

Benchmarks: 1.) Iron rod in power pole, Sta. 22+29/38' LT, Elev. 599.18

2.) Top of cap bolt on hydrant in front of house #805 on Rickelman Ave., Sta. 25+61/23' RT, Elev. 604.03

Existing Structure:

The existing structure consists of a 7' x 5.5' reinforced concrete box culvert with concrete wingwalls. The culvert length is approximately 40'-0". One lane of traffic will be maintained utilizing stage construction.

No Salvage.

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

DESIGN SPECIFICATIONS

AASHTO 2002

DESIGN STRESSES

FIELD UNITS

$f'_c = 3,500$ psi (Cast-In-Place)
 $f_y = 60,000$ psi (Reinforcement)

PRECAST UNITS

$f'_c = 5,000$ psi (Precast)
 $f_y = 60,000$ psi (Reinforcement)
 $f_y = 65,000$ psi (Welded Wire Fabric)

LOADING HS20-44

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

WATERWAY INFORMATION

Drainage Area = 1.08 Sq. Mi.		Existing Low Grade Elev. 595.96 @ Sta. 23+22.81		Proposed Low Grade Elev. 595.89 @ Sta. 23+23.00		
Flood	Freq. Yr.	Q C.F.S.	Opening Sq. Ft. Exist. Prop.	Nat. H.W.E.	*Head - Ft. Exist. Prop.	Headwater El. Exist. Prop.
	10					
Design	30	442	39 65	590.7	4.6 0.6	595.3 591.3
Base	100	593	39 75	591.8	4.0 0.2	595.8 592.0
Overtopping						
Max. Calc.	500					

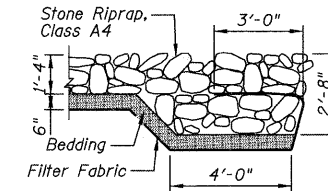
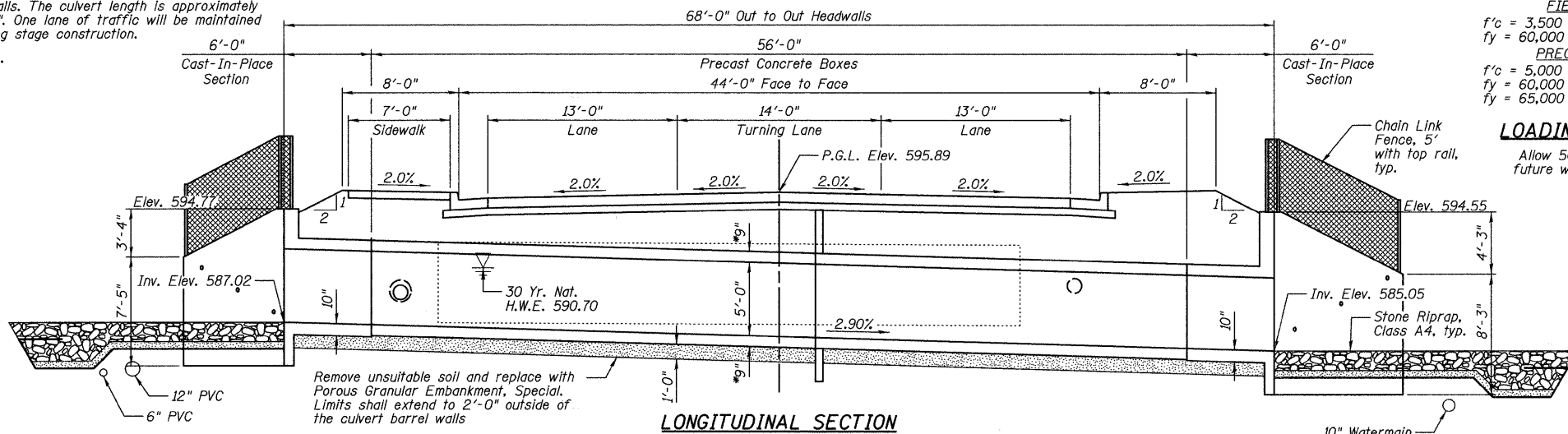
10 year velocity through Existing Structure = 11.34 fps
10 year velocity through Proposed Structure = 4.02 fps

TOTAL BILL OF MATERIAL-BOX CULVERT

ITEM	UNIT	TOTAL
Removal And Disposal Of Unsuitable Material	Cu Yd	62
Porous Granular Embankment, Special	Cu Yd	62
Stone Riprap, Class A4	Sq Yd	145
Filter Fabric	Sq Yd	145
Removal Of Existing Structures	Each	1
Reinforcement Bars	Pound	7,360
Temporary Sheet Piling	Sq Ft	626
Concrete Box Culverts	Cu Yd	45.1
Precast Concrete Box Culvert 9'x5'	Foot	112
Chain Link Fence, 5'	Foot	86

GENERAL NOTES

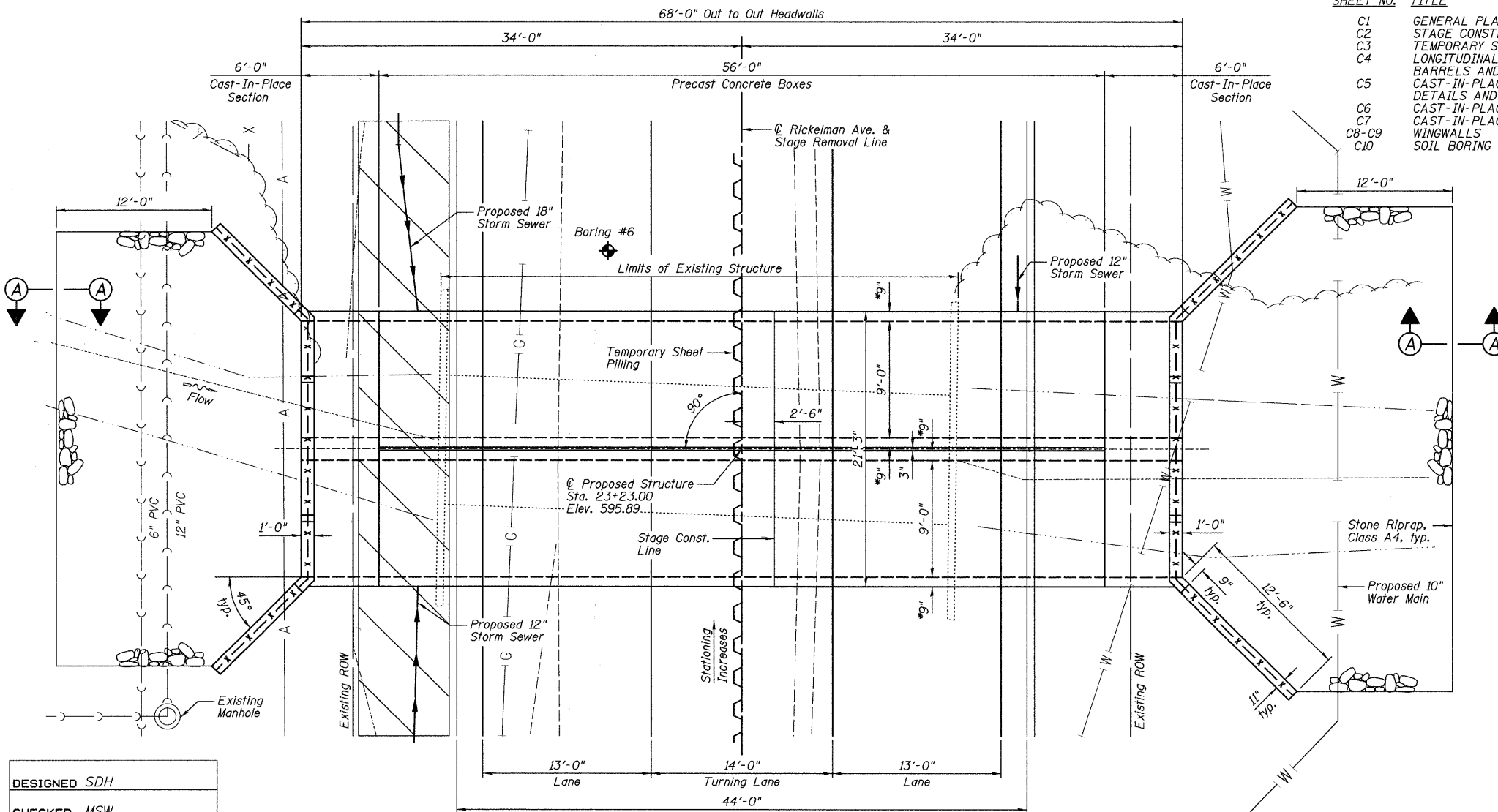
- 1.) Reinforcement bars shall conform to the requirements of ASTM A 706 Gr 60 (IL Modified). See Special Provisions.
- 2.) Layout of the slope protection system may be varied to suit ground conditions in the field as directed by the Engineer.
- 3.) Cast-In-Place concrete exposed edges shall be beveled $\frac{3}{4}$ ".
- 4.) 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".
- 5.) Structural seal does not include design of precast elements.
- 6.) The precast concrete culvert sections shall be designed and manufactured in accordance with AASHTO M259 (ASTM C 789).
- 7.) For backfilling and embankment, see Standard Specifications.
- 8.) End of precast section shall not have a bell or spigot.
- 9.) Contractor to confirm all precast culvert dimensions with supplier before starting construction. All applicable cast-in-place concrete dimensions shall match precast culvert dimensions.
- 10.) See Sheet C10 for soil borings.
- 11.) The last section of precast culvert shall have reinforcing bars extending from the precast culvert as shown on Sheets C4-C7.
- 12.) The pay item "Removal and Disposal of Unsuitable Material" shall include the excavation of unsuitable material for a depth of 1'-0" below the structure for a width of 25'-3" within the limits of the toe walls as shown on the plans. The actual amount shall be determined in the field by the Engineer.
- 13.) The pay item "Porous Granular Embankment, Special" shall include the placement of CA-7 below the structure for a width of 25'-3" within the limits of the toe walls as shown on the plans. The actual amount shall be determined in the field by the Engineer.
- 14.) The Contractor shall reshape the channel within the Easement 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".
- 15.) At least 6'-0" of the culvert walls shall be poured with the wingwalls.



SECTION A-A

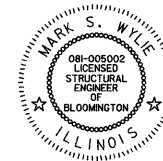
INDEX OF SHEETS

SHEET NO.	TITLE
C1	GENERAL PLAN AND ELEVATION
C2	STAGE CONSTRUCTION PLAN
C3	TEMPORARY SHEET PILING DETAIL
C4	LONGITUDINAL SECTION, SECTION THRU PRECAST BARRELS AND PRECAST END ELEVATION
C5	CAST-IN-PLACE CONCRETE CULVERT SECTION, DETAILS AND BILL OF MATERIAL
C6	CAST-IN-PLACE TOP SLAB PLAN AND SECTION
C7	CAST-IN-PLACE BOTTOM SLAB PLAN AND SECTION
C8-C9	WINGWALLS
C10	SOIL BORING LOGS

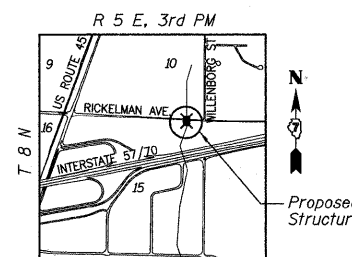


PLAN

I certify that to the best of my knowledge, information and belief, this box culvert design is structurally adequate for the design loading shown on the plans. The design is an economical one for the style of structure and complies with requirements of the current "AASHTO Standard Specifications for Highway Bridges".



Mark S. Wylie Date 10/19/10
MARK S. WYLIE
ILLINOIS STRUCTURAL ENGINEER
NO. 081-005002
Exp. Date 11/30/10



LOCATION SKETCH

GENERAL PLAN AND ELEVATION

DESIGNED	SDH
CHECKED	MSW
DRAWN	JWK
CHECKED	MSW

DATE 10/19/10

NOTES:

- 1.) *Confirm slab and wall thickness with Precaster.
- 2.) P.G.L. denotes Profile Grade Line.

SHEET NO. C1	F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
10 SHEETS		07-00112-00-PV	EFFINGHAM	53	33
			CONTRACT NO. 95635		
			FED. ROAD DIST. NO. 3 ILLINOIS FED. AID PROJECT		