



BENCHMARK: BM 1005 -  
Chiseled square on top of  
the southwest headwall  
of SN 039-2002.  
Elev. 384.48

EXISTING STRUCTURE:  
SN 039-2002 was originally built  
in 1933 as Route 150, Section 123.  
It is a double barrel 11'-2 1/2" S  
by 9'-0" R reinforced concrete box  
culvert with L-Type wing walls and  
side mounted steel railing. The  
barrel length is 44'-3" o. to o.  
headwalls. There is a 21° skew.  
Traffic shall be maintained  
utilizing stage construction.

No salvage.

Permanent Steel  
Sheet Piling  
D.S. Invert  
Elev. 371.28

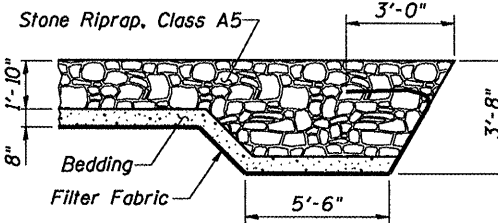
Varies to parallel  
profile grade  
(Typ. each side)  
D.S. Flowline  
Elev. 371.53

Concrete  
cap

### LONGITUDINAL SECTION

(Looking West)  
(Dimensions at rt. angle to  $\angle$  FAP 312)

Limits of Removal and Disposal  
of Unsuitable Material and Rock Fill-Replacement



SECTION A-A

STATION 370+74  
BUILT 20\_\_ BY  
STATE OF ILLINOIS  
F.A. RT. 312 SEC. 123B-4  
LOADING HS20-44  
STR. NO. 039-2029

NAME PLATE  
(See Hwy. Std. 515001)

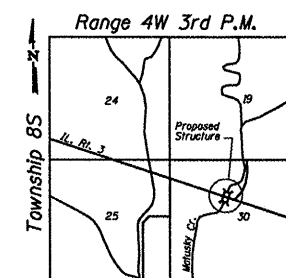
- GENERAL NOTES**
- Reinforcement bars shall conform to the requirements of ASTM A 706 Gr 60.
  - Reinforcement bars designated (E) shall be epoxy coated.
  - Layout of the slope protection system may be varied to suit ground conditions in the field as directed by the Engineer.
  - For backfilling and embankment, see Standard Specifications. Backfill culvert excavation with Porous Granular Embankment, except the outer 3' at each end of the culvert shall be backfilled with impervious material. See sheet 2 of 11 for limits of PGE.
  - Precast alternate is not allowed.
  - The limits and quantities of removal and replacement shown are based on the boring data and may be modified by the District Geotechnical and Field Engineers for variable subsurface conditions encountered in the field.
  - The Rock Fill shall be capped with 6 in. of CA 7 and satisfy the Standard Specifications unless otherwise indicated in the Special Provisions. The cost of the capping material shall be included in the pay item for Rock Fill - Replacement. Rock Fill shall be composed of Stone Riprap, Class A1.
  - Modify existing channel to match culvert at each end as directed by the Engineer, cost included in the pay item for Stone Riprap, Class A5.

### TOTAL BILL OF MATERIAL

ITEM	UNIT	QUANTITY
Porous Granular Embankment	Cu. Yd.	474
Stone Riprap, Class A5	Sq. Yd.	148
Filter Fabric	Sq. Yd.	148
Removal of Existing Structures No. 2	Each	1
Removal and Disposal of Unsuitable Material for Structures	Cu. Yd.	111
Reinforcement Bars, Epoxy Coated	Pound	33,140
Reinforcement Bars	Pound	360
Bar Splicers	Each	167
Steel Railing, Type 2399	Foot	59
Name Plates	Each	1
Concrete Box Culverts	Cu. Yd.	195.0
Temporary Soil Retention System, (Location 2)	Sq. Ft.	525
Temporary Support System, Location 2	Each	1
Rock Fill - Replacement	Ton	228
Permanent Steel Sheet Piling	Sq. Ft.	286

See Roadway Plans for quantities of Temporary Concrete Barrier, Earth  
Excavation, and Pavement Removal.

**APPROVED**  
For Structural Adequacy Only  
*D. Carl Pappas (RD)*  
Engineer of Bridges & Structures



LOCATION SKETCH

### DESIGN SPECIFICATIONS

2002 AASHTO  
LOADING HS20-44  
Allow 50 psf for future wearing surface.

### DESIGN STRESSES

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

### WATERWAY INFORMATION

Drainage Area = 2.25 Sq. Mi.		Exist. Low Grade Elev. = 384.10 Ft. @ Sta. 371+00		Prop. Low Grade Elev. = 384.10 Ft. @ Sta. 371+00	
Flood	Freq. Yr.	0	Opening-Sq. Ft.	Mat.	Head-Ft.
	100	121	180	378.8	1.6
Design	50	1860	164	226	380.7
Base	100	2220	182	240	381.5
Overtopping	100	2200	182	-	381.5
Max. Calc.	500	3120	-	240	382.6

10 year velocity through existing culvert = 9.6 ft/s  
10 year velocity through proposed culvert = 6.6 ft/s

### PROFILE GRADE

(Along  $\angle$  FAP 312)

### SCOUR INFORMATION

Design Scour Elevation (Ft.)	Downstream	Upstream
	368.28	368.52



USER NAME = HAS  
ESCA PROJECT NO. 988.08  
PLOT SCALE = 8.17' / IN.  
PLOT DATE = 11/9/2011 2:01:49 PM

DESIGNED - RDP 09/11  
CHECKED - JAF 09/11  
DRAWN - DWH 11/11  
CHECKED - RDP 11/11

REVISED -  
REVISED -  
REVISED -  
REVISED -

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

GENERAL PLAN  
STRUCTURE NO. 039-2029

SHEET NO. 1 OF 11 SHEETS

F.A.P. RTE. 312 SECTION 123B-4 COUNTY JACKSON TOTAL SHEETS 58 SHEET NO. 24  
CONTRACT NO. 78197  
ILLINOIS FED. AID PROJECT