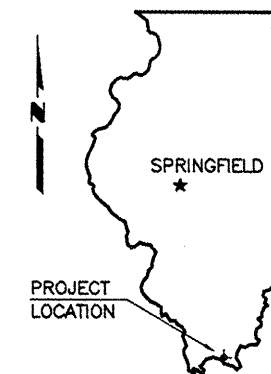


STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED
HIGHWAY BRIDGE PROGRAM

TOWNSHIP ROUTE 80 (SUNSET LANE)
SECTION 00-01198-00-BR
PROJECT NO. BROS-127(19)
JOB NO. C-99-529-04
CN/IC RAILROAD

MASSAC COUNTY

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 80	00-01198-00-BR	MASSAC	13	1
PROJECT NO. BROS-127(19)			CONTRACT NO. 99354	



SUMMARY OF QUANTITIES

CODE NO.	PAY ITEM	UNIT	TOTAL
20100500	TREE REMOVAL, ACRES	ACRE	0.2
20200100	EARTH EXCAVATION	CU YD	280
20400100	BORROW EXCAVATION	CU YD	2,425
25000200	SEEDING, CLASS 2	ACRE	0.7
25000400	NITROGEN FERTILIZER NUTRIENT	POUND	63
25000500	PHOSPHORUS FERTILIZER NUTRIENT	POUND	63
25000600	POTASSIUM FERTILIZER NUTRIENT	POUND	63
25000700	AGRICULTURAL GROUND LIMESTONE	TON	1.4
25100115	MULCH, METHOD 2	ACRE	0.7
28100807	STONE DUMPED RIPRAP, CLASS A4	TON	250
40200800	AGGREGATE SURFACE COURSE, TYPE B	TON	850
50100100	REMOVAL OF EXISTING STRUCTURES	EACH	1
50300225	CONCRETE STRUCTURES	CU YD	85.6
50300280	CONCRETE ENCASEMENT	CU YD	14.8
50400305	PRECAST PRESTRESSED CONCRETE DECK BEAMS (17" DEPTH)	SQ FT	1,748
50400405	PRECAST PRESTRESSED CONCRETE DECK BEAMS (21" DEPTH)	SQ FT	1,078
50800105	REINFORCEMENT BARS	POUND	6,544
Δ 50900205	STEEL RAILING, TYPE S1	FOOT	236
51200957	FURNISHING METAL SHELL PILES 12" X 0.250"	FOOT	617
51202305	DRIVING PILES	FOOT	617
51203200	TEST PILE METAL SHELLS	EACH	1
51500100	NAME PLATES	EACH	1
67100100	MOBILIZATION	L SUM	1
Δ 78201000*	TERMINAL MARKER - DIRECT APPLIED	EACH	4
Z0048665*	RAILROAD PROTECTIVE LIABILITY INSURANCE	L SUM	1

* SEE SPECIAL PROVISIONS
Δ SPECIALTY ITEMS

INDEX OF SHEETS

1. COVER SHEET
 2. PLAN & PROFILE
 3. GENERAL PLAN & ELEVATION
 4. SUPERSTRUCTURE - SPAN 1
 5. SUPERSTRUCTURE - SPAN 2
 6. SUPERSTRUCTURE - SPAN 3
 7. ABUTMENTS
 8. PIERS
 9. STEEL RAILING
 10. NAME PLATE
 11. PILE DETAILS
 - 12.-13. CROSS SECTIONS
- STANDARDS
- 00001-05 STD SYMBOLS, ABBREVIATIONS & PATTERNS
 - 28001-04 TEMPORARY EROSION CONTROL SYSTEMS
 - 635006-03 REFLECTOR & TERMINAL MARKER PLACEMENT
 - 701901-01 TRAFFIC CONTROL DEVICES
 - BLR 21-8 TYP APP OF TRAFFIC CONTROL DEVICES



LOCATION MAP

SCALE: 1" = 2 MILES

NET LENGTH OF IMPROVEMENT = 950.00 FT. = 0.180 MILES

CLASSIFICATION : LOCAL ROAD
ADT : 75
DESIGN SPEED : 30 MPH

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

CONTRACT NO. 99354

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



Edward W. Miller
Edward W. Miller
PROFESSIONAL ENGINEER
#062-025277
EXPIRES NOV. 30, 2009

ILLINOIS DEPARTMENT OF TRANSPORTATION	
Approved	<u>JANUARY 22, 2009</u> <i>Robert J. ...</i> Massac County Engineer
Passed	<u>4/7/2009</u> <i>Richard W. ...</i> District 9 Engineer of Local Roads and Streets
Releasing for Bid Based on Limited Review	<u>4/7/09</u> <i>Mary S. ...</i> Deputy Director of Highways, Region 5 Engineer

TBM - RR Spike in fence post
41' Lt. Sta. 13+96
Elev. 420.00

Existing Structure - 6 Span timber deck
on timber stringers and timber pile
bent piers and abutments.
17.4' W x 113.5' L

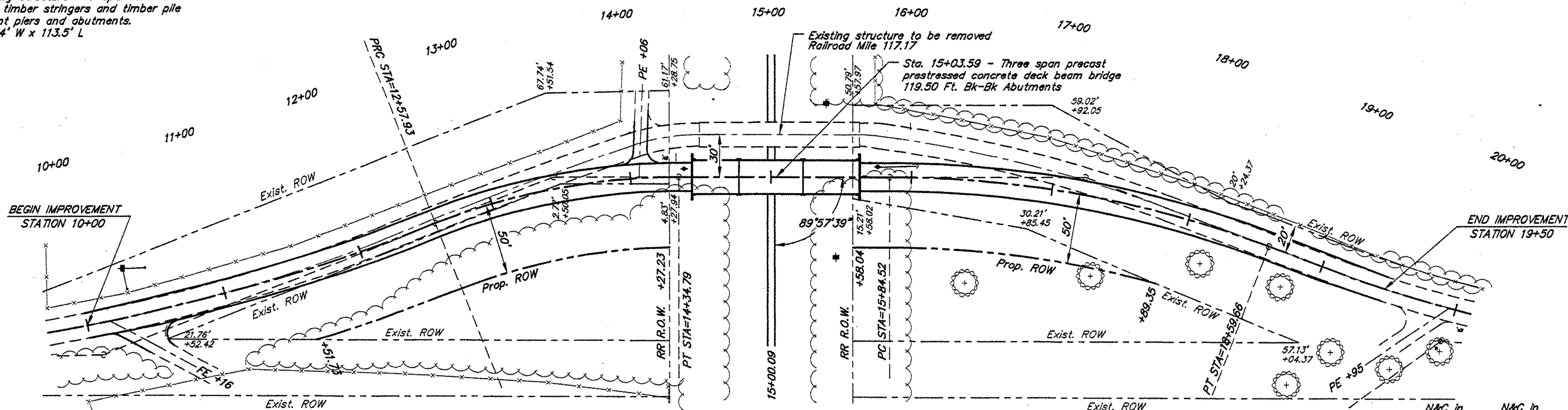
CURVE DATA

PI Sta = 13+47.43
Δ = 21°39'53" T = 89.50'
D = 12°15'00" L = 176.85'
R = 467.72' E = 8.49'

CURVE DATA

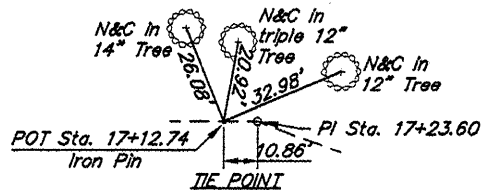
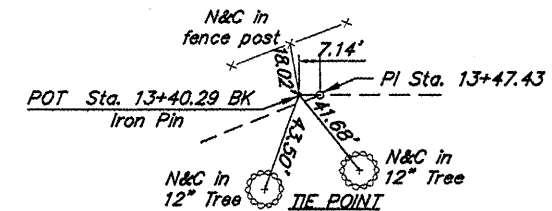
PI Sta = 17+23.60
Δ = 20°38'09" T = 139.08'
D = 7°30'00" L = 275.14'
R = 763.94' E = 12.56'

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 80	00-01198-00-BR	MASSAC	13	2
PROJECT NO. BROS-127(19)			CONTRACT NO. 99354	

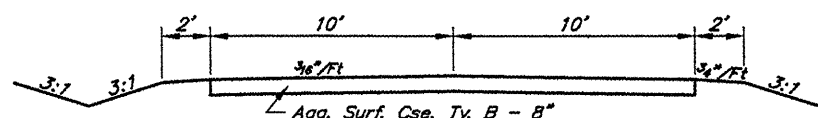
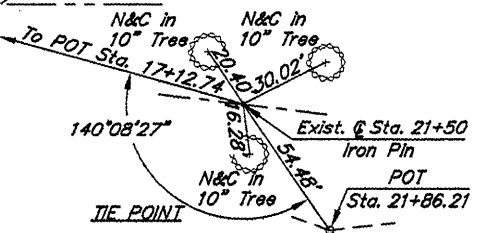


SCALES:
1" = 80' HOR
1" = 20' VER

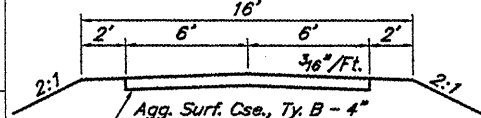
CURVE DATA
PI Sta = 10+09.62
Δ = 20°21'15" T = 253.66'
D = 12°15'00" L = 501.97'
R = 1413.02' E = 22.59'



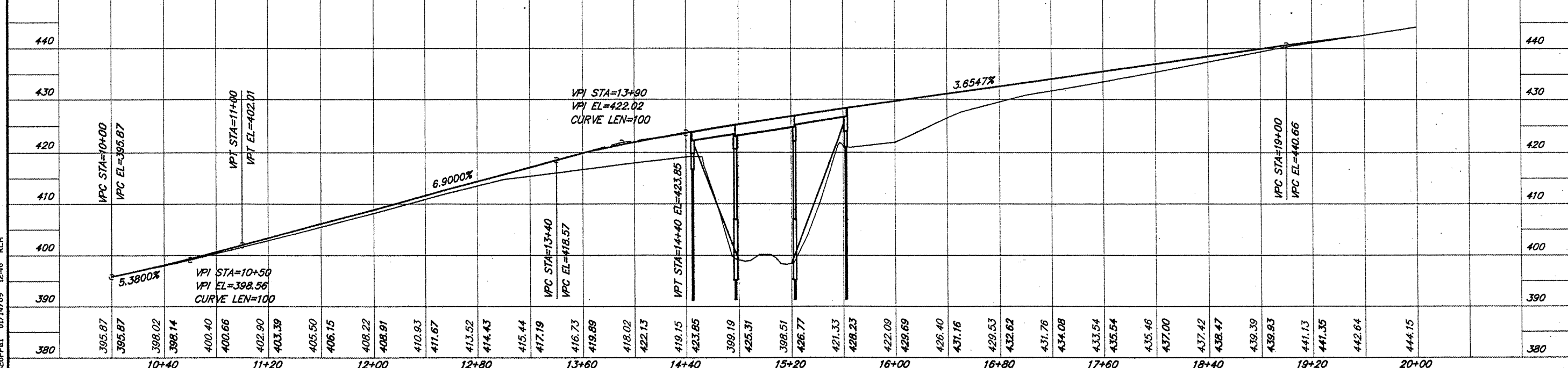
TREE REMOVAL ACRES
Sta. 13+15 to Sta. 14+70 Rt. - 0.12 Ac.
Sta. 15+30 to Sta. 16+00 Rt. - 0.08 Ac.
@ Roadway to Construction Limits



TYPICAL ROADWAY SECTION



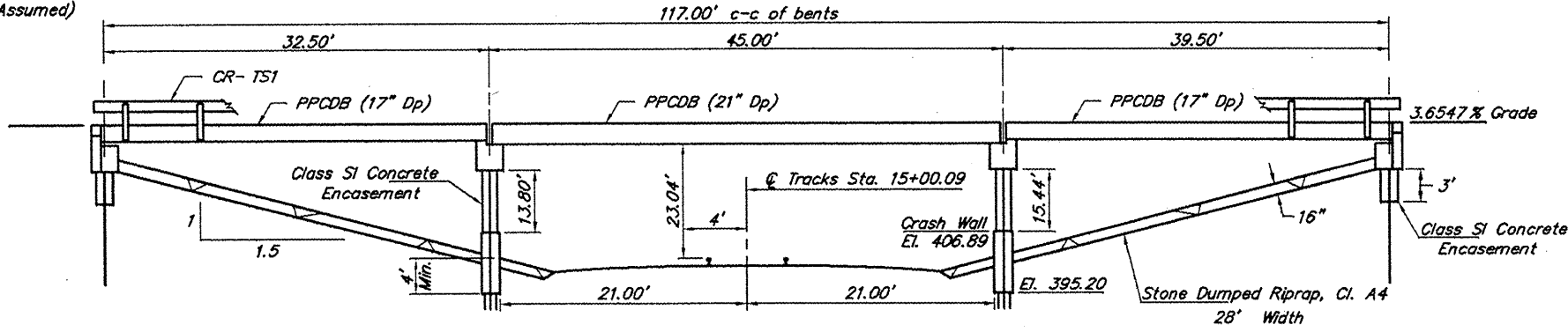
TYPICAL ENTRANCE



620PPI-I 01/14/09 12+40 RLM

B.M. - RR Spike in fence post
41' Lt. Sta. 13+96
Elev. 420.00 (Assumed)

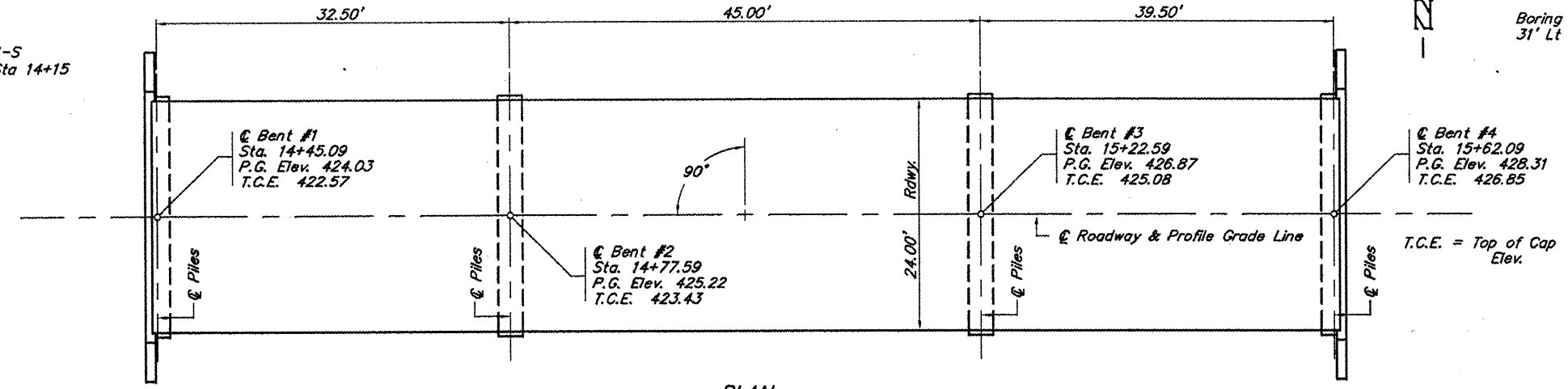
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 80	00-01198-00-BR	MASSAC	13	3
PROJECT NO. BROS-127(19)			CONTRACT NO. 99354	



ELEVATION

Existing Structure - Six span timber deck on timber stringers and timber pile bent piers and abutments - 17.4'W x 113.5'L

Boring 1-S
17' Lt Sta 14+15



PLAN

Boring 2-S
31' Lt Sta 16+05

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 one test pile, as specified, in a permanent location as directed by the Engineer.
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.

TOTAL BILL OF MATERIAL

Item	Unit	Super	Sub.		Total
			Piers	Abuts.	
Removal of Existing Structures	Each				1
Concrete Structures	Cu. Yds.		69.4	16.2	85.6
P.P. Conc. Dk. Bm. 17" Dp.	Sq. Ft.	1748			1748
P.P. Conc. Dk. Bm. 21" Dp.	Sq. Ft.	1078			1078
Steel Railing, Type S1	Foot	236			236
Reinforcement Bars	Pound		4824	1720	6544
Furnishing Metal Pile Shells 12"	Foot		369	248	617
Driving Piles	Foot		369	248	617
Test Pile Metal Shells	Each		1		1
Concrete Encasement	Cu. Yds.		12.7	2.1	14.8
Name Plates	Each			1	1
Stone Dumped Riprap, Class A4	Tons			250	250

PILE DATA (2-PIERS)

Type & Size: Metal Shell 12" dia. x 0.25" walls
Nominal Required Bearing: 306 kips
Allowable Resistance Available: 102 kips
Estimated Length: 41 Feet
Number Required: 10 (Includes 1 Test Pile located in Bent #3)

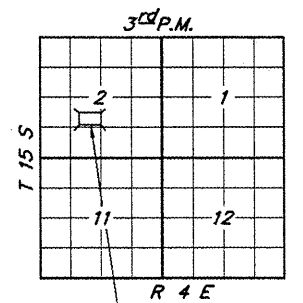
PILE DATA (2-ABUTS.)

Type & Size: Metal Shell 12" dia. x 0.25" walls
Nominal Required Bearing: 186 kips
Allowable Resistance Available: 62 kips
Estimated Length: 31 Feet
Number Required: 8

CN/IC RAILROAD
SEC. 00-01198-00-BR BUILT 20
COUNTY UNIT ROAD DISTRICT
MASSAC COUNTY
LOADING HS20
STR. NO. 064-3138

LETTERING FOR NAME PLATE

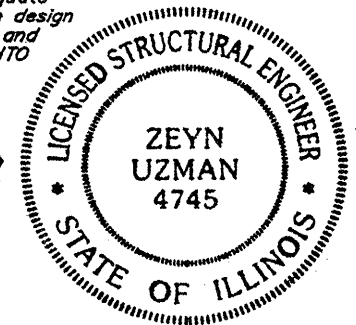
Locate Name Plate at Southwest Corner of Bridge (See Std. CN)



LOCATION SKETCH

"I certify that to the best of my knowledge, information and belief, this bridge design is structurally adequate for the design loading shown on the plans. The design is an economical one for the style of structure and complies with requirements of the current 'AASHTO Standard Specifications for Highway Bridges'."

Zeyn B. Uzman
Zeyn B. Uzman
S.E. #81-4745
Expires Nov. 30, 2010



DESIGN SPECIFICATIONS

2002 AASHTO Standard Specifications - 17th ed.

LOADING HS20-44

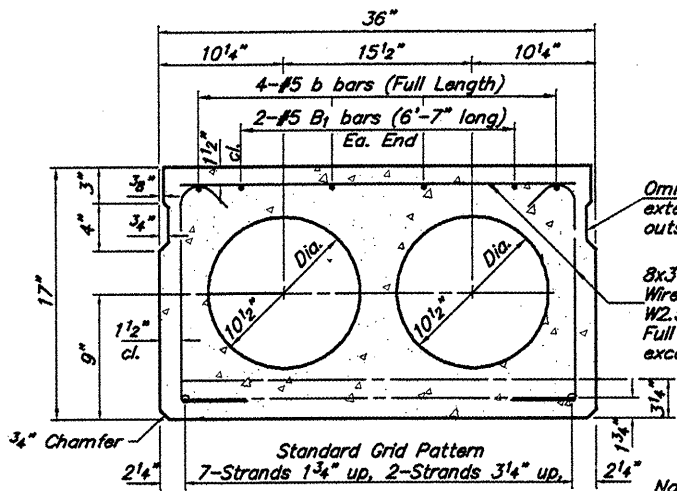
Allow 25#/sq. ft. for future wearing surface.

SEISMIC DATA

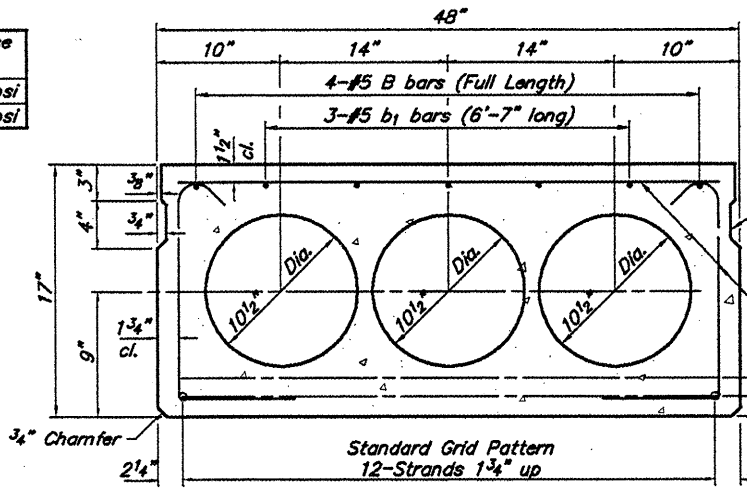
Seismic Performance Category (SPC) = B
Bedrock Acceleration Coefficient (A) = 17.0%
Site Coefficient (S) = 1.5

GENERAL PLAN & ELEVATION
TOWNSHIP ROUTE 80
CN/IC RAILROAD
SECTION 00-01198-00-BR
MASSAC COUNTY
STATION 15+03.59

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 80	00-01198-00-BR	MASSAC	13	4
PROJECT NO. BROS-127(19)			CONTRACT NO. 99354	

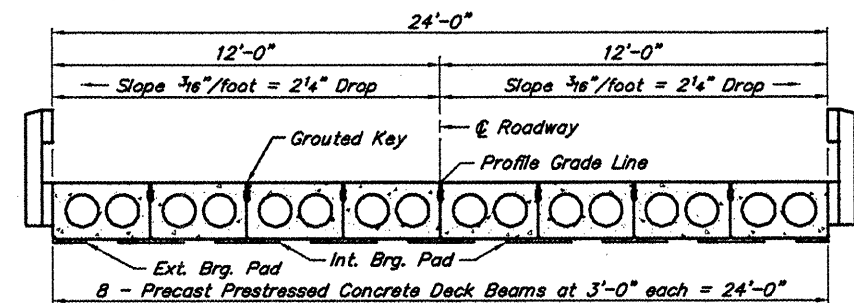


Required Release Strength
36" Bm. 4,000 psi
48" Bm. 4,300 psi

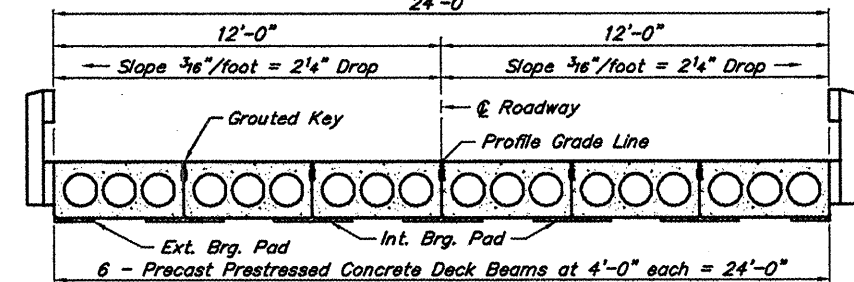


TYPICAL SECTION 36" BEAM
9-1/2" Strands Each Strand Stressed to 28,900 lbs.

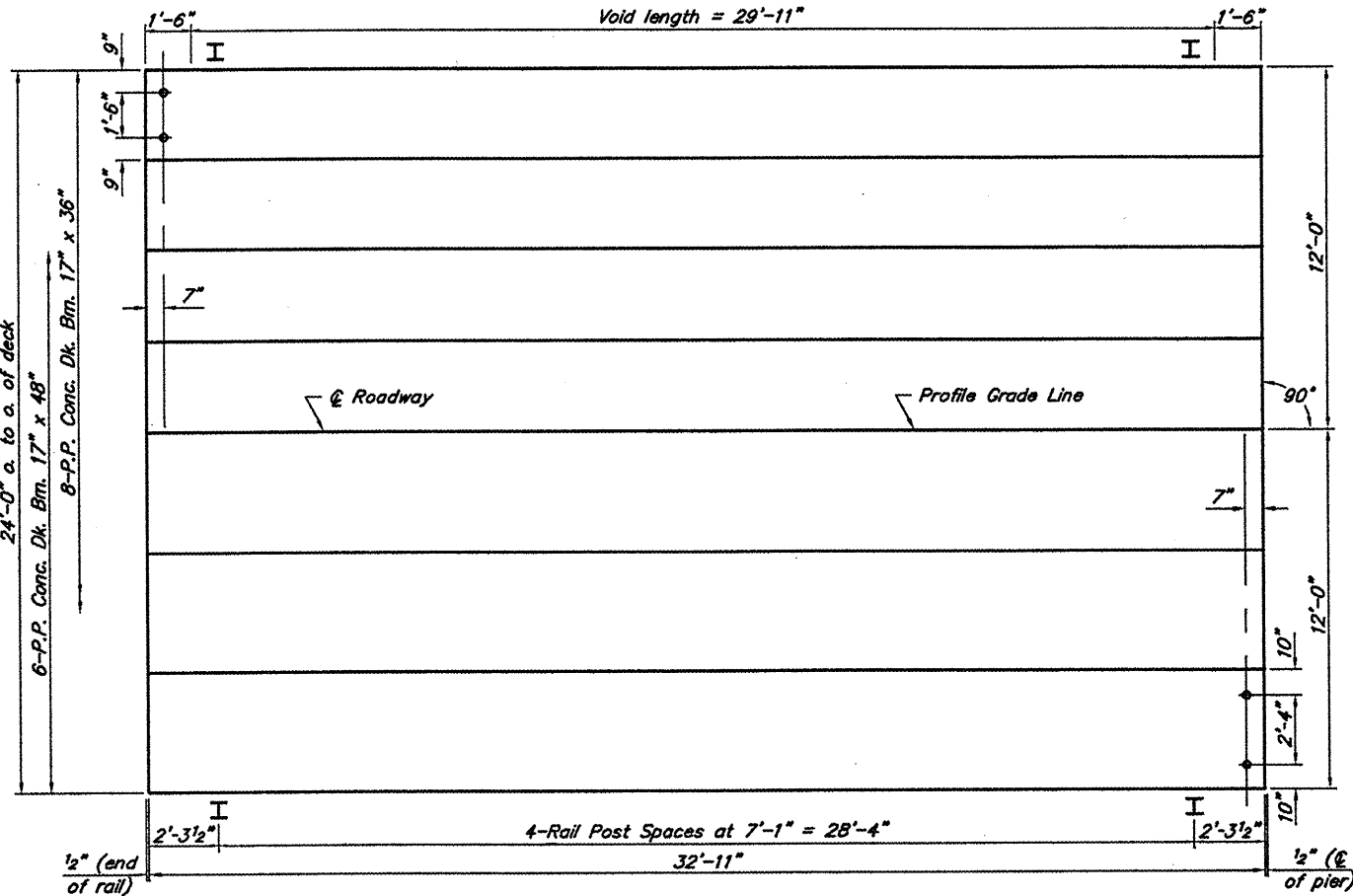
TYPICAL SECTION 48" BEAM
12-1/2" Strands Each Strand Stressed to 28,900 lbs.



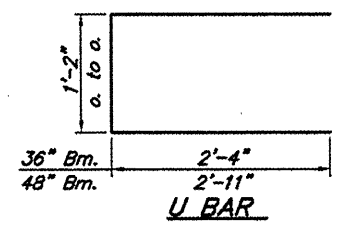
CROSS SECTION



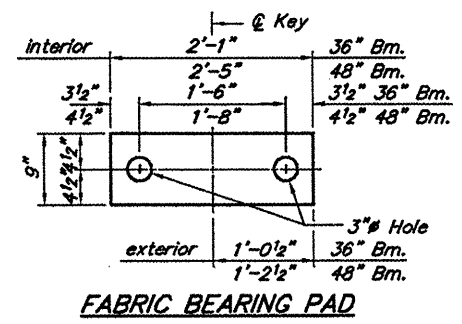
CROSS SECTION



PLAN



U BAR



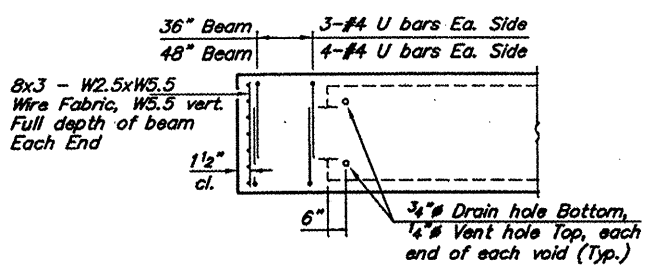
FABRIC BEARING PAD

NOTES

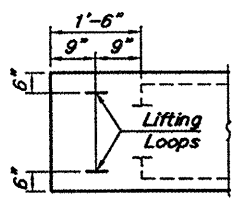
Reinforcement bars shall conform to AASHTO M-31, M-42 or M-53, Grade 60. Prestressing steel shall be uncoated high strength, stress-relieved 7-wire strand, Grade 270. The nominal diameter shall be 1/2" and the nominal cross-sectional area shall be 0.153 sq. in. An equal substitution of the low-relaxation strands for the stress-relieved strands will be permitted. Lifting loops shall be 5/8" diameter, 6x25 class wire rope with fiber core and shall have a minimum ultimate tensile strength of 33,000 lbs. or 2-1/2"-270 ksi strands, as shown. 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. The bearing seat surfaces shall be adjusted by shimming to assure firm and even bearing. Two 1/8" fabric adjusting shims of the dimensions of the Exterior Bearing Pad shall be provided for each bearing. 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 a minimum of 24 hours prior to grouting the shear keys. Nominal 1" joint at @ Pier shall be filled with non-shrink grout. Rail Post Anchor Devices shall be cast into exterior face of outside beams as elsewhere specified.

QUANTITIES FOR SPAN 1

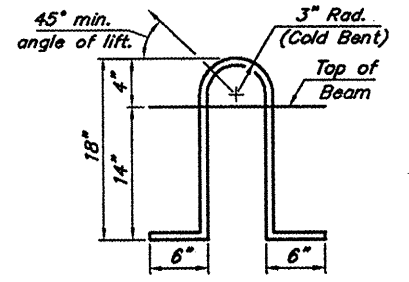
P.P. Conc. Dk. Bm. 17" Dp.	790 Sq. Ft.
Steel Railing, Type S1	66 Ft.



END PLAN



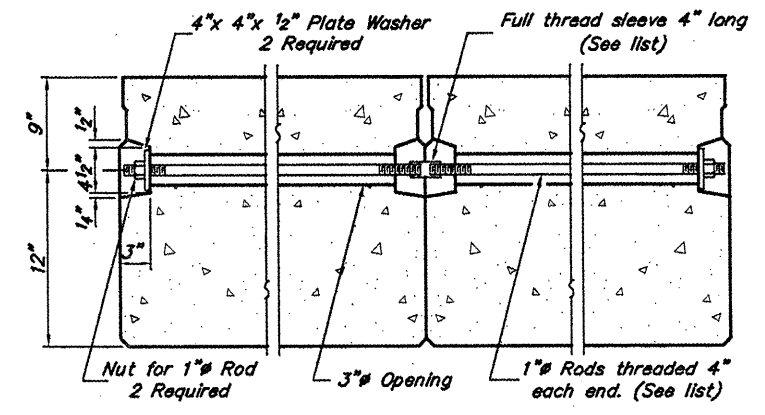
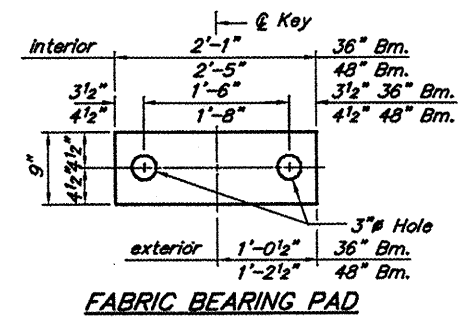
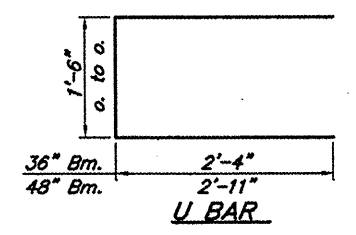
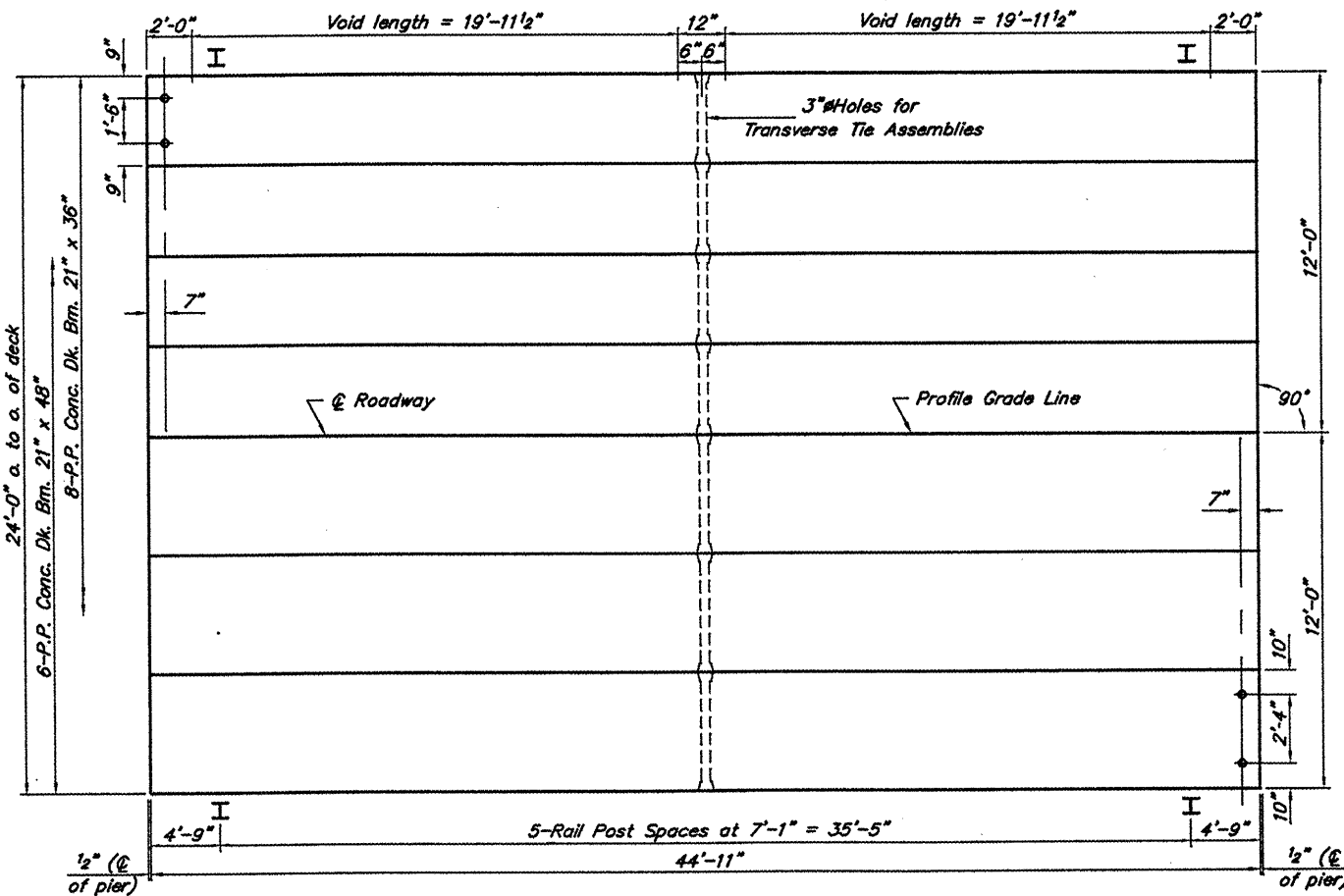
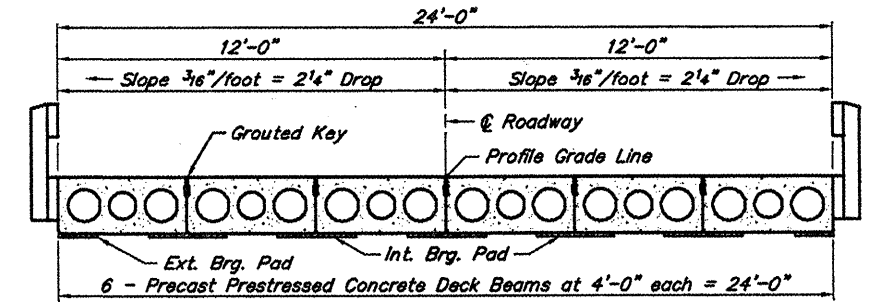
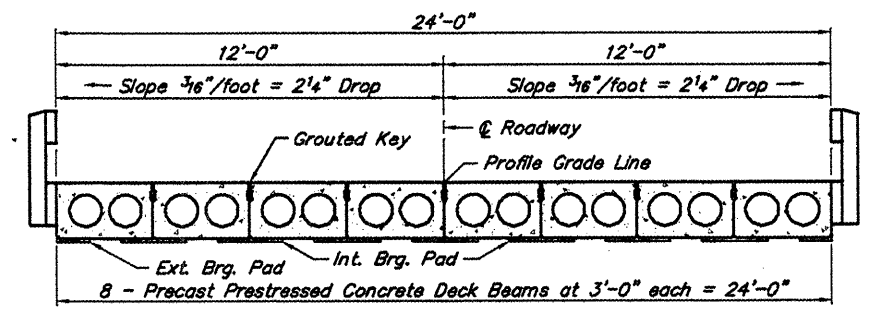
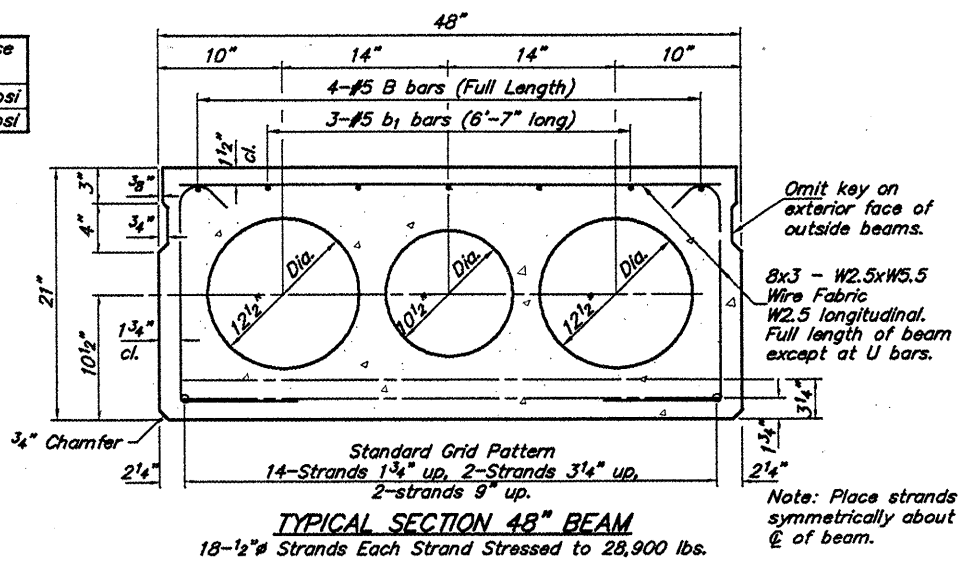
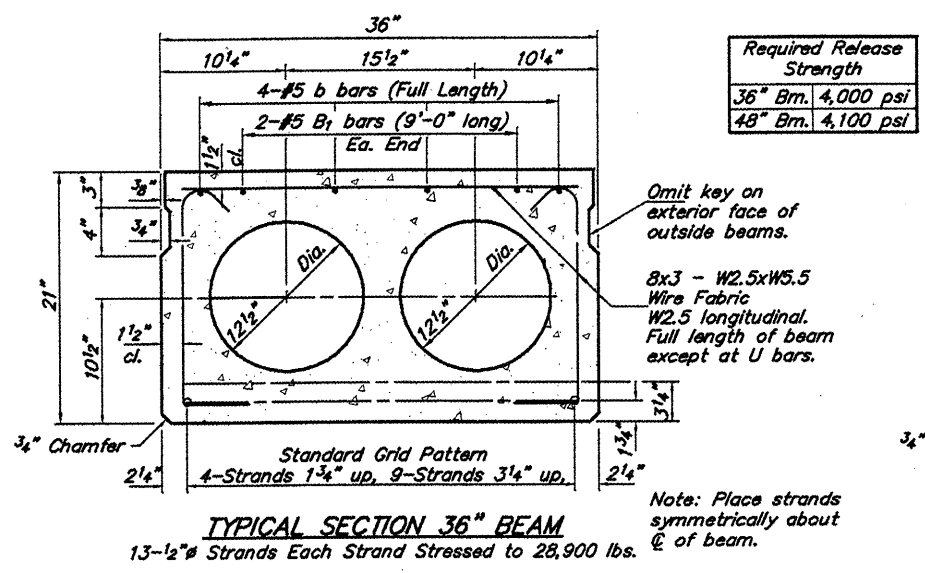
END BLOCK DETAIL



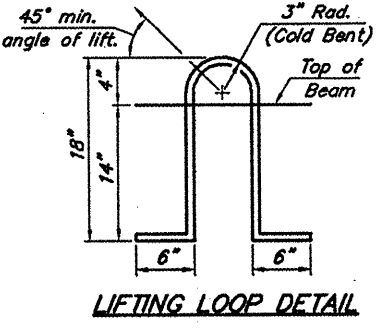
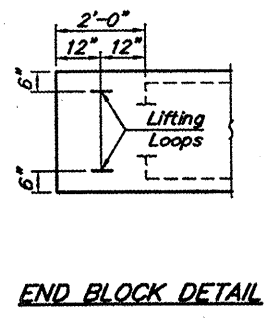
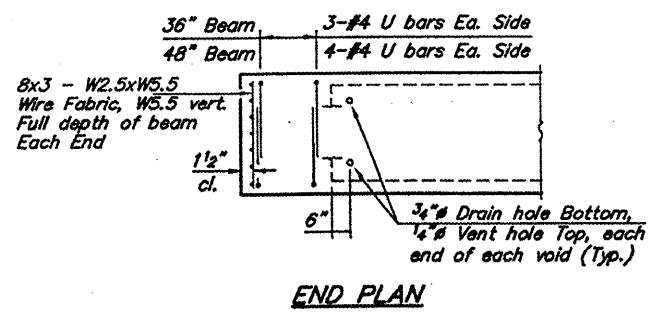
LIFTING LOOP DETAIL

SUPERSTRUCTURE - SPAN 1
CN/IC RAILROAD
SECTION 00-01198-00-BR
MASSAC COUNTY

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 80	00-01198-00-BR	MASSAC	13	5
PROJECT NO. BROS-127(19)			CONTRACT NO. 99354	



	No. Sleeves	No. Rods	Length
36" Bm.	7	8	2'-11"
48" Bm.	5	6	3'-11"



NOTES

Reinforcement bars shall conform to AASHTO M-31, M-42 or M-53, Grade 60. Prestressing steel shall be uncoated high strength, stress-relieved 7-wire strand, Grade 270. The nominal diameter shall be 1/2" and the nominal cross-sectional area shall be 0.153 sq. in. An equal substitution of the low-relaxation strands for the stress-relieved strands will be permitted.

Lifting loops shall be 3/4" diameter, 6x25 class wire rope with fiber core and shall have a minimum ultimate tensile strength of 46,000 lbs. or 2-1/2"-270 ksi strands, as shown. 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.

The bearing seat surfaces shall be adjusted by shimming to assure firm and even bearing. Two 1/8" fabric adjusting shims of the dimensions of the Exterior Bearing Pad shall be provided for each bearing.

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 a minimum of 24 hours prior to grouting the shear keys.

Nominal 1" joint at Pler shall be filled with non-shrink grout.

Rail Post Anchor Devices shall be cast into exterior face of outside beams as elsewhere specified.

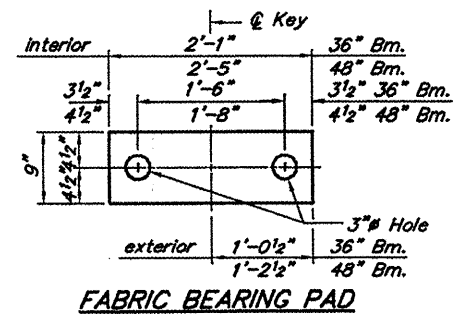
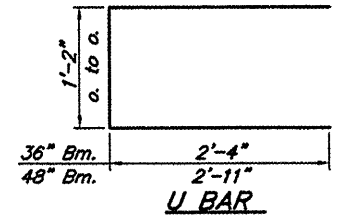
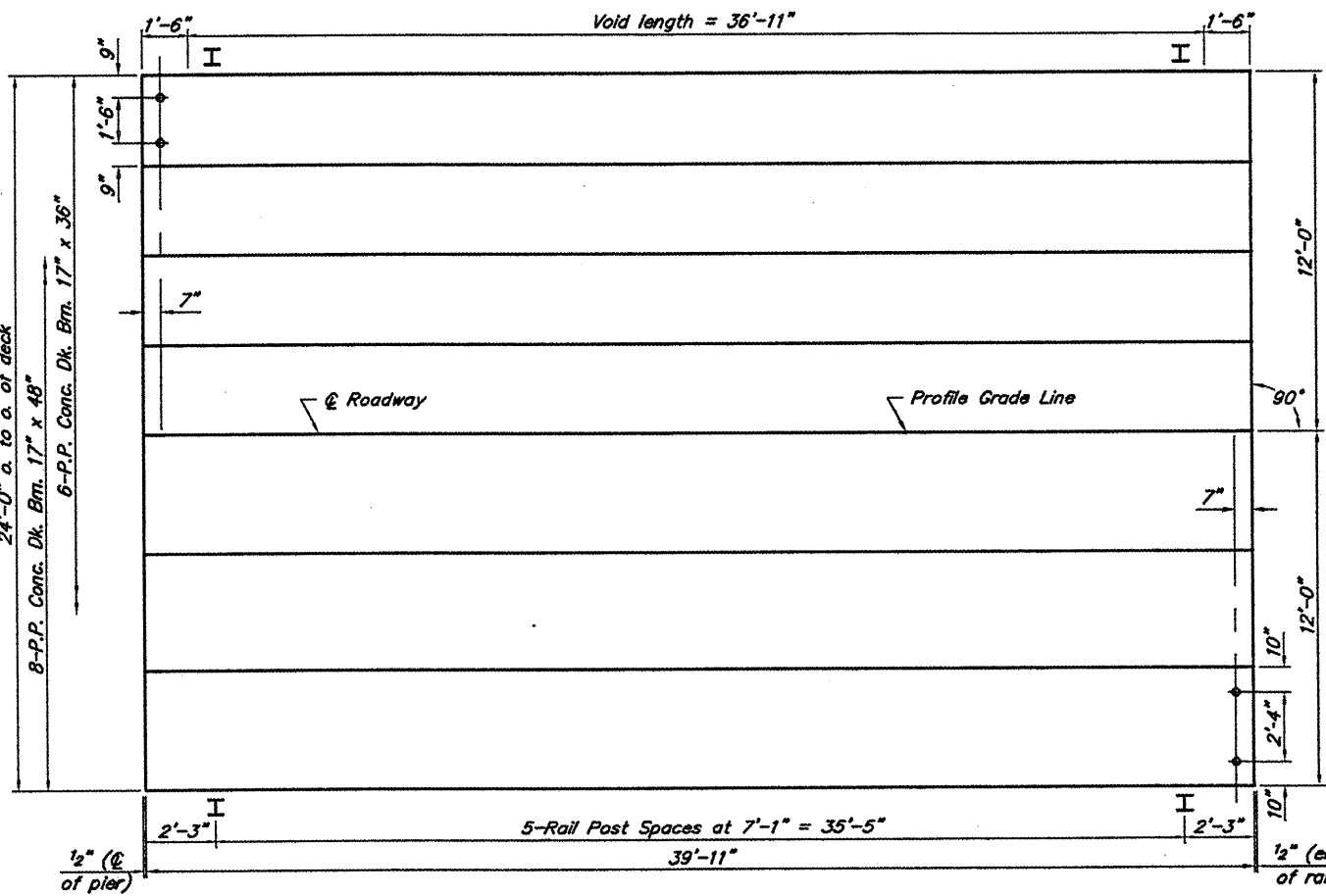
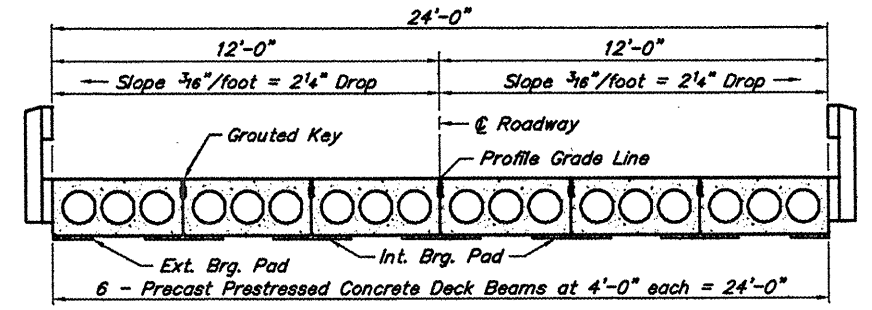
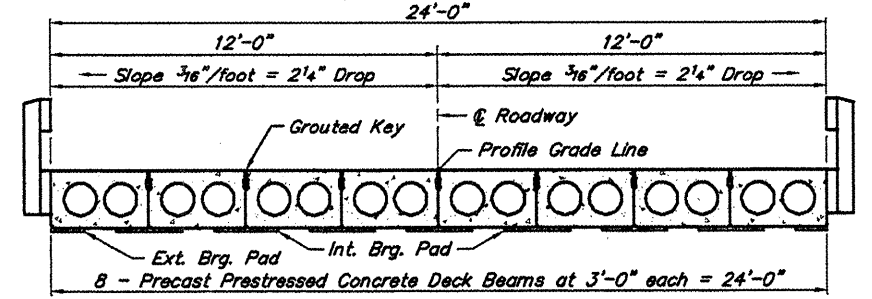
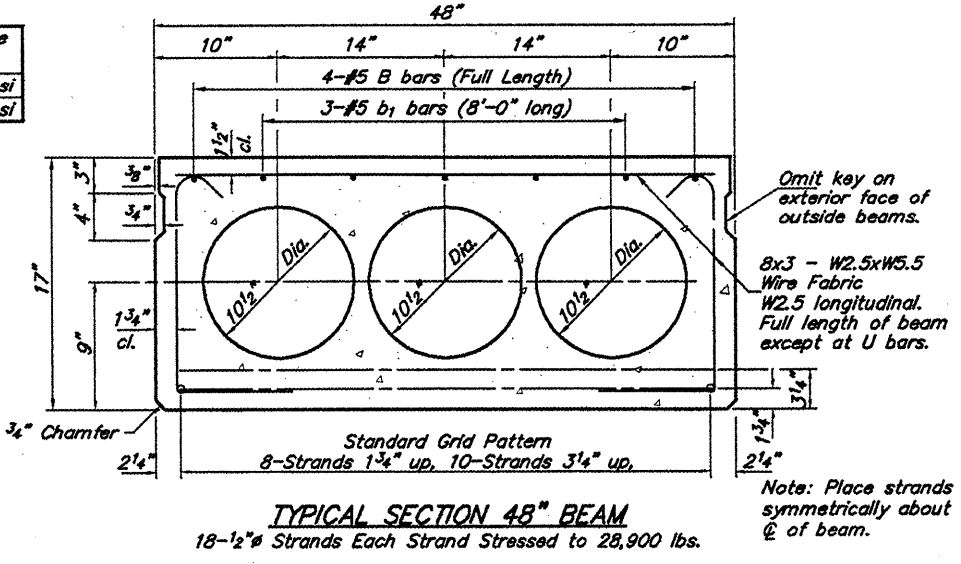
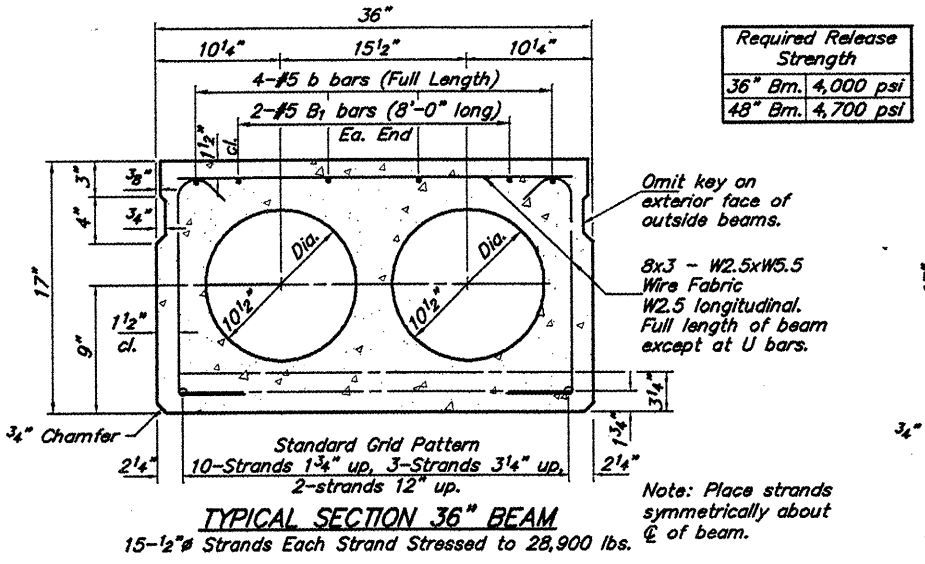
The 1" rods in the transverse tie assembly shall be tightened to a snug fit and the threads set. Pockets that receive transverse tie bar on outside shall be filled with grout after transverse tie assembly is in place.

QUANTITIES FOR SPAN 2

P.P. Conc. Dk. Bm. 21" Dp.	1078 Sq. Ft.
Steel Railing, Type S1	90 Ft.

SUPERSTRUCTURE - SPAN 2
CN/IC RAILROAD
SECTION 00-01198-00-BR
MASSAC COUNTY

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 80	00-01198-00-BR	MASSAC	13	6
PROJECT NO. BROS-127(19)			CONTRACT NO. 99354	



NOTES

Reinforcement bars shall conform to AASHTO M-31, M-42 or M-53, Grade 60. Prestressing steel shall be uncoated high strength, stress-relieved 7-wire strand, Grade 270. The nominal diameter shall be 1/2" and the nominal cross-sectional area shall be 0.153 sq. in. An equal substitution of the low-relaxation strands for the stress-relieved strands will be permitted.

Lifting loops shall be 5/8" diameter, 6x25 class wire rope with fiber core and shall have a minimum ultimate tensile strength of 33,000 lbs. or 2-1/2"-270 ksi strands, as shown.

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.

The bearing seat surfaces shall be adjusted by shimming to assure firm and even bearing. Two 1/2" fabric adjusting shims of the dimensions of the Exterior Bearing Pad shall be provided for each bearing.

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 a minimum of 24 hours prior to grouting the shear keys.

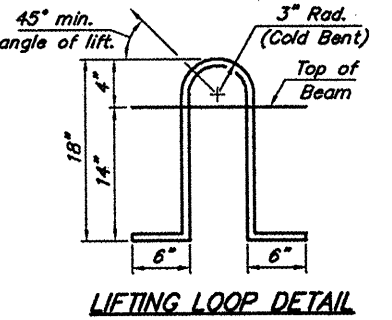
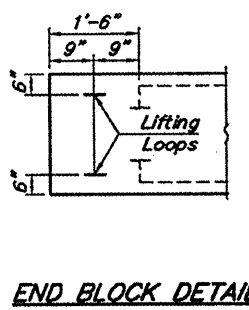
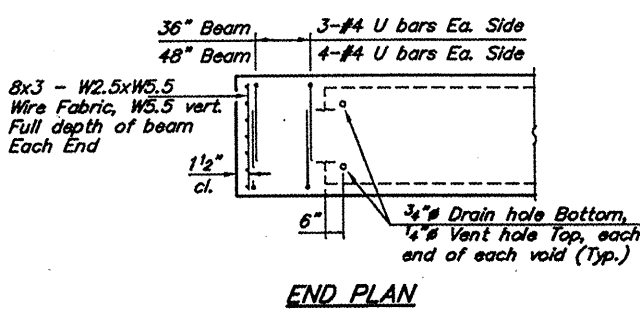
Nominal 1" joint at \bar{c} Pier shall be filled with non-shrink grout.

Rail Post Anchor Devices shall be cast into exterior face of outside beams as elsewhere specified.

The 1" rods in the transverse tie assembly shall be tightened to a snug fit and the threads set. Pockets that receive transverse tie bar on outside shall be filled with grout after transverse tie assembly is in place.

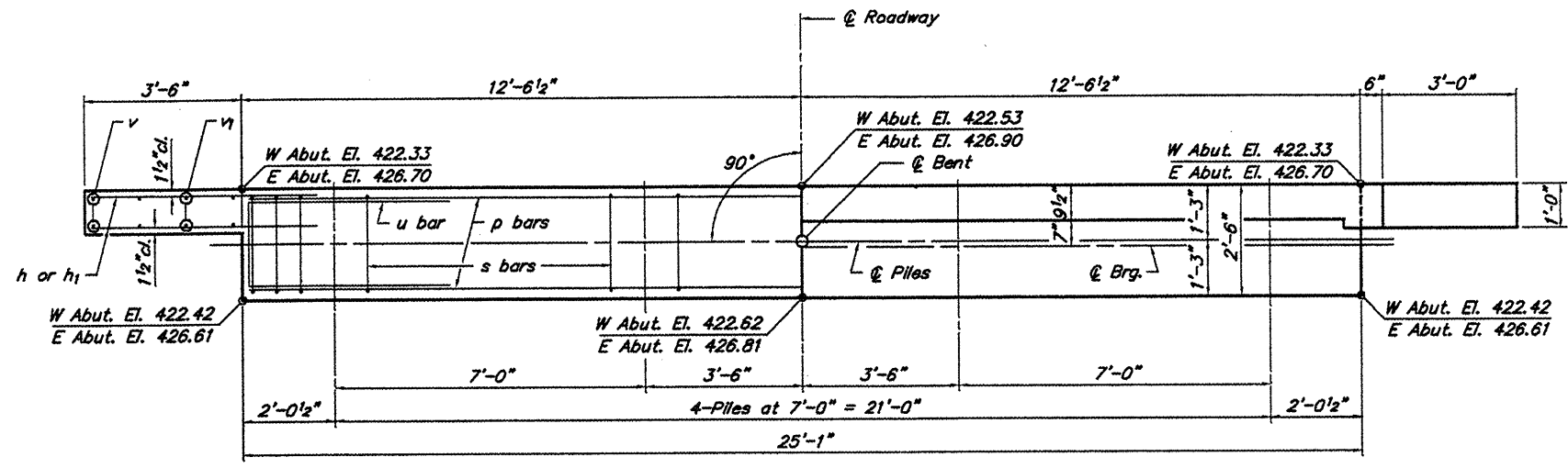
QUANTITIES FOR SPAN 3

P.P. Conc. Dk. Bm. 17" Dp.	958 Sq. Ft.
Steel Railing, Type S1	80 Ft.

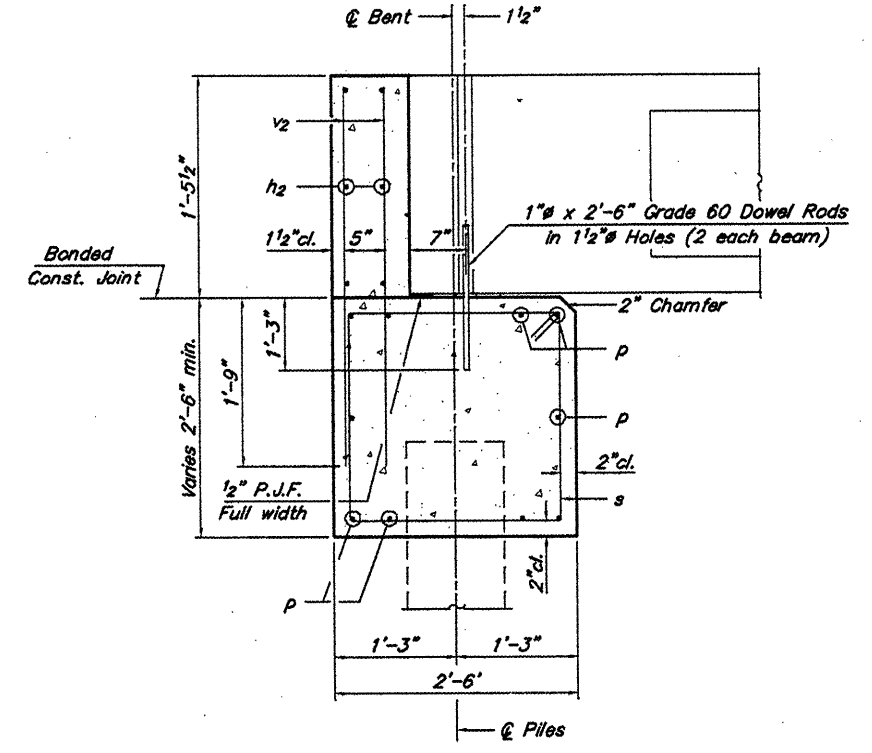


SUPERSTRUCTURE - SPAN 3
 CN/IC RAILROAD
 SECTION 00-01198-00-BR
 MASSAC COUNTY

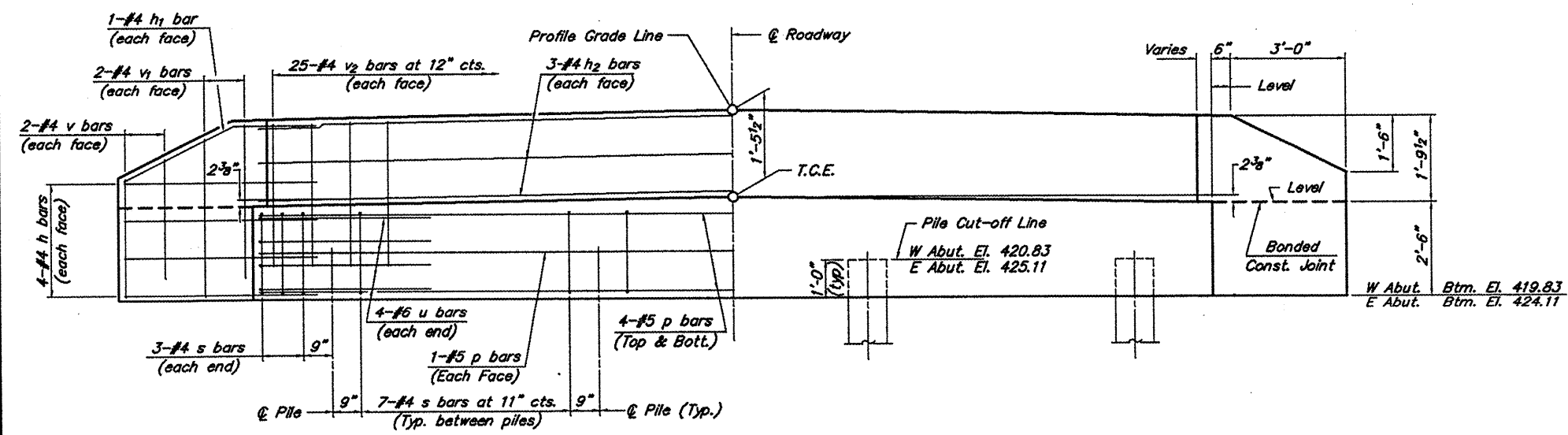
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 80	00-01198-00-BR	MASSAC	13	7
PROJECT NO. BROS-127(19)			CONTRACT NO. 99354	



PLAN



SECTION THRU ABUT.
(At Right Angles)



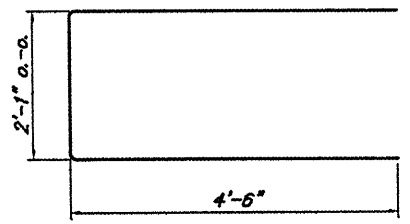
ELEVATION

NOTES

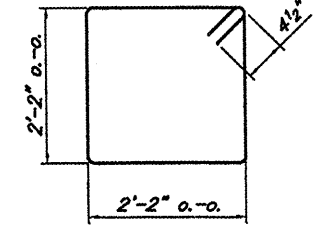
- The Backwall and the portion of the Wingwalls above the bonded construction joint shall be cast against the in-place beam.
- Reinforcement bars shall conform to A.A.S.H.T.O. M-31, M-42 or M-53, Grade 60.

DESIGN STRESSES

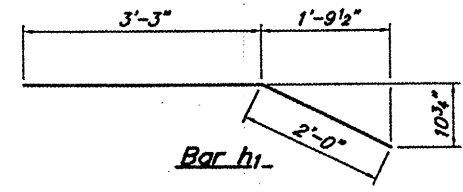
$f_c = 3,500 \text{ psi}$
 $f_y = 60,000 \text{ psi}$



Bar u



Bar s



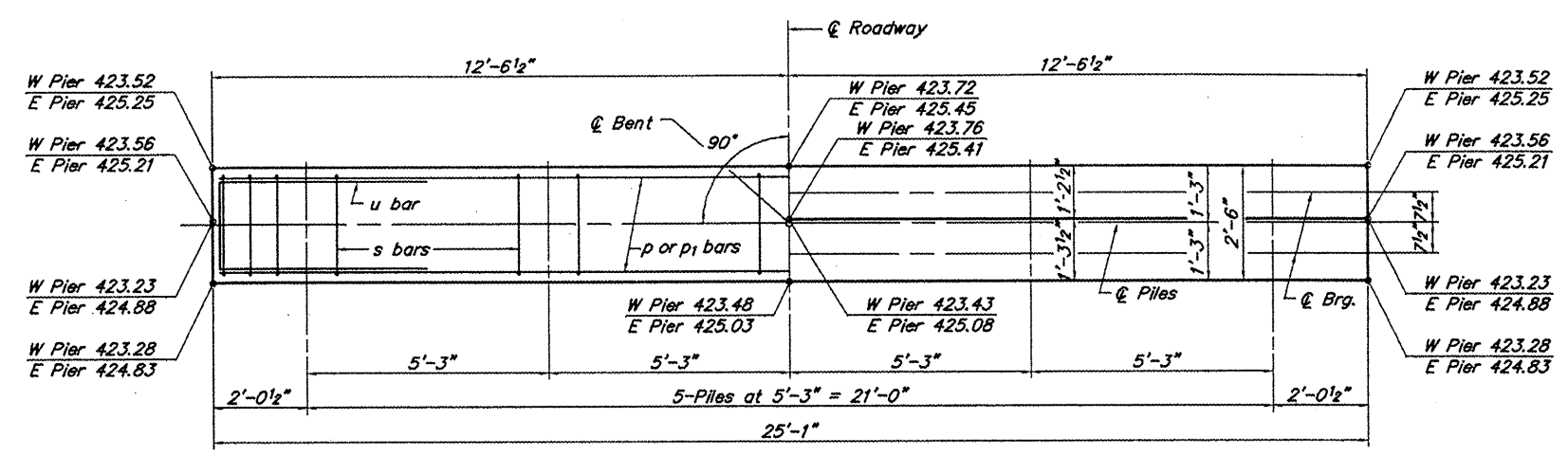
Bar h1

BILL OF MATERIAL FOR ONE ABUTMENT

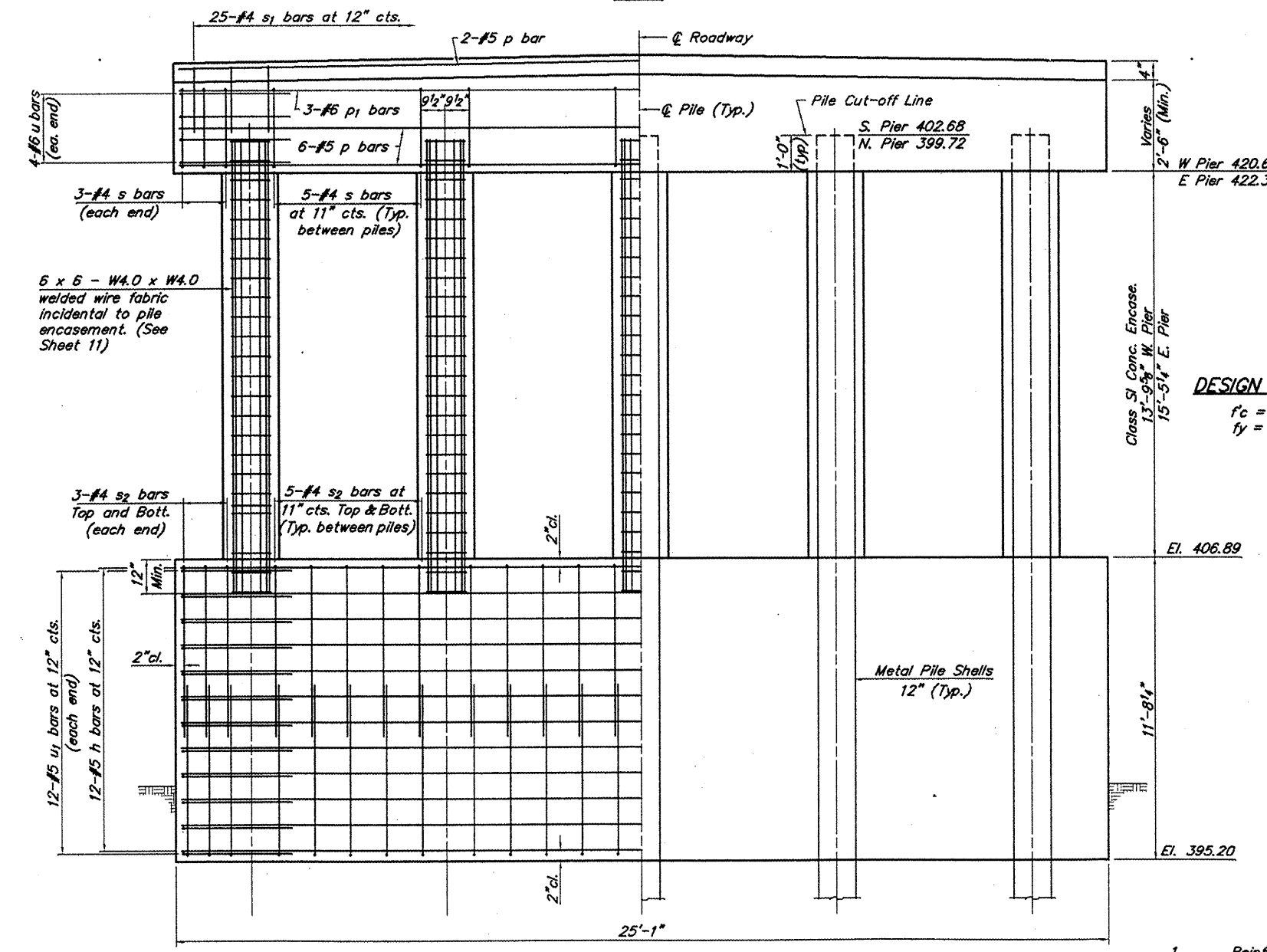
Bar	No.	Size	Length	Shape
h	16	#4	5'-0"	—
h1	4	#4	5'-3"	—
h2	6	#4	24'-9"	—
p	10	#5	24'-9"	—
s	27	#4	9'-5"	□
u	8	#6	11'-1"	—
v	8	#4	2'-6"	—
v1	8	#4	3'-5"	—
v2	50	#4	3'-1"	—
Concrete Structures			8.1	Cu. Yds.
Reinforcement Bars			860	Lbs.

ABUTMENTS
CN/IC RAILROAD
SECTION 00-01198-00-BR
MASSAC COUNTY

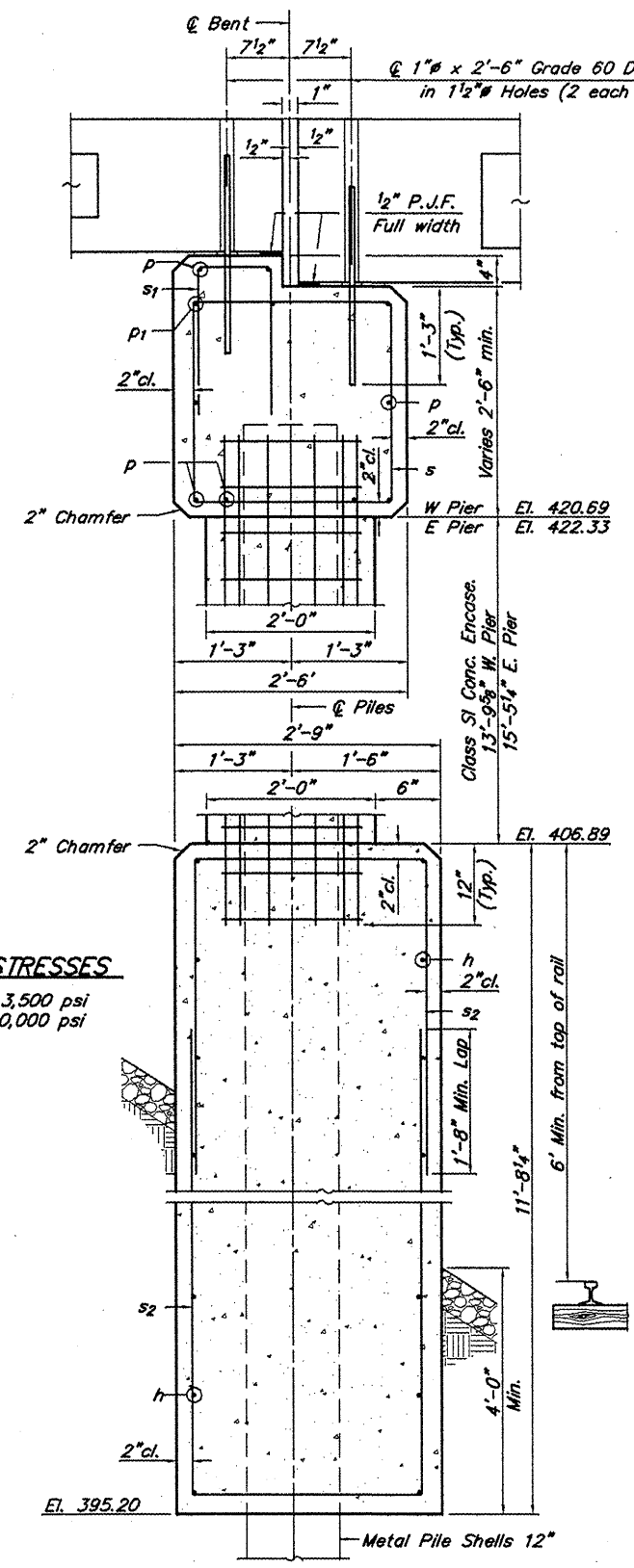
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 80	00-01198-00-BR	MASSAC	13	8
PROJECT NO. BROS-127(19)			CONTRACT NO. 99354	



PLAN



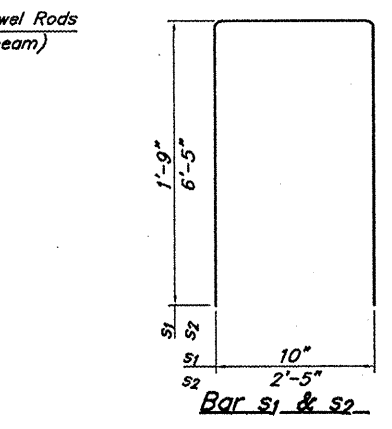
ELEVATION



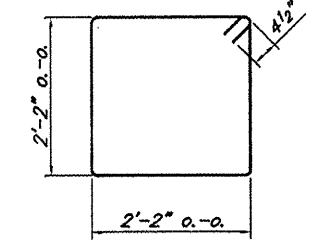
SECTION THRU ABUT.
(At Right Angles)

DESIGN STRESSES

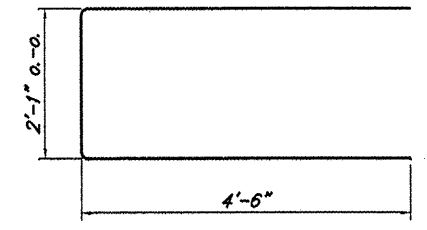
$f_c = 3,500 \text{ psi}$
 $f_y = 60,000 \text{ psi}$



Bar s1 & s2



Bar s



Bar u & u1

BILL OF MATERIALS FOR ONE PIER

Bar	No.	Size	Length	Shape
h	24	#5	24'-9"	—
p	8	#5	24'-9"	—
p1	3	#6	24'-9"	—
s	26	#4	9'-5"	□
s1	25	#4	4'-4"	□
s2	52	#5	15'-3"	□
u	8	#6	11'-1"	—
u1	24	#5	11'-1"	—
Concrete Structures			34.7	Cu. Yds.
Reinforcement Bars			2412	Lbs.

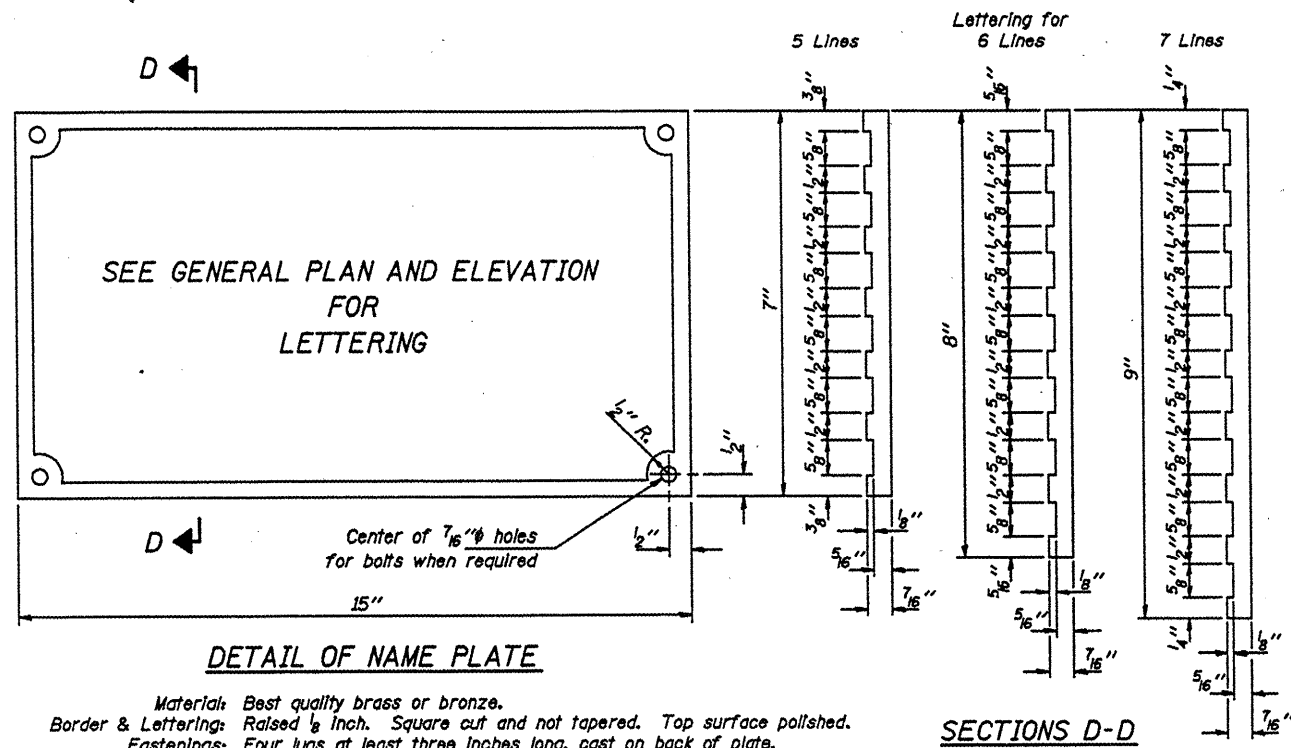
CLASS SI CONCRETE ENCASUREMENT

West Pier	6.0	Cu. Yds.
East Pier	6.7	Cu. Yds.
Total	12.7	Cu. Yds.

- NOTES**
- Reinforcement bars shall conform to A.A.S.H.T.O. M-31, M-42 or M-53, Grade 60.
 - Nominal 1 1/4" joint at @ Pier shall be filled with non-shrink grout to top.

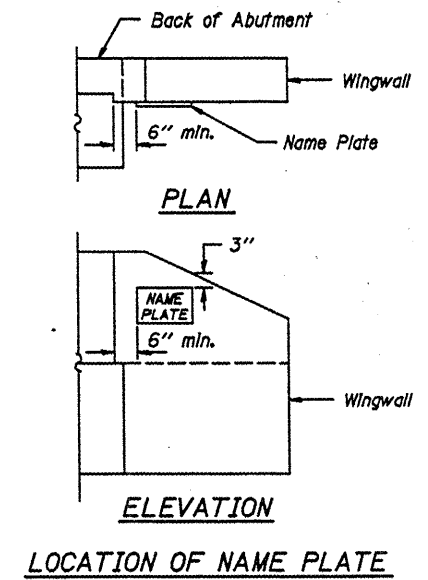
PIERS
CN/IC RAILROAD
SECTION 00-01198-00-BR
MASSAC COUNTY

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 80	00-01198-00-BR	MASSAC	13	10
PROJECT NO. BROS-127(19)			CONTRACT NO. 99354	



DETAIL OF NAME PLATE

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



Illinois Department of Transportation

PASSED APRIL 4, 2005
 Thomas S. [Signature]
 Engineer of Bridge Design

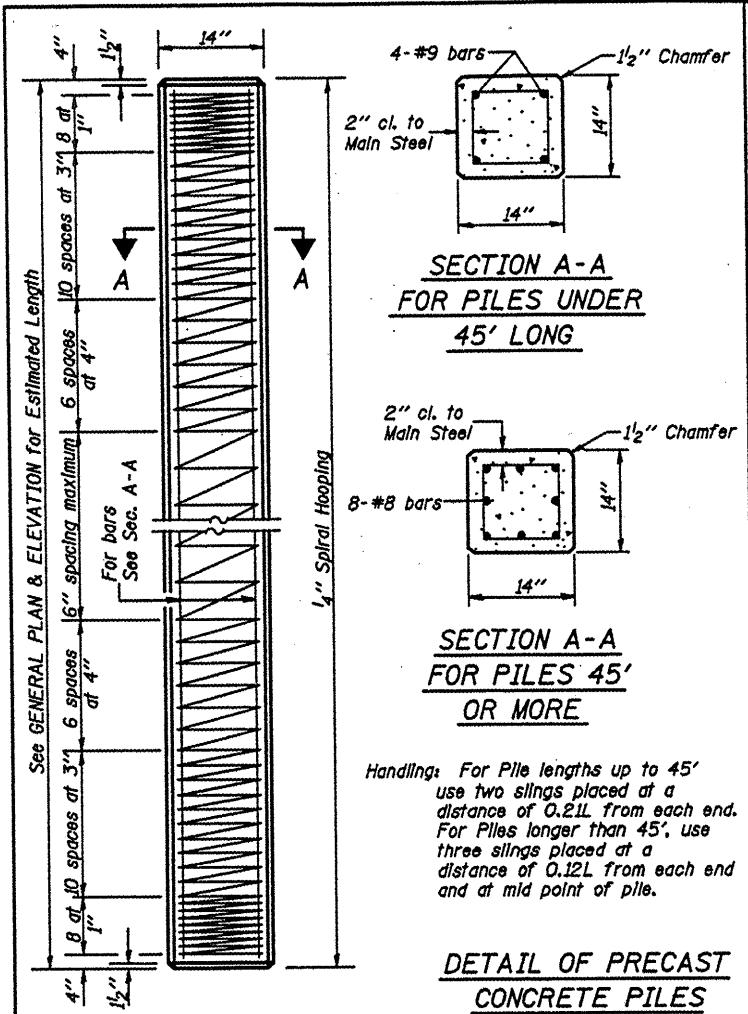
APPROVED APRIL 4, 2005
 [Signature]
 Engineer of Bridge and Structures

NAME PLATE
 STANDARD CN

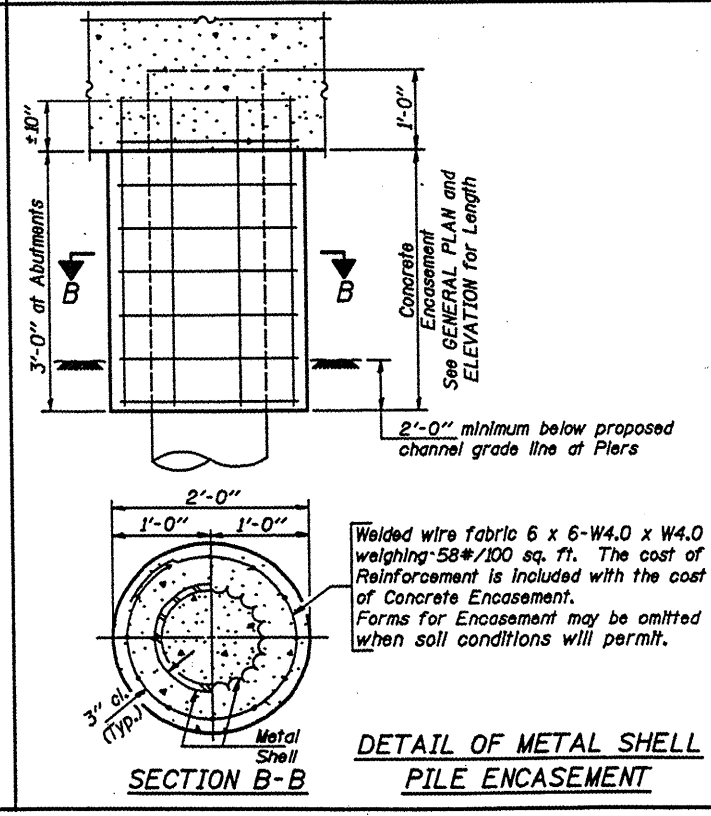
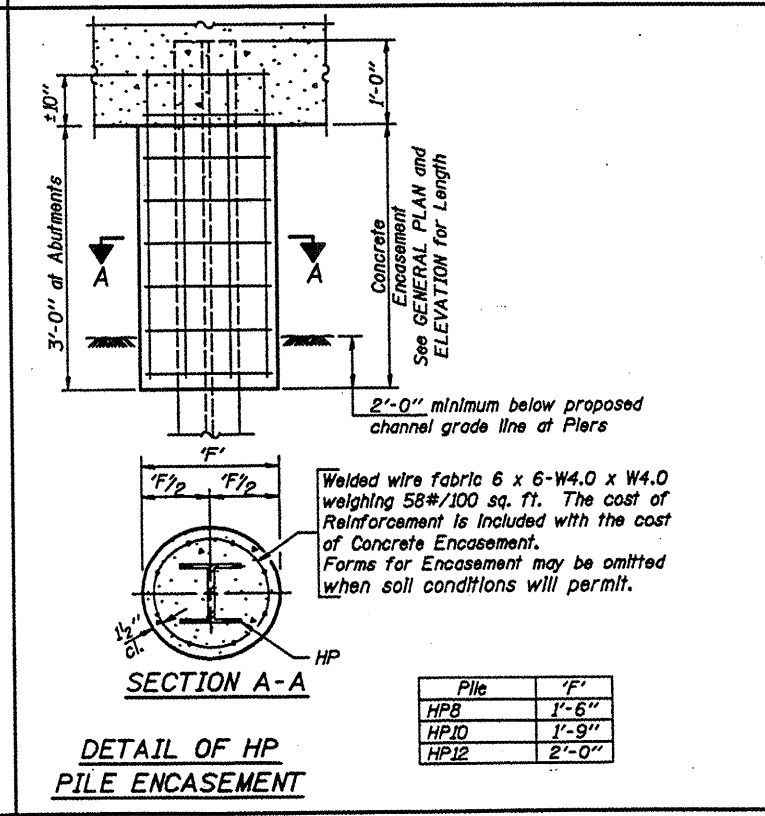
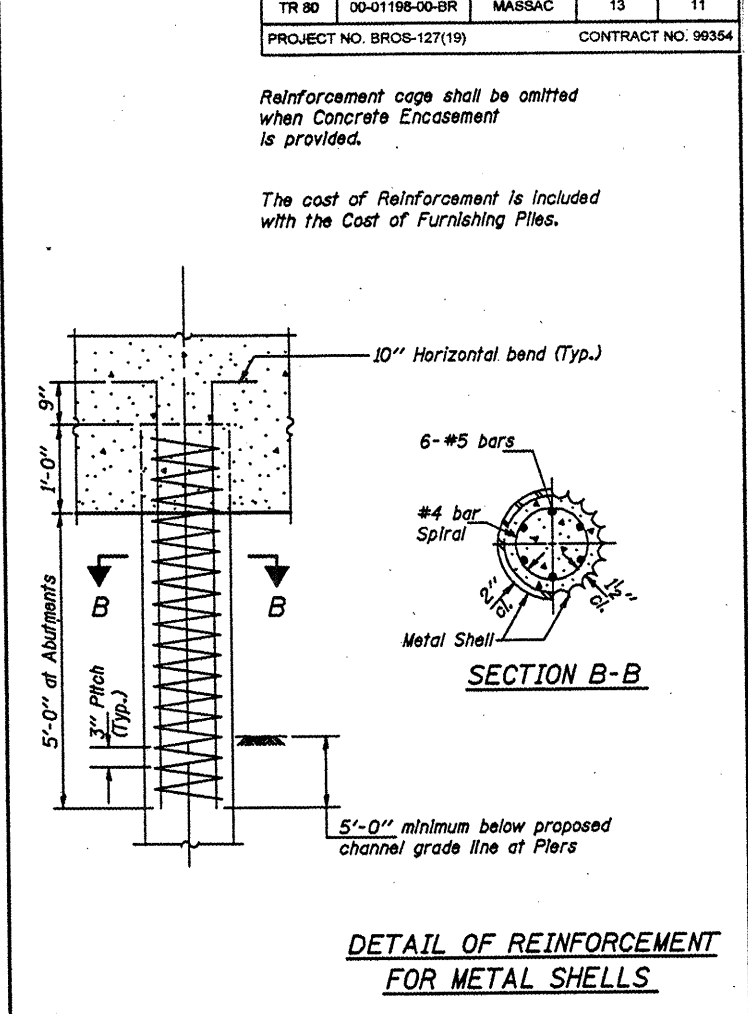
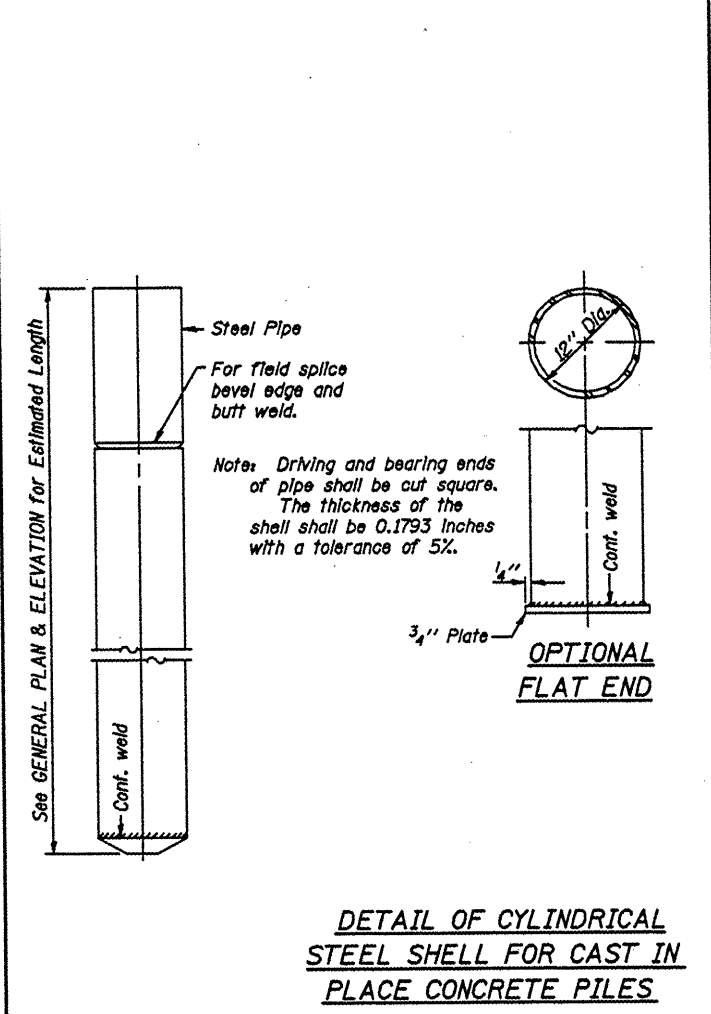
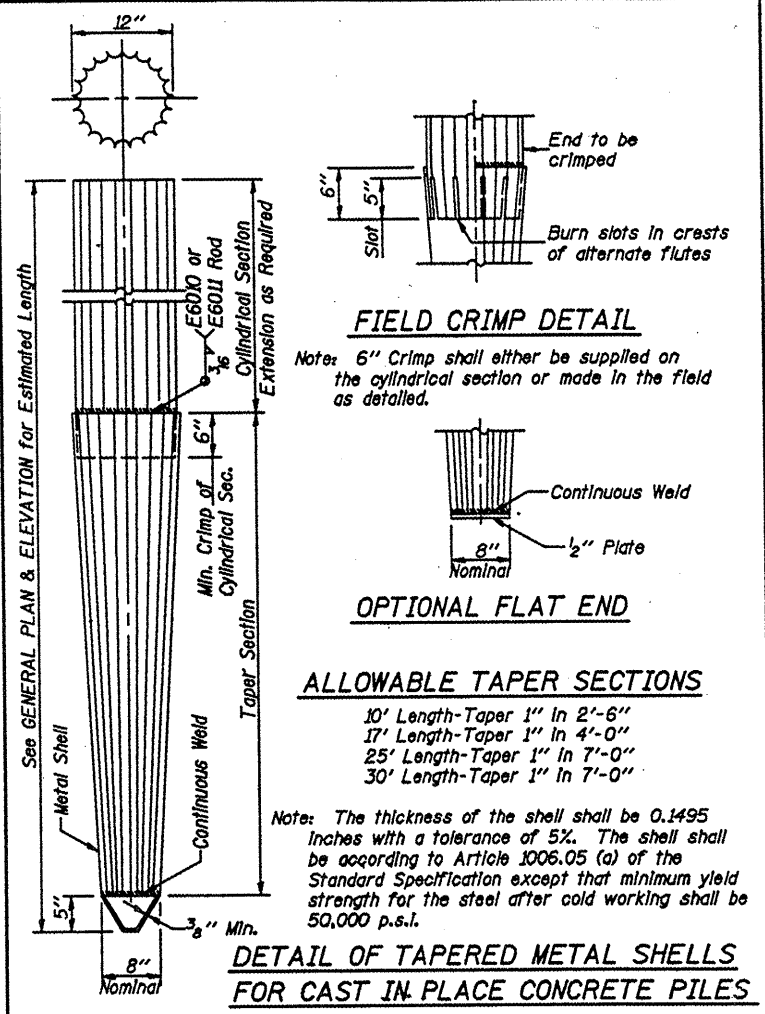
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 90	00-01198-00-BR	MASSAC	13	11
PROJECT NO. BROS-127(19)			CONTRACT NO. 99354	

Reinforcement cage shall be omitted when Concrete Encasement is provided.

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



Handling: For Pile lengths up to 45' use two slings placed at a distance of 0.21L from each end. For Piles longer than 45', use three slings placed at a distance of 0.12L from each end and at mid point of pile.



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)

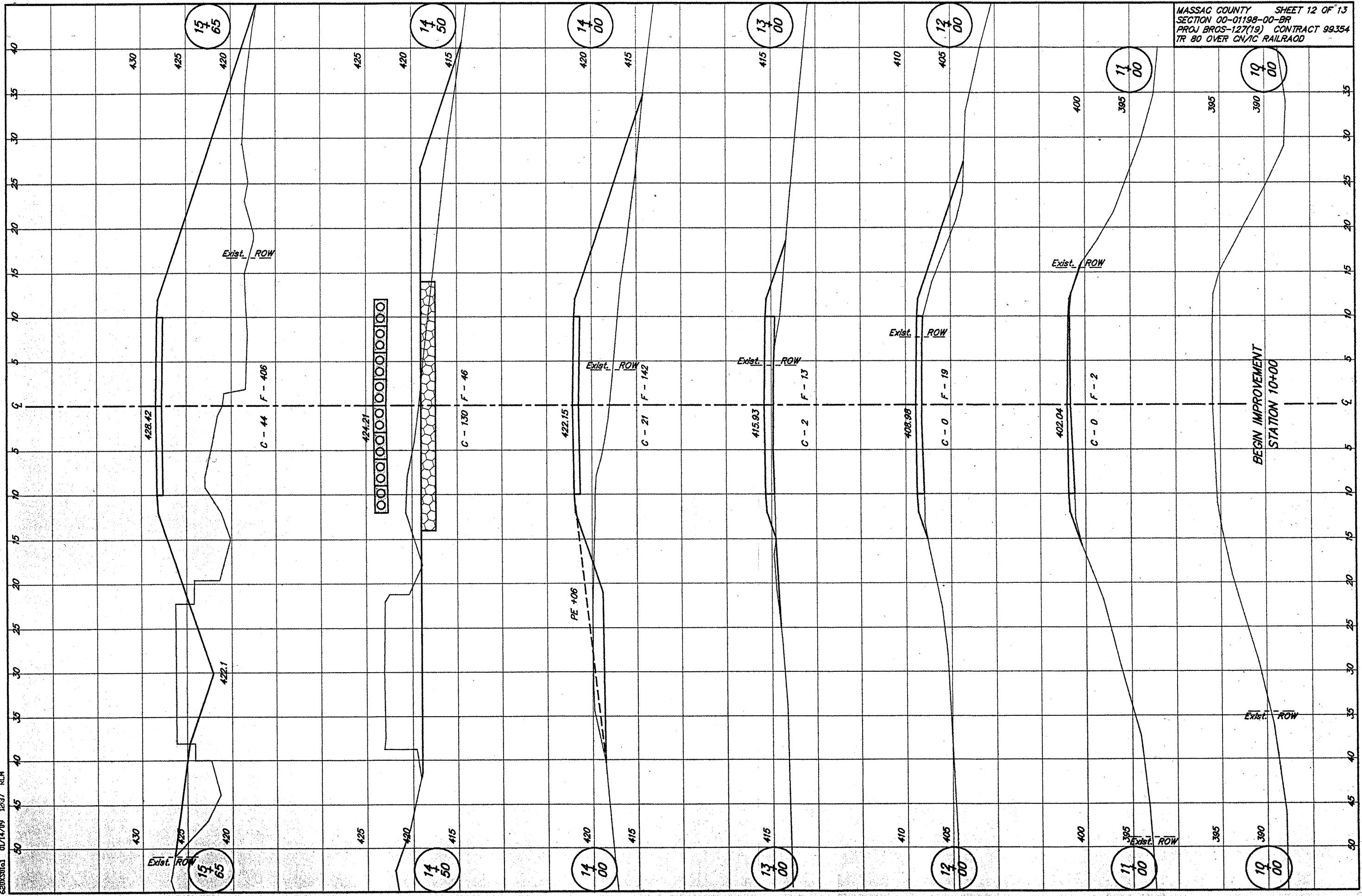
Pile Size	Item	Quantity
12" Dia.	Concrete Encasement	0.087 C.Y.

Illinois Department of Transportation
 PASSED FEBRUARY 1, 2000
 Approved by: [Signature]
 Engineer of Bridge Design
 APPROVED FEBRUARY 1, 2000
 Approved by: [Signature]
 Engineer of Bridges and Structures

PILE DETAILS
 STANDARD CX-1

GENSR01.d 01/14/09 12:37 RLM

MASSACHUSETTS COUNTY SHEET 12 OF 13
SECTION 00-01198-00-BR
PROJ BROS-127(19) CONTRACT 99354
TR 80 OVER CN/IC RAILROAD



620X502&1 01/14/09 1233 RLM

MASSAC COUNTY SHEET 13 OF 13
SECTION 00-01198-00-BR
PROJ BROS-127(19) CONTRACT 99354
TR 80 OVER CN/IC RAILROAD

