Appendix E:
Geotechnical Investigation

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E.1 - Geotechnical Feasibility Study

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LANGAN

Technical Excellence
Practical Experience
Client Responsiveness

6 October 2020

10x Genomics, Inc.
6230 Stoneridge Mall Road
Pleasanton, California 94588

Re: Geotechnical Feasibility Study
10x Genomics – Proposed New Facility
1701 Springdale Avenue
Pleasanton, California
Langan Project No.: 731745101

Dear 10x Genomics:

This letter presents the results of our geotechnical feasibility study, which is part of a due diligence exercise being carried out by 10x Genomics in relation to the potential purchase of a property at 1701 Springdale Avenue in Pleasanton, California. Our services were performed in accordance with our proposal dated 10 August 2020. Langan previously performed an investigation of the site and presented the results in preliminary and interim geotechnical reports dated 16 July 2019 and 15 May 2020, respectively, relating to potential development of the property by another client. The client for which our investigation was performed has halted development plans for the site and has not gone ahead with its purchase.

The site is irregularly-shaped and is bound by Stoneridge Mall Road on the north and east, Stoneridge Drive on the south, and Springdale Avenue on the west. The location of the site is shown on Figures 1 and 2. It is occupied by several at-grade one-story commercial buildings and paved parking lots. The types of foundations that support the existing buildings are unknown to us at this time; however, we anticipate that the buildings are likely supported on shallow footings or mats. In general, the ground surface slopes down gently toward the center of the site and to the east. The southwest and northwest corners of the site have elevations of 350 and 345 feet[1], respectively, and gently slope east, down toward the center of the site with an elevation of about 340 feet. The southeast and northeast corners of the site have elevations of 338 and 340 feet, respectively. We understand that if the Client (10x Genomics) goes ahead with the proposed purchase, existing structures, asphalt parking, and landscaping would likely be demolished and removed from the site prior to commencement of the future development.

We also understand that if the site is purchased, future development will likely consist of several low-rise buildings and a parking garage. The number of stories that defines a "low-rise" building would typically be less than three. The location of the proposed buildings is unknown at the time of preparing this feasibility study. Other site improvements will likely include asphalt-paved driveways, concrete flatwork, landscaping areas, and underground utilities. The purpose of our feasibility study is to provide the Client with an evaluation of geotechnical conditions observed during our preliminary and interim geotechnical investigations at the site, as well as to summarize

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[1] Elevations are based on the National Geodetic Vertical Datum of 1929.

our geotechnical findings, conclusions and recommendations with respect to any proposed development. Should 10x Genomics purchase the site, these issues should be further evaluated once design level drawings are available, at which point Langan should perform engineering analyses and provide recommendations specific to the planned development.

PRELIMINARY AND INTERIM GEOTECHNICAL INVESTIGATIONS

We previously investigated subsurface conditions at the site by drilling eleven borings, designated B-1 through B-11, and performing thirteen cone penetration tests (CPTs) designated CPT-1 through CPT-13. The approximate locations of the borings and CPTs are shown on Figure 2.

Prior to performing our field investigation, we obtained a drilling permit from Zone 7 Water Agency, notified Underground Service Alert and retained a private underground utility locating service to check for underground utilities near the exploration points.

The borings were drilled between 29 January 2020 and 11 February 2020 by Pitcher Services, LLC., of East Palo Alto, California; using a truck-mounted drill rig equipped with rotary-wash equipment. Borings were advanced to depths between 20 and 100 feet below the existing ground surface (bgs). During drilling, our field engineer logged the borings and obtained representative samples of the soil encountered for classification and laboratory testing.

The CPTs, designated as CPT-1 through CPT-13, were advanced by Gregg Drilling, LLC. of Martinez, California. CPT-1 through CPT-4 were performed on 7 May 2019 and CPT-5 through CPT-13 were performed between 13 and 16 January 2020 to depths of about 100 feet bgs. The CPTs are performed by hydraulically pushing a 1.7-inch-diameter cone-tipped probe with a projected area of 15 square centimeters into the ground. The cone-tipped probe measures tip resistance, and the friction sleeve behind the cone tip measures frictional resistance. Electrical strain gauges within the cone continuously measure soil parameters for the entire depth advanced. Cone data, including tip resistance and frictional resistance, are recorded by a computer while the test is conducted. Accumulated data were processed by computer to provide engineering information such as the types and approximate strength characteristics of the soil encountered.

Pore pressure dissipation tests (PPDTs) were attempted during the advancement of all CPTs. The PPDTs were conducted by halting cone penetration in a sand layer and measuring the variation of pore pressure behind the tip of the cone with time. This method is used to measure the equilibrium water pressure and determine the approximate level of the ground water. Additionally, CPTs 5 through 8 were performed as seismic cone penetration tests (SCPT). The SCPT is performed by halting advancement of the cone and sending a shear wave into the soil. The shear wave velocity of the soil is determined based on the time the shear wave pulse is received at a sensor at a known distance interval. The average shear wave velocity derived from this test can then be used to determine site class and as input for site-specific response during an earthquake.

Upon completion of the field investigation, the boreholes and CPTs were backfilled with cement grout in accordance with Zone 7 Water Agency requirements. Soil cuttings from the borings were placed into a 20-cubic-yard bin which was temporarily stored onsite, tested, and transported off-site for proper disposal.

Laboratory Testing

We re-examined the soil samples obtained from our borings to confirm the field classifications and select representative samples for geotechnical laboratory testing. Soil samples were tested to measure moisture content, dry density, fines content, Atterberg limits, strength, consolidation properties, resistance value (R-value), and corrosion potential.

SUBSURFACE CONDITIONS

Site and subsurface conditions discussed in this section are based on the results of our field investigation, observations during drilling, and available subsurface and topographic information by others.

Existing Site Conditions

The site of the proposed development is occupied by several one-story commercial buildings, driveways and parking lots, and landscaping. Topographic contours of the existing ground surface are shown on Figure 2. Where the site borders Springdale Avenue, the ground surface slopes down from south to north from about Elevation 350 feet to about 345 feet. From Springdale Avenue toward the east, the ground surface slopes down towards the center of the site to approximate Elevation 340 feet. The north corner of Stoneridge Mall Road is at the same elevation as the center of the site at Elevation 340 feet. From the center of the site, the ground surface slopes down towards the south corner of Stoneridge Mall Road which is at approximate Elevation 338 feet.

Subsurface Conditions

The available subsurface information indicates that the site is generally underlain by soft to very stiff native clay with variable sand and gravel content. The clay is interbedded with medium dense to very dense sand layers.

The borings drilled through the existing pavement encountered between 1 to 4½ inches of asphaltic pavement, underlain by zero to 10½ inches of aggregate base. Locally, 3 to 4½ feet of clay fill and 8½ feet of very stiff silt with sand is also present.

The upper 18½ to 24 feet of the clay is medium stiff to very stiff. Below these depths the clay becomes soft to stiff to depths between 31 and 46½ feet below ground surface (bgs). Where encountered within the project site, the thickness of the soft to stiff clay layer ranges between

10 to 23 feet. Consolidation tests performed on samples of this deeper, soft to stiff clay layer indicate that the soil is slightly overconsolidated[2].

The soft to stiff clay layer is underlain by stiff to hard clay with variable sand and gravel content interbedded with layers of medium dense to very dense sand. Results of the Atterberg limits tests indicate the medium dense to dense sand generally has a plasticity index between 13 and 19, with exception to some non-continuous sand layers at depths of between 40 and 45 feet bgs with a plasticity index of 5 and 10, respectively. Additionally, where tested, the medium dense to dense sand has between 15 and 40 percent fines. The CPTs, encountered similar subsurface conditions to the borings; typically clay with interbedded dense to very dense sand layers with varying silt and gravel contents to the maximum depth explored of 100 feet bgs.

Groundwater

Groundwater levels were not obtained from borings because it was obscured by the drilling fluid. Groundwater was measured in the CPTs during the 2019 and 2020 geotechnical investigations. In May 2019, groundwater was measured between 17.5 and 18.5 feet bgs, corresponding to Elevations between 322.5 feet and 324 feet. During the 2020 geotechnical investigation where successful PPDTs were performed, groundwater was measured between 21.5 and 24.5 feet bgs, corresponding to Elevations between 316 and 321 feet. Groundwater levels at the site are expected to vary seasonally. We anticipate the high (design) groundwater level at Elevation 324 feet.

REGIONAL SEISMICITY

The major active faults in the area are the Hayward, Calaveras, Mount Diablo, San Andreas, and Green Valley faults. These and other active faults in the region are shown on Figure 3. For each of the active faults within 50 kilometers of the site, the distance from the site and estimated mean characteristic Moment magnitude[3] [2007 Working Group on California Earthquake Probabilities (WGCEP) (2008) and Cao et al. (2003)] are summarized in Table 1.

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[2] An overconsolidated clay has experienced a pressure greater than its current load.

[3] Moment magnitude is an energy-based scale and provides a physically meaningful measure of the size of a faulting event. Moment magnitude is directly related to average slip and fault rupture area.

TABLE 1
Regional Faults and Seismicity

Fault Segment	Approximate Distance from Site (km)	Direction from Site	Mean Characteristic Moment Magnitude
Total Calaveras	0.6	West	7.03
Mount Diablo Thrust	9	Northeast	6.70
Total Hayward	12	Southwest	7.00
Total Hayward-Rodgers Creek	12	Southwest	7.33
Greenville Connected	18	Northeast	7.00
Green Valley Connected	24	North	6.80
Great Valley 7	36	East	6.90
Great Valley 5, Pittsburg Kirby Hills	37	North	6.70
Monte Vista-Shannon	40	Southwest	6.50
N. San Andreas - Peninsula	42	West	7.23
N. San Andreas (1906 event)	42	West	8.05

Figure 3 also shows the earthquake epicenters for events with magnitude greater than 5.0 from January 1800 through August 2014. Since 1800, four major earthquakes have been recorded on the San Andreas Fault. In 1836 an earthquake with an estimated maximum intensity of VII on the Modified Mercalli (MM) scale (Figure 4) occurred east of Monterey Bay on the San Andreas Fault (Toppozada and Borchardt 1998). The estimated Moment magnitude, M_w, for this earthquake is about 6.25. In 1838, an earthquake occurred with an estimated intensity of about VIII-IX (MM), corresponding to an M_w of about 7.5. The San Francisco Earthquake of 1906 caused the most significant damage in the history of the Bay Area in terms of loss of lives and property damage. This earthquake created a surface rupture along the San Andreas Fault from Shelter Cove to San Juan Bautista approximately 470 kilometers in length. It had a maximum intensity of XI (MM), an M_w of about 7.9, and was felt 560 kilometers away in Oregon, Nevada, and Los Angeles. The Loma Prieta Earthquake occurred on 17 October 1989, in the Santa Cruz Mountains with an M_w of 6.9, approximately 73 kilometers from the site. The most recent earthquake to affect the Bay Area occurred on 24 August 2014 and was located on the West Napa fault, approximately 68 kilometers from the site, with an M_w of 6.0.

In 1868 an earthquake with an estimated maximum intensity of X on the MM scale occurred on the southern segment (between San Leandro and Fremont) of the Hayward Fault. The estimated M_w for the earthquake is 7.0. In 1861, an earthquake of unknown magnitude (probably an M_w of about 6.5) was reported on the Calaveras Fault. The most recent significant earthquake on this fault was the 1984 Morgan Hill earthquake (M_w = 6.2).

The 2014 WGCEP (2015 report) at the U.S. Geologic Survey (USGS) predicted a 72 percent chance of a magnitude 6.7 or greater earthquake occurring in the San Francisco Bay Area in

30 years. More specific estimates of the probabilities for different faults in the Bay Area are presented in Table 2.

TABLE 2
WGCEP (2015) Estimates of 30-Year Probability of a Magnitude 6.7 or Greater Earthquake

Fault	Probability (percent)
Hayward-Rodgers Creek	32
N. San Andreas	33
Calaveras	25
Green Valley	7
Greenville	6
Mount Diablo Trust	4

PRELIMINARY CONCLUSIONS AND RECOMMENDATIONS

Preliminary geotechnical issues for the development include:

- strong ground shaking and seismic hazards
- shallow groundwater conditions
- appropriate foundation system(s) for the new building(s); and
- excavation shoring and associated support for adjacent existing improvements.

Should 10x Genomics purchase the site, these issues should be further evaluated once design level drawings are available, at which point Langan should perform engineering analyses and provide recommendations specific to the planned development. In the absence of any specific design, our preliminary conclusions and recommendations regarding these issues can be summarized as follows:

Fault Rupture Potential and Strong Ground Shaking

Published data indicate neither known active faults, nor extensions of active faults exist beneath the site. Therefore, we judge the potential for surface rupture occurring at the site is low. However, the Pleasanton fault, a subsidiary fault that is considered to be active, is located approximately 2.6 kilometers northeast of the site. The site is in an area of high seismicity, so strong ground shaking during major seismic events should be expected during the service life of the project. The project will need to be designed in accordance with the seismic provisions of the 2019 California Building Code (CBC 2019).

Liquefaction and Associated Hazards

When a saturated, cohesionless soil liquefies during a major earthquake, it experiences a temporary loss of shear strength caused by a transient rise in excess pore water pressure generated by strong ground motion. Flow failure, lateral spreading, differential settlement, loss of bearing, ground fissures, and sand boils are evidence of excess pore pressure generation and liquefaction. According to the Earthquake Zones of Required Investigation: Dublin Quadrangle prepared by the California Division of Mines and Geology (now the California Geological Survey), the center of the project site is approximately 950 feet west and 1,300 feet south of an area designated as a liquefaction hazard zone as shown on Figure 5. The California Geological Survey (CGS) has recommended the content for site investigation reports within seismic hazard zones be performed in accordance with Special Publication 117A titled Guidelines for Evaluating and Mitigating Seismic Hazard Zones in California, dated September 11, 2008. Although the site is outside the mapped liquefaction area, the medium dense, sand present at the site below the design groundwater level may be susceptible to liquefaction. Therefore, our evaluation of site seismic hazards was performed in general accordance with these guidelines.

The level of ground shaking that may occur at the site during future earthquakes is uncertain because the location, recurrence interval, and magnitude of future earthquakes are not known. For the purposes of this interim report, peak ground acceleration (PGA) of 0.92 times gravity was used in our liquefaction analysis. We used a moment magnitude of 7.03, which is the maximum moment magnitude for the Total Calaveras Fault, located about 0.6 kilometers from the site as shown on Table 1. For our analyses we used a design groundwater level at Elevation 324 feet.

We used the results of all CPTs to evaluate the liquefaction potential at the site and the liquefaction analysis was performed in accordance with the methodology described in Youd, et al. (2001). We also considered the approach determined by Cetin, et al. (2009) for evaluating reconsolidation settlement of deep soil layers. This approach assigns depth-varying weighting factors to the estimated settlement for a given soil layer.

Our CPT analyses indicate that the some of the thin, medium dense sand layers below the soft to medium stiff clay generally between about 30 and 50 feet bgs are susceptible to liquefaction (FS_{liq}<1.0) during the maximum considered earthquake. We estimate about ¼ inch of liquefaction-induced settlement could occur at the project site. However, these CPTs do not measure fines content. Based on the amounts of fines and the plasticity of sands encountered in the borings at similar depths, we conclude the soils encountered in the CPTs are not susceptible to liquefaction. We therefore conclude potential for liquefaction and cyclic softening to occur at the site is low.

Lateral Spreading

Lateral spreading is a phenomenon in which a surficial soil displaces along a shear zone that has formed within a continuous underlying liquefied layer. The surficial blocks are transported downslope or in the direction of a free face, such as a channel, by earthquake and gravitational forces. Lateral spreading is generally the most pervasive and damaging type of liquefaction-induced ground failure generated by earthquakes. Because the potential for liquefaction at the site is low, the potential for lateral spreading at the site is also low.

Cyclic Densification

Cyclic densification (also referred to as seismic densification and differential compaction) can occur during strong ground shaking in loose, granular deposits above the water table, resulting in ground surface settlement. The degree of susceptibility to cyclic densification is directly related to the relative density of the existing granular soils. The soil encountered in the borings at the site, above the water level is typically cohesive or consists of medium dense to dense clayey sand with sufficient plasticity, fines content, and strength to resist cyclic densification. We therefore judge the potential for cyclic densification to occur at the site is low.

Groundwater

We anticipate the high (design) groundwater level is at Elevation 324 feet, which could be as shallow as 16 feet bgs at the center of the site. If the future development includes one basement level, groundwater may not be a geotechnical concern depending on the elevation of the base of excavation. However, if two basement levels are proposed, based on our experience on projects in the vicinity, groundwater seepage into the proposed basement excavation should be expected where excavation deeper than about 16 feet is proposed, especially if the excavation is open during wet weather conditions. Temporary dewatering could be required during construction for the basement level. Waterproofing of the basement should be included in the design:

Basement walls above the groundwater level can be designed with backdrains to avoid the build-up of hydrostatic pressures. However, if the proposed development will extend below the design groundwater level, the basement floor and walls should be designed for water pressures which could eventually build up above the basement floor. Designing the floors for hydrostatic pressures could require hold-down elements if the span between columns is too great or the hydrostatic uplift exceeds the weight of the building.

Foundations and Settlement

Our subsurface information indicates the site is underlain by slightly overconsolidated clay layers that will experience reconsolidation settlement under light moderate building loads associated with low-rise structures. Our preliminary estimate is that consolidation settlement under the weight of a low-rise building, assumed to be 3-stories or less, constructed at grade could be ½ to ¾ inch. Differential settlement would depend upon the variation of building loads within the building, and the stiffness of the foundation

Our preliminary conclusion is that buildings 3-stories or less built at grade may be supported on a shallow foundation system consisting of isolated spread footings, interconnected strip footings forming a grid, and/or a mat. A stiffened grid system or mat foundation would be used in lieu of isolated footings to reduce differential settlement. A stiffened grid consists of interconnected grade beams. We estimate a shallow foundation system may be designed for allowable bearing pressures on the order of 3,000 to 4,000 pounds per square feet (psf) for dead plus live loads with a one-third increase for total design loads (including seismic). Lateral loads can be resisted by a combination of passive resistance acting against the vertical faces of the footings and friction along the base. The feasibility of a shallow foundation for the support of the proposed structures and final geotechnical parameters for foundation design should be confirmed by detailed geotechnical analyses when design level drawings are available.

For buildings four stories and higher, feasibility of shallow foundations should be determined after a detailed settlement analysis is performed based on the building loads. If the resulting settlement estimates are not acceptable, the taller buildings should be supported on a deep foundation system, consisting of piles gaining support in friction along the shaft, or a combined foundation system incorporating a mat supported on improved soil. We anticipate ground improvement techniques, such as soil-cement-mix columns or drilled displacement columns are feasible. Ground improvement should be performed in the upper approximately 30 feet (the zone of weaker soil where the majority of consolidation settlement is anticipated) and should stiffen the soil sufficiently to limit settlement within this zone to within tolerable limits and effectively transfer building loads to the stiffer soils below. We anticipate the soil improvement ratio may be 45 to 60 percent of the building area.

Auger cast-in-place (ACIP) piles are commonly used in the Bay Area and are a feasible pile type should piles be needed for this project. Our preliminary estimate is that 16-inch- diameter ACIP piles with 70- to 80 feet of embedment will have an allowable dead plus live load capacity on the order of 200 to 240 kips. We also estimate that differential settlement between adjacent pile caps can be maintained at less than ½ inch.

Basement Excavation(s)

If basements are included, we anticipate the excavation for basements can be made with conventional earth moving equipment. If space permits, the excavation sides may be sloped at an inclination of 1:1 (horizontal to vertical) or flatter. If space does not permit, the excavations should be shored. For one basement level, we consider a soldier-pile-and-lagging shoring system to be appropriate. Excavations that extend below the groundwater level will require dewatering.

2019 California Building Code Mapped Values

For seismic design in accordance with the provision of 2019 California Building Code (CBC), we recommend the following parameters be used:

- Risk Targeted Maximum Considered Earthquake (MCE_R) S_S and S_1 of 1.971g and 0.725g, respectively
- Site Class D
- Site Coefficients, F_a and F_v of 1.0 and 1.7
- MCE_R spectral response acceleration parameters at short period, S_{MS}, and at one-second period, S_{M1}, of 2.365g and 1.233g, respectively
- Design Earthquake (DE) spectral response acceleration parameters at short period, S_{DS}, and at one-second period, S_{D1}, of 1.577g and 0.822g, respectively.

Future Studies

The project site has already been investigated during previous preliminary and full geotechnical investigations. Future studies would include engineering analyses when final design drawings become available and issuing of a full geotechnical report with recommendations appropriate to the nature of the final development scheme.

We trust the foregoing provides the information needed at this time. If you have any questions regarding this report, please contact the undersigned.

Sincerely,
Langan Engineering & Environmental Services, Inc.

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Project Engineer

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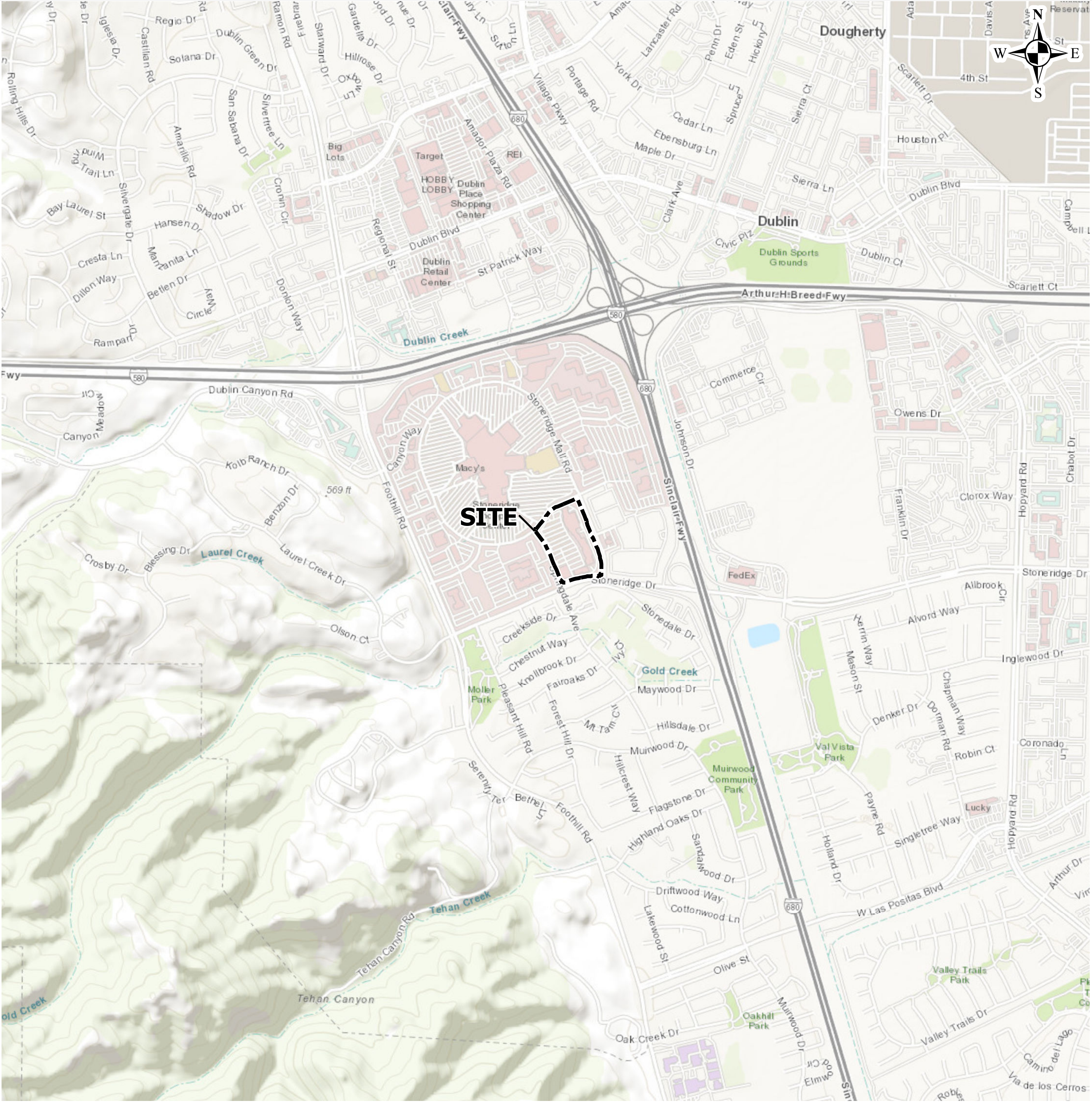
731745301.01 TJF_FeasibilityStudy_10x Genomics

Attachments: Figure 1 – Site Location Map
Figure 2 – Site Plan
Figure 3 – Map of Faults & Earthquakes
Figure 4 – Modified Mercalli Intensity Scale
Figure 5 – Regional Seismic Hazard Zones Map

FIGURES



Explanation

▭ Approximate site boundary

Notes:
1. Topographic basemap is provided through Langan's Esri ArcGIS software licensing and ArcGIS online Copyright, National Geographic Society, i-cubed.
2. All features shown are approximate.

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Collectively known as Langan

Project	Figure Title	Project No.	Figure
10X GENOMICS - PROPOSED NEW FACILITY PLEASANTON ALAMEDA COUNTY CALIFORNIA	SITE LOCATION MAP	731745301 Date 9/30/2020 Scale 1 " = 2,000 ' Drawn By BJS	1

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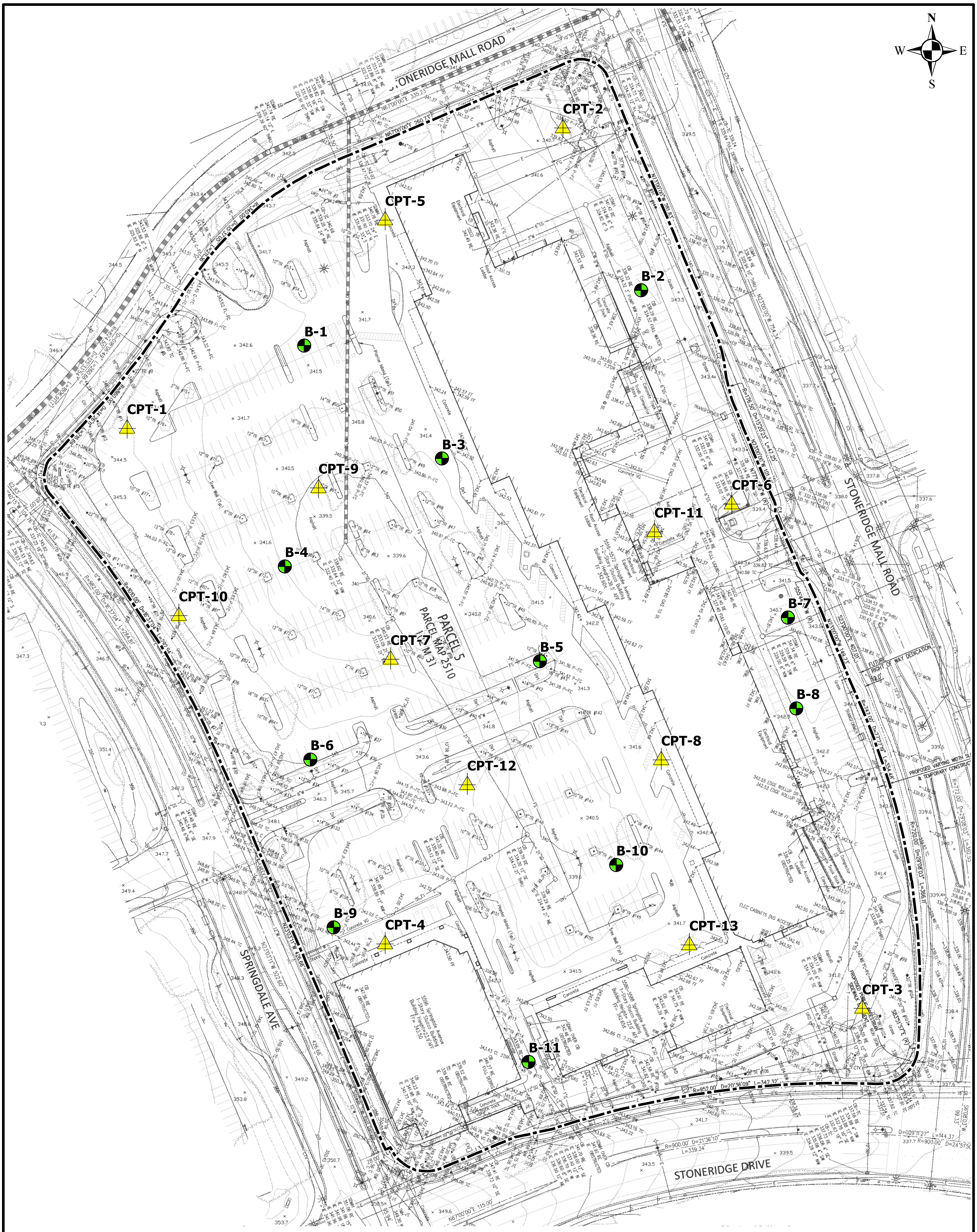

Explanation

● Approximate location of boring by Langan, January and February 2020

▲ Approximate location of CPT by Langan, May 2019 and January 2020

▭ Approximate site boundary

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Notes:
1. Topographic survey provided the Kier+Wright plan titled "Topographic Survey of 5516-5572, 5580-5588 and 5596 Springdael Avenue For Workday" dated, July 2019.

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Project	Figure Title	Project No.	Figure
10X GENOMICS - PROPOSED NEW FACILITY PLEASANTON ALAMEDA COUNTY CALIFORNIA	SITE PLAN	731745301 Date 9/30/2020 Scale 1 " = 100 ' Drawn By BJS	2

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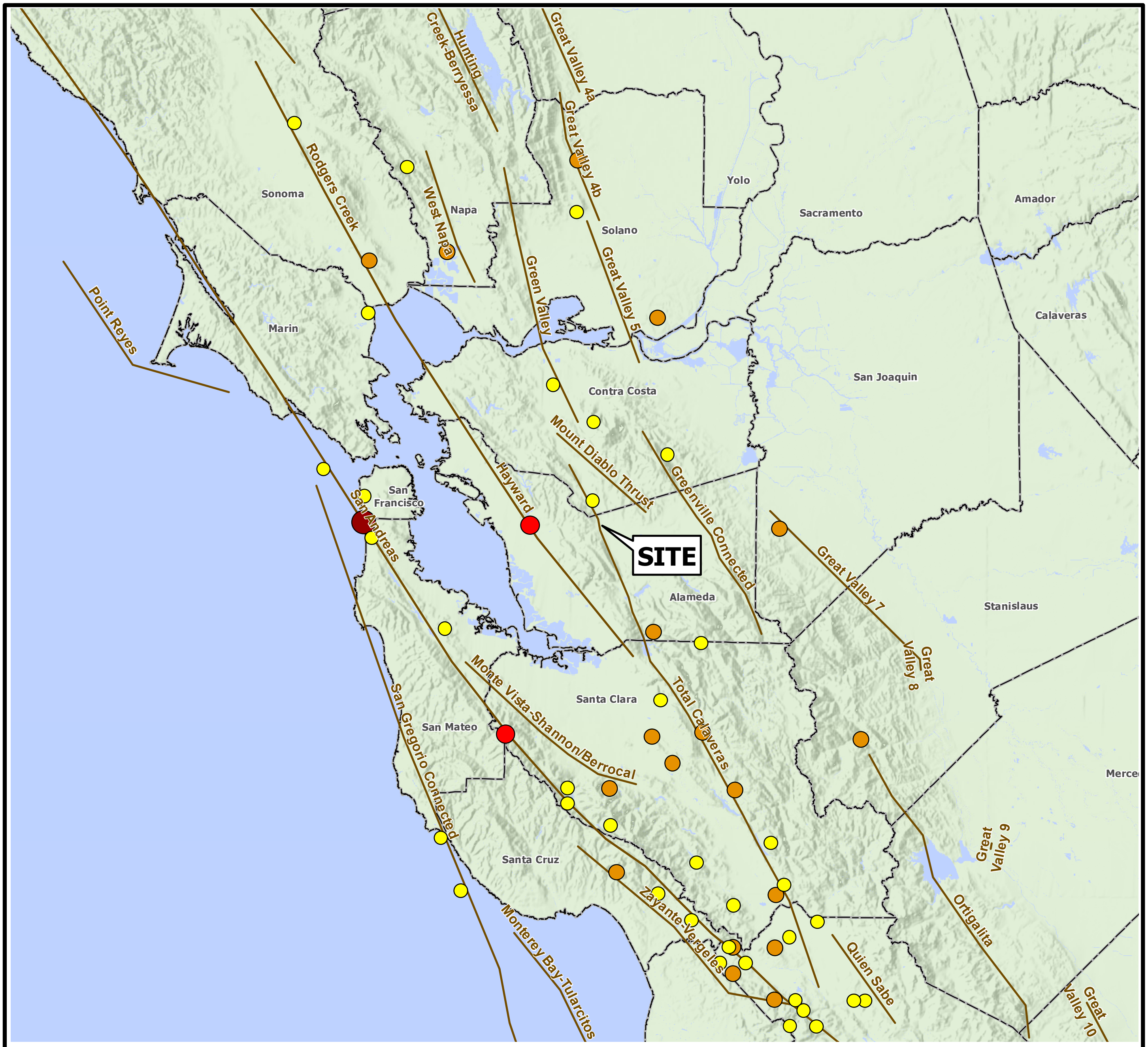

Explanation

⬚ County Boundary

— Fault

Earthquake Epicenter

Magnitude

● Magnitude 5 to 5.9

● Magnitude 6 to 6.9

● Magnitude 7 to 7.4

● Magnitude 7.5 to 8

0 10 20

Miles

N
W E
S

Notes:

1. Quaternary fault data displayed are based on a generalized version of USGS Quaternary Fault and fold database, 2010. For cartographic purposes only.
2. The Earthquake Epicenter (Magnitude) data is provided by the U.S Geological Survey (USGS) and is current through 08/26/2014.
3. Basemap hillshade and County boundaries provided by USGS and California Department of Transportation.
4. Map displayed in California State Coordinate System, California (Teale) Albers, North American Datum of 1983 (NAD83), Meters.

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Project

10X GENOMICS -
PROPOSED NEW FACILITY

PLEASANTON

ALAMEDA COUNTY CALIFORNIA

Figure Title

MAP OF MAJOR
FAULTS AND EARTHQUAKE
EPICENTERS IN THE
SAN FRANCISCO BAY AREA

Project No.
731745301

Date
9/30/2020

Scale
1 " = 20 miles

Drawn By
JNE

Figure
3

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I **Not felt by people, except under especially favorable circumstances. However, dizziness or nausea may be experienced.**
Sometimes birds and animals are uneasy or disturbed. Trees, structures, liquids, bodies of water may sway gently, and doors may swing very slowly.

II **Felt indoors by a few people, especially on upper floors of multi-story buildings, and by sensitive or nervous persons.**
As in Grade I, birds and animals are disturbed, and trees, structures, liquids and bodies of water may sway. Hanging objects swing, especially if they are delicately suspended.

III **Felt indoors by several people, usually as a rapid vibration that may not be recognized as an earthquake at first. Vibration is similar to that of a light, or lightly loaded trucks, or heavy trucks some distance away. Duration may be estimated in some cases.**
Movements may be appreciable on upper levels of tall structures. Standing motor cars may rock slightly.

IV **Felt indoors by many, outdoors by a few. Awakens a few individuals, particularly light sleepers, but frightens no one except those apprehensive from previous experience. Vibration like that due to passing of heavy, or heavily loaded trucks. Sensation like a heavy body striking building, or the falling of heavy objects inside.**
Dishes, windows and doors rattle; glassware and crockery clink and clash. Walls and house frames creak, especially if intensity is in the upper range of this grade. Hanging objects often swing. Liquids in open vessels are disturbed slightly. Stationary automobiles rock noticeably.

V **Felt indoors by practically everyone, outdoors by most people. Direction can often be estimated by those outdoors. Awakens many, or most sleepers. Frightens a few people, with slight excitement; some persons run outdoors.**
Buildings tremble throughout. Dishes and glassware break to some extent. Windows crack in some cases, but not generally. Vases and small or unstable objects overturn in many instances, and a few fall. Hanging objects and doors swing generally or considerably. Pictures knock against walls, or swing out of place. Doors and shutters open or close abruptly. Pendulum clocks stop, or run fast or slow. Small objects move, and furnishings may shift to a slight extent. Small amounts of liquids spill from well-filled open containers. Trees and bushes shake slightly.

VI **Felt by everyone, indoors and outdoors. Awakens all sleepers. Frightens many people; general excitement, and some persons run outdoors.**
Persons move unsteadily. Trees and bushes shake slightly to moderately. Liquids are set in strong motion. Small bells in churches and schools ring. Poorly built buildings may be damaged. Plaster falls in small amounts. Other plaster cracks somewhat. Many dishes and glasses, and a few windows break. Knickknacks, books and pictures fall. Furniture overturns in many instances. Heavy furnishings move.

VII **Frightens everyone. General alarm, and everyone runs outdoors.**
People find it difficult to stand. Persons driving cars notice shaking. Trees and bushes shake moderately to strongly. Waves form on ponds, lakes and streams. Water is muddied. Gravel or sand stream banks cave in. Large church bells ring. Suspended objects quiver. Damage is negligible in buildings of good design and construction; slight to moderate in well-built ordinary buildings; considerable in poorly built or badly designed buildings, adobe houses, old walls (especially where laid up without mortar), spires, etc. Plaster and some stucco fall. Many windows and some furniture break. Loosened brickwork and tiles shake down. Weak chimneys break at the roofline. Cornices fall from towers and high buildings. Bricks and stones are dislodged. Heavy furniture overturns. Concrete irrigation ditches are considerably damaged.

VIII **General fright, and alarm approaches panic.**
Persons driving cars are disturbed. Trees shake strongly, and branches and trunks break off (especially palm trees). Sand and mud erupts in small amounts. Flow of springs and wells is temporarily and sometimes permanently changed. Dry wells renew flow. Temperatures of spring and well waters varies. Damage slight in brick structures built especially to withstand earthquakes; considerable in ordinary substantial buildings, with some partial collapse; heavy in some wooden houses, with some tumbling down. Panel walls break away in frame structures. Decayed pilings break off. Walls fall. Solid stone walls crack and break seriously. Wet grounds and steep slopes crack to some extent. Chimneys, columns, monuments and factory stacks and towers twist and fall. Very heavy furniture moves conspicuously or overturns.

IX **Panic is general.**
Ground cracks conspicuously. Damage is considerable in masonry structures built especially to withstand earthquakes; great in other masonry buildings - some collapse in large part. Some wood frame houses built especially to withstand earthquakes are thrown out of plumb, others are shifted wholly off foundations. Reservoirs are seriously damaged and underground pipes sometimes break.

X **Panic is general.**
Ground, especially when loose and wet, cracks up to widths of several inches; fissures up to a yard in width run parallel to canal and stream banks. Landsliding is considerable from river banks and steep coasts. Sand and mud shifts horizontally on beaches and flat land. Water level changes in wells. Water is thrown on banks of canals, lakes, rivers, etc. Dams, dikes, embankments are seriously damaged. Well-built wooden structures and bridges are severely damaged, and some collapse. Dangerous cracks develop in excellent brick walls. Most masonry and frame structures, and their foundations are destroyed. Railroad rails bend slightly. Pipe lines buried in earth tear apart or are crushed endwise. Open cracks and broad wavy folds open in cement pavements and asphalt road surfaces.

XI **Panic is general.**
Disturbances in ground are many and widespread, varying with the ground material. Broad fissures, earth slumps, and land slips develop in soft, wet ground. Water charged with sand and mud is ejected in large amounts. Sea waves of significant magnitude may develop. Damage is severe to wood frame structures, especially near shock centers, great to dams, dikes and embankments, even at long distances. Few if any masonry structures remain standing. Supporting piers or pillars of large, well-built bridges are wrecked. Wooden bridges that "give" are less affected. Railroad rails bend greatly and some thrust endwise. Pipe lines buried in earth are put completely out of service.

XII **Panic is general.**
Damage is total, and practically all works of construction are damaged greatly or destroyed. Disturbances in the ground are great and varied, and numerous shearing cracks develop. Landslides, rock falls, and slumps in river banks are numerous and extensive. Large rock masses are wrenched loose and torn off. Fault slips develop in firm rock, and horizontal and vertical offset displacements are notable. Water channels, both surface and underground, are disturbed and modified greatly. Lakes are dammed, new waterfalls are produced, rivers are deflected, etc. Surface waves are seen on ground surfaces. Lines of sight and level are distorted. Objects are thrown upward into the air.

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Langan International, LLC

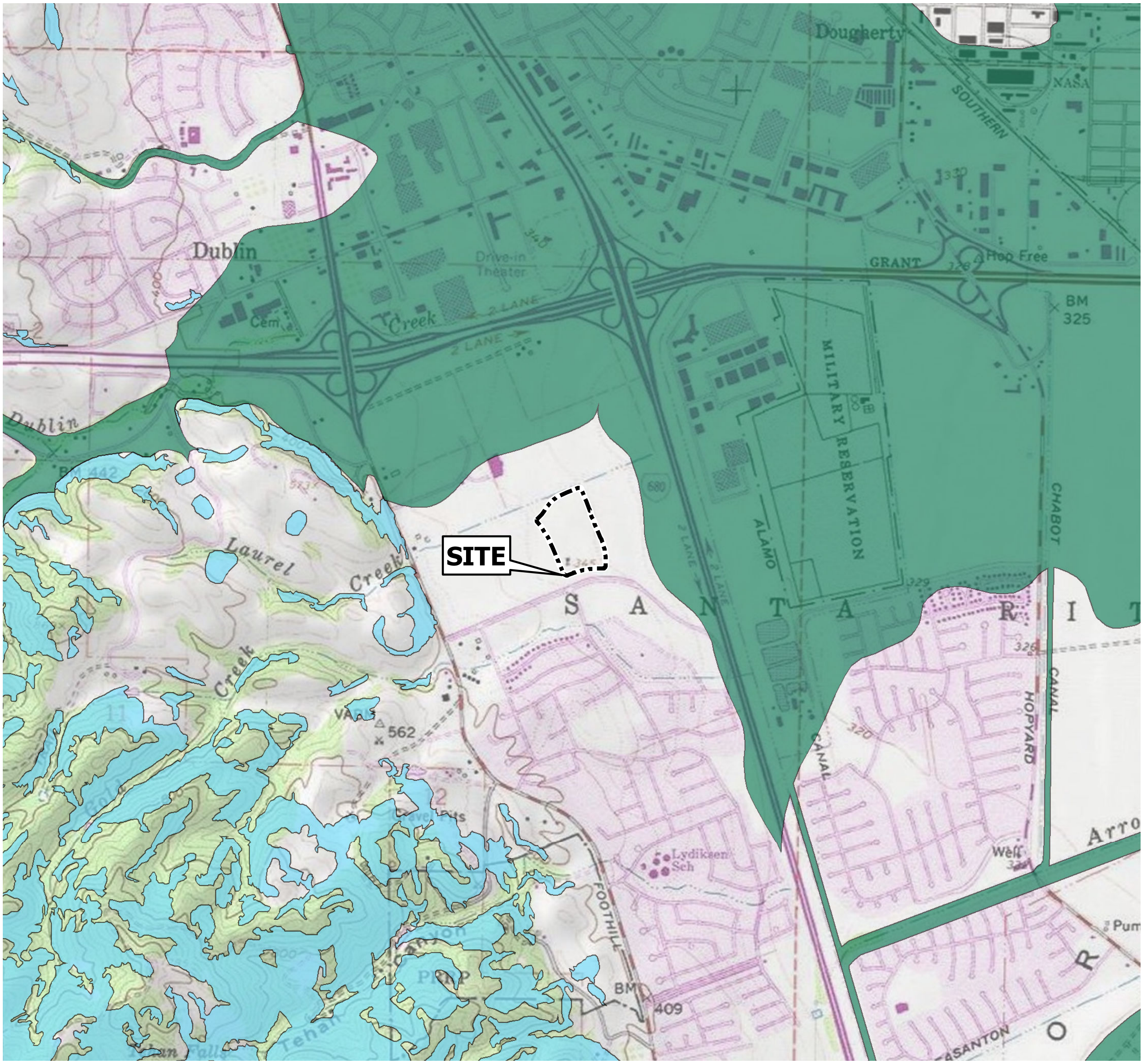
Collectively known as Langan

Project
10X GENOMICS -
PROPOSED NEW FACILITY
PLEASANTON
ALAMEDA COUNTY CALIFORNIA

Figure Title
MODIFIED
MERCALLI
INTENSITY SCALE

Project No.
731745301
Date
9/30/2020

Figure
4



EXPLANATION

⬚ Approximate site boundary

🟦 **Earthquake-Induced Landslides**; Areas where previous occurrence of landslide movement, or local topographic, geological, geotechnical, and subsurface water conditions indicate a potential for permanent ground displacements

🟩 **Liquefaction**; Areas where historic occurrence of liquefaction, or local topographic, geological, geotechnical, and subsurface water conditions indicate a potential for permanent ground displacements.

N
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Notes:
1. Topographic basemap is provided through Langan's Esri ArcGIS software licensing and ArcGIS online, National Geographic Society, i-cubed and the USGS.
2. Data provided by the CGS through the GIS Seismic Hazard Zone Map presenting areas where liquefaction and landslides may occur during a strong earthquake.

2,000 0 2,000
SCALE IN FEET

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Project 10X GENOMICS - PROPOSED NEW FACILITY PLEASANTON ALAMEDA COUNTY CALIFORNIA	Figure Title REGIONAL SEISMIC HAZARD ZONES MAP	Project No. 731745301 Date 9/30/2020 Scale 1 " = 2,000 ' Drawn By JNE	Figure 5

Path: \\langan.com\data\SJO\data9\770660901\Project Data\ArcGIS\MXD\Geotech_Figures\10x Genomics\Regional Seismic Hazard Zones Map.mxd Date: 9/30/2020 User: ogodfrey Time: 12:24:12 PM

E.2 - Geotechnical Investigation

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GEOTECHNICAL INVESTIGATION
10X Genomics Building 1
1701 Springdale Avenue
Pleasanton, California

Prepared For:
10x Genomics, Inc.
6230 Stoneridge Mall Road
Pleasanton, California 94588

Prepared By:
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Principal

3 December 2020
731745301

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GEOTECHNICAL INVESTIGATION
10X Genomics Building 1
1701 Springdale Avenue
Pleasanton, California

1.0 INTRODUCTION

This report presents the results of a geotechnical investigation performed by Langan Engineering and Environmental Services, Inc. (Langan) at the 10x Genomics campus for the proposed Building 1 development at 1701 Springdale Ave in Pleasanton, California. Our services were performed in accordance with our proposal dated 19 November 2020.

The overall 10x Genomics campus site is irregularly-shaped and is bounded by Stoneridge Mall Road to the north and east, Stoneridge Drive to the south, and Springdale Avenue to the west. The location of the campus site is shown on Figure 1. It is currently occupied by several at-grade one-story commercial buildings and paved parking lots. The types of foundations that support the existing buildings are unknown to us at this time; however, we anticipate that the buildings are likely supported on shallow footings or mats. In general, the ground surface slopes down gently toward the center of the campus site and to the east. The southwest and northwest corners of the campus site have elevations of 350 and 345 feet[1], respectively, and gently slope east, down toward the center of the campus site, at an elevation of about 340 feet. The southeast and northeast corners of the campus site have elevations of 338 and 340 feet, respectively. We understand the existing structures, some asphalt parking, and landscaping will be demolished and removed from the campus site prior to commencement of the planned development. There are plans to repurpose some of the existing asphalt pavement as surface parking during the first phase of construction that will later be demolished during future phases.

We understand the campus site will be developed in phases. The first phase of development includes construction of a three-story at-grade office building at the north end of the campus site as shown in Figure 2. The office building, referred to as Building 1 in the HOK Planning Commission Presentation, is approximately rectangular in shape with maximum plan dimensions of about 85 to 180 feet. The finished floor elevation of Building 1 was not available at the time

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[1] Elevations are based on the topographic survey provided by Kier & Wright titled "Topographic Survey of 5516-5572, 5580-5588 and 5596 Springdale Ave for Workday" dated July 2019, which corresponds to the National Geodetic Vertical Datum of 1929 (NGVD29).

the report was prepared. Foundation loads are not available at this time; however, we anticipate that loads will be moderate. In the absence of design drawings and structural loads, we have assumed typical floor pressures of about 150 pounds per square foot (psf) for dead plus live loads, and a foundation consisting of isolated spread footings with plan dimensions of 12 to 12 feet spaced 30 feet on center. Additionally, there will be surface parking, hardscape, landscaping, and utilities associated with the proposed development. We understand future phases of the development will include additional office buildings and a parking garage.

2.0 SCOPE OF SERVICES

Our scope of services was outlined in our proposal dated 19 November 2020 and included using the results of previous explorations at the campus site to evaluate subsurface conditions beneath the Building 1 site and provide recommendations for site grading and feasible foundation options. On the basis of the field and laboratory test results and our engineering studies, we developed conclusions and recommendations regarding the following:

- soil and groundwater conditions
- site seismicity and seismic hazards, including potential for liquefaction, lateral spreading, and fault rupture
- estimated foundation settlements, including total and differential settlements, using building loads estimated by Langan
- appropriate foundation type(s) for the proposed Building 1 development
- design criteria for the most appropriate foundation type(s) for Building 1, including values for vertical and lateral capacities
- ground improvement, if appropriate
- floor slabs
- site grading, including subgrade preparation and criteria for fill quality and compaction
- excavation, and temporary slopes
- flexible (asphalt) and rigid (concrete) pavement design
- underground utilities
- 2019 California Building Code (CBC) seismic design parameters
- corrosion characteristics
- construction considerations.

3.0 FIELD EXPLORATION AND LABORATORY TESTING

Our field investigations and laboratory testing at the project site are discussed in this section.

3.1 Previous Investigations

Langan performed two phases of site investigations for a previous development that was not constructed. In May 2019, we performed a preliminary geotechnical investigation and presented the results in a preliminary report dated 16 July 2019. For the preliminary investigation subsurface conditions were explored by advancing four cone penetration tests (CPTs), designated CPT-1 through CPT-4. In January and February 2020, we performed additional geotechnical investigation at the site; the results were presented in an interim report dated 15 May 2020. For the second phase of investigation we explored subsurface conditions by drilling eleven borings, designated B-1 through B-11, and performing nine CPTs designated CPT-5 through CPT-13. The approximate locations of borings and CPTs are shown on Figure 2.

Borings were drilled by Pitcher Services, LLC. of East Palo Alto, California using a truck-mounted drill rig equipped with rotary-wash equipment. Borings were advanced to depths between 20 and 100 feet below the existing ground surface (bgs). During drilling, our field engineer logged the borings and obtained representative samples of the soil encountered for classification and laboratory testing. The boring logs are presented in Appendix A on Figures A-1 through A-11. The soil encountered in the borings was classified in accordance with the soil classification charts shown on Figure A-12.

Soil samples were obtained during drilling using the following sampler types:

- Standard Penetration Test (SPT) split-barrel sampler with a 2.0-inch-outside diameter and a 1.5-inch-inside diameter, without liners

- Sprague and Henwood (S&H) split-barrel sampler with a 3.0-inch-outside diameter and a 2.5-inch-inside diameter lined with brass or stainless steel tubes with an inside diameter of 2.43 inches

- Shelby Tube (ST) sampler with a 3.0-inch outside diameter and a 2.875-inch inside diameter.

The SPT and S&H samplers were driven with a 140-pound, automatic safety hammer falling 30 inches. The samplers were driven up to 18 inches and the hammer blows required to drive the samplers every six inches of penetration were recorded and are presented on the boring logs. A "blow count" is defined as the number of hammer blows per six inches of penetration or 50 blows for six inches or less of penetration. The blow counts required to drive the S&H and SPT samplers were converted to approximate SPT N-values using a factor of 0.7 and 1.2, respectively, to account for sampler type and hammer energy, and are shown on the boring logs. The blow counts used for these conversions were: 1) the last two blow counts if the sampler was driven more than 12 inches, 2) the last one blow count if the sampler was driven more than six inches but less than 12 inches, and 3) the only blow count if the sampler was driven six inches or less. The final converted blow counts for each sample are shown on the boring logs.

The Shelby Tube sampler was pushed hydraulically into the soil; the pressure required to advance the sampler is shown on the logs, measured in pounds per square inch (psi).

The CPTs were advanced by Gregg Drilling, LLC. of Martinez, California to depths of about 100 feet bgs. The CPTs are performed by hydraulically pushing a 1.7-inch-diameter cone-tipped probe with a projected area of 15 square centimeters into the ground. The cone-tipped probe measures tip resistance, and the friction sleeve behind the cone tip measures frictional resistance. Electrical strain gauges within the cone continuously measure soil parameters for the entire depth advanced. Cone data, including tip resistance and frictional resistance, are recorded by a computer while the test is conducted. Accumulated data were processed by computer to provide engineering information such as the types and approximate strength characteristics of the soil encountered. The CPT logs present tip resistance and friction ratio by depth, as well as interpreted standard penetration test blow counts, soil shear strength parameters, and soil classifications. The logs of the CPTs performed during our investigation are presented in Appendix B.

Pore pressure dissipation tests (PPDTs) were attempted during the advancement of all CPTs. The PPDTs were conducted by halting cone penetration in a sand layer and measuring the variation of pore pressure behind the tip of the cone with time. This method is used to measure the equilibrium water pressure and determine the approximate depth of the ground water level. PPDT results are presented in Appendix B. Additionally, CPTs 5 through 8 were performed as seismic cone penetration tests (SCPT). The SCPT is performed by halting advancement of the cone at one meter intervals and sending a shear wave into the soil. The shear wave velocity of the soil is determined based on the time the shear wave pulse is received at a sensor at a known distance. The average shear wave velocity of the site is used to determine site class and develop site-specific response during an earthquake.

Upon completion of the field investigation, the boreholes and CPTs were backfilled with cement grout in accordance with Zone 7 Water Agency requirements. Soil cuttings from the borings were placed into a 20-cubic-yard bin which was temporarily stored onsite, tested, and transported off-site for proper disposal.

3.2 Laboratory Testing

We re-examined the soil samples obtained from our borings to confirm the field classifications and select representative samples for geotechnical laboratory testing. Soil samples were tested to measure moisture content, dry density, fines content, Atterberg limits, strength, consolidation properties, resistance value (R-value), and corrosion potential. The geotechnical laboratory test results are presented on the boring logs and in Appendix C.

4.0 SITE AND SUBSURFACE CONDITIONS

Site and subsurface conditions discussed in this section are based on the results of our field investigations, observations during drilling, and available subsurface and topographic information from other sources.

4.1 Existing Site Conditions

The campus site for the proposed development is occupied by several one-story commercial buildings, driveways and parking lots, and landscaping. Topographic contours of the existing ground surface are shown on Figure 2. Where the campus site borders Springdale Avenue, the ground surface slopes down from south to north from about Elevation 350 feet to about 345 feet. From Springdale Avenue toward the east, the ground surface slopes down towards the center of the campus site to approximate Elevation 340 feet. The north corner of Stoneridge Mall Road is at the same elevation as the center of the campus site at Elevation 340 feet. From the center of the campus site, the ground surface slopes down towards the south corner of Stoneridge Mall Road which is at approximate Elevation 338 feet.

The western portion of the Building 1 site is covered with parking and driveway areas; an existing 1- to 2-story stucco building transverses the eastern half of the Building 1 site. The ground floor of the existing building is at Elevation 342.6 feet.

4.2 Subsurface Conditions

The available subsurface information indicates that the Building 1 site is generally underlain by medium stiff to very stiff native clay with variable sand and gravel content. The clay is interbedded with medium dense to very dense sand layers. Subsurface conditions vary across the site, including localized areas of fill and soft clays in the upper clay layer. Generalized subsurface conditions at the proposed Building 1 are shown in the subsurface profile A-A' on Figure 3. The location of the profile is shown on Figure 2.

The upper 31 to 46½ feet of the Building 1 site is medium stiff to stiff clay with variable sand content. Results of laboratory testing indicate the near-surface clay throughout the campus site generally has moderate expansion potential[2], with plasticity indices (PI) between about 18 and 19 in the upper six feet. Additional PI testing is being performed for the surface clay encountered in the borings within the footprint of Building 1 to confirm the soil plasticity. The results of the additional laboratory tests and evaluation of expansion potential of the soil at the Building 1 site will be included in the final geotechnical report. Consolidation tests performed on samples of this clay layer indicate that the soil is slightly overconsolidated[3].

The medium stiff to stiff clay layer is underlain by stiff to hard clay with variable sand and gravel content interbedded with layers of medium dense to very dense sand. Results of the Atterberg limits tests indicate the medium dense to very dense sand generally has a plasticity index between 10 and 17. Additionally, where tested, the medium dense to dense sand has approximately 11.2 and 35.9 percent fines. The CPTs, encountered similar subsurface conditions as the borings, clay with interbedded dense to very dense sand layers with varying silt and gravel contents to the maximum depth explored of 100 feet bgs.

4.3 Groundwater

Groundwater levels were measured in the CPTs during the 2019 and 2020 geotechnical investigations. In May 2019, groundwater was measured between 17.5 and 18.5 feet bgs, corresponding to Elevations between 322.5 feet and 324 feet. For the 2020 geotechnical investigation, where successful PPDTs were performed, groundwater was measured between 21.5 and 24.5 feet bgs, corresponding to Elevations between 316 and 321 feet. Groundwater

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[2] Expansive soil shrinks or swells significantly with changes in moisture content, which can result in damage to overlying structures.

[3] An overconsolidated clay has previously experienced a pressure greater than its current load.

levels at the site are expected to vary seasonally. Historical groundwater data indicates the groundwater could be as shallow as 10 feet bgs. We anticipate the high (design) groundwater level at Elevation 330 feet.

5.0 REGIONAL SEISMICITY

The major active faults in the area are the Hayward, Calaveras, Mount Diablo, San Andreas, and Green Valley faults. These and other faults of the region are shown on Figure 4. For each of the active faults within about 50 kilometers (km) of the site, the distance from the site and estimated mean characteristic moment magnitude[4] [Working Group on California Earthquake Probabilities (WGCEP) and Cao et al. (2003)] are summarized in Table 1. In addition to the active faults listed in Table 1, the potentially active Pleasanton fault terminates approximately 2.6 kilometers northeast of the site.

TABLE 1
Regional Faults and Seismicity

Fault Name	Distance (km)	Direction from Site	Mean Characteristic Moment Magnitude
Total Calaveras	0.6	West	7.03
Mount Diablo Thrust	9	Northeast	6.70
Total Hayward	12	Southwest	7.00
Total Hayward-Rodgers Creek	12	Southwest	7.33
Greenville Connected	18	Northeast	7.00
Green Valley Connected	24	North	6.8
Great Valley 7	36	East	6.9
Great Valley 5, Pittsburg Kirby Hills	37	North	6.7
Monte Vista-Shannon	40	Southwest	6.5
N. San Andreas – Peninsula	42	West	7.23
N. San Andreas (1906 event)	42	West	8.05

Figure 4 also shows the earthquake epicenters for events with magnitude greater than 5.0 from January 1800 through August 2014. Since 1800, four major earthquakes have been recorded on the San Andreas fault. In 1836 an earthquake with an estimated maximum intensity of VII on the

---

[4] Moment magnitude is an energy-based scale and provides a physically meaningful measure of the size of a faulting event. Moment magnitude is directly related to average slip and fault rupture area.

Modified Mercalli (MM) scale (Figure 5) occurred east of Monterey Bay on the San Andreas fault (Toppozada and Borchardt 1998). The estimated Moment magnitude, M_W, for this earthquake is about 6.25. In 1838, an earthquake occurred with an estimated intensity of about VIII-IX (MM), corresponding to an M_W of about 7.5. The San Francisco Earthquake of 1906 caused the most significant damage in the history of the Bay Area in terms of loss of lives and property damage. This earthquake created a surface rupture along the San Andreas fault from Shelter Cove to San Juan Bautista approximately 470 kilometers in length. It had a maximum intensity of XI (MM), an M_W of about 7.9, and was felt 560 kilometers away in Oregon, Nevada, and Los Angeles. The Loma Prieta Earthquake occurred on 17 October 1989, in the Santa Cruz Mountains with an M_W of 6.9, approximately 73 kilometers from the site. The most recent earthquake to affect the Bay Area occurred on 24 August 2014 and was located on the West Napa fault, approximately 68 kilometers from the site, with a M_W of 6.0.

In 1868 an earthquake with an estimated maximum intensity of X on the MM scale occurred on the southern segment (between San Leandro and Fremont) of the Hayward fault. The estimated M_W for the earthquake is 7.0. In 1861, an earthquake of unknown magnitude (probably an M_W of about 6.5) was reported on the Calaveras fault. The most recent significant earthquake on this fault was the 1984 Morgan Hill earthquake (M_W = 6.2).

The 2014 WGCEP (2015 report) at the U.S. Geologic Survey (USGS) predicted a 72 percent chance of a magnitude 6.7 or greater earthquake occurring in the San Francisco Bay Area in 30 years. More specific estimates of the probabilities for different faults in the Bay Area are presented in Table 2.

TABLE 2
WGCEP (2015) Estimates of 30-Year Probability of a Magnitude 6.7 or Greater Earthquake

Fault	Probability (percent)
Hayward-Rodgers Creek	32
N. San Andreas	33
Calaveras	25
Green Valley	7
Greenville	6
Mount Diablo Trust	4

6.0 SEISMIC HAZARDS

During a major earthquake, strong to violent ground shaking is expected to occur at the project site. Strong ground shaking during an earthquake can result in ground failure such as that associated with soil liquefaction[5] and cyclic softening[6], lateral spreading[7], cyclic densification[8], and fault rupture. Each of these conditions has been evaluated based on our literature review, field investigation and analysis, and are discussed in this section.

6.1 Liquefaction and Cyclic Softening

When a saturated, cohesionless soil liquefies during a major earthquake, it experiences a temporary loss of shear strength caused by a transient rise in excess pore water pressure generated by strong ground motion. Flow failure, lateral spreading, differential settlement, loss of bearing, ground fissures, and sand boils are evidence of excess pore pressure generation and liquefaction. According to the Earthquake Zones of Required Investigation: Dublin Quadrangle prepared by the California Division of Mines and Geology (now the California Geological Survey), the center of the project site is approximately 950 feet west and 1,300 feet south of an area designated as a liquefaction hazard zone as shown on Figure 6. The California Geological Survey (CGS) has recommended the content for site investigation reports within seismic hazard zones be performed in accordance with Special Publication 117A titled Guidelines for Evaluating and Mitigating Seismic Hazard Zones in California, dated September 11, 2008. Although the site is outside the mapped liquefaction area, the medium dense, sand present at the site below the design groundwater level may be susceptible to liquefaction. Therefore, our evaluation of site seismic hazards was performed in general accordance with these guidelines.

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[5] Liquefaction is a transformation of soil from a solid to a liquefied state during which saturated soil temporarily loses strength resulting from the buildup of excess pore water pressure, especially during earthquake-induced cyclic loading. Soil susceptible to liquefaction includes loose to medium dense sand and gravel, low-plasticity silt, and some low-plasticity clay deposits.

[6] Cyclic softening is a phenomenon in which soil loses strength resulting from the buildup of excess pore water pressure, especially during earthquake-induced loading, but has sufficient internal cohesion to resist complete liquefaction.

[7] Lateral spreading is a phenomenon in which surficial soil displaces along a shear zone that has formed within an underlying liquefied layer. Upon reaching mobilization, the surficial blocks are transported downslope or in the direction of a free face by earthquake and gravitational forces.

[8] Cyclic densification is a phenomenon in which non-saturated, cohesionless soil is densified by earthquake vibrations, causing ground-surface settlement.

The level of ground shaking that may occur at the site during future earthquakes is uncertain because the location, recurrence interval, and magnitude of future earthquakes are not known. For the purposes of this report, peak ground acceleration (PGA) of 0.90 times gravity was used in our liquefaction analysis. We used a moment magnitude of 7.03, which is the maximum moment magnitude for the Total Calaveras fault, located about 0.6 kilometers from the site as shown on Table 1. For our analyses we used a design groundwater level at Elevation 330 feet.

We used the results of all borings and CPTs to evaluate the liquefaction potential at the site and the liquefaction analysis was performed in accordance with the methodology described in Youd, et al. (2001). We also considered the approach determined by Cetin, et al. (2009) for evaluating reconsolidation settlement of deep soil layers. This approach assigns depth-varying weighting factors to the estimated settlement for a given soil layer.

Our boring & CPT analyses indicate that the some of the thin, medium dense sand layers below the medium stiff to stiff clay generally between about 30 and 50 feet bgs are susceptible to liquefaction (FS_{liq}<1.0) during the maximum considered earthquake. We estimate about ½ inch of liquefaction-induced settlement could occur at the project site. If ½ inch of liquefaction induced settlement in addition to consolidation settlement from building loads discussed later in the report are not tolerable, ground improvement could be implemented to mitigate settlement. We can provide recommendations for ground improvement, if needed.

6.2 Lateral Spreading

Lateral spreading is a phenomenon in which a surficial soil displaces along a shear zone that has formed within a continuous underlying liquefied layer. The surficial blocks are transported downslope or in the direction of a free face, such as a channel, by earthquake and gravitational forces. Lateral spreading is generally the most pervasive and damaging type of liquefaction-induced ground failure generated by earthquakes. Because the zones of potentially liquefiable soil are thin and not continuous, and has corrected blow counts greater than 15, the potential for lateral spreading at the site is also low.

6.3 Cyclic Densification

Cyclic densification (also referred to as seismic densification and differential compaction) can occur during strong ground shaking in loose, granular deposits above the water table, resulting in ground surface settlement. The degree of susceptibility to cyclic densification is directly related to the relative density of the existing granular soils. The soil encountered in the borings at the site, above the water level is typically cohesive or consists of medium dense to dense clayey sand with sufficient plasticity, fines content, and strength to resist cyclic densification. We therefore judge the potential for cyclic densification to occur at the site is low.

6.4 Fault Rupture

Historically, ground surface displacements closely follow the traces of geologically young faults. The site is not within an Earthquake Fault Zone, as defined by the Alquist-Priolo Earthquake Fault Zoning Act, and no known active or potentially active faults exist on the site. However, in any seismically active area, the remote possibility exists for future faulting in areas where no faults previously existed; based on available evidence, we conclude the risk of surface faulting and consequent secondary ground failure at the site is low.

7.0 DISCUSSION AND CONCLUSIONS

We conclude that from a geotechnical standpoint, the Building 1 site can be developed as planned, provided the recommendations presented in this report are incorporated into the project plans and specifications and are implemented during construction. The primary geotechnical issues for the project are:

- protecting the proposed improvements from the effects of expansive soil
- foundation support to control settlement of the Building 1 development

Our conclusions regarding these and other geotechnical issues are presented in the following section.

7.1 Foundation Considerations

As discussed in Section 4.2, the Building 1 site is blanketed by clayey soil with moderate expansion potential. Expansive near-surface soil is subject to volume changes during seasonal fluctuations in moisture content. These volume changes can cause cracking of foundations, floor slabs, and pavement sections. Therefore, foundations and concrete flatwork will need to be designed and constructed to resist the effects of the expansive soil. These effects can be mitigated by moisture-conditioning the expansive soil and/or deepening foundations below the zone of seasonal moisture change.

Based on our assessment of the geotechnical data and estimated structural loads, we conclude that it is feasible from a geotechnical standpoint to support the proposed Building 1 on a shallow foundation consisting of isolated spread footings or a mat foundation, provided the anticipated static and earthquake induced settlement is acceptable. Recommendations for design of foundations are provided in Section 8.2.

If spread footings are used, in the areas where the building's lowest finished floor will be within three feet of final adjacent exterior site grades, measures will need to be taken to mitigate the effects of expansive soil on the building. A continuous deepened perimeter footing, grade beam, or thickened slab edge extending at least 24 inches below the lowest adjacent soil subgrade will need to be incorporated into the design of the shallow foundation system to reduce the potential for surface water to infiltrate beneath the at-grade portions of the floor slabs.

We anticipate that properly-designed and constructed spread footings or a mat bearing in on-site soil will settle ½ inch or less, with less than ¼ inch of differential settlement occurring over a horizontal distance of 30 feet.

7.2 Floor Slabs

The near-surface soil is generally medium stiff to stiff; therefore, we conclude the slab for Building 1 can be supported on grade. Where soft or loose soil is present in localized areas, the weak soil should be removed and replaced with engineered fill or lean concrete.

Where the slab finished floor is on soil within three feet of adjacent exterior site grades, the soil subgrade should be moisture conditioned as recommended in Section 8.1.2.

7.3 Corrosion Potential

Corrosivity testing will be performed on soil samples collected from borings B-3 and B-8 at depths of 5½ feet. The soil will be tested in accordance with Caltrans and ASTM protocols by CERCO Analytical, Inc. of Concord, California. The results will be available in one to two weeks and will be updated in the final geotechnical report.

7.4 Construction Considerations

Existing improvements including building elements, pavements and utilities will need to be removed in their entirety within the proposed Building 1 footprint.

8.0 RECOMMENDATIONS

Our recommendations regarding design of foundations, pavement design, and other geotechnical aspects of this project are presented in this section.

8.1 Earthwork

Our recommendations to site grading are presented in this section.

8.1.1 Site Preparation

Site preparation should include demolition of existing structures and pavements and stripping of trees, vegetation, and organic topsoil. Stripped topsoil should be removed from the site or stockpiled for later use in landscaped areas, if approved by the landscape architect and owner. Where existing utility lines will not interfere with the planned construction, they can be abandoned in-place, provided the lines are filled with lean concrete or cement grout to the limits of the project. Existing building foundation elements (footings and slabs) should be removed in their entirety beneath the proposed Building 1 footprint. Voids resulting from demolition activities should be properly backfilled with engineered fill as described in Section 8.1.3.

From a geotechnical standpoint, concrete and asphalt generated by demolition can be crushed and reused as fill provided it is free of organic material and rocks or lumps greater than three inches in greatest dimension. The acceptability of using crushed asphalt at the site should be verified by the architect. Where crushed asphalt pavement and concrete are used in fill, particles between 1½ and 3 inches in greatest dimension should comprise no more than 30 percent of the fill by weight.

8.1.2 Subgrade Preparation

Following site preparation and due to moderate expansion potential, the subgrade of the building floor slab should be scarified to a depth of at least twelve inches, moisture conditioned to at least two percent above the optimum moisture content and compacted to at least 90 percent relative compaction[9]. Within areas of vehicle pavement areas and concrete flatwork, the upper six inches

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[9] Relative compaction refers to the in-place dry density of soil expressed as a percentage of the maximum dry density of the same material, as determined by the ASTM D1557 laboratory compaction procedure.

of the pavement soil subgrade should be compacted to at least 95 percent relative compaction regardless of expansion potential. The subgrade should be kept moist until it is covered with fill or other improvements.

If soft or loose soil is encountered, the unsuitable material should be removed and be replaced with suitable fill material that is properly compacted and moisture conditioned. The subgrade should be kept moist until it is covered with fill or other improvements. If the compacted subgrade is disturbed, it should be re-rolled to provide a smooth, firm surface.

We recommend new sidewalks be underlain by at least four inches of Class 2 aggregate base material (or the minimum thickness per City of Pleasanton Standards) that has been compacted to at least 95 percent relative compaction. Recommendations for asphalt pavement sections and concrete flatwork are provided in Section 8.4.

8.1.3 Fill Placement

Imported soil and non-expansive on-site soil to be used as general site fill should be moisture-conditioned to near optimum moisture content, placed in horizontal lifts not exceeding eight inches in loose thickness, and compacted to at least 90 percent relative compaction for total fill thicknesses of five feet or less and to at least 95 percent relative compaction for total fill thicknesses exceeding five feet. On-site expansive soil can be used as general site fill provided it is moisture-conditioned to at least three percent above optimum moisture content and compacted to between 88 and 92 percent relative compaction.

General site fill should be free of organic matter, contain no rocks or lumps larger than three inches in greatest dimension, have a liquid limit less than 40 and plasticity index less than 12, have low corrosion potential and be approved by the geotechnical engineer.

We should approve all sources of engineered fill at least three days before use at the site. The grading subcontractor should provide analytical test results or other suitable environmental documentation indicating that imported fill is free of hazardous materials at least three days before use at the site. If this data is not available, up to two weeks should be allowed to perform analytical testing on the proposed import material.

8.1.4 Utility Trenches

Excavations for utility trenches can be made with a backhoe. All trenches should conform to the current OSHA requirements for slopes, shoring, and other safety concerns.

To provide uniform support, pipes or conduits should be bedded on a minimum of four inches of sand or fine gravel. After the pipes and conduits are tested, inspected (if required), and approved, they should be covered to a depth of six inches with sand or fine gravel, which should be mechanically tamped. Open-graded gravel used as bedding and cover should be wrapped in filter fabric (Mirafi 140N or equivalent) to reduce the potential for infiltration of fines.

Backfill for utility trenches and other excavations is also considered fill and should be placed and compacted according to the recommendations previously presented. Jetting of trench backfill should not be permitted. Poor compaction of backfilled utility trenches may cause excessive settlements, resulting in damage to the structure or pavement sections.

Where utility trenches backfilled with sand or gravel enter the building pad, an impermeable plug consisting of native clay or lean concrete, at least five feet in length, should be installed at the building line. Further, where sand- or gravel-backfilled trenches cross planter areas and pass below asphalt or concrete pavements, a similar plug should be placed at the edge of the pavement. The plug should extend from the bottom of the trench to the subgrade elevation. The purpose of these recommendations is to reduce the potential for water to become trapped in trenches beneath the building or pavements. This trapped water can cause softening of subgrade soil beneath pavements.

8.1.5 Temporary Cut Slopes

Temporary cut slopes will be made during site grading, foundation subgrade preparation, and utility installation. The safety of workers and equipment in or near excavations is the responsibility of the contractor. The contractor should be familiar with the most recent OSHA Trench and Excavation Safety standards (29 CFR Part 1926). Excavations that will be deeper than five feet and will be entered by workers should be shored or sloped in accordance with OSHA standards.

We recommend temporary cuts that are less than 12 feet high and above the groundwater level be inclined no steeper than 1½:1 (horizontal to vertical), provided they are not surcharged by equipment or building material. Temporary shoring will be required where temporary slopes are not possible because of space constraints or for cuts greater than 12 feet.

8.2 Shallow Foundations

Building 1 can be supported on continuous perimeter footings and isolated interior spread footings, or a mat gaining support in medium stiff to stiff clay. Perimeter footings and isolated spread footings should be embedded at least 24 inches below lowest adjacent soil subgrade.

Footings adjacent to utility trenches should bear below an imaginary 1.5:1 (horizontal to vertical) plane projected upward from the bottom edge of the utility trench.

For footings or a mat bearing on medium stiff to stiff clay, we recommend using an allowable bearing capacity of 2,800 pounds per square foot (psf) for dead plus live loads, which includes a factor of safety of at least 2.0. The allowable bearing capacity can be increased by one-third for total design loads, including wind or seismic forces. To design footings or mat using the modulus of subgrade reaction method, we recommend using a modulus of subgrade reaction of 67 kips per cubic foot (kcf); this value is representative of the anticipated settlement under foundation bearing pressures equivalent to the allowable bearing capacity. If the actual foundation bearing pressures will be less, we should be contacted to provide the modulus of subgrade reaction.

Lateral loads can be resisted by a combination of passive pressure on the vertical faces of the foundation elements and friction between the bottoms of the foundations and the underlying soil. To compute lateral resistance from passive pressure, we recommend using a uniform pressure of 1,300 psf (rectangular distribution). The upper one foot of soil should be ignored in computing lateral resistance from passive pressure, unless it is confined by a slab or pavement. Frictional resistance should be computed using a base friction coefficient of 0.25, assuming the footings are not waterproofed. The passive pressure and frictional resistance values include a factor of safety of at least 1.5.

We should observe footing or mat subgrade prior to placement of the reinforcing steel. The exposed subgrade should be free of standing water, debris, and disturbed materials prior to placing concrete. The bottom and sides of foundation excavations should be wetted following excavation and maintained in a moist condition until concrete is placed. If loose, disturbed, or otherwise undesirable material is observed at the foundation subgrade, it should be excavated to firm, competent material and be replaced with lean concrete or controlled density fill. Lean concrete and controlled density fill used in foundation excavations should have a minimum unconfined compressive strength of 100 psi.

8.3 Floor Slabs

For on-grade portions of the structure, where the slab finished floor is on soil within three feet of adjacent exterior site grades, the floor slab subgrade should be prepared as discussed in Section 8.1.2.

Moisture is likely to condense on the underside of the floor slab or mat, even though it will be above the measured groundwater levels. Consequently, a moisture barrier should be installed beneath the floor slab or mat if movement of water vapor through the floor slab or mat would be detrimental to its intended use. A typical moisture barrier consists of a capillary moisture break and a water vapor retarder. Moisture barriers are typically used in areas where moisture is not desirable such as storage rooms and where floor finishes will be installed.

If used, the capillary moisture break should consist of at least four inches of clean, free-draining gravel or crushed rock. The vapor retarder should meet the requirements for Class C vapor retarders stated in ASTM E1745-97. The vapor retarder should be placed in accordance with the requirements of ASTM E1643-98. These requirements include overlapping seams by six inches, taping seams, and sealing penetrations in the vapor retarder. The particle size of the gravel/crushed rock and sand should meet the gradation requirements presented in Table 3.

TABLE 3

Gradation Requirements for Capillary Moisture Break

Sieve Size	**Percentage Passing Sieve**
Gravel or Crushed Rock	
1 inch	90 – 100
3/4 inch	30 – 100
1/2 inch	5 – 25
3/8 inch	0 – 6

Concrete mixes with high water/cement (w/c) ratios result in excess water in the concrete, which increases the cure time and results in excessive vapor transmission through the slab. Therefore, concrete for the floor slab or mat should have a low w/c ratio - less than 0.45. The slab should be properly cured. Before the floor covering is placed, the contractor should check that the concrete surface and the moisture emission levels (if emission testing is required) meet the manufacturer’s requirements.

8.4 Pavement and Concrete Flatwork Design

Our recommendations for flexible pavement and concrete flatwork are presented in this section.

8.4.1 Flexible Pavement

The State of California resistance value (R-value) method for asphalt concrete pavement design was used to develop recommendations for asphalt concrete pavement sections. We anticipate the final soil subgrade in some areas will consist of moderately expansive clayey soil, which has an R-value between 7 and 14 based on the results of our laboratory testing. We used an R-value of 5 in our calculations to account for the presence of moderately expansive clayey soil. Imported fill will have a higher R-value, which would result in thinner pavement sections. The design R-value should be checked once the final site grading plans are available and source of any import fill is known.

For our calculations, we used traffic indices (TIs) of 4.5 through 7.0; we can provide recommendations for other TIs upon request. Our pavement section recommendations are presented on Table 4. Recommendations for subgrade preparation beneath pavement sections are provided in Section 8.1.2. Class 2 aggregate base (AB) should be compacted to at least 95 percent relative compaction.

TABLE 4

Asphaltic Concrete Pavement Section Design, R-Value = 5

TI	Asphalt Concrete (inches)	Class 2 Aggregate Base (inches)
4.5	2.5	9.5
5.0	3.0	10.0
5.5	3.0	12.0
6.0	3.5	13.0
6.5	4.0	13.5
7.0	4.0	15.5

8.4.2 Concrete Flatwork

In areas to receive sidewalks or other flatwork, the soil subgrade should be prepared in accordance with our recommendation in Section 8.1.2. Concrete flatwork should be underlain by at least four inches of Class 2 aggregate base (or the minimum thickness per City of Pleasanton Standards) compacted to at least 95 percent relative compaction.

8.5 Landscaping

The use of water-intensive landscaping around the perimeter of Building 1 should be avoided to reduce the amount of water introduced to the subgrade. Irrigation of landscaping around the building should be limited to drip or bubbler-type systems. Trees with large roots or have high water demand should also be avoided since they can reduce the moisture content of the soil beneath foundations and cause settlement. The purpose of these recommendations is to avoid large differential moisture changes adjacent to the foundations, which have been known to cause significant differential movement over short horizontal distances in expansive soil, resulting in cracking of slabs and architectural damage.

To reduce the potential for irrigation water entering the pavement section, vertical curbs adjacent to landscaped areas should extend through any aggregate base and at least six inches into the underlying soil. In heavily watered areas, such as lawns, it may also be necessary to install a subdrain behind the curb to intercept excess irrigation water.

8.6 2019 California Building Code Mapped Values

Based on the results of shear wave velocity testing in the seismic CPTs, we conclude that Site Class D as defined in the 2019 California Building Code (CBC) is appropriate for the site located at 1701 Springdale Ave. For seismic design in accordance with the provisions of 2019 CBC we recommend the following parameters be used:

- Risk Targeted Maximum Considered Earthquake (MCE_R) S_S and S_1 of 1.971g and 0.725g, respectively.
- Site Class D
- Site Coefficients, F_a and F_v of 1.0 and 1.7, respectively.
- MCE_R spectral response acceleration parameters at short period, S_{MS}, and at one-second period, S_{M1}, of 1.971g and 1.233 g, respectively.
- Design Earthquake (DE) spectral response acceleration parameters at short period, S_{DS}, and at one-second period, S_{D1}, of 1.314g and 0.822g, respectively.

9.0 ADDITIONAL RECOMMENDATIONS – SERVICES DURING DESIGN AND CONSTRUCTION

During final design of Building 1 we should be retained to consult with the design team as geotechnical questions arise. Prior to construction, we should review the geotechnical aspects of the project plans and specifications to check their conformance with the intent of our recommendations. During construction, it is imperative that we observe subgrade preparation, compaction of fill and backfill, excavation, and foundation installation as the geotechnical engineer of record. These observations will allow us to compare the actual with the anticipated soil conditions and to check that the contractors' work conforms with the geotechnical aspects of the plans and specifications. The recommendations contained in this report assume that we will be on-site during construction to make modification to them as needed.

10.0 LIMITATIONS

The conclusions and recommendations presented in this report are intended for the proposed Building 1 development and are based on limited engineering studies based on our interpretation of the geotechnical conditions existing at the site at the time of the previous investigations. Actual subsurface conditions may vary. If any variations or undesirable conditions are encountered during construction, or if the proposed construction will differ from that described in this report, Langan should be notified to make supplemental recommendations, as necessary.

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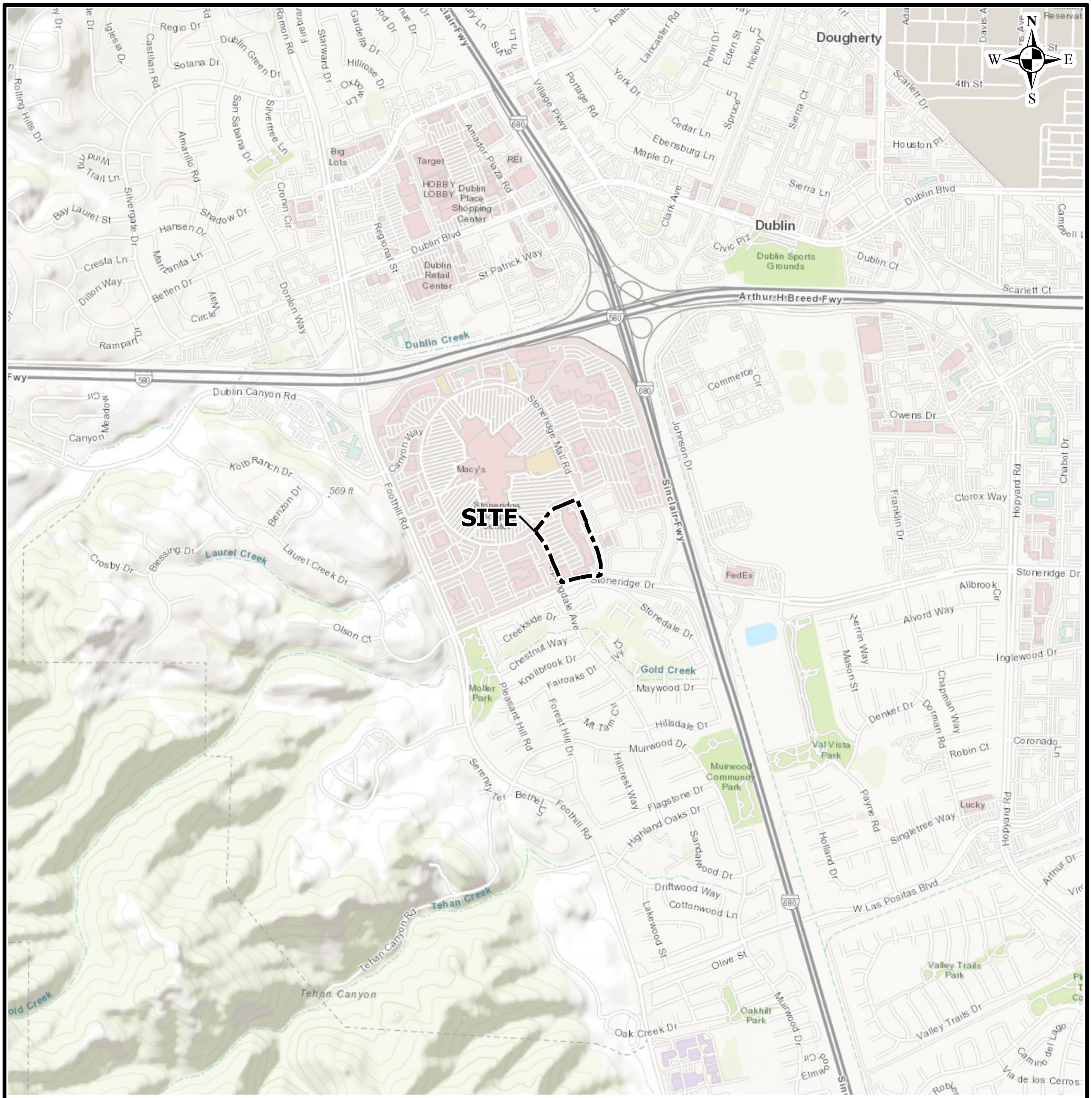
FIGURES



Explanation

▭ Approximate site boundary

Notes:
1. Topographic basemap is provided through Langan's Esri ArcGIS software licensing and ArcGIS online Copyright, National Geographic Society, i-cubed.
2. All features shown are approximate.

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SCALE IN FEET

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Langan International LLC

Collectively known as Langan

Project

10X GENOMICS BUILDING 1
1701 SPRINGDALE AVENUE

PLEASANTON

ALAMEDA COUNTY CALIFORNIA

Figure Title

SITE
LOCATION MAP

Project No.
731745301

Date
12/01/2020

Scale
1 " = 2,000 '

Drawn By
BJS

Figure
1

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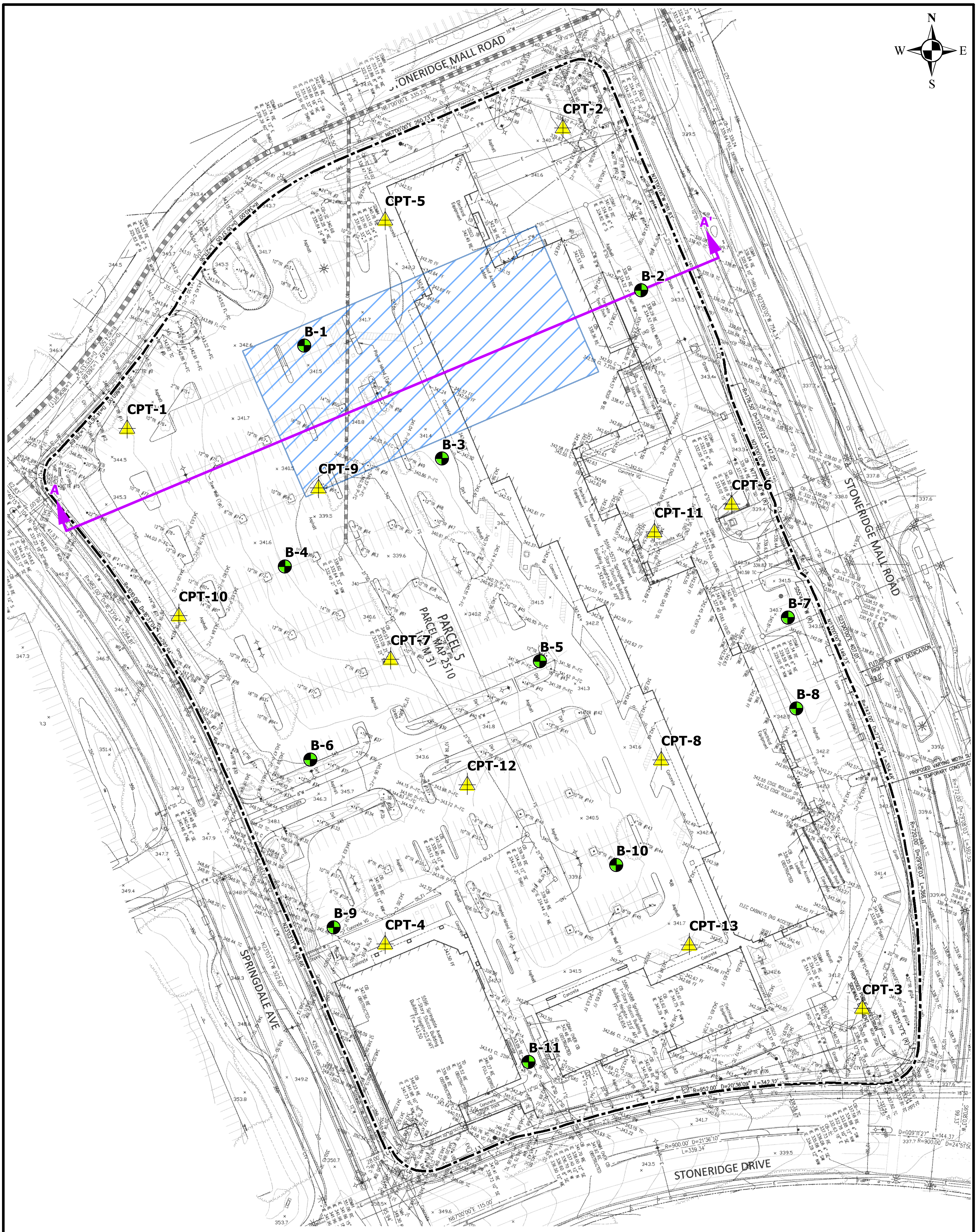

Explanation

● Approximate location of boring by Langan, January and February 2020

▲ Approximate location of CPT by Langan, May 2019 and January 2020

▨ Approximate extent of proposed above grade structure Building 1

⬚ Approximate site boundary

⊔ Location of idealized subsurface profile

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Notes:

1. Topographic survey provided by the Kier+Wright plan titled "Topographic Survey of 5516-5572, 5580-5588 and 5596 Springdael Avenue For Workday" dated, July 2019. Survey uses national geodetic vetical datum of 1929 (NGVD29).
2. All features shown are approximate.

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10X GENOMICS BUILDING 1
1701 SPRINGDALE AVENUE

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ALAMEDA COUNTY CALIFORNIA

Figure Title

SITE PLAN

Project No.
731745301

Date
12/01/2020

Scale
1 " = 100 '

Drawn By
OG

Figure
2

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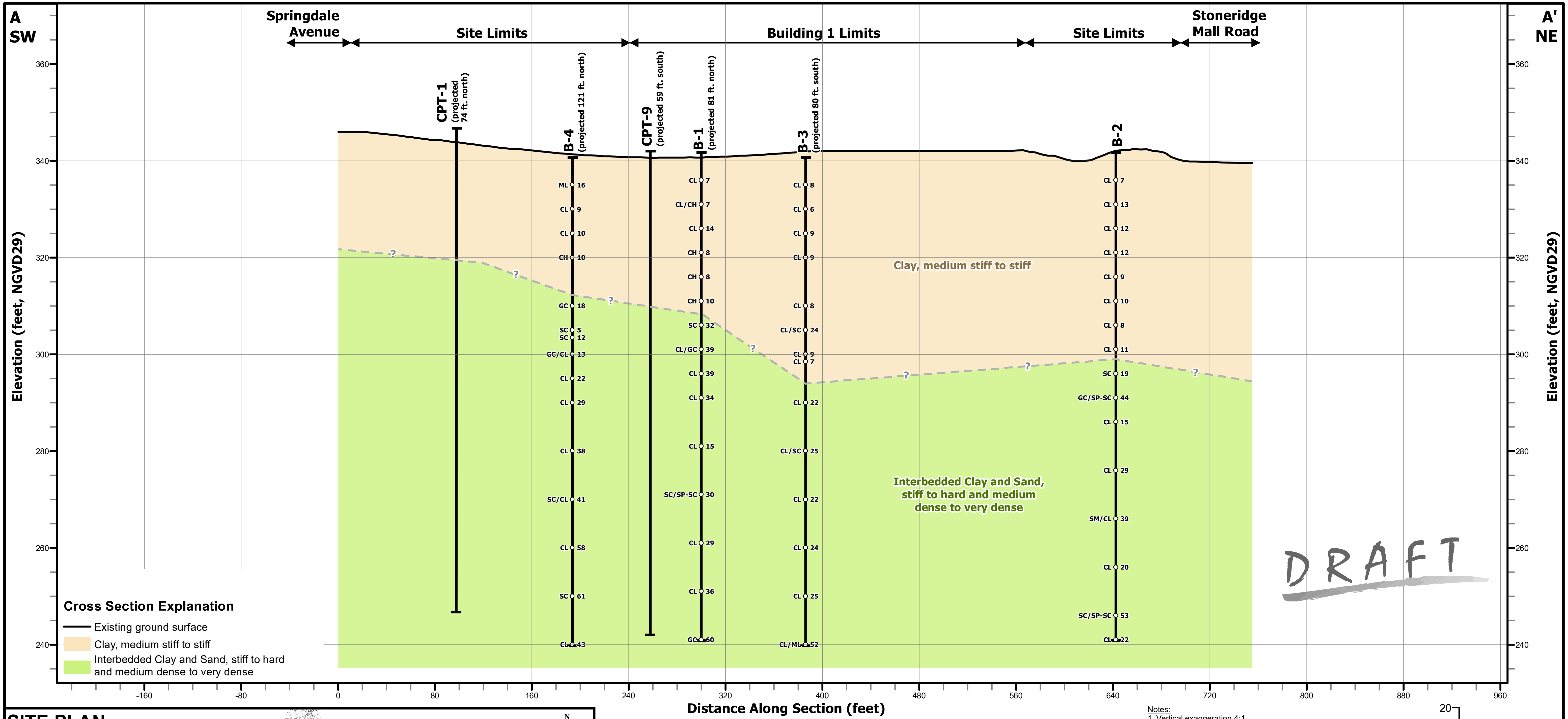
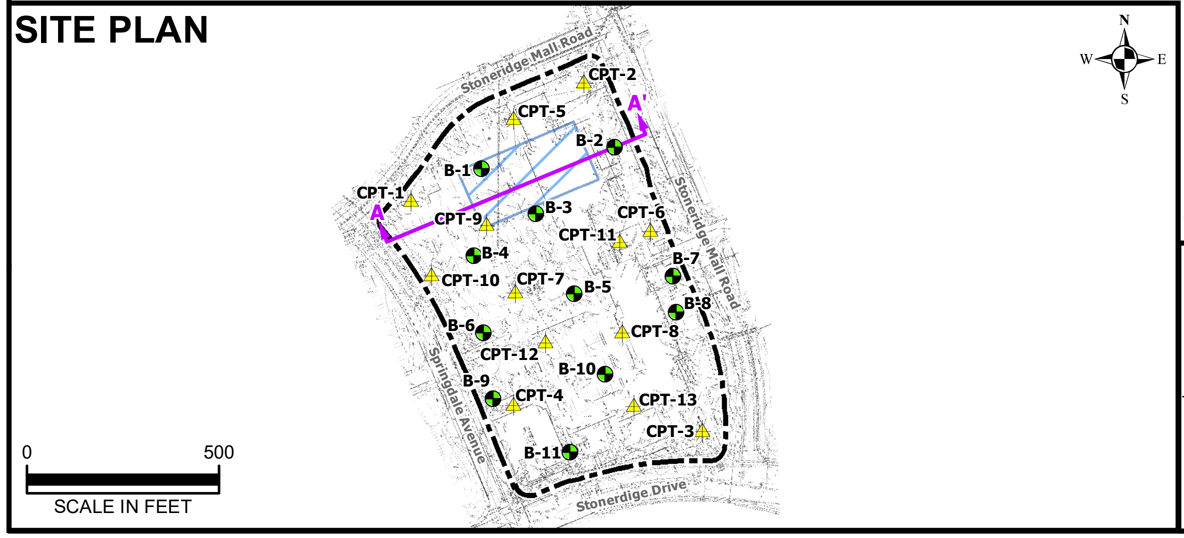


SITE PLAN



Site Plan Explanation

● Approximate location of boring by Langan	▨ Approximate extent of proposed above grade structure
▲ Apprxoimate location of CPT by Langan	☐ Approximate site boundary
Location of idealized subsurface profile	

Notes:
1. Vertical exaggeration 4:1.
2. Ground surface based on topographic survey provided by Kier & Wright titled "Topographic Survey of 5516-5572, 5580-5588 and 5596 Springdale Avenue For Workday" dated July 2019, which corresponds to the National Geodetic Vertical Datum of 1929 (NGVD29).
3. Exploration locations are approximate.
4. This profile represents a generalized soil cross section interpreted from widely spaced borings and CPTs. Soil and groundwater conditions may vary in type, location, elevation, and engineering properties between points of exploration. Variations in subsurface conditions should be expected between borings and CPTs.

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1701 SPRINGDALE AVENUE

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ALAMEDA COUNTY CALIFORNIA

Figure Title
IDEALIZED SUBSURFACE PROFILE A-A'

Project No.
731745301
Date
12/01/2020
Scale
AS SHOWN
Drawn By
BJS

Figure
3

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Explanation

⬚ County Boundary

— Fault

Earthquake Epicenter

Magnitude

● Magnitude 5 to 5.9

● Magnitude 6 to 6.9

● Magnitude 7 to 7.4

● Magnitude 7.5 to 8

0 10 20
Miles

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W E
S

Notes:

1. Quaternary fault data displayed are based on a generalized version of USGS Quaternary Fault and fold database, 2010. For cartographic purposes only.
2. The Earthquake Epicenter (Magnitude) data is provided by the U.S Geological Survey (USGS) and is current through 08/26/2014.
3. Basemap hillshade and County boundaries provided by USGS and California Department of Transportation.
4. Map displayed in California State Coordinate System, California (Teale) Albers, North American Datum of 1983 (NAD83), Meters.

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10X GENOMICS BUILDING 1
1701 SPRINGDALE AVENUE

PLEASANTON

ALAMEDA COUNTY CALIFORNIA

Figure Title

MAP OF MAJOR
FAULTS AND EARTHQUAKE
EPICENTERS IN THE
SAN FRANCISCO BAY AREA

Project No.
731745301

Date
12/01/2020

Scale
1 " = 20 miles

Drawn By
JNE

Figure
4

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I **Not felt by people, except under especially favorable circumstances. However, dizziness or nausea may be experienced.**

Sometimes birds and animals are uneasy or disturbed. Trees, structures, liquids, bodies of water may sway gently, and doors may swing very slowly.

II **Felt indoors by a few people, especially on upper floors of multi-story buildings, and by sensitive or nervous persons.**

As in Grade I, birds and animals are disturbed, and trees, structures, liquids and bodies of water may sway. Hanging objects swing, especially if they are delicately suspended.

III **Felt indoors by several people, usually as a rapid vibration that may not be recognized as an earthquake at first. Vibration is similar to that of a light, or lightly loaded trucks, or heavy trucks some distance away. Duration may be estimated in some cases.**

Movements may be appreciable on upper levels of tall structures. Standing motor cars may rock slightly.

IV **Felt indoors by many, outdoors by a few. Awakens a few individuals, particularly light sleepers, but frightens no one except those apprehensive from previous experience. Vibration like that due to passing of heavy, or heavily loaded trucks. Sensation like a heavy body striking building, or the falling of heavy objects inside.**

Dishes, windows and doors rattle; glassware and crockery clink and clash. Walls and house frames creak, especially if intensity is in the upper range of this grade. Hanging objects often swing. Liquids in open vessels are disturbed slightly. Stationary automobiles rock noticeably.

V **Felt indoors by practically everyone, outdoors by most people. Direction can often be estimated by those outdoors. Awakens many, or most sleepers. Frightens a few people, with slight excitement; some persons run outdoors.**

Buildings tremble throughout. Dishes and glassware break to some extent. Windows crack in some cases, but not generally. Vases and small or unstable objects overturn in many instances, and a few fall. Hanging objects and doors swing generally or considerably. Pictures knock against walls, or swing out of place. Doors and shutters open or close abruptly. Pendulum clocks stop, or run fast or slow. Small objects move, and furnishings may shift to a slight extent. Small amounts of liquids spill from well-filled open containers. Trees and bushes shake slightly.

VI **Felt by everyone, indoors and outdoors. Awakens all sleepers. Frightens many people; general excitement, and some persons run outdoors.**

Persons move unsteadily. Trees and bushes shake slightly to moderately. Liquids are set in strong motion. Small bells in churches and schools ring. Poorly built buildings may be damaged. Plaster falls in small amounts. Other plaster cracks somewhat. Many dishes and glasses, and a few windows break. Knickknacks, books and pictures fall. Furniture overturns in many instances. Heavy furnishings move.

VII **Frightens everyone. General alarm, and everyone runs outdoors.**

People find it difficult to stand. Persons driving cars notice shaking. Trees and bushes shake moderately to strongly. Waves form on ponds, lakes and streams. Water is muddied. Gravel or sand stream banks cave in. Large church bells ring. Suspended objects quiver. Damage is negligible in buildings of good design and construction; slight to moderate in well-built ordinary buildings; considerable in poorly built or badly designed buildings, adobe houses, old walls (especially where laid up without mortar), spires, etc. Plaster and some stucco fall. Many windows and some furniture break. Loosened brickwork and tiles shake down. Weak chimneys break at the roofline. Cornices fall from towers and high buildings. Bricks and stones are dislodged. Heavy furniture overturns. Concrete irrigation ditches are considerably damaged.

VIII **General fright, and alarm approaches panic.**

Persons driving cars are disturbed. Trees shake strongly, and branches and trunks break off (especially palm trees). Sand and mud erupts in small amounts. Flow of springs and wells is temporarily and sometimes permanently changed. Dry wells renew flow. Temperatures of spring and well waters varies. Damage slight in brick structures built especially to withstand earthquakes; considerable in ordinary substantial buildings, with some partial collapse; heavy in some wooden houses, with some tumbling down. Panel walls break away in frame structures. Decayed pilings break off. Walls fall. Solid stone walls crack and break seriously. Wet grounds and steep slopes crack to some extent. Chimneys, columns, monuments and factory stacks and towers twist and fall. Very heavy furniture moves conspicuously or overturns.

IX **Panic is general.**

Ground cracks conspicuously. Damage is considerable in masonry structures built especially to withstand earthquakes; great in other masonry buildings - some collapse in large part. Some wood frame houses built especially to withstand earthquakes are thrown out of plumb, others are shifted wholly off foundations. Reservoirs are seriously damaged and underground pipes sometimes break.

X **Panic is general.**

Ground, especially when loose and wet, cracks up to widths of several inches; fissures up to a yard in width run parallel to canal and stream banks. Landsliding is considerable from river banks and steep coasts. Sand and mud shifts horizontally on beaches and flat land. Water level changes in wells. Water is thrown on banks of canals, lakes, rivers, etc. Dams, dikes, embankments are seriously damaged. Well-built wooden structures and bridges are severely damaged, and some collapse. Dangerous cracks develop in excellent brick walls. Most masonry and frame structures, and their foundations are destroyed. Railroad rails bend slightly. Pipe lines buried in earth tear apart or are crushed endwise. Open cracks and broad wavy folds open in cement pavements and asphalt road surfaces.

XI **Panic is general.**

Disturbances in ground are many and widespread, varying with the ground material. Broad fissures, earth slumps, and land slips develop in soft, wet ground. Water charged with sand and mud is ejected in large amounts. Sea waves of significant magnitude may develop. Damage is severe to wood frame structures, especially near shock centers, great to dams, dikes and embankments, even at long distances. Few if any masonry structures remain standing. Supporting piers or pillars of large, well-built bridges are wrecked. Wooden bridges that "give" are less affected. Railroad rails bend greatly and some thrust endwise. Pipe lines buried in earth are put completely out of service.

XII **Panic is general.**

Damage is total, and practically all works of construction are damaged greatly or destroyed. Disturbances in the ground are great and varied, and numerous shearing cracks develop. Landslides, rock falls, and slumps in river banks are numerous and extensive. Large rock masses are wrenched loose and torn off. Fault slips develop in firm rock, and horizontal and vertical offset displacements are notable. Water channels, both surface and underground, are disturbed and modified greatly. Lakes are dammed, new waterfalls are produced, rivers are deflected, etc. Surface waves are seen on ground surfaces. Lines of sight and level are distorted. Objects are thrown upward into the air.

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Collectively known as Langan

Project
10X GENOMICS BUILDING 1
1701 SPRINGDALE AVENUE

PLEASANTON

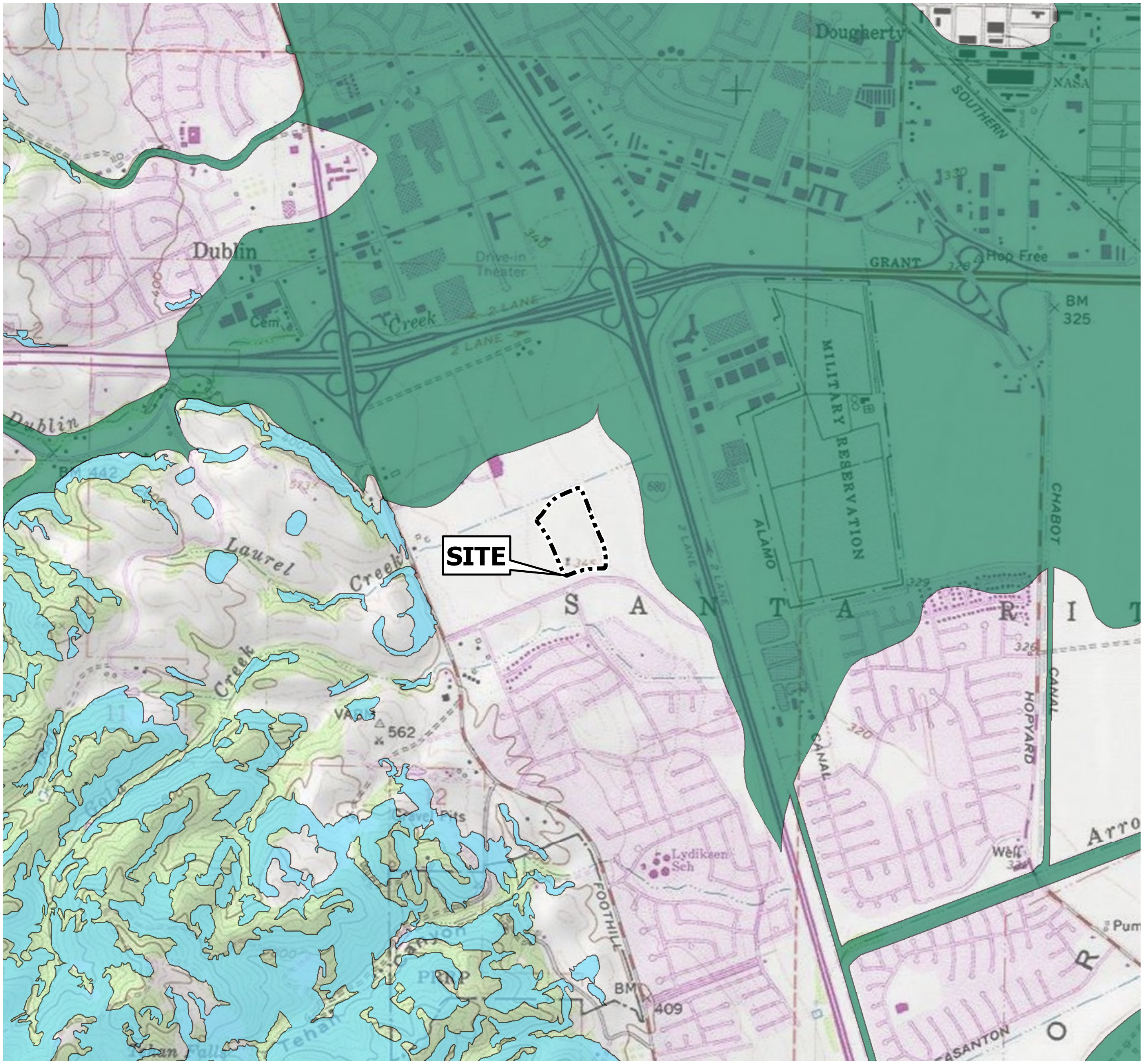
ALAMEDA COUNTY CALIFORNIA

Figure Title
MODIFIED
MERCALLI
INTENSITY SCALE

Project No.
731745301

Date
12/01/2020

Figure
5



EXPLANATION

N W E S

Approximate site boundary

🟦 **Earthquake-Induced Landslides**; Areas where previous occurrence of landslide movement, or local topographic, geological, geotechnical, and subsurface water conditions indicate a potential for permanent ground displacements

🟩 **Liquefaction**; Areas where historic occurrence of liquefaction, or local topographic, geological, geotechnical, and subsurface water conditions indicate a potential for permanent ground displacements.

Notes:
1. Topographic basemap is provided through Langan's Esri ArcGIS software licensing and ArcGIS online, National Geographic Society, i-cubed and the USGS.
2. Data provided by the CGS through the GIS Seismic Hazard Zone Map presenting areas where liquefaction and landslides may occur during a strong earthquake.

2,000 0 2,000
SCALE IN FEET

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Figure Title
REGIONAL SEISMIC HAZARD ZONES MAP

Project No. 731745301
Date 12/01/2020
Scale 1 " = 2,000 '
Drawn By JNE

Figure 6

Path: \\langan.com\data\SFO\data3\731745301\Project Data\ArcGIS\MXD\Geotech_Figures\Regional Seismic Hazard Zones Map.mxd Date: 12/2/2020 User: Ogodfrey Time: 5:22:19 PM

APPENDIX A

LOG OF BORINGS

PROJECT: **10X GENOMICS BUILDING 1**
1701 SPRINGDALE AVENUE
Pleasanton, California

Log of Boring B-1

PAGE 1 OF 4

Boring location: See Site Plan, Figure 2
Date started: 2/6/20
Date finished: 2/7/20
Drilling method: Mud Rotary
Hammer weight/drop: 140 lbs./30 inches
Hammer type: Automatic
Samplers: Sprague & Henwood (S&H), Shelby Tube (ST)

Logged by: R. Renedo
Drilled By: Pitcher Drilling

Ground Surface Elevation: 342 feet[2]

DEPTH (feet)	SAMPLES: Sampler Type	SAMPLES: Sample	SAMPLES: Blows/ 6"	SAMPLES: SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION	LABORATORY TEST DATA: Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
					AC	3-1/2 inches asphalt concrete (AC)						
1					AB	10-1/2 inches aggregate base (AB)						
2						CLAY with SAND (CL) dark brown to brown, moist, fine-grained sand, trace fine subangular to subrounded gravel, trace silt and organics						
3												
4												
5					CL	medium stiff						
6	S&H		2 4 6	7			PP		1,500			
7												
8												
9						SANDY CLAY (CL) brown to yellow-brown, medium stiff, moist, fine- to coarse-grained sand, trace fine subangular to subrounded gravel						
10					CL							
11	S&H		5 5 5	7		SANDY CLAY (CL) brown, medium stiff, moist, fine-grained sand						
12					CH							
13												
14												
15						CLAY (CL) brown, stiff, moist, trace fine-grained sand	PP		1,500		26.5	99
16	S&H		3 6 14	14								
17					CL							
18												
19												
20						CLAY (CH) brown, medium stiff to stiff, moist, trace fine to coarse subangular gravel						
21	S&H		5 5 7	8			PP		1,500		24.5	103
22												
23												
24												
25					CH	wet, increased sand content						
26	S&H		3 5 7	8			PP		1,000			
27												
28												
29												
30												

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Project No.: 731745301
Figure: A-1a

PROJECT:

10X GENOMICS BUILDING 1
1701 SPRINGDALE AVENUE
Pleasanton, California

Log of Boring B-1

PAGE 2 OF 4

DEPTH (feet)	SAMPLES: Sampler Type	SAMPLES: Sample	SAMPLES: Blows/ 6"	SAMPLES: SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION	LABORATORY TEST DATA: Type of Strength Test	LABORATORY TEST DATA: Confining Pressure Lbs/Sq Ft	LABORATORY TEST DATA: Shear Strength Lbs/Sq Ft	LABORATORY TEST DATA: Fines %	LABORATORY TEST DATA: Natural Moisture Content, %	LABORATORY TEST DATA: Dry Density Lbs/Cu Ft
					CH	CLAY (CH) (continued)						
31	S&H		0 6 8	10		GRAVELLY CLAY with SAND (CH) light brown to brown, stiff, wet, fine to coarse subangular to subrounded gravel, fine-grained sand						
32					CH							
33						CLAYEY SAND with GRAVEL (SC) brown, dense, wet, fine-grained, fine subangular to subrounded gravel						
34												
35			11							13.6	24.5	103
36	S&H		20 25	32	SC							
37												
38												
39												
40			8		CL	SANDY CLAY (CL) brown, hard, wet, fine-grained sand, trace fine to coarse subangular gravel						
41	S&H		22 34	39		CLAYEY GRAVEL with SAND (GC) brown, dense, wet, fine to coarse subangular to subrounded, fine-grained sand						
42					GC							
43												
44						SANDY CLAY (CL) brown with orange oxidation, hard, wet, fine- to coarse-grained sand						
45			18		CL		PP		>4,500			
46	S&H		21 34	39	CL	GRAVELLY CLAY with SAND (CL) light brown to brown, stiff, wet, fine to coarse subangular to subrounded gravel, fine-grained sand						
47						CLAY (CL) gray with orange speckling, hard, wet, trace fine-grained sand						
48												
49												
50			15									
51	S&H		21 27	34	CL		PP		>4,500		20.6	110
52						Triaxial Test, see Figure C-12	TxUU	5,150	4,680			
53												
54												
55	ST			85 to 380 psi		SANDY CLAY (CL) light brown, wet, fine-grained sand Consolidation Test, see Figure C-3						
56											20.0	104
57					CL							
58												
59												
60					CL							

PROJECT: **10X GENOMICS BUILDING 1**
1701 SPRINGDALE AVENUE
Pleasanton, California

Log of Boring B-1

DEPTH (feet)	SAMPLES: Sampler Type	Sample	Blows/ 6"	SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION	LABORATORY TEST DATA: Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
61	S&H	■	5 10 11	15		CLAY (CL) gray-brown, stiff to very stiff, wet, trace fine-grained sand and silt	PP		1,500			
62												
63												
64												
65					CL							
66												
67												
68												
69												
70												
71	S&H	■	7 18 25	30	SC	CLAYEY SAND with GRAVEL (SC) brown, medium dense to dense, wet, fine-grained sand, fine subangular gravel LL = 31, PI = 10, see Figure C-1				19.2	13.3	123
72					SP-SC	SAND with CLAY (SP-SC) brown, medium dense to dense, wet, fine- to medium-grained						
73												
74						CLAY with SAND (CL) gray-brown, very stiff, wet, fine-grained sand, trace fine subangular gravel						
75												
76												
77												
78												
79												
80												
81	S&H	■	10 15 27	29	CL		PP		3,000			
82												
83												
84												
85												
86												
87												
88												
89												
90												

TEST GEOTECH LOG 731745301_1701 SPRINGDALE.GPJ TEMPLATE_CA-MODIFIED.GDT 11/30/20

PROJECT:

10X GENOMICS BUILDING 1
1701 SPRINGDALE AVENUE
Pleasanton, California

Log of Boring B-1

PAGE 4 OF 4

DEPTH (feet)	SAMPLES: Sampler Type	SAMPLES: Sample	SAMPLES: Blows/ 6"	SAMPLES: SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION	LABORATORY TEST DATA: Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
	S&H	▨	11 20 31	36	CL	CLAY with SAND (CL) (continued)	PP		3,750			
91												
92												
93												
94												
95												
96												
97					GC	CLAYEY GRAVEL with SAND (GC) brown, very dense, wet, fine to coarse subangular, fine- to coarse-grained sand						
98												
99												
100	S&H	⊙	34 34 52	60								
101												
102												
103												
104												
105												
106												
107												
108												
109												
110												
111												
112												
113												
114												
115												
116												
117												
118												
119												
120												

Boring terminated at a depth of 101.5 feet below ground surface.
Boring backfilled with cement grout via treme and patched with asphalt.
Groundwater obscured by drilling method.
PP = pocket penetrometer.

[1] S&H and SPT blow counts for the last two increments were converted to SPT N-Values using factors of 0.7 and 1.2, respectively to account for sampler type and hammer energy.
[2] Elevations based on National Geodetic Vertical Datum of 1929 (NGVD29).

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Project No.: 731745301

Figure: A-1d

TEST GEOTECH LOG 731745301_1701 SPRINGDALE.GPJ TEMPLATE_CA-MODIFIED.GDT 11/30/20

PROJECT:	10X GENOMICS BUILDING 1 1701 SPRINGDALE AVENUE Pleasanton, California	**Log of Boring B-2** PAGE 1 OF 4

Boring location: See Site Plan, Figure 2

Date started: 2/7/20 Date finished: 2/10/20

Drilling method: Mud Rotary

Hammer weight/drop: 140 lbs./30 inches Hammer type: Automatic

Samplers: Sprague & Henwood (S&H)

Logged by: R. Renedo
Drilled By: Pitcher Drilling

DEPTH (feet)	SAMPLES: Sampler Type	Sample	Blows/ 6"	SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION Ground Surface Elevation: 342 feet[2]	LABORATORY TEST DATA: Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
					AC	4 inches asphalt concrete (AC)						
					AB	5-1/2 inches aggregate base (AB)						
1 2					CL	CLAY (CL) gray, moist, trace fine- to coarse-grained sand, trace fine to coarse subangular gravel, plastic debris [FILL]						
3 4 5						SANDY CLAY (CL) dark brown, medium stiff, moist, fine-grained sand, trace coarse-grained sand, organics						
6	S&H		5 5 5	7	CL		PP		2,500			
7 8												
9 10						CLAY with SAND (CL) brown, stiff, moist, fine-grained sand, trace medium- to coarse-grained sand						
11	S&H		7 9 10	13			PP		3,750			
12 13					CL							
14						trace coarse subangular gravel						
15 16	S&H		5 8 9	12		SANDY CLAY (CL) brown, stiff, moist, fine- to medium-grained sand, trace fine subangular gravel						
17 18 19					CL							
20 21	S&H		3 8 9	12		CLAY (CL) brown, stiff, moist, trace fine-grained sand, trace fine to coarse subangular gravel	PP		1,500			
22 23 24 25					CL							
26	S&H		3 7 6	9			PP		1,250			
27 28 29 30												

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Project No.: 731745301 Figure: A-2a

PROJECT:

10X GENOMICS BUILDING 1
1701 SPRINGDALE AVENUE
Pleasanton, California

Log of Boring B-2

PAGE 2 OF 4

DEPTH (feet)	SAMPLES Sampler Type	Sample	Blows/ 6"	SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION	LABORATORY TEST DATA Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
31	S&H		2 7 7	10	CL	CLAY (CL) (continued) increased sand content	PP		1,250			
32												
33						CLAY with SAND (CL) dark brown to gray-brown with orange oxidation, medium stiff to stiff, wet, fine- to coarse-grained sand						
34												
35												
36	S&H		2 4 7	8		Consolidation Test, see Figure C-4	PP		1,000		23.7	99
37												
38					CL							
39												
40						trace fine subangular gravel						
41	S&H		4 6 9	11			PP		1,000			
42												
43						CLAYEY SAND (SC) brown with orange oxidation, medium dense, wet, fine- to coarse-grained, trace fine subangular gravel						
44												
45					SC							
46	SPT		4 8 8	19		LL = 36, PI = 16, see Figure C-1				35.9	12.0	
47												
48						CLAYEY GRAVEL with SAND (GC) brown, dense, wet, fine subangular, fine- to coarse-grained sand, trace coarse subrounded gravel						
49					GC							
50												
51	S&H		19 29 34	44		SAND with CLAY and GRAVEL (SP-SC) brown, dense, wet, fine- to course-grained, trace fine subangular gravel				11.2	9.7	
52					SP-SC							
53						CLAY (CL) gray, stiff to very stiff, wet						
54												
55						Triaxial Test, see Figure C-13	TxUU	5,550	2,150		21.9	107
56	S&H		3 7 14	15			PP		2,250			
57					CL							
58												
59												
60												

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Project No.: 731745301
Figure: A-2b

PROJECT:

10X GENOMICS BUILDING 1
1701 SPRINGDALE AVENUE
Pleasanton, California

Log of Boring B-2

PAGE 3 OF 4

	SAMPLES						LABORATORY TEST DATA					
DEPTH (feet)	Sampler Type	Sample	Blows/ 6"	SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION	Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
						CLAY (CL) (continued) pockets of gravel						
61												
62					CL							
63												
64						SANDY CLAY (CL) gray with orange oxidation, very stiff, wet, fine-grained sand, trace silt content						
65												
66	S&H	■	11 15 27	29			PP		3,000			
67												
68					CL							
69												
70												
71												
72												
73						SANDY CLAY with GRAVEL (CL) gray-brown with orange oxidation, hard, wet, fine-grained sand, fine subangular gravel						
74					CL							
75					SM	SILTY SAND (SM) gray-brown, dense, wet, fine-grained sand, trace clay content						
76	S&H	■	11 24 31	39								
77						SANDY CLAY (CL) gray-brown with orange oxidation, hard, wet, fine-grained sand						
78												
79												
80					CL							
81												
82												
83												
84						CLAY (CL) gray to blue-gray, very stiff, wet						
85												
86	S&H	■	8 12 16	20			PP		2,500			
87					CL							
88												
89												
90												

PROJECT: **10X GENOMICS BUILDING 1**
1701 SPRINGDALE AVENUE
Pleasanton, California

Log of Boring B-2

PAGE 4 OF 4

DEPTH (feet)	SAMPLES Sampler Type	Sample	Blows/ 6"	SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION	LABORATORY TEST DATA Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
						CLAY (CL) (continued)						
91					CL							
92												
93						SAND with CLAY (SP-SC) gray, very dense, wet, fine-grained, trace silt						
94					SP-SC							
95	S&H	▨	18 29 47	53	SC	CLAYEY SAND (SC) gray, very dense, wet, stiff, fine-grained						
96						SAND with CLAY (SP-SC) gray, very dense, wet, fine-grained, trace silt						
97					SP-SC							
98												
99						CLAY (CL) gray, very stiff, wet						
100	S&H	▨	8 14 17	22	CL		PP		2,500			
101												
102												
103												
104												
105												
106												
107												
108												
109												
110												
111												
112												
113												
114												
115												
116												
117												
118												
119												
120												

Boring terminated at a depth of 101.5 feet below ground surface.
Boring backfilled with cement grout via treme and patched with asphalt.
Groundwater obscured by drilling method.
PP = pocket penetrometer.

[1] S&H and SPT blow counts for the last two increments were converted to SPT N-Values using factors of 0.7 and 1.2, respectively to account for sampler type and hammer energy.
[2] Elevations based on National Geodetic Vertical Datum of 1929 (NGVD29).

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Project No.: 731745301

Figure: A-2d

PROJECT: **10X GENOMICS BUILDING 1**
1701 SPRINGDALE AVENUE
Pleasanton, California

Log of Boring B-3

PAGE 1 OF 4

Boring location: See Site Plan, Figure 2
Date started: 2/5/20
Date finished: 2/6/20
Drilling method: Mud Rotary
Hammer weight/drop: 140 lbs./30 inches
Hammer type: Automatic
Samplers: Sprague & Henwood (S&H), Standard Penetration Test (SPT), Shelby Tube (ST)

Logged by: R. Renedo
Drilled By: Pitcher Drilling

DEPTH (feet)	SAMPLES				LITHOLOGY	MATERIAL DESCRIPTION	LABORATORY TEST DATA					
	Sampler Type	Sample	Blows/ 6"	SPT N-Value[1]		Ground Surface Elevation: 341 feet[2]	Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
					AC	2 inches asphalt concrete (AC)						
					AB	5-1/2 inches aggregate base (AB)						
1						CLAY (CL) dark brown, moist, trace fine-grained sand, trace fine to coarse subangular to subrounded gravel						
2												
3					CL							
4						brown						
5						SANDY CLAY (CL) brown, medium stiff to stiff, moist, fine-grained sand, trace silt and fine subangular gravel, organics						
6	S&H		4 6 6	8			PP		3,500			
7					CL							
8												
9					CL	GRAVELLY CLAY with SAND (CL) brown, medium stiff, moist, fine to coarse subangular to subrounded gravel, fine- to coarse-grained sand						
10						SANDY CLAY (CL) dark brown, medium stiff, moist, fine-grained sand, trace fine subangular gravel						
11	S&H		4 5 4	6								
12					CL							
13												
14						CLAY (CL) dark brown, stiff, moist, trace fine-grained sand and fine subangular gravel						
15												
16	S&H		4 5 8	9			PP		2,500			
17												
18												
19					CL							
20						trace medium-grained sand						
21	S&H		4 6 7	9			PP		1,500			
22												
23												
24						SANDY CLAY (CH) brown, medium stiff, wet, fine-grained sand, trace coarse-grained sand Consolidation Test, see Figure C-5						
25												
26	ST			85 to 200 psi							26.6	93
27					CH							
28												
29												
30					CL							

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Project No.: 731745301
Figure: A-3a

PROJECT:

10X GENOMICS BUILDING 1
1701 SPRINGDALE AVENUE
Pleasanton, California

Log of Boring B-3

DEPTH (feet)	SAMPLES: Sampler Type	SAMPLES: Sample	SAMPLES: Blows/ 6"	SAMPLES: SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION	LABORATORY TEST DATA: Type of Strength Test	LABORATORY TEST DATA: Confining Pressure Lbs/Sq Ft	LABORATORY TEST DATA: Shear Strength Lbs/Sq Ft	LABORATORY TEST DATA: Fines %	LABORATORY TEST DATA: Natural Moisture Content, %	LABORATORY TEST DATA: Dry Density Lbs/Cu Ft
31	S&H		3 5 7	8	CL	.CLAY with SAND (CL) light brown with orange and black speckling, medium stiff to stiff, wet, fine-grained sand, trace coarse-grained sand and coarse subangular gravel	PP		1,250			
32												
33												
34					CL	SANDY CLAY (CL) light brown, very stiff, wet, fine-grained sand						
35					SC	CLAYEY SAND with GRAVEL (SC) brown, medium dense, wet, fine- to coarse-grained, fine subangular gravel LL = 36, PI = 17, see Figure C-1				16.9	12.3	
36	S&H		5 14 20	24								
37												
38												
39												
40					CL	SANDY CLAY with GRAVEL (CL) brown, stiff, wet, fine-grained sand, fine to coarse subangular gravel, trace silt content						
41	S&H		4 5 8	9								
42	SPT		1 1 5	7		medium stiff						
43												
44						Triaxial Test, See Figure C-6 Consolidation Test, see Figure C14						
45											25.7	96
46	ST						TxUU	4,550	1,980		20.7	109
47					SC	CLAYEY SAND (SC) brown, wet, fine-grained						
48					CL	CLAY (CL) gray-brown, very stiff, wet, trace fine-grained sand						
49												
50												
51	S&H		5 13 18	22			PP		3,000			
52												
53												
54												
55												
56												
57												
58												
59												
60												

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Project No.: 731745301

Figure: A-3b

PROJECT:

10X GENOMICS BUILDING 1
1701 SPRINGDALE AVENUE
Pleasanton, California

Log of Boring B-3

DEPTH (feet)	SAMPLES: Sampler Type	SAMPLES: Sample	SAMPLES: Blows/ 6"	SAMPLES: SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION	LABORATORY TEST DATA: Type of Strength Test	LABORATORY TEST DATA: Confining Pressure Lbs/Sq Ft	LABORATORY TEST DATA: Shear Strength Lbs/Sq Ft	LABORATORY TEST DATA: Fines %	LABORATORY TEST DATA: Natural Moisture Content, %	LABORATORY TEST DATA: Dry Density Lbs/Cu Ft
		▨	8		CL	CLAY (CL) (continued)	PP		2,500			
61	S&H		11 24	25	SC	CLAYEY SAND (SC) brown, medium dense, wet, fine- to coarse-grained, fine subangular gravel						
62												
63						CLAY with SAND (CL) gray-brown with orange oxidation, very stiff, wet, fine-grained sand						
64												
65												
66												
67					CL							
68												
69							PP		2,000			
70		▨	7									
71	S&H		13 19	22		SANDY CLAY (CL) gray-brown with orange and black speckling, very stiff, wet, fine- to medium-grained sand						
72												
73												
74												
75												
76					CL	increased gravel content						
77												
78												
79												
80		▨	9									
81	S&H		15 19	24		CLAY (CL) gray to blue-gray, very stiff, wet, trace silt						
82												
83												
84												
85					CL							
86												
87												
88												
89												
90												

LANGAN

Project No.: 731745301
Figure: A-3c

PROJECT: **10X GENOMICS BUILDING 1**
1701 SPRINGDALE AVENUE
Pleasanton, California

Log of Boring B-3

DEPTH (feet)	SAMPLES Sampler Type	 Sample	 Blows/ 6"	 SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION	LABORATORY TEST DATA Type of Strength Test	 Confining Pressure Lbs/Sq Ft	 Shear Strength Lbs/Sq Ft	 Fines %	 Natural Moisture Content, %	 Dry Density Lbs/Cu Ft
91	S&H	■	10 15 20	25		CLAY (CL) (continued) Triaxial Test, see Figure C-15	TxUU	9,050	3,310		24.8	102
92												
93												
94												
95					CL							
96												
97												
98												
99												
100												
101	S&H	■	20 29 45	52		orange oxidation, hard						
					ML	SANDY SILT (ML) gray-brown, hard, wet, fine-grained sand						
102												
103												
104												
105												
106												
107												
108												
109												
110												
111												
112												
113												
114												
115												
116												
117												
118												
119												
120												

Boring terminated at a depth of 101.5 feet below ground surface.
Boring backfilled with cement grout via treme and patched with asphalt.
Groundwater obscured by drilling method.
PP = pocket penetrometer.

[1] S&H and SPT blow counts for the last two increments were converted to SPT N-Values using factors of 0.7 and 1.2, respectively to account for sampler type and hammer energy.
[2] Elevations based on National Geodetic Vertical Datum of 1929 (NGVD29).

LANGAN

Project No.: 731745301
Figure: A-3d

PROJECT: **10X GENOMICS BUILDING 1**
1701 SPRINGDALE AVENUE
Pleasanton, California

Log of Boring B-4

PAGE 1 OF 4

Boring location: See Site Plan, Figure 2
Date started: 2/4/20
Date finished: 2/5/20
Drilling method: Mud Rotary
Hammer weight/drop: 140 lbs./30 inches
Hammer type: Automatic
Samplers: Sprague & Henwood (S&H), Standard Penetration Test (SPT), Shelby Tube (ST)

Logged by: R. Renedo
Drilled By: Pitcher Drilling

LABORATORY TEST DATA

Ground Surface Elevation: 341 feet^2

DEPTH (feet)	SAMPLES Sampler Type	Sample	Blows/ 6"	SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION	Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
					AC	1 inches asphalt concrete (AC)						
1					AB	5 inches aggregate base (AB)						
2					ML	SILT with SAND (ML) brown, very stiff, moist, fine-grained sand, trace fine subangular gravel, organics						
3						trace fine to coarse subangular gravel						
4												
5												
6	S&H	▨	9 9 14	16			PP		>4,500			
7												
8												
9					CL	CLAY (CL) dark brown, stiff, moist, trace fine-grained sand, trace silt and organics						
10												
11	S&H	▨	2 4 9	9			PP		1,000			
12												
13												
14												
15												
16	S&H	▨	4 6 8	10		trace fine subangular gravel	PP		2,500			
17												
18												
19					CH	CLAY (CH) brown, stiff, moist, fine-grained sand, trace fine subangular gravel						
20												
21	S&H	▨	3 6 8	10			PP		1,500			
22												
23												
24					CL	SANDY CLAY (CL) brown, fine-to coarse-grained sand						
25	ST	▨		85 to 400 psi								
26												
27					GC	CLAYEY GRAVEL with SAND (GC) brown, medium dense, wet, fine-grained sand, fine to coarse subangular to subrounded						
28												
29												
30												

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Project No.: 731745301
Figure: A-4a

PROJECT: **10X GENOMICS BUILDING 1**
1701 SPRINGDALE AVENUE
Pleasanton, California

Log of Boring B-4

DEPTH (feet)	Sampler Type	Sample	Blows/ 6"	SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION	Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
31	S&H	●	12 9 17	18	GC	CLAYEY GRAVEL with SAND (GC) (continued)						
32												
33					SC	CLAYEY SAND with GRAVEL (SC) brown, loose, wet, fine- to coarse-grained, trace fine subangular gravel						
34												
35												
36	S&H	▨	2 2 5	5		LL = 35, PI = 19, see Figure C-1				14.4	13.6	
37	SPT	●	4 4 6	12								
38												
39												
40					GC	CLAYEY GRAVEL with SAND (GC) brown, loose, wet, fine to coarse subangular gravel, fine- to coarse-grained sand						
41	S&H	▨	9 9 10	13	CL	CLAY with SAND (CL) brown to gray-brown, stiff, wet, fine-grained sand						
42												
43												
44												
45					CL	CLAY (CL) gray-brown to brown, very stiff, wet, trace fine-grained sand Triaxial Test, see Figure C-16	TxUU	4,600	3,220		24.7	102
46	S&H	▨	10 14 18	22			PP		3,750			
47												
48												
49												
50						orange and black speckling						
51	S&H	▨	14 17 25	29		Consolidation Test, see Figure C-7	PP		>4,500		28.7	100
52												
53												
54												
55												
56												
57												
58												
59												
60												

LANGAN

Project No.: 731745301

Figure: A-4b

PROJECT: **10X GENOMICS BUILDING 1**
1701 SPRINGDALE AVENUE
Pleasanton, California

Log of Boring B-4

PAGE 3 OF 4

DEPTH (feet)	SAMPLES Sampler Type	 Sample	 Blows/ 6"	 SPT N-Value¹	LITHOLOGY	MATERIAL DESCRIPTION	LABORATORY TEST DATA Type of Strength Test	 Confining Pressure Lbs/Sq Ft	 Shear Strength Lbs/Sq Ft	 Fines %	 Natural Moisture Content, %	 Dry Density Lbs/Cu Ft
61	S&H		8 22 32	38	CL	CLAY (CL) (continued) Triaxial Test, see Figure C-17	TxUU	6,075	4,430		22.3	107
62												
63												
64												
65					CL	SANDY CLAY (CL) gray-brown to blue-gray, hard, wet, fine-grained sand						
66												
67												
68												
69												
70							PP		3,000			
70	S&H		15 31 28	41	SC	CLAYEY SAND (SC) gray-brown, dense, wet, fine- to medium-grained						
71					CL	CLAY (CL) gray-brown, hard, wet, trace fine-grained sand						
72												
73												
74												
75												
76												
77					CL	SANDY CLAY (CL) gray-brown, hard, wet, fine-grained sand						
78												
79												
80												
81	SPT		11 20 28	58	CL	SANDY CLAY with GRAVEL (CL) gray-brown, hard, wet, fine-grained sand, fine to coarse subangular to subrounded gravel						
82												
83					CL	CLAY (CL) gray-brown, hard, wet						
84												
85												
86												
87												
88					SC	CLAYEY SAND (SC) brown, very dense, wet, fine- to coarse-grained sand, trace fine subangular gravel						
89												
90												

LANGAN

Project No.: 731745301

Figure: A-4c

PROJECT:

10X GENOMICS BUILDING 1
1701 SPRINGDALE AVENUE
Pleasanton, California

Log of Boring B-4

DEPTH (feet)	SAMPLES				LITHOLOGY	MATERIAL DESCRIPTION	LABORATORY TEST DATA					
	Sampler Type	Sample	Blows/ 6"	SPT N-Value[1]			Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
91	S&H	▨	15 37 50/ 6"	61	SC	CLAYEY SAND (SC) (continued)						
92												
93						SANDY CLAY with GRAVEL (CL) brown, hard, wet, fine- to coarse-grained sand, fine subangular gravel						
94												
95												
96												
97					CL							
98												
99												
100												
101	S&H	▨	14 18 18	43								
102												
103												
104												
105												
106												
107												
108												
109												
110												
111												
112												
113												
114												
115												
116												
117												
118												
119												
120												

Boring terminated at a depth of 101.5 feet below ground surface.
Boring backfilled with cement grout via treme and patched with asphalt.
Groundwater obscured by drilling method.
PP = pocket penetrometer.

[1] S&H and SPT blow counts for the last two increments were converted to SPT N-Values using factors of 0.7 and 1.2, respectively to account for sampler type and hammer energy.
[2] Elevations based on National Geodetic Vertical Datum of 1929 (NGVD29).

LANGAN

Project No.: 731745301
Figure: A-4d

PROJECT: **10X GENOMICS BUILDING 1**
1701 SPRINGDALE AVENUE
Pleasanton, California

Log of Boring B-5

PAGE 1 OF 3

Boring location: See Site Plan, Figure 2
Date started: 1/31/20
Date finished: 1/31/20
Drilling method: Mud Rotary
Hammer weight/drop: 140 lbs./30 inches
Hammer type: Automatic
Samplers: Sprague & Henwood (S&H), Standard Penetration Test (SPT)
Logged by: R. Renedo
Drilled By: Pitcher Drilling

Ground Surface Elevation: 341 feet[2]

DEPTH (feet)	SAMPLES: Sampler Type	Sample	Blows/ 6"	SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION	LABORATORY TEST DATA: Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
					AC	4 inches asphalt concrete (AC)						
1					AB	7 inches aggregate base (AB)						
2						SANDY CLAY (CL) brown, moist, trace fine-grained sand, trace silt, organics						
3												
4												
5		▨			CL							
6	S&H	▨	9 10 15	18		very stiff, trace fine- to coarse-grained sand, trace fine to coarse gravel LL = 36, PI = 18, see Figure C-1					13.1	96
7												
8						increased gravel content						
9												
10		▨				CLAY with SAND (CL) dark brown, very stiff, moist, fine- to coarse-grained sand, roots present, trace silt and fine subangular gravel						
11	S&H	▨	9 9 15	17			PP		>4,500			
12					CL							
13												
14												
15		▨			CL-ML	SILTY CLAY (CL-ML) brown to yellow-brown, very stiff, moist, trace fine-grained sand						
16	S&H	▨	8 10 17	19								
17						CLAY with SAND (CL) dark brown, very stiff, moist, fine- to coarse-grained sand LL = 37, PI = 18, see Figure C-1						
18					CL							
19												
20		▨				CLAY (CH) brown, stiff, moist, trace fine to coarse subangular gravel						
21	S&H	▨	4 7 7	10			PP		1,000			
22												
23												
24												
25		▨			CH	medium stiff, wet						
26	S&H	▨	2 3 6	6								
27												
28												
29					CL	CLAY with SAND (CL) brown, medium stiff, wet, fine- to coarse-grained sand						
30							pp		750			

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Project No.: 731745301
Figure: A-5a

TEST GEOTECH LOG 731745301_1701 SPRINGDALE.GPJ TEMPLATE_CA-MODIFIED.GDT 11/30/20

PROJECT: **10X GENOMICS BUILDING 1**
1701 SPRINGDALE AVENUE
Pleasanton, California

Log of Boring B-5

PAGE 2 OF 3

DEPTH (feet)	SAMPLES: Sampler Type	SAMPLES: Sample	SAMPLES: Blows/ 6"	SAMPLES: SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION	LABORATORY TEST DATA: Type of Strength Test	LABORATORY TEST DATA: Confining Pressure Lbs/Sq Ft	LABORATORY TEST DATA: Shear Strength Lbs/Sq Ft	LABORATORY TEST DATA: Fines %	LABORATORY TEST DATA: Natural Moisture Content, %	LABORATORY TEST DATA: Dry Density Lbs/Cu Ft
31	S&H	▨	0 0 7	5	CL	CLAY with SAND (CL) (continued)	pp		2,500			
32 33 34 35					CL	SANDY CLAY (CL) brown, medium stiff, wet, fine-grained sand sandier zone for approximately 6 inches grades brown to yellow-brown with orange oxidation						
36	S&H	▨	2 5 8	9								
37 38 39					SC	CLAYEY SAND with GRAVEL (SC) brown, loose, wet, fine- to coarse-grained, fine to coarse subangular gravel						
40					SC	CLAYEY SAND (SC) brown, very dense, wet, fine- to coarse-grained						
41 42	S&H	▨	15 32 43	53	GC	CLAYEY GRAVEL with SAND (GC) brown with orange oxidation, very dense, wet, fine to coarse subangular, fine- to coarse-grained sand						
43 44 45					CL	SANDY CLAY with GRAVEL (CL) brown, stiff to very stiff, wet, fine- to coarse-grained sand, fine to coarse subangular to subrounded gravel						
46 47 48	S&H	▨	9 9 12	15	CL							
49 50					SC	CLAYEY SAND with GRAVEL (SC) brown, medium dense, wet, fine- to coarse-grained, fine to coarse subangular to subrounded gravel LL = 36, PI = 16, see Figure C-1				20.7	10.0	
51 52 53 54	SPT	▨	13 12 20	22	SC							
55					GC	CLAYEY GRAVEL with SAND (GC) brown with orange oxidation, loose, wet, fine to coarse subangular to subrounded, fine-grained sand						
56 57 58 59 60	SPT	●	5 5 7	8	GC							

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Project No.: 731745301

Figure: A-5b

TEST GEOTECH LOG 731745301_1701 SPRINGDALE.GPJ TEMPLATE_CA-MODIFIED.GDT 11/30/20

PROJECT: **10X GENOMICS BUILDING 1**
1701 SPRINGDALE AVENUE
Pleasanton, California

Log of Boring B-5

DEPTH (feet)	SAMPLES Sampler Type	Sample	Blows/ 6"	SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION	LABORATORY TEST DATA Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
61	S&H	▨	8 25 30	43		CLAYEY SAND (SC) yellow-brown to gray-brown with orage and dark brown speckling, dense, wet, fine- to medium-grained						
62												
63												
64												
65												
66					SC							
67												
68												
69												
70												
71												
72						CLAY (CH) gray, very stiff, wet						
73												
74					CH							
75												
76	S&H	▨	13 14 18	22								
77												
78												
79												
80												
81												
82												
83												
84												
85												
86												
87												
88												
89												
90												

Boring terminated at a depth of 76.5 feet below ground surface.
Boring backfilled with grout and topped with asphalt patch.
Groundwater obscured by drilling method.
PP = pocket penetrometer.

[1] S&H and SPT blow counts for the last two increments were converted to SPT N-Values using factors of 0.7 and 1.2, respectively to account for sampler type and hammer energy.

[2] Elevations based on National Geodetic Vertical Datum of 1929 (NGVD29).

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Project No.: 731745301

Figure: A-5c

PROJECT: **10X GENOMICS BUILDING 1**
1701 SPRINGDALE AVENUE
Pleasanton, California

Log of Boring B-6

PAGE 1 OF 4

Boring location: See Site Plan, Figure 2

Date started: 1/31/20 | Date finished: 2/4/20

Drilling method: Mud Rotary

Hammer weight/drop: 140 lbs./30 inches | Hammer type: Automatic

Samplers: Sprague & Henwood (S&H), Shelby Tube (ST)

Logged by: R. Renedo
Drilled By: Pitcher Drilling

Ground Surface Elevation: 344.5 feet[2]

	SAMPLES						LABORATORY TEST DATA					
DEPTH (feet)	Sampler Type	Sample	Blows/ 6"	SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION	Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
					AC	1-1/2 inches asphalt concrete (AC)						
					AB	6-1/2 inches aggregate base (AB)						
1						CLAY with SAND (CL) dark brown, moist, fine-grained sand, trace organics and silt content						
2												
3					CL							
4						dark brown to brown, increased sand content						
5						CLAYEY SAND (SC) dark brown, medium dense, moist, fine- to coarse-grained, trace fine subangular to subrounded gravel, trace organics and silt content LL = 38, PI = 19, see Figure C-1						
6	S&H		6 7 9	11						39.5	14.1	
7					SC							
8												
9						CLAY with SAND (CL) dark brown, stiff, moist, fine-grained sand, trace subangular gravel						
10												
11	S&H		5 6 9	11								
12												
13												
14					CL							
15												
16	S&H		7 7 11	13			PP		3,000			
17												
18												
19												
20						SANDY CLAY with GRAVEL (CL) brown, stiff, moist, fine-grained sand, fine to coarse subangular gravel, trace cobbles						
21	S&H		5 8 9	12			PP		2,250			
22					CL							
23												
24						CLAY with SAND (CH) brown, medium stiff, wet, fine-grained sand, trace fine to coarse subangular gravel						
25												
26	S&H		0 3 5	6			PP		750			
27					CH							
28						gravel seam						
29												
30					CH							

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Project No.: 731745301 | Figure: A-6a

PROJECT:

10X GENOMICS BUILDING 1
1701 SPRINGDALE AVENUE
Pleasanton, California

Log of Boring B-6

PAGE 2 OF 4

DEPTH (feet)	SAMPLES Sampler Type	Sample	Blows/ 6"	SPT N-Value^1	LITHOLOGY	MATERIAL DESCRIPTION	LABORATORY TEST DATA Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
31	S&H		4 2 5	5		SANDY CLAY (CH) brown, medium stiff, wet, fine-grained sand	PP		750			
32												
33	ST			85 to 150 psi	CH	Triaxial Test, see Figure C-18 Consolidation Test, see Figure C-8	TxUU	3,300	640		25.3 23.7	95 101
34												
35	S&H		8 11 12	16			PP		1,000			
36					GC	CLAYEY GRAVEL with SAND (GC) brown, medium dense, wet, fine to coarse subangular to subrounded, fine-grained sand						
37												
38						CLAYEY SILTY SAND (SC-SM) brown, medium dense, wet, fine-grained, with clay						
39					SC-SM							
40						LL = 23, PI = 5, see Figure C-2						
41	S&H		5 9 8	12		SANDY CLAY (CL) brown to light brown, stiff, wet, fine-grained sand, trace fine subangular gravel				37.2	19.5	
42												
43					CL							
44												
45						CLAY (CL) brown, very stiff, wet, trace fine-grained sand						
46	S&H		9 9 14	16			PP		2,250			
47					CL							
48												
49					SC	CLAYEY SAND with GRAVEL (SC) brown, medium dense, wet, fine-grained, fine to coarse subangular gravel						
50												
51	S&H		5 9 10	13		CLAY with SAND (CL) brown with orange oxidation, stiff, wet, fine-grained sand						
52												
53												
54												
55					CL							
56												
57												
58												
59												
60												

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Project No.: 731745301

Figure: A-6b

PROJECT: **10X GENOMICS BUILDING 1**
1701 SPRINGDALE AVENUE
Pleasanton, California

Log of Boring B-6

DEPTH (feet)	SAMPLES: Sampler Type	SAMPLES: Sample	SAMPLES: Blows/ 6"	SAMPLES: SPT N-Value¹	LITHOLOGY	MATERIAL DESCRIPTION	LABORATORY TEST DATA: Type of Strength Test	LABORATORY TEST DATA: Confining Pressure Lbs/Sq Ft	LABORATORY TEST DATA: Shear Strength Lbs/Sq Ft	LABORATORY TEST DATA: Fines %	LABORATORY TEST DATA: Natural Moisture Content, %	LABORATORY TEST DATA: Dry Density Lbs/Cu Ft
61	S&H	■	14 24 31	39		SANDY CLAY with GRAVEL (CL) gray-brown with orange oxidation, hard, wet, fine- to coarse-grained sand, fine to coarse subangular gravel	PP		3,250			
62												
63												
64					CL							
65												
66												
67						CLAY with SAND (CL) gray to blue-gray, hard, wet, fine-grained sand						
68												
69												
70		■	7			Triaxial Test, see Figure C-20	TxUU	7,075	4,340		20.5	111
71	S&H		19 29	34			PP		>4,500			
72												
73												
74												
75												
76												
77												
78												
79					CL							
80		■	14			white speckling and orange oxidation, trace coarse-grained sand						
81	S&H		27 29	39			PP		>4,500			
82												
83												
84												
85												
86												
87												
88												
89												
90												

TEST GEOTECH LOG 731745301_1701 SPRINGDALE.GPJ TEMPLATE_CA-MODIFIED.GDT 11/30/20

PROJECT: **10X GENOMICS BUILDING 1**
1701 SPRINGDALE AVENUE
Pleasanton, California

Log of Boring B-6

PAGE 4 OF 4

DEPTH (feet)	SAMPLES: Sampler Type	SAMPLES: Sample	SAMPLES: Blows/ 6"	SAMPLES: SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION	LABORATORY TEST DATA: Type of Strength Test	LABORATORY TEST DATA: Confining Pressure Lbs/Sq Ft	LABORATORY TEST DATA: Shear Strength Lbs/Sq Ft	LABORATORY TEST DATA: Fines %	LABORATORY TEST DATA: Natural Moisture Content, %	LABORATORY TEST DATA: Dry Density Lbs/Cu Ft
91	S&H	▨	11 28 33	43	CL	CLAY with SAND (CL) (continued) decreased sand content, silt	PP		4,000			
92												
93												
94												
95												
96												
97												
98												
99					SP-SM	SAND with SILT (SP-SM) gray-brown, very dense, wet, fine-grained, trace clay						
100	S&H	▨	29 50/ 6"	60/ 6"	SC	CLAYEY SAND (SC) gray-brown, very dense, wet, fine-grained						
101												
102												
103												
104												
105												
106												
107												
108												
109												
110												
111												
112												
113												
114												
115												
116												
117												
118												
119												
120												

Boring terminated at a depth of 101 feet below ground surface.
Boring backfilled with cement grout via treme and patched with asphalt.
Groundwater obscured by drilling method.
PP = pocket penetrometer.

[1] S&H and SPT blow counts for the last two increments were converted to SPT N-Values using factors of 0.7 and 1.2, respectively to account for sampler type and hammer energy.
[2] Elevations based on National Geodetic Vertical Datum of 1929 (NGVD29).

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Project No.: 731745301
Figure: A-6d

PROJECT: **10X GENOMICS BUILDING 1**
1701 SPRINGDALE AVENUE
Pleasanton, California

Log of Boring B-7

PAGE 1 OF 1

Boring location: See Site Plan, Figure 2

Date started: 2/11/20

Date finished: 2/11/20

Drilling method: Solid Flight Auger

Hammer weight/drop: 140 lbs./30 inches

Hammer type: Automatic

Samplers: Sprague & Henwood (S&H)

Logged by: R. Renedo

Drilled By: Pitcher Drilling

DEPTH (feet)	SAMPLES: Sampler Type	SAMPLES: Sample	SAMPLES: Blows/ 6"	SAMPLES: SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION Ground Surface Elevation: 341 feet[2]	LABORATORY TEST DATA: Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
					AC	1-1/2 inches asphalt concrete (AC)						
					AB	6-1/2 inches aggregate base (AB)						
3	BULK				CL	SANDY CLAY with GRAVEL (CL) gray to black, moist, fine- to coarse-grained sand, fine to coarse subangular gravel [FILL] LL = 38, PI = 19, see Figure C-2 R-value Test, see Figure C-22				56.4		
6	S&H		4 5 7	8	CL	CLAY with SAND (CL) dark brown, medium stiff to stiff, moist, fine- to coarse-grained sand	PP		3,500			
11	S&H		5 6 9	11	CL	SANDY CLAY (CL) brown, stiff, moist, fine-grained sand, trace medium-grained sand	PP		4,000			
16	S&H		3 5 7	8	CL	CLAY with SAND (CL) brown to dark brown, medium stiff to stiff, moist, fine-grained sand	PP		3,000			
21	S&H		2 3 5	6	CH	CLAY (CH) brown, medium stiff, moist, fine-grained sand, trace fine subangular gravel						
30												

Boring terminated at a depth of 21.5 feet below ground surface.
Boring backfilled with grout and topped with asphalt patch.
Groundwater obscured by drilling method.
PP = pocket penetrometer.

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[1] S&H and SPT blow counts for the last two increments were converted to SPT N-Values using factors of 0.7 and 1.2, respectively to account for sampler type and hammer energy.

[2] Elevations based on National Geodetic Vertical Datum of 1929 (NGVD29).

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Project No.: 731745301

Figure: A-7

PROJECT: **10X GENOMICS BUILDING 1**
1701 SPRINGDALE AVENUE
Pleasanton, California

Log of Boring B-8

PAGE 1 OF 4

Boring location: See Site Plan, Figure 2
Date started: 2/10/20
Date finished: 2/11/20
Drilling method: Mud Rotary
Hammer weight/drop: 140 lbs./30 inches
Hammer type: Automatic
Samplers: Sprague & Henwood (S&H), Shelby Tube (ST)

Logged by: R. Renedo
Drilled By: Pitcher Drilling

LABORATORY TEST DATA

DEPTH (feet)	SAMPLES: Sampler Type	SAMPLES: Sample	SAMPLES: Blows/ 6"	SAMPLES: SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION Ground Surface Elevation: 342 feet[2]	Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
					AC	4 inches asphalt concrete (AC)						
1					CL	CLAY (CL) gray to black, moist, trace fine- to coarse-grained sand, trace fine to coarse subangular to subrounded gravel [FILL]						
2					SM							
3					CL	SILTY SAND with GRAVEL (SM) brown, moist, fine- to coarse-grained, fine to coarse subangular gravel [FILL]						
4												
5	S&H	▨	7 14 12	18	ML	CLAY (CL) gray to black, moist, trace fine- to coarse-grained sand, trace fine to coarse subangular to subrounded gravel [FILL]						
6												
7						SANDY SILT (ML) black, very stiff, moist, fine- to coarse-grained sand						
8					CL	SANDY CLAY (CL) dark brown, very stiff, moist, fine- to coarse-grained sand, trace fine to coarse subangular gravel, rootlets						
9												
10						CLAY (CL) brown, stiff, trace fine- to medium-grained sand						
11	S&H	▨	4 8 16	13			PP		3,500			
12												
13												
14												
15					CL	trace fine to course subangular gravel						
16	S&H	▨	1 5 6	8			PP		1,250			
17												
18												
19												
20						CLAY with GRAVEL (CL) brown, medium stiff to stiff, moist, fine to coarse subangular to subrounded gravel						
21	S&H	▨	3 5 7	8			PP		2,250			
22					CL							
23												
24												
25						SANDY CLAY (CH) light brown, soft to medium stiff, wet, fine-grained sand, trace fine to coarse gravel						
26	S&H	▨	5 3 2	4								
27					CH							
28												
29												
30					CL	.						

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Project No.: 731745301
Figure: A-8a

PROJECT: **10X GENOMICS BUILDING 1**
1701 SPRINGDALE AVENUE
Pleasanton, California

Log of Boring B-8

PAGE 2 OF 4

DEPTH (feet)	SAMPLES: Sampler Type	SAMPLES: Sample	SAMPLES: Blows/ 6"	SAMPLES: SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION	LABORATORY TEST DATA: Type of Strength Test	LABORATORY TEST DATA: Confining Pressure Lbs/Sq Ft	LABORATORY TEST DATA: Shear Strength Lbs/Sq Ft	LABORATORY TEST DATA: Fines %	LABORATORY TEST DATA: Natural Moisture Content, %	LABORATORY TEST DATA: Dry Density Lbs/Cu Ft
31	S&H		3 7 8	11		CLAY with SAND and GRAVEL (CL) brown, stiff, wet, fine- to coarse-grained sand, trace fine subangular gravel						
32												
33												
34												
35												
36	ST			95 to 200 psi	CL	Triaxial Test, see Figure C-19 Consolidation Test, see Figure C-9	TxUU	3,600	1,820		29.4 23.3	95 101
37						light brown						
38												
39												
40						orange oxidation, stiff to very stiff						
41	S&H		5 10 12	15		1/2-inch thick gravel seam						
42						SANDY CLAY with GRAVEL (CL) light brown to gray-brown with orange oxidation, stiff to very stiff, wet, fine-grained sand, fine to coarse subangular gravel						
43					CL							
44												
45					SC	CLAYEY SAND (SC) brown, medium dense, wet, fine- to coarse-grained, trace fine subangular to subrounded gravel LL = 30, PI = 10, see Figure C-2						
46	S&H		7 10 14	17						38.1	20.5	
47					CL	CLAY with SAND (CL) gray-brown with orange oxidation, very stiff, wet, fine-grained sand						
48												
49						CLAYEY SAND with GRAVEL (SC) brown, medium dense, wet, fine-grained, trace medium- to coarse-grained sand, fine subangular gravel, trace silt LL = 36, PI = 16, see Figure C-2						
50										31.5	16.5	
51	S&H		7 11 15	18	SC							
52						CLAYEY GRAVEL with SAND (GC) brown, dense, wet, fine to coarse subangular, fine- to coarse-grained sand						
53												
54												
55												
56	SPT		10 15 18	40	GC							
57												
58												
59												
60												

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Project No.: 731745301
Figure: A-8b

PROJECT: **10X GENOMICS BUILDING 1**
1701 SPRINGDALE AVENUE
Pleasanton, California

Log of Boring B-8

DEPTH (feet)	SAMPLES: Sampler Type	SAMPLES: Sample	SAMPLES: Blows/ 6"	SAMPLES: SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION	LABORATORY TEST DATA: Type of Strength Test	LABORATORY TEST DATA: Confining Pressure Lbs/Sq Ft	LABORATORY TEST DATA: Shear Strength Lbs/Sq Ft	LABORATORY TEST DATA: Fines %	LABORATORY TEST DATA: Natural Moisture Content, %	LABORATORY TEST DATA: Dry Density Lbs/Cu Ft
						CLAYEY GRAVEL with SAND (CL) (continued)						
61					GC							
62												
63						SANDY CLAY (CL) brown, stiff, wet, fine-grained sand						
64					CL							
65			7			trace coarse subangular gravel						
66	S&H	■	9 10	13		CLAYEY SAND (SC)						
67						brown, medium dense, wet, fine- to coarse-grained, trace fine subangular gravel						
68					SC							
69				375								
70	ST	▨		to 500 psi		CLAYEY SAND (SC)						
71						light brown, wet, fine-grained sand, trace medium- to coarse-grained sand						
72					SC							
73												
74						CLAY (CL)						
75			8			gray-brown with orange oxidation, hard, wet, trace fine-grained sand						
76	S&H	■	18 27	32			PP		3,000			
77												
78												
79					CL							
80												
81												
82												
83												
84						CLAYEY GRAVEL with SAND (GC)						
85			22		GC	brown, very dense, wet, fine to coarse subangular, fine- to coarse-grained sand						
86	S&H	■	44 35	55	SM	SILTY SAND (SM) brown, very dense, wet, fine-grained, trace medium- to						
87						coarse-grained sand, trace clay, increased at 86 feet CLAY (CL)						
88						blue-gray to gray, hard, wet, trace fine-grained sand						
89					CL							
90												

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Project No.: 731745301

Figure: A-8c

PROJECT: **10X GENOMICS BUILDING 1**
1701 SPRINGDALE AVENUE
Pleasanton, California

Log of Boring B-8

PAGE 4 OF 4

DEPTH (feet)	SAMPLES: Sampler Type	SAMPLES: Sample	SAMPLES: Blows/ 6"	SAMPLES: SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION	LABORATORY TEST DATA: Type of Strength Test	LABORATORY TEST DATA: Confining Pressure Lbs/Sq Ft	LABORATORY TEST DATA: Shear Strength Lbs/Sq Ft	LABORATORY TEST DATA: Fines %	LABORATORY TEST DATA: Natural Moisture Content, %	LABORATORY TEST DATA: Dry Density Lbs/Cu Ft
91 92 93 94 95					CL	CLAY (CL) (continued)						
96	S&H	■	14 24 40	45								
97 98					SP- SC	SAND with CLAY (SP-SC) blue-gray to gray, dense, wet, fine-grained						
99 100					CL	SANDY CLAY (CL) blue-gray to gray-brown, hard, wet, fine-grained sand						
101	SPT	◩	8 13 18	37								
102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120												

Boring terminated at a depth of 101.5 feet below ground surface.
Boring backfilled with cement grout via treme and patched with asphalt.
Groundwater obscured by drilling method.
PP = pocket penetrometer.

---

[1] S&H and SPT blow counts for the last two increments were converted to SPT N-Values using factors of 0.7 and 1.2, respectively to account for sampler type and hammer energy.

[2] Elevations based on National Geodetic Vertical Datum of 1929 (NGVD29).

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Project No.: 731745301

Figure: A-8d

PROJECT:	**10X GENOMICS BUILDING 1** **1701 SPRINGDALE AVENUE** Pleasanton, California	**Log of Boring B-9** PAGE 1 OF 1

Boring location: See Site Plan, Figure 2

Date started: 1/30/20 Date finished: 1/30/20

Drilling method: Solid Flight Auger

Hammer weight/drop: 140 lbs./30 inches Hammer type: Automatic

Samplers: Sprague & Henwood (S&H)

Logged by: R. Renedo

Drilled By: Pitcher Drilling

DEPTH (feet)	SAMPLES				LITHOLOGY	MATERIAL DESCRIPTION	LABORATORY TEST DATA					
	Sampler Type	Sample	Blows/ 6"	SPT N-Value[1]		Ground Surface Elevation: 344 feet[2]	Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
					AC	3 inches asphalt concrete (AC)						
1					AB	5 inches aggregate base (AB)						
2						CLAY with SAND (CL) brown, stiff, fine-grained sand, trace fine to coarse subangular gravel, trace organics, with brick debris R-value Test, see Figure C-23						
3	BULK											
5					CL							
6	S&H		4 7 7	10			PP		3,000			
9						CLAY with SAND (CL) brown, stiff, moist, fine-grained sand						
11	S&H		3 6 11	12			PP		3,500			
13					CL							
15						trace coarse subangular gravel						
16	S&H		4 7 9	11			PP		3,000			
18						SANDY CLAY (CH) brown, medium stiff, moist, fine-grained sand, fine to coarse subangular to subrounded gravel						
19					CH							
21	S&H		1 3 7	7								
30												

Boring terminated at a depth of 21.5 feet below ground surface.
Boring backfilled with grout and topped with asphalt patch.
Groundwater obscured by drilling method.
PP = pocket penetrometer.

[1] S&H and SPT blow counts for the last two increments were converted to SPT N-Values using factors of 0.7 and 1.2, respectively to account for sampler type and hammer energy.

[2] Elevations based on National Geodetic Vertical Datum of 1929 (NGVD29).

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Project No.: 731745301

Figure: A-9

PROJECT: **10X GENOMICS BUILDING 1**
1701 SPRINGDALE AVENUE
Pleasanton, California

Log of Boring B-10

PAGE 1 OF 4

Boring location: See Site Plan, Figure 2
Date started: 1/29/20 Date finished: 1/30/20
Drilling method: Mud Rotary
Hammer weight/drop: 140 lbs./30 inches Hammer type: Automatic
Samplers: Sprague & Henwood (S&H), Standard Penetration Test (SPT), Shelby Tube (ST)

Logged by: R. Renedo
Drilled By: Pitcher Drilling

DEPTH (feet)	SAMPLES Sampler Type	Sample	Blows/ 6"	SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION Ground Surface Elevation: 340.5 feet[2]	LABORATORY TEST DATA Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
					AC	2 inches asphalt concrete (AC)						
					AB	7 inches aggregate base (AB)						
1						CLAY (CL) dark brown, moist, trace silt, trace fine subangular to subrounded gravel, organics						
2												
3					CL							
4						coarse subangular gravel						
5						CLAYEY SAND with GRAVEL (SC) brown, medium dense, moist, fine- to coarse-grained, coarse subangular gravel						
6	S&H	■	12 19 16	25								
7					SC							
8												
9						SANDY CLAY with GRAVEL (CL) brown, very stiff, wet, fine- to coarse-grained sand, fine to coarse subangular gravel, brick debris						
10												
11	SPT	◩	6 9 7	19								
12												
13												
14					CL							
15						stiff, increased sand content						
16	S&H	■	5 6 10	11			PP		2,500			
17												
18												
19						CLAY with SAND (CH) brown, medium stiff to stiff, moist, fine- to coarse-grained, sand, trace coarse subangular gravel Consolidation Test, see Figure C-10						
20												
21	S&H	■	4 5 6	8	CH		PP		1,000		22.5	102
22												
23						increased gravel content						
24						SANDY CLAY (CH) brown, very soft, wet, fine-grained sand, trace coarse-grained sand						
25												
26	S&H	■	0 0 0	0	CH		PP		500			
27												
28						SANDY CLAY (CL) light brown to brown with orange oxidation, very stiff, wet, fine-grained sand, trace coarse-grained sand and fine subangular to subrounded gravel, trace silt						
29					CL							
30												

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Project No.: 731745301
Figure: A-10a

TEST GEOTECH LOG 731745301_1701 SPRINGDALE.GPJ TEMPLATE_CA-MODIFIED.GDT 11/30/20

PROJECT: **10X GENOMICS BUILDING 1**
1701 SPRINGDALE AVENUE
Pleasanton, California

Log of Boring B-10

DEPTH (feet)	SAMPLES: Sampler Type	SAMPLES: Sample	SAMPLES: Blows/ 6"	SAMPLES: SPT N-Value¹	LITHOLOGY	MATERIAL DESCRIPTION	LABORATORY TEST DATA: Type of Strength Test	LABORATORY TEST DATA: Confining Pressure Lbs/Sq Ft	LABORATORY TEST DATA: Shear Strength Lbs/Sq Ft	LABORATORY TEST DATA: Fines %	LABORATORY TEST DATA: Natural Moisture Content, %	LABORATORY TEST DATA: Dry Density Lbs/Cu Ft
						SANDY CLAY (CL) (continued)						
31	S&H	■	4 9 14	16			PP		2,250			
32												
33						gravel seam						
34					CL							
35						increased sand content						
36	SPT	◪	6 8 6	17								
37												
38												
39						SANDY CLAY (CL) brown, medium stiff, wet, fine-grained sand, trace coarse subangular gravel						
40					CL							
41	S&H	■	3 4 25	20		increased gravel content	PP		1,000		25.1	102
42					SP-SM	SAND with SILT and GRAVEL (SP-SM) brown, medium dense, wet, fine- to coarse-grained, fine to coarse subangular gravel						
43										11.8	6.3	
44						CLAYEY SAND with GRAVEL (SC) brown, medium dense, wet, fine-to medium-grained, fine subangular gravel						
45					SC							
46	S&H	■	6 11 22	23		LL = 33, PI = 13, see Figure C-2				17.4	17.9	
						CLAYEY GRAVEL with SAND (GC) brown, medium dense, wet, fine to coarse subangular, fine- to coarse-grained sand						
47												
48												
49												
50												
51	S&H	●	5 12 11	28								
52												
53					GC	2 foot thick clay seam						
54												
55												
56												
57												
58												
59												
60												

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Project No.: 731745301

Figure: A-10b

PROJECT: **10X GENOMICS BUILDING 1**
1701 SPRINGDALE AVENUE
Pleasanton, California

Log of Boring B-10

	SAMPLES						LABORATORY TEST DATA					
DEPTH (feet)	Sampler Type	Sample	Blows/ 6"	SPT N-Value¹	LITHOLOGY	MATERIAL DESCRIPTION	Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
61	S&H	●	20 24 24	34	GC	CLAYEY GRAVEL with SAND (GC) (continued) dense						
62												
63					CL	SANDY CLAY with GRAVEL (CL) light brown, hard, wet, fine-grained sand, trace fine to coarse subangular gravel						
64												
65												
66	S&H		10 24 40	45	GC	CLAYEY GRAVEL with SAND (GC) brown, dense, wet, fine- to coarse-grained sand, fine to coarse subangular gravel						
67												
68												
69					SC	CLAYEY SAND (SC) brown with orange oxidation, very dense, wet, fine- to coarse-grained, trace coarse subangular gravel						
70	S&H		20 50/ 6"	35/ 6"								
71												
72												
73												
74					CL	CLAY (CL) gray, very stiff, moist, trace fine-grained sand						
75												
76												
77												
78												
79												
80												
81	ST			85 - 500 psi		Triaxial Test, see Figure C-21 Consolidation Test, see Figure C-11	TxUU	8,050	2,590		27.9 26.6	96 95
82												
83												
84												
85												
86												
87												
88												
89												
90												

PROJECT:

10X GENOMICS BUILDING 1
1701 SPRINGDALE AVENUE
Pleasanton, California

Log of Boring B-10

PAGE 4 OF 4

DEPTH (feet)	SAMPLES: Sampler Type	Sample	Blows/ 6"	SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION	LABORATORY TEST DATA: Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
91	S&H	▨	9 27 35	43	CL	CLAY (CL) (continued) orange oxidation with black speckling, hard	PP		<4,500			
92												
93												
94												
95												
96												
97												
98												
99												
100						increased sand content						
101	S&H	▨	14 24 34	41			PP		3,750			
102												
103												
104												
105												
106												
107												
108												
109												
110												
111												
112												
113												
114												
115												
116												
117												
118												
119												
120												

Boring terminated at a depth of 101.5 feet below ground surface.
Boring backfilled with cement grout via treme and patched with asphalt.
Groundwater obscured by drilling method..
PP = pocket penetrometer.

[1] S&H and SPT blow counts for the last two increments were converted to SPT N-Values using factors of 0.7 and 1.2, respectively to account for sampler type and hammer energy.
[2] Elevations based on National Geodetic Vertical Datum of 1929 (NGVD29).

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Project No.: 731745301

Figure: A-10d

PROJECT: **10X GENOMICS BUILDING 1**
1701 SPRINGDALE AVENUE
Pleasanton, California

Log of Boring B-11

PAGE 1 OF 1

Boring location: See Site Plan, Figure 2
Date started: 1/30/20
Date finished: 1/30/20
Drilling method: Solid Flight Auger
Hammer weight/drop: 140 lbs./30 inches
Hammer type: Automatic
Samplers: Sprague & Henwood (S&H)
Logged by: R. Renedo
Drilled By: Pitcher Drilling

Ground Surface Elevation: 342 feet[2]

DEPTH (feet)	SAMPLES: Sampler Type	SAMPLES: Sample	SAMPLES: Blows/ 6"	SAMPLES: SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION	LABORATORY TEST DATA: Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
0					AC	4-1/2 inches asphalt concrete (AC)						
					AB	7-1/2 inches aggregate base (AB)						
1–5	BULK	☒			CL	CLAY (CL) dark brown, moist, fine- to coarse-grained sand, fine gravel, trace silt, organics						
5–6	S&H	■	4 5 10	11		stiff, trace coarse subangular gravel	PP		3,500			
6–11					CL	CLAY with SAND (CL) brown, stiff, moist, fine-grained sand, trace silt brick debris						
10–11	S&H	■	4 6 8	10			PP		2,500			
11–14.5					CL	CLAY with SAND and GRAVEL (CL) brown, stiff, moist, fine-grained sand, fine to coarse subangular to subrounded gravel, trace organics						
14.5–18					CL	SANDY CLAY (CL) brown, stiff, moist, fine-grained sand, trace fine to coarse subangular gravel, with brick debris						
15–16	S&H	■	2 4 9	9			PP		2,750			
18–21.5					CH	SANDY CLAY (CH) brown, medium stiff, moist, fine-grained sand, trace fine to coarse subangular gravel						
20–21.5	S&H	■	2 3 6	6								
21.5					SC	CLAYEY SAND with GRAVEL (SC) brown, loose, moist, fine-grained sand, fine to coarse subangular to subrounded gravel						

Boring terminated at a depth of 21.5 feet below ground surface.
Boring backfilled with grout and topped with asphalt patch.
Groundwater obscured by drilling method.
PP = pocket penetrometer.

[1] S&H and SPT blow counts for the last two increments were converted to SPT N-Values using factors of 0.7 and 1.2, respectively to account for sampler type and hammer energy.
[2] Elevations based on National Geodetic Vertical Datum of 1929 (NGVD29).

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Project No.: 731745301
Figure: A-11

UNIFIED SOIL CLASSIFICATION SYSTEM

Major Divisions		Symbols	Typical Names
Coarse-Grained Soils (more than half of soil > no. 200 sieve size	**Gravels** (More than half of coarse fraction > no. 4 sieve size)	**GW**	Well-graded gravels or gravel-sand mixtures, little or no fines
		GP	Poorly-graded gravels or gravel-sand mixtures, little or no fines
		GM	Silty gravels, gravel-sand-silt mixtures
		GC	Clayey gravels, gravel-sand-clay mixtures
	Sands (More than half of coarse fraction < no. 4 sieve size)	**SW**	Well-graded sands or gravelly sands, little or no fines
		SP	Poorly-graded sands or gravelly sands, little or no fines
		SM	Silty sands, sand-silt mixtures
		SC	Clayey sands, sand-clay mixtures
Fine -Grained Soils (more than half of soil < no. 200 sieve size)	**Silts and Clays** LL = < 50	**ML**	Inorganic silts and clayey silts of low plasticity, sandy silts, gravelly silts
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, lean clays
		OL	Organic silts and organic silt-clays of low plasticity
	Silts and Clays LL = > 50	**MH**	Inorganic silts of high plasticity
		CH	Inorganic clays of high plasticity, fat clays
		OH	Organic silts and clays of high plasticity
Highly Organic Soils		**PT**	Peat and other highly organic soils

GRAIN SIZE CHART

Classification	Range of Grain Sizes	
	U.S. Standard Sieve Size	Grain Size in Millimeters
Boulders	Above 12"	Above 305
Cobbles	12" to 3"	305 to 76.2
Gravel	3" to No. 4	76.2 to 4.76
coarse	3" to 3/4"	76.2 to 19.1
fine	3/4" to No. 4	19.1 to 4.76
Sand	No. 4 to No. 200	4.76 to 0.075
coarse	No. 4 to No. 10	4.76 to 2.00
medium	No. 10 to No. 40	2.00 to 0.420
fine	No. 40 to No. 200	0.420 to 0.075
Silt and Clay	Below No. 200	Below 0.075

▽	Unstabilized groundwater level
▼	Stabilized groundwater level

SAMPLE DESIGNATIONS/SYMBOLS

⬒	Sample taken with Sprague & Henwood split-barrel sampler with a 3.0-inch outside diameter and a 2.43-inch inside diameter. Darkened area indicates soil recovered
◩	Classification sample taken with Standard Penetration Test sampler
◨	Undisturbed sample taken with thin-walled tube
⊠	Disturbed sample
⊡	Sampling attempted with no recovery
◫	Core sample
▣	Analytical laboratory sample
▥	Sample taken with Direct Push or Drive sampler
▥	Sonic

SAMPLER TYPE

C	Core barrel
CA	California split-barrel sampler with 2.5-inch outside diameter and a 1.93-inch inside diameter
D&M	Dames & Moore piston sampler using 2.5-inch outside diameter, thin-walled tube
O	Osterberg piston sampler using 3.0-inch outside diameter, thin-walled Shelby tube
PT	Pitcher tube sampler using 3.0-inch outside diameter, thin-walled Shelby tube
S&H	Sprague & Henwood split-barrel sampler with a 3.0-inch outside diameter and a 2.43-inch inside diameter
SPT	Standard Penetration Test (SPT) split-barrel sampler with a 2.0-inch outside diameter and a 1.5-inch inside diameter
ST	Shelby Tube (3.0-inch outside diameter, thin-walled tube) advanced with hydraulic pressure

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Project
10X GENOMICS BUILDING 1
1701 SPRINGDALE AVE
PLEASANTON
ALAMEDA COUNTY CALIFORNIA

Figure Title
SOIL CLASSIFICATION CHART

Project No. 731745301
Date 12/01/2020
Drawn By AG
Checked By TF

Figure
A-12

APPENDIX B

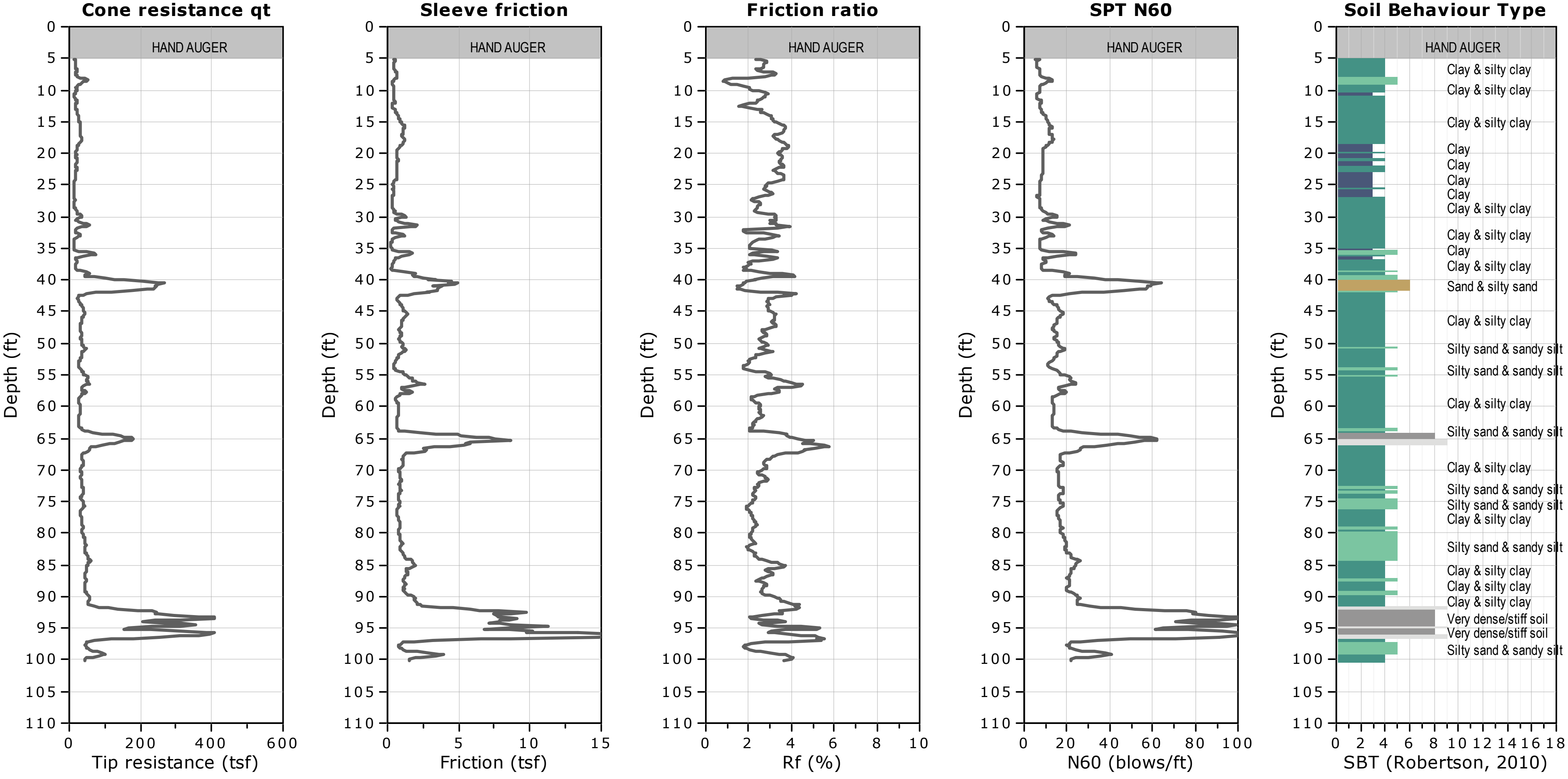
CPT LOGS

GREGG DRILLING, INC.
www.greggdrilling.com

CPT: CPT-01

CLIENT: LANGAN
SITE: 1701 SPRINGDALE AVENUE, PLEASANTON, CA

FIELD REP: TIM FORREST
Total depth: 100.07 ft, Date: 5/7/2019



SBTn legend

- 🟥 1. Sensitive fine grained
- 🟫 2. Organic material
- 🟦 3. Clay to silty clay
- 🟩 4. Clayey silt to silty clay
- 🟩 5. Silty sand to sandy silt
- 🟫 6. Clean sand to silty sand
- 🟧 7. Gravely sand to sand
- ⬛ 8. Very stiff sand to clayey sand
- ⬜ 9. Very stiff fine grained

GREGG DRILLING, INC.
www.greggdrilling.com

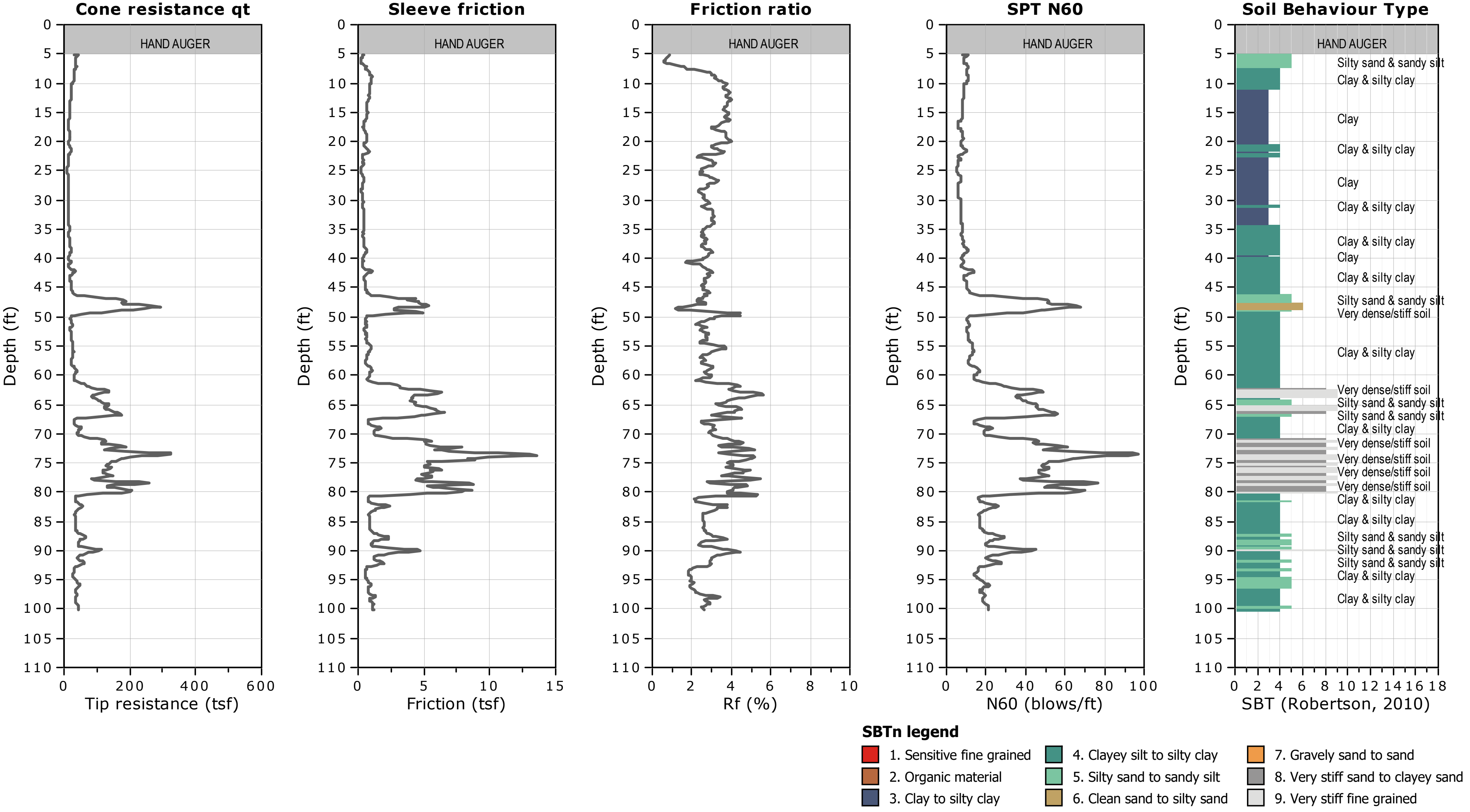
CPT: CPT-02

CLIENT: LANGAN

SITE: 1701 SPRINGDALE AVENUE, PLEASANTON, CA

FIELD REP: TIM FORREST

Total depth: 100.23 ft, Date: 5/7/2019



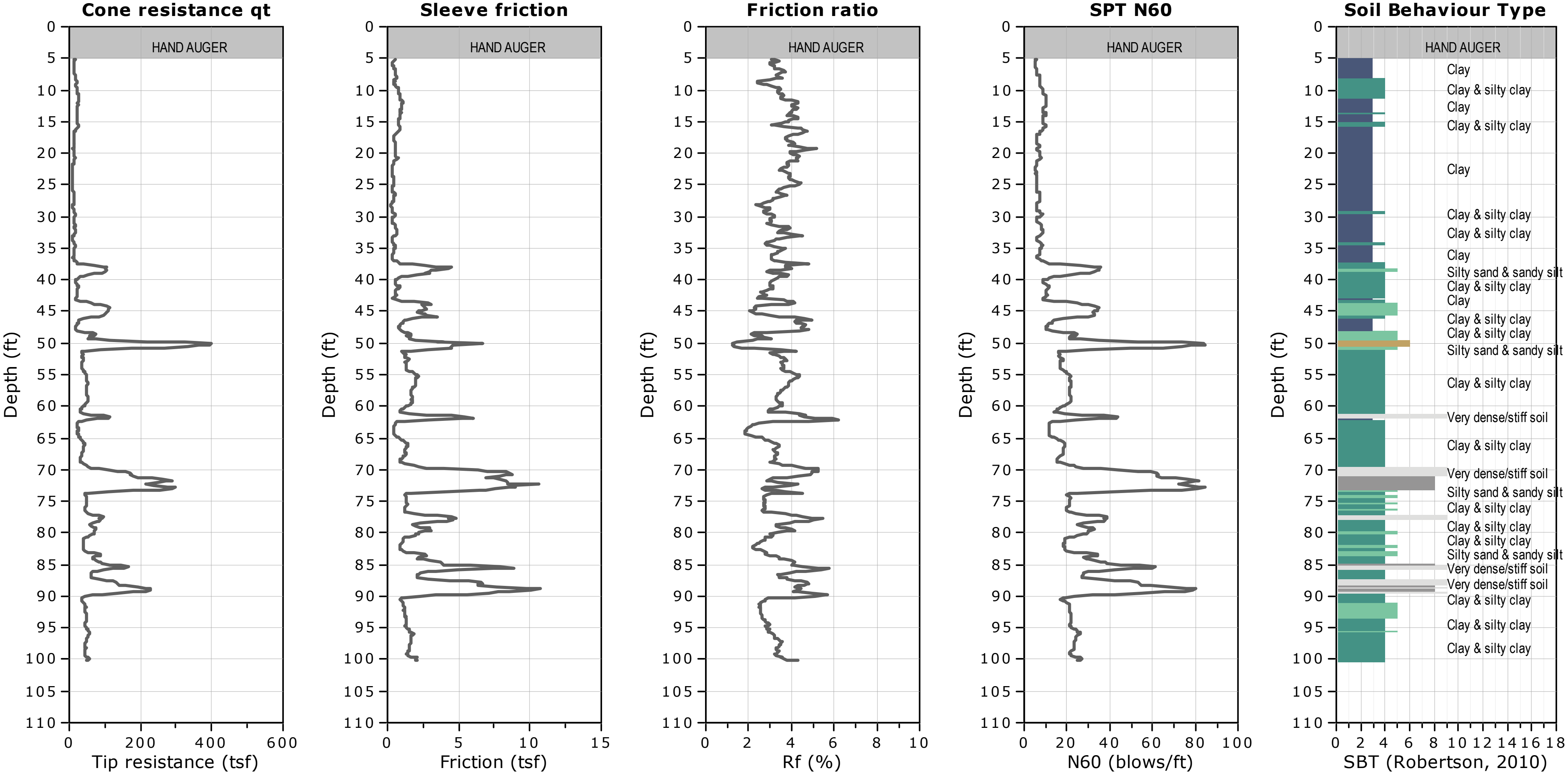
CPT: CPT-03

CLIENT: LANGAN

SITE: 1701 SPRINGDALE AVENUE, PLEASANTON, CA

FIELD REP: TIM FORREST

Total depth: 100.23 ft, Date: 5/7/2019



SBTn legend

🟥 1. Sensitive fine grained	🟩 4. Clayey silt to silty clay	🟧 7. Gravely sand to sand
🟫 2. Organic material	🟩 5. Silty sand to sandy silt	⬛ 8. Very stiff sand to clayey sand
🟦 3. Clay to silty clay	🟫 6. Clean sand to silty sand	⬜ 9. Very stiff fine grained

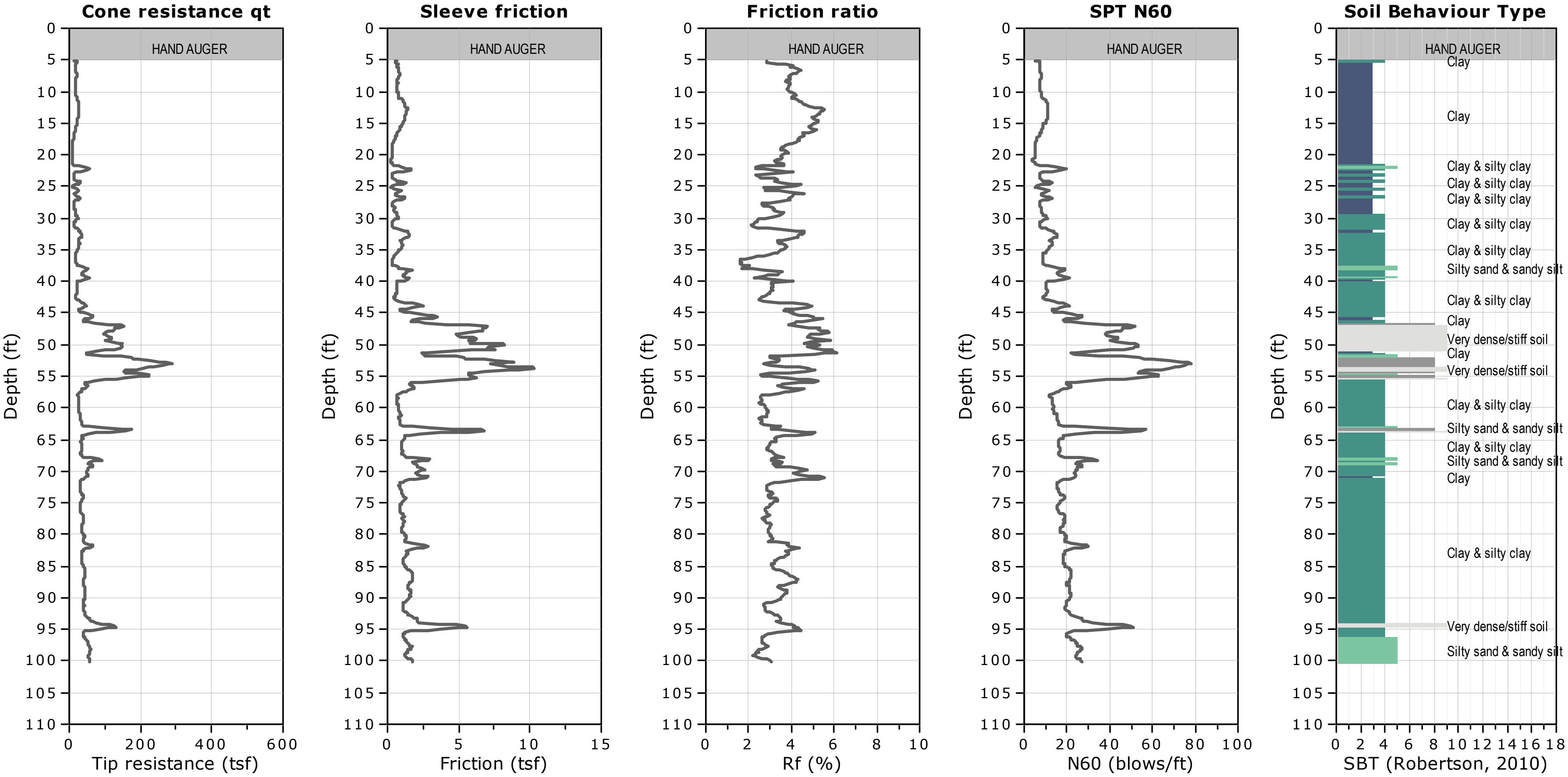
CPT: CPT-04

CLIENT: LANGAN

SITE: 1701 SPRINGDALE AVENUE, PLEASANTON, CA

FIELD REP: TIM FORREST

Total depth: 100.23 ft, Date: 5/7/2019



SBTn legend

- 🟥 1. Sensitive fine grained
- 🟫 2. Organic material
- 🟦 3. Clay to silty clay
- 🟩 4. Clayey silt to silty clay
- 🟩 5. Silty sand to sandy silt
- 🟫 6. Clean sand to silty sand
- 🟧 7. Gravely sand to sand
- ⬛ 8. Very stiff sand to clayey sand
- ⬜ 9. Very stiff fine grained

Gregg Drilling, LLC
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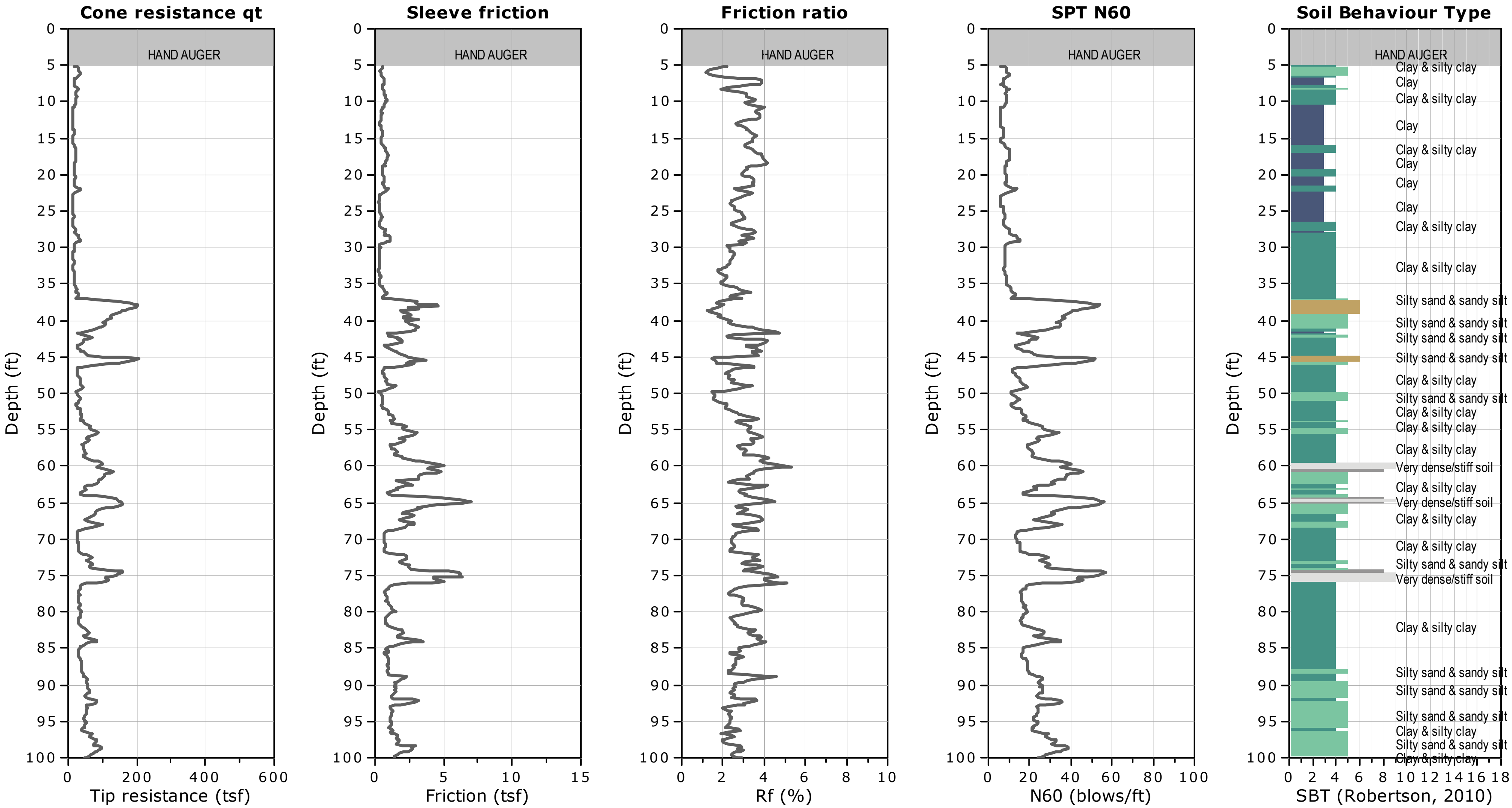
CPT: CPT-05

CLIENT: LANGAN

SITE: 1701 SPRINGDALE AVE., PLEASANTON, CA

FIELD REP: TIM FORREST

Total depth: 100.07 ft, Date: 1/15/2020



🟥 1. Sensitive fine grained
🟫 2. Organic material
🟦 3. Clay to silty clay
🟩 4. Clayey silt to silty clay
🟩 5. Silty sand to sandy silt
🟨 6. Clean sand to silty sand
🟧 7. Gravely sand to sand
⬛ 8. Very stiff sand to clayey
⬜ 9. Very stiff fine grained

Gregg Drilling, LLC
www.greggdrilling.com

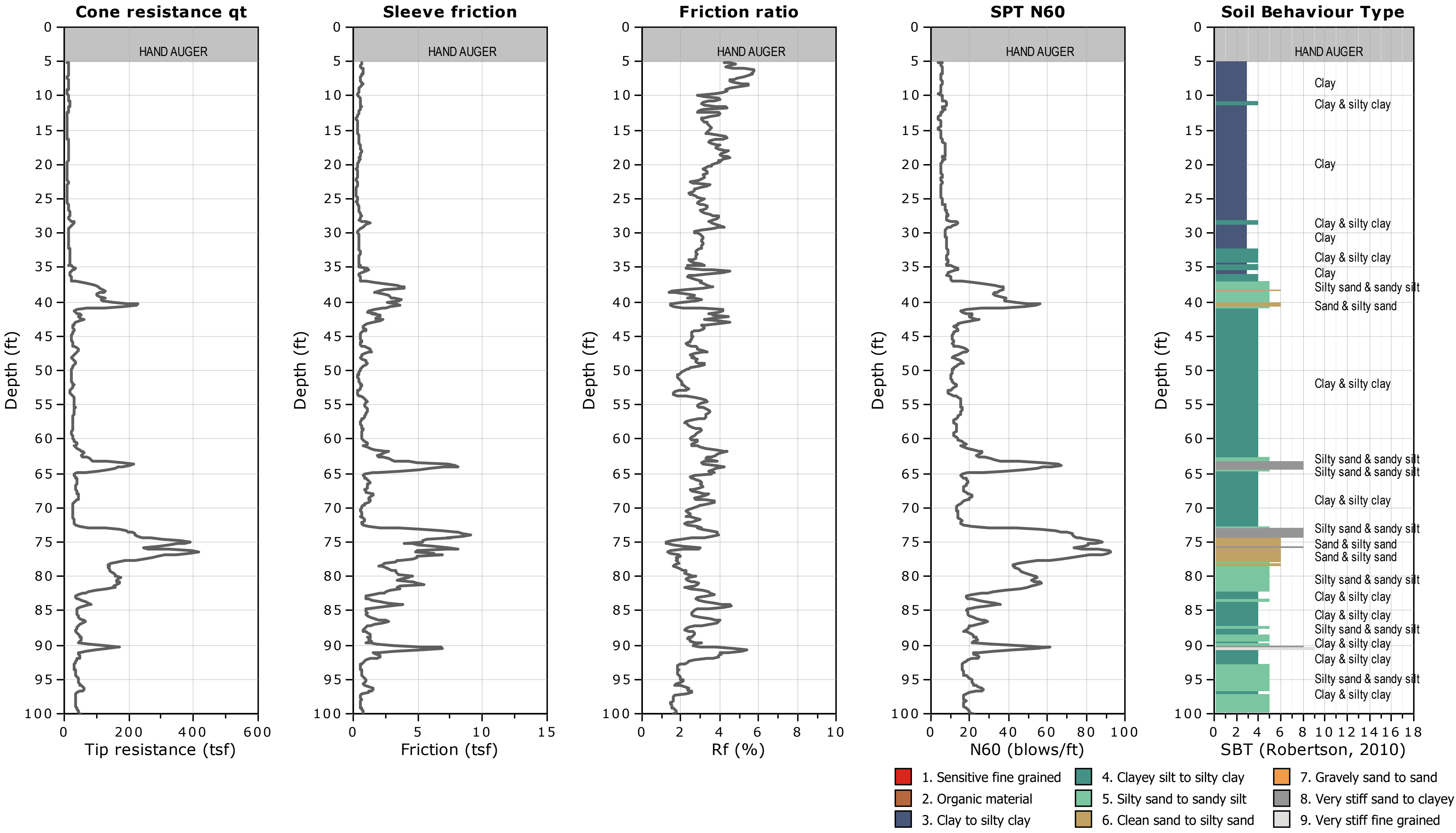
CPT: CPT-06

CLIENT: LANGAN

SITE: 1701 SPRINGDALE AVE., PLEASANTON, CA

FIELD REP: TIM FORREST

Total depth: 100.39 ft, Date: 1/14/2020



Gregg Drilling, LLC
www.greggdrilling.com

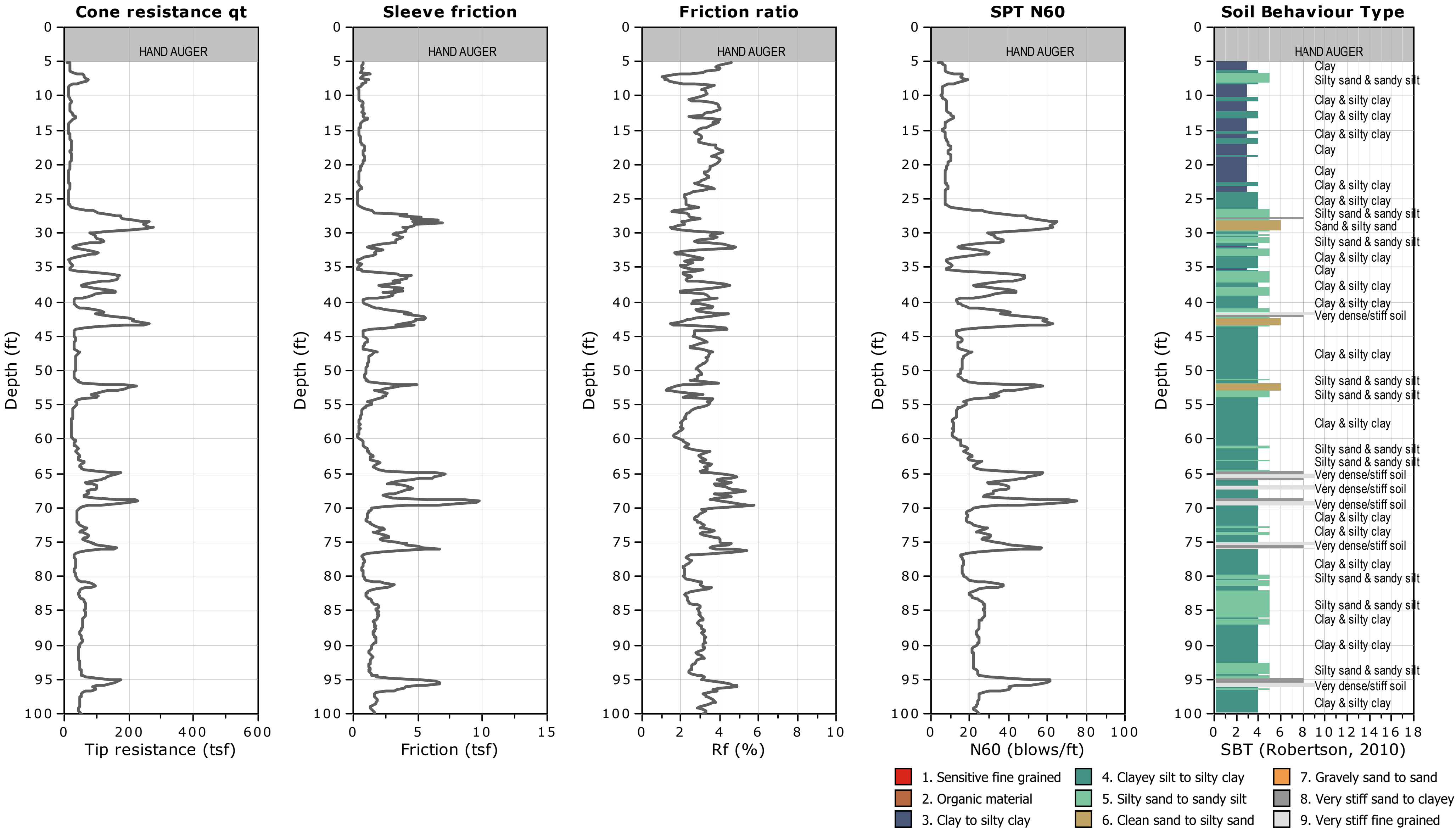
CPT: CPT-07

CLIENT: LANGAN

SITE: 1701 SPRINGDALE AVE., PLEASANTON, CA

FIELD REP: TIM FORREST

Total depth: 100.07 ft, Date: 1/15/2020



Gregg Drilling, LLC
www.greggdrilling.com

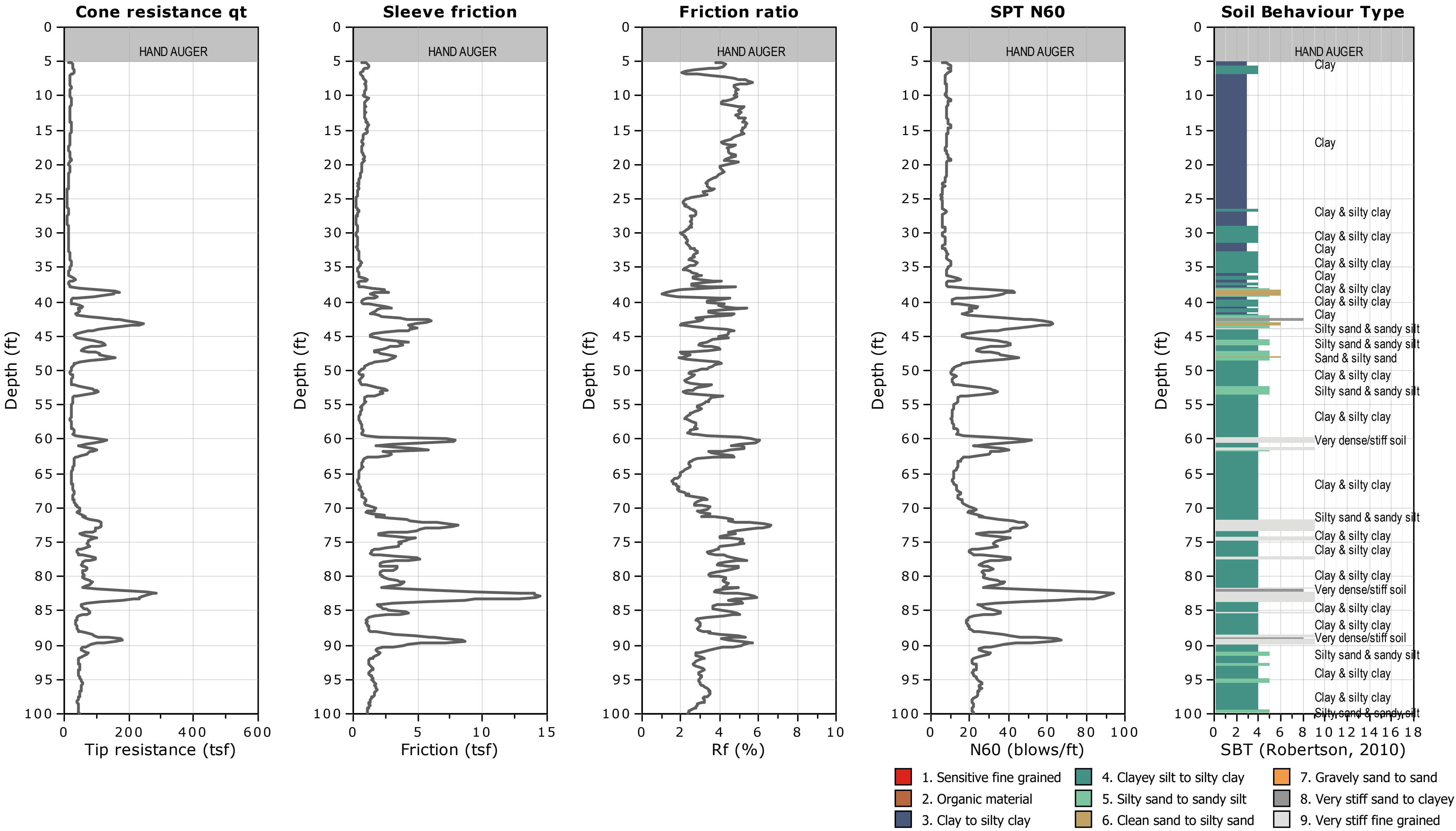
CPT: CPT-08

CLIENT: LANGAN

SITE: 1701 SPRINGDALE AVE., PLEASANTON, CA

FIELD REP: TIM FORREST

Total depth: 100.07 ft, Date: 1/13/2020



Gregg Drilling, LLC
www.greggdrilling.com

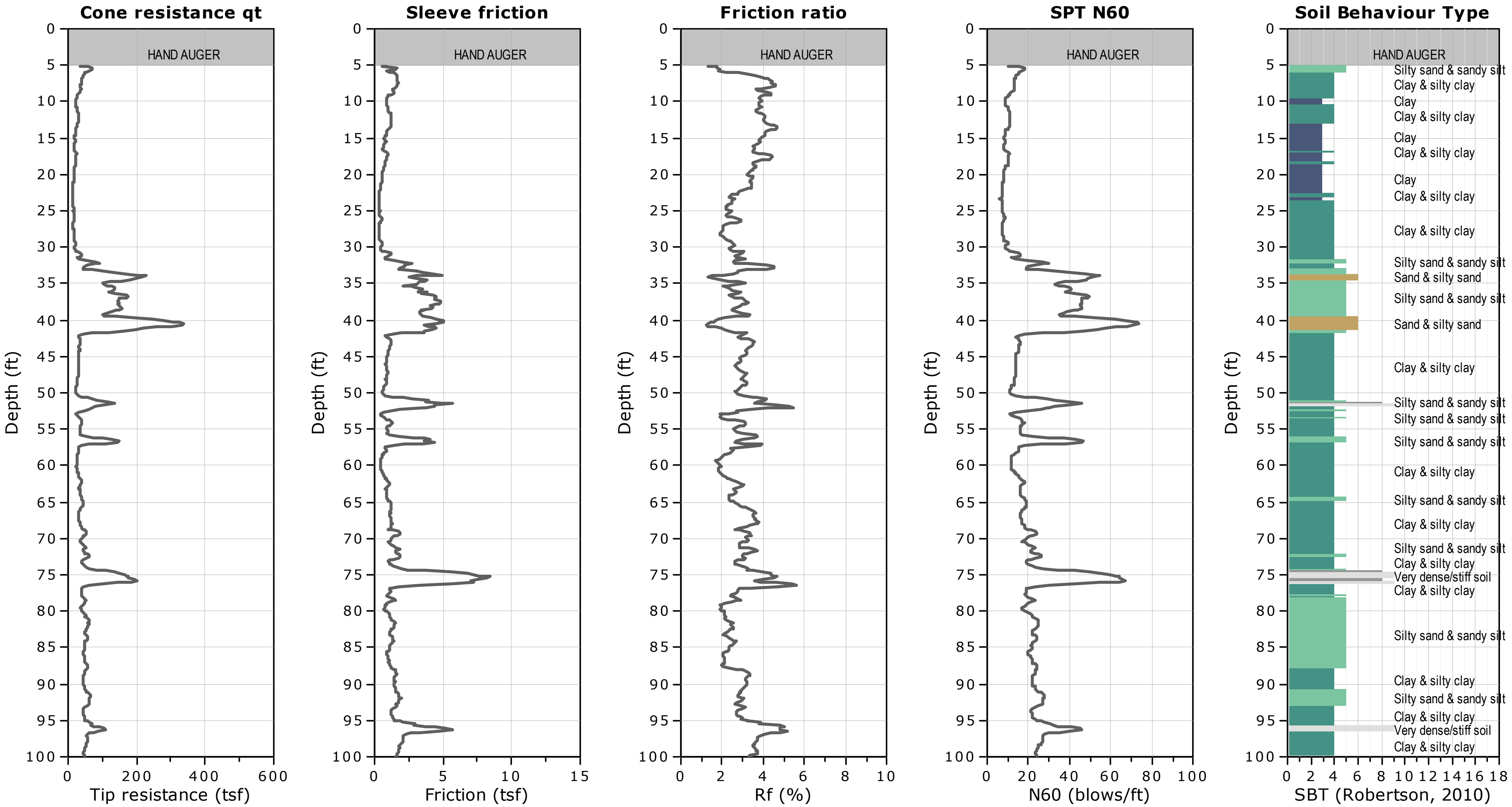
CPT: CPT-09

CLIENT: LANGAN

SITE: 1701 SPRINGDALE AVE., PLEASANTON, CA

FIELD REP: TIM FORREST

Total depth: 100.56 ft, Date: 1/16/2020



🟥 1. Sensitive fine grained	🟩 4. Clayey silt to silty clay	🟧 7. Gravely sand to sand
🟫 2. Organic material	🟩 5. Silty sand to sandy silt	⬛ 8. Very stiff sand to clayey
🟦 3. Clay to silty clay	🟨 6. Clean sand to silty sand	⬜ 9. Very stiff fine grained

Gregg Drilling, LLC
www.greggdrilling.com

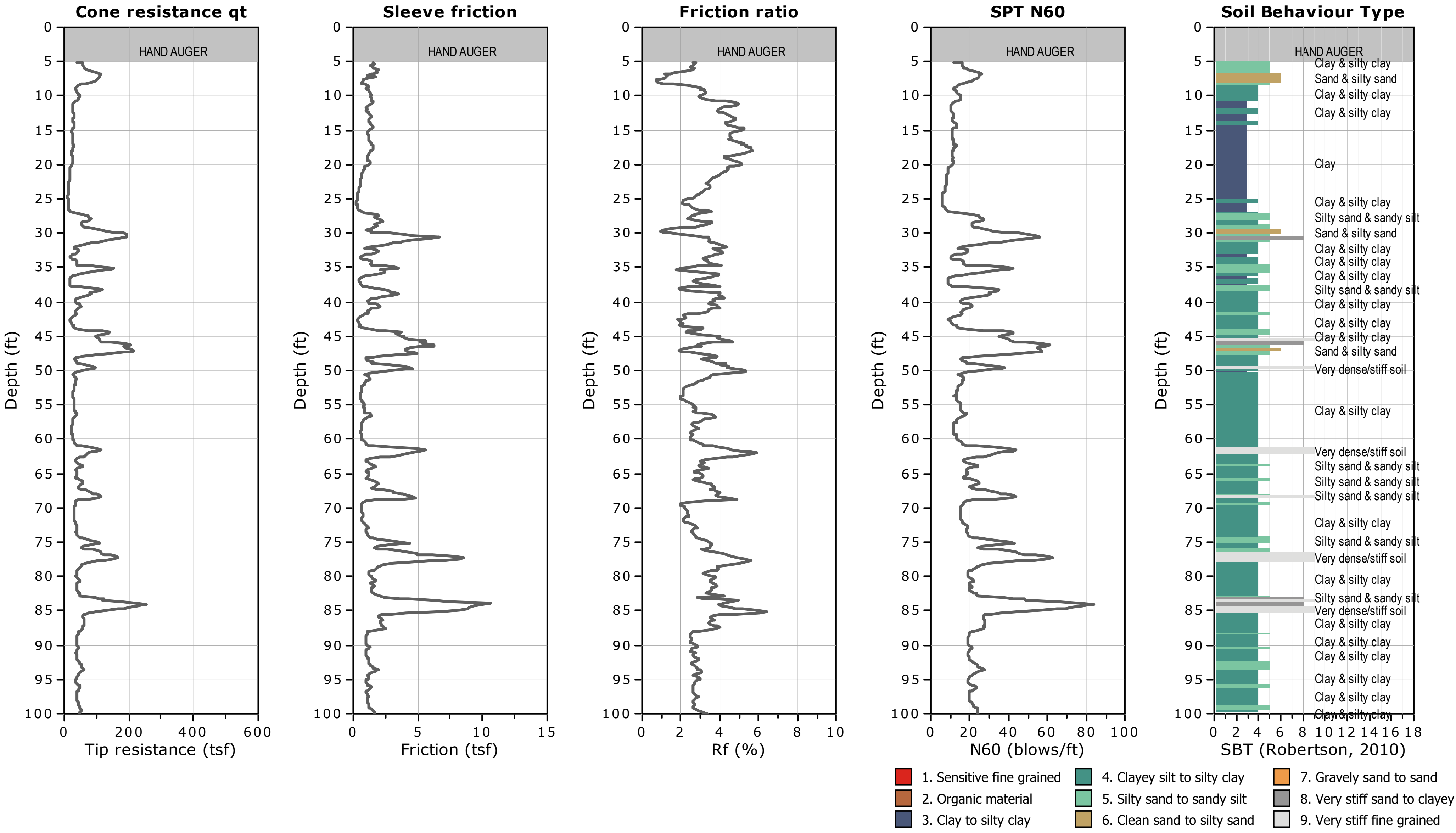
CPT: CPT-10

CLIENT: LANGAN

SITE: 1701 SPRINGDALE AVE., PLEASANTON, CA

FIELD REP: TIM FORREST

Total depth: 100.56 ft, Date: 1/16/2020



Gregg Drilling, LLC
www.greggdrilling.com

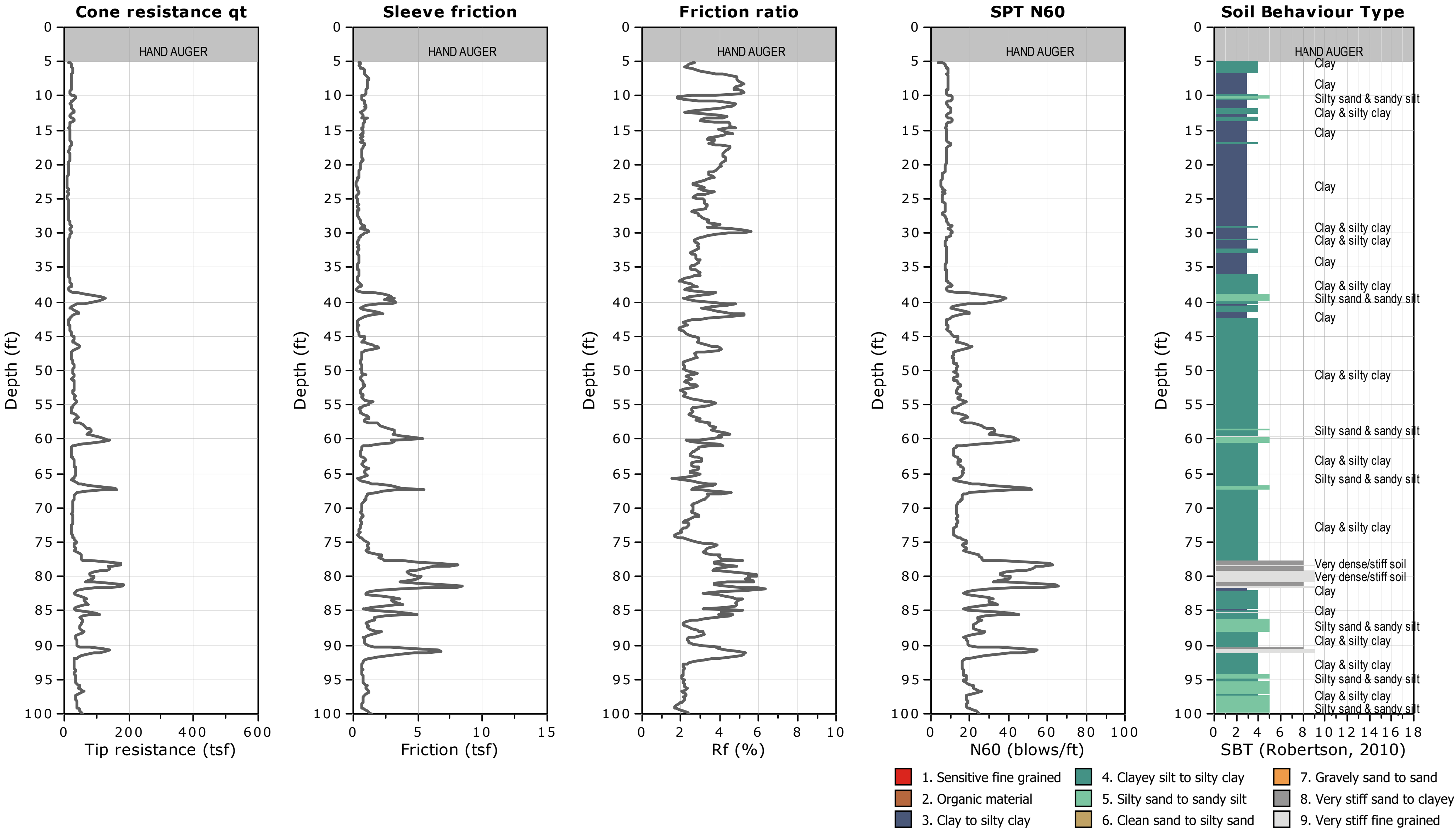
CPT: CPT-11

CLIENT: LANGAN

SITE: 1701 SPRINGDALE AVE., PLEASANTON, CA

FIELD REP: TIM FORREST

Total depth: 100.72 ft, Date: 1/14/2020



Gregg Drilling, LLC
www.greggdrilling.com

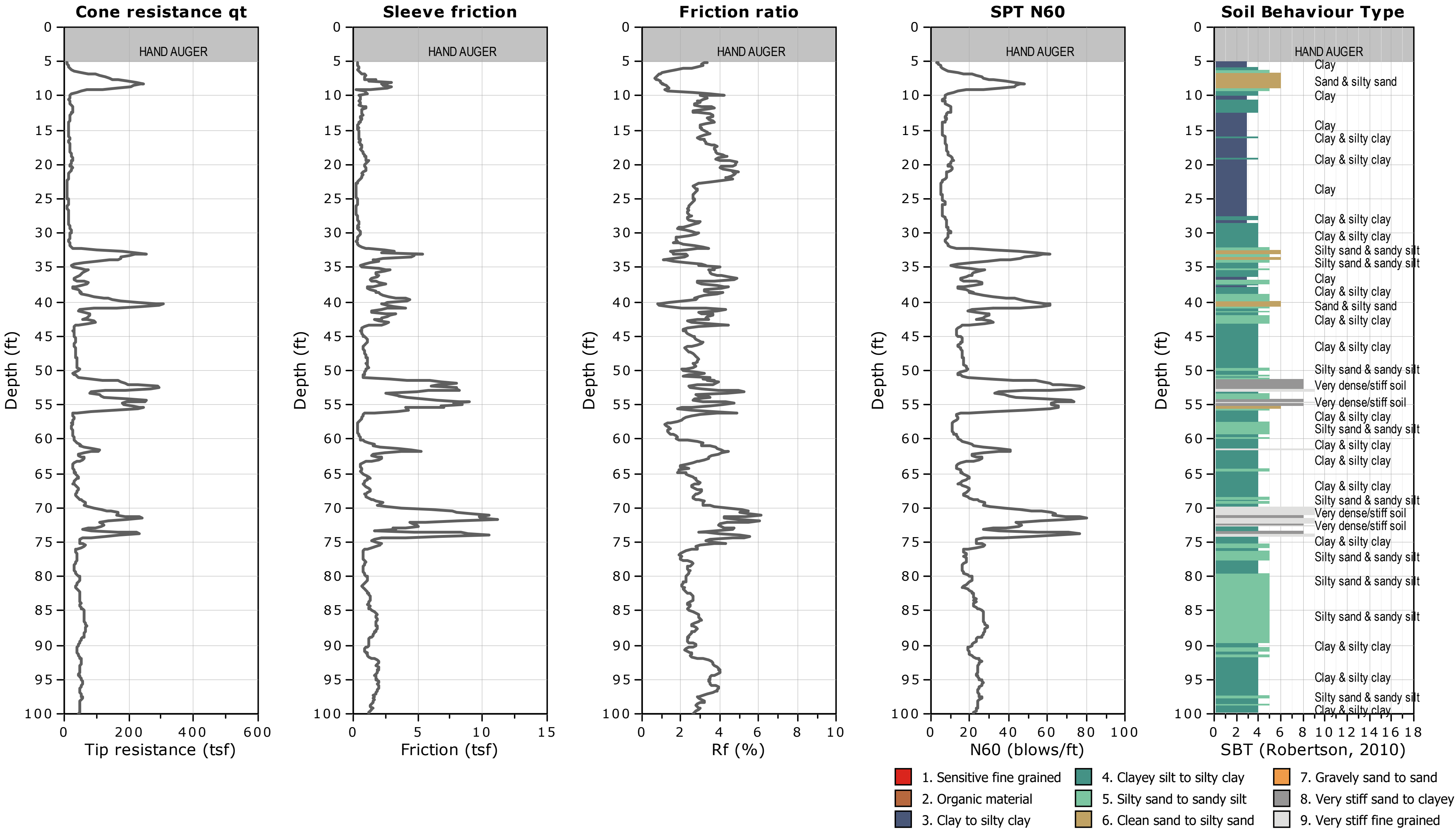
CPT: CPT-12

CLIENT: LANGAN

SITE: 1701 SPRINGDALE AVE., PLEASANTON, CA

FIELD REP: TIM FORREST

Total depth: 100.07 ft, Date: 1/14/2020



CPeT-IT v.19.0.1.22 - CPTU data presentation & interpretation software - Report created on: 1/17/2020, 10:32:34 AM
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Gregg Drilling, LLC
www.greggdrilling.com

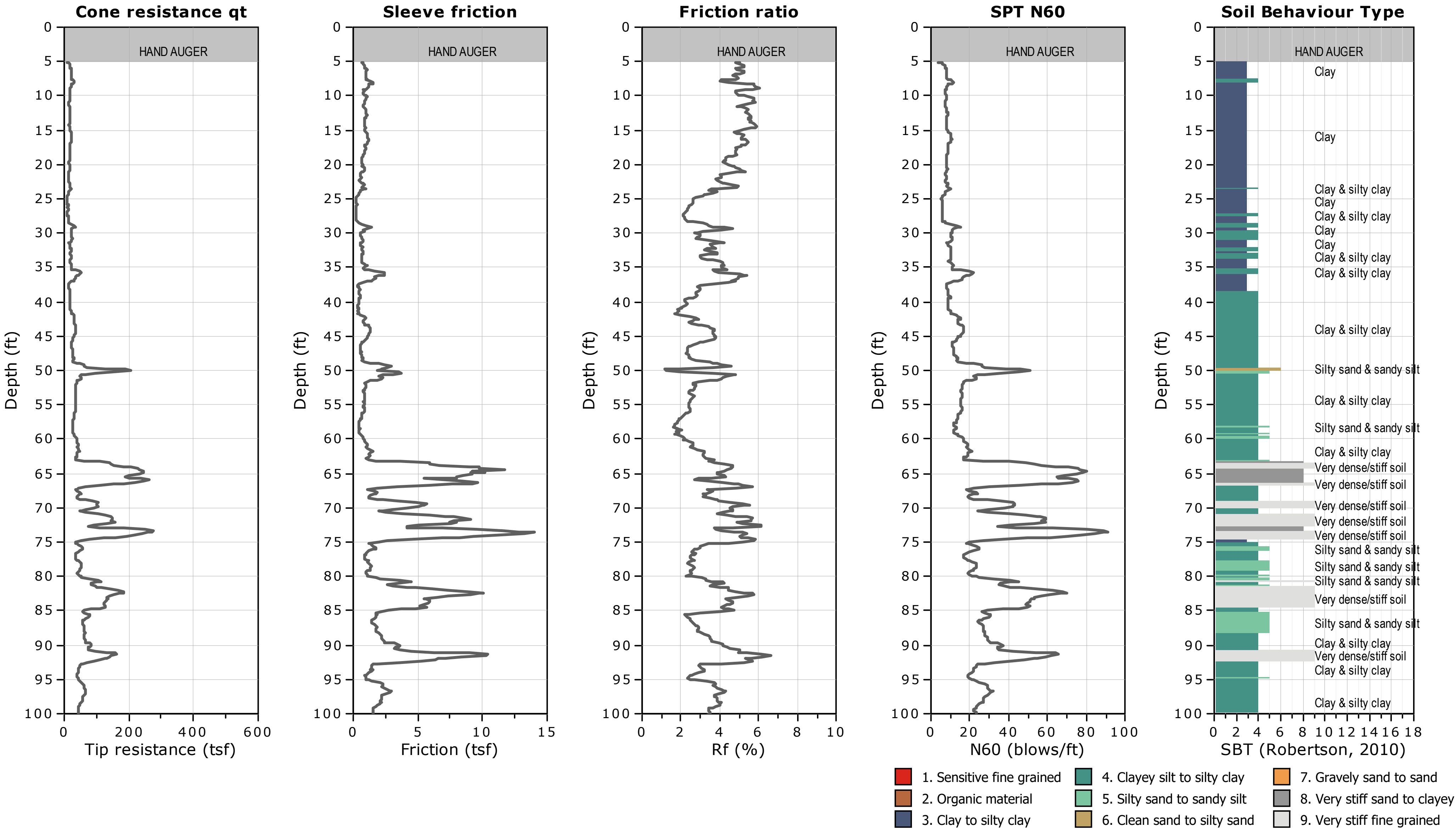
CPT: CPT-13

CLIENT: LANGAN

SITE: 1701 SPRINGDALE AVE., PLEASANTON, CA

FIELD REP:

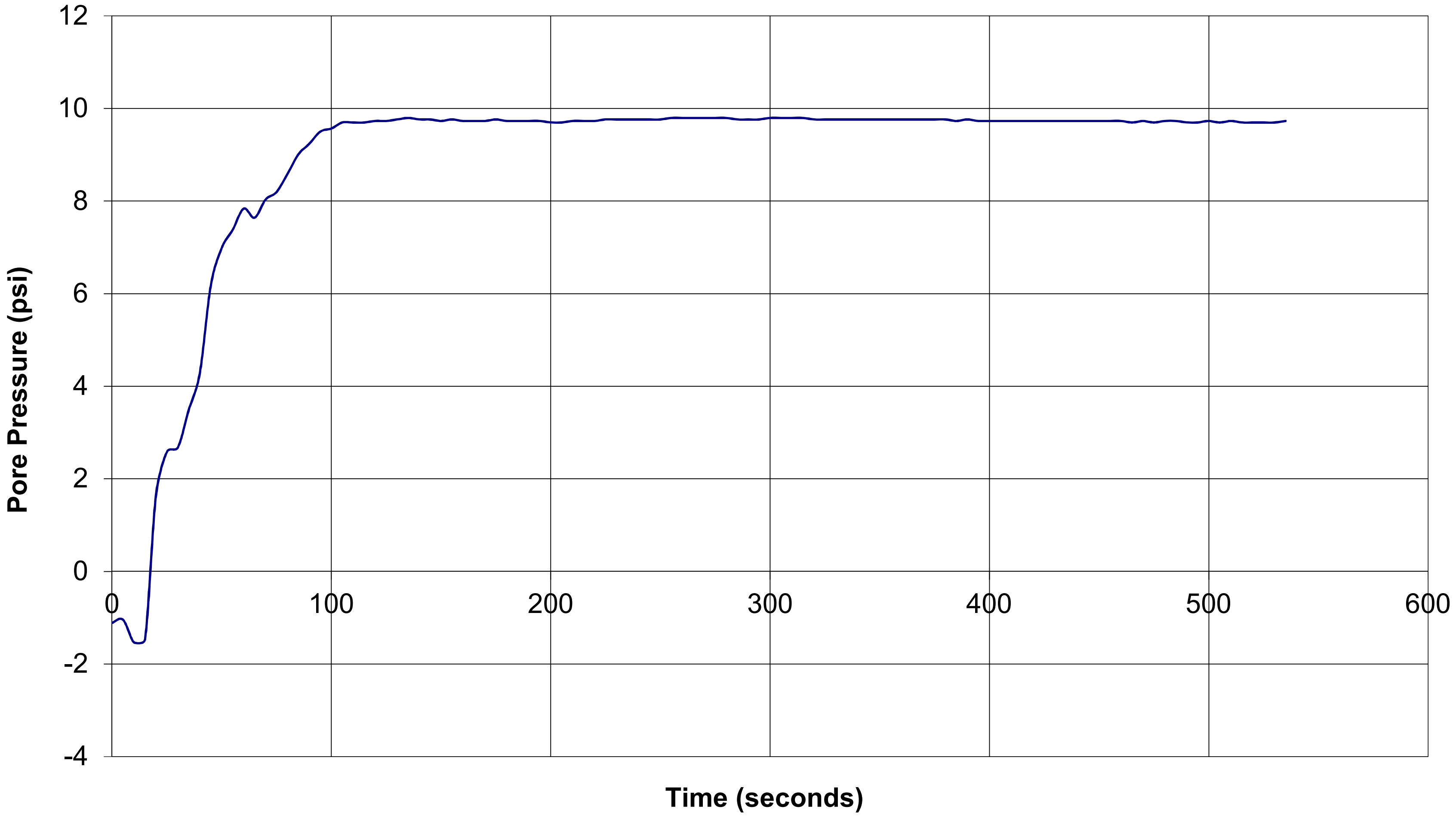
Total depth: 101.54 ft, Date: 1/13/2020



GREGG DRILLING & TESTING

Pore Pressure Dissipation Test

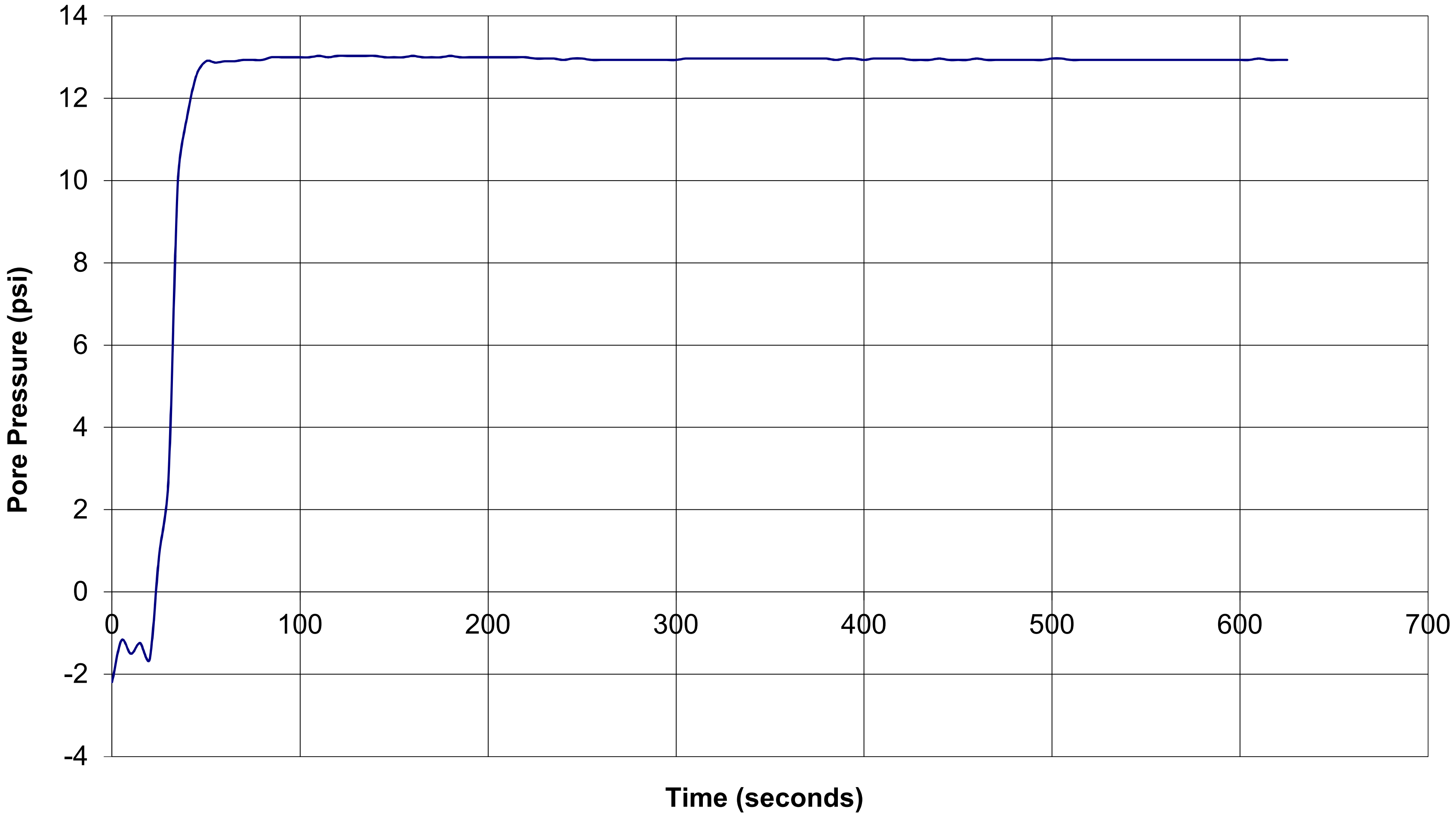
Sounding:	CPT-01
Depth:	41.010375
Site:	1701 Springdale
Engineer:	Tim Forrest



GREGG DRILLING & TESTING

Pore Pressure Dissipation Test

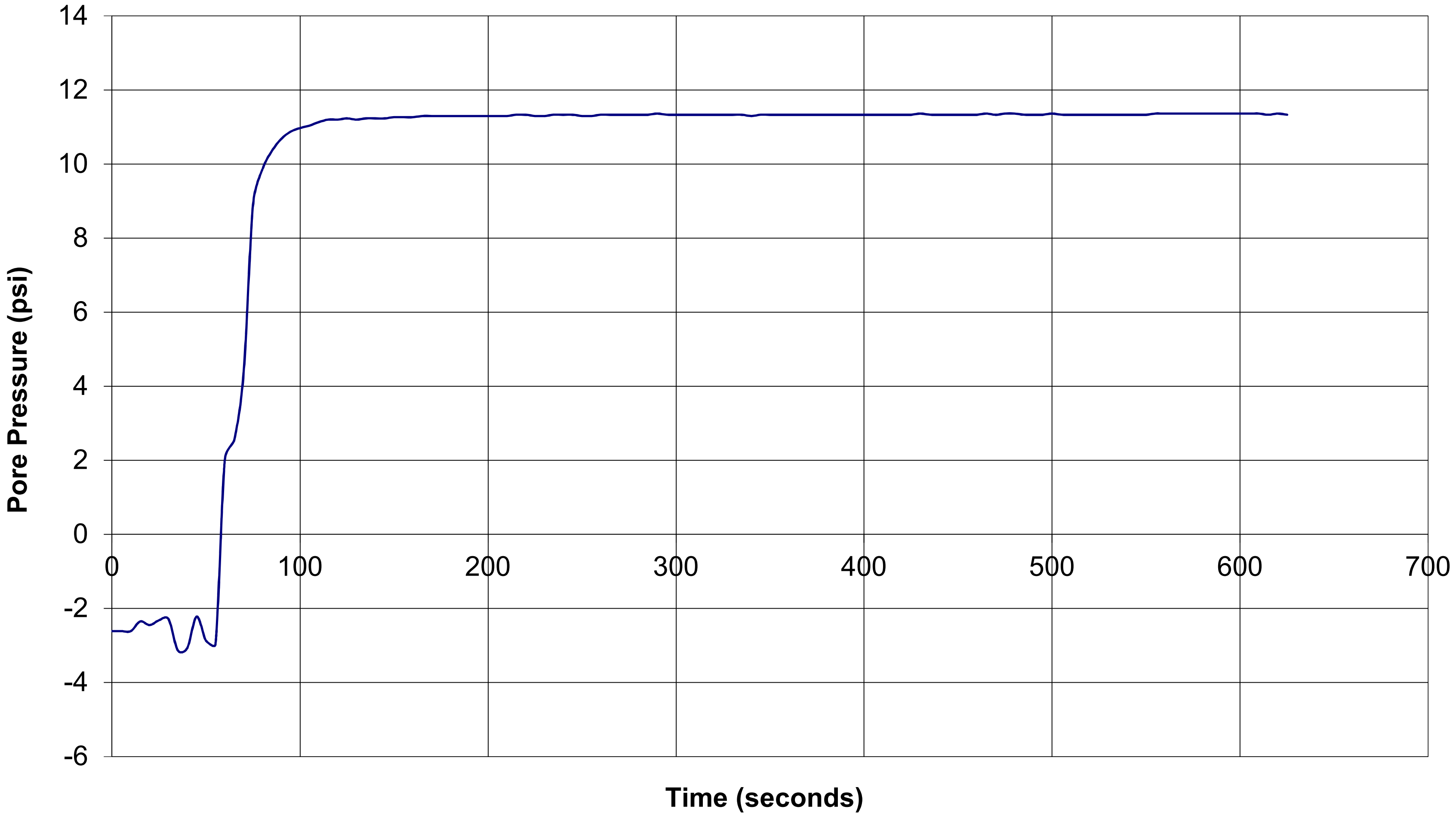
Sounding: CPT-02
Depth: 47.243952
Site: 1701 Springdale
Engineer: Tim Forrest



GREGG DRILLING & TESTING

Pore Pressure Dissipation Test

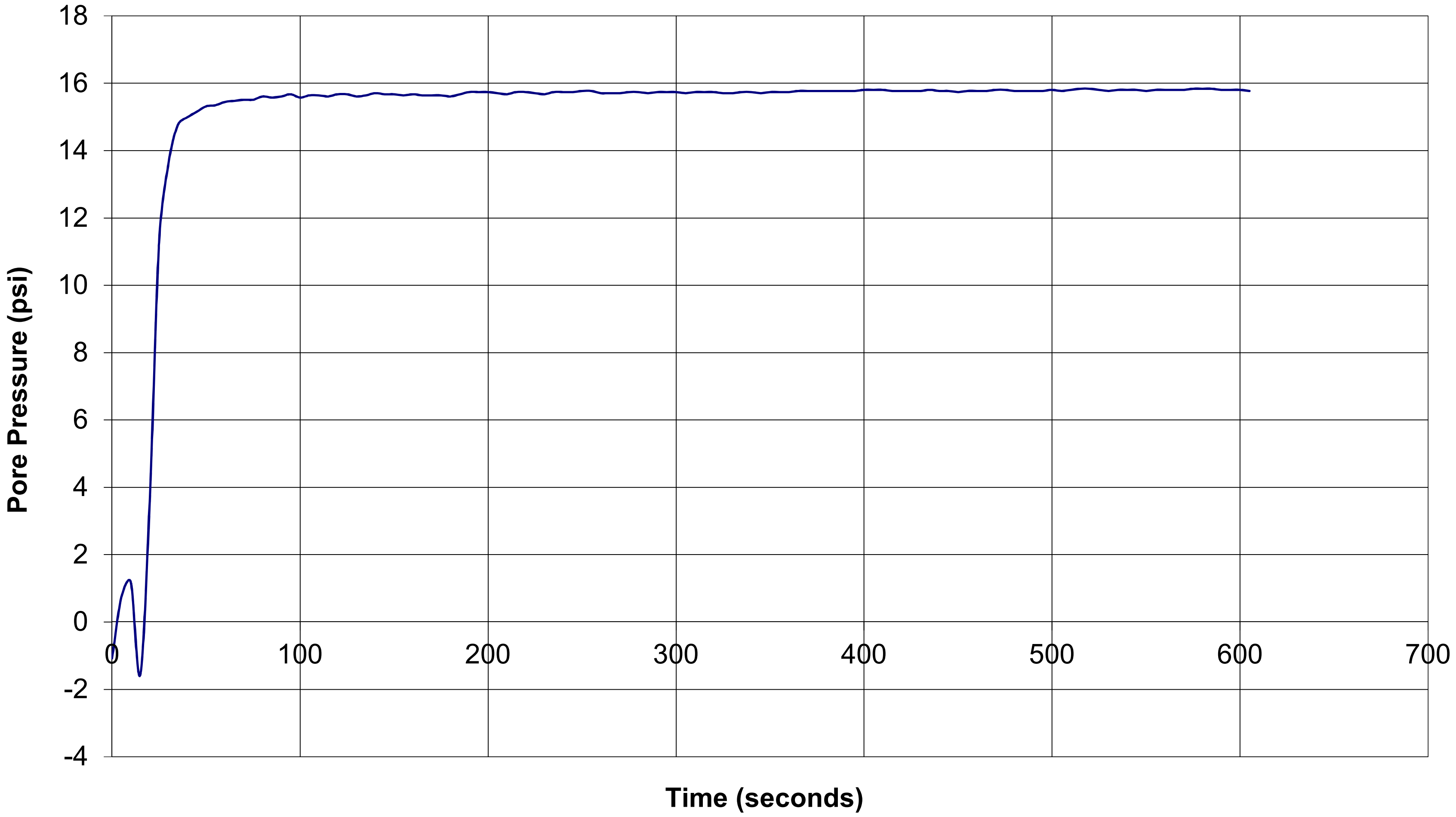
Sounding: CPT-03
Depth: 44.291205
Site: 1701 Springdale
Engineer: Tim Forrest



GREGG DRILLING & TESTING

Pore Pressure Dissipation Test

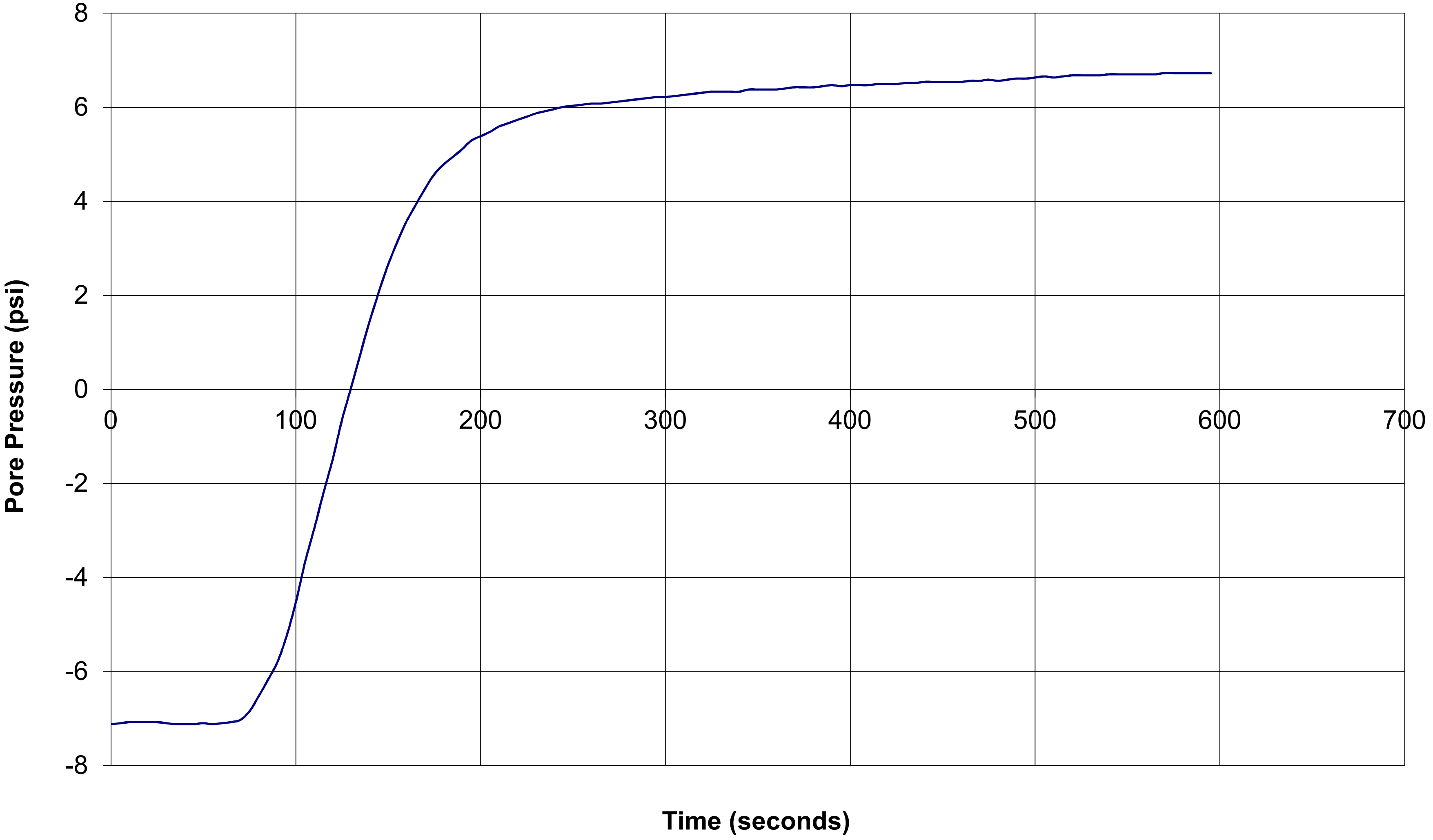
Sounding: CPT-04
Depth: 54.9539025
Site: 1701 Springdale
Engineer: Tim Forrest



GREGG DRILLING & TESTING

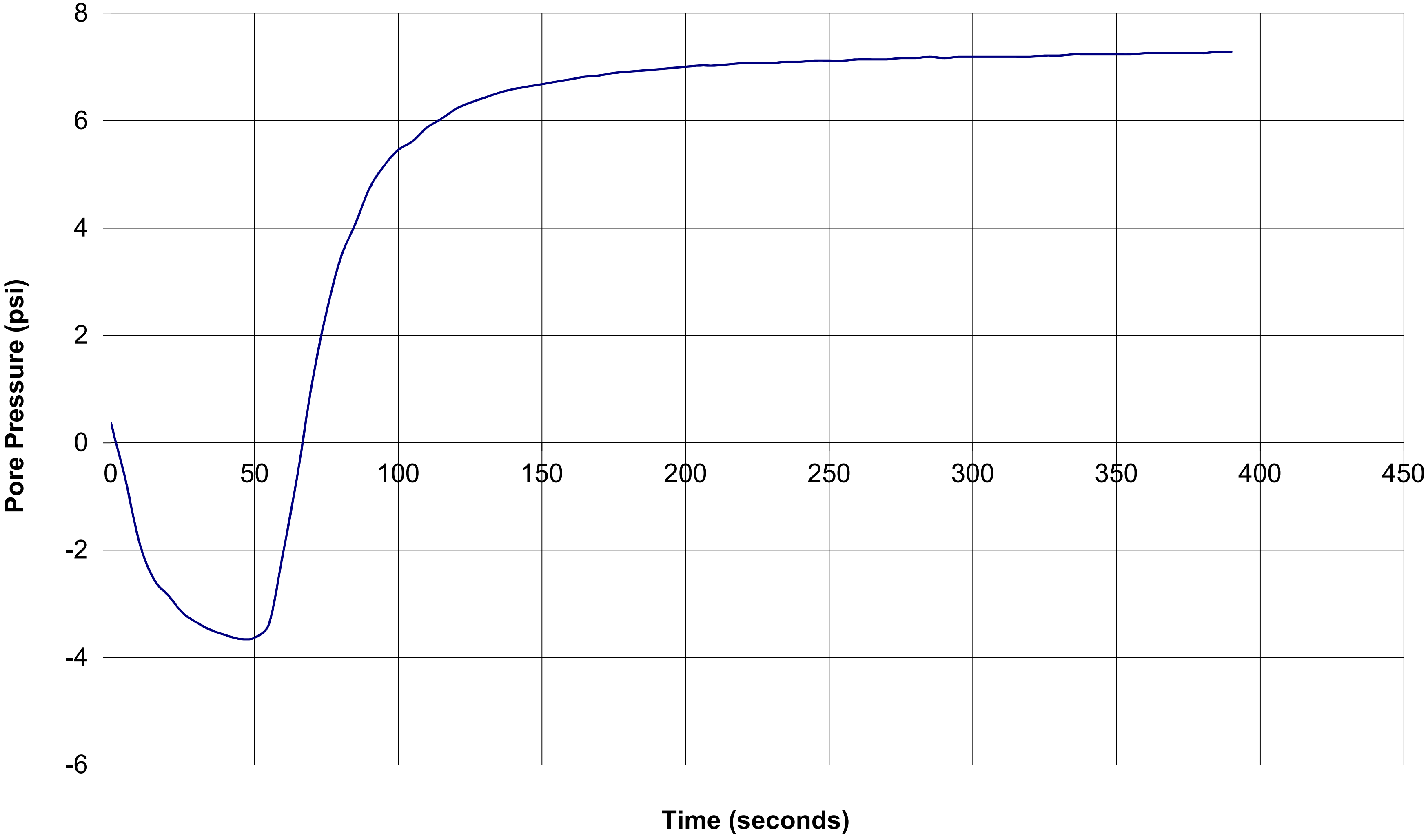
Pore Pressure Dissipation Test

Sounding: CPT-05
Depth (ft): 40.19
Site: 1701 SPRINGDALE A
Engineer: TIM FORREST



Pore Pressure Dissipation Test

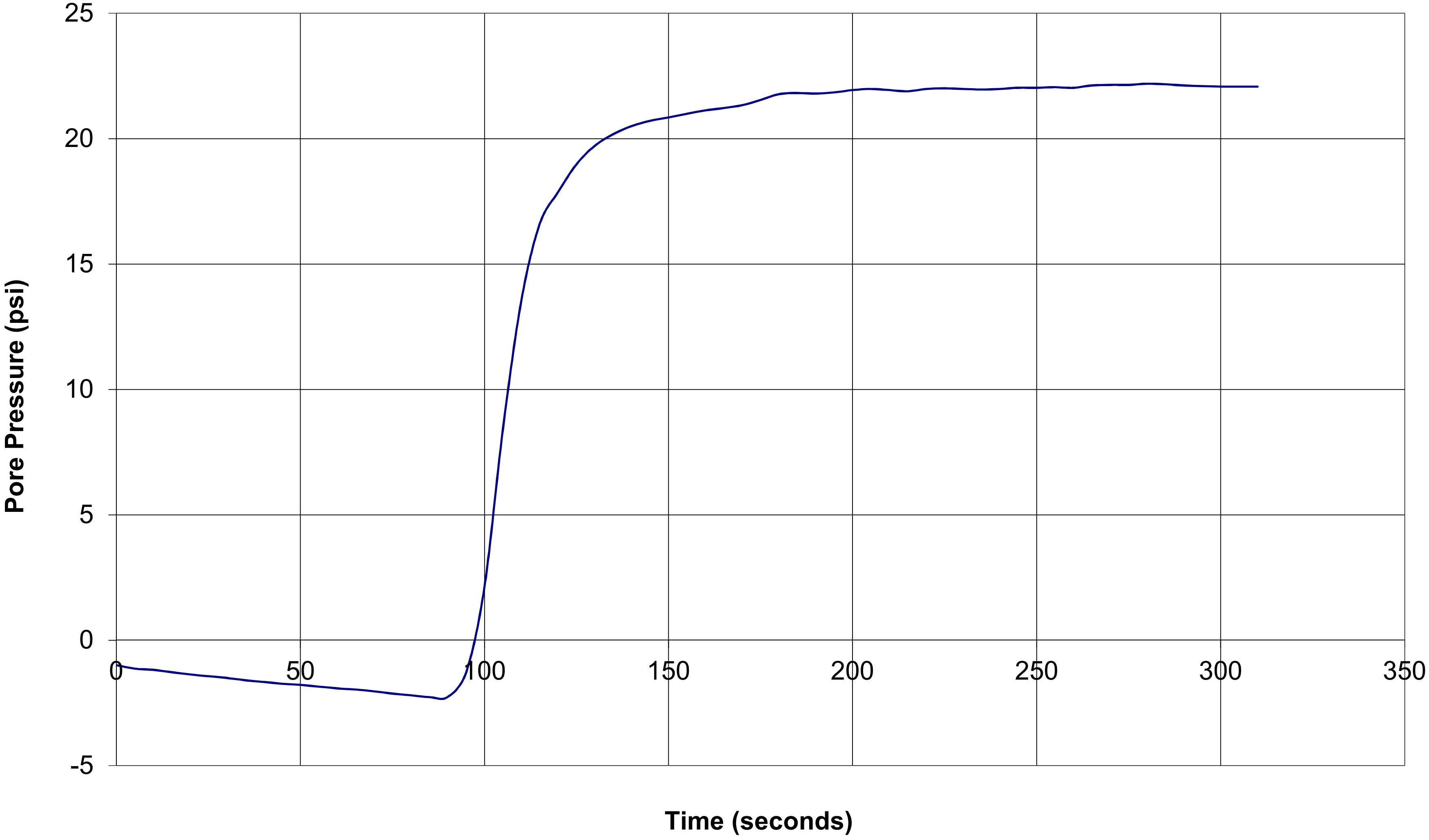
Sounding: CPT-06
Depth (ft): 38.39
Site: 1701 SPRINGDALE A
Engineer: TIM FORREST



GREGG DRILLING & TESTING

Pore Pressure Dissipation Test

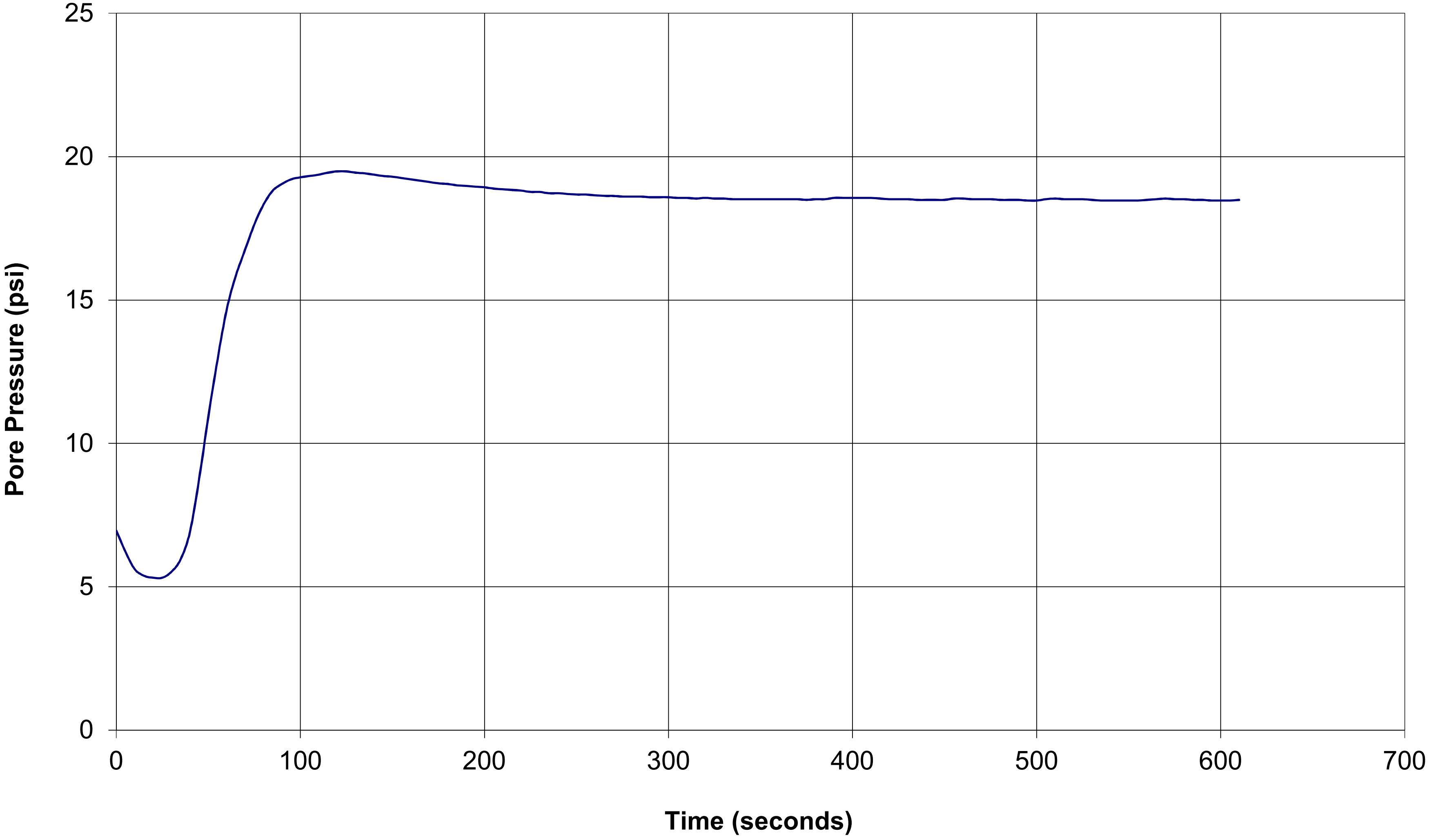
Sounding: CPT-06
Depth (ft): 75.13
Site: 1701 SPRINGDALE A
Engineer: TIM FORREST



GREGG DRILLING & TESTING

Pore Pressure Dissipation Test

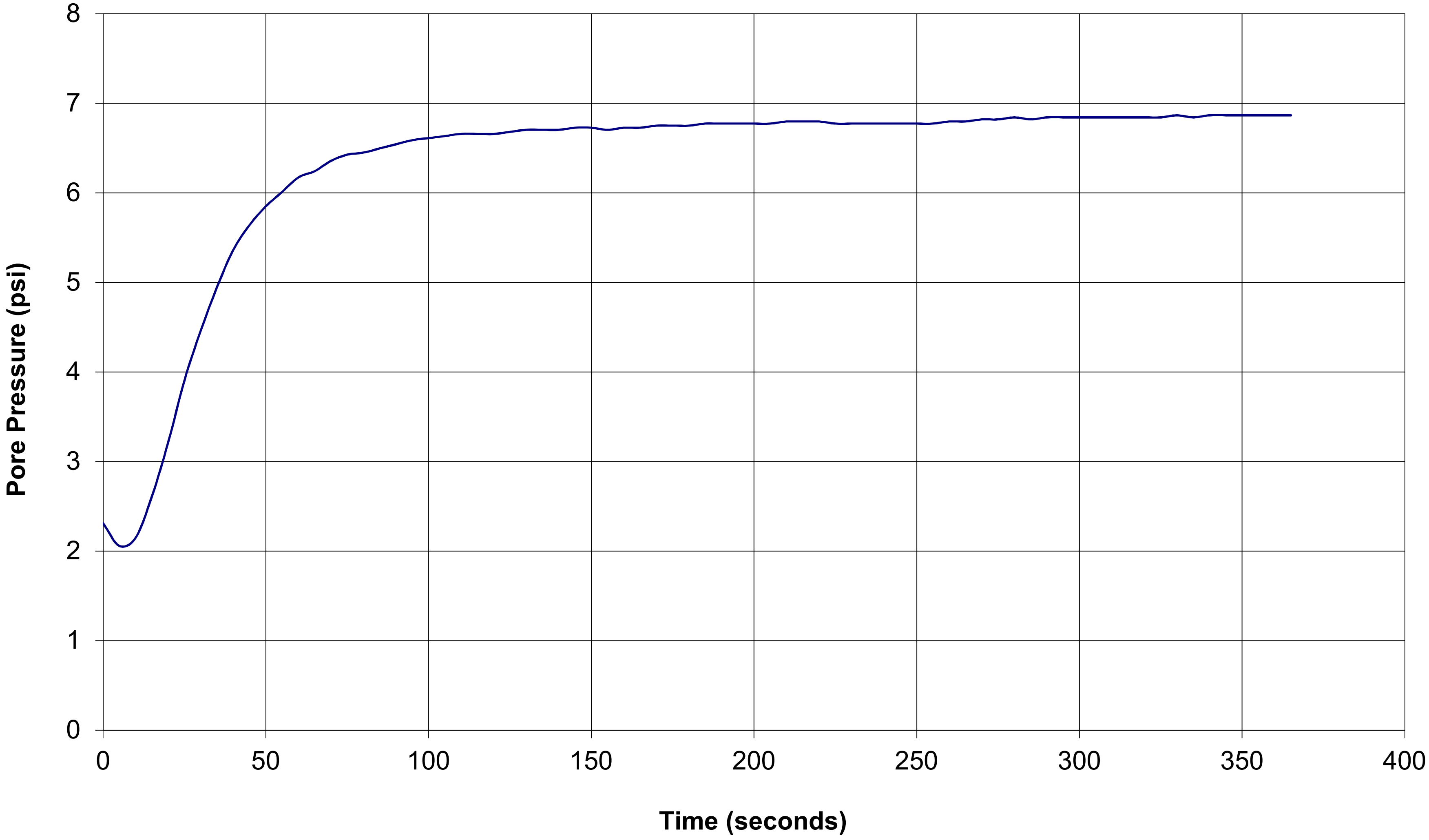
Sounding: CPT-07
Depth (ft): 64.96
Site: 1701 SPRINGDALE A
Engineer: TIM FORREST



GREGG DRILLING & TESTING

Pore Pressure Dissipation Test

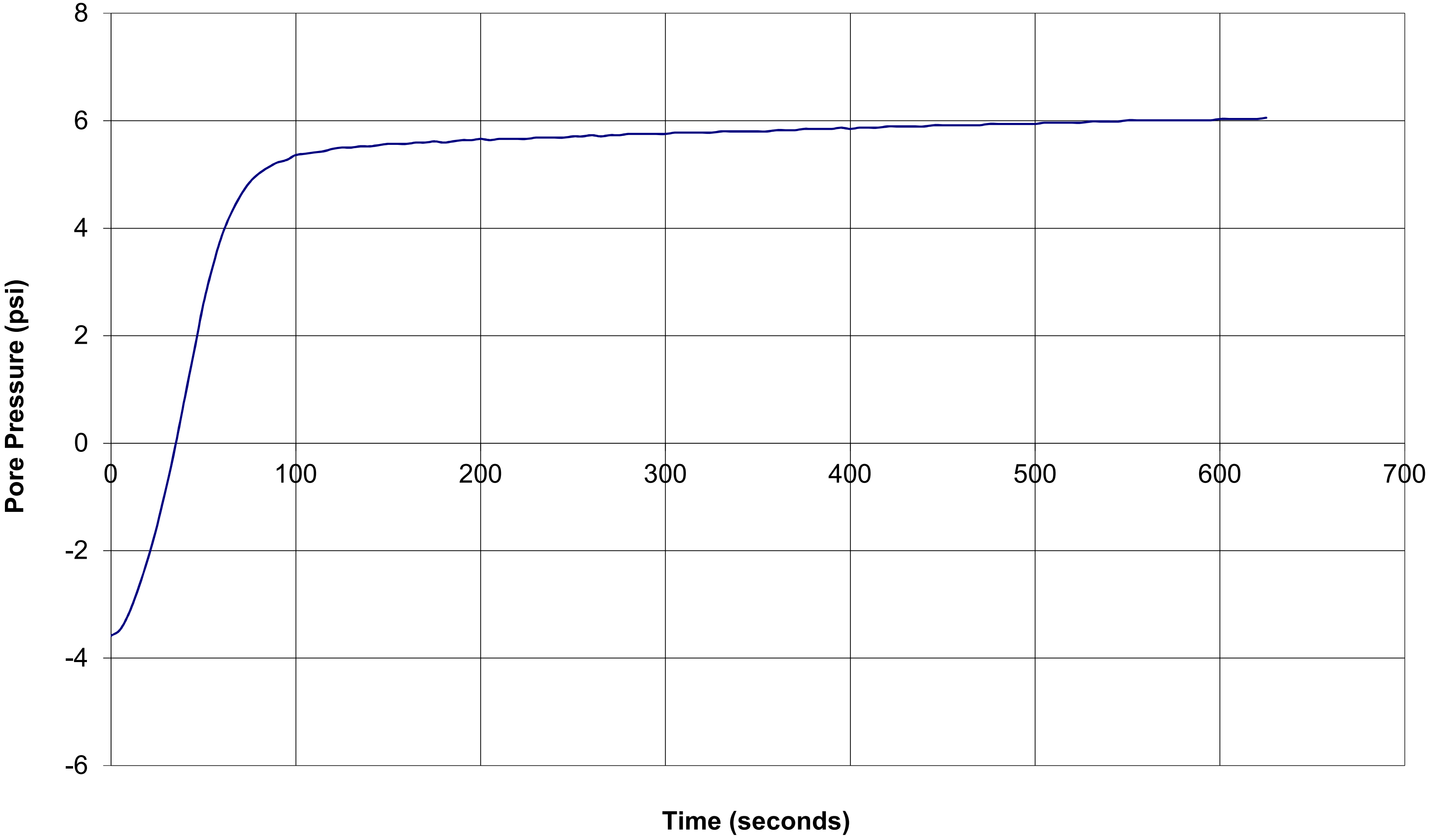
Sounding: CPT-08
Depth (ft): 38.55
Site: 1701 SPRINGDALE A
Engineer: TIM FORREST



GREGG DRILLING & TESTING

Pore Pressure Dissipation Test

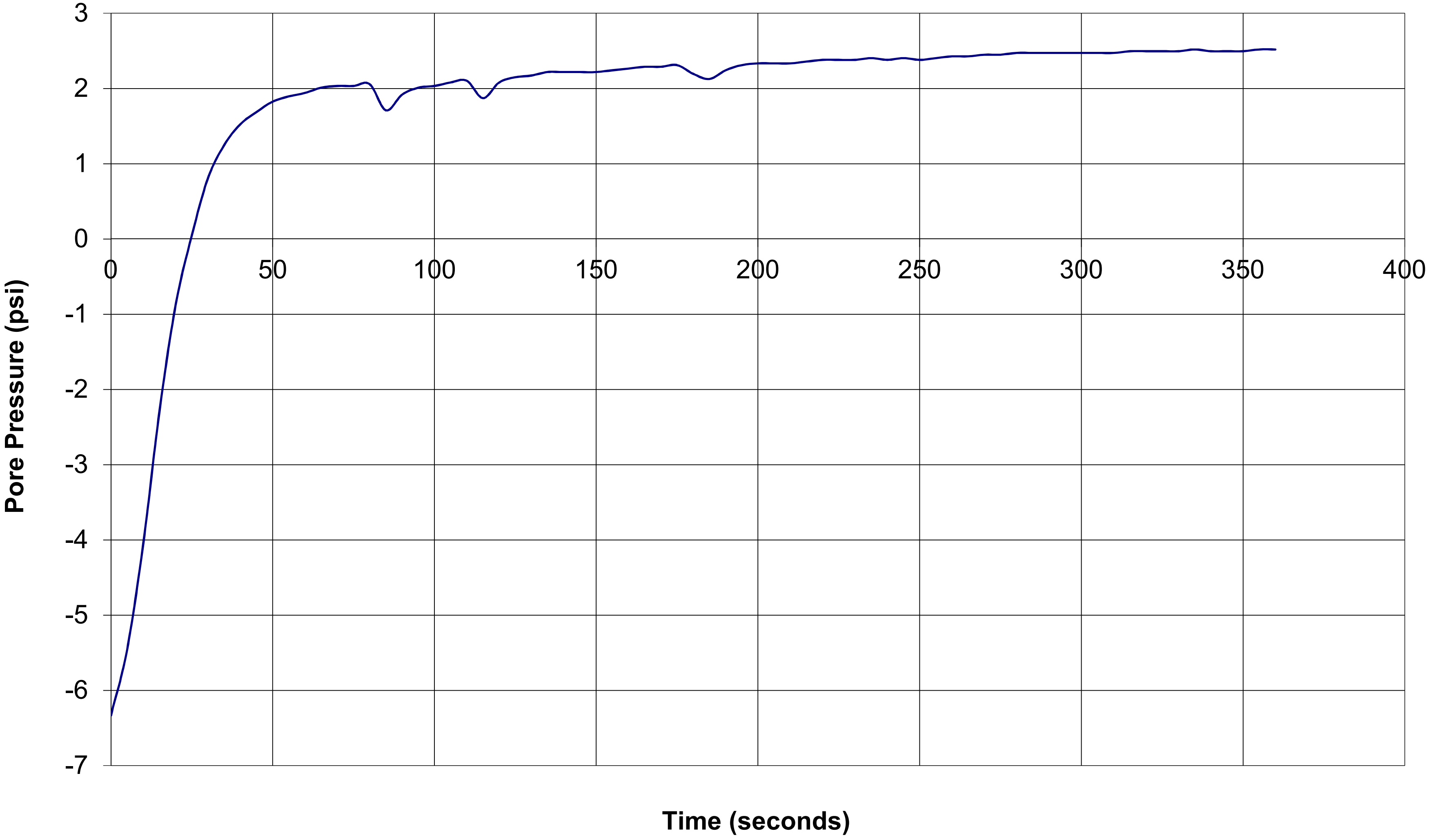
Sounding: CPT-09
Depth (ft): 35.43
Site: 1701 SPRINGDALE A
Engineer: TIM FORREST



GREGG DRILLING & TESTING

Pore Pressure Dissipation Test

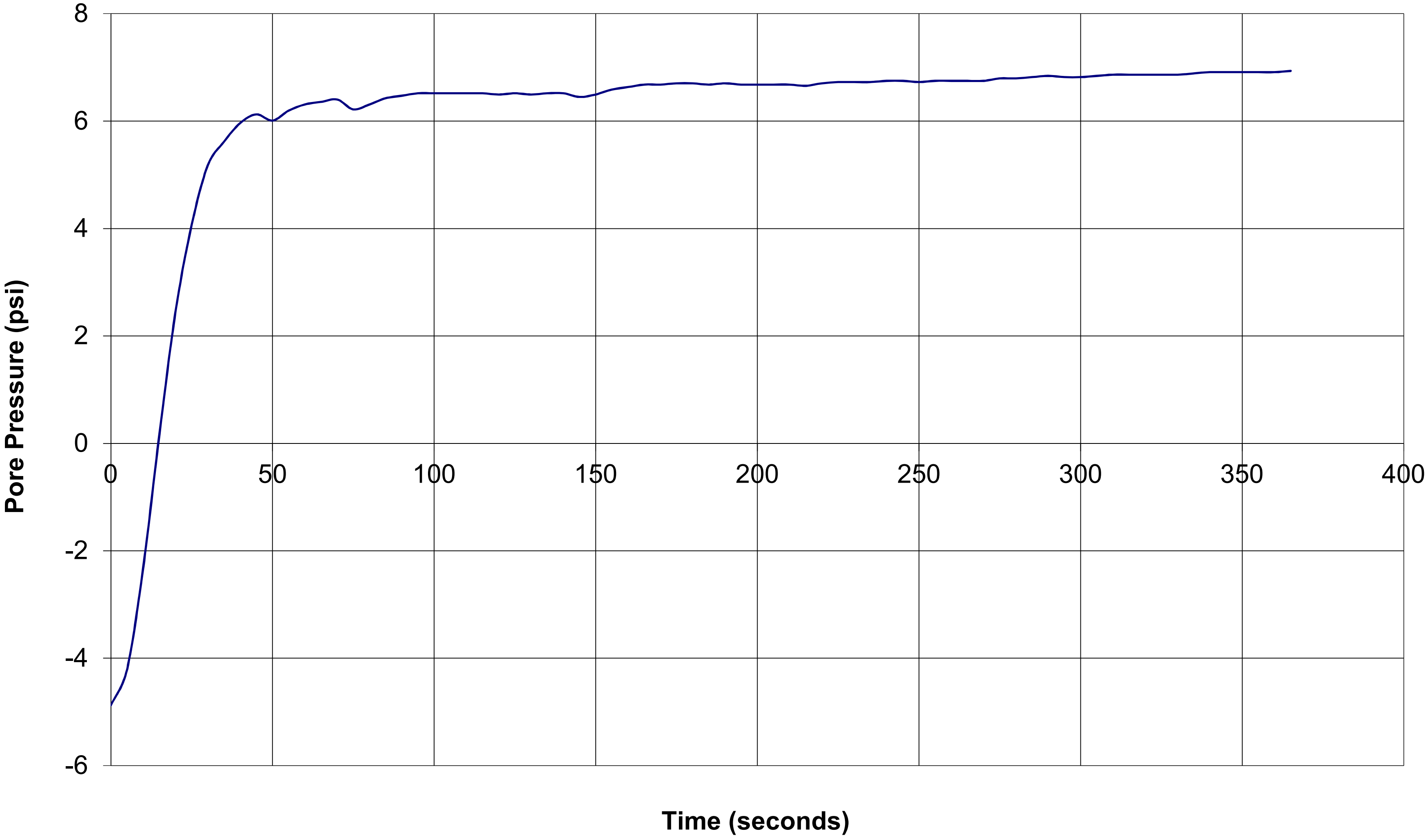
Sounding: CPT-10
Depth (ft): 29.86
Site: 1701 SPRINGDALE A
Engineer: TIM FORREST



GREGG DRILLING & TESTING

Pore Pressure Dissipation Test

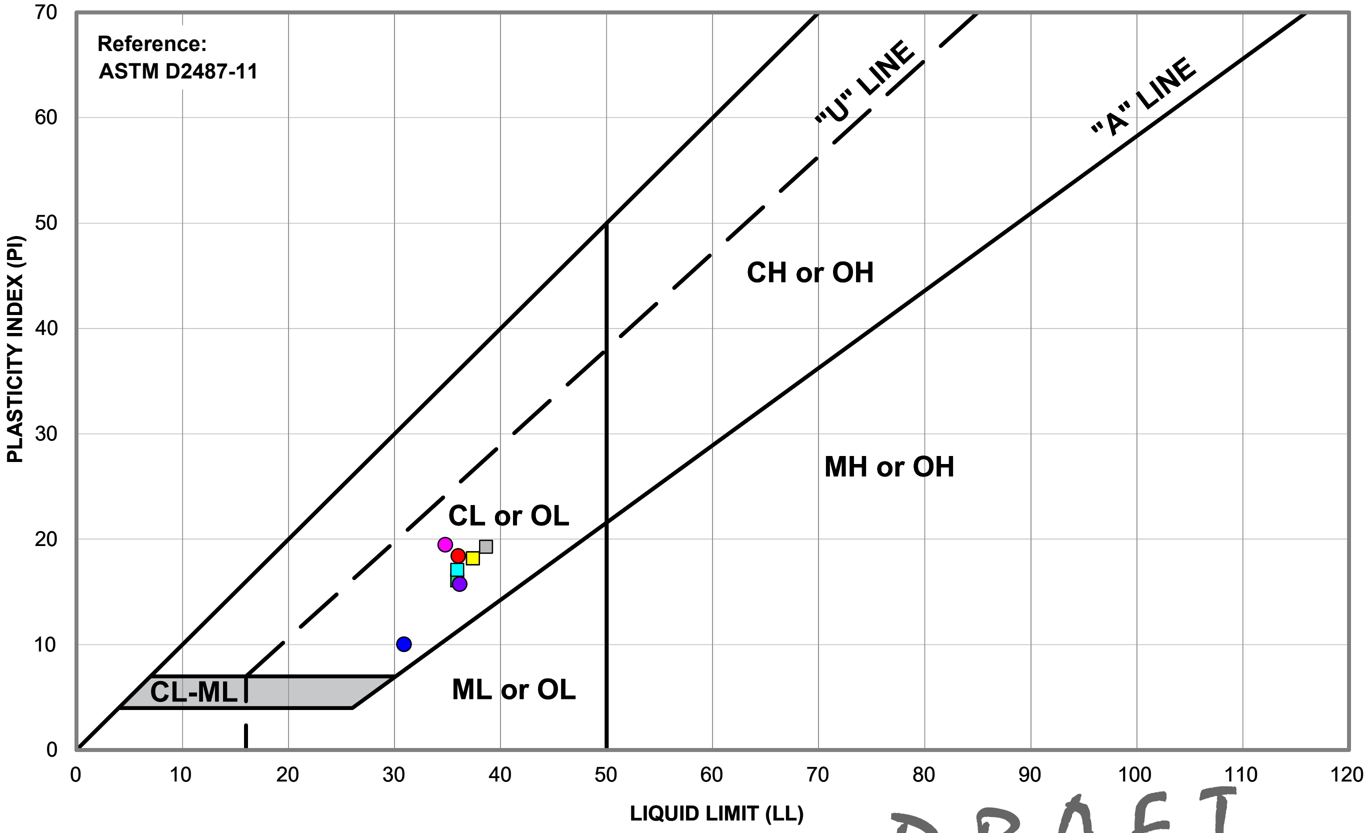
Sounding: CPT-12
Depth (ft): 40.19
Site: 1701 SPRINGDALE A
Engineer: TIM FORREST



APPENDIX C

LABORATORY TESTS

PLASTICITY CHART



Symbol	Source	Description and Classification	Natrual M.C. (%)	Liquid Limit (%)	Plasticity Index (%)	% Passing #200 Sieve
🔵	B-1 at 70.75 feet	CLAYEY SAND with GRAVEL (SC), brown	13.3	31	10	19.2
🟩	B-2 at 45.25 and 46 feet	CLAYEY SAND (SC), brown with orange oxidation	12.0	36	16	35.9
🟦	B-3 at 35.5 feet	CLAYEY SAND with GRAVEL (SC), brown	12.3	36	17	16.9
🟣	B-4 at 36 feet	CLAYEY SAND with GRAVEL (SC), brown	13.6	35	19	14.4
🔴	B-5 at 5.75 feet	SANDY CLAY (CL), brown	13.1	36	18	--
🟨	B-5 at 15.25 feet	CLAY with SAND (CL), dark brown	--	37	18	--
🟣	B-5 at 50 feet	CLAYEY SAND with GRAVEL (SC), brown	10.0	36	16	20.7
⬜	B-6 at 5.5 feet	CLAYEY SAND (SC), dark brown	14.1	38	19	39.5

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ALAMEDA COUNTY CALIFORNIA

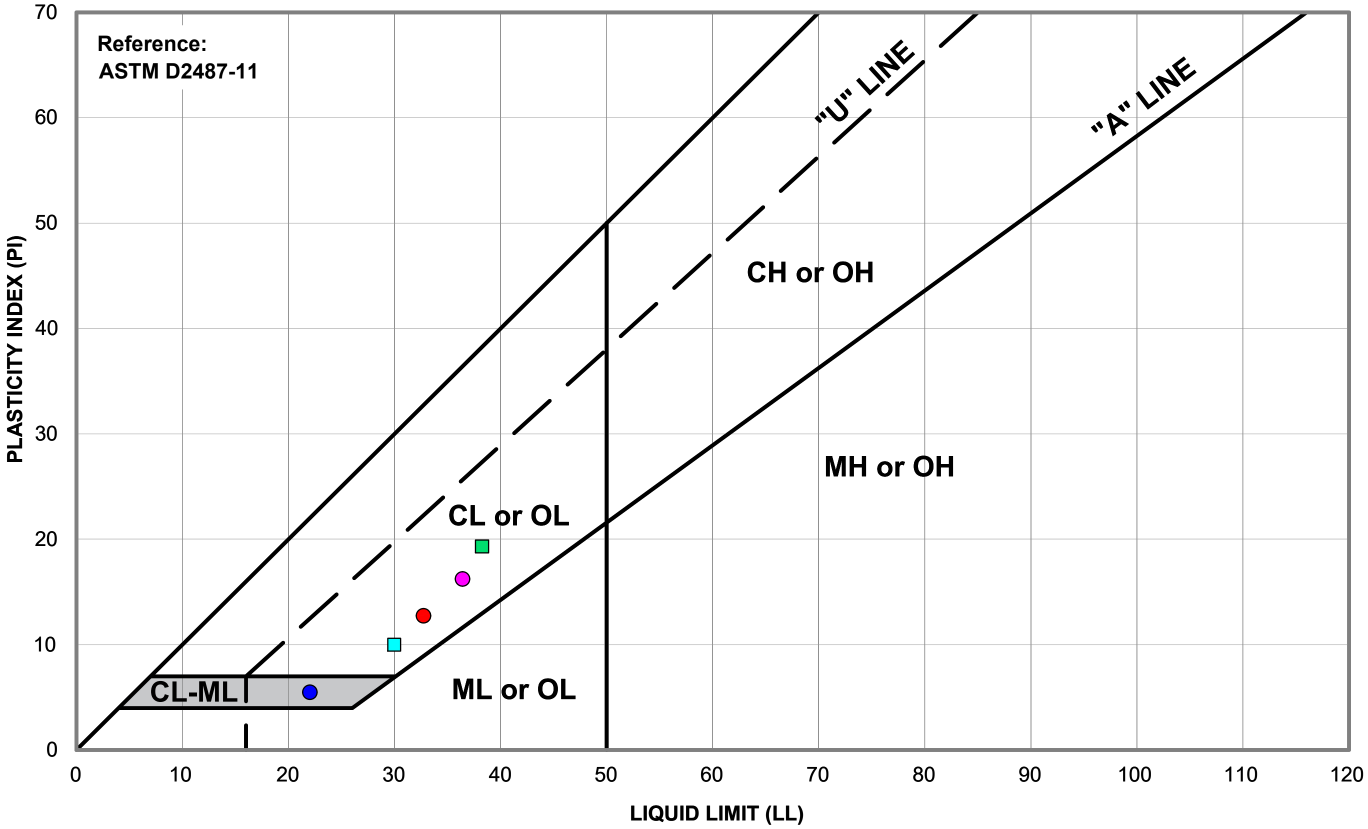
Figure Title
PLASTICITY CHART

Project No. 731745301
Date 12/01/2020
Drawn By AG
Checked By TF

Figure
C-1

Filename: \\langan.com\data\SFO\data3\731745301\Project Data\CAD\01\2D-DesignFiles\Geotechnical\731745301-B-GI0101_Lab-Classification.dwg Date: 11/30/2020 Time: 10:06 User: agekas Style Table: Langan.stb Layout: PLASTICITY CHART_1

PLASTICITY CHART



Symbol	Source	Description and Classification	Natrual M.C. (%)	Liquid Limit (%)	Plasticity Index (%)	% Passing #200 Sieve
🔵	B-6 at 40 feet	CLAYEY SILTY SAND (SC-SM), brown	19.5	23	5	37.2
🟩	B-7 at 0 to 5 feet	SANDY CLAY with GRAVEL (CL), gray to black	--	38	19	56.4
🟦	B-8 at 45 feet	CLAYEY SAND (SC), brown	20.5	30	10	38.1
🟣	B-8 at 50.5 feet	CLAYEY SAND with GRAVEL (SC), brown	16.5	36	16	31.5
🔴	B-10 at 45.75 feet	CLAYEY SAND with GRAVEL (SC), brown	17.9	33	13	17.4

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Project
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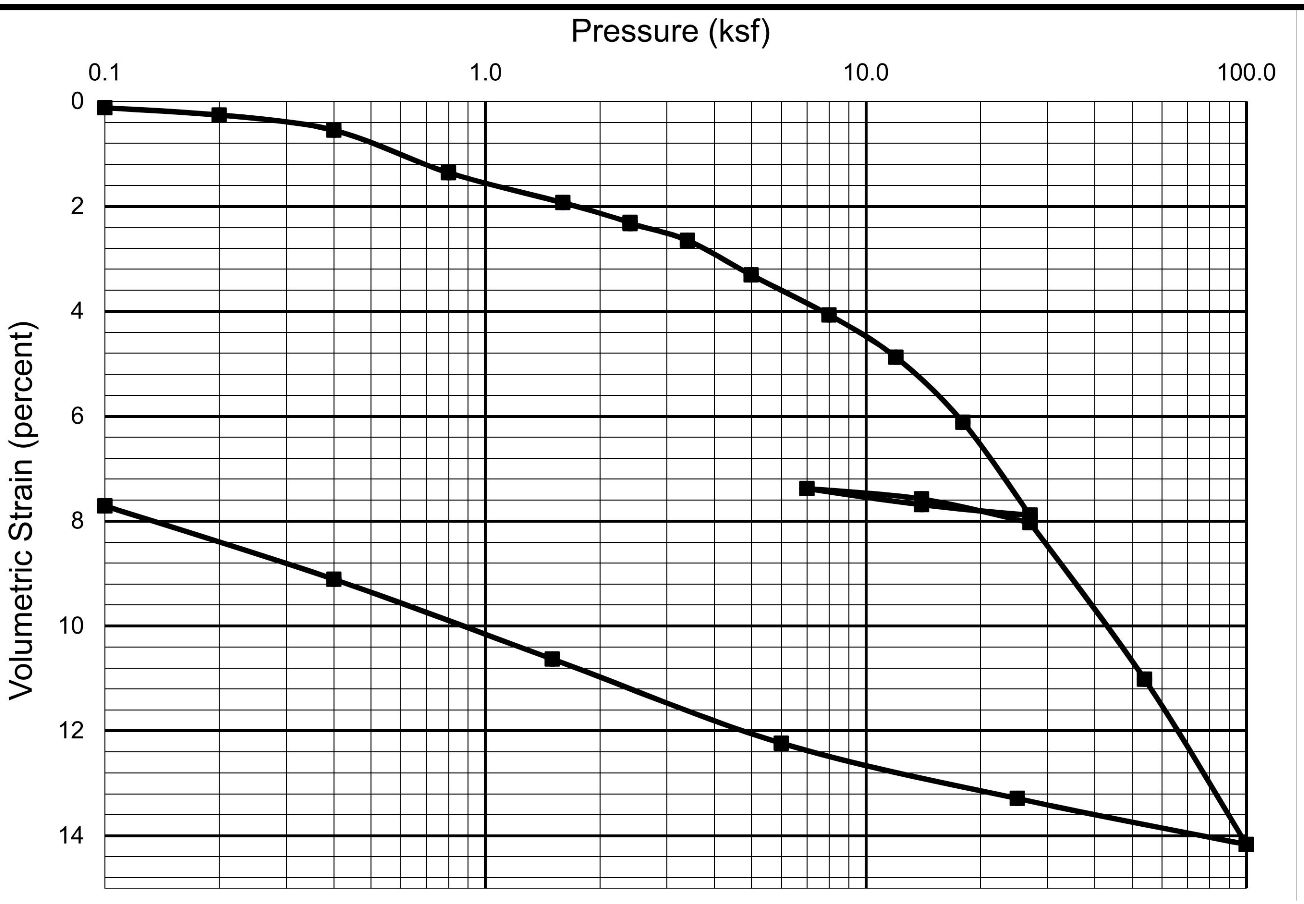
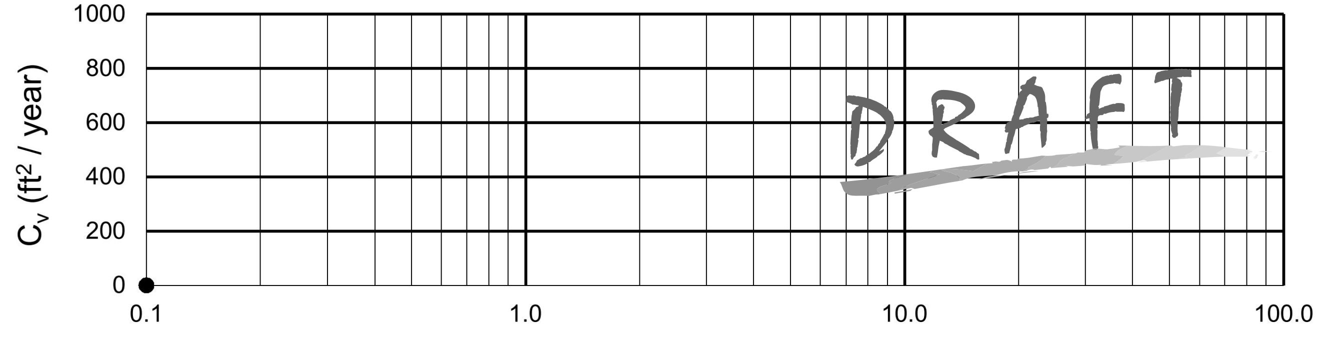
PLEASANTON
ALAMEDA COUNTY CALIFORNIA

Figure Title
PLASTICITY
CHART

Project No.
731745301
Date
12/01/2020
Drawn By
AG
Checked By
TF

Figure
C-2





Sampler Type			**Condition Before Test**			**After Test**	
Shelby Tube	Diameter (in) 2.42	Height (in) 1.00	Water Content	w_o	20.0 %	w_f	18.4 %
Overburden Pressure, P_o	4,420 psf		Void Ratio	e_o	0.62	e_f	0.50
Preconsol. Pressure, P_c	12,500 psf		Saturation	S_o	87 %	S_f	100 %
Compression Ration, $C\varepsilon_c$	0.11		Dry Density	γ_d	104 pcf	γ_d	113 pcf
Liquid Limit: --	Plastic Limit: --	Plasticity Index: --		G_s	2.70 (assumed)		
Classification:	SANDY CLAY (CL), light brown		Source:	B-1 at 55 feet			

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Project
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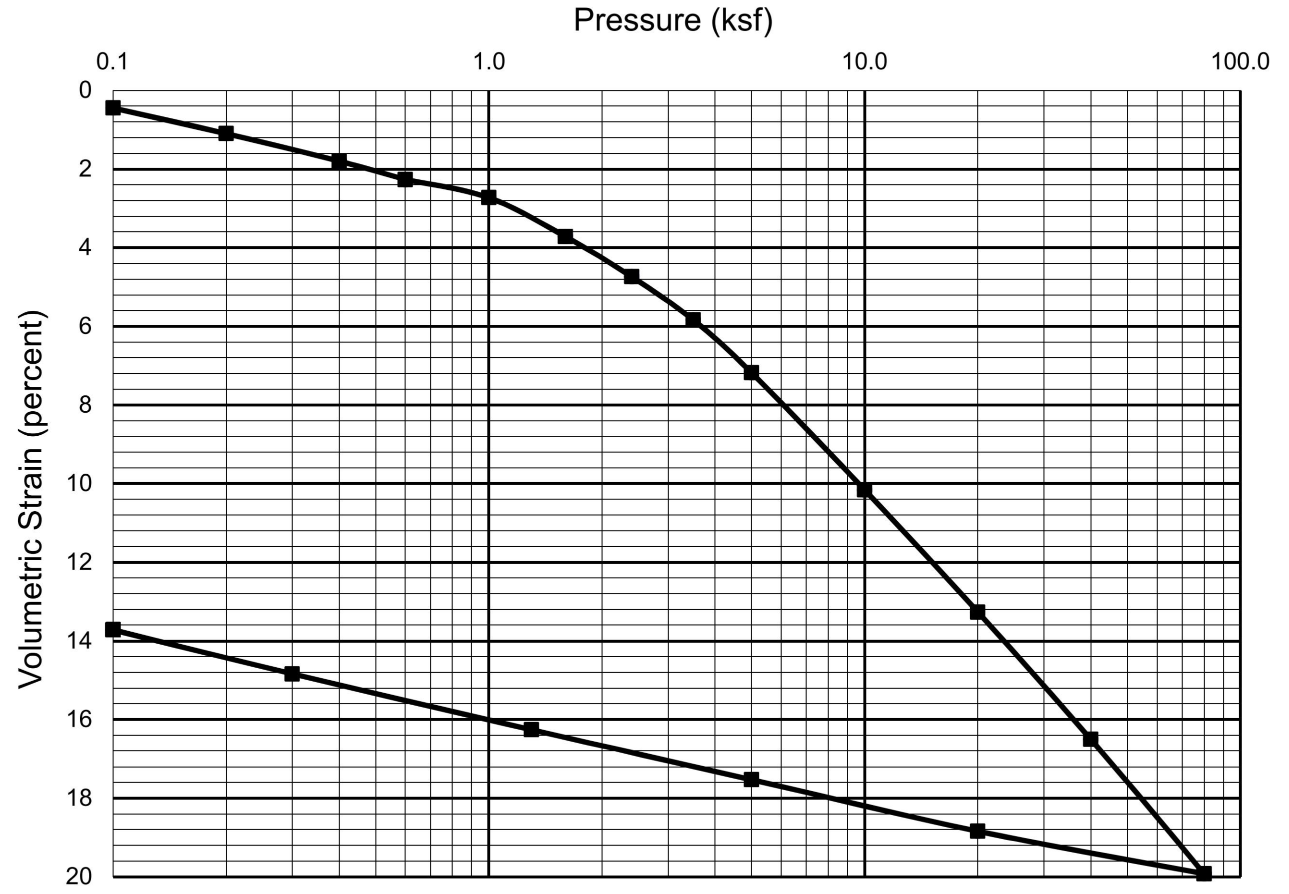
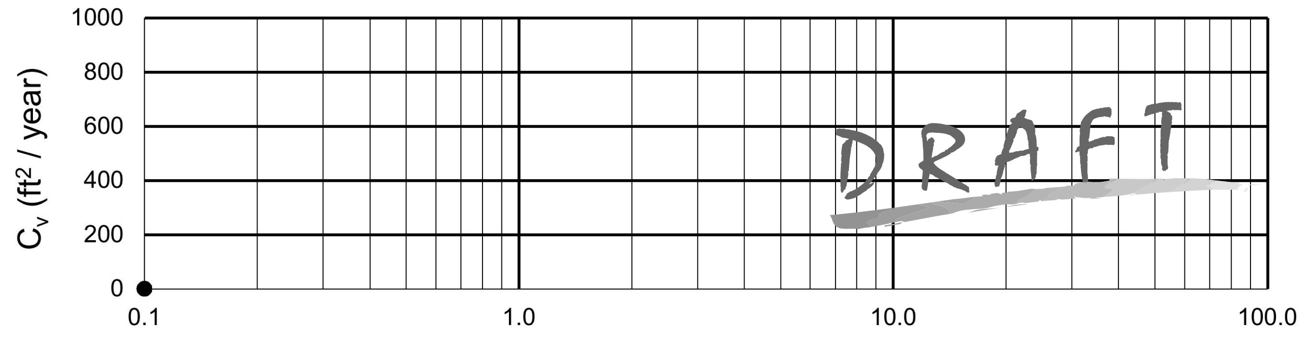
Figure Title
CONSOLIDATION TEST REPORT

Project No. 731745301
Date 12/01/2020
Drawn By AG
Checked By TF

Figure
C-3

Filename: \\langan.com\data\SFO\data3\731745301\Project Data\CAD\01\2D-DesignFiles\Geotechnical\731745301-B-GI0101_Lab-Classification.dwg Date: 11/30/2020 Time: 10:07 User: agekas Style Table: Langan.stb Layout: CONSOLIDATION TEST REPORT-1





Sampler Type					Condition Before Test			After Test	
Sprague & Henwood	Diameter (in)	2.42	Height (in)	1.00	Water Content	w_o	23.7 %	w_f	17.5 %
Overburden Pressure, P_o	3,300 psf				Void Ratio	e_o	0.70	e_f	0.47
Preconsol. Pressure, P_c	3,000 psf				Saturation	S_o	91 %	S_f	100 %
Compression Ration, $C\varepsilon_c$	0.11				Dry Density	γ_d	99 pcf	γ_d	115 pcf
Liquid Limit:	--	Plastic Limit:	--	Plasticity Index:	--		G_s	2.70 (assumed)	
Classification:	CLAY with SAND (CL), dark brown				Source:		B-2 at 35.5 feet		

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Project
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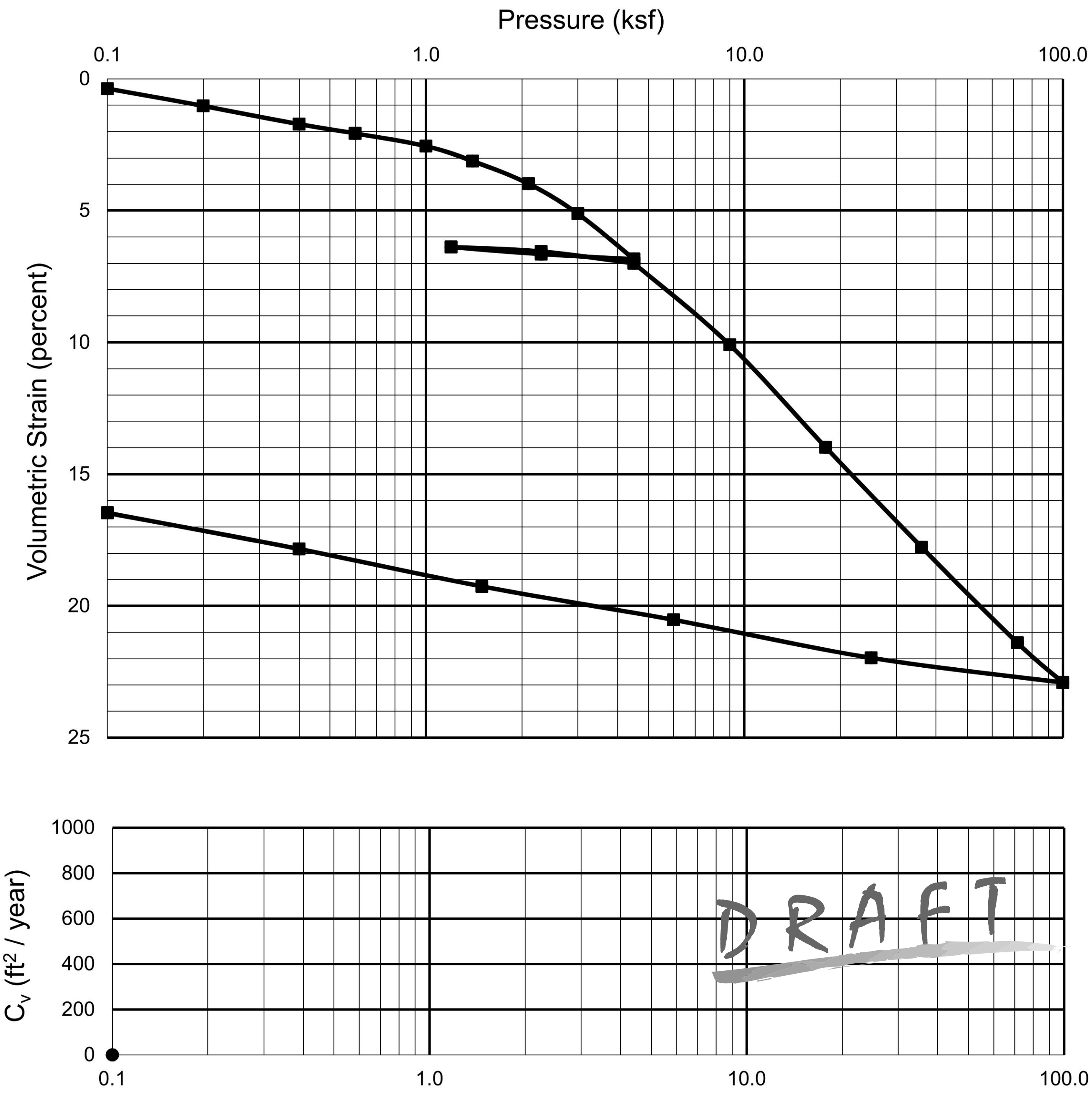
1701 SPRINGDALE AVE
PLEASANTON
ALAMEDA COUNTY CALIFORNIA

Figure Title
CONSOLIDATION
TEST REPORT

Project No. 731745301
Date 12/01/2020
Drawn By AG
Checked By TF

Figure
C-4



Sampler Type			Condition Before Test			After Test	
Shelby Tube	Diameter (in) 2.42	Height (in) 1.00	Water Content	w_o	26.6 %	w_f	18.8 %
Overburden Pressure, P_o	2,700 psf		Void Ratio	e_o	0.80	e_f	0.51
Preconsol. Pressure, P_c	3,000 psf		Saturation	S_o	89 %	S_f	100 %
Compression Ration, $C\varepsilon_c$	0.13		Dry Density	γ_d	93 pcf	γ_d	112 pcf

Liquid Limit: --	Plastic Limit: --	Plasticity Index: --	G_s 2.70 (assumed)
Classification:	SANDY CLAY (CH), brown	Source:	B-3 at 25 feet

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Project
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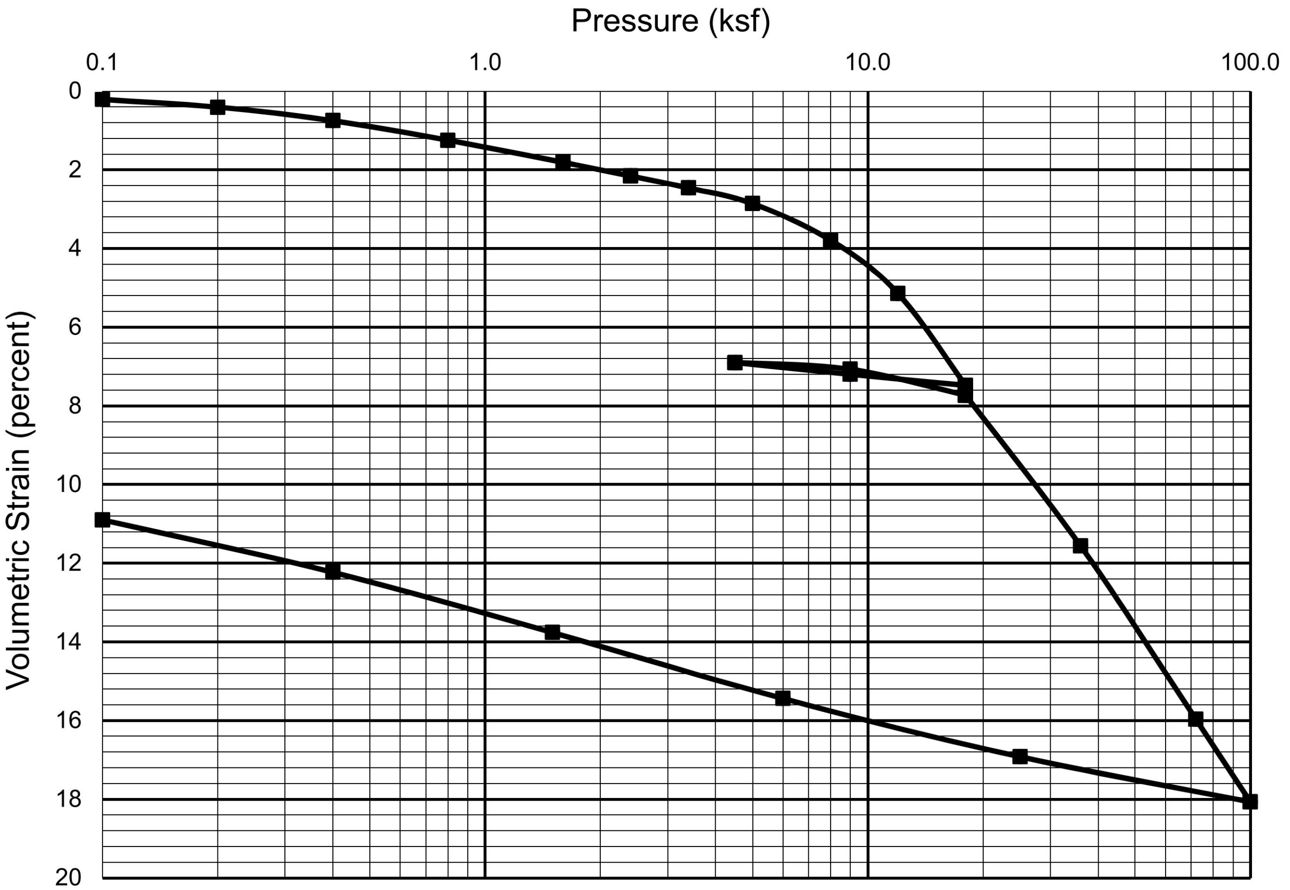
ALAMEDA COUNTY CALIFORNIA

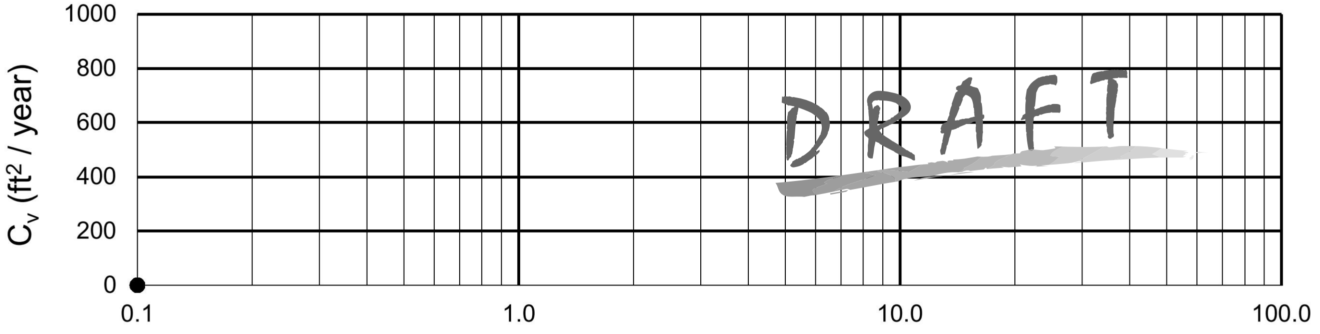
Figure Title
CONSOLIDATION
TEST REPORT

Project No. 731745301
Date 12/01/2020
Drawn By AG
Checked By TF

Figure
C-5

Filename: \\langan.com\data\SFO\data3\731745301\Project Data\CAD\01\2D-DesignFiles\Geotechnical\731745301-B-GI0101_Lab-Classification.dwg Date: 11/30/2020 Time: 10:08 User: agekas Style Table: Langan.stb Layout: CONSOLIDATION TEST REPORT-3





Sampler Type					**Condition Before Test**			**After Test**	
Shelby Tube	Diameter (in)	2.42	Height (in)	1.00	Water Content	w_o	25.7 %	w_f	21.0 %
Overburden Pressure, P_o	3,850 psf				Void Ratio	e_o	0.76	e_f	0.57
Preconsol. Pressure, P_c	10,800 psf				Saturation	S_o	92 %	S_f	100 %
Compression Ration, $C\varepsilon_c$	0.15				Dry Density	γ_d	96 pcf	γ_d	108 pcf

Liquid Limit:	--	Plastic Limit:	--	Plasticity Index:	--	G_s	2.70 (assumed)
Classification:	SANDY CLAY with GRAVEL (CL), brown			Source:	B-3 at 45 feet		

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Figure Title
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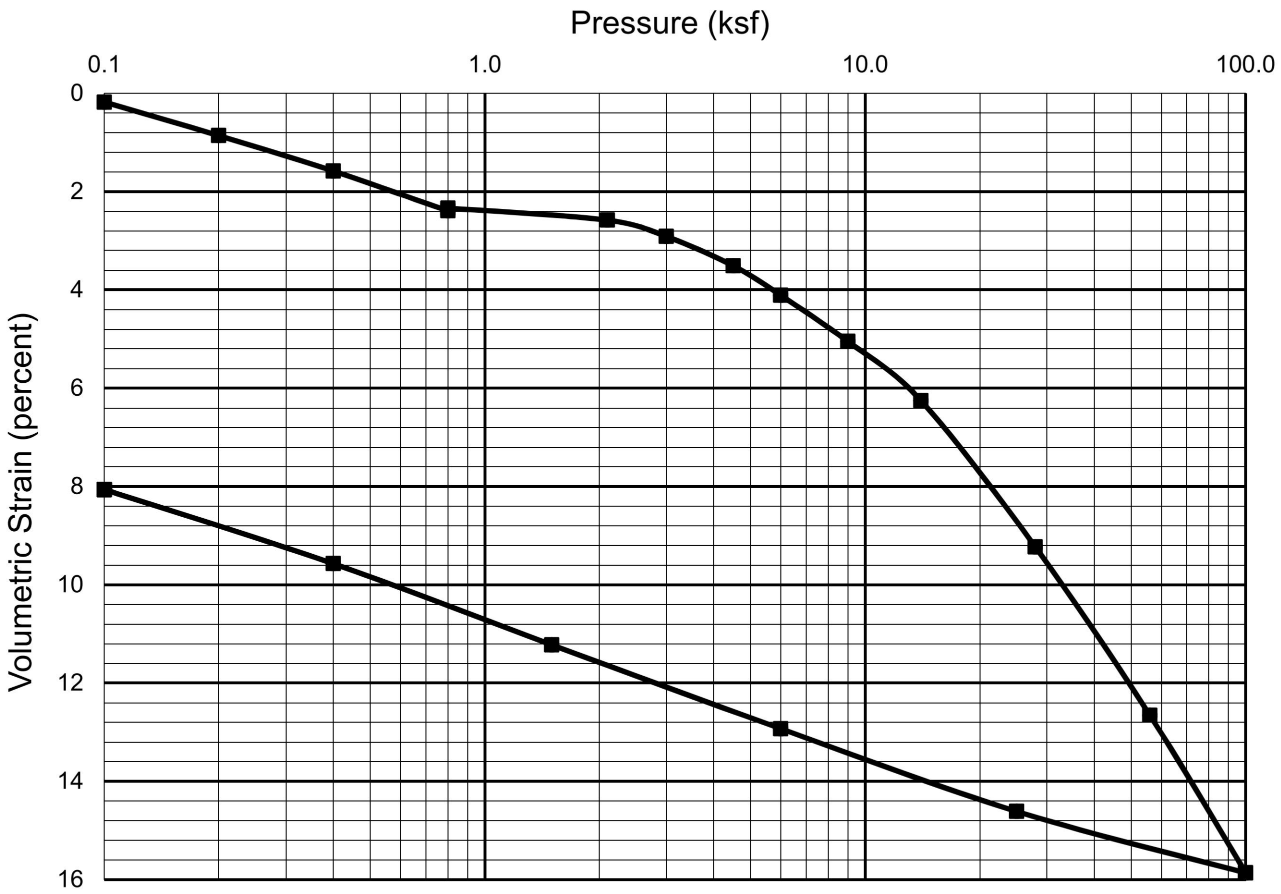
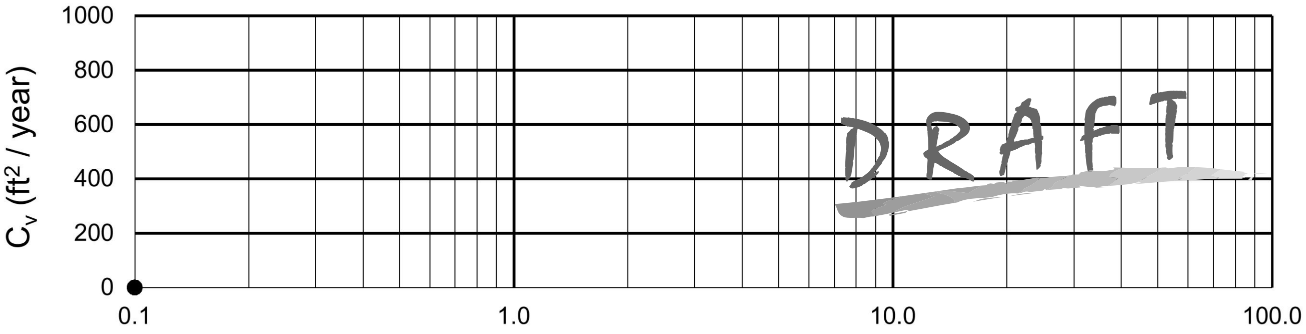
Figure
C-6





Sampler Type			**Condition Before Test**			**After Test**	
Sprague & Henwood	Diameter (in) 2.42	Height (in) 1.00	Water Content	w_o	23.7 %	w_f	20.4 %
Overburden Pressure, P_o	4,200 psf		Void Ratio	e_o	0.69	e_f	0.55
Preconsol. Pressure, P_c	11,500 psf		Saturation	S_o	93 %	S_f	100 %
Compression Ration, $C\varepsilon_c$	0.12		Dry Density	γ_d	100 pcf	γ_d	109 pcf

Liquid Limit: -- Plastic Limit: -- Plasticity Index: -- G_s 2.70 (assumed)

Classification: CLAY (CL), gray-brown to brown with orange and black speckling Source: B-4 at 51 feet

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Figure
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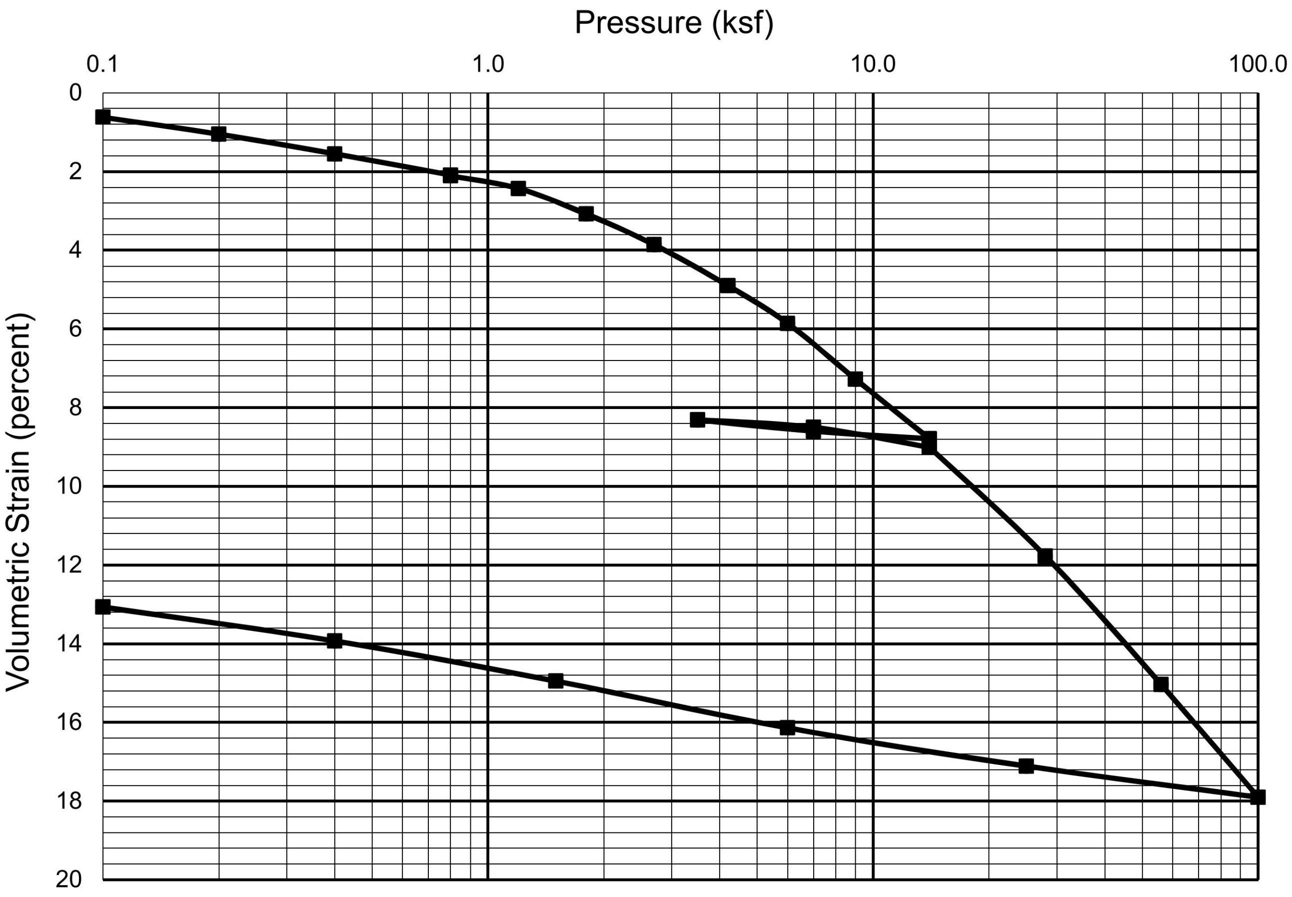
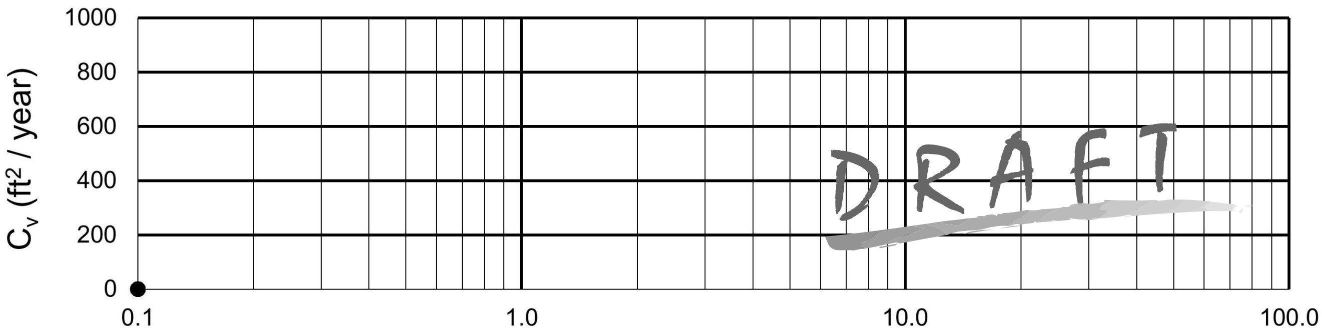
Filename: \\langan.com\data\SFO\data3\731745301\Project Data\CAD\01\2D-DesignFiles\Geotechnical\731745301-B-GI0101_Lab-Classification.dwg Date: 11/30/2020 Time: 10:09 User: agekas Style Table: Langan.stb Layout: CONSOLIDATION TEST REPORT-5





Sampler Type			**Condition Before Test**			**After Test**	
Shelby Tube	Diameter (in) 2.42	Height (in) 1.00	Water Content	w_o	23.7 %	w_f	17.0 %
Overburden Pressure, P_o	3,100 psf		Void Ratio	e_o	0.68	e_f	0.46
Preconsol. Pressure, P_c	6,000 psf		Saturation	S_o	95 %	S_f	100 %
Compression Ration, $C\varepsilon_c$	0.11		Dry Density	γ_d	101 pcf	γ_d	116 pcf
Liquid Limit: --	Plastic Limit: --	Plasticity Index: --		G_s	2.70 (assumed)		
Classification:	SANDY CLAY (CL), brown			Source:	B-6 at 32 feet		

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Figure
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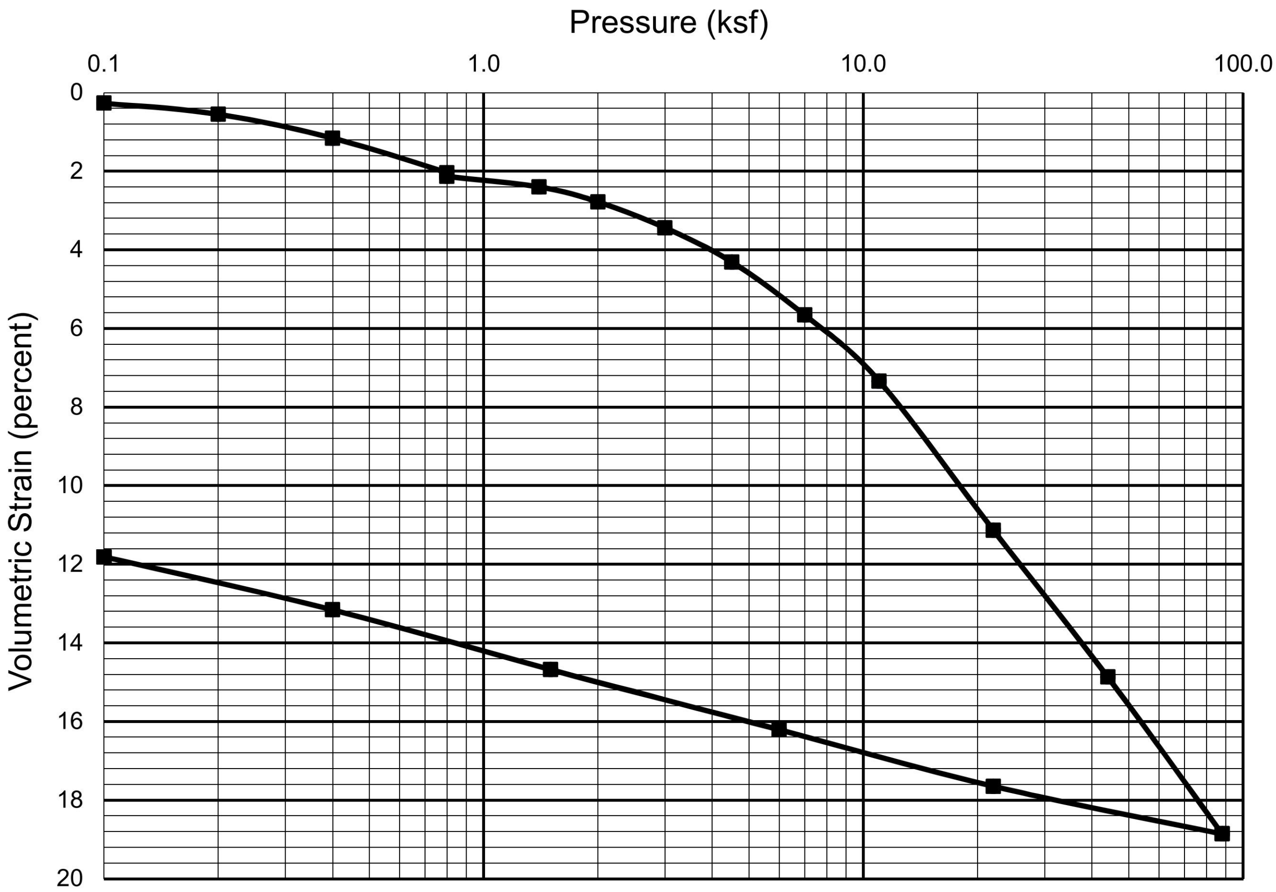
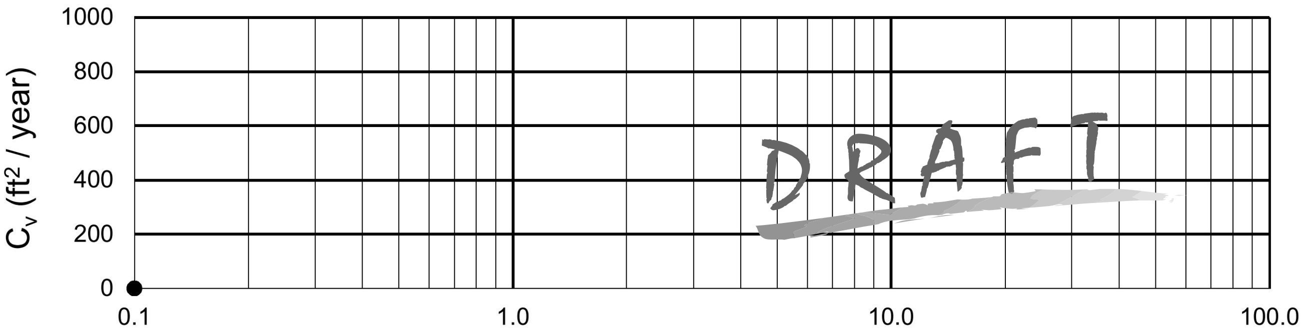
Filename: \\langan.com\data\SFO\data3\731745301\Project Data\CAD\01\2D-DesignFiles\Geotechnical\731745301-B-GI0101_Lab-Classification.dwg Date: 11/30/2020 Time: 10:10 User: agekas Style Table: Langan.stb Layout: CONSOLIDATION TEST REPORT-6





Sampler Type					**Condition Before Test**			**After Test**	
Shelby Tube	Diameter (in)	2.42	Height (in)	1.00	Water Content	w_o	23.3 %	w_f	17.5 %
Overburden Pressure, P_o	3,300 psf				Void Ratio	e_o	0.67	e_f	0.47
Preconsol. Pressure, P_c	6,000 psf				Saturation	S_o	94 %	S_f	100 %
Compression Ration, $C\varepsilon_c$	0.13				Dry Density	γ_d	101 pcf	γ_d	115 pcf
Liquid Limit:	--	Plastic Limit:	--	Plasticity Index:	--	G_s	2.70 (assumed)		
Classification:	CLAY with SAND and GRAVEL (CL), light brown				Source:	B-8 at 35 feet			

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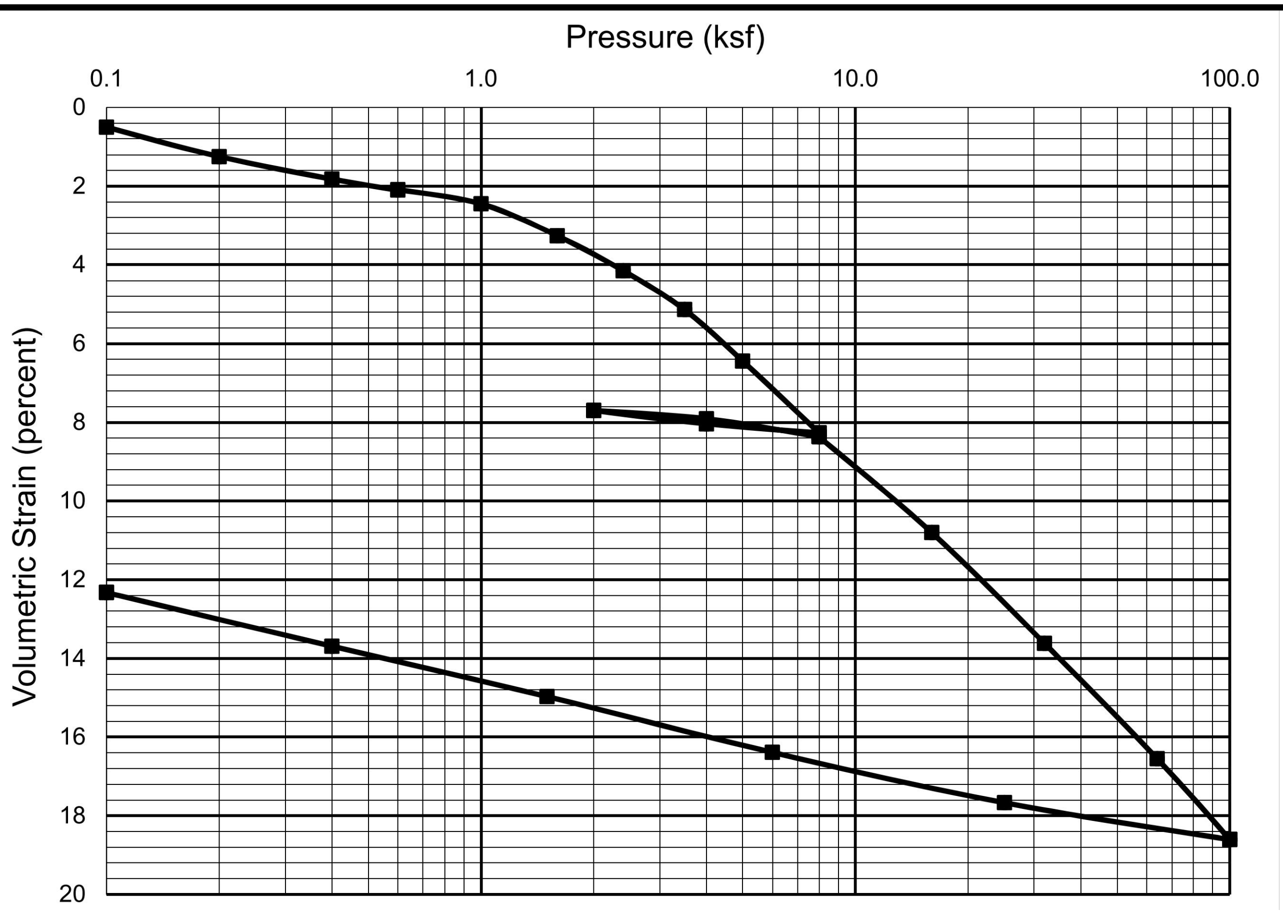
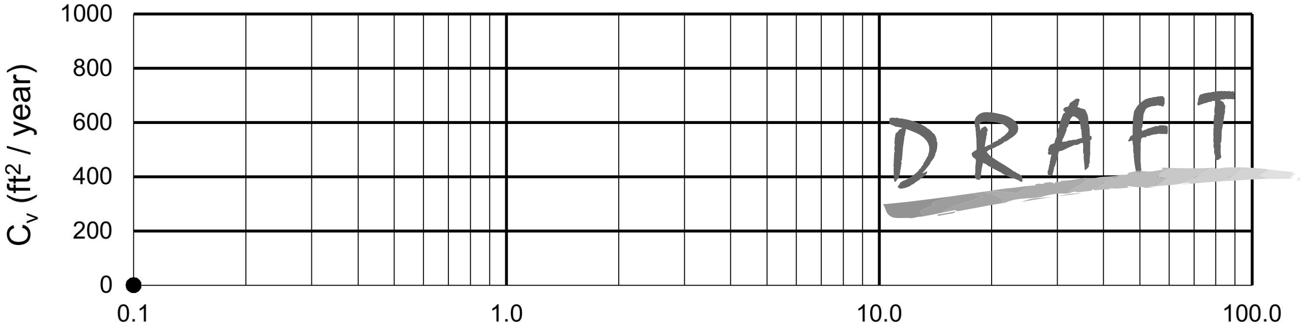
Filename: \\langan.com\data\SFO\data3\731745301\Project Data\CAD\01\2D-DesignFiles\Geotechnical\731745301-B-GI0101_Lab-Classification.dwg Date: 11/30/2020 Time: 10:10 User: agekas Style Table: Langan.stb Layout: CONSOLIDATION TEST REPORT-7





Sampler Type			**Condition Before Test**			**After Test**	
Sprague & Henwood	Diameter (in) 2.42	Height (in) 1.00	Water Content	w_o	22.5 %	w_f	16.5 %
Overburden Pressure, P_o	2,450 psf		Void Ratio	e_o	0.65	e_f	0.45
Preconsol. Pressure, P_c	3,000 psf		Saturation	S_o	94 %	s_f	100 %
Compression Ration, $C\varepsilon_c$	0.10		Dry Density	γ_d	102 pcf	γ_d	117 pcf
Liquid Limit: --	Plastic Limit: --	Plasticity Index: --		G_s	2.70 (assumed)		
Classification:	CLAY with SAND (CH), brown		Source:	B-10 at 20.5 feet			

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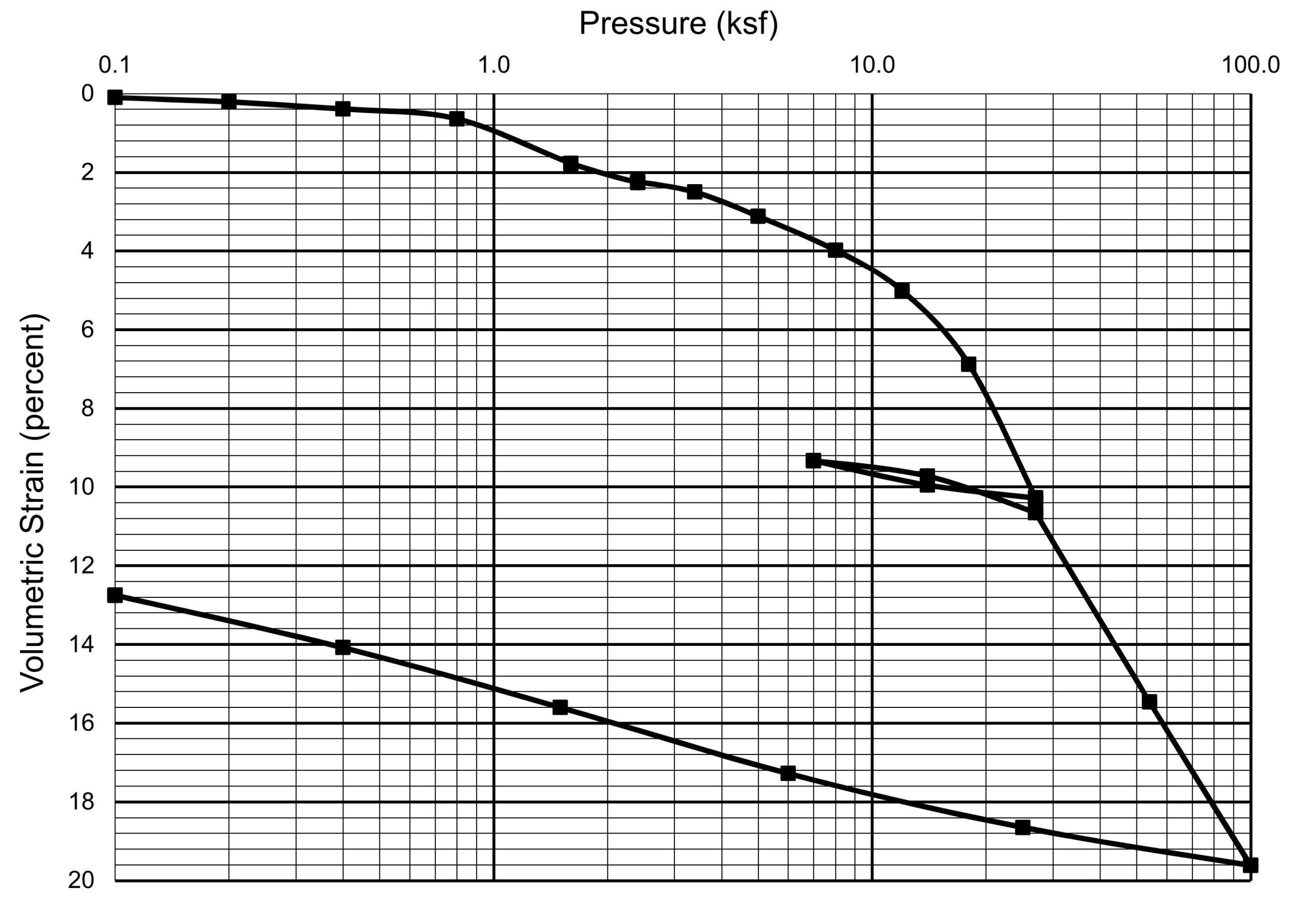
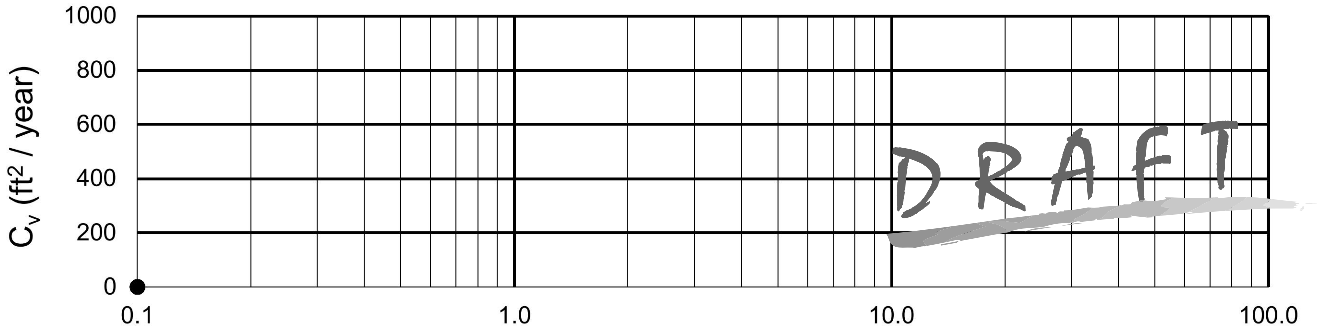
Figure
C-10





Sampler Type			Condition Before Test			After Test	
Shelby Tube	Diameter (in) 2.42	Height (in) 1.00	Water Content	w_o	26.6 %	w_f	20.3 %
Overburden Pressure, P_o	5,850 psf		Void Ratio	e_o	0.77	e_f	0.55
Preconsol. Pressure, P_c	12,500 psf		Saturation	S_o	93 %	S_f	100 %
Compression Ration, $C\varepsilon_c$	0.17		Dry Density	γ_d	95 pcf	γ_d	109 pcf
Liquid Limit: --	Plastic Limit: --	Plasticity Index: --		G_s	2.70 (assumed)		
Classification:	CLAY (CL), gray		Source:		B-10 at 80 feet		

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Figure
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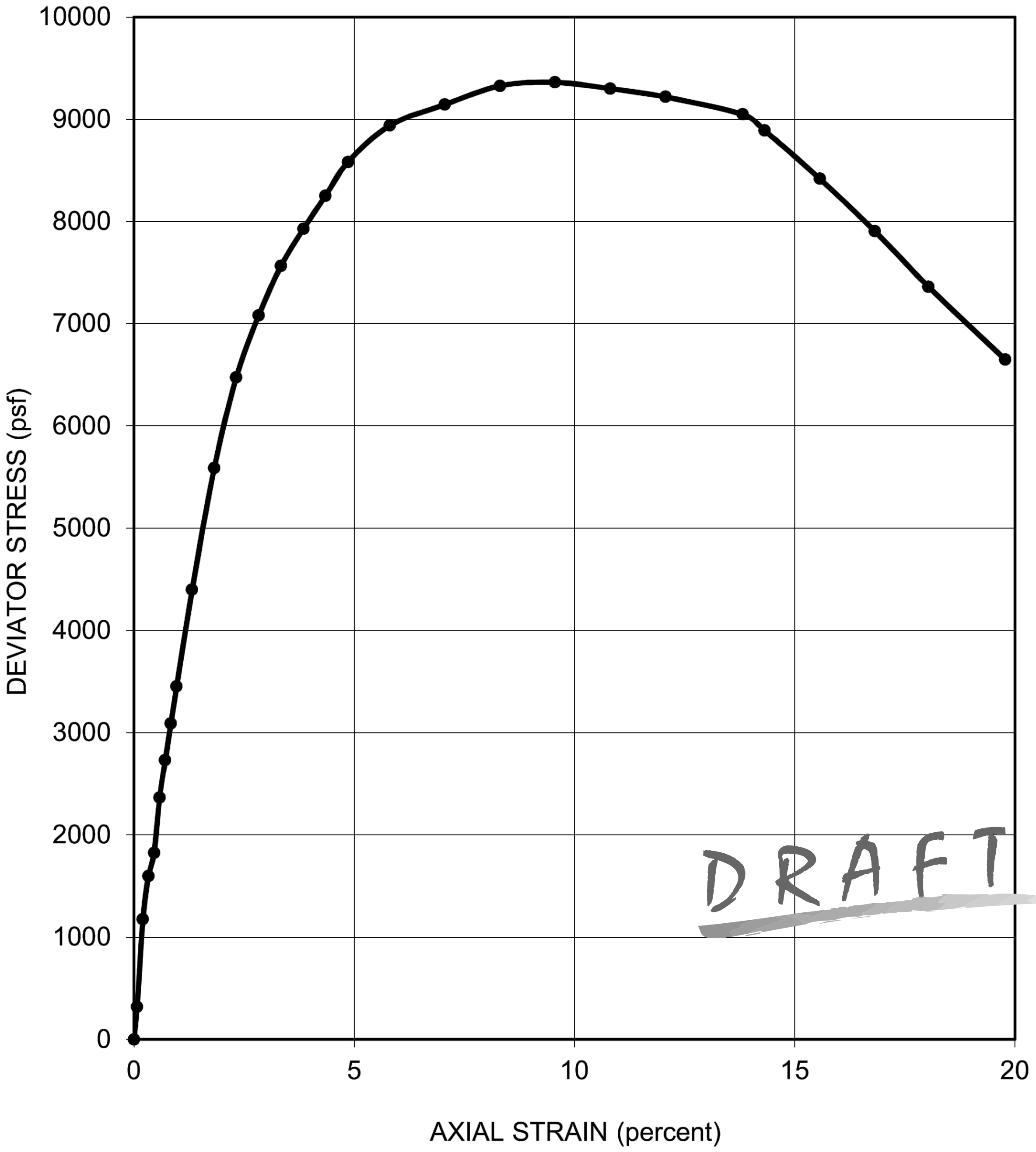

SAMPLER TYPE: Sprague & Henwood			SHEAR STRENGTH:	4,680	psf
DIAMETER (in.): 2.37	HEIGHT (in.): 5.61		STRAIN AT FAILURE:	9.6	%
MOISTURE CONTENT:	20.6	%	CONFINING PRESSURE:	5,150	psf
DRY DENSITY:	110	pcf	STRAIN RATE:	0.75	% / min
DESCRIPTION: CLAY (CL), gray with orange speckling			SOURCE:	B-1 at 51.5 feet	

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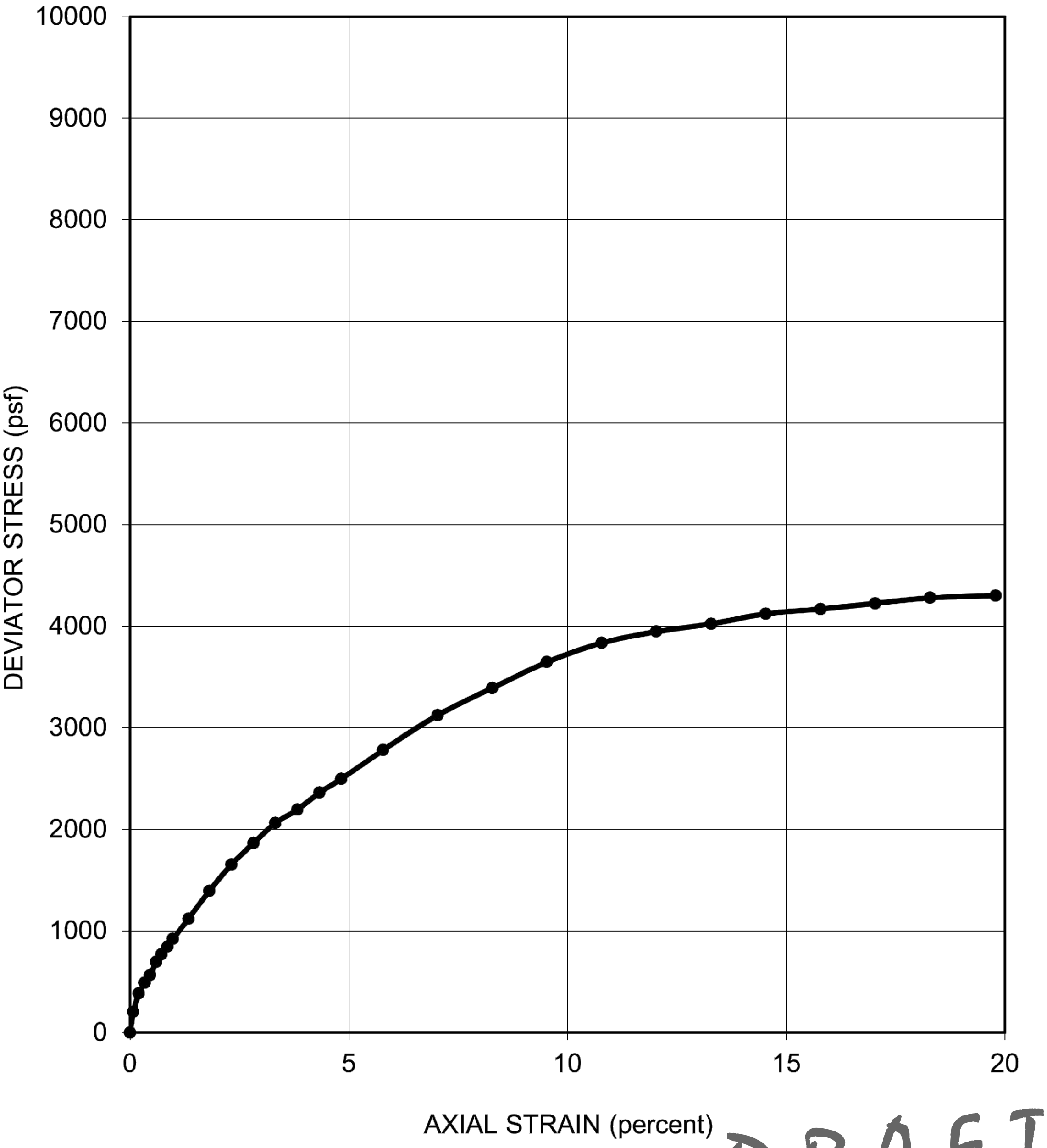

SAMPLER TYPE: Shelby Tube

DIAMETER (in.): 2.37

HEIGHT (in.): 5.61

MOISTURE CONTENT: 21.9 %

DRY DENSITY: 107 pcf

SHEAR STRENGTH: 2,150 psf

STRAIN AT FAILURE: 19.8 %

CONFINING PRESSURE: 5,550 psf

STRAIN RATE: 1.00 % / min

DESCRIPTION: CLAY (CL), gray

SOURCE: B-2 at 55.5 feet

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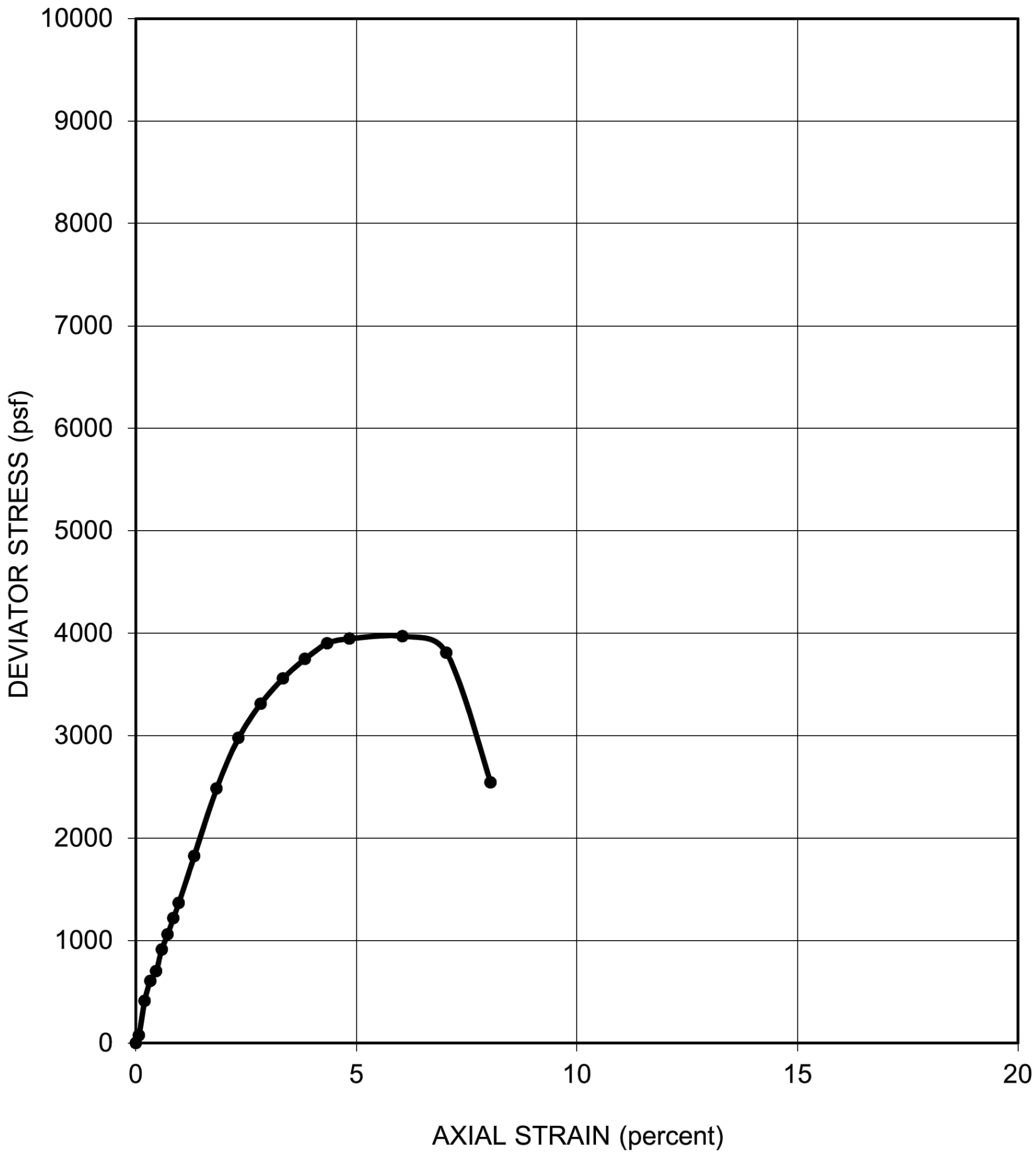
Figure
C-13

Filename: \\langan.com\data\SFO\data3\731745301\Project Data\CAD\01\2D-DesignFiles\Geotechnical\731745301-B-GI0101_Lab-Classification.dwg Date: 11/30/2020 Time: 10:13 User: agekas Style Table: Langan.stb Layout: TXUU REPORT_2



DRAFT

SAMPLER TYPE: Shelby Tube			SHEAR STRENGTH:	1,980	psf
DIAMETER (in.): 2.87	HEIGHT (in.): 6.1		STRAIN AT FAILURE:	6.0	%
MOISTURE CONTENT:	20.7	%	CONFINING PRESSURE:	4,550	psf
DRY DENSITY:	109	pcf	STRAIN RATE:	0.50	% / min
DESCRIPTION: SANDY CLAY with GRAVEL (CL), brown			SOURCE: B-3 at 45 feet		

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Figure
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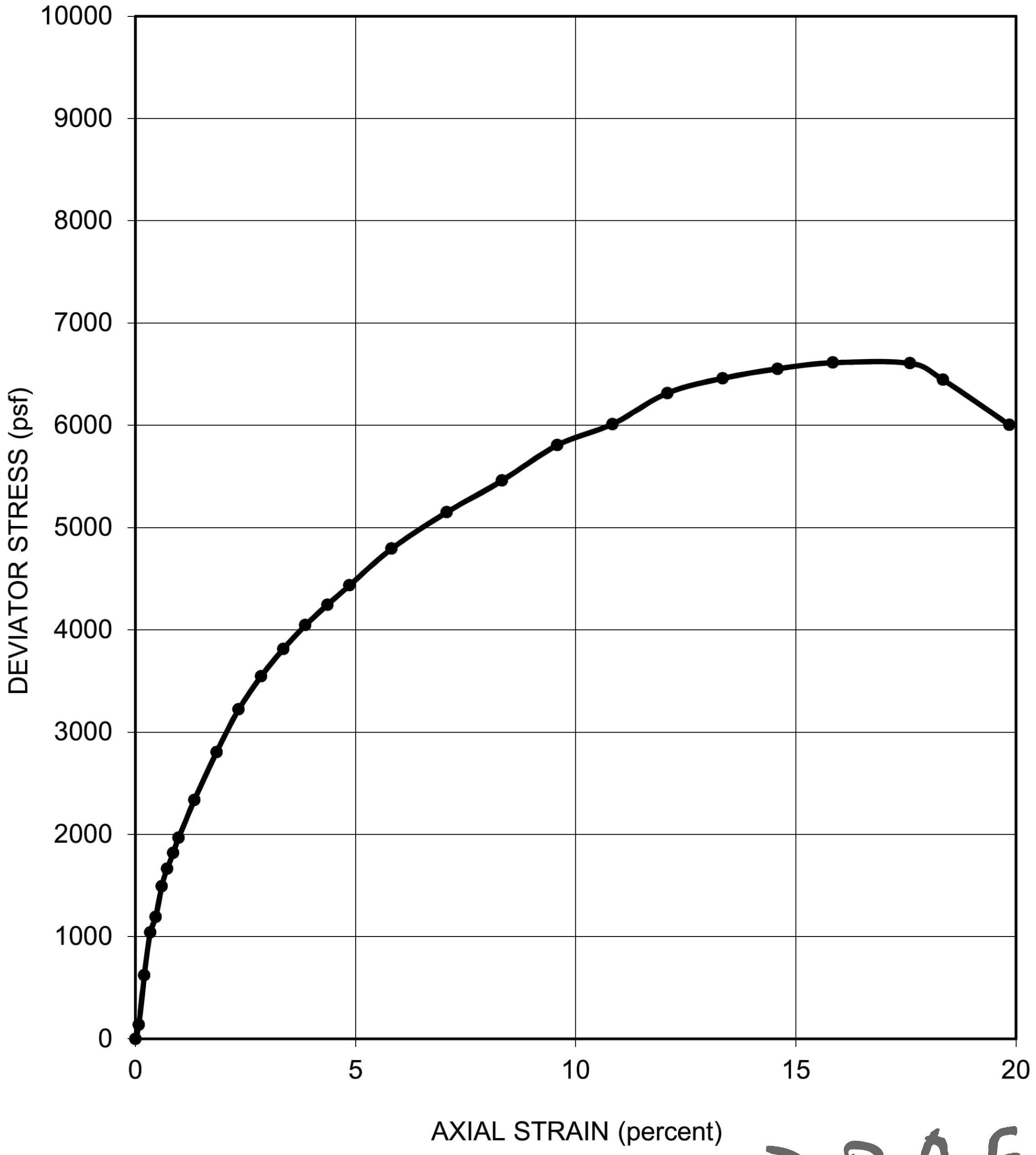
Filename: \\langan.com\data\SFO\data3\731745301\Project Data\CAD\01\2D-DesignFiles\Geotechnical\731745301-B-GI0101_Lab-Classification.dwg Date: 11/30/2020 Time: 10:13 User: agekas Style Table: Langan.stb Layout: TXUU REPORT_3



DRAFT

SAMPLER TYPE: Sprague & Henwood		SHEAR STRENGTH: 3,310 psf	
DIAMETER (in.): 2.37	HEIGHT (in.): 5.61	STRAIN AT FAILURE: 15.8 %	
MOISTURE CONTENT: 24.8 %		CONFINING PRESSURE: 9,050 psf	
DRY DENSITY: 102 pcf		STRAIN RATE: 1.00 % / min	
DESCRIPTION: CLAY (CL), gray to blue-gray			SOURCE: B-3 at 90.5 feet

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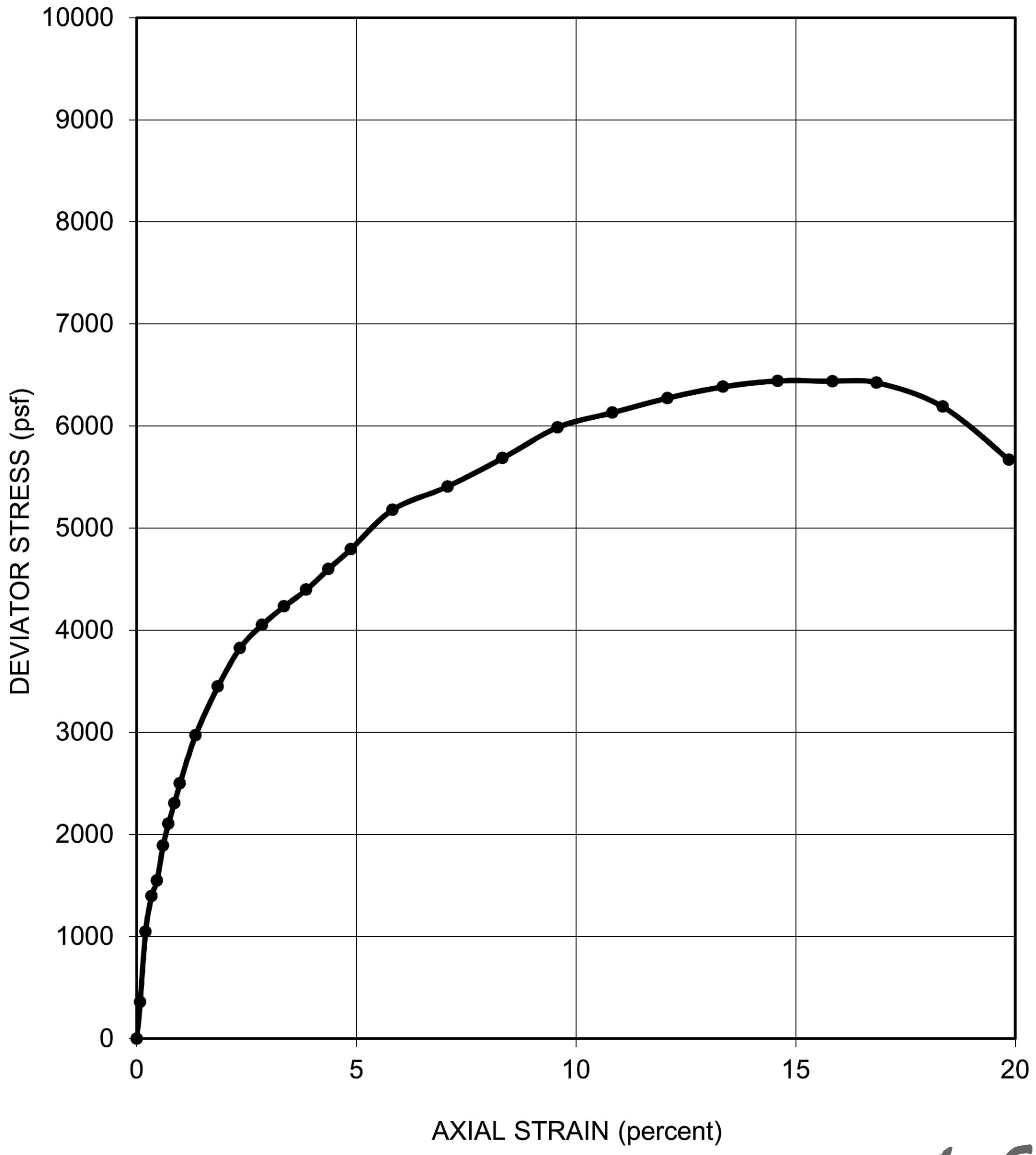
Filename: \\langan.com\data\SFO\data3\731745301\Project Data\CAD\01\2D-DesignFiles\Geotechnical\731745301-B-GI0101_Lab-Classification.dwg Date: 11/30/2020 Time: 10:13 User: agekas Style Table: Langan.stb Layout: TXUU REPORT_4



DRAFT

SAMPLER TYPE: Sprague & Henwood		SHEAR STRENGTH:	3,220	psf
DIAMETER (in.): 2.38	HEIGHT (in.): 5.61	STRAIN AT FAILURE:	14.6	%
MOISTURE CONTENT:	24.7 %	CONFINING PRESSURE:	4,600	psf
DRY DENSITY:	102 pcf	STRAIN RATE:	1.00	% / min
DESCRIPTION: CLAY (CL), gray-brown to brown		SOURCE: B-4 at 46 feet		

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Figure
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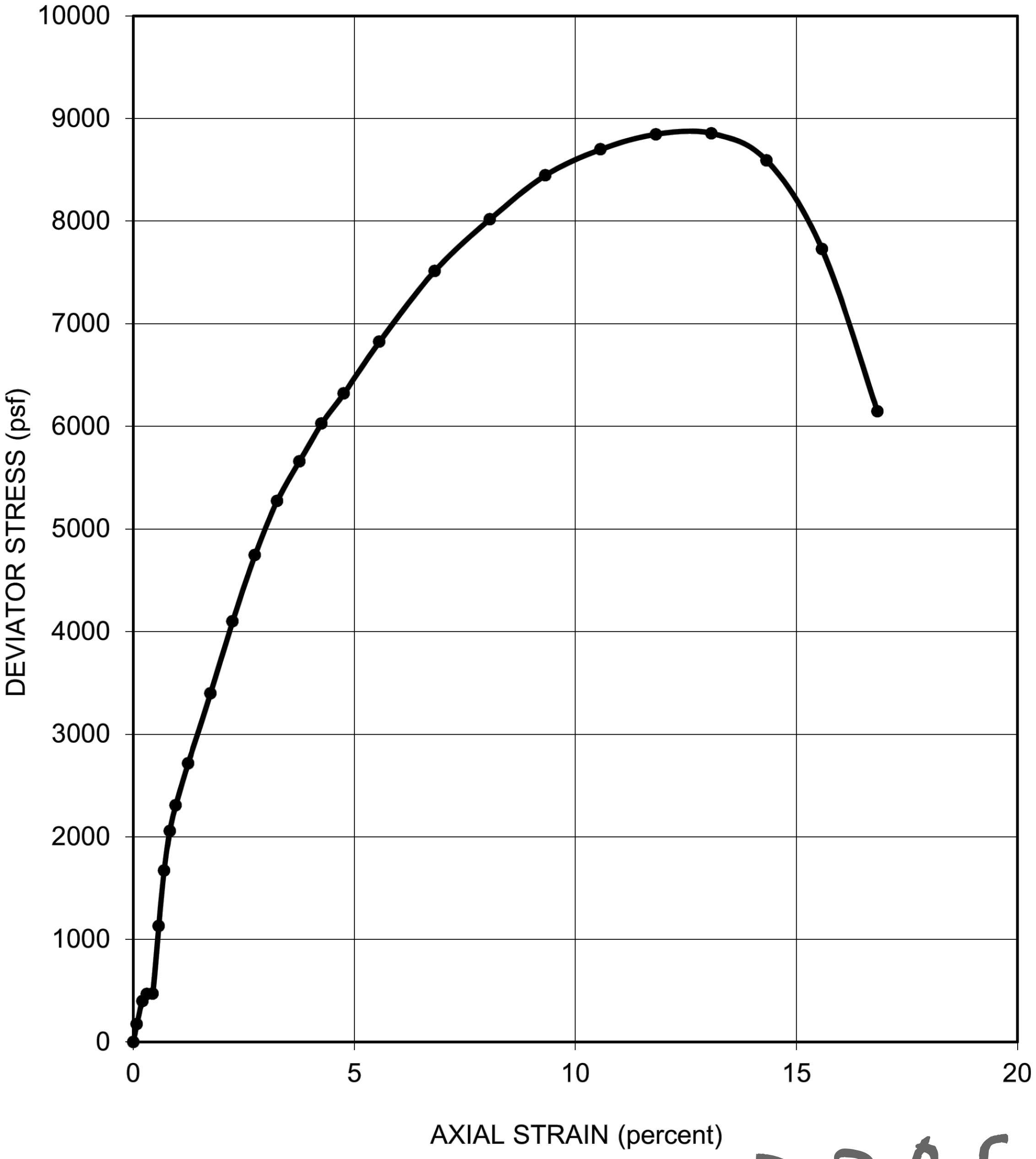

SAMPLER TYPE: Sprague & Henwood		SHEAR STRENGTH:	4,430 psf
DIAMETER (in.): 2.38	HEIGHT (in.): 5.61	STRAIN AT FAILURE:	13.1 %
MOISTURE CONTENT:	22.3 %	CONFINING PRESSURE:	6,075 psf
DRY DENSITY:	107 pcf	STRAIN RATE:	1.00 % / min
DESCRIPTION: CLAY (CL), gray-brown to brown with orange and black speckling		SOURCE: B-4 at 60.75 feet	

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Figure
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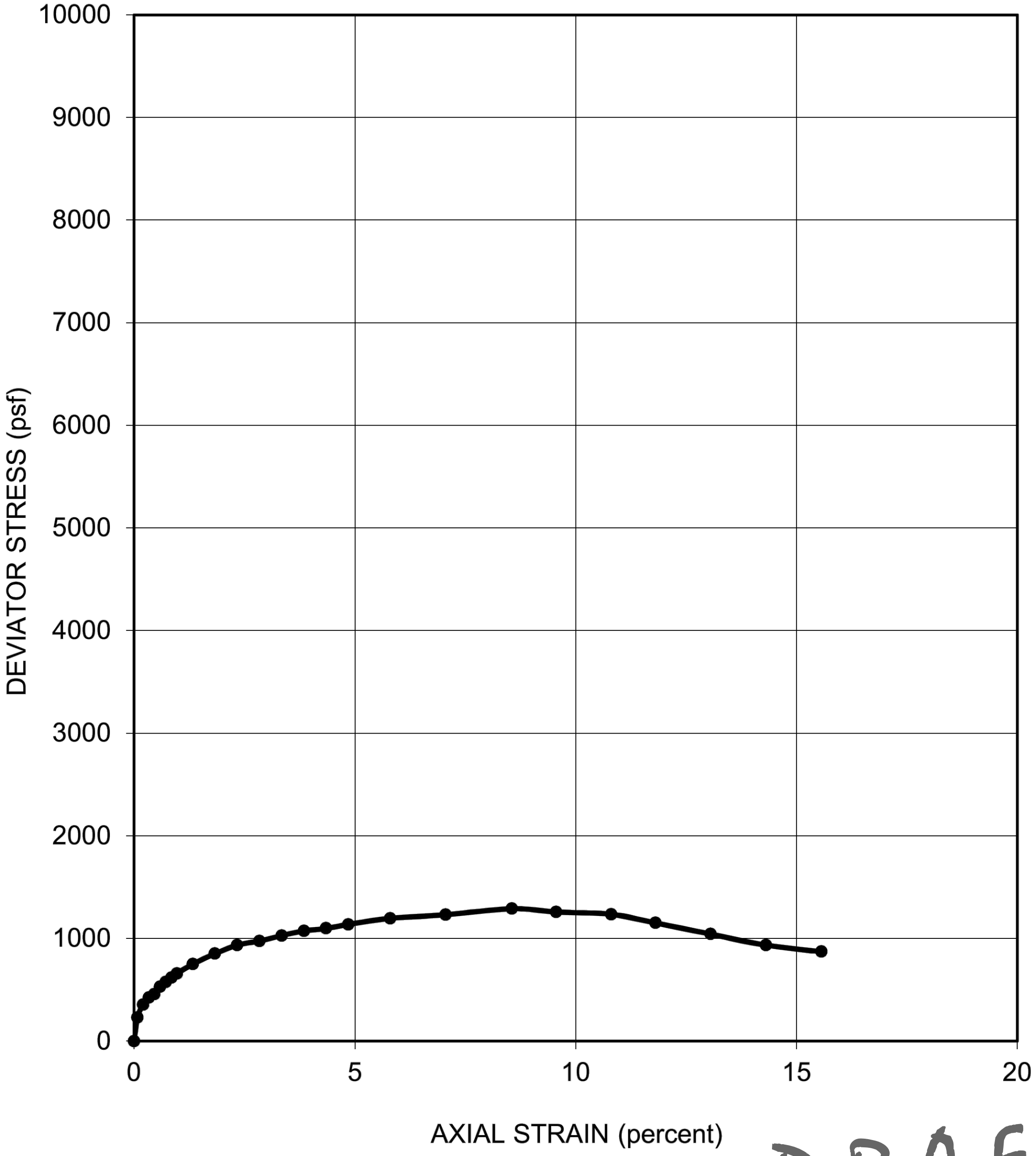

SAMPLER TYPE: Shelby Tube		SHEAR STRENGTH: 640 psf	
DIAMETER (in.): 2.86	HEIGHT (in.): 6.1	STRAIN AT FAILURE: 8.6 %	
MOISTURE CONTENT: 25.3 %		CONFINING PRESSURE: 3,300 psf	
DRY DENSITY: 95 pcf		STRAIN RATE: 0.50 % / min	
DESCRIPTION: SANDY CLAY (CH), brown			SOURCE: B-6 at 32 feet

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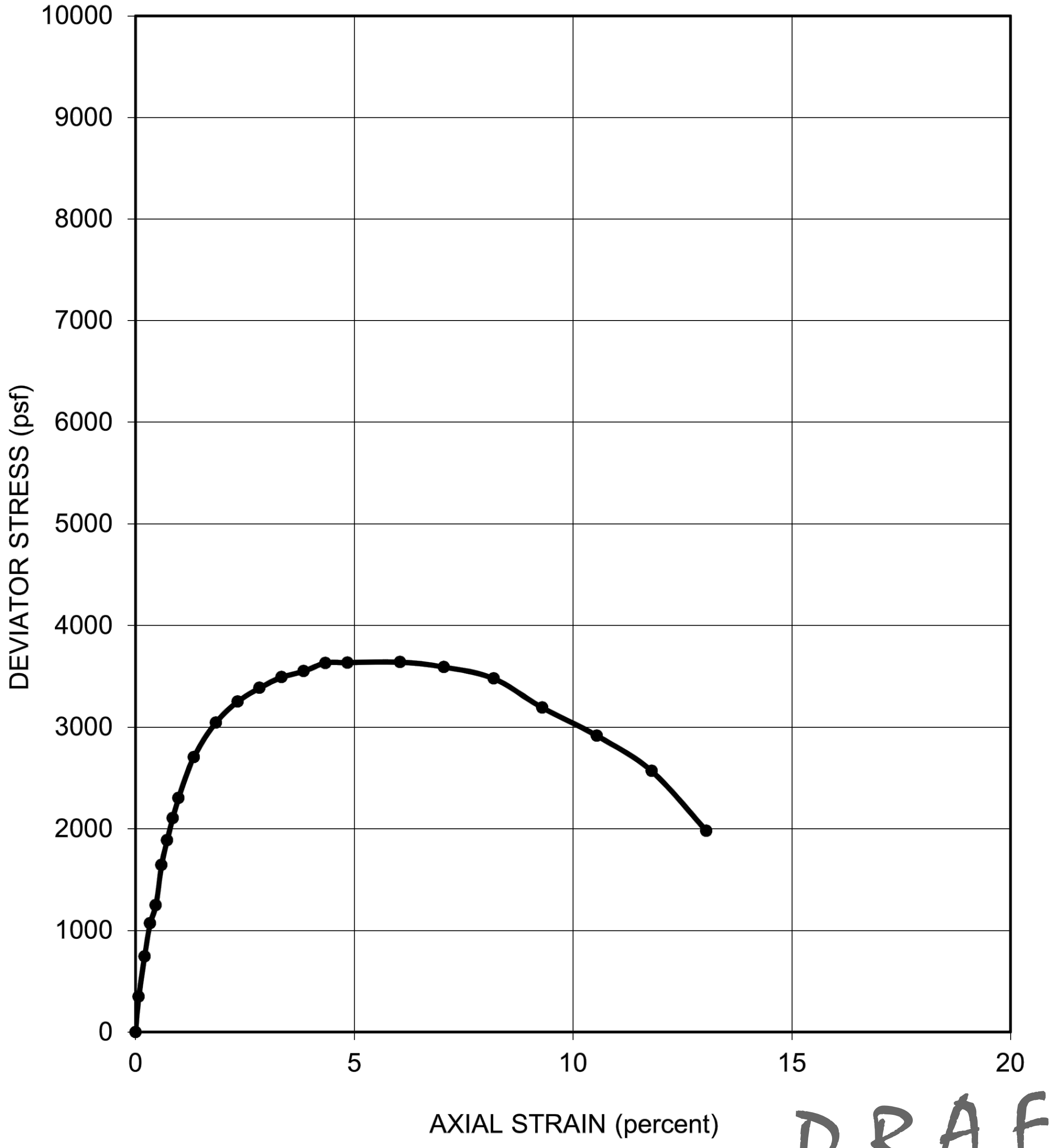
Figure C-18



SAMPLER TYPE: Shelby Tube			SHEAR STRENGTH:	1,820	psf
DIAMETER (in.): 2.86	HEIGHT (in.): 6.1		STRAIN AT FAILURE:	6.0	%
MOISTURE CONTENT:	29.4	%	CONFINING PRESSURE:	3,600	psf
DRY DENSITY:	95	pcf	STRAIN RATE:	0.50	% / min
DESCRIPTION: CLAY with SAND and GRAVEL (CL), brown			SOURCE: B-8 at 35 feet		

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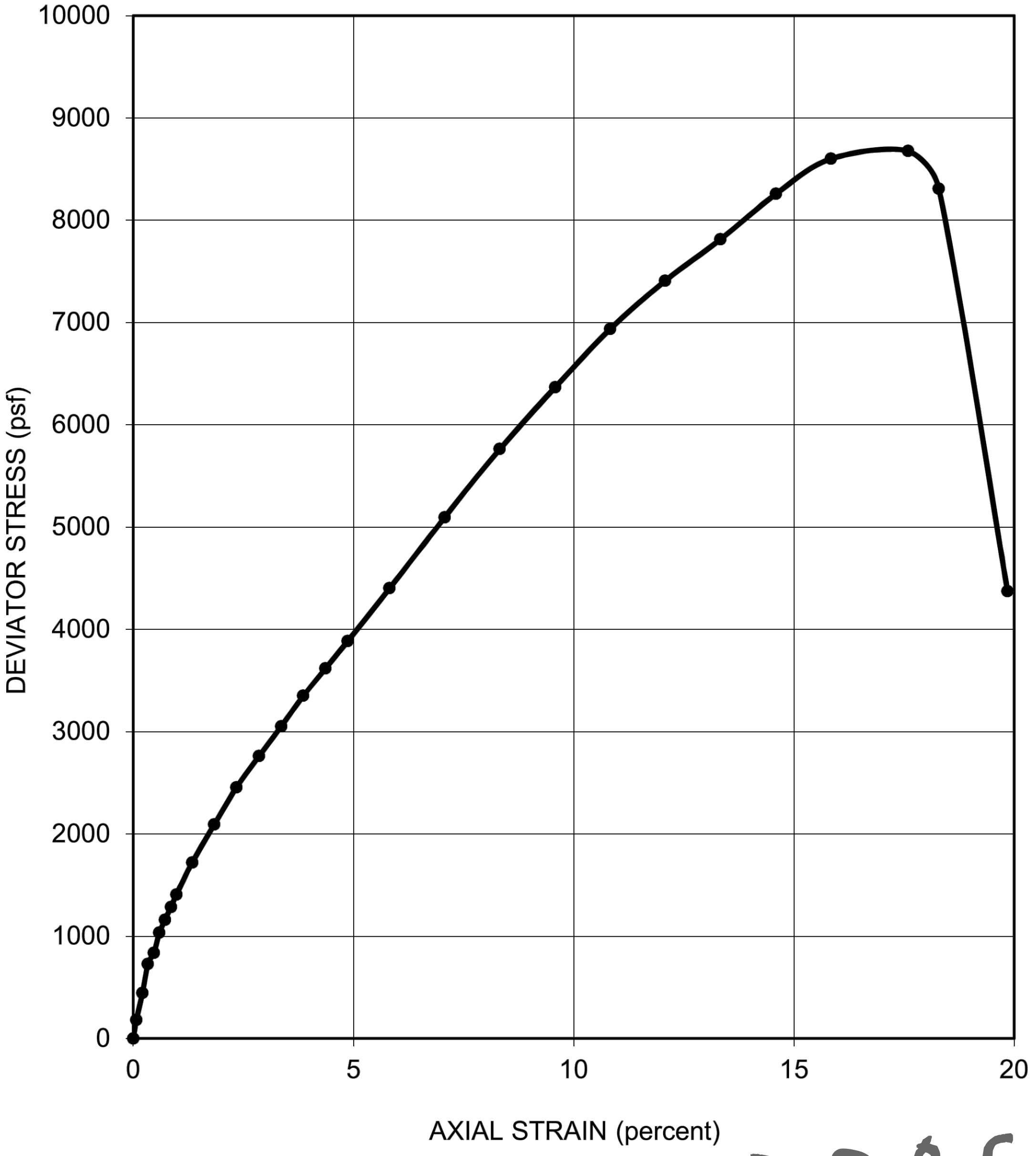

SAMPLER TYPE: Sprague & Henwood			SHEAR STRENGTH:	4,340	psf
DIAMETER (in.): 2.37	HEIGHT (in.): 5.61		STRAIN AT FAILURE:	17.6	%
MOISTURE CONTENT:	20.5	%	CONFINING PRESSURE:	7,075	psf
DRY DENSITY:	111	pcf	STRAIN RATE:	1.00	% / min
DESCRIPTION: CLAY with SAND (CL), gray to blue-gray			SOURCE: B-6 at 70.75 feet		

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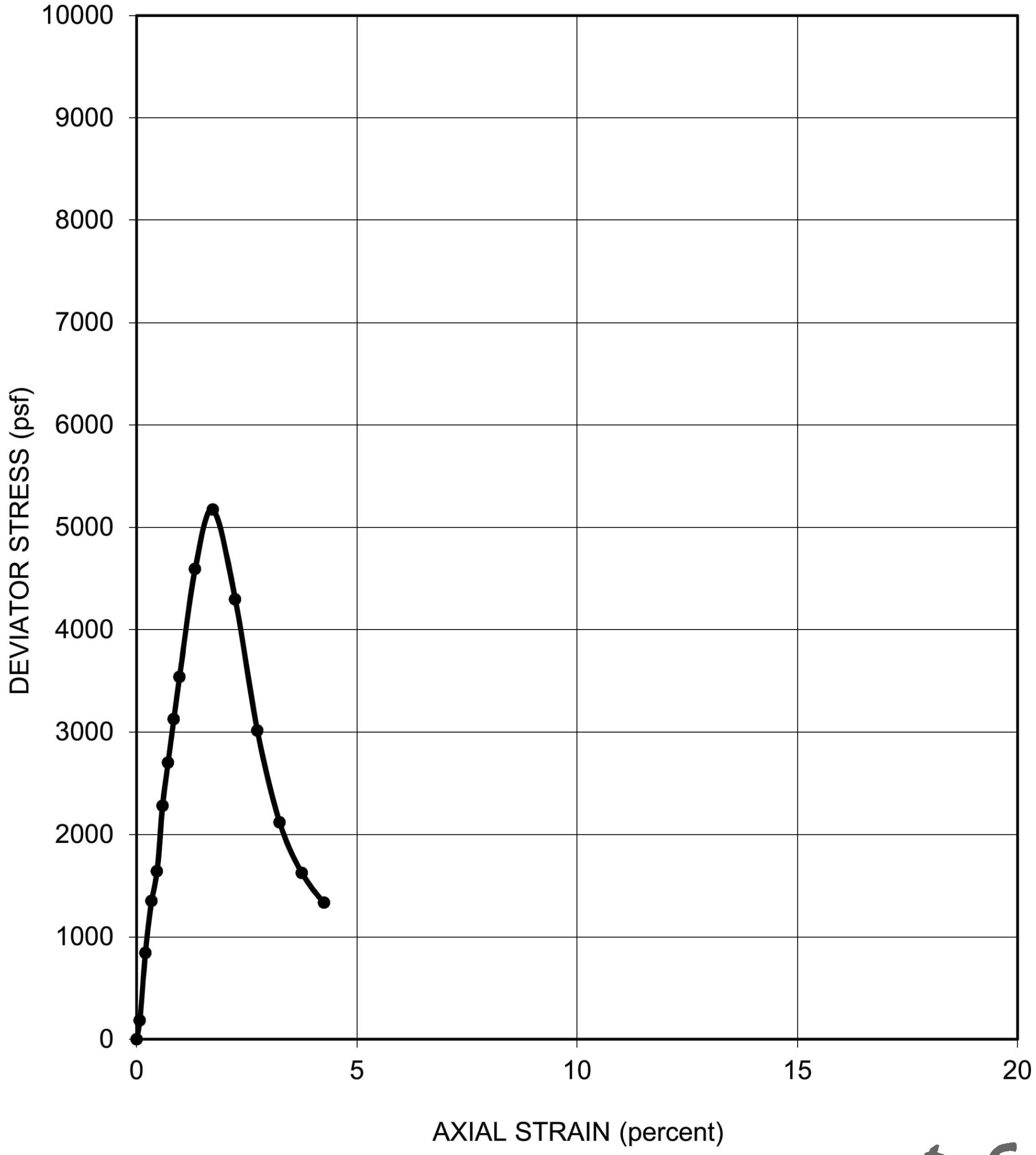
10X GENOMICS BUILDING 1
1701 SPRINGDALE AVE
PLEASANTON
ALAMEDA COUNTY CALIFORNIA

Figure Title
UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST

Project No. 731745301
Date 12/01/2020
Drawn By AG
Checked By TF

Figure
C-20



SAMPLER TYPE: Shelby Tube			SHEAR STRENGTH:	2,590	psf
DIAMETER (in.): 2.86	HEIGHT (in.): 6.1		STRAIN AT FAILURE:	1.7	%
MOISTURE CONTENT:	27.9	%	CONFINING PRESSURE:	8,050	psf
DRY DENSITY:	96	pcf	STRAIN RATE:	0.75	% / min
DESCRIPTION: CLAY (CL), gray			SOURCE: B-10 at 80 feet		

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UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST

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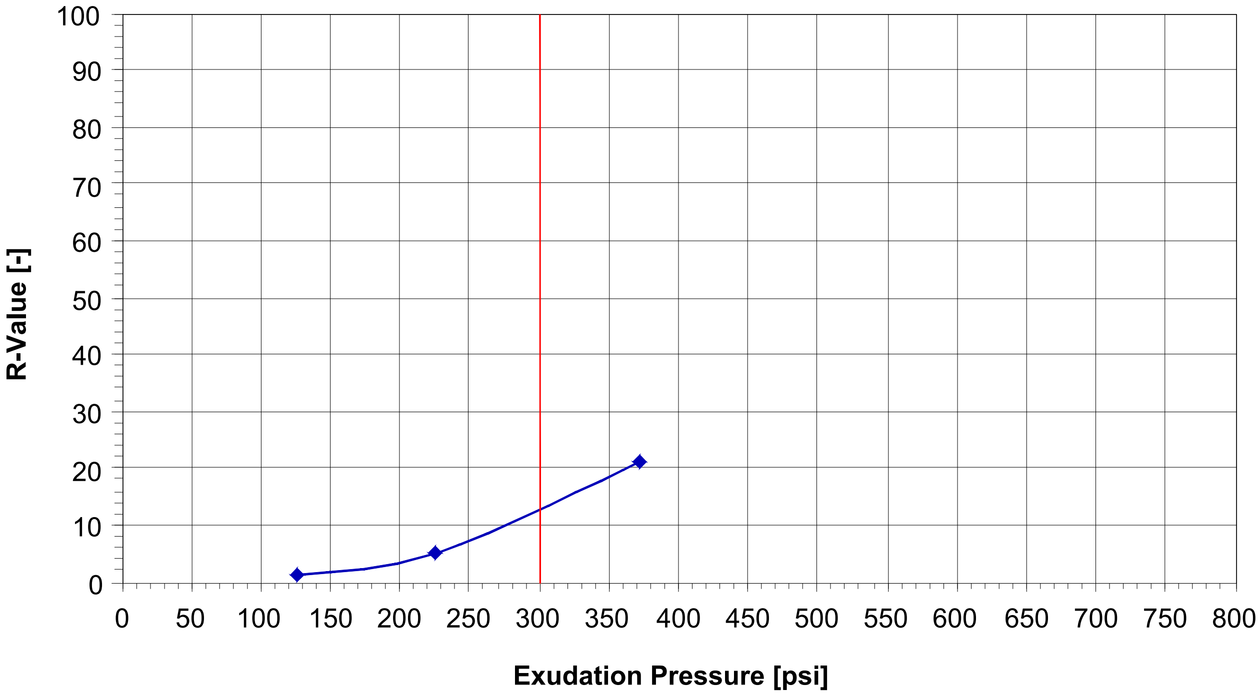
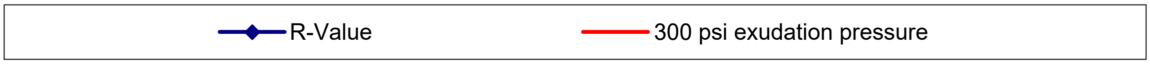
Figure C-21





Sample ID	A	B	C	D
Water Content (%)	21.0	18.4	16.2	--
Dry Density (pcf)	104.4	106.7	109.5	--
Exudation Pressuer (psi)	126	226	372	--
Expansion Pressure (psf)	0.0	0.0	0.0	--
Resistance Value (R)	1.0	5.0	21.0	--

DRAFT

Sample Source	Sample Description	Sand Equivalent	Expansion Pressure	R-Value
B-7 at 0 to 4 feet	SANDY CLAY with GRAVEL (CL), gray to black	--	--	14

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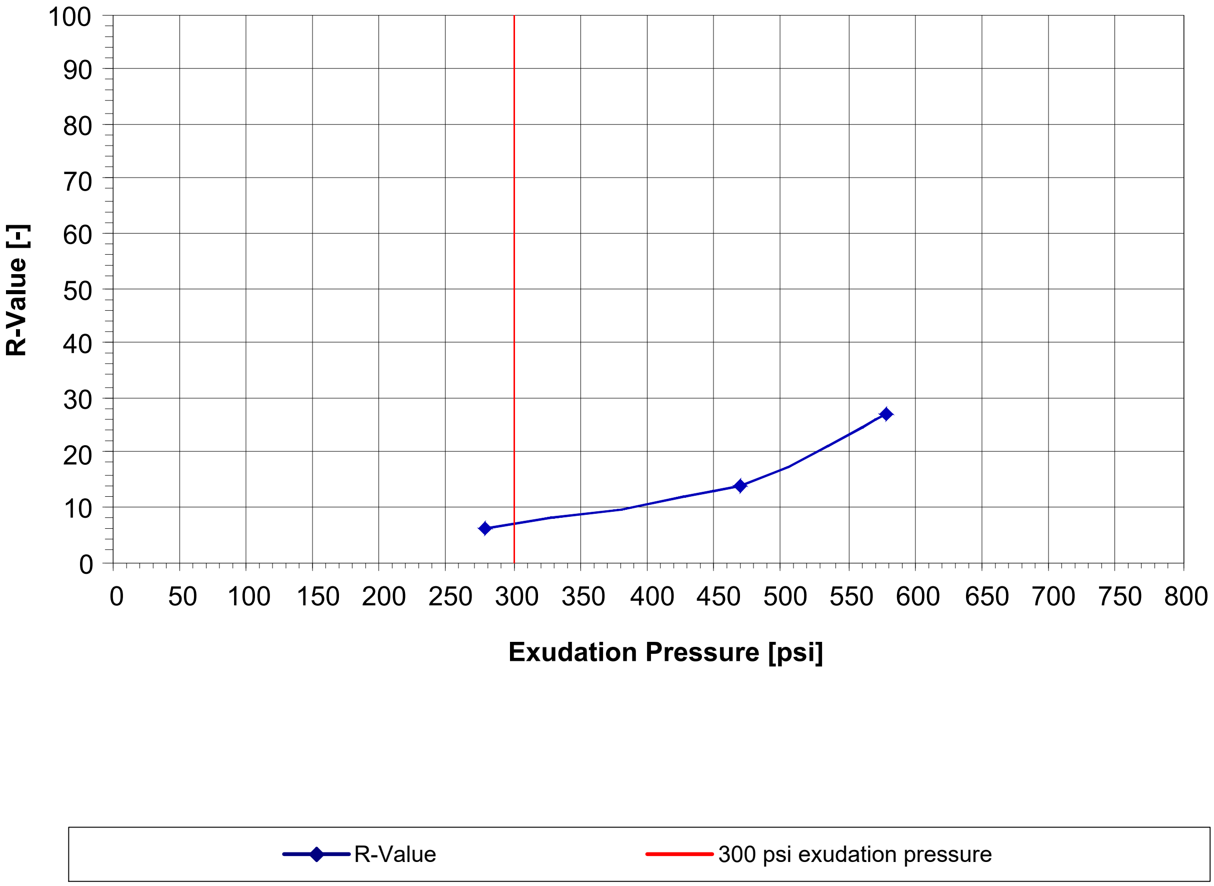
Figure Title
RESISTANCE VALUE TEST REPORT

Project No. 731745301
Date 12/01/2020
Drawn By AG
Checked By TF

Figure
C-22



Sample ID	A	B	C	D
Water Content (%)	17.3	15.6	14.7	--
Dry Density (pcf)	113.1	114.3	115.8	--
Exudation Pressuer (psi)	280	469	578	--
Expansion Pressure (psf)	0.0	0.0	0.0	--
Resistance Value (R)	6.0	14.0	27.0	--

Sample Source	Sample Description	Sand Equivalent	Expansion Pressure	R-Value
B-9 at 8 inches to 5 feet	CLAY with SAND (CL), brown	--	--	7

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Figure Title
RESISTANCE VALUE TEST REPORT

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Figure
C-23

DISTRIBUTION

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QUALITY CONTROL REVIEWER

Richard D. Rodgers
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