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SOILS AND GEOLOGY STUDY
MERIDIAN RANCH – ROLLING HILLS RANCH NORTH
FILING NOS. 1 AND 2
EL PASO COUNTY, COLORADO

Prepared for:
Tech Contractors
3575 Kenyon Street, Suite 200
San Diego, California 92110

Attn: Raul Guzman

February 12, 2024

Respectfully Submitted,

ENTECH ENGINEERING, INC.

Logan L. Langford, P.G.
Sr. Geologist

Reviewed by:

COLORADO REGISTERED
JOSEPH COLLIN GOODE JR.
23725
PROFESSIONAL ENGINEER

Joseph C Goode Jr.
Digitally signed by Joseph C Goode Jr.
Date: 2024.02.12 14:16:12 -07'00'

Joseph C. Goode Jr., P.E.
President

LLL

EPC: PUD SP-235

Table of Contents

1 SUMMARY

Project Location

The project lies in a portion of N½ of Section 20, Township 12 South, Range 64 West of the 6th Principal Meridian in El Paso County, Colorado. The site is located approximately five miles northeast of Colorado Springs in northern El Paso County, Colorado, northeast of the intersection of Estate Ridge Drive and Rex Road in the Meridian Ranch Subdivision.

Project Description

Meridian Ranch – Rolling Hills Ranch North Filing Nos. 1 and 2 will consist of the development of approximately 147 acres with two hundred and twenty-four (224) lots proposed. The proposed development is to consist of single-family residential lots, which will be serviced by Woodmen Hills Metropolitan District.

Scope of Report

This report presents the results of our geologic evaluation and treatment of engineering geologic hazard study.

Land Use and Engineering Geology

This site was found to be suitable for the proposed development. Areas were encountered where the geologic conditions will impose some minor constraints on development and land use. These include areas of expansive soils, shallow bedrock, seasonally shallow groundwater areas, and potential for elevated radon levels. Based on the proposed development plan, it appears that these areas will have some impact on the development. These conditions will be discussed in greater detail in the report.

In general, it is our opinion that the development can be achieved if the observed geologic conditions on site are either avoided or properly mitigated. All recommendations are subject to the limitations discussed in the report.

2 GENERAL SITE CONDITIONS AND PROJECT DESCRIPTION

The site is located in a portion of N½ of Section 20, Township 12 South, Range 64 West of the 6th Principal Meridian in El Paso County, Colorado. The site is located approximately five miles northeast of Colorado Springs in northern El Paso County, Colorado, northeast of the intersection of Estate Ridge Drive and Rex Road in the Meridian Ranch Subdivision. The location of the site is as shown on the Vicinity Map, Figure 1.

The topography of the site is gently rolling hills and valleys with a general southeast-sloping trend. A drainage is located through the central portion of the site, and a minor drainage swale in the northeastern portion of the site within a proposed open space area. Vegetation consisted of field grasses and weeds. Existing residences and proposed developments are located to the west and southwest of the site, undeveloped land lies immediately north, south, and east and Eastonville Road to the east. The site boundaries are indicated on the USGS Map, Figure 2. Previous land uses have consisted of undeveloped grazing and pasture land. Site photographs, taken February 1, 2024, are included in Appendix A.

Meridian Ranch – Rolling Hills Ranch North Filing Nos. 1 and 2 will consist of the development of approximately 147 acres with two hundred and twenty-four (224) residential lots proposed. The development is to consist of single-family residential, which will be serviced by Woodmen Hills Metropolitan District. Site grading plans indicated cuts up to 21 feet and fills up to 12 feet. The majority of the cuts and fills were in the 2 to 8-foot range. Figure 4 shows the Cut/Fill Map. At the time of our site observations and field mapping the grading was completed. The Development Plan/Test Boring Location Map is presented in Figure 3.

3 SCOPE OF THE REPORT

The scope of the report will include a general geologic analysis utilizing published geologic data. Detailed site-specific mapping will be conducted to obtain general information in respect to major geographic and geologic features, geologic descriptions and their effects on the development of the property.

4 FIELD INVESTIGATION

Our field investigation consisted of the preparation of a geologic map of any bedrock features and significant surficial deposits. The Natural Resource Conservation Service (NRCS), previously the Soil Conservation Service (SCS) survey was also reviewed to evaluate the site. The position of mappable units within the subject property are shown on the Geologic Map. Our mapping procedures involved both field reconnaissance and measurements and air photo reconnaissance and interpretation. The same mapping procedures have also been utilized to produce the Engineering Geology Map which identified pertinent geologic conditions affecting development. The field mapping was performed by personnel of Entech Engineering, Inc. on February 1, 2024.

Nineteen Test Borings were drilled as part of the *Subsurface Soil Investigation,* dated April 20, 2022, Entech Job No. 220455 (Reference 1, Appendix B) to determine general soil and bedrock characteristics. This report was used in the preparation of the *Soils and Geology Study*. The locations of the test borings are indicated on the Exploration/Site Plan, Figure 3. The Test Boring Logs and Laboratory testing Results are included in Appendix B. Results of this testing will be discussed later in this report. The *Soil, Geology, and Geologic Hazard Evaluation for Meridian Ranch – Rolling Hills Ranch, Filings 1 through 4,* dated September 20, 2019, Entech Job No. 190300 (Reference 2) was also utilized in the preparation of this report.

5 SOIL, GEOLOGY, AND ENGINEERING GEOLOGY

5.1 General Geology

Physiographically, the site lies in the western portion of the Great Plains Physiographic Province. Approximately 17 miles to the west is a major structural feature known as the Rampart Range Fault. This fault marks the boundary between the Great Plains Physiographic Province and the Southern Rocky Mountain Province. The site exists within the southeastern edge of a large structural feature known as the Denver Basin. Bedrock in the area tends to be very gently dipping in a northerly direction (Reference 3). The rocks in the area of the site are sedimentary in nature and typically Upper Cretaceous in age. The bedrock underlying the site consists of the Dawson Formation. Overlying this formation are unconsolidated deposits of alluvial soils of Quaternary Age. The alluvial soils were deposited by water on site and as stream terraces along Sand Creek and the drainages located on the site. Man-made soils exist as fill piles located in the southern portion of the site. The site's stratigraphy will be discussed in more detail in Section 5.3.

5.2 Soil Conservation Survey

The Natural Resource Conservation Service (Reference 4), previously the Soil Conservation Service (Reference 5) has mapped two soil types on the site (Figure 5). In general, the soils classify as coarse sandy loam. The soils are described as follows:

Type	Description
19	Columbine Gravelly Sandy Loam, 0 to 3% slopes
83	Stapleton Sandy Loam, 3 to 8% slopes

Complete descriptions of each soil type are presented in Appendix C. The soils have generally been described to have moderate to moderately rapid permeabilities. Possible hazards with soil erosion are present on the site. The erosion potential can be controlled with vegetation. The majority of the soils have been described to have moderate erosion hazards

5.3 Site Stratigraphy

The Falcon Quadrangle Geology Map showing the site is presented in Figure 6 (Reference 6). The Geology Map prepared for the site is presented in Figure 7. Five mappable units were identified on this site which are described as follows:

Qda **Disturbed Area of Holocene Age:** These are the recent cut/fill operations for the development that have been completed. The fill placement was observed and tested by representatives of Entech, and the Cut/Fill Map is presented in Figure 4. The overlot fill density records are included in Appendix D.

Qaf **Artificial Fill of Holocene Age:** These recent man-made deposits associated with an erosion berm located in the northeastern portion of the site. The berm is currently located in the proposed open space area and will be avoided. Additionally, the grading for the development has been completed. The fill placement was observed and tested by representatives of Entech. The Cut/Fill Map is presented in Figure 4. The overlot fill density records are included in Appendix D.

Qa_1 **Alluvium One of late Holocene Age:** These are water deposited along the active drainage as stream terrace deposits that typically consist of silty to clayey sands and may contain clay layers. The Alluvium one correlates with the Post-Piney Creek Alluvium.

Qa_3 **Alluvium Three of late Pleistocene Age:** These are water deposited as stream terrace deposits that typically consist of silty to clayey sands and may contain clay layers. The Alluvium Three correlates with the Broadway Alluvium.

Tda **Dawson Arkose Formation of Tertiary Age:** The Dawson Formation typically consists of arkosic sandstone with interbedded fine-grained sandstone, siltstone and claystone. Overlying this formation is a variable layer of residual soil. The residual soils were derived from the in-situ weathering of the bedrock materials on-site. These soils consisted of silty sands and may contain layers of sandy clays.

The bedrock underlying the site consists of the Dawson Formation of Tertiary Age. The Dawson Formation typically consists of arkosic sandstone with interbedded fine-grained sandstone, siltstone and claystone. Overlying this formation are variable layers of man-placed fill deposits, alluvial deposits, and residual soil. The residual soils were derived from the in-situ weathering of the bedrock materials on-site. These soils consisted of silty to clayey sands and sandy clays.

The soils listed above were mapped from site-specific mapping, the *Geologic Map of the Falcon Quadrangle* distributed by the Colorado Geological Survey in 2012 (Reference 6), the *Geologic Map of the Colorado Springs-Castle Rock Area*, distributed by the US Geological Survey in 1981 (Reference 8), and the *Geologic Map of the Denver 1^0 x 2^0 Quadrangle*, distributed by the US Geological Survey in 1981 (Reference 8). The Test Borings used in evaluating the site and are included in Appendix B. The Geology/Engineering Geology Map prepared for the site is presented in Figure 7.

5.4 Soil Conditions

The soils encountered in the Test Borings can be grouped into three general soil types. The soils were classified using the Unified Soil Classification System (USCS).

Soil Type 1 classified as native silty to clayey to very clayey sand (SM, SC). The sand was encountered in all of the test borings at the existing ground surface and extending to depth ranging from 1 to 4 feet below ground surface (bgs). Standard Penetration Testing conducted on the sand resulted in SPT N-values ranging from 27 to 47 blows per foot (bpf), indicating medium dense to dense states. Water content and grain size testing of selected soil samples resulted in a water content range of 2 to 9 percent, and 40 percent of the soil particles passing the No. 200 sieve. Atterberg limits testing on a sample of very clayey sand resulted in a Liquid Limit of 40 and a

Plastic Index of 27. Swell/Consolidation testing on a sample of very clayey sand resulted in a volume change of 0.2 percent, indicating a low expansion potential. Sulfate testing resulted in less than 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 native sandy clay (CL). The clay was encountered in Test Boring Nos. 2 and 11 at the surface and extending to 3 and 4 feet bgs. Standard Penetration Testing conducted on the clay resulted in SPT N-values from 26 and 31, which indicates stiff consistencies. Water content and grain size testing resulted in a water content of 12 percent, and 83 to 90.5 percent of the soil particles passing the No. 200 sieve. Atterberg Limits testing resulted in Liquid Limit of 31 and a Plastic Index of 17. Swell/Consolidation testing on the clay resulted in volume changes of +1.0 to -1.1 percent, indicating low to moderate consolidation and expansion potential.

Soil Type 3 classified as slightly silty to silty to very clayey sandstone bedrock (SM-SW, SM, SC). The sandstone was encountered in all the test borings below the Type 1 and 2 soils, at 1 to 9 feet bgs and extending to various depths or to termination of borings (20 to 30 feet). Standard Penetration Testing conducted on the sandstone resulted in SPT N-values of 38 to greater than 50 bpf, which indicates dense to very dense states. Water content and grain size testing resulted in a water content range of 1 to 12, and 7 to 49 percent the soil size particles passing the No. 200 sieve. Atterberg limits testing on a sample of the slightly silty sandstone resulted in no values. Swell/Consolidation testing on the sandstone resulted in volume changes of -0.1 to -0.3 percent, indicating a low consolidation and expansion potential.

Soil Type 4 classified as a sandy to very sandy claystone (CL). The claystone was encountered below the surficial soils or interbedded in the sandstone at varying depths. Standard Penetration Testing on the claystone resulted in greater than 50 bpf, indicating hard consistencies. Water content and grain size testing resulted in 8 to 15 percent water content with 51 to 81 percent of soil size particles passing the No. 200 sieve. Atterberg limits testing resulted in liquid limits of 36 to 42 percent and plastic indexes of 19 to 22 percent. Swell/Consolidation testing of random claystone samples resulted in volume changes of -1.1 to +0.1, indicating a low to moderate consolidation potential and a low expansion potential. Sulfate testing indicated a negligible degradation potential due to sulfate attack.

The Test Boring Logs are presented in Appendix B. Laboratory Test Results are presented in Appendix C, and a Summary of Laboratory Test Results is presented in Table 1C.

5.5 Groundwater

Groundwater was only encountered in two of the test borings at a depth of 16 and 17 feet (TB-2 and TB-12). All other test borings were dry to the depth drilled. These areas are discussed in the following section. Fluctuation in groundwater conditions may occur due to variations in rainfall and other factors not readily apparent at this time. It should be noted that in the sandy materials on-site, some groundwater conditions might be encountered due to the variability in the soil profile. Isolated sand and gravel layers within the soils, sometimes only a few feet in thickness and width, can carry water in the subsurface. Groundwater may also flow on top of the underlying bedrock. Builders and planners should be cognizant of the potential for the occurrence of such subsurface water features during construction on-site and deal with each individual problem as necessary at the time of construction.

6 ENGINEERING GEOLOGY – IDENTIFICATION AND MITIGATION OF GEOLOGIC HAZARDS

Detailed mapping has been performed on this site to produce a Geology/Engineering Geology Map Figure 7. This map shows the location of various geologic conditions of which the developers should be cognizant during the planning, design and construction stages of the project. These hazards and the recommended mitigation techniques are as follows:

Artificial Fill – Constraint

These are areas of man-made fill associated with earthen berm in the northeastern portion of the site.

Mitigation: This erosion berm will be avoided. Any uncontrolled fill encountered beneath foundations will require removal and recompaction at a minimum of 95% of its maximum Modified Procter Dry Density, ASTM D-1557.

Disturbed Area – Constraint

This area is associated with the grading for the development has been completed. The fill placement was observed and tested by representatives of Entech, and the Cut/Fill Map is presented in Figure 4. The overlot fill density records are included in Appendix D. The fill is considered controlled for construction purposes, however, where clay or claystone are encountered mitigation for expansive soils will be required.

Expansive Soils – Constraint

Expansive soils were encountered in the test borings drilled on site. These occurrences are typically sporadic; therefore, none have been indicated on the maps. The clays and claystone, if encountered at foundation grade, can cause differential movement in structures. These occurrences should be identified and dealt with on an individual basis.

Mitigation Should expansive soils be encountered beneath foundations; mitigation will be necessary. Mitigation of expansive soils will require special foundation design. Overexcavation 3 to 5 feet and replacement with non-expansive soils at a minimum of 95% of its maximum Modified Proctor Dry Density, ASTM D-1557 is a suitable mitigation, which is common in the area. Floor slabs on expansive soils should be expected to experience movement. Overexcavation and replacement has been successful in minimizing slab movements. The use of structural floors should be considered for basement construction on highly expansive clays. Final recommendations should be determined after additional investigation of the building sites.

Shallow Bedrock – Constraint

Bedrock was encountered in all the test borings at depths ranging from 1 to 9 feet. Shallow bedrock will be encountered in some areas of this site. Where claystone or sandstone are encountered, excavation/grading may be difficult requiring track-mounted excavators. Bedrock will likely be encountered cuts for utility excavations.

Groundwater and Floodplain Areas – Constraint

The site is not mapped within floodplain zones according to the FEMA Map No. 08041CO552G, Figure 8 (Reference 7). A drainage is located through the central portion of the site, and a minor drainage swale in the northeastern portion of the site within a proposed open space area. The main drainage through the central portion of the site is within a drainage easement and will be avoided with developed lots. These areas are discussed as follows:

Seasonal Shallow Groundwater Area – Constraint

In these areas, we would anticipate the potential for periodically high subsurface moisture conditions, frost heave potential and highly organic soils. These areas are associated with the drainage through the central portion of the site which will be avoided by the construction on the lots. Construction of the roadway crossing the drainage and utility installation may encounter shallow groundwater, and may require the use of temporary dewatering measures.

Mitigation: Foundations must have a minimum 30-inch depth for frost protection. In areas where high subsurface moisture conditions are anticipated periodically, subsurface perimeter drains are

recommended to help prevent the intrusion of water into areas below grade. Areas may experience higher groundwater levels during period of higher precipitation where water can flow through permeable sands on top of less permeable bedrock materials. Subsurface perimeter drains may be necessary to prevent the intrusion of water into areas below grade. Typical drain details are presented in Figure 9. Where shallow groundwater is encountered, underslab drains or interceptor drains may be necessary. Typical drain details are presented in Figures 9 and 11. Specific recommendations should be made after additional investigation of the lots has been completed.

Radon – Hazard

Radon levels for the area have been reported by the Colorado Geologic Survey in the open file, Report No. 91-4 (Reference 11). Average Radon levels for the 80831-zip code is 4.50 pCi/l. The following is a table of radon levels in this area:

	80831
0 < 4 pCi/l	0.00%
4 < 10 pCi/l	100.00%
10 < 20 pCi/l	0.00%
> 20 pCi/l	0.00%

Mitigation:

The potential for high radon levels is present for the site. Build-up of radon gas can usually be mitigated by providing increased ventilation of basement and crawlspace and sealing joints. Specific requirements for mitigation should be based on site specific testing.

6.1 Relevance of Geologic Conditions to Land Use Planning

As mentioned earlier in this report, we understand that the development will be single-family residential. It is our opinion that the existing geologic and engineering geologic conditions will impose some minor constraints on the proposed development and construction. The constraints affecting development will be those associated with the expansive soils, shallow bedrock, and potential for elevated radon levels on the site that can be satisfactorily mitigated through proper engineering design and construction practices or avoidance. Shallow groundwater areas will be encountered during road construction across the drainage.

The upper residual soils are typically at medium to very dense states. The granular soils encountered in the upper soil profiles of the test borings should provide good support for foundations.

The overlot grading was performed prior to the completion of this report. Overlot fill placement was observed and tested by representatives of Entech. The Cut/Fill Map is presented in Figure 4. The overlot fill density records are included in Appendix D. The fill is considered controlled for construction purposes, however, where clay or claystone are encountered mitigation for expansive soils will be required.

Expansive soils were encountered on portions of the site that will require mitigation. Foundations anticipated for the site are standard spread footings possibly in conjunction with overexcavation in areas of expansive soils. Areas containing arkosic sandstone will have high allowable bearing conditions. Difficult excavation should be anticipated in areas of shallow bedrock. Expansive layers may also be encountered in the soil and bedrock on this site. Areas of expansive soils encountered on site are sporadic; therefore, none have been indicated on the maps. Expansive soils, if encountered, will require special foundation design and/or overexcavation. These soils will not prohibit development. Bearing capacities of 2000 to 2400 psf for granular soils or structural fill, and 3000 to 3500 psf for undisturbed sandstone are anticipated. Site specific subsurface investigations will need to be conducted and recommendations provided prior to construction.

Areas of seasonal shallow groundwater were observed on site. These areas will be avoided by the development of the lots, however, construction of the roadway crossing drainage and utility installation may encounter shallow groundwater, and may require the use of temporary dewatering measures. Subsurface perimeter drains will be recommended for all basements; typical perimeter drain details are presented in Figure 9. If shallow groundwater is encountered, underslab drains or interceptor drains may be necessary. Typical drain details are presented in Figures 9 and 11. Specific recommendations should be made after additional investigation of the lots has been completed.

In summary, development of the site can be achieved if the items mentioned above are mitigated. These items can be mitigated through proper design and construction or through avoidance. Investigation on each lot is recommended prior to construction.

7 ECONOMIC MINERAL RESOURCES

Some of the sandy materials on-site could be considered a low-grade sand resource. According to the *El Paso County Aggregate Resource Evaluation Map* (Reference 12) and the *Atlas of Sand, Gravel and Quarry Aggregate Resources, Colorado Front Range Counties* distributed by the Colorado Geological Survey (Reference 13), the area is mapped with U4-upland deposits (probable aggregate resource) and A3-Alluvial Fan deposits (sand, fine aggregate resource). According to the *Evaluation of Mineral and Mineral Fuel Potential* (Reference 14), the area of the site has been mapped as "Fair" for industrial minerals. However, considering the silty nature of much of these materials and abundance of similar materials through the region and the close proximity to developed land, they would be considered to have little significance as an economic resource.

According to *the Evaluation of Mineral and Mineral Fuel Potential of El Paso County State Mineral Lands* (Reference 14), the site is mapped within the Denver Basin Coal Region. However, the area of the site has been mapped as "Poor" for coal resources. No active or inactive mines have been mapped in the area of the site. No metallic mineral resources have been mapped on-site (Reference 14).

The site has been mapped as "Fair" for oil and gas resources (Reference 14). No oil or gas fields have been discovered in the area of the site. The sedimentary rocks in the area may lack the geologic structure for trapping oil or gas; therefore, it may not be considered a significant resource. Hydraulic fracturing is a new method that is being used to extract oil and gas from rocks. It utilizes pressurized fluid to extract oil and gas from rocks that would not normally be productive. The area of the site has not been explored to determine if the rocks underlying the site would be commercially viable utilizing hydraulic fracturing. The practice of hydraulic fracturing has come under review due to concerns about environmental impacts, health and safety.

8 EROSION CONTROL

The soil types observed on the site are mildly to highly susceptible to wind erosion, and moderately to highly susceptible to water erosion. A minor wind erosion and dust problem may be created for a short time during and immediately after construction. Should the problem be considered severe enough during this time, watering of the cut areas or the use of chemical palliative may be required to control dust. However, once construction has been completed and vegetation re-established, the potential for wind erosion should be considerably reduced.

With regard to water erosion, loosely compacted soils will be the most susceptible to water erosion, residually weathered soils become increasingly less susceptible to water erosion. For the typical soils observed on-site, allowable velocities or unvegetated and unlined earth channels would be on the order of 3 to 4 feet/second, depending upon the sediment load carried by the water. Permissible velocities may be increased through the use of vegetation to something on the order of 4 to 7 feet/second, depending upon the type of vegetation established. Should the anticipated velocities exceed these values, some form of channel lining material may be required to reduce erosion potential. These might consist of some of the synthetic channel lining materials on the market or conventional riprap. In cases where ditch-lining materials are still insufficient to control erosion, small check dams or sediment traps may be required. The check dams will serve to reduce flow velocities, as well as provide small traps for containing sediment. The determination of the amount, location and placement of ditch linings, check dams and of the special erosion control features should be performed by or in conjunction with the drainage engineer who is more familiar with the flow quantities and velocities.

Cut and fill slope areas will be subjected primarily to sheetwash and rill erosion. Unchecked rill erosion can eventually lead to concentrated flows of water and gully erosion. The best means to combat this type of erosion is, where possible, the adequate re-vegetation of cut and fill slopes. Cut and fill slopes having gradients more than three (3) horizontal to one (1) vertical become increasingly more difficult to revegetate successfully. Therefore, recommendations pertaining to the vegetation of the cut and fill slopes may require input from a qualified landscape architect and/or the Soil Conservation Service.

9 ROADWAY, EMBANKMENT, AND STORMWATER DETENTION FACILITY CONSTRUCTION RECOMMENDATIONS

In general, the site soils are suitable for the proposed roadways and embankments. Groundwater may be encountered in deeper cuts and along drainages and low-lying areas. Additional investigation of these areas is recommended as plans are completed. If excavations encroach on the groundwater level unstable soil conditions may be encountered. Excavation of saturated soils will be difficult with rubber-tired equipment. Stabilization using shot rock or geogrids may be necessary.

Any areas to receive fill should have all topsoil, organic material or debris removed. Prior to fill placement Entech should observe the subgrade. Fill must be properly benched and compacted to minimize potentially unstable conditions in slope areas. Fill slopes should be 3:1 or flatter. The subgrade should be scarified and moisture conditioned to within 2% of optimum moisture content and compacted to a minimum of 95% of its maximum Modified Proctor Dry Density, ASTM D-1557, prior to placing new fill. Areas receiving fill may require stabilization with rock or fabric if shallow groundwater conditions are encountered.

New fill should be placed in thin lifts not to exceed 6 inches after compaction while maintaining at least 95% of its maximum Modified Proctor Dry Density, ASTM D-1557. These materials should be placed at a moisture content conducive to compaction, usually 0 to ±2% of Proctor optimum moisture content. The placement and compaction of fill should be observed and tested by Entech during construction. Entech should approve any import materials prior to placing or hauling them to the site. Additional investigation will be required for pavement designs once roadway grading is completed and utilities are installed.

10 CLOSURE

It is our opinion that the existing geologic engineering and geologic conditions will impose some constraints on development and construction of the site. The majority of these conditions can be mitigated through proper engineering design and construction practices. The proposed development and use are consistent with anticipated geologic and engineering geologic conditions.

It should be pointed out that because of the nature of data obtained by random sampling of such variable and non-homogeneous materials as soil and rock, it is important that we be informed of any differences observed between surface and subsurface conditions encountered in construction and those assumed in the body of this report. Individual investigations for building sites will be required prior to construction. Construction and design personnel should be made familiar with the contents of this report. Reporting such discrepancies to Entech Engineering, Inc. soon after they are discovered would be greatly appreciated and could possibly help avoid construction and development problems.

This report has been prepared for Tech Contractors. for application to the proposed project in accordance with generally accepted geologic soil and engineering practices. No other warranty expressed or implied is made.

We trust that this report has provided you with all the information that you required. Should you require additional information, please do not hesitate to contact Entech Engineering, Inc.

11 REFERENCES

1. Entech Engineering, Inc. April 20, 2022. *Subsurface Soil Investigation, Meridian Ranch, Rolling Hills Ranch North, Filing Nos. 1 and 2, North of Rex Road, El Paso County, Colorado.* Entech Job No. 220455.
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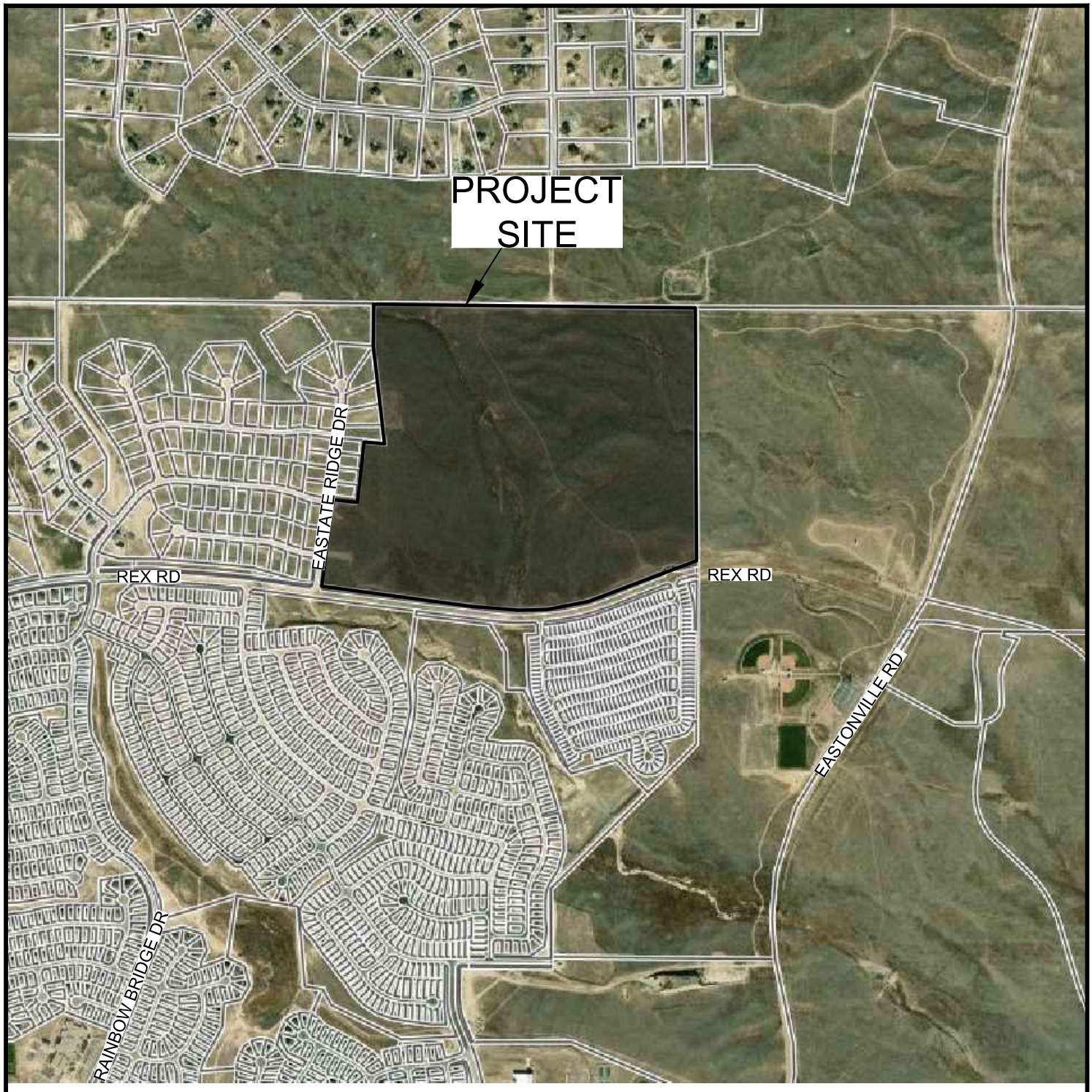
FIGURES



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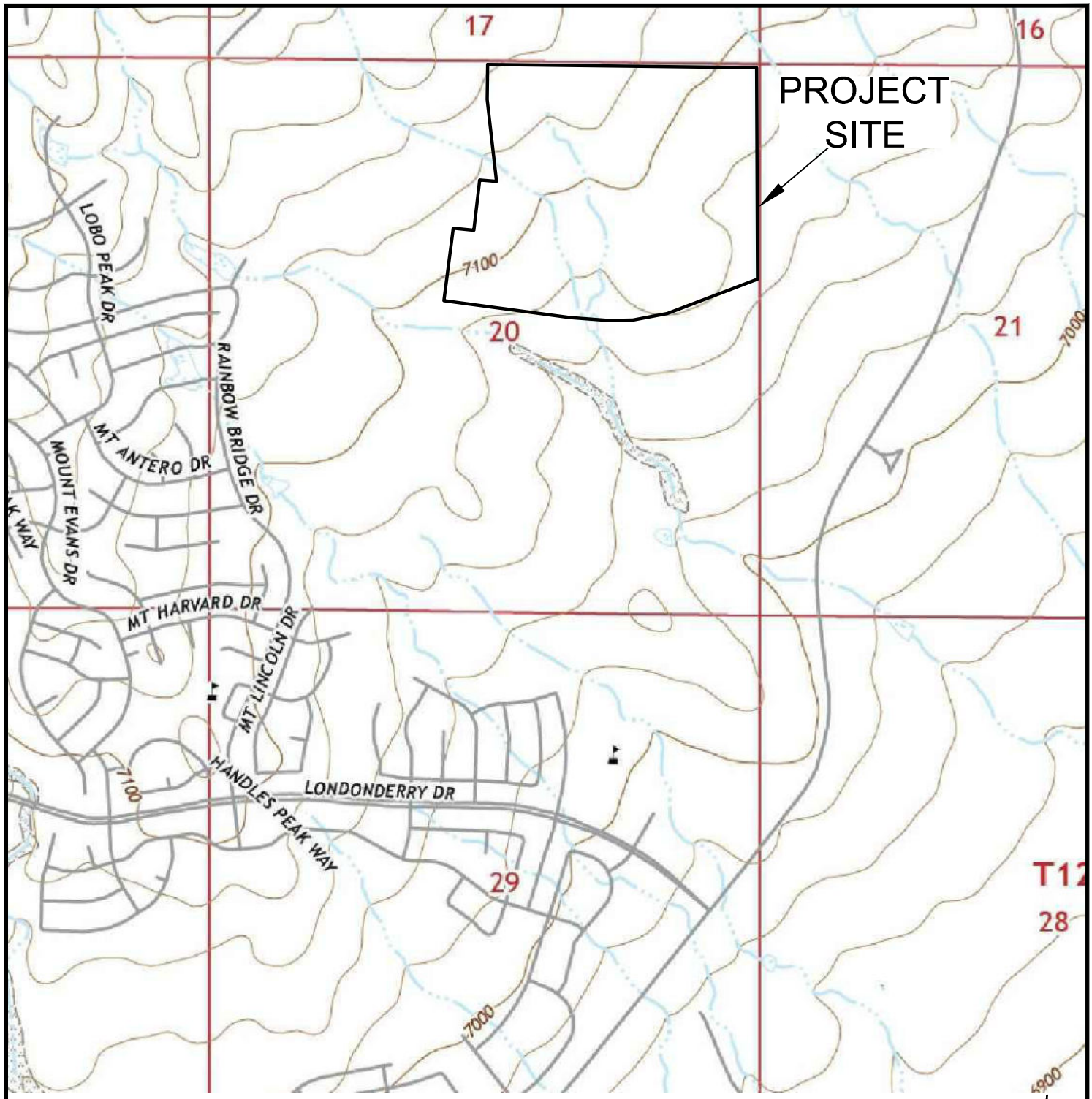
ENTECH ENGINEERING, INC.

VICINITY MAP

MERIDIAN RANCH
ROLLING HILLS RANCH NORTH
TECH CONTRACTORS

JOB NO.
220455

FIG. 1



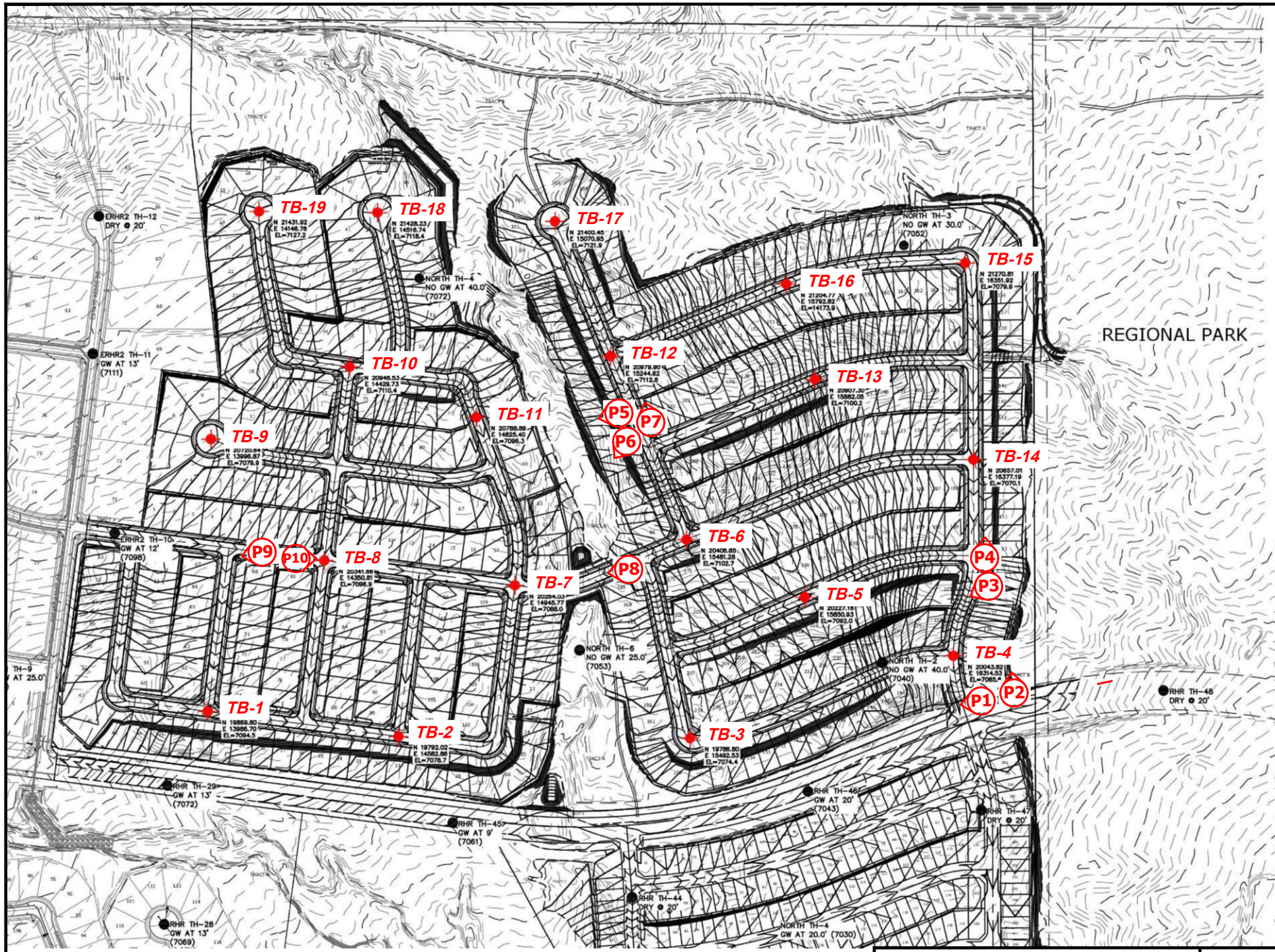
ENTECH ENGINEERING, INC.

USGS TOPOGRAPHY MAP

MERDIAN RANCH
ROLLING HILLS RANCH NORTH
TECH CONTRACTORS

JOB NO.
220455

FIG. 2



N

GRAPHIC SCALE

200 0 100 200 400 800

(IN FEET)

1 inch = 200 ft.

● EXISTING BORINGS

✦ PROPOSED BORINGS

⌖ - APPROXIMATE TEST BORING LOCATION AND NUMBER

P2 - APPROXIMATE PHOTOGRAPH LOCATION AND NUMBER

ENTECH ENGINEERING, INC.

SITE / TEST BORING LOCATION MAP

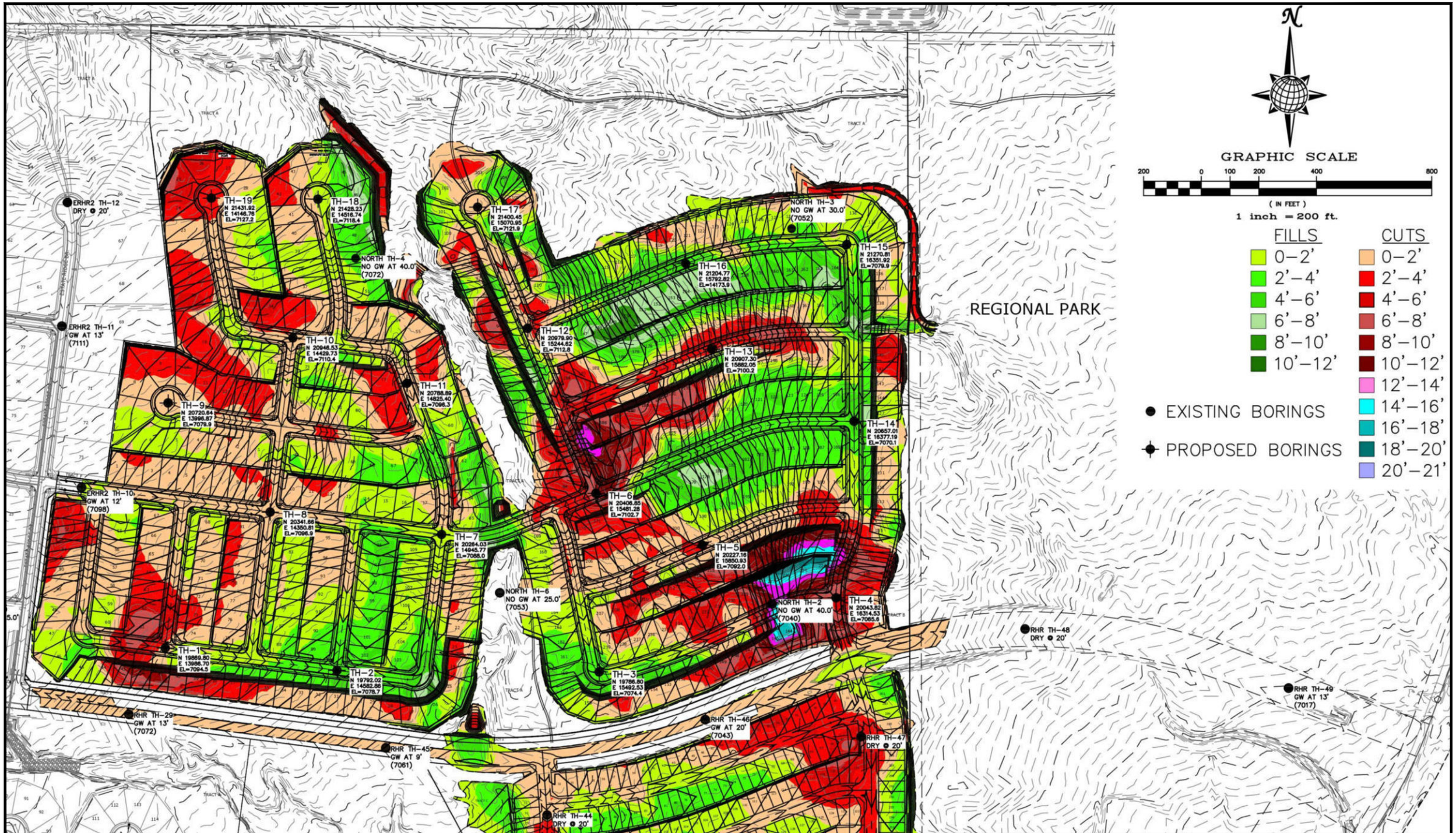
ADDRESS

CITY

CLIENT

JOB NO. 231532

FIG. 3



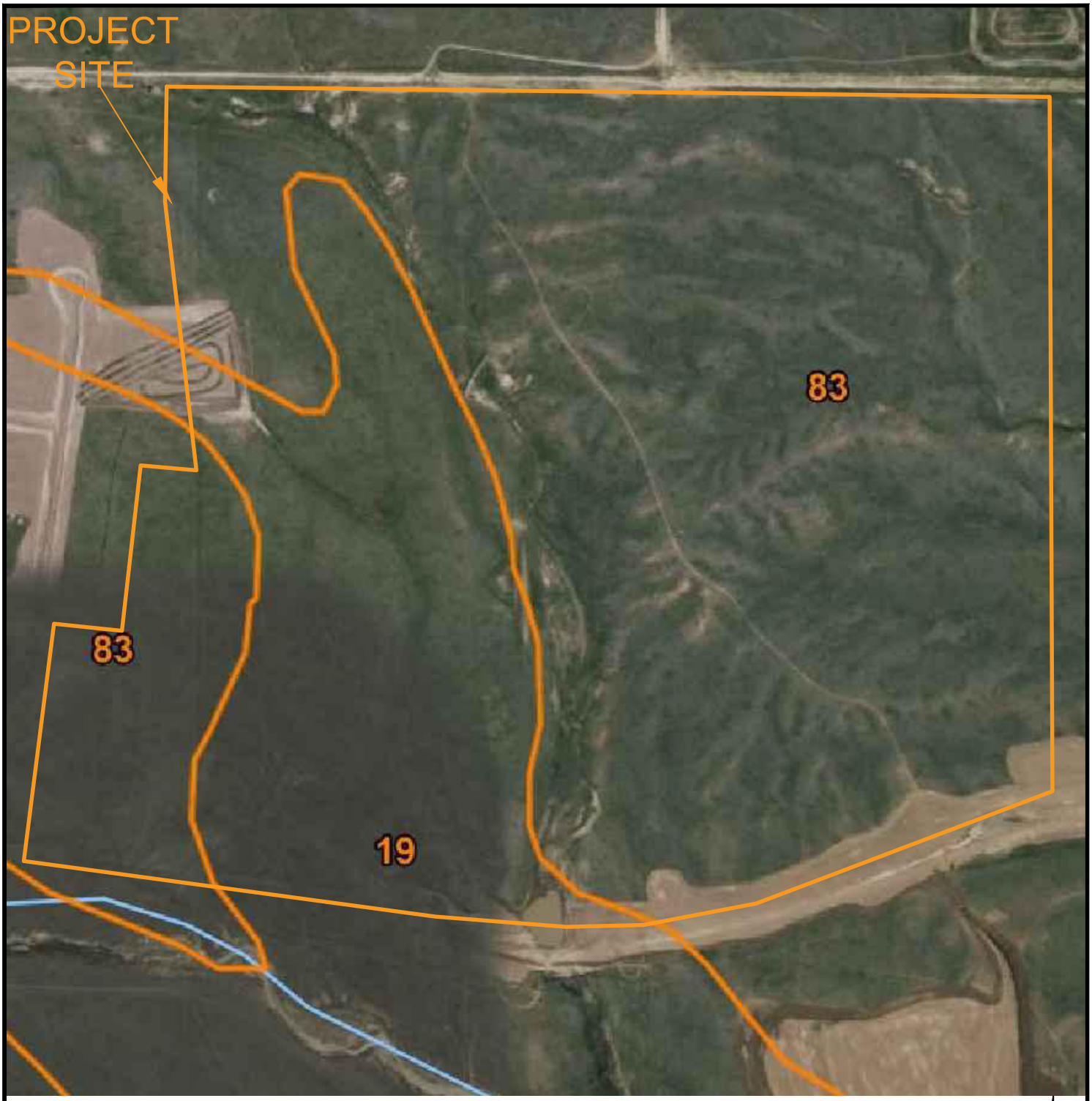
ENTECH ENGINEERING, INC.

CUT/FILL MAP

MERDIAN RANCH
ROLLING HILLS RANCH NORTH
TECH CONTRACTORS

JOB NO.
220455

FIG. 4



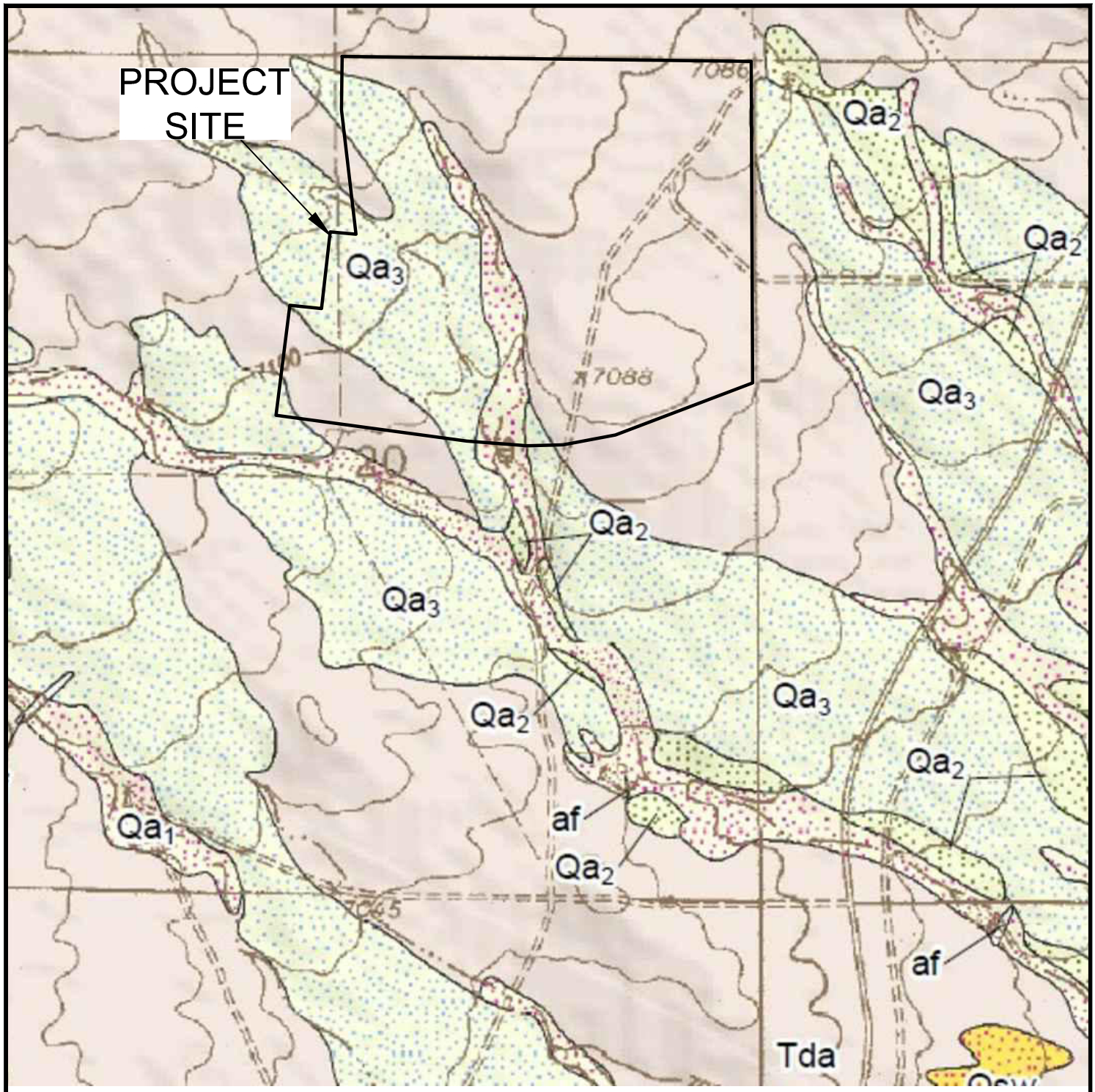
ENTECH
ENGINEERING, INC.

SOIL SURVEY MAP

MERIDIAN RANCH
ROLLING HILLS RANCH NORTH
TECH CONTRACTORS

JOB NO.
220455

FIG. 5



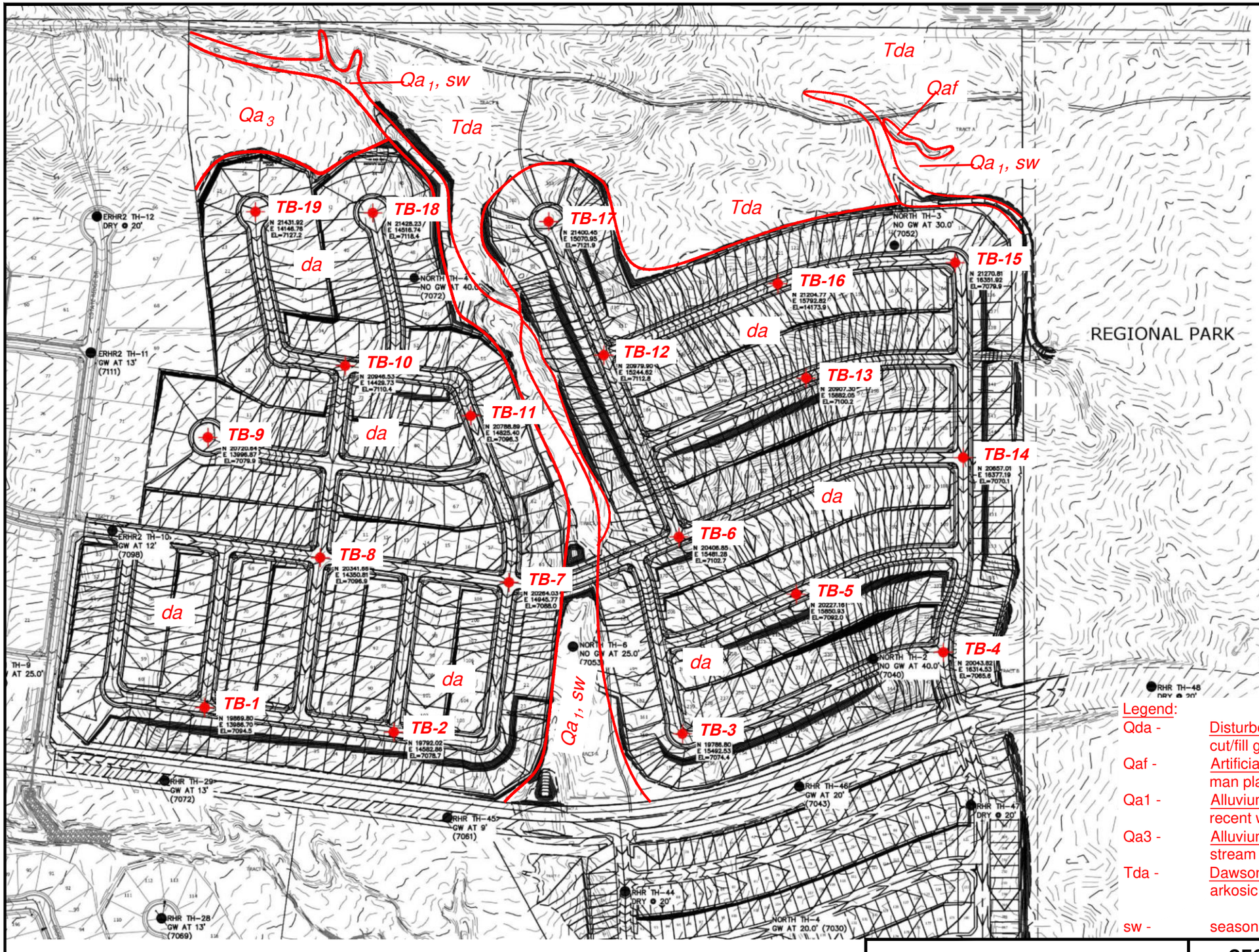
ENTECH ENGINEERING, INC.

GEOLOGIC MAP OF THE FALCON QUADRANGLE

MERIDIAN RANCH
ROLLING HILLS NORTH RANCH
TECH CONTRACTORS

JOB NO. 220455

FIG. 6



Legend:

Qda - Disturbed Area of Holocene Age:
cut/fill grading for lots and roadways

Qaf - Artificial Fill of Holocene Age:
man placed fill deposit

Qa1 - Alluvium one of late Holocene Age:
recent water deposited clayey to silty sands

Qa3 - Alluvium three of late Pleistocene Age:
stream terrace deposited sands

Tda - Dawson Arkose of Tertiary Age:
arkosic sandstone with interbedded claystone and siltstone

sw - seasonal shallow groundwater area

ENTECH ENGINEERING, INC.

GEOLOGY / ENGINEERING MAP

MERIDIAN RANCH
ROLLING HILLS RANCH NORTH
TECH CONTRACTORS

JOB NO.
220455

FIG. 7

N

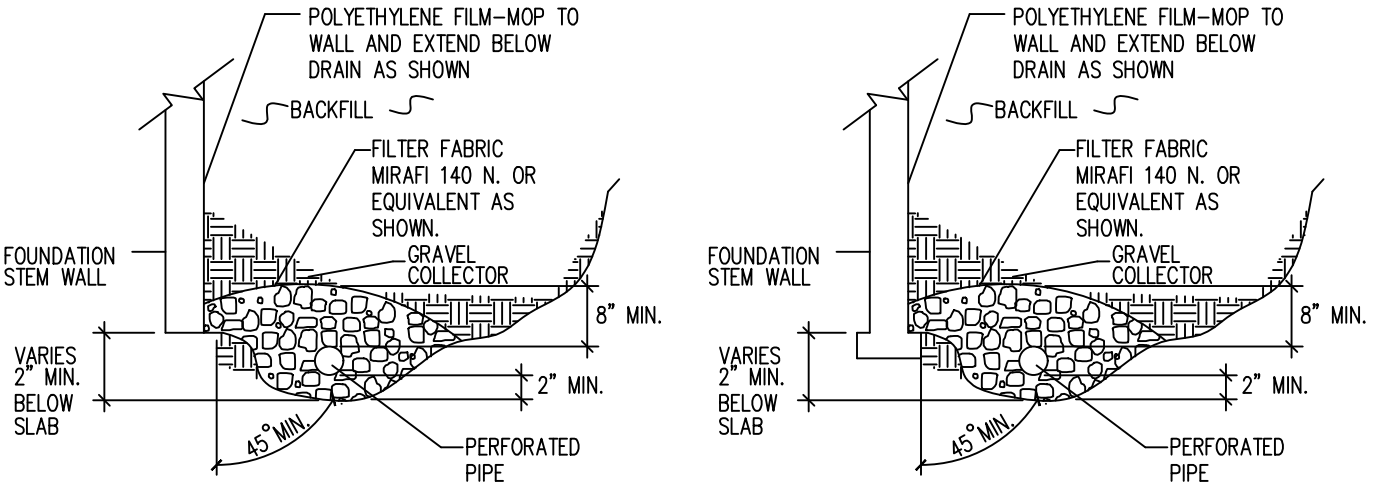
ENTECH
ENGINEERING, INC.

FEMA FLOODPLAIN MAP

MERIDIAN RANCH
ROLLING HILLS RANCH NORTH
TECH CONTRACTORS

JOB NO.
220455

FIG. 8



NOTES:

–GRAVEL SIZE IS RELATED TO DIAMETER OF PIPE PERFORATIONS–85% GRAVEL GREATER THAN 2x PERFORATION DIAMETER.

–PIPE DIAMETER DEPENDS UPON EXPECTED SEEPAGE. 4–INCH DIAMETER IS MOST OFTEN USED.

–ALL PIPE SHALL BE PERFORATED PLASTIC. THE DISCHARGE PORTION OF THE PIPE SHOULD BE NON–PERFORATED PIPE.

–FLEXIBLE PIPE MAY BE USED UP TO 8 FEET IN DEPTH, IF SUCH PIPE IS DESIGNED TO WITHSTAND THE PRESSURES. RIGID PLASTIC PIPE WOULD OTHERWISE BE REQUIRED.

–MINIMUM GRADE FOR DRAIN PIPE TO BE 1% OR 3 INCHES OF FALL IN 25 FEET.

–DRAIN TO BE PROVIDED WITH A FREE GRAVITY OUTFALL, IF POSSIBLE. A SUMP AND PUMP MAY BE USED IF GRAVITY OUT FALL IS NOT AVAILABLE.

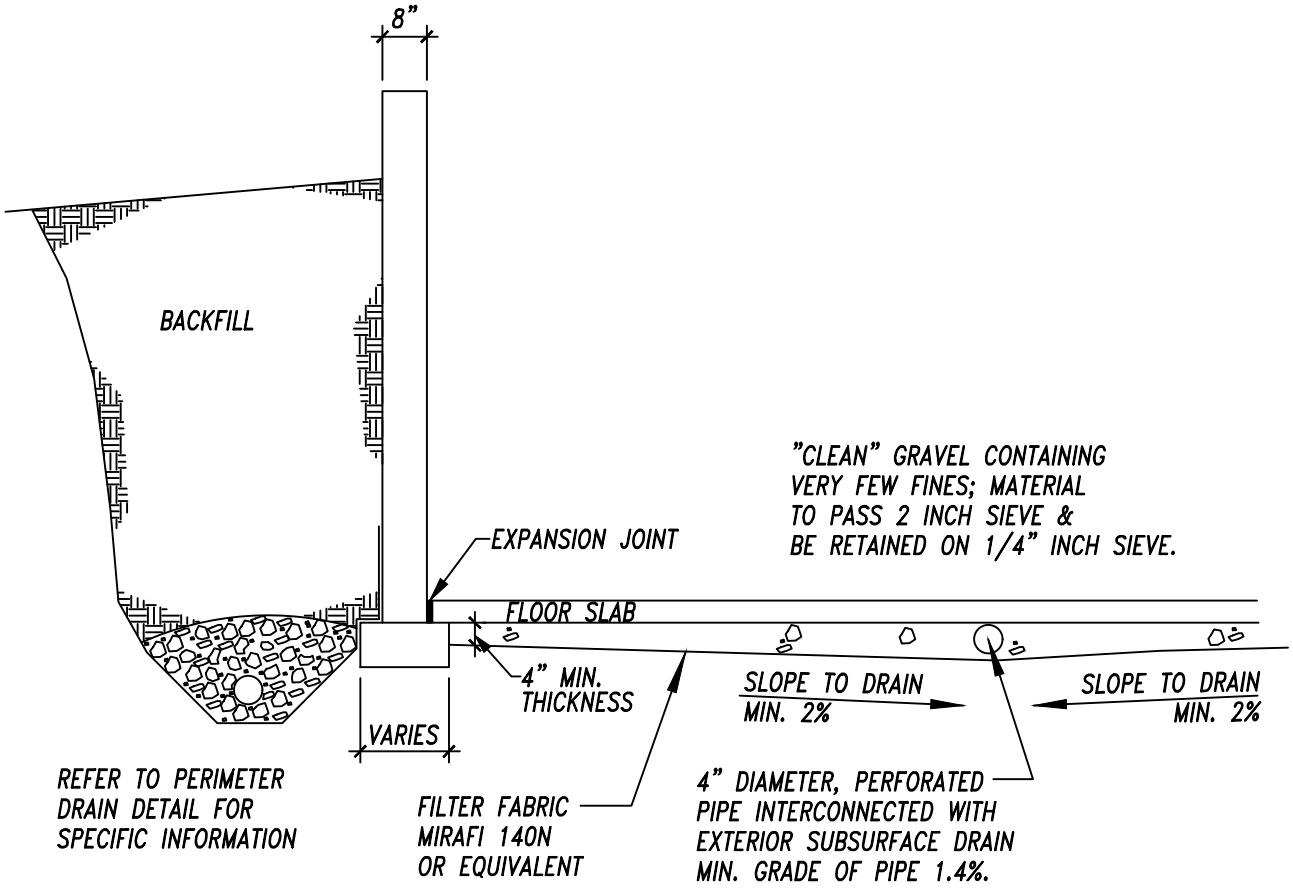
ENTECH ENGINEERING, INC.

PERIMETER DRAIN DETAIL

MERIDIAN RANCH
ROLLING HILLS RANCH NORTH
TECH CONTRACTORS

JOB NO. 220455

FIG. 9



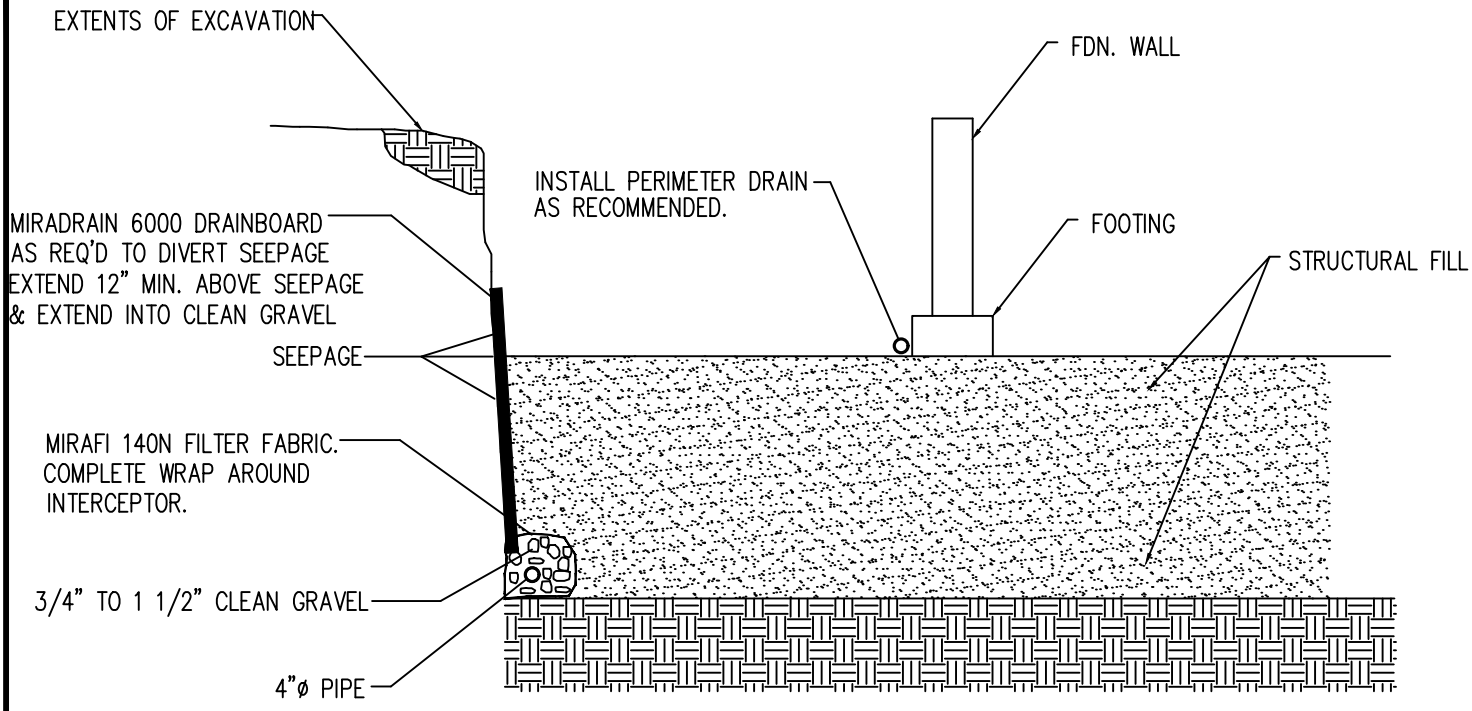
ENTECH ENGINEERING, INC.

TYP. UNDERSLAB DRAINAGE LAYER (CAPILLARY BREAK)

MERIDIAN RANCH
ROLLING HILLS RANCH NORTH
TECH CONTRACTORS

JOB NO.
220455

FIG. 10



NOTE:
EXTEND INTERCEPTOR DRAIN TO UNDERDRAIN OR TO SUMP.
BENCH DRAIN INTO NATIVE SOILS 12 INCHES MINIMUM.

INTERCEPTOR DRAIN DETAIL

N.T.S.

ENTECH ENGINEERING, INC.

INTERCEPTOR DRAIN DETAIL

MERIDIAN RANCH
ROLLING HILLS RANCH NORTH
TECH CONTRACTORS

JOB NO.
220455

FIG. 11

APPENDIX A: Site Photographs

1

Looking west from the southeastern portion of the site.

February 1, 2024

2

Looking north from the southeastern portion of the site.

February 1, 2024

Job No. 220455

3

Looking west from the southeastern portion of the site.

February 1, 2024

4

Looking north from the southeastern portion of the site.

February 1, 2024

Job No. 220455

5

Looking from the central portion of the site.

February 1, 2024

6

Looking southwest from the central portion of the site.

February 1, 2024

Job No. 220455

7

Looking north from the central portion of the site.

February 1, 2024

8

Looking west along the future drainage crossing.

February 1, 2024

Job No. 220455

9

Looking west from the western portion of the site.

February 1, 2024

10

Looking east from the western portion of the site.

February 1, 2024

Job No. 220455

APPENDIX B: Entech, Subsurface Soil Investigation, Job No. 220455

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SUBSURFACE SOIL INVESTIGATION
MERIDIAN RANCH, ROLLING HILLS RANCH NORTH
FILING NOS. 1 AND 2
NORTH OF REX ROAD
EL PASO COUNTY, COLORADO

Prepared for:

Tech Contractors
3575 Kenyon Street, Suite 200
San Diego, California 92110

Attn: Mr. Raul Guzman

April 20, 2022

Respectfully Submitted,

ENTECH ENGINEERING, INC.

Stuart Wood
Geologist

COLORADO REGISTERED
JOSEPH COLLIN GOODE JR.
23725
PROFESSIONAL ENGINEER
4-20-2022

Reviewed by:

Joseph C. Goode, Jr., P.E.
President

DPS/drc

Encl.

Entech Job No. 220455
AAprojects/2022/220455/220455 SSI

Table of Contents

SUBSURFACE SOIL INVESTIGATION
MERIDIAN RANCH, ROLLING HILLS RANCH NORTH
FILING NOS. 1 AND 2
NORTH OF REX ROAD
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 North Filings 1 and 2. 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. Test Boring locations were staked by the client.

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 nineteen 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 North subdivision in Meridian Ranch. The investigation was performed at predetermined locations 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 has not been graded for the planned development. Site grading plans were provided to us with proposed cuts up to 21 feet and fills up to 12 feet. The majority of the cuts and fills are in the 2 to 8-foot range. Figure 3 shows the Cut/Fill Plan. Approximate finished grades are shown on the Test Boring Logs (Appendix A). The topography of the site is gently rolling hills and valleys with a general southeast-sloping trend. Vegetation consisted of grasses and weeds. Existing residences and proposed developments are located to the west and southwest of the site, undeveloped land lies immediately north, south, and east and Eastonville Road to the east. Natural earthen drainage trends to the southeast with one primary north/south drainage traversing the property near the center.

3.0 SUBSURFACE EXPLORATIONS AND LABORATORY TESTING

Subsurface conditions on the site were explored by drilling nineteen 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 30 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) 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

Two soil types and two bedrock types were encountered in the test borings drilled for the subsurface investigation: Type 1: native silty to clayey to very clayey sand (SM, SC), Type 2: native sandy clay (CL), Type 3: slightly silty to silty to very clayey sandstone (SM-SW, SM, SC), and Type 4: 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 silty to clayey to very clayey sand (SM, SC). The sand was encountered in all of the test borings at the existing ground surface and extending to depth ranging from 1 to 4 feet below ground surface (bgs). Standard Penetration Testing conducted on the sand resulted in SPT N-values ranging from 27 to 47 blows per foot (bpf), indicating medium dense to dense states. Water content and grain size testing of selected soil samples

resulted in a water content range of 2 to 9 percent, and 40 percent of the soil particles passing the No. 200 sieve. Atterberg limits testing on a sample of very clayey sand resulted in a Liquid Limit of 40 and a Plastic Index of 27. Swell/Consolidation testing on a sample of very clayey sand resulted in a volume change of 0.2 percent, indicating a low expansion potential. Sulfate testing resulted in less than 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 native sandy clay (CL). The clay was encountered in Test Boring Nos. 2 and 11 at the surface and extending to 3 and 4 feet bgs. Standard Penetration Testing conducted on the clay resulted in SPT N-values from 26 and 31, which indicates stiff consistencies. Water content and grain size testing resulted in a water content of 12 percent, and 83 to 90.5 percent of the soil particles passing the No. 200 sieve. Atterberg Limits testing resulted in Liquid Limit of 31 and a Plastic Index of 17. Swell/Consolidation testing on the clay resulted in volume changes of +1.0 to -1.1 percent, indicating low to moderate consolidation and expansion potential.

Soil Type 3 classified as slightly silty to silty to very clayey sandstone bedrock (SM-SW, SM, SC). The sandstone was encountered in all the test borings below the Type 1 and 2 soils, at 1 to 9 feet bgs and extending to various depths or to termination of borings (20 to 30 feet). Standard Penetration Testing conducted on the sandstone resulted in SPT N-values of 38 to greater than 50 bpf, which indicates dense to very dense states. Water content and grain size testing resulted in a water content range of 1 to 12, and 7 to 49 percent the soil size particles passing the No. 200 sieve. Atterberg limits testing on a sample of the slightly silty sandstone resulted in no values. Swell/Consolidation testing on the sandstone resulted in volume changes of -0.1 to -0.3 percent, indicating a low consolidation and expansion potential.

Soil Type 4 classified as a sandy to very sandy claystone (CL). The claystone was encountered below the surficial soils or interbedded in the sandstone at varying depths. Standard Penetration Testing on the claystone resulted in greater than 50 bpf, indicating hard consistencies. Water content and grain size testing resulted in 8 to 15 percent water content with 51 to 81 percent of soil size particles passing the No. 200 sieve. Atterberg limits testing resulted in liquid limits of 36 to 42 percent and plastic indexes of 19 to 22 percent. Swell/Consolidation testing of random

claystone samples resulted in volume changes of -1.1 to +0.1, indicating a low to moderate consolidation potential and a low expansion potential. Sulfate testing indicated a negligible degradation potential 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 two test borings subsequent to drilling, Test Boring Nos. 2 and 12 at a depth of approximately 17 feet. Groundwater should not 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. Shallow groundwater may also be encountered near drainages.

5.0 PRELIMINIARY 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 a thin layer of surficial sands or clay over sandstone and claystone bedrock. Bedrock was encountered at depths ranging from 1 to 9 feet bgs. Shallow bedrock (1 to 2 feet) was encountered in 13 of the test borings. 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 should not impact the development of this site. Subsequent to completion of overlot grading cuts per the grading plan presented to us, the groundwater table should be at

such a depth as to propose no threat to developing this site, unless deep utilities are required. Groundwater was measured in Test Boring Nos. 2 and 12 at a depth of approximately 17 feet. Shallow cut and fills are proposed in this area. 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 may be necessary. 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 sandy clay] are present on the site exhibiting low to moderate potential for expansion and consolidation. These soils, where encountered, will require mitigation for residential construction. Damage to structures can occur due to expansive/ compressive 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 or claystone bedrock is expected to be exposed across the majority of the areas tested.

6.0 SITE GRADING

Shallow bedrock was encountered in all 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 typically placed at a slope to match the sanitary sewer system. 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 areas of sandstone, 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. Shallow groundwater was not encountered in the 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 three 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 less than 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 (Subport 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 North Subdivision, Filing Nos. 1 and 2 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.

TABLE

TABLE 1

SUMMARY OF LABORATORY TEST RESULTS

CLIENT TECH CONTRACTORS
PROJECT ROLLING HILLS NORTH
JOB NO. 220455

SOIL TYPE	TEST BORING NO.	DEPTH (FT)	WATER (%)	DRY DENSITY (PCF)	PASSING NO. 200 SIEVE (%)	LIQUID LIMIT (%)	PLASTIC INDEX (%)	SULFATE (WT %)	FHA SWELL (PSF)	SWELL/ CONSOL (%)	UNIFIED CLASSIFICATION	SOIL DESCRIPTION
1	8	2-3	10.1	111.3	40.2	43	27	<0.01		0.2	SC	SAND, VERY CLAYEY
2	11	2-3	13.0	99.5	90.5					1.0	CL	CLAY, SANDY
2	15	5	9.2	111.9	83.3	31	17			-1.1	CL	CLAY, SANDY
3	11	15			13.0						SM	SANDSTONE, SILTY
3	16	5			35.2						SC	SANDSTONE, CLAYEY
3	4	5			6.9	NV	NP				SM-SW	SANDSTONE, SLIGHTLY SILTY
3	5	2-3			20.8						SM	SANDSTONE, SILTY
3	9	10			8.6						SM-SW	SANDSTONE, SLIGHTLY SILTY
3	10	2-3			17.4						SM	SANDSTONE, SILTY
3	12	20	10.5	117.9	47.9					-0.1	SC	SANDSTONE, VERY CLAYEY
3	13	10			13.9						SM	SANDSTONE, SILTY
3	14	5			26.8						SM	SANDSTONE, SILTY
3	18	20			49.0						SC	SANDSTONE, VERY CLAYEY
3	19	15	11.4	120.9	32.8					-0.3	SC	SANDSTONE, CLAYEY
4	1	15			67.4	36	19	0.00			CL	CLAYSTONE, SANDY
4	2	5			78.6	42	22	0.00			CL	CLAYSTONE, SANDY
4	3	10	12.6	114.6	80.0					0.1	CL	CLAYSTONE, SANDY
4	4	20	14.6	111.6	51.3					-0.4	CL	CLAYSTONE, VERY SANDY
4	6	10	13.1	121.5	81.5					0.1	CL	CLAYSTONE, SANDY
4	7	5	11.7	121.5	75.5					0.8	CL	CLAYSTONE, SANDY
4	17	10	12.5	106.7	74.6					-1.1	CL	CLAYSTONE, SANDY

FIGURES

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

VICINITY MAP
ROLLING HILLS NORTH
COLORADO SPRINGS, CO
For: TECH CONTRACTORS

DRAWN:	DATE:	CHECKED:	DATE:
JAC	04/08/22	DPS	

JOB NO.: 220455

FIG NO.: 1

REVISION	BY

N

TB-19 (1')
TB-18 (1')
TB-17 (1')
TB-16 (1')
TB-15 (9')
TB-14 (1')
TB-13 (1')
TB-12 (4')
TB-11 (4')
TB-10 (1')
TB-9 (1')
TB-8 (4')
TB-7 (4')
TB-6 (1')
TB-5 (1')
TB-4 (1')
TB-3 (1')
TB-2 (3')
TB-1 (2')

TH-19 N 21431.92 E 14148.76 El.=7127.2
TH-18 N 21428.23 E 14618.74 El.=7118.4
TH-17 N 21400.45 E 15070.95 El.=7121.8
TH-16 N 21204.77 E 15792.82 El.=7117.9
TH-15 N 21270.81 E 16351.92 El.=7079.8
TH-14 N 20887.01 E 16377.18 El.=7070.1
TH-13 N 20967.30 E 15862.05 El.=7100.2
TH-12 N 20979.90 E 15244.82 El.=7112.8
TH-11 N 20788.86 E 14625.40 El.=7086.3
TH-10 N 20946.53 E 14429.75 El.=7110.4
TH-9 N 20720.64 E 13994.87 El.=7079.3
TH-8 N 20341.58 E 14380.81 El.=7096.9
TH-7 N 20284.03 E 14844.77 El.=7088.0
TH-6 N 20406.55 E 15481.26 El.=7102.7
TH-5 N 20327.16 E 15990.83 El.=7062.9
TH-4 N 20043.82 E 16314.83 El.=7083.8
TH-3 N 19788.80 E 15482.63 El.=7074.4
TH-2 N 19792.02 E 14882.28 El.=7075.7
TH-1 N 19866.80 E 13988.76 El.=7094.8

ERHR2 TH-12 DRY @ 20'
ERHR2 TH-11 GW AT 13' (7111)
ERHR2 TH-10 GW AT 12' (7095)
NORTH TH-4 NO GW AT 40.0' (7072)
NORTH TH-3 NO GW AT 30.0' (7052)
NORTH TH-5 NO GW AT 25.0' (7053)
NORTH TH-2 NO GW AT 40.0' (7040)
NORTH TH-1 NO GW AT 25.0' (7077)
RHR TH-2R GW AT 13' (7072)
RHR TH-4R GW AT 9' (7081)
RHR TH-4R GW AT 20' (7043)

75 0 150 300 600

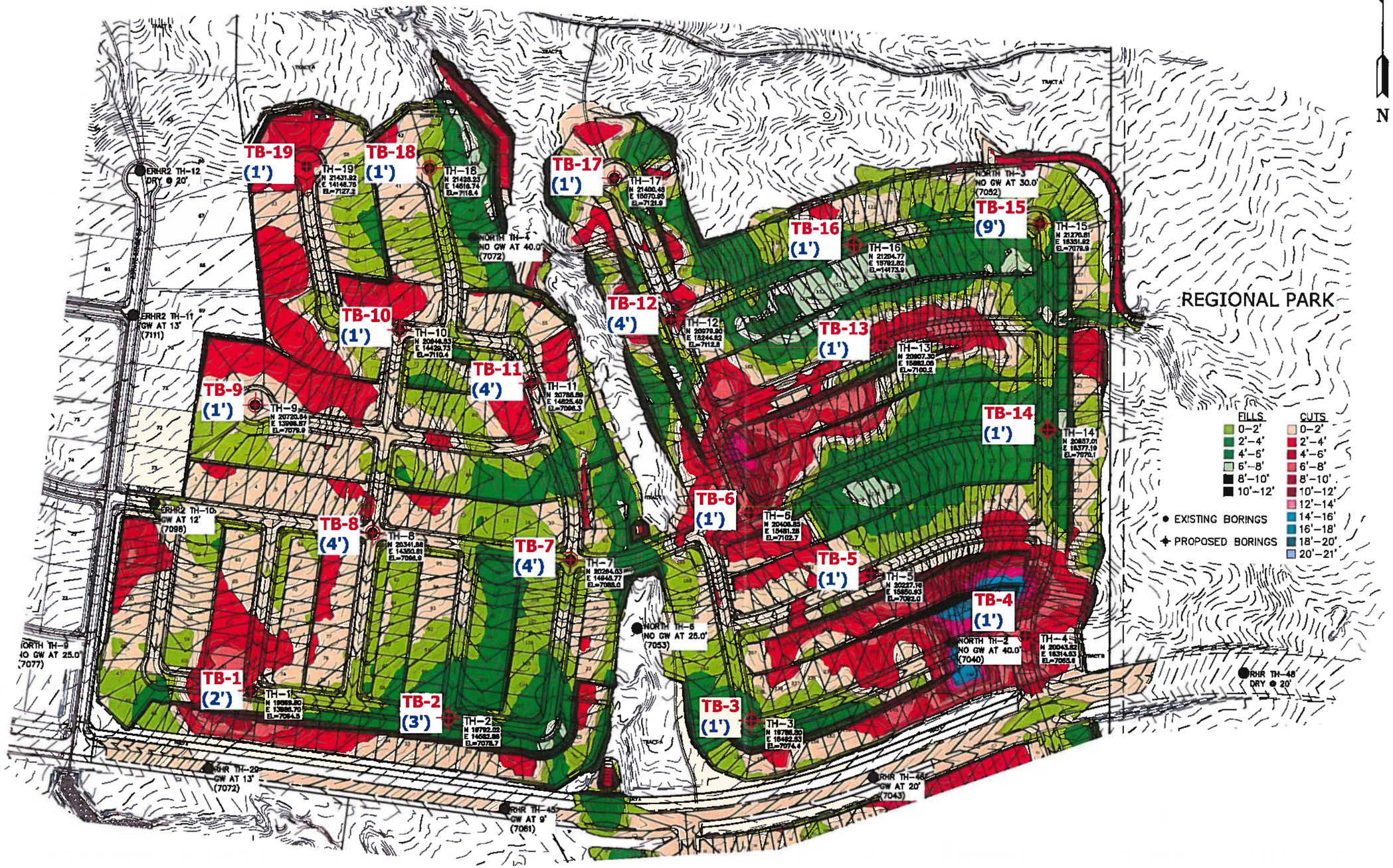
1:300

TB- APPROXIMATE TEST BORING LOCATIONS AND NUMBERS (DEPTH TO BEDROCK)

ENTECH ENGINEERING, INC.
305 ELKTON DRIVE COLORADO SPRINGS, CO. 80907 (719) 531-5599

TEST BORING LOCATION MAP
ROLLING HILLS NORTH
COLORADO SPRINGS, CO
For: TECH CONTRACTORS

DRAWN	JAC
CHECKED	DPS
DATE	04/06/22
SCALE	1:300
JOB NO.	220455
FIGURE No.	2



TB- APPROXIMATE TEST BORING LOCATIONS AND NUMBERS (DEPTH TO BEDROCK)

REVISION	BY

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

CUT & FILL MAP
ROLLING HILLS NORTH
COLORADO SPRINGS, CO
For: TECH CONTRACTORS

DRAWN	JAC
CHECKED	DPS
DATE	04/05/22
SCALE	1:300
JOB NO.	220455
FIGURE No.	3

APPENDIX A: Test Boring Logs

TEST BORING NO. 1
DATE DRILLED 3/8/2022
Job # 220455

REMARKS

DRY TO 20', 3/22/22

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type	
					1	SAND, SILTY, BROWN
			42	3.6	3	SANDSTONE, SILTY, FINE TO COARSE GRAINED, TAN, DENSE TO VERY DENSE, MOIST
		GRADE				
5			50 5"	4.4	3	
10			50 5"	8.4	3	
15			50 6"	13.7	4	CLAYSTONE, SANDY, GRAY BROWN, HARD, MOIST
						SANDSTONE, SILTY, FINE TO COARSE GRAINED, TAN, VERY DENSE, MOIST
20			50 5"	12.3	3	

TEST BORING NO. 2
DATE DRILLED 3/8/2022
CLIENT TECH CONTRACTORS
LOCATION ROLLING HILLS NORTH

REMARKS

>4' FILL

WATER @ 17', 3/22/22

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type	
						CLAY, SANDY, TAN, STIFF, MOIST
			26	10.5	2	
						CLAYSTONE, SANDY, GRAY
5			50 6"	10.1	4	BROWN, HARD, MOIST
10			50 6"	11.6	4	
15			50 7"	8.4	3	SANDSTONE, SILTY, FINE TO COARSE GRAINED, TAN, VERY DENSE, MOIST
20			50 7"	11.2	3	

ENTECH
ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

TEST BORING LOG

DRAWN:	DATE:	CHECKED:	DATE:
		SW	4-12-22

JOB NO.: 220455
FIG NO.: A- 1

TEST BORING NO. 3
DATE DRILLED 3/14/2022
Job # 220455

REMARKS

>4' FILL

DRY TO 20', 3/22/22

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
					1
			50/11"	2.4	3
5			50/8"	4.8	3
10			50/6"	11.4	4
15			50/5"	2.9	3
20			50/6"	7.1	3

SAND, SILTY, BROWN

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

CLAYSTONE, SANDY, BROWN, HARD, MOIST

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

TEST BORING NO. 4
DATE DRILLED 3/11/2022
CLIENT TECH CONTRACTORS
LOCATION ROLLING HILLS NORTH

REMARKS

DRY TO 30', 3/22/22

GRADE

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
					1
			50/8"	1.3	3
5			50/8"	2.6	3
10			50/6"	7.6	3
15			50/7"	9.3	3
20			50/6"	11.0	4
25			50/5"	12.0	3
30			50/3"	8.0	3

SAND, SILTY, BROWN

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

CLAYSTONE, VERY SANDY, GRAY BROWN, HARD, MOIST

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

ENTECH
ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

TEST BORING LOG

DRAWN:	DATE:	CHECKED: SW	DATE: 4-12-22

JOB NO.: 220455
FIG NO.: A- 2

TEST BORING NO. 5
DATE DRILLED 3/14/2022
Job # 220455

REMARKS

DRY TO 25', 3/22/22

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
					1
			50 / 6"	1.5	3
GRADE 5			50 / 3"	2.0	3
10			50 / 6"	6.1	3
15			50 / 6"	7.4	3
20			50 / 6"	13.1	4
25			50 / 6"	7.4	3

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

CLAYSTONE, SANDY, BROWN, HARD, MOIST

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

TEST BORING NO. 6
DATE DRILLED 3/11/2022
CLIENT TECH CONTRACTORS
LOCATION ROLLING HILLS NORTH

REMARKS

DRY TO 30', 3/22/22

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
					1
			50	2.8	3
5			50 / 11"	12.0	3
GRADE 10			50 / 6"	15.1	4
15			50 / 5"	9.1	3
20			50 / 6"	7.7	3
25			50 / 4"	6.6	3
30			50 / 5"	10.8	3

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

CLAYSTONE, SANDY, BROWN, HARD, MOIST

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

ENTECH
ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

TEST BORING LOG

DRAWN:	DATE:	CHECKED: SW	DATE: 4-12-22

JOB NO: 220455
FIG NO.: A- 3

TEST BORING NO. 7
DATE DRILLED 3/14/2022
Job # 220455

REMARKS

>4'
FILL

DRY TO 20', 3/22/22

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
CLAY, SANDY, TAN, VERY STIFF, MOIST			31	8.9	2
CLAYSTONE, SANDY, GRAY BROWN, HARD, MOIST	5		50/7"	15.6	4
SANDSTONE, SILTY, FINE TO COARSE GRAINED, TAN, VERY DENSE, MOIST	10		50/4"	6.4	3
			*	7.0	3
CLAYSTONE, SANDY, GRAY BROWN, HARD, MOIST	15		50/8"	12.6	4
* - BULK SAMPLE TAKEN	20		50/5"	12.0	4

TEST BORING NO. 8
DATE DRILLED 3/8/2022
CLIENT TECH CONTRACTORS
LOCATION ROLLING HILLS NORTH

REMARKS

DRY TO 20', 3/22/22

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
SAND, VERY CLAYEY, FINE TO MEDIUM GRAINED, TAN, MEDIUM DENSE, MOIST GRADE			26	9.4	1
SANDSTONE, SILTY, FINE TO COARSE GRAINED, DARK BROWN TO TAN, VERY DENSE, MOIST	5		50/6"	6.2	3
	10		50/6"	8.6	3
	15		50/7"	7.0	3
	20		50/5"	9.1	3

ENTECH
ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

TEST BORING LOG

DRAWN:	DATE:	CHECKED: SW	DATE: 4-12-22

JOB NO.: 220455
FIG NO.: A- 4

TEST BORING NO. 9
DATE DRILLED 3/9/2022
Job # 220455

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
DRY TO 20', 3/22/22						
SAND, SILTY, BROWN						1
SANDSTONE, SLIGHTLY SILTY						
TO SILTY, FINE TO COARSE GRAINED, TAN, VERY DENSE, MOIST				50	2.8	3
GRADE	5			50/8"	5.6	3
	10			50/7"	5.1	3
	15			50/6"	10.1	3
	20			50/5"	8.3	3

TEST BORING NO. 10
DATE DRILLED 3/9/2022
CLIENT TECH CONTRACTORS
LOCATION ROLLING HILLS NORTH

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
DRY TO 20', 3/22/22						
SAND, SILTY, BROWN						1
SANDSTONE, SLIGHTLY SILTY						
TO SILTY, FINE TO COARSE GRAINED, TAN, VERY DENSE, MOIST				50/9"	4.7	3
GRADE	5			50/8"	4.4	3
	10			50/5"	5.0	3
CLAYSTONE, SANDY, GRAY BROWN, HARD, MOIST	15			50/6"	12.2	4
SANDSTONE, SILTY, FINE TO COARSE GRAINED, TAN, VERY DENSE, MOIST	20			50/7"	8.7	3

ENTECH
ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

TEST BORING LOG

DRAWN:	DATE:	CHECKED: SW	DATE: 4-12-22

JOB NO: 220455
FIG NO: A- 5

TEST BORING NO. 11
DATE DRILLED 3/9/2022
Job # 220455

REMARKS

DRY TO 20', 3/22/22

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			31	12.0	2
			50/5"	8.1	3
			50/6"	9.1	3
			50/6"	7.8	3
			50/5"	7.1	3

CLAY, SANDY, TAN, VERY STIFF, MOIST

GRADE

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

TEST BORING NO. 12
DATE DRILLED 3/9/2022
CLIENT TECH CONTRACTORS
LOCATION ROLLING HILLS NORTH

REMARKS

WATER @ 16.5' 3/22/22

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			47	2.2	1
			50/8"	7.5	3
			50/7"	9.6	3
			50/7"	7.2	3
			50/6"	10.2	3
			50/6"	10.2	3

SAND, SILTY, FINE TO COARSE GRAINED, TAN, DENSE, DRY

GRADE

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

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

ENTECH
ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

TEST BORING LOG

DRAWN:	DATE:	CHECKED: SW	DATE: 4-12-22

JOB NO.: 220455
FIG NO.: A- 6

TEST BORING NO. 13
DATE DRILLED 3/14/2022
Job # 220455

REMARKS

DRY TO 20', 3/22/22

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type	
					1	SAND, SILTY, BROWN
			50/9"	2.7	3	SANDSTONE, SILTY, FINE TO COARSE GRAINED, BROWN, VERY DENSE, DRY TO MOIST
						GRADE
5			50/9"	7.7	3	
10			50/8"	10.0	3	
15			50/4"	10.0	4	CLAYSTONE, SANDY, GRAY BROWN, HARD, MOIST
20			50/4"	11.5	4	

TEST BORING NO. 14
DATE DRILLED 3/11/2022
CLIENT TECH CONTRACTORS
LOCATION ROLLING HILLS NORTH

REMARKS

>6' FILL

DRY TO 20', 3/22/22

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type	
					1	SAND, SILTY, BROWN
			50/6"	2.2	3	SANDSTONE, SILTY, FINE TO COARSE GRAINED, BROWN, VERY DENSE, DRY TO MOIST
5			50/5"	6.3	3	
10			50/6"	6.1	3	
15			50/6"	6.7	3	
20			50/6"	6.9	3	

ENTECH
ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

TEST BORING LOG

DRAWN:	DATE:	CHECKED: SW	DATE: 4-12-22

JOB NO: 220455
FIG NO: A-7

TEST BORING NO. 15
DATE DRILLED 3/11/2022
Job # 220455

REMARKS

>4' FILL

DRY TO 20', 3/22/22

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
SAND, SILTY, FINE TO COARSE GRAINED, TAN, DENSE, MOIST			37	3.9	1
CLAY, SANDY, TAN, STIFF, MOIST	5		28	17.2	2
SANDSTONE, SILTY, FINE TO COARSE GRAINED, TAN, VERY DENSE, MOIST	10		50/6"	11.0	3
	15		50/5"	5.2	3
	20		50/4"	6.2	3

TEST BORING NO. 16
DATE DRILLED 3/10/2022
CLIENT TECH CONTRACTORS
LOCATION ROLLING HILLS NORTH

REMARKS

>4' FILL

DRY TO 20', 3/22/22

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
SAND, SILTY, BROWN					1
SANDSTONE, CLAYEY, FINE TO COARSE GRAINED, BROWN, VERY DENSE, MOIST			50/8"	4.9	3
	5		50/6"	8.8	3
	10		50/8"	8.6	3
	15		50/7"	9.5	3
	20		50/7"	9.5	3

ENTECH
ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

TEST BORING LOG

DRAWN:	DATE:	CHECKED: SW	DATE: 4-12-22

JOB NO.: 220455
FIG NO.: A- 8

TEST BORING NO. 17
DATE DRILLED 3/10/2022
Job # 220455

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
DRY TO 20', 3/22/22						
SAND, SILTY, BROWN						1
SANDSTONE, SILTY, FINE TO COARSE GRAINED, TAN, VERY DENSE, MOIST				50/8"	6.5	3
GRADE	5			50/6"	6.8	3
CLAYSTONE, SANDY, GRAY BROWN, HARD, MOIST	10			50/6"	11.9	4
	15			50/5"	11.4	4
	20			50/5"	7.8	4

TEST BORING NO. 18
DATE DRILLED 3/9/2022
CLIENT TECH CONTRACTORS
LOCATION ROLLING HILLS NORTH

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
DRY TO 20', 3/22/22 GRADE						
SAND, SILTY, BROWN						1
SANDSTONE, SILTY, FINE TO COARSE GRAINED, TAN, VERY DENSE, MOIST				50/8"	3.9	3
	5			50/6"	8.3	3
CLAYSTONE, SANDY, GRAY BROWN, HARD, MOIST	10			50/8"	14.2	4
SANDSTONE, VERY CLAYEY, FINE TO MEDIUM GRAINED, BROWN, VERY DENSE, MOIST	15			50/5"	6.1	3
	20			50/1"	8.2	3

ENTECH
ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

TEST BORING LOG

DRAWN:	DATE:	CHECKED: SW	DATE: 4-12-22

JOB NO.: 220455
FIG NO.: A- 9

TEST BORING NO. 19
DATE DRILLED 3/9/2022
Job # 220455

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

REMARKS

DRY TO 20', 3/22/22

REMARKS

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type	Description
					1	SAND, SILTY, BROWN WEATHERED TO FORMATIONAL
			38	7.2	3	SANDSTONE, SILTY, FINE TO COARSE GRAINED, TAN, DENSE
5			50/6"	5.8	3	TO VERY DENSE, MOIST GRADE
10			50/7"	8.2	3	
15			50	18.7	3	SANDSTONE, CLAYEY, FINE TO MEDIUM GRAINED, GRAY BROWN, VERY DENSE, MOIST
20			50/1"	8.1	3	

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

ENTECH
ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

TEST BORING LOG

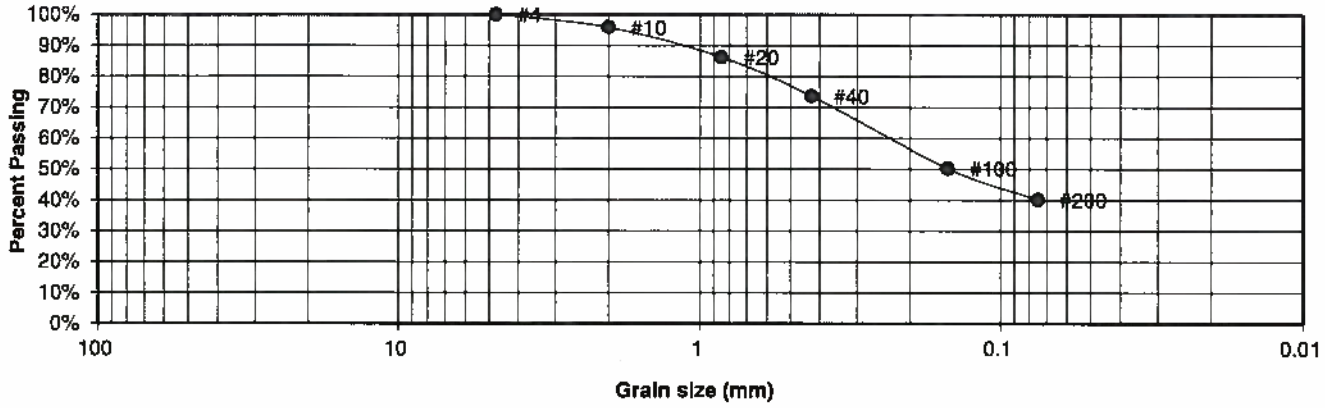
DRAWN:	DATE:	CHECKED: SW	DATE: 4-12-22

JOB NO.: 220455
FIG NO.: A- 10

APPENDIX B: Laboratory Testing Results

UNIFIED CLASSIFICATION	SC	CLIENT	TECH CONTRACTORS
SOIL TYPE #	1	PROJECT	ROLLING HILLS NORTH
TEST BORING #	8	JOB NO.	220455
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"	
4	100.0%
10	95.9%
20	86.2%
40	73.6%
100	50.2%
200	40.2%

Atterberg Limits	
Plastic Limit	16
Liquid Limit	43
Plastic Index	27

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

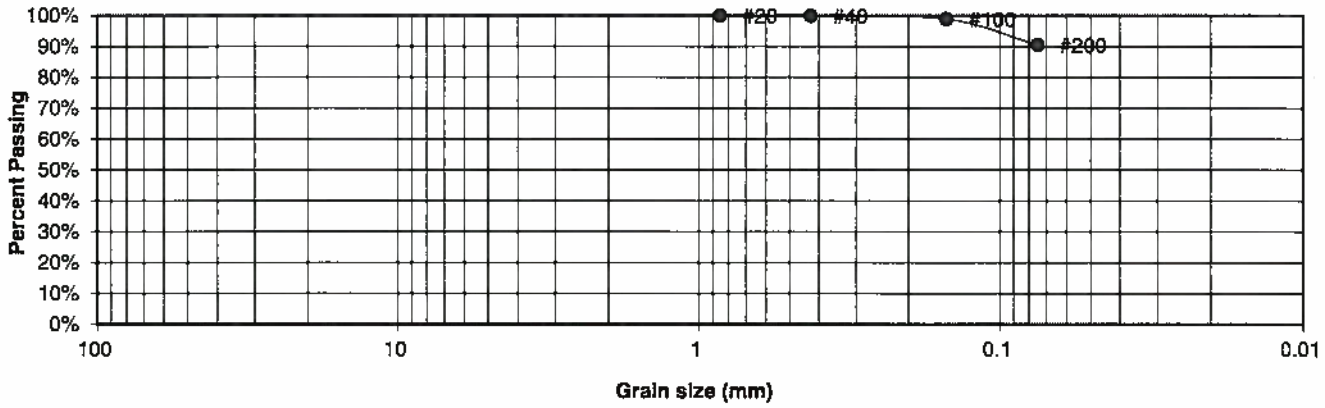
DRAWN:	DATE:	CHECKED: SW	DATE: 3-25-22

JOB NO.: 220455

FIG NO.: B-1

UNIFIED CLASSIFICATION	CL	CLIENT	TECH CONTRACTORS
SOIL TYPE #	2	PROJECT	ROLLING HILLS NORTH
TEST BORING #	11	JOB NO.	220455
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"	
4	
10	
20	100.0%
40	99.8%
100	98.9%
200	90.5%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

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

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

LABORATORY TEST RESULTS

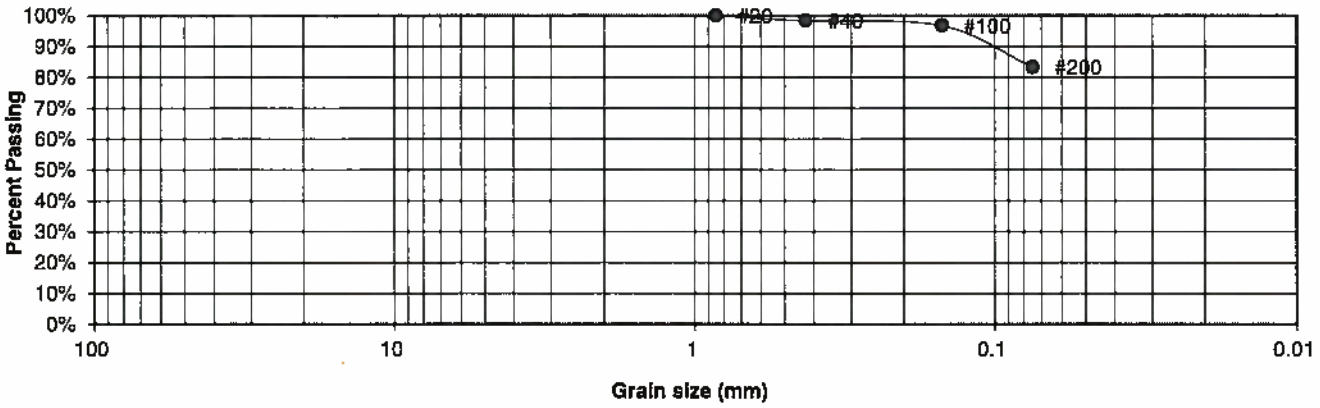
DRAWN:	DATE:	CHECKED: SW	DATE: 3-25-22

JOB NO.: 220455

FIG NO.: B-2

UNIFIED CLASSIFICATION	CL	CLIENT	TECH CONTRACTORS
SOIL TYPE #	2	PROJECT	ROLLING HILLS NORTH
TEST BORING #	15	JOB NO.	220455
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	100.0%
40	98.3%
100	96.8%
200	83.3%

Atterberg Limits	
Plastic Limit	14
Liquid Limit	31
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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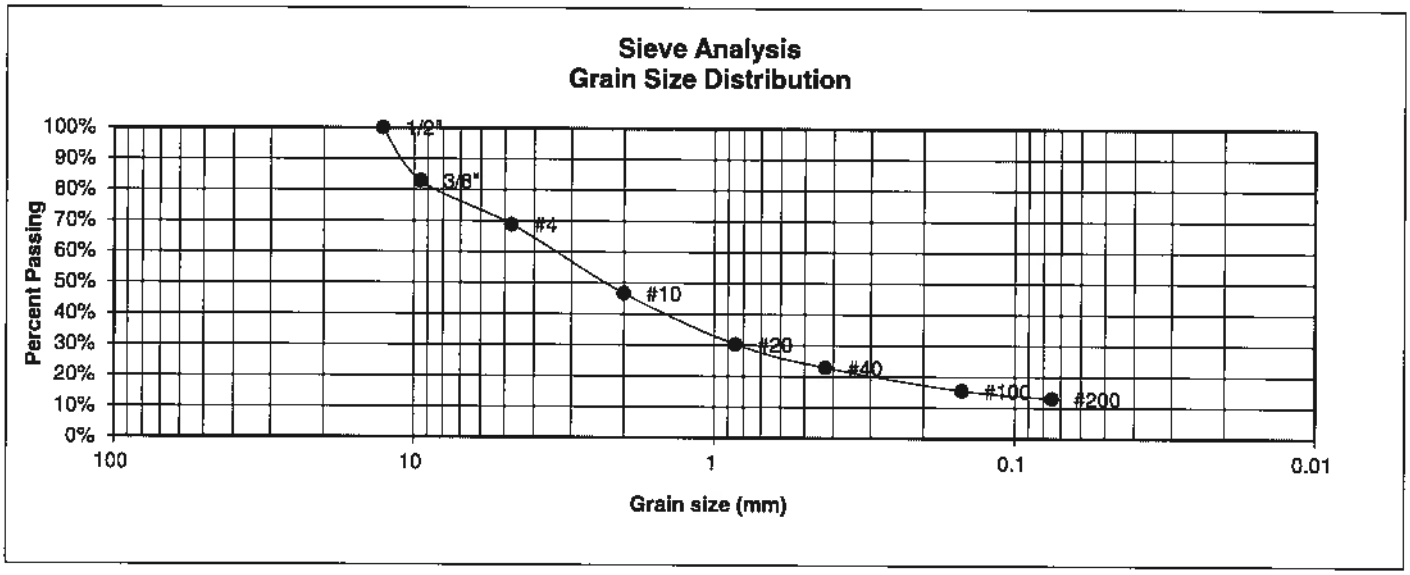
JOB NO.: 220455

FIG NO.: B-3

UNIFIED CLASSIFICATION	SM	CLIENT	TECH CONTRACTORS
SOIL TYPE #	3	PROJECT	ROLLING HILLS NORTH
TEST BORING #	11	JOB NO.	220455
DEPTH (FT)	15	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	82.9%
4	68.8%
10	46.7%
20	30.3%
40	22.8%
100	15.5%
200	13.0%

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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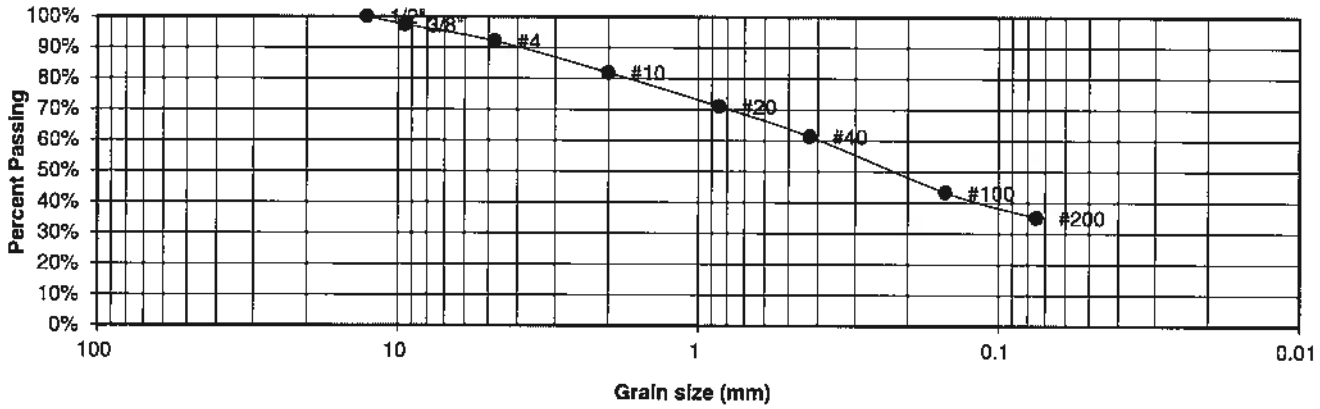
JOB NO.: 220455

FIG NO.: B-4

UNIFIED CLASSIFICATION	SC	CLIENT	TECH CONTRACTORS
SOIL TYPE #	3	PROJECT	ROLLING HILLS NORTH
TEST BORING #	16	JOB NO.	220455
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"	97.4%
4	92.1%
10	82.0%
20	71.0%
40	61.4%
100	43.3%
200	35.2%

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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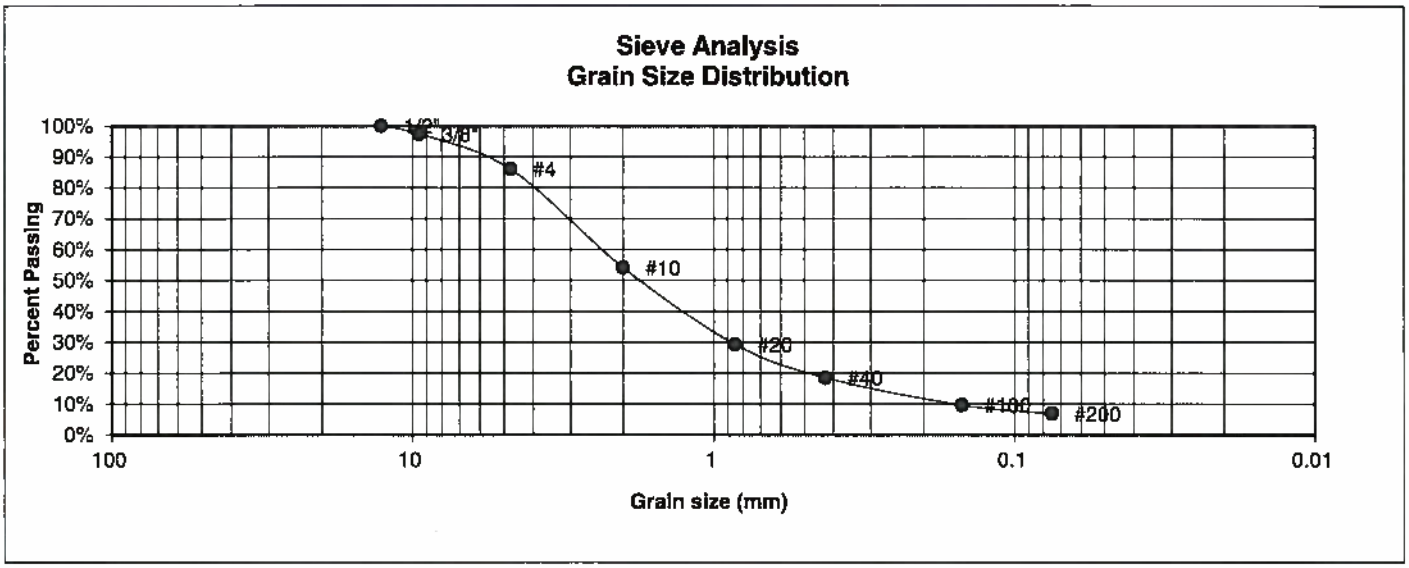
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED: SW	DATE: 3-25-22

JOB NO.: 220455

FIG NO.: B-5

UNIFIED CLASSIFICATION	SM-SW	CLIENT	TECH CONTRACTORS
SOIL TYPE #	3	PROJECT	ROLLING HILLS NORTH
TEST BORING #	4	JOB NO.	220455
DEPTH (FT)	5	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	97.4%
4	86.1%
10	54.1%
20	29.3%
40	18.5%
100	9.6%
200	6.9%

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

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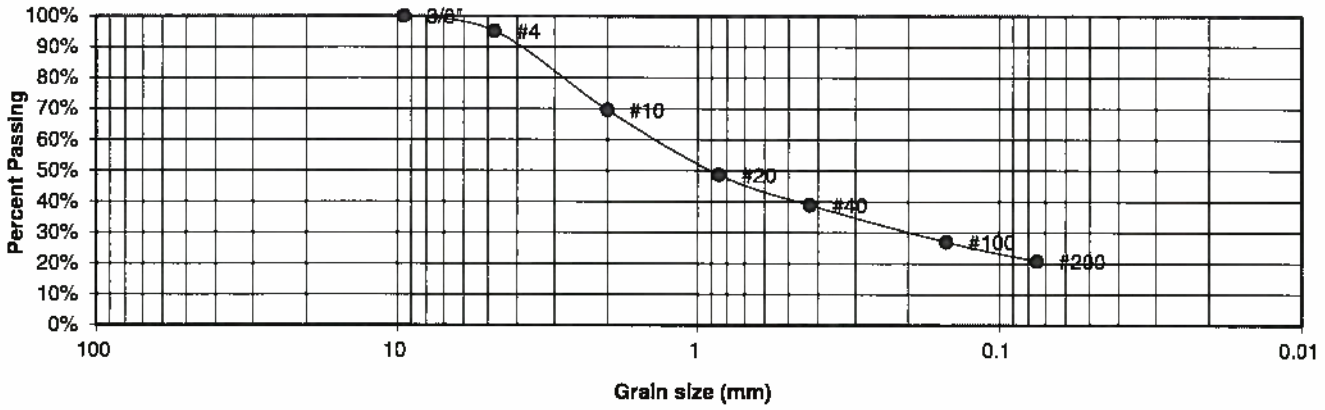
JOB NO.: 220455

FIG NO.: B-6

UNIFIED CLASSIFICATION	SM	CLIENT	TECH CONTRACTORS
SOIL TYPE #	3	PROJECT	ROLLING HILLS NORTH
TEST BORING #	5	JOB NO.	220455
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	95.1%
10	69.6%
20	48.7%
40	38.9%
100	27.0%
200	20.8%

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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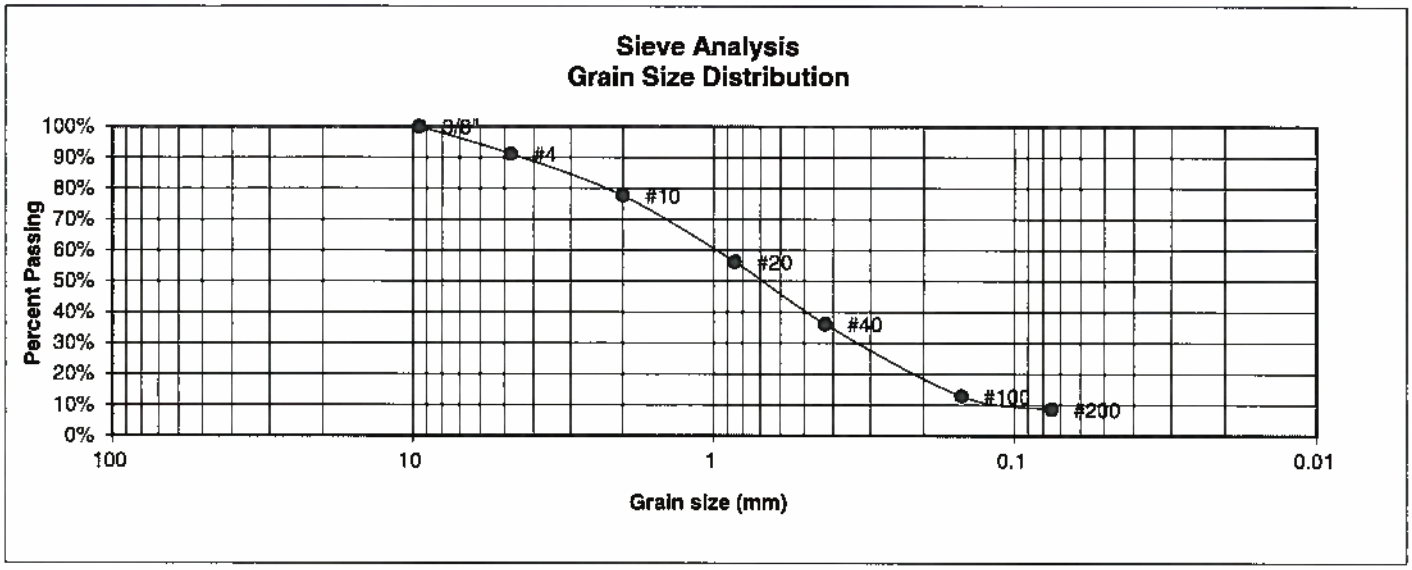
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED: SW	DATE: 3-25-22

JOB NO.: 220455

FIG NO.: B-7

UNIFIED CLASSIFICATION	SM-SW	CLIENT	TECH CONTRACTORS
SOIL TYPE #	3	PROJECT	ROLLING HILLS NORTH
TEST BORING #	9	JOB NO.	220455
DEPTH (FT)	10	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	91.1%
10	77.7%
20	56.2%
40	36.1%
100	12.9%
200	8.6%

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

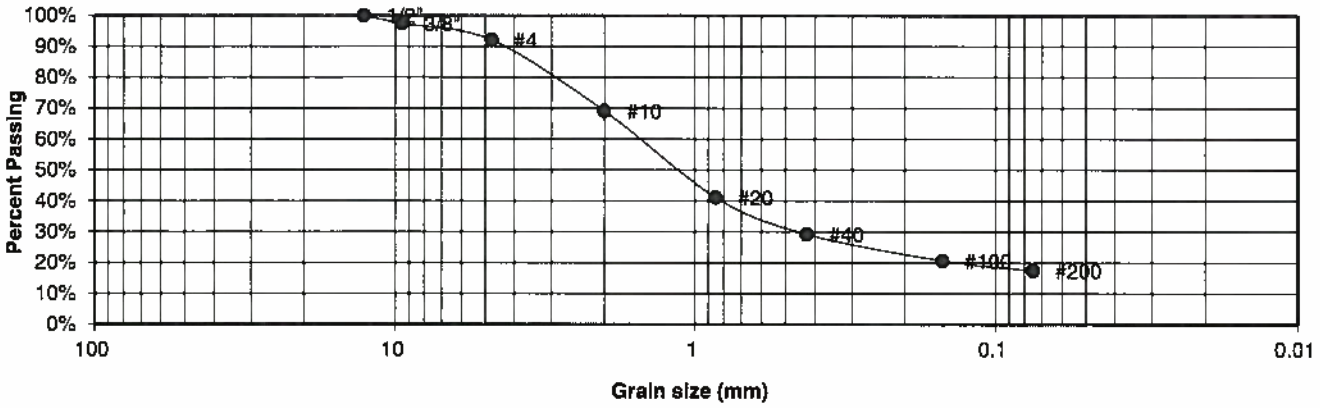
DRAWN:	DATE:	CHECKED: SW	DATE: 3-25-22

JOB NO.: 220455

FIG NO.: B-8

UNIFIED CLASSIFICATION	SM	CLIENT	TECH CONTRACTORS
SOIL TYPE #	3	PROJECT	ROLLING HILLS NORTH
TEST BORING #	10	JOB NO.	220455
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"	97.4%
4	92.0%
10	69.1%
20	41.1%
40	29.2%
100	20.7%
200	17.4%

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
COLORADO SPRINGS, COLORADO 80907

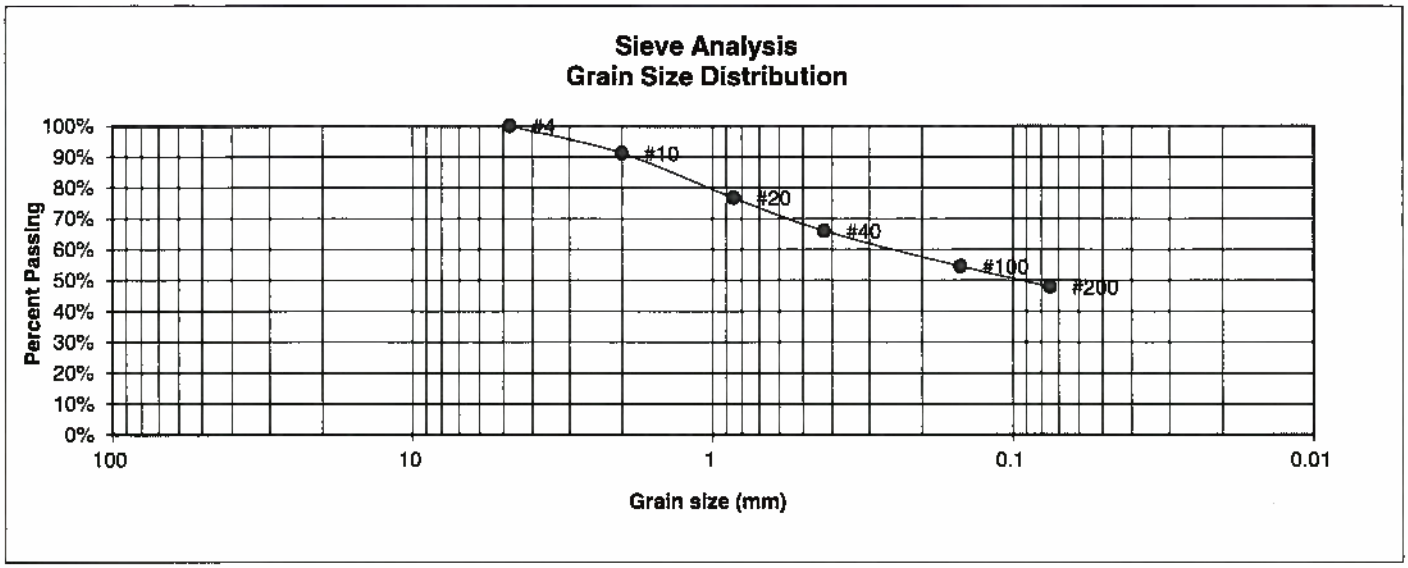
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED: SW	DATE: 3-25-22

JOB NO.: 220455

FIG NO.: B-9

UNIFIED CLASSIFICATION	SC	CLIENT	TECH CONTRACTORS
SOIL TYPE #	3	PROJECT	ROLLING HILLS NORTH
TEST BORING #	12	JOB NO.	220455
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	91.2%
20	76.8%
40	66.0%
100	54.6%
200	47.9%

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.
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LABORATORY TEST RESULTS

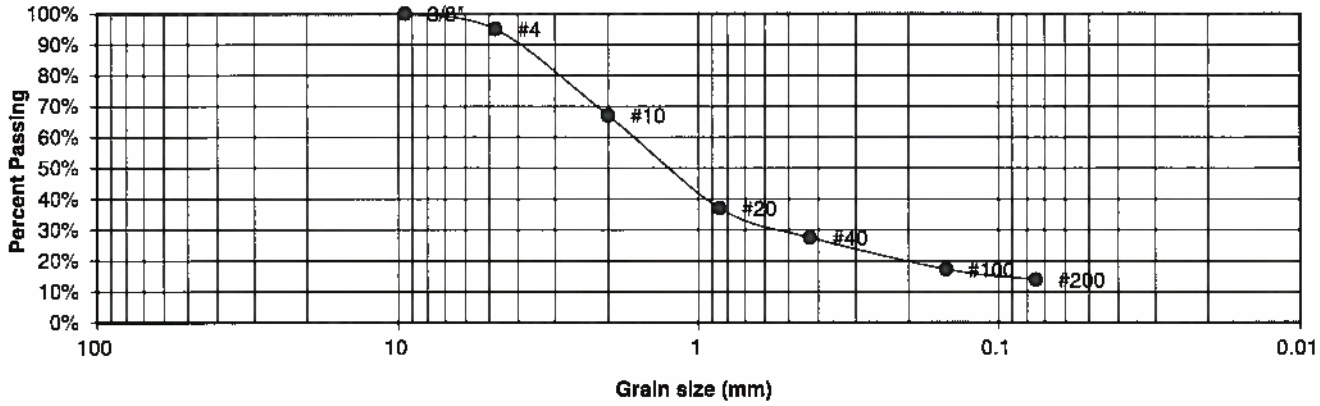
DRAWN:	DATE:	CHECKED: SW	DATE: 3-25-22

JOB NO.: 220455

FIG NO.: B-10

UNIFIED CLASSIFICATION	SM	CLIENT	TECH CONTRACTORS
SOIL TYPE #	3	PROJECT	ROLLING HILLS NORTH
TEST BORING #	13	JOB NO.	220455
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	95.0%
10	67.1%
20	37.0%
40	27.5%
100	17.2%
200	13.9%

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

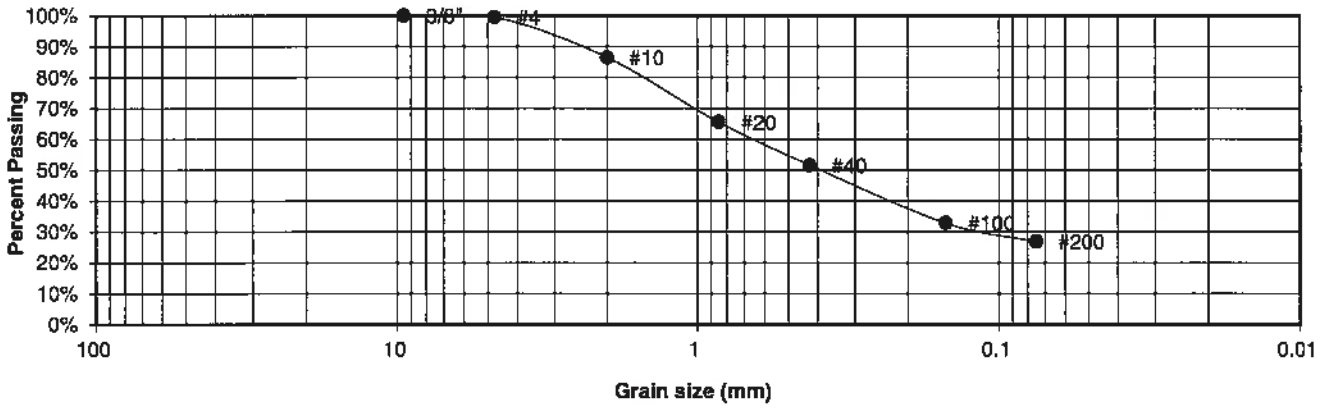
DRAWN:	DATE:	CHECKED: SW	DATE: 3-25-22

JOB NO.: 220455

FIG NO.: B-11

UNIFIED CLASSIFICATION	SM	CLIENT	TECH CONTRACTORS
SOIL TYPE #	3	PROJECT	ROLLING HILLS NORTH
TEST BORING #	14	JOB NO.	220455
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	99.5%
10	86.5%
20	65.5%
40	51.6%
100	32.8%
200	26.8%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

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

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

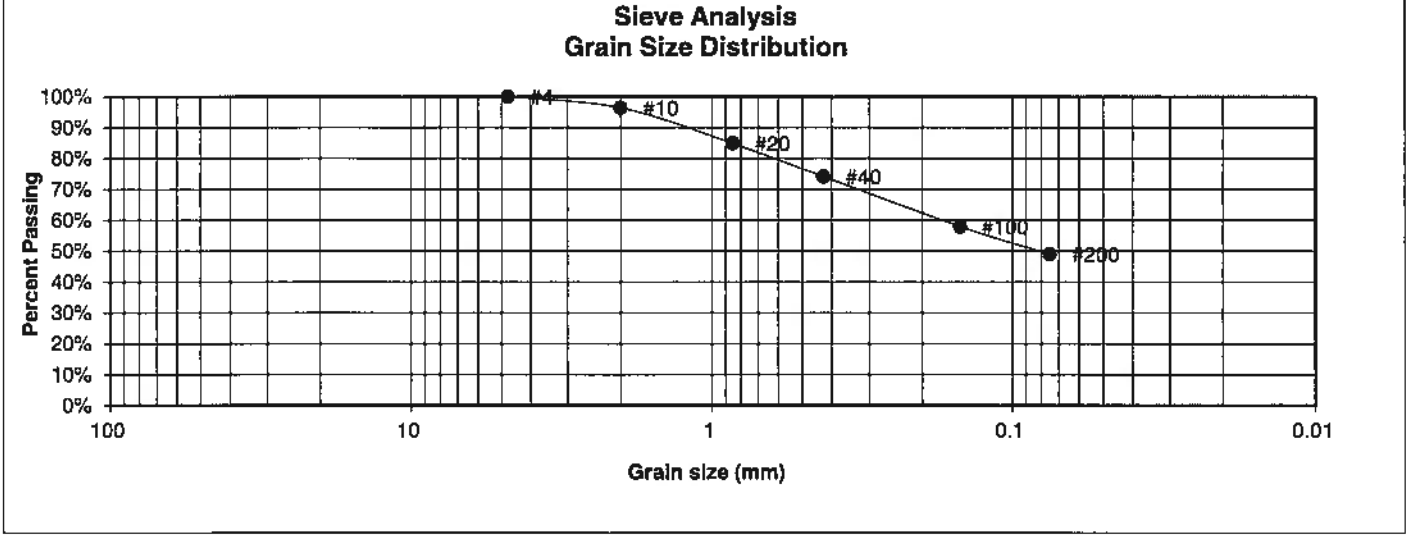
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED: SW	DATE: 3-25-22

JOB NO.: 220455

FIG NO.: B-12

UNIFIED CLASSIFICATION	SC	CLIENT	TECH CONTRACTORS
SOIL TYPE #	3	PROJECT	ROLLING HILLS NORTH
TEST BORING #	18	JOB NO.	220455
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	96.4%
20	84.8%
40	74.1%
100	57.9%
200	49.0%

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
COLORADO SPRINGS, COLORADO 80907

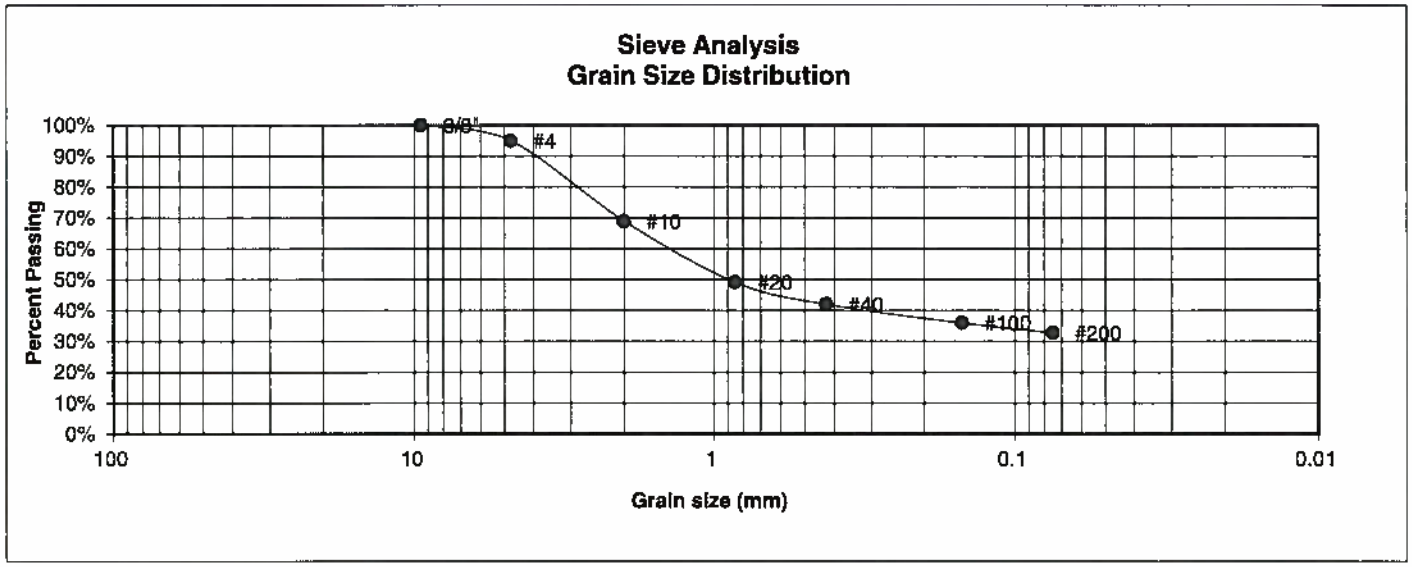
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED: SW	DATE: 3-25-22

JOB NO.: 220455

FIG NO.: B-13

UNIFIED CLASSIFICATION	SC	CLIENT	TECH CONTRACTORS
SOIL TYPE #	3	PROJECT	ROLLING HILLS NORTH
TEST BORING #	19	JOB NO.	220455
DEPTH (FT)	15	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	94.9%
10	68.9%
20	49.1%
40	42.0%
100	36.0%
200	32.8%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

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

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

LABORATORY TEST RESULTS

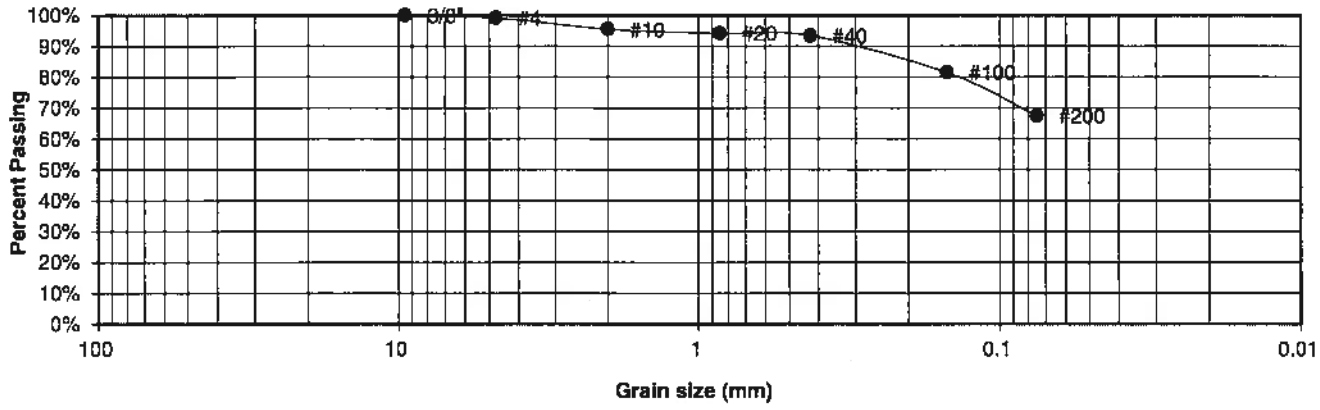
DRAWN:	DATE:	CHECKED: SW	DATE: 3-22-25

JOB NO.: 220455

FIG NO.: B-14

UNIFIED CLASSIFICATION	CL	CLIENT	TECH CONTRACTORS
SOIL TYPE #	4	PROJECT	ROLLING HILLS NORTH
TEST BORING #	1	JOB NO.	220455
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	99.2%
10	95.5%
20	94.2%
40	93.4%
100	81.5%
200	67.4%

Atterberg Limits

Plastic Limit	17
Liquid Limit	36
Plastic Index	19

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

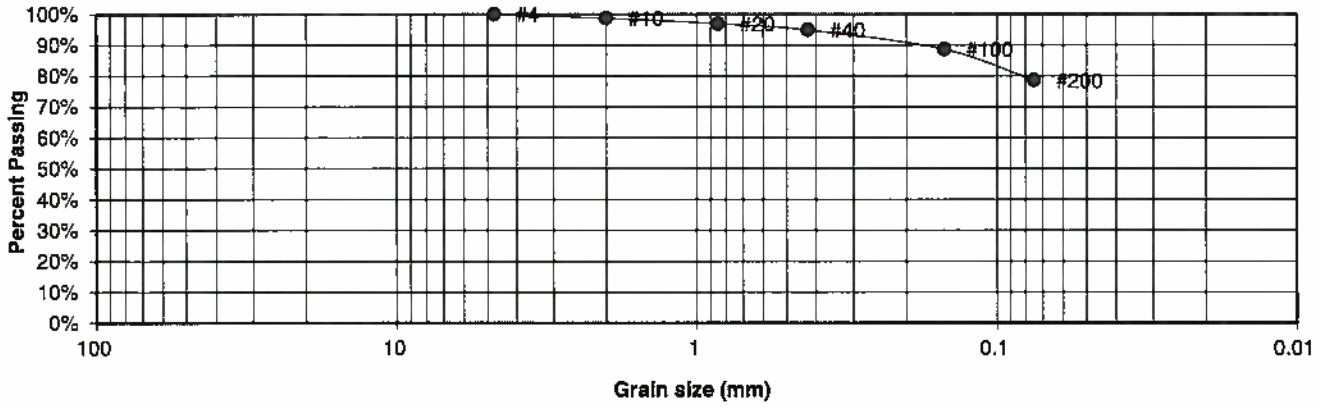
DRAWN:	DATE:	CHECKED:	DATE:
		SW	3-25-22

JOB NO.: 220455

FIG NO.: B-15

UNIFIED CLASSIFICATION	CL	CLIENT	TECH CONTRACTORS
SOIL TYPE #	4	PROJECT	ROLLING HILLS NORTH
TEST BORING #	2	JOB NO.	220455
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	100.0%
10	98.8%
20	96.9%
40	94.9%
100	88.6%
200	78.6%

Atterberg Limits	
Plastic Limit	20
Liquid Limit	42
Plastic Index	22

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

ENTECH
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LABORATORY TEST RESULTS

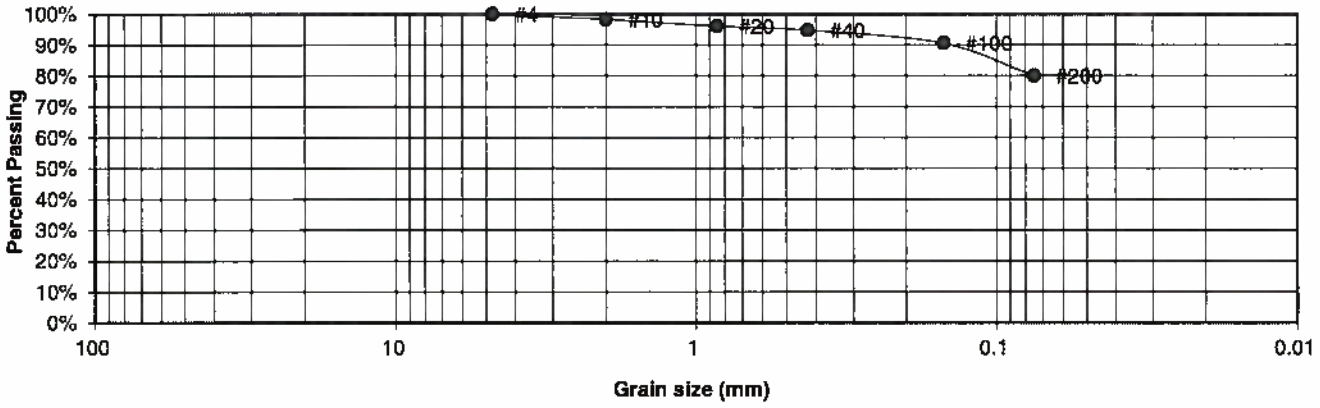
DRAWN:	DATE:	CHECKED: SW	DATE: 3-25-22

JOB NO.: 220455

FIG NO.: B-16

UNIFIED CLASSIFICATION	CL	CLIENT	TECH CONTRACTORS
SOIL TYPE #	4	PROJECT	ROLLING HILLS NORTH
TEST BORING #	3	JOB NO.	220455
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	100.0%
10	98.3%
20	96.1%
40	94.7%
100	90.5%
200	80.0%

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
COLORADO SPRINGS, COLORADO 80907

LABORATORY TEST RESULTS

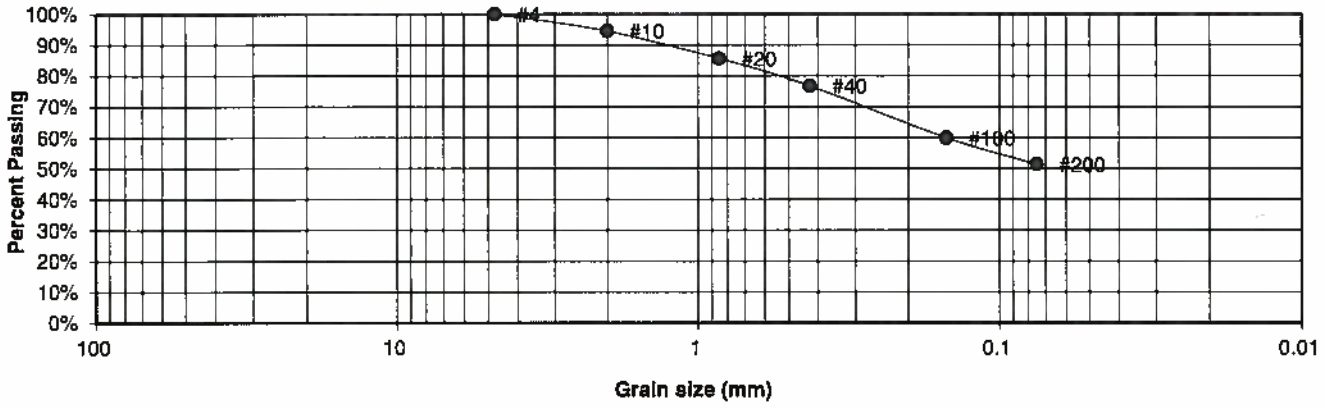
DRAWN:	DATE:	CHECKED: SW	DATE: 3-25-22

JOB NO.: 220455

FIG NO.: B-17

UNIFIED CLASSIFICATION	CL	CLIENT	TECH CONTRACTORS
SOIL TYPE #	4	PROJECT	ROLLING HILLS NORTH
TEST BORING #	4	JOB NO.	220455
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"	
4	100.0%
10	94.5%
20	85.6%
40	76.8%
100	59.9%
200	51.3%

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
COLORADO SPRINGS, COLORADO 80907

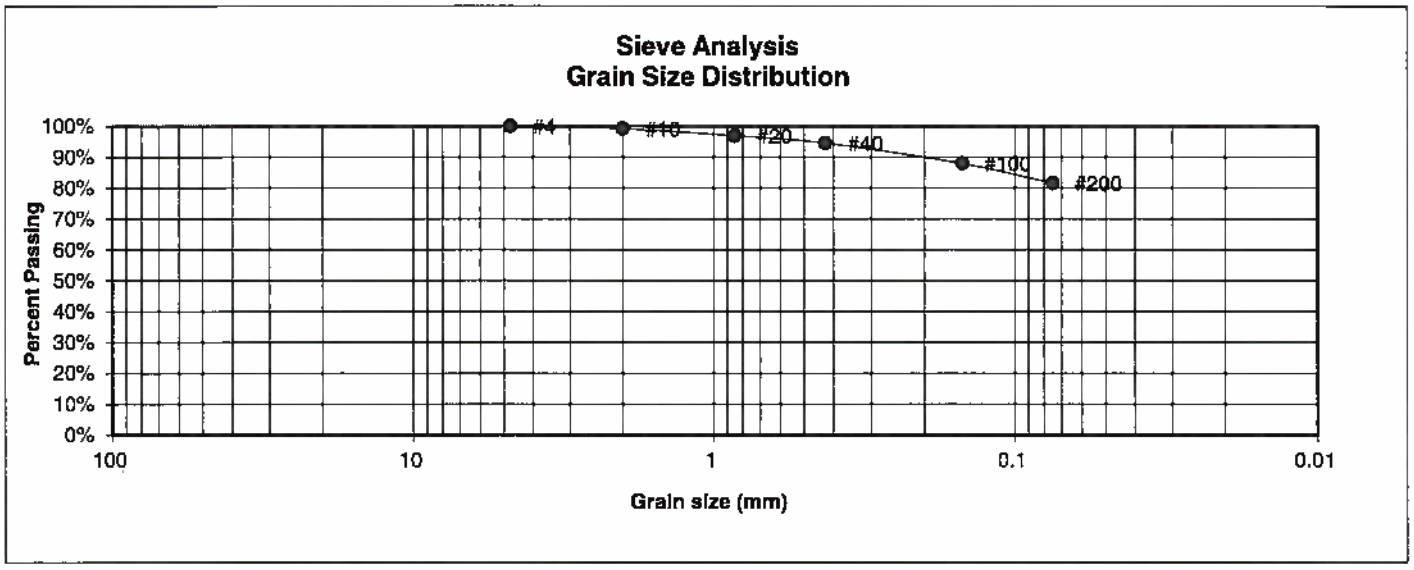
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED: SW	DATE: 3-25-22

JOB NO.: 220455

FIG NO.: B-18

UNIFIED CLASSIFICATION	CL	CLIENT	TECH CONTRACTORS
SOIL TYPE #	4	PROJECT	ROLLING HILLS NORTH
TEST BORING #	6	JOB NO.	220455
DEPTH (FT)	10	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	100.0%
10	99.2%
20	96.9%
40	94.6%
100	88.0%
200	81.5%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

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

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

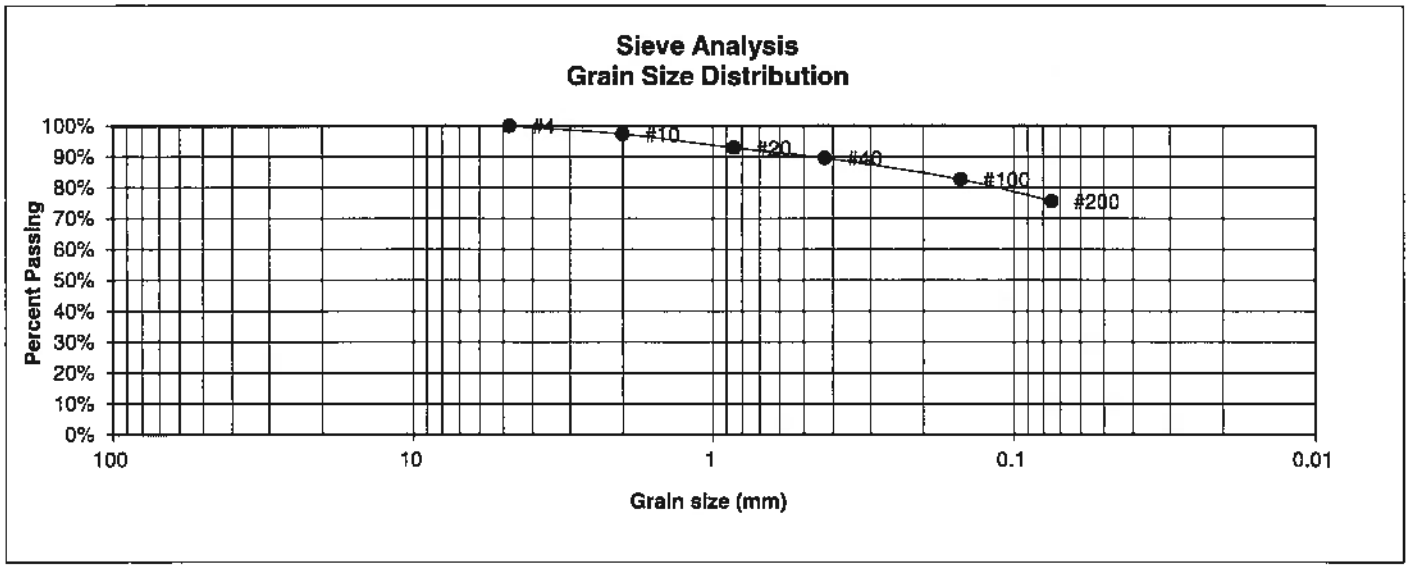
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED: SW	DATE: 3-25-22

JOB NO.: 220455

FIG NO.: B-19

UNIFIED CLASSIFICATION	CL	CLIENT	TECH CONTRACTORS
SOIL TYPE #	4	PROJECT	ROLLING HILLS NORTH
TEST BORING #	7	JOB NO.	220455
DEPTH (FT)	5	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	100.0%
10	97.4%
20	92.8%
40	89.5%
100	82.6%
200	75.5%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

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

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
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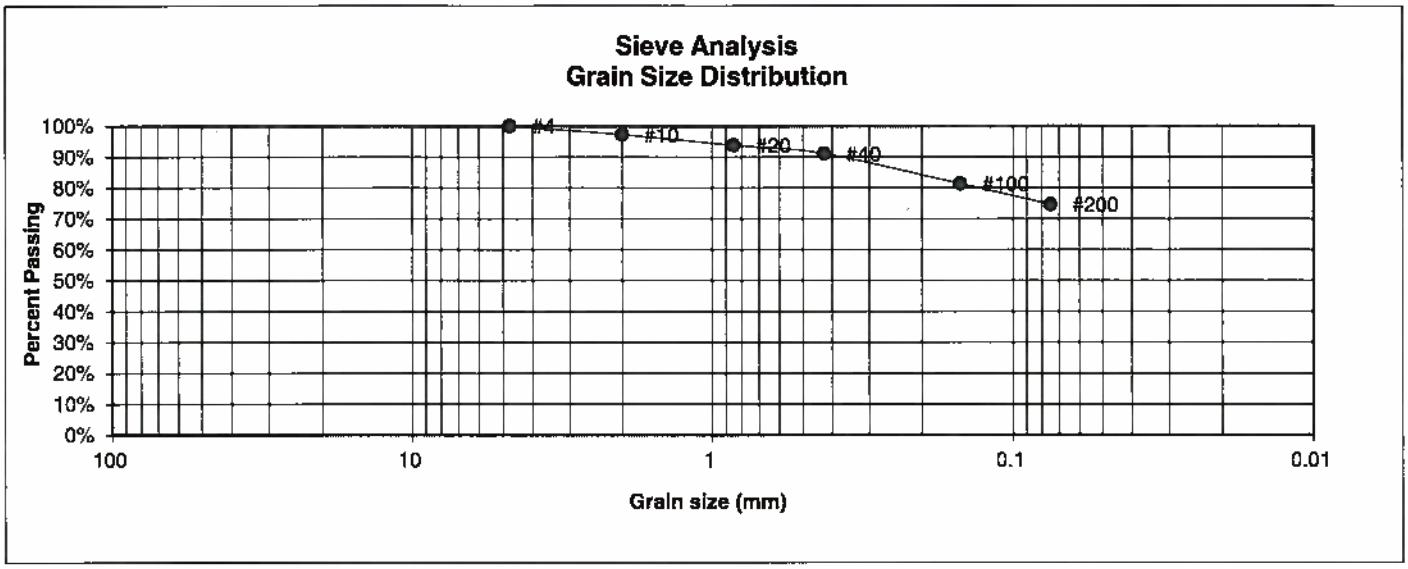
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED: SW	DATE: 3-25-22

JOB NO.: 220455

FIG NO.: B-20

UNIFIED CLASSIFICATION	CL	CLIENT	TECH CONTRACTORS
SOIL TYPE #	4	PROJECT	ROLLING HILLS NORTH
TEST BORING #	17	JOB NO.	220455
DEPTH (FT)	10	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	100.0%
10	97.2%
20	93.8%
40	91.1%
100	81.4%
200	74.6%

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
COLORADO SPRINGS, COLORADO 80907

LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED: SW	DATE: 3-25-22

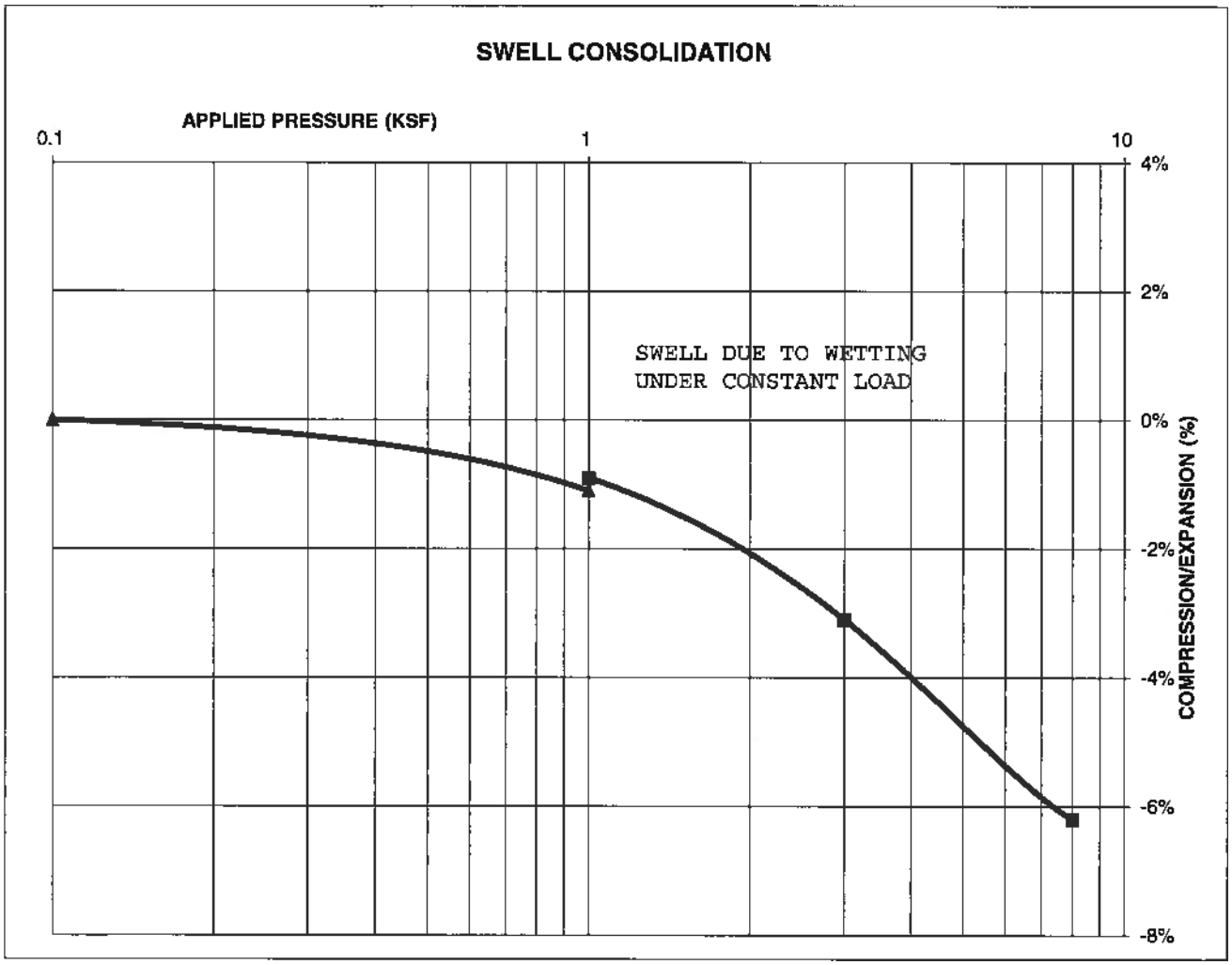
JOB NO.: 220455

FIG NO.: B-21

CONSOLIDATION TEST RESULTS

TEST BORING #	8	DEPTH(ft)	2-3
DESCRIPTION	SC	SOIL TYPE	1
NATURAL UNIT DRY WEIGHT (PCF)			111
NATURAL MOISTURE CONTENT			10.1%
SWELL/CONSOLIDATION (%)			0.2%

JOB NO. 220455
CLIENT TECH CONTRACTORS
PROJECT ROLLING HILLS NORTH



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ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

SWELL CONSOLIDATION
TEST RESULTS

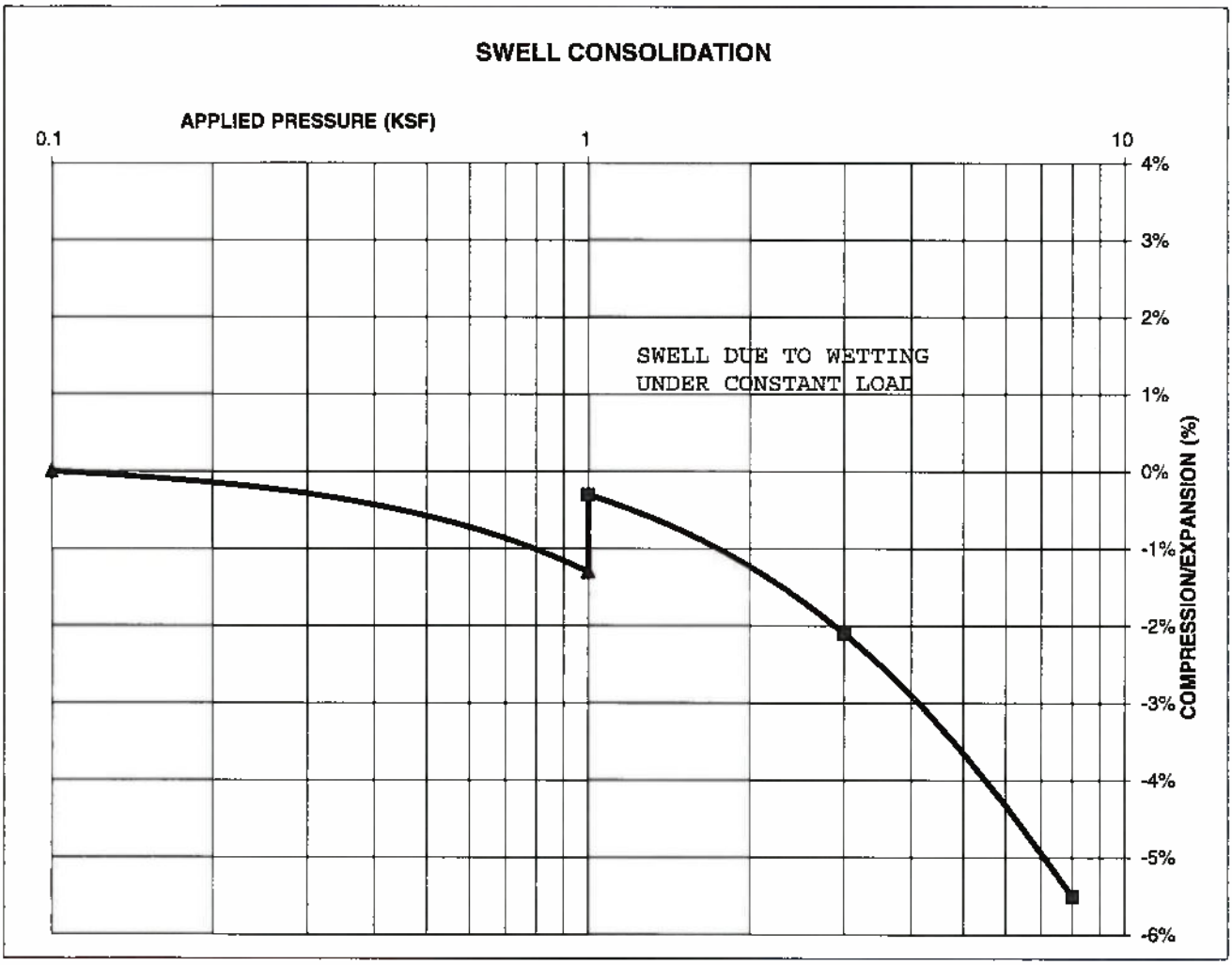
DRAWN:	DATE:	CHECKED: SW	DATE: 3-25-22

JOB NO.: 220455
FIG NO.: B-22

CONSOLIDATION TEST RESULTS

TEST BORING #	11	DEPTH(ft)	2-3
DESCRIPTION	CL	SOIL TYPE	2
NATURAL UNIT DRY WEIGHT (PCF)			99
NATURAL MOISTURE CONTENT			13.0%
SWELL/CONSOLIDATION (%)			1.0%

JOB NO. 220455
CLIENT TECH CONTRACTORS
PROJECT ROLLING HILLS NORTH



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505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

SWELL CONSOLIDATION
TEST RESULTS

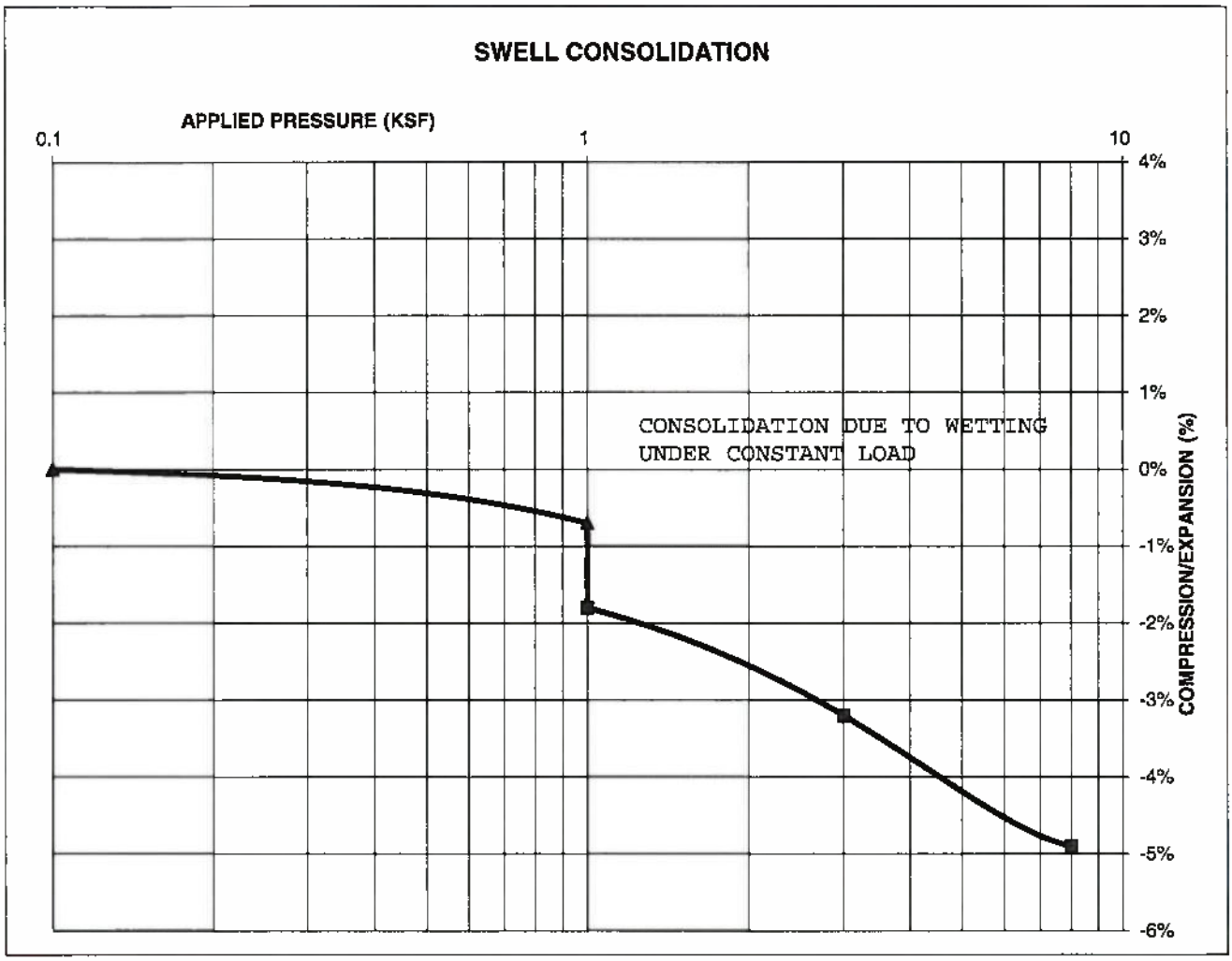
DRAWN:	DATE:	CHECKED: SW	DATE: 3-25-22

JOB NO.: 220455
FIG NO.: B-23

CONSOLIDATION TEST RESULTS

TEST BORING #	15	DEPTH(ft)	5
DESCRIPTION	CL	SOIL TYPE	2
NATURAL UNIT DRY WEIGHT (PCF)			112
NATURAL MOISTURE CONTENT			9.2%
SWELL/CONSOLIDATION (%)			-1.1%

JOB NO. 220455
CLIENT TECH CONTRACTORS
PROJECT ROLLING HILLS NORTH



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COLORADO SPRINGS, COLORADO 80907

SWELL CONSOLIDATION
TEST RESULTS

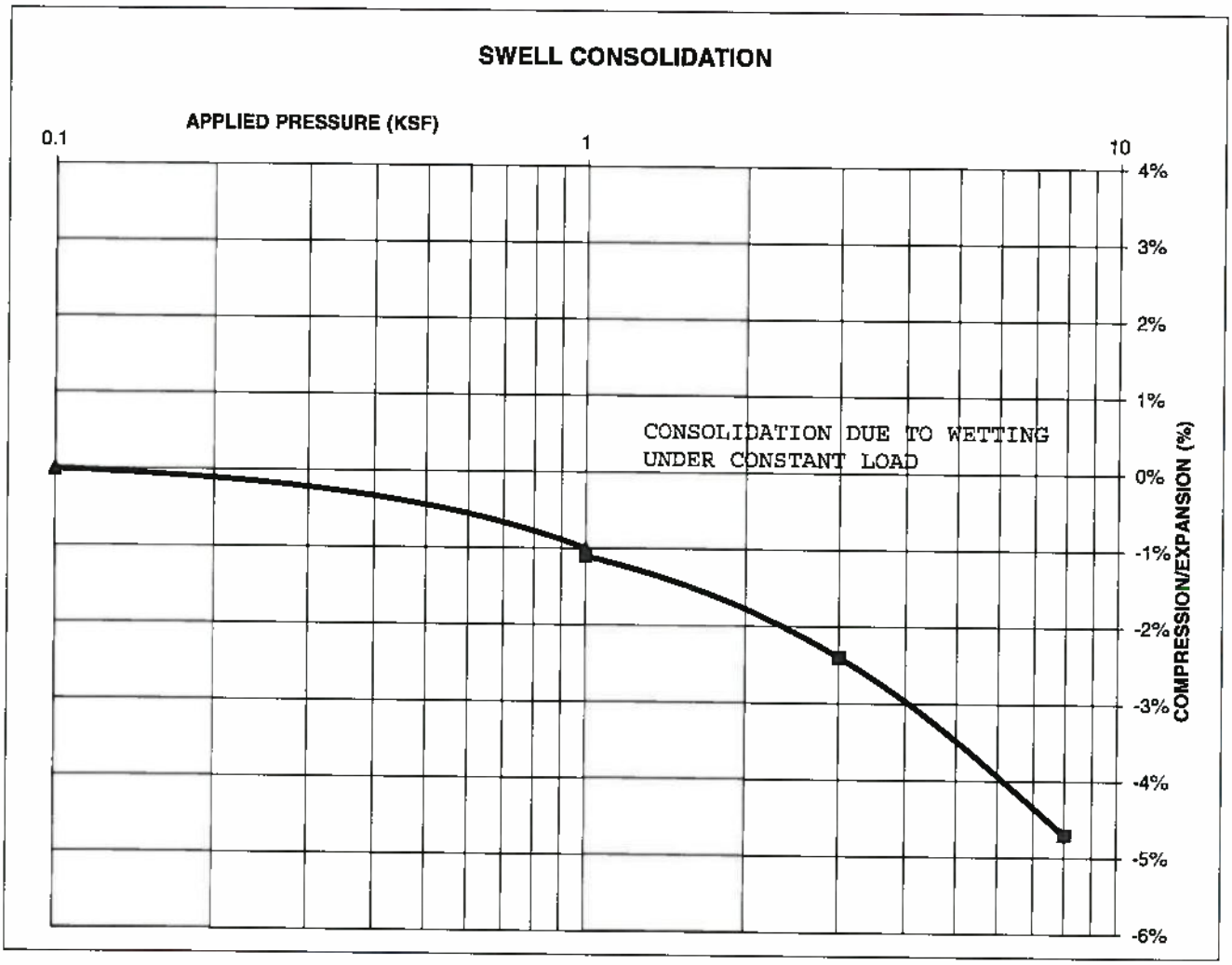
DRAWN:	DATE:	CHECKED: SW	DATE: 3-25-22

JOB NO.: 220455
FIG NO.: B-24

CONSOLIDATION TEST RESULTS

TEST BORING #	12	DEPTH(ft)	20
DESCRIPTION	SC	SOIL TYPE	3
NATURAL UNIT DRY WEIGHT (PCF)			118
NATURAL MOISTURE CONTENT			10.5%
SWELL/CONSOLIDATION (%)			-0.1%

JOB NO. 220455
CLIENT TECH CONTRACTORS
PROJECT ROLLING HILLS NORTH



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SWELL CONSOLIDATION
TEST RESULTS

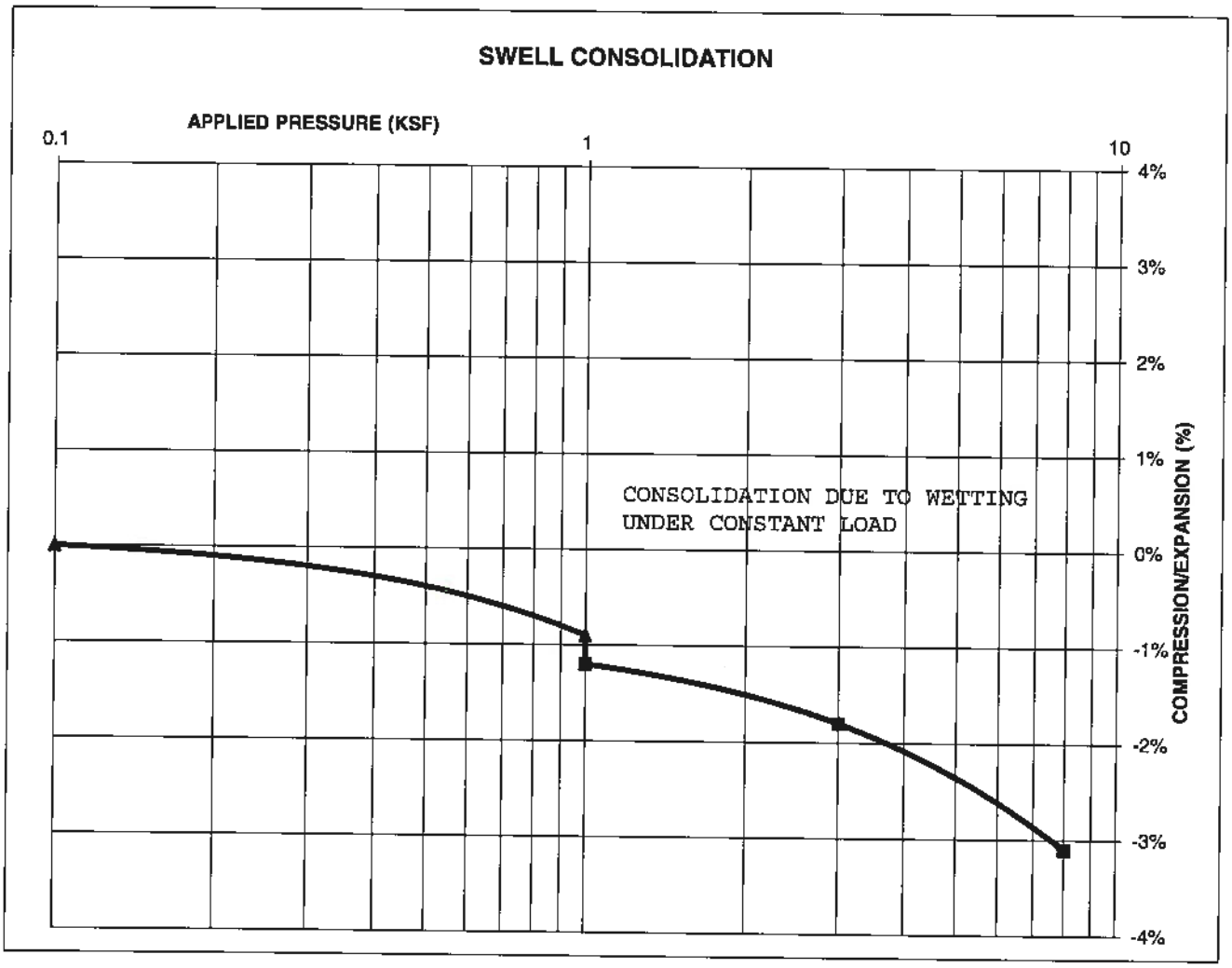
DRAWN:	DATE:	CHECKED: SW	DATE: 3-25-22

JOB NO.: 220455
FIG NO.: B-25

CONSOLIDATION TEST RESULTS

TEST BORING #	19	DEPTH(ft)	15
DESCRIPTION	SC	SOIL TYPE	3
NATURAL UNIT DRY WEIGHT (PCF)			121
NATURAL MOISTURE CONTENT			11.4%
SWELL/CONSOLIDATION (%)			-0.3%

JOB NO. 220455
CLIENT TECH CONTRACTORS
PROJECT ROLLING HILLS NORTH



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COLORADO SPRINGS, COLORADO 80907

SWELL CONSOLIDATION
TEST RESULTS

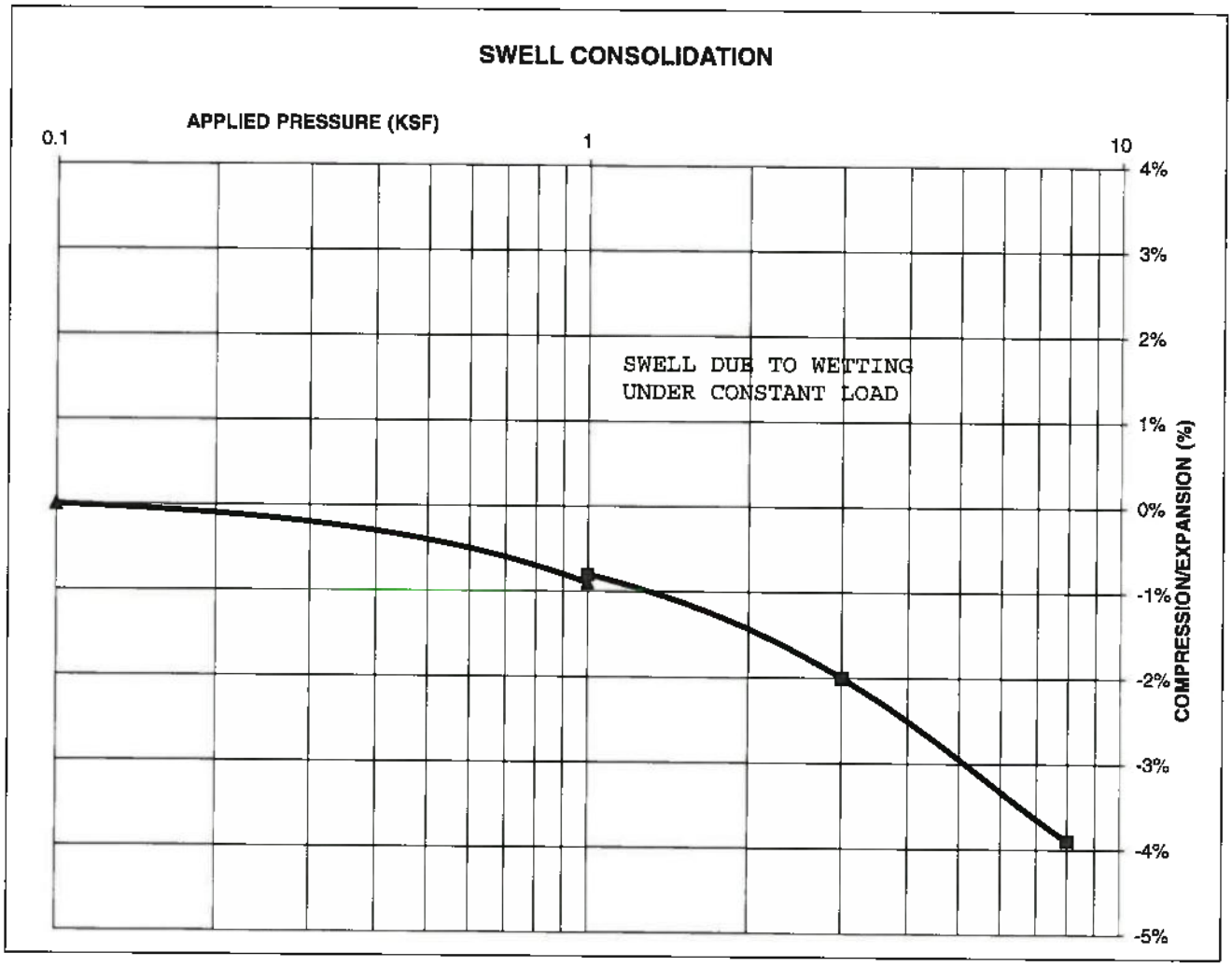
DRAWN:	DATE:	CHECKED: SW	DATE: 3-25-22

JOB NO.: 220455
FIG NO.: B-26

CONSOLIDATION TEST RESULTS

TEST BORING #	3	DEPTH(ft)	10
DESCRIPTION	CL	SOIL TYPE	4
NATURAL UNIT DRY WEIGHT (PCF)			115
NATURAL MOISTURE CONTENT			12.6%
SWELL/CONSOLIDATION (%)			0.1%

JOB NO. 220455
CLIENT TECH CONTRACTORS
PROJECT ROLLING HILLS NORTH



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COLORADO SPRINGS, COLORADO 80907

SWELL CONSOLIDATION
TEST RESULTS

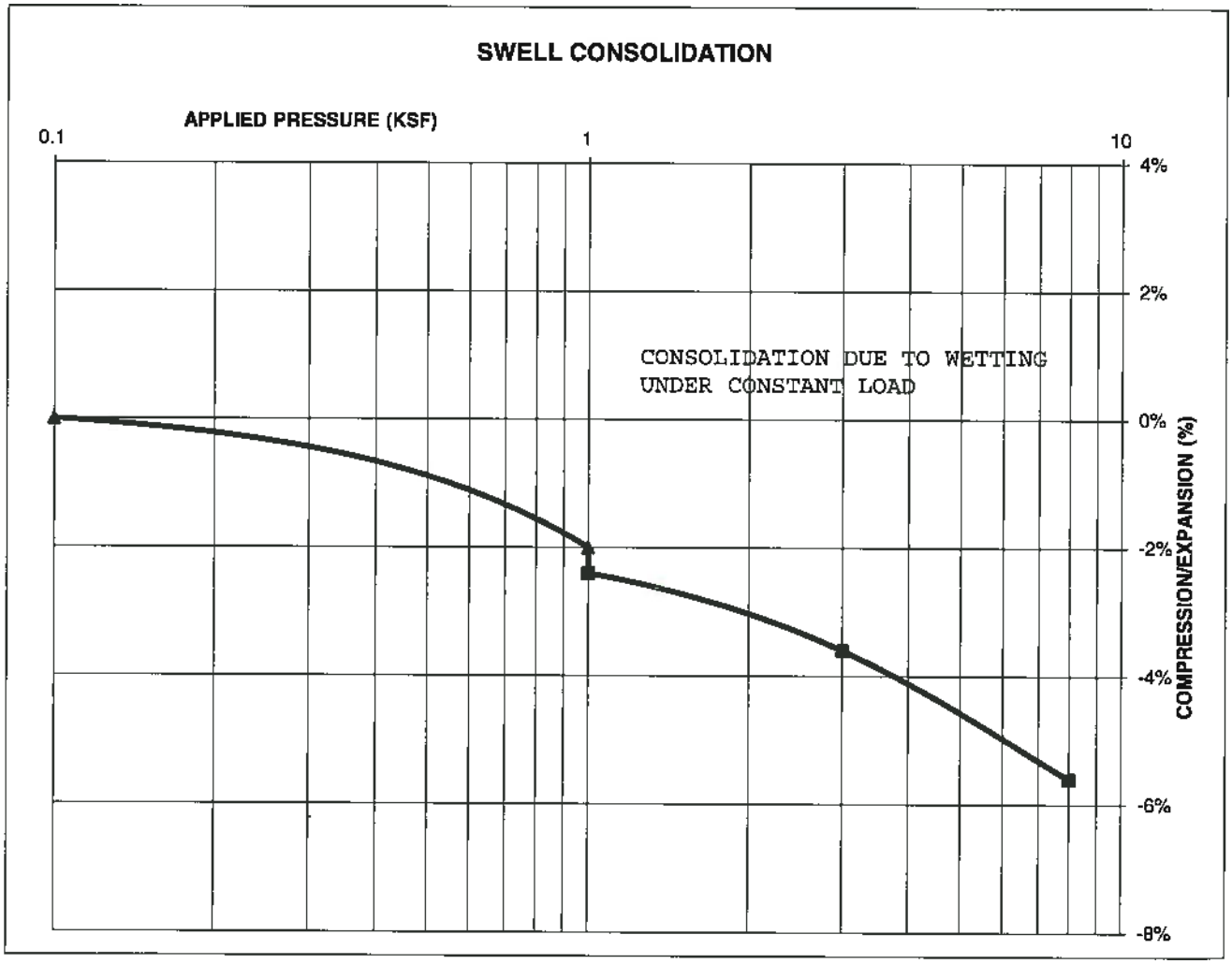
DRAWN:	DATE:	CHECKED: SW	DATE: 3-25-22

JOB NO.: 220455
FIG NO.: B-27

CONSOLIDATION TEST RESULTS

TEST BORING #	4	DEPTH(ft)	20
DESCRIPTION	CL	SOIL TYPE	4
NATURAL UNIT DRY WEIGHT (PCF)			112
NATURAL MOISTURE CONTENT			14.6%
SWELL/CONSOLIDATION (%)			-0.4%

JOB NO. 220455
CLIENT TECH CONTRACTORS
PROJECT ROLLING HILLS NORTH



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ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

SWELL CONSOLIDATION
TEST RESULTS

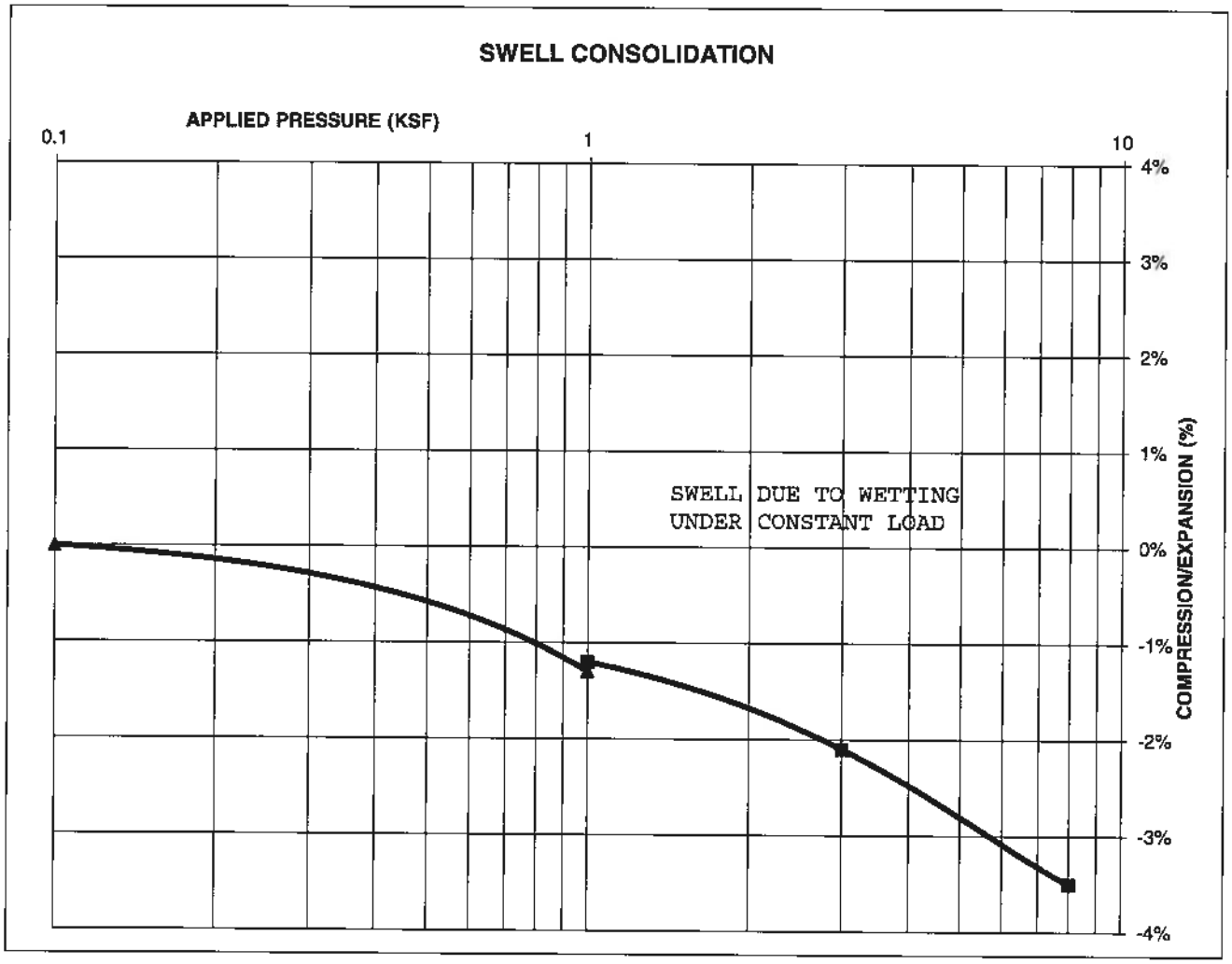
DRAWN:	DATE:	CHECKED: SW	DATE: 3-25-22

JOB NO: 220455
FIG NO: B-28

CONSOLIDATION TEST RESULTS

TEST BORING #	6	DEPTH(ft)	10
DESCRIPTION	CL	SOIL TYPE	4
NATURAL UNIT DRY WEIGHT (PCF)			122
NATURAL MOISTURE CONTENT			13.1%
SWELL/CONSOLIDATION (%)			0.1%

JOB NO. 220455
CLIENT TECH CONTRACTORS
PROJECT ROLLING HILLS NORTH



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505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

SWELL CONSOLIDATION
TEST RESULTS

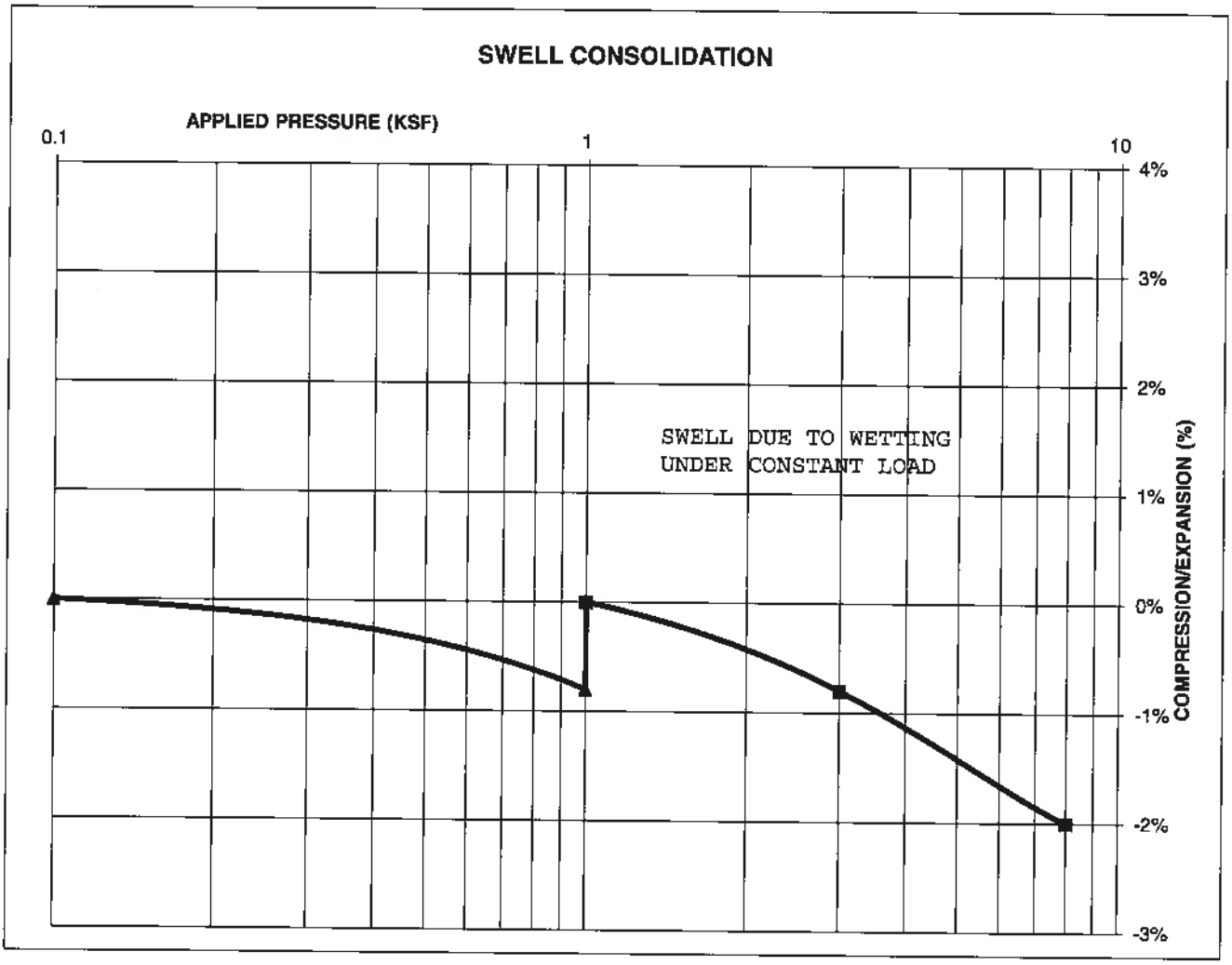
DRAWN:	DATE:	CHECKED: SW	DATE: 3-25-22

JOB NO.: 220455
FIG NO.: B-29

CONSOLIDATION TEST RESULTS

TEST BORING #	7	DEPTH(ft)	5
DESCRIPTION	CL	SOIL TYPE	4
NATURAL UNIT DRY WEIGHT (PCF)			121
NATURAL MOISTURE CONTENT			11.7%
SWELL/CONSOLIDATION (%)			0.8%

JOB NO. 220455
CLIENT TECH CONTRACTORS
PROJECT ROLLING HILLS NORTH



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505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

SWELL CONSOLIDATION
TEST RESULTS

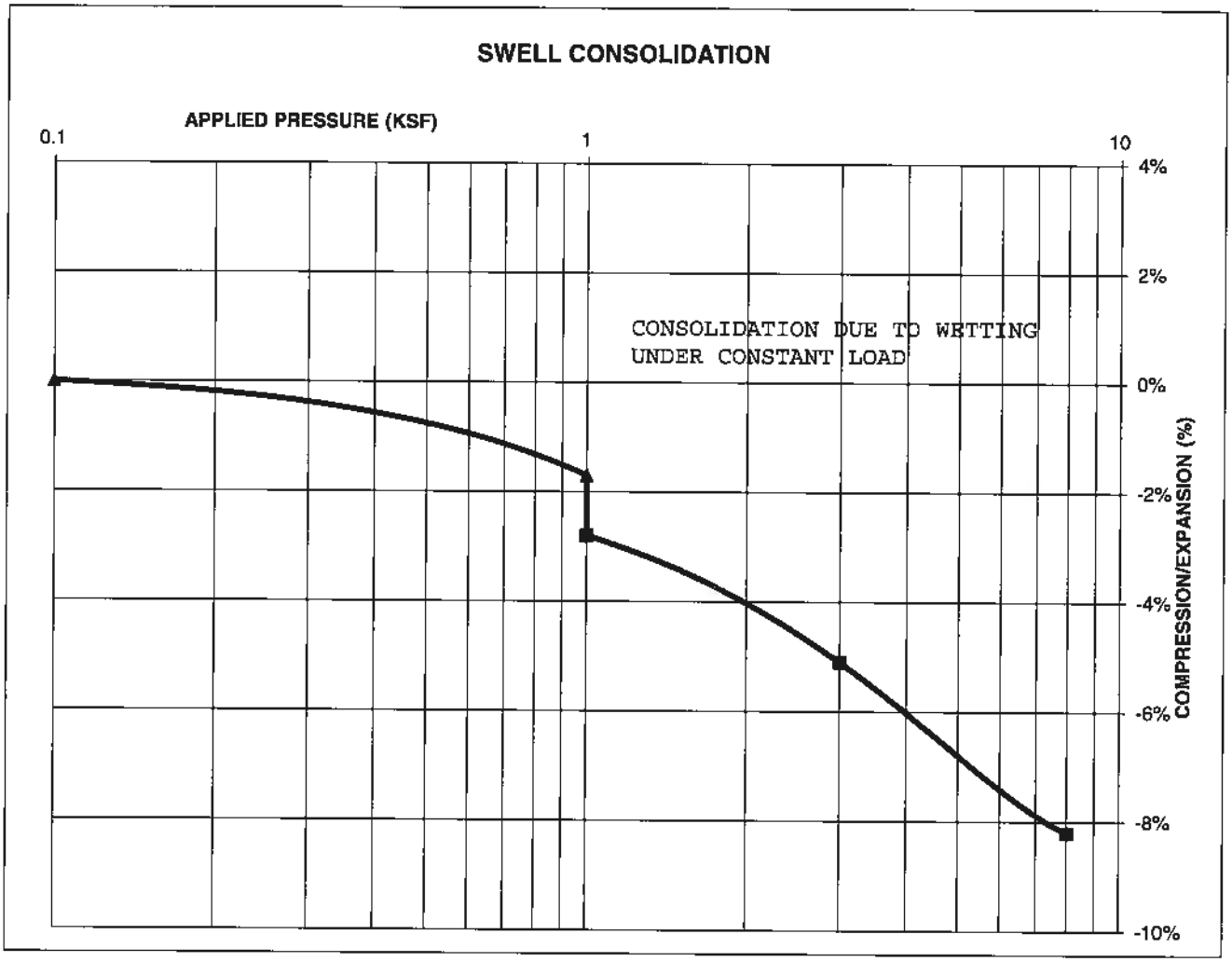
DRAWN:	DATE:	CHECKED: SW	DATE: 3-25-22

JOB NO.: 220455
FIG NO.: B-30

CONSOLIDATION TEST RESULTS

TEST BORING #	17	DEPTH(ft)	10
DESCRIPTION	CL	SOIL TYPE	4
NATURAL UNIT DRY WEIGHT (PCF)			107
NATURAL MOISTURE CONTENT			12.5%
SWELL/CONSOLIDATION (%)			-1.1%

JOB NO. 220455
CLIENT TECH CONTRACTORS
PROJECT ROLLING HILLS NORTH



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505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

SWELL CONSOLIDATION
TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		SW	3-25-22

JOB NO.: 220455
FIG NO.: B-31

CLIENT	TECH CONTRACTORS	JOB NO.	220455
PROJECT	ROLLING HILLS NORTH	DATE	3/18/2022
LOCATION	ROLLING HILLS NORTH	TEST BY	BL

BORING NUMBER	DEPTH, (ft)	SOIL TYPE NUMBER	UNIFIED CLASSIFICATION	WATER SOLUBLE SULFATE, (wt%)
TB-1	15	0		0.00
TB-2	5	0		0.00
TB-8	2-3	0		<0.01

QC BLANK PASS

ENTECH
ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

LABORATORY TEST
SULFATE RESULTS

DRAWN:	DATE:	CHECKED: SW	DATE: 3-25-22

JOB NO: 220455

FIG NO: B-32

APPENDIX C: Soil Survey Descriptions

El Paso County Area, Colorado

19—Columbine gravelly sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 367p
Elevation: 6,500 to 7,300 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 125 to 145 days
Farmland classification: Not prime farmland

Map Unit Composition

Columbine and similar soils: 97 percent
Minor components: 3 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Columbine

Setting

Landform: Flood plains, fan terraces, fans
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

A - 0 to 14 inches: gravelly sandy loam
C - 14 to 60 inches: very gravelly loamy sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: R049XY214CO - Gravelly Foothill
Hydric soil rating: No

Minor Components

Fluvaquentic haplaquolls

Percent of map unit: 1 percent

Landform: Swales
Hydric soil rating: Yes

Other soils
Percent of map unit: 1 percent
Hydric soil rating: No

Pleasant
Percent of map unit: 1 percent
Landform: Depressions
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 21, Aug 24, 2023

El Paso County Area, Colorado

83—Stapleton sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 369z
Elevation: 6,500 to 7,300 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 125 to 145 days
Farmland classification: Not prime farmland

Map Unit Composition

Stapleton and similar soils: 97 percent
Minor components: 3 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Stapleton

Setting

Landform: Hills
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy alluvium derived from arkose

Typical profile

A - 0 to 11 inches: sandy loam
Bw - 11 to 17 inches: gravelly sandy loam
C - 17 to 60 inches: gravelly loamy sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: R049XY214CO - Gravelly Foothill
Hydric soil rating: No

Minor Components

Fluvaquentic haplaquolls
Percent of map unit: 1 percent
Landform: Swales
Hydric soil rating: Yes

Other soils
Percent of map unit: 1 percent
Hydric soil rating: No

Pleasant
Percent of map unit: 1 percent
Landform: Depressions
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 21, Aug 24, 2023

APPENDIX D: Entech Overlot Fill Testing Records

ENTECH
ENGINEERING, INC.
Density Testing Summary

Client: Tech Contractors
Project: Rolling Hills Ranch North
Entech Job #: 221455.1
Subject: Overlot

QC Reviewed by:_____
QA Reviewed by:_____
Report Date: *23-Jan-24*

Test #	Test Location	Testing Date	Percent Compaction	Percent Required	Percent Moisture	Soil Type	Proctor Type/Value	Pass/Fail ☑ = Fail
1	120' north and 410' east of the southwest corner of Rolling Hills north lot, 5' below grade.	7/28/2022	95	95	7.2	SM	M - 127.8 @ 7.8	☐
2	115' north and 310' east of the southwest corner of Rolling Hills north lot, 3' below grade.	7/28/2022	95	95	6.8	SM	M - 127.8 @ 7.8	☐
3	110' north and 200' west of the southwest corner of Rolling Hills north lot, 1' below grade.	7/28/2022	96	95	7.6	SM	M - 127.8 @ 7.8	☐
4	105' north and 450' west of the southwest corner of Rolling Hills north lot, 4' below grade.	7/28/2022	95	95	8.4	SM	M - 127.8 @ 7.8	☐
5	115' north and 320' west of the southwest corner Rolling Hills north lot, 2' below grade.	7/28/2022	97	95	9.1	SM	M - 127.8 @ 7.8	☐
6	110' north and 120' west off the southwest corner of Rolling Hills north lot, at grade.	7/28/2022	95	95	7.9	SM	M - 127.8 @ 7.8	☐
7	120' north and 400' west off he southwest corner of Rolling Hills Ln, 3' below grade.	7/28/2022	96	95	6.2	SM	M - 127.8 @ 7.8	☐
8	105' north and 180' west of the southwest corner of Rolling Hills Ln, 1' below grade.	7/28/2022	95	95	6.5	SM	M - 127.8 @ 7.8	☐
9	170' north and 410' east off the southwest corner of Rolling Hills north lot 2' below grade.	7/29/2022	95	95	7.2	SM	M - 127.8 @ 7.8	☐
10	150' north and 250' east off the southwest corner of Rolling Hills north lot, 1' below grade.	7/29/2022	96	95	8.1	SM	M - 127.8 @ 7.8	☐
11	120' north and 100' east of the southwest corner of Rolling Hills north lot, at grade.	7/29/2022	96	95	6.4	SM	M - 127.8 @ 7.8	☐
12	105' north and 120' east off the southwest corner of Rolling Hills north lot, at grade.	7/29/2022	95	95	7.5	SM	M - 127.8 @ 7.8	☐

ENTECH
ENGINEERING, INC.
Density Testing Summary

Client: Tech Contractors
Project: Rolling Hills Ranch North
Entech Job #: 221455.1
Subject: Overlot

QC Reviewed by:_____
QA Reviewed by:_____
Report Date: *23-Jan-24*

Test #	Test Location	Testing Date	Percent Compaction	Percent Required	Percent Moisture	Soil Type	Proctor Type/Value	Pass/Fail ☑ = Fail
13	Marker GPS # 1047, 4' below grade.	8/3/2022	98	95	8.2	SM	M - 130.4 @ 7.6	☐
14	Marker GPS # 1123, 4' below grade.	8/3/2022	98	95	8.4	SM	M - 130.4 @ 7.6	☐
15	Marker GPS # 1022, 4' below grade.	8/3/2022	98	95	8.0	SM	M - 130.4 @ 7.6	☐
16	Marker GPS # 1286, 4' below grade.	8/3/2022	98	95	8.2	SM	M - 130.4 @ 7.6	☐
17	Marker GPS # 1049, 4' below grade.	8/4/2022	98	95	7.9	SM	M - 130.4 @ 7.6	☐
18	Marker GPS # 1032, 4' below grade.	8/4/2022	98	95	8.3	SM	M - 130.4 @ 7.6	☐
19	Marker GPS # 1044, 4' below grade.	8/4/2022	98	95	8.6	SM	M - 130.4 @ 7.6	☐
20	Marker GPS # 1011, 4' below grade.	8/5/2022	98	95	8.2	SM	M - 130.4 @ 7.6	☐
21	Marker GPS # 1013, 4' below grade.	8/5/2022	98	95	8.4	SM	M - 130.4 @ 7.6	☐
22	Marker GPS # 1002, 4' below grade.	8/5/2022	98	95	8.0	SM	M - 130.4 @ 7.6	☐
23	Marker GPS # 1047, 2' below grade.	8/5/2022	98	95	8.0	SM	M - 130.4 @ 7.6	☐
24	Marker GPS # 1123, 2' below grade.	8/5/2022	98	95	7.7	SM	M - 130.4 @ 7.6	☐

ENTECH
ENGINEERING, INC.
Density Testing Summary

Client: Tech Contractors
Project: Rolling Hills Ranch North
Entech Job #: 221455.1
Subject: Overlot

QC Reviewed by:_____
QA Reviewed by:_____
Report Date: *23-Jan-24*

Test #	Test Location	Testing Date	Percent Compaction	Percent Required	Percent Moisture	Soil Type	Proctor Type/Value	Pass/Fail ☑ = Fail
25	Marker GPS # 1072, 2' below grade.	8/5/2022	98	95	7.3	SM	M - 130.4 @ 7.6	☐
26	Marker GPS # 1286, 2' below grade.	8/5/2022	99	95	8.2	SM	M - 130.4 @ 7.6	☐
27	Marker GPS # 1049, 2' below grade.	8/9/2022	97	95	8.1	SM	M - 130.4 @ 7.6	☐
28	Marker GPS # 1032, 2' below grade.	8/9/2022	97	95	8.6	SM	M - 130.4 @ 7.6	☐
29	Marker GPS # 1044, 2' below grade.	8/10/2022	97	95	7.3	SM	M - 130.4 @ 7.6	☐
30	Marker GPS # 1011, 2' below grade.	8/10/2022	97	95	8.5	SM	M - 130.4 @ 7.6	☐
31	Marker GPS # 1013, 2' below grade.	8/11/2022	97	95	8.1	SM	M - 130.4 @ 7.6	☐
32	Marker GPS # 1002, 2' below grade.	8/11/2022	97	95	8.0	SM	M - 130.4 @ 7.6	☐
33	Marker GPS # 1047, at grade.	8/12/2022	98	95	9.2	SM	M - 130.4 @ 7.6	☐
34	Marker GPS # 1123, at grade.	8/12/2022	98	95	9.0	SM	M - 130.4 @ 7.6	☐
35	Marker GPS # 1072, at grade.	8/15/2022	98	95	8.9	SM	M - 130.4 @ 7.6	☐
36	Marker GPS # 1286, at grade.	8/15/2022	98	95	9.0	SM	M - 130.4 @ 7.6	☐

ENTECH
ENGINEERING, INC.
Density Testing Summary

Client: Tech Contractors
Project: Rolling Hills Ranch North
Entech Job #: 221455.1
Subject: Overlot

QC Reviewed by:_____
QA Reviewed by:_____
Report Date: *23-Jan-24*

Test #	Test Location	Testing Date	Percent Compaction	Percent Required	Percent Moisture	Soil Type	Proctor Type/Value	Pass/Fail ☑ = Fail
37	Marker GPS # 1049, at grade.	8/15/2022	98	95	9.4	SM	M - 130.4 @ 7.6	☐
38	Marker GPS # 1032, at grade.	8/15/2022	98	95	9.3	SM	M - 130.4 @ 7.6	☐
39	Marker GPS # 1044, at grade.	8/16/2022	98	95	9.1	SM	M - 130.4 @ 7.6	☐
40	Marker GPS # 1011, at grade.	8/16/2022	98	95	9.0	SM	M - 130.4 @ 7.6	☐
41	Marker GPS # 1013, at grade.	8/19/2022	98	95	9.8	SM	M - 130.4 @ 7.6	☐
42	Marker GPS # 1002, at grade.	8/19/2022	98	95	9.3	SM	M - 130.4 @ 7.6	☐
43	Shelter Creek Dr, Lot 310, 4' below grade.	8/22/2022	98	95	8.1	SM	M - 130.4 @ 7.6	☐
44	Shelter Creek Dr, Lot 306, 4' below grade.	8/22/2022	98	95	7.9	SM	M - 130.4 @ 7.6	☐
45	Shelter Creek Dr, Lot 304, 4' below grade.	8/22/2022	98	95	8.6	SM	M - 130.4 @ 7.6	☐
46	Shelter Creek Dr, Lot 298, 4' below grade.	8/22/2022	98	95	7.3	SM	M - 130.4 @ 7.6	☐
47	Shelter Creek Dr, Lot 294, 4' below grade.	8/22/2022	98	95	8.1	SM	M - 130.4 @ 7.6	☐
48	Shelter Creek Dr, Lot 310, 2' below grade.	8/22/2022	98	95	8.7	SM	M - 130.4 @ 7.6	☐

ENTECH
ENGINEERING, INC.
Density Testing Summary

Client: Tech Contractors
Project: Rolling Hills Ranch North
Entech Job #: 221455.1
Subject: Overlot

QC Reviewed by:_____
QA Reviewed by:_____
Report Date: *23-Jan-24*

Test #	Test Location	Testing Date	Percent Compaction	Percent Required	Percent Moisture	Soil Type	Proctor Type/Value	Pass/Fail ☑ = Fail
49	Shelter Creek Dr, Lot 306, 2' below grade.	8/23/2022	98	95	8.4	SM	M - 130.4 @ 7.6	☐
50	Shelter Creek Dr, Lot 304, 2' below grade.	8/23/2022	98	95	7.9	SM	M - 130.4 @ 7.6	☐
51	Shelter Creek Dr, Lot 298, 2' below grade.	8/23/2022	98	95	7.7	SM	M - 130.4 @ 7.6	☐
52	Shelter Creek Dr, Lot 294, 2' below grade.	8/23/2022	98	95	7.9	SM	M - 130.4 @ 7.6	☐
53	Shelter Creek Dr, Lot 310, at grade.	8/23/2022	98	95	7.6	SM	M - 130.4 @ 7.6	☐
54	Shelter Creek Dr, Lot 306, at grade.	8/23/2022	98	95	8.0	SM	M - 130.4 @ 7.6	☐
55	Shelter Creek Dr, Lot 304, at grade.	8/24/2022	98	95	7.4	SM	M - 130.4 @ 7.6	☐
56	Shelter Creek Dr, Lot 298, at grade.	8/24/2022	98	95	8.3	SM	M - 130.4 @ 7.6	☐
57	Shelter Creek Dr, Lot 294, at grade.	8/24/2022	98	95	9.0	SM	M - 130.4 @ 7.6	☐
58	Manzanola Dr, Lot # 278, 4' below grade.	8/24/2022	98	95	8.6	SM	M - 130.4 @ 7.6	☐
59	Manzanola Dr, Lot # 279, 4' below grade.	8/24/2022	98	95	9.0	SM	M - 130.4 @ 7.6	☐
60	Manzanola Dr, Lot # 280, 4' below grade.	8/24/2022	98	95	8.7	SM	M - 130.4 @ 7.6	☐

ENTECH
ENGINEERING, INC.
Density Testing Summary

Client: Tech Contractors
Project: Rolling Hills Ranch North
Entech Job #: 221455.1
Subject: Overlot

QC Reviewed by:_____
QA Reviewed by:_____
Report Date: *23-Jan-24*

Test #	Test Location	Testing Date	Percent Compaction	Percent Required	Percent Moisture	Soil Type	Proctor Type/Value	Pass/Fail ☑ = Fail
61	Manzanola Dr, Lot # 277, 4' below grade.	8/25/2022	98	95	8.3	SM	M - 130.4 @ 7.6	☐
62	Manzanola Dr, Lot # 276, 4' below grade.	8/25/2022	98	95	8.4	SM	M - 130.4 @ 7.6	☐
63	Manzanola Dr, Lot # 276, 2' below grade.	8/25/2022	98	95	8.1	SM	M - 130.4 @ 7.6	☐
64	Manzanola Dr, Lot # 277, 2' below grade.	8/25/2022	97	95	7.9	SM	M - 130.4 @ 7.6	☐
65	Manzanola Dr, Lot # 278, 2' below grade.	8/25/2022	97	95	8.0	SM	M - 130.4 @ 7.6	☐
66	Manzanola Dr, Lot # 279, 2' below grade.	8/25/2022	98	95	7.7	SM	M - 130.4 @ 7.6	☐
67	Manzanola Dr, Lot # 280, 2' below grade.	8/26/2022	98	95	7.3	SM	M - 130.4 @ 7.6	☐
68	Manzanola Dr, Lot # 276, at grade.	8/26/2022	98	95	8.1	SM	M - 130.4 @ 7.6	☐
69	Manzanola Dr, Lot # 277, at grade.	8/26/2022	98	95	8.6	SM	M - 130.4 @ 7.6	☐
70	Manzanola Dr, Lot # 278, at grade.	8/26/2022	98	95	7.8	SM	M - 130.4 @ 7.6	☐
71	Manzanola Dr, Lot # 279, at grade.	8/26/2022	98	95	7.7	SM	M - 130.4 @ 7.6	☐
72	Manzanola Dr, Lot # 280, at grade.	8/26/2022	98	95	7.9	SM	M - 130.4 @ 7.6	☐

ENTECH
ENGINEERING, INC.
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Test #	Test Location	Testing Date	Percent Compaction	Percent Required	Percent Moisture	Soil Type	Proctor Type/Value	Pass/Fail ☑ = Fail
73	Lot # 78 on Arrica Drive, 3' below grade.	8/29/2022	98	95	9.0	SM	M - 130.1 @ 7.6	☐
74	Lot # 77 on Arrica Drive, 3' below grade.	8/29/2022	98	95	8.7	SM	M - 130.1 @ 7.6	☐
75	Lot # 76 on Arrica Drive, 3' below grade.	8/29/2022	98	95	8.3	SM	M - 130.1 @ 7.6	☐
76	Lot # 75 on Arrica Drive, 3' below grade.	8/29/2022	98	95	8.2	SM	M - 130.1 @ 7.6	☐
77	Lot # 78 on Arrica Drive, 2' below grade.	8/29/2022	98	95	8.4	SM	M - 130.1 @ 7.6	☐
78	Lot # 77 on Arrica Drive, 2' below grade.	8/29/2022	98	95	8.9	SM	M - 130.1 @ 7.6	☐
79	Lot # 76 on Arrica Drive, 2' below grade.	8/30/2022	98	95	7.7	SM	M - 130.1 @ 7.6	☐
80	Lot # 75 on Arrica Drive, 2' below grade.	8/30/2022	98	95	8.3	SM	M - 130.1 @ 7.6	☐
81	Lot # 78 on Arrica Drive, at grade.	8/30/2022	98	95	8.1	SM	M - 130.1 @ 7.6	☐
82	Lot # 77 on Arrica Drive, at grade.	8/30/2022	98	95	8.7	SM	M - 130.1 @ 7.6	☐
83	Lot # 76 on Arrica Drive, at grade.	8/30/2022	98	95	8.6	SM	M - 130.1 @ 7.6	☐
84	Lot # 75 on Arrica Drive, at grade.	8/30/2022	97	95	8.0	SM	M - 130.1 @ 7.6	☐

ENTECH
ENGINEERING, INC.
Density Testing Summary

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Report Date: *23-Jan-24*

Test #	Test Location	Testing Date	Percent Compaction	Percent Required	Percent Moisture	Soil Type	Proctor Type/Value	Pass/Fail ☑ = Fail
85	Lot # 31 on Retreat Peak, 4' below grade.	8/31/2022	97	95	8.7	SM	M - 130.1 @ 7.6	☐
86	Lot # 29 on Retreat Peak, 4' below grade.	8/31/2022	97	95	7.7	SM	M - 130.1 @ 7.6	☐
87	Lot # 27 on Retreat Peak, 4' below grade.	8/31/2022	98	95	7.6	SM	M - 130.1 @ 7.6	☐
88	Lot # 25 on Retreat Peak, 4' below grade.	8/31/2022	98	95	7.3	SM	M - 130.1 @ 7.6	☐
89	Lot # 23 on Retreat Peak, 4' below grade.	8/31/2022	98	95	7.7	SM	M - 130.1 @ 7.6	☐
90	Lot # 21 on Retreat Peak, 4' below grade.	8/31/2022	98	95	8.3	SM	M - 130.1 @ 7.6	☐
91	Lot # 31 on Retreat Peak, 2' below grade.	9/1/2022	98	95	8.2	SM	M - 130.1 @ 7.6	☐
92	Lot # 29 on Retreat Peak, 2' below grade.	9/1/2022	98	95	8.6	SM	M - 130.1 @ 7.6	☐
93	Lot # 27 on Retreat Peak, 2' below grade.	9/1/2022	98	95	8.4	SM	M - 130.1 @ 7.6	☐
94	Lot # 25 on Retreat Peak, 2' below grade.	9/1/2022	98	95	8.1	SM	M - 130.1 @ 7.6	☐
95	Lot # 23 on Retreat Peak, 2' below grade.	9/1/2022	98	95	7.9	SM	M - 130.1 @ 7.6	☐
96	Lot # 21 on Retreat Peak, 2' below grade.	9/1/2022	98	95	7.9	SM	M - 130.1 @ 7.6	☐

ENTECH
ENGINEERING, INC.
Density Testing Summary

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Report Date: *23-Jan-24*

Test #	Test Location	Testing Date	Percent Compaction	Percent Required	Percent Moisture	Soil Type	Proctor Type/Value	Pass/Fail ☑ = Fail
97	Lot # 31 on Retreat Peak, at grade.	9/2/2022	98	95	8.6	SM	M - 130.1 @ 7.6	☐
98	Lot # 29 on Retreat Peak, at grade.	9/2/2022	98	95	8.3	SM	M - 130.1 @ 7.6	☐
99	Lot # 27 on Retreat Peak, at grade.	9/2/2022	98	95	8.1	SM	M - 130.1 @ 7.6	☐
100	Lot # 25 on Retreat Peak, at grade.	9/2/2022	98	95	8.4	SM	M - 130.1 @ 7.6	☐
101	Lot # 23 on Retreat Peak, at grade.	9/2/2022	98	95	8.0	SM	M - 130.1 @ 7.6	☐
102	Lot # 21 on Retreat Peak, at grade.	9/2/2022	98	95	8.3	SM	M - 130.1 @ 7.6	☐
103	Lot # 322 on Cuchara Way, 6' below grade.	9/6/2022	98	95	8.2	SM	M - 130.5 @ 7.8	☐
104	Lot # 323 on Cuchara Way, 6' below grade.	9/6/2022	98	95	7.9	SM	M - 130.5 @ 7.8	☐
105	Lot # 324 on Cuchara Way, 6' below grade.	9/6/2022	98	95	8.6	SM	M - 130.5 @ 7.8	☐
106	Lot # 325 on Cuchara Way, 6' below grade.	9/6/2022	98	95	8.3	SM	M - 130.5 @ 7.8	☐
107	Lot # 322 on Cuchara Way, 4' below grade.	9/7/2022	98	95	8.2	SM	M - 130.5 @ 7.8	☐
108	Lot # 323 on Cuchara Way, 4' below grade.	9/7/2022	98	95	8.7	SM	M - 130.5 @ 7.8	☐

ENTECH
ENGINEERING, INC.
Density Testing Summary

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Report Date: *23-Jan-24*

Test #	Test Location	Testing Date	Percent Compaction	Percent Required	Percent Moisture	Soil Type	Proctor Type/Value	Pass/Fail ☑ = Fail
109	Lot # 324 on Cuchara Way, 4' below grade.	9/8/2022	98	95	8.6	SM	M - 130.5 @ 7.8	☐
110	Lot # 325 on Cuchara Way, 4' below grade.	9/8/2022	98	95	8.2	SM	M - 130.5 @ 7.8	☐
111	Lot # 322 on Cuchara Way, 2' below grade.	9/8/2022	98	95	8.4	SM	M - 130.5 @ 7.8	☐
112	Lot # 323 on Cuchara Way, 2' below grade.	9/8/2022	98	95	8.3	SM	M - 130.5 @ 7.8	☐
113	Lot # 324 on Cuchara Way, 2' below grade.	9/8/2022	98	95	8.3	SM	M - 130.5 @ 7.8	☐
114	Lot # 325 on Cuchara Way, 2' below grade.	9/8/2022	98	95	8.0	SM	M - 130.5 @ 7.8	☐
115	Lot # 322 on Cuchara Way, at grade.	9/8/2022	98	95	8.4	SM	M - 130.5 @ 7.8	☐
116	Lot # 323 on Cuchara Way, at grade.	9/8/2022	98	95	8.1	SM	M - 130.5 @ 7.8	☐
117	Lot # 324 on Cuchara Way, at grade.	9/9/2022	98	95	8.6	SM	M - 130.5 @ 7.8	☐
118	Lot # 325 on Cuchara Way, at grade.	9/9/2022	98	95	8.3	SM	M - 130.5 @ 7.8	☐
119	Overlot, Lot # 141, 3' below grade.	9/12/2022	98	95	8.3	SM	M - 130.5 @ 7.8	☐
120	Overlot, Lot # 140, 3' below grade.	9/12/2022	98	95	8.0	SM	M - 130.5 @ 7.8	☐

ENTECH
ENGINEERING, INC.
Density Testing Summary

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Report Date: *23-Jan-24*

Test #	Test Location	Testing Date	Percent Compaction	Percent Required	Percent Moisture	Soil Type	Proctor Type/Value	Pass/Fail ☑ = Fail
121	Overlot, Lot # 139, 3' below grade.	9/12/2022	98	95	7.9	SM	M - 130.5 @ 7.8	☐
122	Overlot, Lot # 138, 3' below grade.	9/12/2022	98	95	8.3	SM	M - 130.5 @ 7.8	☐
123	Overlot, Lot # 137, 3' below grade.	9/13/2022	98	95	7.6	SM	M - 130.5 @ 7.8	☐
124	Overlot, Lot # 141, 2' below grade.	9/13/2022	98	95	8.2	SM	M - 130.5 @ 7.8	☐
125	Overlot, Lot # 140, 2' below grade.	9/13/2022	98	95	8.5	SM	M - 130.5 @ 7.8	☐
126	Overlot, Lot # 139, 2' below grade.	9/13/2022	98	95	8.1	SM	M - 130.5 @ 7.8	☐
127	Overlot, Lot # 138, 2' below grade.	9/13/2022	98	95	8.7	SM	M - 130.5 @ 7.8	☐
128	Overlot, Lot # 137, 2' below grade.	9/13/2022	98	95	8.3	SM	M - 130.5 @ 7.8	☐
129	Overlot, Lot # 141, 1' below grade.	9/14/2022	98	95	8.2	SM	M - 130.5 @ 7.8	☐
130	Overlot, Lot # 140, 1' below grade.	9/14/2022	98	95	8.0	SM	M - 130.5 @ 7.8	☐
131	Overlot, Lot # 139, 1' below grade.	9/14/2022	98	95	7.8	SM	M - 130.5 @ 7.8	☐
132	Overlot, Lot # 138, 1' below grade.	9/14/2022	98	95	7.6	SM	M - 130.5 @ 7.8	☐

ENTECH
ENGINEERING, INC.
Density Testing Summary

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Report Date: *23-Jan-24*

Test #	Test Location	Testing Date	Percent Compaction	Percent Required	Percent Moisture	Soil Type	Proctor Type/Value	Pass/Fail ☑ = Fail
133	Overlot, Lot # 137, 1' below grade.	9/15/2022	97	95	8.3	SM	M - 130.5 @ 7.8	☐
134	Overlot, Lot # 141, at grade.	9/15/2022	97	95	8.2	SM	M - 130.5 @ 7.8	☐
135	Overlot, Lot # 140, at grade.	9/15/2022	98	95	7.9	SM	M - 130.5 @ 7.8	☐
136	Overlot, Lot # 139, at grade.	9/15/2022	98	95	8.6	SM	M - 130.5 @ 7.8	☐
137	Overlot, Lot # 138, at grade.	9/16/2022	98	95	8.3	SM	M - 130.5 @ 7.8	☐
138	Overlot, Lot # 137, at grade.	9/16/2022	98	95	8.1	SM	M - 130.5 @ 7.8	☐
139	Overlot, Lot # 156, 2' below grade.	9/19/2022	98	95	8.2	SM	M - 130.5 @ 7.8	☐
140	Overlot, Lot # 155, 2' below grade.	9/19/2022	98	95	8.0	SM	M - 130.5 @ 7.8	☐
141	Overlot, Lot # 154, 2' below grade.	9/20/2022	98	95	9.2	SM	M - 130.5 @ 7.8	☐
142	Overlot, Lot # 153, 2' below grade.	9/20/2022	98	95	9.3	SM	M - 130.5 @ 7.8	☐
143	Overlot, Lot # 156, at grade.	9/21/2022	98	95	8.9	SM	M - 130.5 @ 7.8	☐
144	Overlot, Lot # 155, at grade.	9/21/2022	98	95	9.0	SM	M - 130.5 @ 7.8	☐

ENTECH
ENGINEERING, INC.
Density Testing Summary

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Report Date: *23-Jan-24*

Test #	Test Location	Testing Date	Percent Compaction	Percent Required	Percent Moisture	Soil Type	Proctor Type/Value	Pass/Fail ☑ = Fail
145	Overlot, Lot # 154, at grade.	9/23/2022	98	95	8.7	SM	M - 130.5 @ 7.8	☐
146	Overlot, Lot # 153, at grade.	9/23/2022	98	95	8.6	SM	M - 130.5 @ 7.8	☐
147	Lot # 37, 4' below grade.	9/27/2022	98	95	8.0	SM	M - 130.5 @ 7.8	☐
148	Lot # 37, 3' below grade.	9/27/2022	99	95	8.6	SM	M - 130.5 @ 7.8	☐
149	Lot # 37, 2' below grade.	9/28/2022	99	95	9.1	SM	M - 130.5 @ 7.8	☐
150	Lot # 37, 1' below grade.	9/28/2022	99	95	8.7	SM	M - 130.5 @ 7.8	☐
151	Lot # 37, at grade.	9/29/2022	98	95	7.9	SM	M - 130.5 @ 7.8	☐
152	Lot # 38, 3' below grade.	9/29/2022	98	95	8.3	SM	M - 130.5 @ 7.8	☐
153	Lot # 38, 2' below grade.	9/30/2022	98	95	8.4	SM	M - 130.5 @ 7.8	☐
154	Lot # 38, at grade.	9/30/2022	99	95	8.1	SM	M - 130.5 @ 7.8	☐
155	Lot # 140 on Shelter Creek, 2' below grade.	10/3/2022	98	95	8.4	SM	M - 130.2 @ 7.8	☐
156	Lot # 141 on Shelter Creek, 2' below grade.	10/3/2022	98	95	7.9	SM	M - 130.2 @ 7.8	☐

ENTECH
ENGINEERING, INC.
Density Testing Summary

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Test #	Test Location	Testing Date	Percent Compaction	Percent Required	Percent Moisture	Soil Type	Proctor Type/Value	Pass/Fail ☑ = Fail
157	Lot # 142 on Shelter Creek, 2' below grade.	10/4/2022	98	95	8.6	SM	M - 130.2 @ 7.8	☐
158	Lot # 143 on Shelter Creek, 2' below grade.	10/4/2022	98	95	8.0	SM	M - 130.2 @ 7.8	☐
159	Lot # 144 on Shelter Creek, 2' below grade.	10/4/2022	97	95	9.1	SM	M - 130.2 @ 7.8	☐
160	Lot # 140 on Shelter Creek, 1' below grade.	10/4/2022	97	95	9.0	SM	M - 130.2 @ 7.8	☐
161	Lot # 141 on Shelter Creek, 1' below grade.	10/5/2022	97	95	8.3	SM	M - 130.2 @ 7.8	☐
162	Lot # 142 on Shelter Creek, 1' below grade.	10/5/2022	98	95	8.1	SM	M - 130.2 @ 7.8	☐
163	Lot # 143 on Shelter Creek, 1' below grade.	10/5/2022	98	95	8.6	SM	M - 130.2 @ 7.8	☐
164	Lot # 144 on Shelter Creek, 1' below grade.	10/5/2022	98	95	8.3	SM	M - 130.2 @ 7.8	☐
165	Lot # 140 on Shelter Creek, at grade.	10/6/2022	98	95	8.4	SM	M - 130.2 @ 7.8	☐
166	Lot # 141 on Shelter Creek, at grade.	10/6/2022	98	95	8.6	SM	M - 130.2 @ 7.8	☐
167	Lot # 142 on Shelter Creek, at grade.	10/6/2022	98	95	8.0	SM	M - 130.2 @ 7.8	☐
168	Lot # 143 on Shelter Creek, at grade.	10/6/2022	98	95	7.8	SM	M - 130.2 @ 7.8	☐

ENTECH
ENGINEERING, INC.
Density Testing Summary

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Report Date: *23-Jan-24*

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169	Lot # 144 on Shelter Creek, at grade.	10/7/2022	98	95	8.3	SM	M - 130.2 @ 7.8	☐
170	Lot # 145 on Shelter Creek, at grade.	10/7/2022	98	95	8.6	SM	M - 130.2 @ 7.8	☐
171	Lot # 110 on Sunrise Ridge, 2' below grade.	10/10/2022	98	95	9.1	SM	M - 130.5 @ 7.8	☐
172	Lot # 112 on Sunrise Ridge, 2' below grade.	10/10/2022	98	95	8.7	SM	M - 130.5 @ 7.8	☐
173	Lot # 114 on Sunrise Ridge, 2' below grade.	10/11/2022	97	95	8.4	SM	M - 130.5 @ 7.8	☐
174	Lot # 116 on Sunrise Ridge, 2' below grade.	10/11/2022	97	95	8.5	SM	M - 130.5 @ 7.8	☐
175	Lot # 118 on Sunrise Ridge, 2' below grade.	10/11/2022	97	95	8.7	SM	M - 130.5 @ 7.8	☐
176	Lot # 120 on Sunrise Ridge, 2' below grade.	10/11/2022	97	95	8.8	SM	M - 130.5 @ 7.8	☐
177	Lot # 122 on Sunrise Ridge, 2' below grade.	10/12/2022	98	95	9.0	SM	M - 130.5 @ 7.8	☐
178	Lot # 124 on Sunrise Ridge, 2' below grade.	10/12/2022	97	95	8.4	SM	M - 130.5 @ 7.8	☐
179	Lot # 126 on Sunrise Ridge, 2' below grade.	10/13/2022	97	95	8.6	SM	M - 130.5 @ 7.8	☐
180	Lot # 119 on Sunrise Ridge, 2' below grade.	10/13/2022	97	95	8.3	SM	M - 130.5 @ 7.8	☐

ENTECH
ENGINEERING, INC.
Density Testing Summary

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Report Date: *23-Jan-24*

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181	Lot # 1 on Sunrise Ridge, 2' below grade.	10/17/2022	98	95	8.1	SM	M - 130.5 @ 7.8	☐
182	Lot # 2 on Sunrise Ridge, 2' below grade.	10/17/2022	97	95	7.3	SM	M - 130.5 @ 7.8	☐
183	Lot # 3 on Sunrise Ridge, 2' below grade.	10/18/2022	97	95	7.9	SM	M - 130.5 @ 7.8	☐
184	Lot # 4 on Sunrise Ridge, 2' below grade.	10/18/2022	97	95	7.6	SM	M - 130.5 @ 7.8	☐
185	Lot # 5 on Sunrise Ridge, 2' below grade.	10/19/2022	97	95	7.3	SM	M - 130.5 @ 7.8	☐
186	Lot # 6 on Sunrise Ridge, 2' below grade.	10/19/2022	98	95	7.4	SM	M - 130.5 @ 7.8	☐
187	Lot # 7 on Sunrise Ridge, 2' below grade.	10/20/2022	98	95	7.9	SM	M - 130.5 @ 7.8	☐
188	Lot # 8 on Sunrise Ridge, 2' below grade.	10/20/2022	98	95	8.1	SM	M - 130.5 @ 7.8	☐
189	Lot # 9 on Sunrise Ridge, 2' below grade.	10/21/2022	97	95	8.0	SM	M - 130.5 @ 7.8	☐
190	Lot # 10 on Sunrise Ridge, 2' below grade.	10/21/2022	97	95	7.7	SM	M - 130.5 @ 7.8	☐
191	Overlot, Shelter Creek, Lot # 132, 2' below grade.	10/24/2022	98	95	9.0	SM	M - 130.5 @ 7.8	☐
192	Overlot, Shelter Creek, Lot # 133, 2' below grade.	10/24/2022	97	95	8.3	SM	M - 130.5 @ 7.8	☐

ENTECH
ENGINEERING, INC.
Density Testing Summary

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QA Reviewed by:_____
Report Date: *23-Jan-24*

Test #	Test Location	Testing Date	Percent Compaction	Percent Required	Percent Moisture	Soil Type	Proctor Type/Value	Pass/Fail ☑ = Fail
193	Overlot, Shelter Creek, Lot # 134, 2' below grade.	10/24/2022	97	95	8.7	SM	M - 130.5 @ 7.8	☐
194	Overlot, Shelter Creek, Lot # 135, 2' below grade.	10/24/2022	97	95	8.9	SM	M - 130.5 @ 7.8	☐
195	Overlot, Shelter Creek, Lot # 136, 2' below grade.	10/24/2022	97	95	8.9	SM	M - 130.5 @ 7.8	☐
196	Overlot, Shelter Creek, Lot # 137, 2' below grade.	10/25/2022	98	95	9.1	SM	M - 130.5 @ 7.8	☐
197	Overlot, Shelter Creek, Lot # 138, 2' below grade.	10/25/2022	98	95	9.4	SM	M - 130.5 @ 7.8	☐
198	Overlot, Shelter Creek, Lot # 139, 2' below grade.	10/26/2022	98	95	9.0	SM	M - 130.5 @ 7.8	☐
199	Overlot, Shelter Creek, Lot # 140, 2' below grade.	10/26/2022	98	95	8.9	SM	M - 130.5 @ 7.8	☐
200	Overlot, Shelter Creek, Lot # 141, 2' below grade.	10/26/2022	98	95	9.3	SM	M - 130.5 @ 7.8	☐
201	Overlot, Shelter Creek, Lot # 132, at grade.	10/27/2022	98	95	8.2	SM	M - 130.5 @ 7.8	☐
202	Overlot, Shelter Creek, Lot # 133, at grade.	10/27/2022	98	95	8.7	SM	M - 130.5 @ 7.8	☐
203	Overlot, Shelter Creek, Lot # 134, at grade.	10/27/2022	98	95	8.1	SM	M - 130.5 @ 7.8	☐
204	Overlot, Shelter Creek, Lot # 135, at grade.	10/27/2022	98	95	8.3	SM	M - 130.5 @ 7.8	☐

ENTECH
ENGINEERING, INC.
Density Testing Summary

Client: Tech Contractors
Project: Rolling Hills Ranch North
Entech Job #: 221455.1
Subject: Overlot

QC Reviewed by:_____
QA Reviewed by:_____
Report Date: *23-Jan-24*

Test #	Test Location	Testing Date	Percent Compaction	Percent Required	Percent Moisture	Soil Type	Proctor Type/Value	Pass/Fail ☑ = Fail
205	Overlot, Shelter Creek, Lot # 136, at grade.	10/27/2022	98	95	8.1	SM	M - 130.5 @ 7.8	☐
206	Overlot, Shelter Creek, Lot # 137, at grade.	10/28/2022	97	95	9.2	SM	M - 130.5 @ 7.8	☐
207	Overlot, Shelter Creek, Lot # 138, at grade.	10/28/2022	97	95	8.7	SM	M - 130.5 @ 7.8	☐
208	Overlot, Shelter Creek, Lot # 139, at grade.	10/28/2022	97	95	9.0	SM	M - 130.5 @ 7.8	☐
209	Overlot, Shelter Creek, Lot # 140, at grade.	10/28/2022	97	95	9.3	SM	M - 130.5 @ 7.8	☐
210	Overlot, Shelter Creek, Lot # 141, at grade.	10/28/2022	98	95	9.6	SM	M - 130.5 @ 7.8	☐
211	Overlot, Sunrise Ridge, Lot # 170, 2' below grade.	10/31/2022	98	95	8.2	SM	M - 130.5 @ 7.8	☐
212	Overlot, Sunrise Ridge, Lot # 171, 2' below grade.	10/31/2022	98	95	7.9	SM	M - 130.5 @ 7.8	☐
213	Overlot, Sunrise Ridge, Lot # 172, 2' below grade.	11/1/2022	98	95	8.0	SM	M - 130.5 @ 7.8	☐
214	Overlot, Sunrise Ridge, Lot # 173, 2' below grade.	11/1/2022	98	95	8.2	SM	M - 130.5 @ 7.8	☐
215	Overlot, Sunrise Ridge, Lot # 174, 2' below grade.	11/2/2022	98	95	8.4	SM	M - 130.5 @ 7.8	☐
216	Overlot, Sunrise Ridge, Lot # 175, 2' below grade.	11/2/2022	98	95	8.6	SM	M - 130.5 @ 7.8	☐

ENTECH
ENGINEERING, INC.
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Project: Rolling Hills Ranch North
Entech Job #: 221455.1
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Report Date: *23-Jan-24*

Test #	Test Location	Testing Date	Percent Compaction	Percent Required	Percent Moisture	Soil Type	Proctor Type/Value	Pass/Fail ☑ = Fail
217	Overlot, Sunrise Ridge, Lot # 176, 2' below grade.	11/3/2022	98	95	8.2	SM	M - 130.5 @ 7.8	☐
218	Overlot, Sunrise Ridge, Lot # 177, 2' below grade.	11/3/2022	98	95	8.3	SM	M - 130.5 @ 7.8	☐
219	Overlot, Sunrise Ridge, Lot # 178, 2' below grade.	11/4/2022	98	95	8.0	SM	M - 130.5 @ 7.8	☐
220	Overlot, Sunrise Ridge, Lot # 179, 2' below grade.	11/4/2022	98	95	8.9	SM	M - 130.5 @ 7.8	☐
221	Overlot, Chalk Cliffs, Lot # 112, 3' below grade.	11/7/2022	98	95	9.0	SM	M - 130.5 @ 7.8	☐
222	Overlot, Chalk Cliffs, Lot # 113, 3' below grade.	11/7/2022	98	95	8.7	SM	M - 130.5 @ 7.8	☐
223	Overlot, Chalk Cliffs, Lot # 114, 3' below grade.	11/8/2022	98	95	8.3	SM	M - 130.5 @ 7.8	☐
224	Overlot, Chalk Cliffs, Lot # 115, 3' below grade.	11/8/2022	98	95	8.2	SM	M - 130.5 @ 7.8	☐
225	Overlot, Chalk Cliffs, Lot # 116, 3' below grade.	11/8/2022	98	95	8.6	SM	M - 130.5 @ 7.8	☐
226	Overlot, Chalk Cliffs, Lot # 117, 3' below grade.	11/8/2022	98	95	7.9	SM	M - 130.5 @ 7.8	☐
227	Overlot, Chalk Cliffs, Lot # 118, 3' below grade.	11/8/2022	98	95	9.0	SM	M - 130.5 @ 7.8	☐
228	Overlot, Chalk Cliffs, Lot # 119, 3' below grade.	11/8/2022	98	95	9.1	SM	M - 130.5 @ 7.8	☐

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ENGINEERING, INC.
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Report Date: *23-Jan-24*

Test #	Test Location	Testing Date	Percent Compaction	Percent Required	Percent Moisture	Soil Type	Proctor Type/Value	Pass/Fail ☑ = Fail
229	Overlot, Chalk Cliffs, Lot # 120, 3' below grade.	11/8/2022	98	95	8.3	SM	M - 130.5 @ 7.8	☐
230	Overlot, Chalk Cliffs, Lot # 121, 3' below grade.	11/8/2022	98	95	9.4	SM	M - 130.5 @ 7.8	☐
231	Overlot, Chalk Cliffs, Lot # 112, at grade.	11/9/2022	98	95	8.2	SM	M - 130.5 @ 7.8	☐
232	Overlot, Chalk Cliffs, Lot # 113, at grade.	11/9/2022	98	95	8.3	SM	M - 130.5 @ 7.8	☐
233	Overlot, Chalk Cliffs, Lot # 114, at grade.	11/10/2022	98	95	8.6	SM	M - 130.5 @ 7.8	☐
234	Overlot, Chalk Cliffs, Lot # 115, at grade.	11/10/2022	98	95	8.7	SM	M - 130.5 @ 7.8	☐
235	Overlot, Chalk Cliffs, Lot # 116, at grade.	11/11/2022	98	95	9.2	SM	M - 130.5 @ 7.8	☐
236	Overlot, Chalk Cliffs, Lot # 117, at grade.	11/11/2022	98	95	9.0	SM	M - 130.5 @ 7.8	☐
237	Overlot, Chalk Cliffs, Lot # 118, at grade.	11/11/2022	98	95	8.8	SM	M - 130.5 @ 7.8	☐
238	Overlot, Chalk Cliffs, Lot # 119, at grade.	11/11/2022	98	95	8.3	SM	M - 130.5 @ 7.8	☐
239	Overlot, Chalk Cliffs, Lot # 120, at grade.	11/11/2022	98	95	8.2	SM	M - 130.5 @ 7.8	☐
240	Overlot, Chalk Cliffs, Lot # 121, at grade.	11/11/2022	98	95	8.7	SM	M - 130.5 @ 7.8	☐

ENTECH
ENGINEERING, INC.
Density Testing Summary

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Entech Job #: 221455.1
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QC Reviewed by:_____
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Report Date: *23-Jan-24*

Test #	Test Location	Testing Date	Percent Compaction	Percent Required	Percent Moisture	Soil Type	Proctor Type/Value	Pass/Fail ☑ = Fail
241	Overlot, Crystal Falls Drive, Lot # 207, 2' below grade.	11/14/2022	98	95	8.1	SM	M - 130.5 @ 7.8	☐
242	Overlot, Crystal Falls Drive, Lot # 209, 2' below grade.	11/14/2022	98	95	7.8	SM	M - 130.5 @ 7.8	☐
243	Overlot, Crystal Falls Drive, Lot # 211, 2' below grade.	11/14/2022	98	95	8.6	SM	M - 130.5 @ 7.8	☐
244	Overlot, Crystal Falls Drive, Lot # 213, 2' below grade.	11/14/2022	98	95	8.3	SM	M - 130.5 @ 7.8	☐
245	Overlot, Crystal Falls Drive, Lot # 213, 2' below grade.	11/14/2022	98	95	8.4	SM	M - 130.5 @ 7.8	☐
246	Overlot, Crystal Falls Drive, Lot # 217, 2' below grade.	11/15/2022	98	95	8.7	SM	M - 130.5 @ 7.8	☐
247	Overlot, Crystal Falls Drive, Lot # 219, 2' below grade.	11/15/2022	98	95	8.3	SM	M - 130.5 @ 7.8	☐
248	Overlot, Crystal Falls Drive, Lot # 221, 2' below grade.	11/15/2022	98	95	8.6	SM	M - 130.5 @ 7.8	☐
249	Overlot, Crystal Falls Drive, Lot # 223, 2' below grade.	11/15/2022	97	95	8.2	SM	M - 130.5 @ 7.8	☐
250	Overlot, Crystal Falls Drive, Lot # 199, 2' below grade.	11/15/2022	97	95	8.4	SM	M - 130.5 @ 7.8	☐
251	Overlot, Crystal Falls Drive, Lot # 207, at grade.	11/16/2022	98	95	7.8	SM	M - 130.5 @ 7.8	☐
252	Overlot, Crystal Falls Drive, Lot # 209, at grade.	11/16/2022	98	95	8.1	SM	M - 130.5 @ 7.8	☐

ENTECH
ENGINEERING, INC.
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Entech Job #: 221455.1
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Report Date: *23-Jan-24*

Test #	Test Location	Testing Date	Percent Compaction	Percent Required	Percent Moisture	Soil Type	Proctor Type/Value	Pass/Fail ☑ = Fail
253	Overlot, Crystal Falls Drive, Lot # 211, at grade.	11/16/2022	98	95	8.3	SM	M - 130.5 @ 7.8	☐
254	Overlot, Crystal Falls Drive, Lot # 213, at grade.	11/16/2022	98	95	8.0	SM	M - 130.5 @ 7.8	☐
255	Overlot, Crystal Falls Drive, Lot # 215, at grade.	11/16/2022	98	95	8.2	SM	M - 130.5 @ 7.8	☐
256	Overlot, Crystal Falls Drive, Lot # 217, at grade.	11/17/2022	98	95	8.4	SM	M - 130.5 @ 7.8	☐
257	Overlot, Crystal Falls Drive, Lot # 219, at grade.	11/17/2022	98	95	8.6	SM	M - 130.5 @ 7.8	☐
258	Overlot, Crystal Falls Drive, Lot # 221, at grade.	11/17/2022	98	95	8.3	SM	M - 130.5 @ 7.8	☐
259	Overlot, Crystal Falls Drive, Lot # 223, at grade.	11/17/2022	98	95	8.1	SM	M - 130.5 @ 7.8	☐
260	Overlot, Crystal Falls Drive, Lot # 199, at grade.	11/17/2022	98	95	8.7	SM	M - 130.5 @ 7.8	☐
261	Overlot, House Rock Drive, Lot # 142, at grade.	11/21/2022	98	95	8.3	SM	M - 130.5 @ 7.8	☐
262	Overlot, House Rock Drive, Lot # 143, at grade.	11/21/2022	98	95	8.7	SM	M - 130.5 @ 7.8	☐
263	Overlot, House Rock Drive, Lot # 144, at grade.	11/21/2022	98	95	9.0	SM	M - 130.5 @ 7.8	☐
264	Overlot, House Rock Drive, Lot # 145, at grade.	11/22/2022	98	95	9.1	SM	M - 130.5 @ 7.8	☐

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Report Date: *23-Jan-24*

Test #	Test Location	Testing Date	Percent Compaction	Percent Required	Percent Moisture	Soil Type	Proctor Type/Value	Pass/Fail ☑ = Fail
265	Overlot, House Rock Drive, Lot # 146, at grade.	11/22/2022	98	95	8.9	SM	M - 130.5 @ 7.8	☐
266	Overlot, House Rock Drive, Lot # 147, at grade.	11/22/2022	98	95	8.8	SM	M - 130.5 @ 7.8	☐
267	Overlot, House Rock Drive, Lot # 148, at grade.	11/23/2022	98	95	8.4	SM	M - 130.5 @ 7.8	☐
268	Overlot, House Rock Drive, Lot # 149, at grade.	11/23/2022	98	95	9.3	SM	M - 130.5 @ 7.8	☐
269	Overlot, House Rock Drive, Lot # 150, at grade.	11/23/2022	98	95	9.1	SM	M - 130.5 @ 7.8	☐
270	Lot # 103 on Cardenas Drive, 2' below grade.	11/28/2022	98	95	7.9	SM	M - 128.2 @ 7.8	☐
271	Lot # 105 on Cardenas Drive, 2' below grade.	11/28/2022	98	95	8.3	SM	M - 128.2 @ 7.8	☐
272	Lot # 107 on Cardenas Drive, 2' below grade.	11/28/2022	98	95	7.6	SM	M - 128.2 @ 7.8	☐
273	Lot # 109 on Cardenas Drive, 2' below grade.	11/28/2022	98	95	8.0	SM	M - 128.2 @ 7.8	☐
274	Lot # 111 on Cardenas Drive, 2' below grade.	11/28/2022	98	95	8.3	SM	M - 128.2 @ 7.8	☐
275	Lot # 113 on Cardenas Drive, 2' below grade.	11/29/2022	98	95	8.4	SM	M - 128.2 @ 7.8	☐
276	Lot # 100 on Cardenas Drive, 2' below grade.	11/29/2022	98	95	8.2	SM	M - 128.2 @ 7.8	☐

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Test #	Test Location	Testing Date	Percent Compaction	Percent Required	Percent Moisture	Soil Type	Proctor Type/Value	Pass/Fail ☑ = Fail
277	Lot # 99 on Cardenas Drive, 2' below grade.	11/29/2022	98	95	8.7	SM	M - 128.2 @ 7.8	☐
278	Lot # 98 on Cardenas Drive, 2' below grade.	11/29/2022	98	95	8.3	SM	M - 128.2 @ 7.8	☐
279	Lot # 97 on Cardenas Drive, 2' below grade.	11/29/2022	98	95	8.0	SM	M - 128.2 @ 7.8	☐
280	Lot # 103 on Cardenas Drive, at grade.	11/29/2022	98	95	8.2	SM	M - 128.2 @ 7.8	☐
281	Lot # 105 on Cardenas Drive, at grade.	11/29/2022	98	95	8.4	SM	M - 128.2 @ 7.8	☐
282	Lot # 107 on Cardenas Drive, at grade.	11/29/2022	98	95	8.3	SM	M - 128.2 @ 7.8	☐
283	Lot # 109 on Cardenas Drive, at grade.	11/29/2022	98	95	8.9	SM	M - 128.2 @ 7.8	☐
284	Lot # 111 on Cardenas Drive, at grade.	11/29/2022	98	95	7.6	SM	M - 128.2 @ 7.8	☐
285	Lot # 113 on Cardenas Drive, at grade.	12/1/2022	98	95	7.9	SM	M - 128.2 @ 7.8	☐
286	Lot # 100 on Cardenas Drive, at grade.	12/1/2022	98	95	8.3	SM	M - 128.2 @ 7.8	☐
287	Lot # 99 on Cardenas Drive, at grade.	12/1/2022	98	95	8.4	SM	M - 128.2 @ 7.8	☐
288	Lot # 98 on Cardenas Drive, at grade.	12/1/2022	98	95	8.1	SM	M - 128.2 @ 7.8	☐

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Test #	Test Location	Testing Date	Percent Compaction	Percent Required	Percent Moisture	Soil Type	Proctor Type/Value	Pass/Fail ☑ = Fail
289	Lot # 97 on Cardenas Drive, at grade.	12/1/2022	98	95	8.0	SM	M - 128.2 @ 7.8	☐
290	Lot # 84 on Cardenas Drive, at grade.	12/2/2022	98	95	8.7	SM	M - 128.2 @ 7.8	☐
291	Lot # 85 on Cardenas Drive, at grade.	12/2/2022	98	95	8.3	SM	M - 128.2 @ 7.8	☐
292	Lot # 86 on Cardenas Drive, at grade.	12/2/2022	98	95	8.6	SM	M - 128.2 @ 7.8	☐
293	Lot # 87 on Cardenas Drive, at grade.	12/2/2022	98	95	8.4	SM	M - 128.2 @ 7.8	☐
294	Lot # 88 on Cardenas Drive, at grade.	12/2/2022	98	95	7.9	SM	M - 128.2 @ 7.8	☐
295	Overlot, Esplanade Drive, Lot # 01, at grade.	12/5/2022	98	95	8.0	SM	M - 128.2 @ 7.8	☐
296	Overlot, Esplanade Drive, Lot # 03, at grade.	12/5/2022	98	95	7.8	SM	M - 128.2 @ 7.8	☐
297	Overlot, Esplanade Drive, Lot # 05, at grade.	12/6/2022	98	95	7.6	SM	M - 128.2 @ 7.8	☐
298	Overlot, Esplanade Drive, Lot # 07, at grade.	12/6/2022	98	95	7.3	SM	M - 128.2 @ 7.8	☐
299	Overlot, Esplanade Drive, Lot # 09, at grade.	12/7/2022	98	95	7.9	SM	M - 128.2 @ 7.8	☐
300	Overlot, Esplanade Drive, Lot # 11, at grade.	12/7/2022	98	95	7.8	SM	M - 128.2 @ 7.8	☐

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Test #	Test Location	Testing Date	Percent Compaction	Percent Required	Percent Moisture	Soil Type	Proctor Type/Value	Pass/Fail ☑ = *Fail*
301	Overlot, Esplanade Drive, Lot # 13, at grade.	12/8/2022	97	95	8.3	SM	M - 128.2 @ 7.8	☐
302	Overlot, Horn Hill Drive, Lot # 74, at grade.	12/8/2022	97	95	8.6	SM	M - 128.2 @ 7.8	☐
303	Overlot, Horn Hill Drive, Lot # 75, at grade.	12/9/2022	97	95	8.7	SM	M - 128.2 @ 7.8	☐
304	Overlot, Horn Hill Drive, Lot # 60, at grade.	12/9/2022	97	95	8.0	SM	M - 128.2 @ 7.8	☐