

04-25-14 LETTING ITEM 100

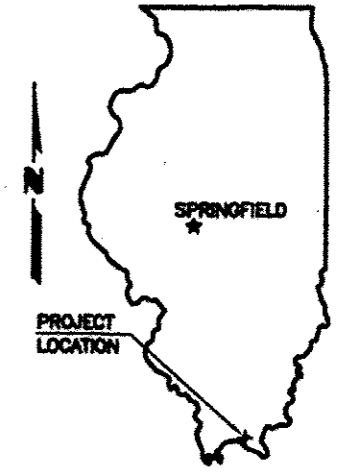
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CH 1	10-00087-00-BR	MASSAC	11	1
PROJECT NO. BROS-127(21)			CONTRACT NO. 99518	



PLANS FOR PROPOSED  
**HIGHWAY BRIDGE PROGRAM**

FAS 929-COUNTY HIGHWAY 1 (NEW COLUMBIA ROAD)  
SECTION 10-00087-00-BR  
PROJECT NO. BROS-127(21)  
JOB NO. C-99-531-11  
NEW COLUMBIA DITCH

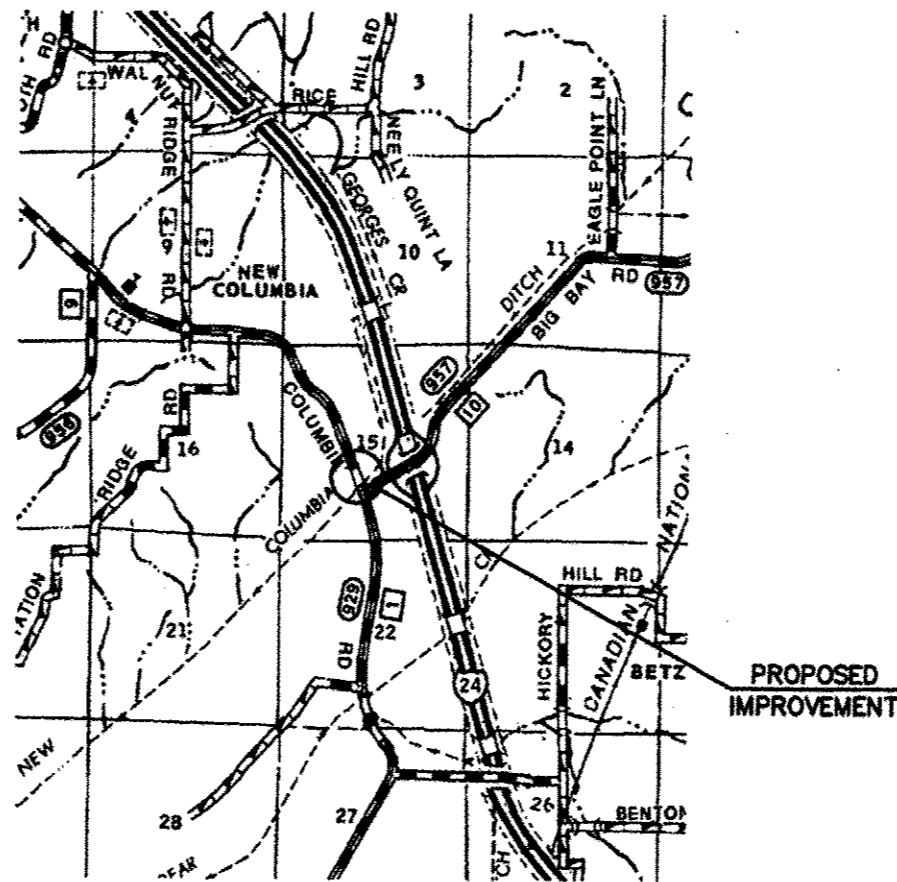


SUMMARY OF QUANTITIES

CODE NO.	PAY ITEM	UNIT	TOTAL
Δ LR631020	TRAFFIC BARRIER TERMINAL, TYPE 1	EACH	3
* X2501000	SEEDING, CLASS 2 (SPECIAL)	ACRE	0.1
20200100	EARTH EXCAVATION	CU YD	16
* 20300100	CHANNEL EXCAVATION	CU YD	138
* 28100809	STONE DUMPED RIPRAP, CLASS A5	TON	737
35101400	AGGREGATE BASE COURSE, TYPE B	TON	33
42001185	BRIDGE APPROACH PAVEMENT	SQ YD	98
44000100	PAVEMENT REMOVAL	SQ YD	145
48101200	AGGREGATE SHOULDERS, TYPE B	TON	25
* 50100100	REMOVAL OF EXISTING STRUCTURES	EACH	1
* 50105220	PIPE CULVERT REMOVAL	FOOT	30
50200100	STRUCTURE EXCAVATION	CU YD	95
50300225	CONCRETE STRUCTURES	CU YD	32.0
50300280	CONCRETE ENCASEMENT	CU YD	3.1
50400605	PRECAST PRESTRESSED CONCRETE DECK BEAMS (33" DEPTH)	SQ FT	2,310
50800105	REINFORCEMENT BARS	POUND	3,789
Δ 50900205	STEEL RAILING, TYPE S1	FOOT	156
51200957	FURNISHING METAL SHELL PILES 12" X 0.250"	FOOT	520
51202305	DRIVING PILES	FOOT	520
51203200	TEST PILE METAL SHELLS	EACH	1
51500100	NAME PLATES	EACH	1
542A0253	PIPE CULVERTS, CLASS A, TYPE 1 48"	FOOT	46
59300100	CONTROLLED LOW-STRENGTH MATERIAL	CU YD	21.0
Δ 63000001	STEEL PLATE BEAM GUARDRAIL, TYPE A, 6 FOOT POSTS	FOOT	62.5
Δ 63100075	TRAFFIC BARRIER TERMINAL, TYPE 5A	EACH	4
* 63200310	GUARDRAIL REMOVAL	FOOT	140.5
67100100	MOBILIZATION	L SUM	1
Δ 78001110	PAINT PAVEMENT MARKING - LINE 4"	FOOT	300
Δ 78201000	TERMINAL MARKER - DIRECT APPLIED	EACH	2

\* SEE SPECIAL PROVISIONS    Δ SPECIALTY ITEMS

**MASSAC COUNTY**



LOCATION MAP

SCALE: 1" = 1 MILE

NET LENGTH OF IMPROVEMENT = 276.00 FT. = 0.0523 MILES

INDEX OF SHEETS

1. COVER SHEET
  2. PLAN AND PROFILE
  3. GENERAL PLAN AND ELEVATION
  4. 33" X 36" PPC DECK BEAM
  5. 33" X 36" PPC DECK BEAM DETAILS
  6. ABUTMENT
  7. BRIDGE APPROACH PAVEMENT DETAILS
  8. STEEL RAILING, TYPE S1
  9. NAME PLATES
  10. PILING DETAILS
  11. CROSS SECTIONS
- STANDARDS 000001-06 STANDARD SYMBOLS, ABBREVIATIONS AND PATTERNS
- 635006-03 REFLECTOR AND TERMINAL MARKER PLACEMENT
- 701901-03 TRAFFIC CONTROL DEVICES
- 780001-04 TYPICAL PAVEMENT MARKING
- BLR 21-8 TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES
- BLR23-4 TRAFFIC BARRIER TERMINAL, TYPE 1
- BLR 26-3 STEEL PLATE BEAM GUARDRAIL 29" HEIGHT
- BLR 27-1 TRAFFIC BARRIER TERMINAL, TYPE 5A

CLASSIFICATION : COLLECTOR (RURAL)  
ADT : 600  
DESIGN SPEED : 50 MPH

CONTRACT NO. 99518

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



*Edward W. Miller*  
Edward W. Miller  
PROFESSIONAL ENGINEER  
#062-025277  
EXPIRES NOV. 30, 2015

ILLINOIS DEPARTMENT OF TRANSPORTATION	
Approved	<u>1/31/2014</u> <i>Joseph L. Matteson</i> Massac County Engineer
Passed	<u>2/18/2014</u> <i>Dennis W. Hillebrand</i> District 9 Engineer of Local Roads and Streets
Releasing for Bid Based on Limited Review	<u>2/18/2014</u> <i>Jeffrey L. Kevin</i> Deputy Director of Highways, Region 5 Engineer Illinois Department of Transportation

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CH 1	10-00087-00-BR	MASSAC	11	2
PROJECT NO. BROS-127(21)			CONTRACT NO. 99518	

Existing Structure - Two span precast reinforced concrete deck beams on closed timber pile bent abutments and open timber pile bent pier with concrete caps. 26.2' W x 58.0' L.

Station 497+41.80 - Single span precast prestressed concrete deck beam bridge 78'-11 5/8" bk-bk Abutments, Skewed 30° Rt. Forward

Existing structure to be removed

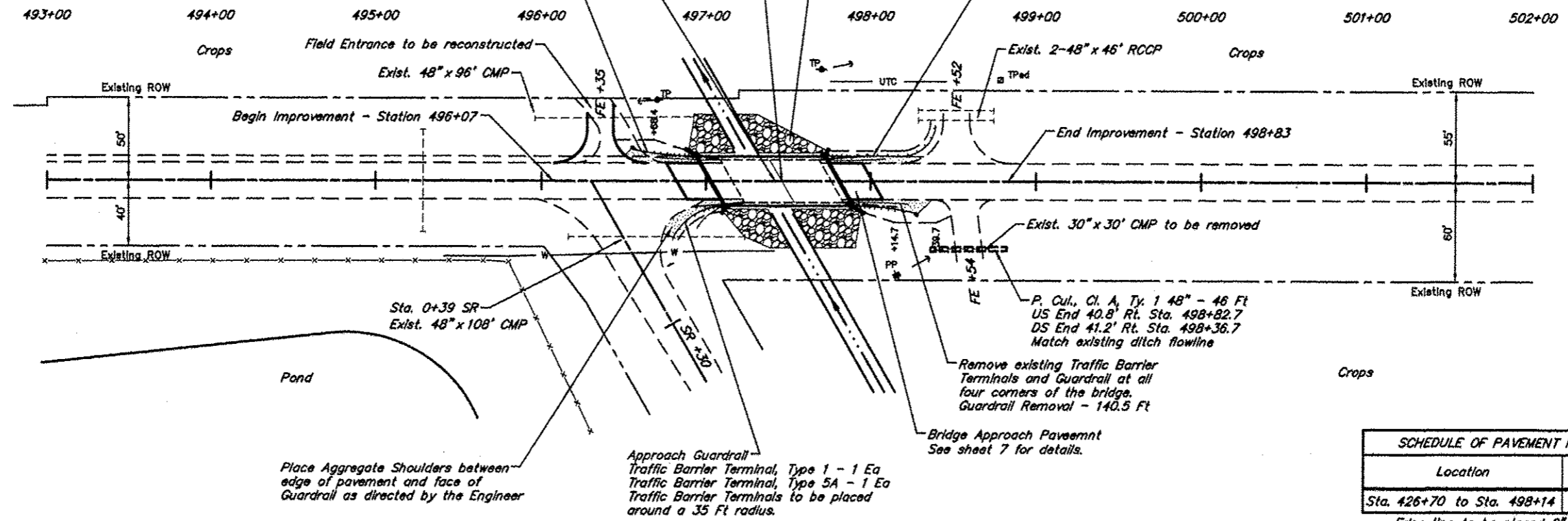
Place riprap along channel bank for length of slope transitions as directed by the Engineer. Estimated quantity 373 Tons

TBM 1 - Dbl. nail in Telephone Pole 49' Lt. Sta. 496+70 Elev. 343.73

TBM 2 - Dbl. nail in Power Pole 57' Rt. Sta. 498+16 Elev. 345.33

Departure Guardrail, typical each end Traffic Barrier Terminal, Type 1 - 1 Ea Traffic Barrier Terminal, Type 5A - 1 Ea See Standard BLR 23 for shoulder widening details

Approach Guardrail Traffic Barrier Terminal, Type 5A - 1 Ea Steel Plate Beam Guardrail, Type A, 6 Foot Posts - 62.5 Ft with End Section. ±29.1 Ft of Guardrail to be placed around a 21 Ft radius.



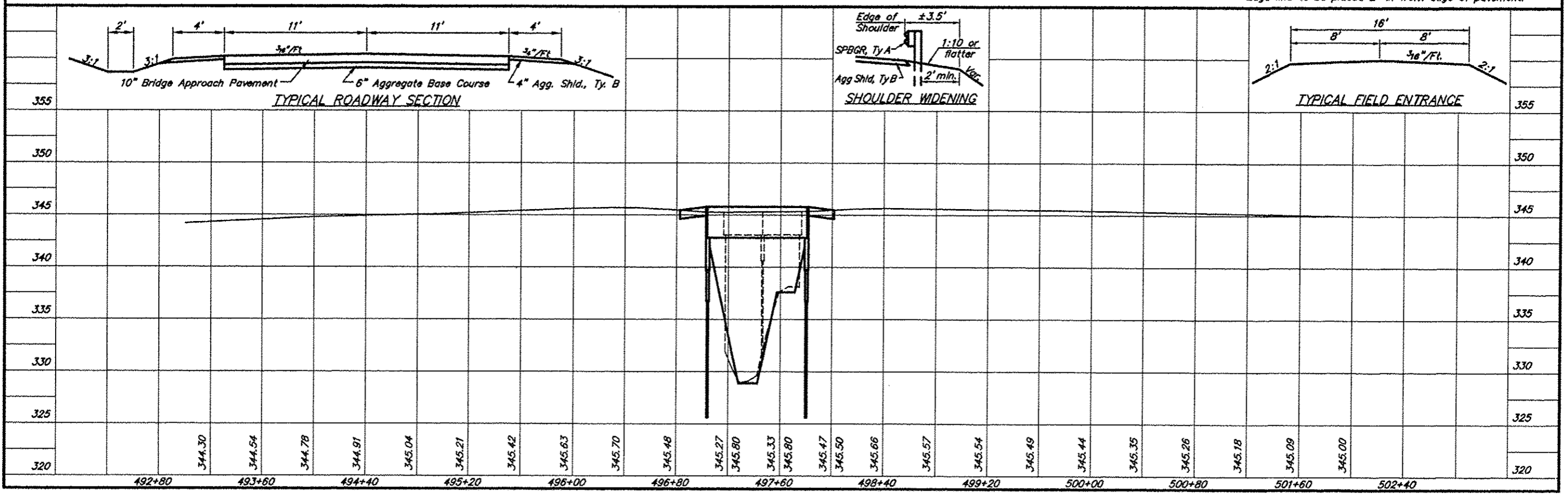
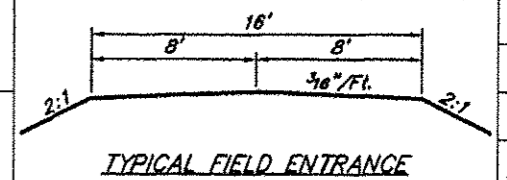
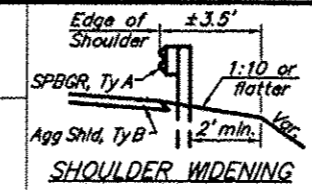
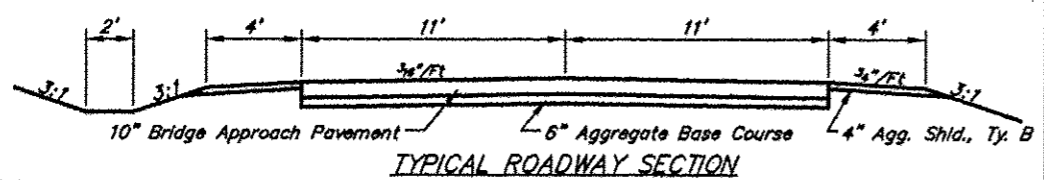
SCALES:  
1" = 80' HOR  
1" = 10' VER

Place Aggregate Shoulders between edge of pavement and face of Guardrail as directed by the Engineer

Approach Guardrail Traffic Barrier Terminal, Type 1 - 1 Ea Traffic Barrier Terminal, Type 5A - 1 Ea Traffic Barrier Terminals to be placed around a 35 Ft radius.

SCHEDULE OF PAVEMENT MARKING LINE 4" (LIN. FT.)		
Location	Edge Line (White Solid)	Centerline (Yellow Dashed)
Sta. 426+70 to Sta. 498+14	260	40

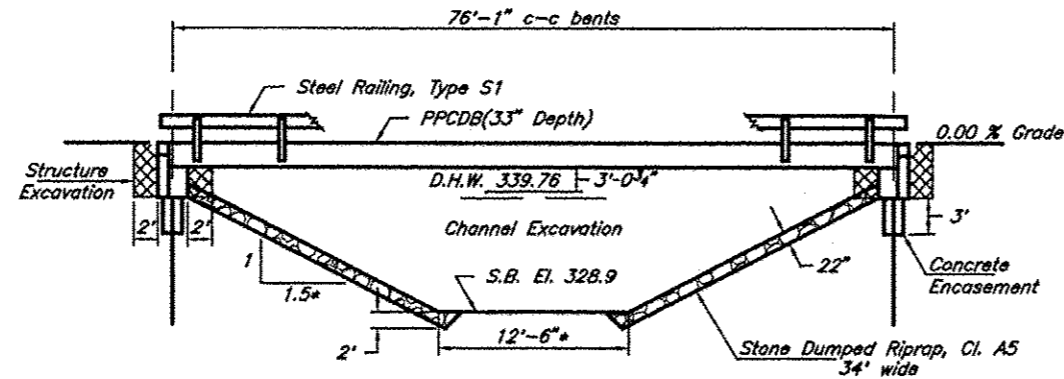
Edge line to be placed 2" in from edge of pavement.



ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CH 1	10-00087-00-BR	MASSAC	11	3
PROJECT NO. BROS-127(21)			CONTRACT NO. 99518	

B.M.#1- Dbl. nail in Telephone Pole  
49' Lt. Station 496+70  
Elev. 343.73

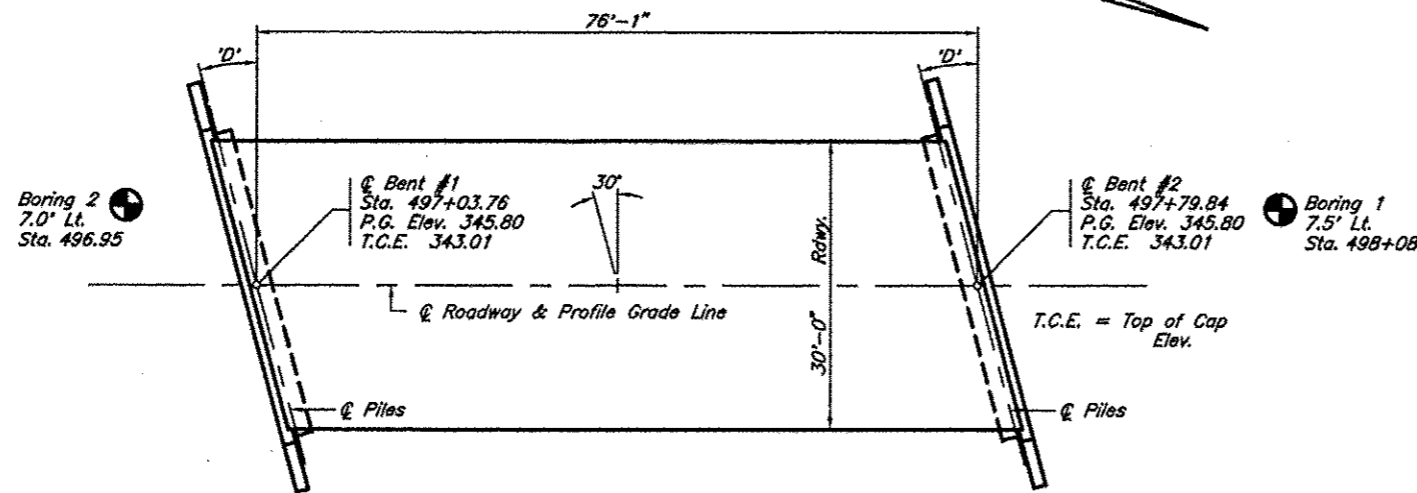
B.M.#2- Dbl. nail in Power Pole  
57' Rt. Station 498+16  
Elev. 345.33



\* Normal to Channel

**ELEVATION**

Existing Structure - Two span precast reinforced concrete deck beams on closed timber pile bent abutments and open timber pile bent pier with concrete caps. 26.2' W x 58.0' L.



**PLAN**

Skew Angle "D" = 30° Right Forward

**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 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.

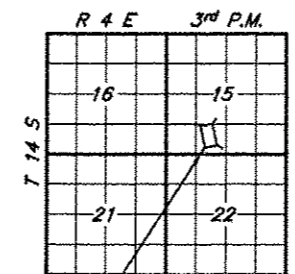
**TOTAL BILL OF MATERIAL**

Item	Unit	Super	Sub.		Total
			Piers	Abuts.	
Channel Excavation	Cu. Yds.			138	138
Stone Dumped Riprap, Cl. A5	Tons			364	364
Removal of Existing Structures	Each				1
Structure Excavation	Cu. Yds.			95	95
Concrete Structures	Cu. Yds.			32.0	32.0
Concrete Encasement	Cu. Yds.			3.1	3.1
P.P. Conc. Dk. Brn. 33" Dp.	Sq. Ft.	2,310			2,310
Reinforcement Bars	Pound			3,789	3,789
Steel Railing, Type S1	Foot	156			156
Furnishing Metal Shell Piles 12"x 0.250"	Foot			520	520
Driving Piles	Foot			520	520
Test Pile Metal Shells	Each			1	1
Name Plates	Each			1	1

STATION 497+41.8  
NEW COLUMBIA DITCH  
SEC. 10-00087-00-BR BUILT 20  
COUNTY UNIT ROAD DISTRICT  
MASSAC COUNTY  
LOADING HL-93  
STR. NO. 064-3146

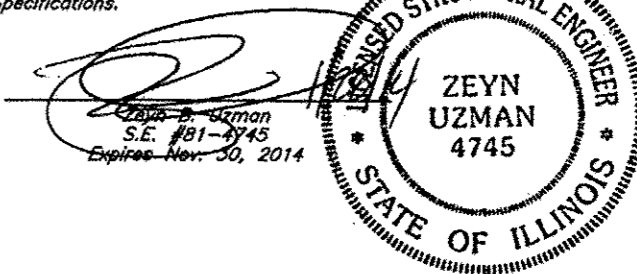
**LETTERING FOR NAME PLATE**

Locate Name Plate at southeast corner of Bridge (See Sheet 8)



**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 type of structure and comply with the requirements of the current AASHTO LRFD Specifications.



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

Type & Size : Metal Shell 12"x 0.250"  
Nominal Required Bearing : 269 kips  
Factored Resistance Available : 148 kips  
Estimated Length : 50 feet Bent #1, 45 feet Bent #2  
Number Required : 12 (Includes 1 Test Pile located in Bent #1)

**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 = D  
Design Spectral Acceleration at 0.2 sec. (S<sub>0.2</sub>) = 1.139  
Design Spectral Acceleration at 1.0 sec. (S<sub>1.0</sub>) = 0.499  
Seismic Performance Zone (SPZ) = 3

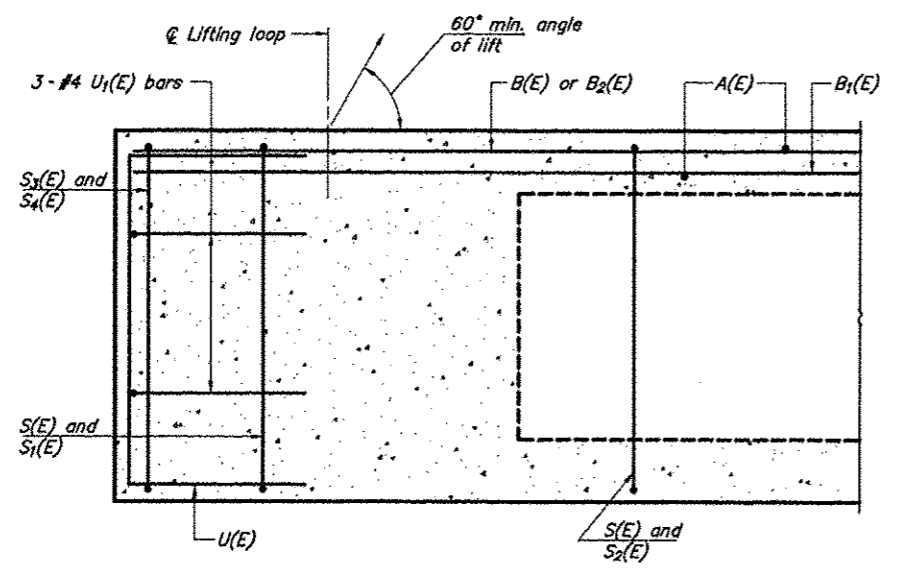
**WATERWAY INFORMATION**

Drainage Area = 15.41 Sq. Mi.		Low Grade Elev. = 345.22		At Sta. 502+00		
Flood	Freq. Yr.	Q C.F.S.	Opening Sq. Ft. Exist. Prop.	Natural H.W.E. Exist. Prop.	Cr. Head Ft. * Exist. Prop.	Headwater El. Exist. Prop.
Design	20	4,530	279.2 388.0	339.76 25.24 15.04	365.00	354.80
Base	100	6,450	294.9 359.3	340.13 36.16 21.58	376.29	361.71

\* The calculated created heads shown are not typical of the actual created heads observed at the structure due to the effects of the over bank areas acting as impoundments, reducing the actual flow through the structure.

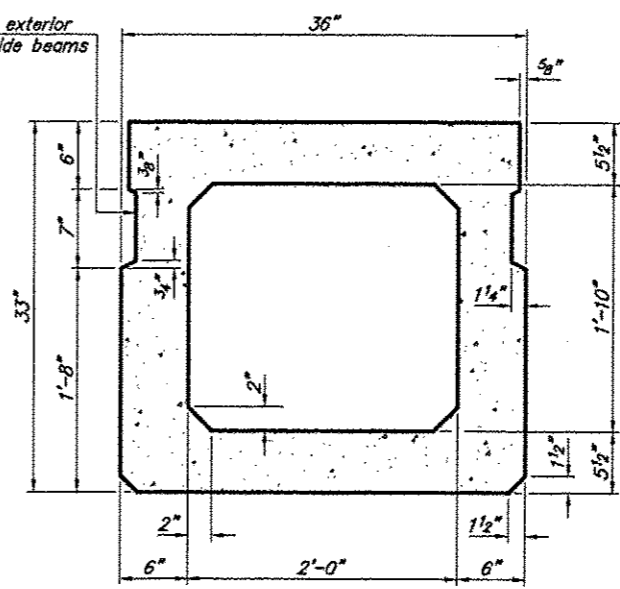
GENERAL PLAN & ELEVATION  
COUNTY HIGHWAY 1 (NEW COLUMBIA ROAD)  
NEW COLUMBIA DITCH  
SECTION 10-00087-00-BR  
MASSAC COUNTY  
STRUCTURE NO. 064-3146

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO
CH 1	10-00087-00-BR	MASSAC	11	4
PROJECT NO. BROS-127(21)			CONTRACT NO. 99518	

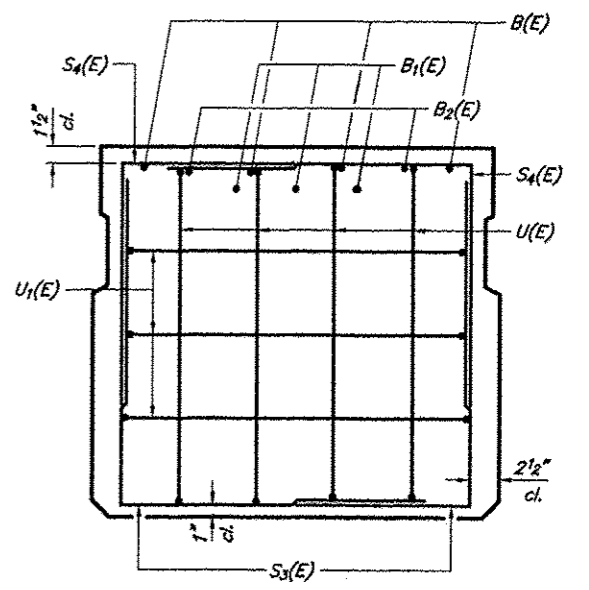


SECTION C-C

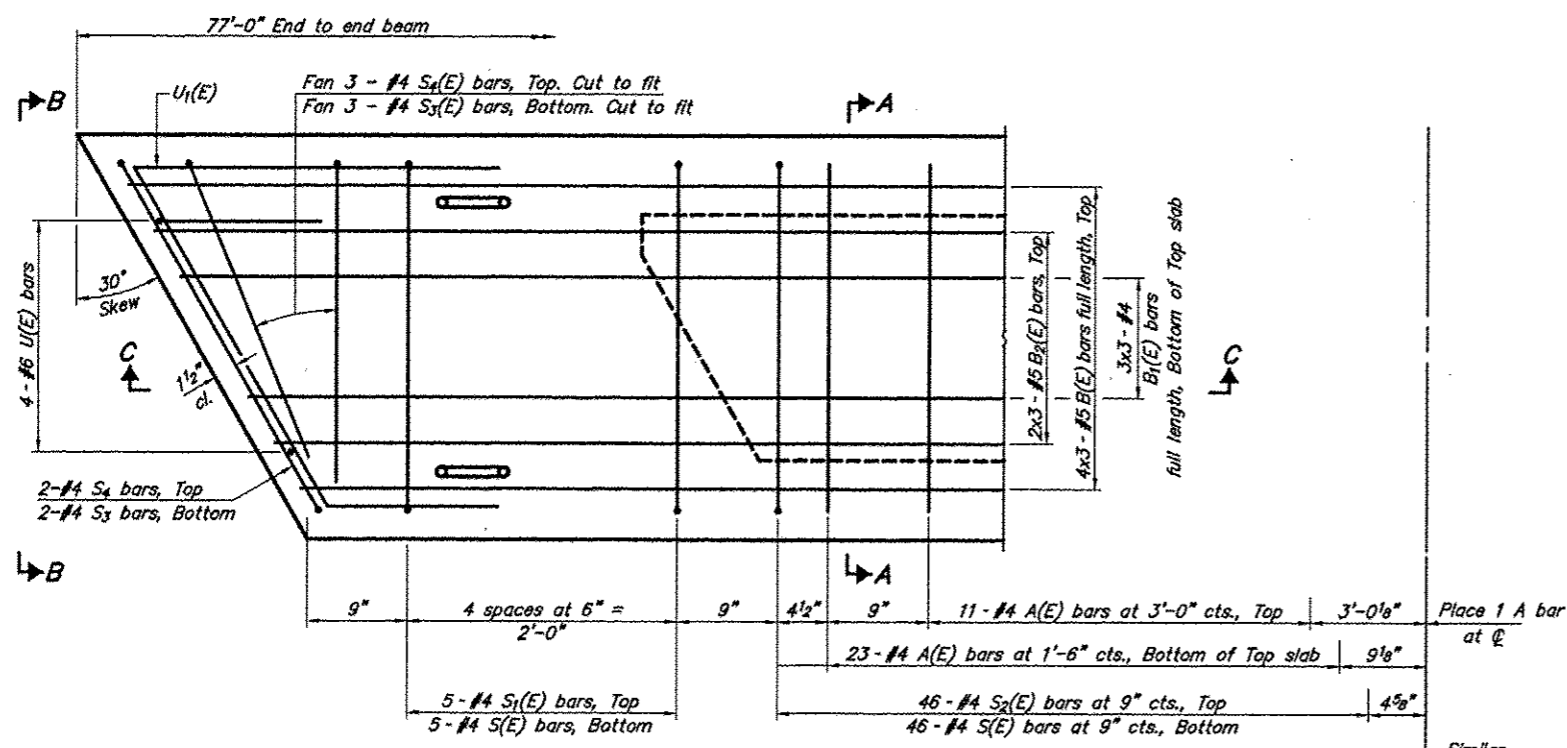
Omit key on exterior face of outside beams



SECTION A-A  
(Showing dimensions)

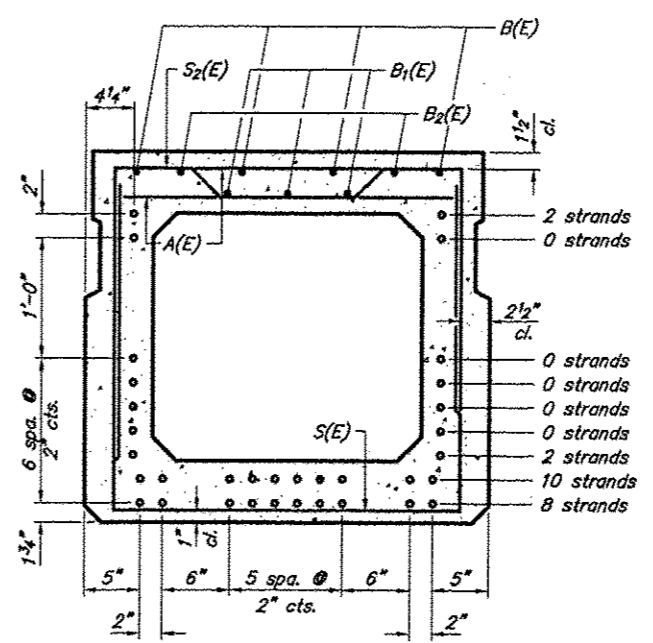


VIEW B-B



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)

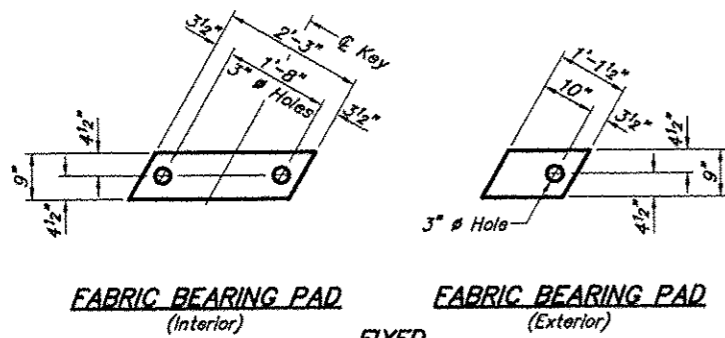
Bar	No.	Size	Length	Shape
A(E)	69	#4	2'-7"	—
B(E)	12	#5	27'-0"	—
B1(E)	9	#4	26'-8"	—
B2(E)	6	#5	27'-0"	—
S(E)	102	#4	7'-5"	⌋
S1(E)	10	#4	6'-3"	⌋
S2(E)	92	#4	6'-6"	⌋
S3(E)	10	#4	4'-9"	⌋
S4(E)	10	#4	4'-2"	⌋
U1(E)	8	#6	5'-0"	⌋
U2(E)	6	#4	6'-10"	⌋

Bars noted thus 4x3-#5 etc. indicates 4 lines of bars with 3 lengths per line.

MINIMUM BAR LAP  
#4 bar = 1'-8"  
#5 bar = 2'-2"

33" X 36" PPC DECK BEAM  
COUNTY HIGHWAY 1 (NEW COLUMBIA ROAD)  
NEW COLUMBIA DITCH  
SECTION 10-00087-00-BR  
MASSAC COUNTY  
STRUCTURE NO. 064-3146

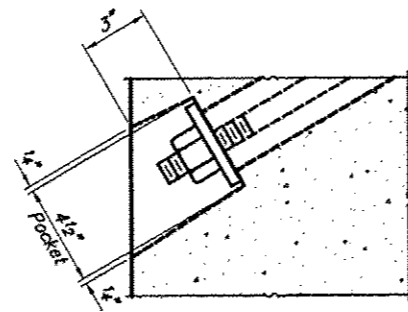
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO
CH 1	10-00087-00-BR	MASSAC	11	5
PROJECT NO. BROS-127(21)			CONTRACT NO. 99518	



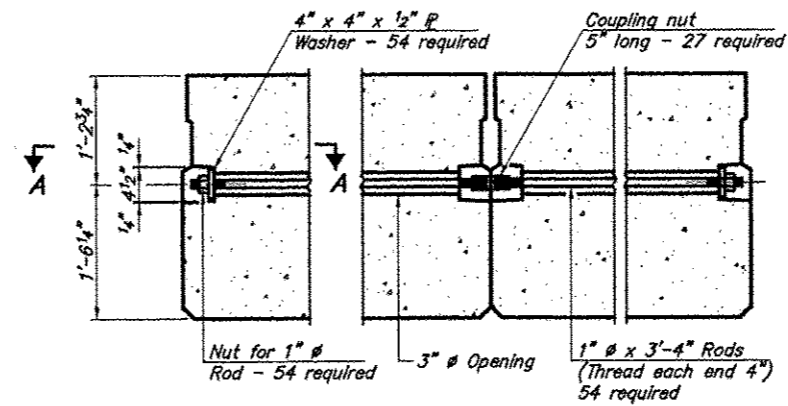
**FABRIC BEARING PAD**  
(Interior)      **FABRIC BEARING PAD**  
(Exterior)

**FIXED**

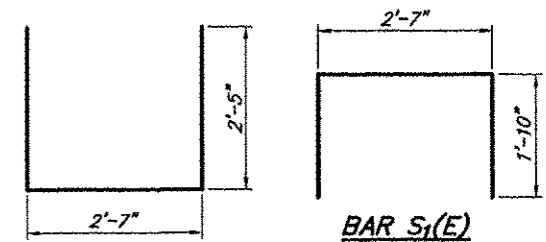
Note: Omit holes when using expansion bearings.



**SECTION A-A**

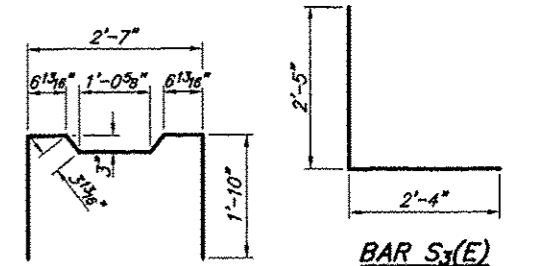


**TYPICAL TRANSVERSE TIE ASSEMBLY**



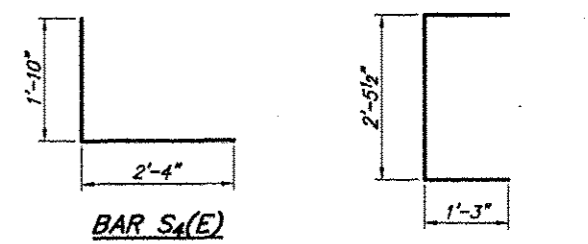
**BAR S(E)**

**BAR S1(E)**



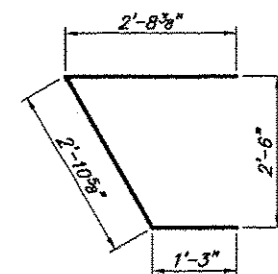
**BAR S2(E)**

**BAR S3(E)**

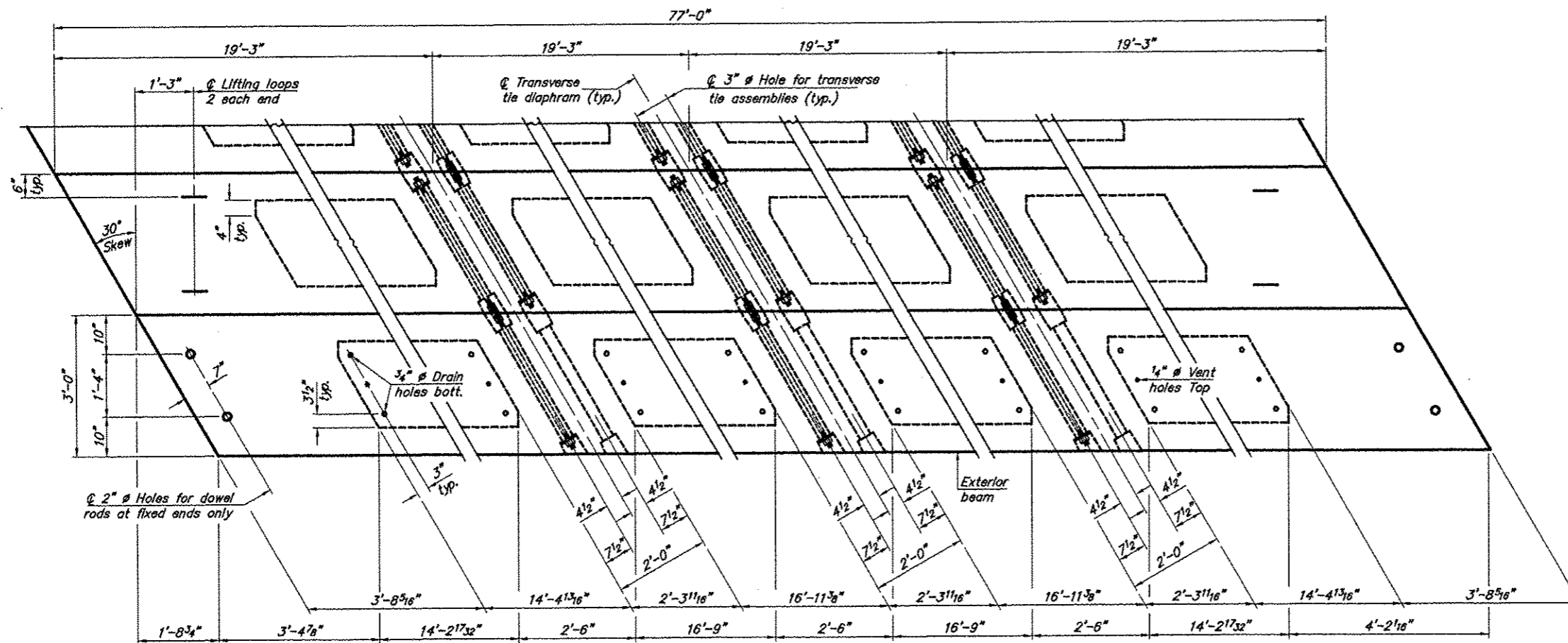


**BAR S4(E)**

**BAR U(E)**

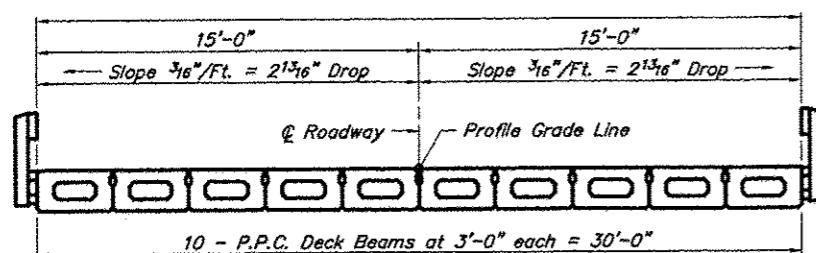


**BAR U1(E)**



**PLAN VIEW**

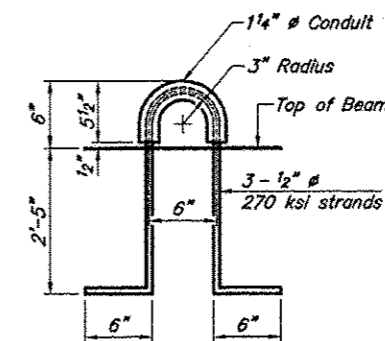
Note: Connect beams in pairs with the transverse tie configuration shown.



**CROSS SECTION**

**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.



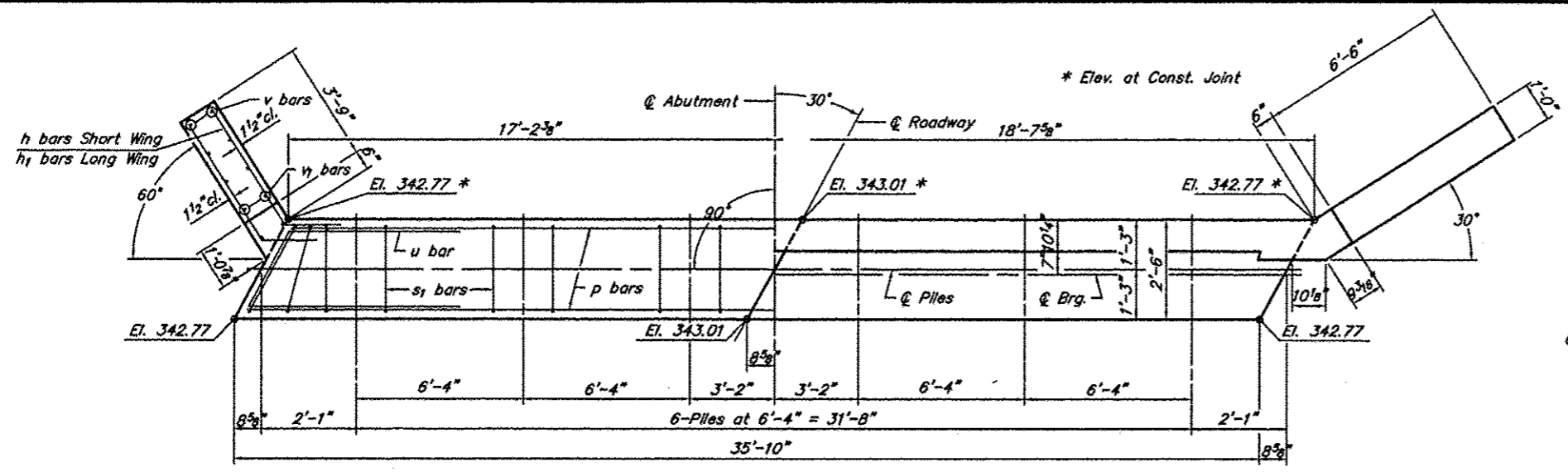
**LIFTING LOOP DETAIL**

**BILL OF MATERIAL**

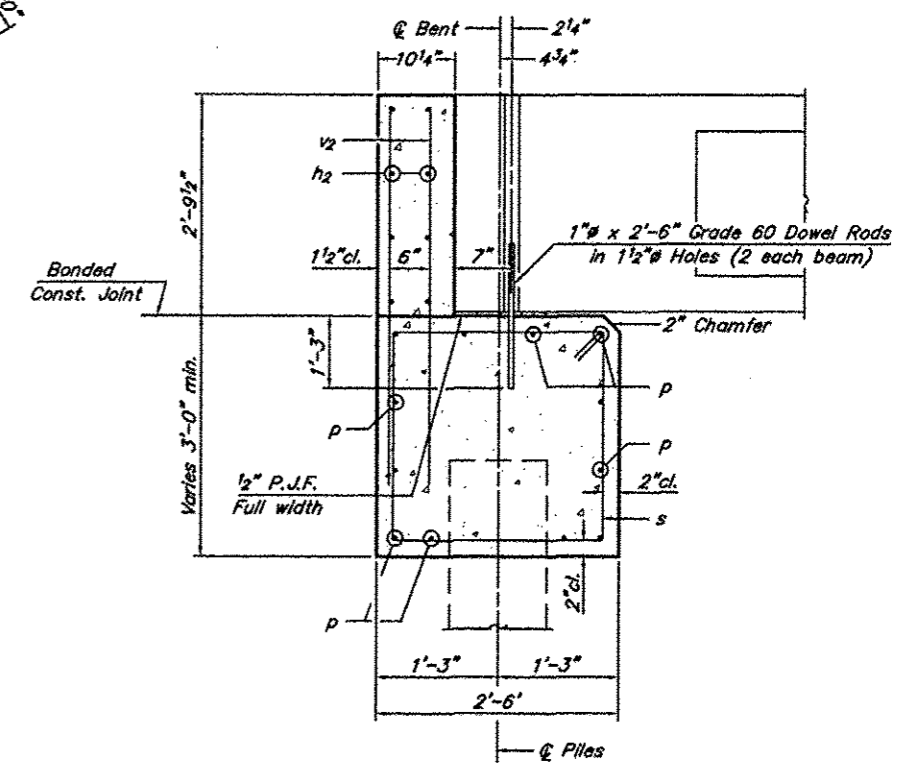
Precast Prestressed Conc. Deck Bms. (33" depth)	Sq. Ft.	2,310
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**33" X 36" PPC DECK BEAM DETAILS**  
COUNTY HIGHWAY 1 (NEW COLUMBIA ROAD)  
NEW COLUMBIA DITCH  
SECTION 10-00087-00-BR  
MASSAC COUNTY  
STRUCTURE NO. 064-3146

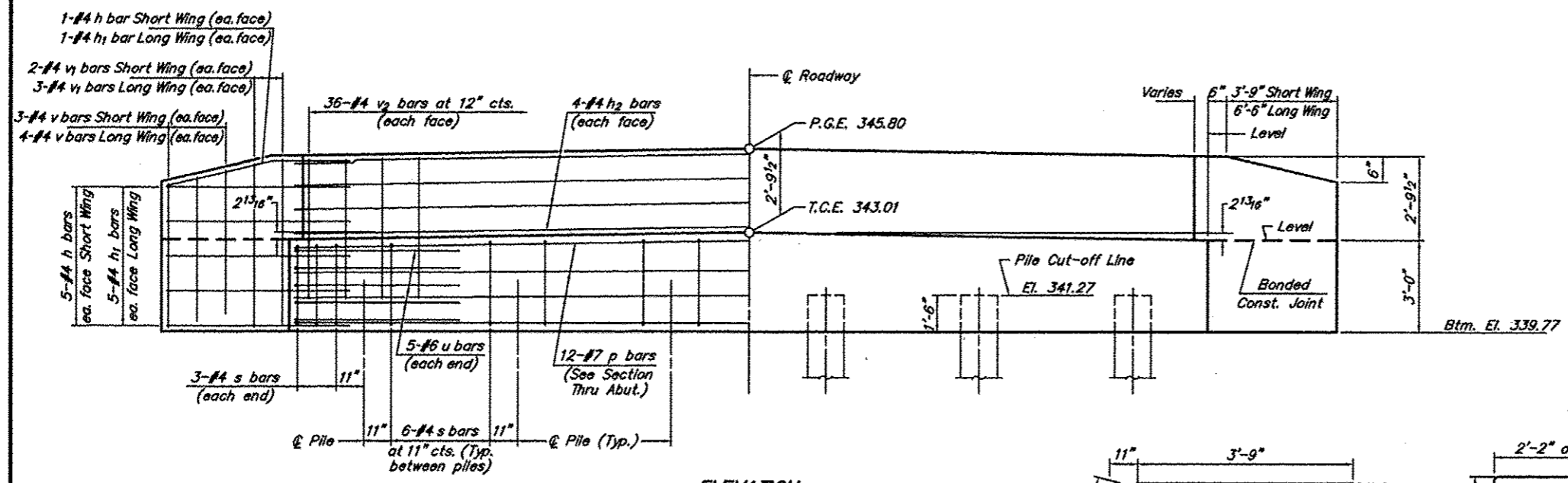
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO
CH 1	10-00087-00-BR	MASSAC	11	6
PROJECT NO. BROS-127(21)		CONTRACT NO. 99518		



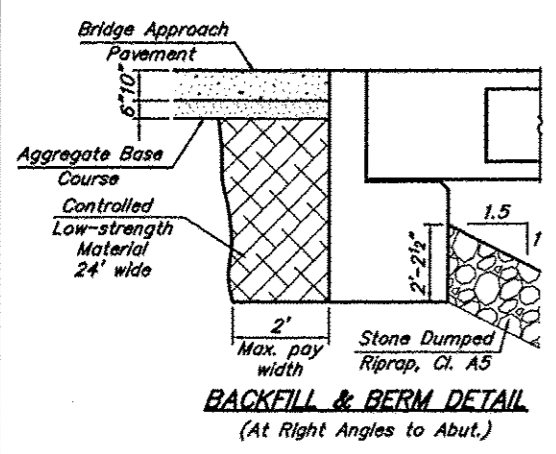
**PLAN**



**SECTION THRU ABUT.**  
(At Right Angles)



**ELEVATION**

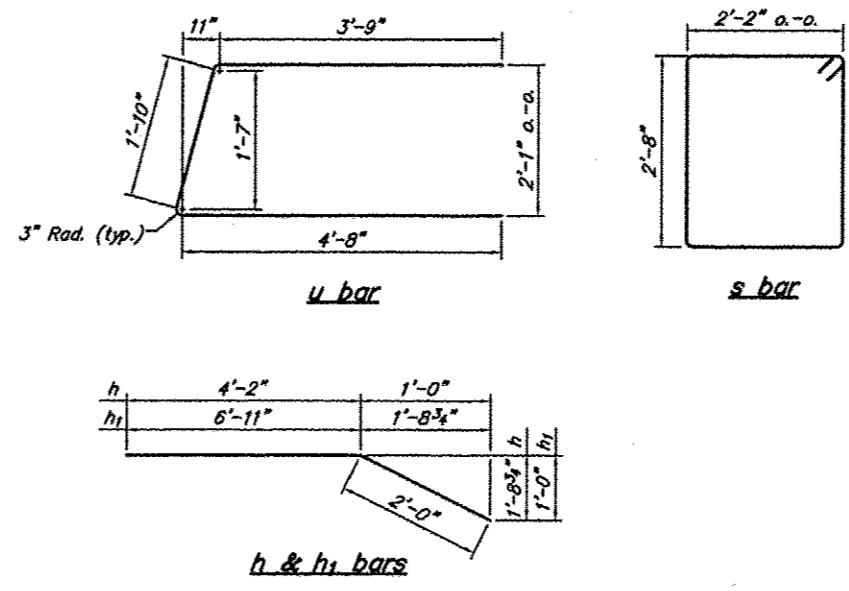


**BACKFILL & BERM DETAIL**  
(At Right Angles to Abut.)

- 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**

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

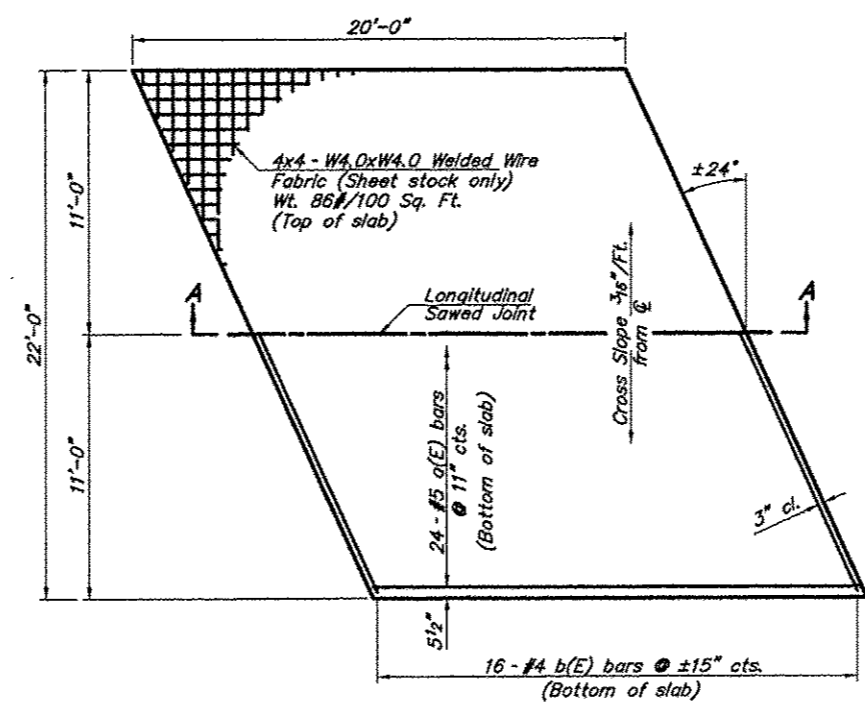
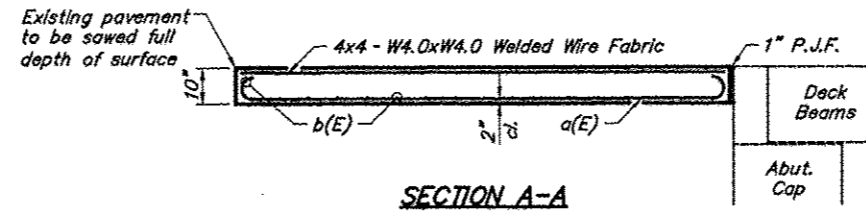


**BILL OF MATERIAL FOR ONE ABUTMENT**

Bar	No.	Size	Length	Shape
h	12	#4	6'-2"	
h1	12	#4	8'-11"	
h2	8	#4	35'-6"	
p	12	#7	35'-6"	
s	27	#4	10'-5"	
u	10	#6	11'-1"	
v	14	#4	5'-1"	
v1	10	#4	5'-5"	
v2	72	#4	4'-5"	
Concrete Structures			16.0	Cu. Yds.
Reinforcement Bars			1,894.5	Lbs.

**ABUTMENT**  
COUNTY HIGHWAY 1 (NEW COLUMBIA ROAD)  
NEW COLUMBIA DITCH  
SECTION 10-00087-00-BR  
MASSAC COUNTY  
STRUCTURE NO. 064-3146

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO
CH 1	10-00087-00-BR	MASSAC	11	7
PROJECT NO. BROS-127(21)		CONTRACT NO. 99518		



PLAN

**BILL OF MATERIAL FOR ONE APPROACH PAVEMENT**

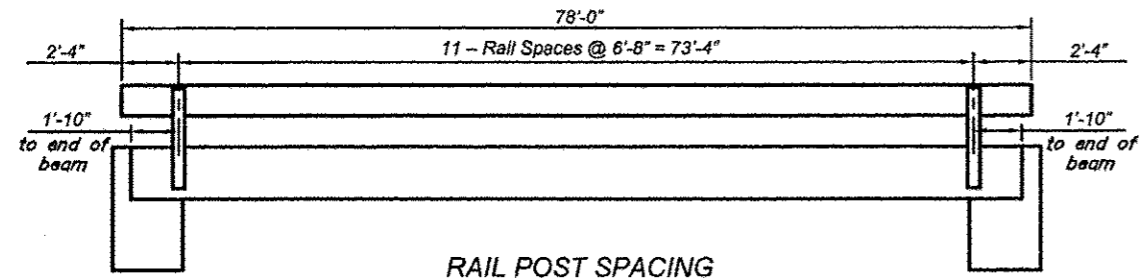
Not Pay Items. For information only.

Bar	No.	Size	Length	Shape
a(E)	24	#5	20'-8"	
b(E)	18	#4	24'-10"	
Reinforcement Bars, Epoxy Coated			816	Pounds
Portland Cement Concrete PV			13.6	Cu. Yds.
Welded Wire Fabric			420	Sq. Ft.

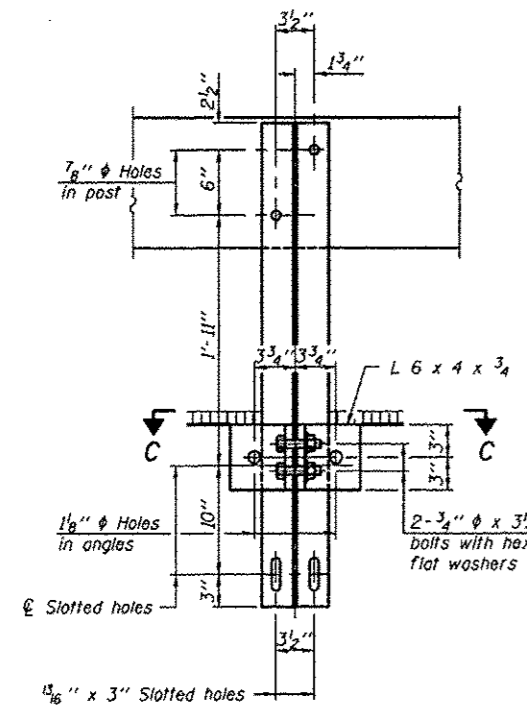
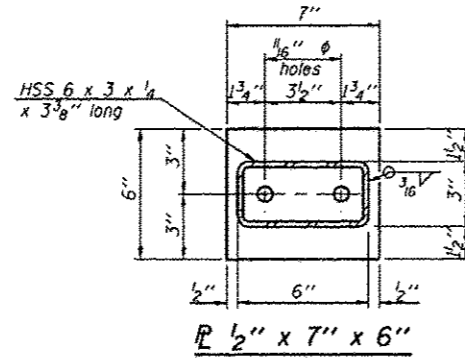
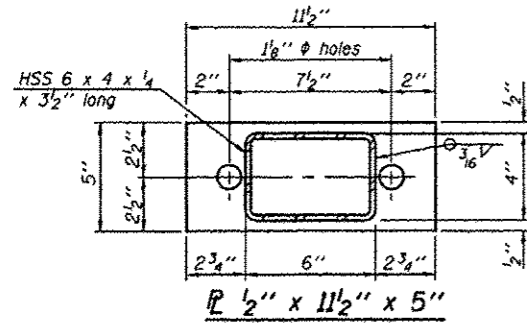
Item	Unit	Quantity
Bridge Approach Pavement	Sq Yd	98

BRIDGE APPROACH PAVEMENT DETAILS  
 COUNTY HIGHWAY 1 (NEW COLUMBIA ROAD)  
 NEW COLUMBIA DITCH  
 SECTION 10-00087-00-BR  
 MASSAC COUNTY  
 STRUCTURE NO. 064-3146

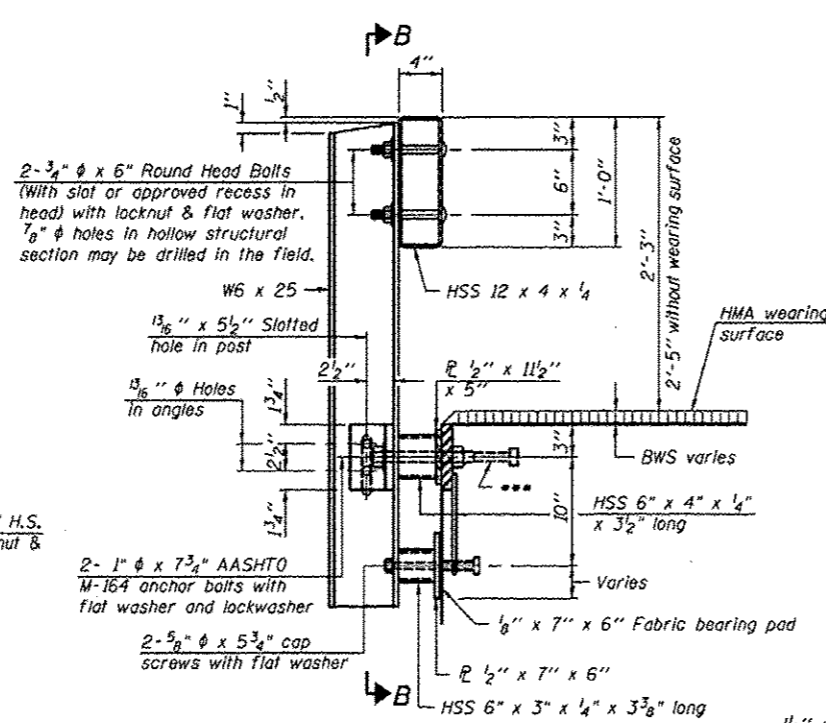
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CH 1	10-00087-00-BR	MASSAC	11	8
PROJECT NO. BROS-127(21)			CONTRACT NO. 99518	



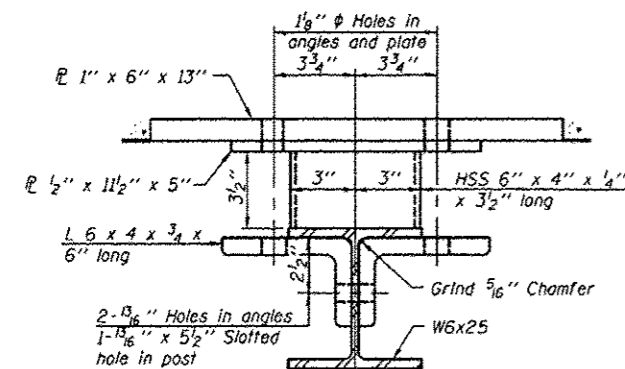
RAIL POST SPACING



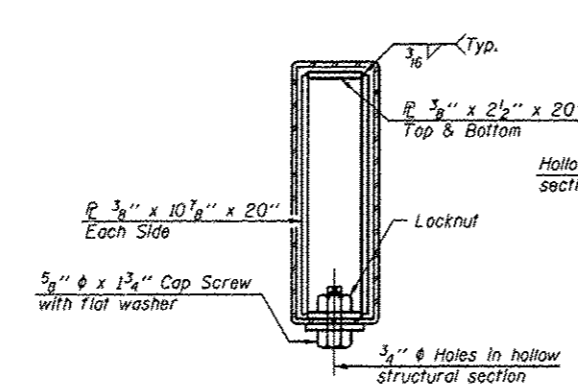
SECTION B-B



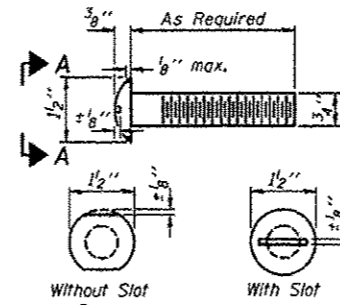
SECTION AT RAILING POST



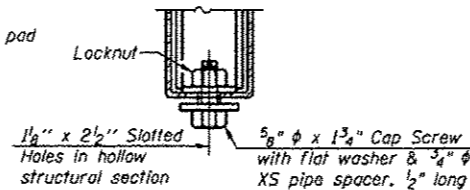
SECTION C-C



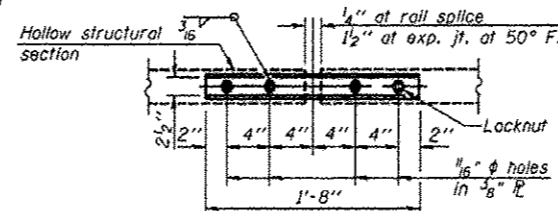
SECTIONS AT RAIL SPLICE



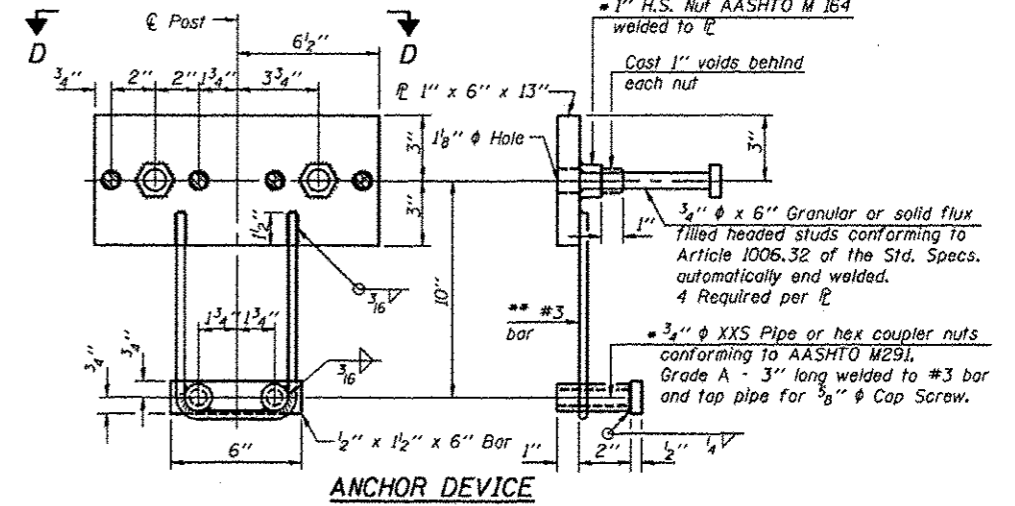
VIEW A-A ROUND HEAD BOLT



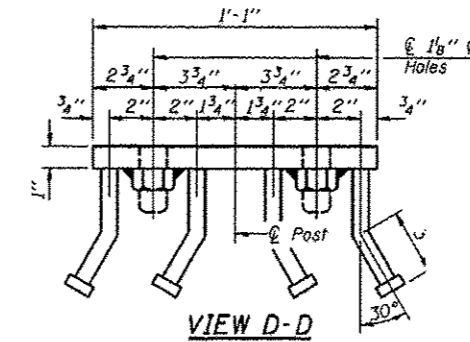
RAIL SPLICE CONNECTION AT EXPANSION JT.



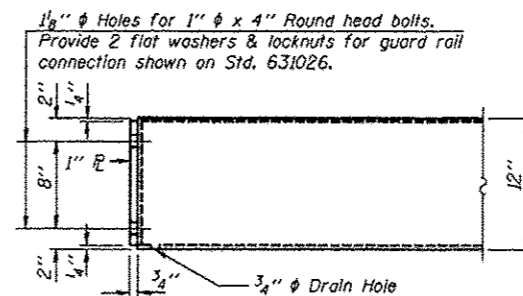
PLAN-BOTT. SPLICE P TYPICAL



ANCHOR DEVICE



VIEW D-D



END OF RAIL DETAILS

- 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 Rolling, 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

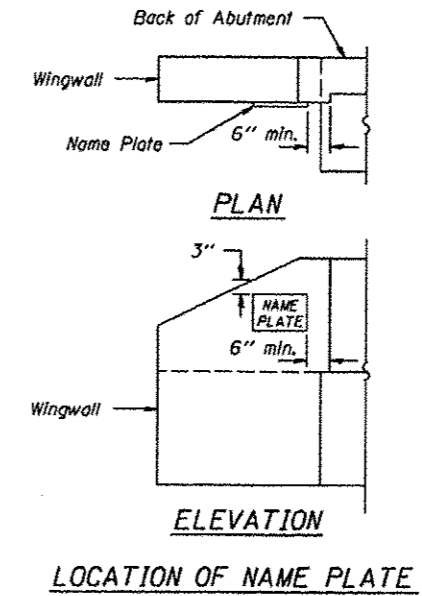
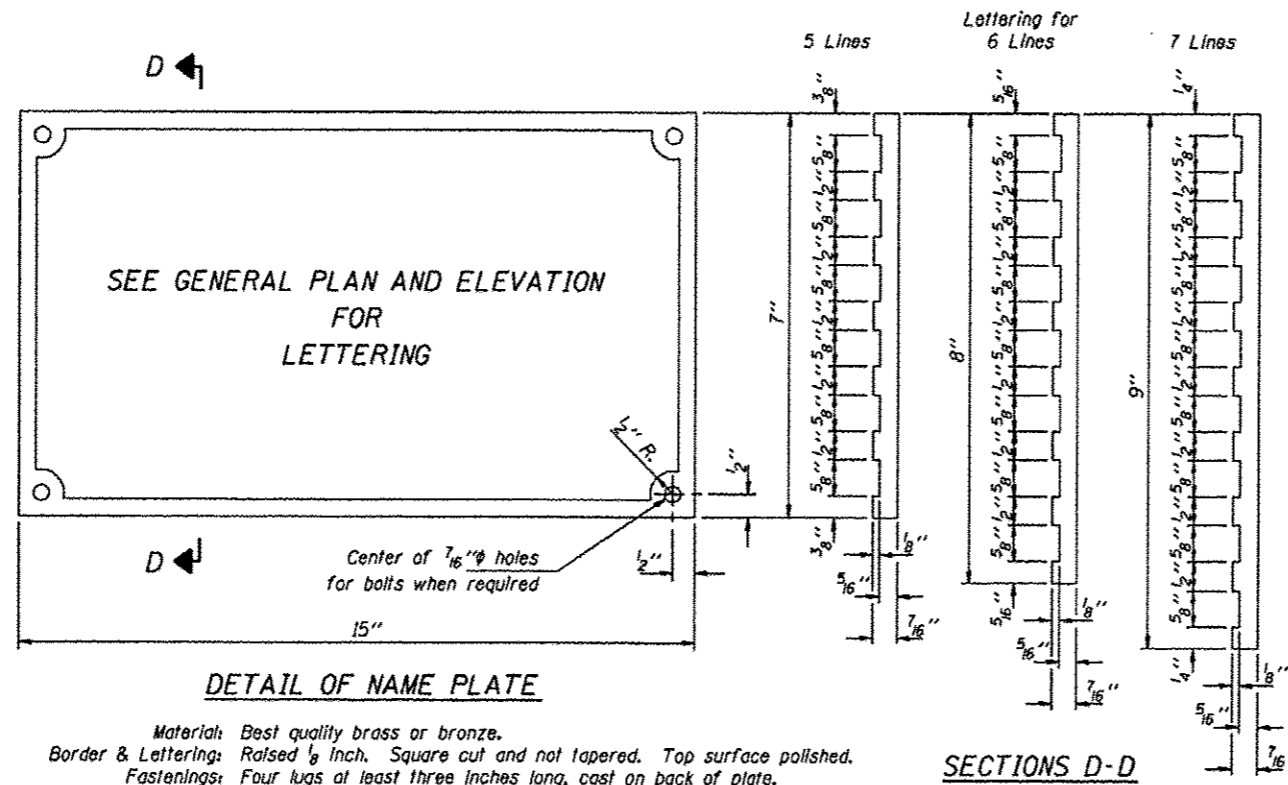
BILL OF MATERIAL

Item	Unit	Quantity
Steel Rolling, Type S-1	Foot	156

STEEL RAILING, TYPE S-1  
 COUNTY HIGHWAY 1 (NEW COLUMBIA ROAD)  
 NEW COLUMBIA DITCH  
 SECTION 10-00087-00-BR  
 MASSAC COUNTY  
 STRUCTURE NO. 064-3146

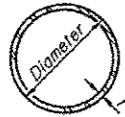


ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CH 1	10-00087-00-BR	MASSAC	11	9
PROJECT NO. BROS-127(21)			CONTRACT NO. 99518	



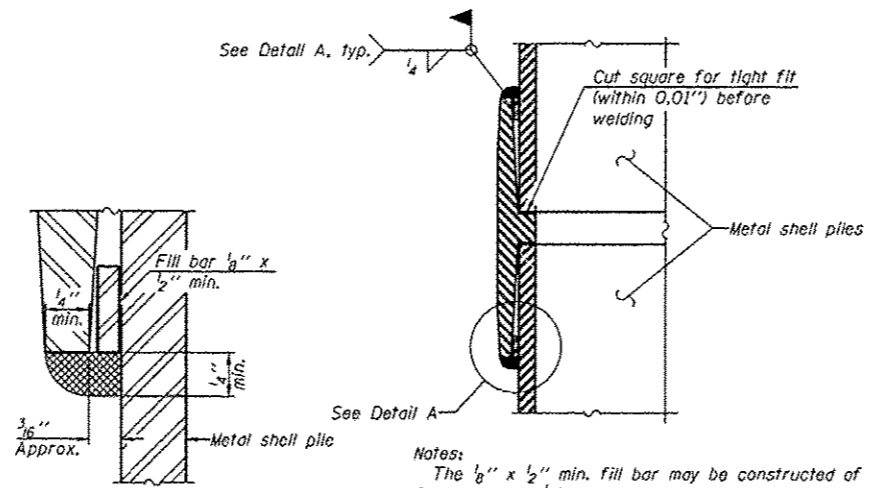
**NAME PLATES**  
**COUNTY HIGHWAY 1 (NEW COLUMBIA ROAD)**  
**NEW COLUMBIA DITCH**  
**SECTION 10-00087-00-BR**  
**MASSAC COUNTY**  
**STRUCTURE NO. 064-3146**

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CH 1	10-00087-00-BR	MASSAC	11	10
PROJECT NO. BROS-127(21)			CONTRACT NO. 99518	



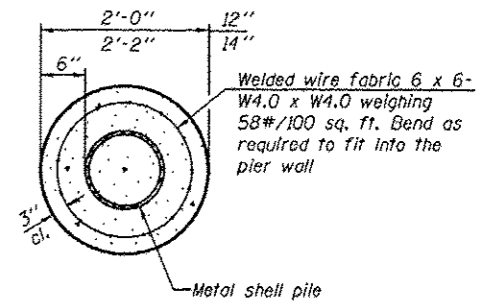
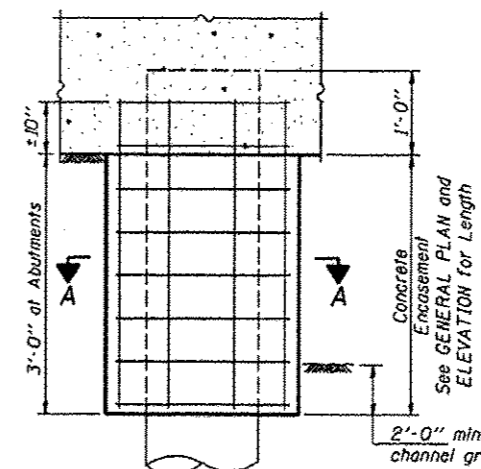
**METAL SHELL PILE TABLE**

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



**Notes:**  
 The  $\frac{1}{8}$ " x  $\frac{1}{2}$ " min. fill bar may be constructed of 2 bars with a  $\frac{1}{8}$ " max. gap between them.  
 Pile segments shall be driven to solid contact with splicar before welding.

**WELDED COMMERCIAL SPLICE**



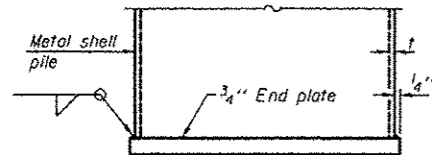
**SECTION A-A**

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

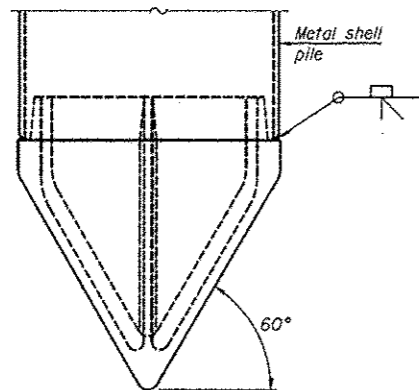
**Note:**  
 Forms for encasement may be omitted when soil conditions permit.

**ELEVATION**

**CONCRETE ENCASEMENT**



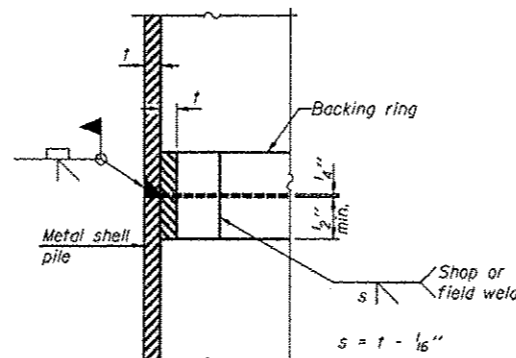
**END PLATE ATTACHMENT**



**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.

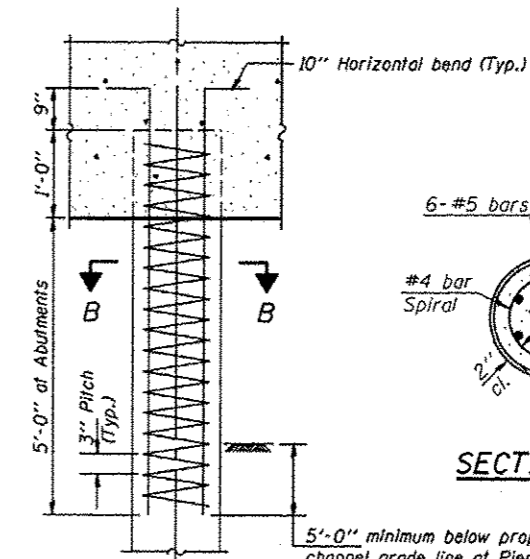
**METAL SHELL PILE SHOE ATTACHMENT**

(See Note A)



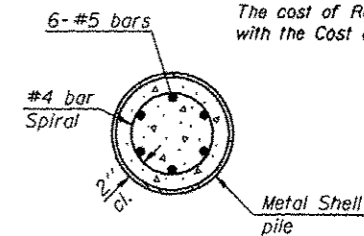
**COMPLETE PENETRATION WELD SPLICE**

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



Reinforcement cage shall be omitted when Concrete Encasement is provided.

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



**SECTION B-B**

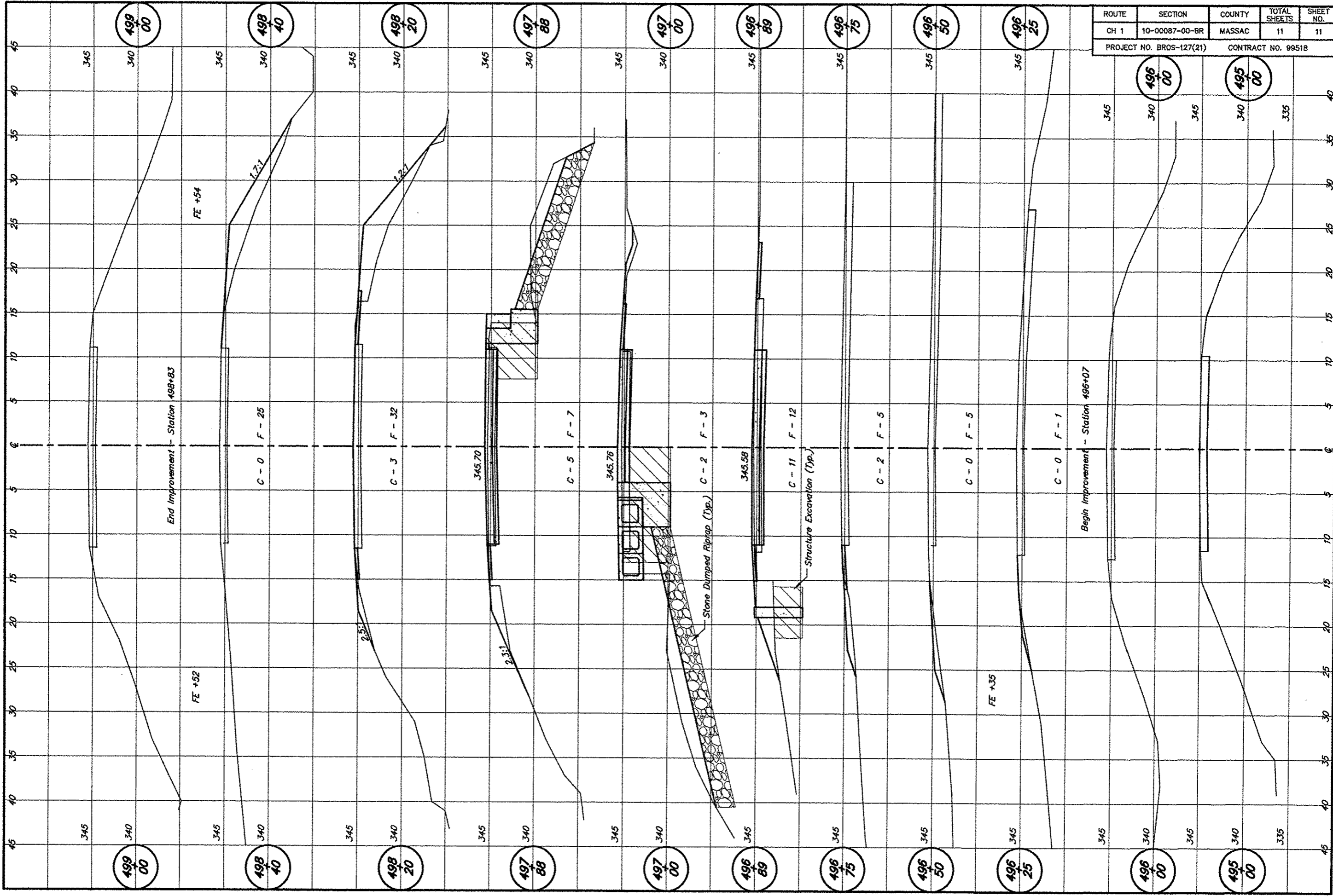
**ELEVATION**

**METAL SHELL REINFORCEMENT**

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

**PILING DETAILS**  
 COUNTY HIGHWAY 1 (NEW COLUMBIA ROAD)  
 NEW COLUMBIA DITCH  
 SECTION 10-00087-00-BR  
 MASSAC COUNTY  
 STRUCTURE NO. 064-3146

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CH 1	10-00087-00-BR	MASSAC	11	11
PROJECT NO. BROS-127(21)			CONTRACT NO. 99518	



End Improvement - Station 498+83

Begin Improvement - Station 496+07

Stone Dumped Riprap (Typ.)

Structure Excavation (Typ.)

FE +54

FE +52

FE +36

C - 0 F - 25

C - 3 F - 32

C - 5 F - 7

C - 2 F - 3

C - 11 F - 12

C - 2 F - 5

C - 0 F - 5

C - 0 F - 1

2.5:1

2.5:1

345.70

345.76

345.58