

Profile Grade
Along \bar{C} of Roadway

STATION 2+48.30
BUILT 20... BY
STATE OF ILLINOIS
F.A.P. RT. 749 SEC. 12ORS-3
LOADING HS 20
STRUCTURE NO. 021-8055

NAME PLATE
See Std. 515001

INDEX OF SHEETS

1. General Plan and Elevation
- 2-4 Box Culvert End Section Details
5. Staging Details
6. Porous Granular Detail

DESIGN SPECIFICATIONS

2002 AASHTO

LOADING HS20-44

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

DESIGN STRESSES

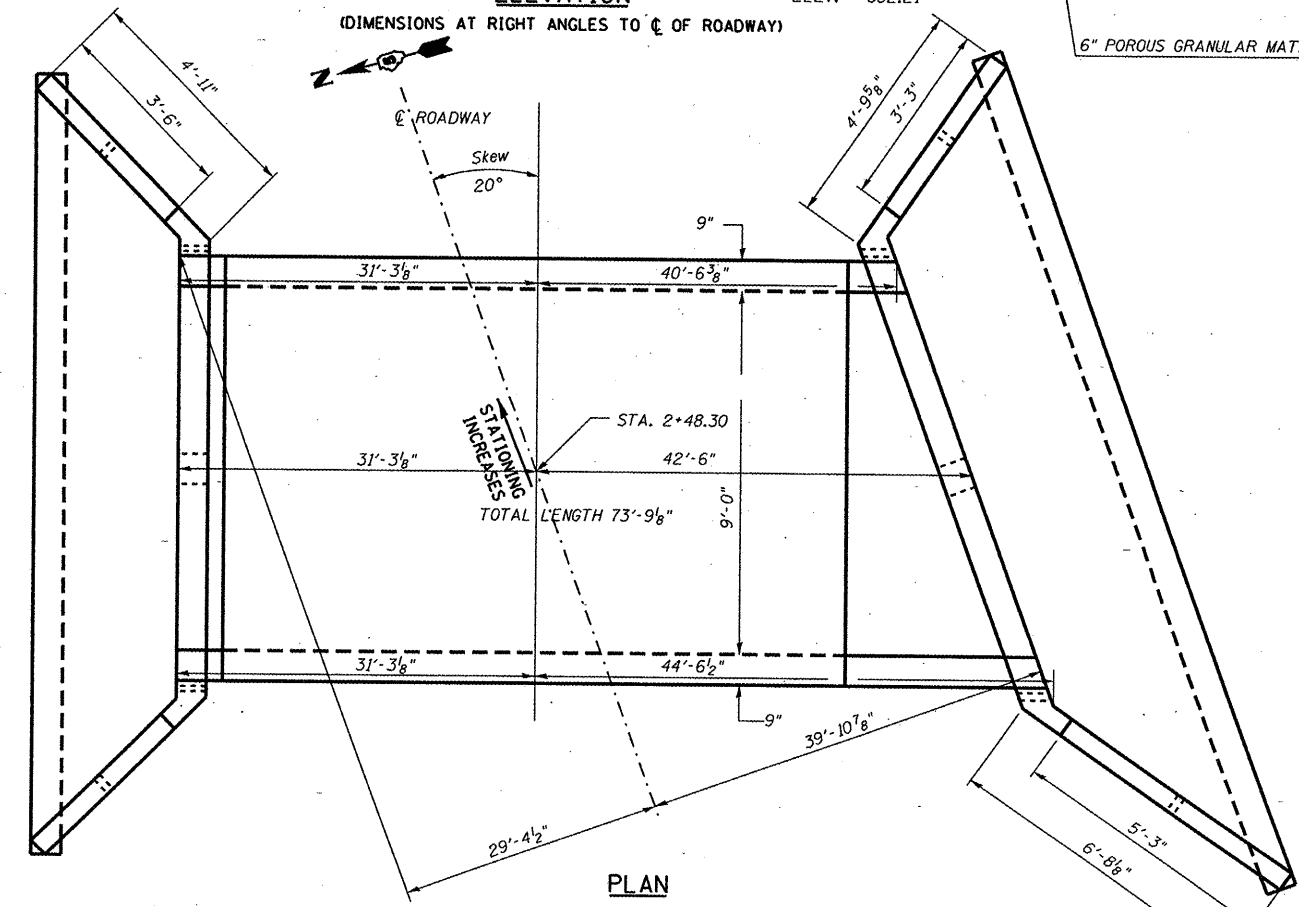
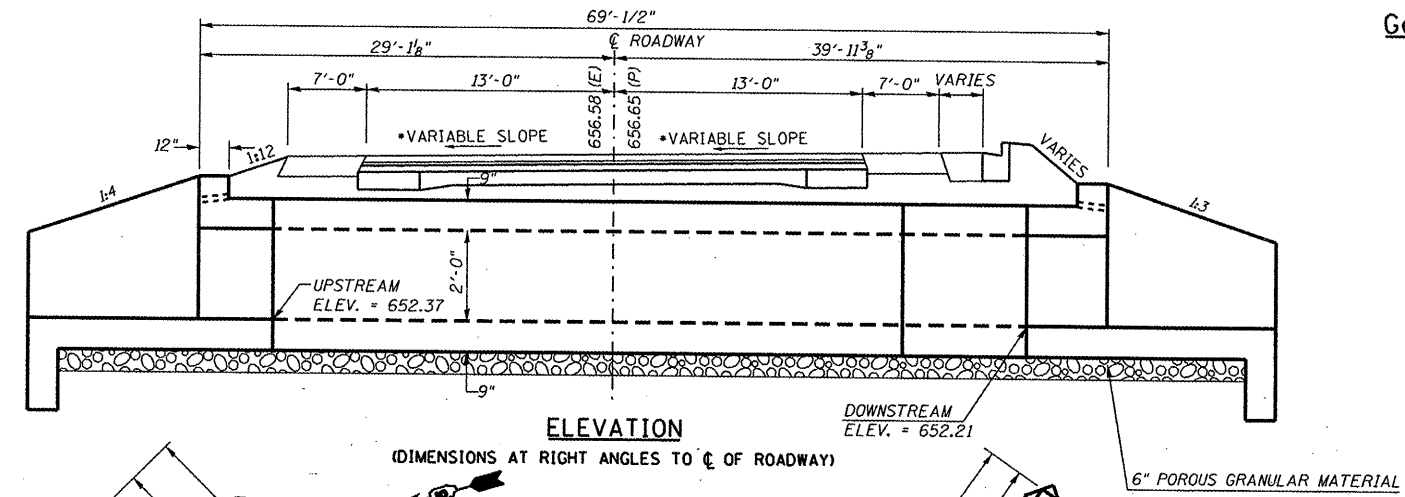
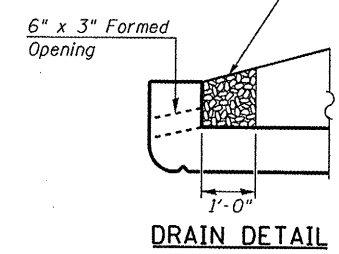
FIELD UNITS

$f'_c = 3,500$ 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 Box Culvert End Sections.



WATERWAY INFORMATION

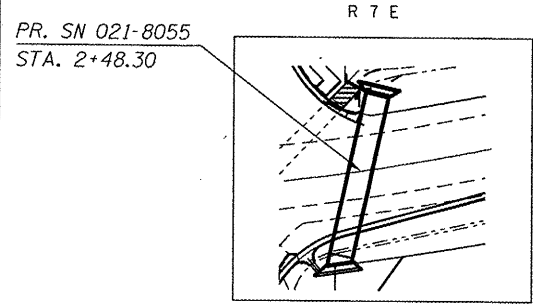
Drainage Area = 0.136 sq. mi. Low Grade Elev. 656.99 @ Sta. 2+48.30

Flood	Freq. Yr.	Q C.F.S.	Opening Sq. Ft.		Not. H.W.E.	Head - Ft.		Headwater El.	
			Exist.	Prop.		Exist.	Prop.	Exist.	Prop.
Design	10	64	12	18				655.1	654.8
Base	50	106	12	18				Over	655.6
Overtopping	100	125	12	18				Over	656.2
Max. Calc.	500	173	12	18				Over	656.9

Note: Information provided using the USGS StreamStats methodology.

Design Scour Elevation Table

Design Scour Elevation (ft.)	Upstream	Downstream
	649.37	649.21



General Notes

- 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.
- The 6" Porous Granular Material required per Art. 540.06 of the Standard Specifications shall also extend beneath the Box Culvert End Sections and shall be considered included in the cost of Precast Concrete Box Culverts and Box Culvert End Sections.
- 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 box culvert end sections may be cast in place or precast. A precast cut-off wall may be used with a cast in place end section provided the cut-off wall is securely attached to the end section in the field after the cut-off wall is in place. Connection details shall be provided by the contractor and subject to approval by the engineer. 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 cast-in-place end section shall be formed without the male and female shapes specified in Article 8.1 of AASHTO M273. See Sections B-B, D-D, E-E, and F-F on Sheet 2.
- 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 design reinforcement areas shall conform to those found in Table 1 of AASHTO M273 for a 9 x 5 box section except A_{s1} shall equal 0.38 and A_{s2} shall equal 0.57
- 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.
- Area of reinforcement for the downstream cast-in-place section of box culvert shall be as required for the precast box sections. Spacing and laps of WWF shall be in accordance with AASHTO M 273 except as shown in Cast-In-Place Section of Box Culvert To Be Built In Field. If the Contractor elects to use reinforcement bars instead of WWF for cast-in-place section of box culvert, bars may consist of #3 thru #6 bars and the spacing shall not exceed the lesser of the wall thickness or 8".
- All dimensions are in FEET (') - INCHES (") unless otherwise noted.
- Drawings not to scale.

TOTAL BILL OF MATERIAL

Item	Unit	Total
Precast Concrete Box Culverts 9'x2'	FOOT	68
Box Culvert End Sections	Each	2
Name Plates	Each	1
EXISTING 6'x2' BOX CULVERT @ STA. 2+06.17		
Filling Existing Culverts	CU YD	40
Box Culvert Removal	FOOT	18
Concrete Removal	CU YD	5

SINGLE 9'x2' PRECAST BOX CULVERT AT SKEW = 20° LT. FWD