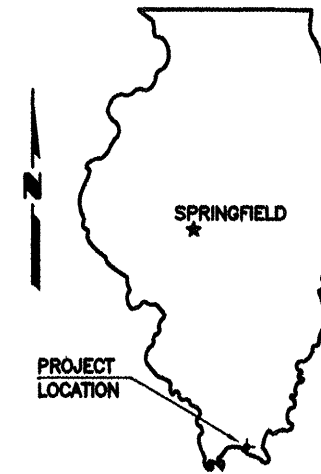


06-15-12 LETTING ITEM 187

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

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 93	00-01199-00-BR	MASSAC	18	1
PROJECT NO. BROS-127(18)			CONTRACT NO. 99438	



TOWNSHIP ROUTE 93 (SEILBECK ROAD)  
 SECTION 00-01199-00-BR  
 PROJECT NO. BROS-127(18)  
 JOB NO. C-99-536-04  
 IC RAILROAD

**MASSAC COUNTY**

INDEX OF SHEETS

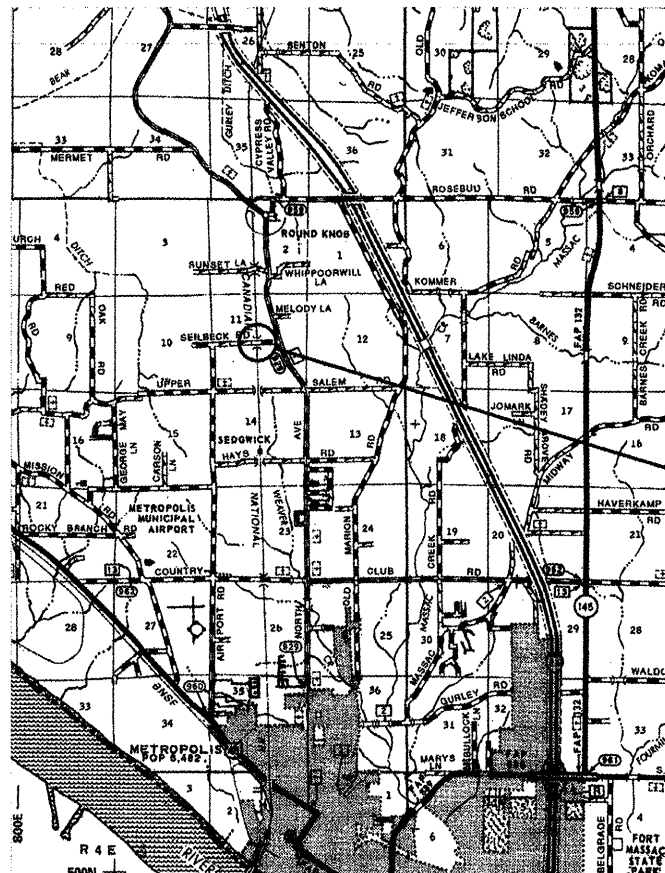
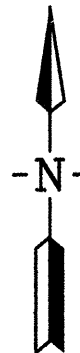
1. COVER SHEET
  2. PLAN AND PROFILE
  3. EROSION CONTROL PLAN
  4. GENERAL PLAN AND ELEVATION
  5. 21" X 48" PPC DECK BEAM - SPAN 1
  6. 21" X 48" PPC DECK BEAM DETAILS - SPAN 1
  7. 21" X 48" PPC DECK BEAM - SPAN 2
  8. 21" X 48" PPC DECK BEAM DETAILS - SPAN 2
  9. 21" X 48" PPC DECK BEAM - SPAN 3
  10. 21" X 48" PPC DECK BEAM DETAILS - SPAN 3
  11. ABUTMENT
  12. PIER
  13. STEEL RAILING, TYPE S1
  14. NAME PLATES
  15. PILING DETAILS
  16. DROP INLET HEADWALL
  - 17.-18. CROSS SECTIONS
- STANDARDS 000001-06 STANDARD SYMBOLS, ABBREVIATIONS AND PATTERNS  
 280001-06 TEMPORARY EROSION CONTROL SYSTEMS  
 635006-03 REFLECTOR AND TERMINAL MARKER PLACEMENT  
 701901-02 TRAFFIC CONTROL DEVICES  
 BLR 21-9 TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES

CLASSIFICATION : LOCAL ROAD (RURAL)  
 ADT : 75  
 DESIGN SPEED : 30 MPH

SUMMARY OF QUANTITIES

CODE NO.	PAY ITEM	UNIT	TOTAL
* X2501000	SEEDING, CLASS 2 (SPECIAL)	ACRE	1.2
* Z0048665	RAILROAD PROTECTIVE LIABILITY INSURANCE	L SUM	1
* 20100500	TREE REMOVAL, ACRES	ACRE	0.6
20200100	EARTH EXCAVATION	CU YD	120
* 20400100	BORROW EXCAVATION	CU YD	10,968
25100630	EROSION CONTROL BLANKET	SQ YD	750
28000250	TEMPORARY EROSION CONTROL SEEDING	POUND	120
28000400	PERIMETER EROSION BARRIER	FOOT	2,070
28000500	INLET AND PIPE PROTECTION	EACH	5
* 28100807	STONE DUMPED RIPRAP, CLASS A4	TON	339
* 40200800	AGGREGATE SURFACE COURSE, TYPE B	TON	940
* 50100100	REMOVAL OF EXISTING STRUCTURES	EACH	1
50200100	STRUCTURE EXCAVATION	CU YD	99
50300225	CONCRETE STRUCTURES	CU YD	96.7
50300280	CONCRETE ENCASEMENT	CU YD	16.9
50400405	PRECAST PRESTRESSED CONCRETE DECK BEAMS (21" DEPTH)	SQ FT	3,294
50800105	REINFORCEMENT BARS	POUND	7,791
Δ 50900205	STEEL RAILING, TYPE S1	FOOT	278
51200957	FURNISHING METAL SHELL PILES 12"X0.250"	FOOT	965
51202305	DRIVING PILES	FOOT	965
51203200	TEST PILE METAL SHELLS	EACH	1
51500100	NAME PLATES	EACH	1
54002020	EXPANSION BOLTS 3/4"	EACH	20
542A1075	PIPE CULVERTS, CLASS A, TYPE 2 30"	FOOT	10
542D0217	PIPE CULVERTS, CLASS D, TYPE 1 12"	FOOT	22
542D1075	PIPE CULVERTS, CLASS D, TYPE 2 30"	FOOT	22
542D5485	PIPE CULVERTS, CLASS A, TYPE 1 EQUIVALENT ROUND-SIZE 30"	FOOT	68
54213675	PRECAST REINFORCED CONCRETE FLARED END SECTIONS 30"	EACH	1
54213705	PRECAST REINFORCED CONCRETE FLARED END SECTIONS 60"	EACH	1
67100100	MOBILIZATION	L SUM	1
Δ 78201000	TERMINAL MARKER - DIRECT APPLIED	EACH	4

\* SEE SPECIAL PROVISIONS    Δ SPECIALITY ITEM



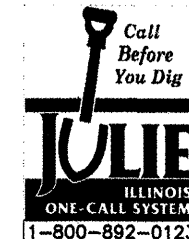
LOCATION MAP

SCALE: 1" = 2 MILES

NET LENGTH OF IMPROVEMENT = 980.00 FT. = 0.1856 MILES

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

*Edward W. Miller*  
 Edward W. Miller  
 REGISTERED PROFESSIONAL ENGINEER  
 #062-025277  
 EXPIRES NOV. 30, 2013



ILLINOIS DEPARTMENT OF TRANSPORTATION	
Approved	<u>2-15-2012</u> <i>Robert Glass</i> Massac County Engineer
Passed	<u>2/28/2012</u> <i>Demetrius Hill</i> District 9 Engineer of Local Roads and Streets
Releasing for Bid Based on Limited Review	<u>2/28/2012</u> <i>Ornel Roman</i> Deputy Director of Highways, Region 5 Engineer Illinois Department of Transportation

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 93	00-01199-00-BR	MASSAC	18	2
PROJECT NO. BROS-127(18)			CONTRACT NO. 99438	

B.M.#1 - SW Corner Headwall  
13' Lt. Sta. 10+17  
Elev. 405.00

B.M.#2 - Dbl. Nail in PP  
19' Lt. Sta. 16+40  
Elev. 419.44

PI Sta 12+40.94  
 $\Delta 0^{\circ}41'04''$  Rt.  
No Curve

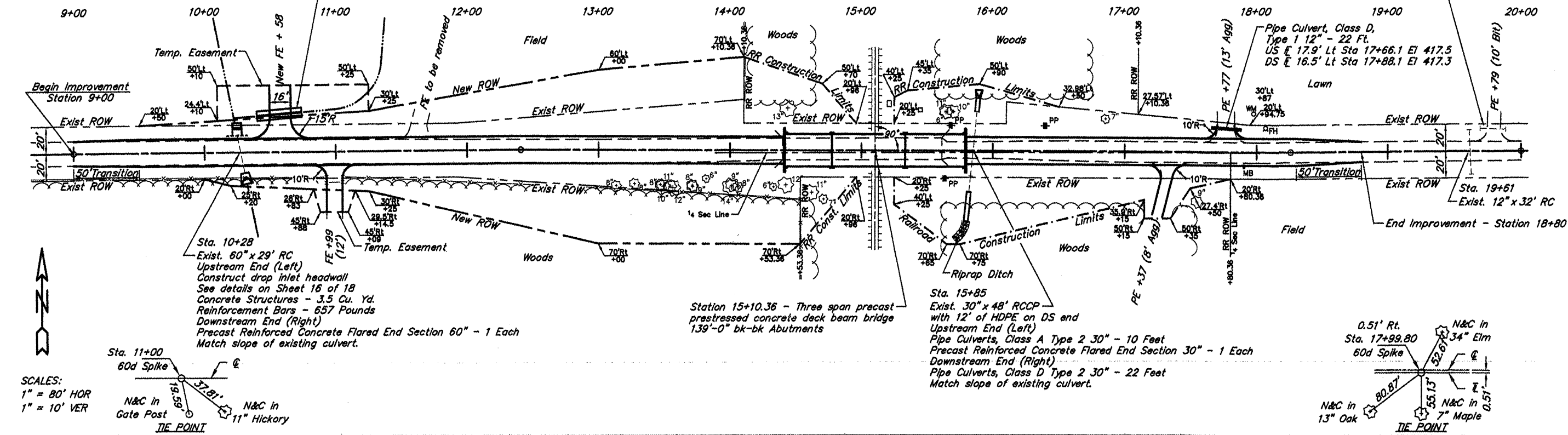
Tree Removal Acres  
Sta. 10+00 - 14+75 Rt. 0.33 Ac  
Sta. 14+11 - 14+70 Lt. 0.06 Ac  
Sta. 15+55 - 16+30 Lt. 0.05 Ac  
Sta. 15+60 - 17+25 Rt. 0.12 Ac  
Total 0.55 Ac

PI Sta 18+25.87  
 $\Delta 0^{\circ}41'16''$  Lt.  
No Curve

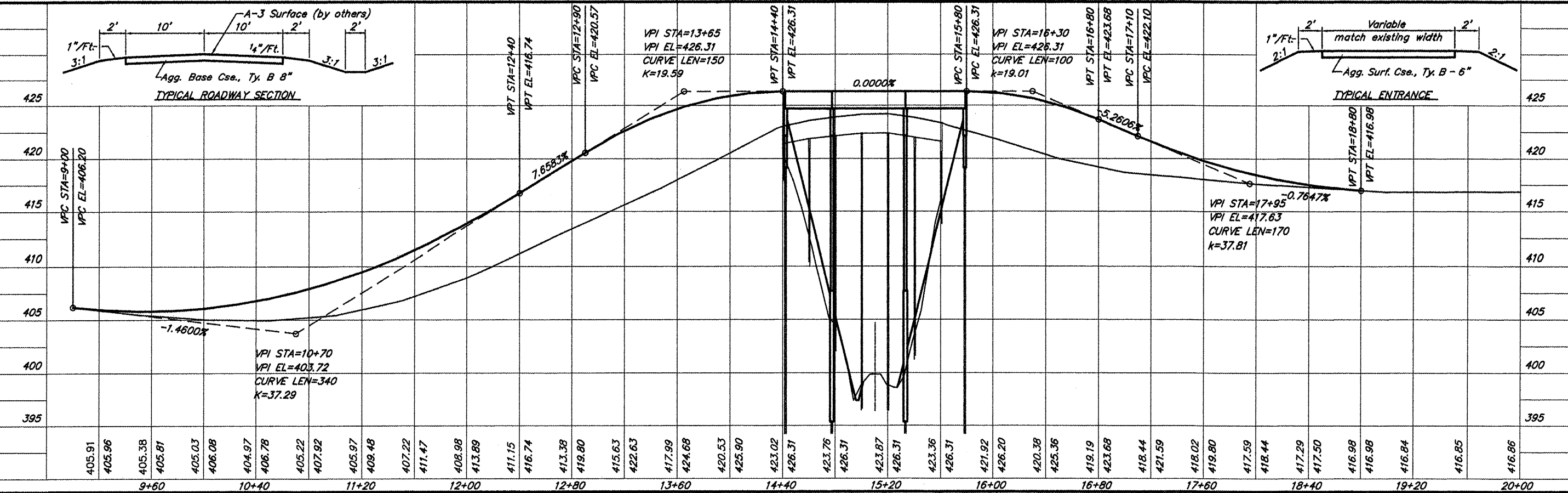
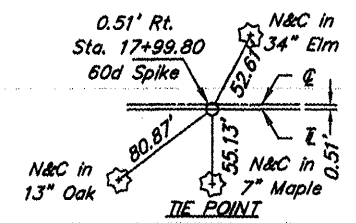
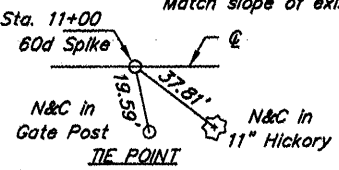
B.M.#3 - Top of NE bolt in signal base  
35.5' Lt. Sta. 15+21  
Elev. 401.39

Existing Structure - 6 Span timber deck on timber stringers with timber pile bent piers and abutments. 16' Wide x 123' Long

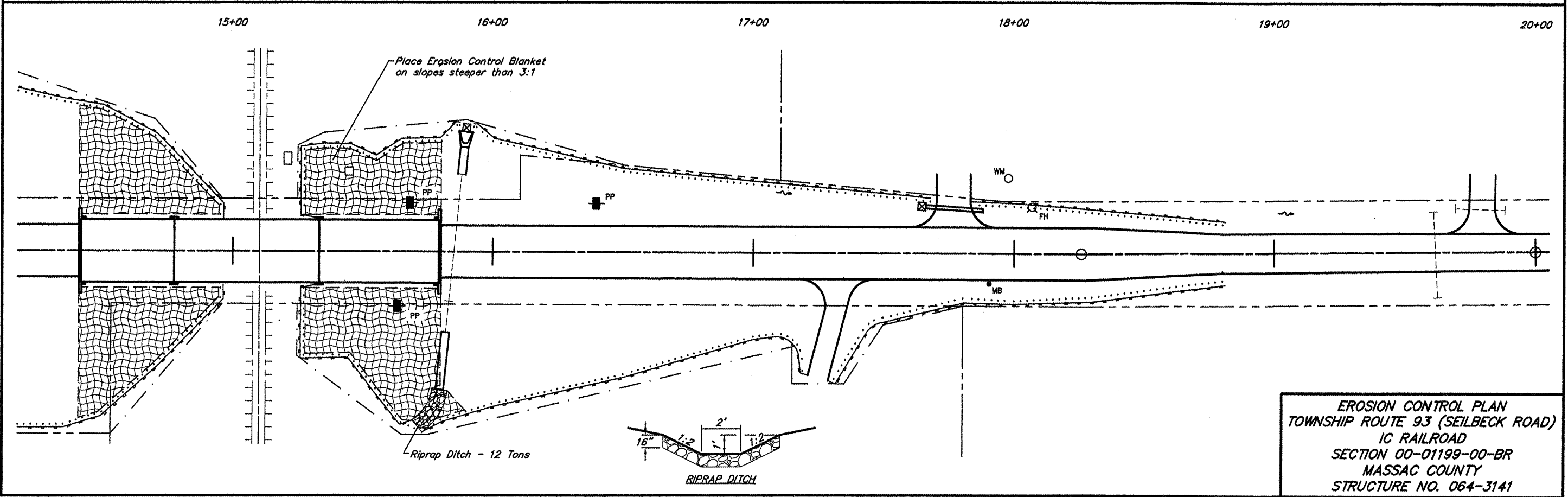
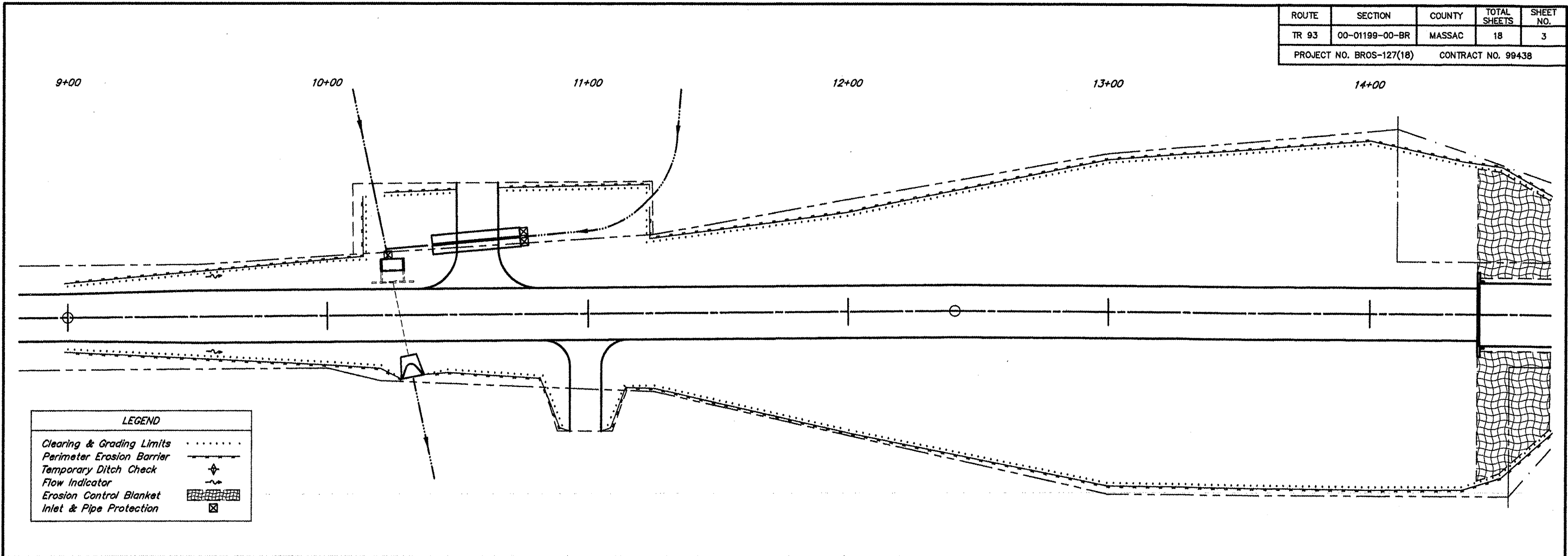
Two Pipe Culverts, Class D, Type 1  
Equivalent Round-Size 30" - 34 Ft.  
G between pipes  
US E 29.5' Lt Sta 10+74.2 El 401.92  
DS E 26.8' Lt Sta 10+40.3 El 401.70



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



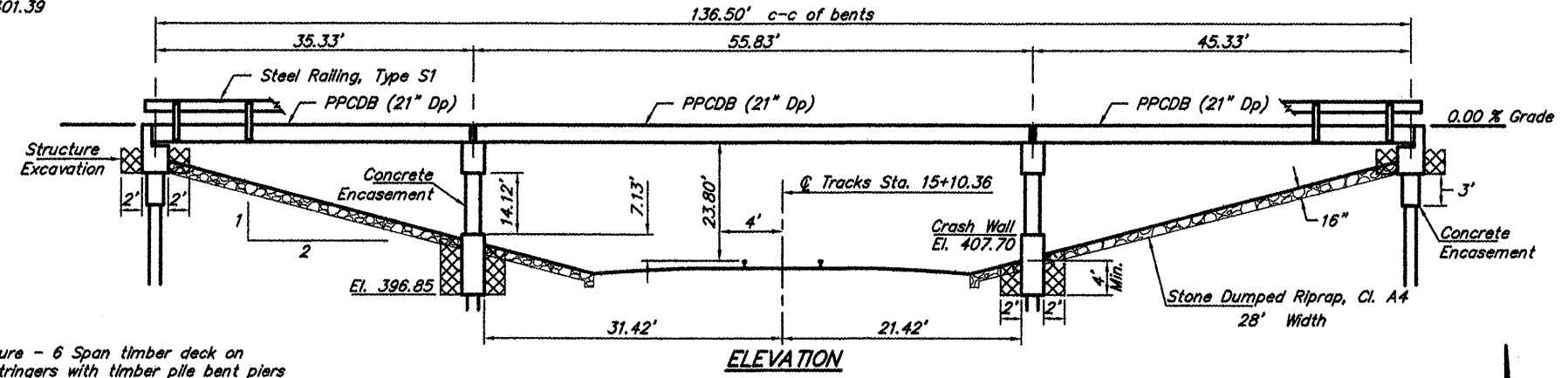
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 93	00-01199-00-BR	MASSAC	18	3
PROJECT NO. BROS-127(18)			CONTRACT NO. 99438	



EROSION CONTROL PLAN  
 TOWNSHIP ROUTE 93 (SEILBECK ROAD)  
 IC RAILROAD  
 SECTION 00-01199-00-BR  
 MASSAC COUNTY  
 STRUCTURE NO. 064-3141

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 93	00-01199-00-BR	MASSAC	18	4
PROJECT NO. BROS-127(18)			CONTRACT NO. 99438	

B.M.#3- Top of NE bolt in signal base  
35.5' Lt. Sta. 15+21  
Elev. 401.39



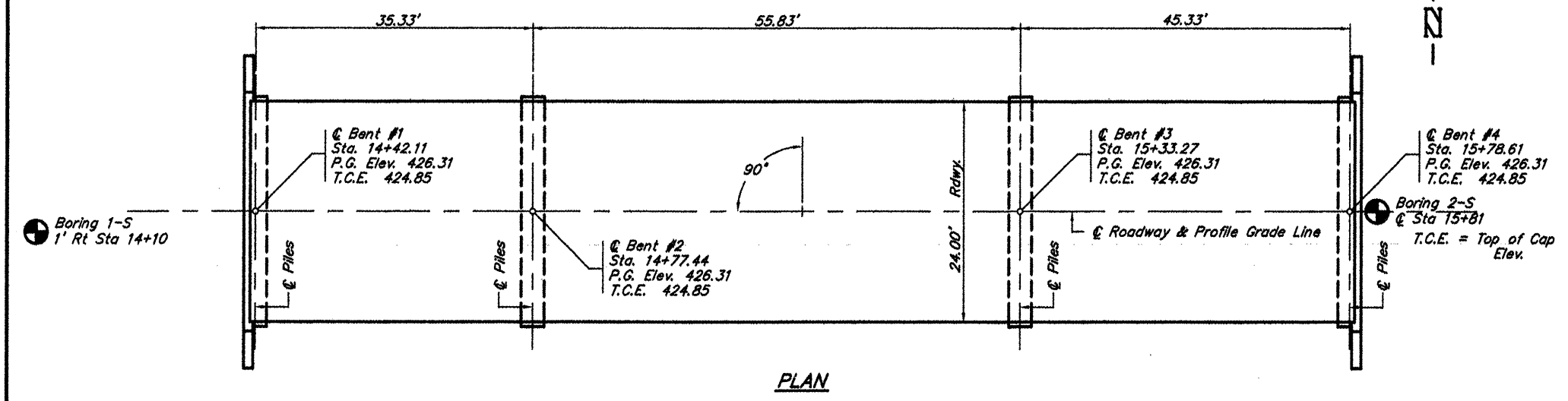
Existing Structure - 6 Span timber deck on timber stringers with timber pile bent piers and abutments. 16' Wide x 123' Long

**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.	
Stone Dumped Riprap, Class A4	Tons			327	327
Removal of Existing Structures	Each				1
Structure Excavation	Cu. Yds.		88.5	10.5	99
Concrete Structures	Cu. Yds.		76.4	16.8	93.2
Concrete Encasement	Cu. Yds.		14.8	2.1	16.9
P.P. Conc. Dk. Brm. 21" Dp.	Sq. Ft.	3,294			3,294
Reinforcement Bars	Pound		4,880	2,254	7,134
Steel Railing, Type S1	Foot	278			278
Furnishing Metal Pile Shells 12"	Foot		581	384	965
Driving Piles	Foot		581	384	965
Test Pile Metal Shells	Each		1		1
Name Plates	Each			1	1



**PILE DATA (2-PIERS)**

Type & Size: Metal Shell 12" dia. x 0.25" walls  
Nominal Required Bearing: 302 kips Bent #2, 318 kips Bent #3  
Factored Resistance Available: 151 kips Bent #2, 159 kips Bent #3  
Estimated Length: 55 Feet Bent #2, 51 Feet Bent #3  
Number Required: 12 (Includes 1 Test Pile located in Bent #2)

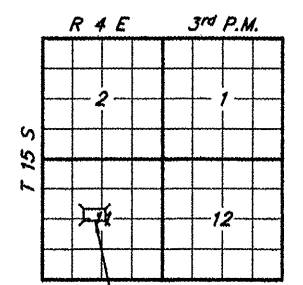
**PILE DATA (2-ABUTS.)**

Type & Size: Metal Shell 12" dia. x 0.25" walls  
Nominal Required Bearing: 206 kips Bent #1, 234 kips Bent #4  
Factored Resistance Available: 103 kips Bent #1, 117 kips Bent #4  
Estimated Length: 54 Feet Bent #1, 42 Feet Bent #4  
Number Required: 8

STATION 15+10.36  
IC RAILROAD  
SEC.00-01199-00-BR BUILT 20  
COUNTY UNIT ROAD DISTRICT  
MASSAC COUNTY  
LOADING HL-93  
STR. NO. 064-3141

**LETTERING FOR NAME PLATE**

Locate Name Plate at Southwest Corner of Bridge (See Sheet 10)



**DESIGN SPECIFICATIONS**

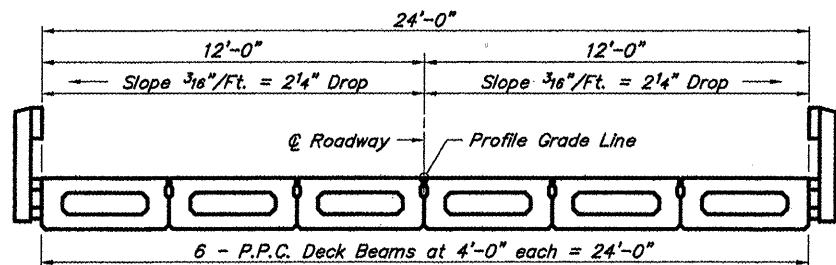
2007 AASHTO LRFD Bridge Design Specifications and all applicable interims.

**LOADING HL-93**

Allow 50#/sq. ft. for future wearing surface

**SEISMIC DATA**

Soil Site Class = C  
Design Spectral Acceleration at 0.2 sec. ( $S_{ps}$ ) = 1.117  
Design Spectral Acceleration at 1.0 sec. ( $S_{p1}$ ) = 0.427  
Seismic Performance Zone (SPZ) = 3



**CROSS SECTION**

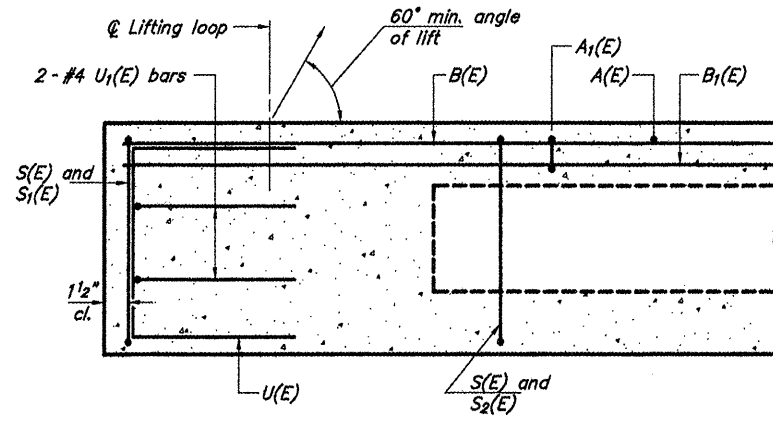
"I certify that to the best of my knowledge, information and belief, this bridge design is structurally adequate for the design loading shown on the plans. The design is an economical one for the style of structure and complies with requirements of the current Standard Specifications for Highway Bridges."

Zeyn B. Uzman  
S.E. #81-4745  
Expires Nov. 30, 2012

LICENSED STRUCTURAL ENGINEER  
STATE OF ILLINOIS  
ZEYN UZMAN  
4745

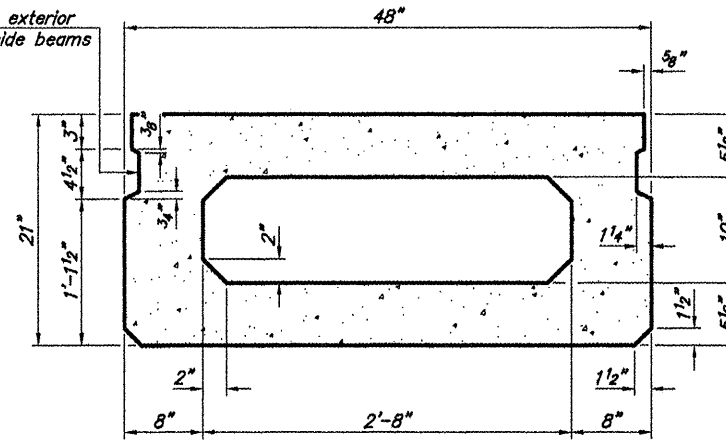
GENERAL PLAN & ELEVATION  
TOWNSHIP ROUTE 93 (SEILBECK ROAD)  
IC RAILROAD  
SECTION 00-01199-00-BR  
MASSAC COUNTY  
STRUCTURE NO. 064-3141

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO
TR 93	00-01199-00-BR	MASSAC	18	5
PROJECT NO. BROS-127(18)			CONTRACT NO. 99438	

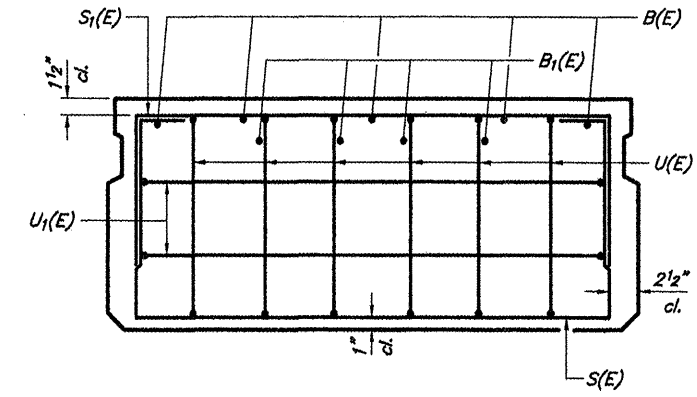


**SECTION C-C**

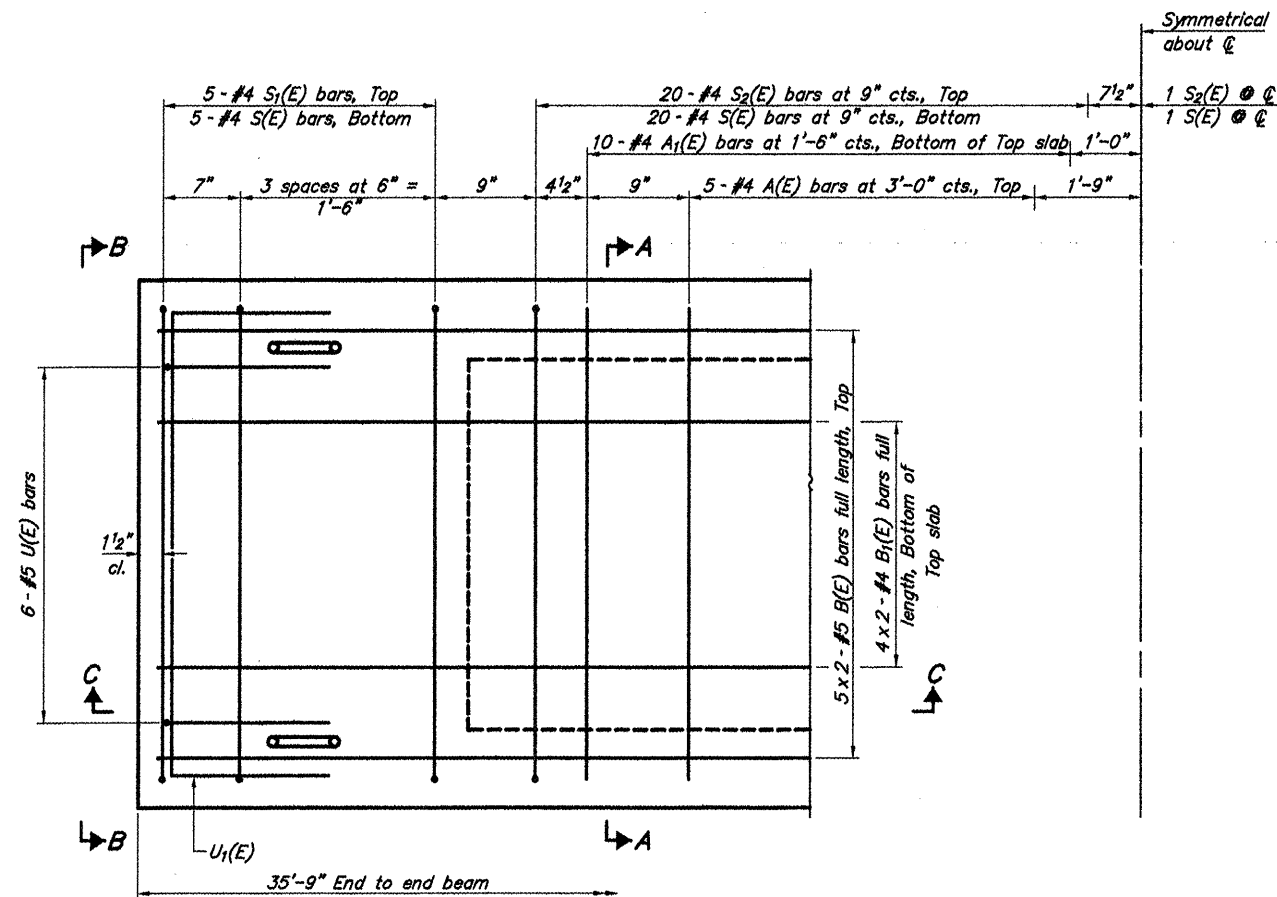
Omit key on exterior face of outside beams



**SECTION A-A**  
(Showing dimensions)

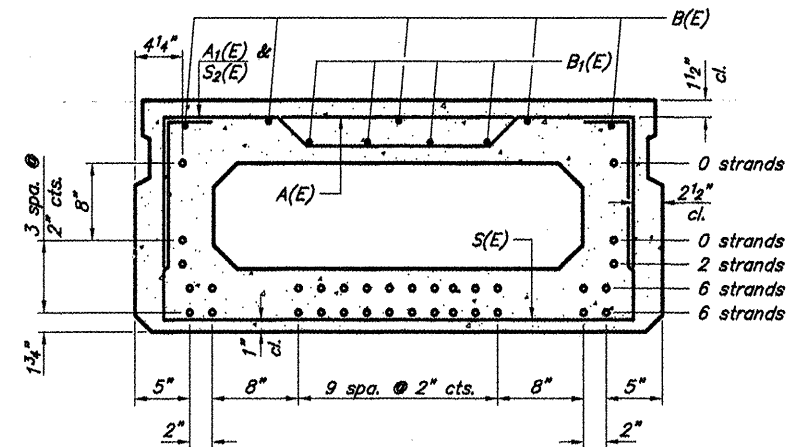


**VIEW B-B**



**PLAN VIEW**

Note: Spacing of S(E) and S2(E) bars may be adjusted up to 4" in the immediate area of the transverse tie diaphragms to miss the block outs for the transverse ties.



**SECTION A-A**  
(Showing reinforcement and permissible strand locations)

Note: Place the number of strands specified in each row symmetrically about the centerline of beam in the permissible strand locations shown.

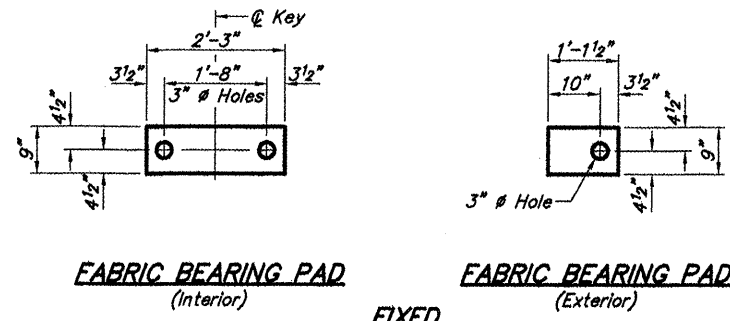
**BAR LIST**  
**ONE BEAM ONLY**  
(For information only)

Bar	No.	Size	Length	Shape
A(E)	10	#4	3'-7"	—
A1(E)	20	#4	3'-10"	—
B(E)	10	#5	18'-10"	—
B1(E)	8	#4	18'-7"	—
S(E)	51	#4	7'-5"	□
S1(E)	10	#4	5'-11"	□
S2(E)	41	#4	6'-2"	□
U(E)	12	#5	4'-0"	□
U1(E)	4	#4	6'-0"	□

Bar Laps #4 bars = 1'-8"  
#5 bars = 2'-2"

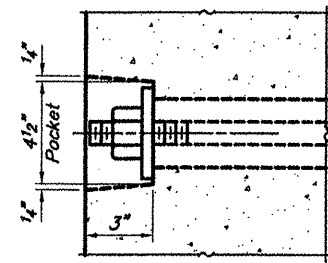
21" X 48" PPC DECK BEAM - SPAN 1  
TOWNSHIP ROUTE 93 (SEILBECK ROAD)  
IC RAILROAD  
SECTION 00-01199-00-BR  
MASSAC COUNTY  
STRUCTURE NO. 064-3141

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO
TR 93	00-01199-00-BR	MASSAC	18	6
PROJECT NO. BROS-127(18)			CONTRACT NO. 99438	

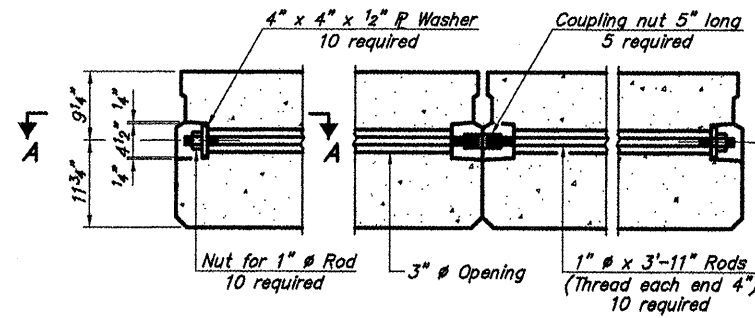


**FABRIC BEARING PAD**  
(Interior)      **FABRIC BEARING PAD**  
(Exterior)

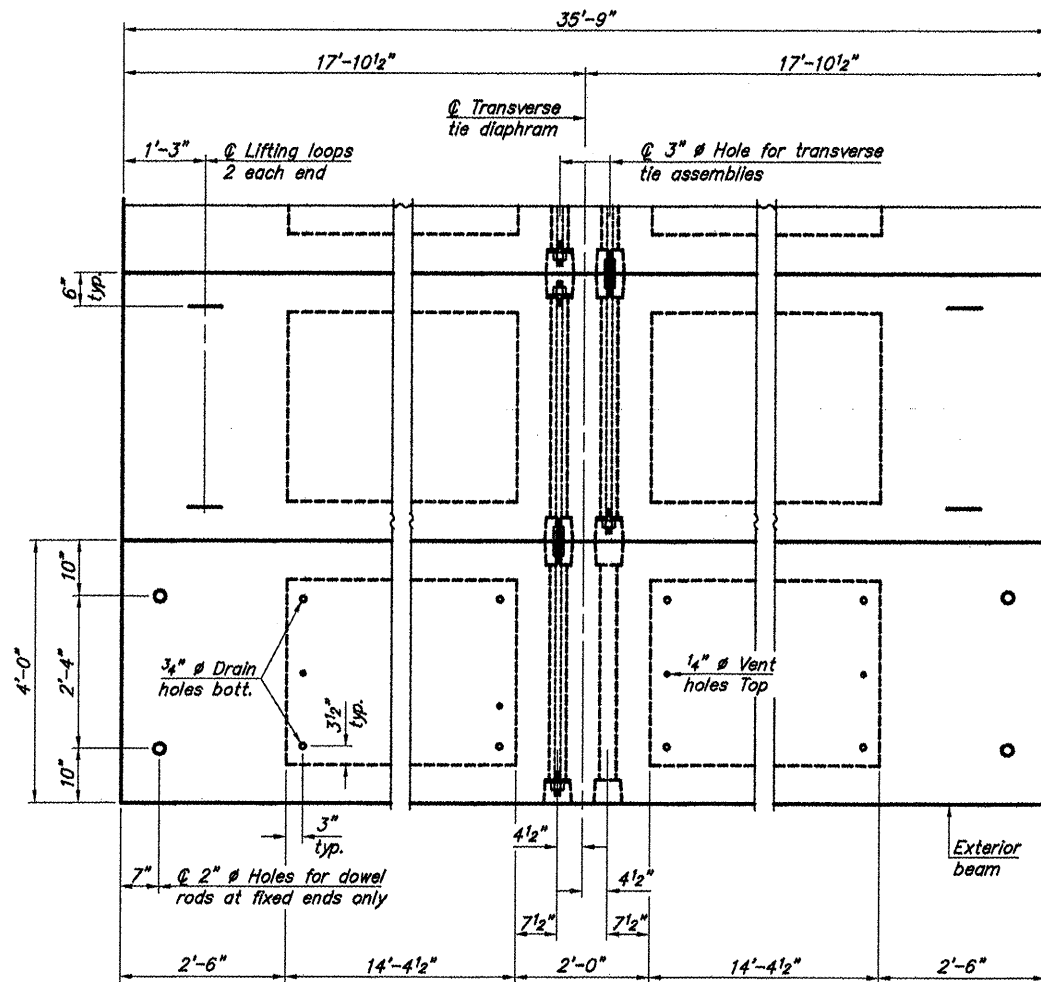
**FIXED**  
Note: Omit holes when using expansion bearings.



**SECTION A-A**

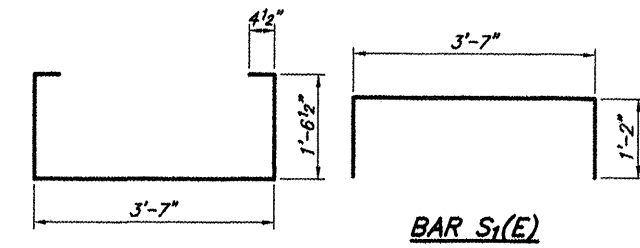


**TYPICAL TRANSVERSE TIE ASSEMBLY**



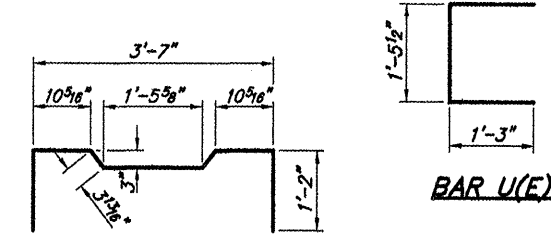
**PLAN VIEW**

Note: Connect beams in pairs with the transverse tie configuration shown.



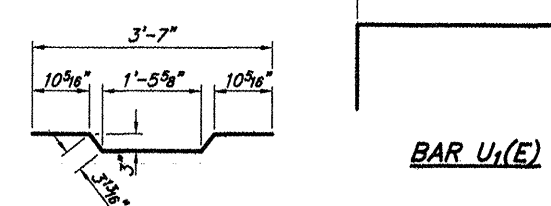
**BAR S(E)**

**BAR S1(E)**



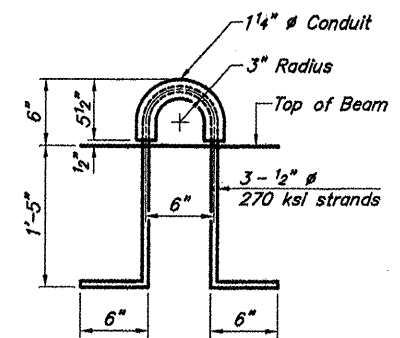
**BAR S2(E)**

**BAR U(E)**



**BAR A1(E)**

**BAR U1(E)**



**LIFTING LOOP DETAIL**

**NOTES**

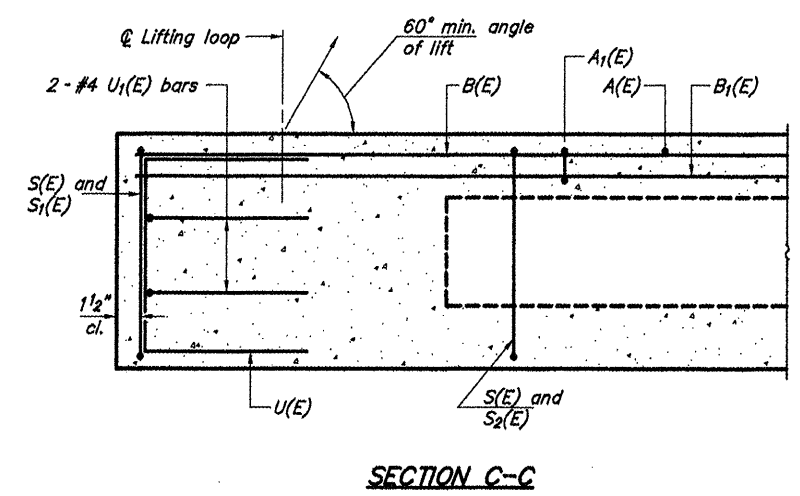
- Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal diameter shall be 1/2" and the nominal cross-sectional area shall be 0.153 sq. in.
- The 1" rods in the transverse tie assembly shall be tightened to a snug fit and the threads set. Pockets on exterior faces of bridge shall be filled with grout after transverse tie assembly is in place.
- Reinforcement bars shall conform to ASTM A 706, Grade 60. (See Special Provisions).
- Two 1/8" fabric adjusting shims of the dimensions of the exterior bearing pad shall be provided for each bearing pad location.
- A minimum 2 1/2" lifting pin shall be used to engage the lifting loops during handling.
- Corrosion Inhibitor, per Article 1020.05(b)(12) and 1021.06 of the Standard Specifications, shall be used in the concrete for precast prestressed concrete deck beams.
- Compressive strength of prestressed concrete, f<sub>c</sub>, shall be 6000 psi.
- Compressive strength of prestressed concrete at release, f'<sub>ci</sub>, shall be 5000 psi.

**BILL OF MATERIAL - SPAN 1**

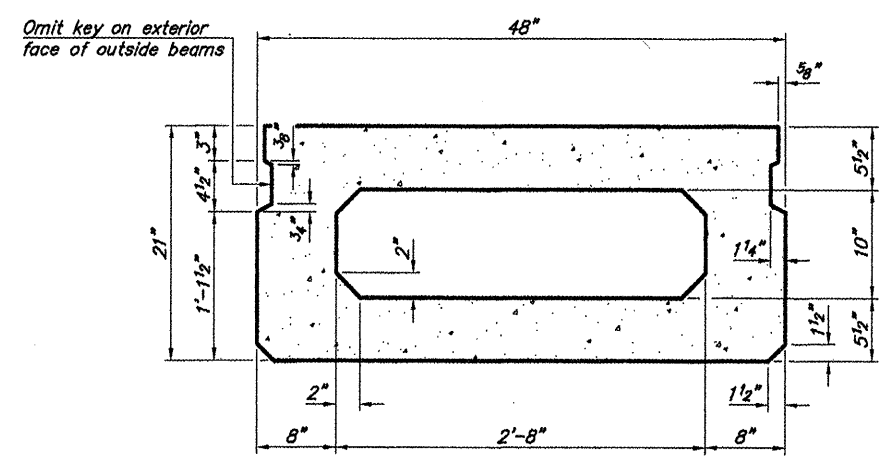
Precast Prestressed Concrete Deck Beams (21" depth)	Sq. Ft.	858
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**21" X 48" PPC DECK BEAM DETAILS - SPAN 1**  
**TOWNSHIP ROUTE 93 (SEILBECK ROAD)**  
**IC RAILROAD**  
**SECTION 00-01199-00-BR**  
**MASSAC COUNTY**  
**STRUCTURE NO. 064-3141**

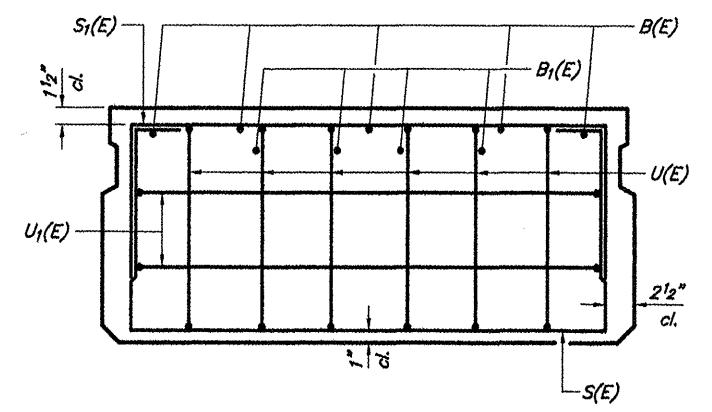
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO
TR 93	00-01199-00-BR	MASSAC	18	7
PROJECT NO. BROS-127(18)			CONTRACT NO. 99438	



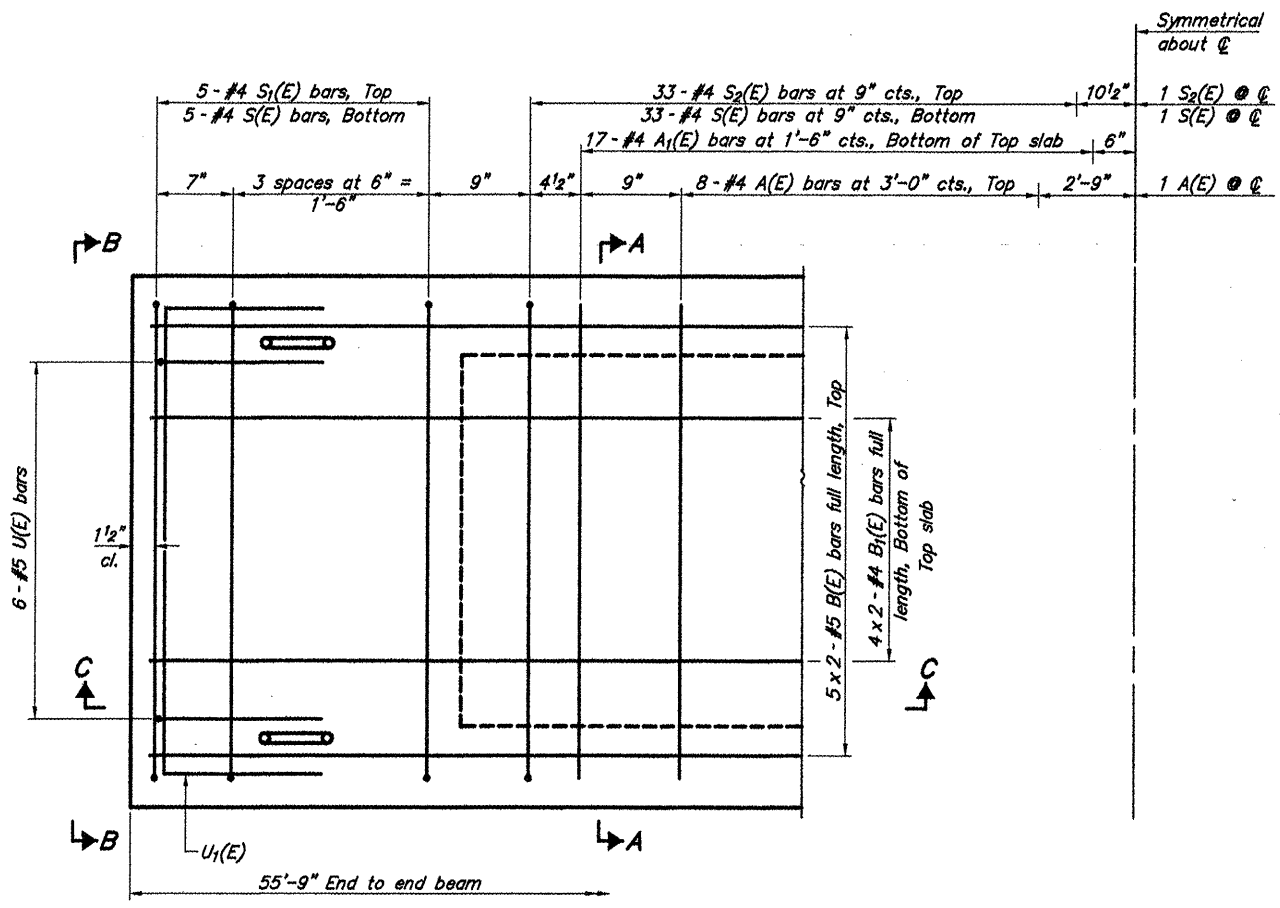
**SECTION C-C**



**SECTION A-A**  
(Showing dimensions)

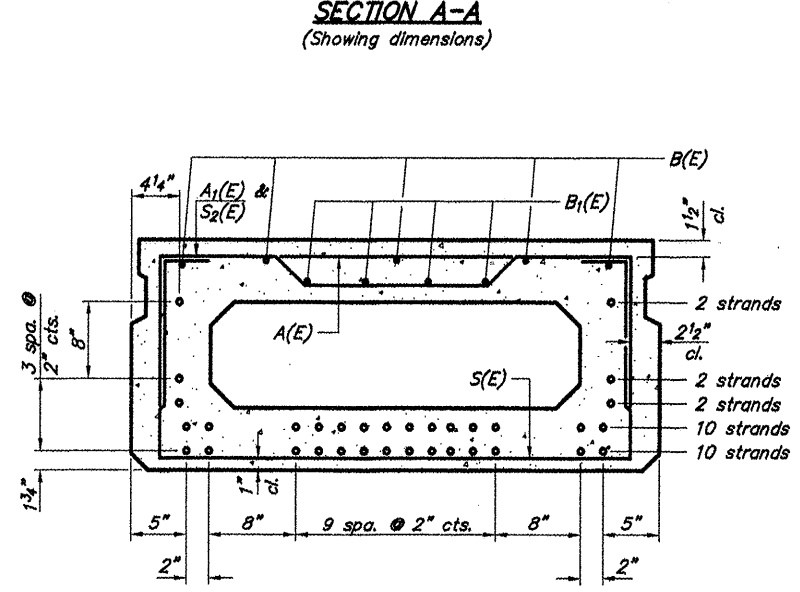


**VIEW B-B**



**PLAN VIEW**

Note: Spacing of S(E) and S2(E) bars may be adjusted up to 4\"/>



**SECTION A-A**  
(Showing reinforcement and permissible strand locations)

Note: Place the number of strands specified in each row symmetrically about the centerline of beam in the permissible strand locations shown.

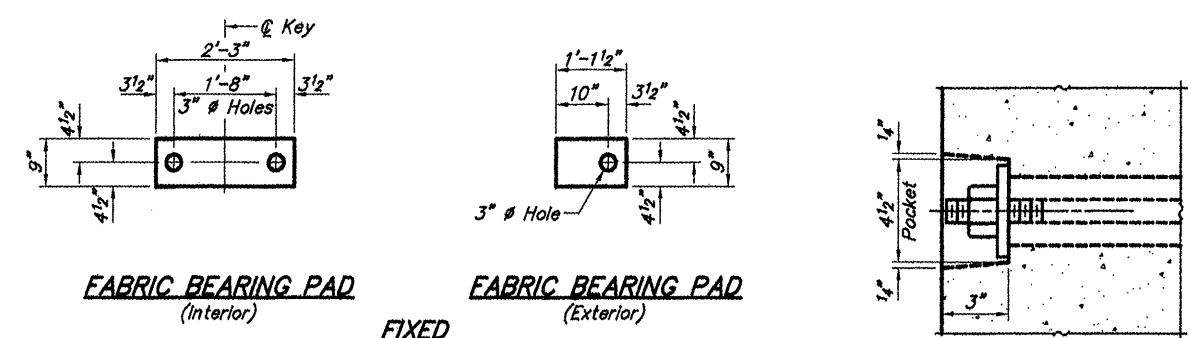
**BAR LIST**  
**ONE BEAM ONLY**  
(For information only)

Bar	No.	Size	Length	Shape
A(E)	17	#4	3'-7"	—
A1(E)	34	#4	3'-10"	—
B(E)	10	#5	28'-10"	—
B1(E)	8	#4	28'-7"	—
S(E)	77	#4	7'-5"	□
S1(E)	10	#4	5'-11"	□
S2(E)	67	#4	6'-2"	□
U(E)	12	#5	4'-0"	□
U1(E)	4	#4	6'-0"	□

Bar Laps #4 bars = 1'-8"  
#5 bars = 2'-2"

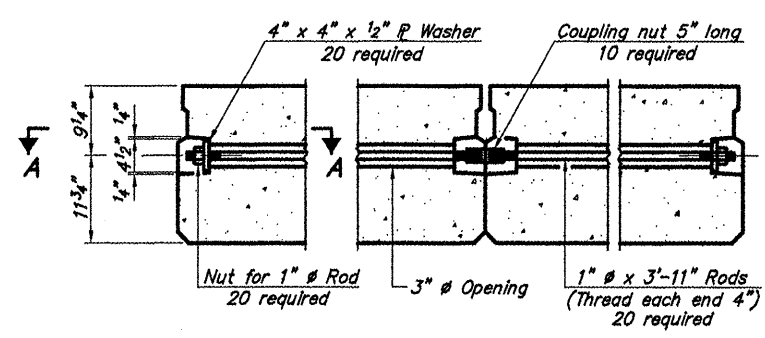
**21" X 48" PPC DECK BEAM - SPAN 2**  
**TOWNSHIP ROUTE 93 (SEILBECK ROAD)**  
**IC RAILROAD**  
**SECTION 00-01199-00-BR**  
**MASSAC COUNTY**  
**STRUCTURE NO. 064-3141**

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO
TR 93	00-01199-00-BR	MASSAC	18	8
PROJECT NO. BROS-127(18)			CONTRACT NO. 99438	



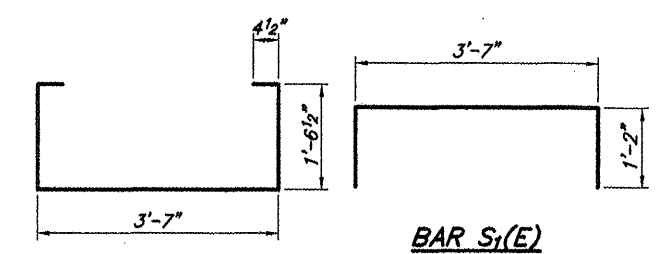
**FABRIC BEARING PAD**  
(Interior)      **FABRIC BEARING PAD**  
(Exterior)

**FIXED**  
Note: Omit holes when using expansion bearings.

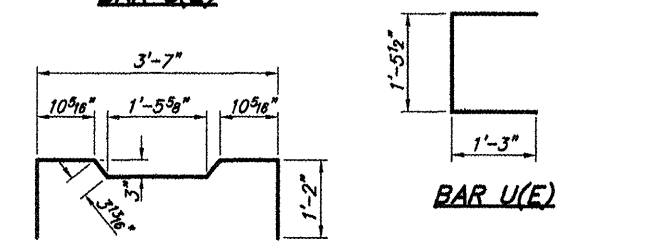


**TYPICAL TRANSVERSE TIE ASSEMBLY**

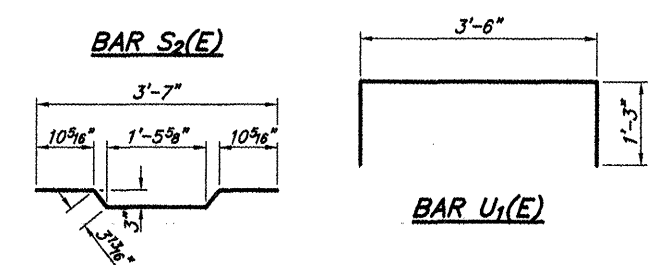
**SECTION A-A**



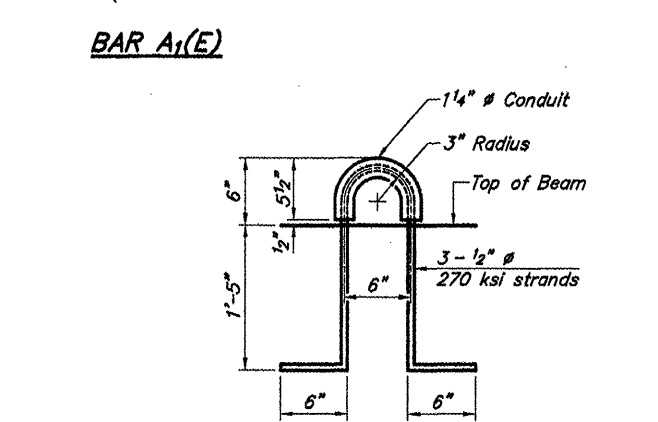
**BAR S(E)**



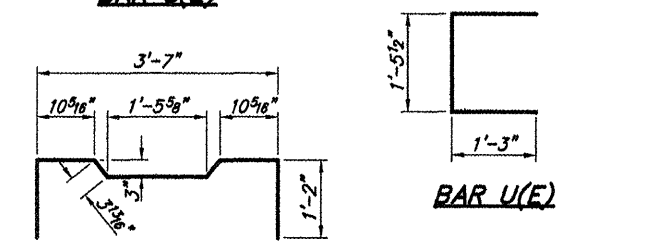
**BAR S2(E)**



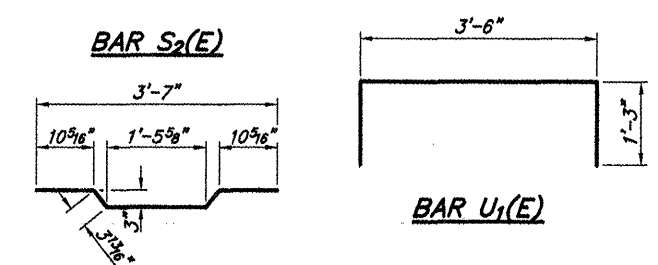
**BAR U1(E)**



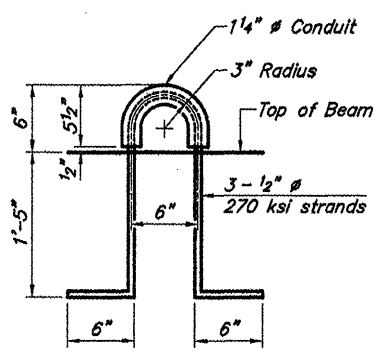
**BAR A1(E)**



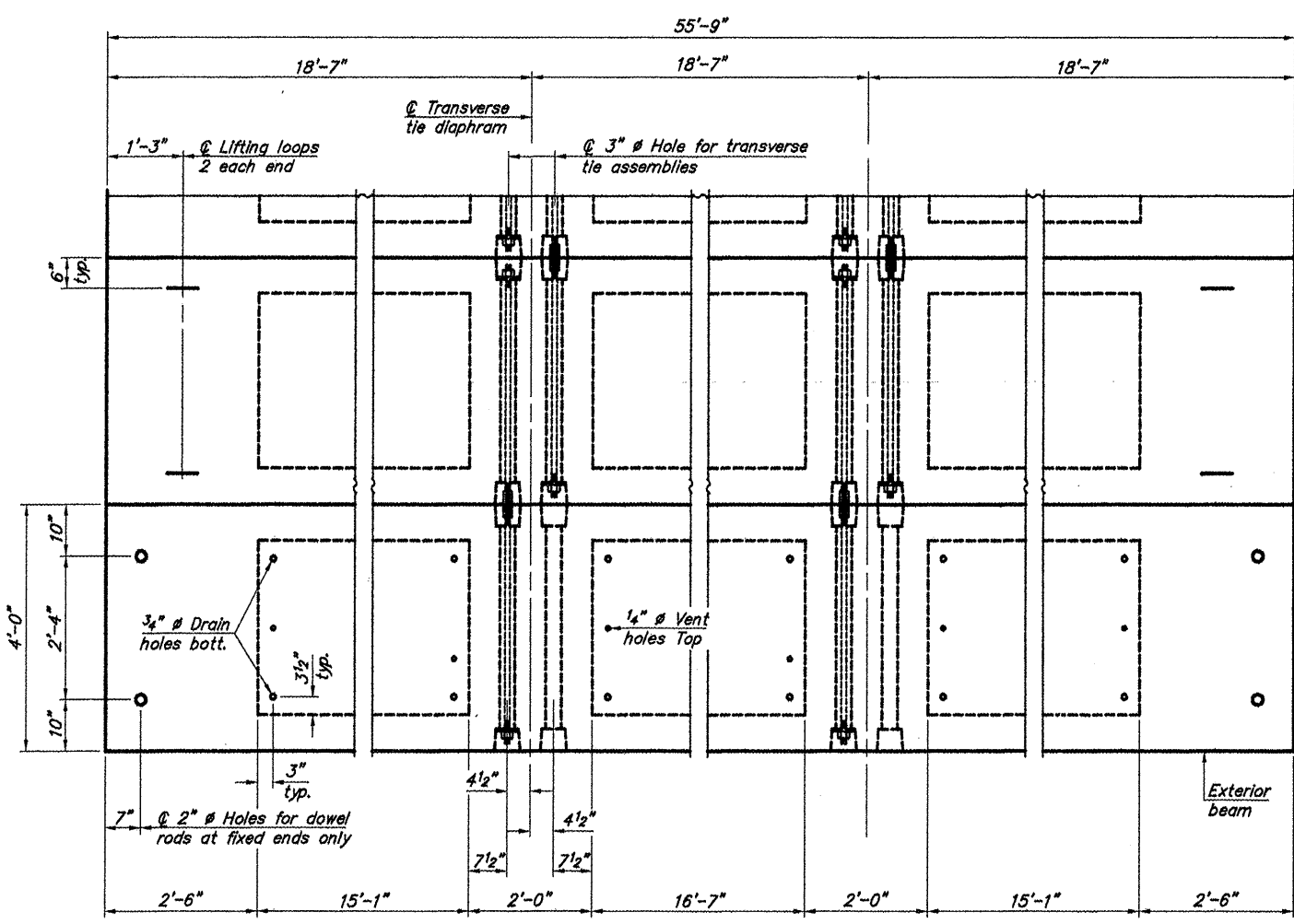
**BAR S1(E)**



**BAR U(E)**



**LIFTING LOOP DETAIL**



**PLAN VIEW**

Note: Connect beams in pairs with the transverse tie configuration shown.

**NOTES**

- Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal diameter shall be 1/2" and the nominal cross-sectional area shall be 0.153 sq. in.
- The 1" rods in the transverse tie assembly shall be tightened to a snug fit and the threads set. Pockets on exterior faces of bridge shall be filled with grout after transverse tie assembly is in place.
- Reinforcement bars shall conform to ASTM A 706, Grade 60. (See Special Provisions).
- Two 1/8" fabric adjusting shims of the dimensions of the exterior bearing pad shall be provided for each bearing pad location.
- A minimum 2 1/2" diameter lifting pin shall be used to engage the lifting loops during handling.
- Corrosion inhibitor, per Article 1020.05(b)(12) and 1021.06 of the Standard Specifications, shall be used in the concrete for precast prestressed concrete deck beams.
- Compressive strength of prestressed concrete, f'c, shall be 6000 psi.
- Compressive strength of prestressed concrete at release, f'ci, shall be 5000 psi.

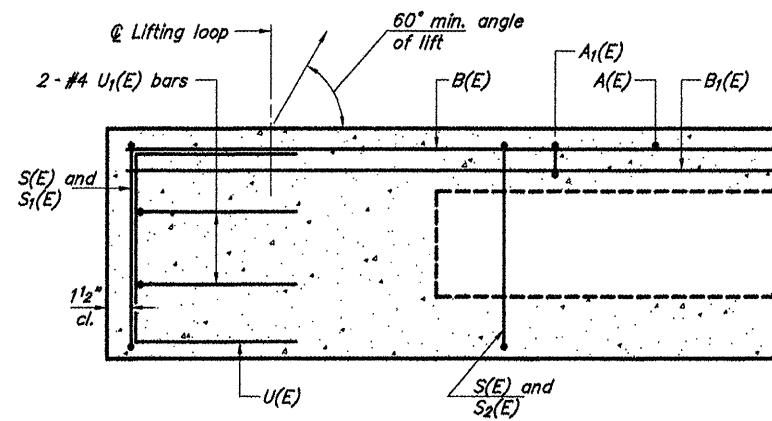
**BILL OF MATERIAL - SPAN 2**

Precast Prestressed Concrete Deck Beams (21" depth)	Sq. Ft.	1338
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**21" X 48" PPC DECK BEAM DETAILS - SPAN 2**  
**TOWNSHIP ROUTE 93 (SEILBECK ROAD)**  
**IC RAILROAD**  
**SECTION 00-01199-00-BR**  
**MASSAC COUNTY**  
**STRUCTURE NO. 064-3141**

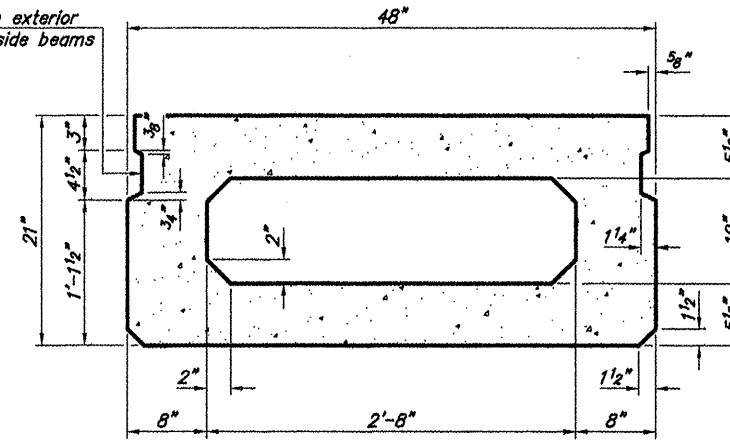


ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO
TR 93	00-01199-00-BR	MASSAC	18	9
PROJECT NO. BROS-127(18)			CONTRACT NO. 99438	

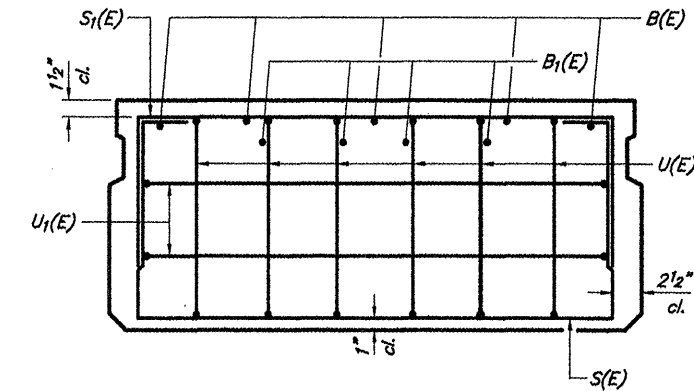


**SECTION C-C**

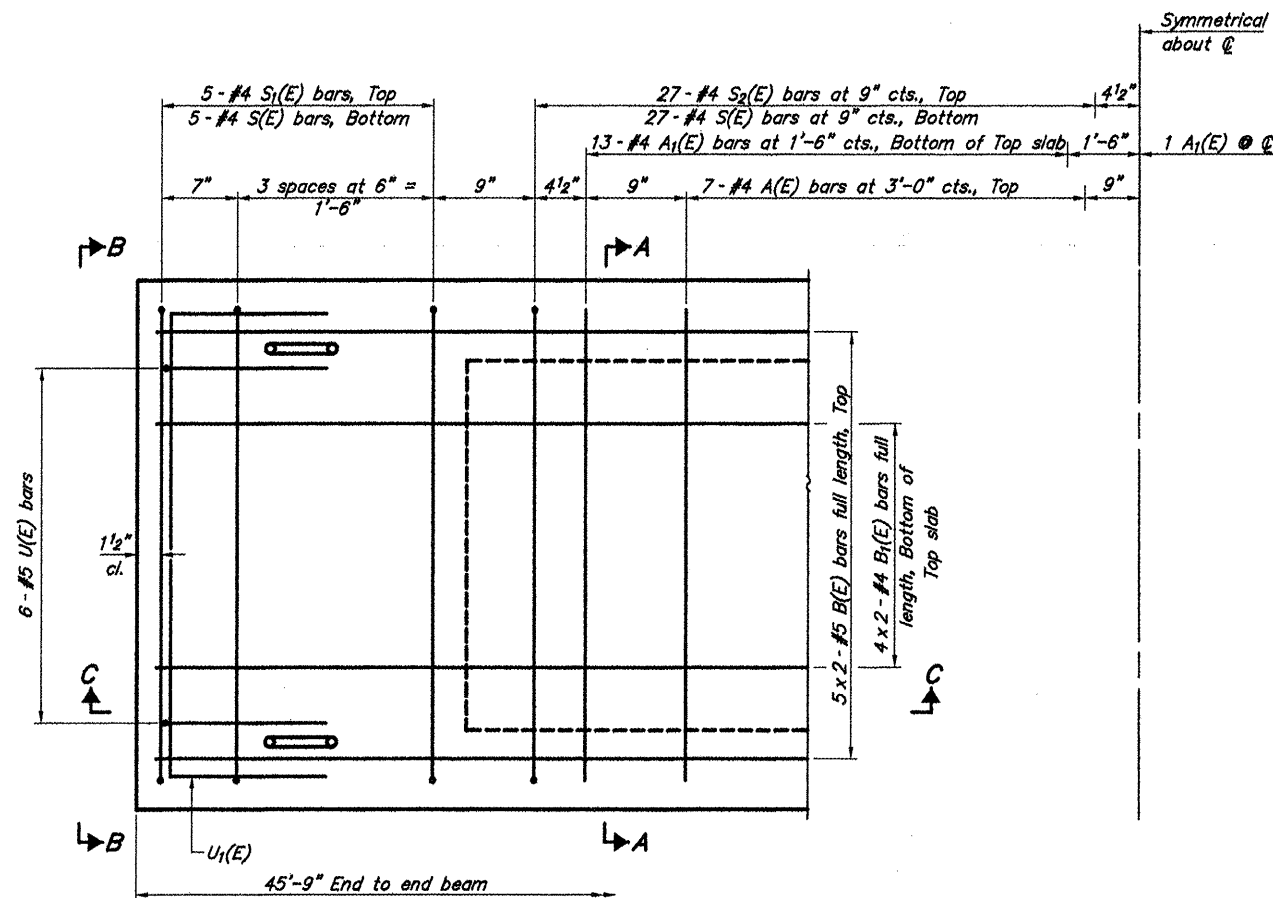
Omit key on exterior face of outside beams



**SECTION A-A**  
(Showing dimensions)

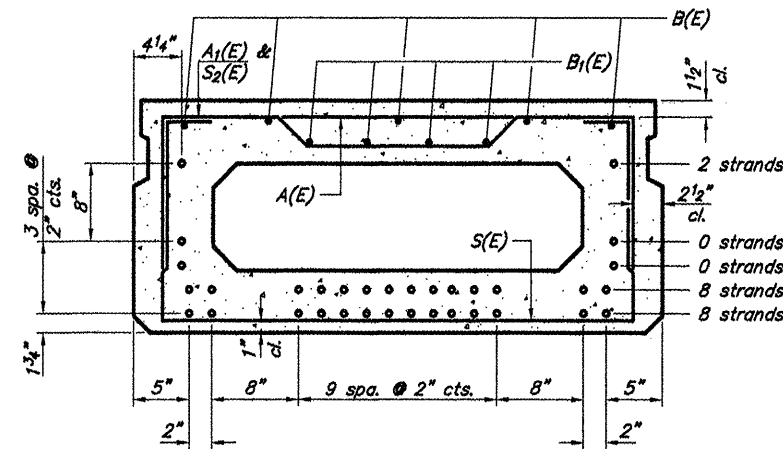


**VIEW B-B**



**PLAN VIEW**

Note: Spacing of S(E) and S2(E) bars may be adjusted up to 4" in the immediate area of the transverse tie diaphragms to miss the block outs for the transverse ties.



**SECTION A-A**  
(Showing reinforcement and permissible strand locations)

Note: Place the number of strands specified in each row symmetrically about the centerline of beam in the permissible strand locations shown.

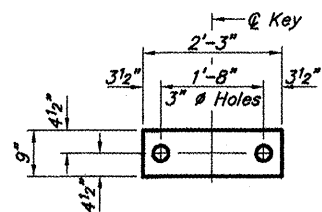
**BAR LIST**  
**ONE BEAM ONLY**  
(For information only)

Bar	No.	Size	Length	Shape
A(E)	14	#4	3'-7"	—
A1(E)	27	#4	3'-10"	~
B(E)	10	#5	23'-10"	—
B1(E)	8	#4	23'-7"	—
S(E)	64	#4	7'-5"	□
S1(E)	10	#4	5'-11"	□
S2(E)	54	#4	6'-2"	□
U(E)	12	#5	4'-0"	□
U1(E)	4	#4	6'-0"	□

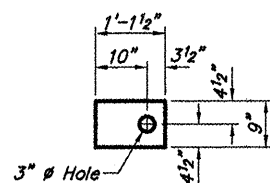
Bar Laps #4 bars = 1'-8"  
#5 bars = 2'-2"

**21" X 48" PPC DECK BEAM - SPAN 3**  
**TOWNSHIP ROUTE 93 (SEILBECK ROAD)**  
**IC RAILROAD**  
**SECTION 00-01199-00-BR**  
**MASSAC COUNTY**  
**STRUCTURE NO. 064-3141**

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO
TR 93	00-01199-00-BR	MASSAC	18	10
PROJECT NO. BROS-127(18)			CONTRACT NO. 99438	



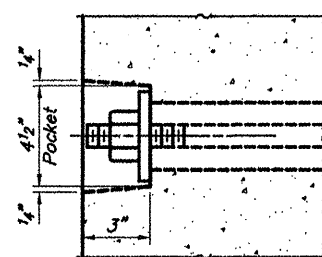
**FABRIC BEARING PAD**  
(Interior)



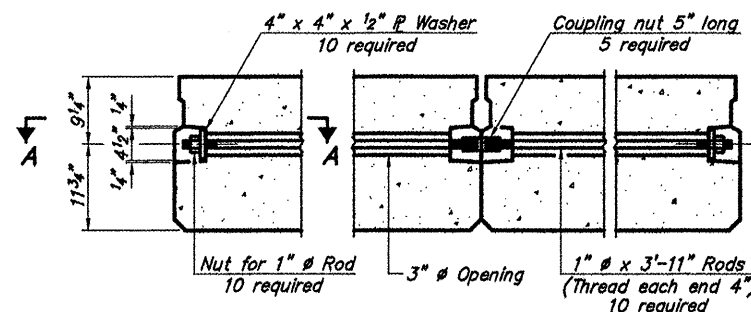
**FABRIC BEARING PAD**  
(Exterior)

**FIXED**

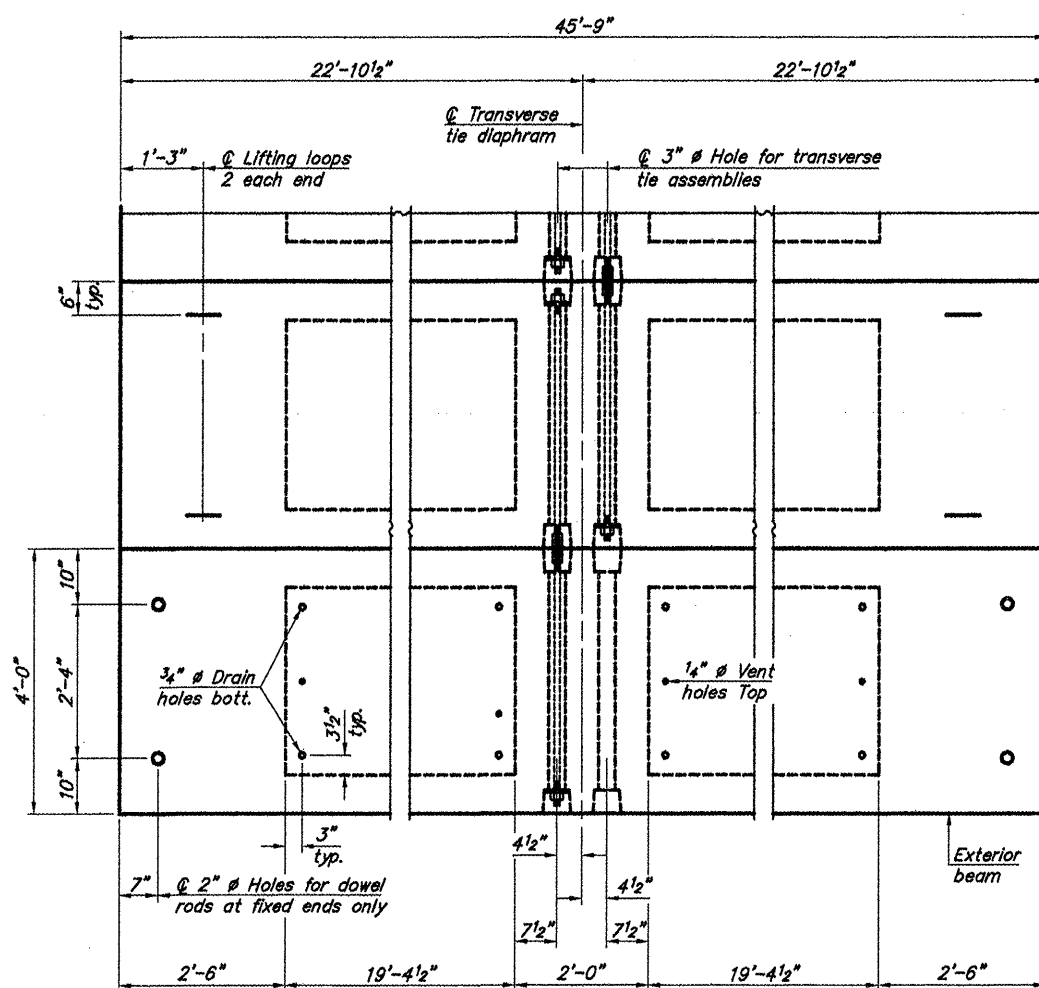
Note: Omit holes when using expansion bearings.



**SECTION A-A**



**TYPICAL TRANSVERSE TIE ASSEMBLY**

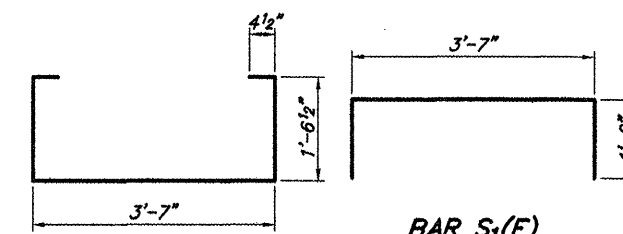


**PLAN VIEW**

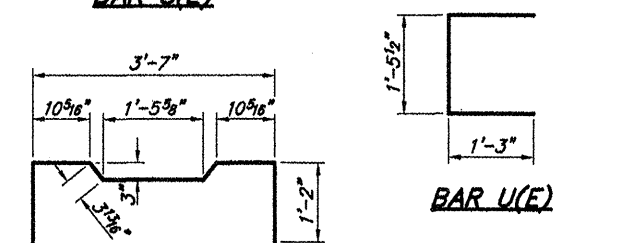
Note: Connect beams in pairs with the transverse tie configuration shown.

**NOTES**

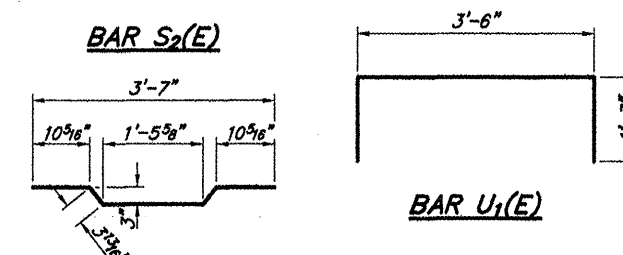
- Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal diameter shall be 1/2" and the nominal cross-sectional area shall be 0.153 sq. in.
- The 1" rods in the transverse tie assembly shall be tightened to a snug fit and the threads set. Pockets on exterior faces of bridge shall be filled with grout after transverse tie assembly is in place.
- Reinforcement bars shall conform to ASTM A 706, Grade 60. (See Special Provisions).
- Two 1/8" fabric adjusting shims of the dimensions of the exterior bearing pad shall be provided for each bearing pad location.
- A minimum 2 1/2" diameter lifting pin shall be used to engage the lifting loops during handling.
- Corrosion inhibitor, per Article 1020.05(b)(12) and 1021.06 of the Standard Specifications, shall be used in the concrete for precast prestressed concrete deck beams.
- Compressive strength of prestressed concrete, f'c, shall be 6000 psi.
- Compressive strength of prestressed concrete at release, f'cl, shall be 5000 psi.



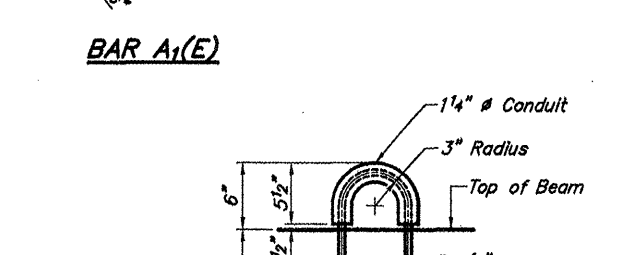
**BAR S(E)**



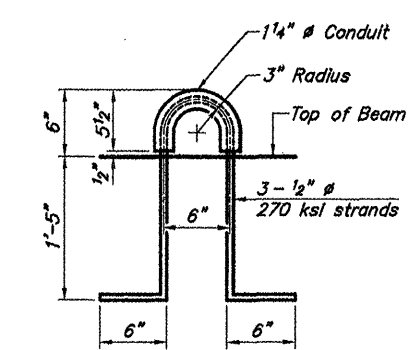
**BAR U(E)**



**BAR S2(E)**



**BAR A1(E)**



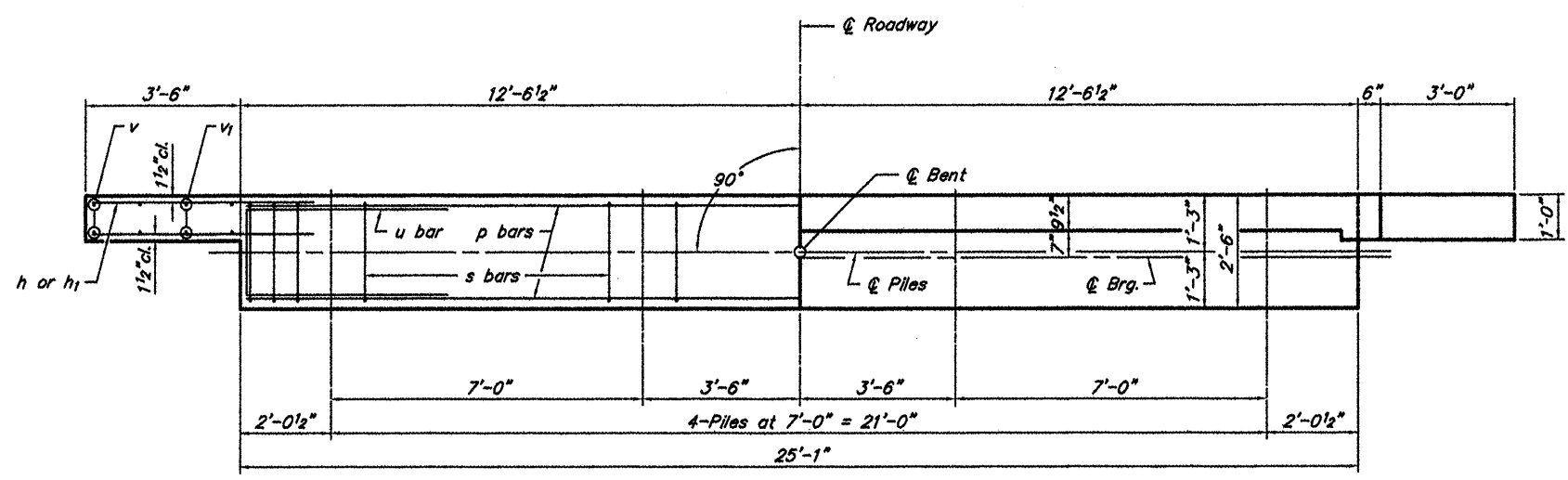
**LIFTING LOOP DETAIL**

**BILL OF MATERIAL - SPAN 3**

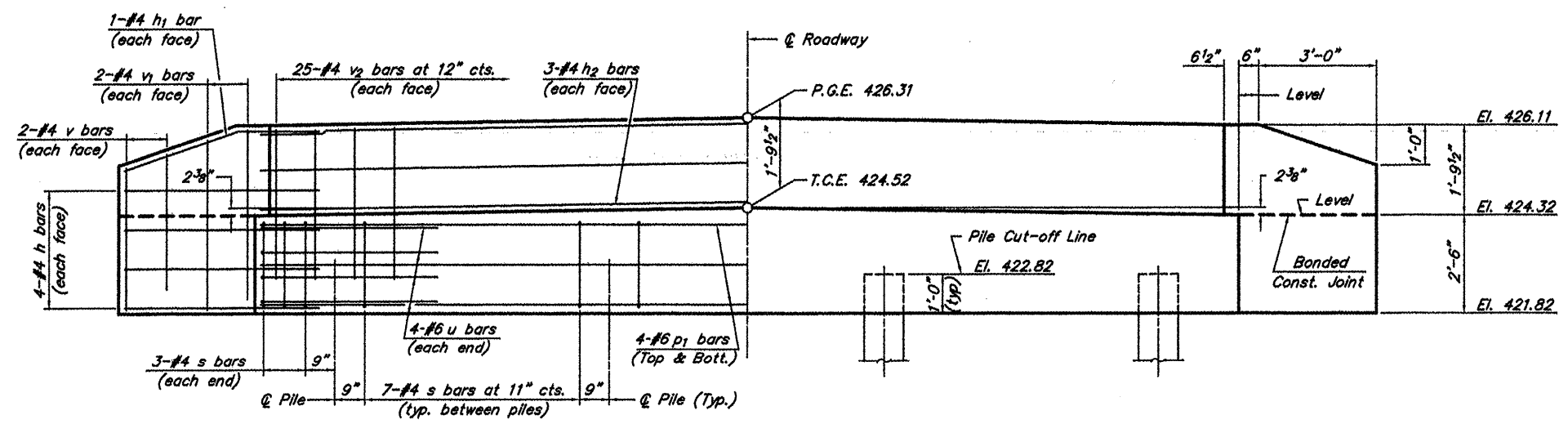
Precast Prestressed Concrete Deck Beams (21" depth)	Sq. Ft.	1098
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**21" X 48" PPC DECK BEAM DETAILS - SPAN 3**  
TOWNSHIP ROUTE 93 (SEILBECK ROAD)  
IC RAILROAD  
SECTION 00-01199-00-BR  
MASSAC COUNTY  
STRUCTURE NO. 064-3141

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 93	00-01199-00-BR	MASSAC	18	11
PROJECT NO. BROS-127(18)			CONTRACT NO. 99438	



**PLAN**



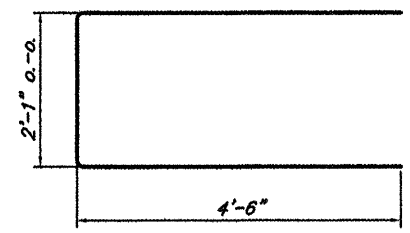
**ELEVATION**

**NOTES**

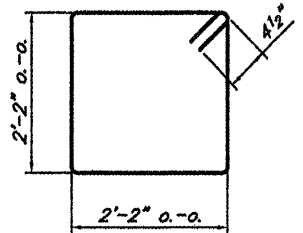
- The Backwall and the portion of the Wingwalls above the bonded construction joint shall be cast against the in-place beam.
- Reinforcement bars shall conform to A.A.S.H.T.O. M-31 or M-322, Grade 60.

**DESIGN STRESSES**

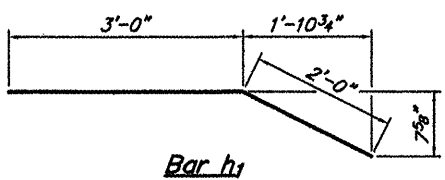
$f_c' = 3,500 \text{ psi}$   
 $f_y = 60,000 \text{ psi}$



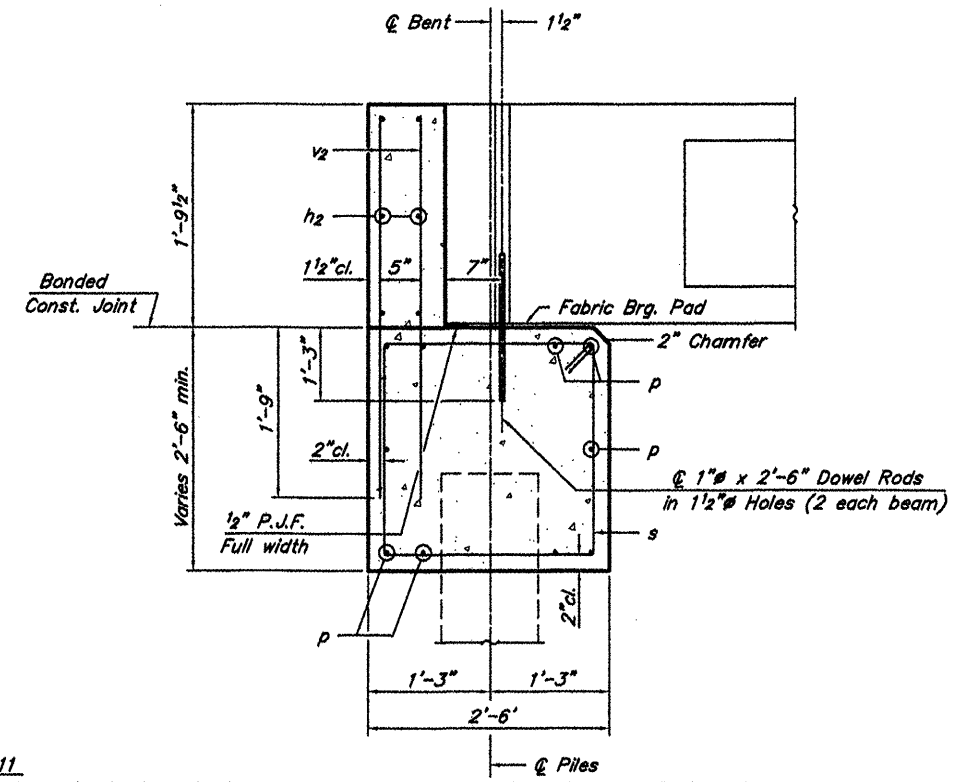
**Bar u**



**Bar s**



**Bar h1**



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

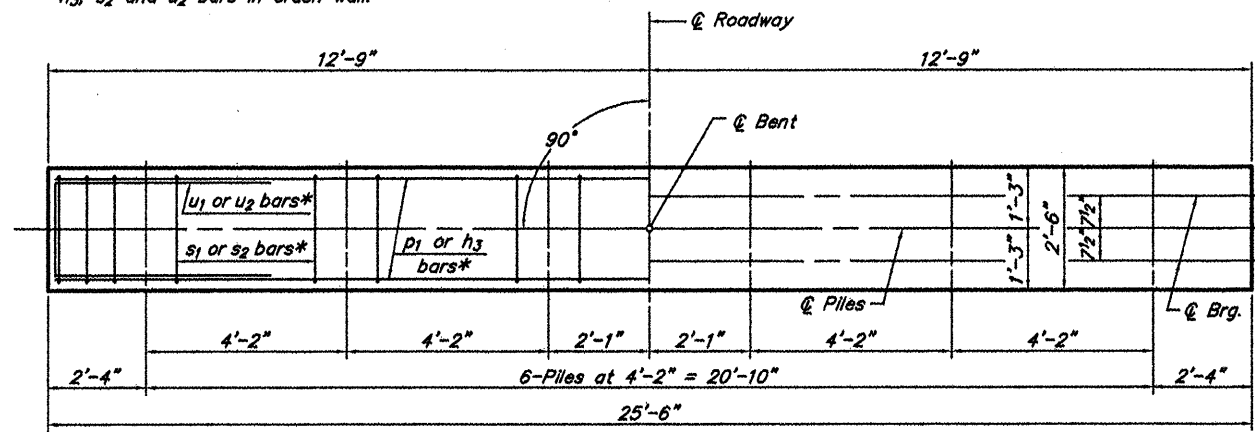
**BILL OF MATERIAL FOR ONE ABUTMENT**

Bar	No.	Size	Length	Shape
h	16	#4	5'-0"	—
h1	4	#4	5'-0"	—
h2	6	#4	24'-9"	—
P	10	#7	24'-9"	—
s	27	#4	9'-5"	□
u	8	#6	11'-1"	—
v	8	#4	3'-2"	—
v1	8	#4	3'-11"	—
v2	50	#4	3'-5"	—
Concrete Structures			8.4	Cu. Yds.
Reinforcement Bars			1,127	Lbs.

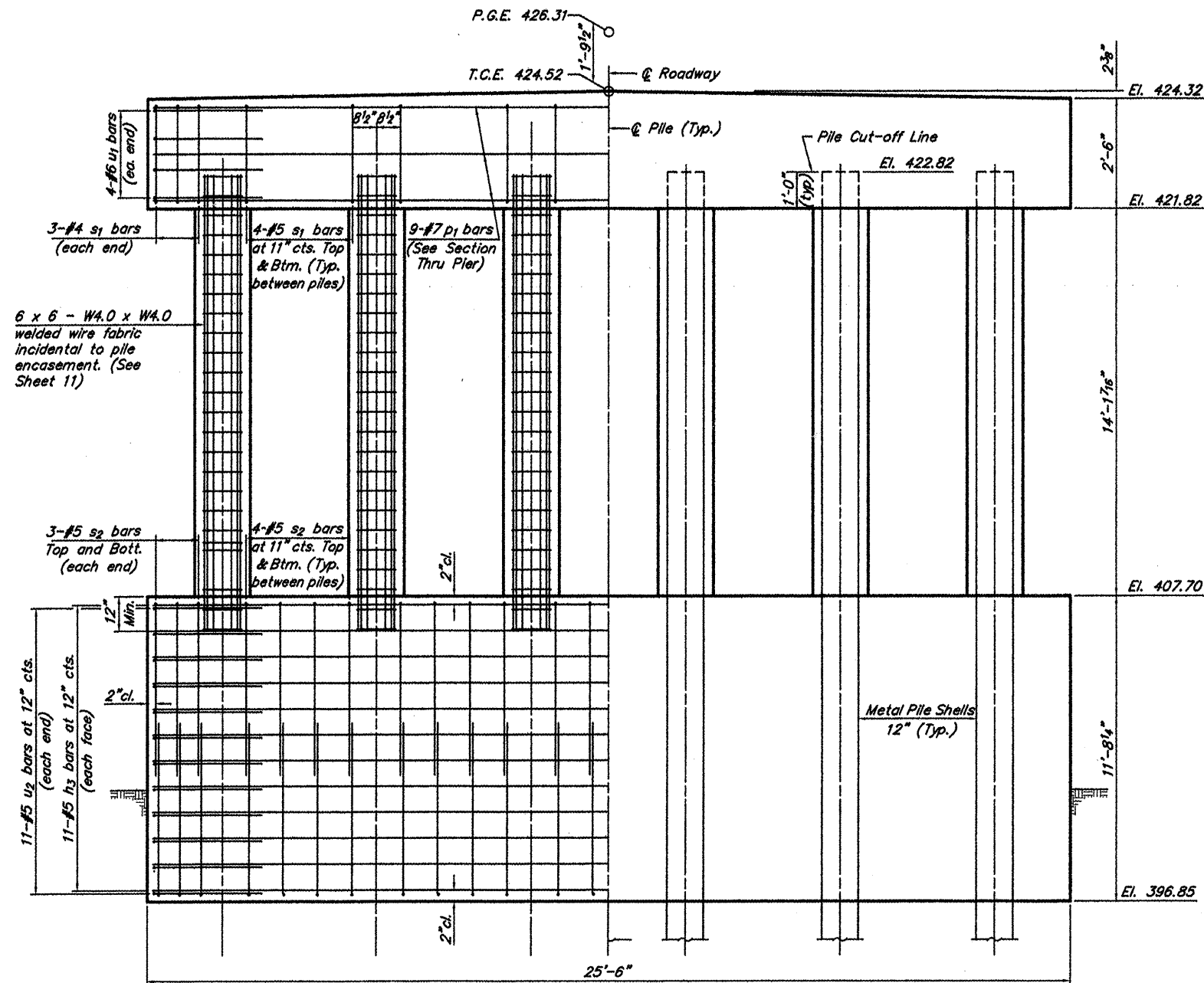
**ABUTMENT**  
**TOWNSHIP ROUTE 93 (SEILBECK ROAD)**  
**IC RAILROAD**  
**SECTION 00-01199-00-BR**  
**MASSAC COUNTY**  
**STRUCTURE NO. 064-3141**

\* Note:  $p_1$ ,  $s_1$  and  $u_1$  bars in cap  
 $h_3$ ,  $s_2$  and  $u_2$  bars in crash wall.

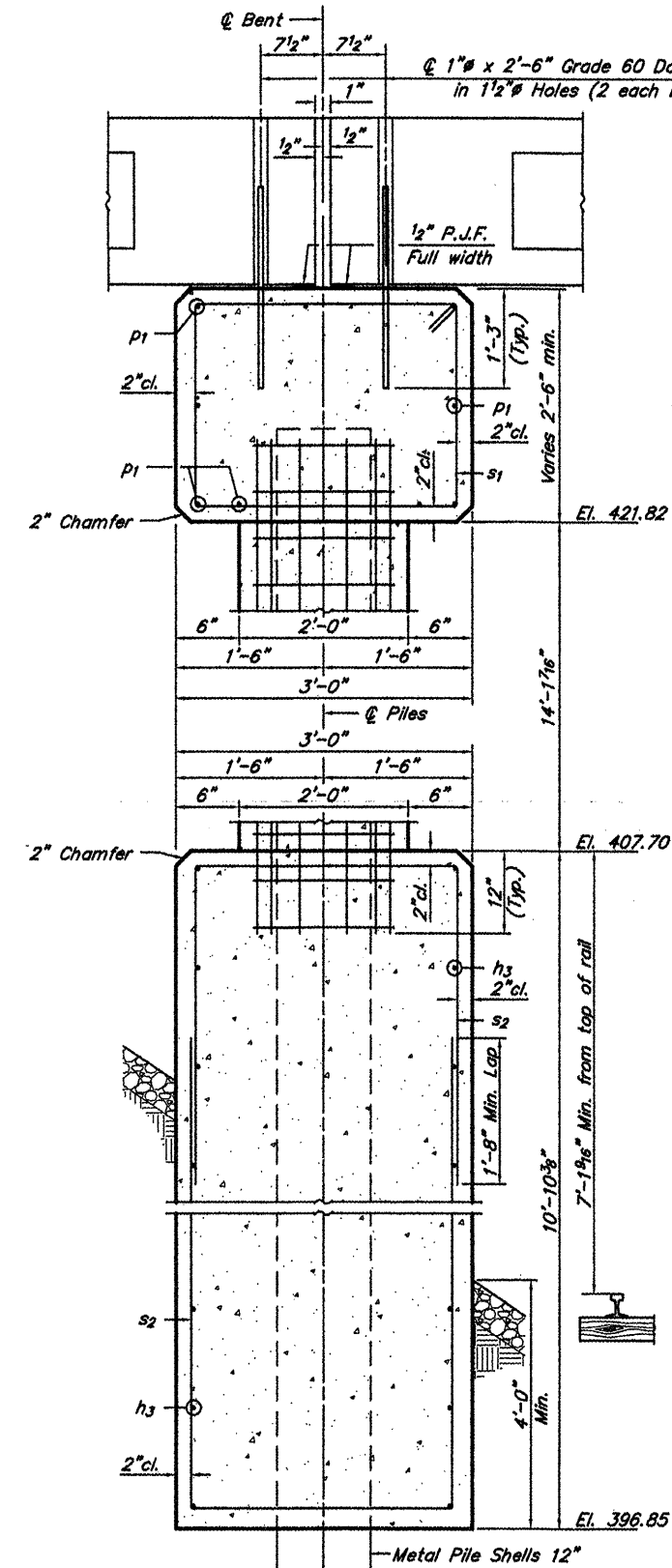
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 93	00-01199-00-BR	MASSAC	18	12
PROJECT NO. BROS-127(18)			CONTRACT NO. 99438	



PLAN



ELEVATION



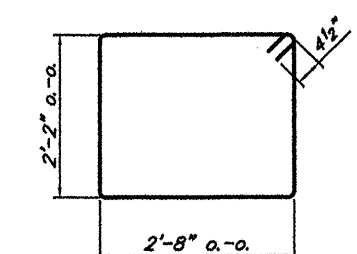
SECTION THRU ABUT.  
 (At Right Angles)

NOTES

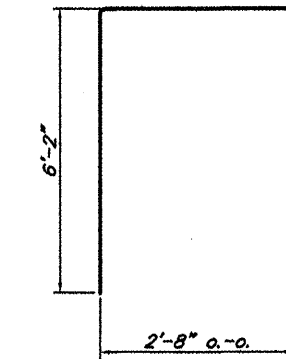
- Reinforcement bars shall conform to A.A.S.H.T.O. M-31 or M-322, Grade 60.
- Nominal 1" joint at @ Pier shall be filled with non-shrink grout to top.

DESIGN STRESSES

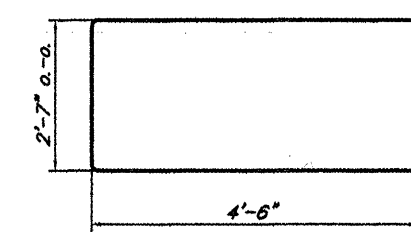
$f'_c = 3,500$  psi  
 $f_y = 60,000$  psi



Bar  $s_1$



Bar  $s_2$



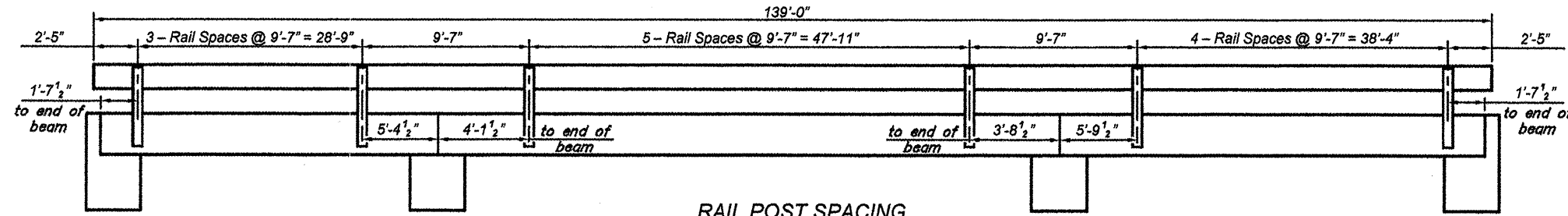
Bar  $u_1$  &  $u_2$

BILL OF MATERIALS FOR ONE PIER

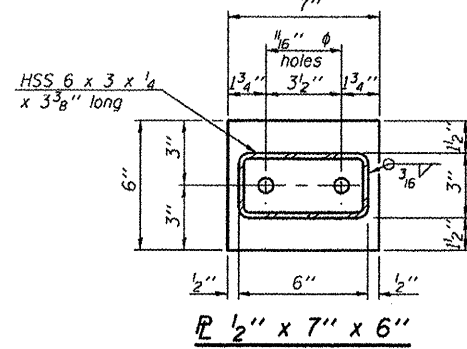
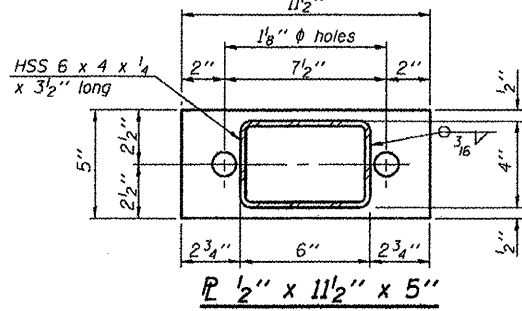
Bar	No.	Size	Length	Shape
$h_3$	22	#5	25'-2"	—
$p_1$	9	#7	25'-2"	—
$s_1$	26	#4	10'-5"	□
$s_2$	52	#5	15'-0"	□
$u_1$	8	#6	11'-7"	—
$u_2$	22	#5	11'-7"	—
Concrete Structures			38.2	Cu. Yds.
Concrete Encasement			7.4	Cu. Yds.
Reinforcement Bars			2,440	Lbs.

PIER  
 TOWNSHIP ROUTE 93 (SEILBECK ROAD)  
 IC RAILROAD  
 SECTION 00-01199-00-BR  
 MASSAC COUNTY  
 STRUCTURE NO. 064-3141

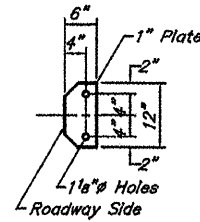
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 93	00-01199-00-BR	MASSAC	18	13
PROJECT NO. BROS-127(18)			CONTRACT NO. 99438	



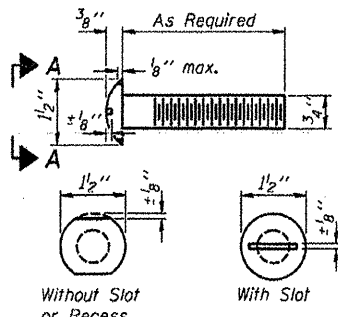
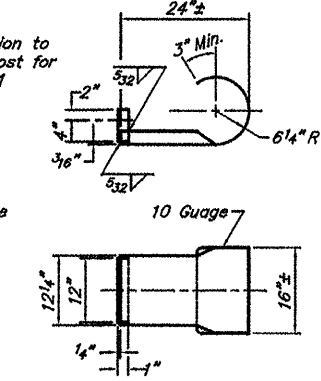
**RAIL POST SPACING**



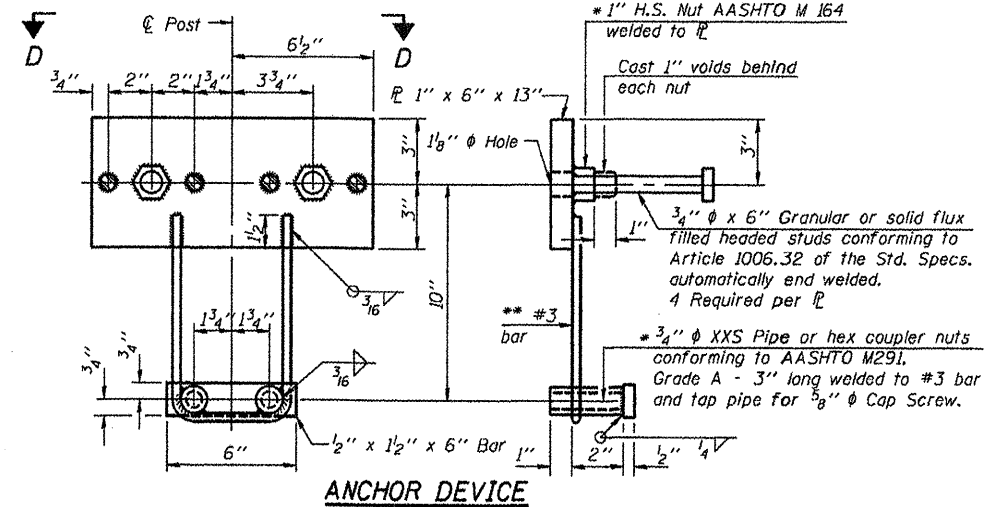
NOTE: Curled End Section to be included in the cost for Steel Railing, Type S1 Four (4)



**CURLED END SECTION DETAILS**

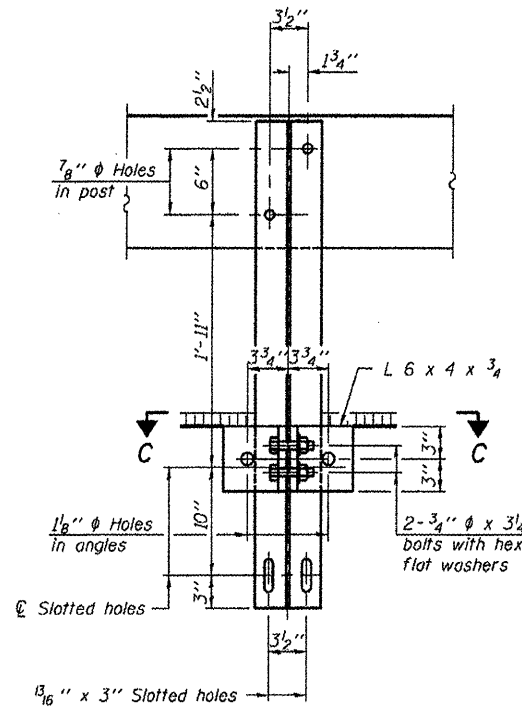


**VIEW A-A ROUND HEAD BOLT**

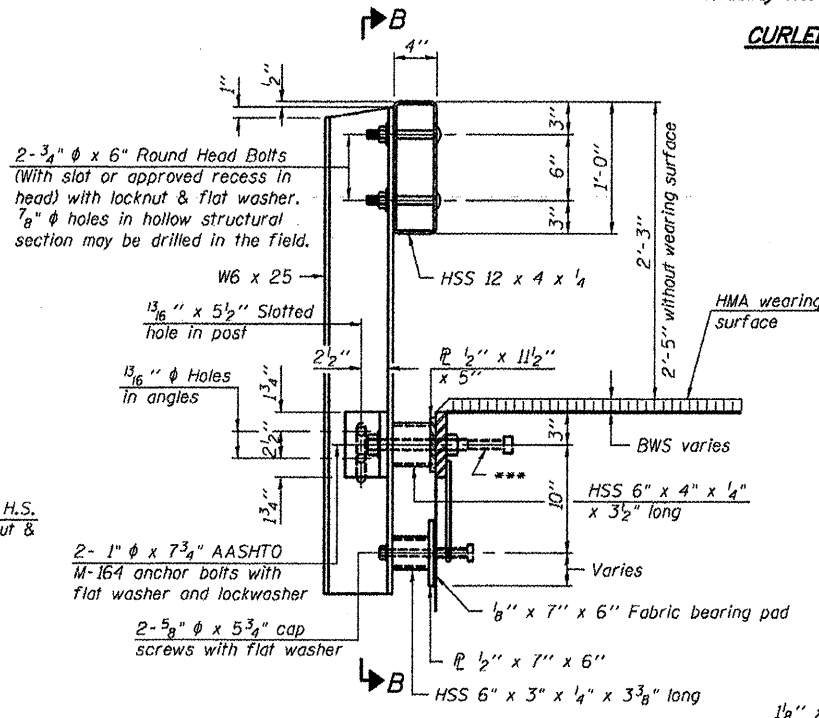


**ANCHOR DEVICE**

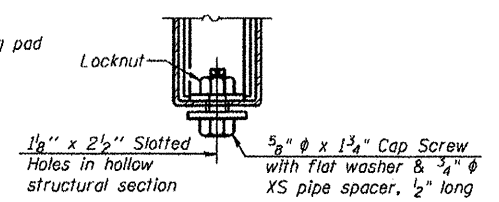
- Notes:
- All field drilled holes shall be coated with an approved zinc rich paint before erection.
  - For multi-span bridges, sufficient 1/4" x 6" x 1'-2" galvanized steel shims shall be provided to align rail between adjacent spans. Cost included with Steel Railing, Type S-1.
  - All steel rail elements shall be galvanized according to Article 509.05 of the Standard Specifications.
  - Threaded areas shall be plugged or blocked off during casting 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".
  - The studs of the anchor devices shall be placed below the top reinforcement bars and the outermost longitudinal reinforcement bar shall be placed directly above the studs of the rail post anchor device.
  - 10'-9" Maximum Post Spacing



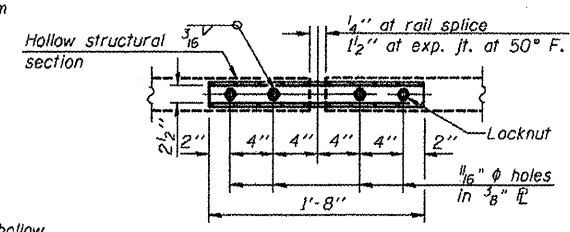
**SECTION B-B**



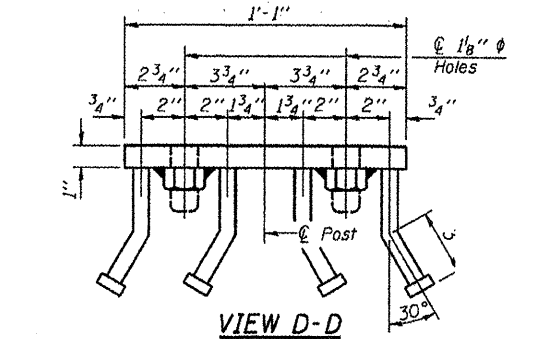
**SECTION AT RAILING POST**



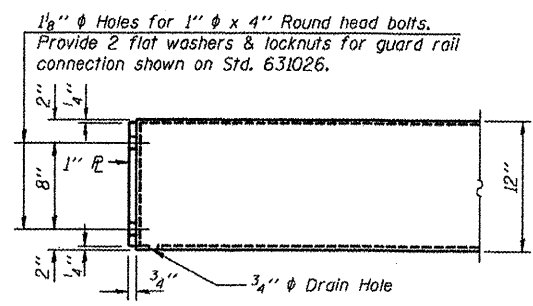
**RAIL SPLICE CONNECTION AT EXPANSION JT.**



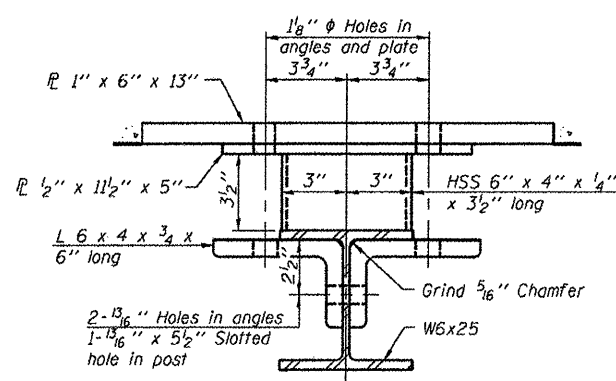
**PLAN-BOTT. SPLICE P TYPICAL**



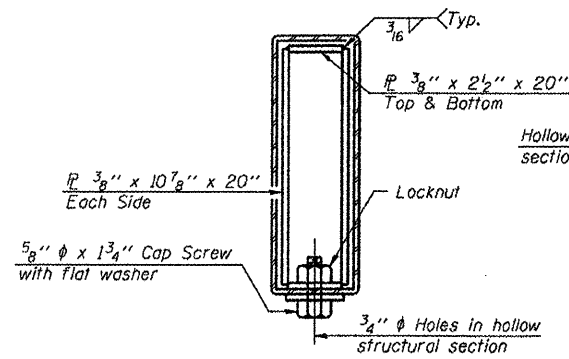
**VIEW D-D**



**END OF RAIL DETAILS**



**SECTION C-C**



**SECTIONS AT RAIL SPLICE**

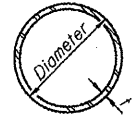
**BILL OF MATERIAL**

Item	Unit	Quantity
Steel Railing, Type S-1	Foot	278

**STEEL RAILING, TYPE S-1**  
**TOWNSHIP ROUTE 93 (SEILBECK ROAD)**  
**IC RAILROAD**  
**SECTION 00-01199-00-BR**  
**MASSAC COUNTY**  
**STRUCTURE NO. 064-3141**

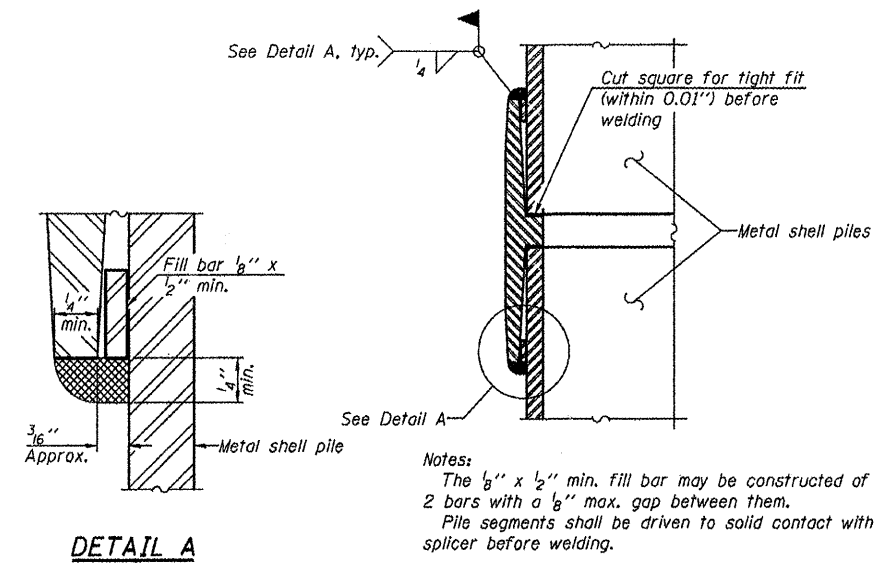


ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 93	00-01199-00-BR	MASSAC	18	15
PROJECT NO. BROS-127(18)			CONTRACT NO. 99438	



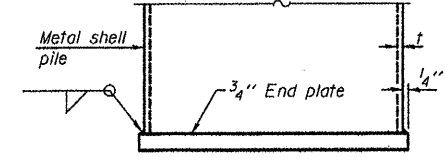
**METAL SHELL PILE TABLE**

Designation and outside diameter	Wall thickness t	Weight per foot (Lbs./ft.)	Inside volume (yd. <sup>3</sup> /ft.)
PP12	0.179"	22.60	0.0274
PP12	0.250"	31.37	0.0267
PP14	0.250"	36.71	0.0368
PP14	0.312"	45.61	0.0361

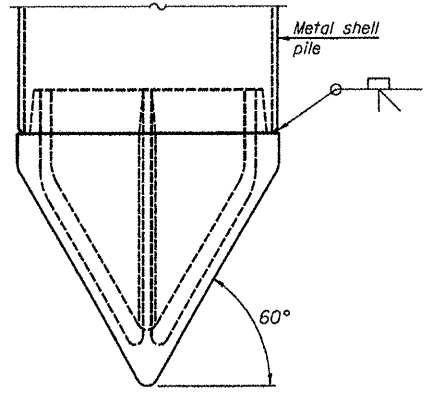


**DETAIL A**

**WELDED COMMERCIAL SPLICE**

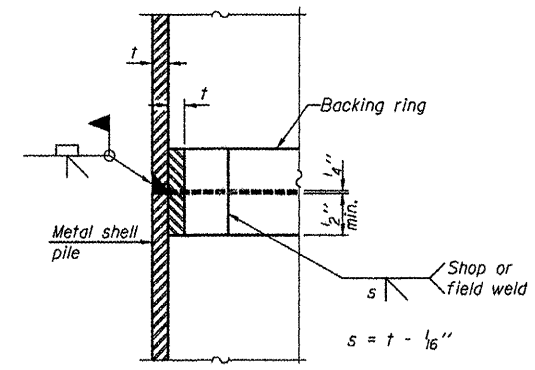


**END PLATE ATTACHMENT**



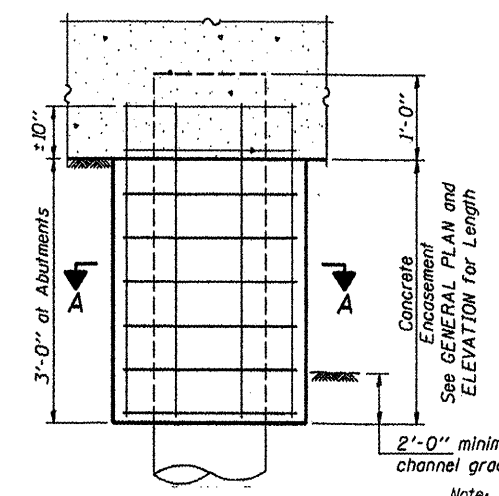
Note A:  
 When called for on the plans, the Contractor shall furnish metal shell pile shoes consisting of a single piece conical pile point as shown. The pile shoes shall be cast in one piece steel according to either ASTM A 148 Grade 90-60 or AASHTO M 103 Grade 65-35 and shall provide full bearing over the full circumference of the metal shell pile. The pile shoe shall have tapered leads to assure proper alignment and fitting and shall be secured to the pile with a circumferential weld.

**METAL SHELL PILE SHOE ATTACHMENT**  
 (See Note A)



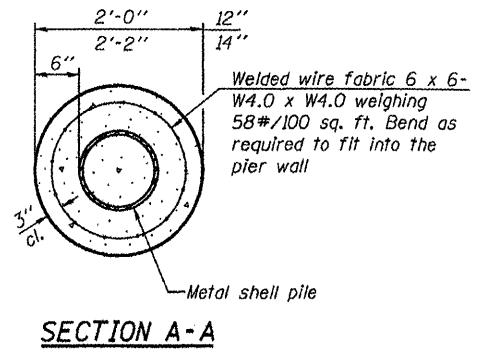
**COMPLETE PENETRATION WELD SPLICE**

Backing ring made from pile shell. Remove segment to allow reducing circumference and vertically rejoin with partial joint penetration weld.



**ELEVATION**

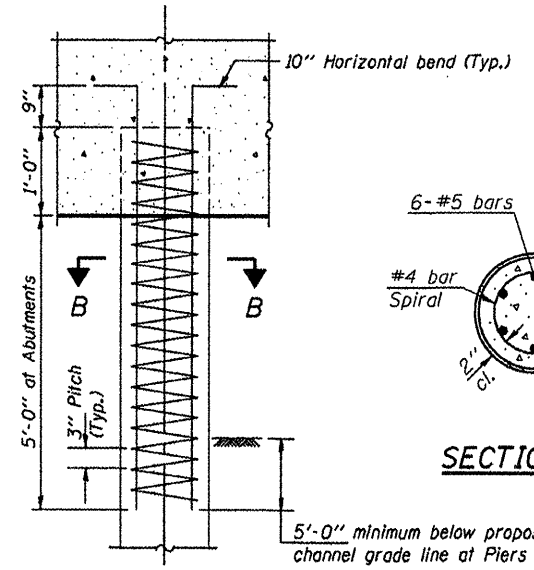
**CONCRETE ENCASUREMENT**



**SECTION A-A**

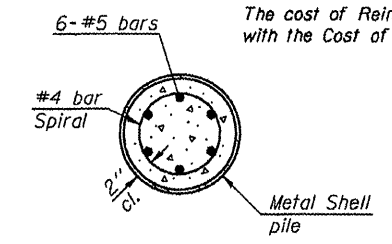
Concrete Encasement Pile Size	Quantity / Ft.
12" Dia.	0.087 C.Y.
14" Dia.	0.107 C.Y.

Note:  
 Forms for encasement may be omitted when soil conditions permit.



**ELEVATION**

**METAL SHELL REINFORCEMENT**



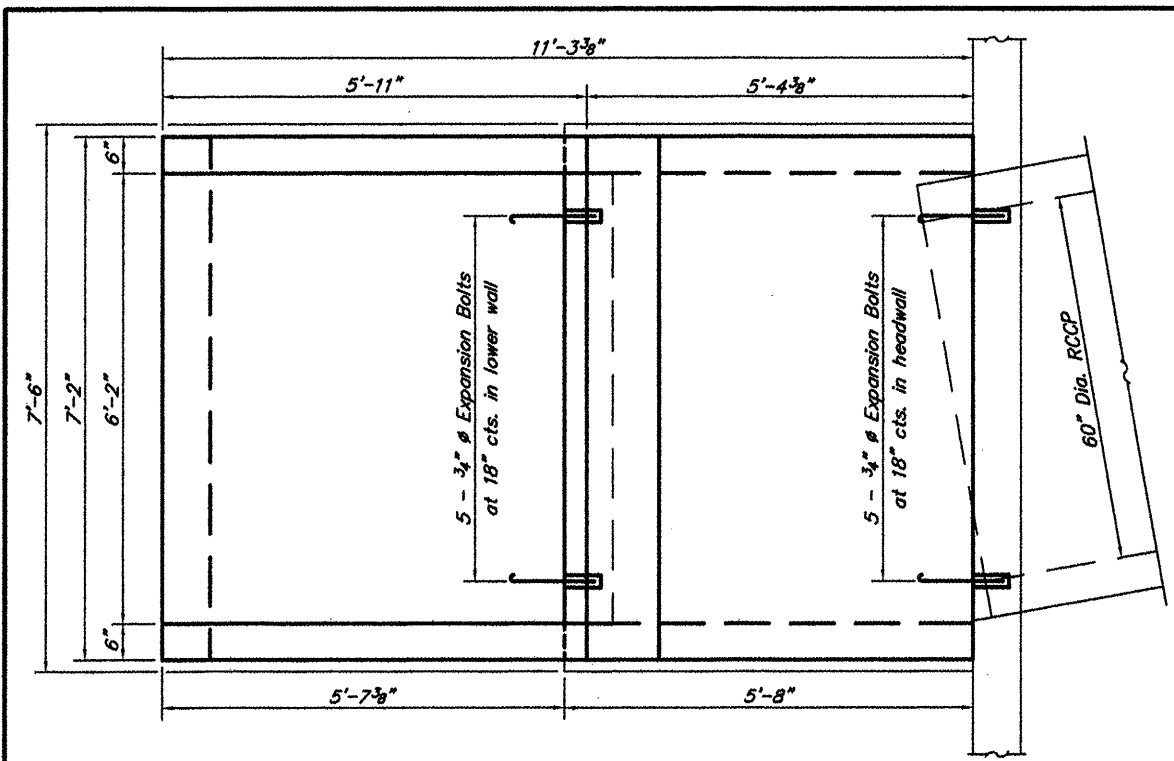
**SECTION B-B**

Reinforcement cage shall be omitted when Concrete Encasement is provided.  
 The cost of Reinforcement is included with the Cost of Furnishing Piles.

Note:  
 The metal shell piles shall be according to ASTM A 252 Grade 3.

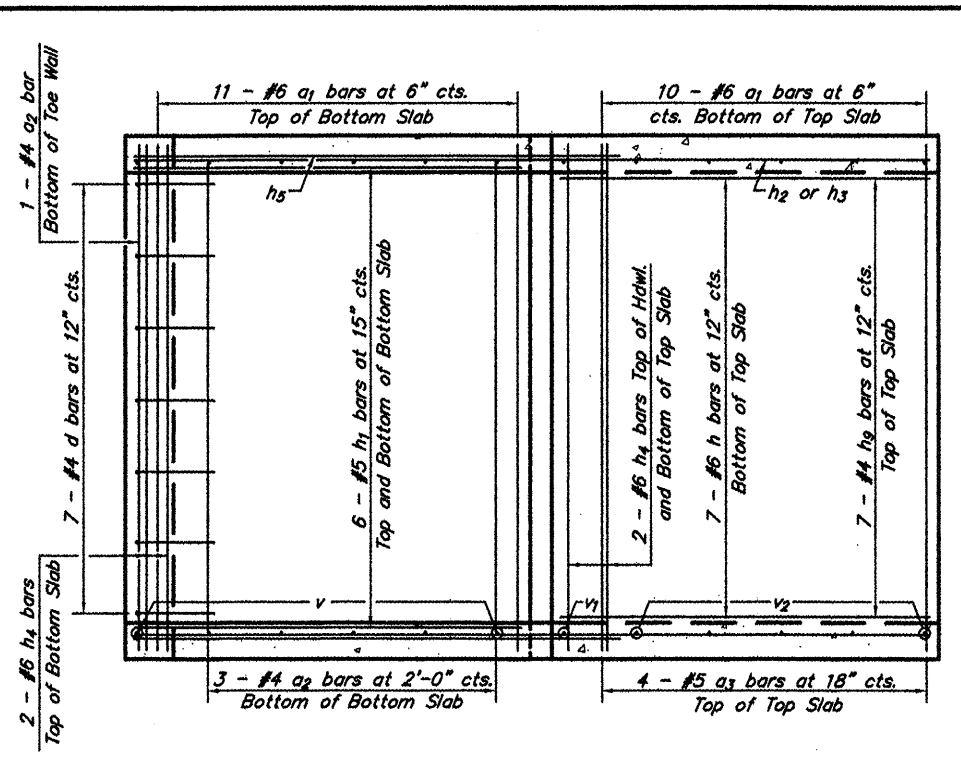
**PILING DETAILS**  
 TOWNSHIP ROUTE 93 (SEILBECK ROAD)  
 IC RAILROAD  
 SECTION 00-01199-00-BR  
 MASSAC COUNTY  
 STRUCTURE NO. 064-3141

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 93	00-01199-00-BR	MASSAC	18	16
PROJECT NO. BROS-127(18)			CONTRACT NO. 99438	

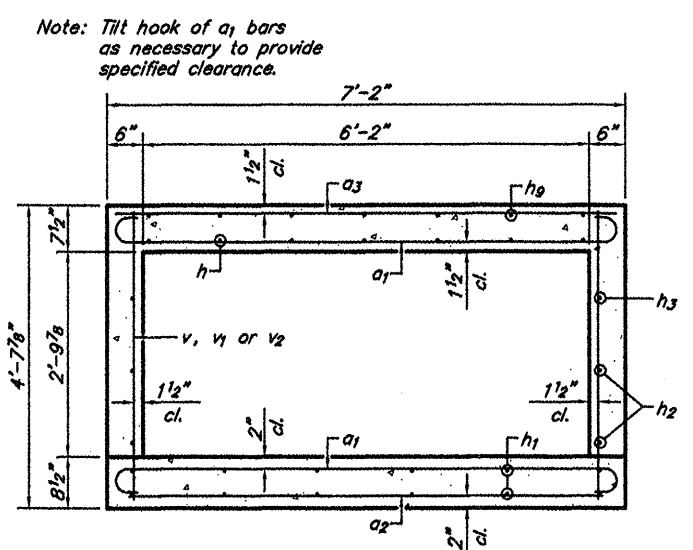


SHOWING OUTLINE

PLAN

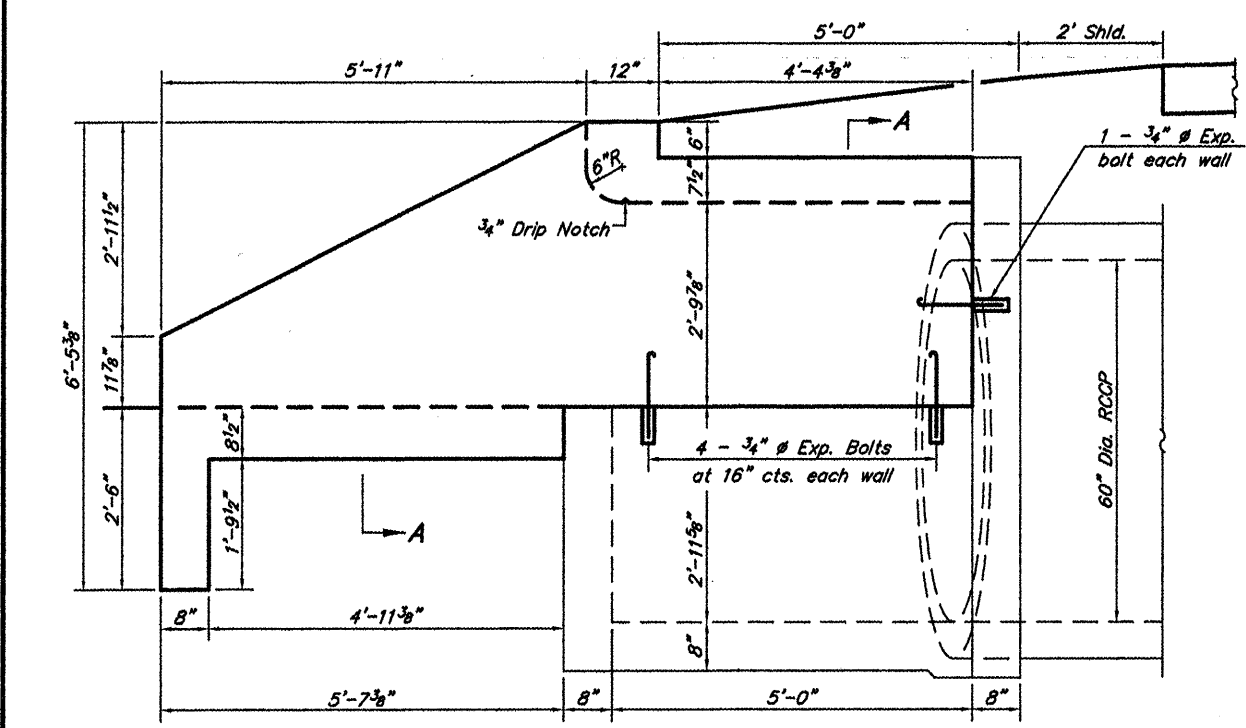


SHOWING REINFORCEMENT



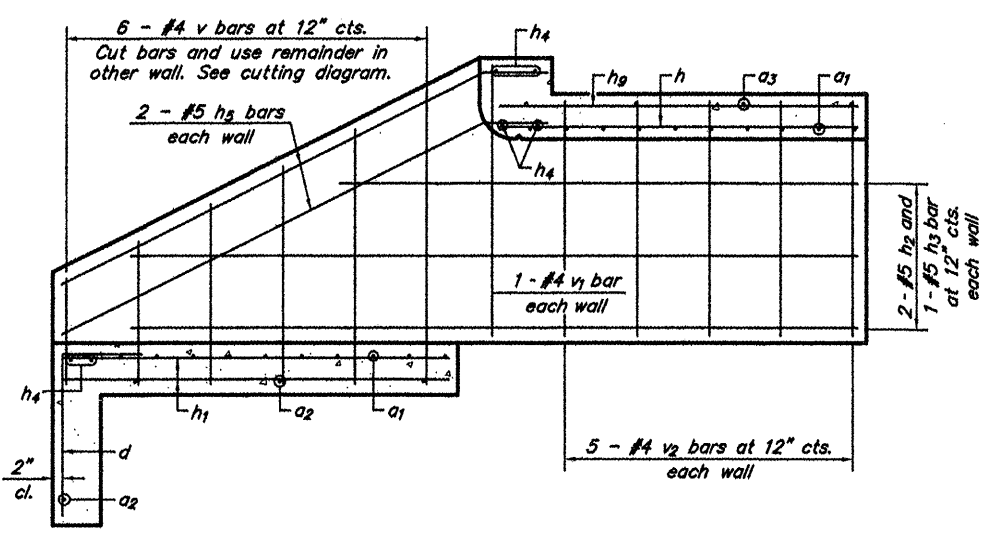
SECTION A-A

Note: Tilt hook of a1 bars as necessary to provide specified clearance.

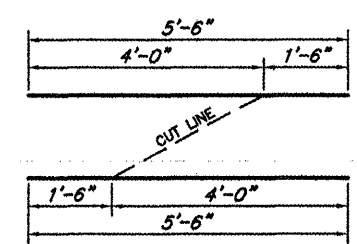


SHOWING OUTLINE

ELEVATION



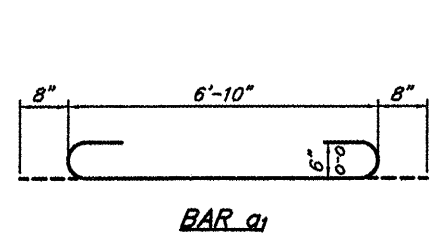
SHOWING REINFORCEMENT



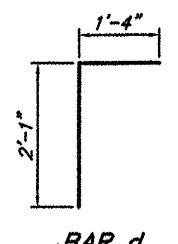
Bar v

BILL OF MATERIAL

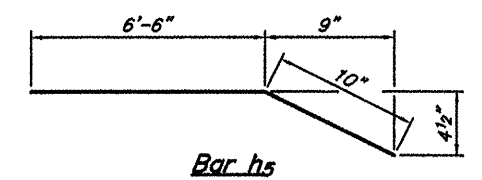
Bar	No.	Size	Length	Shape
a1	21	#6	8'-2"	—
a2	4	#4	6'-5"	—
a3	4	#5	6'-10"	—
d	7	#4	3'-5"	└
h	7	#6	5'-0"	—
h1	12	#5	5'-3"	—
h2	4	#5	10'-0"	—
h3	2	#5	7'-0"	—
h4	6	#6	6'-10"	—
h5	4	#5	7'-4"	—
h9	7	#4	5'-0"	—
v	6	#4	5'-6"	—
v1	2	#4	3'-8"	—
v2	10	#4	3'-2"	—
Concrete Structures			3.5	Cu. Yds.
Reinforcement Bars			657	Lbs.
Expansion Bolts 3/4 Inch			20	Each



BAR a1



BAR d



Bar h5

DESIGN STRESSES

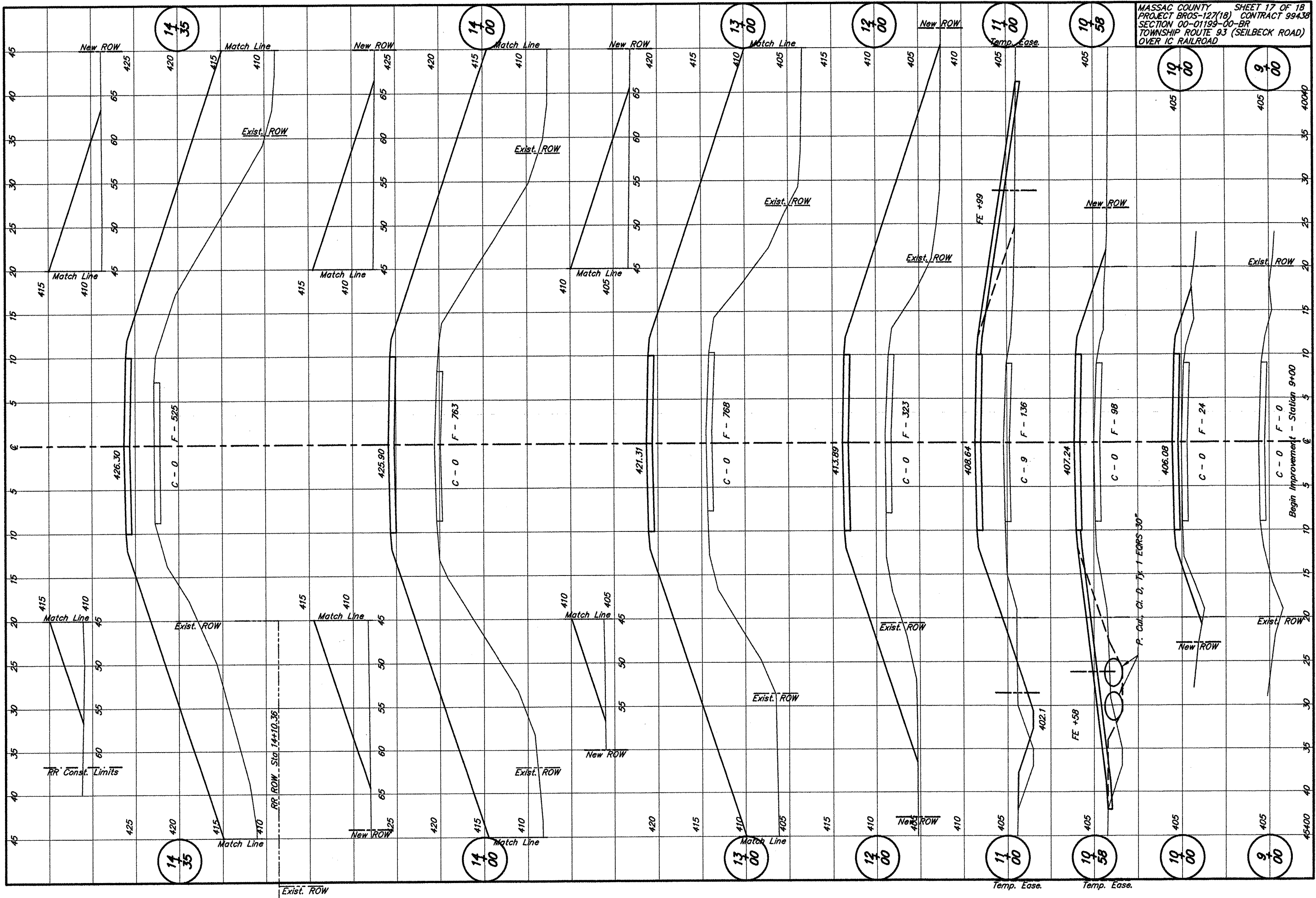
fc' = 3,500 psi  
fy = 60,000 psi

NOTES

Exposed edges shall be beveled 3/4".  
All construction joints shall be bonded.  
Reinforcement bars shall conform to the requirements of AASHTO M-31 or M-322, Grade 60.  
Expansion bolts shall consist of self drilling expansion shields and 3/4" x 12" hooked bolts. Bolts shall extend a minimum of 9" into new concrete and have a certified proof load of 4,080 lbs.

DROP INLET HEADWALL  
STATION 10+28 LEFT  
TOWNSHIP ROUTE 93 (SEILBECK ROAD)  
CN RAILROAD  
SECTION 00-01199-00-BR  
MASSAC COUNTY





MASSAC COUNTY SHEET 18 OF 18  
PROJECT BR05-127(18) CONTRACT 99438  
SECTION 00-01199-00-BR  
TOWNSHIP ROUTE 93 (SEILBECK ROAD)  
OVER IC RAILROAD

