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**SUBSURFACE SOIL INVESTIGATION
MERIDIAN RANCH - ROLLING HILLS RANCH
EL PASO COUNTY, COLORADO**

Per DCM Chapter 11 Section 11.3.3. Report to include recommendations for the foundation preparation and embankment construction for all permanent detention facilities. (Pond G)

WILL ADD.

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Attn: Mr. Raul Guzman

July 15, 2019

Respectfully Submitted,

ENTECH ENGINEERING, INC.

Reviewed by:

Daniel P. Stegman

DPS/ts

Encl.

Entech Job No. 190300
AAprojects/2019/190300/190300 SSI



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**SUBSURFACE SOIL INVESTIGATION
MERIDIAN RANCH - ROLLING HILLS RANCH,
FILINGS 1 - 4
EL PASO COUNTY, COLORADO**

1.0 INTRODUCTION

The project consists of the development of the site for the construction of single-family residences in Rolling Hills Ranch Filings 1 - 4. Development is expected to include site grading, installation of subsurface utilities, roadways, and drainage structures. The subdivision is in Meridian Ranch in the northern portion of El Paso County, Colorado. The approximate location of the project site is shown on the Vicinity Map, Figure 1. The test boring locations are shown on Figure 2, the Test Boring Location Plan, with the approximate delineation of soil types and potential groundwater areas depicted on the figures.

This report describes the subsurface investigation conducted for the site and provides recommendations for development design and construction. The Subsurface Soil Investigation included the drilling of forty-nine test borings across the site, collecting samples of soil, and conducting a geotechnical evaluation of the investigation findings. All drilling and subsurface investigation activities were performed by Entech Engineering, Inc. (Entech). The contents of this report, including the geotechnical evaluation and recommendations, are subject to the limitations and assumptions presented in Section 17.0.

2.0 PROJECT AND SITE DESCRIPTION

The project will consist of developing the site for single family residential structures. The planned lots are located in the Rolling Hills Ranch subdivision in Meridian Ranch. The investigation was performed at predetermined locations designated based on the roadway alignment and proposed grading on the site plan provided to us. At the time of drilling, the site was vacant and not developed. The site is not graded for the planned development. Site grading plans were provided to us with proposed cuts up to 13 feet and fills up to 15 feet. The majority of the cuts and fills are in the 2 to 10-foot range. The site has a gradual slope towards the southeast. Vegetation consisted of grasses and weeds. Existing residences and Falcon High School were located to the west and south of the site, undeveloped land immediately north, and Eastonville Road to the east. Natural earthen drainage trends to the southeast traversing the property from near the intersection of Rex Road and Sunrise Ridge Drive towards Eastonville Road at a point approximately 2000 feet northeast of Falcon High School. Fill piles of soil encompass approximately 3 acres in the northwest quadrant of the proposed subdivision, and approximately 20-acres of land south of this area was previously excavated, likely for nearby developments. The large area of soil removals and fill piles are not depicted on the topographic mapping for this site. Other smaller piles of manmade materials and straw bales were noted south and west of the natural drainage.

3.0 SUBSURFACE EXPLORATIONS AND LABORATORY TESTING

Subsurface conditions on the site were explored by drilling forty-nine test borings at the approximate locations shown on Figure 2. The boring locations were determined and staked by others. The borings were drilled within the proposed roadway alignments. The borings were drilled to depths of 20 to 25 feet below the existing ground surface (bgs). The drilling was performed using a truck-mounted, continuous flight auger-drilling rig supplied and operated by Entech. Boring logs descriptive of the subsurface conditions encountered during drilling are presented in Appendix A. At the conclusion and subsequent to drilling, observations for groundwater levels were made in each of the open boreholes.

Soil and bedrock samples were obtained from the borings utilizing the Standard Penetration Test (ASTM D-1586) using 2-inch O.D. split-barrel and California samplers. Results of the Standard Penetration Test (SPT) are included on the boring logs in terms of N-values

expressed in blows per foot (bpf). Soil and bedrock samples recovered from the borings were visually classified and recorded on the boring logs. The soil and bedrock classifications were later verified utilizing laboratory testing and grouped by soil type. The soil and bedrock type numbers are included on the boring logs. It should be understood that the soil and bedrock descriptions shown on the boring logs may vary between boring location and sample depth. It should also be noted that the lines of stratigraphic separation shown on the boring logs represent approximate boundaries between soil and bedrock types and the actual stratigraphic transitions may be more gradual or variable with location.

Water content testing (ASTM D-2216) was performed on the samples recovered from the borings, and the results are shown on the boring logs. Grain-Size Analysis (ASTM D-422) and Atterberg Limits testing (ASTM D-4318) were performed on selected samples to assist in classifying the materials encountered in the borings. Volume change testing was performed on selected samples using the Swell/Consolidation Test (ASTM D-4546) and the FHA Swell Test in order to evaluate potential expansion/compression characteristics of the soil and bedrock. Soluble sulfate testing was performed on select soil samples to evaluate the potential for below grade degradation of concrete due to sulfate attack. The Laboratory Testing Results are summarized on Table 1 and are presented in Appendix B.

4.0 SUBSURFACE CONDITIONS

One soil type and two bedrock types were encountered in the test borings drilled for the subsurface investigation: Type 1: native slightly silty to silty sand, clayey to very clayey sand, and sand (SM-SW, SM, SC, SW), Type 2: slightly silty to silty sandstone and clayey to very clayey sandstone (SM-SW, SM, SC), and Type 3: sandy to very sandy claystone (CL). The soil and bedrock were classified in accordance with the Unified Soil Classification System (USCS) and American Association of State Highway and Transportation Officials (AASHTO) System using the laboratory testing results and the observations made during drilling.

4.1 Soil and Bedrock

Soil Type 1 classified as native slightly silty to silty sand, clayey to very clayey sand, and sand (SM-SW, SM, SC, SW). The sand was encountered in all of the test borings at the existing ground surface and extending to depth ranging from 1 to 14 feet below ground surface (bgs).

Standard Penetration Testing conducted on the sand resulted in SPT N-values ranging from 4 to 48 blows per foot (bpf), indicating loose to dense states. Water content and grain size testing of selected soil samples resulted in a water content range of 1 to 21 percent, and 5 to 48 percent of the soil particles passing the No. 200 sieve. Atterberg limits testing resulted in Liquid Limits of 26, 29, and no value and Plastic Indexes of 16, 10, and non-plastic, respectively. FHA Swell testing resulted in swell pressure between 70 and 2970 psf, indicating low to high expansion potentials. Swell/Consolidation testing on a sample of silty sand resulted in a volume change of -1.2 percent, indicating a low to moderate consolidation potential. Sulfate testing resulted in 0.00, less than 0.01, and 0.01 percent soluble sulfate by weight, which indicates a negligible potential for below grade concrete degradation due to sulfate attack.

Soil Type 2 classified as slightly silty to silty sandstone and clayey to very clayey sandstone (SM-SW, SM, SC). The sandstone was encountered in all test borings, but Test Boring No. 31, underlying Soil Types 1 and 3 at depths ranging from 1 to 20 feet bgs and extending to depths ranging from 12 to 24 feet bgs and to the termination of the borings (20 to 25 feet). Standard Penetration Testing conducted on the sandstone resulted in SPT N-values from 27 to greater than 50 bpf, which indicates medium dense to very dense states. Water content and grain size testing resulted in a water content range of 2 to 30, and 7 to 50 percent of the soil particles passing the No. 200 sieve. Atterberg Limits testing resulted in Liquid Limit between 26 and 41 and no value with Plastic Indexes between 12 and 20 and non-plastic. Swell/Consolidation testing on the sandstone resulted in volume changes of -1.9 to 3.2 percent, indicating low to moderate consolidation potentials and moderate to high expansion potentials. Sulfate testing on the sandstone resulted in 0.00 and less than 0.01 percent sulfate by weight indicating the sandstone exhibits a negligible potential for below grade concrete degradation due to sulfate attack.

Soil Type 3 classified as sandy to very sandy claystone (CL). The claystone was encountered in Test Boring Nos. 2, 4, 5, 15, 16, 19 thru 24, 27, 31 thru 39, 41, 43, 46, and 48 underlying Soil Types 1 and 2 at depths ranging from 1 to 24 feet bgs and extending to depths ranging from 4 to 24 feet bgs or to the termination of the borings (20 to 25 feet). Standard Penetration Testing conducted on the claystone resulted in SPT N-values of 45 to greater than 50 bpf, which indicates very stiff to hard consistencies. Water content and grain size testing resulted in a water content range of 9 to 19, and 51 to 81 percent the soil size particles passing the No. 200 sieve. Atterberg limits testing resulted in Liquid Limits between 34 and 42 and Plastic Indexes

between 15 and 20. FHA Swell testing resulted in a swell pressure of 90 psf, indicating a low expansion potential. Swell/Consolidation testing on the claystone resulted in volume changes of -2.0 to 2.5 percent, indicating moderate to high consolidation and expansion potentials. Sulfate testing on the claystone resulted in 0.00 percent sulfate by weight indicating the claystone exhibits negligible degradation to concrete due to sulfate attack.

4.2 Groundwater

Depth to groundwater was measured in each of the borings at the conclusion of drilling and subsequent to drilling. Groundwater was encountered in thirty-eight of the forty-nine test borings, ranging from depths of 2 to 23 feet bgs. Groundwater may affect building foundation excavations, roadway and utilities construction on this site. It should be noted that groundwater levels could change due to seasonal variations, changes in land runoff characteristics and future development including nearby areas. Table 2 presents the estimated depths to bedrock and groundwater.

5.0 PRELIMINARY DEVELOPMENT CONSIDERATIONS

The following discussion is based on the subsurface conditions encountered in the test borings drilled at the site. This investigation is for the site discussed in 2.0 Project and Site Description. If subsurface conditions different from those described herein are encountered during construction or if the project elements change from those described, Entech Engineering, Inc. should be notified so that the evaluation and recommendations presented can be reviewed and revised if necessary.

Subsurface soil conditions encountered in the test borings drilled on the site generally consisted of native slightly silty to silty sand, clayey to very clayey sand, and sand overlying slightly silty to silty sandstone, clayey to very clayey sandstone, and sandy to very sandy claystone. Bedrock was encountered at depths ranging from 1 to 14 feet bgs. Depths to bedrock are indicated on the test boring plan and in Table 2. Consideration should be given to several conditions on this site in planning and excavating the development including groundwater, expansive soils and sandstone/claystone materials.

5.1 Groundwater

Groundwater may impact the development. Table 2 presents the depth to groundwater measured in each boring. Subsequent to completion of overlot grading cuts per the grading plan presented to us, the measured water levels will be less than 10 feet in some areas of the site. Groundwater was measured as shallow as two feet in Test Boring No. 24. Fill is proposed in this area. The area may require stabilization prior to placing fill. Claystone was encountered at 4 feet. Unstable conditions should be expected where groundwater is shallow or close to excavated depths. Procedures and equipment to mitigate groundwater impact during and after construction should be anticipated. Pumps, cofferdams, wide area and localized drain systems and other procedures and equipment may be necessary. Shotrock and geotextiles may be appropriate for stabilizing excavations. An underdrain system can be considered for long term groundwater mitigation. Frequently, groundwater levels rise following development as result of increased irrigation and decreased potential area of evaporation.

5.2 Expansive Soils

Expansive soils [clayey sand, claystone, and potentially clay (not encountered in the test borings)] are present on the site exhibiting expansion potential from low to high. Expansive soils where encountered will require mitigation for residential construction. Damage to structures can occur due to expansive soils; occurrence and severity of distress can be reduced by moisture treatments and overexcavation mitigation approaches.

5.3 Sandstone and Claystone

Sandstone and claystone were encountered at shallow depths across the site. Excavation of sandstone and claystone should be expected to be moderate to difficult. Track type equipment likely will be needed to accomplish excavations particularly where harder materials or lenses are present. Upon completion of site grading per the plan provided to us, sandstone is expected to be exposed across the majority of the areas tested.

6.0 SITE GRADING

Shallow bedrock was encountered in approximately half of the test borings. Depth to bedrock in each boring is indicated on the Test Boring Plan, Figure 2. Excavation of dense and hard

materials on site is expected to be moderate to difficult with heavy duty earthmoving equipment. Claystone and sandstone materials may require track equipment and ripping teeth. For conditions with no groundwater seepage, cut and fill slopes no steeper than 3 to 1 (horizontal to vertical) should be considered. If seepage occurs, then flatter slopes or a drain system should be considered. Recommendations may be subject to change depending upon particular field conditions.

6.1 Stripping

Debris, topsoil and organic materials should be stripped from the ground surface of areas to be filled. Any uncontrolled fill materials should be completely removed. The materials may be used as fill pending approval if they are free of organic material and debris. Although soft areas are not expected any soft or loose soils should be stabilized or removed to expose suitable material prior to placement of fill. Topsoil may be stored in stock piles and placed at the surface in landscape areas.

6.2 Fill Preparation

Surfaces which will receive fill should be scarified to depths of 6 inches, moisture conditioned to within 0 to 3 percent of optimum moisture, and compacted to minimum of 95 percent of Standard Proctor Dry Density (ASTM D-698) for cohesive materials and within 2 percent of optimum moisture, and compacted to minimum of 95 percent of Modified Proctor Dry Density (ASTM D-1557) for cohesionless soils. On-site natural soils and bedrock are anticipated to be used as site grading fill. Bedrock must be processed and broken down to small gravel-sized materials where placed in the fill. Expansive materials used for fill should be placed at sufficient moisture content to mitigate potential swell. The fill quality will influence the performance of foundations, slabs-on-grade, and pavements. Fill settlement can be minimized by placing thin lifts at suitable moisture content and by verification of compaction with frequent density tests.

6.3 Compaction

Overlot grading fill consisting of granular soils should be placed in lifts to exceed 6 inches following compaction and compacted to at least 95 percent of the maximum dry density determined by Modified Proctor (ASTM D-1557). Clay materials should be placed in compacted lifts less than 6 inches thick compacted to at least 95 percent of maximum Standard Proctor (ASTM D 698) dry density. Fills below 10 feet in depth should be moisture conditioned as above

and compacted to 98 percent of Standard Proctor dry density (ASTM D 698) for cohesive materials or 98 percent of maximum modified Proctor Dry Density (ASTM D 1557) for granular materials. The soil materials should be placed at a moisture content conducive to adequate compaction, usually within ± 2 percent of optimum moisture content. Fill placement and compaction should be observed and tested by Entech during construction to verify that adequate moisture and density has been achieved.

7.0 UNDERGROUND UTILITY CONSTRUCTION

Generally excavation is expected to be moderate to difficult utilizing heavy-duty track hoes. Rock buckets and rock teeth will likely be required where excavations extend into very hard sandstone or cemented materials. Special procedures or equipment may be required to remove water and/or achieve stability in utility trenches where excavations approach or intercept groundwater.

Utilities including water and sewer lines are usually constructed beneath paved roads. Placement of fill and degree of compaction applied to trench backfill will influence performance of overlying structures including pavements. Fill placed into utility trenches should be compacted according to requirements of the local jurisdiction. Fill should be placed in horizontal lifts having compacted thickness of six inches or less and at a water content conducive adequate compaction, usually within ± 2 percent of optimum water content. Typical compaction specifications would be similar to specifications in the Site Grading section. Mechanical methods should be used for fill placement; however, heavy equipment should be kept at a distance away from structures to avoid damage. No water flooding techniques of any type should be used for compaction or placement of utility trench backfill.

Trench backfill should be performed in accordance with El Paso County specifications and requirements. Excavations and excavation shoring/bracing should be performed in accordance with OSHA guidelines.

8.0 UNDERDRAIN SYSTEM

Depending on final site grading anticipated depths of excavations and structure foundations relative to groundwater occurrence, an underdrain system may be considered to be included as part of sewer system design and installation. The underdrain system drain pipe shall consist of

smooth wall non perforated rigid PVC pipe placed at a minimum slope of 2 percent. Shallower pipe grades can be considered for larger diameter underdrain pipes and areas to daylight the drainage systems. Concrete or clay material fill may be strategically placed at the manhole locations to slow the water flow down the trench. The underdrain below sewer should be constructed with adequate depth to allow connection of residence foundation drain systems. Drain elements should be of appropriate slopes and sizes for anticipated flows. Maintenance of the underdrain system should be anticipated. Gravity outlet should be planned such that other developments and properties are not adversely affected.

9.0 PAVEMENT CONSIDERATIONS

Materials exposed at pavement subgrade elevations will be dependent upon native materials exposed at final overlot grading and the specific materials placed as fill at and near finish grade elevations. The predominate materials are generally expected to be silty sand, sandstone, clayey sand, and clay. Materials anticipated at subgrade elevation generally would be rated as good, but some areas likely would be rated as poor AASHTO classifications of A-1-b, A-2-6, and A-4 were determined for the sandstone and upper granular soils. Based on depth to claystone and estimated cut, claystone with AASHTO classification of A-6 and associated poor rating is likely not to be encountered. The claystone classifies as A-6 which has poor asphalt support characteristics. Thickness of asphalt pavements to be anticipated generally range between 4 to 5 inches of asphalt overlying 6 to 10 inches of basecourse depending on specific subgrade materials and Roadway Classification of each particular street. Cement treated subgrade thickness of 10 to 12 inches are common. Actual thickness may exceed anticipated thickness at some areas. For specific thickness determinations, a subsurface investigation and pavement design should be completed after completion of overlot grading.

10.0 ANTICIPATED RESIDENTIAL FOUNDATION SYSTEMS

Subsurface soil conditions consisted of granular materials with some areas of expansive clayey soils and claystone materials. We anticipate conventional spread footing foundation systems will be appropriate for residences constructed on the majority of the site. Where expansive materials are encountered at or near foundation grades, use of spread footings with overexcavation and replacement with non-expansive fill should be expected. Drilled pier foundations may be a suitable alternative where expansive soils are encountered. A Subsurface Soils Investigation

report should be prepared after completion of overlot grading to address appropriate foundation systems. Perimeter below grade drain systems should be anticipated for all structures with basements. Overexcavation drains may also be recommended. Figures 3 and 4 present typical details. Shallow groundwater was encountered in numerous test borings. Temporary and permanent dewatering systems may be necessary at various foundation excavations. Shotrock and geotextiles may be appropriate for stabilizing excavations. An area wide subdrain may be considered for discharge of collected water.

11.0 RESIDENCE ON-GRADE FLOOR SLABS

On-grade floor slabs for the planned structures could be supported by on-site non-expansive soils or compacted, non-expansive, structural fill. Loose or expansive soils encountered at or near floor slab grade should be penetrated or overexcavated a distance below slab subgrade and replaced with a non-expansive structural fill to improve floor slab performance. If slab movement and cracks cannot be tolerated a structural floor system should be used. Evaluation of subgrade materials should be included within a Subsurface Soils Investigation for each specific lot.

12.0 CONCRETE DEGRADATION DUE TO SULFATE ATTACK

Sulfate solubility testing was conducted on eight samples recovered from the test borings to evaluate the potential for sulfate attack on concrete placed below surface grade. The test results indicated 0.00 to 0.01 percent soluble sulfate (by weight). The test results indicate the sulfate component of the in-place soils presents a negligible exposure threat to concrete placed below the site grade. Type II cement is recommended for the on-site soils. Additional testing should be conducted following completion of overlot grading.

13.0 EXCAVATION STABILITY

Excavation walls must be properly sloped/benched or otherwise supported in order to maintain stable conditions. All excavation openings and work execution shall conform to OSHA standards as in CFR 29, Part 1926.650-652 (Subpart D).

14.0 SURFACE AND SUBSURFACE DRAINAGE

Surface drainage will influence performance of structures at the site including streets and residences. Drainage is recommended around each building perimeter at a minimum slope of 5 percent in the first 10 feet adjacent to exterior foundation walls and for unpaved areas, where possible. For paved areas and other impervious surfaces, a minimum slope of 2 percent is recommended. Drainage should be planned to avoid ponding of water. Collected water and irrigation should discharge well beyond foundation backfill zones. Surface runoff should be designed to avoid sheet flow and erosion. Slopes should be protected from erosion by materials such as mulch or appropriate plants or other methods. All fills and backfills should be properly compacted. Unprotected surfaces may be subject to undesirable, heavy erosion.

15.0 WINTER CONSTRUCTION

In the event construction occurs during winter, concrete and soil materials should be protected from freezing conditions. Concrete should not be placed on frozen soil and once concrete has been placed, it should not be allowed to freeze. Similarly, once exposed, the soil subgrades should not be allowed to freeze. During grading operations and subgrade preparation, care should be taken to avoid burial of snow, ice or frozen material within the planned construction area.

16.0 CONSTRUCTION OBSERVATIONS

It is recommended that Entech observe and document the following activities during construction of the building foundations.

- Excavated subgrades and subgrade preparation.
- Placement of foundation perimeter drains (if installed).
- Placement/compaction of fill materials.
- Placement/compaction of utility bedding and trench backfill.

17.0 CLOSURE

The subsurface investigation, geotechnical evaluation and preliminary recommendations presented in this report are intended for use by Tech Contractors with application to the planned development of the single-family residential project site located in the Rolling Hills Ranch Filings 1 - 4 subdivision in Meridian Ranch in northern El Paso County, Colorado. In conducting the subsurface soil investigation, laboratory testing, engineering evaluation and reporting, Entech Engineering, Inc. endeavored to work in accordance with generally accepted professional geotechnical and geologic practices and principles consistent with the level of care and skill ordinarily exercised by members of the geotechnical profession currently practicing in same locality and under similar conditions. No other warranty, expressed or implied is made. Additional subsurface investigations and testing are recommended to further evaluate the individual sites and roadways after final development plans are prepared and after the site has been graded. During final design and/or construction, if conditions are encountered which appear different from those described in this report, Entech Engineering, Inc. requests that it be notified so that the evaluation and recommendations presented herein can be reviewed and modified as appropriate.

If there are any questions regarding the information provided herein or if Entech Engineering, Inc. can be of further assistance, please do not hesitate to contact us.

TABLES

TABLE 1

SUMMARY OF LABORATORY TEST RESULTS

CLIENT TECH CONTRACTORS
 PROJECT ROLLING HILLS
 JOB NO. 190300

SOIL TYPE	TEST BORING NO.	DEPTH (FT)	WATER (%)	DRY DENSITY (PCF)	PASSING NO. 200 SIEVE (%)	LIQUID LIMIT (%)	PLASTIC INDEX (%)	SULFATE (WT %)	AASHTO CLASS.	FHA SWELL (PSF)	SWELL/ CONSOL (%)	UNIFIED CLASS.	SOIL DESCRIPTION
1	6	2-3			8.1	NV	NP	<0.01	A-1-b			SM-SW	SAND, SLIGHTLY SILTY
1	8	5			6.1							SM-SW	SAND, SLIGHTLY SILTY
1	10	5			14.0	29	16	0.01	A-2-6			SC	SAND, CLAYEY
1	11	2-3			15.2					370		SM	SAND, SILTY
1	2	2-3			8.4							SM-SW	SAND, SLIGHTLY SILTY
1	23	2-3			17.0	NV	NP	0.00	A-1-b			SM	SAND, SILTY
1	24	2-3			18.0							SM	SAND, SILTY
1	32	10			15.6							SM	SAND SILTY
1	27	5			48.3					460		SC	SAND, VERY CLAYEY
1	1	2-3			4.7	NV	NP		A-1-b			SW	SAND
1	5	2-3			13.3	26	10		A-2-4			SC	SAND, CLAYEY
1	13	2-3			4.8							SW	SAND
1	14	5			13.2	NV	NP		A-1-b			SM	SAND, SILTY
1	16	5			5.9					70		SM-SW	SAND, SLIGHTLY SILTY
1	19	2-3	10.0	112.9	34.7						-1.2	SM	SAND, SILTY
1	26	5			11.5	NV	NP		A-1-b			SM-SW	SAND, SLIGHTLY SILTY
1	28	2-3			4.9	NV	NP		A-1-b			SW	SAND
1	30	2			12.1							SC	SAND, CLAYEY
1	30	3								2970		CL	CLAY, SANDY
1	30	5			6.9							SM-SW	SAND, SLIGHTLY SILTY
1	31	5			5.4							SM-SW	SAND, SLIGHTLY SILTY
1	38	2-3			8.6	NV	NP		A-1-b			SM-SW	SAND, SLIGHTLY SILTY
1	39	5			17.8							SM	SAND, SILTY
1	42	5			19.6							SM	SAND, SILTY
1	43	2-3			6.0	NV	NP		A-1-b			SM-SW	SAND, SLIGHTLY SILTY
1	47	2-3			20.7					220		SM	SAND, SILTY
1	49	5			7.3							SM-SW	SAND, SLIGHTLY SILTY
2	7	10			18.6	32	14					SC	SANDSTONE, CLAYEY
2	17	10			7.3	NV	NP		A-1-b			SM-SW	SANDSTONE, SLIGHTLY SILTY
2	18	5			14.2							SM	SANDSTONE, SILTY
2	20	5			17.1	37	20		A-2-6			SC	SANDSTONE, CLAYEY
2	21	10			12.5							SM	SANDSTONE, SILTY
2	41	10			16.0							SM	SANDSTONE, SILTY
2	44	10			14.3							SM	SANDSTONE, SILTY
2	6	20			38.9	26	13	<0.01	A-6			SC	SANDSTONE, VERY CLAYEY
2	9	15			17.5	NV	NP	<0.01	A-1-b			SM	SANDSTONE, SILTY

TABLE 1 (cont.)

SOIL TYPE	TEST BORING NO.	DEPTH (FT)	WATER (%)	DRY DENSITY (PCF)	PASSING NO. 200 SIEVE (%)	LIQUID LIMIT (%)	PLASTIC INDEX (%)	SULFATE (WT %)	AASHTO CLASS.	FHA SWELL (PSF)	SWELL/ CONSOL (%)	UNIFIED CLASS.	SOIL DESCRIPTION
2	12	10			15.5							SM	SANDSTONE, SILTY
2	3	5			26.1							SM	SANDSTONE, SILTY
2	37	5	11.4	116.5	35.4			0.00			-0.4	SC	SANDSTONE, CLAYEY
2	40	10			12.3	NV	NP	<0.01	A-1-b			SM	SANDSTONE, SILTY
2	25	15			28.7	NV	NP		A-2-4			SM	SANDSTONE, SILTY
2	23	10			11.6							SM-SW	SANDSTONE, SLIGHTLY SILTY
2	35	5			10.1							SM-SW	SANDSTONE, SLIGHTLY SILTY
2	27	10			16.2							SM	SANDSTONE, SILTY
2	1	15			15.5							SM	SANDSTONE, SILTY
2	4	20	9.3	110.3	20.3	29	12		A-2-6		-1.9	SC	SANDSTONE, CLAYEY
2	5	25			48.5	31	14		A-6			SC	SANDSTONE, VERY CLAYEY
2	14	20			17.8							SM	SANDSTONE, SILTY
2	15	15			19.9							SC	SANDSTONE, CLAYEY
2	20	20	7.4	84.0	49.7	28	14		A-6		3.2	SC	SANDSTONE, VERY CLAYEY
2	21	25			21.2							SM	SANDSTONE, SILTY
2	28	15			28.3	41	17		A-2-6			SC	SANDSTONE, CLAYEY
2	29	10	4.5	119.9	49.6						-0.4	SC	SANDSTONE, VERY CLAYEY
2	39	15			41.1							SC	SANDSTONE, VERY CLAYEY
2	45	20			13.4							SM	SANDSTONE, SILTY
2	46	15			45.5							SC	SANDSTONE, VERY CLAYEY
3	19	5			65.1							CL	CLAYSTONE, SANDY
3	15	10	7.2	126.8	56.1						1.0	CL	CLAYSTONE, VERY SANDY
3	16	20	9.5	120.5	58.8						0.0	CL	CLAYSTONE, VERY SANDY
3	22	10	12.7	99.3	54.2	34	15		A-6			CL	CLAYSTONE, VERY SANDY
3	38	15			59.6	34	17		A-6			CL	CLAYSTONE, VERY SANDY
3	48	20	12.5	103.3	51.1						-0.7	CL	CLAYSTONE, VERY SANDY
3	36	15			59.7							CL	CLAYSTONE, VERY SANDY
3	24	5			63.6					90		CL	CLAYSTONE, SANDY
3	34	10	11.5	114.3	56.0						0.7	CL	CLAYSTONE, VERY SANDY
3	33	10	16.5	115.0	80.8	42	20		A-7-6		2.5	CL	CLAYSTONE, SANDY

Table 2: Summary of Test Borings and Water Measurements*

Test Boring No.	Depth of Boring (ft.)	Depth to Bedrock (ft.)	Depth to Groundwater (ft.)	Cut & Fill** (-/+ , ft.)	Estimated Ground Elevation	Estimated Groundwater Elevation
1	20.0	9.0	9.0	0 to -2	7021.3	7012.3
2	25.0	9.0	13.0	-2 to -4	7031.5	7018.5
3	25.0	1.0	15.0	-2 to -4	7032.3	7017.3
4	20.0	1.0	dry	-2 to -4	7044.0	dry
5	25.0	4.0	14.0	-2 to -4	7044.8	7030.8
6	25.0	14.0	10.0	0 to +2	7054.7	7044.7
7	20.0	1.0	16.5	+2 to +4	7058.6	7042.6
8	20.0	9.0	13.0	0 to -2	7060.1	7047.1
9	20.0	14.0	10.0	+4 to +6	7069.7	7059.7
10	20.0	14.0	14.0	0 to -2	7077.5	7063.5
11	20.0	9.0	9.0	0 to +2	7071.6	7062.6
12	20.0	9.0	14.0	0 to -2	7087.3	7073.3
13	20.0	9.0	14.0	0 to -2	7092.0	7078.0
14	25.0	14.0	18.5	-6 to -8	7105.3	7086.8
15	20.0	9.0	18.0	0 to -2	7108.4	7090.4
16	25.0	9.0	16.0	0 to -2	7110.9	7094.9
17	20.0	1.0	17.5	0 to -2	7121.7	7104.2
18	20.0	4.0	dry	0 to +2	7120.7	dry
19	20.0	4.0	dry	+2 to +4	7126.5	dry
20	20.0	1.0	dry	outside cut/fill	7125.4	dry
21	25.0	1.0	10.0	-6 to -8	7105.7	7095.7
22	20.0	4.0	18.5	-6 to -8	7106.0	7087.5
23	20.0	9.0	dry	+2 to +4	7092.3	dry
24	25.0	4.0	2.0	0 to +2	7072.9	7070.9

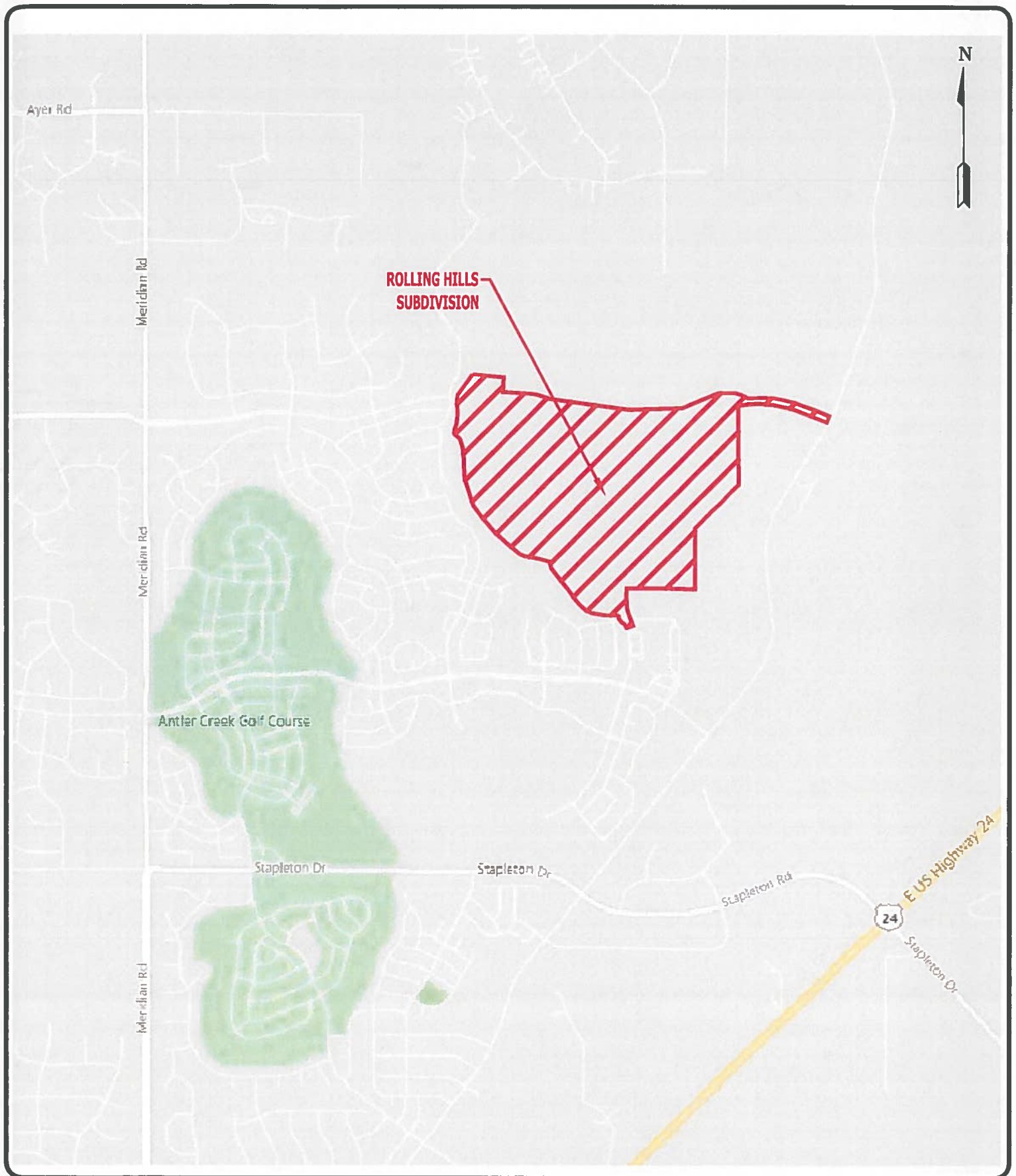
Table 2: (Continued)

Test Boring No.	Depth of Boring (ft.)	Depth to Bedrock (ft.)	Depth to Groundwater (ft.)	Cut & Fill** (-/+ , ft.)	Est. Ground Elevation	Estimated Groundwater Elevation
25	20.0	1.0	12.0	0 to +2	7068.8	7056.8
26	20.0	1.0	17.0	-6 to -8	7049.2	7032.2
27	20.0	9.0	8.0	0 to +2	7071.2	7063.2
28	20.0	9.0	13.5	0 to -2	7082.9	7069.4
29	25.0	4.0	12.0	outside cut/fill	7084.4	7072.4
30	20.0	10.0	8.0	0 to +2	7066.7	7058.7
31	20.0	14.0	dry	0 to -2	7057.5	dry
32	25.0	14.0	13.0	0 to -2	7045.4	7032.4
33	25.0	9.0	7.0	0 to -2	7052.7	7045.7
34	20.0	1.0	9.0	+2 to +4	7042.0	7033.0
35	20.0	3.0	dry	0 to -2	7065.4	dry
36	25.0	1.0	23.0	-6 to -8	7049.4	7026.4
37	20.0	1.0	dry	-2 to -4	7038.8	dry
38	25.0	12.0	10.0	-6 to -8	7032.4	7022.4
39	20.0	9.0	4.0	-6 to -8	7032.5	7028.5
40	20.0	9.0	10.0	+12 to +14	7032.1	7022.1
41	20.0	1.0	17.0	outside cut/fill	7039.1	7022.1
42	25.0	9.0	14.0	outside cut/fill	7046.0	7032.0
43	25.0	4.0	19.0	outside cut/fill	7049.0	7030.0
44	20.0	1.0	dry	outside cut/fill	7064.0	dry
45	25.0	4.0	11.0	outside cut/fill	7072.1	7061.1
46	25.0	4.0	22.0	outside cut/fill	7065.0	7043.0
47	20.0	1.0	dry	outside cut/fill	7058.7	dry
48	20.0	1.0	dry	outside cut/fill	7047.6	dry
49	25.0	14.0	12.0	outside cut/fill	7029.5	7017.5

* - Measurement taken subsequent to drilling

** - Cut and Fill estimates based on map provided by the client

FIGURES



ENTECH
ENGINEERING, INC.

505 ELKTON DRIVE
COLORADO SPRINGS, CO. 80907 (719) 531-5599

VICINITY MAP
ROLLING HILLS RANCH
EL PASO COUNTY, CO
FOR: TECH CONTRACTORS

DRAWN BY:
SC

DATE DRAWN:
04/18/19

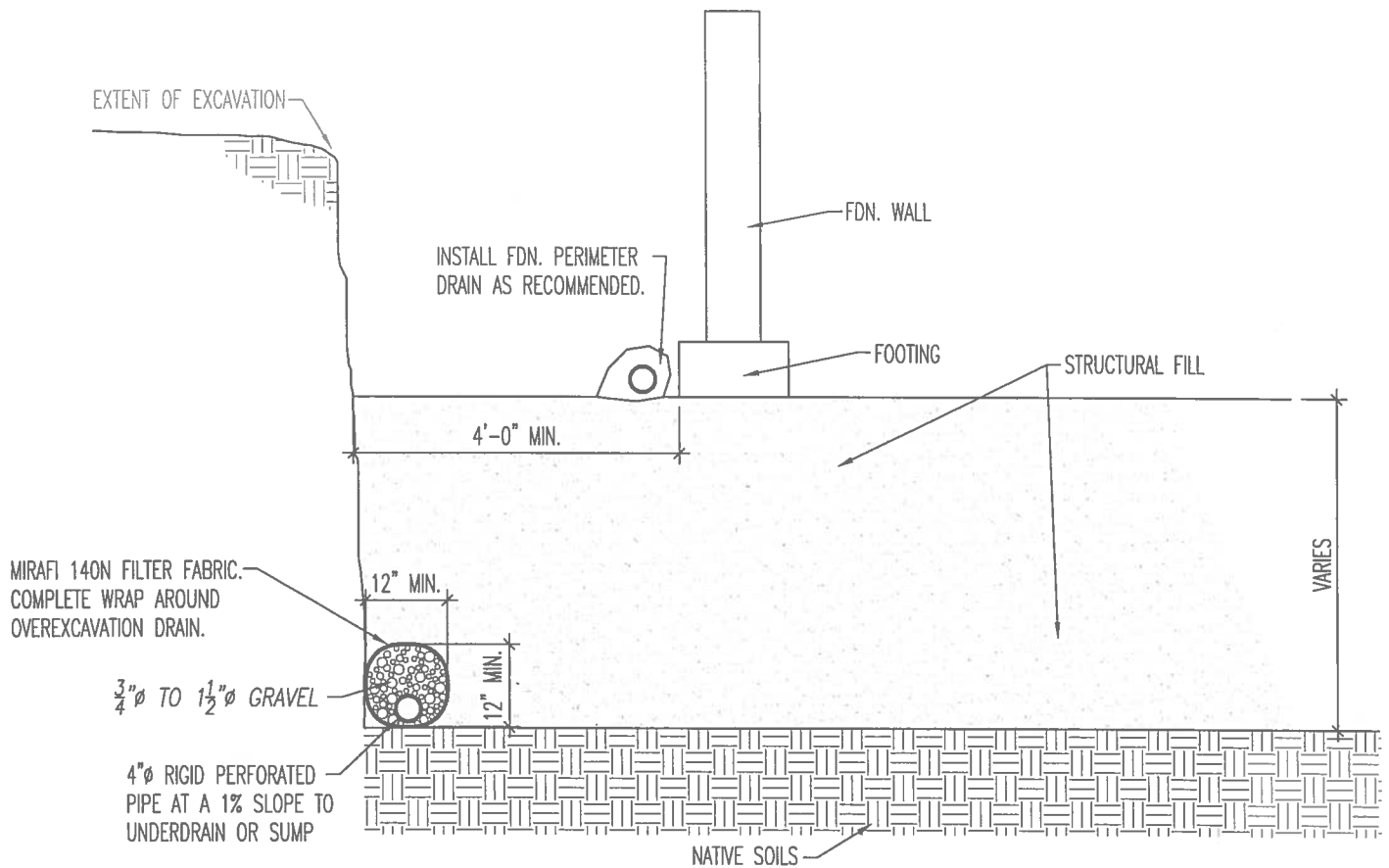
DESIGNED BY:
SC

CHECKED:
SC

JOB NO.:
190300

FIG. NO.:

1



OVEREXCAVATION DRAIN DETAIL

N.T.S.

NOTE:

EXTEND DRAIN TO SUMP AS REQ'D.



ENTECH
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505 ELKTON DRIVE
COLORADO SPRINGS, CO. 80907 (719) 531-5599

OVEREXCAVATION DRAIN DETAIL

DRAWN BY:
M. WELLS

DATE DRAWN:

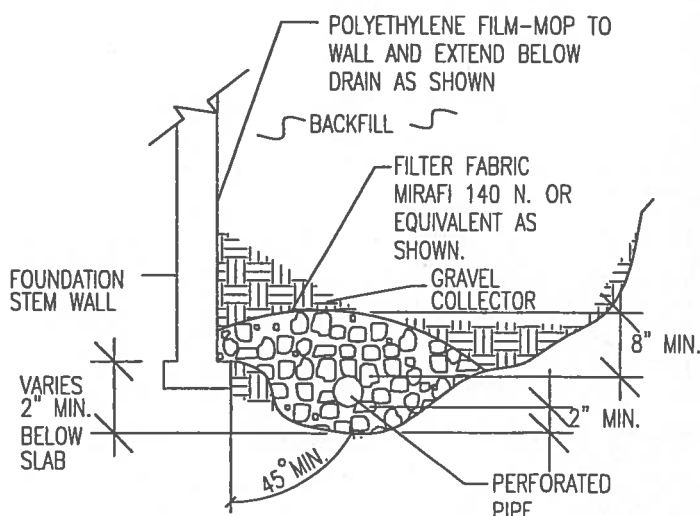
DESIGNED BY:
D. STEGMAN

CHECKED:

JOB NO.:
190300

FIG. NO.:

3



4

APPENDIX A: Test Boring Logs

TEST BORING NO. 1
 DATE DRILLED 6/19/2019
 Job # 190300

TEST BORING NO. 2
 DATE DRILLED 3/11/2019
 CLIENT TECH CONTRACTORS
 LOCATION ROLLING HILLS

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type	REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
WATER @ 9', 6/19/19							WATER @ 13', 3/11/19						
3" TOP SOIL SAND, CLEAN TO SILTY, FINE TO COARSE GRAINED, TAN, MEDIUM DENSE, MOIST				14	8.3	1	SAND, GRAVELLY, SLIGHTLY SILTY, FINE TO COARSE GRAINED, BROWN, MEDIUM DENSE, MOIST				22	12.5	1
	5			23	7.0	1		5			28	9.3	1
SANDSTONE, SILTY, FINE TO COARSE GRAINED, TAN, VERY DENSE, MOIST TO WET	10			50 9"	12.4	2	SANDSTONE, SILTY, FINE TO COARSE GRAINED, TAN TO GRAY BROWN, VERY DENSE, MOIST TO WET	10			50 10"	7.8	2
	15			50 10"	11.9	2		15			50 9"	14.6	2
	20			50 7"	12.7	2	CLAYSTONE, SANDY, GRAY BROWN, HARD, MOIST	20			50 9"	11.9	3
								25			50 6"	12.4	3



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505 ELKTON DRIVE
 COLORADO SPRINGS, COLORADO 80907

TEST BORING LOG

DRAWN:

DATE:

CHECKED: *h*

DATE: 7/1/19

JOB NO.:
190300

FIG NO.:
A- 1

TEST BORING NO. 3
 DATE DRILLED 3/11/2019
 Job # 190300

TEST BORING NO. 4
 DATE DRILLED 6/7/2019
 CLIENT TECH CONTRACTORS
 LOCATION ROLLING HILLS

REMARKS

WATER @ 15', 3/11/19

SAND, SILTY, TAN
 SANDSTONE, SILTY, FINE TO
 COARSE GRAINED, TAN, VERY
 DENSE, MOIST

SANDSTONE, CLAYEY, FINE TO
 MEDIUM GRAINED, GRAY
 BROWN, VERY DENSE, MOIST
 TO WET



Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
1	1-1				1
2			50 11"	4.4	2
3					
4			50 8"	7.3	2
5					
6					
7					
8					
9					
10			50 4"	11.4	2
11					
12					
13					
14					
15			50 6"	11.6	2
16					
17					
18					
19					
20			50 8"	30.4	2
21					
22					
23					
24					
25			50 3"	24.1	2

REMARKS

DRY TO 20', 6/7/19

6" TOP SOIL, SAND, SILTY, TAN
 SANDSTONE, SILTY, FINE TO
 COARSE GRAINED, TAN, VERY
 DENSE, MOIST

FINE GRAINED LENSES

CLAYSTONE, SANDY, TAN,
 HARD, MOIST

SANDSTONE, CLAYEY, FINE
 TO COARSE GRAINED, TAN,
 VERY DENSE, MOIST

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
1	1-1				1
2			50 7"	7.8	2
3					
4			50 7"	5.7	2
5					
6					
7					
8					
9					
10			50 6"	8.7	2
11					
12					
13					
14					
15			50 9"	17.0	3
16					
17					
18					
19					
20			50 5"	8.4	2



**ENTECH
 ENGINEERING, INC.**

505 ELKTON DRIVE
 COLORADO SPRINGS, COLORADO 80907

TEST BORING LOG

DRAWN:

DATE:

CHECKED: *h*

DATE: 7/1/19

JOB NO.:
 190300

FIG NO.:
 A- 2

TEST BORING NO. 5
 DATE DRILLED 5/29/2019
 Job # 190300

TEST BORING NO. 6
 DATE DRILLED 3/7/2019
 CLIENT TECH CONTRACTORS
 LOCATION ROLLING HILLS

REMARKS

WATER @ 14', 5/29/19

3" TOPSOIL SAND, CLAYEY,
 FINE TO COARSE GRAINED,
 TAN, MEDIUM DENSE, MOIST

SANDSTONE, SILTY, FINE TO
 COARSE GRAINED, TAN,
 DENSE TO MEDIUM DENSE,
 MOIST

CLAYSTONE, SANDY, GRAY
 BROWN, HARD, MOIST

SANDSTONE, VERY CLAYEY,
 FINE GRAINED, GRAY BROWN,
 VERY DENSE, MOIST

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			14	9.6	1
5			40	5.4	2
10			50 6"	9.3	2
15			50 5"	6.5	2
20			50 4"	13.8	3
25			50 7"	14.6	2

REMARKS

WATER @ 10', 3/7/19

6" TOPSOIL, SAND, SLIGHTLY
 SILTY, FINE TO COARSE GRAINED
 BROWN TO TAN, MEDIUM DENSE
 TO LOOSE, MOIST TO WET

WEATHERED TO FORMATIONAL
 SANDSTONE, CLAYEY TO VERY
 CLAYEY, FINE TO COARSE
 GRAINED, GRAY BROWN, DENSE
 TO VERY DENSE, MOIST

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			28	2.4	1
5			21	4.2	1
10			9	15.7	1
15			48	13.3	2
20			50 10"	11.7	2
25			45	15.4	2



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505 ELKTON DRIVE
 COLORADO SPRINGS, COLORADO 80907

TEST BORING LOG

DRAWN:

DATE:

CHECKED: L

DATE 7/1/19

JOB NO.:
 190300

FIG NO.:
 A- 3

TEST BORING NO. 7
 DATE DRILLED 5/29/2019
 Job # 190300

TEST BORING NO. 8
 DATE DRILLED 3/7/2019
 CLIENT TECH CONTRACTORS
 LOCATION ROLLING HILLS

REMARKS

WATER @ 16.5', 5/29/19

6" TOPSOIL, SAND, SILTY, TAN
 WEATHERED SANDSTONE,
 SILTY, FINE TO COARSE
 GRAINED, DENSE, MOIST

SANDSTONE, CLAYEY TO
 SILTY, FINE TO COARSE
 GRAINED, TAN, VERY DENSE,
 MOIST TO WET

FINE GRAINED LENSES

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
0					1
1			46	4.8	2
5			45	9.0	2
10			50 6"	8.1	2
15			50 3"	10.7	2
20			50 6"	11.1	2



REMARKS

WATER @ 13', 3/7/19

6" TOPSOIL, SAND, SLIGHTLY
 SILTY, FINE TO COARSE GRAINED,
 BROWN, MEDIUM DENSE, MOIST

SANDSTONE, SILTY, FINE TO
 COARSE GRAINED, TAN, VERY
 DENSE, MOIST TO WET



Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
0					
1			23	4.1	1
5			11	6.0	1
10			50 9"	8.5	2
15			50 7"	17.8	2
20			50 6"	16.6	2



**ENTECH
 ENGINEERING, INC.**

505 ELKTON DRIVE
 COLORADO SPRINGS, COLORADO 80907

TEST BORING LOG

DRAWN:

DATE:

CHECKED: *L*

DATE: 7/1/19

JOB NO.:

190300

FIG NO.:

A- 4

TEST BORING NO. 9
 DATE DRILLED 3/7/2019
 Job # 190300

TEST BORING NO. 10
 DATE DRILLED 3/7/2019
 CLIENT TECH CONTRACTORS
 LOCATION ROLLING HILLS

REMARKS

WATER @ 10', 3/7/19

6" TOP SOIL, SAND, SILTY, FINE TO COARSE GRAINED, BROWN, MEDIUM DENSE, DRY TO MOIST

SAND, CLAYEY, FINE TO COARSE GRAINED, GRAY BROWN, LOOSE, WET

SANDSTONE, SILTY, FINE TO COARSE GRAINED, TAN, VERY DENSE, MOIST

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			16	2.7	1
5			11	6.6	1
10			5	18.0	1
15			50 7"	8.7	2
20			50 6"	10.9	2

REMARKS

WATER @ 14', 3/7/19

6" TOP SOIL, SAND, SILTY TO CLAYEY, FINE TO COARSE GRAINED, TAN, MEDIUM DENSE, MOIST

SANDSTONE, CLAYEY, FINE TO COARSE GRAINED, BROWN, VERY DENSE TO DENSE, WET

WEATHERED ZONE

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			26	6.2	1
5			19	7.8	1
10			27	12.4	1
15			50 10"	12.5	2
20			45	13.8	2



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505 ELKTON DRIVE
 COLORADO SPRINGS, COLORADO 80907

TEST BORING LOG

DRAWN:

DATE:

CHECKED:

DATE:

7/1/19

JOB NO.:
 190300

FIG NO.:
 A- 5

TEST BORING NO. 11
 DATE DRILLED 3/7/2019
 Job # 190300

TEST BORING NO. 12
 DATE DRILLED 3/7/2019
 CLIENT TECH CONTRACTORS
 LOCATION ROLLING HILLS

REMARKS

WATER @ 9', 3/7/19

SAND, SILTY, FINE TO COARSE
 GRAINED, TAN, LOOSE TO
 MEDIUM DENSE, VERY MOIST

SANDSTONE, SILTY, FINE
 TO COARSE GRAINED, TAN,
 VERY DENSE, WET



Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			7	21.3	1
5			16	15.1	1
10			50 11"	17.5	2
15			50 8"	12.6	2
20			50 7"	12.7	2

REMARKS

WATER @ 14', 3/7/19

6" TOP SOIL, SAND, SILTY, FINE
 TO COARSE GRAINED, BROWN,
 LOOSE TO MEDIUM DENSE,
 MOIST

WEATHERED TO FORMATIONAL
 SANDSTONE, SILTY, FINE TO
 COARSE GRAINED, BROWN,
 DENSE TO VERY DENSE, MOIST
 TO WET
 CLAYEY LENSES



Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			6	3.6	1
5			23	8.6	1
10			36	11.3	2
15			50 11"	20.2	2
20			50 7"	12.8	2



**ENTECH
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505 ELKTON DRIVE
 COLORADO SPRINGS, COLORADO 80907

TEST BORING LOG

DRAWN:

DATE:

CHECKED:

DATE: 7/1/19

JOB NO.:
 190300

FIG NO.:
 A- 6

TEST BORING NO. 13
 DATE DRILLED 5/29/2019
 Job # 190300

TEST BORING NO. 14
 DATE DRILLED 5/29/2019
 CLIENT TECH CONTRACTORS
 LOCATION ROLLING HILLS

REMARKS

WATER @ 14', 5/29/19

6" TOP SOIL, SAND, CLEAN TO SILTY, FINE TO COARSE GRAINED, TAN, LOOSE TO MEDIUM DENSE, MOIST

WEATHERED TO FORMATIONAL SANDSTONE, SILTY, FINE TO COARSE GRAINED, TAN, DENSE TO VERY DENSE, MOIST TO WET



Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			11	1.4	1
5			14	6.3	1
10			45	8.4	2
15			48	8.9	2
20			50 5"	11.5	2

REMARKS

WATER @ 18.5', 5/29/19

6" TOP SOIL, SAND, SILTY, FINE TO COARSE GRAINED, TAN, LOOSE TO MEDIUM DENSE, DRY TO MOIST

FINE GRAINED LENSES

SANDSTONE, SILTY, FINE TO COARSE GRAINED, TAN, VERY DENSE, MOIST TO WET



Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			13	1.8	1
5			7	2.3	1
10			24	9.1	1
15			50 11"	6.7	2
20			50 11"	10.6	2
25			50 9"	12.6	2



ENTECH
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505 ELKTON DRIVE
 COLORADO SPRINGS, COLORADO 80907

TEST BORING LOG

DRAWN:

DATE:

CHECKED: *h*

DATE: 7/1/19

JOB NO.:
 190300

FIG NO.:
 A- 7

TEST BORING NO. 15
 DATE DRILLED 5/29/2019
 Job # 190300

TEST BORING NO. 16
 DATE DRILLED 5/29/2019
 CLIENT TECH CONTRACTORS
 LOCATION ROLLING HILLS

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type	REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
WATER @ 18', 5/29/19							WATER @ 16', 5/29/19						
6" TOPSOIL SAND, SILTY, TAN WEATHERED SANDSTONE, SILTY, FINE TO COARSE GRAINED, TAN, DENSE, MOIST	0					1	6" TOPSOIL, SAND, SLIGHTLY SILTY, FINE TO COARSE GRAINED, TAN, MEDIUM DENSE, DRY	0					
	5			43	3.2	2		5			11	1.2	1
				34	9.9	2					21	1.8	1
CLAYSTONE, VERY SANDY, GRAY BROWN, HARD, MOIST	10			50	11.4	3	SANDSTONE, SILTY, FINE TO COARSE GRAINED, TAN, VERY DENSE, MOIST	10			50	7.0	2
				7"							9"		
SANDSTONE, CLAYEY, FINE TO COARSE GRAINED, TAN, VERY DENSE, MOIST	15			50	11.0	2		15			50	8.3	2
				4"							6"		
	20			50	14.2	2	CLAYSTONE, VERY SANDY, BROWN, HARD, MOIST	20			50	15.0	3
				11"							B	8.9	3

B - BOUNCE



**ENTECH
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505 ELKTON DRIVE
 COLORADO SPRINGS, COLORADO 80907

TEST BORING LOG

DRAWN:

DATE:

CHECKED:

DATE
7/1/19

JOB NO.:
190300

FIG NO.:
A- 8

TEST BORING NO. 17
 DATE DRILLED 5/29/2019
 Job # 190300

TEST BORING NO. 18
 DATE DRILLED 6/7/2019
 CLIENT TECH CONTRACTORS
 LOCATION ROLLING HILLS

REMARKS

WATER @ 17.5', 5/29/19

6" TOPSOIL, SAND, SILTY, TAN
 SANDSTONE, SILTY, FINE TO
 COARSE GRAINED, TAN,
 VERY DENSE, DRY TO MOIST

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
0					1
1			50	1.7	2
2			10"		
3			50	1.8	2
4			8"		
5					
6					
7					
8					
9					
10			50	6.9	2
11			6"		
12					
13					
14					
15			50	8.0	2
16			7"		
17					
18					
19					
20			50	10.1	2
21			6"		



REMARKS

DRY TO 20', 6/7/19

6" TOPSOIL, SAND, SILTY,
 FINE TO COARSE GRAINED,
 BROWN, MEDIUM DENSE, DRY
 WEATHERED TO FORMATIONAL
 SANDSTONE, SILTY, FINE TO
 COARSE GRAINED, TAN,
 DENSE TO VERY DENSE, MOIST
 FINE GRAINED LENSES

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
0					
1					
2			12	2.7	1
3					
4			42	5.0	2
5					
6					
7					
8					
9					
10			50	8.9	2
11			6"		
12					
13					
14					
15			50	4.9	2
16			7"		
17					
18					
19					
20			50	7.0	2
21			6"		



ENTECH
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505 ELKTON DRIVE
 COLORADO SPRINGS, COLORADO 80907

TEST BORING LOG

DRAWN:

DATE:

CHECKED:

DATE:

h 7/1/19

JOB NO.:
 190300

FIG NO.:
 A- 9

TEST BORING NO. 19
 DATE DRILLED 6/7/2019
 Job # 190300

TEST BORING NO. 20
 DATE DRILLED 5/30/2019
 CLIENT TECH CONTRACTORS
 LOCATION ROLLING HILLS

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type	REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
DRY TO 20', 6/7/19							DRY TO 20', 5/30/19 CAVED TO 19', 6/6/19, DRY						
6" TOPSOIL, SAND, SILTY, FINE TO COARSE GRAINED, GRAY BROWN, MEDIUM DENSE, MOIST				21	7.8	1	6" TOPSOIL, SAND, SILTY, TAN SANDSTONE, SILTY TO CLAYEY, FINE TO COARSE GRAINED, TAN, VERY DENSE, DRY TO MOIST				50 10"	4.8	2
CLAYSTONE, SANDY, GRAY BROWN, HARD, MOIST	5			50 9"	10.9	3		5			50 9"	8.6	2
	10			50 8"	7.8	2		10			50 9"	6.5	2
SANDSTONE, SILTY, FINE TO COARSE GRAINED, TAN, VERY DENSE, MOIST	15			50 8"	5.7	2	CLAYSTONE, SANDY, GRAY BROWN, HARD, MOIST	15			50 7"	10.4	3
	20			50 6"	8.9	2	SANDSTONE, VERY CLAYEY, FINE TO COARSE GRAINED, BROWN, VERY DENSE, MOIST	20			50 2"	8.0	2



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505 ELKTON DRIVE
 COLORADO SPRINGS, COLORADO 80907

TEST BORING LOG

DRAWN:

DATE:

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DATE:

JOB NO.:
190300

FIG NO.:
A- 10

TEST BORING NO. 21
 DATE DRILLED 5/30/2019
 Job # 190300

TEST BORING NO. 22
 DATE DRILLED 4/25/2019
 CLIENT TECH CONTRACTORS
 LOCATION ROLLING HILLS

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type	REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
WATER @ 18', 5/30/19 WATER @ 10', 6/6/19							WATER @ 18.5', 6/6/19						
6" TOP SOIL, SAND, SILTY, TAN WEATHERED SANDSTONE, SILTY, FINE TO COARSE GRAINED, TAN, DENSE, MOIST	1			40	3.0	1	6" TOP SOIL, SAND, SILTY, FINE TO COARSE GRAINED, TAN, MEDIUM DENSE, MOIST	1			25	7.2	1
	5			42	6.2	2	SANDSTONE, SILTY, FINE TO COARSE GRAINED, TAN, VERY DENSE, MOIST	5			50 10"	6.3	2
6/6/19 SANDSTONE, SILTY, FINE TO COARSE GRAINED, BROWN, VERY DENSE, MOIST	10			50 10"	6.5	2	CLAYSTONE, VERY SANDY, TAN, HARD, MOIST	10			50 8"	12.1	3
CLAYSTONE, SANDY, GRAY BROWN, HARD, MOIST	15			50	13.1	3	SANDSTONE, SILTY, FINE TO COARSE GRAINED, BROWN, VERY DENSE, MOIST	15			50 6"	3.4	2
5/30/19 SANDSTONE LENSE	20			50	12.3	3		20			50 6"	9.7	2
SANDSTONE, SILTY, FINE TO COARSE GRAINED, GRAY BROWN, VERY DENSE, MOIST	25			50 6"	8.8	2							



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TEST BORING LOG

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DATE:

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DATE: 7/1/19

JOB NO.:
190300

FIG NO.:
A- 11

TEST BORING NO. 23
 DATE DRILLED 3/12/2019
 Job # 190300

TEST BORING NO. 24
 DATE DRILLED 3/12/2019
 CLIENT TECH CONTRACTORS
 LOCATION ROLLING HILLS

REMARKS

DRY TO 20', 3/12/19

6" TOPSOIL, SAND, SILTY, FINE
 TO COARSE GRAINED, TAN,
 LOOSE, MOIST

SANDSTONE, SLIGHTLY SILTY,
 FINE TO COARSE GRAINED,
 BROWN, VERY DENSE, MOIST
 CLAYSTONE, SANDY, BLUE
 GRAY, HARD, MOIST

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
5			4	3.3	1
5			7	4.5	1
10			50 10"	12.1	2
15			50 8"	12.5	3
20			50 11"	13.3	3

REMARKS

WATER @ 9', 3/12/19
 WATER @ 2', 6/6/19

6" TOPSOIL, SAND, SILTY, FINE
 TO COARSE GRAINED, TAN,
 DENSE, MOIST 6/6/19

CLAYSTONE, SANDY, TAN,
 HARD, MOIST

3/12/19
 SANDSTONE, CLAYEY, FINE
 TO COARSE GRAINED, BROWN,
 VERY DENSE, WET

CLAYSTONE, SANDY, BLUE
 GRAY, HARD, MOIST

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
5			45	11.4	1
5			50 7"	16.8	3
10			50 11"	21.0	2
15			50 7"	8.3	2
20			50 9"	10.4	2
25			50 5"	16.1	3



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DATE:

7-12-19

JOB NO.:

190300

FIG NO.:

A- 12

TEST BORING NO. 25
 DATE DRILLED 3/12/2019
 Job # 190300

TEST BORING NO. 26
 DATE DRILLED 6/7/2019
 CLIENT TECH CONTRACTORS
 LOCATION ROLLING HILLS

REMARKS

WATER @ 12', 7/9/19

SAND, SILTY, TAN
 SANDSTONE, CLAYEY TO SILTY,
 FINE TO COARSE GRAINED, TAN
 TO GRAY BROWN, VERY DENSE,
 MOIST TO WET

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
1	1-1				1
2			50	9.4	2
3			3"		
4			50	8.6	2
5			9"		
6					
7					
8					
9					
10			50	6.6	2
11			7"		
12					
13					
14					
15			50	17.0	2
16			11"		
17					
18					
19					
20			50	14.6	2
21			5"		



REMARKS

WATER @ 11', 7/9/19

6" TOPSOIL, SAND, SILTY, TAN
 SANDSTONE, SLIGHTLY
 SILTY TO SILTY, FINE TO
 COARSE GRAINED, BROWN
 TO TAN, VERY DENSE, MOIST
 TO WET

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
1	1-1				1
2					
3			50	5.5	2
4			7"		
5			50	4.2	2
6			6"		
7					
8					
9					
10			50	6.4	2
11			7"		
12					
13					
14					
15			50	10.3	2
16			6"		
17					
18					
19					
20			50	11.5	2
21			5"		



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TEST BORING LOG

DRAWN:

DATE:

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DATE: 7.12.19

JOB NO.:
 190300

FIG NO.:
 A- 13

TEST BORING NO. 27
 DATE DRILLED 3/12/2019
 Job # 190300

TEST BORING NO. 28
 DATE DRILLED 4/25/2019
 CLIENT TECH CONTRACTORS
 LOCATION ROLLING HILLS

REMARKS

WATER @ 18', 3/12/19
 WATER @ 8', 6/6/19

6" TOPSOIL SAND, SILTY, FINE TO
 COARSE GRAINED, BROWN,
 MEDIUM DENSE, DRY
 SAND, VERY CLAYEY, FINE TO
 COARSE GRAINED, BROWN,
 MEDIUM DENSE, MOIST

6/6/2019

SANDSTONE, SILTY, FINE TO
 COARSE GRAINED, BROWN,
 VERY DENSE, MOIST

3/12/2019

CLAYSTONE, SANDY, BROWN,
 HARD, MOIST

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			22	2.7	1
5			23	13.6	1
10			50 8"	8.7	2
15			50 7"	9.6	2
20			50 6"	15.9	3

REMARKS

WATER @ 13.5', 4/25/19

6" TOPSOIL, SAND, SILTY TO
 CLEAN, FINE TO COARSE
 GRAINED, TAN, MEDIUM DENSE,
 DRY TO MOIST

SANDSTONE, SILTY TO CLAYEY,
 FINE TO COARSE GRAINED,
 BROWN, VERY DENSE, MOIST
 TO WET

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			18	2.4	1
5			26	5.2	1
10			50 11"	7.7	2
15			50 6"	17.1	2
20			50 5"	8.1	2



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TEST BORING LOG

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DATE:

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DATE: 7.12.19

JOB NO.:
 190300

FIG NO.:
 A- 14

TEST BORING NO. 29
 DATE DRILLED 5/30/2019
 Job # 190300

TEST BORING NO. 30
 DATE DRILLED 4/25/2019
 CLIENT TECH CONTRACTORS
 LOCATION ROLLING HILLS

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type	REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
WATER @ 19', 5/30/19 WATER @ 12', 6/11/19							WATER @ 8', 4/25/19						
6" TOPSOIL, SAND, SILTY, FINE TO COARSE GRAINED, TAN, MEDIUM DENSE, MOIST				20	6.6	1	6" TOPSOIL, SAND, SILTY TO SLIGHTLY SILTY WITH CLAY LENSES, FINE TO COARSE GRAINED, TAN, MEDIUM DENSE TO DENSE, DRY TO MOIST				10	1.7	1
SANDSTONE, SILTY, FINE TO COARSE GRAINED, BROWN, VERY DENSE, MOIST	5			50 11"	8.5	2		5			30	4.4	1
SANDSTONE, CLAYEY TO VERY CLAYEY, FINE TO COARSE GRAINED, GRAY BROWN, VERY DENSE, MOIST	10			50 6"	11.2	2	SANDSTONE, SILTY, FINE TO COARSE GRAINED, BROWN, VERY DENSE, WET	10			39	9.5	1
6/6/19	15			50 6"	7.7	2		15			50	12.8	2
5/30/2019	20			50 6"	9.0	2	B - BOUNCE	20			B		2
FINE GRAINED LENSES	25			50 6"	15.4	2							



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TEST BORING LOG

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DATE: 7.12.19

JOB NO.:
190300

FIG NO.:
A- 15

TEST BORING NO. 31
 DATE DRILLED 5/29/2019
 Job # 190300

TEST BORING NO. 32
 DATE DRILLED 3/12/2019
 CLIENT TECH CONTRACTORS
 LOCATION ROLLING HILLS

REMARKS

DRY TO 20', 5/29/19

6" TOP SOIL, SAND, SLIGHTLY
 SILTY, FINE TO COARSE
 GRAINED, TAN, DENSE, DRY
 TO MOIST

CLAYSTONE, SANDY, BLUE
 GRAY, HARD, MOIST

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
5			32	2.0	1
			30	3.0	1
10			34	9.8	1
15			50	14.8	3
			11"		
20			50	14.7	3
			7"		

REMARKS

WATER @ 13', 3/12/19

6" TOP SOIL, SAND, SILTY, FINE
 TO COARSE GRAINED, BROWN,
 LOOSE TO MEDIUM DENSE,
 DRY TO MOIST

SANDSTONE, CLAYEY, FINE TO
 COARSE GRAINED, GRAY BROWN,
 VERY DENSE, MOIST

CLAYSTONE, SANDY, BLUE GRAY,
 HARD, MOIST

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
5			5	1.4	1
			6	1.3	1
10			11	10.7	1
15			50	11.8	2
			10"		
20			50	11.0	2
			7"		
25			50	14.8	3
			8"		



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TEST BORING LOG

DRAWN:

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7/12/19

JOB NO.:

190300

FIG NO.:

A- 16

TEST BORING NO. 33
 DATE DRILLED 3/12/2019
 Job # 190300

TEST BORING NO. 34
 DATE DRILLED 3/12/2019
 CLIENT TECH CONTRACTORS
 LOCATION ROLLING HILLS

REMARKS

WATER @ 17', 3/12/19
 WATER @ 7', 6/6/19

6" TOP SOIL, SAND, SILTY, FINE
 TO COARSE GRAINED, BROWN,
 MEDIUM DENSE, DRY TO MOIST

6/6/2019

WEATHERED TO FORMATIONAL
 CLAYSTONE, SANDY, GRAY
 BROWN, VERY STIFF TO HARD,
 MOIST

3/12/2019

SANDSTONE, SILTY, FINE TO
 COARSE GRAINED, BROWN,
 VERY DENSE, VERY MOIST

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			13	2.4	1
5			15	4.1	1
10			45	17.4	3
15			50 9"	13.1	3
20			50 8"	18.0	3
25			50 5"	14.3	2

REMARKS

WATER @ 9', 3/12/19

6" TOP SOIL, SAND, SILTY, BROWN
 SANDSTONE, SILTY, FINE TO
 COARSE GRAINED, BROWN,
 VERY DENSE, MOIST

CLAYSTONE, VERY SANDY,
 GRAY BROWN, HARD, MOIST

SANDSTONE, SILTY, FINE TO
 COARSE GRAINED, GRAY
 BROWN, VERY DENSE, MOIST

CLAYSTONE, SANDY, BLUE GRAY,
 HARD, MOIST

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			50 7"	6.1	2
5			50 10"	8.2	2
10			50 9"	12.8	3
15			50 5"	9.7	2
20			50 5"	15.9	3



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TEST BORING LOG

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7/12/19

JOB NO.:
 190300

FIG NO.:

A- 17

TEST BORING NO. 35
 DATE DRILLED 3/12/2019
 Job # 190300

TEST BORING NO. 36
 DATE DRILLED 3/11/2019
 CLIENT TECH CONTRACTORS
 LOCATION ROLLING HILLS

REMARKS

DRY TO 20', 3/12/19

6" TOPSOIL SAND, SILTY, FINE
 TO COARSE GRAINED, TAN,
 DENSE, MOIST
 SANDSTONE, SLIGHTLY SILTY
 TO SILTY, FINE TO COARSE
 GRAINED, BROWN, VERY DENSE,
 MOIST

CLAYSTONE, SANDY, BLUE GRAY,
 HARD, MOIST

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
5			48	3.6	1
5			50	6.0	2
10			50 9"	8.9	2
15			50	9.7	2
20			50 6"	11.7	3

REMARKS

WATER @ 13.5', 7/9/19

SAND, SILTY, TAN
 SANDSTONE, SILTY, FINE TO
 COARSE GRAINED, TAN, VERY
 DENSE, MOIST

CLAYSTONE, VERY SANDY, BLUE
 GRAY, HARD, MOIST

SANDSTONE, CLAYEY, FINE TO
 COARSE GRAINED, GRAY BROWN
 TO BROWN, VERY DENSE,
 MOIST TO WET

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
1					1
2			50	3.1	2
2			7"		
2			50	3.7	2
2			6"		
10			50 6"	10.9	2
15			50 6"	12.2	3
20			50 10"	13.4	2
25			50 7"	16.8	2



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DRAWN:

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FIG NO.:
 A- 18

TEST BORING NO. 37
 DATE DRILLED 3/12/2019
 Job # 190300

TEST BORING NO. 38
 DATE DRILLED 6/7/2019
 CLIENT TECH CONTRACTORS
 LOCATION ROLLING HILLS

REMARKS

DRY TO 20', 3/12/19

SAND, SILTY, BROWN
 CLAYSTONE, SANDY, BROWN,
 HARD, MOIST

SANDSTONE, CLAYEY, FINE TO
 COARSE GRAINED, TAN, VERY
 DENSE, MOIST

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
1					1
1.1					3
5			50 11"	11.6	2
10			50 10"	10.1	2
15			50 7"	11.3	2
20			50 6"	9.2	2
				9.3	2

REMARKS

WATER @ 18', 7/9/19

6" TOP SOIL, SAND, GRAVELLY,
 SILTY TO SLIGHTLY SILTY,
 FINE TO COARSE GRAINED,
 BROWN, LOOSE TO MEDIUM
 DENSE, MOIST

CLAYSTONE, SANDY, BROWN,
 MOIST

SANDSTONE, SILTY, FINE TO
 COARSE GRAINED, BROWN,
 VERY DENSE, MOIST

CLAYSTONE, SANDY, BLUE
 GRAY, HARD, MOIST

* - BULK SAMPLE TAKEN

B - BOUNCE

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
1					
4			4	1.7	1
5			12	0.7	1
10			*	7.6	1
15			*	19.1	3
20			50 5"	12.1	2
25			B	9.4	3



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TEST BORING LOG

DRAWN:

DATE:

CHECKED: *L*

DATE: 7/12/19

JOB NO.:
 190300

FIG NO.:
 A- 19

TEST BORING NO. 39
 DATE DRILLED 5/29/2019
 Job # 190300

TEST BORING NO. 40
 DATE DRILLED 3/12/2019
 CLIENT TECH CONTRACTORS
 LOCATION ROLLING HILLS

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type	REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
WATER @ 11', 7/9/19							WATER @ 10', 3/12/19						
6" TOPSOIL, SAND, SILTY, FINE TO COARSE GRAINED, TAN, MEDIUM DENSE, MOIST TO WET		*					6" TOPSOIL, SAND, SILTY, FINE TO COARSE GRAINED, TAN, DENSE TO MEDIUM DENSE, MOIST		*				
	5			13	10.7	1		5			32	4.8	1
				21	11.7	1					27	6.2	1
CLAYSTONE, SANDY, GRAY BROWN, HARD, MOIST	10			50	10.2	3	SANDSTONE, SILTY, FINE TO COARSE GRAINED, GRAY BROWN, VERY DENSE, MOIST TO WET	10			50 9"	12.9	2
SANDSTONE, VERY CLAYEY, FINE TO COARSE GRAINED, BROWN, WET	15			*	14.8	2	CLAYEY LENSES	15			50 8"	12.9	2
CLAYSTONE, SANDY, BROWN, WET	20			*	18.4	3		20			50 9"	15.2	2

* - BULK SAMPLE TAKEN



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CHECKED: *h*

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7/12/19

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190300

FIG NO.:

A- 20

TEST BORING NO. 41
 DATE DRILLED 6/7/2019
 Job # 190300

TEST BORING NO. 42
 DATE DRILLED 3/12/2019
 CLIENT TECH CONTRACTORS
 LOCATION ROLLING HILLS

REMARKS

WATER @ 17', 6/7/19

6" TOP SOIL, SAND, SILTY, TAN
 SANDSTONE, SILTY, FINE
 TO COARSE GRAINED, BROWN,
 VERY DENSE, MOIST
 CLAYSTONE, SANDY, BROWN,
 HARD, MOIST

SANDSTONE, CLAYEY TO
 SILTY, FINE TO COARSE
 GRAINED, BROWN, VERY
 DENSE, MOIST TO WET

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
0					
1			50	5.2	1
2			7"		2
3			50	10.3	3
4			6"		
5					
10			50	10.1	2
			6"		
15			50	11.9	2
			7"		
20			50	15.5	2
			6"		



REMARKS

WATER @ 14', 6/7/19

6" TOP SOIL, SAND, CLAYEY,
 FINE TO COARSE GRAINED,
 BROWN, MEDIUM DENSE,
 MOIST

SANDSTONE, SILTY, FINE TO
 COARSE GRAINED, BROWN,
 VERY DENSE, MOIST TO WET

CLAYEY LENSES



Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
0					
1					
2			10	9.2	1
3					
4			29	7.8	1
5					
10			50	10.0	2
			10"		
15			50	10.2	2
			6"		
20			50	9.3	2
			6"		
25			50	14.0	2
			6"		



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TEST BORING LOG

DRAWN:

DATE:

CHECKED: *h*

DATE:

7/12/19

JOB NO.:
 190300

FIG NO.:

A- 21

TEST BORING NO. 43
 DATE DRILLED 5/30/2019
 Job # 190300

TEST BORING NO. 44
 DATE DRILLED 5/30/2019
 CLIENT TECH CONTRACTORS
 LOCATION ROLLING HILLS

REMARKS

WATER @ 19', 5/30/19

6" TOP SOIL, SAND, SLIGHTLY
 SILTY, FINE TO COARSE
 GRAINED, TAN, MEDIUM
 DENSE, MOIST
 WEATHERED SANDSTONE,
 SILTY, FINE TO COARSE
 GRAINED, BROWN, DENSE,
 MOIST

CLAYSTONE, SANDY, GRAY
 BROWN, HARD, MOIST

SANDSTONE, CLAYEY, FINE
 TO COARSE GRAINED, TAN,
 VERY DENSE, MOIST

CLAYSTONE, SANDY, BLUE GRAY,
 HARD, MOIST

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			14	3.4	1
5			32	8.3	2
10			50 7"	14.1	3
15			50 8"	12.5	3
20			50 5"	12.2	2
25			50 6"	16.8	3

REMARKS

DRY TO 20', 5/30/19

6" TOP SOIL, SAND, SILTY, TAN
 WEATHERED SANDSTONE,
 SILTY, FINE TO COARSE
 GRAINED, TAN, DENSE, MOIST
 CLAYEY LENSES

SANDSTONE, SILTY, FINE TO
 COARSE GRAINED, BROWN,
 VERY DENSE, MOIST

CLAYEY LENSES

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			32	3.0	2
5			35	10.3	2
10			50 11"	9.8	2
15			50 8"	8.8	2
20			50 7"	10.6	2



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TEST BORING LOG

DRAWN:

DATE:

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DATE: 5/31/19

JOB NO.:
 190300

FIG NO.:
 A- 22

TEST BORING NO. 45
DATE DRILLED 5/30/2019
Job # 190300

TEST BORING NO. 46
DATE DRILLED 5/30/2019
CLIENT TECH CONTRACTORS
LOCATION ROLLING HILLS

REMARKS

WATER @ 13', 5/30/19
WATER @ 11', 6/6/19
6" TOPSOIL, SAND, CLAYEY,
FINE TO COARSE GRAINED,
BROWN, MEDIUM DENSE,
MOIST
SANDSTONE, SILTY TO
CLAYEY, FINE TO COARSE
GRAINED, TAN, VERY DENSE,
MOIST TO WET

6/6/2019

5/30/2019

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			22	11.2	1
5		50	5"	6.9	2
10		50	11"	9.0	2
15		50	7"	8.7	2
20		50	8"	13.4	2
25		50	7"	13.4	2

REMARKS

WATER @ 22', 5/30/19
6" TOPSOIL, SAND, CLAYEY,
FINE TO COARSE GRAINED,
LIGHT BROWN, MEDIUM DENSE,
MOIST
SANDSTONE, CLAYEY TO
VERY CLAYEY, FINE TO COARSE
GRAINED, TAN TO GRAY BROWN,
VERY DENSE, MOIST

CLAYSTONE, SANDY, GRAY
BROWN, HARD, MOIST

SANDSTONE, CLAYEY, FINE
TO COARSE GRAINED,
GRAY BROWN, VERY DENSE,
MOIST

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			10	14.2	1
5		50	11"	7.9	2
10		50	6"	7.9	2
15		50	6"	8.4	2
20		50	6"	12.9	3
25		50	6"	14.3	2



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505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

TEST BORING LOG

DRAWN:

DATE:

CHECKED:

DATE: 7/1/19

JOB NO.:
190300

FIG NO.:
A- 23

TEST BORING NO. 47
 DATE DRILLED 5/30/2019
 Job # 190300

TEST BORING NO. 48
 DATE DRILLED 6/7/2019
 CLIENT TECH CONTRACTORS
 LOCATION ROLLING HILLS

REMARKS

DRY TO 20', 5/30/19

6" TOPSOIL, SAND, SILTY, TAN
 SANDSTONE, SILTY, FINE TO
 COARSE GRAINED, BROWN,
 VERY DENSE, MOIST

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
0					1
5			50 9"	9.0	2
5			50 10"	8.7	2
10			50 10"	9.4	2
15			50 10"	8.8	2
20			50 7"	8.5	2

REMARKS

DRY TO 20', 6/7/19
 CAVED TO 14', 7/9/19, DRY

6" TOPSOIL, SAND, SILTY, TAN
 SANDSTONE, CLAYEY TO
 SILTY, FINE TO COARSE
 GRAINED, BROWN, VERY DENSE,
 MOIST

CLAYSTONE, SANDY, BROWN,
 HARD, MOIST

SANDSTONE, SILTY, FINE TO
 COARSE GRAINED, TAN,
 VERY DENSE, MOIST

CLAYSTONE, VERY SANDY,
 GRAY BROWN, HARD, MOIST

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
0					1
5			32	8.9	2
5			27	7.8	2
10			50 9"	9.6	3
15			50 8"	5.4	2
20			50 9"	9.4	3



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TEST BORING LOG

DRAWN:

DATE:

CHECKED: *h*

DATE:

7/12/19

JOB NO.:

190300

FIG NO.:

A- 24

TEST BORING NO. 49
 DATE DRILLED 6/7/2019
 Job # 190300

TEST BORING NO.
 DATE DRILLED
 CLIENT TECH CONTRACTORS
 LOCATION ROLLING HILLS

REMARKS

WATER @ 12', 6/7/19

6" TOP SOIL, SAND, SLIGHTLY
 SILTY TO SILTY, FINE TO
 COARSE GRAINED, TAN,
 MEDIUM DENSE TO DENSE,
 MOIST

SANDSTONE, SILTY, FINE TO
 COARSE GRAINED, TAN, VERY
 DENSE, MOIST TO WET



Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
5			15	5.2	1
5			20	10.3	1
10			33	10.1	1
15			50	11.9	2
			9"		
20			50	15.5	2
			6"		
25			50	15.5	2
			5"		

REMARKS

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
5					
10					
15					
20					
25					



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TEST BORING LOG

DRAWN:

DATE:

CHECKED: *[Signature]*

DATE: 7/12/19

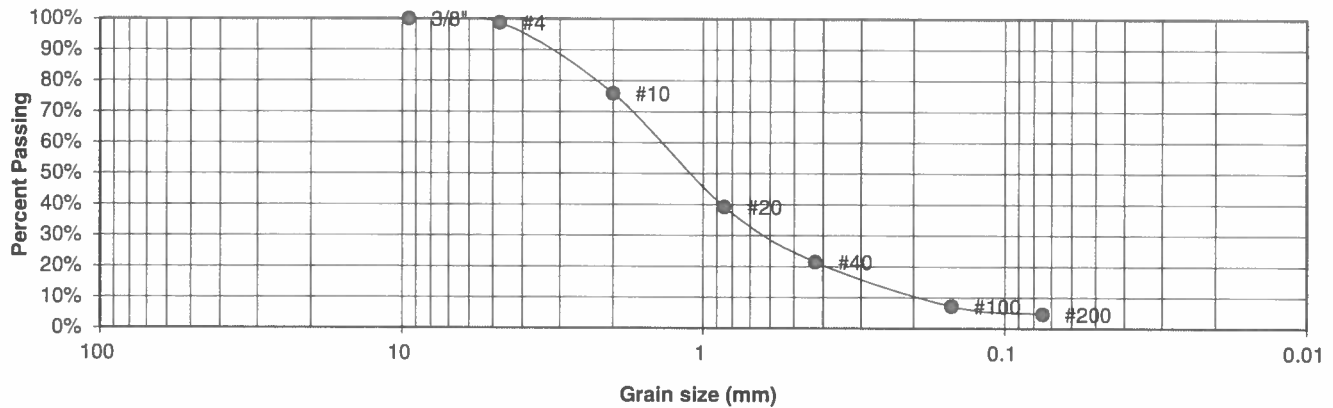
JOB NO.:
 190300

FIG NO.:
 A- 25

APPENDIX B: Laboratory Test Results

<u>UNIFIED CLASSIFICATION</u>	SW	<u>CLIENT</u>	TECH CONTRACTORS
<u>SOIL TYPE #</u>	1	<u>PROJECT</u>	ROLLING HILLS
<u>TEST BORING #</u>	1	<u>JOB NO.</u>	190300
<u>DEPTH (FT)</u>	2-3	<u>TEST BY</u>	BL

**Sieve Analysis
Grain Size Distribution**



<u>U.S. Sieve #</u>	<u>Percent Finer</u>
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	98.7%
10	75.9%
20	39.2%
40	21.4%
100	7.2%
200	4.7%

<u>Atterberg Limits</u>	
Plastic Limit	NP
Liquid Limit	NV
Plastic Index	NP

Swell
 Moisture at start
 Moisture at finish
 Moisture increase
 Initial dry density (pcf)
 Swell (psf)



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COLORADO SPRINGS, COLORADO 80907

**LABORATORY TEST
RESULTS**

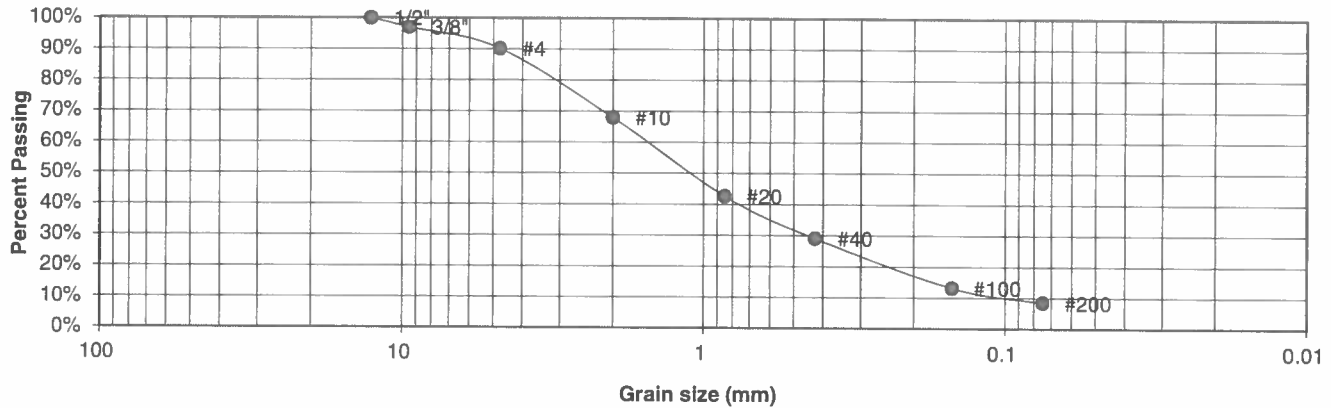
DRAWN:	DATE:	CHECKED: <i>h</i>	DATE: 7/1/19
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JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SM-SW	CLIENT	TECH CONTRACTORS
SOIL TYPE #	1	PROJECT	ROLLING HILLS
TEST BORING #	2	JOB NO.	190300
DEPTH (FT)	2-3	TEST BY	BL

Sieve Analysis Grain Size Distribution



U.S.
Sieve #

3"
1 1/2"
3/4"
1/2"
3/8"
4
10
20
40
100
200

Percent
Finer

100.0%
97.0%
90.2%
67.9%
42.7%
29.0%
13.2%
8.4%

Atterberg
Limits

Plastic Limit
Liquid Limit
Plastic Index

Swell

Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



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LABORATORY TEST RESULTS

DRAWN:

DATE:

CHECKED: *h*

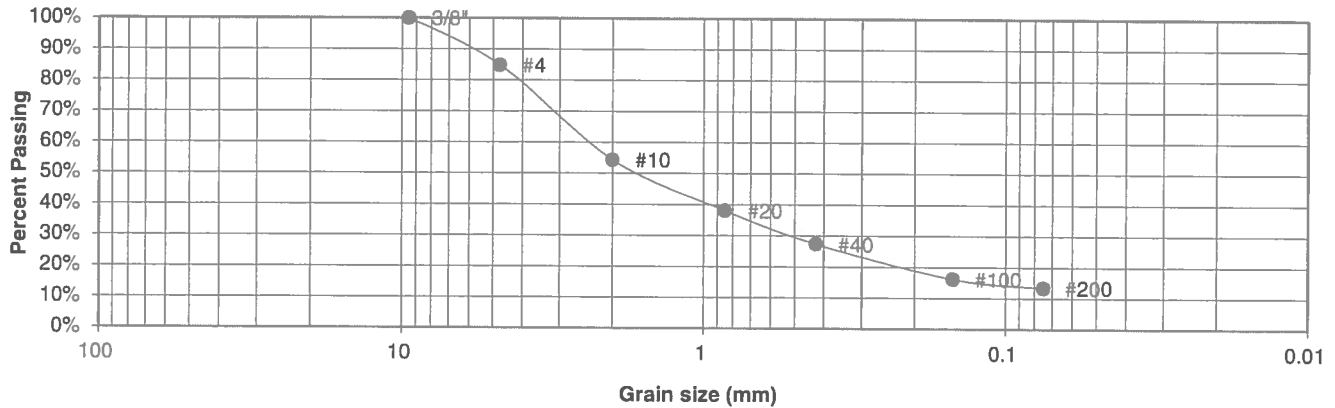
DATE: 7/1/19

JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SC	CLIENT	TECH CONTRACTORS
SOIL TYPE #	1	PROJECT	ROLLING HILLS
TEST BORING #	5	JOB NO.	190300
DEPTH (FT)	2-3	TEST BY	BL

**Sieve Analysis
Grain Size Distribution**



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	84.9%
10	54.4%
20	38.1%
40	27.3%
100	16.2%
200	13.3%

Atterberg Limits	
Plastic Limit	16
Liquid Limit	26
Plastic Index	10

Swell	
Moisture at start	
Moisture at finish	
Moisture increase	
Initial dry density (pcf)	
Swell (psf)	



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505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

**LABORATORY TEST
RESULTS**

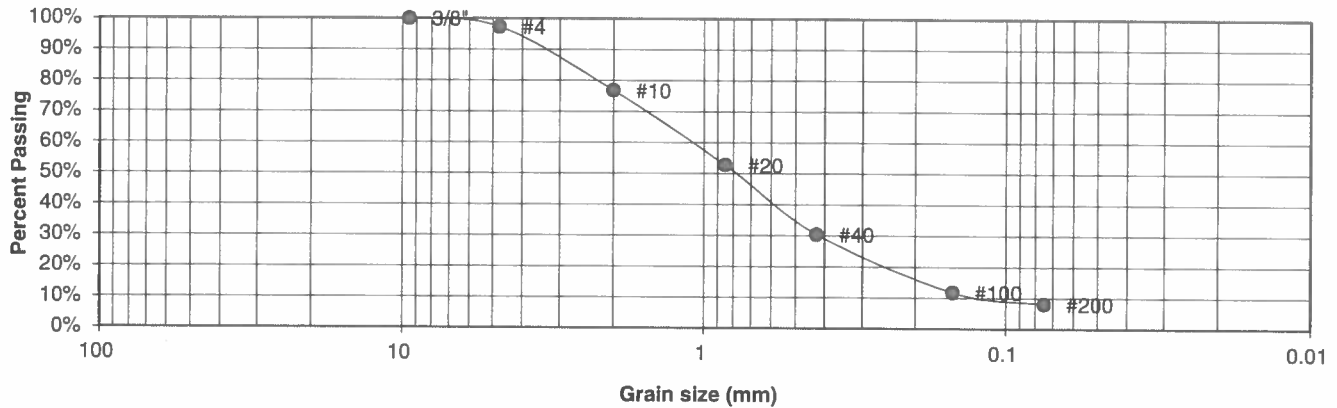
DRAWN:	DATE:	CHECKED: <i>L</i>	DATE: <i>7/17/19</i>
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JOB NO.:
190300

FIG NO.:

<u>UNIFIED CLASSIFICATION</u>	SM-SW	<u>CLIENT</u>	TECH CONTRACTORS
<u>SOIL TYPE #</u>	1	<u>PROJECT</u>	ROLLING HILLS
<u>TEST BORING #</u>	6	<u>JOB NO.</u>	190300
<u>DEPTH (FT)</u>	2-3	<u>TEST BY</u>	BL

**Sieve Analysis
Grain Size Distribution**



<u>U.S. Sieve #</u>	<u>Percent Finer</u>
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	97.3%
10	76.8%
20	52.8%
40	30.4%
100	11.8%
200	8.1%

<u>Atterberg Limits</u>	
Plastic Limit	NP
Liquid Limit	NV
Plastic Index	NP

<u>Swell</u>	
Moisture at start	
Moisture at finish	
Moisture increase	
Initial dry density (pcf)	
Swell (psf)	



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**LABORATORY TEST
RESULTS**

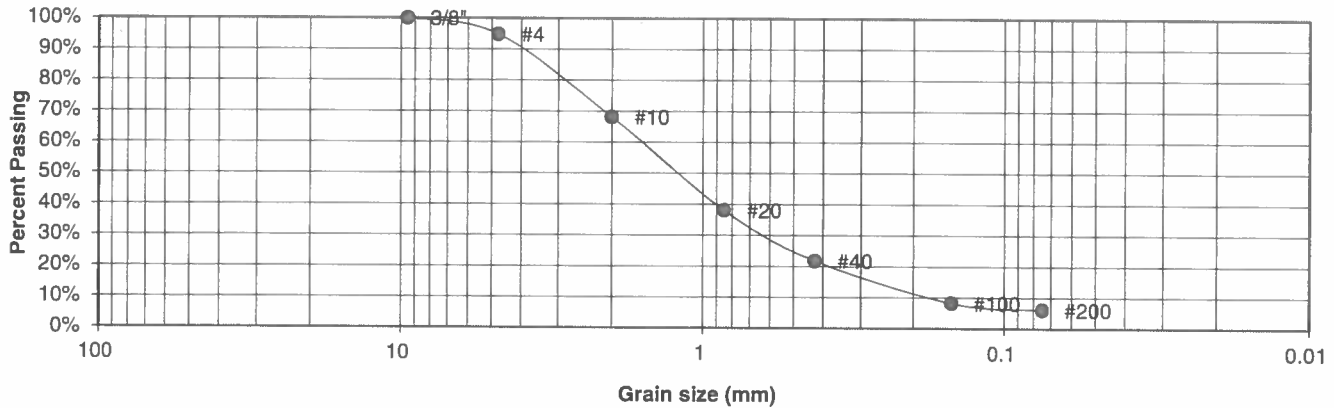
<u>DRAWN:</u>	<u>DATE:</u>	<u>CHECKED:</u> <i>h</i>	<u>DATE:</u> <i>7/1/19</i>
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JOB NO.:
190300

FIG NO.:

<u>UNIFIED CLASSIFICATION</u>	SM-SW	<u>CLIENT</u>	TECH CONTRACTORS
<u>SOIL TYPE #</u>	1	<u>PROJECT</u>	ROLLING HILLS
<u>TEST BORING #</u>	8	<u>JOB NO.</u>	190300
<u>DEPTH (FT)</u>	5	<u>TEST BY</u>	BL

**Sieve Analysis
Grain Size Distribution**



<u>U.S. Sieve #</u>	<u>Percent Finer</u>
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	94.8%
10	68.1%
20	38.0%
40	21.8%
100	8.2%
200	6.1%

Atterberg
Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



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505 ELKTON DRIVE
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**LABORATORY TEST
RESULTS**

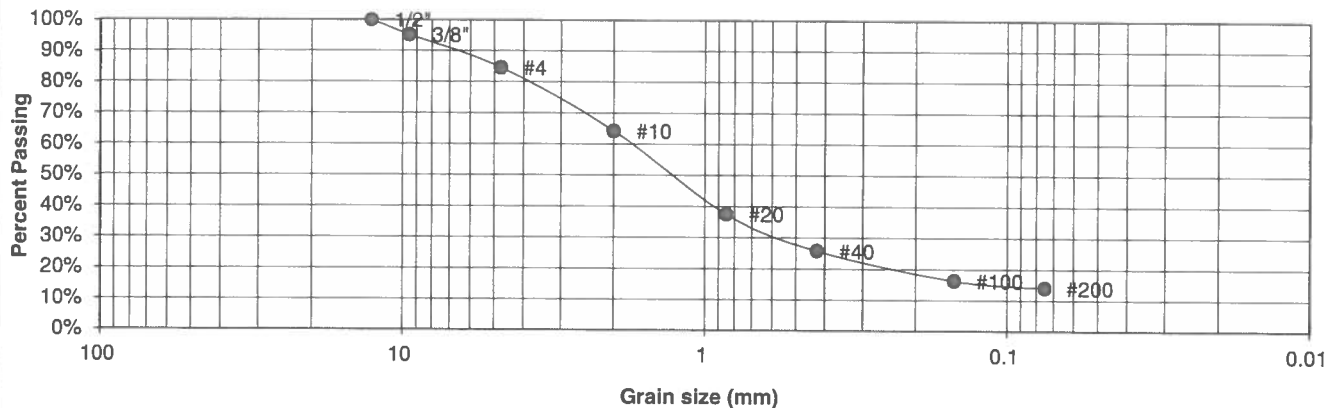
DRAWN:	DATE:	CHECKED: <i>h</i>	DATE: 7/1/19
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JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SC	CLIENT	TECH CONTRACTORS
SOIL TYPE #	1	PROJECT	ROLLING HILLS
TEST BORING #	10	JOB NO.	190300
DEPTH (FT)	5	TEST BY	BL

Sieve Analysis Grain Size Distribution



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	95.1%
4	84.6%
10	64.3%
20	37.5%
40	25.8%
100	16.3%
200	14.0%

Atterberg Limits	
Plastic Limit	13
Liquid Limit	29
Plastic Index	16

Swell	
Moisture at start	
Moisture at finish	
Moisture increase	
Initial dry density (pcf)	
Swell (psf)	



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LABORATORY TEST RESULTS

DRAWN:

DATE:

CHECKED: *h*

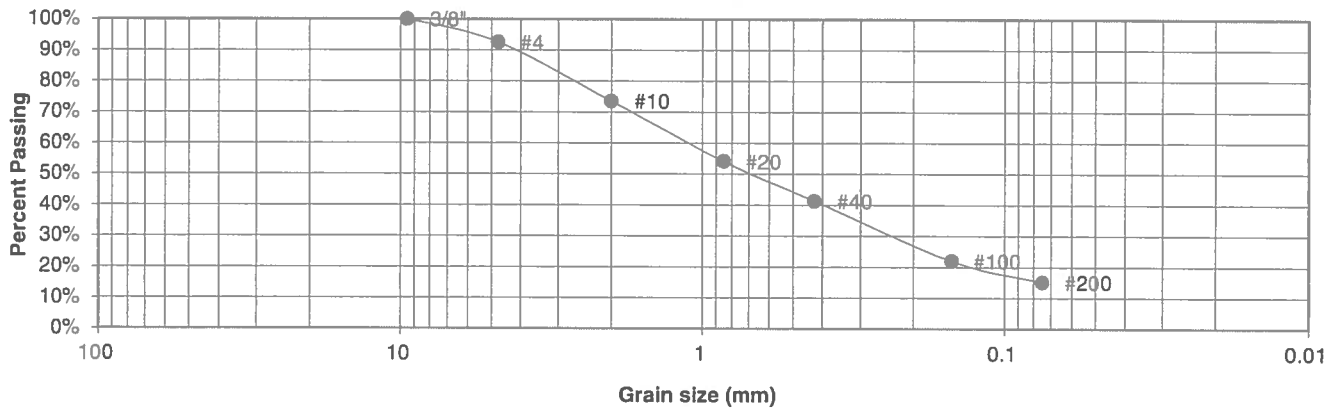
DATE: 7/1/19

JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SM	CLIENT	TECH CONTRACTORS
SOIL TYPE #	1	PROJECT	ROLLING HILLS
TEST BORING #	11	JOB NO.	190300
DEPTH (FT)	2-3	TEST BY	BL

**Sieve Analysis
Grain Size Distribution**



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	92.6%
10	73.5%
20	54.1%
40	41.3%
100	22.0%
200	15.2%

Atterberg
Limits
Plastic Limit
Liquid Limit
Plastic Index

<u>Swell</u>	
Moisture at start	12.1%
Moisture at finish	19.1%
Moisture increase	6.9%
Initial dry density (pcf)	110
Swell (psf)	370



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**LABORATORY TEST
RESULTS**

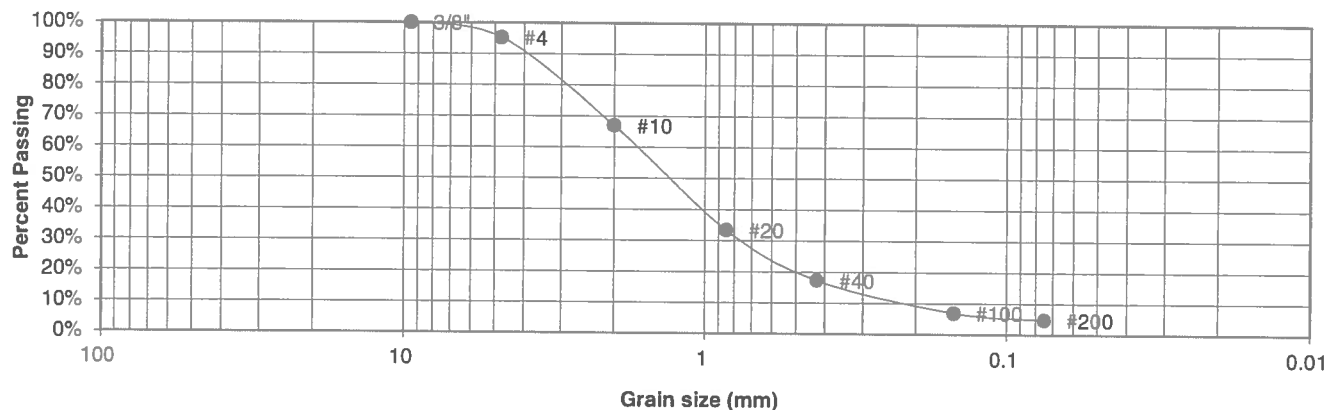
DRAWN:	DATE:	CHECKED: <i>W</i>	DATE: 7/1/19
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JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SW	CLIENT	TECH CONTRACTORS
SOIL TYPE #	1	PROJECT	ROLLING HILLS
TEST BORING #	13	JOB NO.	190300
DEPTH (FT)	2-3	TEST BY	BL

Sieve Analysis Grain Size Distribution



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	95.2%
10	67.0%
20	33.4%
40	17.3%
100	7.0%
200	4.8%

Atterberg
Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



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LABORATORY TEST RESULTS

DRAWN:

DATE:

CHECKED: *h*

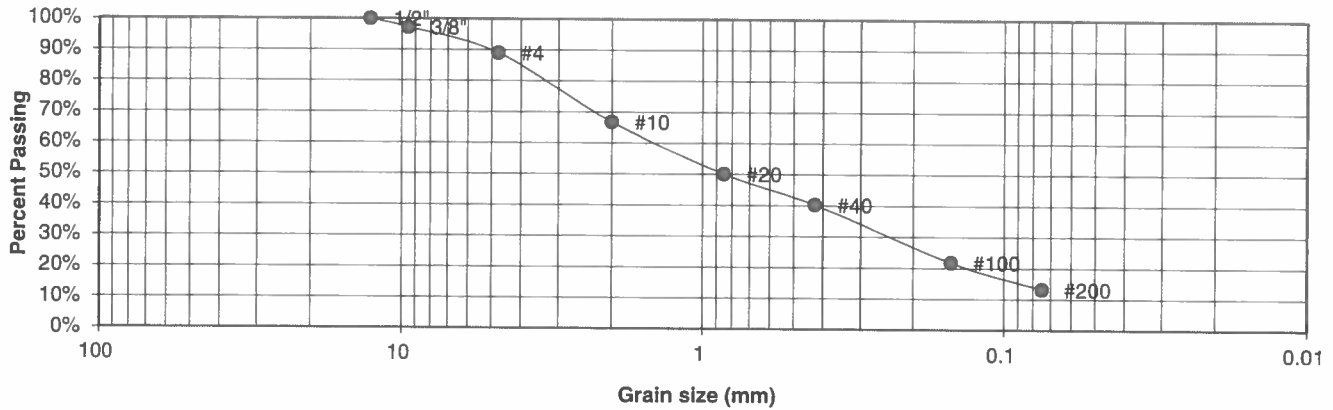
DATE: 7/1/19

JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SM	CLIENT	TECH CONTRACTORS
SOIL TYPE #	1	PROJECT	ROLLING HILLS
TEST BORING #	14	JOB NO.	190300
DEPTH (FT)	5	TEST BY	BL

Sieve Analysis Grain Size Distribution



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	97.2%
4	89.0%
10	66.8%
20	50.1%
40	40.2%
100	21.8%
200	13.2%

Atterberg Limits

Plastic Limit	NP
Liquid Limit	NV
Plastic Index	NP

Swell

Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



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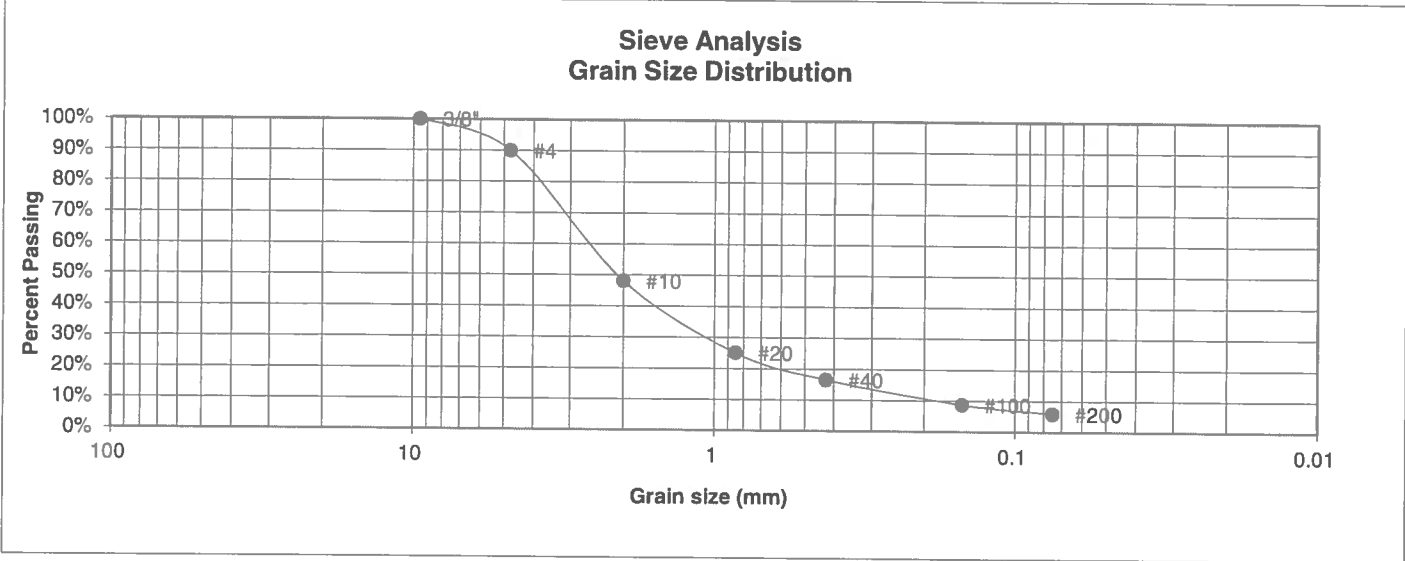
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		<i>h</i>	7/1/19

JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SM-SW	CLIENT	TECH CONTRACTORS
SOIL TYPE #	1	PROJECT	ROLLING HILLS
TEST BORING #	16	JOB NO.	190300
DEPTH (FT)	5	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	89.9%
10	48.1%
20	25.1%
40	16.5%
100	8.7%
200	5.9%

Atterberg
Limits
Plastic Limit
Liquid Limit
Plastic Index

<u>Swell</u>	
Moisture at start	13.5%
Moisture at finish	21.9%
Moisture increase	8.4%
Initial dry density (pcf)	100
Swell (psf)	70



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LABORATORY TEST RESULTS

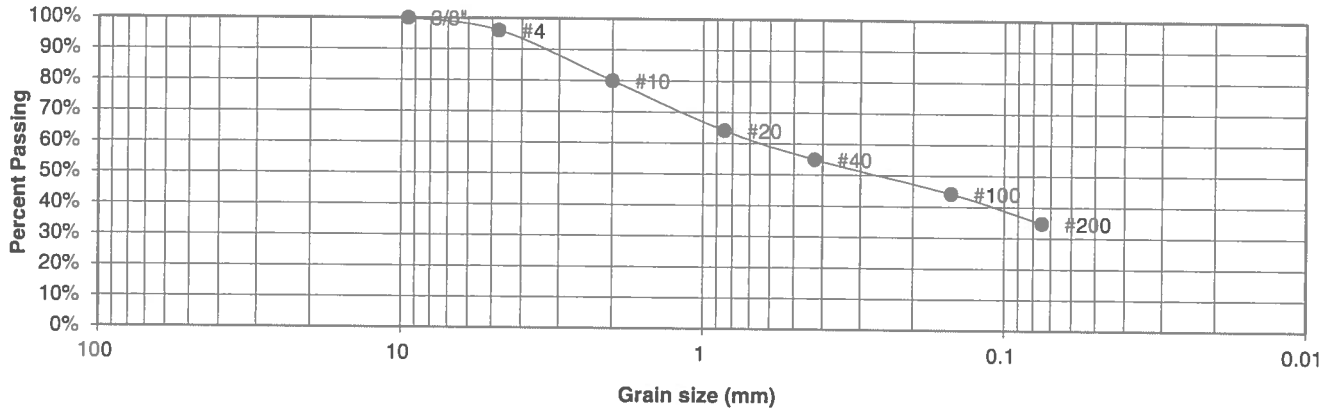
DRAWN:	DATE:	CHECKED: <i>h</i>	DATE: 7/1/19
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JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SM	CLIENT	TECH CONTRACTORS
SOIL TYPE #	1	PROJECT	ROLLING HILLS
TEST BORING #	19	JOB NO.	190300
DEPTH (FT)	2-3	TEST BY	BL

**Sieve Analysis
Grain Size Distribution**



U.S.
Sieve #

Percent
Finer

3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	96.1%
10	80.0%
20	64.1%
40	55.0%
100	44.2%
200	34.7%

Atterberg
Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



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**LABORATORY TEST
RESULTS**

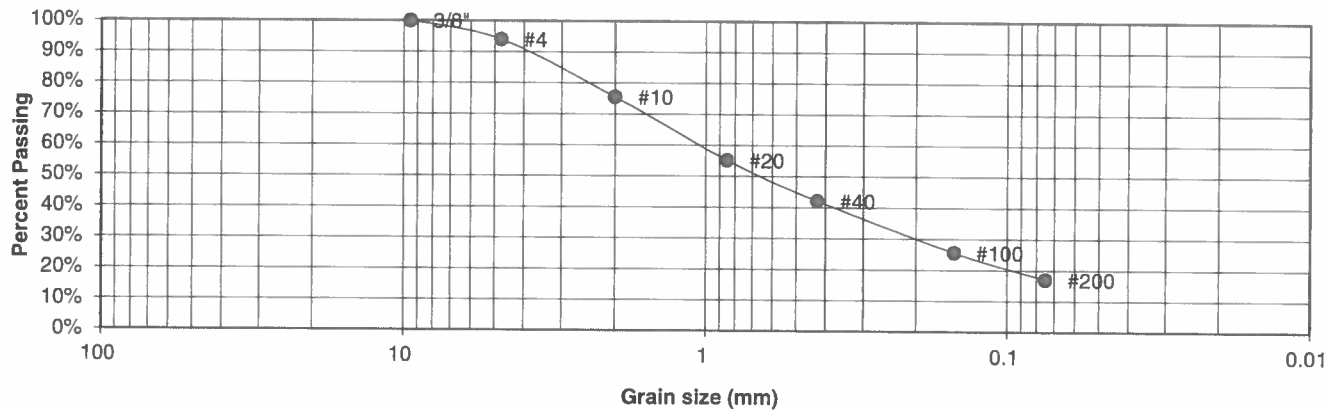
DRAWN:	DATE:	CHECKED: <i>h</i>	DATE: 2/1/19
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JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SM	CLIENT	TECH CONTRACTORS
SOIL TYPE #	1	PROJECT	ROLLING HILLS
TEST BORING #	23	JOB NO.	190300
DEPTH (FT)	2-3	TEST BY	BL

**Sieve Analysis
Grain Size Distribution**



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	94.0%
10	75.5%
20	55.2%
40	42.1%
100	25.6%
200	17.0%

Atterberg Limits	
Plastic Limit	NP
Liquid Limit	NV
Plastic Index	NP

Swell	
Moisture at start	
Moisture at finish	
Moisture increase	
Initial dry density (pcf)	
Swell (psf)	



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**LABORATORY TEST
RESULTS**

DRAWN:

DATE:

CHECKED: *h*

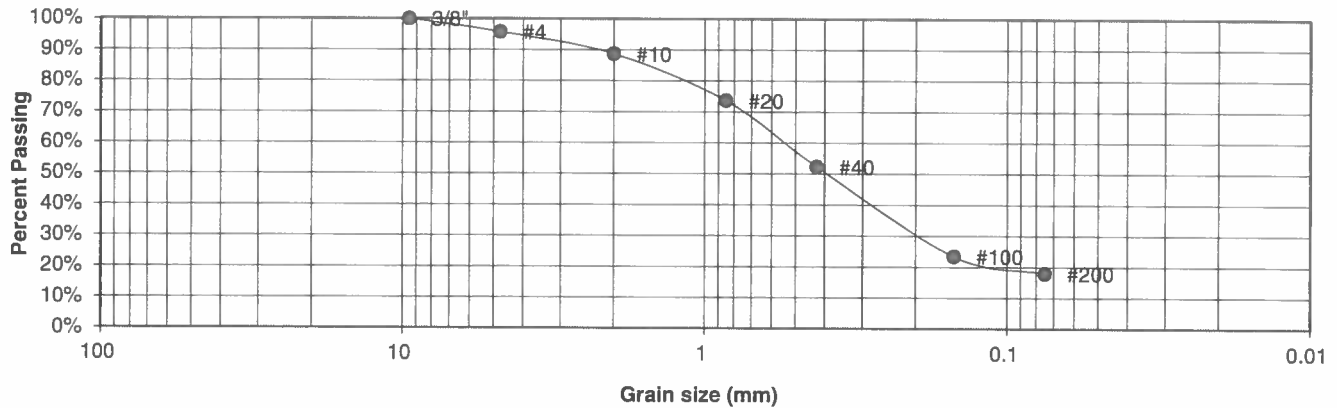
DATE: 7/1/19

JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SM	CLIENT	TECH CONTRACTORS
SOIL TYPE #	1	PROJECT	ROLLING HILLS
TEST BORING #	24	JOB NO.	190300
DEPTH (FT)	2-3	TEST BY	BL

Sieve Analysis Grain Size Distribution



U.S.
Sieve #

Percent
Finer

3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	95.8%
10	88.7%
20	73.6%
40	52.3%
100	23.5%
200	18.0%

Atterberg

Limits

Plastic Limit

Liquid Limit

Plastic Index

Swell

Moisture at start

Moisture at finish

Moisture increase

Initial dry density (pcf)

Swell (psf)



**ENTECH
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505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

LABORATORY TEST RESULTS

DRAWN:

DATE:

CHECKED:

DATE: 7/1/19

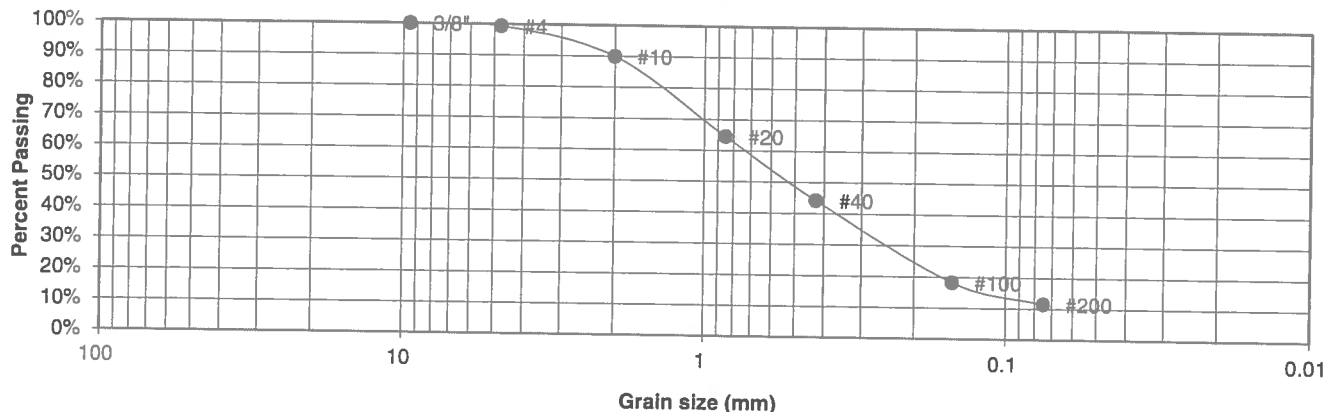
JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SM-SW
SOIL TYPE #	1
TEST BORING #	26
DEPTH (FT)	5

CLIENT	TECH CONTRACTORS
PROJECT	ROLLING HILLS
JOB NO.	190300
TEST BY	BL

**Sieve Analysis
Grain Size Distribution**



<u>U.S. Sieve #</u>	<u>Percent Finer</u>
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	99.3%
10	90.0%
20	64.6%
40	44.2%
100	18.3%
200	11.5%

Atterberg
Limits

Plastic Limit	NP
Liquid Limit	NV
Plastic Index	NP

Swell

Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



**ENTECH
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505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

**LABORATORY TEST
RESULTS**

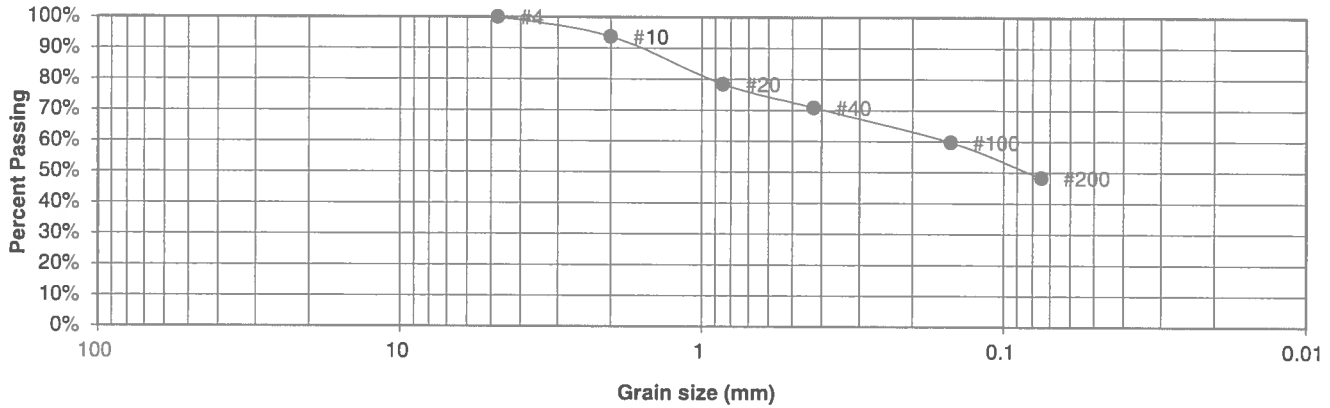
DRAWN:	DATE:	CHECKED: <i>h</i>	DATE: 7/1/19
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JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SC	CLIENT	TECH CONTRACTORS
SOIL TYPE #	1	PROJECT	ROLLING HILLS
TEST BORING #	27	JOB NO.	190300
DEPTH (FT)	5	TEST BY	BL

**Sieve Analysis
Grain Size Distribution**



U.S.
Sieve #

Percent
Finer

3"
1 1/2"
3/4"
1/2"
3/8"
4
10
20
40
100
200

100.0%
93.7%
78.5%
70.9%
59.7%
48.3%

Atterberg
Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell

Moisture at start	14.0%
Moisture at finish	20.9%
Moisture increase	6.9%
Initial dry density (pcf)	103
Swell (psf)	460



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505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

**LABORATORY TEST
RESULTS**

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DATE:

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DATE: 7/1/19

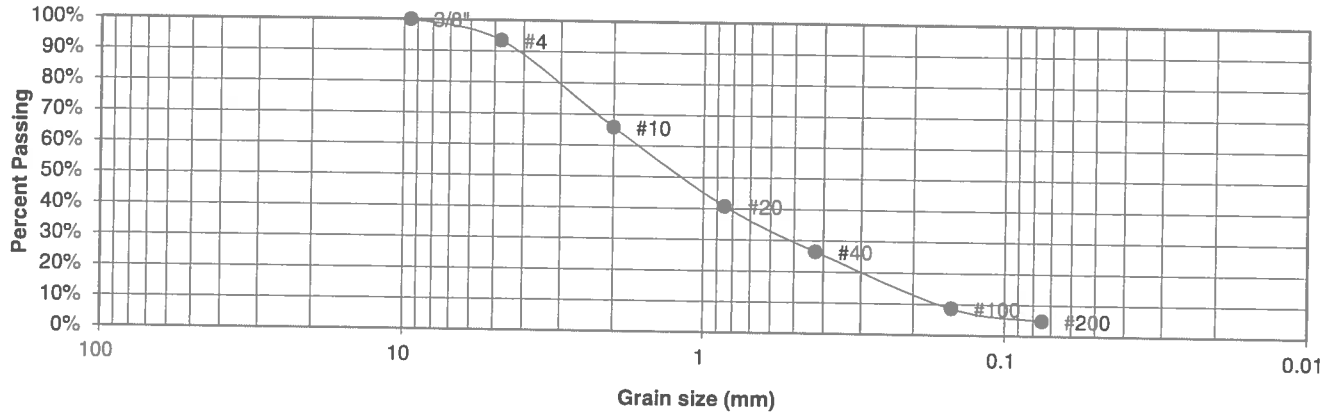
JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION SW
 SOIL TYPE # 1
 TEST BORING # 28
 DEPTH (FT) 2-3

CLIENT TECH CONTRACTORS
 PROJECT ROLLING HILLS
 JOB NO. 190300
 TEST BY BL

**Sieve Analysis
 Grain Size Distribution**



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	93.4%
10	65.9%
20	40.8%
40	26.4%
100	8.7%
200	4.9%

**Atterberg
 Limits**
 Plastic Limit NP
 Liquid Limit NV
 Plastic Index NP

Swell
 Moisture at start
 Moisture at finish
 Moisture increase
 Initial dry density (pcf)
 Swell (psf)



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**LABORATORY TEST
 RESULTS**

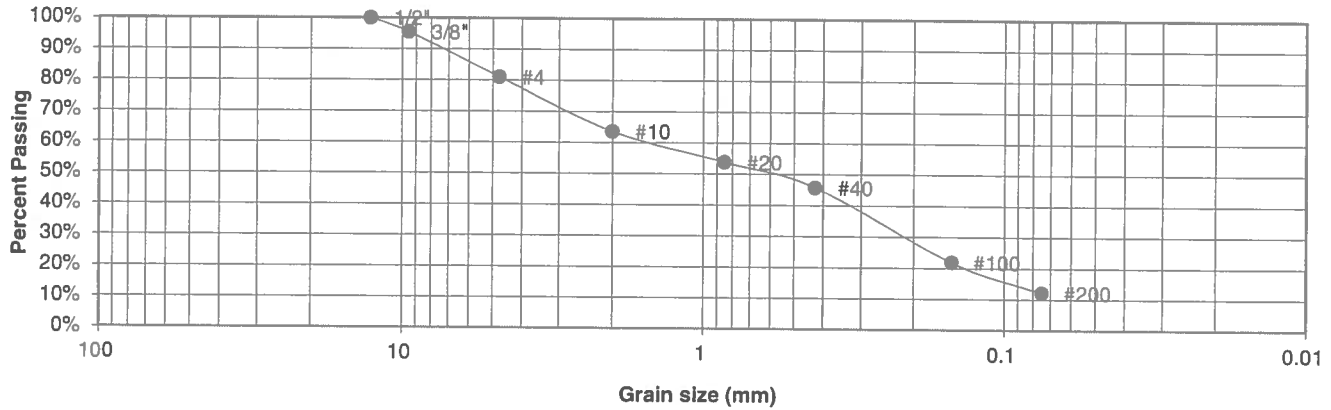
DRAWN:	DATE:	CHECKED: <i>h</i>	DATE: 7/1/19
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JOB NO.:
 190300

FIG NO.:

UNIFIED CLASSIFICATION	SC	CLIENT	TECH CONTRACTORS
SOIL TYPE #	1	PROJECT	ROLLING HILLS
TEST BORING #	30	JOB NO.	190300
DEPTH (FT)	2-3	TEST BY	BL

**Sieve Analysis
Grain Size Distribution**



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	95.5%
4	81.0%
10	63.6%
20	53.9%
40	45.8%
100	21.9%
200	12.1%

Atterberg
Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start 13.1%
Moisture at finish 19.6%
Moisture increase 6.5%
Initial dry density (pcf) 97
Swell (psf) 2970



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**LABORATORY TEST
RESULTS**

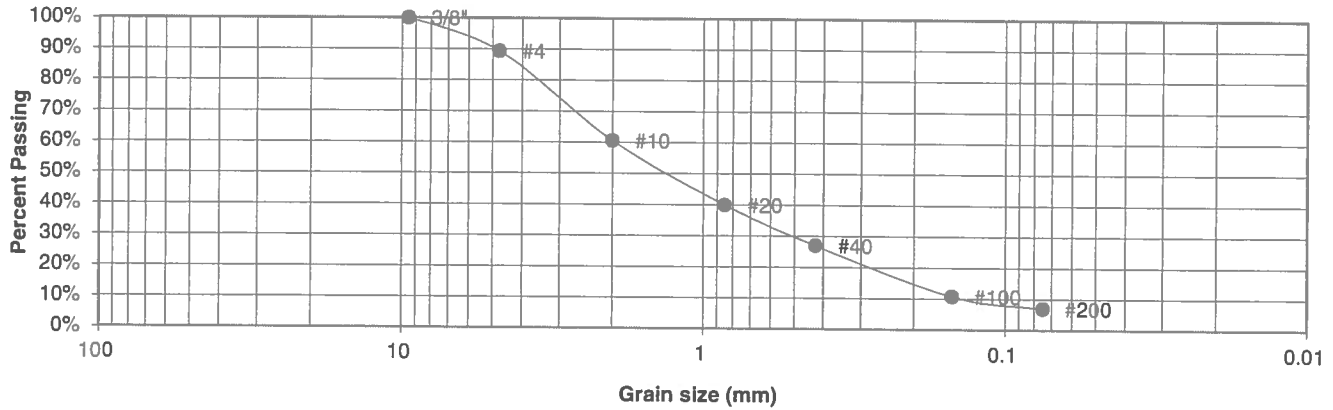
DRAWN:	DATE:	CHECKED: <i>h</i>	DATE: <i>7/1/19</i>
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JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SM-SW	CLIENT	TECH CONTRACTORS
SOIL TYPE #	1	PROJECT	ROLLING HILLS
TEST BORING #	30	JOB NO.	190300
DEPTH (FT)	5	TEST BY	BL

**Sieve Analysis
Grain Size Distribution**



U.S.
Sieve #

Percent
Finer

3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	89.3%
10	60.6%
20	40.0%
40	26.9%
100	10.8%
200	6.9%

Atterberg
Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



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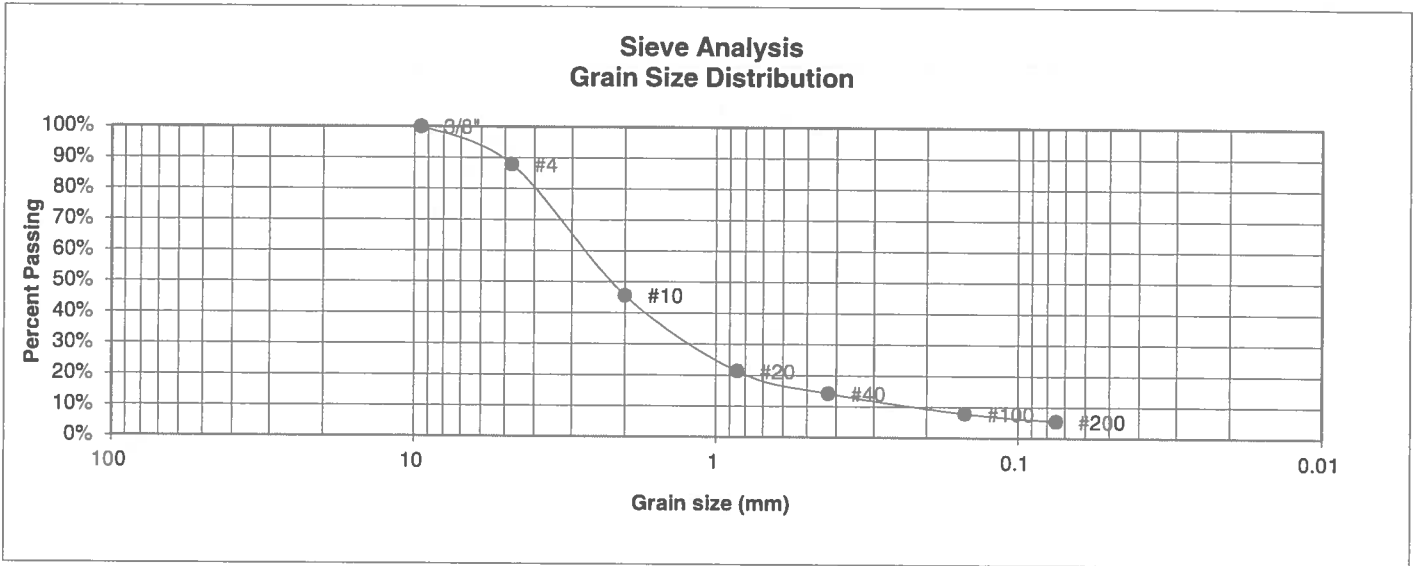
**LABORATORY TEST
RESULTS**

DRAWN:	DATE:	CHECKED: <i>h</i>	DATE: <i>7/1/19</i>
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JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SM-SW	CLIENT	TECH CONTRACTORS
SOIL TYPE #	1	PROJECT	ROLLING HILLS
TEST BORING #	31	JOB NO.	190300
DEPTH (FT)	5	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	87.9%
10	45.6%
20	21.3%
40	14.2%
100	7.8%
200	5.4%

Atterberg
Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



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LABORATORY TEST RESULTS

DRAWN:

DATE:

CHECKED: *LM*

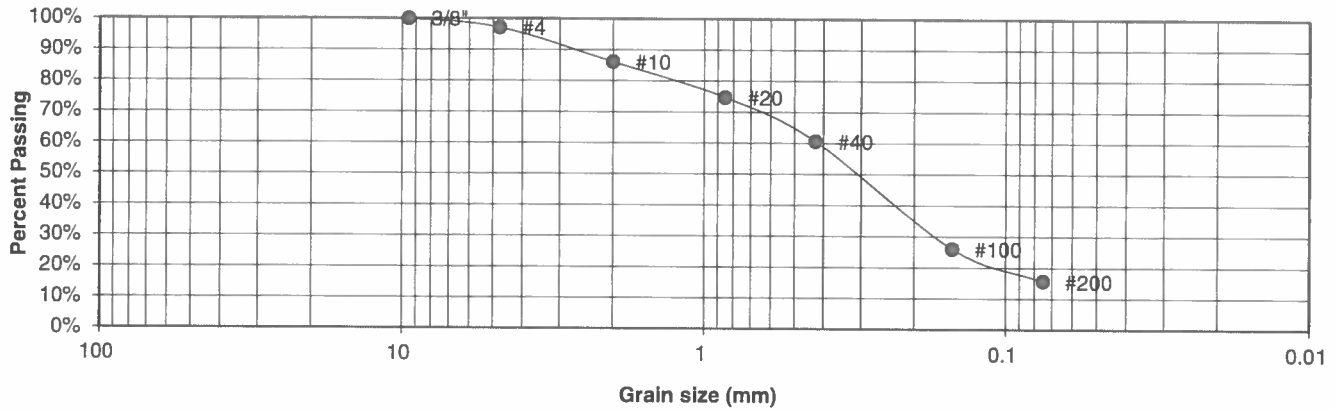
DATE: *7/1/12*

JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SM	CLIENT	TECH CONTRACTORS
SOIL TYPE #	1	PROJECT	ROLLING HILLS
TEST BORING #	32	JOB NO.	190300
DEPTH (FT)	10	TEST BY	BL

Sieve Analysis Grain Size Distribution



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	97.1%
10	86.1%
20	74.7%
40	60.6%
100	26.1%
200	15.6%

Atterberg
Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



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LABORATORY TEST RESULTS

DRAWN:

DATE:

CHECKED: *h*

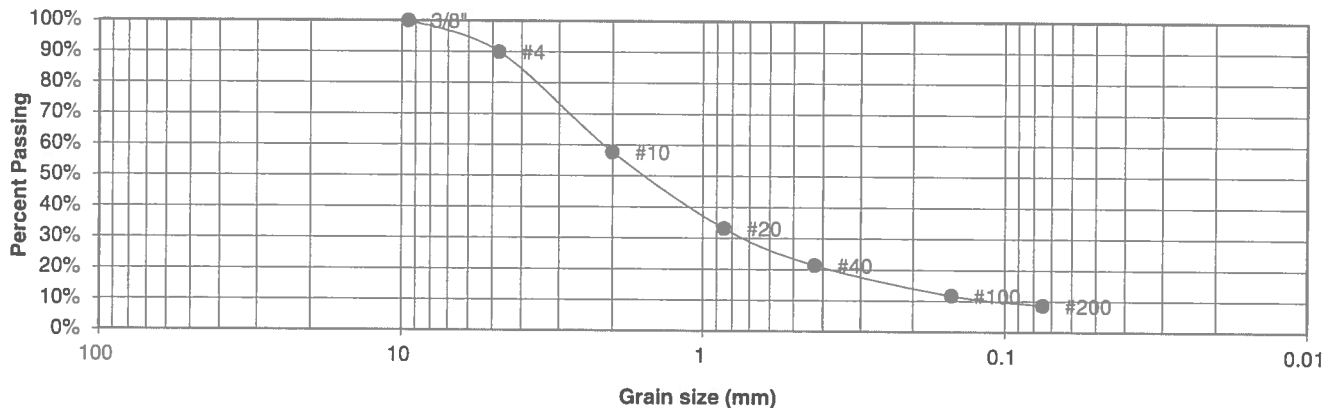
DATE: 7/1/19

JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SM-SW	CLIENT	TECH CONTRACTORS
SOIL TYPE #	1	PROJECT	ROLLING HILLS
TEST BORING #	38	JOB NO.	190300
DEPTH (FT)	2-3	TEST BY	BL

Sieve Analysis Grain Size Distribution



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	90.0%
10	57.7%
20	33.2%
40	21.4%
100	11.7%
200	8.6%

Atterberg Limits	
Plastic Limit	NP
Liquid Limit	NV
Plastic Index	NP

Swell	
Moisture at start	
Moisture at finish	
Moisture increase	
Initial dry density (pcf)	
Swell (psf)	



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LABORATORY TEST RESULTS

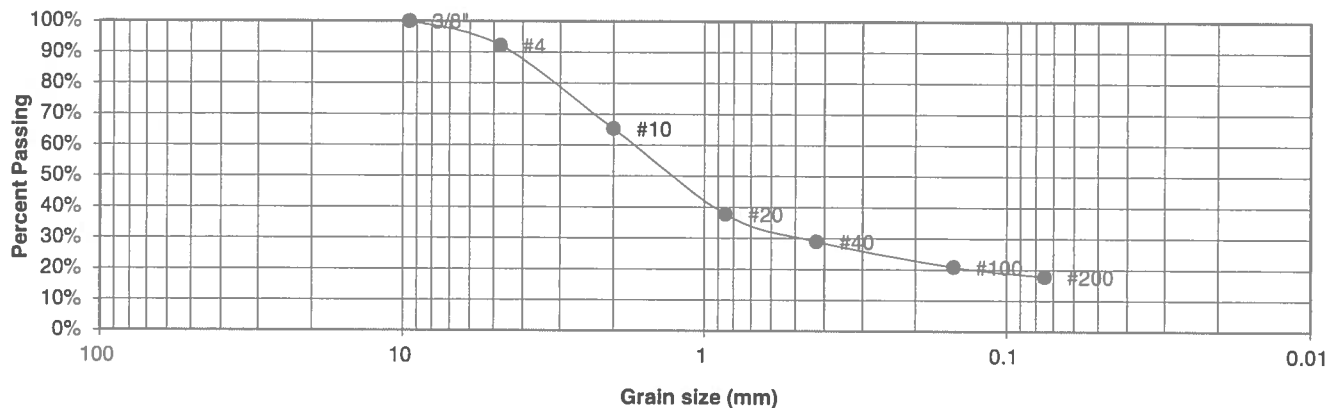
DRAWN:	DATE:	CHECKED:	DATE:
		<i>h</i>	7/1/19

JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SM	CLIENT	TECH CONTRACTORS
SOIL TYPE #	1	PROJECT	ROLLING HILLS
TEST BORING #	39	JOB NO.	190300
DEPTH (FT)	5	TEST BY	BL

Sieve Analysis Grain Size Distribution



U.S.
Sieve #

Percent
Finer

3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	92.2%
10	65.3%
20	37.7%
40	29.0%
100	20.8%
200	17.8%

Atterberg
Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



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LABORATORY TEST RESULTS

DRAWN:

DATE:

CHECKED: *h*

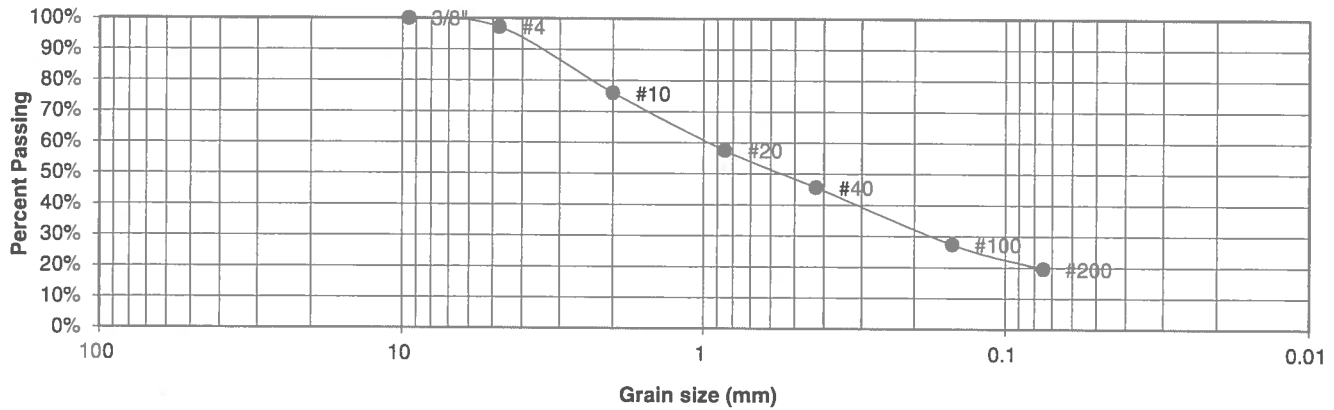
DATE: *7/1/19*

JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SM	CLIENT	TECH CONTRACTORS
SOIL TYPE #	1	PROJECT	ROLLING HILLS
TEST BORING #	42	JOB NO.	190300
DEPTH (FT)	5	TEST BY	BL

Sieve Analysis Grain Size Distribution



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	97.2%
10	76.1%
20	57.5%
40	45.6%
100	27.4%
200	19.6%

Atterberg
Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



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LABORATORY TEST RESULTS

DRAWN:

DATE:

CHECKED: *h*

DATE:

7/1/19

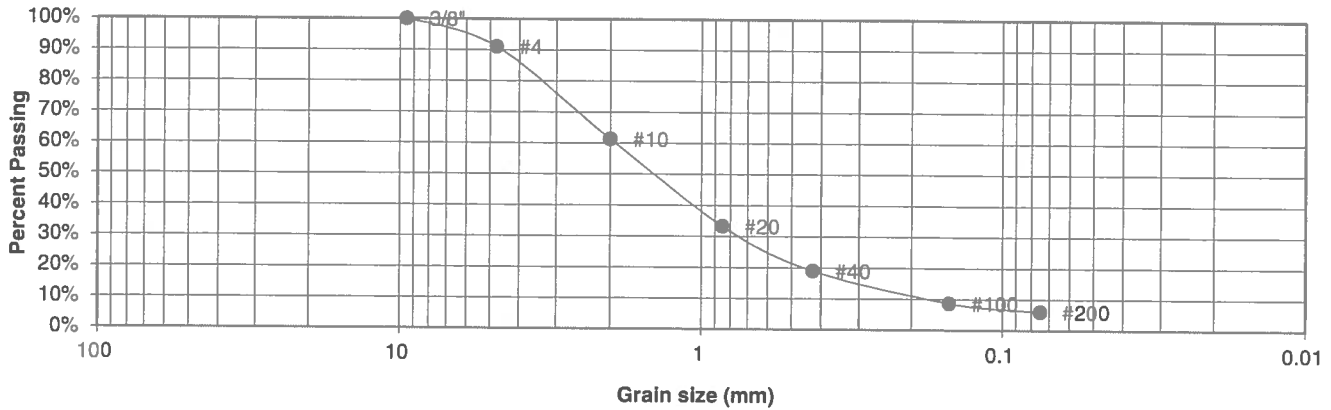
JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SM-SW
SOIL TYPE #	1
TEST BORING #	43
DEPTH (FT)	2-3

CLIENT	TECH CONTRACTORS
PROJECT	ROLLING HILLS
JOB NO.	190300
TEST BY	BL

Sieve Analysis Grain Size Distribution



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	91.1%
10	61.3%
20	33.3%
40	19.0%
100	8.7%
200	6.0%

Atterberg
Limits

Plastic Limit	NP
Liquid Limit	NV
Plastic Index	NP

Swell

Moisture at start	
Moisture at finish	
Moisture increase	
Initial dry density (pcf)	
Swell (psf)	



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LABORATORY TEST RESULTS

DRAWN:

DATE:

CHECKED:

DATE:

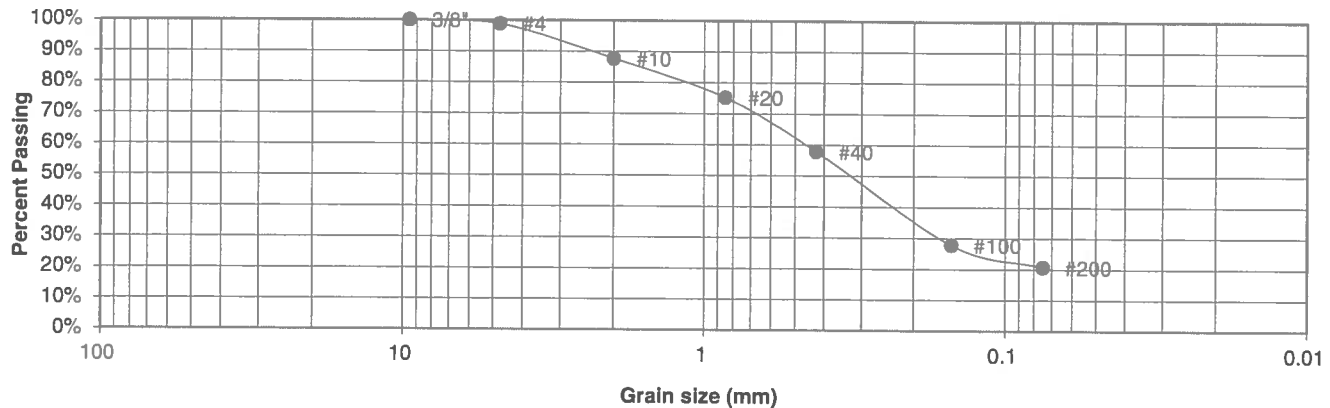
A 7/1/19

JOB NO.:
190300

FIG NO.:

<u>UNIFIED CLASSIFICATION</u>	SM	<u>CLIENT</u>	TECH CONTRACTORS
<u>SOIL TYPE #</u>	1	<u>PROJECT</u>	ROLLING HILLS
<u>TEST BORING #</u>	47	<u>JOB NO.</u>	190300
<u>DEPTH (FT)</u>	2-3	<u>TEST BY</u>	BL

**Sieve Analysis
Grain Size Distribution**



<u>U.S. Sieve #</u>	<u>Percent Finer</u>
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	98.8%
10	87.7%
20	75.2%
40	57.8%
100	27.8%
200	20.7%

Atterberg
Limits
Plastic Limit
Liquid Limit
Plastic Index

<u>Swell</u>	
Moisture at start	13.9%
Moisture at finish	18.6%
Moisture increase	4.8%
Initial dry density (pcf)	103
Swell (psf)	220



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**LABORATORY TEST
RESULTS**

DRAWN:

DATE:

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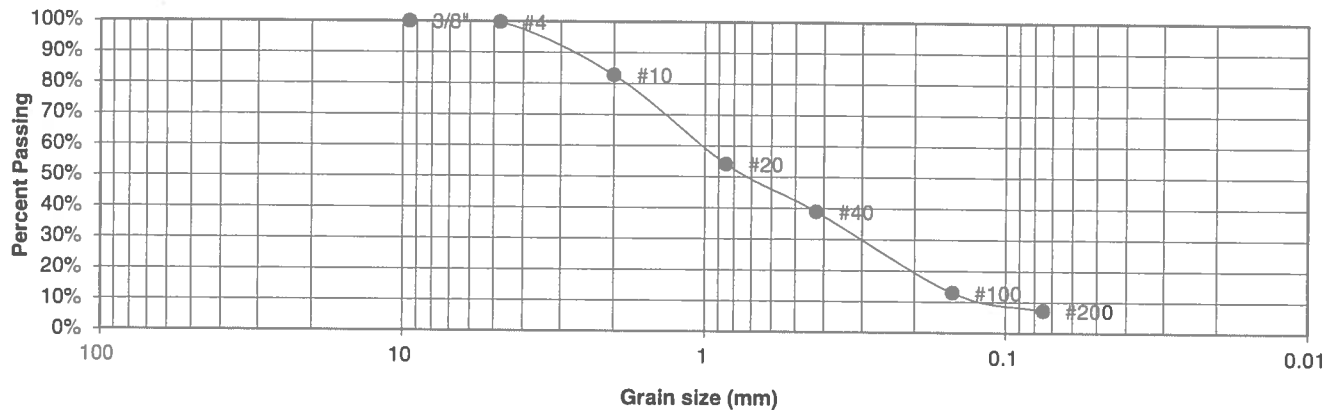
DATE: 7/1/19

JOB NO.:
190300

FIG NO.:

<u>UNIFIED CLASSIFICATION</u>	SM-SW	<u>CLIENT</u>	TECH CONTRACTORS
<u>SOIL TYPE #</u>	1	<u>PROJECT</u>	ROLLING HILLS
<u>TEST BORING #</u>	49	<u>JOB NO.</u>	190300
<u>DEPTH (FT)</u>	5	<u>TEST BY</u>	BL

**Sieve Analysis
Grain Size Distribution**



<u>U.S. Sieve #</u>	<u>Percent Finer</u>
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	99.8%
10	82.8%
20	54.2%
40	38.9%
100	13.0%
200	7.3%

Atterberg
Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



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**LABORATORY TEST
RESULTS**

DRAWN:

DATE:

CHECKED: *h*

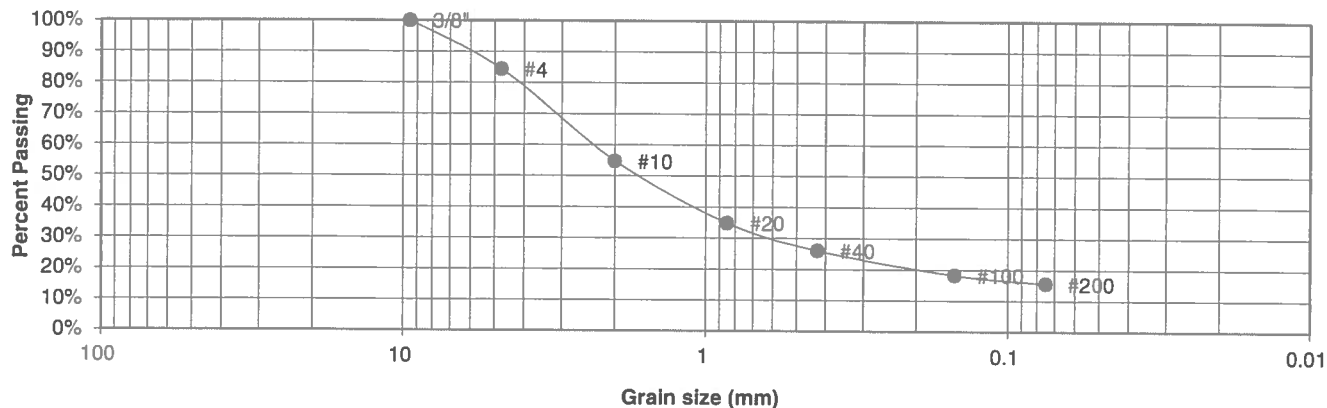
DATE: 7/1/19

JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SM	CLIENT	TECH CONTRACTORS
SOIL TYPE #	2	PROJECT	ROLLING HILLS
TEST BORING #	1	JOB NO.	190300
DEPTH (FT)	15	TEST BY	BL

**Sieve Analysis
Grain Size Distribution**



U.S.
Sieve #

Percent
Finer

3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	84.4%
10	54.8%
20	34.9%
40	26.0%
100	18.2%
200	15.5%

Atterberg
Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



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COLORADO SPRINGS, COLORADO 80907

**LABORATORY TEST
RESULTS**

DRAWN:

DATE:

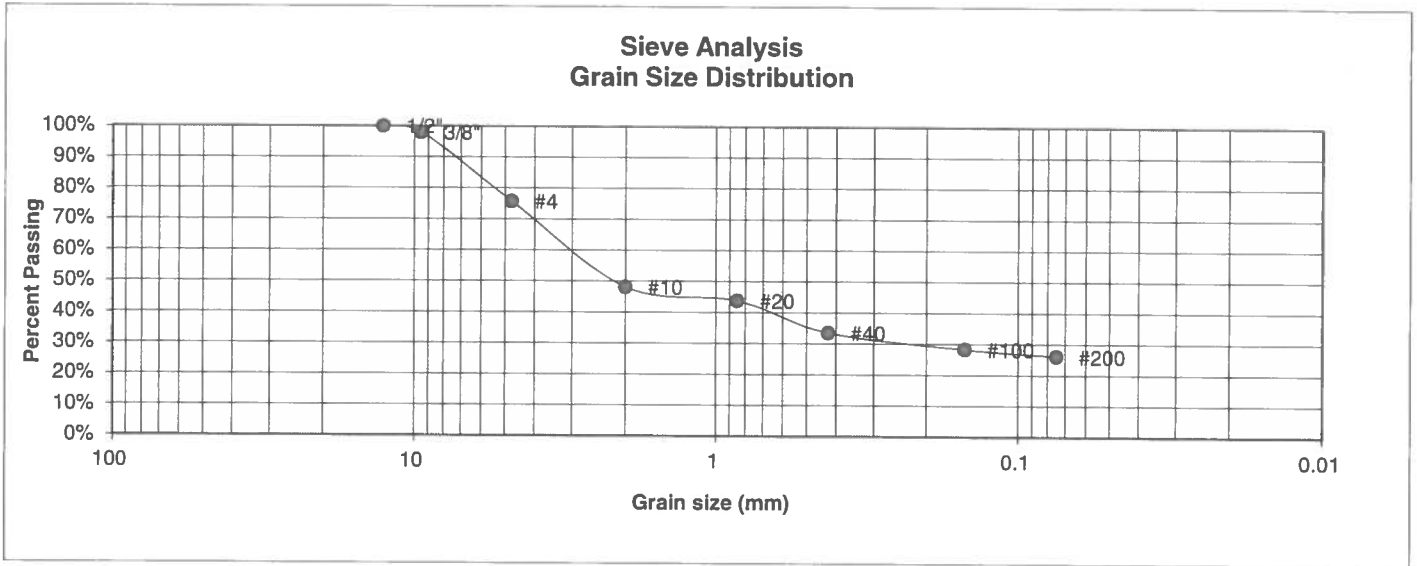
CHECKED: *h*

DATE: 7/1/19

JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SM	CLIENT	TECH CONTRACTORS
SOIL TYPE #	2	PROJECT	ROLLING HILLS
TEST BORING #	3	JOB NO.	190300
DEPTH (FT)	5	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	98.0%
4	75.7%
10	48.2%
20	43.8%
40	33.5%
100	28.3%
200	26.1%

Atterberg
Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



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LABORATORY TEST RESULTS

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DATE:

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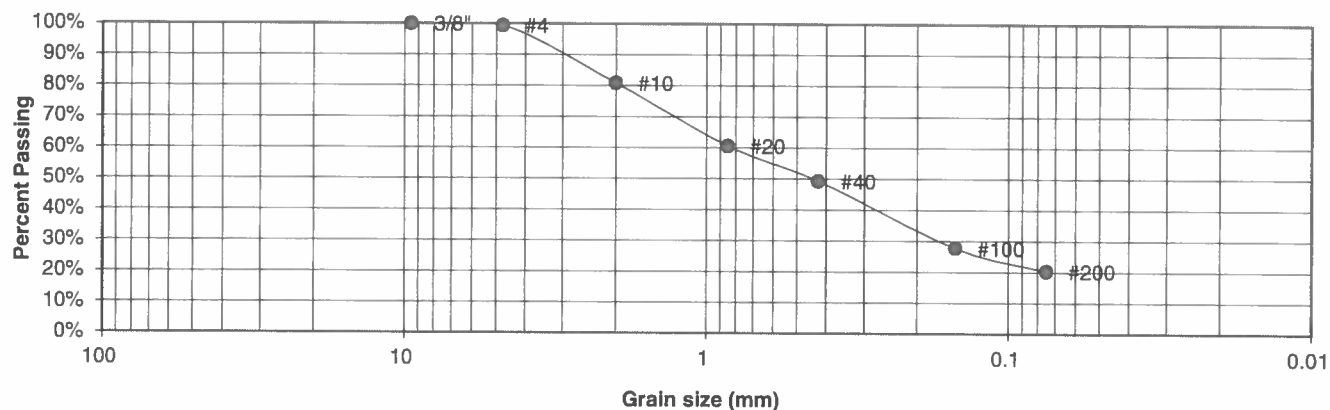
DATE: 7/1/19

JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SC	CLIENT	TECH CONTRACTORS
SOIL TYPE #	2	PROJECT	ROLLING HILLS
TEST BORING #	4	JOB NO.	190300
DEPTH (FT)	20	TEST BY	BL

Sieve Analysis Grain Size Distribution



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	99.4%
10	80.9%
20	60.6%
40	49.3%
100	27.7%
200	20.3%

Atterberg Limits	
Plastic Limit	17
Liquid Limit	29
Plastic Index	12

Swell	
Moisture at start	
Moisture at finish	
Moisture increase	
Initial dry density (pcf)	
Swell (psf)	



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COLORADO SPRINGS, COLORADO 80907

LABORATORY TEST RESULTS

DRAWN:

DATE:

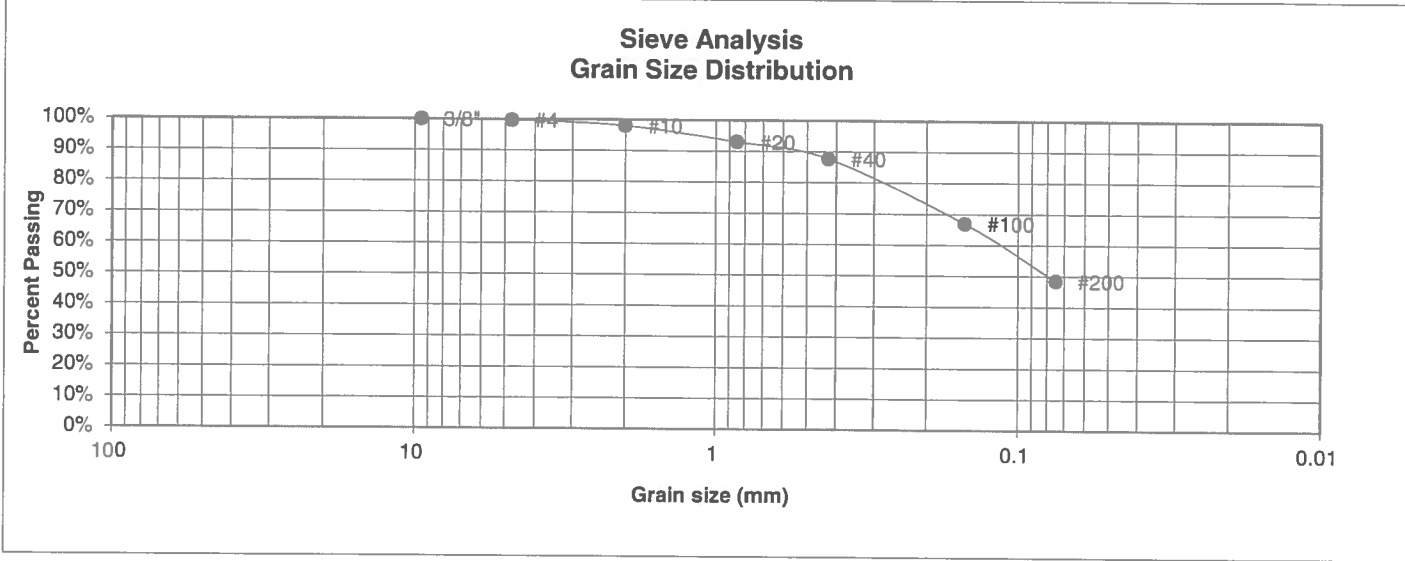
CHECKED: *W*

DATE: 7/1/19

JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SC	CLIENT	TECH CONTRACTORS
SOIL TYPE #	2	PROJECT	ROLLING HILLS
TEST BORING #	5	JOB NO.	190300
DEPTH (FT)	25	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	99.7%
10	98.0%
20	93.0%
40	87.6%
100	67.0%
200	48.5%

Atterberg	
Limits	
Plastic Limit	17
Liquid Limit	31
Plastic Index	14

Swell	
Moisture at start	
Moisture at finish	
Moisture increase	
Initial dry density (pcf)	
Swell (psf)	



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LABORATORY TEST RESULTS

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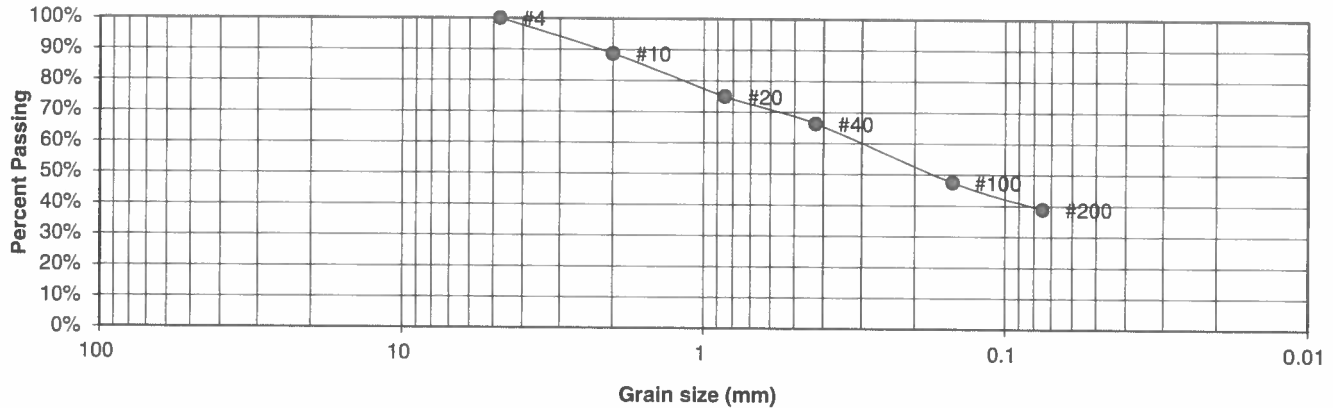
JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SC
SOIL TYPE #	2
TEST BORING #	6
DEPTH (FT)	20

CLIENT	TECH CONTRACTORS
PROJECT	ROLLING HILLS
JOB NO.	190300
TEST BY	BL

Sieve Analysis Grain Size Distribution



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	100.0%
10	88.7%
20	75.0%
40	66.3%
100	47.5%
200	38.9%

Atterberg Limits	
Plastic Limit	13
Liquid Limit	26
Plastic Index	13

Swell	
Moisture at start	
Moisture at finish	
Moisture increase	
Initial dry density (pcf)	
Swell (psf)	



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505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

LABORATORY TEST RESULTS

DRAWN:

DATE:

CHECKED: *h*

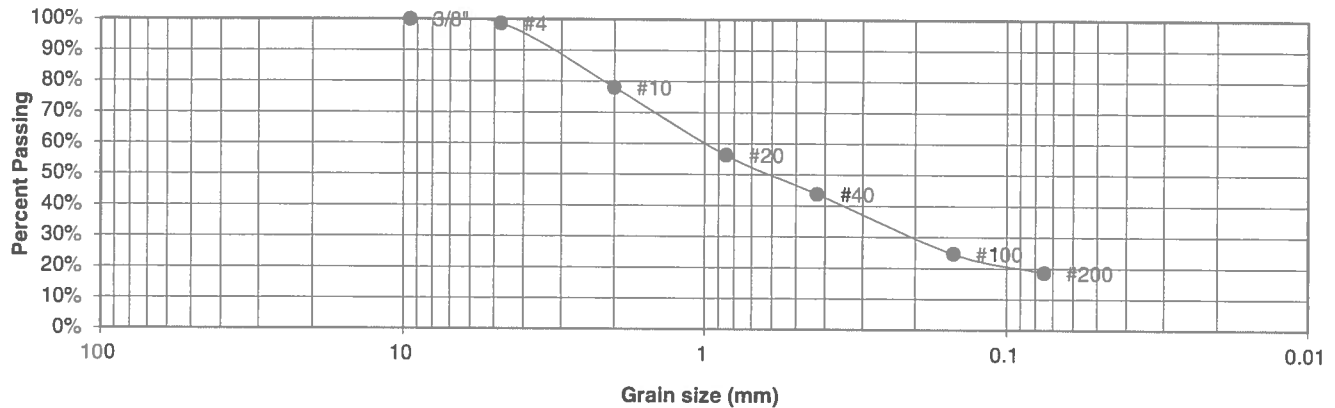
DATE: *7/1/19*

JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SC	CLIENT	TECH CONTRACTORS
SOIL TYPE #	2	PROJECT	ROLLING HILLS
TEST BORING #	7	JOB NO.	190300
DEPTH (FT)	10	TEST BY	BL

**Sieve Analysis
Grain Size Distribution**



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	98.7%
10	78.1%
20	56.3%
40	43.8%
100	24.6%
200	18.6%

Atterberg Limits	
Plastic Limit	18
Liquid Limit	32
Plastic Index	14

Swell	
Moisture at start	
Moisture at finish	
Moisture increase	
Initial dry density (pcf)	
Swell (psf)	



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505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

**LABORATORY TEST
RESULTS**

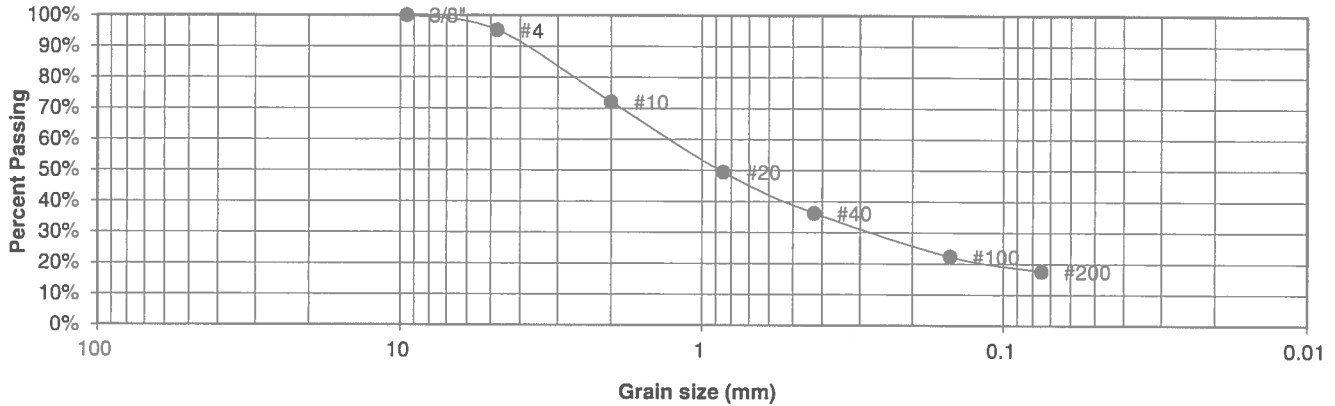
DRAWN:	DATE:	CHECKED: <i>h</i>	DATE: 7/1/19
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JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SM	CLIENT	TECH CONTRACTORS
SOIL TYPE #	2	PROJECT	ROLLING HILLS
TEST BORING #	9	JOB NO.	190300
DEPTH (FT)	15	TEST BY	BL

**Sieve Analysis
Grain Size Distribution**



U.S.
Sieve #

Percent
Finer

3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	95.3%
10	72.0%
20	49.5%
40	36.2%
100	22.3%
200	17.5%

Atterberg
Limits

Plastic Limit	NP
Liquid Limit	NV
Plastic Index	NP

Swell

Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



**ENTECH
ENGINEERING, INC.**

505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

**LABORATORY TEST
RESULTS**

DRAWN:

DATE:

CHECKED: *[Signature]*

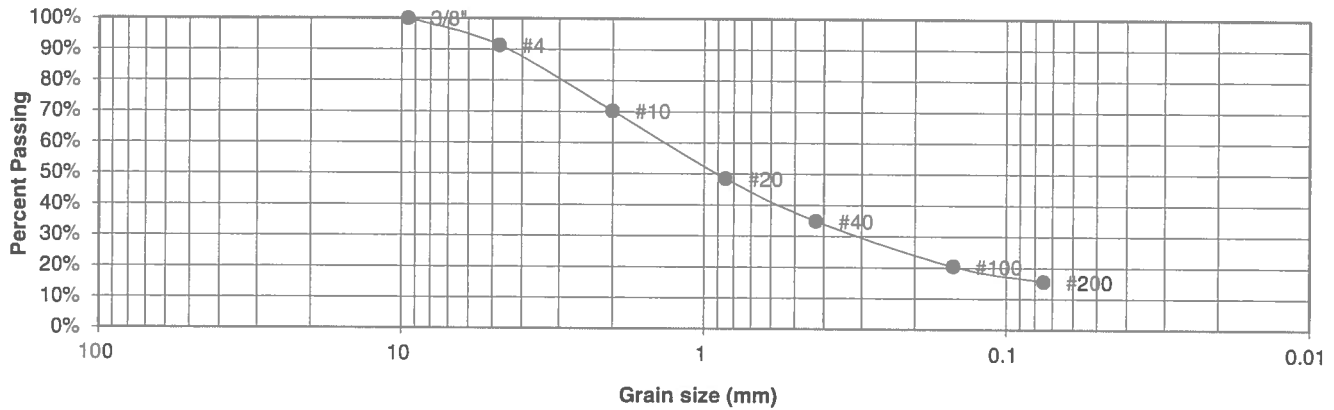
DATE: 7/1/19

JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SM	CLIENT	TECH CONTRACTORS
SOIL TYPE #	2	PROJECT	ROLLING HILLS
TEST BORING #	12	JOB NO.	190300
DEPTH (FT)	10	TEST BY	BL

Sieve Analysis Grain Size Distribution



U.S.
Sieve #

Percent
Finer

3"
1 1/2"
3/4"
1/2"
3/8"
4
10
20
40
100
200

100.0%
91.3%
70.3%

48.5%
34.9%
20.4%
15.5%

Atterberg
Limits

Plastic Limit
Liquid Limit
Plastic Index

Swell

Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



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505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

LABORATORY TEST RESULTS

DRAWN:

DATE:

CHECKED:

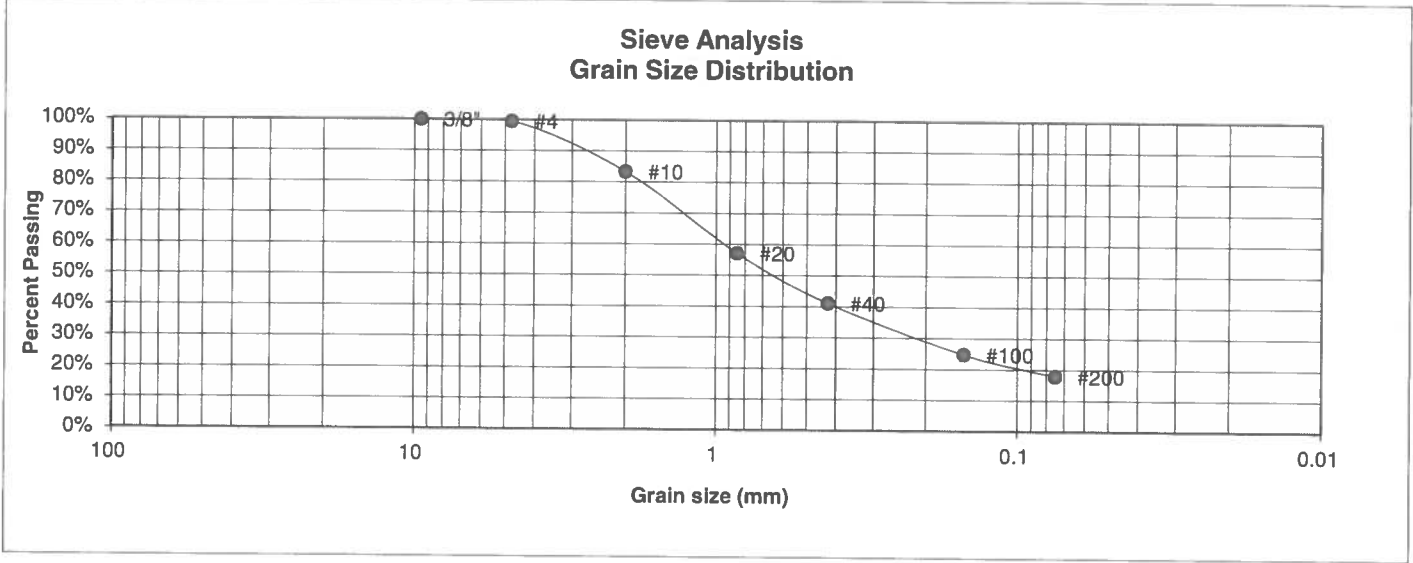
DATE:

h 7/1/19

JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SM	CLIENT	TECH CONTRACTORS
SOIL TYPE #	2	PROJECT	ROLLING HILLS
TEST BORING #	14	JOB NO.	190300
DEPTH (FT)	20	TEST BY	BL



U.S. Sieve #	Percent Finer	Atterberg Limits
3"		Plastic Limit
1 1/2"		Liquid Limit
3/4"		Plastic Index
1/2"		
3/8"	100.0%	
4	99.5%	
10	83.3%	
20	57.2%	
40	41.1%	
100	24.8%	
200	17.8%	

<u>Swell</u>
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



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505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

**LABORATORY TEST
RESULTS**

DRAWN:	DATE:	CHECKED: <i>h</i>	DATE: 7/11/19
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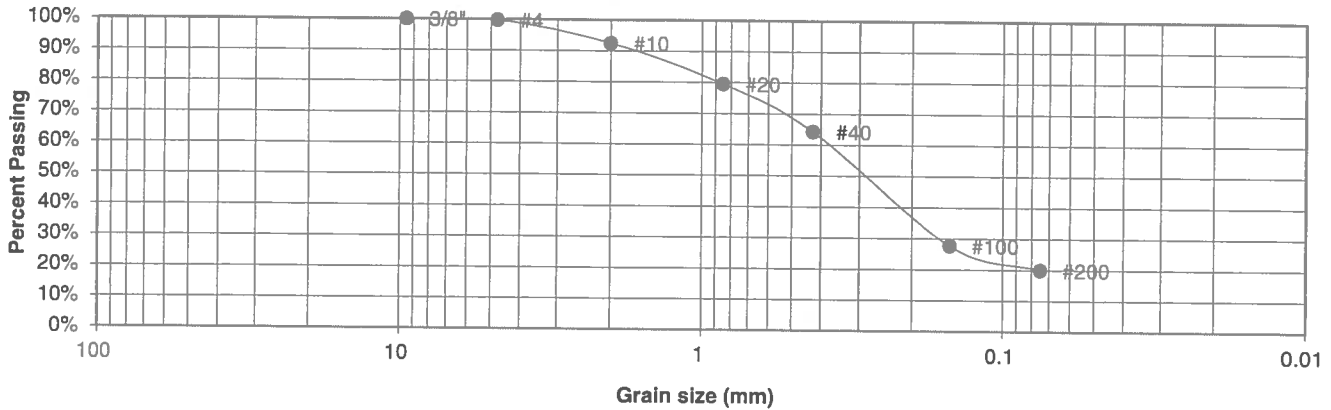
JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SC
SOIL TYPE #	2
TEST BORING #	15
DEPTH (FT)	15

CLIENT	TECH CONTRACTORS
PROJECT	ROLLING HILLS
JOB NO.	190300
TEST BY	BL

**Sieve Analysis
Grain Size Distribution**



<u>U.S. Sieve #</u>	<u>Percent Finer</u>
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	99.7%
10	92.5%
20	79.5%
40	64.2%
100	27.7%
200	19.9%

**Atterberg
Limits**
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



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505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

**LABORATORY TEST
RESULTS**

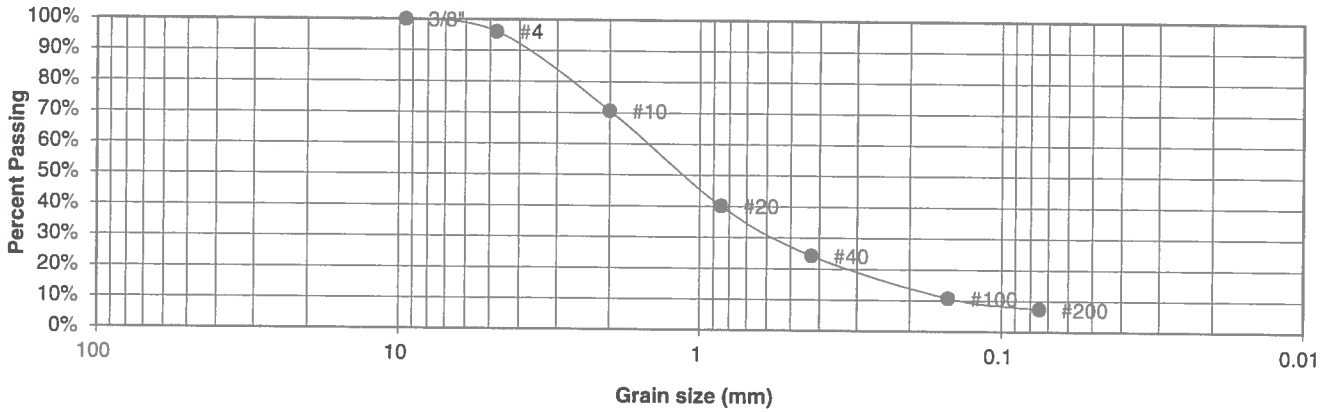
DRAWN:	DATE:	CHECKED: <i>h</i>	DATE: 7/1/19
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JOB NO.:
190300

FIG NO.:

<u>UNIFIED CLASSIFICATION</u>	SM-SW	<u>CLIENT</u>	TECH CONTRACTORS
<u>SOIL TYPE #</u>	2	<u>PROJECT</u>	ROLLING HILLS
<u>TEST BORING #</u>	17	<u>JOB NO.</u>	190300
<u>DEPTH (FT)</u>	10	<u>TEST BY</u>	BL

**Sieve Analysis
Grain Size Distribution**



<u>U.S. Sieve #</u>	<u>Percent Finer</u>
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	96.1%
10	70.6%
20	40.1%
40	24.3%
100	10.8%
200	7.3%

Atterberg
Limits

Plastic Limit	NP
Liquid Limit	NV
Plastic Index	NP

Swell

Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



**ENTECH
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505 ELKTON DRIVE
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**LABORATORY TEST
RESULTS**

DRAWN:

DATE:

CHECKED: *h*

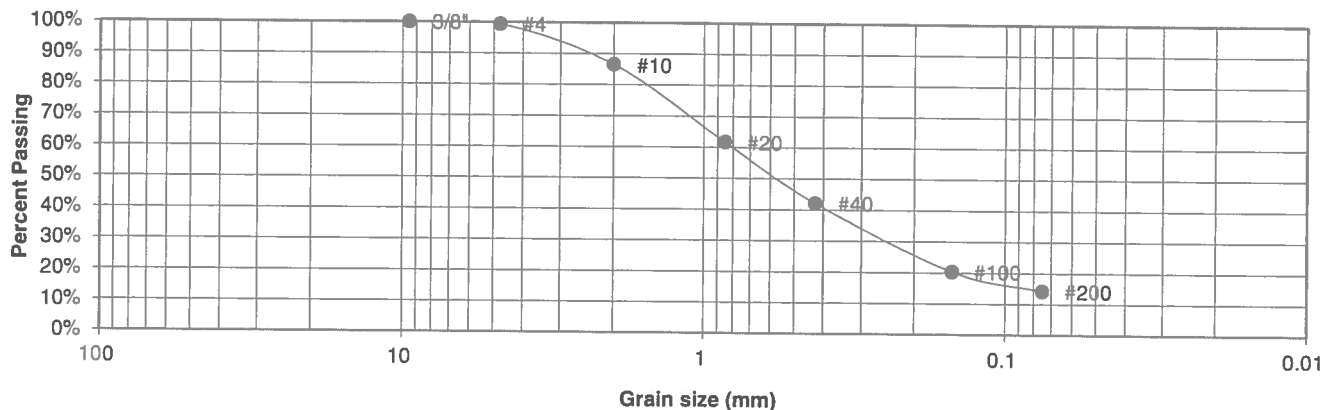
DATE: 7/1/19

JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SM	CLIENT	TECH CONTRACTORS
SOIL TYPE #	2	PROJECT	ROLLING HILLS
TEST BORING #	18	JOB NO.	190300
DEPTH (FT)	5	TEST BY	BL

Sieve Analysis Grain Size Distribution



U.S.
Sieve #

Percent
Finer

3"
1 1/2"
3/4"
1/2"
3/8"
4
10
20
40
100
200

100.0%
99.4%
86.5%
61.7%
42.1%
20.3%
14.2%

Atterberg
Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



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LABORATORY TEST RESULTS

DRAWN:

DATE:

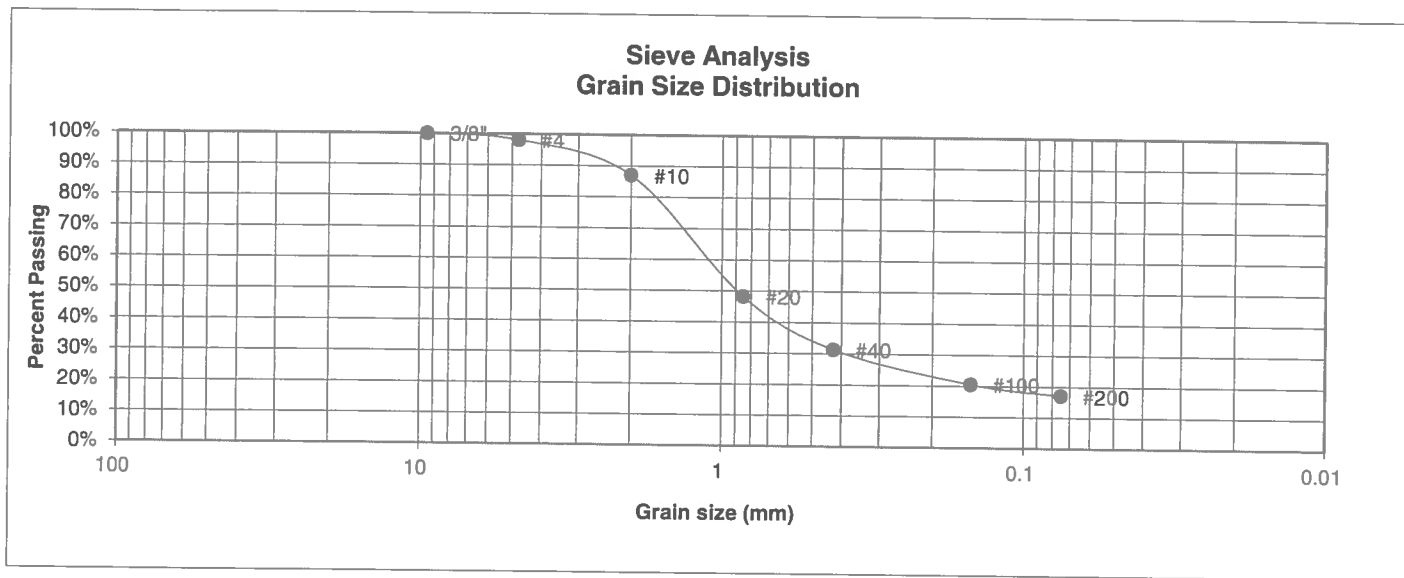
CHECKED:

DATE:

JOB NO.:
190300

FIG NO.:

<u>UNIFIED CLASSIFICATION</u>	SC	<u>CLIENT</u>	TECH CONTRACTORS
<u>SOIL TYPE #</u>	2	<u>PROJECT</u>	ROLLING HILLS
<u>TEST BORING #</u>	20	<u>JOB NO.</u>	190300
<u>DEPTH (FT)</u>	5	<u>TEST BY</u>	BL



<u>U.S. Sieve #</u>	<u>Percent Finer</u>
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	98.1%
10	87.0%
20	48.2%
40	31.3%
100	20.5%
200	17.1%

<u>Atterberg Limits</u>	
Plastic Limit	17
Liquid Limit	37
Plastic Index	20

<u>Swell</u>	
Moisture at start	
Moisture at finish	
Moisture increase	
Initial dry density (pcf)	
Swell (psf)	



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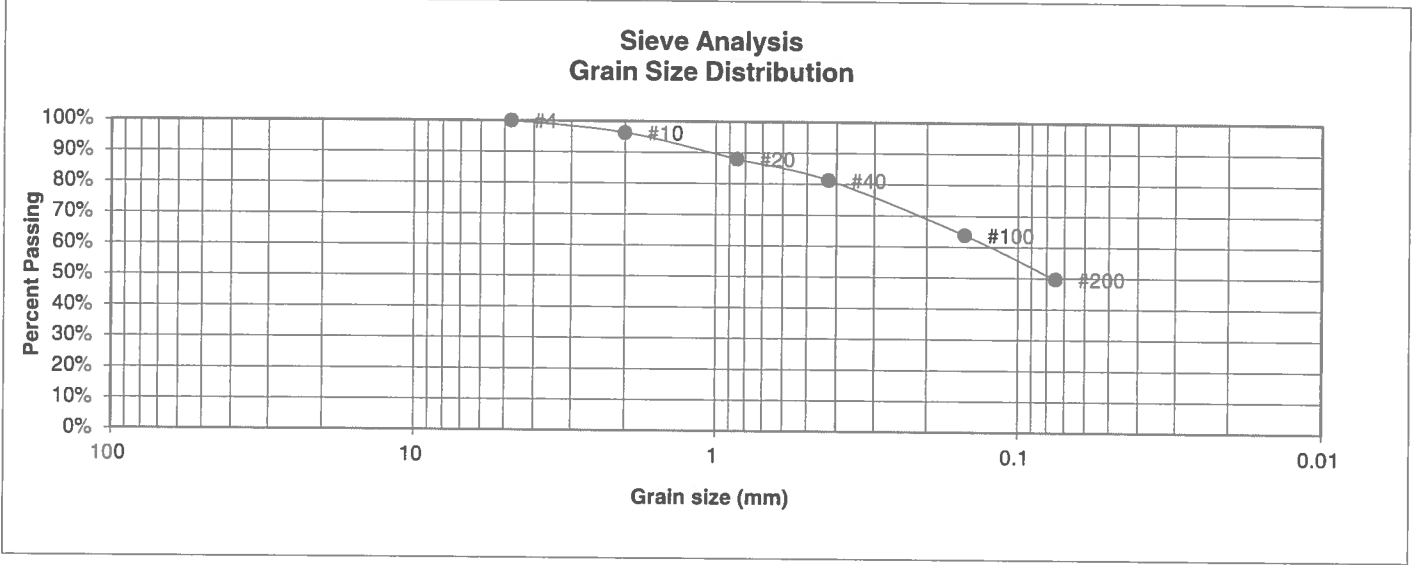
LABORATORY TEST RESULTS

<u>DRAWN:</u>	<u>DATE:</u>	<u>CHECKED:</u> <i>h</i>	<u>DATE:</u> 7/1/19
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JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SC	CLIENT	TECH CONTRACTORS
SOIL TYPE #	2	PROJECT	ROLLING HILLS
TEST BORING #	20	JOB NO.	190300
DEPTH (FT)	20	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	100.0%
10	96.3%
20	88.0%
40	81.3%
100	63.8%
200	49.7%

Atterberg Limits	
Plastic Limit	14
Liquid Limit	28
Plastic Index	14

Swell	
Moisture at start	
Moisture at finish	
Moisture increase	
Initial dry density (pcf)	
Swell (psf)	



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505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

LABORATORY TEST RESULTS

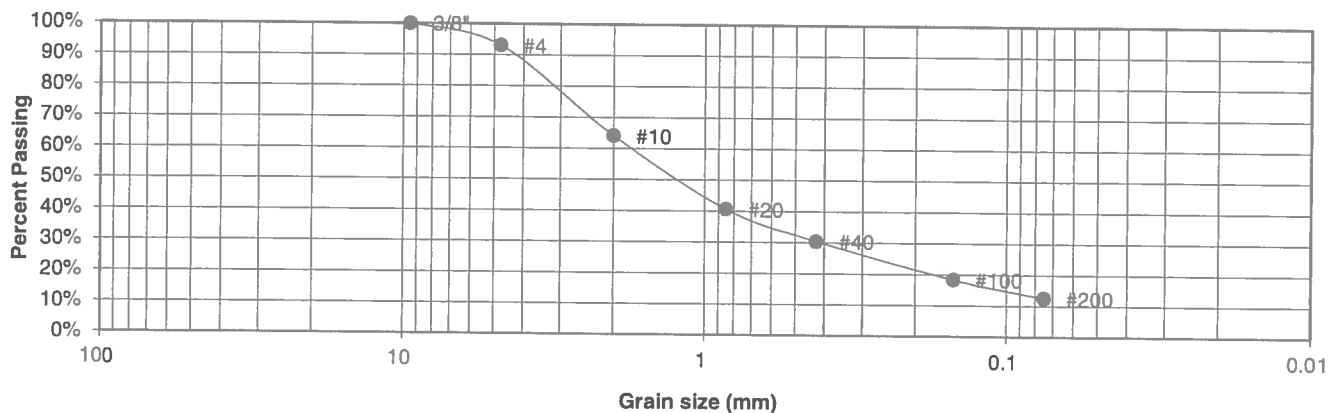
DRAWN:	DATE:	CHECKED: <i>h</i>	DATE: 7/1/19
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JOB NO.:
190300

FIG NO.:

<u>UNIFIED CLASSIFICATION</u>	SM	<u>CLIENT</u>	TECH CONTRACTORS
<u>SOIL TYPE #</u>	2	<u>PROJECT</u>	ROLLING HILLS
<u>TEST BORING #</u>	21	<u>JOB NO.</u>	190300
<u>DEPTH (FT)</u>	10	<u>TEST BY</u>	BL

Sieve Analysis Grain Size Distribution



U.S.
Sieve #

Percent
Finer

3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	93.0%
10	64.1%
20	40.6%
40	30.4%
100	18.4%
200	12.5%

Atterberg

Limits

Plastic Limit

Liquid Limit

Plastic Index

Swell

Moisture at start

Moisture at finish

Moisture increase

Initial dry density (pcf)

Swell (psf)



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LABORATORY TEST RESULTS

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DATE:

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DATE:

7/1/19

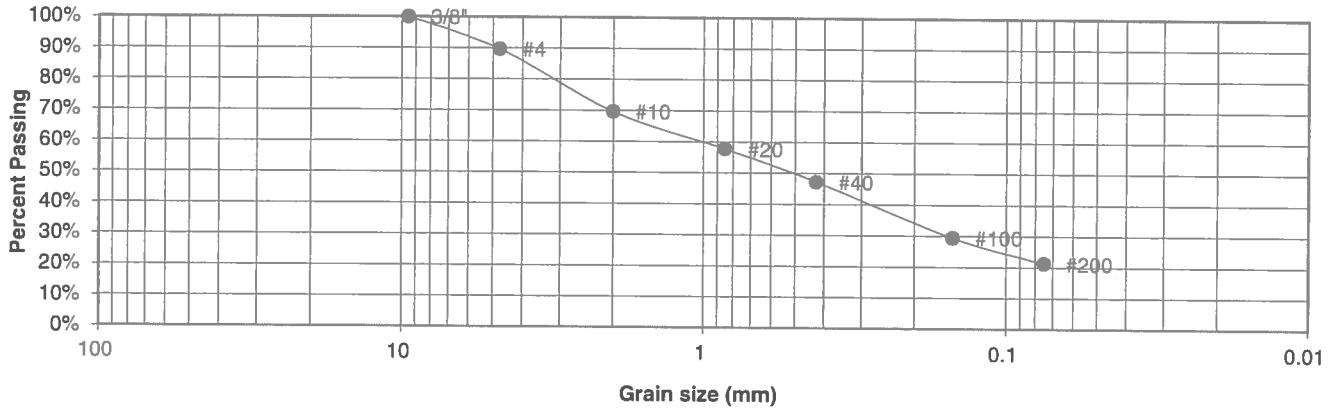
JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SM
SOIL TYPE #	2
TEST BORING #	21
DEPTH (FT)	25

CLIENT	TECH CONTRACTORS
PROJECT	ROLLING HILLS
JOB NO.	190300
TEST BY	BL

**Sieve Analysis
Grain Size Distribution**



<u>U.S. Sieve #</u>	<u>Percent Finer</u>
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	89.6%
10	69.6%
20	57.7%
40	47.2%
100	29.5%
200	21.2%

Atterberg
Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



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**LABORATORY TEST
RESULTS**

DRAWN:	DATE:	CHECKED: <i>h</i>	DATE: 7/1/19
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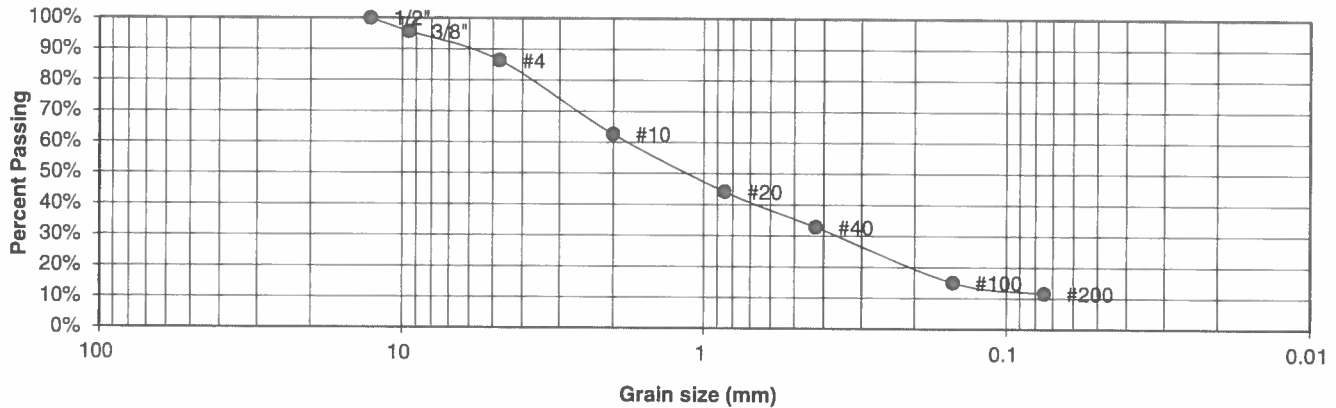
JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SM-SW
SOIL TYPE #	2
TEST BORING #	23
DEPTH (FT)	10

CLIENT	TECH CONTRACTORS
PROJECT	ROLLING HILLS
JOB NO.	190300
TEST BY	BL

Sieve Analysis Grain Size Distribution



U.S.
Sieve #

Percent
Finer

3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	95.7%
4	86.4%
10	62.6%
20	44.2%
40	32.8%
100	15.0%
200	11.6%

Atterberg
Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



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505 ELKTON DRIVE
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LABORATORY TEST RESULTS

DRAWN:

DATE:

CHECKED: *h*

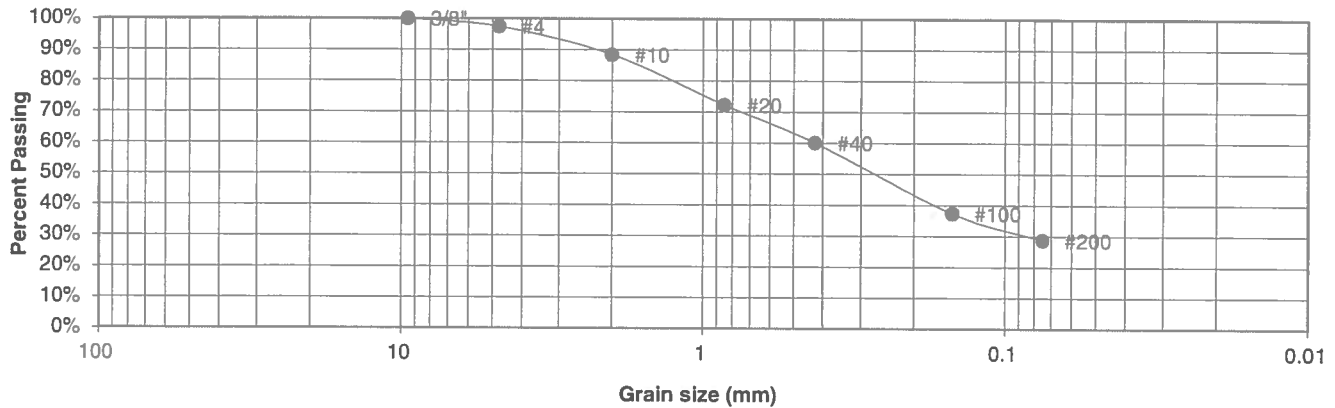
DATE: 7/1/19

JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SM	CLIENT	TECH CONTRACTORS
SOIL TYPE #	2	PROJECT	ROLLING HILLS
TEST BORING #	25	JOB NO.	190300
DEPTH (FT)	15	TEST BY	BL

Sieve Analysis Grain Size Distribution



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	97.4%
10	88.4%
20	72.2%
40	60.1%
100	37.4%
200	28.7%

Atterberg Limits	
Plastic Limit	NP
Liquid Limit	NV
Plastic Index	NP

Swell	
Moisture at start	
Moisture at finish	
Moisture increase	
Initial dry density (pcf)	
Swell (psf)	



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LABORATORY TEST RESULTS

DRAWN:

DATE:

CHECKED: *h*

DATE: 7/1/19

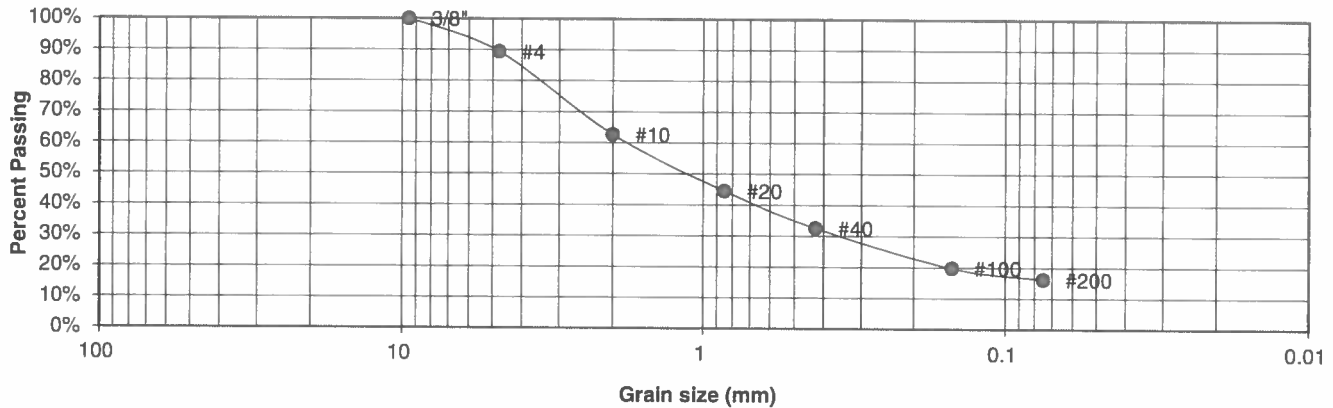
JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SM
SOIL TYPE #	2
TEST BORING #	27
DEPTH (FT)	10

CLIENT	TECH CONTRACTORS
PROJECT	ROLLING HILLS
JOB NO.	190300
TEST BY	BL

Sieve Analysis Grain Size Distribution



<u>U.S. Sieve #</u>	<u>Percent Finer</u>
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	89.4%
10	62.7%
20	44.5%
40	32.5%
100	19.8%
200	16.2%

Atterberg
Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



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LABORATORY TEST RESULTS

DRAWN:

DATE:

CHECKED: *h*

DATE: 7/1/79

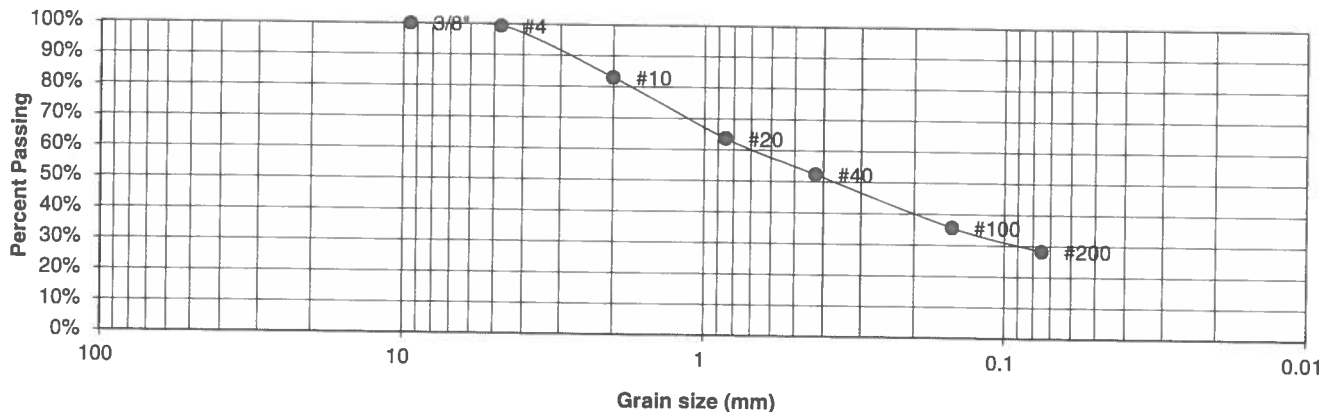
JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SC
SOIL TYPE #	2
TEST BORING #	28
DEPTH (FT)	15

CLIENT	TECH CONTRACTORS
PROJECT	ROLLING HILLS
JOB NO.	190300
TEST BY	BL

Sieve Analysis Grain Size Distribution



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	99.4%
10	83.0%
20	63.6%
40	52.4%
100	35.7%
200	28.3%

Atterberg Limits	
Plastic Limit	24
Liquid Limit	41
Plastic Index	17

Swell	
Moisture at start	
Moisture at finish	
Moisture increase	
Initial dry density (pcf)	
Swell (psf)	



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LABORATORY TEST RESULTS

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DATE:

CHECKED:

DATE:

h 7/1/19

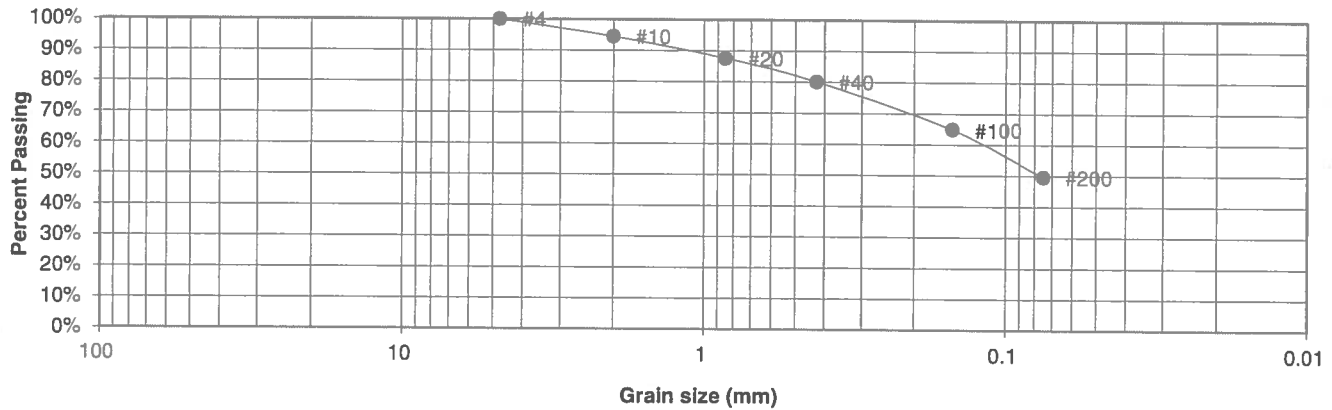
JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SC
SOIL TYPE #	2
TEST BORING #	29
DEPTH (FT)	10

CLIENT	TECH CONTRACTORS
PROJECT	ROLLING HILLS
JOB NO.	190300
TEST BY	BL

**Sieve Analysis
Grain Size Distribution**



U.S.
Sieve #

Percent
Finer

3"
1 1/2"
3/4"
1/2"
3/8"
4
10
20
40
100
200

100.0%
94.5%
87.6%
80.1%
64.9%
49.6%

Atterberg
Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



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505 ELKTON DRIVE
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**LABORATORY TEST
RESULTS**

DRAWN:

DATE:

CHECKED: *h*

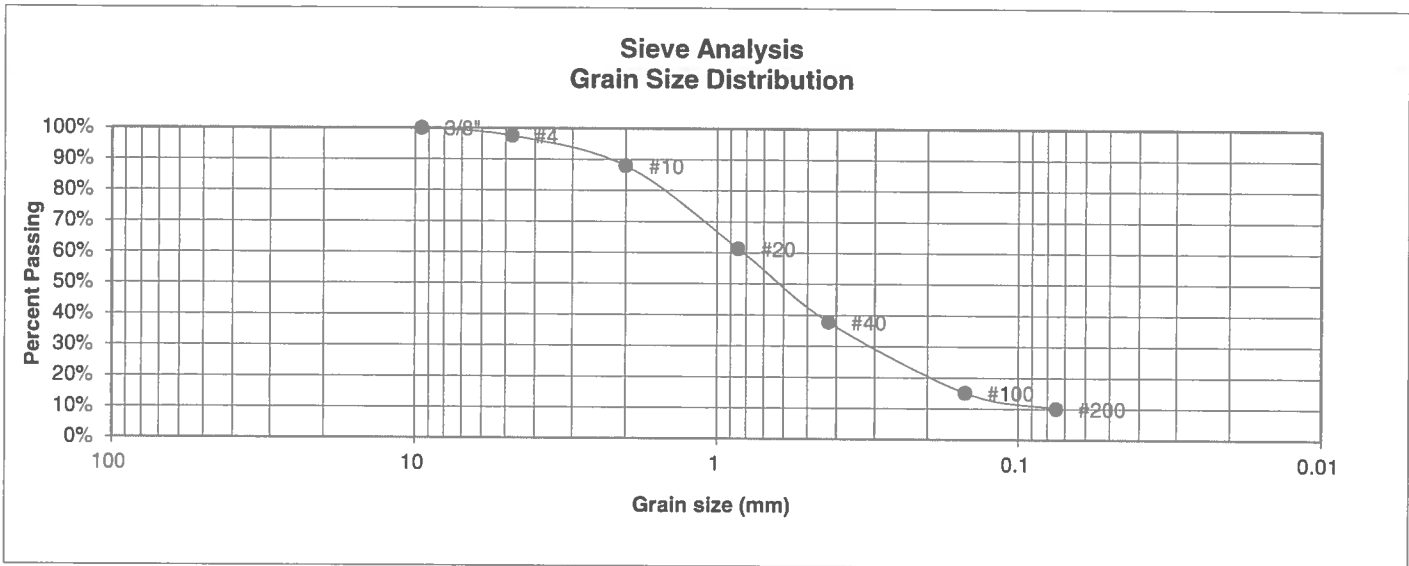
DATE:

7/1/19

JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SM-SW	CLIENT	TECH CONTRACTORS
SOIL TYPE #	2	PROJECT	ROLLING HILLS
TEST BORING #	35	JOB NO.	190300
DEPTH (FT)	5	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	97.5%
10	87.9%
20	61.3%
40	37.8%
100	15.2%
200	10.1%

Atterberg
Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



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505 ELKTON DRIVE
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LABORATORY TEST RESULTS

DRAWN:

DATE:

CHECKED: *h*

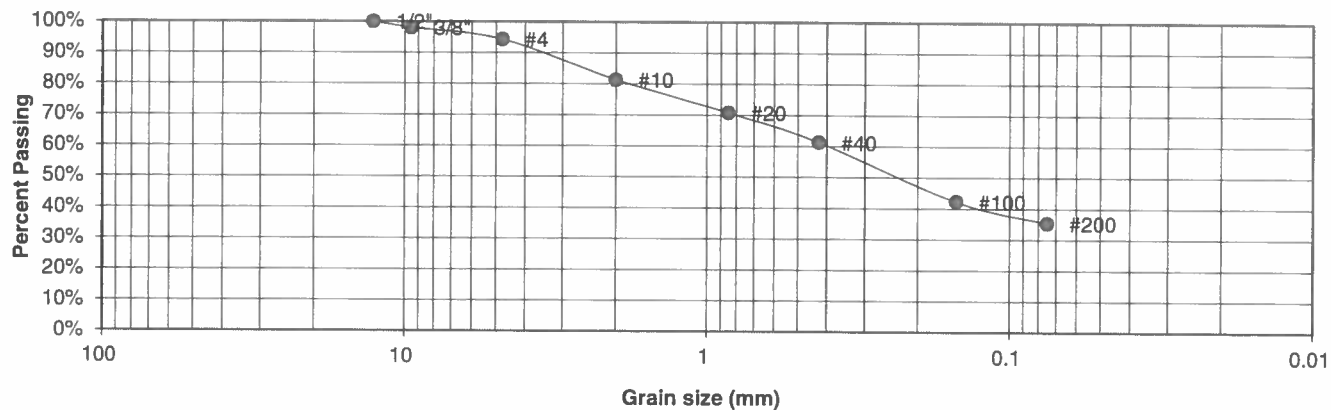
DATE: 7/1/19

JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SC	CLIENT	TECH CONTRACTORS
SOIL TYPE #	2	PROJECT	ROLLING HILLS
TEST BORING #	37	JOB NO.	190300
DEPTH (FT)	5	TEST BY	BL

**Sieve Analysis
Grain Size Distribution**



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	98.1%
4	94.3%
10	81.4%
20	70.8%
40	61.3%
100	42.3%
200	35.4%

Atterberg
Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



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**LABORATORY TEST
RESULTS**

DRAWN:

DATE:

CHECKED: *h*

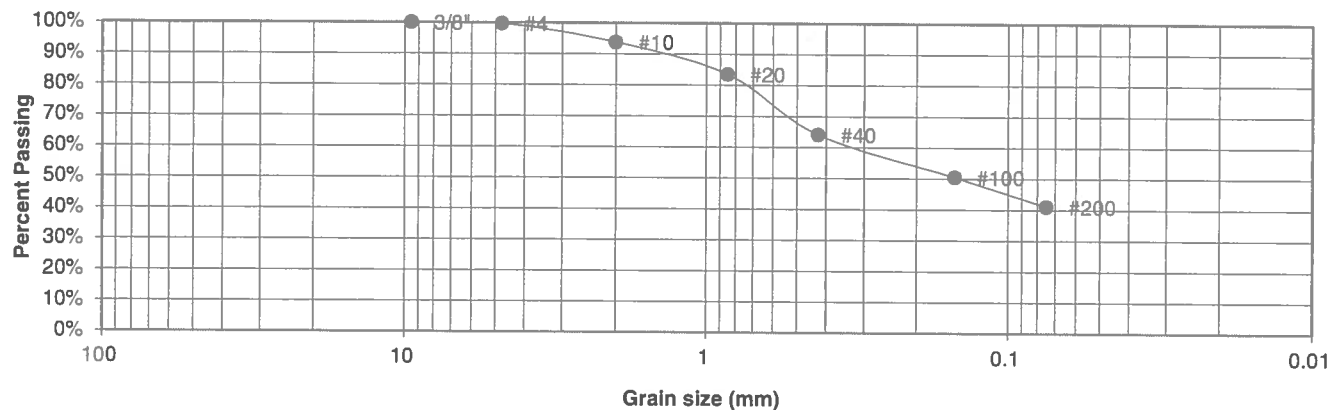
DATE: *7/1/19*

JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SC	CLIENT	TECH CONTRACTORS
SOIL TYPE #	2	PROJECT	ROLLING HILLS
TEST BORING #	39	JOB NO.	190300
DEPTH (FT)	15	TEST BY	BL

Sieve Analysis Grain Size Distribution



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	99.7%
10	93.8%
20	83.5%
40	64.1%
100	50.5%
200	41.1%

Atterberg
Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



**ENTECH
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LABORATORY TEST RESULTS

DRAWN:

DATE:

CHECKED: *h*

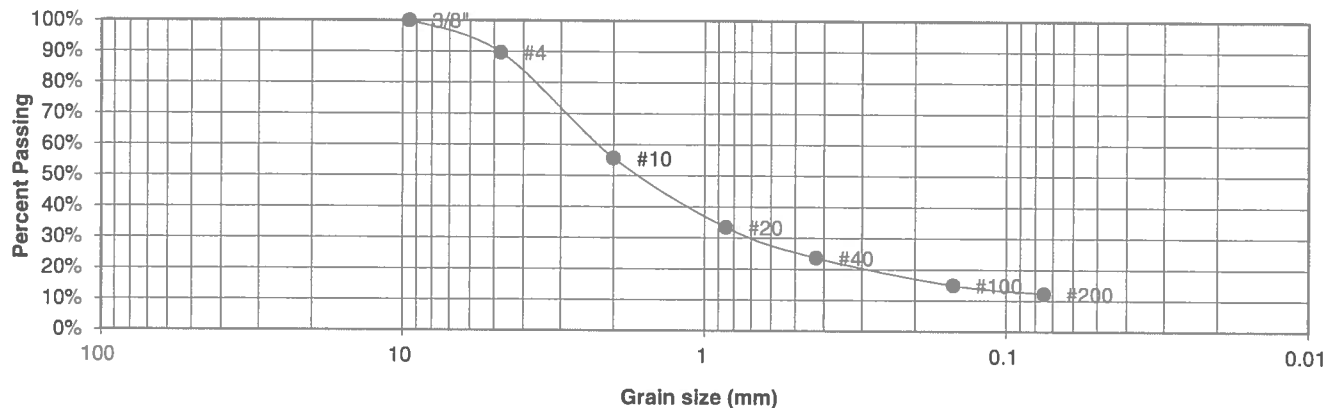
DATE: 7/1/19

JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SM	CLIENT	TECH CONTRACTORS
SOIL TYPE #	2	PROJECT	ROLLING HILLS
TEST BORING #	40	JOB NO.	190300
DEPTH (FT)	10	TEST BY	BL

**Sieve Analysis
Grain Size Distribution**



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	89.7%
10	55.7%
20	33.4%
40	23.7%
100	14.9%
200	12.3%

Atterberg Limits	
Plastic Limit	NP
Liquid Limit	NV
Plastic Index	NP

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



**ENTECH
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505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

**LABORATORY TEST
RESULTS**

DRAWN:

DATE:

CHECKED:

DATE:

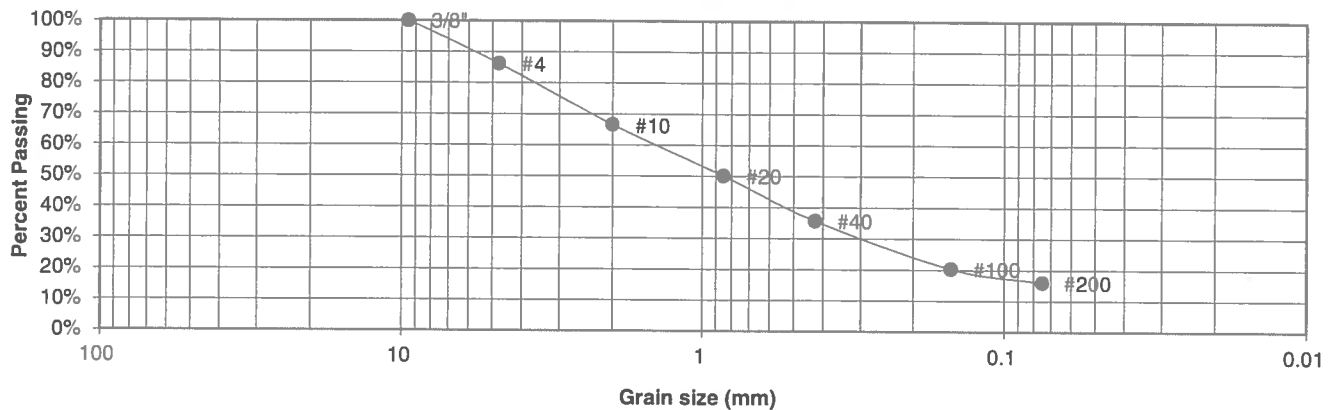
h 7/1/19

JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SM	CLIENT	TECH CONTRACTORS
SOIL TYPE #	2	PROJECT	ROLLING HILLS
TEST BORING #	41	JOB NO.	190300
DEPTH (FT)	10	TEST BY	BL

Sieve Analysis Grain Size Distribution



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	86.2%
10	66.5%
20	50.2%
40	35.7%
100	20.3%
200	16.0%

Atterberg
Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



**ENTECH
ENGINEERING, INC.**

505 ELKTON DRIVE
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LABORATORY TEST RESULTS

DRAWN:

DATE:

CHECKED:

DATE:

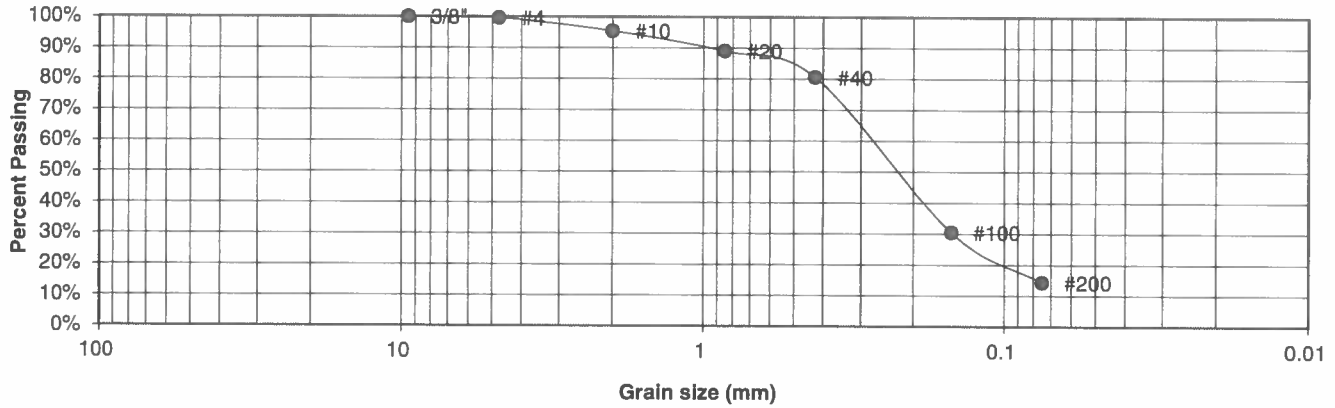
2/1/19

JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SM	CLIENT	TECH CONTRACTORS
SOIL TYPE #	2	PROJECT	ROLLING HILLS
TEST BORING #	44	JOB NO.	190300
DEPTH (FT)	10	TEST BY	BL

Sieve Analysis Grain Size Distribution



U.S.
Sieve #

3"
1 1/2"
3/4"
1/2"
3/8"
4
10
20
40
100
200

Percent
Finer

100.0%
99.6%
95.4%
89.0%
80.6%
30.5%
14.3%

Atterberg
Limits

Plastic Limit
Liquid Limit
Plastic Index

Swell

Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



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LABORATORY TEST RESULTS

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DATE:

CHECKED: *h*

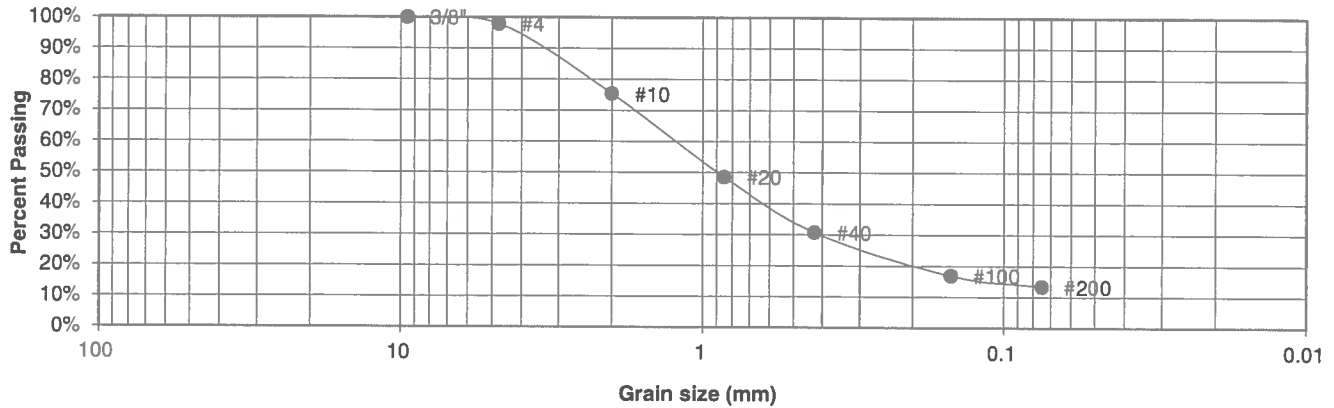
DATE: 7/1/19

JOB NO.:
190300

FIG NO.:

<u>UNIFIED CLASSIFICATION</u>	SM	<u>CLIENT</u>	TECH CONTRACTORS
<u>SOIL TYPE #</u>	2	<u>PROJECT</u>	ROLLING HILLS
<u>TEST BORING #</u>	45	<u>JOB NO.</u>	190300
<u>DEPTH (FT)</u>	20	<u>TEST BY</u>	BL

**Sieve Analysis
Grain Size Distribution**



<u>U.S. Sieve #</u>	<u>Percent Finer</u>
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	97.9%
10	75.4%
20	48.6%
40	30.7%
100	16.9%
200	13.4%

Atterberg
Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



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**LABORATORY TEST
RESULTS**

DRAWN:	DATE:	CHECKED:	DATE:
		<i>h</i>	7/1/19

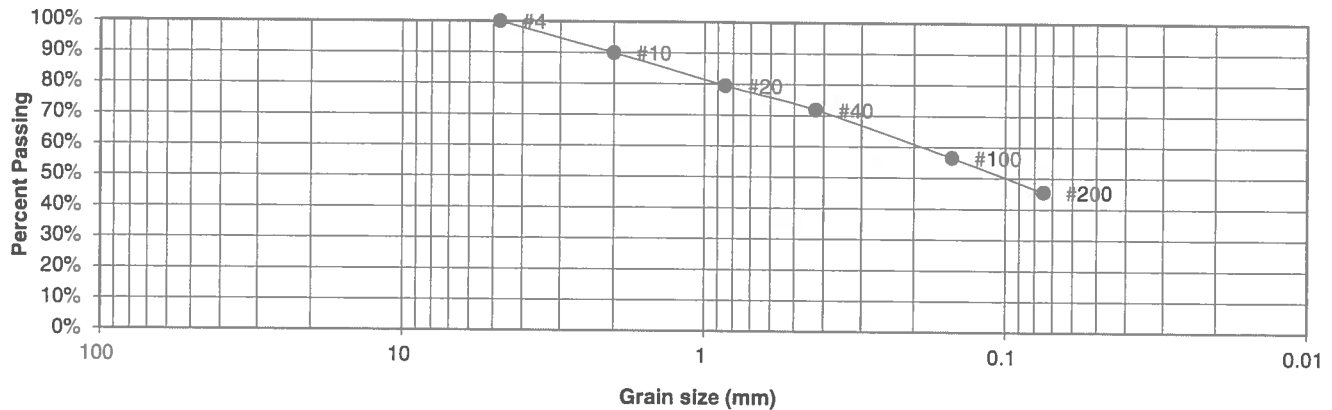
JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	SC
SOIL TYPE #	2
TEST BORING #	46
DEPTH (FT)	15

CLIENT	TECH CONTRACTORS
PROJECT	ROLLING HILLS
JOB NO.	190300
TEST BY	BL

**Sieve Analysis
Grain Size Distribution**



**U.S.
Sieve #**

**Percent
Finer**

3"
1 1/2"
3/4"
1/2"
3/8"
4
10
20
40
100
200

100.0%
89.9%
79.5%
71.8%
56.5%
45.5%

**Atterberg
Limits**
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



**ENTECH
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**LABORATORY TEST
RESULTS**

DRAWN:

DATE:

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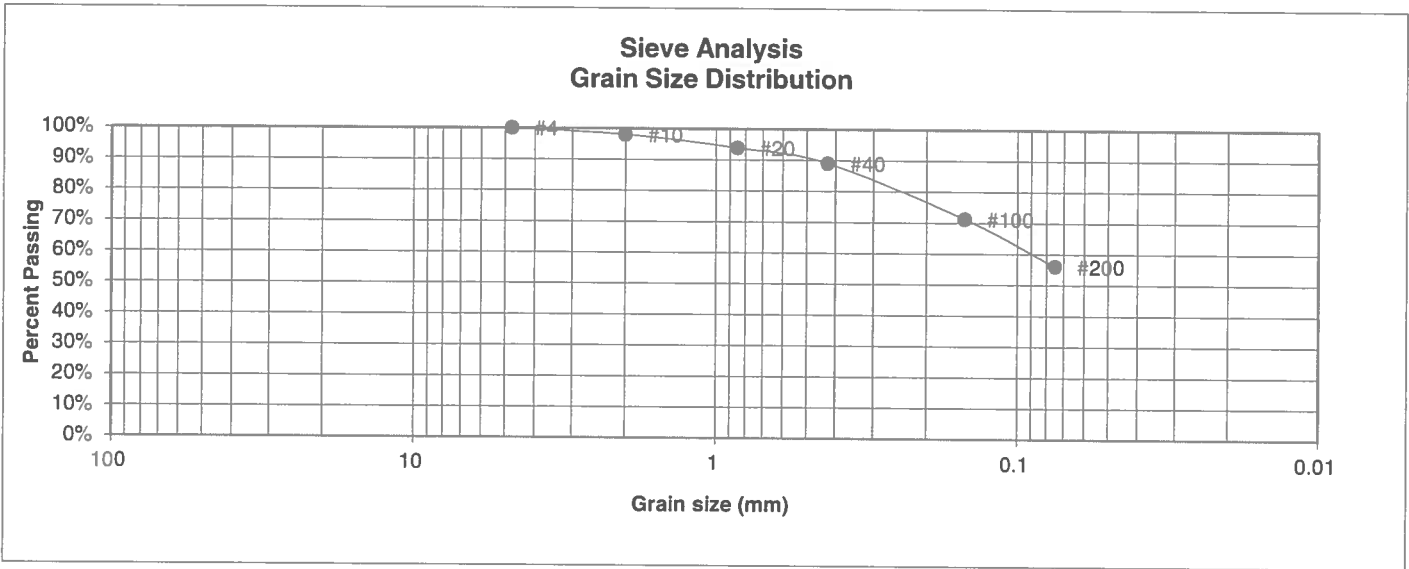
DATE:

7/1/19

JOB NO.:
190300

FIG NO.:

<u>UNIFIED CLASSIFICATION</u>	CL	<u>CLIENT</u>	TECH CONTRACTORS
<u>SOIL TYPE #</u>	3	<u>PROJECT</u>	ROLLING HILLS
<u>TEST BORING #</u>	15	<u>JOB NO.</u>	190300
<u>DEPTH (FT)</u>	10	<u>TEST BY</u>	BL



U.S.
Sieve #

Percent
Finer

Atterberg
Limits
Plastic Limit
Liquid Limit
Plastic Index

3"
1 1/2"
3/4"
1/2"
3/8"
4
10
20
40
100
200

100.0%
98.1%
93.9%
89.0%
71.3%
56.1%

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



**ENTECH
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505 ELKTON DRIVE
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LABORATORY TEST RESULTS

DRAWN:

DATE:

CHECKED: *h*

DATE: 2/1/19

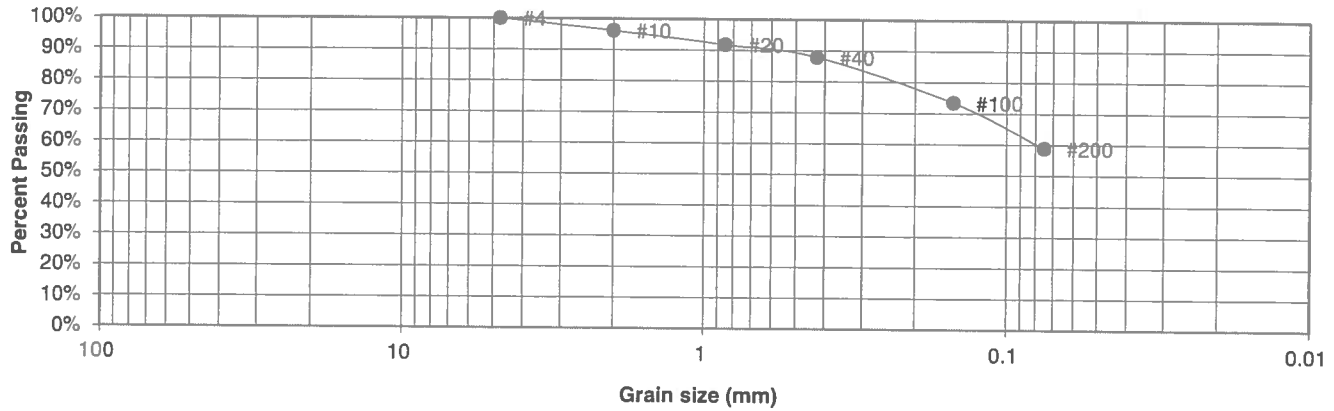
JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	CL
SOIL TYPE #	3
TEST BORING #	16
DEPTH (FT)	20

CLIENT	TECH CONTRACTORS
PROJECT	ROLLING HILLS
JOB NO.	190300
TEST BY	BL

**Sieve Analysis
Grain Size Distribution**



**U.S.
Sieve #**

**Percent
Finer**

3"
1 1/2"
3/4"
1/2"
3/8"
4
10
20
40
100
200

100.0%
96.2%
91.8%
87.9%
73.5%
58.8%

**Atterberg
Limits**

Plastic Limit
Liquid Limit
Plastic Index

Swell

Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



**ENTECH
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**LABORATORY TEST
RESULTS**

DRAWN:	DATE:	CHECKED: <i>h</i>	DATE: 7/1/19
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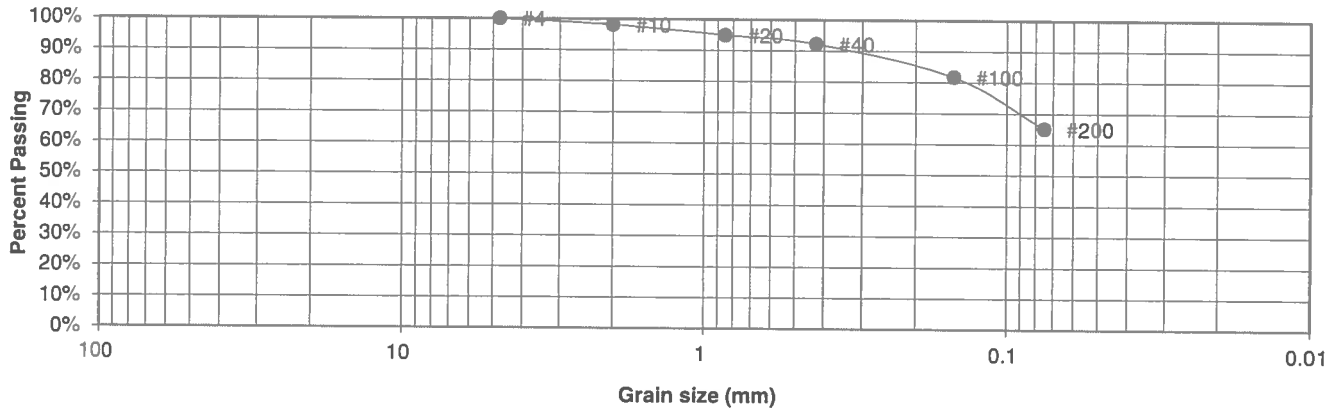
JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	CL
SOIL TYPE #	3
TEST BORING #	19
DEPTH (FT)	5

CLIENT	TECH CONTRACTORS
PROJECT	ROLLING HILLS
JOB NO.	190300
TEST BY	BL

Sieve Analysis Grain Size Distribution



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	100.0%
10	98.2%
20	95.0%
40	92.2%
100	81.7%
200	65.1%

Atterberg
Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



**ENTECH
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LABORATORY TEST RESULTS

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DATE:

CHECKED: *h*

DATE: 7/1/19

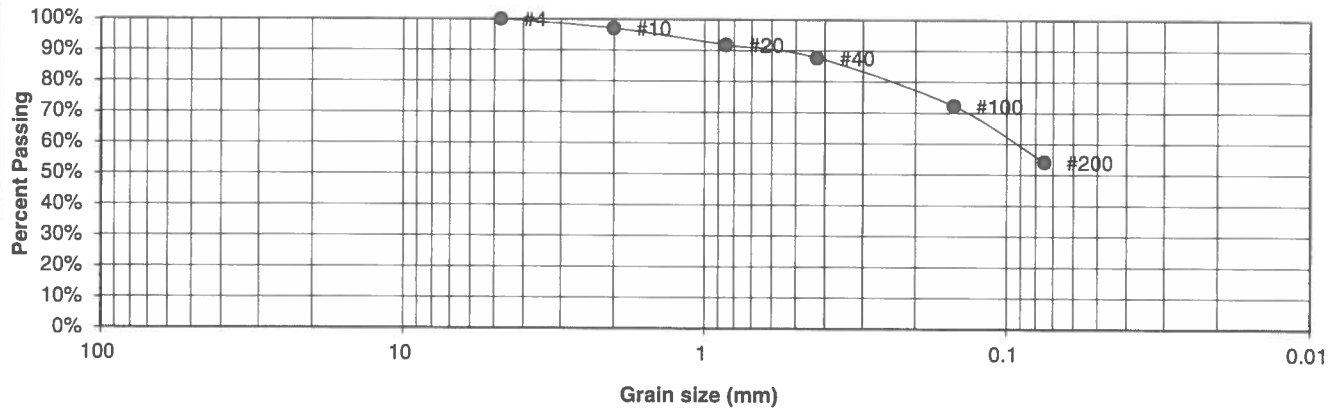
JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	CL
SOIL TYPE #	3
TEST BORING #	22
DEPTH (FT)	10

CLIENT	TECH CONTRACTORS
PROJECT	ROLLING HILLS
JOB NO.	190300
TEST BY	BL

**Sieve Analysis
Grain Size Distribution**



<u>U.S. Sieve #</u>	<u>Percent Finer</u>
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	100.0%
10	97.1%
20	91.9%
40	87.7%
100	72.3%
200	54.2%

Atterberg Limits	
Plastic Limit	19
Liquid Limit	34
Plastic Index	15

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



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505 ELKTON DRIVE
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**LABORATORY TEST
RESULTS**

DRAWN:

DATE:

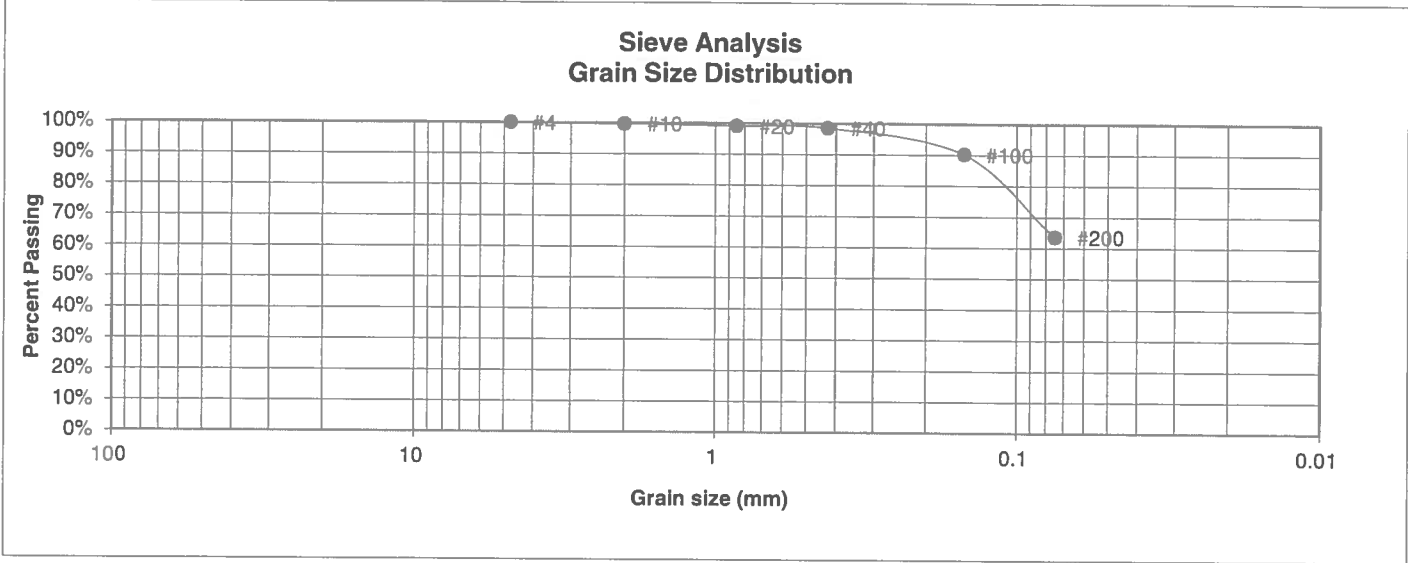
CHECKED: *h*

DATE: 7/1/19

JOB NO.:
190300

FIG NO.:

<u>UNIFIED CLASSIFICATION</u>	CL	<u>CLIENT</u>	TECH CONTRACTORS
<u>SOIL TYPE #</u>	3	<u>PROJECT</u>	ROLLING HILLS
<u>TEST BORING #</u>	24	<u>JOB NO.</u>	190300
<u>DEPTH (FT)</u>	5	<u>TEST BY</u>	BL



<u>U.S. Sieve #</u>	<u>Percent Finer</u>
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	100.0%
10	99.7%
20	99.1%
40	98.5%
100	90.2%
200	63.6%

Atterberg
Limits
Plastic Limit
Liquid Limit
Plastic Index

<u>Swell</u>	
Moisture at start	14.5%
Moisture at finish	24.3%
Moisture increase	9.8%
Initial dry density (pcf)	90
Swell (psf)	90



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LABORATORY TEST RESULTS

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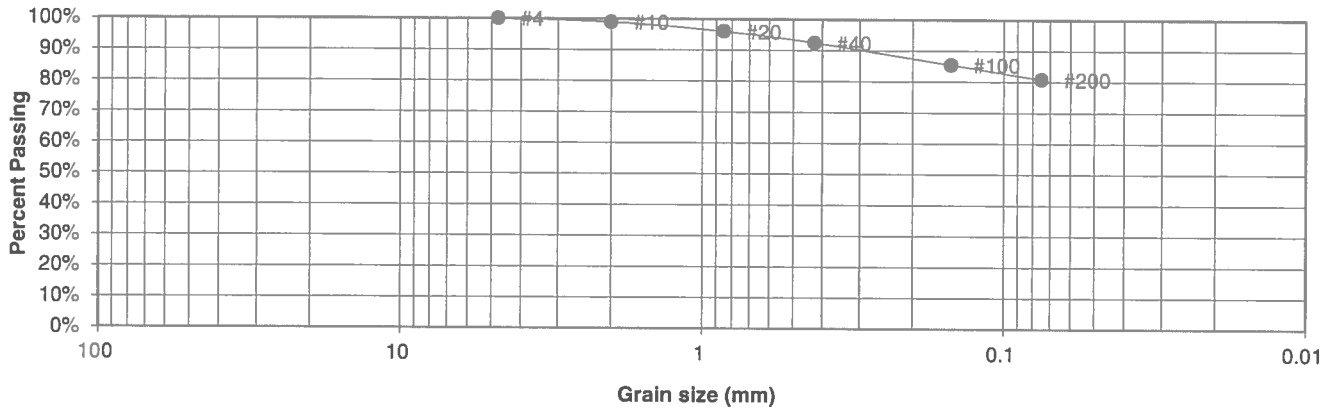
JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	CL
SOIL TYPE #	3
TEST BORING #	33
DEPTH (FT)	10

CLIENT	TECH CONTRACTORS
PROJECT	ROLLING HILLS
JOB NO.	190300
TEST BY	BL

**Sieve Analysis
Grain Size Distribution**



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	100.0%
10	99.0%
20	96.0%
40	92.5%
100	85.5%
200	80.8%

**Atterberg
Limits**

Plastic Limit	22
Liquid Limit	42
Plastic Index	20

Swell

Moisture at start	
Moisture at finish	
Moisture increase	
Initial dry density (pcf)	
Swell (psf)	



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505 ELKTON DRIVE
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**LABORATORY TEST
RESULTS**

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DATE:

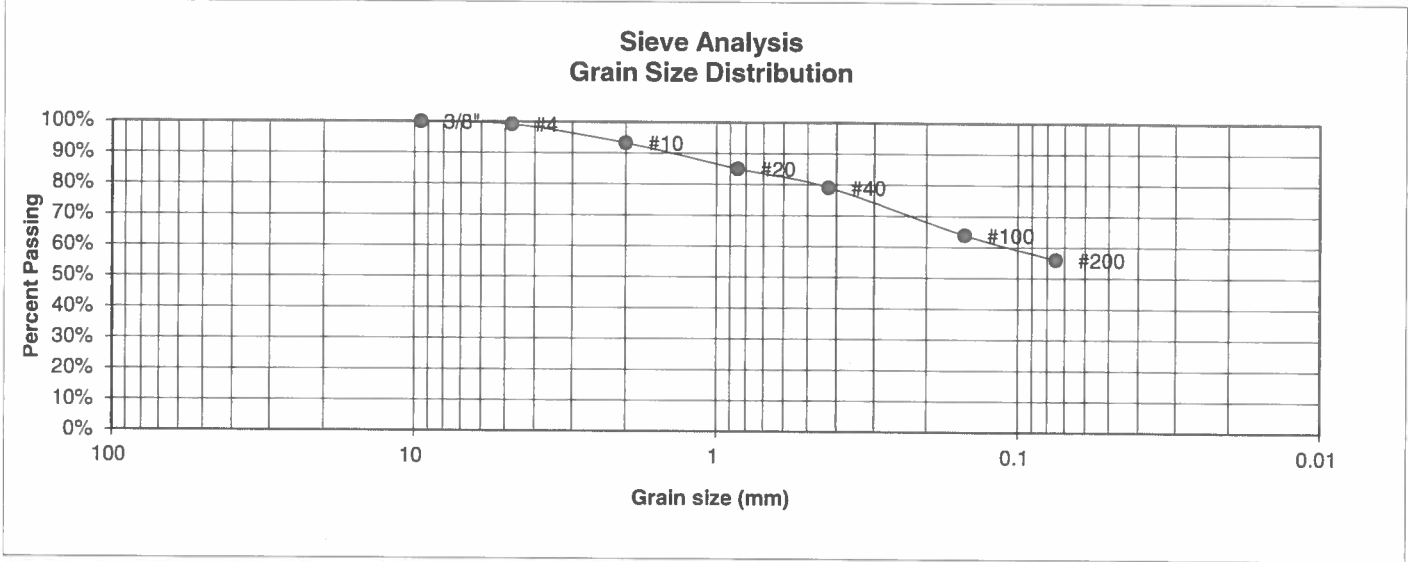
CHECKED: *L*

DATE: 7/1/19

JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	CL	CLIENT	TECH CONTRACTORS
SOIL TYPE #	3	PROJECT	ROLLING HILLS
TEST BORING #	34	JOB NO.	190300
DEPTH (FT)	10	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	99.2%
10	93.2%
20	85.1%
40	79.1%
100	63.9%
200	56.0%

Atterberg
Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



**ENTECH
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505 ELKTON DRIVE
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LABORATORY TEST RESULTS

DRAWN:

DATE:

CHECKED: *h*

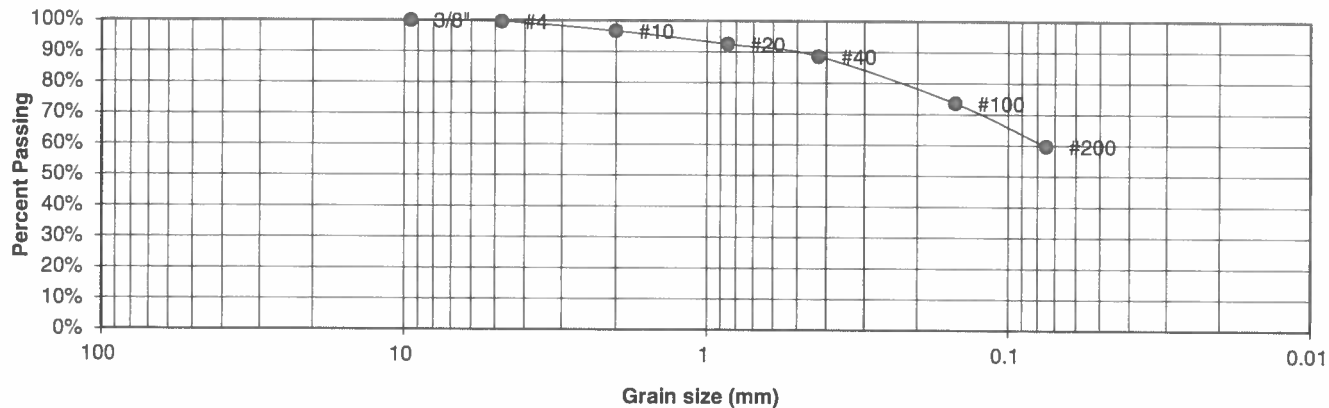
DATE: *7/1/19*

JOB NO.:
190300

FIG NO.:

<u>UNIFIED CLASSIFICATION</u>	CL	<u>CLIENT</u>	TECH CONTRACTORS
<u>SOIL TYPE #</u>	3	<u>PROJECT</u>	ROLLING HILLS
<u>TEST BORING #</u>	36	<u>JOB NO.</u>	190300
<u>DEPTH (FT)</u>	15	<u>TEST BY</u>	BL

**Sieve Analysis
Grain Size Distribution**



U.S.
Sieve #

Percent
Finer

3"
1 1/2"
3/4"
1/2"
3/8"
4
10
20
40
100
200

100.0%
99.6%
96.7%
92.5%
88.6%
73.6%
59.7%

Atterberg
Limits

Plastic Limit
Liquid Limit
Plastic Index

Swell

Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



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**LABORATORY TEST
RESULTS**

DRAWN:

DATE:

CHECKED: *h*

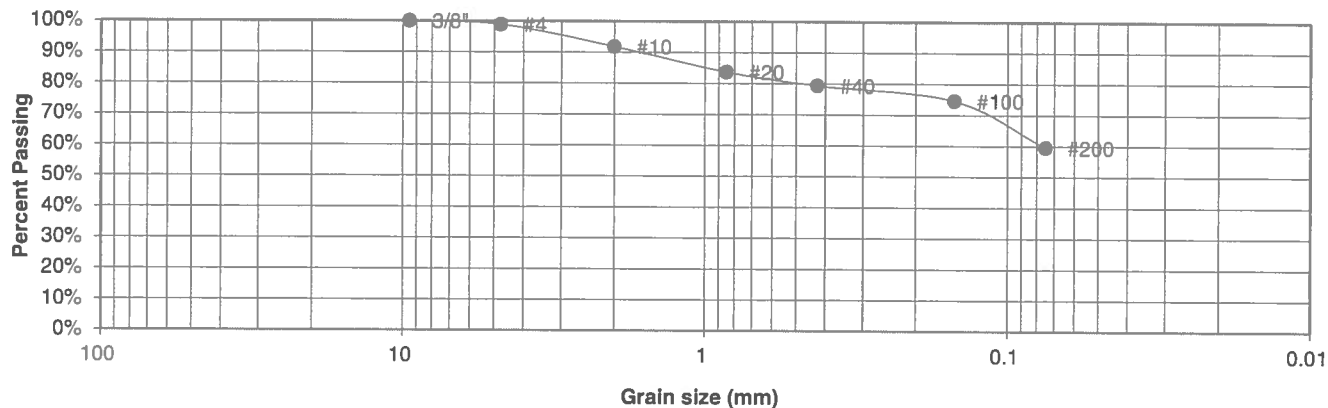
DATE: 7/1/19

JOB NO.:
190300

FIG NO.:

UNIFIED CLASSIFICATION	CL	CLIENT	TECH CONTRACTORS
SOIL TYPE #	3	PROJECT	ROLLING HILLS
TEST BORING #	38	JOB NO.	190300
DEPTH (FT)	15	TEST BY	BL

Sieve Analysis Grain Size Distribution



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	98.9%
10	91.9%
20	83.7%
40	79.3%
100	74.6%
200	59.6%

Atterberg Limits	
Plastic Limit	17
Liquid Limit	34
Plastic Index	17

Swell	
Moisture at start	
Moisture at finish	
Moisture increase	
Initial dry density (pcf)	
Swell (psf)	



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LABORATORY TEST RESULTS

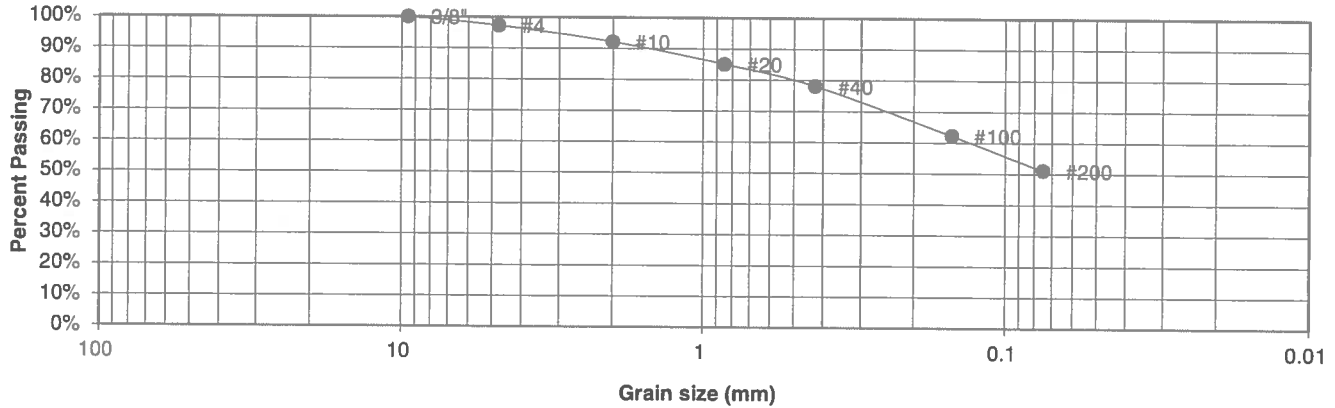
DRAWN:	DATE:	CHECKED:	DATE:
		<i>h</i>	2/1/19

JOB NO.:
190300

FIG NO.:

<u>UNIFIED CLASSIFICATION</u>	CL	<u>CLIENT</u>	TECH CONTRACTORS
<u>SOIL TYPE #</u>	3	<u>PROJECT</u>	ROLLING HILLS
<u>TEST BORING #</u>	48	<u>JOB NO.</u>	190300
<u>DEPTH (FT)</u>	20	<u>TEST BY</u>	BL

**Sieve Analysis
Grain Size Distribution**



<u>U.S. Sieve #</u>	<u>Percent Finer</u>
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	97.3%
10	92.1%
20	85.1%
40	78.1%
100	62.2%
200	51.1%

Atterberg
Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



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505 ELKTON DRIVE
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**LABORATORY TEST
RESULTS**

DRAWN:	DATE:	CHECKED: L	DATE: 7/1/19
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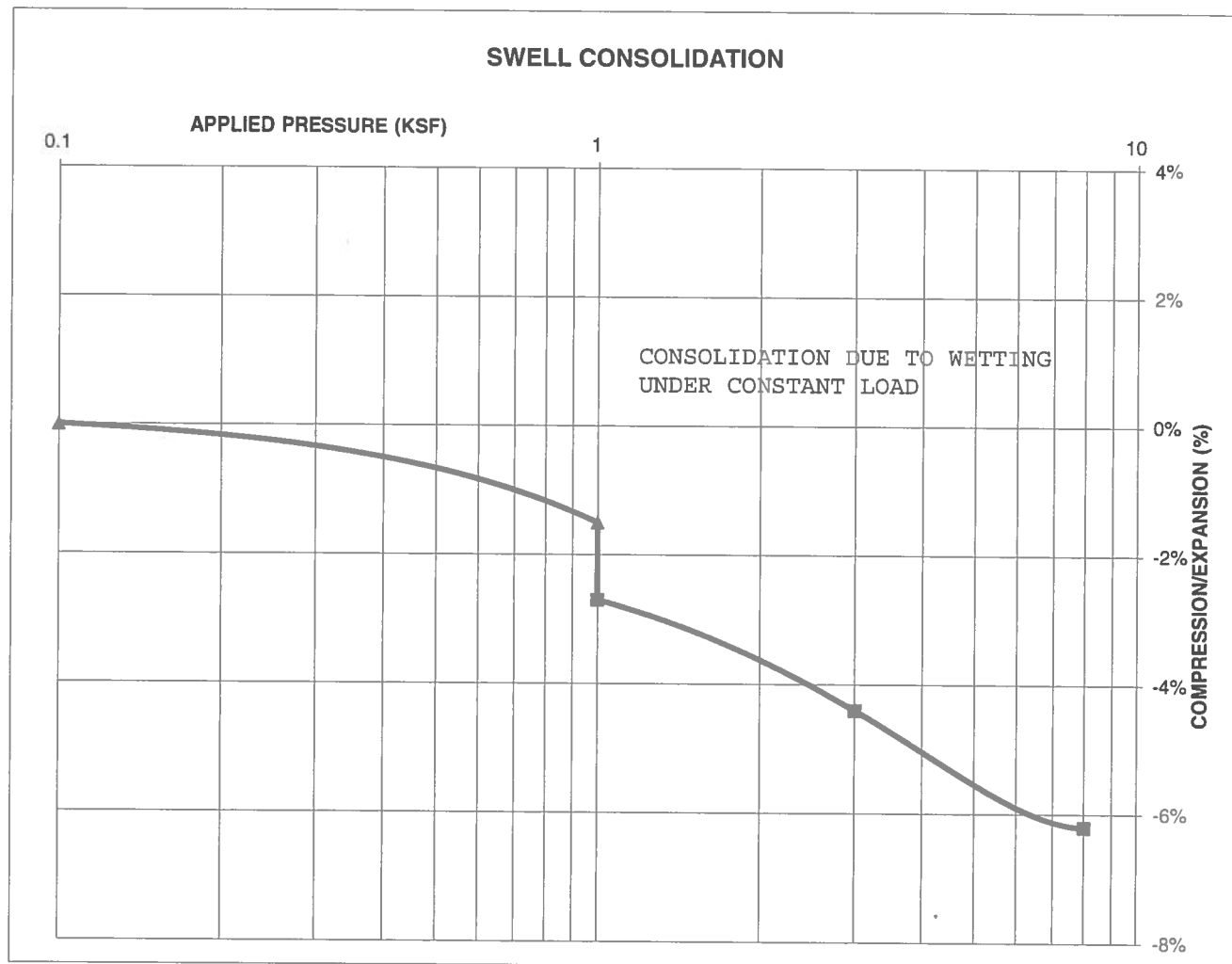
JOB NO.:
190300

FIG NO.:

CONSOLIDATION TEST RESULTS

TEST BORING #	19	DEPTH(ft)	2-3
DESCRIPTION	SM	SOIL TYPE	1
NATURAL UNIT DRY WEIGHT (PCF)			113
NATURAL MOISTURE CONTENT			10.0%
SWELL/CONSOLIDATION (%)			-1.2%

JOB NO. 190300
CLIENT TECH CONTRACTORS
PROJECT ROLLING HILLS



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SWELL CONSOLIDATION TEST RESULTS

DRAWN:

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DATE:

[Signature] 7/1/19

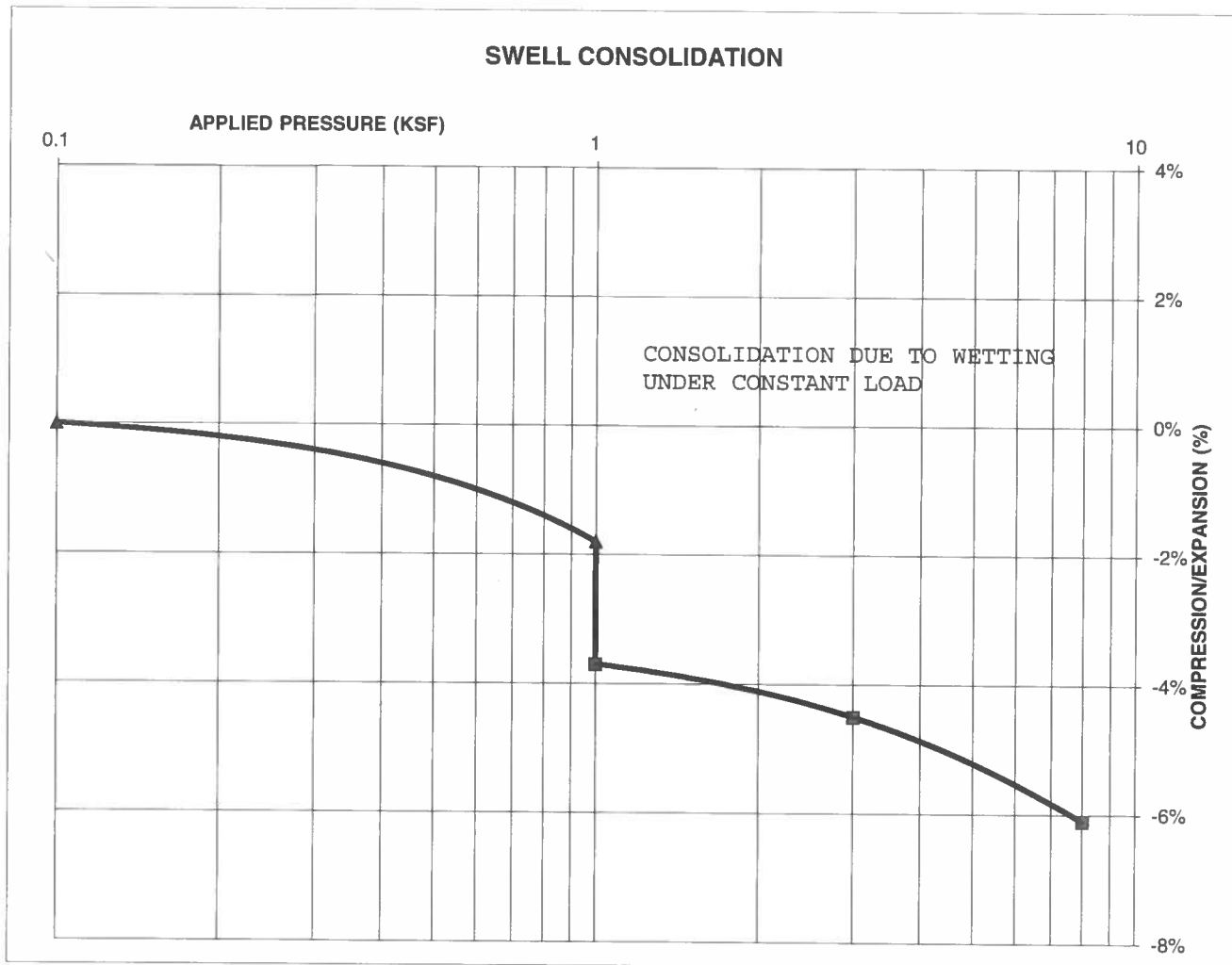
JOB NO.:
190300

FIG NO.:

CONSOLIDATION TEST RESULTS

TEST BORING #	4	DEPTH(ft)	20
DESCRIPTION	SC	SOIL TYPE	2
NATURAL UNIT DRY WEIGHT (PCF)			110
NATURAL MOISTURE CONTENT			9.3%
SWELL/CONSOLIDATION (%)			-1.9%

JOB NO. 190300
 CLIENT TECH CONTRACTORS
 PROJECT ROLLING HILLS



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505 ELKTON DRIVE
 COLORADO SPRINGS, COLORADO 80907

SWELL CONSOLIDATION TEST RESULTS

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DATE: 7/1/19

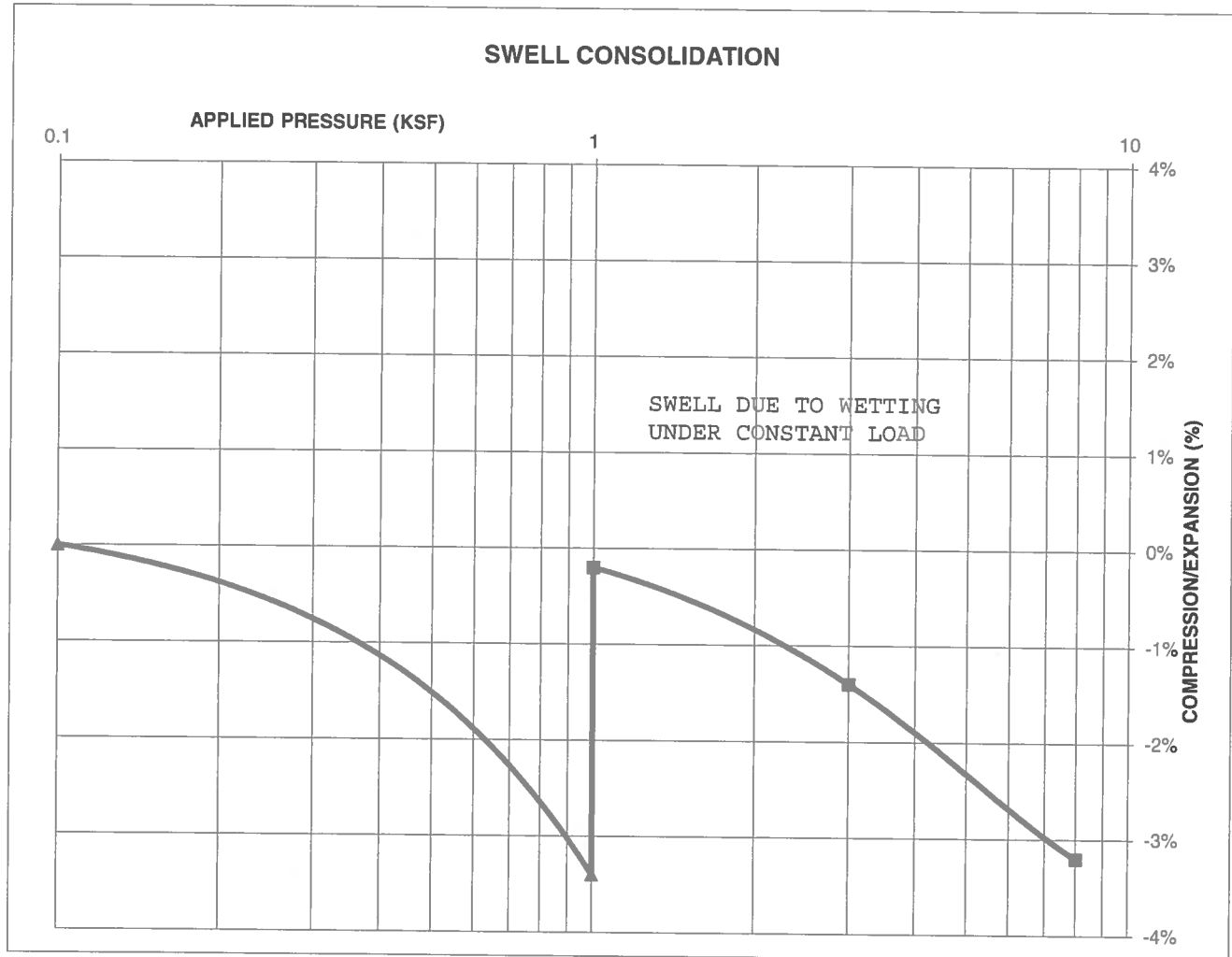
JOB NO.:
 190300

FIG NO.:

CONSOLIDATION TEST RESULTS

TEST BORING #	20	DEPTH(ft)	20
DESCRIPTION	SC	SOIL TYPE	2
NATURAL UNIT DRY WEIGHT (PCF)			84
NATURAL MOISTURE CONTENT			7.4%
SWELL/CONSOLIDATION (%)			3.2%

JOB NO.	190300
CLIENT	TECH CONTRACTORS
PROJECT	ROLLING HILLS



**ENTECH
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505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

SWELL CONSOLIDATION TEST RESULTS

DRAWN:

DATE:

CHECKED:

DATE:

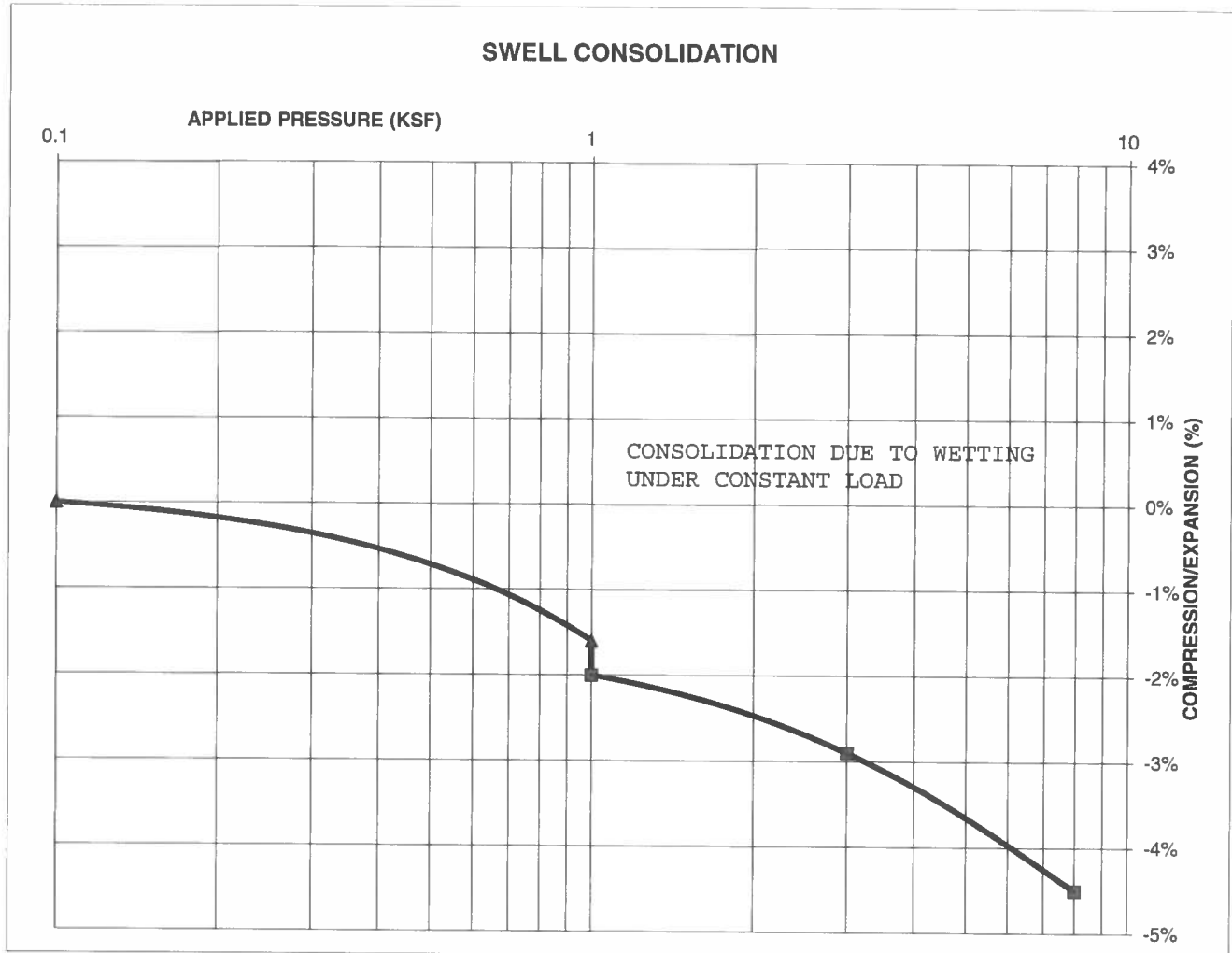
JOB NO.:
190300

FIG NO.:

CONSOLIDATION TEST RESULTS

TEST BORING #	29	DEPTH(ft)	10
DESCRIPTION	SC	SOIL TYPE	2
NATURAL UNIT DRY WEIGHT (PCF)			120
NATURAL MOISTURE CONTENT			4.5%
SWELL/CONSOLIDATION (%)			-0.4%

JOB NO. 190300
 CLIENT TECH CONTRACTORS
 PROJECT ROLLING HILLS



**ENTECH
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505 ELKTON DRIVE
 COLORADO SPRINGS, COLORADO 80907

SWELL CONSOLIDATION TEST RESULTS

DRAWN:

DATE:

CHECKED: *h*

DATE:

7/14/19

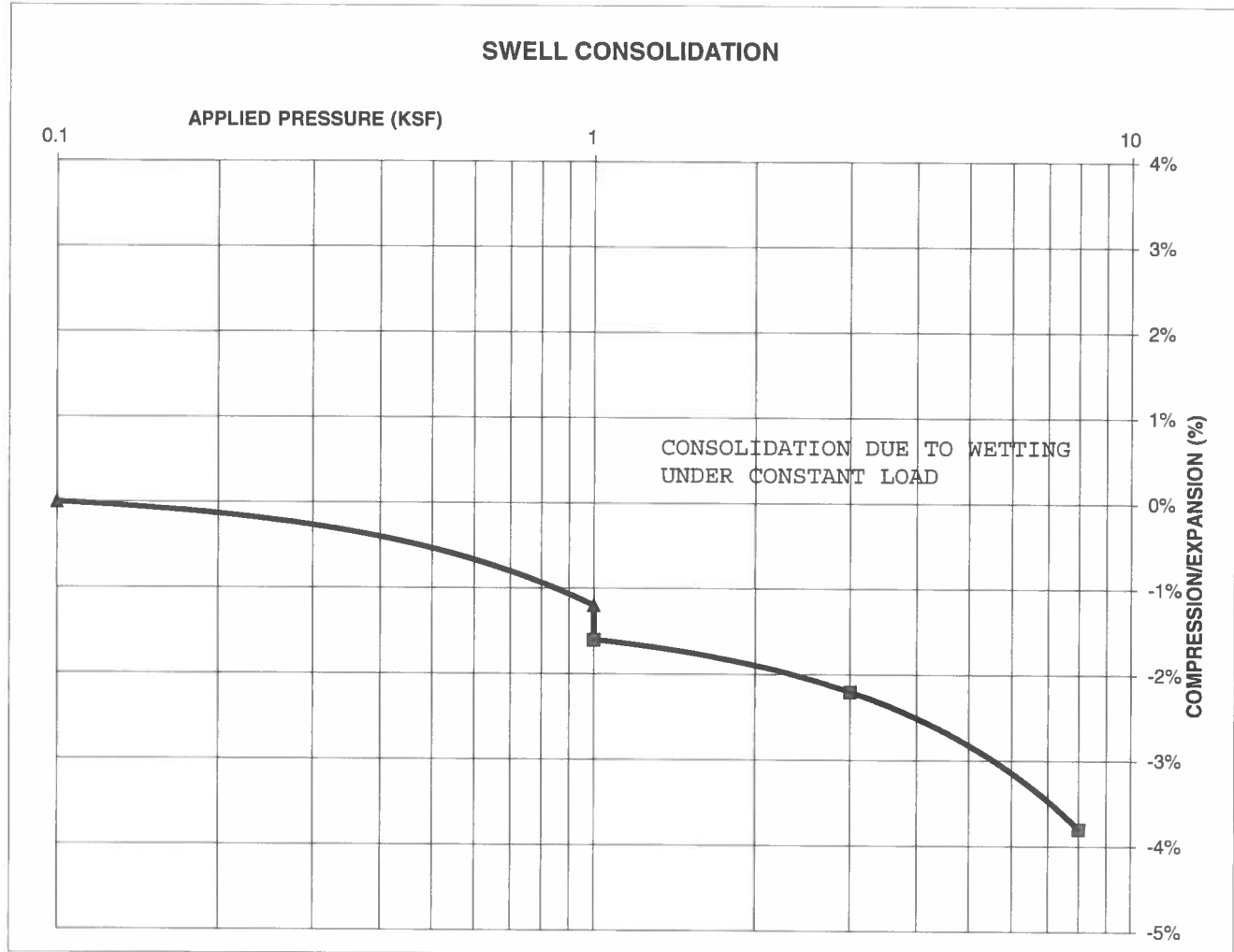
JOB NO.:
190300

FIG NO.:

CONSOLIDATION TEST RESULTS

TEST BORING #	37	DEPTH(ft)	5
DESCRIPTION	SC	SOIL TYPE	2
NATURAL UNIT DRY WEIGHT (PCF)	117		
NATURAL MOISTURE CONTENT	11.4%		
SWELL/CONSOLIDATION (%)	-0.4%		

JOB NO. 190300
CLIENT TECH CONTRACTORS
PROJECT ROLLING HILLS



**ENTECH
ENGINEERING, INC.**

505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

SWELL CONSOLIDATION TEST RESULTS

DRAWN:

DATE:

CHECKED: *h*

DATE: 7/1/19

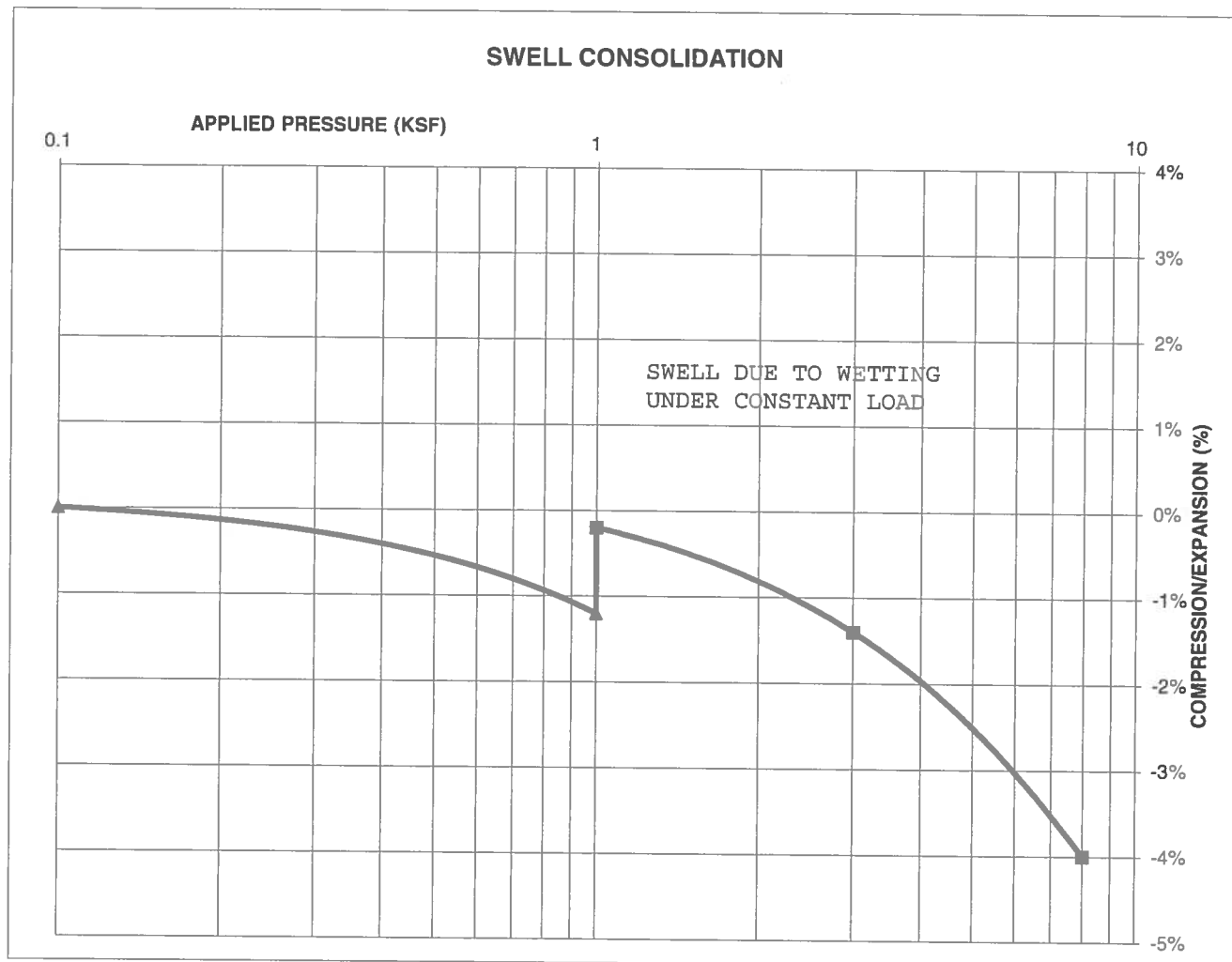
JOB NO.:
190300

FIG NO.:

CONSOLIDATION TEST RESULTS

TEST BORING #	15	DEPTH(ft)	10
DESCRIPTION	CL	SOIL TYPE	3
NATURAL UNIT DRY WEIGHT (PCF)	127		
NATURAL MOISTURE CONTENT	7.2%		
SWELL/CONSOLIDATION (%)	1.0%		

JOB NO. 190300
CLIENT TECH CONTRACTORS
PROJECT ROLLING HILLS



**ENTECH
ENGINEERING, INC.**

505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

SWELL CONSOLIDATION TEST RESULTS

DRAWN:

DATE:

CHECKED:

DATE:

6/7/19

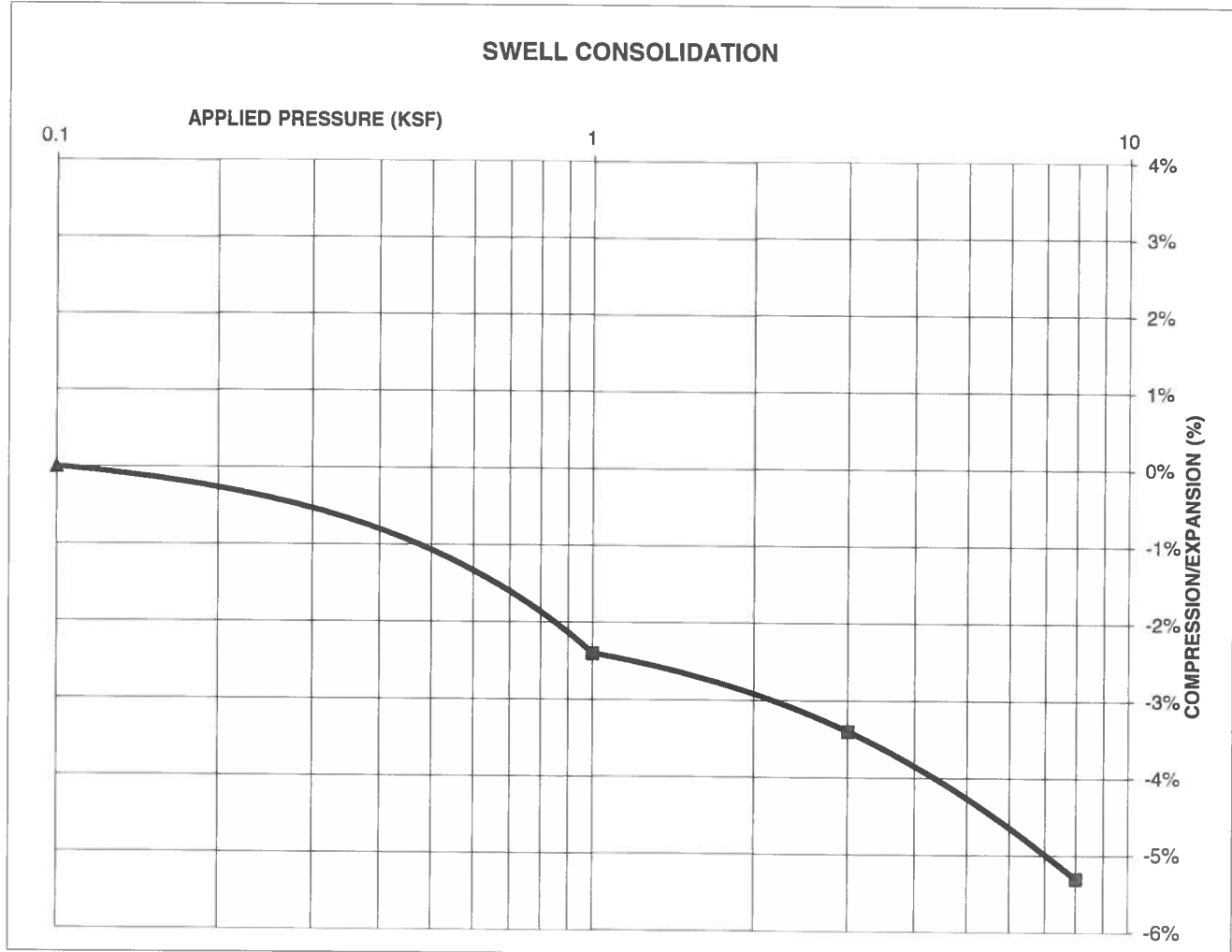
JOB NO.:
190300

FIG NO.:

CONSOLIDATION TEST RESULTS

TEST BORING #	16	DEPTH(ft)	20
DESCRIPTION	CL	SOIL TYPE	3
NATURAL UNIT DRY WEIGHT (PCF)	121		
NATURAL MOISTURE CONTENT	9.5%		
SWELL/CONSOLIDATION (%)	0.0%		

JOB NO.	190300
CLIENT	TECH CONTRACTORS
PROJECT	ROLLING HILLS



**ENTECH
ENGINEERING, INC.**

505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

SWELL CONSOLIDATION TEST RESULTS

DRAWN:

DATE:

CHECKED

DATE:

7/1/19

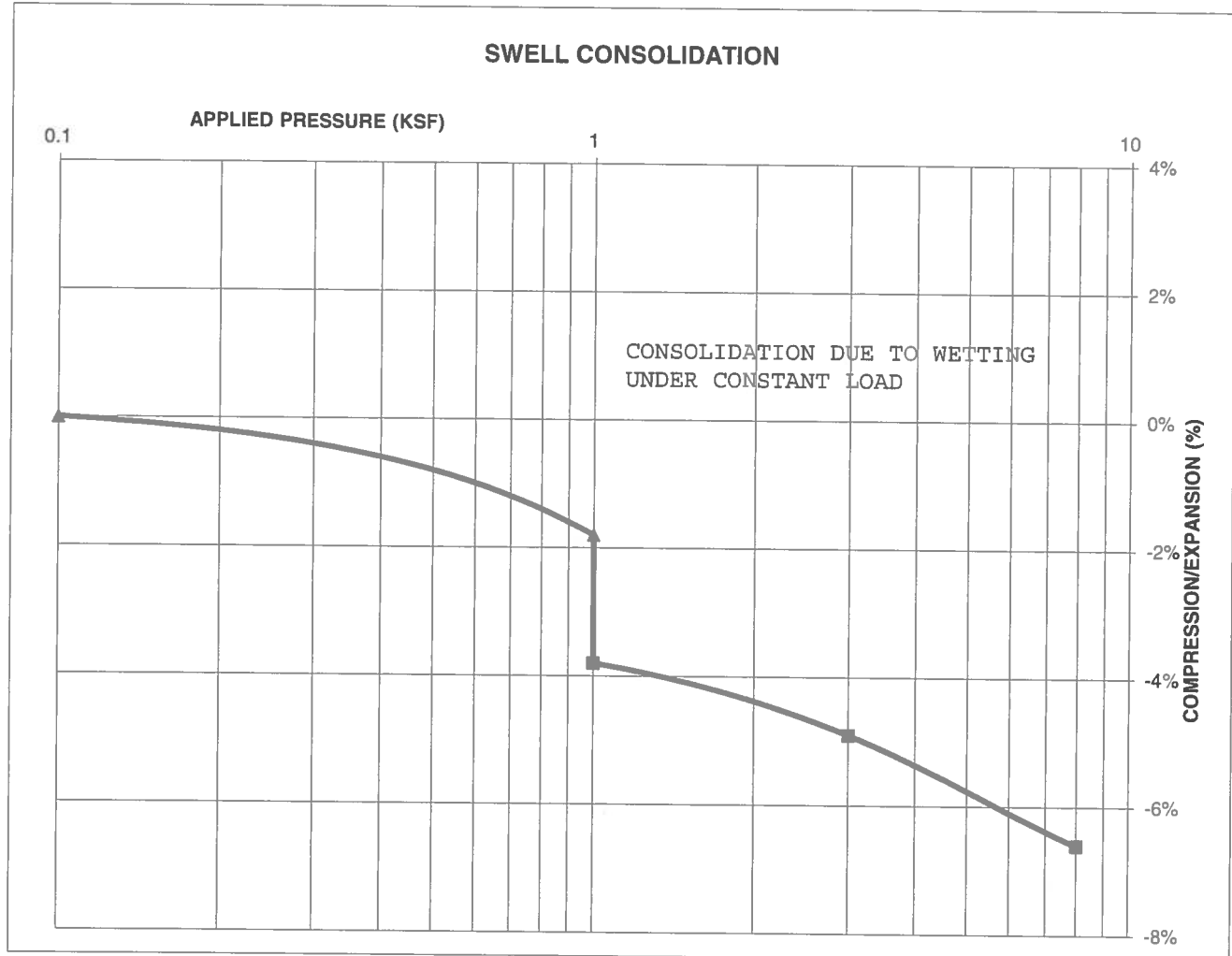
JOB NO.:
190300

FIG NO.:

CONSOLIDATION TEST RESULTS

TEST BORING #	22	DEPTH(ft)	10
DESCRIPTION	CL	SOIL TYPE	3
NATURAL UNIT DRY WEIGHT (PCF)			99
NATURAL MOISTURE CONTENT			12.7%
SWELL/CONSOLIDATION (%)			-2.0%

JOB NO. 190300
CLIENT TECH CONTRACTORS
PROJECT ROLLING HILLS



**ENTECH
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505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

SWELL CONSOLIDATION TEST RESULTS

DRAWN:

DATE:

CHECKED:

DATE:

2/11/19

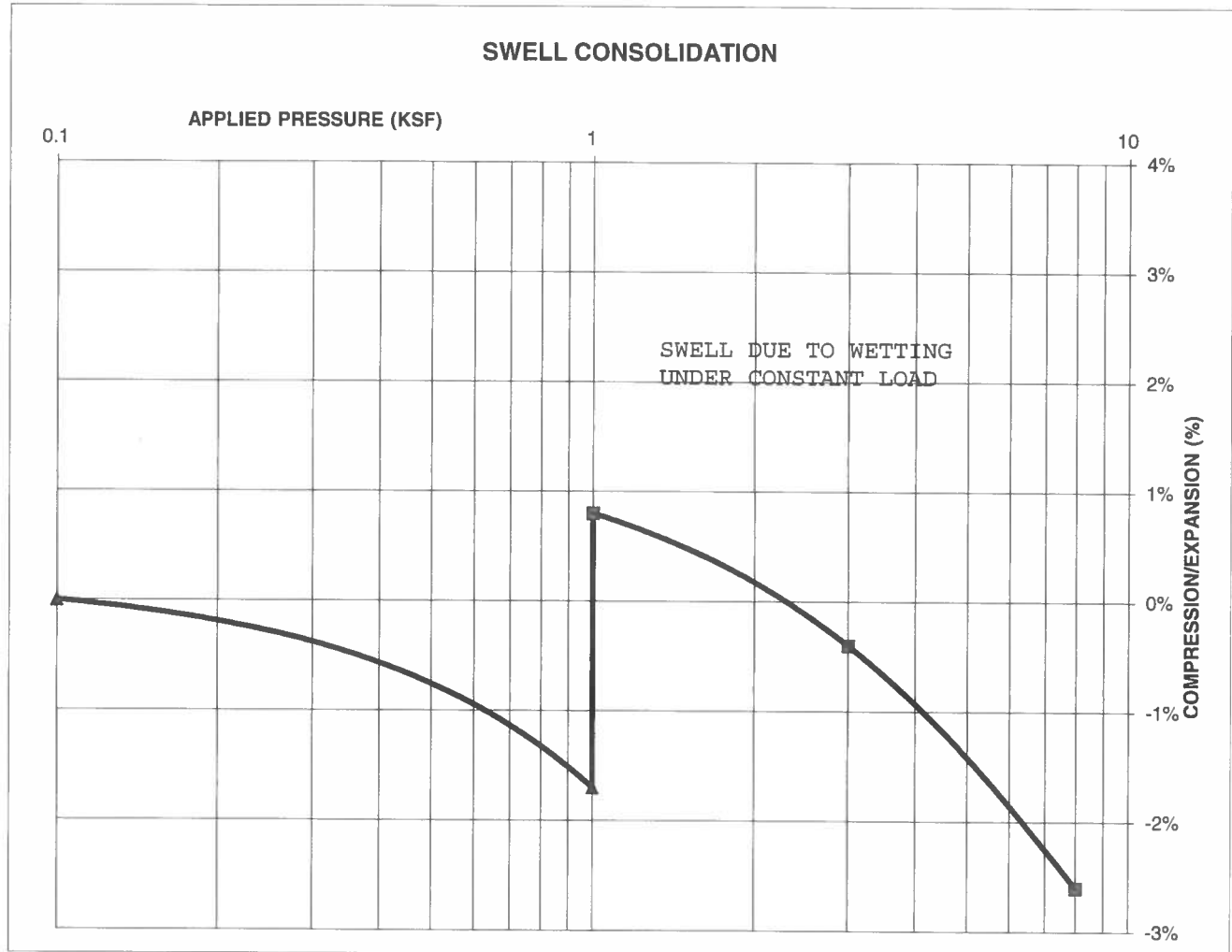
JOB NO.:
190300

FIG NO.:

CONSOLIDATION TEST RESULTS

TEST BORING #	33	DEPTH(ft)	10
DESCRIPTION	0	SOIL TYPE	3
NATURAL UNIT DRY WEIGHT (PCF)			115
NATURAL MOISTURE CONTENT			16.5%
SWELL/CONSOLIDATION (%)			2.5%

JOB NO. 190300
 CLIENT TECH CONTRACTORS
 PROJECT ROLLING HILLS



**ENTECH
ENGINEERING, INC.**

505 ELKTON DRIVE
 COLORADO SPRINGS, COLORADO 80907

SWELL CONSOLIDATION TEST RESULTS

DRAWN:

DATE:

CHECKED: *h*

DATE: 7/1/19

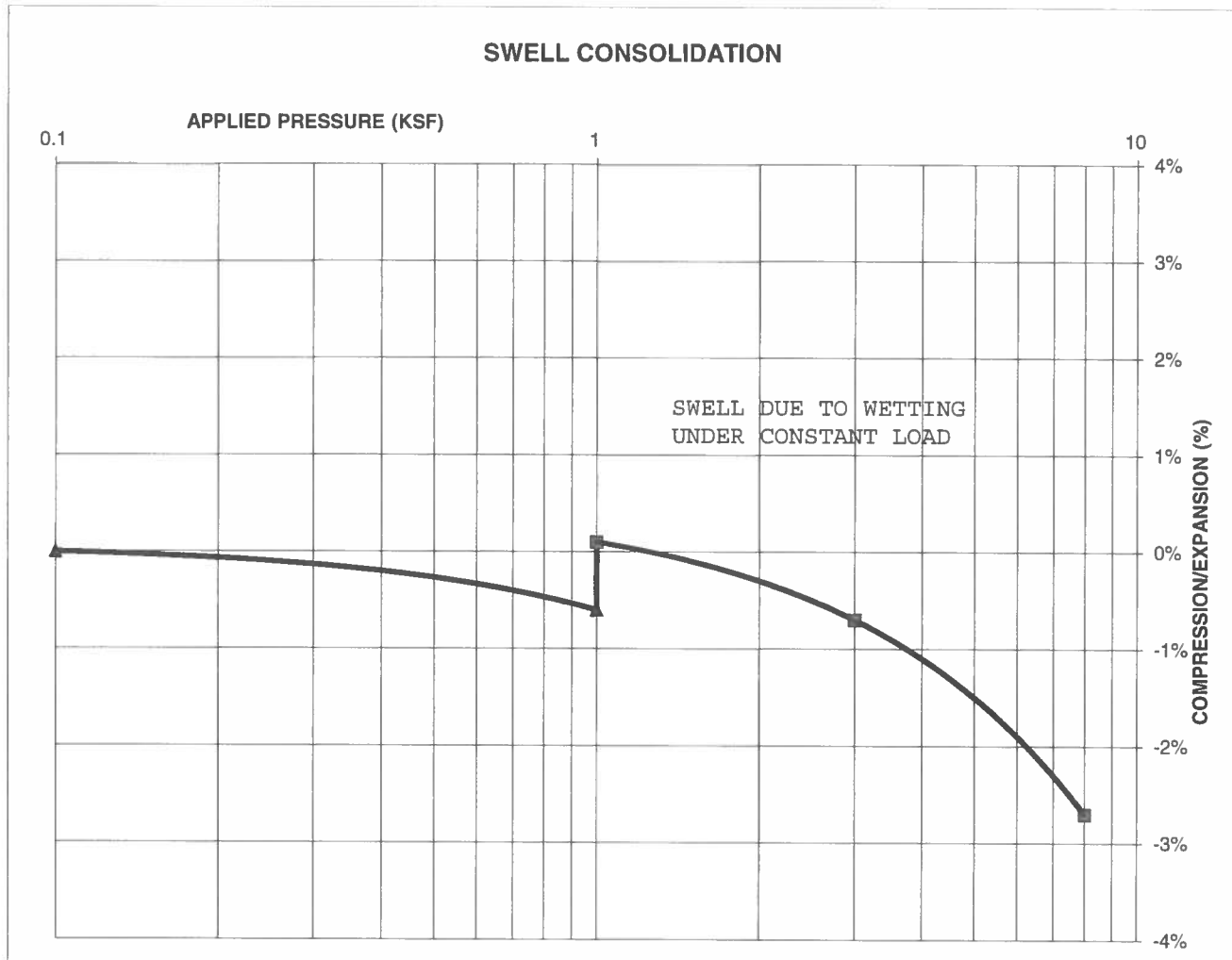
JOB NO.:
190300

FIG NO.:

CONSOLIDATION TEST RESULTS

TEST BORING #	34	DEPTH(ft)	10
DESCRIPTION	CL	SOIL TYPE	3
NATURAL UNIT DRY WEIGHT (PCF)	114		
NATURAL MOISTURE CONTENT	11.5%		
SWELL/CONSOLIDATION (%)	0.7%		

JOB NO. 190300
 CLIENT TECH CONTRACTORS
 PROJECT ROLLING HILLS



**ENTECH
ENGINEERING, INC.**

505 ELKTON DRIVE
 COLORADO SPRINGS, COLORADO 80907

SWELL CONSOLIDATION TEST RESULTS

DRAWN:

DATE:

CHECKED: *h*

DATE: *7/1/19*

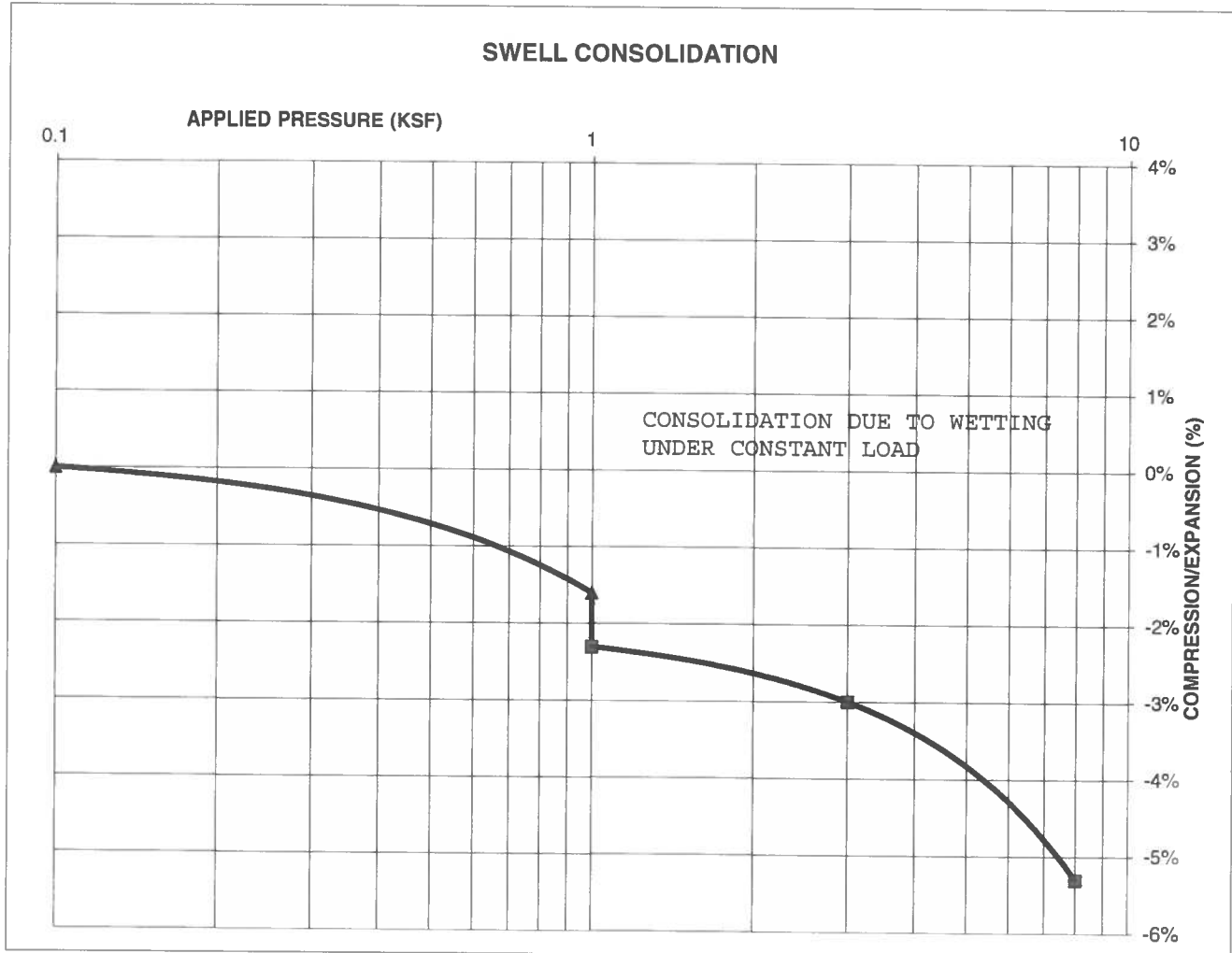
JOB NO.:
190300

FIG NO.:

CONSOLIDATION TEST RESULTS

TEST BORING #	48	DEPTH(ft)	20
DESCRIPTION	CL	SOIL TYPE	3
NATURAL UNIT DRY WEIGHT (PCF)			103
NATURAL MOISTURE CONTENT			12.5%
SWELL/CONSOLIDATION (%)			-0.7%

JOB NO.	190300
CLIENT	TECH CONTRACTORS
PROJECT	ROLLING HILLS



**ENTECH
ENGINEERING, INC.**

505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

SWELL CONSOLIDATION TEST RESULTS

DRAWN:

DATE:

CHECKED: *[Signature]*

DATE: 7/1/19

JOB NO.:
190300

FIG NO.:

CLIENT	TECH CONTRACTORS	JOB NO.	190300
PROJECT	ROLLING HILLS	DATE	3/28/2019
LOCATION	ROLLING HILLS	TEST BY	BL

BORING NUMBER	DEPTH, (ft)	SOIL TYPE NUMBER	UNIFIED CLASSIFICATION	WATER SOLUBLE SULFATE, (wt%)
TB-6	2-3	1	SM-SW	<0.01
TB-10	5	1	SC	0.01
TB-6	20	2	SC	<0.01
TB-9	15	2	SM	<0.01
TB-23	2-3	1	SM	0.00
TB-37	5	2	SC	0.00
TB-40	10	2	SM	<0.01
TB-13	2-3	1	SW	0.00
TB-14	20	2	SM	<0.01
TB-15	10	3	CL	<0.01
TB-31	5	1	SM-SW	<0.01
TB-39	5	1	SM	<0.01
TB-39	15	2	SC	<0.01
TB-22	10	3	CL	<0.01
TB-28	2-3	1	SW	<0.01
TB-28	15	2	SC	0.00
TB-26	5	1	SM-SW	<0.01
TB-38	2-3	1	SM-SW	<0.01
TB-38	15	3	CL	0.03
TB-48	20	3	CL	0.00

QC BLANK PASS



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COLORADO SPRINGS, COLORADO 80907

**LABORATORY TEST
SULFATE RESULTS**

DRAWN:

DATE:

CHECKED:

DATE:

[Signature] 7/1/19

JOB NO.:
190300

FIG NO.: