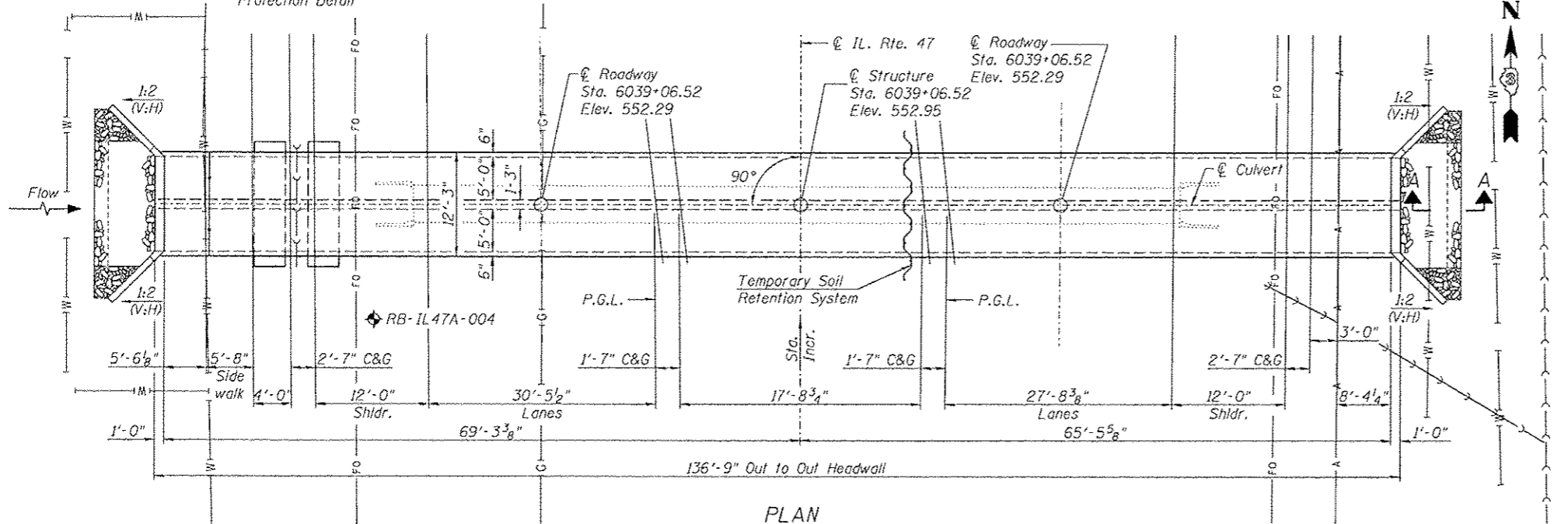
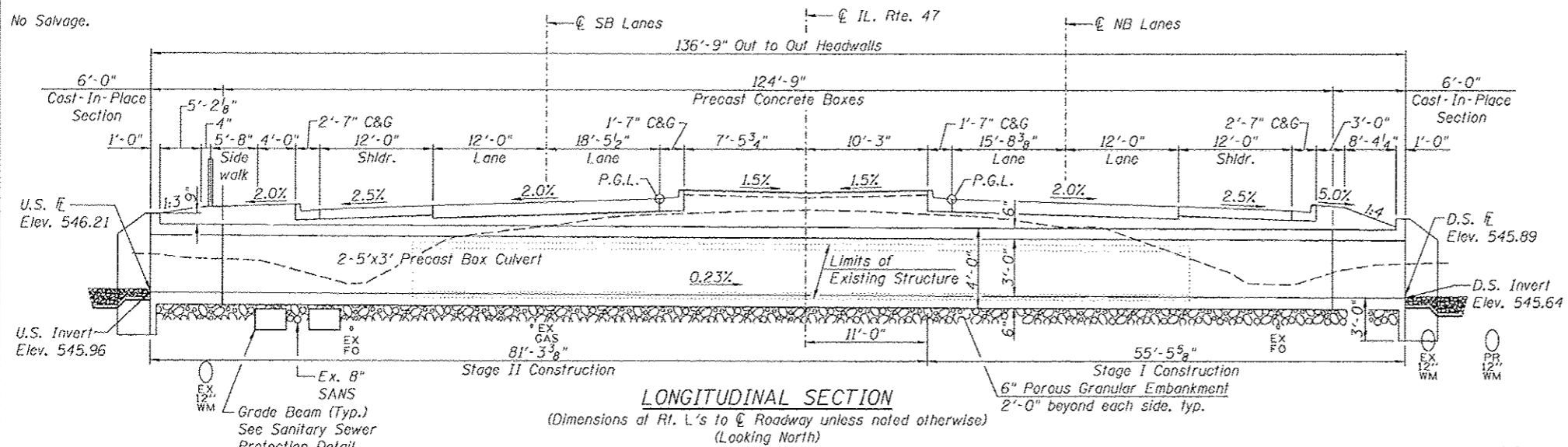


Benchmark: Tag ball on FH located in front of Grundy County Farm Bureau, Elev. 551.80.

Existing Structure: The existing structure consists of a 4'x3' precast box culvert with concrete wingwalls.  
The culvert is approximately 81'-0" in length with no skew. Existing structure to be removed and replaced.  
Traffic to be maintained utilizing stage construction.

No Salvage.



**WATERWAY INFORMATION**

Drainage Area = 0.61 sq mi      Exist. Low Grade Elev. 550.21  
Prop. Low Grade El. = 551.30

Flood	Freq. Yr.	Q C.F.S.	Opening Sq. Ft.		Vel. H.W.E.		Head - Ft.		Headwater El.	
			Exist.	Prop.	Exist.	Prop.	Exist.	Prop.	Exist.	Prop.
Design	10	124	11	30	548.9	1.9	0.0	550.7	548.9	
Base	50	185	11	30	549.1	1.8	0.6	550.8	549.7	
Overlapping	100	208	12	30	549.3	1.8	1.0	551.1	550.3	
Max. Calc.	500	264	12	30	549.4	1.9	1.6	551.3	551.1	

10 year velocity through Existing structure = 11.3 fps  
10 year velocity through Proposed structure = 4.1 fps

**TOTAL BILL OF MATERIAL**

ITEM	UNIT	TOTAL
Porous Granular Embankment	Cu. Yd.	41.2
Stone Riprap, Class A4	Sq. Yd.	30
Filter Fabric	Sq. Yd.	30
Removal of Existing Structures	Each	1
Reinforcement Bars	Pound	2990
Name Plates	Each	1
Concrete Box Culverts	Cu. Yd.	12.5
Precast Concrete Box Culverts 5'x3'	Foot	249.5
Temporary Soil Retention System	Sq. Ft.	227

**DESIGN SCOUR ELEVATION TABLE**

Design Scour Elevation (ft.)	U.S. Invert	D.S. Invert
	542.96	542.64

**INDEX OF SHEETS**

1. General Plan & Elevation
2. General Data
3. Culvert Details
4. Soil Borings

**DESIGN SPECIFICATIONS**  
2012 AASHTO LRFD Bridge Design Specifications, 6th Edition

**LOADING HL-93**  
Allow 50#/sq. ft. for future wearing surface.

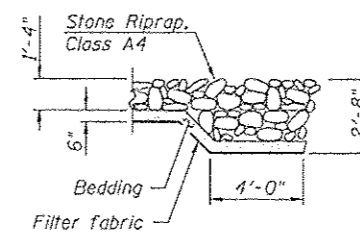
**DESIGN STRESSES**

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

**PRECAST UNITS**  
f'c = 5,000 psi  
fy = 60,000 psi (Reinforcement)  
fy = 65,000 psi (Welded Wire Fabric)

**GENERAL NOTES**

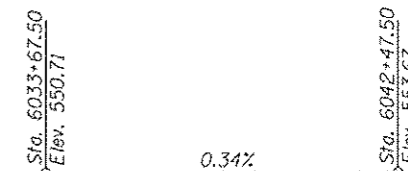
Layout of the slope protection system may be varied to suit ground conditions in the field as directed by the Engineer.  
The last section of precast culvert on each end shall have reinforcing bars extending from the precast culvert to be incorporated into the cast-in-place end sections as shown on sheet 3.  
Precast concrete box culverts shall conform to the design requirements of ASTM C1577.  
See Box Culvert Backfilling Detail within roadway detail sheets for limits of Granular Culvert Backfill.



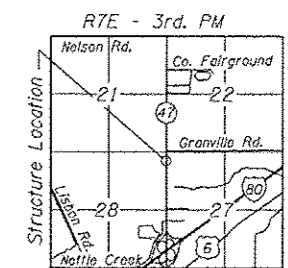
SECTION A-A

STATION 6039+06.52  
BUILT BY  
STATE OF ILLINOIS  
F.A.P. RTE. 326  
SEC. (110)R, BR & BR-1  
LOADING HL-93  
STRUCTURE NO. 032-2541

**NAME PLATE**  
See Std. 515001



**PROFILE GRADE**  
(Along IL. Rte. 47 P.G.)



**LOCATION SKETCH**

**GENERAL PLAN & ELEVATION**  
**IL. RTE. 47 OVER**  
**DRAINAGE DITCH**  
**F.A.P. RTE. 0326-SEC (110)R,**  
**BR & BR-1**  
**GRUNDY COUNTY**  
**STATION 6039+06.52**  
**STRUCTURE NO. 032-2541**



Vincent P. Tabor 7/15/2013  
Date

Vincent P. Tabor  
Licensed Structural Engineer  
State of Illinois No. 081-007047  
Expires 11/30/2014