	658
Driving Piles	Foot		378	280	658
Test Pile Metal Shells	Each		1	1	2
Concrete Encasement	Cu. Yds.		15.2	2.1	17.3
Name Plates	Each				1
Structure Excavation	Cu. Yds.				7
Channel Excavation	Cu. Yds.				769
Stone Dumped Riprap, Class A4	Tons				205



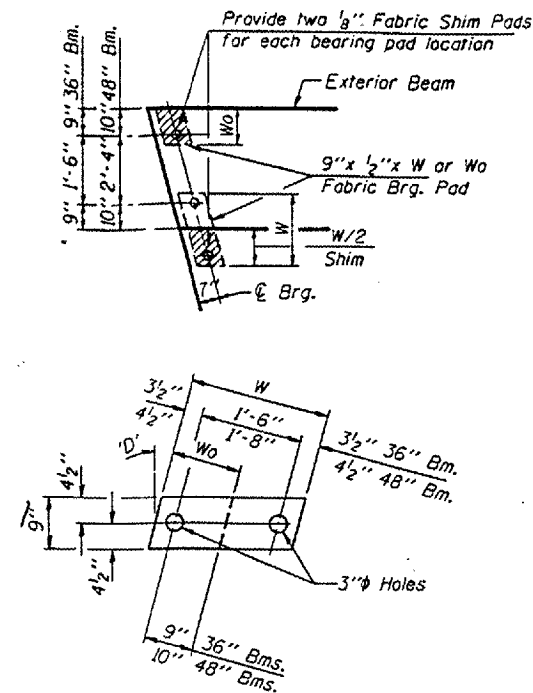
Expires 11-30-2008

GENERAL PLAN & ELEVATION  
TOWNSHIP ROUTE 110  
SEVENMILE CREEK  
SECTION 83-01171-00-BR  
MASSAC COUNTY  
STATION 14+80

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 110	83-01171-00-BR	MASSAC	15	5
PROJECT NO. BR-OS-127(12)			CONTRACT NO. 99282	

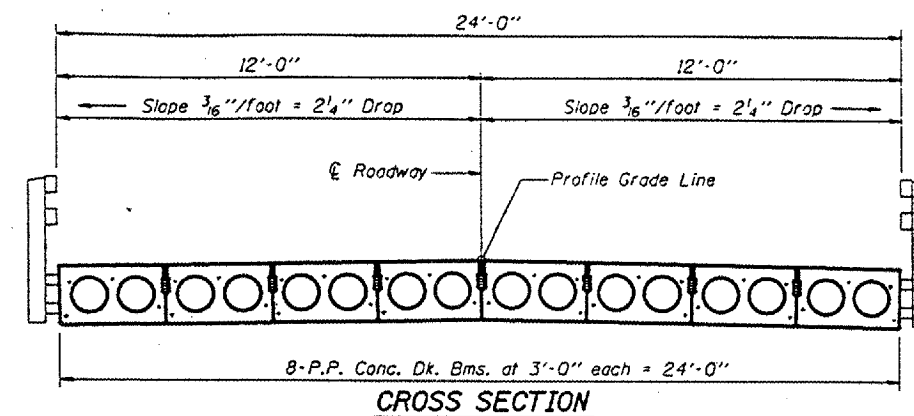


**TYPICAL ELEVATIONS**

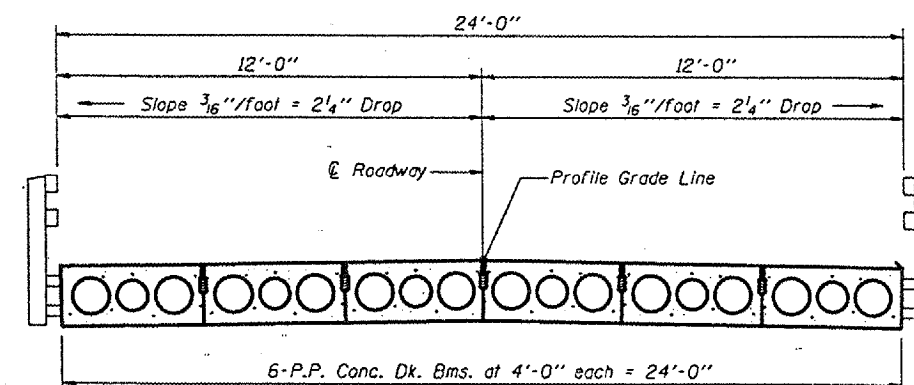


Beam	W	Wo
36"	2'-1"	1'-0 1/2"
48"	2'-5"	1'-2 1/2"

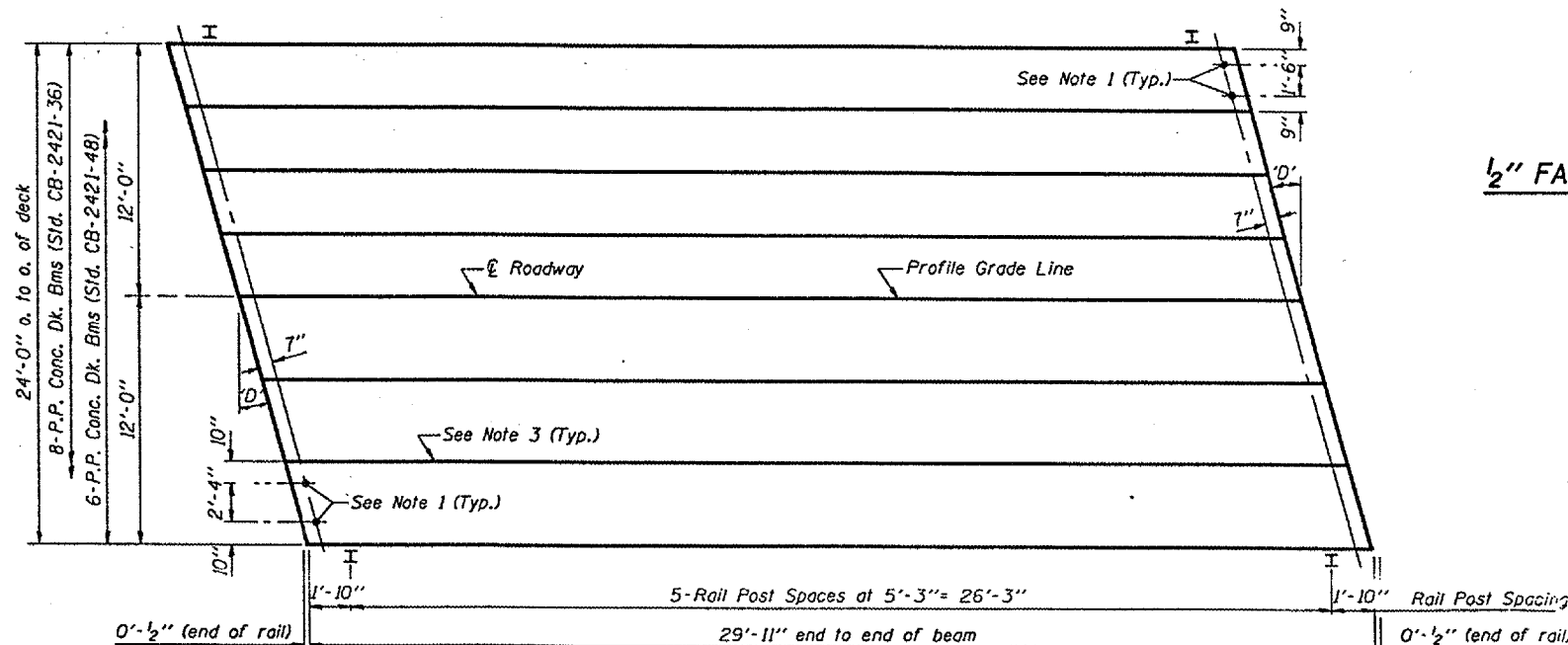
**1/2" FABRIC BRG. PAD DETAILS**



**CROSS SECTION**



**CROSS SECTION**



**PLAN**  
(*'D'* = Designated Skew Angle)

**DIMENSIONS 'A' AND 'B'**

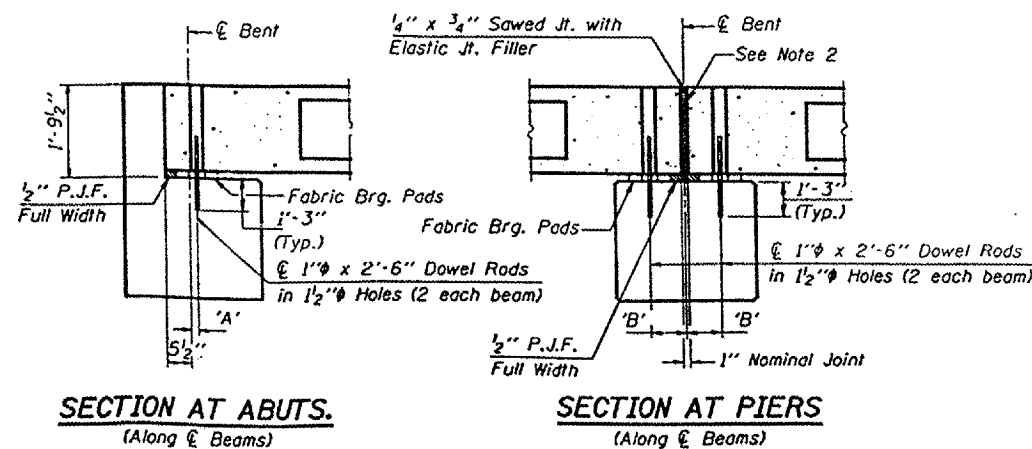
'D'	5°	10°	15°	20°	25°	30°
A	1 1/2"	1 3/8"	1 3/4"	1 7/8"	2 1/8"	2 3/8"
B	7 1/2"	7 3/8"	7 3/4"	8"	8 1/4"	8 3/8"

**QUANTITIES FOR ONE SPAN**

P.P. Conc. Dk. Bm. 21" Dp.	720 Sq. Ft.
Steel Railing, Type S-1	60 Ft.

DESIGNED	JSB
CHECKED	JFS
DRAWN	SMS
CHECKED	JSB

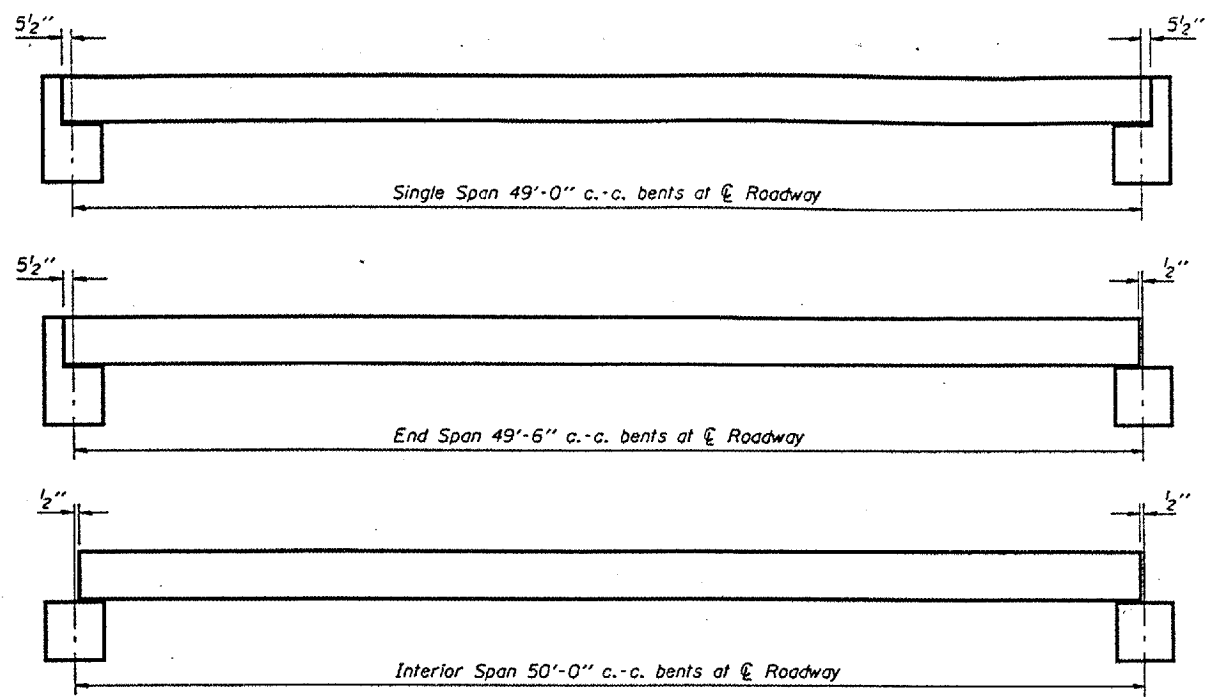
- NOTES**
- After beams have been erected, holes shall be drilled into substructure and anchor dowels placed. Dowel holes shall be filled with non-shrink grout to top of beam and allowed to cure min. 24 hrs. prior to grouting the shear keys.
  - Nominal 1" joint at centerline of Pier shall be filled with non-shrink grout.
  - Longitudinal keys shall be grouted.



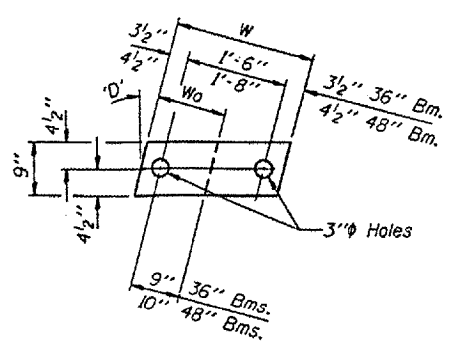
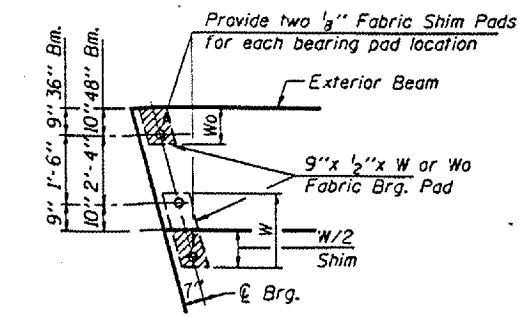
**SECTION AT ABUTS.**  
(Along centerline of Beams)

**SECTION AT PIERS**  
(Along centerline of Beams)

**SUPERSTRUCTURE SPAN 1 & 3**  
TOWNSHIP ROUTE 110  
SEVENMILE CREEK  
SECTION 83-01171-00-BR  
MASSAC COUNTY

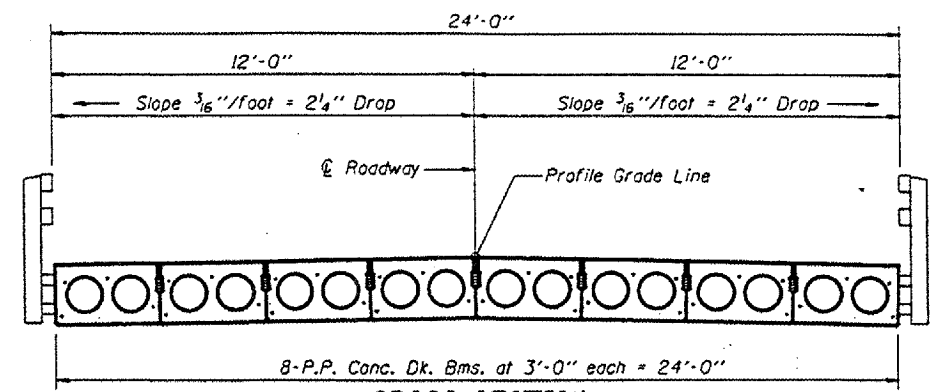


TYPICAL ELEVATIONS

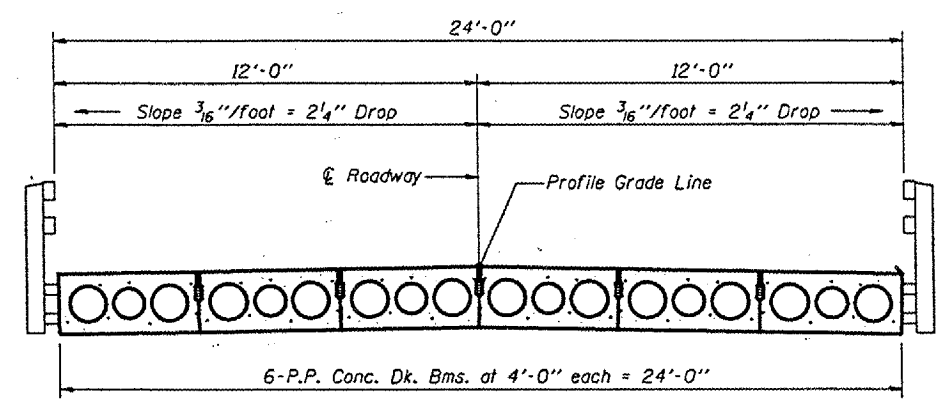


Beam	W	W0
36"	2'-1"	1'-0 1/2"
48"	2'-5"	1'-2 1/2"

1/2" FABRIC BRG. PAD DETAILS



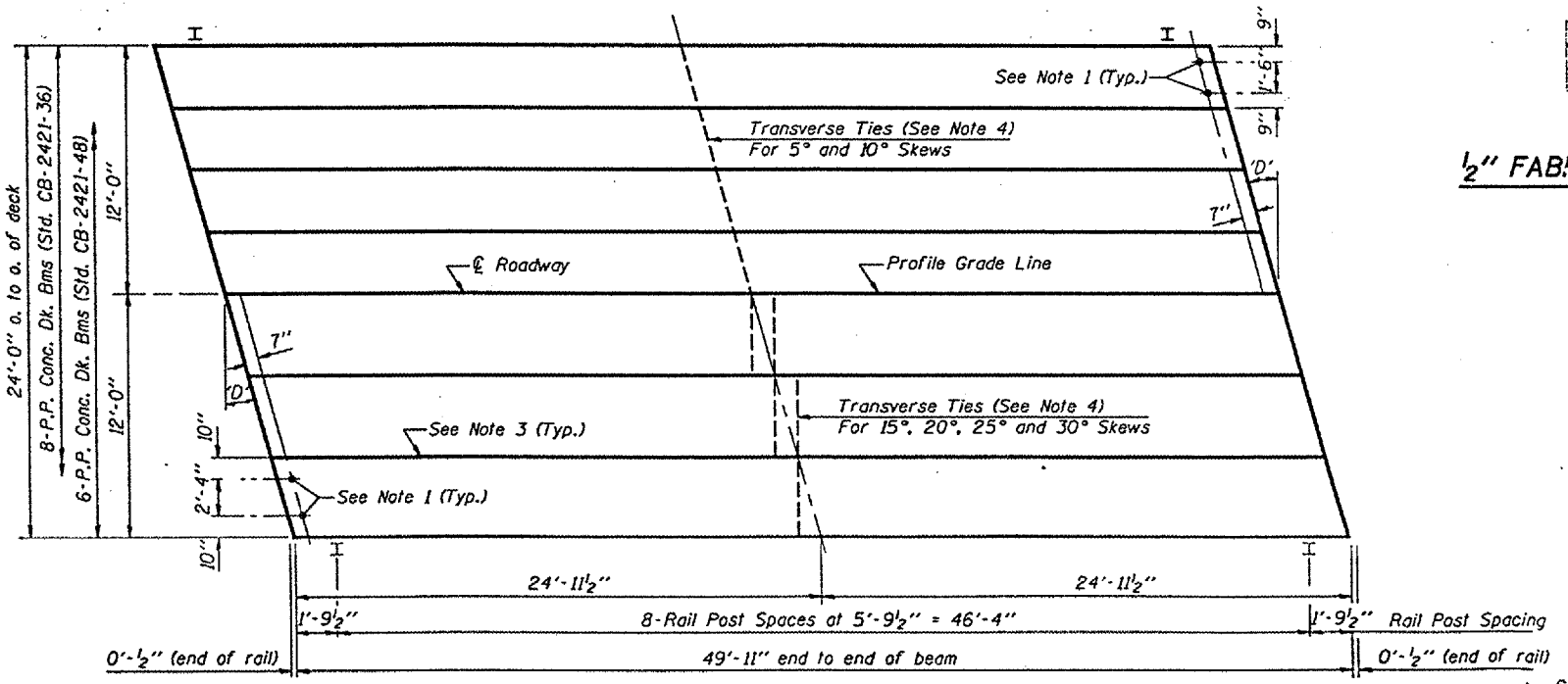
CROSS SECTION



CROSS SECTION

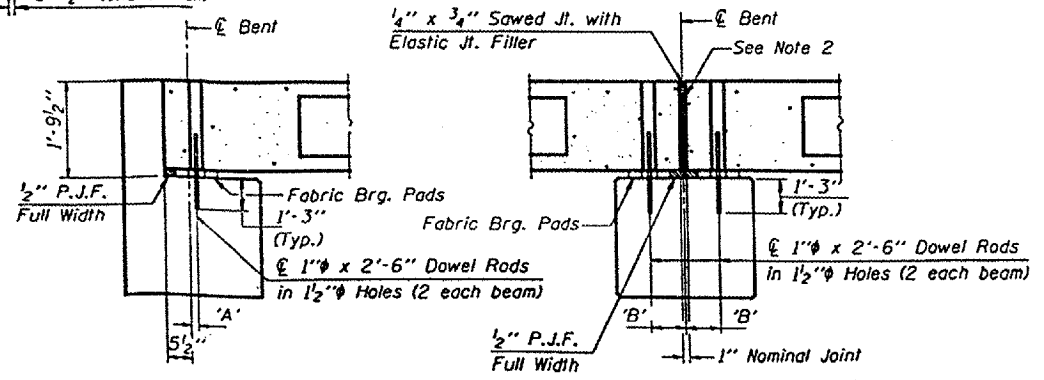
DIMENSIONS 'A' AND 'B'

'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	7/2"	7 3/8"	7 3/4"	8"	8 1/4"	8 3/8"



PLAN

('D' = Designated Skew Angle)



SECTION AT ABUTS.  
(Along centerline of Beams)

SECTION AT PIERS  
(Along centerline of Beams)

QUANTITIES FOR ONE SPAN

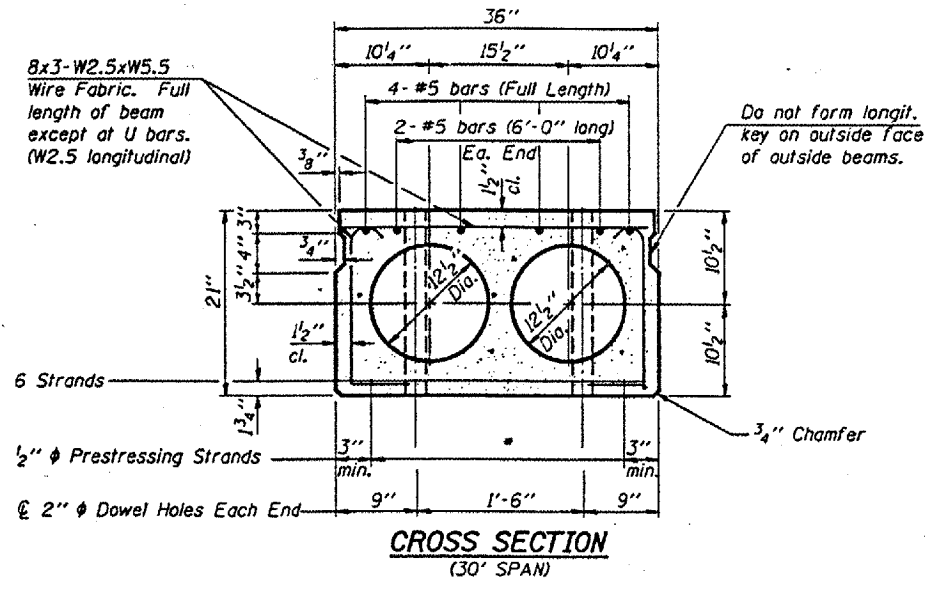
P.P. Conc. Dk. Bm. 21" Dp.	1200 Sq. Ft.
Steel Railing, Type S-1	100 Ft.

DESIGNED JSB
CHECKED JFS
DRAWN SMS
CHECKED JSB

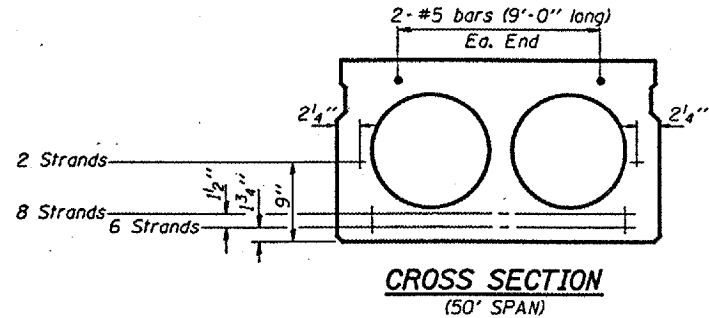
- NOTES
- After beams have been erected, holes shall be drilled into substructure and anchor dowels placed. Dowel holes shall be filled with non-shrink grout to top of beam and allowed to cure min. 24 hrs. prior to grouting the shear keys.
  - Nominal 1" joint at centerline of Pier shall be filled with 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.

SUPERSTRUCTURE SPAN 2  
TOWNSHIP ROUTE 110  
SEVENMILE CREEK  
SECTION 83-01171-00-BR  
MASSAC COUNTY

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 110	83-01171-00-BR	MASSAC	15	7
PROJECT NO. BR-OS-127(12)			CONTRACT NO. 99282	



**CROSS SECTION**  
(30' SPAN)

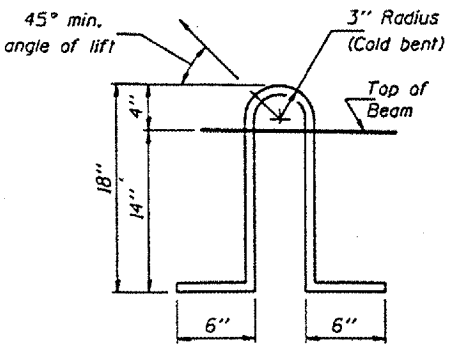


**CROSS SECTION**  
(50' SPAN)

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

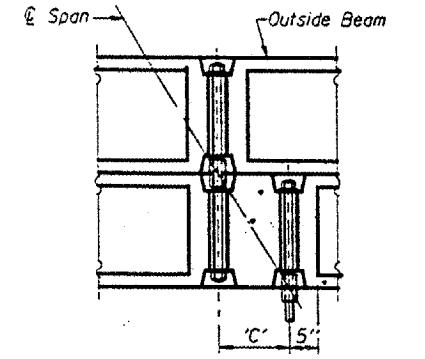
**END BLOCK DETAILS**

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



**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=15°, 20°, 25° and 30°)

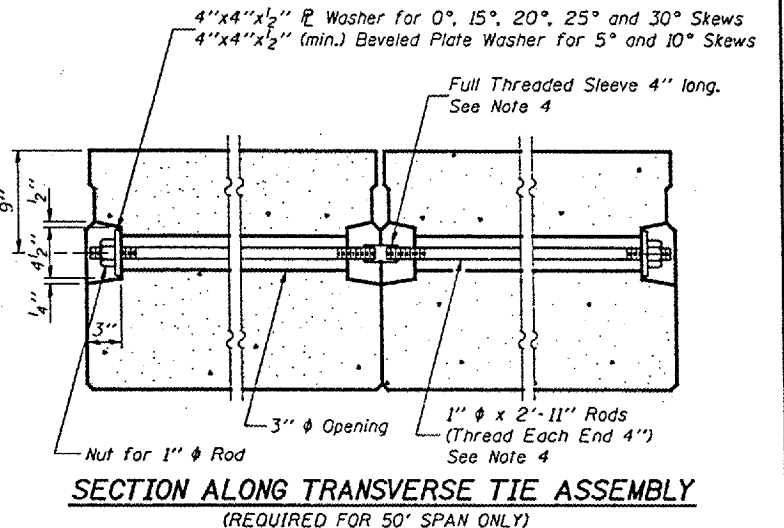
**DIMENSION 'C'**

Skew Angle 'D'	0°	5°	10°	15°	20°	25°	30°
Dimension 'C' (Inches)	0	3 3/8	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 1/2".

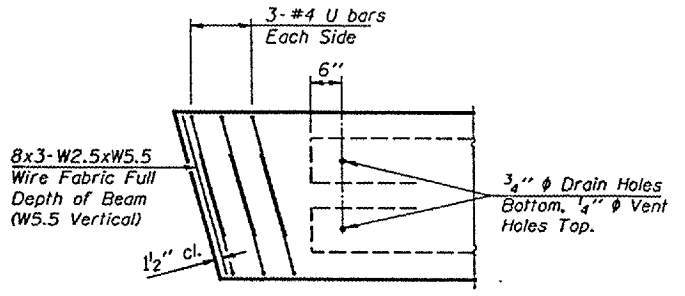
Vertical placement of strands shall not be adjusted to satisfy the above guidelines.



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

**NOTES**

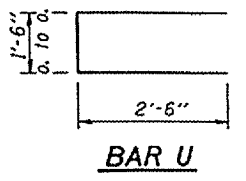
1. Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270.
2. The nominal diameter shall be 1/2 inch and the nominal cross-sectional area shall be 0.153 square inches.
3. Reinforcement bars shall conform to the requirements of IL Modified ASTM A706, Grade 60.
4. On 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 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.



**END REINFORCEMENT**  
(SKEWED)

**MIN. BAR LAP**

#5 bars = 1'-8"



**BAR U**

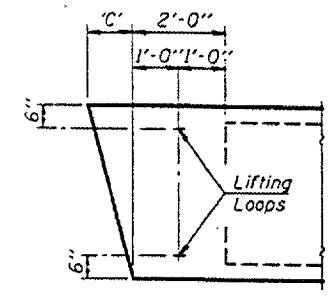
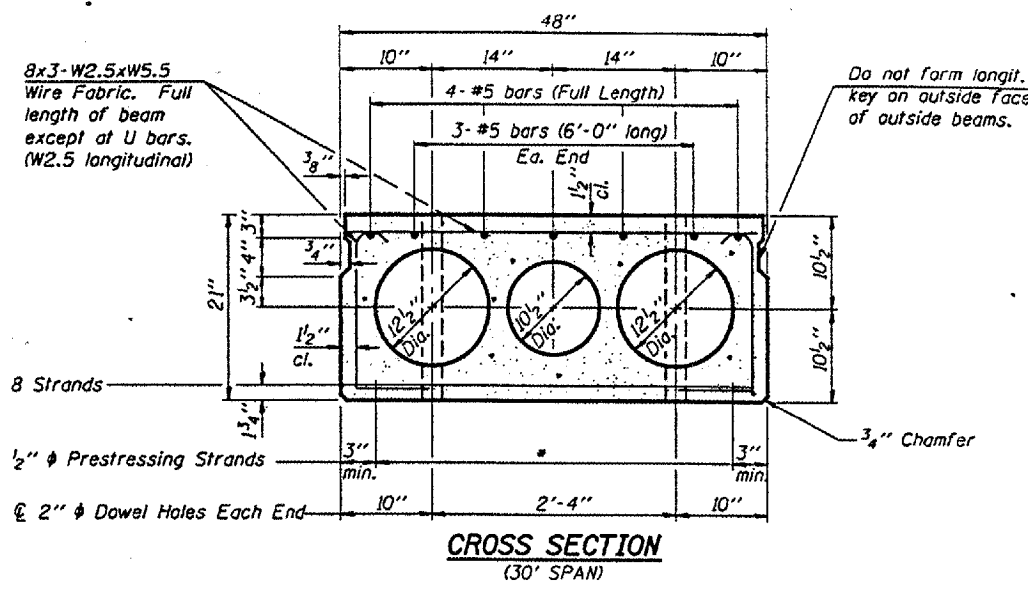
**DESIGN STRESSES**

- f<sub>c</sub> = 5,000 p.s.i.
- f<sub>u</sub> = 4,000 p.s.i.
- f<sub>s</sub> = 270,000 p.s.i. (1/2 inch diameter Strand)
- f<sub>u</sub> = 201,960 p.s.i. (1/2 inch diameter Strand)
- f<sub>y</sub> = 60,000 p.s.i.

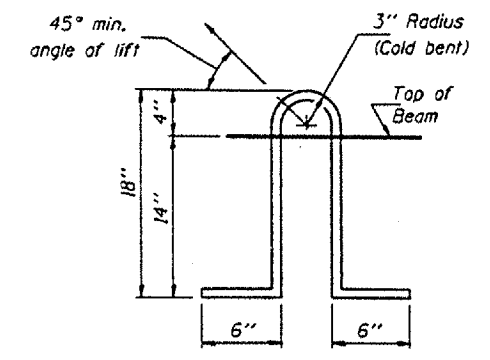
DESIGNED	JSB
CHECKED	JFS
DRAWN	SMS
CHECKED	JSB

**DECK BEAMS 21" X 36"**  
**TOWNSHIP ROUTE 110**  
**SEVENMILE CREEK**  
**SECTION 83-01171-00-BR**  
**MASSAC COUNTY**

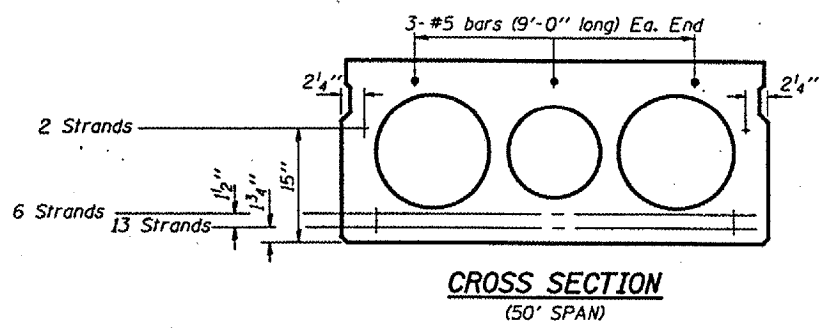
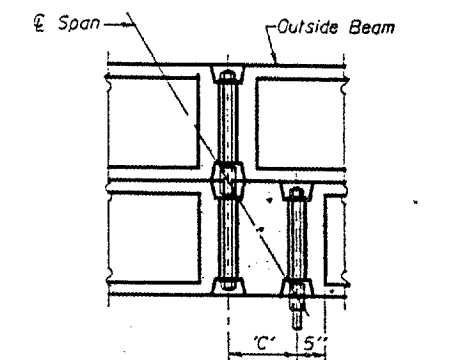
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 110	83-01171-00-BR	MASSAC	15	8
PROJECT NO. BR-OS-127(12)			CONTRACT NO. 99282	



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.



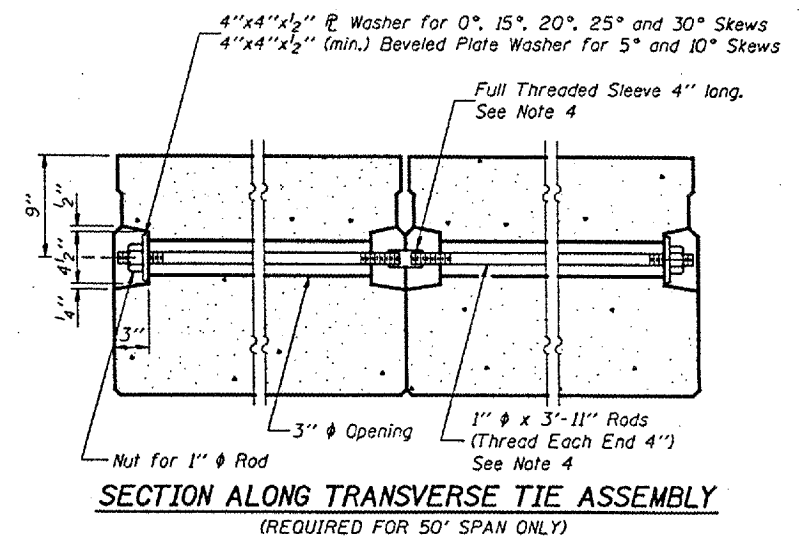
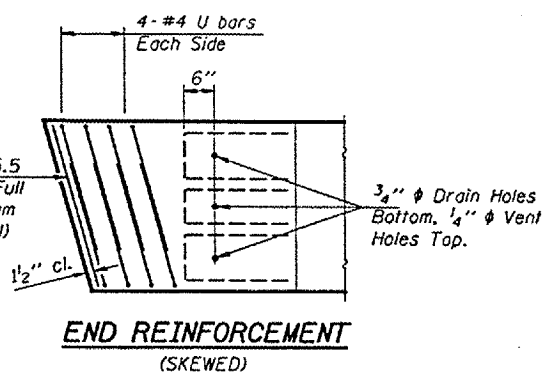
Lifting loops shall be 2 1/2"  $\phi$  -270 ksi strands, as shown. Alternate approved lifting devices are also acceptable.



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

**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

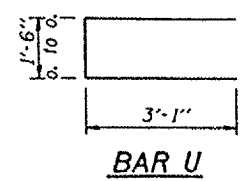


**\* TRANSVERSE STRAND PLACEMENT GUIDELINES**

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.

**MIN. BAR LAP**  
#5 bars = 1'-8"



**DESIGN STRESSES**

- $f_c = 5,000$  p.s.i.
- $f'_c = 4,000$  p.s.i.
- $f_s = 270,000$  p.s.i. (1/2"  $\phi$  Strand)
- $f_u = 201,960$  p.s.i. (1/2"  $\phi$  Strand)
- $f_y = 60,000$  p.s.i.

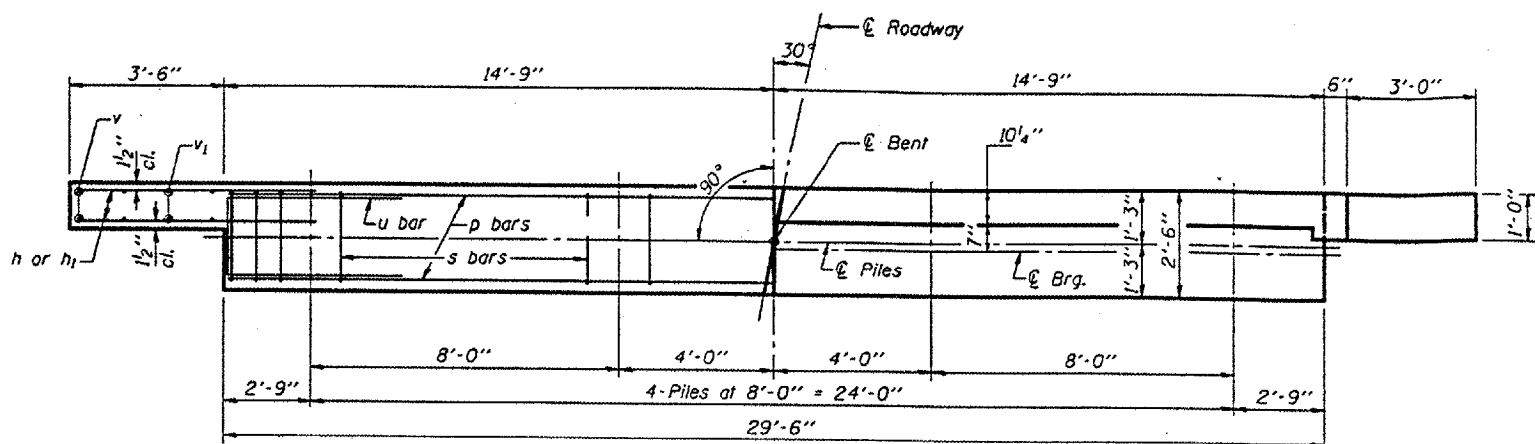
- NOTES**
1. Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270.
  2. The nominal diameter shall be 1/2" and the nominal cross-sectional area shall be 0.153 square inches.
  3. Reinforcement bars shall conform to the requirements of IL Modified ASTM A706, Grade 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.

DESIGNED	JSB
CHECKED	JFS
DRAWN	SMS
CHECKED	JSB

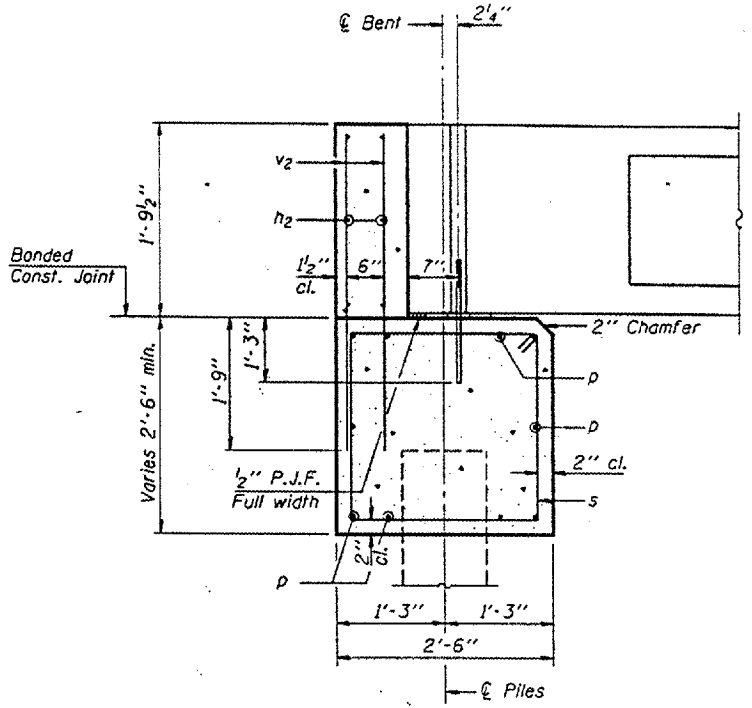
**DECK BEAMS 21" X 48"**  
TOWNSHIP ROUTE 110  
SEVENMILE CREEK  
SECTION 83-01171-00-BR  
MASSAC COUNTY



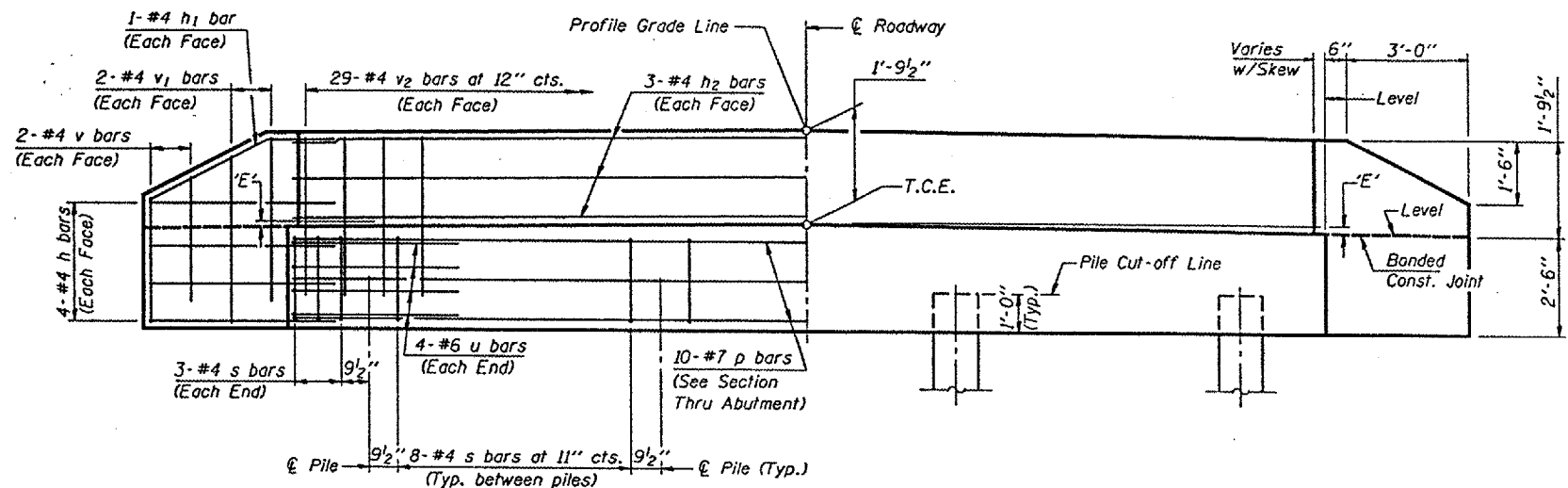
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 110	83-01171-00-BR	MASSAC	15	9
PROJECT NO. BR-OS-127(12)			CONTRACT NO. 99282	



**PLAN**  
(D=Designated Skew Angle)



**SECTION THRU ABUTMENT**  
(At Right Angles)



**ELEVATION**

**DIMENSION 'E'**

GRADE	'D'=30°	
	UPGRADE END	DOWNGRADE END
0%	2 3/8"	2 3/8"
Over 0% to 1%	2"	2 1/8"
Over 1% to 2%	1"	3 3/4"
Over 2% to 3%	1/8"	4 5/8"
Over 3% to 4%		

**NOTES**

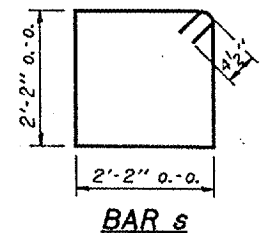
- The Backwall and the portion of the Wingwalls above the bonded construction joint shall be cast against the in-place beam.
- Reinforcement bars shall conform to the requirements of IL Modified ASTM A706, Grade 60.
- Space reinforcement in cap to miss anchor bolts.

**MAXIMUM PILE LOADS**

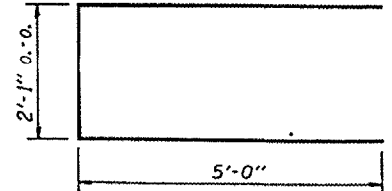
SPAN	TONS
30'	27
50'	37

**DESIGN STRESSES**

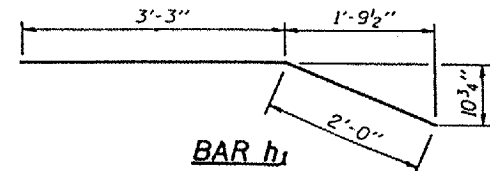
f'c = 3,500 psi  
fy = 60,000 psi



**BAR s**



**BAR u**



**BAR h1**

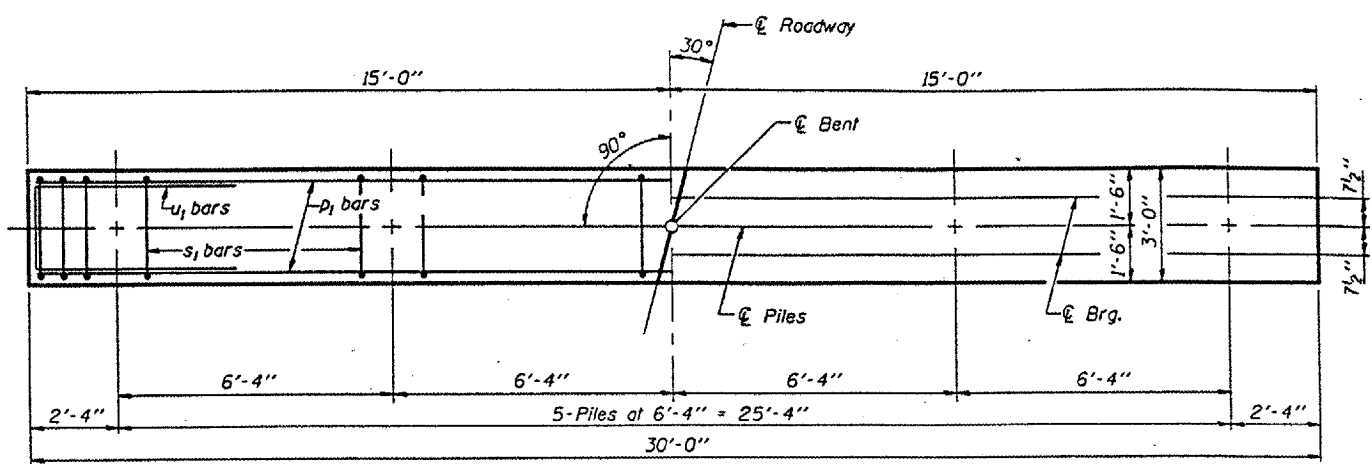
**BILL OF MATERIAL FOR ONE ABUTMENT**

Bar	No.	Size	Length	Shape
h	16	#4	5'-0"	—
h1	4	#4	5'-3"	—
h2	6	#4	29'-2"	—
p	10	#7	29'-2"	—
s	30	#4	9'-5"	□
u	8	#6	12'-1"	□
v	8	#4	2'-8"	—
v1	8	#4	3'-8"	—
v2	58	#4	3'-5"	—
Concrete Structures			10.1 Cu. Yds.	
Reinforcement Bars			1280 Pound	

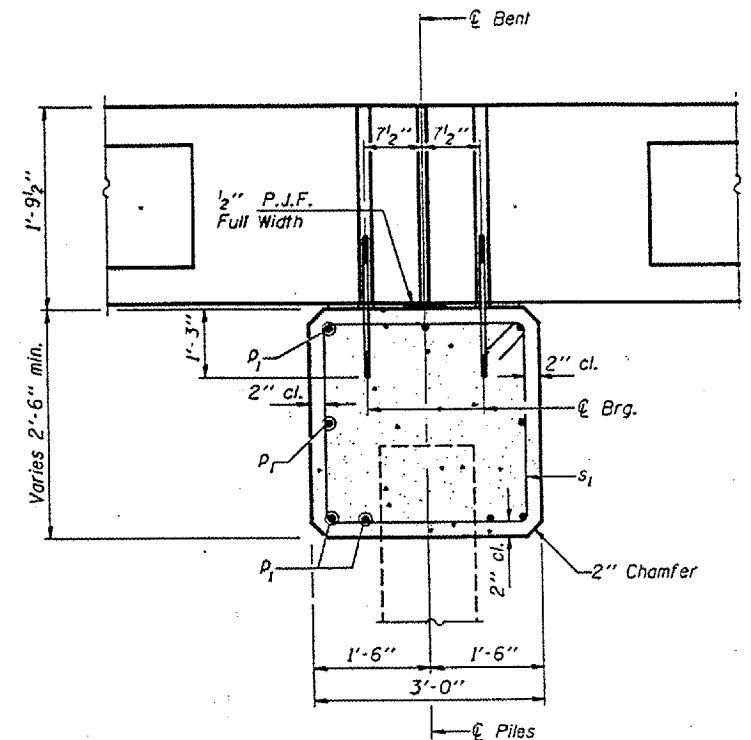
DESIGNED	JSB
CHECKED	JFS
DRAWN	SMS
CHECKED	JSB

**ABUTMENTS**  
TOWNSHIP ROUTE 110  
SEVENMILE CREEK  
SECTION 83-01171-00-BR  
MASSAC COUNTY

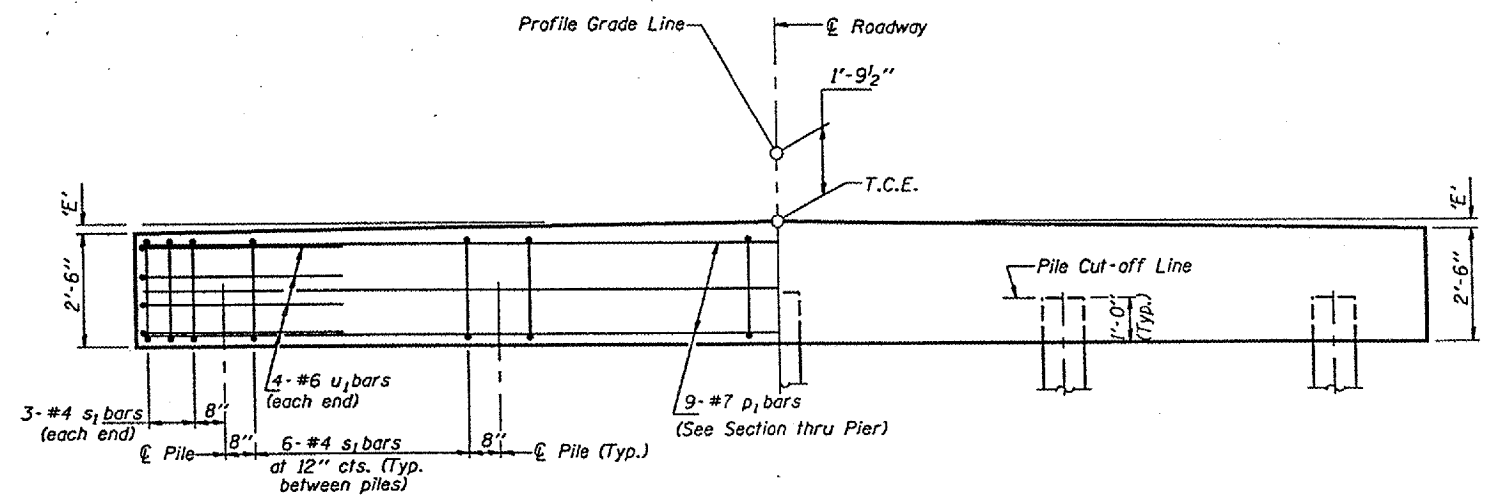
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 110	83-01171-00-BR	MASSAC	15	10
PROJECT NO. BR-OS-127(12)			CONTRACT NO. 99282	



**PLAN**



**SECTION THRU PIER**  
(At Right Angles)



**ELEVATION**

**DIMENSION 'E'**

GRADE	'D'=30°	
	UPGRADE END	DOWNGRADE END
0%	2 <sup>3</sup> / <sub>8</sub> "	2 <sup>3</sup> / <sub>8</sub> "
Over 0% to 1%	2"	2 <sup>7</sup> / <sub>8</sub> "
Over 1% to 2%	1"	3 <sup>3</sup> / <sub>4</sub> "
Over 2% to 3%	1/2"	4 <sup>5</sup> / <sub>8</sub> "
Over 3% to 4%	—	—

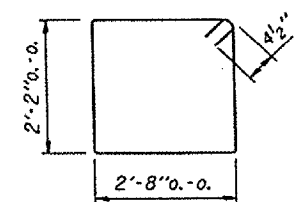
**MAXIMUM PILE LOADS**

SPAN	TONS
30'	33
50'	45

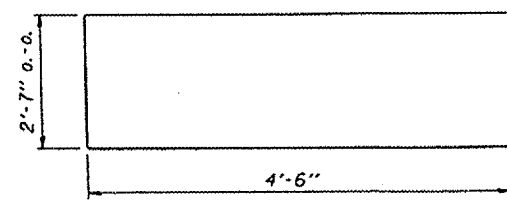
Longer of Either Span Supported by Pier.

**DESIGN STRESSES**

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



**BAR s1**



**BAR u1**

**BILL OF MATERIAL FOR ONE PIER**

Bar	No.	Size	Length	Shape
p1	9	#7	29'-8"	—
s1	30	#4	10'-5"	□
u1	8	#6	11'-7"	—
Concrete Structures			8.7	Cu. Yds.
Reinforcement Bars			890	Pound

**NOTE**

Reinforcement bars shall conform to the requirements of 1L Modified ASTM A706, Grade 60.

DESIGNED	JSB
CHECKED	JFS
DRAWN	SMS
CHECKED	JSB

**PIERS**  
TOWNSHIP ROUTE 110  
SEVENMILE CREEK  
SECTION 83-01171-00-BR  
MASSAC COUNTY

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 110	83-01171-00-BR	MASSAC	15	11
PROJECT NO. BR-OS-127(12)			CONTRACT NO. 99282	

**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.

Boils, 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.

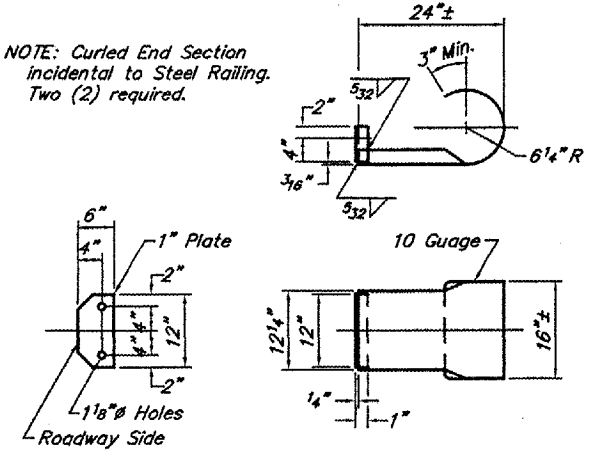
All field drilled holes shall be coated with an approved zinc rich paint before erection.

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 1/2" fabric bearing pads shall be placed between the plates and concrete.

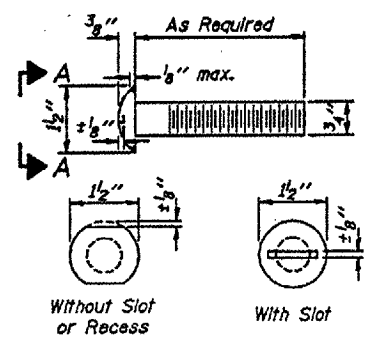
The 3/8" high strength bolts used to connect the 6 x 4 x 3/4 angles to the post shall be tightened according to Article 505.04 (FX2) of the Standard Specifications. The 1" high strength bolts connecting the angles to the concrete shall be tightened to a snug fit and given an additional 1/8 turn. The 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.

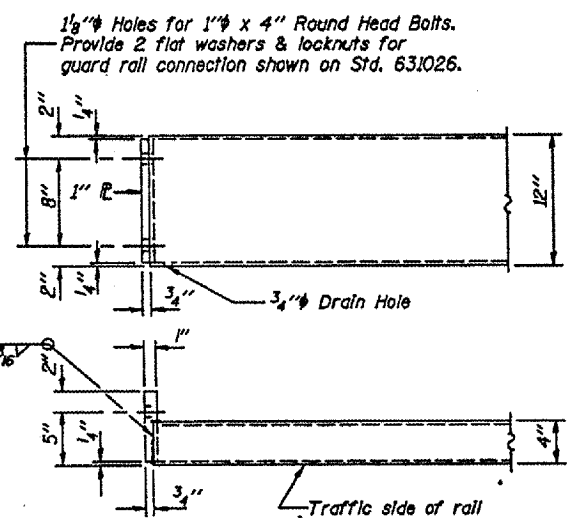
NOTE: Curled End Section incidental to Steel Railing. Two (2) required.



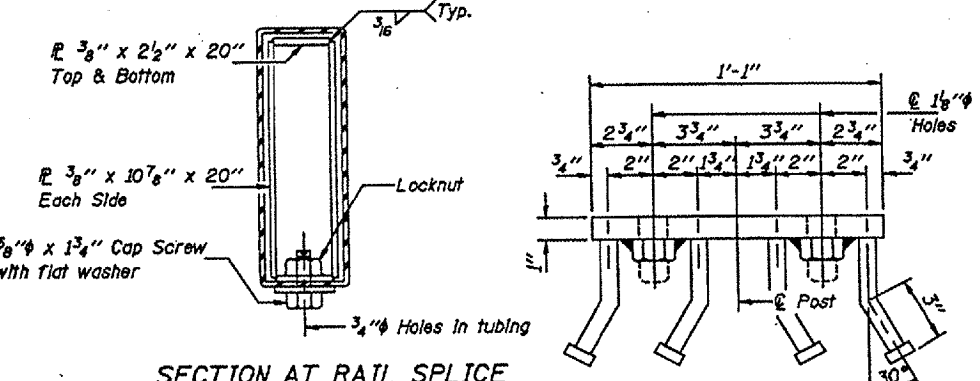
**CURLED END SECTION DETAILS**



**VIEW A-A  
ROUND HEAD BOLT**

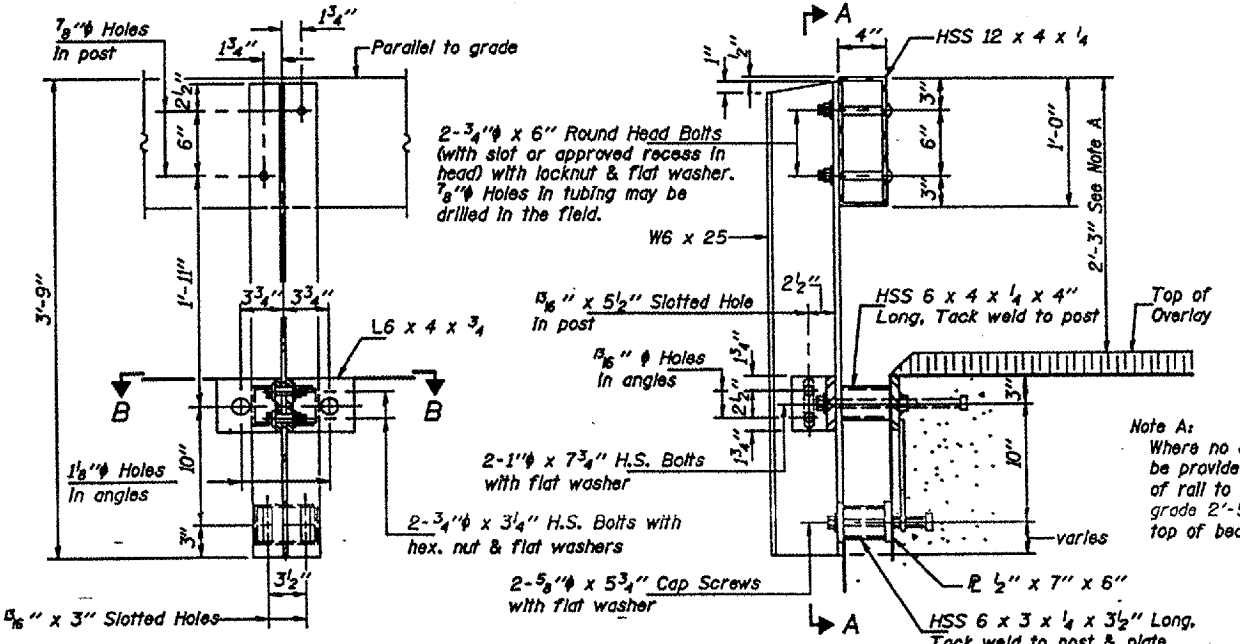


**END OF RAIL DETAILS**



**SECTION AT RAIL SPLICE**

**VIEW C-C**

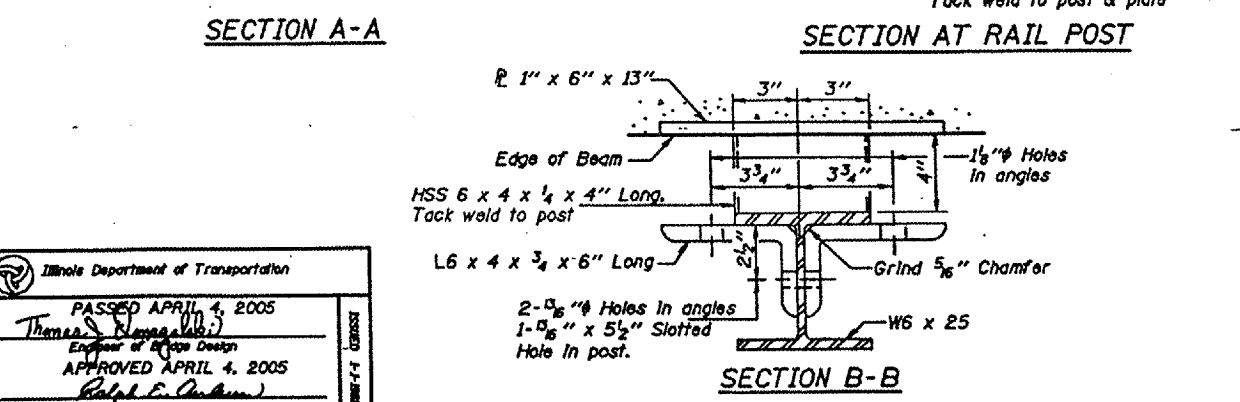


**SECTION A-A**

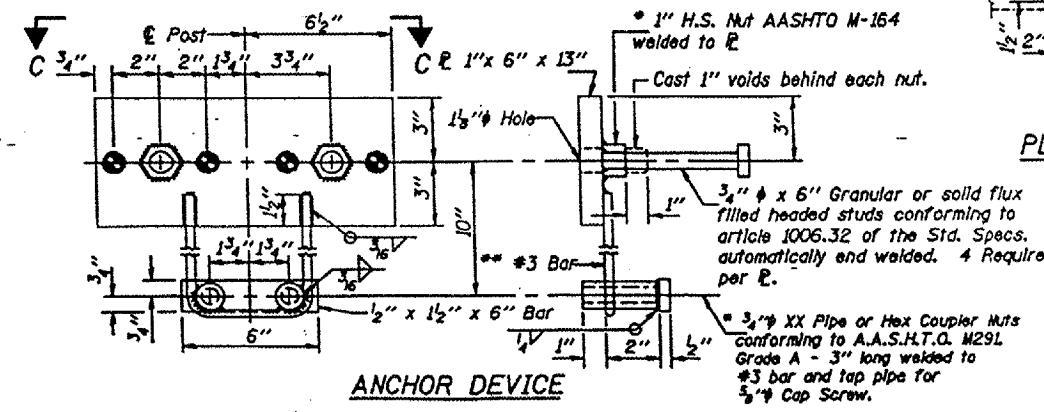
Note A: Where no overlay is to be provided, adjust top of rail to lay parallel to grade 2'-5" max. above top of beam.

\*\* 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".

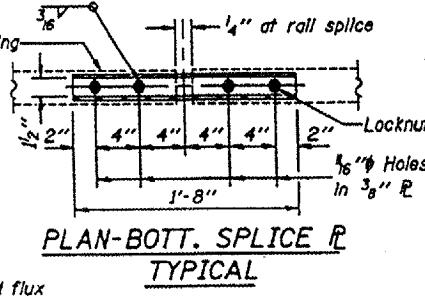
\* Threaded areas shall be plugged or blocked off during casting of beam.



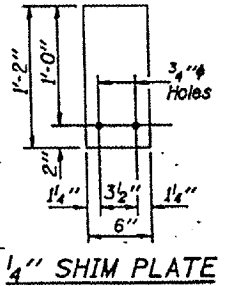
**SECTION B-B**



**ANCHOR DEVICE**



**PLAN-BOTT. SPLICE R  
TYPICAL**

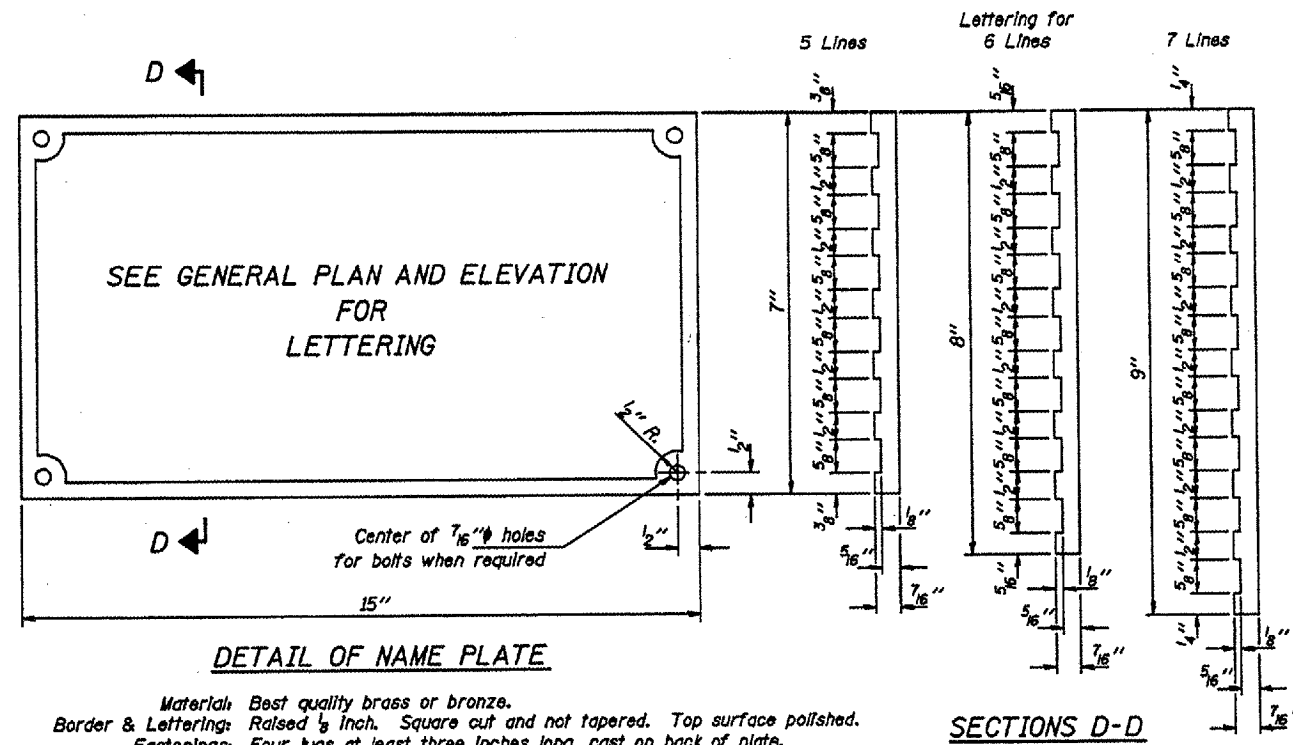


**1/4" SHIM PLATE**

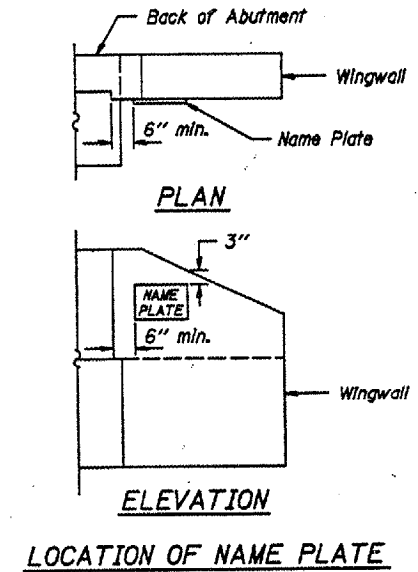
**STEEL RAILING, TYPE S-1  
STANDARD CR-TS1**

Illinois Department of Transportation  
 PASSED APRIL 4, 2005  
 Thomas D. [Signature]  
 Engineer of Bridge Design  
 APPROVED APRIL 4, 2005  
 Ralph E. [Signature]  
 Engineer of Bridges and Structures

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 110	83-01171-00-BR	MASSAC	15	12
PROJECT NO. BR-OS-127(12)			CONTRACT NO. 98282	



Material: Best quality brass or bronze.  
 Border & Lettering: Raised  $\frac{1}{8}$  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

PASSED APRIL 4, 2005  
*Thomas S. Roman*  
 Engineer of Bridge Design

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

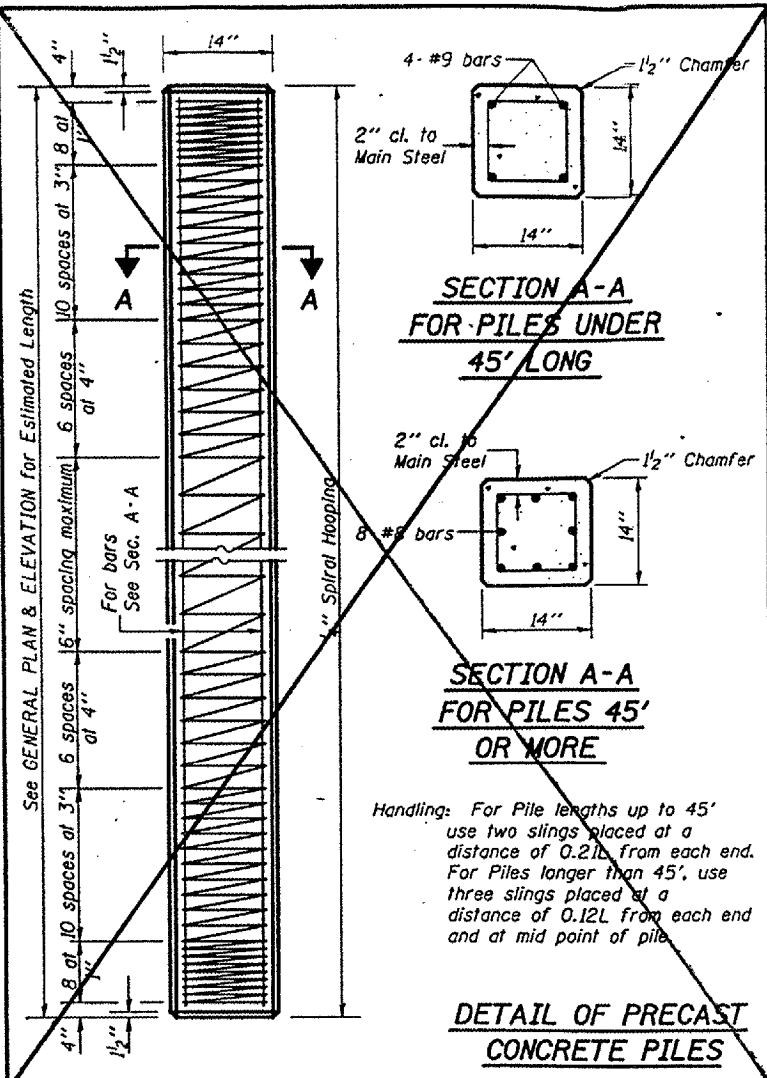
STATE OF ILLINOIS

NAME PLATE  
 STANDARD CN

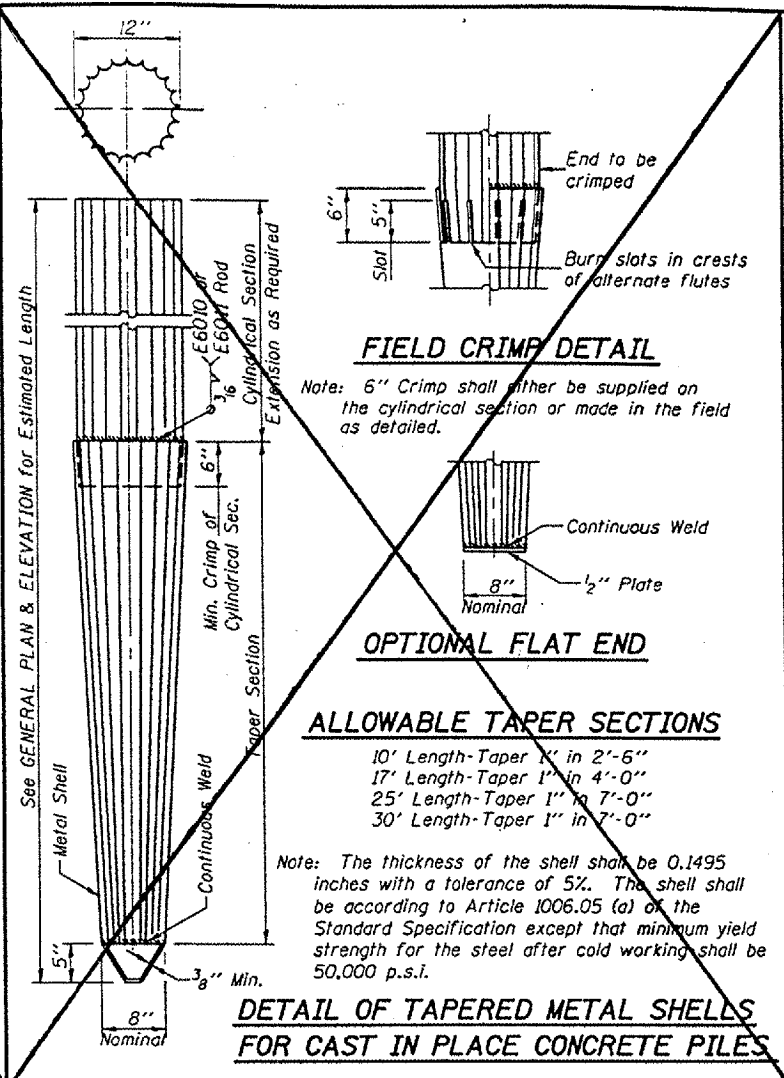
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 110	83-01171-00-BR	MASSAC	15	13
PROJECT NO. BR-OS-127(12)			CONTRACT NO. 99282	

Reinforcement cage shall be omitted when Concrete Encasement is provided.

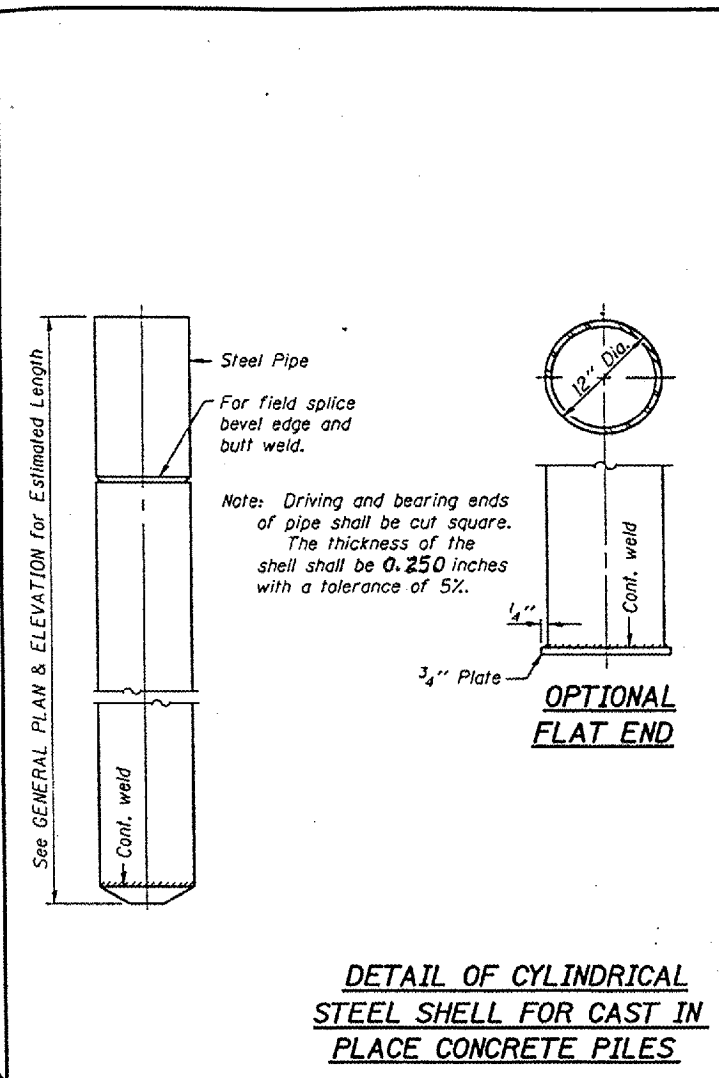
The cost of Reinforcement is included with the Cost of Furnishing Piles.



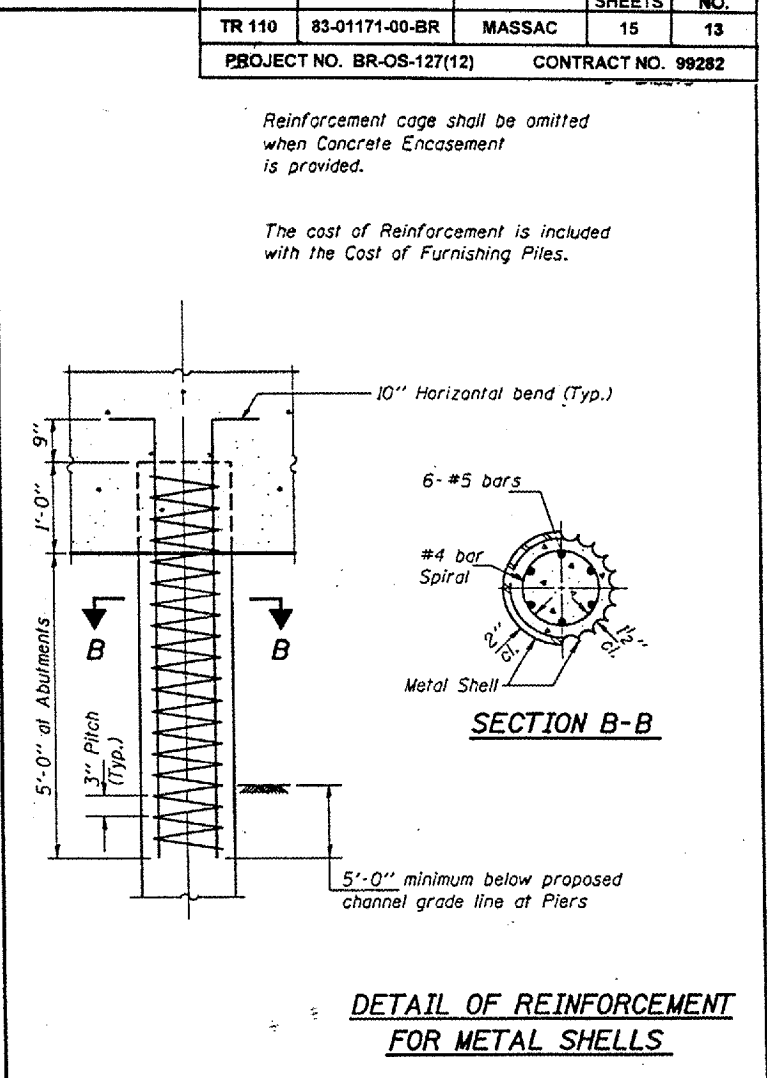
**DETAIL OF PRECAST CONCRETE PILES**



**DETAIL OF TAPERED METAL SHELLS FOR CAST IN PLACE CONCRETE PILES**



**DETAIL OF CYLINDRICAL STEEL SHELL FOR CAST IN PLACE CONCRETE PILES**



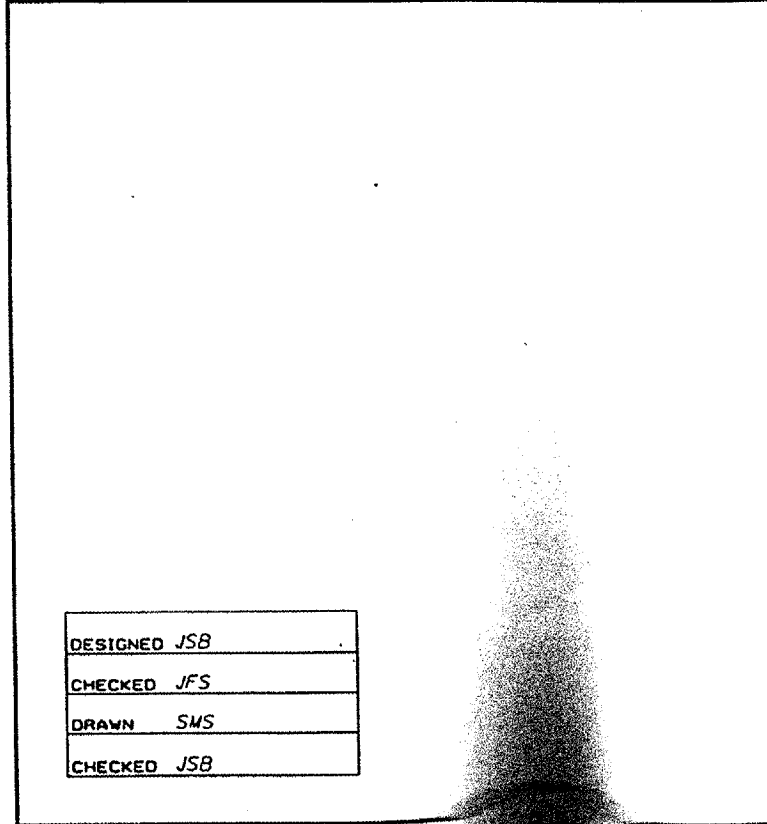
**DETAIL OF REINFORCEMENT FOR METAL SHELLS**

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

Pile Size	Item	Quantity
HP8	Concrete Encasement	0.063 C.Y.
HP10	Concrete Encasement	0.085 C.Y.
HP12	Concrete Encasement	0.112 C.Y.

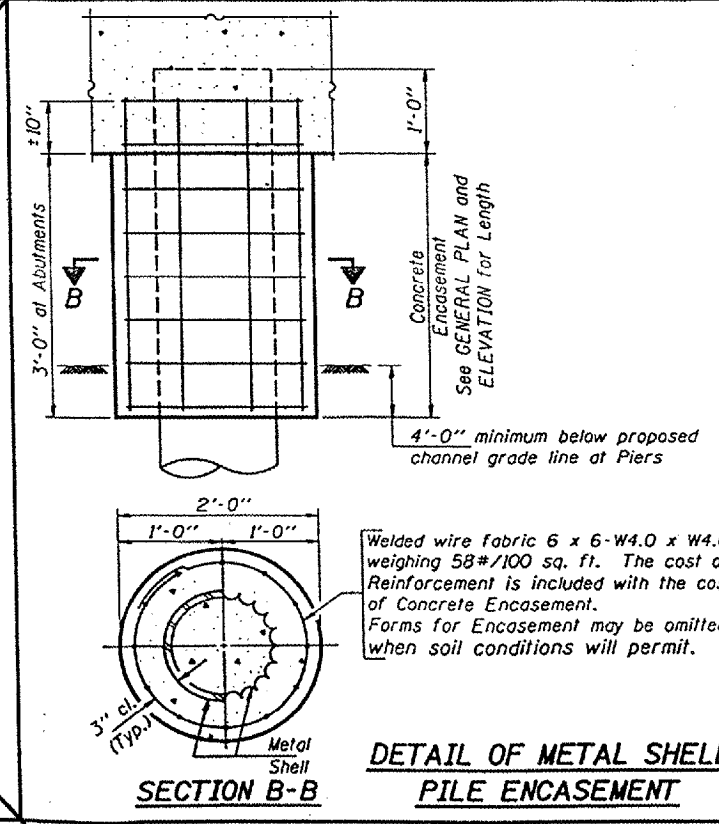
**(METAL SHELL PILES)**

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



DESIGNED	JSB
CHECKED	JFS
DRAWN	SMS
CHECKED	JSB

Pile	"F"
HP8	1'-6"
HP10	1'-9"
HP12	2'-0"



**DETAIL OF METAL SHELL PILE ENCASEMENT**

**PILE DETAILS**  
 TOWNSHIP ROUTE 110  
 SEVENMILE CREEK  
 SECTION 83-01171-00-BR  
 MASSAC COUNTY

