CONTRACT NO. 66717

| F.A.P. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| 338 | 33 BR-1 | IROQUOIS | 27 | 15 |
| STA. | | TO STA. | | |
| FED. ROAD DIST. NO. | ILLINOIS | FED. AID PROJECT | | |

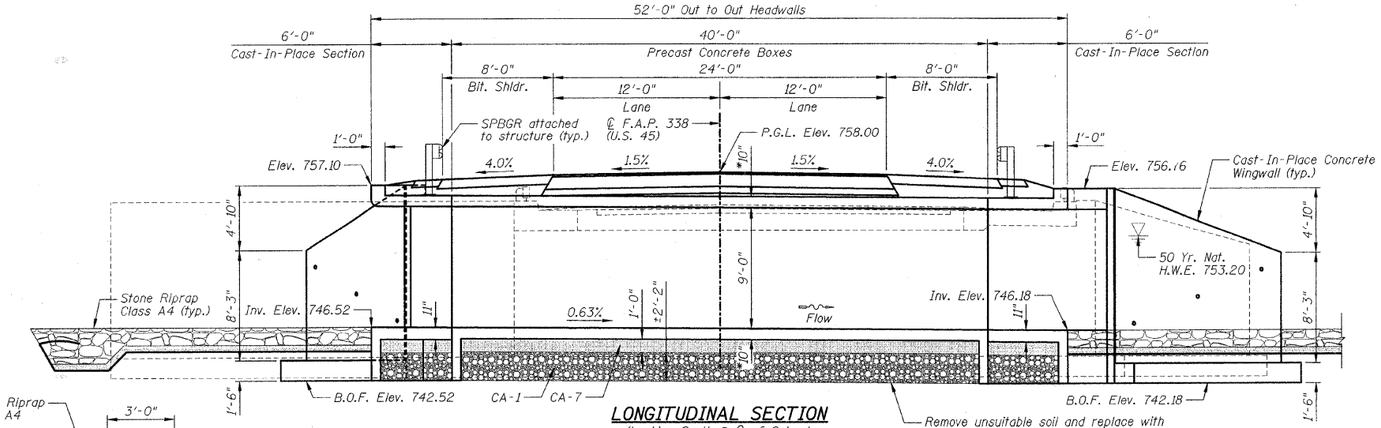
SHEET NO. 81 OF 10 SHEETS

Benchmarks: OA#2, Bar set flush, S.W. Quadrant of bridge, ±4.5' West of West edge of pavement, Elevation = 755.05 @ Sta. 2373+16.36/16.25' RT.

Existing Structure: SN 038-0045 was built in the 1920's as a single span reinforced concrete slab bridge with closed abutments supported on spread footings. The original structure was 26'-0" out-to-out of deck. The structure is 23'-8¾" back-to-back of abutments with a 20° skew right forward. In 1952, the concrete bridge rails and concrete wingwalls were removed and the bridge was widened to 38'-4" out-to-out of deck. The substructure was widened with abutments and vertical cantilever wingwalls on spread footings. The upstream wingwalls to the East are approximately 30' long and run parallel with the abutments and channel. Traffic to be detoured.

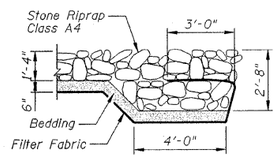
No Salvage.

# STATE OF ILLINOIS
# DEPARTMENT OF TRANSPORTATION

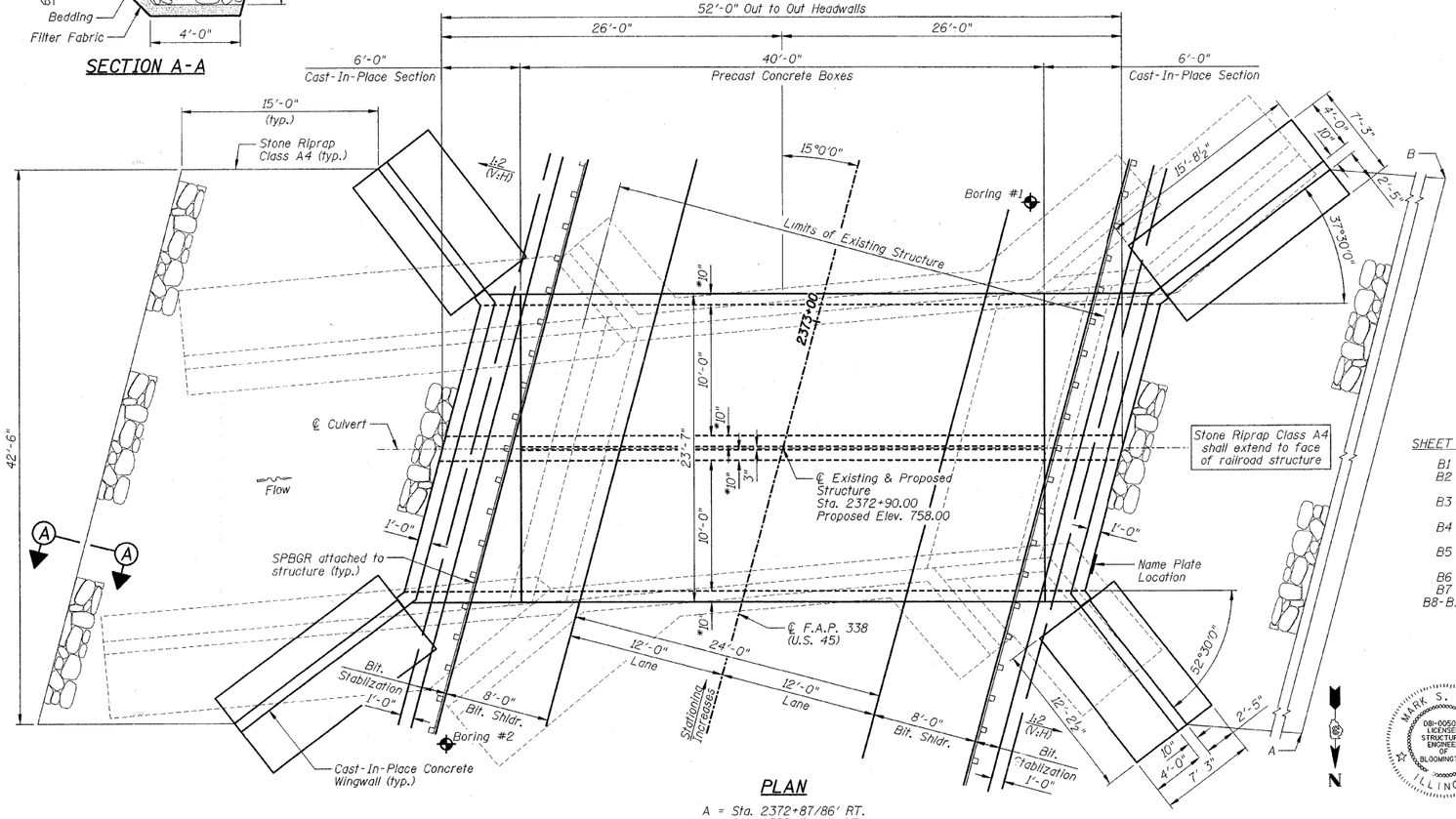



## LONGITUDINAL SECTION

(Looking South @ ℄ of Culvert, roadway dimensions @ right angles to roadway)




## SECTION A-A




## PLAN

A = Sta. 2372+87/86' RT.
B = Sta. 2373+31/86' RT.

## WATERWAY INFORMATION

Drainage Area = 6.25 Sq. Mi.

Existing Low Grade Elev. 754.94 @ Sta. 2372+00
Proposed Low Grade Elev. 758.00 @ Sta. 2372+00

| Flood | Freq. Yr. | Q C.F.S. | Opening Sq. Ft. Exist. | Opening Sq. Ft. Prop. | Nat. H.W.E. | *Head - Ft. Exist. | *Head - Ft. Prop. | Headwater El. Exist. | Headwater El. Prop. |
|---|---|---|---|---|---|---|---|---|---|
| | 10 | 570 | 91 | 117 | 752.60 | 2.00 | 1.40 | 754.60 | 754.00 |
| Design | 50 | 836 | 103 | 129 | 753.20 | 3.10 | 2.50 | 756.30 | 755.70 |
| Base | 100 | 943 | 108 | 133 | 753.41 | 3.40 | 3.10 | 756.80 | 756.50 |
| Overtopping (exist.) | 25 | 700 | 99 | | 752.92 | 2.50 | | 755.40 | |
| Overtopping (prop.) | 300 | 1135 | | 140 | 753.76 | | 4.30 | | 758.10 |
| Max. Calc. | 300 | 1135 | | 140 | 753.76 | | 4.30 | | 758.10 |

10 year velocity through Existing Structure = 2.45 fps
10 year velocity through Proposed Structure = 1.91 fps

*Gross Area Opening = 180 sq. ft. Taken from the section with the highest created head.

## TOTAL BILL OF MATERIAL-BOX CULVERT

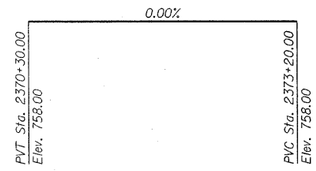
| ITEM | UNIT | TOTAL |
|---|---|---|
| Removal and Disposal of Unsuitable Material | Cu Yd | 213 |
| Porous Granular Embankment, Special | Cu Yd | 159 |
| Stone Riprap, Class A4 | Sq Yd | 395 |
| Filter Fabric | Sq Yd | 395 |
| Removal Of Existing Structures | Each | 1 |
| Reinforcement Bars | Pound | 9890 |
| Reinforcement Bars, Epoxy Coated | Pound | 680 |
| Name Plates | Each | 1 |
| Concrete Box Culverts | Cu Yd | 81.5 |
| Precast Concrete Box Culvert 10' x 9' (M273) | Foot | 80 |

## GENERAL NOTES

1.) Reinforcement bars shall conform to the requirements of ASTM A 706 Gr 60 (IL Modified). See Special Provisions.
2.) Reinforcement bars designated (E) shall be epoxy coated.
3.) Layout of the slope protection system may be varied to suit ground conditions in the field as directed by the Engineer.
4.) Cast-In-Place concrete exposed edges shall be beveled ¾".
5.) It shall be the responsibility of the Contractor to divert the stream flow during construction in order to keep the construction area free of water. The method of water diversion shall be subject to the approval of the Engineer and the cost shall be included with the cost of "Concrete Box Culverts".
6.) Structural seal does not include design of precast elements.
7.) The precast concrete culvert sections shall be designed and manufactured in accordance with AASHTO M273 (ASTM C 850).
8.) For backfilling and embankment, see Standard Specifications.
9.) End of precast section shall not have a bell or spigot.
10.) Contractor to confirm all precast culvert dimensions with supplier before starting construction. All applicable cast-in-place concrete dimensions shall match precast culvert dimensions.
11.) The existing plans are provided for informational use only.
12.) See Sheet B7 for soil borings.
13.) The last section of precast culvert shall have an integral toe wall and reinforcing bars extending from the precast culvert as shown on Sheets B2, B4 & B5.
14.) The pay item "Removal and Disposal of Unsuitable Material" shall include the excavation of unsuitable material for a depth of ±3'-2" below the structure for a width of 27'-7" within the limits of the toe walls as shown on the plans. The actual amount shall be determined in the field by the Engineer.
15.) The pay item "Porous Granular Embankment, Special" shall include the placement of CA-1 and CA-7 below the structure for a width of 27'-7" within the limits of the toe walls as shown on the plans. The actual amount shall be determined in the field by the Engineer.
16.) The Contractor shall reshape the channel within the Right-Of-Way in order to facilitate drainage and the placement of riprap as directed by the Engineer. The cost of reshaping the channel shall be included in the cost of "Removal of Existing Structures".
17.) Excavation behind existing abutment walls shall be performed to balance front and back soil pressure before removing the existing superstructure.

## INDEX TO SHEETS



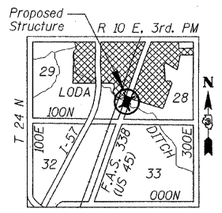



## PROFILE GRADE

(Along ℄ Roadway)

## NOTES:

1.) *Confirm slab and wall thickness with Precaster.
2.) B.O.F. denotes Bottom Of Footing.
3.) P.G.L. denotes Profile Grade Line.




## LOCATION SKETCH

## DESIGN SPECIFICATIONS

AASHTO 2002

## DESIGN STRESSES

FIELD UNITS
f'c = 3,500 psi (Cast-In-Place)
fy = 60,000 psi (Reinforcement)
PRECAST UNITS
f'c = 5,000 psi (Precast)
fy = 60,000 psi (Reinforcement)
fy = 65,000 psi (Welded Wire Fabric)

## LOADING HS20-44

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

STATION 2372+90.00
BUILT 200_ BY
STATE OF ILLINOIS
F.A.P. RTE. 338 SECTION 33 BR-1
LOADING HS20
STR. NO. 038-2018

## NAME PLATE

See Standard 515001




Mark S Wylie Date 12/7/07
MARK S. WYLIE
ILLINOIS STRUCTURAL ENGINEER
NO. 081-005002
Exp. Date 11/30/08

| REVISIONS NAME | DATE |
|---|---|
| | |
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ILLINOIS DEPARTMENT OF TRANSPORTATION
GENERAL PLAN AND ELEVATION
F.A.P. 338 (US 45) OVER A DITCH
SECTION 33 BR-1
IROQUOIS COUNTY
STATION 2372+90.00
STRUCTURE NO. 038-2018

DESIGNED BY: JML DRAWN BY: DJM
DATE: 12/07/07 CHECKED BY: MSW


FARNSWORTH GROUP, INC.
CONSULTING ENGINEERS - 2709 MCGRAW DRIVE BLOOMINGTON, ILLINOIS 61704 (309) 663-8435 / (309) 663-1571 FAX