Geotechnical Engineering Report

Planned Pickleball Complex

North Main Street
Centerton, Arkansas
GTS Project No. 25-15077

October 13, 2025

Prepared For:

NFour LLC
PO Box 454
Centerton, Arkansas

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Geotechnical Engineering | Construction Materials Testing | Environmental Due Diligence

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GTS, Inc.
Geotechnical & Testing Services

October 13, 2025

NFour LLC
PO Box 454
Centerton, Arkansas 72719

Attention: Mr. Gowthamkuma Reddy Mittoor

RE: Geotechnical Engineering Report
Planned Pickleball Complex
North Main Street
Centerton, Arkansas
Project No. 25-15077

Mr. Mittoor:

This report contains the results of the subsurface exploration and geotechnical engineering analysis performed for the planned pickleball complex development to be located in Centerton, Arkansas. A general boundary outline of the evaluated property is shown in Figure 1 within this report.

We appreciate the opportunity to provide engineering services to you on this project. We encourage retaining GTS, Inc. to be involved in any pre-bid and pre-construction meetings to allow us to discuss the following findings and recommendations. Please contact us if the assumptions stated in this report are incorrect and/or if further explanation is required for portions of this report.

Sincerely,

GTS, Inc.
Geotechnical & Testing Services

Certificate of Authorization No. 1251, Expires 12/31/2025

Nathan Love

Nathan Love, E.I.
Geotechnical Associate

Shaun P. Baker, P.E.
Arkansas No. 11817

10/13/2025
No.11817
SHAUN P. BAKER

Copies: Addressee (email-PDF)

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PROJECT DESCRIPTION and INFORMATION

Introduction

Our services were performed in accordance with GTS Proposal No. GTS125139, authorized by Mr. Gowthamkuma Reddy Mittoor on August 14, 2025. The intent of the authorized scope of services was to explore the subsurface soil/rock conditions at the project site in order to prepare recommendations regarding the planned foundations, slabs-on-grade, mass grading, and pavements.

The following document was provided to us for preparing this report:

- **Sheet C-104, titled "Pickleball Complex", dated October 3, 2025, and prepared by Crafton Tull.** This sheet provides the preliminary site grading plan.

Our scope of services included evaluating the subsurface conditions at 11 boring locations; identified as Borings B-1 through B-11. Borings B-1 through B-8 were located within the planned building footprints and were drilled to depths of about 14 to 15 feet below existing grade. Borings B-9 through B-11 were located within planned pavement areas and were drilled to depths of about 6 to 6 ½ feet below existing grade. Soil and rock samples obtained from the borings were brought to our laboratory for further testing and analysis.

Our currently authorized scope of services is concluded with the issuance of this Geotechnical Engineering Report.

Project Site

The project site is located on the west side of North Main Street, approximately 1,700 feet north of Seba Road, in Centerton, Arkansas. The general boundary of the site is outlined in yellow in Figure 1 on the following page.

The site is recognized as Benton County Parcel No. 06-00047-346, which occupies a footprint area of about 5 acres. The site surface currently consists of grass cover. Further, based on a cursory review of historical satellite imagery, the site appears to have been undeveloped since at least 1994. Finally, based on ground surface contours shown on the site grading plan provided to us, the site generally slopes downhill from the north-central portion of the site to the east, south, and west from about EL 1326 to 1322 feet.

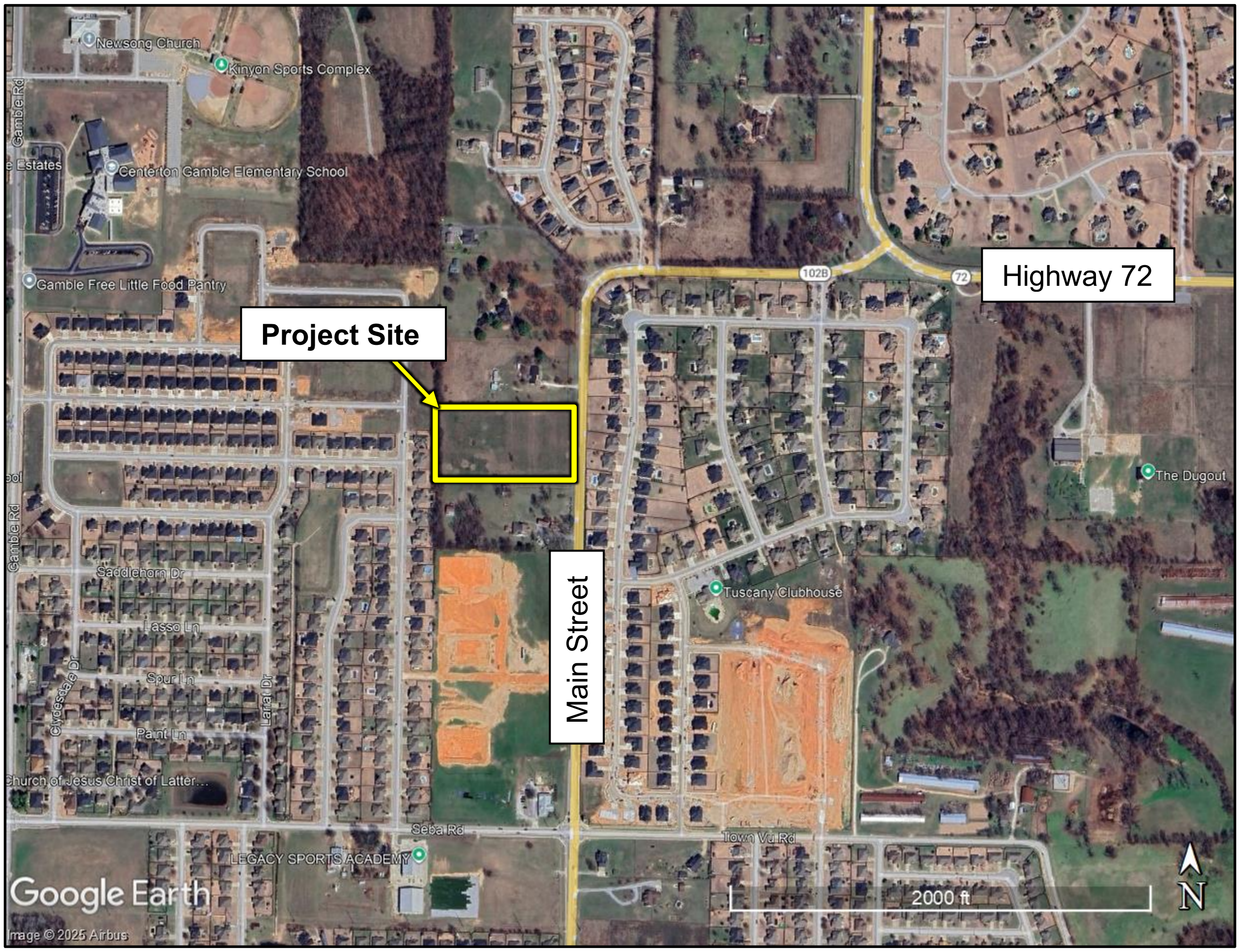


Figure 1: General Boundary of the Project Site (Outlined in Yellow)

Planned Development

Our current understanding of the planned development is based on email exchanges and phone conversations between Mr. Hunter Collins, P.E. with Crafton Tull and Mr. Nathan Love, E.I. of GTS, Inc. (GTS) that took place between October 6 and 7, 2025. Current development plans call for the construction of three (3) independent structures: a 40,600-square-foot pickleball complex, as well as a 7,000-square-foot and a 1,250-square-foot commercial building. GTS anticipates that the planned buildings will be steel-, masonry-, or wood-framed structures with concrete slabs-on-grade. Structural loading information was not provided to GTS prior to the issuance of this report. Therefore, we necessarily assume maximum column loads of 50 kips, maximum wall loads of 2.5 kips per foot, and maximum slab loading of 150 pounds per square foot.

Development plans also include paved parking and drive areas, a 10,000-gallon temporary sanitary tank, a detention pond located in the southwest corner of the site, and an underground detention tank located near the entrance off of Main Street to the east. Finally, we understand that there a multiple, short retaining walls planned, with heights of less than 4 feet. To be clear, these walls will be designed by others; however, we have included lateral earth pressures herein for their design.

Planned Pavements

As previously discussed, paved parking and drives are planned throughout the site. Specific traffic loading information was not available prior to the issuance of this report. However, based on the site plan provided to GTS, we anticipate that the traffic will predominantly consist of passenger vehicle traffic with occasional garbage/delivery truck traffic.

No design guidance has been provided to GTS for the pavement sections. The traffic loading and traffic frequency assumed by GTS – shown as Equivalent Single Axle Loads (ESALs) in this report – should be evaluated by the client and project Civil Engineer prior to utilizing the pavement sections provided herein.

Planned Site Grading

As mentioned previously, GTS was provided a site grading plan for preparing this report. We understand that the main, northwestern building will have a finished floor elevation (FFE) of 1328.37 feet. The smaller, northeastern building will have a FFE of 1326.32 feet. Lastly, the southeastern building will have a FFE of 1328.17 feet. We estimate fill depths of 2 to 6 feet from existing grades are necessary to develop final grades within the building footprints. We estimate cut depths of 1 foot and fill depths of up to 4 feet could be necessary to develop final grades in the pavement areas. The planned bottom of the pond will remain near existing grade (EL 1323 feet) while the surrounding grade will be raised to about 1327.50 feet. Again, retaining walls are planned for the detention pond, along the southern property boundary, and in the northeastern corner of the site.

If site grading plans differ significantly from our understanding, GTS should be allowed to review the site grading plans and potentially amend our foundation support recommendations for this development.

SUMMARY of SUBSURFACE FINDINGS

Site Geology

Based on available geologic maps, the project site is located in the geologic unit mapped as the Boone Formation (Mb). The following description of this unit was obtained from the Stratigraphic Summary of Arkansas (Arkansas Geological Commission IC-36, 2004):

> *The Boone consists of gray fine to coarse grained fossiliferous limestone interbedded with chert. Some sections may be predominantly limestone or chert. The cherts tend to be dark in color in the lower part of the sequence and light in color in the upper part of the section. The quantity of chert varies considerably both vertically and horizontally. The Boone is well known for dissolutional features such as rock pinnacles, sinkholes, caves, and enlarged fissures. The thickness of the Boone is 300 to 350 feet in most of northern Arkansas.*

The subsurface conditions encountered at our borings are consistent with this geologic formation.

Surface

At the time of our field exploration, the site was predominantly grass covered, as shown in Photo 1 below. The root mat associated with the encountered grass cover was measured to be about 3 to 6 inches in thickness at our boring locations, including a layer of topsoil.

Photo 1: General Site Surface (shown near Boring B-10).

Subsurface Conditions

Stratum I – Lean Clay Soils

Native lean clays, containing variable silt, sand, and gravel (chert) content, were encountered immediately below the ground surface at each boring location. These soils extended to depths of about 2 to 13 ½ feet below existing grade.

These soils had moderate to high, but generally moderate, shear strength at the time of drilling and sampling. Standard Penetration Test (SPT) N-values of 11 to 55 blows per foot of penetration (bpf) were recorded within Stratum I.

Stratum II – Sand and Gravel Soils

A combination of native sands and gravels, each containing variable clay content, were encountered immediately below the Stratum I soils at each boring location. Seams and layers of chert rock were also intermittently encountered within these soils. Additionally, interbedded layers of fat clay were encountered within these soils. The soils encountered, including the chert seams and clay layers, are consistent with the Boone Formation. The Stratum II soils extended to the terminal depths ranging from about 5 to 15 feet below existing grade at the boring locations.

These soils had moderate to high shear strength at the time of drilling and sampling. SPT N-values of 8 to 60 bpf as well as 50 blows for 3 and 4 inches of penetration were recorded within the Stratum II soils at the performed boring locations. The higher blow counts likely represent seams, layers, and/or boulders of chert.

Hard Drilling/Auger Refusal Depths

Hard drilling conditions were encountered within the Stratum II soils at each boring location, except Borings B-1 and B-7, beginning at depths of about 1 to 13 ½ feet below existing grades at all performed boring locations. Auger refusal material was not encountered at any boring location, within the depths explored. The depths to where hard drilling was encountered during drilling and sampling at the project site are summarized in Table 1 on the following page.

Table 1: Depths to Hard Drilling Conditions

Boring Number	Depths/Elevations to Hard Drilling Conditions (feet below existing grades/ feet above mean sea level)
B-1	Not Encountered / N/A
B-2	3 ½ / 1321
B-3	8 ½ / 1317 ½
B-4	4 ½ / 1320 ½
B-5	4 ½ / 1320 ½
B-6	1 / 1321
B-7	Not Encountered / N/A
B-8	13 ½ / 1308 ½
B-9	5 / 1319
B-10	6 / 1316 ½
B-11	5 ½ / 1318 ½

Water Measurements

The borings were observed for the presence of free water while drilling and immediately after boring completion. No water was observed in the boreholes at these times.

The depths to water are date-dependent measurements of groundwater levels at the time of the field exploration. We anticipate perched groundwater could form within the lean clays, sands, and gravels above less permeable fat clay layers, as well as atop intact chert seams/layers at the site. Longer-term observations in piezometers or observation wells sealed from the influence of surface water are often required to define groundwater levels in these soil types. The installation and periodic measurement of monitoring wells would be required to establish seasonal piezometric surfaces below this project site.

GEOTECHNICAL ENGINEERING ANALYSIS

Geotechnical Considerations

Moisture-Sensitive Soils

The Stratum I lean clay soils are susceptible to strength loss with increase in moisture content and/or when exposed to repetitive construction traffic. Ground improvement should be anticipated during wet periods of the year.

Foundation Recommendations

The planned building structures may be supported on a shallow foundation system. The shallow foundations should be designed as conventional footing foundations bearing in tested and approved, stiff to very stiff lean clay soils and/or new select fill material, placed and compacted above native, relatively undisturbed, stiff to very stiff lean clays (Stratum I). New fill material should be placed and compacted in accordance with the recommendations provided in the Mass Grading Recommendations section of this report.

Footing foundations for the planned building structures may be designed using the information provided in Table 2 below.

Table 2: Footing Foundation Recommendations

Maximum Net Allowable Bearing Pressure (psf)	Bearing Soil Description	Depth to Bearing Soils
2,000 (continuous)	Tested and Approved, Stiff to Very Stiff Lean Clay (Stratum I) and/or New Select Fill Material *	Generally anticipated within 18 inches of final grade, following mass grading.
2,500 (column)		

* The recommended bearing stratum should be relatively undisturbed and have moderate shear strength. Foundations may also be supported on Class 7 Aggregate Base Course placed and compacted above the recommended bearing materials or flowable fill poured atop suitable bearing materials, in accordance with the Allowable Backfill Materials section of this report.

An allowable passive pressure of 750 psf may be used for footings cast directly against near-vertical sides in native soils or approved soil fill or for approved soil fill compacted against the vertical footing face. Passive resistance for exterior footings should be neglected in the upper 2 feet of the soil profile unless pavement is constructed directly against the building exterior. We recommend an ultimate coefficient of sliding friction of 0.30 for the interaction between the base of footing and approved soil fill bearing material.

We estimate long-term settlement of the building footing foundations, designed and constructed as recommended in this report, should be less than 1 inch (total) and ¾ inch (differential) between isolated column footings or over 50 feet for continuous footings.

Footing Foundation Construction Recommendations

General Dimensions

Continuous formed and isolated column foundations should have minimum widths of 18 inches and 30 inches, respectively. A minimum foundation depth of 18 inches below lowest adjoining final grades should be used to protect against frost heave.

Allowable Backfill Materials

Select fill or aggregate base course material may be used to backfill foundation overexcavations, where required. Additionally, flowable fill material (i.e., “lean concrete”) may be used to backfill foundation overexcavations, where required. Alternatively, the foundations may be poured “full depth” with structural concrete.

Specifications regarding these materials are shown in the Geotechnical Report Requirements and Specifications section of this report. Other backfill materials and alternative foundation support options can also be provided upon request.

Construction Guidelines

Foundation excavations should be cleaned of loose soils, debris, and water. Soils exposed at plan bearing depths should be evaluated by GTS prior to placement of approved backfill, reinforcing bar, and concrete. Relatively frequent control joints should be installed within any masonry or other movement-sensitive walls.

Where newly placed and compacted fill material is exposed at plan bottom of foundation elevations, we recommend the fill be re-compacted with a jumping jack or similar type of compaction equipment and field-tested for in-place density and moisture content immediately before placement of reinforcing bar and concrete. We recommend that the approved soil fill material be tested for in-place density at each column location and every 25 linear feet of continuous foundation trench. The fill may be scarified, moisture conditioned and recompacted in place to reach the project specifications.

Where weak and unstable soils are encountered in the bottom of foundation trench excavations, these weak and unsuitable soils should be removed from the foundation trenches full-depth. After unsuitable soils are removed from the foundation trenches and stable soils are encountered, approved fill material may be placed as recommended in the Geotechnical Report Requirements and Specifications of this report.

If select fill material or aggregate base is used to backfill foundation trench overexcavations, the overexcavation should extend at least 8 inches beyond the footing perimeter for every 12 inches of depth below the bottom of footing, per Figure 2. Select fill material and aggregate base should be placed and compacted as recommended in the Geotechnical Report Requirements and Specifications of this report.

If flowable fill is used to backfill foundation trenches or if trenches are overpoured full-depth with concrete, the trenches do not need to extend beyond the footing perimeter as shown in Figure 2. Flowable fill should be placed as soon as possible after foundation trench overexcavations are completed and the foundations have been evaluated for bearing suitability. Flowable fill should be field sampled and laboratory tested for strength every day of placement.

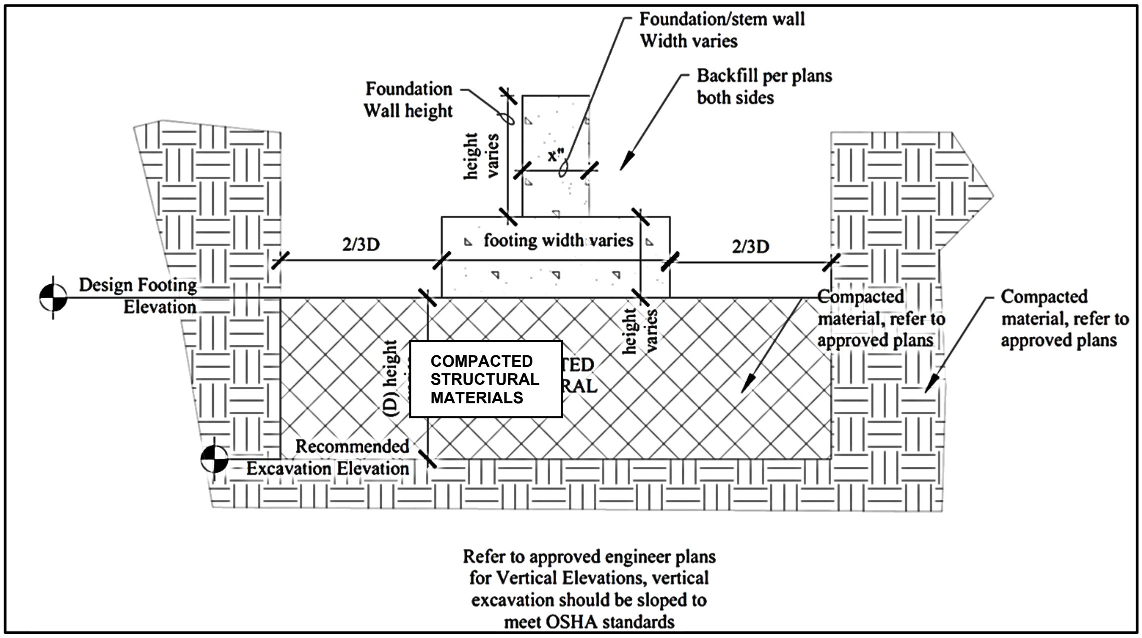


Figure 2: Foundation Trench Backfill Detail for Approved Soil Fill

Floor Slab-On-Grade Design

New floor slabs-on-grade should be supported on a minimum of 1 foot of new approved select fill material, placed and compacted above stable on-site soils. Concrete floor slabs constructed as slab-on-grade and supported on subgrade prepared as recommended in this report can be designed using a modulus of subgrade reaction (k) value of 125 pounds per square inch, per inch.

We recommend that a minimum of 4 inches of free draining gravel or sand be placed beneath the slab-on-grade to act as a capillary break. This layer is termed a “subbase” layer. To be effective as a capillary break, the subbase should have a maximum of 5 percent by dry weight passing the No. 200 sieve. The modulus of subgrade reaction value applies to the top of the subbase layer. The top of the subbase should be compacted using a vibratory plate.

If rutting of the subbase layer is a concern for concrete placement, the subbase layer may be topped with an additional 2 to 4 inches of gravel or sand having sufficient fines to allow compaction. The optional topping layer is termed the “base” layer. The base layer, if used, should be compacted to a minimum of 95 percent Standard Proctor maximum dry density (ASTM D698) at a workable moisture content that allows the density to be achieved. The base layer should have a percent passing the No. 100 sieve ranging from 10 to 30 percent by dry weight. ARDOT Class 7 Aggregate Base Course material is acceptable to use in the base layer.

A vapor barrier having a minimum thickness of 10 mil is recommended immediately below the concrete unless otherwise recommended by the finished flooring manufacturer or other members of the design team.

The general components of a floor slab, inclusive of the optional base course, are shown in Figure 3 below. The shown reinforcing steel location provides general guidance only. The location and composition of reinforcing steel should be determined by a structural engineer.

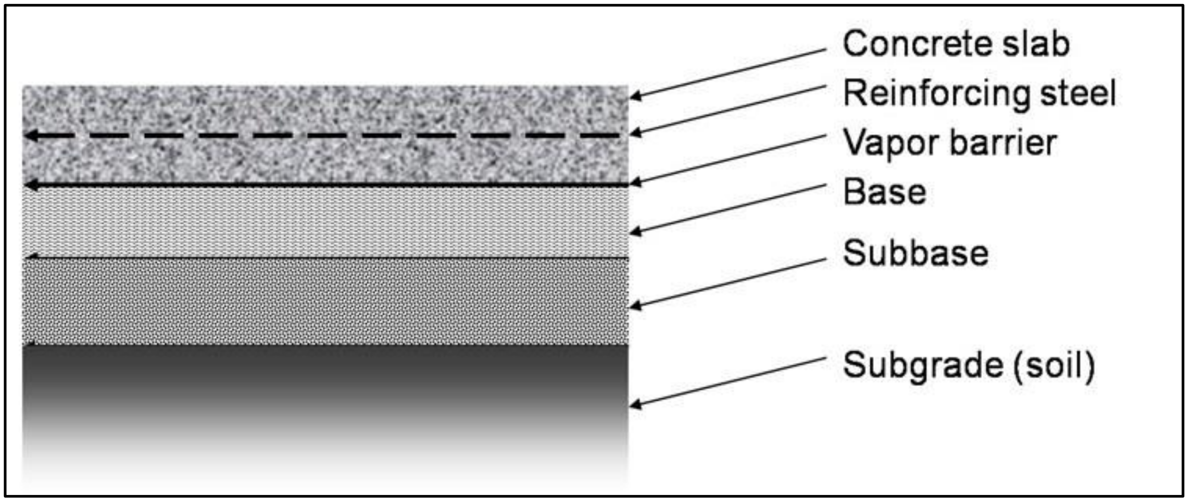


Figure 3: General Floor Slab-on-Grade Section

IBC Site Classification

Based on our knowledge of the reginal geology, the subsurface conditions encountered at the boring locations as well as the assumed site grading, the subsurface conditions are consistent with a Site Class C per the International Building Code (IBC), 2021 Edition.

The 2021 International Building Code (IBC) uses a site profile extending to a depth of 100 feet for seismic site classification. The deepest boring performed at this site was extended to a maximum depth of approximately 15 feet below existing grade. The subsurface conditions below the boring depth to 100 feet were estimated based on our experience and knowledge of geologic conditions of the general area.

The following mapped acceleration parameters were obtained using online seismic design maps and tools provided by the Structural Engineers Association of California (SEAOC/OSHPD) at https://seismicmaps.org for ASCE 7-16 and may be used in design for the planned new structures.

- S_s: 0.149 g
- S_1: 0.087 g
- F_a: 1.3
- F_v: 1.5
- S_{DS}: 0.129 g
- S_{D1}: 0.087 g
- PGA_m: 0.092 g

MASS GRADING RECOMMENDATIONS

Stripping of Surface Organics

Mass grading should extend a minimum of 5 feet outside of the building footprints and a minimum lateral distance of 2 feet behind back of curb in all directions.

At a minimum, surface organics, topsoil, and trees, as well as any surface or subsurface structures should be removed from the areas of planned new construction. Based on the subsurface conditions encountered at the boring locations, we estimate an average stripping depth of about 6 inches. This depth does not include the depth to stump and grub any existing trees. The topsoil material may be stockpiled and reused for landscaping, at the discretion of the design team.

Buried utility lines should also be relocated or abandoned, as necessary. Excavations after removing buried utilities should be backfilled with new select fill as recommended in this report. Any abandoned utility lines not removed through excavation should be grouted and plugged.

Recommended Undercuts

As previously discussed, we recommend that the building and pavements be supported on a minimum 1-foot-thick layer of new select fill for more uniform support. The recommended 1-foot-thick select fill layer can be constructed through a combination of undercutting and raising grade. Based on the understood site grading to raise grades, we anticipate that the subgrade materials within the building footprints and the majority of the pavement areas will consist of new select fill.

General Mass Grading

After stripping surface organics, completing cuts for grading and any undercuts to construct the recommended minimum of 1 foot of approved fill material beneath the planned pavements and floor slabs-on-grade, but prior to placing new fill, the exposed soils should be evaluated for stability by GTS. The exposed soils should be evaluated for stability by observing overlapping passes with a loaded tandem-axle dump truck (i.e., proof-rolling) weighing at least 25 tons. If proof-rolling cannot be performed due to access limitations, GTS may evaluate the stability of the exposed soils through evaluation with an engineer’s hand probe rod, static cone penetrometer, dynamic cone penetrometer or through the excavation of test pits.

If the exposed soils are stable they are suitable for directly supporting the placement and compaction of new fill material.

Where unstable soils are identified by proofrolling or other methods, they should be scarified, moisture conditioned, and compacted, or removed and replaced full depth with new select fill if they cannot be stabilized in place. Ground improvement is discussed in more detail in the following section.

If the prepared subgrade material becomes saturated, desiccated, frozen, or otherwise damaged prior to construction of the floor slab section, the affected subgrade material should be scarified, moisture conditioned and compacted prior to placing the aggregate base course material. Final conditioning of the finished subgrade should be performed immediately prior to placement of the floor slab base course material.

Weather and Instability Considerations

Soil stability is directly related to the moisture within and below the exposed soils. If the near-surface silt, silty clay, silty sand, lean clay, and clayey sands (Strata I and II, and portion of Stratum III) soils are moist to wet or have undergone freeze-thaw cycles after mass grading and/or placement and compaction, we expect that these soils will likely be unstable.

If the exposed subgrade soils are unstable but otherwise suitable to remain in-place based on their classification or depth below plan finish grades, they may be scarified and allowed to dry to achieve stability if the construction timeframe and prevailing weather conditions allow. We do not expect that scarification and drying will be practical to stabilize the soils if the unstable soils are greater than 1 ½ feet thick or during moderately wet to wet weather conditions. Alternatively, the unstable soils could be undercut and replaced full depth with new approved soil fill. For budgeting purposes, an average undercut depth of about 18 inches below existing grade is anticipated when the on-site soils are moist to wet.

Other ground improvement methods, such as chemical stabilization with Portland cement or Class C fly ash or use of geotextiles/geogrids, could be provided during construction based on the actual site conditions at that time. The appropriate method of improvement, if required, would depend on factors such as schedule, weather, the size of area to be improved, and the nature of the instability. Performing site grading operations during warm, dry periods would help reduce the amount of subgrade stabilization required.

Fill Placement

Lifts of fill material required to reach plan finished subgrade elevations should be composed of tested and approved fill material and placed per the specifications shown in this report. Fill should be placed in near-horizontal lifts beginning in areas requiring the deepest amount of fill. The fill should be benched into the native soils each lift. Fill should not be placed on frozen, saturated or unstable soils.

Foundation trench backfill material should consist of approved select fill material, aggregate base course, or flowable fill (i.e., “lean concrete”). The requirements to meet for approved soil fill and base course materials are provided in the Geotechnical Report Requirements and Specifications section of this report.

Re-Use of On-Site Soils as Fill

On-site topsoil should not be reused as fill material in areas of planned development. However, these soils may be used in areas of planned landscaping, at the discretion of the design team.

The on-site, native lean clays (Stratum I) are anticipated to be suitable for re-use as select fill material. However, if construction occurs during the wet periods of the year, we anticipate that the lean clay soils will require stockpiling and drying time before being suitable for re-use as fill. It is our experience that the re-use of lean clay soils as select fill materials is highly dependent on the experience of the contractor and the weather conditions at the time of mass grading.

The on-site sands, gravels, and chert (Stratum II) are anticipated to be suitable for re-use as select fill material at the site. However, any chert fragments will need to be screened or crushed during compaction into particles less than 3 inches in any dimension before re-use as fill material.

Soil classifications discussed in this report are based on approximately 2-inch diameter samples obtained during our field sampling. This type of sampling follows industry standards; however, this type of sampling can under- or over-estimate the amount of gravel within a soil formation.

Both on-site soils and imported fill should also be tested and approved prior to use as fill on this site. Imported fill containing rock will need to be screened or crushed into pieces no greater than 3 inches in any dimension prior to re-use.

Utility Trench Backfill

All trench excavations should be made with sufficient working space to permit construction including backfill placement and compaction. Utility trenches are a common source of water infiltration and migration. If utility trenches are backfilled with relatively clean granular material, they should be capped with at least 18 inches of cohesive fill to reduce the infiltration and conveyance of surface water through the trench backfill.

Grading and Drainage

During construction, grades should be developed to direct surface water flow away from or around the site. Exposed subgrades should be sloped to provide positive drainage so that saturation of the subgrade is avoided. Surface water should not be permitted to accumulate on the site.

Final grades should be sloped away from the buildings and pavements on all sides to promote effective drainage and prevent water from ponding. Downspouts should discharge water a minimum of 10 feet beyond the footprint of the buildings. This can be accomplished through the use of splash-blocks and downspout extensions. As an alternative, the drains could be designed to discharge to a storm water collection system. Also, the interface between the buildings and pavements or sidewalks should be effectively sealed to prevent water from infiltrating into the slab-on-grade and pavement subgrade.

Rock Excavation Potential

Rock excavation means and methods are anticipated to be intermittently required to penetrate the very dense gravels and/or seams/boulders of chert rock, beginning at depths of about 1 to 13 ½ feet below existing grade.

In general, track hoes and dozers with rock excavation attachments are expected to be required below the depths where we encountered hard drilling. Greater rock excavation effort is expected in limited access excavations, such as for foundations and utility trenches.

Excavations

The contractor, by his contract, is usually responsible for designing and constructing stable, temporary excavations and should shore, slope or bench the sides of the excavations as required to maintain stability of the excavation sides and bottom. All excavations should comply with applicable local, state and federal safety regulations, including the current Occupational Safety and Health Administration (OSHA) Excavation and Trench Safety Standards.

Permanent Earth Slopes

Constructed fill earth slopes are generally understood to be planned at the project site. Table 3 below summarizes recommended slopes for permanent cut and fill earth slopes with a maximum height of 10 feet at this project site. Based on designing permanent slopes for this project using the recommended maximum slopes in Table 3 and a maximum slope height of 10 feet, we anticipate a minimum factor of safety of 1.3 for long-term slopes constructed as recommended in this report.

Table 3: Recommended Maximum Slopes for Permanent Earth Slopes

On-Site Materials	Recommended Maximum Slope [1] (horizontal:vertical)
On-Site, Native, Stratum I Soils, or Newly Placed and Compacted Select Fill Material[2]	3H:1V

[1] The given slope is based on maximum slope heights of 10 feet and without surcharge or flooding/saturation.

[2] The given slope is recommended provided the fill material meets the requirements provided in the Geotechnical Report Requirements and Specifications section of this report.

We recommend a minimum buffer space of 5 feet between the planned slope toes and back of hardscape curb for potential erosion, and slope maintenance.

Permanent slopes should be protected by vegetation or other means to reduce the potential for erosion, or shallow, localized sloughing. Also, to reduce the potential of surface water from running over the crest of the cut slopes onto the slopes, we recommend surface drainage ditches be constructed along the top of the slopes a few feet behind the crest where necessary to intercept surface runoff from upslope. These ditches should discharge at locations beyond the ends of the cut slopes.

A slope stability analysis should be performed for steeper and/or taller permanent slopes. GTS can provide slope stability services after the final design plans have been completed, if requested.

LATERAL LOADING CONDITIONS

As discussed previously, we understand that short retaining walls are planned at the site. Retaining walls with unbalanced backfill levels on opposite sides should be designed for earth pressures at least equal to those defined in the below diagram and indicated in the following table. Earth pressures will be influenced by structural design of the walls, conditions of wall restraint, methods of construction and/or compaction and the strength of the materials being restrained. Two wall restraint conditions are shown. Active earth pressure is commonly used for design of free-standing cantilever retaining walls and assumes wall movement/rotation at the top of the wall. The "at rest" condition assumes the wall is structurally restrained from movement at the top and should be used for below-grade walls. The recommended design lateral earth pressures do not include a factor of safety and are based on a drained soil condition behind the wall.

For sloping ground behind the retaining wall, the soil weight above the horizonal line through the top of the walls may be treated as a surcharge. The average soil pressure over a distance of one times the retaining wall height from the wall can be used as the surcharge.

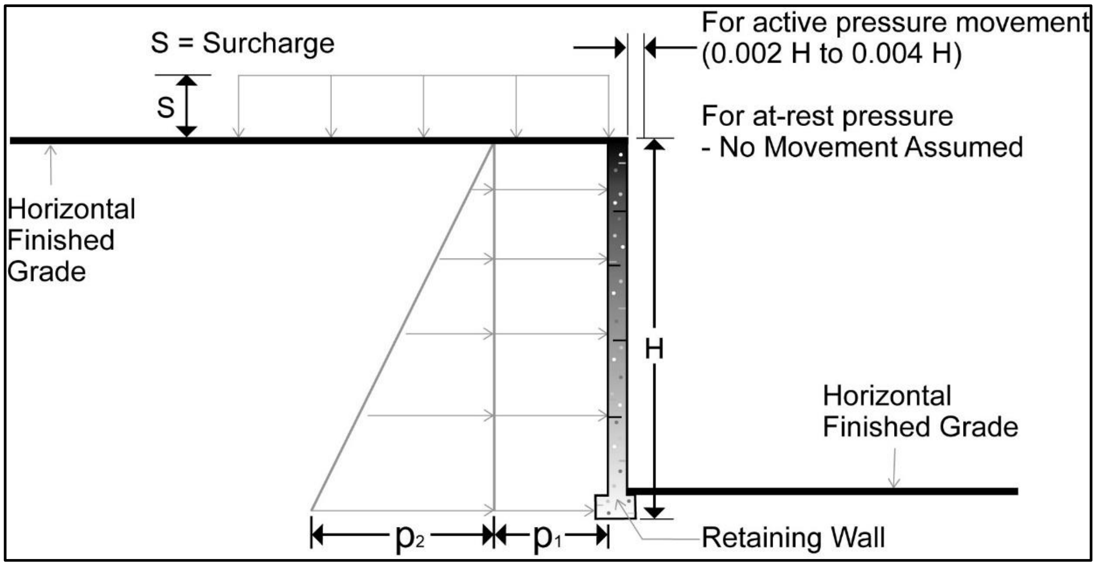


Figure 4: General Section Showing Pressures Acting on Retaining Walls

Table 4: Lateral Earth Pressure Coefficients

Earth Pressure Conditions	Coefficient for Backfill Type	Equivalent Fluid Density (pcf)	Surcharge Pressure, p_1 (psf)	Earth Pressure, p_2 (psf)
Active (Ka)	Granular Fill - 0.33	40	(0.33)S	(40)H
	Lean Clay Fill – 0.42	50	(0.42)S	(50)H
At-Rest (Ko)	Granular Fill – 0.50	60	(0.50)S	(60)H
	Lean Clay Fill – 0.58	70	(0.58)S	(70)H
Passive (Kp)	Granular Fill – 3.0	360	---	---
	Lean Clay Fill – 2.4	288	---	---

The values shown in Table 4 require the following:

- For active earth pressure, wall must rotate about base, with top lateral movements of about 0.002 H to 0.004 H, where H is wall height
- For passive earth pressure to develop, wall must move horizontally to mobilize resistance.
- Uniform surcharge, where S is surcharge pressure
- In-situ soil or placed and compacted soil backfill with a maximum weight of 120 pcf
- Backfill placed near horizontal, compacted to a minimum of 95 percent of standard Proctor maximum dry density
- Loading associated with backfill operations and construction not included in the recommended design values
- A drained soil condition exists behind the wall
- No dynamic loading acting above the wall
- No safety factor included in soil parameters
- Ignore passive pressure in frost zone

Backfill placed against structures should consist of granular soils or low plasticity cohesive soils. For the granular values to be valid, the granular backfill must extend out and up from the base of the wall at an angle of at least 45 and 60 degrees from vertical for the active and passive cases, respectively. To calculate the resistance to sliding, a value of 0.30 should be used as the ultimate coefficient of friction between the footing and the underlying soil.

To reduce hydrostatic pressure behind the wall (i.e., a “drained” soil condition) we recommend that a drainage system be installed continuously on the back side of the retaining wall structure, with a collection pipe installed at the top of the foundation. The collection pipe should be rigid, perforated pipe and should be designed to gravity discharge at a location away from the wall and any other planned structures. The values shown in Table 4 assume a drained soil condition.

Based on our understanding that the new concrete retaining wall will be cast directly against the existing stacked rock wall, we expect that the “backfill” behind the new wall will be effectively sealed. If drainage behind the new combined retaining wall system is not possible, then combined hydrostatic and lateral earth pressures should be calculated for lean clay backfill using an equivalent fluid weighing 90 and 100 pcf for active and at-rest conditions, respectively. For granular backfill, an equivalent fluid weighing 75 and 85 pcf should be used for active and at-rest conditions, respectively. These pressures do not include the influence of surcharge, equipment, or floor loading, which should be added. Heavy equipment should not operate within a distance closer than the exposed height of retaining walls to prevent lateral pressures exceeding those provided.

The upper 2 feet of backfill placed adjacent to the wall should consist of a compacted, relatively impermeable material to limit the downward flow of surface water along the wall. These soils should be placed following the recommendations provided in this report. Also, positive surface drainage should be developed and maintained around the wall to prevent the ponding of water and to divert drainage away from the wall.

PAVEMENTS

Pavement Support Recommendations

We recommend that the pavement subgrade materials consist of a minimum 1-foot-thick layer of tested and approved, new select fill constructed atop stable native soils. In addition we recommend that the uppermost 1-foot of fill in pavement areas have a minimum California Bearing Ratio (CBR) of 8.0. Locally available clayey gravel (i.e., “hillside”) fill typically meets this requirement.

The following pavement design recommendations assume rapid drainage away from the pavement section will be provided during and after construction to prevent saturation and weakening of the pavement subgrade materials. A design California Bearing Ratio (CBR) of 5 was used for the design of flexible pavements – this value represents an average of the uppermost 2 feet of subgrade soils (i.e., the recommended 1 foot of CBR 8 material and the remaining native soils or select fill material). A modulus of subgrade reaction (k) of 125 pounds per square inch, per inch, was used for the design of the rigid pavements. The pavement sections assume adequate drainage will be provided to allow removal of water from the pavement structure in 24 hours or less.

Pavement Design Recommendations

No pavement loading design guidance has been provided to GTS by the design team. Therefore, the pavement sections provided below are based on a low-volume traffic design consisting of light-duty pavement sections for automobile-only traffic areas, medium-duty pavement sections for drive lanes and fire lanes, and heavy-duty pavement sections for delivery/garbage truck traffic and dumpster areas.

No pavement loading design guidance has been provided to GTS by the design team. Therefore, the pavement sections provided in this report are based on an assumed Equivalent Single Axle Loading (ESAL) of about 50,000 for light-duty pavement sections (car and passenger truck) and about 200,000 for medium-duty pavement sections (drive lanes for passenger cars and occasional garbage trucks and for fire lanes). A factor of 1.5 was used to convert flexible ESALs to rigid pavement ESALs. These values should be evaluated by the design team for appropriateness for this project site and intended pavement use.

The following pavement design recommendations assume rapid drainage away from the pavement section will be provided during and after construction to prevent saturation and weakening of the pavement subgrade materials. The flexible and rigid pavement sections shown in Tables 5 and 6 on the following page are recommended. Other pavement materials and mix design alternatives could be discussed upon request.

Table 5: Flexible Pavement Section Recommendations

Flexible Pavement Section:	Asphalt Surface Course	Asphalt Binder Course	Aggregate Base Course (Class 7)	Design Traffic
Light-Duty	2 inches	---	9 inches	parking areas for car and passenger trucks
Medium-Duty	3 inches	---	9 inches	drive lanes for passenger cars and occasional garbage trucks and for fire lanes
Specification[1]	Section 407	Section 406	Section 303	---
1) Standard Specification for Highway Construction, Arkansas Department of Transportation, Edition of 2014				

Table 6: Unreinforced Rigid Pavement Section Recommendations

Rigid Pavement Section Alternative:	4,000 psi Portland Cement Concrete Pavement	Aggregate Base Course (Class 7)	Design Traffic
Light-Duty	5 ½ inches	4 inches	parking areas for car and passenger trucks
Medium-Duty	7 inches	4 inches	drive lanes for passenger cars and occasional garbage trucks and for fire lanes
Heavy-Duty	8 inches	4 inches	any area designated as heavy-duty (i.e., dumpster areas/ loading and unloading areas)
Specification[1]	Section 501	Section 303	---
1) Standard Specification for Highway Construction, Arkansas Department of Transportation, Edition of 2014			

The pavement design for the new roadways associated with this development was calculated using the AASHTO Guide for Design of Pavement Structures, 1993 edition. The recommended asphalt pavement section is typical of local construction practices for similar projects over the past 10 years. It should be noted that there could be some decreased performance and life span for the new asphalt pavement if actual traffic loading is higher than anticipated and particularly if there is heavy truck traffic. Arkansas references most asphalt specifications on the 1993 AASHTO guide which is largely based on highway traffic, which is why it was used in this design. For rigid pavements, the ACI publication titled “Guide for Design and Construction of Concrete Parking Lots”, ACI 330R should be used to design jointing.

Several national asphalt associations and states have developed alternate design guides for asphalt parking lots, several of which are guided by the increased stresses placed on a parking lot pavement due to slower traffic speeds, increased turning traffic and long durations of static loads. The use of several of these alternate methods will provide a thicker pavement section for the same design traffic and pavement subgrade, which would increase the life expectancy of the pavement. It should be noted that several of these design methods will require a minimum of two layers of asphalt pavement (surface and binder/base courses) for both structural support and long-term rideability. The minimum pavement sections required to ensure that proper placement and compaction is achieved during construction often lead to parking lots that can support much more traffic than the design traffic, particularly for lightly loaded parking lots. If requested, GTS can provide a design based on these alternate methods.

GEOTECHNICAL REPORT REQUIREMENTS and SPECIFICATIONS

Unless otherwise stated in this report, the recommendations contained in this report are based on the compaction specifications and material types noted in Table 7, Table 8, and the paragraphs on the following page.

Table 7: Compaction Criteria

Type of Material	Moisture-Density Specification	Minimum Dry Density (percentage of Proctor)	Range from Optimum Moisture Content (%)
Soil Fill Material (Building Pads)	ASTM D698 (Standard Proctor)	95	-2 to +2
Soil Fill Material (Pavement Areas)	ASTM D698 (Standard Proctor)	95	-2 to +2
ARDOT Class 7 Aggregate Base Course	ASTM D1557 (Modified Proctor)	95	Adequate to Achieve Compaction
Flowable Fill Material	ARDOT Section 206	Not applicable (400 psi)	

Table 8: Soil Fill Material Requirements

Type of Soil Fill	Location/Use	Maximum LL	Maximum PI	USCS Classifications
Select Fill	All Areas; CBR > 8.0 for top 1 foot of pavement subgrade	40[A]	18[A]	GM, GC, GP, SC, SP, CL, Chert

[A] Plasticity requirements may be waived provided the fill has a minimum of 65% retained on the No. 200 sieve.

Fill material should have a maximum nominal aggregate size of 3 inches or less after placement and compaction. If there are questions regarding the effectiveness of compaction equipment breaking down the material, a test pad should be constructed using the fill material and observed by GTS during compaction.

Fill proposed for use in the top 1 foot of pavement subgrade should have a laboratory CBR value of at least 8.0.

Fill needed for site grading should be placed in loose lifts not exceeding 9 inches in thickness (compacted lift thickness of approximately 6 to 7 inches). We recommend the fill be tested for density every lift during site grading, with a minimum of one test every 2,500 square feet of building area and every 10,000 square feet of pavement area.

Where select fill is used to backfill foundation overexcavations up to plan bottom of foundation elevations, the fill should be tested each lift, at each column location and every 25 linear feet of continuous foundation. Additionally, we recommend that the new fill material is tested for in-place density immediately before placement of reinforcing bar and concrete.

Flowable fill, if used to backfill foundation overexcavations, should have a minimum unconfined compressive strength of 400 pounds per square inch (psi). Flowable fill should be tested for compressive strength each day of placement.

The recommended moisture content and compaction of the fill should be maintained until fills are completed and floor slabs and pavements are constructed.

SUBSURFACE EXPLORATION and PROCEDURES

The subsurface exploration included evaluating the subsurface conditions at 11 boring locations, identified as Borings B-1 through B-11. Borings B-1 through B-8 were located within the planned building footprints and were drilled to depths of about 14 to 15 feet below existing grade. Borings B-9 through B-11 were located within planned pavement areas and were drilled to depths of about 6 to 6 ½ feet below existing grade.

The boring locations were established in the field by GTS using a recreation-grade hand-held GPS unit. The approximate boring locations are shown on the attached Boring Location Diagrams in Appendix A. The ground surface elevations at the boring locations were estimated from the Grading Plan provide to us. The elevations are shown near the top of the boring logs and are rounded to the nearest half foot. The locations and elevations of the borings should be considered accurate only to the degree implied by the methods used to define them. The results of the borings are attached to this report in Appendix A.

The borings were drilled with a track mounted Geoprobe 7822DT drill rig. Disturbed samples and estimates of the in-situ shear strengths of the soils and rock materials (chert) were obtained using an automatic-hammer-driven split-barrel sampler in general accordance with the Standard Penetration Test (SPT) at the boring locations.

An automatic SPT-hammer was used to advance the split-barrel sampler in the boreholes. A significantly greater efficiency is achieved with the automatic hammer compared to the conventional safety hammer operated with a cathead and rope. This higher efficiency has an appreciable effect on the SPT-N value. The effect of the automatic hammer's efficiency has been considered in the interpretation and analysis of the subsurface information for this report.

The soil samples obtained in the field were sealed to reduce moisture loss and taken to the GTS soil laboratory for further examination, testing, and classification. The results of laboratory tests on select samples are shown on the boring logs and are provided in Appendix B.

Field logs were prepared during the drilling and sampling of the borings. These logs report sampling methods, sampling intervals, groundwater conditions, and notes regarding soil, drilling conditions observed between sample depths. The final boring logs, included in this report, have been prepared based on the field logs and have been modified, where appropriate, based on the results of the laboratory observation.

LABORATORY TESTING and PROCEDURES

The soil samples were examined in our laboratory by an experienced geotechnical engineer and classified based on the soil's texture and plasticity, in accordance with the Unified Soil Classification System. The estimated Unified Soil Classification System group symbols are shown on the boring logs. Hand penetrometer tests were performed on select intact cohesive samples. Hand penetrometer test values are shown on the boring logs as filled squares.

The laboratory testing was performed by GTS in general accordance with the American Society for Testing and Materials (ASTM) test designations shown in Table 9.

Table 9: Laboratory Test Method Designations

Laboratory Test	Test Designation	
Moisture Content of Soil and Rock	ASTM D2216-10	Method A
Visual Classification of Soil Types	ASTM D2488	
Atterberg Limits	ASTM D4318	Method A
Sieve Analysis	ASTM D6913	Method A
USCS Classification	ASTM D2487	

GEOTECHNICAL REPORT LIMITATIONS

The recommendations contained in this report are based on our interpretation of subsurface conditions encountered at the discrete boring locations. Variations between the subsurface conditions anticipated in this report and actual project site conditions may occur away from the boring locations. If significant differences between the findings of the borings and site conditions are observed, GTS should be contacted to assess the variation and, if necessary, reevaluate the recommendations contained in this report. In addition, the involvement of GTS during site grading and foundation/floor slab construction is encouraged to note any differences between site conditions and anticipated conditions.

The recommendations contained in this report are based on the understood project described in the Project Description and Information section of this report. The recommendations should not be relied upon if the project description changes from the one noted in this report.

ENVIRONMENTAL EXCLUSION

A Geotechnical Engineering Report assesses the engineering properties of soil and rock. No environmental assessment of a project site is performed during a geotechnical exploration. If the owner is concerned about the potential for environmental hazards at the project site, additional studies should be performed by GTS.

APPENDIX A

Boring Location Diagrams

Boring Logs

Soil Classification Legend

Boring Location Diagram (Existing Conditions, March 2025)

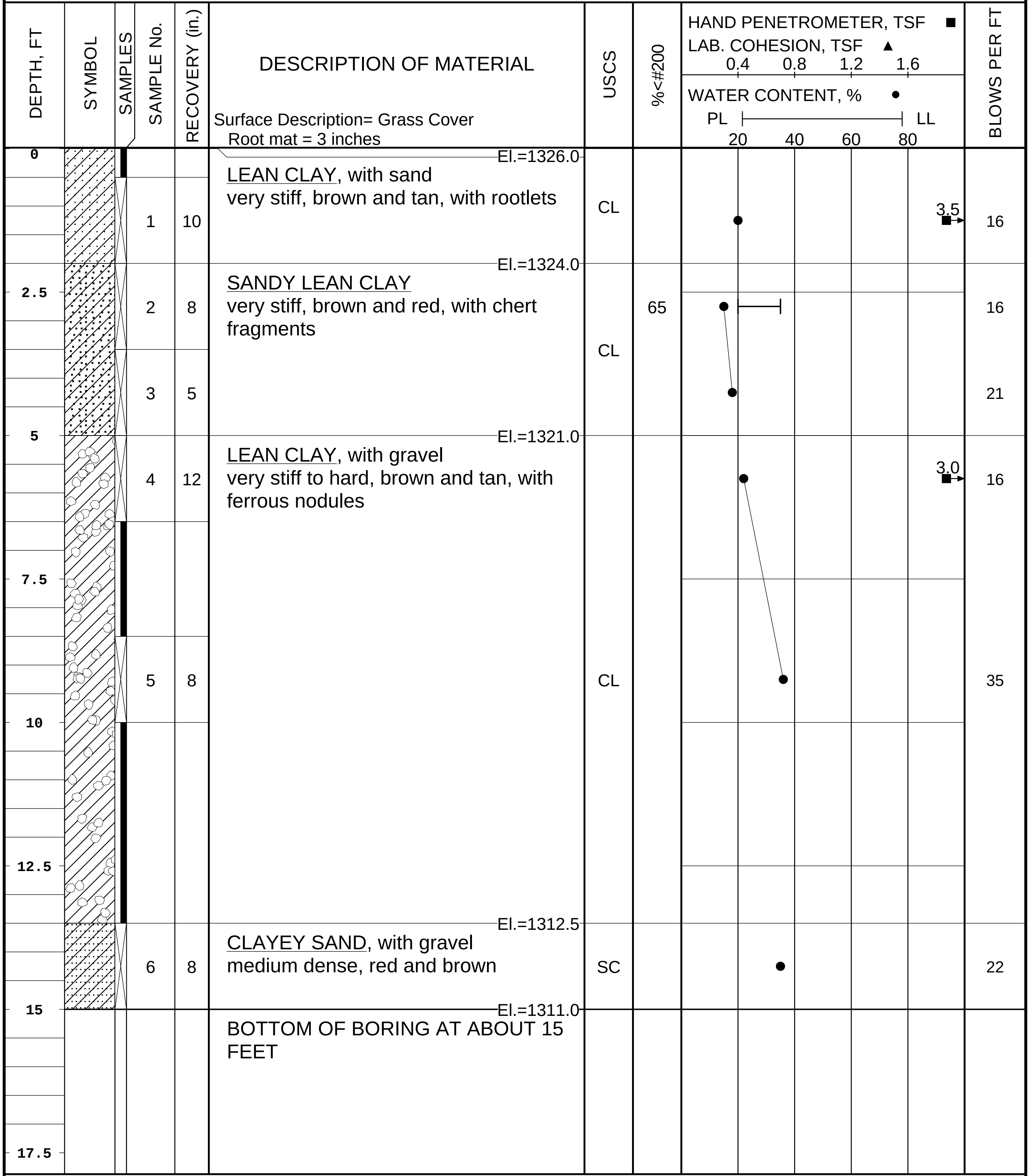
Boring Location Diagram (with Site Plan Overlain)

LOG OF BORING NO.B-1

Planned Pickleball Complex
North Main Street
Centerton, Arkansas

GTS, Inc.
Geotechnical & Testing Services
Fayetteville, AR

Project No.: 25-15077 Location: Shown on Attached Boring Location Diagram



Surface Description= Grass Cover
Root mat = 3 inches

SAMPLE No.	RECOVERY (in.)	DESCRIPTION OF MATERIAL	USCS	%<#200	HAND PENETROMETER, TSF	BLOWS PER FT
		El.=1326.0				
1	10	LEAN CLAY, with sand very stiff, brown and tan, with rootlets	CL		3.5	16
		El.=1324.0				
2	8	SANDY LEAN CLAY very stiff, brown and red, with chert fragments	CL	65		16
3	5					21
		El.=1321.0				
4	12	LEAN CLAY, with gravel very stiff to hard, brown and tan, with ferrous nodules	CL		3.0	16
5	8					35
		El.=1312.5				
6	8	CLAYEY SAND, with gravel medium dense, red and brown	SC			22
		El.=1311.0				
		BOTTOM OF BORING AT ABOUT 15 FEET				

COMPLETION DEPTH: 15 ft.
DATE: 9/2/2025
RIG: Geoprobe 7822DT (2015), Track-Mounted, Auto Hammer Assisted

DEPTH TO WATER: DURING DRILLING: Dry ▽
AT COMPLETION: Dry ▼
AT 24 HOURS: Backfilled ▼

LOG OF BORING NO.B-2

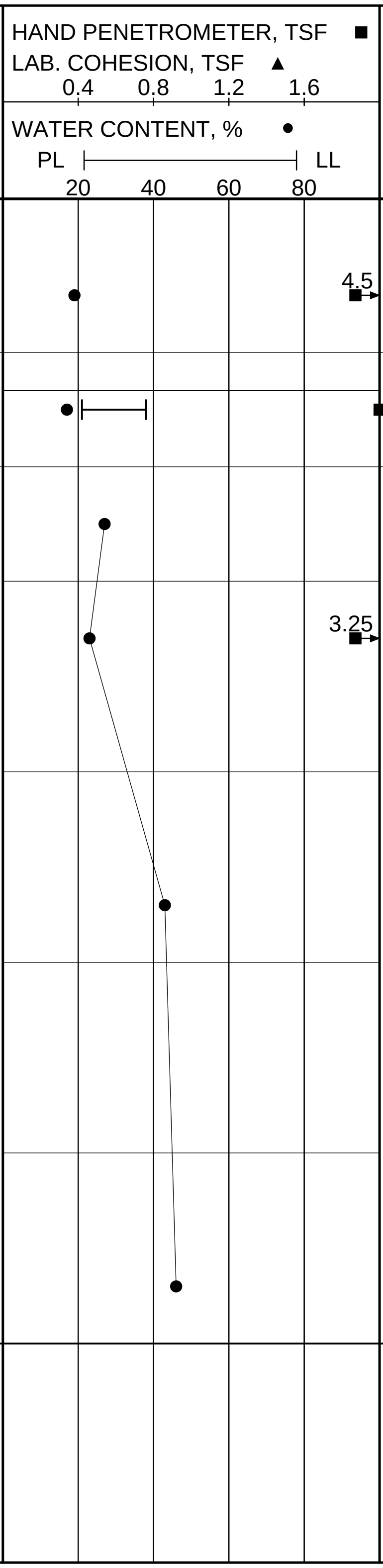
Planned Pickleball Complex
North Main Street
Centerton, Arkansas

GTS, Inc. Geotechnical & Testing Services
Fayetteville, AR

Project No.: 25-15077 Location: Shown on Attached Boring Location Diagram

Surface Description= Grass Cover
Root mat = 3 inches

DEPTH, FT	SAMPLE No.	RECOVERY (in.)	DESCRIPTION OF MATERIAL	USCS	%<#200	BLOWS PER FT
0			El.=1324.5 LEAN CLAY, with sand very stiff, brown and grey, with rootlets	CL		
	1	15			83	13
2.5			El.=1322.5 SANDY LEAN CLAY very stiff, grey, tan and red, with ferrous nodules			
	2	12		CL	69	15
			El.=1321.0 CLAYEY SAND, with gravel loose to very dense, red, brown and grey			
	3	10				54
5						
	4	10				8
7.5						
	5	10		SC		47
10						
12.5						
	6	12				17
15			El.=1309.5 BOTTOM OF BORING AT ABOUT 15 FEET			
17.5						



COMPLETION DEPTH: 15 ft.
DATE: 9/2/2025
RIG: Geoprobe 7822DT (2015), Track-Mounted, Auto Hammer Assisted

DEPTH TO WATER: DURING DRILLING: Dry
AT COMPLETION: Dry
AT 24 HOURS: Backfilled

LOG OF BORING NO.B-3

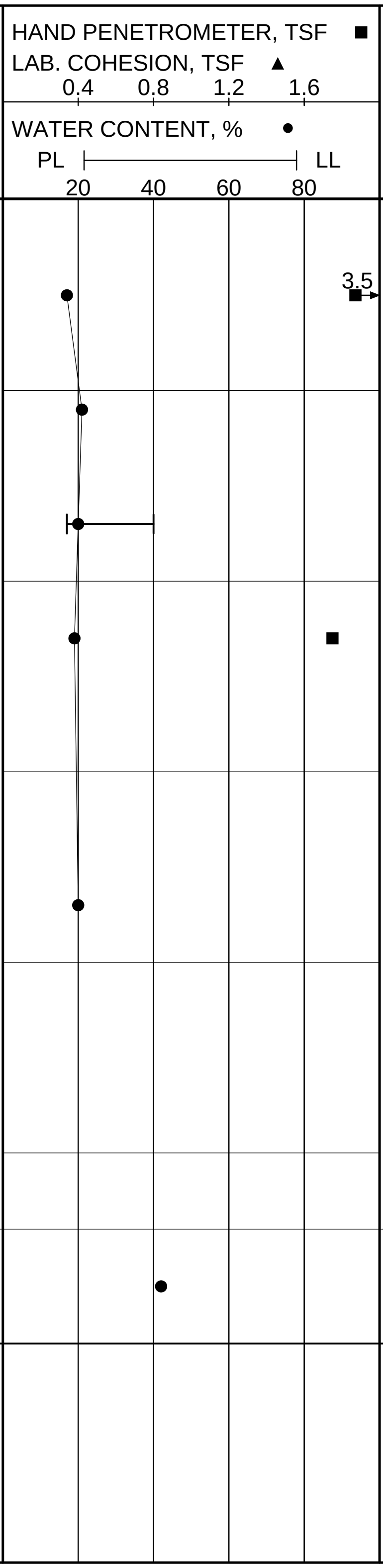
Planned Pickleball Complex
North Main Street
Centerton, Arkansas

GTS, Inc.
Geotechnical & Testing Services
Fayetteville, AR

Project No.: 25-15077 Location: Shown on attached Boring Location

Surface Description= Grass Cover
Root mat = 3 inches

DEPTH, FT	SAMPLE No.	RECOVERY (in.)	DESCRIPTION OF MATERIAL	USCS	%<#200	BLOWS PER FT
0			El.=1326.0 LEAN CLAY, with sand stiff to hard, red, brown and grey, trace silt layers, trace ferrous nodules	CL		
	1	12				10
2.5	2	10				15
	3	8			75	24
5	4	10				12
7.5						
	5	8				42
10						
12.5						
	6	8	El.=1312.5 CLAYEY GRAVEL, with sand medium dense, red, brown and grey, with fat clay pockets	GC		11
15			El.=1311.0 BOTTOM OF BORING AT ABOUT 15 FEET			
17.5						



COMPLETION DEPTH: 15 ft.
DATE: 9/2/2025
RIG: Geoprobe 7822DT (2015), Track-Mounted, Auto Hammer Assisted

DEPTH TO WATER: DURING DRILLING: Dry
AT COMPLETION: Dry
AT 24 HOURS: Backfilled

LOG OF BORING NO.B-4

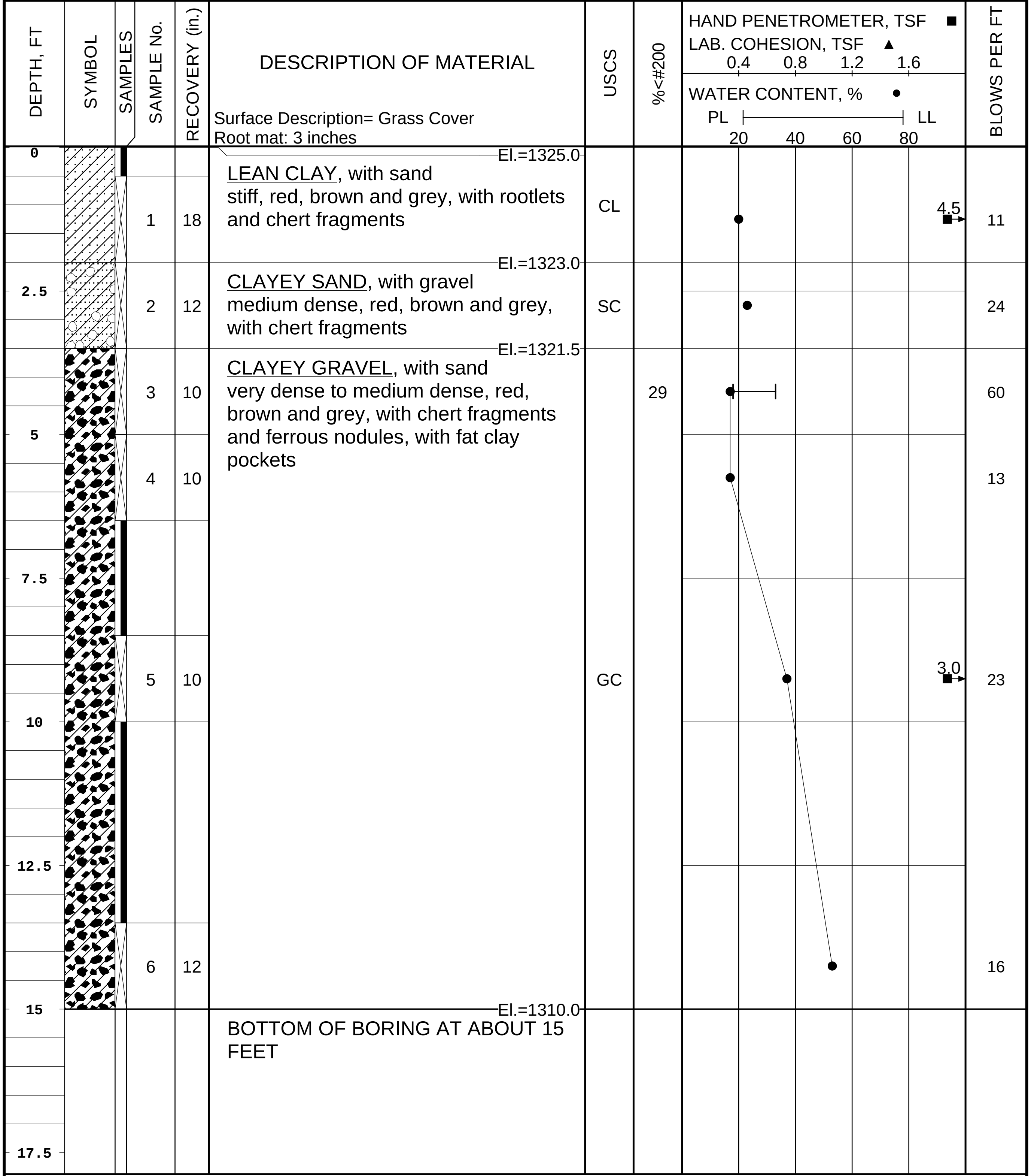
Planned Pickleball Complex
North Main Street
Centerton, Arkansas

GTS, Inc.
Geotechnical & Testing Services
Fayetteville, AR

Project No.: 25-15077 Location: Shown on Attached Boring Location Diagram

Surface Description= Grass Cover
Root mat: 3 inches

SAMPLE No.	RECOVERY (in.)	DESCRIPTION OF MATERIAL	USCS	%<#200	HAND PENETROMETER, TSF	BLOWS PER FT
		El.=1325.0				
1	18	LEAN CLAY, with sand stiff, red, brown and grey, with rootlets and chert fragments	CL		4.5	11
		El.=1323.0				
2	12	CLAYEY SAND, with gravel medium dense, red, brown and grey, with chert fragments	SC			24
		El.=1321.5				
3	10	CLAYEY GRAVEL, with sand very dense to medium dense, red, brown and grey, with chert fragments and ferrous nodules, with fat clay pockets		29		60
4	10					13
5	10		GC		3.0	23
6	12					16
		El.=1310.0				
		BOTTOM OF BORING AT ABOUT 15 FEET				



COMPLETION DEPTH: 15 ft.
DATE: 9/2/2025
RIG: Geoprobe 7822DT (2015), Track-Mounted, Auto Hammer Assisted

DEPTH TO WATER: DURING DRILLING: Dry
AT COMPLETION: Dry
AT 24 HOURS: Backfilled

LOG OF BORING NO.B-5

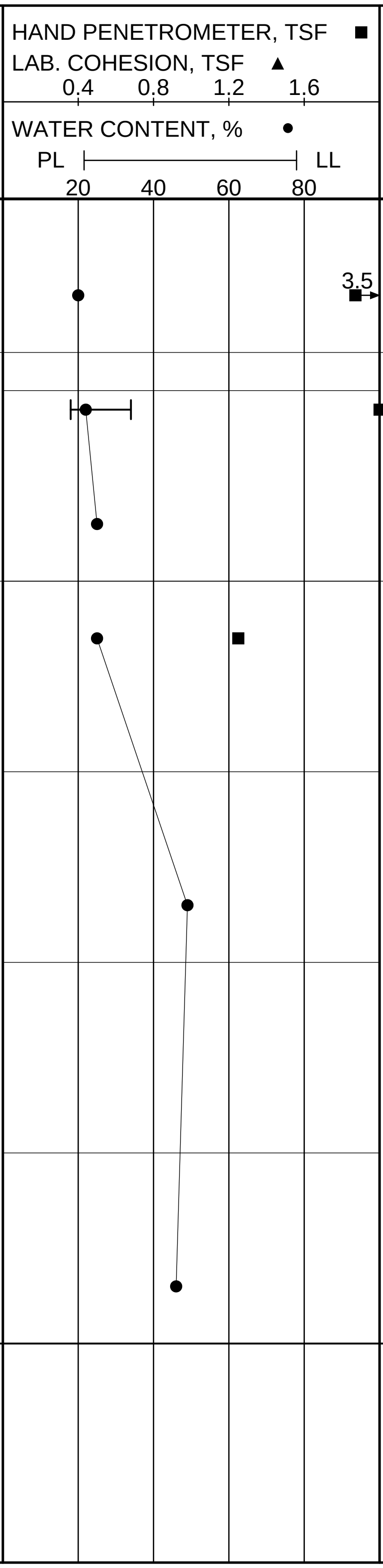
Planned Pickleball Complex
North Main Street
Centerton, Arkansas

GTS, Inc.
Geotechnical & Testing Services
Fayetteville, AR

Project No.: 25-15077 Location: Shown on Attached Boring Location Diagram

Surface Description= Grass Cover
Root mat: 3 inches

DEPTH, FT	SYMBOL	SAMPLES	SAMPLE No.	RECOVERY (in.)	DESCRIPTION OF MATERIAL	USCS	%<#200	BLOWS PER FT
0					El.=1325.0 LEAN CLAY, with sand stiff, red and brown, with sand and chert fragments	CL		
			1	15				10
2.5			2	15	El.=1323.0 CLAYEY SAND, with gravel dense, red, brown and grey, with ferrous nodules	SC	41	41
			3	8				44
5			4	8	El.=1320.0 CLAYEY GRAVEL, with sand dense to medium dense, red, brown and tan, with fat clay pockets	GC		32
7.5								
			5	18				11
10								
12.5								
			6	12				18
15					El.=1310.0 BOTTOM OF BORING AT ABOUT 15 FEET			
17.5								



COMPLETION DEPTH: 15 ft.
DATE: 9/2/2025
RIG: Geoprobe 7822DT (2015), Track-Mounted, Auto Hammer Assisted

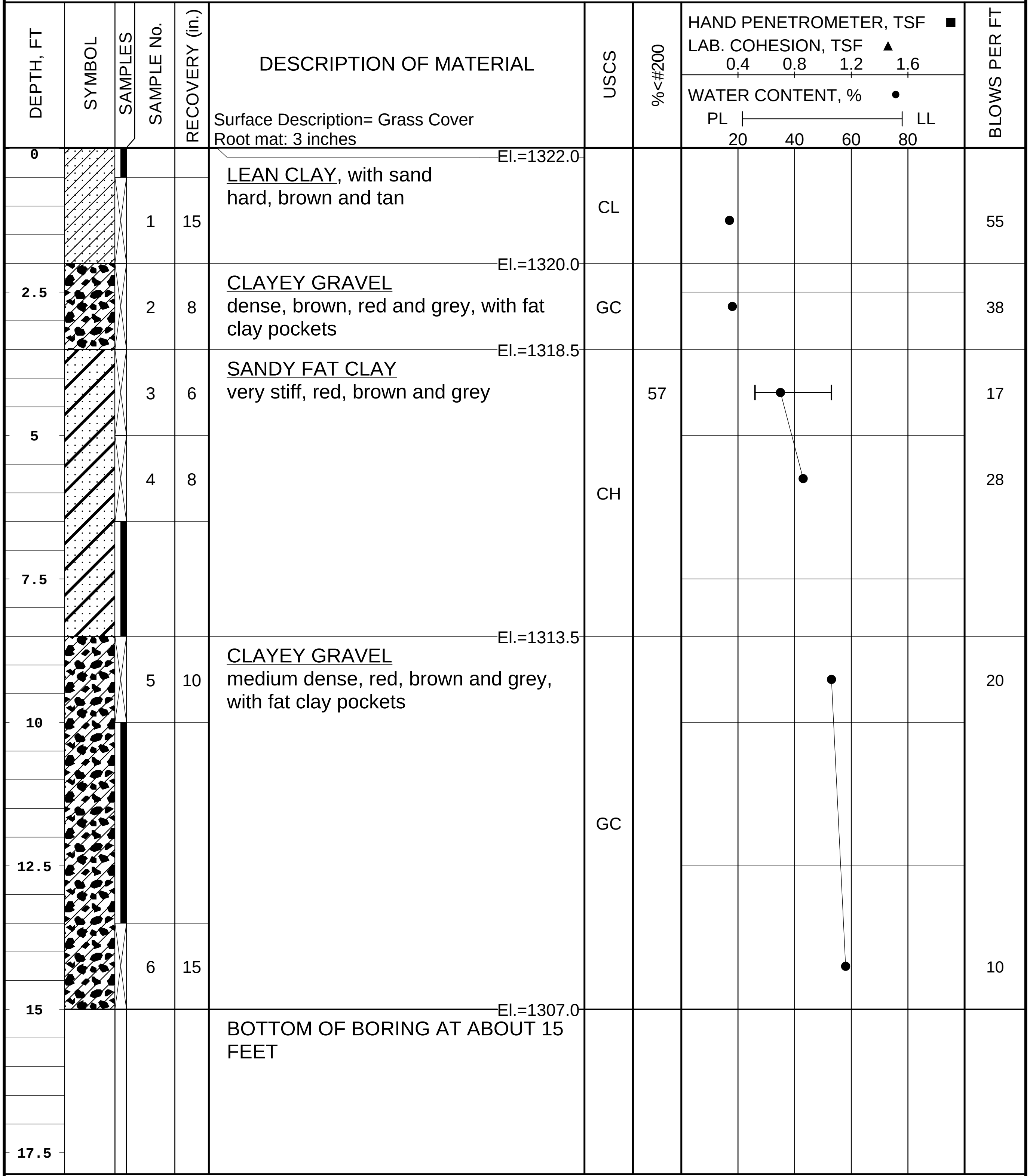
DEPTH TO WATER: DURING DRILLING: Dry ▽
AT COMPLETION: Dry ▽
AT 24 HOURS: Backfilled ▼

LOG OF BORING NO.B-6

Planned Pickleball Complex
North Main Street
Centerton, Arkansas

GTS, Inc.
Geotechnical & Testing Services
Fayetteville, AR

Project No.: 25-15077 Location: Shopwn on Attached Boring Location Diagram



Surface Description= Grass Cover
Root mat: 3 inches

SAMPLE No.	RECOVERY (in.)	DESCRIPTION OF MATERIAL	USCS	%<#200	BLOWS PER FT
		El.=1322.0			
1	15	LEAN CLAY, with sand hard, brown and tan	CL		55
		El.=1320.0			
2	8	CLAYEY GRAVEL dense, brown, red and grey, with fat clay pockets	GC		38
		El.=1318.5			
3	6	SANDY FAT CLAY very stiff, red, brown and grey	CH	57	17
4	8				28
		El.=1313.5			
5	10	CLAYEY GRAVEL medium dense, red, brown and grey, with fat clay pockets	GC		20
6	15				10
		El.=1307.0			
		BOTTOM OF BORING AT ABOUT 15 FEET			

COMPLETION DEPTH: 15 ft.
DATE: 9/2/2025
RIG: Geoprobe 7822DT (2015), Track-Mounted, Auto Hammer Assisted

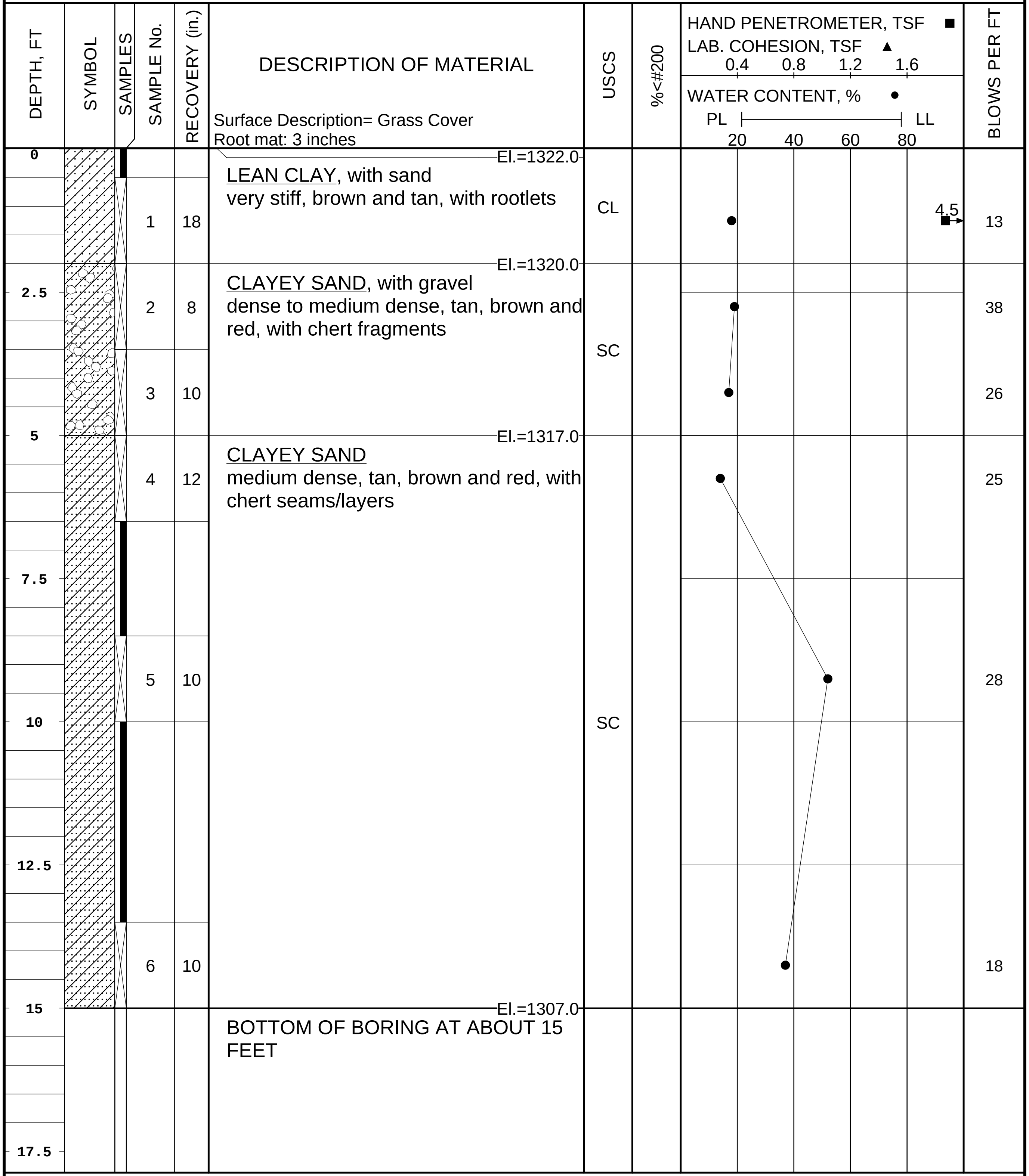
DEPTH TO WATER: DURING DRILLING: Dry
AT COMPLETION: Dry
AT 24 HOURS: Backfilled

LOG OF BORING NO.B-7

Planned Pickleball Complex
North Main Street
Centerton, Arkansas

GTS, Inc.
Geotechnical & Testing Services
Fayetteville, AR

Project No.: 25-15077 Location: Shown on Attached Boring Location Diagram



Surface Description= Grass Cover
Root mat: 3 inches

DEPTH, FT	SAMPLE No.	RECOVERY (in.)	DESCRIPTION OF MATERIAL	USCS	%<#200	HAND PENETROMETER, TSF	BLOWS PER FT
0			El.=1322.0 LEAN CLAY, with sand very stiff, brown and tan, with rootlets	CL			
	1	18				4.5	13
2.5			El.=1320.0 CLAYEY SAND, with gravel dense to medium dense, tan, brown and red, with chert fragments	SC			
	2	8					38
	3	10					26
5			El.=1317.0 CLAYEY SAND medium dense, tan, brown and red, with chert seams/layers	SC			
	4	12					25
7.5							
	5	10					28
10							
12.5							
	6	10					18
15			El.=1307.0 BOTTOM OF BORING AT ABOUT 15 FEET				
17.5							

COMPLETION DEPTH: 15 ft.
DATE: 9/2/2025
RIG: Geoprobe 7822DT (2015), Track-Mounted, Auto Hammer Assisted

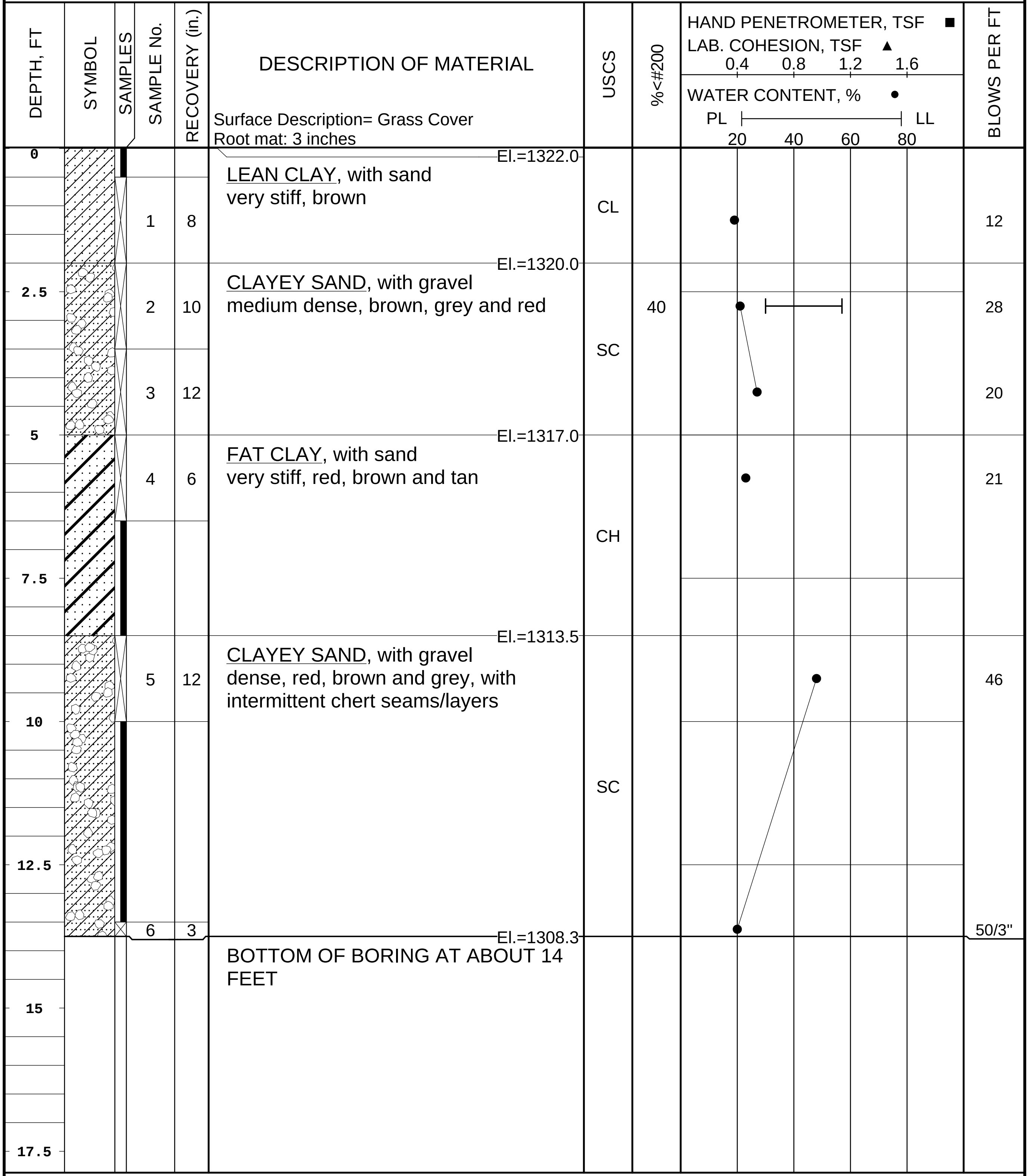
DEPTH TO WATER: DURING DRILLING: Dry ▽
AT COMPLETION: Dry ▼
AT 24 HOURS: Backfilled ▼

LOG OF BORING NO.B-8

Planned Pickleball Complex
North Main Street
Centerton, Arkansas

GTS, Inc.
Geotechnical & Testing Services
Fayetteville, AR

Project No.: 25-15077 Location: Shown on Attached Boring Location Diagram



Surface Description= Grass Cover
Root mat: 3 inches

SAMPLE No.	RECOVERY (in.)	DESCRIPTION OF MATERIAL	USCS	%<#200	BLOWS PER FT
		El.=1322.0			
1	8	LEAN CLAY, with sand very stiff, brown	CL		12
		El.=1320.0			
2	10	CLAYEY SAND, with gravel medium dense, brown, grey and red	SC	40	28
3	12				20
		El.=1317.0			
4	6	FAT CLAY, with sand very stiff, red, brown and tan	CH		21
		El.=1313.5			
5	12	CLAYEY SAND, with gravel dense, red, brown and grey, with intermittent chert seams/layers	SC		46
6	3				50/3"
		El.=1308.3			
		BOTTOM OF BORING AT ABOUT 14 FEET			

COMPLETION DEPTH: 13.75 ft.
DATE: 9/2/2025
RIG: Geoprobe 7822DT (2015), Track-Mounted, Auto Hammer Assisted

DEPTH TO WATER: DURING DRILLING: Dry ∇
AT COMPLETION: Dry ▼
AT 24 HOURS: Backfilled ▼

LOG OF BORING NO.B-9

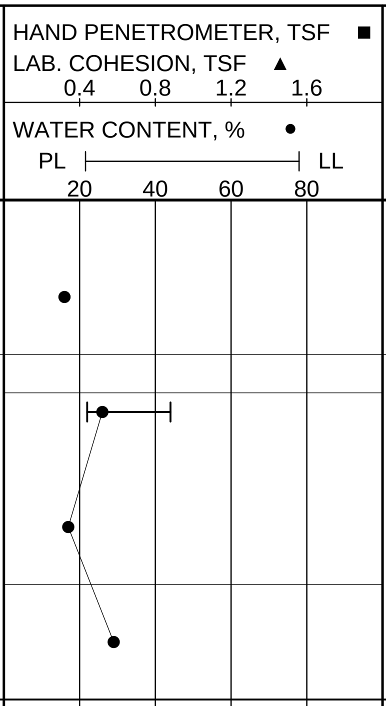
Planned Pickleball Complex
North Main Street
Centerton, Arkansas

GTS, Inc.
Geotechnical & Testing Services
Fayetteville, AR

Project No.: 25-15077 Location: Shown on Attached Boring Location Diagram

Surface Description= Grass Cover
Root mat: 3 inches

DEPTH, FT	SYMBOL	SAMPLES	SAMPLE No.	RECOVERY (in.)	DESCRIPTION OF MATERIAL	USCS	%<#200	BLOWS PER FT
0	▨				El.=1324.0 LEAN CLAY, with sand very stiff, brown, with rootlets	CL		
	▨		1	15			81	29
2.5	▨		2	10	El.=1322.0 CLAYEY GRAVEL, with sand medium dense to dense, red, brown and grey, with fat clay pockets		30	29
	▨		3	4		GC		30
5	▨		4	6				40
7.5 10 12.5 15 17.5					El.=1317.5 BOTTOM OF BORING AT ABOUT 6½ FEET			



COMPLETION DEPTH: 6.5 ft.
DATE: 9/2/2025
RIG: Geoprobe 7822DT (2015), Track-Mounted, Auto Hammer Assisted

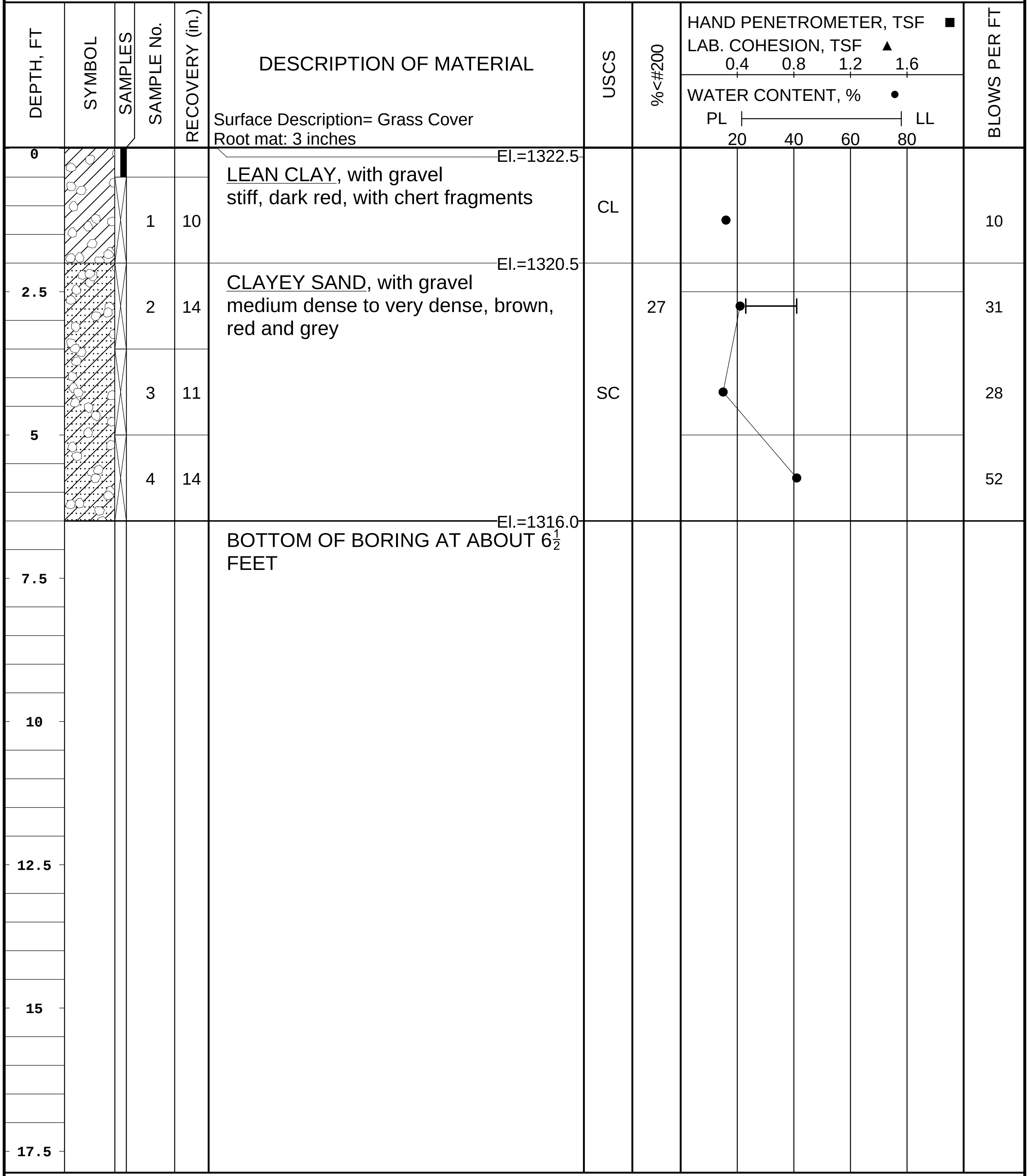
DEPTH TO WATER: DURING DRILLING: Dry ▽
AT COMPLETION: Dry ▼
AT 24 HOURS: Backfilled ▼

LOG OF BORING NO.B-10

Planned Pickleball Complex
North Main Street
Centerton, Arkansas

GTS, Inc.
Geotechnical & Testing Services
Fayetteville, AR

Project No.: 25-15077 Location: Shown on Attached Boring Location Diagram



Surface Description= Grass Cover
Root mat: 3 inches

SAMPLE No.	RECOVERY (in.)	DESCRIPTION OF MATERIAL	USCS	%<#200	BLOWS PER FT
		El.=1322.5			
1	10	LEAN CLAY, with gravel stiff, dark red, with chert fragments	CL		10
		El.=1320.5			
2	14	CLAYEY SAND, with gravel medium dense to very dense, brown, red and grey	SC	27	31
3	11				28
4	14				52
		El.=1316.0			
		BOTTOM OF BORING AT ABOUT 6½ FEET			

COMPLETION DEPTH: 6.5 ft.
DATE: 9/2/2025
RIG: Geoprobe 7822DT (2015), Track-Mounted, Auto Hammer Assisted

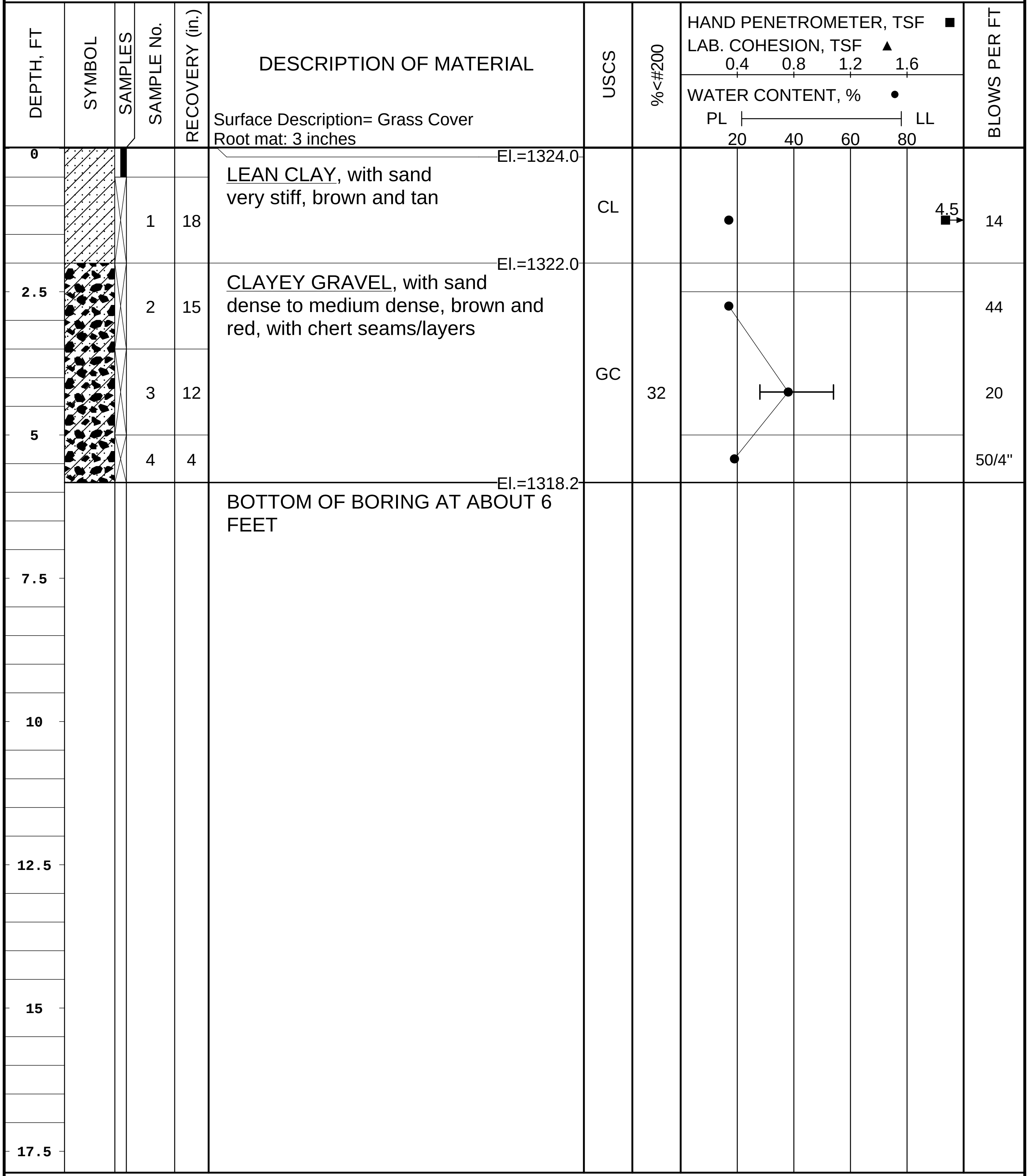
DEPTH TO WATER: DURING DRILLING: Dry ▽
AT COMPLETION: Dry ▼
AT 24 HOURS: Backfilled ▼

LOG OF BORING NO.B-11

Planned Pickleball Complex
North Main Street
Centerton, Arkansas

GTS, Inc.
Geotechnical & Testing Services
Fayetteville, AR

Project No.: 25-15077 Location: Shown on Attached Boring Location Diagram



Surface Description= Grass Cover
Root mat: 3 inches

SAMPLE No.	RECOVERY (in.)	DESCRIPTION OF MATERIAL	USCS	%<#200	BLOWS PER FT
		El.=1324.0			
1	18	LEAN CLAY, with sand very stiff, brown and tan	CL		14
		El.=1322.0			
2	15	CLAYEY GRAVEL, with sand dense to medium dense, brown and red, with chert seams/layers	GC		44
3	12			32	20
4	4				50/4"
		El.=1318.2			
		BOTTOM OF BORING AT ABOUT 6 FEET			

COMPLETION DEPTH: 5.83 ft.
DATE: 9/2/2025
RIG: Geoprobe 7822DT (2015), Track-Mounted, Auto Hammer Assisted

DEPTH TO WATER: DURING DRILLING: Dry ▽
AT COMPLETION: Dry ▼
AT 24 HOURS: Backfilled ▼

SOIL CLASSIFICATION LEGEND

APPARENT CONSISTENCY OF COHESIVE SOILS (PECK, HANSON & THORNBURN 1974, AASHTO 1988)

Descriptor	SPT N_{60} (blows/foot)*	Pocket Penetrometer, Qp (tsf)	Torvane (tsf)	Field Approximation
Very Soft	< 2	< 0.25	< 0.12	Easily penetrated several inches by fist
Soft	2 – 4	0.25 – 0.50	0.12 – 0.25	Easily penetrated several inches by thumb
Medium Stiff	5 – 7	0.50 – 1.0	0.25 – 0.50	Penetrated several inches by thumb w/moderate effort
Stiff	8 – 11	1.0 – 2.0	0.50 – 1.0	Readily indented by thumbnail
Very Stiff	12 – 29	2.0 – 4.0	1.0 – 2.0	Indented by thumb but penetrated only with great effort
Hard	≥ 30	> 4.0	> 2.0	Indented by thumbnail with difficulty

* Using SPT N_{60} is considered a crude approximation for cohesive soils.

APPARENT DENSITY OF COHESIONLESS SOILS (AASHTO 1988)

Descriptor	SPT N_{60} Value (blows/foot)
Very Loose	0 – 3
Loose	4 – 8
Medium Dense	9 – 29
Dense	30 – 49
Very Dense	$\geq$ 50

MOISTURE (ASTM D2488-06)

Descriptor	Criteria
Dry	Absence of moisture, dusty, dry to the touch, well below optimum moisture content (per ASTM D698 or D1557)
Moist	Damp but no visible water
Wet	Visible free water, usually soil is below water table, well above optimum moisture content (per ASTM D698 or D1557)

PERCENT OR PROPORTION OF SOILS (ASTM D2488-06)

Descriptor	Criteria
Trace	Particles are present but estimated < 5%
Few	5 – 10%
Little	15 – 25%
Some	30 – 45%
Mostly	50 – 100%
Percentages are estimated to nearest 5% in the field. Use “about” unless percentages are based on laboratory testing.	

SOIL PARTICLE SIZE (ASTM D2488-06)

Descriptor	Size
Boulder	> 12 inches
Cobble	3 to 12 inches
Gravel - Coarse Fine	¾ inch to 3 inches No. 4 sieve to ¾ inch
Sand - Coarse Medium Fine	No. 10 to No. 4 sieve (4.75mm) No. 40 to No. 10 sieve (2mm) No. 200 to No. 40 sieve (.425mm)
Silt and Clay (“fines”)	Passing No. 200 sieve (0.075mm)

UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D2488)

Major Division			Group Symbol	Description
Coarse Grained Soils (more than 50% retained on #200 sieve)	**Gravel** (50% or more retained on No. 4 sieve)	Clean Gravel	GW	Well-graded gravels and gravel-sand mixtures, little or no fines
			GP	Poorly graded gravels and gravel-sand mixtures, little or no fines
		Gravel with fines	GM	Silty gravels and gravel-sand-silt mixtures
			GC	Clayey gravels and gravel-sand-clay mixtures
	Sand (> 50% passing No. 4 sieve)	Clean sand	SW	Well-graded sands and gravelly sands, little or no fines
			SP	Poorly-graded sands and gravelly sands, little or no fines
		Sand with fines	SM	Silty sands and sand-silt mixtures
			SC	Clayey sands and sand-clay mixtures
Fine Grained Soils (50% or more passing #200 sieve)	**Silt and Clay** (liquid limit < 50)		ML	Inorganic silts, rock flour and clayey silts
			CL	Inorganic clays of low-medium plasticity, gravelly, sandy & lean clays
			OL	Organic silts and organic silty clays of low plasticity
	Silt and Clay (liquid limit > 50)		MH	Inorganic silts and clayey silts
			CH	Inorganic clays or high plasticity, fat clays
			OH	Organic clays of medium to high plasticity
Highly Organic Soils			PT	Peat, muck and other highly organic soils

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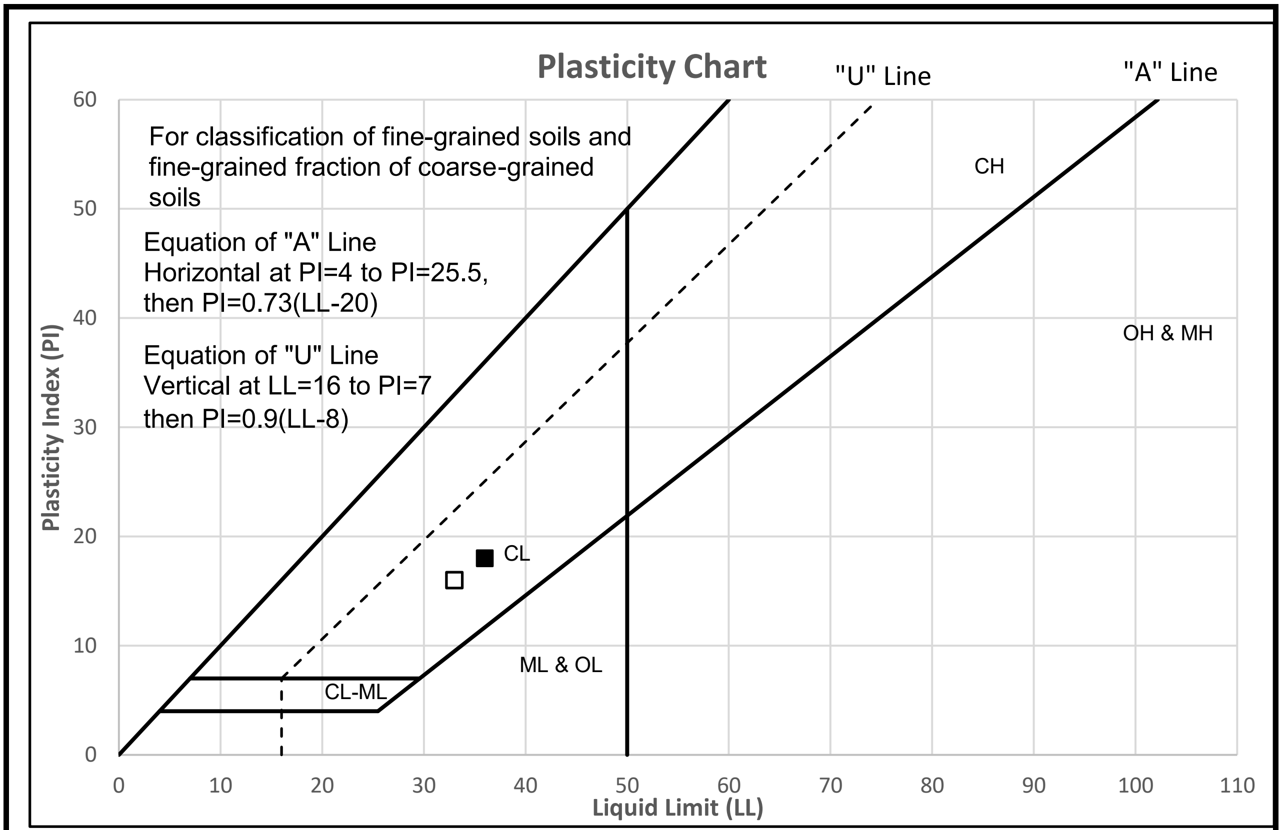
GRAPHIC SYMBOL LEGEND

SPT	☒	Standard Penetration Test (2” OD), ASTM D1586
GRAB	◢	Grab Sample
ST		Shelby Tube, ASTM D1587 (pushed)
AUGER	▮	Boring Advanced Through Drilling
CORE	▯	Rock coring

APPENDIX B

Laboratory Test Results

Results of Classification Tests



	Boring No	Depth (ft)	LL	PL	PI	% Fines	USCS Classification
■	B-2, S-1	0.5 to 2	36	18	18	83	Lean Clay, with sand (CL)
□	B-9, S-1	0.5 to 2	33	17	16	81	Lean Clay, with sand (CL)

Planned Pickleball Complex
North Main Street
Centerton, Arkansas

GTS Project No. 25-15077

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Tulsa, Oklahoma
Dallas, Texas

PROJECT: Planned Pickleball Complex

DATE: 9/19/25

JOB NO: 25-15077

BORING NO. B-1

SAMPLE NO. S-2

DEPTH (FT) 2 to 3.5

PLASTIC LIMIT 20

LIQUID LIMIT 35

PLASTICITY INDEX 15

SIEVE SIZE	PERCENT PASSING
3.00"	100.0%
1.50"	100.0%
1.00"	100.0%
3/4"	100.0%
3/8"	100.0%
No. 4	97.6%
No. 10	95.0%
No. 40	82.6%
No. 200	65.1%

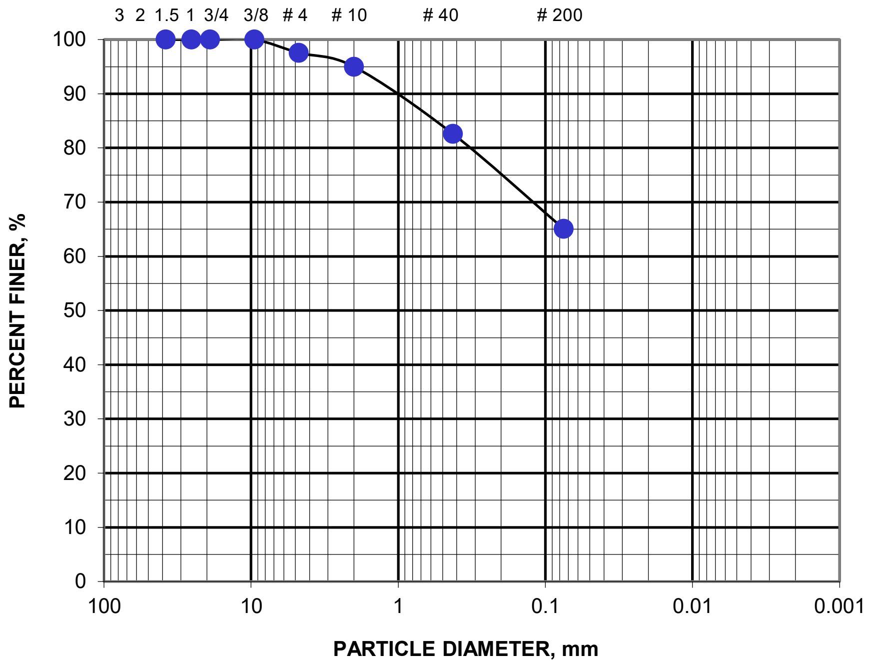
MOISTURE CONTENT (%) 17.0

VISUAL DESCRIPTION brown and red, with chert fragments

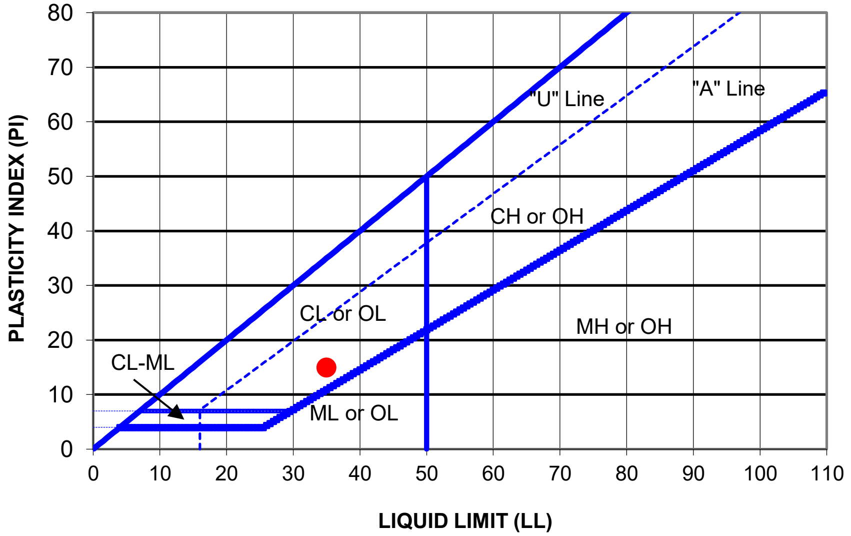
ASTM DESCRIPTION	AASHTO CLASSIFICATION	AASHTO GI
Sandy Lean Clay, CL	**A-6**	**8**

GRAIN SIZE DISTRIBUTION CURVE

U.S. STANDARD SIEVE OPENINGS IN INCHES & STANDARD SIEVE NUMBERS



PLASTICITY CHART



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BORING NO.	B-2
SAMPLE NO.	S-2
DEPTH (FT)	2 to 3.5
PLASTIC LIMIT	21
LIQUID LIMIT	38
PLASTICITY INDEX	17

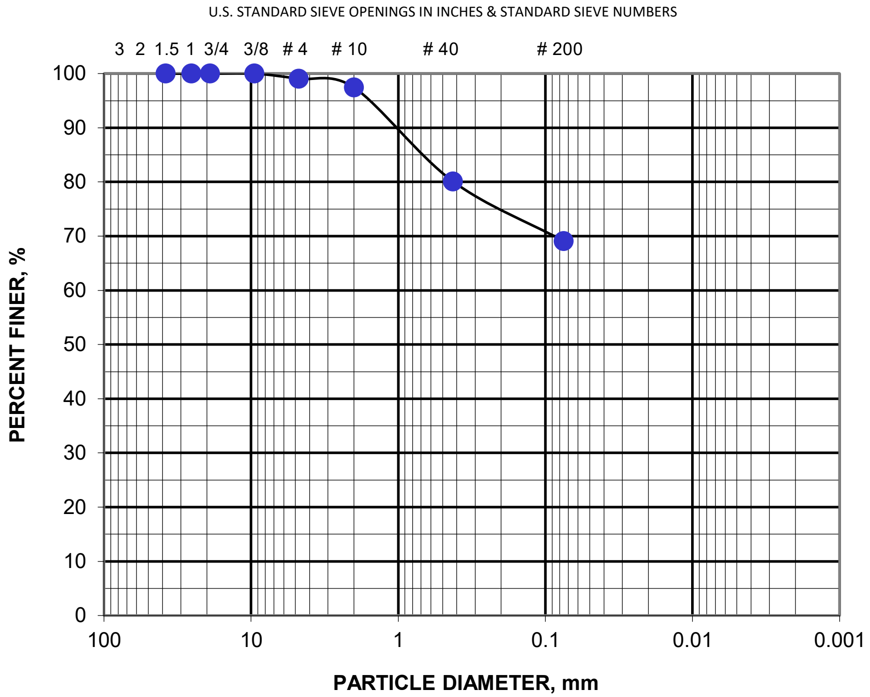
SIEVE SIZE	PERCENT PASSING
3.00"	100.0%
1.50"	100.0%
1.00"	100.0%
3/4"	100.0%
3/8"	100.0%
No. 4	99.0%
No. 10	97.4%
No. 40	80.1%
No. 200	69.1%

MOISTURE CONTENT (%) 19.3

VISUAL DESCRIPTION	grey, tan and red with ferrous nodules

ASTM DESCRIPTION	AASHTO CLASSIFICATION	AASHTO GI
Sandy Lean Clay, CL	**A-6**	**10**

GRAIN SIZE DISTRIBUTION CURVE



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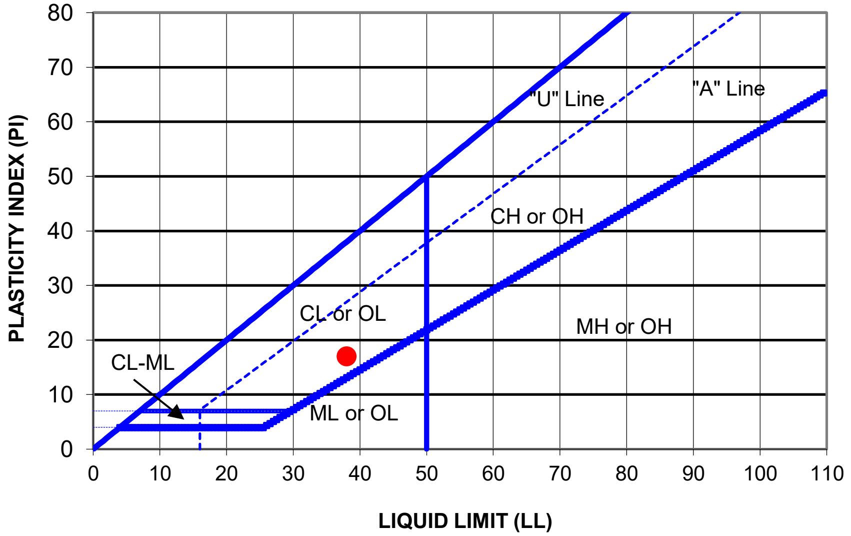

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DATE: 9/19/25

JOB NO: 25-15077

BORING NO.	B-3
SAMPLE NO.	S-3
DEPTH (FT)	3.5 to 5
PLASTIC LIMIT	17
LIQUID LIMIT	40
PLASTICITY INDEX	23

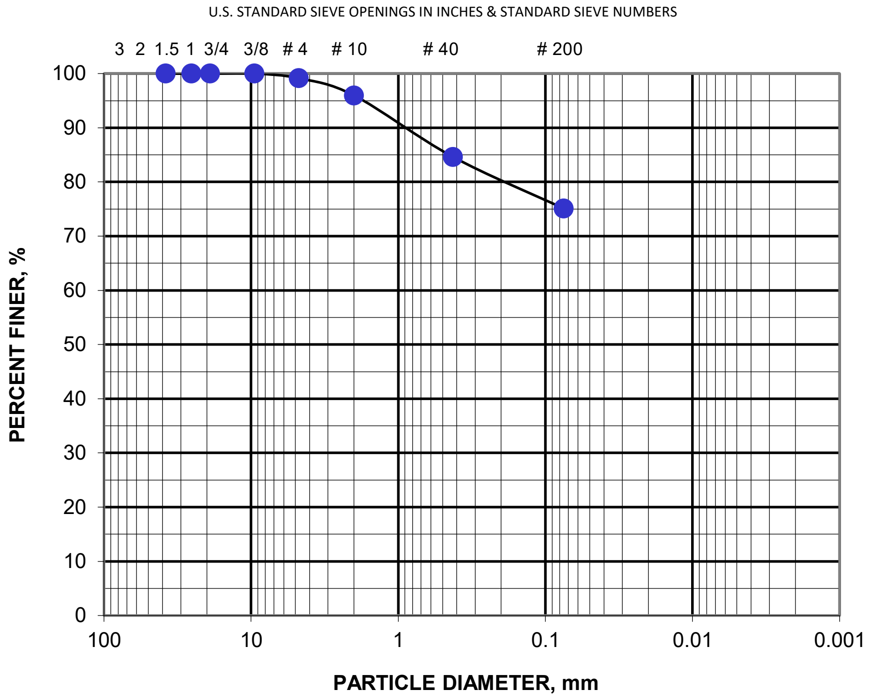
SIEVE SIZE	PERCENT PASSING
3.00"	100.0%
1.50"	100.0%
1.00"	100.0%
3/4"	100.0%
3/8"	100.0%
No. 4	99.1%
No. 10	96.0%
No. 40	84.6%
No. 200	75.1%

MOISTURE CONTENT (%) 19.6

VISUAL DESCRIPTION	brown, grey and red, with ferrous nodules

ASTM DESCRIPTION	AASHTO CLASSIFICATION	AASHTO GI
Lean Clay with Sand, CL	**A-6**	**16**

GRAIN SIZE DISTRIBUTION CURVE



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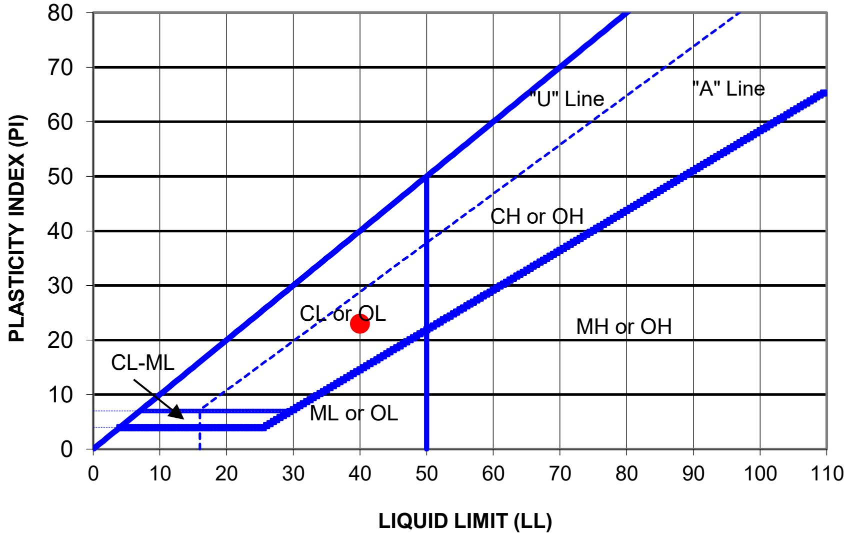

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JOB NO: 25-15077

BORING NO.	B-4
SAMPLE NO.	S-3
DEPTH (FT)	3.5 to 5
PLASTIC LIMIT	18
LIQUID LIMIT	33
PLASTICITY INDEX	15

SIEVE SIZE	PERCENT PASSING
3.00"	100.0%
1.50"	100.0%
1.00"	100.0%
3/4"	81.8%
3/8"	73.4%
No. 4	63.0%
No. 10	50.0%
No. 40	37.7%
No. 200	29.3%

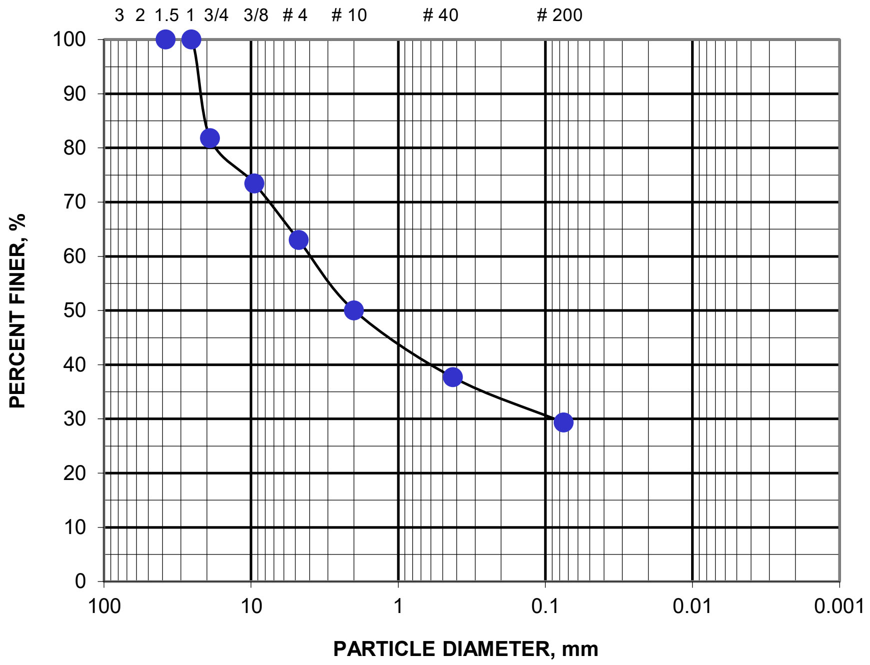
MOISTURE CONTENT (%) 18.8

VISUAL DESCRIPTION red brown and grey, with chert fragments and ferrous nodules, with fat clay pockets

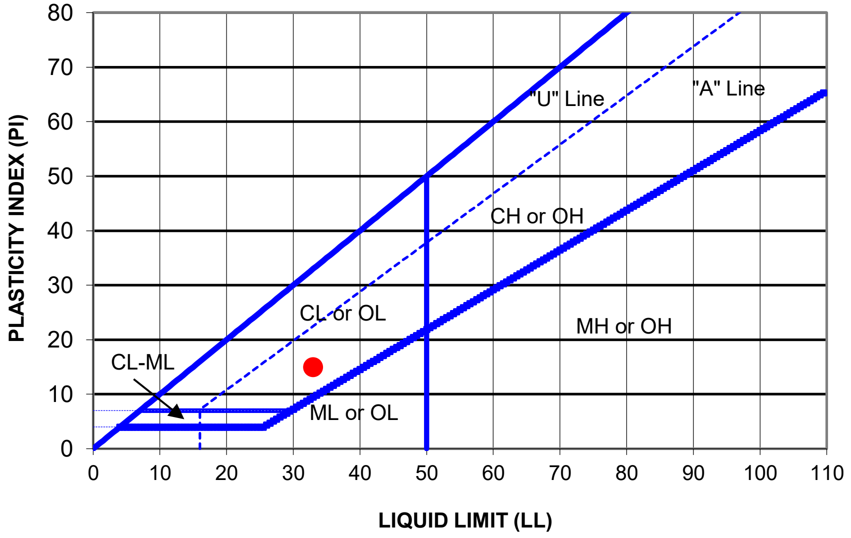
ASTM DESCRIPTION	AASHTO CLASSIFICATION	AASHTO GI
Clayey Gravel with Sand, GC	**A-2-6**	**1**

GRAIN SIZE DISTRIBUTION CURVE

U.S. STANDARD SIEVE OPENINGS IN INCHES & STANDARD SIEVE NUMBERS



PLASTICITY CHART



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JOB NO: 25-15077

BORING NO. B-5

SAMPLE NO. S-2

DEPTH (FT) 2 to 3.5

PLASTIC LIMIT 18

LIQUID LIMIT 34

PLASTICITY INDEX 16

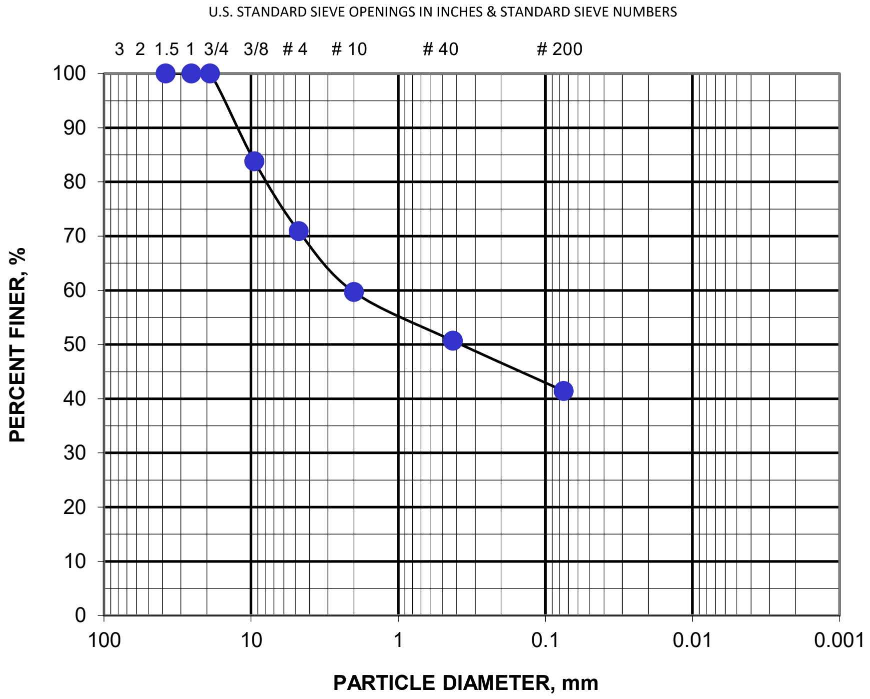
SIEVE SIZE	PERCENT PASSING
3.00"	100.0%
1.50"	100.0%
1.00"	100.0%
3/4"	100.0%
3/8"	83.8%
No. 4	70.9%
No. 10	59.7%
No. 40	50.7%
No. 200	41.4%

MOISTURE CONTENT (%) 18.2

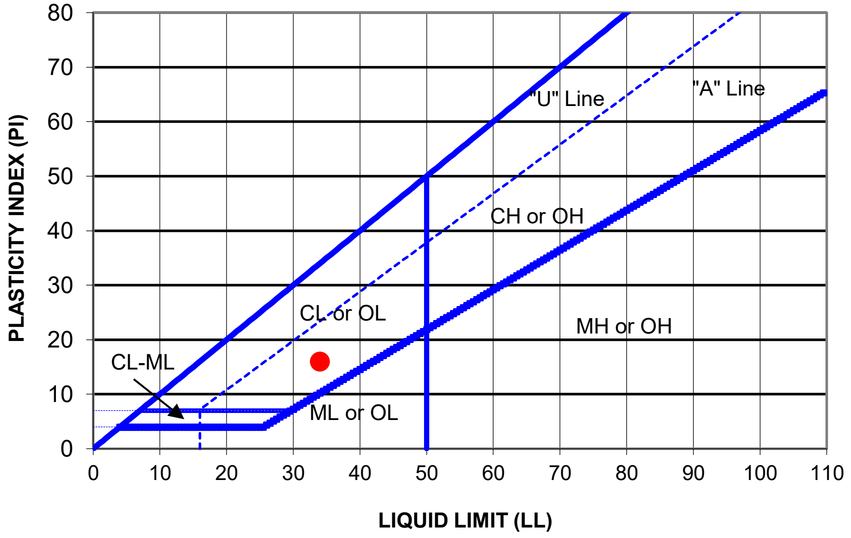
VISUAL DESCRIPTION red, brown and grey, with ferrous nodules

ASTM DESCRIPTION	AASHTO CLASSIFICATION	AASHTO GI
Clayey Sand with Gravel, SC	**A-6**	**3**

GRAIN SIZE DISTRIBUTION CURVE



PLASTICITY CHART



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BORING NO. B-6

SAMPLE NO. S-3

DEPTH (FT) 3.5 to 5

PLASTIC LIMIT 27

LIQUID LIMIT 53

PLASTICITY INDEX 26

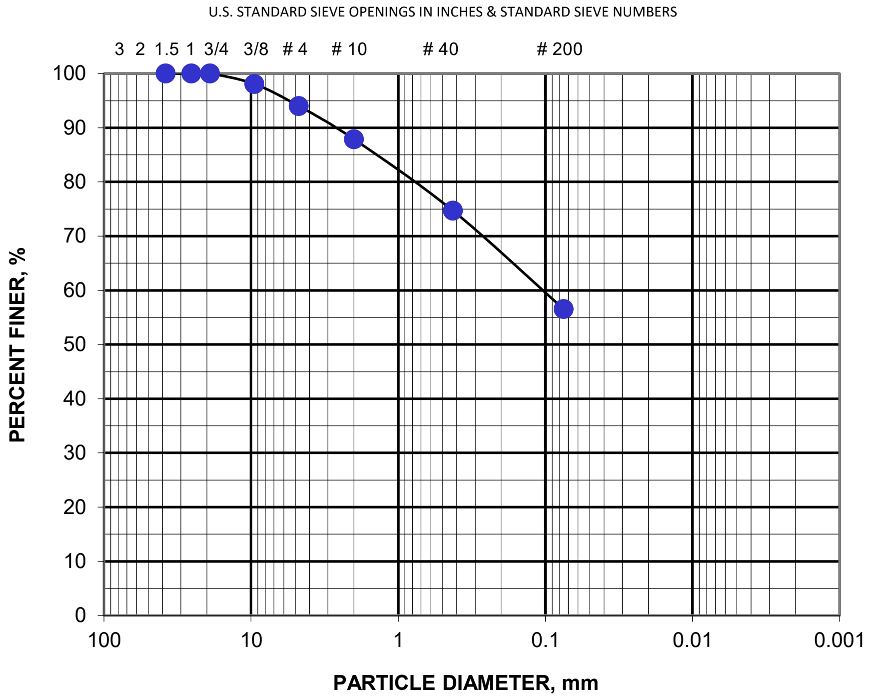
SIEVE SIZE	PERCENT PASSING
3.00"	100.0%
1.50"	100.0%
1.00"	100.0%
3/4"	100.0%
3/8"	98.1%
No. 4	94.0%
No. 10	87.9%
No. 40	74.7%
No. 200	56.5%

MOISTURE CONTENT (%) 34.6

VISUAL DESCRIPTION red, brown and grey

ASTM DESCRIPTION	AASHTO CLASSIFICATION	AASHTO GI
Sandy Fat Clay, CH	**A-7-6**	**13**

GRAIN SIZE DISTRIBUTION CURVE



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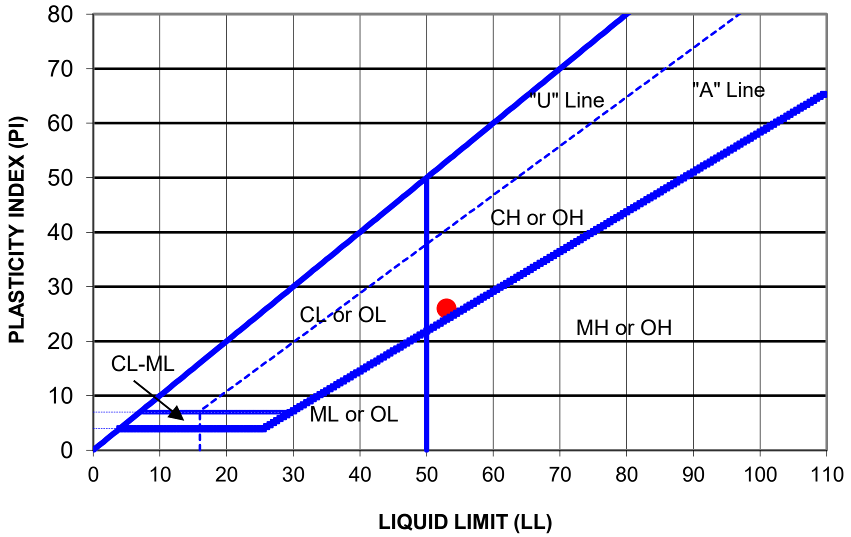

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BORING NO.	B-8
SAMPLE NO.	S-3
DEPTH (FT)	3.5 to 5
PLASTIC LIMIT	27
LIQUID LIMIT	57
PLASTICITY INDEX	30

SIEVE SIZE	PERCENT PASSING
3.00"	100.0%
1.50"	100.0%
1.00"	100.0%
3/4"	100.0%
3/8"	96.9%
No. 4	89.0%
No. 10	83.2%
No. 40	61.8%
No. 200	39.9%

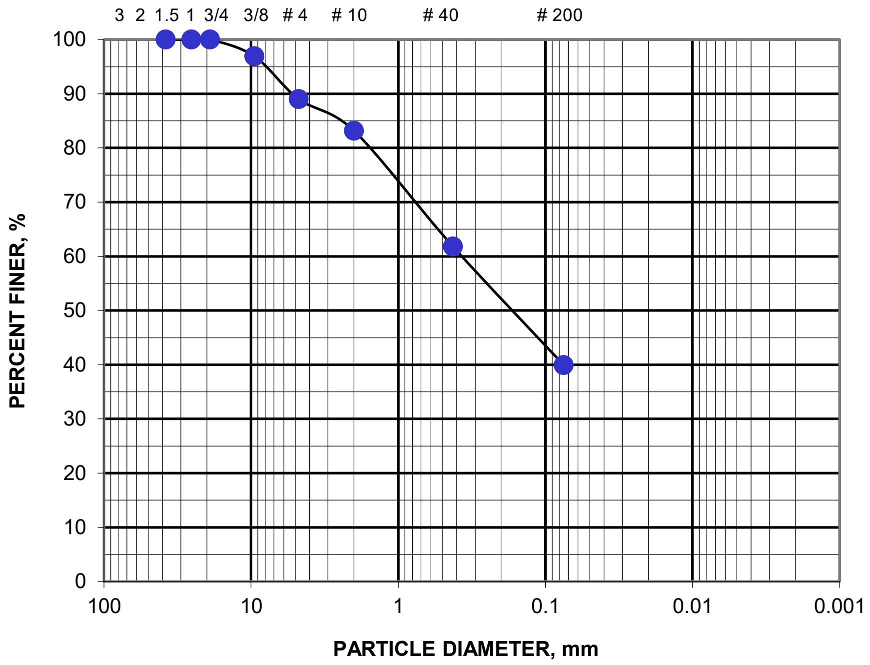
MOISTURE CONTENT (%) 26.2

VISUAL DESCRIPTION	brown, red and grey

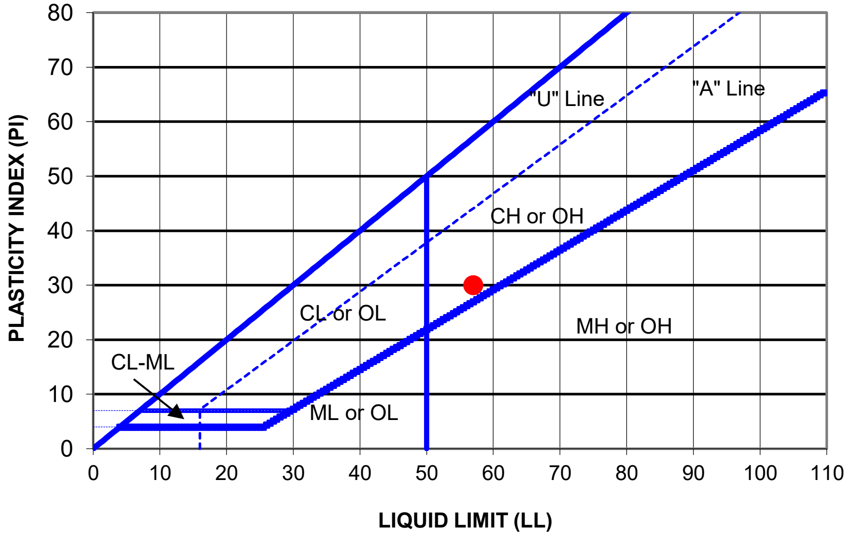
ASTM DESCRIPTION	AASHTO CLASSIFICATION	AASHTO GI
Clayey Sand, SC	A-7-6	6

GRAIN SIZE DISTRIBUTION CURVE

U.S. STANDARD SIEVE OPENINGS IN INCHES & STANDARD SIEVE NUMBERS



PLASTICITY CHART



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BORING NO. B-9

SAMPLE NO. S-2

DEPTH (FT) 2 to 3.5

PLASTIC LIMIT 22

LIQUID LIMIT 44

PLASTICITY INDEX 22

SIEVE SIZE	PERCENT PASSING
3.00"	100.0%
1.50"	100.0%
1.00"	100.0%
3/4"	77.3%
3/8"	64.6%
No. 4	55.8%
No. 10	47.8%
No. 40	38.6%
No. 200	30.3%

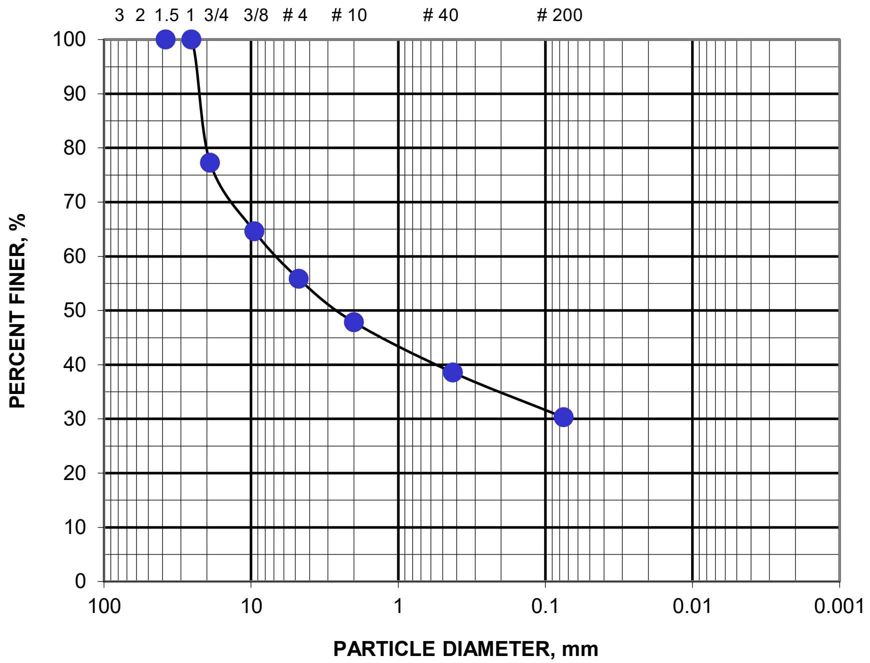
MOISTURE CONTENT (%) 17.2

VISUAL DESCRIPTION red, brown and grey, with fat clay pockets

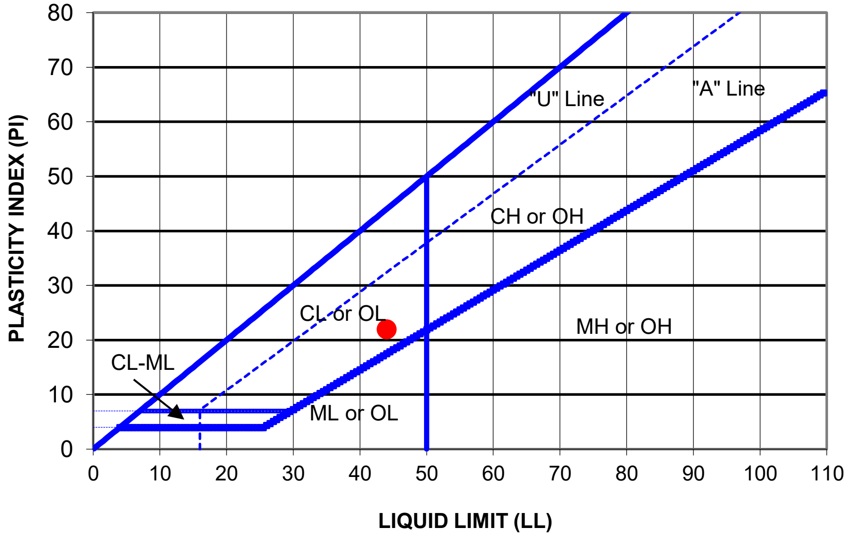
ASTM DESCRIPTION	AASHTO CLASSIFICATION	AASHTO GI
Clayey Gravel with Sand, GC	**A-2-7**	**2**

GRAIN SIZE DISTRIBUTION CURVE

U.S. STANDARD SIEVE OPENINGS IN INCHES & STANDARD SIEVE NUMBERS



PLASTICITY CHART



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BORING NO. B-10

SAMPLE NO. S-3

DEPTH (FT) 3.5 to 5

PLASTIC LIMIT 23

LIQUID LIMIT 41

PLASTICITY INDEX 18

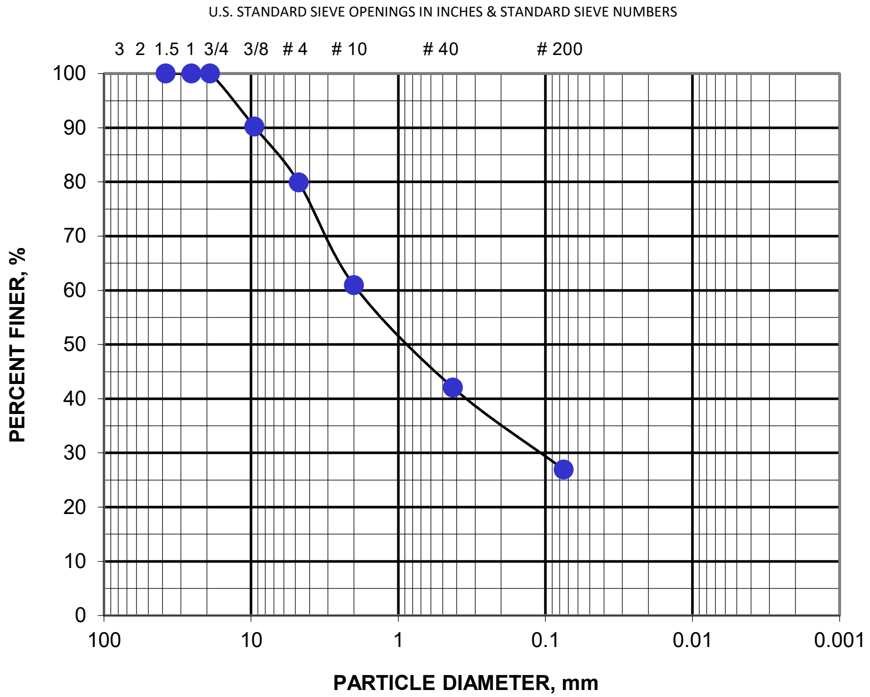
SIEVE SIZE	PERCENT PASSING
3.00"	100.0%
1.50"	100.0%
1.00"	100.0%
3/4"	100.0%
3/8"	90.2%
No. 4	79.9%
No. 10	60.9%
No. 40	42.1%
No. 200	26.9%

MOISTURE CONTENT (%) 16.8

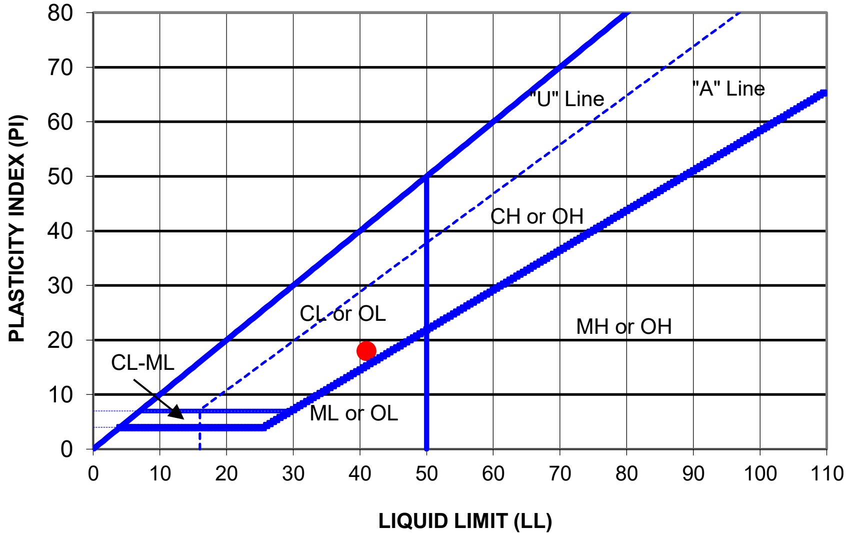
VISUAL DESCRIPTION red, brown and grey

ASTM DESCRIPTION	AASHTO CLASSIFICATION	AASHTO GI
Clayey Sand with Gravel, SC	**A-2-7**	**1**

GRAIN SIZE DISTRIBUTION CURVE



PLASTICITY CHART



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BORING NO.	B-11
SAMPLE NO.	S-3
DEPTH (FT)	3.5 to 5
PLASTIC LIMIT	28
LIQUID LIMIT	54
PLASTICITY INDEX	26

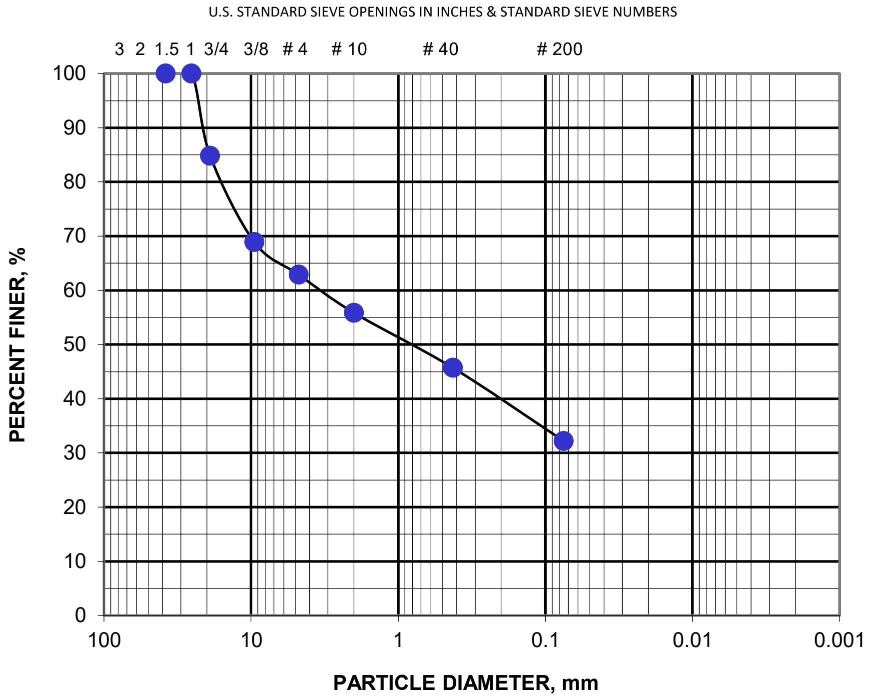
SIEVE SIZE	PERCENT PASSING
3.00"	100.0%
1.50"	100.0%
1.00"	100.0%
3/4"	84.9%
3/8"	68.9%
No. 4	62.9%
No. 10	55.9%
No. 40	45.7%
No. 200	32.2%

MOISTURE CONTENT (%) 24.3

VISUAL DESCRIPTION brown and red, with chert fragments

ASTM DESCRIPTION	AASHTO CLASSIFICATION	AASHTO GI
Clayey Gravel with Sand, GC	**A-2-7**	**3**

GRAIN SIZE DISTRIBUTION CURVE



PLASTICITY CHART