Existing Structure: Cast-in-place Concrete Box Culvert
approx 5'-0" x 5'-0", length of structure is approx 30'-0".
See Sheet 2 of Roadway Plans for benchmark information.

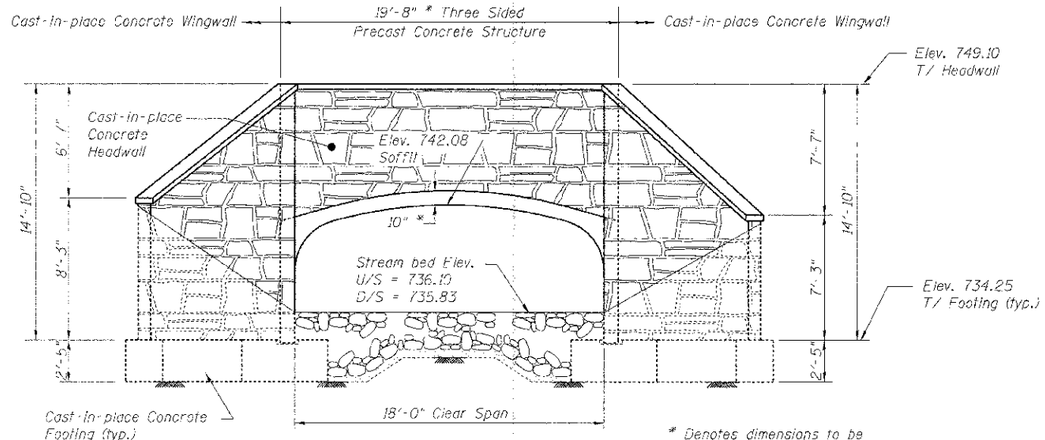
WATERWAY INFORMATION

Drainage Area = 640 Acres (1 Sq Mi)
Existing Low Grade Elev. 741.62 @ Sta. 129+79
Proposed Low Grade Elev. 741.86 @ Sta. 131+25

Flood	Freq. (yr)	Q (cfs)	Opening Sq. Ft. Exist.	Opening Sq. Ft. Prop.	Natural H.W.E. Exist.	Natural H.W.E. Prop.	Created Head Exist.	Created Head Prop.	Headwater El. Exist.	Headwater El. Prop.
	10	237	22.2	104.4	741.98	740.69	1.37	0.00	743.35	740.69
Design	50	373	23.4	109.4	742.18	741.81	1.45	0.13	743.63	741.94
Base	100	429	23.7	110.2	742.22	742.13	1.50	0.25	743.72	742.38
Max. Calc.	500	568	24.1	111.4	742.29	742.79	1.61	0.09	743.90	742.88

DESIGN SCOUR ELEVATION TABLE

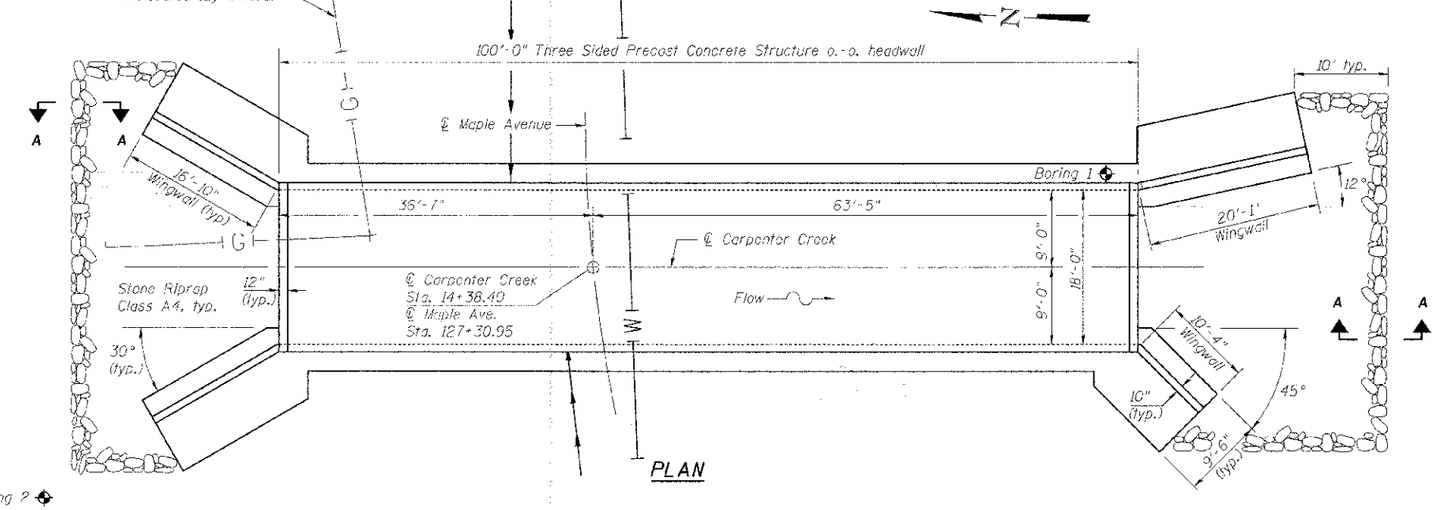
Design Scour Elevation (ft.)	East Ftg	West Ftg
	731.83	731.83



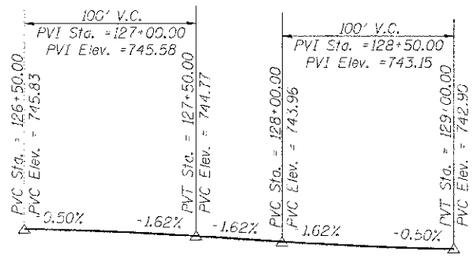
ELEVATION

Looking South

* Denotes dimensions to be determined by Three Sided Precast Concrete Structure Manufacturer.



PLAN

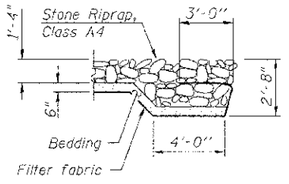


PROFILE GRADE

Along ℄ Roadway

TOTAL BILL OF MATERIAL

ITEM	UNIT	TOTAL
Stone Riprap, Class A4	Sq Yd	385
Filter Fabric	Sq Yd	385
Removal of Existing Structures	Each	1
Concrete Structures	Cu Yd	179.2
Form Liner Textured Surface	Sq Ft	1204
Reinforcement Bars	Pound	12,350
Reinforcement Bars, Epoxy Coated	Pound	900
Concrete Surface Color Treatment	Sq Ft	1204
Three Sided Precast Concrete Structure, 18' x 8'	Foot	100



SECTION A-A

INDEX OF SHEETS

1. General Plan and Elevation
2. Details and Footing Plan
3. Headwall and Wingwall Details

GENERAL NOTES

Precast footing, wingwall and headwall options are not allowed.
Maximum applied service bearing pressure, Qmax. = 2,500 PSF.
The foundation design is based on the following maximum unfactored reactions applied at the top of the footing:
Vmax = 12.24k/ft.; Hmax = 1.43k/ft.
The Contractor shall verify that the selected structure meets these design parameters. If the design parameters are exceeded, a complete foundation design with calculations, details, and the required seals shall be submitted for review and approval.
Reinforcement bars designated (E) shall be epoxy coated.
Refer to Specifications for Geotechnical Report.
See Sheet 2 of 3 for Storm Sewer penetrations thru precast structure.
Stream diversion and excavation dewatering will not be paid for separately, but shall be considered incidental to the pay item Three Sided Precast Concrete Structure, 18' x 8'. See Special Provisions.
Refer to Geotechnical Report for Soil Borings and other additional information.

LOADING HL-93

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

DESIGN SPECIFICATIONS

2012 AASHTO LRFD Bridge Design Specifications

DESIGN STRESSES

FIELD UNITS	PRECAST UNITS
f'c = 3,500 psi	f'c = 5,500 psi
fy = 60,000 psi (Reinforcement)	fy = 60,000 psi (Reinforcement)

SEISMIC DATA

Seismic Performance Zone (SPZ) = 1
Design Spectral Acceleration at 1.0 sec. (S_{D1}) = 0.083g
Design Spectral Acceleration at 0.2 sec. (S_{DS}) = 0.145g
Soil Site Class = D

MATERIALS

Precast Concrete Three Sided Structure Units shall be Designed, Constructed, and Installed in Accordance with Manufacturer Specifications. The Structure shown on the Drawings is for general arrangement purposes only. (See Special Provisions)

BRIAN A. BROME
081-006517
LICENSED STRUCTURAL ENGINEER
STATE OF ILLINOIS

DATE:
LICENSE EXPIRES 11/30/14

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 style of structure and complies with the requirements of the current AASHTO LRFD Bridge Design Specifications.

FILE NAME:	USER NAME:	DESIGNED BAB	REVISED -
		CHECKED BLB	REVISED -
	PLOT SCALE:	DRAWN BAB	REVISED -
	PLOT DATE:	CHECKED BLB	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

THREE SIDED PRECAST CONCRETE STRUCTURE
GENERAL PLAN AND ELEVATION
SHEET NO. 1 OF 3 SHEETS

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
4006	95-00049-00-PV	KANE	138	93
		CONTRACT NO. 63745		

FED. ROAD DIST. NO. 1 ILLINOIS FED. AID PROJECT M-8003 (189)