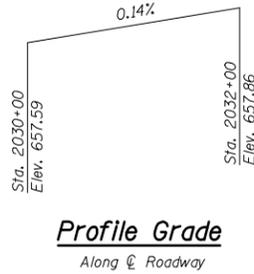


| F.A.P. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|-------------|---------|--------|--------------|-----------|
| 808         | .       | **     | 715          | 245       |

EXISTING STRUCTURE: The existing structure is a 2 1/2' x 2 1/2' R.C. Box Culvert that was built in 1938 as Route 15 Section 94A-MFT at Sta. 30+85. The existing structure is to be completely removed and replaced. Stage Construction will be utilized.



**Profile Grade**  
Along  $\phi$  Roadway

STATION 2030+82.00  
BUILT 20\_\_ BY  
STATE OF ILLINOIS  
F.A.P. RT. 808 SEC. (205,57,105)RS-2  
LOADING HS 20  
STRUCTURE NO. 010-8143

**NAME PLATE**  
See Std. 515001

**INDEX OF SHEETS**

1. General Plan and Elevation
- 2,3 Box Culvert End Section Details
4. Staging Details
5. Porous Granular Detail
6. Undercutting Detail
7. Soil Boring Logs
8. Existing Structure Information
9. Grating Detail

**DESIGN SPECIFICATIONS**  
2002 AASHTO

**LOADING HS20-44**

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

**DESIGN STRESSES**

**FIELD UNITS**

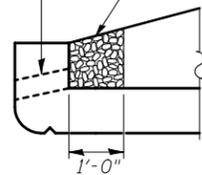
$f'_c = 3,500$  psi  
 $f_y = 60,000$  psi (reinforcement)  
 $f_y = 65,000$  psi (welded wire fabric)

**PRECAST UNITS**

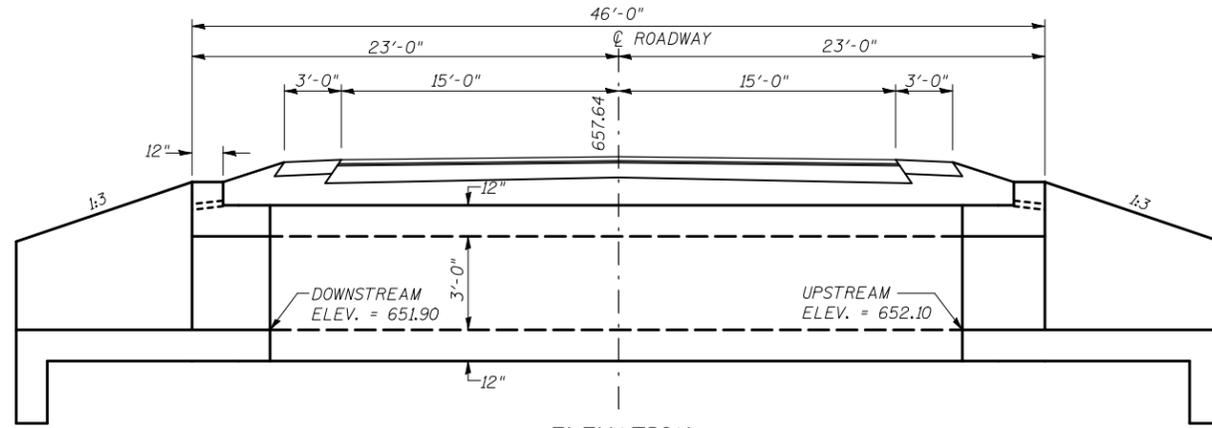
$f'_c = 5,000$  psi  
 $f_y = 65,000$  psi (welded wire fabric)

Coarse aggregate full length of both headwalls. To be placed by Grading Contractor. Cost included with Concrete Box Culverts.

6" x 3" Formed Opening

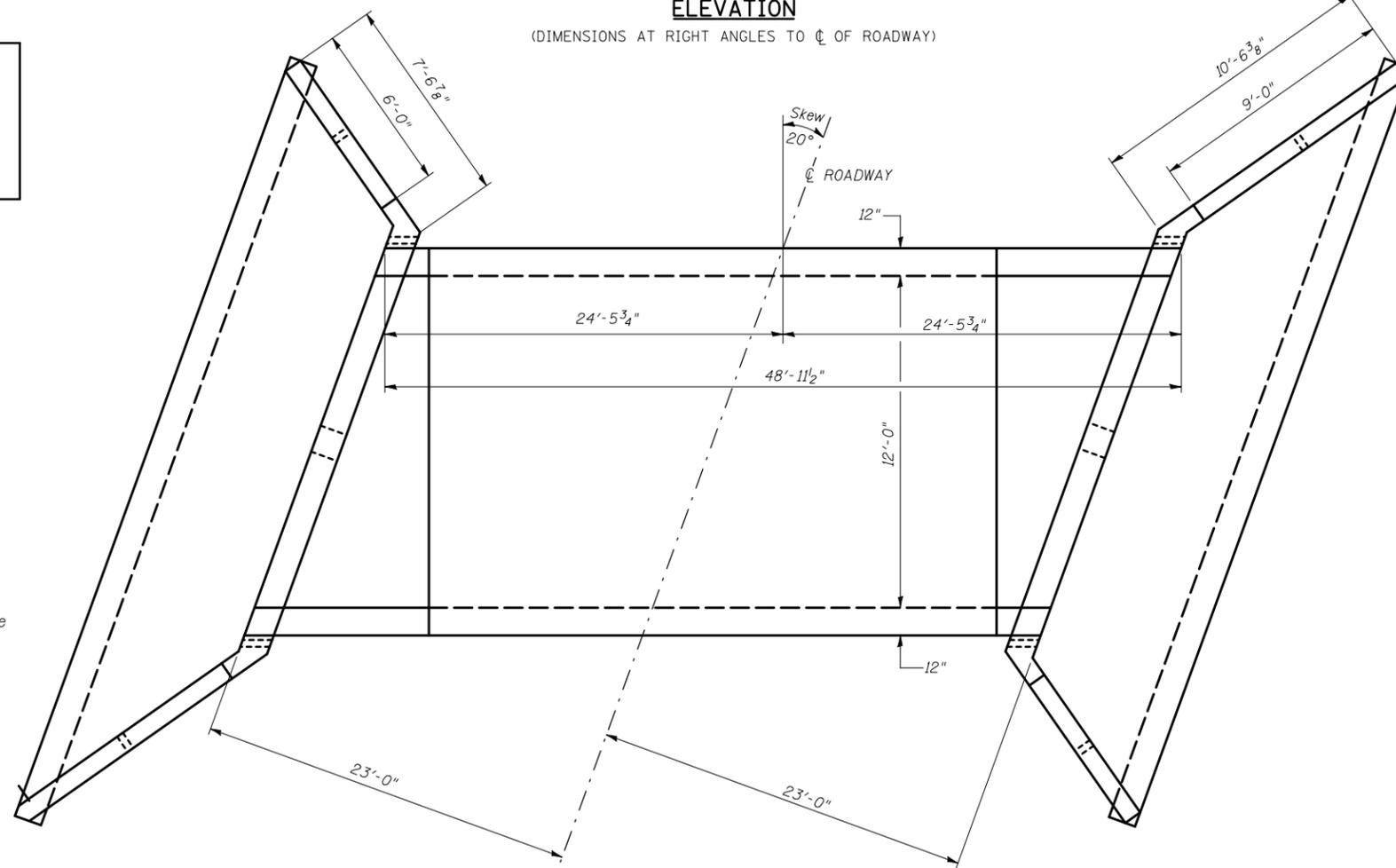


**DRAIN DETAIL**



**ELEVATION**

(DIMENSIONS AT RIGHT ANGLES TO  $\phi$  OF ROADWAY)



**PLAN**

**WATERWAY INFORMATION**

Drainage Area = 0.379 sq. mi. Low Grade Elev. 657.46 @ Sta. 2030+82

| Flood       | Freq. Yr. | Q C.F.S. | Opening Sq. Ft. |       | Nat. H.W.E. | Head - Ft. |       | Headwater El. |       |
|-------------|-----------|----------|-----------------|-------|-------------|------------|-------|---------------|-------|
|             |           |          | Exist.          | Prop. |             | Exist.     | Prop. | Exist.        | Prop. |
|             | 10        | 119      | 6.25            | 36    |             |            | Over  | 654.62        |       |
| Design      | 50        | 197      | 6.25            | 36    |             |            | Over  | 655.47        |       |
| Base        | 100       | 233      | 6.25            | 36    |             |            | Over  | 655.87        |       |
| Overtopping |           |          |                 |       |             |            |       |               |       |
| Max. Calc.  | 500       | 321      | 6.25            | 36    |             |            | Over  | 656.88        |       |

Note: Information provided using the USGS Regression Method.

**General Notes**

Build tops of headwalls parallel to the grade lines.

- (205,57,105)RS-2
- CHAMPAIGN & DOUGLAS

All construction joints shall be bonded according to Article 503.09 of the Standard Specifications.

Reinforcement bars shall conform to the requirements of ASTM A706 Gr. (IL Modified). See Special Provisions.

All bars should be rounded and conform to the requirements of Article 1006.10 of the Standard Specifications.

When lapping sheets of welded wire fabric, the overlap measured between the outermost cross wires of each fabric sheet shall not be less than 8"

End Sections will be paid for at the contract unit price per each for BOX CULVERT END SECTIONS, as outlined in Section 540 of the Standard Specifications.

Class SI Concrete shall be used throughout.

Concrete, Rebar, and Welded Wire Fabric quantities and lengths calculated for the cast-in-place End Sections may vary based on the precast box culverts supplied.

Drain holes shall be provided in accordance with Article 503.11 of the Standard Specifications.

The precast manufacturer shall design and detail a connection/construction joint between the precast concrete box sections and the cast-in-place apron and wingwall. The minimum area of reinforcement passing through these construction joints shall be 0.20 sq. in./lineal ft. of welded wire fabric. The design shall be detailed in the shop drawings. The cost of the connection is included in the cost of the end section.

The box culvert end section shall be built in the field and a precast option is not allowed except the cut-off wall may be precast. If the contractor elects to use a precast cut-off wall, shop drawings and a proposed construction sequence shall be submitted to the Engineer for approval.

The ends of the precast box sections adjacent to the end section shall be formed without the male and female shapes specified in Article 8.1 of AASHTO M273. See Section D-D on Sheet 2 and 3.

The design fill height for this box is less than 2 feet. The Precast Concrete Box Culvert Sections shall conform to the requirements of AASHTO M 273.

The joints between precast box sections shall be sealed, all voids filled with a mastic joint sealer. In addition, the joints shall be externally sealed on all four sides with a 13 inch wide external sealing band. The seal shall be centered over the joint, secured in place and protected during the backfilling process.

All dimensions are in FEET (') - INCHES (") unless otherwise noted.

Drawings not to scale.

**TOTAL BILL OF MATERIAL**

| Item                                 | Unit | Total |
|--------------------------------------|------|-------|
| Removal of Existing Structures       | Each | 1     |
| Precast Concrete Box Culverts 12'x3' | Foot | 43    |
| Box Culvert End Sections             | Each | 2     |
| Name Plates                          | Each | 1     |
| Grating for Box Culverts             | Each | 2     |

SHEET 1 OF 9

**GENERAL PLAN AND ELEVATION**  
**SINGLE 12'x3' PRECAST BOX CULVERT**  
**AT SKEW = 20° RT. FWD.**  
**F.A.P. ROUTE 808 - SECTION (205,57,105)RS-2**  
**CHAMPAIGN COUNTY**  
**STATION 2030+82.00, S.N. 010-8143**  
**CULVERT NO. 6**