



Original Report Date: 04-14-2014 Proposed SN: 046-2017 Route: FAP 796 (IL 115)  
 Revised Date: 09-22-2014 Existing SN: 046-0067 Section: 104 BR  
 Geotechnical Engineer: Michael Short, IDOT District 3 County: Kankakee  
 Structural Engineer: Mike Okrent - Bloom Companies Contract: 66B74

Indicate the proposed structure type, substructure types, and foundation locations (attach plan and elevation drawing): *The proposed structure is a 10' by 7' double precast concrete box culvert. The end treatment for the box culvert will be precast concrete end sections.*

Discuss the existing boring data, existing plans foundation information, new subsurface exploration and need for any additional exploration to be provided with SGR Technical Memo (attach all data and subsurface profile plot): *Two soil borings have been completed and are sufficient to design the proposed improvements.*

Provide the location and maximum height of any new soil fill or magnitude of footing bearing pressure. Estimate the amount and time of the expected settlement. Indicate if further testing, analysis, and/or ground improvement/treatment is necessary: *The roadway profile will not change. There will be approximately 2 feet of soil fill over the top of the box culvert, however, due to the high strengths of the underlying soils, settlement is not expected. The existing structure and roadway do not have any signs of settlement. No further testing or analysis for settlement is necessary.*

Identify any new cuts or fill slope angles and heights. Estimate the factor of safety against slope failure. Indicate if further testing, analysis or ground improvement/treatment is necessary. *The foreslopes will be widened and flattened throughout the project and will generally be less than 8 feet tall. The existing slopes do not have any signs of slope failure. No further testing or analysis for slope stability is necessary.*

Indicate at each substructure, the 100-year and 500-year total scour depths in the Hydraulics report, the non-granular scour depth reduction, the proposed ground surface, and the recommended foundation design scour elevations. *Assuming culvert invert elevations of 659.20 (upstream) and 659.05 (downstream), the design scour elevations are 656.20 (upstream) and 656.05 (downstream) if 3 ft. deep toe walls are used.*

Determining the seismic soil site class, the seismic performance zone, the 0.2 and 1.0 second design spectral accelerations and indicate if that the soils are liquefiable. *Not applicable to box culverts*

Confirm feasibility of the proposed foundation or wall type and provide design parameters. Attach a pile design table indicating feasible pile types, various nominal required bearings, factored resistances available and corresponding estimated lengths at locations where piles will be used. Provide factored bearing resistance and unit sliding resistance at various elevations and confirm no ground improvement/treatment is necessary where spread footings are proposed. Estimated top of rock elevations as well as preliminary skin friction and end bearing values shall be indicated when drilled shafts are proposed. *The foundation soils are acceptable for construction of the proposed precast concrete box culvert. The only aggregate needed under the precast concrete box culvert is the 6 inches required by Article 540.06 of the Standard Specifications.*

Calculate the estimated water surface elevation and determine the need for cofferdam(s) and seal coat: *The proposed box culvert can be constructed using conventional construction methods.*

Assess the need for sheeting/soil retention versus using a temporary construction slope and provide recommendation for the most feasible option. *If stage construction is utilized, the pay item Temporary Soil Retention System should be used because soil strengths exceed the allowable soil strengths allowed for use of temporary sheet piling.*



# SOIL BORING LOG

ROUTE IL 115 DESCRIPTION IL 115 over Reddick Creek, 1.7 miles North of Cabery LOGGED BY Larry Myers

SECTION 104-B LOCATION NE 1/4, SEC. 5, TWP. 29N, RNG. 9E,

Latitude 41.021683, Longitude -88.209552

COUNTY Kankakee DRILLING METHOD Hollow Stem Auger HAMMER TYPE CME Automatic

STRUCT. NO. 046-0067 (Exist.)  
Station 953+12

BORING NO. 1 (N.W. Quad.)  
Station 952+80  
Offset 14.0 ft Rt.  
Ground Surface Elev. 669.82 ft

DEPTH H S	B L O W S	U C S Qu	M O I S T
(ft)	(/6")	(tsf)	(%)

Surface Water Elev. 660.47 ft  
Stream Bed Elev. 659.69 ft

Groundwater Elev.:  
First Encounter Dry ft  
Upon Completion Dry ft  
After      Hrs.      ft

DEPTH H S	B L O W S	U C S Qu	M O I S T
(ft)	(/6")	(tsf)	(%)

Augered Shoulder Stone, Brown Silty Clay Loam Till				Hard Gray Silty Clay Loam Till (continued)	6			
					8	5.3	16	
					10	S		
	667.32							
Hard Brown Silty Clay Loam Till & Black Silty Clay Loam Fill		5			5			
		5	>4.5	22	6	4.8	17	
		5	P		7	S		
	-5				-25			
		4			4			
		5	>4.5	26	5	4.8	18	
		5	P		7	S		
	662.32				642.82			
Very Stiff Brown & Gray Silty Clay Loess		3			Very Stiff Gray Silty Clay Loam Till			
		3	3.0	24		3		
		4	P			4	3.4	17
						5	B	
	660.32							
Very Stiff Brown Silty Clay Loam Till								
	-10				-30			
		3				3		
		3	3.2	23		3	3.1	20
		3	B			4	B	
	657.82							
Hard Grayish Brown Silty Clay Loam Till		5						
		6	5.1	18				
		9	S					
	655.32							
Hard Gray Silty Clay Loam Till								
	-15				-35			
		6				3		
		6	5.1	20		4	3.6	18
		8	S			5	B	
					633.32			
					End of Boring			
		5						
		8	5.1	17				
		8	S					
	-20				-40			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)



ROUTE IL 115 DESCRIPTION IL 115 over Reddick Creek, 1.7 miles North of Cabery LOGGED BY Larry Myers

SECTION 104-B LOCATION NE 1/4, SEC. 5, TWP. 29N, RNG. 9E,

Latitude 41.02153, Longitude -88.209547

COUNTY Kankakee DRILLING METHOD Hollow Stem Auger HAMMER TYPE CME Automatic

STRUCT. NO. 046-0067 (Exist.)  
Station 953+12  
BORING NO. 2 (S.W. Quad.)  
Station 953+35  
Offset 14.0 ft Rt.  
Ground Surface Elev. 669.83 ft

D E P T H  H  ft	B L O W S  S  (ft)	U C S  Qu  (/6")	M O I S T  T  (tsf)	M O I S T  T  (%)
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Surface Water Elev.	<u>660.47</u>	ft
Stream Bed Elev.	<u>659.69</u>	ft
Groundwater Elev.:		
First Encounter	<u>Dry</u>	ft
Upon Completion	<u>Dry</u>	ft
After	<u>      </u>	Hrs.

D E P T H  H  ft	B L O W S  S  (/6")	U C S  Qu  (tsf)	M O I S T  T  (%)
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Augered Shoulder Stone, Brown Silty Clay Loam Till					Hard Gray Silty Clay Loam Till (continued)				
						6			
						7	4.8	17	
						7	S		
667.33									
Hard Brown Silty Clay Loam Till Fill & Black Silty Clay Loam Fill		5				5			
		5	>4.5	20		5	4.3	18	
		6	P			8	S		
-5									
	4					5			
	4	4.5	17			4	4.4	19	
	4	P				6	S		
662.33									
Very Stiff Brown & Gray Silty Clay Loess		4			Very Stiff Gray Silty Clay Loam Till				
		3	3.5	24		4			
		4	P			4	3.8	18	
						3	B		
-10									
	2					4			
	2	2.5	27			4	3.2	19	
	2	P				4	B		
657.83									
Very Stiff Brown Silty Clay Loam Till, Soft in top 1' (12.5' - 13.5')		WH							
		2	3.0	22					
WH - weight of hammer		5	B						
655.33									
Hard Gray Silty Clay Loam Till		6							
		8	5.2	15		4			
		10	S			5	3.6	19	
						4	B		
-15									
633.33									
					End of Boring				
	5								
	6	4.8	18						
	7	S							
-20									

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)