

Original Report Date: <u>2/18/2016</u>	Proposed SN: <u>047-2052</u>	Route: <u>US 52 (FAP 607)</u>
Revised Date: <u>N/A</u>	Existing SN: <u>047-0037</u>	Section: <u>(126) BR</u>
Geotechnical Engineer: <u>Michael Short, IDOT District 3</u>		County: <u>Kendall</u>
Structural Engineer: <u>Shuja Kazi, Delta Engineering Group, LLC</u>		Contract: <u>66C62</u>

**Indicate the proposed structure type, substructure types, and foundation locations (attach plan and elevation drawing):** The proposed structure is a double 10-foot by 6-foot precast concrete box culvert with cast-in-place end sections and no skew. The proposed plan and profile are attached.

**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 single span bridge supported by untreated timber piles. The approach pavements at each end are supported by 20-foot long concrete piles. Two soil borings were performed by IDOT District 3 in 2013. The soil borings 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 of the roadway is not expected to change, therefore there will not be any significant load applied to the soils. A site visit indicated no signs of settlement problems with 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 not expected to change significantly. The current side slopes range from 1:3 to 1:4 and are a maximum of 9-foot high at the culvert ends. A site visit indicated no slope stability problems with 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.** Not applicable to closed bottom box culverts as 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.**

Both cast-in-place end sections and horizontal cantilever wingwalls are feasible for the culvert. The soils under the proposed box culvert will not require removal and replacement to support the proposed structure. 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.

The concrete piles and pile caps from the original approach pavement at both ends of the structure will need to be removed to the excavation line.

PLAN	SURVEYED	DATE
	PLOTTED	BY
	GRADES CHECKED	
	STRUCTURE NOTATIONS CHECKED	
	NOTE BOOK NO.	
	FILE NAME	

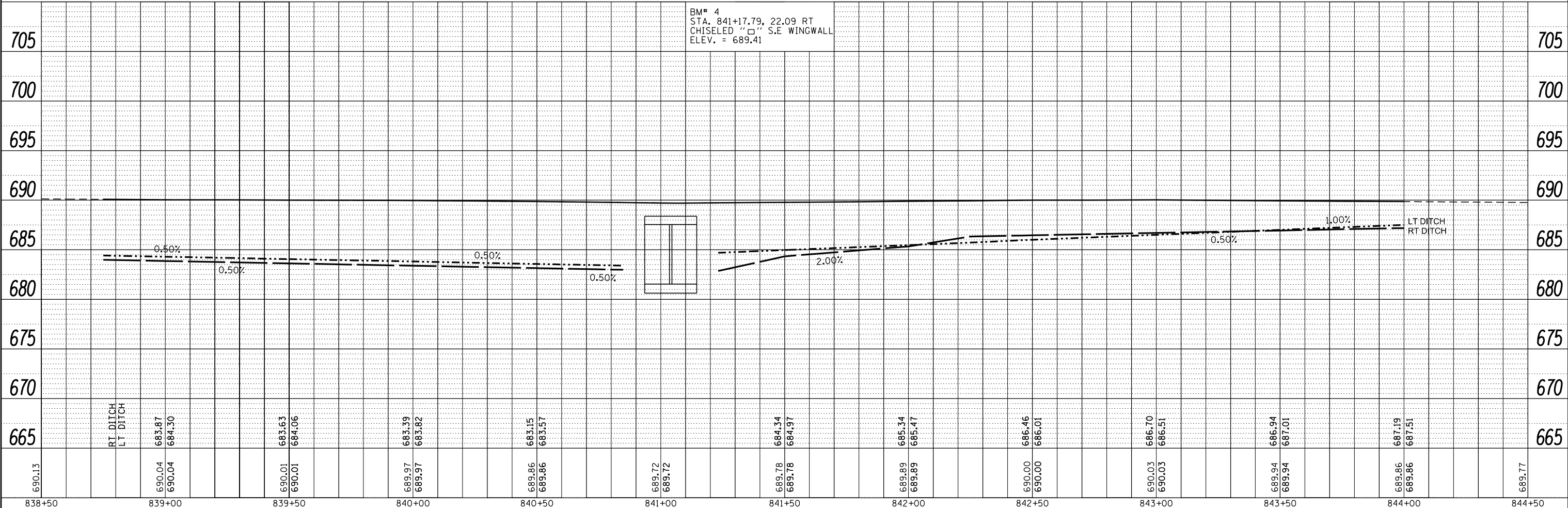
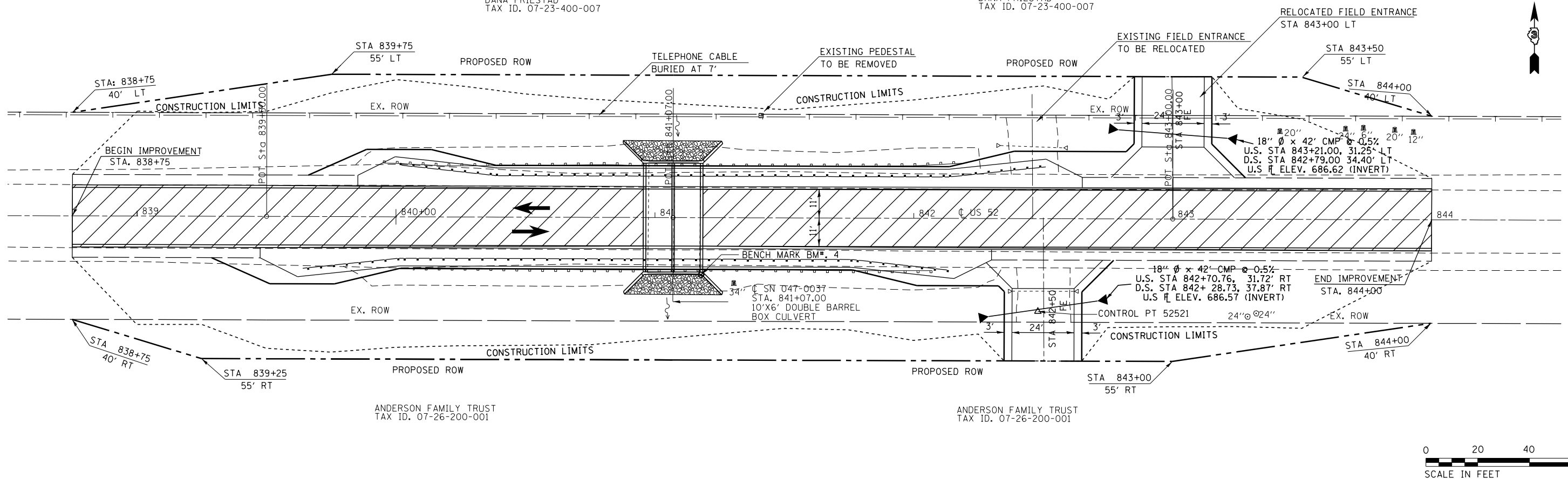
PROFILE	SURVEYED	DATE
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	GRADES CHECKED	
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DANA FRIESTAD  
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ANDERSON FAMILY TRUST  
TAX ID. 07-26-200-001

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TAX ID. 07-26-200-001



BM# 4  
STA. 841+17.79, 22.09 RT  
CHISELED "□" S.E. WINGWALL  
ELEV. = 689.41

FILE NAME =	USER NAME = pillionkj	DESIGNED -	REVISED - K. PILLION 8/22/14
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**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

SCALE:	SHEET	OF	SHEETS	STA.	TO	STA.
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F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
607	(126)BR	KENDALL		
				CONTRACT NO. 66C62
ILLINOIS FED. AID PROJECT				



