

**Subsurface Exploration, and
Pavement Recommendations
Heritage Mill South – Phase 4
Hutto, Williamson County, Texas**

Terradyne Project No.: A241147-R2

**Ms. Hannah Burton
Brohn Homes
6720 Vaught Ranch Road, Suite 200
Austin, Texas 78730**

December 18, 2024



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Brohn Homes
6720 Vaught Ranch Road
Suite 200
Austin, Texas 78730

Attn: Ms. Hannah Burton- Land Development Project Manager

Re: **Subsurface Exploration, and Pavement Recommendations**
Heritage Mill South – Phase 4
Hutto, Williamson County, Texas
Terradyne Project No.: A241147-R2

Dear Ms. Burton:

Terradyne Engineering, Inc. Terradyne has completed a soil and foundation engineering report at the above referenced project site. The results of the exploration are presented in this report.

We appreciate and wish to thank you for the opportunity to service you on this project. Please do not hesitate to contact us if we can be of additional assistance during the Construction Materials Testing and Quality Control phases of construction.

Respectfully Submitted,

Terradyne Engineering, Inc.
Texas Firm Registration No. F-6799


John A. Gunter, M.S., P.E. 11/08/2024
Chief Engineer


Lana AL Dulaimy, E.I.T.
Geotechnical Project Engineer

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EXECUTIVE SUMMARY

The soil conditions at the site of the proposed residential roadways for Heritage Mill South – Phase 4 in Hutto, Williamson County, Texas were explored by drilling 49 borings to a maximum depth of approximately 15 feet below the existing ground surface elevation. Laboratory tests were performed on selected soil samples to evaluate the engineering characteristics of the soil strata encountered in the borings. This investigation is preliminary in nature and based on a very limited number of borings.

The results of the exploration, laboratory testing, and engineering evaluation indicate the soils underlying this site have high expansive characteristics and the pavement design is provided herein based on these parameters.

Groundwater was not encountered in the borings during drilling operations. Detailed descriptions of subsurface conditions, engineering analysis and design recommendations are included in this report.

This summary does not contain all the information that is included in the full report. The report should be read in its entirety to obtain a more complete understanding of the information provided. Any amendment and/or revisions per request **must** be issued in writing by Terradyne.

1.0 INTRODUCTION

This report presents the results of the preliminary subsurface exploration and proposed residential local and collector streets for Heritage Mill South – Phase 4 in Hutto, Williamson County, Texas. The services of Terradyne, were authorized on September 6, 2024 by Ms. Hannah Burton, Land Development Project Manager of Brohn Homes by approving Terradyne proposal No: AP241160 dated September 4, 2024.

2.0 PURPOSE AND SCOPE OF SERVICES

The purpose of the preliminary geotechnical investigation was to evaluate the subsurface materials and groundwater conditions of the site and provide geotechnical-engineering recommendations for the design and construction of new residential structures and roadways. The scope of services includes the following:

- 1) Drilling and sampling of 49 borings to a maximum depth of approximately 15 feet below the existing ground surface elevation;
- 2) Observation of the groundwater conditions during drilling operations;
- 3) Performing laboratory tests such as Atterberg limits and moisture content tests;
- 4) Review and evaluation of the field and laboratory test programs during their execution with modifications of these programs, when necessary, to adjust to subsurface conditions revealed by them;
- 5) Compilation, generalization and analysis of the field and laboratory data in relation to the project requirements;
- 6) Development of recommendations for the design, construction, and earthwork phases of project; and
- 7) Consultations with the Prime Professional and members of the design team on findings and recommendations; and preparation of a written geotechnical engineering report for use by the members of the design team in their preparation of design, contract documents, and specifications.

The Scope of Services did not include any environmental assessment for the presence or absence of wetlands and/or hazardous or toxic materials in the soil, surface water, groundwater, or air, in the proximity of this site. Any statements in this report or on the bore hole logs regarding odors, colors or unusual or suspicious items or conditions are strictly for the information of the client.

2.1 Site Description

The subject property is located on the southeast side of F.M. 1660 and County Road 137 intersection in Hutto, Williamson County, Texas. The subject site slopes moderately down towards the south with grass-covered ground. Borings B-1 through B-49 were drilled at/near the following GPS location (Lat. 30.506600°, Long. -97.538570°). An aerial map of the GPS location is included in Figure 1-A.

3.0 GEOTECHNICAL INVESTIGATION

The field exploration to determine the engineering characteristics of the subsurface materials included a reconnaissance of the project site, drilling the borings, and recovering samples. A total of 49 borings were drilled to a maximum depth of 15 feet at the project site.

The soil borings were performed with a drilling rig equipped with a rotary head. Conventional solid stem continuous augers were used to advance the hole and samples of the subsurface materials were sampled using a two-inch O.D. split barrel sampler (ASTM D 1586) or a three-inch O.D. Shelby tube sample (D1587), and Hand Auger. The samples were identified according to depth, encased in polyethylene plastic wrapping to protect against moisture loss, and transported to the laboratory in special containers.

3.1 Field Tests and Measurements

Penetration Tests: During the sampling procedures, standard penetration tests were performed in the borings in conjunction with the split-barrel sampling. The standard penetration value (N) is defined as the number of blows of a 140-pound hammer, falling thirty inches, required to advance the split-spoon sampler one-foot into the soil. The sampler is lowered to the bottom of the drill hole and the number of blows recorded for each of the three successive increments of six inches penetration. The "N" value is obtained by adding the second and third incremental numbers. The results of the standard penetration test indicate the relative density and comparative consistency of the soils, and thereby provide a basis for estimating the relative strength and compressibility of the soil profile components. Also, standard penetration tests were performed on the Shelby tube samples in conjunction with pocket penetrometer (ASTM 1558). The standard penetration value is defined as the effort, in tons per square-foot (tsf) required to advance the probe into the sample ¼ inch. The sampler is lowered to the bottom of the drill hole and the Shelby tube is pushed into the soil at the bottom of the bore hole. When the relatively-undisturbed sample is extracted from the tube the soil is tested with the pocket penetrometer. The results of the penetration tests indicate the relative density and comparative consistency of the soils.

Water Level Measurements: Water level observations were made during the excavation operations and the results are noted on the boring logs. In relatively pervious soils, such as sandy soils, the indicated elevations are considered reliable groundwater levels. In relatively impervious soils, an accurate determination of the groundwater elevation may not be possible even after several days of observation. Seasonal variations, temperature and recent rainfall conditions may influence the level of the groundwater table and the volume of water encountered will depend on the permeability of the soils.

3.2 Boring Logs

A field log was prepared for each boring. The logs include information concerning the samples attempted and recovered, indications of the presence of material (such as calcareous clays, sandy

clay, etc.) and groundwater observations. It also includes an interpretation of the subsurface conditions between samples. Therefore, these logs include both factual and interpretive information.

The final logs represent the interpretation of the contents of the field logs for the purpose delineated by the client. The final logs are included on Figures 2 through 50 in the Illustration Section. A key to classification terms and symbols used on the logs is presented on Figure 51.

3.3 Laboratory Testing Program

In addition to field exploration, a supplemental laboratory-testing program was conducted to determine additional pertinent engineering characteristics of the subsurface materials necessary in evaluating the design parameters of the soil. All phases of the laboratory testing program were conducted in general accordance with the indicated applicable ASTM Specifications as presented in Table No. 1.

Table No. 1 – Laboratory Testing Summary

Laboratory Test	Applicable Test Standard
Liquid Limit, Plastic Limit, & Plasticity Index of Soil	ASTM D-4318
Moisture Content	ASTM D-2216
Material Finer than No. 200	ASTM D-1140
Proctor Compaction Test	ASTM D-698
California Bearing Ratio (CBR)	ASTM D-1883
Corrosion Test Summary	ASTM D-4972
PI Lime Series	Tex – 112 - E
Unconfined Compression Test	ASTM D-2166
Unconsolidated-Undrained Triaxial Compression Test	ASTM D-2850

In the laboratory, each sample was examined and classified by a geotechnical engineer. As a part of this classification procedure, the natural water content of the soil samples was determined. Atterberg limit tests were performed on representative soil samples to determine the plasticity characteristics of the soil strata encountered. The results of these tests are presented on the appropriate boring logs and in the Illustrations.

3.4 General Subsurface Conditions

A review of the *Geologic Atlas of Texas, Austin/Seguin Sheet*¹, indicates that this site is naturally underlain by Fluvial Terrace Deposits (Qt) and Alluvium (Qal) formation. The Fluvial Terrace Deposits (Qt) are stream bed deposits typically consisting of clays, sands, silts, and gravels. Such deposits can contain point bars, cutbanks, oxbows, and abandoned channel segments associated with variations in stream bed activity. As a result, soil profiles in terrace deposit areas may vary greatly over relatively short distances. The Alluvium (Qal) formation which are floodplain deposits generally consist of clay, silt, sand and gravel.

The soils underlying this site may be grouped into five (5) generalized strata. The soil stratigraphy information and the engineering properties of the underlying soils based Terradyne's professional engineering experience are presented on the Boring Logs, Figures 2 through 50.

During the field investigation, subsurface water was not encountered in the borings during drilling. In addition, the soil samples were considered moist. Based upon this information and past projects in the surrounding areas of the site, groundwater is not anticipated to be major concern during construction activities. However, groundwater condition can fluctuate due to seasonal and climatic variations and may be encountered at shallow depths during high precipitation seasons.

4.0 PAVEMENT GUIDELINES

4.1 General

Terradyne understand current plans are that the roadways will likely consist of flexible pavements. Therefore, we have prepared the following recommendations for the design and construction of flexible pavement systems. Terradyne understand the proposed pavements for these subdivision units will be designed and constructed in general accordance with the Williamson County design standards. These guidelines require that streets be designed using the American Association of State Highway and Transportation Officials (AASHTO) "Guide for Design of Pavement Structures".

4.2 Subgrade Design Considerations

Based on the subsurface information obtained at the soil borings drilled along the alignment of the proposed streets, the pavement subgrade soil profile generally consists of a stiff to hard FAT CLAY (CH) or Lean Clay (CL). As a part of any pavement design, the strength of the underlying subgrade must be taken into consideration. This is often accomplished by performing a laboratory California Bearing Ratio (CBR) test to approximate a soil resilient modulus which is utilized in the design. Based upon the findings of the exploratory borings and results of laboratory testing, Terradyne's experience with similar soils in nearby subdivision units,

¹ Source: United States Geological Survey, Geologic Atlas of Texas [Austin/Seguin Sheet], Bureau of Economic Geology, Texas Natural Resource Information System; <http://txpub.usgs.gov/DSS/texasgeology/> (Reprinted 1981).

Terradyne have used a design CBR of approximately 3.2 for the pavements within this development. Per Williamson County Subdivision Regulations, Local Streets are designed for a minimum traffic application of 150,000 18-kip ESALs (ADT=400). Collector Streets are designed for a minimum traffic application of 700,000 18-kip ESALs (ADT=2,000). The following pavement design parameters are required by Williamson County Subdivision Regulations:

Table No. 2

Flexible Pavement Design Parameters	
Reliability, Local Streets, percent	90
Reliability, Collector Streets, percent	90
Initial Serviceability Index	4.2
Terminal Serviceability Index, Local	2.0
Terminal Serviceability Index, Collector	2.5
Standard Deviation	0.45

The Plasticity Index (PI) of the soils underlying the proposed street alignment were tested up to a value of 81. The above referenced County document states that roadbed soil having a PI greater than twenty (20) shall be chemically stabilized with lime.

4.3 Pavement Sections

Based on the data provided to Terradyne, the results of the field and laboratory testing, and the Williamson County guidelines, Terradyne have developed the following minimum structural numbers and structural design values for the pavement sections planned for this project.

Required Structural Number (SN) - Local Streets	= 2.92
Required Structural Number (SN) - Collector Streets	= 3.88
Design CBR Value	= 3.2
Item 340, Asphaltic Concrete Layer Coefficient	= 0.44
Item 247, Type A, Grade 1 or 2 Base Layer Coefficient	= 0.14
Item 260, Lime Stabilized Subgrade Layer Coefficient	= 0.08

Using the above information, the AASHTO design method, and Terradyne's understanding of the Williamson County Flexible Pavement Design Criteria, the following engineered flexible pavement sections are recommended. Options with and without geogrid subgrade reinforcement are presented.

Table No. 3- Local Streets
Recommended Flexible Pavement Sections

Flexible Pavement Section	Thickness in Inches
	Subgrade PI >35
Hot Mix Asphaltic Concrete, Type D	2.0
Aggregate Base	14.0
Lime Stabilized Subgrade	8.0

Table No. 4- Collector Streets
Recommended Flexible Pavement Sections

Flexible Pavement Section	Thickness in Inches
	Subgrade PI >35
Hot Mix Asphaltic Concrete, Type D	2.0
Aggregate Base	16.0
Lime Stabilized Subgrade	8.0

In any areas where pavements are to be constructed, vegetation and all loose or organic material should be stripped and removed from the site. After stripping operations, the subgrade should be proof-rolled with heavy sheep's-foot roller compactor a minimum of **three (3)-passes** to identify soft zones. Any soft zone detected should be removed to a firm subgrade soils and replaced with compacted suitable soils to reach subgrade level. Upon the acceptance of proof-rolling operations the subgrade should be scarified to a depth of six (6) inches, moisture conditioned and compacted to a 95 percent of maximum dry density as determined by ASTM D 698, between optimum and three (3) percentage points above of optimum moisture content. The exposed subgrade should not be allowed to dry out prior to placing structural fill.

4.4 Base Course – WCSR B6

Base material shall conform to Item 247 of the current edition of the TxDOT Standard Specifications for Construction, "Flexible Base". The base material shall be Type A Grade 4, or as approved by the County Engineer. Grade 4 material shall conform to the requirements of Table No. 5 below:

Table. No. 5 – Base Course Gradation Requirements

Master Gradation Sieve Size	Cumulative % Retained
2 1/2"	--
1 3/4"	0
7/8"	10-35
3/8"	30-65
#4	45-75
#40	70-90
#200	87-95

Each layer of base course shall be tested for in-place dry density and measured for compacted thickness. The number and location of all base test samples shall be determined by the County Engineer.

The base shall be prepared and compacted to achieve a minimum of 100% of the maximum (Proctor) dry density or as approved by the County Engineer upon recommendation by the testing laboratory. The maximum lift shall not exceed six inches. The base must be inspected and approved by an Independent Testing Laboratory and a certified copy of the test results furnished to the County Engineer for approval. Prior to the placement of the first lift of base, the stockpile shall be tested for the specifications found in Item 247 Table 1 and the result furnished to the County Engineer for approval.

4.5 Asphaltic Concrete – WCSR B7

Urban roads require a minimum 2 inch wearing surface of HMAC Type D. The mix shall be from a TxDOT certified plant and the mix design shall be submitted to the County Engineer for approval prior to placement of the material.

If Providing mixture Type C or D, use performance grade (PG) binder 70-22. Provide PG binder that does not contain Recycled Engine Oil Bottoms (REOBs) or Poly Phosphoric Acid (PPA). Recycled Asphalt Pavement (RAP) is not permitted for use as a component of the HMACP. The Contractor is also not permitted the use Recycled Asphalt Shingles (RAS) as a component of the HMACP.

If providing mixture Type B, use PG binder 64-22. Provide PG binders that do not contain REOBs or PPA. For subsurface course Type B, the use of twenty percent (20%) RAP is permitted in the mix design. The Contractor is not permitted to use RAS as a component of the HMACP.

Target laboratory molded density is 96.5% for all mixtures without RAP and when using a Texas Gyratory Compactor (TGC) for designing the mixture. When using Superpave Gyratory Compactor (SGC) to design mixtures, submit the SGC mix design to the Engineer for approval.

All mixtures must meet the Hamburg requirement as stated in the table below.

Table No. 6– Hamburg Wheel Test Requirements

High-Temperature Binder Grade	Test Method	Hamburg Wheel Test Requirements*
		Minimum # of Passes @ 0.5" Rut Depth, Tested @122°F
PG 64 or lower	TEX-242-F	7,000
PG 70	TEX-242-F	15,000
PG 76 or higher	TEX-242-F	20,000

** The County Engineer may accept Hamburg Wheel test results for production and placement if no more than 1 of the 5 most recent tests is below the specified number of passes and the failing test is no more than 2,000 passes below the specified number of passes.*

Submit any proposed adjustments or changes to a job mix formula to the County Engineer before production of the new job mix formula.

Unless otherwise approved, provide Type B mixtures that have no less than 4.5% asphalt binder, and TY C and D mixtures with no less than 4.7% binder.

For Mixture Design Verification, provide the Engineer with two 5-gallon buckets of each aggregate stockpile to be used on the project and three gallons of each PG binder to be used on the project. Also provide sufficient quantities of any other additives that will be used in the HMA mixture. This must be done prior to approval of the mix design, unless already performed within a one-year time period.

Prior to allowing production of the trial batch, the Engineer will use the materials provided by the Contractor to perform the following tests to verify the HMA mixture design.

1. Indirect Tensile Test in accordance with Tex-226-F
2. Hamburg Wheel Test in accordance with Tex-242-F
3. Overlay Test in accordance with Tex-248-F
4. Cantabro Test in accordance with Tex-245-F

For mixtures designed with a Texas Gyrotory Compactor (TGC), the Engineer may require that the target laboratory molded density be raised to no more than 97.5% or may lower the design number of gyrations to no less than 35 for mixtures designed with an SGC if any of the following conditions exist.

1. The Indirect Tensile Test results in a value greater than 200 PSI
2. The Hamburg Wheel Test results in a value less than 3.0 mm
3. The Overlay Test results in a value less than 100 cycles

4. The Cantabro Test results in a value of more than 20% loss

In lieu of, or in addition to evaluating the mixture design prior to allowing a trial batch to be produced, the Engineer may also evaluate the mixture produced during the trial batch for compliance with the 4 tests listed above.

Contractor's Quality Control (CQC) test reports shall be submitted to the County Engineer on a daily basis. As a minimum, daily CQC testing on the produced mix shall include: Sieve Analysis TEX-200-F, Asphalt Content TEX-236-F, Hveem Stability TEX-208-F, Laboratory Compacted Density TEX-207-F, and Maximum Specific Gravity TEX-227-F. The number and location of all HMAC tests shall be determined by the County Engineer with a minimum of three, 6-inch diameter field cores secured and tested by the contractor from each day's paving. Each HMAC course shall be tested for in-place density, bituminous content and aggregate gradation, and shall be measured for compacted thickness. The number and location of all HMAC test samples shall be determined by the County Engineer.

Rural roads may use either the specifications found in Section B7.1 or a two-course surface in accordance with Item 316, treatment wearing surface, of the current edition of the TxDOT Standard Specifications for Construction. The type and rate of asphalt and aggregate shall be indicated on the plans as a basis of estimate and shall be determined at the preconstruction conference. Aggregate used in the mix shall be on the TxDOT Quality Monitoring Schedule. Aggregate shall be Type B Grade 4. Gradation tests shall be required for each 300 cubic yards of material placed with a minimum of two tests per each grade per each project. Test results shall be reviewed by the County Engineer prior to application of the material.

4.6 Lime Stabilized Subgrade – WCSR B5

The preparation of the subgrade shall follow good engineering practices as directed by the County Engineer in conjunction with recommendations outlined in the geotechnical report. When the Plasticity Index (PI) is greater than 20, a sufficient amount of lime shall be added as described in Item 260 of the current edition of the TxDOT Standard Specifications for Construction until the PI is less than 20. If the addition of lime as described in Item 260 is not feasible, an alternate stabilizing design shall be proposed and submitted to the County Engineer for approval. The subgrade shall be prepared and compacted to achieve a dry density per TxDOT Item 132. In addition, proof rolling may be required by the County Engineer.

If Lime is necessary, then a sufficient amount of lime shall be added, as described in Item 260 of the current edition of the TxDOT Standard Specifications for Construction to properly stabilize subgrade. The use of Hydrated lime or lime slurry is approved; however, the use of Pelletized lime is not approved.

Prior to lime stabilization, a sulfate test of in situ soils shall be performed by developer to confirm the appropriate means and methods of stabilization. Provide sulfate test to County Engineer prior to stabilization.

Any variation to the County's stabilization requirements must be approved by the County Engineer.

The subgrade shall be prepared and compacted to achieve a dry density per TxDOT Item 132. In addition, proof rolling may be required by the County Engineer.

The subgrade shall be inspected and approved by an Independent Testing Laboratory and a certified copy of all inspection reports furnished to the County Engineer. The County Engineer must approve the report prior to application of the base material. All density test reports shall include a copy of the work sheet showing the percentage of the maximum dry (Proctor) density. The number and location of all subgrade tests shall be determined by the County Engineer.

4.7 Perimeter Drainage

Perimeter protection must be provided so that water will not infiltrate into the pavement's flexible base or immediate subgrade. If this protection is not provided, Terradyne does not assume responsibility for the pavement integrity. Terradyne recommends one (1) of the following options for accomplishing this:

- Option 1 – Extended curb bearing a minimum of six (6) inches into the subgrade
- Option 2 – Minimum 10 mil polyurethane plastic placed over the subgrade prior to base placement that allows for the plastic to be placed in a manner to protect the base layer after curb has been placed.
- Option 3 – Moisture barrier that extends a minimum of six (6) inches into the subgrade that consists of a minimum six (6) inch wide trench filled with flowable fill.

Failure to provide this protection may cause pavement issues including cracking and potholing. This risk should be discussed with the owner and Civil Engineer for final decision.

5.0 DRAINAGE AND MAINTENANCE

Final drainage is very important for the performance of the pavement. It is vital that the Civil Engineer of record provide adequate drainage along the entire pavement surface so that water is not allowed to pond or enter the base material and eventually pond on the pavement subgrade.

Trenches backfill for utilities should be properly placed and compacted as outlined in this report and in accordance with requirements of local City Standards. Since granular bedding backfill is used for most utility lines, the backfilled trench should be prevented from becoming a conduit and allowing an access for surface or subsurface water to travel toward the new structure. Concrete cut-off collars or clay plugs should be provided where utility lines cross building lines to prevent water traveling in the trench backfill and entering beneath the structure.

6.0 SHORING

Shoring of excavations and design of shoring systems are governed by federal, state, and local regulations. The design of shoring systems on this project is beyond the scope of Terradyne's services. The owner or the contractor should retain a shoring design professional to design shoring systems for excavations on this site.

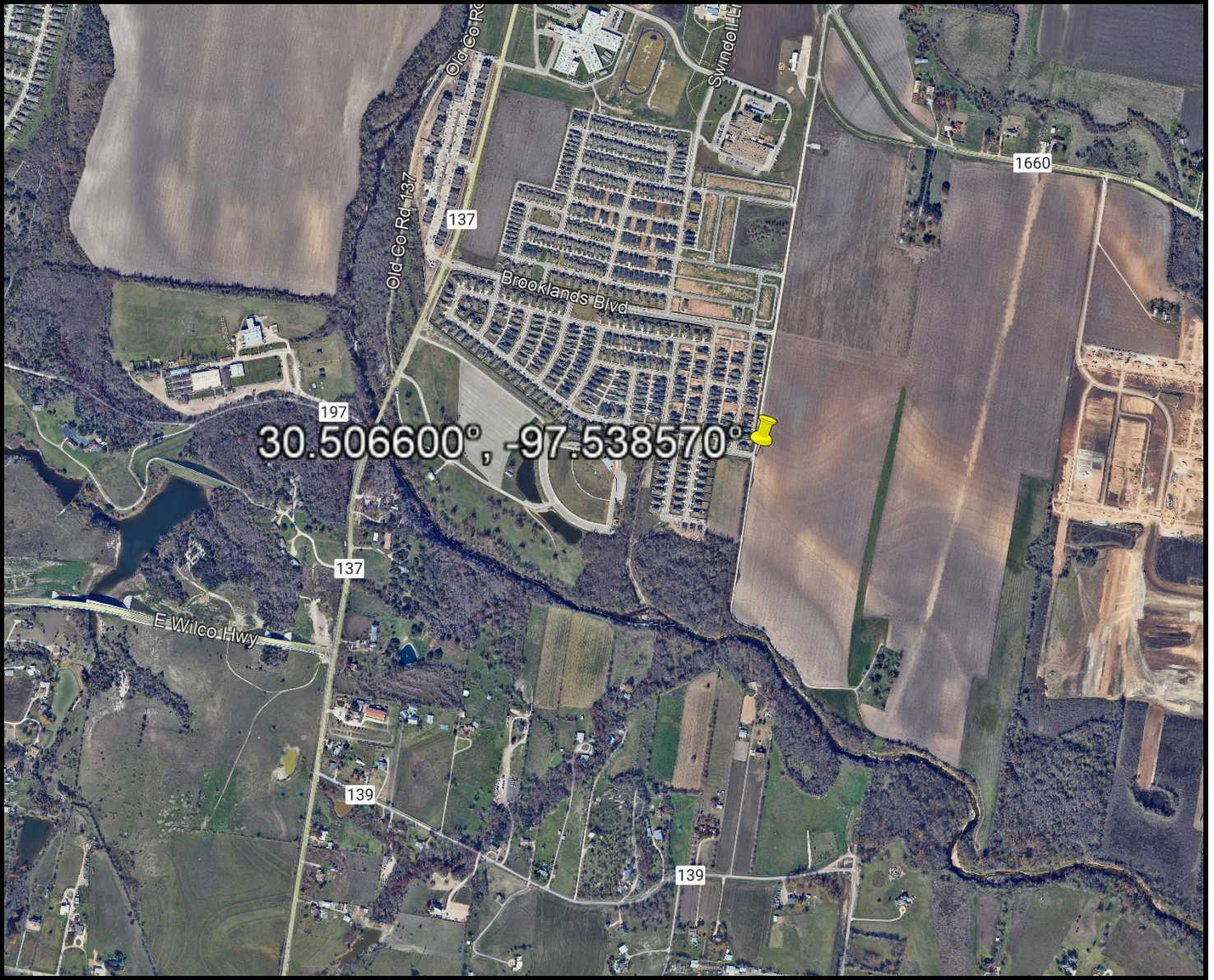
7.0 LIMITATIONS

The analysis and recommendations submitted in this report are based upon the data obtained from the 49 borings drilled at the site. This report is preliminary, and the values presented are for planning purposes only and should not be used for design. This report may not reflect the exact variations of the soil conditions across the site. The nature and extent of variations across the site may not become evident until construction commences. If variations appear evident, it will be necessary to re-evaluate Terradyne's recommendations after performing on-site observations and tests to establish the engineering significance of any variations. The project geotechnical engineer should review the final plan for the proposed building so that he may determine if changes in the foundation recommendations are required. The project geotechnical engineer declares that the findings, recommendations, or professional advice contained herein have been made and this report prepared in accordance with generally accepted professional engineering practice in the fields of geotechnical engineering and engineering geology. No other warranties are implied or expressed.

This report is valid until site conditions change due to disturbance (cut and fill grading) or changes to nearby drainage conditions or for three (3) years from the date of this report, whichever occurs first. Beyond this expiration date, Terradyne shall not accept any liability associated with the engineering recommendations in the report, particularly if the site conditions have changed. If this report is desired for use for design purposes beyond this expiration date, Terradyne highly recommend drilling additional borings so that Terradyne can verify the subsurface conditions and validate the recommendations in this report.

This report has been prepared for the exclusive use of Brohn Homes for the specific application of the proposed residential roadways for Heritage Mill South – Phase 4 in Hutto, Williamson County, Texas.

APPENDIX



Site Latitude and Longitude

Proposed Pavement
Heritage Mill South – Phase 4
Hutto, Williamson County, Texas



TERRADYNE
AUSTIN, TEXAS

Prepared By:
LD

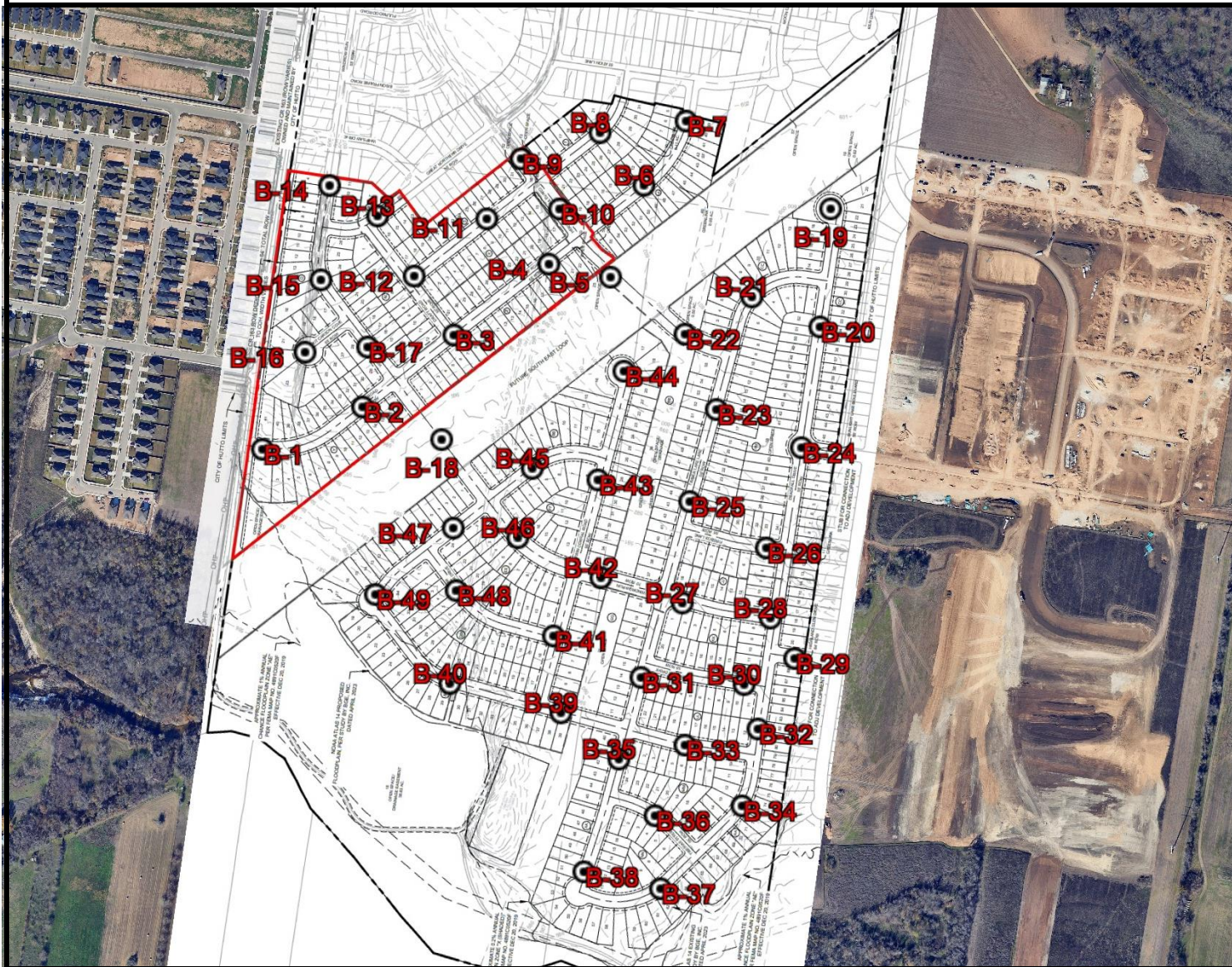
Scale:
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Project #
A241147

Verified By:
JAG

Date:
October 2024

Figure #
1-A



Approximate Location of Exploratory Borings

Proposed Pavement
Heritage Mill South – Phase 4
Hutto, Williamson County, Texas



TERRADYNE
AUSTIN, TEXAS

Prepared By:
LD

Scale:
Not to Scale

Project #
A241147

Base Plan By:
Other

Date:
October 2024

Figure #
1-B

Project: Proposed Pavement	Log of Boring B1
Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas	
Terradyne Project Number: A241147	

Date(s) Drilled October 4, 2024		
Drilling Method Solid Stem Flight		Total Depth of Borehole 15 feet bgs
Drill Rig Type B-34		Approximate Surface Elevation Existing Ground Level
Groundwater Level and Date Measured Not Encountered	Sampling Method(s) Auger, Tube	
Borehole Backfill Soil Cuttings	Location SEE BLP	

Depth (feet)	Sample Type N=blows/ft (SPT) T=inches/100 blows (THD)	PP (tsf)	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Passing #200 Sieve, %	LL, %	PL, %	PI, %	UC, ksf	REMARKS AND OTHER TESTS
0		4.5+		Sandy Lean Clay (CL) - dark brown, hard	11		67	45	20	25		
5		4.5+		Fat Clay with Sand (CH) - brown to gray, hard	11							
10		4.5+			10							
15		4.5+		- light brown, hard	16							
15		4.5+		End of Borehole	12							
20												

Figure 2

Project: Proposed Pavement Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas Terradyne Project Number: A241147	Log of Boring B2
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Date(s) Drilled: October 4, 2024		Total Depth of Borehole: 15 feet bgs
Drilling Method: Solid Stem Flight		Approximate Surface Elevation: Existing Ground Level
Drill Rig Type: B-34		
Groundwater Level and Date Measured: Not Encountered	Sampling Method(s): Auger, Tube	
Borehole Backfill: Soil Cuttings	Location: SEE BLP	

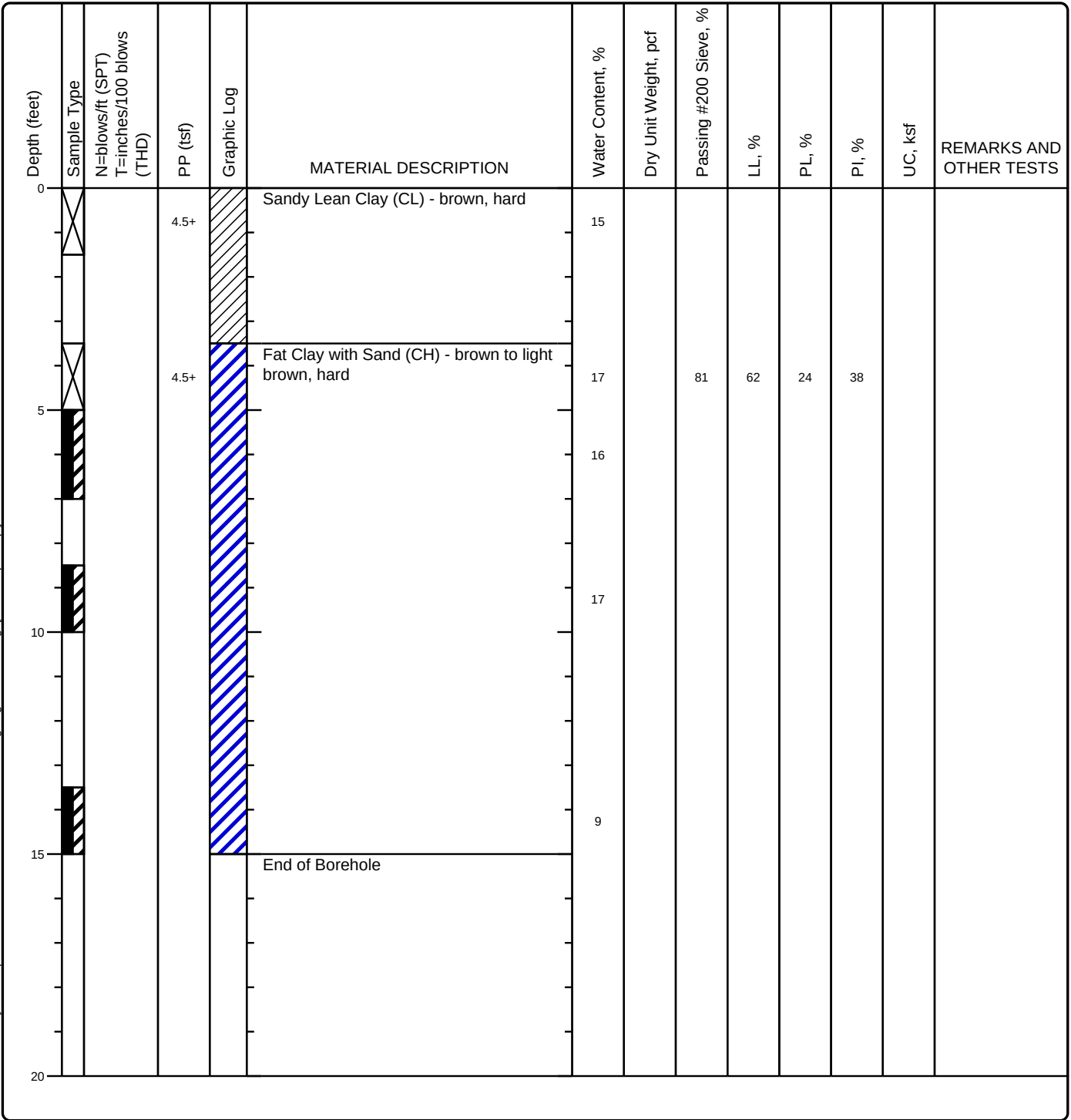


Figure 3

Project: Proposed Pavement	Log of Boring B3
Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas	
Terradyne Project Number: A241147	

Date(s) Drilled October 4, 2024		
Drilling Method Solid Stem Flight		Total Depth of Borehole 15 feet bgs
Drill Rig Type B-34		Approximate Surface Elevation Existing Ground Level
Groundwater Level and Date Measured Not Encountered	Sampling Method(s) Auger, Tube	
Borehole Backfill Soil Cuttings	Location SEE BLP	

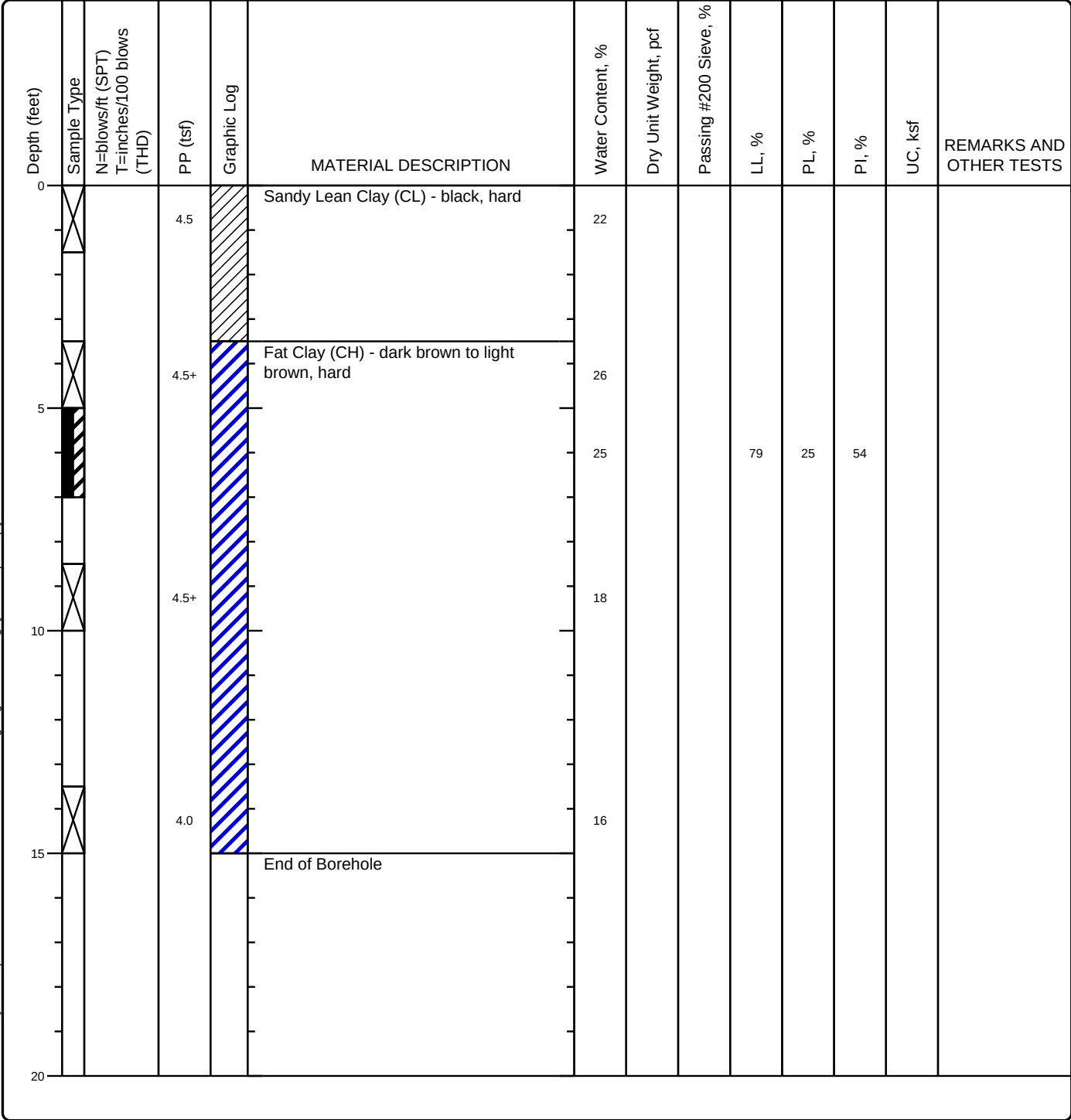


Figure 4

Project: Proposed Pavement Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas Terradyne Project Number: A241147	Log of Boring B4
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Date(s) Drilled: October 4, 2024		Total Depth of Borehole: 15 feet bgs
Drilling Method: Solid Stem Flight		Approximate Surface Elevation: Existing Ground Level
Drill Rig Type: B-34		
Groundwater Level and Date Measured: Not Encountered	Sampling Method(s): Auger, Tube	
Borehole Backfill: Soil Cuttings	Location: SEE BLP	

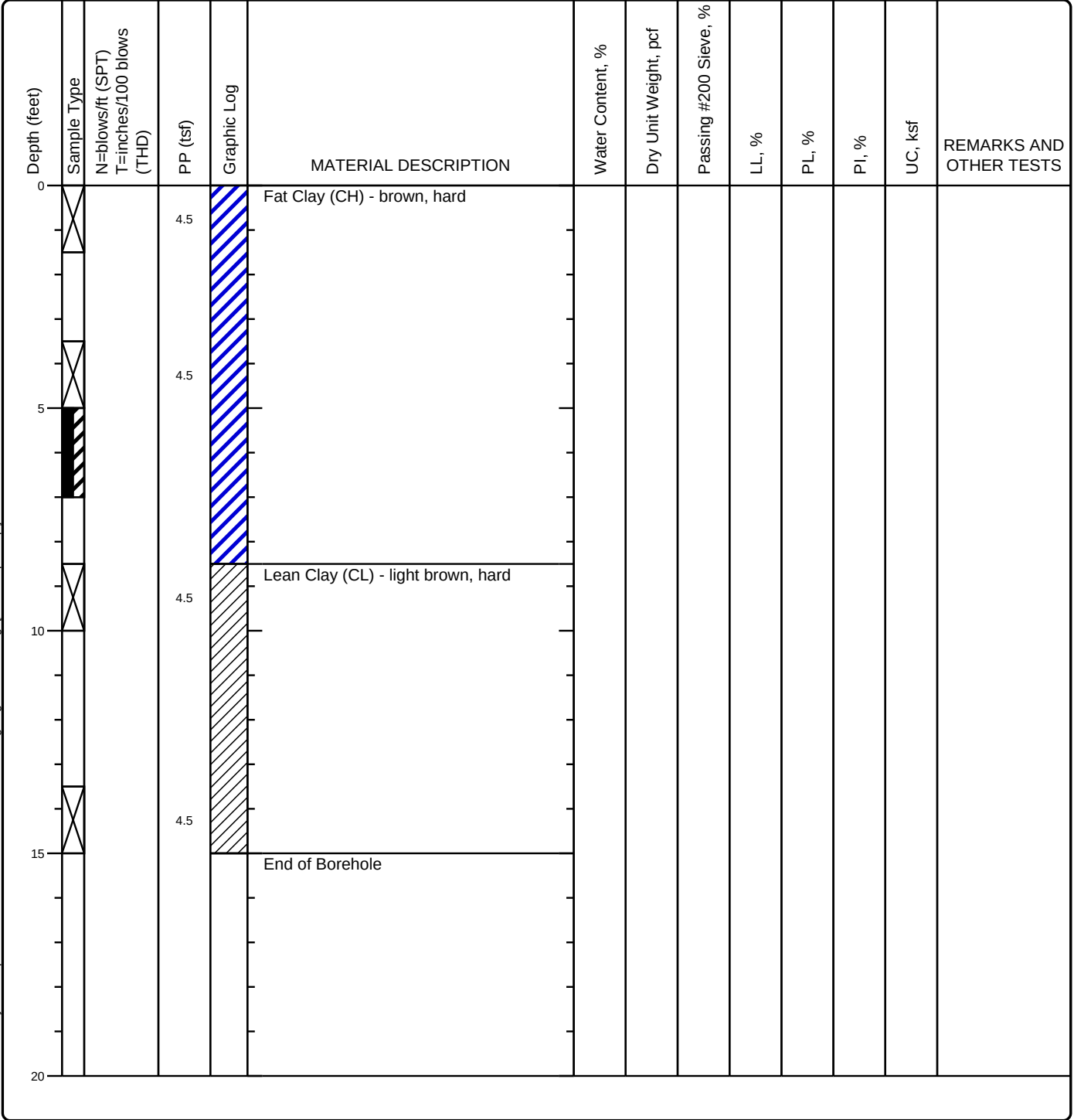


Figure 5

Project: Proposed Pavement Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas Terradyne Project Number: A241147	Log of Boring B5
---	--

Date(s) Drilled: October 4, 2024		Total Depth of Borehole: 15 feet bgs
Drilling Method: Solid Stem Flight		Approximate Surface Elevation: Existing Ground Level
Drill Rig Type: B-34		
Groundwater Level and Date Measured: Not Encountered	Sampling Method(s): Auger, Tube	
Borehole Backfill: Soil Cuttings	Location: SEE BLP	

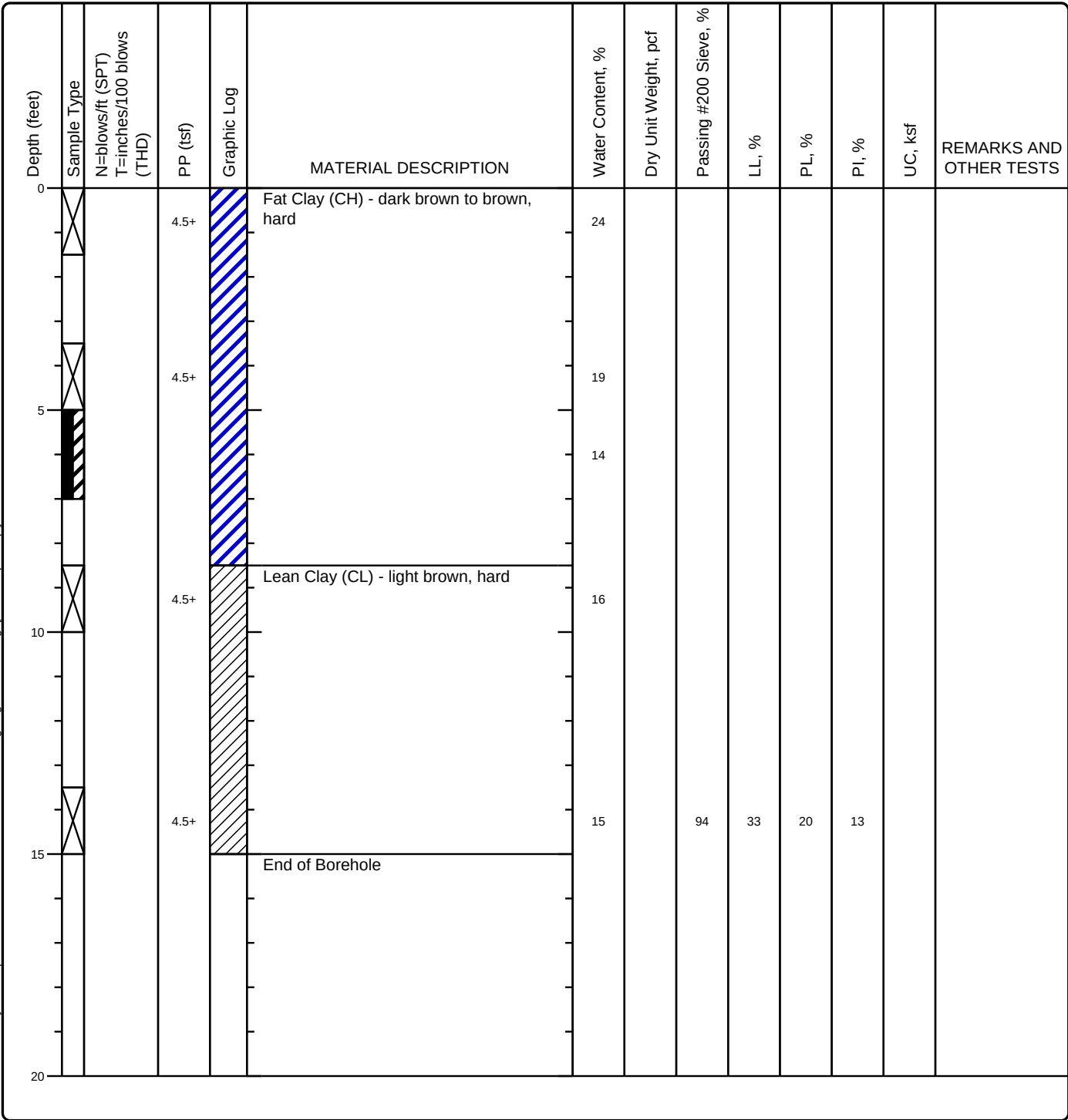


Figure 6

Project: Proposed Pavement Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas Terradyne Project Number: A241147	Log of Boring B6
---	--

Date(s) Drilled: October 4, 2024		Total Depth of Borehole: 15 feet bgs
Drilling Method: Solid Stem Flight		Approximate Surface Elevation: Existing Ground Level
Drill Rig Type: B-34		
Groundwater Level and Date Measured: Not Encountered	Sampling Method(s): Auger, Tube	
Borehole Backfill: Soil Cuttings	Location: SEE BLP	

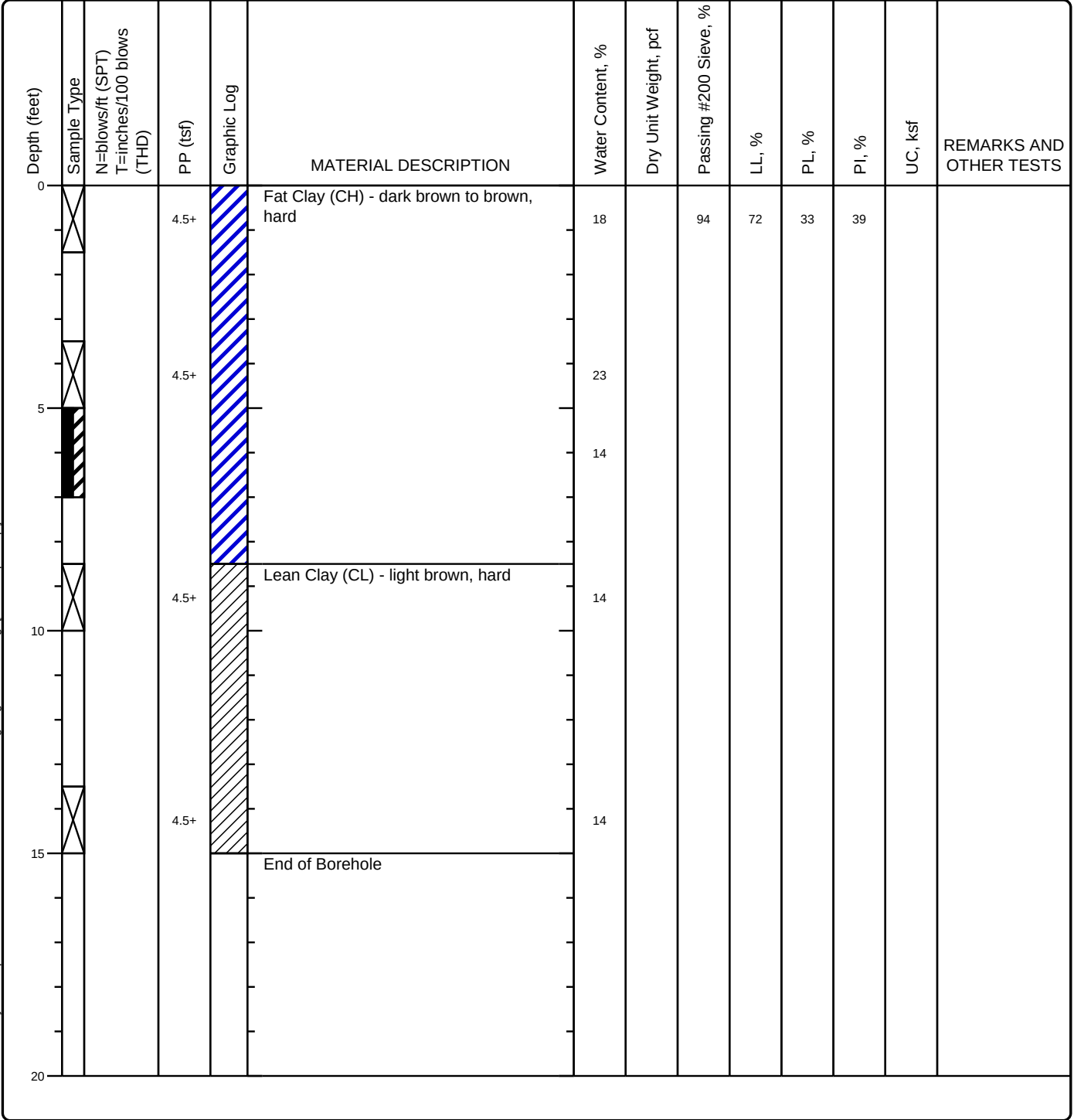


Figure 7

Project: Proposed Pavement	Log of Boring B7
Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas	
Terradyne Project Number: A241147	

Date(s) Drilled October 4, 2024		
Drilling Method Solid Stem Flight		Total Depth of Borehole 15 feet bgs
Drill Rig Type B-34		Approximate Surface Elevation Existing Ground Level
Groundwater Level and Date Measured Not Encountered	Sampling Method(s) Auger, SPT	
Borehole Backfill Soil Cuttings	Location SEE BLP	

Depth (feet)	Sample Type N=blows/ft (SPT) T=inches/100 blows (THD)	PP (tsf)	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Passing #200 Sieve, %	LL, %	PL, %	PI, %	UC, ksf	REMARKS AND OTHER TESTS
0				Fat Clay with Sand (CH) - brown, very stiff	20		81	60	24	36		
5				- brown, medium stiff								
10				Lean Clay (CL) - light brown to brown, medium stiff to very stiff				34	15	19		
15				End of Borehole								
20												

Figure 8

Project: Proposed Pavement Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas Terradyne Project Number: A241147	Log of Boring B8
---	--

Date(s) Drilled: October 4, 2024		Total Depth of Borehole: 15 feet bgs
Drilling Method: Solid Stem Flight		Approximate Surface Elevation: Existing Ground Level
Drill Rig Type: B-34		
Groundwater Level and Date Measured: Not Encountered	Sampling Method(s): Auger, SPT	
Borehole Backfill: Soil Cuttings	Location: SEE BLP	

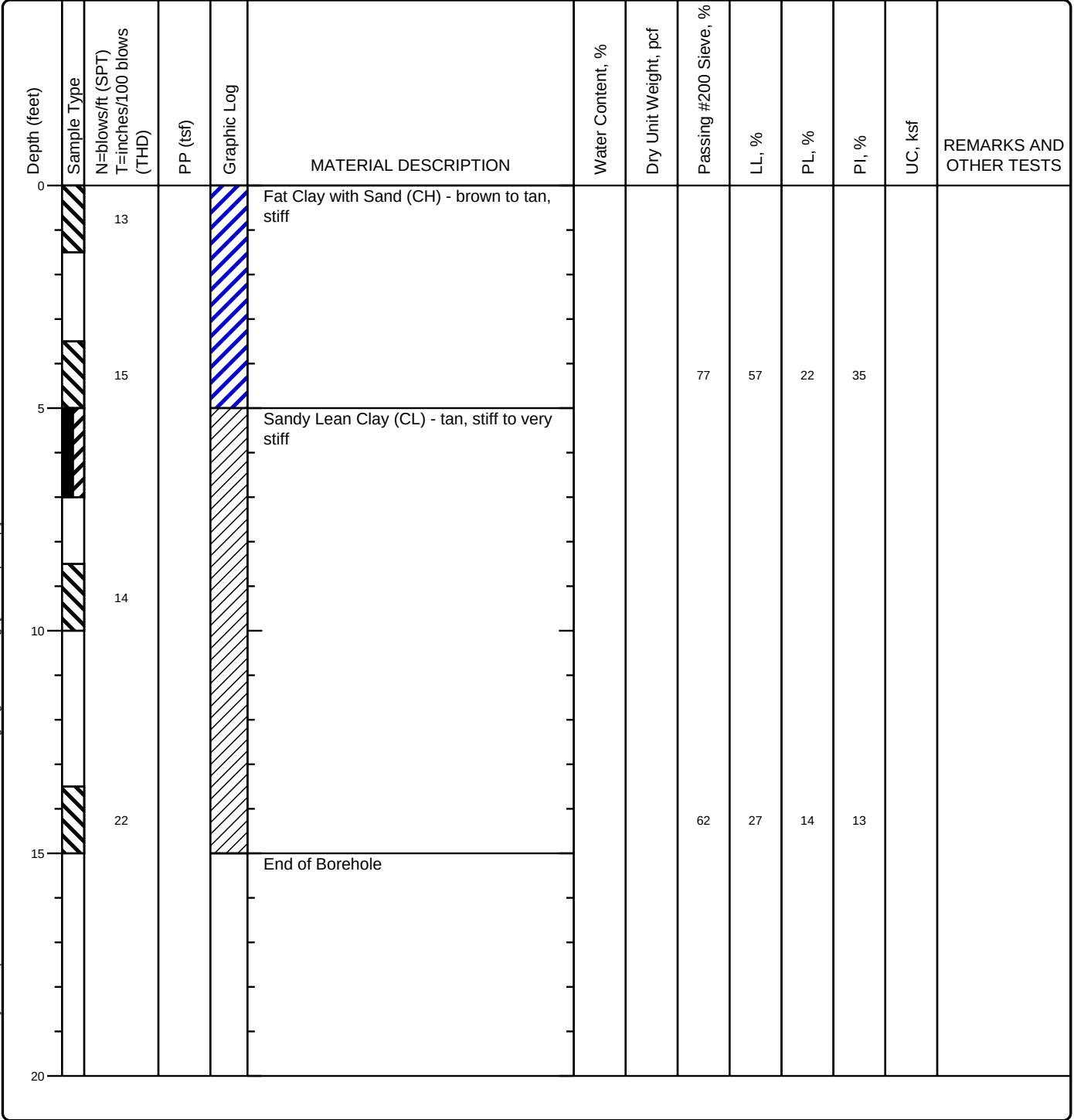


Figure 9

Project: Proposed Pavement Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas Terradyne Project Number: A241147	Log of Boring B9
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Date(s) Drilled: October 4, 2024		Total Depth of Borehole: 15 feet bgs
Drilling Method: Solid Stem Flight		Approximate Surface Elevation: Existing Ground Level
Drill Rig Type: B-34		
Groundwater Level and Date Measured: Not Encountered	Sampling Method(s): Auger, SPT	
Borehole Backfill: Soil Cuttings	Location: SEE BLP	

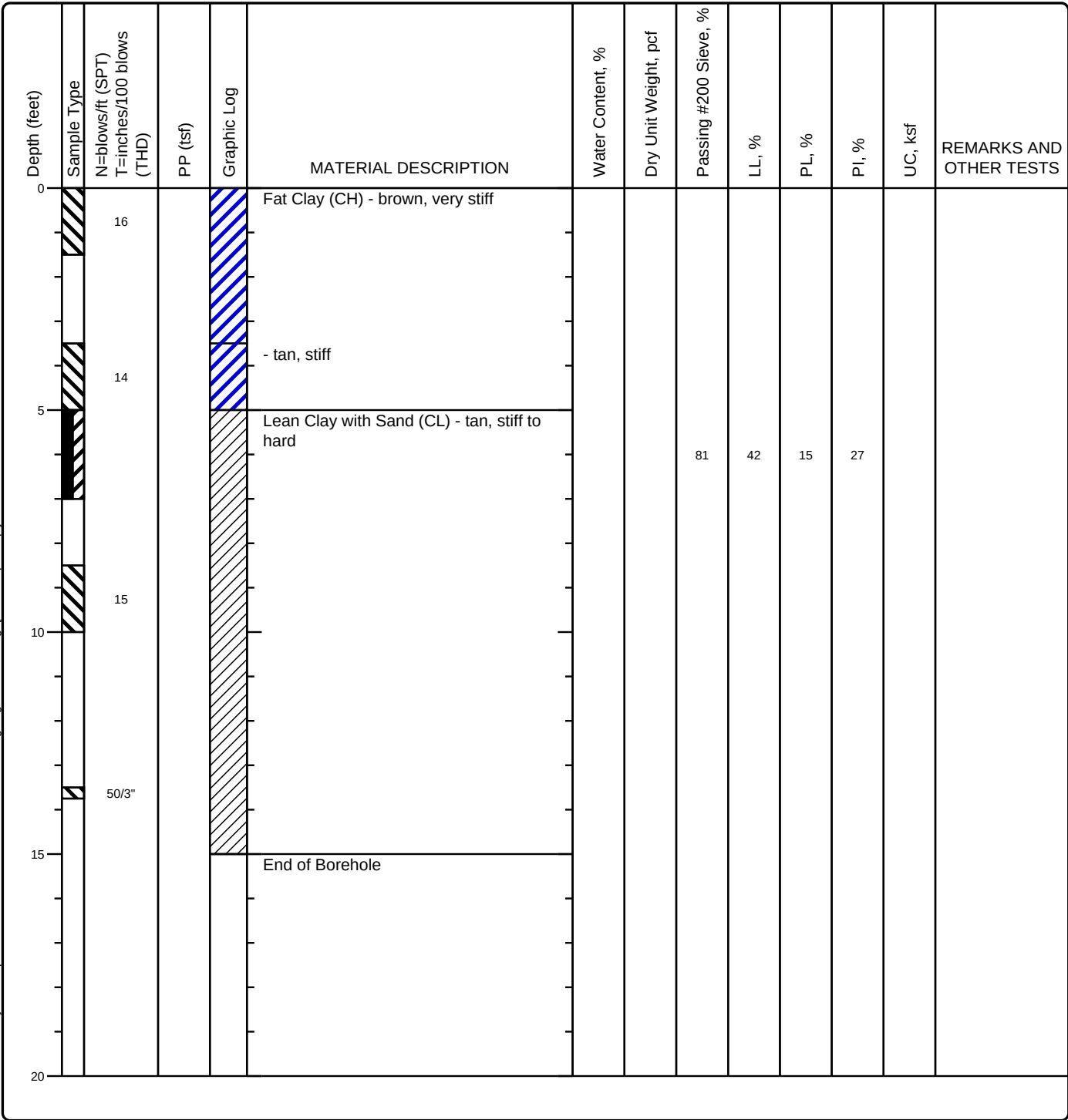


Figure 10

Project: Proposed Pavement Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas Terradyne Project Number: A241147	Log of Boring B10
---	---

Date(s) Drilled: October 4, 2024		Total Depth of Borehole: 15 feet bgs
Drilling Method: Solid Stem Flight		Approximate Surface Elevation: Existing Ground Level
Drill Rig Type: B-34		
Groundwater Level and Date Measured: Not Encountered	Sampling Method(s): Auger, Tube	
Borehole Backfill: Soil Cuttings	Location: SEE BLP	

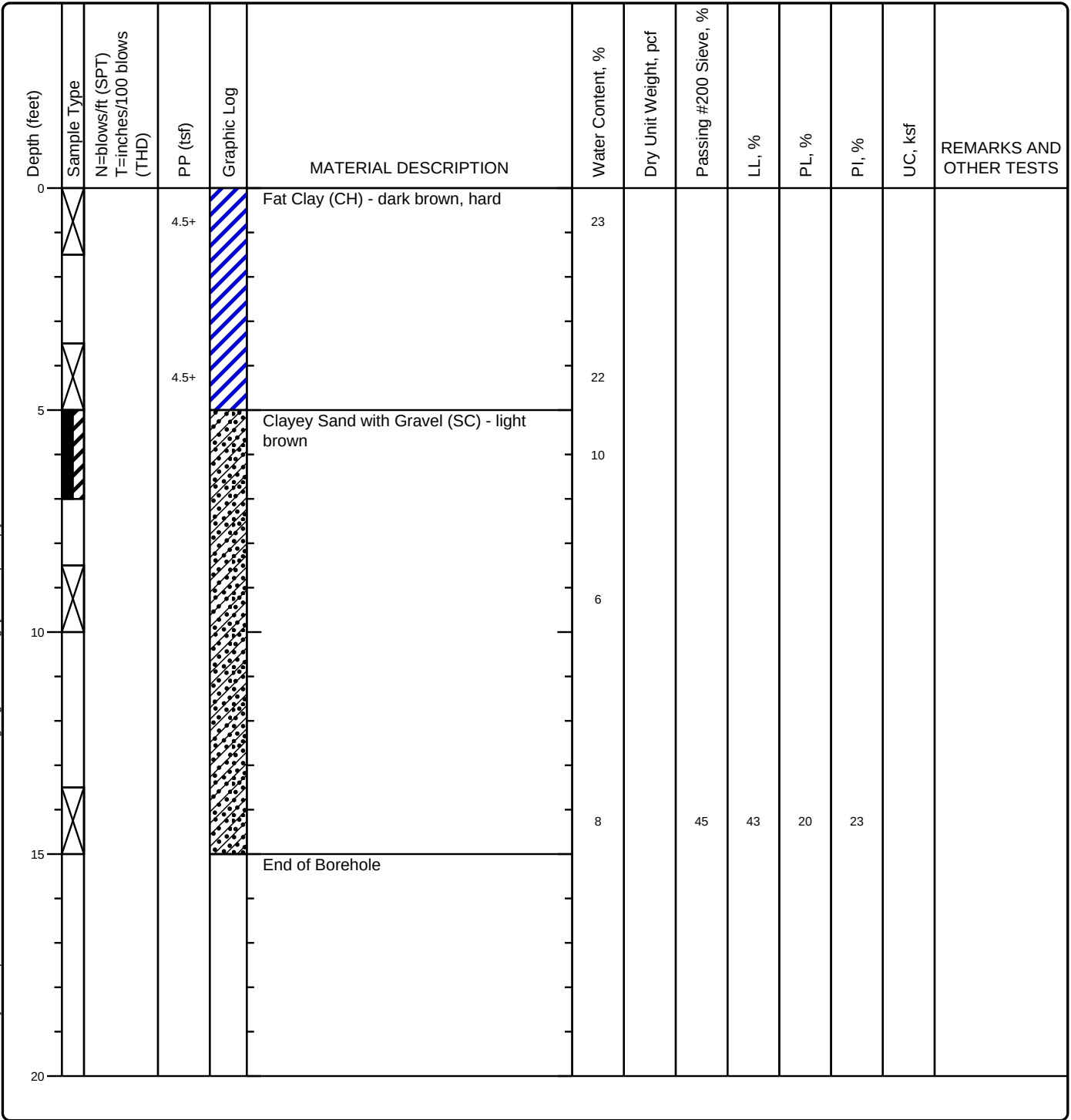


Figure 11

Project: Proposed Pavement Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas Terradyne Project Number: A241147	Log of Boring B11
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Date(s) Drilled: October 4, 2024		Total Depth of Borehole: 15 feet bgs
Drilling Method: Solid Stem Flight		Approximate Surface Elevation: Existing Ground Level
Drill Rig Type: B-34		
Groundwater Level and Date Measured: Not Encountered	Sampling Method(s): Auger, SPT	
Borehole Backfill: Soil Cuttings	Location: SEE BLP	

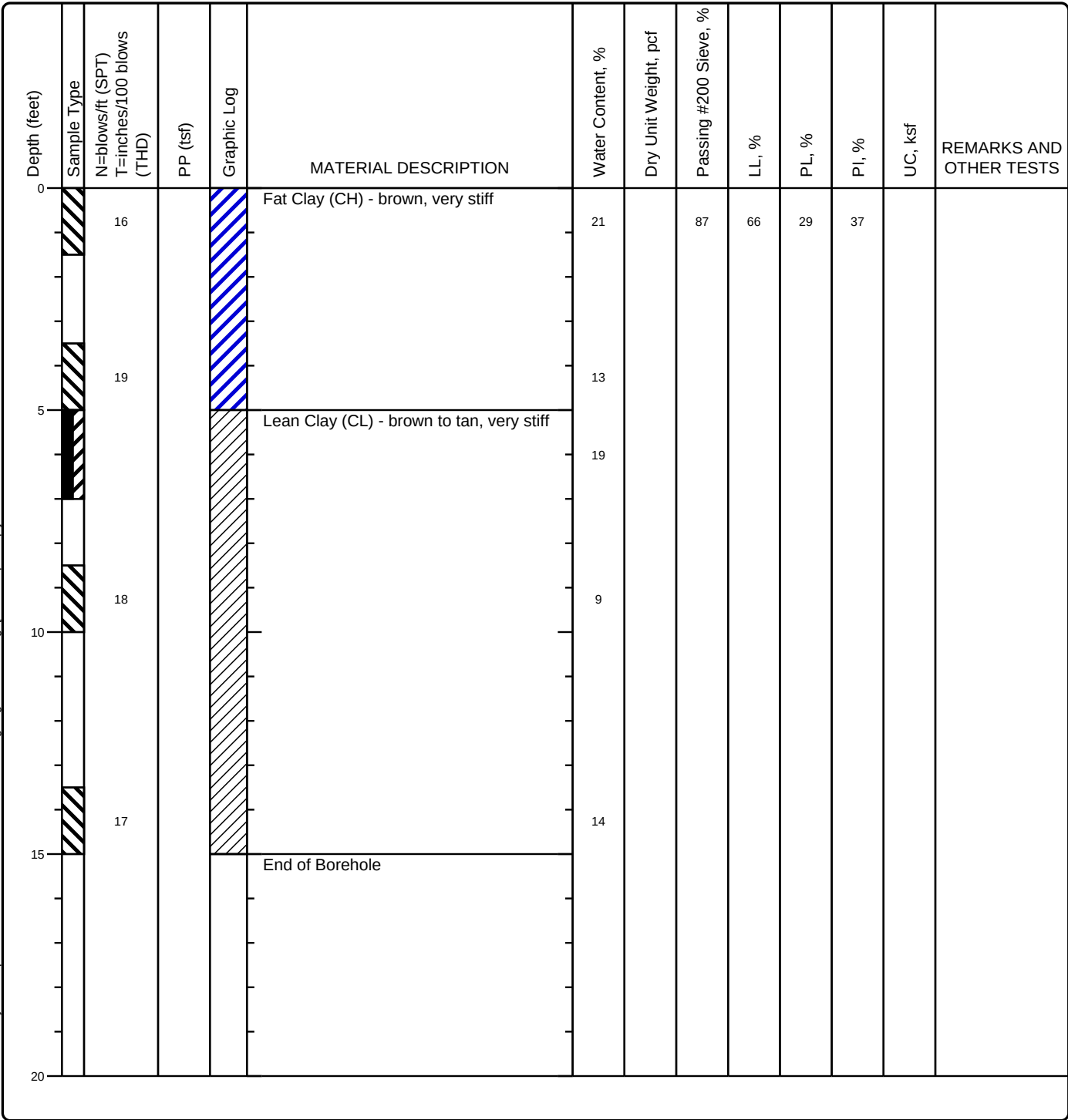


Figure 12

Project: Proposed Pavement	Log of Boring B12
Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas	
Terradyne Project Number: A241147	

Date(s) Drilled October 4, 2024		
Drilling Method Solid Stem Flight		Total Depth of Borehole 15 feet bgs
Drill Rig Type B-34		Approximate Surface Elevation Existing Ground Level
Groundwater Level and Date Measured Not Encountered	Sampling Method(s) Auger, Tube	
Borehole Backfill Soil Cuttings	Location SEE BLP	

Depth (feet)	Sample Type N=blows/ft (SPT) T=inches/100 blows (THD)	PP (tsf)	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Passing #200 Sieve, %	LL, %	PL, %	PI, %	UC, ksf	REMARKS AND OTHER TESTS
0		4.5+		Gravelly Fat Clay with Sand (CH) - dark brown to brown, hard	13							
5				Lean Clay (CL) - light brown, hard	12		58	53	24	29		
10		4.5+			15							
15		4.5+		End of Borehole	13							
20												

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Figure 13

Project: **Proposed Pavement**

Project Location: **Heritage Mill South- Phase 4, Hutto, Williamson County, Texas**

Terradyne Project Number: **A241147**

Log of Boring B13

Date(s) Drilled October 4, 2024		
Drilling Method Solid Stem Flight		Total Depth of Borehole 15 feet bgs
Drill Rig Type B-34		Approximate Surface Elevation Existing Ground Level
Groundwater Level and Date Measured Not Encountered	Sampling Method(s) Auger, SPT	
Borehole Backfill Soil Cuttings	Location SEE BLP	

Depth (feet)	Sample Type N=blows/ft (SPT) T=inches/100 blows (THD)	PP (tsf)	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Passing #200 Sieve, %	LL, %	PL, %	PI, %	UC, ksf	REMARKS AND OTHER TESTS
0				Fat Clay (CH) - dark brown to white, stiff	23		89	63	29	34		
10												
12					13							
5				Lean Clay (CL) - light brown, very stiff	14							
17					14							
10												
15				Clayey Sand with Gravel (SC) - brown, dense	8							
15				End of Borehole								
20												

Figure 14

Project: Proposed Pavement Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas Terradyne Project Number: A241147	Log of Boring B14
---	---

Date(s) Drilled: October 4, 2024		Total Depth of Borehole: 15 feet bgs
Drilling Method: Solid Stem Flight		Approximate Surface Elevation: Existing Ground Level
Drill Rig Type: B-34		
Groundwater Level and Date Measured: Not Encountered	Sampling Method(s): Auger, SPT	
Borehole Backfill: Soil Cuttings	Location: SEE BLP	

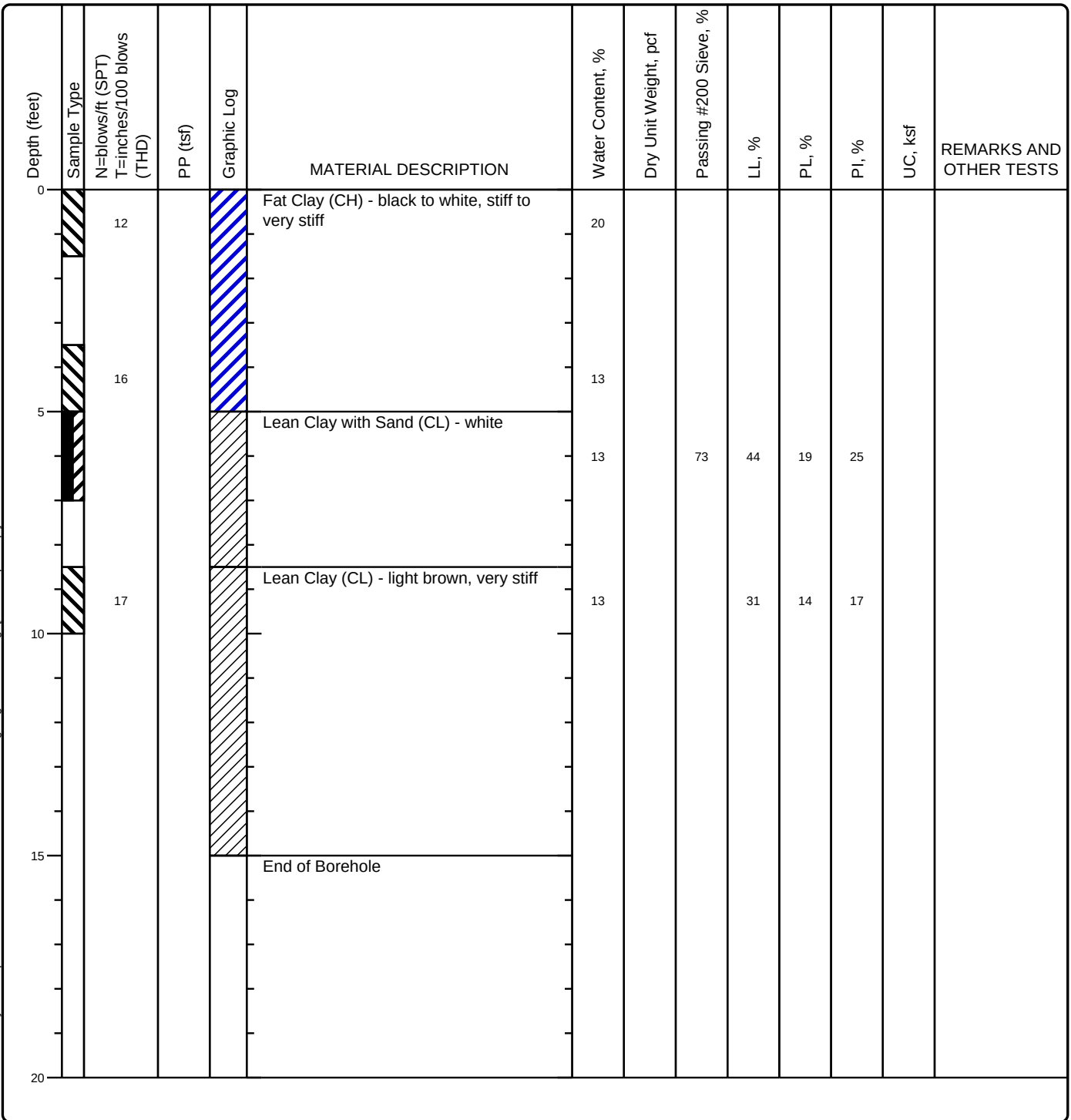


Figure 15

Project: Proposed Pavement Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas Terradyne Project Number: A241147	Log of Boring B15
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Date(s) Drilled: October 4, 2024		Total Depth of Borehole: 15 feet bgs
Drilling Method: Solid Stem Flight		Approximate Surface Elevation: Existing Ground Level
Drill Rig Type: B-34		
Groundwater Level and Date Measured: Not Encountered	Sampling Method(s): Auger, Tube	
Borehole Backfill: Soil Cuttings	Location: SEE BLP	

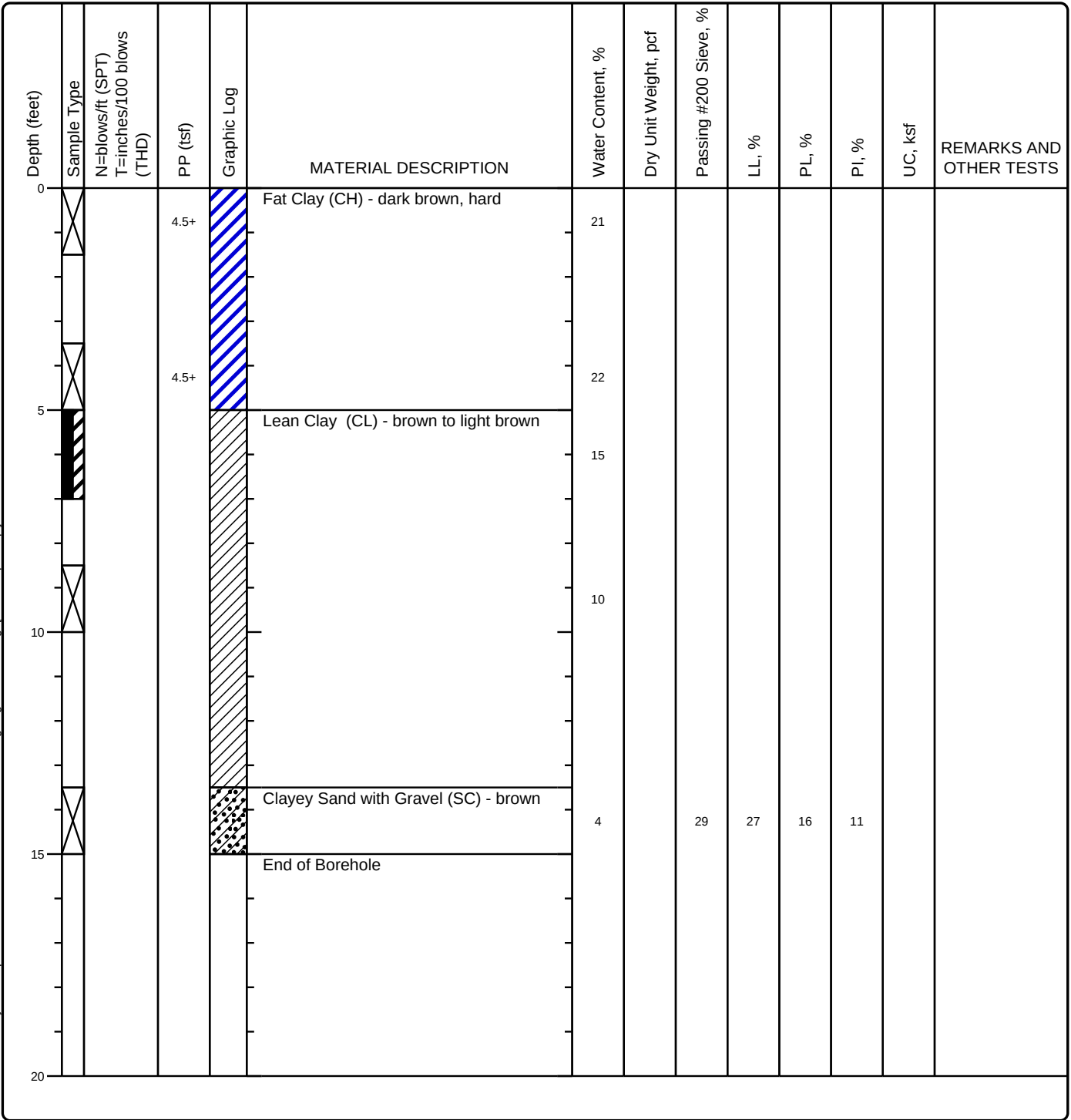


Figure 16

Project: Proposed Pavement Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas Terradyne Project Number: A241147	Log of Boring B16
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Date(s) Drilled: October 4, 2024		Total Depth of Borehole: 15 feet bgs
Drilling Method: Solid Stem Flight		Approximate Surface Elevation: Existing Ground Level
Drill Rig Type: B-34		
Groundwater Level and Date Measured: Not Encountered	Sampling Method(s): Auger, SPT	
Borehole Backfill: Soil Cuttings	Location: SEE BLP	

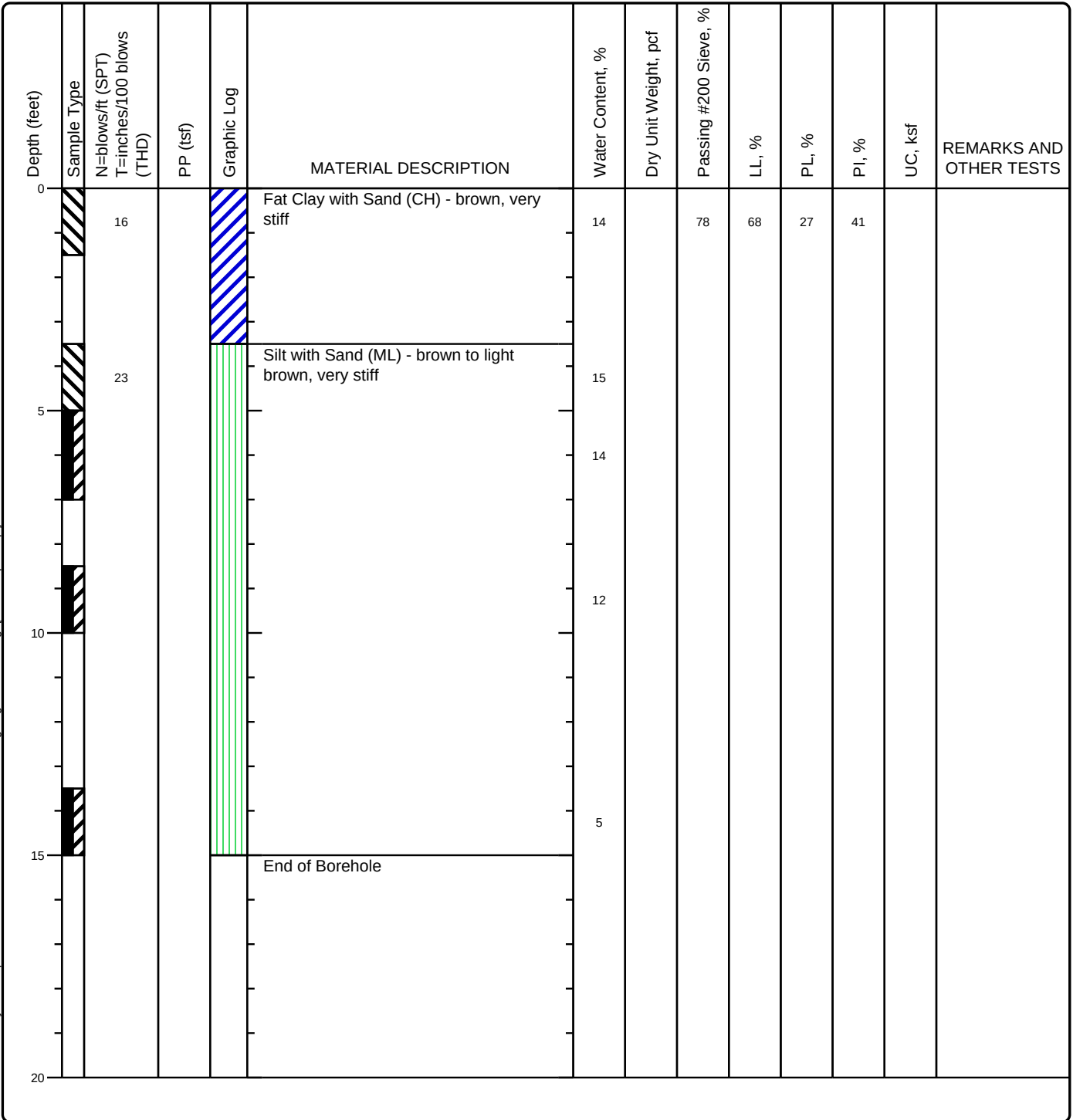


Figure 17

Project: Proposed Pavement Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas Terradyne Project Number: A241147	Log of Boring B17
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Date(s) Drilled: October 4, 2024		Total Depth of Borehole: 15 feet bgs
Drilling Method: Solid Stem Flight		Approximate Surface Elevation: Existing Ground Level
Drill Rig Type: B-34		
Groundwater Level and Date Measured: Not Encountered	Sampling Method(s): Auger, SPT, Tube	
Borehole Backfill: Soil Cuttings	Location: SEE BLP	

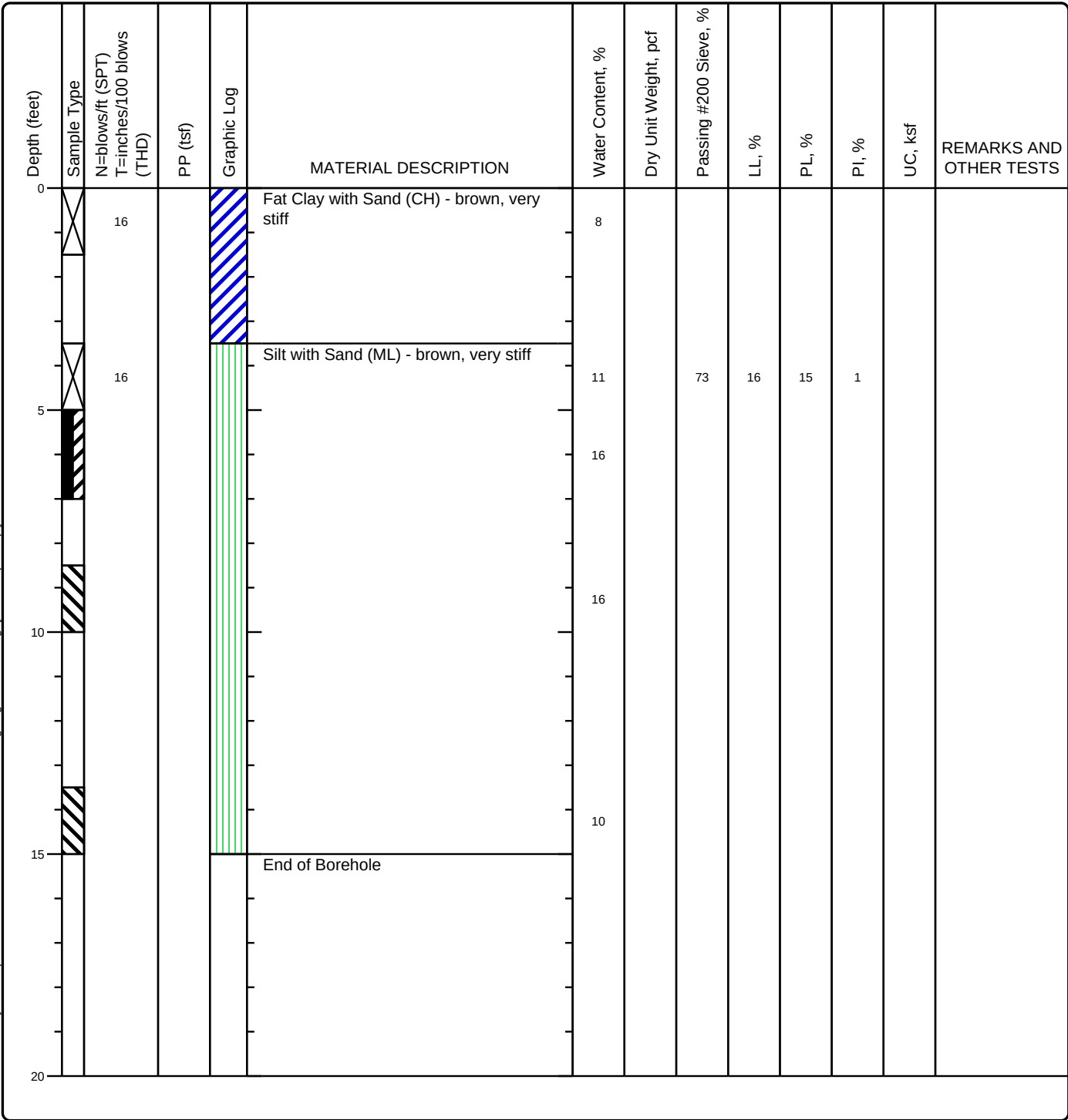


Figure 18

Project: Proposed Pavement Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas Terradyne Project Number: A241147	Log of Boring B18
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Date(s) Drilled: October 4, 2024		Total Depth of Borehole: 15 feet bgs
Drilling Method: Solid Stem Flight		Approximate Surface Elevation: Existing Ground Level
Drill Rig Type: B-34		
Groundwater Level and Date Measured: Not Encountered	Sampling Method(s): Auger, Tube	
Borehole Backfill: Soil Cuttings	Location: SEE BLP	

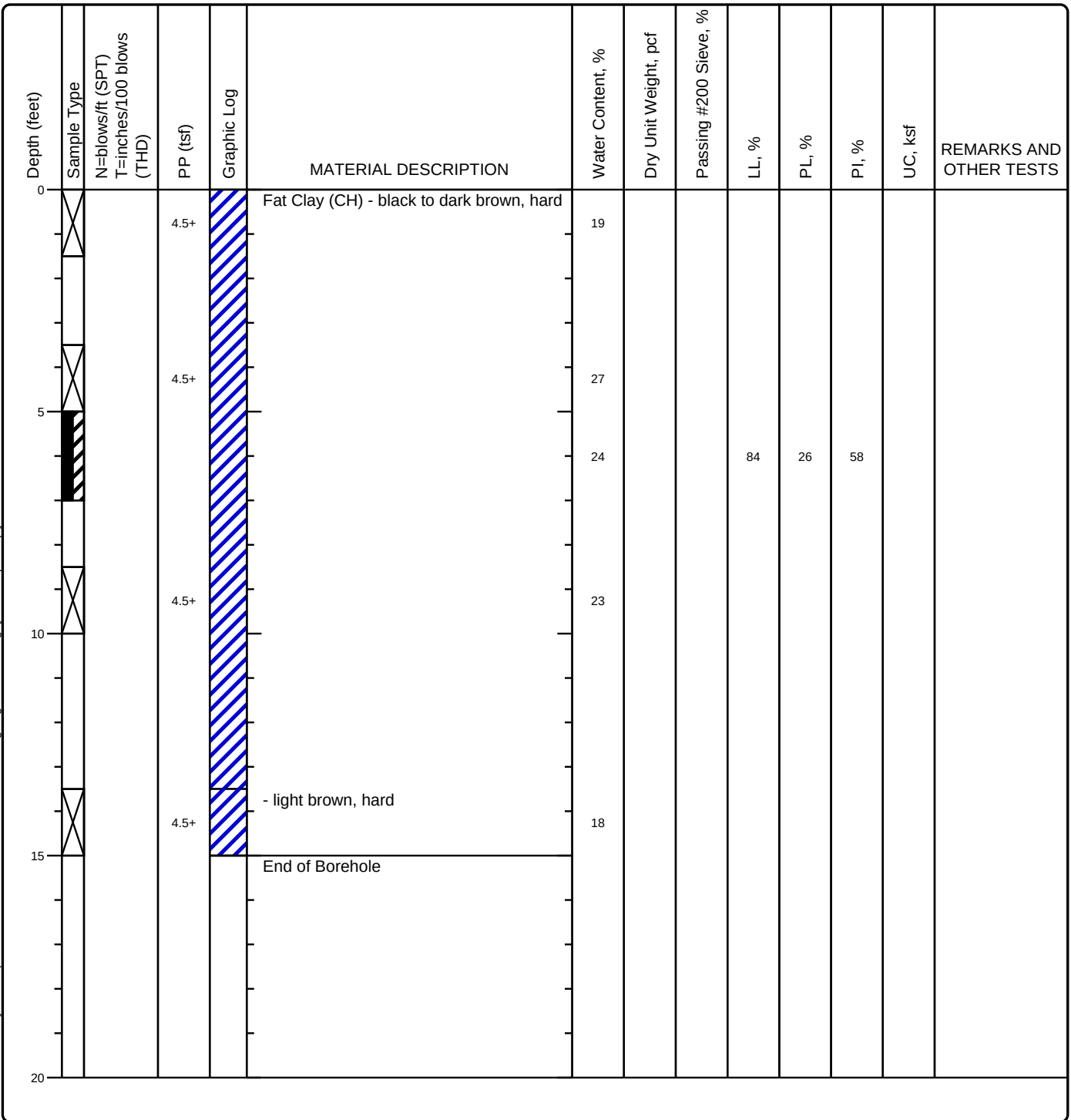


Figure 19

Project: Proposed Pavement Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas Terradyne Project Number: A241147	Log of Boring B19
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Date(s) Drilled: October 4, 2024		Total Depth of Borehole: 15 feet bgs
Drilling Method: Solid Stem Flight		Approximate Surface Elevation: Existing Ground Level
Drill Rig Type: B-34		
Groundwater Level and Date Measured: Not Encountered	Sampling Method(s): Auger, Tube	
Borehole Backfill: Soil Cuttings	Location: SEE BLP	

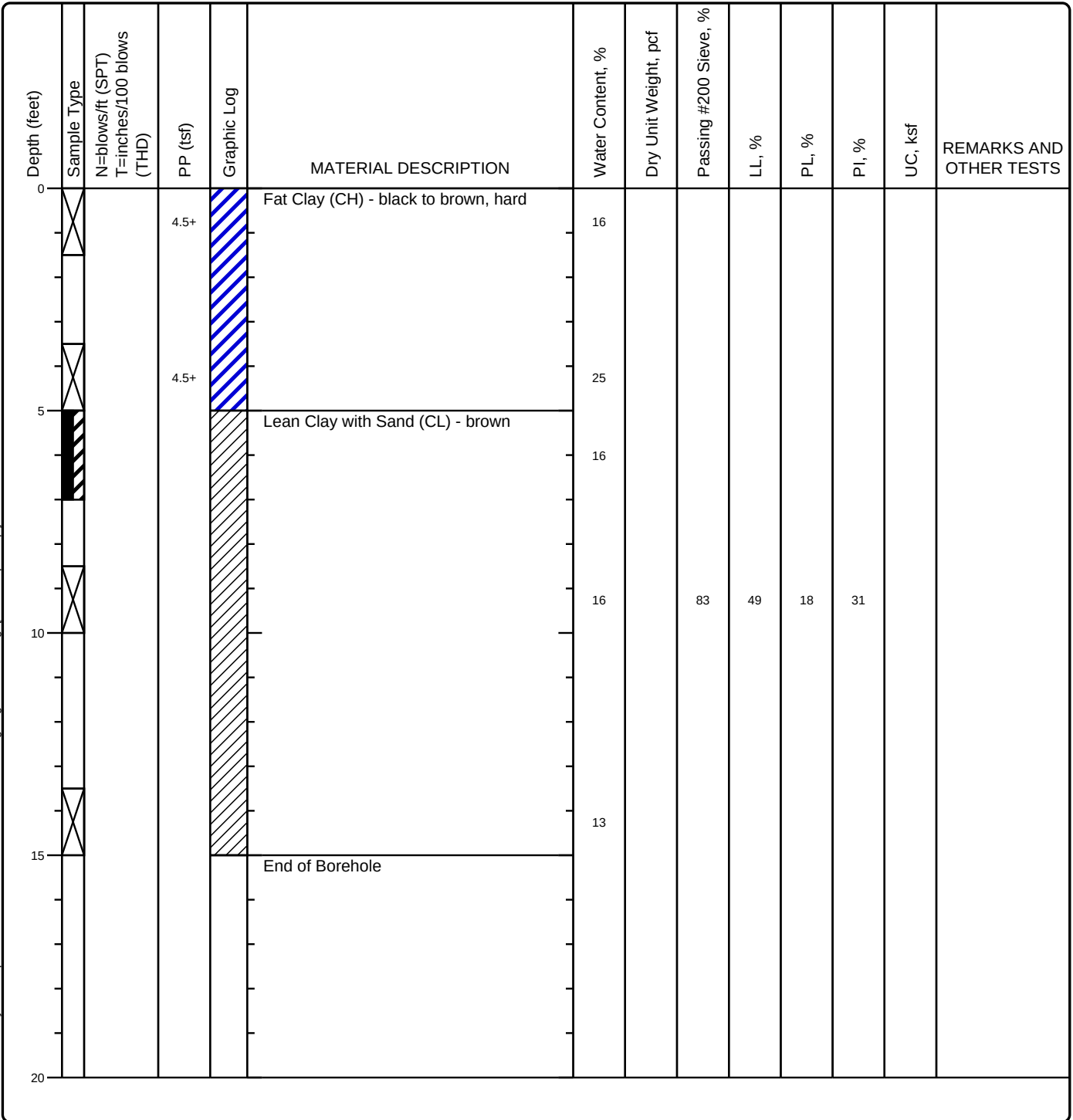


Figure 20

Project: Proposed Pavement	Log of Boring B20
Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas	
Terradyne Project Number: A241147	

Date(s) Drilled October 4, 2024		
Drilling Method Solid Stem Flight		Total Depth of Borehole 15 feet bgs
Drill Rig Type B-34		Approximate Surface Elevation Existing Ground Level
Groundwater Level and Date Measured Not Encountered	Sampling Method(s) Auger, Tube	
Borehole Backfill Soil Cuttings	Location SEE BLP	

Depth (feet)	Sample Type N=blows/ft (SPT) T=inches/100 blows (THD)	PP (tsf)	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Passing #200 Sieve, %	LL, %	PL, %	PI, %	UC, ksf	REMARKS AND OTHER TESTS
0		4.5+		Fat Clay (CH) - dark brown to brown, hard	29		90	72	34	38		
5		4.5+		Lean Clay with Sand (CL) - light brown, hard	25							
10		4.0			15							
15		4.5+			14							
				End of Borehole	15							
20												

Figure 21

Project: Proposed Pavement Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas Terradyne Project Number: A241147	Log of Boring B21
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Date(s) Drilled: October 4, 2024		Total Depth of Borehole: 15 feet bgs
Drilling Method: Solid Stem Flight		Approximate Surface Elevation: Existing Ground Level
Drill Rig Type: B-34		
Groundwater Level and Date Measured: Not Encountered	Sampling Method(s): Auger, Tube	
Borehole Backfill: Soil Cuttings	Location: SEE BLP	

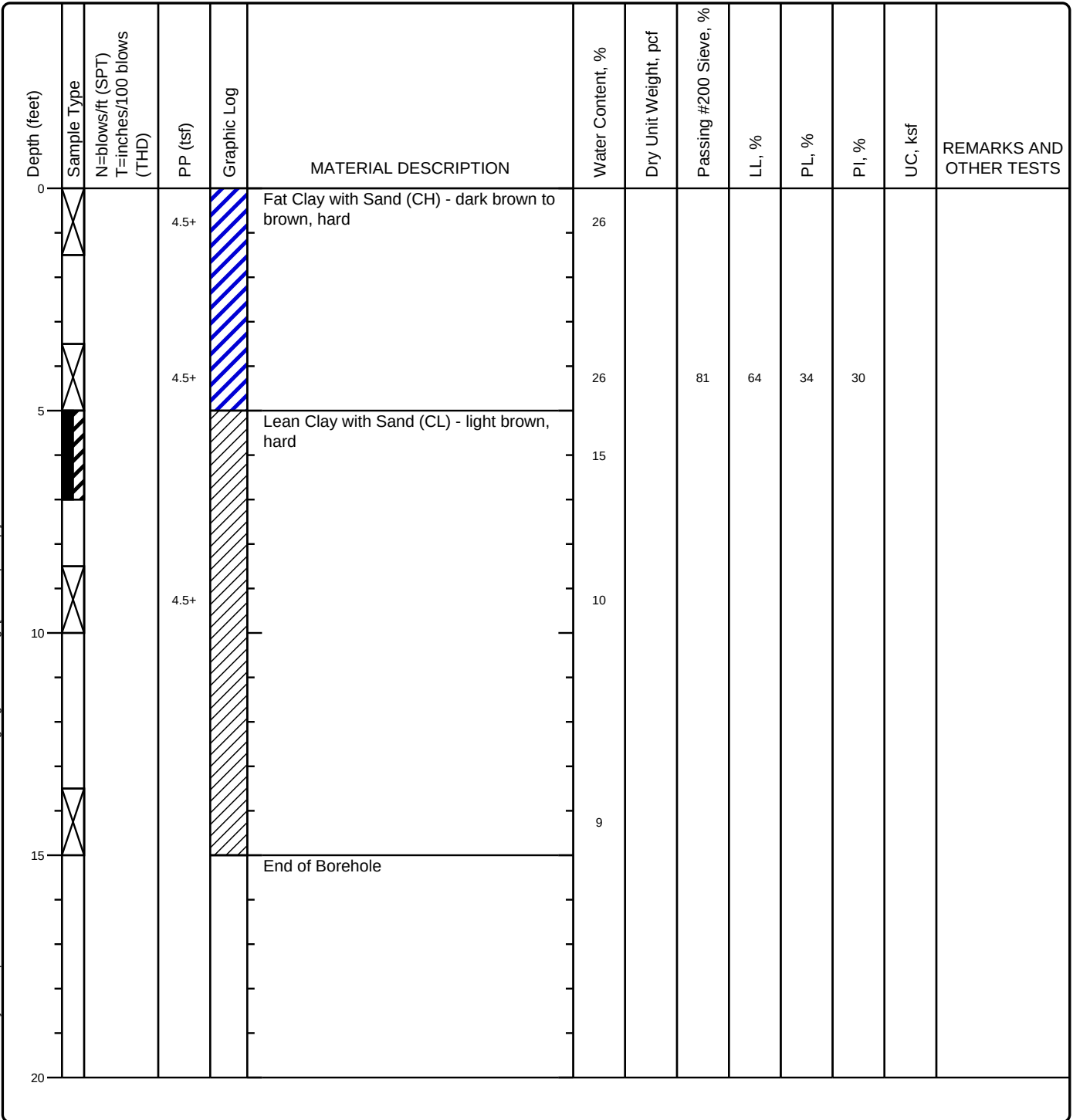


Figure 22

Project: Proposed Pavement Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas Terradyne Project Number: A241147	Log of Boring B22
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Date(s) Drilled: October 4, 2024		Total Depth of Borehole: 15 feet bgs
Drilling Method: Solid Stem Flight		Approximate Surface Elevation: Existing Ground Level
Drill Rig Type: B-34		
Groundwater Level and Date Measured: Not Encountered	Sampling Method(s): Auger, Tube	
Borehole Backfill: Soil Cuttings	Location: SEE BLP	

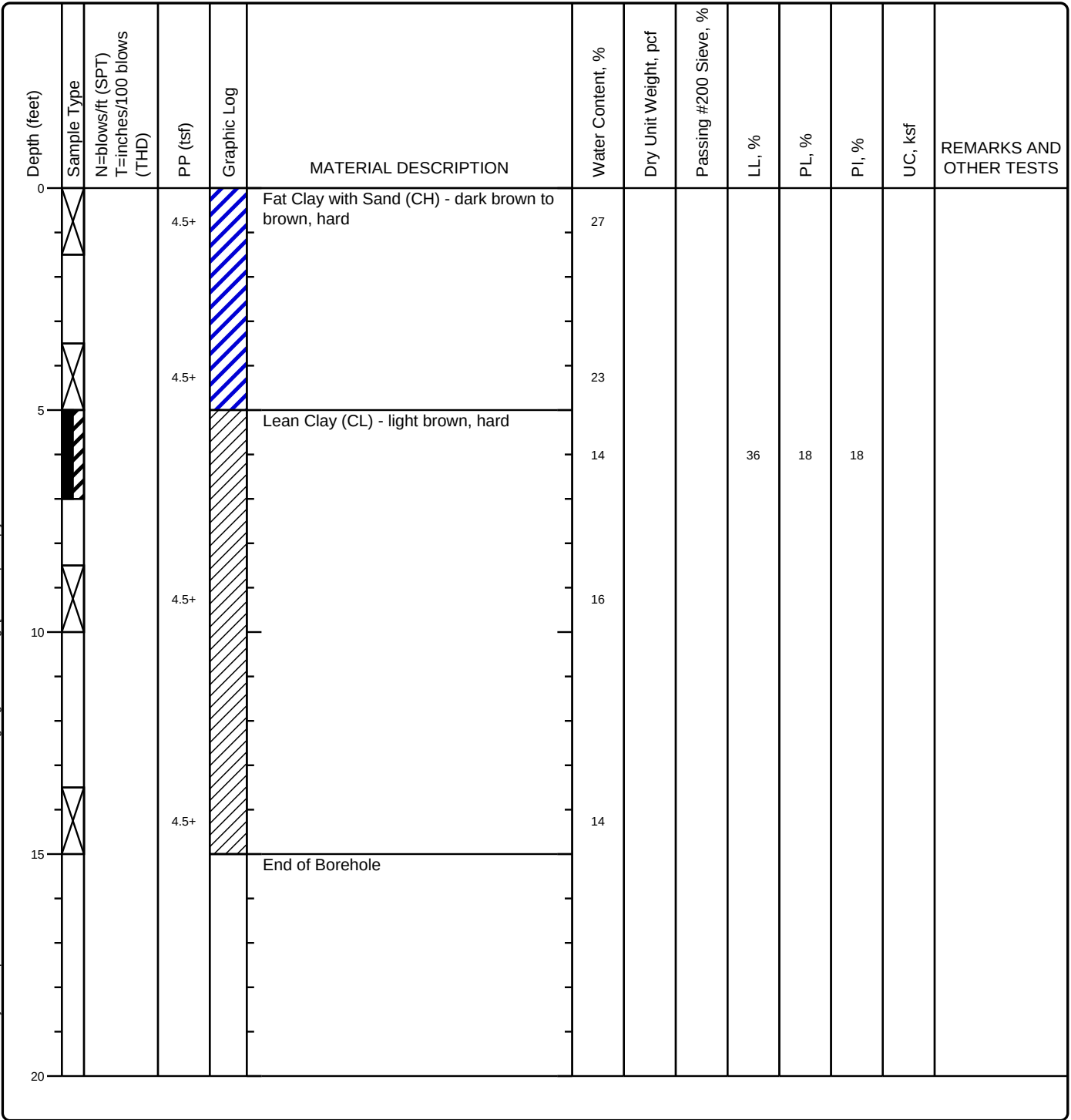


Figure 23

Project: Proposed Pavement	Log of Boring B23
Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas	
Terradyne Project Number: A241147	

Date(s) Drilled October 4, 2024		
Drilling Method Solid Stem Flight		Total Depth of Borehole 15 feet bgs
Drill Rig Type B-34		Approximate Surface Elevation Existing Ground Level
Groundwater Level and Date Measured Not Encountered	Sampling Method(s) Auger, Tube	
Borehole Backfill Soil Cuttings	Location SEE BLP	

Depth (feet)	Sample Type N=blows/ft (SPT) T=inches/100 blows (THD)	PP (tsf)	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Passing #200 Sieve, %	LL, %	PL, %	PI, %	UC, ksf	REMARKS AND OTHER TESTS
0		4.5+		Fat Clay with Sand (CH) - dark brown, hard	23							
4.5+		4.5+			21							
5				Lean Clay (CL) - light brown, hard	13			42	17	25		
10		4.5+			14							
15		4.5+			10							
				End of Borehole								
20												

Figure 24

Project: Proposed Pavement	Log of Boring B24
Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas	
Terradyne Project Number: A241147	

Date(s) Drilled October 4, 2024		
Drilling Method Solid Stem Flight		Total Depth of Borehole 15 feet bgs
Drill Rig Type B-34		Approximate Surface Elevation Existing Ground Level
Groundwater Level and Date Measured Not Encountered	Sampling Method(s) Auger, Tube	
Borehole Backfill Soil Cuttings	Location SEE BLP	

Depth (feet)	Sample Type N=blows/ft (SPT) T=inches/100 blows (THD)	PP (tsf)	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Passing #200 Sieve, %	LL, %	PL, %	PI, %	UC, ksf	REMARKS AND OTHER TESTS
0		4.5+		Fat Clay with Sand (CH) - dark brown to brown, hard	16							
5				Lean Clay with Sand (CL) - light brown, hard	9							
10		4.5+			14		80	36	17	19		
15		3.0+		- light brown, vert stiff	14							
				End of Borehole								
20												

Figure 25

Project: Proposed Pavement Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas Terradyne Project Number: A241147	Log of Boring B25
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Date(s) Drilled: October 4, 2024		Total Depth of Borehole: 15 feet bgs
Drilling Method: Solid Stem Flight		Approximate Surface Elevation: Existing Ground Level
Drill Rig Type: B-34		
Groundwater Level and Date Measured: Not Encountered	Sampling Method(s): Auger, Tube	
Borehole Backfill: Soil Cuttings	Location: SEE BLP	

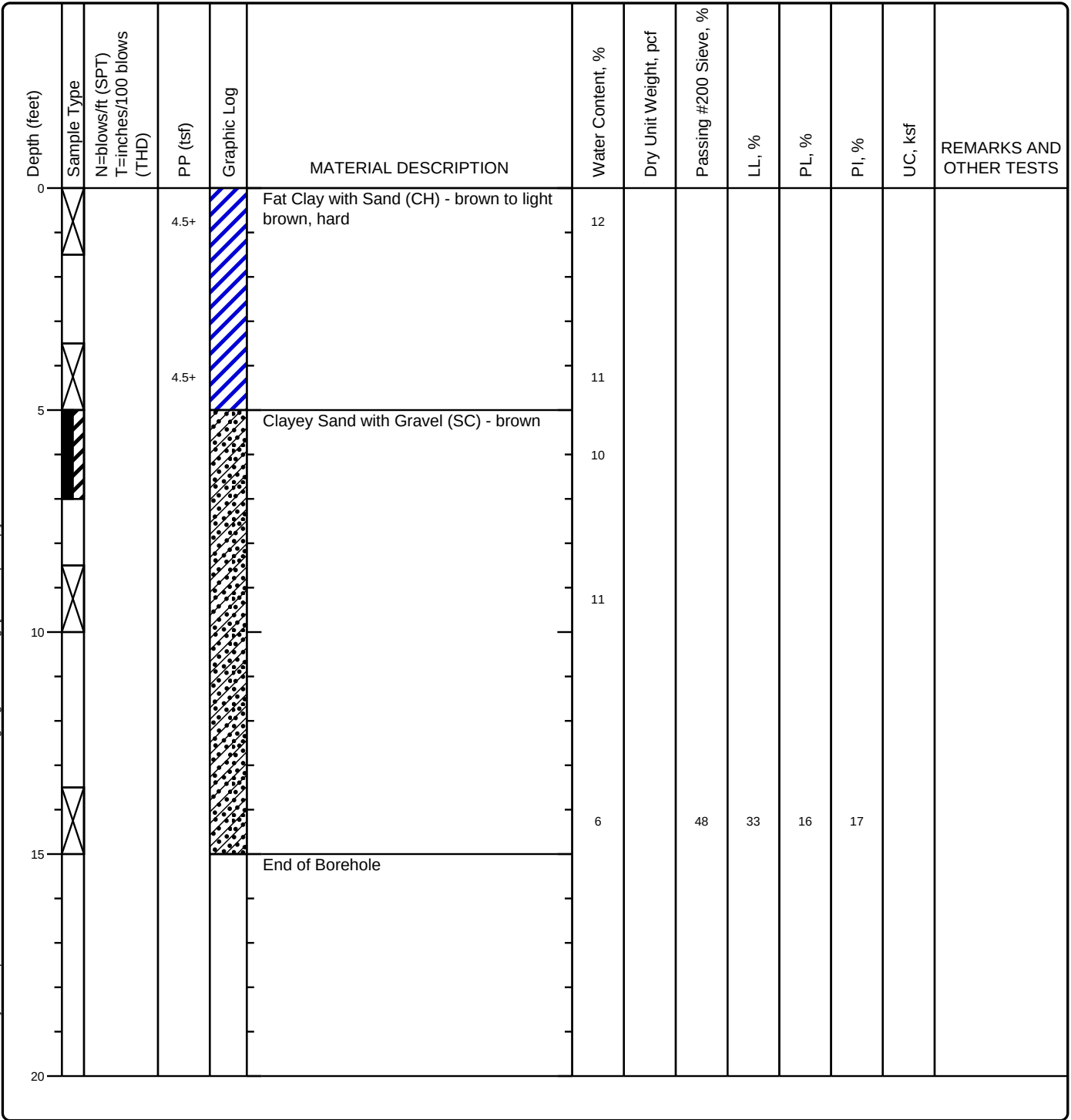


Figure 26

Project: **Proposed Pavement**

Project Location: **Heritage Mill South- Phase 4, Hutto, Williamson County, Texas**

Terradyne Project Number: **A241147**

Log of Boring B26

Date(s) Drilled October 4, 2024		
Drilling Method Solid Stem Flight		Total Depth of Borehole 15 feet bgs
Drill Rig Type B-34		Approximate Surface Elevation Existing Ground Level
Groundwater Level and Date Measured Not Encountered	Sampling Method(s) Auger, Tube	
Borehole Backfill Soil Cuttings	Location SEE BLP	

Depth (feet)	Sample Type N=blows/ft (SPT) T=inches/100 blows (THD)	PP (tsf)	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Passing #200 Sieve, %	LL, %	PL, %	PI, %	UC, ksf	REMARKS AND OTHER TESTS
0		4.5+		Lean Clay with Sand (CL) - brown, hard	9		76	39	21	18		
5					6							
7					7							
10		4.0			2							
15		4.5+		End of Borehole	2							
20												

Figure 27

Project: Proposed Pavement	Log of Boring B27
Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas	
Terradyne Project Number: A241147	

Date(s) Drilled October 4, 2024		
Drilling Method Solid Stem Flight		Total Depth of Borehole 15 feet bgs
Drill Rig Type B-34		Approximate Surface Elevation Existing Ground Level
Groundwater Level and Date Measured Not Encountered	Sampling Method(s) Auger, Tube	
Borehole Backfill Soil Cuttings	Location SEE BLP	

Depth (feet)	Sample Type N=blows/ft (SPT) T=inches/100 blows (THD)	PP (tsf)	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Passing #200 Sieve, %	LL, %	PL, %	PI, %	UC, ksf	REMARKS AND OTHER TESTS
0		4.5+		Fat Clay (CH) - dark brown to light brown, hard	27							
5		4.5+		Clayey Sand with Gravel (SC) - light brown	24		90	81	36	45		
10					15							
15					17							
17					17							
20				End of Borehole								

Figure 28

Project: Proposed Pavement Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas Terradyne Project Number: A241147	Log of Boring B28
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Date(s) Drilled: October 4, 2024		Total Depth of Borehole: 15 feet bgs
Drilling Method: Solid Stem Flight		Approximate Surface Elevation: Existing Ground Level
Drill Rig Type: B-34		
Groundwater Level and Date Measured: Not Encountered	Sampling Method(s): Auger, Tube	
Borehole Backfill: Soil Cuttings	Location: SEE BLP	

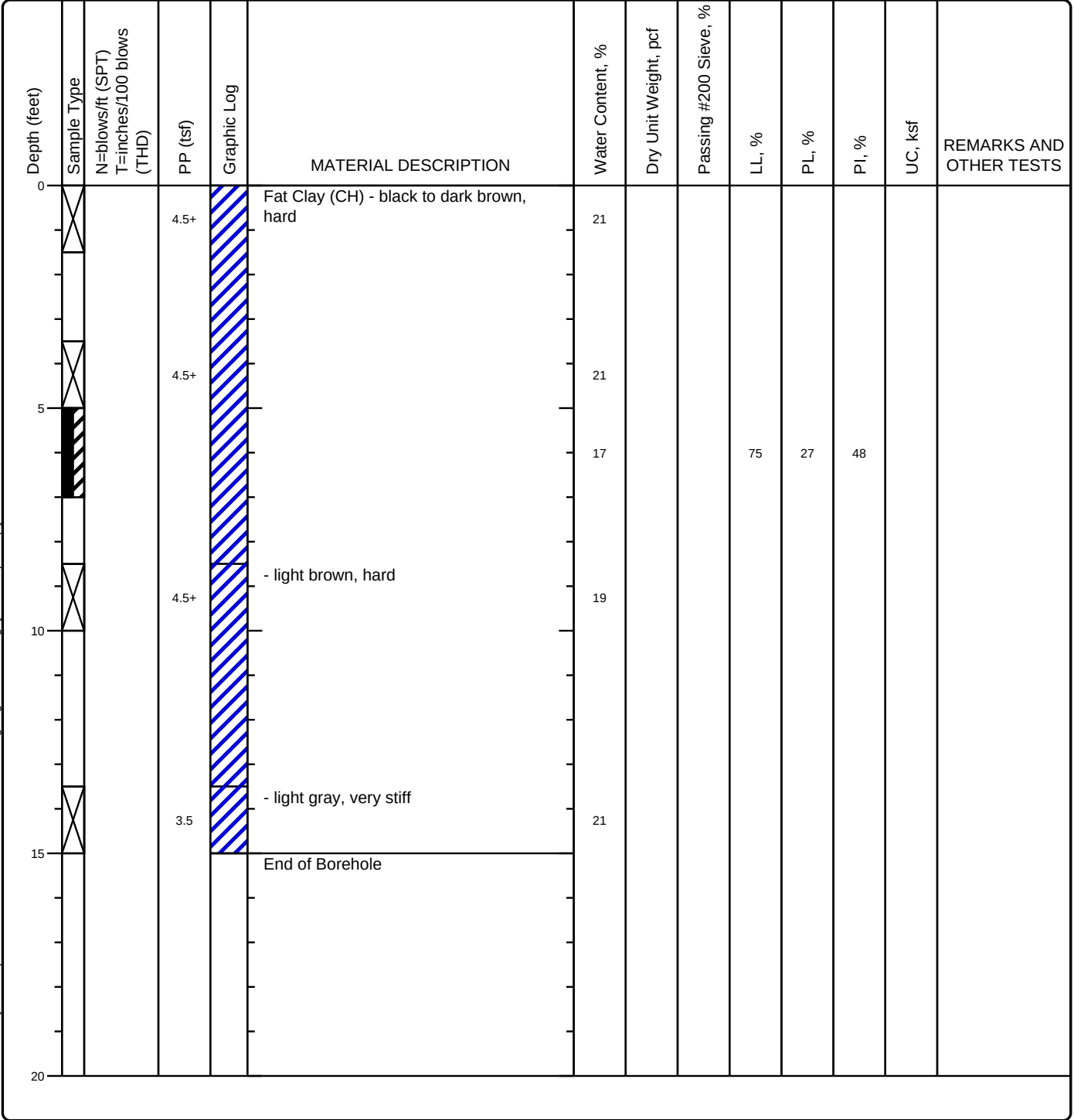


Figure 29

Project: Proposed Pavement Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas Terradyne Project Number: A241147	Log of Boring B29
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Date(s) Drilled: October 4, 2024		Total Depth of Borehole: 15 feet bgs
Drilling Method: Solid Stem Flight		Approximate Surface Elevation: Existing Ground Level
Drill Rig Type: B-34		
Groundwater Level and Date Measured: Not Encountered	Sampling Method(s): Auger, Tube	
Borehole Backfill: Soil Cuttings	Location: SEE BLP	

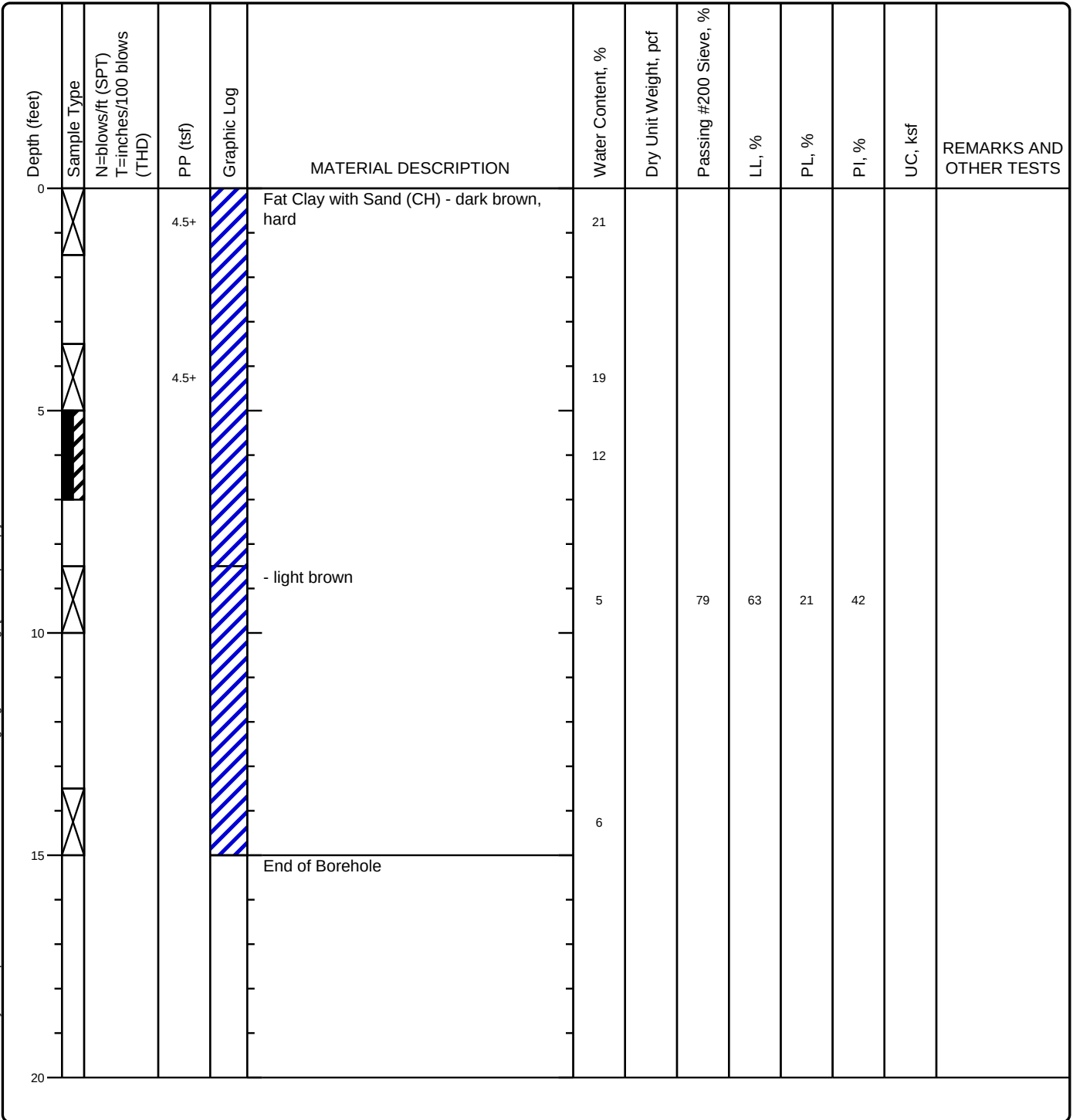


Figure 30

Project: Proposed Pavement Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas Terradyne Project Number: A241147	Log of Boring B30
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Date(s) Drilled: October 4, 2024		Total Depth of Borehole: 15 feet bgs
Drilling Method: Solid Stem Flight		Approximate Surface Elevation: Existing Ground Level
Drill Rig Type: B-34		
Groundwater Level and Date Measured: Not Encountered	Sampling Method(s): Auger, Tube	
Borehole Backfill: Soil Cuttings	Location: SEE BLP	

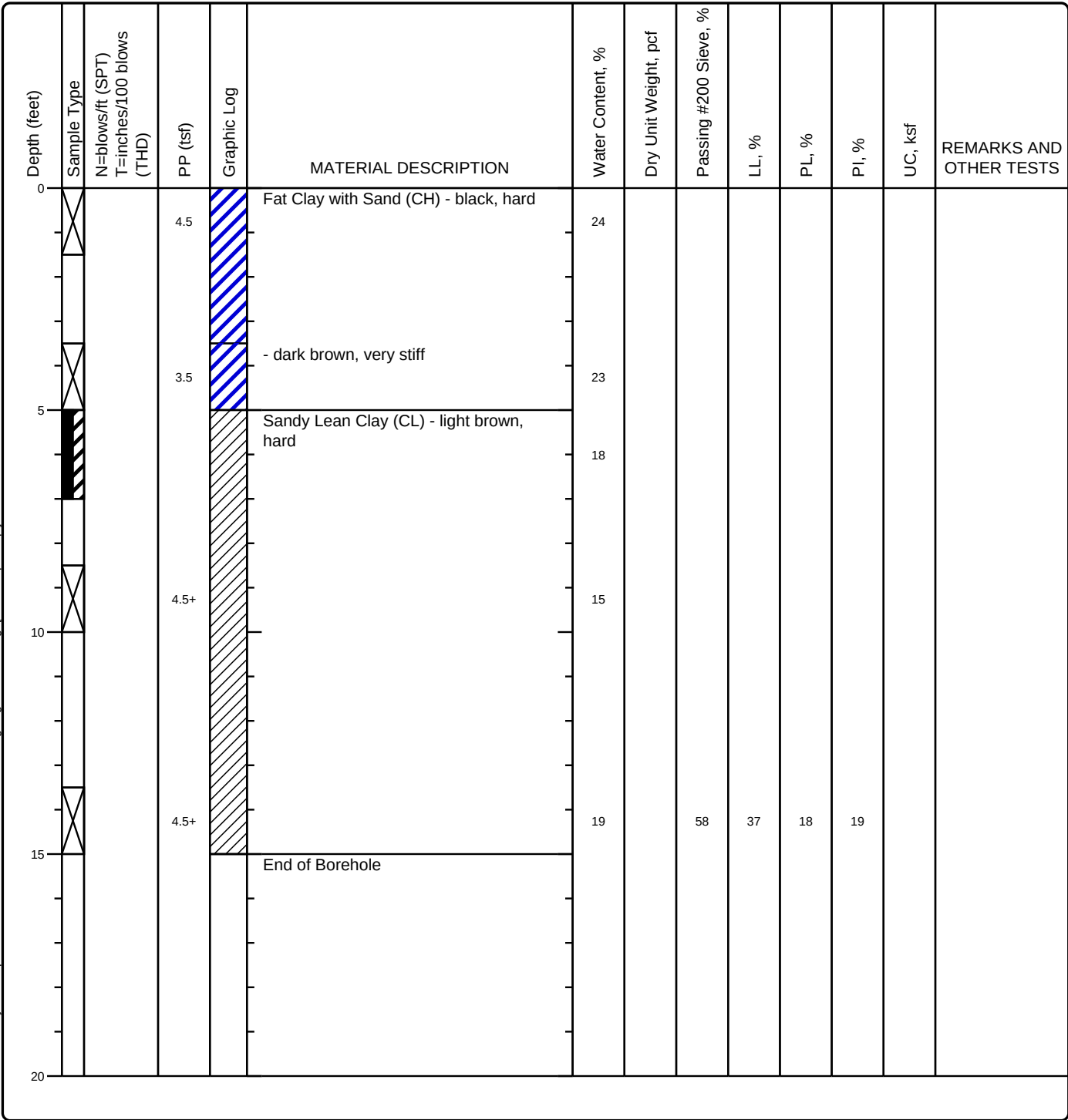


Figure 31

Project: Proposed Pavement Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas Terradyne Project Number: A241147	Log of Boring B31
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Date(s) Drilled October 4, 2024		Total Depth of Borehole 15 feet bgs
Drilling Method Solid Stem Flight		Approximate Surface Elevation Existing Ground Level
Drill Rig Type B-34		
Groundwater Level and Date Measured Not Encountered	Sampling Method(s) Auger, Tube	
Borehole Backfill Soil Cuttings	Location SEE BLP	

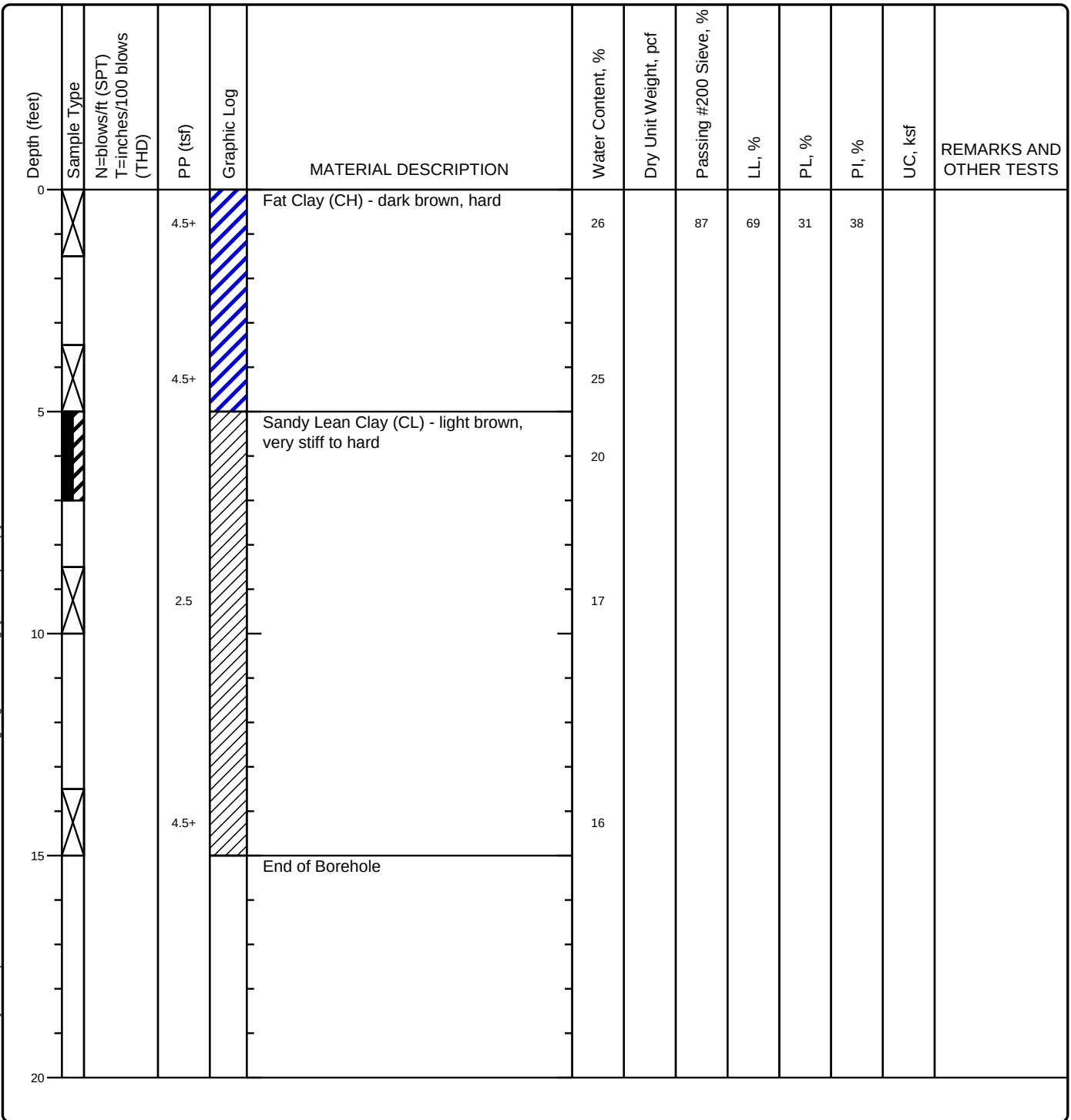


Figure 32

Project: Proposed Pavement Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas Terradyne Project Number: A241147	Log of Boring B32
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Date(s) Drilled: October 4, 2024		Total Depth of Borehole: 15 feet bgs
Drilling Method: Solid Stem Flight		Approximate Surface Elevation: Existing Ground Level
Drill Rig Type: B-34		
Groundwater Level and Date Measured: Not Encountered	Sampling Method(s): Auger, Tube	
Borehole Backfill: Soil Cuttings	Location: SEE BLP	

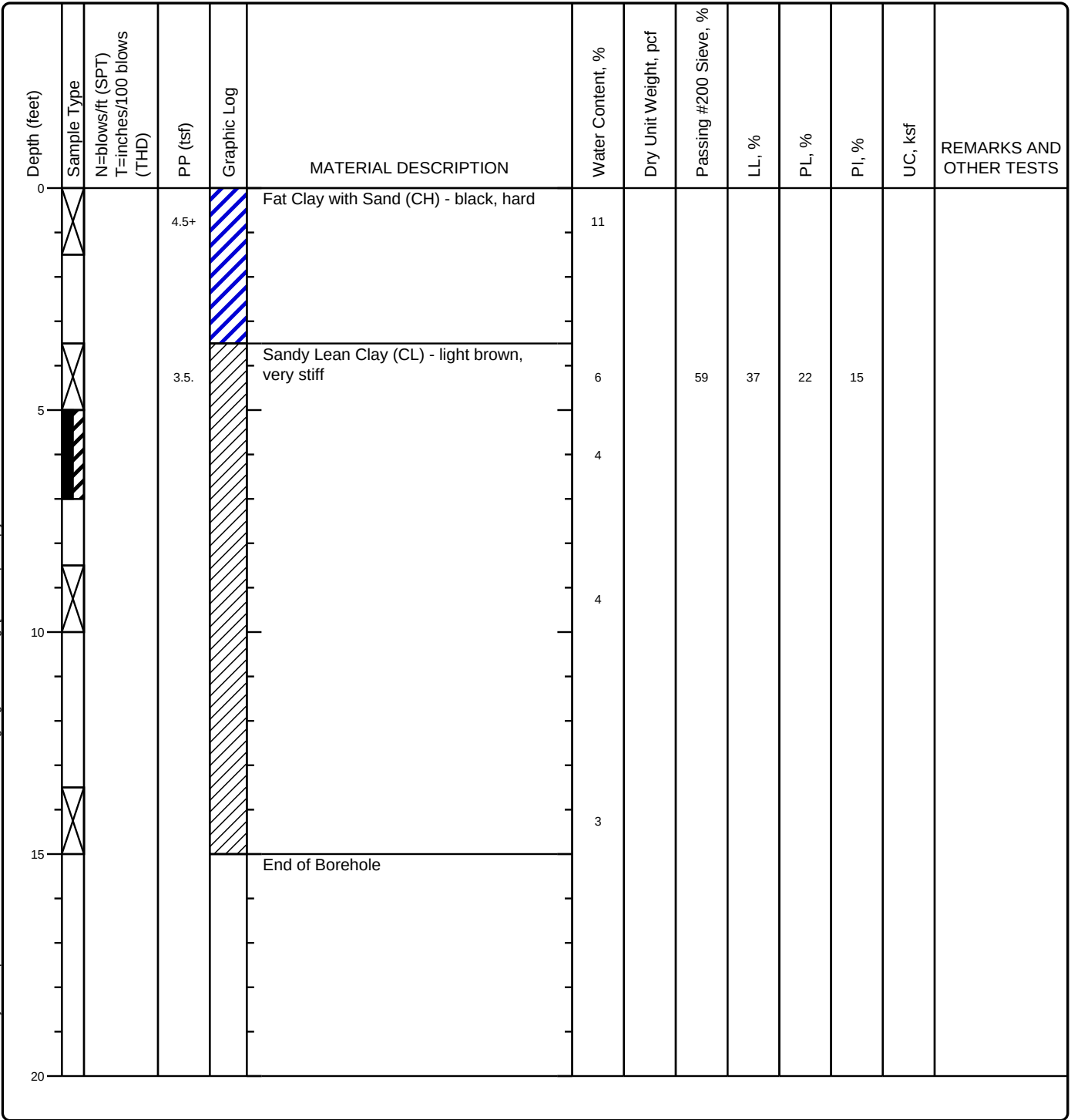


Figure 33

Project: Proposed Pavement Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas Terradyne Project Number: A241147	Log of Boring B33
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Date(s) Drilled: October 4, 2024		Total Depth of Borehole: 15 feet bgs
Drilling Method: Solid Stem Flight		Approximate Surface Elevation: Existing Ground Level
Drill Rig Type: B-34		
Groundwater Level and Date Measured: Not Encountered	Sampling Method(s): Auger, Tube	
Borehole Backfill: Soil Cuttings	Location: SEE BLP	

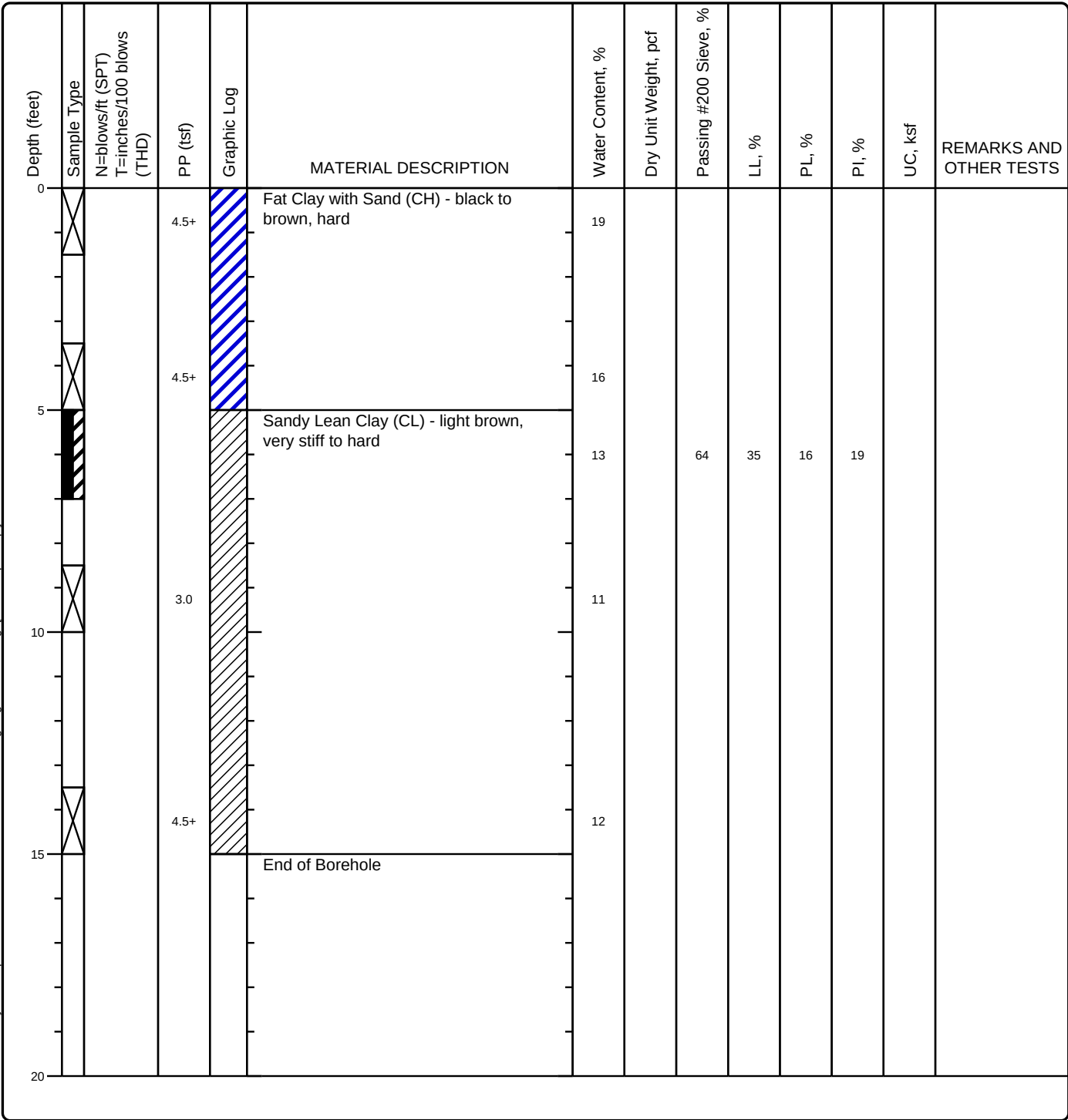


Figure 34

Project: Proposed Pavement Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas Terradyne Project Number: A241147	Log of Boring B34
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Date(s) Drilled: October 4, 2024		Total Depth of Borehole: 15 feet bgs
Drilling Method: Solid Stem Flight		Approximate Surface Elevation: Existing Ground Level
Drill Rig Type: B-34		
Groundwater Level and Date Measured: Not Encountered	Sampling Method(s): Auger, Tube	
Borehole Backfill: Soil Cuttings	Location: SEE BLP	

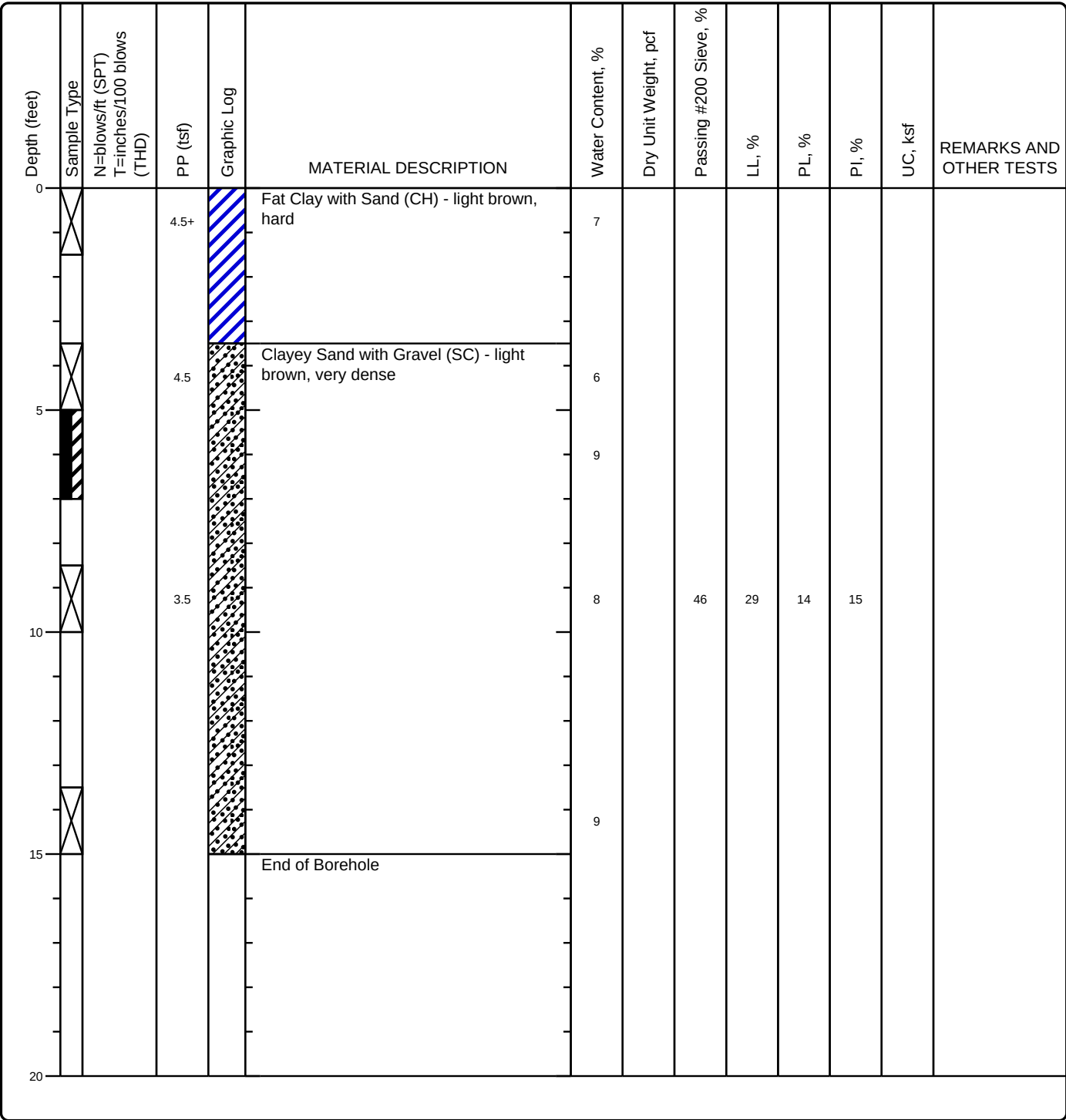


Figure 35

Project: Proposed Pavement Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas Terradyne Project Number: A241147	Log of Boring B35
---	---

Date(s) Drilled: October 4, 2024		Total Depth of Borehole: 15 feet bgs
Drilling Method: Solid Stem Flight		Approximate Surface Elevation: Existing Ground Level
Drill Rig Type: B-34		
Groundwater Level and Date Measured: Not Encountered	Sampling Method(s): Auger, Tube	
Borehole Backfill: Soil Cuttings	Location: SEE BLP	

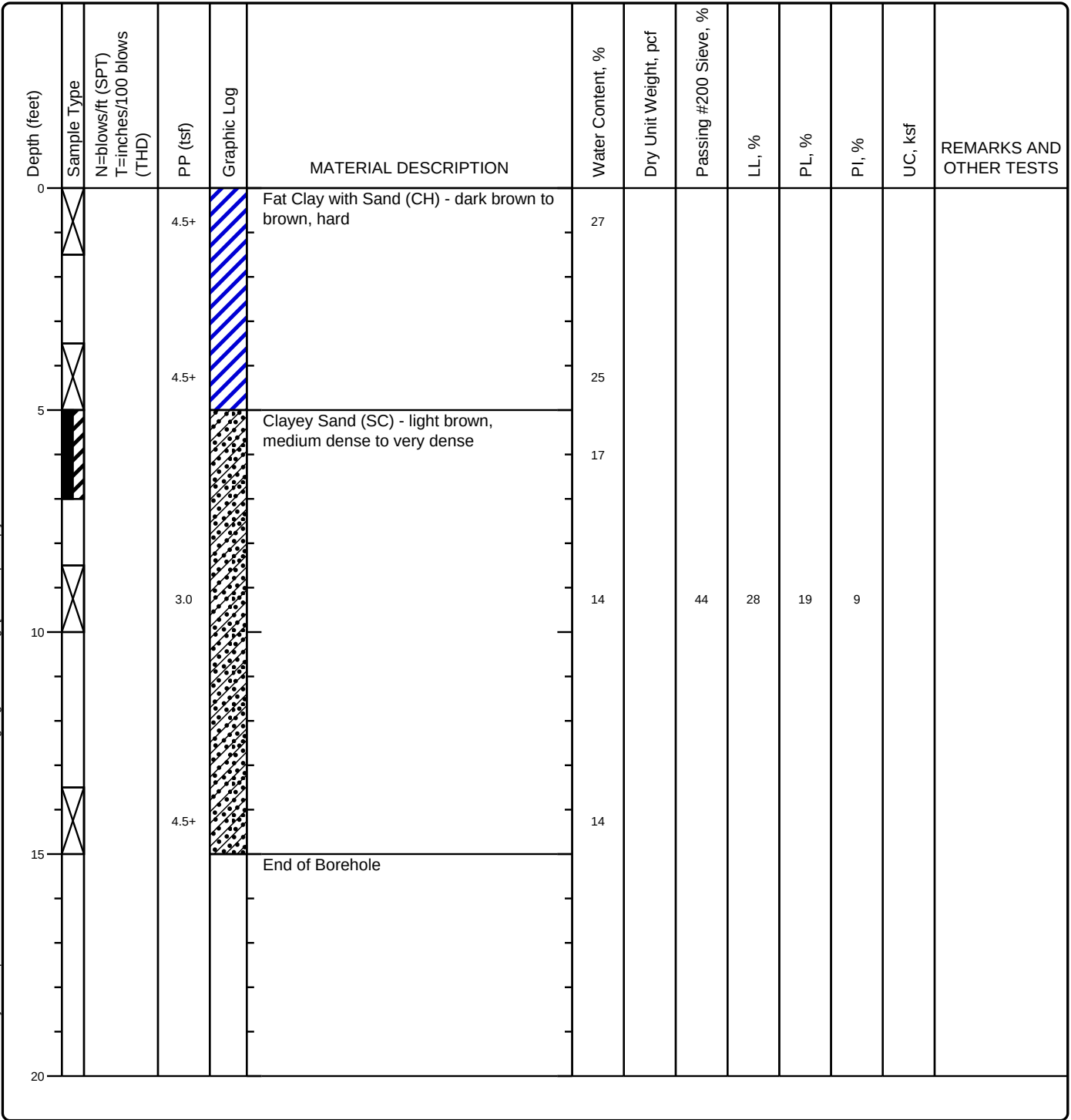


Figure 36

Project: Proposed Pavement Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas Terradyne Project Number: A241147	Log of Boring B36
---	---

Date(s) Drilled: October 4, 2024		Total Depth of Borehole: 15 feet bgs
Drilling Method: Solid Stem Flight		Approximate Surface Elevation: Existing Ground Level
Drill Rig Type: B-34		
Groundwater Level and Date Measured: Not Encountered	Sampling Method(s): Auger, Tube	
Borehole Backfill: Soil Cuttings	Location: SEE BLP	

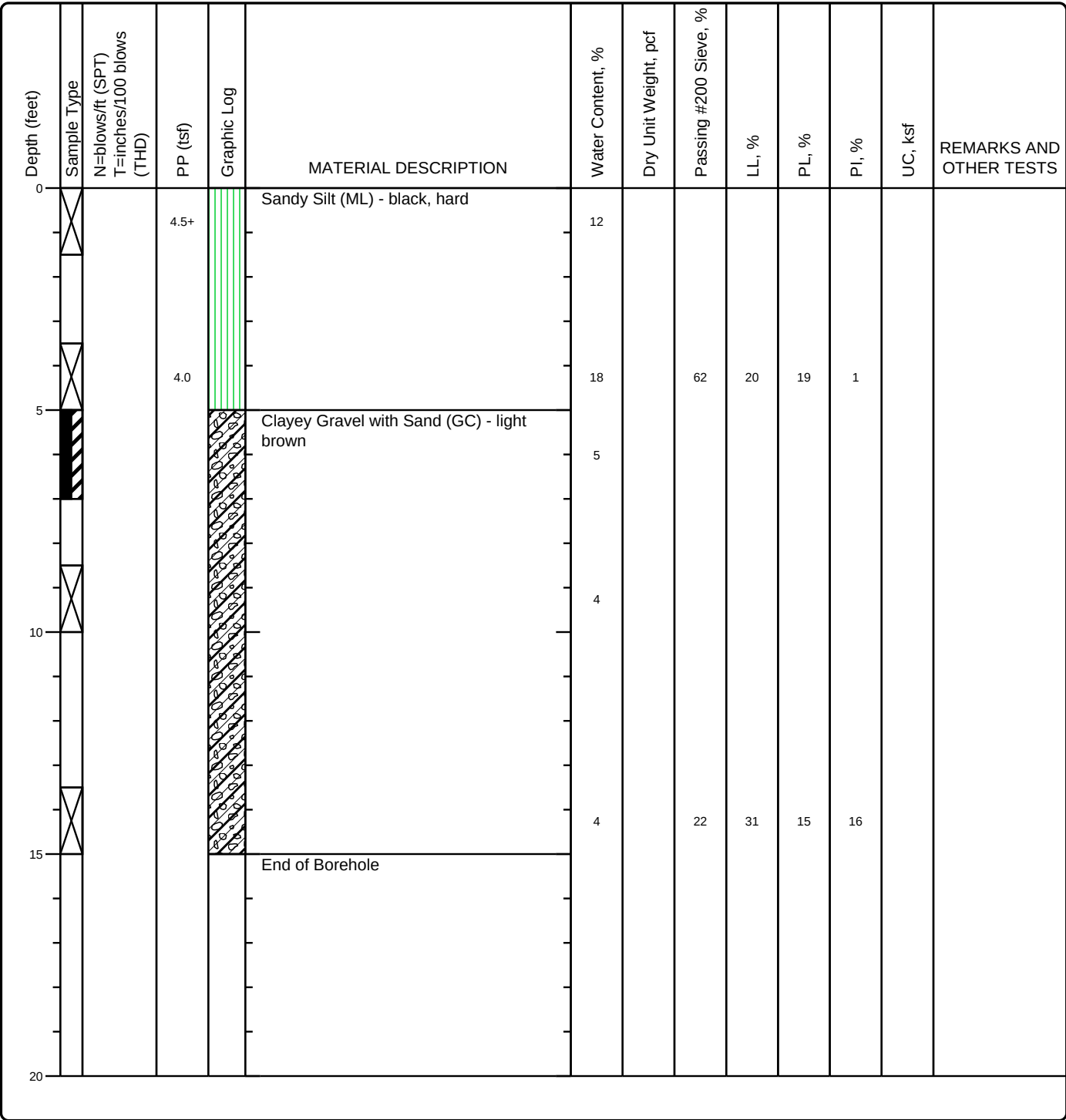


Figure 37

Project: Proposed Pavement Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas Terradyne Project Number: A241147	Log of Boring B37
---	---

Date(s) Drilled: October 4, 2024		Total Depth of Borehole: 15 feet bgs
Drilling Method: Solid Stem Flight		Approximate Surface Elevation: Existing Ground Level
Drill Rig Type: B-34		
Groundwater Level and Date Measured: Not Encountered	Sampling Method(s): Auger, Tube	
Borehole Backfill: Soil Cuttings	Location: SEE BLP	

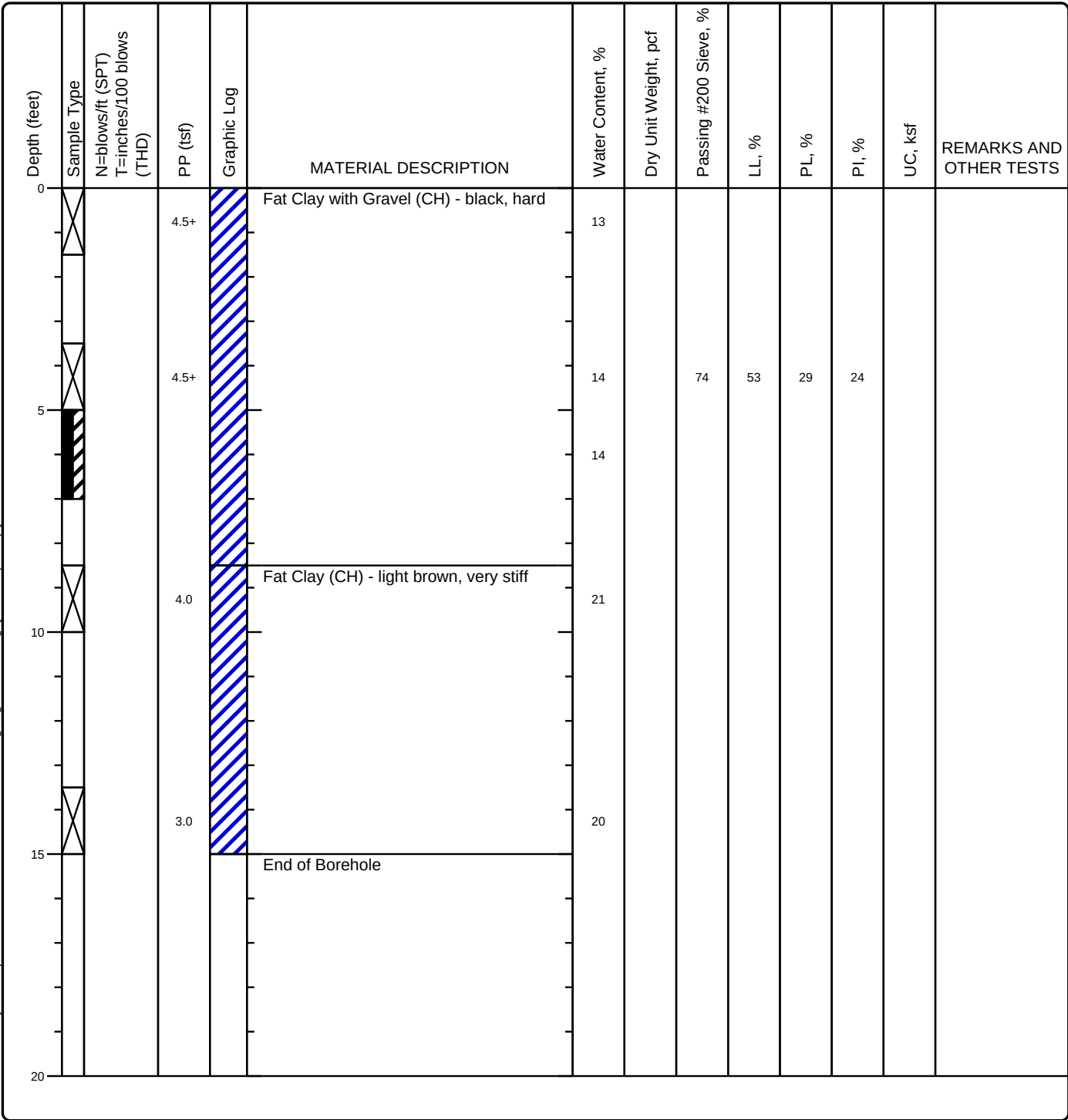


Figure 38

Project: Proposed Pavement Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas Terradyne Project Number: A241147	Log of Boring B38
---	---

Date(s) Drilled: October 4, 2024		Total Depth of Borehole: 15 feet bgs
Drilling Method: Solid Stem Flight		Approximate Surface Elevation: Existing Ground Level
Drill Rig Type: B-34		
Groundwater Level and Date Measured: Not Encountered	Sampling Method(s): Auger, Tube	
Borehole Backfill: Soil Cuttings	Location: SEE BLP	

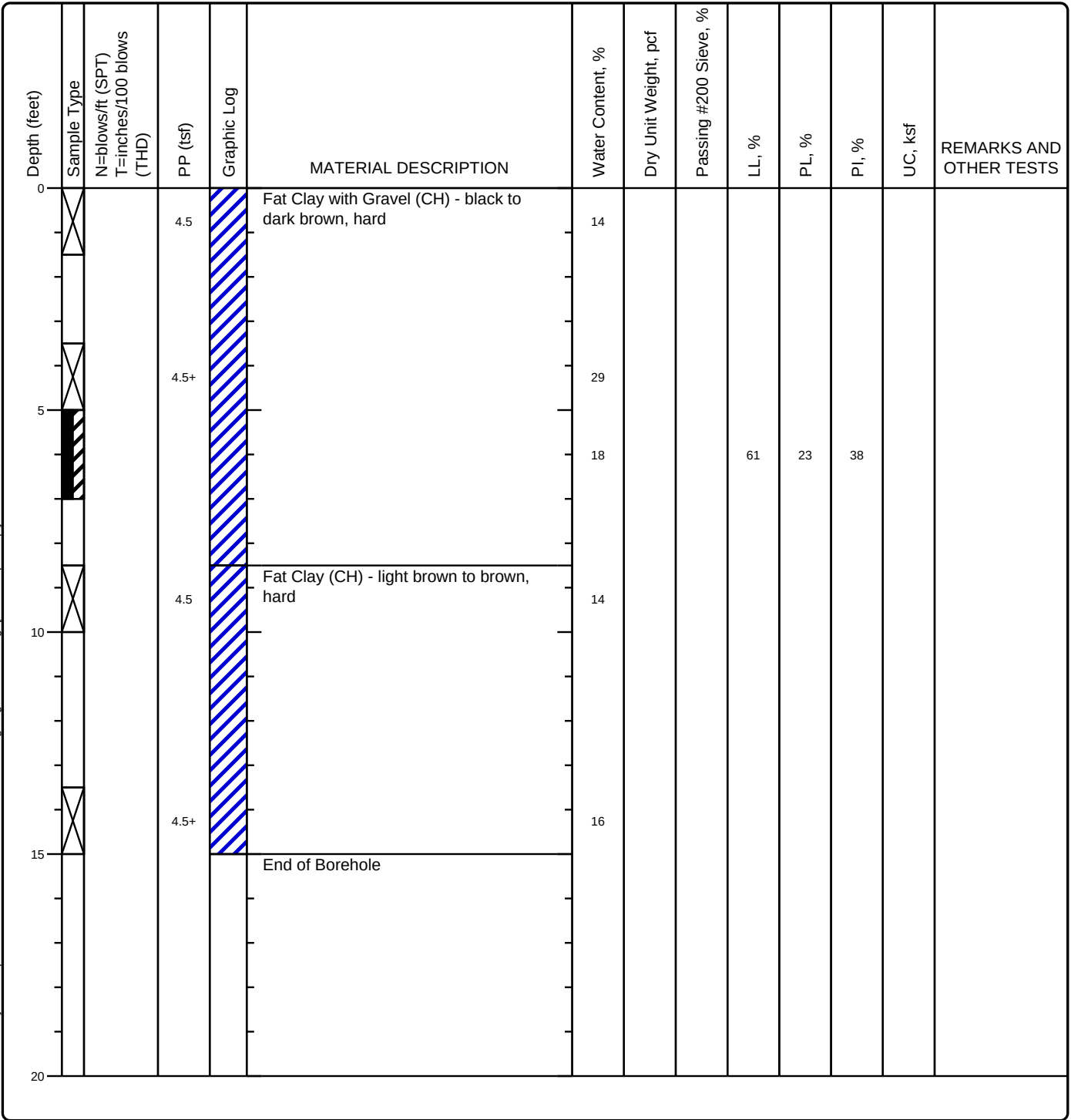


Figure 39

Project: Proposed Pavement Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas Terradyne Project Number: A241147	Log of Boring B39
---	---

Date(s) Drilled: October 4, 2024		Total Depth of Borehole: 15 feet bgs
Drilling Method: Solid Stem Flight		Approximate Surface Elevation: Existing Ground Level
Drill Rig Type: B-34		
Groundwater Level and Date Measured: Not Encountered	Sampling Method(s): Auger, Tube	
Borehole Backfill: Soil Cuttings	Location: SEE BLP	

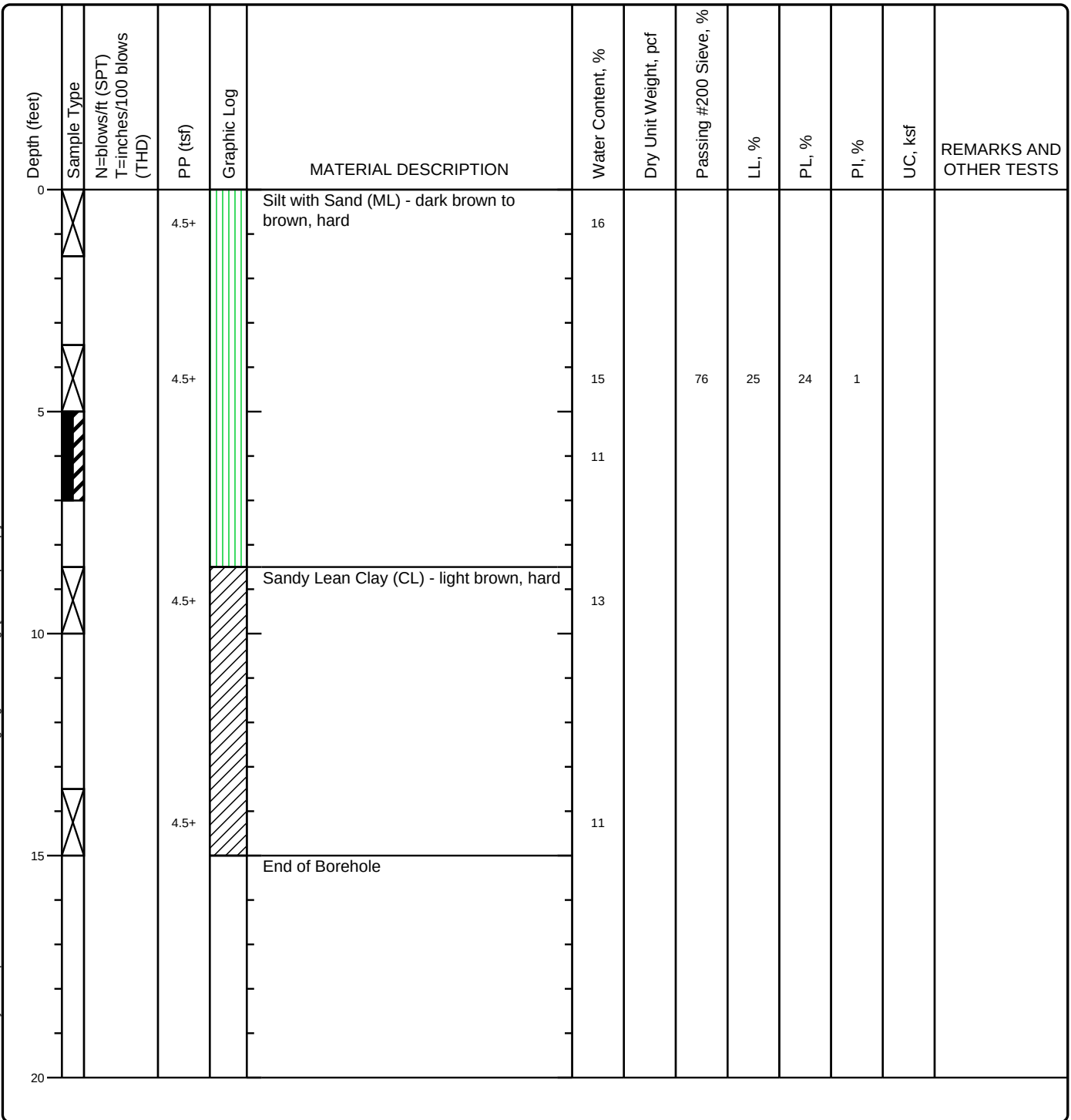


Figure 40

Project: Proposed Pavement Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas Terradyne Project Number: A241147	Log of Boring B40
---	---

Date(s) Drilled: October 3, 2024		Total Depth of Borehole: 15 feet bgs
Drilling Method: Solid Stem Flight		Approximate Surface Elevation: Existing Ground Level
Drill Rig Type: Lonestar		
Groundwater Level and Date Measured: Not Encountered	Sampling Method(s): Auger, SPT	
Borehole Backfill: Soil Cuttings	Location: SEE BLP	

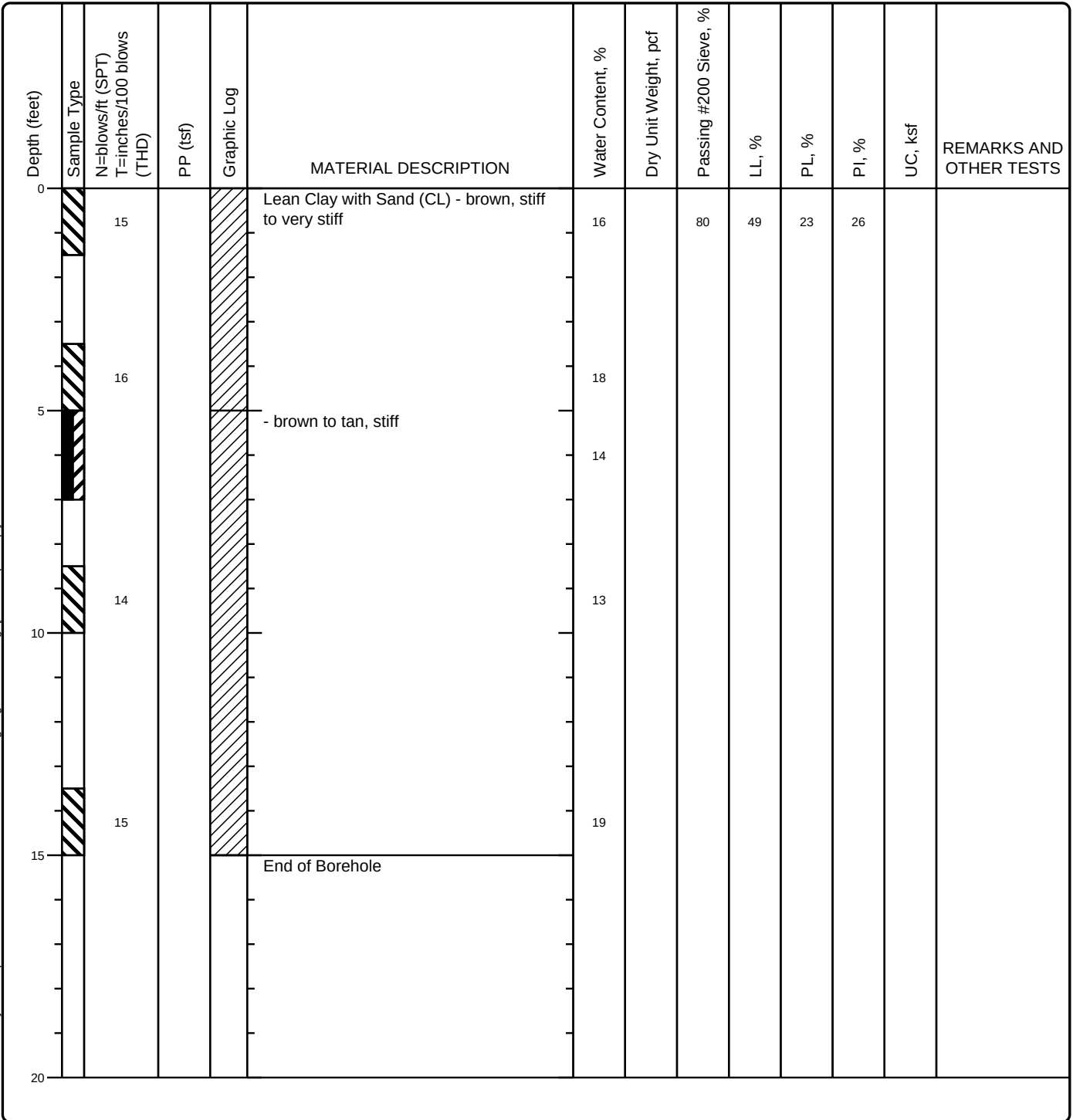


Figure 41

Project: Proposed Pavement Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas Terradyne Project Number: A241147	Log of Boring B41
---	---

Date(s) Drilled: October 4, 2024		Total Depth of Borehole: 15 feet bgs
Drilling Method: Solid Stem Flight		Approximate Surface Elevation: Existing Ground Level
Drill Rig Type: B-34		
Groundwater Level and Date Measured: Not Encountered	Sampling Method(s): Auger, Tube	
Borehole Backfill: Soil Cuttings	Location: SEE BLP	

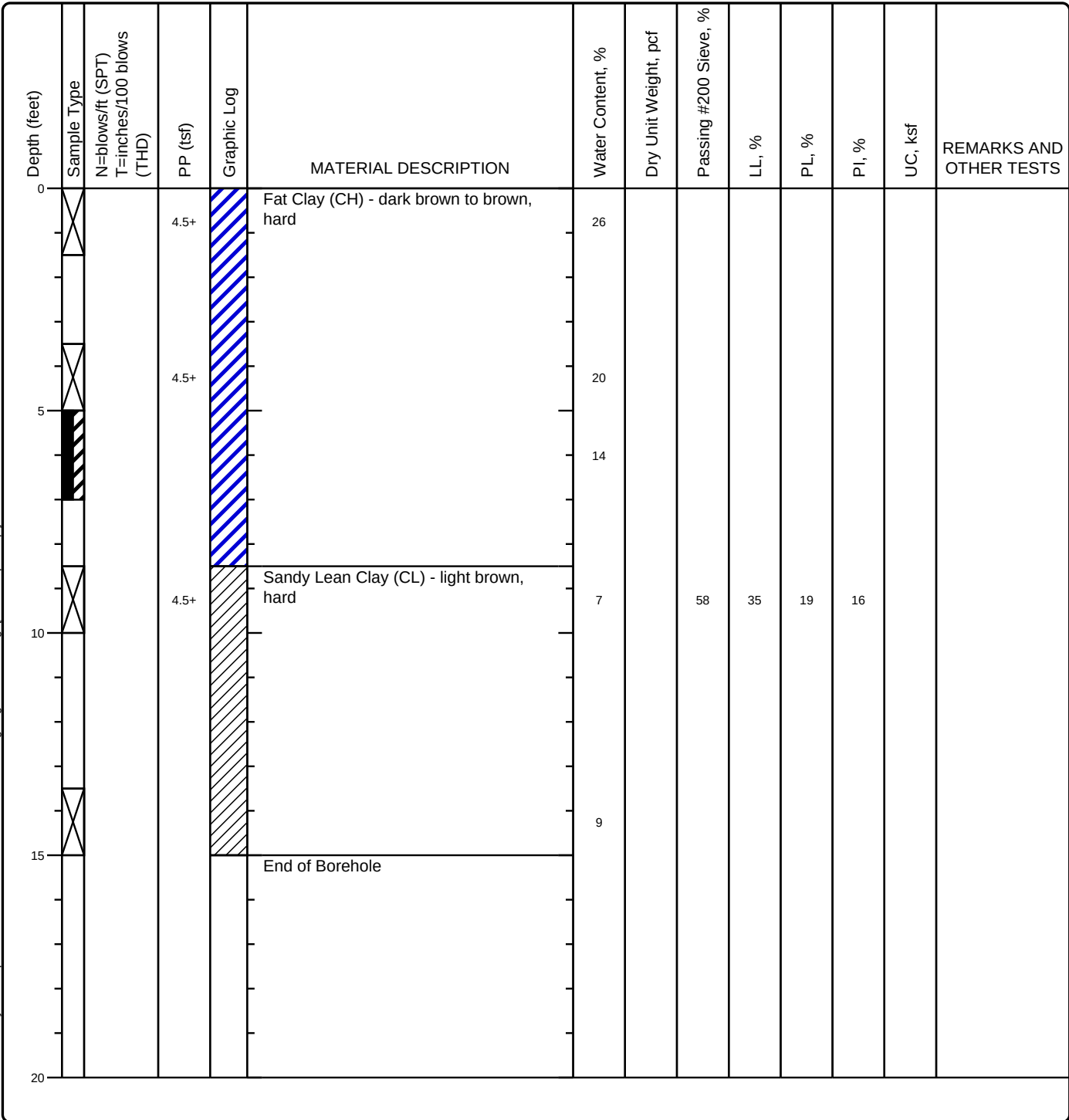


Figure 42

Project: Proposed Pavement Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas Terradyne Project Number: A241147	Log of Boring B42
---	---

Date(s) Drilled: October 4, 2024		Total Depth of Borehole: 15 feet bgs
Drilling Method: Solid Stem Flight		Approximate Surface Elevation: Existing Ground Level
Drill Rig Type: B-34		
Groundwater Level and Date Measured: Not Encountered	Sampling Method(s): Auger, Tube	
Borehole Backfill: Soil Cuttings	Location: SEE BLP	

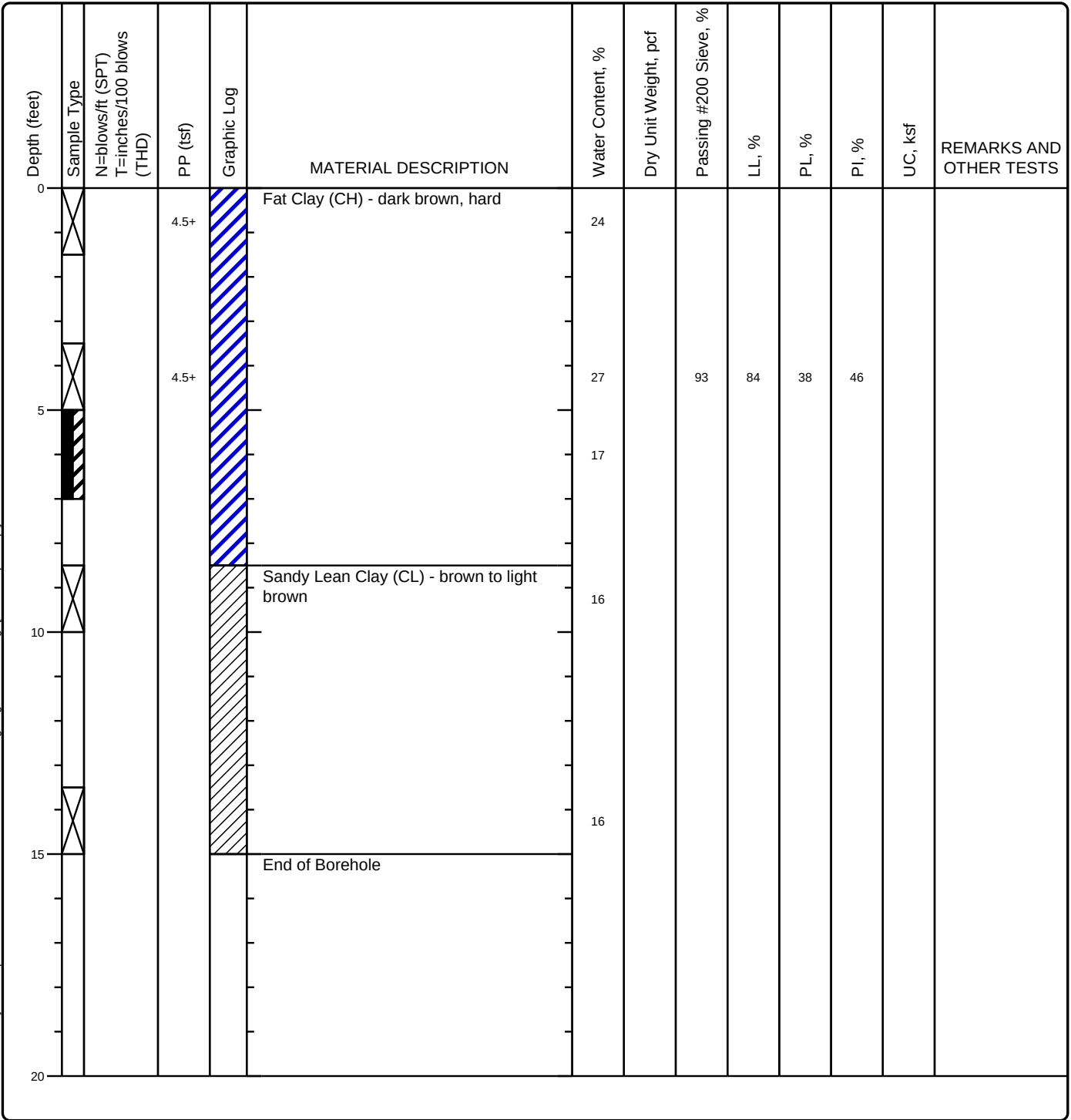


Figure 43

Project: Proposed Pavement	Log of Boring B43
Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas	
Terradyne Project Number: A241147	

Date(s) Drilled October 4, 2024		
Drilling Method Solid Stem Flight		Total Depth of Borehole 15 feet bgs
Drill Rig Type B-34		Approximate Surface Elevation Existing Ground Level
Groundwater Level and Date Measured Not Encountered	Sampling Method(s) Auger, Tube	
Borehole Backfill Soil Cuttings	Location SEE BLP	

Depth (feet)	Sample Type N=blows/ft (SPT) T=inches/100 blows (THD)	PP (tsf)	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Passing #200 Sieve, %	LL, %	PL, %	PI, %	UC, ksf	REMARKS AND OTHER TESTS
0		4.5+		Fat Clay (CH) - dark brown, hard	13							
5		4.5+			25							
					23			101	20	81		
10				Sandy Lean Clay (CL) - brown to light brown	21							
15					17							
				End of Borehole								
20												

Figure 44

Project: Proposed Pavement	Log of Boring B44
Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas	
Terradyne Project Number: A241147	

Date(s) Drilled October 4, 2024		
Drilling Method Solid Stem Flight		Total Depth of Borehole 15 feet bgs
Drill Rig Type B-34		Approximate Surface Elevation Existing Ground Level
Groundwater Level and Date Measured Not Encountered	Sampling Method(s) Auger, Tube	
Borehole Backfill Soil Cuttings	Location SEE BLP	

Depth (feet)	Sample Type N=blows/ft (SPT) T=inches/100 blows (THD)	PP (tsf)	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Passing #200 Sieve, %	LL, %	PL, %	PI, %	UC, ksf	REMARKS AND OTHER TESTS
0		4.5+		Fat Clay (CH) - dark brown to brown, hard	14							
5		4.5+			14							
					11							
10		4.5+		Lean Clay (CL) - light brown, hard	13		86	38	18	20		
15		4.5+			15							
				End of Borehole								
20												

Figure 45

Project: Proposed Pavement	Log of Boring B45
Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas	
Terradyne Project Number: A241147	

Date(s) Drilled October 4, 2024		
Drilling Method Solid Stem Flight		Total Depth of Borehole 15 feet bgs
Drill Rig Type B-34		Approximate Surface Elevation Existing Ground Level
Groundwater Level and Date Measured Not Encountered	Sampling Method(s) Auger, Tube	
Borehole Backfill Soil Cuttings	Location SEE BLP	

Depth (feet)	Sample Type N=blows/ft (SPT) T=inches/100 blows (THD)	PP (tsf)	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Passing #200 Sieve, %	LL, %	PL, %	PI, %	UC, ksf	REMARKS AND OTHER TESTS
0		4.5+		Fat Clay (CH) - black to dark brown, hard	14							
5		4.5+			27							
					23							
10				Sandy Lean clay (CL) - light brown	20							
15					17		66	42	19	23		
				End of Borehole								
20												

Figure 46

Project: Proposed Pavement	Log of Boring B46
Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas	
Terradyne Project Number: A241147	

Date(s) Drilled October 4, 2024		
Drilling Method Solid Stem Flight		Total Depth of Borehole 15 feet bgs
Drill Rig Type B-34		Approximate Surface Elevation Existing Ground Level
Groundwater Level and Date Measured Not Encountered	Sampling Method(s) Auger, Tube	
Borehole Backfill Soil Cuttings	Location SEE BLP	

Depth (feet)	Sample Type N=blows/ft (SPT) T=inches/100 blows (THD)	PP (tsf)	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Passing #200 Sieve, %	LL, %	PL, %	PI, %	UC, ksf	REMARKS AND OTHER TESTS
0		4.5+		Fat Clay (CH) - black, hard	28		88	70	35	35		
5		4.5+			26							
10				Sandy Lean Clay (CL) - brown	19							
15				End of Borehole	10							
20												

Figure 47

Project: Proposed Pavement Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas Terradyne Project Number: A241147	Log of Boring B47
---	---

Date(s) Drilled: October 4, 2024		Total Depth of Borehole: 15 feet bgs
Drilling Method: Solid Stem Flight		Approximate Surface Elevation: Existing Ground Level
Drill Rig Type: B-34		
Groundwater Level and Date Measured: Not Encountered	Sampling Method(s): Auger, Tube	
Borehole Backfill: Soil Cuttings	Location: SEE BLP	

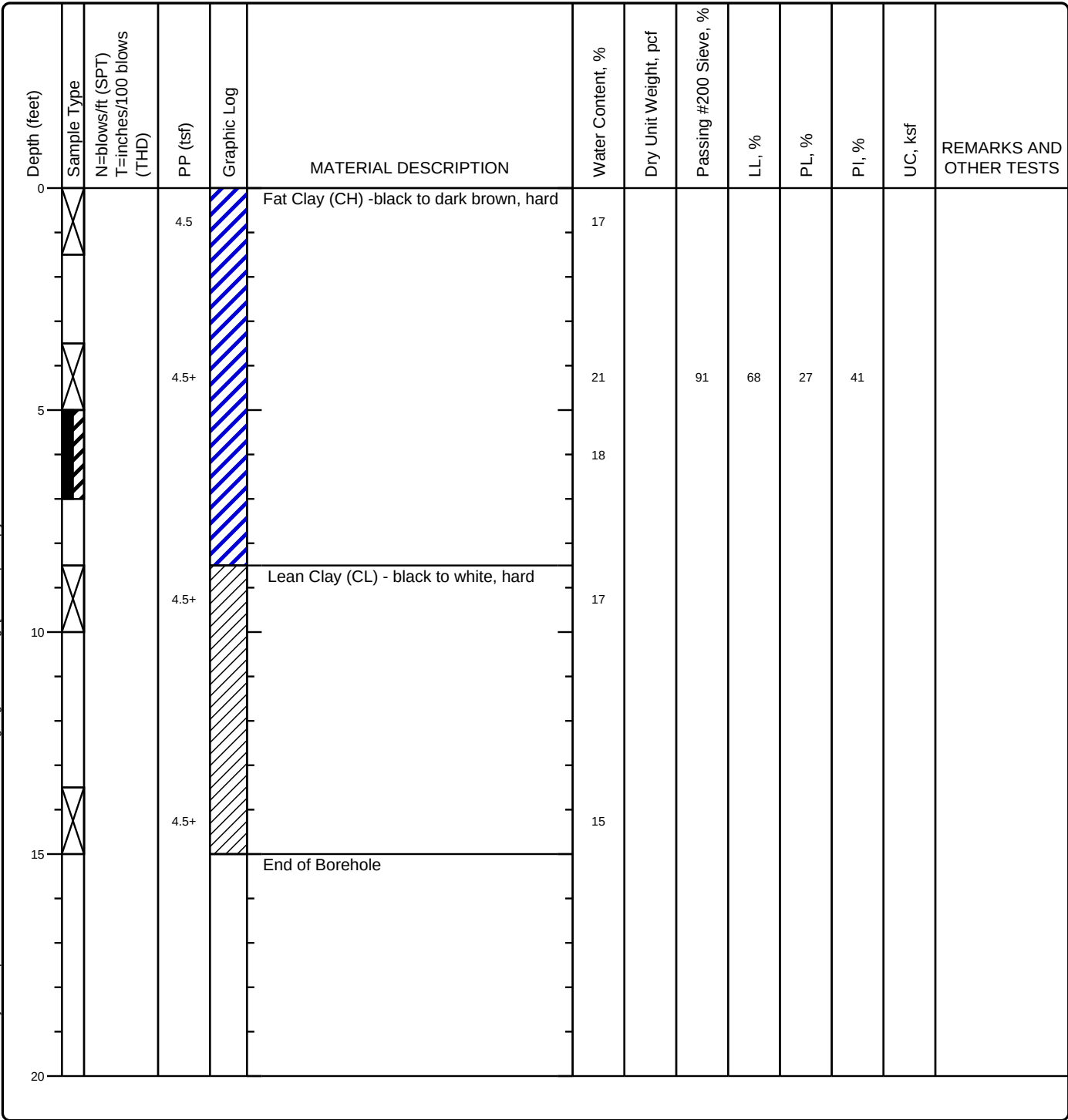


Figure 48

Project: Proposed Pavement	Log of Boring B48
Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas	
Terradyne Project Number: A241147	

Date(s) Drilled October 4, 2024		
Drilling Method Solid Stem Flight		Total Depth of Borehole 15 feet bgs
Drill Rig Type B-34		Approximate Surface Elevation Existing Ground Level
Groundwater Level and Date Measured Not Encountered	Sampling Method(s) Auger, Tube	
Borehole Backfill Soil Cuttings	Location SEE BLP	

Depth (feet)	Sample Type N=blows/ft (SPT) T=inches/100 blows (THD)	PP (tsf)	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Passing #200 Sieve, %	LL, %	PL, %	PI, %	UC, ksf	REMARKS AND OTHER TESTS
0				Fat Clay (CH) -brown to tan, hard								
4.5												
4.5												
5												
10				Lean Clay (CL) - light tan, hard								
4.5												
15				End of Borehole								
4.5												
20												

Figure 49

Project: Proposed Pavement Project Location: Heritage Mill South- Phase 4, Hutto, Williamson County, Texas Terradyne Project Number: A241147	Log of Boring B49
---	---

Date(s) Drilled: October 4, 2024		Total Depth of Borehole: 15 feet bgs
Drilling Method: Solid Stem Flight		Approximate Surface Elevation: Existing Ground Level
Drill Rig Type: B-34		
Groundwater Level and Date Measured: Not Encountered	Sampling Method(s): Auger, SPT	
Borehole Backfill: Soil Cuttings	Location: SEE BLP	

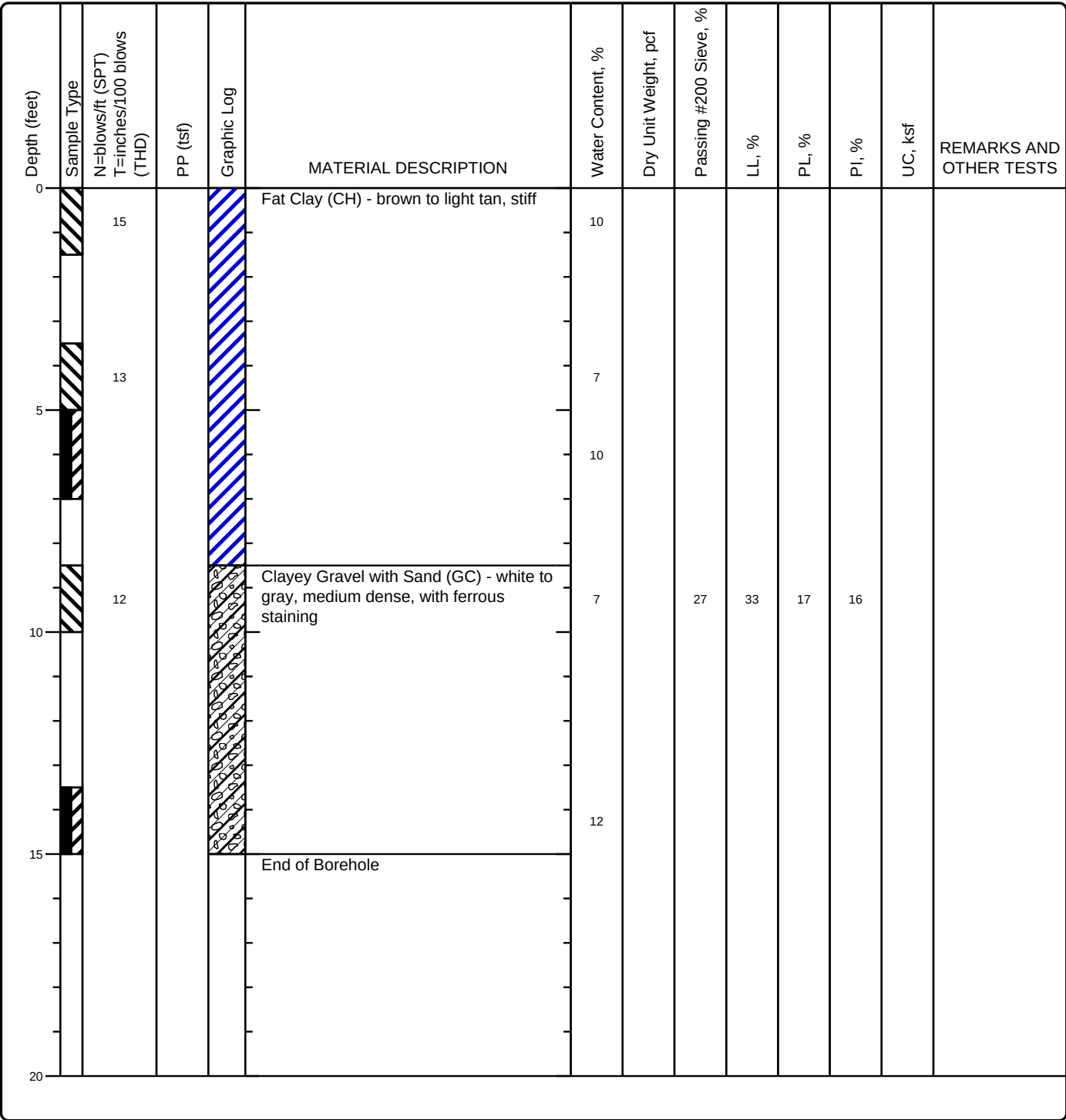


Figure 50



Depth (feet)	Sample Type	N=blows/ft (SPT) T=inches/100 blows (THD)	PP (tsf)	Graphic Log	MATERIAL DESCRIPTION	Water Conte	Dry Unit We	Passing #2C	LL, %	PL, %	PI, %	UC, ksf	REMARKS AND OTHER TESTS
1	2	3	4	5	6	7	8	9	10	11	12	13	14

COLUMN DESCRIPTIONS

- 1** Depth (feet): Depth in feet below the ground surface.
- 2** Sample Type: Type of soil sample collected at the depth interval shown.
- 3** N=blows/ft (SPT) T=inches/100 blows (THD) : N: Number of blows to advance SPT sampler 12 inches or distance shown, OR T: Penetration in inches of THD Cone for 100 blows
- 4** PP (tsf): The Relative Consistency of the soil, measured by Pocket Penetrometer in tons/square foot
- 5** Graphic Log: Graphic depiction of the subsurface material encountered.
- 6** MATERIAL DESCRIPTION: Description of material encountered. May include consistency, moisture, color, and other descriptive text.
- 7** Water Content, %: Water content of the soil sample, expressed as percentage of dry weight of sample.
- 8** Dry Unit Weight, pcf: Dry weight per unit volume of soil sample measured in laboratory, in pounds per cubic foot.
- 9** Passing #200 Sieve, %: The percent fines (soil passing the No. 200 Sieve) in the sample.
- 10** LL, %: Liquid Limit, expressed as a water content
- 11** PL, %: Plastic Limit, expressed as a water content.
- 12** PI, %: Plasticity Index, expressed as a water content.
- 13** UC, ksf: Unconfined compressive strength.
- 14** REMARKS AND OTHER TESTS: Comments and observations regarding drilling or sampling made by driller or field personnel.

FIELD AND LABORATORY TEST ABBREVIATIONS

SPT: Standard Penetration Test
 THD: Texas Dept. of Transportation Cone Penetrometer Test
 LL: Liquid Limit, percent
 PL: Plastic Limit, percent
 PI: Plasticity Index, percent
 PP: Pocket Penetrometer
 UC: Unconfined compressive strength test, Qu, in ksf

TYPICAL MATERIAL GRAPHIC SYMBOLS

	Fat CLAY, CLAY w/SAND, SANDY CLAY (CH)		Clayey GRAVEL (GC)
	Lean CLAY, CLAY w/SAND, SANDY CLAY (CL)		SILT, SILT w/SAND, SANDY SILT (ML)
			Clayey SAND (SC)

TYPICAL SAMPLER GRAPHIC SYMBOLS

	Auger sampler		Grab Sample
	Bulk Sample		2.5-inch-OD Modified California w/ brass liners
	3-inch-OD California w/ brass rings		Pitcher Sample
	CME Sampler		2-inch-OD unlined split spoon (SPT)

OTHER GRAPHIC SYMBOLS

	Water level (at time of drilling, ATD)
	Water level (after waiting, AW)
	Minor change in material properties within a stratum
	Inferred/gradational contact between strata
	Queried contact between strata

GENERAL NOTES

- 1: Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive, and actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
- 2: Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.



Proctor Compaction Test

Client: Terradyne Engineering

Beyond Project No.: LT2410087

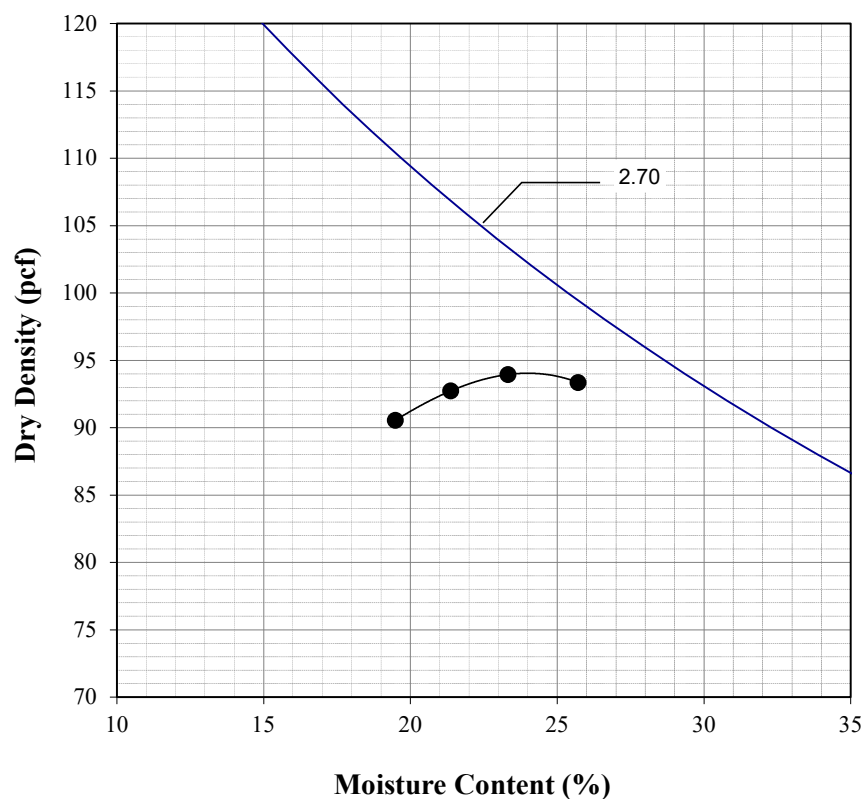
Project Name: Heritage Mill South-Phase 4

Test Method: ASTM D698, Method A

Sample I.D.: B-43 at 0-1 ft

Test Date: 10/05/24

Moisture-Density Relationship



Water Content (%)	Dry Density (pcf)
21.4	92.7
23.3	93.9
25.7	93.4
19.5	90.5

Curve Results	
Maximum Dry Density (pcf):	94.0
Optimum Water Content (%):	24.0

HuaMiao Cao, P.E., 10/7/24

Quality Review/Date

Tested by: A.S.

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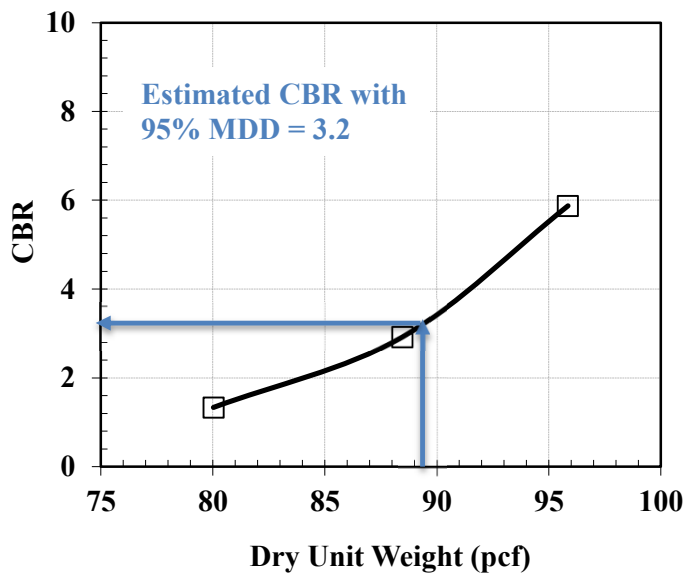
Beyond Engineering & Testing, LLC
3801 Doris Lane, Suite B
Round Rock, TX 78664
(512) 358-6048

CBR (California Bearing Ratio) Test

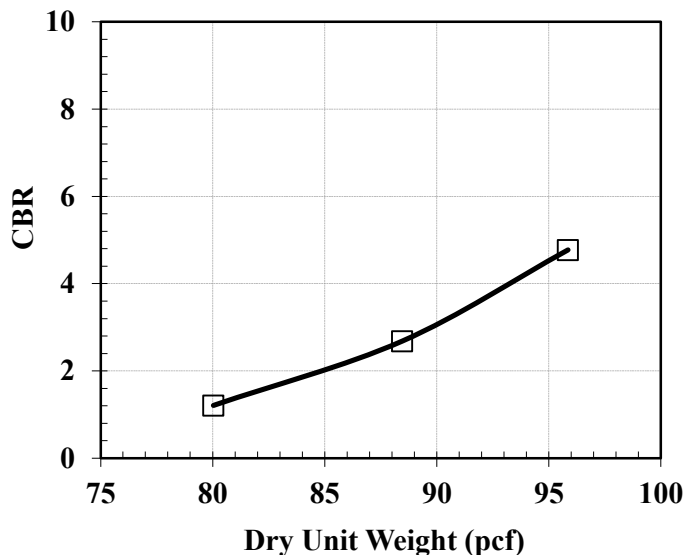
Client: Terradyne Engineering
Project: Heritage Mill South-Phase 4
Sample No: B-43 at 0-1 ft

Beyond Project No.: LT2410087
Test Method: ASTM D1883
Test Date: 10/14/2024
Rate of Penetration: 0.05 in/min

CBR for 0.100-in Penetration



CBR for 0.200-in Penetration



Initial Conditions			
Specimen No.	1	2	3
Blows per Layer	10	25	60
Surcharge Weight (lbs)	10	10	10
Water Content (%)	24.5	24.7	24.7
Dry Unit Weight (pcf)	80.0	88.5	95.9
Percent Compaction (%)	85.1	94.1	102.0
Final Conditions (soaked)			
Water Content (%) at top 1-in layer after soaking	36.3	31.8	28.3
Swell (% of initial height)	2.1	1.7	1.1
Bearing Ratio of Sample at 0.100 in penetration	1.3	2.9	5.9
Bearing Ratio of Sample at 0.200 in penetration	1.2	2.7	4.8

Note: Soil specimens were molded to a range of densities using 10, 25 and 60 blows at optimum moisture content as per ASTM D 1883 to develop the CBR versus dry density curve. It was allowed the specimens to soak for 96 hrs prior bearing test. Removed the free water and allow the specimens to drain out for 15 min. The 10-lbs surcharge load was placed during bearing test.

HuaMiao Cao, P.E., 10/15/24

Analysis & Quality Review/Date
Specimens prepared and tested by: T.Z.

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3801 Doris Lane, Suite B
Round Rock, TX 78664
(512) 358-6048

Client: Terradyne Engineering, Inc.
Project: Heritage Mills Pavement
(PN: A241147)

Beyond Project No.: LT2409087
Testing Method: Tex-145-E, Tex-620-J,
ASTM D4972

Corrosion Test Summary

Sample ID	Sulfate Content (ppm)	Chloride Content (ppm)	pH	
			Water	CaCl ₂
B-16 at 0'-2' Bulk	<100	61	5.4	--

HuaMiao Cao, P.E., 11/5/24

Quality Review/Date



Beyond Engineering & Testing, LLC
3801 Doris Lane, Suite B
Round Rock, TX 78664
(512) 358-6048

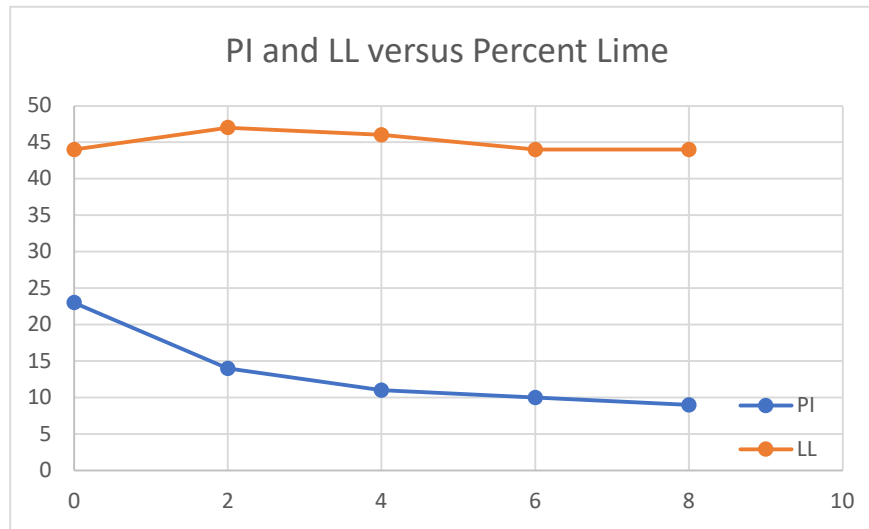
PI Lime Series

Admixing Lime to Reduce Plasticity Index of Soils

Client: Terradyne Engineering, Inc.
Project: Heritage Mills Pavement (PN: A241147)
Sample: B-16 at 0-2 ft

Beyond Project No.: LT2410087
Test Method: Tex-112-E
Test Date: 10/29/2024

Soil = 50 g					
Series	% Lime	Lime Weight (g)	LL	PL	PI
1	0	0	44	21	23
2	2	1	47	33	14
3	4	2	46	35	11
4	6	3	44	34	10
5	8	4	44	35	9



Note: Hydrated Lime was used.

HuaMiao Cao, P.E., 11/5/24

Analysis & Quality Review/Date

Specimen prepared by: L.P.

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Unconfined Compression Test Report

Client: Terradyne Engineering, Inc.

Project No.: LT2410087

Type of Specimen: Shelby Tube

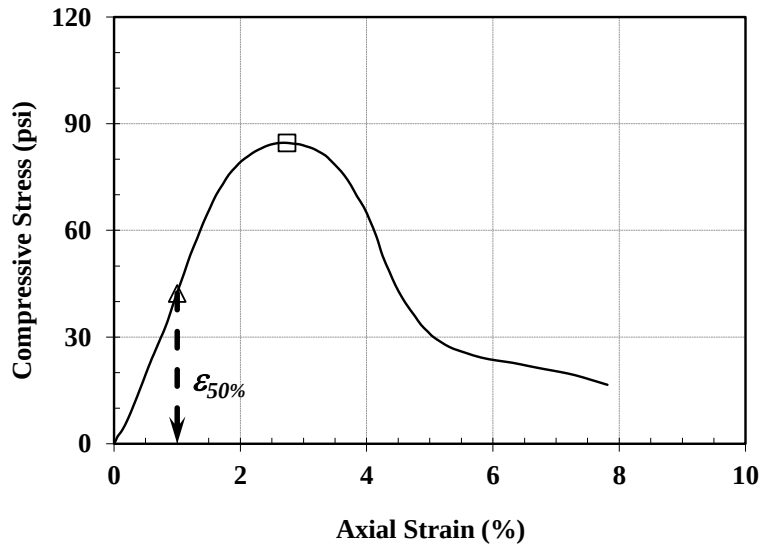
Project: Heritage Mills Pavement
(PN: A241147)

Test Method: ASTM D2166

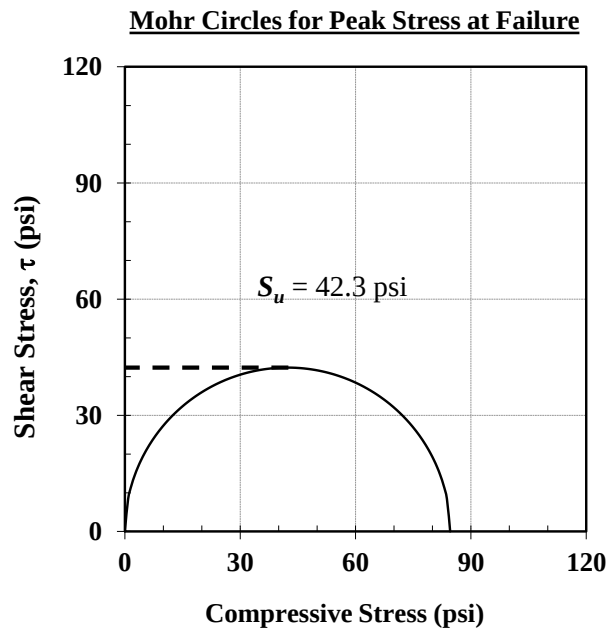
Strain Rate: 1.0 %/min

Test Date: 10/29/2024

Sample I.D.: B-43A at 2-4 ft



Initial Specimen Conditions		
Avg. Diameter (in)	D_o	2.78
Avg. Height (in)	H_o	5.66
In-situ Moisture Content (%)	w_o	24.7
Total Unit Weight (pcf)	ρ_{total}	119.2
Dry Unit Weight (pcf)	ρ_{dry}	95.6
Saturation (%)	S_r	87.4
Void Ratio	e_o	0.76
Specific Gravity (Assumed)	G_s	2.70



Stresses at Failure	
Unconfined Compressive Strength, q_u (psi)	84.6
Axial Strain at Failure (%)	2.7
Axial Strain at 50 % of q_u (%)	1.0
Total Stresses at Failure	
Major Principal Stress, s_1 (psi)	84.6
Minor Principal Stress, s_3 (psi)	0
Undrained Shear Strength, S_u (tsf)	3.05

Note: Failure was determined at the maximum deviator stress or deviator stress at 15 % axial strain, whenever is obtained first.

Te-An Wang, EIT, 11/01/24

Quality Review/Date
Specimen prepared & tested by: YL

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Unconfined Compression Test Appendix

Client: Terradyne Engineering, Inc.
Project: Heritage Mills Pavement (PN: A241147)
Specimen: B-43A at 2-4 ft

Project No.: LT2410087
Test Method: ASTM D2166
Test Date: 10/29/24



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Unconsolidated-Undrained Triaxial Compression Test

Client: Terradyne Engineering, Inc.

Project No.: LT2410087

Type of Specimen: Shelby Tube

Project: Heritage Mills Pavement
(PN: A241147)

Type of Test: Q-Test

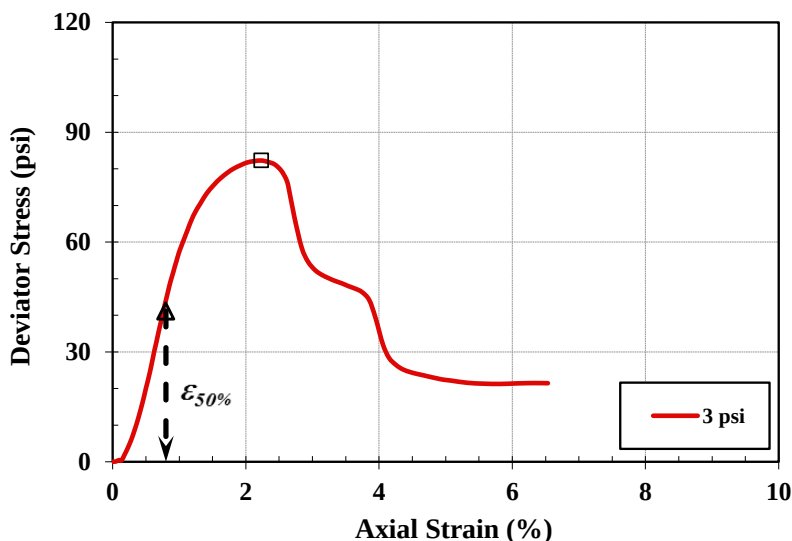
Strain Rate: 1.0 %/min

Test Date: 10/30/2024

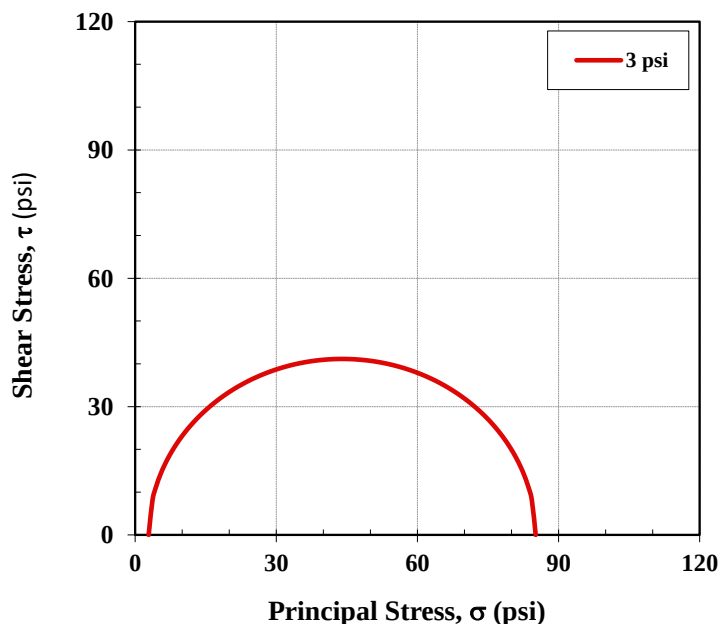
Test Method: ASTM D2850

Sample No.: B-43B at 2-4 ft

Principal Stress Difference vs. Axial Strain



Mohr Circles (Total Stress) for Peak Stress at Failure



Initial Specimen Conditions

Confining Pressure (psi)		3.0
Avg. Diameter (in)	D_o	2.79
Avg. Height (in)	H_o	5.60
In-situ Water Content (%)	w_o	24.2
Total Unit Weight (pcf)	q_{total}	115.3
Dry Unit Weight (pcf)	q_{dry}	92.8
Saturation (%)	S_r	80.2
Void Ratio	e_o	0.82
Specific Gravity (Assumed)	G_s	2.70

Stresses at Failure

Maximum Deviator Stress (psi)	82.3
Axial Strain at Failure (%)	2.2
Axial Strain at 50% of q_u , ϵ_{50} (%)	0.8
Total Stresses at Failure	
Major Principal Stress Corrected, s_{1C} (psi)	85.1
Minor Principal Stress, s_3 (psi)	2.9

Test Results

Unconsolidated-Undrained Compressive Strength at Failure, $\sigma_{1C} - \sigma_3$ (tsf)	5.92
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Note: Failure was determined at the maximum deviator stress or deviator stress at 15 % axial strain, whenever is obtained first.

Te-An Wang, EIT, 11/01/24

Analysis & Quality Review/Date
Specimen Prepared by: JD & JZ



Beyond Engineering & Testing, LLC
3801 Doris Lane, Suite B
Round Rock, TX 78664
(512) 358-6048

Unconsolidated-Undrained Triaxial Compression Test Appendix

Client: Terradyne Engineering, Inc.
Project: Heritage Mills Pavement (PN: A241147)
Specimen: B-43B at 2-4 ft

Project No.: LT2410087
Test Method: ASTM D2850
Test Date: 10/30/24



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