

ADDENDUM NO. 2

TO: PLANS AND SPECIFICATIONS FOR STATE OF MISSOURI

**Renovate to Create Dynamic Crash Testing Site
Emergency Vehicle Operations Course
Jefferson City, Missouri
Project No. R2501-01**

Bid Opening Date: 1:30 PM, Thursday, October 1, 2026 (not Changed)

Bidders are hereby informed that the construction Plans and/or Specifications are modified as follows:

SPECIFICATION CHANGES:

1. ADDED: Appendix 1 – Geotechnical Report

DRAWING CHANGES:

1. Sheet C-501 Joint Plan – Bid Alternate 2 (NEW)

ATTACHMENTS:

1. Appendix 1 – Geotechnical Report
2. Drawing Sheet: C-501

September 24, 2026

END OF ADDENDUM NO. 2

APPENDIX 1

Missouri Highway Patrol EVOC

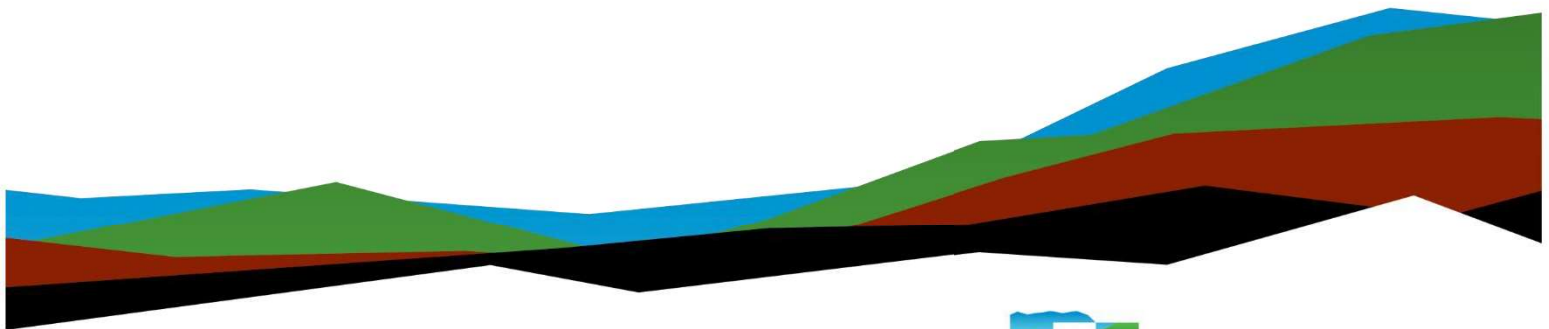
Geotechnical Engineering Report

Jefferson City, Missouri

November 26, 2025 | Terracon Project No. 09255039

Prepared for:

McClure Engineering Co
Columbia, Missouri



Nationwide
Terracon.com

- Facilities
- Environmental
- Geotechnical
- Materials



4441 I-70 Drive NW
Columbia, Missouri 65202
P (573) 214-2677
Terracon.com

November 26, 2025

McClure Engineering Co
2001 West Broadway
Columbia, Missouri 65203

Attn: Mr. Joseph Tuey, P.E.

Re: Geotechnical Engineering Report
Missouri Highway Patrol EVOC
7022 Military Circle
Jefferson City, Missouri
Terracon Project No. 09255039

Dear Mr. Tuey:

We have completed a subsurface exploration and geotechnical engineering evaluation for the referenced project in general accordance with Terracon Proposal No. P09255039 – Revision 1 dated September 2, 2025. This report presents the findings of the subsurface exploration and provides geotechnical recommendations concerning earthwork and the design and construction of and pavements for the project.

We appreciate the opportunity to be of service to you on this project, and we are prepared to provide construction and materials testing (CMT) services recommended in this report (please contact Mr. Dan Hurst, Dan.hurst@terracon.com, the CMT manager). If you have any questions concerning this report or if we may be of further service, please contact us.

Sincerely,

Terracon

A handwritten signature in black ink, appearing to read 'Kaylee'.

Kaylee N. Cannon, P.E.
Senior Staff Engineer

A handwritten signature in black ink, appearing to read 'Jamie M. Klein'.

Jamie M. Klein, P.E.
Senior Engineer
Missouri No. PE-2009001099





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- Exploration and Testing Procedures
- Site Location and Exploration Plans
- Exploration and Laboratory Results
- Supporting Information

Note: This report was also delivered in a web-based format. **Blue Bold** text in the report indicates a referenced section heading. The PDF version also includes hyperlinks which direct the reader to that section and clicking on the Terracon logo will bring you back to this page. For more interactive features, please view your project online at client.terracon.com. Refer to each individual Attachment for a listing of contents.

Introduction

This report presents the results of our subsurface exploration and Geotechnical Engineering services performed for the proposed drive strip and pad to be located at the existing highway patrol facility at 7022 Military Circle in Jefferson City, Missouri. The purpose of these services was to provide information and geotechnical engineering recommendations relative to:

- Subsurface conditions
- Groundwater conditions
- Site preparation and earthwork
- Pavements

Drawings showing the site and boring locations are shown on the attached [Site Location](#) and [Exploration Plan](#). The results of the laboratory testing performed on soil samples obtained from the site during our field exploration are included on the boring logs in [Exploration Results](#).

Project Description

Our initial understanding of the project was provided in our proposal and was discussed during project planning. A period of collaboration has transpired since the project was initiated, and our final understanding of the project conditions is as follows:

Item	Description
Project Description	The project includes the addition of a 500-foot drive strip and up to 160,000 square foot driving pad to the current Missouri Highway Patrol EVOC.
Grading	A site grading plan was not provided. We have considered no more than 10 feet of cut/fill will be required to develop final grades.
Pavements	Anticipated traffic is as follows: ■ Autos/light trucks: 1,000 vehicles per day ■ Light delivery and trash collection vehicles: 10 vehicles per week ■ Tractor-trailer trucks: <1 vehicle per week The pavement design period is 20 years.

Terracon should be notified if any of the above information is inconsistent with the planned construction, especially the grading limits, as modifications to our recommendations may be necessary.

Site Conditions

The following description of site conditions is derived from our site visit in association with the field exploration and our review of publicly available geologic and topographic maps.

Item	Description
Parcel Information	The project is located at 7022 Military Circle in Jefferson City, Missouri. Latitude: 38.5507, Longitude: -92.0684 (approximate) See Site Location
Existing Improvements	Missouri Highway Patrol EVOC Facility
Current Ground Cover	Grass, light tree cover
Existing Topography	The site slopes downward from the west to the east with about 40 feet of grade change between our boring locations.
Geology	Based on the Geological Map provided by the United States Geologic Survey (USGS), the subject site is located over the Jefferson City Dolomite. The Jefferson City Dolomite consists of dolomite bedrock with smaller amounts of sandstone, shale, conglomerate, and chert.

Geotechnical Characterization

We have developed a general characterization of the subsurface conditions based on the subsurface exploration, laboratory data, geologic setting, and our understanding of the project. This characterization, termed GeoModel, forms the basis of our geotechnical evaluation. Conditions observed at each boring location are indicated on the individual logs. The individual logs are in the [Exploration Results](#) and the GeoModel is in the [Figures](#) attachment of this report.

As part of our analyses, we identified the following model layers within the subsurface profile. For a more detailed view of the model layer depths at each boring location, refer to the GeoModel.

Model Layer	Layer Name	General Description
1	Existing Fill	Sandy lean clay, fat clay with varying amounts of sand, clayey sand
2	Clay Soils	Lean clay with varying amounts of sand and silt, fat clay with varying amounts of sand
3	Sand Soils	Poorly graded sand with varying amounts of clay, silty sand

The borings were observed during drilling and shortly after completion of drilling for the presence and level of water. Groundwater was observed at depths ranging from 13 to 19 feet in Borings B-6 through B-8, B-10, and B-11. Groundwater was not encountered in the other borings at these times. A longer period of time may be required for groundwater to develop and stabilize in a borehole. Longer term observations in piezometers or observation wells, sealed from the influence of surface water, are often required to define groundwater levels.

Groundwater levels may fluctuate due to seasonal variations in the amount of rainfall, runoff, and other factors not evident at the time the borings were performed. "Perched" water could occur above lower permeability soil layers, and "trapped" water could be present within existing fill materials. Therefore, groundwater conditions at other times may be different than the conditions encountered in our exploratory borings. The potential for water level fluctuations and perched water should be considered when developing design and construction plans and specifications for the project.

Geotechnical Overview

Existing fill was encountered to depths of about 3 to 8 feet at each borings except Boring B-8. The fill could extend deeper in areas not explored. The fill was variable in composition, moisture content and consistency as summarized below.

Item	Range
Moisture Content (%)	10.6 – 29.9
SPT N-Value (bpf)	6 – 22

We understand that a considerable amount of existing fill was placed during the construction of the existing facility, and that specifically former lagoons in the west part of the site were backfilled. No documentation or records regarding the placement of this fill were provided for our review. If records are available, Terracon should be supplied with these documents to better assess the suitability of the existing fill. Further

exploration and testing (e.g., test pits, geophysical testing, etc.) of the existing fills could be performed either as part of the design or during construction, if requested.

Since the fill extends to a significant depths, we understand that complete removal and replacement of the existing fill will not be economically feasible for this project. Provided the owner is willing to accept the risks associated with supporting pavements over the existing fill materials in exchange for reduced construction costs, portions of the existing undocumented fill could be left in place for support of pavements. If this alternative is chosen, at least 12 inches of existing fill should be scarified, moisture conditioned and recompacted, or at least 12 inches of new engineered fill should be placed, directly below the pavement base rock. If the owner is not willing to accept the risks of supporting pavements over existing undocumented fill materials, significantly more extensive remediation measures could be considered.

To reduce the risk of adverse performance from higher settlement and provide more consistent support for pavements, the exposed existing fill materials should be observed and tested during construction as described in the **Earthwork** section. Where unsuitable conditions are observed, the materials should be improved by scarification and compaction, aggregate or chemical stabilization, or be removed and replaced with engineered fill. Unsuitable fill materials observed during construction may warrant further exploration at that time.

Expansive fat clay soils were encountered at the site. These materials have the potential to shrink and swell with seasonal fluctuations in the soil moisture content. We recommend the pavements be supported on at least 12 inches of low volume change (LVC) material, respectively. Placement of a layer of LVC material below pavements, as recommended in this report, will not eliminate all future subgrade volume change and resultant pavement movements. However, use of an LVC zone should reduce the potential for subgrade volume change. Details regarding the LVC zone are provided in **Earthwork**.

This report provides recommendations to help mitigate the effects of soil shrinkage and expansion. However, even if these procedures are followed, some movement and at least minor cracking in the pavements could still occur. The severity of cracking and other cosmetic damage caused by movement of the pavements will likely increase if any modification of the site results in excessive wetting or drying of the expansive soils. Eliminating the risk of movement and cosmetic distress may not be feasible, but it may be possible to further reduce the risk of movement if significantly more extensive measures are used during construction. We would be pleased to discuss other construction alternatives with you upon request.

The near surface soils consist of clay and sand which could become unstable with typical earthwork and construction traffic, especially after precipitation events. Even in dry weather, a sand subgrade is subject to loss of strength from disturbance. Effective drainage should be completed early in the construction sequence and maintained after

construction to avoid potential issues. If possible, the grading should be performed during the warmer and drier times of the year. If grading is performed during the wetter months, an increased risk for possible undercutting and replacement of unstable subgrade will persist. Additional site preparation recommendations including subgrade improvement and fill placement are provided in the **Earthwork** section.

The recommendations contained in this report are based upon the results of field and laboratory testing (presented in the **Exploration Results**), engineering analyses, and our current understanding of the proposed project. The **General Comments** section provides an understanding of the report limitations.

Earthwork

Site Preparation

Vegetation, topsoil, and any loose, soft or otherwise unsuitable soils present within the proposed construction areas should be stripped. Based on information obtained at the boring locations, stripping depths on the order of 3 to 6 inches should be anticipated to remove the root zone materials. However, greater stripping depths may be required in areas not explored by the borings. Organic soils removed during site preparation should not be used as fill beneath the proposed new building and pavement areas.

The soils within the planned pavement areas should be further undercut as necessary to accommodate placement of the recommended 12-inch thick LVC layer below pavements. The undercut areas should extend a minimum of 2 feet laterally outside the edge of pavements. Undercutting to facilitate placement of the LVC layer would not be necessary in areas where more than 12 inches fill will be placed to develop the pavement subgrade level.

Provided the owner is willing to accept the risks associated with supporting pavements over the existing fill materials in exchange for reduced construction costs, portions of the existing undocumented fill could be left in place for support of pavements. If this alternative is chosen, at least 12 inches of existing fill should be scarified, moisture conditioned and recompacted. If the existing fill is confirmed to meet LVC requirements, it could also serve as the 12 inches LVC layer to be placed directly below the pavement base rock. Prior to placing the engineered fill, the existing fill should be evaluated by a representative of Terracon by exploring using hand equipment or test pits, field density tests and/or possibly obtaining additional samples for further laboratory testing. If unsuitable materials are encountered at this time, these materials should be removed and replaced with controlled engineered fill.

After completing these procedures, the exposed soils should be proofrolled. A Terracon representative should observe the proofrolling. Proofrolling can be accomplished using a

loaded tandem-axle dump truck with a gross weight of at least 20 tons, or similarly loaded equipment. Areas that display excessive deflection (pumping) or rutting during proofroll operations should be improved by scarification/compaction or by removal and replacement with engineered fill.

Mature trees are located within or near the footprint of some of the proposed buildings, which will require removal at the onset of construction. Tree root systems can remove substantial moisture from surrounding soils. Where trees are removed, the full root ball and all associated dry and desiccated soils should be removed. The soil materials which contain less than 5 percent organics can be reused as engineered fill provided the material is moisture conditioned and properly compacted.

Where fill is placed on existing slopes steeper than 5H:1V, benches should be cut into the existing slopes prior to fill placement. The benches should have a minimum vertical face height of 1 foot and a maximum vertical face height of 3 feet and should be cut wide enough to accommodate the compaction equipment. This benching will help provide a positive bond between the fill and natural soils and reduce the possibility of failure along the fill/natural soil interface.

Excavation

We anticipate that excavations for the proposed construction can be accomplished with conventional earthmoving equipment. The bottom of excavations should be thoroughly cleaned of loose soils and disturbed materials prior to backfill placement and/or construction.

Subgrade Stabilization

Due to the presence of soils with high moisture content and relatively low strength, some means of subgrade stabilization may be required to facilitate construction, especially if wet soils are encountered during site preparation or if the subgrade becomes saturated by precipitation during site preparation/earthwork operations.

In general (weather permitting), scarifying, drying and compacting the exposed subgrades is expected to be the most economical means of improving these soils prior to placing new fill. However, this option is typically less effective where soft/wet soils are more than about one foot thick. Alternatives for subgrade stabilization could include undercutting unsuitable (wet, low strength, and/or disturbed) soils followed by the addition of crushed stone aggregate (typically on the order of 12 to 18 inches thick) to improve subgrade stability, or the incorporation of a chemical additive such as portland cement, hydrated lime, or lime kiln dust. The need for stabilization, and the most appropriate type of stabilization, will be dependent upon soil, groundwater, and weather conditions at the time of construction. The proposed grading plan, the construction

schedule, and construction methods will also affect selection of the stabilization method. Terracon should be retained during construction to help provide recommendations as needed.

Fill Material Types

Fill required to achieve design grade should be classified as engineered fill and general fill. Engineered fill is material used below, or within 10 feet of pavements or constructed slopes. General fill is material used to achieve grade outside of these areas.

Reuse of On-Site Soil: Excavated on-site soil may be selectively reused as new engineered fill. Based on the limited number of tested samples it appears some of the on-site soils may meet the requirements for LVC material. Soils that do not meet LVC requirements should be used below the recommended LVC zone.

Material property requirements for on-site soil for use as engineered fill are noted in the table below:

Fill Type	USCS Classification	Acceptable Location for Placement
Existing Fill	CL, CH, or SC	Pavement subgrades, below LVC zone unless further laboratory testing confirms material meets LVC requirements.. Existing fill should be observed, tested and approved by Terracon. Organics, rock/rubble fragments larger than 3 inches, debris, or other unsuitable materials should be removed prior to re-use of the existing fill in engineered fill sections.
Native Fat Clays and/or Lean to Fat Clays (LL $\geq$ 45 and/or PI $\geq$ 23)	CH, CL/CH	At depths greater than 12 inches below the base of pavement sections
Native Lean Clays (LL $<$ 45 and PI $<$ 23)	CL	All locations and elevations, except where baserock or free-draining material is required
Native Sand	SP	All locations and elevations except where baserock is required
Native Silty Sand	SM	All locations and elevations, except where baserock or free-draining material is required

Imported Fill Materials: Imported fill materials should meet the following material property requirements. Regardless of its source, compacted fill should consist of approved materials that are free of organic matter and debris. Frozen material should not be used, and fill should not be placed on a frozen subgrade.

Fill Type ¹	USCS Classification	Acceptable Location for Placement
Low Volume Change (LVC) material	GM ² or CL (LL<45 and PI<23)	All locations and elevations, except where free-draining material is required
Free Draining Granular ³	GW, GP, SW, SP	Less than 5% passing No. 200 sieve

1. Engineered fill should consist of approved materials that are free of organic matter and debris. Frozen material should not be used, and fill should not be placed on a frozen subgrade.
2. MoDOT Type 5 or an approved alternate gradation of crushed limestone aggregate.
3. Granular materials with less than 5 percent fines (material passing the #200 sieve), such as ASTM C33 Size No. 57 aggregate or an approved alternate gradation.

Fill Placement and Compaction Requirements

Engineered fill and general fill should meet the following compaction requirements.

Item	Engineered Fill	General Fill
Maximum Lift Thickness	8 inches or less in loose thickness when heavy, self-propelled compaction equipment is used 4 to 6 inches in loose thickness when hand-guided equipment (i.e. a jumping jack or plate compactor) is used	Same as engineered fill
Minimum Compaction Requirements ^{1,2,3}	95% of max. below pavements	92% of max.

Item	Engineered Fill	General Fill
Water Content Range ¹	Low plasticity cohesive: -2% to +3% of optimum High plasticity cohesive: 0 to +4% of optimum Granular: -3% to +3% of optimum	As required to achieve min. compaction requirements

1. Maximum density and optimum water content as determined by the standard Proctor test (ASTM D 698).
2. High plasticity cohesive fill should not be compacted to more than 100% of standard Proctor maximum dry density.
3. If the granular material is a coarse sand or gravel, or of a uniform size, or has a low fines content, compaction comparison to relative density may be more appropriate. In this case, granular materials should be compacted to at least 70% relative density (ASTM D 4253 and D 4254). Materials not amenable to density testing should be placed and compacted to a stable condition observed by the Geotechnical Engineer or their representative.

Grading and Drainage

All grades must provide effective drainage away from the pavements during and after construction and should be maintained throughout the life of the facility. After completion of paving, final grades should be checked to document that effective drainage has been achieved. Grades should also be periodically inspected and adjusted, as necessary, as part of the facility's maintenance program. Where paving or flatwork abuts existing improvements, a maintenance program should be established to effectively seal and maintain joints to resist surface water infiltration.

Earthwork Construction Considerations

Care should be taken to avoid disturbance of prepared subgrades. Unstable subgrade conditions can develop during general construction operations, particularly if the soils are wetted and/or subjected to repetitive construction traffic. If unstable subgrade conditions develop, stabilization measures will need to be employed. Construction traffic over the completed subgrade should be avoided to the extent practical. If the subgrade becomes frozen, desiccated, saturated, or disturbed, the affected materials should be removed or these materials should be scarified, moisture conditioned, and compacted prior to construction.

Based on conditions encountered in the borings, seepage should be expected in shallow excavations for this project (e.g., for utility installation, etc.). If seepage is encountered in excavations during construction, the contractor is responsible for designing, implementing, and maintaining appropriate dewatering methods to control seepage and

facilitate construction. In our experience, dewatering of excavations in clay soils can typically be accomplished using sump pits and pumps. If seepage occurs where layers of sand or broken rock are encountered in excavations, a more extensive dewatering system may be required.

As a minimum, excavations should be performed in accordance with OSHA 29 CFR, Part 1926, Subpart P, "Excavations" and its appendices, and in accordance with any applicable local, state, and federal safety regulations. The contractor should be aware that slope height, slope inclination, and excavation depth should in no instance exceed those specified by these safety regulations. Flatter slopes than those dictated by these regulations may be required depending upon the soil conditions encountered and other external factors. These regulations are strictly enforced and if they are not followed, the owner, contractor, and/or earthwork and utility subcontractor could be liable and subject to substantial penalties. Under no circumstances should the information provided in this report be interpreted to mean that Terracon is responsible for construction site safety or the contractor's activities. Construction site safety is the sole responsibility of the contractor who shall also be solely responsible for the means, methods, and sequencing of the construction operations.

Construction Observation and Testing

The earthwork efforts should be observed by the Geotechnical Engineer (or others under their direction). Observation should include documentation of adequate removal of surficial materials (vegetation, topsoil, and pavements), evaluation and remediation of existing fill materials, as well as proofrolling and mitigation of unsuitable areas delineated by the proofroll.

Each lift of compacted fill should be tested, evaluated, and reworked, as necessary, as recommended by the Geotechnical Engineer prior to placement of additional lifts. Each lift of fill should be tested for density and water content at a frequency of at least one test for every 5,000 square feet in pavement areas. Where not specified by local ordinance, one density and water content test should be performed for every 100 linear feet of compacted utility trench backfill and a minimum of one test performed for every 12 vertical inches of compacted backfill.

In areas of excavations, the subgrade should be evaluated by the Geotechnical Engineer. If unanticipated conditions are observed, the Geotechnical Engineer should prescribe mitigation options.

In addition to the documentation of the essential parameters necessary for construction, the continuation of the Geotechnical Engineer into the construction phase of the project provides the continuity to maintain the Geotechnical Engineer's evaluation of subsurface conditions, including assessing variations and associated design changes.

Pavements

Pavement Subgrade Preparation

Pavement subgrades are expected to consist of 12 inches of LVC material beneath the pavement base rock to reduce the shrink/swell potential of the subgrade. The pavement subgrades should be evaluated and proofrolled as recommended in [Earthwork](#). If soft or otherwise unsuitable areas are observed, additional over-excavation and replacement will be needed. Support characteristics of subgrade for pavement design do not account for shrink/swell movements of an expansive clay subgrade, such as soils observed on this project. Thus, the pavement may be adequate from a structural standpoint, yet still experience cracking and deformation due to shrink/swell related movement of the subgrade.

Grading and paving are commonly performed by separate contractors and there is often a time lapse between the end of grading operations and the commencement of paving. Subgrades prepared early in the construction process may become disturbed by construction traffic. Non-uniform subgrades often result in poor pavement performance and local failures relatively soon after pavements are constructed. Depending on the paving equipment used by the contractor, measures may be required to improve subgrade strength to greater depths for support of heavily loaded concrete/asphalt trucks.

We recommend the moisture content and density of the subgrade be evaluated and the pavement subgrades be proofrolled (using a loaded tandem-axle dump truck with a minimum gross weight of 20 tons or similarly loaded rubber-tire equipment) within two days prior to commencement of actual paving operations. Areas not in compliance with the required ranges of moisture or density should be scarified, moisture conditioned, and compacted. Particular attention should be paid to high traffic areas that were rutted and disturbed earlier and to areas where backfilled trenches are located. Areas where unsuitable conditions are located should be repaired by removing and replacing the materials with properly compacted fills. The subgrade should be in its finished form at the time of the final review.

Opinions of Minimum Pavement Thicknesses

Pavement thickness depends upon many factors including but not limited to:

- applied wheel/axle loads and number of repetitions
- subgrade and pavement material characteristics
- climate conditions
- site and pavement drainage

Specific information regarding anticipated vehicle types, axle loads and traffic volumes was not provided at the time of this report. The “Light Duty” pavement section considers 4-tire, 2-axle personal vehicle traffic only (cars, vans, pickups and SUVs). The “Heavy Duty” pavement section considers personal vehicle traffic, a maximum of ten delivery trucks/trash collection trucks per week, and one semi-tractor trailer vehicle per week. Our recommendations for ACC pavement over aggregate base and portland cement concrete (PCC) pavement sections are outlined in the following table.

Opinions of Minimum Pavement Thickness

Pavement Type	Light Duty	Heavy Duty
ACC Over Aggregate Base	2 inches ACC surface 2 inches ACC base 6 inches aggregate base (MoDOT Type 5 or similar)	2 inches ACC surface 4 inches ACC base 6 inches aggregate base (MoDOT Type 5 or similar)
PCC ¹	5 inches PCC 4 inches aggregate base (MoDOT Type 5 or similar)	6 inches PCC 4 inches aggregate base (MoDOT Type 5 or similar)

1. For trash container pads, we recommend a PCC pavement section be used consisting of 7 inches (minimum) of PCC over 4 inches (minimum) aggregate base (MoDOT Type 5 or similar) on a compacted soil subgrade. The trash container pad should be large enough to support the container and the tipping axle of the collection truck.

PCC pavements will perform better than ACC in areas where short radius turning and braking are expected (i.e., entrance/exit aprons) due to better resistance to rutting and shoving. In addition, PCC pavement will perform better in areas subject to heavy static loads.

Construction traffic on the pavements was not considered in developing our opinions of minimum pavement thickness. If the pavements will be subject to construction equipment/vehicles, the pavement sections should be revised to consider the additional loading.

Pavements and subgrades will be subject to freeze-thaw cycles and seasonal fluctuations in moisture content. Pavement thickness design methods are intended to provide adequate thickness of structural materials over a particular subgrade such that wheel loads are reduced to a level that the subgrade can support. The subgrade support parameters for pavement thickness design do not account for shrink/swell movements of a subgrade constructed of expansive clay soils. Therefore, the pavement may be

adequate from a structural standpoint, yet still experience cracking and deformation due to shrink/swell related movement of the subgrade.

The pavement sections provided above consider that the subgrade soils will not experience significant increases in moisture content. Paved areas should be sloped to provide rapid drainage of surface water and to drain water away from the pavement edges. Pavements should be designed so water does not accumulate on or adjacent to the pavement, since this could saturate and soften the subgrade soils and subsequently accelerate pavement deterioration.

Post-construction performance of pavements supported on existing fill materials cannot be accurately predicted but could be larger than normal and result in some cracking. Mitigation measures, as noted in [Earthwork](#), are critical to the performance of pavements. In addition to the mitigation measures, aggregate base and/or pavement thicknesses could be increased to further reduce risks associated with existing fill.

Pavement Drainage

Pavements should be sloped to provide rapid drainage of surface water. Water allowed to pond on or adjacent to the pavements could saturate the subgrade and contribute to premature pavement deterioration. In addition, the pavement subgrade should be graded to provide positive drainage within the granular base section. Appropriate sub-drainage or connection to a suitable daylight outlet could be considered to remove water from the granular subbase.

Pavement Maintenance

The pavement sections represent minimum recommended thicknesses, and periodic maintenance and repairs should be anticipated. Preventive maintenance should be planned and provided for through an on-going pavement management program. Maintenance activities are intended to slow the rate of pavement deterioration and to preserve the pavement investment. Pavement care consists of both localized (e.g., crack sealing, joint sealing, and patching) and global maintenance (e.g., surface sealing). Additional engineering consultation is recommended to determine the type and extent of a cost-effective program. Even with periodic maintenance, some movements and related cracking may still occur, and repairs may be required.

Pavement performance is affected by the pavement's surroundings. In addition to providing preventive maintenance, the civil engineer should consider the following recommendations in the design and layout of pavements:

- Final grade adjacent to paved areas should slope down from the edges at a minimum 2%.

- Subgrade and pavement surfaces should have a minimum 2% slope to promote proper surface drainage.
- Install pavement drainage systems surrounding areas anticipated for frequent wetting.
- Install joint sealant and seal cracks immediately.
- Seal all landscaped areas in or adjacent to pavements to reduce moisture migration to subgrade soils.
- Place compacted, low permeability backfill against the exterior side of curbs and gutters.
- Place curbs, gutters and/or sidewalks directly on clay subgrade soils rather than on unbound granular base course materials.

Periodic Surface Evaluations to Document Distress using Pave-AI

Periodic surface evaluations are critical to maintaining the longevity, safety, and performance of pavement infrastructure. Routine visual inspections help identify early signs of surface distresses enabling the implementation of proactive and effective maintenance strategies. By tracking the progression of these distresses, asset managers can take timely corrective actions before issues worsen into more extensive and costly repairs. Consistent evaluations also support the development of preventive maintenance programs, which extend pavement service life and reduce long-term maintenance expenditures. Terracon's use of proprietary Pave-AI technology to scan the pavement surface and produced high resolution imagery is then analyzed through a machine learning and artificial intelligence model. This process follows the guidance of **ASTM D6433 – Standard Practice for Roads and Parking Lots Pavement Condition Index Surveys**, ensuring objective, time-stamped, and comprehensive documentation of pavement condition.

Periodic Structural Capacity Evaluation using FWD Testing

Pavement layer properties change over time due to aging and accumulated damage. To monitor these variations, it is essential to perform periodic Falling Weight Deflectometer (FWD) testing, combined with nonlinear dynamic backcalculation to determine layer properties. These properties provide critical insights that support proactive maintenance decisions—before surface damage becomes visible. FWD testing must be conducted using a reliable, well-maintained, and properly calibrated device, verified through both reference and relative calibrations. It is recommended to initiate FWD testing within 1–2 years after construction to establish a baseline for comparison in future evaluations. Thereafter, testing should be repeated every 2–3 years for flexible pavements and every 4–5 years for rigid pavements. If the pavement structure shows signs of underperformance, it is important to increase the testing frequency accordingly. Please

consult with us to develop a comprehensive FWD testing plan that ensures consistent procedures, reliable data, and meaningful comparisons over time.

General Comments

Our analysis and opinions are based upon our understanding of the project, the geotechnical conditions in the area, and the data obtained from our site exploration. Variations will occur between exploration point locations or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. Terracon should be retained as the Geotechnical Engineer, where noted in this report, to provide observation and testing services during pertinent construction phases. If variations appear, we can provide further evaluation and supplemental recommendations. If variations are noted in the absence of our observation and testing services on-site, we should be immediately notified so that we can provide evaluation and supplemental recommendations.

Support of pavements above existing fill is discussed in this report. Even with the construction observation/testing recommended in this report, the owner must accept the risk that unsuitable materials within or buried by the fill will not be discovered. This may result in larger than normal settlement and damage to pavements supported above existing fill, requiring additional maintenance. This risk cannot be eliminated without removing the existing fill from below the pavement areas, but it can be reduced by thorough observation and testing as discussed herein.

Our Scope of Services does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

Our services and any correspondence are intended for the sole benefit and exclusive use of our client for specific application to the project discussed and are accomplished in accordance with generally accepted geotechnical engineering practices with no third-party beneficiaries intended. Any third-party access to services or correspondence is solely for information purposes to support the services provided by Terracon to our client. Reliance upon the services and any work product is limited to our client and is not intended for third parties. Any use or reliance of the provided information by third parties is done solely at their own risk. No warranties, either express or implied, are intended or made.

Site characteristics as provided are for design purposes and not to estimate excavation cost. Any use of our report in that regard is done at the sole risk of the excavating cost estimator as there may be variations on the site that are not apparent in the data that

could significantly impact excavation cost. Any parties charged with estimating excavation costs should seek their own site characterization for specific purposes to obtain the specific level of detail necessary for costing. Site safety, cost estimating, excavation support, and dewatering requirements/design are the responsibility of others. Construction and site development have the potential to affect adjacent properties. Such impacts can include damages due to vibration, modification of groundwater/surface water flow during construction, foundation movement due to undermining or subsidence from excavation, as well as noise or air quality concerns. Evaluation of these items on nearby properties are commonly associated with contractor means and methods and are not addressed in this report. The owner and contractor should consider a preconstruction/precondition survey of surrounding development. If changes in the nature, design, or location of the project are planned, our conclusions and recommendations shall not be considered valid unless we review the changes and either verify or modify our conclusions in writing.

Geotechnical Engineering Report

Missouri Highway Patrol EVOC | Jefferson City, Missouri

November 26, 2025 | Terracon Project No. 09255039

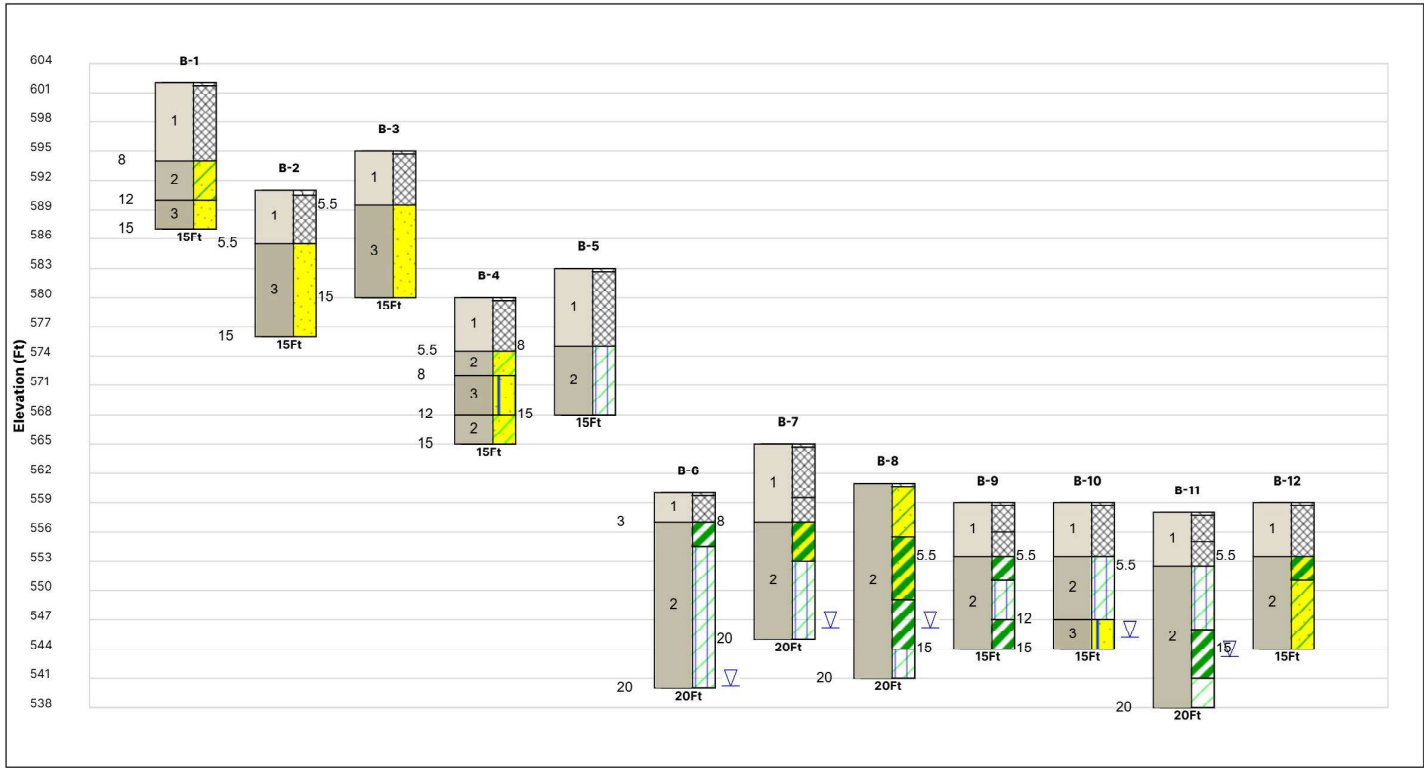


Figures

Contents:

GeoModel

GeoModel



This is not a cross section. This is intended to display the Geotechnical Model only. See individual logs for more detailed conditions

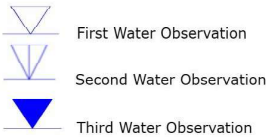
#	Layer Name	General Description
1	Existing Fill	Sandy lean clay, fat clay with varying amounts of sand, clayey sand
2	Clay Soils	Lean clay with varying amounts of sand and silt, fat clay with varying amounts of sand
3	Sand Soils	Poorly graded sand with varying amounts of clay, silty sand

Legend	
	Topsoil
	Fill
	Sandy Lean Clay
	Poorly Graded Sand
	TOPSOIL
	Silty Sand
	Lean Clay with Silt
	Fat Clay
	Fat Clay with Sand
	Lean Clay
	Lean Clay with Sand

Groundwater levels are temporal. The levels shown are representative of the date and time of our exploration. Significant changes are possible over time.
Water levels shown are as measured during and/or after drilling. In some cases, boring advancement methods mask the presence/absence of groundwater. See individual logs for details.

Notes:

Layering shown on this figure has been developed by the geotechnical engineer for purposes of modeling the subsurface conditions as required for the subsequent geotechnical engineering for this project.
Numbers adjacent to soil column indicate depth below ground surface.



Geotechnical Engineering Report

Missouri Highway Patrol EVOC | Jefferson City, Missouri

November 26, 2025 | Terracon Project No. 09255039



Attachments

Exploration and Testing Procedures

Field Exploration

Number of Borings	Approximate Boring Depth (feet)	Location
12	15 to 20	Drive Strip and Driving Pad

Boring Layout and Elevations: Terracon personnel provided the boring layout using handheld GPS equipment (estimated horizontal accuracy of about ±10 feet) and referencing existing site features. Approximate ground surface elevations were estimated using Google Earth. If more precise elevations and boring layout are desired, we recommend the borings be surveyed.

Subsurface Exploration Procedures: We advanced the borings with an ATV-mounted rotary drill rig using continuous flight, hollow-stem augers. Four samples were obtained in the upper 10 feet of each boring and at intervals of 5 feet thereafter. In the split-barrel sampling procedure, a standard 2-inch outer diameter split-barrel sampling spoon was driven into the ground by a 140-pound automatic hammer falling a distance of 30 inches. The number of blows required to advance the sampling spoon the last 12 inches of a normal 18-inch penetration is recorded as the Standard Penetration Test (SPT) resistance value. The SPT resistance values, also referred to as N-values, are indicated on the boring logs at the test depths. We observed and recorded groundwater levels during drilling and sampling. For safety purposes, all borings were backfilled with auger cuttings after their completion.

The sampling depths, penetration distances, and other sampling information were recorded on the field boring logs. The samples were placed in appropriate containers and taken to our soil laboratory for testing and classification by a geotechnical engineer. Our exploration team prepared field boring logs as part of the drilling operations. These field logs included visual classifications of the materials observed during drilling and our interpretation of the subsurface conditions between samples. Final boring logs were prepared from the field logs. The final boring logs represent the Geotechnical Engineer's interpretation of the field logs and include modifications based on observations and tests of the samples in our laboratory.

Laboratory Testing

The project engineer reviewed the field data and assigned laboratory tests. The laboratory testing program included the following tests on selected samples:

- Moisture Content
- Atterberg Limits

Geotechnical Engineering Report

Missouri Highway Patrol EVOG | Jefferson City, Missouri

November 26, 2025 | Terracon Project No. 09255039



The laboratory testing program included observation of soil samples by an engineer. Based on the results of our field and laboratory programs, we described and classified the soil samples in accordance with the Unified Soil Classification System.

Site Location and Exploration Plans

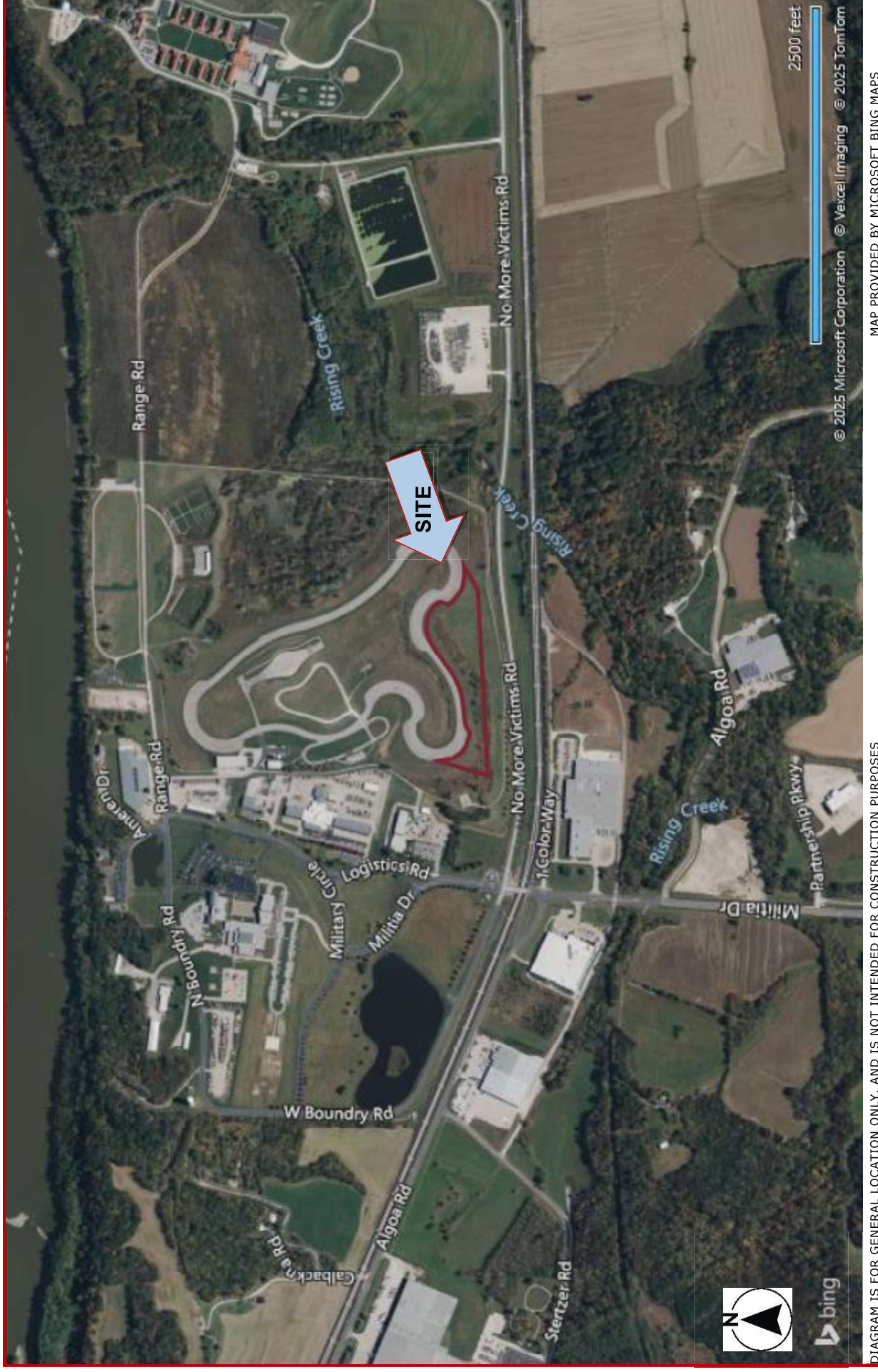
Contents:

Site Location Plan

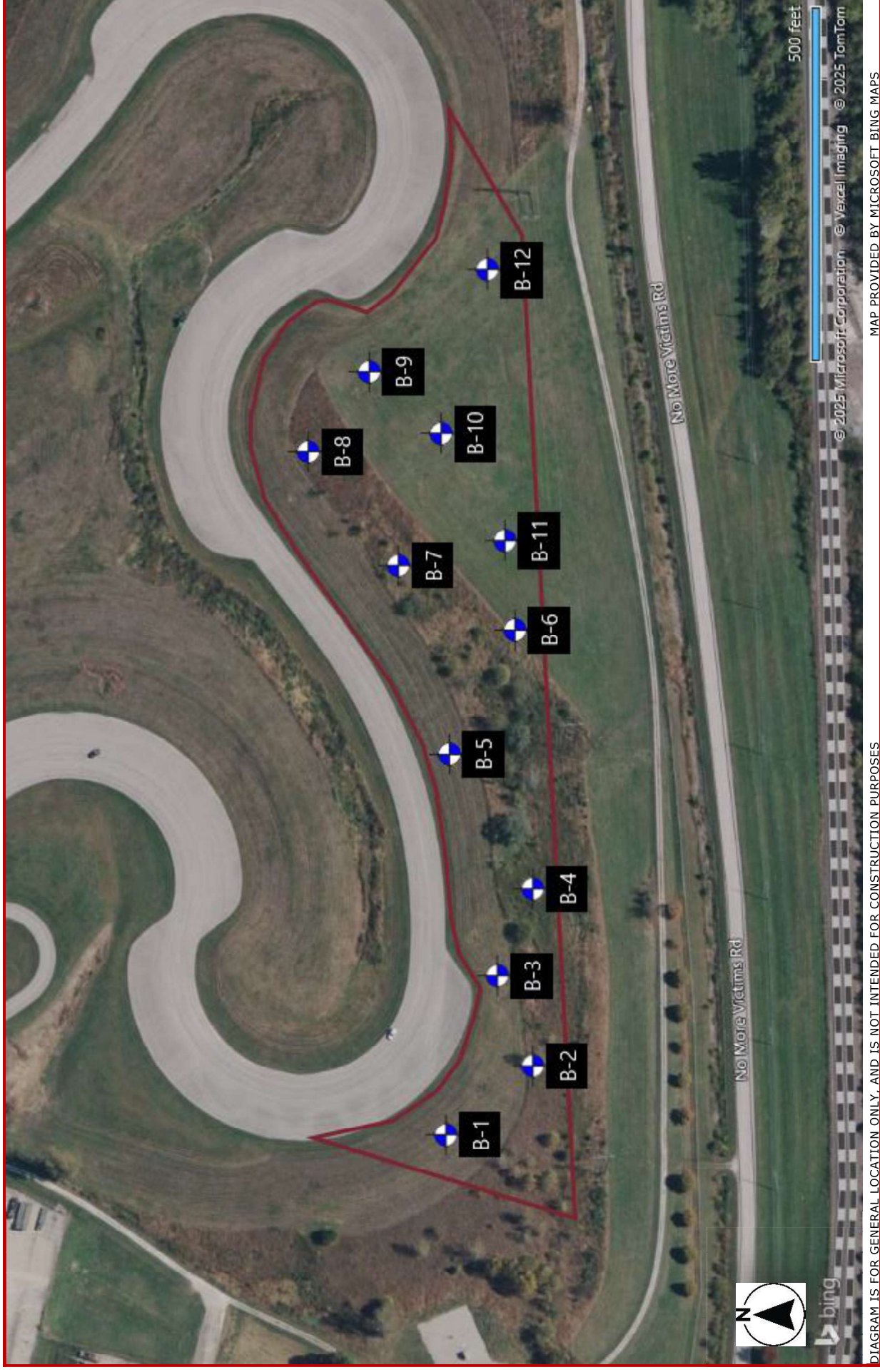
Exploration Plan

Note: All attachments are one page unless noted above.

Site Location



Exploration Plan



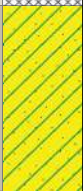
Exploration and Laboratory Results

Contents:

Boring Logs (B-1 through B-12)

Note: All attachments are one page unless noted above.

BORING LOG NO. B-1

Model Layer	Graphic Log	Lithology Depth (Ft.)	Material Description	Depth (Ft.)	Elevation (Ft.)	Sample Type	Recovery (In.)	Field Test Results	Water Content (%)	Atterberg Limits		
										LL	PL	PI
1		0.3	TOPSOIL , Approximately 3"		601.7							
			FILL - SANDY LEAN CLAY brown and gray			X	12	4-6-5 N = 11	14	38	18	20
				5		X	16	4-8-14 N = 22	17.7			
						X	18	4-6-8 N = 14	25.6			
2		8.0	SANDY LEAN CLAY (CL) , brown, medium stiff to stiff		594.0							
				10		X	17	2-4-4 N = 8	26.1			
3		12.0	POORLY GRADED SAND (SP) , fine grained, brown, loose		590.0							
						X	18	2-3-3 N = 6	14.6			
			Boring Terminated at 15 Ft									

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.

Notes

Elevation Reference: The elevations were obtained from Google Earth.

Water Level Observations

Groundwater not encountered while drilling

Advancement Method

0-15 Ft. Hollow Stem Auger

Abandonment Method

Boring backfilled with soil cuttings upon completion.

Drill Rig

721/CME-550X

Hammer Type

Automatic

Driller

BR

Logged By

RO

Boring Started

11/07/2025

Boring Completed

11/07/2025

BORING LOG NO. B-2

Surface Elevation:
 591(Ft) +/-

Model Layer	Graphic Log	Lithology Depth (Ft.)	Material Description	Depth (Ft.)	Elevation (Ft.)	Sample Type	Recovery (In.)	Field Test Results	Water Content (%)
1		0.5	TOPSOIL , Approximately 6"		590.5				
			FILL - SANDY LEAN CLAY brown						
						X	11	4-7-9 N = 16	21.8
						X	15	5-6-7 N = 13	15.7
		5.5		5	585.5				
			POORLY GRADED SAND (SP) , fine to medium grained, brown, loose						
						X	11	4-4-3 N = 7	11.7
						X	18	2-2-3 N = 5	7.1
3				10					
						X	15	4-4-3 N = 7	9
			Boring Terminated at 15 Ft						

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
 See Supporting Information for explanation of symbols and abbreviations.

Notes

Elevation Reference: The elevations were obtained from Google Earth.

Water Level Observations

Groundwater not encountered while drilling

Advancement Method

0-15 Ft. Hollow Stem Auger

Abandonment Method

Boring backfilled with soil cuttings upon completion.

Drill Rig

721/CME-550X

Hammer Type

Automatic

Driller

BR

Logged By

RO

Boring Started

11/07/2025

Boring Completed

11/07/2025

BORING LOG NO. B-3

Surface Elevation:
595(Ft) +/-

Model Layer	Graphic Log	Lithology Depth (Ft.)	Material Description	Depth (Ft.)	Elevation (Ft.)	Sample Type	Recovery (In.)	Field Test Results	Water Content (%)	Atterberg Limits		
										LL	PL	PI
1		0.3	TOPSOIL , Approximately 3"		594.7							
			FILL - SANDY FAT CLAY brown			X	13	7-6-7 N = 13	12.5	56	19	37
3		5.5	POORLY GRADED SAND (SP) , trace clay, fine grained, brown, loose	5	589.5	X	13	4-6-9 N = 15	17.5			
						X	18	4-4-4 N = 8	10.7			
				10		X	14	3-4-5 N = 9	19.5			
						X	18	1-2-5 N = 7	6.2			
			Boring Terminated at 15 Ft									

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.

Notes

Elevation Reference: The elevations were obtained from Google Earth.

Water Level Observations

Groundwater not encountered while drilling

Abandonment Method

Boring backfilled with soil cuttings upon completion.

Drill Rig

721/CME-550X

Hammer Type

Automatic

Driller

BR

Logged By

RO

Boring Started

11/06/2025

Boring Completed

11/06/2025

BORING LOG NO. B-4

Surface Elevation:
 580(Ft) +/-

Model Layer	Graphic Log	Lithology Depth (Ft.)	Material Description	Depth (Ft.)	Elevation (Ft.)	Sample Type	Recovery (In.)	Field Test Results	Water Content (%)
1		0.3	<u>TOPSOIL</u> , Approximately 4"		579.7				
			<u>FILL - SANDY LEAN CLAY</u> brown						
						X	9	7-9-7 N = 16	11.5
						X	12	3-4-4 N = 8	22.6
		5.5		5	574.5				
2			<u>LEAN CLAY WITH SAND (CL)</u> , brown, stiff			X	18	3-4-5 N = 9	26.1
		8.0			572.0				
3			<u>SILTY SAND (SM)</u> , fine grained, brown, loose			X	18	2-3-3 N = 6	22.2
		12.0		10					
			<u>LEAN CLAY WITH SAND (CL)</u> , brown, soft to medium stiff		568.0				
2						X	18	3-2-2 N = 4	29
			Boring Terminated at 15 Ft						

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
 See Supporting Information for explanation of symbols and abbreviations.

Notes

Elevation Reference: The elevations were obtained from Google Earth.

Water Level Observations

Groundwater not encountered while drilling

Abandonment Method

Boring backfilled with soil cuttings upon completion.

Drill Rig

721/CME-550X

Hammer Type

Automatic

Driller

BR

Logged By

RO

Boring Started

11/07/2025

Boring Completed

11/07/2025

BORING LOG NO. B-5

Surface Elevation:
 583(Ft) +/-

Model Layer	Graphic Log	Lithology Depth (Ft.)	Material Description	Depth (Ft.)	Elevation (Ft.)	Sample Type	Recovery (In.)	Field Test Results	Water Content (%)
1		0.3	TOPSOIL , Approximately 3"		582.7				
			FILL - SANDY LEAN CLAY brown						
						X	17	7-6-7 N = 13	10.6
						X	13	3-5-7 N = 12	21.2
				5		X	18	3-5-7 N = 12	19.2
		8.0	LEAN CLAY WITH SILT (CL) , gray, stiff		575.0				
						X	16	3-4-6 N = 10	20.6
2				10		X	18	3-4-5 N = 9	24.5
			Boring Terminated at 15 Ft						

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
 See Supporting Information for explanation of symbols and abbreviations.

Notes

Elevation Reference: The elevations were obtained from Google Earth.

Water Level Observations

Groundwater not encountered while drilling

Abandonment Method

Boring backfilled with soil cuttings upon completion.

Drill Rig

721/CME-550X

Hammer Type

Automatic

Driller

BR

Logged By

RO

Boring Started

11/06/2025

Boring Completed

11/06/2025

BORING LOG NO. B-6

Surface Elevation:
560(Ft) +/-

Model Layer	Graphic Log	Lithology Depth (Ft.)	Material Description	Depth (Ft.)	Elevation (Ft.)	Sample Type	Recovery (In.)	Water Level Observations	Field Test Results	Water Content (%)	Atterberg Limits		
											LL	PL	PI
1		0.3	TOPSOIL , Approximately 4"		559.7								
			FILL - FAT CLAY WITH SAND dark brown			X	10		4-4-3 N = 7	18.6	58	19	39
2		3.0	FAT CLAY (CH) , gray, medium stiff		557.0	X	11		2-2-4 N = 6	30.4			
		5.5	LEAN CLAY WITH SILT (CL) , brown and gray, soft to medium stiff		554.5	X	18		2-2-3 N = 5	32.6			
						X	17		1-2-1 N = 3	37			
				10									
						X	17		1-1-1 N = 2	44.9			
				15									
						X	18	▽	WoH-WoH-2 N = 2	40.8			
			Boring Terminated at 20 Ft										

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.

Notes

Elevation Reference: The elevations were obtained from Google Earth.

Water Level Observations

▽ 19 Ft. While drilling

Abandonment Method

Boring backfilled with soil cuttings upon completion.

Drill Rig

721/CME-550X

Hammer Type

Automatic

Driller

BR

Logged By

RO

Boring Started

11/07/2025

Boring Completed

11/07/2025

BORING LOG NO. B-7

Surface Elevation:
565(Ft) +/-

Model Layer	Graphic Log	Lithology Depth (Ft.)	Material Description	Depth (Ft.)	Elevation (Ft.)	Sample Type	Recovery (In.)	Water Level Observations	Field Test Results	Water Content (%)	Atterberg Limits		
											LL	PL	PI
1		0.3	TOPSOIL , Approximately 3"		564.7								
			FILL - SANDY LEAN CLAY brown and gray			X	11		3-4-6 N = 10	19.2	41	20	21
						X	15		3-5-4 N = 9	22.1			
		5.5	FILL - FAT CLAY WITH SAND dark gray	5	559.5	X	16		2-4-5 N = 9	22.1			
2		8.0	FAT CLAY WITH SAND (CH) , brown and gray, medium stiff to stiff		557.0	X	17		2-4-4 N = 8	25.9			
				10									
		12.0	LEAN CLAY WITH SILT (CL) , gray with brown, soft to medium stiff		553.0	X	18		2-1-2 N = 3	34.1			
				15		X	13	▽	2-3-5 N = 8	35.6			
			Boring Terminated at 20 Ft										

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.

Notes

Elevation Reference: The elevations were obtained from Google Earth.

Water Level Observations

▽ 18 Ft. While drilling

Abandonment Method

Boring backfilled with soil cuttings upon completion.

Drill Rig

721/CME-550X

Hammer Type

Automatic

Driller

BR

Logged By

RO

Boring Started

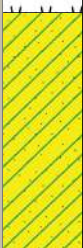
11/07/2025

Boring Completed

11/07/2025

BORING LOG NO. B-8

Surface Elevation:
561(Ft) +/-

Model Layer	Graphic Log	Lithology Depth (Ft.)	Material Description	Depth (Ft.)	Elevation (Ft.)	Sample Type	Recovery (In.)	Water Level Observations	Field Test Results	Water Content (%)
2		0.3	TOPSOIL , Approximately 3"		560.7					
		5.5	SANDY LEAN CLAY (CL) , dark brown and dark gray, medium stiff			X	14		2-2-4 N = 6	21.8
						X	4		1-3-4 N = 7	19.6
		5.5	FAT CLAY WITH SAND (CH) , light gray, medium stiff	5	555.5	X	18		3-3-4 N = 7	25.5
						X	18		1-2-4 N = 6	49.4
		12.0	FAT CLAY (CH) , trace sand, dark gray, soft		549.0					
						X	18	▽	1-1-2 N = 3	49.3
		17.0	LEAN CLAY WITH SILT (CL) , gray, soft		544.0					
						X	18		WoH-WoH-2 N = 2	35.6
			Boring Terminated at 20 Ft							

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.

Notes

Elevation Reference: The elevations were obtained from Google Earth.

Water Level Observations

▽ 14 Ft. While drilling

Abandonment Method

Boring backfilled with soil cuttings upon completion.

Drill Rig

721/CME-550X

Hammer Type

Automatic

Driller

BR

Logged By

RO

Boring Started

11/06/2025

Boring Completed

11/06/2025

BORING LOG NO. B-9

Surface Elevation:
559(Ft) +/-

Model Layer	Graphic Log	Lithology Depth (Ft.)	Material Description	Depth (Ft.)	Elevation (Ft.)	Sample Type	Recovery (In.)	Field Test Results	Water Content (%)
1		0.3	TOPSOIL , Approximately 3"		558.7				
			FILL - CLAYEY SAND fine grained, gray			X	12	2-3-4 N = 7	25.6
		3.0			556.0				
2			FILL - FAT CLAY WITH SAND gray with brown			X	11	3-4-6 N = 10	25
		5.5		5	553.5				
			FAT CLAY (CH) , trace sand, light gray with brown, medium stiff			X	18	2-3-4 N = 7	34.6
		8.0			551.0				
			LEAN CLAY WITH SILT (CL) , light gray, soft to medium stiff			X	18	1-2-2 N = 4	37.2
		12.0		10					
			FAT CLAY (CH) , trace sand, dark gray, soft to medium stiff		547.0				
						X	16	1-3-1 N = 4	26
			Boring Terminated at 15 Ft						

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.

Notes

Elevation Reference: The elevations were obtained from Google Earth.

Water Level Observations

Groundwater not encountered while drilling

Abandonment Method

Boring backfilled with soil cuttings upon completion.

Drill Rig

721/CME-550X

Hammer Type

Automatic

Driller

BR

Logged By

RO

Boring Started

11/06/2025

Boring Completed

11/06/2025

BORING LOG NO. B-10

Surface Elevation:
559(Ft) +/-

Model Layer	Graphic Log	Lithology Depth (Ft.)	Material Description	Depth (Ft.)	Elevation (Ft.)	Sample Type	Recovery (In.)	Water Level Observations	Field Test Results	Water Content (%)	Atterberg Limits		
											LL	PL	PI
1		0.3	TOPSOIL , Approximately 3"		558.7								
			FILL - FAT CLAY WITH SAND dark brown to dark gray			X	13		2-2-4 N = 6	29.9	72	24	48
						X	18		2-3-5 N = 8	28.2			
		5.5	LEAN CLAY WITH SILT (CL) , light gray, soft to medium stiff	5	553.5								
						X	18		2-3-3 N = 6	30.3			
2				10		X	15		1-1-2 N = 3	30.6			
		12.0	SILTY SAND (SM) , fine grained, dark gray, loose		547.0			▽					
3						X	11		3-3-2 N = 5	25.7			
			Boring Terminated at 15 Ft										

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.

Notes

Elevation Reference: The elevations were obtained from Google Earth.

Water Level Observations

▽ 13 Ft. While drilling

Abandonment Method

Boring backfilled with soil cuttings upon completion.

Drill Rig

721/CME-550X

Hammer Type

Automatic

Driller

BR

Logged By

RO

Boring Started

11/06/2025

Boring Completed

11/06/2025

BORING LOG NO. B-11

Surface Elevation:
558(Ft) +/-

Model Layer	Graphic Log	Lithology Depth (Ft.)	Material Description	Depth (Ft.)	Elevation (Ft.)	Sample Type	Recovery (In.)	Water Level Observations	Field Test Results	Water Content (%)
1		0.3	TOPSOIL , Approximately 3"		557.7					
			FILL - FAT CLAY WITH SAND dark brown			X	7		3-3-3 N = 6	25.5
2		3.0	FILL - FAT CLAY WITH SAND brown and gray		555.0	X	16		2-3-5 N = 8	27
		5.5	LEAN CLAY WITH SILT (CL) , brown and gray, soft to medium stiff	5	552.5	X	18		2-2-2 N = 4	27.6
						X	18		WoH-2-1 N = 3	35
		12.0	FAT CLAY (CH) , trace sand, gray, very soft		546.0	X	18		WoH-WoH-WoH	48.8
		17.0	LEAN CLAY (CL) , trace sand, gray, soft to medium stiff	10	541.0	X	18		1-2-2 N = 4	33.3
			Boring Terminated at 20 Ft							

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.

Notes

Elevation Reference: The elevations were obtained from Google Earth.

Water Level Observations

▽ 14 Ft. While drilling

Abandonment Method

Boring backfilled with soil cuttings upon completion.

Drill Rig

721/CME-550X

Hammer Type

Automatic

Driller

BR

Logged By

RO

Boring Started

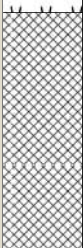
11/06/2025

Boring Completed

11/06/2025

BORING LOG NO. B-12

Surface Elevation:
559(Ft) +/-

Model Layer	Graphic Log	Lithology Depth (Ft.)	Material Description	Depth (Ft.)	Elevation (Ft.)	Sample Type	Recovery (In.)	Field Test Results	Water Content (%)
1		0.3	<u>TOPSOIL</u> , Approximately 3"		558.7				
			<u>FILL - SANDY LEAN CLAY</u> brown and gray			X	14	5-4-5 N = 9	12.9
						X	14	2-4-6 N = 10	23.9
		5.5		5	553.5				
2			<u>FAT CLAY WITH SAND (CH)</u> , brown and gray, medium stiff			X	18	2-3-4 N = 7	32.9
		8.0	<u>SANDY LEAN CLAY (CL)</u> , gray with brown, soft to medium stiff		551.0				
				10		X	18	2-2-2 N = 4	26.1
						X	18	1-2-3 N = 5	35.1
			Boring Terminated at 15 Ft						

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.

Notes

Elevation Reference: The elevations were obtained from Google Earth.

Water Level Observations

Groundwater not encountered while drilling

Abandonment Method

Boring backfilled with soil cuttings upon completion.

Drill Rig

721/CME-550X

Hammer Type

Automatic

Driller

BR

Logged By

RO

Boring Started

11/06/2025

Boring Completed

11/06/2025

Supporting Information

Contents:

General Notes

Unified Soil Classification System

Note: All attachments are one page unless noted above.

General Notes

Sampling	Water Level	Field Tests
 Auger Cuttings  Modified California Ring Sampler  Rock Core	 Water Initially Encountered  Water Level After a Specified Period of Time  Water Level After a Specified Period of Time  Cave In Encountered	(N) Standard Penetration Test Resistance (Blows/Ft.) (HP) Hand Penetrometer (T) Torvane (DCP) Dynamic Cone Penetrometer (UC) Unconfined Compressive Strength (PID) Photo-Ionization Detector (OVA) Organic Vapor Analyzer
 Dynamic Cone Penetrometer  Modified Dames & Moore Ring Sampler  Dual Sampler SPT		
 Grab Sample  GeoProbe Macro Core or Large Bore  No Recovery		
 Ring Sampler  Shelby Tube  Standard Penetration Test		
 Split Spoon  Texas Cone Penetrometer  Vane Shear	Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.	

Descriptive Soil Classification

Soil classification as noted on the soil boring logs is based Unified Soil Classification System. Where sufficient laboratory data exist to classify the soils consistent with ASTM D2487 "Classification of Soils for Engineering Purposes" this procedure is used. ASTM D2488 "Description and Identification of Soils (Visual-Manual Procedure)" is also used to classify the soils, particularly where insufficient laboratory data exist to classify the soils in accordance with ASTM D2487. In addition to USCS classification, coarse grained soils are classified on the basis of their in-place relative density, and fine-grained soils are classified on the basis of their consistency. See "Strength Terms" table below for details. The ASTM standards noted above are for reference to methodology in general. In some cases, variations to methods are applied as a result of local practice or professional judgment.

Location And Elevation Notes

Exploration point locations as shown on the Exploration Plan and as noted on the soil boring logs in the form of Latitude and Longitude are approximate. See Exploration and Testing Procedures in the report for the methods used to locate the exploration points for this project. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

Strength Terms

Relative Density of Coarse-Grained Soils (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance		Consistency of Fine-Grained Soils (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance		
Relative Density	Standard Penetration or N-Value (Blows/Ft.)	Consistency	Unconfined Compressive Strength Qu (tsf)	Standard Penetration or N-Value (Blows/Ft.)
Very Loose	0 - 3	Very Soft	less than 0.25	0 - 1
Loose	4 - 9	Soft	0.25 to 0.50	2 - 4
Medium Dense	10 - 29	Medium Stiff	0.50 to 1.00	5 - 8
Dense	30 - 50	Stiff	1.00 to 2.00	9 - 15
Very Dense	> 50	Very Stiff	2.00 to 4.00	16 - 30
		Hard	> 4.00	> 30

Relevance of Exploration and Laboratory Test Results

Exploration/field results and/or laboratory test data contained within this document are intended for application to the project as described in this document. Use of such exploration/field results and/or laboratory test data should not be used independently of this document.

Unified Soil Classification System

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests ^A				Soil Classification	
				Group Symbol	Group Name ^B
Coarse-Grained Soils: More than 50% retained on No. 200 sieve	Gravels: More than 50% of coarse fraction retained on No. 4 sieve	Clean Gravels: Less than 5% fines ^C	Cu≥4 and 1≤Cc≤3 ^E	GW	Well-graded gravel ^F
			Cu<4 and/or [Cc<1 or Cc>3.0] ^E	GP	Poorly graded gravel ^F
		Gravels with Fines: More than 12% fines ^C	Fines classify as ML or MH	GM	Silty gravel ^{F, G, H}
	Sands: 50% or more of coarse fraction passes No. 4 sieve		Fines classify as CL or CH	GC	Clayey gravel ^{F, G, H}
		Clean Sands: Less than 5% fines ^D	Cu≥6 and 1≤Cc≤3 ^E	SW	Well-graded sand ^I
			Cu<6 and/or [Cc<1 or Cc>3.0] ^E	SP	Poorly graded sand ^I
Fine-Grained Soils: 50% or more passes the No. 200 sieve	Silts and Clays: Liquid limit less than 50	Inorganic:	Fines classify as ML or MH	SM	Silty sand ^{G, H, I}
			Fines classify as CL or CH	SC	Clayey sand ^{G, H, I}
		Organic:	PI > 7 and plots above "A" line ^J	CL	Lean clay ^{K, L, M}
			PI < 4 or plots below "A" line ^J	ML	Silt ^{K, L, M}
	Silts and Clays: Liquid limit 50 or more	Inorganic:	$\frac{LL \text{ oven dried}}{LL \text{ not dried}} < 0.75$	OL	Organic clay ^{K, L, M, N}
					Organic silt ^{K, L, M, O}
		Organic:	PI plots on or above "A" line	CH	Fat clay ^{K, L, M}
			PI plots below "A" line	MH	Elastic silt ^{K, L, M}
Highly organic soils:		Primarily organic matter, dark in color, and organic odor		PT	Peat

- ^A Based on the material passing the 3-inch (75-mm) sieve.

^B If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

^C Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

^D Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay.

^E $Cu = D_{60}/D_{10}$ $Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$

^F If soil contains $\geq 15\%$ sand, add "with sand" to group name.

^G If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.
- ^H If fines are organic, add "with organic fines" to group name.

^I If soil contains $\geq 15\%$ gravel, add "with gravel" to group name.

^J If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

^K If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

^L If soil contains $\geq 30\%$ plus No. 200 predominantly sand, add "sandy" to group name.

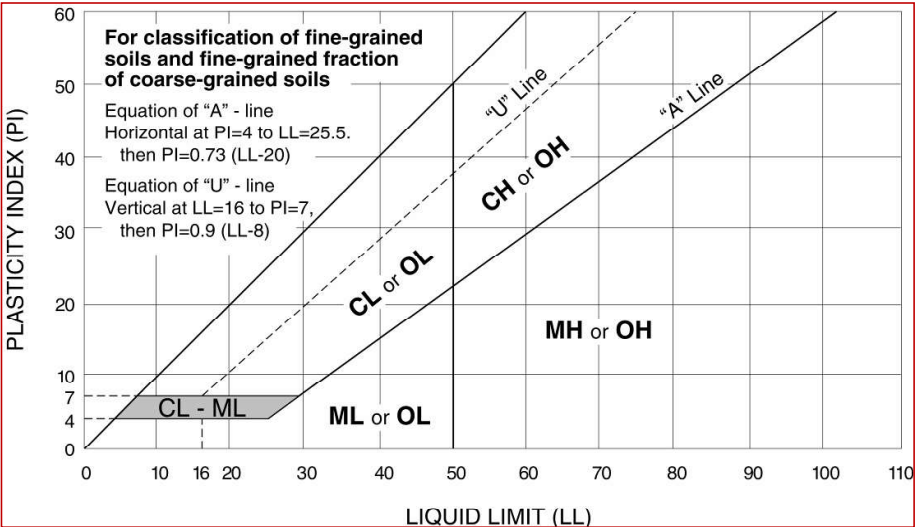
^M If soil contains $\geq 30\%$ plus No. 200, predominantly gravel, add "gravelly" to group name.

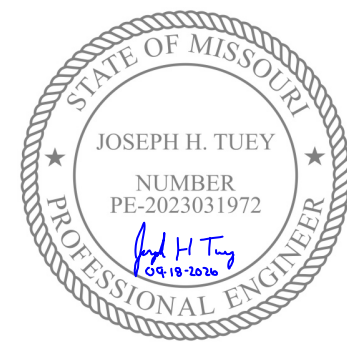
^N $PI \geq 4$ and plots on or above "A" line.

^O $PI < 4$ or plots below "A" line.

^P PI plots on or above "A" line.

^Q PI plots below "A" line.





JOSEPH H. TUEY, P.E.
PE-2023031972 EXP. 12/31/2027

2001 W Broadway
Columbia, MO 65203
573.814.1568 |
www.mccclurells.com
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OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN & CONSTRUCTION

DEPARTMENT OF
PUBLIC SAFETY
MISSOURI STATE
HIGHWAY PATROL

EMERGENCY VEHICLE
OPERATIONS COURSE
RENOVATE TO CREATE
DYNAMIC CRASH TESTING SITE
2302 MILITIA DRIVE
JEFFERSON CITY, MO
65101

PROJECT NO. R2501-01
SITE NO. 6012
ASSET NO. 8136012001

REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____

ISSUE DATE: 09/18/2026

CAD DWG FILE: R2501-01-C-501
DRAWN BY: CJH
CHECKED BY: RAF
DESIGNED BY: JHT

SHEET TITLE:
JOINT PLAN - BID
ALTERNATE 2

SHEET NUMBER:

C-501

10 OF 10 SHEETS
SEPTEMBER 18, 2026

EROSION CONTROL PLAN NOTES:

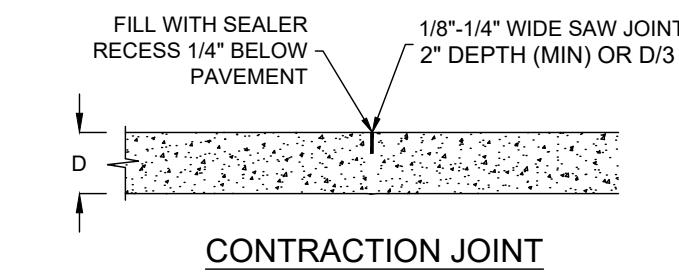
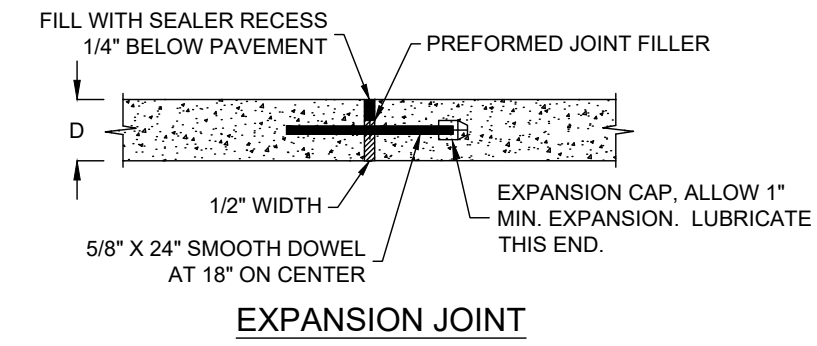
- CONTRACTOR SHALL TAKE ACTIVE MEASURES TO KEEP SEDIMENT FROM LEAVING THE SITE, ENTERING STORM DRAINS AND DEPOSITING ON PAVEMENT.

CONSTRUCTION NOTES:

- THIS FACILITY IS AT AN ACTIVE LAW ENFORCEMENT FACILITY. CONTRACTOR SHALL, AT ALL TIMES, NOTIFY FACILITY STAFF WHEN ON SITE AND TO CHECK IN AND OUT OF THE SITE.
- CONSTRUCTION PARKING AND STAGING WILL BE PER FACILITY STAFF DIRECTION. UNLESS OTHERWISE NOTED, ALL REMOVALS AND DEMOLITION SHALL BE REMOVED FROM THE SITE AND DISPOSED OF BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
- NOTICE: DRIVING COURSE WILL BE IN USE DURING CONSTRUCTION. CONTRACTOR TO IMPLEMENT PROPER SAFETY PRACTICES PER CONTRACTOR'S SAFETY PLAN AND COORDINATE WORK WITH OWNER.

KEY NOTES

- BID ALTERNATE 2: INSTALL CONCRETE JOINTS AS SHOWN AT MAXIMUM SPACING OF 13.5' X 13.5'.
- ±12.5' X 12.5' PANEL, TYP.
- INSTALL EXPANSION JOINTS.



D = THICKNESS SHOWN ON PLANS

1
C501 / N.T.S. JOINT DETAILS

