



Original Report Date: 3-2-2015 Proposed SN: 027-2020 Route: FAP 71 (IL 54)  
 Revised Date: N/A Existing SN: 027-0021 Section: (115BR-1)-1  
 Geotechnical Engineer: Michael Short, IDOT District 3 County: Ford  
 Structural Engineer: Toni McDonough, McDonough-Whitlow, P.C. Contract: 66C94

Indicate the proposed structure type, substructure types, and foundation locations (attach plan and elevation drawing):  
*The proposed structure is a double 9-feet by 6-feet precast box culvert with a 45° right forward skew.*

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):  
*The existing structure is a 25 ft single span bridge on a 45° right forward skew supported by untreated timber piles. Two soil borings were performed by IDOT District 3 in 2014. The soil boring logs are attached.*

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 profile of the proposed roadway is not expected to change significantly, therefore there will not be any additional loads applied to the soils. A site visit indicated no signs of settlement problems near the existing structure. No further settlement analysis is required.*

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 proposed side slopes are expected to be flatter than existing. Proposed slopes are 1:3 and a maximum of 9 ft at culvert ends. A site visit indicated no slope stability problems near the existing structure. No further slope stability analysis is warranted.*

Indicate at each substructure, the 100-year and 200-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.  
*The design scour elevation table is not required for closed bottom box culverts per ABD Memo 14.2.*

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.*

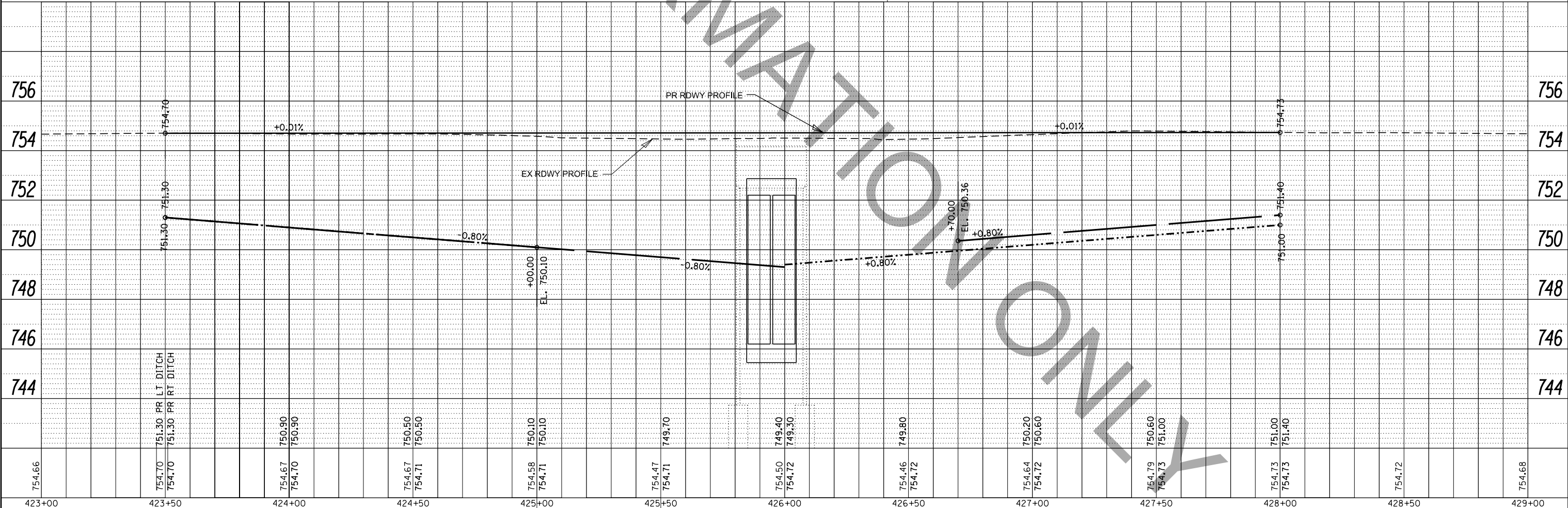
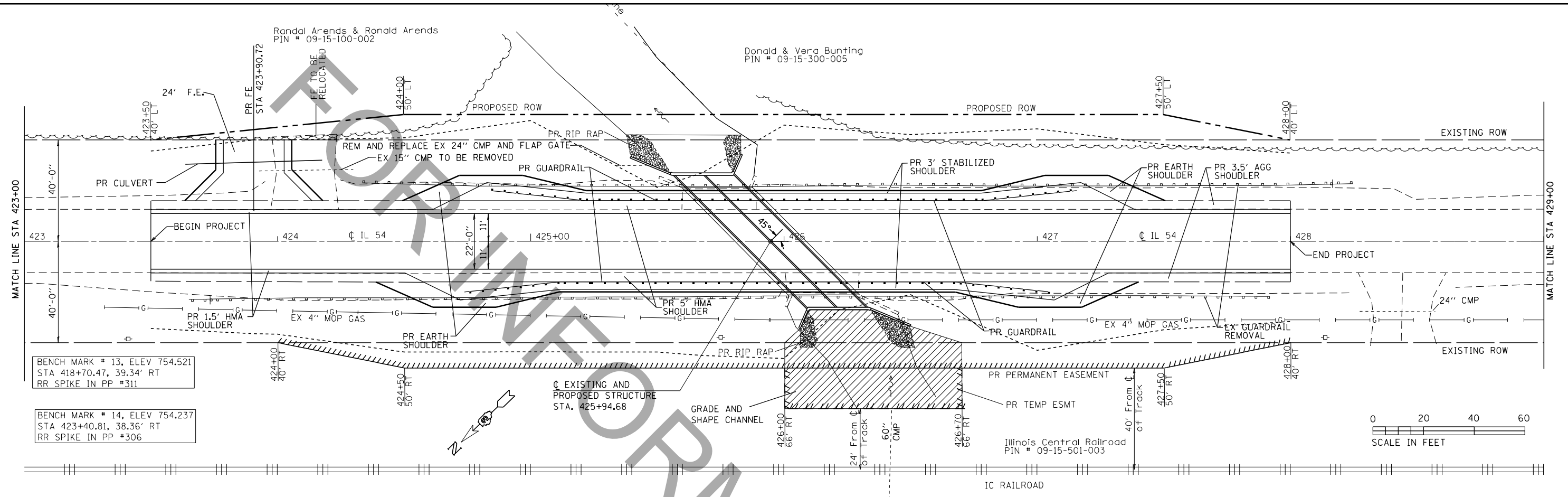
Confirm feasibility of the proposed foundation or wall type and provide design parameters. Attach a pile design table indicating feasible pile types, various nominal required bearings, factored resistances available and corresponding estimated lengths at locations where piles will be used. Provide factored 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 factored unit side and tip resistance values shall be indicated when drilled shafts are proposed.  
*Since the length of the long wingwalls exceed the maximum allowable length for horizontal cantilever wingwalls, L-type wingwalls or a horizontal cantilever wingwall with gabion extensions are feasible. For L-type and gabion wingwalls, the allowable bearing capacity exceeds 5 ksf. 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 cofferdams (type 1 or 2), and seal coat:  
*The structure can be constructed using conventional methods for water diversion.*

Assess the need for sheeting or soil retention or temporary construction slope and provide recommendation for other construction concerns.  
*The new structure will be constructed using a detour. However, if it becomes necessary to use staged construction, the pay item "Temporary Soil Retention System" should be used because soil strengths exceed 4.5 tsf.*

PLAN	SURVEYED	DATE
	PLOTTED	BY
	ALIGNED	CHECKED
	FILED	NO.
	NO.	

PROFILE	SURVEYED	DATE
	PLOTTED	BY
	GRADES CHECKED	CHECKED
	STRUCTURE NOTATIONS CHECKED	NO.
	NO.	



FILE NAME =	USER NAME = alexanderds	DESIGNED -	REVISED -	<b>STATE OF ILLINOIS</b> <b>DEPARTMENT OF TRANSPORTATION</b>	<b>PLAN AND PROFILE SHEET</b> <b>SN 027-0021</b>	F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	
c:\pwwork\pwwork\alexanderds\d0337066\0366C94-sht-plnprf.dgn	DRAWN -	REVISED -	71			(115BR-11-1)	FORD				
#MODELNAMEs	CHECKED -	REVISED -	SCALE: 1:20			SHEET	OF	SHEETS	STA. 423+00	TO STA. 429+00	CONTRACT NO. 66C94
	DATE -	REVISED -	ILLINOIS FED. AID PROJECT								



**Illinois Department of Transportation**

Division of Highways  
Illinois Department of Transportation, District 3

**SOIL BORING LOG**

Date 6/18/14

ROUTE IL 54 (SBI-48) DESCRIPTION IL 54 over Drainage Ditch, 7.06 miles North of IL 9 LOGGED BY Larry Myers

SECTION 115-B LOCATION SW 1/4, SEC. 15, TWP. 24N, RNG. 8E, 3<sup>rd</sup> PM,

Latitude 40.536447, Longitude -88.28854

COUNTY Ford DRILLING METHOD Hollow Stem Auger HAMMER TYPE CME Automatic

STRUCT. NO. 027-0021 (Exist.)  
Station 425+87

BORING NO. 01 (E. Quad.)  
Station 425+40  
Offset 15.0 ft Lt.  
Ground Surface Elev. 754.04 ft

D E P T H  (ft)	B L O W S  (/6")	U C S  (tsf)	M O I S T  (%)
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Surface Water Elev.	ft
Stream Bed Elev.	ft
Groundwater Elev.:	
First Encounter	Dry ft
Upon Completion	724.0 ft
After	Hrs. ft

D E P T H  (ft)	B L O W S  (/6")	U C S  (tsf)	M O I S T  (%)
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Augered Shoulder Gravel, Black & Gray Silty Clay Loam Fill				Hard Gray and Olive Green Silty Clay Loam Till (continued)			
					3		
					5	4.5	14
					6	S	
751.54							
Stiff to Very Stiff Black & Gray Silty Clay Loam Fill	2				2		
	2	2.0	18		5	4.5	14
	3	P			7	S	
749.54							
Soft Gray & Brown Sandy Loam with Sand/Gravel layers							
	-5				-25		
	1				5		
	1	0.5	21		8	5.3	15
	2	P			10	S	
747.04							
Very Stiff to Hard Olive Green and Gray Silty Clay Loam Till							
	2				6		
	3	3.8	16		9	5.1	19
	4	S			10	S	
744.54							
Hard Gray Silty Clay Till with Sand and Silt seams							
	-10				▽ -30		
	3				6		
	4	4.2	14		10	5.6	18
	6	S			10	S	
	5						
	8	4.6	16				
	9	S					
	-15				-35		
	4				5		
	5	4.2	18		8	4.8	19
	7	S			10	S	
736.54					717.54		
Very Stiff Gray Silt with Minor Clay				End of Boring			
	3						
	5	3.5	22				
	7	P					
734.54							
	-20				-40		

SOIL BORING 027-0021.GPJ IL\_DOT\_GDT 3/2/15

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)

