

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
**PLANS FOR PROPOSED  
STP-BRIDGE**

**FAS 720 (CH 10) OVER  
BUCK CREEK  
SECTION 11-00122-00-BR  
PROJECT NO. BRS-0720(109)  
FAYETTE COUNTY  
JOB NO. C-97-037-13**



- INDEX OF SHEETS**
- COVER SHEET
  - SUMMARY OF QUANTITIES, GENERAL NOTES, AND TYPICAL SECTIONS
  - PLAN AND PROFILE OF ROADWAY
  - GENERAL PLAN AND ELEVATION
  - 5.-6. PRECAST PRESTRESSED CONCRETE DECK BEAM DETAILS
  - STEEL RAILING, TYPE S1 DETAILS
  - ABUTMENT DETAILS
  - HP PILE DETAILS
  - CROSS SECTIONS OF ROADWAY

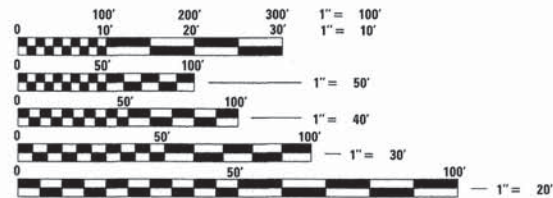
HIGHWAY STANDARDS (SEE SPECIFICATIONS)  
 000001-06 STANDARD SYMBOLS, ABBREVIATIONS AND PATTERNS  
 515001-03 NAME PLATE FOR BRIDGES  
 630301-06 SHOULDER WIDENING FOR TYPE 1 (SPECIAL) GUARDRAIL TERMINALS  
 635006-03 REFLECTOR AND TERMINAL MARKER PLACEMENT  
 701901-04 TRAFFIC CONTROL DEVICES  
 BLR 21-9 TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES FOR CONSTRUCTION ON RURAL LOCAL HIGHWAYS  
 BLR 27-1 TRAFFIC BARRIER TERMINAL TYPE 5A

SOIL BORINGS (SEE SPECIFICATIONS)

DESIGN CLASSIFICATION: RURAL MAJOR COLLECTOR

ADT<sub>2014</sub> : 450  
 ADT<sub>2034</sub> : 550

DESIGN SPEED: 50 MPH

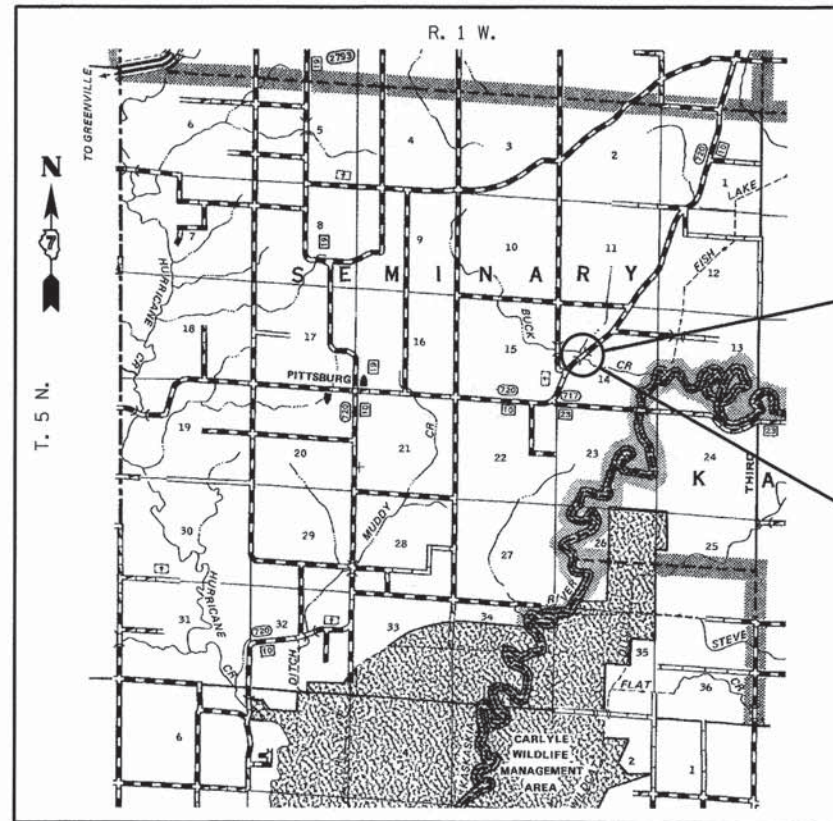


FULL SIZE PLANS HAVE BEEN PREPARED USING STANDARD ENGINEERING SCALES, REDUCED SIZED PLANS WILL NOT CONFORM TO STANDARD SCALES, IN MAKING MEASUREMENTS ON REDUCED PLANS, THE ABOVE SCALES MAY BE USED.

J.U.L.I.E.  
 JOINT UTILITY LOCATING INFORMATION FOR EXCAVATORS  
 1-800-892-0123 or 811 Website: <http://www.illinois1call.com>



*Gary L. Hahn* 10-08-2014  
 GARY L. HAHN  
 CENTRALIA, ILLINOIS  
 ILLINOIS LICENSED PROFESSIONAL  
 ENGINEER NO. 62-42606  
 EXPIRES NOV. 30, 2015



SECTION ENDS  
 STA. 50+96.42

SECTION 11-00122-00-BR INCLUDES THE CONSTRUCTION OF A SINGLE SPAN PRECAST PRESTRESSED CONCRETE DECK BEAM BRIDGE CARRYING FAS 720 (CH 10) OVER BUCK CREEK, 65'-4" BK. TO BK. ABUTMENTS X 28' WIDE. NO SKEW. EXISTING STRUCTURE NO. 026-3017 PROPOSED STRUCTURE NO. 026-3461

SECTION BEGINS  
 STA. 49+11.09

LOCATION: NEAR THE SE CORNER OF THE SW 1/4 OF THE NW 1/4, SECTION 14, T5N, R1W, 3RD P.M.  
 NET LENGTH OF PROJECT: 185.33 FT. = 0.035 MI.

FAYETTE COUNTY  
 HIGHWAY DEPARTMENT

APPROVED Oct 6, 2014  
*William W. [Signature]*  
 FAYETTE COUNTY, COUNTY ENGINEER

PASSED 11-13, 2014  
*Margaret [Signature]*  
 DISTRICT SEVEN ENGINEER OF LOCAL ROADS & STREETS

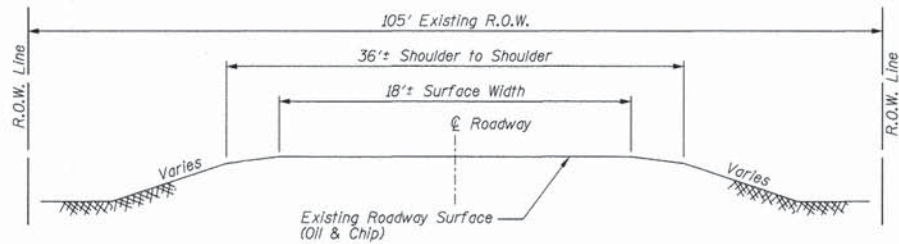
RELEASING FOR BID  
 BASED ON LIMITED  
 REVIEW 11-13, 2014  
*Robert [Signature]*  
 DEPUTY DIRECTOR OF HIGHWAYS, REGION FOUR ENGINEER

**PRINTED BY THE AUTHORITY  
 OF THE STATE OF ILLINOIS**

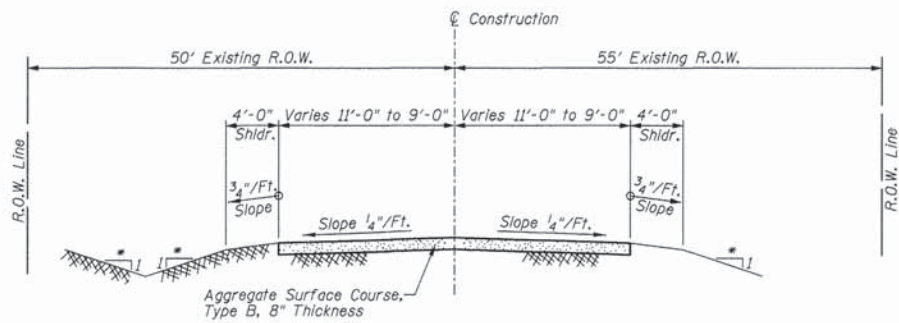
CONTRACT NO. 95748

| ROUTE  | SECTION        | COUNTY  | TOTAL SHEETS       | SHEET NO. |
|--|----------------|---------|--------------------|-----------|
| FAS 720                                      | 11-00122-00-BR | FAYETTE | 10                 | 1         |
| RAAI JOB NO. 51913 ILLINOIS FED. AID PROJECT |                |         | CONTRACT NO. 95748 |           |





**TYPICAL SECTION  
EXISTING APPROACH ROADWAY**

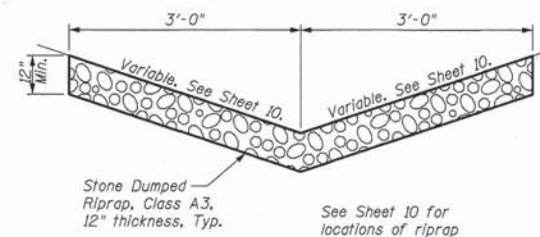


**TYPICAL SECTION  
PROPOSED APPROACH ROADWAY**

Looking Upstation  
\* Variable, See Sheet 10.

**GENERAL NOTES**

- This section shall be constructed according to the plans, the Special Provisions, and the "Standard Specifications for Road and Bridge Construction", adopted January 1, 2012.
- Any reference to a Standard in these plans shall be interpreted to mean the edition as indicated by the sub-number listed in the Index of Sheets or the copy of the Standard included in these plans.
- Roadway Centerline profiles refer to the finished surface.
- Existing utilities shown are located from surface observations or information provided by the respective utilities and must be considered approximate. There may be others, the exact location of which are unknown and not shown. The Contractor will be responsible for notifying the respective utilities before work is begun. Field marking of underground utilities may be obtained by providing a minimum of 48 hours advance notice through the J.U.L.I.E. system by calling 1-800-892-0123, 811, or by direct contact with non-members of J.U.L.I.E.
- The Aggregate Surface Course, Type B gradation shall be CA 6 or CA 10. Only crushed stone will be approved for use on this project.
- The nominal thickness for surface course is shown on the Typical Sections, Standards, Schedules, or Special Details. The constructed thickness of the above item shall not be less than 90 percent of the nominal thickness at any location.
- Factors used for quantity calculations are as follows:  
 Porous Granular Embankment 2.1 tons/cu. yd.  
 Stone Dumped Riprap 130 pounds/cu. ft.  
 Aggregate Surface Course 2.1 tons/cu. yd.
- Commitments: None as of August 31, 2014.



**TYPICAL SECTION  
PROPOSED RIPRAP DITCH**

**SUMMARY OF QUANTITIES**

| Code No.   | Item  | Unit  | Quantity |
|------------|---|-------|----------|
| 20100110   | TREE REMOVAL (6 TO 15 UNITS DIAMETER)               | UNIT  | 25       |
| 20100210   | TREE REMOVAL (OVER 15 UNITS DIAMETER)               | UNIT  | 48       |
| 20200100   | EARTH EXCAVATION                                    | CU YD | 53       |
| 20300100   | CHANNEL EXCAVATION                                  | CU YD | 167      |
| 20400800   | FURNISHED EXCAVATION                                | CU YD | 31       |
| 28100805   | STONE DUMPED RIPRAP, CLASS A3                       | TON   | 30       |
| 28100807   | STONE DUMPED RIPRAP, CLASS A4                       | TON   | 174      |
| 40200800   | AGGREGATE SURFACE COURSE, TYPE B                    | TON   | 126      |
| 50100100   | REMOVAL OF EXISTING STRUCTURES                      | EACH  | 1        |
| 50300225   | CONCRETE STRUCTURES                                 | CU YD | 26.4     |
| 50300280   | CONCRETE ENCASEMENT                                 | CU YD | 2.8      |
| 50400505   | PRECAST PRESTRESSED CONCRETE DECK BEAMS (27" DEPTH) | SQ FT | 1792     |
| 50800105   | REINFORCEMENT BARS                                  | POUND | 4020     |
| * 50900205 | STEEL RAILING, TYPE S1                              | FOOT  | 132      |
| 51201600   | FURNISHING STEEL PILES HP12X53                      | FOOT  | 441      |
| 51202305   | DRIVING PILES                                       | FOOT  | 441      |
| 51203600   | TEST PILE STEEL HP12X53                             | EACH  | 1        |
| 51204650   | PILE SHOES  | EACH  | 8        |
| 51500100   | NAME PLATES   | EACH  | 1        |
| 59300100   | CONTROLLED LOW-STRENGTH MATERIAL                    | CU YD | 51.0     |
| * 63100075 | TRAFFIC BARRIER TERMINAL, TYPE 5A                   | EACH  | 2        |
| * 63100167 | TRAFFIC BARRIER TERMINAL, TYPE 1 (SPECIAL) TANGENT  | EACH  | 2        |
| 67100100   | MOBILIZATION  | L SUM | 1        |
| * 78201000 | TERMINAL MARKER - DIRECT APPLIED                    | EACH  | 4        |
| X2501000   | SEEDING, CLASS 2 (SPECIAL)                          | ACRE  | 0.1      |

\* Specialty Item

**UTILITIES**

J.U.L.I.E.: Design Phase Locate  
Dig No.: X2271244  
  
Telephone: Frontier Communications  
Contact: Mark Burks  
Phone: 217-854-2222  
  
Electric: Southwestern Electric  
Contact: Kim Jackson  
Phone: 618-664-5922

**RHUTASEL and ASSOCIATES, INC.**  
CONSULTING ENGINEERS • LAND SURVEYORS  
CENTRALIA, ILLINOIS FREEBURG, ILLINOIS  
ILLINOIS DESIGN FIRM LICENSE NO. 184-000287

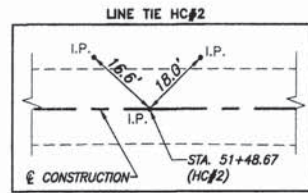
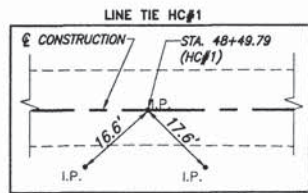
|                   |           |
|-------------------|-----------|
| DESIGNED - BLT    | REVISED - |
| DRAWN - JN        | REVISED - |
| CHECKED - GLH     | REVISED - |
| DATE - 10/08/2014 | REVISED - |

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**SUMMARY OF QUANTITIES, GENERAL NOTES, AND TYPICAL SECTIONS  
STRUCTURE NO. 026-3461**

|                    |                |         |                           |           |
|--------------------|----------------|---------|---------------------------|-----------|
| ROUTE              | SECTION        | COUNTY  | TOTAL SHEETS              | SHEET NO. |
| FAS T20            | 11-00122-00-BR | FAYETTE | 10                        | 2         |
| RAAT JOB NO. 51913 |                |         | ILLINOIS FED. AID PROJECT |           |
|                    |                |         | CONTRACT NO. 95748        |           |





**TREE REMOVAL (6 TO 15 UNITS DIAMETER)**

| LOCATION            | UNIT |
|---------------------|------|
| 34' RT., STA. 49+22 | 7    |
| 32' RT., STA. 49+61 | 8    |
| 30' LT., STA. 49+82 | 10   |

**TREE REMOVAL (OVER 15 UNITS DIAMETER)**

| LOCATION            | UNIT |
|---------------------|------|
| 32' RT., STA. 49+67 | 16   |
| 33' RT., STA. 49+67 | 16   |
| 34' RT., STA. 49+76 | 16   |

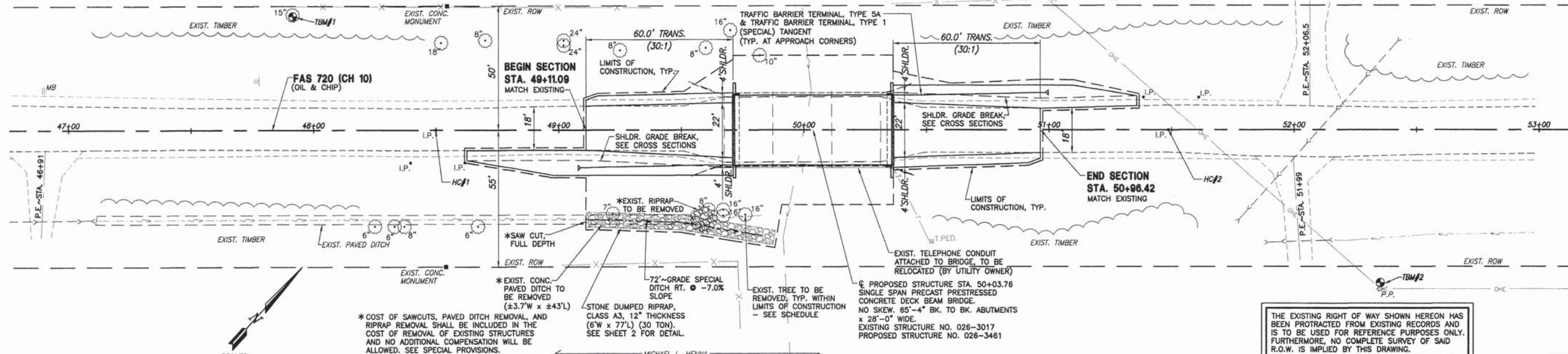
NOTE: ANY PRUNING OF THE EXIST. TREE CANOPY TO FACILITATE CONSTRUCTION SHALL BE INCLUDED IN THE CONTRACT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

**EARTHWORK SCHEDULE**

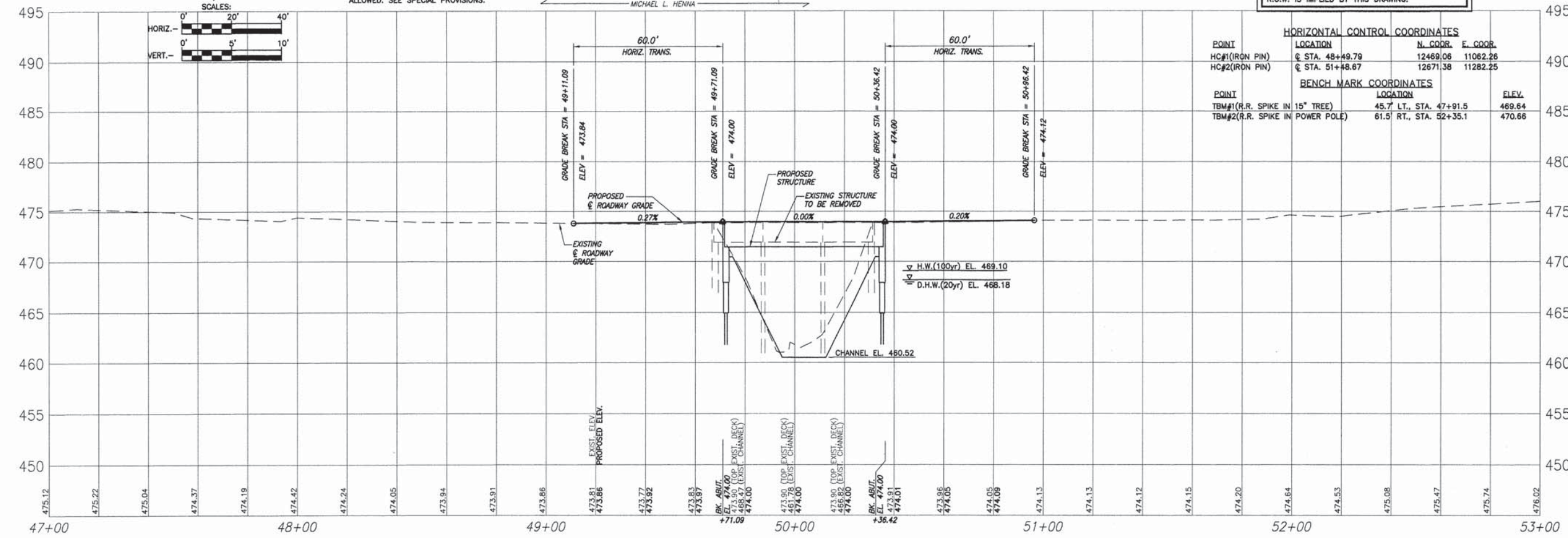
| LOCATION   | EARTH EXCAVATION CU. YD. | EARTH EXCAVATION ADJUSTED FOR SHRINKAGE* CU. YD. | EMBANKMENT CU. YD. | EARTHWORK BALANCE** WASTE (+) OR SHORTAGE (-) CU. YD. |
|--|--------------------------|--|--------------------|---|
| STA. 49+11.09 TO STA. 49+71.09                       | 15                       | 11   | 67                 | -56   |
| STA. 50+36.42 TO STA. 50+96.42                       | 33                       | 25   | 2                  | 23  |
| RT., STA. 48+62.5± TO STA. 49+11.09 (SHLDR. FOR TBT) | 1                        | 0  | 1                  | -1  |
| LT., STA. 50+96.42 TO STA. 51+35.8± (SHLDR. FOR TBT) | 4                        | 3  | 0                  | 3   |
| <b>TOTAL</b>   | <b>53</b>                | <b>39</b>  | <b>70</b>          | <b>-31</b>  |

\*25% SHRINKAGE      \*\*FURNISHED EXCAVATION

EXISTING STRUCTURE: S.N. 026-3017 STA. 49+99.45, THREE SPAN BRIDGE WITH PRECAST REINFORCED CONC. CHANNEL DECK BEAMS ON TIMBER PILE BENT ABUTMENTS WITH CONC. CAPS AND PRECAST CONC. PILE BENT PIERS WITH CONC. CAPS. 65.8'x30'W. TO BE REMOVED. SEE SPECIAL PROVISIONS.



THE EXISTING RIGHT OF WAY SHOWN HEREON HAS BEEN PROTRACTED FROM EXISTING RECORDS AND IS TO BE USED FOR REFERENCE PURPOSES ONLY. FURTHERMORE, NO COMPLETE SURVEY OF SAID R.O.W. IS IMPLIED BY THIS DRAWING.



**HORIZONTAL CONTROL COORDINATES**

| POINT           | LOCATION        | N. COOR. | E. COOR. |
|-----------------|-----------------|----------|----------|
| HC#1 (IRON PIN) | @ STA. 48+49.79 | 12489.06 | 11062.26 |
| HC#2 (IRON PIN) | @ STA. 51+48.87 | 12671.38 | 11282.25 |

**BENCH MARK COORDINATES**

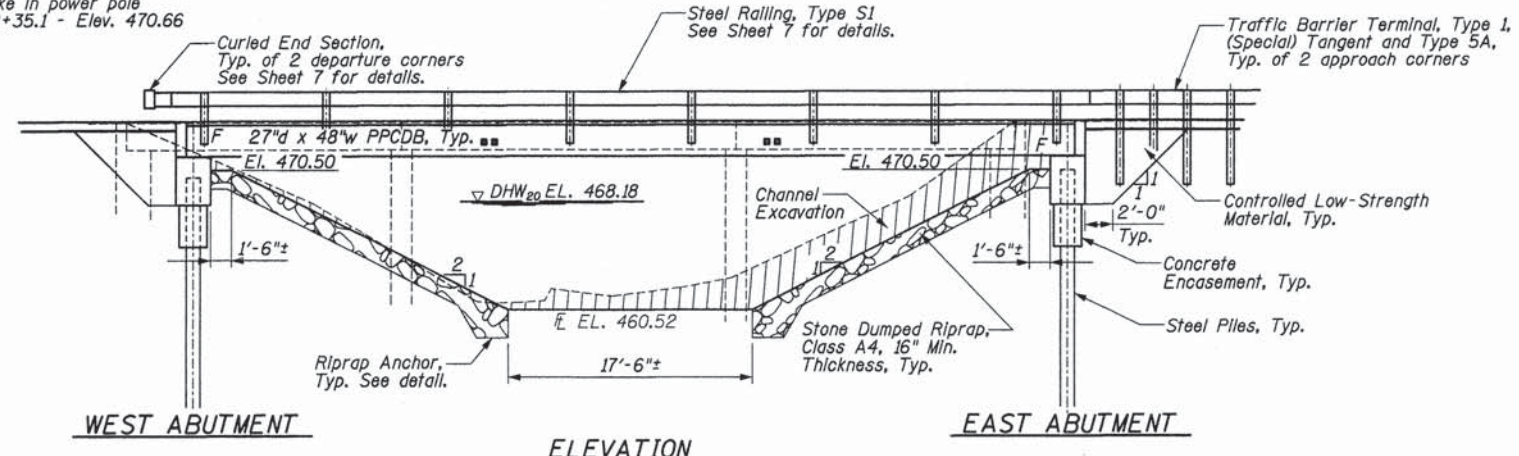
| POINT                            | LOCATION                | ELEV.  |
|----------------------------------|-------------------------|--------|
| TBM#1 (R.R. SPIKE IN 15" TREE)   | 45.7' LT., STA. 47+91.5 | 469.64 |
| TBM#2 (R.R. SPIKE IN POWER POLE) | 61.5' RT., STA. 52+35.1 | 470.66 |



TBM#1 - RR spike in 15" tree  
45.7' Lt., Sta. 47+91.5 - Elev. 469.64

TBM#2 - RR spike in power pole  
61.5' Rt., Sta. 52+35.1 - Elev. 470.66

Existing Structure: S.N. 026-3017 Sta. 49+99.45, three span bridge with precast reinforced concrete channel deck beams on timber pile bent abutments with concrete caps and precast concrete pile bent pliers with concrete caps. 65.8'Lx30'W. To be removed. See Special Provisions.



**LOADING HL-93**  
50#/sq. ft. Included in dead load for future wearing surface.

**DESIGN SPECIFICATIONS**  
2010 (5th Ed.) AASHTO LRFD Bridge Design Specifications

**DESIGN STRESSES**

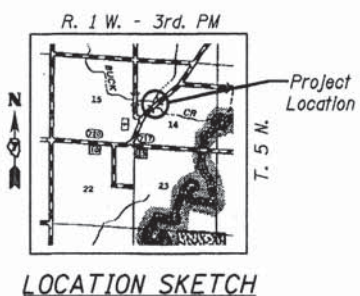
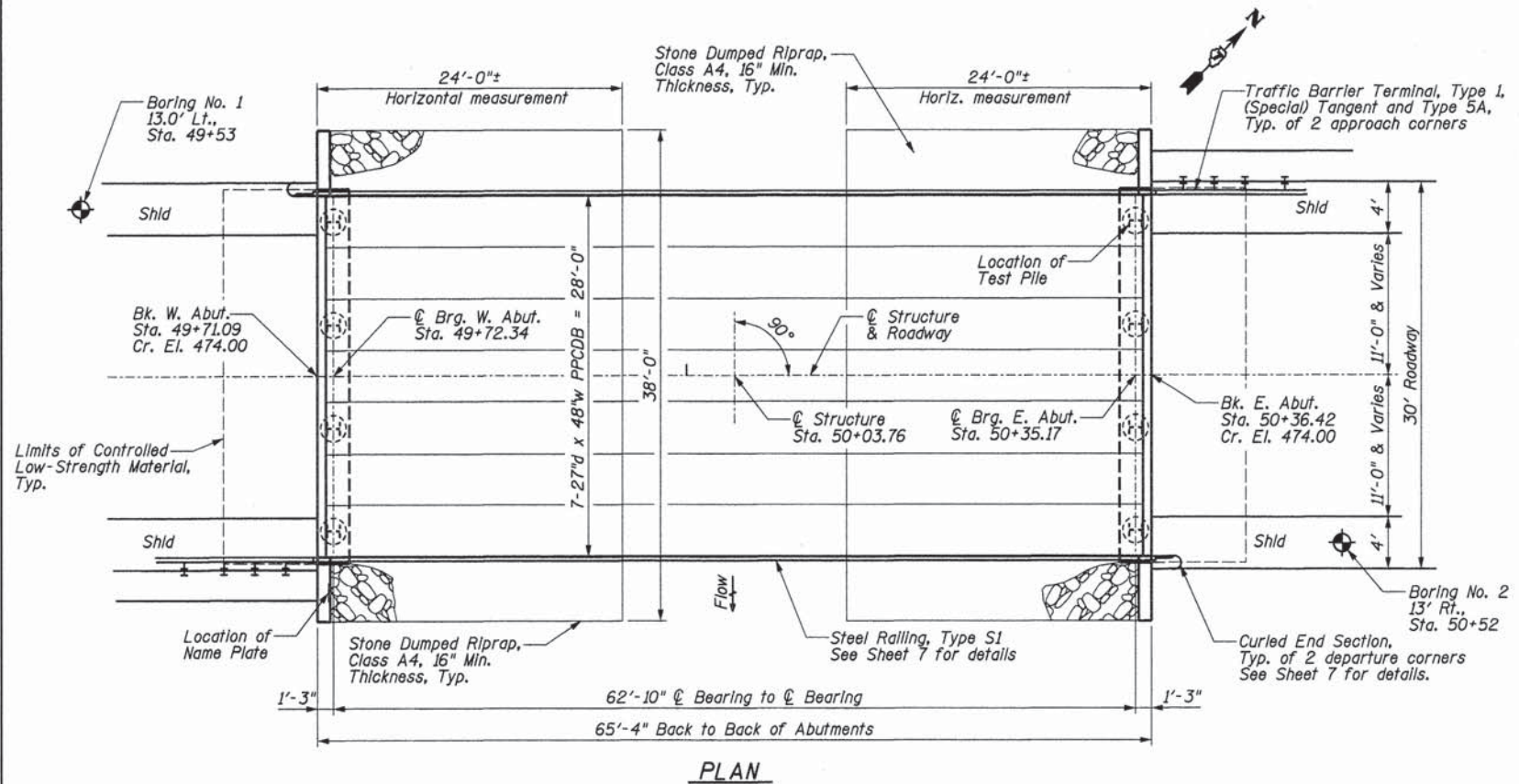
**FIELD UNITS**  
 $f'_c = 3,500$  psi  
 $f_y = 60,000$  psi (reinforcement)

**PRECAST PRESTRESSED UNITS**  
 $f'_c = 6,000$  psi  
 $f'_{ci} = 5,000$  psi  
 $f_{pu} = 270,000$  psi ( $\frac{1}{2}$ "  $\phi$  low lax. strands)  
 $f_{pbt} = 201,960$  psi ( $\frac{1}{2}$ "  $\phi$  low lax. strands)  
 $f_y = 60,000$  psi (reinforcement)

**SEISMIC DATA**  
Seismic Performance Zone (SPZ) = 2  
Soil Site Classification = C  
 $S_{D1} = 0.169$   $S_{D5} = 0.426$

**BILL OF MATERIALS (BRIDGE ONLY)**

| ITEM                             | UNIT  | TOTAL |
|----------------------------------|-------|-------|
| Channel Excavation               | Cu Yd | 167   |
| Stone Dumped Riprap, Class A4    | Ton   | 174   |
| Removal of Existing Structures   | Each  | 1     |
| Concrete Structures              | Cu Yd | 26.4  |
| Concrete Encasement              | Cu Yd | 2.8   |
| PPCDB (27" Depth)                | Sq Ft | 1792  |
| Reinforcement Bars               | Pound | 4020  |
| Steel Railing, Type S1           | Foot  | 132   |
| Furnishing Steel Piles HP12x53   | Foot  | 441   |
| Driving Piles                    | Foot  | 441   |
| Test Pile Steel HP12x53          | Each  | 1     |
| Pile Shoes                       | Each  | 8     |
| Name Plates                      | Each  | 1     |
| Controlled Low-Strength Material | Cu Yd | 51.0  |



**GENERAL NOTES**

Layout of slope protection system may be varied in the field to suit ground conditions as directed by the Engineer.

Channel excavation shall be excavated as shown within the limits of the proposed bridge, then tapered to the existing channel at 30'± left and right of  $\phi$ . If the Engineer deems the material satisfactory, it may be used to construct the roadway embankment.

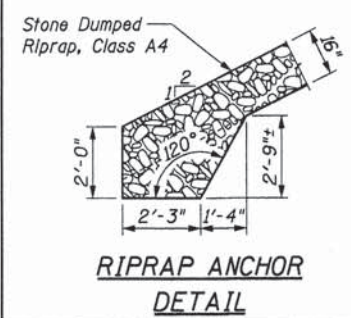
See Section 502 of the Standard Specifications for Structural Excavation.

See Special Provisions for Soil Borings.

Do not scale these drawings.

The abutment bearing seat surfaces for the precast prestressed concrete deck beams shall be adjusted by shimming to assure firm and even bearing. As required,  $\frac{1}{8}$ " fabric adjusting shims of the dimensions of the Exterior Bearing Pad shall be provided for each bearing. The top surface of the beams shall be finished according to the IDOT Manual for Fabrication of Precast Prestressed Concrete Products.

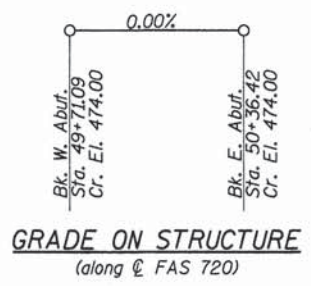
The Contractor is hereby advised that very stiff soils may be encountered prior to the location of anticipated nominal required bearing. See the soil borings for further information.



**WATERWAY INFORMATION**

Drainage Area = 4.28 sq. mi. Exlst. Low Grade Elev. 473.74 @ Sta. 49+50.00  
Prop. Low Grade Elev. 473.84 @ Sta. 49+11.09

| Flood  | Freq. Yr. | Q C.F.S. | Opening Sq. Ft. Exlst. Prop. | Nat. H.W.E. | Head - Ft. Exlst. Prop. | Headwater El. Exlst. Prop. |
|--------|-----------|----------|------------------------------|-------------|-------------------------|----------------------------|
| Design | 20        | 1475     | 223 251                      | 468.18      | 0.95 0.43               | 469.13 468.61              |
| Base   | 100       | 2240     | 269 297                      | 469.10      | 1.74 0.90               | 470.84 470.00              |
| Base   | 500       | 3070     | 313 339                      | 469.89      | 2.61 1.50               | 472.50 471.39              |



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



*William D. Lueking*  
William D. Lueking  
10/08/2014  
Date of Signing  
11/30/2016  
Date of License Expiration

STATION 50+03.76  
BUILT 201\_ BY  
FAYETTE COUNTY  
FAS 720 SEC. 11-00122-00-BR  
LOADING HL-93  
STRUCTURE NO. 026-3461

**NAME PLATE**  
See Std. 515001

**RHUTASEL and ASSOCIATES, INC.**  
CONSULTING ENGINEERS • LAND SURVEYORS  
CENTRALIA, ILLINOIS FREEBURG, ILLINOIS  
ILLINOIS DESIGN FIRM LICENSE NO. 184-000287

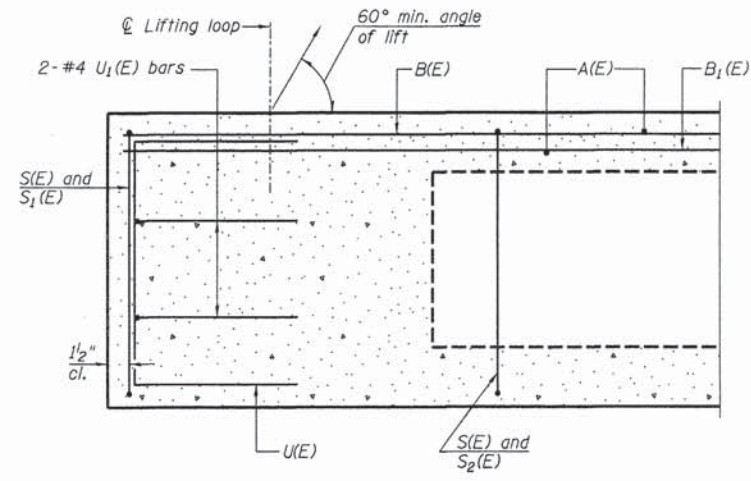
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| DESIGNED - BLT    | REVISED - |
| DRAWN - JN        | REVISED - |
| CHECKED - WDL     | REVISED - |
| DATE - 10/08/2014 | REVISED - |

**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

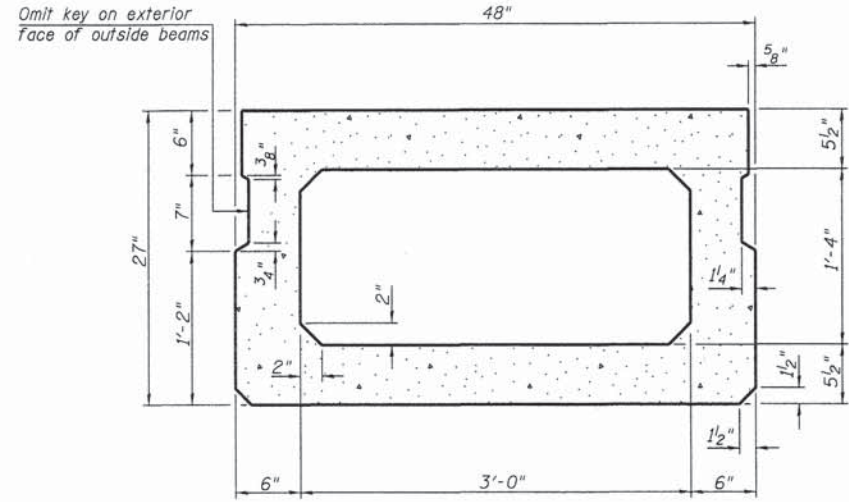
**GENERAL PLAN AND ELEVATION**  
**STRUCTURE NO. 026-3461**

| ROUTE              | SECTION        | COUNTY  | TOTAL SHEETS              | SHEET NO. |
|--------------------|----------------|---------|---------------------------|-----------|
| FAS 720            | 11-00122-00-BR | FAYETTE | 10                        | 4         |
| RAAI JOB NO. 51913 |                |         | ILLINOIS FED. AID PROJECT |           |

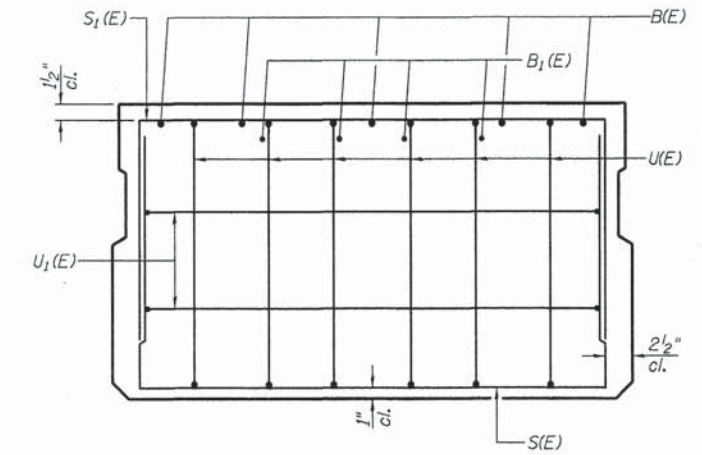




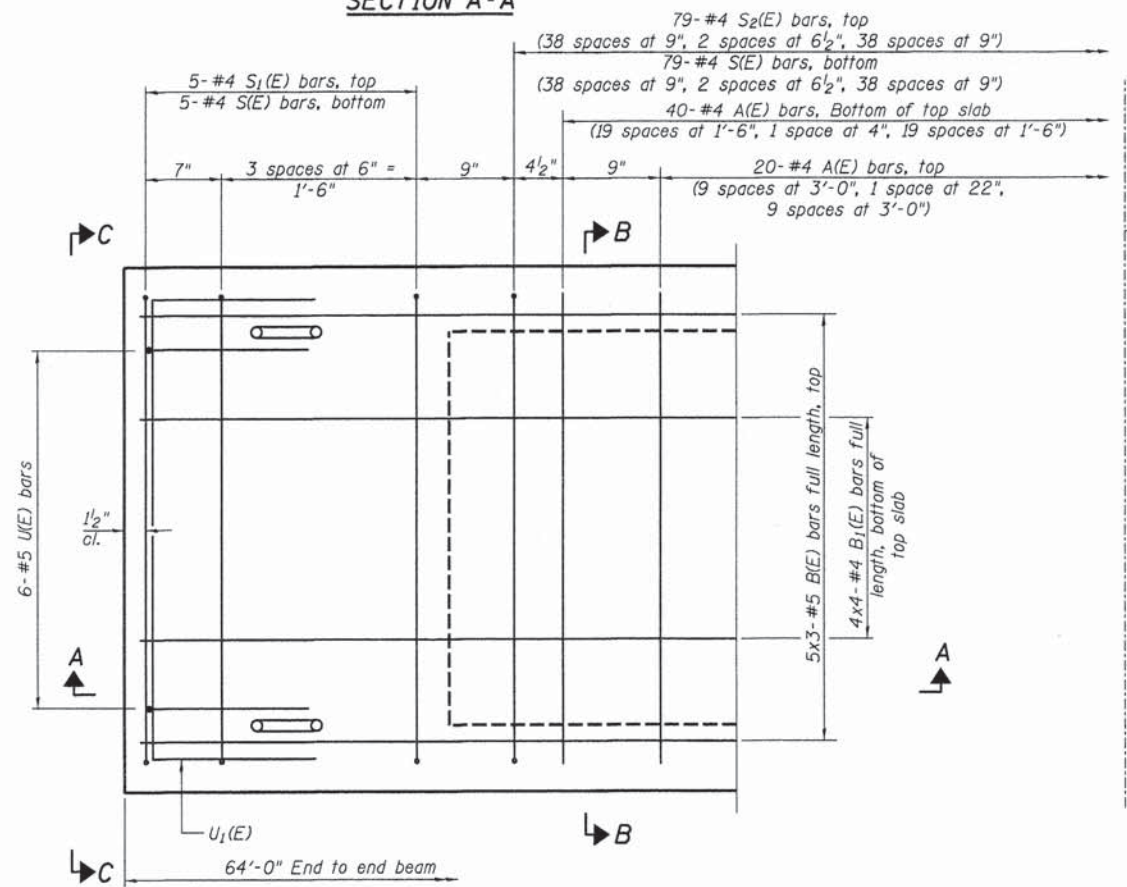
**SECTION A-A**



**SECTION B-B**  
(Showing dimensions)



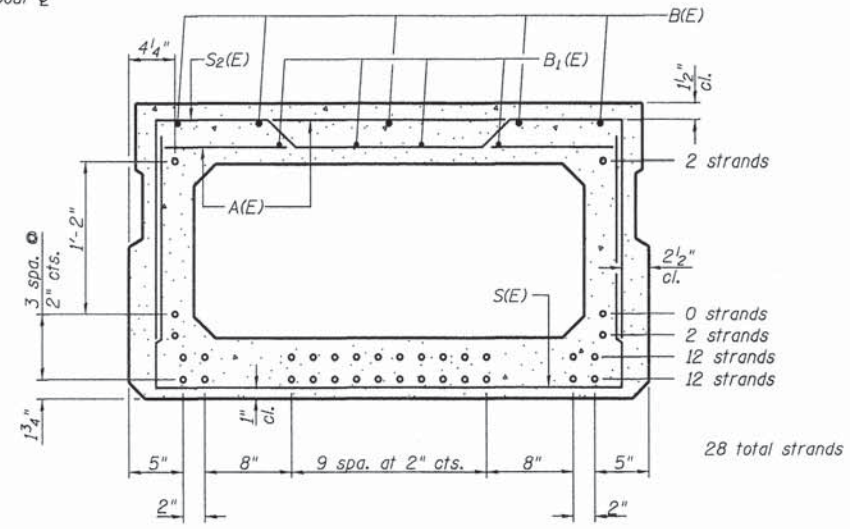
**VIEW C-C**



**PLAN VIEW**

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

Symmetrical about  $\phi$



**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.

**MINIMUM BAR LAP**

#4 bar = 2'-0"  
#5 bar = 2'-6"

**BAR LIST**  
**ONE BEAM ONLY**

(For information only)

| Bar   | No. | Size | Length  | Shape |
|-------|-----|------|---------|-------|
| A(E)  | 60  | #4   | 3'-7"   | —     |
| B(E)  | 15  | #5   | 22'-11" | —     |
| B1(E) | 16  | #4   | 17'-6"  | —     |
| S(E)  | 89  | #4   | 7'-5"   | U     |
| S1(E) | 10  | #4   | 6'-11"  | U     |
| S2(E) | 79  | #4   | 7'-2"   | U     |
| U(E)  | 12  | #5   | 4'-6"   | C     |
| U1(E) | 4   | #4   | 6'-0"   | C     |

Note: See Sheet 6 for additional details and Bill of Material.

**RHUTASEL and ASSOCIATES, INC.**  
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CENTRALIA, ILLINOIS      FREEBURG, ILLINOIS  
ILLINOIS DESIGN FIRM LICENSE NO. 184-000287

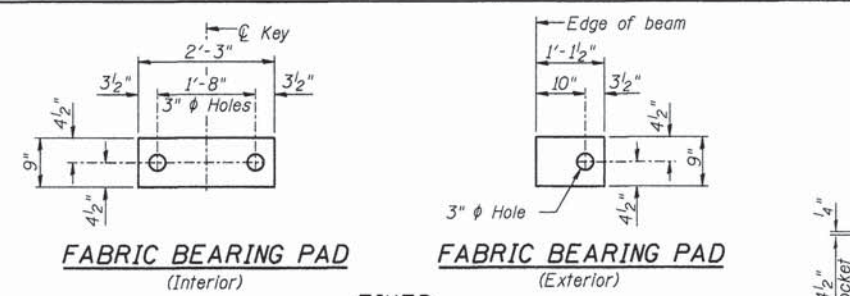
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|-------------------|-----------|
| DESIGNED - BLT    | REVISED - |
| DRAWN - JN        | REVISED - |
| CHECKED - WDL     | REVISED - |
| DATE - 10/08/2014 | REVISED - |

**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**PRECAST PRESTRESSED CONCRETE DECK BEAM DETAILS**  
**STRUCTURE NO. 026-3461**

|                    |                |         |                           |           |
|--------------------|----------------|---------|---------------------------|-----------|
| ROUTE              | SECTION        | COUNTY  | TOTAL SHEETS              | SHEET NO. |
| FAS 720            | 11-00122-00-BR | FAYETTE | 10                        | 5         |
| RAAI JOB NO. 51913 |                |         | ILLINOIS FED. AID PROJECT |           |
|                    |                |         | CONTRACT NO. 95748        |           |

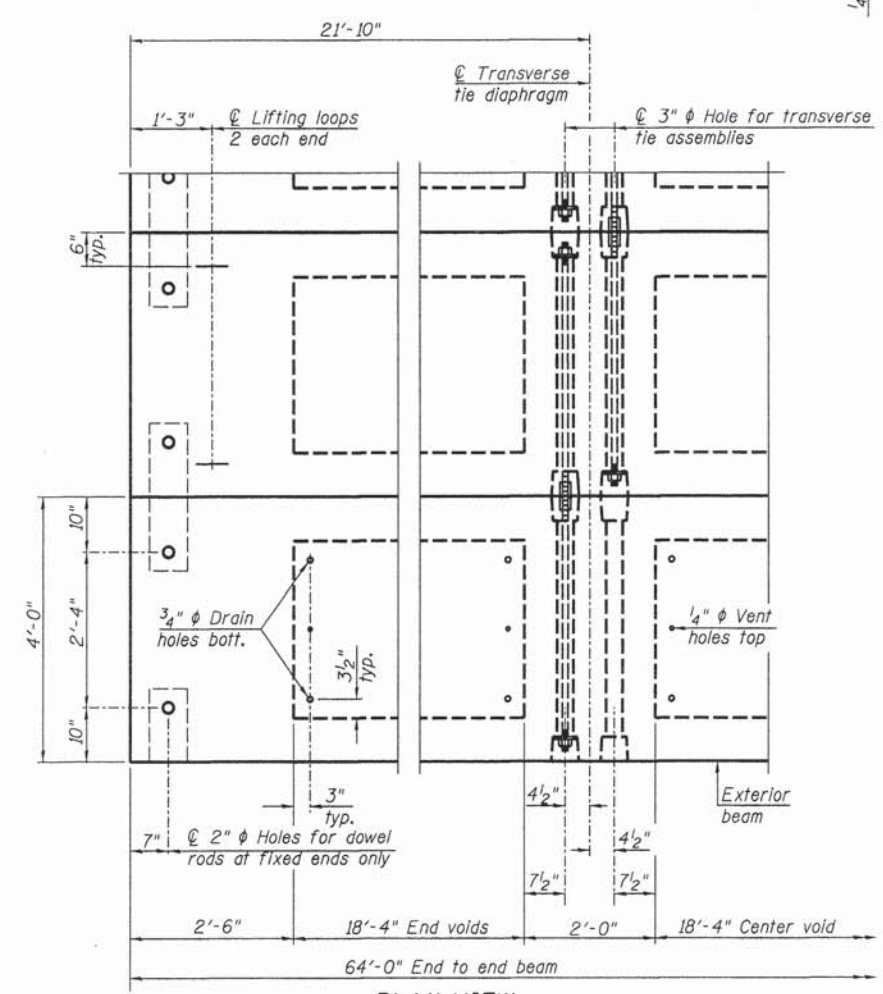




**FABRIC BEARING PAD**  
(Interior)      **FABRIC BEARING PAD**  
(Exterior)

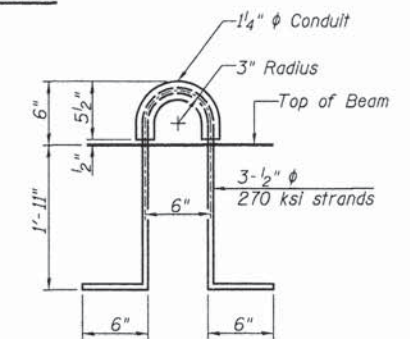
**FIXED**

Notes: All bearing pads shall be 1" thick.

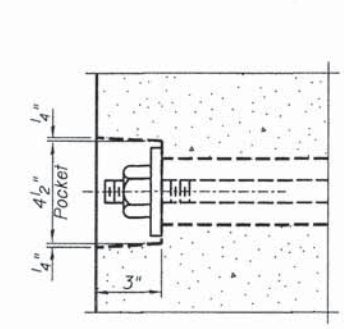


**PLAN VIEW**

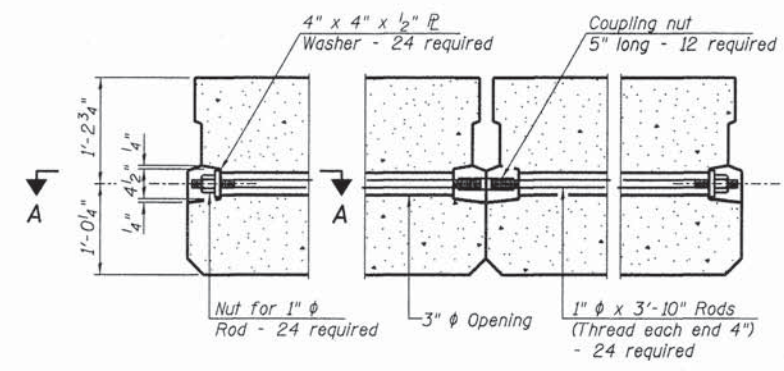
Note: Connect beams in pairs with the transverse tie configuration shown.



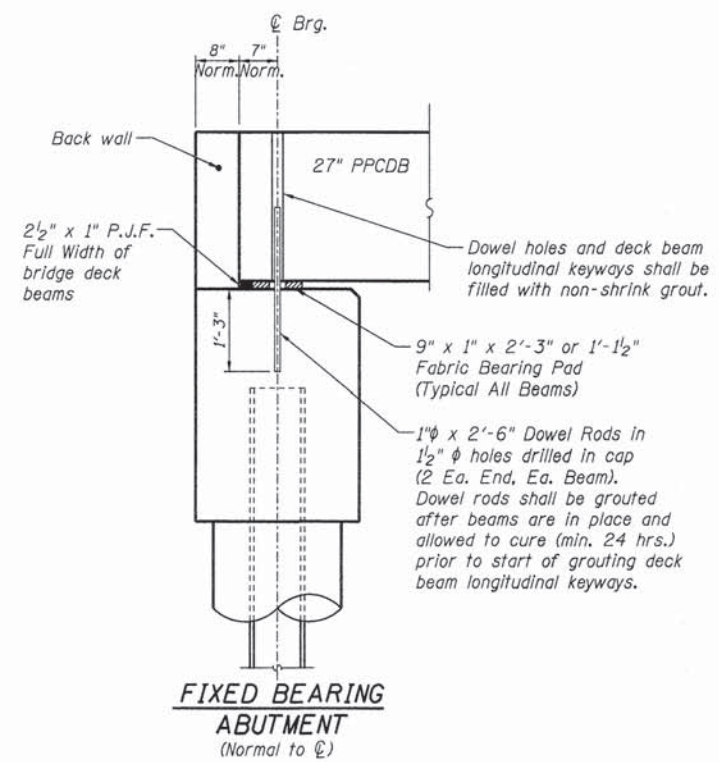
**LIFTING LOOP DETAIL**



**SECTION A-A**



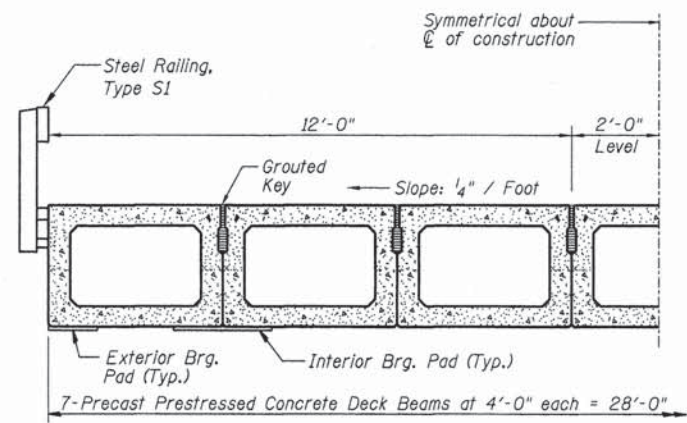
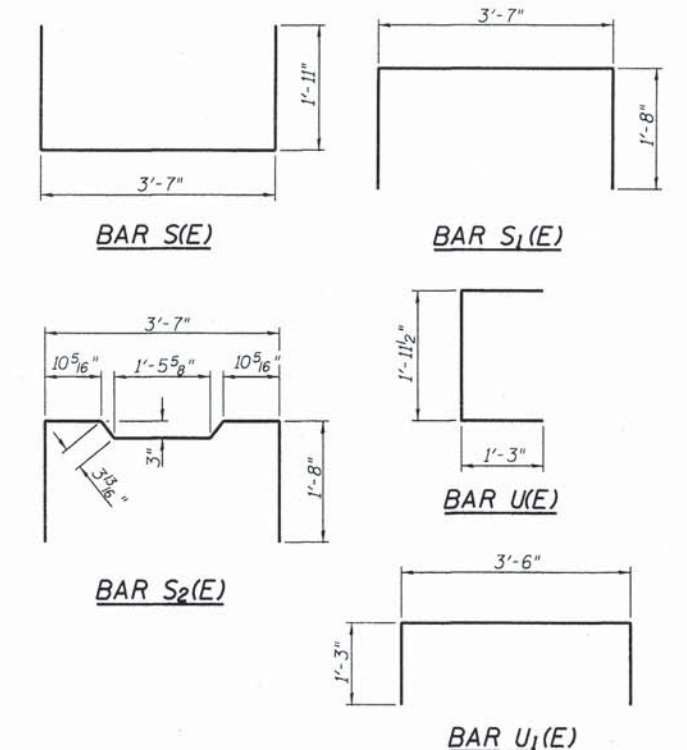
**TYPICAL TRANSVERSE TIE ASSEMBLY**



**FIXED BEARING ABUTMENT**  
(Normal to  $\bar{C}$ )

**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"  $\phi$  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, 1L Modified. Two 1/2" fabric adjusting shims of the dimensions of the exterior bearing pad shall be provided for each bearing pad location. A minimum 2 1/2"  $\phi$  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.



**HALF CROSS SECTION**

See Sheet 7 for the details showing the spacing and mounting of posts and rails to the PPCDB.

**BILL OF MATERIAL**

|  |         |      |
|--|---------|------|
| Precast Prestressed Concrete Deck Beams, (27" depth) | Sq. Ft. | 1792 |
|--|---------|------|

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ILLINOIS DESIGN FIRM LICENSE NO. 184-000287

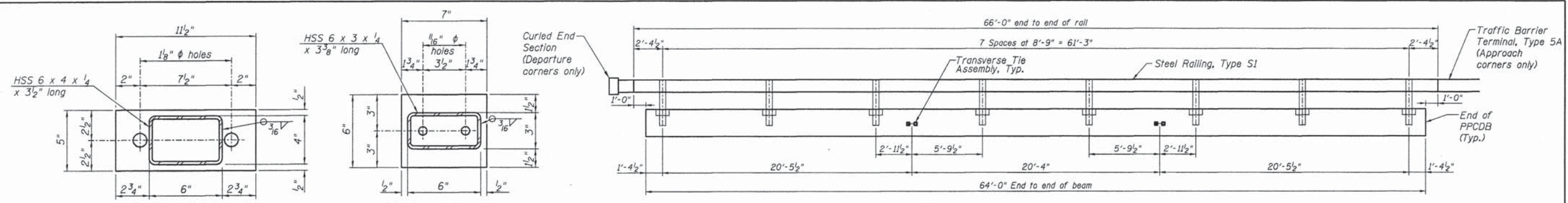
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|-------------------|-----------|
| DESIGNED - BLT    | REVISED - |
| DRAWN - JN        | REVISED - |
| CHECKED - WDL     | REVISED - |
| DATE - 10/08/2014 | REVISED - |

**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**PRECAST PRESTRESSED CONCRETE DECK BEAM DETAILS**  
**STRUCTURE NO. 026-3461**

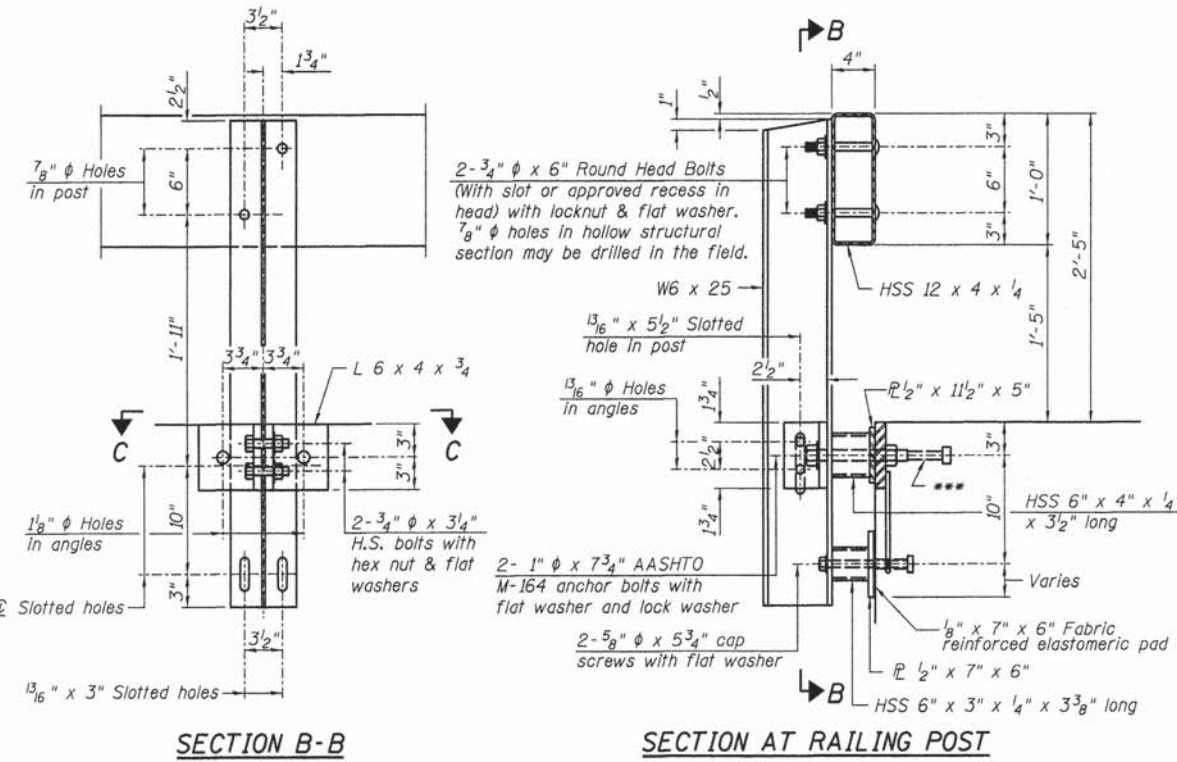
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|--------------------|----------------|---------|---------------------------|-----------|
| ROUTE              | SECTION        | COUNTY  | TOTAL SHEETS              | SHEET NO. |
| FAS 720            | 11-00122-00-BR | FAYETTE | 10                        | 6         |
| RAAI JOB NO. 51913 |                |         | ILLINOIS FED. AID PROJECT |           |
|                    |                |         | CONTRACT NO. 95748        |           |





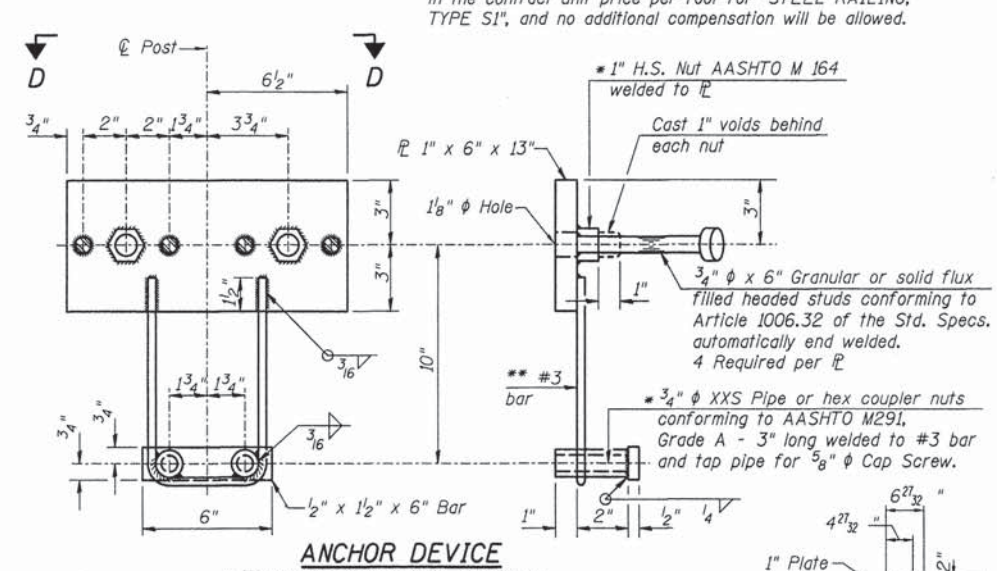
**ELEVATION**

Note: The cost of the Curled End Sections shall be included in the contract unit price per foot for "STEEL RAILING, TYPE S1", and no additional compensation will be allowed.



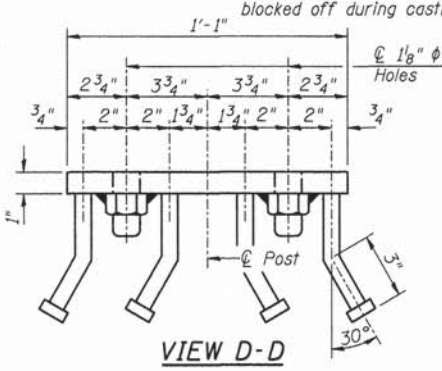
**SECTION B-B**

**SECTION AT RAILING POST**

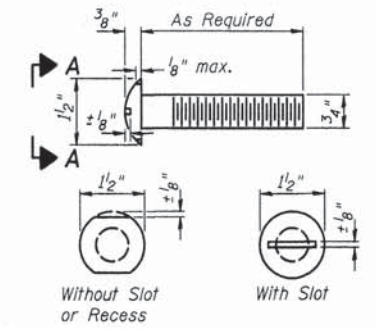


**ANCHOR DEVICE**

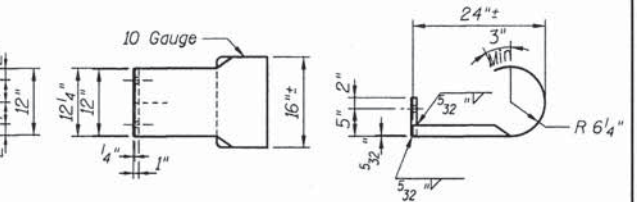
\* Threaded areas shall be plugged or blocked off during casting of beam.



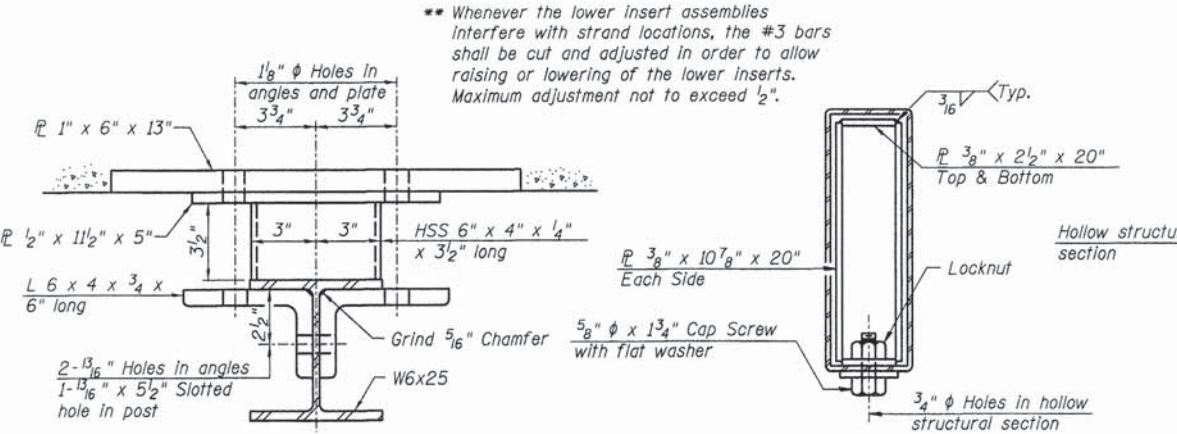
**PLAN-BOTT. SPLICE TYPICAL**



**VIEW A-A ROUND HEAD BOLT**

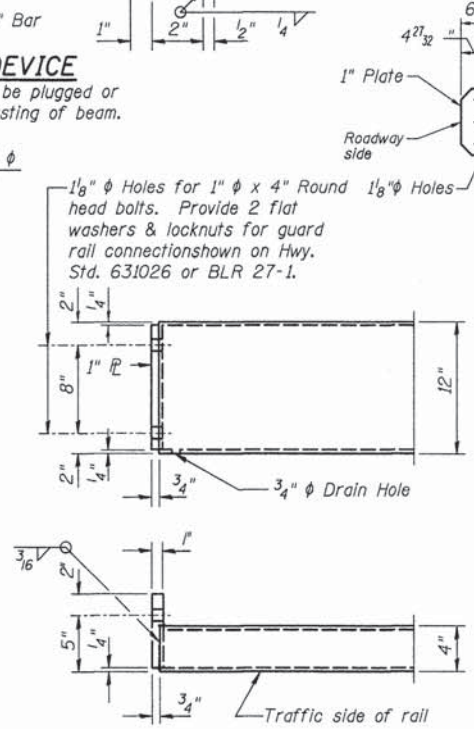


**CURLLED END SECTION DETAILS**



**SECTION C-C**

**SECTIONS AT RAIL SPLICE**



**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 Railing, Type S1.  
 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.

**BILL OF MATERIAL**

| Item                   | Unit | Quantity |
|------------------------|------|----------|
| Steel Railing, Type S1 | Foot | 132      |

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 ILLINOIS DESIGN FIRM LICENSE NO. 184-000287

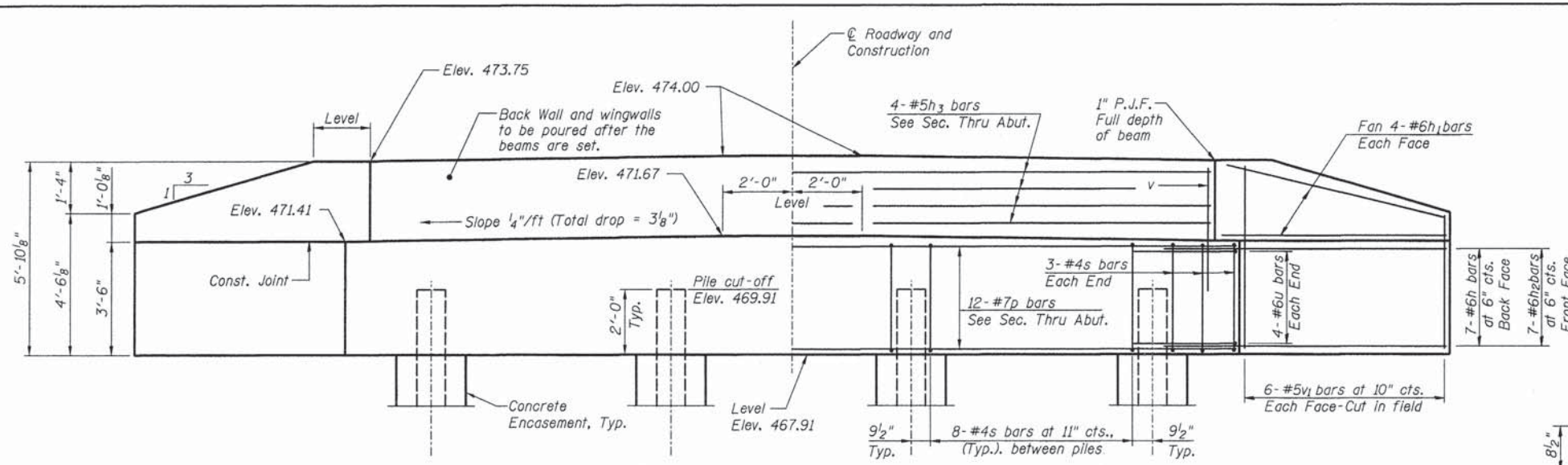
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|-------------------|-----------|
| DESIGNED - BLT    | REVISED - |
| DRAWN - JN        | REVISED - |
| CHECKED - WDL     | REVISED - |
| DATE - 10/08/2014 | REVISED - |

**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

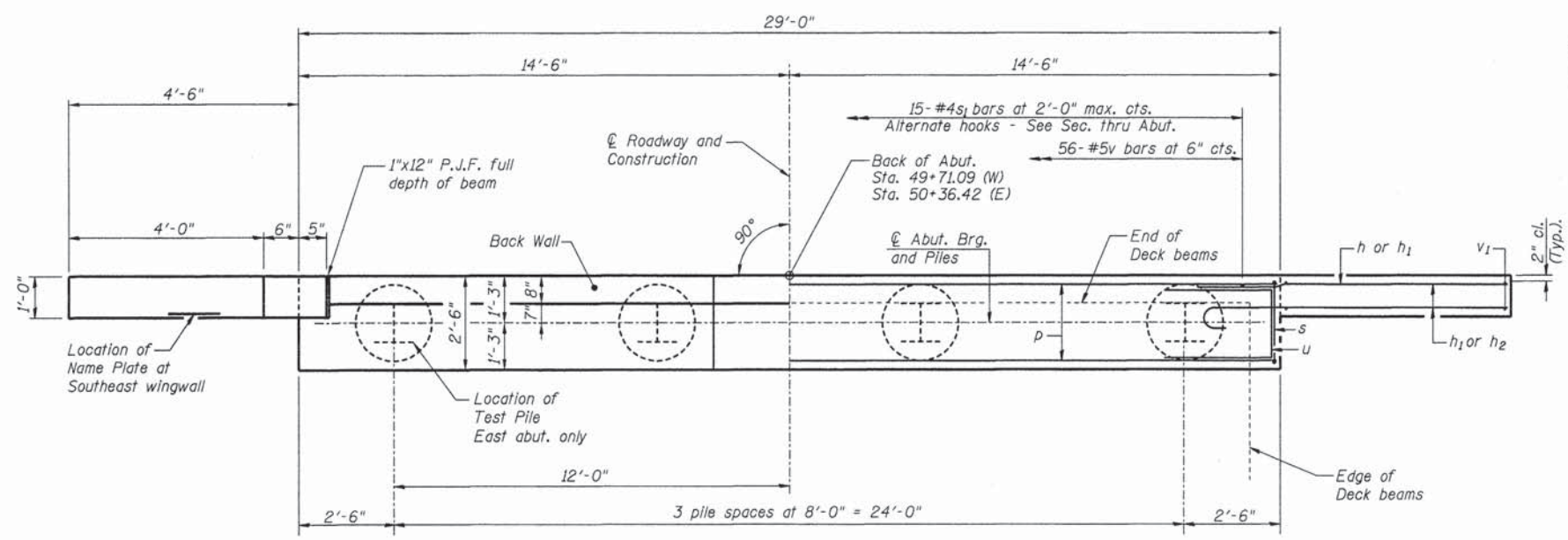
**STEEL RAILING, TYPE S1 DETAILS**  
**STRUCTURE NO. 026-3461**

| ROUTE              | SECTION        | COUNTY  | TOTAL SHEETS | SHEET NO.                 |
|--------------------|----------------|---------|--------------|---------------------------|
| FAS 720            | 11-00122-00-BR | FAYETTE | 10           | 7                         |
| RAAI JOB NO. S1913 |                |         |              | ILLINOIS FED. AID PROJECT |
| CONTRACT NO. 95748 |                |         |              |                           |

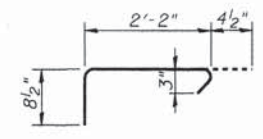




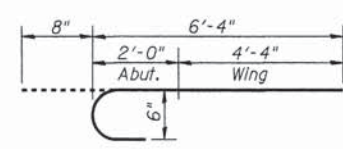
**ELEVATION**



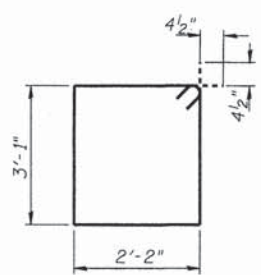
**PLAN**



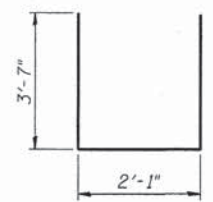
**BAR s1**



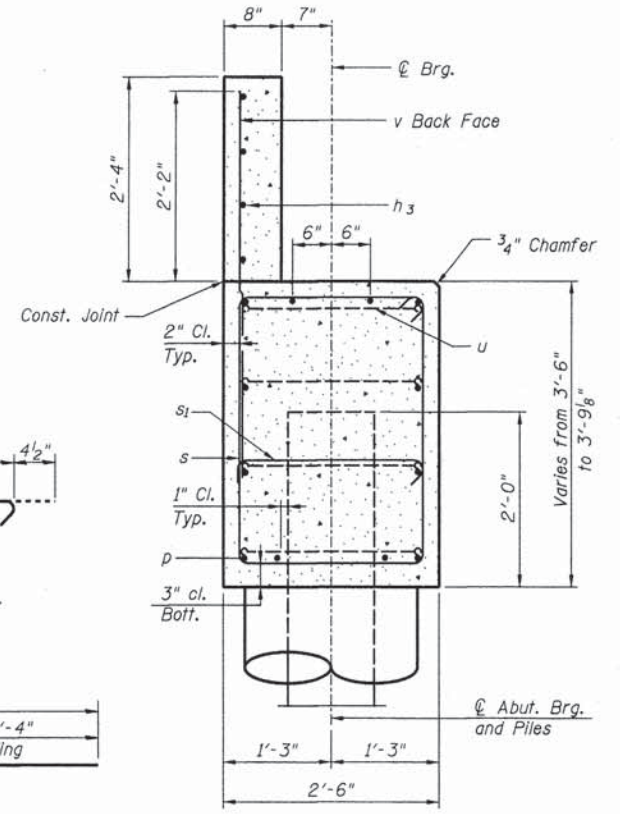
**BAR h2**



**BAR s**



**BAR u**



**SEC. THRU ABUT. (Normal to C)**

**PILE DATA WEST ABUTMENT**

Type: Steel HP12x53  
 Nominal Required Bearing: 419 kips  
 Factored Resistance Available: 230 kips  
 Estimated Length: 63'/pile  
 No. Production Piles w/Pile Shoes: 4  
 No. Test Piles w/Pile Shoes: 0

**PILE DATA EAST ABUTMENT**

Type: Steel HP12x53  
 Nominal Required Bearing: 419 kips  
 Factored Resistance Available: 230 kips  
 Estimated Length: 63'/pile  
 No. Production Piles w/Pile Shoes: 3  
 No. Test Piles w/Pile Shoes: 1

**GENERAL NOTES**

Reinforcement bars shall conform to the requirements of ASTM A 706 Grade 60 (IL Modified).  
 All exposed edges shall have standard 3/4" chamfer, unless otherwise noted or as directed by the Engineer.  
 All clearances between rebar and form surface shall be 2", unless otherwise noted.  
 Space reinforcement in cap to miss PPCDB dowel rods.  
 The Steel H-piles shall be according to AASHTO M270, Grade 50.  
 The Contractor shall drive one (1) Steel HP12x53 Test Pile in a production location as indicated on the plans and as directed by the Engineer before ordering the remainder of the piles.  
 The Test Pile shall be driven to 110 percent of the Nominal Required Bearing indicated in the pile data information.  
 The Contractor is hereby advised that very stiff soils may be encountered prior to the location of anticipated nominal required bearing. See the soil borings for further information.

**BILL OF MATERIAL FOR ONE ABUTMENT**

| Bar                             | No.  | Size     | Length | Shape |
|---------------------------------|------|----------|--------|-------|
| h                               | 14   | #6       | 8'-0"  | —     |
| h1                              | 16   | #6       | 4'-8"  | —     |
| h2                              | 14   | #6       | 7'-0"  | —     |
| h3                              | 4    | #5       | 27'-8" | —     |
| p                               | 12   | #7       | 28'-8" | —     |
| s                               | 30   | #4       | 11'-3" | □     |
| s1                              | 15   | #4       | 3'-3"  | —     |
| u                               | 8    | #6       | 9'-3"  | —     |
| v                               | 56   | #5       | 4'-4"  | —     |
| v1                              | 24   | #5       | 5'-6"  | —     |
| Concrete Structures             |      | Cu Yd    | 13.2   |       |
| Concrete Encasement             |      | Cu Yd    | 1.4    |       |
| Reinforcement Bars              |      | Pound    | 2010   |       |
| Furnishing Steel Piles, HP12x53 | Foot | W. Abut. | 252    |       |
|                                 |      | E. Abut. | 189    |       |
| Driving Piles                   | Foot | W. Abut. | 252    |       |
|                                 |      | E. Abut. | 189    |       |
| Test Pile, Steel HP12x53        | Each | W. Abut. | 0      |       |
|                                 |      | E. Abut. | 1      |       |
| Pile Shoes                      | Each | W. Abut. | 4      |       |
|                                 |      | E. Abut. | 4      |       |

For details of piles and Concrete Encasement, see HP Pile Details sheet.

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 ILLINOIS DESIGN FIRM LICENSE NO. 184-000287

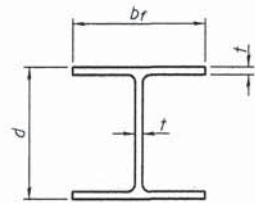
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|-------------------|-----------|
| DESIGNED - BLT    | REVISED - |
| DRAWN - JN        | REVISED - |
| CHECKED - WDL     | REVISED - |
| DATE - 10/08/2014 | REVISED - |

**STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION**

**ABUTMENT DETAILS STRUCTURE NO. 026-3461**

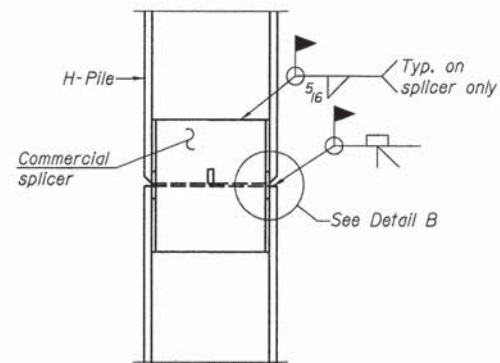
| ROUTE  | SECTION        | COUNTY  | TOTAL SHEETS | SHEET NO. |
|--|----------------|---------|--------------|-----------|
| FAS 720                                      | 11-00122-00-BR | FAYETTE | 10           | 8         |
| CONTRACT NO. 95748                           |                |         |              |           |
| RAAI JOB NO. 51913 ILLINOIS FED. AID PROJECT |                |         |              |           |



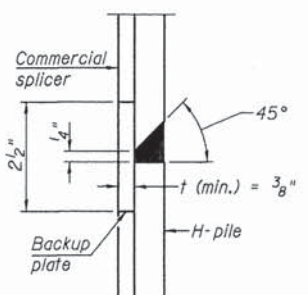


**STEEL PILE TABLE**

| Designation | Depth d | Flange width br | Web and Flange thickness t | Encasement diameter A |
|-------------|---------|-----------------|----------------------------|-----------------------|
| HP 14x117   | 14 1/4" | 14 7/8"         | 13/16"                     | 30"                   |
| x102        | 14"     | 14 3/4"         | 1/16"                      | 30"                   |
| x89         | 13 7/8" | 14 3/4"         | 5/8"                       | 30"                   |
| x73         | 13 5/8" | 14 5/8"         | 1/2"                       | 30"                   |
| HP 12x84    | 12 1/4" | 12 1/4"         | 11/16"                     | 24"                   |
| x74         | 12 1/8" | 12 1/4"         | 5/8"                       | 24"                   |
| x63         | 12"     | 12 1/8"         | 1/2"                       | 24"                   |
| x53         | 11 3/4" | 12"             | 7/16"                      | 24"                   |
| HP 10x57    | 10"     | 10 1/4"         | 9/16"                      | 24"                   |
| x42         | 9 3/4"  | 10 1/8"         | 7/16"                      | 24"                   |
| HP 8x36     | 8"      | 8 1/8"          | 7/16"                      | 18"                   |

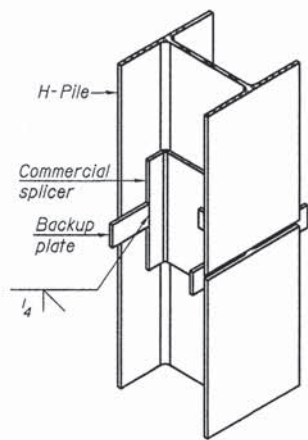


**ELEVATION**

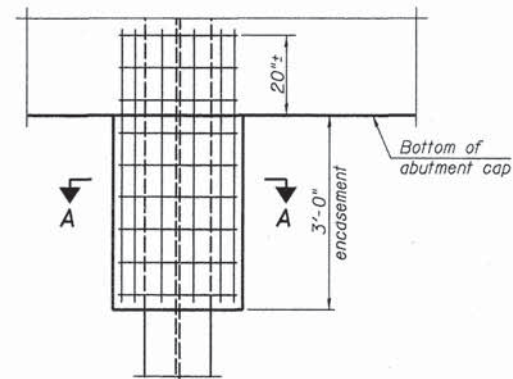


**DETAIL "B"**

**WELDED COMMERCIAL SPLICE**

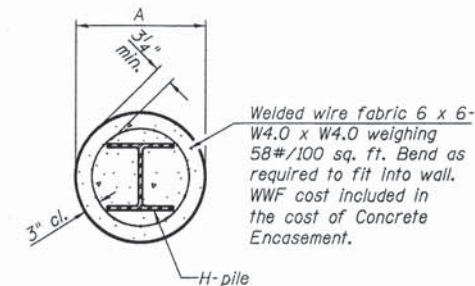


**ISOMETRIC VIEW**



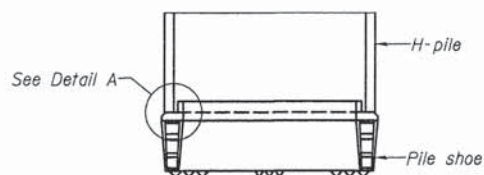
**ELEVATION**

**PILE ENCASEMENT**

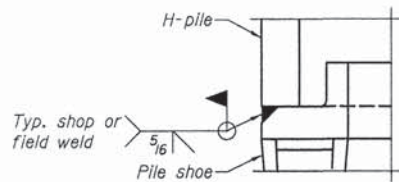


**SECTION A-A**

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

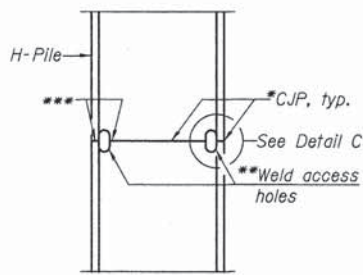


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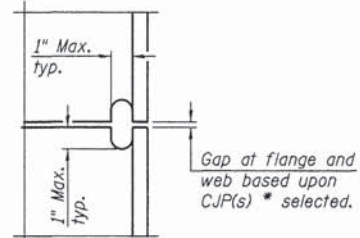
**DETAIL A**

**H-PILE SHOE ATTACHMENT**

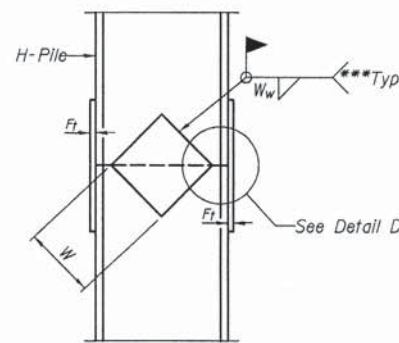


**ELEVATION**

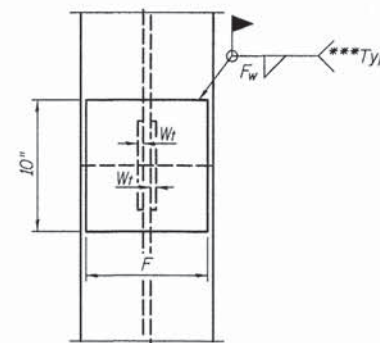
**COMPLETE PENETRATION WELD SPLICE**



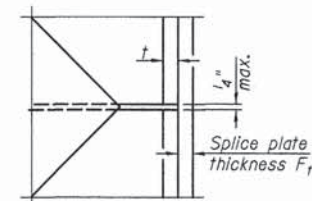
**DETAIL C**



**ELEVATION**



**END VIEW**



**DETAIL D**

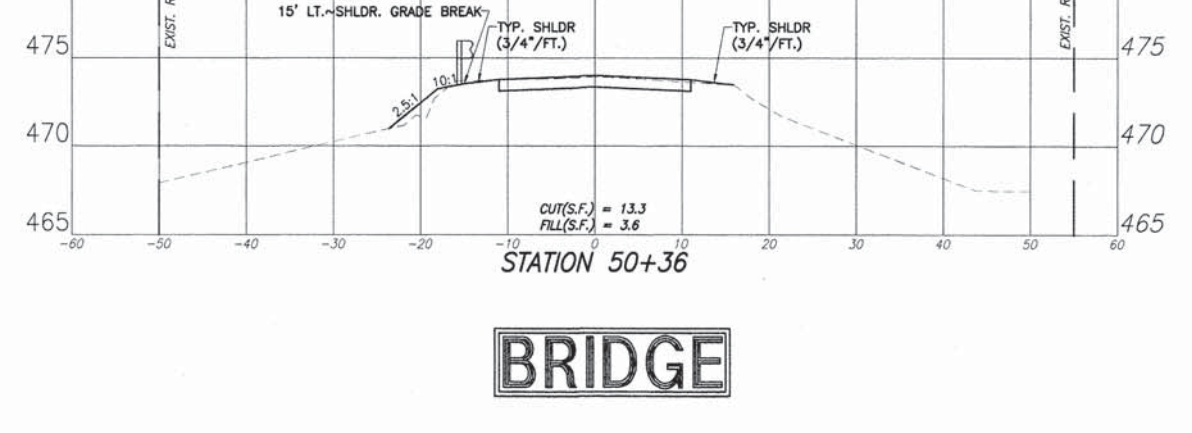
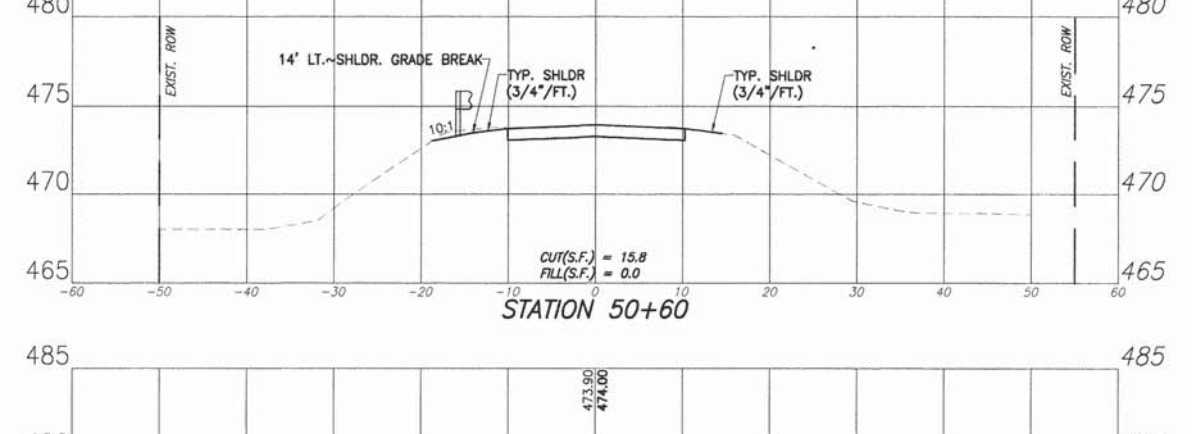
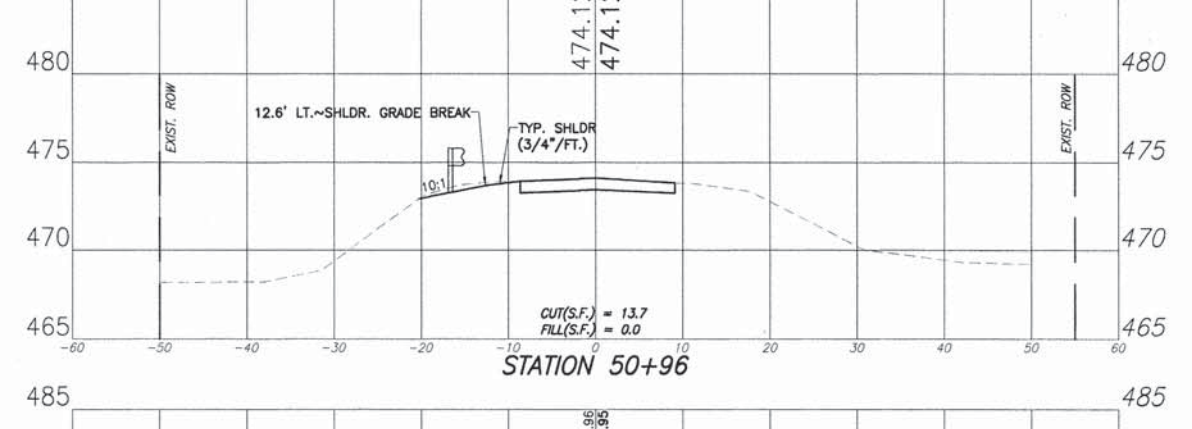
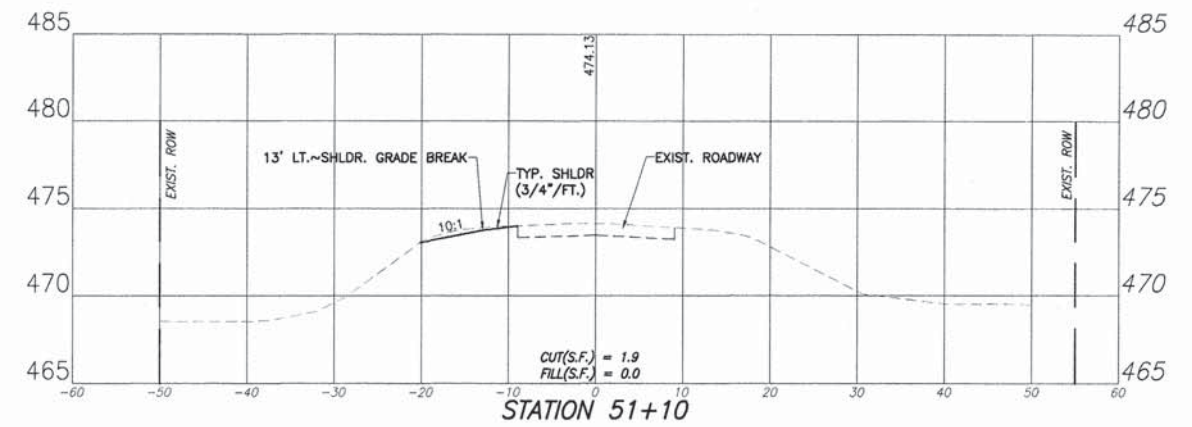
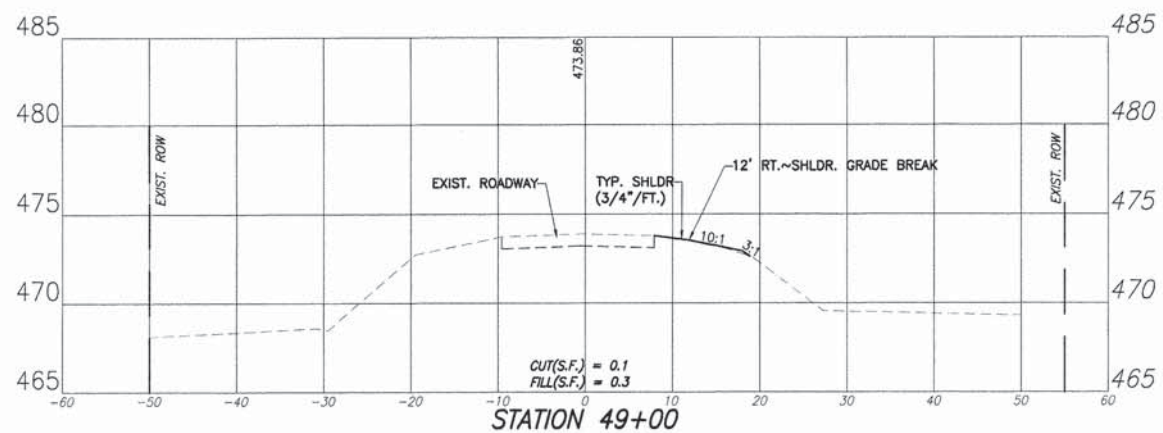
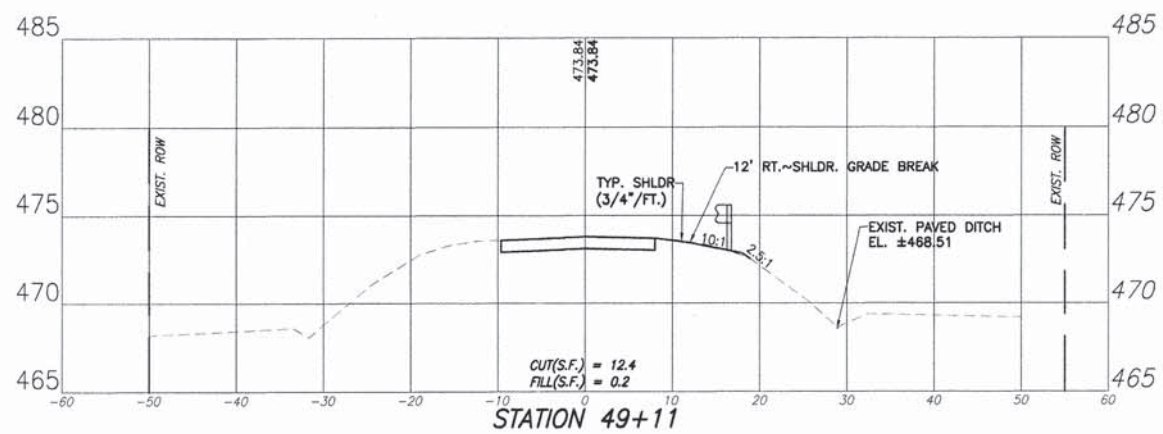
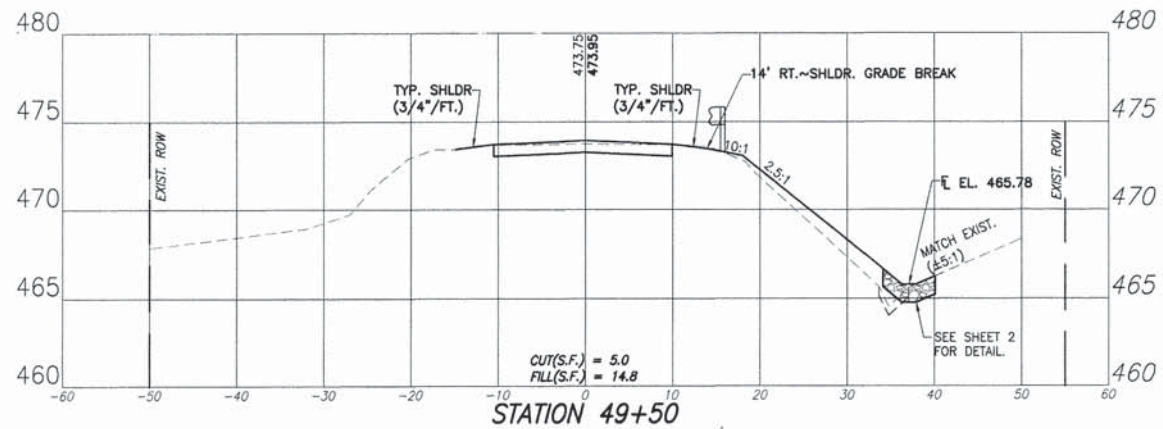
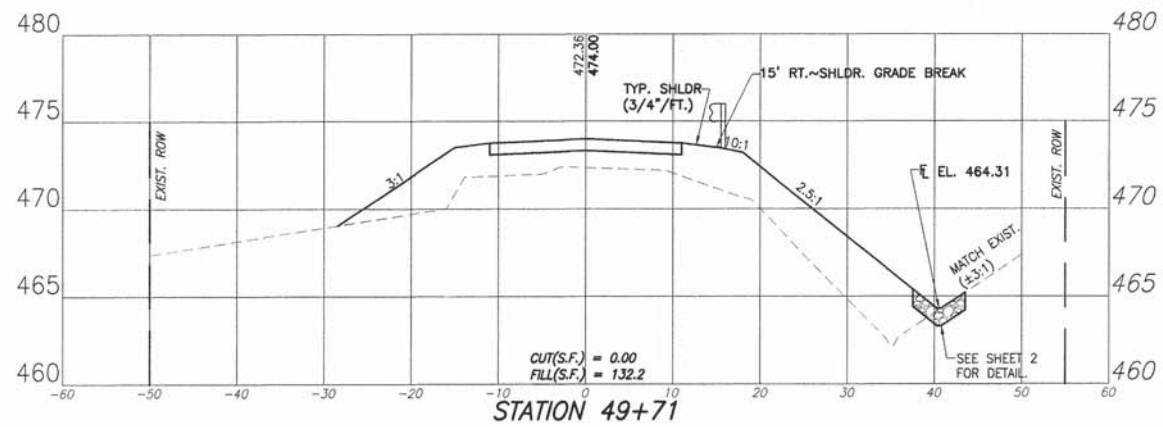
**WELDED PLATE FIELD SPLICE**

| Designation | F       | Ft   | Fw     | W      | Wt   | Ww   |
|-------------|---------|------|--------|--------|------|------|
| HP 14x117   | 12 1/2" | 1"   | 7/8"   | 7 3/4" | 5/8" | 1/2" |
| x102        | 12 1/2" | 7/8" | 3/4"   | 7 3/4" | 5/8" | 1/2" |
| x89         | 12 1/2" | 3/4" | 1/16"  | 7 3/4" | 5/8" | 1/2" |
| x73         | 12 1/2" | 5/8" | 9/16"  | 7 3/4" | 5/8" | 1/2" |
| HP 12x84    | 10"     | 7/8" | 11/16" | 6 1/2" | 5/8" | 1/2" |
| x74         | 10"     | 7/8" | 11/16" | 6 1/2" | 5/8" | 1/2" |
| x63         | 10"     | 5/8" | 1/2"   | 6 1/2" | 1/2" | 3/8" |
| x53         | 10"     | 5/8" | 1/2"   | 6 1/2" | 1/2" | 3/8" |
| HP 10x57    | 8"      | 3/4" | 9/16"  | 5 1/4" | 1/2" | 3/8" |
| x42         | 8"      | 5/8" | 9/16"  | 5 1/4" | 1/2" | 3/8" |
| HP 8x36     | 7"      | 5/8" | 7/16"  | 4 1/4" | 1/2" | 3/8" |

- \* Use joint conforming to Figure 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 1/4" from end of each pile.

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





**BRIDGE**

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ILLINOIS DESIGN FIRM LICENSE NO. 184-000287

|                   |           |
|-------------------|-----------|
| DESIGNED - BLT    | REVISED - |
| DRAWN - JMW       | REVISED - |
| CHECKED - GLH     | REVISED - |
| DATE - 10/08/2014 | REVISED - |

**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**CROSS SECTIONS OF ROADWAY**  
**STRUCTURE NO. 026-3461**  
STA. 49+00 TO STA. 51+10

| ROUTE  | SECTION        | COUNTY  | TOTAL SHEETS       | SHEET NO. |
|--|----------------|---------|--------------------|-----------|
| FAS 720                                      | 11-00122-00-BR | FAYETTE | 10                 | 10        |
| RAAI JOB NO. 51913 ILLINOIS FED. AID PROJECT |                |         | CONTRACT NO. 95748 |           |

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