Call Before You Dig
JULIE ILLINOIS ONE-CALL SYSTEM
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01-18-2019 LETTING ITEM 134

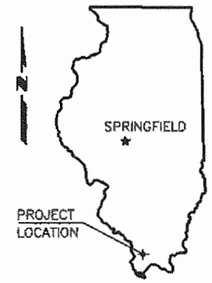
| ROUTE | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| TR 203 | 12-01202-00-BR | UNION | 13 | 1 |
| PROJECT NO. Z2W0(420) | | | CONTRACT NO. 99584 | |

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

# PLANS FOR PROPOSED
# SURFACE TRANSPORTATION PROGRAM
# OFF SYSTEM BRIDGE

TOWNSHIP ROUTE 203 (NASH ROAD)
COUNTY UNIT ROAD DISTRICT
SECTION 12-01202-00-BR
PROJECT NO. Z2W0(420)
JOB NO. C-99-521-13
BIG CREEK

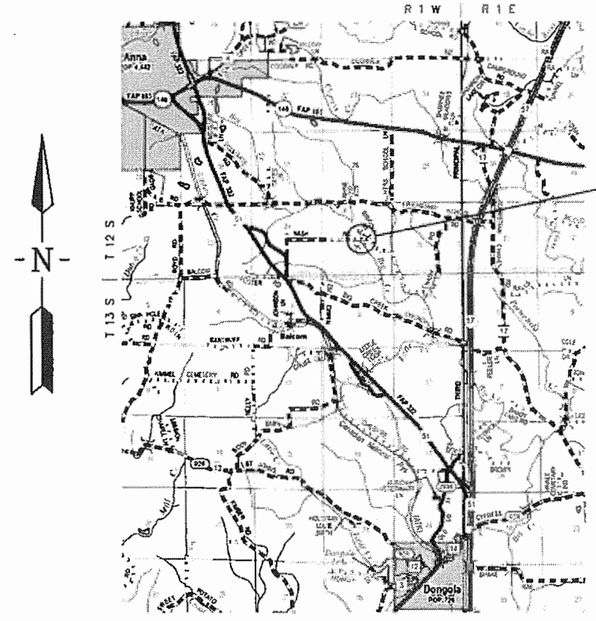
# UNION COUNTY




## SUMMARY OF QUANTITIES

| CODE NO. | PAY ITEM | UNIT | TOTAL |
|---|---|---|---|
| * X2501000 | SEEDING, CLASS 2 (SPECIAL) | ACRE | 0.5 |
| 20100110 | TREE REMOVAL (6 TO 15 UNITS DIAMETER) | UNIT | 127 |
| 20100210 | TREE REMOVAL (OVER 15 UNITS DIAMETER) | UNIT | 58 |
| 20100500 | TREE REMOVAL, ACRES | ACRE | 0.2 |
| 20200100 | EARTH EXCAVATION | CU YD | 392 |
| 20200200 | ROCK EXCAVATION | CU YD | 43 |
| 20400800 | FURNISHED EXCAVATION | CU YD | 1,878 |
| * 28100807 | STONE DUMPED RIPRAP, CLASS A4 | TON | 177 |
| * 28100809 | STONE DUMPED RIPRAP, CLASS A5 | TON | 641 |
| * 40200800 | AGGREGATE SURFACE COURSE, TYPE B | TON | 590 |
| 50100100 | REMOVAL OF EXISTING STRUCTURES | EACH | 1 |
| 50105220 | PIPE CULVERT REMOVAL | FOOT | 24 |
| 50300225 | CONCRETE STRUCTURES | CU YD | 22 |
| 50300280 | CONCRETE ENCASEMENT | CU YD | 2.7 |
| 50400505 | PRECAST PRESTRESSED CONCRETE DECK BEAMS (27" DEPTH) | SQ FT | 1,704 |
| 50800105 | REINFORCEMENT BARS | POUND | 2,522 |
| Δ50900205 | STEEL RAILING, TYPE S1 | FOOT | 144 |
| 51201500 | FURNISHING STEEL PILES HP10X57 | FOOT | 164 |
| 51202305 | DRIVING PILES | FOOT | 164 |
| 51500100 | NAME PLATES | EACH | 1 |
| 542C5479 | PIPE CULVERTS, CLASS C, TYPE 1 EQUIVALENT ROUND-SIZE 24" | FOOT | 68 |
| 67100100 | MOBILIZATION | LSUM | 1 |
| Δ 72501000 | TERMINAL MARKER - DIRECT APPLIED | EACH | 4 |

* SEE SPECIAL PROVISIONS
Δ SPECIALTY ITEMS




LOCATION MAP
SCALE: 1" = 2 MILES

NET LENGTH OF IMPROVEMENT = 580.00 FT. = 0.1098 MILES

## INDEX OF SHEETS



CLASSIFICATION : LOCAL ROAD (RURAL)
ADT : 25
DESIGN SPEED : 30 MPH

CONTRACT NO. 99584

JOHN S. PERADOTTI 062-050510 LICENSED PROFESSIONAL ENGINEER STATE OF ILLINOIS


Round Table Design, Inc.
PROFESSIONAL ENGINEERING - LAND SURVEYING
1457 HIGHWAY 145 S HARRISBURG, IL (618) 253-6017


John S. Peradotti 12/22/16
John S. Peradotti
PROFESSIONAL ENGINEER
#062-050510
EXPIRES NOV. 30, 2019

ILLINOIS DEPARTMENT OF TRANSPORTATION

Approved October 10, 2018
Kevin Framm
Union County Engineer

Passed Nov 13, 2018
District 9 Engineer of Local Roads and Streets

Releasing for Bid Based on Limited Review Nov 13, 2018
Jeffrey L. Keirn, P.E.
Region Five Engineer

| ROUTE | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| TR 203 | 12-01202-00-BR | UNION | 13 | 2 |
| PROJECT NO. Z2W0(420) | | | CONTRACT NO. 99584 | |

B.M. – RR Spike in Power Pole
18' Lt. Sta. 16+97
Elev. 452.44

Existing Structure – Timber deck with steel stringers on closed concrete abutments. 16.0' Wide x 40.0' Long

PI Sta. 12+73.13 N&C buried
PT Sta. 13+40.79 Iron Pin

27.44' 16.84' 44.74' 25.46' 20.35'

N&C in 20" Tree | N&C in Dbl. 18" Tree | N&C in 19" Tree | N&C in Tree

TIE POINTS

**Side Road Curve Data**
PC Station = 0+25.00
Δ = 33°40'52"
R = 71.36'
PRC Station = 0+66.95
Δ = 35°31'58"
R = 71.36'
PT Station = 1+11.21

**Side Road Vertical Alignment**
VPC Station 0+10 Elev. 461.63
Grade -5.000%
VPI Station 0+35 Elev. 460.38
Grade -8.974%
VPT Station 0+60 Elev. 458.14

End Improvement – Station 1+12

Pipe Culvert, Class C, Type 1 EQRS 24" – 42 Ft
Pipe shall be Aluminized Steel Corrugated Pipe Arch
US ℄ 26.4' Lt Station 14+17.8 Elevation 457.9
DS ℄ 28.5' Lt Station 14+59.8 Elevation 455.4

Begin Improvement – Station 12+10

Riprap Ditch – 177 Tons

Existing structure to be removed

Shape embankment to match stream banks as directed by the Engineer. Included as part of Earth Excavation.

Exist. 24' CMP to be removed

Pipe Culvert, Class C, Type 1 EQRS 24" – 26 Ft
Pipe shall be Aluminized Steel Corrugated Pipe Arch
US ℄ 23.5' Lt Station 16+25.7 Elevation 450.5
DS ℄ 26.7' Lt Station 15+99.9 Elevation 450.3

End Improvement – Station 17+90

Station 14+36 = Station 0+00 SR

Station 14+97.38 – Single span precast prestressed concrete deck beam bridge 72'-7½" bk-bk Abutments Skewed 10° Lt. Forward

Place Stone Dumped Riprap, Class A5 on the abutment slopes at all four corners of the bridge as directed by the Engineer (See Sheet 3).

**Tree Removal**

| Location | Unit Dia. 6-15 | Unit Dia. >15 |
|---|---|---|
| Sta. 14+51.5 44.6' Lt. | | 17 |
| Sta. 14+59.8 43.2' Lt. (3) | 33 | |
| Sta. 14+65.2 45.6' Lt. | 6 | |
| Sta. 14+75.7 49.0' Lt. | 15 | |
| Sta. 14+79.0 36.7' Lt. | 13 | |
| Sta. 14+80.1 48.8' Lt. | 8 | |
| Sta. 14+83.5 52.8' Lt. | 9 | |
| Sta. 14+85.5 50.2' Lt. | 14 | |
| Sta. 14+89.3 48.0' Lt. | 8 | |
| Sta. 14+91.4 47.9' Lt. | 6 | |
| Sta. 14+92.9 94.8' Lt. | | 41 |
| Sta. 15+30.3 38.9' Lt. | 15 | |
| Totals | 127 | 58 |

**RIGHT-OF-WAY POINTS**

17+00

| | |
|---|---|
| 20.00' RT STA 12+13.45 | 30.00' RT STA 13+40.79 |
| 20.00' RT STA 12+50.00 | 30.00' RT STA 13+75.00 |
| 25.00' RT STA 12+50.00 | 50.00' RT STA 15+00.00 |
| 25.00' RT STA 12+77.12 | 30.00' RT STA 16+50.00 |
| 30.00' RT STA 12+77.12 | 25.00' RT STA 17+76.80 |
| | 20.00' RT STA 17+76.80 |

Pasture

SCALES:
1" = 40' HOR
1" = 10' VER

N

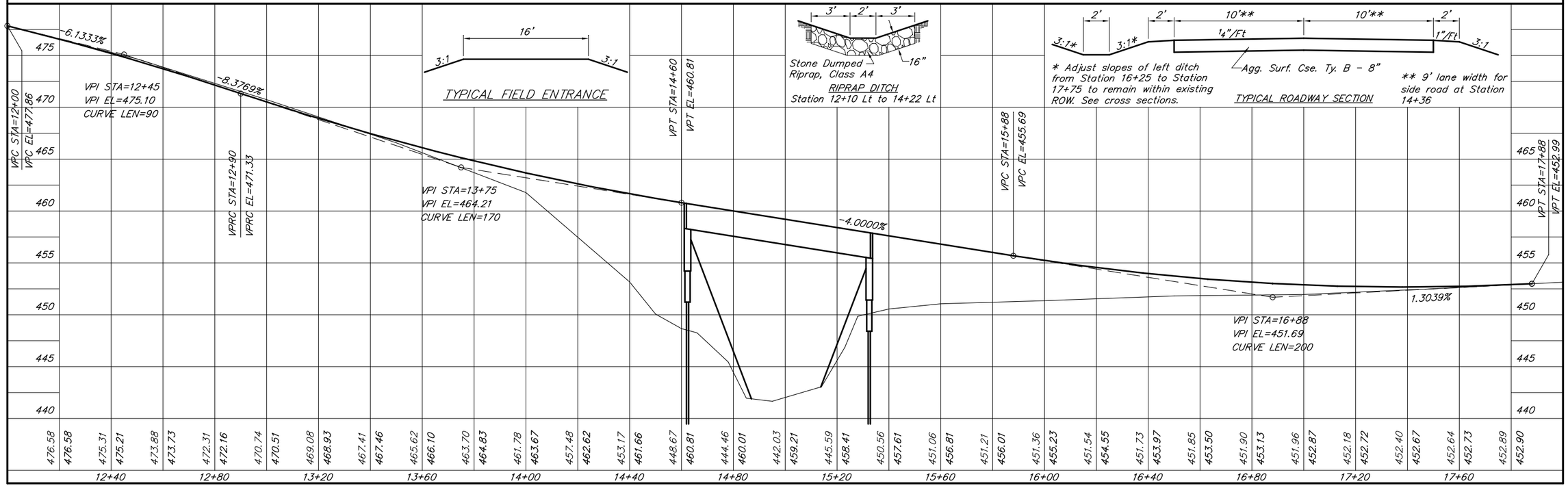
**CURVE DATA PI STA=12+77.13**
Δ = 2°26'54" T = 63.68'
D = 1°55'22" L = 127.34'
R = 2980.00' E = 0.68'
Normal Crown

PC STA=12+13.45
PT STA=13+40.79

**Tree Removal – Acres:**
Limits of Tree Removal, Acres shall be between a line parallel to and ten feet right of the new centerline and the new right-of-way line from Station 12+50 to Station 16+00 containing 0.22 Acres.

FP FP FP
50.05' 20.23' 27.59'
Sta. 17+76.80
Iron Pin
TIE POINT

PI STA=17+76.80
Δ=0°47'12" L




TYPICAL FIELD ENTRANCE

16'
3:1 3:1

Stone Dumped Riprap, Class A4
16"

RIPRAP DITCH
Station 12+10 Lt to 14+22 Lt

2' 2' 10'** 10'** 2'
3:1* 3:1* ¼"/Ft 1"/Ft 3:1

* Adjust slopes of left ditch from Station 16+25 to Station 17+75 to remain within existing ROW. See cross sections.

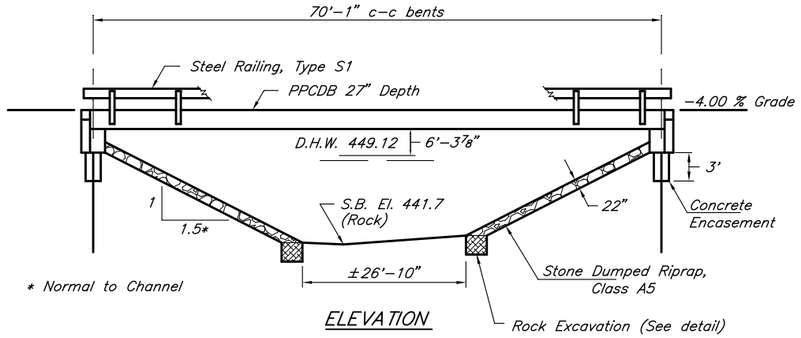
Agg. Surf. Cse. Ty. B – 8"

TYPICAL ROADWAY SECTION

** 9' lane width for side road at Station 14+36

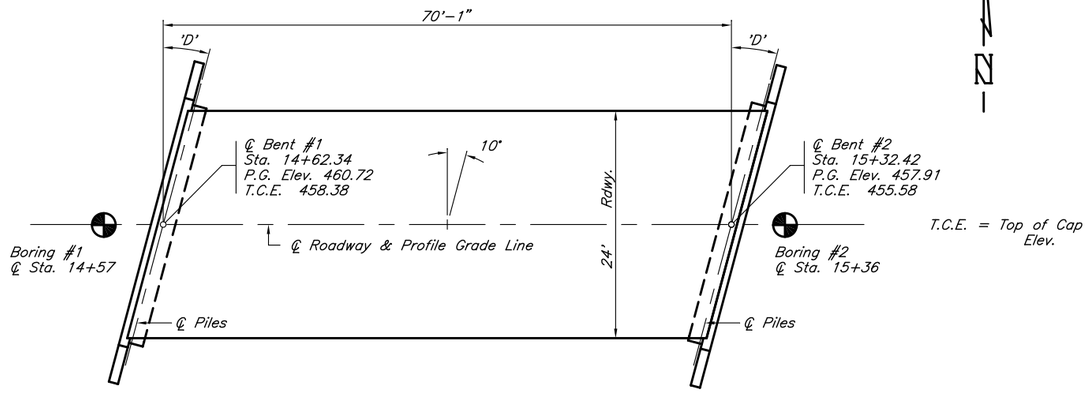
| ROUTE | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| TR 203 | 12-01202-00-BR | UNION | 13 | 3 |
| PROJECT NO. Z2W0(420) | | | CONTRACT NO. 99584 | |

B.M.– RR Spike in Power Pole
18' Lt. Sta. 16+97
Elev. 452.44




ELEVATION

Existing Structure – Timber deck with steel stringers on closed concrete abutments. 16.0' W x 40.0' L




PLAN

Skew Angle "D" = 10° Left Forward

## GENERAL NOTES

1. Steel H piles shall meet AASHTO M270 Grade 50 specifications.
2. See special provisions for boring logs.
3. 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. | |
| Rock Excavation | Cu. Yds. | | | 4.3 | 4.3 |
| Stone Dumped Riprap, Cl. A5 | Tons | | | 641 | 641 |
| Removal of Existing Structures | Each | 1 | | | 1 |
| Concrete Structures | Cu. Yds. | | | 22.0 | 22.0 |
| Concrete Encasement | Cu. Yds. | | | 2.7 | 2.7 |
| P.P. Conc. Dk. Bm. 27" Dp. | Sq. Ft. | 1704 | | | 1704 |
| Reinforcement Bars | Pound | | | 2522 | 2522 |
| Steel Railing, Type S1 | Foot | 144 | | | 144 |
| Furnishing Steel Piles HP 10x57 | Foot | | | 164 | 164 |
| Driving Piles | Foot | | | 164 | 164 |
| Name Plates | Each | | | 1 | 1 |

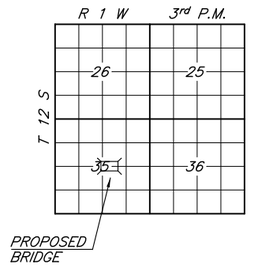
## PILE DATA (2-ABUTS.)

Type & Size : HP10x57
Nominal Required Bearing : 331 kips
Factored Resistance Available : 182 kips
Estimated Length : 20 Ft. Bent #1, 21 Ft. Bent #2
Number Required : 8

BIG CREEK
SEC. 12-01202-00-BR BUILT 20__
COUNTY UNIT ROAD DISTRICT
UNION COUNTY
LOADING HL-93
STR. NO. 091-3242

## LETTERING FOR NAME PLATE

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

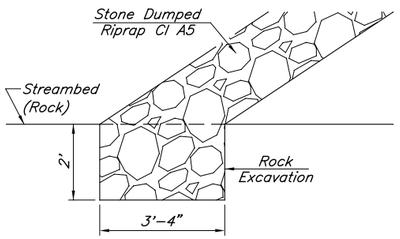



LOCATION SKETCH

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.

John S. Peradotti 12/22/16
John S. Peradotti
S.E. #81-5671
Expires Nov. 30, 2018

JOHN S. PERADOTTI
081-005671
LICENSED STRUCTURAL ENGINEER
STATE OF ILLINOIS




KEY RIPRAP INTO STREAMBED

## DESIGN SPECIFICATIONS

2014 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. ($S_{DS}$) = 1.143
Design Spectral Acceleration at 1.0 sec. ($S_{D1}$) = 0.436
Seismic Performance Zone (SPZ) = 3

## WATERWAY INFORMATION

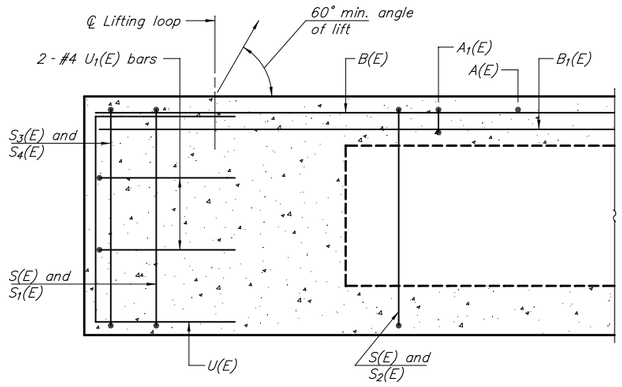
Drainage Area = 4.93 Sq. Mi. Low Grade Elev. = 452.67 At Sta. 17+38.8

| Flood | Freq. | Q | Opening Sq. Ft. | | Natural H.W.E. | | Head–Ft. | | Headwater El. | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Yr. | C.F.S. | Exist. | Prop. | Exist. | Prop. | Exist. | Prop. | Exist. | Prop. |
| Design | 20 | 2160 | 250.3 | 261.2 | 449.42 | 449.12 | 0.44 | 0.47 | 449.86 | 449.59 |
| Base | 100 | 3100 | 292.0* | 316.4 | 450.57 | 450.27 | 2.04 | 0.97 | 452.61 | 451.24 |
| Overtopping | | | | | | | | | | |
| Max. Calc. | 500 | 4150 | 320.5* | 365.6 | 451.53 | 451.23 | 1.48 | 1.96 | 453.01 | 453.19 |

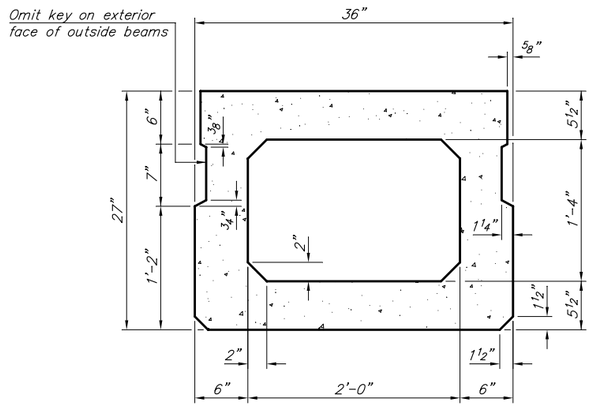
Over Road Flow (Sq Ft): Exist. $Q_{(100)}$ 271.1 $Q_{(500)}$ 457.4

GENERAL PLAN & ELEVATION
TOWNSHIP ROUTE 203 (NASH ROAD)
BIG CREEK
SECTION 12-01202-00-BR
UNION COUNTY
STRUCTURE NO. 091-3242

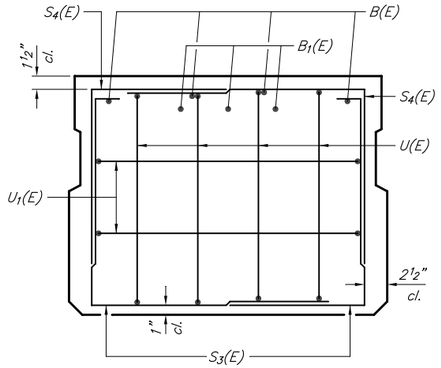
| ROUTE | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| TR 203 | 12-01202-00-BR | UNION | 13 | 4 |
| PROJECT NO. Z2W0(420) | | | CONTRACT NO. 99584 | |



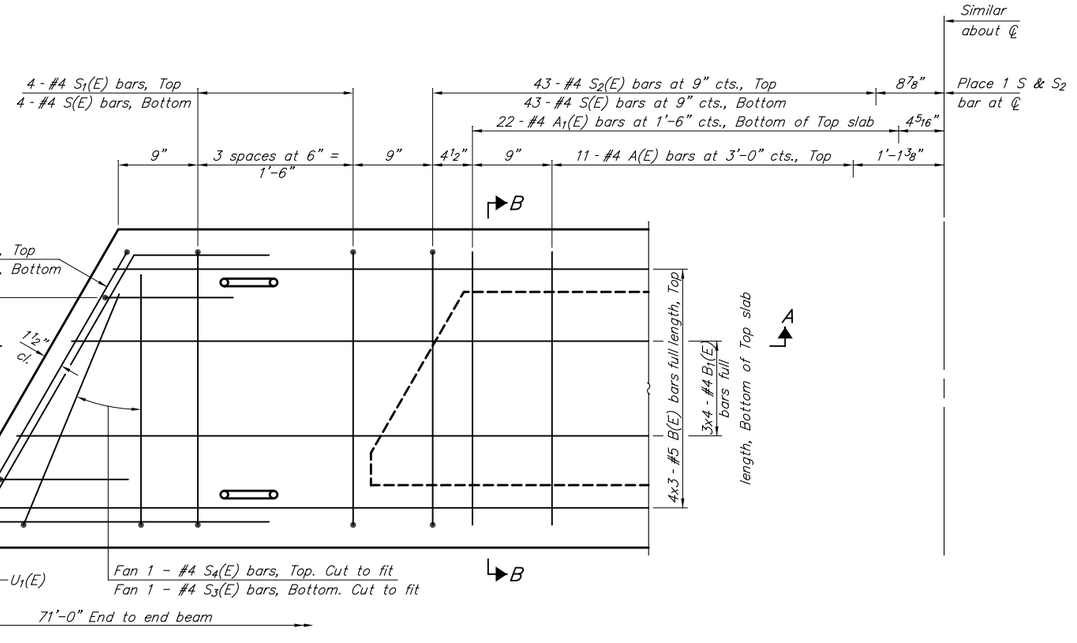

SECTION A-A




SECTION B-B
(Showing dimensions)

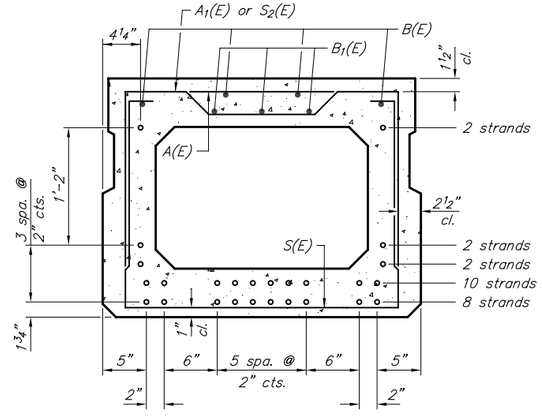



VIEW C-C




PLAN VIEW

Note: Spacing of S(E) and $S_2$(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 B-B
(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)

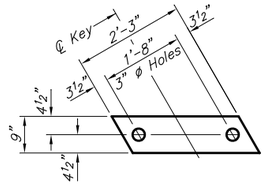
| Bar | No. | Size | Length | Shape |
|---|---|---|---|---|
| A(E) | 22 | #4 | 2'-7" | |
| $A_1$(E) | 44 | #4 | 2'-10" | |
| B(E) | 12 | #5 | 25'-3" | |
| $B_1$(E) | 12 | #4 | 19'-2" | |
| S(E) | 95 | #4 | 7'-5" | |
| $S_1$(E) | 8 | #4 | 5'-11" | |
| $S_2$(E) | 87 | #4 | 6'-2" | |
| $S_3$(E) | 6 | #4 | 4'-8" | |
| $S_4$(E) | 6 | #4 | 3'-10" | |
| U(E) | 8 | #5 | 4'-6" | |
| $U_1$(E) | 4 | #4 | 5'-6" | |

Notes:
See sheet 5 of 13 for additional details and Bill of Materials.
Bars noted thus 4x2-#5 etc. indicates 4 lines of bars with 2 lengths per line.

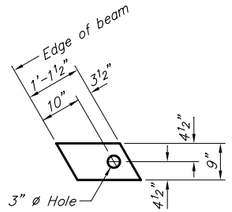
MINIMUM BAR LAP
#4 bar = 1'-11"
#5 bar = 2'-6"

27" X 36" PPC DECK BEAM
TOWNSHIP ROUTE 203 (NASH ROAD)
BIG CREEK
SECTION 12-01202-00-BR
UNION COUNTY
STRUCTURE NO. 091-3242

| ROUTE | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| TR 203 | 12-01202-00-BR | UNION | 13 | 5 |
| PROJECT NO. Z2W0(420) | | | CONTRACT NO. 99584 | |



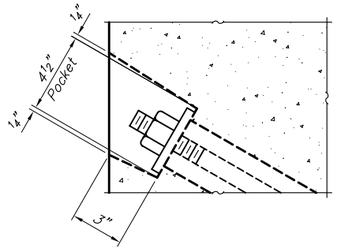

FABRIC BEARING PAD
(Interior)



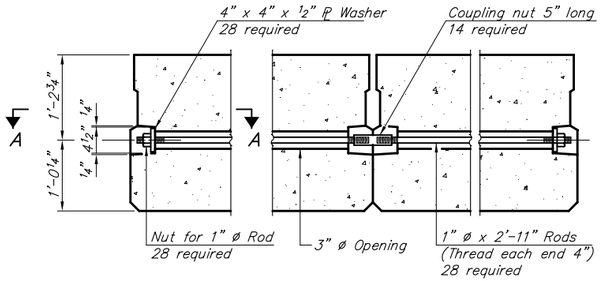

FABRIC BEARING PAD
(Exterior)

FIXED

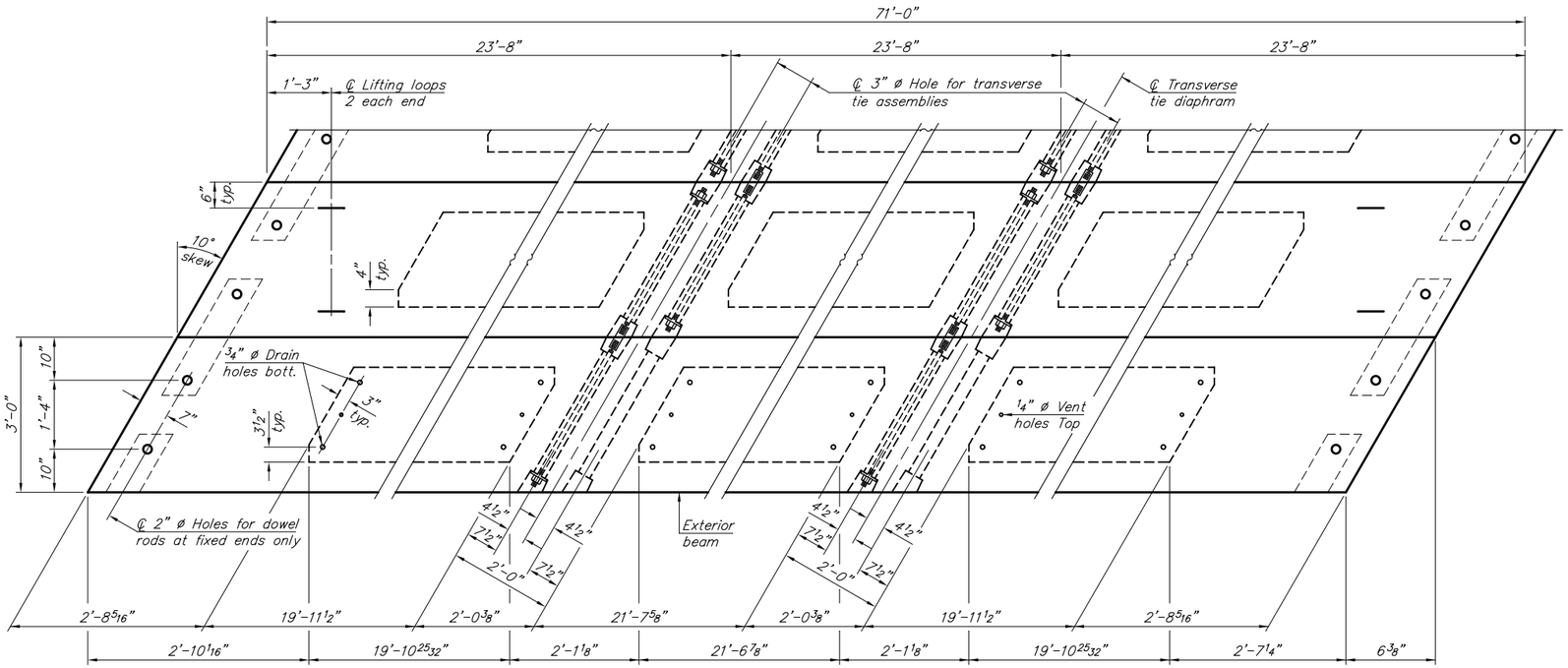
Notes:
All bearing pads shall be 1" thick.
Omit holes when using expansion bearings.
Expansion bearing pads shall be bonded to the substructure.




SECTION A-A

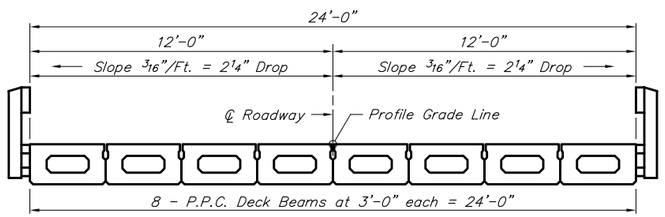



TYPICAL TRANSVERSE TIE ASSEMBLY




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 ½" and the nominal cross-sectional area shall be 0.153 sq. in.

The 1" ø 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.

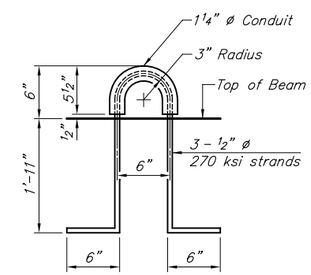
Two ⅛" fabric adjusting shims of the dimensions of the exterior bearing pad shall be provided for each bearing pad location.

A minimum 2½" ø lifting pin shall be used to engage the lifting loops during handling.

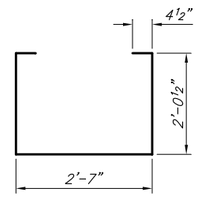
Corrosion Inhibitor, per Article 1020.05(b)(10) and 1021.07 of the Standard Specifications, shall be used in the concrete for precast prestressed concrete deck beams.

Compressive strength of prestressed concrete, f'c, shall be 6000 psi.

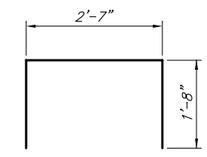
Compressive strength of prestressed concrete at release, f'ci, shall be 5000 psi.



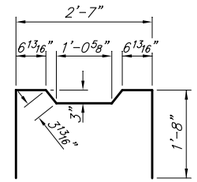

LIFTING LOOP DETAIL



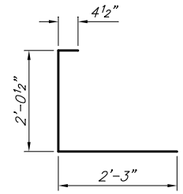

BAR S(E)



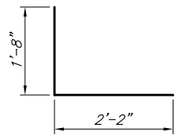

BAR S1(E)



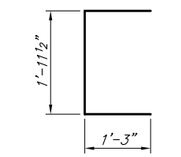

BAR S2(E)



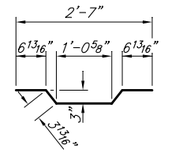

BAR S3(E)



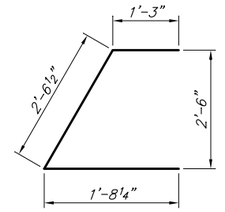

BAR S4(E)




BAR U(E)




BAR A1(E)



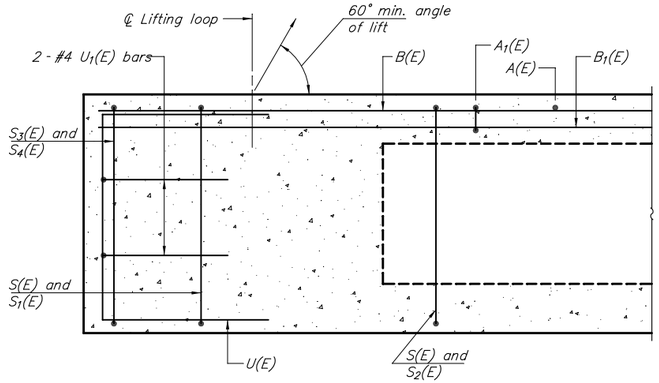

BAR U1(E)

## BILL OF MATERIAL

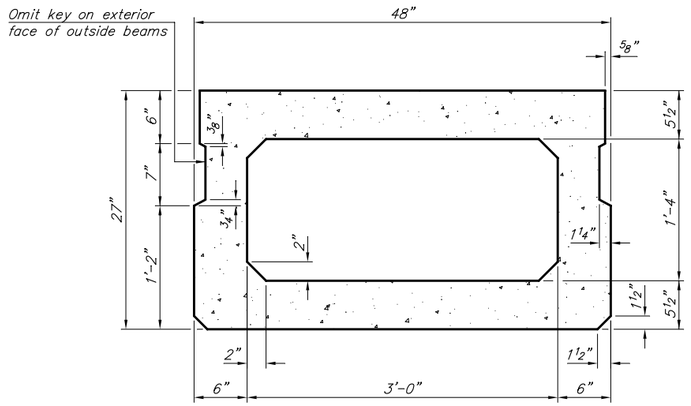
| | | |
|---|---|---|
| Precast Prestressed Concrete Deck Beams (27" depth) | Sq. Ft. | 1,704 |

27" X 36" PPC DECK BEAM DETAILS
TOWNSHIP ROUTE 203 (NASH ROAD)
BIG CREEK
SECTION 12-01202-00-BR
UNION COUNTY
STRUCTURE NO. 091-3242

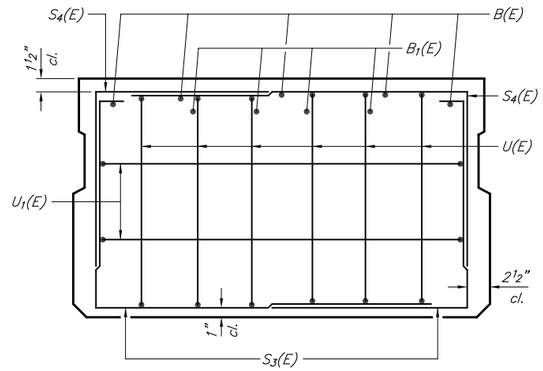
| ROUTE | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| TR 203 | 12-01202-00-BR | UNION | 13 | 6 |
| PROJECT NO. Z2W0(420) | | | CONTRACT NO. 99584 | |



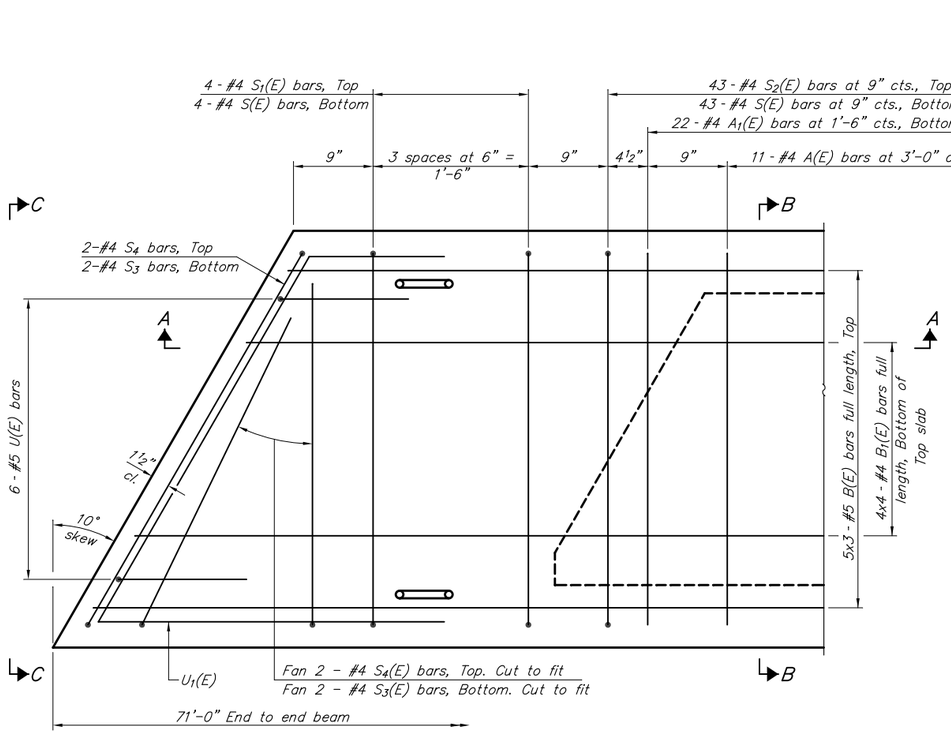

SECTION A-A




SECTION B-B
(Showing dimensions)

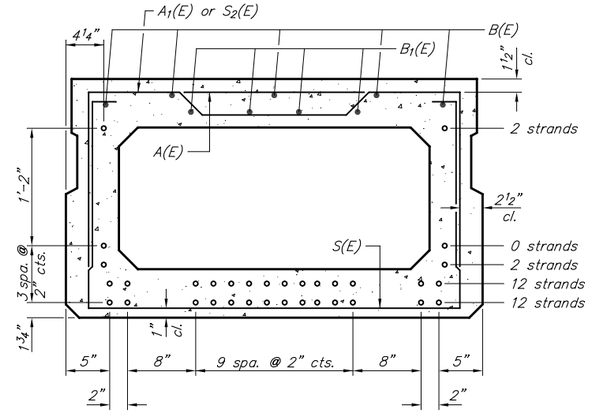



VIEW C-C




PLAN VIEW

Note: Spacing of S(E) and $S_2(E)$ 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 B-B
(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)

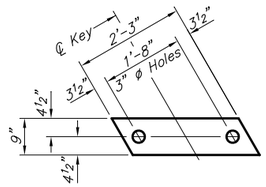
| Bar | No. | Size | Length | Shape |
|---|---|---|---|---|
| A(E) | 22 | #4 | 3'-7" | |
| $A_1(E)$ | 44 | #4 | 3'-10" | |
| B(E) | 15 | #5 | 25'-3" | |
| $B_1(E)$ | 16 | #4 | 19'-2" | |
| S(E) | 95 | #4 | 8'-5" | |
| $S_1(E)$ | 8 | #4 | 6'-11" | |
| $S_2(E)$ | 87 | #4 | 7'-2" | |
| $S_3(E)$ | 8 | #4 | 5'-2" | |
| $S_4(E)$ | 8 | #4 | 4'-4" | |
| U(E) | 12 | #5 | 4'-6" | |
| $U_1(E)$ | 4 | #4 | 6'-8" | |

Notes:
See sheet 7 of 13 for additional details and Bill of Materials.
Bars noted thus 4x2-#5 etc. indicates 4 lines of bars with 2 lengths per line.

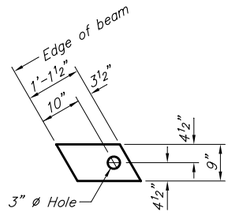
## MINIMUM BAR LAP
#4 bar = 1'-11"
#5 bar = 2'-6"

27" X 48" PPC DECK BEAM
TOWNSHIP ROUTE 203 (NASH ROAD)
BIG CREEK
SECTION 12-01202-00-BR
UNION COUNTY
STRUCTURE NO. 091-3242

| ROUTE | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| TR 203 | 12-01202-00-BR | UNION | 13 | 7 |
| PROJECT NO. Z2W0(420) | | | CONTRACT NO. 99584 | |



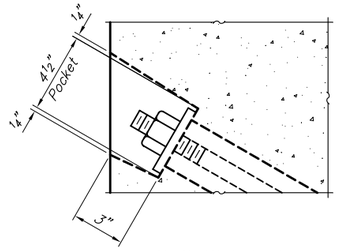

FABRIC BEARING PAD
(Interior)



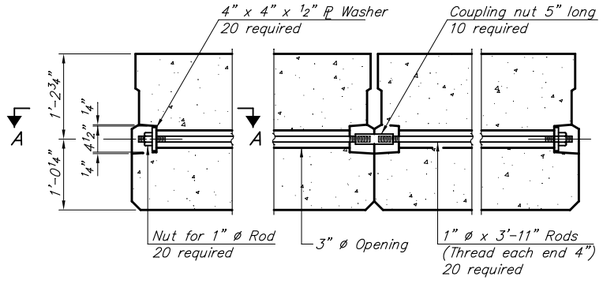

FABRIC BEARING PAD
(Exterior)

FIXED

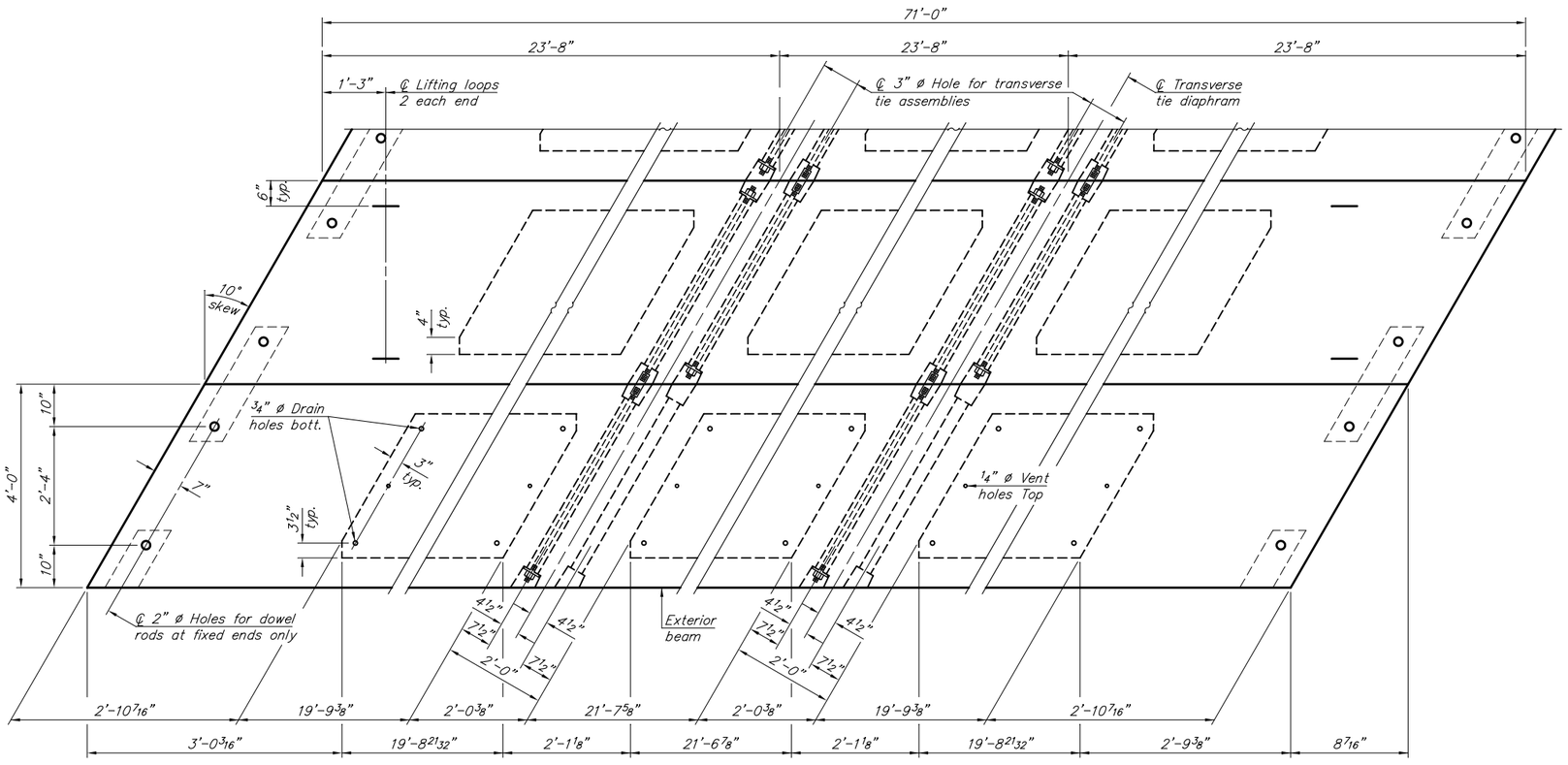
Notes:
All bearing pads shall be 1" thick.
Omit holes when using expansion bearings.
Expansion bearing pads shall be bonded to the substructure.




SECTION A-A

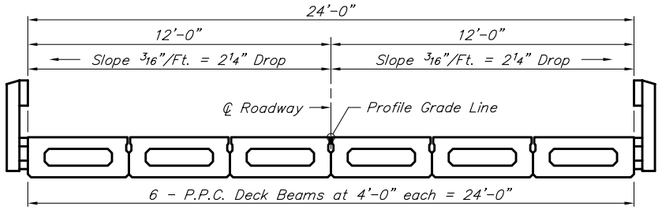



TYPICAL TRANSVERSE TIE ASSEMBLY




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 ½" and the nominal cross-sectional area shall be 0.153 sq. in.

The 1" ø 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.

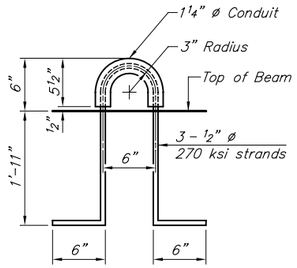
Two ⅛" fabric adjusting shims of the dimensions of the exterior bearing pad shall be provided for each bearing pad location.

A minimum 2½" ø lifting pin shall be used to engage the lifting loops during handling.

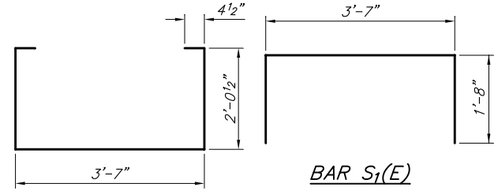
Corrosion Inhibitor, per Article 1020.05(b)(10) and 1021.07 of the Standard Specifications, shall be used in the concrete for precast prestressed concrete deck beams.

Compressive strength of prestressed concrete, f'c, shall be 6000 psi.

Compressive strength of prestressed concrete at release, f'ci, shall be 5000 psi.

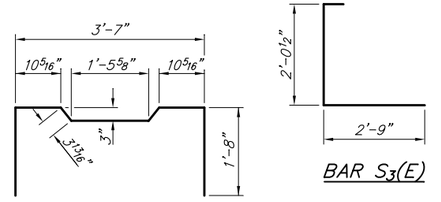



LIFTING LOOP DETAIL




BAR S(E)

BAR $S_1$(E)



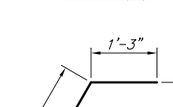

BAR $S_2$(E)



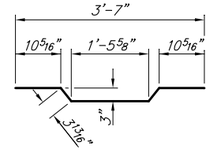

BAR $S_3$(E)




BAR $S_4$(E)




BAR U(E)




BAR $A_1$(E)



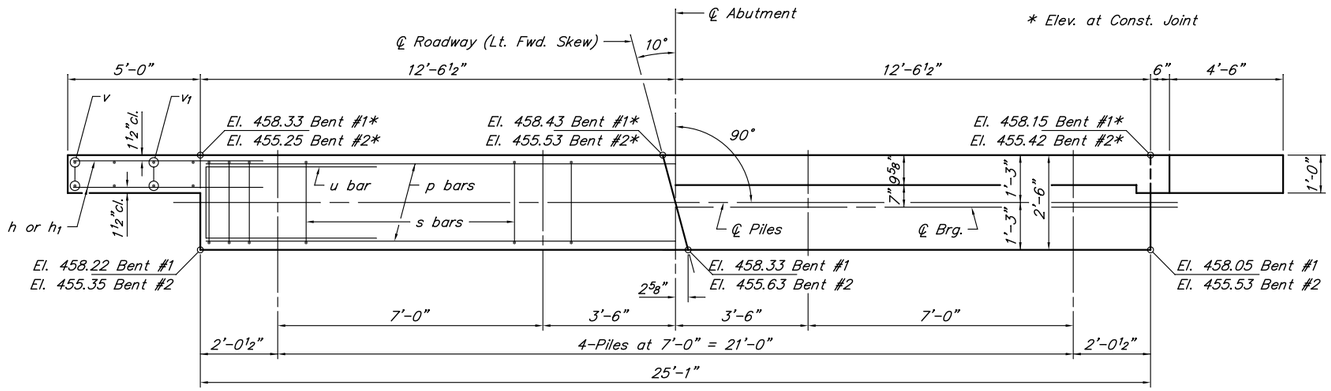

BAR $U_1$(E)

## BILL OF MATERIAL

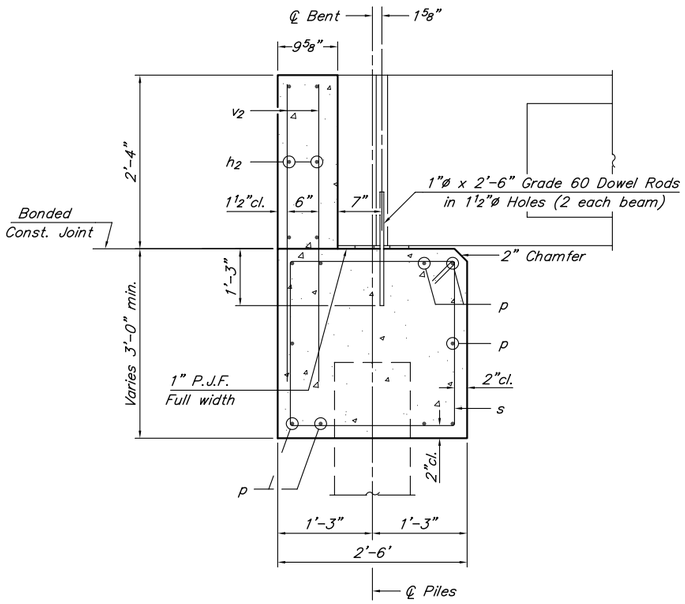
| | | |
|---|---|---|
| Precast Prestressed Concrete Deck Beams (27" depth) | Sq. Ft. | 1,704 |

27" X 48" PPC DECK BEAM DETAILS
TOWNSHIP ROUTE 203 (NASH ROAD)
BIG CREEK
SECTION 12-01202-00-BR
UNION COUNTY
STRUCTURE NO. 091-3242

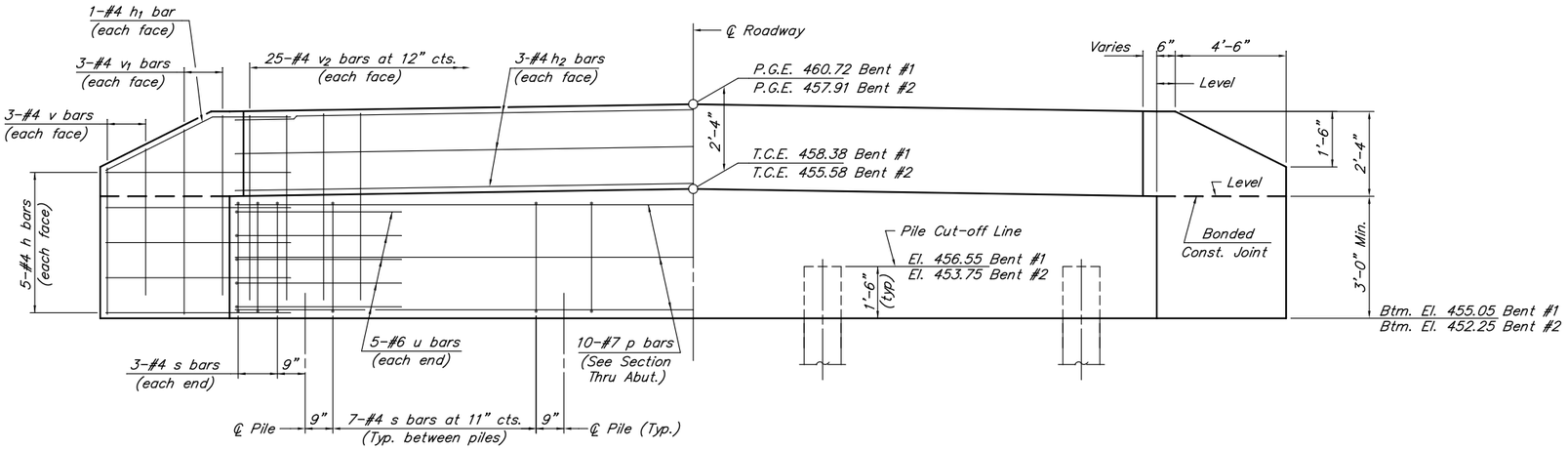
| ROUTE | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| TR 203 | 12-01202-00-BR | UNION | 13 | 8 |
| PROJECT NO. Z2W0(420) | | | CONTRACT NO. 99584 | |



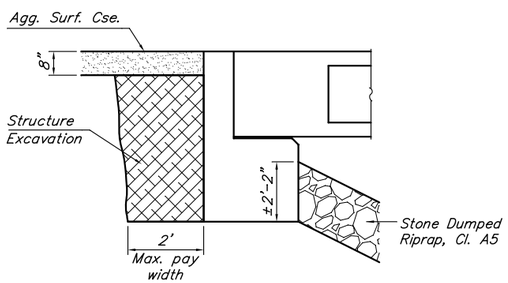

PLAN




SECTION THRU ABUT.
(At Right Angles)




ELEVATION



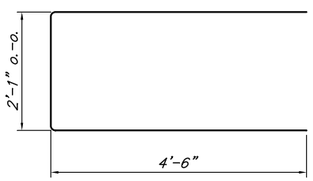

BACKFILL & RIPRAP DETAIL
(At Right Angles to Abut.)

NOTES

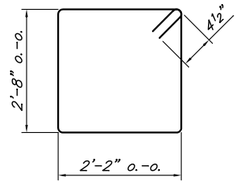
1. The Backwall and the portion of the Wingwalls above the bonded construction joint shall be cast against the in-place beam.
2. Reinforcement bars shall conform to A.A.S.H.T.O. M-31, M-42 or M-53, Grade 60.

DESIGN STRESSES

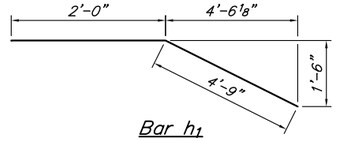
f'c = 3,500 psi
fy = 60,000 psi




Bar u




Bar s



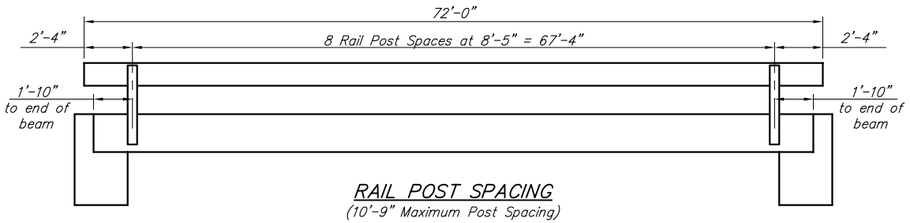

Bar h1

BILL OF MATERIAL
FOR ONE ABUTMENT

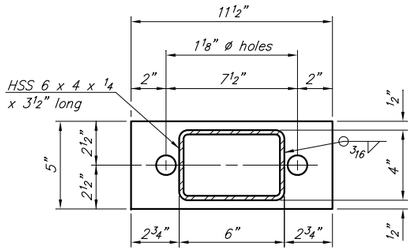
| Bar | No. | Size | Length | Shape |
|---|---|---|---|---|
| | | | | |
| h | 20 | #4 | 6'-6" | —— |
| h1 | 4 | #4 | 6'-9" | ——\ |
| h2 | 6 | #4 | 24'-9" | —— |
| | | | | |
| p | 10 | #7 | 24'-9" | —— |
| | | | | |
| s | 27 | #4 | 10'-5" | □ |
| | | | | |
| u | 10 | #6 | 11'-1" | ⊏ |
| | | | | |
| v | 12 | #4 | 3'-8" | —— |
| v1 | 12 | #4 | 4'-7" | —— |
| v2 | 50 | #4 | 3'-11" | —— |
| | | | | |
| Concrete Structures | | | 11.0 | Cu. Yds. |
| Reinforcement Bars | | | 1,261 | Lbs. |

ABUTMENT
TOWNSHIP ROUTE 203 (NASH ROAD)
BIG CREEK
SECTION 12-01202-00-BR
UNION COUNTY
STRUCTURE NO. 091-3242

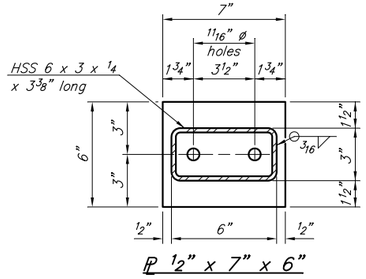
| ROUTE | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| TR 203 | 12-01202-00-BR | UNION | 13 | 9 |
| PROJECT NO. Z2W0(420) | | | CONTRACT NO. 99584 | |



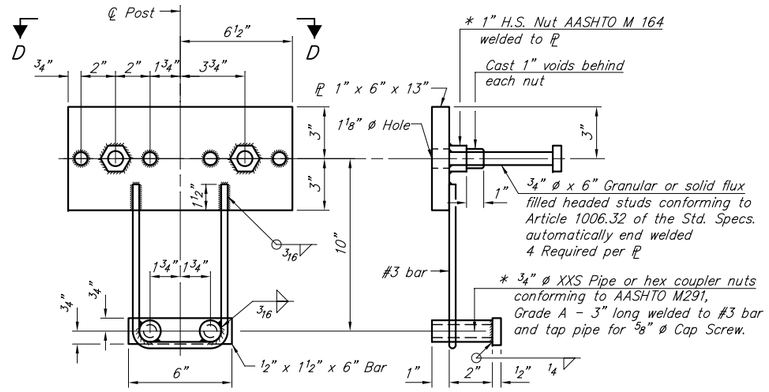

## RAIL POST SPACING
(10'-9" Maximum Post Spacing)




℄ ½" x 11½" x 5"



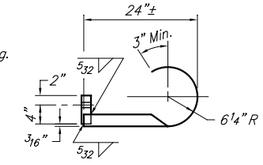

℄ ½" x 7" x 6"

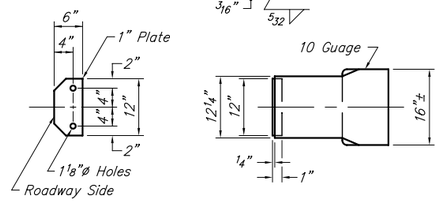



## ANCHOR DEVICE

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

NOTE: Curled End Section incidental to Steel Railing. Four (4) required.



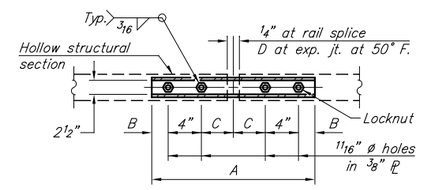




## CURLED END SECTION DETAILS

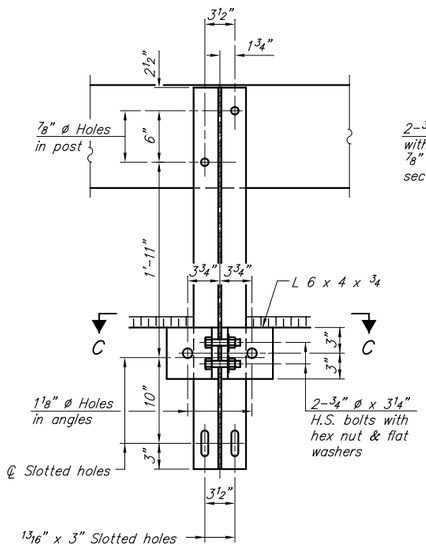
## SPLICE DIMENSIONS

| T | D | A | B | C | E |
|---|---|---|---|---|---|
| Up to 4" | 2½" | 1'-8" | 2" | 4" | 2½" |
| >4" to 6½" | 3¾" | 2'-0" | 2½" | 5½" | 3½" |
| >6½" to 9" | 5" | 2'-4" | 3½" | 6½" | 9" |
| >9" to 13" | 7" | 2'-10" | 4½" | 8½" | 11" |
| Rail Splice | ¼" | 1'-8" | 2" | 4" | —— |

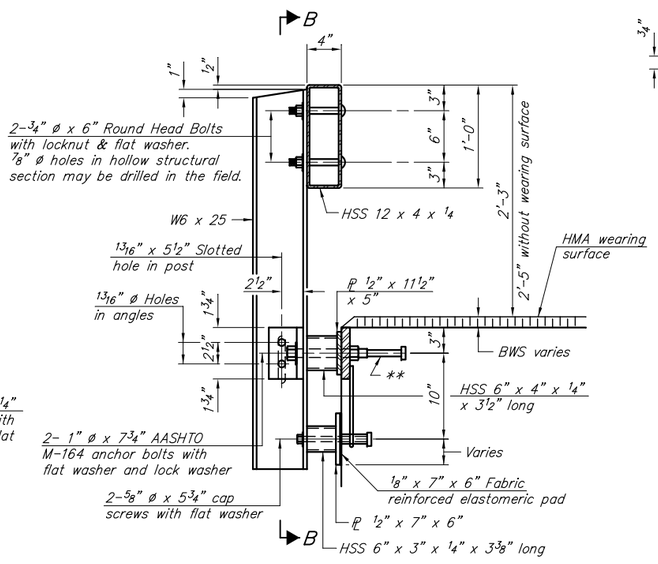
T = Total movement at expansion joint as shown on the design plans.



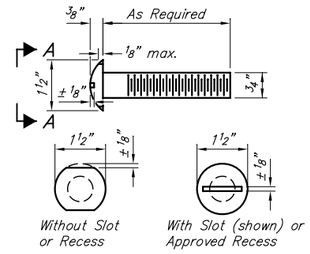

## PLAN-BOTT. SPLICE ℄ TYPICAL



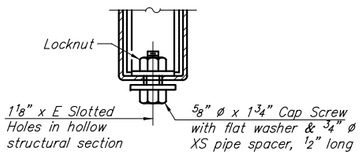

## SECTION B-B



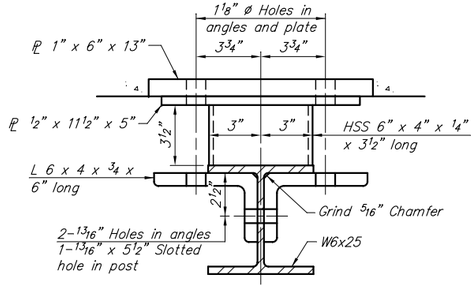

## SECTION AT RAILING POST



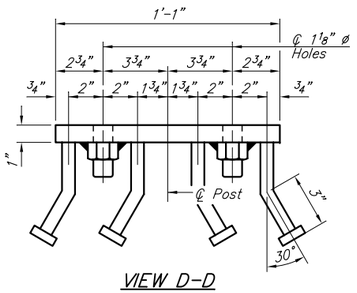

## VIEW A-A ROUND HEAD BOLT



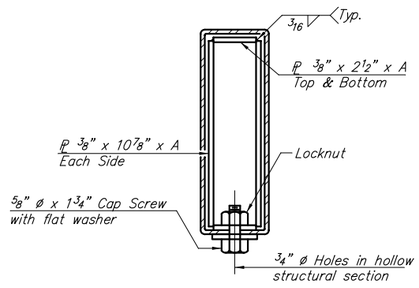

## RAIL SPLICE CONNECTION AT EXPANSION JT.




## SECTION C-C

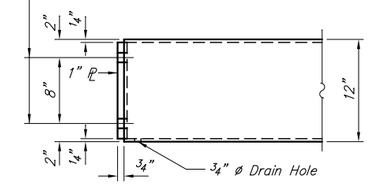


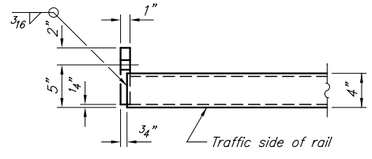

## VIEW D-D




## SECTIONS AT RAIL SPLICE

1⅛" ø Holes for 1" ø x 4" Round head bolts. Provide 2 flat washers & locknuts for guard rail connection shown on Hwy Std. 631026 or BLR 27-1.




## END OF RAIL DETAILS

Notes:

For multi-span bridges, sufficient ¼" 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.

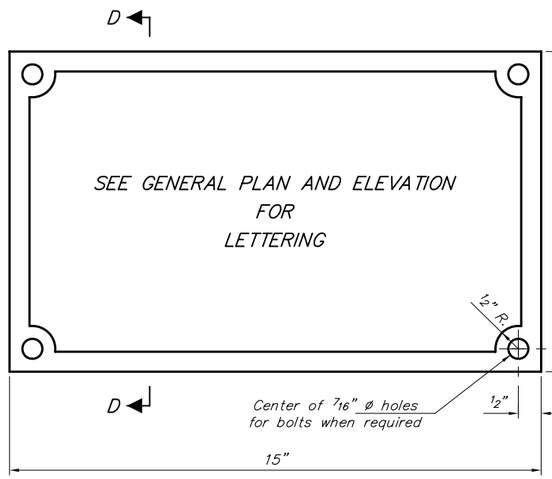
** The studs of the anchor devices shall be placed below the top reinforcement bars and the outermost longitudinal reinforcement bar shall be placed directly above the studs of the rail post anchor device. The anchorage studs may be bent down ½" to accommodate the top reinforcement bar placement.

## BILL OF MATERIAL

| Item | Unit | Quantity |
|---|---|---|
| Steel Railing, Type S-1 | Foot | 144 |

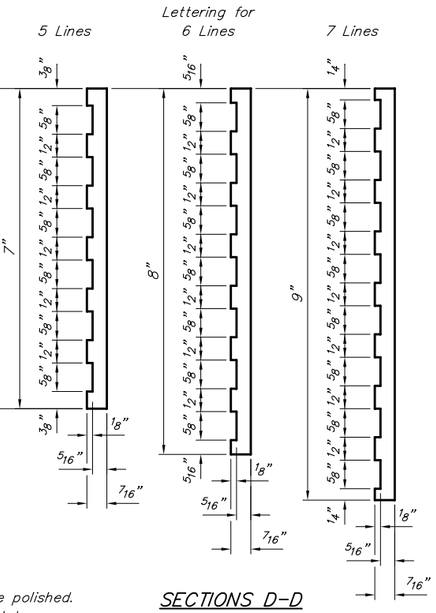
STEEL RAILING, TYPE S-1
TOWNSHIP ROUTE 203 (NASH ROAD)
BIG CREEK
SECTION 12-01202-00-BR
UNION COUNTY
STRUCTURE NO. 091-3242

| ROUTE | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| TR 203 | 12-01202-00-BR | UNION | 13 | 10 |
| PROJECT NO. Z2W0(420) | | | CONTRACT NO. 99584 | |

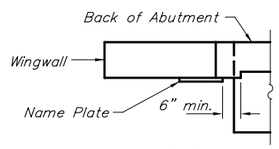



DETAIL OF NAME PLATE

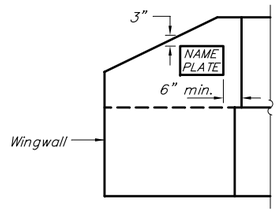
Material: Best quality brass or bronze.
Border and Lettering: Raised 1/8 inch. Square cut and not tapered. Top surface polished.
Fastenings: Four lugs at least three inches long, cast on back of plate.




SECTIONS D-D




PLAN

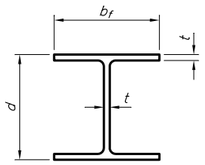



ELEVATION

LOCATION OF NAME PLATE

NAME PLATE
TOWNSHIP ROUTE 203 (NASH ROAD)
BIG CREEK
SECTION 12-01202-00-BR
UNION COUNTY
STRUCTURE NO. 091-3242

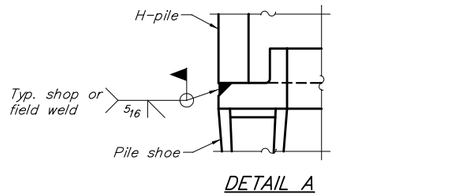
| ROUTE | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| TR 203 | 12-01202-00-BR | UNION | 13 | 11 |
| PROJECT NO. Z2W0(420) | | | CONTRACT NO. 99584 | |




## STEEL PILE TABLE

| Designation | Depth d | Flange width $b_f$ | Web and Flange thickness t | Encasement diameter A | Encasement Quantity/Ft. C.Y. |
|---|---|---|---|---|---|
| HP 14x117 | $14\frac{1}{4}$" | $14\frac{7}{8}$" | $\frac{13}{16}$" | 30" | 0.173 |
| x102 | 14" | $14\frac{3}{4}$" | $\frac{11}{16}$" | 30" | 0.174 |
| x89 | $13\frac{7}{8}$" | $14\frac{3}{4}$" | $\frac{5}{8}$" | 30" | 0.175 |
| x73 | $13\frac{5}{8}$" | $14\frac{5}{8}$" | $\frac{1}{2}$" | 30" | 0.176 |
| HP 12x84 | $12\frac{1}{4}$" | $12\frac{1}{4}$" | $\frac{11}{16}$" | 24" | 0.110 |
| x74 | $12\frac{1}{8}$" | $12\frac{1}{4}$" | $\frac{5}{8}$" | 24" | 0.111 |
| x63 | 12" | $12\frac{1}{8}$" | $\frac{1}{2}$" | 24" | 0.112 |
| x53 | $11\frac{3}{4}$" | 12" | $\frac{7}{16}$" | 24" | 0.112 |
| HP 10x57 | 10" | $10\frac{1}{4}$" | $\frac{9}{16}$" | 24" | 0.112 |
| x42 | $9\frac{3}{4}$" | $10\frac{1}{8}$" | $\frac{7}{16}$" | 24" | 0.113 |
| HP 8x36 | 8" | $8\frac{1}{8}$" | $\frac{7}{16}$" | 18" | 0.063 |

Note: The steel H-piles shall be according to AASHTO M270 Grade 50.

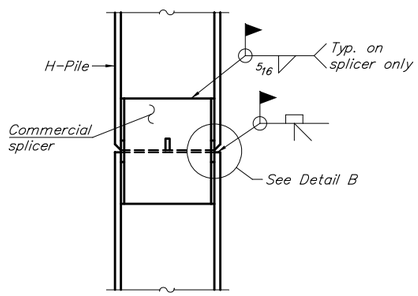



ELEVATION

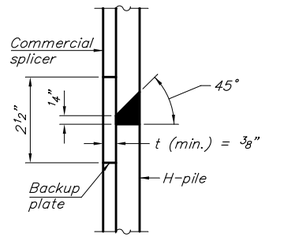



DETAIL A

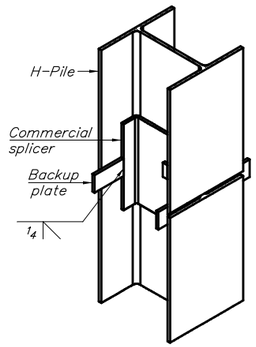
H-PILE SHOE ATTACHMENT




ELEVATION

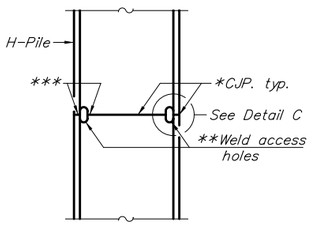



DETAIL "B"

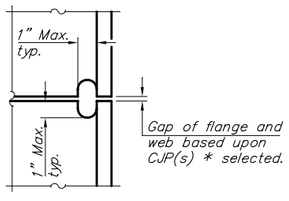



ISOMETRIC VIEW

WELDED COMMERCIAL SPLICE

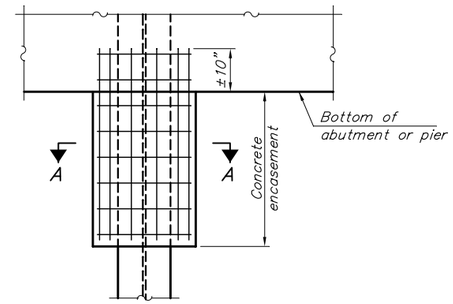



ELEVATION

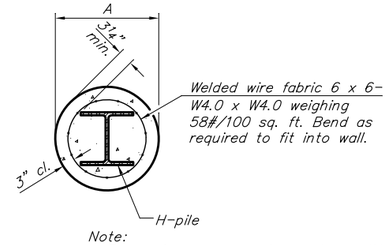



DETAIL C

COMPLETE PENETRATION WELD SPLICE



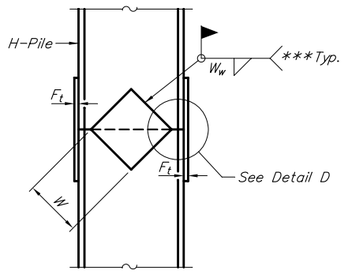

ELEVATION



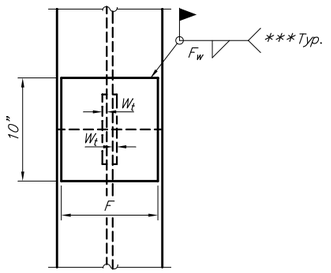

Note:
Forms for encasement may be omitted when soil conditions permit.

SECTION A-A

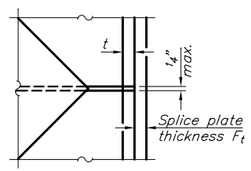
PILE ENCASEMENT




ELEVATION




END VIEW




DETAIL D

| Designation | F | $F_t$ | $F_w$ | W | $W_t$ | $W_w$ |
|---|---|---|---|---|---|---|
| HP 14x117 | $12\frac{1}{2}$" | 1" | $\frac{7}{8}$" | $7\frac{3}{4}$" | $\frac{5}{8}$" | $\frac{1}{2}$" |
| x102 | $12\frac{1}{2}$" | $\frac{7}{8}$" | $\frac{3}{4}$" | $7\frac{3}{4}$" | $\frac{5}{8}$" | $\frac{1}{2}$" |
| x89 | $12\frac{1}{2}$" | $\frac{3}{4}$" | $\frac{11}{16}$" | $7\frac{3}{4}$" | $\frac{5}{8}$" | $\frac{1}{2}$" |
| x73 | $12\frac{1}{2}$" | $\frac{5}{8}$" | $\frac{9}{16}$" | $7\frac{3}{4}$" | $\frac{5}{8}$" | $\frac{1}{2}$" |
| HP 12x84 | 10" | $\frac{7}{8}$" | $\frac{11}{16}$" | $6\frac{1}{2}$" | $\frac{5}{8}$" | $\frac{1}{2}$" |
| x74 | 10" | $\frac{7}{8}$" | $\frac{11}{16}$" | $6\frac{1}{2}$" | $\frac{5}{8}$" | $\frac{1}{2}$" |
| x63 | 10" | $\frac{5}{8}$" | $\frac{1}{2}$" | $6\frac{1}{2}$" | $\frac{1}{2}$" | $\frac{3}{8}$" |
| x53 | 10" | $\frac{5}{8}$" | $\frac{1}{2}$" | $6\frac{1}{2}$" | $\frac{1}{2}$" | $\frac{3}{8}$" |
| HP 10x57 | 8" | $\frac{3}{4}$" | $\frac{9}{16}$" | $5\frac{1}{4}$" | $\frac{1}{2}$" | $\frac{3}{8}$" |
| x42 | 8" | $\frac{5}{8}$" | $\frac{9}{16}$" | $5\frac{1}{4}$" | $\frac{1}{2}$" | $\frac{3}{8}$" |
| HP 8x36 | 7" | $\frac{5}{8}$" | $\frac{7}{16}$" | $4\frac{1}{4}$" | $\frac{1}{2}$" | $\frac{3}{8}$" |

WELDED PLATE FIELD SPLICE

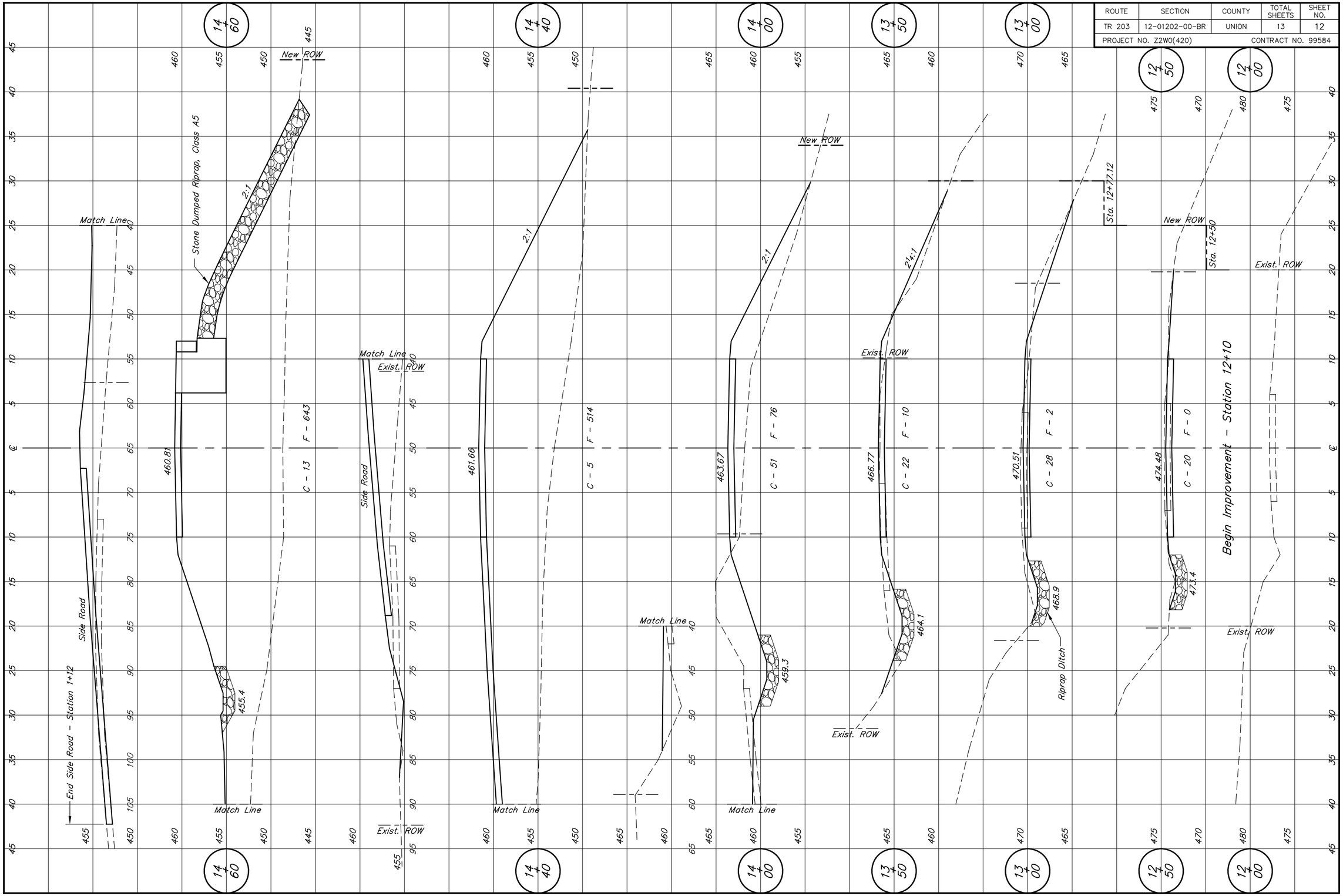
* Use joint conforming to Fig. 3.4 in AWS D1.1. Structure Welding Code - Steel.

** Preparation per Fig. 5.2 in AWS D1.1. Structure Welding Code - Steel.

*** Interrupt welds $\frac{1}{4}$" from end of each pile.

PILING DETAILS
TOWNSHIP ROUTE 203 (NASH ROAD)
BIG CREEK
SECTION 12-01202-00-BR
UNION COUNTY
STRUCTURE NO. 091-3242

| ROUTE | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| TR 203 | 12-01202-00-BR | UNION | 13 | 12 |
| PROJECT NO. Z2W0(420) | | | CONTRACT NO. 99584 | |



| ROUTE | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| TR 203 | 12-01202-00-BR | UNION | 13 | 13 |
| PROJECT NO. Z2W0(420) | | | CONTRACT NO. 99584 | |

End Improvement - Station 17+90

17+50
New ROW
Sta 17+76.80
Exist. ROW
450.9
452.69
2.5:1
2.5:1
2.5:1
451.5
F - 3
C - 9

17+00
450.5
452.87
2.5:1
2.5:1
451.1
F - 16
C - 8

16+50
450.1
453.72
2.5:1
2.5:1
450.7
F - 56
C - 9

16+00
New ROW
449.7
455.23
Exist. ROW
450.3
F - 124
C - 18
Match Line

15+60
New ROW
449.4
456.81
450.0
Match Line
F - 205
C - 32

15+40
449.2
457.61
Exist. ROW
449.8
Match Line
F - 263
C - 92
Exist. ROW