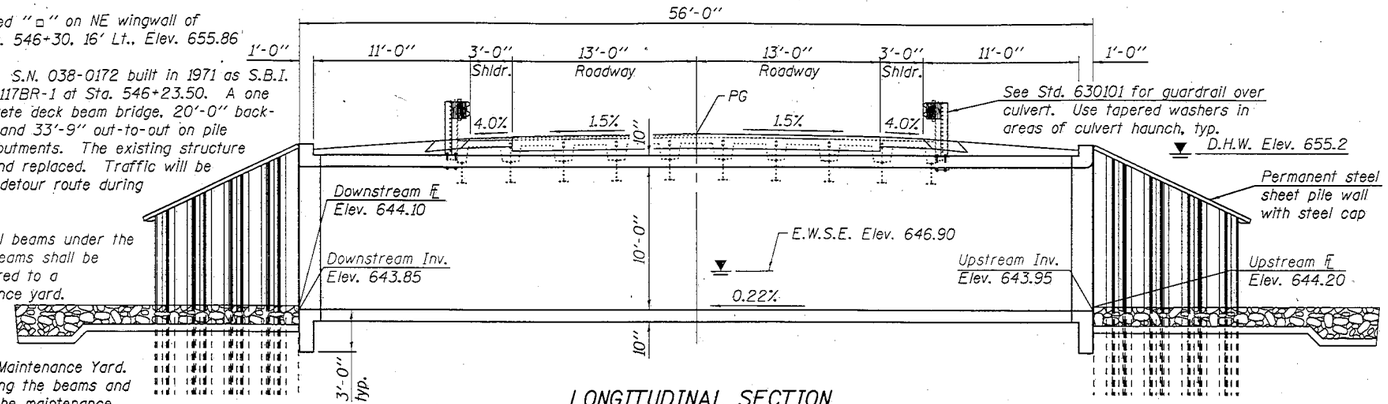
Benchmark: Chiseled "□" on NE wingwall of S.N. 038-0172: Sta. 546+30, 16' Lt., Elev. 655.86

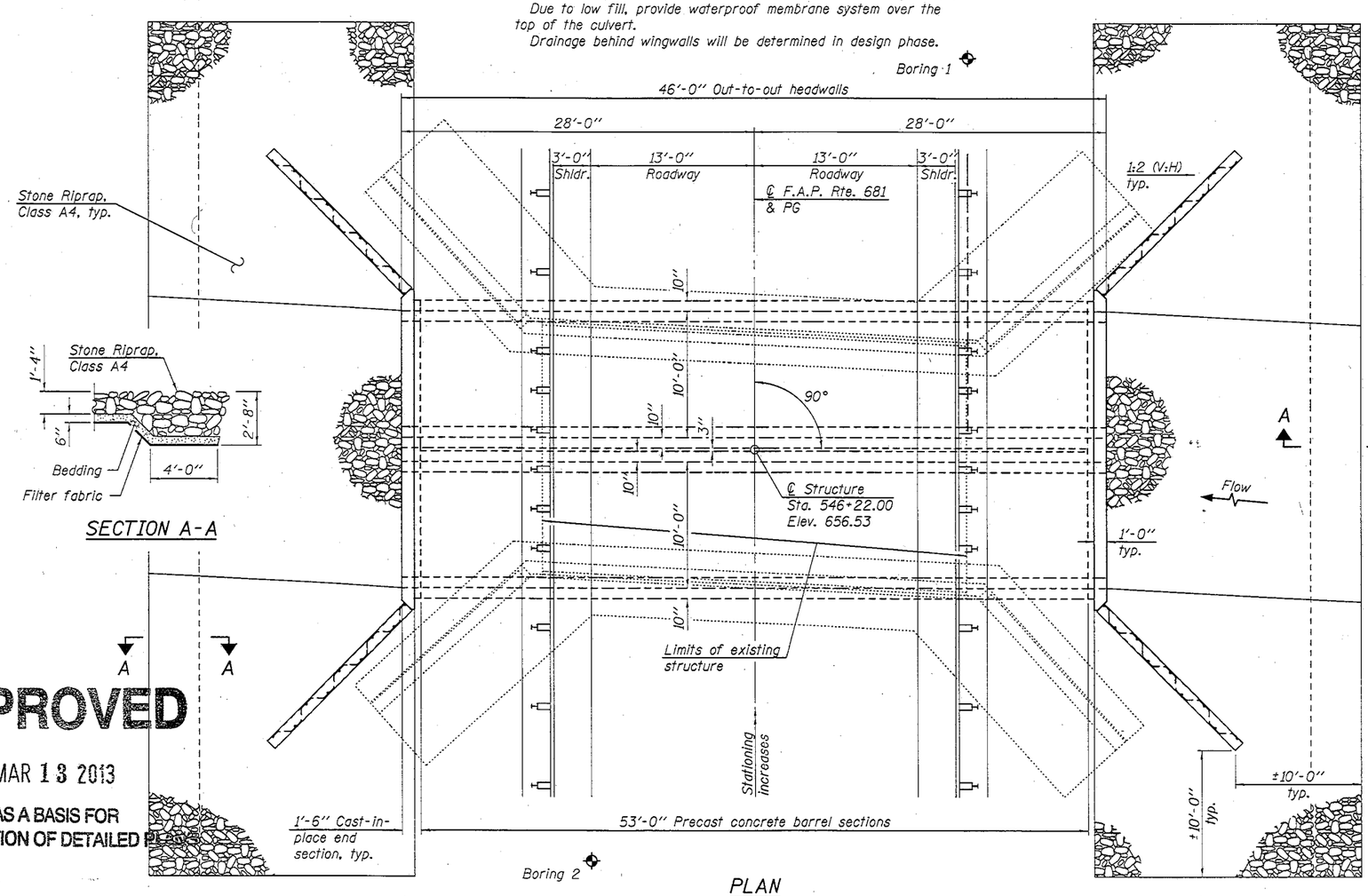
Existing Structure: S.N. 038-0172 built in 1971 as S.B.I. Route 116, Section 117BR-1 at Sta. 546+23.50. A one span precast concrete deck beam bridge, 20'-0" back-to-back abutments and 33'-9" out-to-out on pile supported closed abutments. The existing structure is to be removed and replaced. Traffic will be maintained using a detour route during construction.

The temporary steel beams under the existing concrete beams shall be salvaged and delivered to a District 3 maintenance yard. Contact Mr. Tom Hufnagel at (815)-698-2223. Deliver to Ashkum Maintenance Yard. The cost of removing the beams and delivering them to the maintenance yard shall be included in the cost of Structure Removal.

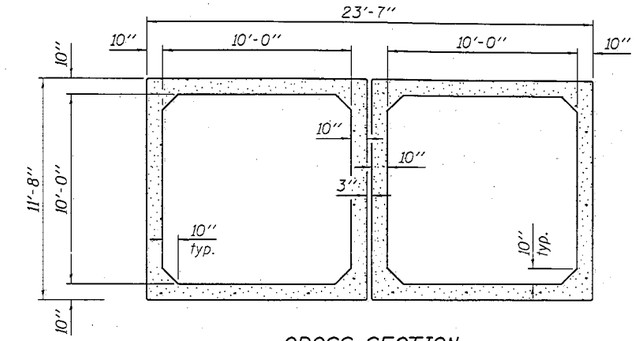


LONGITUDINAL SECTION

Notes:
Contractor shall excavate behind existing abutments prior to removal of superstructure to balance front and back soil pressure.
Due to low fill, provide waterproof membrane system over the top of the culvert.
Drainage behind wingwalls will be determined in design phase.



PLAN



CROSS SECTION

WATERWAY INFORMATION

Drainage Area = 3.8 sq. mi.

Existing Low Grade Elev. 654.53 @ Sta. 539+00
Proposed Low Grade Elev. 654.53 @ Sta. 539+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.
Proposed Overtopping	8	440	161	200	654.8	0.2	0.1	655.0	654.9
Existing Overtopping	8	450	161	200	654.8	0.2	0.0	655.0	654.8
	10	484	161	200	654.9	0.1	0.1	655.0	655.0
Design	50	767	161	200	655.2	0.2	0.1	655.5	655.4
Base	100	892	161	200	655.4	0.2	0.1	655.6	655.5
Max. Calc.	500	1190	161	200	655.5	0.1	0.1	655.7	655.6

Existing 10-year velocity = 2.8 ft./sec.
Proposed 10-year velocity = 1.9 ft./sec.

DESIGN SPECIFICATIONS

2012 AASHTO LRFD Bridge Design Specifications, 6th Edition
ASTM C 1577

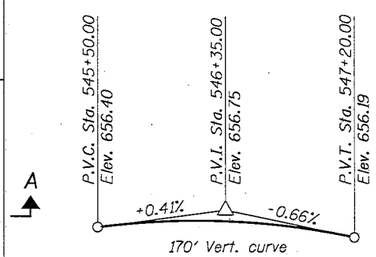
DESIGN STRESSES

FIELD UNITS

f'c = 3,500 psi
fy = 60,000 psi (Reinforcement)
fy = 50,000 psi (Permanent Sheet Piling)
fy = 50,000 psi (AASHTO M270 Grade 50W)

PRECAST UNITS

f'c = 5,000 psi
fy = 65,000 psi (Welded wire fabric)



PROFILE GRADE

(Along ℄ F.A.P. Rte. 681)

DESIGN SCOUR ELEVATION TABLE

Design Scour Elevation (ft.)	Upstream	Downstream
	640.95	640.85

HIGHWAY CLASSIFICATION

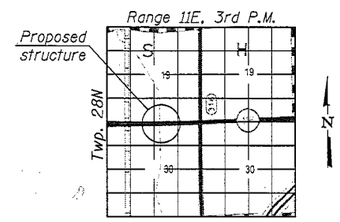
F.A.P. Rte. 681 - IL Rte. 116
Functional Class: Minor Arterial (Non-Urban)
ADT: 1050 (2014); 1470 (2034)
ADTT: 74 (2014)
DHV: 71
Design Speed: 55 m.p.h.
Posted Speed: 55 m.p.h.
Two-Way Traffic
Directional Distribution: 50:50

LOADING HL-93

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

DESIGN FILL HEIGHT

Design earth cover = 1.8 ft.



LOCATION SKETCH

GENERAL PLAN & ELEVATION
IL. RTE. 116 OVER UNNAMED DRAINAGE DITCH
F.A.P. RTE. 681 - SEC. 117BR-2
IROQUOIS COUNTY
STATION 546+22.00
STRUCTURE NO. 038-2027

APPROVED
MAR 13 2013
AS A BASIS FOR PREPARATION OF DETAILED PLANS

DESIGNED -	DEREK G. VERHULST
CHECKED -	SEAN CHAU
DRAWN -	MICHAEL B. MOSSMAN
CHECKED -	D.G.V.

3-13-13

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SHEET NO. 1 OF 1 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
681	117BR-2	IROQUOIS		
		CONTRACT NO. 66B51		
		ILLINOIS FED. AID PROJECT		