



Matthew G. Bevin
Governor

**COMMONWEALTH OF KENTUCKY
TRANSPORTATION CABINET**
Frankfort, Kentucky 40622
www.transportation.ky.gov/

Greg Thomas
Secretary

March 11, 2019

CALL NO. 201
CONTRACT ID NO. 195060
ADDENDUM # 1

Subject: Daviess-McClearn-Ohio Counties, 121GR19D060 - STP
Letting March 22, 2019

(1) Added - Special Notes - Pages 1 to 14

Proposal revisions are available at <http://transportation.ky.gov/Construction-Procurement/>.

If you have any questions, please contact us at 502-564-3500.

Sincerely,

A handwritten signature in black ink that reads "Rachel Mills".

Rachel Mills, P.E.
Director
Division of Construction Procurement

RM:mw
Enclosures



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SPECIAL NOTE FOR ADDITIONAL ENVIRONMENTAL COMMITMENTS

Bundle 19.03.01

02-10023.00	Daviess	030B00111N
02-10011.00	Ohio	092C00001N
01-10008.00	McLean	075B00026N

In addition to other environmental commitments listed in this contract, the following commitments also apply:

- 1) The Contractor shall not go beyond the limits specified as “archaeologically cleared” or “Archaeology APE,” and shall avoid areas identified as “Do Not Disturb.” If no limits are shown on the plans, the contractor shall adhere to the stipulations in the project-specific CAP. If there is no CAP, the contractor shall confine construction work to the previously disturbed area within the existing right of way. If the areas outside the cleared areas are intended for use as laydown yards, vehicle parking, or any other activity related to the construction of this project, the Contractor must clear the area for environmental concerns.

- 2) In the event that human remains are encountered during project activities, all work should be immediately stopped in the area. The area should be cordoned off, and, in accordance with KRS 72.020, the county coroner and local law enforcement must be contacted immediately. Upon confirmation that the human remains are not of forensic interest, the unanticipated discovery must be reported to Nicolas Laracuenta at the Kentucky Heritage Council at (502) 892-3614 and George Crothers at the Office of State Archaeology at (859) 257-1944.

For guidance regarding inadvertent discovery and treatment of human remains, refer to the KYTC’s Right of Way Guidance Manual (Section ROW-1202), and the Advisory Council on Historic Preservation’s (ACHP) Policy Statement Regarding Treatment of Human Remains and Grave Goods (adopted by ACHP February 23, 2007).

- 3) If, during the implementation of The Project, a previously unidentified historic/archaeological property is discovered or a previously identified historic/archaeological property is affected in an unanticipated manner, the contractor shall (1) call KYTC DEA archaeologists at (502) 564-7250, (2) call SHPO archaeologists at (502) 892-3614, and (3) ensure that all work within a reasonable area of the discovery shall cease until such time as a treatment plan can be developed and implemented.

Archaeologically Cleared 02-10011.00 Ohio County 092C00001N

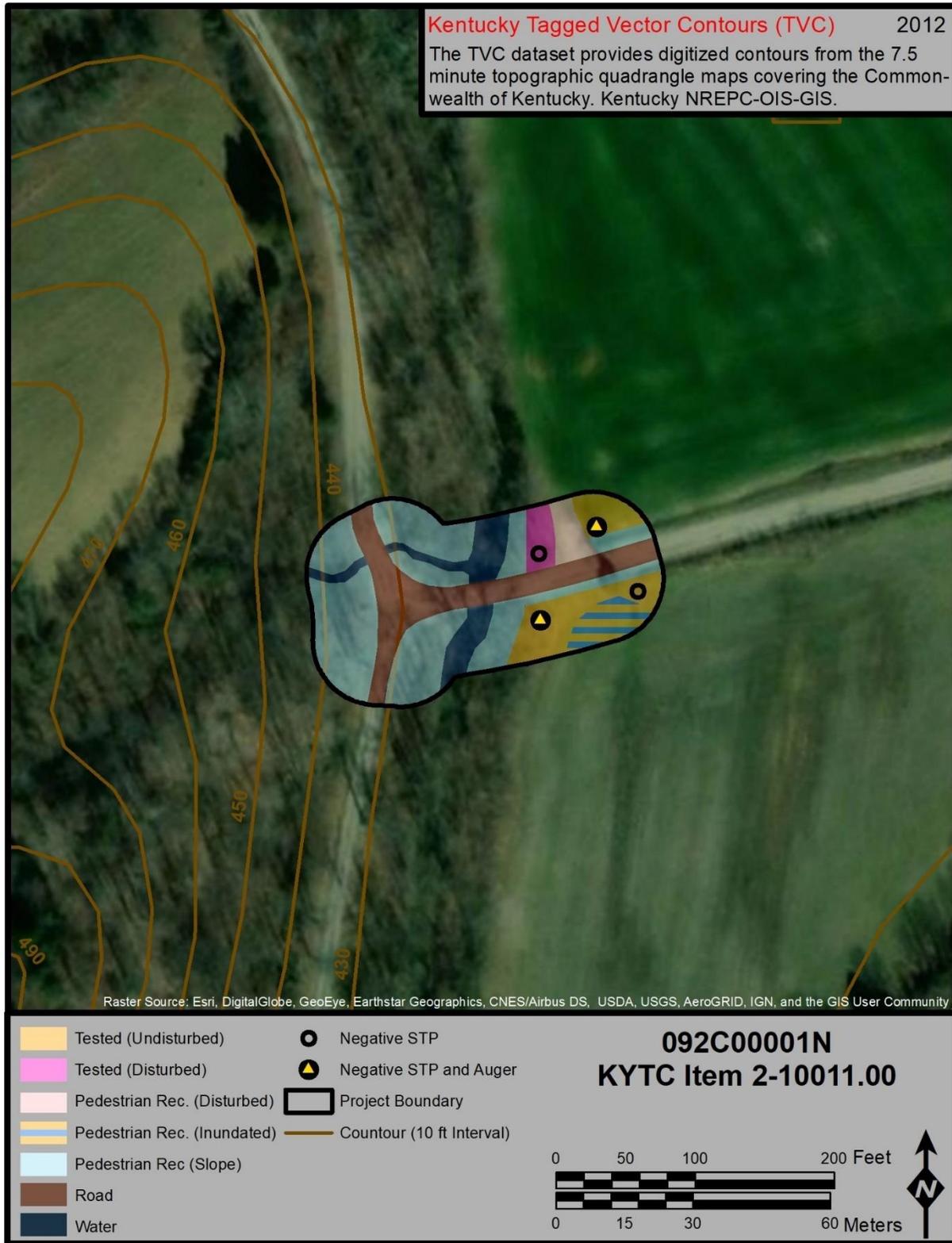


Figure 6. Bridge 092C00001N (Item No. 2-10011), showing project area conditions and excavated test locations on aerial map.

Archaeologically Cleared
02-10008.00 McLean County 075B026N



Project APE.

Archaeologically Cleared
02-10023.00 Daviess County 030B00111N

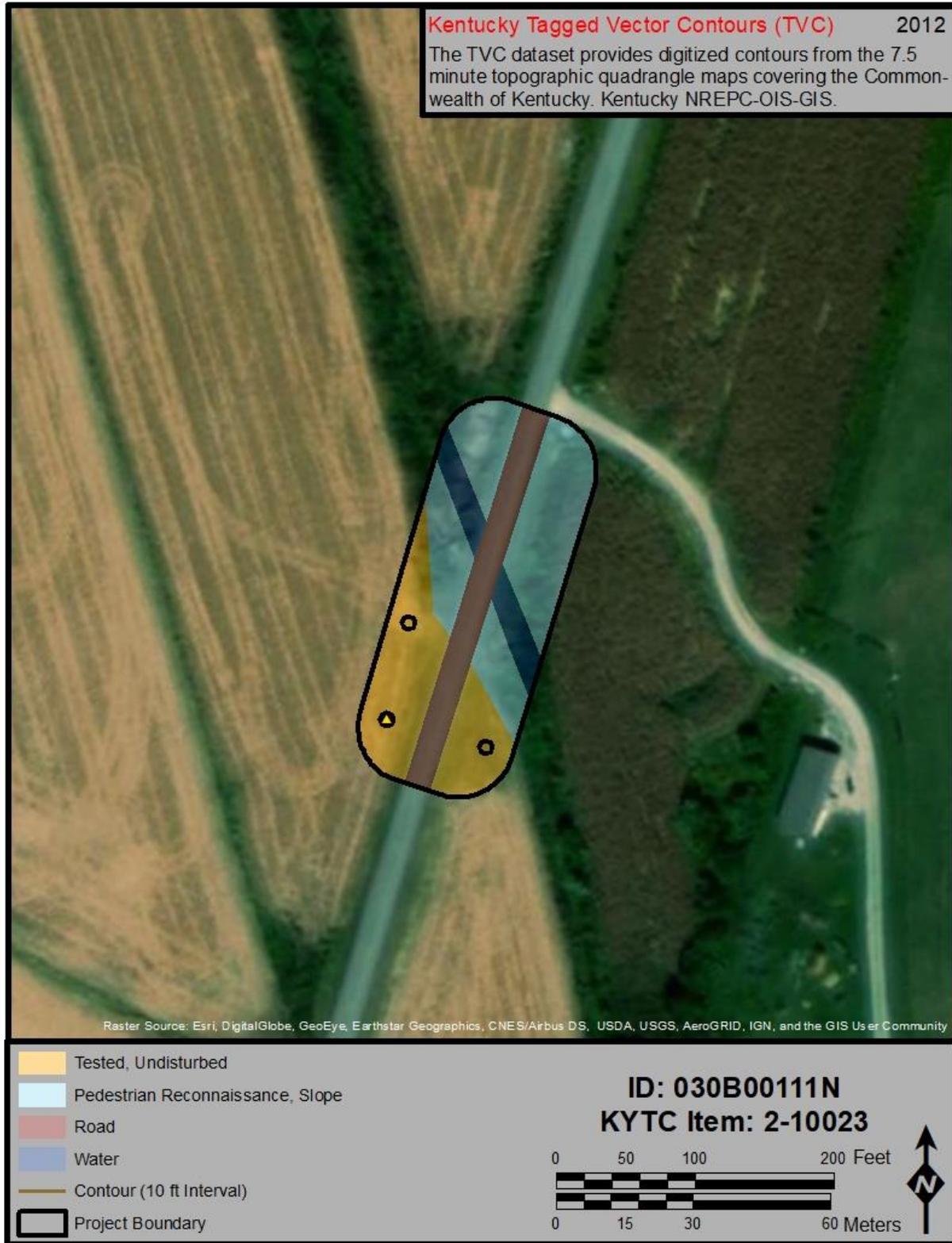


Figure 17. Daviess County Bridge No. 030B00111N (Item No. 2-10023) showing project area conditions and excavated test locations on aerial map.

Special Note For Milestone Completions

Progress Milestone Completion

Progress Milestones are set up to ensure a continuous progression of work on the contract and state the number of bridges that must be completed by a specified date. Unless specified elsewhere in the contract, it is the Contractor's decision on which structures to complete by the milestone completion. Refer to Special Note for Liquidated Damages in this proposal. Failure to meet the required completion date for the number of structures will result in the Contractor being charged for Milestone Completion Damages equal to a percentage of the Liquidated Damages, as specified per section 108.09 of the Standard Specification applied at a rate equal to the formula below:

$$\left(\frac{\text{\# of Bridges failed to meet completion requirement}}{\text{Total \# of Bridges}} \right) \times \text{Liquidated Damage Daily Rate}$$

Bridge Specific Milestone Completion

Bridge Specific Milestones are set up for each structure and listed in the Special Note for Liquidated Damages as total days allowed for bridge closure or lane closure. In addition, certain structures may require completion by a specific date or some may not be allowed to be started until a specific date. In the event work is not complete by the specified date or within the specified range on more than one structure, Bridge Specific Milestone Completion Damages will be applied for each structure. Bridge Specific Milestone Completion Damages and the Liquidated Damage rates will be applied cumulatively.

For example, if two structures each allow for only 60 day bridge closures and both bridges are continuing to be worked on with the bridge closed at 61 days, then the Bridge Specific Milestone Completion Damages will be applied twice, once for each bridge. Also, should the Contractor violate both the specified number of days for a closure and the required completion date for that structure, Both Bridge Specific Milestone Completion Damages and Liquidated Damages will be applied cumulatively, for each violation.



January 23, 2019

Mr. Rodney Little, PE
Bridging Kentucky Area Team Leader
QK4
1046 E. Chestnut Street
Louisville, KY 40204

RE: Geotechnical Exploration
Ohio County, Kentucky
West Halls Creek Road over
Branch of Halls Creek
Bridge No. 092C00001N

Dear Mr. Little:

1 INTRODUCTION

The abbreviated geotechnical engineering report for this structure has been completed. The project is a part of the Bridging Kentucky Program. The project is to replace the existing bridge at West Halls Creek road over the Branch of Halls Creek in Ohio County, Kentucky.

2 GEOLOGY

The structure is in the Dundee Geologic Quadrangle (GQ-688). Available geologic mapping indicates the soils at this site consist of Quaternary-aged alluvial deposits overlying the Buffalo Wallow Formation. The alluvial deposits consist primarily of clays. The Buffalo Wallow Formation is comprised of sandstone, shale and siltstone. The sandstone is described as yellow to brown, medium grained and massively bedded. The shale is described as gray to brown, clayey, locally calcareous, finely laminated and grades laterally into siltstone. The siltstone is described as brown to gray and thin bedded.

Mapping indicates various faults traveling primarily latitudinally near the site. The faults located beneath the alluvial deposits are concealed and comprise the Rough Creek Fault system. If a fault is discovered during construction, please call this office for guidance.

3 DRILLING AND SAMPLING

One soil test boring and one sounding was completed at this location. Soil samples were obtained throughout the boring. Bedrock was encountered in both borings at depths of 14.8 and 17.2 feet below the ground surface.

The boring "as drilled" latitudes and longitudes in decimal degrees were surveyed as a part of the Bridging Kentucky Program and are available in Table 1. Table 1 provides a summary of the locations, elevations, and depths of the borings drilled for the proposed bridge.

Ohio County
West Halls Creek Road over
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Table 1: Bridge over Branch of Halls Creek – Summary of Borings

Hole No.	Latitude	Longitude	Surface Elevation (ft.) MSL	Top of Rock/Refusal		Begin Core		Bottom of Hole	
				Depth (ft.)	Elevation (ft.) MSL	Depth (ft.)	Elevation (ft.) MSL	Depth (ft.)	Elevation (ft.) MSL
B-1	37.515968	-86.807876	426.5	14.8	411.7	14.8	411.7	24.3	402.2
B-2	37.515963	-86.808039	430.0	17.2	412.8	N/A	N/A	17.2	412.8

4 LABORATORY TESTING

The laboratory testing indicates that the soil sampled at this location was clay. Laboratory test results indicate that the soils classify as CL in accordance with the USCS and as A-6 in accordance with the AASHTO classification.

5 ENGINEERING ANALYSIS AND FOUNDATION RECOMMENDATIONS

5.1 OPTION 1 COLUMN FOOTINGS ON ROCK

5.1.1 Abutments–Size the footings at service limit state using presumptive bearing resistance of **20 ksf** on competent unweathered bedrock.

5.2 OPTION 2 PRE-DRILLED PILES

5.2.1 Option 2 End Bents and Piers– Use end bearing steel H-Piles with reinforced pile points driven to bedrock. The approximate point of pile elevation is near 411.7 feet at the eastern end bent and 412.8 feet at the western end bent. We recommend a resistance factor (ϕ_c) of 0.5 to determine the maximum nominal resistance of the piles.

A minimum pile length of 10 feet is required below the pile bent/pile cap. Backfill the holes with sand or pea gravel after the pile is placed in the hole. A temporary casing may be required to prevent collapse of the hole. If used, remove the casing as the hole is being backfilled. Drive piles to refusal after backfill operations are complete.

5.2.2 Wave Equation Analysis– Drivability analyses were performed for the piles at this location assuming 12X53 HP-Piles. These analyses indicate that a single acting diesel hammer with rated energies of 10 to 20 foot-kips is recommended to adequately drive the piles without encountering excessive blow counts or overstressing the piles. The use of hammers other than single acting diesel may require different energy ranges.

Drivability analyses were performed assuming continuous driving.

5.3 BOTH OPTIONS

5.3.1 Settlement at End Bents– A settlement analysis was not required due to the relatively small amount of new fill that will be added.

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5.3.2 Embankment Stability– Due to the minimal amount of new fill, no embankment stability analyses were deemed necessary.

5.3.3 Concealed Faults– Mapping indicates various faults traveling primarily latitudinally near the site. The faults located beneath the alluvial deposits are concealed and comprise the Rough Creek Fault system. If a fault is discovered during construction, please call this office for guidance.

6 STRUCTURE PLAN NOTES

Add the following plan notes as necessary at the appropriate locations in the plans.

6.1 OPTION 1 COLUMN FOOTINGS ON ROCK

6.1.1 Based on a review of the existing subsurface conditions and anticipated structural loads, a rock bearing foundation system consisting of spread footings may be used for all bridge substructure elements. A presumptive bearing resistance of **20 ksf** on unweathered bedrock is being recommended.

6.1.2 Mapping indicates various faults traveling primarily latitudinally near the site. The faults located beneath the alluvial deposits are concealed and comprise the Rough Creek Fault system. If a fault is discovered during construction, please call this office for guidance.

6.1.3 Foundation excavations should be properly braced/shored to provide adequate safety to people working in or around the excavations. Bracing should be performed in accordance with applicable federal, state and local guidelines.

6.1.4 Temporary shoring, sheeting, cofferdams, and/or dewatering methods may be required to facilitate foundation construction. It should be anticipated that groundwater will be encountered at foundation locations within the floodplain.

6.1.5 Rock-bearing spread footings are being provided for substructure elements. Foundation excavations for footings at the structure locations should be level and free of loose, water softened material, etc. Additional rock excavation to achieve suitable bearing conditions may be required depending upon topography and bedrock weathering conditions.

6.1.6 Solid rock excavation will be required for installation of the substructure's spread footings. The contractor shall take care during blasting and other excavation methods to avoid over-breakage and damage to the bedrock beneath the footings

6.1.7 Bearing elevation of footings may be adjusted at the discretion of the Engineer if competent, unweathered bedrock is found at a higher elevation than specified for the respective substructure element. The top of new spread footings should be fully embedded into unweathered bedrock. At a minimum, one-foot embedment into competent bedrock shall be maintained.

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- 6.1.8 Prior to placement of any concrete or reinforcing steel in a foundation excavation, the excavation bottom should be clean and all soft, wet, or loose materials should be removed. In no case should concrete be placed upon compressible or water-softened materials.
- 6.1.9 Concrete placement for footings should be placed as soon as practical after completion of the footing excavation. If the bedrock becomes softened at bearing elevation, the softened material should be undercut to unweathered material prior to placement of reinforcing steel and concrete. Seasonal groundwater fluctuations may cause groundwater infiltration into the footing excavation, and a dewatering method may be necessary.
- 6.1.10 Any clay seams or suspect weak materials at or near the bearing elevation will need to be undercut and replaced with mass concrete.
- 6.1.11 Footing excavations in bedrock shall be cut neatly so that no forming or backfilling is necessary in the construction of the portions of the footings located in rock. Concrete shall be placed directly against the cut rock faces. Mass concrete should be placed in the excavation from the top of the footing to the bedrock surface where the footing does not extend to the bedrock surface.

6.2 OPTION 2 PRE-DRILLED PILES

- 6.2.1 **A plan note should be included by the designer** to address pre-drilling for piles at specified locations to the estimated bearing elevation. Where pre-drilling is necessary for pile installation, holes shall be drilled into solid rock. A minimum pile length of 10 feet is required below the pile bent/pile cap. Backfill the holes with sand or pea gravel after the pile is placed in the hole. A temporary casing may be required to prevent collapse of the hole. If used, remove the casing as the hole is being backfilled. Drive piles to refusal after backfill operations are complete. Include the cost of all materials, labor, and equipment needed to pre-drill, backfill the holes, and drive the piles to refusal in the price per linear foot for "Pre-drilling for Piles".
- 6.2.2 Mapping indicates various faults traveling primarily latitudinally near the site. The faults located beneath the alluvial deposits are concealed and comprise the Rough Creek Fault system. If the fault is discovered during construction, please call this office for guidance.
- 6.2.3 Foundation excavations should be properly braced/shored to provide adequate safety to people working in or around the excavations. Bracing should be performed in accordance with applicable federal, state and local guidelines.
- 6.2.4 Temporary shoring, sheeting, cofferdams, and/or dewatering methods may be required to facilitate foundation construction. It should be anticipated that groundwater will be encountered at foundation locations with the flood plain.
- 6.2.5 A diesel pile driving hammer with a rated energy between 10 foot-kips and 20 foot-kips will be required to drive 12x53 steel H-piles to practical refusal without encountering

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excessive blow counts or damaging the piles. The Contractor shall submit the proposed pile driving system to the Engineer for approval prior to the installation of the first pile. Approval of the pile driving system by the Engineer will be subject to satisfactory field performance of the pile driving procedures.

- 6.2.6** For this project, minimum blow requirements may be reached after total penetration becomes ½ inch or less for ten consecutive blows, practical refusal is obtained after the pile is struck an additional ten blows with total penetration of ½ inch or less. Advance the production piling to the driving resistances specified above and to depths determined by test pile(s). Immediately cease driving operations if the pile visibly yields or becomes damaged during driving.
- 6.2.7** If hard driving is encountered because of dense strata or an obstruction, such as a boulder before the pile is advanced to the depth anticipated, the Engineer will determine if more blows than the average driving resistance specified for practical refusal is required to further advance the pile. Drive additional production and test piles if directed by the Engineer.
- 6.2.8** The installation of the pile foundations should conform to current AASHTO LRFD Bridge Design Specifications, and Section 604 of the current edition of the Kentucky Department of Highways Standard Specifications for Road and Bridge Construction.
- 6.2.9** The Kentucky Transportation Cabinet recommends that protective pile points be used on end bearing piles to allow for embedment into the top of bedrock. Use of reinforced pile points capable of penetrating boulders and hard layers which may be encountered is recommended. Installation of pile points should be in accordance with Section 604 of the Kentucky Standard Specifications for Road and Bridge Construction, current edition.

The designer should feel free to contact AEI at 270-651-7220 for further recommendations or if any questions arise pertaining to this project.

Sincerely,

AMERICAN ENGINEERS, INC.



Jackson Daugherty, EIT, PMP
Geotechnical Engineer



Dennis Mitchell, PE, PMP
Director of Federal Geotechnical Services

Attachments:

- Boring Layout
- Typed Boring Logs
- Laboratory Data

PLOT DATE: 1/17/2019 8:42:23 AM USER: JACKSON DAUGHERTY
T:\GEOTECH SUPPORT\KYTC\218-158 BRIDGING KY PROGRAM\GEOTECH\INITIAL BRIDGES\REPORTS\OHIO CO 092C00001N\ SUPPORT INFO\OHIO 092C00001N LAYOUT.DGN



LEGEND

- SOIL BORING WITH STANDARD PENETRATION TESTS AND ROCK CORE
- ROCKLINE SOUNDING



GRAPHIC SCALE: NTS		BRIDGING KENTUCKY	
DATE: 01/17/2109	BRIDGE: 092C00001N	PAGE NO. -	
DRAWN BY: JC	CKD. BY: JD	SHEET: WEST HALLS CREEK ROAD OVER BRANCH OF HALLS CREEK	FIG. NO. -
AEI JOB NO.: 218-158			
FILE NAME:			

DRILLER'S SUBSURFACE LOG

Project ID: 092C00001N		Ohio - West Halls Creek Road				Project Type: Structure			
Item Number: 2-10011		Branch of Halls Creek				Project Manager: _			
Hole Number B-1		Immediate Water Depth (01/02/19)		Start Date 01/02/2019		Hole Type core and sample			
Surface Elevation 426.5'		Static Water Depth NA		End Date 01/02/2019		Rig Number _			
Total Depth 24.3'		Driller Jim Powers		Latitude(83) 37.515968					
Location + 'Lt.				Longitude(83) -86.807876					
Lithology		Overburden		Sample No.	Depth (ft)	Rec. (ft)	SPT Blows	Sample Type	Remarks
Elevation	Depth	Description		Std/Ky RQD	Run (ft)	Rec (ft)	Rec (%)	SDI (JS)	
426.1	0.4	Topsoil.							
5		Brown, moist to wet, lean clay with fine gravel (stiff to very stiff).		1	3.5-5.0	1.1	7-4-14	SPT	5
10				2	8.5-10.0	1.4	3-6-7	SPT	10
15				3	13.5-14.8	1.1	16-25-50/0.30	SPT	15
413.0	13.5	Shale (gray, soft to moderately hard, thin to medium thick bedded.).							
411.7	14.8	(Begin Core)							
20		Dark gray shale.		0 / 0	4.5	4.4	97		19.3
25				0 / 0	5.0	5.0	100		24.3
402.2	24.3	(Bottom of Hole 24.3')							
30									30
35									35
40									40
45									45
50									50

Project ID: 092C00001N
 Location: Ohio
 Item No: 2-10011

Hole	Sample Type	Depth	Liquid Limit	Plastic Limit	PI	D50	%<#200 Sieve	AASHTO	Classification	Water Content (%)	Dry Density (pcf)	CBR
B-1	SPT	3.5	40	23	17	0.010	81	A-6 (14)	CL	23.1		
B-1	SPT	8.5								14.5		
B-1	SPT	13.5								15.8		

Total Jars: 0
 Total SPT: 0
 Total ST: 0
 Total Cut Bags: 0
 Total Fill Bags: 0