Kaskaskia
Engineering Group, LLC

November 21, 2025

ROADWAY GEOTECHNICAL REPORT

Woodford County State Fish and Wildlife Area
Woodford County, Illinois
PTB # 207-055
KEG Project # 23-1070.08

AUTHORED BY

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PREPARED FOR

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PROJECT

Woodford County State Fish and Wildlife Area
Woodford County, Illinois

November 21, 2025

TABLE OF CONTENTS

EXHIBITS

Exhibit A – Location Map
Exhibit B – Boring Logs
Exhibit C – Soil Profiles
Exhibit D – Laboratory Test Data and BMPR 508A Forms
Exhibit E – Pavement Core Pictures
Exhibit F – Subgrade Support Rating (SSR Chart)
Exhibit G – DCP Results Provided by V&K

1.0 PROJECT DESCRIPTION, LOCATION AND SCOPE

This report presents the geotechnical data, analyses, and design recommendations for the roadway improvement and reconstruction of the interior and access roads at the Woodford County State Fish and Wildlife Area, in Woodford County, Illinois. Dynamic Cone Penetrometer data providing IBV values at four locations along the interior road and an aerial map showing asphalt patch work locations performed along the interior road were provided by Veenstra & Kimm, Inc. (V&K). The standard 12-inch improved subgrade is proposed, as required in the Mechanistic Pavement Design (MPD) method. The general location of the project is shown in Exhibit A - Location Map. The purpose of this investigation was to characterize the site soil, groundwater conditions, and provide geotechnical recommendations for the design and construction of the proposed roadway improvements. A detailed analysis of erosion control and drainage is beyond the scope of this report.

2.0 GEOLOGY AND PEDOLOGY

The project is in S ½ of Section 15, S ½ of Section 16, and N ½ of Section 22, Tier 28N, Range 3W of the Third Principal Meridian. According to the Bedrock Topography of the Middle Illinois River Valley of Bureau, Marshall, Peoria, Putnam, and Woodford Counties, Illinois (Berg, Weibel, Stumpf & McKay, 2009), and according to the Bedrock Geology of Illinois (Kolata, 2005), and the Surficial Deposits of Illinois (Hansel & Johnson, 1996), the project is located mostly on bedded silts, clays, sand, and gravel deposits of the Cahokia Formation deposited during the Holocene Epoch, and medium grained matrix of the Tiskilwa Formation deposited during the Wisconsin glaciation of the Pleistocene Epoch. Bedrock is sandstone, shale, and limestone, of the Carbondale Formation of the Pennsylvanian Period. Bedrock is estimated to be at an approximate elevation of 360 to 373 feet (ft) above mean sea level.

Review of the Woodford County soil survey obtained from http://websoilsurvey.nrcs.usda.gov indicates that the soil within the project limits is composed of the Calco silty clay loam, Raveenwash silt loam, and the Slacwater silt loam, that experience long duration frequent to occasional flooding.

Table 2.0 – Slope Percentage and Erosion Potential

Soil Type	Percent Slope (%)	Runoff Class	Erosion Factors		
			Kw	Kf	T
(3360L) Slacwater silt loam	0 to 2	-	0.37	0.37	5
(8368A) Raveenwash silt loam	0 to 2	-	0.43	0.43	5
(8400L) Calco silty clay loam	0 to 2	-	0.28	0.28	5

Kw – indicates the erodibility of the whole soil
Kf – indicates the erodibility of the fine-earth fraction
T – estimate of the maximum average annual rate of soil erosion by wind/or water in tons per acre per year

3.0 FIELD EXPLORATION

The field exploration portion for the soil survey consisted of eight (8) roadway borings designated RB-01 to RB-06, B-07 and B-08. The field exploration also consisted of seven pavement cores designated as PC-01 to PC-07. The boring locations were determined by Kaskaskia Engineering Group, LLC. (KEG) and confirmed by V&K. These locations were staked by KEG personnel. An ATV D-50 equipped with hollow stem augers was used to advance and maintain open boreholes. Soil sampling was performed according to AASHTO T206, *"Penetration Test and Split Barrel Sampling of Soils"*. The soil was sampled continuously at borings RB-01 to RB-06. Borings B-07 and B-08 were sampled at 2.5-ft intervals to 30 ft and at five (5) ft intervals thereafter to end of boring. Field boring logs, prepared and maintained by a KEG engineer, included lithological descriptions, visual-manual soil classifications, results of Rimac and/or pocket penetrometer, unconfined compressive strength tests, and results of Standard Penetration Tests (SPT) recorded as blows per 6 inches (in) of penetration. The borings were drilled on July 23, 2025. Soil profile is shown in Exhibit C.

GEOCON Professional Services (GEOCON) performed the drilling. The soils that were encountered are summarized below. Borings logs with detailed information regarding the nature and thickness of the soils are shown in Exhibit B. Laboratory testing results are shown in Exhibit D.

Borings RB-01 to RB-06 and B-07 were drilled on the existing roadway pavement. Boring B-08 was drilled outside of roadway pavement, approximately 50 ft east of Boring B-07. The depths of borings RB-01 to RB-06 were extended to 10 ft, 50 ft at B-07, and 25 ft at B-08. The roadway pavement structure encountered ranged in asphalt thickness from 1.0 to 2.75 inches (in). Approximately 12-in topsoil thickness was encountered at Boring B-08. Picture of pavement cores collected are presented in Exhibit F. Table 3.0 shows the pavement composition for each borehole. Below the asphalt pavement and gravel base course, the soil consisted of mostly clay with sand, sand with clay, silty clay, silty clay loam, sandy silty clay, sandy clay, sandy loam, and sand. The soils in general have an unconfined compressive strength (Qu) that ranged from 0.2 to 3.8 tons per square foot (tsf) and moisture contents that ranged from 14 percent (%) to 40%. Traces of peat were encountered between 26 to 30 ft at Boring B-07. Also, heaving sand was encountered during drilling operations between 27 ft to end of boring (45 ft) at Boring B-07.

Table 3.0 – Pavement Core Thickness

Boring No.	Asphalt pavement thickness (in)	GSE (ft)
RB-01	1.5	461.78
RB-02	2.5	458.33
RB-03	1.0	457.55
RB-04	1.75	455.94
RB-05	1.25	448.59
RB-06	2.75	449.02
B-07	2.5	447.41
B-08*	-	445.24

*Obtained outside of roadway pavement. Boring B-08 encountered 12-inch-thick topsoil.
GSE – Ground Surface Elevation

3.1 CLIMATIC CONDITIONS SUMMARY

Table 3.1.1 includes precipitation data for the months of June and July of 2025, leading up to and during the subsurface investigation timeframe. The data indicates that the rainfall amount was below normal.

Table 3.1.1 – Normal vs. Actual Average Rainfall

Month	Avg. Normal Precipitation[1] (in)	Actual Precipitation[2] (in) (2025)	Departure from Normal (+/- in.)
April	3.63	3.28	-0.35
May	4.33	2.70	-1.63
June	3.53	2.53	-1.00
July	3.85	3.46	-0.39
Total	15.34	11.97	-3.37

[1]Average normal precipitation data is from U.S. Climate Data | Climate Peoria - Illinois
[2]Actual precipitation data is from Peoria, IL Weather History | Weather Underground

3.2 GROUNDWATER

Groundwater was recorded during and upon completion of drilling. Perched groundwater was encountered in the roadway borings as shown in Table 3.2.1. It should be noted that the groundwater level is subject to seasonal and climatic variations. In addition, without extended periods of observation, measurement of true groundwater levels may not be possible.

Table 3.2.1 – Groundwater Table

Boring	Depth (ft.)	Elevation (ft.)
RB-01	8.0	453.8
RB-02	8.0	450.3
RB-03	7.0	450.6
RB-04	6.0	449.9
RB-05	4.0	444.6
RB-06	8.0	441.0
B-07	8.5	438.9
B-08	11.0	434.2

4.0 GENERAL SUBGRADE CONDITIONS

4.0.1 OPTION 1: MECHANISTIC PAVEMENT DESIGN

According to the IDOT Geotechnical Manual, the maximum depth of frost penetration in the project area, central one-third of the state, is 35- to 45-inches. Detrimental frost action treatments include deep drains to lower the groundwater surface or removal/replacement of frost susceptible soil. Since the borings were drilled through the existing pavement/alignment, an accurate

representation of the anticipated depth of topsoil to be encountered cannot be quantified. However, 12-inches of topsoil was encountered at Boring B-08.

It is recommended the existing pavement and aggregate base be stripped within the limits of the proposed roadway. After stripping, the stability of the exposed subgrade should be immediately observed for the presence of any unsuitable and/or unstable soils to determine if remedial treatment is necessary. The subgrade should be proof rolled to observe the amount of deflection and rutting taking place under the wheels of heavy construction equipment. Using either static (SCPT) or dynamic (DCP) cone penetrometer tests, soft areas should be evaluated at locations not previously tested according to the 2005 Illinois Department of Transportation (IDOT) Subgrade Stability Manual.

A pavement conforming to IDOT's Mechanistic Pavement Design (MPD) requires a minimum of 12 inches improved subgrade below the design pavement structure to ensure stability during the construction and for long-term pavement performance according to the 2020 IDOT Geotechnical Manual. As per IDOT policy, the top 12 inches of existing subgrade will be improved to facilitate MPD, and additional improvement requirements should be identified beyond the initial 12 inches of improved cover.

According to the IDOT Subgrade Stability Manual, if the adjusted treatment thickness in the field is less than the recommended value, the recommended or planned treatment thickness should be used. Soil modification or soil treatment for the recommended 12-inch soil treatment thickness plan to achieve an IBV of 10 include non-hydrated lime kiln dust (LKD), hydrated lime, lime slurry, slag-modified Portland Cement or Portland Cement. 15% clay is required using LKD. Lime slurry and slag-modified Portland Cement requires a curing time of 24 hours after compaction. Hydrated lime, a courser modifier material than LKD, requires 24 hours before compaction efforts are performed. However, if the 12-inch recommended soil modified treatment thickness does not achieve an IBV of 10, it is the contractor's responsibility to address any corrective action plan.

According to Table 4.0.1.2 and the boring logs shown in Exhibit B, Boring RB-02, shows an IBV value less than 3 for the 0.5 to 4.0 ft depth range. Furthermore, Borings RB-04 and RB-05, show IBV value less than 3 for the 2.0 to 4.0 ft depth range. Additionally, Borings B-07 and B-08, show an IBV value less than 3 for the 3.5 to 5.0 ft depth range. Additional soil treatment depth may be needed at the vicinity of this location where the soil below the initial recommended 12 inches of improved subgrade may not meet the required IBV of 3. However, on the condition that the additional soil treatment depth is greater than four inches below the recommended and standard initial 12-inch improved subgrade, aggregate subgrade improvement may be required instead of the lime-based soil modification. Please see subgrade recommendation for the vicinity of Boring RB-02 in Table 4.0.1.1.

Table 4.0.1.1 – Subgrade Improvement Recommendation at Vicinity of Boring RB-02

Location	Estimated Thickness of Treatment	Treatment Width	Recommended Subgrade Treatment	Concerns
RB-02	24 inches	Entire Roadway Width; Length approx. 200 ft (100 ft north and east of boring location along roadway alignment)	Remove and replace with Agg. Subgrade Improvement	Medium Stiff dark brown SAND with CLAY to CLAY with SAND; damp, Qu = 0.8 tsf & w = 18% to 24%

The actual need for removal and replacement with Aggregate Subgrade Improvement should be determined in the field at the time of construction by the Geotechnical Engineer or soils inspector. All potentially unstable soils should be assessed with a cone penetrometer and treated in accordance with Article 301.04 of the IDOT Standard Specification for Road and Bridge Construction and the undercut guidelines in the IDOT Subgrade Stability Manual. It is also recommended to place the geotextile fabric at the base of undercut areas where low strength subgrade soils are encountered. The 24-inches of improved subgrade at the vicinity of Boring RB-02 is not considered an undercut, and the fabric should not be placed at the base of the proposed 24-inch improved subgrade layer unless it is determined to be necessary to achieve stability by the Geotechnical Engineer or soils inspector at the time of construction.

Fabric should meet the requirements of Article 210, Fabric for Ground Stabilization, of the IDOT Standard Specification for Road and Bridge Construction. Any material not needed at the time of construction should be deleted from the contract with no extra compensation to the contractor. Proof rolling will help the contractor identify moisture sensitive areas, as well as confirm and/or isolate any areas that may require additional treatment depths after required compaction is achieved. The exact limits of the required treatment depths must be quantified in the field during construction. The test should be performed by an IDOT certified soil inspector/tester.

Two (2) California Bearing Ratio (CBR) tests were performed from two (2) bulk samples collected from the top five feet of subsurface soil at Borings RB-03 and B-08. CBR and Illinois Bearing Ratio (IBR) values can be considered equal according to the IDOT Geotechnical Manual. The result of the tests show maximum IBR values of 3.6% and 3.8%. Based on the soils encountered in the borings and the laboratory tests, an IBR value of 3 is recommended for AASHTO pavement design analysis. Moreover, we recommend a Subgrade Support Rating (SSR) of FAIR to POOR for a Mechanistic Pavement Design (MPD) according to the SSR Chart shown in Exhibit G.

The Immediate Bearing Value (IBV) was calculated using Qu values and Equation 2, [Qu (tsf) = 0.32 X IBV] from the IDOT Subgrade Stability Manual, dated May 1, 2005, for the project limits anticipated to have a cohesive material at the proposed subgrade elevation. The IBV is a measure of soil strength of the existing subgrade material and is used to determine the depth and extent of the subgrade treatment zone. IBV values were estimated on samples with Qu values within the top five feet of the borings and resulted in IBV values of 0.94 to 11.88, with an average IBV value of 4.85.

The results of Atterberg Limits testing show that the soils encountered in the subgrade have Liquid Limits (LL) values ranging from 22% to 35%, and Plasticity Indices ranging from 5% to 18%.

According to the IDOT Geotechnical Manual, soils with LL greater than 50% are potentially considered to be expansive soils. With the proposed roadway alignment sitting in the footprint of the existing roadway, KEG recommends the use of additives like lime to reduce the shrinking/swelling potential of the soil and increase the soil strength as discussed below. KEG also recommends an evaluation of the drainage system of the road to see if improvements are necessary.

Table 4.0.1.2 – Subgrade IBV Values

Boring	Depth (ft.)	Qu (tsf)	IBV
RB-01	0.125-2.0	3.5	10.9375
RB-01	2.0-4.0	1.2	3.75
RB-02	0.5-2.0	0.8	2.5
RB-02	2.0-4.0	0.8	2.5
RB-03	1.0-2.0	*NP	-
RB-03	2.0-4.0	1.0	3.125
RB-04	0.5-2.0	2.0	6.25
RB-04	2.0-4.0	0.5	1.5625
RB-05	0.5-2.0	2.3	7.1875
RB-05	2.0-4.0	0.5	1.5625
RB-06	0.5-2.0	2.5	7.8125
RB-06	2.0-4.0	1.8	5.625
B-07	1.0-2.5	1.8	5.625
B-07	3.5-5.0	0.5	1.5625
B-08	1.0-2.5	3.8	11.875
B-08	3.5-5.0	0.3	0.9375

*NP is non-plastic, fine sand

4.0.2 OPTION 2: FULL DEPTH RECLAMATION

The existing asphalt pavement at the project site is suitable for reuse as Reclaimed Asphalt Pavement (RAP), offering a cost-effective rehabilitation option. Pavement thicknesses range from 1.0 to 2.75 inches, and the roadway carries an estimated ADT of fewer than 250 vehicles. To optimize the reuse of existing materials, Full Depth Reclamation (FDR) is recommended. This process will pulverize and blend the full asphalt layer and underlying base/subbase materials to a depth of up to 10 inches, followed by compaction and stabilization using lime, cement, virgin aggregate, and/or emulsified asphalt. Vegetation along pavement edges must be cleared prior to milling to prevent material contamination.

Stabilization materials require specific curing procedures, including 24-hour curing for lime slurry and slag-modified Portland cement after compaction, and a 24-hour delay before compaction when using hydrated lime. When emulsified asphalt is used in FDR, RAP material must meet gradation requirements of 100% passing the 1¼-in or 1-in sieve. Supplementary virgin aggregates must meet Class B (fine) and Class C (coarse) quality standards. The FDR treatment is intended to achieve an IBV of 10, with the contractor responsible for corrective actions if the required IBV is not met. A new asphalt surface will be placed over the reclaimed base, which may result in a slightly raised roadway profile.

In the vicinity of Boring RB-02, a 24-in removal and replacement with aggregate subgrade improvement is recommended across the full roadway width, similar to Option 1. Based on subsurface conditions and DCP data indicating an IBV of 3.5 at 21.2 inches, approximately 200 ft of subgrade improvement—100 ft north and east of boring location along roadway alignment, is anticipated to be adequate. As a cost-saving measure, the use of Tensar geogrid (12" + NX850) is considered an acceptable alternative to full removal and replacement. DCP results provided by V&K are found in Exhibit G.

The contractor is responsible for determining the most appropriate RAP treatment method and shall provide the designer with the design mix for approval.

4.0.3 OPTION 3: OIL AND CHIP (A3) PAVEMENT SURFACE

Oil and chip, chip seal, seal coat, or A3 treatment is a thin bituminous surface applied over an existing granular or asphalt base using a single layer of asphalt binder and uniformly graded chip aggregate. For installing a chip seal or A3 surface over a granular base, KEG recommends pulverizing the full asphalt layer and blending it with the base or subbase materials to a depth of up to six (6) inches, then compacting and stabilizing the mixture to achieve an IBV of 10, consistent with Option 2. This should be followed by placing and compacting an additional six (6) to eight (8) inches of CA-6 granular base, also designed for an IBV of 10. Before placing the chip seal, the granular base should be clean, free of loose material and dust, exhibit no ruts deeper than ¼ inch, and be tightly bound. A proof-roll with a 20- to 25-ton dump truck is required to verify the absence of rutting. A prime coat must be applied if the base is unbound. A nominal chip size of ¼ inch is recommended.

The asphalt binder must be free of water and other contaminants and must satisfy the minimum viscosity and residue requirements of AASHTO M 140, M 208, or M 316. Rolling should begin immediately after the chip placement using 8- to 12-ton pneumatic-tire rollers. Chip seal placement requires at least 50°F air temperature with no expected rainfall for four hours following application or curing.

When placing a chip seal or A3 surface over an asphalt base, the existing asphalt must be sound and free of bleeding, potholes, and cracks. Any deficiencies must be repaired in advance, and the surface must be clean and dust-free. After repairs, the ¼-inch chip size is installed, proof-rolled as previously described, and followed by the asphalt binder application. The application of oil and chip, chip seal or A3 pavement will result in a slightly raised roadway profile.

Near Boring RB-02, a 24-inch removal and replacement with aggregate subgrade improvement is still recommended across the full roadway width, consistent with Options 1 and 2. An improvement zone of approximately 200 feet, 100 feet north and 100 feet east of the boring along the roadway alignment, should be sufficient. As a cost-saving option, installing Tensar geogrid (12" + NX850) is an acceptable alternative to full removal and replacement.

The contractor is responsible for choosing the appropriate binder type and allowable range of nominal chip sizes.

4.1 ROADWAY DRAINAGE

The proposed subgrade and pavement should have proper surface grading to remove water accumulations and prevent the pooling of water. Furthermore, the fill material to be placed for support of the pavement will likely be cohesive and it will exhibit poor drainage characteristics. KEG recommends the installation of 4-inch diameter longitudinal underdrains on each side. The installation of 4-inch diameter transverse underdrains installed at 300 feet spacing and at all low points in the roadway profile is also recommended. The underdrains should be installed 12 inches below the subbase granular material and should be wrapped in geofabric. The underdrains should tie into the storm water drainage system and should be installed per Article 601 in the IDOT Standard Specifications and consist of Type 2 underdrains (Adopted January 1, 2016).

5.0 SETTLEMENT

Since no significant grading or changes to the existing roadway elevations are anticipated for the proposed roadway alignments and the soil characteristics as detailed in the borings provided, it is estimated that with proper preparation of the subgrades and construction the roadways will experience settlements of less than 0.25 inches. Therefore, no settlement calculations were performed on the roadways.

6.0 LABORATORY TESTING

Eight (8) Atterberg limits, and combined sieve and hydrometer analyses, were performed on samples collected from the top five (5) feet of the borings representative of the entire length of the roadway investigated. Two (2) Standard proctor test and three IBR were performed. Standard Proctor Compaction tests (ASTM D 698/AASHTO T99) were completed from samples obtained from borings drilled at the proposed roadway. The maximum dry density obtained from borings RB-03 and B-08 are 114.7 pounds per cubic foot (pcf) and 105.45 pcf, respectively. The optimum moisture content obtained from borings RB-03 and B-08 are 8.4% and 12.5%, respectively, including IBR at 0.1 inches of 3.6% and 3.8%, respectively, and IBR at 0.2 inches of 3.3% and 3.6%, respectively. The laboratory testing results are attached in Exhibit E – Laboratory Test Data.

For further details on all the above referenced tests, IDOT Form BMPR-508A sheets and general laboratory results are included in Exhibit E.

7.0 SPECIAL CONDITIONS

Information provided by Robert Dalton, P.E., of V&K on July 24, 2025, stated a 2003 US Corps of Engineers study that showed an estimated elevation of the Illinois River and its frequency. A 2 year (yr), 10-yr, and 100-yr flooding frequency were estimated at 448.7 ft, 454.9 ft, and 460.3 ft, respectively. As also stated, roadway elevation at highway IL 26, at the Woodford County State Fish and Wildlife site office, dump station, and at the campground are approximately 470 ft, 460 ft, 450 ft, and 448 ft respectively. Given the frequency of flooding challenges at the site including seepage phenomenon, undercutting for placement of new road alignment or to attain an extended road width may pose issues. Furthermore, a significant increase in the elevation of roadway profile may not be feasible. Thus, in addition to the recommendation provided to roadway drainage in section 4.1 of the report, a trapezoidal ditch of depth 2 ft with a bottom width of at least 2 ft is recommended for the less than 250 ADT at this site. If a 4 ft width bottom is used instead, the

bottom should be sloped at 1V:20H toward the center of the ditch to help prevent meandering and pooling of water. Ditch gradient should be at least 0.3%.

8.0 CONSTRUCTION MONITORING

Based on the results of our exploration, no specific additional monitoring efforts are recommended for the proposed construction.

Construction activities should be performed in accordance with the current IDOT Standard Specifications for Road and Bridge Construction and any pertinent Special Provisions or Policies.

9.0 LIMITATIONS

The recommendations provided herein are for the exclusive use of V&K and IDNR. They are specific only to the project described and are based on subsurface information obtained at eight (8) boring locations obtained by KEG within the project area, KEG's understanding of the project as described herein, and geotechnical engineering practice consistent with the standard of care. No other warranty is expressed or implied. KEG should be contacted if conditions encountered during construction are not consistent with those described.

EXHIBIT A

LOCATION MAP

Kaskaskia Engineering Group, LLC

Location Map

Woodford County State Fish and Wildlife Area
Woodford Couty, Illinois
KEG Project # 23-1070.08

Exhibit No.

A-1

KEG JOB# 23-1070.08

Kaskaskia Engineering Group, LLC

Location Map

Woodford County State Fish and Wildlife Area
Woodford Couty, Illinois
KEG Project # 23-1070.08

Exhibit No.

A-2

KEG JOB# 23-1070.08

EXHIBIT B

BORING LOGS

Illinois Department of Transportation
Division of Highways

SOIL BORING LOG

Date 7/23/25

ROUTE _____ **DESCRIPTION** Woodford County State Fish & Wildlife Area **LOGGED BY** ERG

SECTION _____ **LOCATION** Lat. 40.88034 N, Long. -89.45685 W

COUNTY Woodford **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

STRUCT. NO. _____
Station _____

BORING NO. B-07
Station _____
Offset _____
Ground Surface Elev. 447.41 ft

Surface Water Elev. - ft
Stream Bed Elev. - ft

Groundwater Elev.:
First Encounter 438.9 ft ▼
Upon Completion - ft
After - **Hrs.** - ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Description
447.2				2.5-inch thick ASPHALT -PAVEMENT-
446.9	3			GRAVEL -BASE COARSE-
	3 2	1.8 B	17	Stiff, brown SANDY SILTY CLAY; damp -FILL- --LL (%)=22, PL (%)=16, PI (%)=6-- --%Gravel=0.0, %Sand=37.8, %Silt=36.2, %Clay=26.0--
444.4	2			
-5	2 2	0.5 P	18	
441.9				Medium stiff, brown SANDY CLAY -FILL-
	1			Stiff, dark brown SILTY CLAY LOAM; moist -FILL-
	1 1	1.0 B	27	
439.4				Very loose, brown SANDY LOAM; saturated -FILL-
▼	WOH			
	WOH WOH	NP	21	
-10				
436.9				Very loose to loose, brown coarse SAND; saturated -FILL-
	3			
	3 3	NP	13	
	1			
	1 2	NP	15	
-15				
	1			
	WOH 1	NP	17	
429.4				Medium stiff, gray SILTY CLAY; moist -FILL-
	WOH			
	WOH 1	0.9 B	36	
-20				
426.9				Soft to medium stiff, gray SILTY CLAY; moist
	WOH			
	WOH 1	0.3 B	27	
	WOH			
	WOH 1	0.8 B	39	
-25				
	WOH			-saturated sand seams-
	WOH 1	NP	31	-traces of peat-
419.4				Very loose, gray fine SAND; sturated -silty clay (0.25P) seams- -traces of peat- -heaving sand-
	1			
	1 2	NP	20	
-30				
415.4				Very loose, gray coarse SAND; saturated -heaving sand-
	WOH			
	WOH WOH	NP	20	
-35				
	WOH			-heaving sand-
	WOH WOH	NP	19	
-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)

Illinois Department of Transportation
Division of Highways

SOIL BORING LOG

Date 7/23/25

ROUTE _____ **DESCRIPTION** Woodford County State Fish & Wildlife Area **LOGGED BY** ERG

SECTION _____ **LOCATION** Lat. 40.88034 N, Long. -89.45685 W

COUNTY Woodford **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

STRUCT. NO. _____
Station _____

BORING NO. B-07
Station _____
Offset _____
Ground Surface Elev. 447.41 ft

Surface Water Elev. - ft
Stream Bed Elev. - ft

Groundwater Elev.:
First Encounter 438.9 ft ▼
Upon Completion - ft
After - **Hrs.** - ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	
Very loose, gray coarse SAND; saturated -heaving sand- *(continued)*				
405.4				
Medium dense, gray coarse SAND; saturated -heaving sand-	5			
	9 11	NP	15	
402.4 -45				
End of Boring				
-50				
-55				
-60				

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)

Illinois Department of Transportation
Division of Highways

SOIL BORING LOG

Date 7/23/25

ROUTE _____ **DESCRIPTION** Woodford County State Fish & Wildlife Area **LOGGED BY** ERG

SECTION _____ **LOCATION** Lat. 40.88031 N, Long. -89.45673 W

COUNTY Woodford **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

STRUCT. NO. _____
Station _____

BORING NO. B-08
Station _____
Offset _____
Ground Surface Elev. 445.24 ft

Surface Water Elev. - ft
Stream Bed Elev. - ft
434.2
Groundwater Elev.:
First Encounter - ft ▼
Upon Completion _____ ft
After - **Hrs.** - ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
TOPSOIL			
Very stiff, brown CLAY with SAND; dry to damp — 444.2	4		
-trace roots-	6 5	3.8 P	17
--LL (%)=34, PL (%)=19, PI (%)=15-- — 442.7			
--%Gravel=0.0, %Sand=29.4, %Silt=31.8, %Clay=38.8--	3		
Soft, brown fine SAND with CLAY; damp	2 3	0.3	15
-5			
-trace organic matter, shells- — 439.7			
Medium stiff to stiff, brown SILTY CLAY; damp to moist	1		
	2 1	0.8 P	30
	1		
	2 1	1.0 B	27
-10			
434.7			
Very loose to loose, gray fine to coarse SAND; saturated ▼	1		
	1 1	NP	22
	1		
	2 2	NP	25
-15			
429.7			
Medium stiff, gray fine SAND with CLAY; saturated	1		
	2 1	0.8	20
427.2			
Medium stiff, gray CLAY; damp -saturated spoon-	WOH		
	1 1	0.8 B	42
-20			

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
424.7			
Stiff, gray SILTY CLAY; damp	WOH		
	1 1	1.0 B	34
422.2			
Soft, gray SAND with CLAY; saturated	WOH		
	1 2	0.3 P	26
420.2 -25			
End of Boring			
-30			
-35			
-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)

Illinois Department of Transportation
Division of Highways

SOIL BORING LOG

Date 7/23/25

ROUTE _____ **DESCRIPTION** Woodford County State Fish & Wildlife Area **LOGGED BY** ERG

SECTION _____ **LOCATION** Lat. 40.87776 N, Long. -89.439597 W

COUNTY Woodford **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

STRUCT. NO. _____
Station _____

BORING NO. RB-01
Station _____
Offset _____
Ground Surface Elev. 461.78 ft

Surface Water Elev. - ft
Stream Bed Elev. - ft

Groundwater Elev.:
First Encounter 453.8 ft ▼
Upon Completion - ft
After - **Hrs.** - ft

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
1.5-inch thick ASPHALT --PAVEMENT-- 461.7		8		
		8	3.5	22
Very stiff, black SAND with CLAY; damp		5	P	
--FILL-- 459.8		10		
		1		
Stiff, black CLAY with SAND; damp		1	1.2	28
--FILL--		2	B	
--LL (%)=35, PL (%)=17, PI (%)=18-- 457.8		2		
		1		
--%Gravel=0.0, %Sand=19.6, %Silt=43.6, %Clay=36.8--	-5	1	1.1	23
		2	B	
Medium stiff to stiff, black and brown to grey SILTY CLAY; damp to wet		2		
		1		
--FILL--		1	0.8	31
	▼	2	B	
		1		
--wet spoon--		1		
--gray--		1	0.8	29
		2	B	
451.8	-10	1		
End of Boring				
	-15			
	-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)

Illinois Department of Transportation
Division of Highways

SOIL BORING LOG

Date 7/23/25

ROUTE _____ **DESCRIPTION** Woodford County State Fish & Wildlife Area **LOGGED BY** ERG

SECTION _____ **LOCATION** Lat. 40.877736 N, Long. -89.441986 W

COUNTY Woodford **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

STRUCT. NO. _____
Station _____

BORING NO. RB-02
Station _____
Offset _____
Ground Surface Elev. 458.33 ft

Surface Water Elev. - ft
Stream Bed Elev. - ft

Groundwater Elev.:
First Encounter 450.3 ft ▼
Upon Completion - ft
After - **Hrs.** - ft

		DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
2.5-inch thick ASPHALT --PAVEMENT--	458.1				
	457.8		4		
GRAVEL --BASE COARSE--			2	0.8	18
	456.3		2	B	
Medium stiff, dark brown fine SAND with CLAY; damp --FILL--			1		
			1	0.8	24
			2	B	
Medium stiff, dark and light brown CLAY with SAND; damp --FILL--	454.3		2		
			1		
--LL (%)=27, PL (%)=17, PI (%)=10--		-5	1	0.5	26
--%Gravel=0.0, %Sand=24.2, %Silt=36.2, %Clay=39.6--			2	B	
			2		
			1		
Very soft to very stiff, light and dark brown to black and gray SILTY CLAY --FILL--			1	1.8	30
			2	B	
		▼	2		
--wet sand seams--			WOH		
--saturated sand seams--			1	0.2	40
			1	B	
	448.3	-10	1		
End of Boring					
		-15			
		-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)

Illinois Department of Transportation
Division of Highways

SOIL BORING LOG

Date 7/23/25

ROUTE _____ **DESCRIPTION** Woodford County State Fish & Wildlife Area **LOGGED BY** ERG

SECTION _____ **LOCATION** Lat. 40.87893 N, Long. -89.442372 W

COUNTY Woodford **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

STRUCT. NO. _____
Station _____

BORING NO. RB-03
Station _____
Offset _____
Ground Surface Elev. 457.55 ft

Surface Water Elev. - ft
Stream Bed Elev. - ft

Groundwater Elev.:
First Encounter 450.6 ft ▼
Upon Completion - ft
After - **Hrs.** - ft

		DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
1-inch thick ASPHALT	457.5		8		
--PAVEMENT--	456.6		8	NP	14
GRAVEL			4		
--BASE COARSE--	455.6		2		
Dark brown fine SAND; damp			1		
--FILL--			1	1.0	20
Stiff, dark brown SANDY SILTY CLAY; damp			2	B	
--FILL--	453.6		2		
--LL (%)= 22, PL (%)=17, PI (%)=5--			1		
--%Gravel=2.1, %Sand=43.0, %Silt=29.8, %Clay=25.1--		-5	1	NP	18
	451.6		1		
Very loose, light and dark brown fine SAND; damp			1		
--FILL--		▼	1	NP	25
Very loose to loose, brown to brown and gray medium SAND; saturated			2		
			1		
			1		
--clay seam (0.25P)--			2	NP	24
			2		
	447.6	-10	2		
End of Boring					
		-15			
		-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)

Illinois Department of Transportation
Division of Highways

SOIL BORING LOG

Date 7/23/25

ROUTE _____ **DESCRIPTION** Woodford County State Fish & Wildlife Area **LOGGED BY** ERG

SECTION _____ **LOCATION** Lat. 40.87893 N, Long. -89.445194 W

COUNTY Woodford **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

STRUCT. NO. _____
Station _____

BORING NO. RB-04
Station _____
Offset _____
Ground Surface Elev. 455.94 ft

Surface Water Elev. - ft
Stream Bed Elev. - ft

Groundwater Elev.:
First Encounter 449.9 ft ▼
Upon Completion - ft
After - **Hrs.** - ft

		DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
1.75-inch thick ASPHALT --PAVEMENT--	455.8 455.4		3		
GRAVEL --BASE COARSE--			3 4	2.0 B	21
Medium stiff to very stiff, black and brown CLAY with SAND; damp to moist --FILL-- --LL (%)=29, PL (%)=19, PI (%)=10-- --%Gravel=2.1, %Sand=22.0, %Silt=44.4, %Clay=31.5-- --some gravel--	451.9		1 2 1 2 1	0.5 B	20
		-5	1 1 1	NP	23
Very loose, gray SANDY LOAM; saturated		▼	WOH WOH WOH WOH	NP	25
	447.9		WOH		
Very loose, gray medium SAND; saturated			1 WOH 1	NP	20
	445.9	-10			
End of Boring		-15			
		-20			

ROUTE **DESCRIPTION** Woodford County State Fish & Wildlife Area **LOGGED BY** ERG

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)

Illinois Department of Transportation
Division of Highways

SOIL BORING LOG

Date 7/23/25

SECTION _____ **LOCATION** Lat. 40.878897 N, Lat. -89.451789 W

COUNTY Woodford **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

STRUCT. NO. _____
Station _____

BORING NO. RB-05
Station _____
Offset _____
Ground Surface Elev. 448.59 ft

Surface Water Elev. - ft
Stream Bed Elev. - ft

Groundwater Elev.:
First Encounter 444.6 ft ▼
Upon Completion - ft
After - **Hrs.** - ft

		DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
1.25-inch thick ASPHALT -PAVEMENT-	448.5 / 448.1		4		
GRAVEL -BASE COARSE-			3 3	2.3 B	21
Medium stiff to very stiff, black and brown CLAY with SAND; dry -FILL- --LL (%)=29, PL (%)=18, PI (%)=11--			2		
			2 2 2	0.5 B	21
	444.6 ▼		1		
--%Gravel=0.9, %Sand=27.4, %Silt=32.6, %Clay=39.1--		-5	1 1 1		23
Very loose, black, brown, and yellow SILTY LOAM; saturated -FILL-	442.6		1		
Stiff, brown and gray SILTY CLAY; damp -FILL-			1 2 1	1.0 B	38
			1		
			1 2 1	1.0 B	29
	438.6	-10			
End of Boring					
		-15			
		-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)

Illinois Department of Transportation
Division of Highways

SOIL BORING LOG

Date 7/23/25

ROUTE _____ **DESCRIPTION** Woodford County State Fish & Wildlife Area **LOGGED BY** ERG

SECTION _____ **LOCATION** Lat. 40.879214 N, Long. -89.456456 W

COUNTY Woodford **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

STRUCT. NO. _____
Station _____

BORING NO. RB-06
Station _____
Offset _____
Ground Surface Elev. 449.02 ft

Surface Water Elev. - ft
Stream Bed Elev. - ft

Groundwater Elev.:
First Encounter 441.0 ft ▼
Upon Completion - ft
After - **Hrs.** - ft

		DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
2.75-inch thick ASPHALT -PAVEMENT-	448.8 / 448.5		4		
GRAVEL -BASE COARSE-	447.0		3 4	2.5 B	18
Very stiff, black and brown SANDY CLAY; dry to damp -FILL- --LL (%)=27, PL (%)=14, PI (%)=13-- --%Gravel=0.0, %Sand=31.6, %Silt=37.7, %Clay=30.7--	445.0		3 2 3 4	1.8 B	24
Stiff, black SILTY CLAY LOAM; dry -FILL-	443.0	-5	WOH 1 WOH 1	0.8 B	20
Medium stiff, black SILTY CLAY LOAM; damp -FILL-			WOH 1 2 2	1.0 B	33
Medium stiff to stiff, brown and gray to black and brown SILTY CLAY; damp -FILL- -wet sand seams-	439.0	-10	WOH 1 1 1	0.8 B	36
End of Boring		-15 -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)

EXHIBIT C

SOIL PROFILES

Elevation (ft)

B-07

N	Qu	w%	
5	1.8	17	B
4	0.5	18	P
2	1.0	27	B
WOH	NP	21	
6	NP	13	
3	NP	15	
1	NP	17	
1	0.9	36	B
1	0.3	27	B
1	0.8	39	B
1	NP	31	
3	NP	20	
WOH	NP	20	
WOH	NP	19	
20	NP	15	

447.41
-PAVEMENT-
GRAVEL
-BASE COARSE-
Stiff, brown SANDY SILTY CLAY; damp
-FILL-
--LL (%)=22, PL (%)=16, PI (%)=6--
--%Gravel=0.0, %Sand=37.8, %Silt=36.2, %Clay=26.0--
Medium stiff, brown SANDY LOAM; damp
-FILL-
Stiff, dark brown SILTY CLAY LOAM; moist
-FILL-
Very loose, brown SANDY LOAM; saturated
-FILL-
Very loose to loose, brown coarse SAND; saturated
-FILL-
Medium stiff, gray SILTY CLAY; moist
-FILL-
Soft to medium stiff, gray SILTY CLAY;
Very loose, gray fine SAND; sturated
-silty clay (0.25P) seams-
-traces of peat-
-heaving sand-
Very loose, gray coarse SAND; saturated
-heaving sand-
Medium dense, gray coarse SAND; saturated
-heaving sand-
402.4

B-08

N	Qu	w%	
11	3.8	17	
2			C
5	0.3	15	
3	0.8	30	
3	1.0	27	B
2	NP	22	
4	NP	25	
3	0.8	20	
2	0.8	42	B
2	1.0	34	B
3	0.3	26	P

445.24
TOPSOIL
Very stiff, brown CLAY with SABD; dry to damp
-trace roots-
--LL (%)=34, PL (%)=19, PI (%)=15--
--%Gravel=0.0, %Sand=29.4, %Silt=31.8, %Clay=38.8--
Soft, brown fine SAND with 2 0.8 36 mp
-trace organic matter, shells-
Medium stiff to stiff, brown SILTY CLAY; damp to moist
Very loose to loose, gray fine to coarse SAND; saturated
Medium stiff, gray fine SAND with CLAY; saturated
Medium stiff, gray CLAY; damp
-saturated spoon-
Stiff, gray SILTY CLAY; damp
moist
Soft, gray SAND with CLAY; saturated
420.2

RB-06

N	Qu	w%	
7	2.5	18	B
5	1.8	24	B
WOH	0.8	20	
3	1.0	33	B
3	0.8	36	B

449.02
-PAVEMENT-
GRAVEL
-BASE COARSE-
Very stiff, black and brown SANDY CLAY; dry to damp
-FILL-
--LL (%)=27, PL (%)=14, PI (%)=13--
--%Gravel=0.0, %Sand=31.6, %Silt=37.7, %Clay=30.7--
Stiff, black SILTY CLAY LOAM; dry
-FILL-
Medium stiff to stiff, brown and gray to black and brown SILTY CLAY LOAM; damp
-FILL-
439.0

RB-05

N	Qu	w%	
6	2.3	21	B
WOH	NP	25	
WOH	NP	20	

448.59
-PAVEMENT-
GRAVEL
-BASE COARSE-
-FILL-
Medium stiff to very stiff, black and brown CLAY with SAND; dry
--LL (%)=29, PL (%)=18, PI (%)=11--
--%Gravel=0.9, %Sand=27.4, %Silt=32.6, %Clay=39.1--
Very loose, black, brown, and yellow SILTY LOAM; saturated
-FILL-
Stiff, brown and gray SILTY CLAY; damp
438.6

RB-04

N	Qu	w%	
12	NP	14	
7	2.0	21	B
3	0.5	20	B
2	NP	23	
4	NP	24	

455.94
-PAVEMENT-
GRAVEL
-BASE COARSE-
Medium stiff to very stiff, black and brown CLAY with SAND; damp to moist
--FILL--
--LL (%)=29, PL (%)=19, PI (%)=10--
--%Gravel=2.1, %Sand=22.0, %Silt=44.4, %Clay=31.5--
Very loose, gray SANDY LOAM; saturated
Very loose, gray medium SAND; saturated
445.9

RB-03

N	Qu	w%	
3	1.0	20	B
4	NP	24	

457.55
-PAVEMENT-
GRAVEL
-BASE COARSE-
Dark brown fine SAND; damp
--FILL--
--LL (%)= 22, PL (%)=17, PI (%)=5--
--%Gravel=2.1, %Sand=43.0, %Silt=29.8, %Clay=25.1--
Very loose, light and dark brown fine SAND; damp
--FILL--
Very loose to loose, brown to brown and gray medium SAND; saturated
447.6

RB-02

N	Qu	w%	
4	0.8	18	B
3	0.8	24	B
3	0.5	26	B

458.33
-PAVEMENT-
GRAVEL
-BASE COARSE-
Medium stiff, dark brown fine SAND with CLAY; damp
--FILL--
Medium stiff, dark and light brown CLAY with SAND; damp
--FILL--
--LL (%)=27, PL (%)=17, PI (%)=10--
--%Gravel=0.0, %Sand=24.2, %Silt=36.2, %Clay=39.6--
o very stiff, light and dark brown to black and gray SILTY CLAY.

RB-01

N	Qu	w%	
13	3.5	22	P
3	1.2	28	B
3	1.1	23	B
3	0.8	29	B

461.78
-PAVEMENT-
Very stiff, black SAND with CLAY; damp
--FILL--
Stiff, black CLAY with SAND; damp
--FILL--
--LL (%)=35, PL (%)=17, PI (%)=18--
--%Gravel=0.0, %Sand=19.6, %Silt=43.6, %Clay=36.8--
Medium stiff to stiff, black and brown to grey SILTY CLAY; damp to wet
FILL
451.8

PRINTERMOD2 11X17 23-1070.08 WOODFORD COUNTY GEOTECH.GPJ IL_DOT.GDT 9/9/25

Kaskaskia Engineering Group, LLC

SUBSURFACE PROFILE

Route:
Section:
County: Woodford

EXHIBIT D

LAB TESTING AND BMPR 508A FORMS

GEOCON PROFESSIONAL SERVICES

LABORATORY TESTING SUMMARY

Project Name: Woodford State Fish and Wildlife Area, Woodford County, IL **Project Number: 25-G0975** **Client:** Kaskaskia

Boring Number	Sample Number	Depth (ft)	MC (%)	Lab Qu/Qp	% Gravel	% Sand	% Fines	Max Dry Density (pcf)	Optimum Moisture (%)	Max CBR (%)	Swell (%)	LL	PL	PI	Notes
RB-1	1	0' - 2'	21.9	3.5											
RB-1	2	2' - 4'	27.7	1.2	0	19.6	80.4					35	17	18	
RB-1	3	4' - 6'	23.0	1.1											
RB-1	4	6' - 8'	30.9	0.8											
RB-1	5	8' - 10'	29.4	0.8											
RB-2	1	0' - 2'	17.8	0.8											
RB-2	2	2' - 4'	24.1	0.8	0	24.2	75.8					27	17	10	
RB-2	3	4' - 6'	25.8	0.5											
RB-2	4	6' - 8'	29.5	1.8											
RB-2	5	8' - 10'	39.7												
RB-3	1	0' - 2'	13.8					114.7	8.4	3.6	0				CBR sample depth (0' - 5')
RB-3	2	2' - 4'	19.9	1.0	2.1	43	54.9					22	17	5	
RB-3	3	4' - 6'	17.6												
RB-3	4	6' - 8'	25.0												
RB-3	5	8' - 10'	23.6												
RB-4	1	0' - 2'	21.2	2.0	2.1	22	75.9					29	19	10	
RB-4	2	2' - 4'	19.9	0.5											
RB-4	3	4' - 6'	23.2												
RB-4	4	6' - 8'	24.9												
RB-4	5	8' - 10'	20.1												
RB-5	1	0' - 2'	20.6	2.3	0.9	27.4	71.7					29	18	11	
RB-5	2	2' - 4'	20.6	0.5											
RB-5	3	4' - 6'	23.4												
RB-5	4	6' - 8'	38.3	1.0											
RB-5	5	8' - 10'	29.2	1.0											

GEOCON PROFESSIONAL SERVICES

LABORATORY TESTING SUMMARY

Project Name: Woodford State Fish and Wildlife Area, Woodford County, IL **Project Number: 25-G0975** **Client:** Kaskaskia

Boring Number	Sample Number	Depth (ft)	MC (%)	Lab Qu/Qp	% Gravel	% Sand	% Fines	Max Dry Density (pcf)	Optimum Moisture (%)	Max CBR (%)	Swell (%)	LL	PL	PI	Notes
RB-6	1	0' - 2'	17.5	2.5	0	31.6	68.4					27	14	13	
RB-6	2	2' - 4'	23.9	1.8											
RB-6	3	4' - 6'	20.0	0.8											
RB-6	4	6' - 8'	32.9	1.0											
RB-6	5	8' - 10'	35.6	0.8											
RB-7	1	1 - 2.5'	16.7	1.8	0	37.8	62.2					22	16	6	
RB-7	2	3.5' - 5'	18.0	0.5											
RB-7	3	6' - 7.5'	26.8	1.0											
RB-7	4	8.5' - 10'	20.6												
RB-7	5	11' - 12.5'	13.1												
RB-7	6	13.5' - 15'	15.0												
RB-7	7	16' - 17.5'	17.2												
RB-7	8	18.5' - 20'	36.3	0.9											
RB-7	9	21' - 22.5'	27.0	0.3											
RB-7	10	23.5' - 25'	38.7	0.8											
RB-7	11	26' - 27.5'	31.2												
RB-7	12	28.5' - 30'	20.0												
RB-7	13	33.5' - 35'	20.1												
RB-7	14	38.5' - 40'	19.0												
RB-7	15	43.5' - 45'	15.4												
RB-8	1	1 - 2.5'	16.7	3.8	0	29.4	70.6	105.45	12.5	3.8	0	34	19	15	CBR sample depth (0' - 5')
RB-8	2	3.5' - 5'	14.5	0.3											
RB-8	3	6' - 7.5'	30.0	0.8											
RB-8	4	8.5' - 10'	27.1	1.0											
RB-8	5	11' - 12.5'	22.0												
RB-8	6	13.5' - 15'	24.6												
RB-8	7	16' - 17.5'	19.6	0.8											
RB-8	8	18.5' - 20'	41.9	0.8											
RB-8	9	21' - 22.5'	34.3	1.0											
RB-8	10	23.5' - 25'	25.8	0.3											

ATTERBERG LIMITS

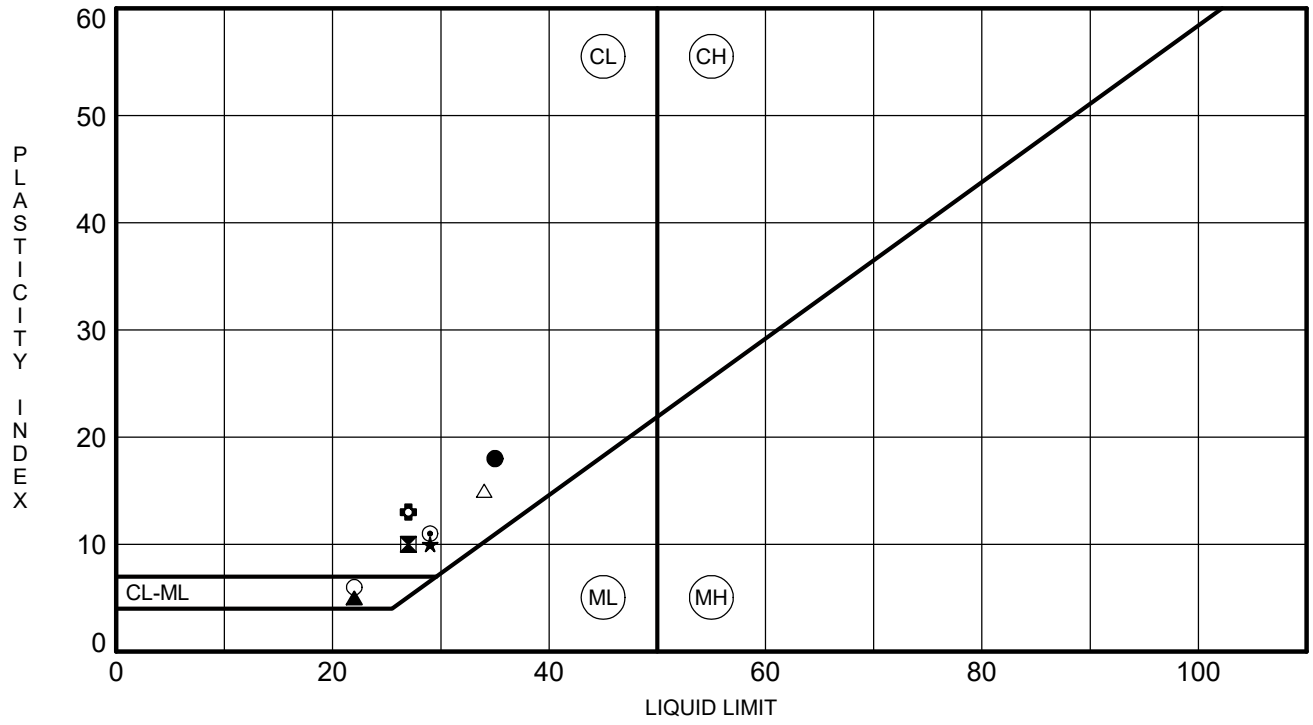
ASTM D4318

ATTERBERG LIMITS RESULTS

PRINT DATE 8/6/2025

CLIENT Kaskaskia **PROJECT NAME** Woodford State Fish and Wildlife Area

PROJECT NUMBER 25-G0975 **PROJECT LOCATION** Woodford County, IL



	BOREHOLE	DEPTH	LL	PL	PI	Fines	Classification
●	RB-1	2.0	35	17	18	80	LEAN CLAY with SAND(CL)
⊠	RB-2	2.0	27	17	10	76	LEAN CLAY with SAND(CL)
▲	RB-3	2.0	22	17	5	55	SANDY SILTY CLAY(CL-ML)
★	RB-4	0.0	29	19	10	76	LEAN CLAY with SAND(CL)
⊙	RB-5	0.0	29	18	11	72	LEAN CLAY with SAND(CL)
✿	RB-6	0.0	27	14	13	68	SANDY LEAN CLAY(CL)
○	RB-7	1.0	22	16	6	62	SANDY SILTY CLAY(CL-ML)
△	RB-8	1.0	34	19	15	71	LEAN CLAY with SAND(CL)

22774 Citation Rd. Unit A Frankfort, IL 60423 Phone 815-806-9986

GEOCON
PROFESSIONAL SERVICES

PARTICLE SIZE / #200 WASH

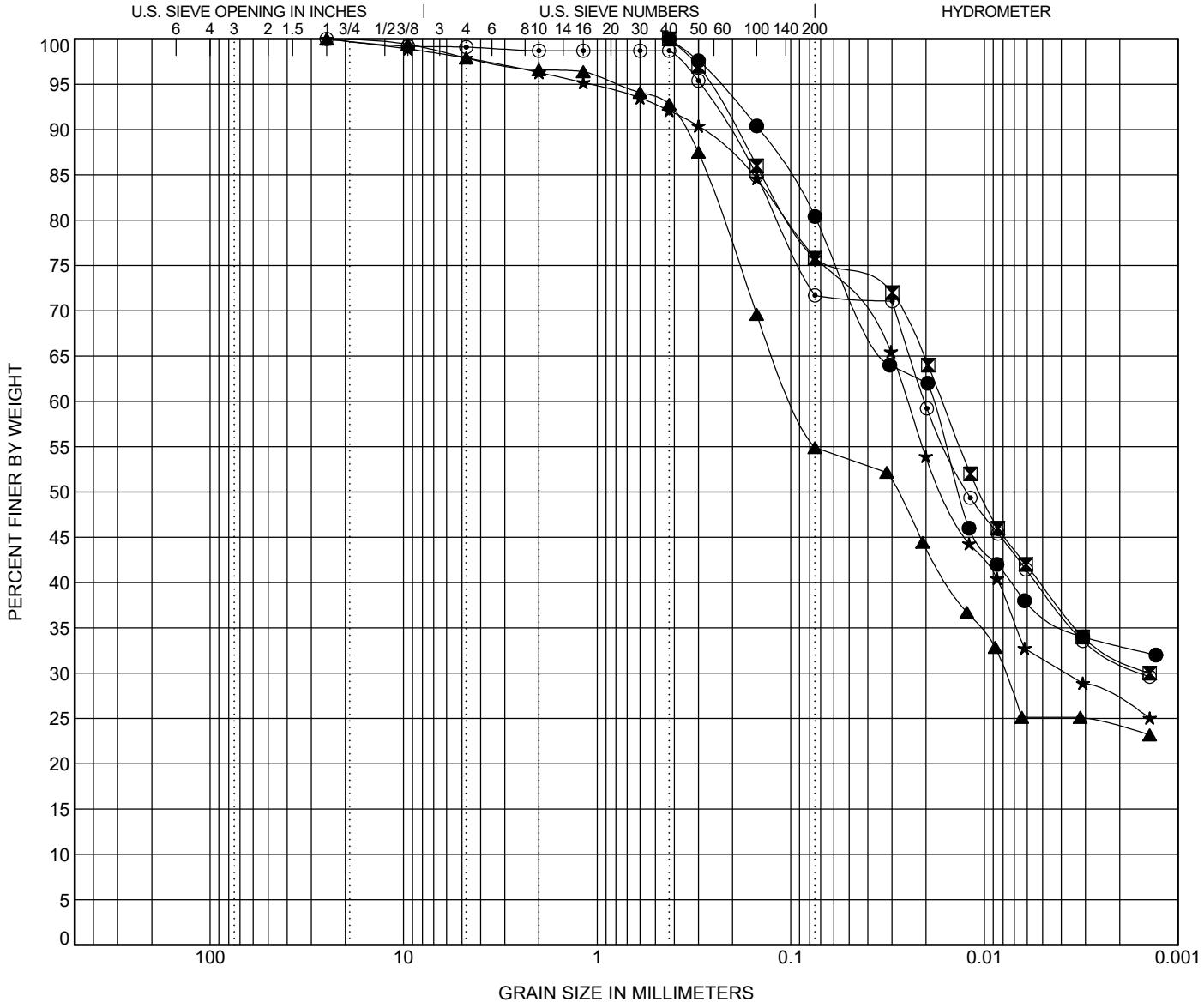
ASTM D6913 / ASTM D422

GRAIN SIZE DISTRIBUTION

PRINT DATE 8/6/2025

CLIENT Kaskaskia **PROJECT NAME** Woodford State Fish and Wildlife Area

PROJECT NUMBER 25-G0975 **PROJECT LOCATION** Woodford County, IL



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BOREHOLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
●	RB-1	2.0	LEAN CLAY with SAND(CL)	35	17	18		
⊠	RB-2	2.0	LEAN CLAY with SAND(CL)	27	17	10		
▲	RB-3	2.0	SANDY SILTY CLAY(CL-ML)	22	17	5		
★	RB-4	0.0	LEAN CLAY with SAND(CL)	29	19	10		
⊙	RB-5	0.0	LEAN CLAY with SAND(CL)	29	18	11		

	BOREHOLE	DEPTH	D100	D60	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	RB-1	2.0	0.425	0.018	0.014		0.0	19.6	43.6	36.8
⊠	RB-2	2.0	0.425	0.016	0.011		0.0	24.2	36.2	39.6
▲	RB-3	2.0	25	0.095	0.028		2.1	43.0	29.8	25.1
★	RB-4	0.0	25	0.025	0.016		2.1	22.0	44.4	31.5
⊙	RB-5	0.0	25	0.02	0.012		0.9	27.4	32.6	39.1

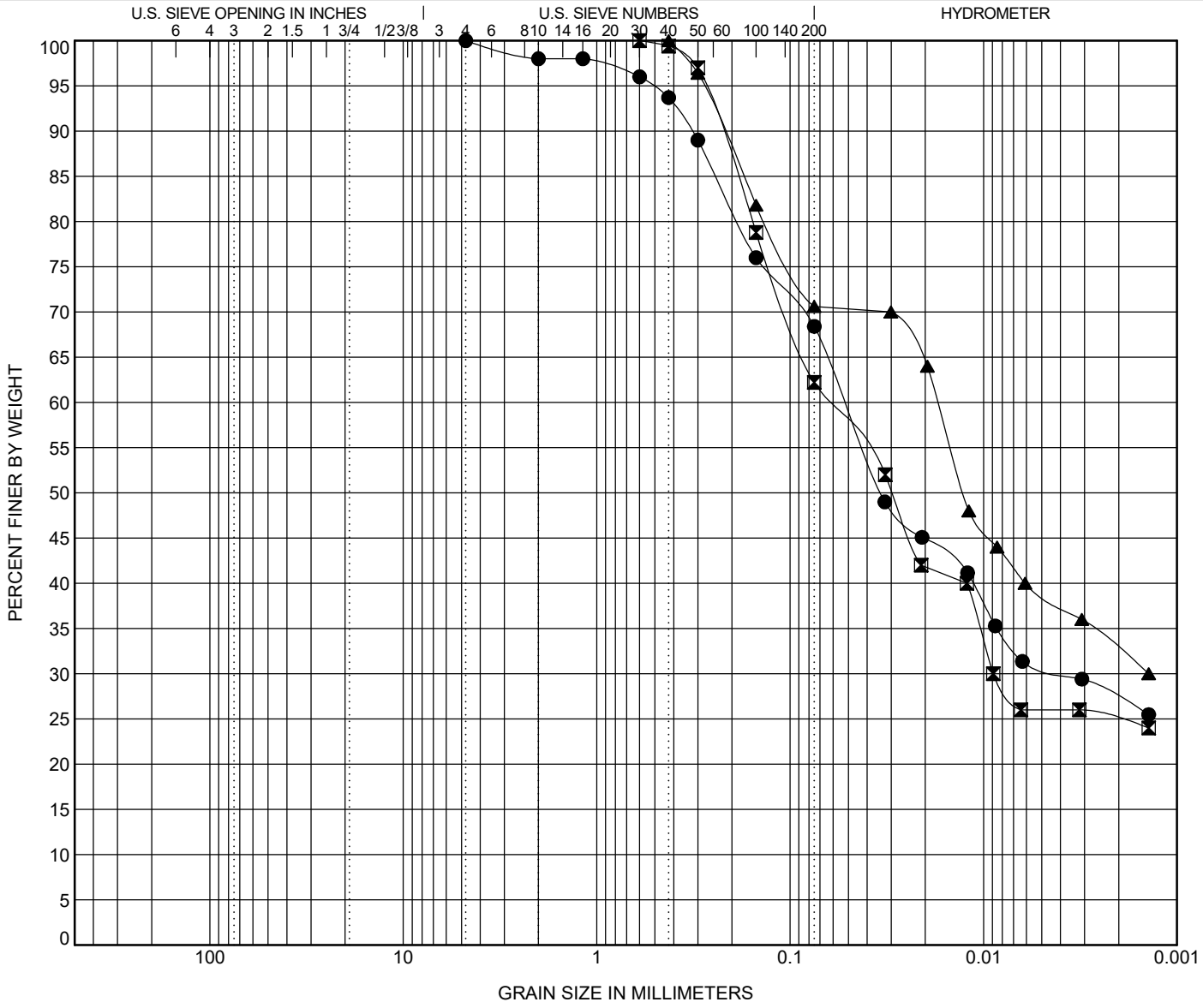
22774 Citation Rd. Unit A Frankfort, IL 60423 Phone 815-806-9986

GRAIN SIZE DISTRIBUTION

PRINT DATE 8/6/2025

CLIENT Kaskaskia **PROJECT NAME** Woodford State Fish and Wildlife Area

PROJECT NUMBER 25-G0975 **PROJECT LOCATION** Woodford County, IL



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BOREHOLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
●	RB-6	0.0	SANDY LEAN CLAY(CL)	27	14	13		
⊠	RB-7	1.0	SANDY SILTY CLAY(CL-ML)	22	16	6		
▲	RB-8	1.0	LEAN CLAY with SAND(CL)	34	19	15		

	BOREHOLE	DEPTH	D100	D60	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	RB-6	0.0	4.75	0.052	0.034		0.0	31.6	37.7	30.7
⊠	RB-7	1.0	0.6	0.062	0.03		0.0	37.8	36.2	26.0
▲	RB-8	1.0	0.425	0.017	0.013		0.0	29.4	31.8	38.8

22774 Citation Rd. Unit A Frankfort, IL 60423 Phone 815-806-9986

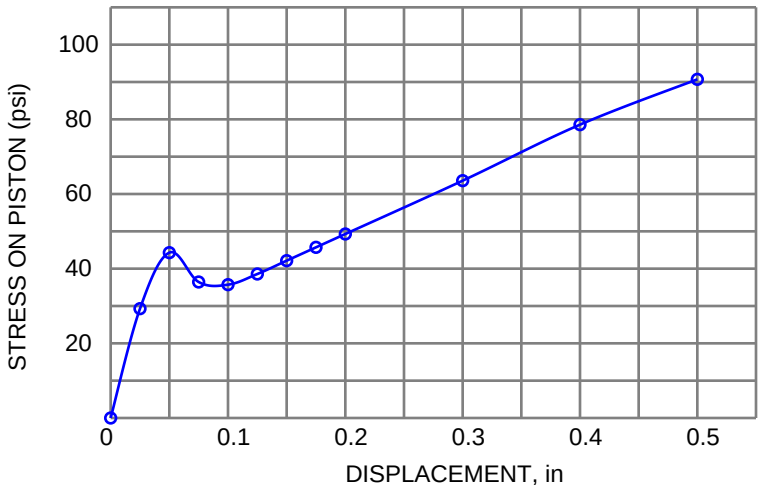
California Bearing Ratio (CBR)

AASHTO T193

CALIFORNIA BEARING RATIO (CBR) OF SOILS

AASHTO T193

SAMPLE ID:	**B3 0-5'**
DATE TESTED:	**8/4/2025**
COMPACTION METHOD:	**D698**
SAMPLE CONDITION	**Soaked**
DRYDENSITY:	**114.7 (95%)**
COMPACTED MOISTURE:	**8.4**
SWELL (% INIT HT):	**0.0**
SURCHARGE:	**10**
PISTON DIA:	**1.954**



Individual Readings:

Reading	Elapsed Time (s)	Penetration (in)	Load (lbf)	Stress (psi)	CBR (%)
0	0.0	0.0000	0.0	0.0	
1	58.4	0.0250	87.0	29.0	
2	88.0	0.0502	133.0	44.4	
3	115.8	0.0750	110.0	36.7	
4	145.0	0.1000	107.0	35.7	3.6
5	174.6	0.1250	115.0	38.3	
6	204.8	0.1500	126.0	42.0	
7	235.0	0.1750	137.0	45.7	
8	264.8	0.2000	148.0	49.4	3.3
9	381.6	0.3002	190.0	63.4	
10	500.4	0.4001	235.0	78.4	
11	616.0	0.5003	271.0	90.4	

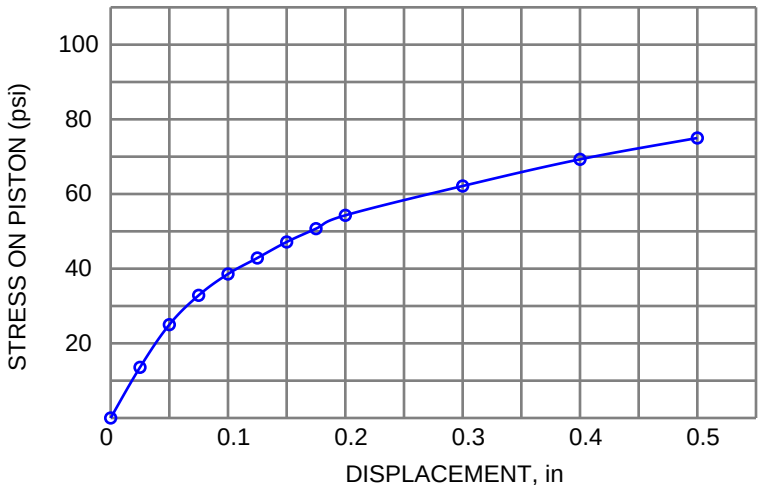
Equipment:

Project: **Woodford State Fish and Wildlife Area**
Project ID: **25-G0975.1**
Client: **Kaskaskia**

CALIFORNIA BEARING RATIO (CBR) OF SOILS

AASHTO T193

SAMPLE ID:	**B8 0-5'**
DATE TESTED:	**8/4/2025**
COMPACTION METHOD:	**D698**
SAMPLE CONDITION	**Soaked**
DRYDENSITY:	**105.45 (95%)**
COMPACTED MOISTURE:	**12.5**
SWELL (% INIT HT):	**0.0**
SURCHARGE:	**10**
PISTON DIA:	**1.954**



Individual Readings:

Reading	Elapsed Time (s)	Penetration (in)	Load (lbf)	Stress (psi)	CBR (%)
0	0.0	0.0000	0.0	0.0	
1	30.8	0.0251	41.0	13.7	
2	60.8	0.0500	76.0	25.3	
3	90.2	0.0750	98.0	32.7	
4	120.2	0.1002	115.0	38.3	3.8
5	148.8	0.1250	129.0	43.0	
6	178.2	0.1501	142.0	47.4	
7	208.2	0.1751	153.0	51.0	
8	238.0	0.2001	163.0	54.4	3.6
9	353.8	0.3002	187.0	62.4	
10	470.4	0.4000	208.0	69.4	
11	587.2	0.5000	225.0	75.0	

Equipment:

Project: **Woodford State Fish and Wildlife Area**
Project ID: **25-G0975.1**
Client: **Kaskaskia**

Illinois Department of Transportation

Soil Test Data

Route _____

Section _____

County Woodford

Location Woodford County State Fish & Wildlife Area

Job No. PTB 207-055

Lab. No.		RB-01	RB-02	RB-03	RB-04
Station					
Offset					
Depth	ft	2	2	2	0.5
AASHTO Classification (AASHTO M 145)		Clay w/ Sand	Clay w/ Sand	Sandy SiltyClay	Clay w/ Sand
Illinois Textural Classification					
Gradation Passing – 1”	%				
3/4”	%				
1/2”	%				
No. 4	%				
No. 10	%				
No. 40	%				
No. 100	%				
No. 200	%				
Sand (AASHTO T 88)	%	19.6	24.2	43.0	22.0
Silt (AASHTO T 88)	%	43.6	36.2	29.8	44.4
Clay (AASHTO T 88)	%	36.8	39.6	25.1	31.5
Liquid Limit (AASHTO T 89)	%	35	27	22	29
Plasticity Index (AASHTO T 90)	%	18	10	5	10
Organic Matter Content	%				
Std. Dry Density (IL Mod AASHTO T 99)	pcf			114.7	
Optimum Moisture (IL Mod AASHTO T 99)	%			8.4	
Subgrade Support Rating					
In situ Moisture	%	28	24	20	21

Illinois Department of Transportation

Soil Test Data

Route _____

Section _____

County Woodford

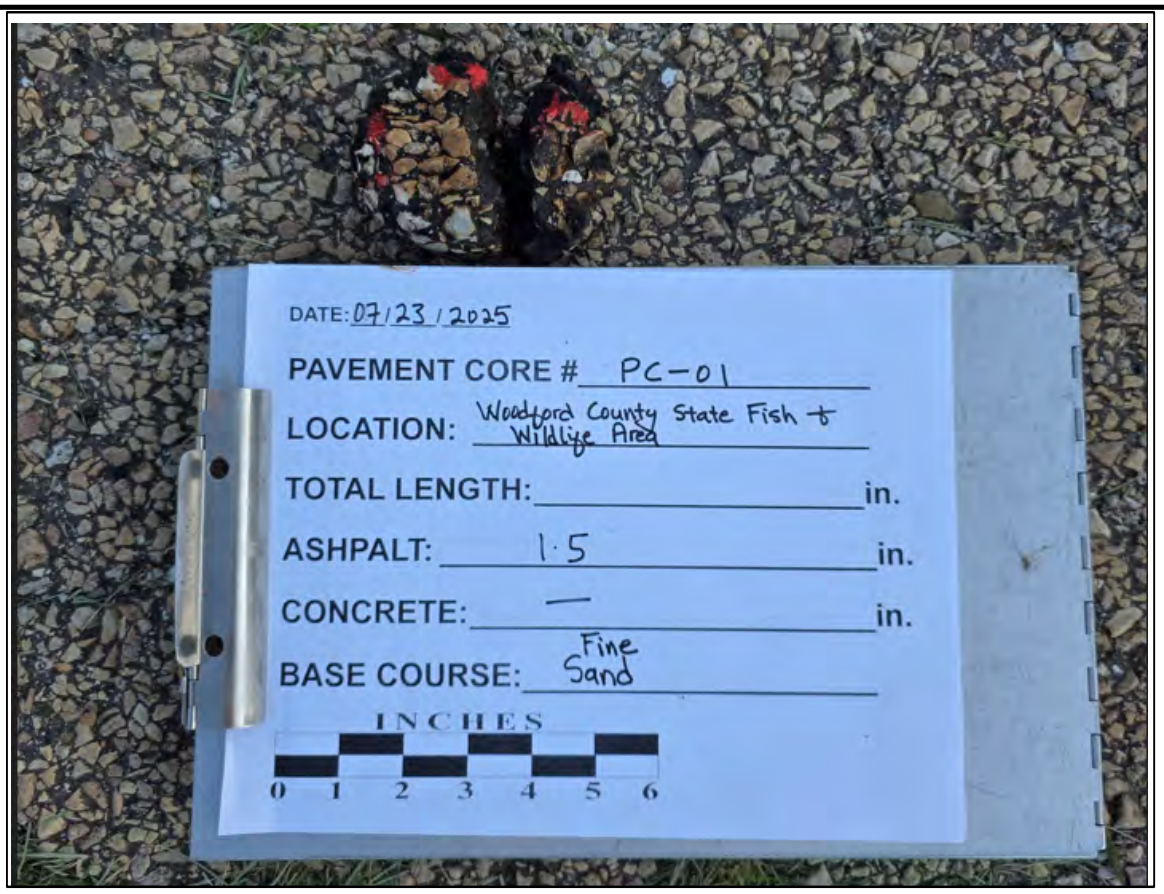
Location Woodford County State Fish & Wildlife Area

Job No. PTB 207-055

Lab. No.		RB-05	RB-06	B-07	B-08
Station					
Offset					
Depth	ft	0.5	0.5	1	1
AASHTO Classification (AASHTO M 145)		Clay w/ Sand	Sandy Clay	Sandy SiltyClay	Clay w/ Sand
Illinois Textural Classification					
Gradation Passing – 1”	%				
3/4”	%				
1/2”	%				
No. 4	%				
No. 10	%				
No. 40	%				
No. 100	%				
No. 200	%				
Sand (AASHTO T 88)	%	27.4	31.6	37.8	29.4
Silt (AASHTO T 88)	%	32.6	37.7	36.2	31.8
Clay (AASHTO T 88)	%	39.1	30.7	26.0	38.8
Liquid Limit (AASHTO T 89)	%	29	27	22	34
Plasticity Index (AASHTO T 90)	%	11	13	6	15
Organic Matter Content	%				
Std. Dry Density (IL Mod AASHTO T 99)	pcf				105.45
Optimum Moisture (IL Mod AASHTO T 99)	%				12.5
Subgrade Support Rating					
In situ Moisture	%	21	18	17	17

EXHIBIT E

PAVEMENT CORE PICTURES



Kaskaskia Engineering Group, LLC

ROADWAY PAVEMENT CORES

Woodford County State Fish and Wildlife Area

Woodford Couty, Illinois

KEG Project # 23-1070.08

Exhibit No.

E-1

KEG JOB# 23-1070.08

Kaskaskia Engineering Group, LLC

ROADWAY PAVEMENT CORES

Woodford County State Fish and Wildlife Area

Woodford Couty, Illinois

KEG Project # 23-1070.08

Exhibit No.

E-2

KEG JOB# 23-1070.08

Kaskaskia Engineering Group, LLC

ROADWAY PAVEMENT CORES

Woodford County State Fish and Wildlife Area

Woodford Couty, Illinois

KEG Project # 23-1070.08

Exhibit No.

E-3

KEG JOB# 23-1070.08

Kaskaskia Engineering Group, LLC

ROADWAY PAVEMENT CORES

Woodford County State Fish and Wildlife Area

Woodford Couty, Illinois

KEG Project # 23-1070.08

Exhibit No.

E-4

KEG JOB# 23-1070.08

EXHIBIT F

SUBGRADE SUPPORT RATING CHART

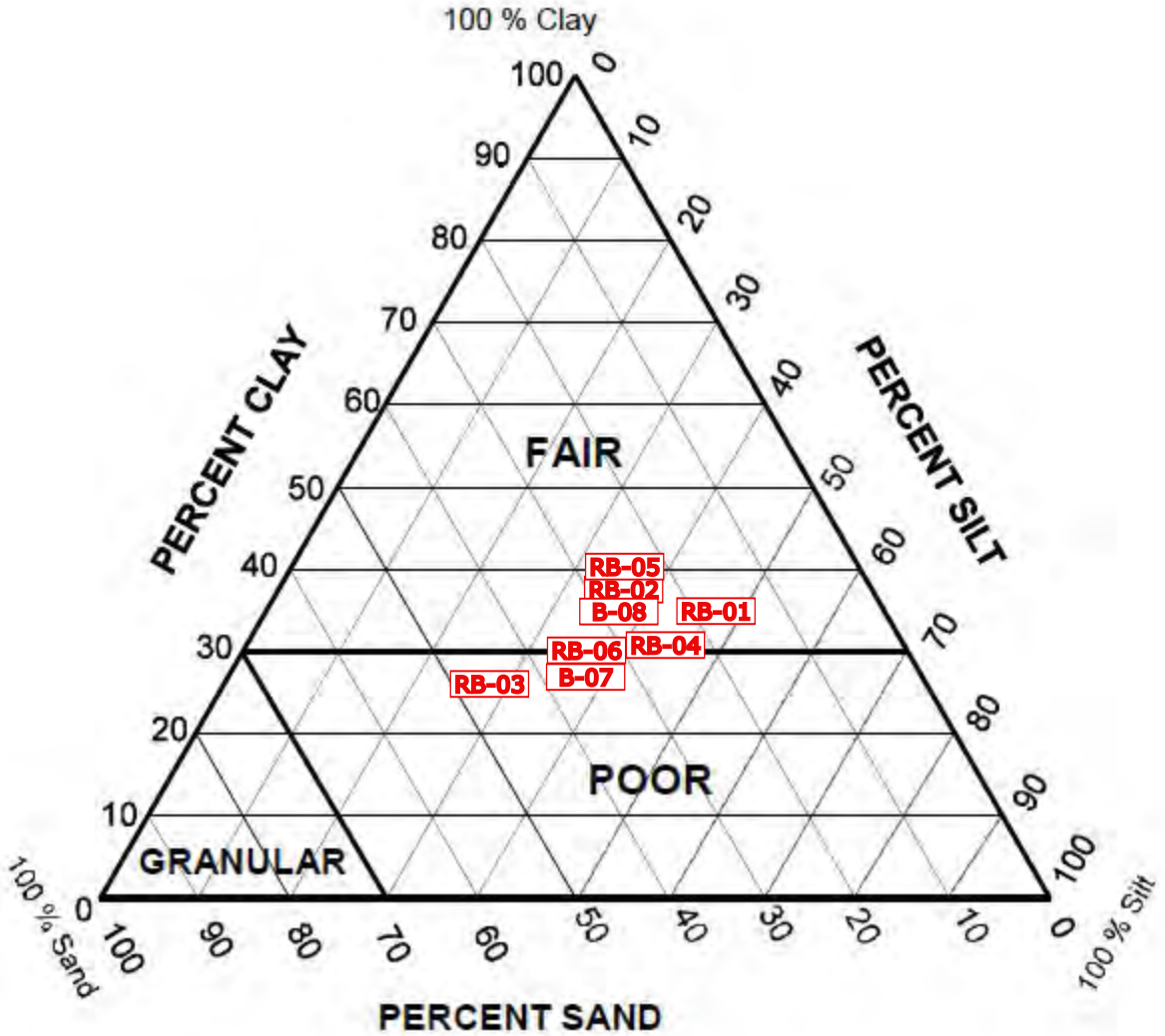


Figure 7.3.3.5-2 Subgrade Support Rating (SSR Chart)

EXHIBIT G

DCP RESULTS PROVIDED BY V&K

Illinois Department of Transportation

Dynamic Cone Index

County: Woodford FWA
Section:
Route:
District: 4
Contract No.:
Job Number:
Project:

	Initials	Date
Inspected by:	CT	30 May 2024
Calculated by:		
Checked by:		

Station:
Location:
Elevation:

No. Blows	Depth	Diff	In/ Blow	IBV	Rec Depth
Start	5"				
20	8.4	3.4	.17	64.5	
20	11.3	2.9	.145	78.8	
13	18	6.7	.515	15.9	
10	21	3	0.3	31.5	
6	25.4	4.4	.73	10.2	
3	29.1	3.7	1.23	5.3	
Start	6.8"				
15	9.7	2.9	.193	54.9	
3	12.2	2.5	.833	8.7	
3	15	2.8	.933	7.5	
3	19.1	4.1	1.367	4.7	
3	22.9	3.8	1.267	5.1	
3	28	5.1	1.700	3.5	
Start	6.6"				
30	10.6	4.0	.133	87.6	
13	14"	3.4	Hole Compromised		
7	6.2	6.2	0.886	8.1	
9	11.6	5.4	0.600	13.2	
2	18.2	6.6	3.3	1.5	
1	21.4	3.2	3.2	1.6	

edge of shoulder

Dynamic Cone Penetrometer IBV Conversion Table
S. African Chart (Rev. 09/30/98)

Inches/ Blow	IBV	REC TREAT DEPTH
0.1	125.9	None
0.2	52.6	None
0.3	31.5	None
0.4	21.9	None
0.5	16.6	None
0.6	13.2	None
0.7	11.0	None
0.8	9.2	None
0.9	8.0	Opt. 8"
1.0	7.0	Opt. 8"
1.1	6.0	Opt. 8"
1.2	5.5	9"
1.4	4.5	10"
1.6	3.8	11"
1.7	3.5	12"
1.8	3.3	13"
2.0	2.9	13"
2.2	2.6	14"
2.4	2.3	14"
2.6	2.1	15"
2.7	2.0	15"
2.8	1.9	16"
3.0	1.7	16"
3.2	1.6	17"
3.4	1.5	17"
3.6	1.4	17"
3.8	1.3	18"
4.0	1.2	18"
4.2-4.4	1.1	20"
4.5-4.7	1.0	23"
4.7-4.9	0.9	24"
5.0	0.8	30"
5.0+	< 0.8	30"

Station:
Location:
Elevation:

No. Blows	Depth	Diff	In/ Blow	IBV	Rec Depth
Start	10.8				
5	13.5	2.7	0.54	15.0	
5	17.6	4.1	0.820	8.9	
5	24.2	6.6	1.320	4.9	