

Benchmark: B.M. 7005. Found cut "+" north end of westerly headwall on box culvert 1000' south of Helmar Road, Elevation 661.53.

Existing Structure: The existing structure consists of a double 8'x6' concrete box culvert with concrete wingwalls. The culvert is approximately 74'-6" in length with no skew. Existing structure to be removed and replaced. Traffic will be maintained utilizing stage construction.

No Salvage.

\*Waterproofing membrane shall cover the top surface of the culvert, including the top and inside face of edge beams at stage lines, and extend 6 inches up the inside face of the headwall. For precast box culverts, the waterproofing membrane shall cover the top 1 foot of the outside face of the sidewalls. For cast in place box culverts, the waterproofing membrane shall extend to 6 inches below the construction joint between the culvert sidewall and the top slab on the outside face of the sidewalls.

**INDEX OF SHEETS**

1. General Plan & Elevation
2. General Data
3. Culvert Details
- 4-5. Soil Borings

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

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

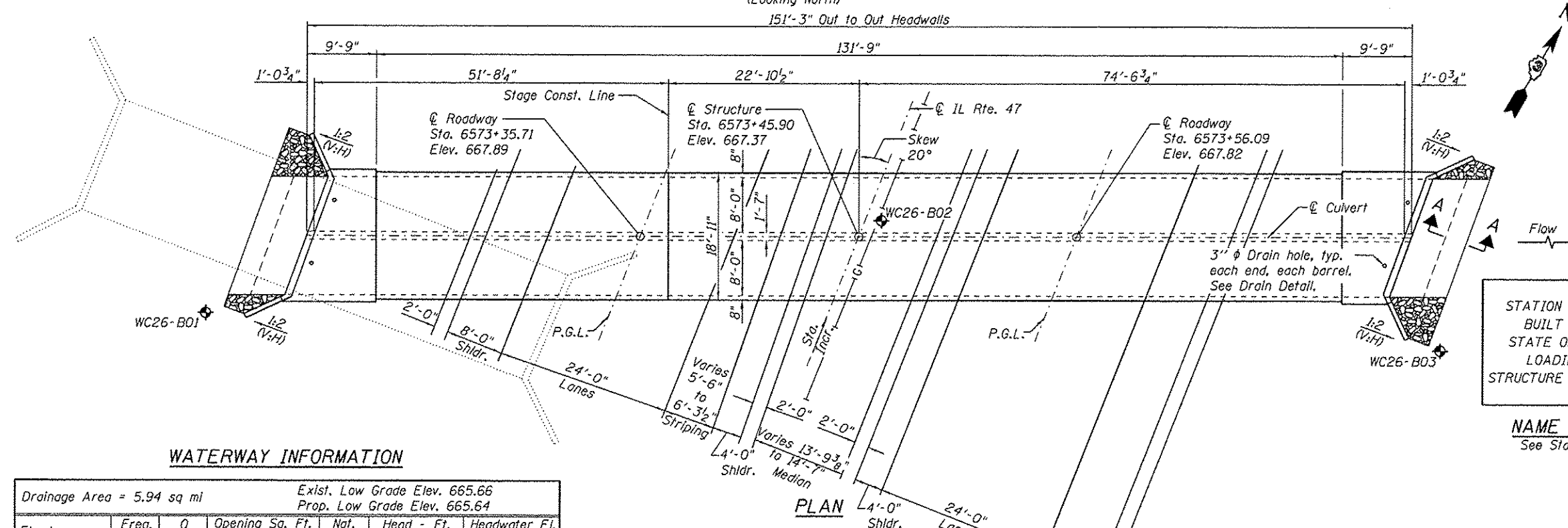
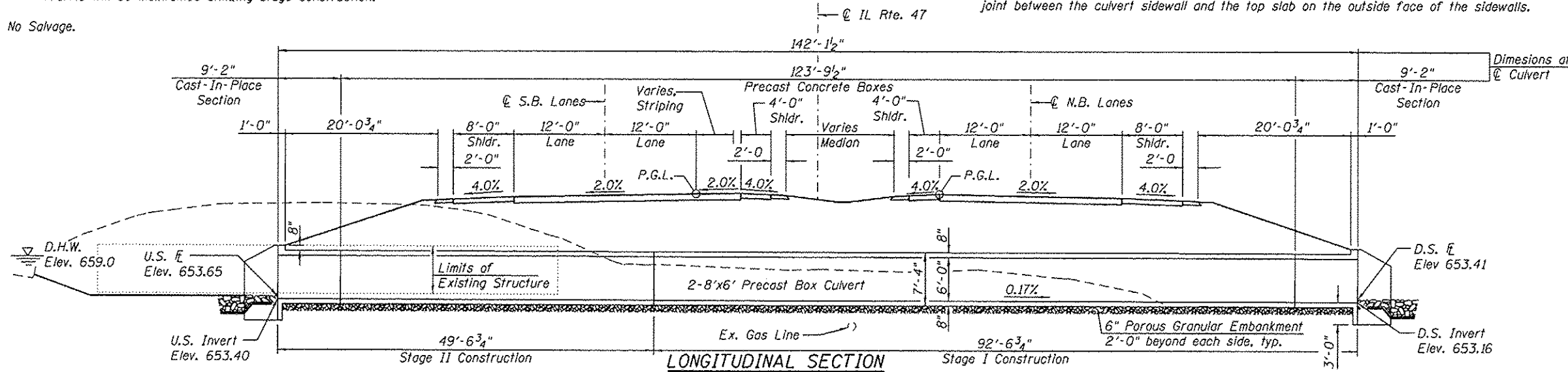
**DESIGN STRESSES**

**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 of 5. Precast concrete box culverts shall conform to the design requirements of ASTM C1577.

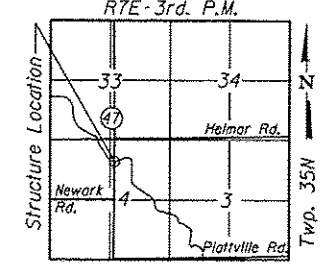


STATION 6573+45.90  
BUILT 20 BY  
STATE OF ILLINOIS  
LOADING HL-93  
STRUCTURE NO. 047-2564

**NAME PLATE**  
See Sid. 515001

**PROFILE GRADE**

(Along IL Rte. 47 P.G.)  
RTE-3rd. P.M.



**LOCATION SKETCH**

**GENERAL PLAN & ELEVATION**

**IL. RTE. 47 OVER  
DRAINAGE DITCH  
F.A.P. RTE. 326  
SEC-(109, 110)R-1  
KENDALL COUNTY  
STATION 6573+45.90  
STRUCTURE NO. 047-2564**

**WATERWAY INFORMATION**

Drainage Area = 5.94 sq mi		Exist. Low Grade Elev. 665.66		Prop. Low Grade Elev. 665.64		
Flood	Freq. Yr.	0 C.F.S.	Opening Sq. Ft.	Nat. H.W.E.	Head - Ft.	Headwater E.I.
			Exist. Prop.	Exist. Prop.	Exist. Prop.	Exist. Prop.
Design	10	552	74 77	658.5 1.0	1.0	659.5 659.5
Base	50	778	82 85	659.0 2.2	2.0	661.2 661.0
Overtopping	100	880	86 88	659.2 2.6	2.5	661.8 661.7
Max. Calc.	500	1123	92 95	659.6 4.3	3.9	663.9 663.5

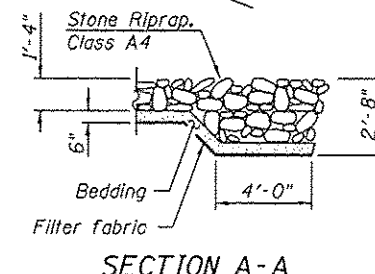
10 year velocity through Existing Structure = 7.4 fps  
10 year velocity through Proposed Structure = 7.2 fps

**DESIGN SCOUR ELEVATION TABLE**

Design Scour Elevation (ft.)	U.S. Invert	D.S. Invert
	650.40	650.16

**TOTAL BILL OF MATERIAL**

ITEM	UNIT	TOTAL
Porous Granular Embankment	Cu. Yd.	64
Stone Riprap, Class A4	Sq. Yd.	70
Filter Fabric	Sq. Yd.	70
Removal of Existing Structures No.10	Each	1
Reinforcement Bars	Pound	11660
Name Plates	Each	1
Concrete Box Culverts	Cu. Yd.	50.9
Precast Concrete Box Culvert 8'x6'	Foot	263.5
*Membrane Waterproofing For Culverts	Sq. Yd.	351



**SECTION A-A**

Vincent P. Tabor 7/14/2014  
Date  
Vincent P. Tabor  
Licensed Structural Engineer  
State of Illinois No. 081-007047  
Expires 11/30/2014