



Geotechnical Engineering Report

QTS Aurora
Gun Club Road and Colfax Avenue
Aurora, Colorado

September 7, 2021

Terracon Project No. 25215031

Prepared for:
Quality Technology Services, Inc.
Irving, Texas

Prepared by:
Terracon Consultants, Inc.
Wheat Ridge, Colorado

September 7, 2021

Quality Technology Services, Inc.
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Attn: Mr. Jon Sizemore
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Re: Geotechnical Engineering Report
QTS Aurora
Gun Club Road and Colfax Avenue
Aurora, Colorado
Terracon Project No. 25215031

Mr. Sizemore:

We have completed the Geotechnical Engineering services for the above referenced project. This study was performed in general accordance with Terracon Proposal No. P25215031 dated February 9, 2021 and revised on March 8, 2021. This report presents the findings of the subsurface exploration and provides geotechnical recommendations concerning earthwork and the design and construction of foundations, floor slabs, and pavements for the proposed project.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants, Inc.

A handwritten signature in black ink, appearing to read "N. Novotny".

Nicholas M. Novotny, P.G., C.E.G.
Senior Staff Geologist



Scott B. Myers, P.E.
Regional Senior Consultant

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FIGURES

GEOMODEL

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EXPLORATION AND TESTING PROCEDURES

SITE LOCATION AND EXPLORATION PLANS

EXPLORATION RESULTS

FIELD ELECTRICAL RESISTIVITY TEST RESULTS

DIRECT EMBED DESIGN PARAMETERS

SUPPORTING INFORMATION

Note: Refer to each individual Attachment cover page for a listing of contents.

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REPORT SUMMARY

Topic ¹	Overview Statement ²
Project Description	We understand the proposed construction consists of two 137,000 square foot data centers, two (2) future data center buildings, a substation, equipment yards, and parking/driveways. The proposed data center buildings will include 2 interior levels with a roof top mechanical platform. We understand that the proposed data center buildings designated as DC1 and DC4 are planned to be constructed as the first phase of a larger development, with the two additional data center buildings, designated as DC2 and DC3, planned for future construction. We also understand that a proposed 3.1 acre substation will be designed and constructed as part of the project. We anticipate that the proposed substation will likely consist of generators, transformers, and inverters with associated transmission towers.
Expansive Soils and Bedrock	Laboratory testing indicates the native clay soils and claystone bedrock have low to very high expansive potential. The native sand soils and sandstone bedrock are considered to have nil to low expansive potential.
Foundations	[REDACTED] in [REDACTED]. If the owner is willing to accept a higher risk of movement, the proposed data centers could be constructed on shallow spread footings bottomed on a zone of new engineered fill. [REDACTED] [REDACTED] [REDACTED] Transmission towers for the proposed substation may be constructed on drilled pier foundations or may be direct embed structures.
Floor Slabs	[REDACTED] [REDACTED] [REDACTED] If very little movement can be tolerated, structural floors, supported independent of the subgrade materials, are recommended.
Pavements	We have assumed both rigid (concrete) and flexible (asphalt) pavement sections will be considered for this project. Also, Terracon will provide recommendations based on a 20-year design life. Anticipated traffic loading was not available at the time this report was written. Based on our experience on similar sites, we anticipate traffic loads to consist of the following for Light Duty and Heavy Duty pavements respectively: ■ Light Duty - 200 light automobiles per day; 50 pickup trucks per day

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Topic ¹	Overview Statement ²
	■ Heavy Duty - 200 light automobiles per day; 50 pickup trucks per day; 2 tractor trailers per day; 2 garbage trucks per week
General Comments	This section contains important information about the limitations of this geotechnical engineering report.

1. If the reader is reviewing this report as a pdf, the topics above can be used to access the appropriate section of the report by simply clicking on the topic itself.

2. This summary is for convenience only. It should be used in conjunction with the entire report for design purposes.

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INTRODUCTION

This report presents the results of our subsurface exploration and geotechnical engineering services performed for the proposed data center to be located near the intersection Gun Club Road and Colfax Avenue in Aurora, Colorado. The purpose of these services is to provide information and geotechnical engineering recommendations relative to:

- Subsurface soil conditions
- Groundwater conditions
- Seismic site classification per IBC
- Floor Slab Recommendations
- Site preparation and earthwork
- Excavation procedures
- Foundation Recommendations
- Exterior Flatwork Recommendations
- Pavement design and construction

The geotechnical engineering Scope of Services for this project included the advancement of fifty-six (56) test borings (designated as Boring Nos. 01 to 42, F1 to F6, and S1 to S8) to depths ranging from approximately 30 to 50 feet below existing site grades.

Plans showing the site and boring locations are shown in the **Site Location** and **Exploration Plans** sections, respectively. The results of the laboratory testing performed on soil and bedrock samples obtained from the site during the field exploration are included on the boring logs and as separate graphs in the **Exploration Results** section.

SITE CONDITIONS

The following description of site conditions is derived from our site visit in association with the field exploration and our review of publicly available geologic and topographic maps.

Item	Description
Parcel Information	The project site is located on a tract of land southeast of the intersection of Gun Club Road and Colfax Avenue in Aurora, Colorado. See Site Location

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Item	Description
Existing Improvements	The project site currently consists of vacant land.
Current Ground Cover	The site is currently covered by moderate vegetation consisting of grass and weeds.
Existing Topography	Based on the grading plan for this project (Martin/Martin, Sheets 1 and 2, Job No. 19.1522.C.86, revised March 29, 2021) the site slopes gently down to the north with an elevation difference of about 20 feet across the site. A northward trending drainage swale is present near the center of the site, with three smaller northward trending drainage swales on the eastern portion of the site. The elevation change across the data center building (DC1) is about 9 feet from the high of EL. 4,548 feet in the southwest corner to a low of EL. 4,539 feet in the northwest corner. The elevation change across the data center building (DC4) is about 8 feet from the high of EL. 5,552 feet in the southwest corner to a low of EL. 5,544 feet in the northeast corner.

PROJECT DESCRIPTION

Our initial understanding of the project was provided in our proposal and was discussed during project planning. A period of collaboration has transpired since the project was initiated, and our final understanding of the project conditions is as follows:

Item	Description
Proposed Structures	We understand the proposed construction consists of two 137,000 square foot data centers, two (2) future data center buildings, a substation, equipment yards, and parking/driveways. The proposed data center buildings will include 2 interior levels with a roof top mechanical platform. We understand that the proposed data center buildings designated as DC1 and DC4 are planned to be constructed as the first phase of a larger development, with the two additional data center buildings, designated as DC2 and DC3, planned for future construction. We also understand that a proposed 3.1 acre substation will be designed and constructed as part of the project. We anticipate that the proposed substation will likely consist of generators, transformers, and inverters with associated transmission towers.
Movement Tolerances	We understand that a maximum potential movement, due to expansion or settlement, is 1-inch total and ½ inch differential.

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Item	Description
Finished Floor Elevation	Based on the site grading plan provided to Terracon, the Finished Floor Elevation (FFE) of the data center building DC1 is set at EL. 5,550.70 feet while the FFE for data center building DC4 is set at EL. 5,547.60 feet.
Maximum Loads (Provided by QTS)	■ Column Loads: 700 kips (dead); 550 kips (live); 250 kips (transient) ■ Equipment Yard Foundations: 250 psf ■ Non-Load Bearing Walls: 7 klf (kips per linear feet) ■ Floor Slabs: 500 psf
Site Grading	We understand that the site grading is planned to be accomplished prior to the sale of the property. Based on the grading plan for this project, we understand that cuts on the order of 170,000 cubic yards and fills on the order of 236,000 cubic yards are planned for the site. For proposed data center DC1, we anticipate fills on the order of about 3 to 11 feet to achieve the proposed finished floor elevation. For proposed data center DC4, we anticipate cuts on the order of up to about 5 feet and fills on the order of about 4 feet to achieve the proposed finished floor elevation.
Retaining Walls	We understand that retaining walls on the order of about 4 feet in height are planned for the proposed loading dock areas.
Pavements	We have assumed both rigid (concrete) and flexible (asphalt) pavement sections will be considered for this project. Also, Terracon will provide recommendations based on a 20-year design life. Anticipated traffic loading was not available at the time this report was written. Based on our experience on similar sites, we anticipate traffic loads to consist of the following for Light Duty and Heavy Duty pavements respectively: ■ Light Duty - 200 light automobiles per day; 50 pickup trucks per day ■ Heavy Duty - 200 light automobiles per day; 50 pickup trucks per day; 2 tractor trailers per day; 2 garbage trucks per week

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GEOTECHNICAL CHARACTERIZATION

Site Geology

Based on our review of the geologic map of the region (¹Brandt, T.R. et. Al, 2004), the site is considered to be underlain by Quaternary age **Loess Deposits (Ql)** and nearby outcrops of **Denver Formation (TKd)** of Upper Cretaceous geologic age.

The **Loess Deposits** generally consist of silt with lesser amounts of clay and sand deposited by wind. Based on our experience in the area, loess deposits are generally less than 5 feet thick. The **Denver Formation** generally consists of interbedded claystone, siltstone, sandstone, and conglomerate. Claystone and siltstone in this formation is known to be partly altered to montmorillonite clay, which swells when wet, and can cause damage to buildings, roads, and other structures.

Due to the gently sloping nature of the site, geologic hazards at the site are anticipated to be low. Seismic activity in the area is anticipated to be low and, from a structural standpoint, the property should be relatively stable. With proper site grading around the proposed structures, erosional problems at the site should be reduced.

Mapping completed by the Colorado Geological Survey (²Hart, 1972), indicates the site is in an area of "High Swell Potential". Potentially expansive materials mapped in this area include bedrock, weathered bedrock and colluvium (surficial units).

The geologic conditions presented in this section were obtained by locating the subject site on available large-scale geologic maps. Due to the scales involved, precise location of the site can be difficult to determine. In addition, the large-scale geologic maps describe only general trends. Local variations are possible and site specific geology may differ from those described above. A site-specific detailed geologic description is beyond the scope of this project.

Subsurface Conditions

We have developed a general characterization of the subsurface conditions based upon our review of the subsurface exploration, laboratory data, geologic setting, and our understanding of the project. This characterization, termed GeoModel, forms the basis of our geotechnical calculations and evaluation of site preparation and foundation options. Conditions encountered at each exploration point are indicated on the individual logs. The individual logs can be found in the **Exploration Results** section and the GeoModel can be found in the **Figures** section of this

¹ Brandt, T.R., Moore, D.W., Murray, K.E., Trimble, D.E., and Machette, M.N., 1979, **Geologic Map of the Greater Denver Area, Front Range Urban Corridor, Colorado**, U.S. Geological Survey, Miscellaneous Investigations Series Map I-856-H, Scale 1:100,000

²Hart, Stephen S., 1972, **Potentially Swelling Soil and Rock in the Front Range Urban Corridor, Colorado**, Colorado Geological Survey, Environmental Geology No. 7.

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report. As noted in **General Comments**, the characterization is based upon widely spaced exploration points across the site, and variations are likely.

As part of our analyses, we identified the following model layers within the subsurface profile. For a more detailed view of the model layer depths at each boring location, refer to the GeoModel.

Model Layer	Layer Name	General Description
1	Native Clay	Native lean clay with varying amounts of sand, gravel and organics; stiff to very stiff
2	Native Sand	Native sand with varying amounts of clay; loose to medium dense
3	Bedrock	Bedrock consisting of claystone and sandstone; soft to very hard

Groundwater Conditions

The borings were observed while drilling and upon completion of drilling for the presence and level of groundwater. The water levels encountered in the boreholes can be found on the boring logs in **Exploration Results**, and are summarized below.

Boring No.	Shallowest depth to groundwater encountered while or upon completion of drilling ¹
1	None encountered
2	About 39 feet
3	None encountered
4	About 24 feet
5	None encountered
6	None encountered
7	None encountered
8	About 34 feet
9	None encountered
10	None encountered
11	None encountered
12	None encountered
13	None encountered
14	None encountered
15	None encountered
16	None encountered
17	None encountered

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Boring No.	Shallowest depth to groundwater encountered while or upon completion of drilling ¹
18	None encountered
19	None encountered
20	None encountered
21	None encountered
22	None encountered
23	None encountered
24	None encountered
25	None encountered
26	None encountered
27	None encountered
28	None encountered
29	None encountered
30	None encountered
31	None encountered
32	None encountered
33	None encountered
34	None encountered
35	None encountered
36	None encountered
37	None encountered
38	None encountered
39	None encountered
40	None encountered
41	None encountered
42	None encountered
F1	None encountered
F2	None encountered
F3	None encountered
F4	None encountered
F5	None encountered
S1	None encountered
S2	None encountered
S3	None encountered
S4	None encountered
S5	None encountered

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Boring No.	Shallowest depth to groundwater encountered while or upon completion of drilling ¹
S6	None encountered
S7	None encountered
S8	None encountered
¹ . Due to safety concerns, borings were backfilled immediately after completion. Therefore, subsequent groundwater measurements were not obtained.	

These observations represent groundwater conditions at the time of the field exploration, and may not be indicative of other times or at other locations. Groundwater levels can be expected to fluctuate with varying seasonal and weather conditions.

Based upon review of U.S. Geological Survey maps (³Hillier, et al, 1983), regional groundwater is expected to be encountered in the Denver Aquifer, generally below a depth of 20 feet and commonly more than 100 feet below present ground surface. Shallowest depths to water table generally occur along stream valleys and in colluvial deposits.

Zones of perched and/or trapped groundwater may also occur at times in the subsurface soils overlying bedrock, on top of the bedrock surface or within permeable fractures in the bedrock materials. The location and amount of perched water is dependent upon several factors, including hydrologic conditions, type of site development, irrigation demands on or adjacent to the site, fluctuations in water features, seasonal and weather conditions.

Groundwater level fluctuations occur due to seasonal variations in the amount of rainfall, runoff, and other factors not evident at the time the borings were performed. Groundwater levels during construction or at other times in the life of the structures may be higher or lower than the levels

GEOTECHNICAL OVERVIEW

Based on subsurface conditions encountered in the borings, the site appears suitable for the proposed construction from a geotechnical point of view provided certain precautions and design and construction recommendations outlined in this report are followed. We have identified

³Hillier, Donald E.; Schneider, Paul A., Jr.; and Hutchinson, E. Carter, 1983, *Depth to Water Table (1976-1977) in the Greater Denver Area, Front Range Urban Corridor, Colorado*, United States Geological Survey, Map I-856-K.

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geotechnical conditions that could impact design and construction of the proposed data center buildings, substation, and other site improvements.

Expansive Soils and Bedrock

Laboratory testing indicates the native clay soils and claystone bedrock have low to very high expansive potential. The native sand soils and sandstone bedrock are considered to have nil to low expansive potential.

This report provides recommendations to help mitigate the effects of soil and bedrock shrinkage and expansion. However, even if these procedures are followed, some movement and cracking in the buildings, pavements, and flatwork should be anticipated. The severity of cracking and other damage such as uneven floor slabs will probably increase if any modification of the site results in excessive wetting or drying of the expansive soils and bedrock. Eliminating the risk of movement and distress is generally not feasible, but it may be possible to further reduce the risk of movement if significantly more expensive measures are used during construction. It is imperative the recommendations outlined in the **Grading and Drainage** subsection of **Earthwork** in this report be followed to reduce movement.

Difficult Excavations

It is anticipated that excavations for the proposed structures can be accomplished with conventional earthmoving equipment; however, specialized heavy-duty equipment capable of ripping may be required for claystone and sandstone bedrock excavation to facilitate rock breakup and removal if excavations extend into these materials. Consideration should be given to obtaining a unit price for difficult excavation in the contract documents for the project.

EARTHWORK

The following presents recommendations for site preparation, excavation, subgrade preparation, and placement of engineered fills on the project. All earthwork on the project should be observed and evaluated by Terracon.

Site Preparation

Strip and remove existing vegetation, organics, and other deleterious materials from proposed building and pavement areas. All exposed surfaces should be free of mounds and depressions that could prevent uniform compaction.

Stripped materials consisting of vegetation, unsuitable fills, and organic materials should be wasted from the site or used to revegetate landscaped areas or exposed slopes after completion of grading operations.

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Where possible, the site should be initially graded to create a relatively level surface to receive fill and to provide for a relatively uniform thickness of fill beneath the proposed building and improvement areas. All exposed areas that will receive fill, once properly cleared, should be scarified to a minimum depth of 12 inches, conditioned to near optimum moisture content, and compacted. It is imperative the moisture content of prepared materials be protected from moisture loss.

Although evidence of underground facilities such as septic tanks and basements were not observed during our exploration, such features could be encountered during construction. If unexpected fills or underground facilities are encountered, such features should be removed and the excavation thoroughly cleaned prior to backfill placement and/or construction.

It is anticipated that excavations for the proposed construction can be accomplished with conventional earthmoving equipment. However, heavy-duty construction equipment may be necessary when excavating into very hard claystone and sandstone bedrock.

Depending upon seasonal conditions, surface water may infiltrate into the excavations on the site. Water seeping into excavations at this site could most likely be controlled by shallow trenches leading to a sump pit where the water could be removed by pumping.

The stability of subgrade soils may be affected by precipitation, repetitive construction traffic, or other factors. If unstable conditions are encountered or develop during construction, workability may be improved by overexcavation of wet zones and mixing these soils with crushed gravel. Use of geotextiles could also be considered as a stabilization technique. Lightweight excavation equipment may be required to reduce subgrade pumping.

Material Types

Fill for this project should consist of engineered fill. Engineered fill is fill that meets the criteria presented in this report and has been properly documented.

Engineered fill should meet the following material property requirements:

Fill Type ^{1,2}	USCS Classification	Acceptable location for placement
On-site clay soils	CL	On-site clay soils are considered suitable for reuse as compacted fill below foundation, slab, and pavement areas, and as general fill for this project.
On-site sand soils mixed with clay soils ³	SC	On-site sand soils mixed with clay soils are considered suitable for reuse as compacted fill below foundation, slab, and pavement areas and as general fill for this project.
Processed claystone bedrock ⁴	N/A	Properly processed on-site claystone bedrock is considered suitable for fill below pavement areas and as general fill for this project.

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Fill Type ^{1,2}	USCS Classification	Acceptable location for placement
Processed sandstone bedrock ^{3,5}	N/A	Properly processed on-site sandstone bedrock mixed with clay soils is considered suitable for fill below foundation, slab, and pavement areas and as general fill for this project.
Imported soils	Varies	Imported soils meeting the gradation outlined herein can be considered acceptable for use as engineered fill beneath slabs and pavements.
CDOT Class 1 Structural Fill ⁶	Varies	CDOT Class 1 Structural Fill (or an approved equivalent) is considered suitable for fill below foundation or slab-on-grade areas.

1. Controlled, compacted fill should consist of approved materials that are free of organic matter and debris. Frozen material should not be used, and fill should not be placed on a frozen subgrade. A sample of each material type should be submitted to the Geotechnical Engineer for evaluation.
2. Care should be taken during the fill placement process to avoid zones of dis-similar fill. Improvements constructed over varying fill types are at a higher risk of differential movement compared to improvements over a uniform fill zone.
3. On-site sand soils and processed sandstone should be mixed with on-site clay soils to meet the gradation requirements outlined below for imported soils.
4. On-site claystone bedrock materials should be staged separately from excavated soils and processed to a soil-like consistency with a maximum particle size of 2 inches.
5. On-site sandstone bedrock materials should be staged separately from excavated soils and processed to a soil-like consistency with a maximum particle size of 2 inches.
6. CDOT Class 1 Structural Fill (or an approved equivalent) may only be used in the overexcavation zone below foundation areas if a drain is constructed at the base of these materials.

Imported soils and on-site materials for engineered fill (if required) should meet the following material property requirements:

Gradation	Percent finer by weight (ASTM C136)
2"	100
No. 4 Sieve	50-100
No. 200 Sieve	>50

- Liquid Limit 30 (max)
- Plasticity Index 15 (max)
- Maximum Expansive Potential (%) 1.0*

*Measured on a sample compacted to approximately 95 percent of the ASTM D698 maximum dry density at optimum water content. The sample is confined under a 200-psf surcharge and submerged.

Compaction Requirements

Engineered fill should be placed and compacted in horizontal lifts, using equipment and procedures that will produce recommended moisture contents and densities throughout the lift.

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Item	Description
Fill lift thickness	8-inches or less in loose thickness when heavy, self-propelled compaction equipment is used 4 to 6-inches in loose thickness when hand-guided equipment (i.e. jumping jack, plate compactor) is used
Compaction requirements ^{1,2}	Minimum of 95% of the material's standard Proctor maximum dry density (ASTM D698) for clay soils and Minimum of 98% of the material's standard Proctor maximum dry density for CDOT Class 1 Structural Fill.
Moisture content cohesive (clay) soils ³	+1 to +4% of the optimum moisture content, with an average daily moisture content of at least +2%, and 0 to +3% of the optimum moisture content under pavements.
Moisture content granular (sand) soils ⁴	-2 to +2% of the optimum moisture content
1. We recommend that engineered fill be tested for water content and compaction during placement. Should the results of the in-place density tests indicate the specified water or compaction limits have not been met, the area represented by the test should be reworked and retested as required until the specified water and compaction requirements are achieved. 2. Water levels should be maintained low enough to allow for satisfactory compaction to be achieved without the compacted fill material pumping when proofrolled. 3. Moisture conditioned clay soils should not be allowed to dry out. A loss of moisture within these materials could result in an increase in the materials expansive potential. Subsequent wetting of these materials could result in undesirable movement. 4. Granular soils should not be used in the overexcavation zone below the buildings, slabs, or pavement areas unless a drain is constructed at the base of the excavated zone.	

Excavation

Excavations into the subsurface soils and bedrock will encounter a variety of conditions. The individual contractor(s) is responsible for designing and constructing stable, temporary excavations as required to maintain stability of both the excavation sides and bottom. All excavations should be sloped or shored in the interest of safety following local and federal regulations, including current Occupational Safety and Health Administration (OSHA) excavation and trench safety standards.

Soils and bedrock penetrated by the proposed excavations may vary significantly across the site. The soil and bedrock classifications are based solely on the materials encountered in the exploratory borings. The contractor should verify that similar conditions exist throughout the proposed area of excavation. If different subsurface conditions are encountered at the time of construction, the actual conditions should be evaluated to determine any excavation modifications necessary to maintain safe conditions.

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Grading and Drainage

All grades must be adjusted to provide positive drainage away from the buildings during construction and maintained throughout the life of the proposed project. Infiltration of water into utility or foundation excavations must be prevented during construction. Landscaped irrigation adjacent to the foundation systems should be minimized or eliminated. Water permitted to pond near or adjacent to the perimeter of the structures (either during or post-construction) can result in significantly higher soil movements than those discussed in this report. As a result, any estimations of potential movement described in this report cannot be relied upon if positive drainage is not obtained and maintained, and water is allowed to infiltrate the fill and/or subgrade.

Permanent grades should be sloped at a minimum of 10 percent grade for at least 10 feet beyond the perimeter of the buildings. Asphalt pavement or concrete flatwork should be sloped at a minimum of 2 percent beyond the building perimeters for the life of the buildings. Where Americans with Disabilities Act (ADA) or other requirements or existing site features limit the gradient, slopes on the order of ½ to 1 percent minimum may be necessary to comply with the ADA, but do increase the risk of unanticipated movement. Backfill against footings, exterior walls, and in utility and sprinkler line trenches should be compacted in accordance with recommendations in this report and free of all construction debris to reduce the possibility of water infiltration. After building construction and prior to project completion, we recommend that verification of final grading be performed to document that positive drainage, as described above, has been achieved.

Where paving or flatwork abuts the structures, care should be taken that joints are properly sealed and maintained to prevent the infiltration of surface water.

Landscape or xeriscape areas within 10 feet of the foundation systems shall not be hindered by landscape edging, grade variations, or vegetation. In addition, consideration should be given to snow removal practices that will minimize the stockpiling of snow in planter and landscaped areas adjacent to structural improvements.

Planters located adjacent to the structures should be watertight. Sprinkler mains and spray heads should be located a minimum of 10 feet away from the building lines. Where drip line irrigation is located near the buildings, we recommend that drip line irrigation systems be located at least 5 feet from the outside edge of the foundations. Roof drains should discharge on pavements or be extended away from the structures a minimum of 10 feet through the use of splash blocks or downspout extensions.

Trees or other vegetation whose root systems have the ability to remove excessive moisture from the subgrade and foundation soils should not be planted next to the buildings. Trees and shrubbery should be kept away from the exterior edges of foundations, a distance at least equal to their expected mature height.

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Earthwork Construction Considerations

Upon completion of grading operations, care should be taken to maintain the moisture content of the subgrade prior to construction of slabs-on-grade, pavements, etc. Construction traffic over prepared subgrade should be minimized and avoided to the extent practical. Construction traffic over processed clay subgrade will eventually reduce the moisture content and increase the density of the subgrade. Subsequent wetting of these materials will result in undesirable movement.

The site should also be graded to prevent ponding of surface water on prepared subgrade or in excavations. In areas where water is allowed to pond over a period of time, the affected area should be removed and allowed to dry out; however, allowing the clay soils to dry out below the optimum moisture content is not recommended. If constraints do not allow for moisture conditioning of affected clays as recommended in this report, the affected area should be overexcavated and replaced with engineered fill. As an alternative, geotextiles could also be considered as a stabilization technique.

The Geotechnical Engineer should be retained during the construction phase of the project to observe earthwork and to perform necessary tests and observations during overexcavation operations, excavations, subgrade preparation; proof-rolling; placement and compaction of controlled compacted fills; backfilling of excavations into the completed subgrade, and just prior to construction of building floor slabs.

Utility Trench Backfill

For low permeability subgrades, utility trenches are a common source of water infiltration and migration. Utility trenches penetrating beneath the building should be effectively sealed to restrict water intrusion and flow through the trenches, which could migrate below the building. The trench should provide an effective trench plug that extends at least 5 feet from the face of the building exterior. The plug material should consist of cementitious flowable fill or low permeability clay. The trench plug material should be placed to surround the utility line. If used, the clay trench plug material should be placed and compacted to comply with the water content and compaction recommendations for engineered fill stated previously in this report.

Construction Observation and Testing

The earthwork efforts should be monitored under the direction of the Geotechnical Engineer. Monitoring should include documentation of adequate removal of vegetation and topsoil, proofrolling, and mitigation of areas delineated by the proofroll to require mitigation.

Each lift of compacted fill should be tested, evaluated, and reworked, as necessary, until approved by the Geotechnical Engineer prior to placement of additional lifts. Each lift of fill should be tested for density and water content at a frequency of at least one test for every 2,500 square feet of

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compacted fill in the building areas and 5,000 square feet in pavement areas. One density and water content test should be performed for every 50 linear feet of compacted utility trench backfill.

In areas of foundation excavations, the bearing subgrade should be evaluated under the direction of the Geotechnical Engineer. If unanticipated conditions are encountered, the Geotechnical Engineer should prescribe mitigation options.

In addition to the documentation of the essential parameters necessary for construction, the continuation of the Geotechnical Engineer into the construction phase of the project provides the continuity to maintain the Geotechnical Engineer's evaluation of subsurface conditions, including assessing variations and associated design changes.

FOUNDATION RECOMMENDATIONS

Based upon the results of the field exploration and laboratory testing program for this exploration, the following foundation systems were evaluated for use in supporting the proposed data center buildings and equipment pads:

- Straight-shaft, cast-in-place piers/shafts constructed in bedrock.
- Spread footing or mat foundations on a zone of new engineered fill.

Due to the presence of expansive clay and claystone materials, we recommend the proposed data center buildings be constructed on drilled pier foundation systems bottomed in the underlying claystone and sandstone bedrock. If the owner is willing to accept a higher risk of movement, the proposed data centers could be supported on shallow spread footings bottomed on a zone of new engineered fill.

The proposed equipment pads for the data center buildings could be constructed on spread footings or mat foundations over a zone of new engineered fill, provided the owner is willing to accept the associated risk of movement.

Drilled Pier Recommendations

Our recommendations for a drilled pier foundation system are presented in the following paragraphs:

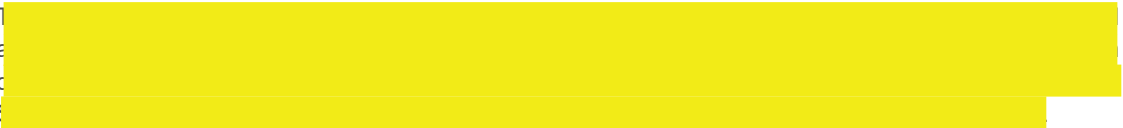
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Description	Value
Minimum Pier Length ¹	35 feet
Minimum Bedrock Embedment ^{2,3,4}	15 feet
Maximum Allowable End-Bearing Pressure ⁵	25,000 psf
Maximum Allowable Skin Friction ⁶	2,000 psf
Minimum Dead Load (kips)	None
Uplift Force (Tension due to Soil/Bedrock Uplift, kips)	85 x pier diameter (feet)
Minimum Pier Diameter	18 inches or length/diameter < 30
Shear Rings	3 inches high by 3 inches deep at 16 inches on center within bottom 15 feet of shaft
Void Thickness ⁸	12 inches

1. The required minimum length is from the bottom of grade beams or pier caps.
2. The required minimum bedrock embedment considers the uplift force from soil/bedrock uplift only.
3. Drilled shafts should be embedded into firm or harder bedrock materials.
4. The portion of the drilled piers that can resist the uplift force must be (a) embedded in firm or harder bedrock and (b) be at least 15 feet below the top of the drilled pier.
5. In accordance with IBC Section 1806.1, if design of the pier foundations is completed using allowable stress design (ASD) methods, the vertical bearing resistance may be increased by 1/3 where used with the alternative basic load combinations that include wind or seismic loads that are described in IBC Section 1605.3.2. This 1/3 increase does not apply if design is completed using load and resistance factor design (LRFD) methods. Increases also do not apply to the resistance of uplift loads, nor to the soil properties provided in this report for modeling the pier response to lateral loads, nor the resulting lateral pier deflection vs. applied load graph.
6. Skin friction should not be applied in fill or overburden soils, or the upper 5 feet of the drilled pier, whichever is deepest.
7. See **Direct Embed Design Parameters** section for direct embed design parameters.
8. 
9. Movement on the order of less than 1/2 inch should be anticipated for the drilled piers, provided the piers are properly designed and constructed. Skin friction capacity provided may be used for compression and tension loading.

Piers should be considered to work in group action if the center-to-center horizontal spacing is less than three pier diameters. A minimum practical center-to-center horizontal spacing between piers of at least three diameters should be maintained, and adjacent piers should bottom at the same elevation. The capacity of individual piers must be reduced when considering the effects of group action. Capacity reduction is a function of pier spacing and the number of piers within a group. The following table presents capacity reductions for closely spaced piers.

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Description	Value		
Drilled Pier Spacing (Center-to-Center)	>3 diameters	>2 to 3 diameters	1 to 2 diameters
Pier Capacity Reduction	None	30 percent	50 percent

- End bearing values do not need to be reduced for closely spaced piers, if bottom of piers are at the same elevation.

To satisfy forces in the horizontal direction using the computer program LPILE®, piers may be designed for the following lateral load criteria:

Soil Layer	Unit Weight (pcf)	Undrained Shear Strength (psf)	Angle of Internal Friction, Φ (degrees)	Coeff. of Subgrade Reaction, k (pci)	Strain, ϵ_{50} (%)
Clay	115	1,000	0	800-static 200-cyclic	0.005
Sand	115	0	30	60	--
Claystone/sandstone ¹	125	2,000	0	1,500-static 600-cyclic	0.004

- The claystone/sandstone bedrock may be modeled as a stiff clay.

Lateral analysis should account for the center-to-center spacing and P-Y multiplier values per the following table:

Pier Center-to-Center Spacing (In Direction of Loading)	P-multiplier, P_M Row 1	P-multiplier, P_M Row 2	P-multiplier, P_M Row 3 and Higher
3 x diameter	0.8	0.4	0.3
5 x diameter	1.0	0.85	0.7

The structural engineer should determine the reinforcement necessary for the piers. At a minimum, all piers should be reinforced full depth for the applied axial, lateral, and uplift stresses imposed.

Drilling to design depth should be possible with conventional single-flight power augers; however, very hard and potentially cemented bedrock layers could require the use of heavy-duty equipment.

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Pier casing may be required if groundwater, loose soils, or caving soils are encountered. Casing should be withdrawn in a slow continuous manner maintaining a sufficient head of concrete to prevent infiltration of water or caving soils or the creation of voids in pier concrete. Pier concrete should have a relatively high fluidity when placed in cased pier holes or through a tremie. Pier concrete with slump in the range of 5 to 7 inches is recommended for uncased piers. For cased piers, a slump in the range of 7 to 9 inches is recommended.

Groundwater (if encountered) should be removed from each pier hole prior to concrete placement. Pier concrete should be placed immediately after completion of drilling and cleaning. If pier concrete cannot be placed in dry conditions, a tremie should be used for concrete placement. Free-fall concrete placement in piers will only be acceptable if provisions are taken to avoid striking the concrete on the sides of the hole or reinforcing steel. The use of a bottom-dump hopper, or an elephant's trunk discharging near the bottom of the hole where concrete segregation will be reduced, is recommended.

Due to potential sloughing and raveling, foundation concrete quantities may exceed calculated geometric volumes. Pier-bearing surfaces must be cleaned prior to concrete placement. A Terracon representative should observe the bearing surface and shaft configuration.

The top of the piers should be cylindrical in shape. Forms may be necessary at the top of the piers in order to minimize the disturbance of the soils and to maintain a cylindrical shape. Failure to provide this shape (i.e., allowing mushrooming of pier tops) may result in additional uplift forces and unanticipated movement.

Spread Footing and Mat Foundation Recommendations

Design recommendations for spread footing and mat foundation systems are presented in the following table and paragraphs.

Description	Value	
Thickness of Zone Of New Engineered Fill	Minimum of 15 feet below bottom of lowest foundation element	
Support Stratum - Engineered Fill Type ^{1,2}	Engineered fill	5 feet of CDOT Class 1 structural fill over 10 feet of engineered fill
Lateral Extent of Zone Of New Engineered Fill	15 feet outside foundation footprint	
Maximum Allowable Bearing Pressure ^{3,4}	2,500 psf	3,000 psf
Minimum Dead Load Pressure ⁵	800 psf or what is practical	
Modulus of Subgrade Reaction	$K_{(B \times B)} = K_1 \left(\frac{1}{B} \right)$ $k_1 = 90 \text{ pounds per square inch per inch (psi/in)}$	$K_{(B \times B)} = K_1 \left(\frac{B + 1}{2B} \right)^2$ $k_1 = 130 \text{ pounds per square inch per inch (psi/in)}$

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Description	Value	
	Where: k_1 = modulus of subgrade reaction of a foundation measuring 1 ft x 1 ft $K_{(B \times B)}$ = modulus of subgrade reaction for a foundation having a square dimension B $K_{(B \times L)}$ = modulus of subgrade reaction for a foundation having dimensions of B by L	
Void Thickness, If Needed	4 inches	
Coefficient of Friction (Sliding)	0.3	0.4
Minimum Footing Dimensions ⁶	Isolated footings: 24 inches Continuous footings: 18 inches	
Minimum Embedment Below Finished Grade for Frost Protection ⁷		
Approximate Total Movement ⁸	About 1 to 1-1/2 inches	About 1 inch
Estimated Differential Movement ^{8,9}	About 1/2 to 3/4 of total settlement	

1. The engineered fill may consist of on-site clay and sand soils (mixed with clay) or granular import (such as CDOT Class 1 Structural Fill). The engineered fill should meet the criteria presented in the **Material Types** section of this report.
2. CDOT Class 1 Structural Fill (or equivalent) may only be used in the overexcavation zone below foundation areas if a drain is constructed at the base of these materials.
3. The recommended maximum allowable bearing pressure assumes that any existing fill or lower strength soils, if encountered, will be excavated and replaced with engineered fill.
4. The maximum allowable soil bearing pressure can be increased by 1/3 for transient loading conditions.
5. A minimum dead load pressure is not applicable for mat foundations.
6. Not applicable for mat foundations.
7. For perimeter footings, footings beneath unheated areas, and footings that will be exposed to freezing conditions during construction. Interior footings may bottom at a minimum depth of 12 inches below finished grade in heated areas.
8. Foundation movement will depend upon the variations within the subsurface soil profile, the structural loading conditions, the embedment depth of the footings, the thickness of engineered fill, and the quality of the earthwork operations and footing construction.
9. Footings should be proportioned on the basis of equal total dead load pressure to reduce differential movement between adjacent footings.

Additional foundation movements could occur if water from any source infiltrates the foundation soils; t



Unstable subgrade conditions should be observed by the Geotechnical Engineer to assess the subgrade and provide suitable alternatives for stabilization. Stabilized areas should be proofrolled prior to continuing construction to assess the stability of the subgrade.

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The base of all foundation excavations should be free of water and loose soil prior to concrete placement. Concrete should be placed soon after excavating to reduce bearing soil disturbance. Should the soils at bearing level become excessively dry, disturbed or saturated, or frozen, the affected soil should be removed prior to placing concrete.

Footings, foundations, and masonry walls should be detailed and reinforced as necessary to reduce the potential for distress caused by differential foundation movement. The use of joints at openings or other discontinuities in masonry walls is recommended.

SUBSTATION RECOMMENDATIONS

We understand that a proposed 3.1 acre substation will be designed and constructed as part of the project. We anticipate that the proposed substation will likely consist of generators, transformers, and inverters with associated transmission towers. Recommendations for shallow and deep foundations to support the proposed substation structures are provided in the following sections.

Substation Spread Footing and Mat Foundation Recommendations

Ancillary equipment for the substation such as switchgears, transformers, and inverters may be supported on a shallow spread footing or mat foundation bottomed on a zone of new engineered fill. If total movements on the order of about 1 inch is acceptable, the foundation recommendations provided in the **Spread Footing and Mat Foundation Recommendations** section of this report are applicable for shallow foundations within the substation area. If the owner is can accept movements on the order of about 2 to 3 inches, consideration could be given to supporting the proposed substation equipment on a minimum of 6 feet of new engineered fill.

Substation Drilled Pier Foundation Recommendations

Transmission towers may be constructed on drilled piers or may be direct embed structures. If very little movement can be tolerated by transmission tower structures, we recommend that they be constructed on a drilled pier foundations bottomed in the underlying claystone and sandstone bedrock. The foundation recommendations provided in the **Drilled Pier Foundation Recommendations** section of this report are applicable for substation transmission towers constructed on drilled pier foundations.

If the owner is willing to accept total movements in excess of 1 inch, transmission towers may consist of direct embed structures. Recommendations for direct embed structures are provided in the following section and in the **Direct Embed Design Parameters** section of this report.

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Direct Embed structure Recommendations

Based on the subsurface conditions encountered at this site, direct embed structures may be designed using the criteria presented in the **Direct Embed Design Parameters** section of this report. The maximum end bearing pressures given in the **Direct Embed Design Parameters** section of this report are based on the cross-sectional area of the tip of the structures. The combination of skin friction and end bearing pressure can be used to determine the vertical compression capacity. A fraction of the side resistance value should be used to determine the uplift capacity of the poles.

The following values can be used for the FAD computer program to model the compacted backfill material in the annulus around direct embed poles.

Backfill Around Annulus		Friction Angle (ϕ)	Cohesion (psf)	Unit Weight (pcf)	Modulus of Deformation (ksi)
Crushed Gravel	Xcel Gradation Type "A"	36°	0	120 – dry condition 57 – wet condition	4.0
	Xcel Gradation Type "B"	34°	0	125 – dry condition 59 – wet condition	3.0
	Xcel Gradation Type "C"	30°	0	125	2.0
Lean Concrete		34°	0	140	1,500

Due to the low deformation modulus, we recommend that the on-site clay soils not be used as compacted backfill material for the annular space around direct embed poles. Due to the free draining nature of the potential backfill around the annulus and the presence of highly expansive clay and claystone, we recommend the upper 3 feet of backfill around the annulus consist of on-site clay soils or other low permeable material.

SEISMIC CONSIDERATIONS

Based on our subsurface exploration and laboratory testing, it is our opinion that the soils have a low risk of liquefaction. The following table presents the seismic site classification based on the 2015 International Building Code (IBC) and the subsurface conditions encountered within the borings:

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Code Used	Site Classification
2015 International Building Code (IBC) ^{1,2}	C

1. In general accordance with the 2015 International Building Code, Section 1613.3.2.
2. The 2015 International Building Code (IBC) requires a site subsurface profile determination extending a depth of 100 feet for seismic site classification. The current scope requested does not include the required 100-foot subsurface profile determination. The deepest borings of this exploration extended to a maximum depth of about 50 feet and this seismic site class definition considers that similar subsurface conditions exist below the maximum depth of the subsurface exploration.

CORROSIVITY

The following table lists the results of laboratory water-soluble sulfate, pH, Redox potential, water-soluble chloride, and electrical resistivity testing performed on samples obtained during our field exploration. These values may be used to estimate potential corrosive characteristics of the on-site soils with respect to contact with the various underground materials which will be used for project construction.

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Boring No.	Sample Depth (feet)	Water-Soluble Chloride ¹ (%)	Water-Soluble Sulfate (%)	pH	Electrical Resistivity (ohm-cm)	Redox Potential (mv)
1	0 – 4	0.0053	0.014	7.6	1,039	414.7
3	0 – 4	0.0004	0.002	7.1	1,546	429.6
5	0 – 4	0.0004	0.001	7.5	1,215	419.1
11	0 – 4	0.0024	0.021	7.4	1,160	361.6
17	0 – 4	0.0039	0.032	7.5	909	351.6
19	0 – 4	0.0006	0.004	7.6	1,608	346.6
21	0 – 4	0.0050	0.124	7.2	664	348.3
22	0 – 4	0.0004	0.038	7.7	726	463.4
24	0 – 4	0.0003	<0.001	6.8	1,532	461.0
26	0 – 4	0.0027	0.133	6.6	521	443.3
32	0 – 4	0.0129	0.324	7.0	475	428.6
34	0 – 4	0.0052	0.484	7.5	605	425.8
38	0 – 4	0.0067	0.169	7.5	650	381.8
40	0 – 4	0.0006	0.145	7.6	720	391.5
42	0 – 4	0.0006	0.004	7.6	1,186	366.7
S4	0 – 4	0.0002	0.001	7.1	1,749	445.9
S7	0 – 4	0.0102	0.035	7.1	766	412.7
S8	0 – 4	0.0141	0.015	7.1	786	393.5

1. Results of water-soluble chloride testing was in process at the time that this report was prepared. Results of the water-soluble chloride testing will be provided when tests have been completed.

Concrete

The degradation of concrete is caused by chemical agents in the soil or groundwater that react with concrete to either dissolve the cement paste or precipitate compounds which cause cracking and flaking. The concentration of water-soluble sulfates in the soils is a good indicator of the potential for chemical attack of concrete. Sulfate concentrations in soil can be used to evaluate the need for protection of concrete based on the following table.

Water Soluble Sulfate Content in Soil (%)	Severity of Potential Exposure
>1.0	Class 3
0.15 – 1.0	Class 2
0.015 – 0.15	Class 1
0 – 0.015	Class 0

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The results of sulfate tests on the selected soil samples indicate the potential for exposure of concrete degradation due to soluble sulfate ranges from Class 0 to Class 2 when classified in accordance with Table 19.3.1.1 of the American Concrete Institute (ACI) Design Manual. The results of the testing indicate ASTM Type V Portland Cement is recommended for project concrete in contact with on-site soils. Concrete should be designed in accordance with the provisions of the ACI Design Manual, Section 318, Chapter 19.

Steel

The corrosion potential of steel is influenced by electrical resistivity, chloride ion concentration, and pH. Corrosion of steel is more likely in soil environments with low resistivity, high chloride ion concentrations, or low pH. The following table presents general guidelines for estimating the corrosion potential of steel as a function of chloride ion concentration, pH, and electrical resistivity.

Resistivity (ohm-cm)	Chloride Content (%)	p	Corrosion Potential
0 – 1,000	>0.05	0 – 4.5	Very High
1,000 – 2,000		4.5 – 5.5	High
2,000 – 5000	<0.05	5.5 – 6.5	Moderate
>5,000		>6.5	Mild

Each of the columns in the above table should be used independently of the others for estimating corrosion potential. For example, it is not necessary to have a resistivity between 0 and 1000 ohm-cm and a pH between 0 and 4.5 to indicate a very high corrosion potential. T

FIELD ELECTRICAL RESISTIVITY

Field measurements of soil electrical resistivity were performed by Terracon on May 27, 2021 and July 21, 2021. The Wenner arrangement (equal electrode spacing) was used with “a” spacings of 2, 5, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 150, 200, and 250 feet at three (3) locations at the site. One field electrical resistivity test was conducted in the area of DC1, DC4, and the proposed substation area respectively. The “a” spacing is generally considered to be the depth of influence of the test. The testing was performed in both a north-south and an east-west orientation at each location. The approximate locations of the center of the in-situ electrical resistivity lines are shown on the **Field Electrical Resistivity Plan**. Results of the soil resistivity measurements are presented in **Field Electrical Resistivity Test Results**.

It should be noted that the resistivity values measured in the field may vary by material type, moisture content, surface temperature, groundwater depth, and other climatic conditions. During the site visit, our field representative indicated that the ground surface cover consisted of moist

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clay at each test location. The weather conditions during the site visit are indicated on the field data sheets.

FLOOR SLABS

Interior Floors

Slab-on-grade floors may be utilized for the interior floor systems, provided slabs-on-grade are constructed on a zone of new engineered fill, and provided some slab movement can be tolerated. We estimate this alternative will reduce movement to about 1 to 1-1/2 inches. If very little movement can be tolerated, structural floors, supported independent of the subgrade materials, are recommended.

Conventional slab-on-grade construction on expansive soils and bedrock, whether in their natural state or moisture-conditioned and recompacted to a certain depth, will move. The severity and magnitude of movement will depend on the depth of treatment, the resulting expansion potential of these materials, and the circumstances causing future wetting.

If the owner is not willing to accept the associated risk of movement for slab-on-grade floors, we recommend the use of a structural floor system, structurally supported independent of the subgrade soils, as a positive means of reducing the potentially detrimental effects of floor movement. A minimum 12-inch crawlspace or void space should be used for structural floor construction.

Structurally Supported Floor Recommendations

If selected, we recommend structurally supported floors be constructed with a minimum 12-inch crawlspace or void space between the low point for any element of the floor system (including utilities) and the ground surface. Carton type void forms, such as SureVoid or an approved equivalent, may be used to provide the minimum void space of 12 inches. The void form manufacturer's installation recommendations must be followed during construction of the structurally supported floor.

Larger void space/crawlspace areas may be necessary to allow for safe access, inspection, and maintenance. Trenches excavated below slabs-on-void may act as conduits for water transmission and should be avoided. If used, they must be sloped to a drain, sump pit, or other appropriate outfall and must be periodically inspected and maintained.

Utilities below structural floors should be limited to crawlspace areas, should be independent of the subgrade, and should maintain the minimum 14-inch space between the utility and subgrade soils.

The design team should account for control of humidity within crawlspaces. We recommend a firm specializing in the design and construction of air quality control systems should be consulted.

Slab-on-Grade Floor Recommendations

If the owner is willing to accept the risk associated with a slab-on-grade floor system, slabs-on-grade could be constructed on a zone of engineered fill, as recommended in the following table.

Description	Value	
Depth of overexcavation below bottom of slab-on-grade	15 feet	
Support Stratum - Engineered Fill Type ^{1,2}	Engineered fill	5 feet of CDOT Class 1 structural fill over 10 feet of engineered fill
Lateral extent of overexcavation zone ³	15 feet	
Approximate Total Movement	About 1 to 1-1/2 inches	About 1 inch

1. The engineered fill may consist of on-site clay and sand soils (mixed with clay) or granular import (such as CDOT Class 1 Structural Fill). The engineered fill should meet the criteria presented in the **Material Types** section of this report.
2. [REDACTED]
3. Lateral extent of the overexcavation zone indicates a zone that received the full depth of overexcavation treatment. The lateral extent zone does not include the required slope layback area. If the overexcavation zone cannot be extended laterally outside of the perimeter footing, there is an increased risk of the overburden soils and underlying claystone becoming wetted.

The following design and construction recommendations apply to conventional slab-on-grade construction. If the owner cannot accept the risk of slab movement, a structural floor should be used. If the owner is willing to accept the risk associated with movement of a slab-on-grade floor system, slabs-on-grade should be constructed on a zone of engineered fill, as recommended above. New fill materials beneath slabs-on-grade should be placed and compacted as outlined in the **Earthwork** section of this report.

For structural design of concrete slabs-on-grade constructed on an engineered fill, a modulus of subgrade reaction of 90 pounds per cubic inch (pci) may be used. If the slab-on-grade is constructed on 5 feet of CDOT Class 1 structural fill underlain by 10 feet of engineered fill, a modulus of subgrade reaction of 130 pci may be used for point or limited area loads for floors supported on an engineered fill.

Additional floor slab design and construction recommendations are as follows:

- [REDACTED]
- Control joints should be provided in slabs to control the location and extent of cracking.

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- A minimum 3-inch void space should be constructed above or below non-bearing partition walls placed on the floor slab. If the slab-on-grade is constructed on 5 feet of CDOT Class 1 structural fill underlain by 10 feet of engineered fill, a minimum 2-inch void space can be utilized. Special framing details should be provided at doorjamb and frames within partition walls to avoid potential distortion. Partition walls should be isolated from suspended ceilings.
- Interior trench backfill placed beneath slabs should be compacted in accordance with recommended specifications outlined in this report.
- The use of a vapor retarder should be considered beneath concrete slabs on grade that will be covered with wood, tile, carpet or other moisture sensitive or impervious coverings, or when the slab will support equipment sensitive to moisture. When conditions warrant the use of a vapor retarder, the slab designer and slab contractor should refer to ACI 302 for procedures and cautions regarding the use and placement of a vapor retarder.
- Floor slabs should not be constructed on frozen subgrade.
- Other design and construction considerations, as outlined in Section 302.1R of the ACI Design Manual, are recommended.

Movements of slab-on-grades using the above outlined technique will likely be reduced and tend to be more uniform. The estimates outlined previously assume that the other recommendations in this report are followed. Additional movement could occur should the subsurface soils become wetted to significant depths, which could result in potential excessive movement causing uneven floor slabs and severe cracking. This could be due to over watering of landscaping, poor drainage, improperly functioning drain systems, and/or broken utility lines. Therefore, it is imperative that the recommendations outlined in this section and in the **Grading and Drainage** subsection of **Earthwork** be followed.

EXTERIOR FLATWORK

Exterior slabs-on-grade and flatwork constructed on the on-site expansive materials will have a moderate to high risk of movement. To improve performance, we recommend that the subgrade soils beneath the proposed exterior slabs-on-grade are overexcavated to a depth of at least 4 feet, moisture conditioned, and recompacted to grade. New fill materials beneath slabs-on-grade should be placed and compacted as outlined in the **Earthwork** section of this report.

For structural design of exterior concrete slabs-on-grade, a modulus of subgrade reaction of 90 pci may be used for point or limited area loads for exterior slabs-on-grade at this site.

Additional slab design and construction recommendations are as follows:

- Minimizing moisture increases in the backfill.
- Controlling moisture-density during placement of backfill.

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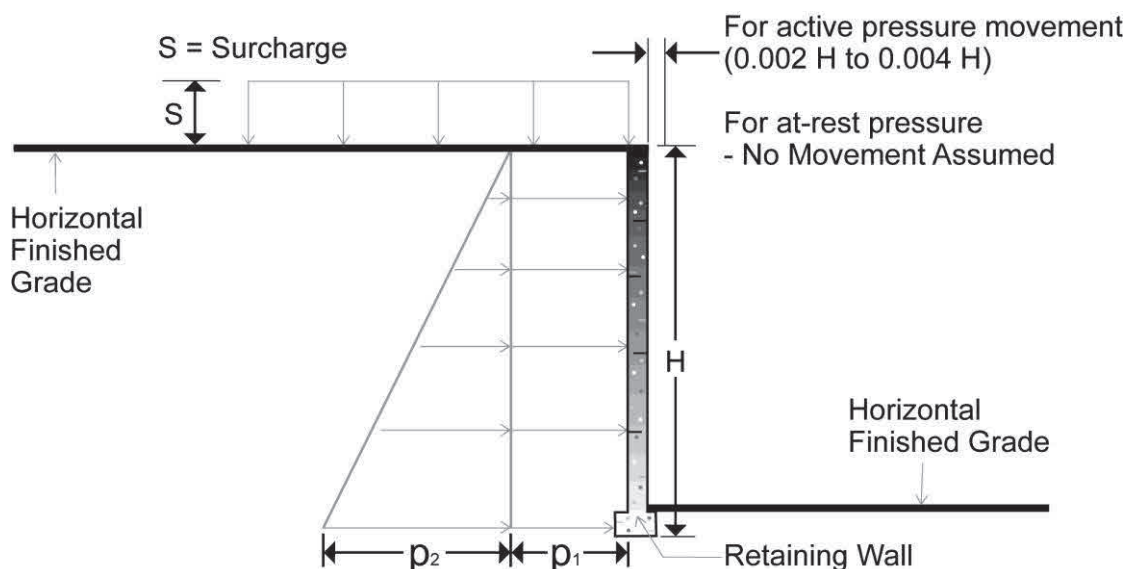


- Positive separations and/or isolation joints should be provided between exterior slabs and the buildings to allow independent movement.
- Control joints should be provided in slabs to control the location and extent of cracking.
- Exterior slabs should not be constructed on frozen subgrade
- Other design and construction considerations, as outlined in Section 302.1R of the ACI Design Manual, are recommended.

Movements of exterior slabs-on-grade using the above technique will likely be reduced and tend to be more uniform. Additional movement could occur should the subsurface soils and bedrock become wetted to significant depths, which could result in potential excessive movement causing uneven exterior slabs and severe cracking. This could be due to over watering of landscaping, poor drainage, and/or broken utility lines. Therefore, it is imperative that the recommendations outlined in the **Grading and Drainage** subsection of **Earthwork** be followed.

LATERAL EARTH PRESSURES

Below-grade walls or free-standing retaining walls are not anticipated for this project; however, we anticipate retaining walls on the order of about 4 feet for the proposed loading dock areas. Reinforced concrete walls with unbalanced backfill levels on opposite sides should be designed for earth pressures at least equal to those indicated in the following table. Earth pressures will be influenced by structural design of the walls, conditions of wall restraint, methods of construction and/or compaction and the strength of the materials being restrained. Two wall restraint conditions are shown. Active earth pressure is commonly used for design of free-standing cantilever retaining walls and assumes wall movement. The "at-rest" condition assumes no wall movement. The recommended design lateral earth pressures do not include a factor of safety and do not provide for possible hydrostatic pressure on the walls.



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Earth Pressure Conditions	Lateral Earth Pressure Coefficient	Equivalent Fluid Density (pcf)	Surcharge Pressure, p_1 (psf)	Earth Pressure, p_2 (psf)
Active (K_a)	0.47	60	(0.47)S	(60)H
At-Rest (K_o)	0.64	80	(0.64)S	(80)H
Passive (K_p)	2.1	250	---	---

Applicable conditions to the above include:

- For active earth pressure, wall must rotate about base, with top lateral movements of about 0.002 H to 0.004 H, where H is wall height
- For passive earth pressure to develop, wall must move horizontally to mobilize resistance.
- Uniform surcharge, where S is surcharge pressure
- In-situ soil backfill weight a maximum of 120 pcf
- Horizontal backfill, compacted to at least 95 percent of standard Proctor maximum dry density
- Loading from heavy compaction equipment not included
- No hydrostatic pressures acting on wall
- No dynamic loading
- No safety factor included in soil parameters

The above pressures do not include the influence of surcharge, equipment, or floor loading, which should be added. Heavy equipment should not operate within a distance closer than the exposed height of retaining walls to prevent lateral pressures more than those provided.

The preceding data are applicable only to cast-in-place concrete or modular block walls up to 5 feet in height. **If taller single walls, tiered walls, or Mechanically Stabilized Earth (MSE) walls will be included in the proposed development, additional site-specific studies and laboratory testing will be required.** In addition, the wall designer should perform standard wall design practices including analysis for overturning, sliding, bearing capacity, and global stability, and results of these analyses should be provided for our review. Additional sampling, laboratory testing and document review associated with retaining walls is beyond the original scope of work but can be performed as a separate scope, for a separate fee.

PAVEMENTS

Design of privately maintained pavements for the project has been based on the procedures outlined by the Asphalt Institute (AI) and the American Concrete Institute (ACI).

Pavements and flatwork constructed on the expansive clay soils and claystone bedrock will have a moderate to high risk of movement. To improve performance, we recommend overexcavating

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the subgrade beneath the pavements to a depth of 4 feet and properly moisture conditioning and compacting the materials to grade.

Design Traffic

Anticipated traffic loading was not available at the time this report was written. For this project Light and Heavy Duty pavement section alternatives have been provided. Light duty is for areas expected to receive only passenger vehicles. Heavy Duty areas assume areas of heavy traffic, such as trash pickup areas, delivery areas, and main access drives. As requested, pavement recommendations are based on a 20-year design life. If traffic information changes, Terracon should be contacted so that we can revise our recommendations.

Based on our experience on similar sites, we assumed the following design parameters for light and heavy duty areas based on the Asphalt Institute flexible pavement thickness design:

■ Light Duty Areas

- AI Class I: Parking stalls and parking lots for cars and pick-up trucks;
 - 200 light automobiles per day; 50 pick-up trucks per day

■ Heavy Duty Areas

- AI Class III: Parking lots and drive lanes for cars, pick-up trucks, tractor trailers, and garbage trucks;
 - 200 light automobiles per day; 50 pickup trucks per day; 2 tractor trailers per day; 2 garbage trucks per week

■ Subgrade Soil Characteristics

- USCS Classification – CL to CH (poor subgrade)

We assumed the following design parameters for ACI rigid pavement thickness design based upon the average daily truck traffic (ADTT):

■ Light Duty Areas

- ACI Category A-1: Automobile parking with an ADTT of 1 over 20 years

■ Heavy Duty Areas

- ACI Category B: Commercial entrance and service lanes with an ADTT of 25 over 20 years

■ Subgrade Soil Characteristics

- USCS Classification – CL to CH (low support)

■ Concrete modulus of rupture value of 500 psi

We should be contacted to confirm and/or modify the recommendations contained herein if actual traffic volumes differ from the assumed values shown above.

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Subgrade Soils

Based on subgrade soil Unified Soil Classifications of CL to CH, AI classifies the subgrade soil as poor, while ACI classifies the subgrade soil as low support. Existing expansive clay soils and claystone will be encountered below the proposed pavement areas. We recommend overexcavating subgrade materials to a depth of at least 4 feet, moisture conditioning, and recompacting the material to grade to improve performance.

Asphalt pavement sections are typically designed using a California Bearing Ratio (CBR) value. The California Ratio (CBR) test is used to evaluate the strength of pavement subgrade. It is performed by measuring the pressure required to penetrate a remolded soil sample with a piston of standard area. CBR is expressed as the ratio of the unit load on the piston required to penetrate 0.1 inch and 0.2 inch of the test material to the unit load required to penetrate a standard material of well-graded crushed stone. Based on our laboratory test results, a CBR value of 1.3 has been considered for design. The CBR and the associated moisture density relationship results are provided in the **Exploration Results**.

Recommended Minimum Pavement Sections and Materials

Recommended alternatives for flexible and rigid pavements are summarized for each traffic area as follows:

Traffic Area	Alternative	Preliminary Pavement Thickness (Inches)			
		Asphalt Concrete Surface	Aggregate Base Course	Portland Cement Concrete	Total
Light Duty Areas (AI Class I and ACI Category A)	A	6	--	--	6
	B	5	8	--	13
	C ¹	--	--	5	5
Heavy Duty Areas (AI Class III and ACI Category B)	A	7	--	--	7
	B	5	10	--	15
	C ¹	--	--	6	6

1. The minimum pavement section thickness per ACI

Each alternative should be investigated with respect to current material availability and economic conditions. A minimum 7-inch thickness of rigid reinforced concrete pavement is recommended at the location of dumpsters where trash trucks park and load, and in areas of tight turning radius.

Concrete pavement joint spacing and reinforcement should be in accordance with specifications in ACI 330R-08.

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For analysis of pavement costs, the following specifications should be considered for each pavement component:

Pavement Component	Colorado Department of Transportation Criteria
Asphalt Concrete Surface	Grading S or SX
Aggregate Base Course	Class 5 or 6
Portland Cement Concrete	Class P

Drainage Adjacent to Pavements

Clay subgrade materials will expand and/or lose stability with increases in moisture content. To reduce pavement distress due to wetting of the subgrade in areas of water intensive landscaping or other nearby water sources (or if aggregate base course is used) located adjacent to pavements, edge drains should be constructed.

Pavement Maintenance

Future performance of pavements constructed at this site will be dependent upon several factors, including:

- Maintaining stable moisture content of the subgrade soils both before and after pavement construction.
- Providing for a planned program of preventative maintenance.

The performance of all pavements can be enhanced by minimizing excess moisture, which can reach the subgrade soils. The following recommendations should be implemented:

- Site grading at a minimum 2 percent grade onto or away from the pavements.
- Water should not be allowed to pond behind curbs.
- Compaction of any utility trenches for landscaped areas to the same criteria as the pavement subgrade.
- Sealing all landscaped areas in or adjacent to pavements, or providing drains to reduce the risk of moisture migration to subgrade soils.
- Placing compacted backfill against the exterior side of curb and gutter.
- Placing curb, gutter, and/or sidewalk directly on subgrade soils without the use of base course materials.

Preventative maintenance should be planned and provided for an ongoing pavement management program in order to enhance future pavement performance. Preventative maintenance activities are intended to slow the rate of pavement deterioration.

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Preventative maintenance consists of both localized maintenance (e.g. crack sealing and patching) and global maintenance (e.g. surface sealing). Preventative maintenance is usually the first priority when implementing a planned pavement maintenance program.

Pavement Construction Considerations

Site grading is generally accomplished early in the construction phase. However, as construction proceeds, the subgrade may be disturbed due to utility excavations, construction traffic, desiccation, or rainfall. As a result, the pavement subgrade may not be suitable for pavement construction and corrective action will be required. The subgrade should be carefully evaluated at the time of pavement construction for signs of disturbance or excessive rutting. If disturbance has occurred, pavement subgrade areas should be reworked, moisture conditioned, and properly compacted to the recommendations in this report immediately prior to paving.

We recommend the pavement areas be rough graded and then thoroughly proofrolled with a loaded tandem axle dump truck prior to final grading and paving. Particular attention should be paid to high traffic areas that were rutted and disturbed earlier and to areas where backfilled trenches are located. Areas where unsuitable conditions are located should be repaired by removing and replacing the materials with properly compacted fills. All pavement areas should be moisture conditioned and properly compacted to the recommendations in this report immediately prior to paving.

The placement of a partial pavement thickness for use during construction is not recommended without a detailed pavement analysis incorporating construction traffic. In addition, if the actual traffic varies from the assumptions outlined above, we should be contacted to confirm and/or modify the pavement thickness recommendations outlined above.

GENERAL COMMENTS

Our analysis and opinions are based upon our understanding of the project, the geotechnical conditions in the area, and the data obtained from our site exploration. Natural variations will occur between exploration point locations or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. Terracon should be retained as the Geotechnical Engineer, where noted in this report, to provide observation and testing services during pertinent construction phases. If variations appear, we can provide further evaluation and supplemental recommendations. If variations are noted in the absence of our observation and testing services on-site, we should be immediately notified so that we can provide evaluation and supplemental recommendations.

Our Scope of Services does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials, or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

Geotechnical Engineering Report

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Our services and any correspondence or collaboration through this system are intended for the sole benefit and exclusive use of our client for specific application to the project discussed and are accomplished in accordance with generally accepted geotechnical engineering practices with no third-party beneficiaries intended. Any third-party access to services or correspondence is solely for information purposes to support the services provided by Terracon to our client. Reliance upon the services and any work product is limited to our client, and is not intended for third parties. Any use or reliance of the provided information by third parties is done solely at their own risk. No warranties, either express or implied, are intended or made.

Site characteristics as provided are for design purposes and not to estimate excavation cost. Any use of our report in that regard is done at the sole risk of the excavating cost estimator as there may be variations on the site that are not apparent in the data that could significantly impact excavation cost. Any parties charged with estimating excavation costs should seek their own site characterization for specific purposes to obtain the specific level of detail necessary for costing. Site safety, and cost estimating including, excavation support, and dewatering requirements/design are the responsibility of others. If changes in the nature, design, or location of the project are planned, our conclusions and recommendations shall not be considered valid unless we review the changes and either verify or modify our conclusions in writing.

FIGURES

Contents:

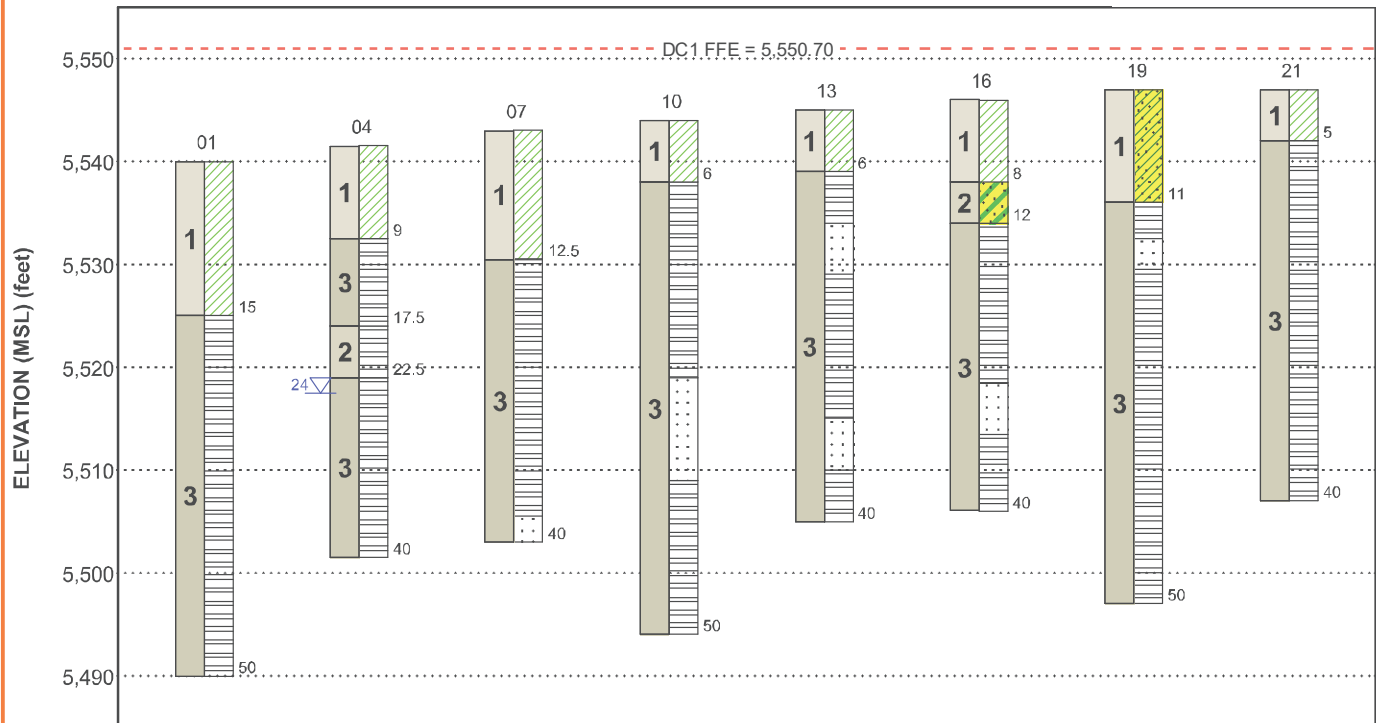
Geomodels
DC1 Building Areas (2 pages)
DC1 Equipment Areas
DC4 Building Areas (2 pages)
DC4 Equipment Areas
Future Building Areas
Substation Areas

Note: All attachments are one page unless noted above.

GEOMODEL - DC1 BUILDING AREA

QTS Aurora ■ Aurora, Colorado

September 7, 2021 ■ Terracon Project No. 25215031



This is not a cross section. This is intended to display the Geotechnical Model only. See individual logs for more detailed conditions.

Model Layer	Layer Name	General Description
1	Native Clay	Native lean clay with varying amounts of sand, gravel and organics; stiff to very stiff
2	Native Sand	Native sand with varying amounts of clay; loose to medium dense
3	Bedrock	Bedrock consisting of claystone and sandstone; soft to very hard

LEGEND



▽ First Water Observation
▽ Second Water Observation

Groundwater levels are temporal. The levels shown are representative of the date and time of our exploration. Significant changes are possible over time. Water levels shown are as measured during and/or after drilling. In some cases, boring advancement methods mask the presence/absence of groundwater. See individual logs for details.

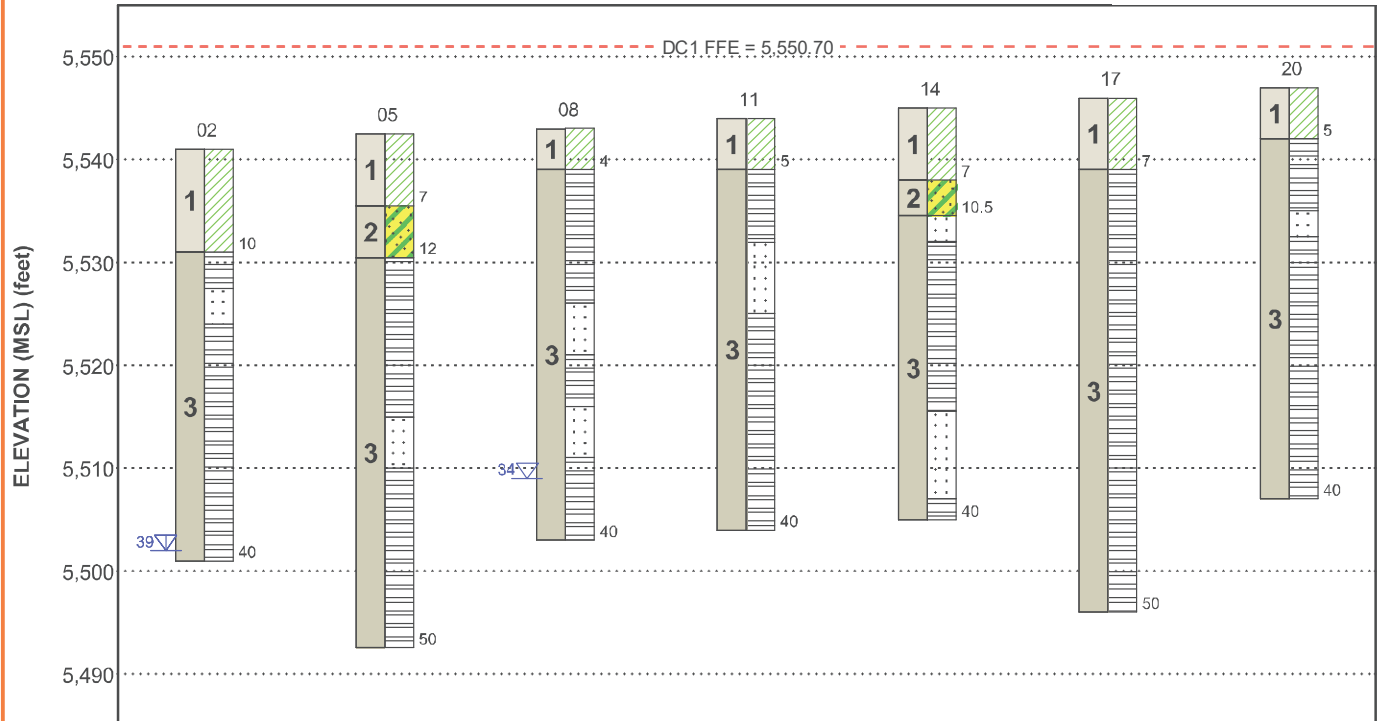
NOTES:

Layering shown on this figure has been developed by the geotechnical engineer for purposes of modeling the subsurface conditions as required for the subsequent geotechnical engineering for this project. Numbers adjacent to soil column indicate depth below ground surface.

GEOMODEL - DC1 BUILDING AREA

QTS Aurora ■ Aurora, Colorado

September 7, 2021 ■ Terracon Project No. 25215031



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LEGEND



▽ First Water Observation
▽ Second Water Observation

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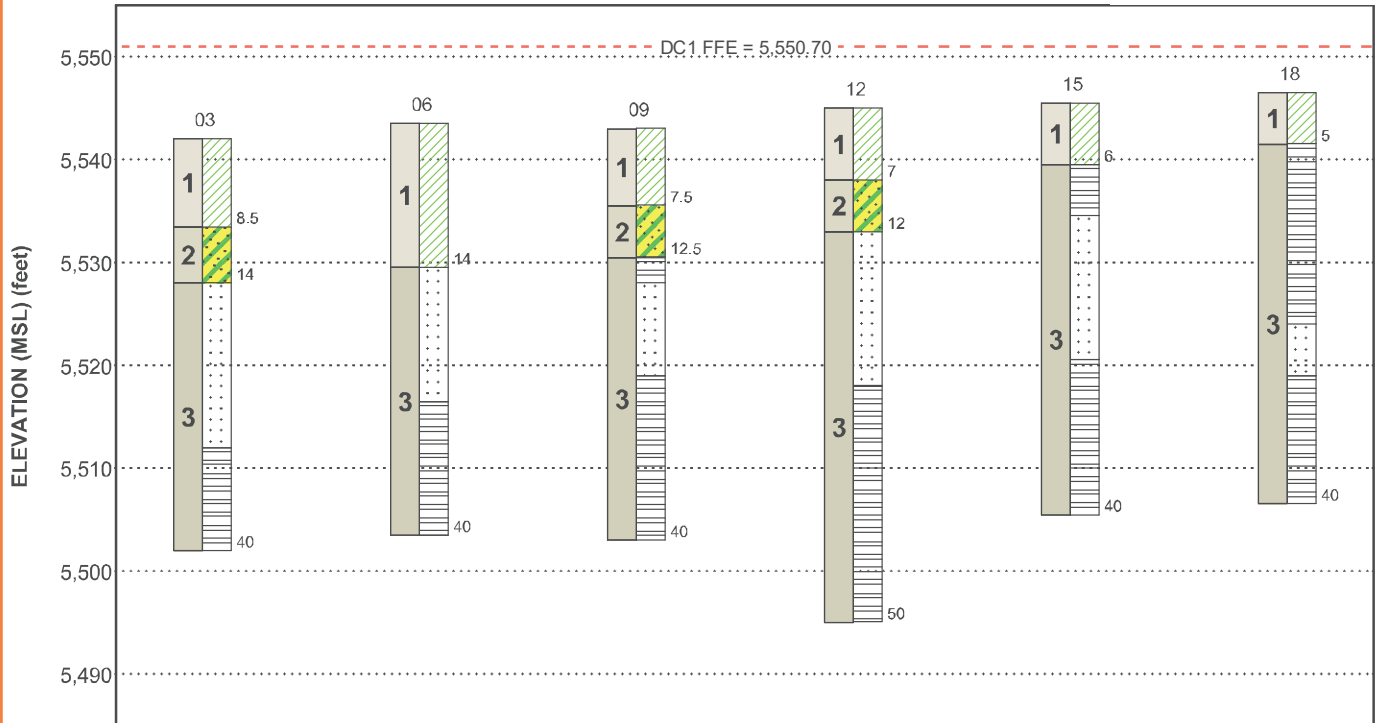
NOTES:

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GEOMODEL - DC1 EQUIPMENT AREA

QTS Aurora ■ Aurora, Colorado

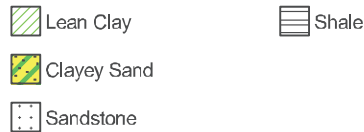
September 7, 2021 ■ Terracon Project No. 25215031



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LEGEND



▽ First Water Observation
▽ Second Water Observation

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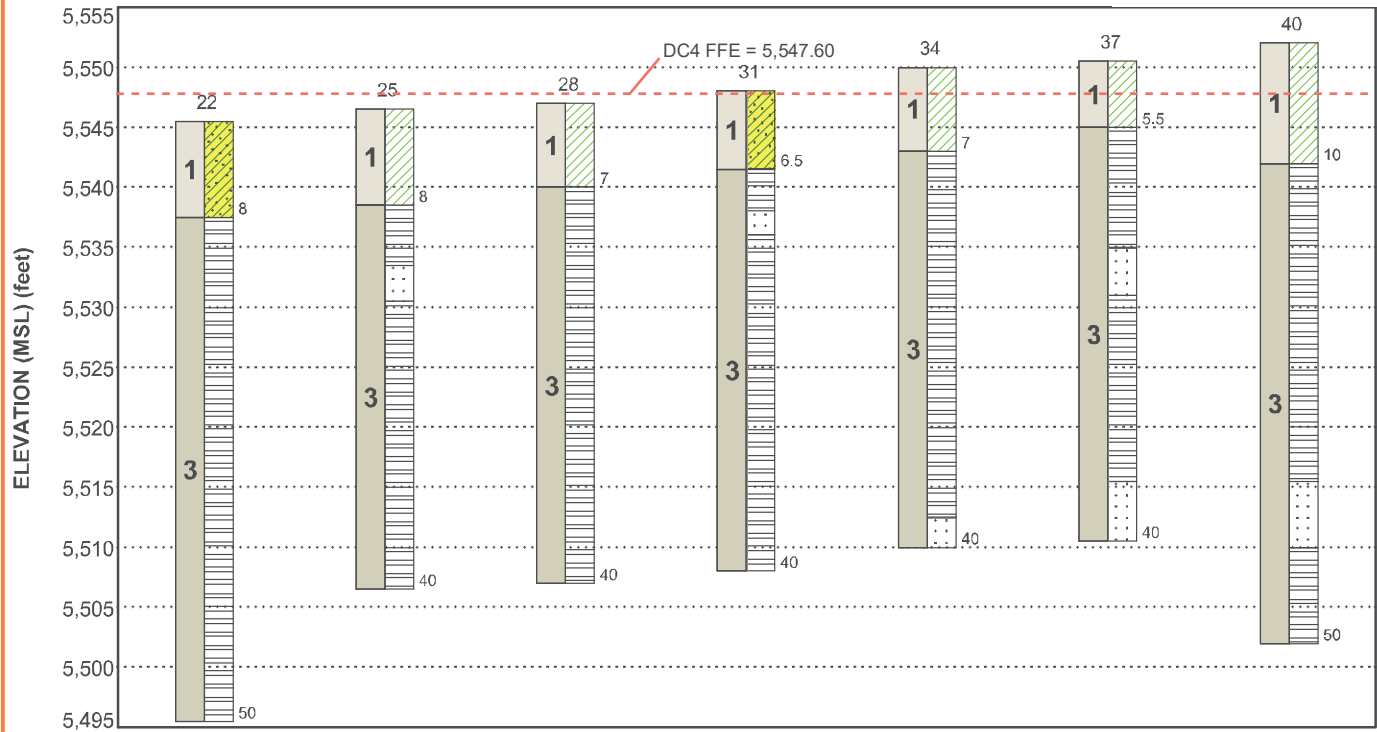
NOTES:

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GEOMODEL - DC4 BUILDING AREA

QTS Aurora ■ Aurora, Colorado

September 7, 2021 ■ Terracon Project No. 25215031



This is not a cross section. This is intended to display the Geotechnical Model only. See individual logs for more detailed conditions.

Model Layer	Layer Name	General Description
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LEGEND



▽ First Water Observation
▽ Second Water Observation

Groundwater levels are temporal. The levels shown are representative of the date and time of our exploration. Significant changes are possible over time. Water levels shown are as measured during and/or after drilling. In some cases, boring advancement methods mask the presence/absence of groundwater. See individual logs for details.

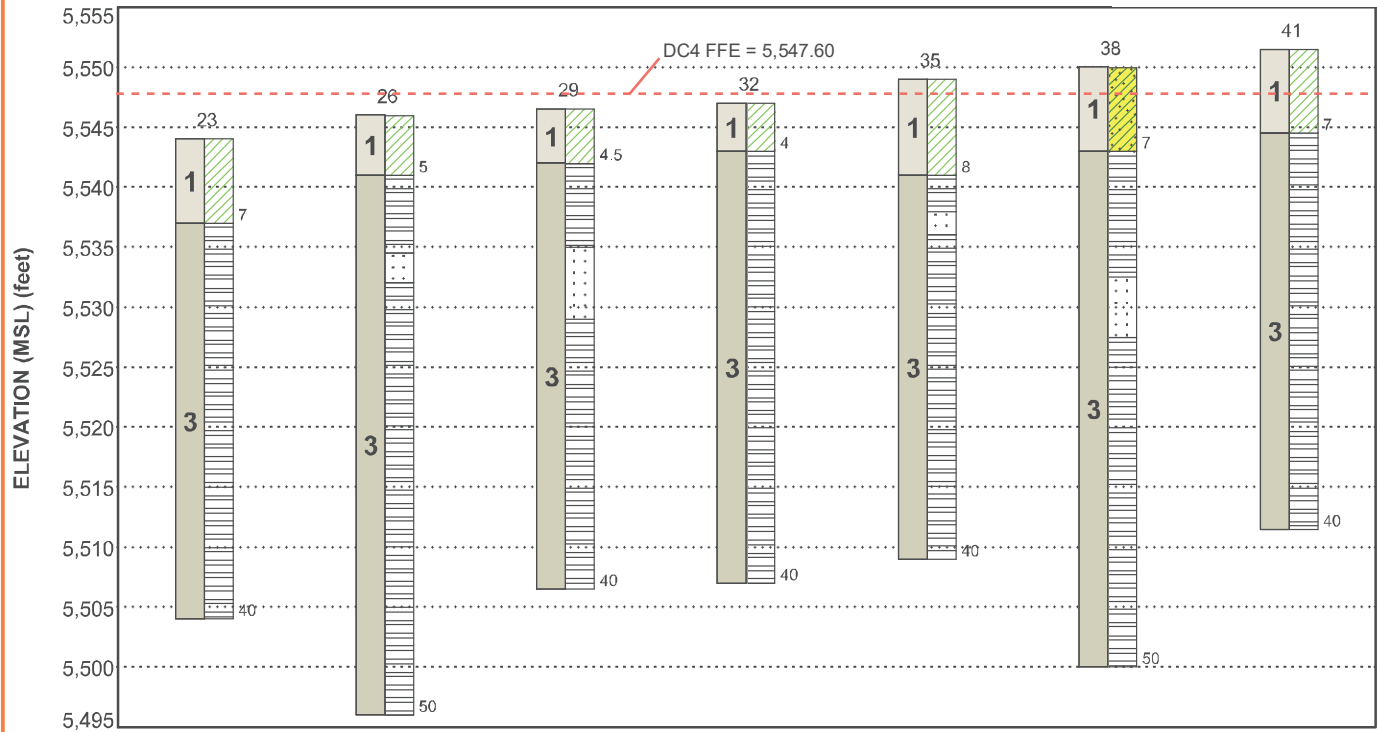
NOTES:

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GEOMODEL - DC4 BUILDING AREA

QTS Aurora ■ Aurora, Colorado

September 7, 2021 ■ Terracon Project No. 25215031



This is not a cross section. This is intended to display the Geotechnical Model only. See individual logs for more detailed conditions.

Model Layer	Layer Name	General Description
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LEGEND



▽ First Water Observation
▽ Second Water Observation

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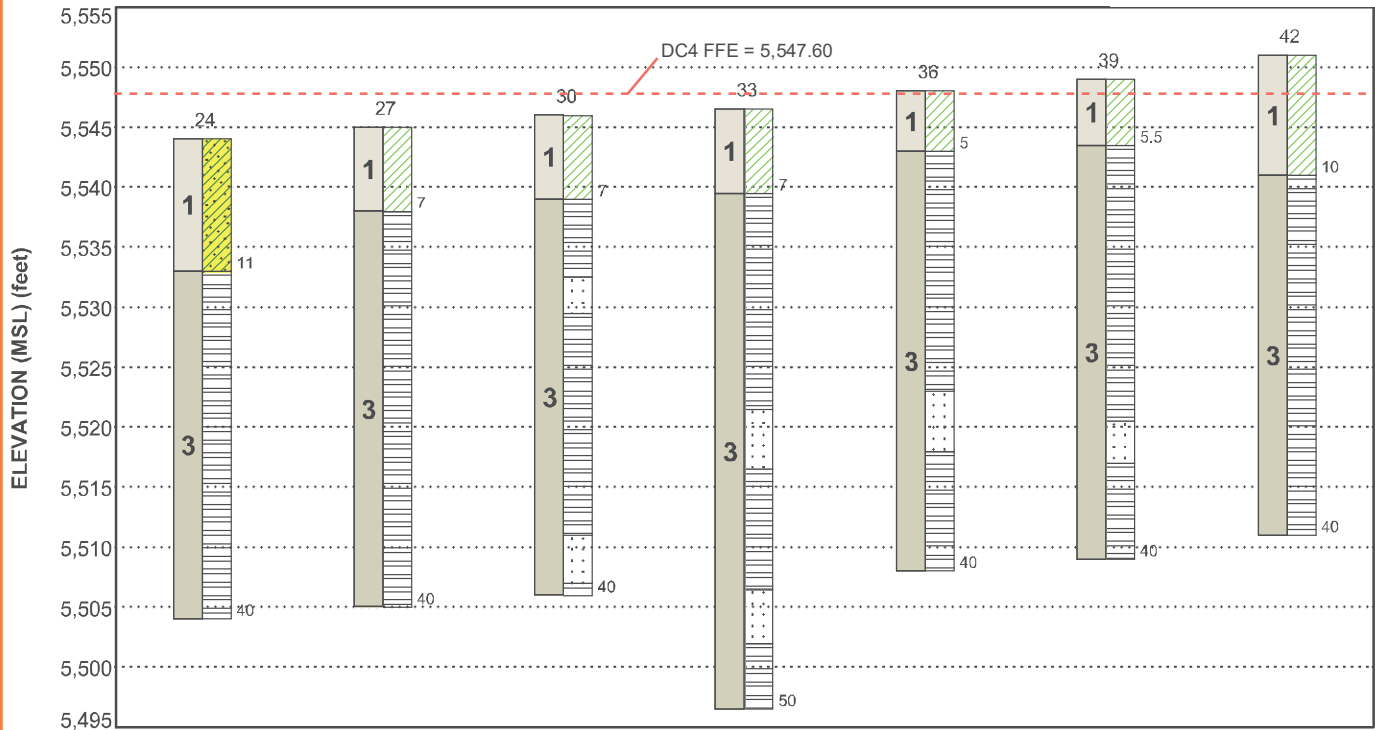
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GEOMODEL - DC4 EQUIPMENT AREA

QTS Aurora ■ Aurora, Colorado

September 7, 2021 ■ Terracon Project No. 25215031



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LEGEND



▽ First Water Observation
▽ Second Water Observation

Groundwater levels are temporal. The levels shown are representative of the date and time of our exploration. Significant changes are possible over time. Water levels shown are as measured during and/or after drilling. In some cases, boring advancement methods mask the presence/absence of groundwater. See individual logs for details.

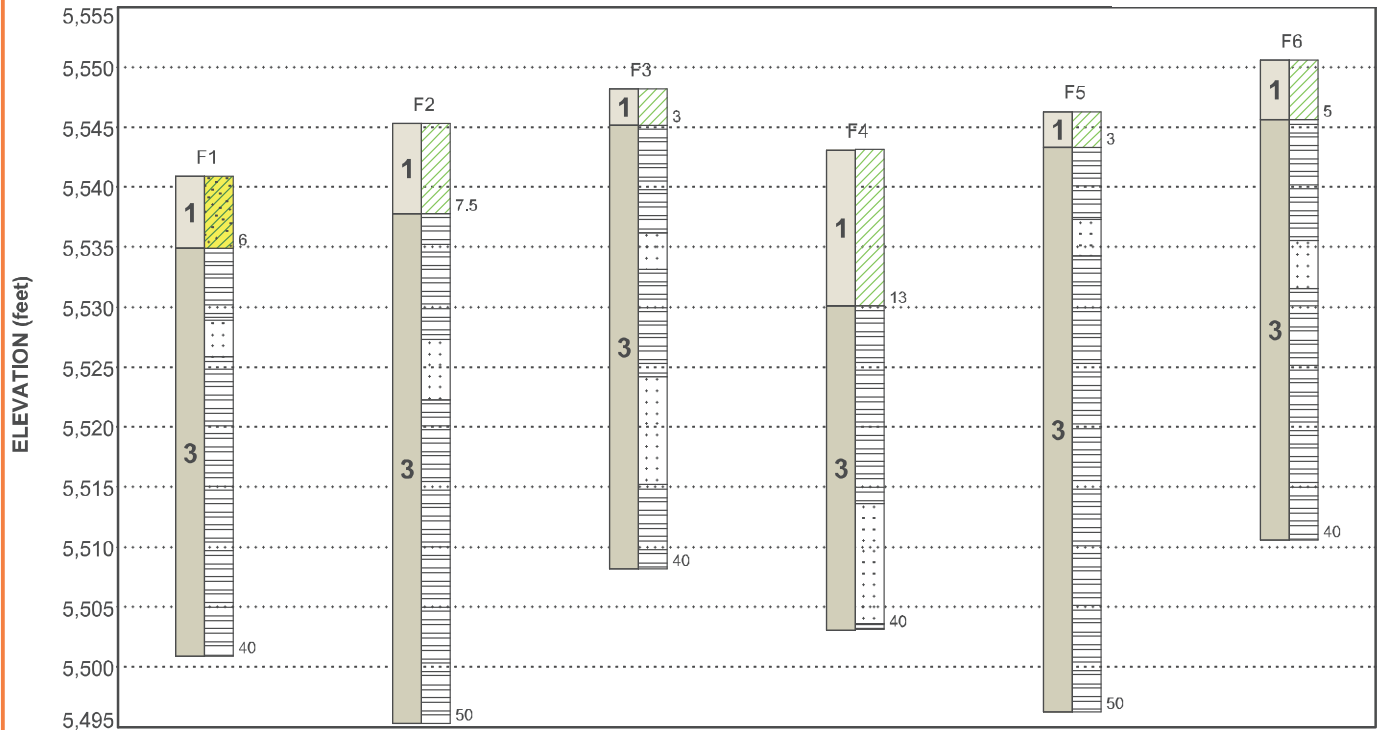
NOTES:

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GEOMODEL - FUTURE BUILDING AREAS

QTS Aurora ■ Aurora, Colorado

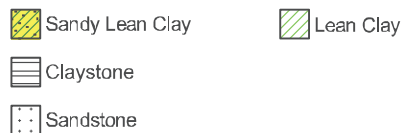
September 7, 2021 ■ Terracon Project No. 25215031



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Model Layer	Layer Name	General Description
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LEGEND



▽ First Water Observation
▽ Second Water Observation

Groundwater levels are temporal. The levels shown are representative of the date and time of our exploration. Significant changes are possible over time. Water levels shown are as measured during and/or after drilling. In some cases, boring advancement methods mask the presence/absence of groundwater. See individual logs for details.

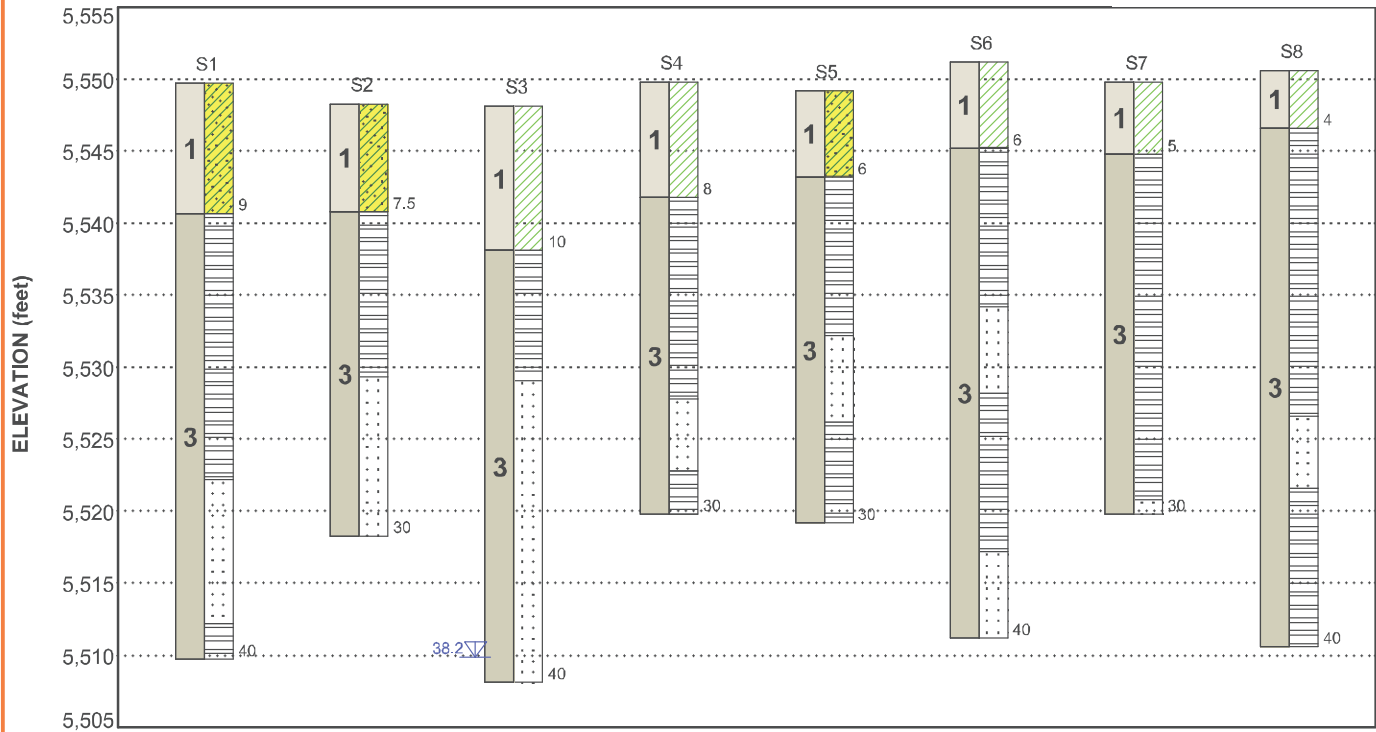
NOTES:

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GEOMODEL - SUBSTATION AREA

QTS Aurora ■ Aurora, Colorado

September 7, 2021 ■ Terracon Project No. 25215031



Model Layer	Layer Name	General Description
1	Native Clay	Native lean clay with varying amounts of sand, gravel and organics; stiff to very stiff
2	Native Sand	Native sand with varying amounts of clay; loose to medium dense
3	Bedrock	Bedrock consisting of claystone and sandstone; soft to very hard

LEGEND

- Sandy Lean Clay
- Lean Clay
- Claystone
- Sandstone

- First Water Observation
- Second Water Observation

Groundwater levels are temporal. The levels shown are representative of the date and time of our exploration. Significant changes are possible over time. Water levels shown are as measured during and/or after drilling. In some cases, boring advancement methods mask the presence/absence of groundwater. See individual logs for details.

NOTES:

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ATTACHMENTS

EXPLORATION AND TESTING PROCEDURES

Field Exploration

Boring Layout and Elevations: The locations of the borings are presented in the **Site Location and Exploration Plans**. The borings were located in the field by overlaying the site plan on Google Earth, recording the latitude and longitude coordinates, and staking the borings using a handheld, recreational-grade GPS unit. The accuracy of the latitude and longitude values is typically about +/- 25 feet when obtaining the values using this method. Elevations at the borings were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS. The accuracy of the boring locations and elevations should only be assumed to the level implied by the methods used.

Subsurface Exploration Procedures: The borings were drilled with a CME-55 and CME-75 truck-mounted and CME-550 all-terrain rotary drill rigs with solid-stem augers. During the drilling operations, lithologic logs of the borings were recorded by the field engineer. Relatively undisturbed samples were obtained at selected intervals utilizing a 2½-inch outside diameter modified California barrel sampler. Bulk samples were obtained from auger cuttings. Penetration resistance values were recorded in a manner similar to the standard penetration test (SPT). This test consists of driving the sampler into the ground with a 140-pound hammer free falling through a distance of 30 inches. The number of blows required to advance the barrel sampler 12 inches (18 inches for standard split-spoon samplers, final 12 inches are recorded) or the interval indicated is recorded and can be correlated to the standard penetration resistance value (N-value). The blow count values are indicated on the boring logs at the respective sample depths, barrel sampler blow counts are not considered N-values.

An automatic hammer was used to advance the samplers in the borings performed on this site. A greater efficiency is typically achieved with the automatic hammer compared to the conventional safety hammer operated with a cathead and rope. Published correlations between the SPT values and soil properties are based on the lower efficiency cathead and rope method. This higher efficiency affects the standard penetration resistance blow count value by increasing the penetration per hammer blow over what would be obtained using the cathead and rope method. The effect of the automatic hammer's efficiency has been considered in the interpretation and analysis of the subsurface information for this report.

The standard penetration test provides a reasonable indication of the in-place density of sandy type materials, but only provides an indication of the relative stiffness of cohesive materials since the blow count in these soils may be affected by the soils moisture content. In addition, considerable care should be exercised in interpreting the N-values in gravelly soils, particularly where the size of the gravel particle exceeds the inside diameter of the sampler.

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Groundwater measurements were obtained in the borings at the time of drilling. Due to safety concerns, the borings were backfilled with auger cuttings after drilling. Some settlement of the backfill may occur and should be repaired as soon as possible.

Laboratory Testing

Samples retrieved during the field exploration were returned to the laboratory for observation by the Geotechnical Engineer, and were classified in general accordance with the Unified Soil Classification System presented in the **Supporting Information**.

At this time, an applicable laboratory-testing program was formulated to determine engineering properties of the subsurface materials. Following the completion of the laboratory testing, the field descriptions were confirmed or modified as necessary, and the boring logs were prepared. The boring logs are included in the **Exploration Results**.

Laboratory test results are included in the **Exploration Results**. These results were used for the geotechnical engineering analyses and the development of foundation, earthwork, and pavement recommendations. All laboratory tests were performed in general accordance with the applicable local or other accepted standards.

Selected soil and bedrock samples were tested for the following engineering properties:

- | | |
|----------------------------------|-----------------------------------|
| ■ Water content | ■ Unconfined compressive strength |
| ■ Dry density | ■ Water-soluble sulfate content |
| ■ Grain size distribution | ■ Water-soluble chloride content |
| ■ Atterberg limits | ■ Redox Potential |
| ■ Swell/consolidation | ■ pH |
| ■ California Bearing Ratio (CBR) | ■ Electrical resistivity |
| ■ Thermal Resistivity | |

SITE LOCATION AND EXPLORATION PLANS

Contents:

Site Location Plan
Exploration Plan with Aerial Image
Exploration Plan with Project Overlay
Field Electrical Resistivity Plan
DC1 Bedrock Contour Map
DC4 Bedrock Contour Map

Note: All attachments are one page unless noted above.

SITE LOCATION
QTS Aurora ■ Aurora, Colorado
September 7, 2021 ■ Terracon Project No. 25215031



TOPOGRAPHIC MAP IMAGE COURTESY OF THE U.S. GEOLOGICAL SURVEY
QUADRANGLES INCLUDE: DENVER INTERNATIONAL AIRPORT, CO (1/1/1994) and
COAL CREEK, CO (1/1/1994).

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT
INTENDED FOR CONSTRUCTION PURPOSES

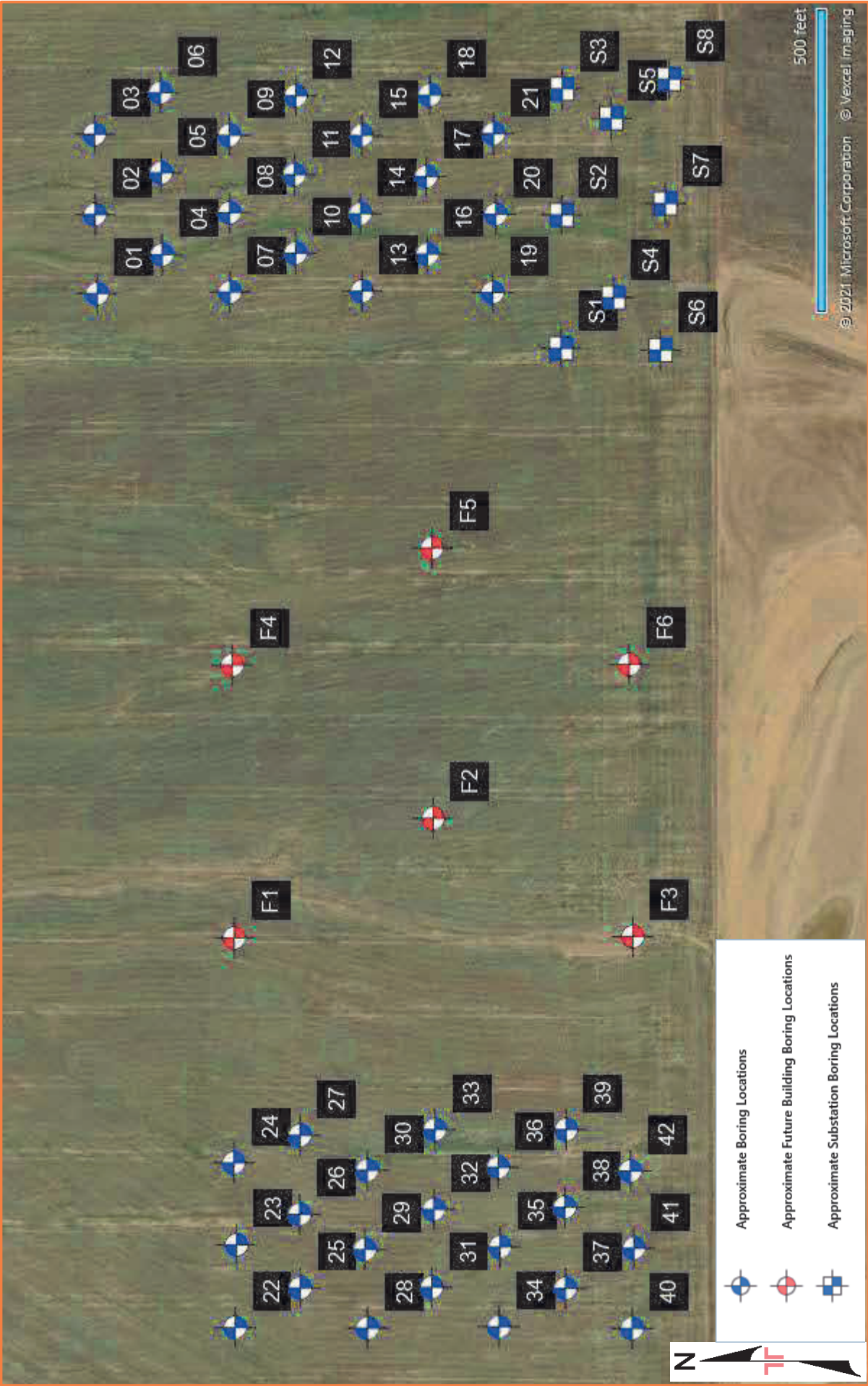
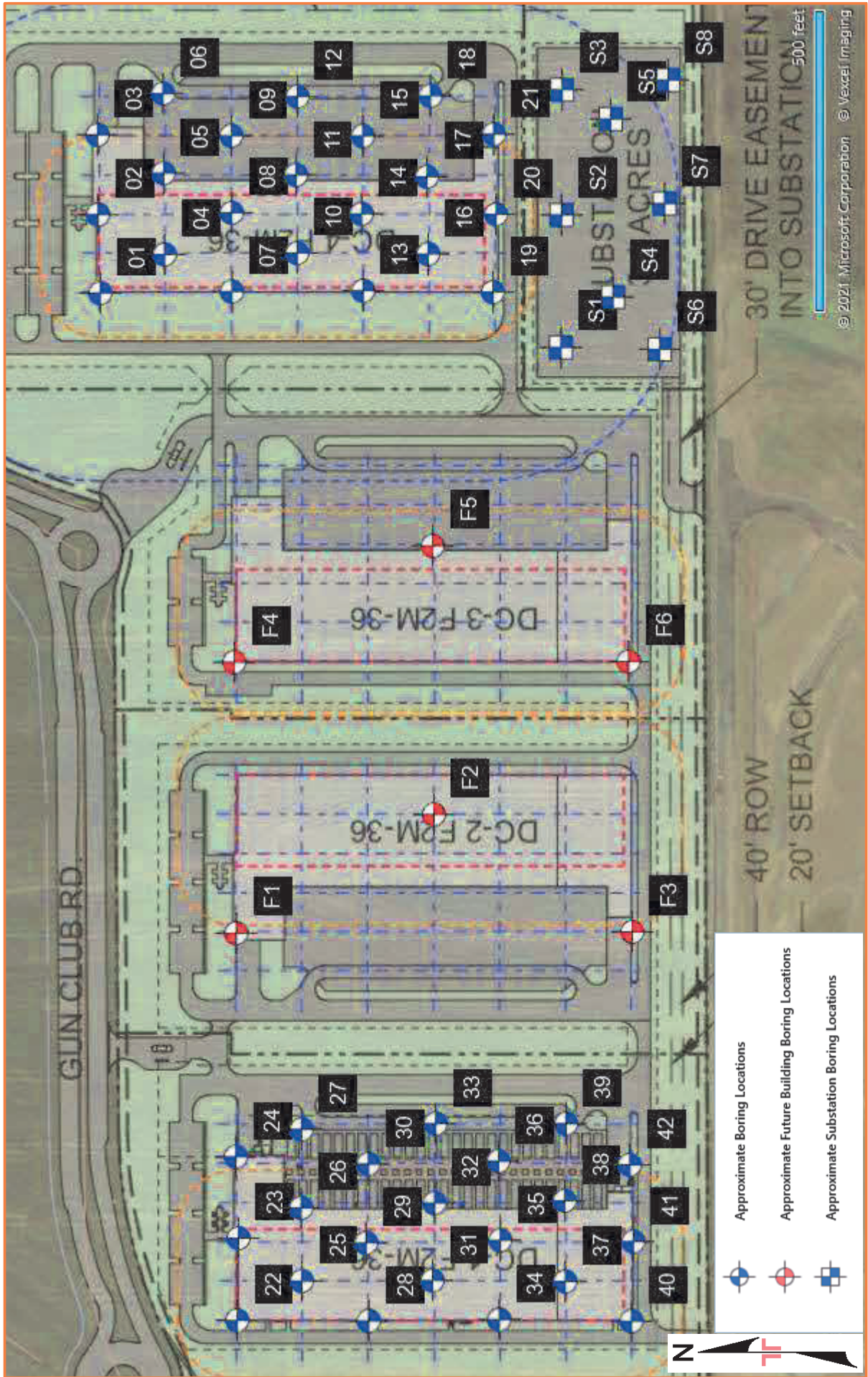


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT
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AERIAL PHOTOGRAPHY PROVIDED BY
MICROSOFT BING MAPS



AERIAL PHOTOGRAPHY PROVIDED BY
MICROSOFT BING MAPS

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT
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FIELD ELECTRICAL RESISTIVITY PLAN
QTS Aurora ■ Aurora, Colorado
September 7, 2021 ■ Terracon Project No. 25215031

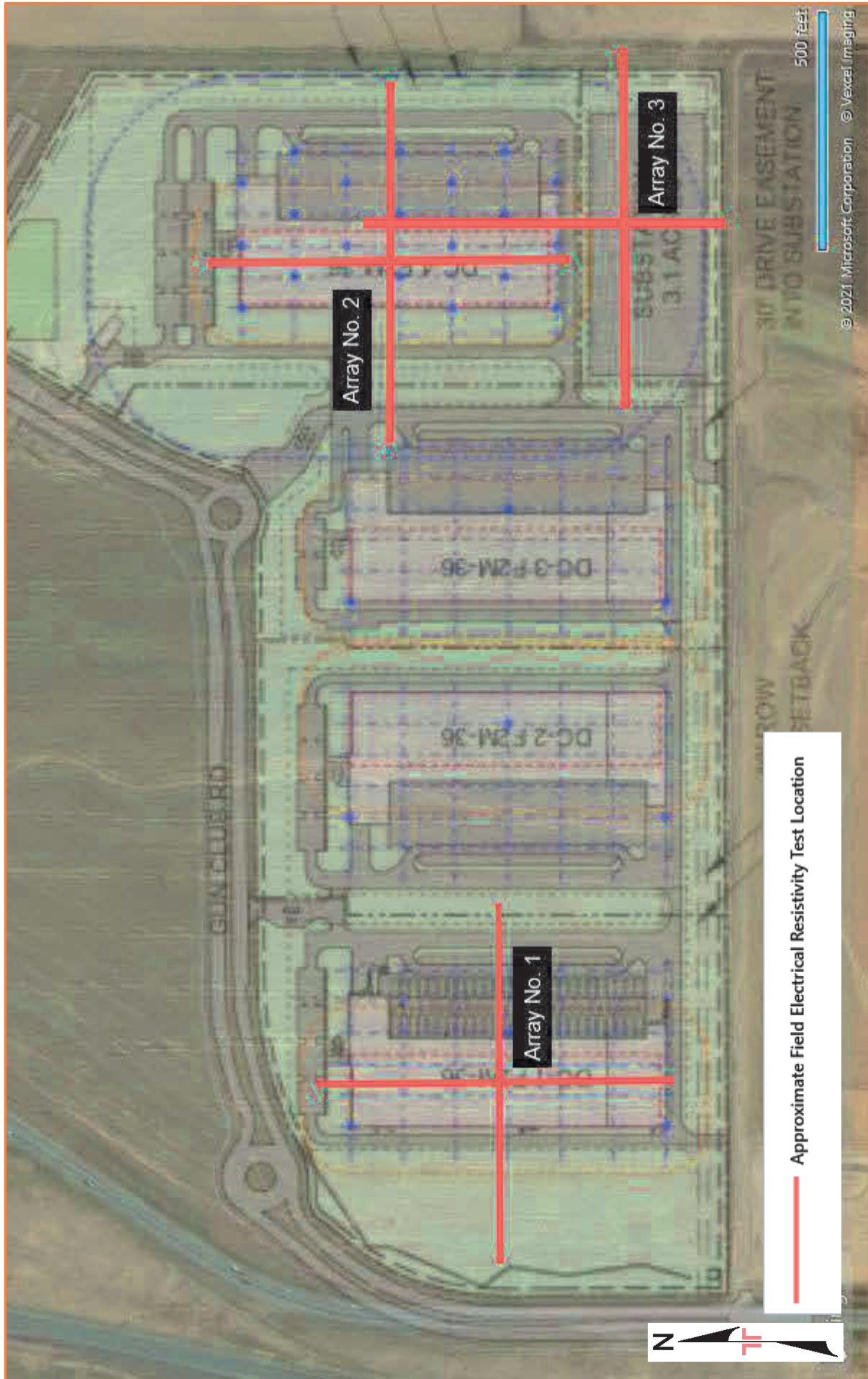
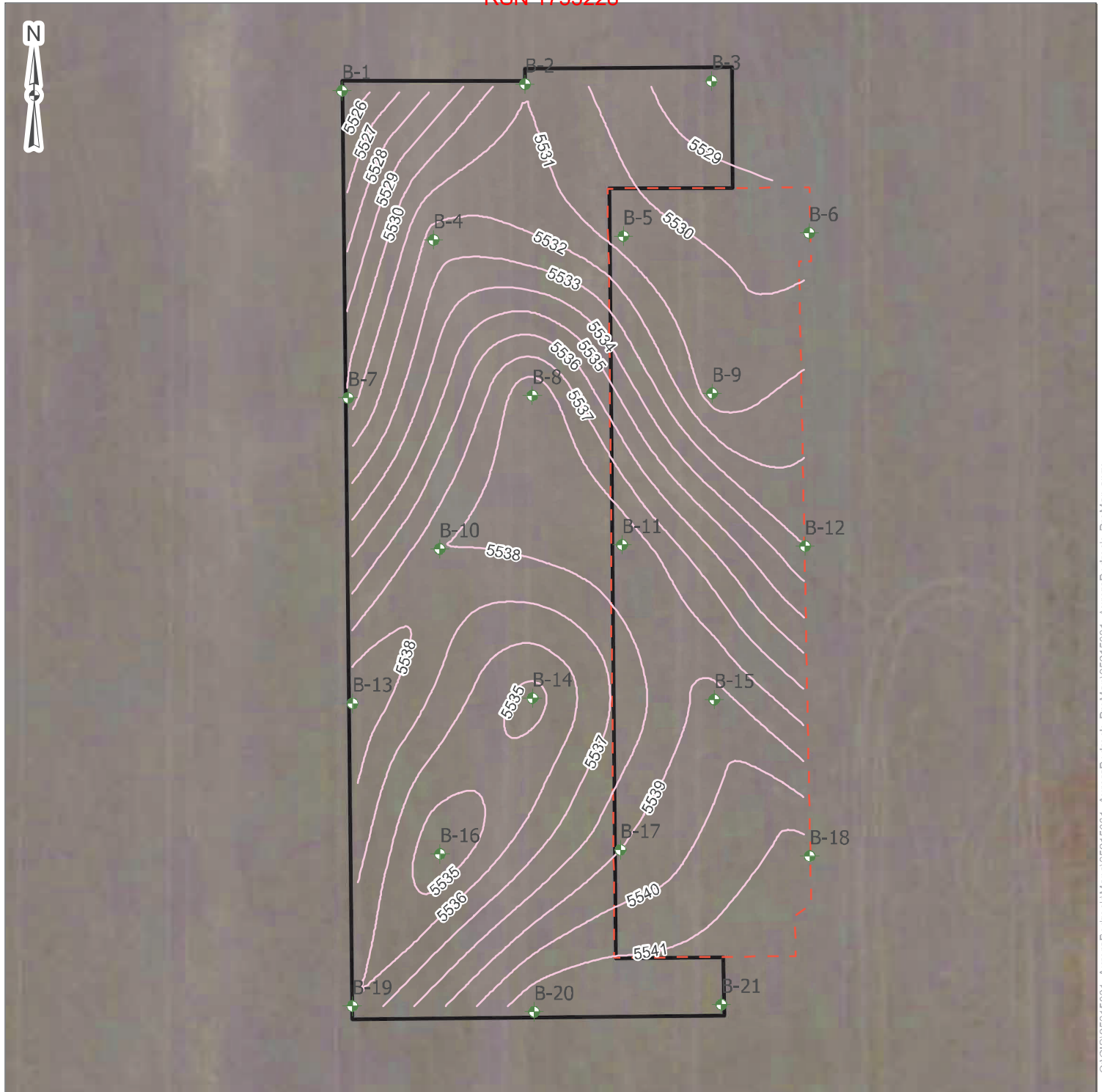


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT
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AERIAL PHOTOGRAPHY PROVIDED BY
MICROSOFT BING MAPS



Legend

DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap

Feet
0 50 100 200

- Future Building Soil Boring
- Soil Boring
- Substation Soil Boring
- Building Footprint
- Equipment Yard
- Bedrock Contour

Notes:

1. Bedrock contours were interpolated using the Natural Neighbors Spatial Analyst Tool from bedrock depths encountered during field exploration.

Project No.:	25215031
Date:	Sep 2021
Drawn By:	EMA
Reviewed By:	NMN

Terracon

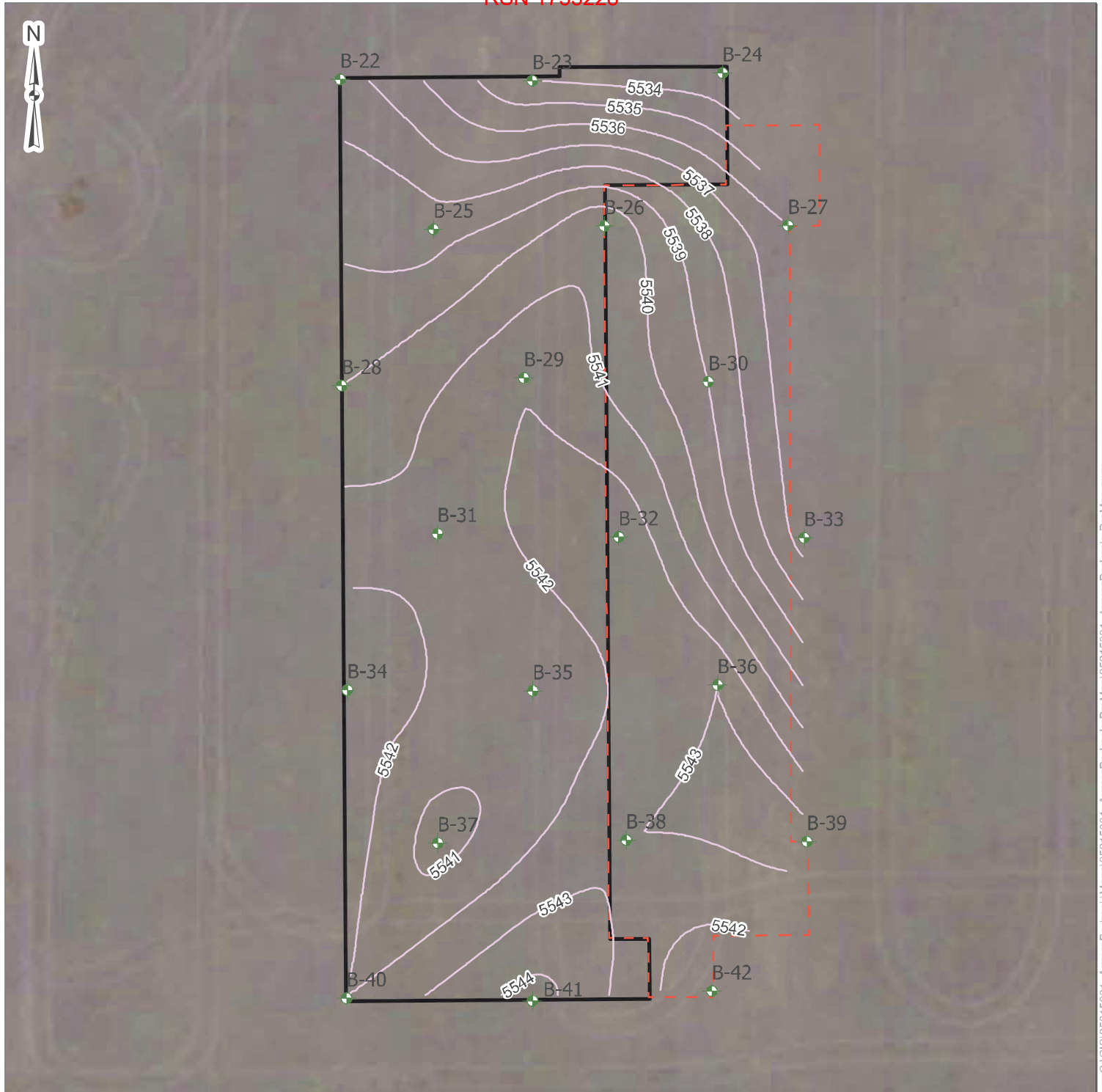
10625 W. I-70 Frontage Rd. N. Ste. 3
Wheat Ridge, CO 80033

PH. (303) 423-3300

terracon.com

DC1 Bedrock Contour Map

QTS Aurora
Gun Club Road and Colfax Avenue
Aurora, Colorado



Legend

DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap

Feet
0 50 100 200

- Future Building Soil Boring
- Soil Boring
- Substation Soil Boring
- Building Footprint
- Equipment Yard
- Bedrock Contour

Notes:

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Drawn By:	EMA
Reviewed By:	NMN

Terracon

10625 W. I-70 Frontage Rd. N. Ste. 3
Wheat Ridge, CO 80033

PH. (303) 423-3300

terracon.com

DC4 Bedrock Contour Map

QTS Aurora
Gun Club Road and Colfax Avenue
Aurora, Colorado

EXPLORATION RESULTS

Contents:

Boring Logs (Boring Nos. 1 to 42, F1 to F6, and S1 to S8)
Swell Consolidation Test (54 pages)
Remolded Swell Test (6 pages)
Grain Size Distribution (13 pages)
Unconfined Compressive Strength (3 pages)
Moisture Density Relationship (16 pages)
CBR (2 pages)
Thermal Resistivity (14 pages)
Corrosivity (8 pages)
Summary of Laboratory Test Results (11 pages)

Note: All attachments are one page unless noted above.

BORING LOG NO. 01

Page 1 of 1

PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7346° Longitude: -104.7085° Approximate Surface Elev.: 5540 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , with sand, calcareous, brown, very stiff 15.0 5525+/-	5			11-23					32-14-18	76
						14-23			14.8	120		
			10			12-19	+2.8 @ 500 psf		14.5	117		
						8-12			16.2	117		
						7-12						
			15			11-20			21.0	106		
			20			50/11"						
			25			50/6"			11.7	128		
			30			50/11"						
			35			50/10"			19.4	108		
			40			50/10"						
			45			50/12"			21.5	105		
			50			50/12"						
		Boring Terminated at 50 Feet 50.0 5490+/-										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 05-27-2021

Boring Completed: 05-27-2021

Drill Rig: CME-550

Driller: Terracon

Project No.: 25215031

BORING LOG NO. 02

Page 1 of 1

PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7346° Longitude: -104.7081° Approximate Surface Elev.: 5541 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , with sand, brown, stiff to very stiff	5			7-10			18.1	113	32-15-17	80
			10.0			10-17						
						13-20			9.5	117		
			10			13-21	+6.2 @ 500 psf		18.0	110		
		CLAYSTONE , gray, firm	13.5			11-19			23.0	103		
		SANDSTONE , fine to coarse grained, brown, hard, moderate cementation	17.0			50/9"						
		CLAYSTONE , brown to orange, firm to medium hard				20-27			24.1	102		
			25			13-19						
			30			50/11"			21.0	107		
			35			50/10"						
			40			17-23			26.1	97		
		Boring Terminated at 40 Feet										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

 39 feet while drilling
 39 feet upon the completion of drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 05-27-2021

Boring Completed: 05-27-2021

Drill Rig: CME-550

Driller: Terracon

Project No.: 25215031

BORING LOG NO. 03

Page 1 of 1

PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7346° Longitude: -104.7076° Approximate Surface Elev.: 5542 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , with sand, brown, stiff to very stiff 8.5 5533.5+/-	5			5-6 7-9 12-18					36-16-20	76
2		CLAYEY SAND (SC) , fine to coarse grained, brown, loose to medium dense 14.0 5528+/-	10			10-14 6-7	+2.4 @ 500 psf		12.8 12.0 13.8	114 123 120		
3		SANDSTONE , with clay, fine to coarse grained, tan, firm to very hard, moderate to strong cementation 30.0 5512+/-	15			11-12 10-12 50/9"			2.7 3.0			
		CLAYSTONE , gray to brown, medium hard 40.0 5502+/-	20			50/1" 50/12"			19.9	107		
		Boring Terminated at 40 Feet	25			50/12"						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 05-27-2021

Boring Completed: 05-27-2021

Drill Rig: CME-550

Driller: Terracon

Project No.: 25215031

BORING LOG NO. 04

Page 1 of 1

PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7343° Longitude: -104.7083° Approximate Surface Elev.: 5541.5 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , with sand, brown, stiff to very stiff	5			5-10			20.8	108	42-14-28	79
			9.0			9-12	+1.3 @ 500 psf		18.6	109		
						6-9			20.8	108		
3		CLAYSTONE , gray to brown, firm hard	10			13-19						
			15			13-18			25.4	101		
			17.5			50/9"						
2		SANDY CLAYSTONE , tan to brown, soft	20			7-5			20.4	106		
			22.5									
		CLAYSTONE , gray to brown, firm to hard	25			18-28						
			30			11-18			23.0	101		
			35			50/10"						
3			40.0			50/10"			21.8	103		
		Boring Terminated at 40 Feet										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

24 feet while drilling

Terracon

10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 05-28-2021

Boring Completed: 05-28-2021

Drill Rig: CME-550

Driller: Terracon

Project No.: 25215031

BORING LOG NO. 05

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PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7343° Longitude: -104.7078° Approximate Surface Elev.: 5542.5 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , with sand, calcareous, brown, stiff to very stiff 7.0 5535.5+/-	5			4-8			18.9	108	43-19-24	79
2		CLAYEY SAND (SC) , fine to coarse grained, tan to brown, medium dense 12.0 5530.5+/-	10			8-22	+3.0 @ 500 psf		16.4	112		
			15			10-16			9.8	119		
			20			8-15						
			25			9-18			21.3	107		
			30			12-24						
			35			50/11"			24.1	103		
			40			50/11"						
			45			50/9"			15.3	113		
			50			15-21			23.7	103		
						50/10"						
						50/11"			25.5	99		
						50/12"						
		Boring Terminated at 50 Feet 5492.5+/-	50									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 05-26-2021

Boring Completed: 05-26-2021

Drill Rig: CME-550

Driller: Terracon

Project No.: 25215031

BORING LOG NO. 06

Page 1 of 1

PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7343° Longitude: -104.7074° Approximate Surface Elev.: 5543.5 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , with sand, calcareous, brown to light gray, medium stiff to stiff	14.0			6-4					33-16-17	76
			5			6-12			10.6	122		
			10			10-14	+1.9 @ 500 psf		16.7	113		
						12-18			10.0	114		
						12-21						
			15			12-22			4.1	105		
			20			50/7"						
			25			50/9"			1.1			
3		SANDSTONE , fine to coarse grained, orangish brown, firm to hard, moderate cementation	27.0									
			30			50/11"						
			35			50/7"			10.6	118		
			40			50/3"						
		CLAYSTONE , brown, medium hard to hard	27.0									
			40.0									
		Boring Terminated at 40 Feet										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 05-26-2021

Boring Completed: 05-26-2021

Drill Rig: CME-550

Driller: Terracon

Project No.: 25215031

BORING LOG NO. 07

Page 1 of 1

PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7340° Longitude: -104.7085° Approximate Surface Elev.: 5543 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , with sand, brown, very stiff to hard	12.5			8-13			10.2	125	43-15-28	78
			5			12-24						
			10			7-11			12.2	120		
			15			15-23						
			15			15-20	+5.6 @ 500 psf		23.6	100		
			20			13-21						
			25			13-23			22.0	106		
			30			50/12"						
			35			12-16			29.9	94		
			40			7-10						
			40			50/9"			14.6	112		
		SANDSTONE , fine to coarse grained, tan, hard, moderate cementation	37.5									
			40.0									
		Boring Terminated at 40 Feet										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 05-28-2021

Boring Completed: 05-28-2021

Drill Rig: CME-550

Driller: Terracon

Project No.: 25215031

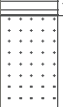
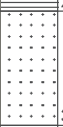
BORING LOG NO. 08

Page 1 of 1

PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7340° Longitude: -104.7081° Approximate Surface Elev.: 5543 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , with sand, calcareous, brown, very stiff 4.0 5539+/-				7-13					28-13-15	82
		CLAYSTONE , brown, medium hard to hard 5 5539+/-	5			13-28	+6.2 @ 500 psf		12.2	117		
						50/12"						
			10			13-26			16.6	114		
						50/11"						
			15			50/12"			21.1	110		
		17.0 5526+/-										
		SANDSTONE , fine to coarse grained, brown to reddish brown, hard, moderate cementation 22.0 5521+/-	20			50/7"						
3		CLAYSTONE , gray, hard 25 5516+/-	25			50/11"			25.5	98		
		27.0 5516+/-										
		SANDSTONE , fine to coarse grained, tan, hard, moderate cementation 32.0 5511+/-	30			50/9"						
		CLAYSTONE , brown to gray, hard 35 5503+/-	35			50/12"			25.9	101		
		40.0 5503+/-	40			50/12"						
		Boring Terminated at 40 Feet										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

 34 feet while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 05-28-2021

Boring Completed: 05-28-2021

Drill Rig: CME-550

Driller: Terracon

Project No.: 25215031

BORING LOG NO. 09

Page 1 of 1

PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7340° Longitude: -104.7076° Approximate Surface Elev.: 5543 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , trace sand, trace organics, brown, medium stiff to stiff 7.5 5535.5+/-	5			4-5			18.5	109	34-15-19	88
2		CLAYEY SAND (SC) , fine to coarse grained, light brown to brown, loose to medium dense 12.5 5530.5+/-	10			7-10	+2.5 @ 500 psf		11.3	122		
						13-17			9.7	123		
						11-12						
						12-22			14.7	120		
						50/11"						
						50/8"			15.0			
						14-27						
						50/11"			22.3	103		
						50/10"						
						50/12"			23.8			
3		CLAYSTONE , brown, firm 15.0 5528+/-	15									
		SANDSTONE , fine to coarse grained, brown, medium hard to hard, moderate cementation 24.0 5519+/-	20									
		CLAYSTONE , brown to orange, medium hard 40.0 5503+/-	25									
		Boring Terminated at 40 Feet	30									
			35									
			40									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 06-01-2021

Boring Completed: 06-01-2021

Drill Rig: CME-550

Driller: Terracon

Project No.: 25215031

BORING LOG NO. 10

Page 1 of 1

PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7337° Longitude: -104.7083° Approximate Surface Elev.: 5544 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , trace sand, brown, stiff to very stiff	6.0			7-10			18.0	101	39-14-25	88
			5			11-23			20.3	100		
									15.7	101		
		CLAYSTONE , brown to light brown, medium hard to hard				12-27	+2.2 @ 500 psf		14.0	117		
			10			50/11"			11.9	123		
						50/11"			18.8	113		
			15			50/7"						
						50/9"			14.9			
			20			50/9"						
						50/9"			17.3			
		SANDSTONE , fine to coarse grained, light brown to grayish brown, very hard, strong cementation	25.0			50/6"						
						50/6"						
			30			50/6"						
						50/6"			20.6	111		
		CLAYSTONE , light brown to gray, medium hard to hard	35.0			50/10"						
						50/8"						
			40			50/8"						
			45			50/8"						
			50.0			50/8"						
		Boring Terminated at 50 Feet										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 06-01-2021

Boring Completed: 06-01-2021

Drill Rig: CME-550

Driller: Terracon

Project No.: 25215031

BORING LOG NO. 11

Page 1 of 1

PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7337° Longitude: -104.7078° Approximate Surface Elev.: 5544 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , with sand, brown, very stiff 5.0 5539+/-	5			10-17	+0.9 @ 500 psf		12.5	124	29-17-12	78
		CLAYSTONE , brown, medium hard to hard 12.0 5532+/-	10			14-25						
						16-24			11.9	125		
		SANDSTONE , fine to coarse grained, brown, medium hard to hard, weak to moderate cementation 19.0 5525+/-	15			50/11"						
						50/7"			6.5			
		CLAYSTONE , brown to gray, hard 40.0 5504+/-	20			16-18						
						50/11"			19.5	109		
			25			50/7"						
			30			50/9"			19.3	110		
			35			50/8"						
			40			50/9"			20.8	108		
		Boring Terminated at 40 Feet										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 06-01-2021

Boring Completed: 06-01-2021

Drill Rig: CME-550

Driller: Terracon

Project No.: 25215031

BORING LOG NO. 12

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PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7337° Longitude: -104.7074° Approximate Surface Elev.: 5545 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , with sand, calcareous, brown, stiff to very stiff 7.0 5538+/-	5			5-8					34-18-16	83
2		CLAYEY SAND (SC) , fine to coarse grained, tan to brown, loose to medium dense 12.0 5533+/-	10			10-17	+3.1 @ 500 psf		11.3	117		
			15			10-12						
			20			10-17			14.6	115		
			25			17-18						
			30			50/10"			12.0	113		
			35			50/8"						
			40			50/6"			12.6	113		
			45			50/9"						
			50			50/9"			14.9			
			55			50/10"						
			60			50/8"						
			65			12-28						
		Boring Terminated at 50 Feet 50.0 5495+/-	50									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 05-28-2021

Boring Completed: 05-28-2021

Drill Rig: CME-550

Driller: Terracon

Project No.: 25215031

BORING LOG NO. 13

Page 1 of 1

PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7334° Longitude: -104.7085° Approximate Surface Elev.: 5545 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , trace sand, brown, very stiff 6.0 5539+/-	5			9-18			17.7	113	37-20-17	87
		CLAYSTONE , brown, firm to medium hard 11.0 5534+/-	10			9-22 13-20 50/12"	+3.1 @ 500 psf		10.7	124		
		SANDSTONE , fine to coarse grained, brown, hard, moderate cementation 16.0 5529+/-	15			50/8"			8.9	108		
		CLAYSTONE , brown, medium hard to very hard 20.0 5515+/-	20			50/12"			21.4	106		
		CLAYSTONE , brown, medium hard to very hard 25.0 5515+/-	25			50/8"						
		SANDSTONE , fine to coarse grained, very hard, strong cementation 30.0 5510+/-	30			50/2"			16.2	116		
		CLAYSTONE , brown, hard 35.0 5505+/-	35			50/6"						
		CLAYSTONE , brown, hard 40.0 5505+/-	40			50/8"			22.9	101		
		Boring Terminated at 40 Feet										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 06-02-2021

Boring Completed: 06-02-2021

Drill Rig: CME-550

Driller: Terracon

Project No.: 25215031

CLIENT: Quality Technology Services, Inc.

[illegible]

Hammer Type: Automatic

Project No.: 25215031

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 25215031 QTS AURORA USE THIS ONE.GPJ TERRACON DATATEMPLATE.GDT 8/17/21

BORING LOG NO. 15

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PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7334° Longitude: -104.7076° Approximate Surface Elev.: 5545.5 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , trace sand, brown, medium stiff to very stiff	6.0			7-13			21.2	104	34-15-19	86
			5			11-22	+1.6 @ 500 psf		16.0	114		
		CLAYSTONE , light brown, soft to medium hard	11.0			14-23			15.4	117		
			10			6-11						
		SANDSTONE , fine grained, light brown, hard to very hard, moderate to strong cementation	5534.5+/-			50/9"			11.7	110		
			15			50/7"						
			20			50/5"			12.0			
			25			50/9"						
		CLAYSTONE , light brown to gray, hard	5520.5+/-			50/8"			19.5	109		
			30			50/8"						
			35			50/8"						
			40			50/7"			19.2	110		
		Boring Terminated at 40 Feet	5505.5+/-									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 06-02-2021

Boring Completed: 06-02-2021

Drill Rig: CME-550

Driller: Terracon

Project No.: 25215031

BORING LOG NO. 16

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PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7331° Longitude: -104.7083° Approximate Surface Elev.: 5546 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , with sand, brown to tan, stiff to very stiff 8.0 5538+/-	5			5-6 7-10 5-10 14-16			12.9 18.2	119 110	32-17-15	78
2		CLAYEY SAND (SC) , fine to coarse grained, brown, medium dense 12.0 5534+/-	10			15-20 14-23	+5.0 @ 500 psf	13370	24.0 23.3	102 103		
3		CLAYSTONE , brown to gray, firm to medium hard 27.5 5518.5+/-	15			17-26 18-31			22.9	103		
		SANDSTONE , fine to coarse grained, tan to reddish brown, hard, moderate cementation 32.5 5513.5+/-	20			50/8"			15.2	113		
		CLAYSTONE , gray to light gray, hard 40.0 5506+/-	25			50/9"						
		Boring Terminated at 40 Feet	30			50/10"			20.0	105		

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 06-07-2021

Boring Completed: 06-07-2021

Drill Rig: CME-550

Driller: Terracon

Project No.: 25215031

BORING LOG NO. 17

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PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7331° Longitude: -104.7079° Approximate Surface Elev.: 5546 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , with sand, brown, stiff	7.0			6-10					32-14-18	75
		CLAYSTONE , tan to brown, medium hard to hard	5539+/-			10-15			13.0	112		
						50/12"						
			10			15-23	+10.3 @ 500 psf		22.8	105		
						14-25						
			15			50/12"			21.5	105		
			20			50/12"						
			25			50/10"			21.0	104		
			30			50/7"						
			35			50/10"			21.6	104		
			40			50/9"						
			45			50/12"						
			50			50/12"						
		Boring Terminated at 50 Feet	5496+/-									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 05-26-2021

Boring Completed: 05-26-2021

Drill Rig: CME-550

Driller: Terracon

Project No.: 25215031

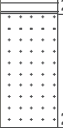
BORING LOG NO. 18

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PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7331° Longitude: -104.7074° Approximate Surface Elev.: 5546.5 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , with sand, brown, very stiff	5.0			7-24			14.5		32-16-16	85
		CLAYSTONE , brown to gray, medium hard to hard	5541.5+/-			50/11"	+9.1 @ 500 psf		11.9	122		
						15-27			13.3	120		
						15-26						
						13-25			19.4	108		
						16-27						
						50/11"			18.1	111		
3		SANDSTONE , fine to coarse grained, tan, very hard, strong cementation	22.5									
			5524+/-			50/4"						
		CLAYSTONE , gray, hard	27.5			50/10"			18.9			
			5519+/-			50/9"						
						15-31						
		Boring Terminated at 40 Feet	40.0									
			5506.5+/-									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 06-07-2021

Boring Completed: 06-07-2021

Drill Rig: CME-550

Driller: Terracon

Project No.: 25215031

BORING LOG NO. 19

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PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7328° Longitude: -104.7085° Approximate Surface Elev.: 5547 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		SANDY LEAN CLAY (CL) , calcareous, brown to reddish brown, stiff to very stiff 11.0 5536+/-	5			5-8					30-14-16	67
			6-9						20.2	105		
			6-7				+2.4 @ 500 psf		25.6	100		
		14.5 5532.5+/-	10			11-19			17.2	113		
			16-22						21.4	105		
		SANDSTONE , fine to coarse grained, reddish brown, very hard, strong cementation 17.5 5529.5+/-	15			50/3"						
		CLAYSTONE , gray, medium hard to hard	20			13-25						
			25			50/10"						
			30			15-27			27.4	92		
			35			50/10"						
			40			50/10"			24.5	101		
			45			50/10"						
		50.0 5497+/-	50			50/11"						
		Boring Terminated at 50 Feet										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling



Boring Started: 06-08-2021

Boring Completed: 06-08-2021

Drill Rig: CME-550

Driller: Terracon

Project No.: 25215031

BORING LOG NO. 20

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PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7328° Longitude: -104.7081° Approximate Surface Elev.: 5547 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , with sand, brown, stiff 5.0 5542+/-	5			3-10					29-15-14	83
		CLAYSTONE , brown to reddish brown, medium hard to hard 12.0 5535+/-	10			50/10"			11.7	122		
		SANDSTONE , fine to coarse grained, white to tan, hard, moderate cementation 14.5 5532.5+/-	15			50/7"			12.3	123		
		CLAYSTONE , light gray to gray, medium hard to hard 15 5532.5+/-	15			50/9"			5.0			
			20			16-28			18.0			
			25			50/8"						
			30			17-33			26.5	96		
			35			50/9"						
			40			50/10"						
		Boring Terminated at 40 Feet 40.0 5507+/-	40									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 06-07-2021

Boring Completed: 06-07-2021

Drill Rig: CME-550

Driller: Terracon

Project No.: 25215031

BORING LOG NO. 21

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PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7328° Longitude: -104.7076° Approximate Surface Elev.: 5547 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , with sand, brown, very stiff 5.0 5542+/-	5			5-14			14.8	109	33-17-16	85
3		CLAYSTONE , brown to gray, medium hard to hard 40.0 5507+/-	5 10 15 20 25 30 35 40			15-30 15-26 50/11" 50/8" 18-32 50/10" 13-23 50/9" 50/9" 50/10"	+9.7 @ 500 psf		19.7 12.9 21.5	111 118 104		
		Boring Terminated at 40 Feet	40									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 06-07-2021

Boring Completed: 06-07-2021

Drill Rig: CME-550

Driller: Terracon

Project No.: 25215031

BORING LOG NO. 22

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PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7340° Longitude: -104.7146° Approximate Surface Elev.: 5545.5 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		SANDY LEAN CLAY , brown, medium stiff to stiff	5			3-6					37-16-21	65
			6-10						22.9	102		
			10-17				+4.3 @ 500 psf		23.7	102		
			10-18						25.2			
			15-26									
			20-29						16.8	112		
			15-22					10650	26.0	98		
			18-30									
			17-29						23.4	103		
			50/6"									
			50/10"						28.9	92		
			50/6"									
			50/2"									
		Boring Terminated at 50 Feet	50									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 06-23-2021

Boring Completed: 06-23-2021

Drill Rig: CME-550

Driller: Terracon

Project No.: 25215031

BORING LOG NO. 23

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PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7340° Longitude: -104.7141° Approximate Surface Elev.: 5544 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , brown, medium stiff to stiff	5			2-5			15.2	115		
			6-10			6-10	+1.1 @ 500 psf		15.7	114		
			6-12			6-12			20.6	108		
			50/6"			50/6"						
			50/12"			50/12"			22.8	103		
			50/9"			50/9"						
			50/11"			50/11"			24.9	101		
			50/11"			50/11"						
			50/9"			50/9"			23.6	103		
			50/10"			50/10"						
			50/8"			50/8"						
3		CLAYSTONE , gray to brown, soft to very hard	40									
		Boring Terminated at 40 Feet										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 06-23-2021

Boring Completed: 06-23-2021

Drill Rig: CME-75

Driller: Terracon

Project No.: 25215031

BORING LOG NO. 24

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PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7340° Longitude: -104.7136° Approximate Surface Elev.: 5544 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		SANDY LEAN CLAY (CL) , brown, medium stiff to very stiff 11.0 5533+/-	5			3-3 5-8 8-10 8-14			16.3	112	37-16-21	66
3		CLAYSTONE , gray to brown, firm to medium hard 40.0 5504+/-	10			14-20 15-25 50/12"			22.3	106		
			15			50/12"			21.1	106		
			20			50/10"			23.1	104		
			25			50/10"						
			30			50/10"						
			35			50/10"						
			40			50/10"						
		Boring Terminated at 40 Feet										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 06-25-2021

Boring Completed: 06-25-2021

Drill Rig: CME-75

Driller: Terracon

Project No.: 25215031

BORING LOG NO. 25

Page 1 of 1

PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7337° Longitude: -104.7144° Approximate Surface Elev.: 5546.5 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , with sand, brown, medium stiff to stiff 8.0 5538.5+/-	5			11-12			20.3	106	38-17-21	75
		CLAYSTONE , gray to brown, medium hard 10.0 5533.5+/-	10			11-15 17-27			19.1	117		
		SANDSTONE , fine to coarse grained, tan, medium hard, weak cementation 13.0 5533.5+/- 16.0 5530.5+/-	15			50/10" 50/11"			21.7	109		
		CLAYSTONE , gray to brown, medium hard to hard 20.0 5506.5+/-	20			50/9"						
			25			50/11"			26.1	100		
			30			50/11"						
			35			50/8"			21.9	111		
			40			50/10"						
		Boring Terminated at 40 Feet 40.0 5506.5+/-										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 06-25-2021

Boring Completed: 06-25-2021

Drill Rig: CME-75

Driller: Terracon

Project No.: 25215031

BORING LOG NO. 26

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PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7337° Longitude: -104.7139° Approximate Surface Elev.: 5546 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , with sand, brown, stiff 5.0 5541+/-	5			7-9			19.4	109	36-16-20	82
		CLAYSTONE , gray to brown, medium hard 11.5 5534.5+/-	10			16-28						
		SANDSTONE , fine to coarse grained, tan, hard, moderate cementation 14.0 5532+/-	15			15-27	+10.7 @ 500 psf		19.9	108		
		CLAYSTONE , gray to brown, hard to very hard 50.0 5496+/-	20			50/11"			7.0			
			25			50/8"						
			30			50/11"						
			35			50/10"			20.4	108		
			40			15-30						
			45			50/6"			18.3	110		
			50			16-26						
						50/10"			21.8	106		
						50/11"						
						50/8"						
		Boring Terminated at 50 Feet	50									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 06-22-2021

Boring Completed: 06-22-2021

Drill Rig: CME-55

Driller: Terracon

Project No.: 25215031

BORING LOG NO. 27

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PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7337° Longitude: -104.7135° Approximate Surface Elev.: 5545 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , trace sand, brown, very stiff	5			7-13			18.4	112	46-16-30	91
			9.0			9-17			14.1	117		
						8-14	+1.7 @ 500 psf		18.7	109		
		CLAYSTONE , gray to brown, firm to hard	10			11-20			21.4	107		
			15			14-26	+3.0 @ 500 psf		21.4	106		
						19-24			22.1	105		
			20			50/12"			21.8	108		
			25			50/10"			19.2	111		
			30			50/12"			20.4	107		
			35			50/9"			22.7	103		
			40			50/8"						
		Boring Terminated at 40 Feet										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 06-03-2021

Boring Completed: 06-03-2021

Drill Rig: CME-550

Driller: Terracon

Project No.: 25215031

BORING LOG NO. 28

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PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7334° Longitude: -104.7146° Approximate Surface Elev.: 5547 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , with sand, brown, stiff 7.0 5540+/-	5			8-10					41-17-24	80
						7-7	+4.2 @ 500 psf		18.2	106		
		CLAYSTONE , gray to brown, firm to hard	10			12-19						
			15			17-27			18.4	110		
			20			50/11"						
			25			15-25			18.6			
			30			50/11"						
			35			50/9"		39860	18.8	109		
			40			50/11"						
						50/11"			18.7	111		
			40			50/10"						
		Boring Terminated at 40 Feet 40.0 5507+/-										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

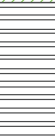
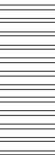
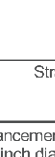
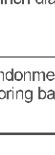
Boring Started: 06-22-2021

Boring Completed: 06-22-2021

Drill Rig: CME-55

Driller: Terracon

Project No.: 25215031

PROJECT: QTS Aurora				CLIENT: Quality Technology Services, Inc.									
SITE: Gun Club Road and Colfax Avenue Aurora, Colorado													
MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7334° Longitude: -104.7142° Approximate Surface Elev.: 5546.5 (Ft.) +/-		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		DEPTH	ELEVATION (Ft.)										
1		LEAN CLAY (CL), brown, very stiff											
		4.5	5542+/-	5		11-21							
		CLAYSTONE, gray to brown, medium hard				12-27	+7.3 @ 500 psf		16.4	115			
		11.5	5535+/-	10		16-27							
		SANDSTONE, fine to coarse grained, tan, medium hard to very hard, moderate to strong cementation				50/12"							
				15		50/5"			9.5				
		17.5	5529+/-	20		50/12"							
		CLAYSTONE, gray to brown, medium hard to hard				50/12"			20.5	105			
				25		50/10"							
				30		50/9"			17.8	110			
				35		50/9"							
		40.0	5506.5+/-	40		50/10"							
		Boring Terminated at 40 Feet											
Stratification lines are approximate. In-situ, the transition may be gradual. Hammer Type: Automatic													
Advancement Method: 4-inch diameter solid stem continuous flight power auger				See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any).				Notes: Elevations were interpolated from the ALTAINSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.					
Abandonment Method: Boring backfilled with auger cuttings upon completion.				See Supporting Information for explanation of symbols and abbreviations.									
WATER LEVEL OBSERVATIONS								Boring Started: 06-22-2021		Boring Completed: 06-22-2021			
None encountered while drilling								Drill Rig: CME-55		Driller: Terracon			
								Project No.: 25215031					

BORING LOG NO. 30

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PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7334° Longitude: -104.7137° Approximate Surface Elev.: 5546 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , trace sand, brown, stiff to very stiff 7.0 5539+/-	5			5-10					32-16-16	89
		CLAYSTONE , gray to brown, soft to medium hard 13.5 5532.5+/-	10			7-16 15-28 50/11"	+2.1 @ 500 psf		17.5	114		
		SANDSTONE , fine to coarse grained, tan, medium hard, moderate cementation 16.5 5529.5+/-	15			50/6"			18.6	108		
		CLAYSTONE , gray to brown, hard to very hard 20 5511+/-	20			50/10"			18.7	112		
			25			50/8"						
			30			50/9"			20.9	106		
			35			50/9"						
		SANDSTONE , fine to coarse grained, tan, very hard, strong cementation 39.0 5507+/-	35			50/3"			19.9	108		
		CLAYSTONE , gray to brown, very hard 40.0 5506+/-	40			50/3"						
		Boring Terminated at 40 Feet										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 06-03-2021

Boring Completed: 06-03-2021

Drill Rig: CME-550

Driller: Terracon

Project No.: 25215031

BORING LOG NO. 31

Page 1 of 1

PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7331° Longitude: -104.7144° Approximate Surface Elev.: 5548 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		SANDY LEAN CLAY (CL) , brown, stiff 6.5 5541.5+/-	5			8-8			18.8 20.9 17.2 16.1	105 106 104 114	30-15-15	63
		CLAYSTONE , brown, firm 10.0 5538+/-	10			10-22	+5.9 @ 500 psf		20.6	106		
		SANDSTONE , fine to coarse grained, tan, medium hard 12.0 5536+/-	15			13-24						
		CLAYSTONE , gray, medium hard to very hard	15			15-28			23.6	103		
			20			14-24						
			20			50/2"			24.5	102		
			25			50/11"						
			30			50/8"						
			35			50/9"						
			40			50/6"						
		Boring Terminated at 40 Feet 40.0 5508+/-	40									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 06-24-2021

Boring Completed: 06-24-2021

Drill Rig: CME-550

Driller: Terracon

Project No.: 25215031

BORING LOG NO. 32

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PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7331° Longitude: -104.7139° Approximate Surface Elev.: 5547 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , with sand, brown, very stiff 4.0 5543+/-				11-20					32-14-18	75
3		CLAYSTONE , gray to brown, firm to hard 40.0 5507+/-	5 10 15 20 25 30 35 40			10-14 50/12" 50/8" 50/7" 50/9" 50/9" 50/10" 50/7" 50/8"	+7.1 @ 500 psf		18.5 14.8 17.1 20.7 20.1	108 119 113 108		
		Boring Terminated at 40 Feet										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 06-24-2021

Boring Completed: 06-24-2021

Drill Rig: CME-550

Driller: Terracon

Project No.: 25215031

BORING LOG NO. 33

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PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7331° Longitude: -104.7134° Approximate Surface Elev.: 5546.5 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , with sand, brown, stiff 10.0 5536.5+/-	5			6-9 7-10 8-15	+2.7 @ 500 psf		20.4	107	39-16-23	81
3		CLAYSTONE , gray to brown, soft to very hard 25.0 5521.5+/-	10			17-25 16-30 50/12"			19.8	106		
		SANDSTONE , fine to coarse grained, tan, very hard, strong cementation 30.0 5516.5+/-	15			20-26 50/4"			22.0	105		
		CLAYSTONE , gray to brown, medium hard to very hard 40.0 5506.5+/-	20			50/3"			21.8	106		
		SANDSTONE , fine to coarse grained, tan, very hard, strong cementation 44.5 5502+/-	25			50/10"			9.2	131		
		CLAYSTONE , gray to brown, very hard 50.0 5496.5+/-	30			50/7"			17.4			
		Boring Terminated at 50 Feet	35			50/6"						
			40									
			45									
			50									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 06-04-2021

Boring Completed: 06-04-2021

Drill Rig: CME-550

Driller: Terracon

Project No.: 25215031

BORING LOG NO. 34

Page 1 of 1

PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7328° Longitude: -104.7146° Approximate Surface Elev.: 5550 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , with sand, brown, stiff to very stiff 7.0 5543+/-	5			8-12					36-15-21	77
						6-12	+2.3 @ 500 psf		19.7	108		
		CLAYSTONE , gray to brown, firm to hard	10			11-22						
			15			21-24			22.7	105		
			20			50/9"						
			25			50/7"			16.8	115		
			30			50/12"						
			35			50/7"			16.7	111		
			40			50/8"						
						50/9"			21.6	107		
						50/7"						
		SANDSTONE , fine to coarse grained, tan, hard, moderate cementation 37.5 5512.5+/- 40.0 5510+/-										
		Boring Terminated at 40 Feet										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 06-24-2021

Boring Completed: 06-24-2021

Drill Rig: CME-550

Driller: Terracon

Project No.: 25215031

BORING LOG NO. 35

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PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7328° Longitude: -104.7141° Approximate Surface Elev.: 5549 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , trace sand, brown, stiff to very stiff	8.0			7-11			16.6	113	40-18-22	87
		CLAYSTONE , gray to brown, hard	11.0			10-19	+6.2 @ 500 psf		18.6	112		
		SANDSTONE , fine to coarse grained, tan, medium hard, moderate cementation	13.0			50/7"			20.1	109		
		CLAYSTONE , gray to brown, medium hard to very hard				50/12"						
						14-24						
						50/12"			19.6	113		
						50/7"						
						50/6"			20.3	108		
						50/5"						
						50/4"			15.6	110		
		Boring Terminated at 40 Feet	40.0									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon

10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 06-23-2021

Boring Completed: 06-23-2021

Drill Rig: CME-75

Driller: Terracon

Project No.: 25215031

BORING LOG NO. 36

Page 1 of 1

PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7328° Longitude: -104.7137° Approximate Surface Elev.: 5548 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , with sand, brown, very stiff	5.0			7-13					40-17-23	77
3		CLAYSTONE , gray to brown, firm to very hard	5543+/-			12-22	+6.0 @ 500 psf		15.2	117		
						12-19			18.7	110		
						15-27	+6.2 @ 500 psf		21.7	105		
						17-27						
						50/8"						
						50/10"			17.8	116		
						50/6"						
						50/6"			22.6	104		
						50/7"						
						50/8"			20.6	107		
		Boring Terminated at 40 Feet	5508+/-									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 06-03-2021

Boring Completed: 06-03-2021

Drill Rig: CME-75

Driller: Terracon

Project No.: 25215031

BORING LOG NO. 37

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PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7325° Longitude: -104.7144° Approximate Surface Elev.: 5550.5 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , trace sand, brown, very stiff	5			8-12					38-17-21	88
			10.0			10-12			23.0	101		
						10-17						
		CLAYSTONE , tan to light brown, soft to medium hard	10			15-20	+3.6 @ 500 psf		19.0	110		
			15.5			17-22						
		SANDSTONE , fine to coarse grained, brown, hard, moderate cementation	15			50/7"			22.7	104		
			19.5									
		CLAYSTONE , tan to gray, hard to very hard	20			50/6"						
			25			50/9"			20.8			
			30			50/6"						
			35.0			50/6"			18.5	117		
		SANDSTONE , fine to coarse grained, tan to gray, very hard, strong cementation	35									
			40.0			50/4"						
		Boring Terminated at 40 Feet	40									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 06-23-2021

Boring Completed: 06-23-2021

Drill Rig: CME-75

Driller: Terracon

Project No.: 25215031

PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS	PERCENT FINES
		Latitude: 39.7325° Longitude: -104.7139°	Approximate Surface Elev.: 5550 (Ft.) +/-									LL-PL-PI	
DEPTH			ELEVATION (Ft.)										
1		SANDY LEAN CLAY (CL) , brown, stiff to very stiff										32-15-17	70
		7.0	5543+/-	5			6-11						
							13-13			16.4			
				10			12-23			17.6			
							13-23			18.0			
							16-23						
				15			14-20			19.6			
		17.5	5532.5+/-										
				20			15-30						
		22.5	5527.5+/-										
				25			50/12"			16.4			
				30			15-27						
				35			50/11"			21.5			
				40			50/11"						
				45			50/11"			26.7	96		
		50.0	5500+/-	50			50/8"						
		Boring Terminated at 50 Feet											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See **Exploration and Testing Procedures** for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTAINSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See **Supporting Information** for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling



Boring Started: 06-24-2021

Boring Completed: 06-24-2021

Drill Rig: CME-550

Driller: Terracon

Project No.: 25215031

BORING LOG NO. 39

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PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7325° Longitude: -104.7134° Approximate Surface Elev.: 5549 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , trace sand, brown, stiff 5.5 5543.5+/-	5			5-10			18.0	114	41-20-21	88
3		CLAYSTONE , gray to brown, firm to medium hard 10-24 5520.5+/- 10-21 5520.5+/- 13-27 5520.5+/- 50/11" 5520.5+/- 50/10" 5520.5+/- 50/11" 5520.5+/- 14-18 5520.5+/- 50/2" 5520.5+/- 50/11" 5520.5+/- 50/8" 5520.5+/-	10 15 20 25 30 35 40				+7.1 @ 500 psf		14.5 18.7 14.7 18.0 15.0 15.3	117 111 125 111 115 114		
		SANDSTONE , fine to coarse grained, tan, very hard, strong cementation 28.5 5520.5+/- 32.0 5517+/- CLAYSTONE , gray to brown, hard to medium hard 40.0 5509+/-	28.5 32.0 40.0									
		Boring Terminated at 40 Feet	40									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling



Boring Started: 06-04-2021

Boring Completed: 06-04-2021

Drill Rig: CME-55

Driller: Terracon

Project No.: 25215031

BORING LOG NO. 40

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PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7322° Longitude: -104.7146° Approximate Surface Elev.: 5552 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , with sand, brown, stiff to very stiff	10.0			11-12					31-18-13	81
			5			12-16						
			10			3-9			16.1	113		
			10			50/11"	+5.2 @ 500 psf		15.1	119		
			15			50/7"						
			15			50/9"						
			20			50/7"			19.1	111		
			25			50/6"						
			30			50/8"			18.2	108		
			35			50/7"						
			36.5									
			40			50/6"			18.4	109		
			42.0									
			45			50/12"						
			50			50/7"			18.2	110		
		Boring Terminated at 50 Feet	50									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 06-30-2021

Boring Completed: 06-30-2021

Drill Rig: CME-550

Driller: Terracon

Project No.: 25215031

BORING LOG NO. 41

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PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7322° Longitude: -104.7141° Approximate Surface Elev.: 5551.5 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , with sand, brown, stiff to very stiff	7.0			7-11					31-16-15	79
			5			9-12			12.5	98		
		CLAYSTONE , gray to brown, medium hard to hard	10			50/10"			18.8			
			15			50/11"						
			20			50/10"						
			25			50/11"						
			30			50/11"			19.3	107		
			35			50/11"						
			40			50/11"			22.0	103		
		Boring Terminated at 40 Feet										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 06-29-2021

Boring Completed: 06-29-2021

Drill Rig: CME-550

Driller: Terracon

Project No.: 25215031

BORING LOG NO. 42

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PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7322° Longitude: -104.7137° Approximate Surface Elev.: 5551 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , with sand, brown, stiff	5			7-10					39-19-20	83
			7			7-8			20.6	106		
			10			4-10						
			12			12-20			19.9	111		
			16			16-27	+10.4 @ 500 psf		22.8	105		
			18			18-30						
			20			50/12"			18.6	111		
			25			50/11"						
			30			50/12"			23.7	103		
			35			50/8"						
			40			50/9"			18.3	114		
		Boring Terminated at 40 Feet										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 06-30-2021

Boring Completed: 06-30-2021

Drill Rig: CME-550

Driller: Terracon

Project No.: 25215031

BORING LOG NO. F1

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PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7340° Longitude: -104.7123° Approximate Surface Elev.: 5541 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		SANDY LEAN CLAY (CL) , brown, very stiff to hard	6.0 5535+/-			7-13					26-14-12	63
		CLAYSTONE , brown, medium hard to very hard				50/10"			10.4	130		
						50/11"						
			10 5529+/-			50/5"	+6.0 @ 500 psf		10.7	126		
		SANDSTONE , fine to coarse grained, brown, medium hard, weak to hard cementation	15.0 5526+/-			16-26						
		CLAYSTONE , gray to light brown, medium hard to very hard				50/12"			11.5			
						50/11"			19.3	108		
						50/12"						
						50/10"			23.3	102		
						50/3"						
						50/9"						
		Boring Terminated at 40 Feet	40 5501+/-									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 06-04-2021

Boring Completed: 06-04-2021

Drill Rig: CME-550

Driller: Terracon

Project No.: 25215031

BORING LOG NO. F2

Page 1 of 1

PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7331° Longitude: -104.7116° Approximate Surface Elev.: 5545.5 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , with organics, trace sand, calcareous, light brown to brown, stiff 7.5 5538+/-	5			5-9 6-11 14-22			20.8	104	37-15-22	86
		CLAYSTONE , brown to brownish gray, medium hard to hard 10 5527.5+/-	10			13-23 50/11"	+5.2 @ 500 psf		21.1	106		
		SANDSTONE , fine grained, orangish brown, hard, moderate cementation 18.0 5527.5+/-	15			50/9"			15.1	114		
		CLAYSTONE , grayish brown to brown, medium hard to hard 23.0 5522.5+/-	20			50/8"			12.9	121		
3			25			50/9"						
			30			50/10"			23.8	104		
			35			50/10"						
			40			50/9"						
			45			50/8"						
			50			50/11"						
		Boring Terminated at 50 Feet 50 5495.5+/-										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 05-31-2021

Boring Completed: 06-02-2021

Drill Rig: CME-55

Driller: Terracon

Project No.: 25215031

BORING LOG NO. F3

Page 1 of 1

PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7322° Longitude: -104.7123° Approximate Surface Elev.: 5548 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , trace sand, trace organics, light brown to orangish brown, very stiff 3.0 5545+/-				7-13					52-18-34	85
		CLAYSTONE , orangish brown to gray, firm 5 5536+/-	5			11-17	+3.5 @ 500 psf		19.4	110		
						12-17						
			10			12-17			23.5	102		
		SANDSTONE , fine to medium grained, reddish brown, medium hard, weak cementation 12.0 5536+/-				18-21						
		CLAYSTONE , gray to brownish gray, medium hard 15.0 5533+/-	15			13-23			23.3	102		
			20			18-27			24.0	101		
		SANDSTONE , fine to medium grained, gray, firm to very hard, weak to strong cementation 24.0 5524+/-	25			13-19						
			30			50/1"			20.9	105		
		CLAYSTONE , gray, medium hard 33.0 5515+/-	35			50/11"						
			40			50/10"						
		Boring Terminated at 40 Feet 40.0 5508+/-										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 05-31-2021

Boring Completed: 06-02-2021

Drill Rig: CME-55

Driller: Terracon

Project No.: 25215031

BORING LOG NO. F4

Page 1 of 1

PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7340° Longitude: -104.7107° Approximate Surface Elev.: 5543 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , with sand, brown, medium stiff to very stiff 13.0 5530 +/-	5			7-10					35-14-21	74
						5-7			17.4	108		
						4-5	+0.1 @ 500 psf		16.3	109		
			10			13-17			20.4	105		
						13-27						
			15			50/12"			25.6	98		
			20			50/9"			25.4	97		
			25			50/10"						
			30			50/9"			22.2	103		
			35			50/6"						
			40			50/6"						
		29.5 5513.5 +/- SANDSTONE , fine to coarse grained, light brown to tan, medium hard to very hard, moderate to strong cementation 39.5 5503.5 +/- 40.0 5503 +/- CLAYSTONE , light brown to gray, very hard Boring Terminated at 40 Feet										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 05-31-2021

Boring Completed: 06-02-2021

Drill Rig: CME-550

Driller: Terracon

Project No.: 25215031

BORING LOG NO. F5

Page 1 of 1

PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7331° Longitude: -104.7100° Approximate Surface Elev.: 5546.5 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , brown, very stiff 3.0 5543.5+/-									30-18-12	85
		CLAYSTONE , brown, firm to medium hard 5 5537.5+/-	5			8-18 11-20 9-36			16.1	112		
		CLAYEY SANDSTONE , fine to coarse grained, white to tan, hard, moderate cementation 9.0 5537.5+/-	10			50/7"	+3.4 @ 500 psf		6.6	133		
		CLAYSTONE , gray to reddish brown, firm to hard 12.0 5534.5+/-	15			9/20 14-26			19.1	108		
			20			50/11"			21.8	105		
			25			50/7"						
			30			15-35			19.3	107		
			35			50/11"						
			40			50/9"						
			45			50/8"						
			50			50/8"						
		Boring Terminated at 50 Feet 50.0 5496.5+/-	50									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 05-31-2021

Boring Completed: 06-02-2021

Drill Rig: CME-55

Driller: Terracon

Project No.: 25215031

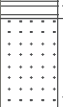
BORING LOG NO. F6

Page 1 of 1

PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7322° Longitude: -104.7107° Approximate Surface Elev.: 5550.5 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , trace sand, trace organics, calcareous, brown to orangish brown, stiff	5.0			6-9					44-17-27	86
		CLAYSTONE , grayish brown, soft to medium hard	5.0			8-12	+2.9 @ 500 psf		24.6	100		
			10.0			14-10						
			10.0			14-23			19.1	112		
			15.0			17-28						
		SANDSTONE , fine to medium grained, orangish brown, medium hard, weak cementation	15.0			10-30			14.6	116		
			19.0									
		CLAYSTONE , grayish brown to gray, hard	19.0			50/12"			24.4	101		
			25.0			50/8"						
			30.0			50/10"			22.1	103		
			35.0			50/8"						
			40.0			50/9"						
		Boring Terminated at 40 Feet	40.0									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 05-31-2021

Boring Completed: 06-02-2021

Drill Rig: CME-55

Driller: Terracon

Project No.: 25215031

BORING LOG NO. S1

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PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7325° Longitude: -104.7089° Approximate Surface Elev.: 5549.5 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		SANDY LEAN CLAY (CL) , calcareous, brown to tan, stiff 9.0 5540.5+/-	5			4-7					34-14-20	
						5-7			24.7	96		
						9-15	+2.3 @ 500 psf		18.0	111		
			10			12-20						
						11-22			25.0	100		
			15			18-27						
			20			17-30			22.3	105		
			25			50/12"						
			30			50/9"			18.3	109		
			35			50/9"						
			40			50/12"			23.4	103		
		Boring Terminated at 40 Feet										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 06-30-2021

Boring Completed: 06-30-2021

Drill Rig: CME-550

Driller: Terracon

Project No.: 25215031

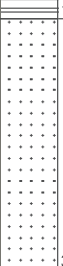
BORING LOG NO. S2

Page 1 of 1

PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7325° Longitude: -104.7081° Approximate Surface Elev.: 5548.5 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		SANDY LEAN CLAY (CL) , brown, stiff to very stiff 7.5 5541+/-	5			7-10			17.2	113	34-12-22	
						8-13						
						9-15	+4.1 @ 500 psf		20.8	107		
			10			12-15			23.3	101		
						15-25						
			15			12-25			24.3	103		
3		SANDSTONE , fine to medium grained, reddish brown to brown, hard, moderate cementation 19.0 5529.5+/- 30.0 5518.5+/-	20			50/9"						
			25			50/9"			12.4	109		
			30			50/10"						
		Boring Terminated at 30 Feet										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 05-31-2021

Boring Completed: 06-02-2021

Drill Rig: CME-55

Driller: Terracon

Project No.: 25215031

BORING LOG NO. S3

Page 1 of 1

PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7325° Longitude: -104.7073° Approximate Surface Elev.: 5548 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , with sand, reddish brown to brown, stiff 10.0 5538+/-	5			6-8					34-16-18	74
						7-10	+1.3 @ 500 psf		20.1	107		
						10-15						
			10			12-20			23.4	104		
						10-18						
			15			15-28			19.8	111		
						50/8"						
			20									
						50/12"			20.8	107		
			25									
						50/8"						
			30									
						50/7"			17.6	110		
			35									
			40			50/9"						
		Boring Terminated at 40 Feet										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

▽ 49 feet while drilling
▽ 38.2 feet on completion of drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 05-31-2021

Boring Completed: 06-02-2021

Drill Rig: CME-55

Driller: Terracon

Project No.: 25215031

BORING LOG NO. S4

Page 1 of 1

PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7323° Longitude: -104.7086° Approximate Surface Elev.: 5550 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , with sand, trace gravel, calcareous, brown, stiff 8.0 5542+/-	5			5-8 10-12 10-17 20-22 14-21 15-25 50/12" 50/9" 50/10"	+1.7 @ 500 psf	16100	19.5 22.7 19.1 18.6 19.2 20.3	109 110 110 112 107 108	35-15-20	76
3		CLAYSTONE , orangish brown, firm to medium hard 22.0 5528+/- SANDSTONE , fine to coarse grained, brown, hard, moderate cementation 27.0 5523+/- CLAYSTONE , brown, medium hard 30.0 5520+/-	10 15 20 25 30									
		Boring Terminated at 30 Feet										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 05-26-2021

Boring Completed: 05-26-2021

Drill Rig: CME-55

Driller: Terracon

Project No.: 25215031

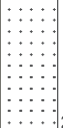
BORING LOG NO. S5

Page 1 of 1

PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7323° Longitude: -104.7075° Approximate Surface Elev.: 5549 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		SANDY LEAN CLAY (CL) , brown, stiff to very stiff	6.0			6-9						
			5			9-14	+3.8 @ 500 psf		18.7	110		
		CLAYSTONE , light gray to grayish brown, soft to medium hard				5-11						
			10			16-26			10.8	127		
						16-23						
			15			50/12"			18.2	112		
3		SANDSTONE , fine to coarse grained, orangish brown, hard, moderate cementation	17.0									
			20			50/9"						
		CLAYSTONE , brown, hard to very hard	23.0									
			25			50/5"			16.0	116		
			30.0			50/11"						
		Boring Terminated at 30 Feet	30									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 05-31-2021

Boring Completed: 06-02-2021

Drill Rig: CME-55

Driller: Terracon

Project No.: 25215031

BORING LOG NO. S6

Page 1 of 1

PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7321° Longitude: -104.7089° Approximate Surface Elev.: 5551 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , with sand, brown, medium stiff to stiff 6.0 5545+/-	5			6-4			20.2	109	41-16-25	74
		CLAYSTONE , light gray to grayish brown, firm 10-14 5534+/-	10			6-12			20.0	107		
						10-14	+4.2 @ 500 psf		20.0	107		
						12-18						
						14-21			21.7	107		
						12-22						
		SANDSTONE , fine to coarse grained, orangish brown, hard, moderate cementation 17.0 5534+/-	20			50/7"			15.0	112		
3		CLAYSTONE , brown, medium hard to hard 23.0 5528+/-	25			50/9"						
						50/11"			22.1	104		
		SANDSTONE , fine to coarse grained, light gray, hard to very hard, moderate to strong cementation 34.0 5517+/-	35			50/7"						
						50/3"			1.5			
		Boring Terminated at 40 Feet 40.0 5511+/-	40									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 05-26-2021

Boring Completed: 05-26-2021

Drill Rig: CME-550

Driller: Terracon

Project No.: 25215031

BORING LOG NO. S7

Page 1 of 1

PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7320° Longitude: -104.7080° Approximate Surface Elev.: 5550 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , yellowish brown, very stiff	5.0			7-15					31-15-16	
3		CLAYSTONE , bluish gray to grayish brown, firm to hard	5545+/-			15-29	+9.4 @ 500 psf		15.5	118		
			10			12-22						
			15			15-26			17.6	109		
			20			12-25						
			25			50/11"			16.1	113		
			30			50/10"						
			29.0			50/9"			17.1	113		
		30.0 SANDSTONE , fine grained, reddish brown, very hard, strong cementation Boring Terminated at 30 Feet	5521+/- 5520+/-			50/5"						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 05-31-2021

Boring Completed: 06-02-2021

Drill Rig: CME-55

Driller: Terracon

Project No.: 25215031

BORING LOG NO. S8

Page 1 of 1

PROJECT: QTS Aurora

CLIENT: Quality Technology Services, Inc.

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 39.7320° Longitude: -104.7073° Approximate Surface Elev.: 5550.5 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SWELL (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		LEAN CLAY (CL) , with sand, dark yellowish brown to dark brown, stiff 4.0 5546.5+/-	5			6-12			17.4	112	33-14-19	
		CLAYSTONE , dark yellowish brown to reddish brown, medium hard to hard	10			50/11"						
			15			11-24	+7.2 @ 500 psf		19.9	109		
			20			50/12"						
			25			50/8"			14.5	113		
			30			15/34						
			35			50/11"			18.9	112		
3		SANDSTONE , fine grained, white, very hard, strong cementation 24.0 5526.5+/-	40			50/6"						
		CLAYSTONE , reddish brown to gray, medium hard 29.0 5521.5+/-	40			15-31			20.4	109		
			40			15-21						
		Boring Terminated at 40 Feet 40.0 5510.5+/-	40			50/9"			18.3			

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4-inch diameter solid stem continuous flight power auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Elevations were interpolated from the ALTA/NSPS Land Title Survey by Martin/Martin (Job No. 19.1522.C.86, revised March 29, 2021) and provided to us by QTS.

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

None encountered while drilling

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

Boring Started: 05-31-2021

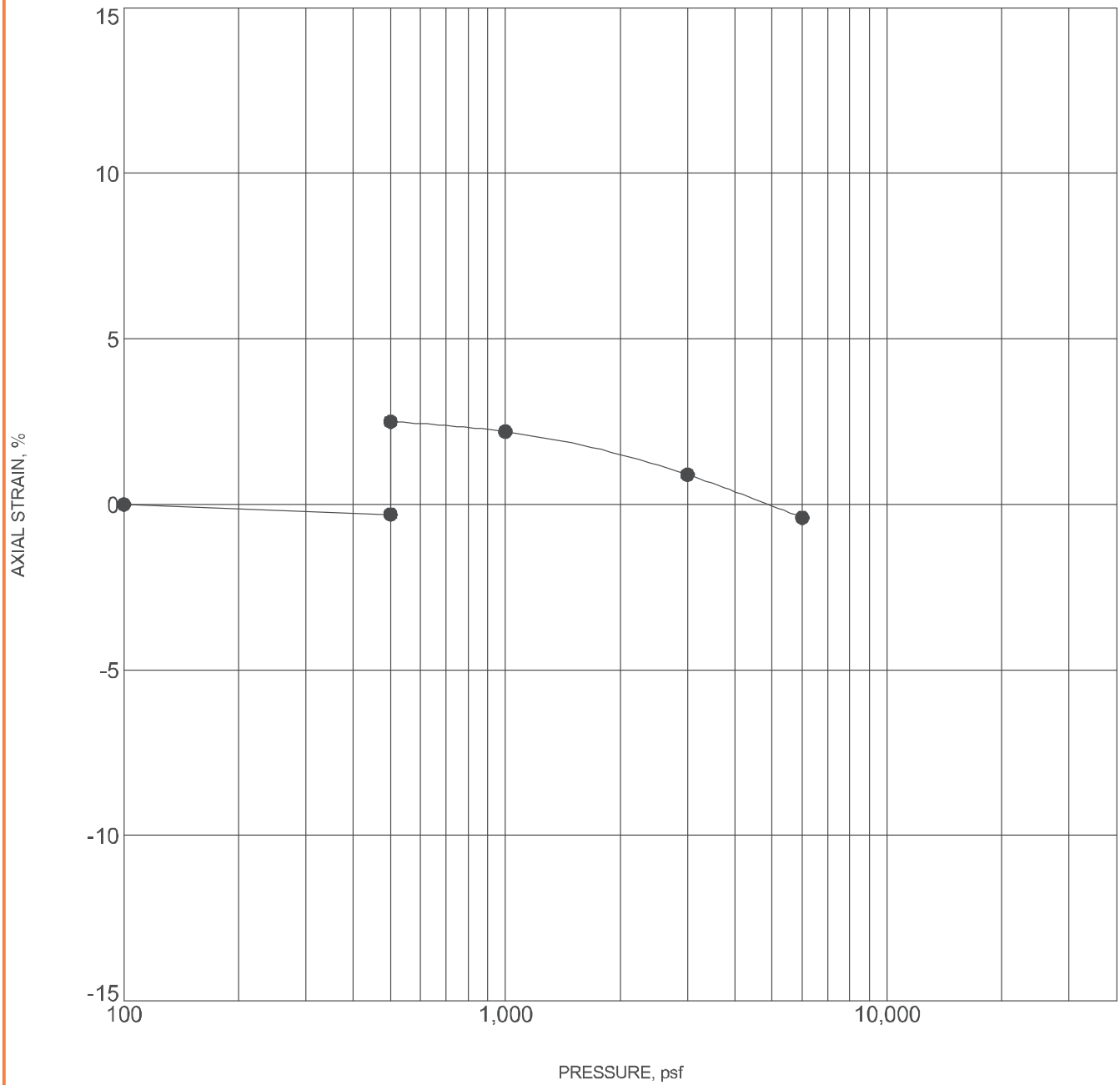
Boring Completed: 06-02-2021

Drill Rig: CME-55

Driller: Terracon

Project No.: 25215031

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21



Specimen Identification			Classification	γ_d , pcf	WC, %
●	01	7.5 - 8.5 ft	LEAN CLAY with SAND (CL)	117	14.5

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora

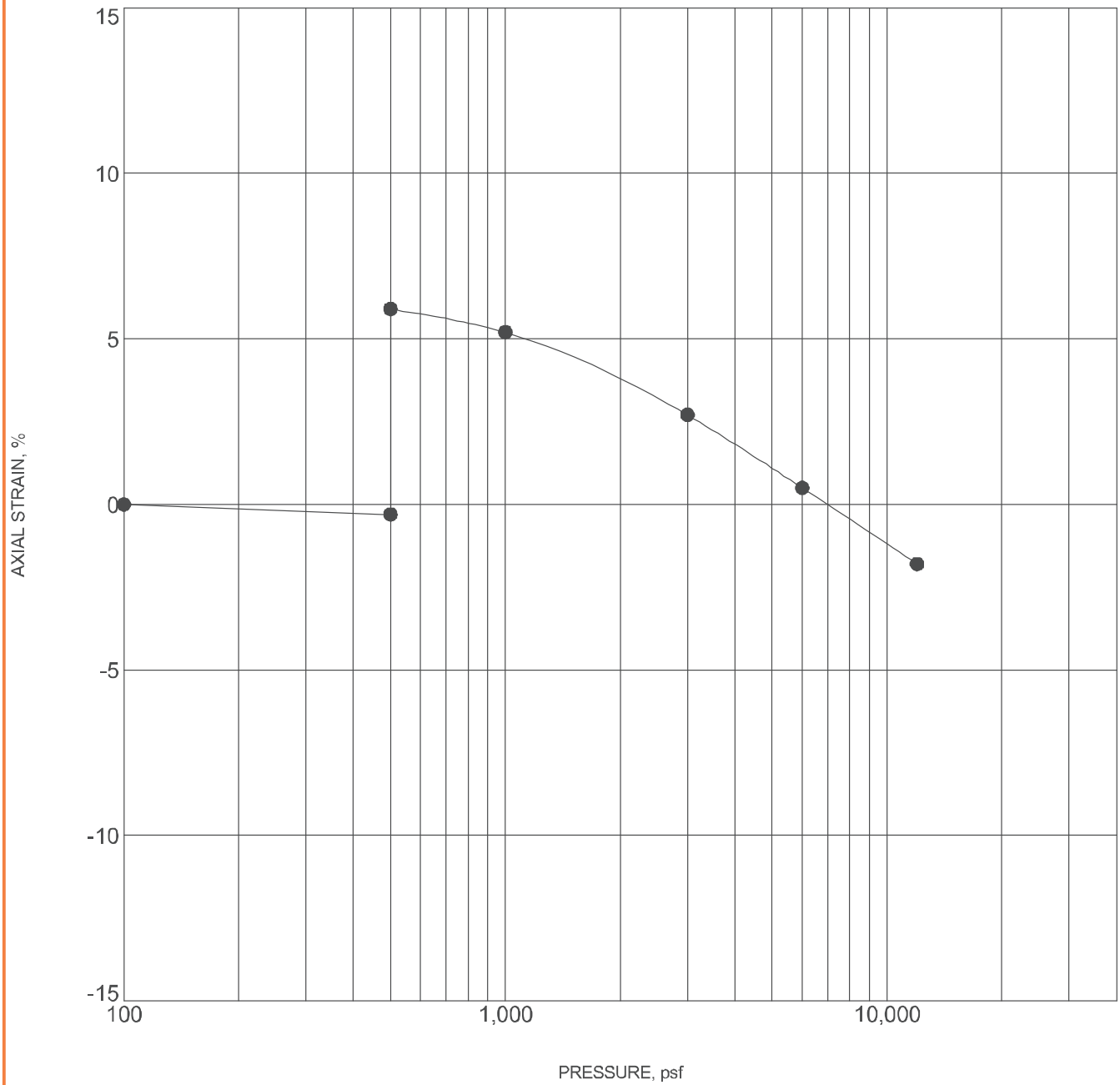
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21



Specimen Identification			Classification	γ_d , pcf	WC, %
●	02	10 - 11 ft	CLAYSTONE	110	18.0

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora

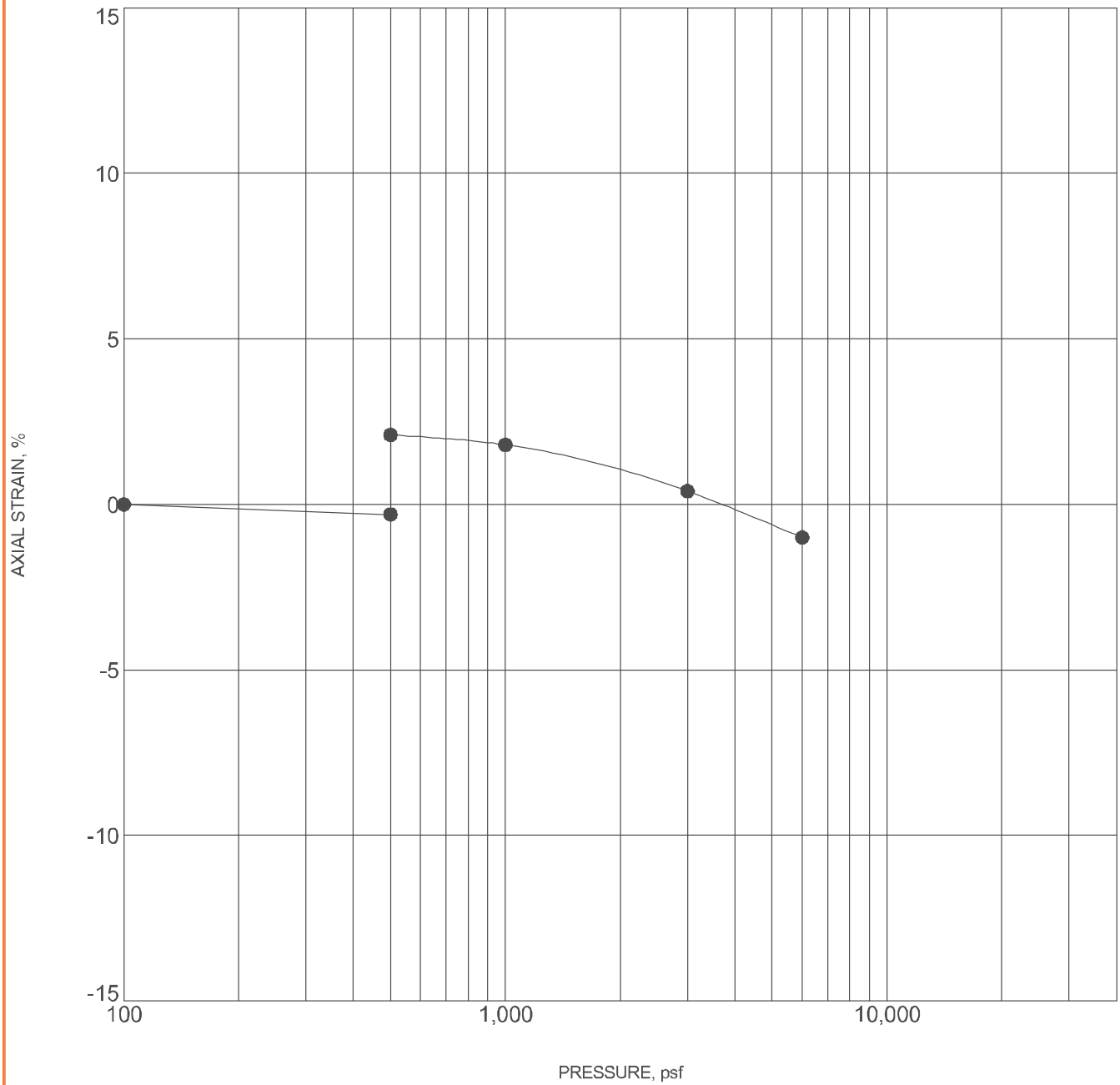
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21

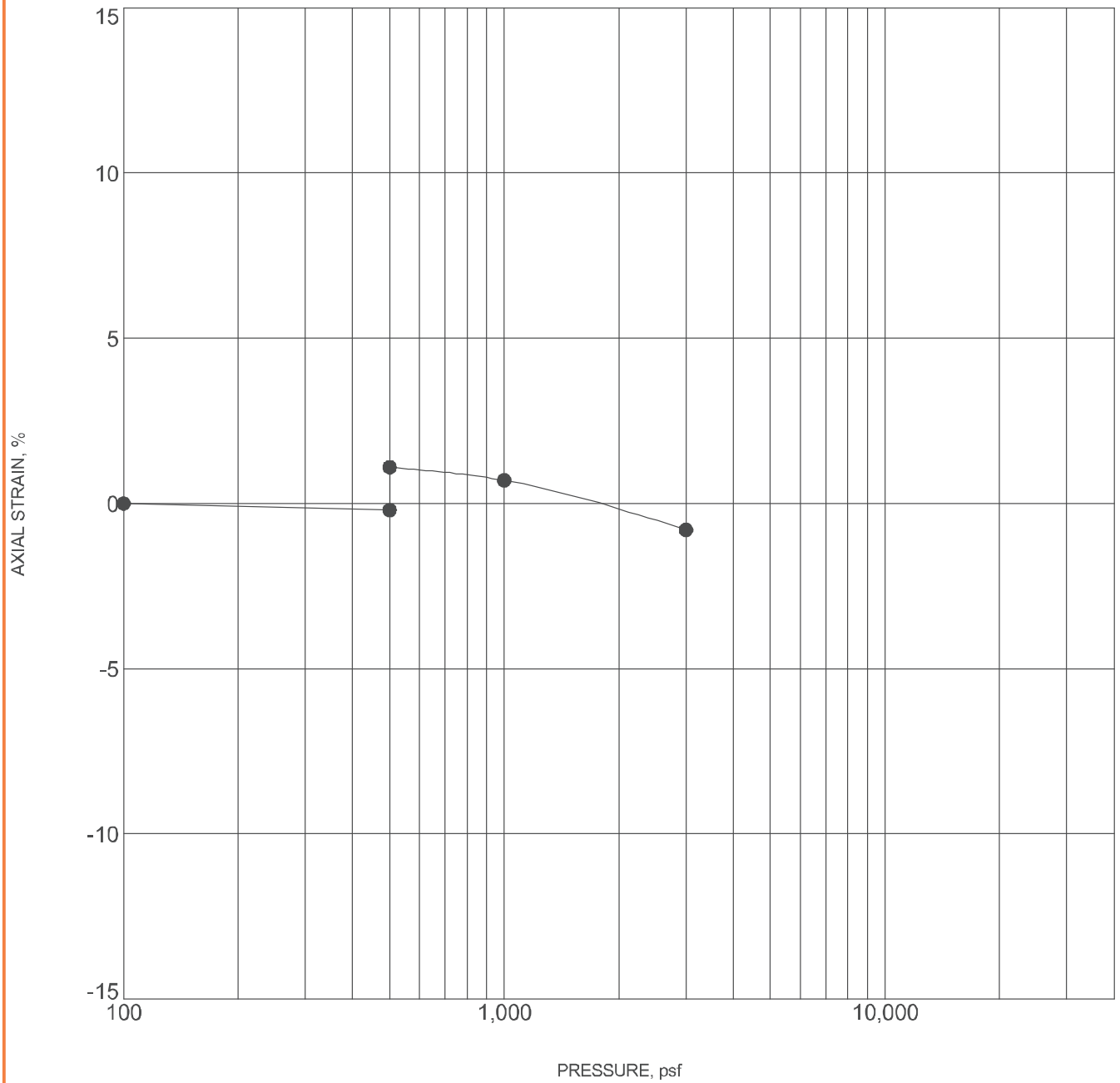


Specimen Identification			Classification	γ_d , pcf	WC, %
●	03	7.5 - 8.5 ft	LEAN CLAY with SAND (CL)	123	12.0

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora	 10625 W I70 Frontage Rd N Ste 3 Wheat Ridge, CO	PROJECT NUMBER: 25215031
SITE: Gun Club Road and Colfax Avenue Aurora, Colorado		CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21

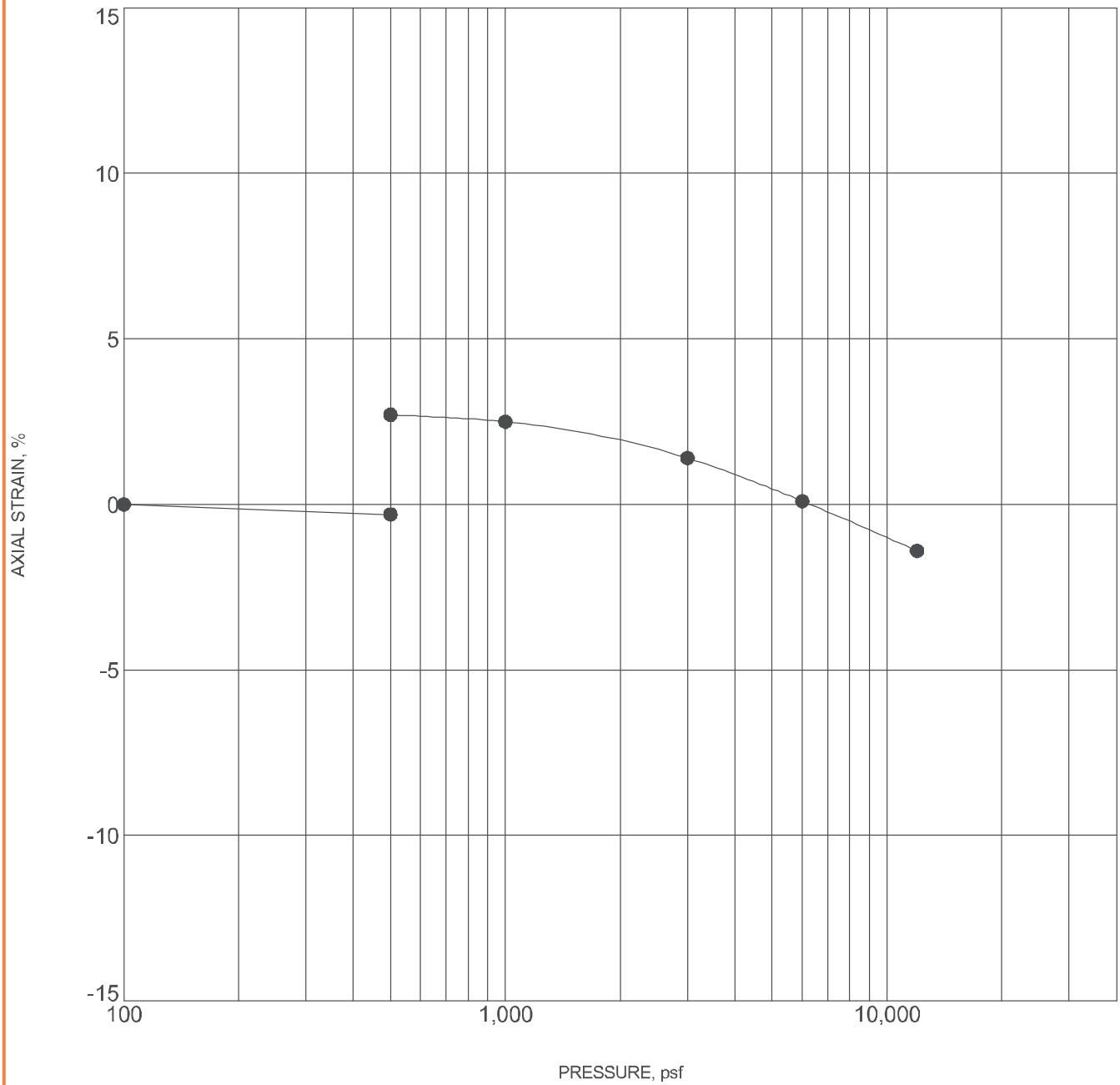


Specimen Identification			Classification	γ_d , pcf	WC, %
●	04	5 - 6 ft	LEAN CLAY with SAND (CL)	109	18.6

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora	 10625 W I70 Frontage Rd N Ste 3 Wheat Ridge, CO	PROJECT NUMBER: 25215031
SITE: Gun Club Road and Colfax Avenue Aurora, Colorado		CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21

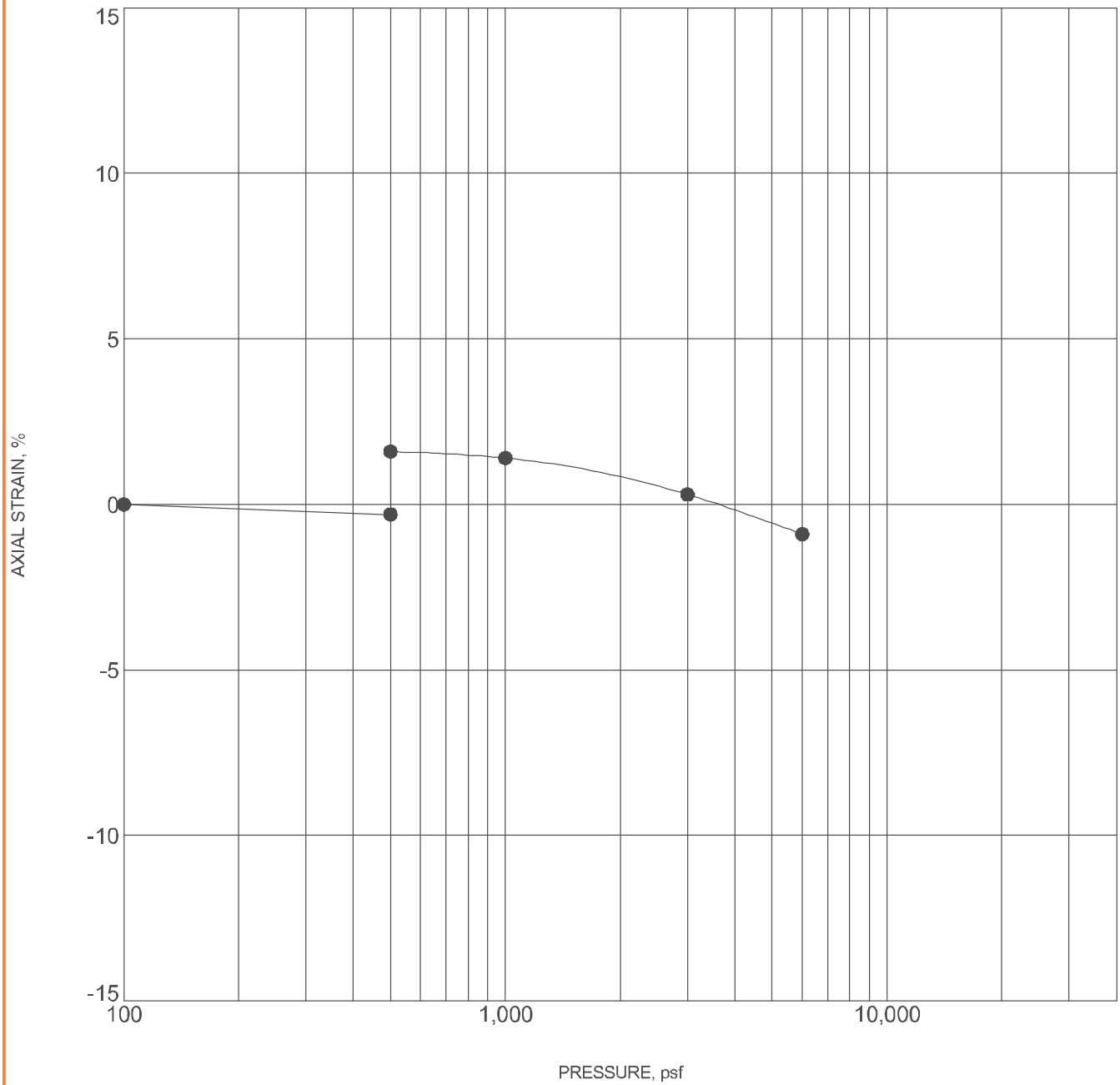


Specimen Identification			Classification	γ_d , pcf	WC, %
●	05	5 - 6 ft	LEAN CLAY with SAND (CL)	112	16.4

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora	 10625 W I70 Frontage Rd N Ste 3 Wheat Ridge, CO	PROJECT NUMBER: 25215031
SITE: Gun Club Road and Colfax Avenue Aurora, Colorado		CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21



Specimen Identification			Classification	γ_d , pcf	WC, %
●	06	7.5 - 8.5 ft	LEAN CLAY with SAND (CL)	113	16.7

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora

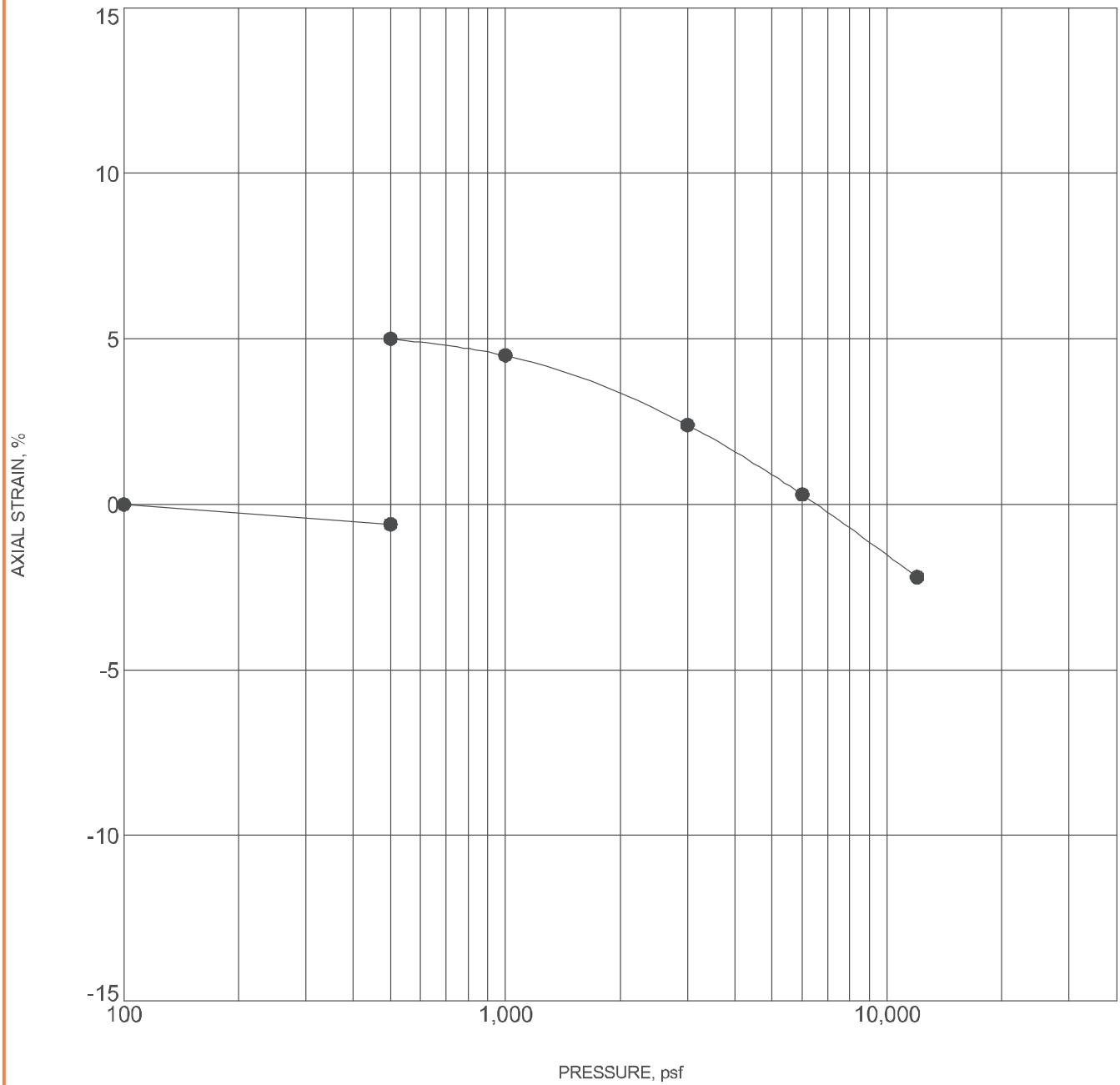
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21



Specimen Identification			Classification	γ_d , pcf	WC, %
●	07	12.5 - 13.5 ft	CLAYSTONE	100	23.6

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora

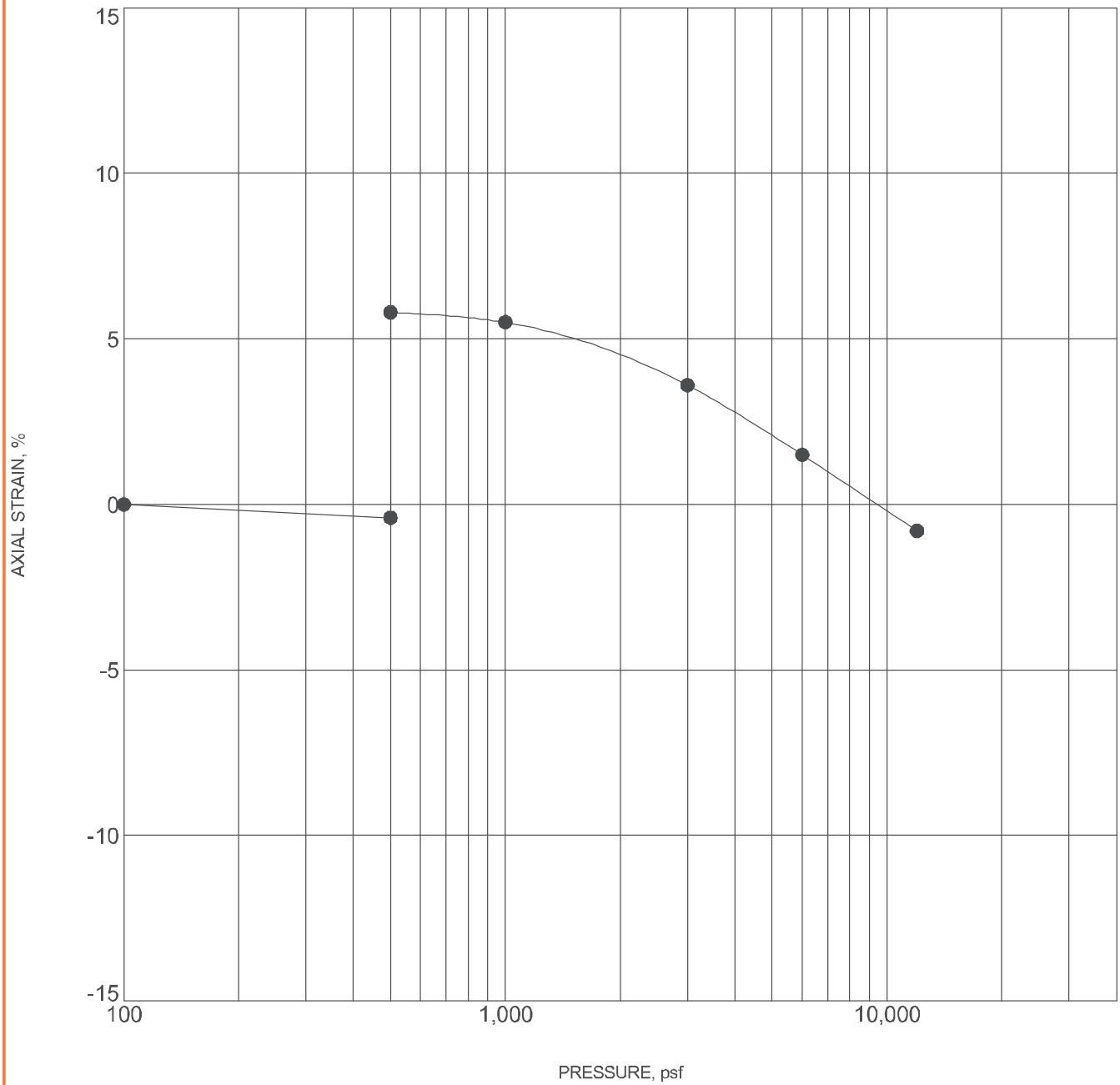
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21



Specimen Identification			Classification	γ_d , pcf	WC, %
●	08	5 - 6 ft	CLAYSTONE	117	12.2

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora

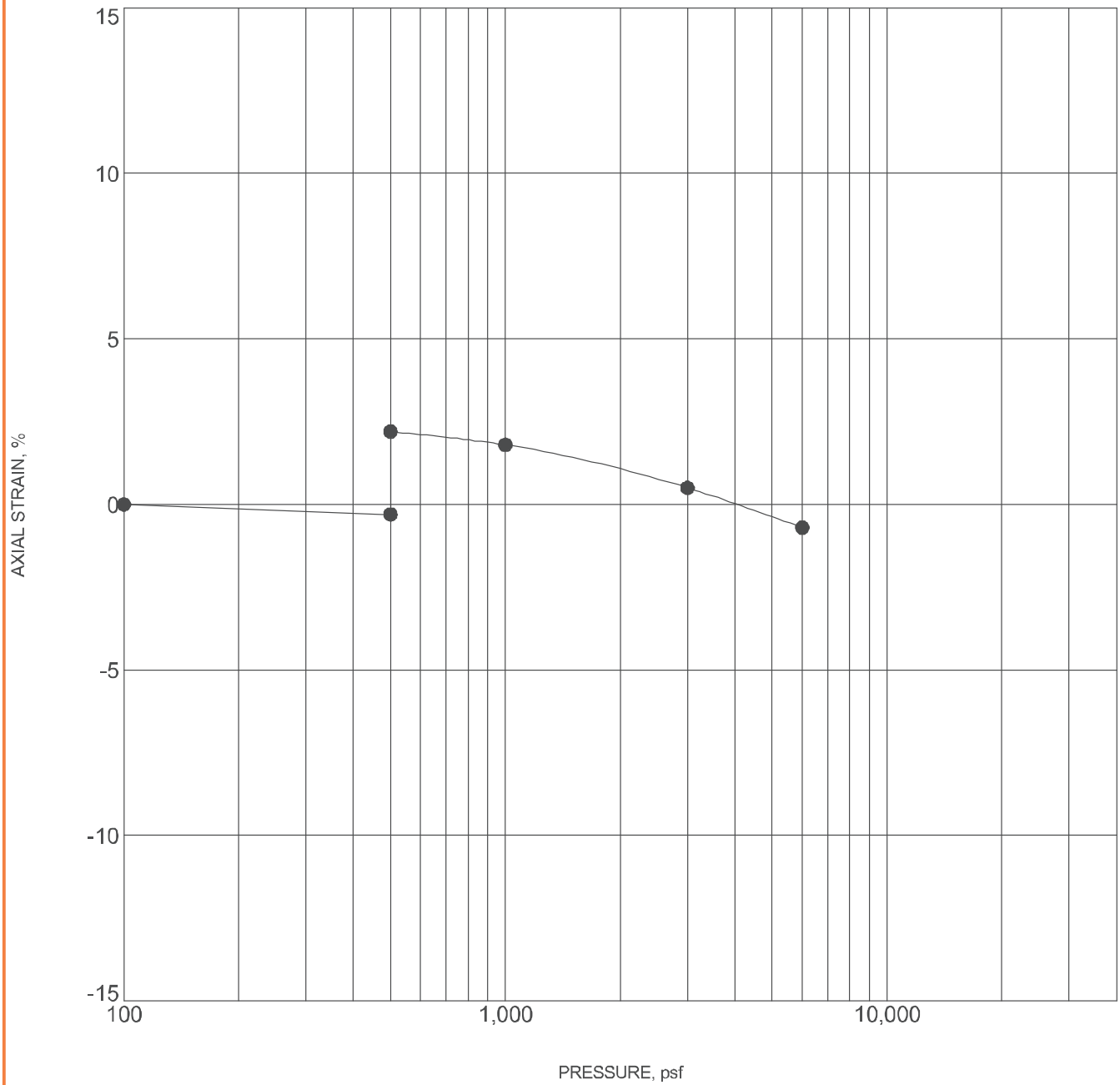
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

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Specimen Identification			Classification	γ_d , pcf	WC, %
●	09	5 - 6 ft	LEAN CLAY (CL)	122	11.3

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora

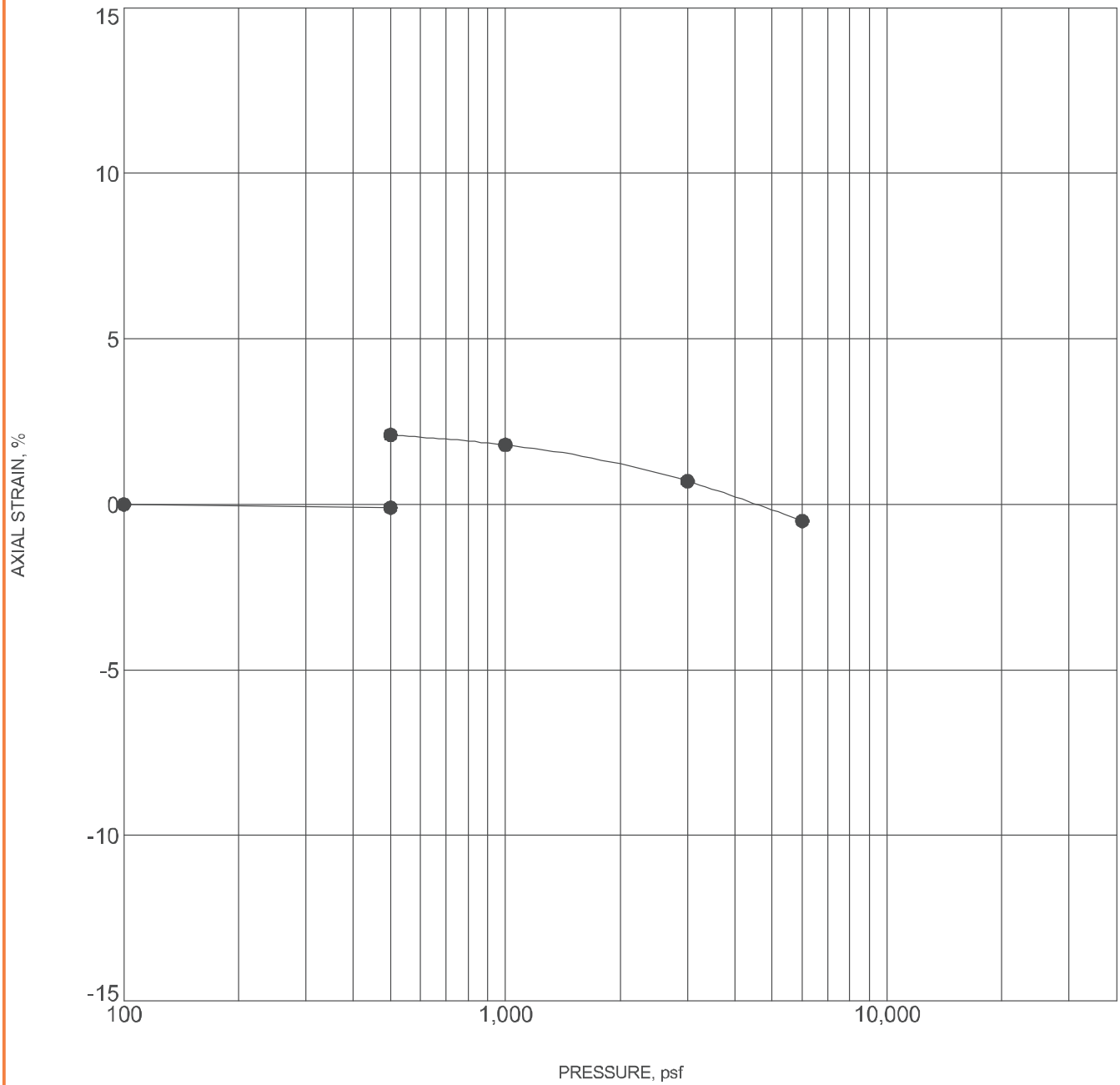
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21



Specimen Identification			Classification	γ_d , pcf	WC, %
●	10	7.5 - 8.5 ft	CLAYSTONE	123	11.9

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora

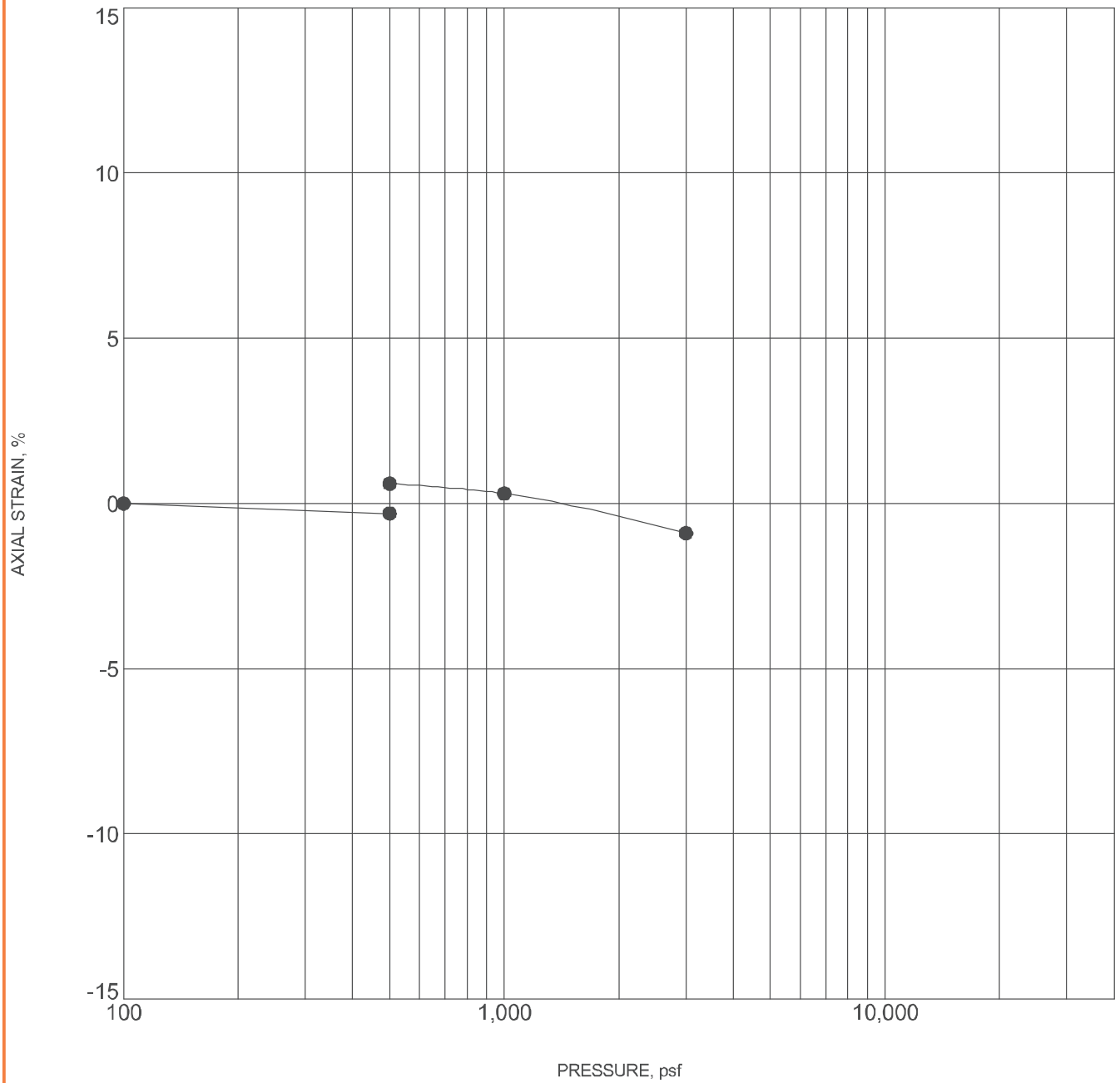
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21



Specimen Identification			Classification	γ_d , pcf	WC, %
●	11	2.5 - 3.5 ft	LEAN CLAY with SAND (CL)	124	12.5

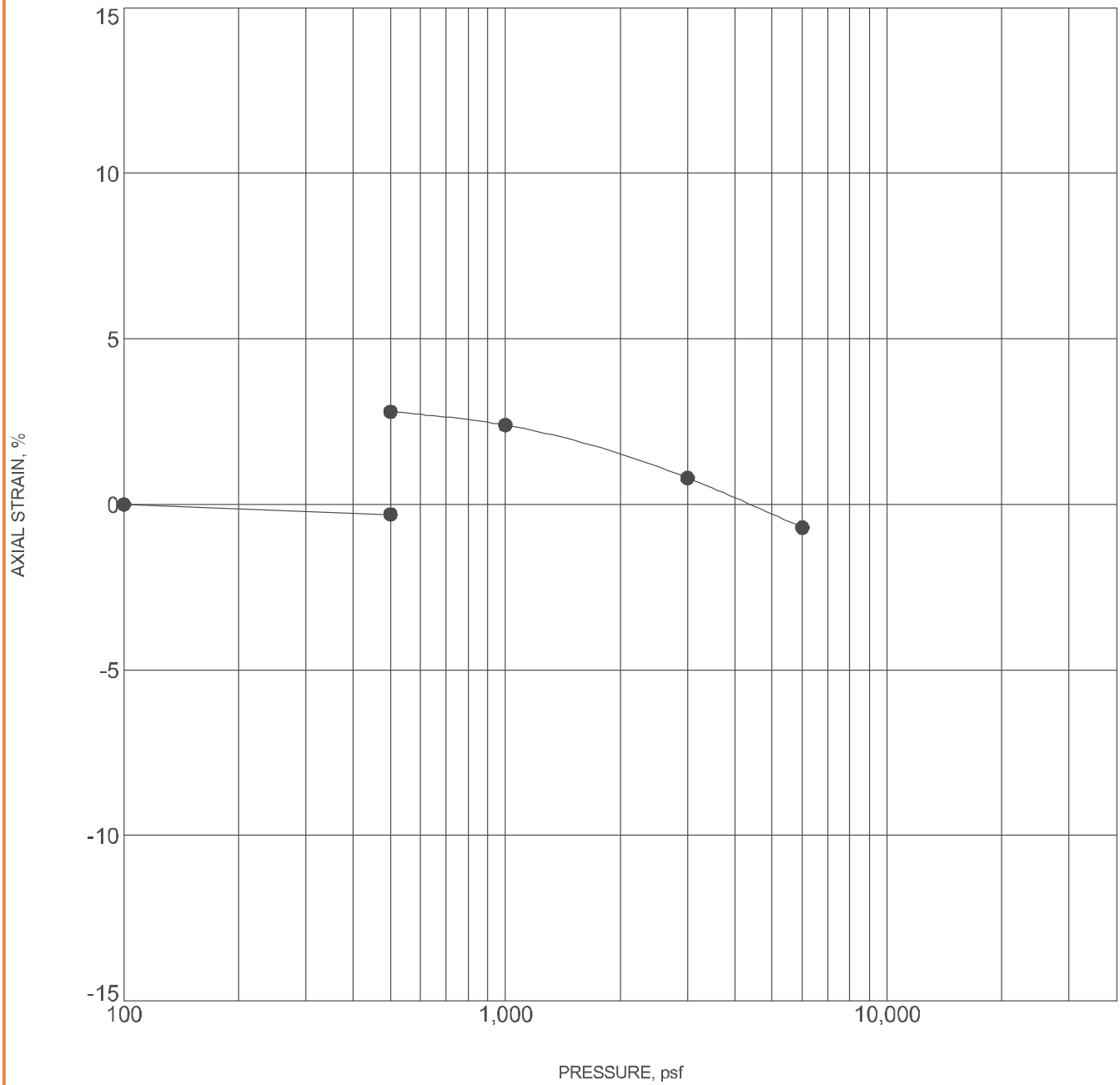
NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora	 10625 W I70 Frontage Rd N Ste 3 Wheat Ridge, CO	PROJECT NUMBER: 25215031
SITE: Gun Club Road and Colfax Avenue Aurora, Colorado		CLIENT: Quality Technology Services, Inc.

SWELL CONSOLIDATION TEST

Permit # 2023-2389684-CM
RSN 1755228

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21



Specimen Identification			Classification	γ_d , pcf	WC, %
●	12	5 - 6 ft	LEAN CLAY with SAND (CL)	117	11.3

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora

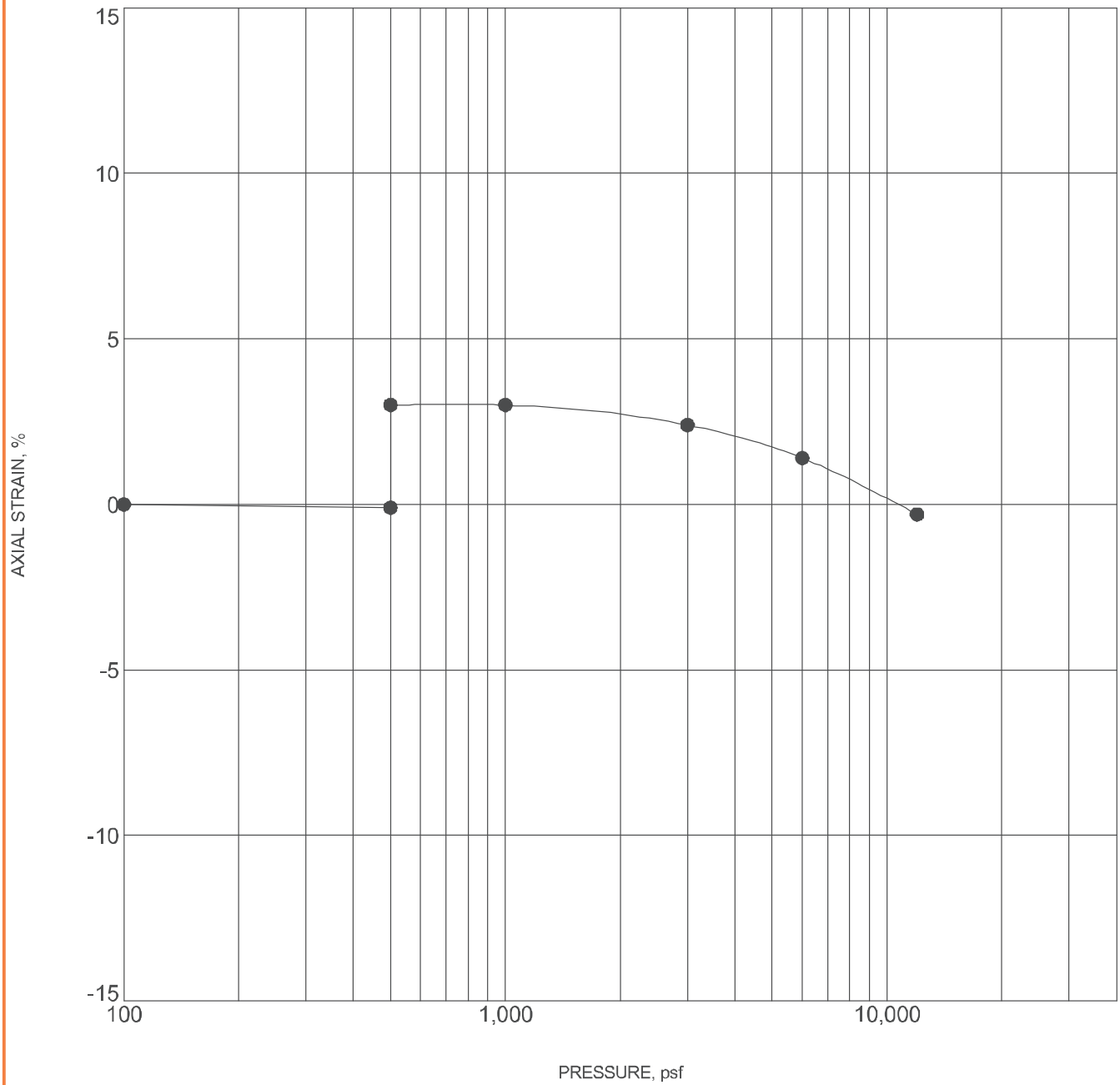
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21



Specimen Identification			Classification	γ_d , pcf	WC, %
●	13	7.5 - 8.5 ft	CLAYSTONE	124	10.7

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora

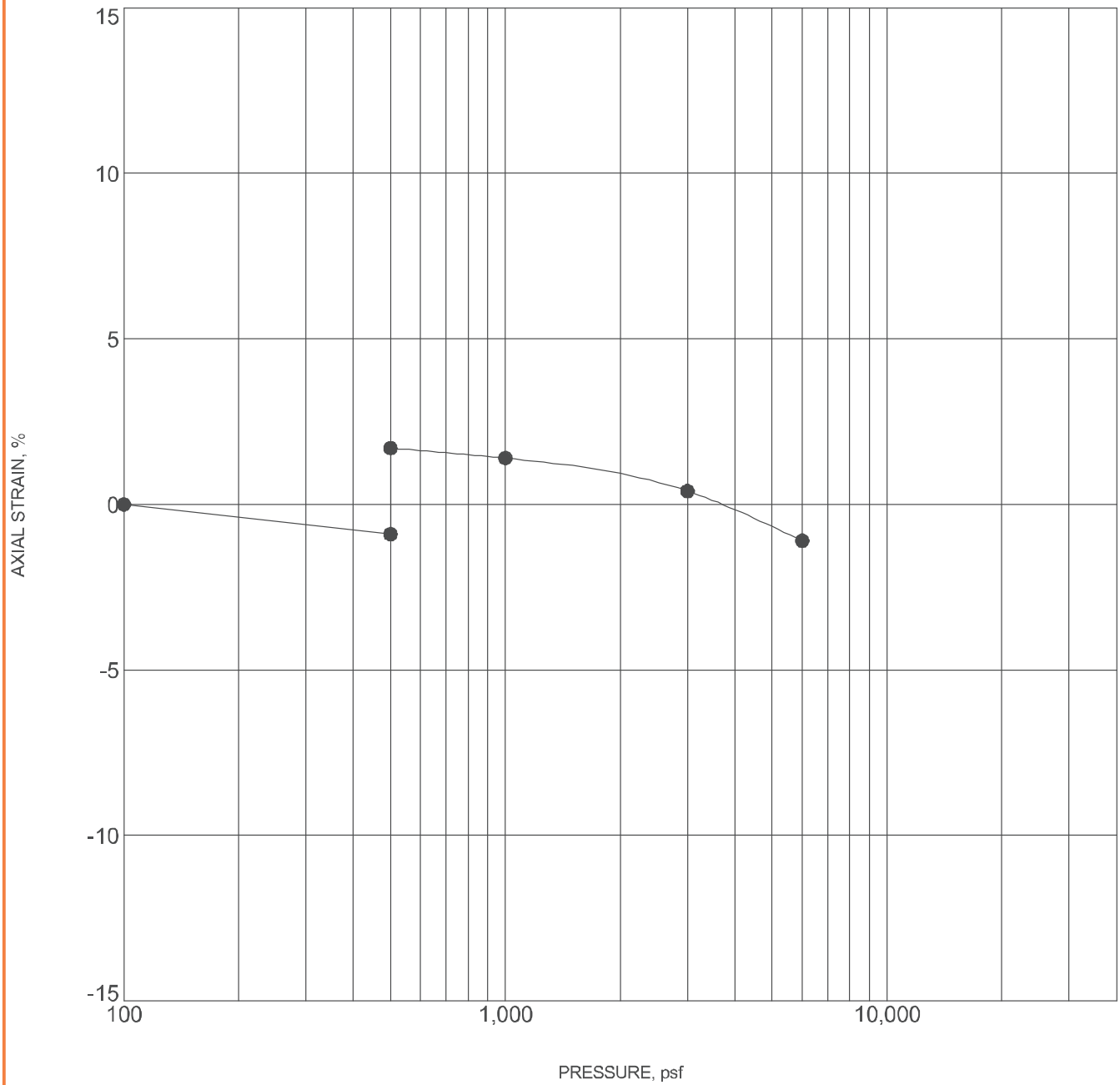
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21

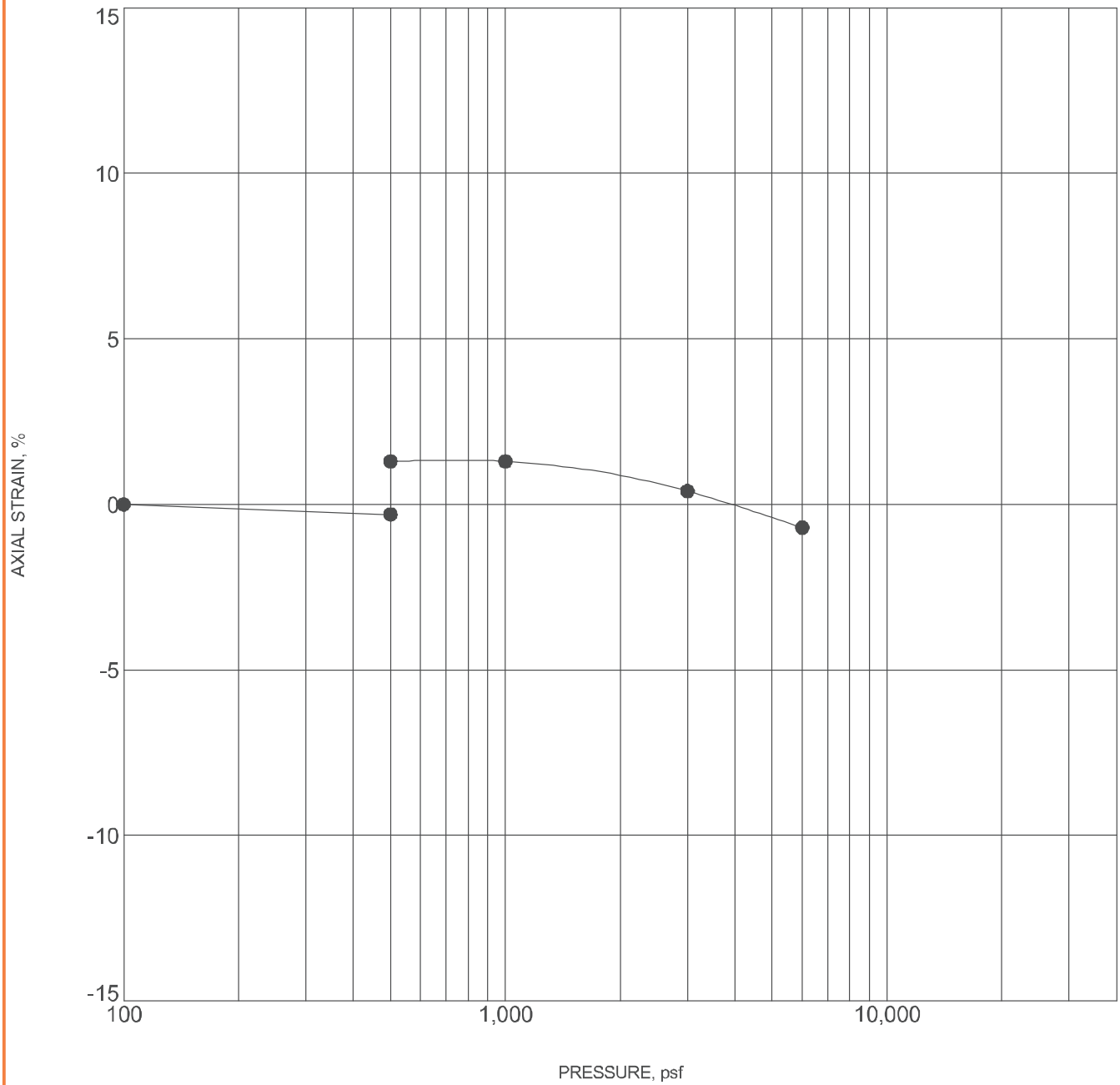


Specimen Identification			Classification	γ_d , pcf	WC, %
●	14	5 - 6 ft	LEAN CLAY with SAND (CL)	122	12.3

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora	 10625 W I70 Frontage Rd N Ste 3 Wheat Ridge, CO	PROJECT NUMBER: 25215031
SITE: Gun Club Road and Colfax Avenue Aurora, Colorado		CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21



Specimen Identification			Classification	γ_d , pcf	WC, %
●	15	5 - 6 ft	LEAN CLAY (CL)	114	16.0

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora

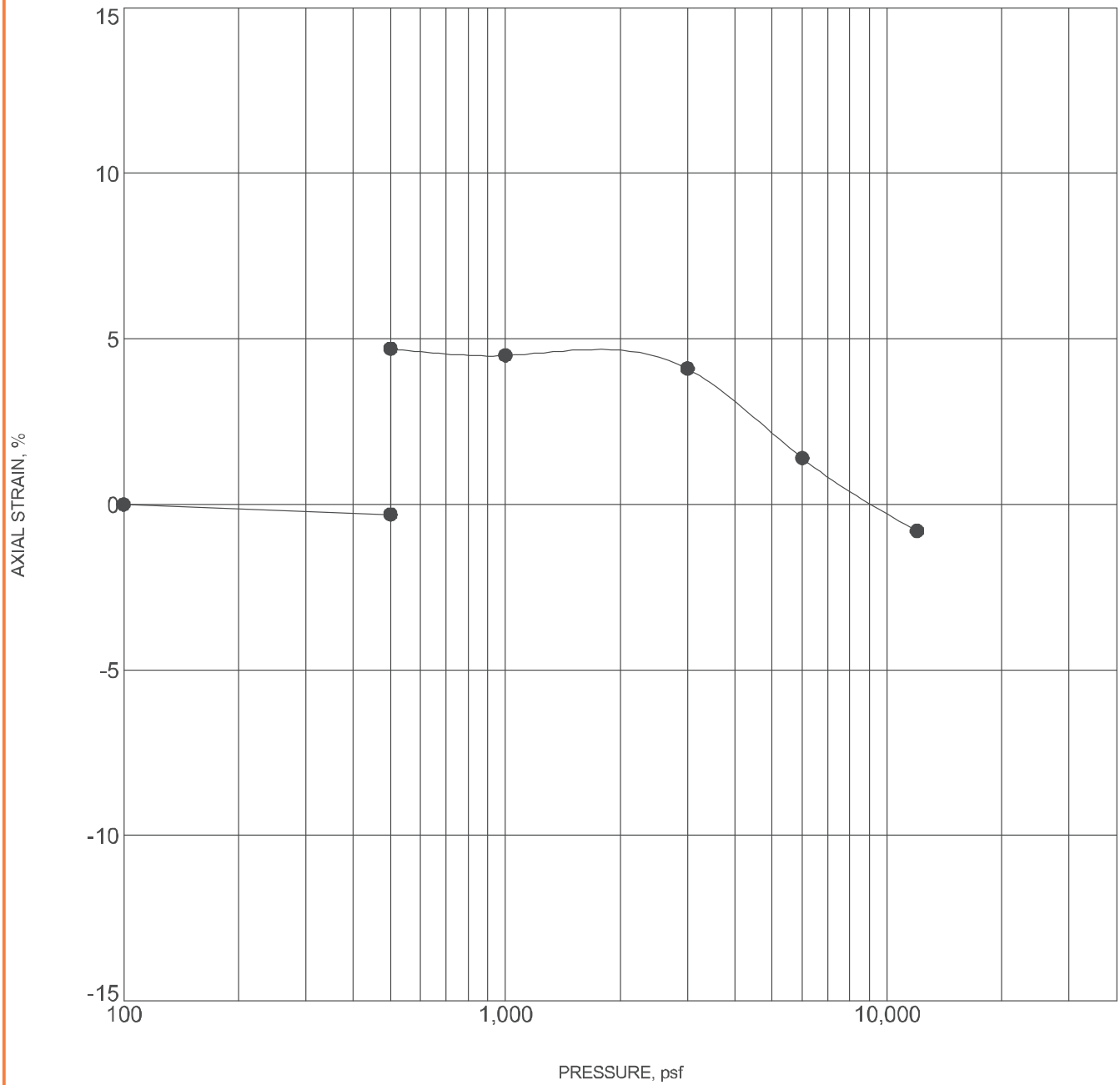
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

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Specimen Identification			Classification	γ_d , pcf	WC, %
●	16	12.5 - 13.5 ft	CLAYSTONE	102	24.0

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora

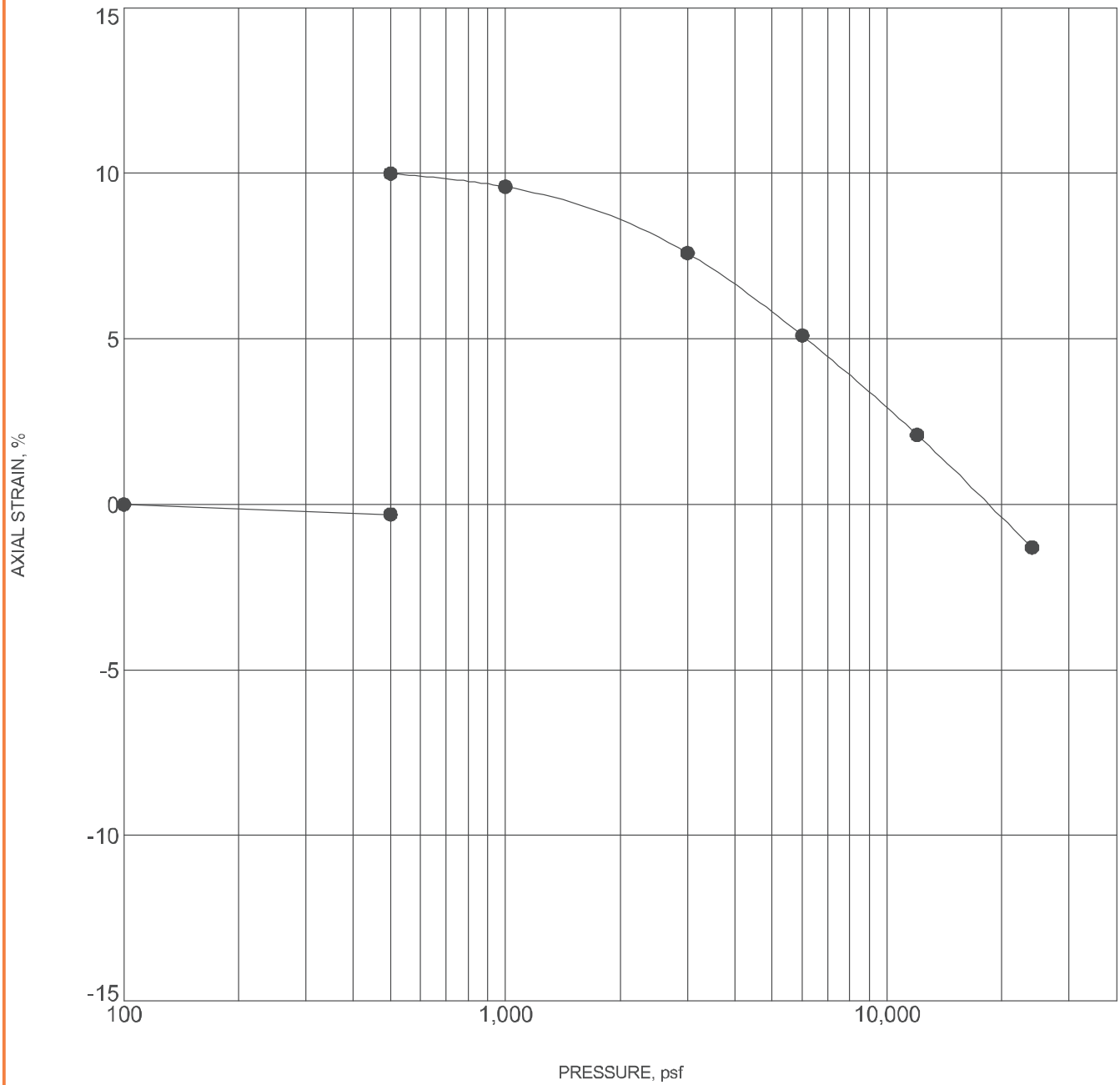
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21



Specimen Identification			Classification	γ_d , pcf	WC, %
●	17	10 - 11 ft	CLAYSTONE	105	22.8

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora

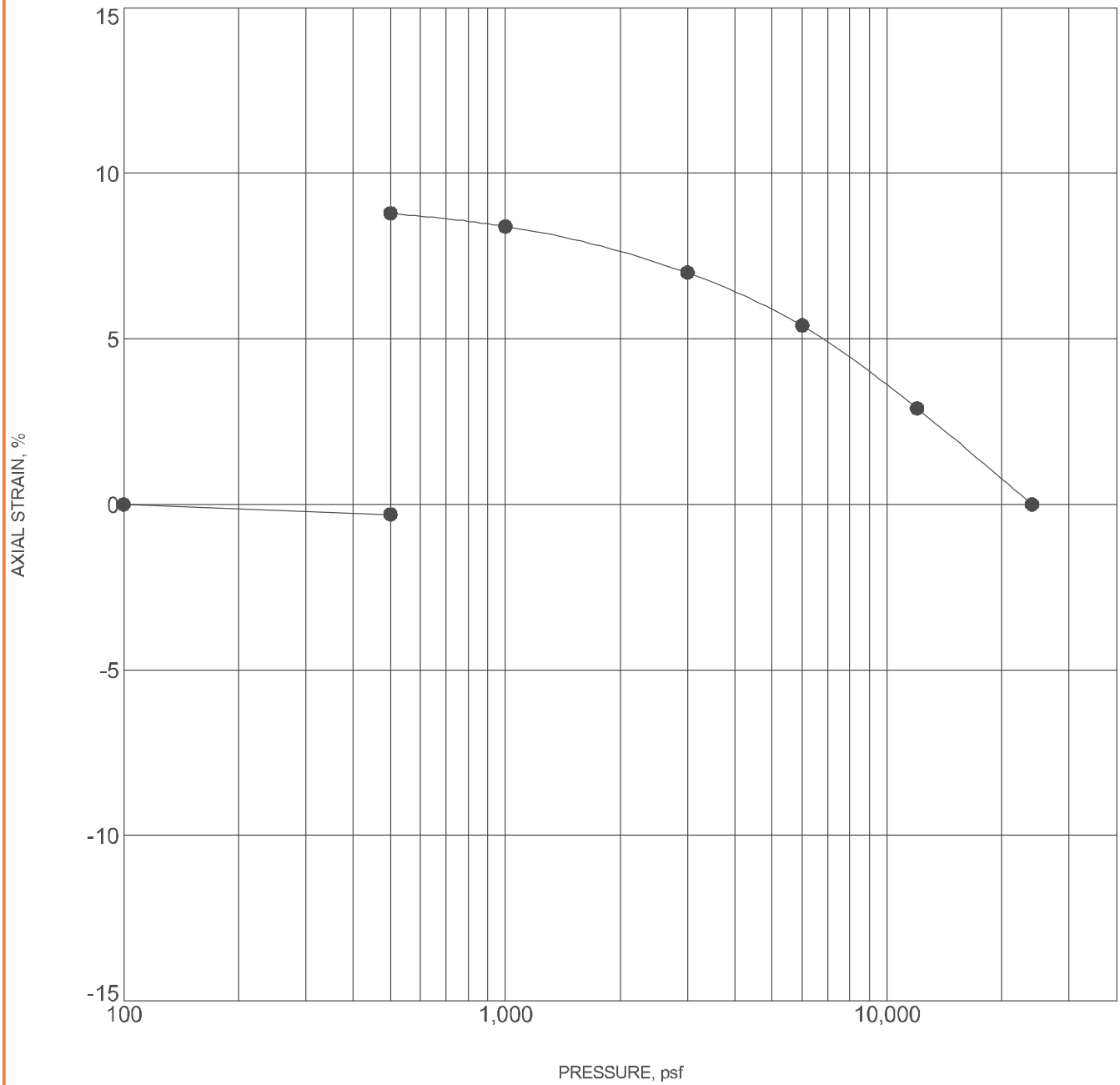
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

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Specimen Identification			Classification	γ_d , pcf	WC, %
●	18	5 - 6 ft	CLAYSTONE	122	11.9

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora

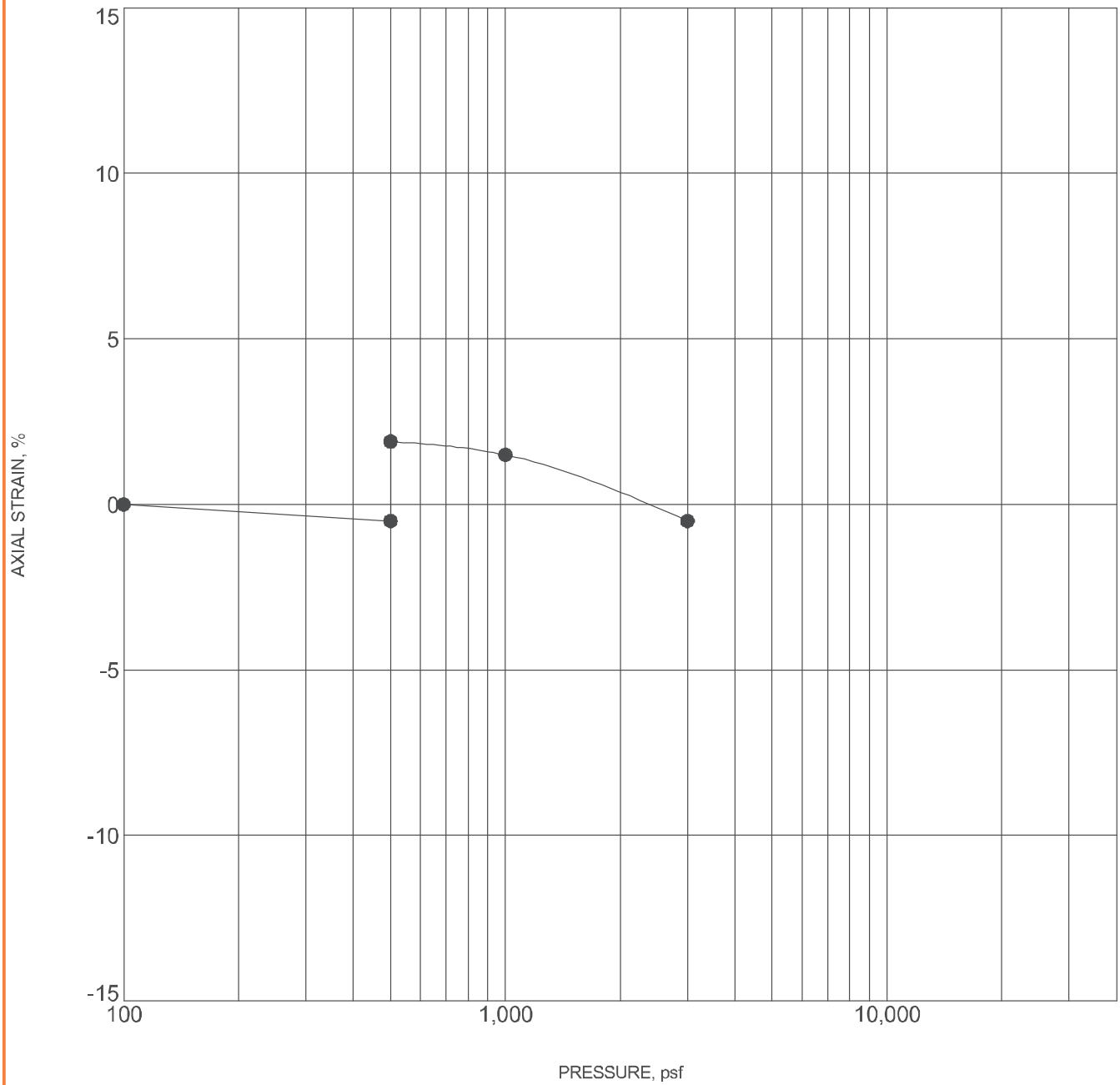
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

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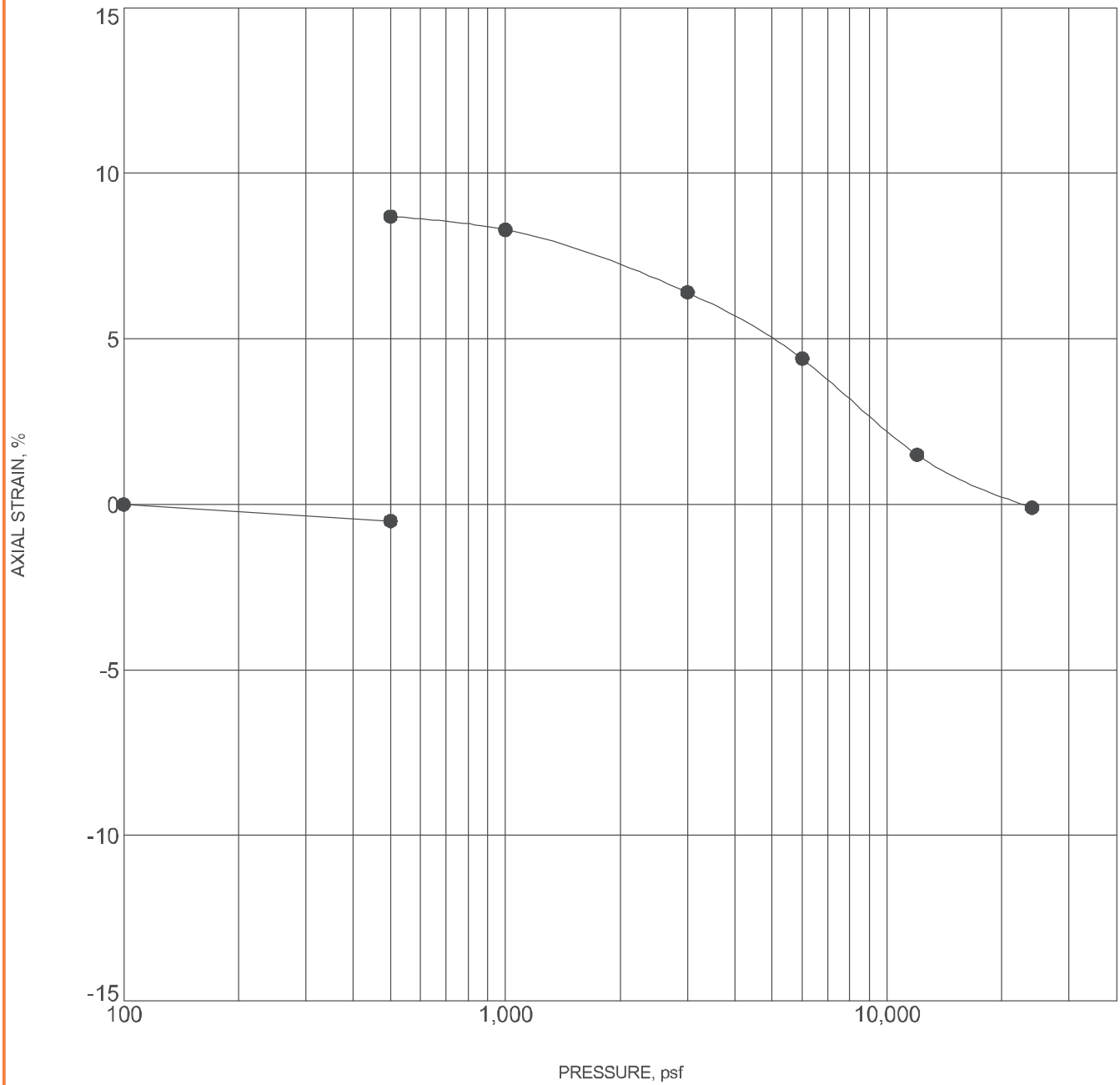


Specimen Identification			Classification	γ_d , pcf	WC, %
●	19	7.5 - 8.5 ft	SANDY LEAN CLAY (CL)	100	25.6

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora	 10625 W I70 Frontage Rd N Ste 3 Wheat Ridge, CO	PROJECT NUMBER: 25215031
SITE: Gun Club Road and Colfax Avenue Aurora, Colorado		CLIENT: Quality Technology Services, Inc.

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Specimen Identification			Classification	γ_d , pcf	WC, %
●	20	7.5 - 8.5 ft	CLAYSTONE	123	12.3

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora

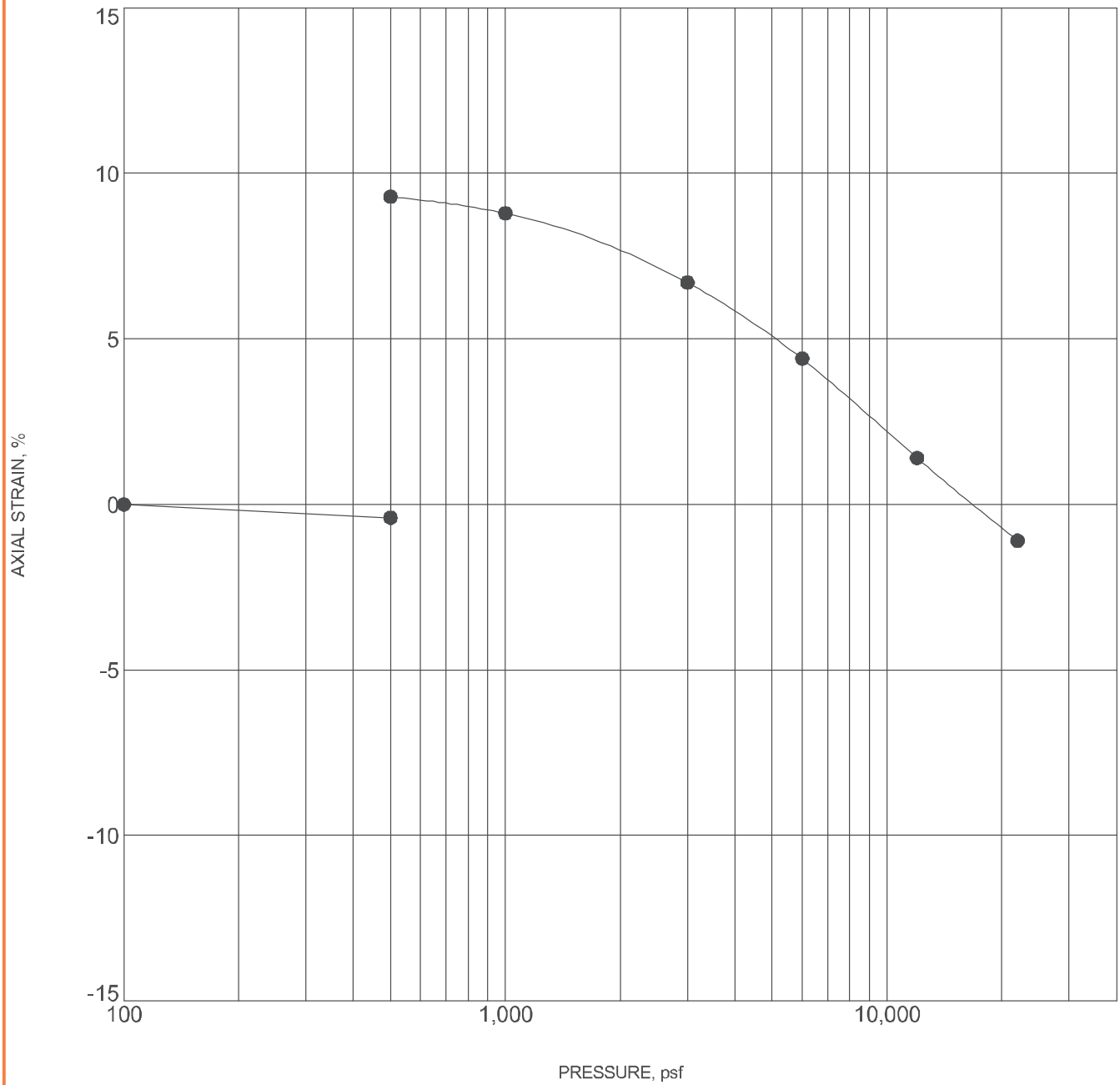
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

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Specimen Identification			Classification	γ_d , pcf	WC, %
●	21	7.5 - 8.5 ft	CLAYSTONE	111	19.7

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora

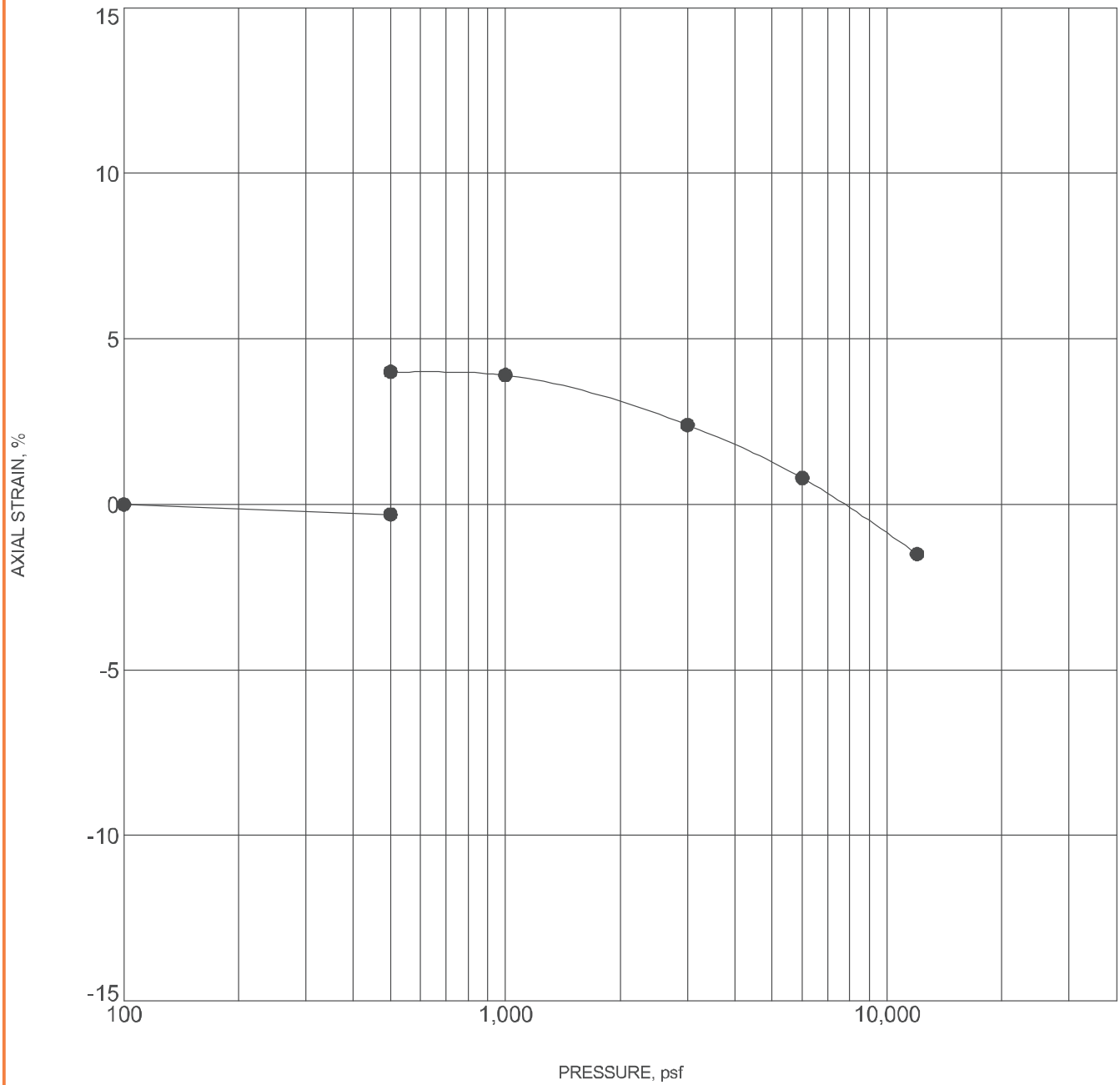
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

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Specimen Identification			Classification	γ_d , pcf	WC, %
●	22	7.5 - 8.5 ft	SANDY LEAN CLAY (CL)	102	23.7

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora

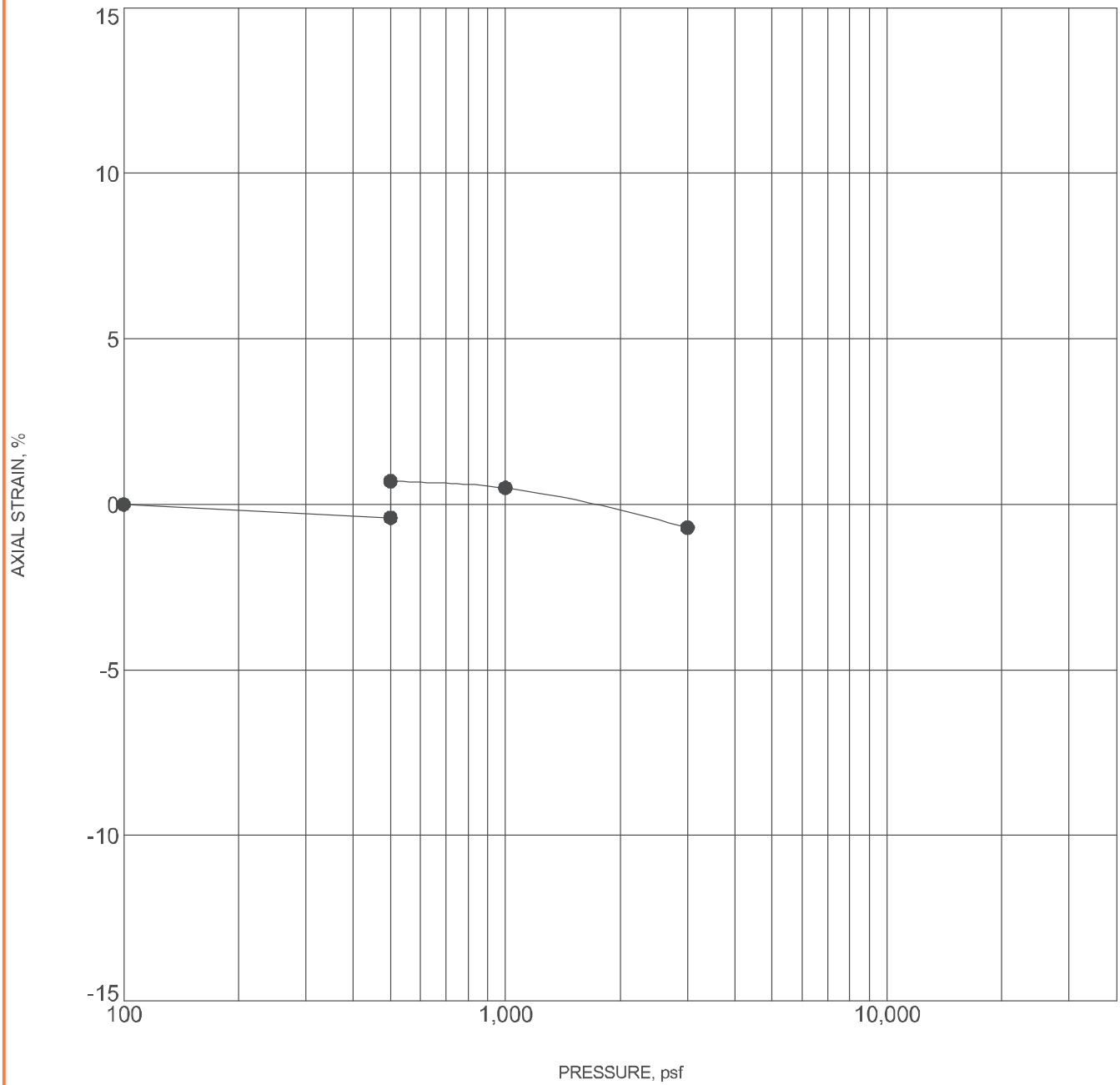
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

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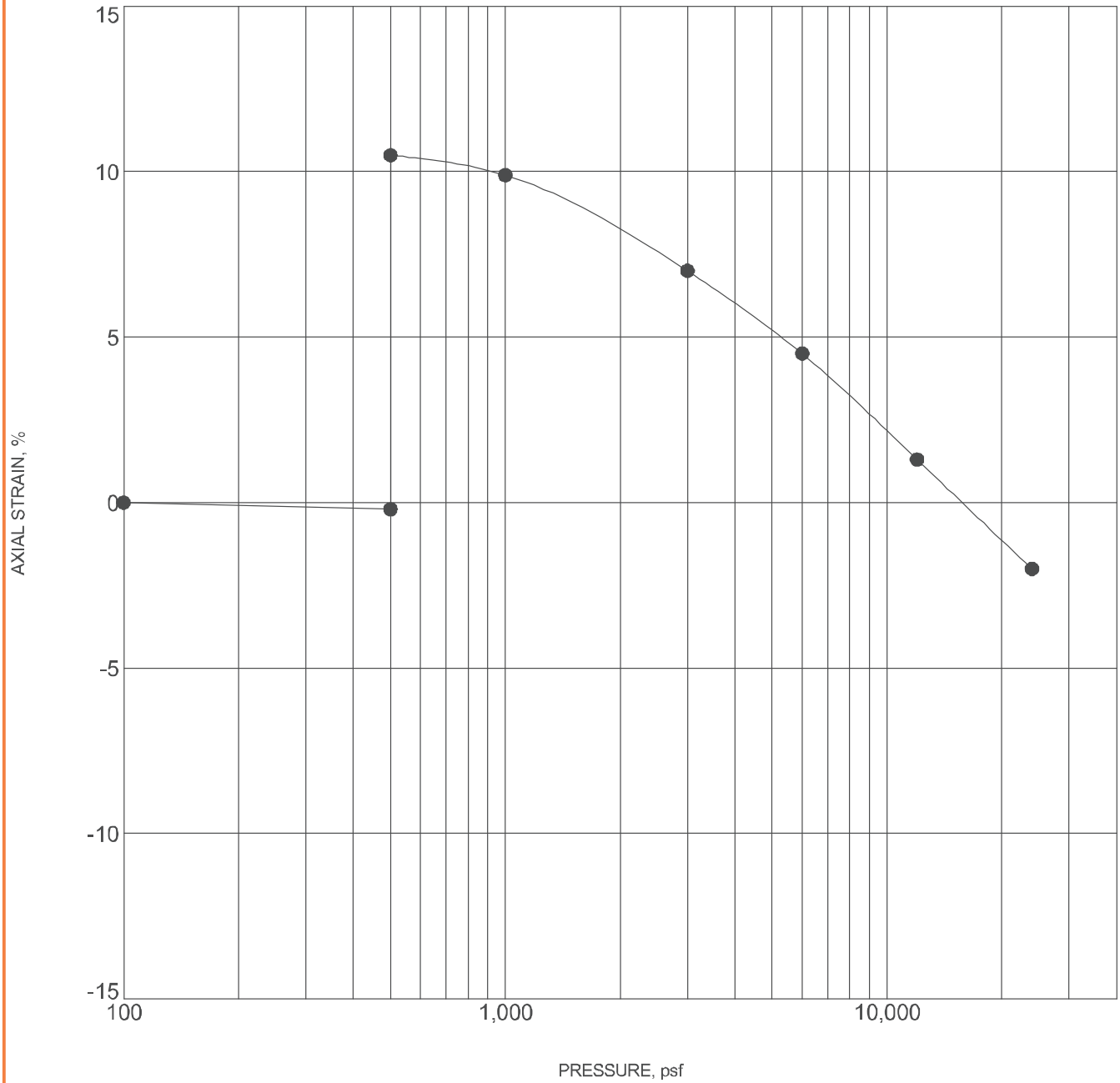
Specimen Identification			Classification	γ_d , pcf	WC, %
●	23	5 - 6 ft	LEAN CLAY (CL)	114	15.7

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora	 10625 W I70 Frontage Rd N Ste 3 Wheat Ridge, CO	PROJECT NUMBER: 25215031
SITE: Gun Club Road and Colfax Avenue Aurora, Colorado		CLIENT: Quality Technology Services, Inc.

SWELL CONSOLIDATION TEST

Permit # 2023-2389684-CM
RSN 1755228



Specimen Identification			Classification	γ_d , pcf	WC, %
●	26	7.5 - 8.5 ft	CLAYSTONE	108	19.9

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora

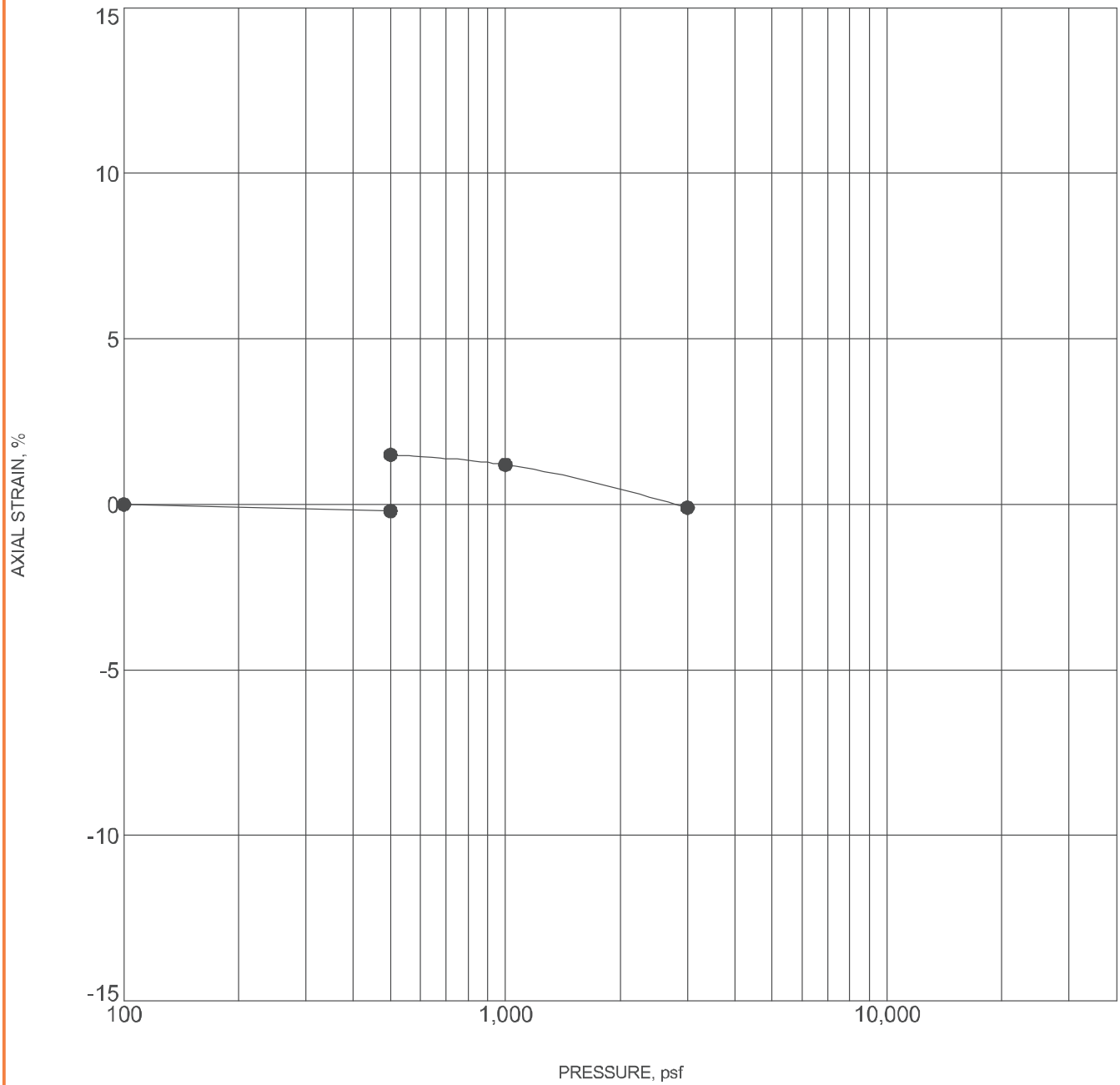
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21



Specimen Identification			Classification	γ_d , pcf	WC, %
●	27	7.5 - 8.5 ft	LEAN CLAY (CL)	109	18.7

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora

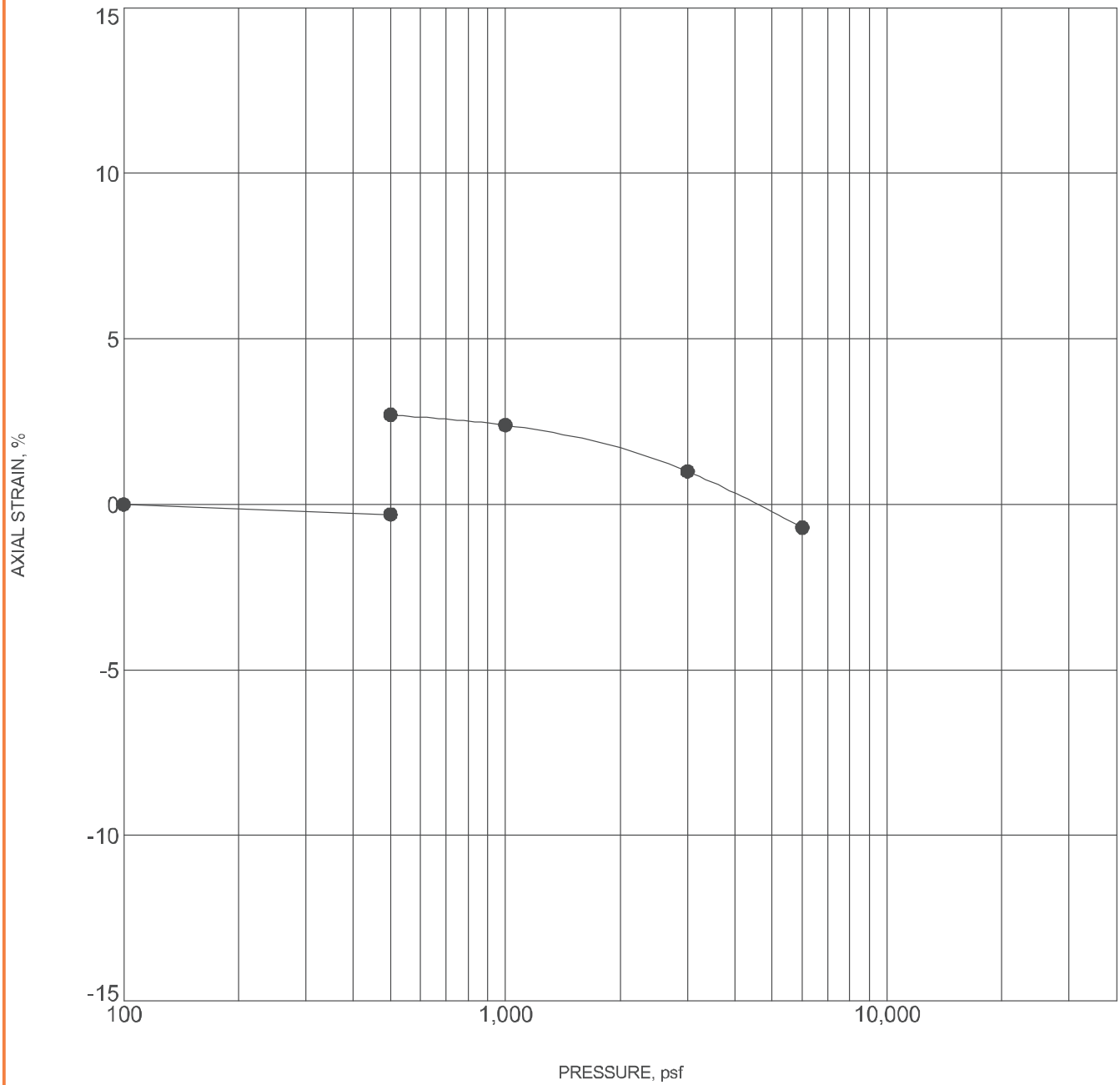
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

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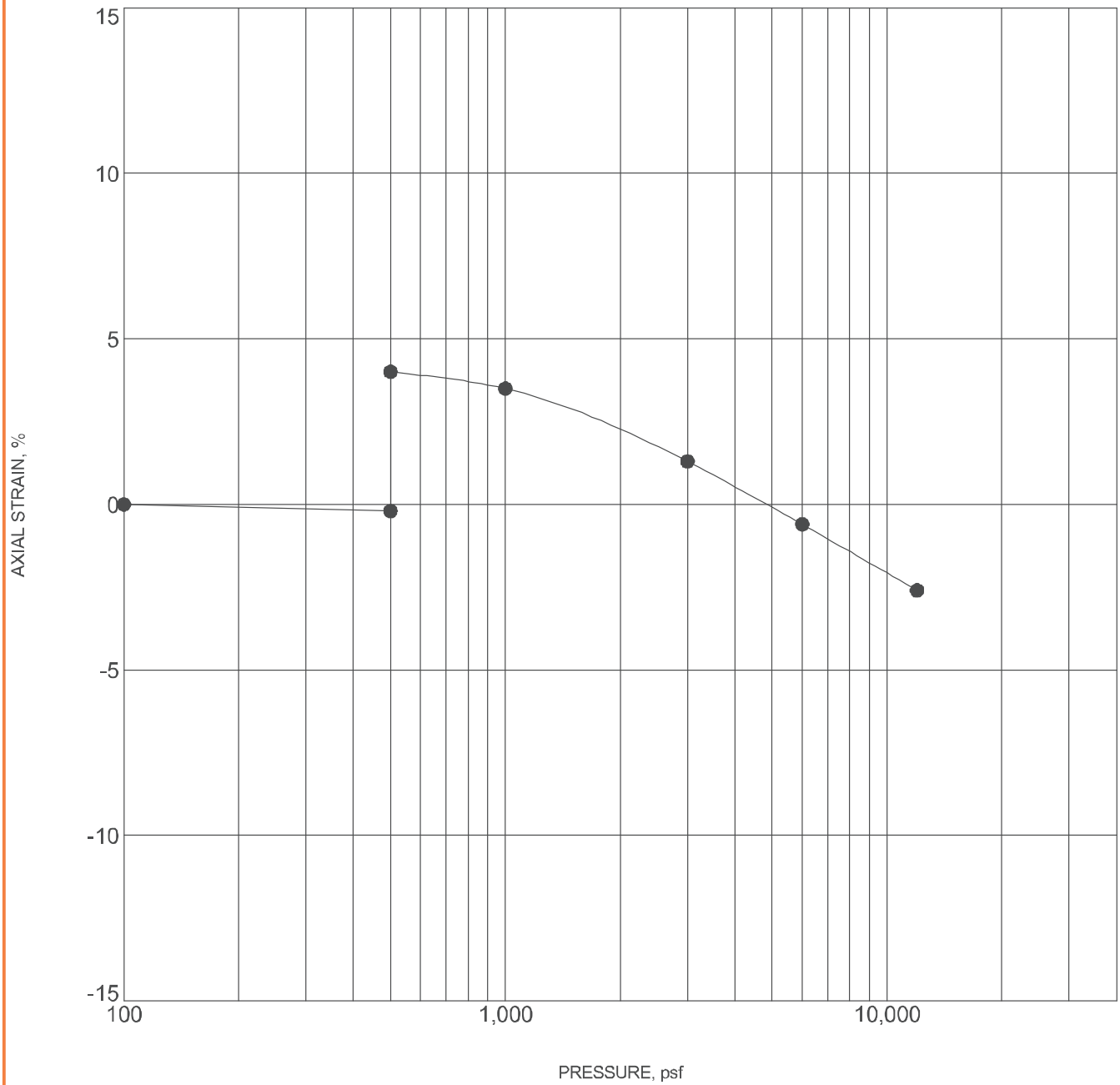


Specimen Identification			Classification	γ_d , pcf	WC, %
●	27	12.5 - 13.5 ft	CLAYSTONE	106	21.4

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora	 10625 W I70 Frontage Rd N Ste 3 Wheat Ridge, CO	PROJECT NUMBER: 25215031
SITE: Gun Club Road and Colfax Avenue Aurora, Colorado		CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21



Specimen Identification			Classification	γ_d , pcf	WC, %
●	28	5 - 6 ft	LEAN CLAY with SAND (CL)	106	18.2

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora

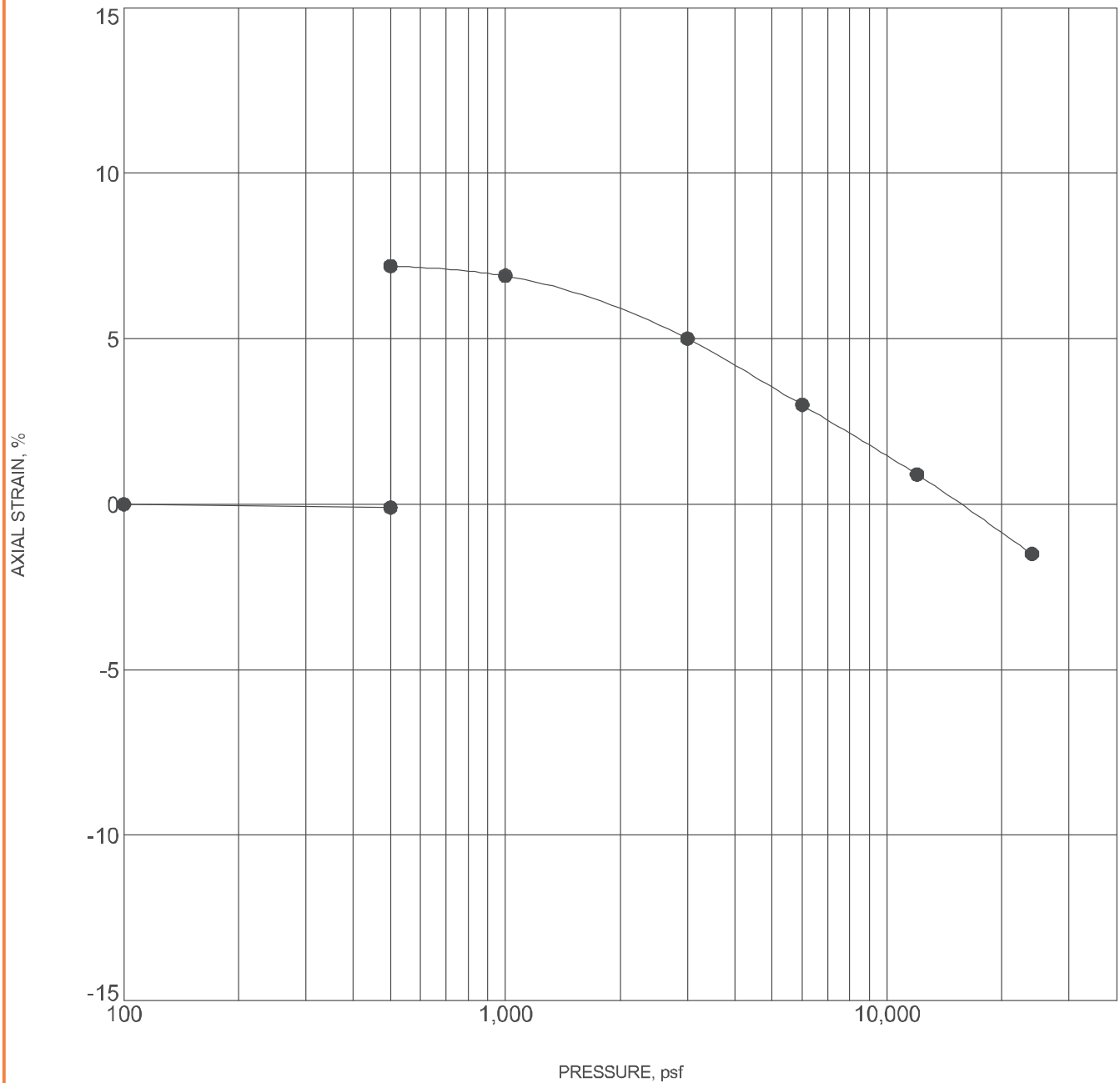
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21



Specimen Identification			Classification	γ_d , pcf	WC, %
●	29	5 - 6 ft	CLAYSTONE	115	16.4

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora

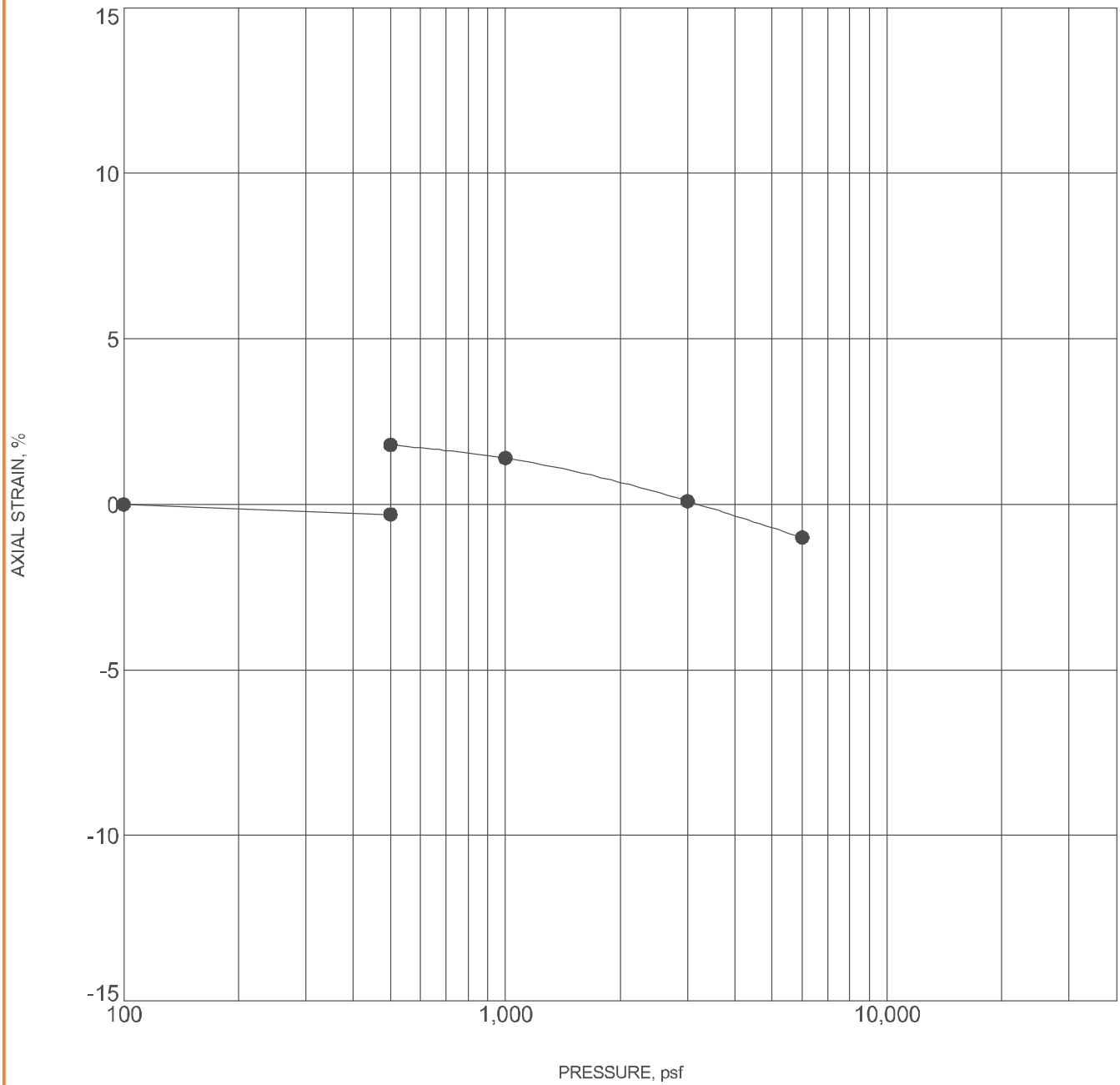
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21



Specimen Identification			Classification	γ_d , pcf	WC, %
●	30	5 - 6 ft	LEAN CLAY (CL)	114	17.5

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora

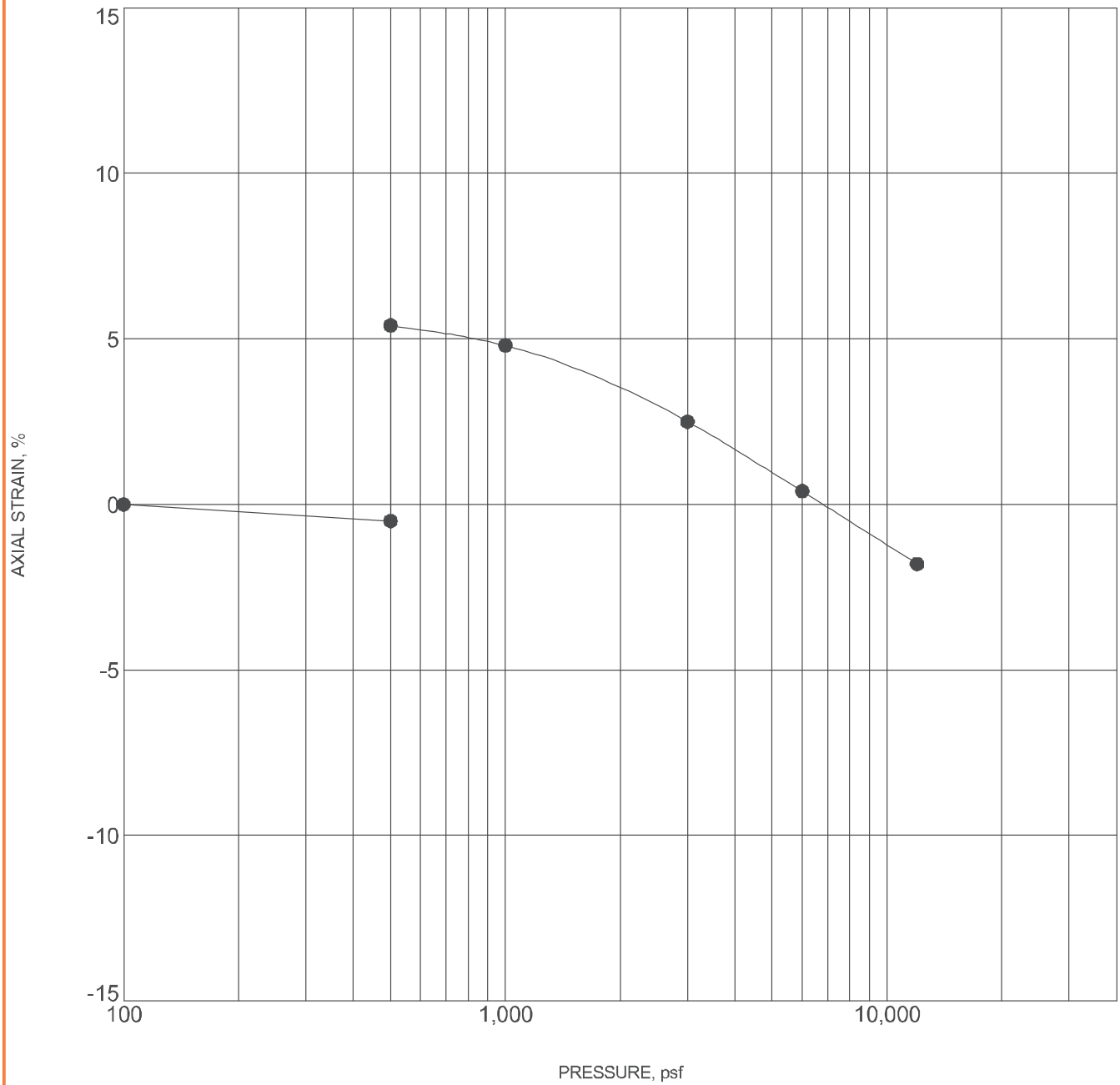
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21



Specimen Identification			Classification	γ_d , pcf	WC, %
●	31	7.5 - 8.5 ft	CLAYSTONE	106	20.6

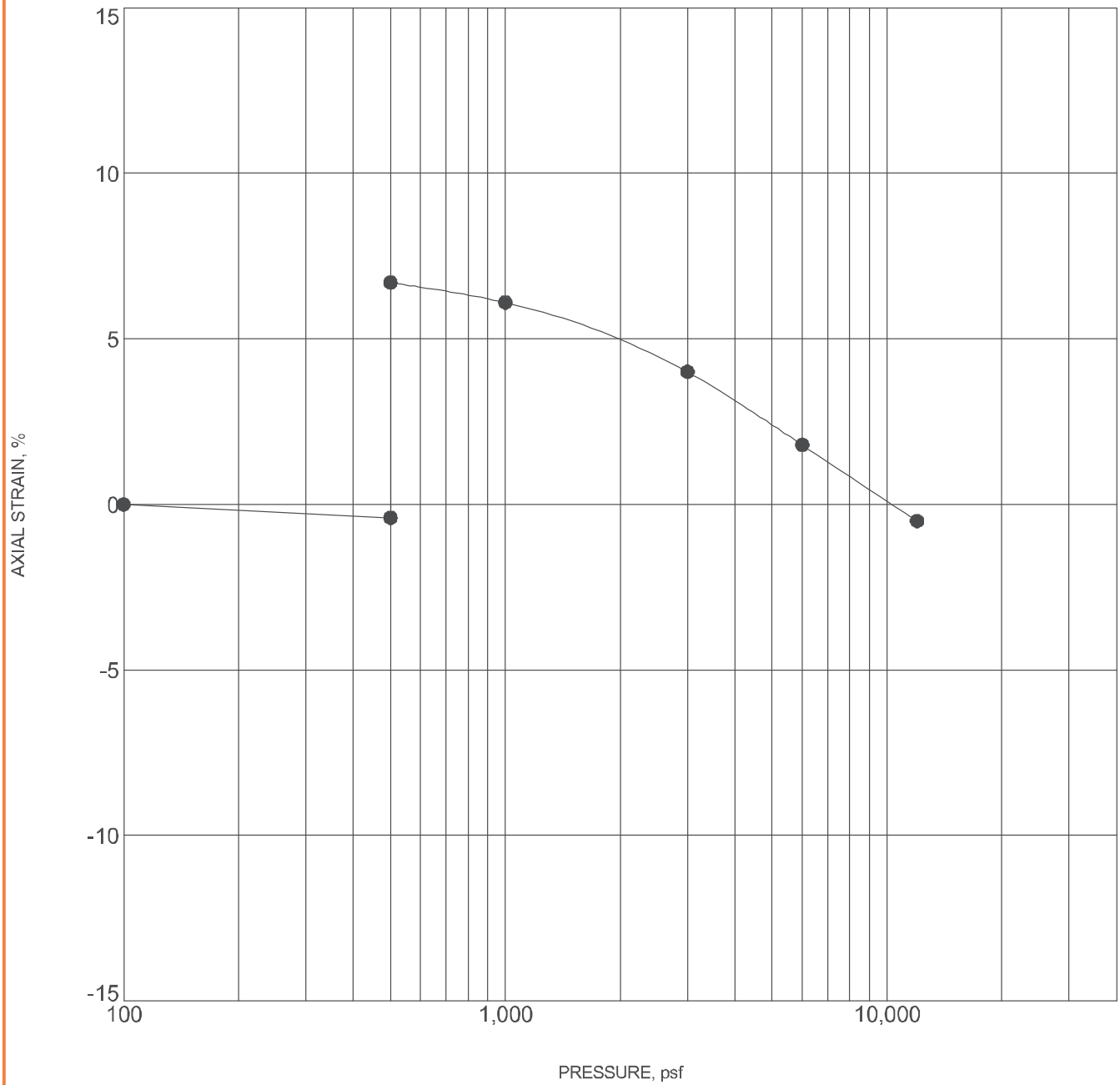
NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora	 10625 W I70 Frontage Rd N Ste 3 Wheat Ridge, CO	PROJECT NUMBER: 25215031
SITE: Gun Club Road and Colfax Avenue Aurora, Colorado		CLIENT: Quality Technology Services, Inc.

SWELL CONSOLIDATION TEST

Permit # 2023-2389684-CM
RSN 1755228

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21



Specimen Identification			Classification	γ_d , pcf	WC, %
●	32	5 - 6 ft	CLAYSTONE	108	18.5

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora

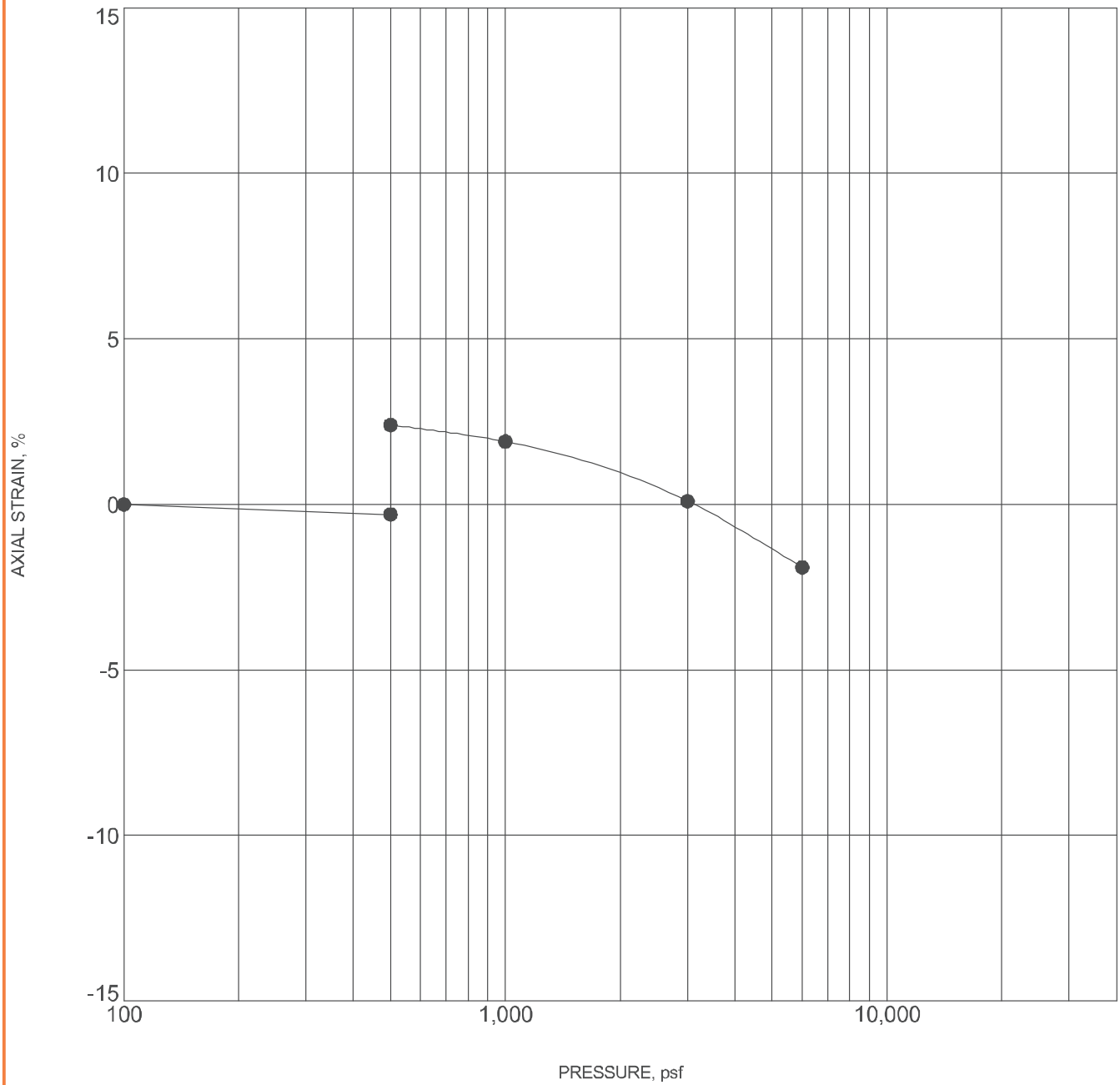
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21



Specimen Identification			Classification	γ_d , pcf	WC, %
●	33	7.5 - 8.5 ft	LEAN CLAY with SAND (CL)	106	19.8

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora

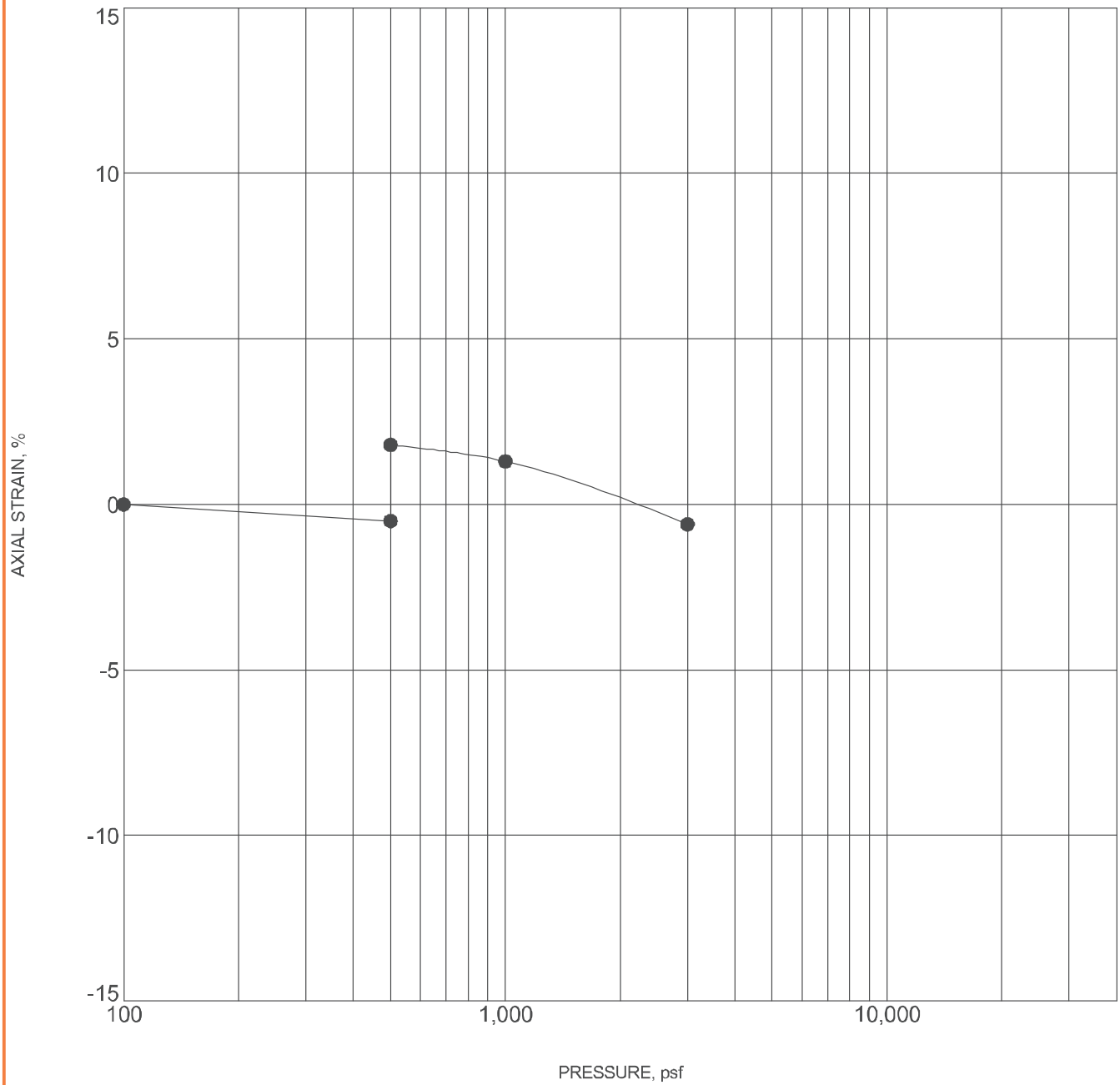
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21

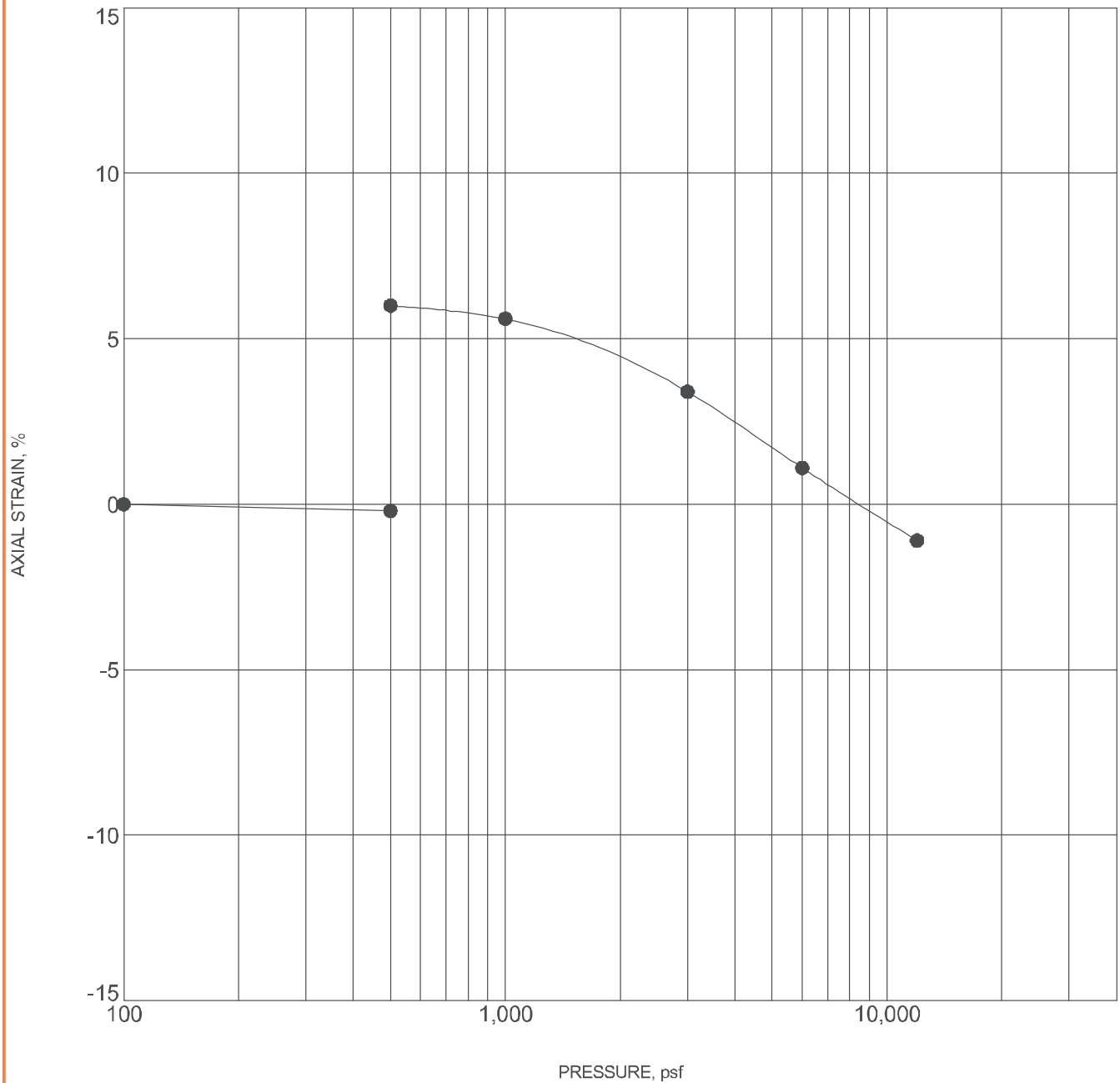


Specimen Identification			Classification	γ_d , pcf	WC, %
●	34	5 - 6 ft	LEAN CLAY with SAND (CL)	108	19.7

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora	 10625 W I70 Frontage Rd N Ste 3 Wheat Ridge, CO	PROJECT NUMBER: 25215031
SITE: Gun Club Road and Colfax Avenue Aurora, Colorado		CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21



Specimen Identification			Classification	γ_d , pcf	WC, %
●	35	7.5 - 8.5 ft	CLAYSTONE	112	18.6

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

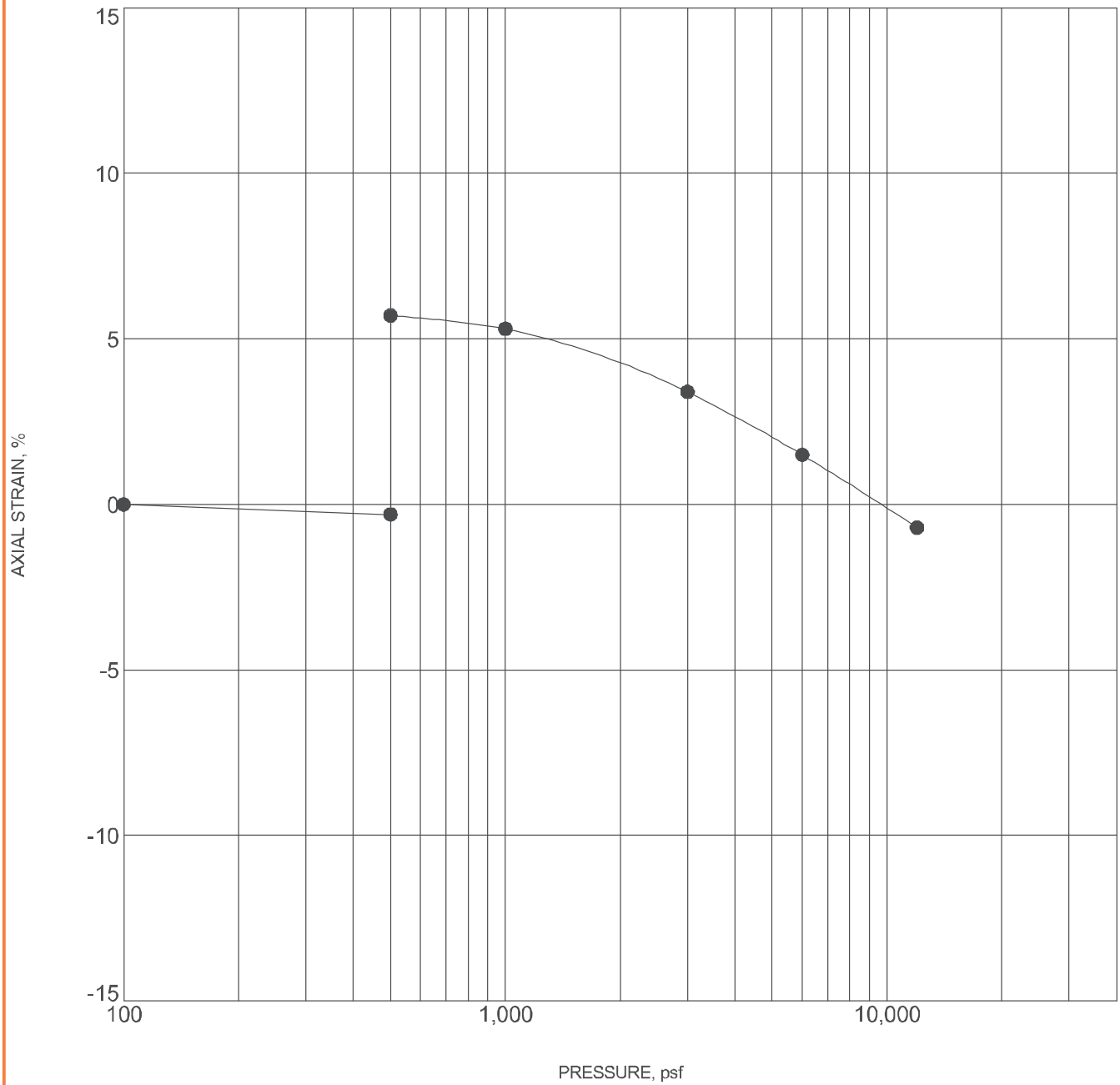
PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

SWELL CONSOLIDATION TEST

Permit # 2023-2389684-CM
RSN 1755228

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21



Specimen Identification			Classification	γ_d , pcf	WC, %
●	36	5 - 6 ft	CLAYSTONE	117	15.2

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora

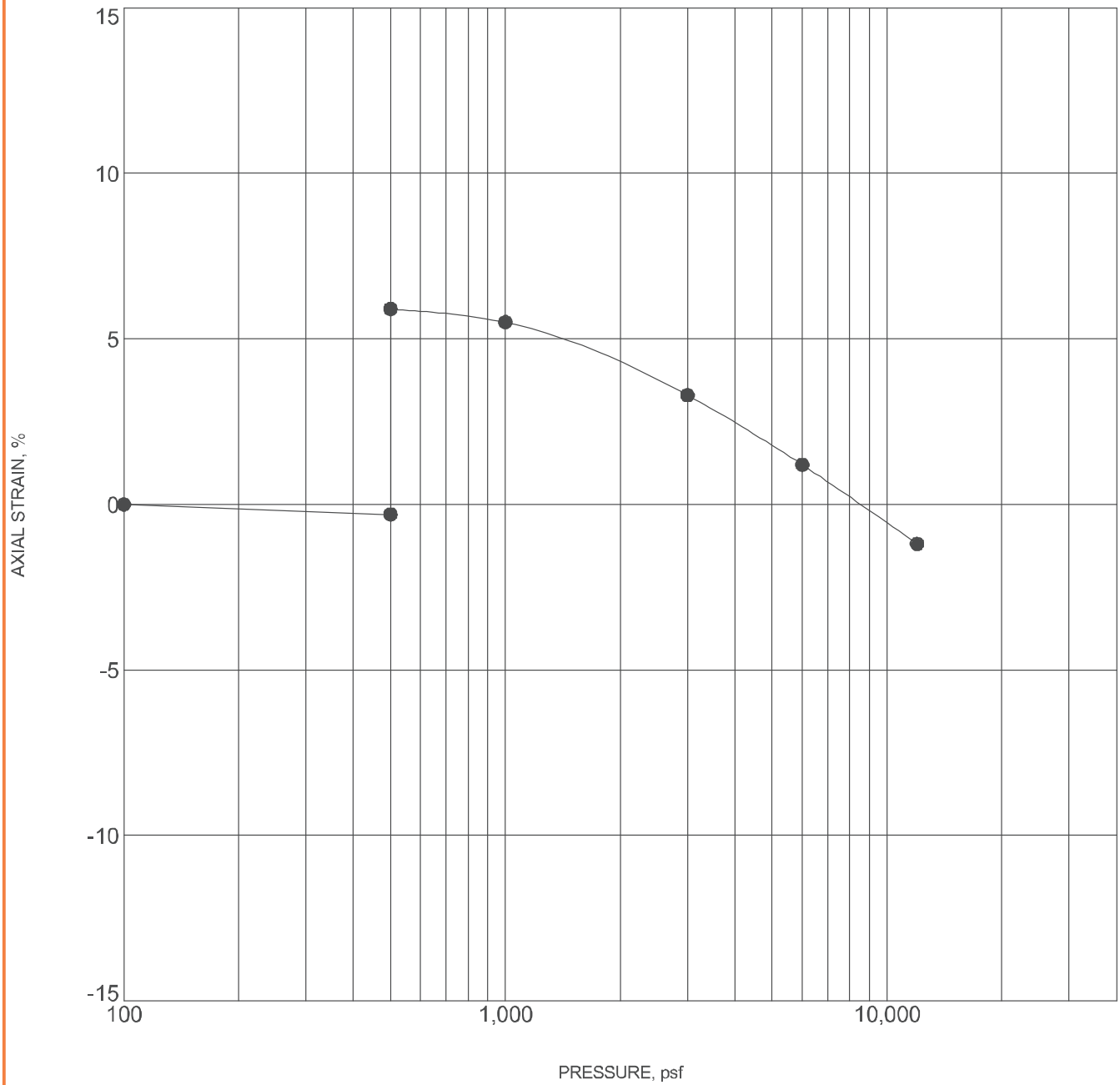
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21



Specimen Identification			Classification	γ_d , pcf	WC, %
●	36	7.5 - 8.5 ft	CLAYSTONE	110	18.7

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora

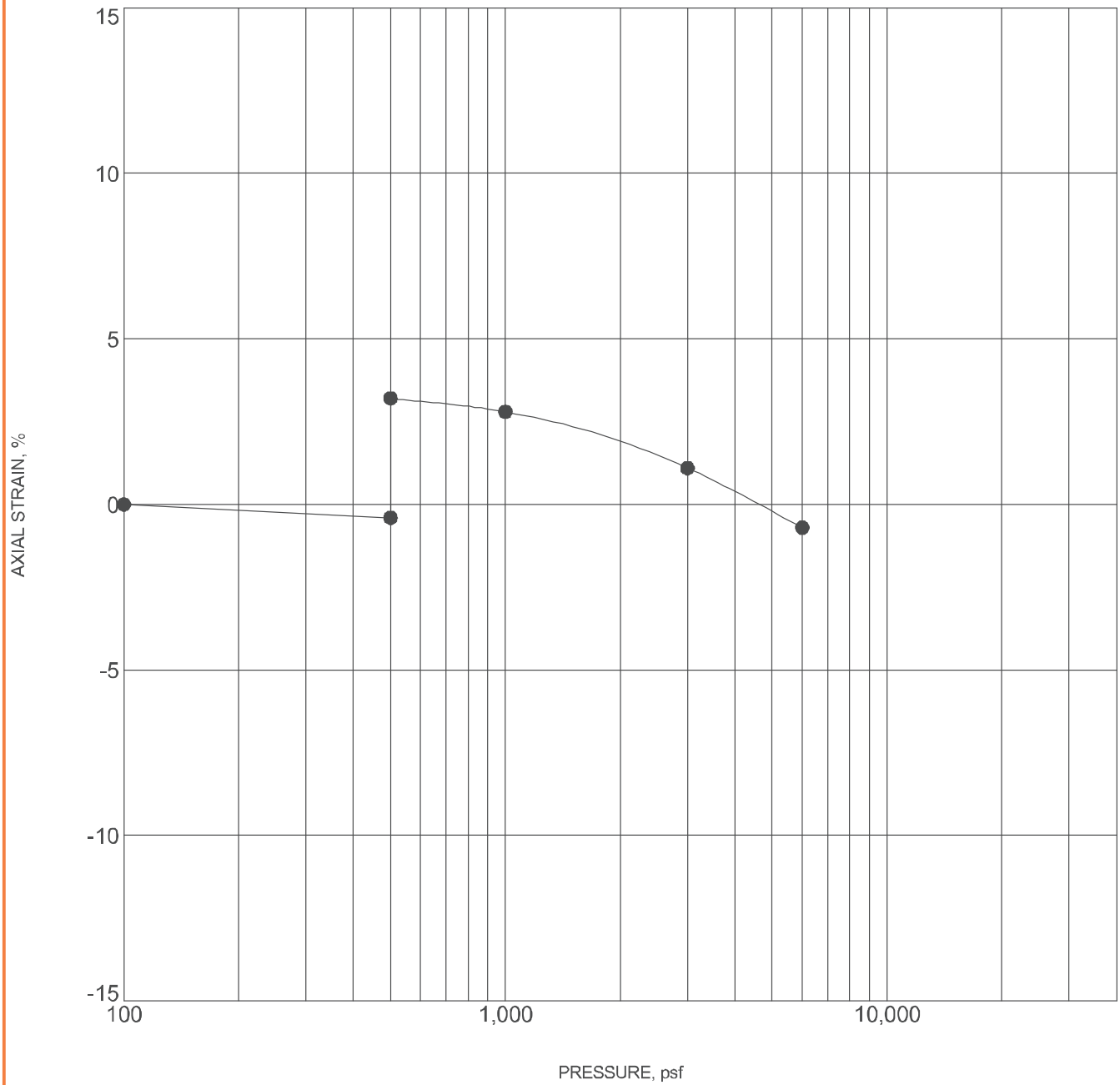
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21



Specimen Identification			Classification	γ_d , pcf	WC, %
●	37	10 - 11 ft	CLAYSTONE	110	19.0

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

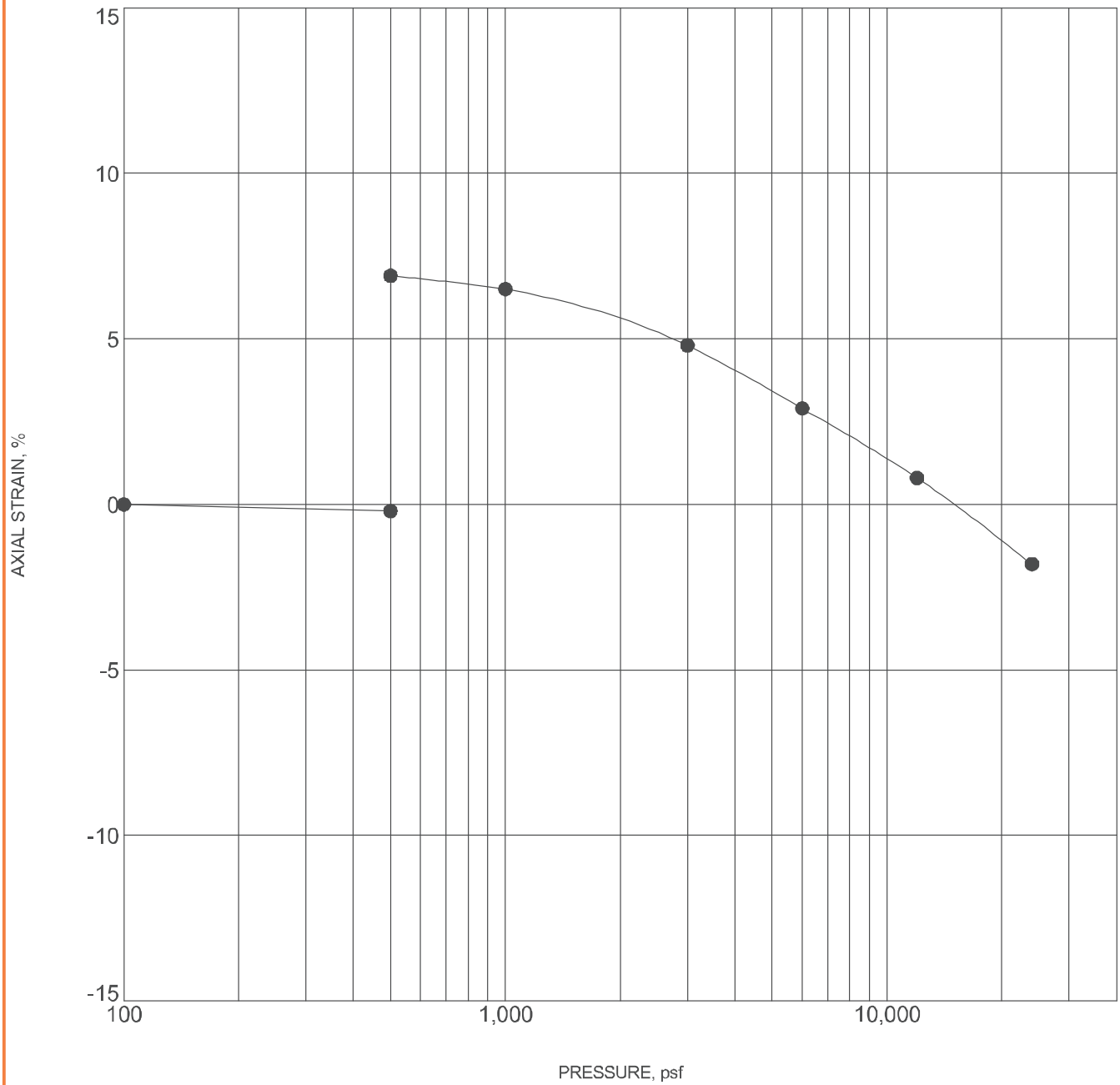
PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

SWELL CONSOLIDATION TEST

Permit # 2023-2389684-CM
RSN 1755228

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21



Specimen Identification			Classification	γ_d , pcf	WC, %
●	39	5 - 6 ft	CLAYSTONE	117	14.5

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora

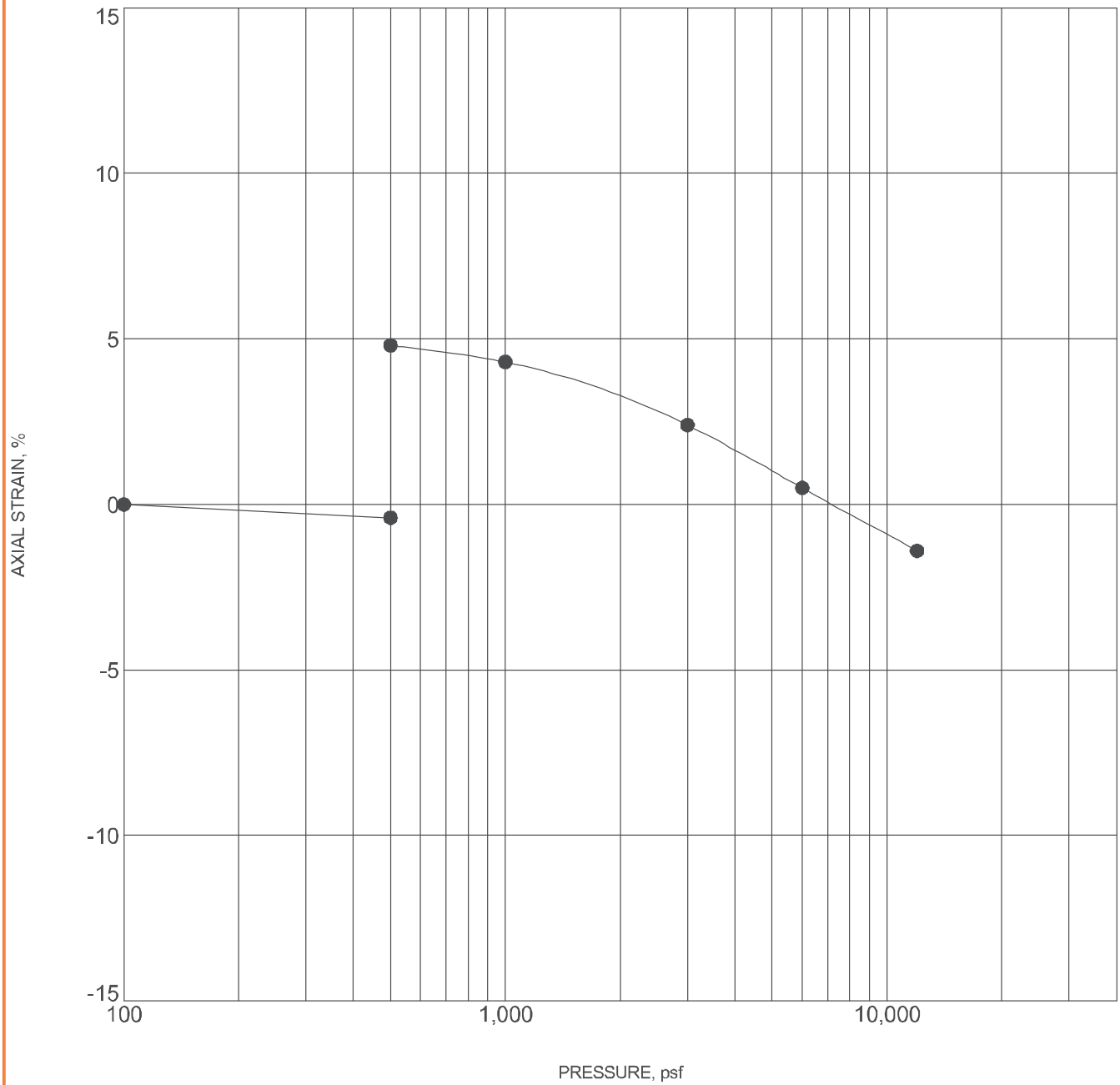
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21



Specimen Identification			Classification	γ_d , pcf	WC, %
●	40	10 - 11 ft	CLAYSTONE	119	15.1

NOTES: Water added at 500 psf.

PROJECT: QTS Aurora

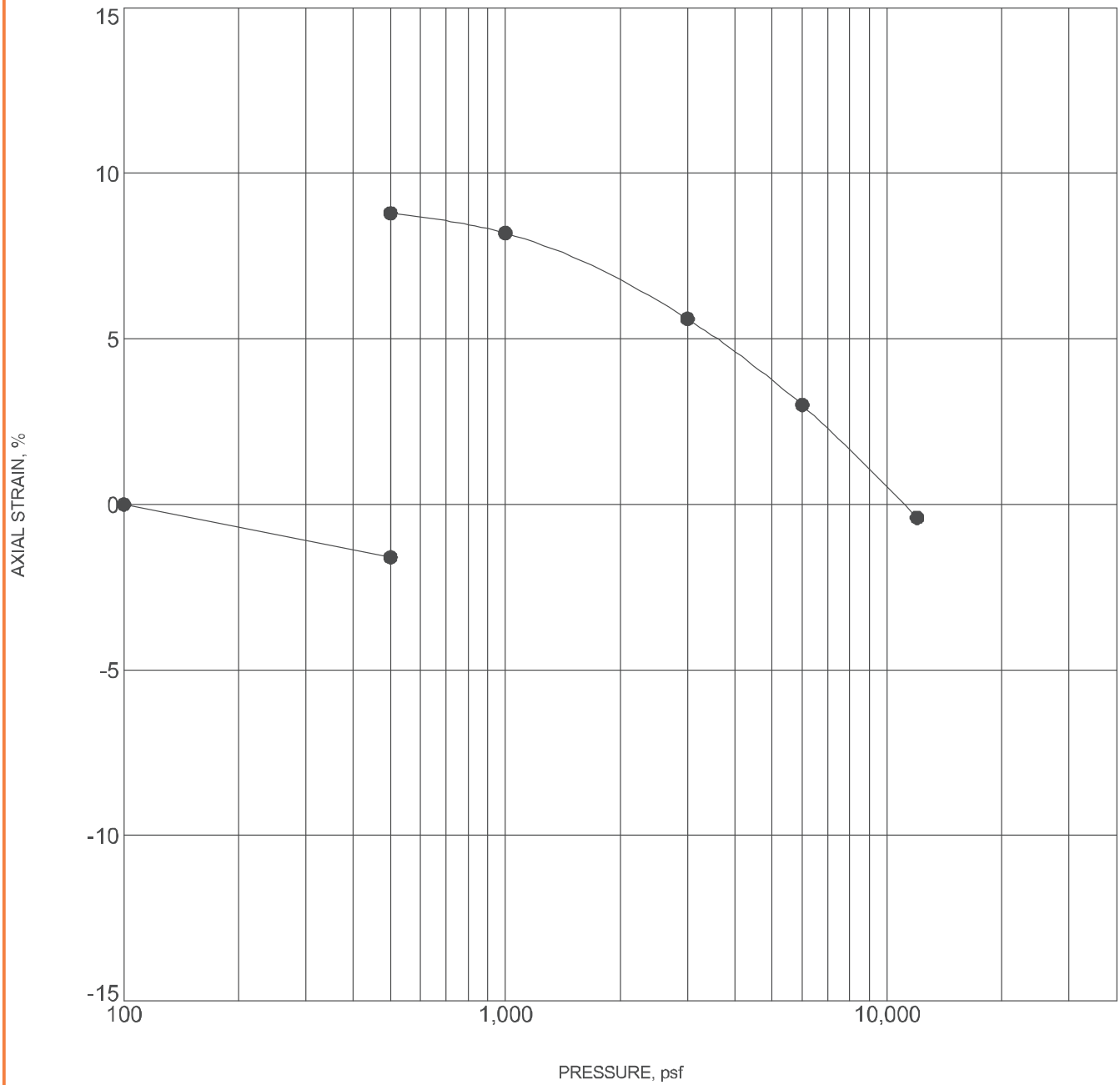
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21



Specimen Identification			Classification	γ_d , pcf	WC, %
●	42	12.5 - 13.5 ft	CLAYSTONE	105	22.8

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora

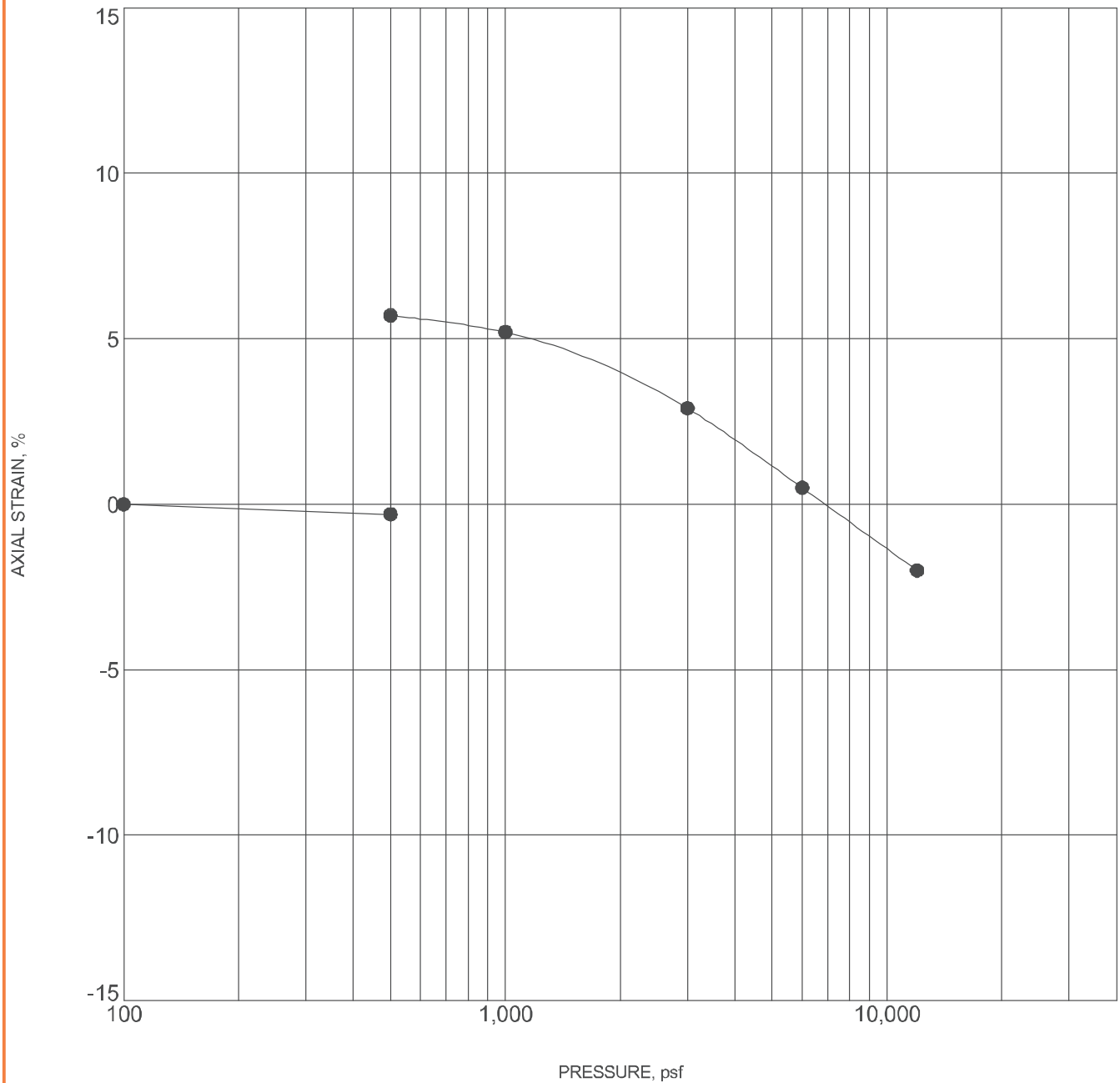
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21



Specimen Identification			Classification	γ_d , pcf	WC, %
●	F1	10 - 11 ft	CLAYSTONE	126	10.7

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora

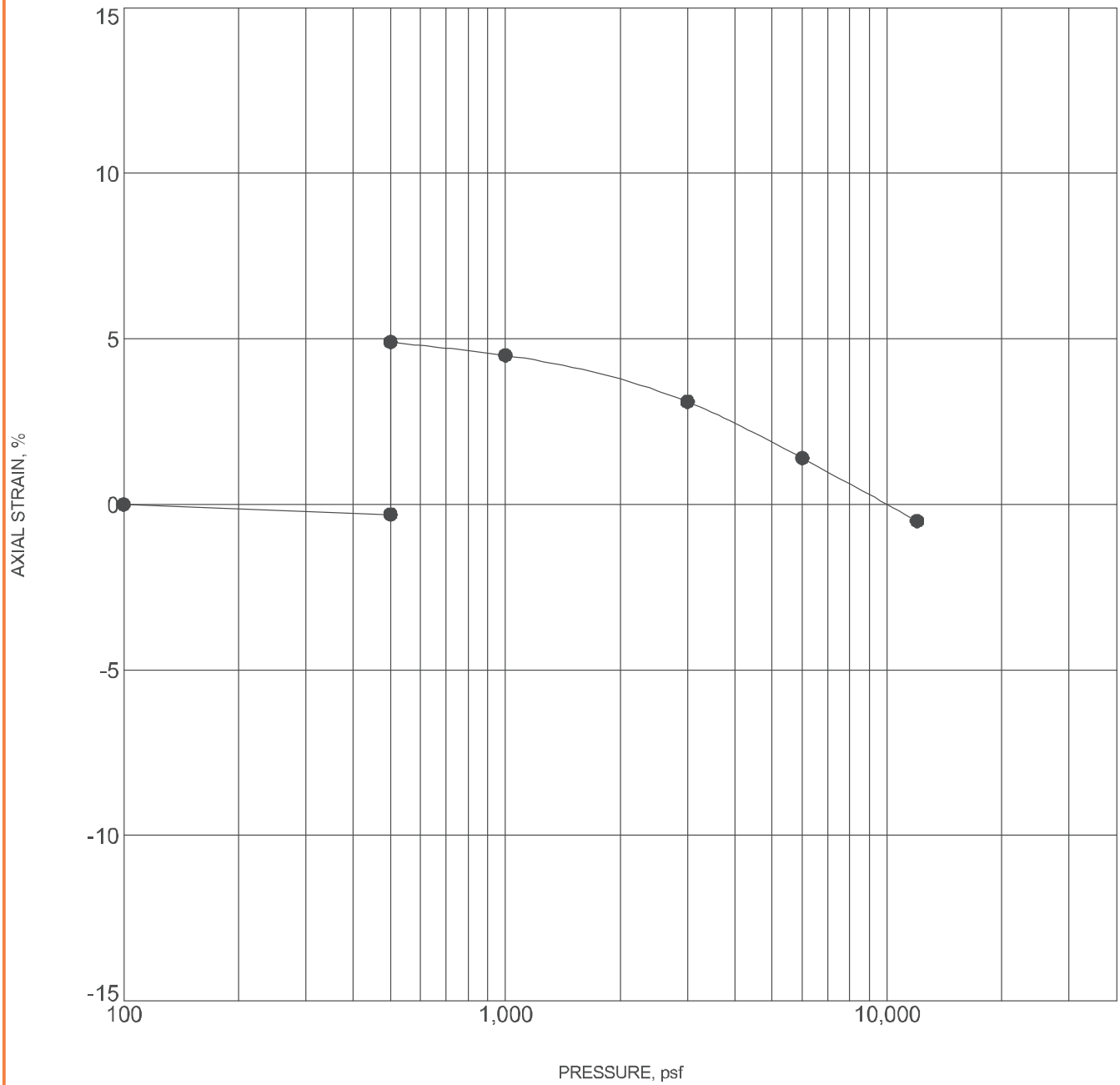
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21

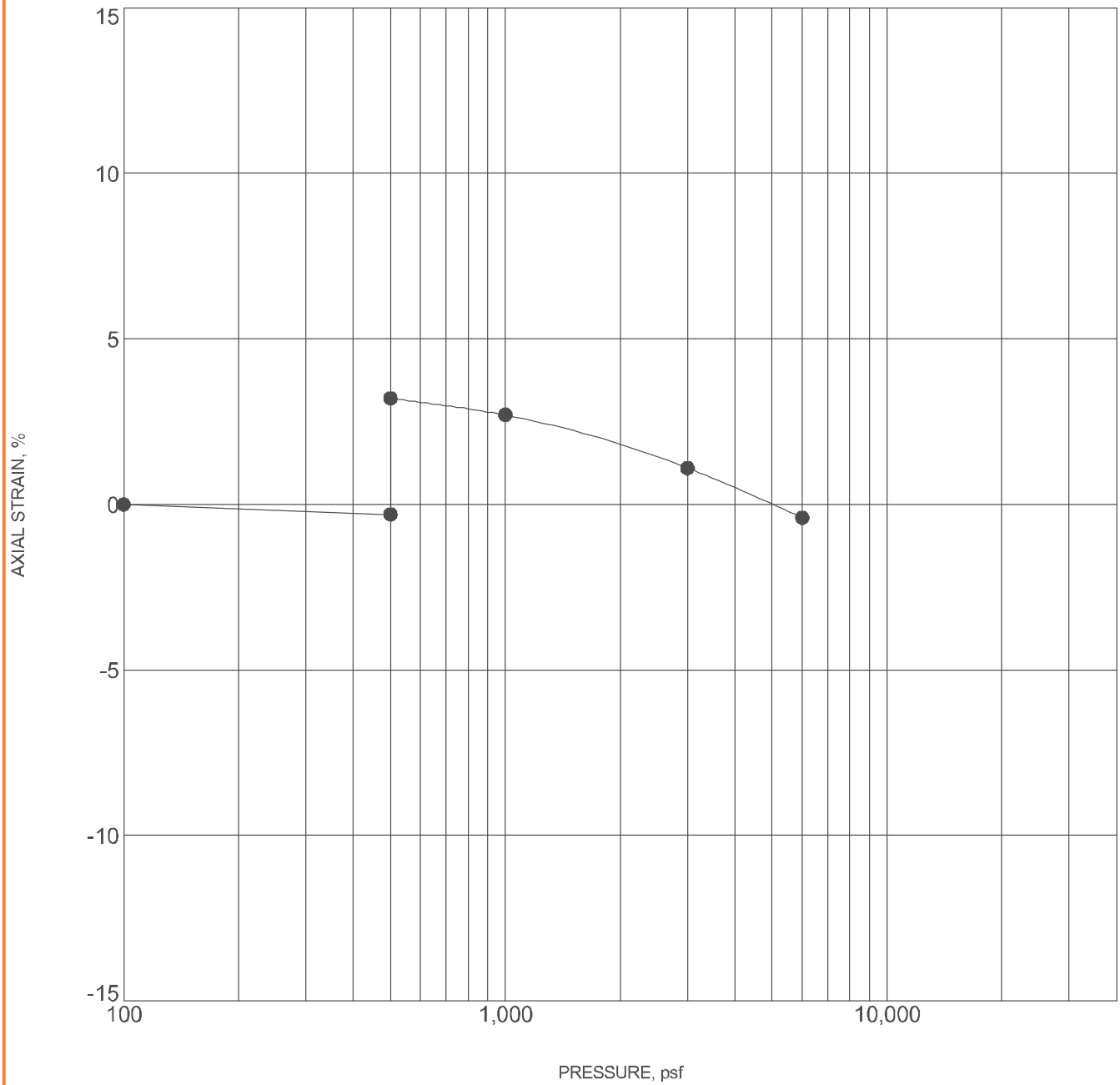


Specimen Identification			Classification	γ_d , pcf	WC, %
●	F2	10 - 11 ft	CLAYSTONE	106	21.1

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora	 10625 W I70 Frontage Rd N Ste 3 Wheat Ridge, CO	PROJECT NUMBER: 25215031
SITE: Gun Club Road and Colfax Avenue Aurora, Colorado		CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21

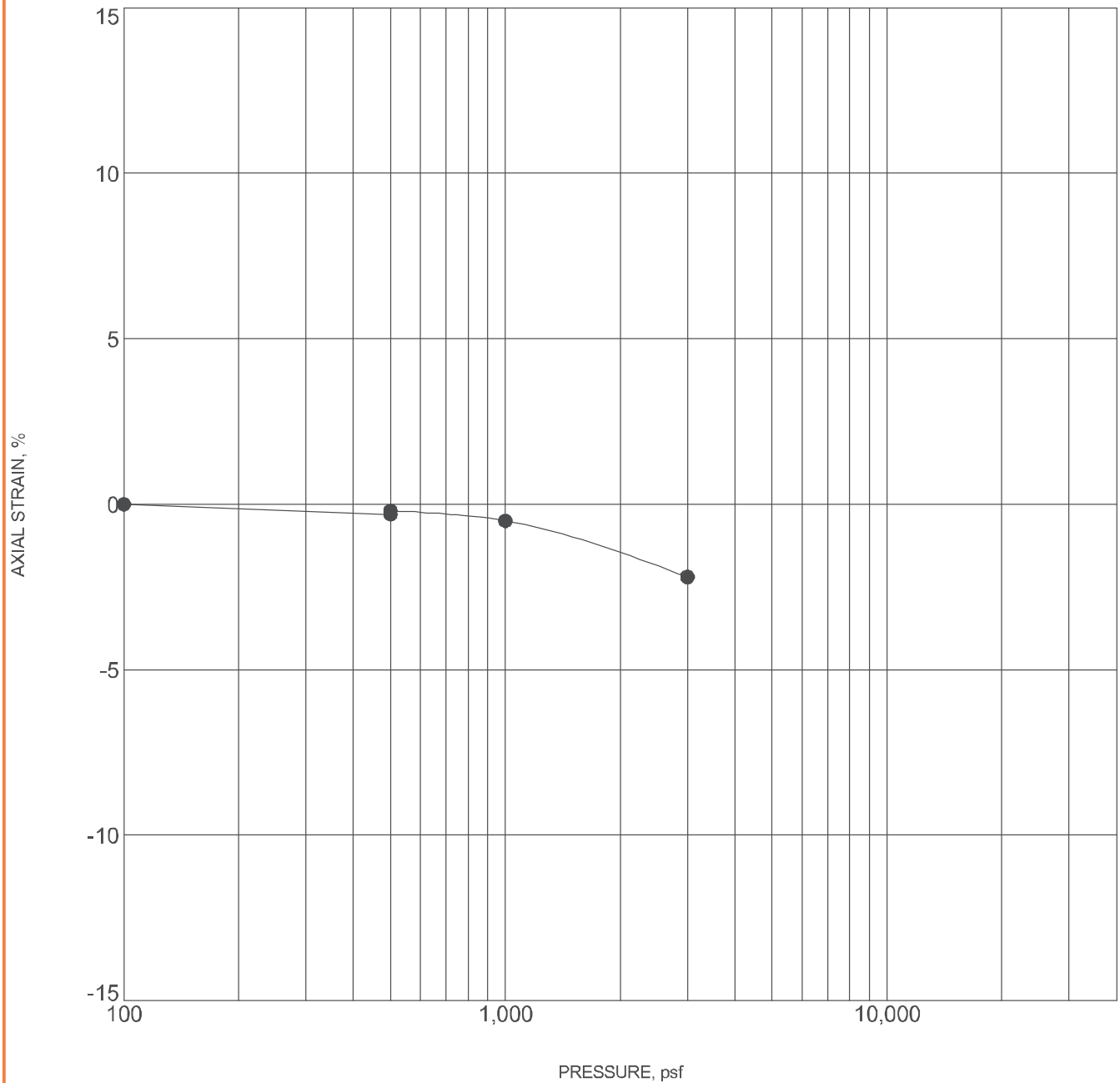


Specimen Identification			Classification	γ_d , pcf	WC, %
●	F3	5 - 6 ft	CLAYSTONE	110	19.4

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora	 10625 W I70 Frontage Rd N Ste 3 Wheat Ridge, CO	PROJECT NUMBER: 25215031
SITE: Gun Club Road and Colfax Avenue Aurora, Colorado		CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21



Specimen Identification			Classification	γ_d , pcf	WC, %
●	F4	7.5 - 8.5 ft	LEAN CLAY with SAND (CL)	109	16.3

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora

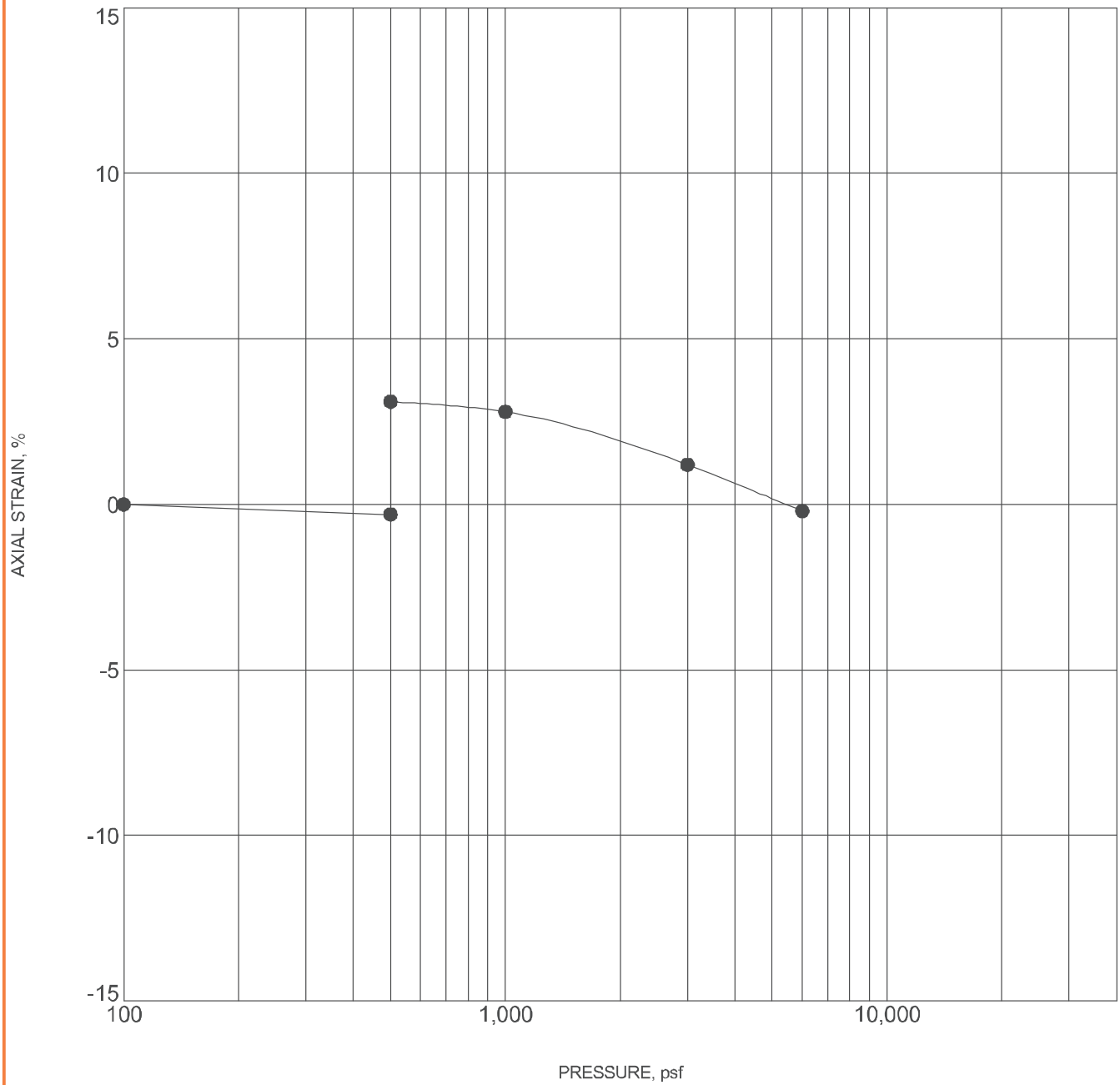
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21



Specimen Identification			Classification	γ_d , pcf	WC, %
●	F5	10 - 11 ft	CLAYEY SANDSTONE	133	6.6

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora

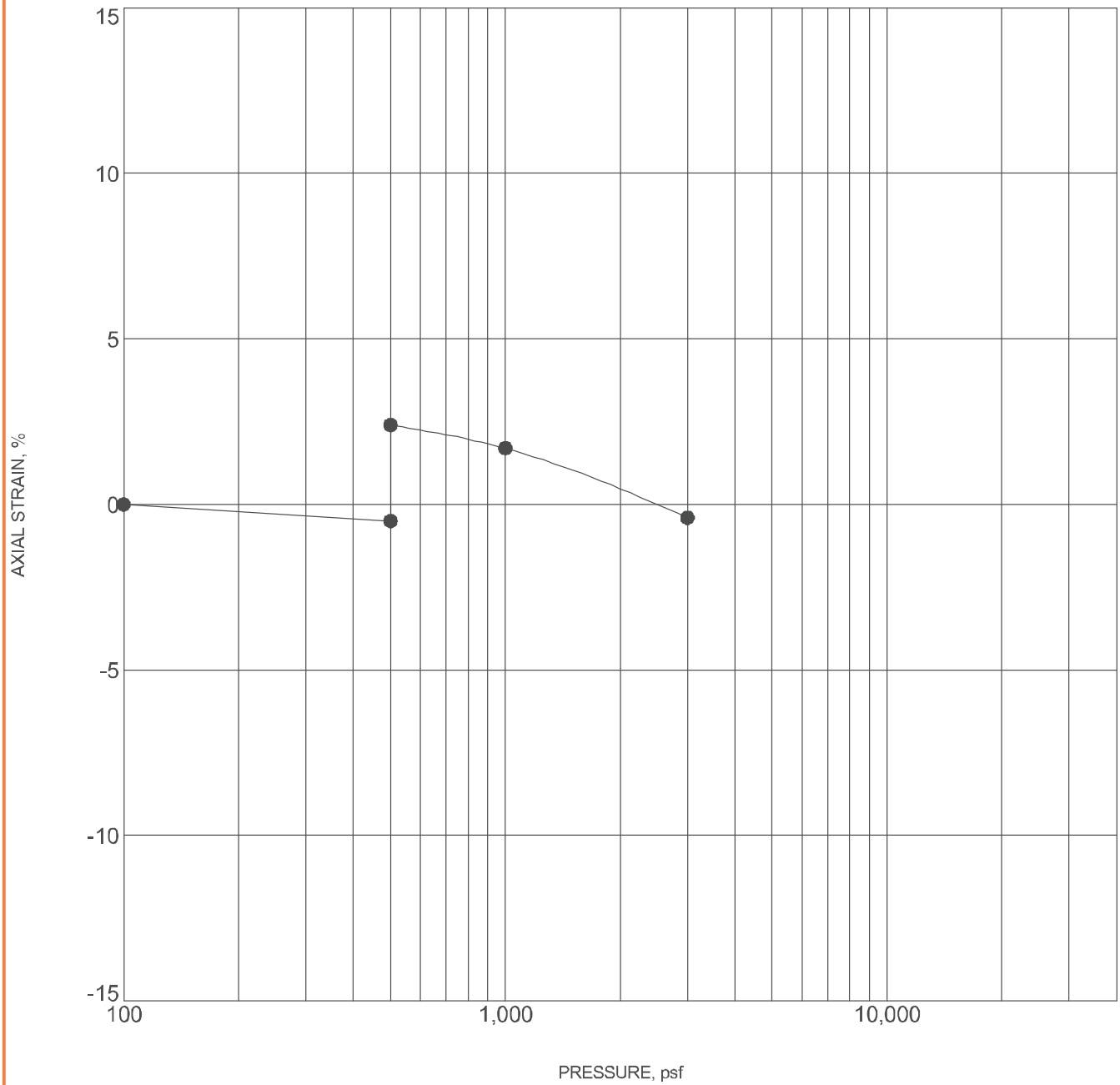
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

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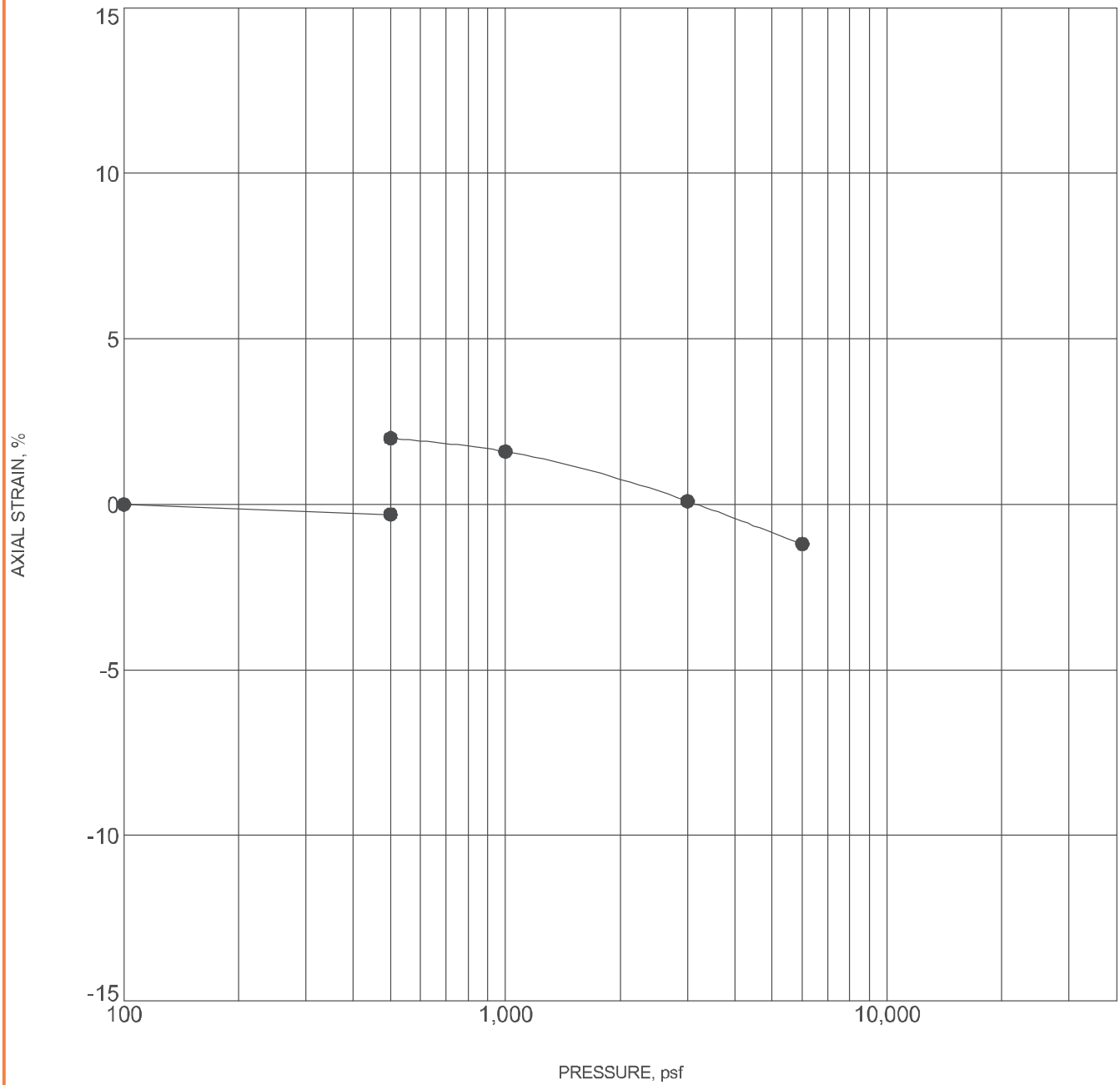


Specimen Identification			Classification	γ_d , pcf	WC, %
●	F6	5 - 6 ft	CLAYSTONE	100	24.6

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora	 10625 W I70 Frontage Rd N Ste 3 Wheat Ridge, CO	PROJECT NUMBER: 25215031
SITE: Gun Club Road and Colfax Avenue Aurora, Colorado		CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21

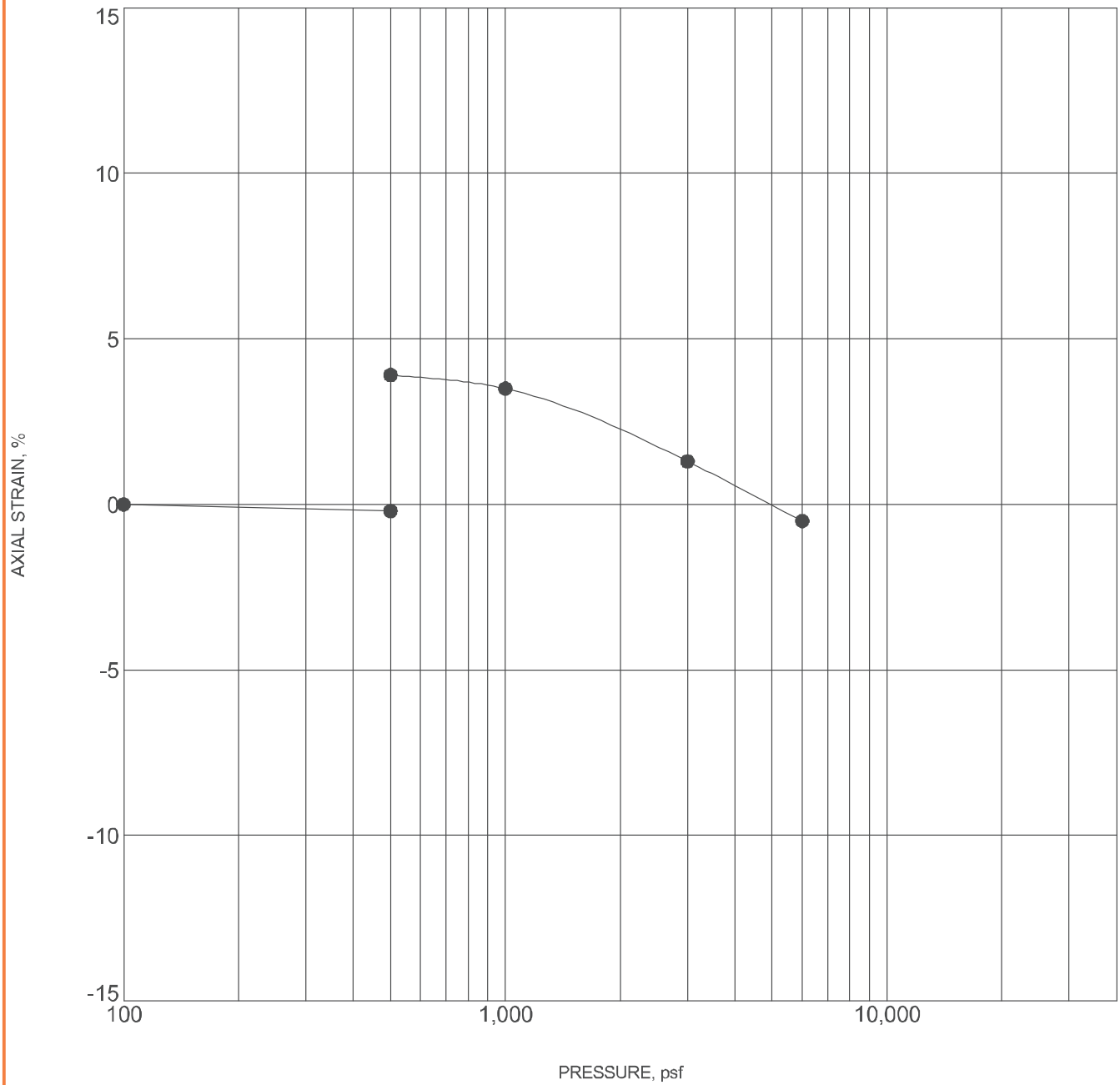


Specimen Identification			Classification	γ_d , pcf	WC, %
●	S1	7.5 - 8.5 ft	SANDY LEAN CLAY (CL)	111	18.0

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora	 10625 W I70 Frontage Rd N Ste 3 Wheat Ridge, CO	PROJECT NUMBER: 25215031
SITE: Gun Club Road and Colfax Avenue Aurora, Colorado		CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21



Specimen Identification			Classification	γ_d , pcf	WC, %
●	S2	7.5 - 8.5 ft	SANDY LEAN CLAY (CL)	107	20.8

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora

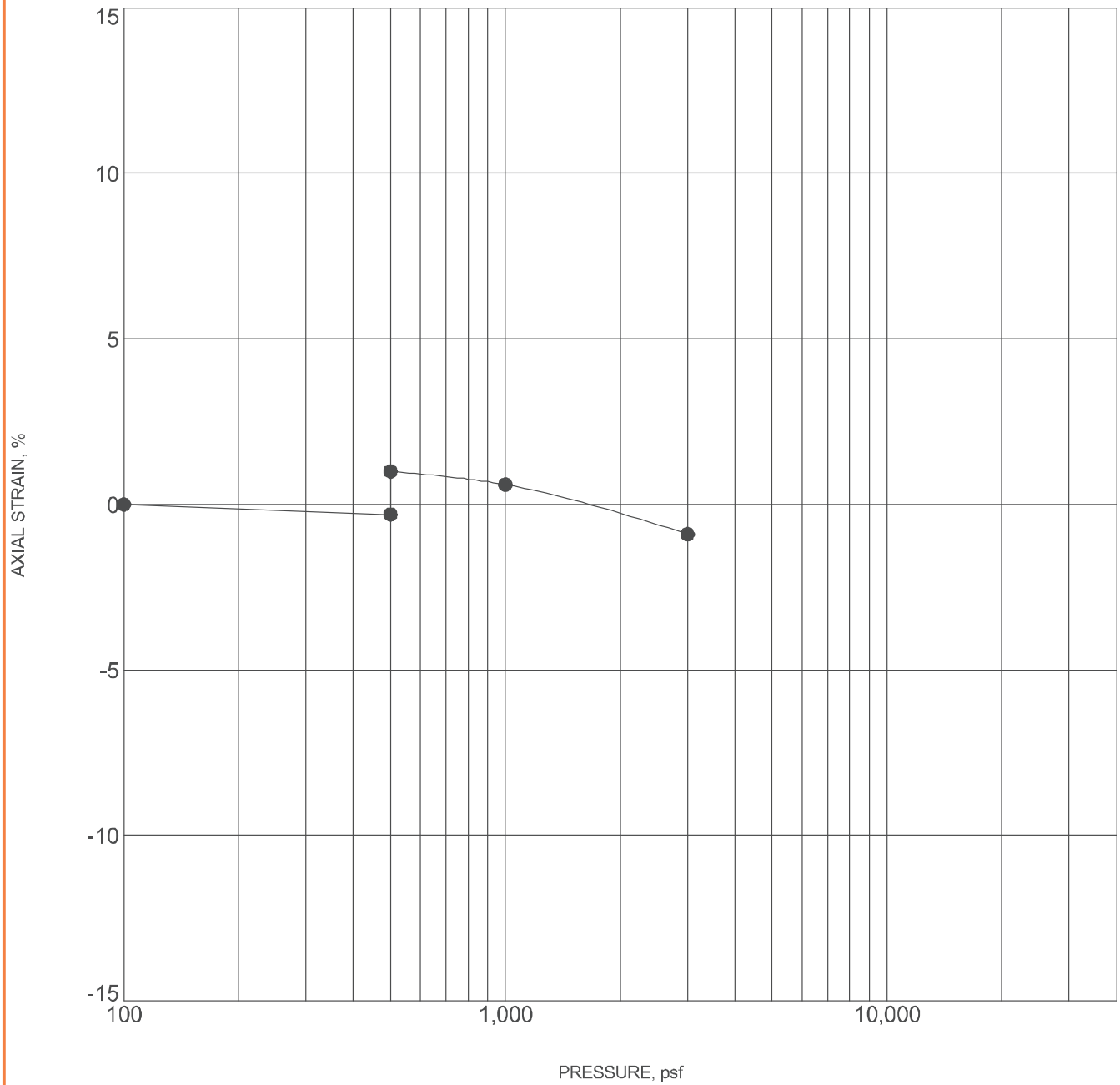
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21



Specimen Identification			Classification	γ_d , pcf	WC, %
●	S3	5 - 6 ft	LEAN CLAY with SAND (CL)	107	20.1

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora

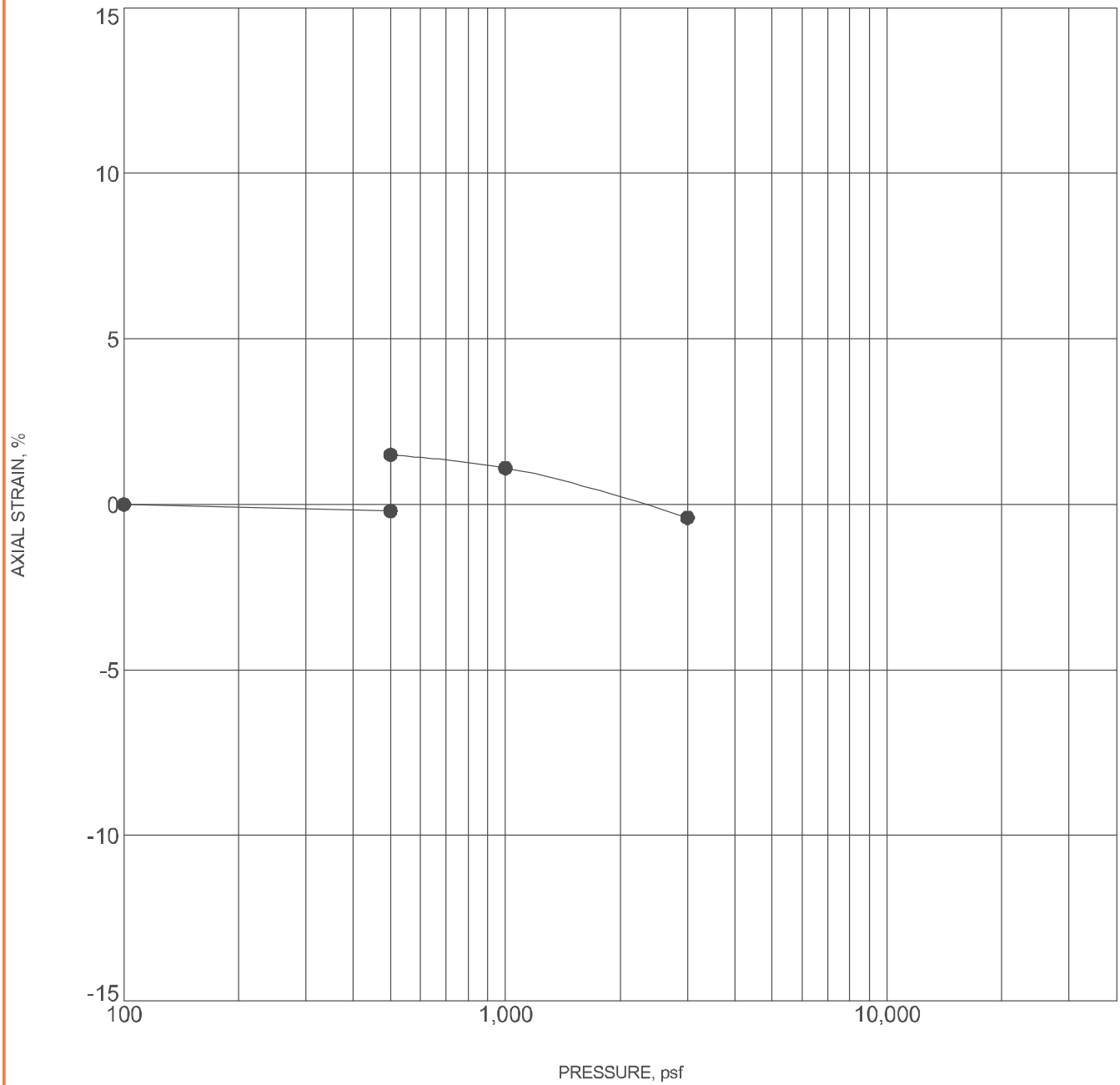
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21



Specimen Identification			Classification	γ_d , pcf	WC, %
●	S4	7.5 - 8.5 ft	CLAYSTONE	110	22.7

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora

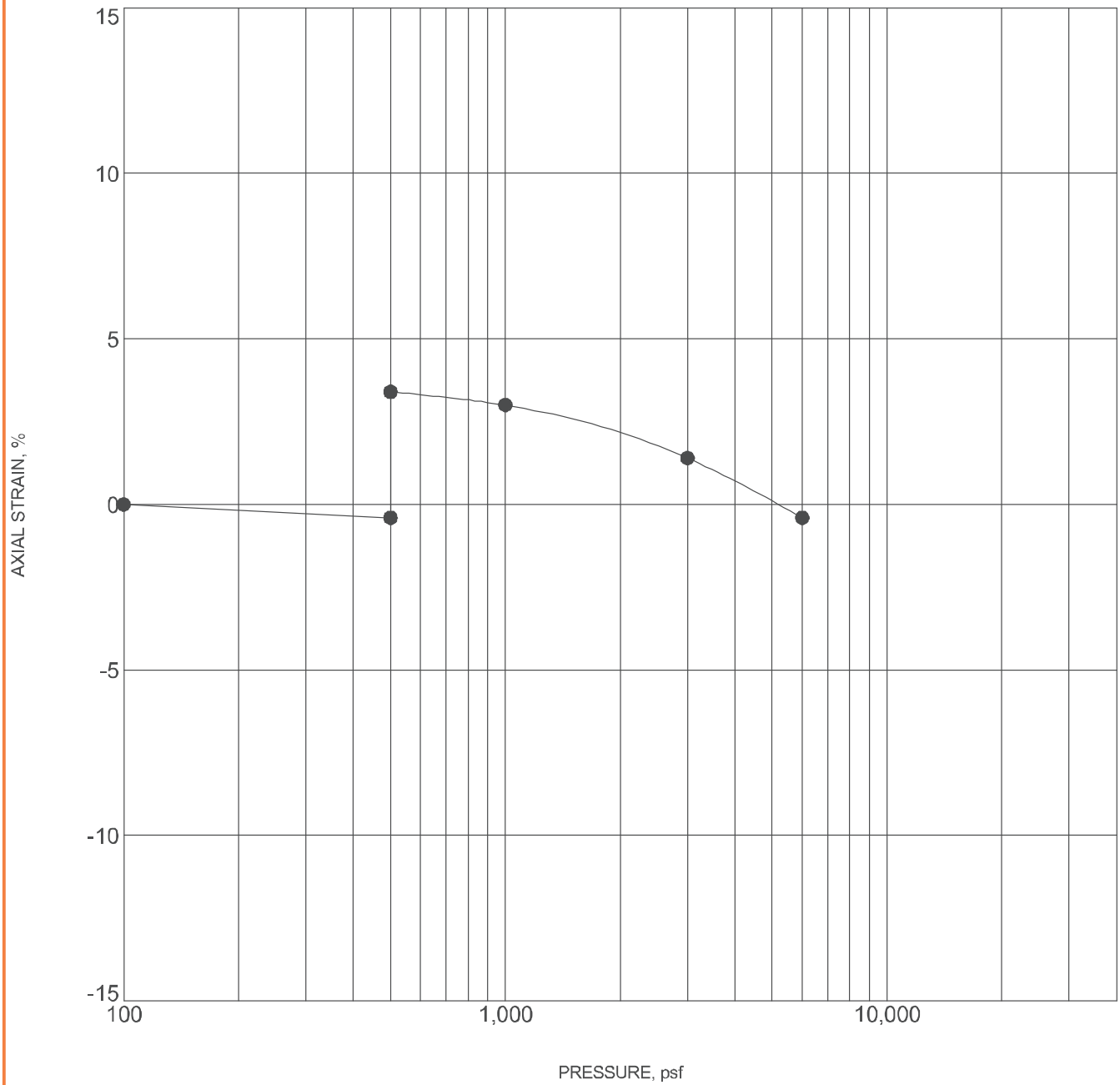
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21

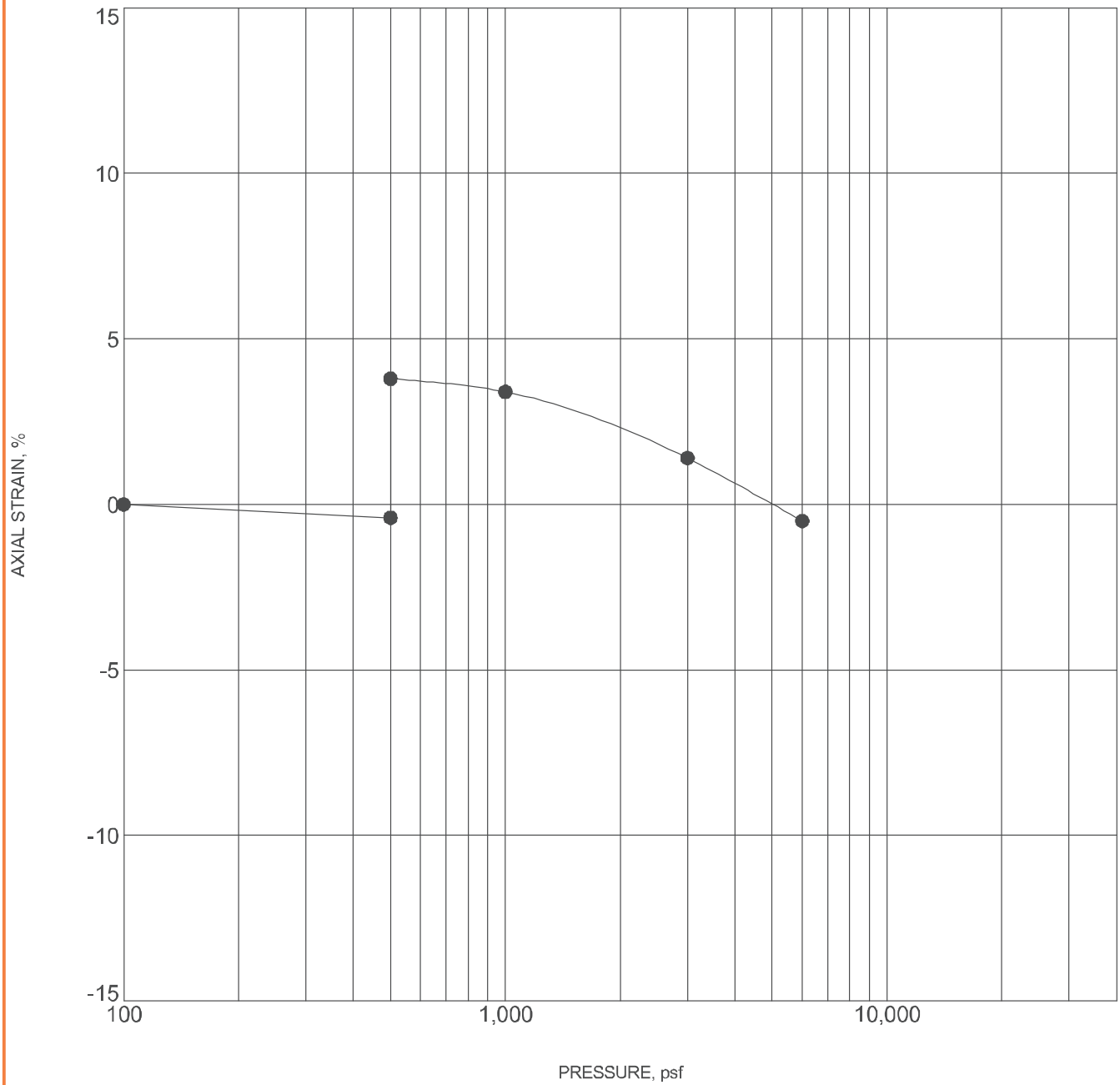


Specimen Identification			Classification	γ_d , pcf	WC, %
●	S5	5 - 6 ft	SANDY LEAN CLAY (CL)	110	18.7

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora	 10625 W I70 Frontage Rd N Ste 3 Wheat Ridge, CO	PROJECT NUMBER: 25215031
SITE: Gun Club Road and Colfax Avenue Aurora, Colorado		CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21



Specimen Identification			Classification	γ_d , pcf	WC, %
●	S6	7.5 - 8.5 ft	CLAYSTONE	107	20.0

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora

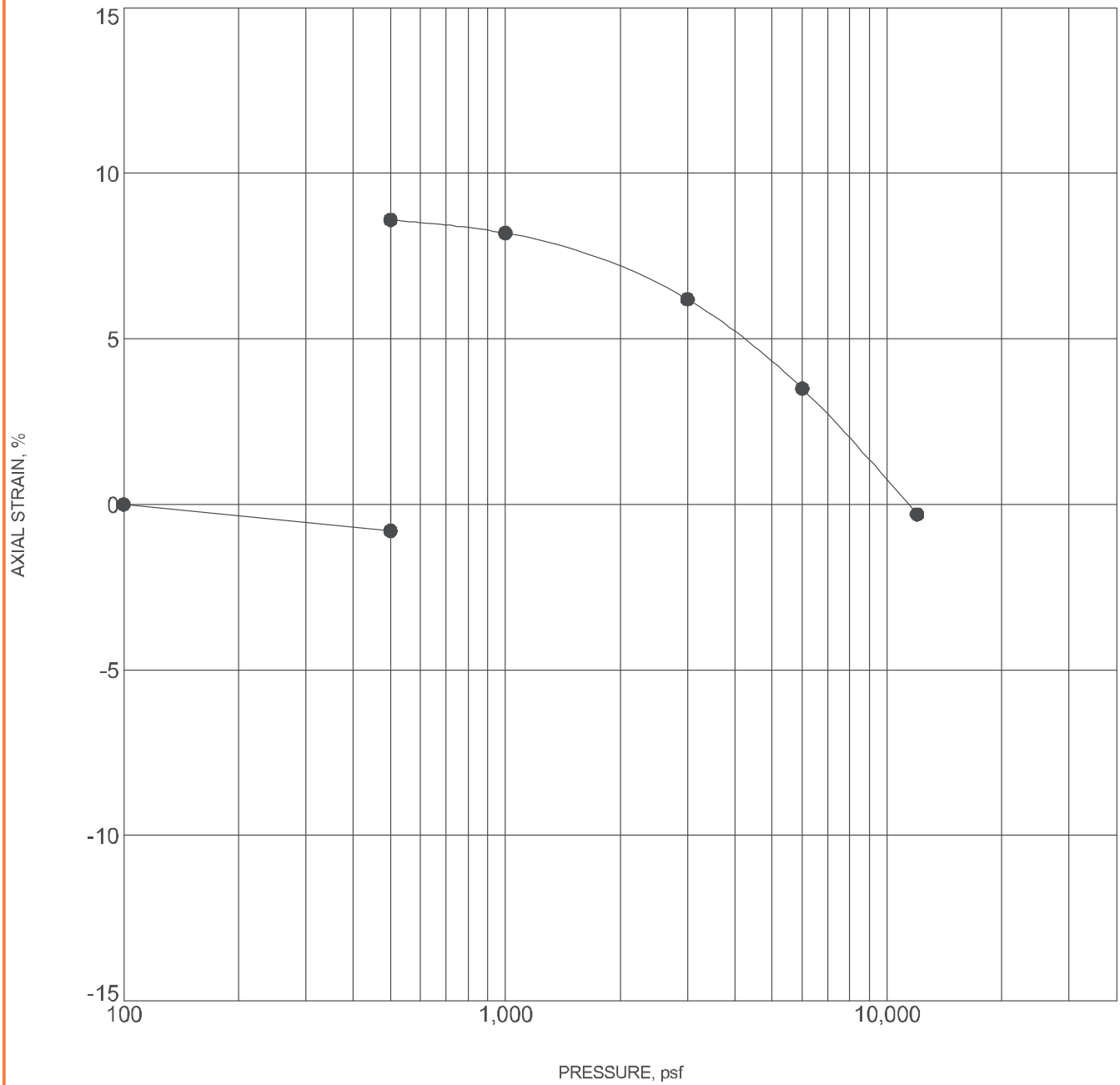
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21



Specimen Identification			Classification	γ_d , pcf	WC, %
●	S7	5 - 6 ft	CLAYSTONE	118	15.5

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora

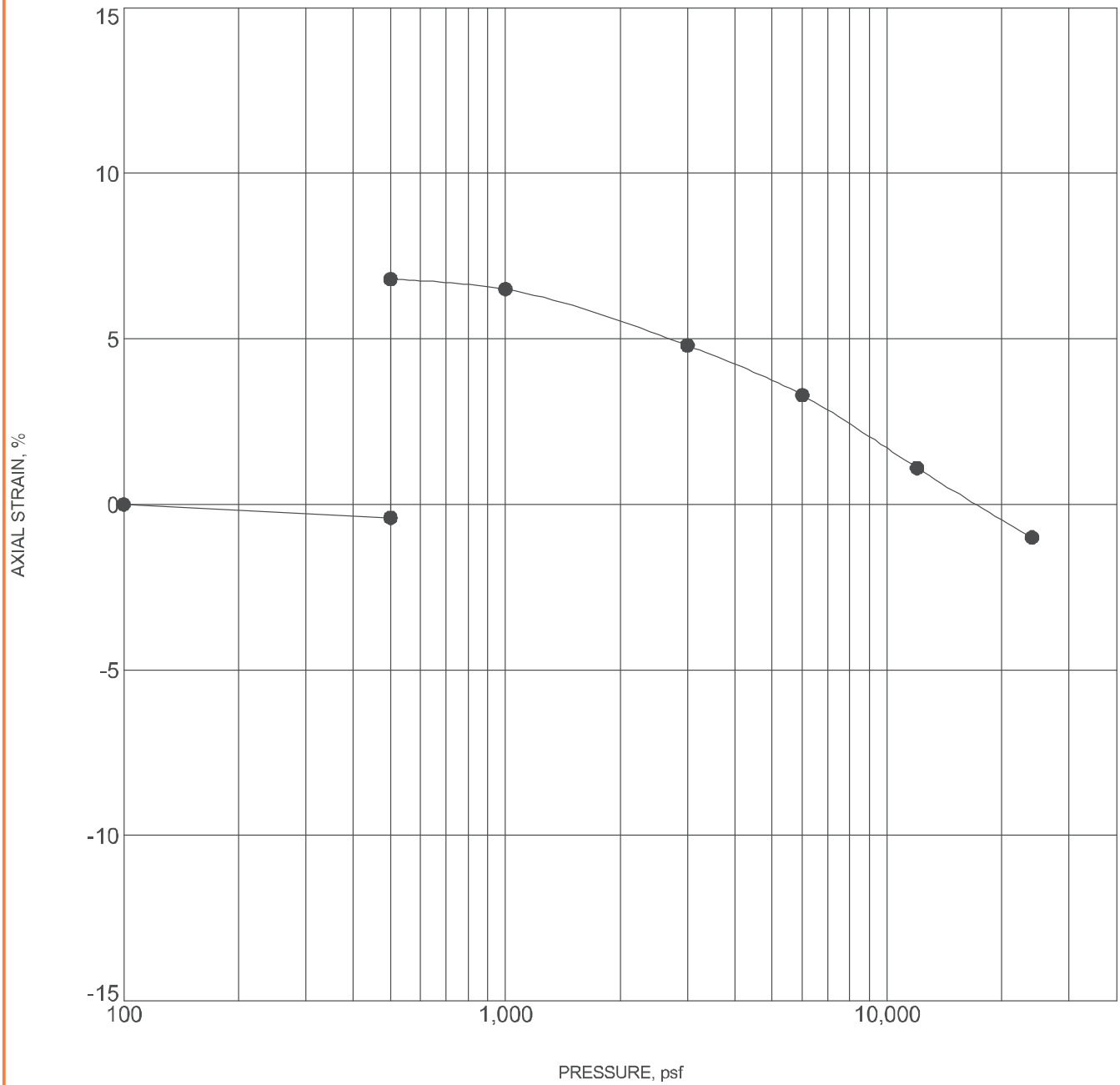
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21



Specimen Identification			Classification	γ_d , pcf	WC, %
●	S8	7.5 - 8.5 ft	CLAYSTONE	109	19.9

NOTES: Water was added at 500 psf.

PROJECT: QTS Aurora

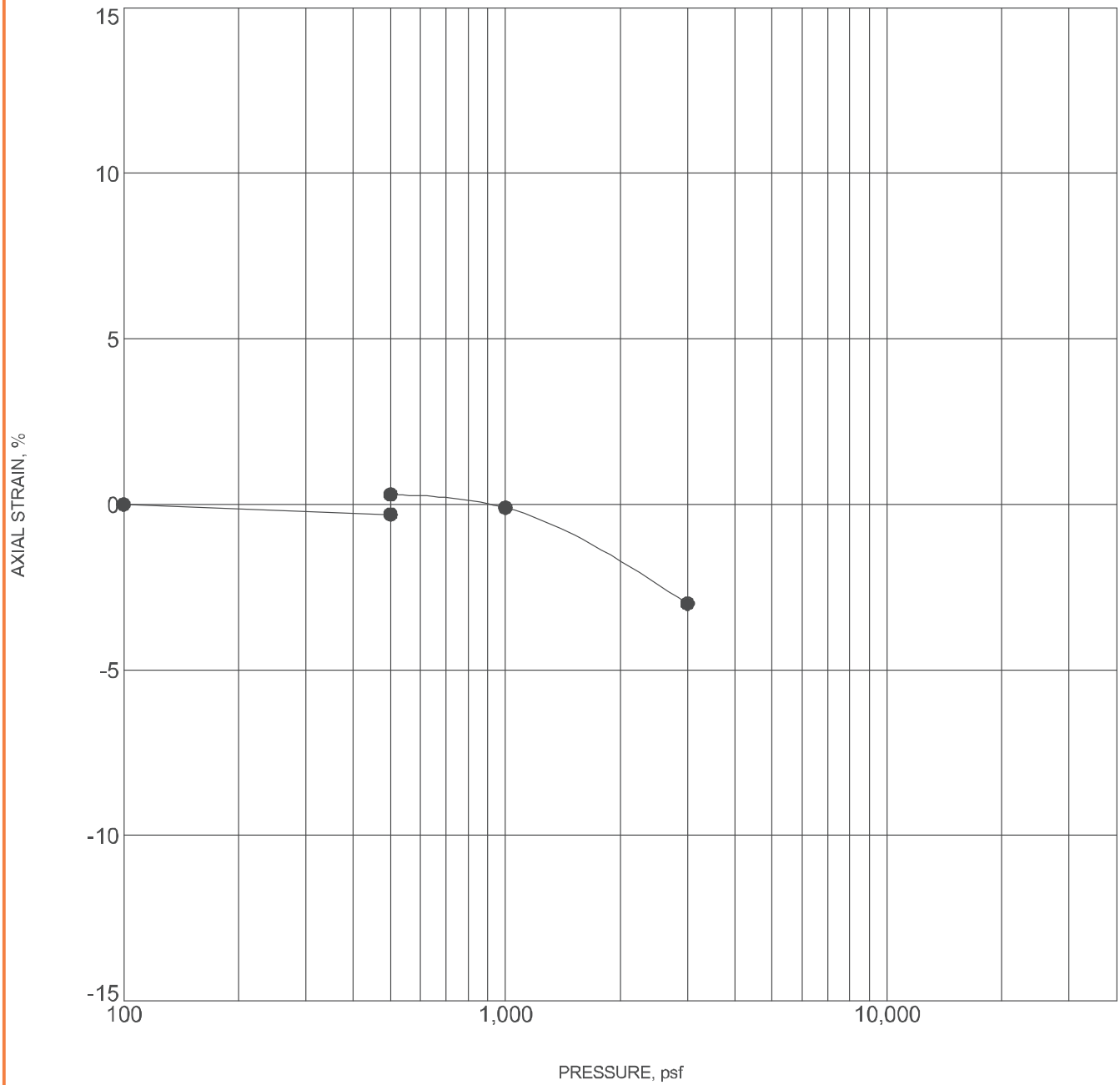
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21



Specimen Identification			Classification	γ_d , pcf	WC, %
●	10	0 - 4 ft	LEAN CLAY (CL)	101	15.7

NOTES: Water was added at 500 psf. Sample remolded to 95% of Standard Proctor Maximum Dry Density at the Optimum Moisture Content.

PROJECT: QTS Aurora

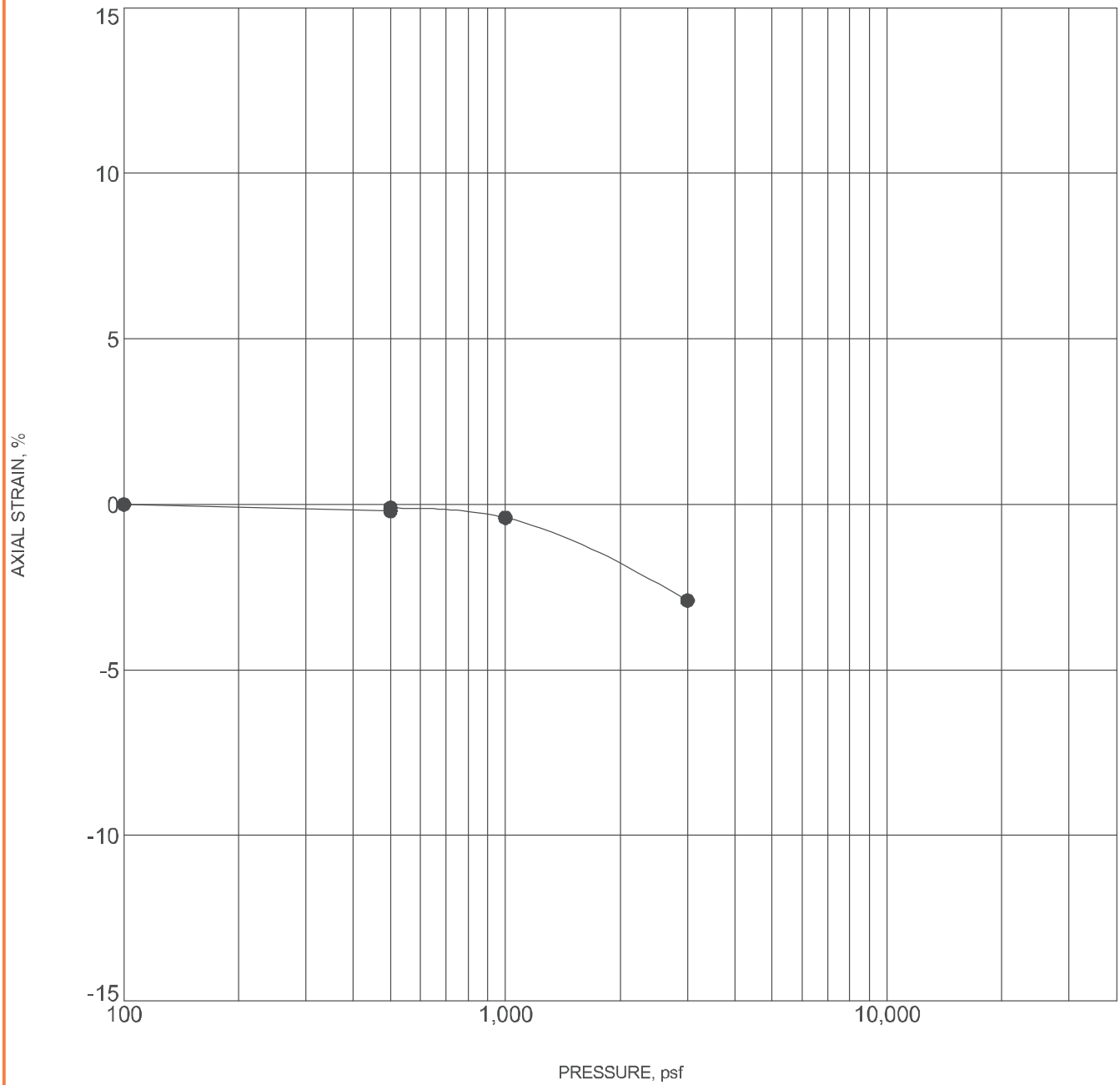
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21



Specimen Identification			Classification	γ_d , pcf	WC, %
●	10	0 - 4 ft	LEAN CLAY (CL)	101	18.0

NOTES: Water was added at 500 psf. Sample remolded to 95% of Standard Proctor Maximum Dry Density at +2% of Optimum Moisture Content.

PROJECT: QTS Aurora

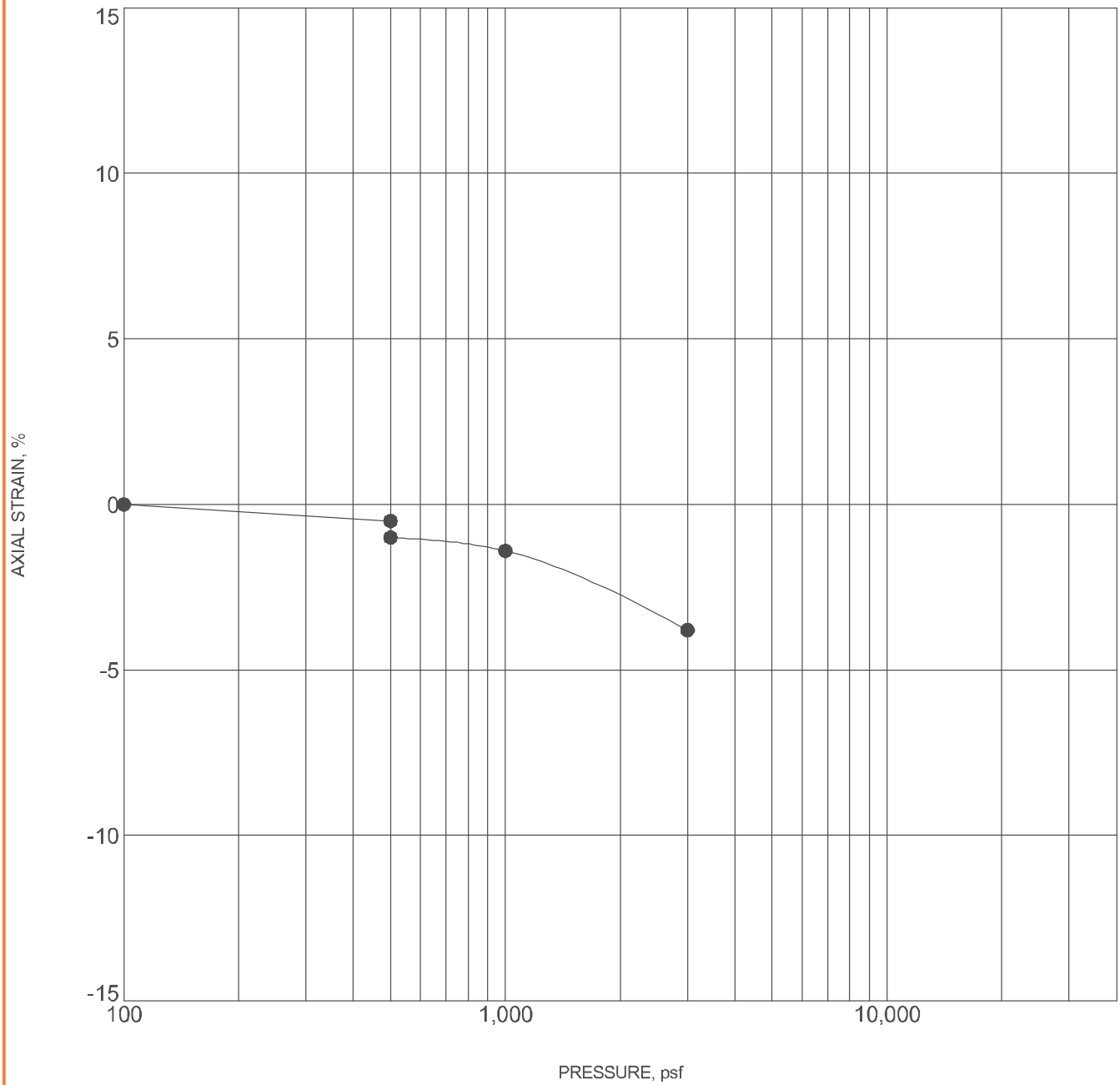
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21



Specimen Identification			Classification	γ_d , pcf	WC, %
●	10	0 - 4 ft	LEAN CLAY (CL)	100	20.3

NOTES: Water was added at 500 psf. Sample remolded to 95% of Standard Proctor Maximum Dry Density at +4% of Optimum Moisture Content.

PROJECT: QTS Aurora

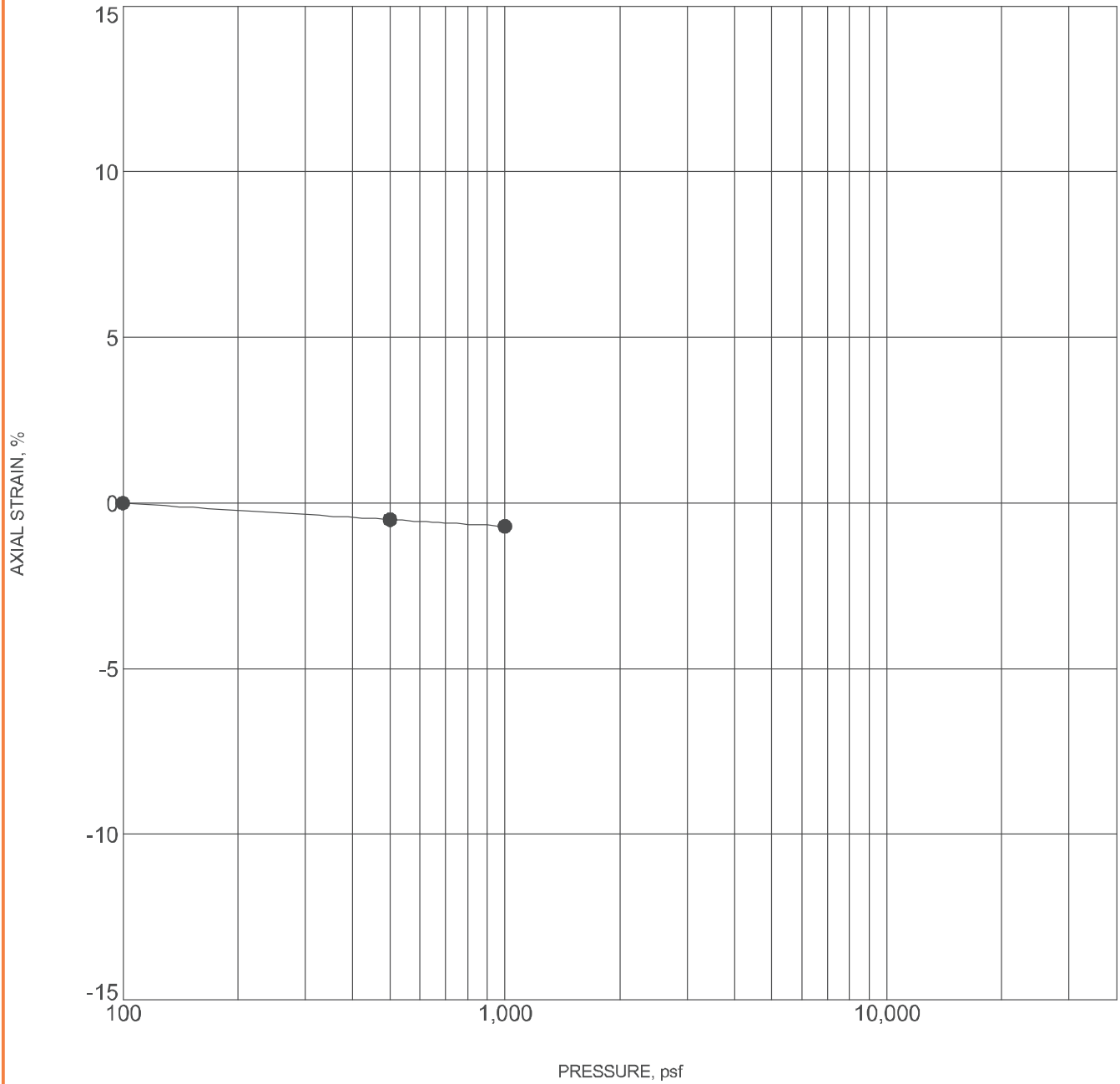
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21

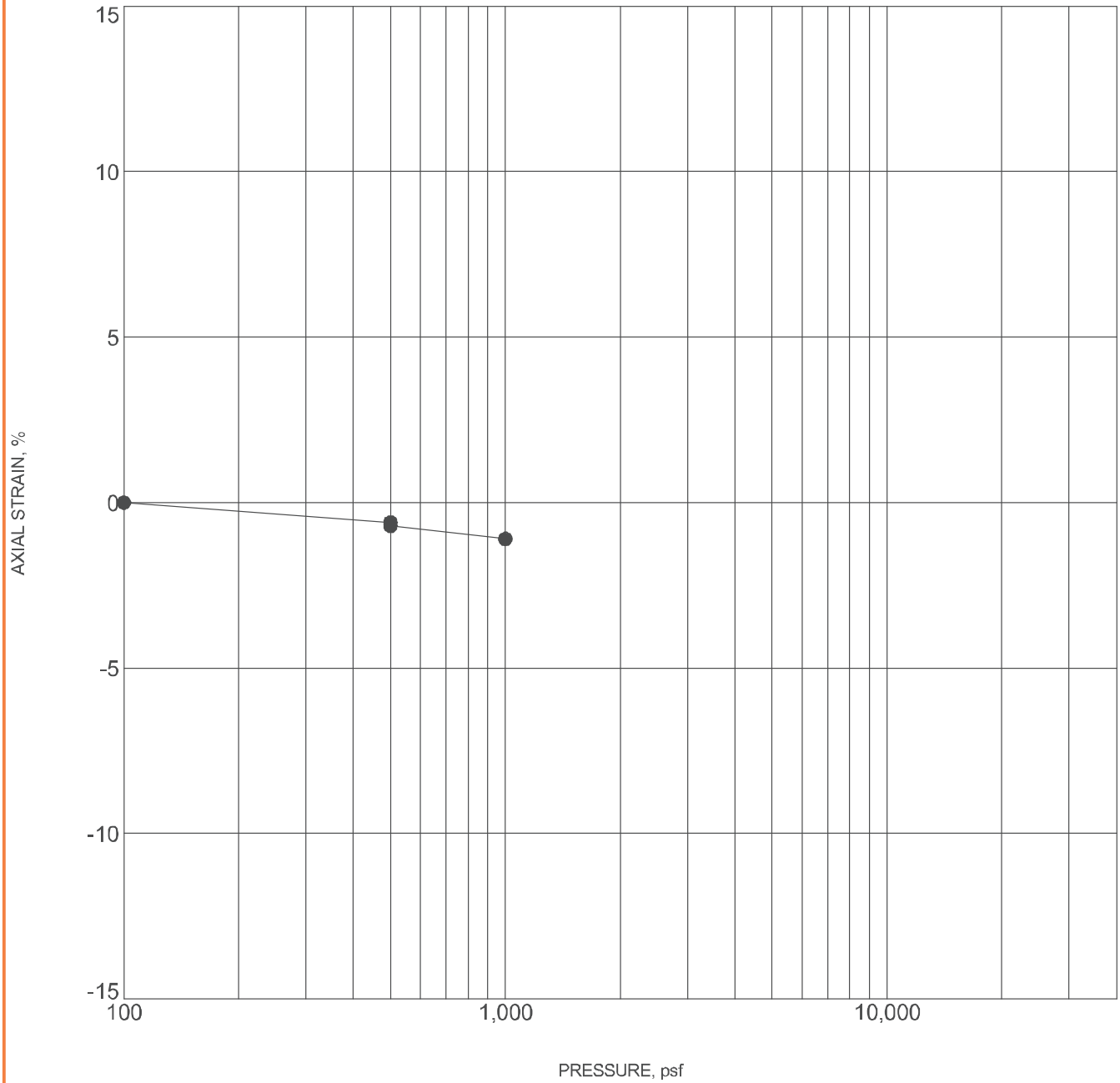


Specimen Identification			Classification	γ_d , pcf	WC, %
●	31	0 - 4 ft	SANDY LEAN CLAY (CL)	104	17.2

NOTES: Water was added at 500 psf. Sample remolded to 95% of Standard Proctor Maximum Dry Density at the Optimum Moisture Content.

PROJECT: QTS Aurora	 10625 W I70 Frontage Rd N Ste 3 Wheat Ridge, CO	PROJECT NUMBER: 25215031
SITE: Gun Club Road and Colfax Avenue Aurora, Colorado		CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21

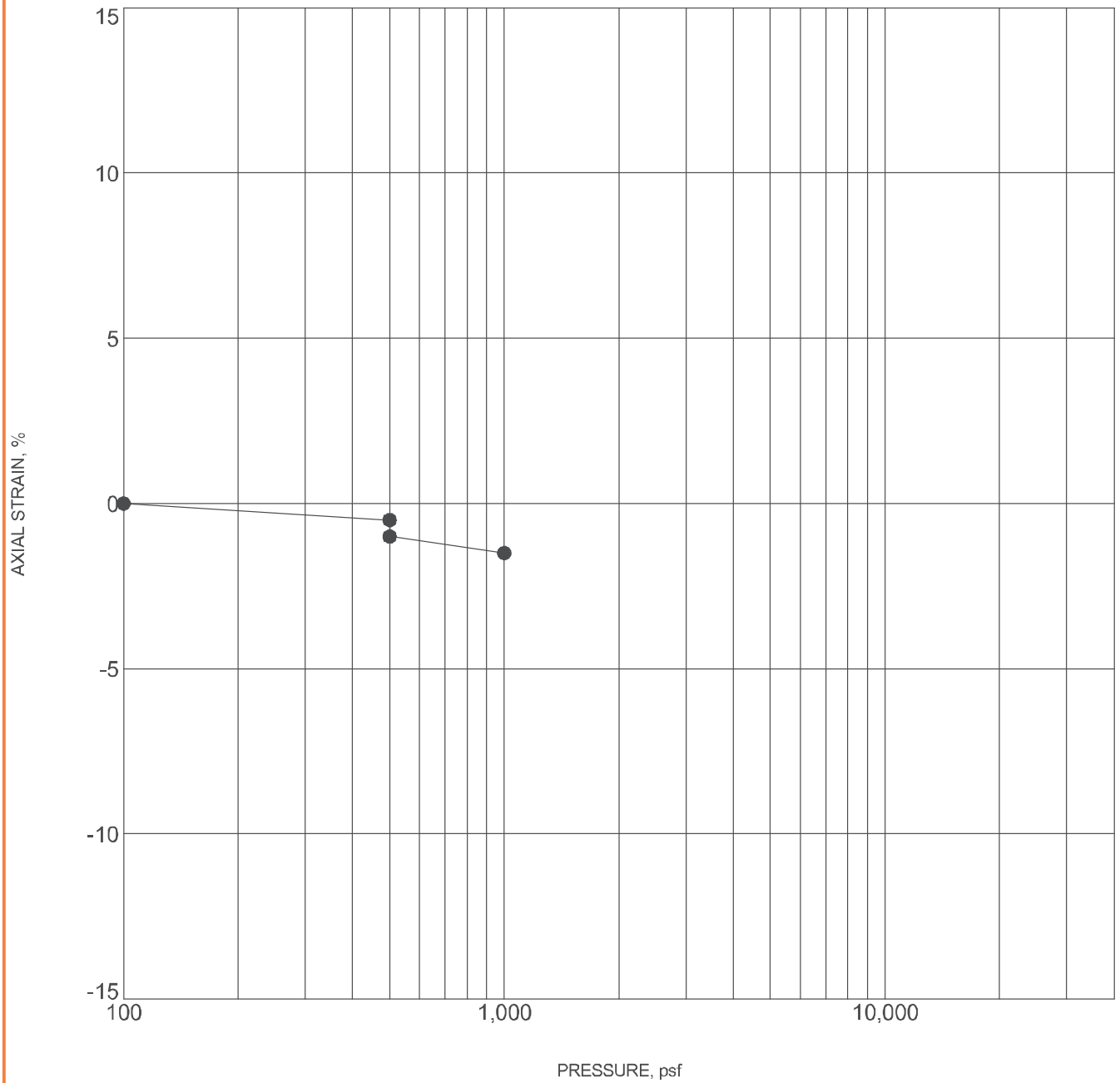


Specimen Identification			Classification	γ_d , pcf	WC, %
●	31	0 - 4 ft	SANDY LEAN CLAY (CI)	105	18.8

NOTES: Water was added at 500 psf. Sample remolded to 95% of Standard Proctor Maximum Dry Density at +2% of Optimum Moisture Content.

PROJECT: QTS Aurora	 10625 W I70 Frontage Rd N Ste 3 Wheat Ridge, CO	PROJECT NUMBER: 25215031
SITE: Gun Club Road and Colfax Avenue Aurora, Colorado		CLIENT: Quality Technology Services, Inc.

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS-NO ASTM 25215031 QTS AURORA_USE THIS ONE.GPJ TERRACON_DATATEMPLATE.GDT 8/17/21



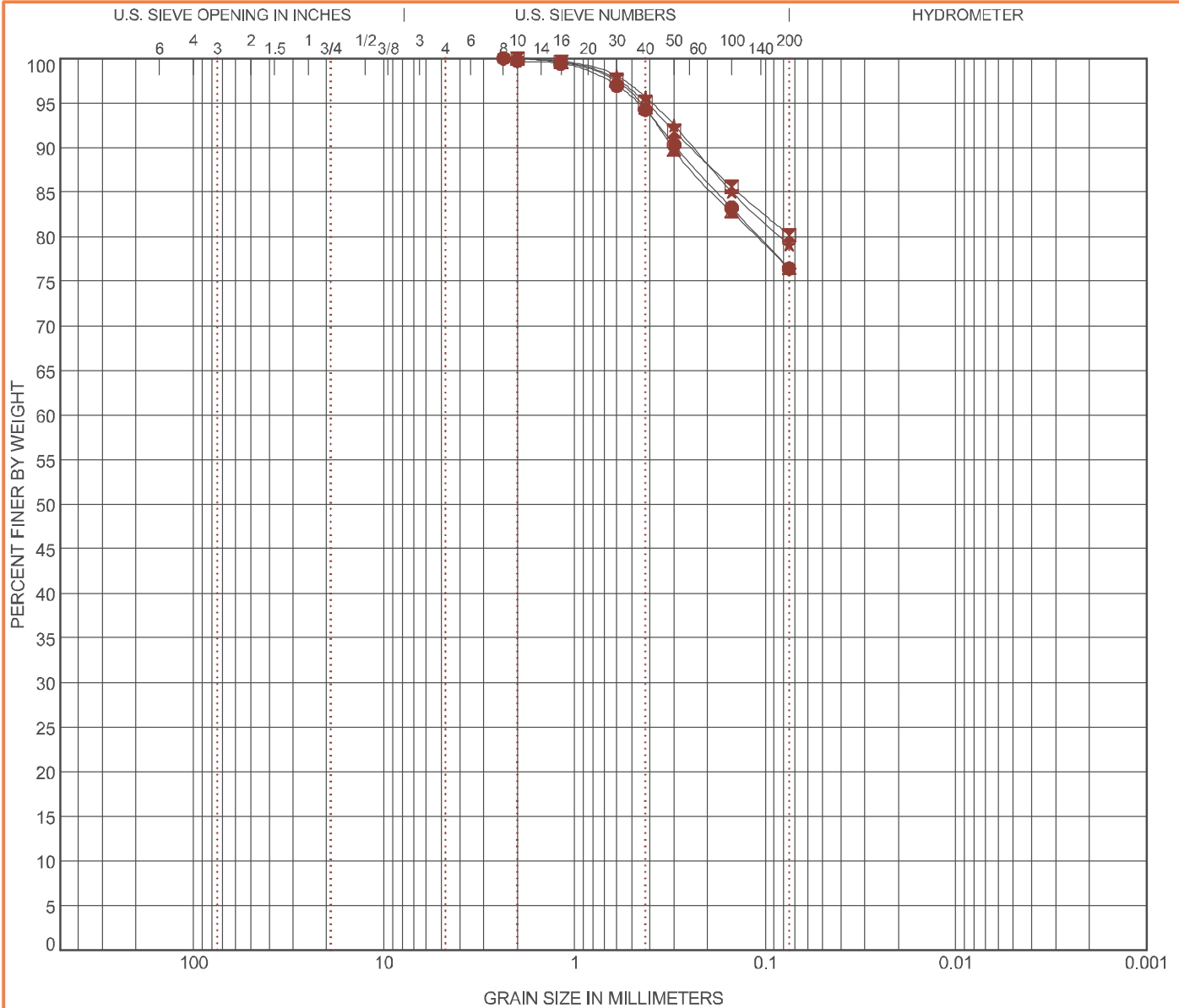
Specimen Identification			Classification	γ_d , pcf	WC, %
●	31	0 - 4 ft	SANDY LEAN CLAY (CI)	106	20.9

NOTES: Water was added at 500 psf. Sample remolded to 95% of Standard Proctor Maximum Dry Density at +4% of Optimum Moisture Content.

PROJECT: QTS Aurora	 10625 W I70 Frontage Rd N Ste 3 Wheat Ridge, CO	PROJECT NUMBER: 25215031
SITE: Gun Club Road and Colfax Avenue Aurora, Colorado		CLIENT: Quality Technology Services, Inc.

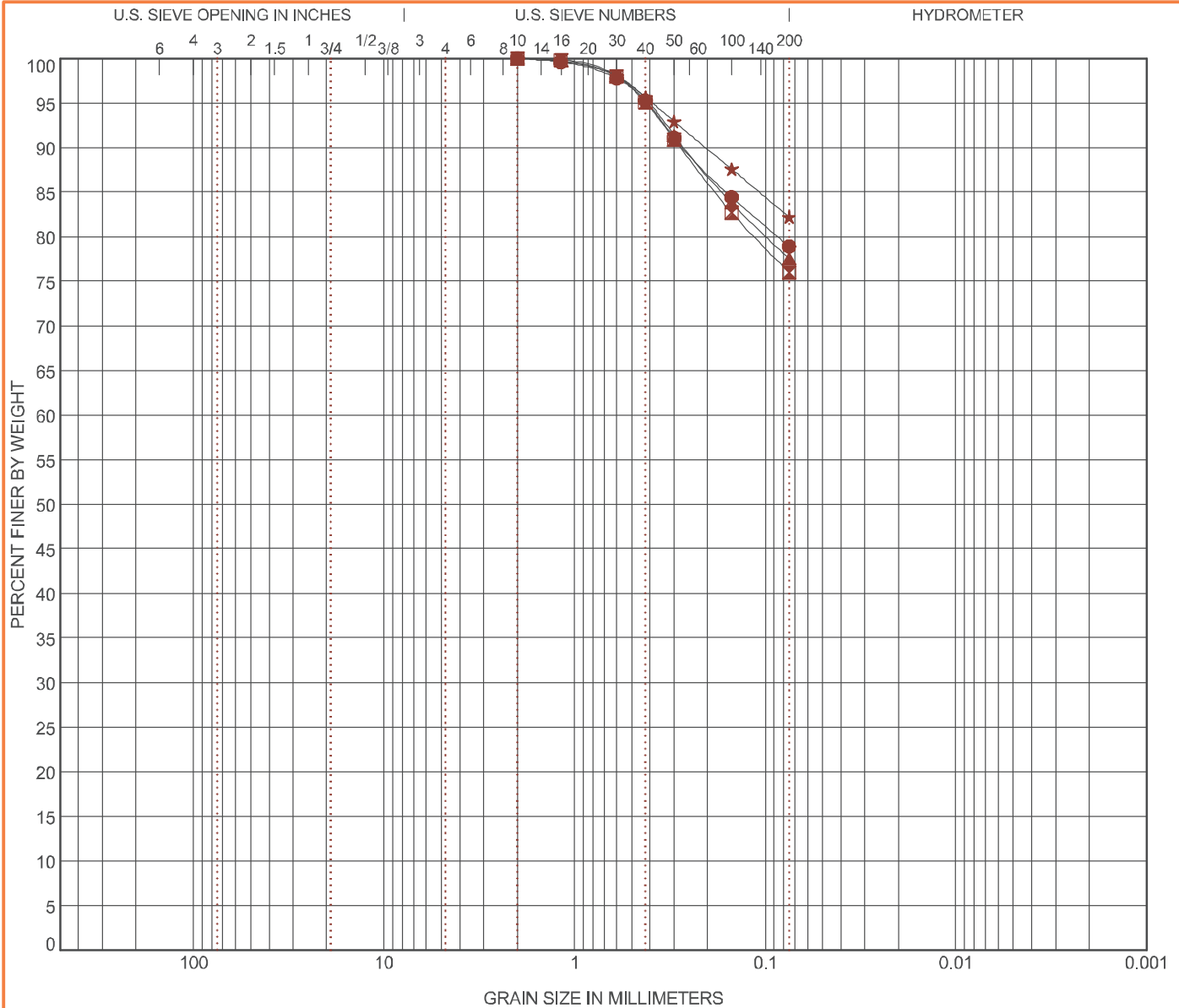
Grain Size Distribution

Permit # 2023-2389684-CM
RSN 1755228
ASTM D422 / ASTM C136



GRAIN SIZE DISTRIBUTION

Permit # 2023-2389684-CM
RSN 1755228
ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring ID		Depth	USCS Classification		AASHTO Classification		WC (%)	LL	PL	PI	Cc	Cu
●	05	0 - 4	LEAN CLAY with SAND (CL)		A-7-6 (18)			43	19	24		
☒	06	0 - 4	LEAN CLAY with SAND (CL)		A-6 (11)			33	16	17		
▲	07	0 - 4	LEAN CLAY with SAND (CL)		A-7-6 (21)			43	15	28		
★	08	0 - 4	LEAN CLAY with SAND (CL)		A-6 (10)			28	13	15		
Boring ID		Depth	D ₁₀₀	D ₆₀	D ₃₀	D ₁₀	%Gravel	%Sand	%Silt	%Fines	%Clay	
●	05	0 - 4	2				0.0	21.1		78.9		
☒	06	0 - 4	2				0.0	24.0		76.0		
▲	07	0 - 4	2				0.0	22.5		77.5		
★	08	0 - 4	2				0.0	17.8		82.2		

PROJECT: QTS Aurora

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon

10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

ASSOCIATED DOCUMENTS

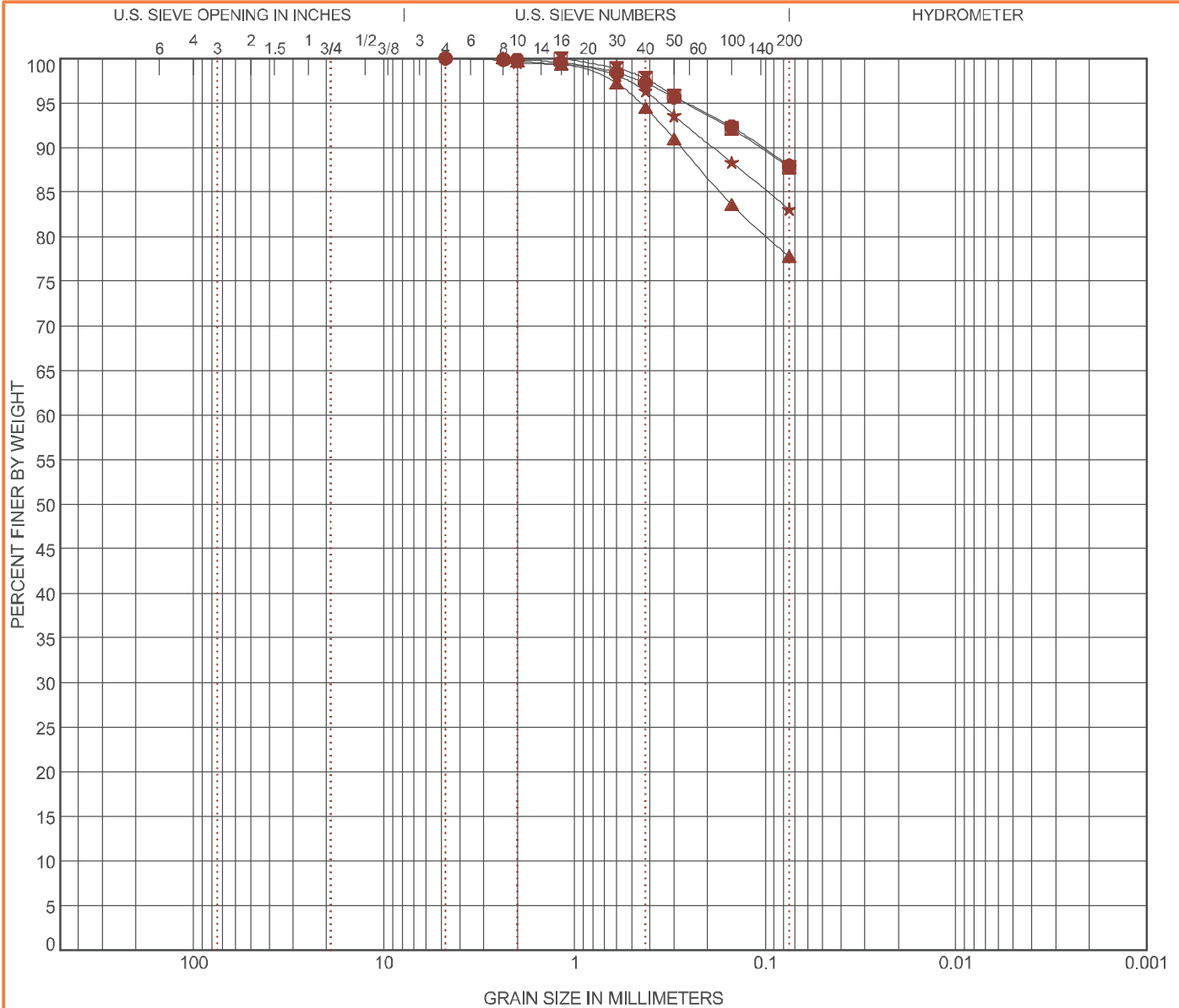
PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

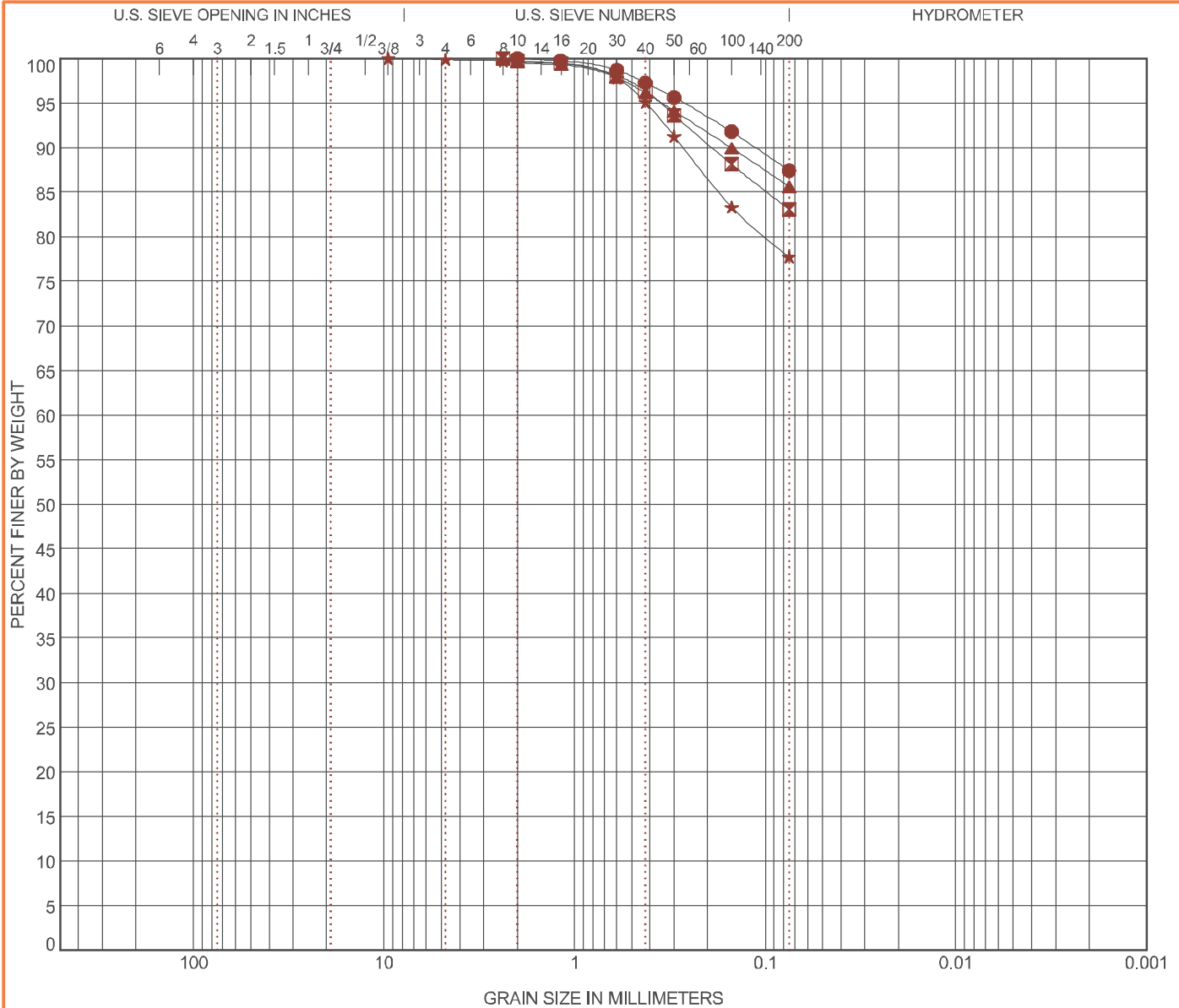
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LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS & AASHTO DESC COMBINED 25215031 QTS AURORA_USE THIS ONE G.P.J TERRACON_DATATEMPLATE.GDT 8/12/21

Permit # 2023-2389684-CM
GRAIN SIZE DISTRIBUTION
 RSN 1755228
 ASTM D422 / ASTM C136



Permit # 2023-2389684-CM
GRAIN SIZE DISTRIBUTION
 RSN 1755228
 ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring ID		Depth	USCS Classification		AASHTO Classification		WC (%)	LL	PL	PI	Cc	Cu
●	13	0 - 4	LEAN CLAY (CL)		A-6 (15)			37	20	17		
⊠	14	0 - 4	LEAN CLAY with SAND (CL)		A-7-6 (22)			42	15	27		
▲	15	0 - 4	LEAN CLAY (CL)		A-6 (15)			34	15	19		
★	16	0 - 4	LEAN CLAY with SAND (CL)		A-6 (10)			32	17	15		
Boring ID		Depth	D ₁₀₀	D ₆₀	D ₃₀	D ₁₀	%Gravel	%Sand	%Silt	%Fines	%Clay	
●	13	0 - 4	2				0.0	12.6		87.4		
⊠	14	0 - 4	2.36				0.0	16.9		83.1		
▲	15	0 - 4	2.36				0.0	14.4		85.6		
★	16	0 - 4	9.5				0.1	22.1		77.7		

PROJECT: QTS Aurora

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon

10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

ASSOCIATED DOCUMENTS

PROJECT NUMBER: 25215031

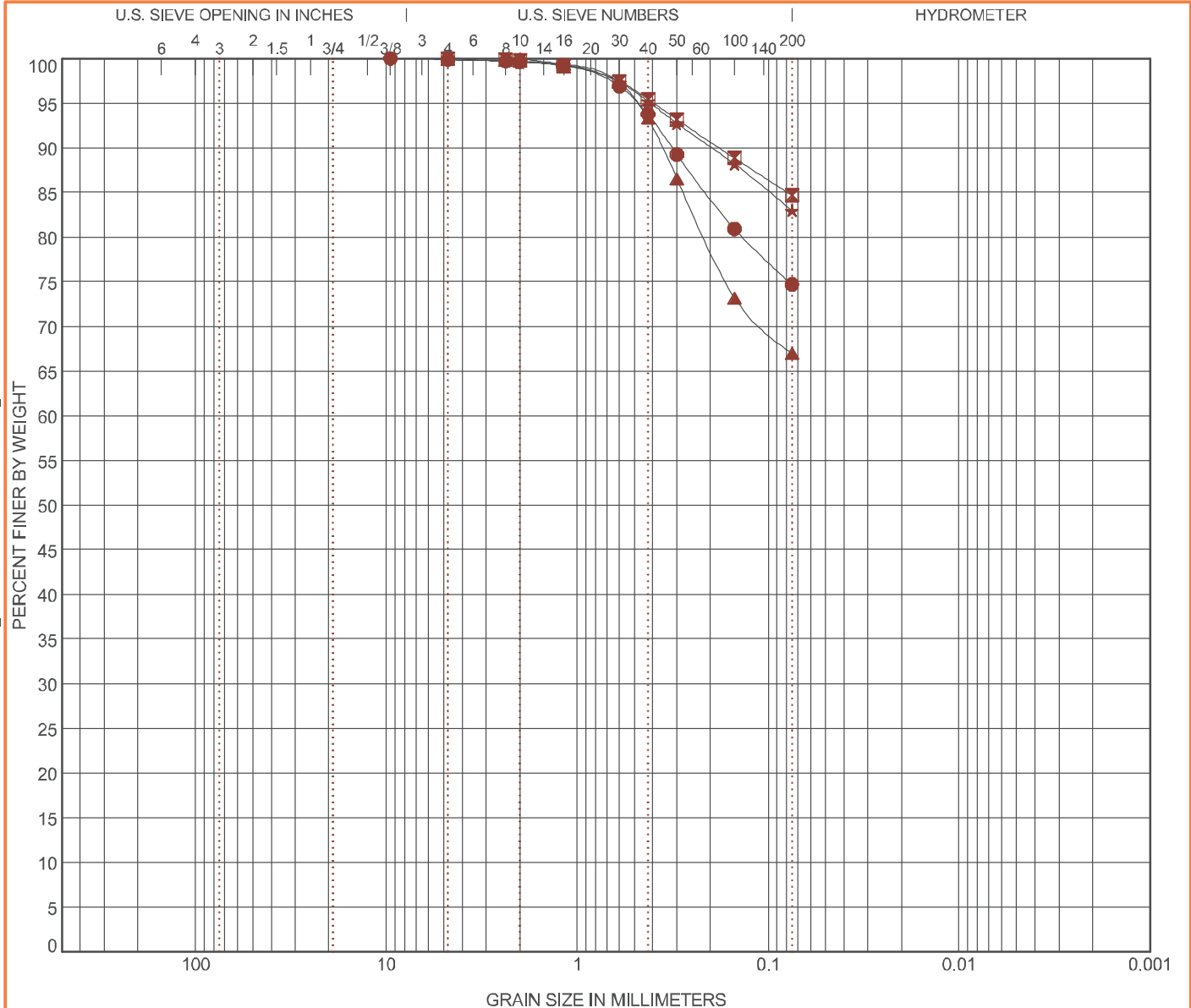
CLIENT: Quality Technology Services, Inc.

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LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS & AASHTO DESC COMBINED 25215031 QTS AURORA_USE THIS ONE GPJ TERRACON_DATATEMPLATE.GDT 8/12/21

Permit # 2023-2389684-CM
GRAIN SIZE DISTRIBUTION
 RSN 1755228
 ASTM D422 / ASTM C136

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS & AASHTO DESC COMBINED 25215031 QTS AURORA_USE THIS ONE GPJ TERRACON_DATATEMPLATE.GDT 8/12/21



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring ID		Depth	USCS Classification		AASHTO Classification		WC (%)	LL	PL	PI	Cc	Cu
●	17	0 - 4	LEAN CLAY with SAND (CL)		A-6 (11)			32	14	18		
☒	18	0 - 4	LEAN CLAY with SAND (CL)		A-6 (12)			32	16	16		
▲	19	0 - 4	SANDY LEAN CLAY (CL)		A-6 (8)			30	14	16		
★	20	0 - 4	LEAN CLAY with SAND (CL)		A-6 (10)			29	15	14		
Boring ID		Depth	D ₁₀₀	D ₆₀	D ₃₀	D ₁₀	%Gravel	%Sand	%Silt	%Fines	%Clay	
●	17	0 - 4	9.5				0.1	25.2		74.7		
☒	18	0 - 4	4.75				0.0	15.3		84.7		
▲	19	0 - 4	2				0.0	33.0		67.0		
★	20	0 - 4	4.75				0.0	17.1		82.9		

PROJECT: QTS Aurora

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon

10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

ASSOCIATED DOCUMENTS

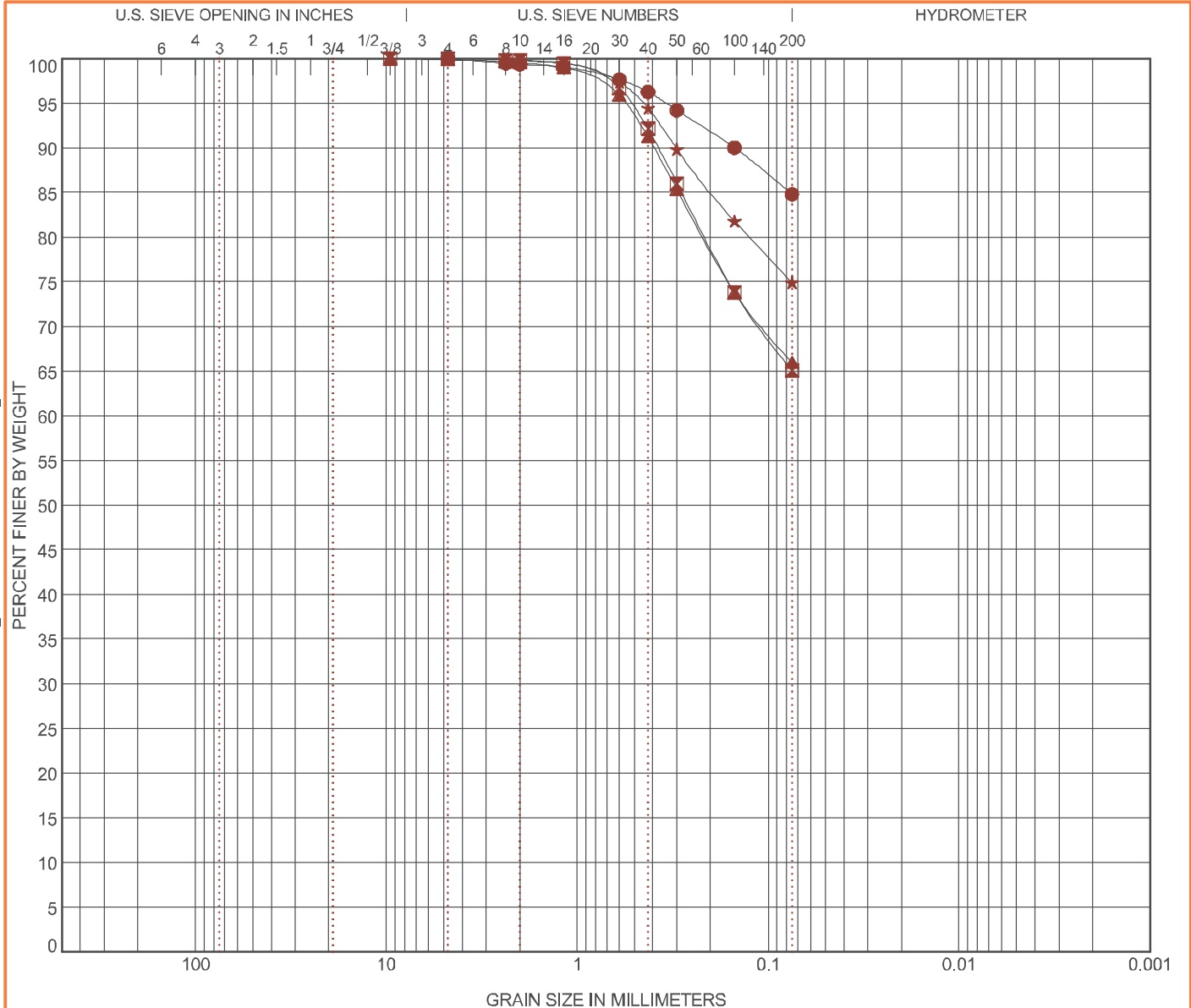
PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

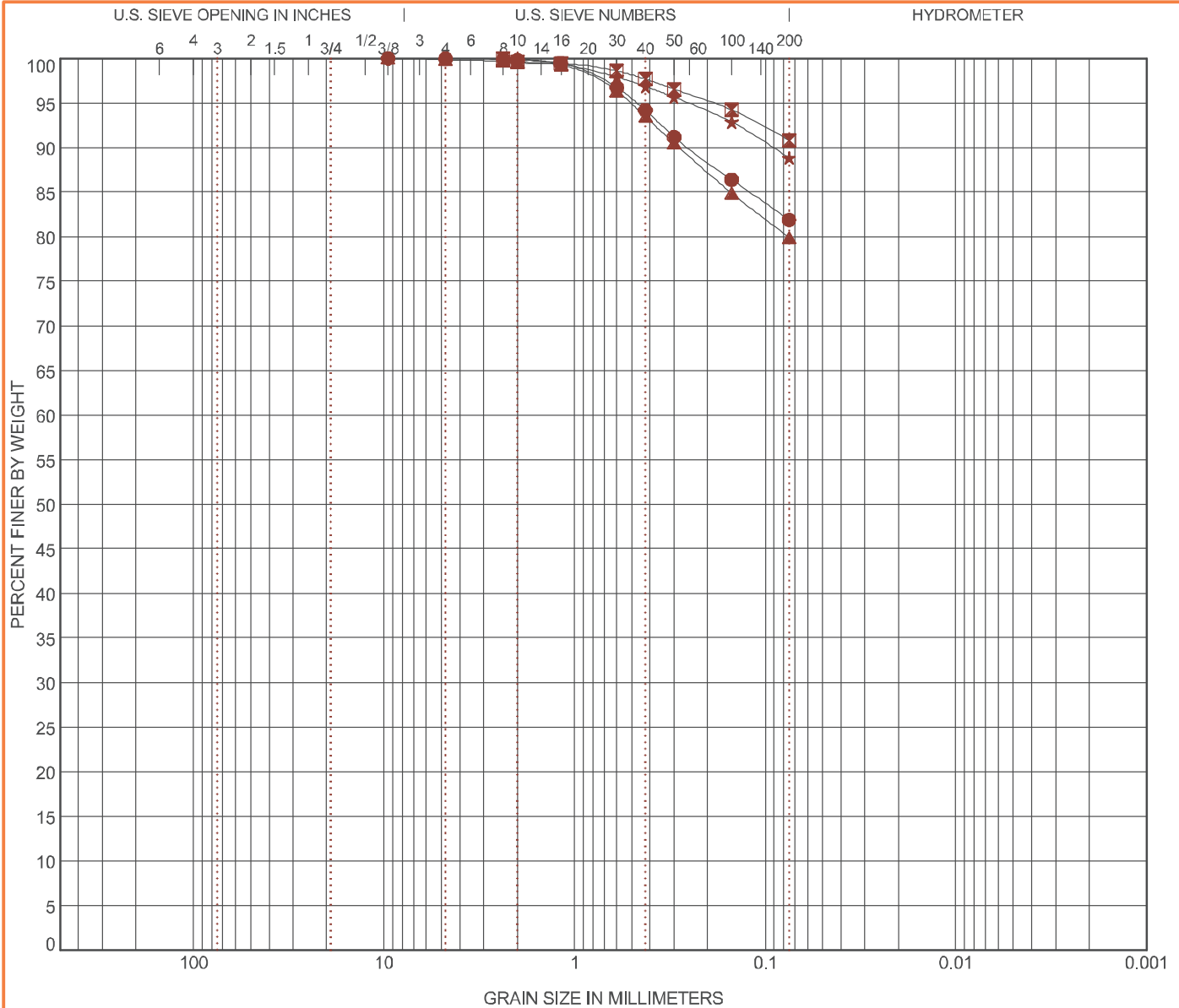
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Permit # 2023-2389684-CM
GRAIN SIZE DISTRIBUTION
 RSN 1755228
 ASTM D422 / ASTM C136

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS & AASHTO DESC COMBINED 25215031 QTS AURORA_USE THIS ONE GPJ TERRACON_DATATEMPLATE.GDT 8/12/21



Permit # 2023-2389684-CM
GRAIN SIZE DISTRIBUTION
 RSN 1755228
 ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring ID		Depth	USCS Classification		AASHTO Classification		WC (%)	LL	PL	PI	Cc	Cu
●	26	0 - 4	LEAN CLAY with SAND (CL)		A-6 (15)			36	16	20		
✕	27	0 - 4	LEAN CLAY (CL)		A-7-6 (28)			46	16	30		
▲	28	0 - 4	LEAN CLAY with SAND (CL)		A-7-6 (18)			41	17	24		
★	30	0 - 4	LEAN CLAY (CL)		A-6 (13)			32	16	16		
Boring ID		Depth	D ₁₀₀	D ₆₀	D ₃₀	D ₁₀	%Gravel	%Sand	%Silt	%Fines	%Clay	
●	26	0 - 4	9.5				0.0	18.1		81.9		
✕	27	0 - 4	2.36				0.0	9.2		90.8		
▲	28	0 - 4	9.5				0.1	19.9		79.9		
★	30	0 - 4	2				0.0	11.2		88.8		

PROJECT: QTS Aurora

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon

10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

ASSOCIATED DOCUMENTS

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

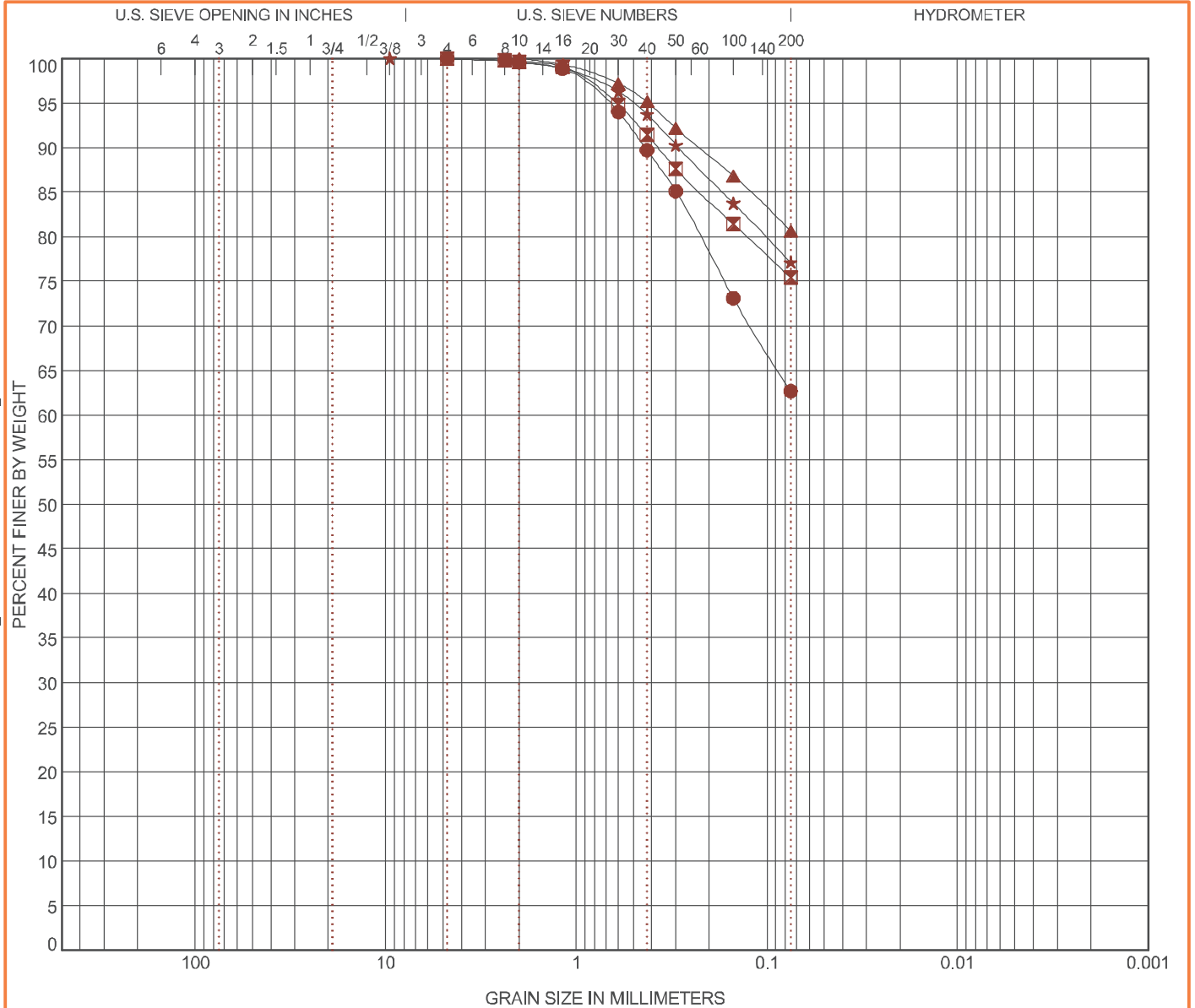
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LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS & AASHTO DESC COMBINED 25215031 QTS AURORA_USE THIS ONE GPJ TERRACON_DATATEMPLATE.GDT 8/12/21

GRAIN SIZE DISTRIBUTION

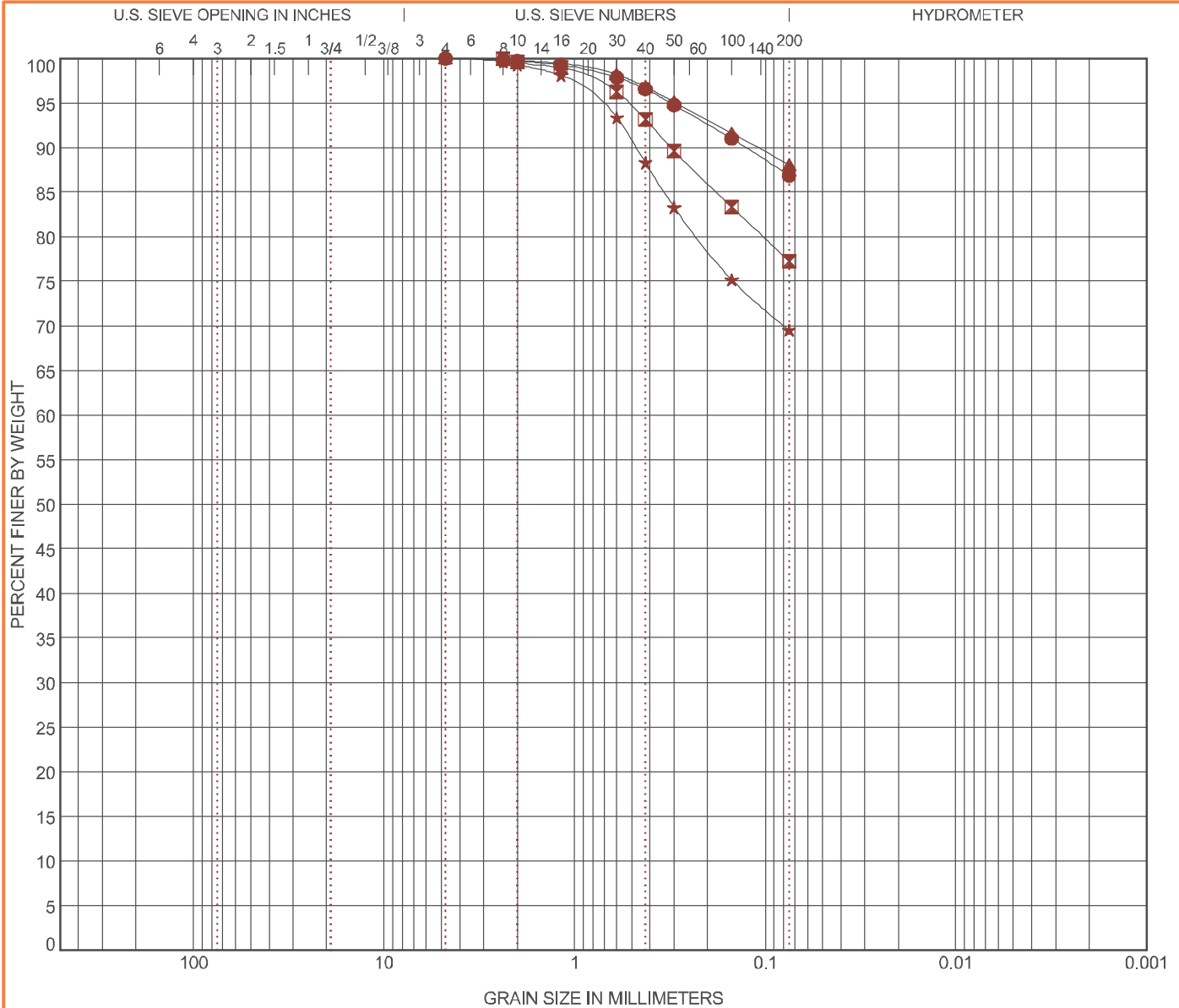
Permit # 2023-2389684-CM
RSN 1755228
ASTM D422 / ASTM C136

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS & AASHTO DESC COMBINED 25215031 QTS AURORA_USE THIS ONE GPJ TERRACON_DATATEMPLATE.GDT 8/12/21



Grain Size Distribution

Permit # 2023-2389684-CM
RSN 1755228
ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring ID		Depth	USCS Classification		AASHTO Classification		WC (%)	LL	PL	PI	Cc	Cu
●	35	0 - 4	LEAN CLAY (CL)		A-6 (19)			40	18	22		
☒	36	0 - 4	LEAN CLAY with SAND (CL)		A-6 (16)			40	17	23		
▲	37	0 - 4	LEAN CLAY (CL)		A-6 (18)			38	17	21		
★	38	0 - 4	SANDY LEAN CLAY (CL)		A-6 (9)			32	15	17		
Boring ID		Depth	D ₁₀₀	D ₆₀	D ₃₀	D ₁₀	%Gravel	%Sand	%Silt	%Fines	%Clay	
●	35	0 - 4	4.75				0.0	13.1		86.9		
☒	36	0 - 4	2.36				0.0	22.8		77.2		
▲	37	0 - 4	4.75				0.0	11.9		88.1		
★	38	0 - 4	4.75				0.0	30.5		69.5		

PROJECT: QTS Aurora

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon

10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

ASSOCIATED DOCUMENTS

PROJECT NUMBER: 25215031

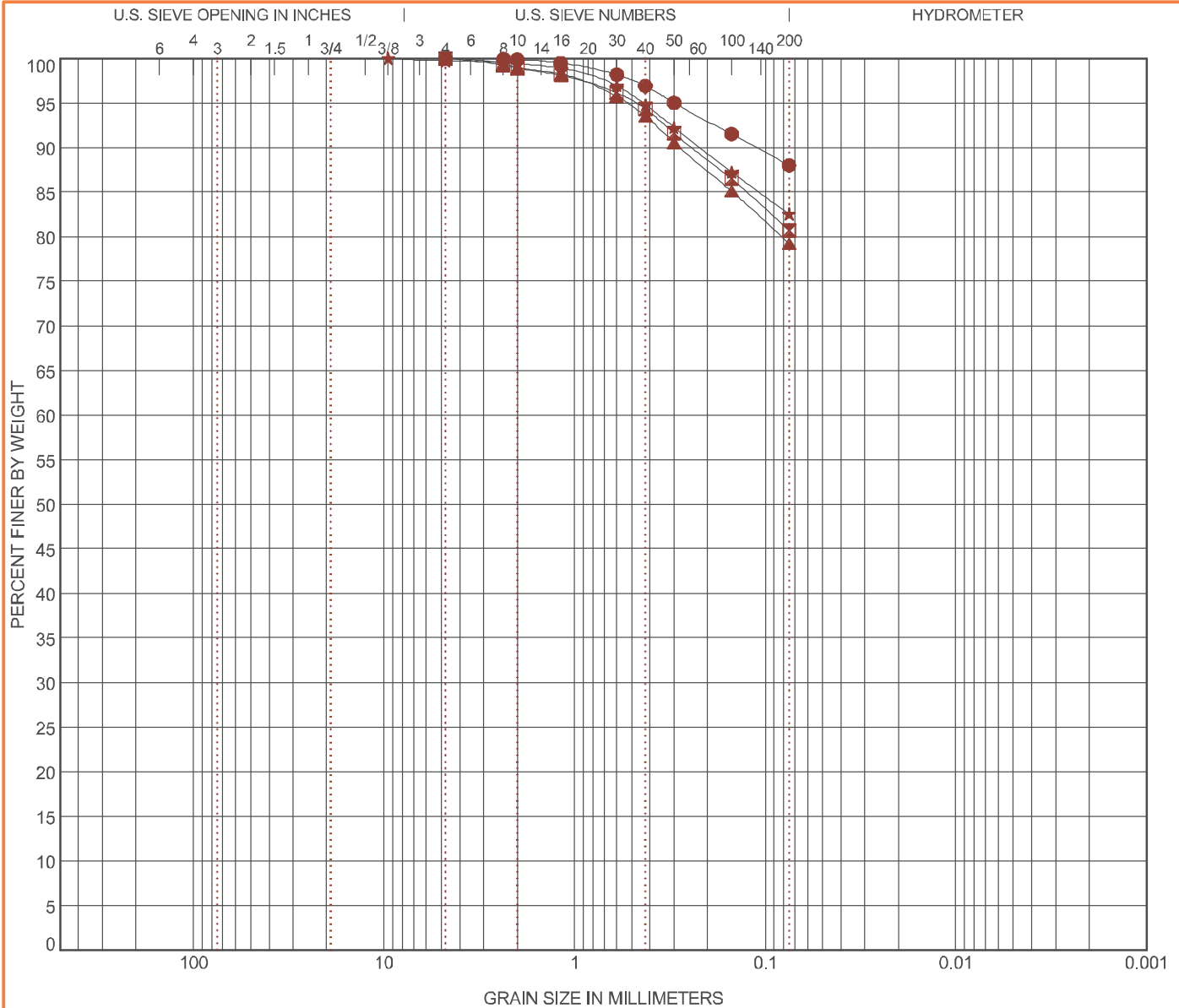
CLIENT: Quality Technology Services, Inc.

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LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS & AASHTO DESC COMBINED 25215031 QTS AURORA_USE THIS ONE GPJ TERRACON_DATATEMPLATE.GDT 8/12/21

GRAIN SIZE DISTRIBUTION

Permit # 2023-2389684-CM
RSN 1755228
ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring ID		Depth	USCS Classification		AASHTO Classification		WC (%)	LL	PL	PI	Cc	Cu
●	39	0 - 4	LEAN CLAY (CL)		A-7-6 (19)			41	20	21		
☒	40	0 - 4	LEAN CLAY with SAND (CL)		A-6 (9)			31	18	13		
▲	41	0 - 4	LEAN CLAY with SAND (CL)		A-6 (10)			31	16	15		
★	42	0 - 4	LEAN CLAY with SAND (CL)		A-6 (16)			39	19	20		
Boring ID		Depth	D ₁₀₀	D ₆₀	D ₃₀	D ₁₀	%Gravel	%Sand	%Silt	%Fines	%Clay	
●	39	0 - 4	4.75				0.0	12.0		88.0		
☒	40	0 - 4	4.75				0.0	19.3		80.7		
▲	41	0 - 4	4.75				0.0	20.8		79.2		
★	42	0 - 4	9.5				0.3	17.2		82.5		

PROJECT: QTS Aurora

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon

10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

ASSOCIATED DOCUMENTS

PROJECT NUMBER: 25215031

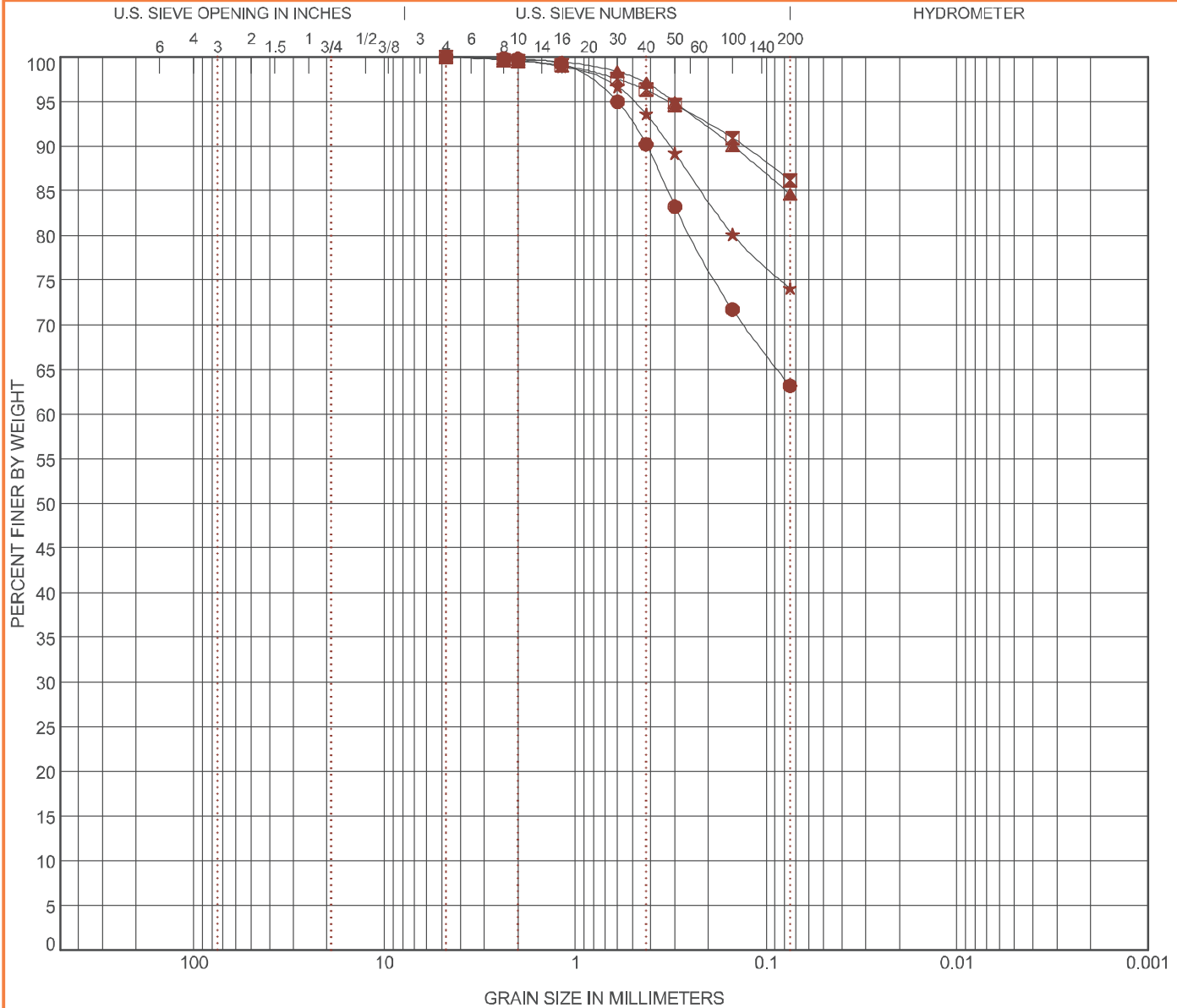
CLIENT: Quality Technology Services, Inc.

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LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS & AASHTO DESC COMBINED 25215031 QTS AURORA_USE THIS ONE G.P.J TERRACON_DATATEMPLATE.GDT 8/12/21

GRAIN SIZE DISTRIBUTION

Permit # 2023-2389684-CM
RSN 1755228
ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring ID		Depth	USCS Classification		AASHTO Classification		WC (%)	LL	PL	PI	Cc	Cu
●	F1	0 - 4	SANDY LEAN CLAY (CL)		A-6 (5)			26	14	12		
☒	F2	0 - 4	LEAN CLAY (CL)		A-6 (18)			37	15	22		
▲	F3	0 - 4	FAT CLAY with SAND (CH)		A-7-6 (30)			52	18	34		
★	F4	0 - 4	LEAN CLAY with SAND (CL)		A-6 (13)			35	14	21		
Boring ID		Depth	D ₁₀₀	D ₆₀	D ₃₀	D ₁₀	%Gravel	%Sand	%Silt	%Fines	%Clay	
●	F1	0 - 4	4.75				0.0	36.8		63.2		
☒	F2	0 - 4	4.75				0.0	13.8		86.2		
▲	F3	0 - 4	4.75				0.0	15.4		84.6		
★	F4	0 - 4	4.75				0.0	25.9		74.1		

PROJECT: QTS Aurora

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon

10625 W I70 Frontage Rd N Ste 3
Wheat Ridge, CO

ASSOCIATED DOCUMENTS

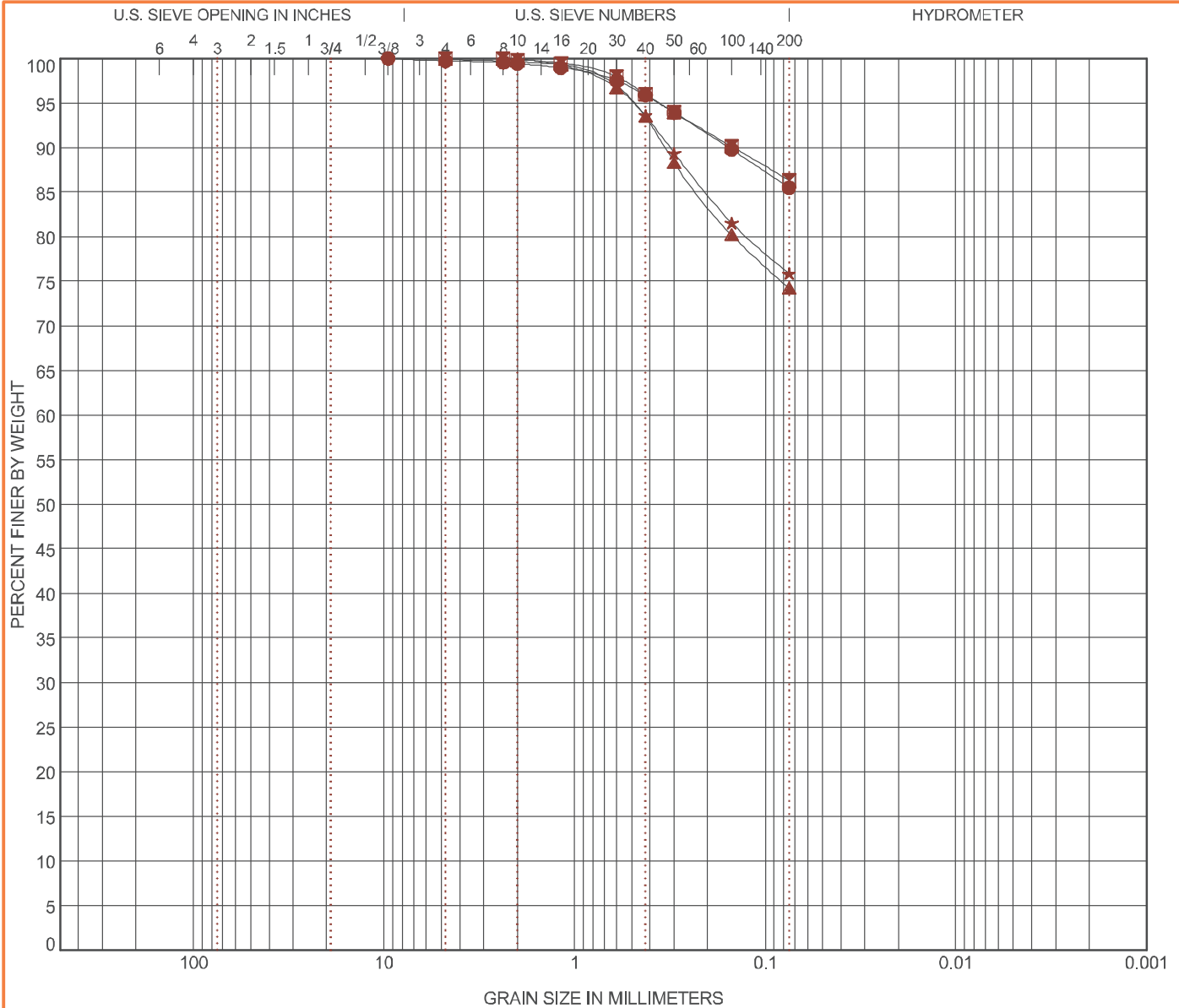
PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.

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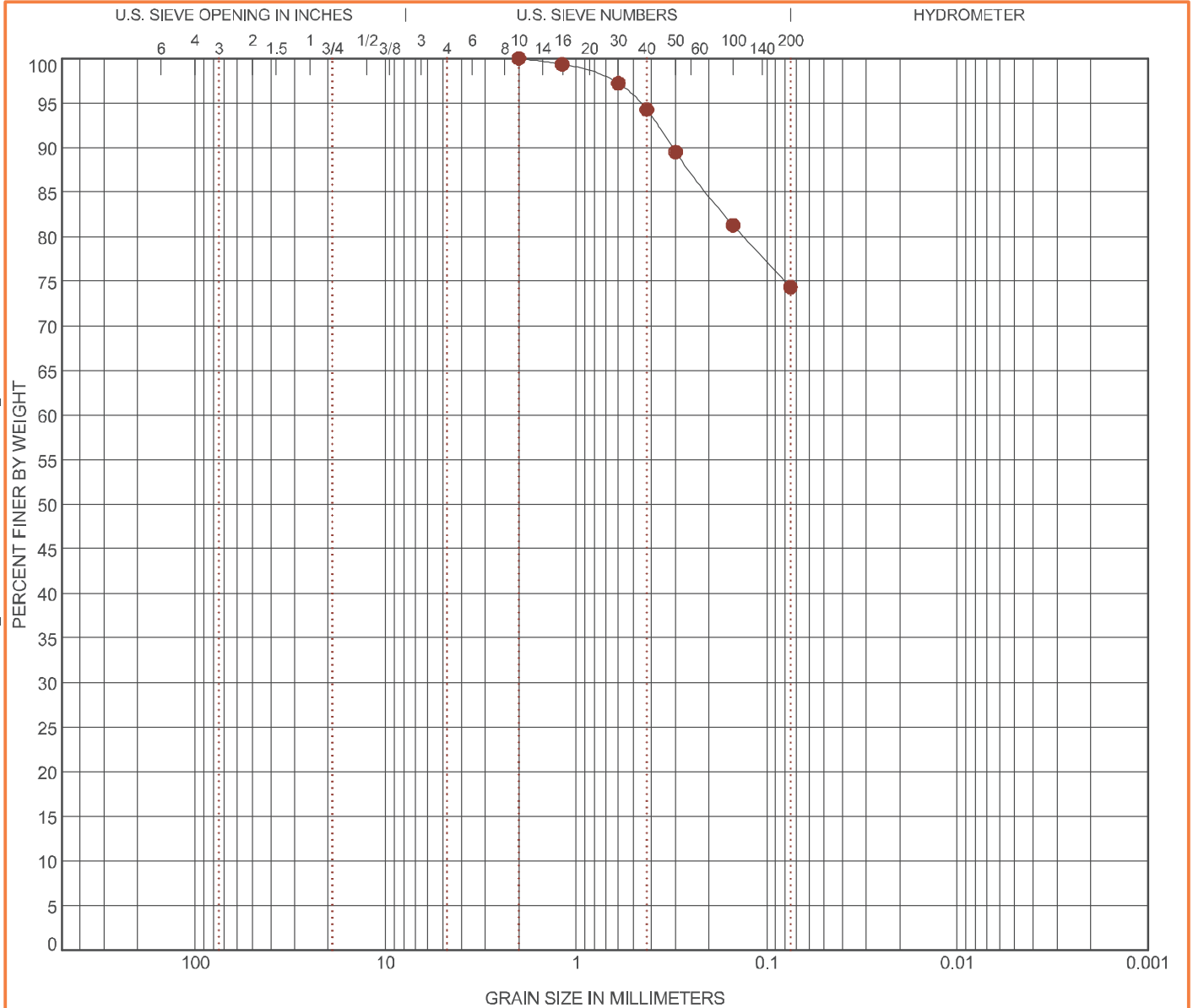
LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS & AASHTO DESC COMBINED 25215031 QTS AURORA_USE THIS ONE GPJ TERRACON_DATATEMPLATE.GDT 8/12/21

Permit # 2023-2389684-CM
GRAIN SIZE DISTRIBUTION
 RSN 1755228
 ASTM D422 / ASTM C136



Permit # 2023-2389684-CM
GRAIN SIZE DISTRIBUTION
 RSN 1755228
 ASTM D422 / ASTM C136

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS & AASHTO DESC COMBINED 25215031 QTS AURORA_USE THIS ONE GPJ TERRACON_DATATEMPLATE.GDT 8/12/21



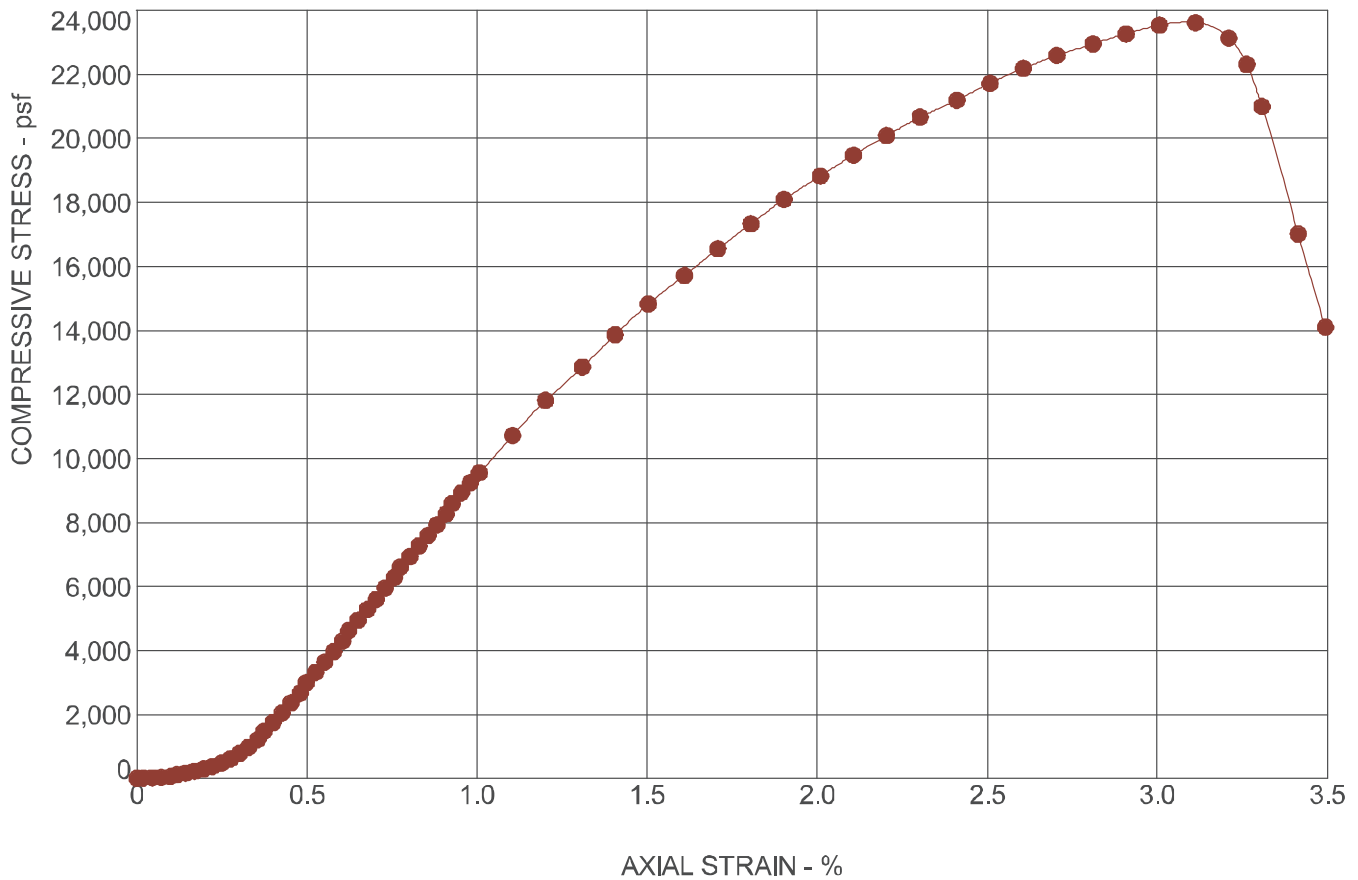
COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring ID	Depth	USCS Classification	AASHTO Classification	WC (%)	LL	PL	PI	Cc	Cu
S6	0 - 4	LEAN CLAY with SAND (CL)	A-7-6 (17)		41	16	25		

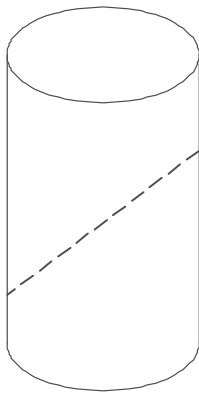
Boring ID	Depth	D ₁₀₀	D ₆₀	D ₃₀	D ₁₀	%Gravel	%Sand	%Silt	%Fines	%Clay
S6	0 - 4	2				0.0	25.7		74.3	

PROJECT: QTS Aurora	 10625 W I70 Frontage Rd N Ste 3 Wheat Ridge, CO	PROJECT NUMBER: 25215031
SITE: Gun Club Road and Colfax Avenue Aurora, Colorado	ASSOCIATED DOCUMENTS	CLIENT: Quality Technology Services, Inc.

Permit # 2023-2389684-CM
RSN 15031
UNCONFINED COMPRESSION TEST
ASTM D2166



SPECIMEN FAILURE MODE



Failure Mode: Shear (dashed)

SPECIMEN TEST DATA

Moisture Content:	%	21.8
Dry Density:	pcf	104
Diameter:	in.	1.93
Height:	in.	3.63
Height / Diameter Ratio:		1.88
Calculated Saturation:	%	97.34
Calculated Void Ratio:		0.61
Assumed Specific Gravity:		2.7
Failure Strain:	%	3.11
Unconfined Compressive Strength	(psf)	23614
Undrained Shear Strength:	(psf)	11807
Strain Rate:	in/min	0.0362
Remarks:		

SAMPLE TYPE: CARS

SAMPLE LOCATION: 21 @ 24 - 25 feet

DESCRIPTION: CLAYSTONE

LL

PL

PI

Percent < #200 Sieve

PROJECT: QTS Aurora

PROJECT NUMBER: 25215031

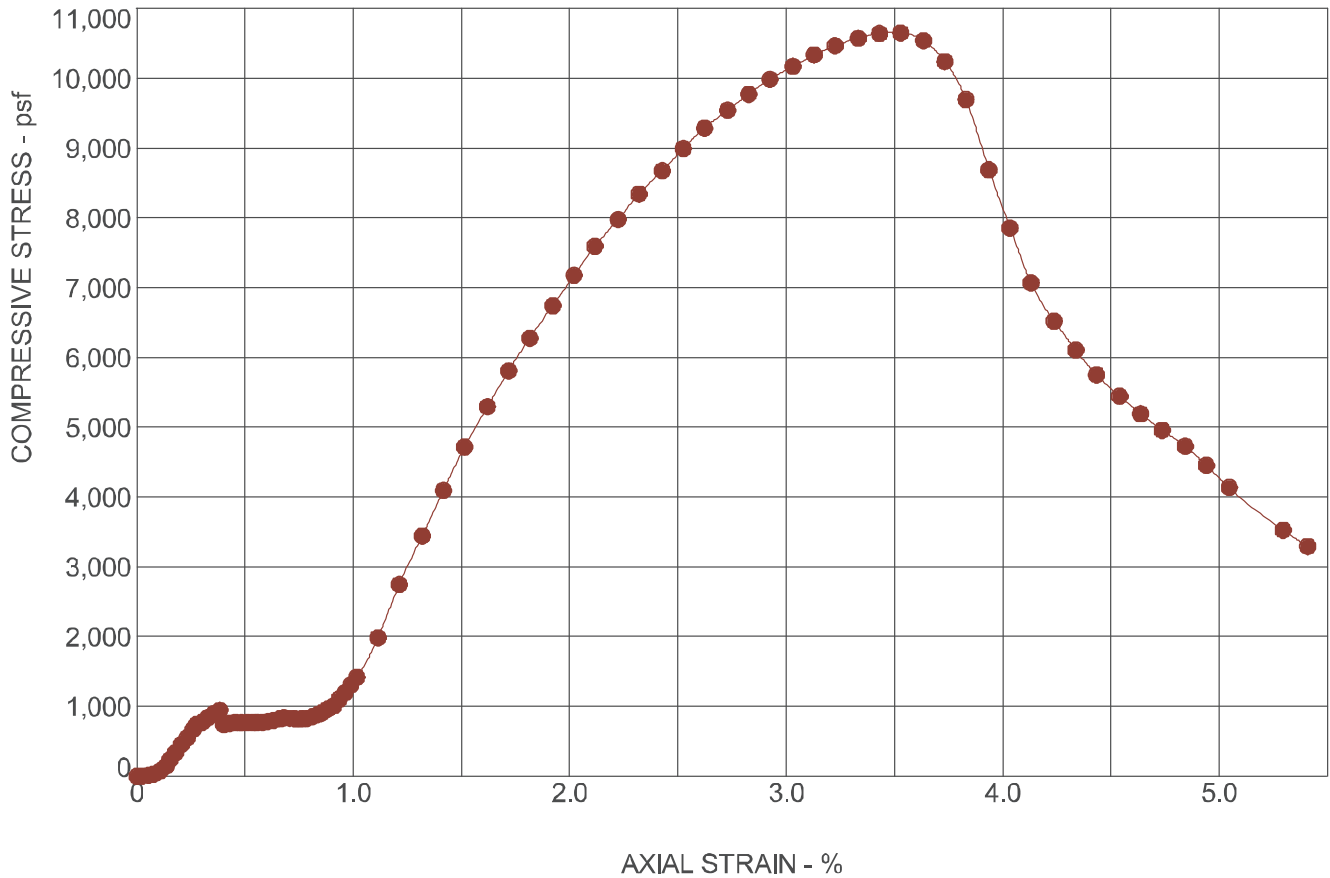
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO
ASSOCIATED DOCUMENTS

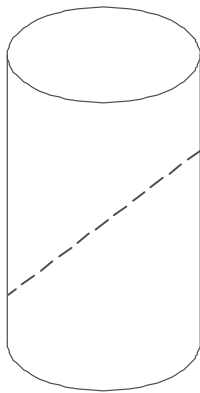
CLIENT: Quality Technology Services, Inc.
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LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. UNCONFINED 25215031 QTS AURORA_USE THIS ONE GPJ TERRACON_DATATEMPLATE.GDT 8/12/21

Permit # 2023-2389684-CM
UNCONFINED COMPRESSION TEST
 ASTM D2166



SPECIMEN FAILURE MODE



Failure Mode: Shear (dashed)

SPECIMEN TEST DATA

Moisture Content:	%	26.0
Dry Density:	pcf	98
Diameter:	in.	1.93
Height:	in.	3.80
Height / Diameter Ratio:		1.97
Calculated Saturation:	%	98.51
Calculated Void Ratio:		0.71
Assumed Specific Gravity:		2.7
Failure Strain:	%	3.53
Unconfined Compressive Strength	(psf)	10647
Undrained Shear Strength:	(psf)	5323
Strain Rate:	in/min	0.0381
Remarks:		

SAMPLE TYPE: CARS

SAMPLE LOCATION: 22 @ 19 - 20 feet

DESCRIPTION: CLAYSTONE

LL

PL

PI

Percent < #200 Sieve

PROJECT: QTS Aurora

PROJECT NUMBER: 25215031

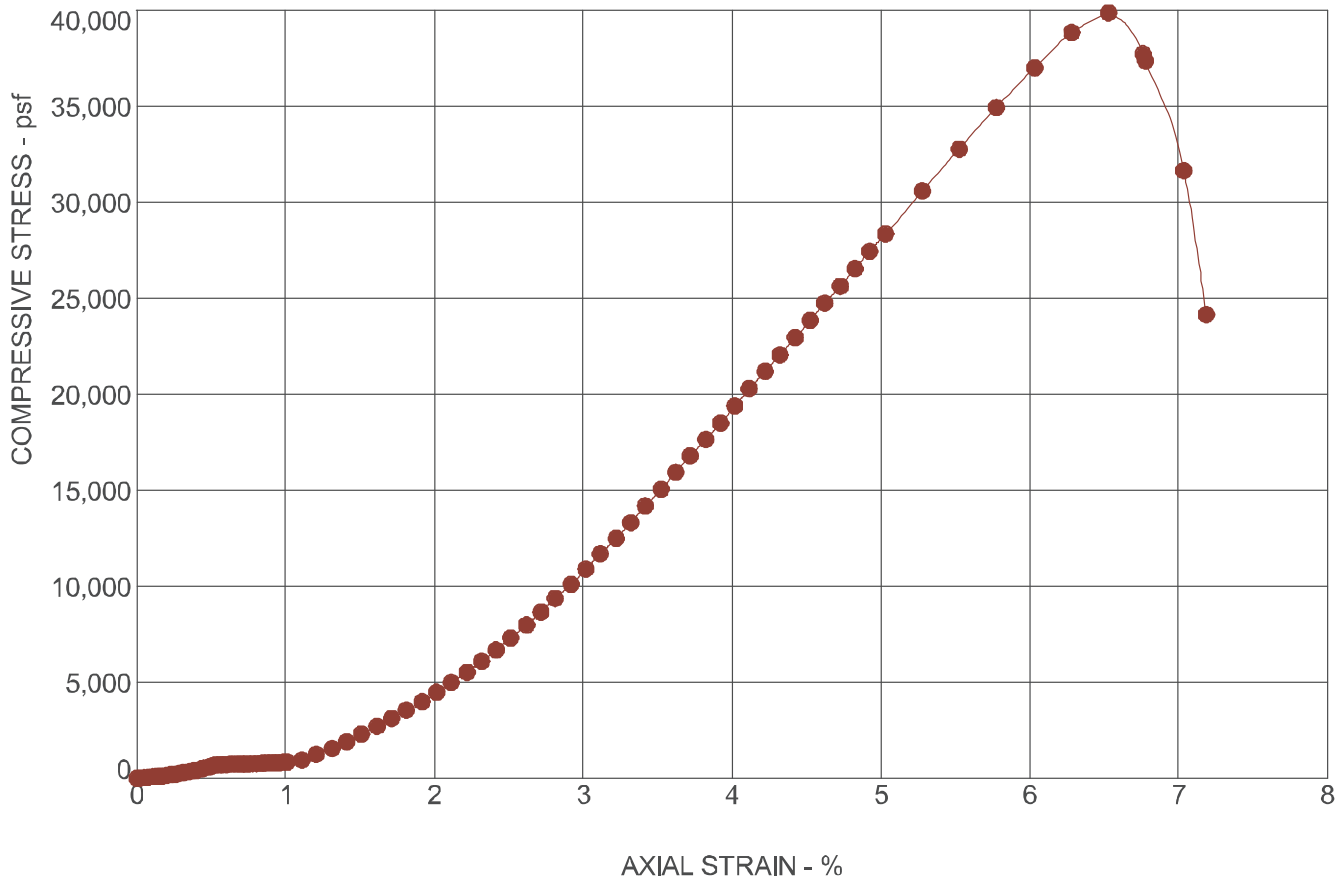
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
 10625 W 170 Frontage Rd N Ste 3
 Wheat Ridge, CO
ASSOCIATED DOCUMENTS

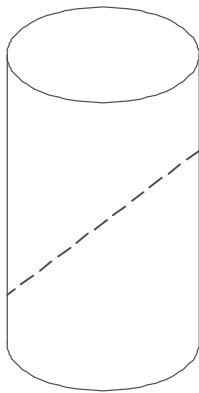
CLIENT: Quality Technology Services, Inc.
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LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. UNCONFINED 25215031 QTS AURORA USE THIS ONE GPJ TERRACON DATATEMPLATE.GDT 8/12/21

Permit # 2023-2389684-CM
UNCONFINED COMPRESSION TEST
 RSN 15031
 ASTM D2166



SPECIMEN FAILURE MODE



Failure Mode: Shear (dashed)

SPECIMEN TEST DATA

Moisture Content:	%	18.8
Dry Density:	pcf	108
Diameter:	in.	1.95
Height:	in.	3.91
Height / Diameter Ratio:		2.00
Calculated Saturation:	%	91.92
Calculated Void Ratio:		0.55
Assumed Specific Gravity:		2.7
Failure Strain:	%	6.53
Unconfined Compressive Strength	(psf)	39860
Undrained Shear Strength:	(psf)	19930
Strain Rate:	in/min	0.0390
Remarks:		

SAMPLE TYPE: CARS

SAMPLE LOCATION: 28 @ 24 - 25 feet

DESCRIPTION: CLAYSTONE

LL

PL

PI

Percent < #200 Sieve

PROJECT: QTS Aurora

PROJECT NUMBER: 25215031

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
 10625 W 170 Frontage Rd N Ste 3
 Wheat Ridge, CO
ASSOCIATED DOCUMENTS

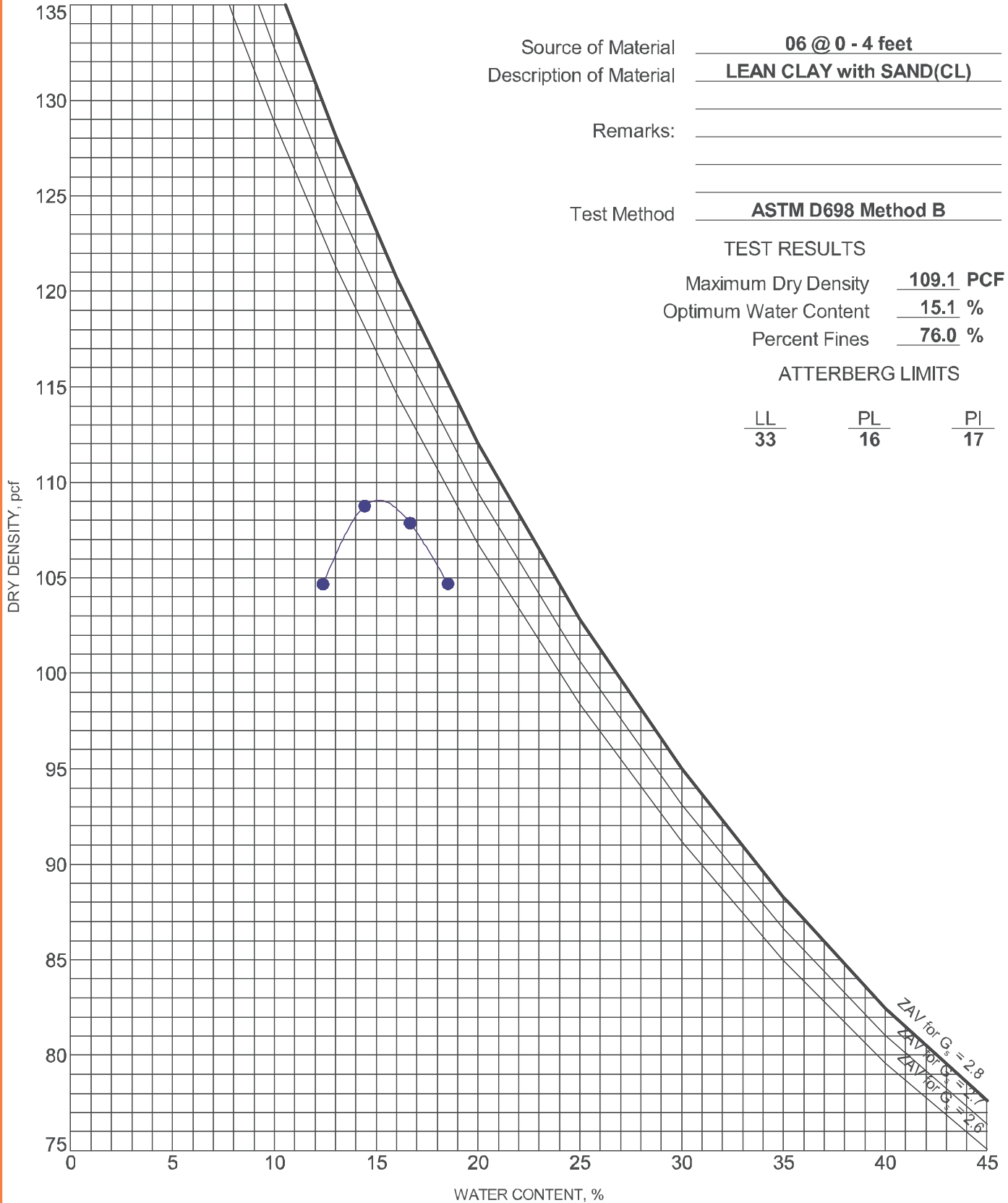
CLIENT: Quality Technology Services, Inc.
Page 191 of 274

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. UNCONFINED 25215031 QTS AURORA USE THIS ONE GPJ TERRACON_DATATEMPLATE.GDT 8/12/21

MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. COMPACTON - V2 25215031 QTS AURORA. USE THIS ONE.GPJ TERRACON.DATATEMPLATE.GDT 8/12/21



PROJECT: QTS Aurora

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO
ASSOCIATED DOCUMENTS

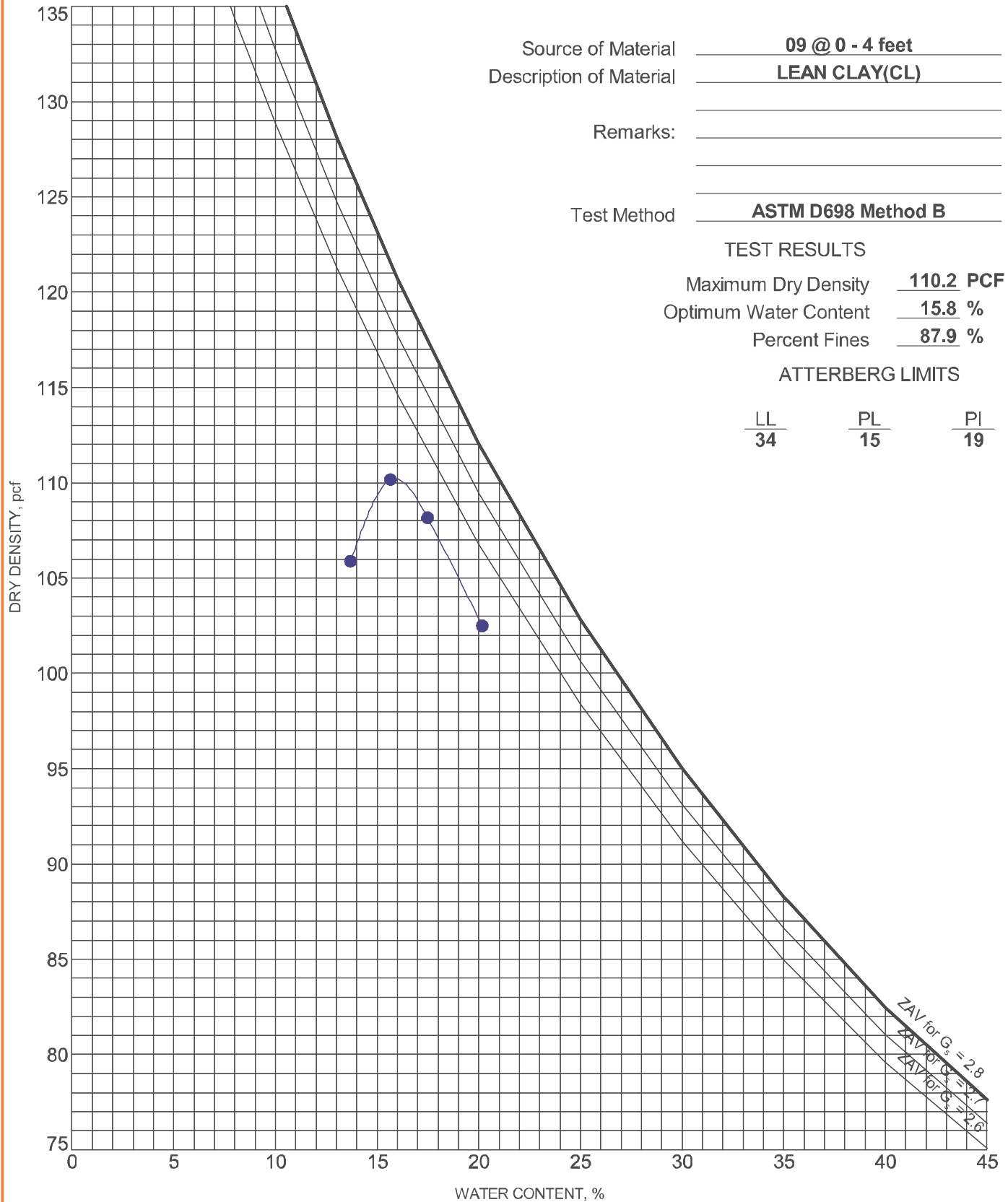
PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.
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MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. COMPACTION - V2 25215031 QTS AURORA. USE THIS ONE.GPJ TERRACON.DATATEMPLATE.GDT 8/12/21



PROJECT: QTS Aurora

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO
ASSOCIATED DOCUMENTS

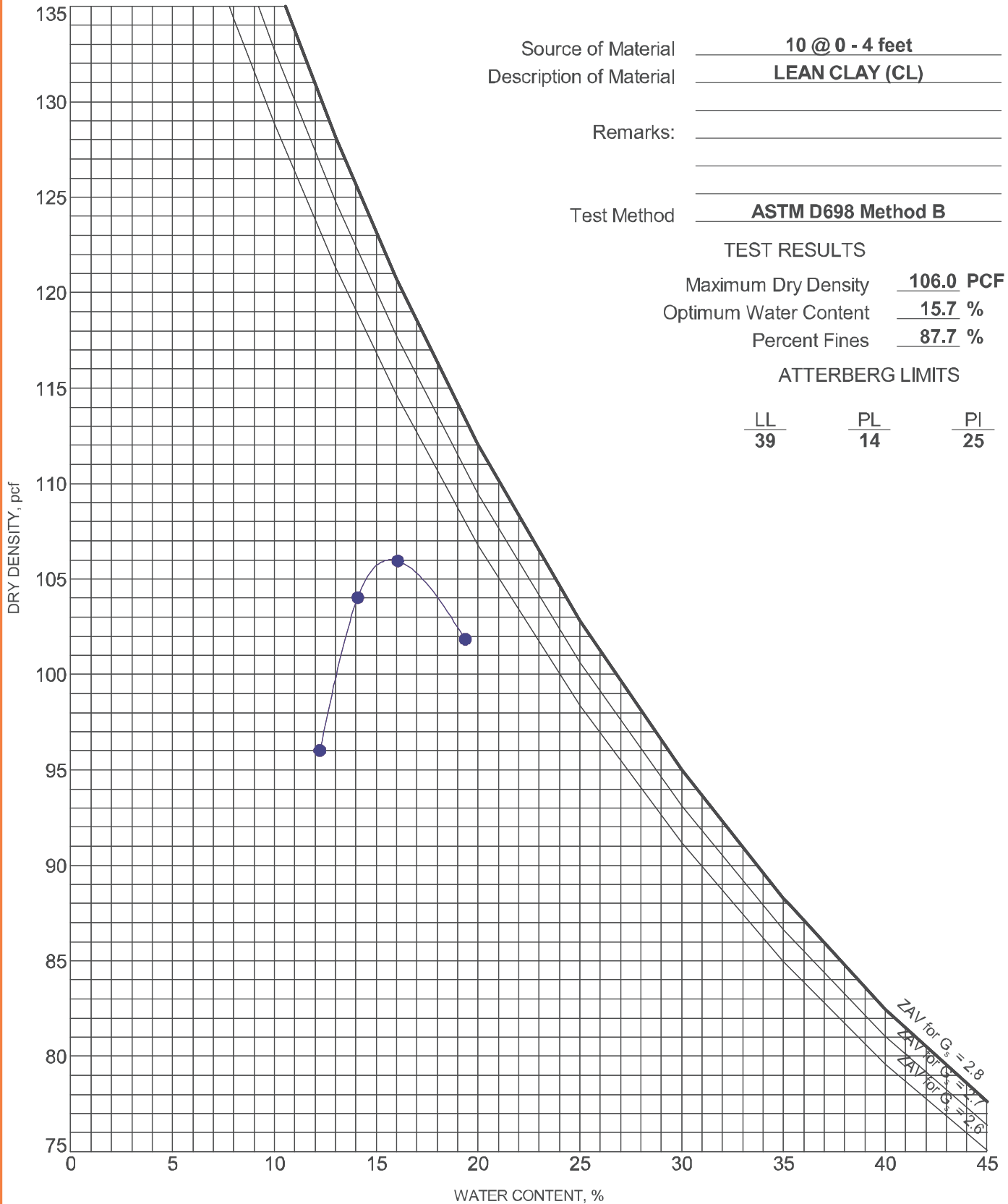
PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.
Page 193 of 274

MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. COMPACTION - V2 25215031 QTS AURORA. USE THIS ONE.GPJ TERRACON.DATATEMPLATE.GDT 8/12/21



PROJECT: QTS Aurora

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO
ASSOCIATED DOCUMENTS

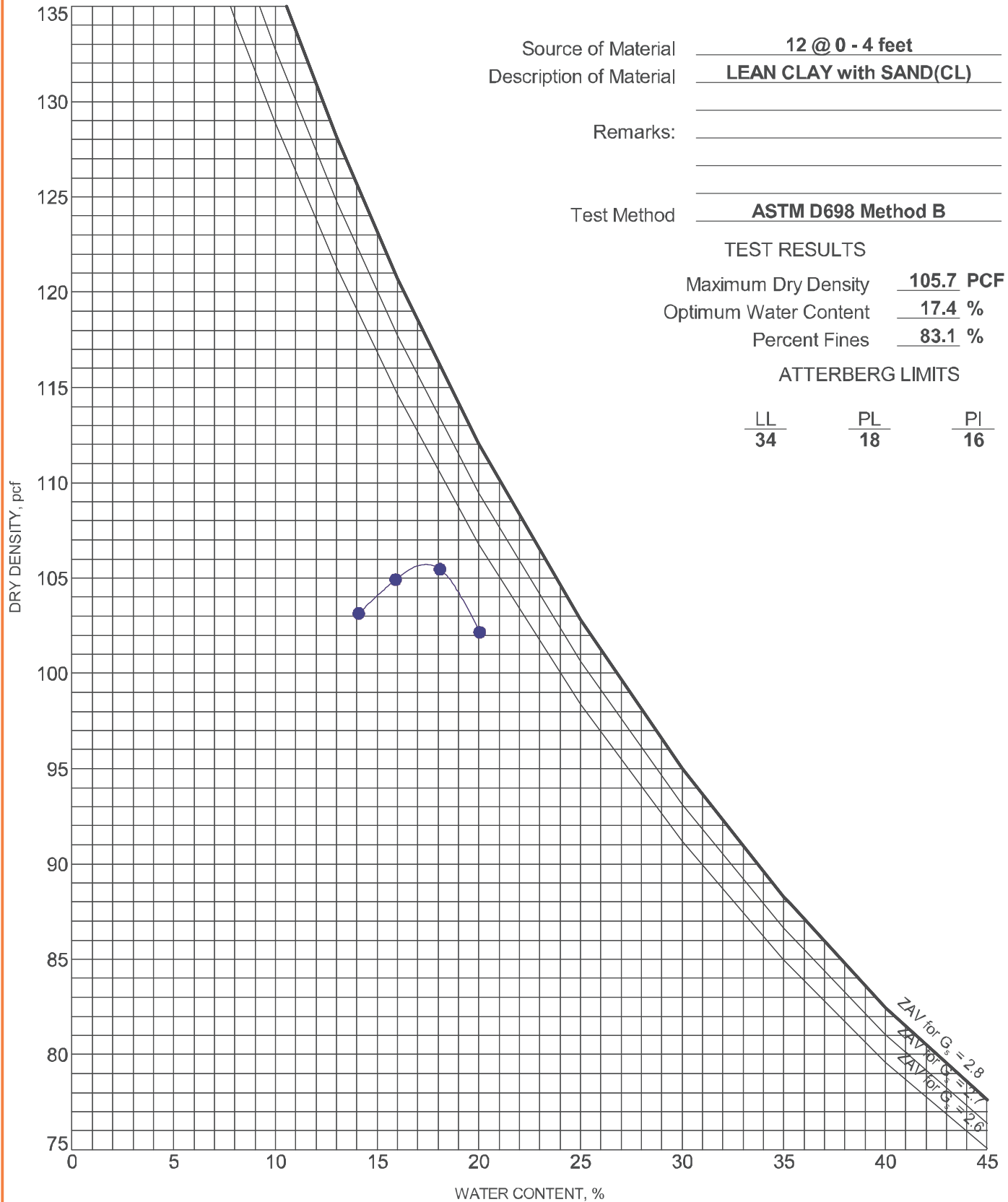
PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.
Page 194 of 274

MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. COMPACTION - V2 25215031 QTS AURORA. USE THIS ONE.GPJ TERRACON.DATATEMPLATE.GDT 8/12/21



PROJECT: QTS Aurora

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO
ASSOCIATED DOCUMENTS

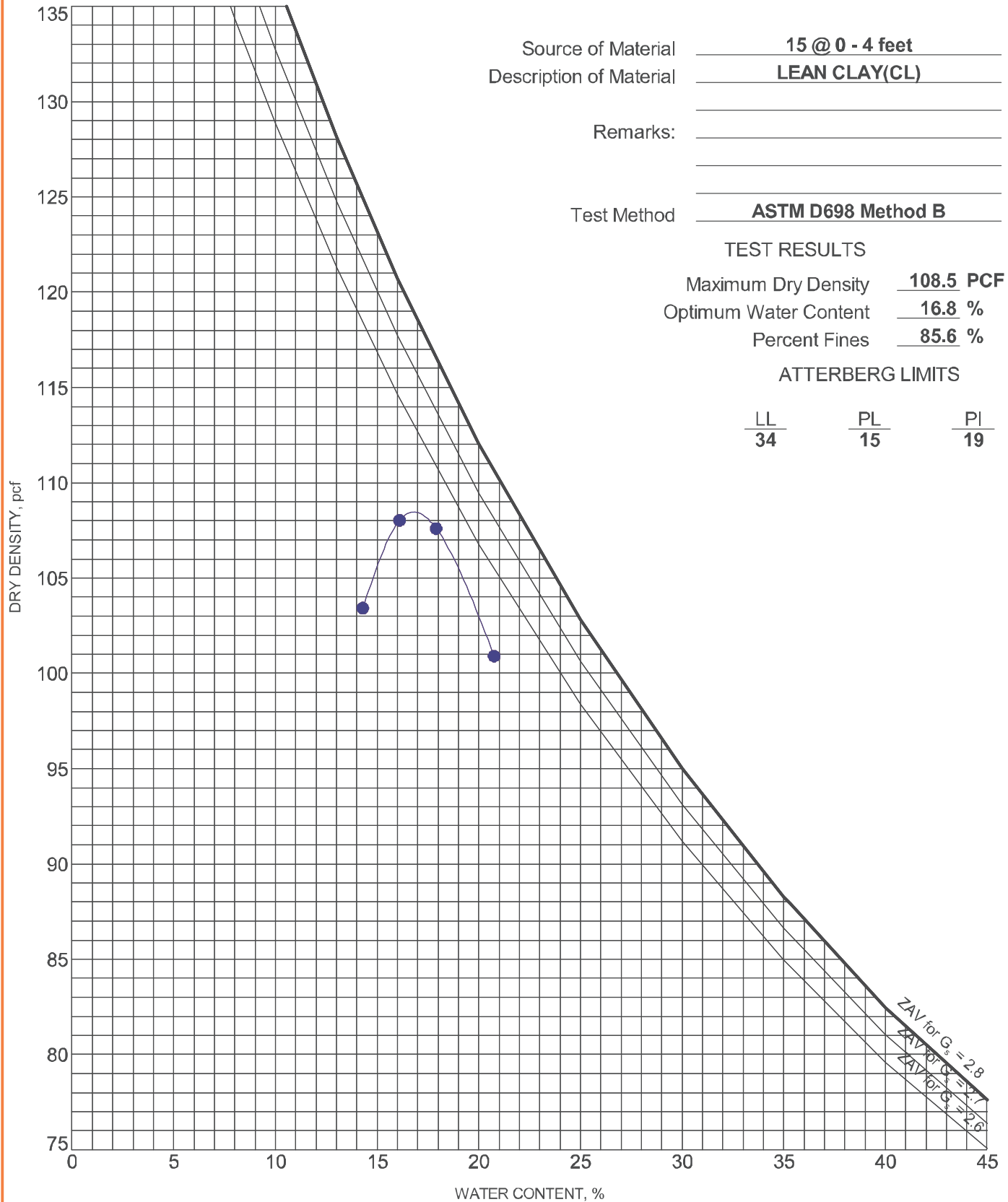
PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.
Page 195 of 274

MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. COMPACTION - V2 25215031 QTS AURORA. USE THIS ONE.GPJ TERRACON.DATATEMPLATE.GDT 8/12/21



PROJECT: QTS Aurora

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO
ASSOCIATED DOCUMENTS

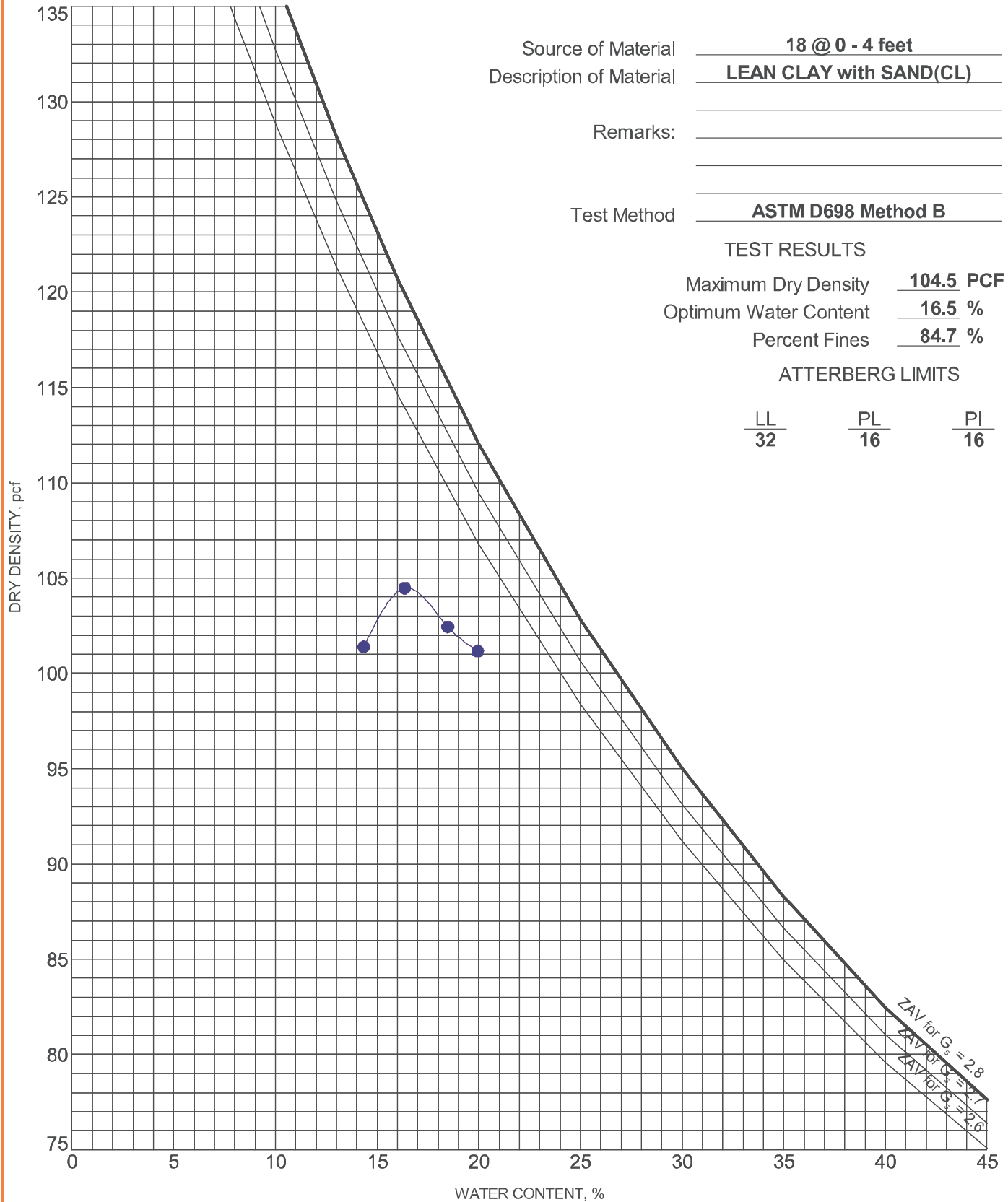
PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.
Page 196 of 274

MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. COMPACTION - V2 25215031 QTS AURORA. USE THIS ONE.GPJ TERRACON.DATATEMPLATE.GDT 8/12/21



PROJECT: QTS Aurora

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
 10625 W 170 Frontage Rd N Ste 3
 Wheat Ridge, CO
ASSOCIATED DOCUMENTS

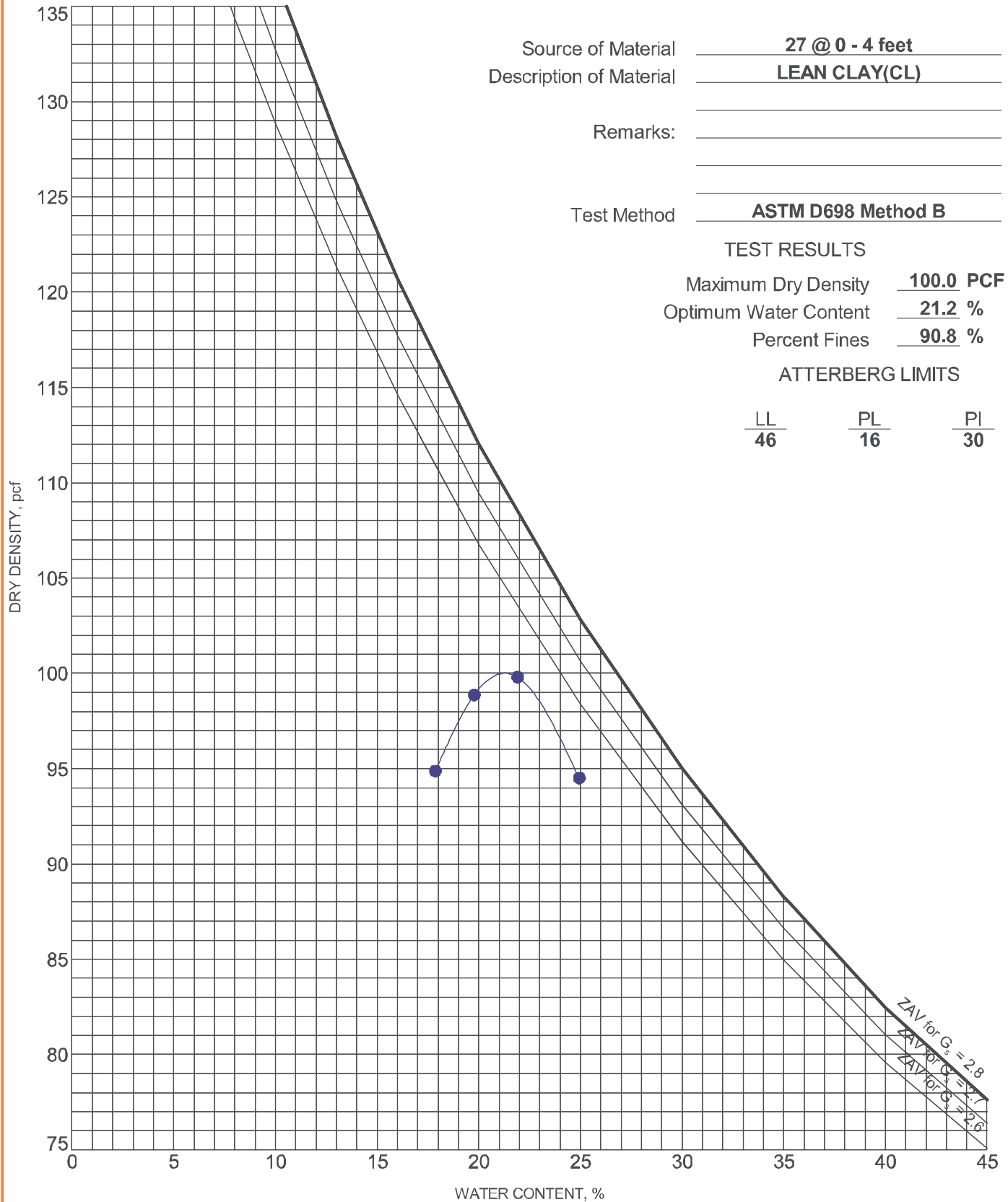
PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.
Page 197 of 274

MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. COMPACTION - V2 25215031 QTS AURORA. USE THIS ONE.GPJ TERRACON.DATATEMPLATE.GDT 8/12/21



PROJECT: QTS Aurora

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO
ASSOCIATED DOCUMENTS

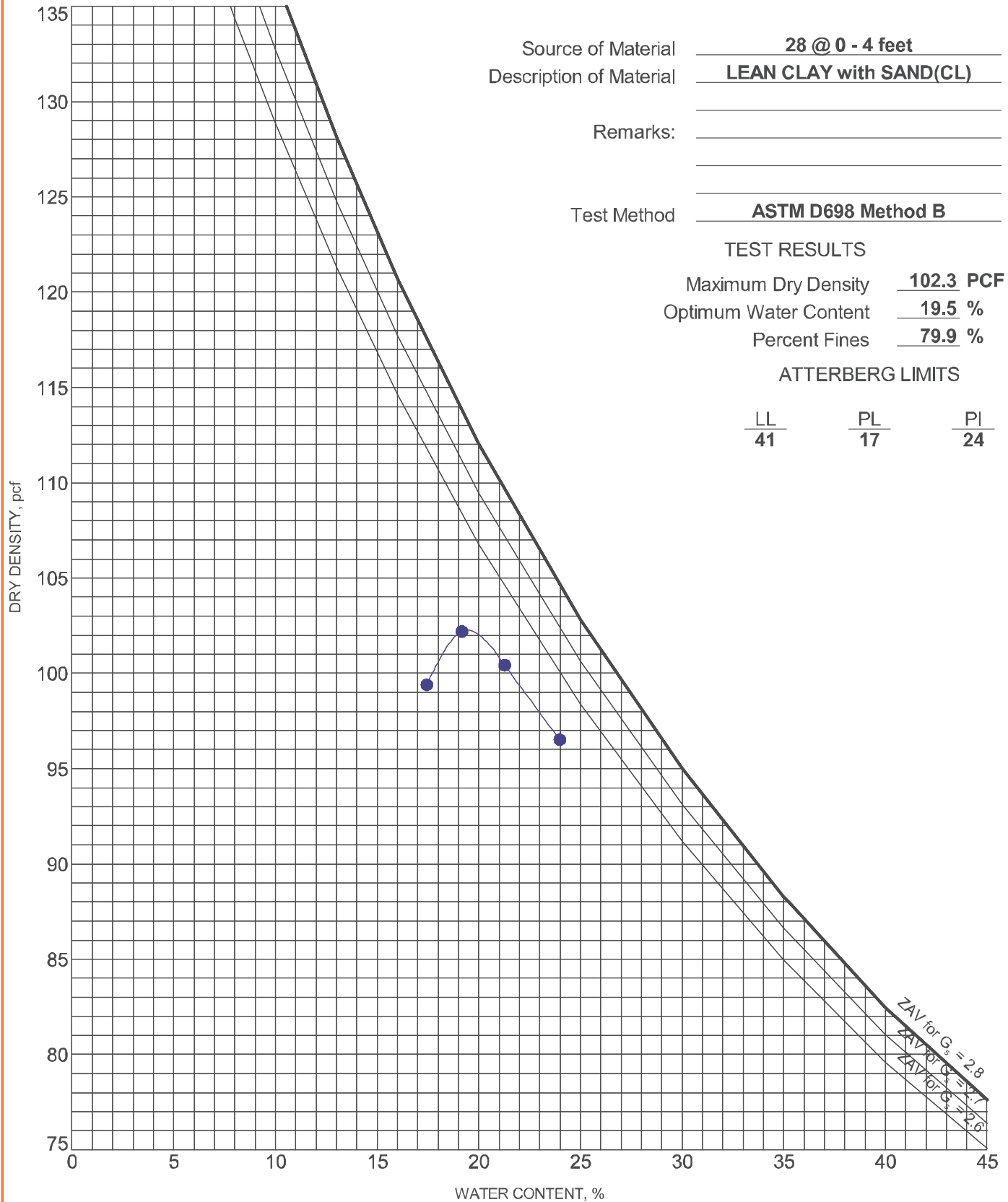
PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.
Page 198 of 274

MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. COMPACTION - V2 25215031 QTS AURORA. USE THIS ONE.GPJ TERRACON.DATATEMPLATE.GDT 8/12/21



PROJECT: QTS Aurora

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO
ASSOCIATED DOCUMENTS

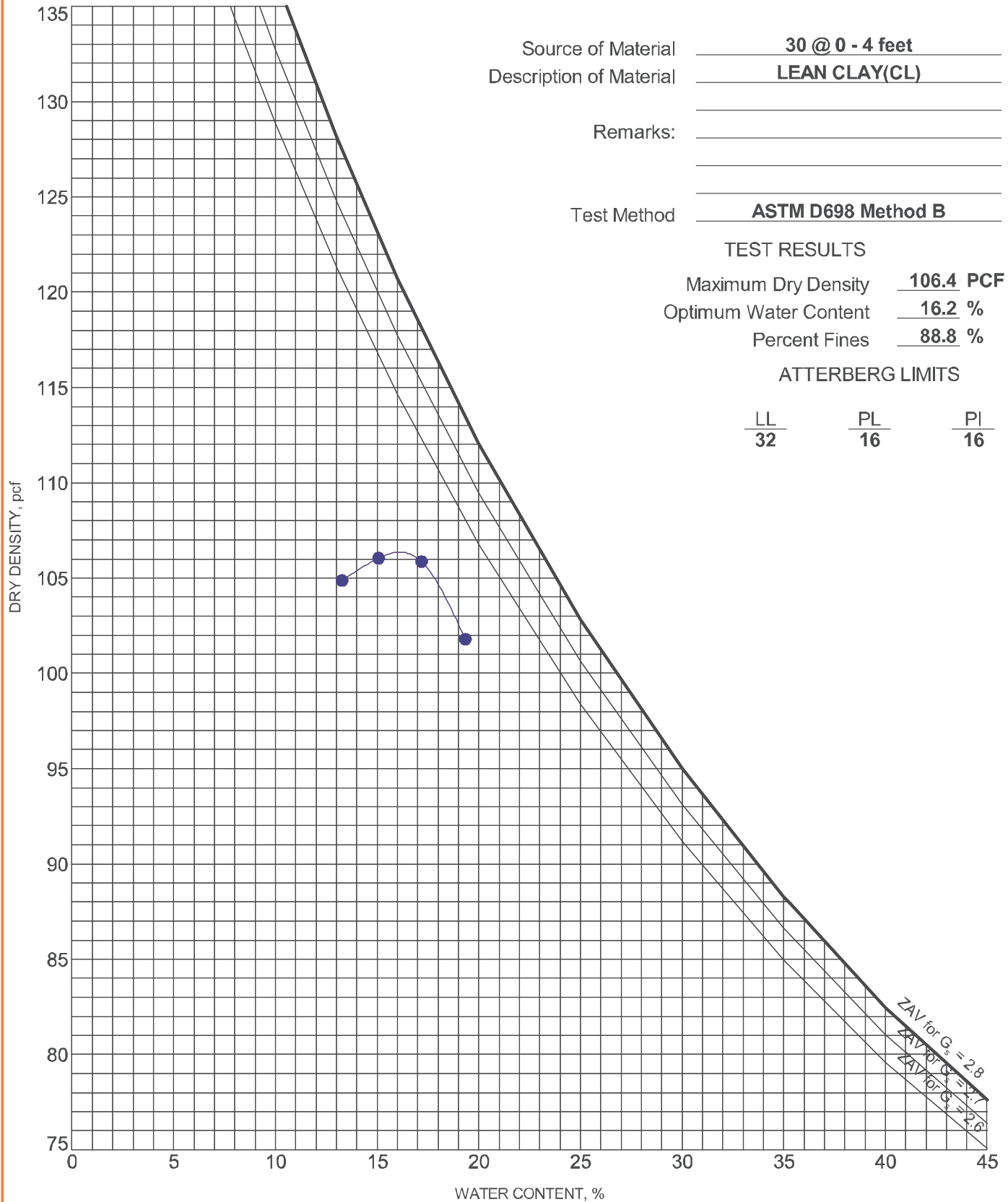
PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.
Page 199 of 274

MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. COMPACTION - V2 25215031 QTS AURORA. USE THIS ONE.GPJ TERRACON.DATATEMPLATE.GDT 8/12/21



PROJECT: QTS Aurora

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO
ASSOCIATED DOCUMENTS

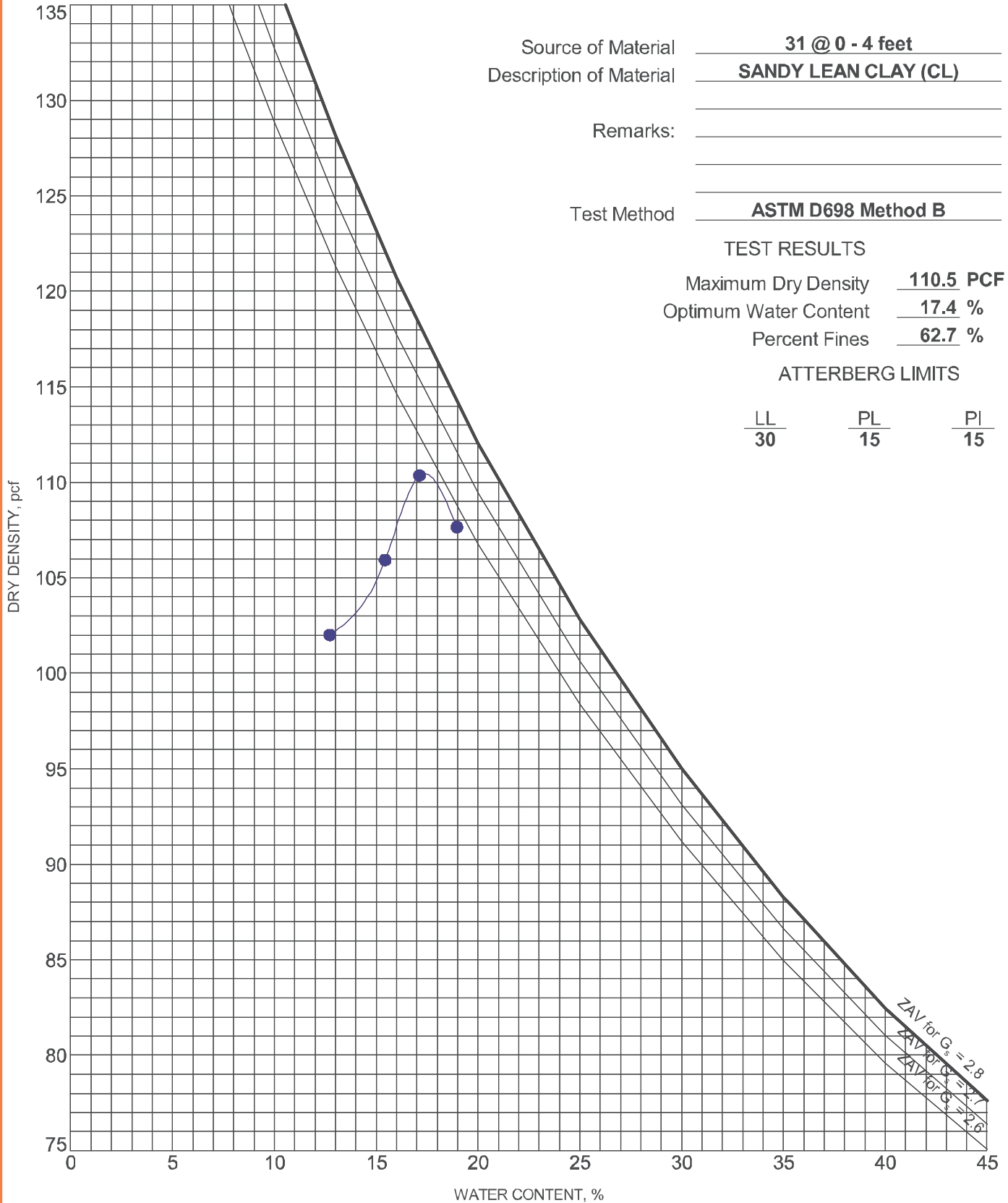
PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.
Page 200 of 274

MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. COMPACTION - V2 25215031 QTS AURORA. USE THIS ONE.GPJ TERRACON.DATATEMPLATE.GDT 8/12/21



PROJECT: QTS Aurora

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO
ASSOCIATED DOCUMENTS

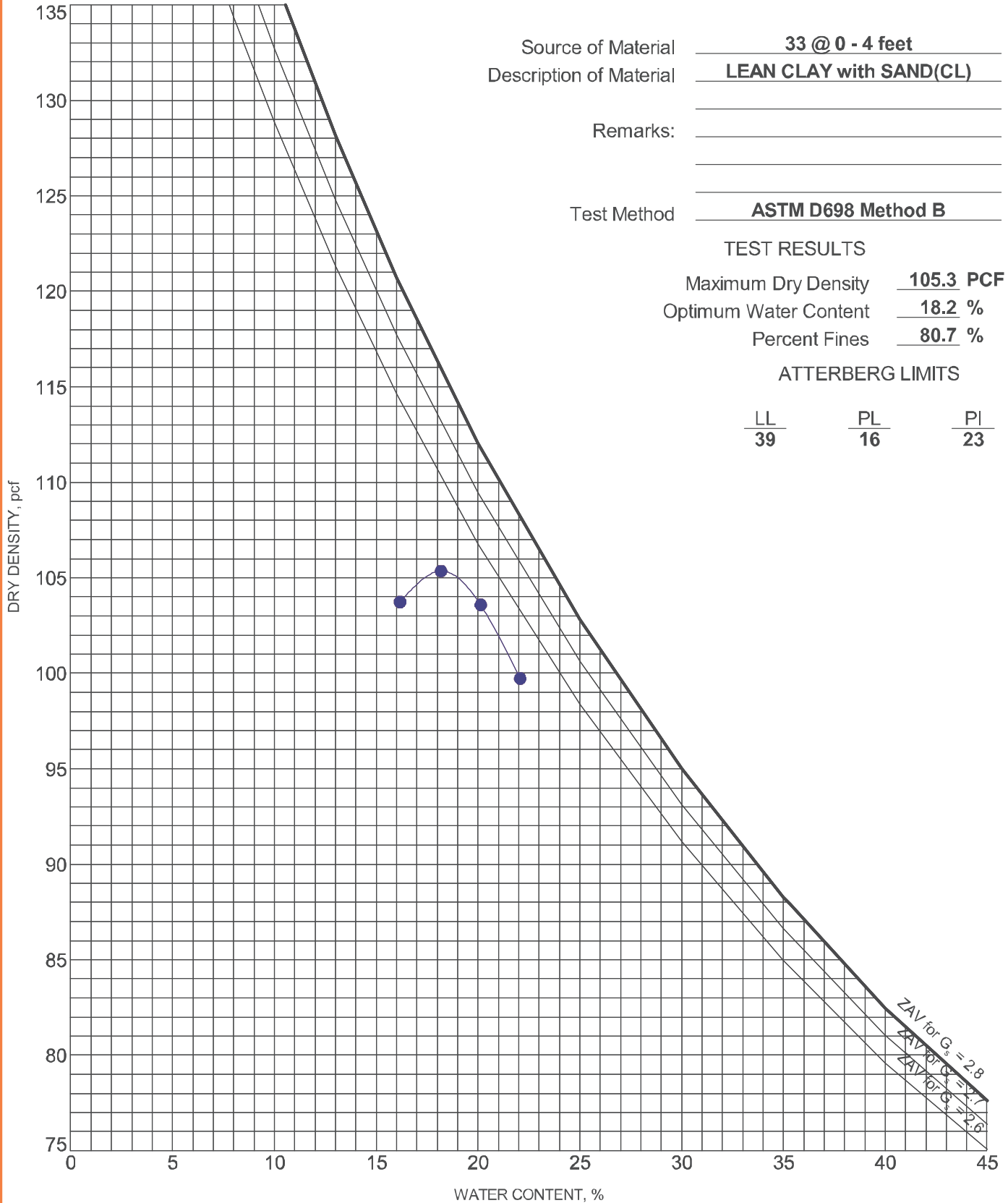
PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.
Page 201 of 274

MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. COMPACTION - V2 25215031 QTS AURORA. USE THIS ONE.GPJ TERRACON.DATATEMPLATE.GDT 8/12/21



Source of Material 33 @ 0 - 4 feet
 Description of Material LEAN CLAY with SAND(CL)
 Remarks: _____
 Test Method ASTM D698 Method B

TEST RESULTS

Maximum Dry Density 105.3 PCF
 Optimum Water Content 18.2 %
 Percent Fines 80.7 %

ATTERBERG LIMITS

LL PL PI
39 16 23

PROJECT: QTS Aurora

SITE: Gun Club Road and Colfax Avenue
 Aurora, Colorado

Terracon
 10625 W 170 Frontage Rd N Ste 3
 Wheat Ridge, CO
ASSOCIATED DOCUMENTS

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.
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MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557

Source of Material

36 @ 0 - 4 feet

Description of Material

LEAN CLAY with SAND(CL)

Remarks:

Test Method

ASTM D698 Method B

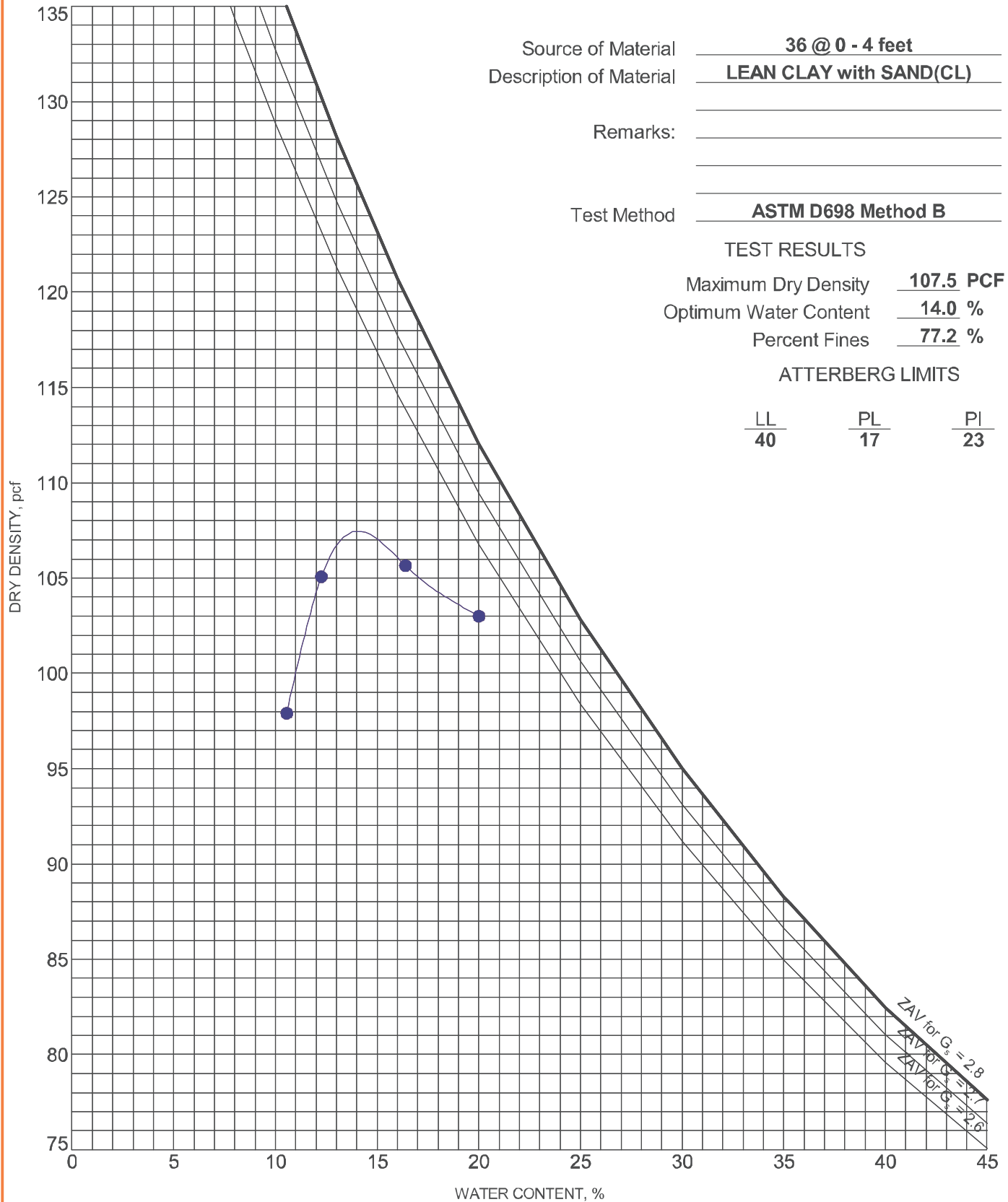
TEST RESULTS

Maximum Dry Density 107.5 PCF

Optimum Water Content 14.0 %

Percent Fines 77.2 %

ATTERBERG LIMITS

LL
40PL
17PI
23

PROJECT: QTS Aurora

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon

10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

ASSOCIATED DOCUMENTS

PROJECT NUMBER: 25215031

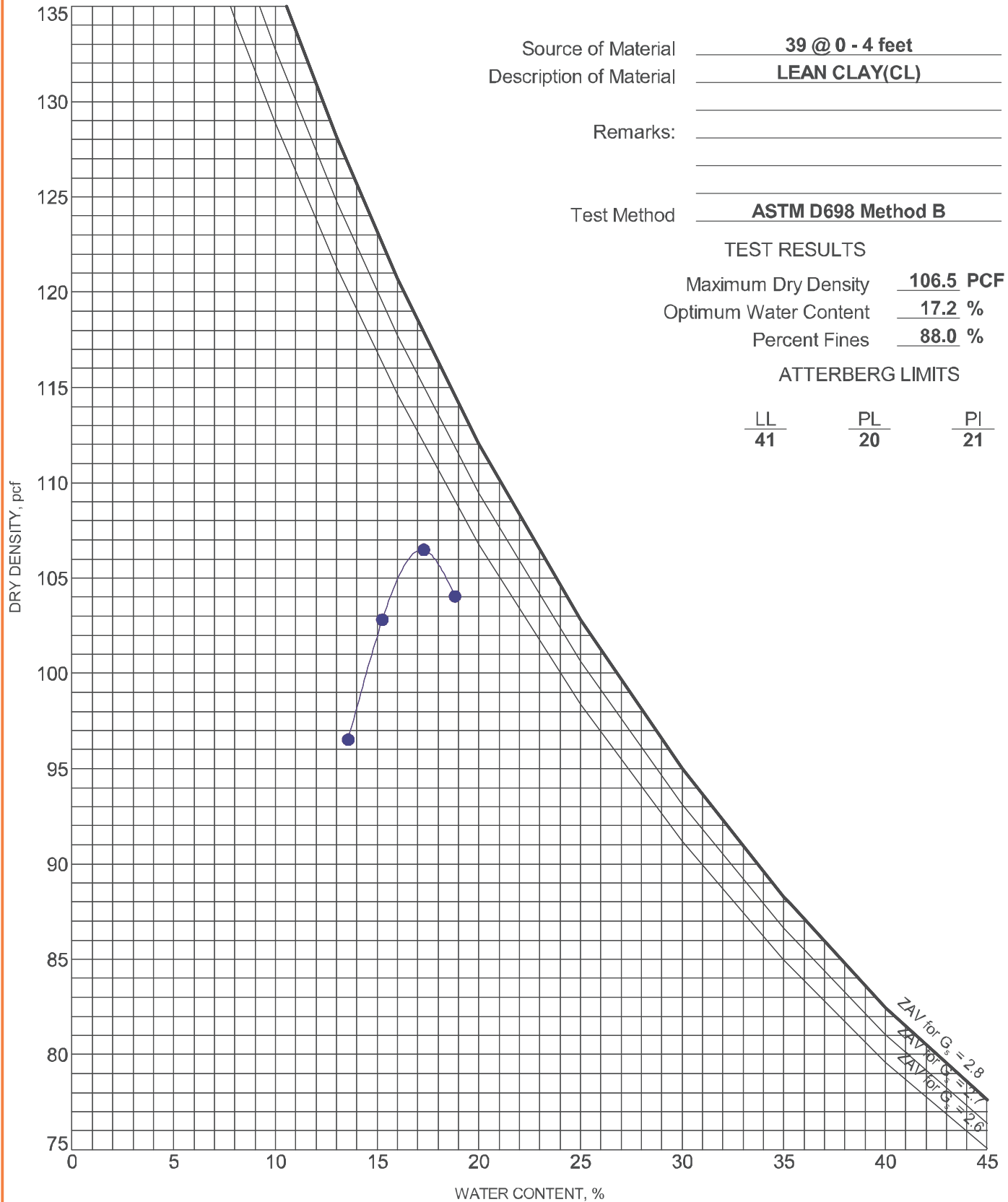
CLIENT: Quality Technology Services, Inc.

Page 203 of 274

MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. COMPACTION - V2 25215031 QTS AURORA. USE THIS ONE.GPJ TERRACON.DATATEMPLATE.GDT 8/12/21



PROJECT: QTS Aurora

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon

10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

ASSOCIATED DOCUMENTS

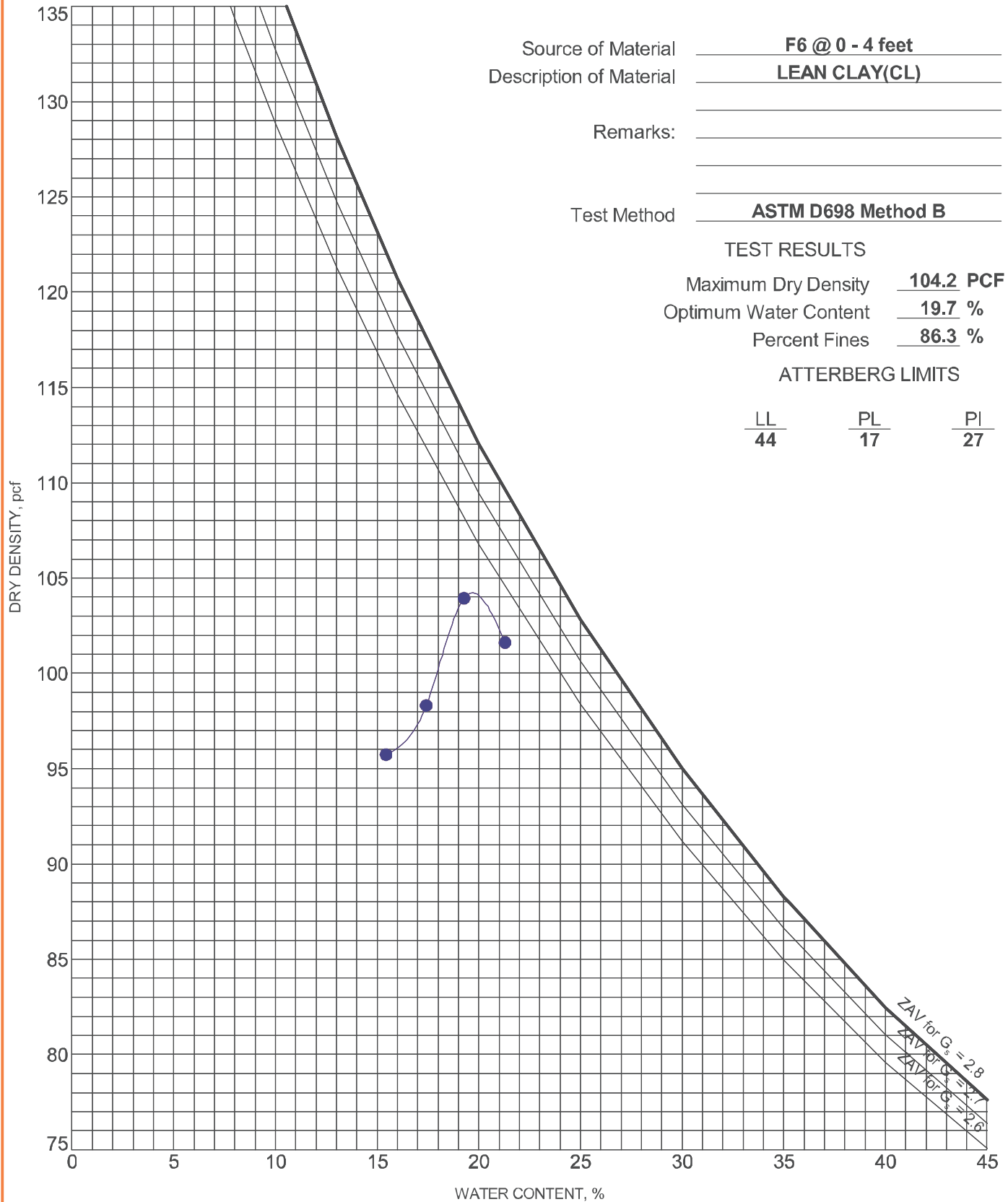
PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.
Page 204 of 274

MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. COMPACTION - V2 25215031 QTS AURORA. USE THIS ONE.GPJ TERRACON.DATATEMPLATE.GDT 8/12/21



PROJECT: QTS Aurora

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO
ASSOCIATED DOCUMENTS

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.
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MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557

Source of Material

S3 @ 0 - 4 feet

Description of Material

LEAN CLAY with SAND(CL)

Remarks:

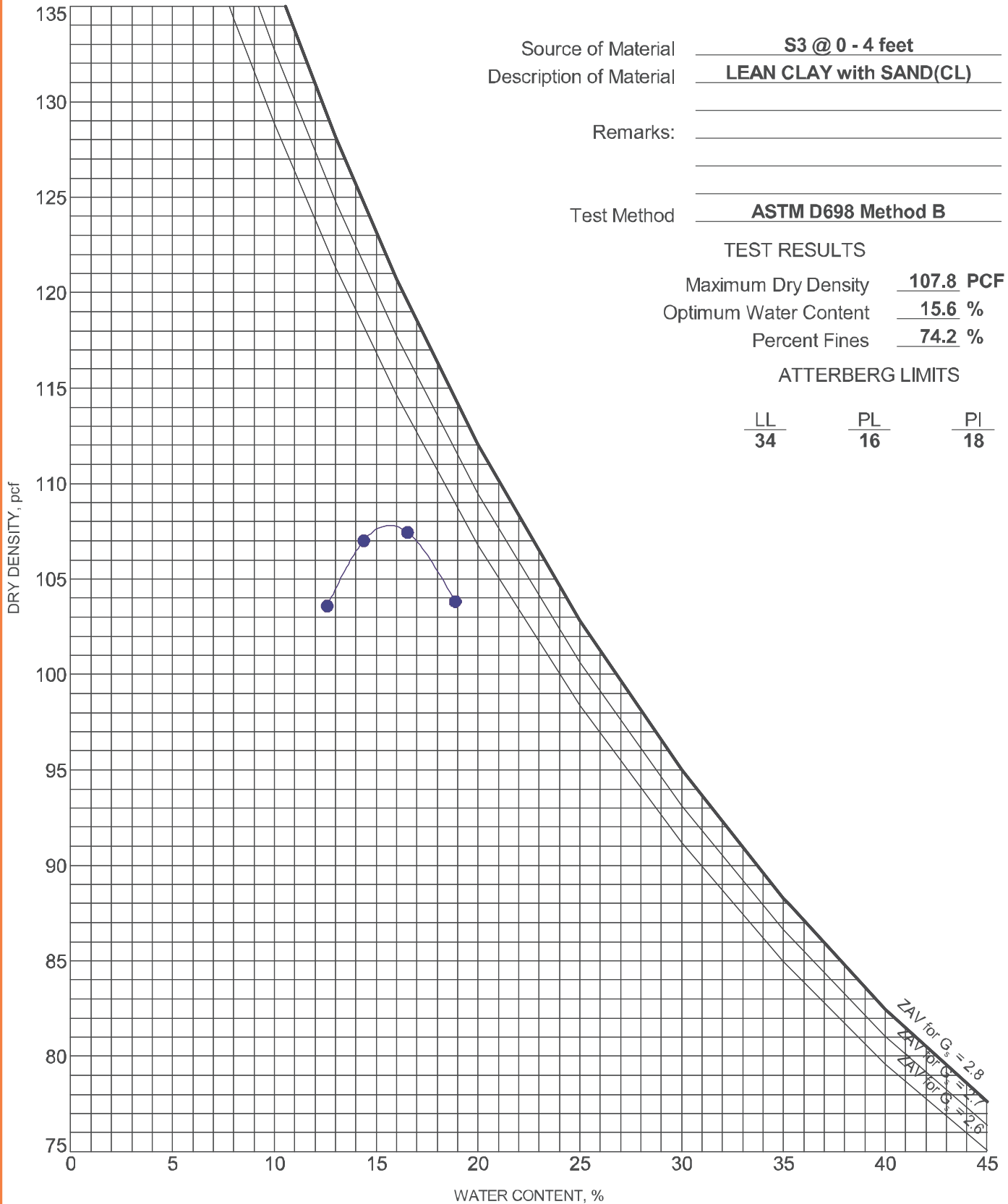
Test Method

ASTM D698 Method B

TEST RESULTS

Maximum Dry Density 107.8 PCFOptimum Water Content 15.6 %Percent Fines 74.2 %

ATTERBERG LIMITS

LL
34PL
16PI
18

PROJECT: QTS Aurora

SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon

10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO

ASSOCIATED DOCUMENTS

PROJECT NUMBER: 25215031

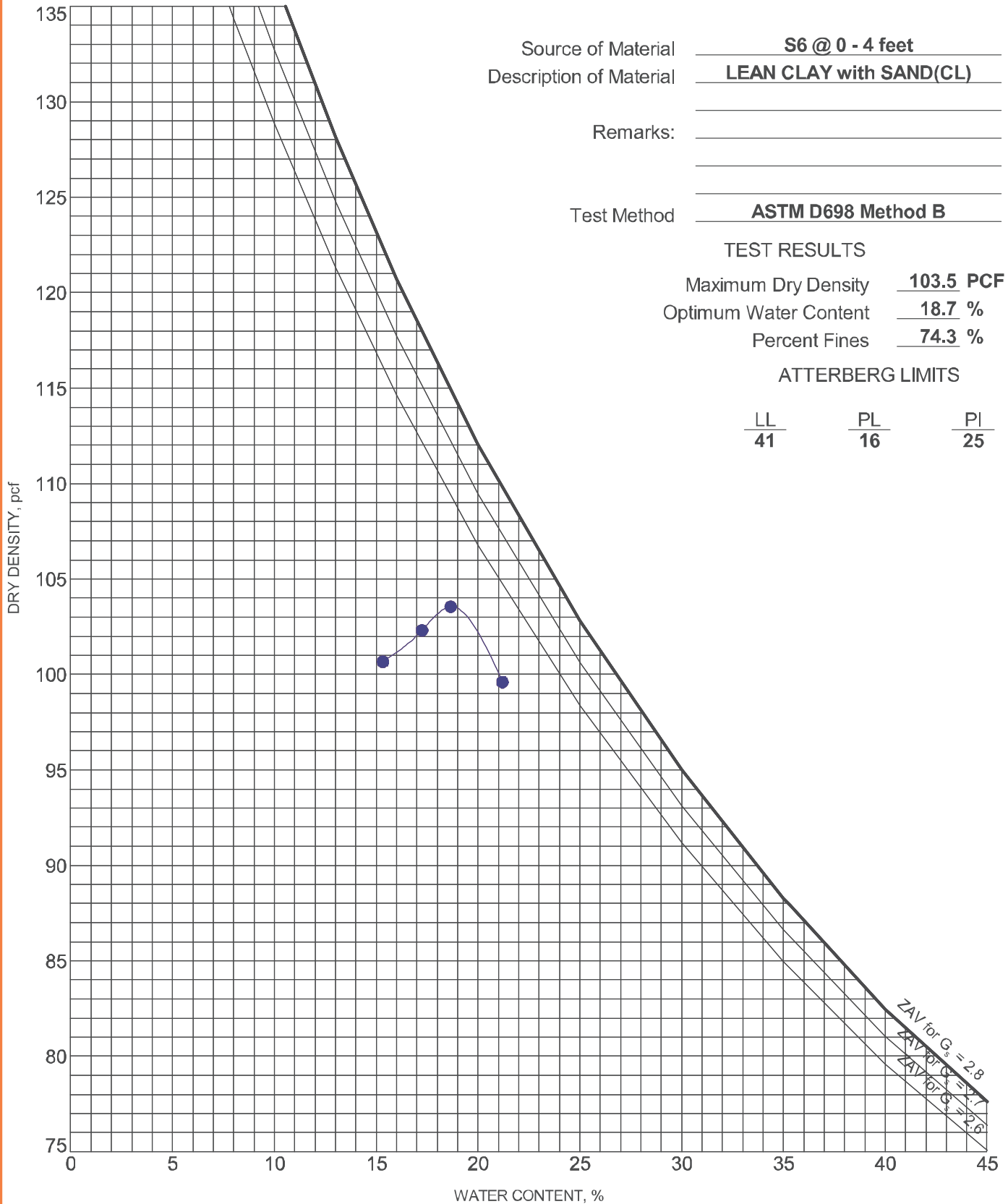
CLIENT: Quality Technology Services, Inc.

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MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. COMPACTION - V2 25215031 QTS AURORA. USE THIS ONE.GPJ TERRACON.DATATEMPLATE.GDT 8/12/21



PROJECT: QTS Aurora

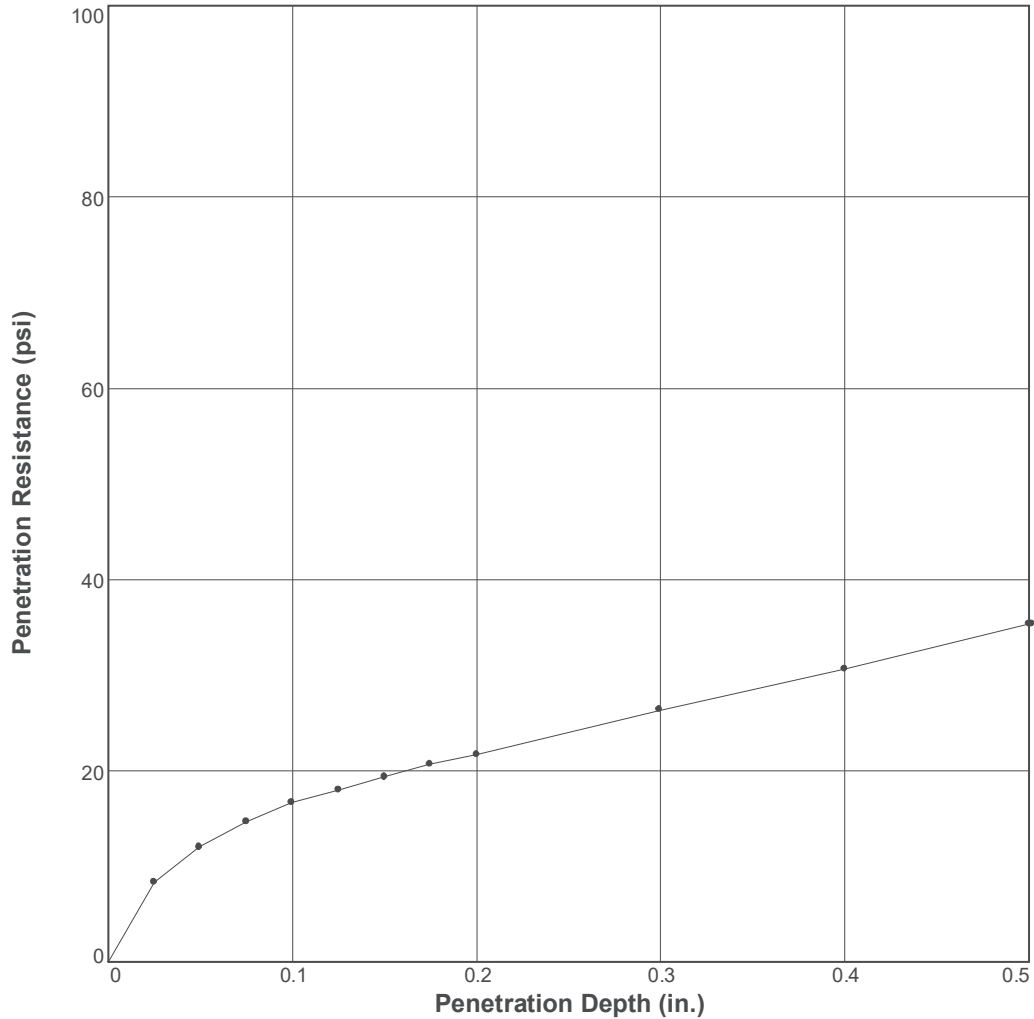
SITE: Gun Club Road and Colfax Avenue
Aurora, Colorado

Terracon
10625 W 170 Frontage Rd N Ste 3
Wheat Ridge, CO
ASSOCIATED DOCUMENTS

PROJECT NUMBER: 25215031

CLIENT: Quality Technology Services, Inc.
Page 207 of 274

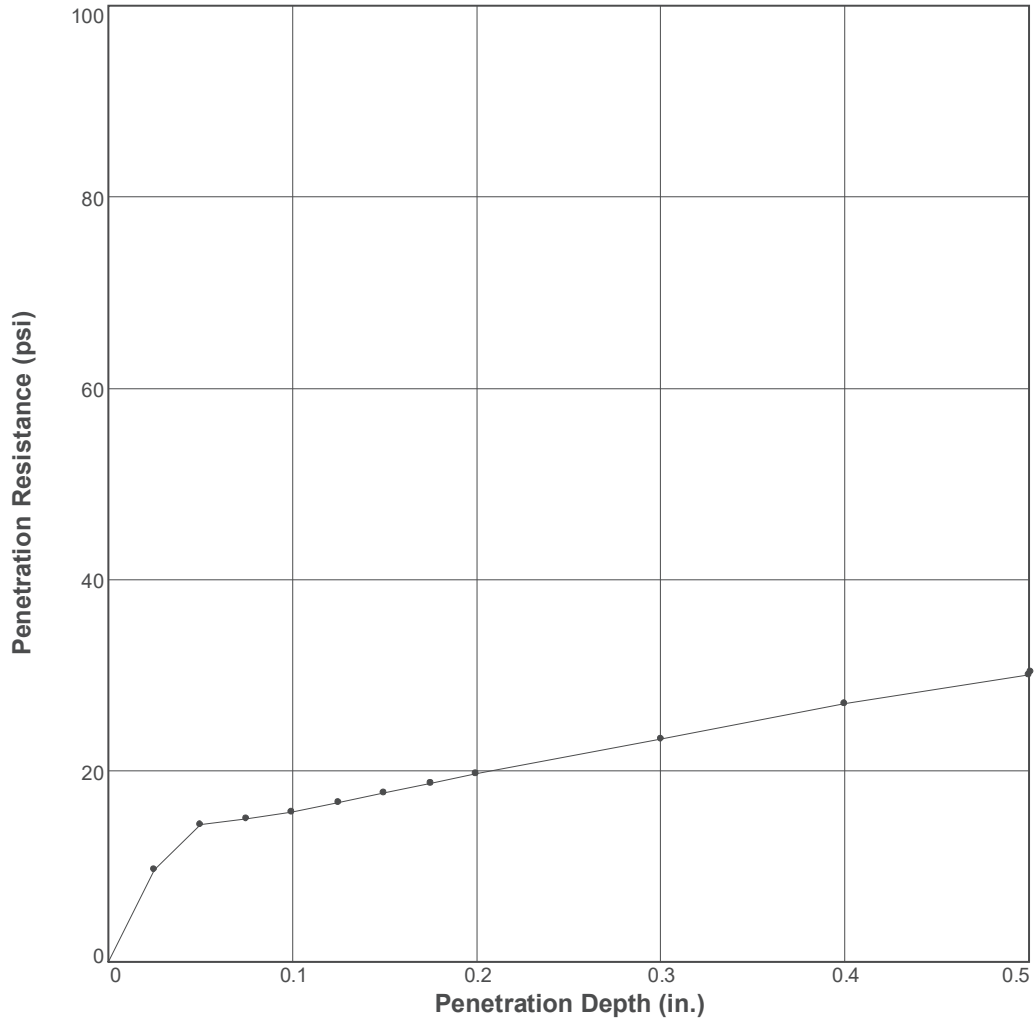
BEARING RATIO TEST REPORT ASTM D1883-16



	Molded			Soaked			CBR (%)		Linearity Correction (in.)	Surcharge (lbs.)	Max. Swell (%)
	Density (pcf)	Percent of Max. Dens.	Moisture (%)	Density (pcf)	Percent of Max. Dens.	Moisture (%)	0.10 in.	0.20 in.			
1 ○	97.5	95.3	19.2	95.0	92.9	23.6	1.7	1.4	0.000	10	2.6
2 △											
3 □											
Material Description							USCS	Max. Dens. (pcf)	Optimum Moisture (%)	LL	PI
Lean Clay with Sand							CL	102.3	19.5	44	24

Project No: 25215031 Project: QTS Aurora Source of Sample: 28 Depth: 0-4' Date: 7/19/2021	Test Description/Remarks: Compaction based on D698 efforts.
BEARING RATIO TEST REPORT Terracon Consultants, Inc.	
Figure _____	

BEARING RATIO TEST REPORT ASTM D1883-16



	Molded			Soaked			CBR (%)		Linearity Correction (in.)	Surcharge (lbs.)	Max. Swell (%)
	Density (pcf)	Percent of Max. Dens.	Moisture (%)	Density (pcf)	Percent of Max. Dens.	Moisture (%)	0.10 in.	0.20 in.			
1 ○	99.3	95.3	19.4	96.1	92.3	23.6	1.6	1.3	0.000	10	3.3
2 △											
3 □											
Material Description							USCS	Max. Dens. (pcf)	Optimum Moisture (%)	LL	PI
Lean Clay							CL	104.2	19.7	44	27

Project No: 25215031
Project: QTS Aurora
Source of Sample: F6 **Depth:** 0-4'
Date: 7/19/2021

Test Description/Remarks:
 Compaction based on D698 efforts.

BEARING RATIO TEST REPORT
Terracon Consultants, Inc.

Figure _____



21239 FM529 Rd., Bldg. F
Cypress, TX 77433
Tel: 281-985-9344
Fax: 832-427-1752
info@geothermusa.com
<http://www.geothermusa.com>

July 13, 2021

Terracon

10625 W. I-70 Frontage Rd N, Ste 3 5
Wheat Ridge, CO 80033

Attn: John T. Taylor

**Re: Thermal Analysis of Native Soil Samples
QTS Aurora – Aurora, CO (Project No. 25215031)**

The following is the report of thermal dryout characterization tests conducted on twelve (12) native soil samples from the referenced project sent to our laboratory.

Thermal Resistivity Tests: The samples were tested their 'optimum' moisture content and 95% of maximum dry density ***provided by Terracon***. The tests were conducted in accordance with the IEEE standard 442-2017. The results are tabulated below and the thermal dryout curves are presented in **Figures 1 to 12**.

Sample ID, Description, Thermal Resistivity, Moisture Content and Density

Sample ID	Depth (ft)	Description (Terracon)	Thermal Resistivity (°C-cm/W)		Moisture Content (%)	Dry Density (lb/ft³)
			Wet	Dry		
06	0-4	Lean clay with sand (CL)	79	172	15	104
09	0-4	Lean clay (CL)	61	165	16	105
12	0-4	Lean clay with sand (CL)	79	174	17	100
15	0-4	Lean clay (CL)	76	162	17	103
18	0-4	Lean clay with sand (CL)	85	193	17	99
27	0-4	Lean clay (CL)	92	198	21	95
30	0-4	Lean clay (CL)	77	181	16	101
33	0-4	Lean clay with sand (CL)	75	173	18	100

COOL SOLUTIONS FOR UNDERGROUND POWER CABLES
THERMAL SURVEYS, CORRECTIVE BACKFILLS & INSTRUMENTATION



Sample ID, Description, Thermal Resistivity, Moisture Content and Density

Sample ID	Depth (ft)	Description (Terracon)	Thermal Resistivity (°C-cm/W)		Moisture Content (%)	Dry Density (lb/ft³)
			Wet	Dry		
36	0-4	Lean clay with sand (CL)	86	175	14	102
39	0-4	Lean clay (CL)	91	184	17	101
53	0-4	Lean clay with sand (CL)	84	174	16	102
56	0-4	Lean clay with sand (CL)	88	193	19	98

Comments: The thermal characteristic depicted in the dryout curves apply for the soils at their respective test dry density.

Please contact us if you have any questions or if we can be of further assistance.

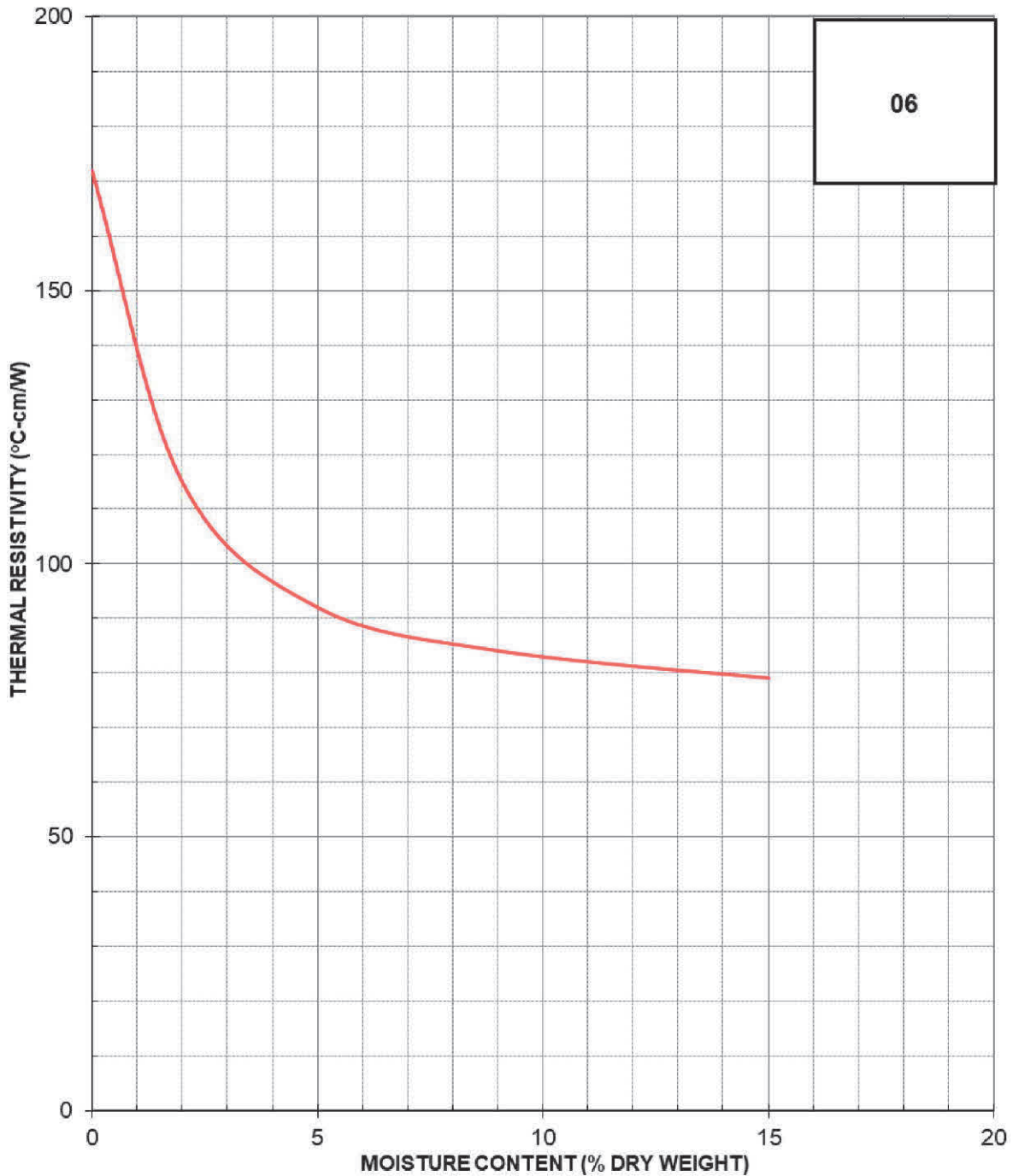
Geotherm USA

A handwritten signature in black ink, appearing to read "Deepak Parmar", written over a light gray circular stamp.

Deepak Parmar



THERMAL DRYOUT CURVE



Terracon (Project No. 25215031)

Thermal Analysis of Native Soil Samples

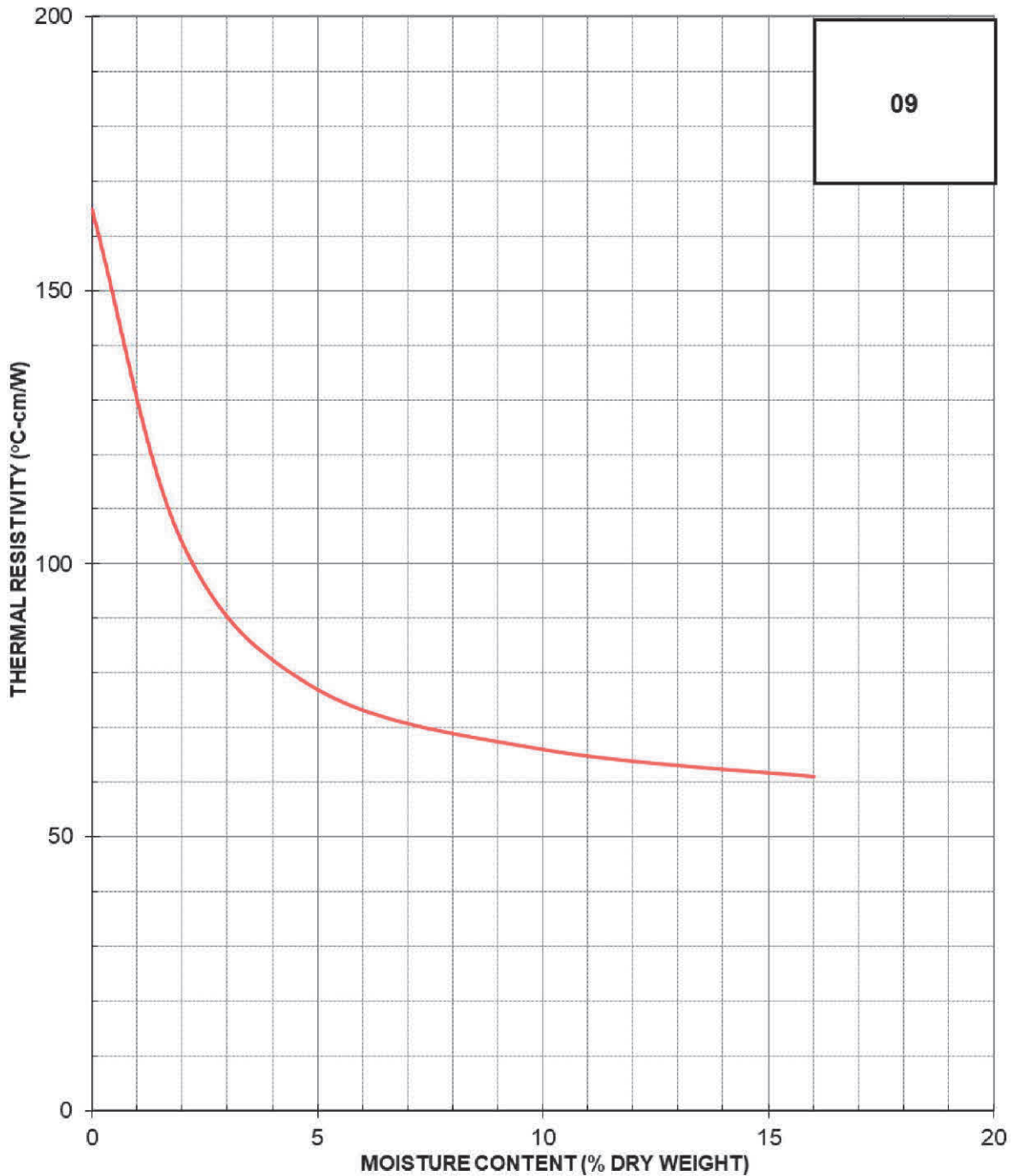
QTS Aurora – Aurora, CO

July 2021

Figure 1



THERMAL DRYOUT CURVE



Terracon (Project No. 25215031)

Thermal Analysis of Native Soil Samples

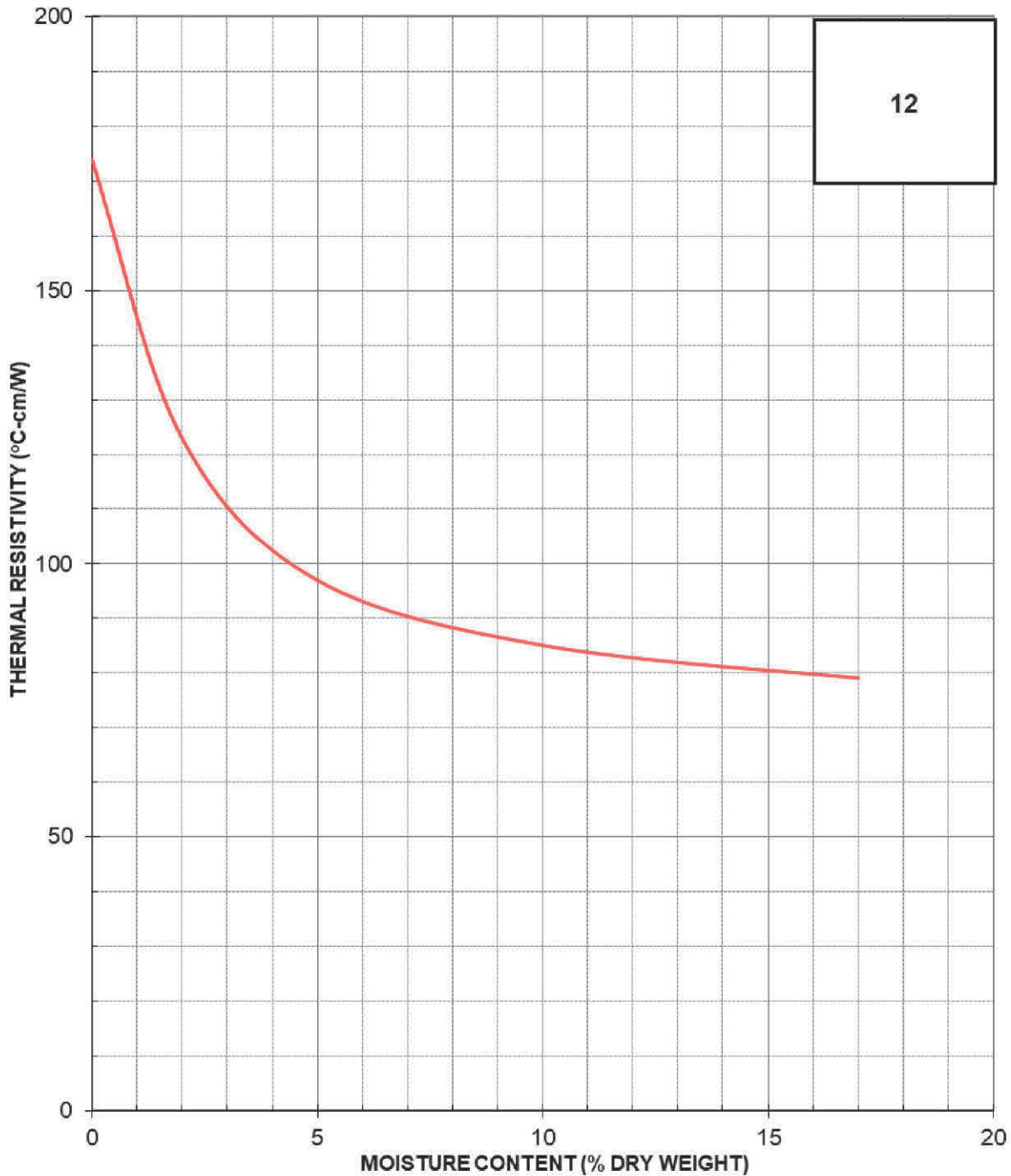
QTS Aurora – Aurora, CO

July 2021

Figure 2



THERMAL DRYOUT CURVE



Terracon (Project No. 25215031)

Thermal Analysis of Native Soil Samples

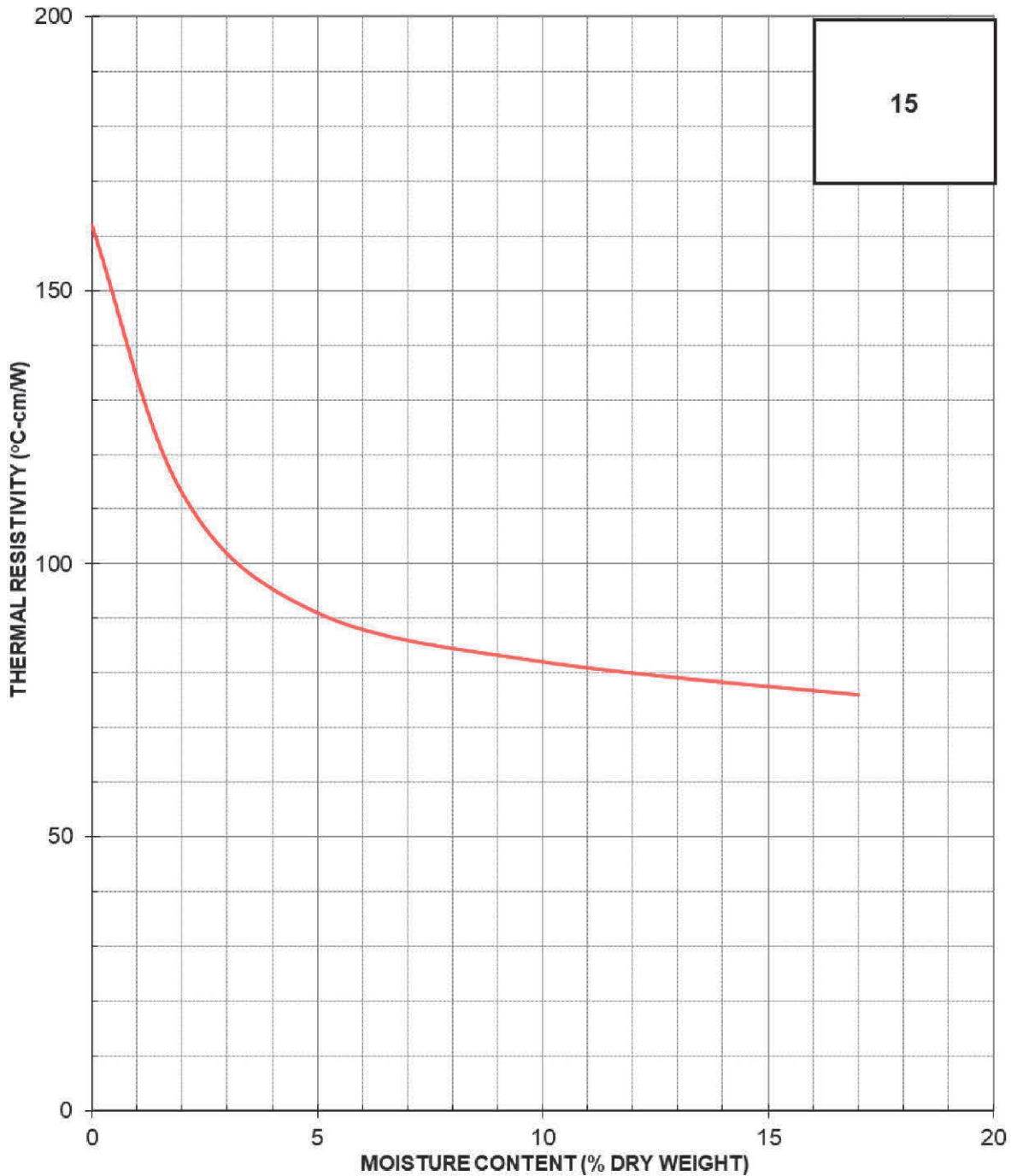
QTS Aurora – Aurora, CO

July 2021

Figure 3



THERMAL DRYOUT CURVE



Terracon (Project No. 25215031)

Thermal Analysis of Native Soil Samples

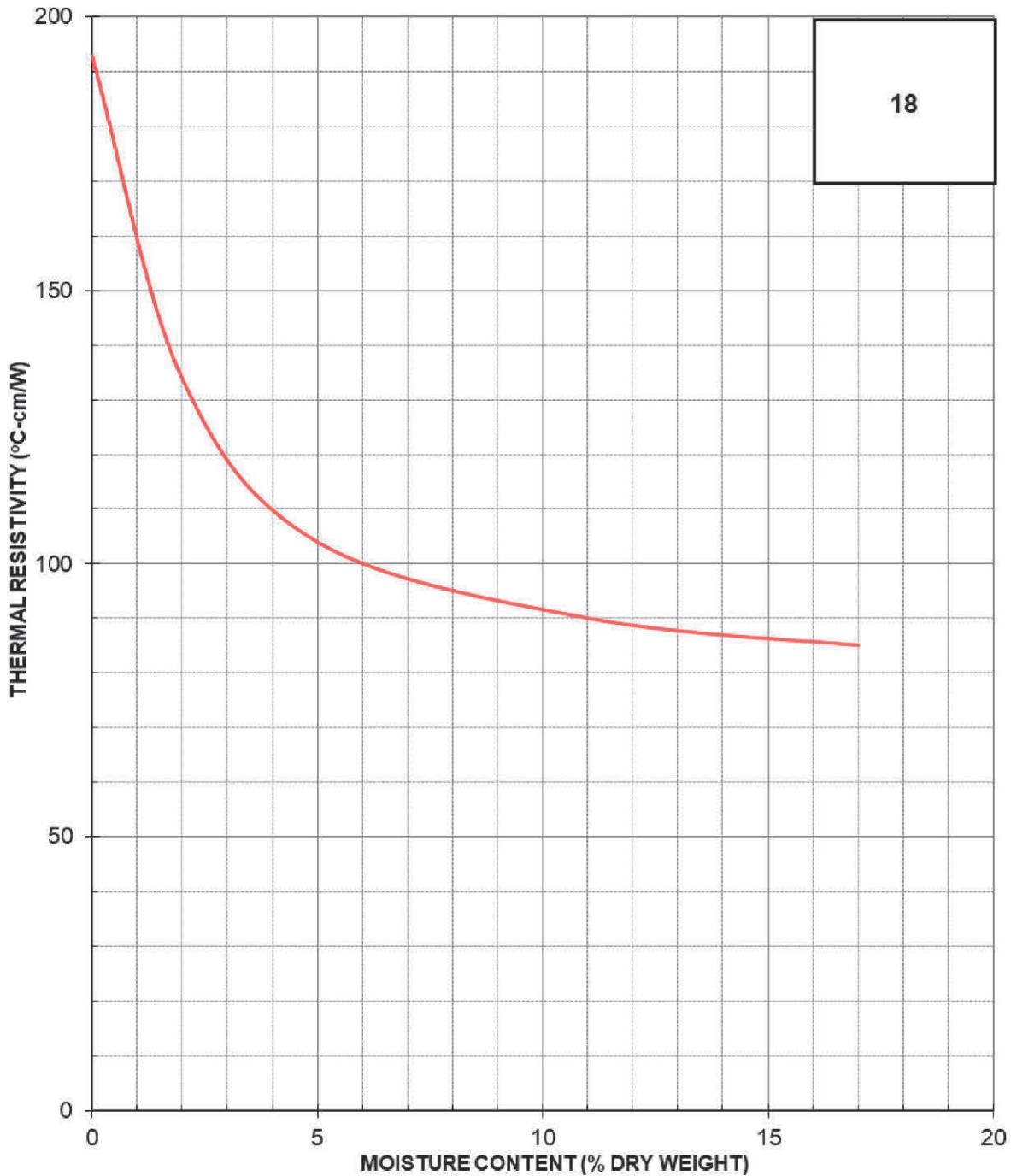
QTS Aurora – Aurora, CO

July 2021

Figure 4



THERMAL DRYOUT CURVE



Terracon (Project No. 25215031)

Thermal Analysis of Native Soil Samples

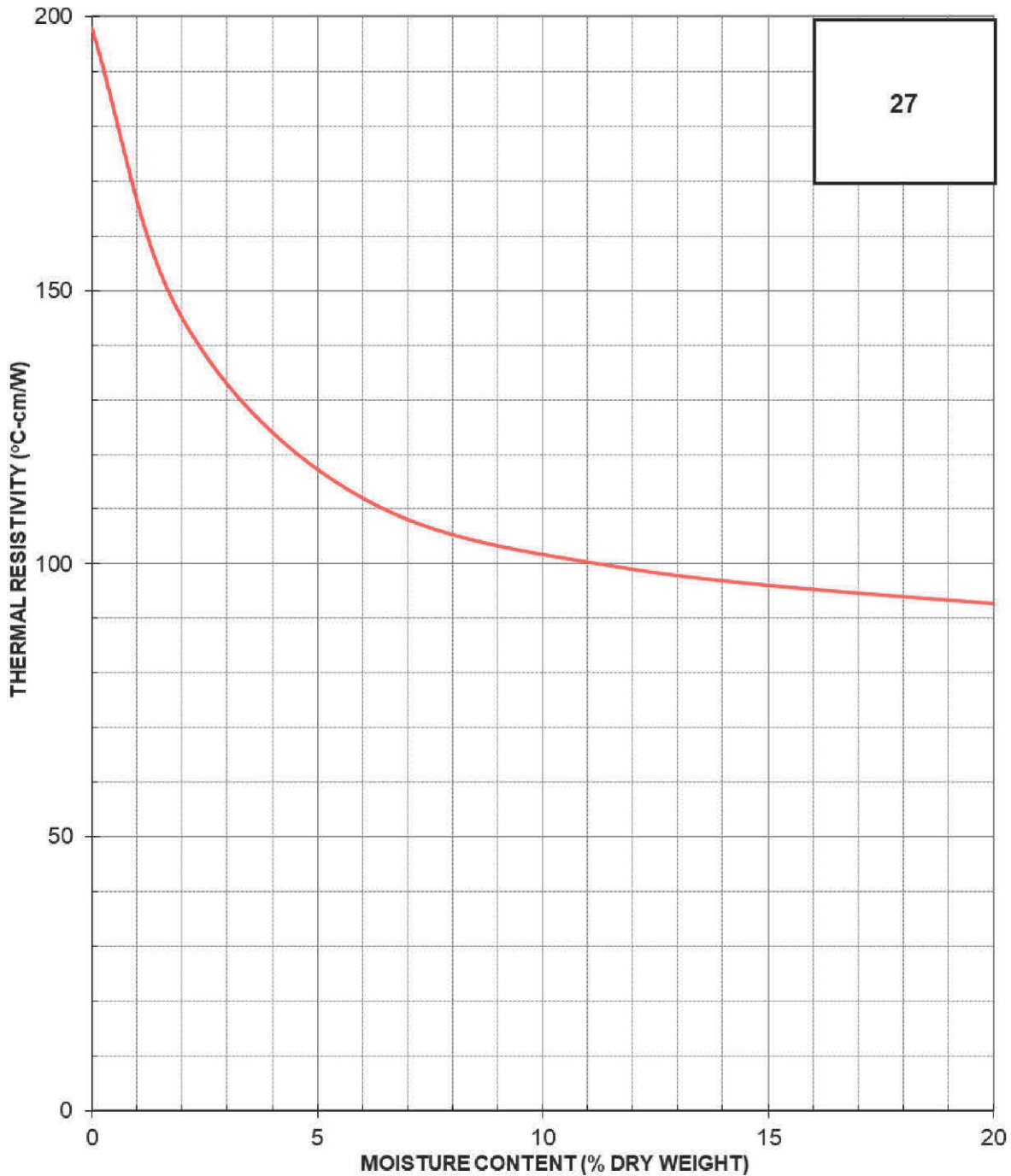
QTS Aurora – Aurora, CO

July 2021

Figure 5



THERMAL DRYOUT CURVE



Terracon (Project No. 25215031)

Thermal Analysis of Native Soil Samples

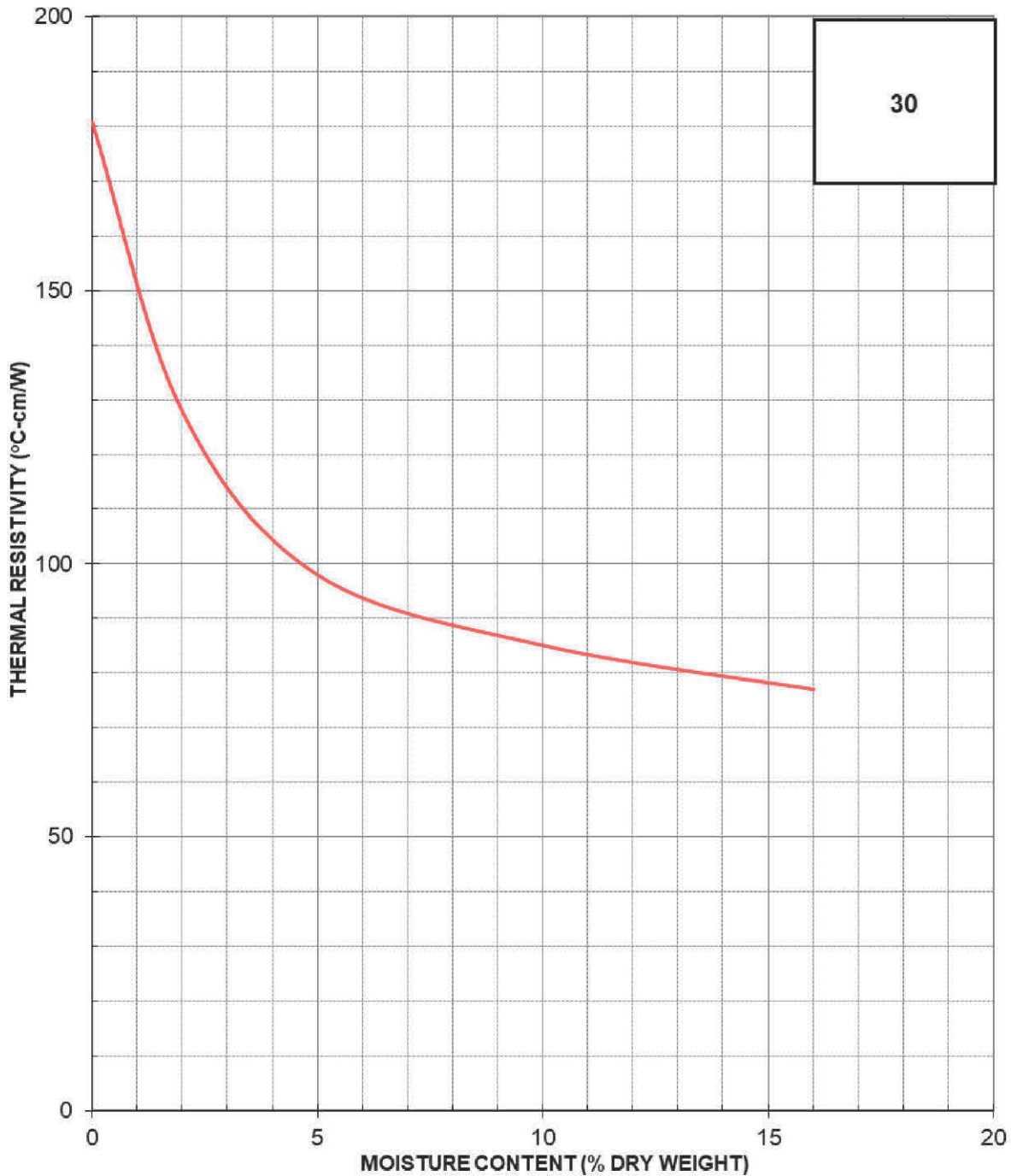
QTS Aurora – Aurora, CO

July 2021

Figure 6



THERMAL DRYOUT CURVE



Terracon (Project No. 25215031)

Thermal Analysis of Native Soil Samples

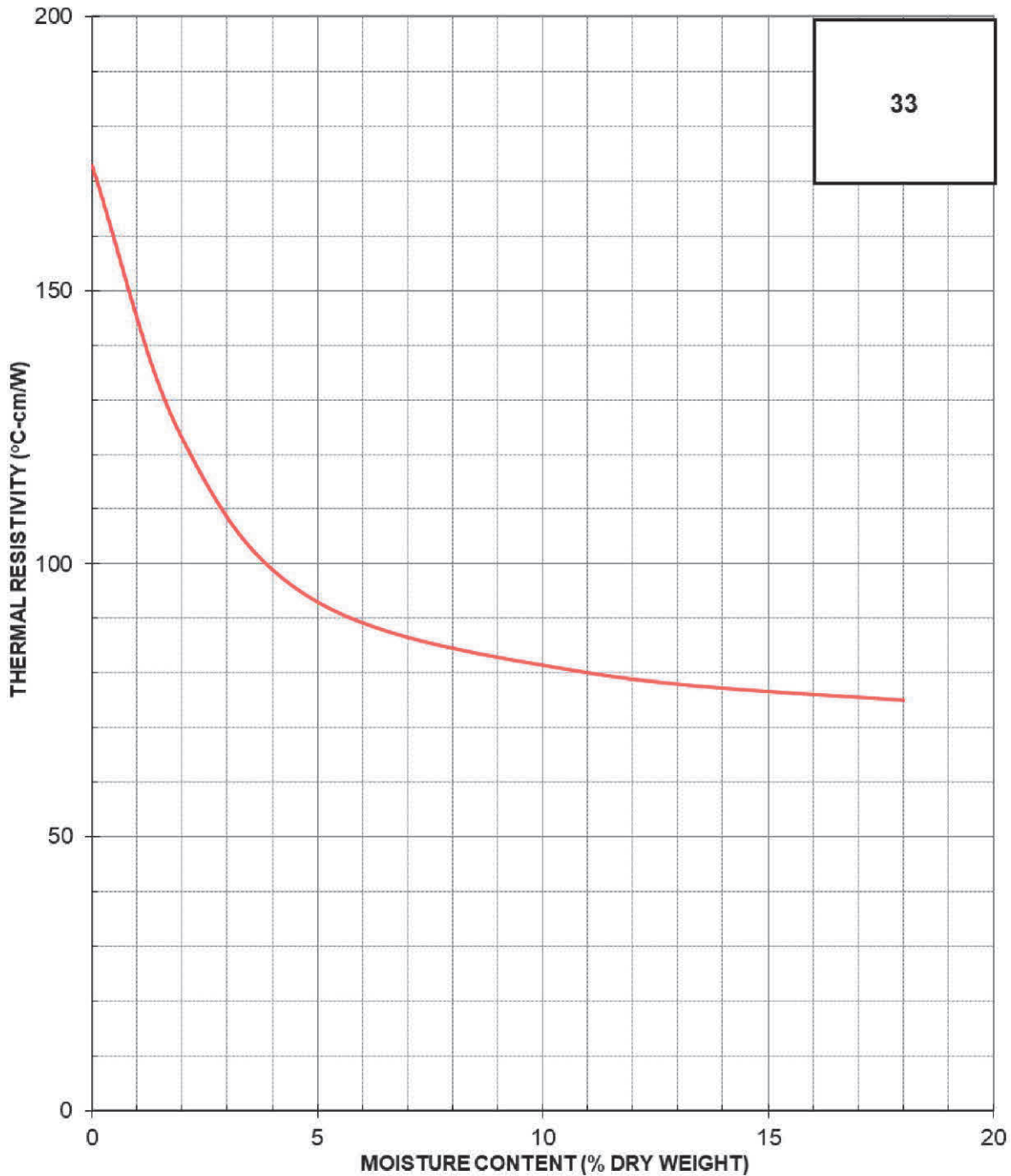
QTS Aurora – Aurora, CO

July 2021

Figure 7



THERMAL DRYOUT CURVE



Terracon (Project No. 25215031)

Thermal Analysis of Native Soil Samples

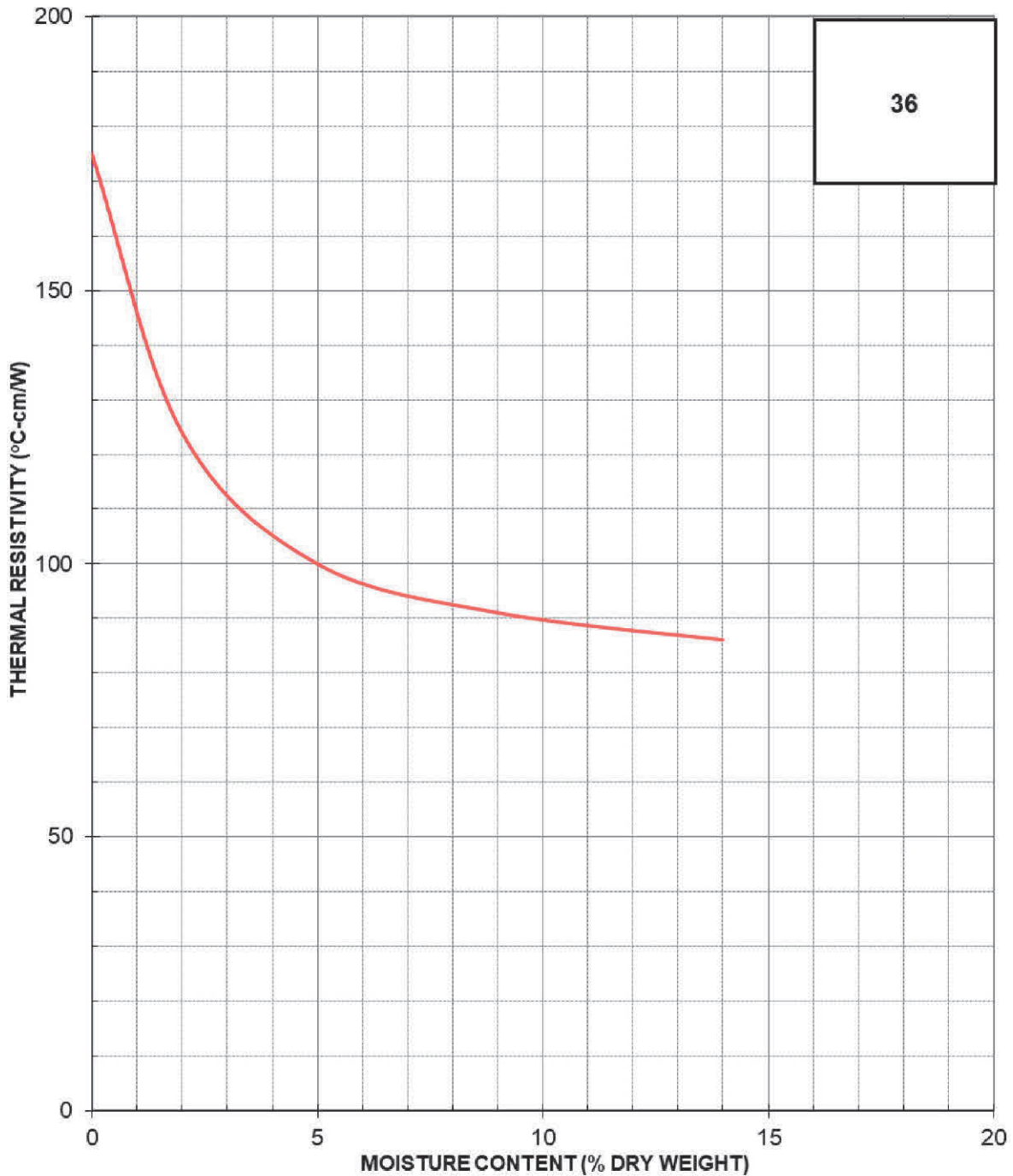
QTS Aurora – Aurora, CO

July 2021

Figure 8



THERMAL DRYOUT CURVE



Terracon (Project No. 25215031)

Thermal Analysis of Native Soil Samples

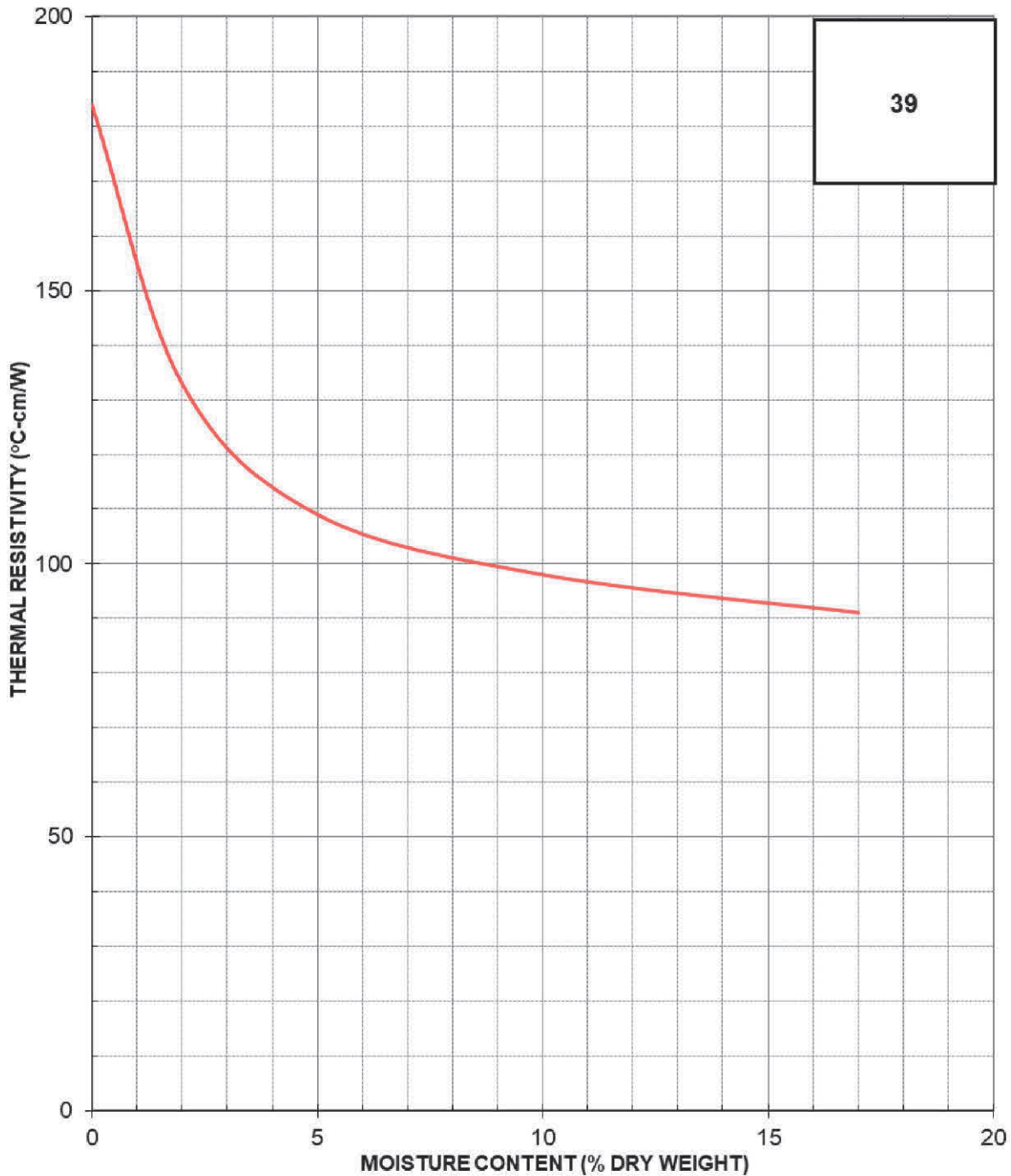
QTS Aurora – Aurora, CO

July 2021

Figure 9



THERMAL DRYOUT CURVE



Terracon (Project No. 25215031)

Thermal Analysis of Native Soil Samples

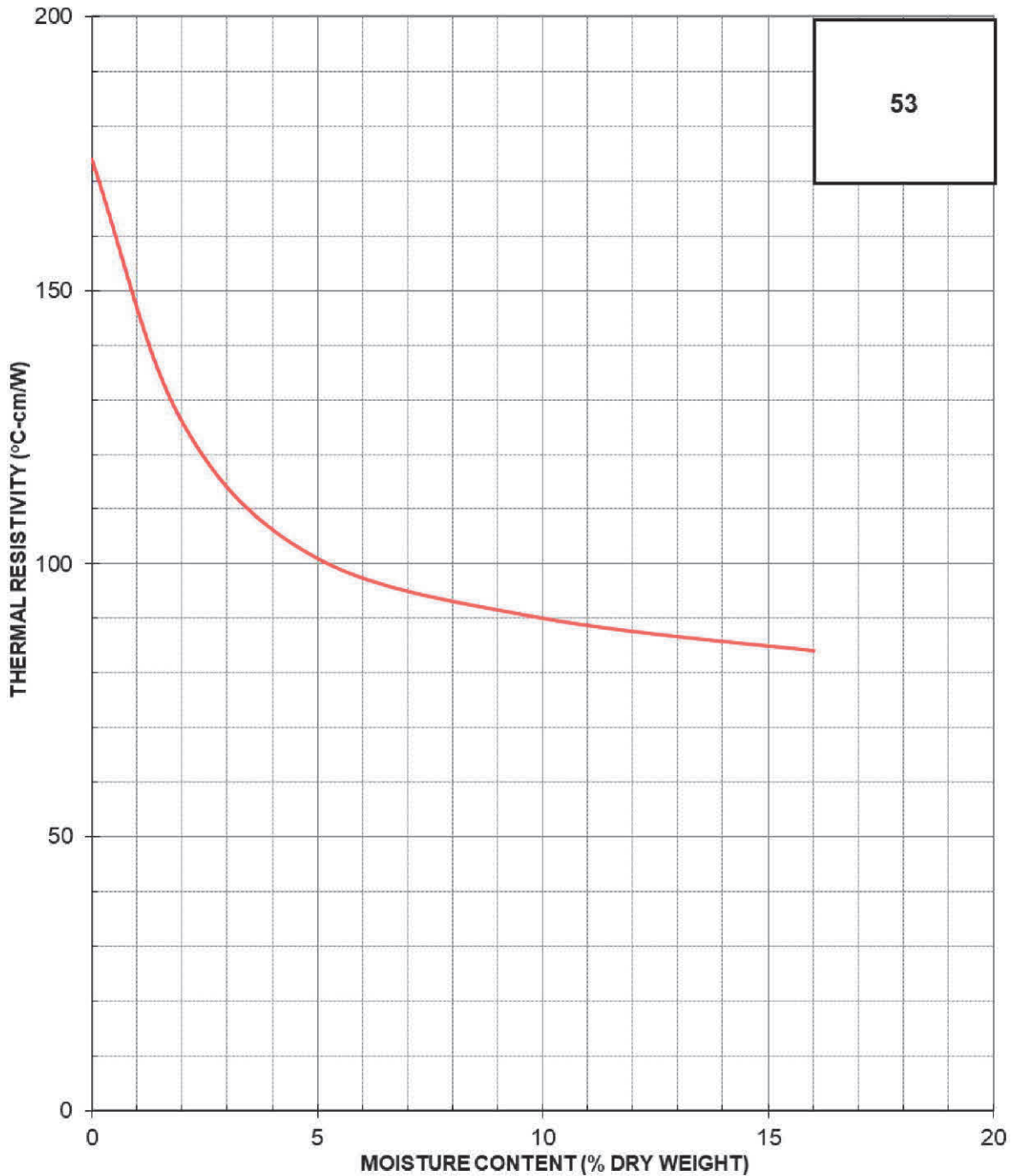
QTS Aurora – Aurora, CO

July 2021

Figure 10



THERMAL DRYOUT CURVE



Terracon (Project No. 25215031)

Thermal Analysis of Native Soil Samples

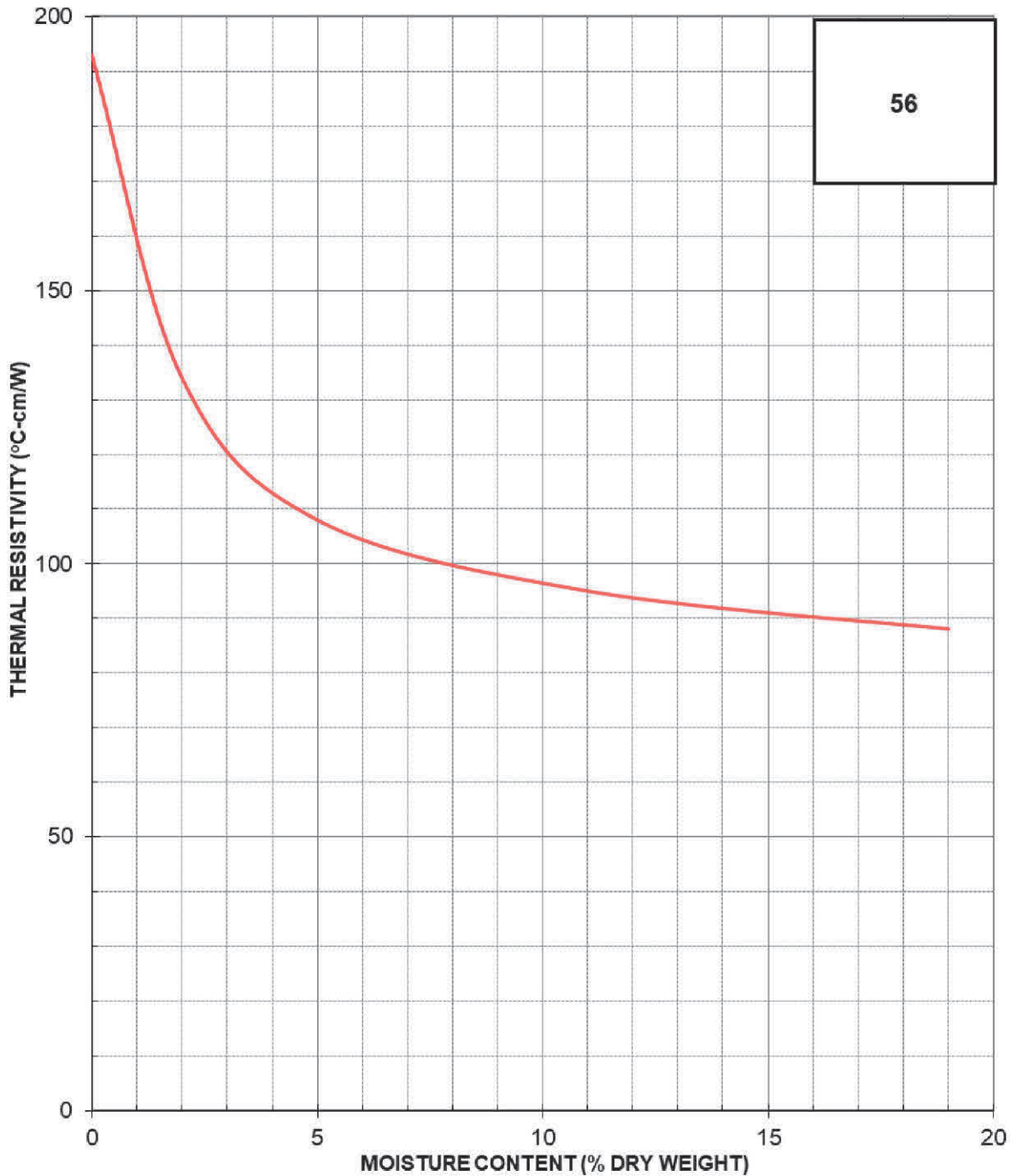
QTS Aurora – Aurora, CO

July 2021

Figure 11



THERMAL DRYOUT CURVE



Terracon (Project No. 25215031)

Thermal Analysis of Native Soil Samples

QTS Aurora – Aurora, CO

July 2021

Figure 12



Analytical Results

TASK NO: 210618111

Report To: John Taylor

Company: Terracon, Inc. - Wheat Ridge
10625 W. I-70 Frontage Road
Wheat Ridge CO 80033

Bill To: John Taylor

Company: Terracon, Inc. - Accounts Payable
18001 W. 106th St
Suite 300
Olathe KS 66061

Task No.: 210618111
Client PO:
Client Project: QTS Aurora 25215031

Date Received: 6/18/21
Date Reported: 6/25/21
Matrix: Soil - Geotech

Customer Sample ID 01@4ft
Lab Number: 210618111-01

Test	Result	Method
pH	7.6 units	AASHTO T289-91
Redox Potential	414.7 mv	ASTM D1498
Resistivity	1039 ohm.cm	AASHTO T288-91
Sulfate - Water Soluble	0.014 %	AASHTO T290-91/ ASTM D4327

Customer Sample ID 03@0-4ft
Lab Number: 210618111-02

Test	Result	Method
pH	7.1 units	AASHTO T289-91
Redox Potential	429.6 mv	ASTM D1498
Resistivity	1546 ohm.cm	AASHTO T288-91
Sulfate - Water Soluble	0.002 %	AASHTO T290-91/ ASTM D4327

Customer Sample ID 05@0-4ft
Lab Number: 210618111-03

Test	Result	Method
pH	7.5 units	AASHTO T289-91
Redox Potential	419.1 mv	ASTM D1498
Resistivity	1215 ohm.cm	AASHTO T288-91
Sulfate - Water Soluble	0.001 %	AASHTO T290-91/ ASTM D4327

Abbreviations/ References:

AASHTO - American Association of State Highway and Transportation Officials.
ASTM - American Society for Testing and Materials.
ASA - American Society of Agronomy.
DIPRA - Ductile Iron Pipe Research Association Handbook of Ductile Iron Pipe.

A handwritten signature in black ink, appearing to read "Steve Nielson", is written over a horizontal line.

DATA APPROVED FOR RELEASE BY

10411 Heinz Way / Commerce City, CO 80640 / 303-659-2313
Mailing Address: P.O. Box 507 / Brighton, CO 80601-0507

ASSOCIATED DOCUMENTS

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210618111
1/3



Analytical Results

TASK NO: 210618111

Report To: John Taylor

Company: Terracon, Inc. - Wheat Ridge
10625 W. I-70 Frontage Road
Wheat Ridge CO 80033

Bill To: John Taylor

Company: Terracon, Inc. - Accounts Payable
18001 W. 106th St
Suite 300
Olathe KS 66061

Task No.: 210618111
Client PO:
Client Project: QTS Aurora 25215031

Date Received: 6/18/21
Date Reported: 6/25/21
Matrix: Soil - Geotech

Customer Sample ID 11@0-4ft
Lab Number: 210618111-04

Test	Result	Method
pH	7.4 units	AASHTO T289-91
Redox Potential	361.6 mv	ASTM D1498
Resistivity	1160 ohm.cm	AASHTO T288-91
Sulfate - Water Soluble	0.021 %	AASHTO T290-91/ ASTM D4327

Customer Sample ID 17@0-4ft
Lab Number: 210618111-05

Test	Result	Method
pH	7.5 units	AASHTO T289-91
Redox Potential	351.6 mv	ASTM D1498
Resistivity	909 ohm.cm	AASHTO T288-91
Sulfate - Water Soluble	0.032 %	AASHTO T290-91/ ASTM D4327

Customer Sample ID 19@0-4ft
Lab Number: 210618111-06

Test	Result	Method
pH	7.6 units	AASHTO T289-91
Redox Potential	346.6 mv	ASTM D1498
Resistivity	1608 ohm.cm	AASHTO T288-91
Sulfate - Water Soluble	0.004 %	AASHTO T290-91/ ASTM D4327

Abbreviations/ References:

AASHTO - American Association of State Highway and Transportation Officials.
ASTM - American Society for Testing and Materials.
ASA - American Society of Agronomy.
DIPRA - Ductile Iron Pipe Research Association Handbook of Ductile Iron Pipe.

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Analytical Results

TASK NO: 210618111

Report To: John Taylor

Company: Terracon, Inc. - Wheat Ridge
10625 W. I-70 Frontage Road
Wheat Ridge CO 80033

Bill To: John Taylor

Company: Terracon, Inc. - Accounts Payable
18001 W. 106th St
Suite 300
Olathe KS 66061

Task No.: 210618111
Client PO:
Client Project: QTS Aurora 25215031

Date Received: 6/18/21
Date Reported: 6/25/21
Matrix: Soil - Geotech

Customer Sample ID 21@0-4ft
Lab Number: 210618111-07

Test	Result	Method
Chloride - Water Soluble	0.0050 %	AASHTO T291-91/ ASTM D4327
pH	7.2 units	AASHTO T289-91
Redox Potential	348.3 mv	ASTM D1498
Resistivity	664 ohm.cm	AASHTO T288-91
Sulfate - Water Soluble	0.124 %	AASHTO T290-91/ ASTM D4327

Abbreviations/ References:

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Analytical Results

TASK NO: 210630112

Report To: John Taylor

Company: Terracon, Inc. - Wheat Ridge
10625 W. I-70 Frontage Road
Wheat Ridge CO 80033

Bill To: John Taylor

Company: Terracon, Inc. - Accounts Payable
18001 W. 106th St
Suite 300
Olathe KS 66061

Task No.: 210630112
Client PO:
Client Project: QTS Aurora 25215031

Date Received: 6/30/21
Date Reported: 7/8/21
Matrix: Soil - Geotech

Customer Sample ID 22 @ 0-5
Lab Number: 210630112-01

Test	Result	Method
pH	7.7 units	AASHTO T289-91
Redox Potential	463.4 mv	ASTM D1498
Resistivity	726 ohm.cm	AASHTO T288-91
Sulfate - Water Soluble	0.038 %	AASHTO T290-91/ ASTM D4327

Customer Sample ID 24 @ 0-5
Lab Number: 210630112-02

Test	Result	Method
pH	6.8 units	AASHTO T289-91
Redox Potential	461.0 mv	ASTM D1498
Resistivity	1532 ohm.cm	AASHTO T288-91
Sulfate - Water Soluble	< 0.001 %	AASHTO T290-91/ ASTM D4327

Customer Sample ID 26 @ 0-5
Lab Number: 210630112-03

Test	Result	Method
pH	6.6 units	AASHTO T289-91
Redox Potential	443.3 mv	ASTM D1498
Resistivity	521 ohm.cm	AASHTO T288-91
Sulfate - Water Soluble	0.133 %	AASHTO T290-91/ ASTM D4327

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210630112
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ASSOCIATED DOCUMENTS

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Analytical Results

TASK NO: 210630112

Report To: John Taylor

Company: Terracon, Inc. - Wheat Ridge
10625 W. I-70 Frontage Road
Wheat Ridge CO 80033

Bill To: John Taylor

Company: Terracon, Inc. - Accounts Payable
18001 W. 106th St
Suite 300
Olathe KS 66061

Task No.: 210630112

Client PO:

Client Project: QTS Aurora 25215031

Date Received: 6/30/21

Date Reported: 7/8/21

Matrix: Soil - Geotech

Customer Sample ID 32 @ 0-5

Lab Number: 210630112-04

Test	Result	Method
pH	7.0 units	AASHTO T289-91
Redox Potential	428.6 mv	ASTM D1498
Resistivity	475 ohm.cm	AASHTO T288-91
Sulfate - Water Soluble	0.324 %	AASHTO T290-91/ ASTM D4327

Abbreviations/ References:

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Analytical Results

TASK NO: 210721171

Report To: John Taylor

Company: Terracon, Inc. - Wheat Ridge
10625 W. I-70 Frontage Road
Wheat Ridge CO 80033

Bill To: John Taylor

Company: Terracon, Inc. - Accounts Payable
18001 W. 106th St
Suite 300
Olathe KS 66061

Task No.: 210721171
Client PO:
Client Project: QTS Aurora 25215031

Date Received: 7/21/21
Date Reported: 7/28/21
Matrix: Soil - Geotech

Customer Sample ID B34 @ 0-5 Ft
Lab Number: 210721171-01

Test	Result	Method
pH	7.5 units	AASHTO T289-91
Redox Potential	425.8 mv	ASTM D1498
Resistivity	605 ohm.cm	AASHTO T288-91
Sulfate - Water Soluble	0.484 %	AASHTO T290-91/ ASTM D4327

Customer Sample ID B38 @ 0-5 Ft
Lab Number: 210721171-02

Test	Result	Method
pH	7.5 units	AASHTO T289-91
Redox Potential	381.8 mv	ASTM D1498
Resistivity	650 ohm.cm	AASHTO T288-91
Sulfate - Water Soluble	0.169 %	AASHTO T290-91/ ASTM D4327

Customer Sample ID B40 @ 0-5 Ft
Lab Number: 210721171-03

Test	Result	Method
pH	7.6 units	AASHTO T289-91
Redox Potential	391.5 mv	ASTM D1498
Resistivity	720 ohm.cm	AASHTO T288-91
Sulfate - Water Soluble	0.145 %	AASHTO T290-91/ ASTM D4327

Abbreviations/ References:

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210721171
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Analytical Results

TASK NO: 210721171

Report To: John Taylor

Company: Terracon, Inc. - Wheat Ridge
10625 W. I-70 Frontage Road
Wheat Ridge CO 80033

Bill To: John Taylor

Company: Terracon, Inc. - Accounts Payable
18001 W. 106th St
Suite 300
Olathe KS 66061

Task No.: 210721171
Client PO:
Client Project: QTS Aurora 25215031

Date Received: 7/21/21
Date Reported: 7/28/21
Matrix: Soil - Geotech

Customer Sample ID B42 @ 0-5 Ft
Lab Number: 210721171-04

Test	Result	Method
pH	7.6 units	AASHTO T289-91
Redox Potential	366.7 mv	ASTM D1498
Resistivity	1186 ohm.cm	AASHTO T288-91
Sulfate - Water Soluble	0.004 %	AASHTO T290-91/ ASTM D4327

Abbreviations/ References:

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Analytical Results

TASK NO: 210706225

Report To: John Taylor

Company: Terracon, Inc. - Wheat Ridge
10625 W. I-70 Frontage Road
Wheat Ridge CO 80033

Bill To: John Taylor

Company: Terracon, Inc. - Accounts Payable
18001 W. 106th St
Suite 300
Olathe KS 66061

Task No.: 210706225
Client PO:
Client Project: QTS Aurora 25215031

Date Received: 7/6/21
Date Reported: 7/13/21
Matrix: Soil - Geotech

Customer Sample ID S4 @ 0-5
Lab Number: 210706225-01

Test	Result	Method
pH	7.1 units	AASHTO T289-91
Redox Potential	445.9 mv	ASTM D1498
Resistivity	1749 ohm.cm	AASHTO T288-91
Sulfate - Water Soluble	0.001 %	AASHTO T290-91/ ASTM D4327

Customer Sample ID S7 @ 0-5
Lab Number: 210706225-02

Test	Result	Method
pH	7.1 units	AASHTO T289-91
Redox Potential	412.7 mv	ASTM D1498
Resistivity	766 ohm.cm	AASHTO T288-91
Sulfate - Water Soluble	0.035 %	AASHTO T290-91/ ASTM D4327

Customer Sample ID S8 @ 0-5
Lab Number: 210706225-03

Test	Result	Method
pH	7.1 units	AASHTO T289-91
Redox Potential	393.5 mv	ASTM D1498
Resistivity	786 ohm.cm	AASHTO T288-91
Sulfate - Water Soluble	0.015 %	AASHTO T290-91/ ASTM D4327

Abbreviations/ References:

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Mailing Address: P.O. Box 507 / Brighton, CO 80601-0507

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Analytical Results

TASK NO: 210618111

Report To: John Taylor

Company: Terracon, Inc. - Wheat Ridge
10625 W. I-70 Frontage Road
Wheat Ridge CO 80033

Bill To: John Taylor

Company: Terracon, Inc. - Accounts Payable
18001 W. 106th St
Suite 300
Olathe KS 66061

Task No.: 210618111
Client PO:
Client Project: QTS Aurora 25215031

Date Received: 6/18/21
Date Reported: 8/18/21
Matrix: Soil - Geotech

Customer Sample ID 1@4ft
Lab Number: 210618111-01

Test	Result	Method
Chloride - Water Soluble	0.0053 %	AASHTO T291-91/ ASTM D4327

Customer Sample ID 3@0-4ft
Lab Number: 210618111-02

Test	Result	Method
Chloride - Water Soluble	0.0004 %	AASHTO T291-91/ ASTM D4327

Customer Sample ID 5@0-4ft
Lab Number: 210618111-03

Test	Result	Method
Chloride - Water Soluble	0.0004 %	AASHTO T291-91/ ASTM D4327

Customer Sample ID 11@0-4ft
Lab Number: 210618111-04

Test	Result	Method
Chloride - Water Soluble	0.0024 %	AASHTO T291-91/ ASTM D4327

Customer Sample ID 17@0-4ft
Lab Number: 210618111-05

Test	Result	Method
Chloride - Water Soluble	0.0039 %	AASHTO T291-91/ ASTM D4327

Abbreviations/References:

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Analytical Results

TASK NO: 210618111

Report To: John Taylor

Company: Terracon, Inc. - Wheat Ridge
10625 W. I-70 Frontage Road
Wheat Ridge CO 80033

Bill To: John Taylor

Company: Terracon, Inc. - Accounts Payable
18001 W. 106th St
Suite 300
Olathe KS 66061

Task No.: 210618111
Client PO:
Client Project: QTS Aurora 25215031

Date Received: 6/18/21
Date Reported: 8/18/21
Matrix: Soil - Geotech

Customer Sample ID 19@0-4ft
Lab Number: 210618111-06

Test	Result	Method
Chloride - Water Soluble	0.0006 %	AASHTO T291-91/ ASTM D4327

Abbreviations/References:

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Analytical Results

TASK NO: 210630112

Report To: John Taylor

Company: Terracon, Inc. - Wheat Ridge
10625 W. I-70 Frontage Road
Wheat Ridge CO 80033

Bill To: John Taylor

Company: Terracon, Inc. - Accounts Payable
18001 W. 106th St
Suite 300
Olathe KS 66061

Task No.: 210630112
Client PO:
Client Project: QTS Aurora 25215031

Date Received: 6/30/21
Date Reported: 8/18/21
Matrix: Soil - Geotech

Customer Sample ID 22 @ 0-5
Lab Number: 210630112-01

Test	Result	Method
Chloride - Water Soluble	0.0004 %	AASHTO T291-91/ ASTM D4327

Customer Sample ID 24 @ 0-5
Lab Number: 210630112-02

Test	Result	Method
Chloride - Water Soluble	0.0003 %	AASHTO T291-91/ ASTM D4327

Customer Sample ID 26 @ 0-5
Lab Number: 210630112-03

Test	Result	Method
Chloride - Water Soluble	0.0027 %	AASHTO T291-91/ ASTM D4327

Customer Sample ID 32 @ 0-5
Lab Number: 210630112-04

Test	Result	Method
Chloride - Water Soluble	0.0129 %	AASHTO T291-91/ ASTM D4327

Abbreviations/References:

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Analytical Results

TASK NO: 210721171

Report To: John Taylor

Company: Terracon, Inc. - Wheat Ridge
10625 W. I-70 Frontage Road
Wheat Ridge CO 80033

Bill To: John Taylor

Company: Terracon, Inc. - Accounts Payable
18001 W. 106th St
Suite 300
Olathe KS 66061

Task No.: 210721171
Client PO:
Client Project: QTS Aurora 25215031

Date Received: 7/21/21
Date Reported: 8/18/21
Matrix: Soil - Geotech

Customer Sample ID B34 @ 0-5 Ft
Lab Number: 210721171-01

Test	Result	Method
Chloride - Water Soluble	0.0052 %	AASHTO T291-91/ ASTM D4327

Customer Sample ID B38 @ 0-5 Ft
Lab Number: 210721171-02

Test	Result	Method
Chloride - Water Soluble	0.0067 %	AASHTO T291-91/ ASTM D4327

Customer Sample ID B40 @ 0-5 Ft
Lab Number: 210721171-03

Test	Result	Method
Chloride - Water Soluble	0.0008 %	AASHTO T291-91/ ASTM D4327

Customer Sample ID B42 @ 0-5 Ft
Lab Number: 210721171-04

Test	Result	Method
Chloride - Water Soluble	0.0006 %	AASHTO T291-91/ ASTM D4327

Abbreviations/References:

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ASA - American Society of Agronomy.
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210721171
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Analytical Results

TASK NO: 210706225

Report To: John Taylor

Company: Terracon, Inc. - Wheat Ridge
10625 W. I-70 Frontage Road
Wheat Ridge CO 80033

Bill To: John Taylor

Company: Terracon, Inc. - Accounts Payable
18001 W. 106th St
Suite 300
Olathe KS 66061

Task No.: 210706225
Client PO:
Client Project: QTS Aurora 25215031

Date Received: 7/6/21
Date Reported: 8/18/21
Matrix: Soil - Geotech

Customer Sample ID S4 @ 0-5
Lab Number: 210706225-01

Test	Result	Method
Chloride - Water Soluble	0.0002 %	AASHTO T291-91/ ASTM D4327

Customer Sample ID S7 @ 0-5
Lab Number: 210706225-02

Test	Result	Method
Chloride - Water Soluble	0.0102 %	AASHTO T291-91/ ASTM D4327

Customer Sample ID S8 @ 0-5
Lab Number: 210706225-03

Test	Result	Method
Chloride - Water Soluble	0.0141 %	AASHTO T291-91/ ASTM D4327

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SUMMARY OF LABORATORY TEST RESULTS																							
QTS Aurora - Aurora, Colorado																							
Terracon Project No. 25215013																							
Boring No.	Depth (ft)	USCS Class.	Initial Water Content (%)	Initial Dry Density (pcf)	Swell/Consolidation		Moisture-Density Relationship			Particle Size Distribution, Percent Passing by Weight					Atterberg Limits		Unconfined Compressive Strength (psf)	Water Soluble Sulfates (%)	Water Soluble Chlorides (%)	pH	Redox (mv)	Resistivity (ohm.cm)	Remarks
					Surcharge (ksf)	Swell (%)	Maximum Dry Density (pcf)	Optimum Water Content (%)	Test Method	3/4"	#4	#40	#200	LL	PI								
01	0 - 4	CL									100	100	94	76	32	18		0.014	0.0053	7.6	414.7	1039	
01	5	CL	14.8	120																		4	
01	7.5	CL	14.5	117	0.5	+2.8																3.4	
01	10	CL	16.2	117																		4	
01	15		21.0	106																		4	
01	24		11.7	128																		4	
01	34		19.4	108																		4	
01	44		21.5	105																		4	
02	0 - 4	CL									100	100	95	80	32	17							
02	2.5	CL	18.1	113																		4	
02	7.5	CL	9.5	117																		4	
02	10		18.0	110	0.5	+6.2																3.4	
02	12.5		23.0	103																		4	
02	19		24.1	102																		4	
02	29		21.0	107																		4	
02	39		26.1	97																		4	
03	0 - 4	CL									100	100	94	76	36	20		0.002	0.0004	7.1	429.6	1546	
03	5	CL	12.8	114																		4	
03	7.5	CL	12.0	123	0.5	+2.4																3.4	
03	10	SC	13.8	120																		4	
03	15		2.7																				
03	24		3.0																				
03	34		19.9	107																		4	
04	0 - 4	CL									100	100	96	79	42	28							
04	2.5	CL	20.8	108																		4	
04	5	CL	18.6	109	0.5	+1.3																3.4	
04	7.5	CL	20.8	108																		4	
04	12.5		25.4	101																		4	
04	19	SC	20.4	106																		4	
04	29		23.0	101																		4	
04	39		21.8	103																		4	
05	0 - 4	CL									100	100	95	79	43	24		0.001	0.0004	7.5	419.1	1215	
05	2.5	CL	18.9	108																		4	
05	5	CL	16.4	112	0.5	+3.0																3.4	

Notes:

Initial Dry Density and Initial Water Content are in-situ values unless otherwise noted.
* = Partially disturbed sample
- = Compression/settlement
NV = no value
NP = non-plastic

Remarks:

- 1 Remolded Compacted density (about 95% of ASTM D698 maximum density near optimum moisture content)
- 2 Remolded Compacted density (about 95% of ASTM D1557 maximum density near optimum moisture content)
- 3 Water added to sample
- 4 Dry density and/or moisture content determined from one ring of a multi-ring sample
- 5 Minus #200 Only
- 6 Moisture-Density Relationship Test Method ASTM D698/AASHTO T99
- 7 Moisture-Density Relationship Test Method ASTM D1557/AASHTO T180

SUMMARY OF LABORATORY TEST RESULTS															
QTS Aurora - Aurora, Colorado															
Terracon Project No. 25215013															
Boring No.	Depth (ft)	USCS Class.	Initial Water Content (%)	Initial Dry Density (pcf)	Swell/Consolidation		Moisture-Density Relationship			Particle Size Distribution, Percent Passing by Weight				Atterberg Limits	
					Surcharge (ksf)	Swell (%)	Maximum Dry Density (pcf)	Optimum Water Content (%)	Test Method	3/4"	#4	#40	#200	LL	PI
05	7.5	SC	9.8	119											
05	12.5		21.3	107											
05	19		24.1	103											
05	29		15.3	113											
05	39		23.7	103											
05	49		25.5	99											
06	0 - 4	CL					109.1	15.1	D698B	100	100	95	76	33	17
06	5	CL	10.6	122											
06	7.5	CL	16.7	113	0.5	+1.9									
06	10	CL	10.0	114											
06	15		4.1	105											
06	24		1.1												
06	34		10.6	118											
07	0 - 4	CL								100	100	96	78	43	28
07	2.5	CL	10.2	125											
07	7.5	CL	12.2	120											
07	12.5		23.6	100	0.5	+5.6									
07	19		22.0	106											
07	29		29.9	94											
07	39		14.6	112											
08	0 - 4	CL								100	100	96	82	28	15
08	5		12.2	117	0.5	+6.2									
08	10		16.6	114											
08	15		21.1	110											
08	24		25.5	98											
08	34		25.9	101											
09	0 - 4	CL					110.2	15.8	D698B	100	100	97	88	34	19
09	2.5	CL	18.5	109											
09	5	CL	11.3	122	0.5	+2.5									
09	7.5	SC	9.7	123											
09	12.5		14.7	120											
09	19		15.0												
09	29		22.3	103											
09	39		23.8												

Notes:

Initial Dry Density and Initial Water Content are in-situ values unless otherwise noted.
* = Partially disturbed sample
- = Compression/settlement
NV = no value
NP = non-plastic

Remarks:

- 1 Remolded Compacted density (about 95% of ASTM D698 maximum density near optimum moisture content)
- 2 Remolded Compacted density (about 95% of ASTM D1557 maximum density near optimum moisture content)
- 3 Water added to sample
- 4 Dry density and/or moisture content determined from one ring of a multi-ring sample
- 5 Minus #200 Only
- 6 Moisture-Density Relationship Test Method ASTM D698/AASHTO T99
- 7 Moisture-Density Relationship Test Method ASTM D1557/AASHTO T180

SUMMARY OF LABORATORY TEST RESULTS															
QTS Aurora - Aurora, Colorado															
Terracon Project No. 25215013															
Boring No.	Depth (ft)	USCS Class.	Initial Water Content (%)	Initial Dry Density (pcf)	Swell/Consolidation		Moisture-Density Relationship			Particle Size Distribution, Percent Passing by Weight				Atterberg Limits	
					Surcharge (ksf)	Swell (%)	Maximum Dry Density (pcf)	Optimum Water Content (%)	Test Method	3/4"	#4	#40	#200	LL	PI
10	0 - 4	CL	15.7	101	0.5	+0.6	106.0	15.7	D698B	100	100	98	88	39	25
10	0 - 4	CL	18.0	101	0.5	+0.1	106.0	15.7	D698B	100	100	98	88	39	25
10	0 - 4	CL	20.3	100	0.5	-0.5	106.0	15.7	D698B	100	100	98	88	39	25
10	5	CL	14.0	117											4
10	7.5		11.9	123	0.5	+2.2									3.4
10	10		18.8	113											4
10	15		14.9												
10	24		17.3												
10	34		20.6	111											
11	0 - 4	CL								100	100	94	78	29	12
11	2.5	CL	12.5	124	0.5	+0.9									
11	7.5		11.9	125											
11	12.5		6.5												
11	19		19.5	109											4
11	29		19.3	110											4
11	39		20.8	108											4
12	0 - 4	CL					105.7	17.4	D698B	100	100	96	83	34	16
12	5	CL	11.3	117	0.5	+3.1									6
12	10	SC	14.6	115											3.4
12	15		12.0	113											4
12	24		12.6	113											4
12	34		14.9												4
13	0 - 4	CL								100	100	97	87	37	17
13	2.5	CL	17.7	113											
13	7.5		10.7	124	0.5	+3.1									4
13	12.5		8.9	108											4
13	19		21.4	106											4
13	29		16.2	116											4
13	39		22.9	101											4
14	0 - 4	CL								100	100	96	83	42	27
14	5	CL	12.3	122	0.5	+2.6									
14	10		13.0	116											3.4
14	15		25.3	99											4
14	24		17.9	112											4

Notes:

Initial Dry Density and Initial Water Content are in-situ values unless otherwise noted.
* = Partially disturbed sample
- = Compression/settlement
NV = no value
NP = non-plastic

Remarks:

- 1 Remolded Compacted density (about 95% of ASTM D698 maximum density near optimum moisture content)
- 2 Remolded Compacted density (about 95% of ASTM D1557 maximum density near optimum moisture content)
- 3 Water added to sample
- 4 Dry density and/or moisture content determined from one ring of a multi-ring sample
- 5 Minus #200 Only
- 6 Moisture-Density Relationship Test Method ASTM D698/AASHTO T99
- 7 Moisture-Density Relationship Test Method ASTM D1557/AASHTO T180

SUMMARY OF LABORATORY TEST RESULTS																							
QTS Aurora - Aurora, Colorado																							
Terracon Project No. 25215013																							
Boring No.	Depth (ft)	USCS Class.	Initial Water Content (%)	Initial Dry Density (pcf)	Swell/Consolidation		Moisture-Density Relationship			Particle Size Distribution, Percent Passing by Weight					Atterberg Limits		Unconfined Compressive Strength (psf)	Water Soluble Sulfates (%)	Water Soluble Chlorides (%)	pH	Redox (mv)	Resistivity (ohm.cm)	Remarks
					Surcharge (ksf)	Swell (%)	Maximum Dry Density (pcf)	Optimum Water Content (%)	Test Method	3/4"	#4	#40	#200	LL	PI								
14	34		9.2	131																		4	
15	0 -4	CL						108.5	16.8	D698B	100	100	96	86	34	19						6	
15	2.5	CL	21.2	104																		4	
15	5	CL	16.0	114	0.5	+1.6																3,4	
15	7.5		15.4	117																		4	
15	12.5		11.7	110																		4	
15	19		12.0																				
15	29		19.5	109																		4	
15	39		19.2	110																		4	
16	0 -4	CL									100	100	95	78	32	15							
16	2.5	CL	12.9	119																		4	
16	7.5	CL	18.2	110																		4	
16	12.5		24.0	102	0.5	+5.0																3,4	
16	15		23.3	103																		4	
16	19		22.9	103																		4	
16	29		15.2	113																		4	
16	39		20.0	105																		4	
17	0 -4	CL									100	100	94	75	32	18	0.032	0.0039	7.5	351.6	909		
17	5	CL	13.0	112																		4	
17	10		22.8	105	0.5	+10.3																3,4	
17	15		21.5	105																		4	
17	24		21.0	104																		4	
17	34		21.6	104																		4	
18	0 -4	CL						104.5	16.5	D698B	100	100	95	85	32	16						6	
18	2.5	CL	14.5																				
18	5		11.9	122	0.5	+9.1																3,4	
18	7.5		13.3	120																		4	
18	12.5		19.4	108																		4	
18	19		18.1	111																		4	
18	29		18.9																				
19	0 -4	CL									100	100	93	67	30	16	0.004	0.0006	7.6	346.6	1608		
19	5	CL	20.2	105																		4	
19	7.5	CL	25.6	100	0.5	+2.4																3,4	
19	10	CL	17.2	113																		4	

SUMMARY OF LABORATORY TEST RESULTS																							
QTS Aurora - Aurora, Colorado																							
Terracon Project No. 25215013																							
Boring No.	Depth (ft)	USCS Class.	Initial Water Content (%)	Initial Dry Density (pcf)	Swell/Consolidation		Moisture-Density Relationship		Particle Size Distribution, Percent Passing by Weight						Atterberg Limits		Unconfined Compressive Strength (psf)	Water Soluble Sulfates (%)	Water Soluble Chlorides (%)	pH	Redox (mv)	Resistivity (ohm.cm)	Remarks
					Surcharge (ksf)	Swell (%)	Maximum Dry Density (pcf)	Optimum Water Content (%)	Test Method	3/4"	#4	#40	#200	LL	PI								
19	12.5		21.4	105																		4	
19	29		27.4	92																		4	
19	39		24.5	101																		4	
20	0 - 4	CL								100	100	95	83	29	14								
20	5		11.7	122																		4	
20	7.5		12.3	123	0.5	+9.2																3,4	
20	12.5		5.0																				
20	19		18.0																				
20	29		26.5	96																			
21	0 - 4	CL								100	100	96	85	33	16		0.124	0.0050	7.2	348.3	664	4	
21	2.5	CL	14.8	109																		4	
21	7.5		19.7	111	0.5	+9.7																3,4	
21	12.5		12.9	118																		4	
21	24		21.8	104												23614						4	
21	34		21.5																				
22	0 - 4	CL								100	100	92	65	37	21		0.038	0.0004	7.7	463.4	726		
22	5	CL	22.9	102																		4	
22	7.5		23.7	102	0.5	+4.3																3,4	
22	12.5		25.2																			4	
22	15		16.8	112																		4	
22	19		26.0	98												16050						4	
22	29		23.4	103																		4	
22	39		28.9	92																		4	
23	2.5	CL	15.2	115																		4	
23	5	CL	15.7	114	0.5	+1.1																3,4	
23	7.5	CL	20.6	108																		4	
23	12.5		22.8	103																		4	
23	19		24.9	101																		4	
23	29		23.6	103																		4	
24	0 - 4	CL								100	100	91	66	37	21		<0.001	0.0003	6.8	461.0	1532		
24	7.5	CL	16.3	112																		4	
24	15		22.3	106																		4	
24	24		21.1	106																		4	
24	34		23.1	104																		4	

Notes:

Initial Dry Density and Initial Water Content are in-situ values unless otherwise noted.
* = Partially disturbed sample
- = Compression/settlement
NV = no value
NP = non-plastic

Remarks:

- 1 Remolded Compacted density (about 95% of ASTM D698 maximum density near optimum moisture content)
- 2 Remolded Compacted density (about 95% of ASTM D1557 maximum density near optimum moisture content)
- 3 Water added to sample
- 4 Dry density and/or moisture content determined from one ring of a multi-ring sample
- 5 Minus #200 Only
- 6 Moisture-Density Relationship Test Method ASTM D698/AASHTO T99
- 7 Moisture-Density Relationship Test Method ASTM D1557/AASHTO T180

SUMMARY OF LABORATORY TEST RESULTS																							
QTS Aurora - Aurora, Colorado																							
Terracon Project No. 25215013																							
Boring No.	Depth (ft)	USCS Class.	Initial Water Content (%)	Initial Dry Density (pcf)	Swell/Consolidation		Moisture-Density Relationship			Particle Size Distribution, Percent Passing by Weight					Atterberg Limits		Unconfined Compressive Strength (psf)	Water Soluble Sulfates (%)	Water Soluble Chlorides (%)	pH	Redox (mv)	Resistivity (ohm.cm)	Remarks
					Surcharge (ksf)	Swell (%)	Maximum Dry Density (pcf)	Optimum Water Content (%)	Test Method	3/4"	#4	#40	#200	LL	PI								
25	0 - 4	CL									100	100	95	75	38	21							
25	5	CL	20.3	106																		4	
25	10		19.1	117																		4	
25	15		21.7	109																		4	
25	24		26.1	100																		4	
25	34		21.9	111																		4	
26	0 - 4	CL									100	100	94	82	36	20	0.133	0.0027	6.6	443.3	521		
26	2.5	CL	19.4	109																		4	
26	7.5		19.9	108	0.5	+10.7																3,4	
26	12.5		7.0																			4	
26	19		20.4	108																		4	
26	29		18.3	110																		4	
26	39		21.8	106																		4	
27	0 - 4	CL						100.0	21.2	D698B	100	100	98	91	46	30							
27	2.5	CL	18.4	112																		4	
27	5	CL	14.1	117																		4	
27	7.5	CL	18.7	110	0.5	+1.7																3,4	
27	10		21.4	107																		4	
27	12.5		21.4	106	0.5	+3.0																3,4	
27	15		22.1	105																		4	
27	19		21.8	108																		4	
27	24		19.2	111																		4	
27	29		20.4	107																		4	
27	34		22.7	103																		6	
28	0 - 4	CL						102.3	19.5	D698B	100	100	93	80	41	24							
28	5	CL	18.2	106	0.5	+4.2																3,4	
28	10		18.4	110																		4	
28	15		18.6																			4	
28	24		18.8	109													39860					4	
28	34		18.7	111																		4	
29	5		16.4	115	0.5	+7.3																3,4	
29	12.5		9.5																			4	
29	19		20.5	105																		4	
29	29		17.8	110																		4	

Notes:

Initial Dry Density and Initial Water Content are in-situ values unless otherwise noted.
* = Partially disturbed sample
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NP = no value
NP = non-plastic

Remarks:

- 1 Remolded Compacted density (about 95% of ASTM D698 maximum density near optimum moisture content)
- 2 Remolded Compacted density (about 95% of ASTM D1557 maximum density near optimum moisture content)
- 3 Water added to sample
- 4 Dry density and/or moisture content determined from one ring of a multi-ring sample
- 5 Minus #200 Only
- 6 Moisture-Density Relationship Test Method ASTM D698/AASHTO T99
- 7 Moisture-Density Relationship Test Method ASTM D1557/AASHTO T180

SUMMARY OF LABORATORY TEST RESULTS

QTS Aurora - Aurora, Colorado
Terracon Project No. 25215013

Boring No.	Depth (ft)	USCS Class.	Initial Water Content (%)	Initial Dry Density (pcf)	Swell/Consolidation		Moisture-Density Relationship			Particle Size Distribution, Percent Passing by Weight				Unconfined Compressive Strength (psf)	Water Soluble Sulfates (%)	Water Soluble Chlorides (%)	pH	Redox (mv)	Resistivity (ohm.cm)	Remarks
					Surcharge (ksf)	Swell (%)	Maximum Dry Density (pcf)	Optimum Water Content (%)	Test Method	3/4"	#4	#40	#200	LL	PI					
30	0 - 4	CL					106.4	16.2	D698B	100	100	97	89	32	16					6
30	5	CL	17.5	114	0.5	+2.1														3.4
30	10		18.6	108																4
30	15		18.7	112																4
30	24		20.9	106																4
30	34		19.9	108																4
31	0 - 4	CL	17.2	104	0.5	0.0	110.5	17.4	D698B	100	100	90	63	30	15					1.3.6
31	0 - 4	CL	18.8	105	0.5	-0.1	110.5	17.4	D698B	100	100	90	63	30	15					1.3.6
31	0 - 4	CL	20.9	106	0.5	-0.5	110.5	17.4	D698B	100	100	90	63	30	15					1.3.6
31	2.5	CL	16.1	114																4
31	7.5		20.6	106	0.5	+5.9														3.4
31	12.5		23.6	103																4
31	19		24.5	102																4
32	0 - 4	CL								100	100	91	75	32	18	0.324	0.0129	7.0	428.6	475
32	5		18.5	108	0.5	+7.1														3.4
32	10		14.8	119																4
32	15		17.1	113																4
32	24		20.7																	4
32	34		20.1	108																4
33	0 - 4	CL					105.3	18.2	D698B	100	100	95	81	39	23					6
33	2.5	CL	20.4	107																4
33	7.5	CL	19.8	106	0.5	+2.7														3.4
33	12.5		22.0	105																4
33	19		21.8	106																4
33	29		9.2	131																4
33	39		17.4																	4
34	0 - 4	CL								100	100	94	77	36	21	0.484	0.0052	7.5	425.8	605
34	5	CL	19.7	108	0.5	+2.3														3.4
34	10		22.7	105																4
34	15		16.8	115																4
34	24		16.7	111																4
34	34		21.6	107																4
35	0 - 4	CL								100	100	97	87	40	22					4
35	2.5	CL	16.6	113																4

Notes:

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Remarks:

- 1 Remolded Compacted density (about 95% of ASTM D698 maximum density near optimum moisture content)
- 2 Remolded Compacted density (about 95% of ASTM D1557 maximum density near optimum moisture content)
- 3 Water added to sample
- 4 Dry density and/or moisture content determined from one ring of a multi-ring sample
- 5 Minus #200 Only
- 6 Moisture-Density Relationship Test Method ASTM D698/AASHTO T99
- 7 Moisture-Density Relationship Test Method ASTM D1557/AASHTO T180

SUMMARY OF LABORATORY TEST RESULTS																							
QTS Aurora - Aurora, Colorado																							
Terracon Project No. 25215013																							
Boring No.	Depth (ft)	USCS Class.	Initial Water Content (%)	Initial Dry Density (pcf)	Swell/Consolidation		Moisture-Density Relationship			Particle Size Distribution, Percent Passing by Weight					Atterberg Limits		Unconfined Compressive Strength (psf)	Water Soluble Sulfates (%)	Water Soluble Chlorides (%)	pH	Redox (mv)	Resistivity (ohm.cm)	Remarks
					Surcharge (ksf)	Swell (%)	Maximum Dry Density (pcf)	Optimum Water Content (%)	Test Method	3/4"	#4	#40	#200	LL	PI								
35	7.5		18.6	112	0.5	+6.2																3,4	
35	12.5		20.1	109																		4	
35	19		19.6	113																		4	
35	29		20.3	108																		4	
35	39		15.6	110																		4	
36	0 - 4	CL					107.5	14.0	D698B	100	100	93	77		40	23						6	
36	5		15.2	117	0.5	+6.0																3,4	
36	7.5		18.7	110	0.5	+6.2																3,4	
36	10		21.7	105																		4	
36	19		17.8	116																		4	
36	29		22.6	104																		4	
36	39		20.6	107																		4	
37	0 - 4	CL								100	100	97	88		38	21						4	
37	5	CL	23.0	101																		4	
37	10		19.0	110	0.5	+3.6																3,4	
37	15		22.7	104																		4	
37	24		20.8																			4	
37	34		18.5	117																		4	
38	0 - 4	CL								100	100	88	70		32	17	0.169	0.0067		7.5	381.8	650	
38	5	CL	16.4																			4	
38	7.5		17.6																			4	
38	10		18.0																			4	
38	15		19.6																			4	
38	24		16.4																			4	
38	34		21.5																			4	
38	44		26.7	96																		4	
39	0 - 4	CL					106.5	17.2	D698B	100	100	97	88		41	21						4	
39	2.5	CL	18.0	114																		4	
39	5		14.5	117	0.5	+7.1																3,4	
39	7.5		18.7	111																		4	
39	12.5		14.7	125																		4	
39	19		18.0	111																		4	
39	29		15.0	115																		4	
39	39		15.3	114																		4	

Notes:

Initial Dry Density and Initial Water Content are in-situ values unless otherwise noted.
* = Partially disturbed sample
- = Compression/settlement
NV = no value
NP = non-plastic

Remarks:

- 1 Remolded Compacted density (about 95% of ASTM D698 maximum density near optimum moisture content)
- 2 Remolded Compacted density (about 95% of ASTM D1557 maximum density near optimum moisture content)
- 3 Water added to sample
- 4 Dry density and/or moisture content determined from one ring of a multi-ring sample
- 5 Minus #200 Only
- 6 Moisture-Density Relationship Test Method ASTM D698/AASHTO T99
- 7 Moisture-Density Relationship Test Method ASTM D1557/AASHTO T180

SUMMARY OF LABORATORY TEST RESULTS														
QTS Aurora - Aurora, Colorado														
Terracon Project No. 25215013														
Boring No.	Depth (ft)	USCS Class.	Initial Water Content (%)	Initial Dry Density (pcf)	Swell/Consolidation		Moisture-Density Relationship			Particle Size Distribution, Percent Passing by Weight				Atterberg Limits
					Surcharge (ksf)	Swell (%)	Maximum Dry Density (pcf)	Optimum Water Content (%)	Test Method	3/4"	#4	#40	#200	LL
40	0 - 4	CL								100	100	94	81	31
40	7.5	CL	16.1	113										
40	10		15.1	119	0.5	+5.2								
40	19		19.1	111										
40	29		18.2	108										
40	39		18.4	109										
40	49		18.2	110										
41	0 - 4	CL								100	100	94	79	31
41	5	CL	12.5	98										
41	10		18.8											
41	19		19.3	107										
41	29		22.0	103										
42	0 - 4	CL								100	100	95	83	39
42	5	CL	20.6	106										
42	10		19.9	111										
42	12.5		22.8	105	0.5	+10.4								
42	19		18.6	111										
42	29		23.7	103										
42	39		18.3	114						100	100	90	63	26
F1	0 - 4	CL												
F1	5	CL	10.4	130										
F1	10		10.7	126	0.5	+6.0								
F1	15		11.5											
F1	19		19.3	108										
F1	29		23.3	102										
F2	0 - 4	CL												
F2	5	CL	20.8	104						100	100	96	86	37
F2	10		21.1	106	0.5	+5.2								
F2	15		15.1	114										
F2	19		12.9	121										
F2	29		23.8	104										
F3	0 - 4	CL								100	100	97	85	52
F3	5		19.4	110	0.5	+3.5								
F3	10		23.5	102										

Notes:

Initial Dry Density and Initial Water Content are in-situ values unless otherwise noted.
* = Partially disturbed sample
- = Compression/settlement
NV = no value
NP = non-plastic

Remarks:

- 1 Remolded Compacted density (about 95% of ASTM D698 maximum density near optimum moisture content)
- 2 Remolded Compacted density (about 95% of ASTM D1557 maximum density near optimum moisture content)
- 3 Water added to sample
- 4 Dry density and/or moisture content determined from one ring of a multi-ring sample
- 5 Minus #200 Only
- 6 Moisture-Density Relationship Test Method ASTM D698/AASHTO T99
- 7 Moisture-Density Relationship Test Method ASTM D1557/AASHTO T180

SUMMARY OF LABORATORY TEST RESULTS																							
QTS Aurora - Aurora, Colorado																							
Terracon Project No. 25215013																							
Boring No.	Depth (ft)	USCS Class.	Initial Water Content (%)	Initial Dry Density (pcf)	Swell/Consolidation		Moisture-Density Relationship			Particle Size Distribution, Percent Passing by Weight					Atterberg Limits		Unconfined Compressive Strength (psf)	Water Soluble Sulfates (%)	Water Soluble Chlorides (%)	pH	Redox (mv)	Resistivity (ohm.cm)	Remarks
					Surcharge (ksf)	Swell (%)	Maximum Dry Density (pcf)	Optimum Water Content (%)	Test Method	3/4"	#4	#40	#200	LL	PI								
F3	15		23.3	102																		4	
F3	19		24.0	101																		4	
F3	29		20.9	105																		4	
F4	0 - 4	CL																					
F4	5	CL	17.4	108																		4	
F4	7.5	CL	16.3	109	0.5	+0.1																3.4	
F4	10	CL	20.4	105																		4	
F4	15		25.6	98																		4	
F4	19		25.4	97																		4	
F4	29		22.2	103																		4	
F5	0 - 4	CL																					
F5	5		16.1	112																		4	
F5	10		6.6	133	0.5	+3.4																3.4	
F5	15		19.1	108																		4	
F5	19		21.8	105																		4	
F5	29		19.3	107																		4	
F6	0 - 4	CL						104.2	19.7	D698B	100	100	96	86	44	27							
F6	5		24.6	100	0.5	+2.9																3.4	
F6	10		19.1	112																		4	
F6	15		14.6	116																		4	
F6	19		24.4	101																		4	
F6	29		22.1	103																		4	
S1	0 - 4	CL													34	20							
S1	5	CL	24.7	96																		4	
S1	7.5	CL	18.0	111	0.5	+2.3																3.4	
S1	12.5		25.0	100																		4	
S1	19		22.3	105																		4	
S1	29		18.3	109																		4	
S1	39		23.4	103																		4	
S2	0 - 4	CL													34	22							
S2	2.5	CL	17.2	113																		4	
S2	7.5		20.8	107	0.5	+4.1																3.4	
S2	10		23.3	101																		4	
S2	15		24.3	103																		4	

Notes:

Initial Dry Density and Initial Water Content are in-situ values unless otherwise noted.
* = Partially disturbed sample
- = Compression/settlement
NV = no value
NP = non-plastic

Remarks:

- 1 Remolded Compacted density (about 95% of ASTM D698 maximum density near optimum moisture content)
- 2 Remolded Compacted density (about 95% of ASTM D1557 maximum density near optimum moisture content)
- 3 Water added to sample
- 4 Dry density and/or moisture content determined from one ring of a multi-ring sample
- 5 Minus #200 Only
- 6 Moisture-Density Relationship Test Method ASTM D698/AASHTO T99
- 7 Moisture-Density Relationship Test Method ASTM D1557/AASHTO T180

SUMMARY OF LABORATORY TEST RESULTS																							
QTS Aurora - Aurora, Colorado																							
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Boring No.	Depth (ft)	USCS Class.	Initial Water Content (%)	Initial Dry Density (pcf)	Swell/Consolidation		Moisture-Density Relationship			Particle Size Distribution, Percent Passing by Weight					Atterberg Limits		Unconfined Compressive Strength (psf)	Water Soluble Sulfates (%)	Water Soluble Chlorides (%)	pH	Redox (mv)	Resistivity (ohm.cm)	Remarks
					Surcharge (ksf)	Swell (%)	Maximum Dry Density (pcf)	Optimum Water Content (%)	Test Method	3/4"	#4	#40	#200	LL	PI								
S2	24		12.4	109							100	100	93	74	34	18						4	
S3	0 - 4	CL					107.8	15.6	D698B														
S3	5	CL	20.1	107	0.5	+1.3																3,4	
S3	10		23.4	104																		4	
S3	15		19.8	111																		4	
S3	24		20.8	107																		4	
S3	34		17.6	110																		4	
S4	0 - 4	CL									100	100	94	76	35	20	0.001	0.0002		7.1	445.9	1749	
S4	2.5	CL	19.5	109																		4	
S4	7.5	CL	22.7	110	0.5	+1.7																3,4	
S4	10		19.1	110													16100					4	
S4	12.5		18.6	112																		4	
S4	19		19.2	107																		4	
S4	29		20.3	108																		4	
S5	5	CL	18.7	110	0.5	+3.8																	
S5	10		10.8	127																		3,4	
S5	15		18.2	112																		4	
S5	24		16.0	116																		4	
S6	0 - 4	CL					103.5	18.7	D698B	100	100	94	74	41	25							4,6	
S6	2.5	CL	20.2	109																		4	
S6	7.5		20.0	107	0.5	+4.2																3,4	
S6	12.5		21.7	107																		4	
S6	19		15.0	112																		4	
S6	29		22.1	104																		4	
S6	39		1.5																			4	
S7	0 - 4	CL															0.035	0.0102		7.1	412.7	766	
S7	5		15.5	118	0.5	+9.4																3,4	
S7	10		17.6	109																		4	
S7	15		16.1	113																		4	
S7	24		17.1	113																		4	
S8	0 - 4	CL															0.015	0.0141		7.1	393.5	786	
S8	2.5	CL	17.4	112																		4	
S8	7.5		19.9	109	0.5	+7.2																3,4	
S8	12.5		14.5	113																		4	

Notes:

Initial Dry Density and Initial Water Content are in-situ values unless otherwise noted.
* = Partially disturbed sample
- = Compression/settlement
NV = no value
NP = non-plastic

Remarks:

- 1 Remolded Compacted density (about 95% of ASTM D698 maximum density near optimum moisture content)
- 2 Remolded Compacted density (about 95% of ASTM D1557 maximum density near optimum moisture content)
- 3 Water added to sample
- 4 Dry density and/or moisture content determined from one ring of a multi-ring sample
- 5 Minus #200 Only
- 6 Moisture-Density Relationship Test Method ASTM D698/AASHTO T99
- 7 Moisture-Density Relationship Test Method ASTM D1557/AASHTO T180

Notes:
Initial Dry Density and Initial Water Content are in-situ values unless otherwise noted.
* = Partially disturbed sample
- = Compression/settlement
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Remarks:

- 1 Remolded Compacted density (about 95% of ASTM D698 maximum density near optimum moisture content)
- 2 Remolded Compacted density (about 95% of ASTM D1557 maximum density near optimum moisture content)
- 3 Water added to sample
- 4 Dry density and/or moisture content determined from one ring of a multi-ring sample
- 5 Minus #200 Only
- 6 Moisture-Density Relationship Test Method ASTM D698/AASHTO T99
- 7 Moisture-Density Relationship Test Method ASTM D1557/AASHTO T180

FIELD ELECTRICAL RESISTIVITY TEST RESULTS

Contents:

Electrical Resistivity Test Results (3 pages)

Note: All attachments are one page unless noted above.

FIELD ELECTRICAL RESISTIVITY TEST DATA

QTS Aurora ■ Aurora, Colorado

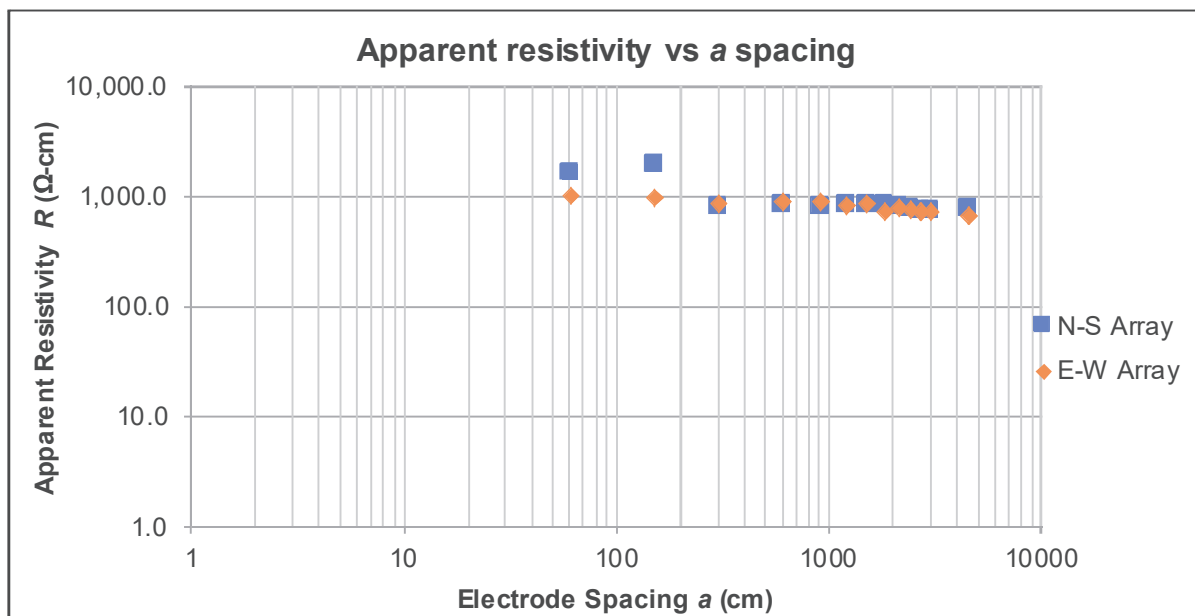
September 7, 2021 ■ Terracon Project No. 25215031



Array Loc.	Array No. 1, Approximate Center of Array: 39.73314, -104.71428		
Instrument	Mini-Res	Weather	70 - 80 F
Serial #	SN-320	Ground Cond.	flat, sandy, moist, heavy vegetation
Cal. Check	n/a	Tested By	Kyle T. Johnson
Test Date	May 27, 2021	Method	Venner 4-pin (ASTM G57-06 (2012); IEEE 81-2012)
Notes & Conflicts	n/a		

Apparent resistivity ρ is calculated as
$$\rho = \frac{4\pi aR}{1 + \frac{2a}{\sqrt{a^2 + 4b^2}} - \frac{a}{\sqrt{a^2 + b^2}}}$$

Electrode Spacing a		Electrode Depth b		N-S Test		E-W Test	
(feet)	(centimeters)	(inches)	(centimeters)	Measured Resistance R	Apparent Resistivity ρ	Measured Resistance R	Apparent Resistivity ρ
				Ω	(Ω -cm)	Ω	(Ω -cm)
2	61	1	3	4.2070	1620	2.5650	990
5	152	4	10	1.9760	1900	1.0020	960
10	305	6	15	0.4123	790	0.4492	860
20	610	6	15	0.2167	830	0.2334	900
30	914	12	30	0.1332	770	0.1522	880
40	1219	12	30	0.1066	820	0.1085	830
50	1524	12	30	0.0849	810	0.0884	850
60	1829	12	30	0.0712	820	0.0636	730
70	2134	12	30	0.0574	770	0.0578	780
80	2438	12	30	0.0496	760	0.0499	760
90	2743	12	30	0.0422	730	0.0421	730
100	3048	12	30	0.0381	730	0.0369	710
150	4572	12	30	0.0258	740	0.0228	660
200	6096	12	30	0.0188	720	0.0185	710
250	7620	12	30	0.0135	650	0.0145	690



FIELD ELECTRICAL RESISTIVITY TEST DATA

QTS Aurora ■ Aurora, Colorado

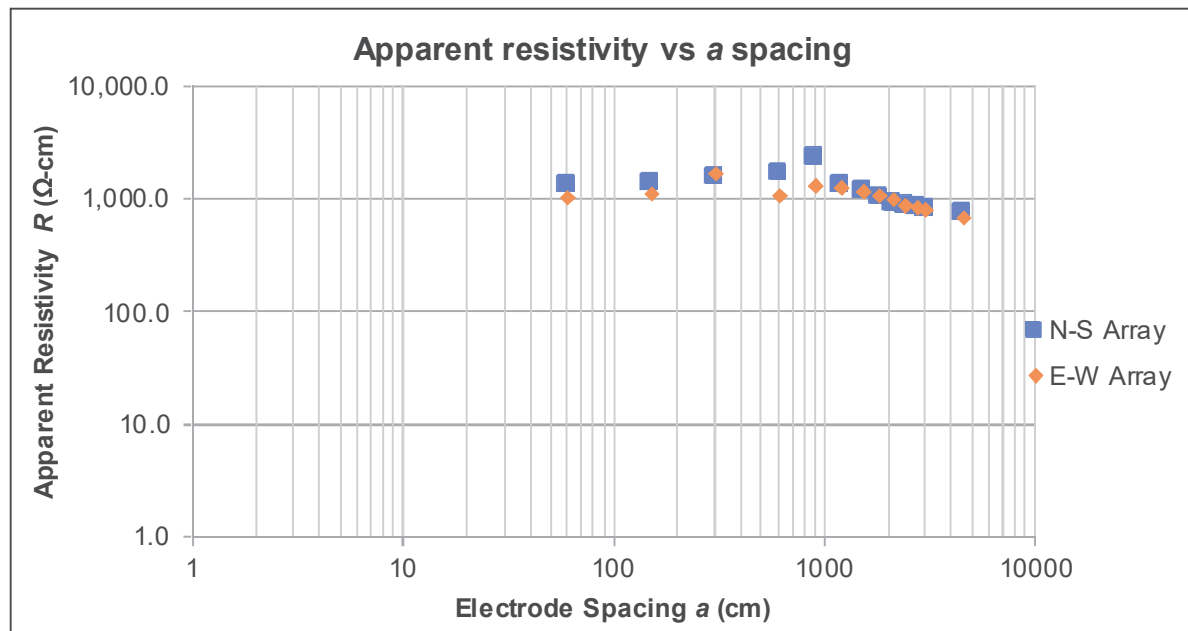
September 7, 2021 ■ Terracon Project No. 25215031



Array Loc.	Array No. 2, Approximate Center of Array: 39.73374, -104.70819		
Instrument	Mini-Res	Weather	70 - 80 F
Serial #	SN-320	Ground Cond.	flat, sandy, moist, heavy vegetation
Cal. Check	n/a	Tested By	Kyle T. Johnson
Test Date	May 27, 2021	Method	Wenner 4-pin (ASTM G57-06 (2012); IEEE 81-2012)
Notes & Conflicts	n/a		

Apparent resistivity ρ is calculated as :
$$\rho = \frac{4\pi a R}{1 + \frac{2a}{\sqrt{a^2 + 4b^2}} - \frac{a}{\sqrt{a^2 + b^2}}}$$

Electrode Spacing a		Electrode Depth b		N-S Test		E-W Test	
(feet)	(centimeters)	(inches)	(centimeters)	Measured Resistance R	Apparent Resistivity ρ	Measured Resistance R	Apparent Resistivity ρ
				Ω	(Ω -cm)	Ω	(Ω -cm)
2	61	1	3	3.4250	1320	2.6040	1000
5	152	4	10	1.4346	1380	1.1450	1100
10	305	6	15	0.8124	1560	0.8686	1670
20	610	6	15	0.4293	1650	0.2785	1070
30	914	12	30	0.3972	2290	0.2285	1310
40	1219	12	30	0.1703	1310	0.1624	1250
50	1524	12	30	0.1196	1150	0.1214	1160
60	1829	12	30	0.0897	1030	0.0941	1080
70	2134	12	30	0.0685	920	0.0714	960
80	2438	12	30	0.0563	860	0.0577	880
90	2743	12	30	0.0489	840	0.0481	830
100	3048	12	30	0.0415	790	0.0416	800
150	4572	12	30	0.0253	730	0.0235	680
200	6096	12	30	0.0192	740	0.0188	720
250	7620	12	30	0.0158	760	0.0164	790



FIELD ELECTRICAL RESISTIVITY TEST DATA

QTS Aurora ■ Aurora, Colorado

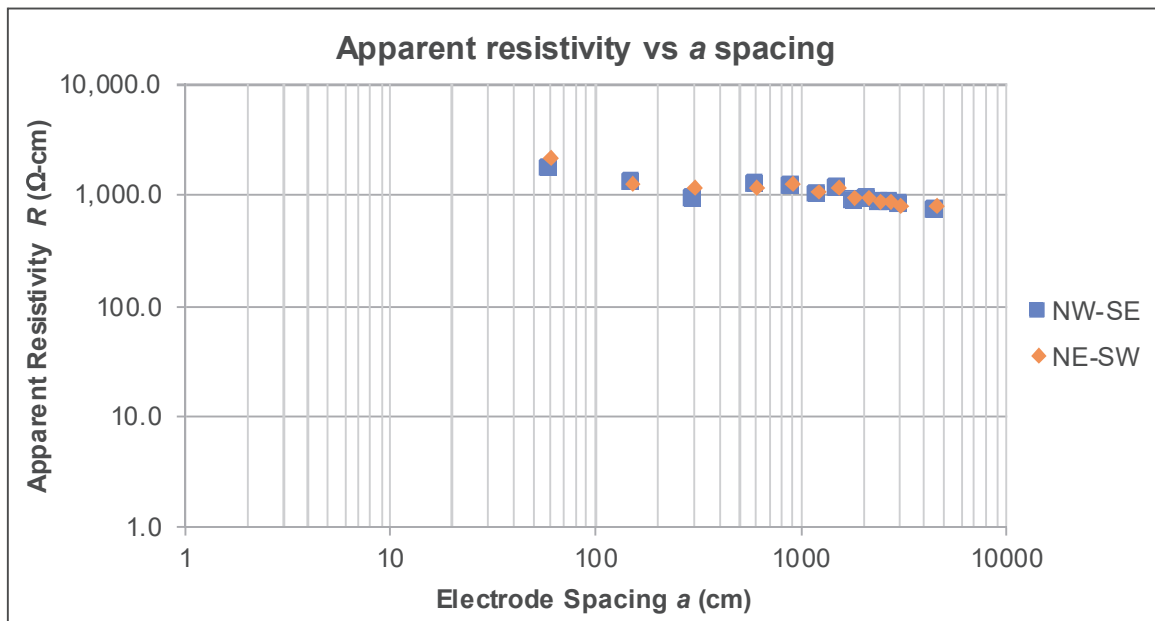
September 7, 2021 ■ Terracon Project No. 25215031



Array Loc.	Array No. 3, Approximate Center of Array: 39.7324311, -104.7079383		
Instrument	AGI Supersting R1	Weather	90 F, Sunny, Dry
Serial #	SS1812034	Ground Cond.	Flat, dry, sandy, heavy vegetation
Cal. Check	4/21/2021	Tested By	Kyle T. Johnson
Test Date	July 21, 2021	Method	Wenner 4-pin (ASTM G57-06 (2012); IEEE 81-2012)
Notes & Conflicts			

Apparent resistivity ρ is calculated as :
$$\rho = \frac{4\pi aR}{1 + \frac{2a}{\sqrt{a^2 + 4b^2}} - \frac{a}{\sqrt{a^2 + b^2}}}$$

Electrode Spacing a		Electrode Depth b		NW-SE Test		NE-SW Test	
(feet)	(centimeters)	(inches)	(centimeters)	Measured Resistance R	Apparent Resistivity ρ	Measured Resistance R	Apparent Resistivity ρ
				Ω	(Ω -cm)	Ω	(Ω -cm)
2	61	6	15	3.9780	1670	5.1000	2140
5	152	6	15	1.2760	1240	1.3100	1270
10	305	6	15	0.4606	890	0.6070	1170
20	610	6	15	0.3147	1210	0.3019	1160
30	914	12	30	0.2056	1180	0.2204	1270
40	1219	12	30	0.1275	980	0.1387	1060
50	1524	12	30	0.1152	1100	0.1214	1160
60	1829	12	30	0.0759	870	0.0822	950
70	2134	12	30	0.0677	910	0.0702	940
80	2438	12	30	0.0551	840	0.0561	860
90	2743	12	30	0.0492	850	0.0502	870
100	3048	12	30	0.0435	790	0.0412	790
150	4572	12	30	0.0243	700	0.0278	800
200	3959	12	36	0.0185	633	0.0200	599
250	4288	12	37	0.0118	579	0.0152	526



DIRECT EMBED DESIGN PARAMETERS

Contents:

Direct Embed Design Data Sheet

Note: All attachments are one page unless noted above.

TRANSMISSION STRUCTURE DRILLED PIER / DIRECT EMBED DESIGN DATA SHEET

Note: This table can be used for transmission structures on drilled piers or direct embed foundations if they can tolerate more than 1 inch of movement

Terracon Project No. 25215031														
Boring No.	Depth Below Existing Grade (feet)			Depth to Groundwater (feet)	Material Type	Lpile Soil Type	Effective Unit Weight (pcf) ¹	Undrained cohesion c (psf)	Friction angle ϕ (deg.)	Strain ϵ_{50}	Static Lateral Modulus K (pci) ¹	Modulus of Deformation, Ep (ksi)	Allowable Compressive Side Resistance ^{2,3} (psf)	Allowable End Bearing ^{3,4,6} (psf)
S1, S2, S3, S4, S5, S6, S7, and S8	3	to	6	Not encountered	Clay	Clay w/o free water	115	1,000	---	0.005	100	1.0	250 See note 6	See note 4
	6	to	9		Clay	Clay w/o free water	115	1,000	---	0.005	100	1.0		
	9	to	12		Clay	Clay w/o free water	115	1,000	---	0.005	100	1.0		
	12	to	15		Clay	Clay w/o free water	115	1,000	---	0.005	100	1.0		
	15	to	18		Claystone/Sandstone	Clay w/o free water	125	2,000	---	0.004	200	3.0		
	18	to	22		Claystone/Sandstone	Clay w/o free water	125	2,000	---	0.004	200	3.0		
	22	to	27		Claystone/Sandstone	Clay w/o free water	125	3,500	---	0.004	200	3.0		
	27	to	32		Claystone/Sandstone	Clay w/o free water	125	3,500	---	0.004	200	3.0		
	32	to	37		Claystone/Sandstone	Clay w/o free water	125	3,500	---	0.004	200	3.0		
	37	to	40		Claystone/Sandstone	Clay w/o free water	125	3,500	---	0.004	200	3.0	2,000	25,000

Notes:

1. No groundwater was encountered in Boring Nos. S1 to S8.
2. In designing to resist uplift loading, $\frac{2}{3}$ of the allowable side friction values provided for compressive loading could be used along with the effective weight of the drilled shaft.
3. A factor of safety of 3 was used to determine the allowable bearing pressure, while a factor of safety of 2 was used to determine the allowable compressive side resistance.
4. The recommended design parameters consider the foundations will have a minimum penetration of 2 times the diameter into the associated layer and that concrete drilled shafts and direct embedded poles will penetrate a minimum depth of 10 feet below existing site grade for the presented allowable end bearing pressures.
5. The contribution of soil resistance within the frost zone of 3 feet should be neglected in computations of vertical and lateral capacity.
6. Drilled piers for structures with movement tolerances of less than 1 inch should not terminate in the overburden soils. Drilled piers for structures with movement tolerances of less than 1 inch should be designed in accordance with the **Deep Foundation** section of this report. In addition, skin friction in the overburden soils should not be used in the design of drilled piers for these structures. Only skin friction in bedrock should be used in the design of these structures.

SUPPORTING INFORMATION

Contents:

General Notes
Unified Soil Classification System

Note: All attachments are one page unless noted above.

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING				WATER LEVEL		Water Initially Encountered	FIELD TESTS	(HP)	Hand Penetrometer
						Water Level After a Specified Period of Time		(T)	Torvane
						Water Level After a Specified Period of Time		(b/f)	Standard Penetration Test (blows per foot)
						Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.		N	N value
								(PID)	Photo-Ionization Detector
								(OVA)	Organic Vapor Analyzer

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification is based on the Unified Soil Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

LOCATION AND ELEVATION NOTES

Unless otherwise noted, Latitude and Longitude are approximately determined using a hand-held GPS device. The accuracy of such devices is variable. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS	RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance Includes gravels, sands and silts.			CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance			BEDROCK		
	Descriptive Term (Density)	Standard Penetration or N-Value Blows/Ft.	Ring Sampler Blows/Ft.	Descriptive Term (Consistency)	Unconfined Compressive Strength, Qu, psf	Standard Penetration or N-Value Blows/Ft.	Ring Sampler Blows/Ft.	Standard Penetration or N-Value Blows/Ft.	Descriptive Term (Consistency)
	Very Loose	0 - 3	0 - 5	Very Soft	less than 500	0 - 1	< 3	< 24	Soft
	Loose	4 - 9	6 - 14	Soft	500 to 1,000	2 - 4	3 - 5	24 - 35	Firm
	Medium Dense	10 - 29	15 - 46	Medium-Stiff	1,000 to 2,000	4 - 8	6 - 10	36 - 60	Medium Hard
	Dense	30 - 50	47 - 79	Stiff	2,000 to 4,000	8 - 15	11 - 18	61 - 96	Hard
	Very Dense	> 50	≥ 80	Very Stiff	4,000 to 8,000	15 - 30	19 - 36	> 96	Very Hard
				Hard	> 8,000	> 30	> 36		

RELATIVE PROPORTIONS OF SAND AND GRAVEL

Descriptive Term(s) of other constituents	Percent of Dry Weight	Major Component of Sample	Particle Size
Trace	< 15	Boulders	Over 12 in. (300 mm)
With	15 - 29	Cobbles	12 in. to 3 in. (300mm to 75mm)
Modifier	> 30	Gravel	3 in. to #4 sieve (75mm to 4.75 mm)
		Sand	#4 to #200 sieve (4.75mm to 0.075mm)
		Silt or Clay	Passing #200 sieve (0.075mm)

GRAIN SIZE TERMINOLOGY

RELATIVE PROPORTIONS OF FINES

Descriptive Term(s) of other constituents	Percent of Dry Weight	Term	Plasticity Index
Trace	< 5	Non-plastic	0
With	5 - 12	Low	1 - 10
Modifier	> 12	Medium	11 - 30
		High	> 30

PLASTICITY DESCRIPTION

UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests ^A				Soil Classification		
				Group Symbol	Group Name ^B	
Coarse Grained Soils: More than 50% retained on No. 200 sieve	Gravels: More than 50% of coarse fraction retained on No. 4 sieve	Clean Gravels: Less than 5% fines ^C	$Cu \geq 4$ and $1 \leq Cc \leq 3$ ^E	GW	Well-graded gravel ^F	
			$Cu < 4$ and/or $1 > Cc > 3$ ^E	GP	Poorly graded gravel ^F	
		Gravels with Fines: More than 12% fines ^C	Fines classify as ML or MH	GM	Silty gravel ^{F,G,H}	
			Fines classify as CL or CH	GC	Clayey gravel ^{F,G,H}	
	Sands: 50% or more of coarse fraction passes No. 4 sieve	Clean Sands: Less than 5% fines ^D	$Cu \geq 6$ and $1 \leq Cc \leq 3$ ^E	SW	Well-graded sand ^I	
			$Cu < 6$ and/or $1 > Cc > 3$ ^E	SP	Poorly graded sand ^I	
		Sands with Fines: More than 12% fines ^D	Fines classify as ML or MH	SM	Silty sand ^{G,H,I}	
			Fines classify as CL or CH	SC	Clayey sand ^{G,H,I}	
Fine-Grained Soils: 50% or more passes the No. 200 sieve	Silts and Clays: Liquid limit less than 50	Inorganic:	$PI > 7$ and plots on or above “A” line ^J	CL	Lean clay ^{K,L,M}	
			$PI < 4$ or plots below “A” line ^J	ML	Silt ^{K,L,M}	
		Organic:	Liquid limit - oven dried	< 0.75	OL	Organic clay ^{K,L,M,N}
			Liquid limit - not dried		Organic silt ^{K,L,M,O}	
	Silts and Clays: Liquid limit 50 or more	Inorganic:	PI plots on or above “A” line	CH	Fat clay ^{K,L,M}	
			PI plots below “A” line	MH	Elastic Silt ^{K,L,M}	
		Organic:	Liquid limit - oven dried	< 0.75	OH	Organic clay ^{K,L,M,P}
			Liquid limit - not dried		Organic silt ^{K,L,M,Q}	
Highly organic soils:	Primarily organic matter, dark in color, and organic odor			PT	Peat	

^A Based on the material passing the 3-inch (75-mm) sieve

^B If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

^C Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

^D Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay

$$^E Cu = D_{60}/D_{10} \quad Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$$

^F If soil contains $\geq 15\%$ sand, add "with sand" to group name.

^G If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

^H If fines are organic, add "with organic fines" to group name.

^I If soil contains $\geq 15\%$ gravel, add "with gravel" to group name.

^J If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

^K If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

^L If soil contains $\geq 30\%$ plus No. 200 predominantly sand, add "sandy" to group name.

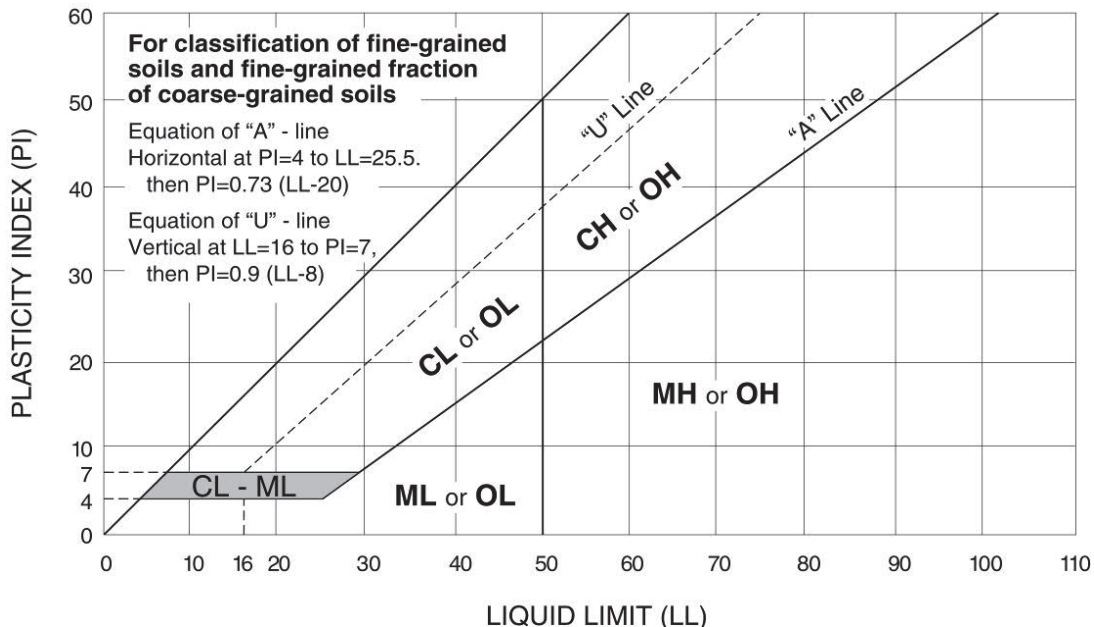
^M If soil contains $\geq 30\%$ plus No. 200, predominantly gravel, add "gravelly" to group name.

^N $PI \geq 4$ and plots on or above "A" line.

^O $PI < 4$ or plots below "A" line.

^P PI plots on or above "A" line.

^Q PI plots below "A" line.





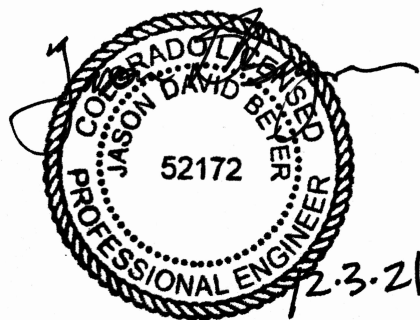
L.A. FUESS PARTNERS, INC.

STRUCTURAL CALCULATIONS QTS DEN1-DC1: Guardbooth

1164 N. Gun Club Road, Aurora, CO

Prepared By:
L.A. Fuess Partners
21161

December 2021



Structural plan review is limited to a general survey for code compliance. No review is implied nor was undertaken to verify structural adequacy.



L.A. FUESS PARTNERS, INC.

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L.A. FUESS PARTNERS, INC.

STRUCTURAL CALCULATIONS

1 - Building Code and Gravity Loads

Prepared By:
L.A. Fuess Partners
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December 2021

L.A. FUESS PARTNERS Structural Engineers
Job Number: 21161
Job Name: QTS-DEN1-DC1: Guard Booth
Subject: Applicable Building Code



Governing Code(s): 2015 International Building Code (2015 IBC)

- ASCE 7-10: Minimum Design Loads
- ACI 318-14: Concrete Design
- AISC 360-16: Steel Design (15th Edition)
- AISC 341-16/358-16: Seismic Design of Steel

L.A. FUESS PARTNERS Structural Engineers
Job Number: 21161
Job Name: QTS-DEN1-DC1: Guard Booth
Subject: Gravity Loads



Governing Code(s): 2015 International Building Code (2015 IBC)

Dead Load (psf)

Roof

Description of Structure:	Premanufactured Panel Built Booth
Roof System + Insulation	20
Hanging Collateral	0
Total:	20

Live Load (psf)

Roof	20
------	----

L.A. FUESS PARTNERS Structural Engineers
Job Number: 21161
Job Name: QTS-DEN1-DC1: Guard Booth
Subject: Snow Loads



Page 1 of 3

ASCE 7-10 Snow Loads

Info

Occupancy Category	IV		
Importance Factor, I	1.2		Table 1.5-2
Exposure Category	C		
Roof Exposure	Partially Exposed		
Exposure Factor, C_e	1.0		Table 7-2
Roof Thermal Cond.	All not mentioned		
Thermal Factor, C_t	1.0		
Ground Snow Load, p_g	34.00	psf	Figure 7-1 Aurora, CO Local Code
Min Flat Roof Snow Load, p_f	30	psf	Aurora, CO Local Code
Snow Density, γ	18.42	pcf	Eq. 7.7-1
Flat Roof Snow Load, p_f			
$p_f = 0.7C_eC_tI p_g$	28.56	psf	A7.3-1

CHECK : Minimum Value for Low Slope Roofs (Section 7.3.4)

$p_f \text{ min} = 24 \text{ psf}$ Section 7.3.4

Applies to:

Monoslope Roofs with slope < 15 deg

L.A. FUESS PARTNERS Structural Engineers
Job Number: 21161
Job Name: QTS-DEN1-DC1: Guard Booth
Subject: Snow Loads



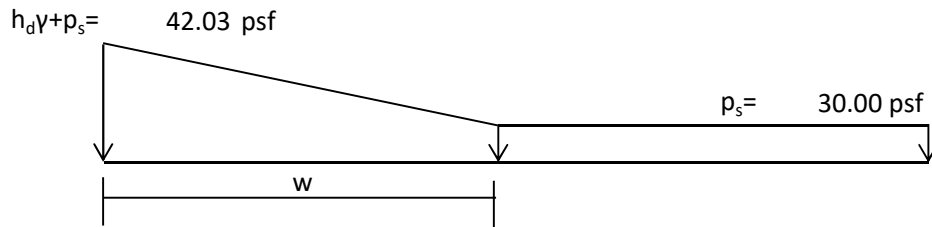
Page 2 of 3

Drift Area at Guard Booth

Case 1: Windward w/ upper roof or parapet

Height of snow $h_b = p_s / \gamma$	1.63	ft
h_c	0.89	ft
l_u	9.81	ft
$h_d = 0.75(0.43(l_u)^{1/3}(p_g + 10)^{1/4} - 1.5)$	0.65	ft
h_p	2.52	ft
$h_{d,max} =$	0.65	ft

Height of Parapet



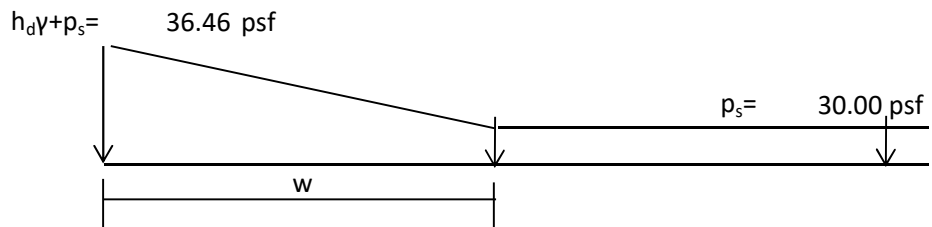
$$w = 4h_d \text{ when } h_d \leq h_c$$

$$w = 4h_d^2 / h_c \text{ when } h_d > h_c$$

$$\text{Max} = 8h_c \implies w = 2.61 \text{ ft}$$

Case 2: Drift from upper roof

Height of snow $h_b = p_s / \gamma$	1.63	ft
h_c	0.89	ft
l_u	4.67	ft
$h_d = 0.43(l_u)^{1/3}(p_g + 10)^{1/4} - 1.5$	0.35	ft



$$w = 4h_d \text{ when } h_d \leq h_c$$

$$w = 4h_d^2 / h_c \text{ when } h_d > h_c$$

$$\text{Max} = 8h_c \implies w = 1.40 \text{ ft}$$



L.A. FUESS PARTNERS, INC.

STRUCTURAL CALCULATIONS

2 - Lateral Loads

Prepared By:
L.A. Fuess Partners
21161

December 2021

L.A. FUESS PARTNERS Structural Engineers
Job Number: 21161
Job Name: QTS-DEN1-DC1: Guard Booth
Subject: Seismic Loads



Governing Code: 2015 International Building Code with Aurora CO Ammendments

Per

Site Class C

For Lat/Long = 39.7294319 °N, -104.8319195 °W

S_s :	0.164 g	S_{MS} :	0.197 g
S_1 :	0.055 g	S_{M1} :	0.094 g
F_a :	1.200	S_{DS} :	0.131 g
F_v :	1.700	S_{D1} :	0.062 g

Per ASCE 7-16:

Table 1.5-1

Risk Category : IV

Table 11.6-1

Seismic Design Category : A ($SDS < 0.167g$)

Table 11.6-2

Seismic Design Category : A ($SDS < 0.067g$)

Per ASCE 7-16:

Table 1.5-2:

Importance Factor, I_E : 1.5

Table 12.2-1:

For N-S Direction:

Seismic Force-Resisting System: Steel Not Specifically Detailed for Seismic

Response Modification Coefficient, R :	3
System Overstrength Factor, Ω_0 :	3
Deflection Amplification Factor, Cd :	3

For E-W Direction:

Seismic Force-Resisting System: Steel Not Specifically Detailed for Seismic

Response Modification Coefficient, R :	3
System Overstrength Factor, Ω_0 :	3
Deflection Amplification Factor, Cd :	3

Figure 22-14:

$T_L = 4$ sec

Table 12.8-2:

For Both Directions:

$C_t =$	0.02
$\alpha =$	0.75

Approximate Fundamental Period (per ASCE 7-16 - 12.8.2.1):

$$T_a = C_t h_n^x \quad (12.8-7)$$

For Both Directions:

$h_n =$	13.92 ft
$T_a =$	0.144 sec

L.A. FUESS PARTNERS Structural Engineers
Job Number: 21161
Job Name: QTS-DEN1-DC1: Guard Booth
Subject: Seismic Loads



Calculation of Seismic Response Coefficient (per ASCE 7-16 - 12.8.1.1):

$$C_s = S_{DS} / (R/I_E)$$

For N-S Direction:

Steel Not Specifically Detailed for Seismic

C_s	=	0.066	(12.8-2)
$C_{s,max}$	=	0.216	(12.8-3 & 12.8-4)
$C_{s,min}$	=	0.010	(12.8-5 & 12.8-6)
$C_{s,SDC-A}$	=	0.010	(11.7 & 1.4)
SDC A?		Yes	

$C_s = 0.0100$

For E-W Direction:

Steel Not Specifically Detailed for Seismic

C_s	=	0.066	(12.8-2)
$C_{s,max}$	=	0.216	(12.8-3 & 12.8-4)
$C_{s,min}$	=	0.010	(12.8-5 & 12.8-6)
$C_{s,SDC-A}$	=	0.010	
SDC A?		Yes	

$C_s = 0.0100$

Redundancy Factor (ASCE 7-16 - 12.3.4)

$\rho = 1.0$ (Section 12.3.4.2.b applies, ρ is permitted to be 1.0)

L.A. FUESS PARTNERS Structural Engineers
Job Number: 21161
Job Name: QTS-DEN1-DC1: Guard Booth
Subject: Seismic Loads



Equivalent Lateral Force Distribution

Section 12.8.3

$F_x = C_v x V$

Eq. 12.8-11

Area Load Types

Component	UNIT	Area Load Types
		Guard Booth
		Roof
Roof System	psf	10
Slab Weight	psf	0
Steel Framing	psf	5
Partitions	psf	0
Hanging Collateral	psf	0
Collateral	psf	5
Live Load Eff Weight	psf	0
Flat Roof Snow Load	psf	30
Seismic Snow Load	psf	6.0
Total	psf	26.00

Vertical Brace Line	Areas (ft2)	Wt (k)	Panel Wall Wt (k)	Total Weight (k)	Wt for Base Shear (k)	V (k)
	Guard Booth					
Plan North - South	Roof					
Roof	205	5.3	2.2	7.5	7.5	0.075

Vertical Brace Line	Areas (ft2)	Wt (k)	Panel Wall Wt (k)	Total Weight (k)	Wt for Base Shear (k)	V (k)
	Guard Booth					
Plan East-West	Roof					
Roof	205	5.3	4.0	9.3	9.3	0.093

Total Weight of Structure 11.5 kips
Total Base Shear 0.115 kips

L.A. FUESS PARTNERS Structural Engineers
Job Number: 21161
Job Name: QTS DEN1-DC1: Guard Booth
Subject: Guard Booth Wind Loads



Page 1 of 2

Governing Code: 2018 International Building Code --> ASCE 7-16

Wind loads on every building or structure shall be determined in accordance with Chapters 26 to 30 of ASCE 7.

Mean Roof Height of Building, h	13.92 ft
Mean Parapet Height, h _p	13.92 ft

Surface Roughness	C
Wind Exposure Classification	C
Risk Category	IV

(ASCE 7-16, Sect. 26.7.2)
(ASCE 7-16, Sect. 26.7.3)
(ASCE 7-16, Table 1.5-1)

Basic Wind Speed Velocity, V 120 mph

(ASCE 7-16, Figure 26.5-1B)

Topographic Factor, K _{zt}	1.00
Wind Directionality Factor, K _d	0.85
Vel. Press. Exposure Coef., K _h	0.85

(ASCE 7-16, Sect. 26.8)
(ASCE 7-16, Table 26.6-1)
(ASCE 7-16, Table 26.10-1)

Velocity Pressure @ ht=z, q_z = 0.00256 K_z K_{zt} K_d V² psf
= 31.33 *K_z psf

(ASCE 7-16, Eq. 26.10-1)

Height, ft	K _z	q _z , psf
0-15	0.85	26.60
13.92	0.85	26.60

(ASCE 7-16, Table 26.10-1)

Velocity Pressure @ ht=h, q_h = 0.00256 K_h K_{zt} K_d V² I psf
q_h = 26.60 psf

(ASCE 7-16, Eq. 26.10-1)



Design Wind Pressures for the MWFRS

(ASCE 7-16, Chapter 27)

Design Wind Pressure, $p = q GC_p - q_h (GC_{pi})$

(ASCE 7-16, Eq. 27.3-1)

where: $q = q_z$ for windward wall at height z above ground

$q = q_h$ for leeward wall, side walls, and roof

Gust Effect Factors, $G = 0.85$ (rigid structures)

(ASCE 7-16, Sect. 26.11.1)

Wall Pressure Coefficients, C_p

(ASCE 7-16, Fig. 27.3-1)

windward wall pressure coefficient (L/B all values)	0.8
side wall pressure coefficient (L/B all values)	-0.7
leeward wall pressure coefficient (L/B = 0-1)	-0.5
(L/B = 2)	-0.3
(L/B >= 4)	-0.2

Roof Pressure Coefficients, C_p

(ASCE 7-16, Fig. 27.3-1)

$\theta < 10^\circ$

and $h/L < 0.5$

$C_p = -0.9$ for windward

Internal Pressure Coefficient, GC_{pi}

(ASCE 7-16, Fig. 26.13-1)

$GC_{pi} = 0.18$	(enclosed bldg.)
$GC_{pi} = -0.18$	(enclosed bldg.)

Combined Net Press. Coefficient for Parapets, GC_{pn}

(ASCE 7-16, Sect. 27.3.4)

$GC_{pn} = 1.5$	(windward)
$GC_{pn} = -1.0$	(leeward)

Net Pressures for MWFRS (Main Building)							
Surface	z	$q_{(h)}$	$q_{(z)}$	C_p	Ext. Press qGC_p	Net Pressure (psf)	
						(+ GC_{pi})	(- GC_{pi})
Windward	13.92		26.60	0.8	18.1	13.3	22.9
Leeward EW	13.92	26.60		-0.5	-11.3	-16.1	-6.5
Leeward NS	13.92	26.60		-0.334	-7.6	-12.3	-7.6
Side	13.92	26.60		-0.3	-6.8	-11.6	-2.0
Roof	13.92	26.60		-0.9	-20.3	-25.1	-15.6

Solve Base Shears

Building 2C

East-West Force Calculation									
Level	z	Windward Pressure (psf)		Leeward Pressure (psf)		Length (ft)	Windward (klf)	Leeward (klf)	Force (k)
		(+ GC_{pi})	(- GC_{pi})	(+ GC_{pi})	(- GC_{pi})				
Roof	13.92	13.3	22.9	-16.1	-6.5	19.2	185.1	-224.0	7.9

Base Shear: 7.9

North-South Force Calculation									
Level	z	Windward Pressure (psf)		Leeward Pressure (psf)		Length (ft)	Windward (klf)	Leeward (klf)	Force (k)
		(+ GC_{pi})	(- GC_{pi})	(+ GC_{pi})	(- GC_{pi})				
Roof	13.92	13.3	22.9	-12.3	-7.6	10.5	185.1	-171.7	3.7

Base Shear: 3.7



L.A. FUESS PARTNERS, INC.

STRUCTURAL CALCULATIONS

3 - Overturning Analysis

Prepared By:
L.A. Fuess Partners
21161

December 2021

L.A. FUESS PARTNERS Structural Engineers
Job Number: 21161
Job Name: QTS-DEN1-DC1: Guard Booth
Subject: Guard Booth Overturning Analysis



Guard Booth Overturning Analysis

Inputs

Booth Dimensions

Length	19.2	ft
Width	10.5	ft
Height	13.92	ft

Gravity Loading

Dead	20	psf
Snow	42.03	psf
Roof Live	20	psf
Total Dead	4.03	kips
Total Snow	8.48	kips
Total Roof Live	4.03	kips

East-West Lateral Forces (at Roof)

Wind	7.9	kips
Seismic	0.075	kips

North-South Lateral Forces (at Roof)

Wind	3.8	kips
Seismic	0.093	kips

Overturning Forces

$M_{EW, Wind}$	$7.9 * 13.92 =$	109.9	kft
$M_{EW, Seismic}$	$0.075 * 13.92 =$	1.0	kft
$M_{NS, Wind}$	$3.8 * 13.92 =$	52.9	kft
$M_{NS, Seismic}$	$0.093 * 13.92 =$	1.3	kft
$T_{EW, Wind}$	$109.94 / 13.92 =$	10.47	kips
$T_{EW, Seismic}$	$1.04 / 13.92 =$	0.10	kips
$T_{NS, Wind}$	$52.88 / 19.21 =$	2.75	kips
$T_{NS, Seismic}$	$1.29 / 19.21 =$	0.07	kips

Wind Loading Controls Design

LRFD Load Combinations

Compression

1.4D	2.82	kips
1.2D+1.6S+0.5W	14.44	kips
1.2D+1.0W+0.5S	15.01	kips
0.9D+1.0W	12.29	kips

Uplift

1.4D	2.82	kips
1.2D+1.6S-0.5W	3.97	kips
1.2D-1.0W+0.5S	-5.93	kips
0.9D-1.0W	-8.66	kips

Max Compression:	15.01	kips
Max Uplift:	-8.66	kips

L.A. FUESS PARTNERS Structural Engineers
Job Number: 21161
Job Name: QTS-DEN1-DC1: Guard Booth
Subject: Guard Booth Overturning Analysis



Page 2 of 2

Footing and Foundation Wall Design

Footing Width	2	ft
Footing Thickness	12	in
TOF Depth	36	in
Wall Thickness	8	in
Footing Length	19.2	ft
Footing Unit Weight	150	pcf
Soil Unit Weight	110	pcf
Include Soil?	No	
Soil Bearing Capacity	3	ksf

Check for Resolved Uplift

Footing Weight	5.8	kips
Wall Weight	4.5	kips
Soil Weight	0.0	kips
Total Weight	10.2	kips

Uplift Resolved by Footing Weight

Check for Bearing

Area	38.42	ft ²
Total Bearing Capacity	115.3	kips

Bearing Capacity > Maximum Compression



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END OF STRUCTURAL CALCULATIONS

Prepared By:
L.A. Fuess Partners
21161

December 2021