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American Fork City
51 East Main
American Fork UT 84003

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ANDREA ALLEN
UTAH COUNTY RECORDER
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RECORDED FOR AMERICAN FORK CITY

NOTICE OF INTEREST, BUILDING REQUIREMENTS, AND ESTABLISHMENT OF RESTRICTIVE COVENANTS

This Notice is recorded to bind the attached Geotechnical Study dated 3/10/21 along with the site grading plan to the property generally located at Stonecreek Plat F (address), American Fork, UT 84003 and therefore mandating that all construction be in compliance with said Geotechnical Study and site grading plan per the requirements of American Fork City ordinances and standards and specification including specifically Ordinance 07-10-47, Section 6-5, Restrictive Covenant Required and 6-2-4, Liquefiable Soils. Said Sections require establishment of a restrictive covenant and notice to property owners of liquefiable soils or other unique soil conditions and construction methods associated with the property.

Exhibit A – Legal Description of Property
Exhibit B – Geotechnical Study
Exhibit C – Site Grading Plan

Dated this 10 day of March, 20 21.

OWNER(S):

(Signature) (Signature)

Ginger Romriell
(Printed Name) (Printed Name)

(Title) (Title)

STATE OF UTAH)
§
COUNTY OF Utah)

On the 10 day of March, 20 21, personally appeared before me Ginger Romriell and _____, Owner(s) of said Property, as (individuals and/or authorized representatives of a company), and acknowledged to me that such individuals or company executed the within instrument freely of their own volition and pursuant to the articles of organization where applicable.

CADE LARSEN
Notary Public - State of Utah
Comm. No. 712931
My Commission Expires on
Aug 16, 2024

Notary Public
My Commission Expires: Aug. 16, 2021

Approved as to form: American Fork City Attorney

Rev. 12/4/18

Stonecreek Plat F Legal Description

Commencing at a point which is North 89°48'57" East 293.18 feet along the section line and South827.65 feet from the Northwest Corner of Section 26, Township 5 South, Range 1 East, Salt Lake Base and Meridian: thence South 89°29'00" East 101.00 feet; thence South 88°18'00" East 62.01 feet;thence South 89°28'13" East 542.37 feet; thence South 00°35'07" West 20.82 feet; thence South89°23'10" East 164.79 feet; thence South 00°49'19" West 502.00 feet; thence South 00°32'41" West62.00 feet; thence South 00°49'19" West 101.00 feet; thence North 89°12'04" West 180.00 feet;thence South 68°48'04" West 44.00 feet; thence South 44°37'49" West 54.18 feet; thence North45°44'08" West 847.68 feet; thence North 00°47'08" East 149.27 feet; thence North 89°42'21" East3.35 feet; thence North 00°27'37" East 6.31 feet to the point of beginning.

Parcel contains: 10.35 acres

Number of lots = 42

1497 West 40 South
Lindon, Utah - 84042
Phone (801) 225-5711

840 West 1700 South #10
Salt Lake City, Utah - 84104
Phone (801) 787-9138

1596 W. 2650 S. #108
Ogden, Utah - 84401
Phone (801) 399-9516

Geotechnical Study
Stonecreek Plats F and G
Approximately 900 South Storrs Avenue
American Fork, Utah

Project No. 218318

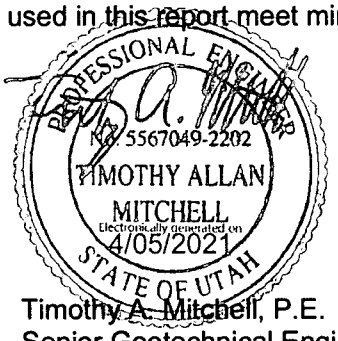
April 5, 2021

Prepared For:

Woodside Homes of Utah
Attention: Mrs. Ginger Romriell
460 West 50 South, Suite 300
Salt Lake City, UT 84101

CERTIFICATE

I hereby certify that I am a licensed professional engineer, as defined in the "Sensitive Lands Ordinance" Section of American Fork City Ordinances. I have examined this report to which this certificate is attached and the information and conclusions contained therein are, without any reasonable reservation not stated therein, accurate and complete. Procedures and tests used in this report meet minimum applicable professional standards.



Timothy A. Mitchell, P.E.
Senior Geotechnical Engineer

TABLE OF CONTENTS

ATTACHED FIGURES

APPENDIX A

1.0 SUMMARY

This entire report presents the results of Earthtec Engineering's completed geotechnical study for the Stonecreek Plats F and G in American Fork, Utah. This summary provides a general synopsis of our recommendations and findings. Details of our findings, conclusions, and recommendations are provided within the body of this report.

- The native clay and silt soils have a negligible potential for collapse (settlement) or expansion (heave) and a slight to high potential for compression under increased moisture contents and anticipated load conditions. (see Section 6)
- Conventional strip and spread footings may be used to support the structures, with foundations placed entirely on firm, undisturbed, uniform native soils (i.e. completely on clay or soils, or completely on gravel soils, etc.), or entirely on a minimum of 12 inches of properly placed, compacted, and tested structural fill extending to undisturbed native soils for structural loads up to 3,000 pounds per linear foot for bearing walls and up to 20,000 pounds for column loads. If loads exceed these see Section 10 for further recommendations.

Based on the results of our field exploration, laboratory testing, and engineering analyses, it is our opinion that the subject site may be suitable for the proposed development, provided the recommendations presented in this report are followed and implemented during design and construction.

Failure to consult with Earthtec Engineering (Earthtec) regarding any changes made during design and/or construction of the project from those discussed herein relieves Earthtec from any liability arising from changed conditions at the site. We also strongly recommend that Earthtec observes the building excavations to verify the adequacy of our recommendations presented herein, and that Earthtec performs materials testing and special inspections for this project to provide continuity during construction.

2.0 INTRODUCTION

The project is located at approximately 900 South Storrs Avenue in American Fork, Utah. The general location of the site is shown on Figure No. 1, *Vicinity Map* and Figure No. 2, *Aerial Photograph Showing Location of Boring and Test Pits*, at the end of this report. The purposes of this study are to evaluate the subsurface soil conditions at the site, assess the engineering characteristics of the subsurface soils, and provide geotechnical recommendations for general site grading and the design and construction of foundations, concrete floor slabs, miscellaneous concrete flatwork, and asphalt paved residential streets.

The scope of work completed for this study included field reconnaissance, subsurface exploration, field and laboratory soil testing, geotechnical engineering analysis, and the preparation of this report.

3.0 PROPOSED CONSTRUCTION

We understand that the proposed project, as described to us by Mrs. Ginger Romriell with Woodside Homes, consists of developing the approximately 22-acre existing parcel with a new residential subdivision. The proposed structures will consist of conventionally framed, one- to two-story, slab-on-grade buildings. We have based our recommendations in this report that the anticipated foundation loads for the proposed structures will not exceed 3,000 pounds per linear foot for bearing walls, 20,000 pounds for column loads, and 100 pounds per square foot for floor slabs. If structural loads will be greater Earthtec should be notified so that we may review our recommendations and make modifications, if necessary.

In addition to the construction described above, we anticipate that utilities will be installed to service the proposed buildings, exterior concrete flatwork will be placed in the form of curb, gutter, sidewalks, driveways, and asphalt paved residential streets will be constructed.

4.0 GENERAL SITE DESCRIPTION

4.1 Site Description

At the time of our subsurface exploration the site was an undeveloped parcel vegetated with weeds and grasses. The site was partially cleared, had several stockpiles of fill, and has a stream on the western edge of the site. The ground surface appears to be relatively flat, we anticipate up to 3 of cut and fill may be required for site grading. The lot was bounded on the north by West 840 South, on the east by South Storrs Avenue, and on the south and west by empty fields.

4.2 Geologic Setting

The subject property is located in the northern portion of Utah Valley near the eastern shore of Utah Lake. Utah Valley is a deep, sediment-filled basin that is part of the Basin and Range Physiographic Province. The valley was formed by extensional tectonic processes during the Tertiary and Quaternary geologic time periods. The valley is bordered by the Wasatch Mountain Range on the east and the Lake Mountains on the west. Much of northwestern Utah, including Utah Valley, was previously covered by the Pleistocene age Lake Bonneville. Utah Lake, which currently covers much of the western portion of the valley, is a remnant of this ancient fresh water lake. The surficial geology of much of the eastern margin of the valley has been mapped by Constenius, 2011[1]. The surficial geology at the location of the subject site and adjacent properties is mapped as "Fine-grained lacustrine deposits" (Map Unit Qlf) dated to upper Pleistocene and "Younger alluvial fan deposits" (Map Unit Qafy) dated to Holocene to upper Pleistocene. These soil or deposits are generally described in the referenced mapping as "Silt and clay with some fine grained sand" and "Mostly sand, silt, and gravel that is poorly stratified and poorly sorted," respectively. However, a geologic hazard study was not performed for the subject site during this

[1] Constenius, K.N., Clark, D.L., King, J.K., Ehler, J.B., 2011, Interim Geologic Map of the Provo Quadrangle, Utah, Wasatch and Salt Lake Counties, Utah; U.S. Geological Survey, Open-File 586DM, Scale 1: 62,500.

study.

5.0 SUBSURFACE EXPLORATION

5.1 Soil Exploration

Under the direction of a qualified member of our geotechnical staff, subsurface explorations were conducted at the site on March 12, 18, and 29, 2021 by the boring of one (1) boring to a depths of 31½ feet below the existing ground surface using a a truck-mounted hydraulic drill rig and the excavation of twenty (20) test pits to depths of 7½ to 12 feet below the existing ground surface using a track-mounted mini-excavator. The approximate locations of the boring and test pits are shown on Figure No. 2, *Aerial Photograph Showing Location of Boring and Test Pits*. Graphical representations and detailed descriptions of the soils encountered are shown on Figure Nos. 3 through 23, *Boring and Test Pit Log* at the end of this report. The stratification lines shown on the logs represent the approximate boundary between soil units; the actual transition may be gradual. Due to potential natural variations inherent in soil deposits, care should be taken in interpolating between and extrapolating beyond exploration points. A key to the symbols and terms on the logs is presented on Figure No. 24, *Legend*.

Samples of the subsurface soils were collected in the boring at depth intervals of approximately 2½ to 5 feet. Disturbed samples were collected with a 1⅜ inch inside diameter split spoon sampler. The split spoon sampler was driven 18 inches into undisturbed soil with a 140-pound hammer free-falling through a distance of 30 inches. The blows required to drive the sampler through the final 12 inches of penetration is called the "N-value" or "blow count," and is recorded as "blows per foot" on the attached boring logs at the respective sample depths. The blow count provides a reasonable indication of the in-place relative density of sandy soils but provides only a limited indication of the relative stiffness of cohesive (clayey) materials, since the penetration resistance for these soils is a function of the moisture content. In gravelly soils, the blow count may be higher than it otherwise would be, particularly when one or more gravel particles are larger than the sampler diameter.

Disturbed bag samples and relatively undisturbed block samples were collected at various depths in each test pit.

The soil samples collected were classified by visual examination in the field following the guidelines of the Unified Soil Classification System (USCS). The samples were transported to our Lindon, Utah laboratory where they will be retained for 30 days following the date of this report and then discarded, unless a written request for additional holding time is received prior to the 30-day limit.

6.0 LABORATORY TESTING

Representative soil samples collected during our field exploration were tested in the laboratory to

assess pertinent engineering properties and to aid in refining field classifications, if needed. Tests performed included natural moisture contents, dry density tests, liquid and plastic limits determinations, mechanical (partial) gradation analyses, and one-dimensional consolidation tests. The laboratory test results are also included on the attached *Boring and Test Pit Logs* at the respective sample depths, on Figure Nos. 25 through 34, *Consolidation-Swell Test.*

As part of the consolidation test procedure, water was added to the samples to assess moisture sensitivity when the samples were loaded to an equivalent pressure of approximately 1,000 psf. The native clay and silt soils have a negligible potential for collapse (settlement) or expansion (heave) and a slight to high potential for compressibility under increased moisture contents and anticipated load conditions.

A water-soluble sulfate test was performed on a representative sample obtained during our field exploration which indicated a value of 112 parts per million. Based on this result, the risk of sulfate attack to concrete appears to be "negligible" according to American Concrete Institute standards. Therefore, there are no restrictions on the type of Portland cement that may be used for concrete in contact with on-site soils. The results can be found in Appendix A.

7.0 SUBSURFACE CONDITIONS

7.1 Soil Types

On the surface of the site, we encountered fill and topsoil which is estimated to extend about ½ to 4 feet in depth at the boring and test pit locations. Below the fill and topsoil we encountered layers of clay, silt, sand, and gravel extending to a depths of 31½ feet below the existing ground surface. Graphical representations and detailed descriptions of the soils encountered are shown on Figure Nos. 3 through 23, *Boring and Test Pit Log* at the end of this report. Based on the blow counts obtained and our experience and observations during field exploration, the clay and silt soils ranged from soft to stiff in consistency and the sand and gravel soils had a relative density of very loose to very dense.

It should be considered that a limited number of small diameter soil borings and test pits were used during the course of our subsurface exploration. Topsoil and fill material composition and contacts are difficult to determine from boring and test pit sampling. Variation in topsoil and fill depths may occur at the site.

7.2 Collapsible Soils

Collapsible soils are typically characterized by a pinhole structure and relatively low unit weights. Foundations, floor slabs, and roadways supported on these soils may be susceptible to large settlements and structural distress when wetted. Significantly collapsible soils were not encountered in our explorations.

7.3 Groundwater Conditions

Groundwater was encountered at depths of approximately 4 to 8 feet below the existing ground surface. In addition, we did observe oxidation in the soils, a possible indicator of past water or seepage levels, in the soils below the topsoil. Note that groundwater levels will fluctuate in response to the season, precipitation, snow melt, irrigation, and other on and off-site influences. Quantifying these fluctuations would require long term monitoring, which is beyond the scope of this study. The contractor should be prepared to dewater excavations as needed.

8.0 SITE GRADING

8.1 General Site Grading

All surface vegetation and unsuitable soils (such as topsoil, organic soils, undocumented fill, soft, loose, or disturbed native soils, collapsible, and any other inapt materials) should be removed from below foundations, floor slabs, exterior concrete flatwork, and pavement areas. We encountered fill and topsoil on the surface of the site. The fill encountered on the site is considered undocumented (untested). The fill and topsoil (including soil with roots larger than about ¼ inch in diameter) should be completely removed, even if found to extend deeper, along with any other unsuitable soils that may be encountered. Over-excavations below footings and slabs also may be needed, as discussed in Section 10.0.

Fill placed over large areas, even if only a few feet in depth, can cause consolidation in the underlying native soils resulting in settlement of the fill. Because the site is relatively flat, we anticipate that less than 3 feet of grading fill will be placed. If more than 3 feet of grading fill will be placed above the existing surface (to raise site grades), Earthtec should be notified so that we may provide additional recommendations, if required. Such recommendations will likely include placing the fill several weeks (or possibly more) prior to construction to allow settlement to occur.

8.2 Temporary Excavations

Temporary excavations that are less than 4 feet in depth and above groundwater should have side slopes no steeper than ½H:1V (Horizontal:Vertical). Temporary excavations where water is encountered in the upper 4 feet or that extend deeper than 4 feet below site grades should be sloped or braced in accordance with OSHA[2] requirements for Type C soils.

8.3 Fill Material Composition

The existing fills are not suitable for use as placed and compacted engineered fill. The native gravel soils appear to be suitable for use as placed and compacted engineered fill provided any existing debris and particles larger than 6 inches in diameter are removed prior to use. Excavated soils, including clay and silt, may be stockpiled for use as fill in landscape areas.

[2] OSHA Health and Safety Standards, Final Rule, CFR 29, part 1926.

Structural fill is defined as imported fill material that will ultimately be subjected to any kind of structural loading, such as those imposed by footings, floor slabs, pavements, etc. Gradation requirements stated below shall be verified in intervals not exceeding 1,000 tons. We recommend that imported structural fill consist of sandy/gravelly soils meeting the following requirements in the table below:

Table 1: Imported Structural Fill Recommendations

Sieve Size/Other	Percent Passing (by weight)
4 inches	100
3/4 inches	70 – 100
No. 4	40 – 80
No. 40	15 – 50
No. 200	0 – 20
Liquid Limit	35 maximum
Plasticity Index	15 maximum

Engineered fill is defined as reworked granular (sands or gravels), native material that will ultimately be subjected to any kind of structural loading, such as those imposed by footings, floor slabs, pavements. Native clay and silt soils are not suitable for use as engineered fill. We recommend that a professional engineer or geologist verify that the engineered fill to be used on this project meets the requirements. Engineered fill should be clear of all organics, have a maximum particle size of 4 inches, less than 70 percent retained on the ¾-seive, a maximum Liquid Limit of 35, and a maximum Plasticity Index of 15.

In some situations, particles larger than 4 inches and/or more than 30 percent coarse gravel may be acceptable but would likely make compaction more difficult and/or significantly reduce the possibility of successful compaction testing. Consequently, stricter quality control measures than normally used may be required, such as using thinner lifts and increased or full-time observation of fill placement.

We recommend that utility trenches below any structural load be backfilled using structural fill or engineered fill. Local governments or utility companies required specification for backfill should be followed unless our recommendations stricter.

If native soil is used as fill material, the contractor should be aware that native clay and silt soils (as observed in the explorations) may be time consuming to compact due to potential difficulties in controlling the moisture content needed to obtain optimum compaction and changes proctor values.

If required (i.e. fill in submerged areas), we recommend that free draining granular material (clean sand and/or gravel) meet the following requirements in the table below:

Table 2: Free-Draining Fill Recommendations

Sieve Size/Other	Percent Passing (by weight)
3 inches	100
No. 10	0 – 25
No. 40	0 – 15
No. 200	0 – 5
Plasticity Index	Non-plastic

Three-inch minus washed rock (sometimes called river rock or drain rock) and pea gravel materials usually meet these requirements and may be used as free draining fill. If free draining fill will be placed adjacent to soil containing a significant amount of sand or silt/clay, precautions should be taken to prevent the migration of fine soil into the free draining fill. Such precautions should include either placing a filter fabric between the free draining fill and the adjacent soil material, or using a well-graded, clean filtering material approved by the geotechnical engineer.

8.4 Fill Placement and Compaction

The thickness of each lift should be appropriate for the compaction equipment that is used. We recommend a maximum lift thickness prior to compaction of 4 inches for hand operated equipment, 6 inches for most "trench compactors" and 8 inches for larger rollers, unless it can be demonstrated by in-place density tests that the required compaction can be obtained throughout a thicker lift. The full thickness of each lift of structural fill placed should be compacted to at least the following percentages of the maximum dry density, as determined by ASTM D-1557:

- In landscape and other areas not below structurally loaded areas: 90%
- Less than 5 feet of fill below structurally loaded areas: 95%
- 5 feet or greater of fill below structurally loaded areas: 98%

Generally, placing and compacting fill at moisture contents within ±2 percent of the optimum moisture content, as determined by ASTM D-1557, will facilitate compaction. Typically, the further the moisture content deviates from optimum the more difficult it will be to achieve the required compaction.

Fill should be tested frequently during placement and we recommend early testing to demonstrate that placement and compaction methods are achieving the required compaction. The contractor is responsible to ensure that fill materials and compaction efforts are consistent so that tested areas are representative of the entire fill.

8.5 Stabilization Recommendations

Near surface layers of clay, silt, and silty sand soils may rut and pump during grading and construction. The likelihood of rutting and/or pumping, and the depth of disturbance, is proportional to the moisture content in the soil, the load applied to the ground surface, and the frequency of the load. Consequently, rutting and pumping can be minimized by avoiding concentrated traffic, minimizing the load applied to the ground surface by using lighter equipment, partially loaded equipment, tracked equipment, by working in dry times of the year, and/or by

providing a working surface for equipment. However, because of the relatively shallow depth of groundwater, it is likely that rutting and pumping may not be avoidable.

During grading the soil in any obvious soft spots should be removed and replaced with granular material. If rutting or pumping occurs traffic should be stopped in the area of concern. The soil in rutted areas should be removed and replaced with granular material. In areas where pumping occurs the soil should either be allowed to sit until pore pressures dissipate (several hours to several days) and the soil firms up or be removed and replaced with granular material. Typically, we recommend removal to a minimum depth of 24 inches.

For granular material, we recommend using angular well-graded gravel, such as pit run, or crushed rock with a maximum particle size of four inches. We suggest that the initial lift be approximately 12 inches thick and be compacted with a static roller-type compactor. A finer granular material such as sand, gravelly sand, sandy gravel or road base may also be used. Materials which are more angular and coarse may require thinner lifts in order to achieve compaction. We recommend that the fines content (percent passing the No. 200 sieve) be less than 15%, the liquid limit be less than 35, and the plasticity index be less than 15.

Using a geosynthetic fabric, such as Mirafi 600X or equivalent, may also reduce the amount of material required and avoid mixing of the granular material and the subgrade. If a fabric is used, following removal of disturbed soils and water, the fabric should be placed over the bottom and up the sides of the excavation a minimum of 24 inches. The fabric should be placed in accordance with the manufacturer's recommendations, including proper overlaps. The granular material should then be placed over the fabric in compacted lifts. Again, we suggest that the initial lift be approximately 12 inches thick and be compacted with a static roller-type compactor.

9.0 SEISMIC AND GEOLOGIC CONSIDERATIONS

9.1 Seismic Design

The State of Utah has adopted the 2015 International Residential Code (IRC) and residential structures should be designed in accordance with the 2015 IRC. The IRC designates this area as a seismic design class D_2.

The site is located at approximately 40.359 degrees latitude and -111.807 degrees longitude from the approximate center of the site. The IRC site value for this property is 1.002g. The design spectral response acceleration parameters are given below.

Table 3: Design Acceleration for Short Period

S_S	F_a	Site Value (S_{DS})
		2/3 S_S*F_a
1.253g	1.2	1.002g

9.2 Faulting

The subject property is located within the Intermountain Seismic Belt where the potential for active faulting and related earthquakes is present. Based upon published geologic maps[3], no active faults traverse through or immediately adjacent to the site and the site is not located within local fault study zones. The nearest mapped fault trace is part of a group of fault beneath Utah Lake located about 1½ miles south of the site.

9.3 Liquefaction Potential

According to current liquefaction maps[4] for Utah County, the site is located within an area designated as "High" in liquefaction potential. Liquefaction can occur when saturated subsurface soils below groundwater lose their inter-granular strength due to an increase in soil pore water pressures during a dynamic event such as an earthquake. Loose, saturated sands are most susceptible to liquefaction, but some loose, saturated gravels and relatively sensitive silt to low-plasticity silty clay soils can also liquefy during a seismic event. Subsurface soils encountered were composed of saturated clay, silt, sand, and gravel soils.

As part of this study, the potential for liquefaction to occur in the soils we encountered was assessed using Youd *et al*[5] and Boulanger & Idriss[6]. Potential liquefaction-induced movements were evaluated using Tokimatsu & Seed[7] and Youd, Hansen & Bartlett[8]. Our analysis indicates that approximately up to ½ inches of liquefaction-induced settlement and possibly up to ½ feet of lateral spreading could occur in the vicinity of B-1 during a moderate to large earthquake event. Given the small amount of movement, it is our opinion that liquefaction mitigation is not needed at the site. American Fork City requires a 70-foot-deep boring to access the liquefaction potential unless the site is located within 2,000 feet of a previously completed boring, then they require a 30-foot deep boring. Boring B-1 from Earthtec Engineering Project No. 169273 is located within 2,000 feet of the site. The Boring Log is included at the end of this report.

[3] U.S. Geological Survey, Quaternary Fault and Fold Database of the United States, November 3, 2010.
[4] Utah Geological Survey, Liquefaction-Potential Map for a Part of Utah County, Utah, Public Information Series 28, August 1994.
[5] Youd, T.L. (Chair), Idriss, I.M. (Co-Chair), and 20 other authors, 2001, Liquefaction Resistance of Soils: Summary Report from the 1996 NCEER and 1998 NCEER/NSF Workshops on Evaluation of Liquefaction Resistance of Soils, Journal of Geotechnical and Geoenvironmental Engineering, ASCE, October 2001, p. 817-833.
[6] Boulanger, R.W. and Idriss, I.M., 2006, Liquefaction Susceptibility Criteria for Silts and Clays, Journal of Geotechnical and Geoenvironmental Engineering, ASCE, November 2006, p. 1413-1426.
[7] Tokimatsu, K. and Seed, H.B., 1987, Evaluation of Settlements in Sands due to Earthquake Shaking, Journal of Geotechnical Engineering, ASCE, p. 861-878.
[8] Youd, T.L., Hansen, C.M. and Bartlett, S.F., 2002, Revised Multilinear Regression Equations for Prediction of Lateral Spread Displacement, Journal of Geotechnical and Geoenvironmental Engineering, ASCE, December 2002, p. 1007-1017.

10.0 FOUNDATIONS

10.1 General

The foundation recommendations presented in this report are based on the soil conditions encountered during our field exploration, the results of laboratory testing of samples of the native soils, the site grading recommendations presented in this report, and the foundation loading conditions presented in Section 3.0, *Proposed Construction*, of this report. If loading conditions and assumptions related to foundations are significantly different, Earthtec should be notified so that we can re-evaluate our design parameters and estimates (higher loads may cause more settlement), and to provide additional recommendations if necessary.

Conventional strip and spread footings may be used to support the proposed structures after appropriate removals as outlined in Section 8.1. Foundations should not be installed on topsoil, undocumented fill, debris, combination soils, organic soils, frozen soil, or in ponded water. If foundation soils become disturbed during construction, they should be removed or compacted.

10.2 Strip/Spread Footings

We recommend that conventional strip and spread foundations be constructed entirely on firm, undisturbed, uniform native soils (i.e. completely on clay or soils, or completely on gravel soils, etc.), or entirely on a minimum of 12 inches of properly placed, compacted, and tested structural fill extending to undisturbed native soils for structural loads up to 3,000 pounds per linear foot for bearing walls and up to 20,000 pounds for column loads. If loads exceed 3,000 pounds per linear foot for bearing walls or 20,000 pounds for column loads, please contact Earthtec for further recommendations. For foundation design we recommend the following:

- Footings founded on undisturbed native soils may be designed using a maximum allowable bearing capacity of 1,500 pounds per square foot. Footings founded on a minimum of 12 inches of structural fill extending to undisturbed native soil may be designed using a maximum allowable bearing capacity of 2,000 pounds per square foot. The values for vertical foundation pressure can be increased by one-third for wind and seismic conditions per Section 1806 when used with the Alternative Basic Load Combinations found in Section 1605.3.2 of the 2018 International Building Code.
- Continuous and spot footings should be uniformly loaded and should have a minimum width of 20 and 30 inches, respectively.
- Exterior footings should be placed below frost depth which is determined by local building codes. In general, 30 inches of cover is adequate for most sites; however local code should be verified by the end design professional. Interior footings, not subject to frost (heated structures), should extend at least 18 inches below the lowest adjacent grade.
- Foundation walls and footings should be properly reinforced to resist all vertical and lateral loads and differential settlement.
- The bottom of footing excavations should be compacted with at least 4 passes of an approved

non-vibratory roller prior to erection of forms or placement of structural fill to densify soils that may have been loosened during excavation and to identify soft spots. If soft areas are encountered, they should be stabilized as recommended in Section 8.5.

- Footing excavations should be observed by the geotechnical engineer prior to beginning footing construction or fill placement to evaluate whether suitable bearing soils have been exposed and whether excavation bottoms are free of loose or disturbed soils.
- Because of shallow groundwater conditions encountered at the site, we anticipate of structural fill may be required below the proposed structure to provide a firm surface upon which to construct the proposed structure.
- In lieu of traditional structural fill, clean 1- to 2-inch clean gravel may be used in conjunction with a stabilization fabric, such as Mirafi 600X or equivalent, which should be placed between the native soils and the clean gravel (additional recommendations for placing clean gravel and stabilization fabric are given in Section 8.5 of this report).
- Structural fill used below foundations should extend laterally a minimum of 6 inches for every 12 vertical inches of structural fill placed. For example, if 18 inches of structural fill is required to bring the excavation to footing grade, the structural fill should extend laterally a minimum of 9 inches beyond the edge of the footings on both sides.

10.3 Estimated Settlements

If the proposed foundations are properly designed and constructed using the parameters provided above, we estimate that total settlements should not exceed one inch and differential settlements should be one-half of the total settlement over a 25-foot length of continuous foundation, for non-earthquake conditions. Additional settlement could occur during a seismic event due to ground shaking, if more than 3 feet of grading fill is placed above the existing ground surface, if loading conditions are greater than anticipated in Section 2, and/or if foundation soils are allowed to become wetted.

10.4 Lateral Load Resistance

Lateral loads are typically resisted by friction between the underlying soil and footing bottoms. Resistance to sliding may incorporate the friction acting along the base of foundations, which may be computed using a coefficient of friction of soils against concrete of 0.30 for native clay and silts, 0.40 for native sands, and 0.55 for native gravels, clean gravel, or structural fill meeting the recommendations presented herein. The values for lateral resistance can be increased by one-third for wind and seismic conditions per Section 1806 when used with the Alternative Basic Load Combinations found in Section 1605.3.2 of the 2018 International Building Code.

11.0 FLOOR SLABS AND FLATWORK

Due to shallow groundwater encountered at the site, lowest floor slab depths should be limited to

1 feet below existing site grades. This is intended to provide a minimum of 3 feet of separation between the observed groundwater condition and the bottom of the floor slab.

Concrete floor slabs and exterior flatwork may be supported on undisturbed native soils or on a minimum of 12 inches properly placed, compacted, and tested engineered fill or imported structural fill extending to undisturbed native soils after appropriate removals and grading as outlined in Section 8.1 are completed. We recommend placing a minimum of 4 inches of free-draining fill material (see Section 8.3) beneath floor slabs to facilitate construction, act as a capillary break, and aid in distributing floor loads. For exterior flatwork, we recommend placing a minimum of 4 inches of road-base material. Prior to placing the free-draining fill or road-base materials, the native sub-grade should be proof-rolled to identify soft spots, which should be stabilized as discussed above in Section 8.5.

For slab design, we recommend using a modulus of sub-grade reaction of 120 pounds per cubic inch. The thickness of slabs supported directly on the ground shall not be less than 3½ inches. A 6-mil polyethylene vapor retarder with joints lapped not less than 6 inches shall be placed between the ground surface and the concrete, as per Section R506 of the 2015 International Residential Code.

To help control normal shrinkage and stress cracking, we recommend that floor slabs have adequate reinforcement for the anticipated floor loads with the reinforcement continuous through interior floor joints, frequent crack control joints, and non-rigid attachment of the slabs to foundation and bearing walls. Special precautions should be taken during placement and curing of all concrete slabs and flatwork. Excessive slump (high water-cement ratios) of the concrete and/or improper finishing and curing procedures used during hot or cold weather conditions may lead to excessive shrinkage, cracking, spalling, or curling of slabs. We recommend all concrete placement and curing operations be performed in accordance with American Concrete Institute (ACI) codes and practices.

12.0 DRAINAGE

12.1 Surface Drainage

As part of good construction practice, precautions should be taken during and after construction to reduce the potential for water to collect near foundation walls. Accordingly, we recommend the following:

- The contractor should take precautions to prevent significant wetting of the soil at the base of the excavation. Such precautions may include: grading to prevent runoff from entering the excavation, excavating during normally dry times of the year, covering the base of the excavation if significant rain or snow is forecast, backfill at the earliest possible date, frame floors and/or the roof at the earliest possible date, other precautions that might become evident during construction.

- Adequate compaction of foundation wall backfill must be provided i.e. a minimum of 90% of ASTM D-1557. Water consolidation methods should not be used.
- The ground surface should be graded to drain away from the building in all directions. We recommend a minimum fall of 8 inches in the first 10 feet.
- Roof runoff should be collected in rain gutters with down spouts designed to discharge well outside of the backfill limits, or at least 10 feet from foundations, whichever is greater.
- Sprinkler nozzles should be aimed away, and all sprinkler components kept at least 5 feet, from foundation walls. A drip irrigation system may be utilized in landscaping areas within 10 feet of foundation walls to minimize water intrusion at foundation backfill. Also, sprinklers should not be placed at the top or on the face of slopes. Sprinkler systems should be designed with proper drainage and well maintained. Over-watering should be avoided.
- Any additional precautions which may become evident during construction.

12.2 Subsurface Drainage

Groundwater or indicators of past groundwater levels were encountered/observed in soils below the topsoil. Due to the presence of shallow groundwater throughout property, basements for residences may be difficult to construct. The depth of basements will depend greatly on-site grading and drainage. Based on current site conditions, basements may be constructed no deeper than one foot below existing site grades. Basement depths can be increased if a land drain system is constructed for the subdivision. The depth of the land drain will then control the allowable depth of the basements.

Section R405.1 of the 2015 International Residential Code states, "Drains shall be provided around all concrete and masonry foundations that retain earth and enclose habitable or usable spaces located below grade." Section R310.2.3.2 of the 2015 International Residential Code states, "Window wells shall be designed for proper drainage by connecting to the building's foundation drainage system." An exception is allowed when the foundation is installed on well drained ground consisting of Group 1 soils, which include those defined by the Unified Soil Classification System as GW, GP, SW, SP, GM, and SM. The soils observed in the explorations at the depth of foundation consisted primarily of clay and silt (CL and ML) which are not Group 1 soils.

13.0 PAVEMENT RECOMMENDATIONS

We understand that asphalt paved residential streets will be constructed as part of the project. The native soils encountered beneath the fill and topsoil during our field exploration were predominantly composed of clays and silts. We estimate that a California Bearing Ratio (CBR) value of 3 is appropriate for these soils. If the fill and topsoil is left beneath concrete flatwork and pavement areas, increased maintenance costs over time should be anticipated.

We anticipate that the traffic volume will be about 1,000 vehicles per day (4.0 ESAL/day) or less for the residential streets, consisting of mostly cars and pickup trucks, with a daily delivery truck and a weekly garbage truck. Based on these traffic parameters, the estimated CBR given above, a 20-year life expectancy, and the procedures and typical design inputs outlined in the UDOT Pavement Design Manual (2008), we recommend the minimum asphalt pavement section presented below. The pavement section should meet the minimum values are required by the jurisdiction or the values below, whichever is greater.

Table 4: Pavement Section Recommendations

Asphalt Thickness (in)	Compacted Aggregate Base Thickness (in)	Compacted Subbase Thickness (in)
3	6	8*
3	12*	0

* Stabilization may be required

If the pavement will be required to support excessive construction traffic (such as dump trucks hauling soil to raise or lower the site), more than an occasional semi-tractor or fire truck, or more traffic than listed above, our office should be notified so that we can re-evaluate the pavement section recommendations. The following also apply:

- The subgrade should be prepared by proof rolling to a firm, non-yielding surface, with any identified soft areas stabilized as discussed above in Section 8.5.
- Site grading fills below the pavements should meet structural fill composition and placement recommendations per Sections 8.3 and 8.4 herein.
- Asphaltic concrete, aggregate base and sub-base material composition should meet local, APWA, or UDOT requirements. Gradation requirements and frequency shall be followed as required by local, APWA, or UDOT requirements, but not to exceed 500 tons.
- Aggregate base and sub-base is compacted to local, APWA, or UDOT requirements, or to at least 95 percent of maximum dry density (ASTM D 1557).
- The aggregate base shall have a CBR value to 70 percent or greater and the subbase shall have a CBR value of 10 percent or greater.
- Asphaltic concrete is compacted to local or UDOT requirements, or to at least 96 percent of the laboratory Marshall density (ASTM D 6927).

14.0 GENERAL CONDITIONS

The exploratory data presented in this report was collected to provide geotechnical design recommendations for this project. The explorations may not be indicative of subsurface conditions outside the study area or between points explored and thus have a limited value in

depicting subsurface conditions for contractor bidding. Variations from the conditions portrayed in the explorations may occur and which may be sufficient to require modifications in the design. If during construction, conditions are different than presented in this report, Earthtec should be advised immediately so that the appropriate modifications can be made.

The findings and recommendations presented in this geotechnical report were prepared in accordance with generally accepted geotechnical engineering principles and practice in this area of Utah at this time. No warranty or representation is intended in our proposals, contracts, letters, or reports. Failure to consult with Earthtec regarding any changes made during design and/or construction of the project from those discussed herein relieves Earthtec from any liability arising from changed conditions at the site.

This geotechnical report is based on relatively limited subsurface explorations and laboratory testing. Subsurface conditions may differ in some locations of the site from those described herein, which may require additional analyses and possibly modified recommendations. Thus, we strongly recommend consulting with Earthtec regarding any changes made during design and construction of the project from those discussed herein. Failure to consult with Earthtec regarding any such changes relieves Earthtec from any liability arising from changed conditions at the site.

To maintain continuity, Earthtec should also perform materials testing and special inspections for this project. The recommendations presented herein are based on the assumption that an adequate program of tests and observations will be followed during construction to verify compliance with our recommendations. We also assume that we will review the project plans and specifications to verify that our conclusions and recommendations are incorporated and remain appropriate (based on the actual design). Earthtec should be retained to review the final design plans and specifications so comments can be made regarding interpretation and implementation of our geotechnical recommendations in the design and specifications. Earthtec also should be retained to provide observation and testing services during grading, excavation, foundation construction, and other earth-related construction phases of the project.

We appreciate the opportunity of providing our services on this project. If we can answer questions or be of further service, please contact Earthtec at your convenience.

Respectfully;

EARTHTEC ENGINEERING

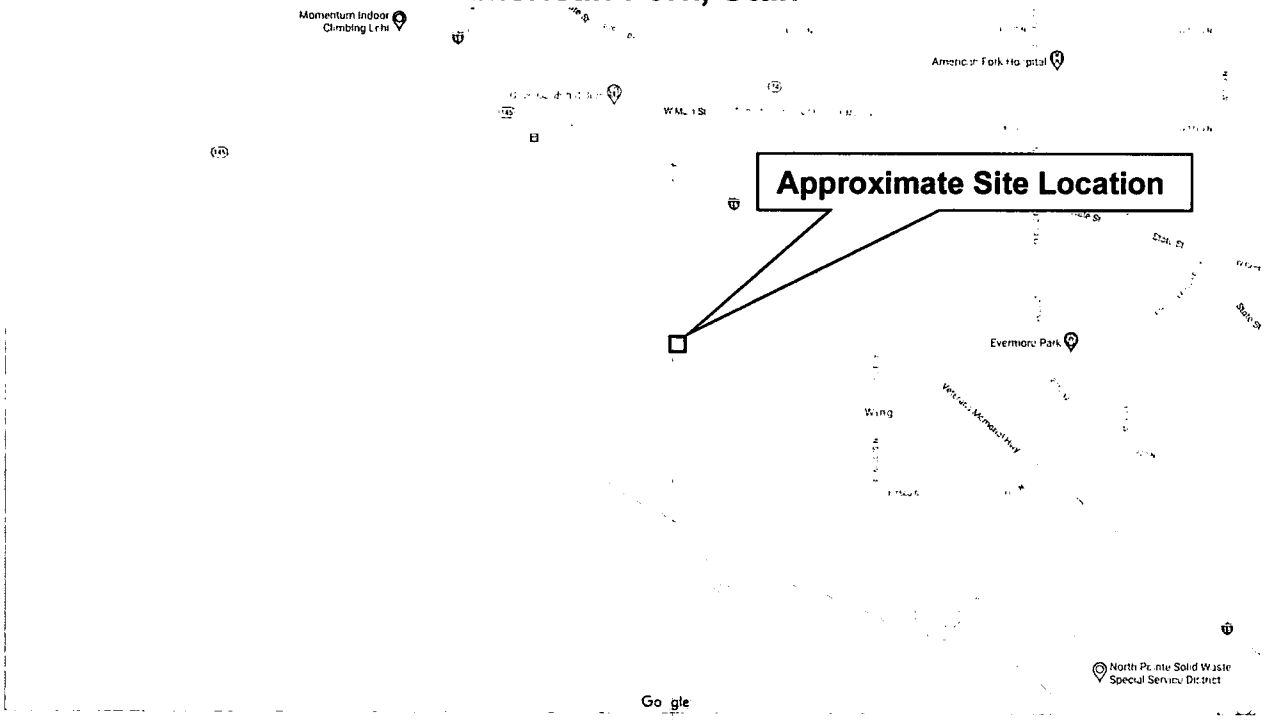
Jeremy A. Balleck, E.I.T.
Staff Engineer

PROFESSIONAL ENGINEER
No. 5567049-2202
TIMOTHY ALLAN MITCHELL
Electronically signed on
4/05/2021
STATE OF UTAH

Timothy A. Mitchell, P.E.
Senior Geotechnical Engineer

VICINITY MAP

Stonecreek Plats F and G
Approximately 900 South Storrs Avenue
American Fork, Utah



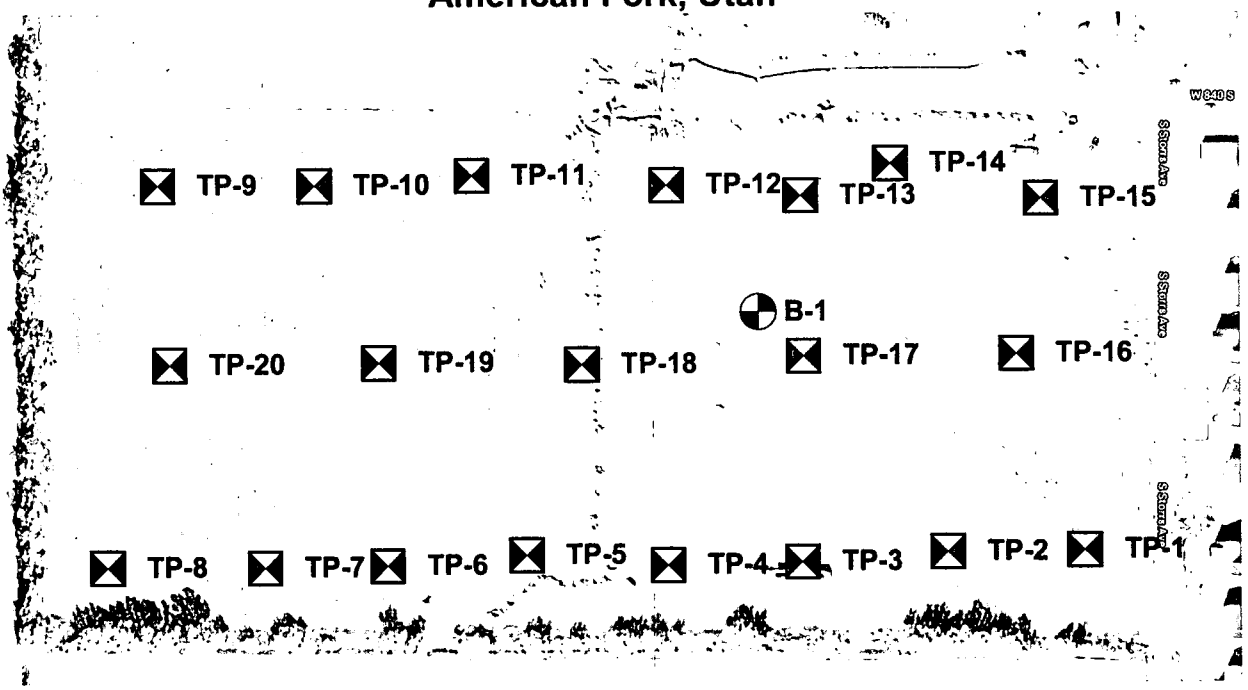
N

Not to Scale

PROJECT NO.: 218318	EARTHTEC ENGINEERING	FIGURE NO.: 1

AERIAL PHOTOGRAPH SHOWING LOCATION OF BORING AND TEST PITS

Stonecreek Plats F and G
Approximately 900 South Storrs Avenue
American Fork, Utah



Approximate Test Pit
Approximate Boring Location

N

Not to Scale

PROJECT NO.: 218318	EARTHTEC ENGINEERING	FIGURE NO.: 2

BORING LOG

NO.: B-1

PROJECT: Stonecreek Plats F and G
CLIENT: Woodside Homes
LOCATION: See Figure 2
OPERATOR: Drill Tech
EQUIPMENT: Truck Mounted Hydraulic Drill Rig
DEPTH TO WATER; INITIAL ▽ :

PROJECT NO.: 218318
DATE: 03/29/21
ELEVATION: Not Measured
LOGGED BY: S. Roberts
AT COMPLETION ▼ : 5.5 ft.

Depth (Ft.)	Graphic Log	USCS	Description	Samples	TEST RESULTS: Blows per foot	Water Cont. (%)	Dry Dens. (pcf)	LL	PI	Gravel (%)	Sand (%)	Fines (%)	Other Test
0			Lean CLAY with sand, medium stiff, slightly moist to wet, brown										
3					5								
6		CL ▼			6								
9					5								
12		SC	Clayey SAND, very loose, wet, gray		3								
15													
18		CL	Lean CLAY with sand, soft, wet, gray		3								
21		SC	Clayey SAND, loose, wet, gray, flowing sands		7								
24													
27		CL	Lean CLAY, stiff, moist, gray		13								
30					10								
33			Maximum depth explored approximately 31½ feet.										

Notes: Groundwater encountered at 5½ feet below the existing ground surface.

Tests Key

CBR = California Bearing Ratio
C = Consolidation
R = Resistivity/Nitrates/PH
DS = Direct Shear
SS = Soluble Sulfates
UC = Unconfined Compressive Strength

PROJECT NO.: 218318

EARTHTEC ENGINEERING

FIGURE NO.: 3

LOG OF TESTHOLE LOGS.GPJ EARTHTEC.GDT 4/5/21

TEST PIT LOG
NO.: TP-01

PROJECT: Stonecreek Plats F and G
CLIENT: Woodside Homes
LOCATION: See Figure No. 2
OPERATOR: D. Judd
EQUIPMENT: Track Mounted Mini-Excavator
DEPTH TO WATER; INITIAL ▽ :

PROJECT NO.: 218318
DATE: 03/12/21
ELEVATION: Not Measured
LOGGED BY: S. Roberts
AT COMPLETION ▼ : 5 ft.

Depth (Ft.)	Graphic Log	USCS	Description	Samples	TEST RESULTS: Water Cont. (%)	Dry Dens. (pcf)	LL	PI	Gravel (%)	Sand (%)	Fines (%)	Other Tests
0			FILL, sandy lean clay, slightly moist, brown									
1												
2			FILL, lean clay, slightly moist, black, roots, pinholes, debris									
3			SILT with sand, medium stiff (estimated), moist, brownish gray, iron oxide staining, pinholes, roots									
4												
5			▼									
6		ML										
7					29	99	26	NP	6	18	76	C
8												
9			Maximum depth explored approximately 8½ feet due to cave-ins.									
10												
11												
12												
13												
14												

Notes: Groundwater encountered at 5 feet below the existing ground surface.

Tests Key
CBR = California Bearing Ratio
C = Consolidation
R = Resistivity
DS = Direct Shear
SS = Soluble Sulfates
B = Burnoff

PROJECT NO.: 218318

EARTHTEC ENGINEERING

FIGURE NO.: 4

LOG OF TESTPIT LOGS.GPJ EARTHTEC.GDT 4/5/21

TEST PIT LOG
NO.: TP-02

PROJECT: Stonecreek Plats F and G
PROJECT NO.: 218318
CLIENT: Woodside Homes
DATE: 03/12/21
LOCATION: See Figure No. 2
ELEVATION: Not Measured
OPERATOR: D. Judd
LOGGED BY: S. Roberts
EQUIPMENT: Track Mounted Mini-Excavator
DEPTH TO WATER; INITIAL ▽ :
AT COMPLETION ▼ : 4.5 ft.

Depth (Ft.)	Graphic Log	USCS	Description	Samples	TEST RESULTS: Water Cont. (%)	Dry Dens. (pcf)	LL	PI	Gravel (%)	Sand (%)	Fines (%)	Other Tests
0			FILL, lean clay, slightly moist, brown									
1			TOPSOIL, lean clay, slightly moist, black, roots, pinholes									
2												
3		CL	Lean CLAY with sand, medium stiff (estimated), moist, brownish gray, iron oxide staining									
4												
5			▼ Silty SAND, medium dense (estimated), wet, grayish brown									
6		SM			34		26	NP	1	66	33	
7												
8		GM	Silty GRAVEL with sand, medium dense (estimated), wet, grayish-brown									
9												
10			Maximum depth explored approximately 9 feet due to cave-ins.									
11												
12												
13												
14												

Notes: Groundwater encountered at 4½ feet below the existing ground surface.

Tests Key
CBR = California Bearing Ratio
C = Consolidation
R = Resistivity
DS = Direct Shear
SS = Soluble Sulfates
B = Burnoff

PROJECT NO.: 218318

EARTH-TEC ENGINEERING

FIGURE NO.: 5

LOG OF TESTPIT LOGS.GPJ EARTHTEC.GDT 4/5/21

TEST PIT LOG
NO.: TP-03

PROJECT: Stonecreek Plats F and G
CLIENT: Woodside Homes
LOCATION: See Figure No. 2
OPERATOR: D. Judd
EQUIPMENT: Track Mounted Mini-Excavator
DEPTH TO WATER; INITIAL ▽ :

PROJECT NO.: 218318
DATE: 03/12/21
ELEVATION: Not Measured
LOGGED BY: S. Roberts
AT COMPLETION ▼ : 4.5 ft.

Depth (Ft.)	Graphic Log	USCS	Description	Samples	TEST RESULTS: Water Cont. (%)	Dry Dens. (pcf)	LL	PI	Gravel (%)	Sand (%)	Fines (%)	Other Tests
0			TOPSOIL, lean clay, slightly moist, black									
1–5		CL	Lean CLAY with sand, medium stiff (estimated), slightly moist to moist, brownish gray, iron oxide staining, pinholes, roots									SS
6–7		GM	Silty GRAVEL with sand, dense (estimated), wet, brown									
8–14			Maximum depth explored approximately 7½ feet due to cave-ins.									

Notes: Groundwater encountered at 4½ feet below the existing ground surface.

Tests Key
CBR = California Bearing Ratio
C = Consolidation
R = Resistivity
DS = Direct Shear
SS = Soluble Sulfates
B = Burnoff

PROJECT NO.: 218318

EARTHTEC ENGINEERING

FIGURE NO.: 6

LOG OF TESTPIT LOGS.GPJ EARTHTEC.GDT 4/5/21

TEST PIT LOG
NO.: TP-04

PROJECT: Stonecreek Plats F and G
CLIENT: Woodside Homes
LOCATION: See Figure No. 2
OPERATOR: D. Judd
EQUIPMENT: Track Mounted Mini-Excavator
DEPTH TO WATER; INITIAL ▽ :

PROJECT NO.: 218318
DATE: 03/12/21
ELEVATION: Not Measured
LOGGED BY: S. Roberts
AT COMPLETION ▼ : 4 ft.

Depth (Ft.)	Graphic Log	USCS	Description	Samples	TEST RESULTS: Water Cont. (%)	Dry Dens. (pcf)	LL	PI	Gravel (%)	Sand (%)	Fines (%)	Other Tests
0			TOPSOIL, lean clay, slightly moist, black									
1–5		CL	Lean CLAY with sand, medium stiff (estimated), moist, gray, iron oxide staining, pinholes, roots									
6–9		GM	Silty GRAVEL with sand, medium dense (estimated), wet, brown									
10–14			Maximum depth explored approximately 9 feet due to cave-ins.									

Notes: Groundwater encountered at 4 feet below the existing ground surface.

Tests Key
CBR = California Bearing Ratio
C = Consolidation
R = Resistivity
DS = Direct Shear
SS = Soluble Sulfates
B = Burnoff

PROJECT NO.: 218318

EARTHTEC ENGINEERING

FIGURE NO.: 7

LOG OF TESTPIT LOGS.GPJ EARTHTEC.GDT 4/5/21

TEST PIT LOG
NO.: TP-05

PROJECT: Stonecreek Plats F and G
CLIENT: Woodside Homes
LOCATION: See Figure 2
OPERATOR: D. Judd
EQUIPMENT: Track Mounted Mini-Excavator
DEPTH TO WATER; INITIAL ▽ :

PROJECT NO.: 218318
DATE: 03/12/21
ELEVATION: Not Measured
LOGGED BY: S. Roberts
AT COMPLETION ▼ : 6 ft.

Depth (Ft.)	Graphic Log	USCS	Description	Samples	Water Cont. (%)	Dry Dens. (pcf)	LL	PI	Gravel (%)	Sand (%)	Fines (%)	Other Tests
0			FILL, sandy lean clay, slightly moist, brown									
1–4		CL	Lean CLAY, medium stiff (estimated), slightly moist, brown, iron oxide staining, calcification, roots									
4–6		SM	Silty SAND, medium dense (estimated), moist to wet, brown, iron oxide staining, roots		28	103	21	NP	4	56	40	C
7–10		SC	Clayey SAND, medium dense (estimated), wet, gray, iron oxide staining									
10			Maximum depth explored approximately 10 feet.									

Notes: Groundwater encountered at 6 feet below the existing ground surface.

Tests Key
CBR = California Bearing Ratio
C = Consolidation
R = Resistivity
DS = Direct Shear
SS = Soluble Sulfates
B = Burnoff

PROJECT NO.: 218318

EARTHTEC ENGINEERING

FIGURE NO.: 8

LOG OF TESTPIT LOGS.GPJ EARTHTEC.GDT 4/5/21

TEST PIT LOG
NO.: TP-06

PROJECT: Stonecreek Plats F and G
CLIENT: Woodside Homes
LOCATION: See Figure 2
OPERATOR: D. Judd
EQUIPMENT: Track Mounted Mini-Excavator
DEPTH TO WATER; INITIAL ▽ :

PROJECT NO.: 218318
DATE: 03/12/21
ELEVATION: Not Measured
LOGGED BY: S. Roberts
AT COMPLETION ▼ : 7.5 ft.

Depth (Ft.)	Graphic Log	USCS	Description	Samples	TEST RESULTS: Water Cont. (%)	Dry Dens. (pcf)	LL	PI	Gravel (%)	Sand (%)	Fines (%)	Other Tests
0			FILL, sandy lean clay with gravel, slightly moist, brown, debris									
3			TOPSOIL, lean clay with sand, slightly moist, black, roots									
4		GM	Silty GRAVEL with sand, medium dense (estimated), slightly moist, grayish brown, iron oxide staining, roots	■	16	110	28	5	36	28	36	C
5												
6		SC	Clayey SAND, medium dense (estimated), slightly moist to wet, brown, iron oxide staining	☒								
9												
10		CL	Lean CLAY with gravel, medium stiff (estimated), wet, gray, iron oxide staining	☒								
11												
12			Maximum depth explored approximately 11½ feet.									
14												

Notes: Groundwater encountered at 7½ feet below the existing ground surface.

Tests Key
CBR = California Bearing Ratio
C = Consolidation
R = Resistivity
DS = Direct Shear
SS = Soluble Sulfates
B = Burnoff

PROJECT NO.: 218318

EARTHTEC ENGINEERING

FIGURE NO.: 9

LOG OF TESTPIT LOGS.GPJ EARTHTEC.GDT 4/5/21

TEST PIT LOG
NO.: TP-07

PROJECT: Stonecreek Plats F and G
CLIENT: Woodside Homes
LOCATION: See Figure 2
OPERATOR: D. Judd
EQUIPMENT: Track Mounted Mini-Excavator
DEPTH TO WATER; INITIAL ▽ :

PROJECT NO.: 218318
DATE: 03/12/21
ELEVATION: Not Measured
LOGGED BY: S. Roberts
AT COMPLETION ▼ : 5.5 ft.

Depth (Ft.)	Graphic Log	USCS	Description	Samples	TEST RESULTS: Water Cont. (%)	Dry Dens. (pcf)	LL	PI	Gravel (%)	Sand (%)	Fines (%)	Other Tests
0			FILL, sandy lean clay, slightly moist, dark brown									
1												
2			TOPSOIL, lean clay, slightly moist, black, roots, pinholes									
3			Lean CLAY with sand, medium stiff (estimated), moist, brownish gray, iron oxide staining, roots									
4		CL										
5												
6			Clayey GRAVEL with sand, medium dense (estimated), moist to wet, brown ▼									
7		GC										
8												
9			Sandy SILT, medium stiff (estimated), wet, grayish brown, iron oxide staining		31	97	23	NP	2	31	67	C
10		ML										
11												
12												
13			Maximum depth explored approximately 12 feet.									
14												

Notes: Groundwater encountered at 5½ feet below the existing ground surface.

Tests Key
CBR = California Bearing Ratio
C = Consolidation
R = Resistivity
DS = Direct Shear
SS = Soluble Sulfates
B = Burnoff

PROJECT NO.: 218318

EARTHTEC ENGINEERING

FIGURE NO.: 10

LOG OF TESTPIT LOGS.GPJ EARTHTEC.GDT 4/5/21

TEST PIT LOG
NO.: TP-08

PROJECT: Stonecreek Plats F and G
CLIENT: Woodside Homes
LOCATION: See Figure 2
OPERATOR: D. Judd
EQUIPMENT: Track Mounted Mini-Excavator
DEPTH TO WATER; INITIAL ▽ :

PROJECT NO.: 218318
DATE: 03/12/21
ELEVATION: Not Measured
LOGGED BY: S. Roberts
AT COMPLETION ▼ : 6 ft.

Depth (Ft.)	Graphic Log	USCS	Description	Samples	TEST RESULTS: Water Cont. (%)	Dry Dens. (pcf)	LL	PI	Gravel (%)	Sand (%)	Fines (%)	Other Tests
0			FILL, sandy lean clay with gravel, slightly moist, brown, debris									
3			TOPSOIL, sandy lean clay, slightly moist, dark brown, roots									
4		CL	Sandy Lean CLAY, medium stiff (estimated), slightly moist to wet, gray, iron oxide staining, pinholes, roots	■								
6			▼	■								
8				☒								
10			Maximum depth explored approximately 10 feet due to cave-ins.									

Notes: Groundwater encountered at 6 feet below the existing ground surface.

Tests Key
CBR = California Bearing Ratio
C = Consolidation
R = Resistivity
DS = Direct Shear
SS = Soluble Sulfates
B = Burnoff

PROJECT NO.: 218318

EARTHTEC ENGINEERING

FIGURE NO.: 11

LOG OF TESTPIT LOGS.GPJ EARTHTEC.GDT 4/5/21

TEST PIT LOG
NO.: TP-09

PROJECT: Stonecreek Plats F and G
CLIENT: Woodside Homes
LOCATION: See Figure 2
OPERATOR: D. Judd
EQUIPMENT: Track Mounted Mini-Excavator
DEPTH TO WATER; INITIAL ▽ :

PROJECT NO.: 218318
DATE: 03/12/21
ELEVATION: Not Measured
LOGGED BY: S. Roberts
AT COMPLETION ▼ : 4.75 ft.

Depth (Ft.)	Graphic Log	USCS	Description	Samples	TEST RESULTS: Water Cont. (%)	Dry Dens. (pcf)	LL	PI	Gravel (%)	Sand (%)	Fines (%)	Other Tests
0			FILL, clayey gravel, slightly moist, brown									
2			TOPSOIL, sandy lean clay, slightly moist, black									
3			Sandy SILT, medium stiff (estimated), moist to wet, gray, iron oxide staining, pinholes, roots									
4		ML		■	32	94	24	NP	4	37	59	C
5			▼									
6			Silty GRAVEL with sand, dense (estimated), wet, brown	X								
7		GM										
8				X								
9												
10			Sandy Lean CLAY, stiff (estimated), wet, gray	X								
11		CL										
12												
13			Maximum depth explored approximately 12 feet.									
14												

Notes: Groundwater encountered at 4¾ feet below the existing ground surface.

Tests Key
CBR = California Bearing Ratio
C = Consolidation
R = Resistivity
DS = Direct Shear
SS = Soluble Sulfates
B = Burnoff

PROJECT NO.: 218318

EARTHTEC ENGINEERING

FIGURE NO.: 12

LOG OF TESTPIT LOGS.GPJ EARTHTEC.GDT 4/5/21

TEST PIT LOG
NO.: TP-10

PROJECT: Stonecreek Plats F and G
CLIENT: Woodside Homes
LOCATION: See Figure 2
OPERATOR: D. Judd
EQUIPMENT: Track Mounted Mini-Excavator
DEPTH TO WATER; INITIAL ▽ :

PROJECT NO.: 218318
DATE: 03/12/21
ELEVATION: Not Measured
LOGGED BY: S. Roberts
AT COMPLETION ▼ : 6 ft.

Depth (Ft.)	Graphic Log	USCS	Description	Samples	TEST RESULTS: Water Cont. (%)	Dry Dens. (pcf)	LL	PI	Gravel (%)	Sand (%)	Fines (%)	Other Tests
0												
1–4			FILL, silty gravel, slightly moist, brown									
5–6		CL	Lean CLAY with sand, medium stiff (estimated), slightly moist to moist, grayish brown, iron oxide staining ▼									
7–8		GM	Silty GRAVEL with sand, dense (estimated), wet, brown									
9–12		CL	Sandy Lean CLAY with gravel, medium stiff (estimated), wet, grayish brown									
13–14			Maximum depth explored approximately 12 feet.									

Notes: Groundwater encountered at 6 feet below the existing ground surface.

Tests Key
CBR = California Bearing Ratio
C = Consolidation
R = Resistivity
DS = Direct Shear
SS = Soluble Sulfates
B = Burnoff

PROJECT NO.: 218318

EARTHTEC ENGINEERING

FIGURE NO.: 13

LOG OF TESTPIT LOGS.GPJ EARTHTEC.GDT 4/5/21

TEST PIT LOG
NO.: TP-11

PROJECT: Stonecreek Plats F and G
CLIENT: Woodside Homes
LOCATION: See Figure 2
OPERATOR: D. Judd
EQUIPMENT: Track Mounted Mini-Excavator
DEPTH TO WATER; INITIAL ▽ :

PROJECT NO.: 218318
DATE: 03/12/21
ELEVATION: Not Measured
LOGGED BY: S. Roberts
AT COMPLETION ▼ : 8 ft.

Depth (Ft.)	Graphic Log	USCS	Description	Samples	TEST RESULTS: Water Cont. (%)	Dry Dens. (pcf)	LL	PI	Gravel (%)	Sand (%)	Fines (%)	Other Tests
0			FILL, clayey gravel, slightly moist, dark brown									
1												
2												
3			TOPSOIL, lean clay with sand, slightly moist, dark brown to black, roots, pinholes									
4		CL	Lean CLAY with sand, stiff (estimated), slightly moist, grayish brown, iron oxide staining, pinholes, roots									
5			Poorly Graded GRAVEL with silt and sand, very dense (estimated), slightly moist to wet, brown, calcification	X	4		24	NP	78	17	5	
6												
7				X								
8		GP-GM	▼									
9				X								
10												
11												
12			Maximum depth explored approximately 11 feet.									
13												
14												

Notes: Groundwater encountered at 8 feet below the existing ground surface.

Tests Key
CBR = California Bearing Ratio
C = Consolidation
R = Resistivity
DS = Direct Shear
SS = Soluble Sulfates
B = Burnoff

LOG OF TESTPIT LOGS.GPJ EARTHTEC.GDT 4/5/21

PROJECT NO.: 218318

EARTHTEC ENGINEERING

FIGURE NO.: 14

TEST PIT LOG
NO.: TP-12

PROJECT: Stonecreek Plats F and G
CLIENT: Woodside Homes
LOCATION: See Figure 2
OPERATOR: D. Judd
EQUIPMENT: Track Mounted Mini-Excavator
DEPTH TO WATER; INITIAL ▽ :

PROJECT NO.: 218318
DATE: 03/12/21
ELEVATION: Not Measured
LOGGED BY: S. Roberts
AT COMPLETION ▼ : 6.5 ft.

Depth (Ft.)	Graphic Log	USCS	Description	Samples	TEST RESULTS: Water Cont. (%)	Dry Dens. (pcf)	LL	PI	Gravel (%)	Sand (%)	Fines (%)	Other Tests
0			FILL, lean clay with gravel, slightly moist, brown, roots									
3		CL	Sandy Lean CLAY, medium stiff (estimated), slightly moist to moist, gray, iron oxide staining									
5				■								
6		GM	Silty GRAVEL with sand, dense (estimated), slightly moist to wet, brown ▼									
7				X								
8		CL	Lean CLAY, stiff (estimated), wet, gray									
9				X								
11												
12			Maximum depth explored approximately 11½ feet.									
14												

Notes: Groundwater encountered at 6½ feet below the existing ground surface.

Tests Key
CBR = California Bearing Ratio
C = Consolidation
R = Resistivity
DS = Direct Shear
SS = Soluble Sulfates
B = Burnoff

PROJECT NO.: 218318

EARTHTEC ENGINEERING

FIGURE NO.: 15

LOG OF TESTPIT LOGS.GPJ EARTHTEC.GDT 4/5/21

TEST PIT LOG
NO.: TP-13

PROJECT: Stonecreek Plats F and G
CLIENT: Woodside Homes
LOCATION: See Figure 2
OPERATOR: D. Judd
EQUIPMENT: Track Mounted Mini-Excavator
DEPTH TO WATER; INITIAL ▽ :

PROJECT NO.: 218318
DATE: 03/12/21
ELEVATION: Not Measured
LOGGED BY: S. Roberts
AT COMPLETION ▼ : 5.5 ft.

Depth (Ft.)	Graphic Log	USCS	Description	Samples	TEST RESULTS: Water Cont. (%)	Dry Dens. (pcf)	LL	PI	Gravel (%)	Sand (%)	Fines (%)	Other Tests
0			TOPSOIL, lean clay, slightly moist, dark brown to black									
1		CL	Lean CLAY with sand, medium stiff (estimated), slightly moist, brownish gray, iron oxide staining, roots, pinholes									
2												
3												
4												
5				■	28	94	41	17	5	15	80	C
6												
7		GP-GM	Poorly Graded GRAVEL with silt and sand, medium dense (estimated), wet, brown	☒	10		19	NP	55	37	8	
8												
9		CL	Sandy Lean CLAY, medium stiff (estimated), wet, gray, roots, pinholes	☒								
10												
11												
12												
13			Maximum depth explored approximately 12 feet.									
14												

Notes: Groundwater encountered at 5½ feet below the existing ground surface.

Tests Key
CBR = California Bearing Ratio
C = Consolidation
R = Resistivity
DS = Direct Shear
SS = Soluble Sulfates
B = Burnoff

LOG OF TESTPIT LOGS.GPJ EARTHTEC.GDT 4/5/21

PROJECT NO.: 218318

EARTHTEC ENGINEERING

FIGURE NO.: 16

TEST PIT LOG
NO.: TP-14

PROJECT: Stonecreek Plats F and G
CLIENT: Woodside Homes
LOCATION: See Figure 2
OPERATOR: D. Judd
EQUIPMENT: Track Mounted Mini-Excavator
DEPTH TO WATER; INITIAL ▽ :

PROJECT NO.: 218318
DATE: 03/12/21
ELEVATION: Not Measured
LOGGED BY: S. Roberts
AT COMPLETION ▼ : 6.75 ft.

Depth (Ft.)	Graphic Log	USCS	Description	Samples	TEST RESULTS: Water Cont. (%)	Dry Dens. (pcf)	LL	PI	Gravel (%)	Sand (%)	Fines (%)	Other Tests
0			TOPSOIL, lean clay, slightly moist, dark brown, roots									
1–8		CL	Lean CLAY with sand, medium stiff (estimated), slightly moist, brown, iron oxide staining, roots, pinholes									
8–9		GM	Silty GRAVEL with sand, dense (estimated), wet, brownish gray									
10–12		CL	Sandy Lean CLAY, medium stiff (estimated), wet, gray									
12			Maximum depth explored approximately 12 feet.									

Notes: Groundwater encountered at 6¾ feet below the existing ground surface.

Tests Key
CBR = California Bearing Ratio
C = Consolidation
R = Resistivity
DS = Direct Shear
SS = Soluble Sulfates
B = Burnoff

PROJECT NO.: 218318

EARTHTEC ENGINEERING

FIGURE NO.: 17

LOG OF TESTPIT LOGS.GPJ EARTHTEC.GDT 4/5/21

TEST PIT LOG
NO.: TP-15

PROJECT: Stonecreek Plats F and G
CLIENT: Woodside Homes
LOCATION: See Figure 2
OPERATOR: D. Judd
EQUIPMENT: Track Mounted Mini-Excavator
DEPTH TO WATER; INITIAL ▽ :

PROJECT NO.: 218318
DATE: 03/12/21
ELEVATION: Not Measured
LOGGED BY: S. Roberts
AT COMPLETION ▼ : 8 ft.

Depth (Ft.)	Graphic Log	USCS	Description	Samples	TEST RESULTS: Water Cont. (%)	Dry Dens. (pcf)	LL	PI	Gravel (%)	Sand (%)	Fines (%)	Other Tests
0			FILL, lean clay with gravel, slightly moist, brown, boulders									
1			TOPSOIL, lean clay with sand, slightly moist, dark brown to black									
2			Lean CLAY with sand, medium stiff (estimated), slightly moist, brown, iron oxide staining, pinholes, roots									
3												
4		CL										
5					21	95	31	10	2	26	72	C
6												
7			Poorly Graded GRAVEL with silt and sand, medium dense to dense (estimated), slightly moist, brown		4		20	NP	78	17	5	
8		GP-GM										
9												
10												
11			Lean CLAY with sand, medium stiff (estimated), wet, gray									
12		CL										
13			Maximum depth explored approximately 12 feet.									
14												

Notes: Groundwater encountered at 8 feet below the existing ground surface.

Tests Key
CBR = California Bearing Ratio
C = Consolidation
R = Resistivity
DS = Direct Shear
SS = Soluble Sulfates
B = Burnoff

PROJECT NO.: 218318

EARTHTEC ENGINEERING

FIGURE NO.: 18

LOG OF TESTPIT LOGS.GPJ EARTHTEC.GDT 4/5/21

TEST PIT LOG
NO.: TP-16

PROJECT: Stonecreek Plats F and G
CLIENT: Woodside Homes
LOCATION: See Figure 2
OPERATOR: D. Judd
EQUIPMENT: Track Mounted Mini-Excavator
DEPTH TO WATER; INITIAL ▽ :

PROJECT NO.: 218318
DATE: 03/18/21
ELEVATION: Not Measured
LOGGED BY: S. Roberts
AT COMPLETION ▼ : 7.5 ft.

Depth (Ft.)	Graphic Log	USCS	Description	Samples	TEST RESULTS: Water Cont. (%)	Dry Dens. (pcf)	LL	PI	Gravel (%)	Sand (%)	Fines (%)	Other Tests
0			FILL, lean clay, slightly moist, brown									
1												
2			TOPSOIL, lean clay with sand, slightly moist, black									
3			Sandy SILT, medium stiff (estimated), slightly moist, brown, iron oxide staining, pinholes									
4		ML										
5				■	17	102	23	NP	4	36	60	C
6												
7			Silty GRAVEL with sand, medium dense (estimated), wet, brownish gray ▼									
8				☒								
9		GM										
10												
11												
12			Maximum depth explored approximately 12 feet.									
13												
14												

Notes: Groundwater encountered at 7½ feet below the existing ground surface.

Tests Key
CBR = California Bearing Ratio
C = Consolidation
R = Resistivity
DS = Direct Shear
SS = Soluble Sulfates
B = Burnoff

PROJECT NO.: 218318

EARTHTEC ENGINEERING

FIGURE NO.: 19

LOG OF TESTPIT LOGS.GPJ EARTHTEC.GDT 4/5/21

TEST PIT LOG
NO.: TP-17

PROJECT: Stonecreek Plats F and G
CLIENT: Woodside Homes
LOCATION: See Figure 2
OPERATOR: D. Judd
EQUIPMENT: Track Mounted Mini-Excavator
DEPTH TO WATER; INITIAL ▽ :

PROJECT NO.: 218318
DATE: 03/18/21
ELEVATION: Not Measured
LOGGED BY: S. Roberts
AT COMPLETION ▼ : 5.5 ft.

Depth (Ft.)	Graphic Log	USCS	Description	Samples	TEST RESULTS: Water Cont. (%)	Dry Dens. (pcf)	LL	PI	Gravel (%)	Sand (%)	Fines (%)	Other Tests
0			TOPSOIL, lean clay with sand, slightly moist, dark brown									
1												
2			Sandy SILT, medium stiff (estimated), slightly moist to wet, gray, pinholes, roots									
3												
4		ML										
5					17	105	23	NP	3	40	57	C
6												
7			Silty GRAVEL with sand, medium dense (estimated), wet, brown									
8												
9		GM										
10												
11			Lean CLAY with sand, medium stiff (estimated), wet, brownish gray									
12		CL										
13			Maximum depth explored approximately 12 feet.									
14												

Notes: Groundwater encountered at 5½ feet below the existing ground surface.

Tests Key
CBR = California Bearing Ratio
C = Consolidation
R = Resistivity
DS = Direct Shear
SS = Soluble Sulfates
B = Burnoff

PROJECT NO.: 218318

EARTHTEC ENGINEERING

FIGURE NO.: 20

LOG OF TESTPIT LOGS.GPJ EARTHTEC.GDT 4/5/21

TEST PIT LOG
NO.: TP-18

PROJECT: Stonecreek Plats F and G
CLIENT: Woodside Homes
LOCATION: See Figure 2
OPERATOR: D. Judd
EQUIPMENT: Track Mounted Mini-Excavator
DEPTH TO WATER; INITIAL ▽ :

PROJECT NO.: 218318
DATE: 03/18/21
ELEVATION: Not Measured
LOGGED BY: S. Roberts
AT COMPLETION ▼ : 6 ft.

Depth (Ft.)	Graphic Log	USCS	Description	Samples	TEST RESULTS: Water Cont. (%)	Dry Dens. (pcf)	LL	PI	Gravel (%)	Sand (%)	Fines (%)	Other Tests
0			FILL, lean clay with gravel, slightly moist, brown									
4			TOPSOIL, lean clay, slightly moist, dark brown									
5		CL	Lean CLAY with sand, medium stiff (estimated), moist, gray, roots									
7		GM	Silty GRAVEL with sand, medium dense (estimated), wet, brownish gray									
8		CL	Lean CLAY with sand, medium stiff (estimated), wet, gray, rootholes									
12			Maximum depth explored approximately 12 feet.									

Notes: Groundwater encountered at 6 feet below the existing ground surface.

Tests Key
CBR = California Bearing Ratio
C = Consolidation
R = Resistivity
DS = Direct Shear
SS = Soluble Sulfates
B = Burnoff

PROJECT NO.: 218318

EARTHTEC ENGINEERING

FIGURE NO.: 21

LOG OF TESTPIT LOGS.GPJ EARTHTEC.GDT 4/5/21

TEST PIT LOG
NO.: TP-19

PROJECT: Stonecreek Plats F and G
CLIENT: Woodside Homes
LOCATION: See Figure 2
OPERATOR: D. Judd
EQUIPMENT: Track Mounted Mini-Excavator
DEPTH TO WATER; INITIAL ▽ :

PROJECT NO.: 218318
DATE: 03/18/21
ELEVATION: Not Measured
LOGGED BY: S. Roberts
AT COMPLETION ▼ : 6 ft.

Depth (Ft.)	Graphic Log	USCS	Description	Samples	TEST RESULTS: Water Cont. (%)	Dry Dens. (pcf)	LL	PI	Gravel (%)	Sand (%)	Fines (%)	Other Tests
0			FILL, lean clay with gravel, slightly moist, brown									
3			TOPSOIL, lean clay with sand, slightly moist, dark brown, roots									
5		CL	Lean CLAY with sand, medium stiff (estimated), slightly moist, brown									
7		GM	Silty GRAVEL with sand, medium dense (estimated), wet, brown									
10			Maximum depth explored approximately 10 feet due to cave-ins.									

Notes: Groundwater encountered at 6 feet below the existing ground surface.

Tests Key
CBR = California Bearing Ratio
C = Consolidation
R = Resistivity
DS = Direct Shear
SS = Soluble Sulfates
B = Burnoff

PROJECT NO.: 218318

EARTHTEC ENGINEERING

FIGURE NO.: 22

LOG OF TESTPIT LOGS.GPJ EARTHTEC.GDT 4/5/21

TEST PIT LOG
NO.: TP-20

PROJECT: Stonecreek Plats F and G
CLIENT: Woodside Homes
LOCATION: See Figure 2
OPERATOR: D. Judd
EQUIPMENT: Track Mounted Mini-Excavator
DEPTH TO WATER; INITIAL ▽ :

PROJECT NO.: 218318
DATE: 03/18/21
ELEVATION: Not Measured
LOGGED BY: S. Roberts
AT COMPLETION ▼ : 5.5 ft.

Depth (Ft.)	Graphic Log	USCS	Description	Samples	TEST RESULTS: Water Cont. (%)	Dry Dens. (pcf)	LL	PI	Gravel (%)	Sand (%)	Fines (%)	Other Tests
0			FILL, lean clay with gravel, slightly moist, brown, debris									
1				X								
2												
3			TOPSOIL, lean clay with sand, slightly moist, dark brown, organics, roots									
4			SILT with sand, medium stiff (estimated), slightly moist, brown									
5		ML		■	21	110	26	4	5	12	83	C
6			▼									
7			Silty GRAVEL with sand, very dense (estimated), wet, brown	X								
8		GM										
9			Lean CLAY with sand, stiff (estimated), wet, gray									
10				■								
11		CL										
12			Maximum depth explored approximately 12 feet.									
13												
14												

Notes: Groundwater encountered at 5½ feet below the existing ground surface.

Tests Key
CBR = California Bearing Ratio
C = Consolidation
R = Resistivity
DS = Direct Shear
SS = Soluble Sulfates
B = Burnoff

PROJECT NO.: 218318

EARTHTEC ENGINEERING

FIGURE NO.: 23

LOG OF TESTPIT LOGS.GPJ EARTHTEC.GDT 4/5/21

LEGEND

PROJECT: Stonecreek Plats F and G
CLIENT: Woodside Homes
DATE: 03/12/21
LOGGED BY: S. Roberts

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR SOIL DIVISIONS			USCS SYMBOL	TYPICAL SOIL DESCRIPTIONS
COARSE GRAINED SOILS (More than 50% retaining on No. 200 Sieve)	GRAVELS (More than 50% of coarse fraction retained on No. 4 Sieve)	CLEAN GRAVELS (Less than 5% fines)	GW	Well Graded Gravel, May Contain Sand, Very Little Fines
			GP	Poorly Graded Gravel, May Contain Sand, Very Little Fines
		GRAVELS WITH FINES (More than 12% fines)	GM	Silty Gravel, May Contain Sand
			GC	Clayey Gravel, May Contain Sand
	SANDS (50% or more of coarse fraction passes No. 4 Sieve)	CLEAN SANDS (Less than 5% fines)	SW	Well Graded Sand, May Contain Gravel, Very Little Fines
			SP	Poorly Graded Sand, May Contain Gravel, Very Little Fines
		SANDS WITH FINES (More than 12% fines)	SM	Silty Sand, May Contain Gravel
			SC	Clayey Sand, May Contain Gravel
FINE GRAINED SOILS (More than 50% passing No. 200 Sieve)	SILTS AND CLAYS (Liquid Limit less than 50)		CL	Lean Clay, Inorganic, May Contain Gravel and/or Sand
			ML	Silt, Inorganic, May Contain Gravel and/or Sand
			OL	Organic Silt or Clay, May Contain Gravel and/or Sand
	SILTS AND CLAYS (Liquid Limit Greater than 50)		CH	Fat Clay, Inorganic, May Contain Gravel and/or Sand
			MH	Elastic Silt, Inorganic, May Contain Gravel and/or Sand
			OH	Organic Clay or Silt, May Contain Gravel and/or Sand
HIGHLY ORGANIC SOILS			PT	Peat, Primarily Organic Matter

SAMPLER DESCRIPTIONS

- SPLIT SPOON SAMPLER (1 3/8 inch inside diameter)
- MODIFIED CALIFORNIA SAMPLER (2 inch outside diameter)
- SHELBY TUBE (3 inch outside diameter)
- BLOCK SAMPLE
- BAG/BULK SAMPLE

WATER SYMBOLS

- ▽ Water level encountered during field exploration
- ▼ Water level encountered at completion of field exploration

NOTES:
1. The logs are subject to the limitations, conclusions, and recommendations in this report.
2. Results of tests conducted on samples recovered are reported on the logs and any applicable graphs.
3. Strata lines on the logs represent approximate boundaries only. Actual transitions may be gradual.
4. In general, USCS symbols shown on the logs are based on visual methods only: actual designations (based on laboratory tests) may vary.

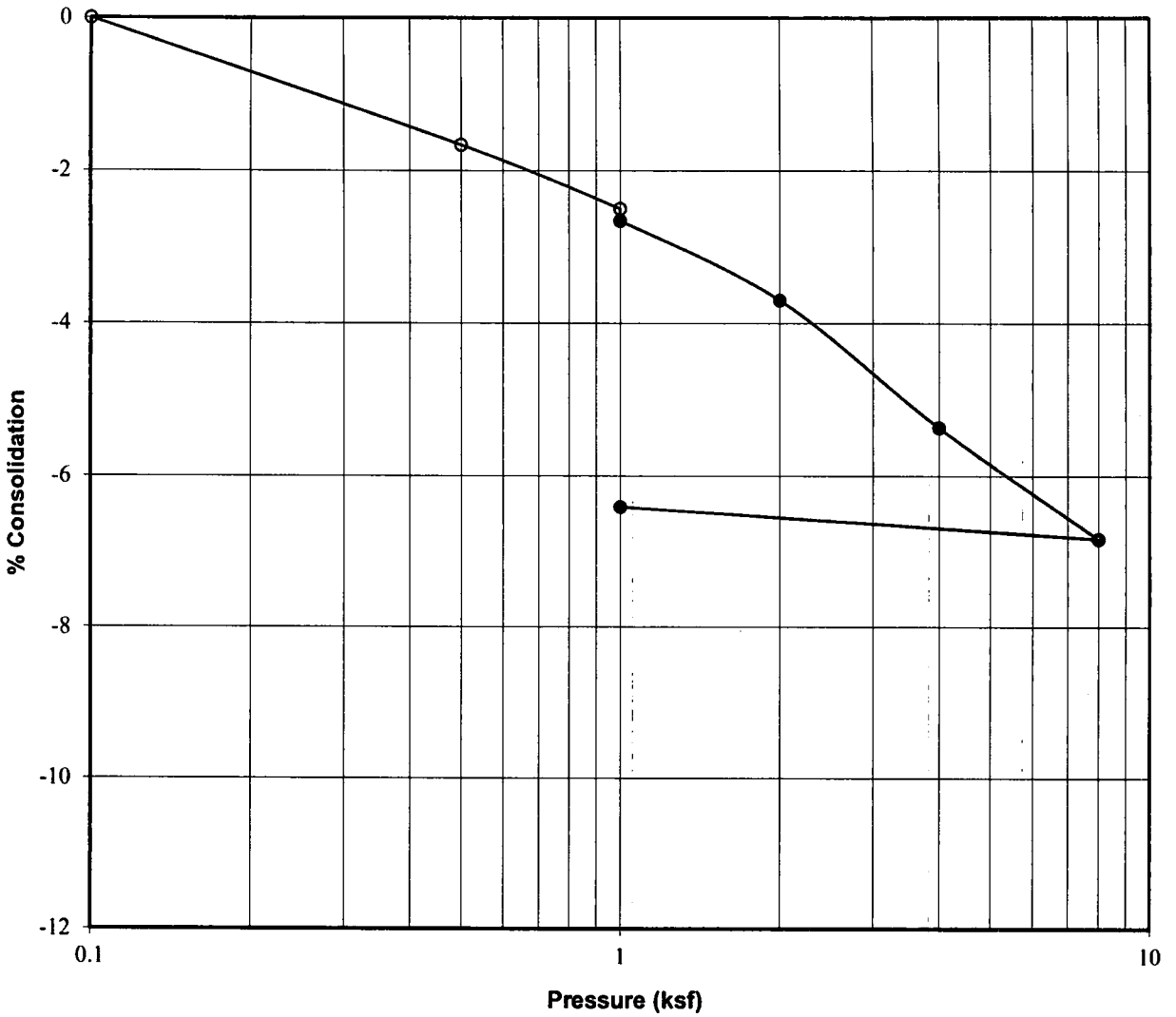
PROJECT NO.: 218318

EARTHTEC ENGINEERING

FIGURE NO.: 24

LEGEND LOGS.GPJ EARTHTEC.GDT 4/5/21

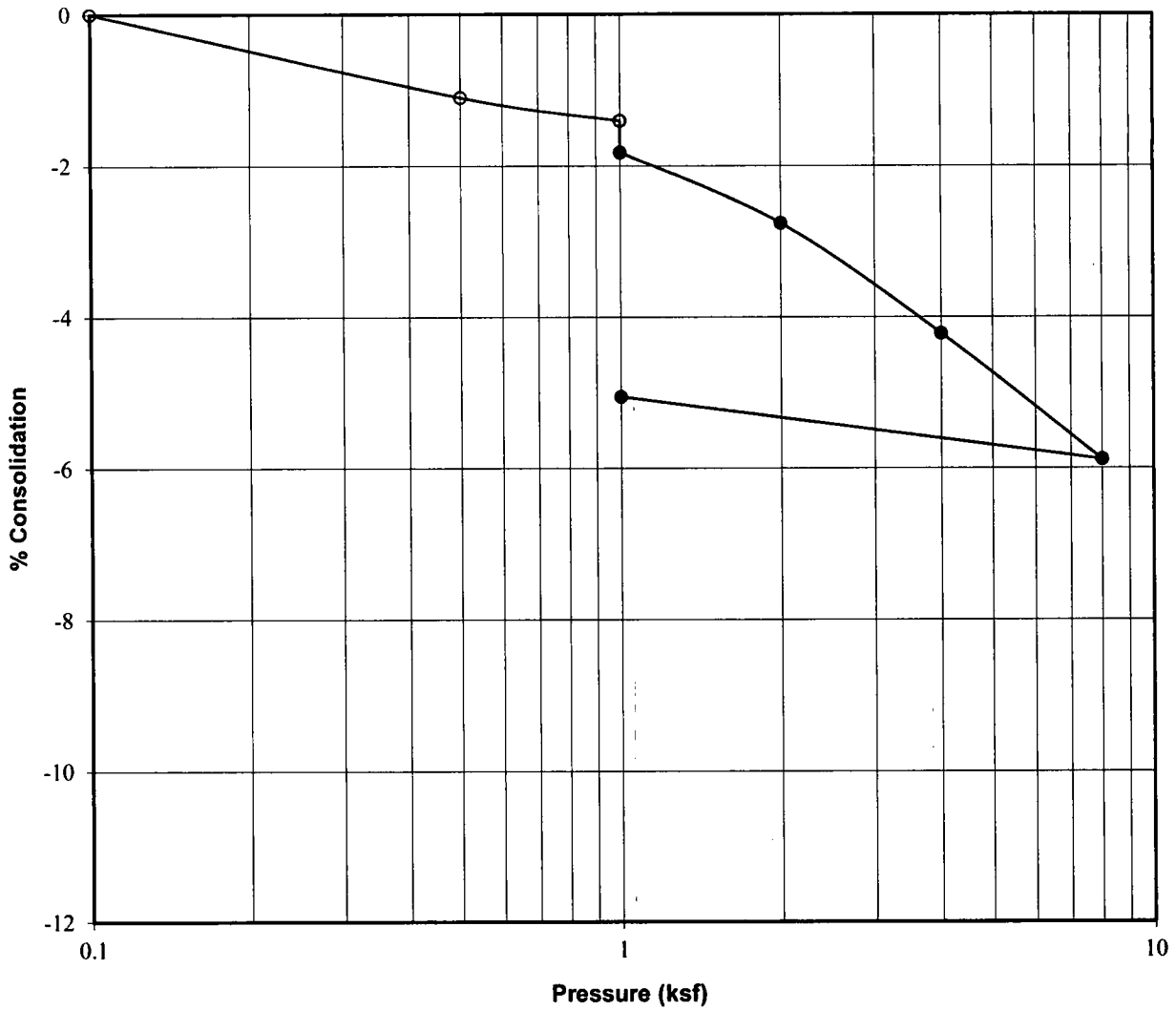
CONSOLIDATION - SWELL TEST



Project:	Stonecreek Plats F and G
Location:	TP-1
Sample Depth, ft:	6½
Description:	Block
Soil Type:	SILT with sand (ML)
Natural Moisture, %:	29
Dry Density, pcf:	99
Liquid Limit:	26
Plasticity Index:	NP
Water Added at:	1 ksf
Percent Collapse:	0.2

PROJECT NO.: 218318	EARTHTEC ENGINEERING	**FIGURE NO.:** 25

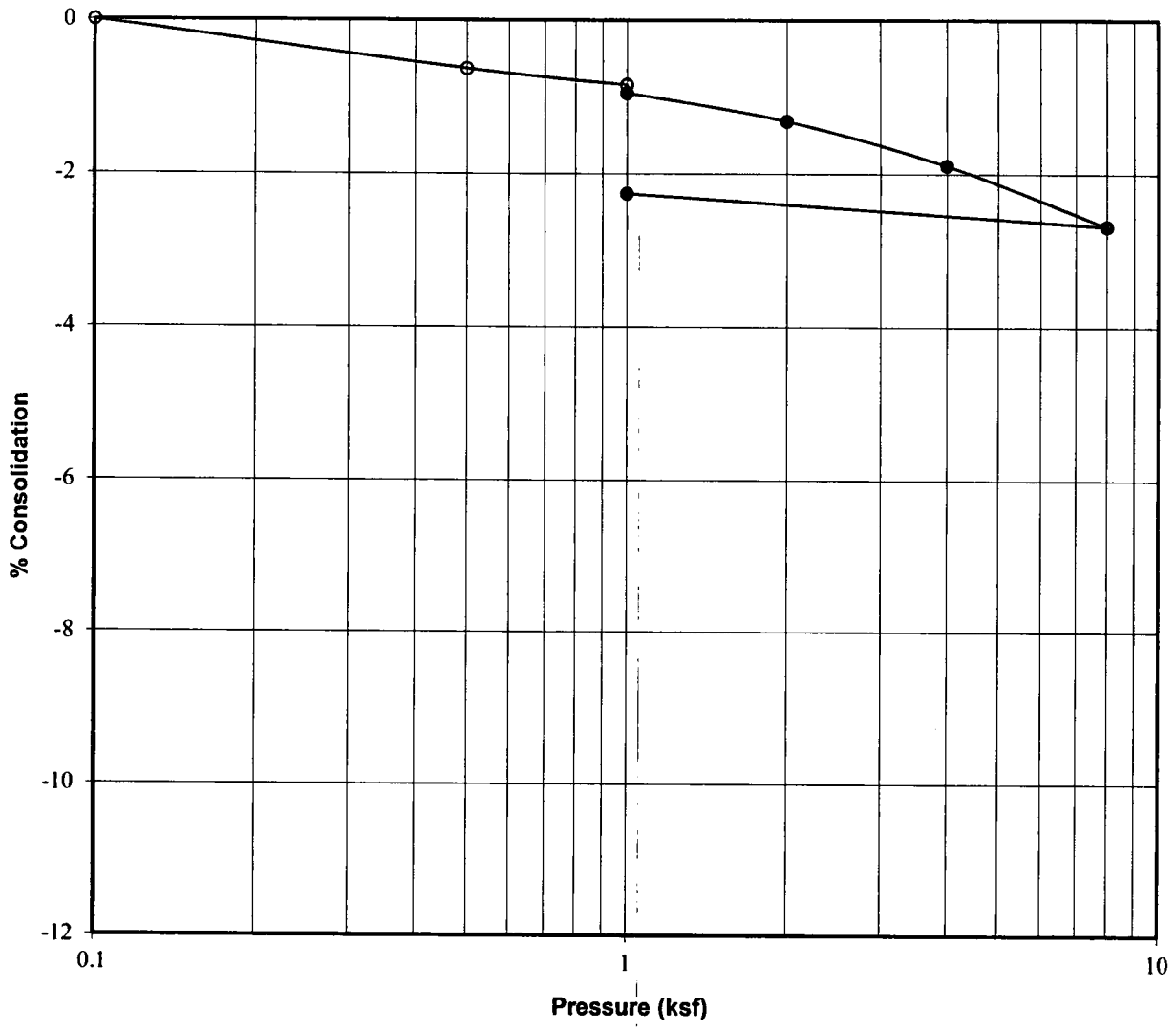
CONSOLIDATION - SWELL TEST



Project:	Stonecreek Plats F and G
Location:	TP-5
Sample Depth, ft:	4
Description:	Block
Soil Type:	Silty SAND (SM)
Natural Moisture, %:	28
Dry Density, pcf:	103
Liquid Limit:	21
Plasticity Index:	NP
Water Added at:	1 ksf
Percent Collapse:	0.4

PROJECT NO.: 218318	EARTHTEC ENGINEERING	**FIGURE NO.:** 26

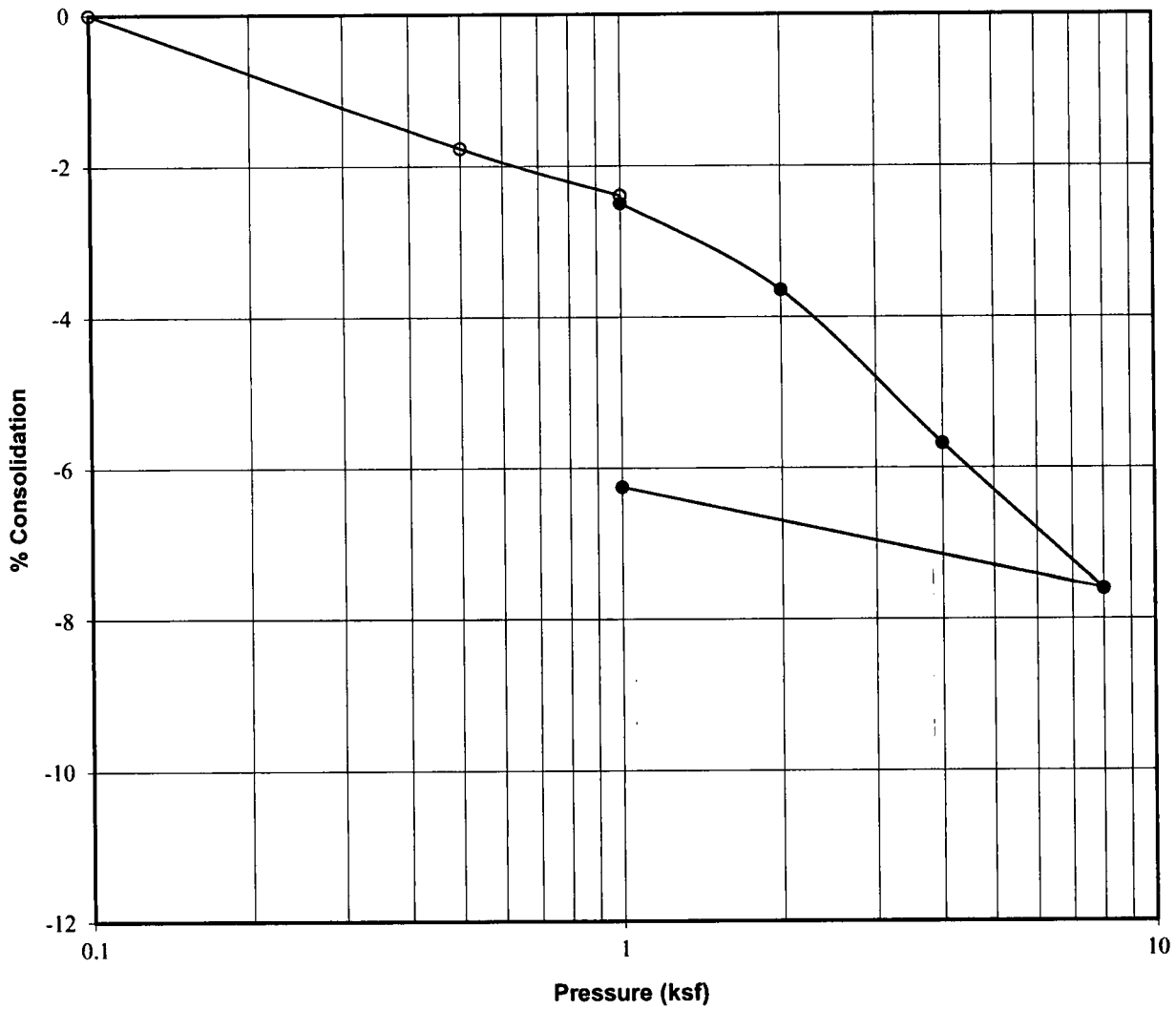
CONSOLIDATION - SWELL TEST



Project:	Stonecreek Plats F and G
Location:	TP-6
Sample Depth, ft:	4
Description:	Block
Soil Type:	Silty GRAVEL with sand (GM)
Natural Moisture, %:	16
Dry Density, pcf:	110
Liquid Limit:	28
Plasticity Index:	5
Water Added at:	1 ksf
Percent Collapse:	0.1

PROJECT NO.: 218318	EARTHTEC ENGINEERING	**FIGURE NO.:** 27

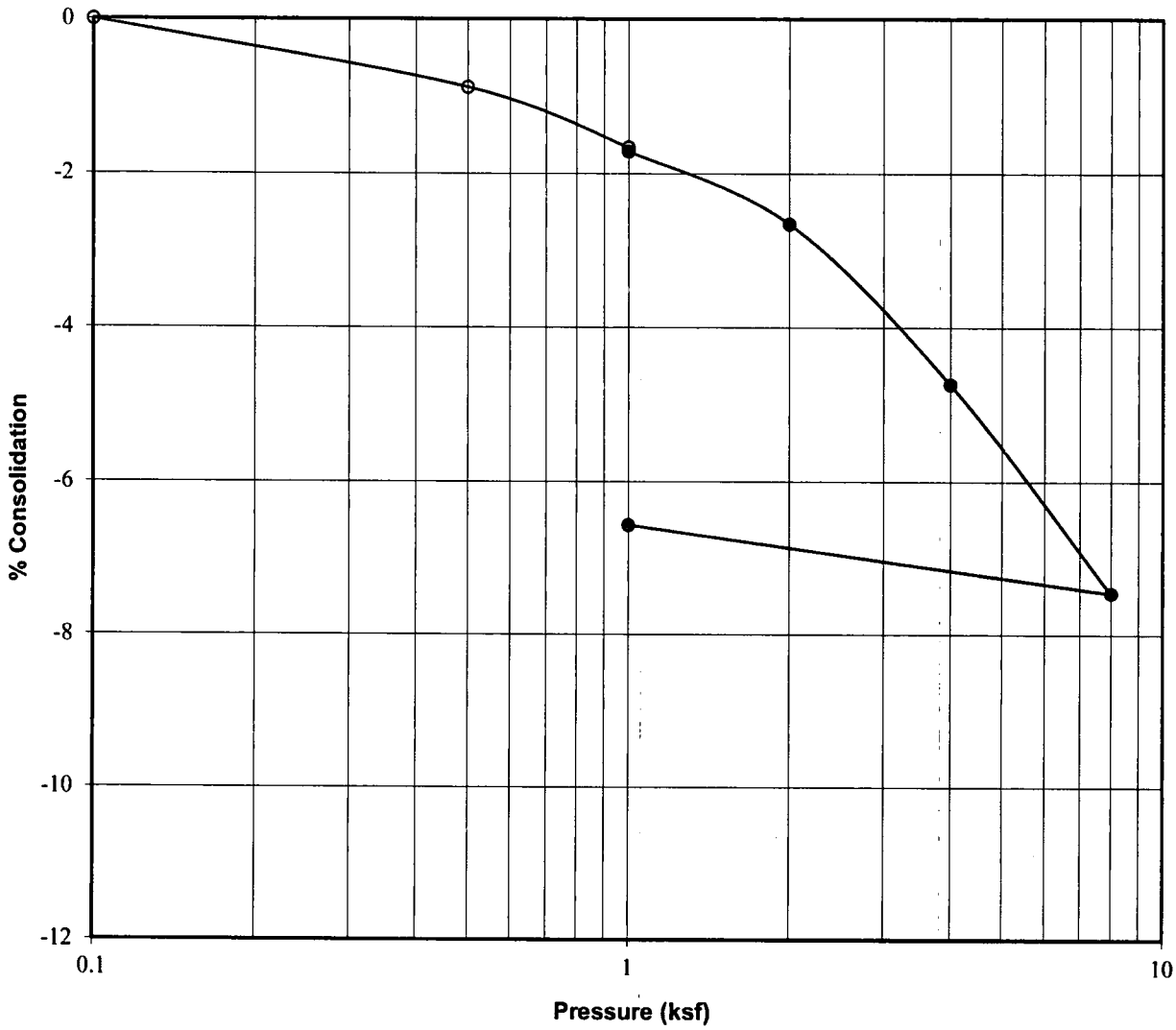
CONSOLIDATION - SWELL TEST



Project:	Stonecreek Plats F and G
Location:	TP-7
Sample Depth, ft:	8½
Description:	Block
Soil Type:	Sandy SILT (ML)
Natural Moisture, %:	31
Dry Density, pcf:	97
Liquid Limit:	23
Plasticity Index:	NP
Water Added at:	1 ksf
Percent Collapse:	0.1

PROJECT NO.: 218318	EARTHTEC ENGINEERING	**FIGURE NO.:** 28

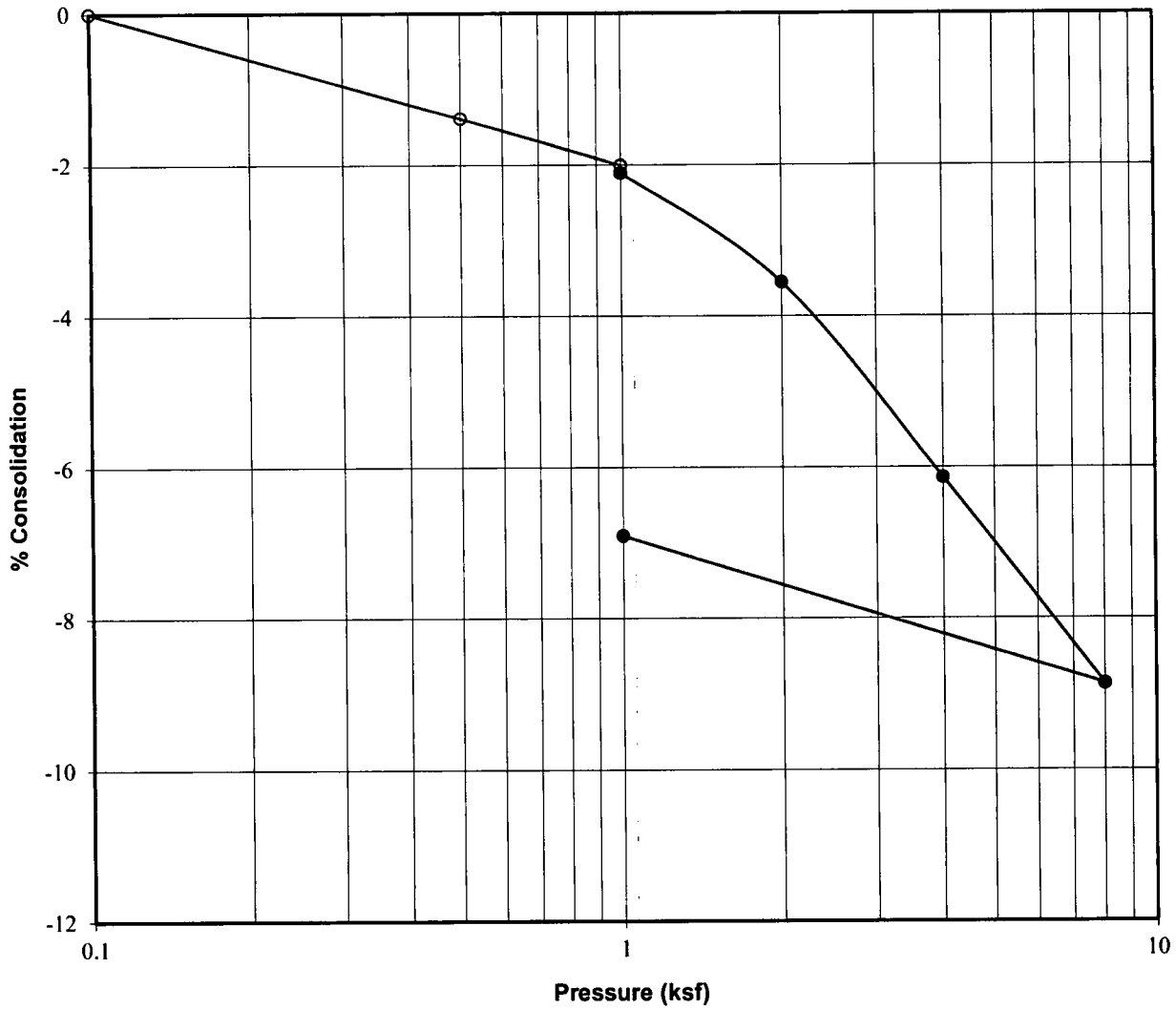
CONSOLIDATION - SWELL TEST



Project:	Stonecreek Plats F and G
Location:	TP-9
Sample Depth, ft:	3½
Description:	Block
Soil Type:	Sandy SILT (ML)
Natural Moisture, %:	32
Dry Density, pcf:	94
Liquid Limit:	24
Plasticity Index:	NP
Water Added at:	1 ksf
Percent Collapse:	0.1

PROJECT NO.: 218318	EARTHTEC ENGINEERING	**FIGURE NO.:** 29

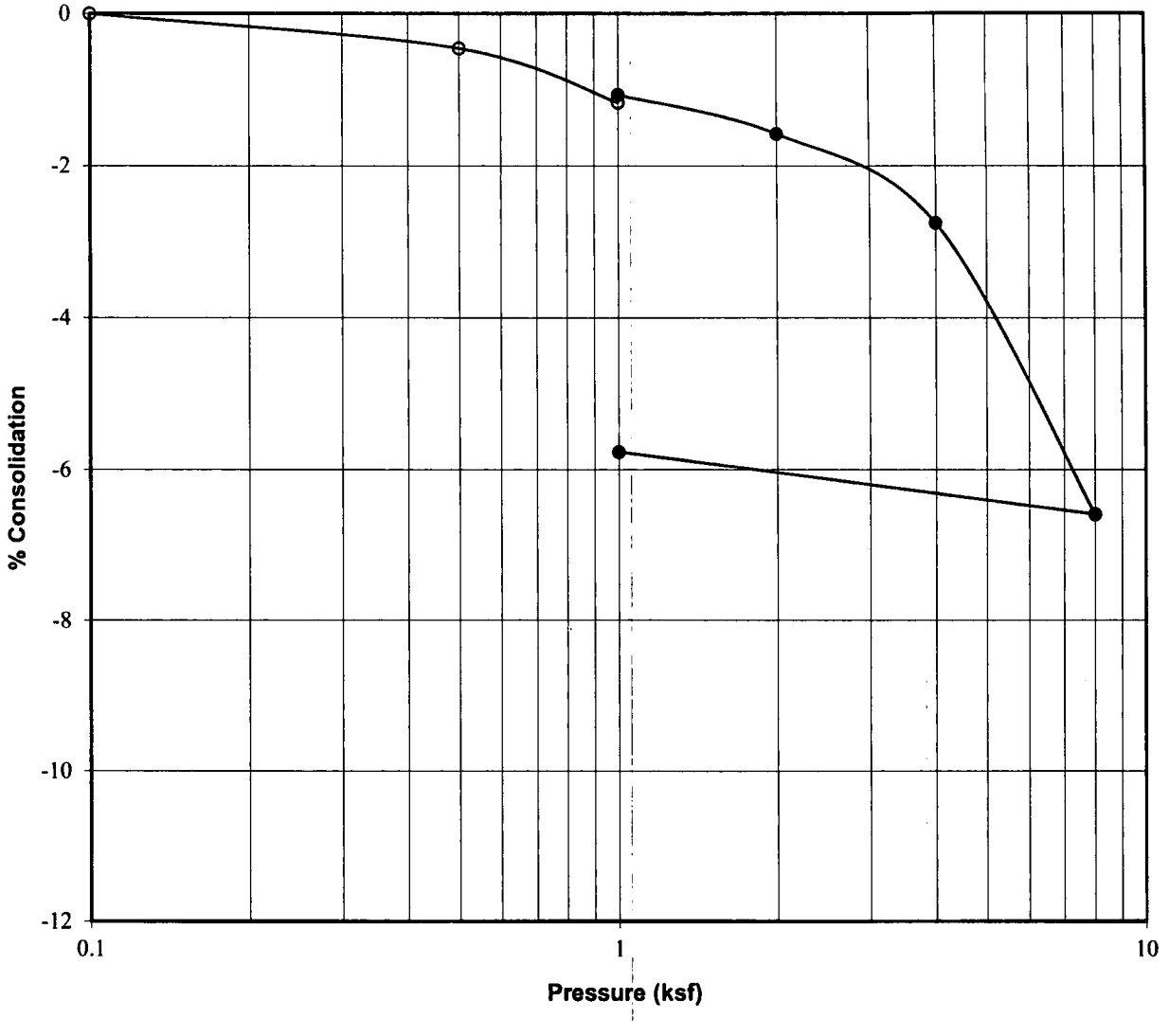
CONSOLIDATION - SWELL TEST



Project:	Stonecreek Plats F and G
Location:	TP-13
Sample Depth, ft:	4½
Description:	Block
Soil Type:	Lean CLAY with sand (CL)
Natural Moisture, %:	28
Dry Density, pcf:	94
Liquid Limit:	41
Plasticity Index:	17
Water Added at:	1 ksf
Percent Collapse:	0.1

PROJECT NO.: 218318	EARTHTEC ENGINEERING	**FIGURE NO.:** 30

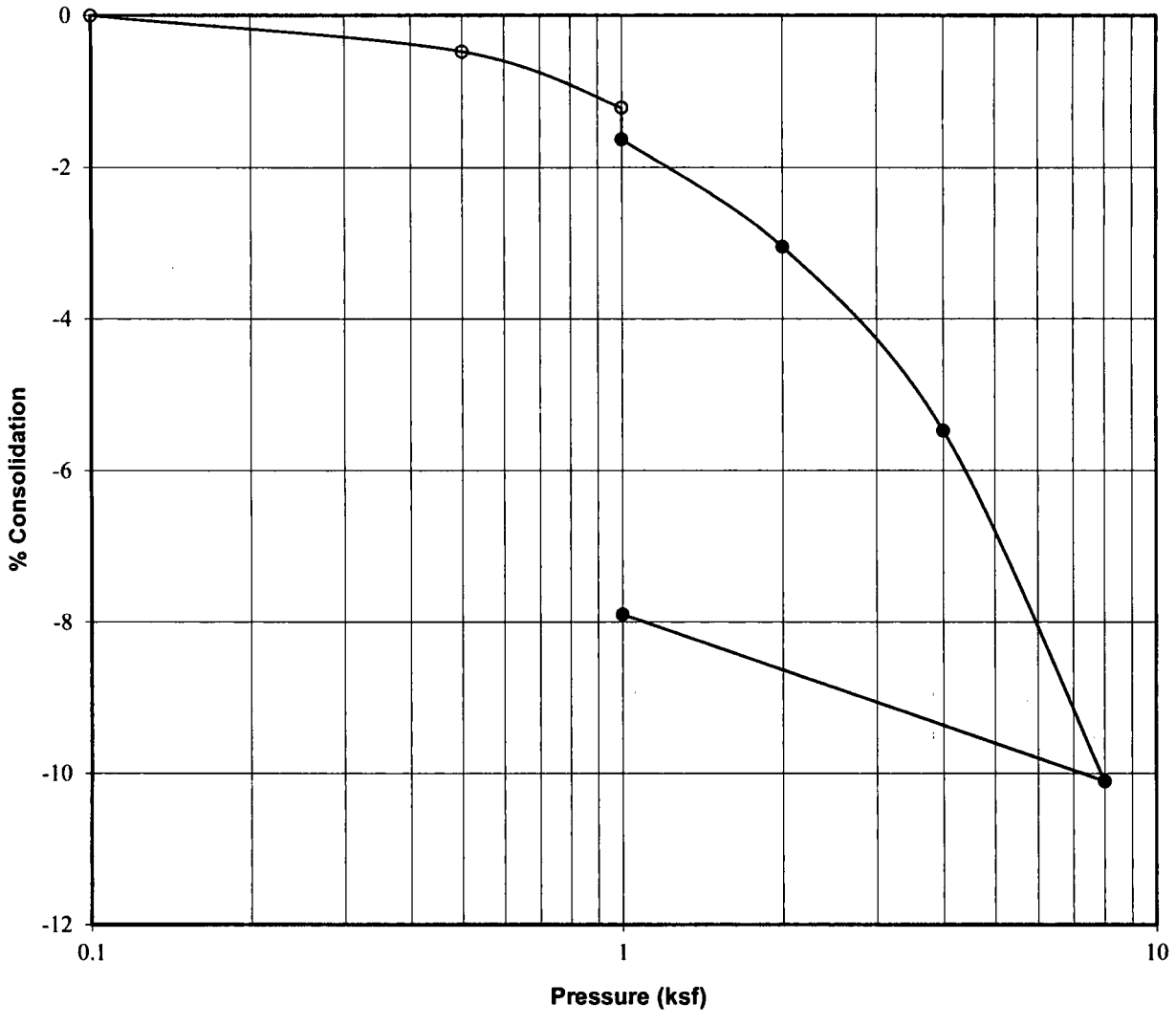
CONSOLIDATION - SWELL TEST



Project:	Stonecreek Plats F and G
Location:	TP-15
Sample Depth, ft:	5
Description:	Block
Soil Type:	Lean CLAY with sand (CL)
Natural Moisture, %:	21
Dry Density, pcf:	95
Liquid Limit:	31
Plasticity Index:	10
Water Added at:	1 ksf
Percent Swell:	0.1

PROJECT NO.: 218318	EARTHTEC ENGINEERING	**FIGURE NO.:** 31

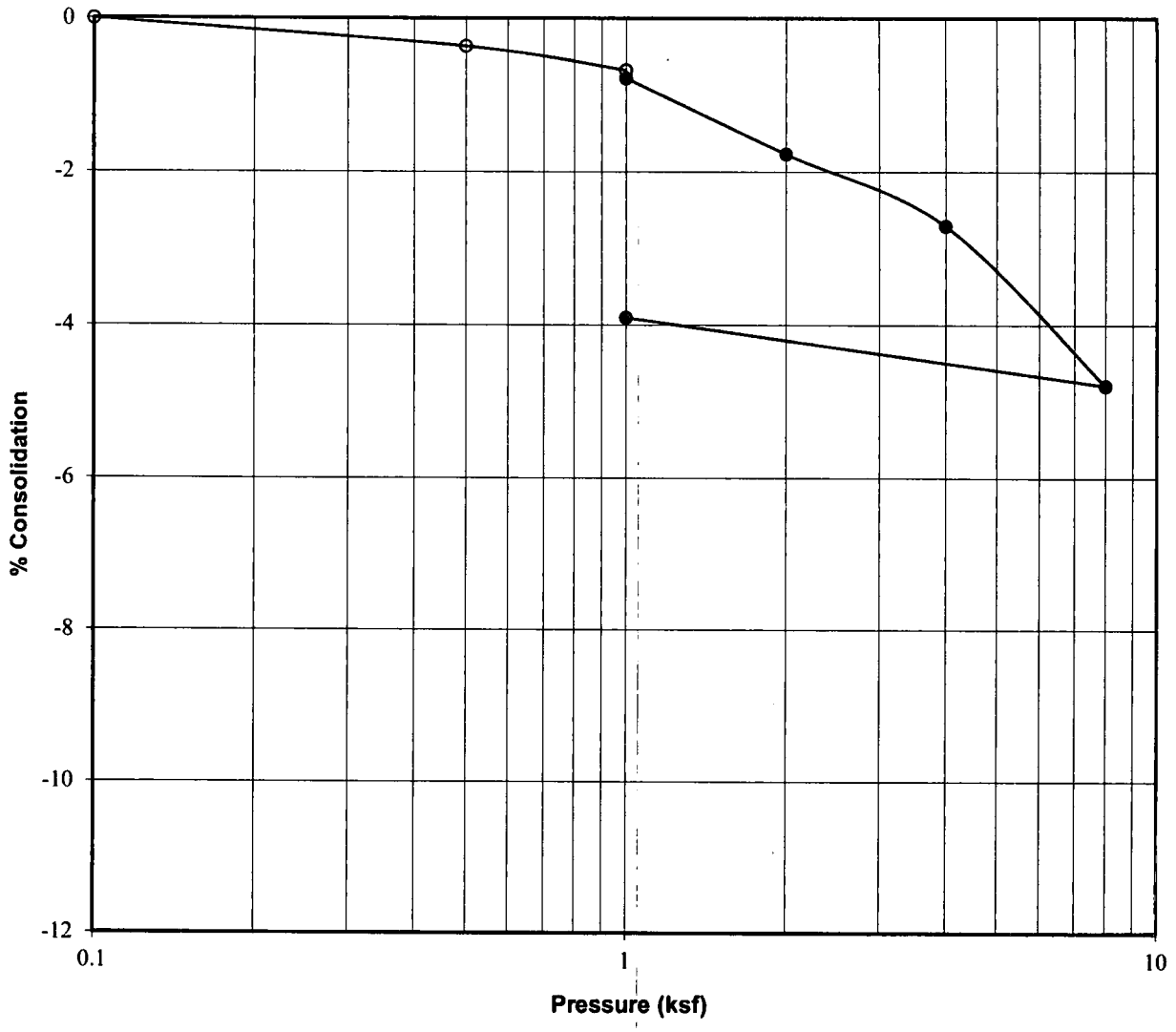
CONSOLIDATION - SWELL TEST



Project:	Stonecreek Plats F and G
Location:	TP-16
Sample Depth, ft:	5
Description:	Block
Soil Type:	Sandy SILT (ML)
Natural Moisture, %:	17
Dry Density, pcf:	102
Liquid Limit:	23
Plasticity Index:	NP
Water Added at:	1 ksf
Percent Collapse:	0.4

PROJECT NO.: 218318	EARTHTEC ENGINEERING	**FIGURE NO.:** 32

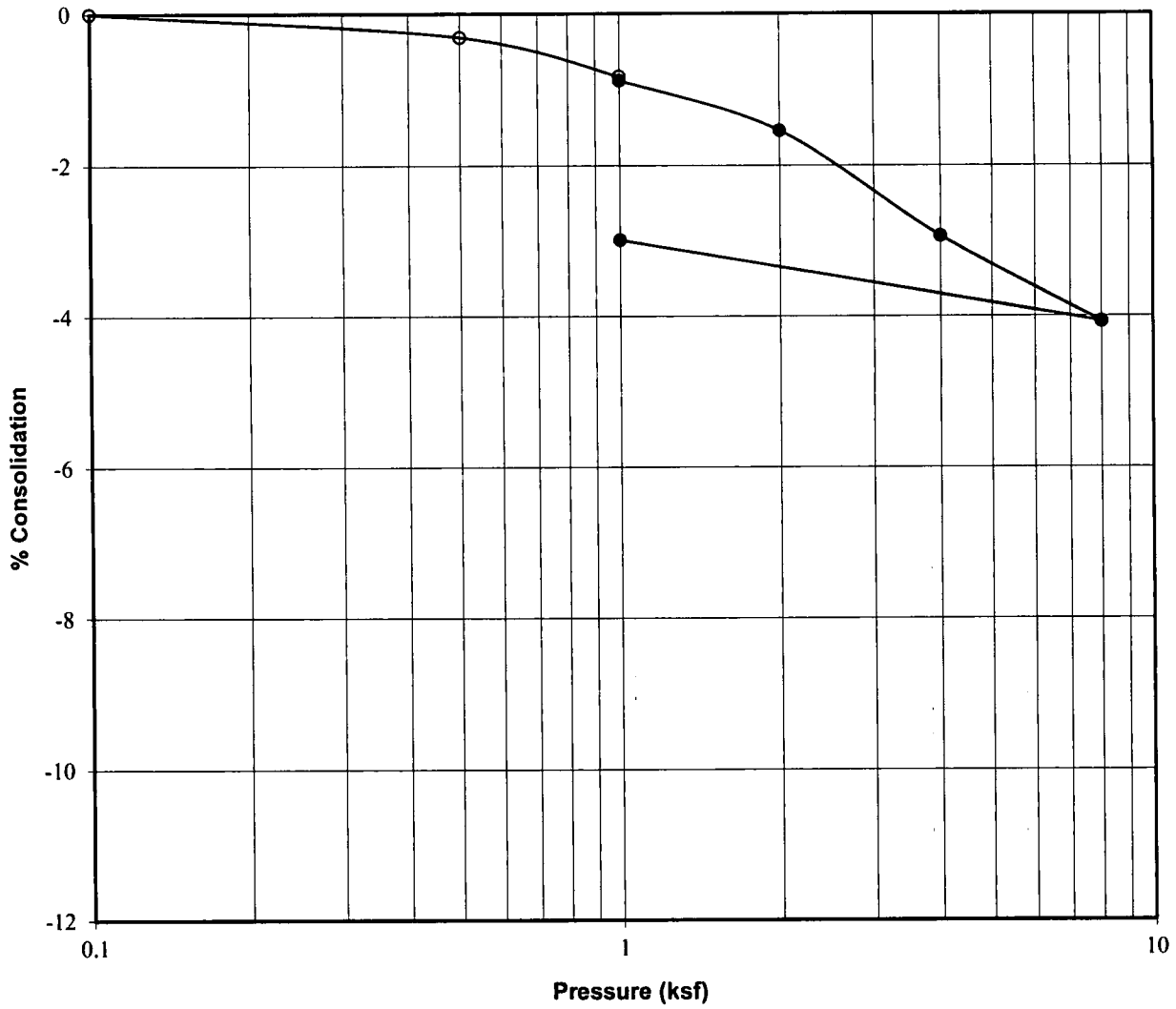
CONSOLIDATION - SWELL TEST



Project:	Stonecreek Plats F and G
Location:	TP-17
Sample Depth, ft:	4
Description:	Block
Soil Type:	Sandy SILT (ML)
Natural Moisture, %:	17
Dry Density, pcf:	105
Liquid Limit:	23
Plasticity Index:	NP
Water Added at:	1 ksf
Percent Collapse:	0.1

PROJECT NO.: 218318	EARTHTEC ENGINEERING	**FIGURE NO.:** 33

CONSOLIDATION - SWELL TEST



Project:	Stonecreek Plats F and G
Location:	TP-20
Sample Depth, ft:	4
Description:	Block
Soil Type:	SILT with sand (ML)
Natural Moisture, %:	21
Dry Density, pcf:	110
Liquid Limit:	26
Plasticity Index:	4
Water Added at:	1 ksf
Percent Collapse:	0.1

PROJECT NO.: 218318	EARTHTEC ENGINEERING	**FIGURE NO.:** 34

APPENDIX A

Timpview Analytical Laboratories
A Chemtech-Ford, Inc. Affiliate
1384 West 130 South Orem, UT 84058 (801) 229-2282

Certificate of Analysis

Earth Tech, LLC (dba Earthtec)
Jeremy Balleck
1497 W 40 S
Lindon, UT 84042
DW System # :

Work Order #: 21C0826
PO# / Project Name: 218318
Receipt: 3/15/21 14:38
Batch Temp °C: 25.7
Date Reported: 3/22/2021

Sample Name: 218318 TP-3 @ 2'
Collected: 3/12/21 10:15 **Matrix:** Solid **Collected By:** Sterling Roberts

Parameter	Lab ID #	Method	Analysis Date / Time	Result	Units	MRL	Flags
Sulfate, Soluble (IC)	21C0826-01	EPA 300.0	3/19/21	112	mg/kg dry	12	
Total Solids	21C0826-01	SM 2540G	3/16/21	80.7	%	0.1	

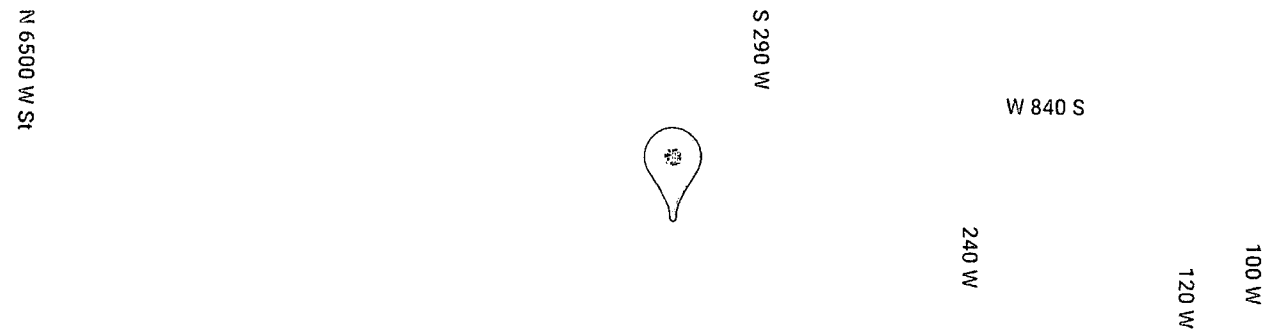
Comment:

Reviewed by: Joyce Applegate

Joyce Applegate, Project Manager

OSHPD

Latitude, Longitude: 40.359411, -111.807302



Date	3/16/2021, 8:17:26 PM
Design Code Reference Document	ASCE7-16
Risk Category	II
Site Class	D - Default (See Section 11.4.3)

Type	Value	Description
S_S	1.253	MCE_R ground motion. (for 0.2 second period)
S_1	0.453	MCE_R ground motion. (for 1.0s period)
S_{MS}	1.503	Site-modified spectral acceleration value
S_{M1}	null -See Section 11.4.8	Site-modified spectral acceleration value
S_{DS}	1.002	Numeric seismic design value at 0.2 second SA
S_{D1}	null -See Section 11.4.8	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	null -See Section 11.4.8	Seismic design category
F_a	1.2	Site amplification factor at 0.2 second
F_v	null -See Section 11.4.8	Site amplification factor at 1.0 second
PGA	0.562	MCE_G peak ground acceleration
F_{PGA}	1.2	Site amplification factor at PGA
PGA_M	0.675	Site modified peak ground acceleration
T_L	8	Long-period transition period in seconds
SsRT	1.253	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	1.433	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	3.074	Factored deterministic acceleration value. (0.2 second)
S1RT	0.453	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.51	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	1.203	Factored deterministic acceleration value. (1.0 second)
PGAd	1.194	Factored deterministic acceleration value. (Peak Ground Acceleration)
C_{RS}	0.874	Mapped value of the risk coefficient at short periods
C_{R1}	0.888	Mapped value of the risk coefficient at a period of 1 s

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FLEXIBLE PAVEMENT CALCULATIONS

Project: **Stonecreek Plats F and G** Date: **4/5/2021**
Location: **Approximately 900 South Storrs Avenue** By: **TM**

Traffic Data Provided for Year Beginning:	**2014**	Functional Class (FC):	**19**
Traffic Data Provided for Year Ending:		Total Number of Lanes:	**2**
2014 Average Daily Traffic Volume:	**500**	Number Directions:	**4**
Average Daily Traffic Volume:		UDOT Project Number:	**N/A**
Entered Annual Traffic Growth Rate (%):	**2**	Pavement Type:	**Flexible**
Estimated Annual Traffic Growth Rate:		Lane Factor, F =	**1.00**
Projected/Proposed Construction Year:	**2014**	Design Period (years) =	**20**
Projected Final Design Year:	**2,034**	2014 Average Daily Traffic Volume:	**500**

CAT.	AXLE CLASS	VEHICLE TYPE	PERCENT OF ADT	CONSTR. YEAR ADT	GROWTH FACTOR	TOTAL TRAFFIC VOLUME	FC = 19 ESAL + MIDPT TRUCK FACTOR	DESIGN ESAL
I	1 - 2	Motorcycles & Cars	66.8	334	24.30	2,962,092	0.0002	148
	3	Other 2-axle, 4-tire vehicles	33	165	24.30	1,463,309	0.0300	10,975
II	4	Buses	0	0	24.30	0	0.8800	0
III	5 - 7	Single-Unit Trucks	0.1	1	24.30	8,869	0.2912	646
IV	8 - 10	Single-Trailer Combinations	0.1	1	24.30	8,869	2.9028	6,436
V	11 - 13	Multi-Trailer Combinations	0	0	24.30	0	3.6584	0
		TOTALS:	100	501		4,443,139		**18,205**
						DESIGN LANE ESAL/DAY:		**2.5**

	Subgrade	Granular Borrow	Base Course
Subgrade CBR value =	3	10	70
W18 =	18,205	18,205	18,205
R =	90	90	90
Zr =	-1.282	-1.282	-1.282
Mr =	4,500	15,000	27,000
So =	0.45	0.45	0.45
Initial psi, Po =	4.2	4.2	4.2
Final psi, Pt =	2.5	2.5	2.5
Drainage Coefficient =	1.00	1.00	1.00
Structural Number :	**2.17**	**1.33**	**1.01**

	Thickness, inches	Structural Coeff.	Drainage Coeff.	Structural Number	Design Thick. inches	Cumul.Struct. Number
Plant Mix Seal Coat	0.00	0.3		0.00	0	0.00
Asphalt Concrete Pavement	2.52	0.4		1.01	3	1.20
Untreated Base Course	3.19	0.1	1.0	0.32	10	2.20
Granular Borrow	10.60	0.08	1.0	0.85	0	2.20
Total Thickness	16.31			2.17	13	(SN>2.17, OK)

PROJECT NO.: 218318

EARTHTEC ENGINEERING

Settlement--Footings

SETTLEMENT OF FOOTINGS								
Project:	Stonecreek F and G		TP-1					
B:	2	feet (width or diameter)			b =	1	ft (1/2 width/dia)	
L:	25	feet (length)			l =	12.5	ft (1/2 length)	
foot. depth:	2.5	feet					Spread Load,k:	20
unit weight:	127.71	pcf (above footing depth)					Strip Load,k:	3
allowable q:	1500	psf						
footing type:	1	(1=strip,2&3=square/rect.,4=circular)						
	4	(4 for center, 1 for corner of square/rect.)						
water depth:	5	feet						

DEFINE SOIL PROFILE:			preconsol		Density	Collapse	Below ftg.	Avg.
Soil type	C_c'	C_r'	press.,σ_c'(psf)	OCR	(pcf)	(%)	depth (ft)	OCR
Fill	0.001	0.000125			135		0.0	1.00
ML	0.055	0.005	1500		127.71	0.2	22.5	1.22

	STRIP FOOTINGS...							
	Below ftg.		Increased	avg. ovrbn.	Incremnt.	Collapse	Total	
Soil Type	depth (ft)	Influence	Stress (psf)	press.(psf)	Sett. (in.)	Sett. (in.)	Set. (in.)	
Fill	0	0.000	0.0	319.3	0.000	0.000	0.00	
ML	1	0.818	1227.5	447.0	0.063	0.024	0.09	
ML	2	0.550	824.7	574.7	0.023	0.024	0.13	
ML	3	0.396	593.7	671.2	0.017	0.024	0.17	
ML	4	0.306	458.6	736.5	0.013	0.024	0.21	<---2B
ML	5	0.248	372.1	801.8	0.010	0.024	0.25	<---2B
ML	6	0.208	312.6	867.1	0.008	0.024	0.28	
ML	7	0.179	269.2	932.4	0.007	0.024	0.31	
ML	8	0.158	236.3	997.8	0.006	0.024	0.34	
ML	9	0.140	210.5	1063.1	0.005	0.024	0.37	
ML	10	0.126	189.7	1128.4	0.004	0.024	0.39	
ML	11	0.115	172.7	1193.7	0.004	0.024	0.42	
ML	12	0.106	158.4	1259.0	0.003	0.024	0.45	
ML	13	0.098	146.3	1324.3	0.003	0.024	0.48	
ML	14	0.091	136.0	1389.6	0.027	0.024	0.53	
ML	15	0.085	126.9	1454.9	0.024	0.024	0.57	
ML	16	0.079	119.1	1520.2	0.022	0.024	0.62	
ML	17	0.075	112.1	1585.5	0.020	0.024	0.66	
ML	18	0.071	105.9	1650.9	0.018	0.024	0.71	
ML	19	0.067	100.3	1716.2	0.016	0.024	0.75	
ML	20	0.064	95.3	1781.5	0.015	0.024	0.78	
ML	21	0.061	90.8	1846.8	0.014	0.024	0.82	
ML	22	0.058	86.7	1912.1	0.013	0.024	0.86	
ML	22.5	0.057	84.8	1944.8	0.006	0.012	0.88	

Settlement--Footings

SETTLEMENT OF FOOTINGS								
Project:	Stonecreek F and G		TP-5					
B:	2	feet (width or diameter)			b =	1	ft (1/2 width/dia)	
L:	25	feet (length)			l =	12.5	ft (1/2 length)	
foot. depth:	2.5	feet					Spread Load,k:	20
unit weight:	131.84	pcf (above footing depth)					Strip Load,k:	3
allowable q:	1500	psf						
footing type:	1	(1=strip,2&3=square/rect.,4=circular)						
	4	(4 for center, 1 for corner of square/rect.)						
water depth:	6	feet						

DEFINE SOIL PROFILE:			preconsol		Density	Collapse	Below ftg.	Avg.
Soil type	C_c'	C_r'	press.,σ_c'(psf)	OCR	(pcf)	(%)	depth (ft)	OCR
Fill	0.001	0.000125			135		0.0	1.00
CL1	0.055	0.005	1500		131.84	0.2	1.5	4.51
SM	0.055	0.009	1600		131.84	0.4	3.5	2.42
SC	0.03	0.006			130		22.5	1.00

	STRIP FOOTINGS...							
	Below ftg.		Increased	avg. ovrbn.	Incremnt.	Collapse	Total	
Soil Type	depth (ft)	Influence	Stress (psf)	press.(psf)	Sett. (in.)	Sett. (in.)	Set. (in.)	
Fill	0	0.000	0.0	329.6	0.000	0.000	0.00	
CL1	1	0.818	1227.5	461.4	0.065	0.024	0.09	
CL1	1.5	0.668	1002.2	527.4	0.016	0.012	0.12	
SM	2.5	0.462	692.6	659.2	0.034	0.048	0.20	
SM	3.5	0.345	518.0	791.0	0.024	0.048	0.27	
SC	4.5	0.274	411.0	858.6	0.061	0.000	0.33	<---2B
SC	5.5	0.227	339.8	926.2	0.049	0.000	0.38	
SC	6.5	0.193	289.3	993.8	0.040	0.000	0.42	
SC	7.5	0.168	251.7	1061.4	0.033	0.000	0.45	
SC	8.5	0.148	222.6	1129.0	0.028	0.000	0.48	
SC	9.5	0.133	199.6	1196.6	0.024	0.000	0.51	
SC	10.5	0.121	180.8	1264.2	0.021	0.000	0.53	
SC	11.5	0.110	165.2	1331.8	0.018	0.000	0.55	
SC	12.5	0.101	152.1	1399.4	0.016	0.000	0.56	
SC	13.5	0.094	141.0	1467.0	0.014	0.000	0.58	
SC	14.5	0.088	131.3	1534.6	0.013	0.000	0.59	
SC	15.5	0.082	122.9	1602.2	0.012	0.000	0.60	
SC	16.5	0.077	115.5	1669.8	0.010	0.000	0.61	
SC	17.5	0.073	108.9	1737.4	0.010	0.000	0.62	
SC	18.5	0.069	103.0	1805.0	0.009	0.000	0.63	
SC	19.5	0.065	97.8	1872.6	0.008	0.000	0.64	
SC	20.5	0.062	93.0	1940.2	0.007	0.000	0.64	
SC	21.5	0.059	88.7	2007.8	0.007	0.000	0.65	
SC	22.5	0.057	84.8	2075.4	0.006	0.000	0.66	

Settlement--Footings

SETTLEMENT OF FOOTINGS								
Project:	Stonecreek F and G	TP-9						
B:	2	feet (width or diameter)			b =	1	ft (1/2 width/dia)	
L:	25	feet (length)			l =	12.5	ft (1/2 length)	
foot. depth:	2.5	feet				Spread Load,k:		20
unit weight:	124.08	pcf (above footing depth)				Strip Load,k:		3
allowable q:	1500	psf						
footing type:	1	(1=strip,2&3=square/rect.,4=circular)						
	4	(4 for center, 1 for corner of square/rect.)						
water depth:	4.75	feet						

DEFINE SOIL PROFILE:			preconsol		Density	Collapse	Below ftg.	Avg.
Soil type	C_c'	C_r'	press.,σ_c'(psf)	OCR	(pcf)	(%)	depth (ft)	OCR
Fill	0.001	0.000125			135		0.0	1.00
ML	0.09	0.01	2000		124.08	0.1	2.5	5.22
GM	0.026	0.005	2000		127.6	0.1	6.5	2.68
CL	0.067	0.015	1600		127.07	0.1	22.5	1.15

STRIP FOOTINGS...

	Below ftg.		Increased	avg. ovrbn.	Incremnt.	Collapse	Total	
Soil Type	depth (ft)	Influence	Stress (psf)	press.(psf)	Sett. (in.)	Sett. (in.)	Set. (in.)	
Fill	0	0.000	0.0	310.2	0.000	0.000	0.00	
ML	1	0.818	1227.5	434.3	0.070	0.012	0.08	
ML	2	0.550	824.7	558.4	0.047	0.012	0.14	
ML	2.5	0.462	692.6	604.8	0.020	0.006	0.17	
GM	3.5	0.345	518.0	670.0	0.015	0.012	0.19	
GM	4.5	0.274	411.0	735.2	0.012	0.012	0.22	<---2B
GM	5.5	0.227	339.8	800.4	0.009	0.012	0.24	
GM	6.5	0.193	289.3	865.6	0.008	0.012	0.26	
CL	7.5	0.168	251.7	930.3	0.019	0.012	0.29	
CL	8.5	0.148	222.6	994.9	0.016	0.012	0.32	
CL	9.5	0.133	199.6	1059.6	0.013	0.012	0.34	
CL	10.5	0.121	180.8	1124.3	0.012	0.012	0.37	
CL	11.5	0.110	165.2	1189.0	0.010	0.012	0.39	
CL	12.5	0.101	152.1	1253.6	0.009	0.012	0.41	
CL	13.5	0.094	141.0	1318.3	0.008	0.012	0.43	
CL	14.5	0.088	131.3	1383.0	0.007	0.012	0.45	
CL	15.5	0.082	122.9	1447.6	0.006	0.012	0.47	
CL	16.5	0.077	115.5	1512.3	0.026	0.012	0.50	
CL	17.5	0.073	108.9	1577.0	0.023	0.012	0.54	
CL	18.5	0.069	103.0	1641.6	0.021	0.012	0.57	
CL	19.5	0.065	97.8	1706.3	0.019	0.012	0.60	
CL	20.5	0.062	93.0	1771.0	0.018	0.012	0.63	
CL	21.5	0.059	88.7	1835.7	0.016	0.012	0.66	
CL	22.5	0.057	84.8	1900.3	0.015	0.012	0.69	

Settlement--Footings

SETTLEMENT OF FOOTINGS								
Project:	Stonecreek F and G	TP-13						
B:	2	feet (width or diameter)			b =	1	ft (1/2 width/dia)	
L:	25	feet (length)			l =	12.5	ft (1/2 length)	
foot. depth:	2.5	feet					Spread Load,k:	20
unit weight:	120.32	pcf (above footing depth)					Strip Load,k:	3
allowable q:	1500	psf						
footing type:	1	(1=strip,2&3=square/rect.,4=circular)						
	4	(4 for center, 1 for corner of square/rect.)						
water depth:	5.5	feet						

DEFINE SOIL PROFILE:			preconsol		Density	Collapse	Below ftg.	Avg.
Soil type	C_c'	C_r'	press.,σ_c'(psf)	OCR	(pcf)	(%)	depth (ft)	OCR
Fill	0.001	0.000125			135		0.0	1.00
CL	0.091	0.022	1600		120.32	0.1	3.5	3.67
GM	0.026	0.005	2000		127.6	0.1	6.0	2.54
CL	0.067	0.015	1600		127.07	0.1	22.5	1.14

	STRIP FOOTINGS...							
	Below ftg.		Increased	avg. ovrbn.	Incremnt.	Collapse	Total	
Soil Type	depth (ft)	Influence	Stress (psf)	press.(psf)	Sett. (in.)	Sett. (in.)	Set. (in.)	
Fill	0	0.000	0.0	300.8	0.000	0.000	0.00	
CL	1	0.818	1227.5	421.1	0.167	0.012	0.18	
CL	2	0.550	824.7	541.4	0.106	0.012	0.30	
CL	3	0.396	593.7	661.8	0.073	0.012	0.38	
CL	3.5	0.345	518.0	690.7	0.032	0.006	0.42	
GM	4.5	0.274	411.0	755.9	0.011	0.012	0.44	<---2B
GM	5.5	0.227	339.8	821.1	0.009	0.012	0.47	
GM	6	0.208	312.6	853.7	0.004	0.006	0.48	
CL	7	0.179	269.2	918.4	0.020	0.012	0.51	
CL	8	0.158	236.3	983.1	0.017	0.012	0.54	
CL	9	0.140	210.5	1047.7	0.014	0.012	0.56	
CL	10	0.126	189.7	1112.4	0.012	0.012	0.59	
CL	11	0.115	172.7	1177.1	0.011	0.012	0.61	
CL	12	0.106	158.4	1241.7	0.009	0.012	0.63	
CL	13	0.098	146.3	1306.4	0.008	0.012	0.65	
CL	14	0.091	136.0	1371.1	0.007	0.012	0.67	
CL	15	0.085	126.9	1435.8	0.007	0.012	0.69	
CL	16	0.079	119.1	1500.4	0.027	0.012	0.73	
CL	17	0.075	112.1	1565.1	0.024	0.012	0.76	
CL	18	0.071	105.9	1629.8	0.022	0.012	0.80	
CL	19	0.067	100.3	1694.4	0.020	0.012	0.83	
CL	20	0.064	95.3	1759.1	0.018	0.012	0.86	
CL	21	0.061	90.8	1823.8	0.017	0.012	0.89	
CL	22	0.058	86.7	1888.4	0.016	0.012	0.92	
CL	22.5	0.057	84.8	1920.8	0.008	0.006	0.93	

Settlement--Footings

SETTLEMENT OF FOOTINGS								
Project:	Stonecreek F and G		TP-15					
B:	2	feet (width or diameter)			b =	1	ft (1/2 width/dia)	
L:	25	feet (length)			l =	12.5	ft (1/2 length)	
foot. depth:	2.5	feet					Spread Load,k:	20
unit weight:	114.95	pcf (above footing depth)					Strip Load,k:	3
allowable q:	1500	psf						
footing type:	1	(1=strip,2&3=square/rect.,4=circular)						
	4	(4 for center, 1 for corner of square/rect.)						
water depth:	8	feet						

DEFINE SOIL PROFILE:			preconsol		Density	Collapse	Below ftg.	Avg.
Soil type	C_c'	C_r'	press.,σ_c'(psf)	OCR	(pcf)	(%)	depth (ft)	OCR
Fill	0.001	0.000125			135		0.0	1.00
CL	0.127	0.009	2500		114.95		4.0	5.54
GM	0.026	0.005	2000		127.6	0.1	7.5	2.05
CL	0.067	0.015	1600		127.07	0.1	22.5	1.02

STRIP FOOTINGS...

Soil Type	Below ftg. depth (ft)	Influence	Increased Stress (psf)	avg. ovrbn. press.(psf)	Incremnt. Sett. (in.)	Collapse Sett. (in.)	Total Set. (in.)	
Fill	0	0.000	0.0	287.4	0.000	0.000	0.00	
CL	1	0.818	1227.5	402.3	0.066	0.000	0.07	
CL	2	0.550	824.7	517.3	0.045	0.000	0.11	
CL	3	0.396	593.7	632.2	0.031	0.000	0.14	
CL	4	0.306	458.6	747.2	0.022	0.000	0.16	<---2B
GM	5	0.248	372.1	874.8	0.009	0.012	0.19	<---2B
GM	6	0.208	312.6	971.2	0.007	0.012	0.20	
GM	7	0.179	269.2	1036.4	0.006	0.012	0.22	
GM	7.5	0.168	251.7	1069.0	0.003	0.006	0.23	
CL	8.5	0.148	222.6	1133.6	0.014	0.012	0.26	
CL	9.5	0.133	199.6	1198.3	0.012	0.012	0.28	
CL	10.5	0.121	180.8	1263.0	0.010	0.012	0.30	
CL	11.5	0.110	165.2	1327.7	0.009	0.012	0.32	
CL	12.5	0.101	152.1	1392.3	0.008	0.012	0.34	
CL	13.5	0.094	141.0	1457.0	0.032	0.012	0.39	
CL	14.5	0.088	131.3	1521.7	0.029	0.012	0.43	
CL	15.5	0.082	122.9	1586.3	0.026	0.012	0.47	
CL	16.5	0.077	115.5	1651.0	0.024	0.012	0.50	
CL	17.5	0.073	108.9	1715.7	0.021	0.012	0.54	
CL	18.5	0.069	103.0	1780.3	0.020	0.012	0.57	
CL	19.5	0.065	97.8	1845.0	0.018	0.012	0.60	
CL	20.5	0.062	93.0	1909.7	0.017	0.012	0.63	
CL	21.5	0.059	88.7	1974.4	0.015	0.012	0.65	
CL	22.5	0.057	84.8	2039.0	0.014	0.012	0.68	

Settlement--Footings

SETTLEMENT OF FOOTINGS								
Project:	Stonecreek F and G	TP-16						
B:	2	feet (width or diameter)			b =	1	ft (1/2 width/dia)	
L:	25	feet (length)			l =	12.5	ft (1/2 length)	
foot. depth:	2.5	feet					Spread Load,k:	20
unit weight:	119.34	pcf (above footing depth)					Strip Load,k:	3
allowable q:	1500	psf						
footing type:	1	(1=strip,2&3=square/rect.,4=circular)						
	4	(4 for center, 1 for corner of square/rect.)						
water depth:	7.5	feet						

DEFINE SOIL PROFILE:			preconsol		Density	Collapse	Below ftg.	Avg.
Soil type	C_c'	C_r'	press.,σ_c'(psf)	OCR	(pcf)	(%)	depth (ft)	OCR
Fill	0.001	0.000125			135		0.0	1.00
ML	0.154	0.024	2000		119.34	0.4	4.0	4.32
GM	0.026	0.005	2000		127.6	0.1	22.5	1.37

STRIP FOOTINGS...

Soil Type	Below ftg. depth (ft)	Influence	Increased Stress (psf)	avg. ovrbn. press.(psf)	Incremnt. Sett. (in.)	Collapse Sett. (in.)	Total Set. (in.)	
Fill	0	0.000	0.0	298.4	0.000	0.000	0.00	
ML	1	0.818	1227.5	417.7	0.171	0.048	0.22	
ML	2	0.550	824.7	537.0	0.116	0.048	0.38	
ML	3	0.396	593.7	656.4	0.081	0.048	0.51	
ML	4	0.306	458.6	775.7	0.058	0.048	0.62	<---2B
GM	5	0.248	372.1	903.3	0.009	0.012	0.64	<---2B
GM	6	0.208	312.6	968.5	0.007	0.012	0.66	
GM	7	0.179	269.2	1033.7	0.006	0.012	0.68	
GM	8	0.158	236.3	1098.9	0.005	0.012	0.69	
GM	9	0.140	210.5	1164.1	0.004	0.012	0.71	
GM	10	0.126	189.7	1229.3	0.004	0.012	0.73	
GM	11	0.115	172.7	1294.5	0.003	0.012	0.74	
GM	12	0.106	158.4	1359.7	0.003	0.012	0.76	
GM	13	0.098	146.3	1424.9	0.003	0.012	0.77	
GM	14	0.091	136.0	1490.1	0.002	0.012	0.78	
GM	15	0.085	126.9	1555.3	0.002	0.012	0.80	
GM	16	0.079	119.1	1620.5	0.002	0.012	0.81	
GM	17	0.075	112.1	1685.7	0.002	0.012	0.83	
GM	18	0.071	105.9	1750.9	0.002	0.012	0.84	
GM	19	0.067	100.3	1816.1	0.001	0.012	0.85	
GM	20	0.064	95.3	1881.3	0.007	0.012	0.87	
GM	21	0.061	90.8	1946.5	0.006	0.012	0.89	
GM	22	0.058	86.7	2011.7	0.006	0.012	0.91	
GM	22.5	0.057	84.8	2044.3	0.003	0.006	0.92	

Settlement--Footings

SETTLEMENT OF FOOTINGS								
Project:	Stonecreek F and G		TP-17					
B:	2	feet (width or diameter)			b =	1	ft (1/2 width/dia)	
L:	25	feet (length)			l =	12.5	ft (1/2 length)	
foot. depth:	2.5	feet					Spread Load,k:	20
unit weight:	122.85	pcf (above footing depth)					Strip Load,k:	3
allowable q:	1500	psf						
footing type:	1	(1=strip,2&3=square/rect.,4=circular)						
	4	(4 for center, 1 for corner of square/rect.)						
water depth:	5.5	feet						

DEFINE SOIL PROFILE:			preconsol		Density	Collapse	Below ftg.	Avg.
Soil type	C_c'	C_r'	press.,σ_c'(psf)	OCR	(pcf)	(%)	depth (ft)	OCR
Fill	0.001	0.000125			135		0.0	1.00
ML	0.069	0.01	2000		122.85	0.1	4.0	4.23
GM	0.026	0.005	2000		127.6	0.1	8.0	2.28
CL	0.067	0.015	1600		127.07	0.1	22.5	1.08

	STRIP FOOTINGS...							
	Below ftg.		Increased	avg. ovrbn.	Incremnt.	Collapse	Total	
Soil Type	depth (ft)	Influence	Stress (psf)	press.(psf)	Sett. (in.)	Sett. (in.)	Set. (in.)	
Fill	0	0.000	0.0	307.1	0.000	0.000	0.00	
ML	1	0.818	1227.5	430.0	0.070	0.012	0.08	
ML	2	0.550	824.7	552.8	0.048	0.012	0.14	
ML	3	0.396	593.7	675.7	0.033	0.012	0.19	
ML	4	0.306	458.6	736.1	0.025	0.012	0.22	<---2B
GM	5	0.248	372.1	801.3	0.010	0.012	0.25	<---2B
GM	6	0.208	312.6	866.5	0.008	0.012	0.27	
GM	7	0.179	269.2	931.7	0.007	0.012	0.28	
GM	8	0.158	236.3	996.9	0.006	0.012	0.30	
CL	9	0.140	210.5	1061.6	0.014	0.012	0.33	
CL	10	0.126	189.7	1126.3	0.012	0.012	0.35	
CL	11	0.115	172.7	1190.9	0.011	0.012	0.38	
CL	12	0.106	158.4	1255.6	0.009	0.012	0.40	
CL	13	0.098	146.3	1320.3	0.008	0.012	0.42	
CL	14	0.091	136.0	1384.9	0.007	0.012	0.44	
CL	15	0.085	126.9	1449.6	0.007	0.012	0.45	
CL	16	0.079	119.1	1514.3	0.026	0.012	0.49	
CL	17	0.075	112.1	1579.0	0.024	0.012	0.53	
CL	18	0.071	105.9	1643.6	0.022	0.012	0.56	
CL	19	0.067	100.3	1708.3	0.020	0.012	0.59	
CL	20	0.064	95.3	1773.0	0.018	0.012	0.62	
CL	21	0.061	90.8	1837.6	0.017	0.012	0.65	
CL	22	0.058	86.7	1902.3	0.016	0.012	0.68	
CL	22.5	0.057	84.8	1934.6	0.007	0.006	0.69	

Settlement--Footings

SETTLEMENT OF FOOTINGS								
Project:	Stonecreek F and G		TP-20					
B:	2	feet (width or diameter)			b =	1	ft (1/2 width/dia)	
L:	25	feet (length)			l =	12.5	ft (1/2 length)	
foot. depth:	2.5	feet					Spread Load,k:	20
unit weight:	133.1	pcf (above footing depth)					Strip Load,k:	3
allowable q:	1500	psf						
footing type:	1	(1=strip,2&3=square/rect.,4=circular)						
	4	(4 for center, 1 for corner of square/rect.)						
water depth:	5.5	feet						

DEFINE SOIL PROFILE:			preconsol		Density	Collapse	Below ftg.	Avg.
Soil type	C_c'	C_r'	press.,σ_c'(psf)	OCR	(pcf)	(%)	depth (ft)	OCR
Fill	0.001	0.000125			135		0.0	1.00
ML	0.046	0.012	1200		133.1	0.1	4.0	2.40
GM	0.026	0.005	2000		127.6	0.1	6.0	2.30
CL	0.067	0.015	1600		127.07	0.1	22.5	1.09

	STRIP FOOTINGS...							
	Below ftg.		Increased	avg. ovrbn.	Incremnt.	Collapse	Total	
Soil Type	depth (ft)	Influence	Stress (psf)	press.(psf)	Sett. (in.)	Sett. (in.)	Set. (in.)	
Fill	0	0.000	0.0	332.8	0.000	0.000	0.00	
ML	1	0.818	1227.5	465.9	0.142	0.012	0.15	
ML	2	0.550	824.7	599.0	0.084	0.012	0.25	
ML	3	0.396	593.7	732.1	0.055	0.012	0.32	
ML	4	0.306	458.6	802.8	0.037	0.012	0.37	<---2B
GM	5	0.248	372.1	868.0	0.009	0.012	0.39	<---2B
GM	6	0.208	312.6	933.2	0.008	0.012	0.41	
CL	7	0.179	269.2	997.8	0.019	0.012	0.44	
CL	8	0.158	236.3	1062.5	0.016	0.012	0.47	
CL	9	0.140	210.5	1127.2	0.013	0.012	0.49	
CL	10	0.126	189.7	1191.8	0.012	0.012	0.51	
CL	11	0.115	172.7	1256.5	0.010	0.012	0.54	
CL	12	0.106	158.4	1321.2	0.009	0.012	0.56	
CL	13	0.098	146.3	1385.8	0.008	0.012	0.58	
CL	14	0.091	136.0	1450.5	0.007	0.012	0.60	
CL	15	0.085	126.9	1515.2	0.028	0.012	0.64	
CL	16	0.079	119.1	1579.9	0.025	0.012	0.67	
CL	17	0.075	112.1	1644.5	0.023	0.012	0.71	
CL	18	0.071	105.9	1709.2	0.021	0.012	0.74	
CL	19	0.067	100.3	1773.9	0.019	0.012	0.77	
CL	20	0.064	95.3	1838.5	0.018	0.012	0.80	
CL	21	0.061	90.8	1903.2	0.016	0.012	0.83	
CL	22	0.058	86.7	1967.9	0.015	0.012	0.86	
CL	22.5	0.057	84.8	2000.2	0.007	0.006	0.87	

Settlement--Footings

SETTLEMENT OF FOOTINGS								
Project:	Stonecreek F and G		TP-1					
B:	3.65148	feet (width or diameter)			b =	1.825742	ft (1/2 width/dia)	
L:	3.65148	feet (length)			l =	1.825742	ft (1/2 length)	
foot. depth:	2.5	feet					Spread Load,k:	20
unit weight:	127.71	pcf (above footing depth)					Strip Load,k:	3
allowable q:	1500	psf						
footing type:	2	(1=strip,2&3=square/rect.,4=circular)						
	4	(4 for center, 1 for corner of square/rect.)						
water depth:	5	feet						

DEFINE SOIL PROFILE:			preconsol		Density	Collapse	Below ftg.	Avg.
Soil type	C_c'	C_r'	press.,σ_c'(psf)	OCR	(pcf)	(%)	depth (ft)	OCR
Fill	0.001	0.000125			135		0.0	1.00
ML	0.055	0.005	1500		127.71	0.2	22.5	1.22

SQUARE/RECTANGULAR FOOTINGS (Boussinesq Method)...

Soil Type	Below ftg. depth (ft)	Influence	Increased Stress (psf)	avg. ovrbn. press.(psf)	Incremnt. Sett. (in.)	Collapse Sett. (in.)	Total Set. (in.)	
Fill	0	0.000	0.0	319.3	0.000	0.000	0.00	
ML	1	0.912	1368.7	447.0	0.086	0.024	0.11	
ML	2	0.655	982.2	574.7	0.036	0.024	0.17	
ML	3	0.435	652.6	671.2	0.018	0.024	0.21	
ML	4	0.295	442.1	736.5	0.012	0.024	0.25	
ML	5	0.208	312.2	801.8	0.009	0.024	0.28	
ML	6	0.153	229.7	867.1	0.006	0.024	0.31	
ML	7	0.117	175.0	932.4	0.004	0.024	0.34	
ML	8	0.092	137.3	997.8	0.003	0.024	0.37	<---2B
ML	9	0.074	110.3	1063.1	0.003	0.024	0.39	
ML	10	0.060	90.5	1128.4	0.002	0.024	0.42	
ML	11	0.050	75.5	1193.7	0.002	0.024	0.44	
ML	12	0.043	63.8	1259.0	0.001	0.024	0.47	
ML	13	0.036	54.7	1324.3	0.001	0.024	0.49	
ML	14	0.032	47.4	1389.6	0.010	0.024	0.53	
ML	15	0.028	41.4	1454.9	0.008	0.024	0.56	
ML	16	0.024	36.5	1520.2	0.007	0.024	0.59	
ML	17	0.022	32.4	1585.5	0.006	0.024	0.62	
ML	18	0.019	29.0	1650.9	0.005	0.024	0.65	
ML	19	0.017	26.1	1716.2	0.004	0.024	0.68	
ML	20	0.016	23.5	1781.5	0.004	0.024	0.71	
ML	21	0.014	21.4	1846.8	0.003	0.024	0.73	
ML	22	0.013	19.5	1912.1	0.003	0.024	0.76	
ML	22.5	0.012	18.7	1944.8	0.001	0.012	0.77	

Settlement--Footings

SETTLEMENT OF FOOTINGS								
Project:	Stonecreek F and G		TP-5					
B:	3.65148	feet (width or diameter)			b =	1.825742	ft (1/2 width/dia)	
L:	3.65148	feet (length)			l =	1.825742	ft (1/2 length)	
foot. depth:	2.5	feet					Spread Load,k:	20
unit weight:	131.84	pcf (above footing depth)					Strip Load,k:	3
allowable q:	1500	psf						
footing type:	2	(1=strip,2&3=square/rect.,4=circular)						
	4	(4 for center, 1 for corner of square/rect.)						
water depth:	6	feet						

DEFINE SOIL PROFILE:			preconsol		Density	Collapse	Below ftg.	Avg.
Soil type	C_c'	C_r'	press.,σ_c'(psf)	OCR	(pcf)	(%)	depth (ft)	OCR
Fill	0.001	0.000125			135		0.0	1.00
CL1	0.055	0.005	1500		131.84	0.2	1.5	4.51
SM	0.055	0.009	1600		131.84	0.4	3.5	2.42
SC	0.03	0.006			130		22.5	1.00

SQUARE/RECTANGULAR FOOTINGS (Boussinesq Method)...

	Below ftg.		Increased	avg. ovrbn.	Incremnt.	Collapse	Total	
Soil Type	depth (ft)	Influence	Stress (psf)	press.(psf)	Sett. (in.)	Sett. (in.)	Set. (in.)	
Fill	0	0.000	0.0	329.6	0.000	0.000	0.00	
CL1	1	0.912	1368.7	461.4	0.088	0.024	0.11	
CL1	1.5	0.789	1183.7	527.4	0.032	0.012	0.16	
SM	2.5	0.534	801.3	659.2	0.037	0.048	0.24	
SM	3.5	0.356	534.6	791.0	0.024	0.048	0.31	
SC	4.5	0.246	369.6	858.6	0.056	0.000	0.37	
SC	5.5	0.178	266.5	926.2	0.040	0.000	0.41	
SC	6.5	0.133	199.7	993.8	0.029	0.000	0.44	
SC	7.5	0.103	154.5	1061.4	0.021	0.000	0.46	<---2B
SC	8.5	0.082	122.7	1129.0	0.016	0.000	0.48	
SC	9.5	0.066	99.7	1196.6	0.013	0.000	0.49	
SC	10.5	0.055	82.5	1264.2	0.010	0.000	0.50	
SC	11.5	0.046	69.3	1331.8	0.008	0.000	0.51	
SC	12.5	0.039	59.0	1399.4	0.006	0.000	0.51	
SC	13.5	0.034	50.8	1467.0	0.005	0.000	0.52	
SC	14.5	0.029	44.2	1534.6	0.004	0.000	0.52	
SC	15.5	0.026	38.8	1602.2	0.004	0.000	0.53	
SC	16.5	0.023	34.4	1669.8	0.003	0.000	0.53	
SC	17.5	0.020	30.6	1737.4	0.003	0.000	0.53	
SC	18.5	0.018	27.5	1805.0	0.002	0.000	0.53	
SC	19.5	0.017	24.8	1872.6	0.002	0.000	0.54	
SC	20.5	0.015	22.4	1940.2	0.002	0.000	0.54	
SC	21.5	0.014	20.4	2007.8	0.002	0.000	0.54	
SC	22.5	0.012	18.7	2075.4	0.001	0.000	0.54	

Settlement--Footings

SETTLEMENT OF FOOTINGS								
Project:	Stonecreek F and G		TP-9					
B:	3.65148	feet (width or diameter)			b =	1.825742	ft (1/2 width/dia)	
L:	3.65148	feet (length)			l =	1.825742	ft (1/2 length)	
foot. depth:	2.5	feet					Spread Load,k:	20
unit weight:	124.08	pcf (above footing depth)					Strip Load,k:	3
allowable q:	1500	psf						
footing type:	2	(1=strip,2&3=square/rect.,4=circular)						
	4	(4 for center, 1 for corner of square/rect.)						
water depth:	4.75	feet						

DEFINE SOIL PROFILE:			preconsol		Density	Collapse	Below ftg.	Avg.
Soil type	C_c'	C_r'	press.,σ_c'(psf)	OCR	(pcf)	(%)	depth (ft)	OCR
Fill	0.001	0.000125			135		0.0	1.00
ML	0.09	0.01	2000		124.08	0.1	2.5	5.22
GM	0.026	0.005	2000		127.6	0.1	6.5	2.68
CL	0.067	0.015	1600		127.07	0.1	22.5	1.15

SQUARE/RECTANGULAR FOOTINGS (Boussinesq Method)...

Soil Type	Below ftg. depth (ft)	Influence	Increased Stress (psf)	avg. ovrbn. press.(psf)	Incremnt. Sett. (in.)	Collapse Sett. (in.)	Total Set. (in.)	
Fill	0	0.000	0.0	310.2	0.000	0.000	0.00	
ML	1	0.912	1368.7	434.3	0.074	0.012	0.09	
ML	2	0.655	982.2	558.4	0.053	0.012	0.15	
ML	2.5	0.534	801.3	604.8	0.022	0.006	0.18	
GM	3.5	0.356	534.6	670.0	0.015	0.012	0.21	
GM	4.5	0.246	369.6	735.2	0.011	0.012	0.23	
GM	5.5	0.178	266.5	800.4	0.007	0.012	0.25	
GM	6.5	0.133	199.7	865.6	0.005	0.012	0.27	
CL	7.5	0.103	154.5	930.3	0.012	0.012	0.29	<---2B
CL	8.5	0.082	122.7	994.9	0.009	0.012	0.31	
CL	9.5	0.066	99.7	1059.6	0.007	0.012	0.33	
CL	10.5	0.055	82.5	1124.3	0.006	0.012	0.35	
CL	11.5	0.046	69.3	1189.0	0.004	0.012	0.36	
CL	12.5	0.039	59.0	1253.6	0.004	0.012	0.38	
CL	13.5	0.034	50.8	1318.3	0.003	0.012	0.39	
CL	14.5	0.029	44.2	1383.0	0.002	0.012	0.41	
CL	15.5	0.026	38.8	1447.6	0.002	0.012	0.42	
CL	16.5	0.023	34.4	1512.3	0.008	0.012	0.44	
CL	17.5	0.020	30.6	1577.0	0.007	0.012	0.46	
CL	18.5	0.018	27.5	1641.6	0.006	0.012	0.48	
CL	19.5	0.017	24.8	1706.3	0.005	0.012	0.50	
CL	20.5	0.015	22.4	1771.0	0.004	0.012	0.51	
CL	21.5	0.014	20.4	1835.7	0.004	0.012	0.53	
CL	22.5	0.012	18.7	1900.3	0.003	0.012	0.54	

Settlement--Footings

SETTLEMENT OF FOOTINGS								
Project:	Stonecreek F and G		TP-13					
B:	3.65148	feet (width or diameter)			b =	1.825742	ft (1/2 width/dia)	
L:	3.65148	feet (length)			l =	1.825742	ft (1/2 length)	
foot. depth:	2.5	feet					Spread Load,k:	20
unit weight:	120.32	pcf (above footing depth)					Strip Load,k:	3
allowable q:	1500	psf						
footing type:	2	(1=strip,2&3=square/rect.,4=circular)						
	4	(4 for center, 1 for corner of square/rect.)						
water depth:	5.5	feet						

DEFINE SOIL PROFILE:			preconsol		Density	Collapse	Below ftg.	Avg.
Soil type	C_c'	C_r'	press.,σ_c'(psf)	OCR	(pcf)	(%)	depth (ft)	OCR
Fill	0.001	0.000125			135		0.0	1.00
CL	0.091	0.022	1600		120.32	0.1	3.5	3.67
GM	0.026	0.005	2000		127.6	0.1	6.0	2.54
CL	0.067	0.015	1600		127.07	0.1	22.5	1.14

SQUARE/RECTANGULAR FOOTINGS (Boussinesq Method)...

	Below ftg.		Increased	avg. ovrbn.	Incremnt.	Collapse	Total	
Soil Type	depth (ft)	Influence	Stress (psf)	press.(psf)	Sett. (in.)	Sett. (in.)	Set. (in.)	
Fill	0	0.000	0.0	300.8	0.000	0.000	0.00	
CL	1	0.912	1368.7	421.1	0.206	0.012	0.22	
CL	2	0.655	982.2	541.4	0.119	0.012	0.35	
CL	3	0.435	652.6	661.8	0.079	0.012	0.44	
CL	3.5	0.356	534.6	690.7	0.033	0.006	0.48	
GM	4.5	0.246	369.6	755.9	0.010	0.012	0.50	
GM	5.5	0.178	266.5	821.1	0.007	0.012	0.52	
GM	6	0.153	229.7	853.7	0.003	0.006	0.53	
CL	7	0.117	175.0	918.4	0.014	0.012	0.55	
CL	8	0.092	137.3	983.1	0.010	0.012	0.58	<---2B
CL	9	0.074	110.3	1047.7	0.008	0.012	0.60	
CL	10	0.060	90.5	1112.4	0.006	0.012	0.61	
CL	11	0.050	75.5	1177.1	0.005	0.012	0.63	
CL	12	0.043	63.8	1241.7	0.004	0.012	0.65	
CL	13	0.036	54.7	1306.4	0.003	0.012	0.66	
CL	14	0.032	47.4	1371.1	0.003	0.012	0.68	
CL	15	0.028	41.4	1435.8	0.002	0.012	0.69	
CL	16	0.024	36.5	1500.4	0.008	0.012	0.71	
CL	17	0.022	32.4	1565.1	0.007	0.012	0.73	
CL	18	0.019	29.0	1629.8	0.006	0.012	0.75	
CL	19	0.017	26.1	1694.4	0.005	0.012	0.77	
CL	20	0.016	23.5	1759.1	0.005	0.012	0.78	
CL	21	0.014	21.4	1823.8	0.004	0.012	0.80	
CL	22	0.013	19.5	1888.4	0.004	0.012	0.82	
CL	22.5	0.012	18.7	1920.8	0.002	0.006	0.82	

Settlement--Footings

SETTLEMENT OF FOOTINGS								
Project:	Stonecreek F and G		TP-15					
B:	3.65148	feet (width or diameter)			b =	1.825742	ft (1/2 width/dia)	
L:	3.65148	feet (length)			l =	1.825742	ft (1/2 length)	
foot. depth:	2.5	feet					Spread Load,k:	20
unit weight:	114.95	pcf (above footing depth)					Strip Load,k:	3
allowable q:	1500	psf						
footing type:	2	(1=strip,2&3=square/rect.,4=circular)						
	4	(4 for center, 1 for corner of square/rect.)						
water depth:	8	feet						

DEFINE SOIL PROFILE:			preconsol		Density	Collapse	Below ftg.	Avg.
Soil type	C_c'	C_r'	press.,σ_c'(psf)	OCR	(pcf)	(%)	depth (ft)	OCR
Fill	0.001	0.000125			135		0.0	1.00
CL	0.127	0.009	2500		114.95		4.0	5.54
GM	0.026	0.005	2000		127.6	0.1	7.5	2.05
CL	0.067	0.015	1600		127.07	0.1	22.5	1.02

SQUARE/RECTANGULAR FOOTINGS (Boussinesq Method)...

	Below ftg.		Increased	avg. ovrbn.	Incremnt.	Collapse	Total	
Soil Type	depth (ft)	Influence	Stress (psf)	press.(psf)	Sett. (in.)	Sett. (in.)	Set. (in.)	
Fill	0	0.000	0.0	287.4	0.000	0.000	0.00	
CL	1	0.912	1368.7	402.3	0.070	0.000	0.07	
CL	2	0.655	982.2	517.3	0.050	0.000	0.12	
CL	3	0.435	652.6	632.2	0.033	0.000	0.15	
CL	4	0.295	442.1	747.2	0.022	0.000	0.17	
GM	5	0.208	312.2	874.8	0.008	0.012	0.19	
GM	6	0.153	229.7	971.2	0.006	0.012	0.21	
GM	7	0.117	175.0	1036.4	0.004	0.012	0.23	
GM	7.5	0.103	154.5	1069.0	0.002	0.006	0.24	<---2B
CL	8.5	0.082	122.7	1133.6	0.008	0.012	0.26	
CL	9.5	0.066	99.7	1198.3	0.006	0.012	0.27	
CL	10.5	0.055	82.5	1263.0	0.005	0.012	0.29	
CL	11.5	0.046	69.3	1327.7	0.004	0.012	0.31	
CL	12.5	0.039	59.0	1392.3	0.003	0.012	0.32	
CL	13.5	0.034	50.8	1457.0	0.012	0.012	0.35	
CL	14.5	0.029	44.2	1521.7	0.010	0.012	0.37	
CL	15.5	0.026	38.8	1586.3	0.008	0.012	0.39	
CL	16.5	0.023	34.4	1651.0	0.007	0.012	0.41	
CL	17.5	0.020	30.6	1715.7	0.006	0.012	0.43	
CL	18.5	0.018	27.5	1780.3	0.005	0.012	0.44	
CL	19.5	0.017	24.8	1845.0	0.005	0.012	0.46	
CL	20.5	0.015	22.4	1909.7	0.004	0.012	0.48	
CL	21.5	0.014	20.4	1974.4	0.004	0.012	0.49	
CL	22.5	0.012	18.7	2039.0	0.003	0.012	0.51	

Settlement--Footings

SETTLEMENT OF FOOTINGS								
Project:	Stonecreek F and G		TP-16					
B:	3.65148	feet (width or diameter)			b =	1.825742	ft (1/2 width/dia)	
L:	3.65148	feet (length)			l =	1.825742	ft (1/2 length)	
foot. depth:	2.5	feet					Spread Load,k:	20
unit weight:	119.34	pcf (above footing depth)					Strip Load,k:	3
allowable q:	1500	psf						
footing type:	2	(1=strip,2&3=square/rect.,4=circular)						
	4	(4 for center, 1 for corner of square/rect.)						
water depth:	7.5	feet						

DEFINE SOIL PROFILE:			preconsol		Density	Collapse	Below ftg.	Avg.
Soil type	C_c'	C_r'	press.,σ_c'(psf)	OCR	(pcf)	(%)	depth (ft)	OCR
Fill	0.001	0.000125			135		0.0	1.00
ML	0.154	0.024	2000		119.34	0.4	4.0	4.32
GM	0.026	0.005	2000		127.6	0.1	22.5	1.37

SQUARE/RECTANGULAR FOOTINGS (Boussinesq Method)...

	Below ftg.		Increased	avg. ovrbn.	Incremnt.	Collapse	Total	
Soil Type	depth (ft)	Influence	Stress (psf)	press.(psf)	Sett. (in.)	Sett. (in.)	Set. (in.)	
Fill	0	0.000	0.0	298.4	0.000	0.000	0.00	
ML	1	0.912	1368.7	417.7	0.182	0.048	0.23	
ML	2	0.655	982.2	537.0	0.130	0.048	0.41	
ML	3	0.435	652.6	656.4	0.086	0.048	0.54	
ML	4	0.295	442.1	775.7	0.056	0.048	0.65	
GM	5	0.208	312.2	903.3	0.008	0.012	0.67	
GM	6	0.153	229.7	968.5	0.006	0.012	0.68	
GM	7	0.117	175.0	1033.7	0.004	0.012	0.70	
GM	8	0.092	137.3	1098.9	0.003	0.012	0.72	<---2B
GM	9	0.074	110.3	1164.1	0.002	0.012	0.73	
GM	10	0.060	90.5	1229.3	0.002	0.012	0.74	
GM	11	0.050	75.5	1294.5	0.001	0.012	0.76	
GM	12	0.043	63.8	1359.7	0.001	0.012	0.77	
GM	13	0.036	54.7	1424.9	0.001	0.012	0.78	
GM	14	0.032	47.4	1490.1	0.001	0.012	0.80	
GM	15	0.028	41.4	1555.3	0.001	0.012	0.81	
GM	16	0.024	36.5	1620.5	0.001	0.012	0.82	
GM	17	0.022	32.4	1685.7	0.000	0.012	0.83	
GM	18	0.019	29.0	1750.9	0.000	0.012	0.85	
GM	19	0.017	26.1	1816.1	0.000	0.012	0.86	
GM	20	0.016	23.5	1881.3	0.002	0.012	0.87	
GM	21	0.014	21.4	1946.5	0.001	0.012	0.89	
GM	22	0.013	19.5	2011.7	0.001	0.012	0.90	
GM	22.5	0.012	18.7	2044.3	0.001	0.006	0.91	

Settlement--Footings

SETTLEMENT OF FOOTINGS								
Project:	Stonecreek F and G		TP-17					
B:	3.65148	feet (width or diameter)			b =	1.825742	ft (1/2 width/dia)	
L:	3.65148	feet (length)			l =	1.825742	ft (1/2 length)	
foot. depth:	2.5	feet					Spread Load,k:	20
unit weight:	122.85	pcf (above footing depth)					Strip Load,k:	3
allowable q:	1500	psf						
footing type:	2	(1=strip,2&3=square/rect.,4=circular)						
	4	(4 for center, 1 for corner of square/rect.)						
water depth:	5.5	feet						

DEFINE SOIL PROFILE:			preconsol		Density	Collapse	Below ftg.	Avg.
Soil type	C_c'	C_r'	press.,σ_c'(psf)	OCR	(pcf)	(%)	depth (ft)	OCR
Fill	0.001	0.000125			135		0.0	1.00
ML	0.069	0.01	2000		122.85	0.1	4.0	4.23
GM	0.026	0.005	2000		127.6	0.1	8.0	2.28
CL	0.067	0.015	1600		127.07	0.1	22.5	1.08

SQUARE/RECTANGULAR FOOTINGS (Boussinesq Method)...

	Below ftg.		Increased	avg. ovrbn.	Incremnt.	Collapse	Total	
Soil Type	depth (ft)	Influence	Stress (psf)	press.(psf)	Sett. (in.)	Sett. (in.)	Set. (in.)	
Fill	0	0.000	0.0	307.1	0.000	0.000	0.00	
ML	1	0.912	1368.7	430.0	0.075	0.012	0.09	
ML	2	0.655	982.2	552.8	0.053	0.012	0.15	
ML	3	0.435	652.6	675.7	0.035	0.012	0.20	
ML	4	0.295	442.1	736.1	0.025	0.012	0.24	
GM	5	0.208	312.2	801.3	0.009	0.012	0.26	
GM	6	0.153	229.7	866.5	0.006	0.012	0.27	
GM	7	0.117	175.0	931.7	0.004	0.012	0.29	
GM	8	0.092	137.3	996.9	0.003	0.012	0.31	<---2B
CL	9	0.074	110.3	1061.6	0.008	0.012	0.33	
CL	10	0.060	90.5	1126.3	0.006	0.012	0.34	
CL	11	0.050	75.5	1190.9	0.005	0.012	0.36	
CL	12	0.043	63.8	1255.6	0.004	0.012	0.38	
CL	13	0.036	54.7	1320.3	0.003	0.012	0.39	
CL	14	0.032	47.4	1384.9	0.003	0.012	0.41	
CL	15	0.028	41.4	1449.6	0.002	0.012	0.42	
CL	16	0.024	36.5	1514.3	0.008	0.012	0.44	
CL	17	0.022	32.4	1579.0	0.007	0.012	0.46	
CL	18	0.019	29.0	1643.6	0.006	0.012	0.48	
CL	19	0.017	26.1	1708.3	0.005	0.012	0.50	
CL	20	0.016	23.5	1773.0	0.005	0.012	0.51	
CL	21	0.014	21.4	1837.6	0.004	0.012	0.53	
CL	22	0.013	19.5	1902.3	0.004	0.012	0.54	
CL	22.5	0.012	18.7	1934.6	0.002	0.006	0.55	

Settlement--Footings

SETTLEMENT OF FOOTINGS								
Project:	Stonecreek F and G		TP-20					
B:	3.65148	feet (width or diameter)			b =	1.825742	ft (1/2 width/dia)	
L:	3.65148	feet (length)			l =	1.825742	ft (1/2 length)	
foot. depth:	2.5	feet					Spread Load,k:	20
unit weight:	133.1	pcf (above footing depth)					Strip Load,k:	3
allowable q:	1500	psf						
footing type:	2	(1=strip,2&3=square/rect.,4=circular)						
	4	(4 for center, 1 for corner of square/rect.)						
water depth:	5.5	feet						

DEFINE SOIL PROFILE:			preconsol		Density	Collapse	Below ftg.	Avg.
Soil type	C_c'	C_r'	press.,σ_c'(psf)	OCR	(pcf)	(%)	depth (ft)	OCR
Fill	0.001	0.000125			135		0.0	1.00
ML	0.046	0.012	1200		133.1	0.1	4.0	2.40
GM	0.026	0.005	2000		127.6	0.1	6.0	2.30
CL	0.067	0.015	1600		127.07	0.1	22.5	1.09

	SQUARE/RECTANGULAR FOOTINGS (Boussinesq Method)...							
	Below ftg.		Increased	avg. ovrbn.	Incremnt.	Collapse	Total	
Soil Type	depth (ft)	Influence	Stress (psf)	press.(psf)	Sett. (in.)	Sett. (in.)	Set. (in.)	
Fill	0	0.000	0.0	332.8	0.000	0.000	0.00	
ML	1	0.912	1368.7	465.9	0.161	0.012	0.17	
ML	2	0.655	982.2	599.0	0.110	0.012	0.29	
ML	3	0.435	652.6	732.1	0.065	0.012	0.37	
ML	4	0.295	442.1	802.8	0.034	0.012	0.42	
GM	5	0.208	312.2	868.0	0.008	0.012	0.44	
GM	6	0.153	229.7	933.2	0.006	0.012	0.46	
CL	7	0.117	175.0	997.8	0.013	0.012	0.48	
CL	8	0.092	137.3	1062.5	0.009	0.012	0.50	<---2B
CL	9	0.074	110.3	1127.2	0.007	0.012	0.52	
CL	10	0.060	90.5	1191.8	0.006	0.012	0.54	
CL	11	0.050	75.5	1256.5	0.005	0.012	0.56	
CL	12	0.043	63.8	1321.2	0.004	0.012	0.57	
CL	13	0.036	54.7	1385.8	0.003	0.012	0.59	
CL	14	0.032	47.4	1450.5	0.003	0.012	0.60	
CL	15	0.028	41.4	1515.2	0.009	0.012	0.62	
CL	16	0.024	36.5	1579.9	0.008	0.012	0.64	
CL	17	0.022	32.4	1644.5	0.007	0.012	0.66	
CL	18	0.019	29.0	1709.2	0.006	0.012	0.68	
CL	19	0.017	26.1	1773.9	0.005	0.012	0.70	
CL	20	0.016	23.5	1838.5	0.004	0.012	0.71	
CL	21	0.014	21.4	1903.2	0.004	0.012	0.73	
CL	22	0.013	19.5	1967.9	0.003	0.012	0.74	
CL	22.5	0.012	18.7	2000.2	0.002	0.006	0.75	

Settlement--Footings

SETTLEMENT OF FOOTINGS								
Project:	Stonecreek F and G	TP-1						
B:	3.65148	feet (width or diameter)			b =	1.825742	ft (1/2 width/dia)	
L:	3.65148	feet (length)			l =	1.825742	ft (1/2 length)	
foot. depth:	2.5	feet					Spread Load,k:	20
unit weight:	127.71	pcf (above footing depth)					Strip Load,k:	3
allowable q:	1500	psf						
footing type:	3	(1=strip,2&3=square/rect.,4=circular)						
	4	(4 for center, 1 for corner of square/rect.)						
water depth:	5	feet						

DEFINE SOIL PROFILE:			preconsol		Density	Collapse	Below ftg.	Avg.
Soil type	C_c'	C_r'	press.,σ_c'(psf)	OCR	(pcf)	(%)	depth (ft)	OCR
Fill	0.001	0.000125			135		0.0	1.00
ML	0.055	0.005	1500		127.71	0.2	22.5	1.22

SQUARE/RECTANGULAR FOOTINGS (Westergard Method)...

Soil Type	Below ftg. depth (ft)	Influence	Increased Stress (psf)	avg. ovrbn. press.(psf)	Incremnt. Sett. (in.)	Collapse Sett. (in.)	Total Set. (in.)	
Fill	0	0.000	0.0	319.3	0.000	0.000	0.00	
ML	1	0.726	1089.7	447.0	0.038	0.024	0.06	
ML	2	0.506	759.7	574.7	0.022	0.024	0.11	
ML	3	0.353	529.3	671.2	0.015	0.024	0.15	
ML	4	0.251	377.0	736.5	0.011	0.024	0.18	
ML	5	0.184	276.7	801.8	0.008	0.024	0.21	
ML	6	0.140	209.3	867.1	0.006	0.024	0.24	
ML	7	0.108	162.6	932.4	0.004	0.024	0.27	
ML	8	0.086	129.4	997.8	0.003	0.024	0.30	<---2B
ML	9	0.070	105.1	1063.1	0.002	0.024	0.33	
ML	10	0.058	86.9	1128.4	0.002	0.024	0.35	
ML	11	0.049	73.0	1193.7	0.002	0.024	0.38	
ML	12	0.041	62.1	1259.0	0.001	0.024	0.40	
ML	13	0.036	53.4	1324.3	0.001	0.024	0.43	
ML	14	0.031	46.4	1389.6	0.009	0.024	0.46	
ML	15	0.027	40.6	1454.9	0.008	0.024	0.49	
ML	16	0.024	35.9	1520.2	0.007	0.024	0.52	
ML	17	0.021	31.9	1585.5	0.006	0.024	0.55	
ML	18	0.019	28.6	1650.9	0.005	0.024	0.58	
ML	19	0.017	25.7	1716.2	0.004	0.024	0.61	
ML	20	0.016	23.3	1781.5	0.004	0.024	0.64	
ML	21	0.014	21.2	1846.8	0.003	0.024	0.67	
ML	22	0.013	19.3	1912.1	0.003	0.024	0.69	
ML	22.5	0.012	18.5	1944.8	0.001	0.012	0.71	

Settlement--Footings

SETTLEMENT OF FOOTINGS								
Project:	Stonecreek F and G		TP-5					
B:	3.65148	feet (width or diameter)			b =	1.825742	ft (1/2 width/dia)	
L:	3.65148	feet (length)			l =	1.825742	ft (1/2 length)	
foot. depth:	2.5	feet					Spread Load,k:	20
unit weight:	131.84	pcf (above footing depth)					Strip Load,k:	3
allowable q:	1500	psf						
footing type:	3	(1=strip,2&3=square/rect.,4=circular)						
	4	(4 for center, 1 for corner of square/rect.)						
water depth:	6	feet						

DEFINE SOIL PROFILE:			preconsol		Density	Collapse	Below ftg.	Avg.
Soil type	C_c'	C_r'	press.,σ_c'(psf)	OCR	(pcf)	(%)	depth (ft)	OCR
Fill	0.001	0.000125			135		0.0	1.00
CL1	0.055	0.005	1500		131.84	0.2	1.5	4.51
SM	0.055	0.009	1600		131.84	0.4	3.5	2.42
SC	0.03	0.006			130		22.5	1.00

SQUARE/RECTANGULAR FOOTINGS (Westergard Method)...

Soil Type	Below ftg. depth (ft)	Influence	Increased Stress (psf)	avg. ovrbn. press.(psf)	Incremnt. Sett. (in.)	Collapse Sett. (in.)	Total Set. (in.)	
Fill	0	0.000	0.0	329.6	0.000	0.000	0.00	
CL1	1	0.803	1204.1	461.4	0.061	0.024	0.08	
CL1	1.5	0.711	1066.8	527.4	0.022	0.012	0.12	
SM	2.5	0.422	633.0	659.2	0.032	0.048	0.20	
SM	3.5	0.297	445.1	791.0	0.021	0.048	0.27	
SC	4.5	0.331	496.6	858.6	0.071	0.000	0.34	
SC	5.5	0.261	390.9	926.2	0.055	0.000	0.39	
SC	6.5	0.208	312.3	993.8	0.043	0.000	0.44	
SC	7.5	0.169	253.4	1061.4	0.033	0.000	0.47	<---2B
SC	8.5	0.139	208.7	1129.0	0.027	0.000	0.50	
SC	9.5	0.116	174.2	1196.6	0.021	0.000	0.52	
SC	10.5	0.098	147.2	1264.2	0.017	0.000	0.54	
SC	11.5	0.084	125.8	1331.8	0.014	0.000	0.55	
SC	12.5	0.072	108.6	1399.4	0.012	0.000	0.56	
SC	13.5	0.063	94.6	1467.0	0.010	0.000	0.57	
SC	14.5	0.055	83.1	1534.6	0.008	0.000	0.58	
SC	15.5	0.049	73.5	1602.2	0.007	0.000	0.59	
SC	16.5	0.044	65.4	1669.8	0.006	0.000	0.59	
SC	17.5	0.039	58.6	1737.4	0.005	0.000	0.60	
SC	18.5	0.035	52.7	1805.0	0.005	0.000	0.60	
SC	19.5	0.032	47.7	1872.6	0.004	0.000	0.61	
SC	20.5	0.029	43.4	1940.2	0.003	0.000	0.61	
SC	21.5	0.026	39.6	2007.8	0.003	0.000	0.61	
SC	22.5	0.024	36.3	2075.4	0.003	0.000	0.61	

Settlement--Footings

SETTLEMENT OF FOOTINGS								
Project:	Stonecreek F and G		TP-9					
B:	3.65148	feet (width or diameter)			b =	1.825742	ft (1/2 width/dia)	
L:	3.65148	feet (length)			l =	1.825742	ft (1/2 length)	
foot. depth:	2.5	feet					Spread Load,k:	20
unit weight:	124.08	pcf (above footing depth)					Strip Load,k:	3
allowable q:	1500	psf						
footing type:	3	(1=strip,2&3=square/rect.,4=circular)						
	4	(4 for center, 1 for corner of square/rect.)						
water depth:	4.75	feet						

DEFINE SOIL PROFILE:			preconsol		Density	Collapse	Below ftg.	Avg.
Soil type	C_c'	C_r'	press.,σ_c'(psf)	OCR	(pcf)	(%)	depth (ft)	OCR
Fill	0.001	0.000125			135		0.0	1.00
ML	0.09	0.01	2000		124.08	0.1	2.5	5.22
GM	0.026	0.005	2000		127.6	0.1	6.5	2.68
CL	0.067	0.015	1600		127.07	0.1	22.5	1.15

SQUARE/RECTANGULAR FOOTINGS (Westergard Method)...

	Below ftg.		Increased	avg. ovrbn.	Incremnt.	Collapse	Total	
Soil Type	depth (ft)	Influence	Stress (psf)	press.(psf)	Sett. (in.)	Sett. (in.)	Set. (in.)	
Fill	0	0.000	0.0	310.2	0.000	0.000	0.00	
ML	1	0.726	1089.7	434.3	0.065	0.012	0.08	
ML	2	0.506	759.7	558.4	0.045	0.012	0.13	
ML	2.5	0.422	633.0	604.8	0.019	0.006	0.16	
GM	3.5	0.297	445.1	670.0	0.013	0.012	0.18	
GM	4.5	0.214	321.7	735.2	0.009	0.012	0.21	
GM	5.5	0.160	239.8	800.4	0.007	0.012	0.22	
GM	6.5	0.123	183.9	865.6	0.005	0.012	0.24	
CL	7.5	0.169	253.4	930.3	0.019	0.012	0.27	<---2B
CL	8.5	0.139	208.7	994.9	0.015	0.012	0.30	
CL	9.5	0.116	174.2	1059.6	0.012	0.012	0.32	
CL	10.5	0.098	147.2	1124.3	0.010	0.012	0.34	
CL	11.5	0.084	125.8	1189.0	0.008	0.012	0.36	
CL	12.5	0.072	108.6	1253.6	0.006	0.012	0.38	
CL	13.5	0.063	94.6	1318.3	0.005	0.012	0.40	
CL	14.5	0.055	83.1	1383.0	0.005	0.012	0.42	
CL	15.5	0.049	73.5	1447.6	0.004	0.012	0.43	
CL	16.5	0.044	65.4	1512.3	0.015	0.012	0.46	
CL	17.5	0.039	58.6	1577.0	0.013	0.012	0.48	
CL	18.5	0.035	52.7	1641.6	0.011	0.012	0.51	
CL	19.5	0.032	47.7	1706.3	0.010	0.012	0.53	
CL	20.5	0.029	43.4	1771.0	0.008	0.012	0.55	
CL	21.5	0.026	39.6	1835.7	0.007	0.012	0.57	
CL	22.5	0.024	36.3	1900.3	0.007	0.012	0.59	

Settlement--Footings

SETTLEMENT OF FOOTINGS								
Project:	Stonecreek F and G		TP-13					
B:	3.65148	feet (width or diameter)			b =	1.825742	ft (1/2 width/dia)	
L:	3.65148	feet (length)			l =	1.825742	ft (1/2 length)	
foot. depth:	2.5	feet					Spread Load,k:	20
unit weight:	120.32	pcf (above footing depth)					Strip Load,k:	3
allowable q:	1500	psf						
footing type:	3	(1=strip,2&3=square/rect.,4=circular)						
	4	(4 for center, 1 for corner of square/rect.)						
water depth:	5.5	feet						

DEFINE SOIL PROFILE:			preconsol		Density	Collapse	Below ftg.	Avg.
Soil type	C_c'	C_r'	press.,σ_c'(psf)	OCR	(pcf)	(%)	depth (ft)	OCR
Fill	0.001	0.000125			135		0.0	1.00
CL	0.091	0.022	1600		120.32	0.1	3.5	3.67
GM	0.026	0.005	2000		127.6	0.1	6.0	2.54
CL	0.067	0.015	1600		127.07	0.1	22.5	1.14

SQUARE/RECTANGULAR FOOTINGS (Westergard Method)...

	Below ftg.		Increased	avg. ovrbn.	Incremnt.	Collapse	Total	
Soil Type	depth (ft)	Influence	Stress (psf)	press.(psf)	Sett. (in.)	Sett. (in.)	Set. (in.)	
Fill	0	0.000	0.0	300.8	0.000	0.000	0.00	
CL	1	0.803	1204.1	421.1	0.160	0.012	0.17	
CL	2	0.627	940.7	541.4	0.115	0.012	0.30	
CL	3	0.484	726.7	661.8	0.085	0.012	0.40	
CL	3.5	0.426	638.8	690.7	0.038	0.006	0.44	
GM	4.5	0.214	321.7	755.9	0.009	0.012	0.46	
GM	5.5	0.160	239.8	821.1	0.007	0.012	0.48	
GM	6	0.140	209.3	853.7	0.003	0.006	0.49	
CL	7	0.187	280.8	918.4	0.021	0.012	0.52	
CL	8	0.153	229.6	983.1	0.016	0.012	0.55	<---2B
CL	9	0.127	190.4	1047.7	0.013	0.012	0.58	
CL	10	0.107	159.9	1112.4	0.010	0.012	0.60	
CL	11	0.091	135.9	1177.1	0.009	0.012	0.62	
CL	12	0.078	116.7	1241.7	0.007	0.012	0.64	
CL	13	0.067	101.2	1306.4	0.006	0.012	0.66	
CL	14	0.059	88.5	1371.1	0.005	0.012	0.67	
CL	15	0.052	78.0	1435.8	0.004	0.012	0.69	
CL	16	0.046	69.3	1500.4	0.016	0.012	0.72	
CL	17	0.041	61.9	1565.1	0.014	0.012	0.74	
CL	18	0.037	55.6	1629.8	0.012	0.012	0.77	
CL	19	0.033	50.2	1694.4	0.010	0.012	0.79	
CL	20	0.030	45.5	1759.1	0.009	0.012	0.81	
CL	21	0.028	41.4	1823.8	0.008	0.012	0.83	
CL	22	0.025	37.9	1888.4	0.007	0.012	0.85	
CL	22.5	0.024	36.3	1920.8	0.003	0.006	0.86	

Settlement--Footings

SETTLEMENT OF FOOTINGS								
Project:	Stonecreek F and G		TP-15					
B:	3.65148	feet (width or diameter)			b =	1.825742	ft (1/2 width/dia)	
L:	3.65148	feet (length)			l =	1.825742	ft (1/2 length)	
foot. depth:	2.5	feet					Spread Load,k:	20
unit weight:	114.95	pcf (above footing depth)					Strip Load,k:	3
allowable q:	1500	psf						
footing type:	3	(1=strip,2&3=square/rect.,4=circular)						
	4	(4 for center, 1 for corner of square/rect.)						
water depth:	8	feet						

DEFINE SOIL PROFILE:			preconsol		Density	Collapse	Below ftg.	Avg.
Soil type	C_c'	C_r'	press.,σ_c'(psf)	OCR	(pcf)	(%)	depth (ft)	OCR
Fill	0.001	0.000125			135		0.0	1.00
CL	0.127	0.009	2500		114.95		4.0	5.54
GM	0.026	0.005	2000		127.6	0.1	7.5	2.05
CL	0.067	0.015	1600		127.07	0.1	22.5	1.02

SQUARE/RECTANGULAR FOOTINGS (Westergard Method)...

Soil Type	Below ftg. depth (ft)	Influence	Increased Stress (psf)	avg. ovrbn. press.(psf)	Incremnt. Sett. (in.)	Collapse Sett. (in.)	Total Set. (in.)	
Fill	0	0.000	0.0	287.4	0.000	0.000	0.00	
CL	1	0.803	1204.1	402.3	0.065	0.000	0.06	
CL	2	0.627	940.7	517.3	0.049	0.000	0.11	
CL	3	0.484	726.7	632.2	0.036	0.000	0.15	
CL	4	0.375	562.5	747.2	0.026	0.000	0.18	
GM	5	0.184	276.7	874.8	0.007	0.012	0.19	
GM	6	0.140	209.3	971.2	0.005	0.012	0.21	
GM	7	0.108	162.6	1036.4	0.004	0.012	0.23	
GM	7.5	0.096	144.7	1069.0	0.002	0.006	0.24	<---2B
CL	8.5	0.139	208.7	1133.6	0.013	0.012	0.26	
CL	9.5	0.116	174.2	1198.3	0.011	0.012	0.28	
CL	10.5	0.098	147.2	1263.0	0.009	0.012	0.30	
CL	11.5	0.084	125.8	1327.7	0.007	0.012	0.32	
CL	12.5	0.072	108.6	1392.3	0.006	0.012	0.34	
CL	13.5	0.063	94.6	1457.0	0.022	0.012	0.37	
CL	14.5	0.055	83.1	1521.7	0.019	0.012	0.41	
CL	15.5	0.049	73.5	1586.3	0.016	0.012	0.43	
CL	16.5	0.044	65.4	1651.0	0.014	0.012	0.46	
CL	17.5	0.039	58.6	1715.7	0.012	0.012	0.48	
CL	18.5	0.035	52.7	1780.3	0.010	0.012	0.50	
CL	19.5	0.032	47.7	1845.0	0.009	0.012	0.53	
CL	20.5	0.029	43.4	1909.7	0.008	0.012	0.55	
CL	21.5	0.026	39.6	1974.4	0.007	0.012	0.56	
CL	22.5	0.024	36.3	2039.0	0.006	0.012	0.58	

Settlement--Footings

SETTLEMENT OF FOOTINGS								
Project:	Stonecreek F and G		TP-16					
B:	3.65148	feet (width or diameter)			b =	1.825742	ft (1/2 width/dia)	
L:	3.65148	feet (length)			l =	1.825742	ft (1/2 length)	
foot. depth:	2.5	feet					Spread Load,k:	20
unit weight:	119.34	pcf (above footing depth)					Strip Load,k:	3
allowable q:	1500	psf						
footing type:	3	(1=strip,2&3=square/rect.,4=circular)						
	4	(4 for center, 1 for corner of square/rect.)						
water depth:	7.5	feet						

DEFINE SOIL PROFILE:			preconsol		Density	Collapse	Below ftg.	Avg.
Soil type	C_c'	C_r'	press.,σ_c'(psf)	OCR	(pcf)	(%)	depth (ft)	OCR
Fill	0.001	0.000125			135		0.0	1.00
ML	0.154	0.024	2000		119.34	0.4	4.0	4.32
GM	0.026	0.005	2000		127.6	0.1	22.5	1.37

SQUARE/RECTANGULAR FOOTINGS (Westergard Method)...

	Below ftg.		Increased	avg. ovrbn.	Incremnt.	Collapse	Total	
Soil Type	depth (ft)	Influence	Stress (psf)	press.(psf)	Sett. (in.)	Sett. (in.)	Set. (in.)	
Fill	0	0.000	0.0	298.4	0.000	0.000	0.00	
ML	1	0.726	1089.7	417.7	0.161	0.048	0.21	
ML	2	0.506	759.7	537.0	0.110	0.048	0.37	
ML	3	0.353	529.3	656.4	0.074	0.048	0.49	
ML	4	0.251	377.0	775.7	0.050	0.048	0.59	
GM	5	0.184	276.7	903.3	0.007	0.012	0.61	
GM	6	0.140	209.3	968.5	0.005	0.012	0.62	
GM	7	0.108	162.6	1033.7	0.004	0.012	0.64	
GM	8	0.086	129.4	1098.9	0.003	0.012	0.65	<---2B
GM	9	0.070	105.1	1164.1	0.002	0.012	0.67	
GM	10	0.058	86.9	1229.3	0.002	0.012	0.68	
GM	11	0.049	73.0	1294.5	0.001	0.012	0.69	
GM	12	0.041	62.1	1359.7	0.001	0.012	0.71	
GM	13	0.036	53.4	1424.9	0.001	0.012	0.72	
GM	14	0.031	46.4	1490.1	0.001	0.012	0.73	
GM	15	0.027	40.6	1555.3	0.001	0.012	0.75	
GM	16	0.024	35.9	1620.5	0.001	0.012	0.76	
GM	17	0.021	31.9	1685.7	0.000	0.012	0.77	
GM	18	0.019	28.6	1750.9	0.000	0.012	0.78	
GM	19	0.017	25.7	1816.1	0.000	0.012	0.80	
GM	20	0.016	23.3	1881.3	0.002	0.012	0.81	
GM	21	0.014	21.2	1946.5	0.001	0.012	0.82	
GM	22	0.013	19.3	2011.7	0.001	0.012	0.84	
GM	22.5	0.012	18.5	2044.3	0.001	0.006	0.84	

Settlement--Footings

SETTLEMENT OF FOOTINGS								
Project:	Stonecreek F and G		TP-17					
B:	3.65148	feet (width or diameter)			b =	1.825742	ft (1/2 width/dia)	
L:	3.65148	feet (length)			l =	1.825742	ft (1/2 length)	
foot. depth:	2.5	feet					Spread Load,k:	20
unit weight:	122.85	pcf (above footing depth)					Strip Load,k:	3
allowable q:	1500	psf						
footing type:	3	(1=strip,2&3=square/rect.,4=circular)						
	4	(4 for center, 1 for corner of square/rect.)						
water depth:	5.5	feet						

DEFINE SOIL PROFILE:			preconsol		Density	Collapse	Below ftg.	Avg.
Soil type	C_c'	C_r'	press.,σ_c'(psf)	OCR	(pcf)	(%)	depth (ft)	OCR
Fill	0.001	0.000125			135		0.0	1.00
ML	0.069	0.01	2000		122.85	0.1	4.0	4.23
GM	0.026	0.005	2000		127.6	0.1	8.0	2.28
CL	0.067	0.015	1600		127.07	0.1	22.5	1.08

SQUARE/RECTANGULAR FOOTINGS (Westergard Method)...

	Below ftg.		Increased	avg. ovrbn.	Incremnt.	Collapse	Total	
Soil Type	depth (ft)	Influence	Stress (psf)	press.(psf)	Sett. (in.)	Sett. (in.)	Set. (in.)	
Fill	0	0.000	0.0	307.1	0.000	0.000	0.00	
ML	1	0.726	1089.7	430.0	0.066	0.012	0.08	
ML	2	0.506	759.7	552.8	0.045	0.012	0.13	
ML	3	0.353	529.3	675.7	0.030	0.012	0.18	
ML	4	0.251	377.0	736.1	0.022	0.012	0.21	
GM	5	0.184	276.7	801.3	0.008	0.012	0.23	
GM	6	0.140	209.3	866.5	0.006	0.012	0.25	
GM	7	0.108	162.6	931.7	0.004	0.012	0.26	
GM	8	0.086	129.4	996.9	0.003	0.012	0.28	<---2B
CL	9	0.127	190.4	1061.6	0.013	0.012	0.30	
CL	10	0.107	159.9	1126.3	0.010	0.012	0.33	
CL	11	0.091	135.9	1190.9	0.008	0.012	0.35	
CL	12	0.078	116.7	1255.6	0.007	0.012	0.37	
CL	13	0.067	101.2	1320.3	0.006	0.012	0.38	
CL	14	0.059	88.5	1384.9	0.005	0.012	0.40	
CL	15	0.052	78.0	1449.6	0.004	0.012	0.42	
CL	16	0.046	69.3	1514.3	0.016	0.012	0.44	
CL	17	0.041	61.9	1579.0	0.013	0.012	0.47	
CL	18	0.037	55.6	1643.6	0.012	0.012	0.49	
CL	19	0.033	50.2	1708.3	0.010	0.012	0.52	
CL	20	0.030	45.5	1773.0	0.009	0.012	0.54	
CL	21	0.028	41.4	1837.6	0.008	0.012	0.56	
CL	22	0.025	37.9	1902.3	0.007	0.012	0.57	
CL	22.5	0.024	36.3	1934.6	0.003	0.006	0.58	

Settlement--Footings

SETTLEMENT OF FOOTINGS								
Project:	Stonecreek F and G	TP-20						
B:	3.65148	feet (width or diameter)			b =	1.825742	ft (1/2 width/dia)	
L:	3.65148	feet (length)			l =	1.825742	ft (1/2 length)	
foot. depth:	2.5	feet					Spread Load,k:	20
unit weight:	133.1	pcf (above footing depth)					Strip Load,k:	3
allowable q:	1500	psf						
footing type:	3	(1=strip,2&3=square/rect.,4=circular)						
	4	(4 for center, 1 for corner of square/rect.)						
water depth:	5.5	feet						

DEFINE SOIL PROFILE:			preconsol		Density	Collapse	Below ftg.	Avg.
Soil type	C_c'	C_r'	press.,σ_c'(psf)	OCR	(pcf)	(%)	depth (ft)	OCR
Fill	0.001	0.000125			135		0.0	1.00
ML	0.046	0.012	1200		133.1	0.1	4.0	2.40
GM	0.026	0.005	2000		127.6	0.1	6.0	2.30
CL	0.067	0.015	1600		127.07	0.1	22.5	1.09

SQUARE/RECTANGULAR FOOTINGS (Westergard Method)...

	Below ftg.		Increased	avg. ovrbn.	Incremnt.	Collapse	Total	
Soil Type	depth (ft)	Influence	Stress (psf)	press.(psf)	Sett. (in.)	Sett. (in.)	Set. (in.)	
Fill	0	0.000	0.0	332.8	0.000	0.000	0.00	
ML	1	0.726	1089.7	465.9	0.121	0.012	0.13	
ML	2	0.506	759.7	599.0	0.073	0.012	0.22	
ML	3	0.353	529.3	732.1	0.043	0.012	0.27	
ML	4	0.251	377.0	802.8	0.024	0.012	0.31	
GM	5	0.184	276.7	868.0	0.007	0.012	0.33	
GM	6	0.140	209.3	933.2	0.005	0.012	0.35	
CL	7	0.187	280.8	997.8	0.019	0.012	0.38	
CL	8	0.153	229.6	1062.5	0.015	0.012	0.40	<---2B
CL	9	0.127	190.4	1127.2	0.012	0.012	0.43	
CL	10	0.107	159.9	1191.8	0.010	0.012	0.45	
CL	11	0.091	135.9	1256.5	0.008	0.012	0.47	
CL	12	0.078	116.7	1321.2	0.007	0.012	0.49	
CL	13	0.067	101.2	1385.8	0.006	0.012	0.51	
CL	14	0.059	88.5	1450.5	0.005	0.012	0.52	
CL	15	0.052	78.0	1515.2	0.018	0.012	0.55	
CL	16	0.046	69.3	1579.9	0.015	0.012	0.58	
CL	17	0.041	61.9	1644.5	0.013	0.012	0.60	
CL	18	0.037	55.6	1709.2	0.011	0.012	0.63	
CL	19	0.033	50.2	1773.9	0.010	0.012	0.65	
CL	20	0.030	45.5	1838.5	0.009	0.012	0.67	
CL	21	0.028	41.4	1903.2	0.008	0.012	0.69	
CL	22	0.025	37.9	1967.9	0.007	0.012	0.71	
CL	22.5	0.024	36.3	2000.2	0.003	0.006	0.72	

Project: Stonecreek Plats F and G
Location: See Figure No. 2, Utah
Project No: 218318
Date: 4/5/21
Drill Rig Code: L3
Borehole Diameter, inches: 7
Sampler without liners?: yes
Fill Height, feet: 0
Magnitude, Mw: 7.5
Peak Horiz. Acceleration, amax: 0.562
Distance from site to fault, km: 2.6
Reference atmosphere value,tsf: 1.058108

References:
1. Youd, et al, 2001.
2. Boulanger & Idriss, 2006.
3. Bray & Sancio, 2006.

Calcs By: TM
Reviewed By:

C_E = 1.02
C_B = 1.05
C_S = 1.20
Magnitude Scaling Factor, MSF = 1.00
$R^* = R + 10^{(0.89M_w - 5.64)}$ = 13.4
ModCal Sampler Conver. Factor (*) = 0.77
Use representative tests for layers? yes
Enter Ground Slope %: 0.01
Enter W=Ht/Distance to free face,%:

LATERAL SPREADING VALUES

Boring	F_{15},T_{15}	$D50_{15}$	D_H, ft	Boring	F_{15},T_{15}	$D50_{15}$	D_H, ft	Boring	F_{15},T_{15}	$D50_{15}$	D_H, ft
B-1	0,0.00	0.000	0.0								

TOTAL SETTLEMENT VALUES

Boring	Sett., in.	Boring	Sett., in.	Boring	Sett., in.
B-1	0.0				

Boring No.	Water Depth, feet	Sample Depth, feet	USC	% Fines	Unit Weight, pcf	Pore Press., tsf	Total Stress tsf	Effective Stress tsf	Rod Length, feet	Meas. N-value N_m	Rod Correct. C_R	Ovrbrdn Correct. C_N	$(N_1)_{60}$	$(N_1)_{60cs}$	r_d	$CRR_{7.5}$	CSR	F.S. = ($CRR_{7.5}$ / CSR) MSF (>1) F.S.	(<=1) F.S.	Moisture Content %	Liquid Limit	Plast. Index	Will It Liquefy By: Boul./Idriss Criteria?	Bray/Sancio Criteria?	Volum. Strain %	Layer Thick. feet	Layer Settlmnt, inches
B-1	5.5	3.5	CL	70	113	0.000	0.198	0.198	5	5	0.75	1.59	7.6	14.1	0.99	0.15	0.36	(Clay)					NO				
	5.5	6	CL	70	114	0.016	0.342	0.326	10	6	0.80	1.46	9.0	15.8	0.99	0.17	0.38	(Clay)					NO				
	5.5	8.5	CL	70	113	0.094	0.480	0.387	10	5	0.80	1.41	7.2	13.6	0.98	0.15	0.44	(Clay)					NO				
	5.5	11	SC	12	112	0.172	0.616	0.444	15	3	0.85	1.36	4.4	6.1	0.97	0.08	0.49	(Clay)					NO				
	5.5	16	CL	70	112	0.328	0.896	0.568	20	3	0.85	1.27	4.1	9.9	0.96	0.11	0.55	(Clay)					NO				
	5.5	21	SC	12	114	0.484	1.197	0.713	25	7	0.95	1.17	10.0	11.9	0.95	0.13	0.58	(Clay)					NO				
	5.5	26	CL	70	117	0.640	1.521	0.881	30	13	0.95	1.08	17.1	25.5	0.94	0.30	0.59	(Clay)					NO				
	5.5	31	CL	70	115	0.796	1.783	0.987	35	10	1.00	1.03	13.2	20.8	0.92	0.23	0.61	(Clay)					NO				
													#N/A														
													#N/A														
													#N/A														

Project: Stonecreek Plats F and G 4/5/2021
Job No. 218318

Bearing Capacity after Meyerhoff[1]

Allowable Bearing Pressure, $q_{all} = (cN_cs_cd_c + \gamma DN_qs_qd_q + 0.5\gamma BN_\gamma s_\gamma d_\gamma r_\gamma)/(F.S.) \leq q_l$

Friction Angle, ϕ =	28	degrees			N_q =	14.7	$= e^{(\pi \tan\phi)}\tan^2(45+\phi/2)$
Cohesion, c =	0	psf			N_c =	25.8	$= (N_q - 1)\cot\phi$
Effective Unit Weight, γ =	120	pcf	= 18.9	kN/m2	N_g =	11.2	$= (N_q - 1)\tan(1.4\phi)$
Longest Wall Footing Length, L =	25	ft	= 7.6	m	K_p =	2.8	$= \tan^2(45+\phi/2)$
Bearing Pressure Limit, q_l =	2	ksf	= 0.1	mPa			
F.S. =	3.0						shaded areas indicate input values

SUMMARY TABLES

Allowable Wall Footing Bearing Capacity, q_{all} - ksf

Footing	Structural Fill	Width - ft									
Depth, D - ft	Depth, D_f - ft	1.50	1.67	1.83	2.00	2.50	3.00	3.50	4.00	4.50	5.00
2.50	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
4.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
2.50	1.50	4.24	4.02	3.86	3.71	3.39	3.18	3.03	2.92	2.83	2.76
4.00	1.50	4.24	4.02	3.86	3.71	3.39	3.18	3.03	2.92	2.83	2.76

Allowable Square Column Footing Bearing Capacity, q_{all} - ksf

Footing	Structural Fill	Width - ft									
Depth, D - ft	Depth, D_f - ft	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	6.50	7.00
1.00	0.00	1.56	1.70	1.84	1.97	2.00	2.00	2.00	2.00	2.00	2.00
2.50	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
1.00	1.50	4.00	3.82	3.75	3.73	3.56	3.38	3.24	3.13	3.03	2.95
2.50	1.50	5.12	4.50	4.08	3.78	3.56	3.38	3.24	3.13	3.03	2.95

1Bowles, Joseph E.; Foundation Analyses and Design; McGraw-Hill; 1988; pgs: 187-196

using Bowles bearing capacity reduction method (r_γ = 1- 0.25 log (B/6), B≥6 ft.).

Wall (Strip) Footing

Width, B =	1.50	1.67	1.83	2.00	2.50	3.00	3.50	4.00	4.50	5.00
s_c =	1.03	1.04	1.04	1.04	1.06	1.07	1.08	1.09	1.10	1.11
$s_q = s_\gamma$ =	1.02	1.02	1.02	1.02	1.03	1.03	1.04	1.04	1.05	1.06
Depth, D =	2.5									
d_c =	1.55	1.50	1.45	1.42	1.33	1.28	1.24	1.21	1.18	1.17
$d_q = d_\gamma$ =	1.28	1.25	1.23	1.21	1.17	1.14	1.12	1.10	1.09	1.08
r_γ =	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
q_{ult} =	7.0	7.0	7.1	7.1	7.3	7.6	7.9	8.2	8.5	8.9
q_{all} =	2.3	2.3	2.4	2.4	2.4	2.5	2.6	2.7	2.8	3.0
Depth, D =	4									
d_c =	1.89	1.80	1.73	1.67	1.53	1.44	1.38	1.33	1.30	1.27
$d_q = d_\gamma$ =	1.44	1.40	1.36	1.33	1.27	1.22	1.19	1.17	1.15	1.13
r_γ =	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
q_{ult} =	11.8	11.7	11.5	11.5	11.4	11.5	11.6	11.9	12.2	12.5
q_{all} =	3.9	3.9	3.8	3.8	3.8	3.8	3.9	4.0	4.1	4.2

Square Column Footing

Width, B =	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	6.50	7.00
Depth, D =	1.00									
d_c =	1.13	1.11	1.10	1.08	1.07	1.07	1.06	1.06	1.05	1.05
$d_q = d_\gamma$ =	1.07	1.06	1.05	1.04	1.04	1.03	1.03	1.03	1.03	1.02
r_γ =	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.98
q_{ult} =	4.7	5.1	5.5	5.9	6.3	6.8	7.2	7.6	8.0	8.4
q_{all} =	1.6	1.7	1.8	2.0	2.1	2.3	2.4	2.5	2.7	2.8
Depth, D =	2.5									
d_c =	1.33	1.28	1.24	1.21	1.18	1.17	1.15	1.14	1.13	1.12
$d_q = d_\gamma$ =	1.17	1.14	1.12	1.10	1.09	1.08	1.08	1.07	1.06	1.06
r_γ =	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.98
q_{ult} =	9.1	9.3	9.7	10.0	10.4	10.8	11.1	11.5	11.9	12.2
q_{all} =	3.0	3.1	3.2	3.3	3.5	3.6	3.7	3.8	4.0	4.1

BORING LOG

NO.: B-1

PROJECT:	American Fork Property	**PROJECT NO.:**	169273
CLIENT:	Woodside Homes	**DATE:**	12/20/16
LOCATION:	See Figure No. 2	**ELEVATION:**	Not Measured
OPERATOR:	Great Basin	**LOGGED BY:**	C. Allred
EQUIPMENT:	Truck Mounted Drill Rig		

DEPTH TO WATER; INITIAL ▽ : 7 ft. **AT COMPLETION ▼ :** 7 ft.

Depth (Ft.)	Graphic Log	USCS	Description	Samples	TEST RESULTS: Blows per foot	Water Cont. (%)	Dry Dens. (pcf)	LL	PI	Gravel (%)	Sand (%)	Fines (%)	Other Tests
0			TOPSOIL, silty clay with sand, moist, dark brown, roots present.										
3		GM	Silty GRAVEL with sand, medium dense (estimated), moist, brown.										
6		SC	Clayey SAND with gravel, very loose, moist to wet, gray.		3	24		31	10	23	41	36	
9		GM	Silty GRAVEL with sand, dense, wet, gray to brown.		36								
12													
15		SM	Silty SAND with gravel, very loose to medium dense, wet, gray.		3			44	14				
18													

Notes: Groundwater encountered at approximately 7 feet.

Tests Key

- CBR = California Bearing Ratio
- C = Consolidation
- R = Resistivity/Nitrates/PH
- DS = Direct Shear
- SS = Soluble Sulfates
- UC = Unconfined Compressive Strength

PROJECT NO.: 169273

EARTHTEC ENGINEERING

FIGURE NO.: 3a

LOG OF TESTHOLE TEST PIT LOGS.GPJ EARTHTEC.GDT 1/12/17

BORING LOG

NO.: B-1

PROJECT: American Fork Property
CLIENT: Woodside Homes
LOCATION: See Figure No. 2
OPERATOR: Great Basin
EQUIPMENT: Truck Mounted Drill Rig
DEPTH TO WATER; INITIAL ▽: 7 ft.

PROJECT NO.: 169273
DATE: 12/20/16
ELEVATION: Not Measured
LOGGED BY: C. Allred
AT COMPLETION ▽: 7 ft.

Depth (Ft.)	Graphic Log	USCS	Description	Samples	TEST RESULTS: Blows per foot	Water Cont. (%)	Dry Dens. (pcf)	LL	PI	Gravel (%)	Sand (%)	Fines (%)	Other Tests
21		SM	Silty SAND with gravel, very loose to medium dense, wet, gray.		11	21				33	54	13	
24					24								
27													
30													
33		CL	Lean CLAY, medium stiff, wet, gray.		6								
36		SC	Clayey SAND, medium dense, wet, gray.		21								
39													

Notes: Groundwater encountered at approximately 7 feet.

Tests Key

CBR = California Bearing Ratio
C = Consolidation
R = Resistivity/Nitrates/PH
DS = Direct Shear
SS = Soluble Sulfates
UC = Unconfined Compressive Strength

PROJECT NO.: 169273

EARTHTEC ENGINEERING

FIGURE NO.: 3b

LOG OF TESTHOLE TEST PIT LOGS.GPJ EARTHTEC.GDT 1/12/17

BORING LOG

NO.: B-1

PROJECT:	American Fork Property	**PROJECT NO.:**	169273
CLIENT:	Woodside Homes	**DATE:**	12/20/16
LOCATION:	See Figure No. 2	**ELEVATION:**	Not Measured
OPERATOR:	Great Basin	**LOGGED BY:**	C. Allred
EQUIPMENT:	Truck Mounted Drill Rig		

DEPTH TO WATER; INITIAL ▽ : 7 ft. **AT COMPLETION ▼ :** 7 ft.

Depth (Ft.)	Graphic Log	USCS	Description	Samples	TEST RESULTS								
					Blows per foot	Water Cont. (%)	Dry Dens. (pcf)	LL	PI	Gravel (%)	Sand (%)	Fines (%)	Other Tests
			Lean CLAY with sand, medium stiff to stiff, wet, gray.		10	33		39	18	0	23	77	
42													
45					8								
48													
51		CL			6								
54													
57													
60													

Notes: Groundwater encountered at approximately 7 feet.

Tests Key

- CBR = California Bearing Ratio
- C = Consolidation
- R = Resistivity/Nitrates/PH
- DS = Direct Shear
- SS = Soluble Sulfates
- UC = Unconfined Compressive Strength

PROJECT NO.: 169273

EARTHTEC ENGINEERING

FIGURE NO.: 3c

LOG OF TESTHOLE TEST PIT LOGS.GPJ EARTHTEC.GDT 1/12/17

BORING LOG

NO.: B-1

PROJECT:	American Fork Properly	**PROJECT NO.:**	169273
CLIENT:	Woodside Homes	**DATE:**	12/20/16
LOCATION:	See Figure No. 2	**ELEVATION:**	Not Measured
OPERATOR:	Great Basin	**LOGGED BY:**	C. Allred
EQUIPMENT:	Truck Mounted Drill Rig		

DEPTH TO WATER; INITIAL ▽ : 7 ft. **AT COMPLETION ▼ :** 7 ft.

Depth (Ft.)	Graphic Log	USCS	Description	Samples	TEST RESULTS: Blows per foot	Water Cont. (%)	Dry Dens. (pcf)	LL	PI	Gravel (%)	Sand (%)	Fines (%)	Other Tests
60													
			Lean CLAY with sand, medium stiff to stiff, wet, gray.		4								
63													
66		CL											
69													
					9								
72			Maximum depth explored approximately 71½ feet.										
75													
78													

Notes: Groundwater encountered at approximately 7 feet.

Tests Key

- CBR = California Bearing Ratio
- C = Consolidation
- R = Resistivity/Nitrates/PH
- DS = Direct Shear
- SS = Soluble Sulfates
- UC = Unconfined Compressive Strength

PROJECT NO.: 169273

EARTHTEC ENGINEERING

FIGURE NO.: 3d

LOG OF TESTHOLE TEST PIT LOGS.GPJ EARTHTEC.GDT 1/12/17

Project:	American Fork
Location:	Approximately 700 South 400 West, Uta
Project No:	169273
Date:	4/5/21
Drill Rig Code:	L2
Borehole Diameter, inches:	7
Sampler without liners?:	yes
Fill Height, feet:	0
Magnitude, Mw:	7.5
Peak Horiz. Acceleration, amax:	0.495
Distance from site to fault, km:	4
Reference atmosphere value,tsf:	1.058108

Calcs By: TM

Reviewed By:

References:

1. Youd, et al, 2001.
2. Boulanger & Idriss, 2006.
3. Bray & Sancio, 2006.

C_E =	1.12
C_B =	1.05
C_S =	1.20
Magnitude Scaling Factor, MSF =	1.00
$R^* = R + 10^{(0.89M_w - 5.64)}$ =	14.8
ModCal Sampler Conver. Factor (*) =	0.77
Use representative tests for layers?	yes
Enter Ground Slope %:	0.008
Enter W=Ht/Distance to free face,%:	

LATERAL SPREADING VALUES

Boring	F_{15},T_{15}	$D50_{15}$	D_H, ft	Boring	F_{15},T_{15}	$D50_{15}$	D_H, ft	Boring	F_{15},T_{15}	$D50_{15}$	D_H, ft
B-1	13,1.60	0.398	2.3								

TOTAL SETTLEMENT VALUES

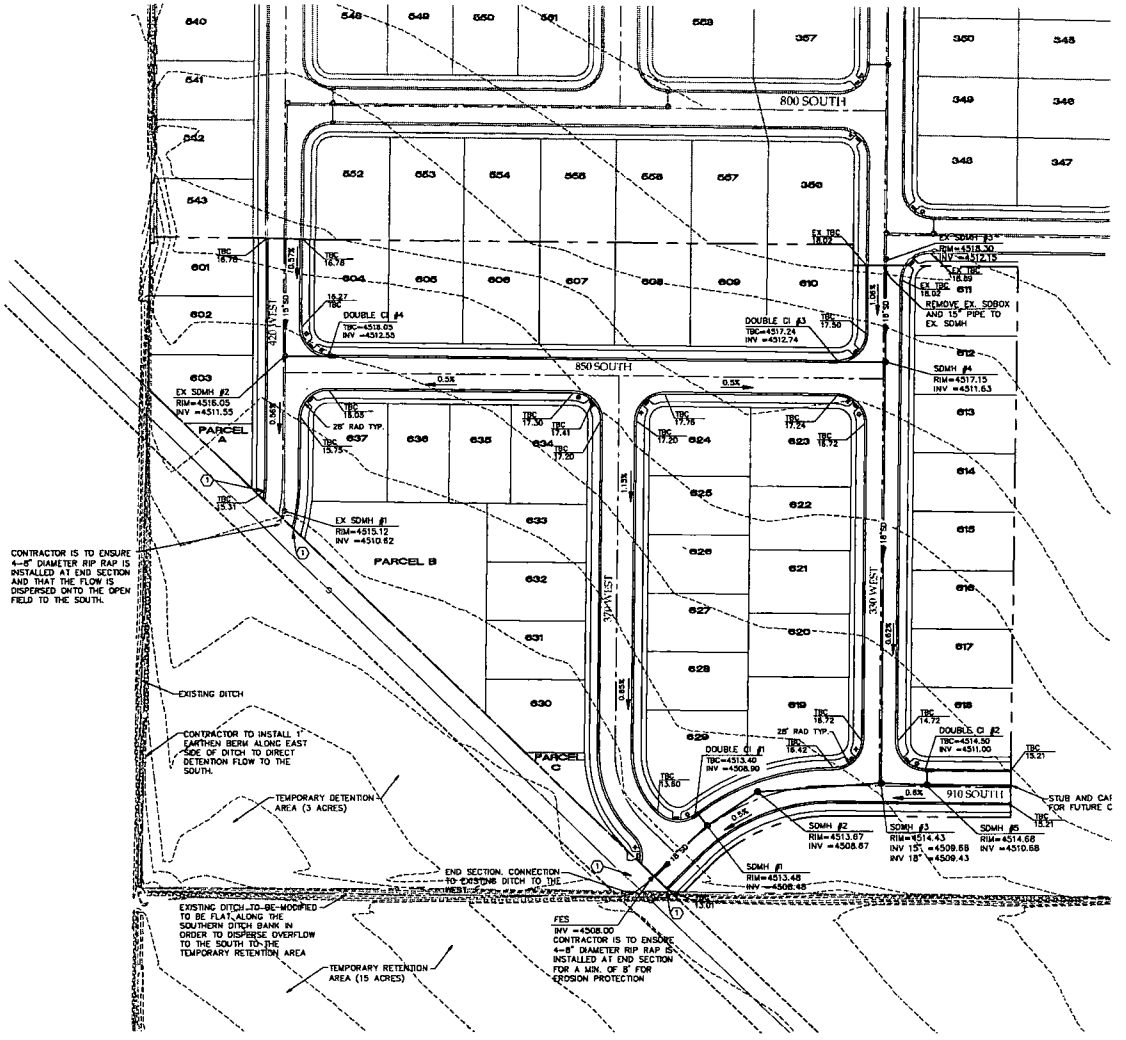
Boring	Sett., in.	Boring	Sett., in.	Boring	Sett., in.
B-1	3.1				

Boring No.	Water Depth, feet	Sample Depth, feet	USC	% Fines	Unit Weight, pcf	Pore Press., tsf	Total Stress tsf	Effective Stress tsf	Rod Length, feet	Meas. N-value N_m	Rod Correct. C_R	Ovrbrdn Correct. C_N	$(N_1)_{60}$	$(N_1)_{60cs}$	r_d	$CRR_{7.5}$	CSR	F.S. = ($CRR_{7.5}$ / CSR) MSF (>1) F.S.	(<=1) F.S.	Moisture Content %	Liquid Limit	Plast. Index	Will It Liquefy By: Boul./Idriss Criteria?	Bray/Sancio Criteria?	Volum. Strain %	Layer Thick. feet	Layer Settlmnt, inches
B-1	7	3.5	GM	12	115	0.000	0.201	0.201	5	8	0.75	1.58	13.4	15.4	0.99	0.16	0.32		AWT								
	7	6	SM	36	112	0.000	0.336	0.336	10	3	0.80	1.45	4.9	10.9	0.99	0.12	0.32	N/A		24	32	11	NO	NO			
	7	11	GM	12	124	0.125	0.682	0.557	15	36	0.85	1.27	54.9	58.2	0.97	(N>30)	0.38	N/A									
	7	16	SM	13	112	0.281	0.896	0.615	20	3	0.85	1.23	4.4	6.5	0.96	0.08	0.45		0.18	24	44	1	YES	NO	3.4	5.25	2.2
	7	21	SM	13	116	0.437	1.218	0.781	25	11	0.95	1.14	16.7	19.2	0.95	0.21	0.48		0.43	21	44	1	YES	NO	1.5	5	0.9
	7	26	SM	13	120	0.593	1.560	0.967	30	24	0.95	1.04	33.4	36.5	0.94	(N>30)	0.49	N/A		21	44	1	YES	NO			
	7	31	CL	85	114	0.749	1.767	1.018	35	6	1.00	1.02	8.6	15.3	0.92	0.16	0.51	(Clay)					NO				
	7	36	SC	12	119	0.905	2.142	1.237	40	7	1.00	0.93	9.1	10.9	0.88	0.12	0.49	(Clay)					NO				
	7	41	CL	77	115	1.061	2.358	1.297	45	10	1.00	0.91	12.8	20.4	0.84	0.22	0.49	(Clay)		33	39	18	NO	YES			
	7	46	CL	77	115	1.217	2.645	1.428	50	8	1.00	0.86	9.7	16.6	0.80	0.18	0.48	(Clay)		33	39	18	NO	YES			
	7	51	CL	77	114	1.373	2.907	1.534	55	6	1.00	0.83	7.0	13.4	0.76	0.14	0.46	(Clay)		33	39	18	NO	YES			
	7	61	CL	77	113	1.685	3.447	1.762	65	4	1.00	0.77	4.3	10.2	0.68	0.11	0.43	(Clay)		33	39	18	NO	YES			
	7	71	CL	77	115	1.997	4.083	2.086	75	9	1.00	0.69	8.8	15.6	0.60	0.17	0.38	(Clay)		33	39	18	NO	YES			

GENERAL NOTES

1. ALL CONSTRUCTION TO BE DONE ACCORDING TO THE AMERICAN FORK CITY STANDARDS AND SPECIFICATIONS.
2. PRIOR TO CONSTRUCTION, AN EROSION & SEDIMENTATION CONTROL PLAN WILL BE SUBMITTED TO THE PUBLIC WORKS DIRECTOR FOR APPROVAL.
3. PRIOR TO COMMENCEMENT OF ANY WORK, A PRECONSTRUCTION MEETING WILL BE HELD WITH THE PUBLIC WORKS DIRECTOR, CHIEF BUILDING OFFICE, CITY INSPECTORS, THE CONTRACTOR AND THE PROPERTY OWNER.
4. ALL ADA REQUIREMENTS TO BE CONSTRUCTED IN ACCORDANCE WITH THE AMERICAN FORK CITY STANDARDS AND SPECIFICATIONS, CONTRACTOR TO ENSURE ALL ADA STANDARDS ARE MET.
5. ALL STORM DRAIN TO BE 15" RCP UNLESS OTHERWISE NOTED.
6. ALL CURB INLET BOXES TO BE 3.5' DEEP UNLESS OTHERWISE NOTED.
7. THE STORM WATER FROM THIS AREA IS DIRECTED TO THE SOUTHWEST CORNER OF THE DEVELOPMENT AND WILL BE RETAINED ON THE PROPERTY TO THE SOUTH UNTIL FUTURE DEVELOPMENT, CONTRACTOR TO INSTALL A TEMPORARY RETENTION BASIN WITH A 4" PERFORATED PIPE WITH SOCK AND GRAVEL BED FOR 20' TO THE SOUTH OF THE BUBBLE UP BOX TO ALLOW BOX TO DRAIN AFTER STORM WATER HAS BEEN RETAINED.
8. CONTRACTOR TO COORDINATE CONNECTION TO EXISTING 12" IRRIGATION PIPE TO THE NORTH WITH ENGINEER.
9. CONTRACTOR TO COORDINATE EXPLORATION OF WATER IN THIS AREA DURING CONSTRUCTION WITH ENGINEER AND INSTALL COLLECTION SYSTEM ONCE FLOW IS DETERMINED.
10. CONNECT TO EXISTING 18" SD PIPE WITH TEMPORARY CLEAN OUT BOX. VERIFY FLOW LINE PRIOR TO CONNECTION.

① INSTALL EROSION PROTECTION AT END OF CURB AND DIRECT FLOW TO TEMPORARY DETENTION AREA AND EXISTING DITCH.



0 60 120 180

(24"x36")
SCALE: 1" = 60'
(11"x17")
SCALE: 1" = 120'

811 Know what's below. Call before you dig.

REVISIONS			
NO.	DATE	DESCRIPTION	BY
1	9/29/20	RED LINES	TT
2			
3			
4			

J:\GARRETT\AMERICAN FORK\dwg\GRADING.dwg

DESIGNED BY:	TGT
DRAWN BY:	TJT
CHECK BY:	TGT
DATE:	2/12/2020
CORD. FILE:	

TRANE ENGINEERING, P.C.
CONSULTING ENGINEERS AND LAND SURVEYORS
27 EAST MAIN LEHI, UTAH 84043 (801) 768-4544

AMERICAN FORK, UTAH

STONECREEK PLAT "F"
A RESIDENTIAL SUBDIVISION

GRADING AND DRAINAGE

JOB: WS-AF
SHEET: 3

ENT 101914:2021 PG 91 of 91