J&K Geological Services
18291 Smokey Pine Rd
Peyton, Colorado 80831
(719) 499-5431

Please update this report for Filing 12 pursuant to LDC Sec. 8.4.9. It is not possible to make a finding regarding prevalence of geologic hazards and constraints as they specifically relate to Filing 12. Please see CGS comments as well.

February 6, 2019

Widefield Investment Group
#3 Widefield Blvd.
Colorado Springs, CO 80911

Gentlemen,

At your request, personnel of J&K Geologic Services, (J&K), installed a total of 6 piezometers in The Glen at Widefield East on December 1, 2017, as discussed in our letter dated January 1, 2018, (J&K Job # 171201). Reference the attached Piezometer Location Plan, (Fig. #1).

The piezometers were installed as part of a monitoring program to verify ground water elevations in Filings #9 & #11 as approved by the Colorado Geological Survey, (CGS) and the comment letter dated April 16, 2016, (CGS Unique No. EP-16-0003 4), concerning the Preliminary Plat Plan for The Glen at Widefield East.

The piezometer borings were advanced to a depth at least 10 ft. below the depth groundwater was encountered during the drilling process. A 2 inch diameter slotted pipe was installed in the boring and was backfilled with washed sand. The upper 3 ft. of the boring was backfilled with Vol-Clay powder to seal the piezometer from outside water sources.

The groundwater levels were measured once a month from December 2017 through December 2018. An electronic Ken-Tech brand water level indicator was used to measure the depth to the groundwater.

In the CGS comment letter for the above referenced development dated January 15, 2016, Ms. Jill Carlson, CEG, recommended "basements should not be allowed in areas where observed groundwater levels are shallower than 14 ft. below planned final grades...". As the groundwater measurements show this requirement has been surpassed in all areas of the development that were of concern for shallow groundwater.

As in all other filings of The Glen at Widefield East, each individual lot is to be investigated by the lot owner's Geotechnical Engineer of Record for final foundation parameters and recommendations.

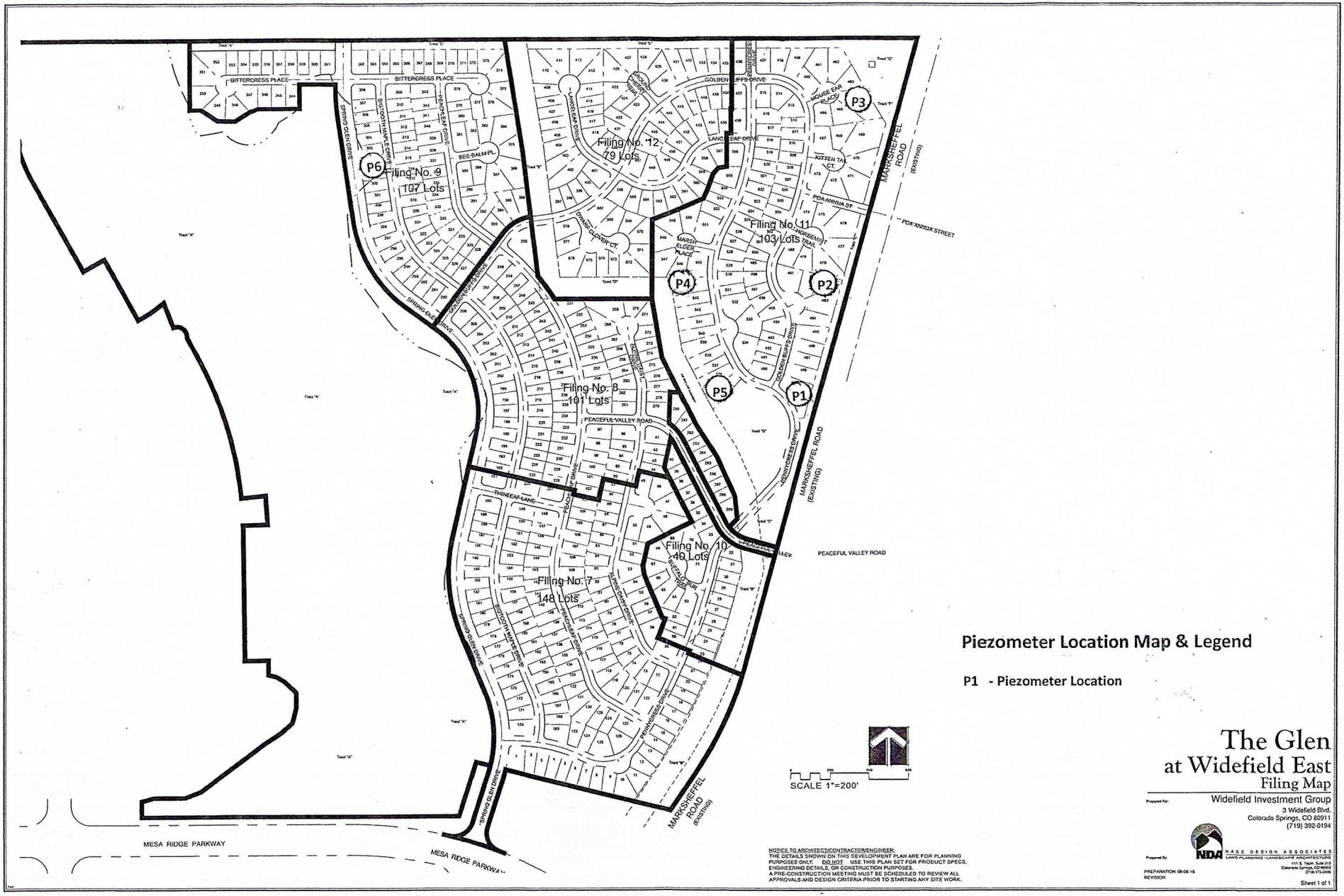
We trust this provides the information you requested. Should questions arise or if further information is needed, please contact J&K Geological Services at your convenience.

Respectfully submitted,

J&K GEOLOGIC SERVICES, LLC

James F. Frohbieter,
Professional Geologist

JFF/ksf



Piezometer Location Map & Legend

P1 - Piezometer Location

NOTICE TO ARCHITECT/CONTRACTOR/ENGINEER:
THE DETAILS SHOWN ON THIS DEVELOPMENT PLAN ARE FOR PLANNING PURPOSES ONLY. DO NOT USE THIS PLAN SET FOR PRODUCT SPECS, ENGINEERING DETAILS, OR CONSTRUCTION PURPOSES.
A PRE-CONSTRUCTION MEETING MUST BE SCHEDULED TO REVIEW ALL APPROVALS AND DESIGN CRITERIA PRIOR TO STARTING ANY SITE WORK.

The Glen at Widefield East
Filing Map

Prepared For:
Widefield Investment Group
3 Widefield Blvd.
Colorado Springs, CO 80911
(719) 392-0194

Prepared By:
NASS DESIGN ASSOCIATES
LAND PLANNING • LANDSCAPE ARCHITECTURE
111 S. Tejon Suite 312
Colorado Springs, CO 80903
(719) 473-2406

PREPARATION: 08-08-16
REVISION:

Sheet 1 of 1

GROUND WATER MEASUREMENTS: THE GLEN AT WIDEFIELD EAST
DECEMBER 2017 THROUGH DECEMBER 2018

Piezometer #*	**P-1**	**P-2**	**P-3**	**P-4**	**P-5**	**P-6**
Elevation (ft.)	5678.82	5681.36	5692.34	5684.37	5680.36	5687.60
Depth to water below current ground surface	Depth to water	Depth to water	Depth to water	Depth to water	Depth to water	Depth to water
December 12/05/2017	26'1''	29'6''	37'2''	34' 10"	31'10''	20'2''
January 01/25/2018	25'0''	29'0"	36'2"	32'0"	29'10"	20'8"
February 02/26/2018	25'1"	28'10"	36'0"	31'10"	30'0"	21'8"
March 03/22/2018	26'10"	28'9"	36'3"	31'10"	30'1"	21'4"
April 04/26/18	27'1"	28'11"	36'1"	32'0"	30'4"	21'7"
May 5/31/2018	28'0"	28'11"	37'0"	32'4"	30'0"	21'0"
June 06/21/2018	30'0"	29'8"	38'6"	32'0"	30'2"	20'6"
July 07/23/2018	30'9"	29'4"	38'3"	32'7"	30'9"	19'6"
August 08/14/2018	31'1"	30'10"	38'9"	32'4"	31'2"	18'4"
September 09/19/2018	30'10"	30'9"	38'9"	33'2"	31'2"	18'9"
October 10/24/2018	30'8"	30'7"	38'4"	32'6"	31'0"	18'6"
November 11/29/2018	30'8"	30'8"	38'3"	32'3"	31'3"	18'6"
December 12/14/2018	30'4"	30'0"	38'0"	32'4"	31'3"	18'5"

*Piezometers installed 12/01/2017

PRELIMINARY
SUBSURFACE SOIL INVESTIGATION
THE GLEN AT WIDEFIELD, FILING #7
WIDEFIELD, COLORADO

Prepared For:

Glen Investment Group No. VIII
3 Widefield Boulevard
Colorado Springs CO 80911

Respectfully submitted,

SOIL TESTING AND ENGINEERING INC

Reviewed By:

Larry W. Chisman, Principal

Francis Magnussen, P.E.

COLORADO REGISTERED FRANCIS MAGNUSSEN 4-17-07 20020 PROFESSIONAL ENGINEER

LWC/mss

STE Report 060933

April 16, 2007

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INTRODUCTION

This report presents the results of our preliminary subsurface soil investigation, to determine the subsurface conditions for The Glen @ Widefield, Filing #7. Borings and test pits from our initial subsurface soil investigation for The Glen @ Widefield, Filing 6, Job No. 051021, that pertain to this filing were also utilized to evaluate subsurface conditions.

The following reports were reviewed and data from these reports were utilized for the completion of this report:

- Lincoln Devores "Geotechnical Report for Sunrise Ridge Subdivision, Phase 2, Western Portion", El Paso County, Colorado. Job No 70380, dated February 24, 1989.
- Geotechnical Consultants Inc. report "Reconnaissance Geology and Surface soils 735 acre area Widefield Area, El Paso County, Colorado". Job No 2245 dated October 31, 1986.
- STE's Report, "Preliminary Subsurface Soil Investigation Sunrise Ridge Phase II, Colorado Springs, Colorado", Job No 80415 dated June 10, 1998.
- STE Report, "Preliminary Subsurface Soil Investigation Marksheffel and Peaceful Valley Road for Widefield School District", Job No 90235 dated May 5, 1999.
- STE Report, "Preliminary Subsurface Soil Investigation Filings 1&2 The Glen at Widefield, Colorado", Job No 90356, dated June 30, 1999.
- STE Report, "Preliminary Subsurface Soil Investigation Proposed Future Elementary School Site in the Central Portion of Filings 1&2 the Glen at Widefield, Colorado", Job No 90989, October 20, 1999.
- STE Report, "Mesa Ridge Parkway, The Glen", Job No 00620, dated October 11, 2000.
- STE Report, "The Glen at Widefield", Job No 01149, dated April 19, 2001.
- Kleinfelders Report-Geotechnical Investigation, "Proposed Mesa Ridge Parkway, Settlement and Preload Analysis, Fountain, Colorado", Job No 65-1532-003 dated May 1, 2001.
- In addition, STE's daily notes and density test results as well as our experience gained in the development of Filing Nos. 1, 2, 3, 4 and 5 for The Glen at Widefield were considered for this letter.
- STE Report, "Preliminary Subsurface Soil Investigation, FMIC Ditch Relocation, Job No. 01149, dated April 19, 2001.
- STE Report, Preliminary Subsurface Soil Investigation, Filing #4, The Glen at Widefield, Widefield, Colorado, Job No. 01969, dated February 7, 2002.
- STE Preliminary Subsurface Soil Investigation, Filing #5, The Glen at Widefield, Widefield, Colorado, Job No. 040721, dated October 11, 2004.
- STE Preliminary Subsurface Soil Investigation, Filing #6, The Glen at Widefield, Widefield, Colorado, Job No. 060938, dated March 21, 2006.

- STE Preliminary Subsurface Soil Investigation, Filing #6, The Glen at Widefield, Widefield, Colorado, Job No. 051021, dated November 21, 2005.

This investigation was completed to better define subsurface conditions for estimating costs for the development phase.

Information provided at the time of writing this report, our preliminary findings, along with suggestions and recommendations for development and construction are included in the body of the report.

The borings are spaced at varying intervals. The soil profile represented by the boring logs is an interpretation of the anticipated profile. However, the soils are erratic and variations in the thicknesses of Soil Types 1, 2, 3 and 5 are anticipated.

During the subsurface investigation for Filing No. 6, borings and test pits were completed along the western boundary of this filing. Test borings from STE report, Job No. 051021 are included in this report (Reference Figures A through Z). Test pits and trenches completed along the eastern boundary of Filing No. 6 were used to provide a preliminary delineation between the stable and unstable areas in this filing. Additional borings were completed during this investigation to better define this boundary. It will be further discussed in the body of this report.

Thirty two borings were completed initially to verify soil conditions across the site. The information obtained from borings along the western boundary of Filing No. 7 from STE Job No. 051021 was also utilized to identify areas that required additional investigation. Thirty additional borings were completed to better define groundwater conditions and areas of unstable soil.

A high pressure gas line and associated easement runs from south to north in the central portion of this filing. A second high pressure gas line and easement is located along the eastern boundary of the site. The two easements intersect in the north central area. It is our understanding the south central portion of the gas line will be abandoned and located in the dedicated easement west of Marksheffel Road.

A forced main sanitary sewer line is also present across the southern and southeastern portion of the site. It is our understanding this utility will be moved to the easement adjacent to Mesa Ridge Parkway.

If these utilities are moved separately from the development phase of this filing, a representative of STE is to periodically monitor the trenches during the removal process. The visual observation of the trenches will be utilized to better define the depths of soil types across the site.

If fill is required to raise trenches to the proposed grades for development, a testing program will be required.

This report addresses the soil conditions only and does not address any environmental concerns.

GENERAL SITE CONDITIONS AND PROJECT DESCRIPTION

LOCATION:

The site is generally located to the west of Marksheffel Road and extends to the south, north and west of the intersection of Peaceful Valley Road and Marksheffel Road, southeast of metropolitan Colorado Springs, Colorado. The site, designated as Filing No. 7, is located to the west of Marksheffel Road. A proposed school site is located between Marksheffel Road and the eastern boundary of this filing in the northeastern portion. The approximate location of the site is shown on the enclosed Site Location Plan (Figure 1).

SITE DESCRIPTION:

Filing No. 7 is generally located on a hill that runs north to south across the property. The highest elevation is in the southern portion of the site.

The slopes around the highest elevation slope in all directions. A saddle is present in the higher elevations between the southern and northern portions of the property.

The highest elevation of the northern area is located at the northeastern boundary corner between the school site and this filing. The surface from the northeast corner generally slopes to the west and south.

An abandoned irrigation ditch system parallels the slope in the northern portion. Shallow ditches are present at various locations on the site. A partially open trench is present in the southeastern portion of

the site. This may be in the utility easement adjacent to the eastern boundary.

The eastern and southern slopes are generally mild and uniform. The central portion of the western slopes, contain some drainage features that generally slope to the south and west.

The western boundary is adjacent to a seasonally active drainage feature. The western boundary is delineated on Figure 2 utilizing data obtained from this investigation and STE Job No. 060938.

The eastern boundary will be the western edge of the high pressure gas line easement.

The easement parallels Marksheffel Road in the southeastern portion. It separates the school property and this filing in the central and northern portions.

The southern boundary is the utility easement located on the north side of Mesa Ridge Parkway.

The northern boundary is adjacent to an open field presently used for grazing.

Minor debris fill is scattered across the site at various locations. Minor piles of residential fill, is present on the surface. Concrete associated with the abandoned irrigation ditches is present in a few areas.

The site is generally covered with grasses and weeds. A few elm and cottonwood trees are present in small areas.

PROJECT DESCRIPTION: This investigation will be utilized to aid in the proposed planning phase and development phase for future residential construction.

Proposed residential models for this subdivision have been designed for other filings of this subdivision. The structures generally consist of one or two-story wood framed structures utilizing a combination of basement, crawlspace, and slab-on-grade type construction.

The building loads are anticipated to range from light to moderate.

GENERAL SUBSURFACE CONDITIONS

SOIL TYPES:

Generally, four native soil types are present over the bedrock. Soil types from previous subsurface investigation were compared for classification and testing. The soils encountered are as follows:

- Type 1 – silty to sandy clay
- Type 2 – sandy clay
- Type 3 – sandy gravel with sandy clay lenses
- Type 5 – silty to clayey sand with sandy clay lenses
- Type 4 – lensatic sandy claystone and clayey sandstone

Clayier portions of the five types are moisture sensitive and will change in volume with increases in moisture content. Soil types 1, 2, 3 and 4 classify as a low plastic silty to sandy clay (CL) and Soil Type 5 classifies as a low plastic clayey sand (SC).

The clays encountered in all soil types have low to moderate to high expansion potentials when they were remolded.

Soil Type 1 consists of a silty to sandy clay and overlays the majority of the ground surface on the higher portions of the site. The thickness of this soil type varies considerably across the site. Due to the environment of deposition in which Soil Type 1 was deposited, the soil profile contains lenses and pockets of silty to clayey sand.

Soil Type 1 is generally a metastable soil that has a low to high potential for collapse when weight and water are added. Swell/consolidation test results from this filing indicate one sample has a low expansion potential of 0.7% volume increase. The majority of the samples collapsed ranging from 1.0% to 8%. This range is from low to very high potential for collapse.

Expansion potential of remolded samples of Type 1 ranged from 795 psf to 1704 psf. This is in the low to moderate to moderate to high expansion range.

Soil Type 2 is also a sandy clay soil and is somewhat similar to Soil Type 1 when tested in the laboratory. This soil type is also somewhat erratic containing varying percentages of coarse grained sands and also contains lenses of silty to clayey sands. This soil type is generally located below Soil Type 1 across this filing.

The soil is generally expansive with a low to moderate moisture increase. Settlement type movements can occur under heavy loads. With a high to saturated moisture content, Soil Type 2 is generally a weak, unstable soil prone to settlement type movements. Due to the

low permeability of this soil, settlement generally occurs over long periods of time.

The major differences between Soil Type 1 and 2 is the environment of deposition. Soil Type 2 was deposited in a wetter environment which allowed for the formation of a more structured soil profile.

Soil Type 3 is a silty to clayey sand and gravel soil. It contains lenses of sandy clay. The majority of the sand and gravel in this deposit appears to be derived from the local sandstone outcroppings. The particles are generally angular, indicating the source for the sand and gravel was relatively close.

Limited amounts of Type 3 were encountered during this investigation. The majority was encountered in the lower elevation along the western portion of the site. This soil type was found at various locations over the bedrock across this site. In previous filings, where groundwater was present over the bedrock in the more permeable lenses, groundwater elevations generally raised immediately during the drilling process. This rise indicates the source of the groundwater is uphill to the north of this site creating a hydrostatic head resulting in the rapid rise in the water elevation in the borings. The water elevation changes were not as extreme in this investigation.

Where water is not present over the bedrock, the lenses of sandy clay in this deposit can be moisture sensitive resulting in settlement type movements in the lighter weight portions. Where these lenses have been exposed to water and consolidation, the clays can have expansion pressures ranging from low to moderate depending on the sand/clay content.

Soil Type 5 was encountered in two borings on the southern end of the site. Based on auger cuttings and limited samples recovered the soil is somewhat lensatic. It is generally silty to clayey sand with sandy clay lenses.

Soil Type 4 is a lensatic claystone and sandstone material belonging to the Pierre Shale formation. The expansion potential ranges from low to high depending on the sand/clay content. Due to the highly fractured nature and high density of the bedrock, undisturbed samples could not be procured for swell/consolidation testing.

Depths to the bedrock vary significantly across the site. Reference the attached "Boring Logs" (Figure Nos. 4 through 34 and Figures A through Z). The initial borings were spaced approximately 400 feet apart. Borings were added at closer spacing where considerable differences in the soil profile were evident during the drilling program.

As such, variations in the bedrock surface are anticipated. The bedrock on the hill is relatively shallow. However, the depth to bedrock deepens considerably on the western and southern slopes.

As discussed in previous reports for The Glen at Widefield, Paleo Channels are present across the entire site. The sides of these channels can be mildly to steeply sloping from the top edge of the channel to the bottom. Many of the channels have very steep to near vertical sidewalls. This type of near vertical sidewalls on the channels has been encountered in previous filings.

MANMADE FILL: Small piles of debris fill are present across the site. The household trash on this portion of The Glen at Widefield is considerably less than that present on other filings.

Concrete debris associated with abandoned irrigation gates is present in the lower portion of the site.

An irrigation channel is located in the northern portion of the site. Several small ditches are also located across the site. These shallow swales appear to be relatively free of debris.

The access road to this area from Marksheffel Road and the sanitary sewer pump station at the southwest corner appears to be cut in most areas. However, it appears some fill was utilized in portions of the western end to construct the access roadway.

All debris fill is unsuitable for use as overlot or structural fill. Due to the relatively small quantities, it should be removed from the site.

The fills associated with abandoned irrigation channels is most likely derived from existing soils at the time of their construction. Subsequent to stripping, the fill can be evaluated for use in the overlot grading process.

Pockets of old fill may be scattered across the site. If fill is encountered during the grading process, it will be addressed at that time.

All debris (i.e. pipe, concrete etc.) associated with the removal of existing gas or sanitary sewer lines are to be removed from the site.

GROUNDWATER: Groundwater was apparent in the majority of the borings along the western boundary, either at the time of drilling or after the drilling program. The borings were measured subsequent to each phase of the

drilling program to determine groundwater elevations. Groundwater was also present in Test Borings 6, 8, 10 and 15 near the gas line easement.

Water bearing pockets and/or lenses were present in Soil Types 2, 3 and 4. Soil Type 5 has lenses of clean to silty sand. However, water was not evident in either boring where it was encountered. The water bearing soils are generally silty to clayey sand and are founded above a non-permeable material that creates perched water tables in the soil profile. The groundwater and perched water elevations will fluctuate with seasonal variations in precipitation and irrigation practices in the area.

The majority of Soil Type 3 was encountered in the western, lower portion of the site where the depth to the bedrock increased. This soil type was generally located at, or near the interface of the bedrock. Where groundwater at the lower elevation was present in this soil type the groundwater elevation raised immediately when the water bearing strata was encountered.

Soil Type 4 is a lensatic shale and also contains water bearing lenses. Groundwater was not generally apparent in the bedrock during the drilling program. However, water was present in subsequent measurements as indicated on the Test Boring Logs.

Since the majority of the soils are expansive, an overexcavation replacement scheme should be used to calculate separation between the bottom of the overexcavation and the groundwater. A six foot separation between the bottom of the overexcavation and the groundwater is generally recommended.

The depth to groundwater varies across the site. If seepage or evidence of groundwater is present in individual excavations, more comprehensive drain systems may be warranted (i.e. curtain drains, capillary breaks etc.).

Groundwater was not apparent to depths drilled on the eastern portion of the site and the higher elevations of the western and northern portions. The majority of the groundwater was present along the western boundary and the lower west central portion of the site.

Groundwater was encountered in Test Borings 6, 8, 10 and 15. These borings are generally in lower areas of the site and overlot fill is anticipated to raise the existing grades.

Again, groundwater is a permanent feature of the site. It will fluctuate with seasonal variations in precipitation and irrigation practices.

Construction of homes and roadways along with irrigation of landscaped areas will tend to raise subsurface water tables.

CONCLUSIONS AND RECOMMENDATIONS

INTRODUCTION:

The discussion in this section is based upon the review of previous reports, conditions encountered in the test borings completed in this filing and on the anticipated building characteristics previously described. Representatives of STE should review grading plans, development plans etc. to ensure they will be appropriate for site conditions.

DEVELOPMENT PLANNING:

As discussed above, the soils in this subdivision are erratic and range from collapsible to unstable to expansive. The majority of the geologic hazards discussed in this report can be addressed during the development phase to reduce potential problems during the home construction process. Concerns not addressed during the initial phases will be addressed on a lot by lot basis (i.e. overexcavation/replacement for expansive material).

Soil Type 1 is generally metastable and will tend to consolidate and/or collapse when weight and water are added. This material is generally located on the slopes on the site and is present over Types 2, 3 and 4. The depth ranges from shallow where bedrock is at or near the surface to 15 to 20 feet below the present ground surface in Paleo channels.

This material is light weight and contains air holes throughout the profile. These materials are subject to settlement and collapse type

movements with additional weight and water intrusion. They have a low permeability. As such, surface water does not easily permeate through the soil profile of the slopes. In the lower portion of the site they have eroded and/or collapsed.

Soil Type 1 is interbedded with both sandy clay and silty to clayey sand lenses. As discussed in reports for previous filings in this subdivision, the overexcavation and recompaction of this material is generally the most accepted method for addressing the collapse potential of the material.

Based on information available, the overexcavation/replacement scheme recommended for Soil Type 1 can be completed satisfactorily during the grading process. If unstable soil is encountered during the overexcavation process it will be evaluated and recommendations will be provided.

Soil Type 2 is generally a sandy clay. Interbedded lenses of both sandy clay and silty to clayey sand are present in this soil deposit. As discussed in the "Groundwater" section of this report, a portion of the sandier lenses may contain perched water tables above the main groundwater elevation.

Soil Type 2 was encountered in all of the borings in the lower portions of the site and in a portion of the borings on the upper elevations. This material generally has an expansion potential in the moderate to high expansion range with low to moderate moisture content increases.

This material, with a high to saturated moisture content, is unstable. As indicated on the boring logs, the auger could be pushed through the unstable soil with very little resistance.

Soil Type 3 is also lensatic. Sandy clay lenses were present in the sand and gravel deposits over the bedrock. Generally, the bedrock on the higher portions of the site is relatively shallow and Soil Type 3 was less apparent.

In the lower portions of the site, the cleaner portions of this deposit were generally saturated with a high permeability allowing the flow of groundwater. This soil type was not as evident on this filing as previous filings.

The clayier portions can have a low to moderate expansion potential with low to moderate moisture contents. Pockets of highly expansive material may be encountered during the development and/or

construction phases, as has been our experience with other filings in this subdivision.

Soil Type 5 was apparent in Test Borings 34 and 35 only. These borings are in the southern portion of the site. The material is generally silty to clayey sand with sandy clay lenses. Due to the depth of the material, it should not be a factor in the cut and fill areas of this subdivision.

Soil Type 4 is a lensatic, very highly weathered to formational claystone and sandstone belonging to the Pierre Shale. The expansion potential in this formation ranges from low to moderate to high. The laboratory testing indicates the clayier lenses are in the moderate to high expansion range. Where samples have a higher percentage of sands and silts the expansion potential is in the low to moderate expansion potential.

Very dense sandstone lenses were encountered in portions of the bedrock profile. These lenses ranged from thin to in excess of 12 inches. Based on the subsurface investigation in this filing and information obtained from previous filings, the thickness of the very dense lenses will increase with depth. The density of the bedrock also increases with depth. This report addresses only the bedrock

encountered to depths indicated on the boring logs. If cuts are planned below the elevations indicated on the drill logs, additional drilling will be warranted.

Mixing the soils may reduce the expansion potential. However, where moderately to highly expansive material is utilized exclusively, overexcavation/replacement schemes will be required for construction of homes.

The initial overexcavation/replacement of collapsible soils during the development phase would include the removal of the material, moisture conditioning and proper compaction as overlot fill. Reference the "Overlot and Structural Fill" section of this report for fill specifications. Unstable material was encountered in the lower western and southwestern portions of the site. During the initial subsurface investigation for Filing 6 backhoe pits were completed to better define the boundary between the unstable and stable portions of the original Filing 6 boundary.

During the subsurface investigation for this filing, the results of the test pits and initial borings completed were utilized to determine the location of additional borings. The western no build line on Figure 2 indicates the boundary between relatively deep unstable soils and shallow

unstable soils. Based on information available, the depth to unstable soil is generally a minimum 14 feet below the present ground surface east of the line.

A roadway is planned at the western boundary of this filing. It is our understanding; underground utilities will be placed to the east of the roadway. Structures, roadways and utilities are not to be planned to the west of the no build line.

The metastable soil (Type 1) in the roadway area is to be removed and replaced in a controlled manner. Available information suggests the overexcavation should not encounter unstable conditions. If, however, unstable soil is encountered some type of stabilization will be required. Recommendations to address unstable soil will be provided, if encountered. Stabilization generally consists of the intrusion of granitic shotrock into the soil to bridge the unstable areas beneath the roadway. The size of the shotrock will be determined by a representative of STE. The quantity of work required to stabilize the affected area will also be determined in the field.

WESTERN ROADWAY BOUNDARY:

As previously discussed, soft to very soft, saturated and unstable materials were encountered on the western and southwestern portions

of the site during the subsurface investigation. The western boundary line assumes the roadway is 60 feet in width. The line indicated on Figure 2 represents either the western edge of the roadway or the crown of the embankment parallel with the edge of the road. Portions of the western roadway embankment may be partially over unstable soil. Some settlement of embankment fills may occur over time. The affected slopes will be monitored by STE on an annual basis until it is determined that the effects of slope movement are negligible. A report will be prepared subsequent to each field inspection.

Based on information available, there will be a minimum 14 feet separation between the present ground surface and unstable material. Fill should be utilized to construct the roadway in lieu of cuts where shallow groundwater is present. Cuts would tend to reduce the separation between the surface and unstable material.

As previously discussed, if unstable small pockets are encountered, they will require stabilization to bridge the soft areas. This has worked well in other filings of this subdivision.

Since a roadway is planned along the western boundary, the foundations to the east of the roadway will not require setbacks from the line shown on the map.

The western roadway may require some additional maintenance, due to its geologic setting.

Further investigation will be required in the two areas in the western portion of the site marked potentially unstable. During the development phase mitigation techniques will be provided if unstable soils are present.

Roadway embankments on either side are to be maintained so that water does not collect or pond on the slopes or at the toe of the slope. Collected surface water at the top of the slopes should be directed into non-erosive channels or conduit and discharged into an area of positive drainage away from the toe of the slope.

UTILITY TRENCHES:

Due to the erratic nature of the groundwater conditions, utility trenches may encounter groundwater and flowing material at various locations across the site. All trenches will require sufficient sloping, shoring and bracing to provide safe working conditions. The contractor is responsible for providing the proper shoring and bracing to ensure adequate safety.

If water is encountered in the utility trenches, some type of dewatering will be required. The contractor is responsible for selecting and utilizing

An overexcavation/replacement scheme will include the removal of a minimum of three feet of the expansive material from beneath the building footprint and replacement with an approved structural fill. The zone of overexcavation is to extend a minimum three feet laterally beyond the foundation components.

OVERLOT AND STRUCTURAL FILL:

During the development phase of this project, the on-site material will be utilized in the cut and fill operations. Due to moisture content of on-site soil and soil makeup, watering both the cut and fill areas will help moisture condition the material. Surfactants may be required to aid in the moisture conditioning of silty clay.

All fill placed across the site during the development phase is to be compacted in lifts not to exceed 6 inches after compaction, while maintaining a minimum of 95% of its maximum Proctor dry density, ASTM D-698. The soil is to be placed at approximately ±2% of its Proctor optimum moisture content.

As discussed earlier, Soil Type 1 is both weight and moisture sensitive and will consolidate and/or collapse with the addition of loads, and/or moisture. In previous filings in this subdivision, Soil Type 1 was removed, moisture conditioned and compacted during the overlot fill phase.

Due to the erratic nature of the subsurface topography and groundwater elevations, conditions may become apparent during the grading process that would warrant the installation of "canyon drains, interceptor drains etc." The type of drain system required will be determined prior to continuing with the overlot fill placement. Collected groundwater is to be directed away from affected areas and discharged appropriately. This issue will be addressed during the grading phase, if encountered.

DESIGN PARAMETERS: Based on information available to date, the majority of the foundation excavations will be founded in moderately to highly expansive soil requiring an overexcavation/replacement scheme. Shallow foundation systems utilized in conjunction with an overexcavation/replacement scheme may be proportioned on the basis of a maximum allowable bearing capacities ranging from 2000 psf to 2600 psf. The final bearing capacity will be determined on a lot-by-lot basis at the time of the open excavation observation. Foundations are to be provided with a minimum of 30 inches of cover for frost protection. Foundation walls should be designed to span a minimum of 12 feet under the design loads to provide for foundation rigidity and account for anomalies in the soil profile.

The on-site native soils and structural fill can be taken to have the following equivalent hydrostatic fluid pressures:

Soil Type	Equivalent Fluid Pressure		
	Active (pcf)	Passive (pcf)	At Rest (pcf)
Select granular fill	38	291	56
1, 2, 4 and Overlot fill	59	138	71
3 and 5	48	238	70

The above values assume level backfill conditions and may require modifications for the effects of surcharge loads, sloping backfill, etc. The design parameters provided must be verified by observation of the foundation excavation.

BACKFILL: Where overexcavation/replacement schemes are warranted due to highly expansive soils, walls retaining in excess of four feet of backfill should be backfilled with granular, non-expansive materials. However, the clay may be used in the upper 18 inches of landscaped areas to create a relatively impermeable cap.

If low to moderately expansive soil is utilized in the backfill process against walls greater than four feet in height, the potential for lateral movement of foundation components will be significantly increased. To reduce the expansion potential, the low to moderately expansive soils can be placed at a minimum of 2% to 4% over optimum moisture content as determined by Standard Proctor, ASTM D-698. Surface drainage and grading is critical, and must be maintained over the life of the structure. Highly expansive soil is not to be used against walls retaining in excess of four feet of backfill.

FLOOR SLABS:

Since expansive soil is present on this site, movement of floor slabs-on-grade is probable. The magnitude of this movement is unpredictable. Concentrating slab loads cannot control the movement. The only positive solution, in our opinion, would be to utilize structural floors with an air space between the expansive soils and floor system. Economic constraints may prevent the use of structural floors. Therefore, if floor slabs-on-grade are utilized in conjunction with an overexcavation replacement scheme, the following recommendations are made:

- Slabs must be separated from all structural and non-structural portions of the building in such a manner that they do not transmit floor slab movement to the roof or overlying floor.

- Stairways and doorways must be designed to accommodate slab movement. Sheetrock and pre-hung doors must not rest on stairway stringers or the slab.

- Columns, pipes, plumbing and utilities penetrating the slab must be isolated from the slab to provide for slab movement.

- Water lines and gas lines connected to water heaters and/or furnaces resting on the slab must be constructed with flexibility to allow for slab movement. Heater ducts must be provided with collapsible connections between the furnace and ductwork.

- Backfill placed below floor slabs should be granular material and is to be compacted to a minimum of 90% of its maximum modified Proctor dry density, ASTM D-698.

The above recommendations are considered prudent and should be followed in order to mitigate the effects of floor slab movement. They do not, however, guarantee that movement will not occur in the event that the subsoils increase in moisture content.

CONCRETE TYPE: All concrete in contact with the soil should be made using a Type II cement for sulfate resistance. Calcium chloride must not be added to a

Type II cement. Foundation forms should remain in place for an appropriate length of time in accordance with ACI (American Concrete Institute) recommendations in the ACI Manual of Standard Practice, Part 2.

In accordance with the International Building Code and good construction practices, concrete must not be placed on frozen ground.

SURFACE DRAINAGE AND GRADING:

The ground surface within 10 feet of the building must be sloped away from the building with a minimum gradient of 5%. This is equivalent to six inches of fall across this 10-foot zone. Two-percent slope would be appropriate in paved areas. Where this is not possible, a well-defined swale should be constructed to intercept the surface water and carry it quickly and safely around and away from the building. Plastic should not be utilized beneath decorative rock or bark, etc. A breathable filter fabric should be utilized in lieu of plastic membranes.

Decorative edging, sidewalks and other flatwork should be planned and constructed so that they do not restrict rapid surface flows away from the foundation region.

Roof downspouts should be extended across all backfill zones and discharged into an area of positive drainage away from the structure.

Decorative edging, sidewalks and other flatwork should be planned and constructed so that they do not restrict rapid surface flows away from the foundation region.

Roof downspouts should be extended across all backfill zones and discharged into an area of positive drainage away from the structure.

No sod, grass, shrubs, flowers, trees, or other vegetation requiring water should be placed within five feet of the foundation or within any backfill zone. Sprinklers must not discharge water within five feet of the foundation or within any backfill zone.

In addition, control of drainage and grading is a critical factor in the future performance of the proposed structures. Cut and fill operations should utilize the natural contours of the site as much as possible.

SUBSURFACE DRAINAGE:

At a minimum, a subsurface perimeter drain will be required around each foundation system. If seepage or evidence of groundwater is

present in the excavation a more comprehensive drain system would be warranted (i.e. curtain drains, capillary breaks, etc.).

OPEN EXCAVATION OBSERVATIONS:

The foundation excavation for each house is to be observed prior to setting forms or pouring concrete in order to verify that adequate bearing materials are present and that no unsuitable materials exist.

CLOSING:

This filing is located in a very complex geologic environment. Some differences in soil and groundwater conditions can be anticipated during the development and construction phases.

Our investigation consisted of random sampling a heterogeneous material. As a result, subsurface soil conditions encountered during development and construction may differ somewhat from the conditions described in this report.

Construction and design personnel should be made familiar with the contents herein. Prior to any site work, a meeting is to be held to familiarize all involved with the overlot grading with existing site conditions and proposed cut and fill operations. If discrepancies are noted during construction, Soil Testing and Engineering Inc. should be notified so that construction problems may be avoided.

This report has been prepared in accordance with generally accepted engineering standards of care for the time and region. No other guarantees or warranties are either expressed or implied.

We trust this report provides you with the information you require. Should questions arise or further information is needed, please contact Soil Testing and Engineering Inc. at your convenience.

Soil Testing and Engineering Inc. appreciates the opportunity to provide you with the engineering services you require.

GEOLOGY

Physiographically, the site lies in the western portion of the Great Plains Physiographic Province. Approximately 8 miles west of the site is a major structure known as the Front Range Fault System. This fault system along with the Rampart Range Fault to the north marks the boundary between the Great Plains Physiographic Province and the Southern Rocky Mountain Province. Bedrock in the area of the site tends to be dipping in an easterly direction. The bedrock in this area is sedimentary in nature and is Cretaceous aged.

The bedrock encountered in the subsurface investigation for this site is the Pierre Shale Formation (KP). Overlying the Pierre Shale are Quaternary aged layers of colluvial, alluvial, residual and eolian soils.

Three mappable units were identified on this site.

Qes – Holocene aged loess with eolian silty to clayey fine grained sand. These metastable soils may consolidate with the introduction of weight and moisture.

Qp – Piney Creek Alluvium – Holocene aged alluvial material – grey to brown firmly compacted silts, clays and sand, contains sand and gravel lenses at the bottom of the deposit. Slope stability is medium to poor. Vertical cuts are stable when dry, but become unstable when wetted.

Kp – Pierre Shale – Cretaceous aged marine shale which contains interbedded lenses of sandstone and claystone shale. Bentonite beds are encountered throughout the formation. Foundation stability is poor. Expansive pressures range from low to very big depending on sand/clay content.

The Reconnaissance Map of Colorado Springs and Vicinity by Scott and Wobus (1973), The Geologic Map of Colorado Springs/Castle Rock area, Front Range Urban Corridor, Colorado by Trimble and Machette (1979) and The Reconnaissance Geology and Surface Soils 735 acres, Widefield Area, El Paso County Co, by Geotechnical Consultants, Inc. (GCI Job No. 2245, dated October 31, 1986) were used in evaluating the site. The test borings by STE were also used to evaluate the site and are included with this report (Figure Nos. 4 - 60 and Figures A – N).

OVERLOT GRADING

This portion of the report is intended to provide specifications to establish the procedures for preparing areas to be filled, including stripping and grubbing, stabilization of soft soils, and placing and compacting fill soils to the lines and grades shown on the grading plans.

- A meeting is to be held on site prior to any stripping, grubbing or fill placement. Representatives from the owner, general contractor, earth moving contractor and STE are to be present at the meeting to familiarize all parties with the proposed project.

- The owner will establish the project boundaries. Responsibilities of all cut and fill elevations necessary for proper location and execution of the work is the responsibility of the owner. He will retain an engineer to establish vertical and horizontal control for the grading work and to determine the final rough grade of the fill.

- In accordance with generally accepted construction practices, the contractor will be solely and completely responsible for conditions on the job site including safety of all personnel and property during the performance of the work. This requirement will apply continuously and not be limited to normal working hours.

- The responsibility of the soil engineer, if hired to do so, is to conduct construction review of the contractor's performance and does not include review of the adequacy of the contractor's safety measures on or near the construction site.

- Soil Testing and Engineering Inc. shall be retained by the owner to observe and test the earthwork in accordance with specifications provided. Adequate observations and testing will be provided to meet construction specifications. It shall be the responsibility of the contractor and owner to assist personnel of Soil Testing and Engineering Inc. to keep apprised of work schedules, changes in conditions or design and new information and data as it becomes available so that we may evaluate any changes. In the event that any unusual conditions not covered by these specifications are encountered during the grading operation, Soil Testing and Engineering Inc shall be contacted for further recommendations.

- If, in the opinion of the representative of Soil Testing and Engineering Inc., substandard conditions are encountered, such as questionable or unsuitable soil conditions, unacceptable moisture content, inadequate compaction or adverse weather, etc., the representative may stop construction until the conditions are remedied, corrected or may recommend rejection of this work. The presence of the representative from Soil Testing and Engineering Inc. shall not relieve the contractor from its duty to place all fill material to the specified degree of compaction, and to complete all work in accordance with specifications.

- All soils used for fill must be approved by a representative of Soil Testing and Engineering Inc.

OVERLOT GRADING
CONT'D

- When the slope of the natural ground receiving fill exceeds 20% (5' horizontal to 1' vertical), the original ground shall be stepped or benched. Benches shall be cut to a firm, competent soil condition. The lower bench shall be at least 10 feet wide or 1½ times the compaction equipment width, whichever is greater. The bottom toe shall be sloped back into the hillside a gradient not less than 2%. All benches shall be at least 6 feet wide. All horizontal portions of each bench shall be compacted prior to receiving fill.

- All natural ground to receive fill must be properly scarified, watered and compacted prior to placing fill.

- Soil Testing and Engineering Inc. shall take an adequate number of density tests to determine if the fill satisfies project specifications. Density test results and daily notes will be provided periodically during the development process. Any failing tests or areas which do not satisfy project specifications will be reworked and retested to the satisfaction of the representative of Soil Testing and Engineering Inc.

- In areas where water is within 4 feet of the proposed fill, static compaction equipment shall be utilized. Vibrating sheepsfoot or smooth drum rollers are not to be used in areas above water until a minimum of 6 feet of compacted material is in place.

- The contractor is solely responsible for the design, maintenance and operation of any required dewatering system. The contractor shall perform such independent investigation as he deems necessary to satisfy himself as to the subsurface groundwater conditions and unstable soil conditions to be encountered throughout the construction.

- No fill shall be placed, spread or rolled while it is frozen, thawing or during unfavorable weather conditions. When the work is interrupted by heavy rain, fill operations shall not be resumed until a representative of Soil Testing and Engineering Inc. indicates that the moisture content and density of the previously placed fill are as specified. Fill surfaces may be scarified and recompacted after rainfall if necessary, to obtain proper moisture density relation.

GENERAL SITE WORK

This section of the report is intended to provide recommendations and to establish general procedures for the excavation for the proposed structure.

- The owner or contractor will establish the project boundaries including all cut and fill elevations. Execution of the work is the responsibility of the owner. He will retain qualified personnel to establish horizontal and vertical control for the excavation and will determine the final elevations for the structural fill.

- In accordance with generally accepted construction practices, the contractor will be solely responsible for conditions on the job site including supervision of all personnel and property during the performance of the work. This requirement will apply continuously and not be limited to normal working hours.

- The responsibility of the soil engineer, if hired to do so, is to observe the open excavation and provide final soil parameters for the proposed foundation design and does not include review of the adequacy of the contractor's safety measures in or near the construction site.

- Soil Testing and Engineering Inc. shall be retained by the owner to observe and test any structural fill in accordance with the specifications provided. Adequate observations and testing will be provided to meet construction specifications.

- All soils used for structural fill must be approved by a representative of Soil Testing and Engineering Inc.

- Where structural fill is required, Soil Testing and Engineering Inc. shall take an adequate number of density tests to determine if the structural fill satisfies project specifications. Density test results will be provided subsequent to any fill placement. Any failing tests or areas which do not satisfy project specifications will be reworked and retested to the satisfaction of the representative of Soil Testing and Engineering Inc.

- Utility trenches must be properly shored or sloped in accordance with local, state, federal or OSHA guidelines or regulations. The contractor is responsible for providing proper shoring and/or sloping to provide adequate safety.

FIELD EXPLORATION PROGRAM

1. The field investigation on this site consisted of drilling 62 test borings as shown on the enclosed Test Boring Location Diagram (Figure 2). Test borings completed on the eastern side of the original Filing No. 6 were in or near the western boundary of Filing No. 7. They are included in this report on Figures A – Z. Test borings were advanced by means of a power-driven, continuous auger drill to depths ranging from 20 feet to 40 feet below the present ground surface. The information from the test pits completed on the original eastern boundary of Filing No. 6 were utilized to determine soil conditions along the western boundary of Filing No. 7.

2. Samples were obtained using the Standard Penetration Test, ASTM D-1586, utilizing a two-inch, split spoon and California sampler.

3. Bulk sampling methods were also utilized.

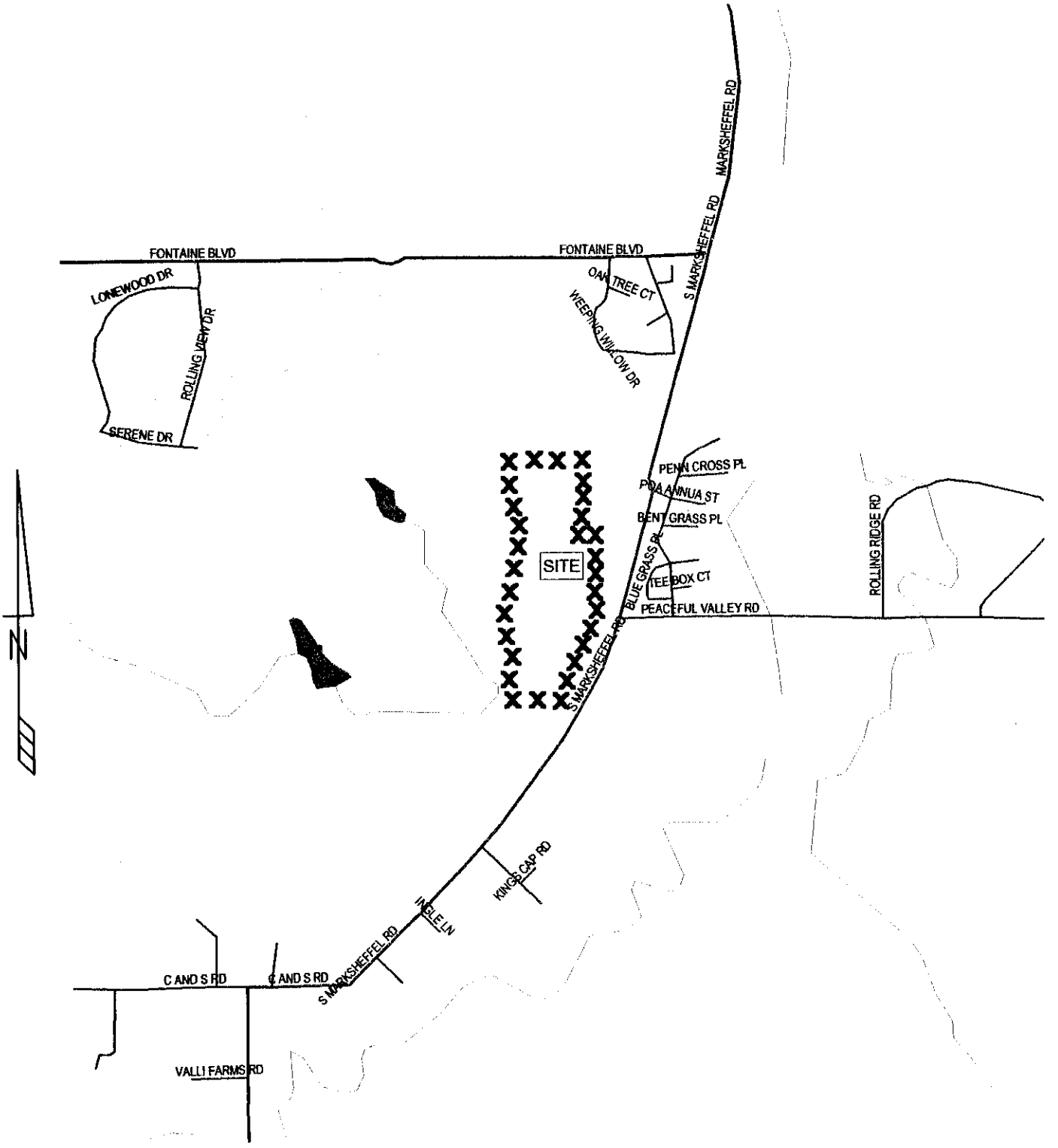
LABORATORY TESTING PROGRAM

1. Moisture content, ASTM D-2216 was obtained in the laboratory for all recovered samples.

2. A grain size analysis, ASTM D-2487, and determination of the Atterberg Limits, ASTM D-4318, were performed on visually grouped samples in order to classify the soil in accordance with the Unified Soils Classification System. Utilizing this method, Soil Types 1, 2, 3 and 4 classified as low plasticity sandy clay (CL). Soil Type 5 classified as a clayey sand (SC).

3. Swell tests were performed in order to determine the expansive characteristics of remolded samples of all soil types.

4. Swell-consolidation results were also performed on five samples (reference Figure Nos. 40 - 44). Swell consolidation results from report Job No. 060938 are also included (Reference Figures 45 - 50).



SITE LOCATION PLAN

DRAWN	DATE	CHECKED	DATE
mss		LWC	

STE

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JOB No. 060933

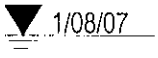
FIG No. 1

15 STANDARD PENETRATION TEST -- ASTM C-1586. PRODUCED BY DRIVING A STANDARD 2" O.D. SPLIT SPOON SAMPLER INTO THE SOIL BY DROPPING A 140 lb HAMMER ONTO THE SPOON. THE NUMBER INDICATES THE NUMBER OF HAMMER DROPS REQUIRED TO DRIVE THE SPOON 12" INTO THE SOIL PROFILE.

15 STANDARD PENETRATION TEST -- ASTM C-1586. PRODUCED BY DRIVING A CALIFORNIA 2" O.D. SPLIT SPOON SAMPLER INTO THE SOIL BY DROPPING A 140 lb HAMMER 30" ONTO THE SPOON. THE NUMBER INDICATES THE NUMBER OF HAMMER DROPS REQUIRED TO DRIVE THE SPOON 12" INTO THE SOIL PROFILE.

1 SOIL TYPE NUMBER DESIGNATION IN REPORT

12.6 MOISTURE CONTENT OF SAMPLE



WATER LEVEL AND DATE MEASURED

SYMBOLS AND NOTES

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE

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JOB No. 060933

FIG No. 3

TEST BORING NO. 1
DATE DRILLED: 9/27/06

REMARKS: 10/6/06
MEASURED
FOR WATER: 20 FT. DRY

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
			33	6.9	1
5			29	8.1	2
			50/3"	8.2	2/4
10					
			50/5"	11.3	4
15					
			50/9"	15.7	4
20					
25					
30					
35					
40					

CLAY, SANDY, VERY STIFF, LOW MOISTURE, LIGHT BROWN

CLAY, SANDY, VERY STIFF, LOW MOISTURE, BROWN

LENSATIC; WEATHERED CLAYSTONE TO SANDSTONE, DENSE, LOW MOISTURE, GREEN TO RUST

TEST BORING NO. 2
DATE DRILLED: 9/27/06

REMARKS: 10/6/06
MEASURED
FOR WATER: 24.5 FT. DRY

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
			20	7.8	1
5			31	9.7	1
			50/8"	11.6	4
10					
			50/6"	10.0	4
15					
			50/5"	12.9	4
20					
			50/3"	11.4	4
25					
30					
35					
40					

CLAY, SANDY, VERY STIFF, LOW MOISTURE, LIGHT BROWN

LENSATIC; WEATHERED TO FORMATIONAL CLAYSTONE AND SANDSTONE WITH VERY DENSE SANDSTONE LENSES, DENSE, LOW MOISTURE, GREEN TO BROWN TO RUST

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE

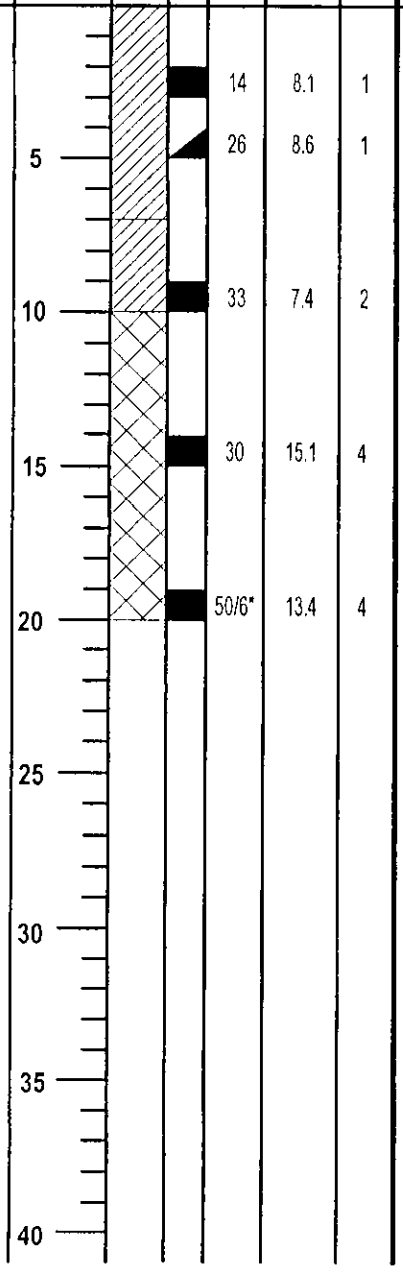
SOIL TESTING & ENGINEERING INC.

JOB No. 060933

FIG No. 4

TEST BORING NO. 3
DATE DRILLED: 9/27/06

REMARKS: 10/6/06
MEASURED
FOR WATER: 19.7 FT. DRY



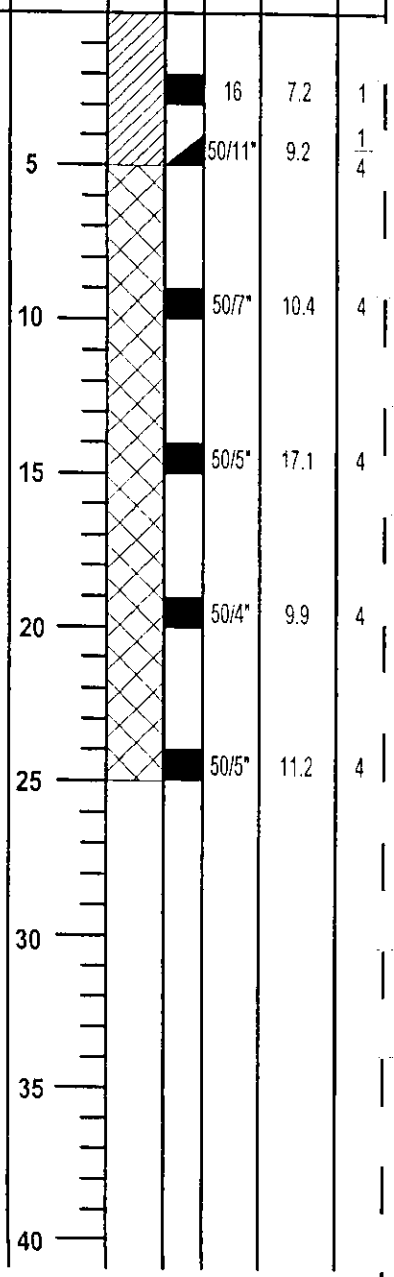
CLAY, SANDY, STIFF TO VERY STIFF, LOW MOISTURE, BROWN

CLAY, SANDY, HARD LOW MOISTURE, LIGHT BROWN

LENSATIC; HIGHLY WEATHERED TO FORMATIONAL CLAYSTONE AND SANDSTONE, VERY STIFF TO DENSE, LOW TO MODERATE MOISTURE, GREEN TO RUST

TEST BORING NO. 4
DATE DRILLED: 9/27/06

REMARKS: 10/6/06
MEASURED
FOR WATER: 24 FT. DRY



CLAY, SANDY, STIFF TO VERY STIFF, LOW MOISTURE, BROWN

LENSATIC; WEATHERED TO FORMATIONAL CLAYSTONE AND SANDSTONE WITH VERY DENSE SANDSTONE LENSES, DENSE, LOW MOISTURE, GREEN TO RUST

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No. 060933
FIG No. 5

TEST BORING NO. 5
DATE DRILLED: 9/27/06

REMARKS: 10/6/06
MEASURED
FOR WATER: 19.9 FT. DRY

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE	
					1	CLAY, SANDY, STIFF, LOW MOISTURE, LIGHT BROWN
			31	12.1	4	
5			31	13.3	4	LENSATIC; HIGHLY WEATHERED TO WEATHERED, CLAYSTONE AND SANDSTONE, HARD TO DENSE, LOW MOISTURE, GREEN TO RUST
10			38	14.0	4	
15			50/7"	13.7	4	
20			50/5"	12.1	4	
25						
30						
35						
40						

TEST BORING NO. 6
DATE DRILLED: 9/27/06

REMARKS: 10/6/06
MEASURED
FOR WATER:
WATER AT 24 FT.

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE	
			7	15.9	1	CLAY, SANDY, FIRM, MODERATE MOISTURE, LIGHT BROWN
5			37	18.6	2	CLAY, SANDY, HARD TO STIFF, MODERATE TO LOW MOISTURE, BROWN
10			29	16.4	2	
15			23	12.9	4	LENSATIC; HIGHLY WEATHERED TO WEATHERED, CLAYSTONE AND SANDSTONE, HARD TO DENSE, LOW MOISTURE, GREEN TO RUST
20			31	18.4	4	
						▼ 10/6/06
25			50/7"	13.5	4	
30						
35						
40						

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No. 060933
FIG No. 6

TEST BORING NO. 7
DATE DRILLED: 9/27/06

REMARKS: 10/6/06
MEASURED
FOR WATER: 20 FT. DRY

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE	
0						CLAY, SANDY, VERY STIFF, LOW MOISTURE, LIGHT BROWN
			20	9.2	1	
5			27	7.1	3	LENSATIC; SANDY CLAY AND CLAYEY SAND AND GRAVEL, VERY STIFF, LOW MOISTURE, GREEN TO RUST
10			50/7"	9.9	4	
15			50/5"	9.9	4	LENSATIC, WEATHERED CLAYSTONE AND SANDSTONE, DENSE, LOW MOISTURE, GREEN TO DARK GREEN TO RUST
20			50/8"	16.8	4	
25						
30						
35						
40						

TEST BORING NO. 8
DATE DRILLED: 9/27/06

REMARKS: 10/6/06
MEASURED
FOR WATER:
WATER AT 18.8 FT.

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE	
0						CLAY, SANDY, VERY STIFF TO STIFF, MODERATE TO LOW MOISTURE, BROWN TO DARK GREEN TO LIGHT BROWN
			23	14.7	2	
5			17	13.1	2	
10			14	11.9	2	LENSATIC; HIGHLY WEATHERED TO WEATHERED CLAYSTONE AND SANDSTONE, HARD TO DENSE, LOW MOISTURE, GREEN TO RUST
15			26	16.5	2/4	
20			50/8"	15.5	4	
25						
30						
35						
40						

▼ 10/6/06

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No. 060933
FIG No. 7

TEST BORING NO. 9
DATE DRILLED: 9/27/06

REMARKS: 10/6/06
MEASURED
FOR WATER: 19 FT. DRY

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
			17	12.5	1
			16	7.6	1
			45	11.5	3
			50/3"	11.7	4
			50/5"	12.6	4

CLAY, SANDY, VERY STIFF TO STIFF, MODERATE TO LOW MOISTURE, BROWN TO GREEN

LENSATIC; SANDY CLAY AND CLAYEY SAND AND GRAVEL, HARD, LOW MOISTURE, BROWN

LENSATIC, CLAYSTONE AND SANDSTONE, DENSE, LOW MOISTURE, GREEN TO RUST TO BROWN

TEST BORING NO. 10
DATE DRILLED: 9/27/06

REMARKS: 10/6/06
MEASURED
FOR WATER:
WATER AT 20 FT.

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
			44	14.0	1/4
			50/9"	13.9	4
			50/6"	12.8	4
			50/5"	11.9	4
			50/7"	16.2	4

CLAY, SANDY, VERY STIFF, MODERATE MOISTURE, LIGHT BROWN

LENSATIC; WEATHERED CLAYSTONE AND SANDSTONE, DENSE, LOW MOISTURE, GREEN TO RUST

10/6/06

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

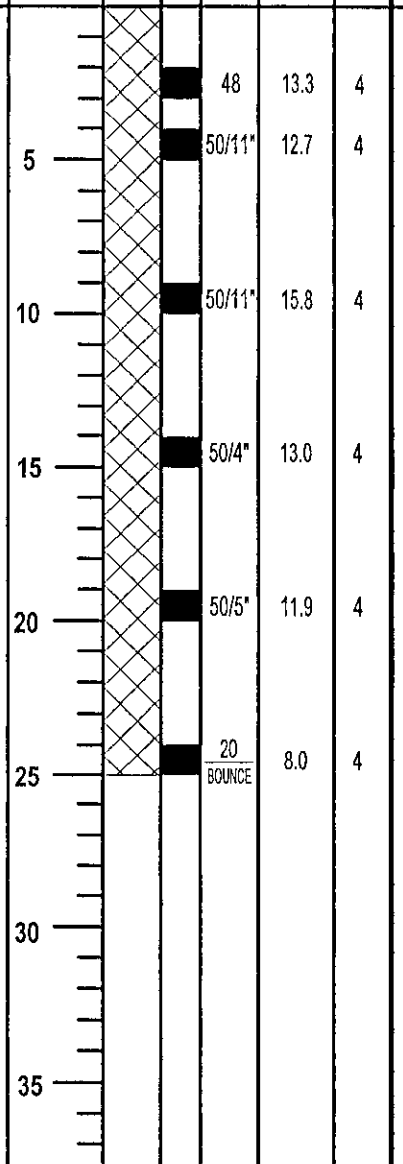
STE
SOIL TESTING & ENGINEERING INC.

JOB No. 060933
FIG No. 8

TEST BORING NO. 11
DATE DRILLED: 9/27/06

REMARKS: 10/6/06
MEASURED
FOR WATER: 24.8 FT. DRY

LENSATIC; WEATHERED TO FORMATIONAL CLAYSTONE AND SANDSTONE WITH VERY DENSE SANDSTONE LENSES, HARD TO DENSE, LOW MOISTURE, GREEN TO RUST TO BLUE GRAY



TEST BORING NO. 12
DATE DRILLED: 10/4/06

REMARKS: 10/6/06
MEASURED
FOR WATER: 23.7 FT. DRY

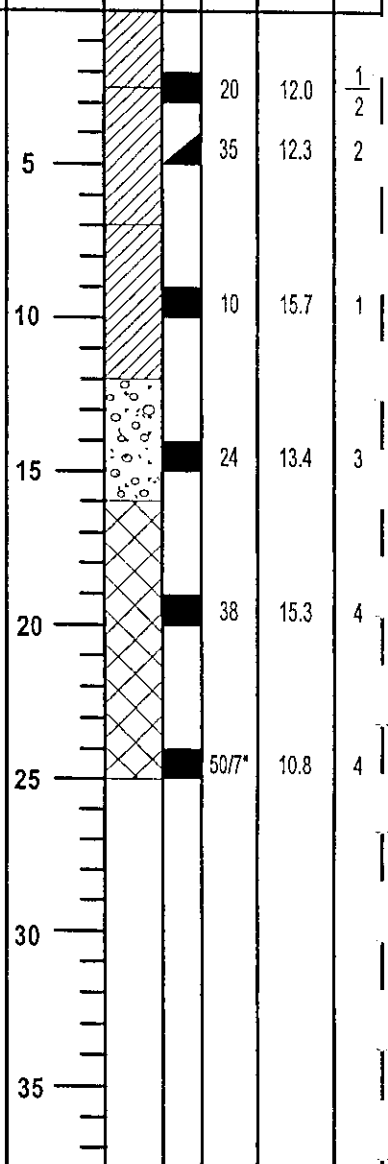
CLAY, SANDY, VERY STIFF, LOW MOISTURE, LIGHT BROWN

CLAY, SANDY, HARD, LOW MOISTURE, BROWN TO GREEN

CLAY, SANDY, FIRM, MODERATE MOISTURE, LIGHT GREEN

LENSATIC; SANDY CLAY AND CLAYEY SAND AND GRAVEL, VERY STIFF, LOW MOISTURE, GREEN TO RUST

LENSATIC; WEATHERED TO FORMATIONAL CLAYSTONE AND SANDSTONE WITH VERY DENSE SANDSTONE LENSES, HARD TO DENSE, LOW MOISTURE, GREEN TO RUST TO BLUE GRAY



TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

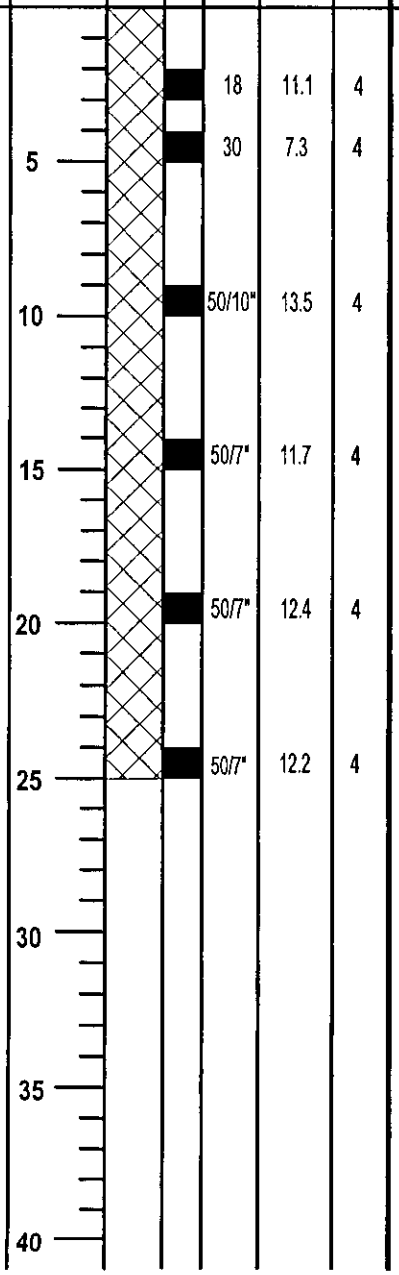
STE
SOIL TESTING & ENGINEERING INC.

JOB No. 060933
FIG No. 9

TEST BORING NO. 13
DATE DRILLED: 10/4/06

REMARKS: 10/6/06
MEASURED
FOR WATER: 23.9 FT. DRY

LENSATIC; RESIDUAL TO HIGHLY WEATHERED TO WEATHERED CLAYSTONE AND SANDSTONE, VERY STIFF TO DENSE, LOW MOISTURE, GREEN TO RUST TO BLUE GRAY

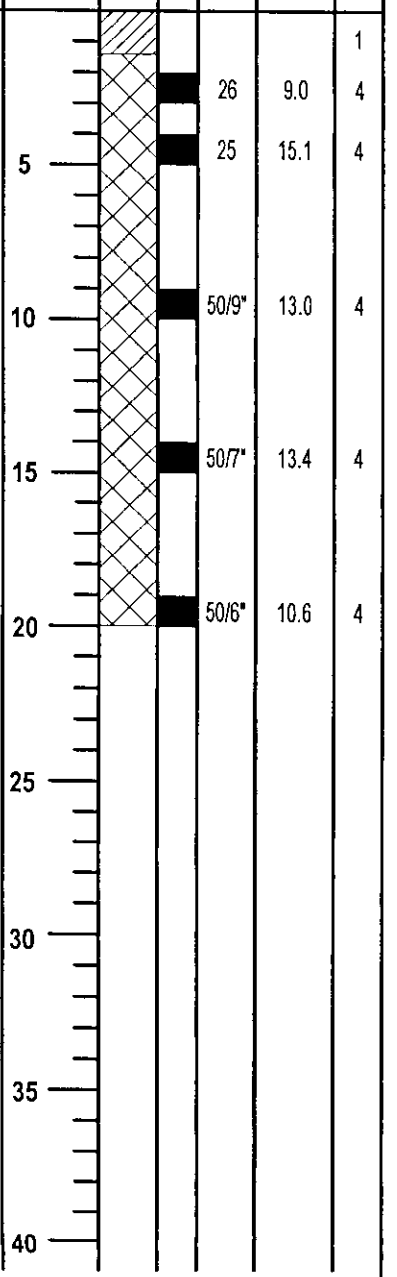


TEST BORING NO. 14
DATE DRILLED: 10/4/06

REMARKS: 10/6/06
MEASURED
FOR WATER: 19.8 FT. DRY

CLAY, SANDY, STIFF, LOW MOISTURE, LIGHT BROWN

LENSATIC; HIGHLY WEATHERED TO WEATHERED CLAYSTONE AND SANDSTONE, VERY STIFF TO DENSE, LOW MOISTURE, BROWN TO GREEN TO RUST



TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE

SOIL TESTING & ENGINEERING INC.

JOB No. 060933

FIG No. 10

TEST BORING NO. 15
DATE DRILLED: 10/4/06

REMARKS: 10/6/06
MEASURED
FOR WATER:
WATER AT 23 FT.

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
0	CLAY, SANDY, STIFF TO VERY STIFF, MODERATE TO LOW MOISTURE, BROWN TO GREEN TO LIGHT BROWN				
			16	16.6	1
5			25	12.1	1
10			15	12.1	1
	CLAY, SANDY, STIFF, MODERATE MOISTURE, LIGHT BROWN				
15			15	14.8	2
	LENSATIC; HIGHLY WEATHERED CLAYSTONE AND SANDSTONE, HARD TO DENSE, LOW MOISTURE, GREEN TO RUST				
20			50	13.8	4
	▼ 10/6/06				
25			50/6"	13.0	4
30					
35					
40					

TEST BORING NO. 16
DATE DRILLED: 10/4/06

REMARKS: 10/6/06
MEASURED
FOR WATER: 24 FT. DRY

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
0	CLAY, SANDY, STIFF TO VERY STIFF, LOW MOISTURE, BROWN TO LIGHT BROWN				
			11	8.3	1
5			20	10.8	1
10			25	11.8	1
15			39	10.9	1
20	LENSATIC; HIGHLY WEATHERED CLAYSTONE AND SANDSTONE, HARD TO DENSE, LOW MOISTURE, GREEN TO RUST		35	9.0	1/4
25			50/5"	10.2	4
30					
35					
40					

TEST BORING LOGS

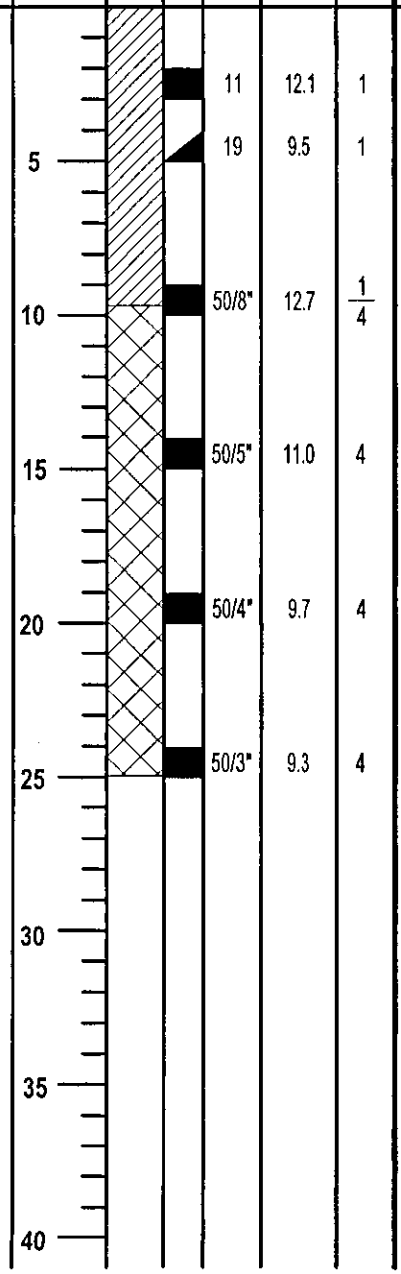
DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No. 060933
FIG No. 11

TEST BORING NO. 17
DATE DRILLED: 10/4/06

REMARKS: 10/6/06
MEASURED
FOR WATER: 24 FT. DRY

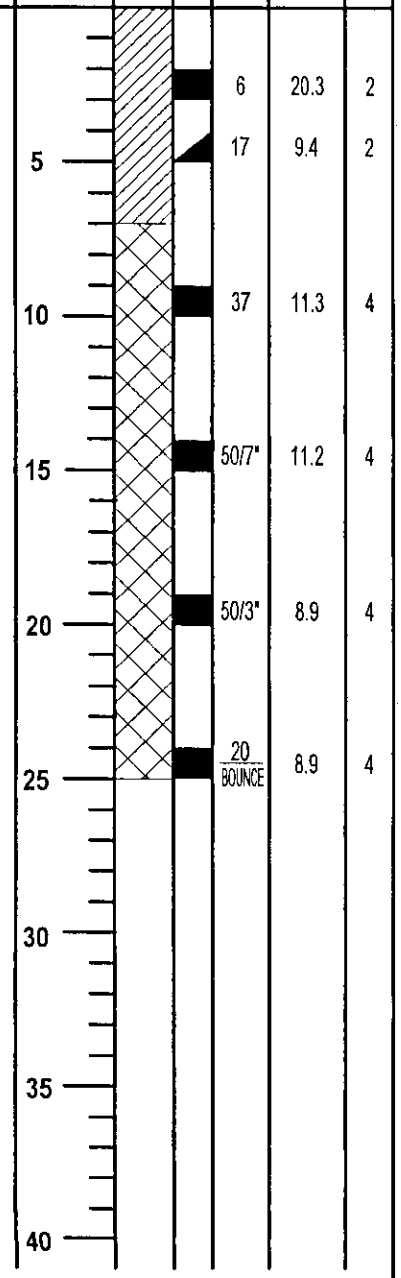


CLAY, SANDY, STIFF TO VERY STIFF, MODERATE TO LOW MOISTURE, LIGHT BROWN TO BROWN

LENSATIC; WEATHERED TO FORMATIONAL CLAYSTONE AND SANDSTONE WITH VERY DENSE SANDSTONE LENSES, DENSE, LOW MOISTURE, GREEN TO RUST TO BLUE GRAY

TEST BORING NO. 18
DATE DRILLED: 10/4/06

REMARKS: 10/6/06
MEASURED
FOR WATER: 24 FT. DRY



CLAY, SANDY, FIRM TO STIFF, HIGH TO LOW MOISTURE, BROWN TO GREEN

LENSATIC; HIGHLY WEATHERED TO FORMATIONAL CLAYSTONE AND SANDSTONE, WITH VERY DENSE SANDSTONE LENSES, HARD TO DENSE, LOW MOISTURE, GREEN TO RUST

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE

SOIL TESTING & ENGINEERING INC.

JOB No. 060933

FIG No. 12

TEST BORING NO. 19
DATE DRILLED: 10/4/06

REMARKS: 10/6/06
MEASURED
FOR WATER: 23.8 FT. DRY

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
					1
			19	12.6	4
5			23	14.3	4
10			50/8"	12.2	4
15			50/5"	9.2	4
20			50/5"	10.0	4
25			50/3"	9.2	4
30					
35					
40					

CLAY, SANDY, STIFF
LOW MOISTURE,
LIGHT BROWN

LENSATIC; RESIDUAL TO HIGHLY WEATHERED TO FORMATIONAL CLAYSTONE AND SANDSTONE, VERY STIFF TO DENSE, MODERATE TO LOW MOISTURE, GREEN TO RUST TO BLUE GRAY

TEST BORING NO. 20
DATE DRILLED: 10/5/06

REMARKS: 10/6/06
MEASURED
FOR WATER: 24.3 FT. DRY

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
			37	9.3	4
5			44	12.2	4
10			50/9"	10.9	4
15			50/8"	11.3	4
20			50/8"	11.1	4
25			50/5"	8.7	4
30					
35					
40					

LENSATIC; HIGHLY WEATHERED TO FORMATIONAL CLAYSTONE AND SANDSTONE, HARD TO DENSE, LOW MOISTURE, LIGHT BROWN TO GREEN TO RUST

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No. 060933
FIG No. 13

TEST BORING NO. 21
DATE DRILLED: 10/5/06

REMARKS: 10/6/06
MEASURED
FOR WATER: 34 FT. DRY

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
			10	7.7	1
5			8	8.7	1
10			27	8.6	2
15			21	8.3	2
20			14	10.9	2
25			20	10.1	4
30			50/7"	11.6	4
35			50/3"	13.3	4
40					

CLAY, SANDY, STIFF, LOW MOISTURE, LIGHT BROWN

CLAY, SANDY, VERY STIFF TO STIFF, LOW MOISTURE, LIGHT BROWN TO GREEN TO RUST

LENSATIC; RESIDUAL TO HIGHLY WEATHERED TO FORMATIONAL CLAYSTONE AND SANDSTONE WITH VERY DENSE SANDSTONE LENSES, VERY STIFF TO DENSE, LOW MOISTURE, GREEN TO RUST

TEST BORING NO. 22
DATE DRILLED: 10/5/06

REMARKS: 10/6/06
MEASURED
FOR WATER: 24.1 FT. DRY

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
			19	9.2	4
5			33	10.4	4
10			50/6"	7.5	4
15			50/9"	12.6	4
20			50/5"	9.0	4
25			50/5"	8.4	4
30					
35					
40					

LENSATIC; RESIDUAL TO HIGHLY WEATHERED TO FORMATIONAL CLAYSTONE AND SANDSTONE WITH VERY DENSE SANDSTONE LENSES, VERY STIFF TO DENSE, LOW MOISTURE, GREEN TO RUST

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

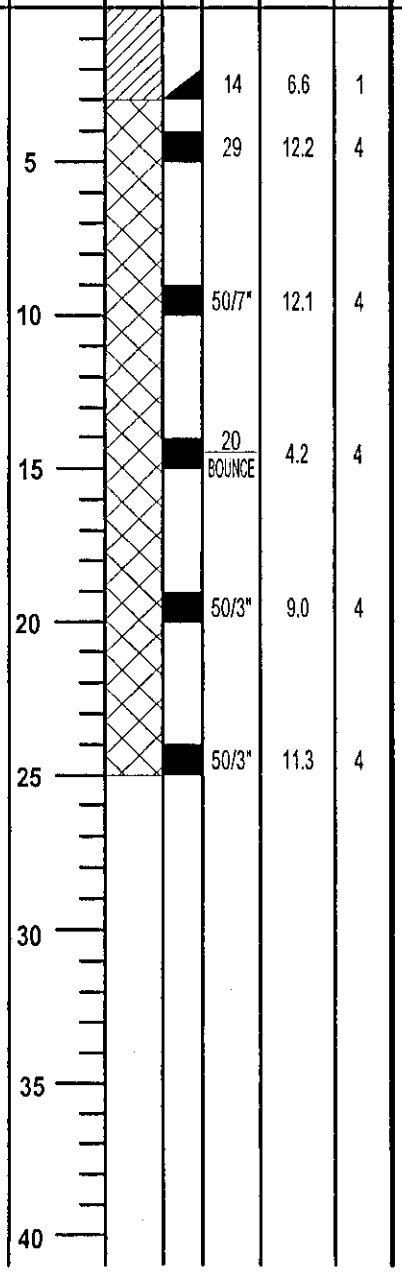
JOB No. 060933
FIG No. 14

TEST BORING NO. 23
DATE DRILLED: 10/11/06

REMARKS: 10/13/06
MEASURED
FOR WATER: 24.3 FT. DRY

CLAY, SANDY, STIFF,
LOW MOISTURE,
LIGHT BROWN

LENSATIC; HIGHLY
WEATHERED TO
FORMATIONAL CLAYSTONE
AND SANDSTONE WITH
VERY DENSE SANDSTONE
LENSES, VERY STIFF TO
DENSE, LOW MOISTURE,
GREEN TO RUST TO
BLUE GRAY

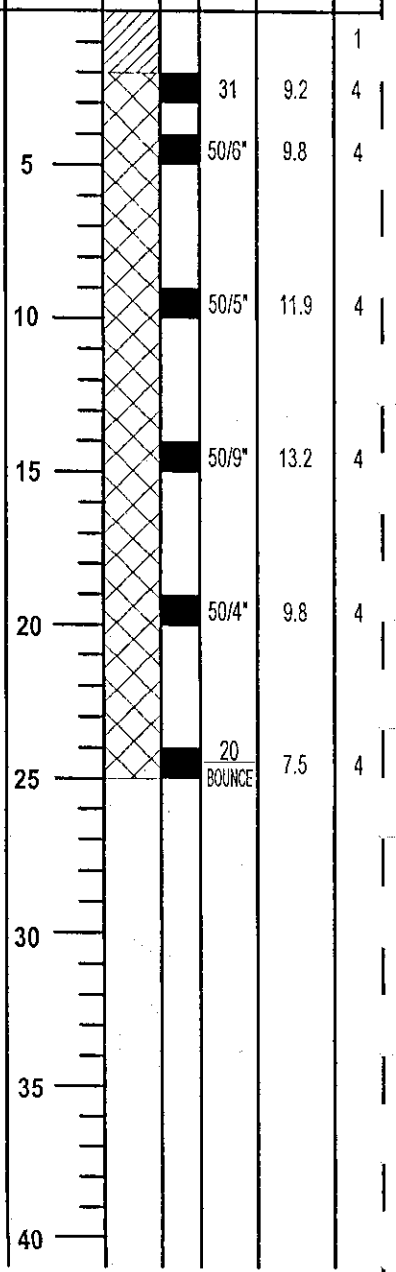


TEST BORING NO. 24
DATE DRILLED: 10/11/06

REMARKS: 10/13/06
MEASURED
FOR WATER: 24.3 FT. DRY

CLAY, SANDY, STIFF,
LOW MOISTURE,
LIGHT BROWN

LENSATIC; HIGHLY
WEATHERED TO
FORMATIONAL CLAYSTONE
AND SANDSTONE WITH
VERY DENSE SANDSTONE
LENSES, VERY STIFF TO
DENSE, LOW MOISTURE,
GREEN TO RUST TO
BLUE GRAY



TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

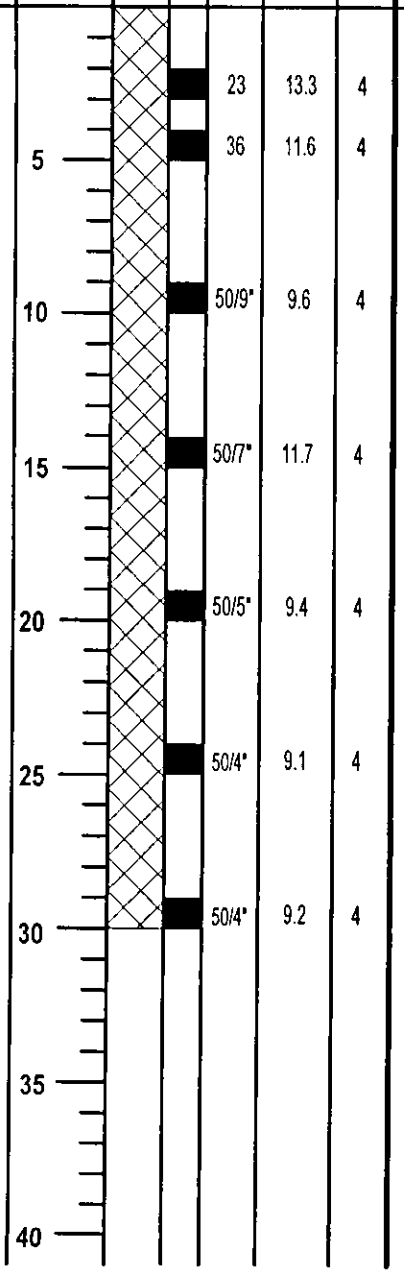
STE
SOIL TESTING & ENGINEERING INC.

JOB No. 060933
FIG No. 15

TEST BORING NO. 25
DATE DRILLED: 10/11/06

REMARKS: 10/13/06
MEASURED
FOR WATER: 29.3 FT. DRY

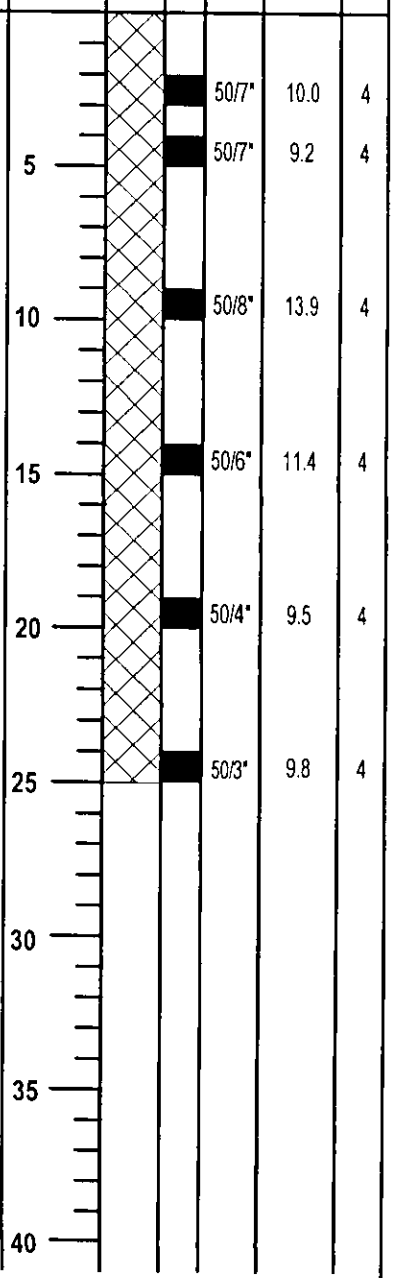
LENSATIC; RESIDUAL TO HIGHLY WEATHERED TO FORMATIONAL CLAYSTONE AND SANDSTONE WITH VERY DENSE SANDSTONE LENSES, VERY STIFF TO DENSE, LOW MOISTURE, GREEN TO RUST TO BLUE GRAY



TEST BORING NO. 26
DATE DRILLED: 10/11/06

REMARKS: 10/13/06
MEASURED
FOR WATER: 24.3 FT. DRY

LENSATIC; WEATHERED TO FORMATIONAL CLAYSTONE AND SANDSTONE WITH VERY DENSE SANDSTONE LENSES, DENSE, LOW MOISTURE, GREEN TO RUST



TEST BORING LOGS

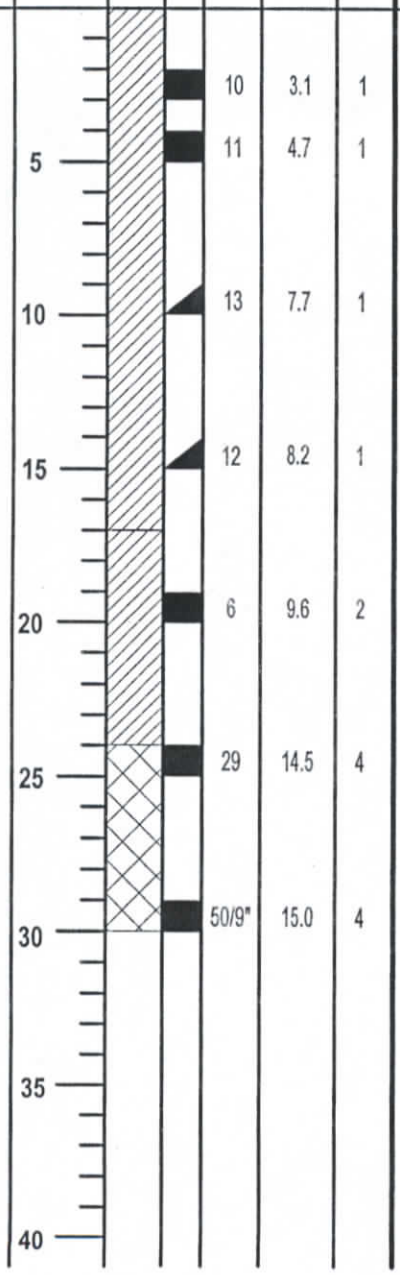
DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No. 060933
FIG No. 16

TEST BORING NO. 27
DATE DRILLED: 10/11/06

REMARKS: 10/13/06
MEASURED
FOR WATER: 30 FT. DRY



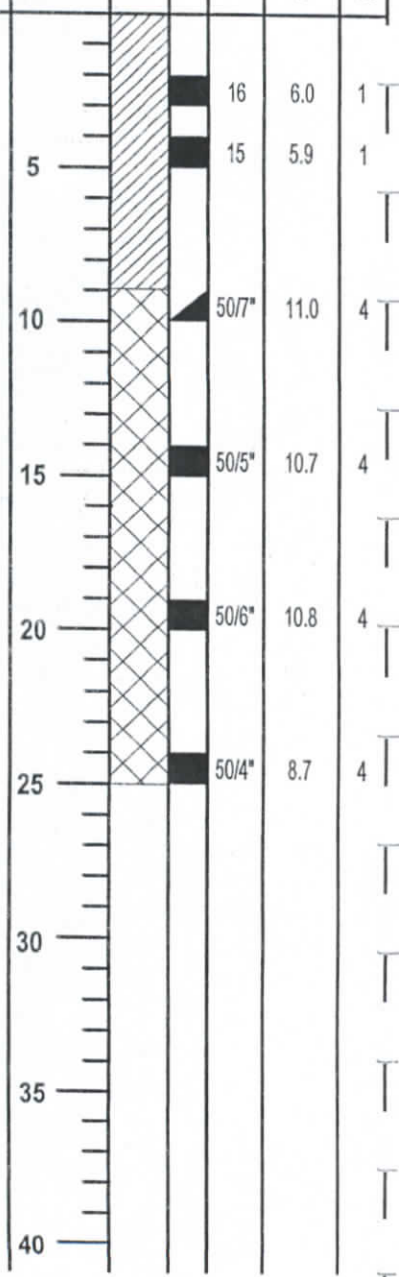
CLAY, SANDY, FIRM TO STIFF, LOW MOISTURE, LIGHT BROWN

CLAY, SANDY, FIRM, LOW MOISTURE, LIGHT BROWN

LENSATIC; HIGHLY WEATHERED TO WEATHERED CLAYSTONE AND SANDSTONE, VERY STIFF TO DENSE, LOW MOISTURE, GREEN TO RUST

TEST BORING NO. 28
DATE DRILLED: 10/11/06

REMARKS: 10/13/06
MEASURED
FOR WATER: 24.5 FT. DRY



CLAY, SANDY, STIFF, LOW MOISTURE, LIGHT BROWN TO RUST

LENSATIC; WEATHERED TO FORMATIONAL CLAYSTONE AND SANDSTONE, LOW MOISTURE, GREEN TO RUST

TEST BORING LOGS

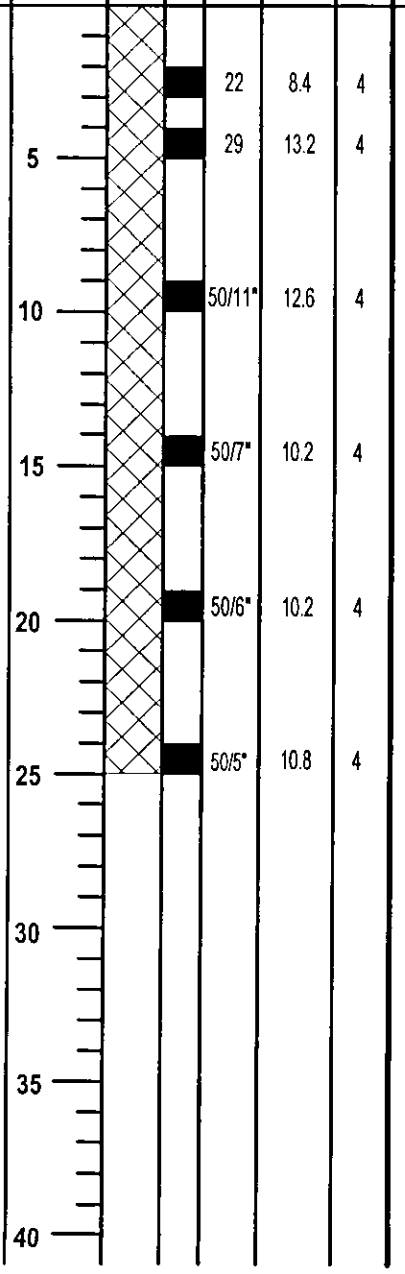
DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No. 060933
FIG No. 17

TEST BORING NO. 29
DATE DRILLED: 10/11/06

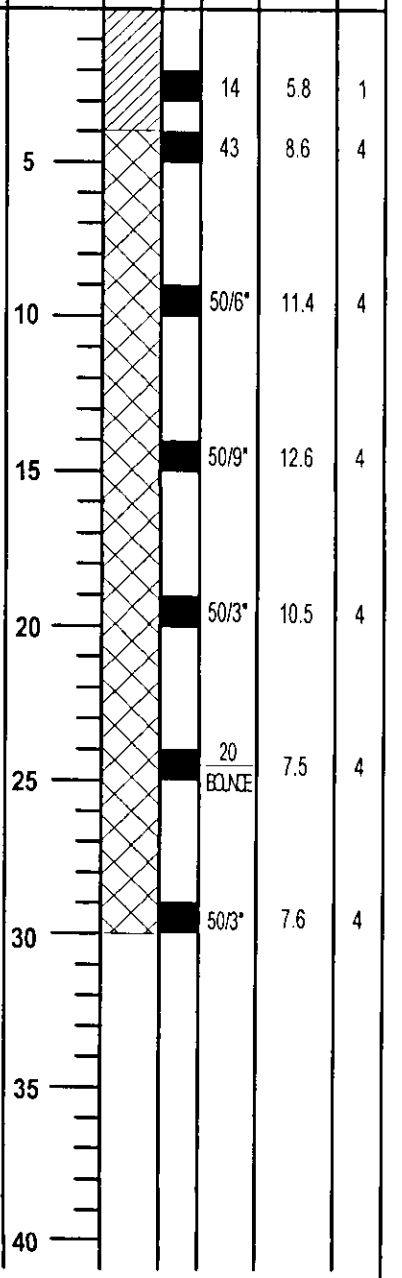
REMARKS: 10/13/06
MEASURED
FOR WATER: 24.5 FT. DRY



LENSATIC; RESIDUAL
TO HIGHLY WEATHERED
TO FORMATIONAL
CLAYSTONE AND
SANDSTONE, VERY STIFF
TO DENSE, LOW
MOISTURE, LIGHT BROWN
TO GREEN TO RUST

TEST BORING NO. 30
DATE DRILLED: 10/13/06

REMARKS: 10/25/06
MEASURED
FOR WATER: 30 FT. DRY



CLAY, SANDY, STIFF,
LOW MOISTURE,
LIGHT BROWN

LENSATIC; HIGHLY
WEATHERED
TO FORMATIONAL
CLAYSTONE AND
SANDSTONE WITH
VERY DENSE SANDSTONE
LENSES, HARD TO DENSE,
LOW MOISTURE, LIGHT
BROWN TO GREEN TO
RUST TO BLUE GRAY

TEST BORING LOGS

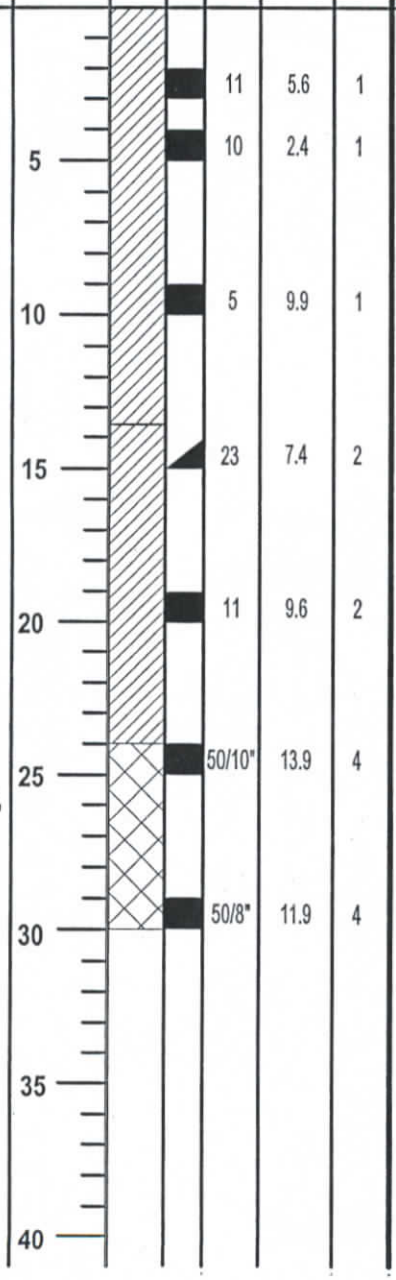
DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No.
060933
FIG No.
18

TEST BORING NO. 31
DATE DRILLED: 10/11/06

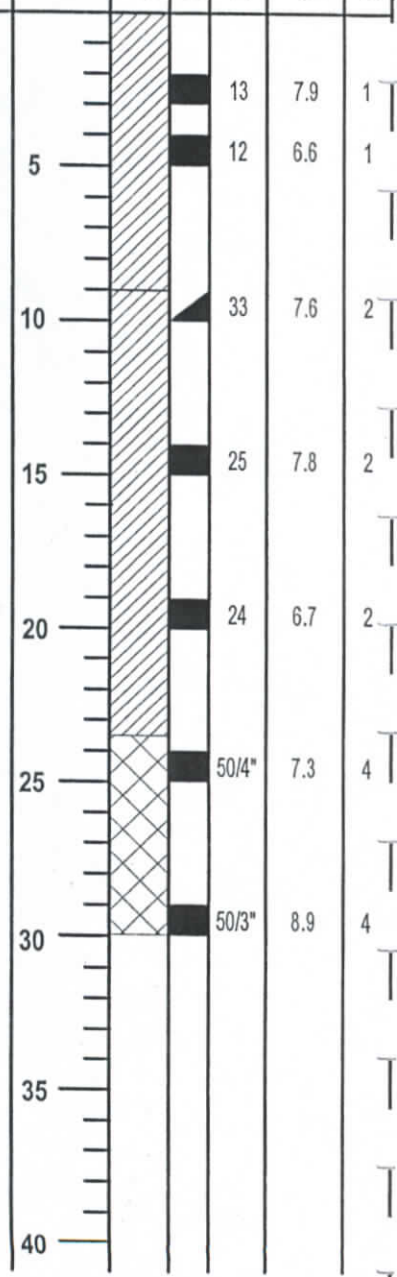
REMARKS: 10/25/06
MEASURED
FOR WATER: 30 FT. DRY



BLOWS per foot	WATER CONTENT %	SOIL TYPE	
11	5.6	1	CLAY, SANDY, STIFF TO FIRM, LOW MOISTURE, LIGHT BROWN TO BROWN
10	2.4	1	
5	9.9	1	
23	7.4	2	CLAY, SANDY, VERY STIFF TO STIFF, LOW MOISTURE, LIGHT BROWN TO BROWN
11	9.6	2	
50/10"	13.9	4	LENSATIC; WEATHERED CLAYSTONE AND SANDSTONE, DENSE, LOW MOISTURE, GREEN TO RUST
50/8"	11.9	4	

TEST BORING NO. 32
DATE DRILLED: 10/11/06

REMARKS: 10/25/06
MEASURED
FOR WATER: 29.6 FT. DRY



BLOWS per foot	WATER CONTENT %	SOIL TYPE	
13	7.9	1	CLAY, SANDY, STIFF, LOW MOISTURE, LIGHT BROWN
12	6.6	1	
33	7.6	2	CLAY, SANDY, VERY STIFF, LIGHT BROWN
25	7.8	2	
24	6.7	2	
50/4"	7.3	4	LENSATIC; CLAYSTONE AND SANDSTONE WITH VERY DENSE SANDSTONE LENSES, DENSE, LOW MOISTURE, GREEN TO RUST
50/3"	8.9	4	

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE

SOIL TESTING & ENGINEERING INC.

JOB No. 060933

FIG No. 19

TEST BORING NO. 33
DATE DRILLED: 10/11/06

REMARKS: 10/25/06
MEASURED
FOR WATER: 19.5 FT. DRY

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
			7	6.1	1
5			12	6.6	1/4
10			50	9.4	4
15			50/8"	9.8	4
20			50/6"	12.0	4
25					
30					
35					
40					

CLAY, SANDY, FIRM TO STIFF, LOW MOISTURE, LIGHT BROWN

LENSATIC; HIGHLY WEATHERED TO WEATHERED CLAYSTONE AND SANDSTONE, VERY STIFF TO DENSE, LOW MOISTURE, GREEN TO RUST

TEST BORING NO. 34
DATE DRILLED: 10/11/06

REMARKS: 10/25/06
MEASURED
FOR WATER: 34.7 FT. DRY

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
			14	9.1	1
5			16	7.7	1
10			20	9.2	1
15			29	7.9	2
20			18	7.9	2
25			22	7.4	2
30			26	9.3	5
35			50/7"	14.2	4
40					

CLAY, SANDY, STIFF, TO VERY STIFF, LOW MOISTURE, LIGHT BROWN

CLAY, SANDY, VERY STIFF, LOW MOISTURE, LIGHT BROWN

SAND, SILTY TO CLAYEY, MEDIUM DENSE, LOW MOISTURE, LIGHT BROWN

LENSATIC; WEATHERED CLAYSTONE AND SANDSTONE DENSE, LOW MOISTURE, GREEN TO RUST

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No. 060933
FIG No. 20

TEST BORING NO. 35
DATE DRILLED: 10/11/06

REMARKS: 10/25/06
MEASURED
FOR WATER: 35 FT. DRY

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
			13	9.2	1
			13	10.0	1
5					
			13	9.6	2
10					
			20	6.6	2
15					
			29	7.0	2
20					
			27	9.9	5
25					
			23	4.0	5
30					
			50/6"	12.5	4
35					
40					

CLAY, SANDY, STIFF, LOW MOISTURE, LIGHT BROWN

CLAY, SANDY, STIFF TO VERY STIFF, LOW MOISTURE, LIGHT BROWN TO RUST TO BROWN

SAND, SILTY TO CLAYEY, MEDIUM DENSE, LIGHT BROWN

LENSATIC; WEATHERED CLAYSTONE AND SANDSTONE, DENSE, LOW MOISTURE, GREEN TO RUST

TEST BORING NO. 36
DATE DRILLED: 11/9/06

REMARKS: 11/20/06
MEASURED
FOR WATER: WATER AT 22 FT.

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
			12	6.4	1
			8	5.9	1
5					
			6	11.8	1/2
10					
			26	14.1	2/4
15					
			50	14.9	4
20					
			50/10"	13.4	4
25					
30					
35					
40					

CLAY, SANDY, STIFF TO FIRM, LOW MOISTURE, LIGHT BROWN

CLAY, SANDY, FIRM, MODERATE MOISTURE, BROWN TO GREEN

LENSATIC; HIGHLY WEATHERED TO WEATHERED CLAYSTONE AND SANDSTONE, VERY STIFF TO DENSE, LOW MOISTURE, GREEN TO RUST

▼ 11/20/06

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE

SOIL TESTING & ENGINEERING INC.

JOB No. 060933
FIG No. 21

TEST BORING NO. 37
DATE DRILLED: 11/9/06

REMARKS: 11/20/06
MEASURED
FOR WATER: 33.9 FT. DRY

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE	
			13	8.2	1	CLAY, SILTY TO SANDY, STIFF TO VERY STIFF, LOW MOISTURE, LIGHT BROWN
5			15	9.5	1	
			22	9.6	1	
10						CLAY, SILTY TO SANDY WITH CLAYEY SAND LENSES, VERY STIFF, LOW MOISTURE, BROWN TO LIGHT BROWN
			26	5.8	2	
15						
			27	8.1	2	
20						
			25	7.4	2	
25						
			20	15.0	4	LENSATIC; HIGHLY WEATHERED TO FORMATIONAL CLAYSTONE AND SANDSTONE, VERY STIFF TO DENSE, LOW MOISTURE, GREEN TO RUST
30						
			50/6"	12.7	4	
35						
40						

TEST BORING NO. 38
DATE DRILLED: 11/9/06

REMARKS: 11/20/06
MEASURED
FOR WATER: 24.3 FT. DRY

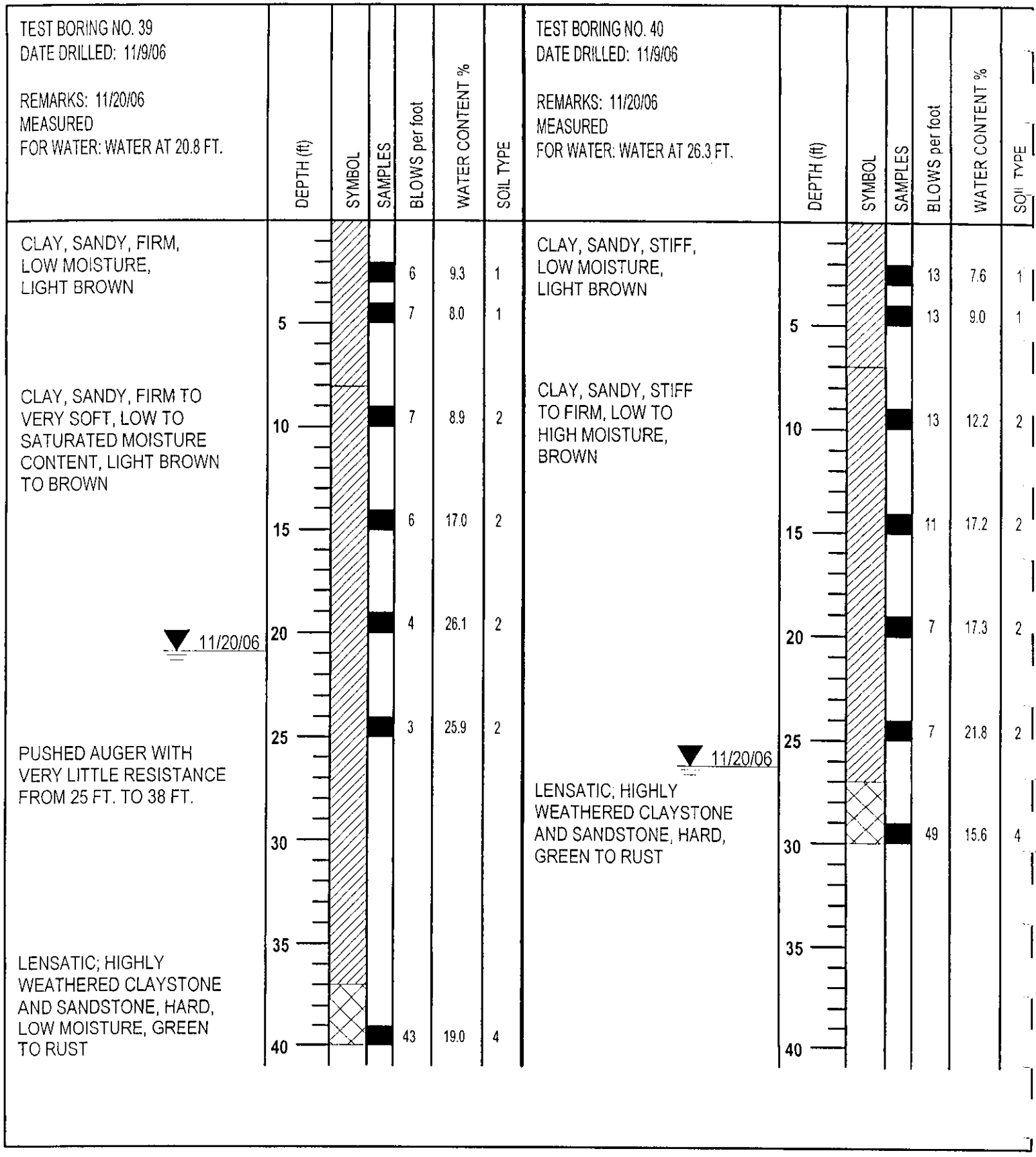
DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE	
			12	5.6	1	CLAY, SANDY, STIFF LOW MOISTURE, LIGHT BROWN
5			12	10.4	1	
			6	16.0	2	CLAY, SANDY, FIRM, MODERATE MOISTURE, LIGHT BROWN TO BROWN
10						
			7	12.5	2	
15						
			37	14.4	4	LENSATIC; HIGHLY WEATHERED TO WEATHERED CLAYSTONE AND SANDSTONE, HARD TO DENSE, LOW MOISTURE, GREEN TO RUST
20						
			50/9"	15.7	4	
25						
30						
35						
40						

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No. 060933
FIG No. 22



TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE

SOIL TESTING & ENGINEERING INC.

JOB No. 060933

FIG No. 23

TEST BORING NO. 41
DATE DRILLED: 11/9/06

REMARKS: 11/20/06
MEASURED
FOR WATER: 23.9 FT. DRY

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE	
					1	CLAY, SANDY, STIFF, LOW MOISTURE, LIGHT BROWN
			50/10"	9.8	4	
5			50/11"	10.6	4	LENSATIC; WEATHERED TO FORMATIONAL CLAYSTONE AND SANDSTONE WITH VERY DENSE SANDSTONE LENSES, HARD TO DENSE, LOW MOISTURE, GREEN TO RUST TO BLUE GRAY
			50	13.2	4	
10						
			50/9"	12.2	4	
15						
			50/6"	12.0	4	
20						
			50/3"	10.3	4	
25						
30						
35						
40						

TEST BORING NO. 42
DATE DRILLED: 11/9/06

REMARKS: 11/20/06
MEASURED
FOR WATER: 24 FT. DRY

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE	
			11	9.3	2	CLAY, SANDY WITH SCATTERED SANDSTONE CHIPS, STIFF, LOW TO MODERATE MOISTURE, GREEN TO BROWN
5			23	9.8	2	
			14	12.1	2	
10						
			15	13.9	2	
15						
			50/10"	13.5	4	LENSATIC; WEATHERED CLAYSTONE AND SANDSTONE, DENSE, LOW MOISTURE, GREEN T RUST
20						
			50/8"	12.8	4	
25						
30						
35						
40						

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE

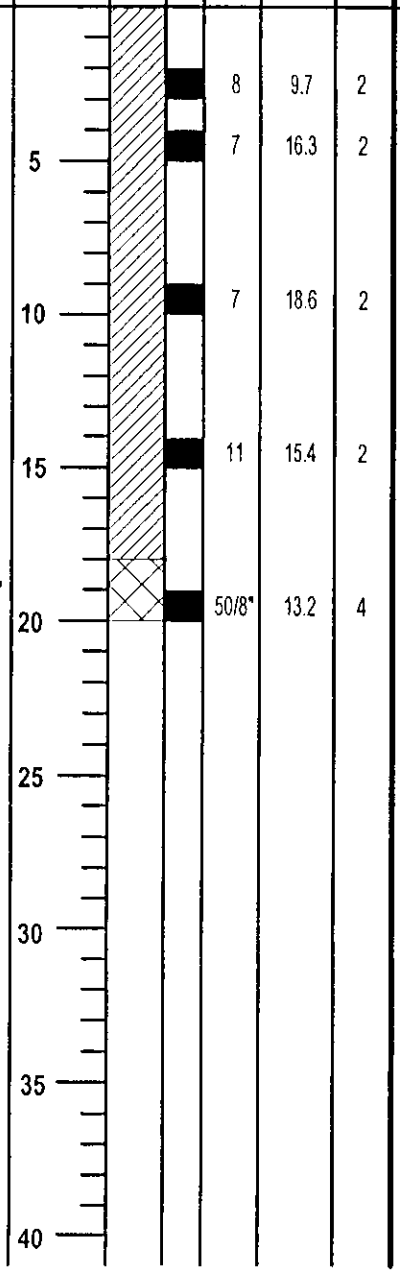
SOIL TESTING & ENGINEERING INC.

JOB No. 060933

FIG No. 24

TEST BORING NO. 43
DATE DRILLED: 11/9/06

REMARKS: 11/20/06
MEASURED
FOR WATER: 18.7 FT. DRY

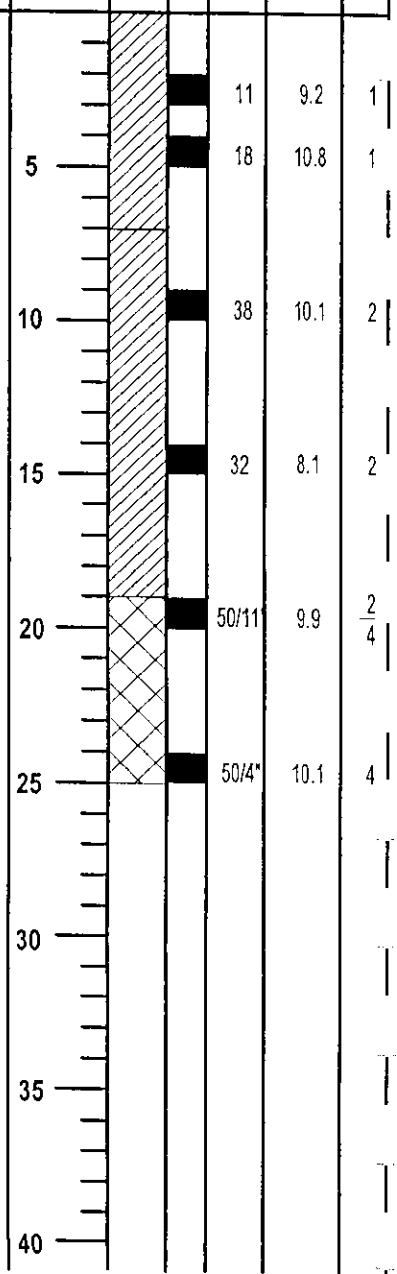


CLAY, SANDY, FIRM TO STIFF, LOW TO MODERATE MOISTURE, LIGHT BROWN TO BROWN

LENSATIC; WEATHERED CLAYSTONE AND SANDSTONE, DENSE, LOW MOISTURE, GREEN TO RUST

TEST BORING NO. 44
DATE DRILLED: 11/9/06

REMARKS: 11/20/06
MEASURED
FOR WATER: 23.6 FT. DRY



CLAY, SANDY, STIFF TO VERY STIFF, LOW MOISTURE, LIGHT BROWN TO BROWN

CLAY, SANDY WITH SCATTERED SANDSTONE CHIPS, HARD, LOW MOISTURE, BROWN TO GREEN TO RUST

LENSATIC; WEATHERED TO FORMATIONAL CLAYSTONE AND SANDSTONE WITH VERY DENSE SANDSTONE LENSES, DENSE LOW MOISTURE, LIGHT BROWN TO GREEN TO RUST

TEST BORING LOGS

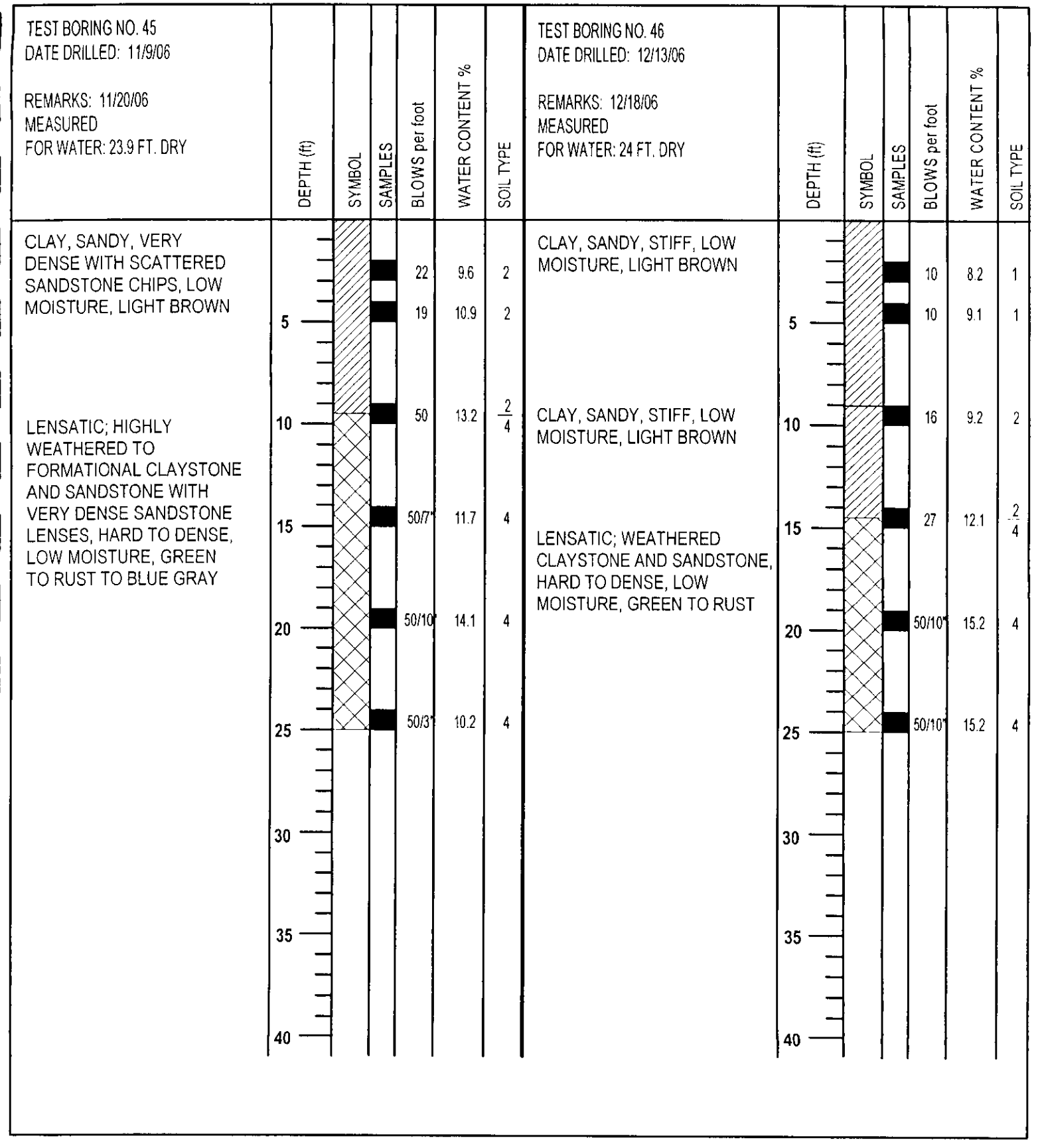
DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE

SOIL TESTING & ENGINEERING INC.

JOB No. 060933

FIG No. 25



TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE

SOIL TESTING & ENGINEERING INC.

JOB No. 060933

FIG No. 26

TEST BORING NO. 47
DATE DRILLED: 12/13/06

REMARKS: 12/18/06
MEASURED
FOR WATER: 23.9 FT. DRY

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
					1
			42	11.1	4
5			50/11"	11.7	4
10			50/8"	13.3	4
15			45	14.6	4
20			50/6"	16.0	4
25			50/9"	16.9	4
30					
35					
40					

CLAY, SANDY, STIFF, LOW MOISTURE, LIGHT BROWN

LENSATIC; WEATHERED CLAYSTONE AND SANDSTONE HARD TO DENSE, LOW MOISTURE, GREEN TO RUST TO DARK GREEN

TEST BORING NO. 48
DATE DRILLED: 12/13/06

REMARKS: 12/18/06
MEASURED
FOR WATER: 18.8 FT. DRY

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
			17	8.3	1
5			29	8.5	1
					2
10			42	10.4	2
15			50/11"	13.9	4
20			50/5"	11.7	4
25					
30					
35					
40					

CLAY, SANDY, VERY STIFF, LOW MOISTURE, LIGHT BROWN

CLAY, SANDY, HARD, LOW MOISTURE, LIGHT BROWN

LENSATIC; WEATHERED TO FORMATIONAL CLAYSTONE AND SANDSTONE, DENSE, LOW MOISTURE, GREEN TO RUST

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE

SOIL TESTING & ENGINEERING INC.

JOB No. 060933

FIG No. 27

TEST BORING NO. 49
DATE DRILLED: 12/13/06

REMARKS: 12/18/06
MEASURED
FOR WATER: 19 FT. DRY

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE	
			7	7.8	1	CLAY, SANDY, FIRM LOW MOISTURE, LIGHT BROWN
5			8	8.8	2	CLAY, SANDY, FIRM TO STIFF, LOW MOISTURE, BROWN TO LIGHT BROWN
10			9	9.8	2	
15			15	15.5	4	LENSATIC; RESIDUAL CLAYS AND SANDS DERIVED FROM WEATHERING OF THE BEDROCK, STIFF, LOW MOISTURE, GREEN TO RUST
20			50/9"	13.4	4	LENSATIC; WEATHERED CLAYSTONE AND SANDSTONE, DENSE, LOW MOISTURE, GREEN TO RUST
25						
30						
35						
40						

TEST BORING NO. 50
DATE DRILLED: 12/13/06

REMARKS: 12/18/06
MEASURED
FOR WATER: WATER AT 15.5 FT.

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE	
			9	17.6	2	CLAY, SANDY, STIFF TO VERY SOFT, MODERATE TO SATURATED MOISTURE CONTENT, BROWN TO GREEN
5			9	16.9	2	
10			8	15.5	2	
15			9	23.0	2	▼ 12/18/06 12/18/06
20			5	24.6	2	NOTE: AUGER PUSHED FROM 20 FT. TO 25 FT. WITH VERY LITTLE RESISTANCE
25						
30			BULK	14.4	4	LENSATIC; WEATHERED CLAYSTONE AND SANDSTONE, HARD, MODERATE MOISTURE, GREEN TO RUST
35						
40						

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No. 060933
FIG No. 28

TEST BORING NO. 51
DATE DRILLED: 12/13/06

REMARKS: 12/18/06
MEASURED FOR
WATER: CAVED TO
14.8 FT. DRY

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE	
			13	8.5	2	CLAY, SANDY, STIFF, LOW TO MODERATE MOISTURE, GREEN
5			9	11.7	2	
10			23	14.6	4	LENSATIC; HIGHLY WEATHERED TO WEATHERED CLAYSTONE AND SANDSTONE, VERY STIFF TO DENSE, LOW MOISTURE, GREEN TO RUST
15			32	15.3	4	
20			50/9"	16.1	4	
25						
30						
35						
40						

TEST BORING NO. 52
DATE DRILLED: 12/13/06

REMARKS: 12/18/06
MEASURED
FOR WATER: WATER AT 11.7 FT.

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE	
			11	9.5	2	CLAY, SANDY, STIFF, LOW TO MODERATE MOISTURE, LIGHT BROWN TO GREEN
5			13	10.5	2	
10			36	17.6	4	LENSATIC; HIGHLY WEATHERED TO WEATHERED CLAYSTONE AND SANDSTONE, HARD TO DENSE, LOW MOISTURE, DARK GREEN TO RUST
15			50/7"	11.8	4	▼ 12/18/06
20						
25						
30						
35						
40						

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No. 060933
FIG No. 29

TEST BORING NO. 53
DATE DRILLED: 12/13/06

REMARKS: 12/18/06
MEASURED FOR
WATER: 19 FT. DRY

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
					2
			23	6.9	4
5			43	8.1	
10			50/8"	11.8	4
15			50/7"	11.6	4
20			50/6"	10.6	4
25					
30					
35					
40					

CLAY, SANDY, STIFF,
LOW MOISTURE, BROWN

LENSATIC; WEATHERED
CLAYSTONE AND SANDSTONE,
HARD TO DENSE, LOW
MOISTURE, GREEN
TO RUST

TEST BORING NO. 54
DATE DRILLED: 12/13/06

REMARKS: 12/18/06
MEASURED
FOR WATER: CAVED
TO 11.4 FT. MUDDY

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
			9	8.4	1
5			9	7.2 / 17.0	2
10			10	13.8	2
15			8	19.9	2
20					2
25			BULK	17.7	4
30					
35					
40					

CLAY, SANDY, STIFF,
LOW MOISTURE, BROWN

CLAY, SANDY, STIFF TO
VERY SOFT, MODERATE
TO SATURATED MOISTURE
CONTENT, BROWN TO GREEN

▼ 12/18/06

NOTE: AUGER PUSHED
FROM 15 FT. TO 22 FT.
WITH VERY LITTLE
RESISTANCE

▼ 12/13/06

LENSATIC; HIGHLY
WEATHERED CLAYSTONE
AND SANDSTONE, HARD,
MODERATE MOISTURE,
GREEN TO RUST

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No.
060933
FIG No.
30

TEST BORING NO. 55
DATE DRILLED: 12/27/06

REMARKS: 1/04/07
MEASURED FOR
WATER: 19.4 FT. DRY

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
0					
			50/9"	7.9	4
			50/6"	8.6	4
5					
			50/5"	11.8	4
10					
			50/5"	12.2	4
15					
			50/3"	9.9	4
20					
25					
30					
35					
40					

LENSATIC; WEATHERED TO FORMATIONAL CLAYSTONE AND SANDSTONE, DENSE, LOW MOISTURE, DARK BROWN TO RUST

TEST BORING NO. 56
DATE DRILLED: 12/27/06

REMARKS: 1/04/07
MEASURED
FOR WATER:
WATER AT 22.6 FT.

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
0					1
			9	7.0	1
5			9	7.4	1
10			8	8.8	1
15			16	14.8	2
20			7	15.6	2
25			6	26.0	2
30			50/8"	15.6	4
35					4
40					

CLAY, SANDY, FIRM TO STIFF, LOW MOISTURE, TAN TO LIGHT BROWN

CLAY, SANDY, FIRM TO STIFF, MODERATE TO SATURATED MOISTURE CONTENT, BROWN

1/04/07

LENSATIC; WEATHERED CLAYSTONE AND SANDSTONE, DENSE, MODERATE MOISTURE CONTENT, DARK GREEN TO RUST

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No. 060933
FIG No. 31

TEST BORING NO. 57
DATE DRILLED: 12/27/06

REMARKS: 1/04/07
MEASURED FOR
WATER: 19.0 FT. DRY

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
					1
			17	8.3	1
5			20	8.2	1
10			50/9"	10.6	4
15			50/7"	11.1	4
20			50/4"	10.3	4
25					
30					
35					
40					

CLAY, SANDY, VERY STIFF, LOW MOISTURE, LIGHT BROWN

LENSATIC; WEATHERED TO FORMATIONAL CLAYSTONE AND SANDSTONE, DENSE, LOW MOISTURE, DARK BROWN TO RUST

TEST BORING NO. 58
DATE DRILLED: 12/27/06

REMARKS: 1/04/07
MEASURED
FOR WATER:
WATER AT 24.0 FT.

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
					1
			5	5.5	1
5			9	6.1	1
10			6	8.9	2
15			4	9.2	2
20			27	14.6	4
25			50/10"	13.4	4
30					
35					
40					

CLAY, SILTY TO SANDY FIRM TO STIFF, LOW MOISTURE, LIGHT BROWN

CLAY, SANDY, VERY SOFT TO FIRM, MODERATE MOISTURE, LIGHT BROWN TO BROWN

LENSATIC; HIGHLY WEATHERED TO WEATHERED CLAYSTONE AND SANDSTONE, VERY STIFF TO DENSE, MODERATE MOISTURE, DARK BROWN TO RUST ▼ 1/04/07

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No. 060933
FIG No. 32

TEST BORING NO. 59
DATE DRILLED: 12/27/06

REMARKS: 1/04/07
MEASURED
FOR WATER:
WATER AT 23.5 FT.

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
					1
			19	5.2	1
5			13	7.9	1
10			8	14.3	2
15			9	17.8	2
20			16	19.5	2
25			9	24.6	2
30			50/12"	21.6	4
35					
40					

CLAY, VERY SILTY TO SANDY, STIFF TO VERY STIFF, LOW MOISTURE, TAN TO LIGHT BROWN

CLAY, SANDY, FIRM TO STIFF, MODERATE TO SATURATED MOISTURE CONTENT, LIGHT BROWN TO BROWN

▼ 1/04/07

LENSATIC; WEATHERED CLAYSTONE AND SANDSTONE, HARD, MODERATE TO HIGH MOISTURE, BROWN TO RUST

TEST BORING NO. 60
DATE DRILLED: 12/27/06

REMARKS: 1/04/07
MEASURED
FOR WATER:
WATER AT 16.6 FT.

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
					2
			7	8.1	2
5			4	12.2	2
10			3	12.2	2
15			6	21.5	2
20			5	27.4	2
25			4	27.9	2
30			9	24.5	2
35			50/12"	17.6	4
40					

CLAY, SANDY, VERY SOFT TO STIFF, MODERATE TO SATURATED MOISTURE CONTENT, LIGHT BROWN TO BROWN

▼ 1/04/07

LENSATIC; WEATHERED CLAYSTONE AND SANDSTONE, HARD, MODERATE MOISTURE, BROWN TO GREEN

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No. 060933
FIG No. 33

TEST BORING NO. 61
DATE DRILLED: 12/27/06

REMARKS: 1/04/07
MEASURED FOR
WATER: 19.2 FT. DRY

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
					1
			12	6.0	1
			15	5.8	1
5					
			50/8"	11.6	4
10					
			50/8"	14.0	4
15					
			50/7"	13.6	4
20					
25					
30					
35					
40					

CLAY, SANDY, STIFF, LOW MOISTURE, LIGHT BROWN

LENSATIC; WEATHERED CLAYSTONE AND SANDSTONE, DENSE, LOW TO MODERATE MOISTURE, DARK GREEN TO BROWN TO RUST

TEST BORING NO. 62
DATE DRILLED: 12/27/06

REMARKS: 1/04/07
MEASURED
FOR WATER:
WATER AT 17.4 FT.

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
					1
			9	6.5	1
			10	5.8	1
5					
			6	14.1	2
10					
			6	22.4	2
15					
			6	22.6	2
20					
			7	24.2	2
25					
			50/11"	18.6	4
30					
35					
40					

CLAY, SANDY, STIFF, LOW MOISTURE, LIGHT BROWN

CLAY, SANDY, FIRM, MODERATE TO HIGH MOISTURE, DARK BROWN TO BROWN

▼ 1/04/07

LENSATIC; WEATHERED CLAYSTONE AND SANDSTONE, HARD TO DENSE, HIGH MOISTURE,DARK BROWN TO RUST

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No. 060933
FIG No. 34

TEST BORING NO. 209
DATE DRILLED: 11/21/05

REMARKS: 12/23/05
MEASURED FOR WATER:
WATER AT 12 FT.
1/10/06 MEASURED FOR WATER:
WATER AT 12 FT.

CLAY, SANDY WITH SAND LENSES, SOFT TO VERY SOFT, HIGH TO SATURATED MOISTURE CONTENT, DARK BROWN TO BROWN TO GREEN TO RUST

▼ 12/23/05
1/10/06

LENSATIC; WEATHERED TO FORMATIONAL CLAYSTONE AND SANDSTONE, DENSE, MODERATE MOISTURE, GREEN TO RUST

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
					2
			12	13.0	2
5			8	14.7	2
			5	28.6	2
10					
15			30	19.0	4
20			50/6"	10.4	4
25					
30					
35					
40					

TEST BORING NO. 210
DATE DRILLED: 11/21/05

REMARKS: 12/23/05
MEASURED FOR WATER:
WATER AT 11.75 FT.
1/10/06 MEASURED FOR WATER:
WATER AT 11.17 FT.

CLAY, SANDY, STIFF, LOW MOISTURE, LIGHT BROWN

CLAY, SANDY WITH SAND LENSES, SOFT TO VERY SOFT, MODERATE TO SATURATED MOISTURE CONTENT, DARK BROWN TO BROWN TO GREEN TO RUST

▼ 11/21/05
▼ 12/23/05

CLAY, WITH FINE TO COARSE GRAINED SAND LENSES, STIFF, HIGH MOISTURE CONTENT, GREEN TO RUST

LENSATIC; WEATHERED TO FORMATIONAL CLAYSTONE AND SANDSTONE, DENSE, MODERATE MOISTURE, GREEN TO RUST

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
					1
			25	16.0	2
5			22	15.8	2
			12	23.9	2
10					
15			14	23.2	3
20			50/11"	17.4	4
25					
30					
35					
40					

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No.
060933
(from 051021)
FIG No.
A

TEST BORING NO. 211
DATE DRILLED: 11/21/05

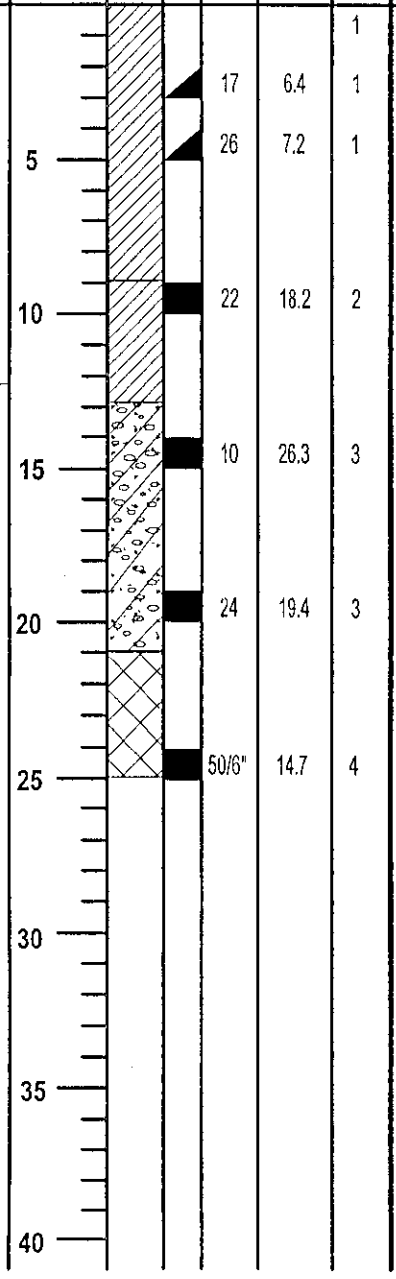
REMARKS: 12/23/05
MEASURED FOR WATER:
WATER AT 13 FT.
1/10/06 MEASURED FOR WATER:
WATER AT 12.25 FT.

CLAY, SANDY, STIFF, LOW MOISTURE, LIGHT BROWN

CLAY, SANDY WITH SAND LENSES, VERY STIFF, SATURATED MOISTURE CONTENT, DARK BROWN TO BROWN TO GREEN TO RUST ▼ 12/23/05 1/10/06

CLAY, WITH FINE TO COARSE GRAINED SAND LENSES, STIFF TO VERY STIFF, HIGH MOISTURE CONTENT, GREEN TO RUST

LENSATIC; WEATHERED TO FORMATIONAL CLAYSTONE AND SANDSTONE, DENSE, LOW TO MODERATE MOISTURE, GREEN TO RUST



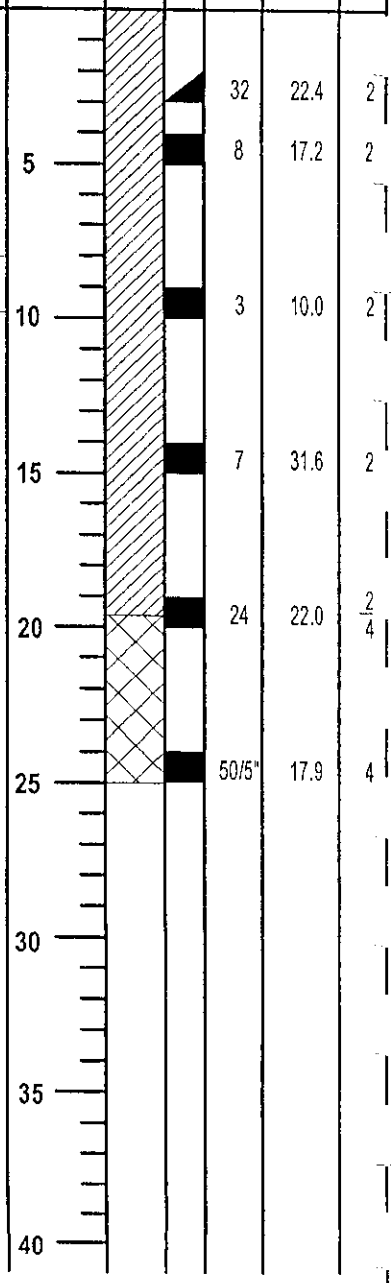
TEST BORING NO. 221
DATE DRILLED: 12/14/05

REMARKS: 12/23/05
MEASURED FOR WATER:
WATER @ 9.75 FT.
1/10/06 MEASURED FOR WATER:
WATER AT 9.75 FT.

CLAY, SANDY, VERY STIFF TO VERY SOFT, HIGH TO SATURATED MOISTURE CONTENT, GREEN TO DARK BROWN

▼ 12/14/05
▼ 12/23/05 1/10/06

LENSATIC; WEATHERED TO FORMATIONAL CLAYSTONE AND SANDSTONE, HARD TO DENSE, MODERATE TO LOW MOISTURE, GREEN TO BUFF TO RUST



TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No.
060933
(FROM 051021)
FIG No.
B

TEST BORING NO. 222
DATE DRILLED: 12/14/05

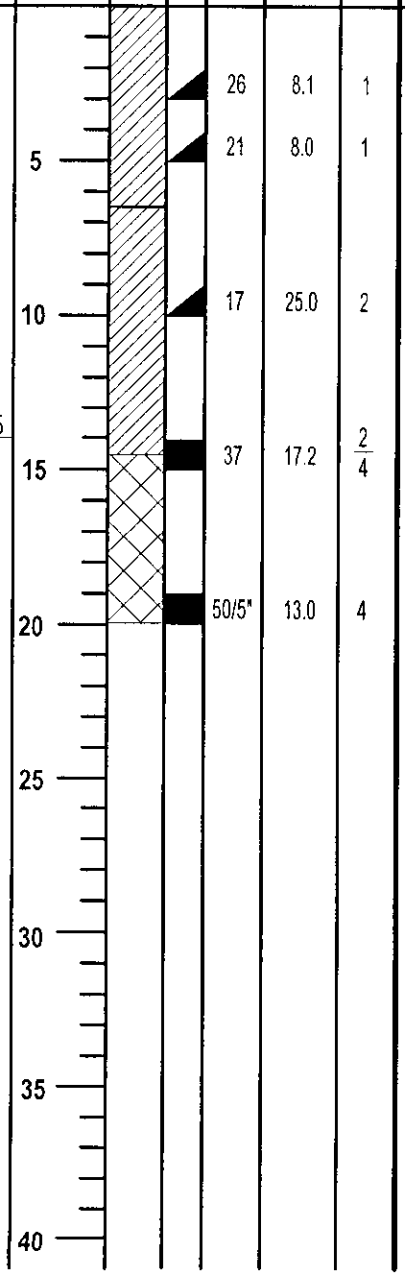
REMARKS: 12/23/05
MEASURED FOR WATER:
WATER @ 14.00 FT.
1/10/06 MEASURED FOR WATER:
WATER AT 13.33 FT.

CLAY, SANDY, STIFF,
LOW MOISTURE,
LIGHT BROWN

CLAY, SANDY, STIFF,
HIGH MOISTURE, GREEN

12/23/05
1/10/06

LENSATIC; HIGHLY
WEATHERED, CLAYSTONE
SANDSTONE, HARD TO
DENSE, MODERATE TO
LOW MOISTURE,
GREEN TO RUST



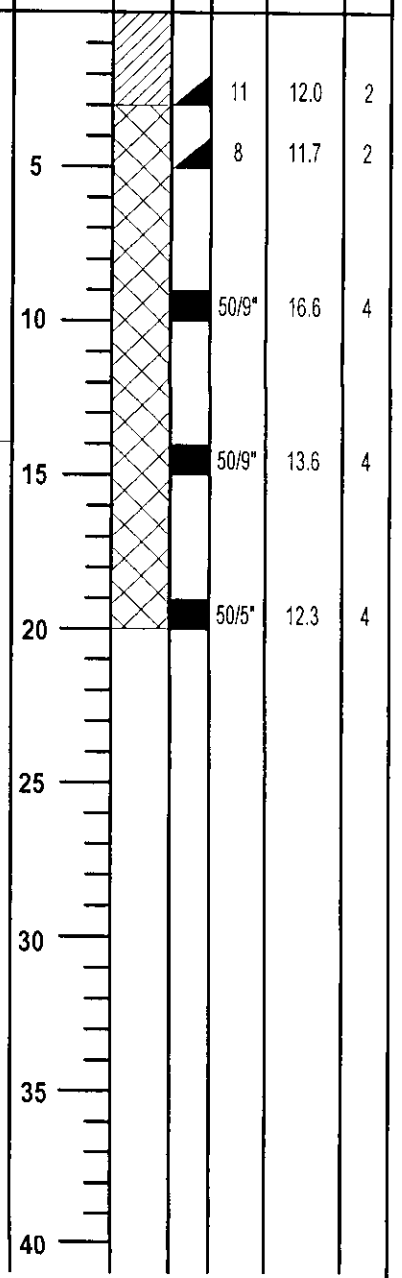
TEST BORING NO. 223
DATE DRILLED: 12/28/05

REMARKS: 1/10/06
MEASURED FOR WATER:
WATER AT 13.67 FT.
1/14/06 MEASURED FOR WATER:
WATER AT13.67 FT.

CLAY, SANDY, FIRM,
LOW TO MODERATE
MOISTURE, LIGHT
BROWN TO BROWN

LENSATIC; WEATHERED TO
FORMATIONAL CLAYSTONE
SANDSTONE, DENSE,
LOW MOISTURE,
GREEN TO RUST

1/10/06
1/14/06



TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No.
060933
(FROM 051021)
FIG No.
C

TEST BORING NO. 231
DATE DRILLED: 12/14/05

REMARKS: 12/23/05
MEASURED FOR WATER:
WATER AT 13 FT.
1/10/06 MEASURED FOR WATER:
WATER AT 8.75 FT.

CLAY, SANDY, VERY STIFF TO STIFF, HIGH TO SATURATED MOISTURE CONTENT, DARK BROWN TO BROWN TO GREEN

1/10/06

12/23/05

12/14/05

LENSATIC; SANDY CLAY AND CLAYEY SAND AND GRAVEL, STIFF, SATURATED MOISTURE CONTENT, GREEN TO RUST

SANDSTONE, VERY DENSE, LOW MOISTURE, BLUE GRAY

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
5			26	18.0	2
			17	23.7	2
10			23	24.5	2
15			16	14.9	2
20			13	22.1	3
25			25	14.4	4
30					
35					
40					

TEST BORING NO. 232
DATE DRILLED: 12/14/05

REMARKS: 12/23/05
MEASURED FOR WATER:
WATER AT 13 FT.
1/10/06 MEASURED FOR WATER:
WATER AT 13 FT.

CLAY, SANDY WITH SILTY SAND LENSES, STIFF, MODERATE TO HIGH MOISTURE, GREEN

12/23/05
1/10/06

LENSATIC; HIGHLY WEATHERED TO WEATHERED CLAYSTONE AND SANDSTONE, VERY STIFF TO DENSE, MODERATE TO LOW MOISTURE, GREEN TO RUST

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
5			29	16.9	2
			16	19.2	2
10			14	19.8	2
15			26	18.8	4
20			50/7"	16.5	4
25					
30					
35					
40					

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No.
060933
(FROM 051021)
FIG No.
D

TEST BORING NO. 233
DATE DRILLED: 12/14/05

REMARKS: 12/23/05
MEASURED FOR WATER:
WATER AT 17.33 FT.
1/10/06 MEASURED FOR WATER:
WATER AT 16.17 FT.

CLAY, SANDY, FIRM,
LOW MOISTURE,
LIGHT BROWN

LENSATIC; CLAYSTONE AND
SANDSTONE, HARD TO
DENSE, LOW MOISTURE,
LIGHT BROWN TO BROWN
TO GREEN

1/10/06
12/23/05

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
					1
			50/11"	14.1	4
5			46	11.8	4
10			50/6"	13.9	4
15			50/5"	13.9	4
20			50/4"	12.2	4
25					
30					
35					
40					

TEST BORING NO. 242
DATE DRILLED: 1/4/06

REMARKS: 1/10/06
MEASURED FOR WATER:
WATER AT 6.5 FT.
1/14/06 MEASURED FOR WATER:
WATER AT 6.5 FT.

CLAY, SANDY, VERY
STIFF TO VERY SOFT,
MODERATE TO SATURATED
MOISTURE CONTENT,
BROWN TO
GREEN TO RUST

1/10/06
1/14/06

NOTE: AUGER PUSHED
FROM 9 FT. TO 15 FT.
WITH VERY LITTLE
RESISTANCE

LENSATIC; WEATHERED
CLAYSTONE AND SANDSTONE,
HARD TO DENSE,
LOW MOISTURE,
GREEN TO RUST

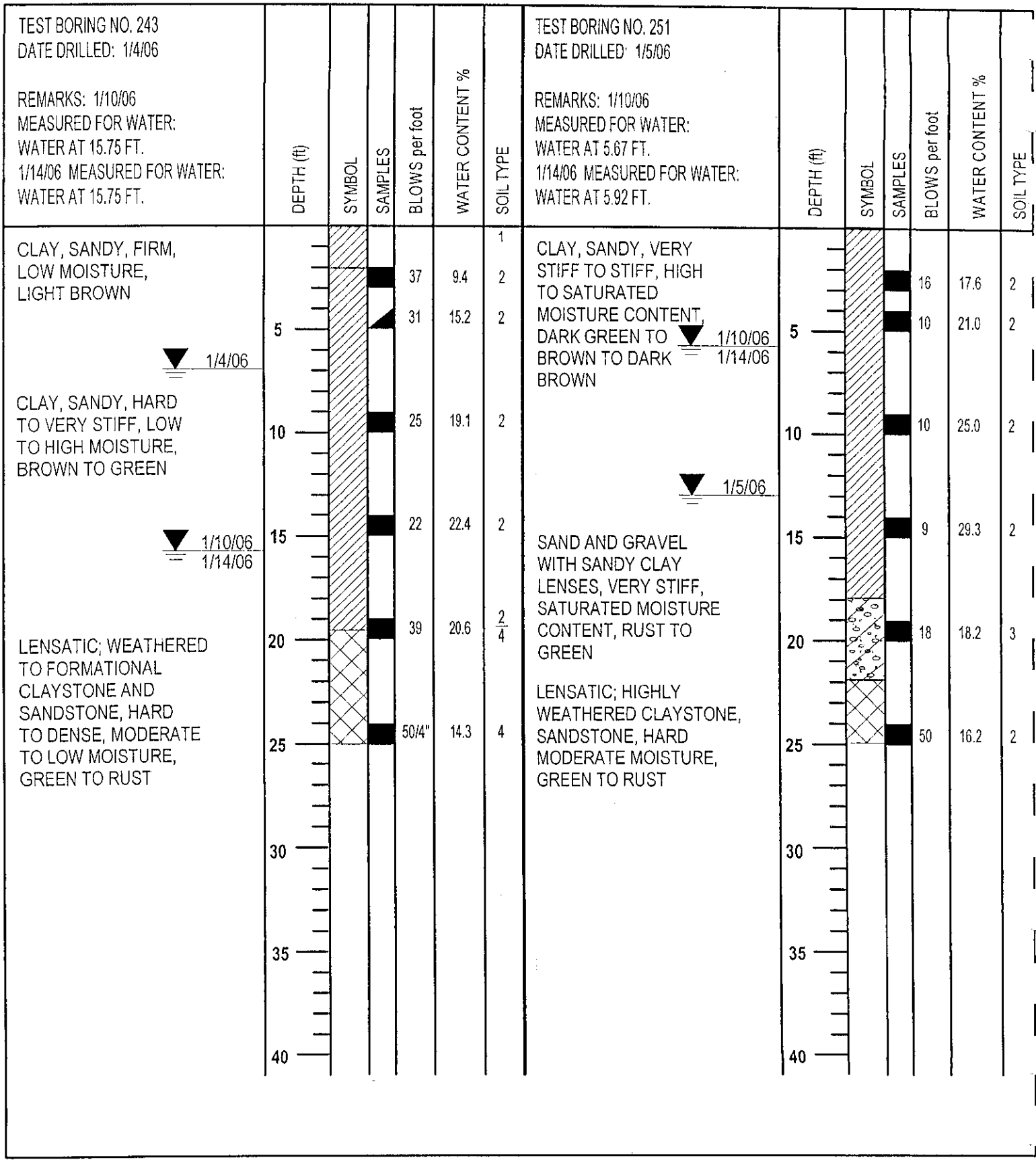
DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
			30	15.7	2
5			9	24.6	2
10			5	32.7	2
15					2
20			50/8"	16.8	4
25					
30					
35					
40					

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No.
060933
(FROM 051021)
FIG No.
E



TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE

SOIL TESTING & ENGINEERING INC.

JOB No.
060933
(FROM 051021)
FIG No.
F

TEST BORING NO. 252
DATE DRILLED: 1/5/06

REMARKS: 1/10/06
MEASURED FOR WATER:
WATER AT 10.75 FT.
1/14/06 MEASURED FOR WATER:
WATER AT 10.08 FT.

CLAY, SANDY, FIRM, LOW MOISTURE, LIGHT BROWN

SAND, CLAYEY, VERY STIFF, LOW MOISTURE, GREEN TO RUST

1/10/06
1/14/06

LENSATIC; HIGHLY WEATHERED TO FORMATIONAL CLAYSTONE AND SANDSTONE WITH VERY DENSE SANDSTONE LENSES, HARD TO DENSE, LOW MOISTURE, GREEN TO RUST TO BLUE GRAY

1/5/06

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
					1
			20	10.8	3
5			36	12.8	4
10			50/8"	14.1	4
15			50/5"	11.9	4
20			50/5"	11.8	4
25					
30					
35					
40					

TEST BORING NO. 253
DATE DRILLED: 1/5/06

REMARKS: 1/10/06
MEASURED FOR WATER:
WATER AT 16.75 FT.
1/14/06 MEASURED FOR WATER:
WATER AT 16.75 FT.

CLAY, SANDY, STIFF, LOW MOISTURE, LIGHT BROWN

LENSATIC; HIGHLY WEATHERED TO FORMATIONAL CLAYSTONE AND SANDSTONE WITH VERY DENSE SANDSTONE LENSES, HARD TO DENSE, LOW MOISTURE, GREEN TO RUST TO BLUE GRAY

1/10/06
1/14/06

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
			15	7.6	1
5			27	8.8	1
10			36	17.4	4
15			50/9"	13.0	4
20			50/2"	10.1	4
25					
30					
35					
40					

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No.
060933
(FROM 051021)
FIG No.
G

TEST BORING NO. 261
DATE DRILLED: 1/5/06

REMARKS: 1/10/06
MEASURED FOR WATER:
WATER AT 10 FT.
1/14/06 MEASURED FOR WATER:
WATER AT 7.67 FT.

CLAY, SANDY, VERY SOFT, SATURATED MOISTURE CONTENT, BROWN TO GREEN

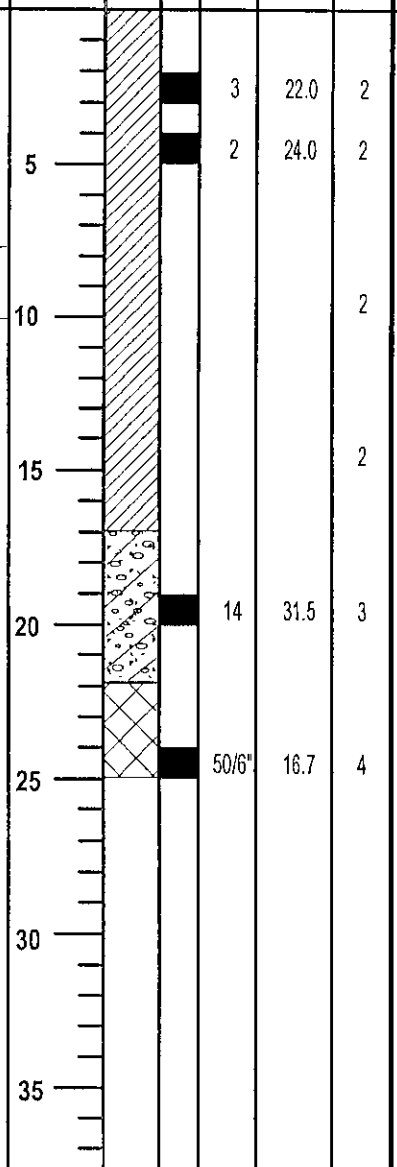
1/14/06

1/5/06
1/10/06

NOTE: AUGER PUSHED FROM 5 FT. TO 17 FT. WITH VERY LITTLE RESISTANCE

SAND AND GRAVEL WITH SANDY CLAY LENSES, STIFF, SATURATED MOISTURE CONTENT, GREEN TO RUST

LENSATIC; WEATHERED TO FORMATIONAL CLAYSTONE, SANDSTONE, DENSE, MODERATE MOISTURE, GREEN TO RUST



TEST BORING NO. 262
DATE DRILLED: 1/5/06

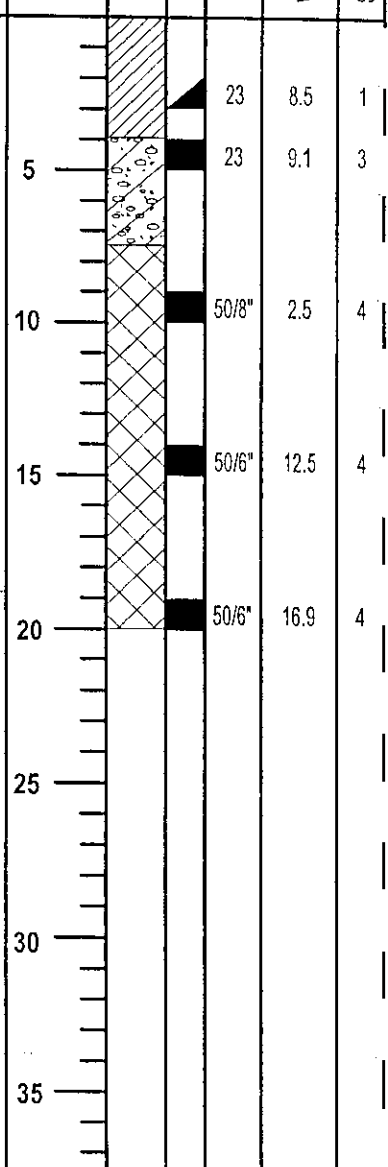
REMARKS: 1/10/06
MEASURED FOR WATER:
WATER AT 19 FT.
1/14/06 MEASURED FOR WATER:
WATER AT 19 FT.

CLAY, SANDY, STIFF, LOW MOISTURE, LIGHT BROWN

CLAY AND SAND LENSES, VERY STIFF, LOW MOISTURE, GREEN TO RUST

LENSATIC; WEATHERED TO FORMATIONAL CLAYSTONE AND SANDSTONE, WITH VERY DENSE SANDSTONE LENSES, VERY STIFF TO DENSE, LOW MOISTURE, GREEN TO RUST TO BLUE GRAY

1/10/06
1/14/06



TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No.
060933
(FROM 051021)
FIG No.
II

TEST BORING NO. 269
DATE DRILLED: 1/5/06

REMARKS: 1/10/06
MEASURED FOR WATER:
WATER AT 7.33 FT.
1/14/06 MEASURED FOR WATER:
WATER AT 7.92 FT.

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
			25	14.5	2
			8	26.2	2
5					
			ROD SETTLED UNDER ITS OWN WEIGHT		
10				29.5	2
					2
15					
			12	14.7	3
20					
			50/6"	18.1	4
25					
30					
35					
40					

CLAY, SANDY, STIFF TO VERY STIFF, MODERATE TO SATURATED MOISTURE CONTENT, DARK BROWN TO DARK GREEN ▼ 1/5/06 / 1/10/06

NOTE: AUGER PUSHED FROM 10 FT. TO 18 FT. WITH VERY LITTLE RESISTANCE

SANDY CLAY WITH SAND AND GRAVEL LENSES, STIFF, SATURATED MOISTURE CONTENT, BROWN

LENSATIC; CLAYSTONE AND SANDSTONE, DENSE, MODERATE MOISTURE, GREEN TO RUST

TEST BORING NO. 270
DATE DRILLED: 1/5/06

REMARKS: 1/10/06
MEASURED FOR WATER:
WATER AT 15.17 FT.
1/14/06 MEASURED FOR WATER:
WATER AT 15.83 FT.

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
					1
			21	3.8	3
5			20	11.7	4
10			32	14.7	4
15			50/8"	14.0	4
20			50/8"	8.4	4
25					
30					
35					
40					

CLAY, SANDY, FIRM LOW MOISTURE, LIGHT BROWN

SANDY, CLAY WITH SAND AND GRAVEL LENSES, STIFF, SATURATED MOISTURE CONTENT, BROWN

▼ 1/10/06 / 1/14/06

LENSATIC, VERY HIGHLY WEATHERED CLAYSTONE AND SANDSTONE, VERY STIFF TO DENSE, LOW MOISTURE, GREEN TO RUST

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No.
060933
(FROM 051021)
FIG No.
I

TEST BORING NO. 271
DATE DRILLED: 1/5/06

REMARKS: 1/10/06
MEASURED FOR WATER:
19.25 FT. DRY
1/14/06 MEASURED FOR WATER:
19.25 FT DRY

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
			12	10.6	1
			18	9.3	1
5					
			50/10"	6.8	4
10					
			50/8"	13.7	4
15					
			50/5"	13.7	4
20					
25					
30					
35					
40					

CLAY, SANDY, STIFF,
LOW MOISTURE,
LIGHT BROWN

LENSATIC, WEATHERED
TO FORMATIONAL
CLAYSTONE AND SANDSTONE
WITH VERY DENSE
SANDSTONE LENSES,
DENSE, LOW MOISTURE,
GREEN TO BROWN TO
RUST TO BLUE GRAY

TEST BORING NO. 279
DATE DRILLED: 1/18/06

REMARKS: MEASURED FOR WATER:
1/27/06 WATER AT 7.8 FT.
2/2/06 WATER AT 8 FT.

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
			21	16.3	2
			18	17.3	2
5					
			6	29.8	2
10					
			NO RECOVERY		2
15					
			16	14.8	3
20					
			50/5"	17.4	4
25					
30					
35					
40					

CLAY, SANDY, VERY
STIFF TO FIRM,
MODERATE TO SATURATED
MOISTURE CONTENT,
DARK BROWN TO
GREEN TO BROWN

1/18/06
2/2/06

SAND AND GRAVEL
WITH SANDY CLAY
LENSES, STIFF,
SATURATED MOISTURE
CONTENT, GREEN TO RUST

LENSATIC; WEATHERED
TO FORMATIONAL
CLAYSTONE, HARD TO
DENSE, MODERATE
MOISTURE, GREEN
TO RUST

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No.
060933
(FROM 051021)
FIG No.
J

TEST BORING NO. 280
DATE DRILLED: 1/18/06

REMARKS: MEASURED FOR WATER:
1/27/06 WATER AT 11.5 FT.
2/2/06 WATER AT 11.5 FT.

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
			18	12.9	1
5			14	17.2	2
10			8	14.6	2
15			50/8"	13.5	4
20			50/6"	12.1	4
25					
30					
35					
40					

CLAY, SANDY, BROWN, VERY STIFF, MODERATE MOISTURE, BROWN

CLAY, SANDY WITH CLAYEY SAND LENSES, STIFF TO FIRM, MODERATE MOISTURE, BROWN TO GREEN TO RUST

▼ 1/27/06
2/2/06

LENSATIC; WEATHERED TO FORMATIONAL CLAYSTONE AND SANDSTONE, HARD TO DENSE, LOW MOISTURE, GREEN TO RUST

TEST BORING NO. 281
DATE DRILLED: 1/18/06

REMARKS: MEASURED FOR WATER:
1/27/06 WATER AT 12.4 FT.
2/2/06 WATER AT 12.4 FT.

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
			13	11.6	1
5			17	17.8	2
10			6	22.7	2
15			9	25.8	2
20			50/11"	14.2	4
25					
30					
35					
40					

CLAY, SANDY, STIFF, LOW TO MODERATE MOISTURE, LIGHT BROWN

CLAY, SANDY, STIFF, MODERATE TO SATURATED MOISTURE CONTENT, LIGHT BROWN TO BROWN

▼ 1/27/06
2/2/06

LENSATIC; WEATHERED CLAYSTONE, SANDSTONE, DENSE, LOW MOISTURE, GREEN TO RUST

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No.
060933
(FROM 051021)
FIG No.
K

TEST BORING NO. 282
DATE DRILLED: 1/8/06

REMARKS: MEASURED FOR WATER:
1/27/06 WATER AT 14.4 FT.
2/2/06 WATER AT 16.4 FT.

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
			17	9.7	1
5			41	7.9	1
10			50/8"	8.3	4
15			50/6"	13.6	4
20			50/4"	12.0	4
25					
30					
35					
40					

CLAY, SANDY, STIFF TO HARD, LOW MOISTURE, LIGHT BROWN

LENSATIC; WEATHERED TO FORMATIONAL CLAYSTONE AND SANDSTONE WITH VERY DENSE SANDSTONE LENSES, DENSE, LOW MOISTURE, GREEN TO RUST TO BROWN

1/27/06
2/2/06

TEST BORING NO. 292
DATE DRILLED: 1/19/06

REMARKS: MEASURED FOR WATER:
1/27/06 WATER AT 11 FT.
2/2/06 WATER AT 10.9 FT.

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
			21	10.8	1
5			26	12.9	2
10			3	26.3	2
15					2
20					3
25			50/6"	13.7	3/4
30			50/8"	16.3	4
35					
40					

CLAY, SANDY, VERY, STIFF, LOW MOISTURE, BROWN

CLAY, SANDY, VERY STIFF TO VERY SOFT, MODERATE TO SATURATED MOISTURE CONTENT, GREEN TO BROWN

1/19/06
2/2/06

NOTE: AUGER PUSHED FROM 10 FT. TO 18 FT. WITH VERY LITTLE RESISTANCE

SAND AND GRAVEL WITH SANDY CLAY LENSES, VERY STIFF, SATURATED MOISTURE CONTENT, GREEN TO RUST

LENSATIC; WEATHERED CLAYSTONE AND SANDSTONE, DENSE MODERATE MOISTURE, GREEN TO RUST TO BLUE GRAY

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No.
060933
(FROM 051021)
FIG No.
L

TEST BORING NO. 293
DATE DRILLED: 1/19/06

REMARKS: MEASURED FOR WATER:
1/27/06 WATER AT 12.8 FT.
2/2/06 WATER AT 12.7 FT.

CLAY, SANDY, VERY STIFF, LOW MOISTURE, LIGHT BROWN

LENSATIC; HIGHLY WEATHERED TO WEATHERED CLAYSTONE AND SANDSTONE, HARD TO DENSE, LOW MOISTURE, GREEN TO RUST

▼ 1/27/06
2/2/06

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
			20	7.8	1
5			43	13.7	4
10			36	16.4	4
15			50/11"	13.7	1
20			50/8"	15.1	1
25					
30					
35					
40					

TEST BORING NO. 294
DATE DRILLED: 1/19/06

REMARKS: MEASURED FOR WATER:
1/27/06 WATER AT 17.7 FT.
2/2/06 WATER AT 17 FT.

CLAY, SANDY, FIRM, LOW MOISTURE, LIGHT BROWN

LENSATIC; WEATHERED CLAYSTONE AND SANDSTONE, DENSE, LOW MOISTURE, GREEN TO RUST

▼ 1/27/06
2/2/06

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
			50/10"	8.1	1/4
5			50/8"	7.8	4
10			50/10"	9.6	4
15			50/8"	13.4	4
20			50/8"	12.1	4
25					
30					
35					
40					

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No.
060933
(FROM 051021)
FIG No.
M

TEST BORING NO. 304
DATE DRILLED: 1/25/06

REMARKS: MEASURED FOR WATER:
1/27/06 WATER AT 10.5 FT.
2/2/06 WATER AT 10.5 FT.

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
			7	11.2	1
5			8	19.5	1
10			4	24.2	2
15			7	25.2	3
20			14	29.2	2
25			50/4"	7.8	4
30			50/7"	19.1	4
35					
40					

CLAY, SANDY, FIRM, LOW TO MODERATE MOISTURE, DARK BROWN TO LIGHT BROWN

▼ 1/25/06

CLAY, SANDY, SOFT SATURATED MOISTURE CONTENT, BROWN

▼ 1/27/06
2/2/06

SAND AND GRAVEL WITH SANDY CLAY LENSES, STIFF, SATURATED MOISTURE CONTENT, BROWN

CLAY, SANDY, STIFF, SATURATED MOISTURE CONTENT, BROWN AND GREEN

LENSATIC; WEATHERED TO FORMATIONAL CLAYSTONE AND SANDSTONE WITH VERY DENSE SANDSTONE LENSES, DENSE, LOW TO MODERATE MOISTURE, GREEN TO RUST

TEST BORING NO. 305
DATE DRILLED: 1/19/06

REMARKS: MEASURED FOR WATER:
1/27/06 WATER AT 18.9 FT.
2/2/06 WATER AT 18.9 FT.

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
			10	7.5	1
5			11	9.5	1
10			11	15.1	1
15			11	18.0	2
20			9	23.9	3
25			50/9"	15.6	4
30					
35					
40					

CLAY, SANDY, STIFF, LOW TO MODERATE MOISTURE, LIGHT BROWN TO GREEN

CLAY, SANDY, STIFF HIGH MOISTURE, GREEN TO RUST

SAND AND GRAVEL WITH SANDY CLAY LENSES, STIFF SATURATED MOISTURE CONTENT, GREEN TO BROWN

▼ 1/27/06
2/2/06

LENSATIC; WEATHERED CLAYSTONE AND SANDSTONE, DENSE MODERATE MOISTURE, GREEN TO RUST

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE

SOIL TESTING & ENGINEERING INC.

JOB No.
060933
(FROM 051021)
FIG No.
N

TEST BORING NO. 315
DATE DRILLED: 1/25/06

REMARKS: MEASURED FOR WATER:
1/27/06 WATER AT 10.5 FT.
2/2/06 WATER AT 10.5 FT.

CLAY, SANDY, STIFF TO FIRM, HIGH TO LOW MOISTURE, BROWN TO LIGHT BROWN

CLAY, SANDY, STIFF, HIGH TO SATURATED MOISTURE CONTENT, BROWN TO GREEN TO RUST

1/25/06

1/27/06
2/2/06

SAND AND GRAVEL WITH SANDY CLAY LENSES, SATURATED MOISTURE CONTENT, BROWN

LENSATIC; VERY HIGHLY WEATHERED TO FORMATIONAL CLAYSTONE AND SANDSTONE, VERY STIFF TO DENSE, HIGH TO LOW MOISTURE, GREEN TO RUST TO GRAY

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
			12	25.2	1
5			5	6.7	1
10			9	13.6	2
15			8	27.5	2
20			7	29.8	2
25			21	15.6	3
30			50/6"	15.9	4
35					
40					

TEST BORING NO. 316
DATE DRILLED: 1/26/06

REMARKS: MEASURED FOR WATER:
1/27/06 20 FT. DRY
2/2/06 20 FT. DRY

CLAY, SANDY, STIFF TO VERY STIFF, LOW MOISTURE, LIGHT BROWN

CLAY, SANDY WITH CLAYEY SAND LENSES, STIFF TO VERY STIFF, LOW MOISTURE, BROWN

LENSATIC, WEATHERED CLAYSTONE AND SANDSTONE, DENSE, LOW MOISTURE, GREEN TO RUST

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
			15	6.5	1
5			19	9.1	1
10			19	10.2	2
15			13	11.3	2
20			50/8"	13.9	4
25					
30					
35					
40					

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

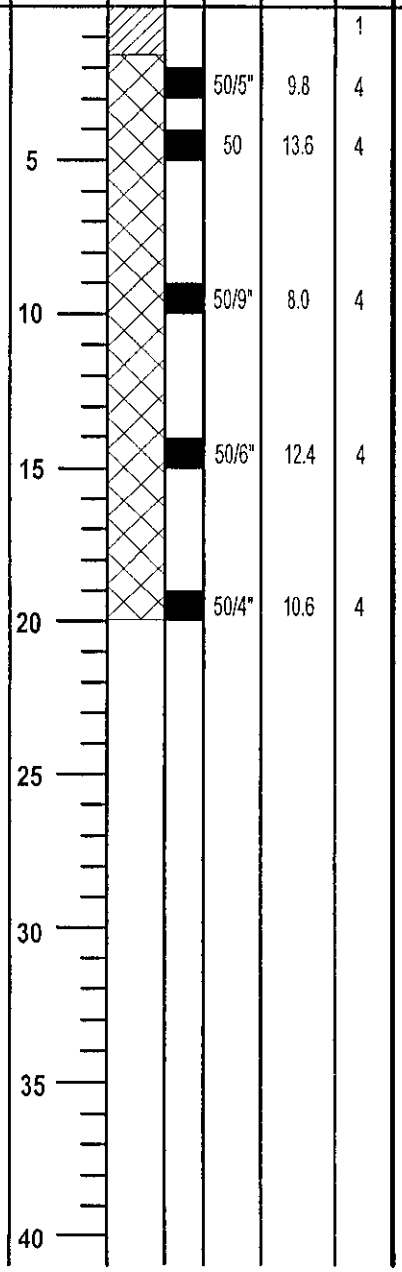
JOB No.
060933
(FROM 051021)
FIG No.
0

TEST BORING NO. 317
DATE DRILLED: 1/26/06

REMARKS: MEASURED FOR WATER:
1/27/06 20 FT. DRY
2/2/06 20 FT. DRY

CLAY, SANDY, STIFF TO VERY STIFF, LOW MOISTURE, LIGHT BROWN

LENSATIC; WEATHERED TO FORMATIONAL CLAYSTONE AND SANDSTONE WITH VERY DENSE SANDSTONE LENSES, HARD TO DENSE, LOW MOISTURE, GREEN TO RUST TO BLUE GRAY



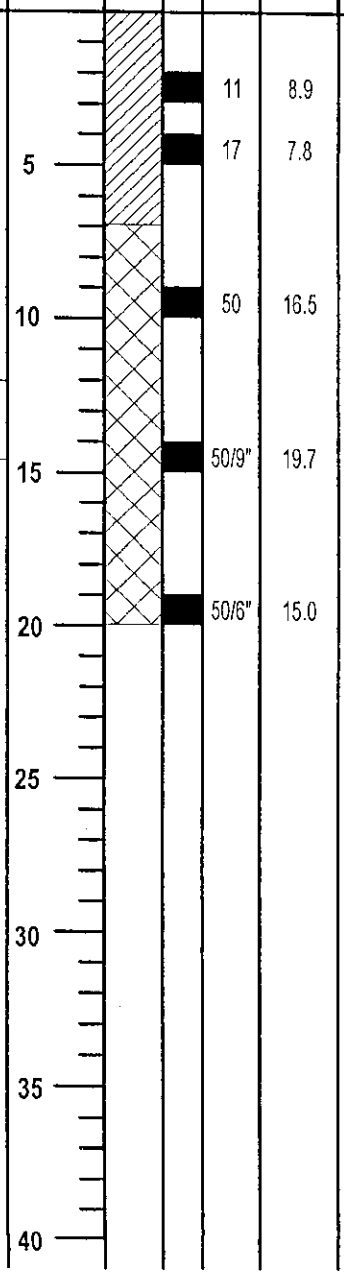
TEST BORING NO. 326
DATE DRILLED: 1/26/06

REMARKS: MEASURED FOR WATER:
1/27/06 WATER AT 11.7 FT.
2/2/06 WATER AT 11.7 FT.

CLAY, SANDY, STIFF TO VERY STIFF, LOW MOISTURE, LIGHT BROWN

LENSATIC; WEATHERED TO FORMATIONAL CLAYSTONE AND SANDSTONE, HARD TO DENSE, LOW MOISTURE, GREEN TO RUST

1/27/06
2/2/06
1/26/06



TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No.
060933
(FROM 051021)
FIG No.
P

TEST BORING NO. 327
DATE DRILLED: 1/26/06

REMARKS: MEASURED FOR WATER:
1/27/06 20 FT. DRY
2/2/06 20 FT. DRY

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE	
0						CLAY, SANDY, VERY STIFF, LOW MOISTURE, LIGHT BROWN
			24	7.5	1	
5			50/10"	11.3	4	LENSATIC; WEATHERED TO FORMATIONAL CLAYSTONE AND SANDSTONE WITH VERY DENSE SANDSTONE LENSES, DENSE, LOW MOISTURE, GREEN TO RUST TO BLUE GRAY
10			50/11"	13.5	4	
15			50/9"	13.9	4	
20			50/5"	12.3	4	
25						
30						
35						
40						

TEST BORING NO. 335
DATE DRILLED: 1/26/06

REMARKS: MEASURED FOR WATER:
1/27/06 WATER AT 10.7 FT.
2/2/06 WATER AT 10.5 FT.

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE	
0						CLAY, SANDY, STIFF TO VERY SOFT, HIGH TO SATURATED MOISTURE CONTENT, DARK BROWN TO BROWN
			16	18.1	2	
5			5	15.9	2	
10					2	▼ 2/2/06 2/2/06
15					2	NOTE: AUGER PUSHED FROM 5 FT. TO 22 FT. WITH VERY LITTLE RESISTANCE
20					2	
25			6	28.2	3	SAND AND GRAVEL WITH SANDY CLAY LENSES, FIRM, SATURATED MOISTURE CONTENT, BROWN
30			50/6"	16.7	4	LENSATIC; HIGHLY WEATHERED TO FORMATIONAL CLAYSTONE AND SANDSTONE, HARD TO DENSE, HIGH TO LOW MOISTURE CONTENT, GREEN TO RUST TO GRAY
35						
40						

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No.
060933
(FROM 051021)
FIG No.
Q

TEST BORING NO. 336
DATE DRILLED: 1/26/06

REMARKS: MEASURED FOR WATER:
1/27/06 WATER AT 18.2 FT.
2/2/06 WATER AT 18.5 FT.

CLAY, SANDY, FIRM, LOW MOISTURE, LIGHT BROWN

LENSATIC; WEATHERED TO FORMATIONAL CLAYSTONE AND SANDSTONE, DENSE, LOW MOISTURE, GREEN TO RUST

▼ 1/27/06
= 2/2/06

DEPTH (ft)	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
5		50/11"	7.6	4
		50	14.3	4
10		50/6"	17.0	4
15		50/7"	14.6	4
20		50/5"	12.4	4
25				
30				
35				
40				

TEST BORING NO. 337
DATE DRILLED: 1/26/06

REMARKS: MEASURED FOR WATER:
2/2/06 20 FT. DRY
2/21/06 20 FT. DRY

CLAY, SANDY, STIFF, LOW MOISTURE, LIGHT BROWN

LENSATIC; WEATHERED CLAYSTONE AND SANDSTONE, HARD TO DENSE, LOW MOISTURE, GREEN TO RUST

DEPTH (ft)	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
		10	9.3	1
5		46	11.7	4
10		50/10"	13.8	4
15		50/8"	13.6	4
20		50/9"	15.6	4
25				
30				
35				
40				

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No.
060933
(FROM 051021)
FIG No.
R

TEST BORING NO. 346
DATE DRILLED: 1/27/06

REMARKS: MEASURED FOR WATER:
2/2/06 WATER AT 14.3 FT.
2/21/06 WATER AT 12.9 FT.

CLAY, SANDY, VERY STIFF TO VERY SOFT, HIGH TO SATURATED MOISTURE CONTENT, DARK BROWN TO GREEN TO RUST

1/27/06

2/21/06

2/2/06

SAND AND GRAVEL WITH SANDY CLAY LENSES, STIFF, SATURATED MOISTURE CONTENT, BROWN TO GREEN TO RUST

LENSATIC; WEATHERED CLAYSTONE AND SANDSTONE, DENSE, LOW MOISTURE, GRAY TO GREEN TO RUST

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
5			18	17.4	2
			10	21.6	2
10			3	32.6	2
15			9	21.6	3
20			13	33.1	3
25			11	19.4	3
30			50/5"	17.8	4
35					
40					

TEST BORING NO. 347
DATE DRILLED: 1/27/06

REMARKS: MEASURED FOR WATER:
2/2/06 WATER AT 12 FT.
2/21/06 WATER AT 11.6 FT.

CLAY, SANDY, STIFF, LOW MOISTURE, LIGHT BROWN

CLAY, SANDY, VERY STIFF, GREEN TO RUST

2/21/06

2/2/06

LENSATIC; HIGHLY WEATHERED TO FORMATIONAL CLAYSTONE AND SANDSTONE WITH VERY DENSE SANDSTONE LENSES, DENSE, LOW MOISTURE, GREEN TO RUST TO BLUE GRAY

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
			10	8.2	1
5			17	13.6	2
10			41	14.0	4
15			50/11"	13.5	4
20			50/6"	13.0	4
25					
30					
35					
40					

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

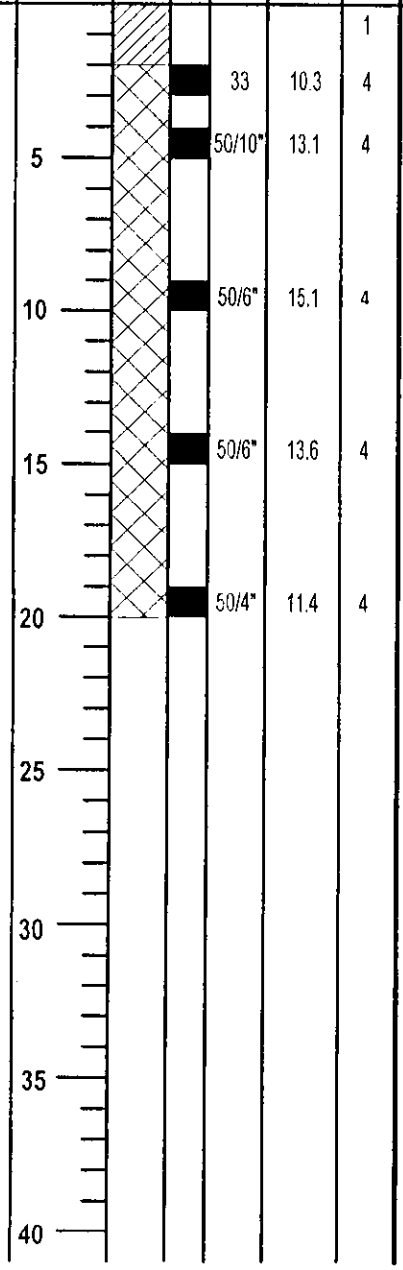
JOB No.
060933
(FROM 051021)
FIG No.
S

TEST BORING NO. 348
DATE DRILLED: 1/27/06

REMARKS: MEASURED FOR WATER:
2/2/06 20 FT. DRY
2/21/06 20 FT. DRY

CLAY, SANDY, FIRM
LOW MOISTURE,
LIGHT BROWN

LENSATIC; HIGHLY
WEATHERED TO
FORMATIONAL CLAYSTONE
AND SANDSTONE WITH
VERY DENSE SATURATED
LENSES, HARD TO DENSE,
LOW MOISTURE, GREEN
TO RUST TO BLUE GRAY

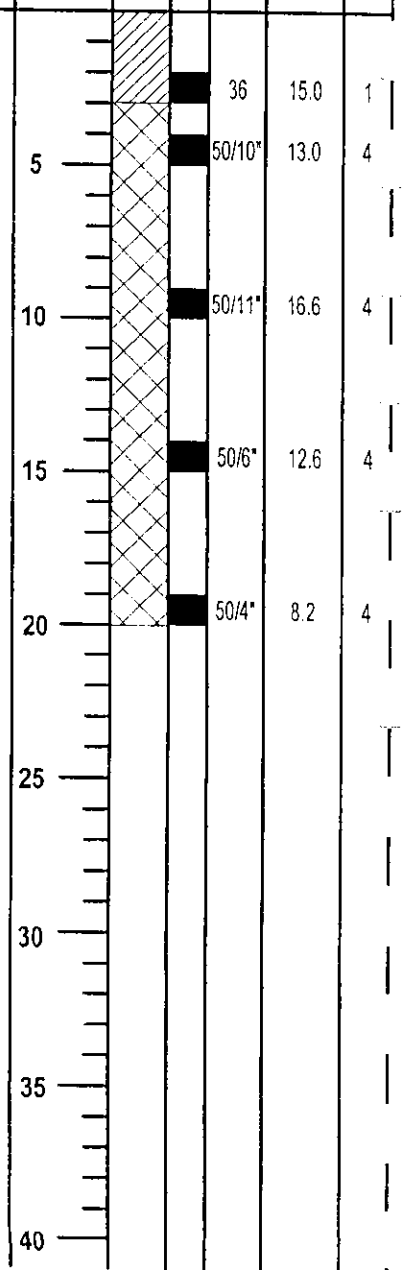


TEST BORING NO. 349
DATE DRILLED: 1/27/06

REMARKS: MEASURED FOR WATER.
2/2/06 20 FT. DRY
2/21/06 20 FT. DRY

CLAY, SANDY, HARD,
LOW MOISTURE,
LIGHT BROWN

LENSATIC, HIGHLY
WEATHERED TO
FORMATIONAL CLAYSTONE
AND SANDSTONE WITH
VERY DENSE SATURATED
LENSES, HARD TO DENSE,
LOW MOISTURE, GREEN
TO RUST TO BLUE GRAY



TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No.
060933
(FROM 051021)
FIG No.
T

TEST BORING NO. 359
DATE DRILLED: 2/1/06

REMARKS: MEASURED FOR WATER:
2/2/06 WATER AT 13.3 FT.
2/21/06 WATER AT 13 FT.

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
			17	8.5	1
			23	16.5	2
			4	23.3	2
					2
					2
			23	16.9	3
			50/9"	20.2	4

CLAY, SANDY, VERY STIFF, LOW MOISTURE, BROWN

CLAY, SANDY, VERY STIFF TO VERY SOFT, HIGH TO SATURATED MOISTURE CONTENT, BROWN

▼ 2/21/06
2/2/06
▼ 2/1/06

NOTE: AUGER PUSHED FROM 10 FT. TO 22 FT. WITH VERY LITTLE RESISTANCE

SAND AND GRAVEL WITH SANDY CLAY LENSES, VERY STIFF, SATURATED MOISTURE CONTENT, BROWN TO GREEN

LENSATIC; WEATHERED CLAYSTONE AND SANDSTONE, DENSE, MODERATE MOISTURE, GREEN TO RUST TO BLUE GRAY

TEST BORING NO. 360
DATE DRILLED: 2/1/06

REMARKS: MEASURED FOR WATER
2/2/06 WATER AT 17.2 FT.
2/21/06 WATER AT 17.2 FT.

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
			13	10.5	1
			12	9.5	1
			50/11"	16.2	4
			50	11.4	4
			50/9"	15.6	4

CLAY, SANDY, STIFF, LOW MOISTURE, LIGHT BROWN

LENSATIC; HIGHLY WEATHERED TO WEATHERED CLAYSTONE AND SANDSTONE, HARD TO DENSE, LOW MOISTURE, GREEN TO RUST

▼ 2/2/06
2/21/06

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No.
060933
(FROM 051021)
FIG No.
U

TEST BORING NO. 361
DATE DRILLED: 2/1/06

REMARKS: MEASURED FOR WATER:
2/2/06 20 FT. DRY
2/21/06 20 FT. DRY

CLAY, SANDY, FIRM, LOW MOISTURE, LIGHT BROWN

LENSATIC; VERY HIGHLY WEATHERED TO FORMATIONAL CLAYSTONE AND SANDSTONE WITH VERY DENSE SANDSTONE LENSES, VERY STIFF TO DENSE, LOW MOISTURE, GREEN TO RUST TO BLUE GRAY

DEPTH (ft)	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
5		30	9.1	4
		50/10"	11.8	4
10		50/8"	13.6	4
15		50/8"	12.2	4
20		50/5"	9.7	4

TEST BORING NO. 369
DATE DRILLED: 2/1/06

REMARKS: MEASURED FOR WATER:
2/2/06 WATER AT 17.5 FT.
2/21/06 WATER AT 17.5 FT.

CLAY, SANDY, STIFF, MODERATE TO LOW MOISTURE, LIGHT BROWN TO GREEN

NOTE: AUGER PUSHED 15 FT. TO 32 FT. WITH VERY LITTLE RESISTANCE

2/2/06
2/21/06

2/1/06

SAND AND GRAVEL WITH SANDY CLAY LENSES, SATURATED MOISTURE CONTENT, GREEN TO BROWN

LENSATIC; WEATHERED TO FORMATIONAL CLAYSTONE AND SANDSTONE, DENSE, MODERATE MOISTURE, GREEN TO RUST

DEPTH (ft)	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
5		9	17.4	1
		10	9.1	1
10		7	13.8	2
15		5	22.9	2
20				2
25				2
30				2
35		19	12.1	3
40		5/5"	18.4	4

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No.
060933
(FROM 051021)
FIG No.
V

TEST BORING NO. 370
DATE DRILLED: 2/1/06

REMARKS: MEASURED FOR WATER:
2/2/06 24.5 FT. DRY
2/21/06 24.5 FT. DRY

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE	
			18	5.1	1	CLAY, SANDY, VERY STIFF, LOW MOISTURE, LIGHT BROWN
5			24	2.4	1	
						CLAY, SANDY, STIFF, LOW MOISTURE, GREEN TO BROWN TO RUST
10			14	10.6	2	
			10	12.5	2	
15						
			15	14.1	2	
20						
						LENSATIC, WEATHERED CLAYSTONE AND SANDSTONE, DENSE, LOW MOISTURE, GREEN TO RUST
25			50/10"	15.5	4	
30						
35						
40						

TEST BORING NO. 380
DATE DRILLED: 2/1/06

REMARKS: MEASURED FOR WATER:
2/2/06 WATER AT 15.2 FT.
2/21/06 FILLED TO 3.3 FT. DRY

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE	
			6	10.6	1	CLAY, SANDY, FIRM, LOW MOISTURE, LIGHT BROWN
5			8	15.2	2	CLAY, SANDY WITH CLAYEY SAND LENSES, FIRM TO VERY SOFT, MODERATE TO SATURATED MOISTURE CONTENT, BROWN
10			4	17.2	2	
15					2	▼ 2/1/06
20					2	NOTE: AUGER PUSHED 9 FT. TO 30.5 FT. WITH VERY LITTLE RESISTANCE
25					2	
30					2	SAND AND GRAVEL WITH SANDY CLAY LENSES, SOFT SATURATED MOISTURE CONTENT, BROWN
					3	
35			11	23.6	4	33 FT. TO 37 FT. RESIDUAL CLAY WEATHERED FROM THE CLAYSTONE
40			50/5"	18.7	4	37 FT. LENSATIC HIGHLY WEATHERED TO FORMATIONAL CLAYSTONE AND SANDSTONE, VERY STIFF TO DENSE, MODERATE MOISTURE, GREEN TO RUST

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No.
060933
(FROM 051021)
FIG No.
W

TEST BORING NO. 381
DATE DRILLED: 2/2/06

REMARKS: MEASURED FOR WATER:
2/21/06 WATER AT 26.6 FT.
2/24/06 WATER AT 26.6 FT.

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
			10	6.6	1
5			12	6.9	1
10			11	7.2	1
15			5	11.1	2
20			6	17.9	2
25			11	21.9	2
30			50/9"	15.2	4
35					
40					

CLAY, SANDY, STIFF, LOW MOISTURE, LIGHT BROWN

CLAY, SANDY, FIRM TO STIFF, MODERATE TO HIGH MOISTURE, BROWN

2/21/06
2/24/06

LENSATIC; WEATHERED CLAYSTONE AND SANDSTONE, DENSE, LOW MOISTURE, BROWN TO GREEN

TEST BORING NO. 390
DATE DRILLED: 2/2/06

REMARKS: MEASURED FOR WATER:
2/21/06 WATER AT 19 FT.
2/24/06 WATER AT 19 FT.

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
			14	6.3	1
5			9	8.5	1
10			8	12.2	2
15			4	21.5	2
20					2
25					2
30			50/8"	19.3	4
35					
40					

CLAY, SANDY, STIFF, LOW MOISTURE, LIGHT BROWN

CLAY, SANDY, FIRM TO VERY SOFT, MODERATE TO SATURATED MOISTURE CONTENT, BROWN

NOTE: AUGER PUSHED 15 FT. TO 25 FT. WITH VERY LITTLE RESISTANCE

2/21/06
2/24/06

LENSATIC; WEATHERED CLAYSTONE AND SANDSTONE, HARD TO DENSE, MODERATE MOISTURE, GREEN TO RUST

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No.
060933
(FROM 051021)
FIG No.
X

TEST BORING NO. 391
DATE DRILLED: 2/2/06

REMARKS: MEASURED FOR WATER:
2/21/06 CAVED TO 22 FT. DRY
2/24/06 22 FT. DRY

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE	
			16	5.5	1	CLAY, SANDY, STIFF, LOW MOISTURE, LIGHT BROWN
5			16	6.0	1	
			18	9.8	2	CLAY, SANDY, VERY STIFF TO STIFF, LOW TO HIGH MOISTURE, BROWN TO GREEN
10						
			12	18.5	2	
15						
			21	15.0	2	
20						
			10	26.0	2	
25						
			50/6"	19.7	4	LENSATIC; CLAYSTONE AND SANDSTONE, DENSE, MODERATE MOISTURE, GREEN TO RUST
30						
35						
40						

TEST BORING NO. 400
DATE DRILLED: 2/2/06

REMARKS: MEASURED FOR WATER:
2/21/06 WATER AT 21 FT.
2/24/06 WATER AT 21 FT.

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE	
			13	7.1	1	CLAY, SANDY, STIFF LOW MOISTURE, LIGHT BROWN
5			11	7.0	1	
			7	15.5	2	CLAY, SANDY, FIRM TO VERY STIFF, HIGH TO SATURATED MOISTURE CONTENT, BROWN
10						
			5	22.3	2	NOTE: AUGER PUSHED FROM 15 FT. TO 23 FT. WITH VERY LITTLE RESISTANCE
15						
					2	
20						▼ 2/21/06 2/24/06
			50/10"	16.5	4	LENSATIC, WEATHERED CLAYSTONE AND SANDSTONE, DENSE, LOW MOISTURE, DARK BROWN
25						
30						
35						
40						

TEST BORING LOGS

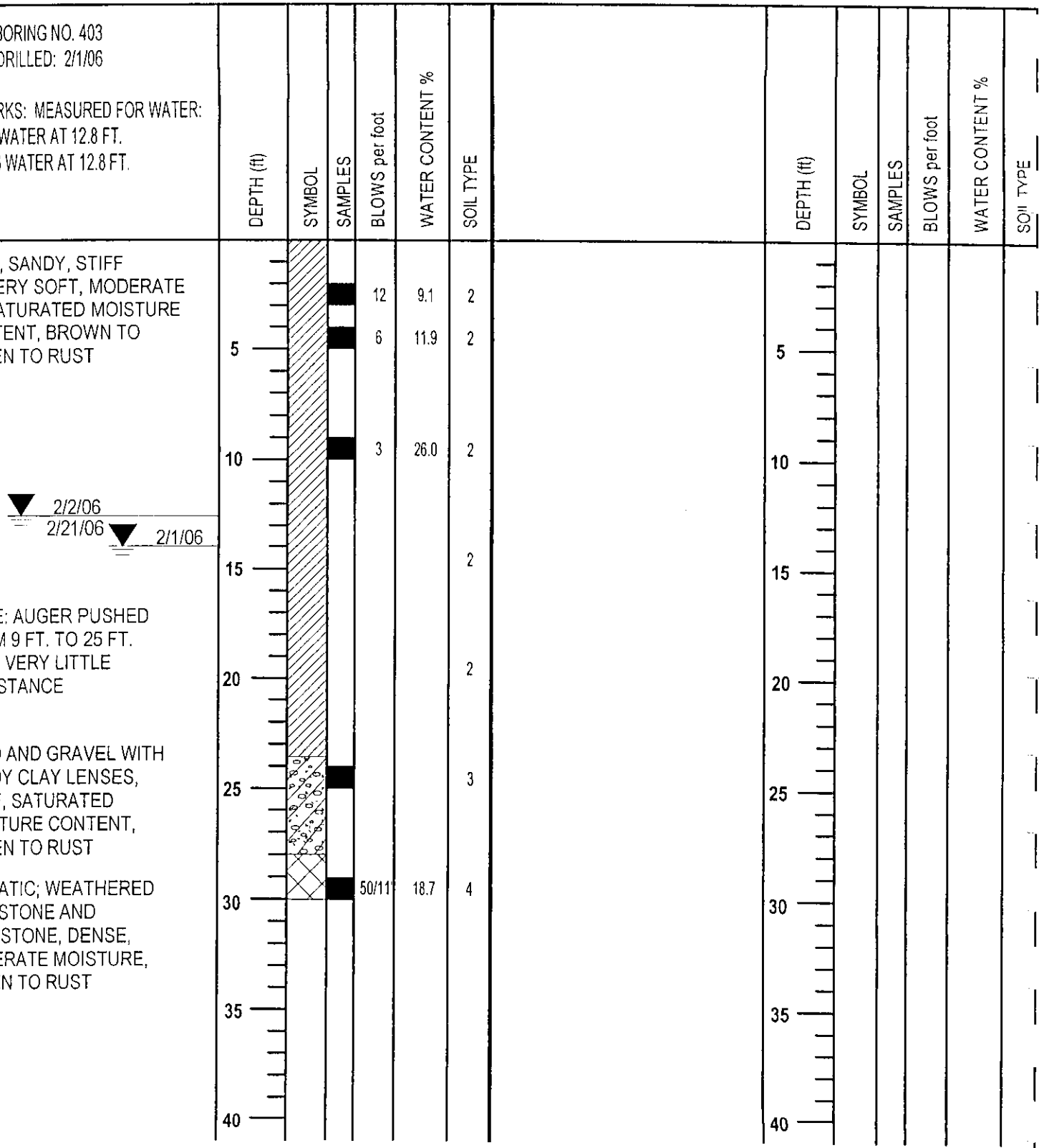
DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No.
060933
(FROM 051021)
FIG No.
Y

TEST BORING NO. 403
DATE DRILLED: 2/1/06

REMARKS: MEASURED FOR WATER:
2/2/06 WATER AT 12.8 FT.
2/21/06 WATER AT 12.8 FT.



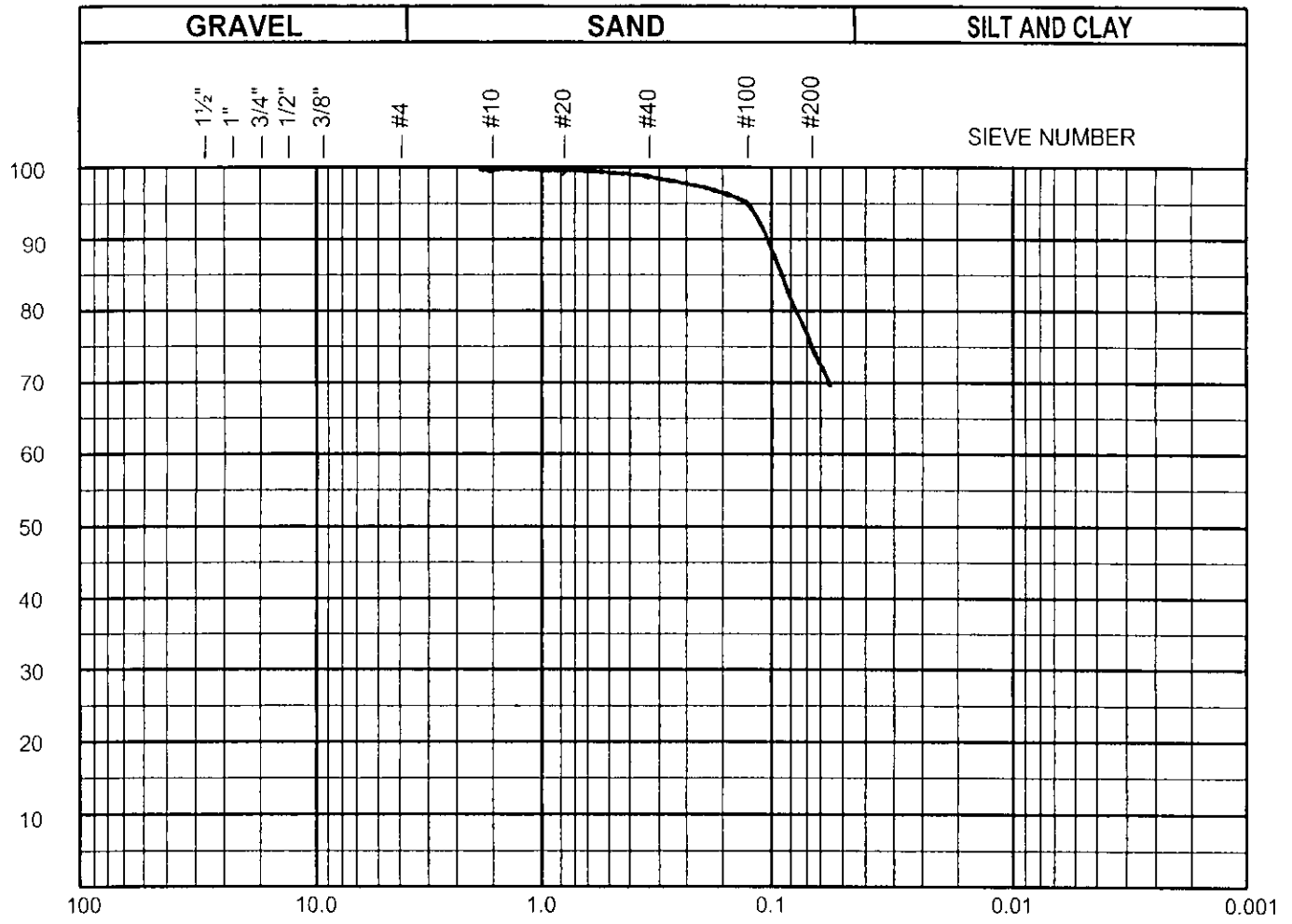
TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No.
060933
(FROM 051021)
FIG No.
Z

CLIENT: NEW GENERATION HOMES	SOIL TYPE NO: 1
PROJECT: THE GLEN AT WIDEFIELD, FILING #7	UNIFIED CLASSIFICATION: CL



SIEVE SIZE	% PASSING
1½"	
1"	
3/4"	
1/2"	
3/8"	
# 4	100
# 10	99.6
# 20	99.2
# 40	98.9
# 100	95.9
# 200	74.3

MIXED SWELL		BORING 16 @ 9 FT.
8.1	% MOISTURE AT START	7.3
19.5	% MOISTURE AT FINISH	22.8
11.4	% MOISTURE INCREASE	15.5
0.60	% VOLUME CHANGE	0.28
105.1	pcf INITIAL DRY DENSITY	101.1
1704	psf SWELL	795

ATTERBERG LIMITS

LIQUID LIMIT: 32
PLASTIC LIMIT: 15
P. I.: 17

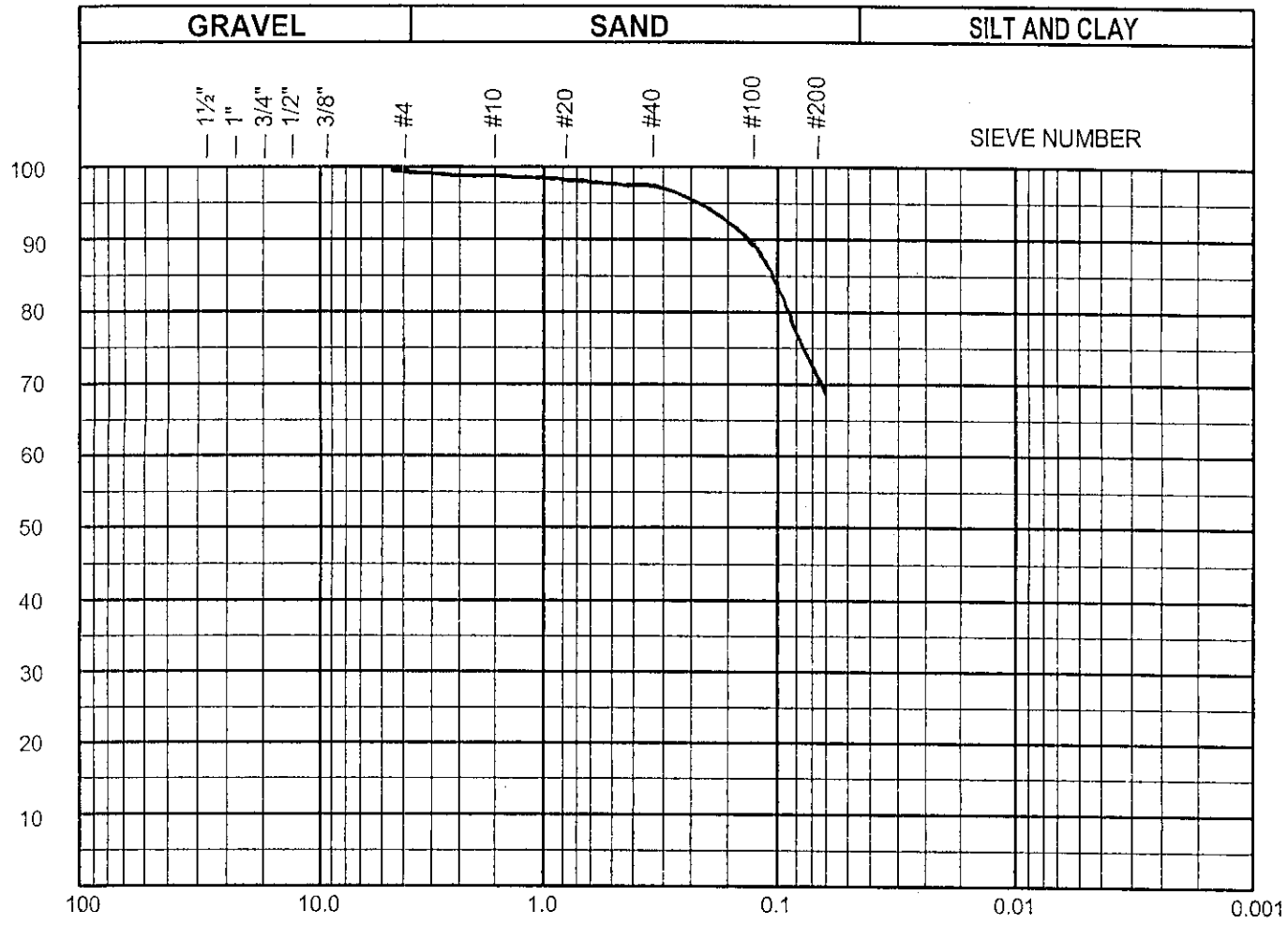
LABORATORY TEST RESULTS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No. 060933
FIG No. 35

CLIENT: NEW GENERATION HOMES	SOIL TYPE NO: 2
PROJECT: THE GLEN AT WIDEFIELD, FILING #7	UNIFIED CLASSIFICATION: CL



SIEVE SIZE	% PASSING
1½"	
1"	
3/4"	
1/2"	
3/8"	100.0
# 4	99.4
# 10	98.7
# 20	97.8
# 40	97.1
# 100	88.9
# 200	70.7

MIXED SWELL		BORING 6 @ 4 FT.
8.5	% MOISTURE AT START	13.8
18.8	% MOISTURE AT FINISH	25.7
10.3	% MOISTURE INCREASE	11.9
0.61	% VOLUME CHANGE	0.68
106.5	pcf INITIAL DRY DENSITY	96.8
1360	psf SWELL	1931

ATTERBERG LIMITS

LIQUID LIMIT: 32
PLASTIC LIMIT: 15
P. I.: 17

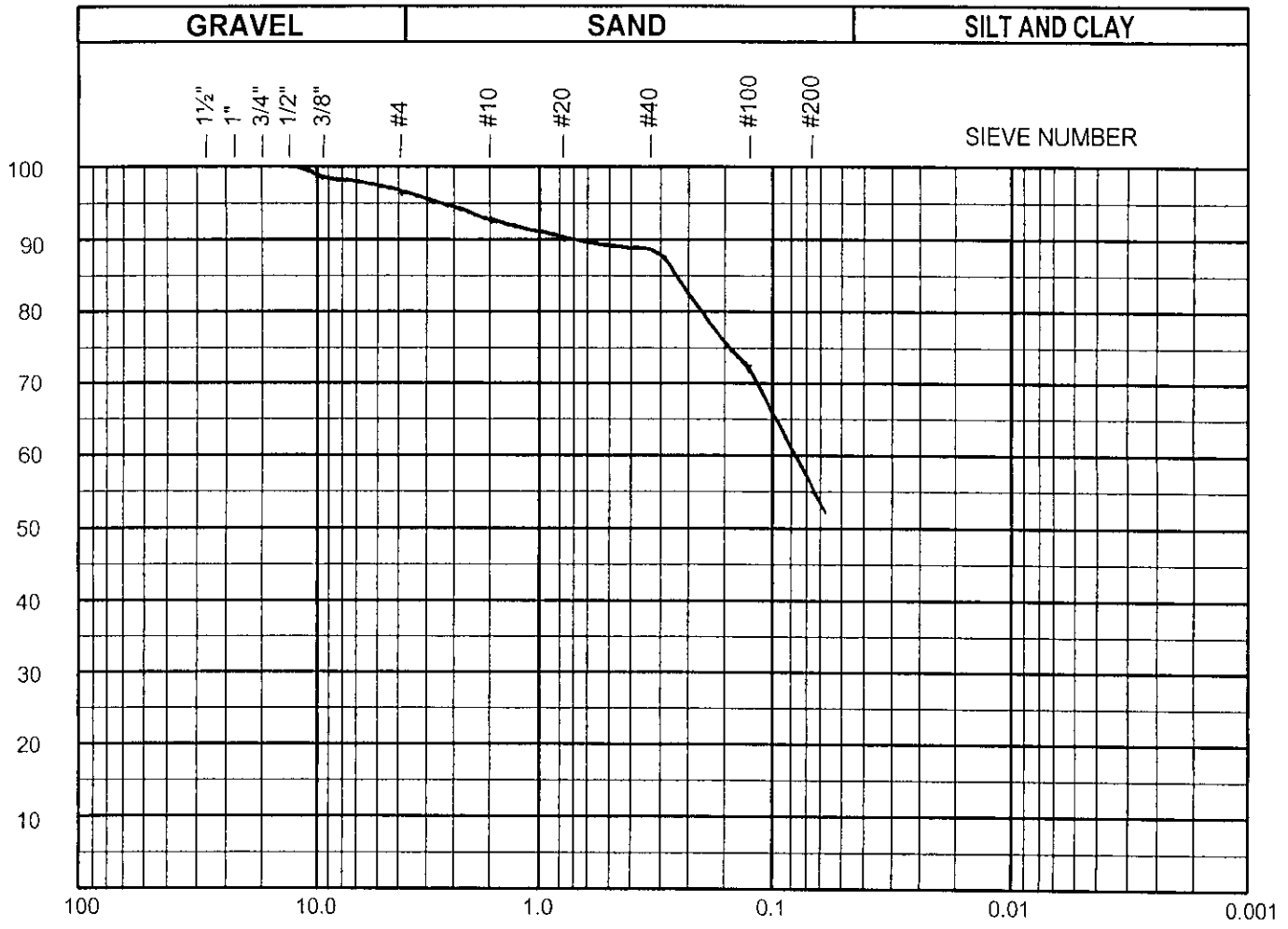
LABORATORY TEST RESULTS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No. 060933
FIG No. 36

CLIENT: NEW GENERATION HOMES	SOIL TYPE NO: 3
PROJECT: THE GLEN AT WIDEFIELD, FILING #7	UNIFIED CLASSIFICATION: CL



SIEVE SIZE	% PASSING
1½"	
1"	
3/4"	
1/2"	100.0
3/8"	98.7
#4	96.5
#10	93.1
#20	90.1
#40	88.3
#100	73.0
#200	55.0

SWELL

11.1	% MOISTURE AT START
17.2	% MOISTURE AT FINISH
6.1	% MOISTURE INCREASE
0.51	% VOLUME CHANGE
113.0	pcf INITIAL DRY DENSITY
1448	psf SWELL

ATTERBERG LIMITS

LIQUID LIMIT:	31
PLASTIC LIMIT:	17
P. I.:	14

LABORATORY TEST RESULTS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

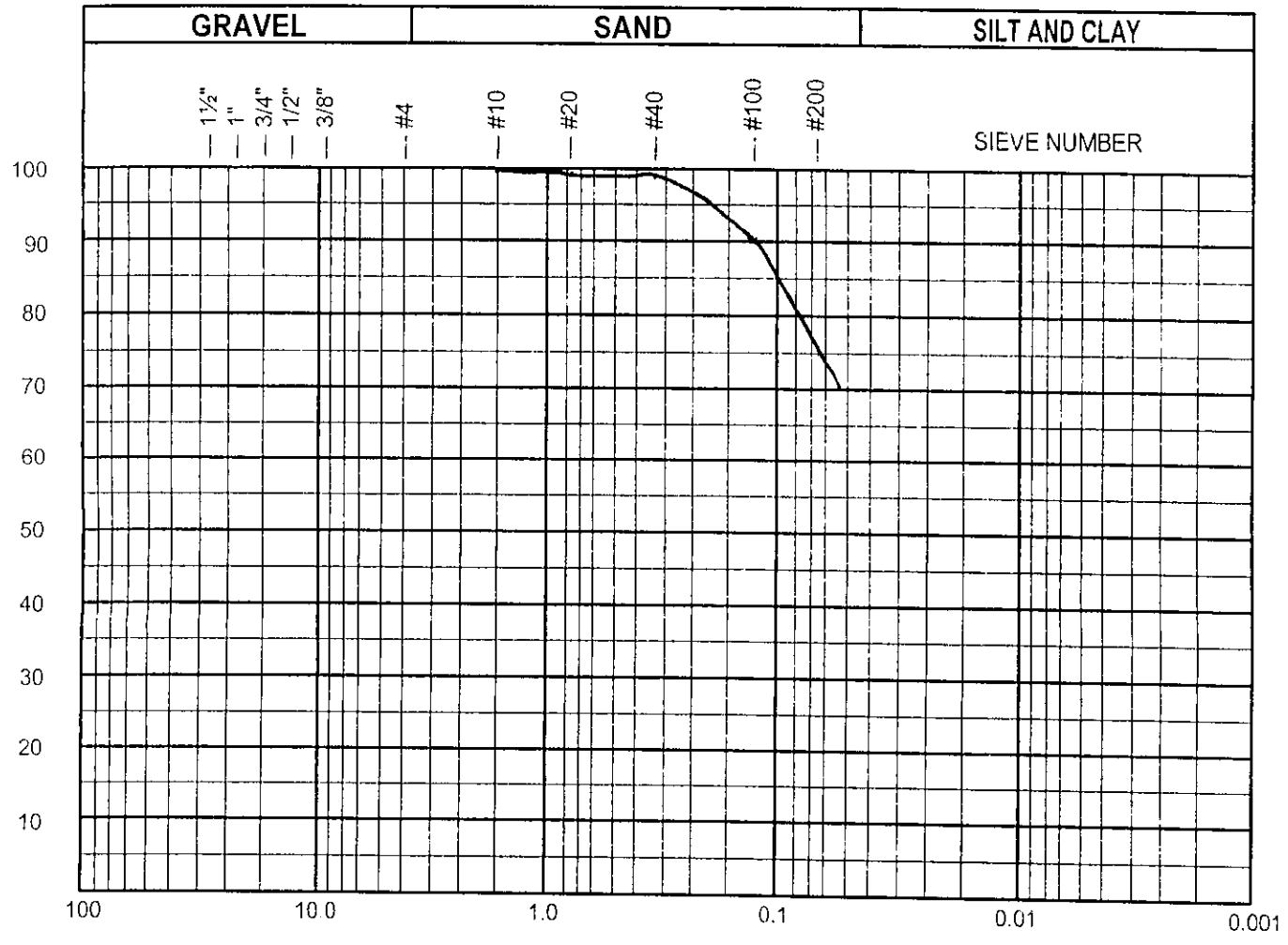
STE

SOIL TESTING & ENGINEERING INC.

JOB No. 060933

FIG No. 37

CLIENT: NEW GENERATION HOMES	SOIL TYPE NO: 4
PROJECT: *THE GLEN AT WIDEFIELD, FILING #7*	UNIFIED CLASSIFICATION: CL



SIEVE SIZE	% PASSING
1½"	
1"	
3/4"	
1/2"	
3/8"	
#4	100.0
#10	99.6
#20	99.0
#40	98.2
#100	90.4
#200	75.1

SWELL

11.1	% MOISTURE AT START
22.2	% MOISTURE AT FINISH
11.1	% MOISTURE INCREASE
0.91	% VOLUME CHANGE
108.9	pcf INITIAL DRY DENSITY
2029	psf SWELL

ATTERBERG LIMITS

LIQUID LIMIT:	37
PLASTIC LIMIT:	17
P. I.:	20

LABORATORY TEST RESULTS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

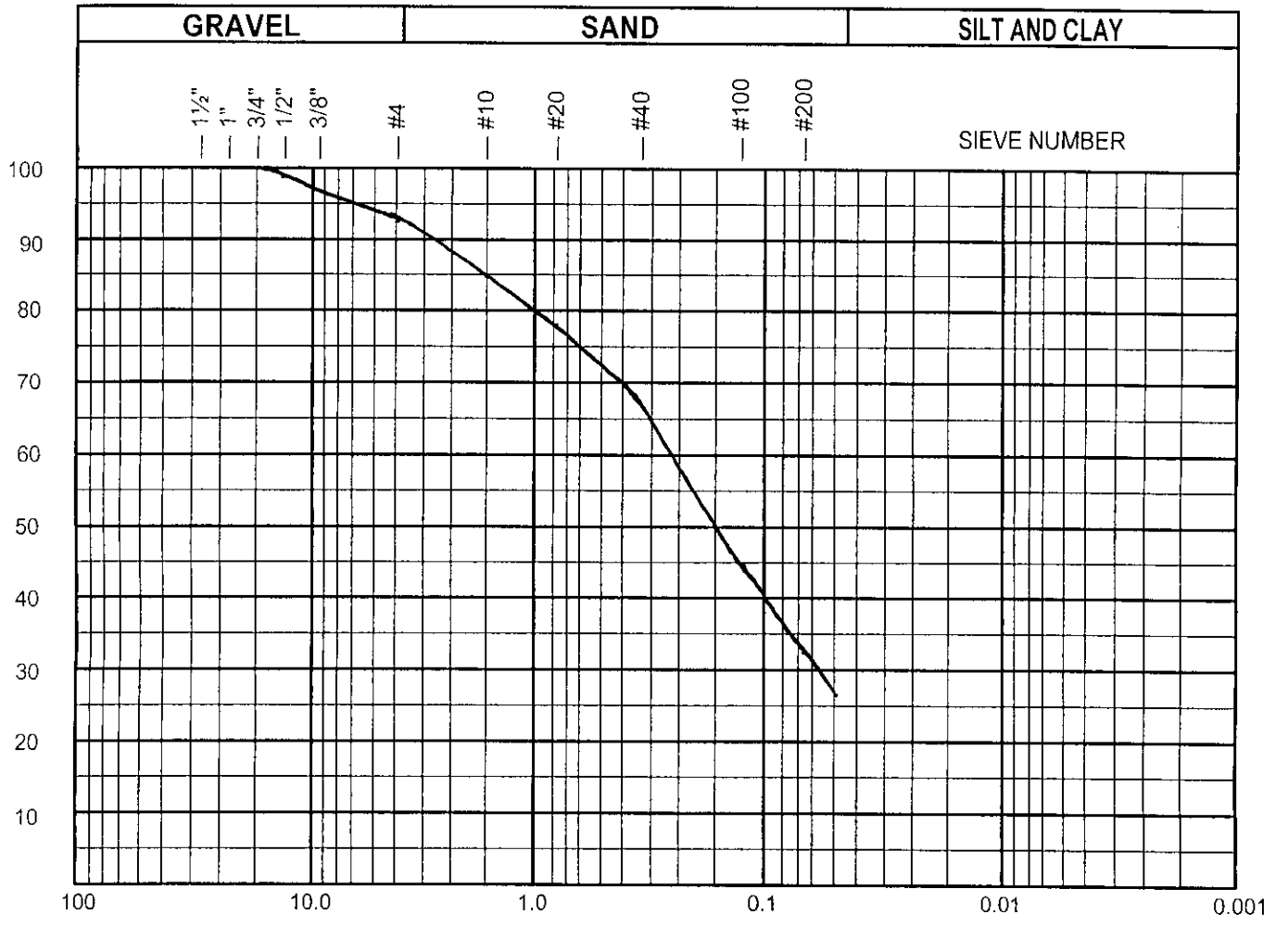
STE

SOIL TESTING & ENGINEERING INC.

JOB No. 060933

FIG No. 38

CLIENT: NEW GENERATION HOMES	SOIL TYPE NO: 5
PROJECT: THE GLEN AT WIDEFIELD, FILING #7	UNIFIED CLASSIFICATION: SC



SIEVE SIZE	% PASSING
1½"	
1"	
3/4"	100.0
1/2"	98.8
3/8"	96.7
#4	93.5
#10	84.8
#20	77.7
#40	66.8
#100	44.9
#200	33.0

SWELL

% MOISTURE AT START

% MOISTURE AT FINISH

% MOISTURE INCREASE

% VOLUME CHANGE

pcf INITIAL DRY DENSITY

psf SWELL

ATTERBERG LIMITS

LIQUID LIMIT: 24
PLASTIC LIMIT: 14
P. I.: 10

LABORATORY TEST RESULTS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

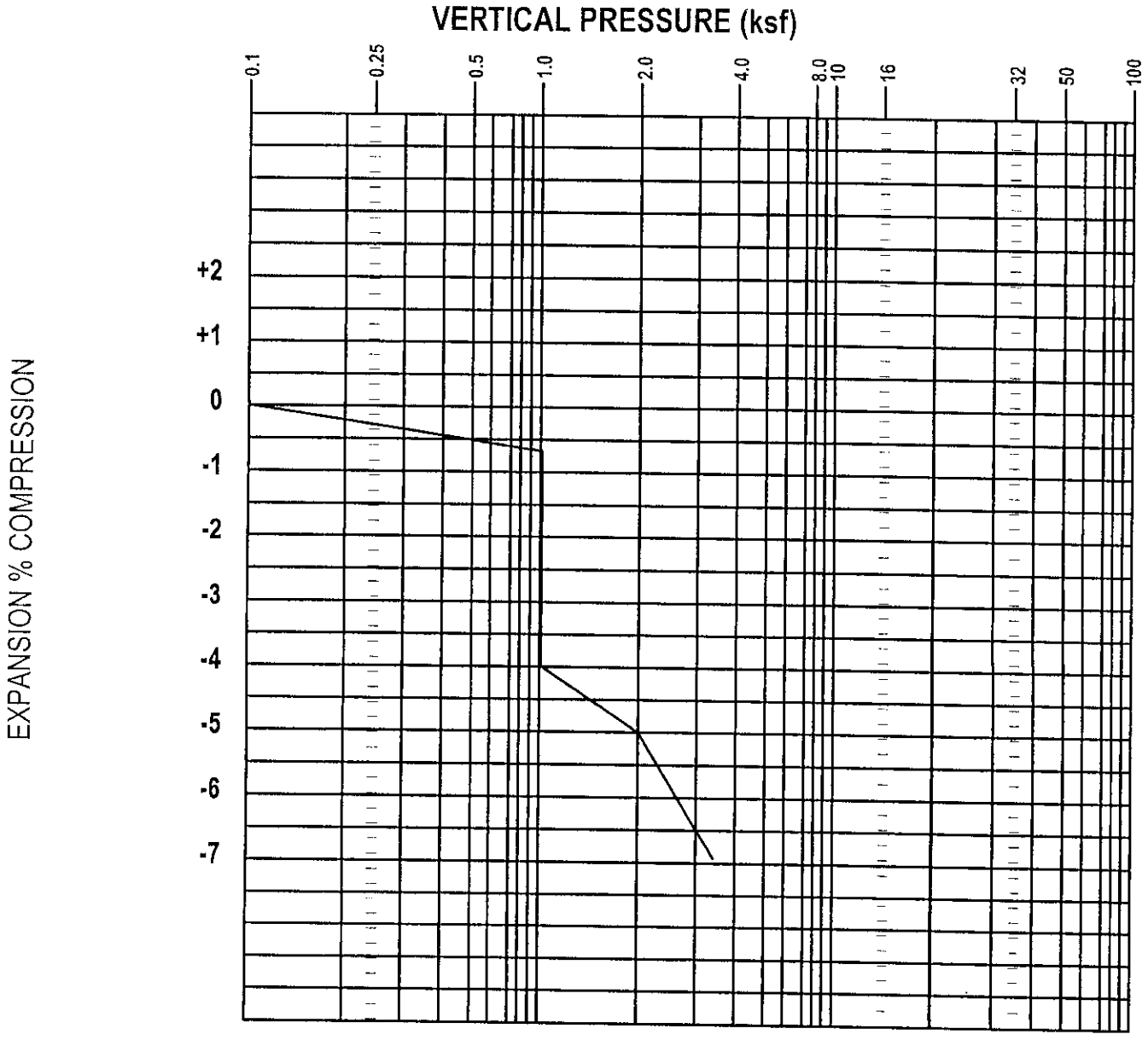
STE

SOIL TESTING & ENGINEERING INC.

JOB No. 060933

FIG No. 39

CLIENT: NEW GENERATION HOMES	JOB NO: 060933
PROJECT: THE GLEN AT WIDEFIELD, FILING 7	DATE: 10/9/06
BORING NO. 3 DEPTH: 4 FT. SOIL TYPE: 1	TEST BY: JF



SWELL-CONSOLIDATION TEST

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

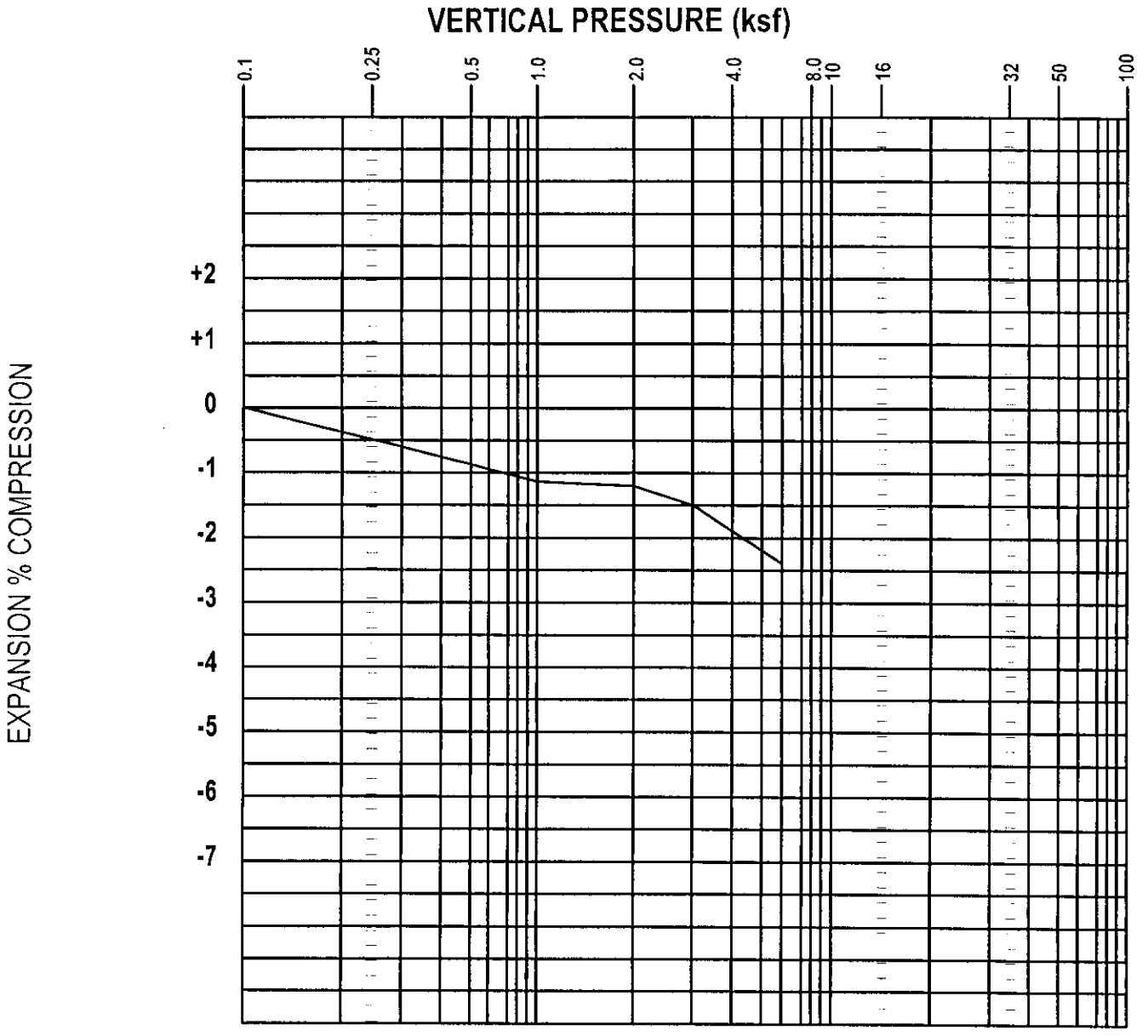
STE

SOIL TESTING & ENGINEERING INC.

JOB No. 060933

FIG No. 40

CLIENT: NEW GENERATION HOMES	JOB NO: 060933
PROJECT: THE GLEN AT WIDEFIELD, FILING 7	DATE: 10/11/06
BORING NO. 6 DEPTH: 4 FT. SOIL TYPE: 2	TEST BY: JF



SWELL-CONSOLIDATION TEST

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

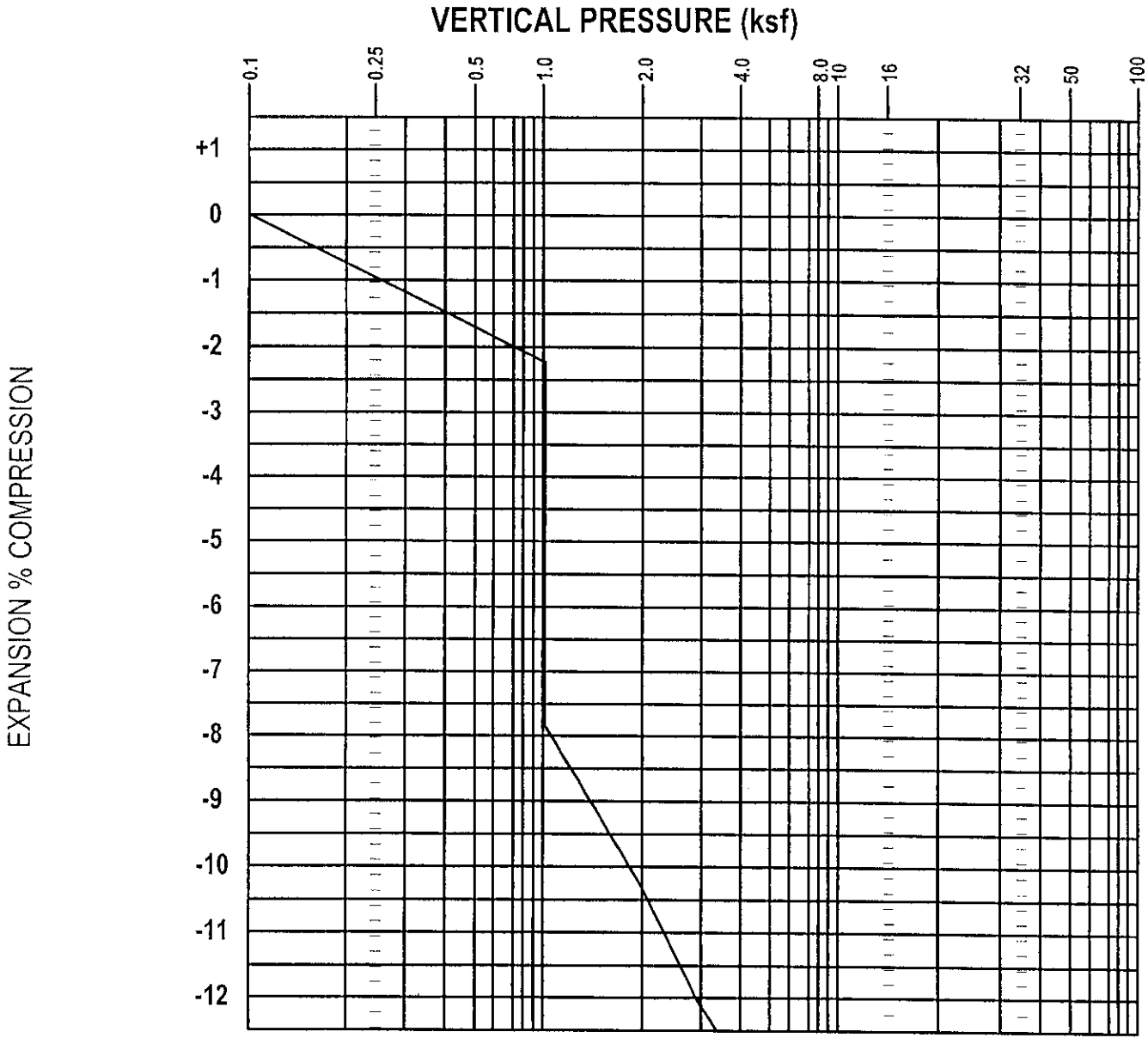
STE

SOIL TESTING & ENGINEERING INC.

JOB No. 060933

FIG No. 41

CLIENT: NEW GENERATION HOMES	JOB NO: 060933
PROJECT: THE GLEN AT WIDEFIELD, FILING 7	DATE: 10/11/06
BORING NO. 16 DEPTH: 14 FT. SOIL TYPE: 1	TEST BY: JF



SWELL-CONSOLIDATION TEST

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

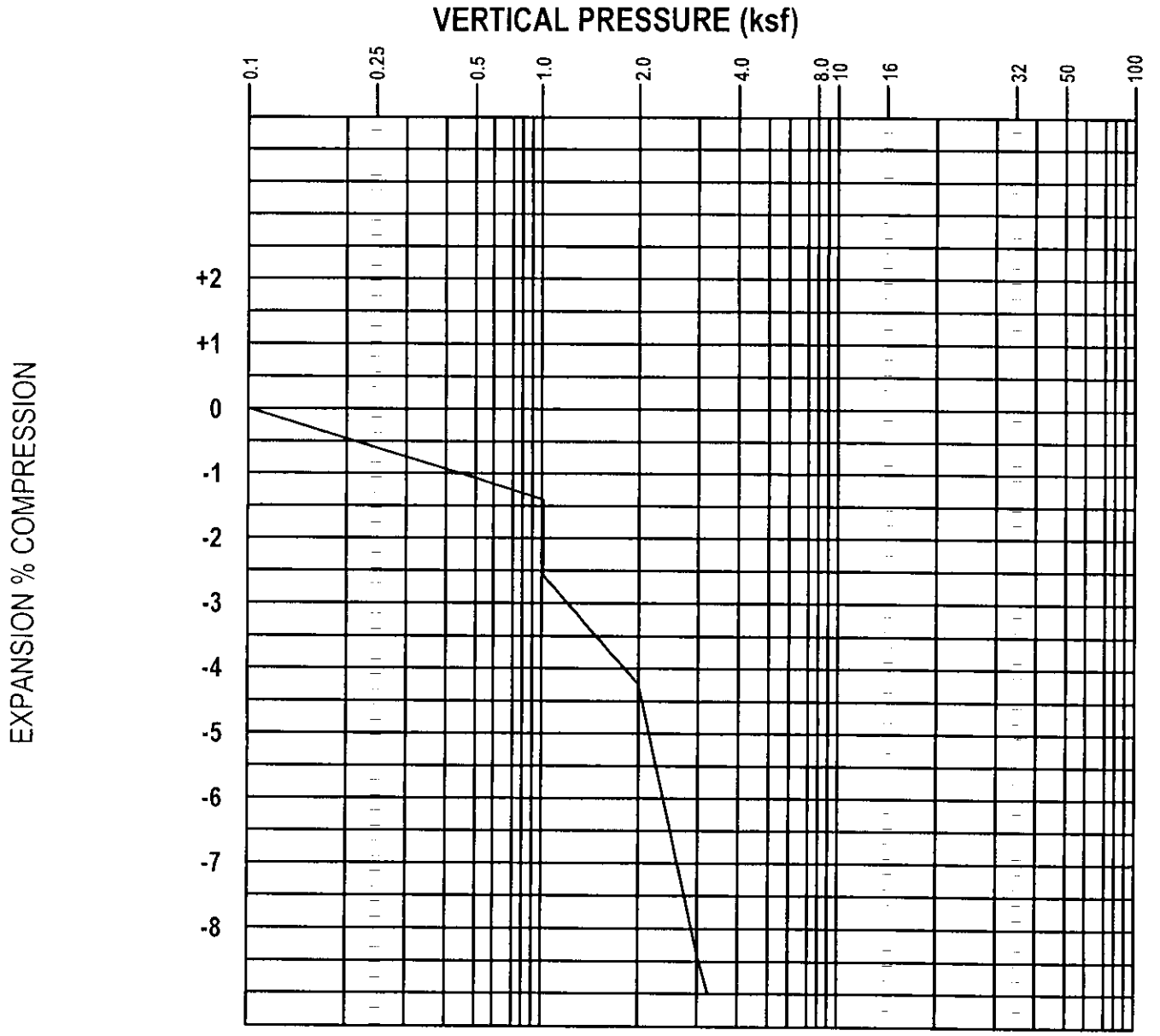
STE

SOIL TESTING & ENGINEERING INC.

JOB No. 060933

FIG No. 42

CLIENT: NEW GENERATION HOMES	JOB NO: 060933
PROJECT: THE GLEN AT WIDEFIELD, FILING 7	DATE: 10/18/06
BORING NO. 21 DEPTH: 14 FT. SOIL TYPE: 1	TEST BY: JF



SWELL-CONSOLIDATION TEST

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

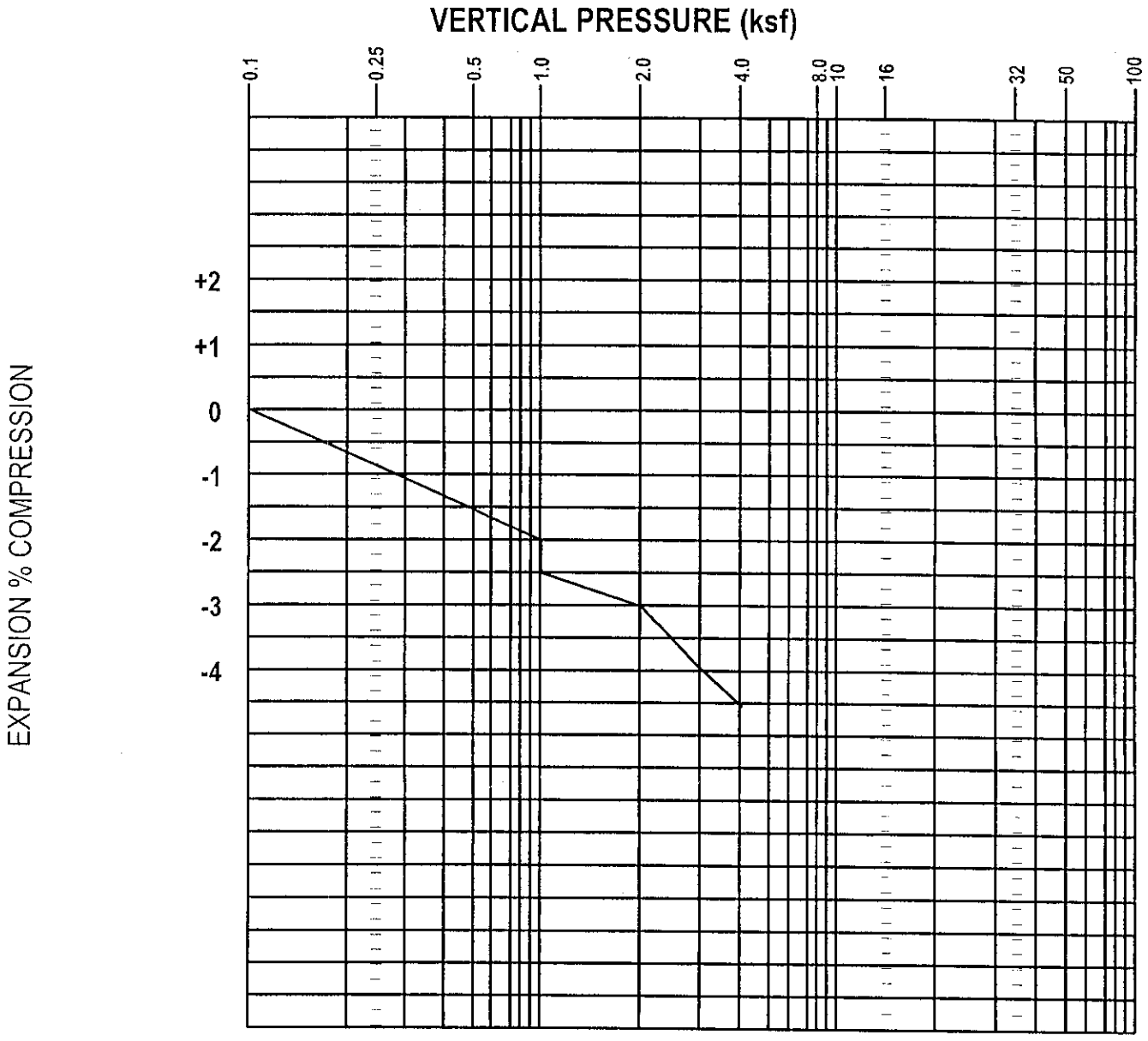
STE

SOIL TESTING & ENGINEERING INC.

JOB No. 060933

FIG No. 43

CLIENT: NEW GENERATION HOMES	JOB NO: 060933
PROJECT: THE GLEN AT WIDEFIELD, FILING 7	DATE: 10/18/06
BORING NO. 27 DEPTH: 14 FT. SOIL TYPE: 1	TEST BY: JF



SWELL-CONSOLIDATION TEST

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

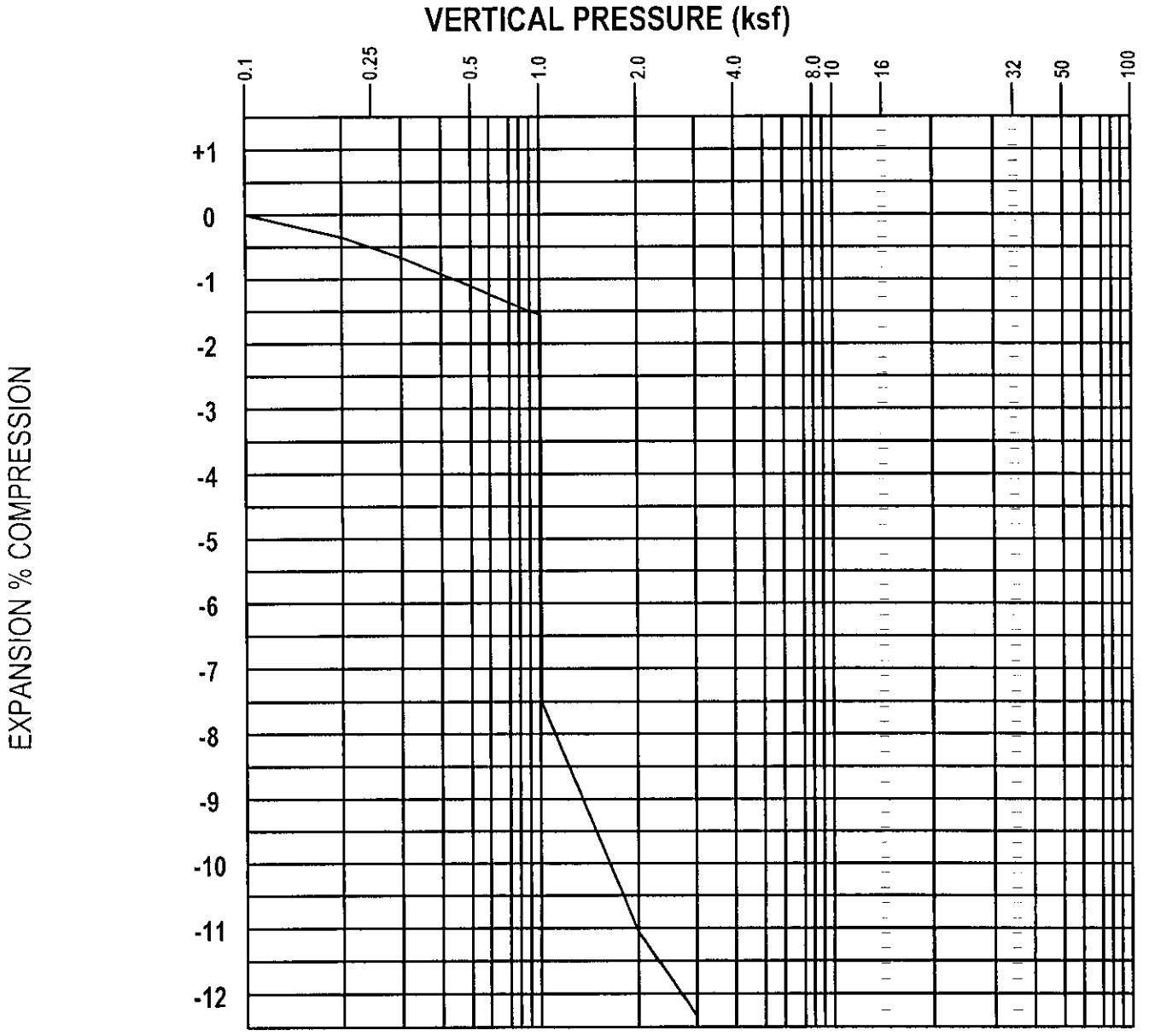
STE

SOIL TESTING & ENGINEERING INC.

JOB No. 060933

FIG No. 44

CLIENT: GLEN INVESTMENT GROUP NO. VIII	JOB NO: 051021
PROJECT: THE GLEN AT WIDEFIELD, FILING 6	DATE: 12/07/05
BORING NO: 211 DEPTH: 2 FT. SOIL TYPE: 1 (SERIES 1)	TEST BY: JF



SWELL-CONSOLIDATION TEST

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

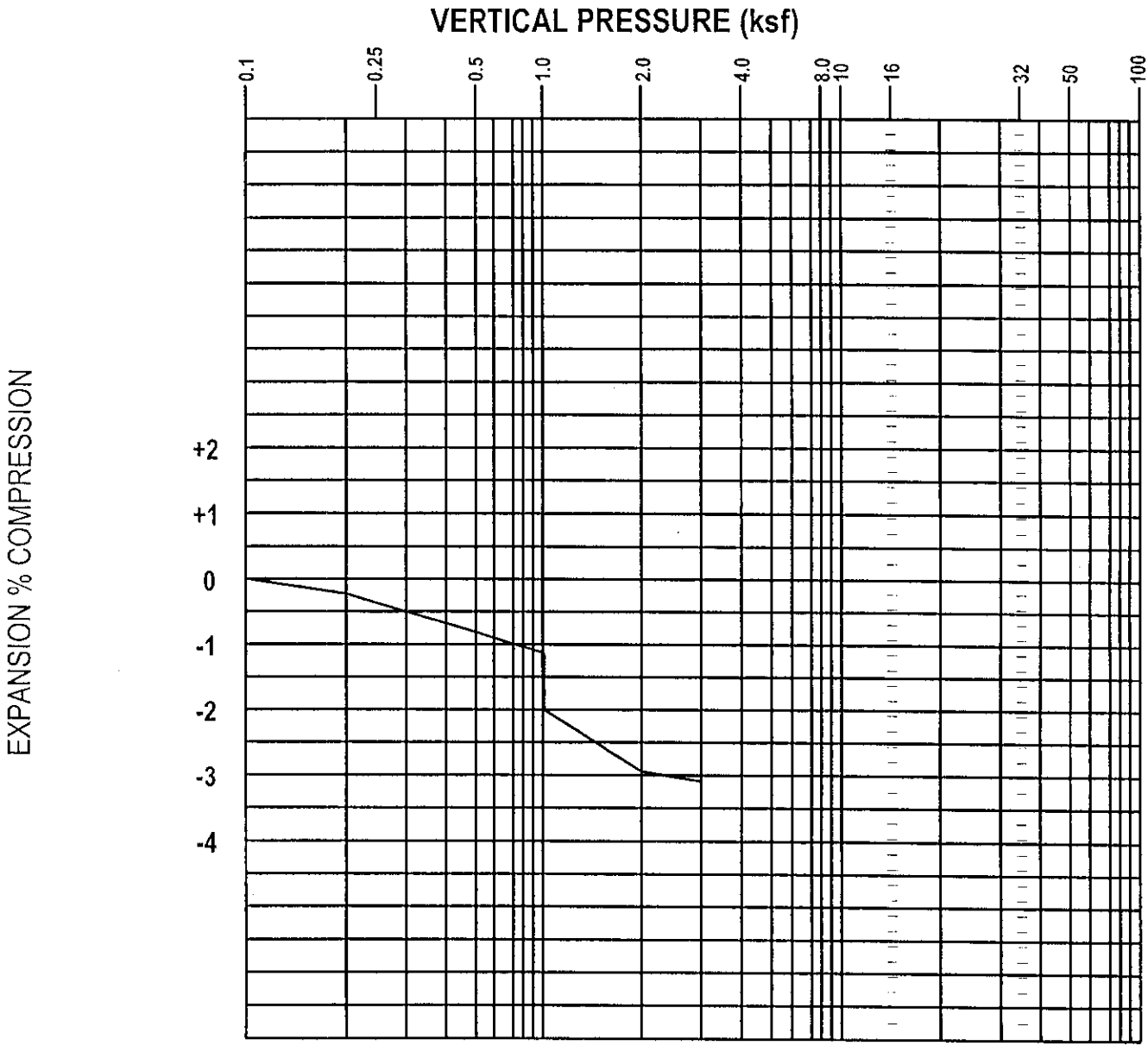
STE

SOIL TESTING & ENGINEERING INC.

JOB No. 060933 (FROM 051021)

FIG No. 45

CLIENT: GLEN INVESTMENT GROUP NO. VIII	JOB NO: 051021
PROJECT: THE GLEN AT WIDEFIELD, FILING 6	DATE: 12/19/05
BORING NO: 222 DEPTH: 4 FT. SOIL TYPE: 1 (SERIES 3)	TEST BY: JF



SWELL-CONSOLIDATION TEST

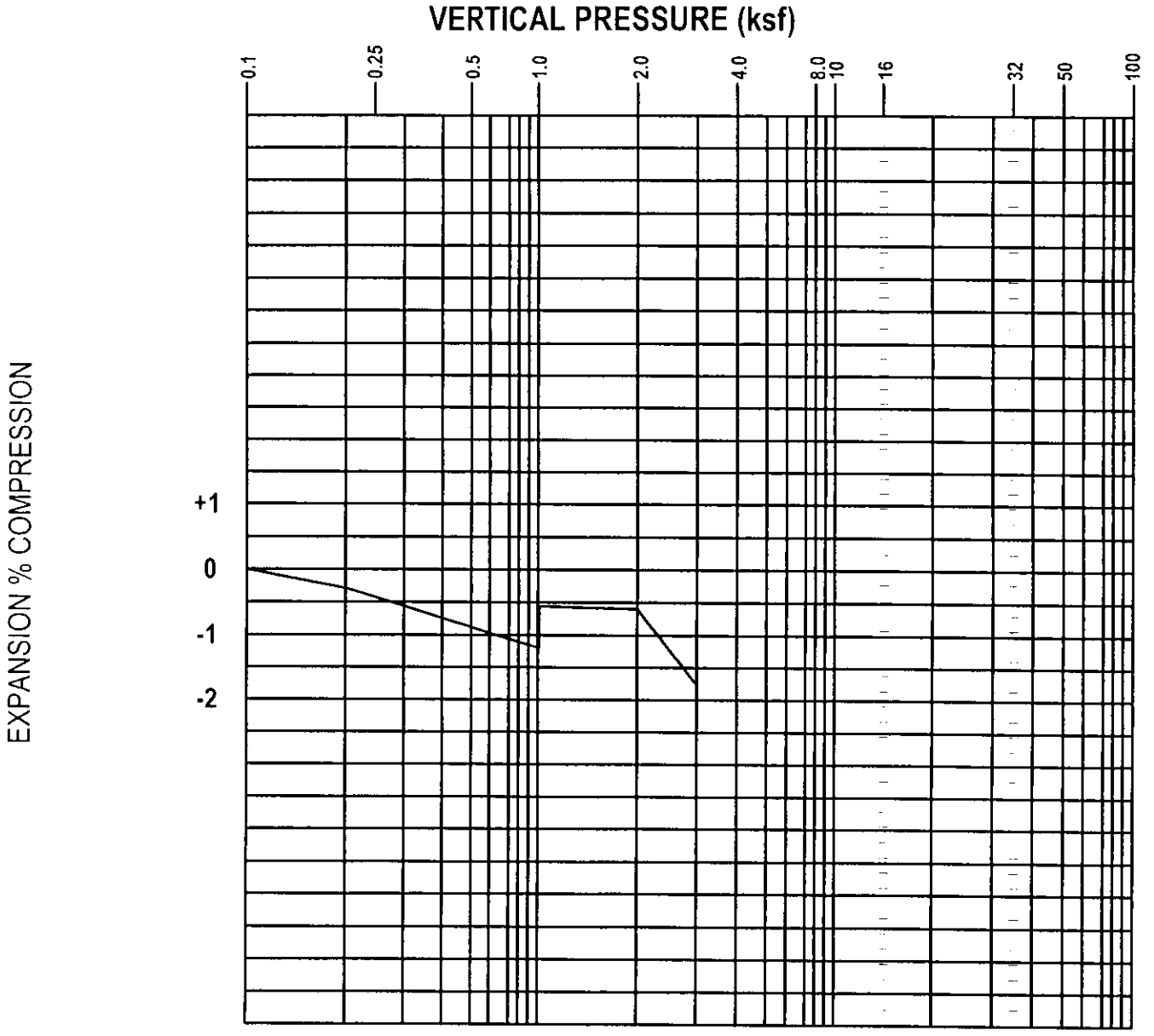
DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE

SOIL TESTING & ENGINEERING INC.

JOB No. 060933 (FROM 051021)
FIG No. 46

CLIENT: GLEN INVESTMENT GROUP NO. VIII	JOB NO: 051021
PROJECT: THE GLEN AT WIDEFIELD, FILING 6	DATE: 2/17/06
BORING NO: 282 DEPTH: 4 FT. SOIL TYPE: 1 (SERIES 1)	TEST BY: JF



SWELL-CONSOLIDATION TEST

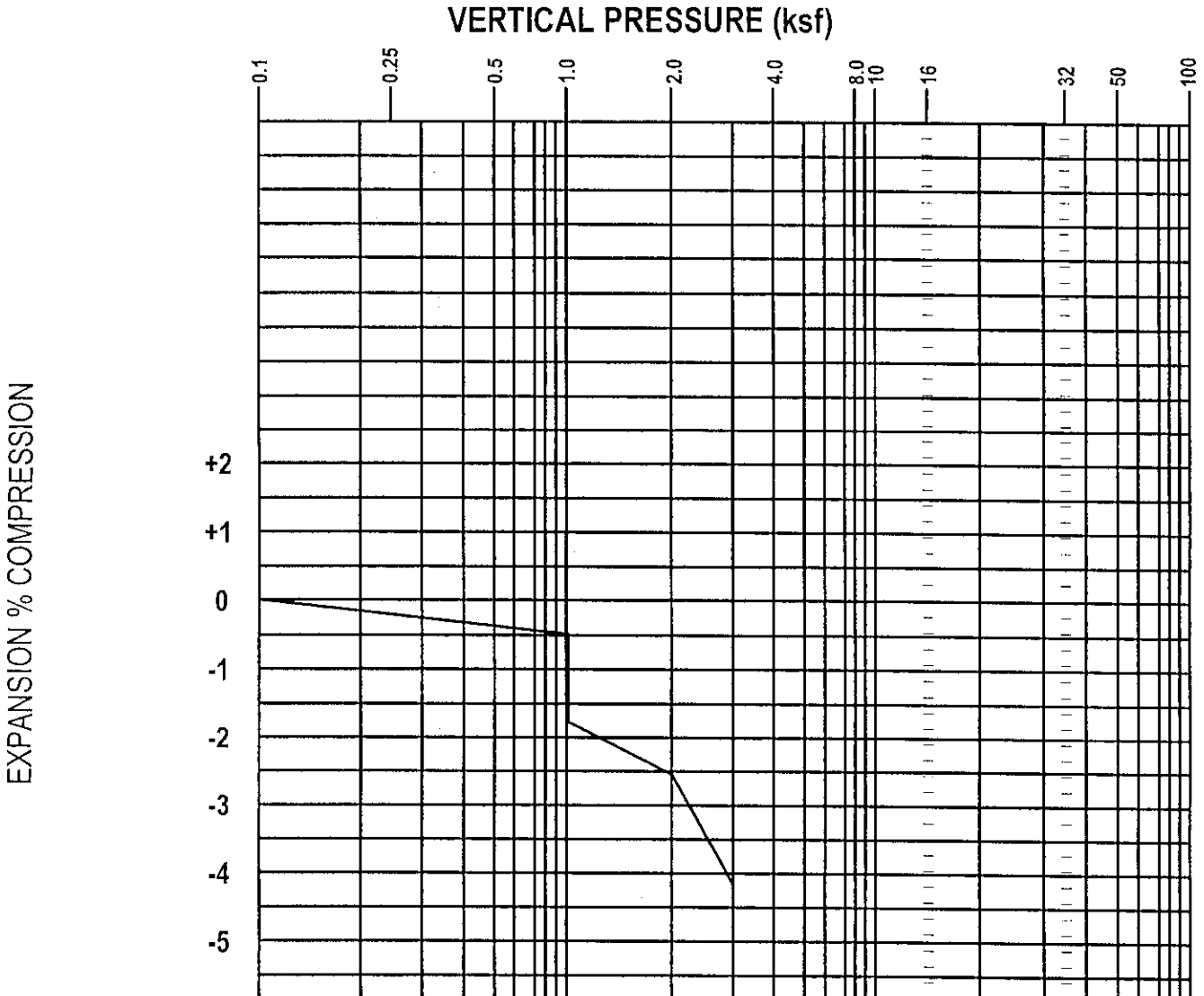
DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE

SOIL TESTING & ENGINEERING INC.

JOB No. 060933 (FROM 051021)
FIG No. 47

CLIENT: GLEN INVESTMENT GROUP NO. VIII	JOB NO: 051021
PROJECT: THE GLEN AT WIDEFIELD, FILING 6	DATE: 2/10/06
BORING NO: 316 DEPTH: 4 FT. SOIL TYPE: 1 (SERIES 3)	TEST BY: JF



SWELL-CONSOLIDATION TEST

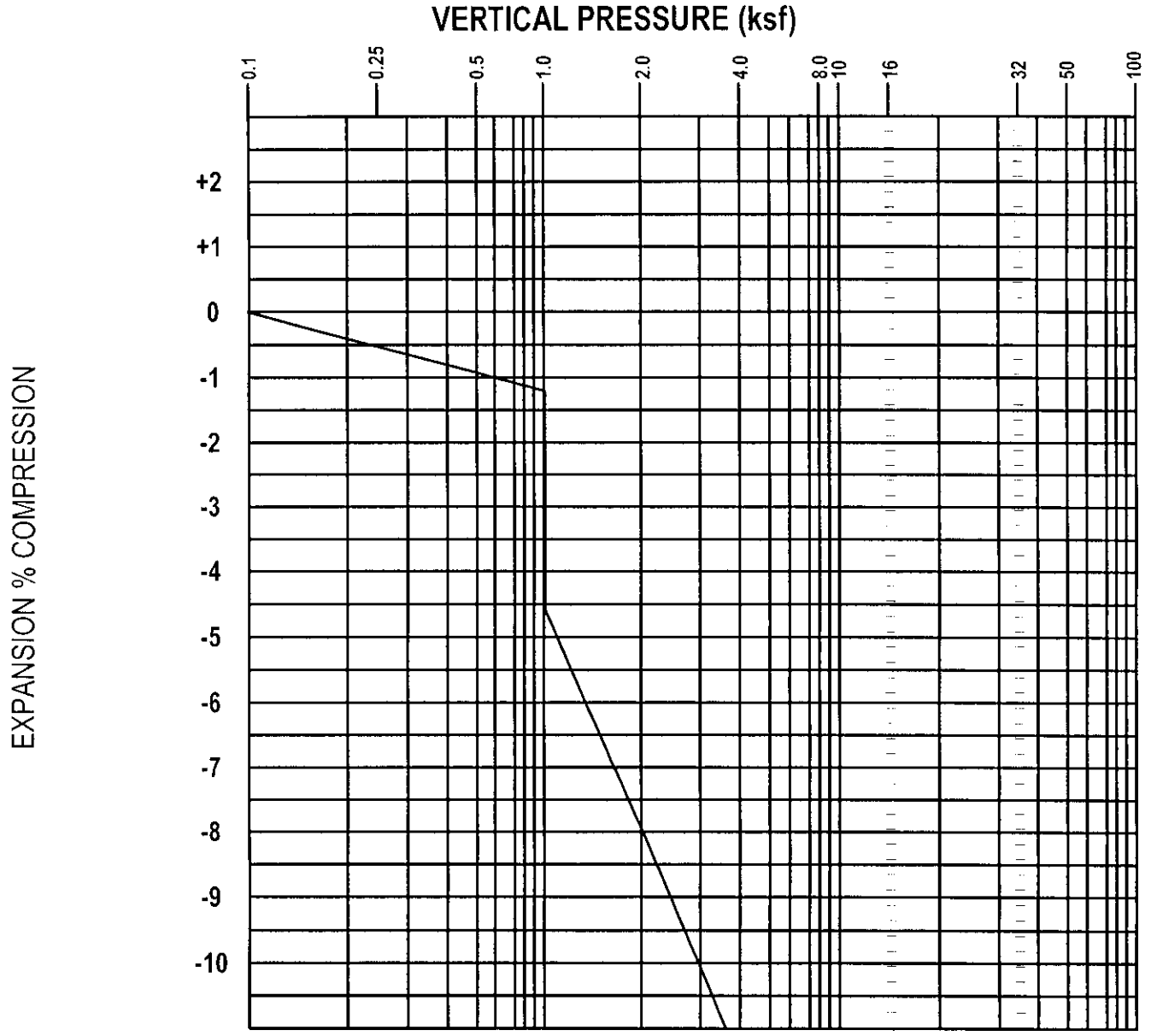
DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE

SOIL TESTING & ENGINEERING INC.

JOB No. 060933 (FROM 051021)
FIG No. 48

CLIENT: GLEN INVESTMENT GROUP NO. VIII	JOB NO: 051021
PROJECT: THE GLEN AT WIDEFIELD, FILING 6	DATE: 2/10/06
BORING NO: 360 DEPTH: 4 FT. SOIL TYPE: 1 (SERIES 3)	TEST BY: JF



SWELL-CONSOLIDATION TEST

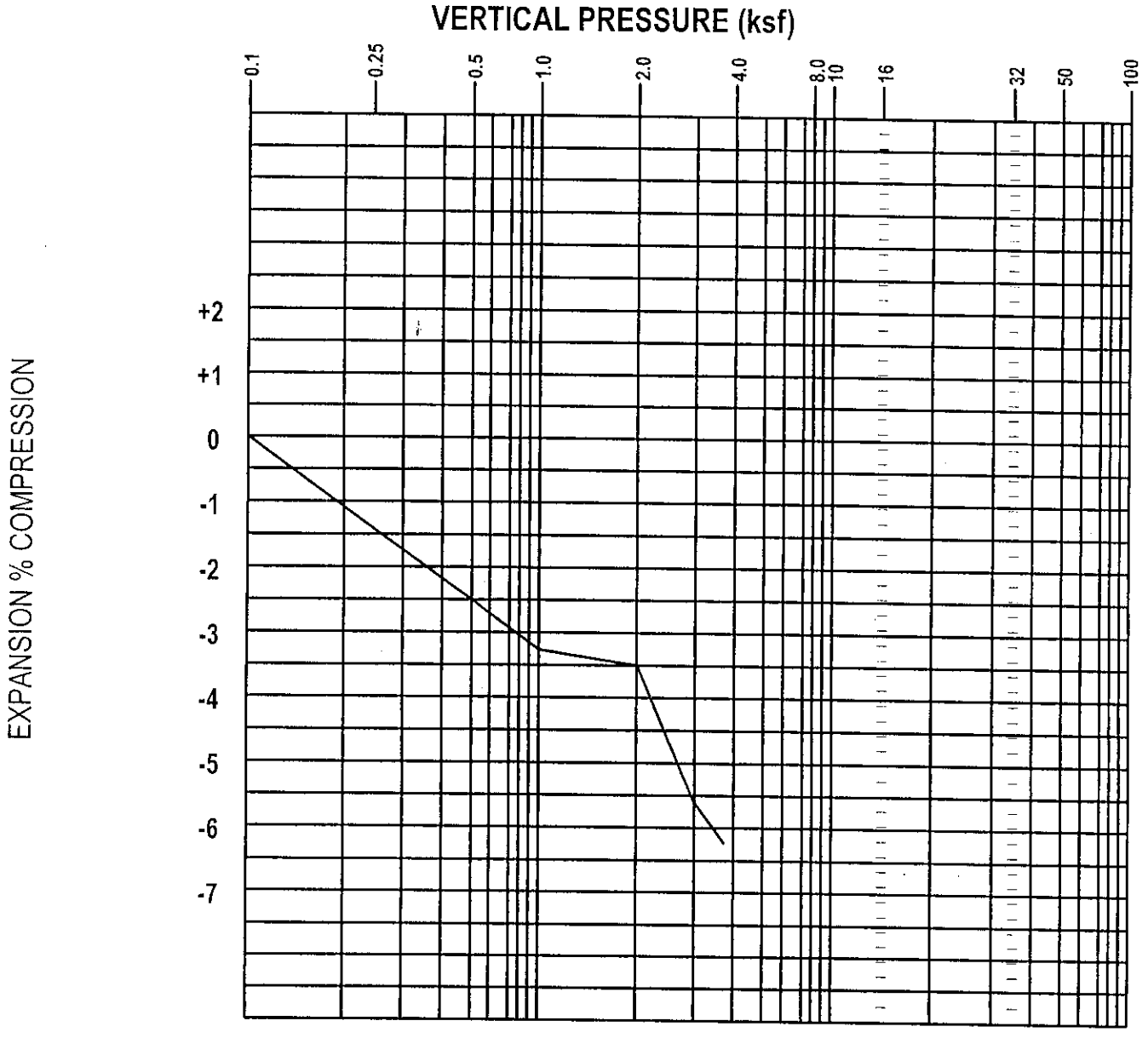
DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE

SOIL TESTING & ENGINEERING INC.

JOB No. 060933 (FROM 051021)
FIG No. 49

CLIENT: GLEN INVESTMENT GROUP NO. VIII	JOB NO: 051021
PROJECT: THE GLEN AT WIDEFIELD, FILING 6	DATE: 2/23/06
BORING NO: 280 DEPTH: 4 FT. SOIL TYPE: 2 (SERIES 3)	TEST BY: JF



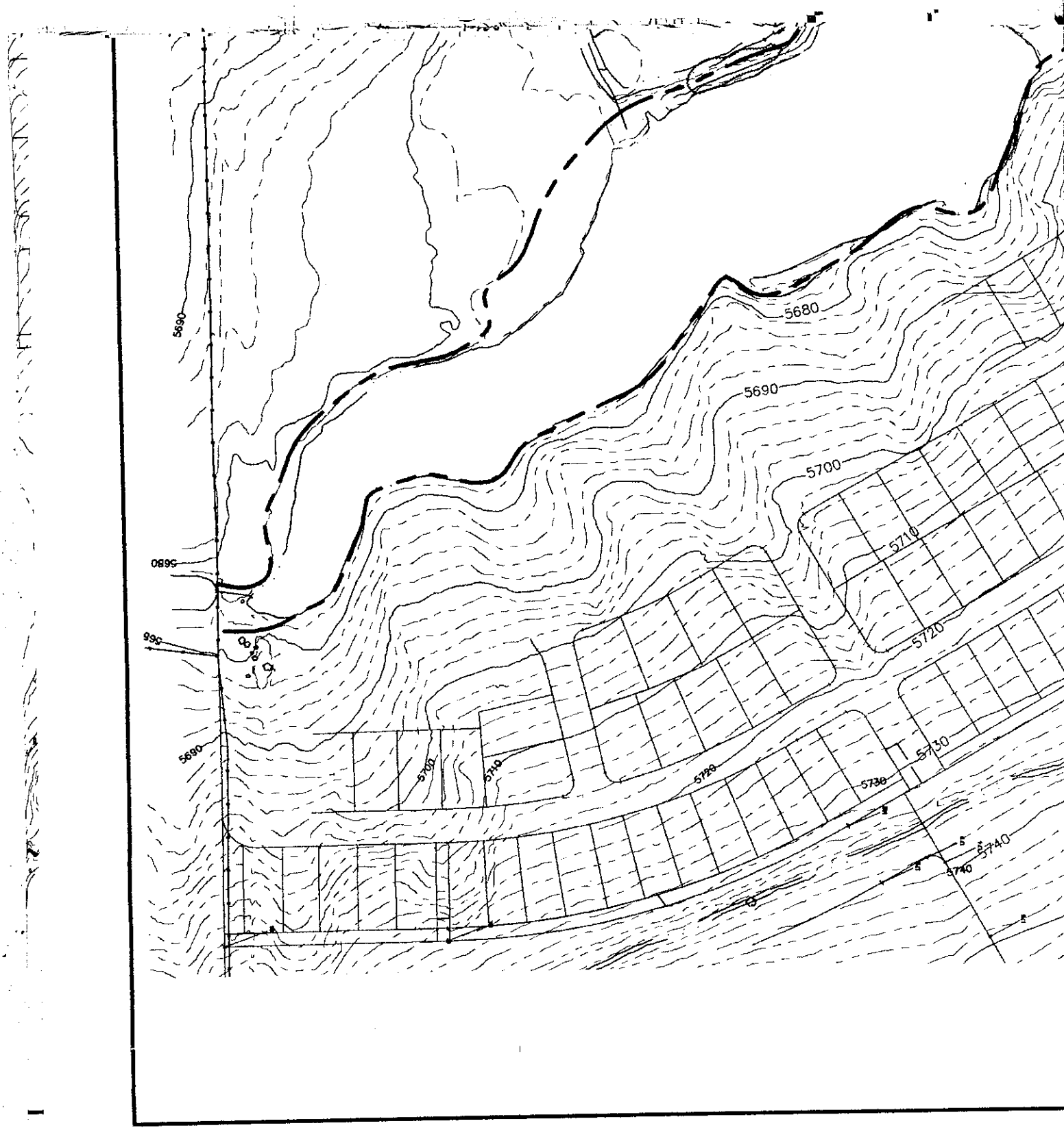
SWELL-CONSOLIDATION TEST

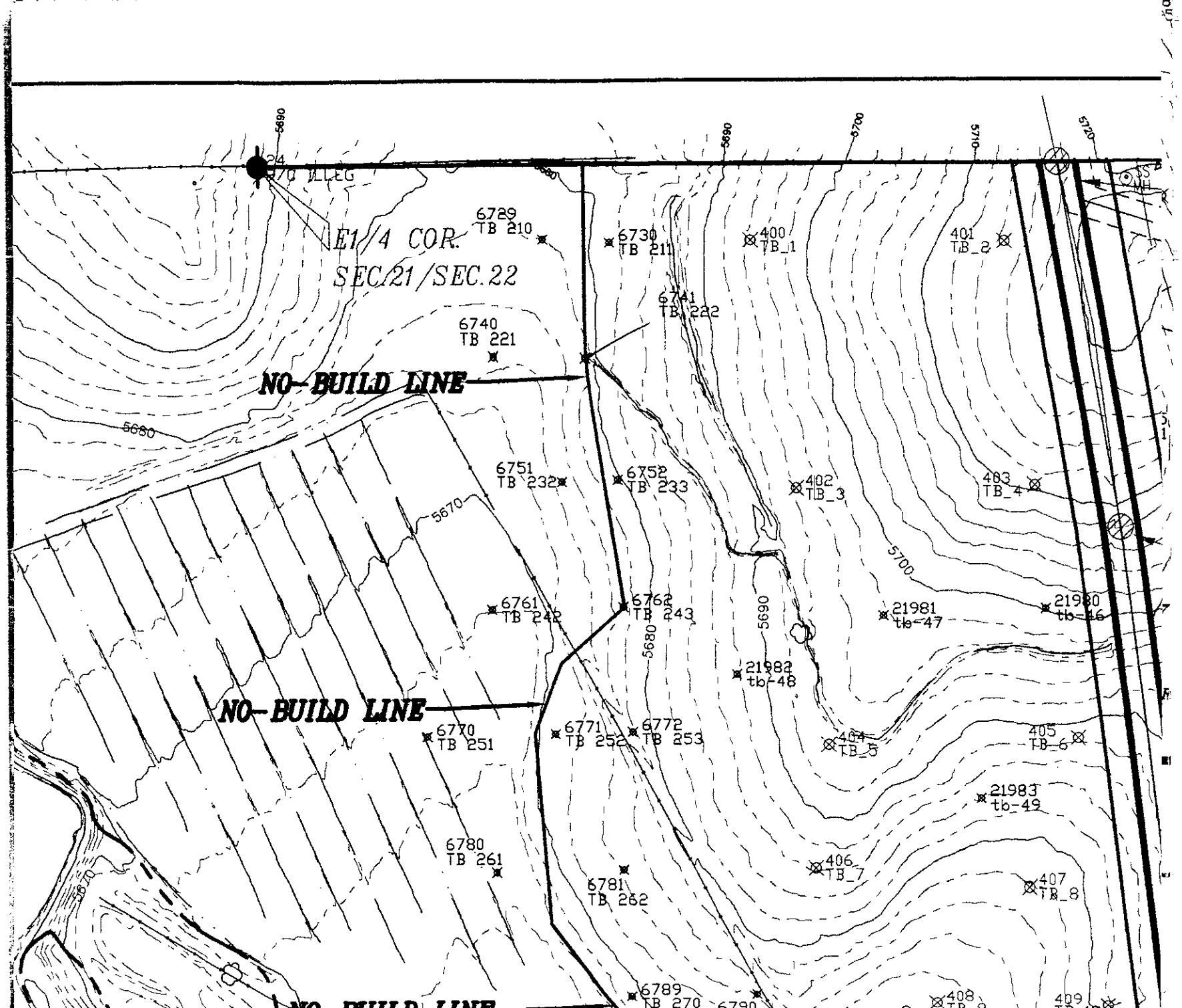
DRAWN	DATE	CHECKED	DATE
MSS		LWC	

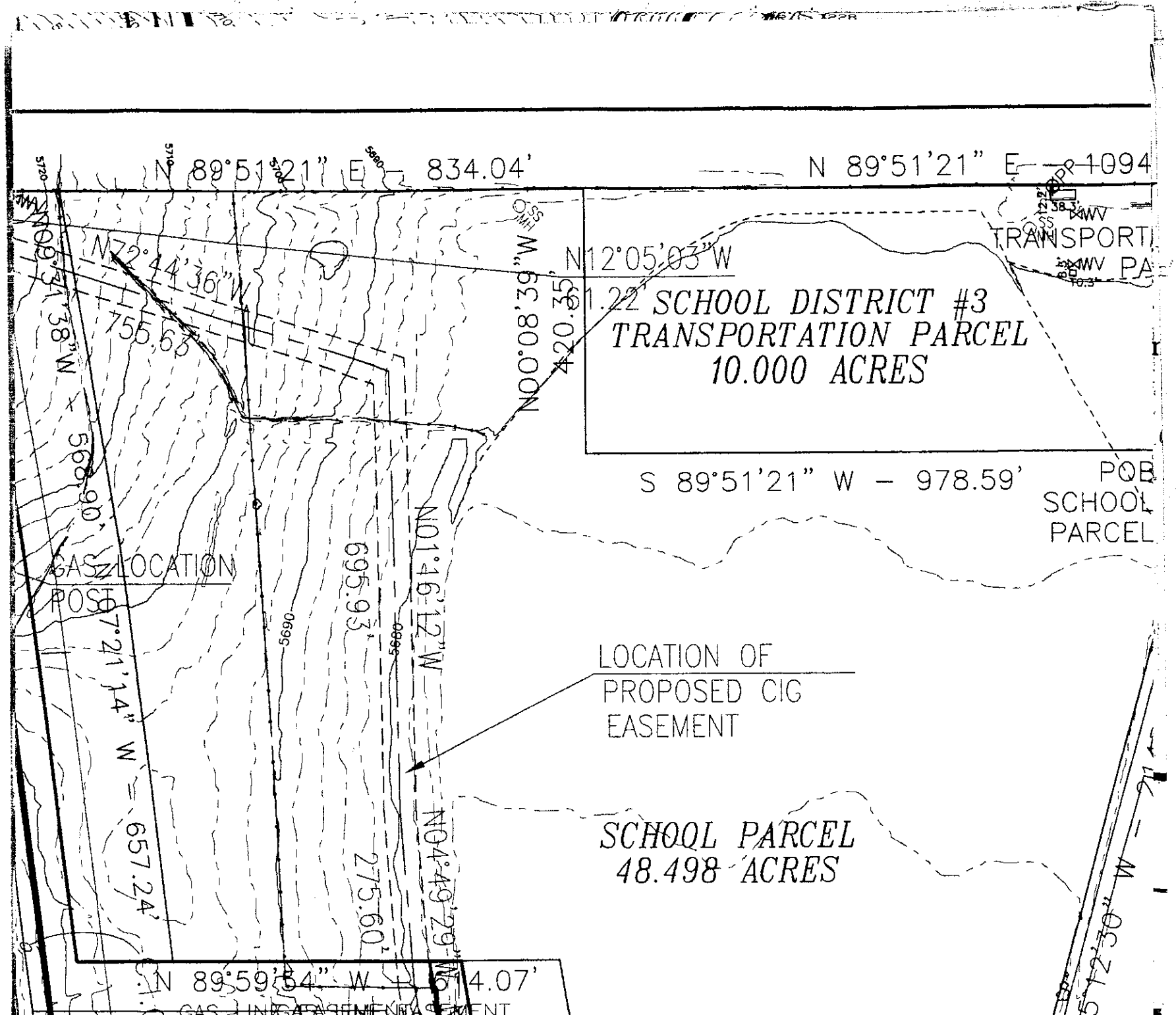
STE

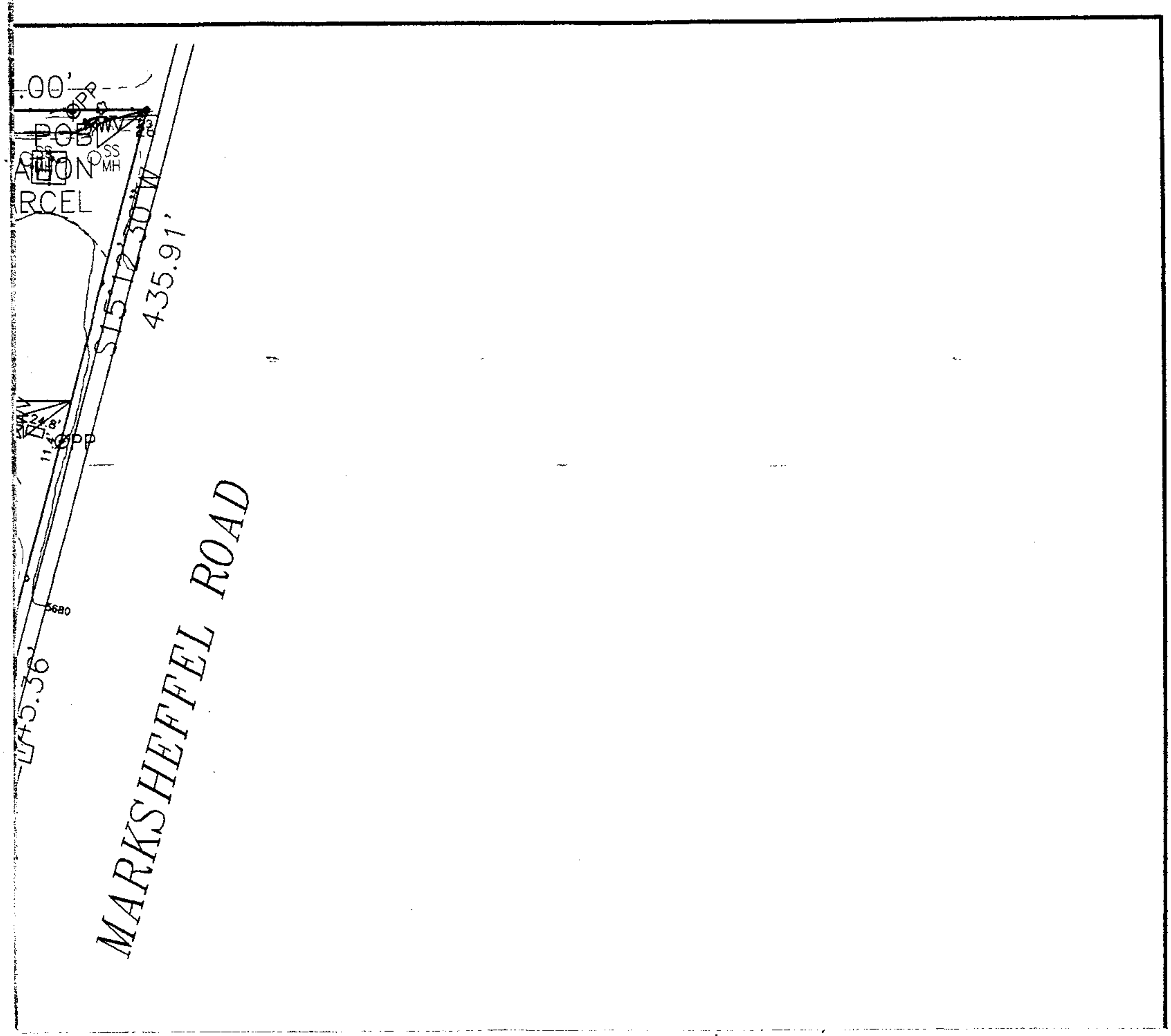
SOIL TESTING & ENGINEERING INC.

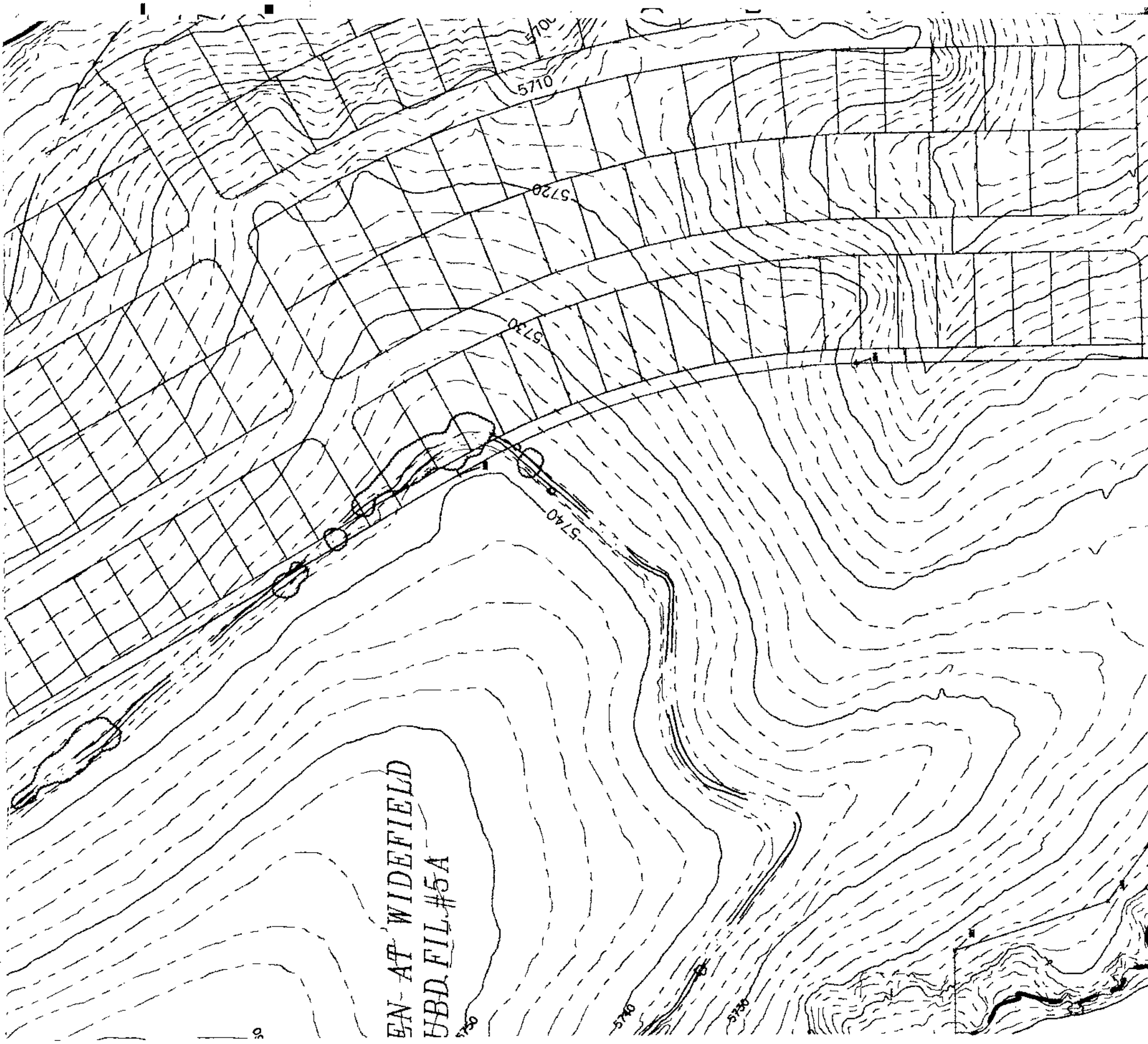
JOB No. 060933 (FROM 051021)
FIG No. 50

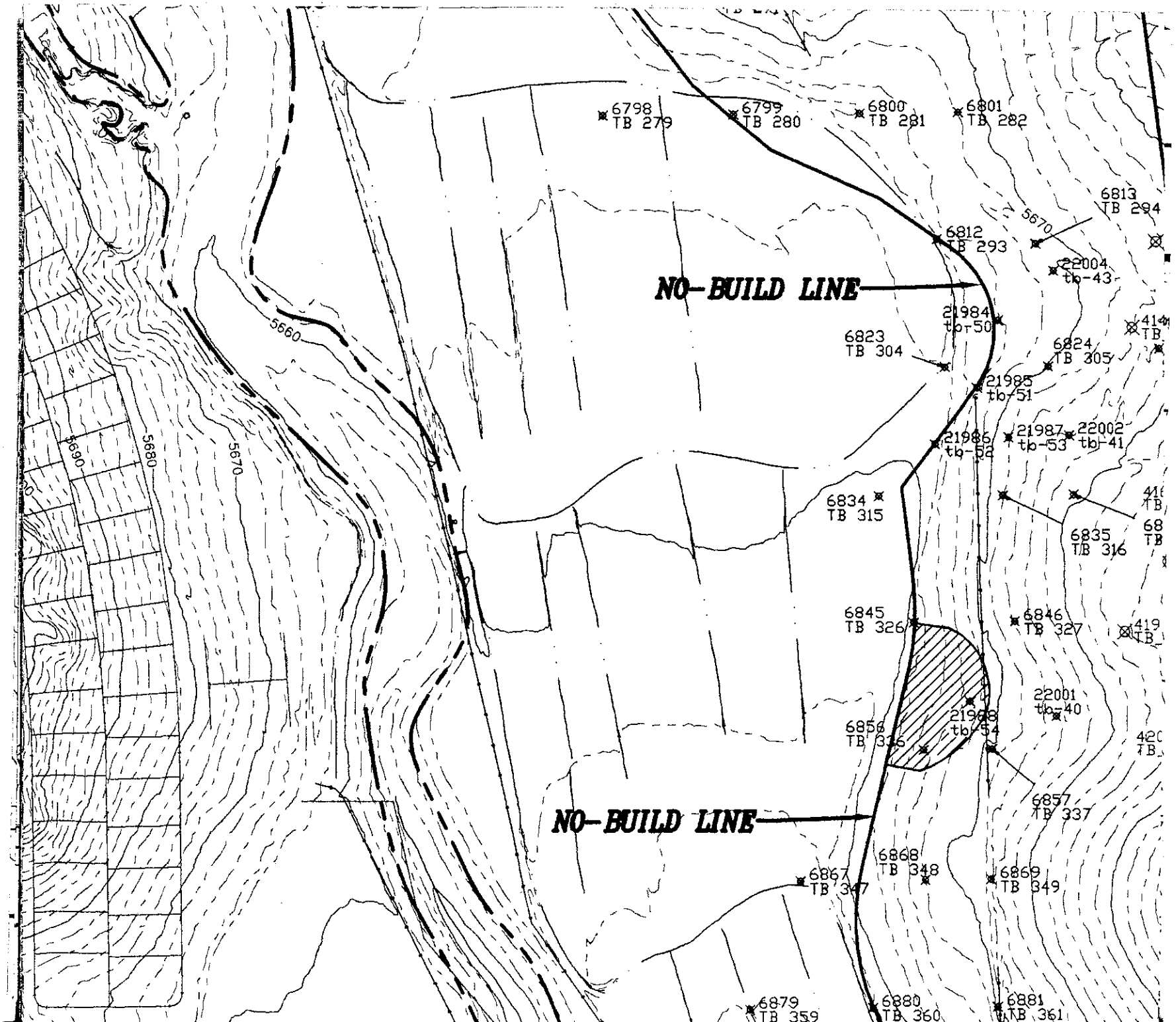

5690
5680
5690
5700
5710
5720
5730
5740
5740
5740
5730
5720
5700
5740
5680
5690

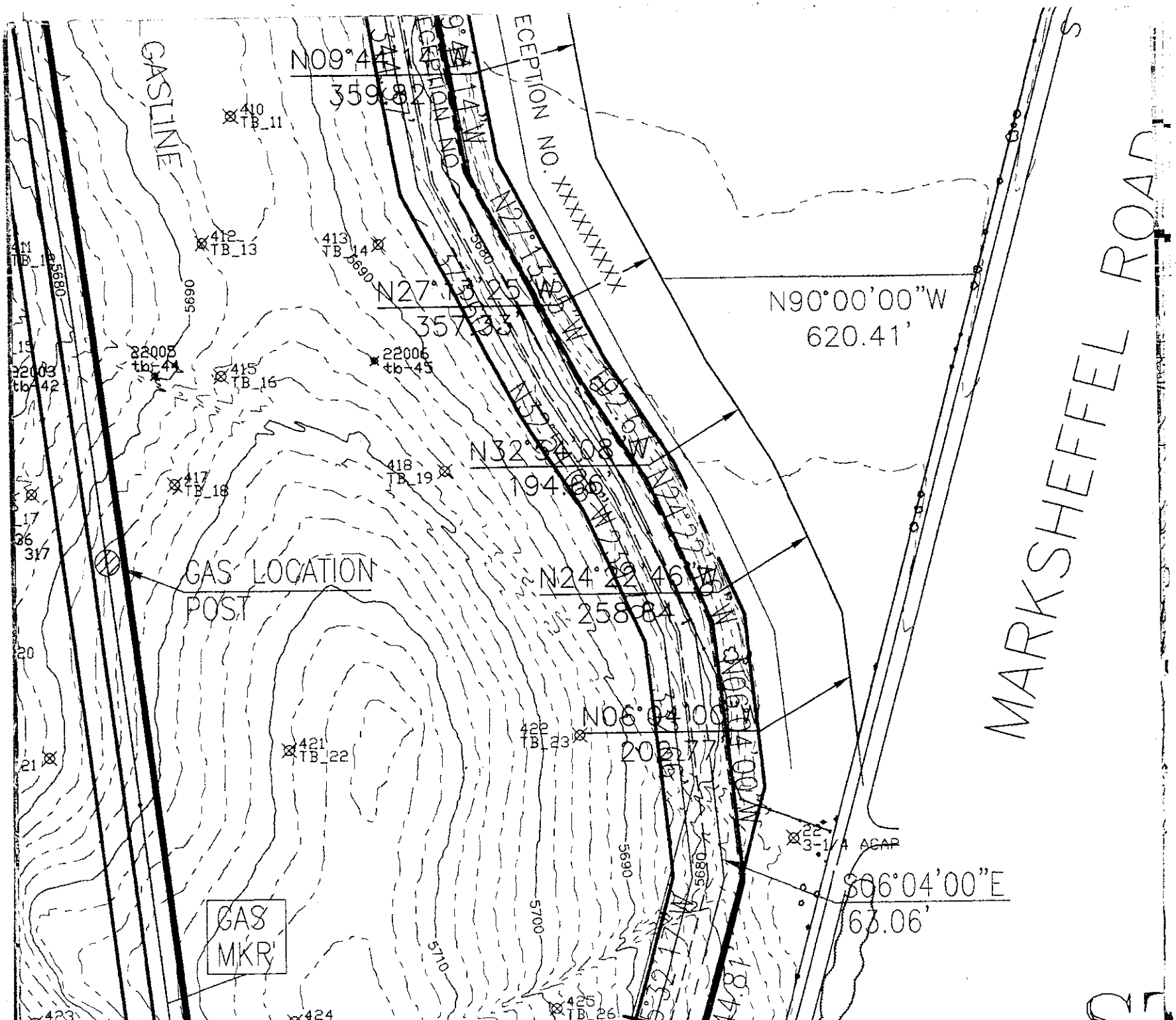

E1/4 COR.
SEC.21/SEC.22
NO-BUILD LINE
NO-BUILD LINE
NO-BUILD LINE
6729
TB 210
6730
TB 211
6740
TB 221
6741
TB 222
6751
TB 232
6752
TB 233
6761
TB 242
6762
TB 243
6770
TB 251
6771
TB 252
6772
TB 253
6780
TB 261
6781
TB 262
6789
TB 270
400
TB_1
401
TB_2
402
TB_3
403
TB_4
404
TB_5
405
TB_6
406
TB_7
407
TB_8
21980
tb-46
21981
tb-47
21982
tb-48
21983
tb-49
5660
5670
5680
5690
5700
5710
5720


N 89°51'21" E – 834.04'
N 89°51'21" E – 1094
N12°05'03"W
1.22
SCHOOL DISTRICT #3
TRANSPORTATION PARCEL
10.000 ACRES
N00°08'39"W
420.35'
S 89°51'21" W – 978.59'
POB
SCHOOL
PARCEL
N72°44'36"W
755.68'
N00°21'38"W
560.90'
GAS LOCATION
POST
S07°21'14"W
657.24'
695.93'
N01°16'12"W
LOCATION OF
PROPOSED CIG
EASEMENT
SCHOOL PARCEL
48.498 ACRES
N04°49'29"W
275.60'
N 89°59'54" W – 614.07'
GAS UNDERGROUND EASEMENT
S12°30"W


MARKSHEFFEL ROAD
435.91'
.00'
POB
RCEL
SS MH
PP
24.8'
5680
45.36


5710
5720
5730
5740
EN AT WIDEFIELD
UBD FIL #5A

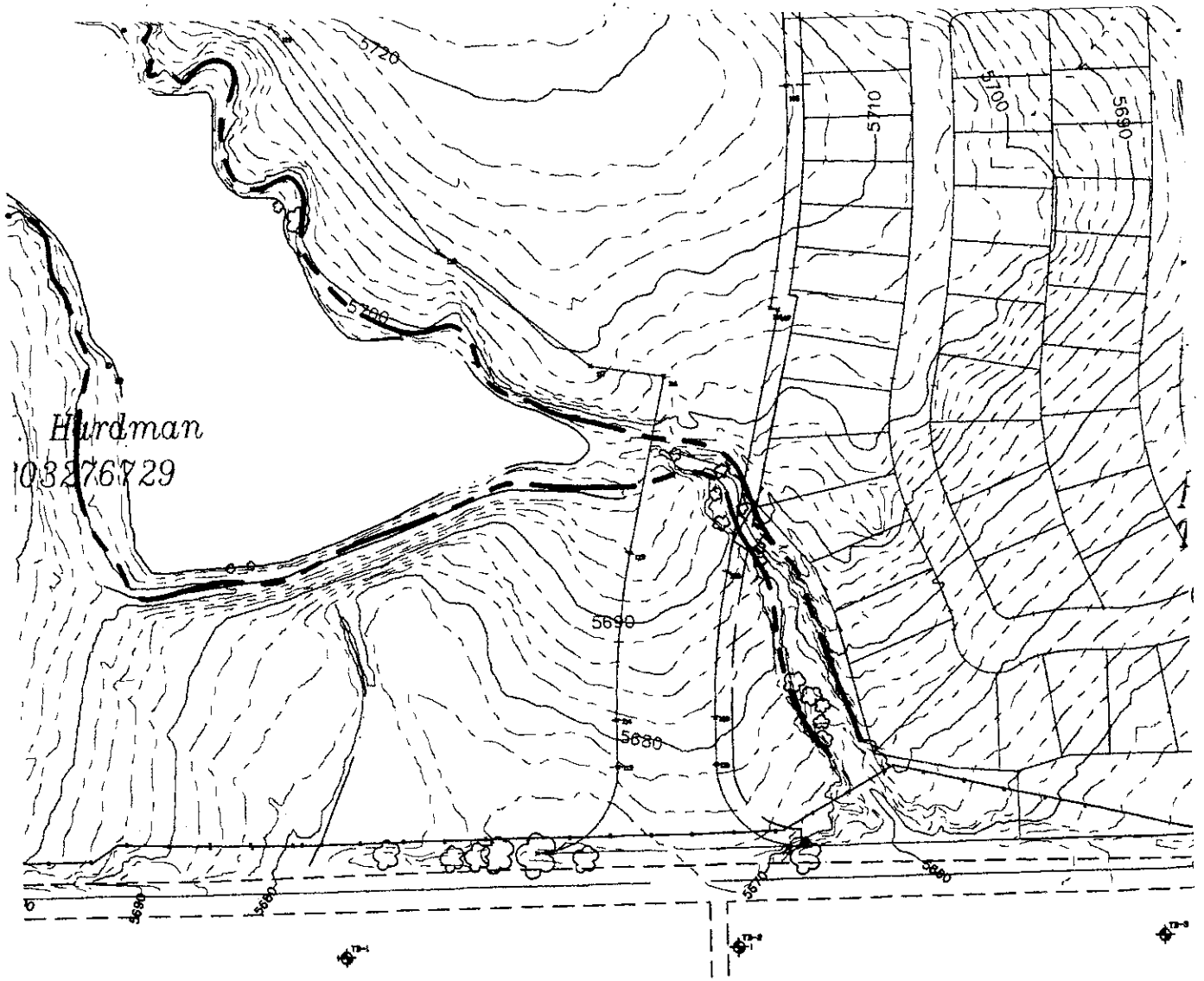

6798
TB 279
6799
TB 280
6800
TB 281
6801
TB 282
6813
TB 294
6812
TB 293
5670
22004
tb-43
NO-BUILD LINE
21984
tb-50
6823
TB 304
6824
TB 305
21985
tb-51
21986
tb-52
21987
tb-53
22002
tb-41
5660
5690
5680
5670
6834
TB 315
6835
TB 316
6845
TB 326
6846
TB 327
22001
tb-40
21988
tb-54
6856
TB 336
6857
TB 337
NO-BUILD LINE
6868
TB 348
6867
TB 347
6869
TB 349
6879
TB 359
6880
TB 360
6881
TB 361


GASLINE
EXCEPTION NO. XXXXXXXX
N09°44'14"W
359.82'
N27°13'25"W
357.33'
N90°00'00"W
620.41'
N32°54'08"W
194.66'
N24°22'46"W
258.84'
N06°04'00"W
200.77'
S06°04'00"E
63.06'
MARKSHEFFEL ROAD
GAS LOCATION POST
GAS MKR
410 TB_11
412 TB_13
413 TB_14
415 TB_16
417 TB_18
418 TB_19
421 TB_22
422 TB_23
425 TB_26
22005 tb-44
22006 tb-45
22003 tb-42
3-1/4 ACAP
5680
5690
5700
5710

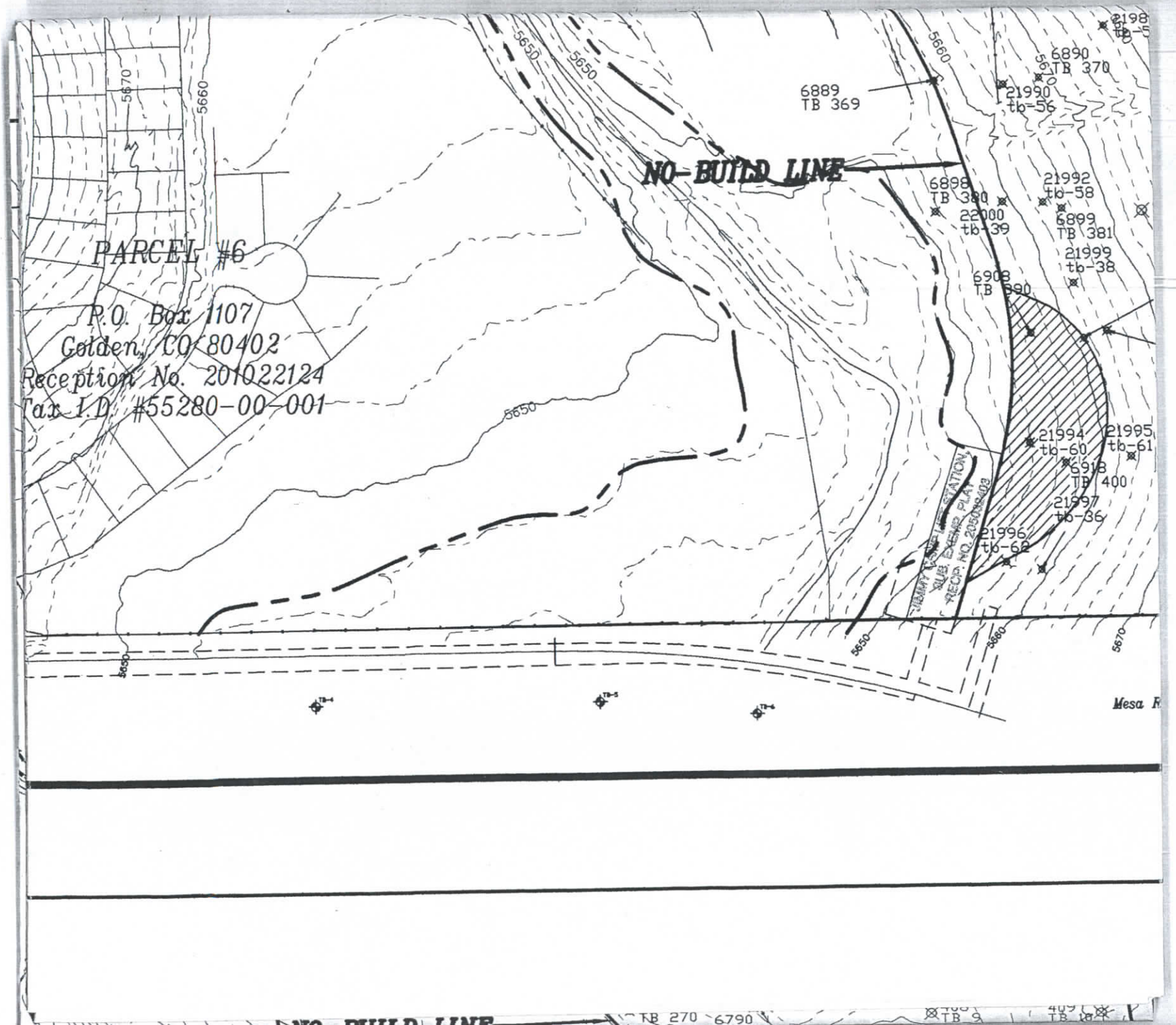
CROWN OF SLOPE FOR WESTERN BOUNDARY

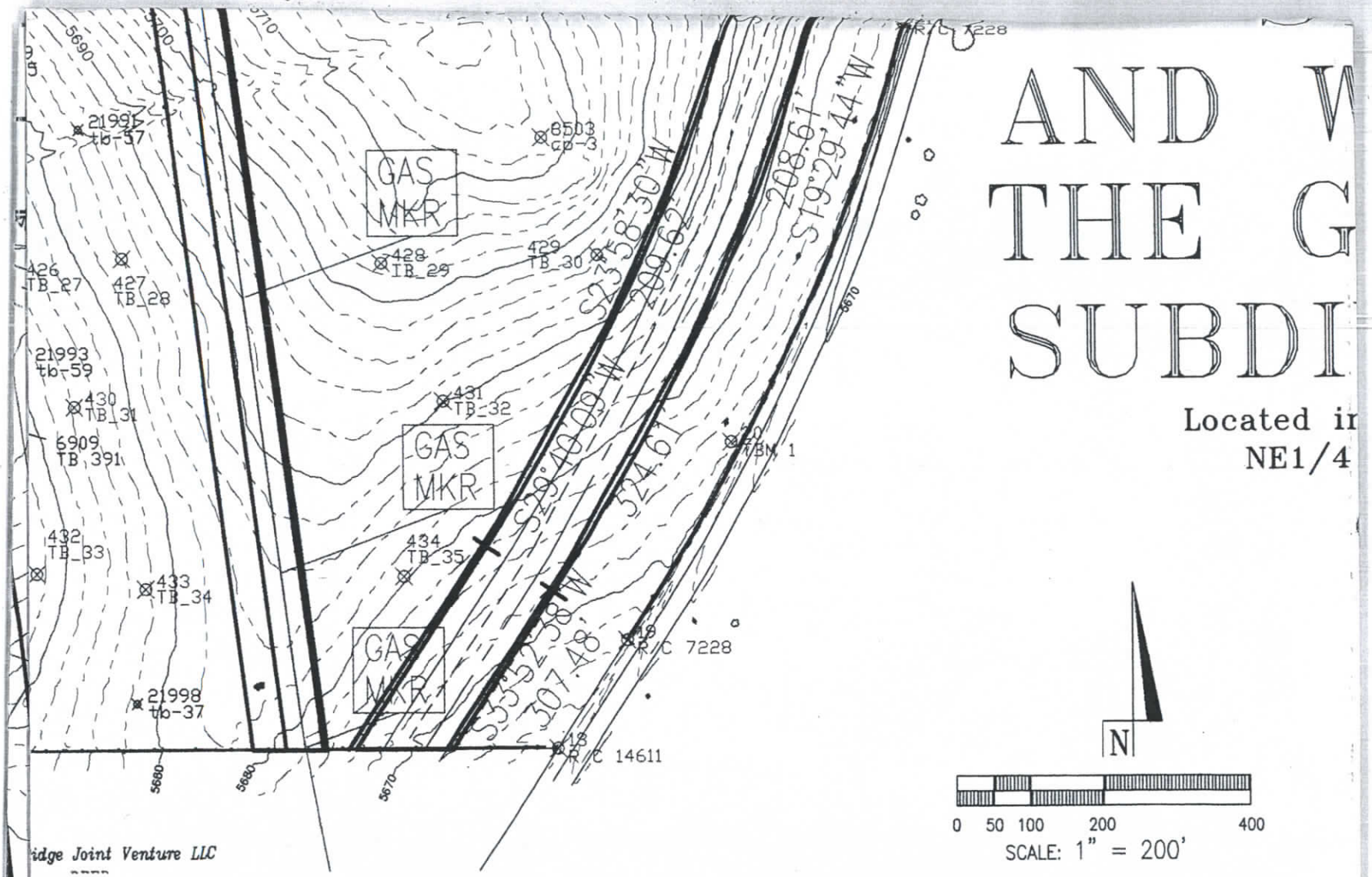
POTENTIALLY UNSTABLE AREA – SPECIAL CONSTRUCTION PRACTICES MAY BE REQUIRED

TE TEST BORES



PINNACLE LAND SURVEYING COMPANY, INC.
925 W. CUCHARRAS ST., C.S., CO 634-0751


PARCEL #6
P.O. Box 1107
Golden, CO 80402
Reception No. 201022124
Tax I.D. #55280-00-001
NO-BUILD LINE
6889
TB 369
6890
TB 370
21990
tb-56
6898
TB 380
22000
tb-39
21992
tb-58
6899
TB 381
21999
tb-38
6908
TB 390
21994
tb-60
21995
tb-61
6918
TB 400
21997
tb-36
21996
tb-62
5650
5660
5670



AND W
THE G
SUBDI

Located ir
NE1/4

N

0 50 100 200 400

SCALE: 1" = 200'

idge Joint Venture LLC

E TEST BORES
VESTERN BOUNDARY
LEN AT WIDEFIELD
VISION FILING NO.7

1 the SE1/4 of SECTION 21, SW1/4 of SECTION 22,
of SECTION 27, and the NW1/4 of SECTION 28
T15S, R65W of the 6TH P.M.
COUNTY OF EL PASO, STATE OF COLORADO

TEST BORE LOCATION MAP

JOB NO.
060933

FIG NO.
2

STE TEST BORES – THE GLEN AT WIDEFIELD FILING NO. 7

DRAWN BY:MWW	CHECKED BY: JWT	DATE: 04/01/07
JOB NO.: 05010000	DWG: 05010000WORK.DWG	SHEET 1 OF 1

Hepworth-Pawlak Geotechnical, Inc.
10302 South Progress Way
Parker, Colorado 80134
Phone: 303-841-7119
Fax: 303-841-7556
www.hpgeotech.com

March 22, 2016 Job No. 215292A

The Glen Investment Company
3 Widefield Boulevard
Colorado Springs, Colorado 80911

Subject: Measured Water Levels at the Glen at Widefield East, Filing 12

References: Geotechnical Report Created by HP Geotech, Job No. 215292A, Dated November 4, 2015

Sheet RG-2 of the Rough Grading Plan Created by Kiowa Engineering Corporation, Project No. 14044, Dated December 16, 2015.

Gentlemen:

At your request, the information in the following table has been compiled from information provided in the referenced geotechnical report, and the referenced rough grading plan.

Lot Number	Boring	Groundwater Elevation	Finished Grade Elevation	Proposed Basement Elevation	Separation from Groundwater (feet)
522/523	HP B-1	5656	5685	5677	21
498	HP B-2	5655	5678	5670	15
564/565	HP B-3	(dry)	5691	5683	*2
270/271	HP B-4	(dry)	5697	5689	*2
(omitted)	HP B-5	(omitted)	(omitted)	(omitted)	(omitted)
493	HP B-6	(dry)	5673	5665	*2
*1	HP B-7	5651	5668	5660	9
543/544	HP B-8	5653	5678	5670	17
515	HP B-9	5658	5689	5681	23
441/442	HP B-10	5658	5691	5683	25

*1: Boring was drilled in sediment basin
*2: No groundwater recorded

Though the proposed separation from groundwater appears adequate based on the water levels encountered in out investigation, significantly shallower groundwater is known to have been present in the past as indicated in subsurface investigations conducted by STE in 1998 and 1999.

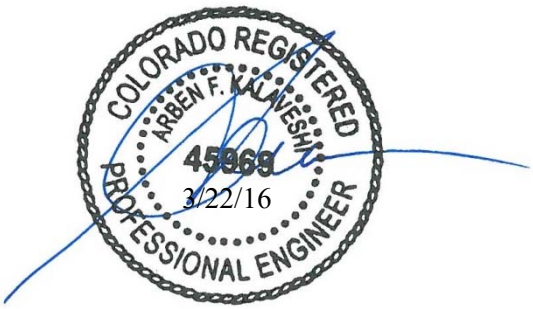
Due to the historically high groundwater levels in this area, basements are not recommended in this area unless a longer groundwater level monitoring program can substantiate the lower groundwater levels based on a period of at least one year.

Please feel free to call with any questions.

Sincerely,

HEPWORTH-PAWLAK GEOTECHNICAL, Inc.

Arben Kalaveshi, P.E.



Hepworth-Pawlak Geotechnical, Inc.
10302 South Progress Way
Parker, Colorado 80134
Phone: 303-841-7119
Fax: 303-841-7556
www.hpgeotech.com

PRELIMINARY GEOTECHNICAL INVESTIGATION
FOR PROPOSED DEVELOPMENT
THE GLEN AT WIDEFIELD
FILING NO. 7
WIDEFIELD, COLORADO

JOB NUMBER: 215292A

NOVEMBER 4, 2015

PREPARED FOR:
MR. J. RYAN WATSON
WIDEFIELD INVESTMENT GROUP
3 WIDEFIELD BOULEVARD
COLORADO SPRINGS, COLORADO 80911

TABLE OF CONTENTS

PURPOSE AND SCOPE OF STUDY

This report presents the findings of our preliminary geotechnical engineering study for the proposed residential development located at The Glen at Widefield, Filing No. 7. The site location is shown on Figure 1. The study was conducted to evaluate the potential influence of the site geology on the proposed development and to develop preliminary geotechnical engineering recommendations. The study was conducted in accordance with our agreement for professional engineering services to Widefield Investment Group dated September 9, 2015. Site specific geotechnical investigations should be conducted at each lot and within proposed roadways to determine the appropriate foundation type and construction considerations of each individual residence planned.

A review of prior geotechnical investigations conducted by Soil testing and Engineering, Inc. has been conducted. The following reports have been reviewed:

1. Preliminary Subsurface Soil Investigation, Sunrise Ridge, Phase II, Colorado Springs, Colorado, Job Number 80415, and Dated June 10, 1998
2. Preliminary Subsurface Soil Investigation, Marksheffel Road and Peaceful Valley Road, Job Number 90235, and Dated May 5, 1999
3. Preliminary Subsurface Soil Investigation, The Glen at Widefield, Filing 7, Widefield, Colorado, Job Number 060933, and dated April 16, 2007.

Additionally, the mapped geology shown in the following map was consulted:

1. Scott, G.R., Taylor, R.B., Epis, R.C., and Wobus, R.A., 1976, Geologic map of the Pueblo 1 degree x 2 degrees quadrangle, south-central Colorado: U.S. Geological Survey, Miscellaneous Field Studies Map MF-775, scale 1:187,500

In addition to the review of the available information listed above, a field exploration program consisting of a site reconnaissance and nine borings was conducted to obtain general information on subsurface conditions. Samples from the borings were tested in the laboratory to determine their engineering characteristics. The previous reports, along with the results of our geologic observations, field exploration, and laboratory testing were analyzed to develop a report on the potential geologic hazards and preliminary geotechnical recommendations. This report summarizes the data obtained during the study and presents our conclusions and preliminary recommendations.

PROPOSED DEVELOPMENT

We understand that this project is part of a larger proposed residential development to be located in the vicinity west of Marksheffel near the intersection with Peaceful Valley Road in El Paso County, Colorado. The scope of this study is limited to the area bound by Marksheffel Road to the east, The Fountain Corporate Boundary to the North (the northern border of Section 22, Township 15 South, Range 65 West), and the rerouted gas line easement to the west and south. This portion of the project has an area of about 53.5 acres, and will potentially include about 185 single family residences and 1.6 miles of roadway. We understand that the houses in this area will be single story units with no basements. As mentioned above, site specific geotechnical studies should be conducted after final grading and platting has been established.

SITE CONDITIONS

The project area is located to the northeast of the intersection of Marksheffel Road and Peaceful Valley Road. A detailed description of the project boundaries was given in the above section. In general, the western portion of the site is located on a ridge extending south. The ground slopes moderately to the east in this area. The eastern portion of the site (approximately 2/3 of the area) is flat with a very mild slope to the east. Based on the available USGS topographic maps, the elevation varies across the site from about 5680 to 5720 feet MSL. Jimmy camp creek is located about 1,200 feet east of the site at its nearest point.

The majority of the site was vacant at the time of our investigation, but several small well houses are located near the northwest corner, which will be outside of the considered development. Overhead power lines run along the east and north sides of the site. Vegetation on the site consists mostly of weeds and grass with some small deciduous trees, and prairie dog holes were noted throughout. A irrigation ditch was noted at the toe of the slope separating the ridge from the flatter area. Peaceful Valley Country Club Estates (Filing 1), is located just east of the project site.

FIELD EXPLORATION

The field exploration for this project was conducted on September 23 and 24, 2015. Nine exploratory borings were drilled with an all-terrain CME 550X drill rig equipped with an automatic hammer to evaluate the subsurface conditions in the soils. The boring locations are shown in Figure 2. The exploratory borings were logged by a representative of Hepworth-Pawlak Geotechnical, Inc.

Samples of the soils were taken with a nominal 2-inch I.D. California spoon sampler and 1-3/8 inch I.D. split spoon sampler. The samplers were driven into the subsoils at various depths with blows from a 140-pound hammer falling 30 inches. This test is similar to the standard penetration test described by ASTM Method D-1586. The penetration resistance values are an indication of the relative density or consistency of the subsoils. Depths at which the samples were taken and the penetration resistance values are shown on the Boring Logs, Figure 3 and 4. The samples were returned to our laboratory for review by the project engineer and testing.

SUBSURFACE CONDITIONS

GENERAL

Under a thin layer of topsoil up to about 1 foot thick, four major subsurface materials were identified in our investigation. These include sandy clay, clayey sand, silty sand, and claystone bedrock. Claystone was encountered at relatively shallow depths along the west side of the site, and dropped off steeply towards the east side, where it was encountered at depths of over 50 feet below the existing ground surface. A detailed discussion of each soil/bedrock type encountered follows.

Sandy Clay (CL):

Sandy clay was found under the topsoil in all nine borings and extended to depths of about 4 to 35 feet below the ground surface. Sandy clay cover was generally shallower at the west side of the site. The sandy clay was medium stiff to very stiff, with an average penetration resistance blow count of 15 that ranged from 6 to 38 blows required for 12 inches of sampler penetration. Swell-compression test results indicate the sandy clay has

a low to very high swell potential based on vertical expansion ranging from 0.3 to 9.1 percent under a surcharge of 1 ksf when wetted.

Clayey Sand (SC):

Clayey sand was encountered under the sandy clay in all Borings except Borings B-3 and B-4. The clayey sand was found to be loose to medium dense, with an average penetration resistance blow count of 11 that ranged from 6 to 18 blows required for 12 inches of sampler penetration. The clayey sand encountered was generally wet, and the samples tested had an in situ water content that ranged from 26.9 to 31.5 percent.

Silty Sand (SM):

Slightly silty to silty sand with some gravel was encountered below the clayey sand in all Borings except Borings B-3 and B-4. The silty sand was found to be medium dense to dense, with an average penetration resistance blow count of 26 that ranged from 13 to 42 blows required for 12 inches of sampler penetration. In situ water content ranging from 10.0 to 12.7 percent was recorded in the samples tested.

Claystone:

Claystone was found at depths as shallow as 4 feet below the ground surface at the west side of the site, and as deep as 53 feet elsewhere. It was generally hard to very hard, with an average penetration of 5½ inches after 50 blows. The sample of claystone taken at 4 feet at Boring B-4 was softer, with a blow count of 31 for 12 inches of sampler penetration.

LABORATORY TESTING:

Laboratory testing included moisture content, unit weight, Atterberg limits, sieve analysis, percent passing #200 sieve, swell-compression, and water soluble sulfate concentration. Detailed results of swell-compression testing are shown on Figures 6-13 and gradation analyses on Figures 14 and 15. Test results are shown on the boring logs, Figures 3 and 4, and are summarized in Table 1

The concentration of water-soluble sulfates in the samples tested ranged from 0.065 to 0.813 percent. According to the Portland Cement Association's publication "Design and Control of Concrete Mixtures, 14th Edition" sulfate concentrations between 0.2 and 2.0 percent represent a severe sulfate exposure to concrete. To limit the effects of sulfate attack, Type V concrete is recommended. Additionally, a water to cementitious material ratio not exceeding 0.42 is recommended.

GROUNDWATER:

Groundwater was generally found at a depth of about 20 feet below the ground surface when measured several days after drilling. The table below lists the specific depths at which ground water was encountered.

Boring	Water Depth at time of Drilling	Water Depth Several Days After Drilling	Cave Depth
B-1	(no water found)	21 feet	21.5 feet
B-2	22 feet	20 feet	20 feet
B-3	(no water found)	(no water found)	19 feet
B-4	(no water found)	(no water found)	14 feet
B-5	(omitted from drilling program)		
B-6	15 feet	(no water found)	20 feet
B-7	22 feet	22 feet	22 feet
B-8	(no water found)	22 feet	24 feet
B-9	44 feet	21 feet	22 feet
B-10	(no water found)	22 feet	26 feet

Our review of previous studies conducted by STE indicate that groundwater depths were significantly shallower in the past. Perched groundwater and water contained in lenses of relatively permeable sands within less permeable clays are likely to be encountered.

It is anticipated that the depth to ground water will fluctuate with time based on seasonal, climatic, and other factors including irrigation.

GEOLOGIC SITE ASSESSMENT

The geologic formations in the vicinity of the project area include Quaternary Piney Creek Alluvium, Colluvium, and Pierre Shale below a thin layer of colluvium on the western side of the proposed development. Geologic hazards include moisture sensitive soils.

MOISTURE SENSITIVE SOILS

Our laboratory testing shows that the clay layers and the Pierre Shale have a medium to very high expansion potential when wetted and some of the soils have a collapse potential. These conditions must be considered in the design of building foundations and road pavements. The previous reports issued by STE have noted the hazards and some of our borings have encountered them. Both compression and swell can be remediated by removal and replacement with suitable material. For the clay, replacement at moisture contents above optimum is a common method. More detailed exploration and testing is required to better define the limits and their effect on the development.

EARTHQUAKE CONSIDERATIONS

The project area could experience earthquake related ground shaking. Modified Mercalli Intensity VI ground shaking should be expected during a reasonable exposure time for the development, but the probability for stronger ground shaking is low. Intensity VI ground shaking is felt by most people and causes general alarm, but results in negligible damage to structures of good design and construction. Occupied structures should be designed to withstand moderately strong ground shaking with little or no damage, and not to collapse under stronger ground shaking. According to the 2003 IBC and local codes, the property is considered to be Site Class C where the overburden is less than 15 feet and Site Class D where the overburden is greater than 15 feet. The Seismic Design Category is considered to be B.

ENGINEERING ANALYSIS

Because of the relatively large area considered within the proposed development, different conditions were identified within different areas of the site. At the western portion, expansive clay over shallow expansive claystone will be the dominant subsurface materials encountered at the anticipated foundation levels. Overburden consisting of

collapsible to expansive soils will encountered throughout the remainder of the site. Though no exceedingly soft/loose areas were identified in our study, such conditions have been identified in past studies, and it is possible that areas requiring significant remediation will be identified when site specific studies are conducted. Particularly, if shallow groundwater is identified, additional fill placement may be necessary to elevate foundations to a suitable distance from the groundwater.

Generally, the moisture sensitive soils should be remediated under all roadways, utility infrastructure, paved walks, drives, and flatwork, and under foundations. This can be accomplished in large part by removing, moisture conditioning, and replacing the existing soils in controlled compacted lifts. Unsuitable material, which includes the expansive claystone bedrock and some highly expansive clay should not be used below foundations. Because of the shallow depth of the bedrock along the western portion of the site, deep foundations, such as drilled piers may be a more cost effective option than over-excavation and replacement. In areas where the existing expansive material is replaced with a more permeable granular material, a toe drain at the base of the fill will be necessary to prevent the accumulation of surface water at this interface.

Structural floors built above crawlspaces will perform the best in the moisture sensitive soils encountered, but if the increased risk of slab movement can be tolerated, on-grade slabs can be used for the garage areas provided the area below has been over-excavated and replaced with suitable material. A more detailed discussion of floor types has been provided in the *Floors* subsection of the *Preliminary Design Recommendations* section below.

We recommend that the potential homeowner be supplied with, read and follow the recommendations presented in the Colorado Geologic Survey's Special Publication 43 "Home Landscaping and Maintenance on Swelling Soil". This publication provides a thorough description of the construction of homes on expansive soil, and includes information about the additional maintenance and care required for such homes. In particular, information about surface drainage and irrigation should be reviewed.

Because high concentrations of water soluble sulfates were found, special cement will likely be necessary for concrete in contact with the native soils. Because special cement could potentially add substantial construction costs, additional testing during the site specific investigations is recommended to determine the extent of these high concentrations.

Roadways will require subgrade improvement, which could be accomplished via over-excavation and replacement, and/or the use of geogrid below the pavement section. Lime stabilization of the native soils with high sulfate concentrations is not recommended due to the potential formation of calcium-sulfate-aluminate-hydrates, and the soil heave associated with the formation of these crystalline compounds.

PRELIMINARY DESIGN RECOMMENDATIONS

Based on the subsurface conditioned encountered, and our understanding of the proposed development, the following preliminary design recommendations have been provided.

SITE GRADING

We anticipate relatively shallow cuts and fills. We should have the opportunity to review construction plans for consistency with our recommendations.

Site Preparation:

The following preliminary recommendations should be observed for site preparation.

1. Permanent cut and fill slopes should be no steeper than 3:1 (horizontal to vertical). Any man-made slopes higher than 10 feet should be evaluated for slope stability.
2. All unsuitable organic material, debris or soft soils should be removed from areas to receive fill. This applies particularly to the placement of fill on slopes. If grading creates any slope steeper than 4 horizontal to 1 vertical, the ground should be benched to provide a relatively level surface for compaction. The exposed soils should be scarified, moisture conditioned, and compacted to the same density as the overlying fill.

3. All fill and backfill should be approved by the geotechnical engineer, placed in uniform lifts with a thickness compatible with the type of compaction equipment being used, moisture conditioned within 0 to +3 percent of optimum moisture content for the clay soil, and ±2 percent of optimum for the sand soils. The soils should be compacted with the appropriate equipment for the lift thickness used. The following minimum percentages of the maximum dry density, as determined by ASTM D698 (standard Proctor), are considered suitable for the anticipated development.

    a) Below foundations……..95%
    b) Below slabs and pavements……95%
    c) Landscaped area fill……90%
    d) Retaining or Foundation Wall Backfill……..95%

Suitability of On-Site Soil:

The clay soils encountered in the borings were found to have a relatively high swell potential at their in-situ moisture content and density, and will likely be expansive when placed as fill. Moisture conditioning to optimum and above can reduce the swell potential, but will not eliminate the risk of heaving caused by expansive soils. For fills that contain these clay soils, we recommend Standard Proctor criteria (ASTM D698) as opposed to modified Proctor criteria (ASTM D1557), because its use generally yields fill at higher optimum moisture content at a lower density and hence a lower expansion potential. All soils proposed for use below slabs or foundations should be tested for suitability. Bedrock will not be suitable for placement under structures.

Borrow areas should be stripped and segregated so that the fill will be free of deleterious materials. The on-site soil should be processed so that the fill does not contain rock or soil fragments larger than 4 inches in diameter. Any soils imported to the site should be approved by the geotechnical engineer.

EXCAVATIONS:

The sandy clay overburden, and the bedrock encountered in our borings can be excavated with typical heavy duty excavation equipment. Relatively shallow excavations are

anticipated for the construction of the proposed residences, but deeper excavations may be required for utility trenches.

It is the responsibility of the Contractor to provide safe working conditions and to comply with the regulations in OSHA Standards, Excavations, 29CFS Part 1926. The on-site native clay will likely classify as "Type B" in accordance with OSHA regulations. The regulations allow slopes of 1:1 horizontal to vertical for Type B soils for temporary excavations less than 20 feet deep. Some of the hard native sandy clay and claystone or sandstone bedrock will classify as "Type A" in accordance with OSHA regulations. The regulation allows for slopes of ¾:1 for temporary excavations less than 20 feet deep. The native sands encountered below the clay will likely classify as "Type C" in accordance with OSHA regulations. The regulations allow slopes of 1½:1 horizontal to vertical (34°) for Type C soils for temporary excavations less than 20 feet deep. The presence of water, seepage, fissuring, vibrations or surcharge loads will require temporary excavation to have slopes flatter than those allowed by OSHA regulations. The Contractor's competent person should make decisions regarding cut slopes. A qualified Geotechnical engineer should observe any questionable slopes or conditions. Temporary shoring or trench boxes may be necessary. Trench cut slopes in cohesive soils and bedrock should stand at near vertical for a sufficient length of time to install any required temporary shoring unless adversely affected by groundwater seepage, vibrations or surcharge loads. Trenches cut in non-cohesive sand may not stand at a near vertical slope during the time required to install trench boxes, and these areas may require the trench to be sloped instead.

FOUNDATIONS

Considering the subsurface conditions encountered in our investigation and the nature of the proposed construction, either deep foundation systems or over-excavation and replacement should be utilized for proposed structures. Deep foundations consisting of typical drilled shaft piers will likely be suitable at the west side of the site. Helical piers bearing in the overburden materials will be necessary for areas where deep bedrock exists. Particularly in the east portion of the site, deep foundations will not likely be required if over-excavation and replacement is conducted.

These criteria are presented for preliminary planning purposes only. Actual design criteria should be established by drilling closely-spaced borings within each building footprint and performing laboratory testing.

FLOOR SLABS

Floor slabs present a difficult problem where expansive materials are near the proposed floor slab elevation because sufficient dead load cannot be imposed on them to resist the uplift pressure generated when the materials become wet and expand. The only positive method to control floor slab movement on these soils is to construct a structural floor system above a crawl space. The evaluation of mold hazards is beyond the scope of this study and H-P Geotech does not provide recommendations regarding mold mitigation.

Garage floors are subject to the same difficult soils conditions as described above, but are difficult to construct over crawlspaces due to the relatively high live loading conditions anticipated. Slab-on-grade construction can be used for the garage floors provided that the risk of distress resulting from floor slab movement is recognized and accepted by the builder/potential homeowner. In areas with high swell potential, over-excavation of the native soils, and replacement with suitable moisture conditioned soils will be required.

DRAINAGE

Underdrains

Though groundwater was found at relatively low elevations compared to those of the anticipated foundations, it has been known to be significantly higher in the past. Additionally, surface water infiltration due to storm events and irrigation will change the groundwater depth. Therefore, we recommend below-grade construction, including crawlspaces be protected from excessive wetting by an underdrain system. The drain also will act to prevent buildup of hydrostatic pressures behind foundation walls.

Surface Drainage and Erosion Control:

Moisture-sensitive and erodible subsoils were identified at this site. The satisfactory performance of foundations, floor slabs and pavements are directly related to positive surface and subsurface drainage systems to prevent subgrade wetting. Surface grades should be maintained such that irrigation, snowmelt and precipitation water will easily

run off away from the structures and pavement. A 10 percent slope adjacent to foundations is commonly used. Positive drainage away from all structures and roadways should be maintained.

Additionally, good surface drainage should be provided around all fill areas and cut slopes to direct surface runoff away from these areas. Slopes and other stripped areas should be protected against erosion by paving, re-vegetation or other means.

CONTINUING SERVICES

Two additional elements of geotechnical engineering service are important for the successful completion of this project.

1. Consultation with design professionals during the design phases. This is important so the intentions of our recommendations are properly incorporated in the design, and that any changes in the design concept properly consider geotechnical aspects. A design-level geotechnical study should be undertaken once siting and configuration of the project is final.
2. Observation and monitoring during construction. A geotechnical engineer from our firm should observe the excavation, earthwork, and foundation phases of the work to judge that subsurface conditions are compatible with those used in the analysis and design. During site grading, placement of fill should be observed and tested to confirm that the proper placement conditions have been achieved.

LIMITATIONS

This report has been prepared in accordance with generally accepted geotechnical engineering principles and practices in this area at this time. We make no warranty either express or implied. The conclusions and recommendations submitted in this report are based upon the data obtained from widely-spaced exploratory borings drilled at the locations indicated on Figure 2, the proposed type of construction and our experience in the area, and the review of previous studies conducted in the area. Our findings are preliminary in nature and include interpolation and extrapolation of the subsurface conditions identified at the exploratory borings and variations in the subsurface

conditions may not become evident until further exploration or excavation is performed. A site specific geotechnical study should be performed for each lot.

This report has been prepared for the exclusive use by our client for preliminary design purposes. We are not responsible for technical interpretations by others of our exploratory information which has not been described or documented in this report. As the project evolves, we should provide continued consultation and field services during construction to review and monitor the implementation of our recommendations, and to verify that the recommendations have been appropriately interpreted.

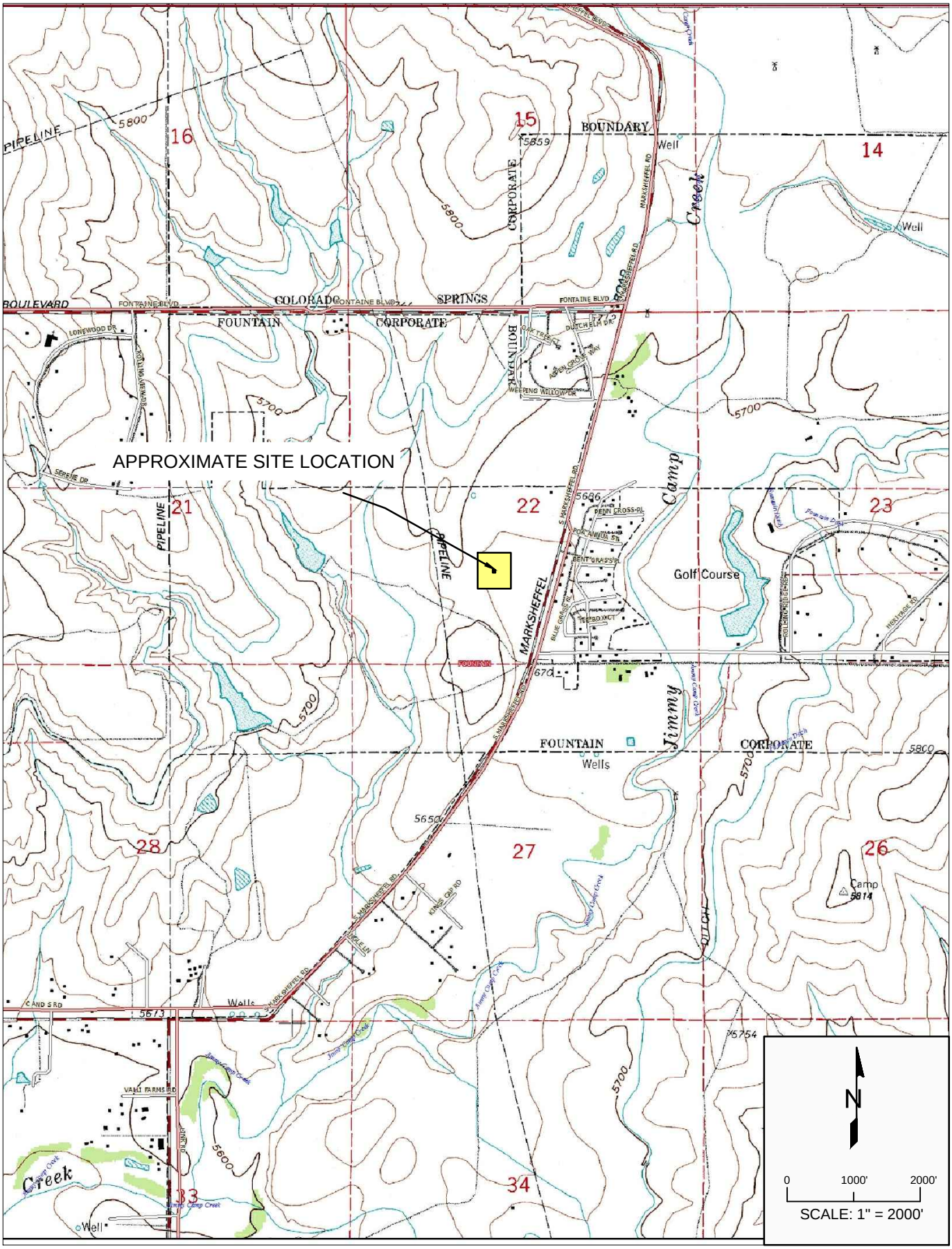
If you have any questions or if we can be of further service, please call. We appreciate the opportunity to have worked on this project.

Sincerely,
HEPWORTH - PAWLAK GEOTECHNICAL, INC.

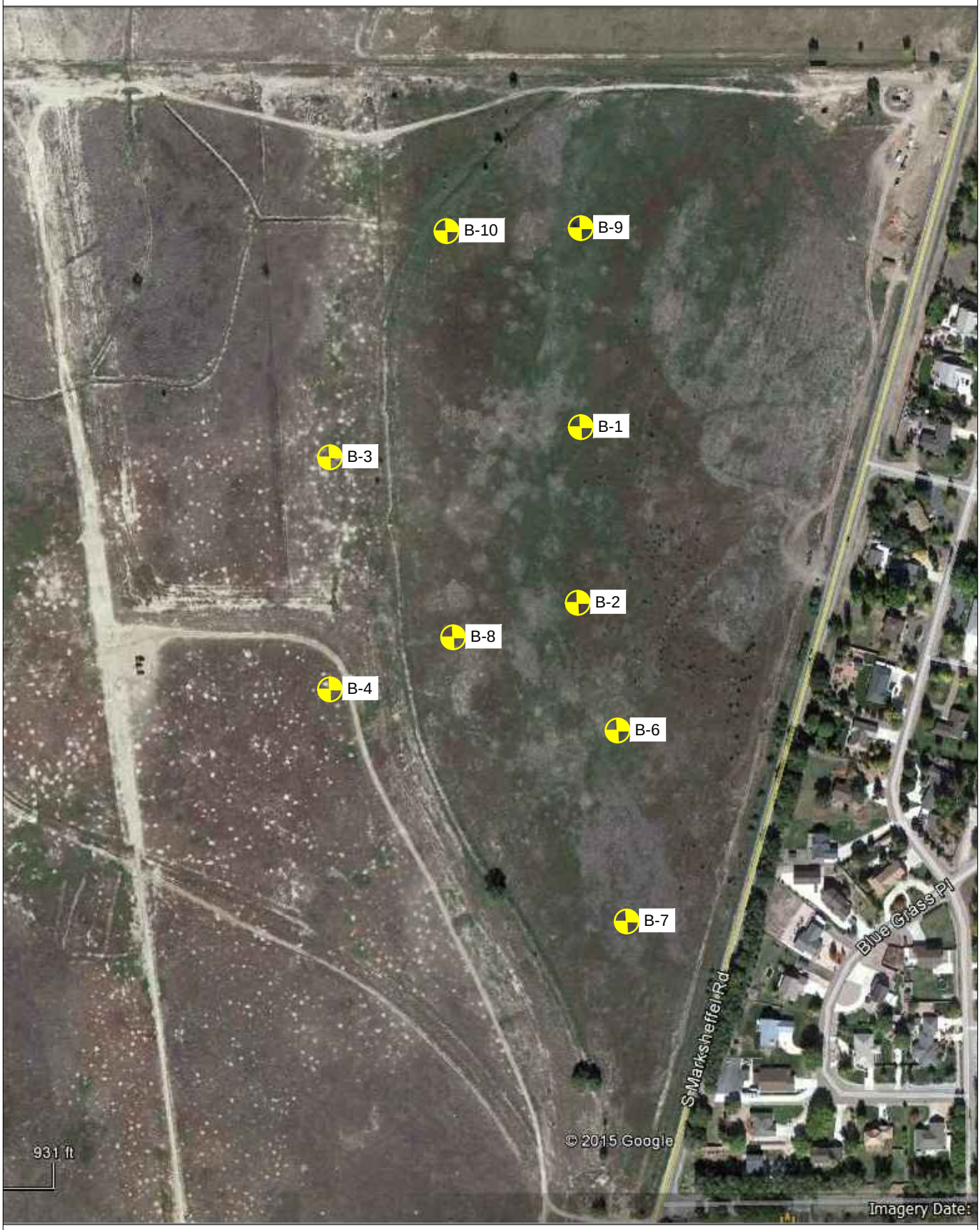
Cuong Vu, Ph.D., P.E.

and

Arben Kalaveshi, P.E.

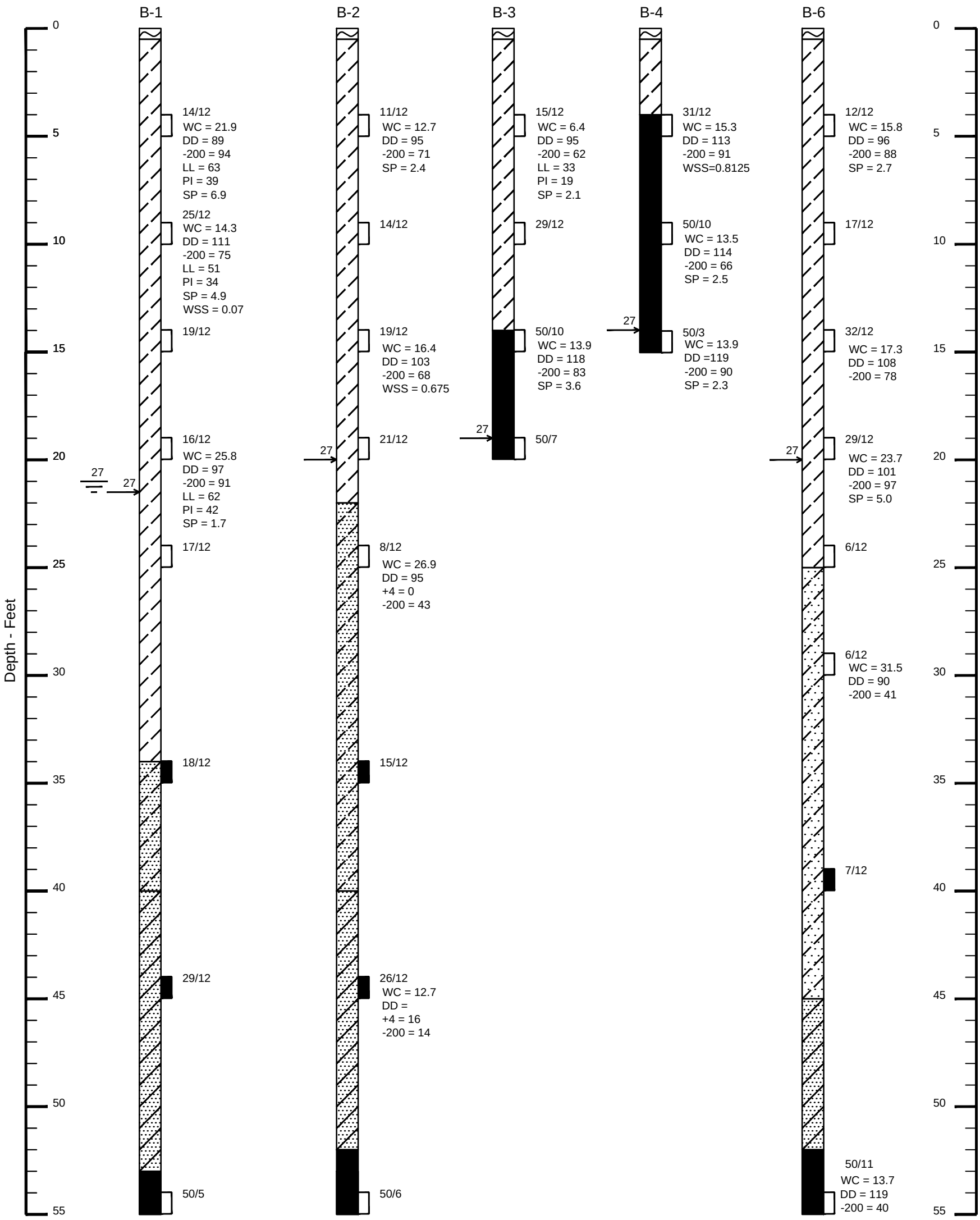


215292A	HEPWORTH-PAWLAK GEOTECHNICAL, Inc.	THE GLEN AT WIDEFIELD, FILING 7 SITE LOCATION	FIG. 1

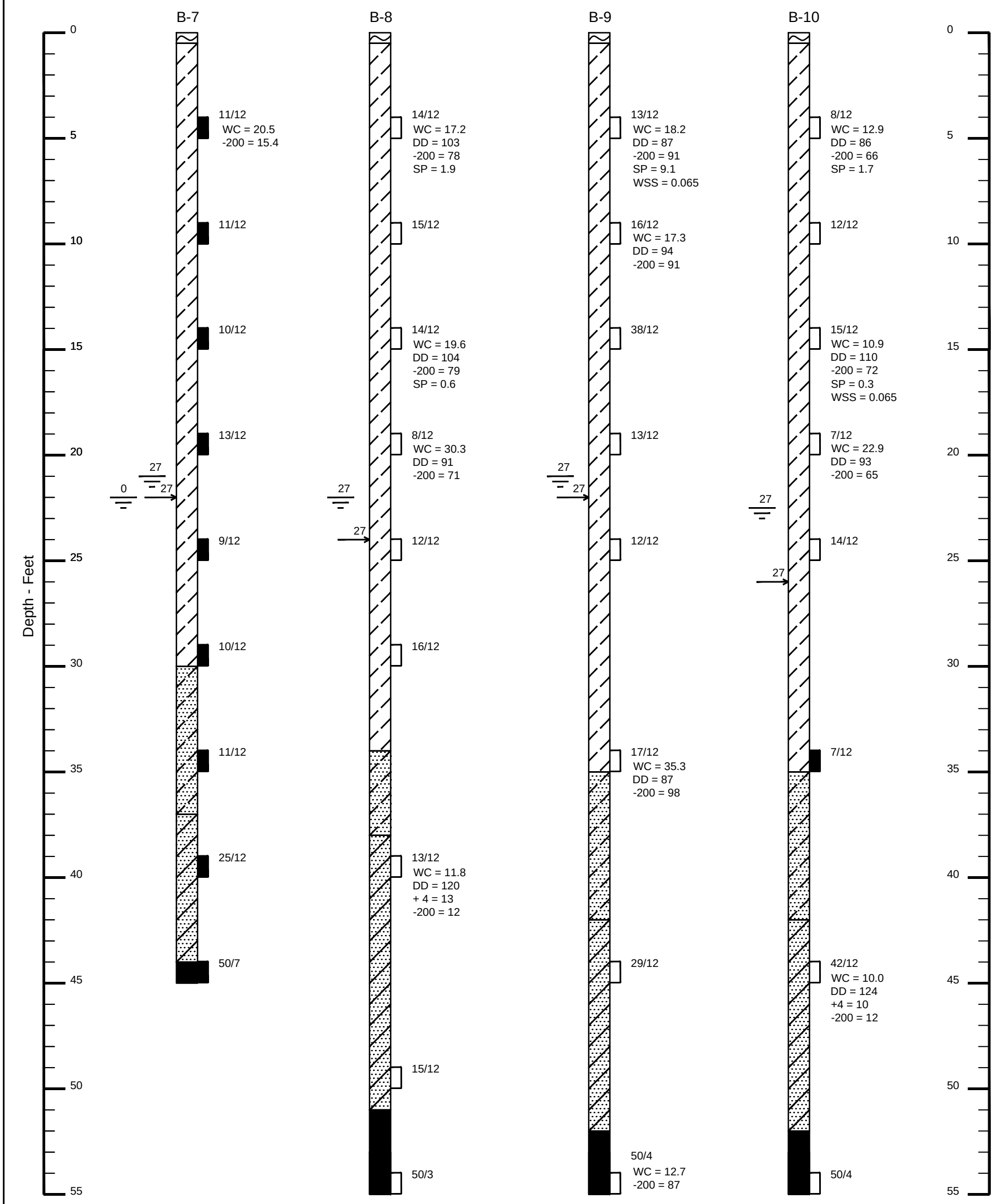


215292A	HEPWORTH-PAWLAK GEOTECHNICAL, Inc.	THE GLEN AT WIDEFIELD, FILING 7 BORING LOCATIONS	FIG. 2

215292A	HEPWORTH-PAWLAK GEOTECHNICAL, Inc.	THE GLEN AT WIDEFIELD, FILING 7 BORING LOCATIONS	FIG. 2a



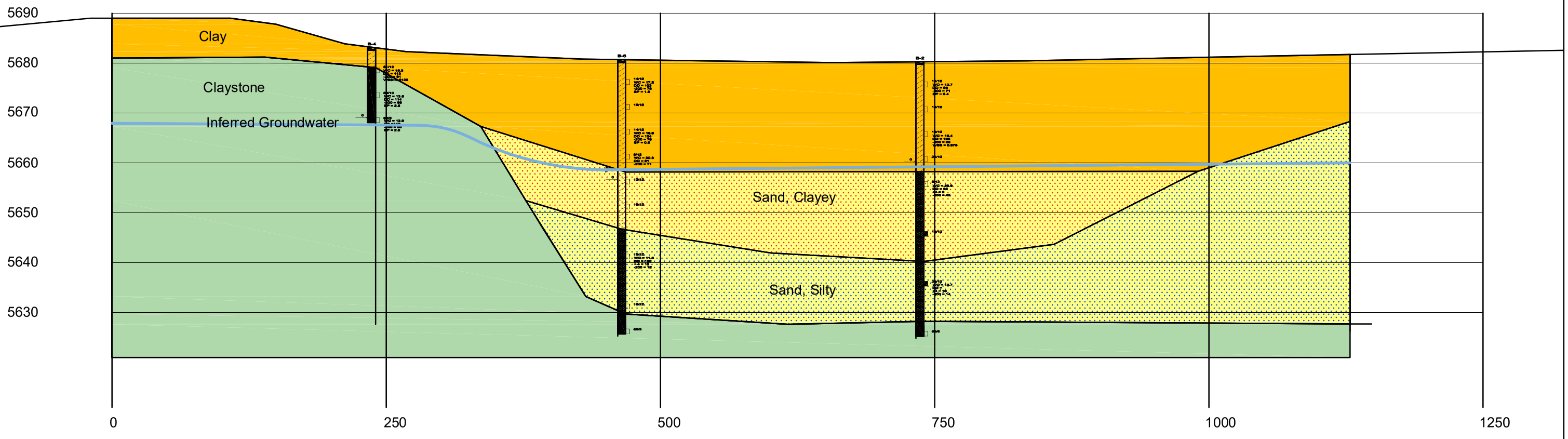
215292A	HEPWORTH-PAWLAK GEOTECHNICAL, Inc.	THE GLEN AT WIDEFIELD, FILING 7 BORING LOGS	FIG. 3



213116A	HEPWORTH-PAWLAK GEOTECHNICAL, Inc.	THE GLEN AT WIDEFIELD, FILING 7 BORING LOGS	FIG. 4

NOTES:

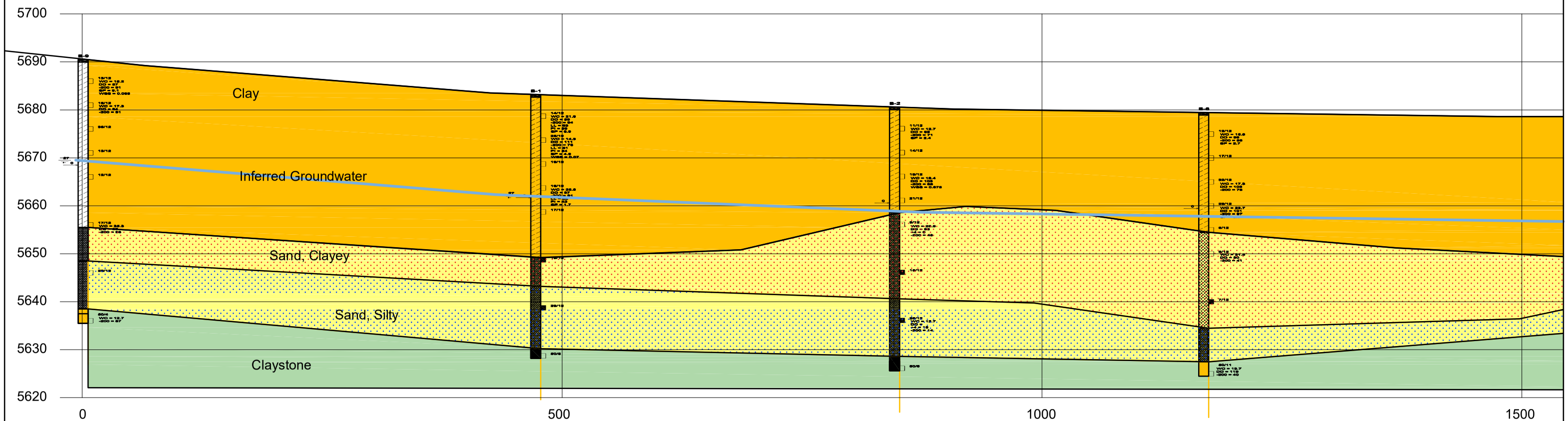
1. The materials shown and their boundaries have been inferred and interpreted from the boring data available and the surface conditions observed, and may differ from the actual subsurface conditions.
2. The surface topography end elevations are approximate.
3. The free water line shown is an extrapolation of the water level shown in boreholes when measured at least 1 day after drilling was completed.



215292A	HEPWORTH-PAWLAK GEOTECHNICAL, Inc.	THE GLEN AT WIDEFIELD, FILING 7 SOIL CROSS SECTIONS	FIG. 4A

NOTES:

1. The materials shown and their boundaries have been inferred and interpreted from the boring data available and the surface conditions observed, and may differ from the actual subsurface conditions.
2. The surface topography end elevations are approximate.
3. The free water line shown is an extrapolation of the water level shown in boreholes when measured at least 1 day after drilling was completed.



215292A	HEPWORTH-PAWLAK GEOTECHNICAL, Inc.	THE GLEN AT WIDEFIELD, FILING 7 SOIL CROSS SECTIONS	FIG. 5

LEGEND

TOPSOIL: Clay (CL), sandy, slightly moist to moist, brown, with grass/weed cover.

CLAY (CL), sandy, fine to medium grained, medium stiff to very stiff, medium plasticity, moist to wet, brown.

SAND (SC), clayey, fine to coarse grained, low plasticity, loose to medium dense, very moist moist to wet, brown.

SAND (SP-SM), silty, gravelly, fine to coarse grained, medium dense, moist, brown.

Claystone, fine grained, medium hard to very hard, moist, brown to blue.

Indicates 1⅜ inch I.D. Split Spoon sampler. 17/12 indicates 17 blows of a 140-pound hammer falling 30 inches were required to drive the sampler 12 inches.

Indicates 2-inch I.D. California sampler. 17/12 indicates 17 blows of a 140-pound hammer falling 30 inches were required to drive the sampler 12 inches.

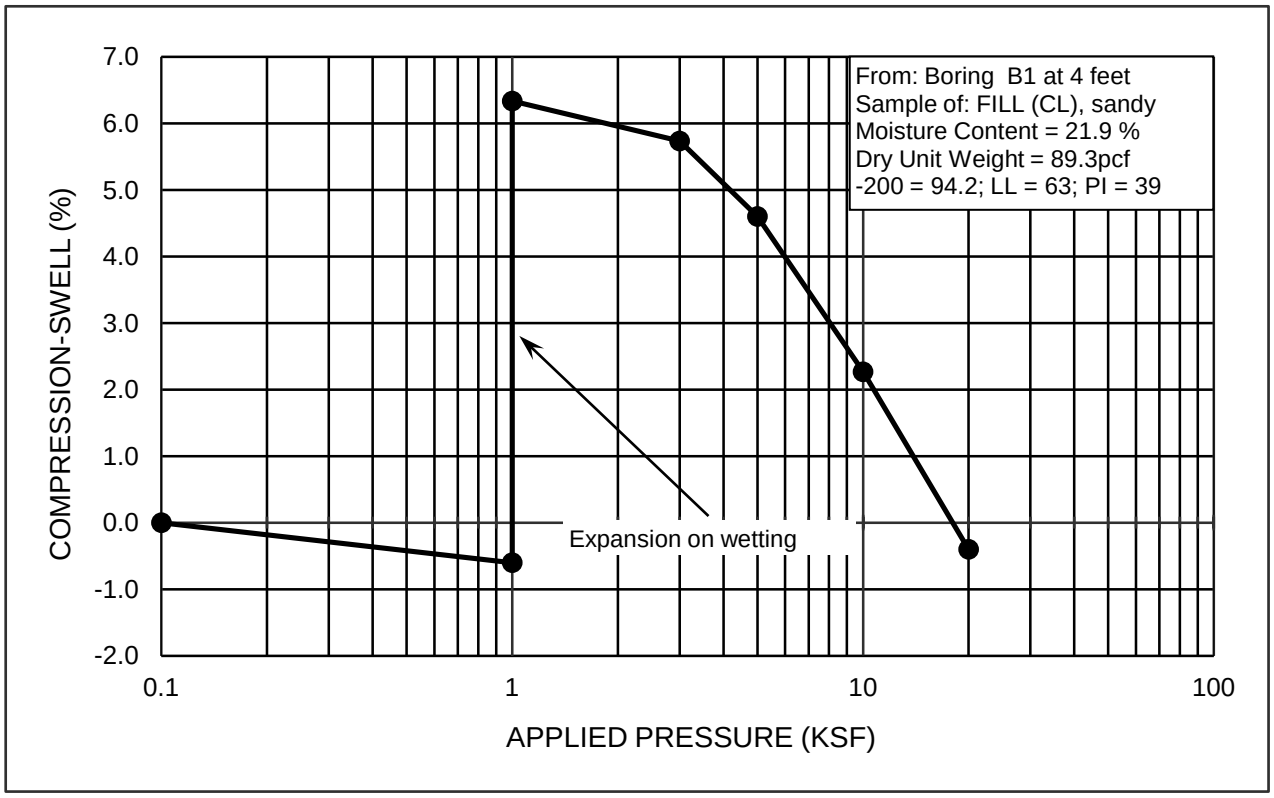
Indicates depth of cave and number of days after drilling measurement was made.

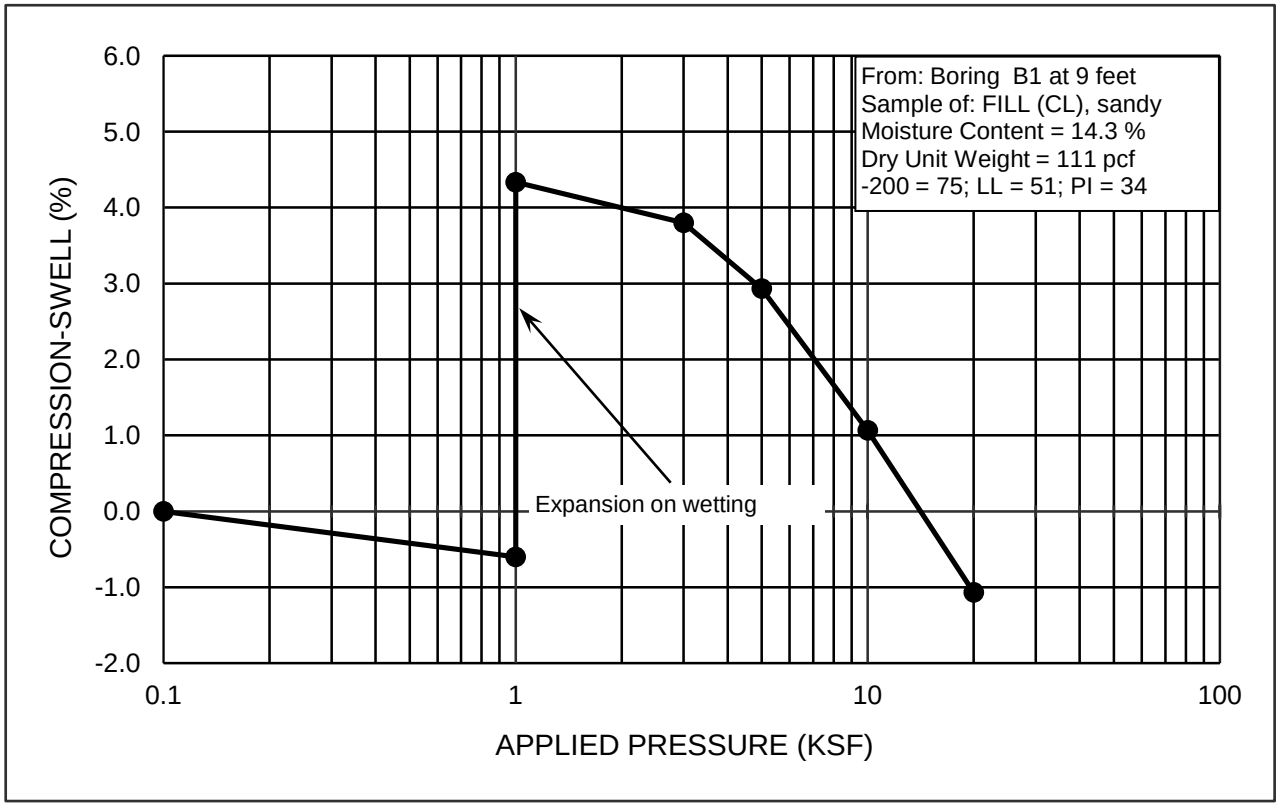
Indicates depth of free water and number of days after drilling measurement was made.

NOTES:

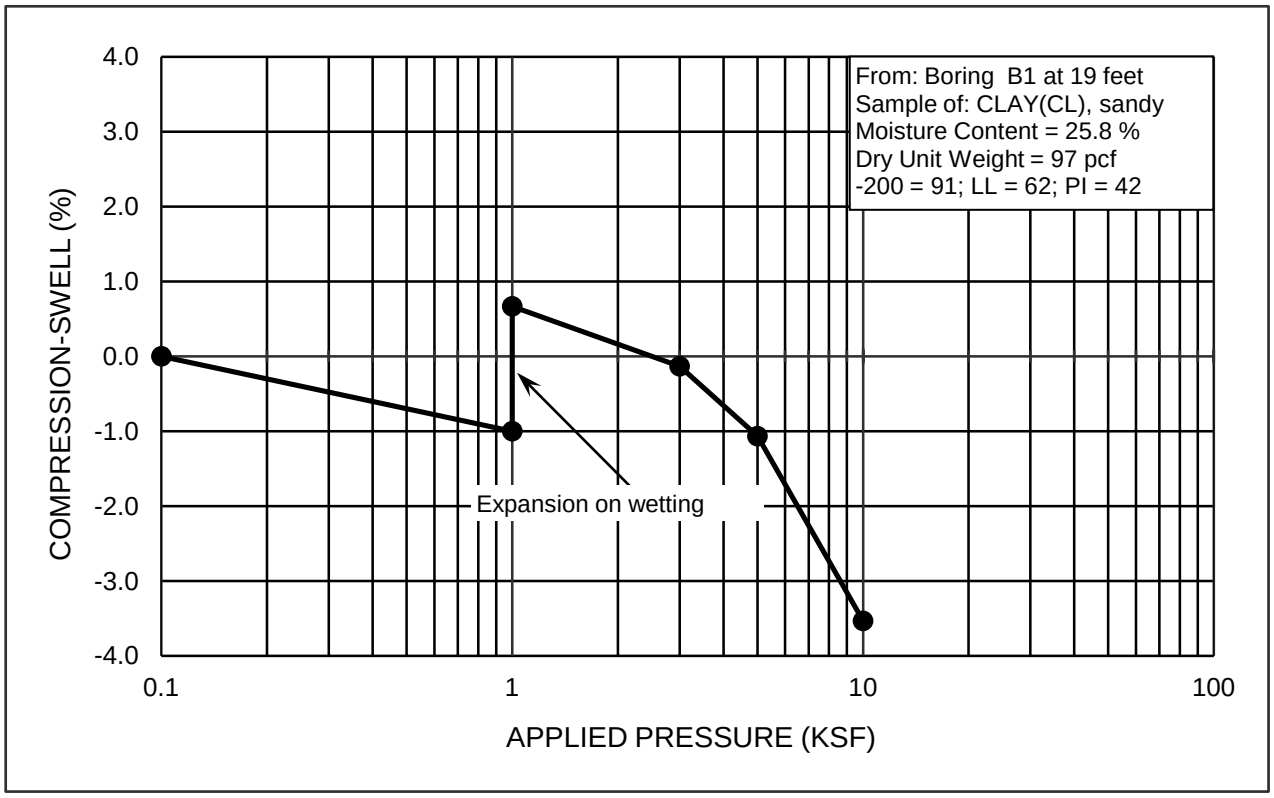
1. FIeld work was conducted on September 23 and 24, 2015. The Boring was drilled and sampled using a truck mounted CME 550X All Terrain Drill Rig.
2. Location of borings shown on Figure 2 are approximate.
3. Elevations of borings were not measured during our site visit.
4. The lines between strata represent approximate boundaries and transitions may be gradual.
5. Laboratory Testing Results:
   - MC=Moisture content (%).
   - DD=Dry density (pcf).
   - +4 = Percent of gravel fraction
   - -200 = Percent of silt and clay fraction.
   - LL = Liquid limit.
   - PI = Plastic index.
   - SP = Percent swell under a surcharge of 1,000 psf when wetted.
   - WSS = Water Soluble Sulfates in Percent.

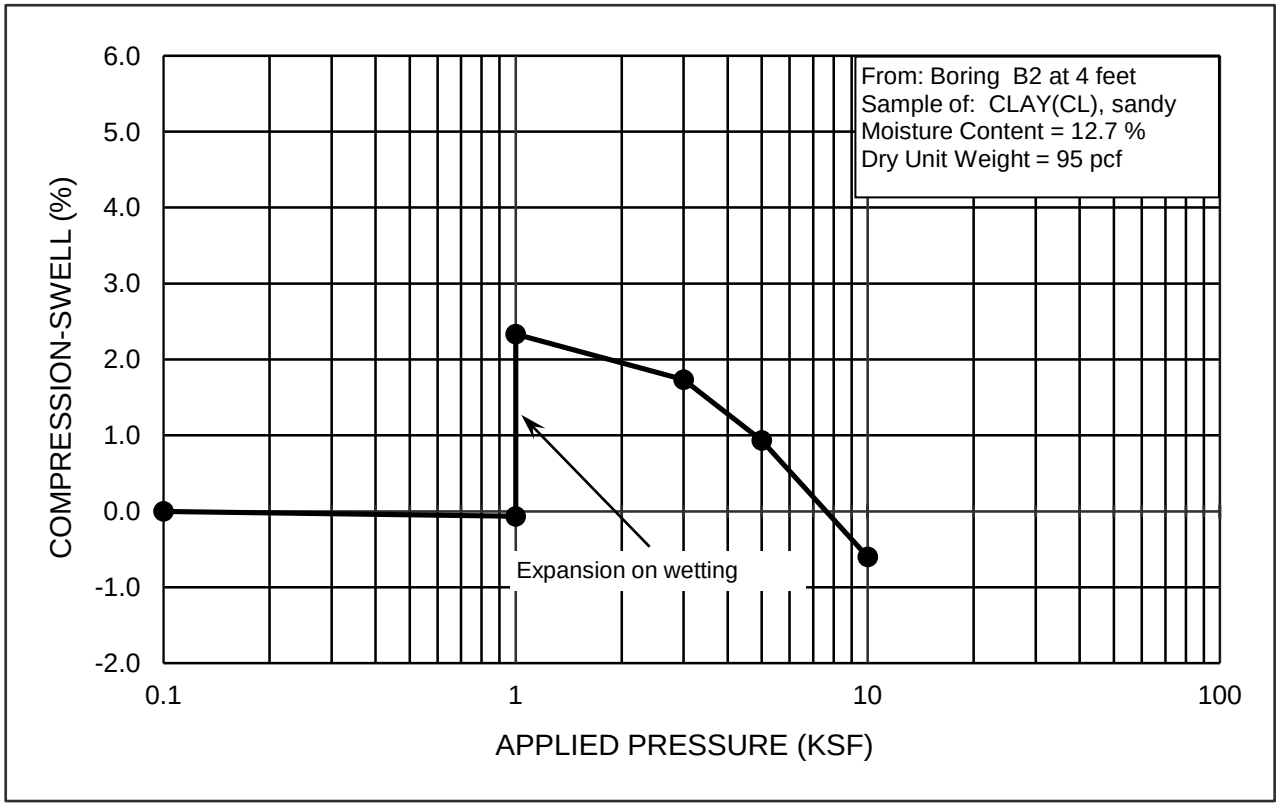
215292A	HEPWORTH-PAWLAK GEOTECHNICAL, Inc.	THE GLEN AT WIDEFIELD, FILING 7 LEGEND AND NOTES	FIG. 5



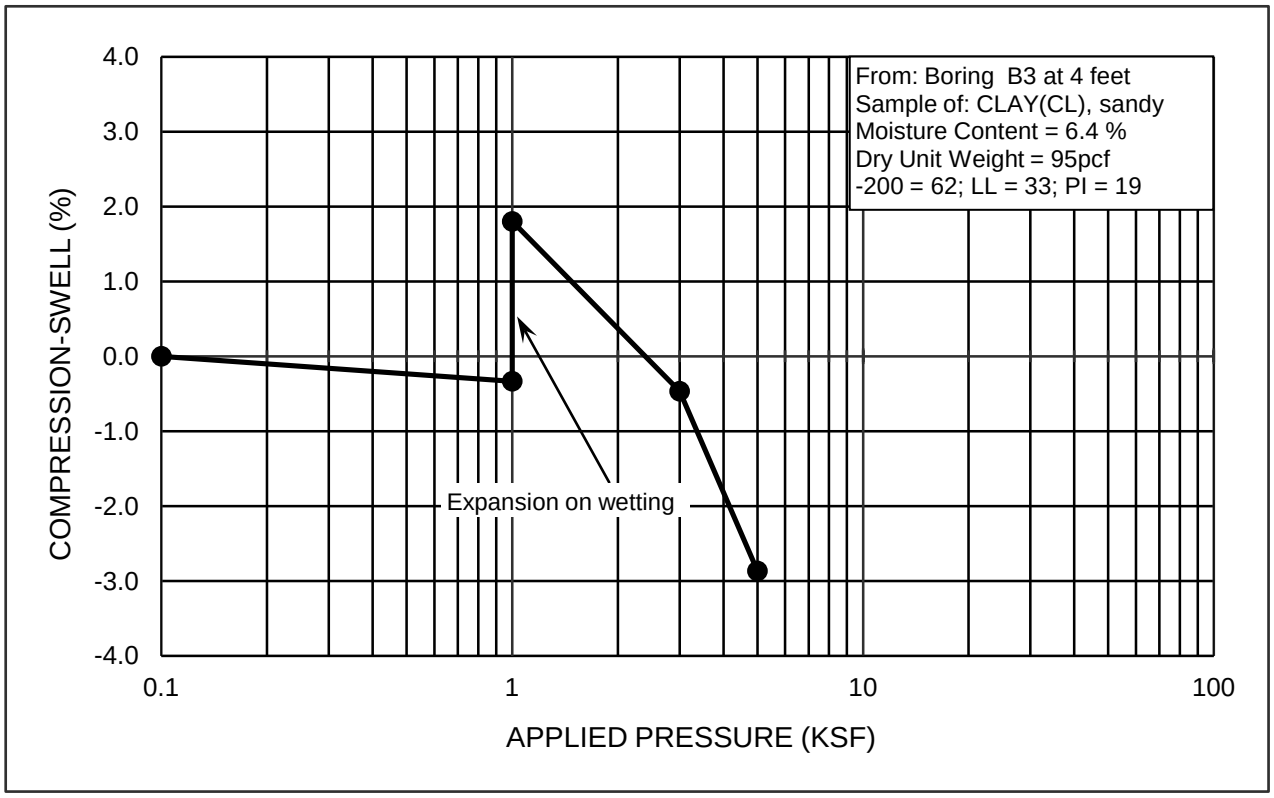


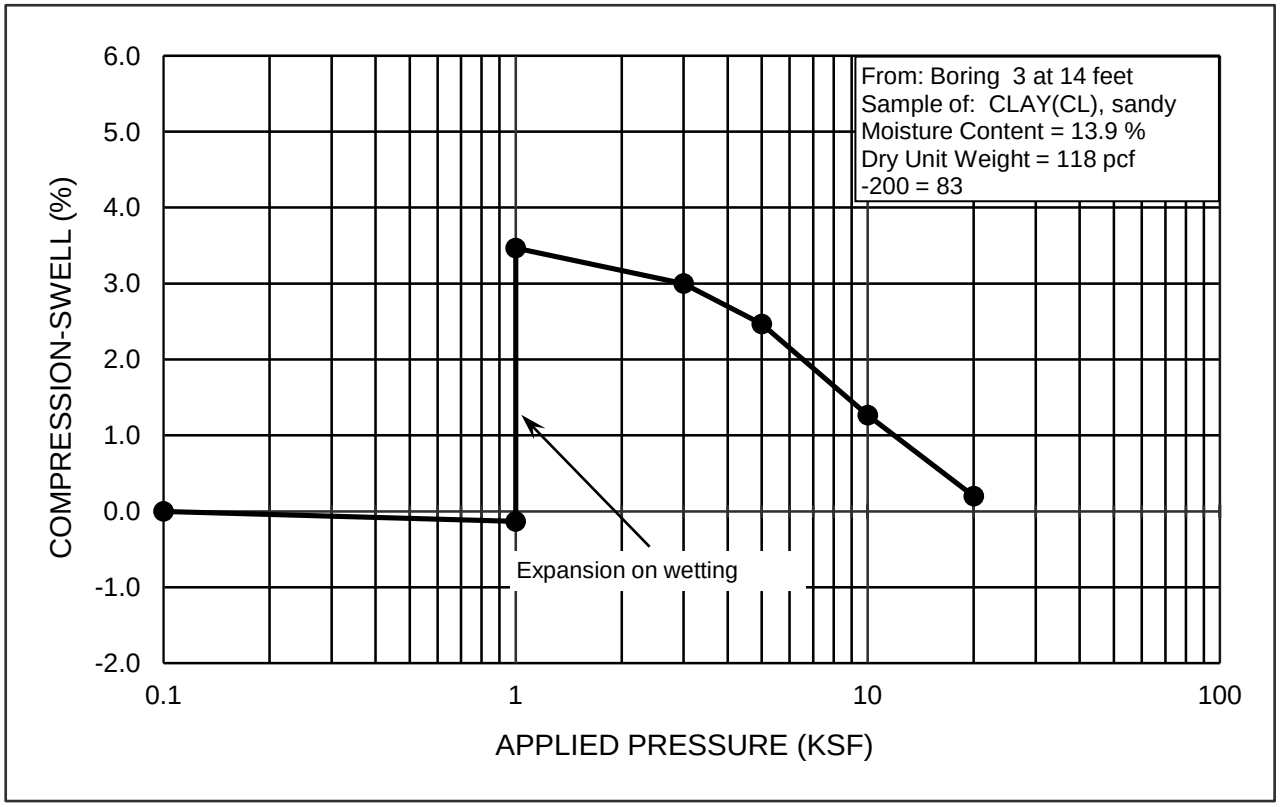
215292A	HEPWORTH-PAWLAK GEOTECHNICAL, INC.	WIDEFIELD SWELL-COMPRESSION TEST RESULTS	FIG. 6



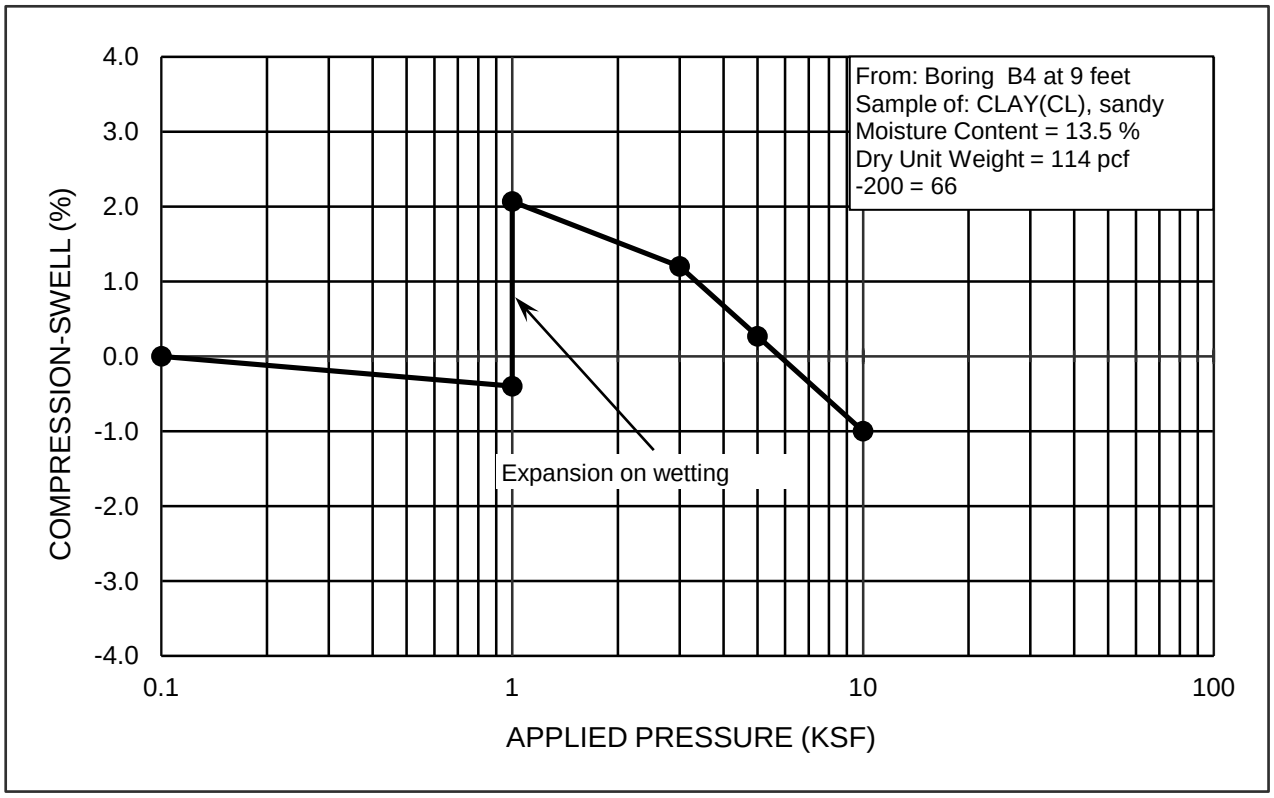


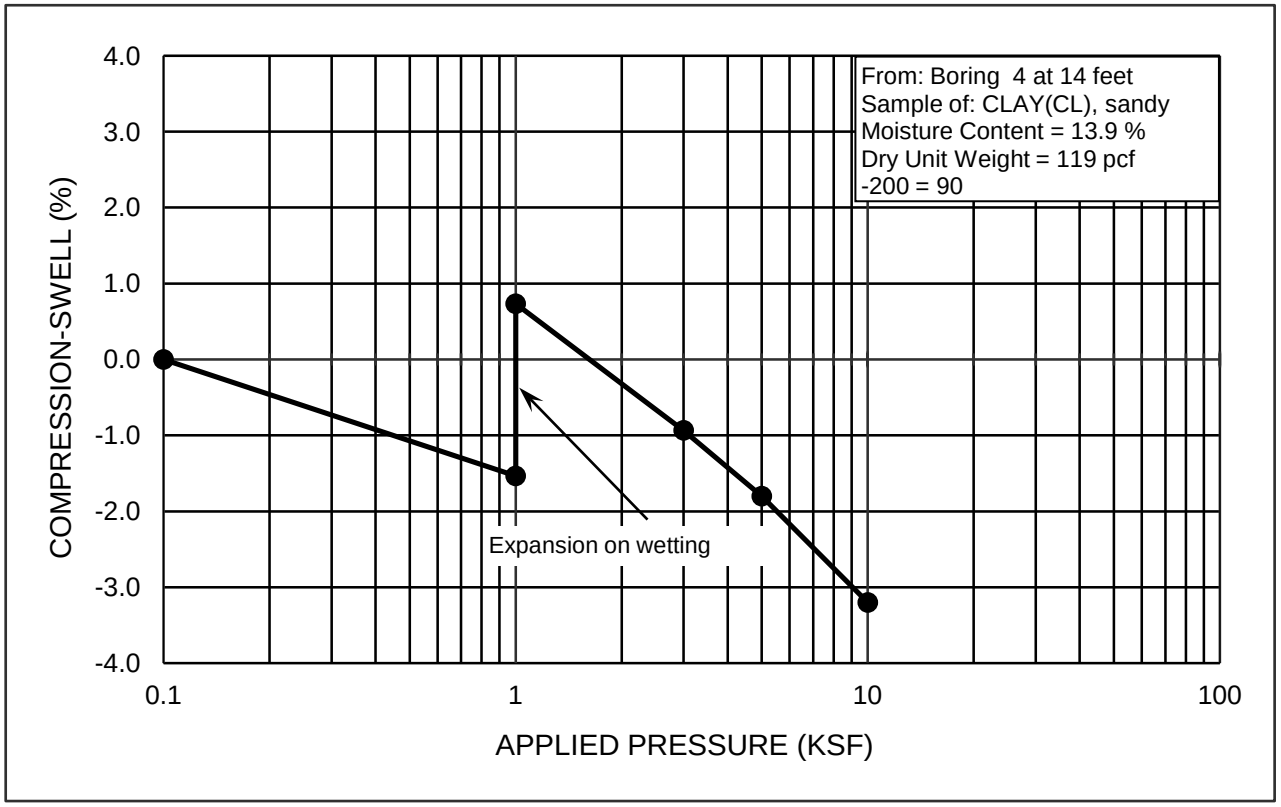
215292A	HEPWORTH-PAWLAK GEOTECHNICAL, INC.	WIDEFIELD SWELL-COMPRESSION TEST RESULTS	FIG. 7



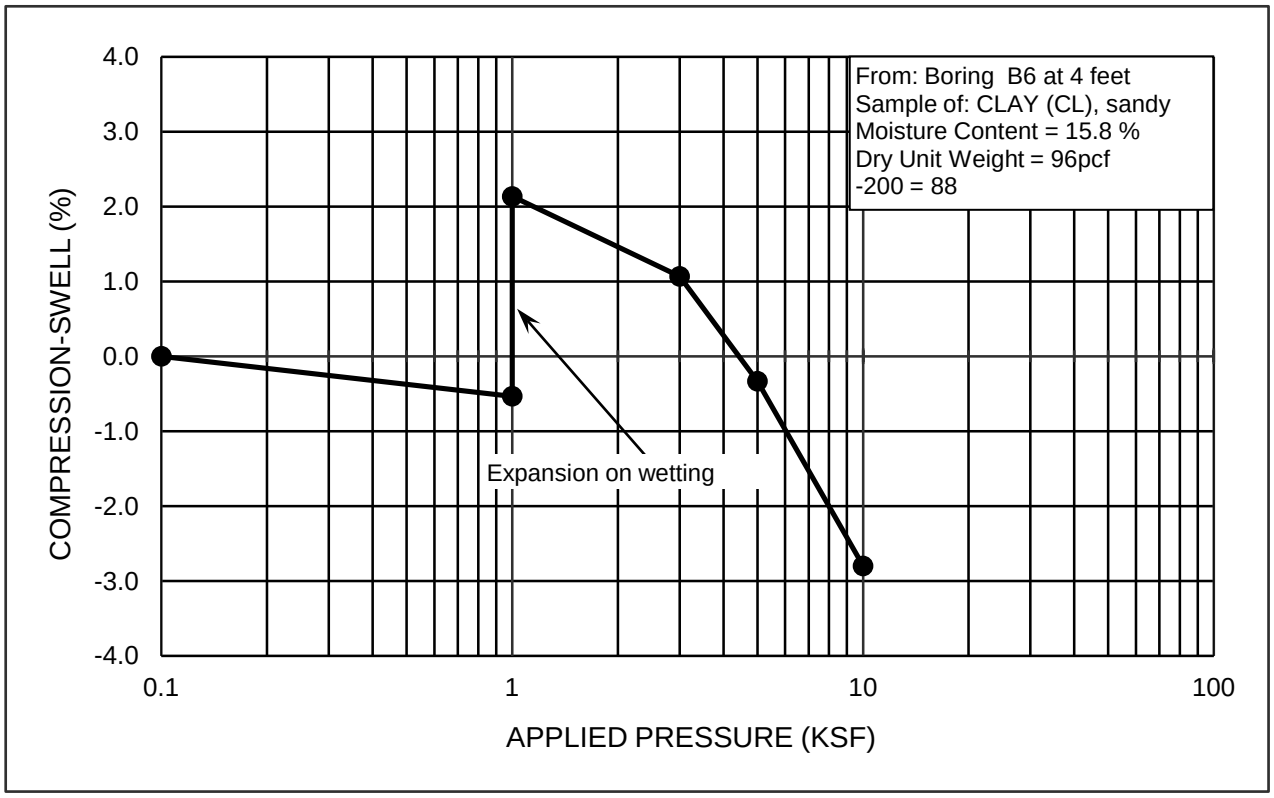


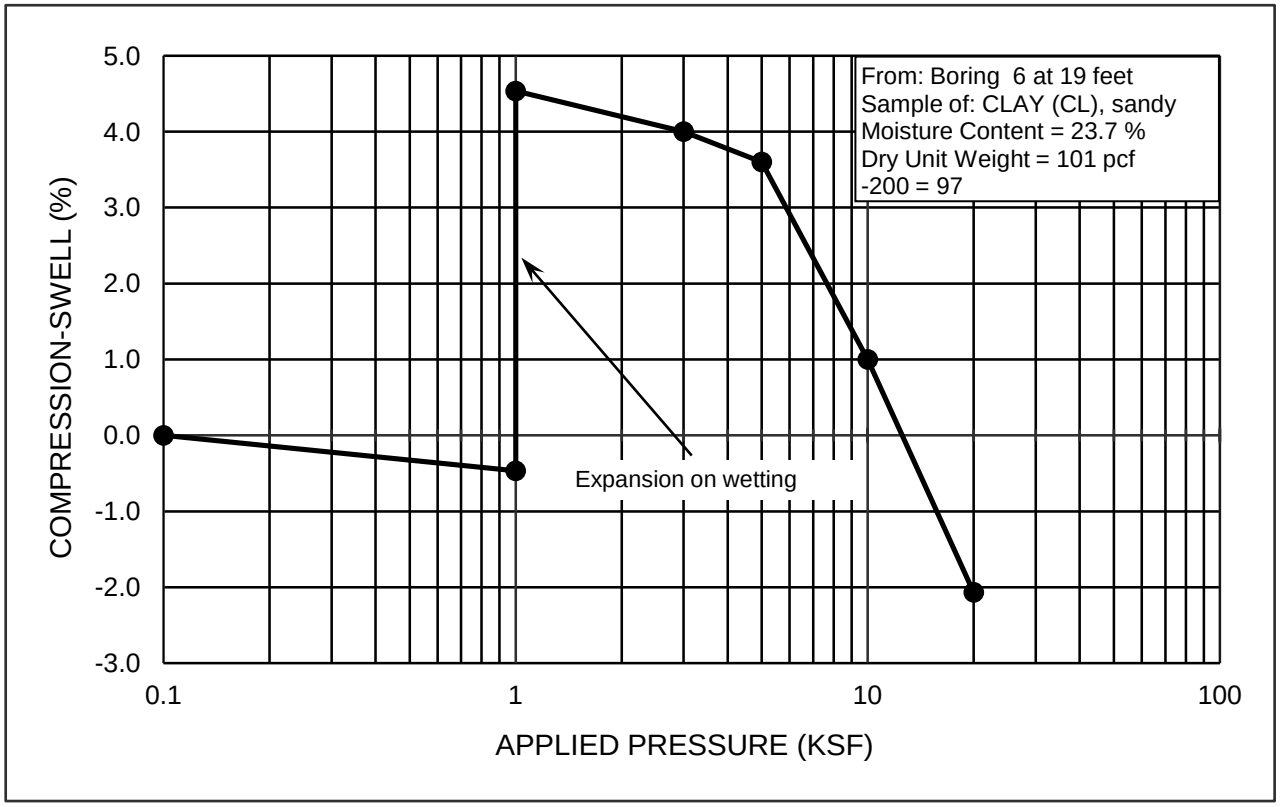
215292A	HEPWORTH-PAWLAK GEOTECHNICAL, INC.	WIDEFIELD SWELL-COMPRESSION TEST RESULTS	FIG. 8



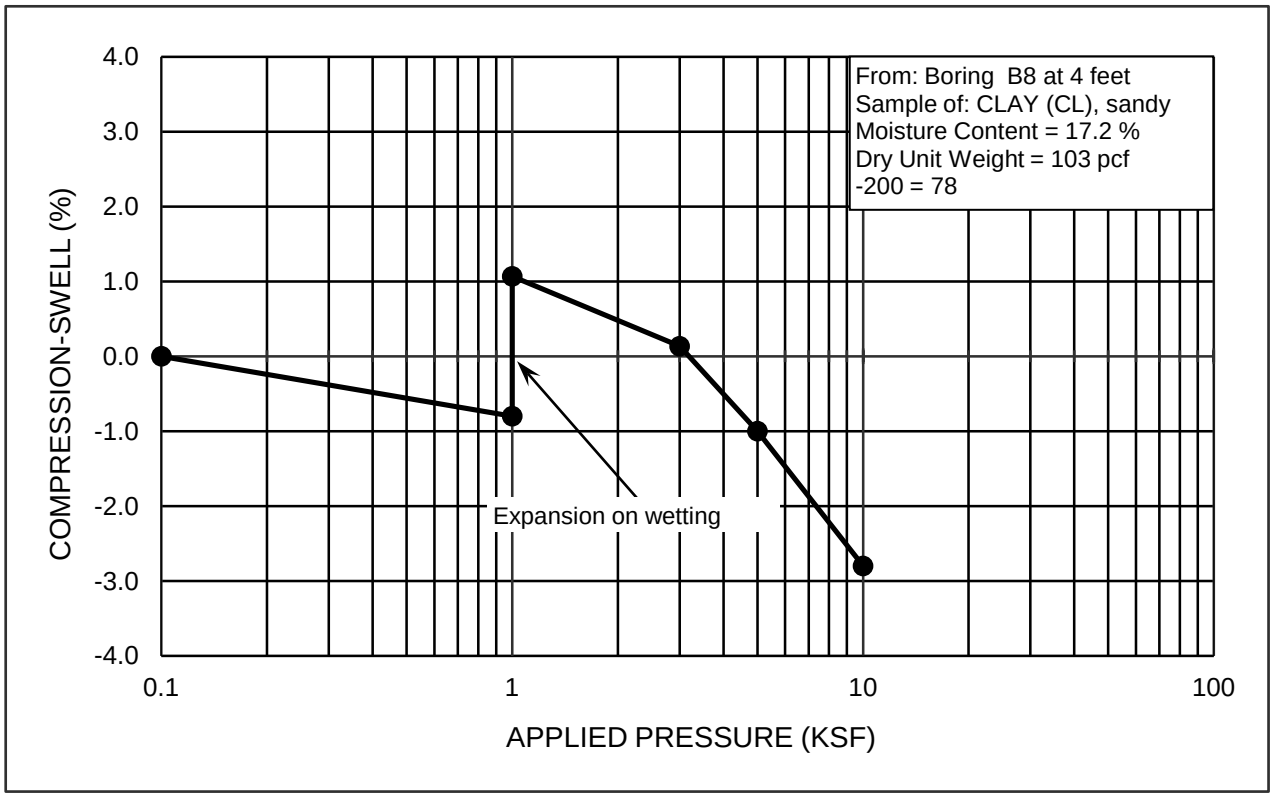


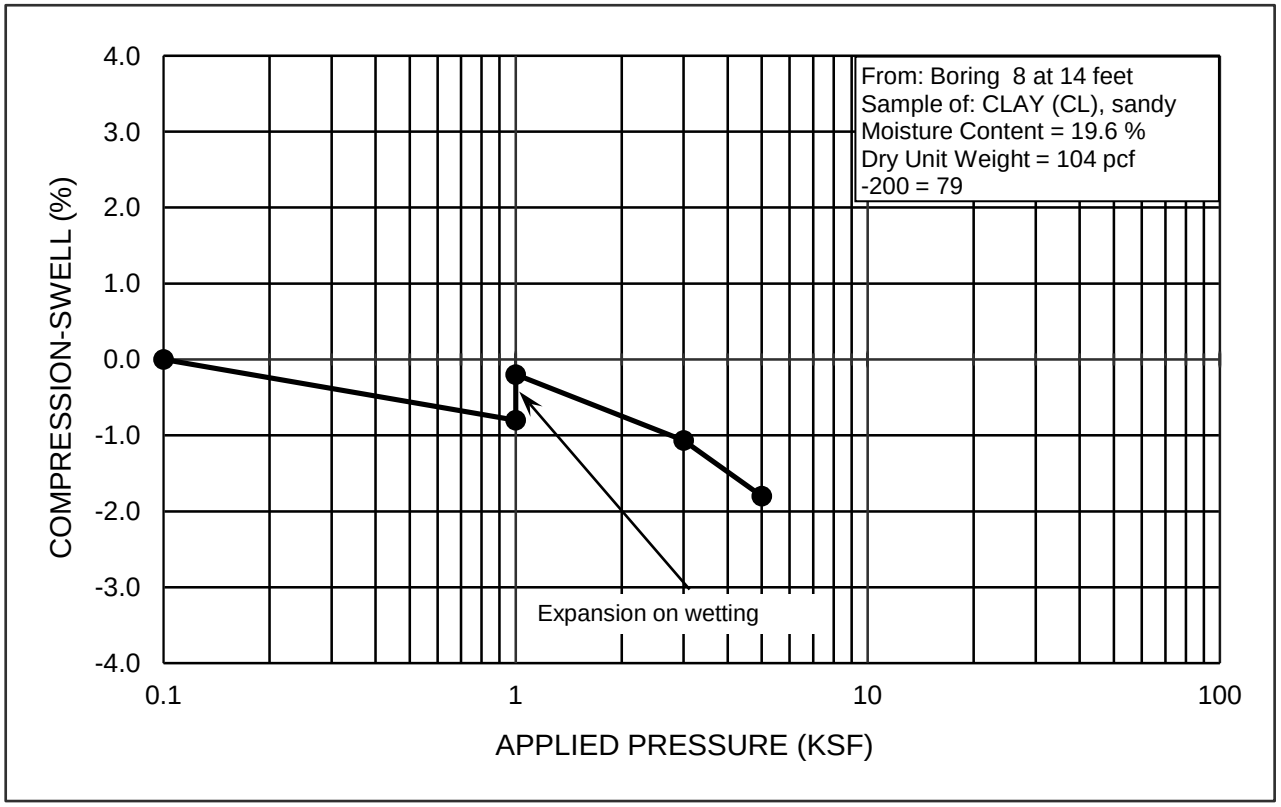
215292A	HEPWORTH-PAWLAK GEOTECHNICAL, INC.	WIDEFIELD SWELL-COMPRESSION TEST RESULTS	FIG. 9



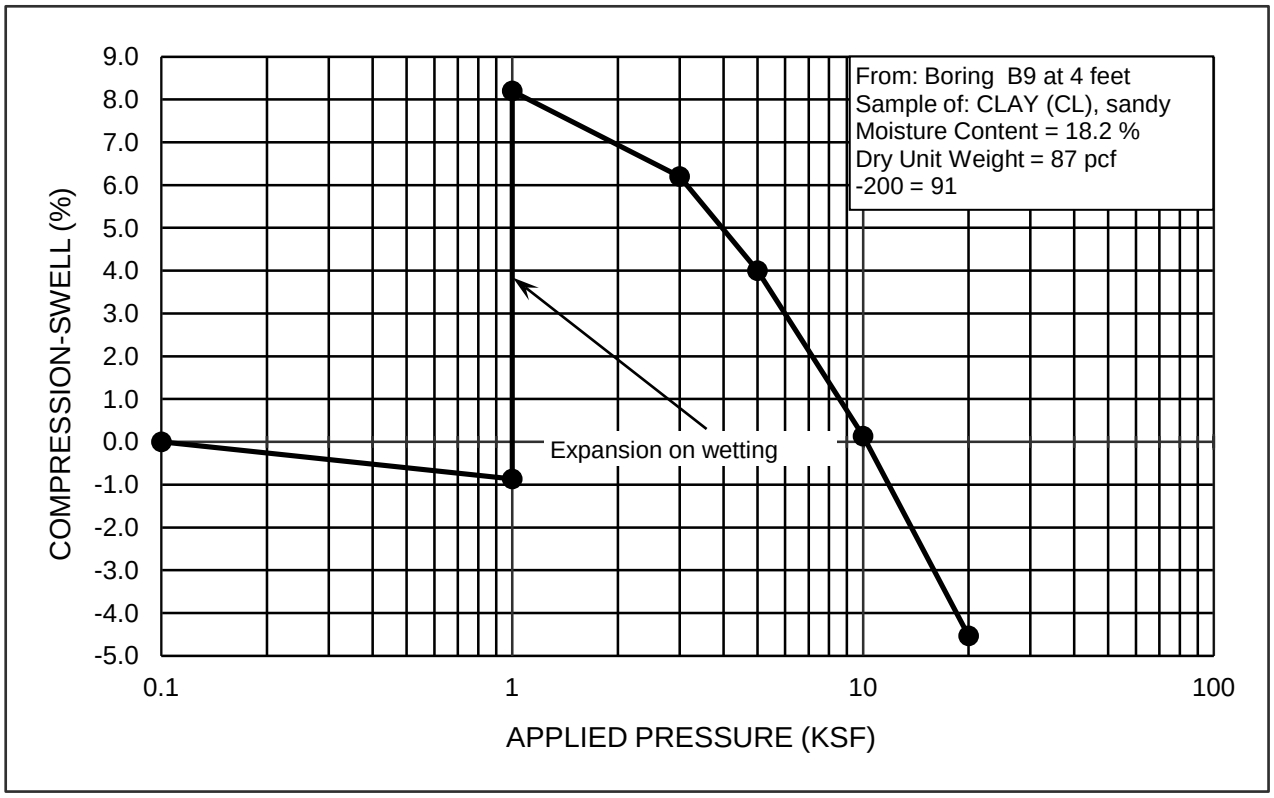


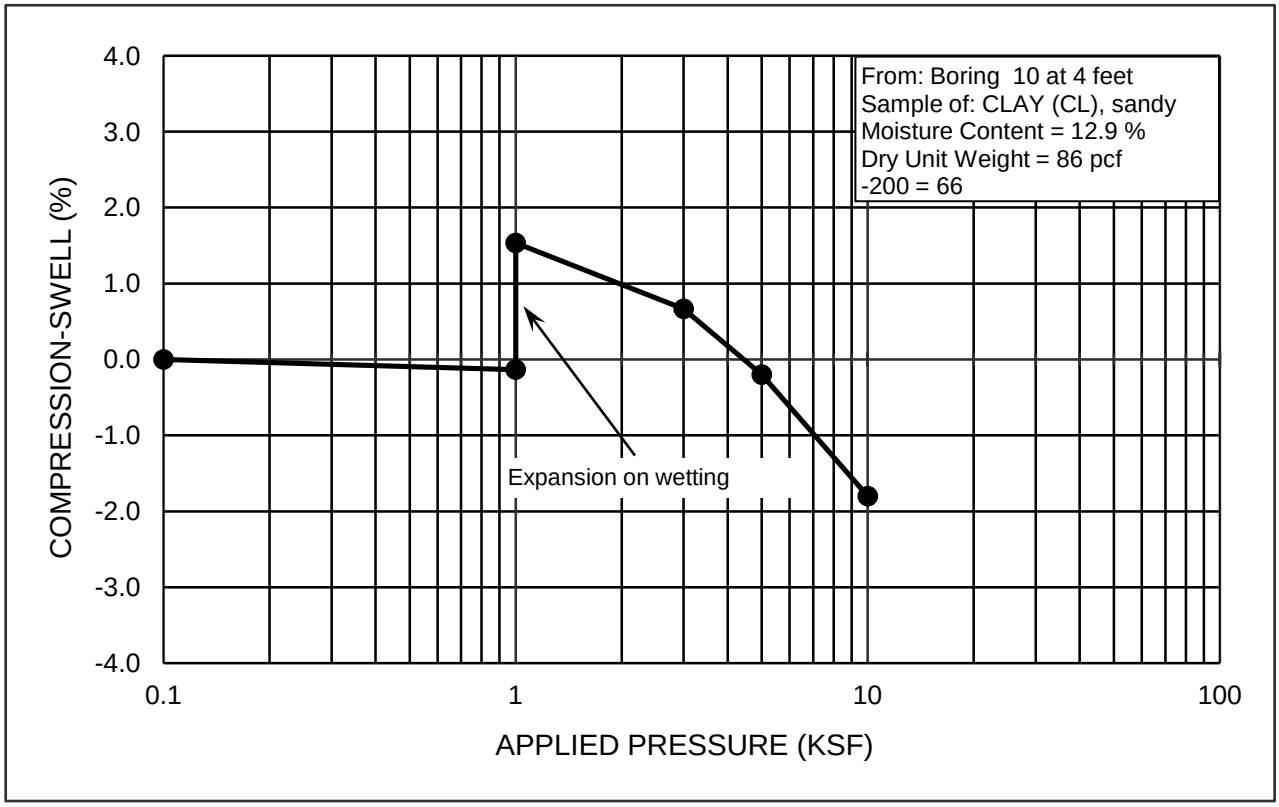
215292A	HEPWORTH-PAWLAK GEOTECHNICAL, INC.	WIDEFIELD SWELL-COMPRESSION TEST RESULTS	FIG. 10



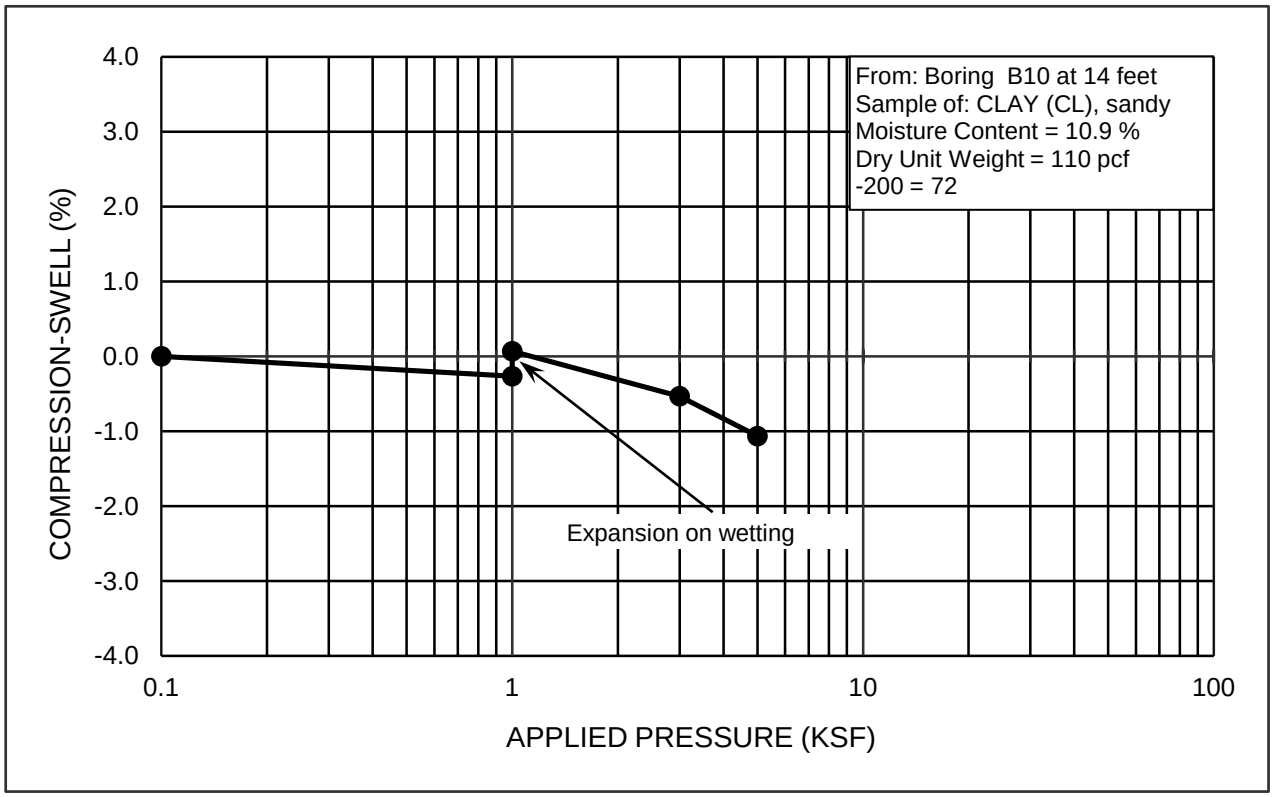


215292A	HEPWORTH-PAWLAK GEOTECHNICAL, INC.	WIDEFIELD SWELL-COMPRESSION TEST RESULTS	FIG. 11

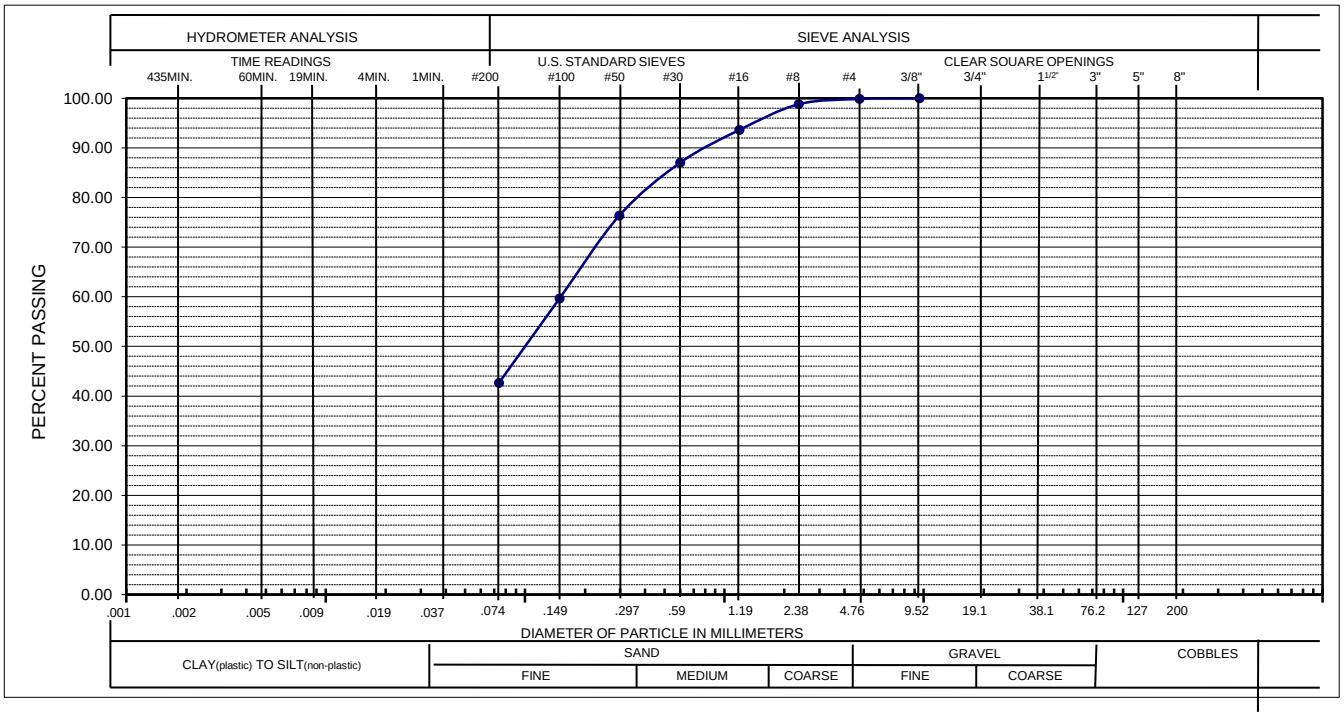




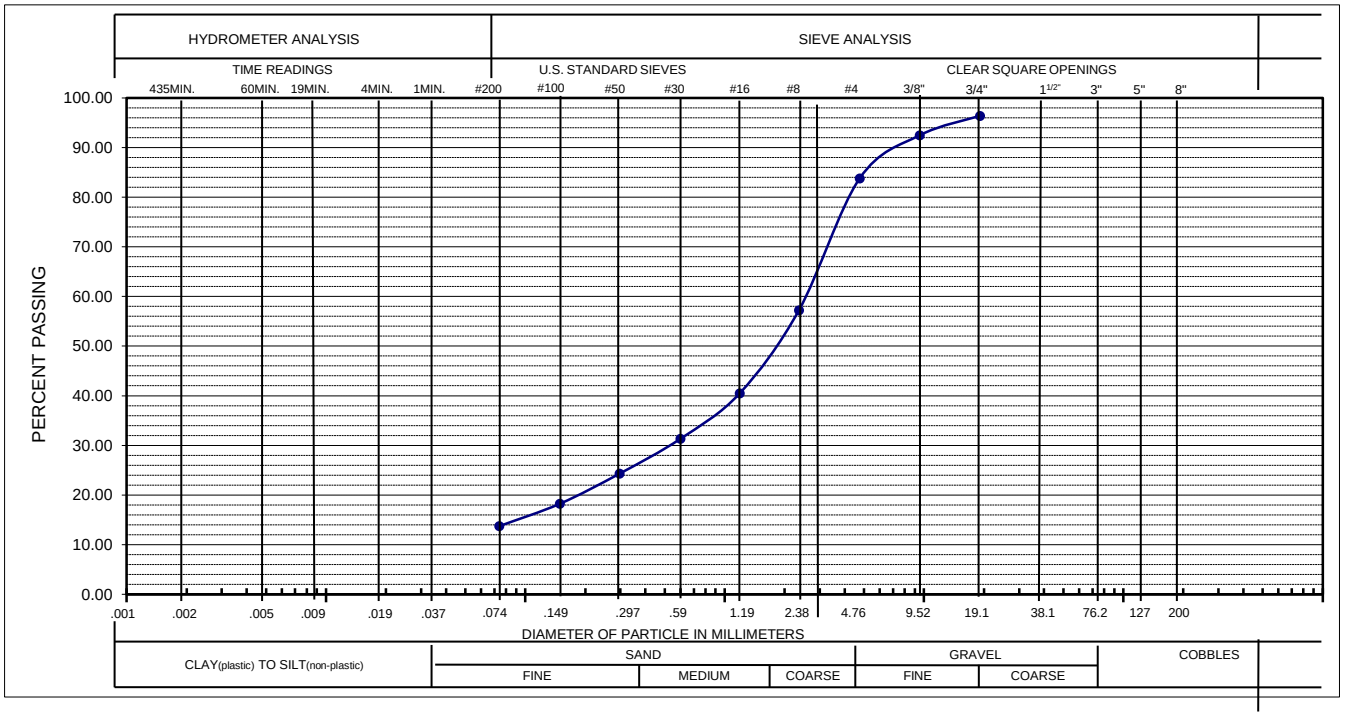
215292A	HEPWORTH-PAWLAK GEOTECHNICAL, INC.	WIDEFIELD SWELL-COMPRESSION TEST RESULTS	FIG. 12



215292A	HEPWORTH-PAWLAK GEOTECHNICAL, INC.	WIDEFIELD SWELL-COMPRESSION TEST RESULTS	FIG. 13

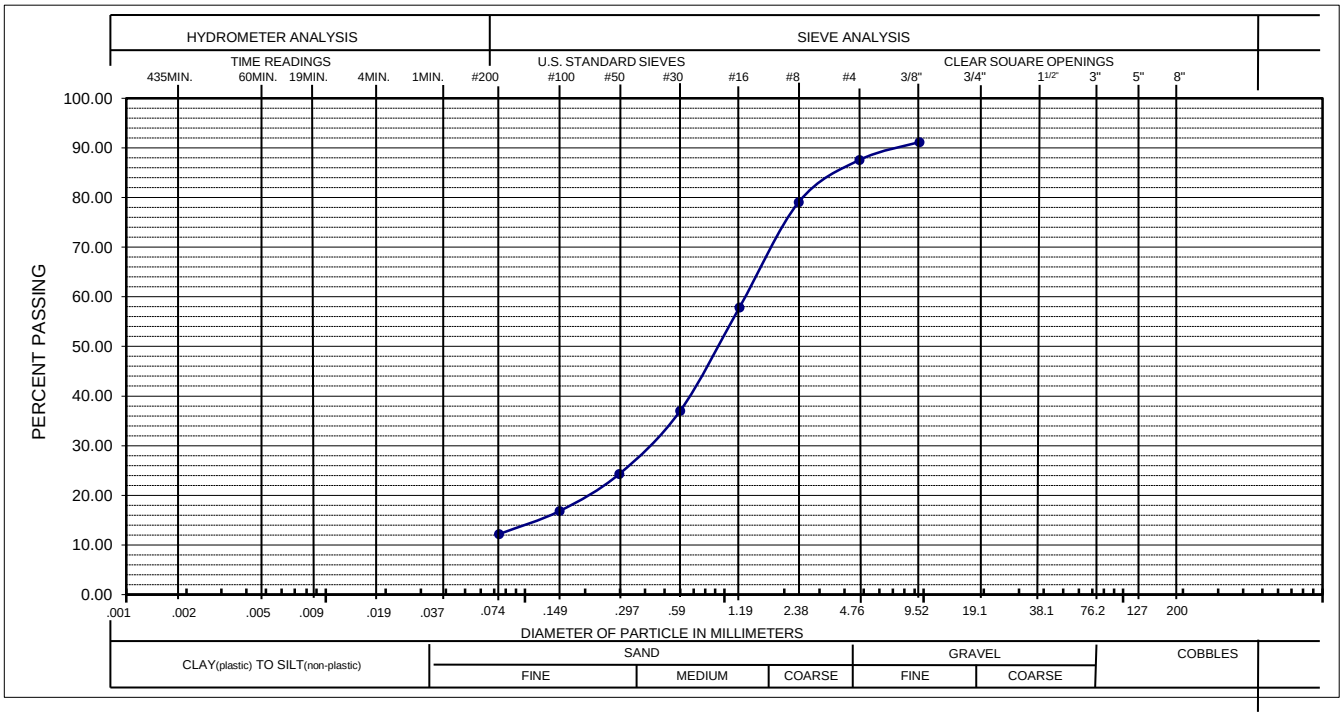


GRAVEL: 0% SAND: 57% SILT AND CLAY: 43%
LIQUID LIMIT: PLASTICITY INDEX:
SAMPLE OF: SAND (SC), clayey FROM: B2 @ 24 feet

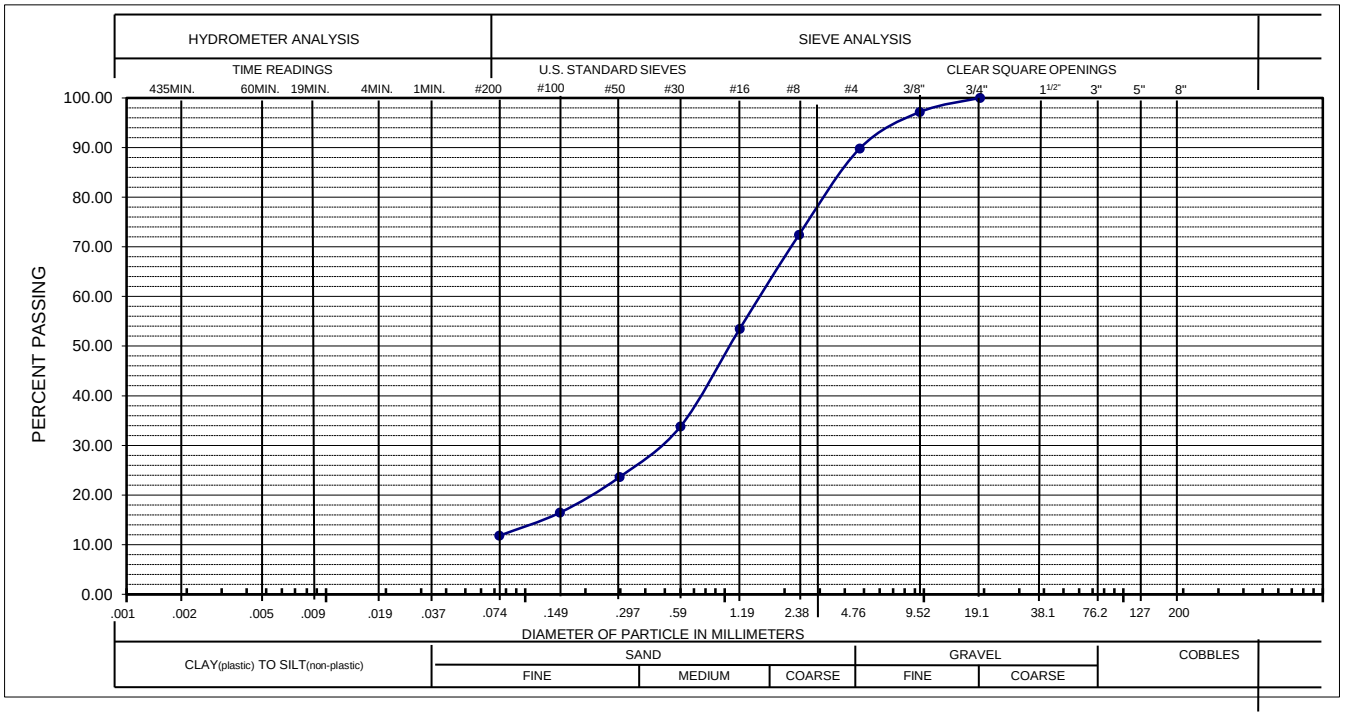


GRAVEL: 16% SAND: 70% SILT AND CLAY: 14%
LIQUID LIMIT: PLASTICITY INDEX:
SAMPLE OF: SAND (SP-SM), gravelly, silty FROM: B2 @ 44 feet

215292A	HEPWORTH-PAWLAK GEOTECHNICAL, INC.	WIDEFIELD GRADATION ANALYSIS	FIG. 14



GRAVEL: 13% SAND: 75% SILT AND CLAY: 12%
LIQUID LIMIT: PLASTICITY INDEX:
SAMPLE OF: SAND (SP-SM), gravelly, sandy FROM: B8 @ 39 feet



GRAVEL: 10% SAND: 78% SILT AND CLAY: 12%
LIQUID LIMIT: PLASTICITY INDEX:
SAMPLE OF: SAND (SP-SM), gravelly, silty FROM: B2 @ 44 feet

215292A	HEPWORTH-PAWLAK GEOTECHNICAL, INC.	WIDEFIELD GRADATION ANALYSIS	FIG. 15

HEPWORTH-PAWLAK GEOTECHNICAL, INC.

JOB NO. 215292A

PROJECT: WIDEFIELD

TABLE 1

SUMMARY OF LABORATORY TEST RESULTS

SAMPLE LOCATION		NATURAL MOISTURE CONTENT (%)	NATURAL DRY UNIT WEIGHT (PCF)	GRADATION			ATTERBERG LIMITS		SWELL/COMP WITH 1,000 psf SURCHARGE (%)	WATER SOLUBLE SULFATES (%)	SOIL OR BEDROCK TYPE (USCS CLASSIFICATION)
BORING	DEPTH (feet)			GRAVEL (%)	SAND (%)	SILT & CLAY (%)	LIQUID LIMIT (%)	PLASTIC INDEX (%)			
B-1	4	21.9	89			94	63	39	6.9		CLAY (CL), sandy
	9	14.3	111			75	51	34		0.07	CLAY (CL), sandy
	19	25.8	97			91	62	42	1.7		CLAY (CL), sandy
B-2	4	12.7	95			71			2.4		CLAY (CL), sandy
	14	16.4	103			68				0.675	CLAY (CL), sandy
	24	26.9	95	0	57	43					SAND (SM), silty
	44	12.7		16	70	14					SAND (SP-SM), gravelly, silty
B-3	4	6.4	95			62	33	19	2.1		CLAY (CL), sandy
	14	13.9	118			83			3.6		CLAYSTONE
B-4	4	15.3	113			91				0.813	CLAYSTONE
	9	13.5	114			66			2.5		CLAYSTONE
	14	13.9	118			83			2.3		CLAYSTONE
B-6	4	15.8	96			88			2.7		CLAY (CL), sandy
	14	17.3	108			78					CLAY (CL), sandy
	19	23.7	101			97			5.0		CLAY (CL), sandy
	29	31.5	90			41					SAND (SC), clayey
	54	13.7	119			40					CLAYSTONE
B-7	34	20.5	15								CLAY (CL), sandy
B-8	4	17.2	103			78			1.9		CLAY (CL), sandy
	14	19.6	104			79			0.6		CLAY (CL), sandy
	19	30.3	91			71					CLAY (CL), sandy
	39	11.8	120	13	75	12					SAND (SP-SM), gravelly, silty
B-9	4	18.2	87			91			9.1	0.065	CLAY (CL), sandy
	9	17.3	94			91					CLAY (CL), sandy
	34	35.3	87			98					CLAY (CL), sandy
	54	12.7				87					CLAYSTONE
B-10	4	12.9	86			66			1.7		CLAY (CL), sandy
	14	10.9	110			72			0.3	0.065	CLAY (CL), sandy
	19	22.9	93			65					CLAY (CL), sandy
	44	10.0	124	10	88	12					SAND (SC), clayey