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

SOILS AND GEOLOGY STUDY
URBAN LANDING
STRUTHERS ROAD AND SPANISH BIT DRIVE
EL PASO COUNTY, COLORADO

Prepared for:

Elite Properties of America, Inc.
2138 Flying Horse Club Drive
Colorado Springs, Colorado 80921

Attn: Joe Loidolt

July 12, 2024

Respectfully Submitted,

ENTECH ENGINEERING, INC.

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

Reviewed by:

COLORADO LICENSED JOSEPH COLLIN GOODE 23725 PROFESSIONAL ENGINEER

Digitally signed by Joseph C. Goode Jr.
Date: 07/12/24

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

LLL/JG

PCD No. _____

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1 SUMMARY

Project Location

The project lies in portions of the SW¼ of Section 36, Township 11 South, Range 67 West of the 6th Principal Meridian in El Paso County, Colorado. The site is southeast of the town of Monument, Colorado, located east of the intersection of Struthers Road and Spanish Bit Drive. The location of the site is as shown on the Vicinity Map, Figure 1.

Project Description

Total acreage involved in the project is approximately 5.67 acres. The site is currently zoned as R-4 (Planned Development). The proposed development consists of a 49-lot single-family subdivision on the southern side of Spanish Bit Drive, and other associated site improvements. The development will utilize municipal sewer and water, and private streets to access parking and homes.

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 minor constraints on development and land use. These include areas of potentially collapsible soils, potentially expansive soils, potential seasonal shallow groundwater, and seasonal shallow groundwater areas. Based on the proposed sketch plan, it appears that these areas will have minor constraints 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 in portions of the SW¼ of Section 36, Township 11 South, Range 67 West of the 6th Principal Meridian in El Paso County, Colorado. The site is southeast of the town of Monument, Colorado, located east of the intersection of Struthers Road and Spanish Bit Drive. The location of the site is as shown on the Vicinity Map, Figure 1.

The topography of the site is generally gradually sloping to the southwest. A minor drainage swale is located in the central portion of the site south of Spanish Bit Drive. The drainage swale flows in a southwesterly direction towards existing culverts at the intersection of Struthers Road and Spanish Bit Drive. Water was not observed in the minor drainage swale at the time of this investigation. The site boundaries are indicated on the USGS Map, Figure 2. Previous land uses have included agricultural grazing and undeveloped land. The site contains primarily field grasses, weeds, cacti and yuccas. Site photographs, taken July 9, 2024, are included in Appendix A.

Total acreage involved in the project is approximately 5.67 acres. The site is currently zoned as R-4 (Planned Development). The proposed development consists of a 49-lot single-family subdivision on the southern side of Spanish Bit Drive, and other associated site improvements. The development will utilize municipal sewer and water, and private streets to access parking and homes. Cut/fill grading, retaining walls, and a detention pond are planned for the development. Retaining walls should be designed by a qualified professional engineer and for global stability. The minor drainage swale being filled and the detention pond expanded in the area of the existing drainage culverts in the western portion of the site. The proposed grading is indicated on the Site and Exploration Plan, Figure 3.

3 SCOPE OF THE REPORT

The report will include a general geologic analysis utilizing published geologic data. Detailed site-specific mapping will be conducted to obtain general information with 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 August 4, 2021.

A Subsurface Soil Investigation was previously performed by Entech Engineering, Inc. (Entech) for the proposed development, August 18, 2021 (Reference 1). Seventeen (17) Test Borings were performed on the site to determine general soil and bedrock characteristics. The borings were drilled to depths of 5 to 20 feet below the existing surface grade. The locations of the test borings are indicated on the Site Map/Test Boring Location Map, Figure 3. The Test Boring Logs are presented in Appendix B. Results of this testing will be discussed later in this report.

Laboratory testing was also performed on some of the soils to classify and determine the soils engineering characteristics. Laboratory tests included grain-size analysis, ASTM D-422, and Atterberg Limits, ASTM D-4318. Swell/Consolidation and FHA Swell Testing to evaluate expansion potential. Sulfate testing was performed on selected samples to evaluate potential for below grade concrete degradation due to sulfate attack. A Summary of Laboratory Test Results is included in Appendix C.

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 4 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 gently dipping in a northeasterly direction (Reference 2). The rocks in the area of the site are sedimentary in nature and typically Tertiary to Cretaceous in age. The bedrock underlying the site consists of the Dawson Formation. Overlying this formation are unconsolidated deposits of artificial fill and residual soils of Quaternary Age. 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 3), previously the Soil Conservation Service (Reference 4) has mapped one soil types on the site Figure 4. In general, the soils are classified as sandy loams. The soils are described as follows:

Soil Type	Description
26	Elbeth – sandy loam, 8 to 15% slopes
67	Peyton –sandy loam, 5 to 9% slopes

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

5.3 Site Stratigraphy

The bedrock underlying the site consists of the Dawson Formation of Tertiary to Cretaceous 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 Monument Quadrangle Geology Map showing the site is presented in Figure 6 (Reference 7). The Geology Map prepared for the site is presented in Figure 7. Three mappable units were identified on this site which are described as follows:

Qas_1 Younger Alluvial-Slope Deposits of Holocene to Late Pleistocene Age: These are sheetwash and fluvial deposited sands that exist in the northern portions of the site. These materials typically consist of silty to clayey sands

Tkd Dawson Formation of Tertiary to Cretaceous 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 to clayey sands and sandy clays. These materials are derived from the bedrock materials and have been re-deposited by the action of sheetwash and gravity.

The soils listed above were mapped from site-specific mapping, the *Geologic Map of the Monument Quadrangle* distributed by the Colorado Geological Survey in 2003 (Reference 5), the *Geologic Map of the Colorado Springs-Castle Rock Area*, distributed by the US Geological Survey in 1979 (Reference 6), and the *Geologic Map of the Denver 1^0 x 2^0 Quadrangle*, distributed by the US Geological Survey in 1981 (Reference 7). The Test Borings were also used in evaluating the site and are included in Appendix B. The Geology Map prepared for the site is presented in Figure 6.

5.4 Soil Conditions

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

Soil Type 1 classified as sand with silt to silty sand (SM-SW, SM). The sand was encountered in all of the test borings at the ground surface extending to depths ranging from 5 to 14 feet bgs. The sand was encountered at loose to dense states.

Soil Type 2 classified as sandy clay (CL). The clay was encountered in TB-1, TB-5, and TB-8 at 9 to 14 feet and extending to depths of 11 to 16 feet bgs. The clay was encountered at very stiff to hard consistencies. Swell/Consolidation Testing on a samples of the clay resulted in a consolidation of 0.3 and 3.5 percent, indicating a low high consolidation potential.

Soil Type 3 classified as sandstone with silt and silty sandstone (SM-SW, SM), or as a sand with silt and silty sand when classified as a soil. The sandstone was encountered in 11 of the borings at depths ranging from 6 to 18 feet bgs, and extended to the termination of the test borings (20 feet). The sandstone was encountered at very dense states.

Soil Type 4 classified as sandy claystone, claystone-siltstone, and siltstone (CL, CL-ML, ML). The claystone and siltstone were encountered in 5 of the borings at depths ranging from 7 to 14 feet bgs, and extended to 18 feet or to the termination of the test borings (20 feet). The claystone and siltstone were encountered at hard consistencies. Swell/Consolidation Testing on a sample of claystone resulted in an expansion of 2.2 to 3.9 percent, indicating a moderate to high expansion potential.

The Test Boring Logs are presented in Appendix B, and the depth to bedrock and groundwater are presented on Table B-1. Laboratory Test Results are presented in Appendix C, and a Summary of Laboratory Test Results is presented in Table C-1.

5.5 Groundwater

Groundwater was encountered in two of the borings at depths of 14 and 15.5 feet. Groundwater was not encountered in the remaining test borings which were drilled to depths of 5 to 20 feet. Areas of potentially seasonal shallow groundwater have been mapped in the minor drainage swale on the site. 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 an Engineering Geology Map Figure 6. 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. Constraints/Hazards include potentially collapsible/expansive soils, and potential seasonal shallow groundwater. These hazards and the recommended mitigation techniques are as follows:

Potentially Collapsible/Expansive Soils – Constraint

Potentially Collapsible/Expansive soils were encountered in some of the test borings drilled on site. Consolidations ranged from low to moderately high, and swells ranged from low to moderately high in the soils tested. The clay, claystone, and siltstone if encountered beneath foundations, can cause differential movement in the structure foundation. These occurrences should be identified and dealt with on an individual building basis or possibly mitigated during site grading if necessary.

Mitigation Collapsible or expansive soils encountered beneath foundations will require mitigation. Mitigation of expansive soils may require special foundation design. Overexcavation and replacement with non-expansive soils at a minimum of 95 percent 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. Overexcavation depths of 4 feet are anticipated for the site

Groundwater and Floodplain Areas – Constraint

A minor drainage swale is located in the southwestern portion of the site south of Spanish Bit Drive. These areas have been potential seasonally shallow groundwater areas. Groundwater was encountered in two test borings at depths of 14 and 15.5 feet. The site is not mapped within

floodplain zones according to the FEMA Map No. 08041CO286G and 08041CO287G, (Figure 7, Reference 10). **Exact floodplain locations and drainage studies are beyond the scope of this report.**

Potential Seasonally Shallow Groundwater – Constraint

The area mapped with this hazard is the minor drainage swale located in the central portion of the site. In this area, we would anticipate the potential for periodically high subsurface moisture conditions and possible frost heave potential, depending on the soil conditions. A new detention pond is located in the southwestern portion of the site, and it is anticipated that site grading will mitigate the hazard. Any organic or unsuitable soils should be removed prior to placement of new fill.

Mitigation: In these locations, foundations subject to severe frost heave potential should penetrate sufficient depth so as to discourage the formation of ice lenses beneath foundations. At this location and elevation, foundation depth for frost protection is 30 inches. In areas where high subsurface moisture conditions are anticipated periodically, a subsurface perimeter drain will be necessary to help prevent the intrusion of water into areas located below grade. Subsurface perimeter drains may be necessary to prevent the intrusion of water into areas below grade. Typical drain details are presented in Figure 9.

Radon – Hazard

Radon is a colorless, tasteless radioactive gas with a United States Environmental Protection Agency (EPA) specified action level of 4.0 picocuries per liter (pCi/L) of air. Radon gas has a very short half-life of 3.8 days. Radon levels for the area have been reported by the Colorado Geologic Survey in the open file, Report No. 91-4 (Reference 12). Average Radon levels for the 80921-zip code is 1.90 pCi/l. The following is a table of radon levels in this area:

Average Radon Levels for the 80921 Zip Code	
0 < 4 pCi/L	100.00%
4 < 10 pCi/L	0.00%
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

Total acreage involved in the project is approximately 5.67 acres. The site is currently zoned as R-4 (Planned Development). The proposed development consists of a 49-lot single-family subdivision on the southern side of Spanish Bit Drive, and other associated site improvements. The development will utilize municipal sewer and water, and private streets to access parking and homes. Cut/fill grading, retaining walls, and a detention pond are planned for the development. Retaining walls should be designed by a qualified professional engineer and for global stability. The constraints affecting development are associated with the potentially collapsible/expansive soils, and potentially seasonal shallow groundwater that can be mitigated with special designs or avoidance. The hazards on site may be satisfactorily mitigated through proper engineering design and construction practices.

Subsurface soils encountered at anticipated foundation depths in the test borings generally consist of loose to medium dense silty sands. The loose soils were primarily encountered in the upper sol profiles. The loose soils will require recompaction in building areas. Very dense sandstone was encountered at depths ranging from 7 to 18 feet. Clays, silts, claystone and siltstone were also encountered at depths that will likely not affect the construction of shallow foundation systems; however, these soils may be encountered in deep utility excavations. Excavation of sandstone is anticipated for a portion of the foundation utilities, and track-mounted equipment is likely required. Rubber-tired equipment should be capable of excavating the overburden soils. Expansive soils, if encountered, will require special foundation design and/or overexcavation. These soils will not prohibit development.

Any fill required for overexcavation or overlot grading should be approved by Entech Engineering and be compacted according to the “Structural Fill” paragraph. Loose sands encountered in the building areas should be recompacted. Overexcavation of sandstone, if encountered, may be required to provide uniform building pads. A minimum layer of 2 feet of suitable soils below and beyond the building foundation is recommended where sandy soils and sandstone exist at footing grade. Any expansive or collapsible soils (clay, silt, claystone or siltstone) in building areas should be removed and replaced with non-expansive structural fill. On-site granular soils may be used as structural fill, as approved by Entech. All overexcavations should be observed by Entech prior

to placing fill. Final depth of overexcavation, if needed, should be determined for each building at the time of the excavation observation. Prior to placing structural fill, the subgrade should be scarified, moisture-conditioned and compacted.

Areas of potential seasonally shallow were observed along the minor drainage swale in the central portion of the site. These areas will likely be mitigated with the proposed site grading. Groundwater was encountered in three of the test borings at depths ranging from 14 to 15.5 feet bgs. Groundwater will likely not affect the construction of shallow foundation systems on this site. Deep utility excavations may encounter water. Unstable soil conditions should be anticipated if excavations approach water levels. Stabilization with shotrock or geofabric may be required. Personnel of Entech should be contacted if groundwater is encountered in excavations on this site to determine corrective actions.

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. Additional subsurface soil investigation is recommended prior to construction, after site grading is completed.

7 ECONOMIC MINERAL RESOURCES

According to the *El Paso County Aggregate Resource Evaluation Map* (Reference 13), the area is mapped as upland deposits. According to the *Atlas of Sand, Gravel and Quarry Aggregate Resources, Colorado Front Range Counties* distributed by the Colorado Geological Survey (Reference 14), the site is not mapped as a probable aggregate resource. According to the *Evaluation of Mineral and Mineral Fuel Potential* (Reference 15), the area of the site has been mapped as “Good” for industrial minerals. The sands associated with the alluvial deposits are considered a sand resource. Considering the silty to clayey nature of much of these materials and abundance of similar materials through the region and 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 15), 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 near the site. The *El Paso County Aggregate Resource Map* (Reference 13) has mapped coal resources in the Rockrimmon area approximately 8 miles south of the site

(Reference 8). At this depth, mining the coal would not be economical at this time. No metallic mineral resources have been mapped on the site (Reference 17).

The site has been mapped as “Fair” for oil and gas resources (Reference 17). No oil or gas fields have been discovered in the area near the site. The sedimentary rocks in the area may lack the geologic structure for trapping oil or gas; therefore, it would not be considered a significant resource. Hydraulic fracturing is a new method that is being used 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 and weathered bedrock materials 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 FACILITY CONSTRUCTION RECOMMENDATIONS

In general, the site soils are suitable for the proposed roadways and embankments. Groundwater should be expected to be encountered in deeper cuts and along or near drainages and low-lying areas. If road or embankment excavations encroach on the groundwater level unstable soil conditions may be encountered. Unstable soils are not anticipated in areas of shallow bedrock. 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. 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 Elite Properties of America, Inc. 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

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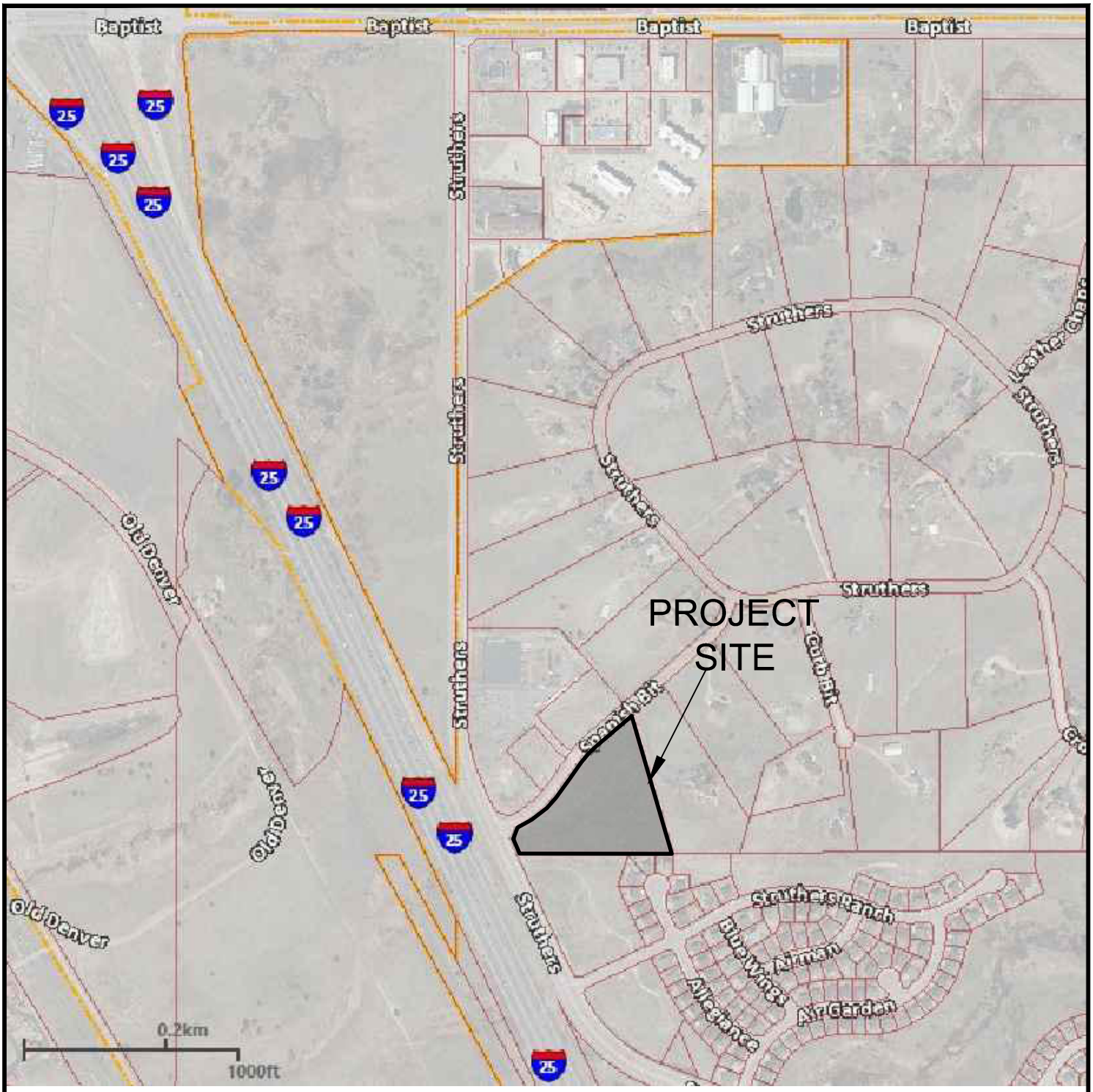
16. Schwochow, S.D.; Shroba, R.R. and Wicklein, P.C. 1974*. Atlas of Sand, Gravel, and Quarry Aggregate Resources, Colorado Front Range Counties*. Colorado Geological Survey. Special Publication 5-B.
17. Keller, John W.; TerBest, Harry and Garrison, Rachel E. 2003. *Evaluation of Mineral and Mineral Fuel Potential of El Paso County State Mineral Lands Administered by the Colorado State Land Board*. Colorado Geological Survey. Open-File Report 03-07.

FIGURES



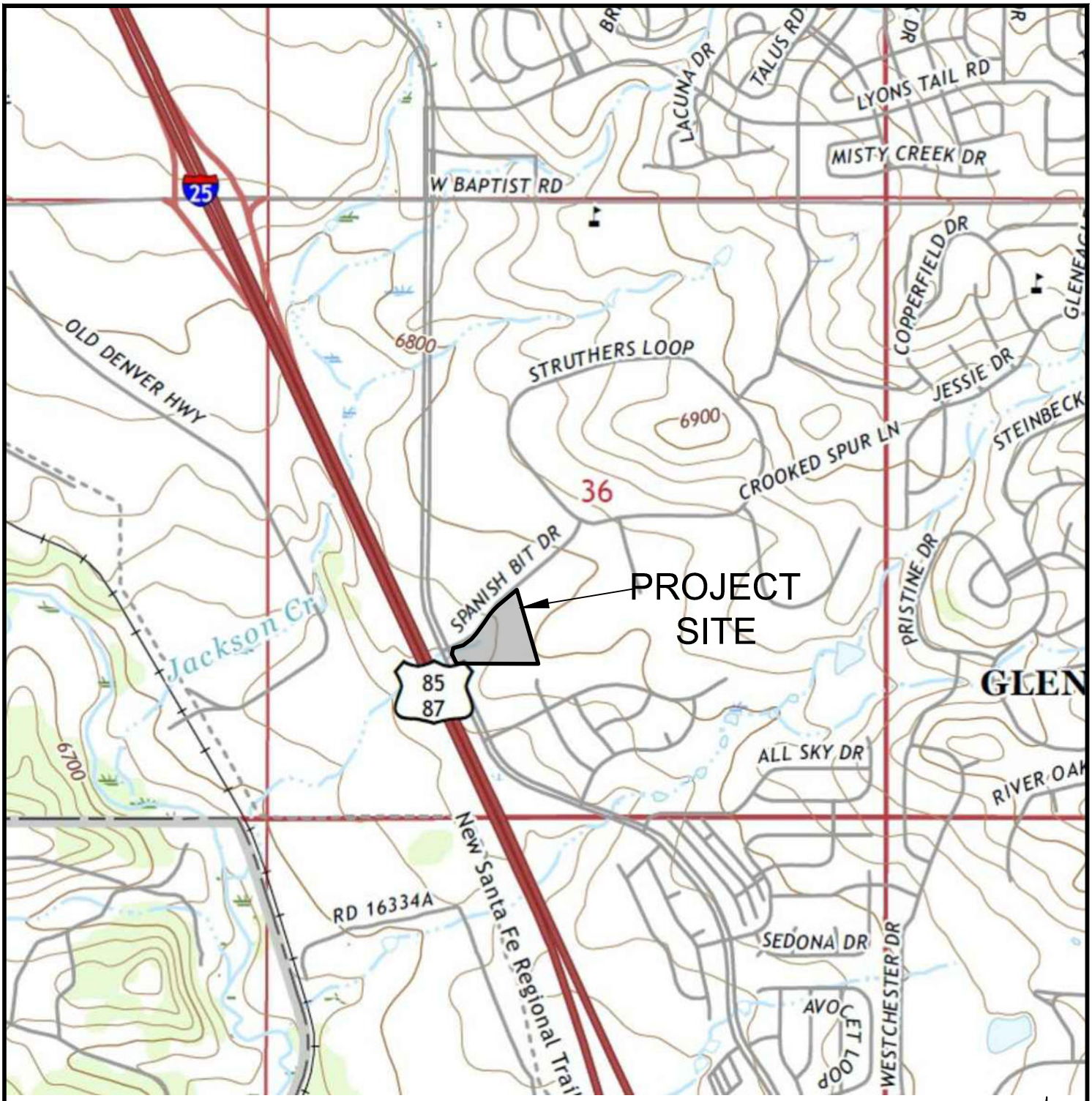
ENTECH ENGINEERING, INC.

VICINITY MAP

URBAN LANDING
ELITE PROPERTIES OF AMERICA, INC.

JOB NO.
241188

FIG. 1



ENTECH ENGINEERING, INC.

USGS TOPOGRAPHY MAP

URBAN LANDING
ELITE PROPERTIES OF AMERICA, INC.

JOB NO.
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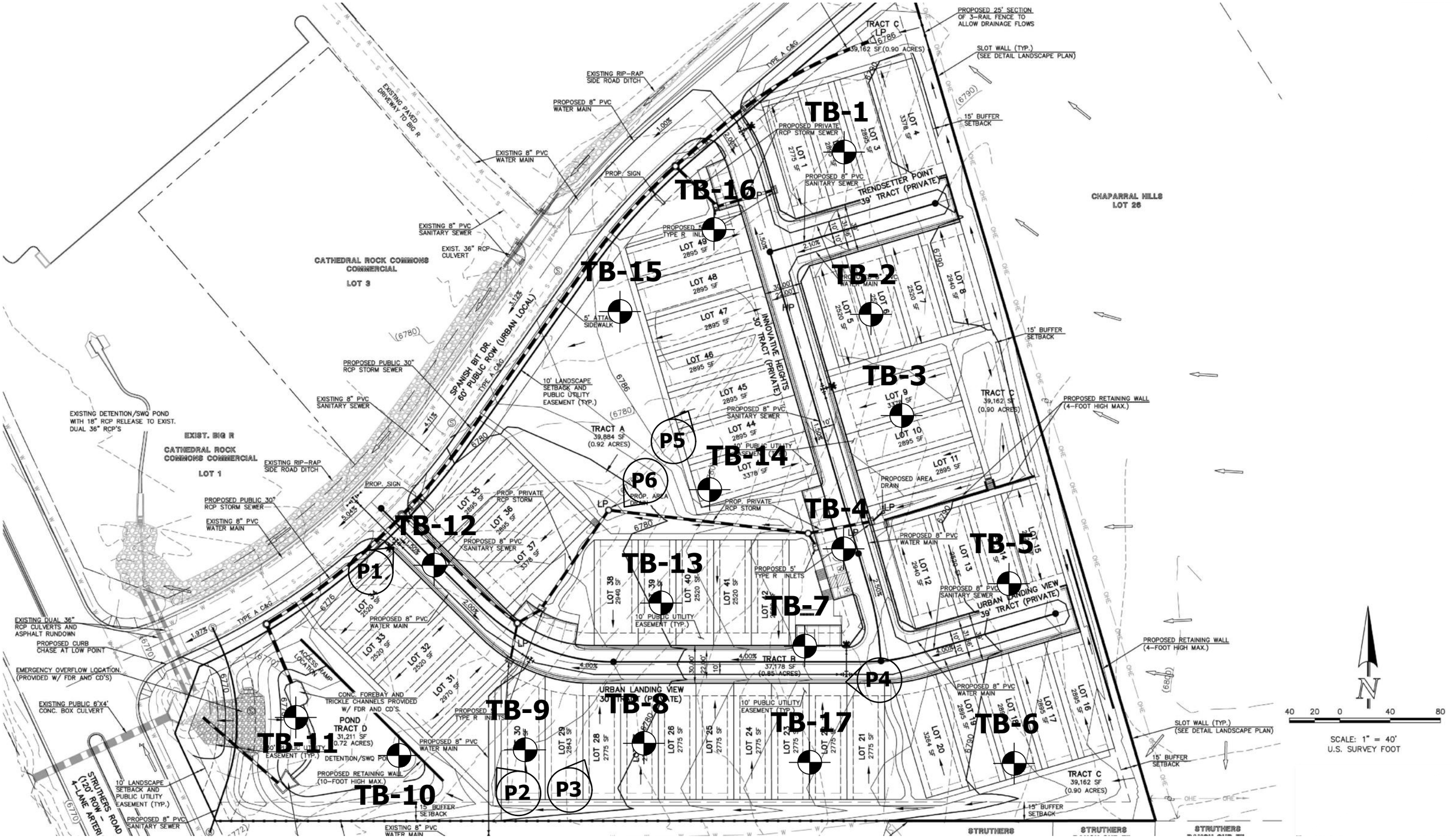
FIG. 2



TB- APPROXIMATE TEST BORING LOCATION AND NUMBER

(P2) - APPROXIMATE PHOTOGRAPH LOCATION AND NUMBER

ENTECH ENGINEERING, INC.

SITE AND EXPLORATION PLAN

URBAN LANDING
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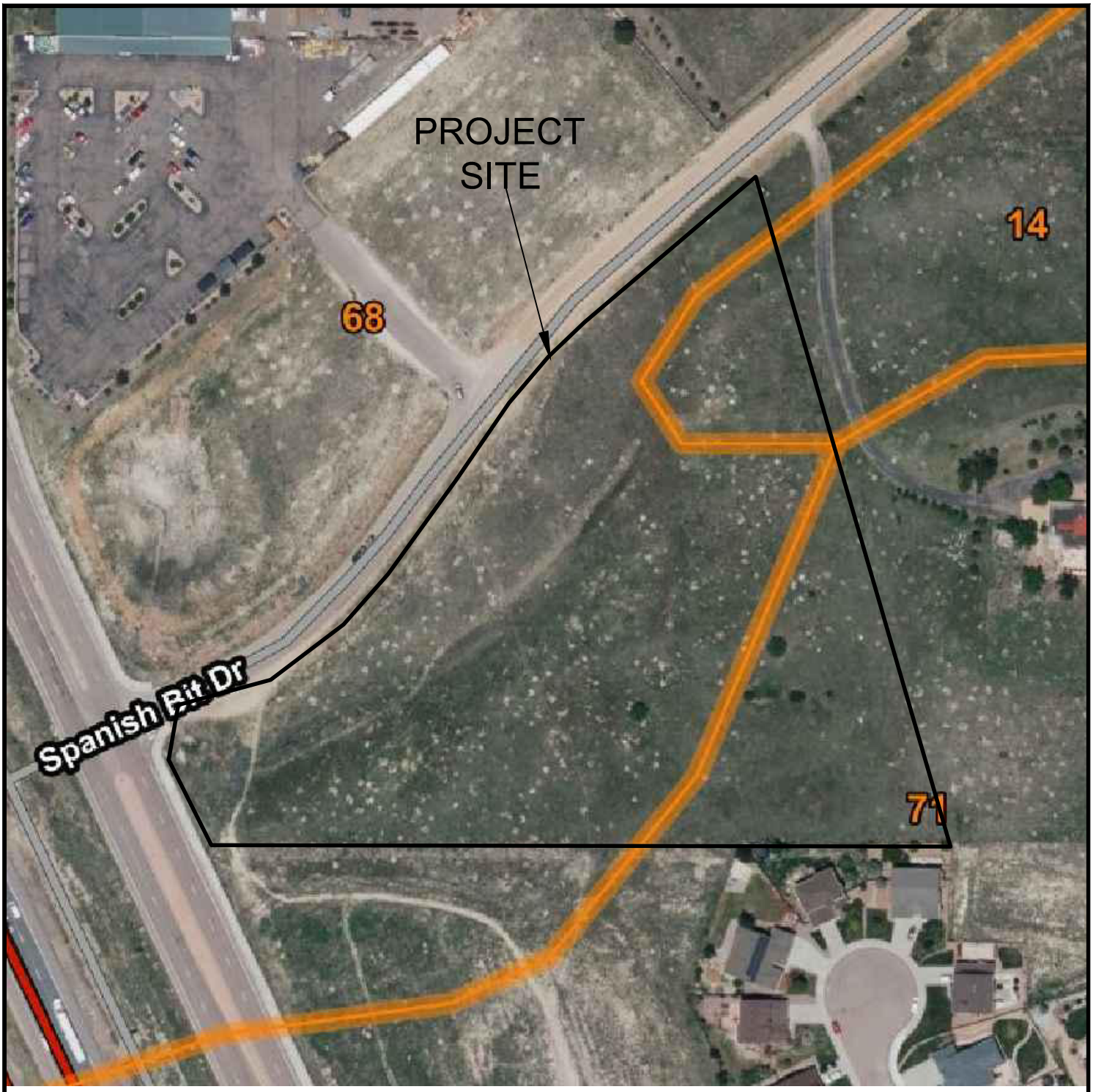
FIG. 3



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USDA SOIL MAP

URBAN LANDING
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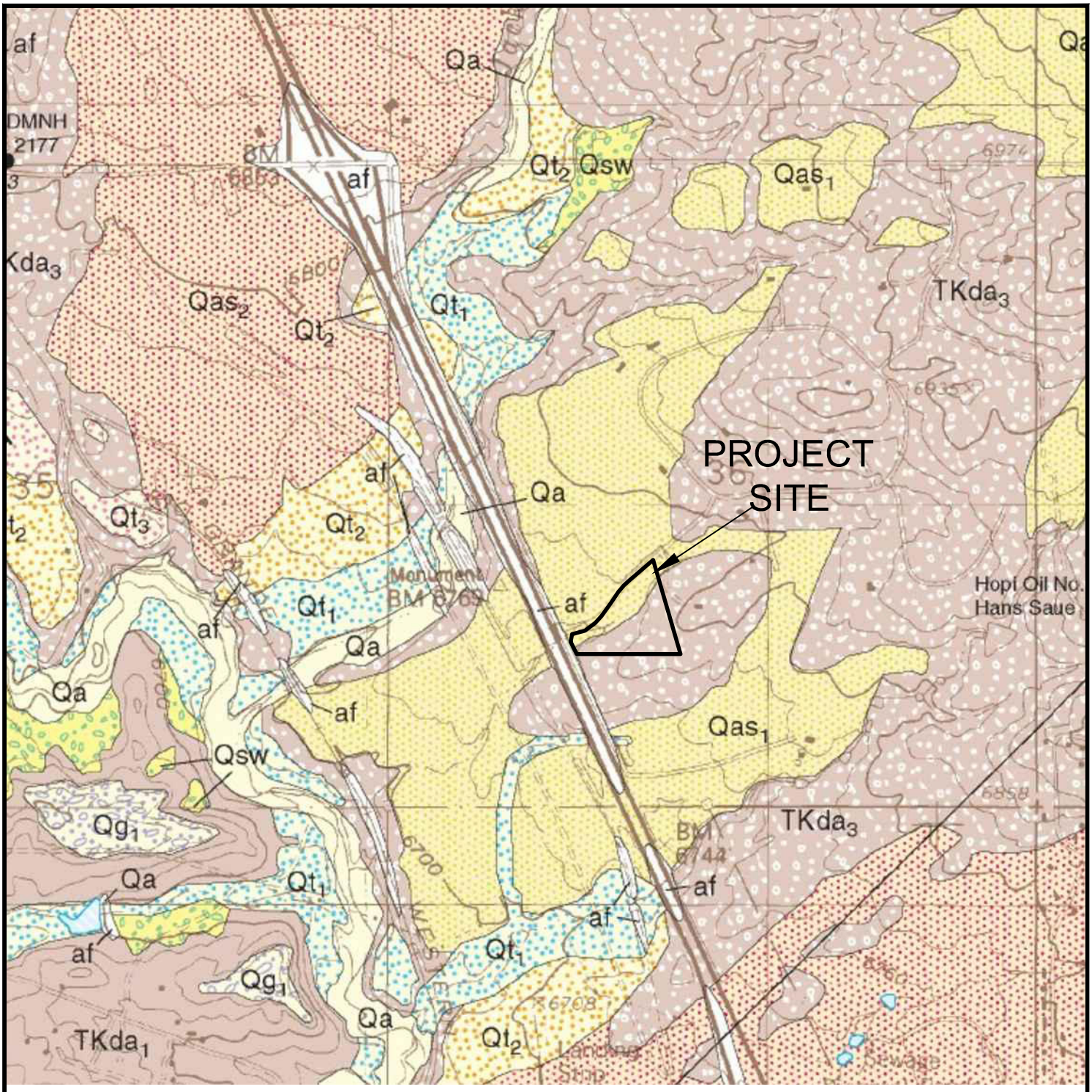
FIG. 4



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ENTECH ENGINEERING, INC.

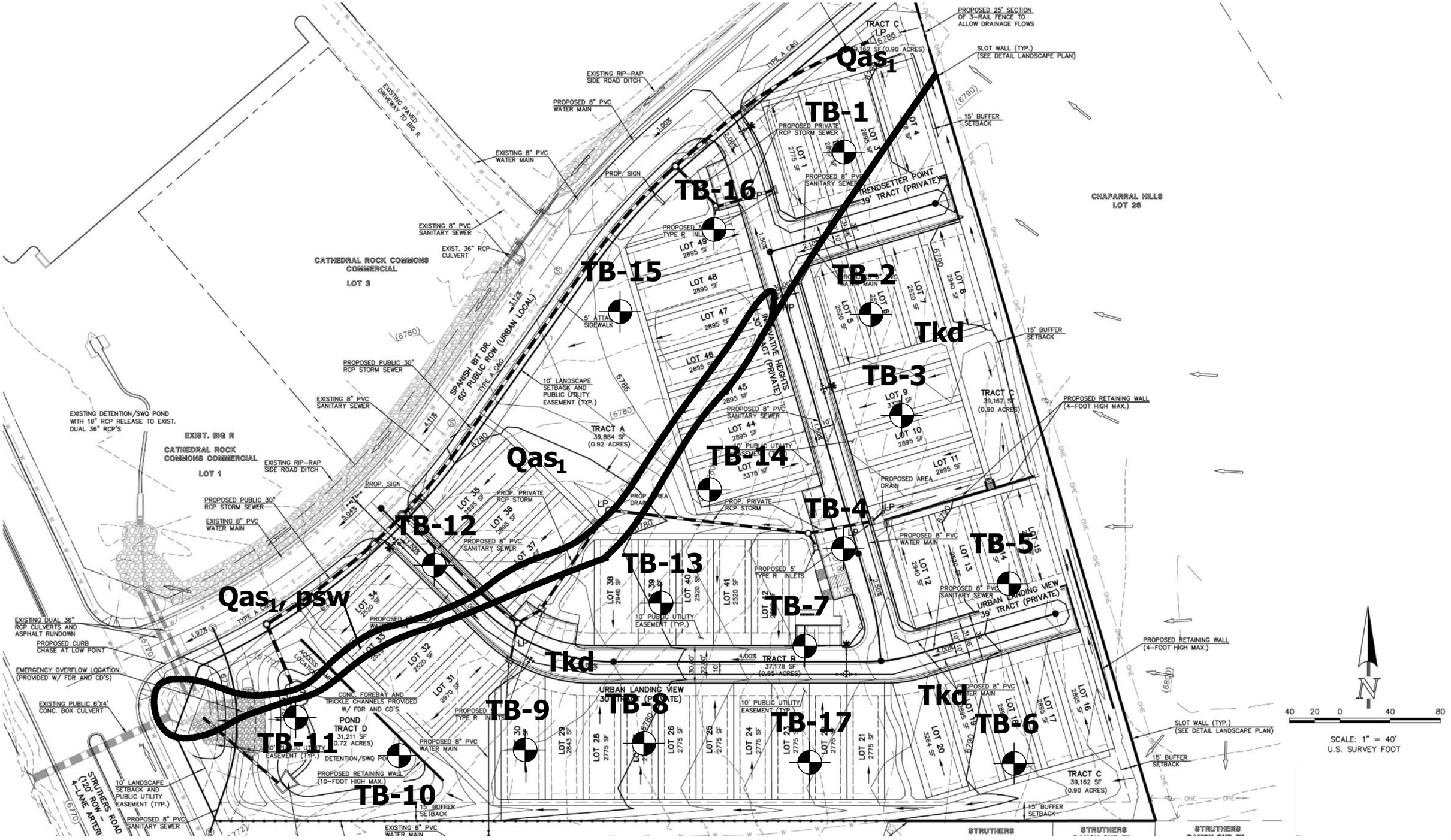
GEOLOGIC MAP OF THE MONUMENT QUADRANGLE

URBAN LANDING

ELITE PROPERTIES OF AMERICA, INC.

JOB NO. 241188

FIG. 5



Legend:

Qas_1 - Younger Alluvial-Slope Deposits of Holocene to late Pleistocene Age: sheet flow and fluvial sand deposits

Tkd - Dawson Formation of Tertiary to Cretaceous Age: arkosic sandstone with interbedded claystone and siltstone

psw - potential seasonally shallow groundwater area

ENTECH ENGINEERING, INC.

GEOLOGY / ENGINEERING MAP

10 EL ENCANTO DRIVE
COLARELLI CUSTOM HOMES

JOB NO. 240451

FIG. 5

N

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FEMA FLOODPLAIN MAP

URBAN LANDING
ELITE PROPERTIES OF AMERICA, INC.

JOB NO.
241188

FIG. 7

N

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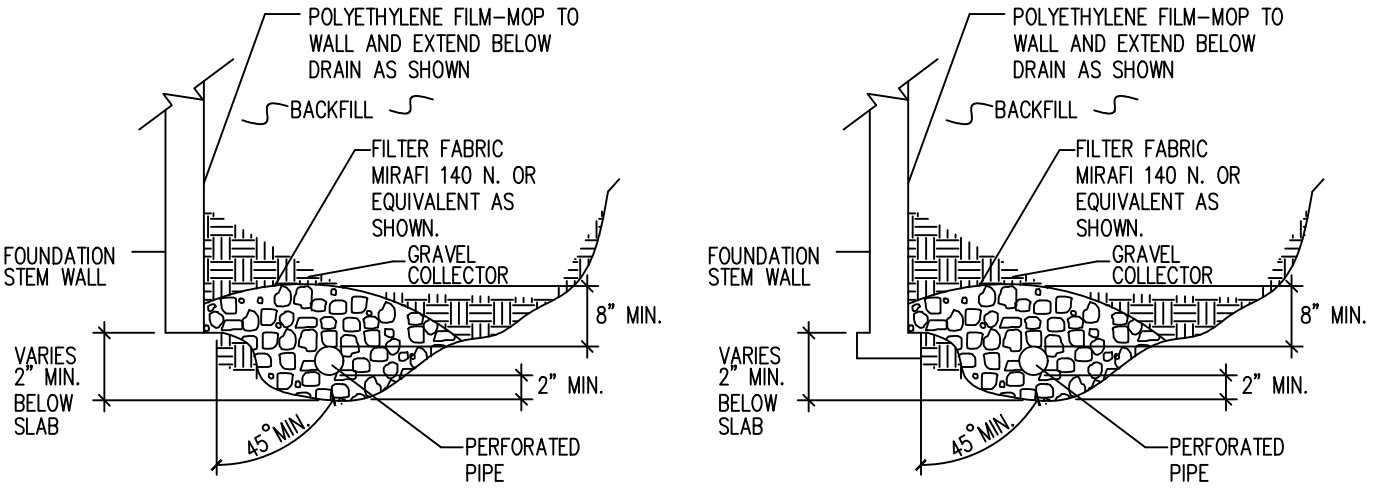
ENGINEERING, INC.

USFWS WETLANDS MAP

URBAN LANDING
ELITE PROPERTIES OF AMERICA, INC.

JOB NO.
241188

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

URBAN LANDING
ELITE PROPERITES OF AMERICA, INC.

JOB NO. 241188

FIG. 9

APPENDIX A: Site Photographs

1

Looking east along Spanish Bit Drive from the western side of the site.

July 9, 2024

2

Looking northwest from the southern side of the site.

July 9, 2024

Job No. 241188

3

Looking northeast from the southern side of the site.

July 9, 2024

4

Looking west from the southeast portion of the site.

July 9, 2024

Job No. 241188

5

Looking northeast along drainage swale in central portion of the site.

July 9, 2024

6

Looking southwest along drainage swale in central portion of the site.

July 9, 2024

Job No. 241188

APPENDIX B: Test Boring Logs

TEST BORING 1
DATE DRILLED 3/10/2021

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
DRY TO 18', 3/15/21						
SAND, SILTY, TAN, LOOSE, DRY to MOIST				3	1.9	1
	5			8	6.9	1
CLAY, SANDY, GRAY BROWN, HARD, MOIST	10			30	12.6	2
SANDSTONE, WEAK, GRAY BROWN, WEATHERED (SAND, SILTY, VERY DENSE, MOIST)	15			50/5"	13.4	3
	20			50/4"	13.3	3

TEST BORING 2
DATE DRILLED 3/10/2021

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
DRY TO 18', 3/15/21						
SAND, SILTY, DARK BROWN to BROWN, LOOSE, DRY				5	1.7	1
	5			6	0.9	1
SAND, SILTY, GRAY BROWN, DENSE, MOIST	10			35	7.6	1
CLAYSTONE-SILTSTONE, WEAK, GRAY BROWN, WEATHERED (CLAY-SILT, SLIGHTLY SANDY, HARD, MOIST)	15			50/7"	11.9	4
	20			50/10"	12.4	4

ENTECH ENGINEERING, INC.

TEST BORING LOGS

URBAN LANDING, SPANISH BIT & STRUTHERS
ELITE PROPERTIES

JOB NO. 241188

FIG. B-1

TEST BORING 3
DATE DRILLED 3/10/2021

REMARKS

DRY TO 20', 3/10/21
CAVED TO 17', 3/15/21, DRY

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
SAND, SILTY, TAN, LOOSE to MEDIUM DENSE, DRY			8	1.10	1
5			20	1.90	1
SANDSTONE, WEAK, TAN, WEATHERED (SAND, SILTY, VERY DENSE, MOIST)					
10			50/6"	3.40	3
15			50/6"	4.80	3
20			50/5"	7.70	3

TEST BORING 4
DATE DRILLED 3/11/2021

REMARKS

DRY TO 18.5', 3/15/21

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
SAND, WITH SILT, TAN, MEDIUM DENSE, DRY to MOIST			14	1.0	1
5			21	2.6	1
SAND, SILTY, GRAY BROWN, DENSE, MOIST			38	9.2	1
10					
CLAYSTONE, WEAK, GRAY BROWN, WEATHERED (CLAY, SANDY, HARD, MOIST)					
15			50/10"	12.9	4
SANDSTONE, WEAK, TAN, WEATHERED (SAND, SILTY, VERY DENSE, MOIST)					
20			50/5"	2.3	3

ENTECH ENGINEERING, INC.

TEST BORING LOGS

URBAN LANDING, SPANISH BIT & STRUTHERS
ELITE PROPERTIES

JOB NO. 241188

FIG. B-2

TEST BORING 5
DATE DRILLED 3/11/2021

REMARKS

DRY TO 19', 3/15/21

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type	Description
			14	1.4	1	SAND, SILTY, TAN, MEDIUM DENSE, DRY
5			15	1.8	1	
10			29	12.2	2	CLAY, SANDY, GRAY BROWN, VERY STIFF, MOIST
						SANDSTONE, WEAK, TAN, WEATHERED (SAND, SILTY, VERY DENSE, MOIST)
15			50/5"	3.7	3	
20			50/5"	4.5	3	

TEST BORING 6
DATE DRILLED 3/11/2021

REMARKS

DRY TO 18', 3/15/21

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type	Description
			6	1.3	1	SAND, SILTY, BROWN, LOOSE, DRY
5			7	1.5	1	
10			41	8.4	1	SAND, SILTY, GRAY BROWN, DENSE, MOIST
						SANDSTONE, WEAK, TAN, WEATHERED (SAND, SILTY, VERY DENSE, MOIST)
15			50/8"	9.2	3	
20			50/3"	3.9	3	

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TEST BORING LOGS

URBAN LANDING, SPANISH BIT & STRUTHERS
ELITE PROPERTIES

JOB NO. 241188

FIG. B-3

TEST BORING 7
DATE DRILLED 3/11/2021

REMARKS

DRY TO 5', 3/15/21

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
	SAND, WITH SILT, BROWN, MEDIUM DENSE, DRY		10	1.20	1
5			17	1.20	1
10					
15					
20					

TEST BORING 8
DATE DRILLED 3/11/2021

REMARKS

DRY TO 18', 3/15/21

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
	SAND, SILTY, TAN, LOOSE to MEDIUM DENSE, DRY to MOIST		3	1.8	1
5			3	2.1	1
10			23	5.9	1
15	CLAY, SANDY, GRAY BROWN, HARD, MOIST		31	21.8	2
20	SANDSTONE, WEAK, TAN, WEATHERED (SAND, SILTY, VERY DENSE, MOIST)		50/4"	8.9	3

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TEST BORING LOGS

URBAN LANDING, SPANISH BIT & STRUTHERS
ELITE PROPERTIES

JOB NO. 241188

FIG. B-4

TEST BORING 9
DATE DRILLED 3/11/2021

REMARKS

DRY TO 18.5', 3/15/21

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
	SAND, SILTY, TAN, MEDIUM DENSE, DRY		13	1.4	1
5			18	1.9	1
10	SANDSTONE, WEAK, TAN, WEATHERED (SAND, SILTY, VERY DENSE, MOIST)		50/11"	6.5	3
15			50/5"	4.1	3
20			50/3"	10.3	3

TEST BORING 10
DATE DRILLED 3/11/2021

REMARKS

WATER @ 15.5', 3/15/21

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
	SAND, SILTY, TAN, LOOSE to MEDIUM DENSE, DRY to MOIST		5	1.4	1
5			32	8.4	1
10	SANDSTONE, WEAK, TAN, WEATHERED (SAND, SILTY, VERY DENSE, MOIST)		50/5"	13.6	3
15	▼		50/6"	15.4	3
20			50/8"	11.1	3

ENTECH ENGINEERING, INC.

TEST BORING LOGS

URBAN LANDING, SPANISH BIT & STRUTHERS
ELITE PROPERTIES

JOB NO. 241188

FIG. B-5

TEST BORING 11
DATE DRILLED 3/12/2021

REMARKS

WATER @ 14', 3/15/21

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			6	0.7	1
5			13	1.7	1
10			50/8"	12.6	4
15			50/9"	16.4	4
20			50/9"	12.1	4

SAND, SILTY, TAN, LOOSE to MEDIUM DENSE, DRY

CLAYSTONE, WEAK, GRAY BROWN, WEATHERED (CLAY, SANDY, HARD, MOIST)

TEST BORING 12
DATE DRILLED 3/12/2021

REMARKS

DRY TO 9.5', 3/15/21

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			10	1.7	1
5			12	2.4	1
10			50/10"	12.6	4
15					
20					

SAND, SILTY, BROWN to TAN, MEDIUM DENSE, DRY

CLAYSTONE, WEAK, GRAY BROWN, WEATHERED (CLAY, SANDY, HARD, MOIST)

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TEST BORING LOGS

URBAN LANDING, SPANISH BIT & STRUTHERS
ELITE PROPERTIES

JOB NO. 241188

FIG. B-6

TEST BORING 13
DATE DRILLED 3/12/2021

REMARKS

DRY TO 18', 3/15/21

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
SAND, SILTY, BROWN to TAN, MEDIUM DENSE to LOOSE, DRY to MOIST			15	2.3	1
5			6	2.6	1
10			22	3.4	1
SANDSTONE, WEAK, GRAY BROWN to TAN, WEATHERED (SAND, SILTY, VERY DENSE, MOIST) 15			50/7"	11.3	3
20			50/5"	17.6	3

TEST BORING 14
DATE DRILLED 3/12/2021

REMARKS

DRY TO 18.5', 3/15/21

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
SAND, SILTY, BROWN to TAN, LOOSE, DRY			6	1.4	1
5			4	2.9	1
SANDSTONE, WEAK, TAN, WEATHERED (SAND, SILTY, VERY DENSE, MOIST) 10			50/7"	6.6	3
15			50/5"	5.0	3
20			50/5"	5.3	3

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TEST BORING LOGS

URBAN LANDING, SPANISH BIT & STRUTHERS
ELITE PROPERTIES

JOB NO. 241188

FIG. B-7

TEST BORING 15
DATE DRILLED 3/12/2021

REMARKS

DRY TO 5', 3/15/21

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type	Description
			6	2.1	1	SAND, SILTY, BROWN, LOOSE, DRY
5			5	2.1	1	
10						
15						
20						

TEST BORING 16
DATE DRILLED 3/12/2021

REMARKS

DRY TO 5', 3/15/21

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type	Description
			13	6.9	1	SAND, SILTY, BROWN, MEDIUM DENSE to LOOSE, MOIST
5			9	3.8	1	
10						
15						
20						

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TEST BORING LOGS

URBAN LANDING, SPANISH BIT & STRUTHERS
ELITE PROPERTIES

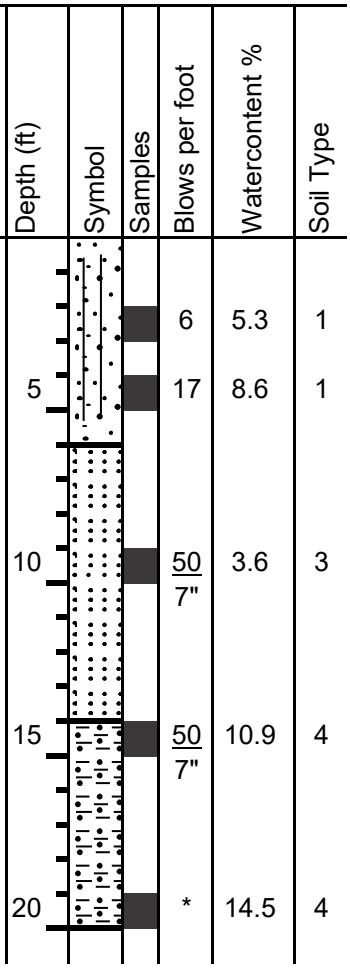
JOB NO. 241188

FIG. B-8

TEST BORING 17
DATE DRILLED 4/22/2021

REMARKS

DRY TO 18', 4/26/21



* - BULK SAMPLE TAKEN

ENTECH ENGINEERING, INC.

TEST BORING LOGS

URBAN LANDING, SPANISH BIT & STRUTHERS
ELITE PROPERTIES

JOB NO. 241188

FIG. B-9

TABLE B-1

DEPTH TO GROUNDWATER & BEDROCK

TEST BORING	DEPTH TO GROUNDWATER (ft.)	DEPTH TO BEDROCK (ft.)
1	>20	12
2	>20	12
3	>20	7
4	>20	11
5	>20	11
6	>20	11
7	>5	>5
8	>20	16
9	>20	9
10	15.5	8
11	14.0	8
12	>10	7
13	>20	12
14	>20	8
15	>5	>5
16	>5	>5
17	>20	6

APPENDIX C: Laboratory Testing Results

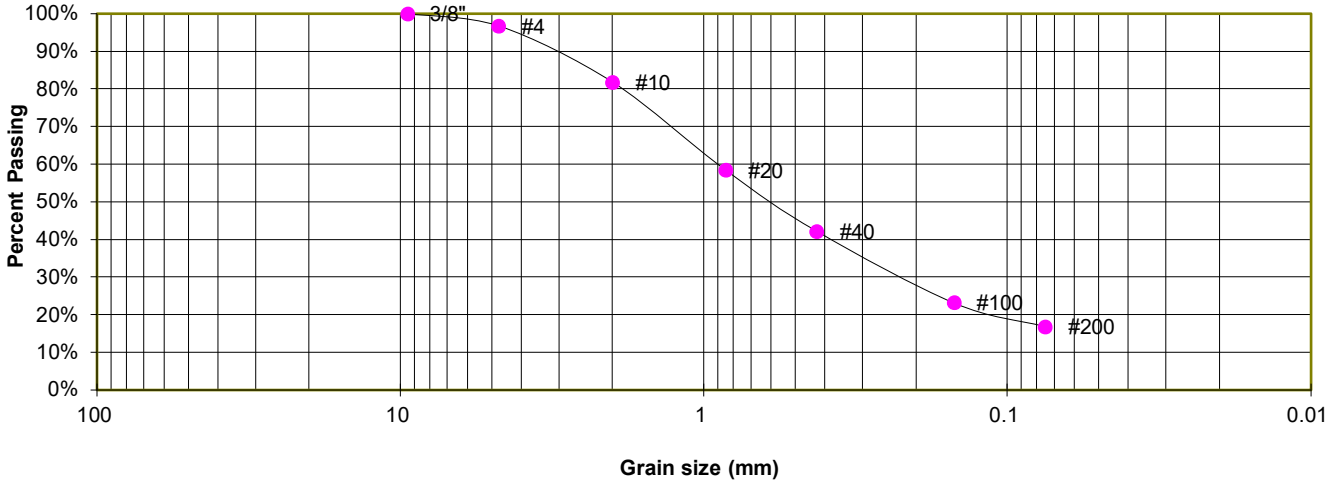
ENTECH ENGINEERING, INC.

TABLE C-1
SUMMARY OF LABORATORY TEST RESULTS

SOIL TYPE	TEST BORING NO.	DEPTH (FT)	WATER (%)	DRY DENSITY (PCF)	PASSING NO. 200 SIEVE (%)	LIQUID LIMIT	PLASTIC LIMIT	PLASTIC INDEX	SULFATE (WT %)	FHA SWELL (PSF)	SWELL/ CONSOL (%)	USCS	SOIL DESCRIPTION
1	2	2-3			16.8				0.00			SM	SAND, SILTY
1	4	5			6.5							SM-SW	SAND, WITH SILT
1	8	2-3			13.6							SM	SAND, SILTY
1	10	2-3			13.2							SM	SAND, SILTY
1	12	1-2			12.1	NV	NP	NP				SM	SAND, SILTY
1	13	5			20.8							SM	SAND, SILTY
1	15	1-2			16.8	NV	NP	NP				SM	SAND, SILTY
1	16	1-2			23.2							SM	SAND, SILTY
2	1	10	13.5	98.9	71.0				0.00		-3.5	CL	CLAY, WITH SAND
2	5	10	12.1	100.7	80.6				<0.01	1110	-0.3	CL	CLAY, WITH SAND
2	8	15			94.3	50	25	25				CH	CLAY, SLIGHTLY SANDY
3	3	10			26.2				<0.01			SM	SANDSTONE (SAND, SILTY)
3	6	15			14.4							SM	SANDSTONE (SAND, SILTY)
3	7	1-2			11.2	NV	NP	NP				SM-SW	SAND, WITH SILT
3	9	10			19.6							SM	SANDSTONE (SAND, SILTY)
3	14	10			14.5							SM	SANDSTONE (SAND, SILTY)
4	11	15	14.4	120.6	71.7	39	26	13			3.9	ML	SILTSTONE (SILT, WITH SAND)
4	2	20			91.3	27	21	6				CL-ML	CLAYSTONE-SILTSTONE (CLAY-SILT, SLIGHTLY SANDY)
4	17	15	13.9	119.5	71.1						2.2	ML	SILTSTONE (SILT, WITH SAND)

Project: Urban Landing, Spanish Bit & Struthers
Client: Elite Properties
Job No: 241188

TEST BORING	2	SOIL DESCRIPTION	SAND, SILTY
DEPTH (FT)	2-3	SOIL TYPE	1



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	96.7%
10	81.8%
20	58.5%
40	42.2%
100	23.2%
200	16.8%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM

ENTECH ENGINEERING, INC.

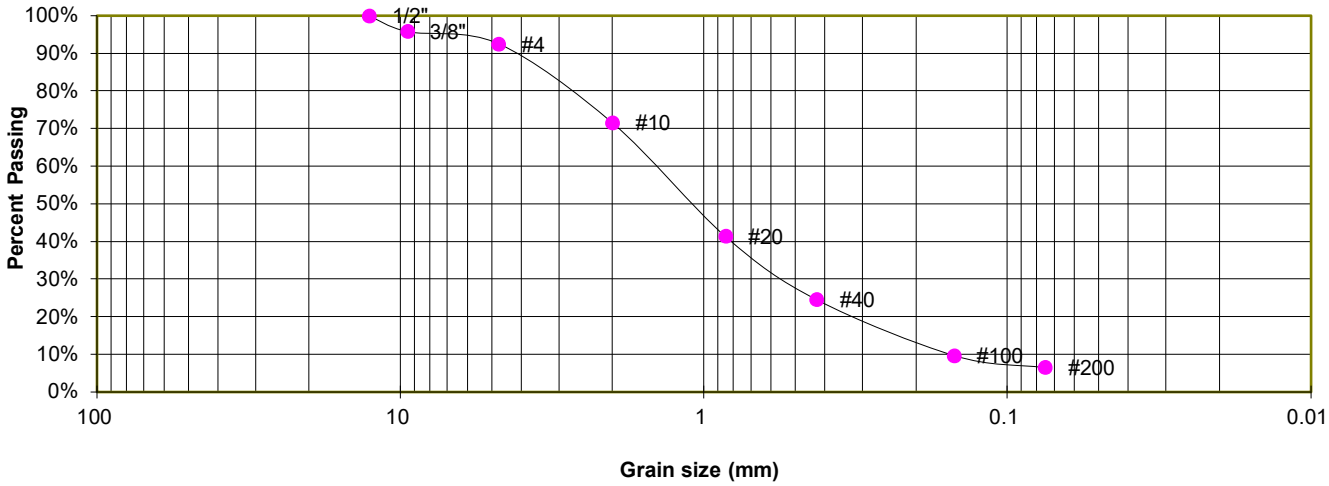
LABORATORY TEST RESULTS

URBAN LANDING, SPANISH BIT & STRUTHERS
ELITE PROPERTIES

JOB NO. 241188

FIG. C-1

TEST BORING	4	SOIL DESCRIPTION	SAND, WITH SILT
DEPTH (FT)	5	SOIL TYPE	1



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	95.9%
4	92.5%
10	71.5%
20	41.4%
40	24.6%
100	9.7%
200	6.5%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM-SW

ENTECH ENGINEERING, INC.

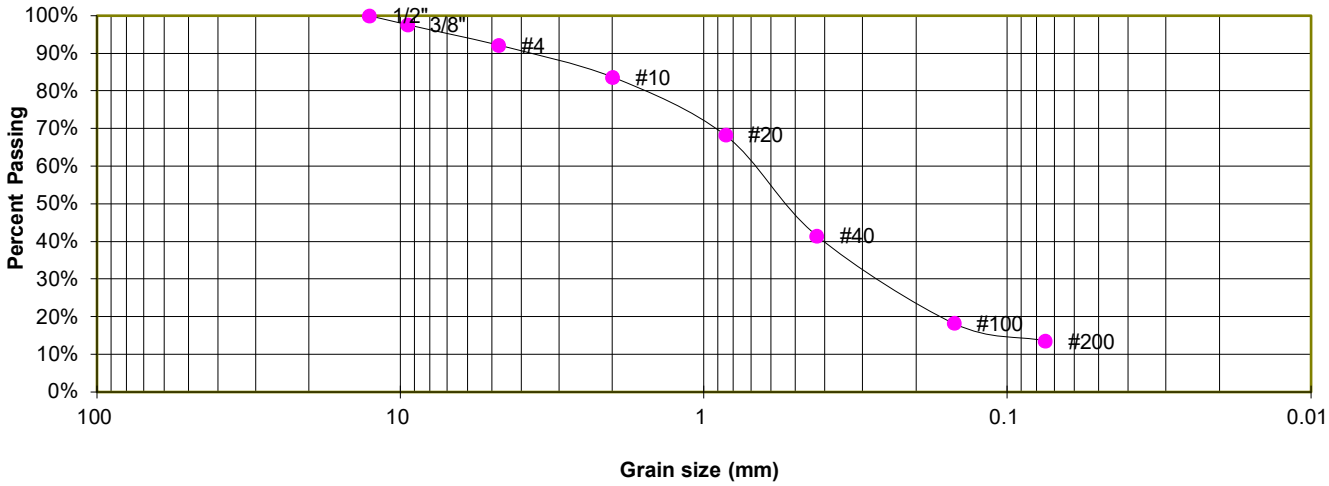
LABORATORY TEST RESULTS

URBAN LANDING, SPANISH BIT & STRUTHERS
ELITE PROPERTIES

JOB NO. 241188

FIG. C-2

TEST BORING	8	SOIL DESCRIPTION	SAND, SILTY
DEPTH (FT)	2-3	SOIL TYPE	1



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	97.6%
4	92.2%
10	83.6%
20	68.3%
40	41.5%
100	18.3%
200	13.6%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM

ENTECH ENGINEERING, INC.

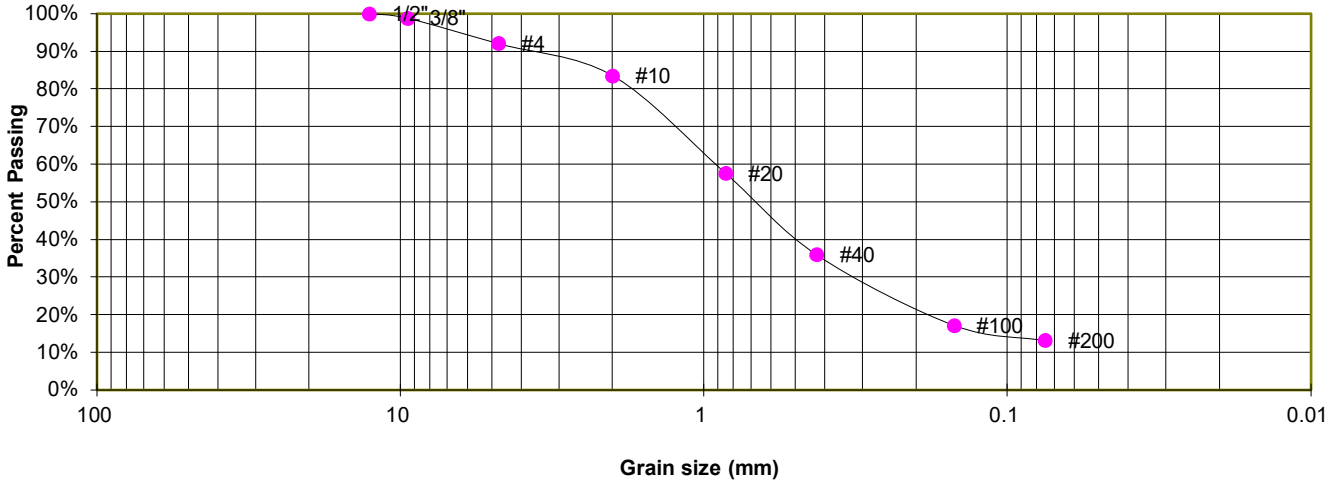
LABORATORY TEST RESULTS

URBAN LANDING, SPANISH BIT & STRUTHERS
ELITE PROPERTIES

JOB NO. 241188

FIG. C-3

TEST BORING	10	SOIL DESCRIPTION	SAND, SILTY
DEPTH (FT)	2-3	SOIL TYPE	1



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	98.9%
4	92.1%
10	83.5%
20	57.7%
40	36.0%
100	17.2%
200	13.2%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM

ENTECH ENGINEERING, INC.

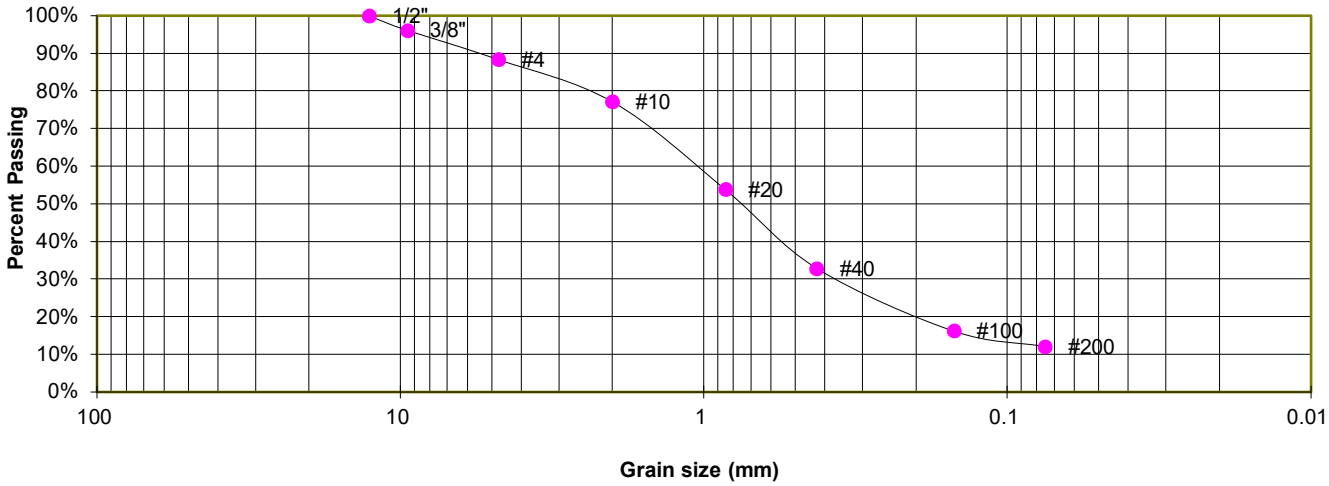
LABORATORY TEST RESULTS

URBAN LANDING, SPANISH BIT & STRUTHERS
ELITE PROPERTIES

JOB NO. 241188

FIG. C-4

TEST BORING	12	SOIL DESCRIPTION	SAND, SILTY
DEPTH (FT)	1-2	SOIL TYPE	1



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	96.1%
4	88.4%
10	77.2%
20	53.8%
40	32.9%
100	16.2%
200	12.1%

ATTERBERG LIMITS

Plastic Limit	NP
Liquid Limit	NV
Plastic Index	NP

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM

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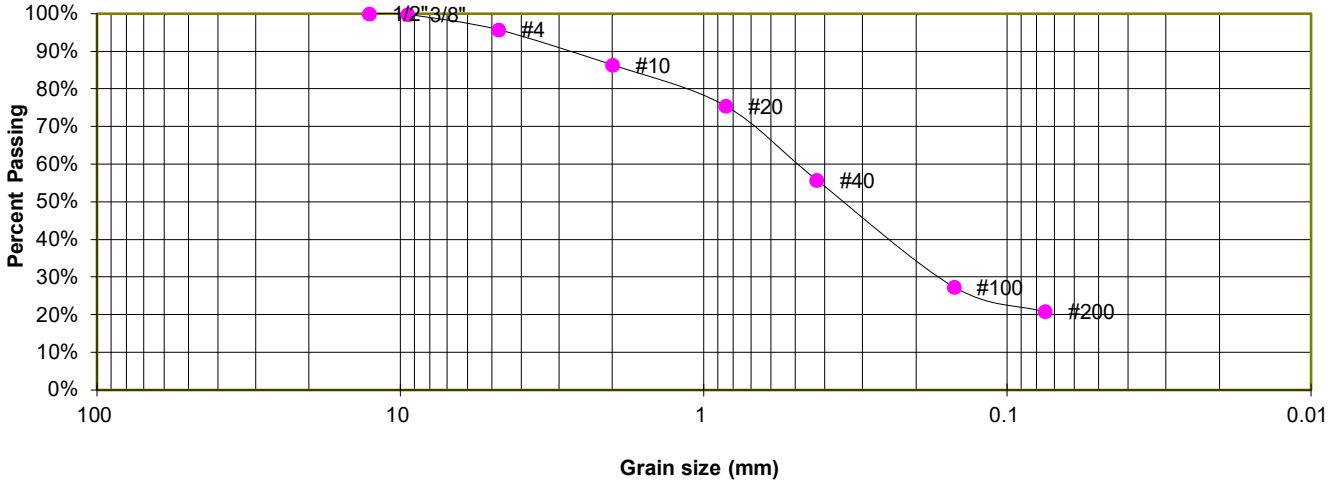
LABORATORY TEST RESULTS

URBAN LANDING, SPANISH BIT & STRUTHERS
ELITE PROPERTIES

JOB NO. 241188

FIG. C-5

TEST BORING	13	SOIL DESCRIPTION	SAND, SILTY
DEPTH (FT)	5	SOIL TYPE	1



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	99.8%
4	95.7%
10	86.4%
20	75.5%
40	55.8%
100	27.4%
200	20.8%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM

ENTECH ENGINEERING, INC.

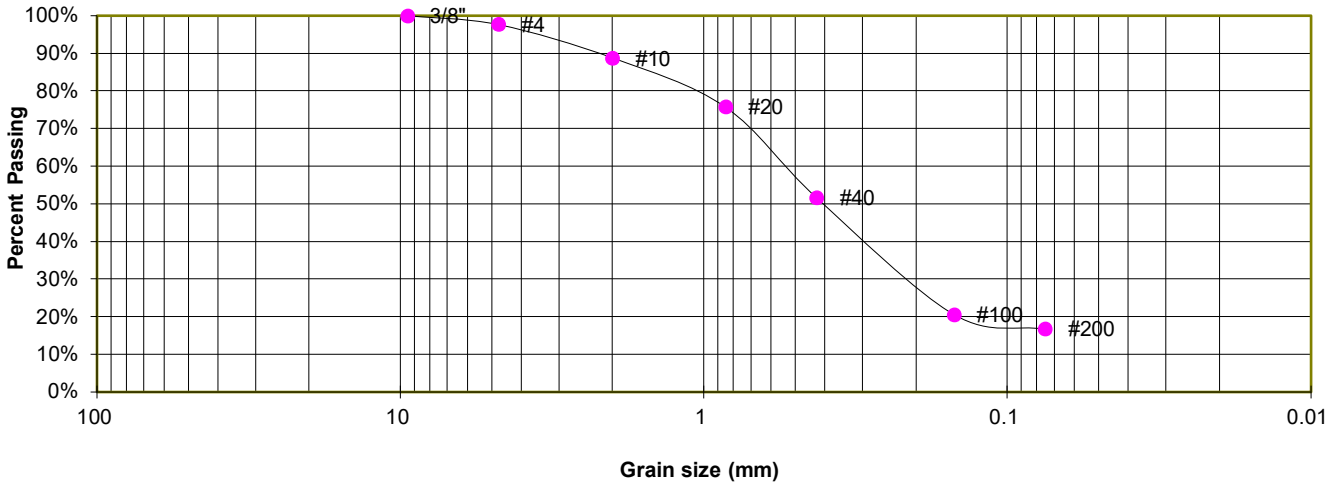
LABORATORY TEST RESULTS

URBAN LANDING, SPANISH BIT & STRUTHERS
ELITE PROPERTIES

JOB NO. 241188

FIG. C-6

TEST BORING	15	SOIL DESCRIPTION	SAND, SILTY
DEPTH (FT)	1-2	SOIL TYPE	1



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	97.7%
10	88.8%
20	75.8%
40	51.6%
100	20.6%
200	16.8%

ATTERBERG LIMITS

Plastic Limit	NP
Liquid Limit	NV
Plastic Index	NP

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM

ENTECH ENGINEERING, INC.

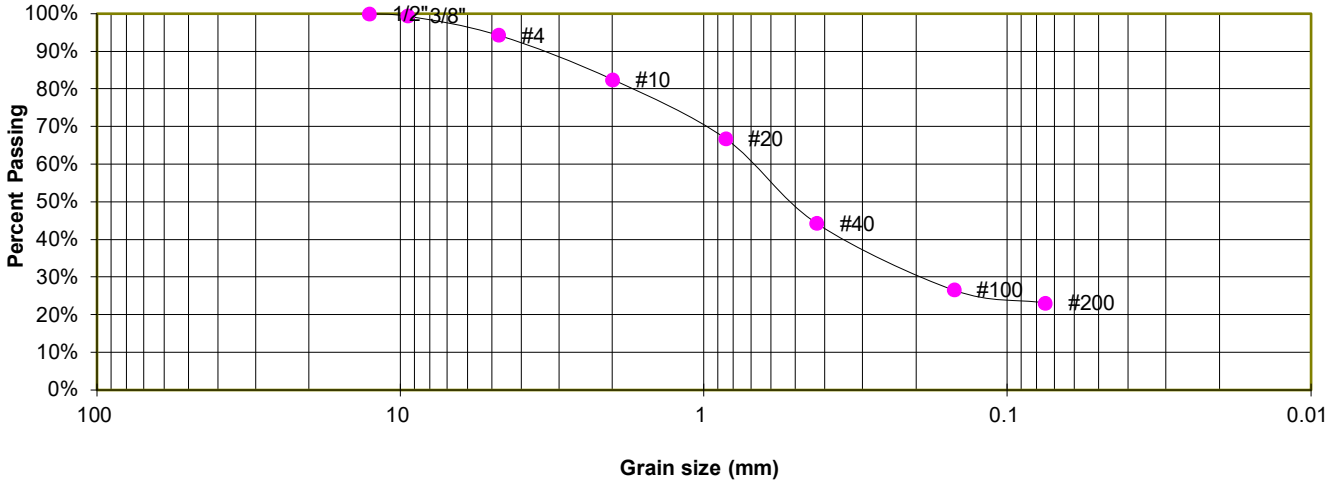
LABORATORY TEST RESULTS

URBAN LANDING, SPANISH BIT & STRUTHERS
ELITE PROPERTIES

JOB NO. 241188

FIG. C-7

TEST BORING	16	SOIL DESCRIPTION	SAND, SILTY
DEPTH (FT)	1-2	SOIL TYPE	1



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	99.4%
4	94.3%
10	82.5%
20	66.9%
40	44.3%
100	26.6%
200	23.2%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM

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LABORATORY TEST RESULTS

URBAN LANDING, SPANISH BIT & STRUTHERS
ELITE PROPERTIES

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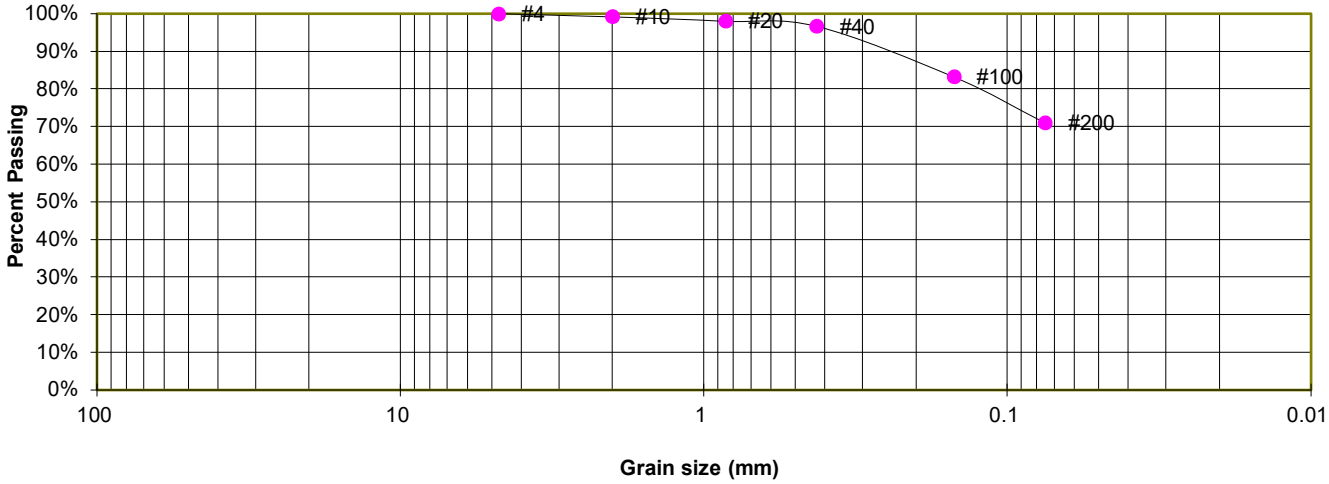
FIG. C-8

TEST BORING	1	SOIL DESCRIPTION	CLAY, WITH SAND
DEPTH (FT)	10	SOIL TYPE	2



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	100.0%
10	99.2%
20	98.0%
40	96.7%
100	83.2%
200	71.0%

SOIL CLASSIFICATION

USCS CLASSIFICATION: CL

ENTECH ENGINEERING, INC.

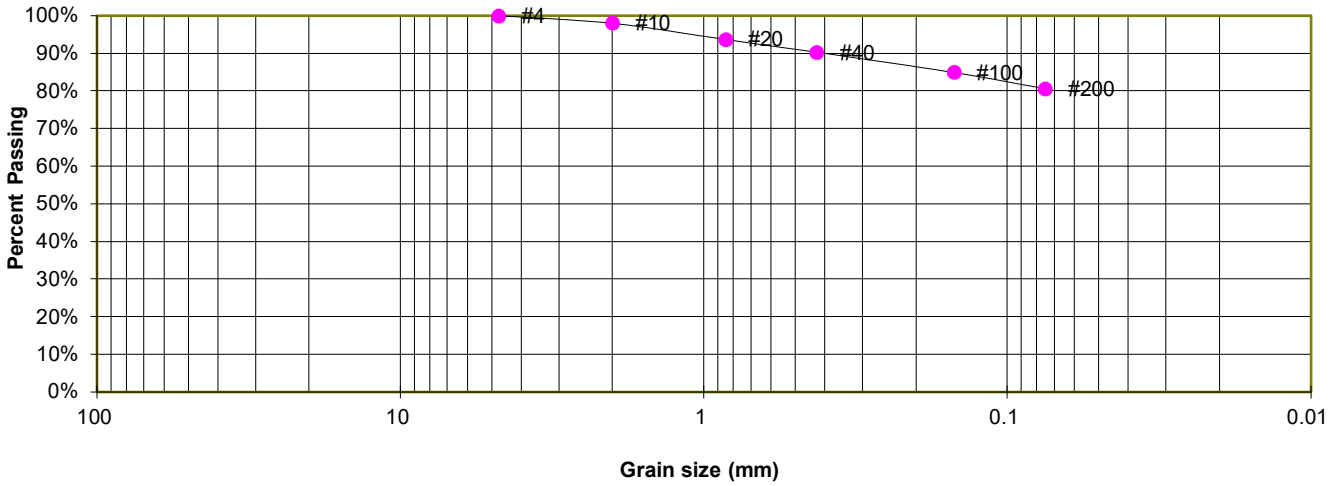
LABORATORY TEST RESULTS

URBAN LANDING, SPANISH BIT & STRUTHERS
ELITE PROPERTIES

JOB NO. 241188

FIG. C-9

TEST BORING	5	SOIL DESCRIPTION	CLAY, WITH SAND
DEPTH (FT)	10	SOIL TYPE	2



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	100.0%
10	98.0%
20	93.8%
40	90.3%
100	84.9%
200	80.6%

FHA SWELL

Moisture at start	12.0%
Moisture at finish	20.3%
Moisture increase	8.3%
Initial dry density (pcf)	106
Swell (psf)	1110

SOIL CLASSIFICATION

USCS CLASSIFICATION: CL

ENTECH ENGINEERING, INC.

LABORATORY TEST RESULTS

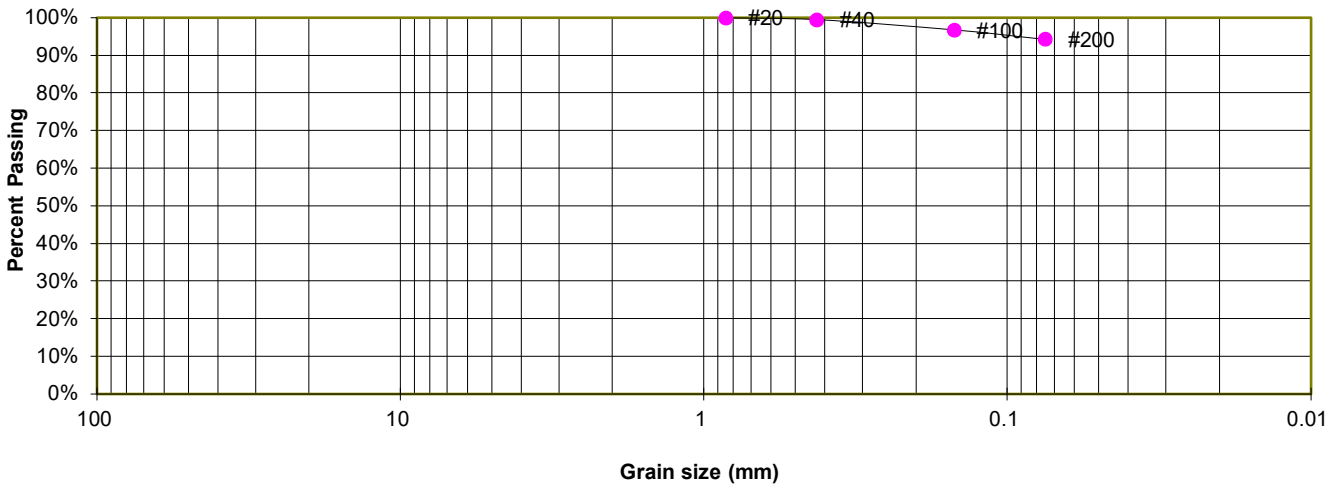
URBAN LANDING, SPANISH BIT & STRUTHERS
ELITE PROPERTIES

JOB NO. 241188

FIG. C-10

TEST BORING	8	SOIL DESCRIPTION	CLAY, SLIGHTLY SANDY
DEPTH (FT)	15	SOIL TYPE	2

Sieve Analysis
Grain Size Distribution



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	
10	
20	100.0%
40	99.5%
100	96.8%
200	94.3%

ATTERBERG LIMITS

Plastic Limit	25
Liquid Limit	50
Plastic Index	25

SOIL CLASSIFICATION

USCS CLASSIFICATION: CH

ENTECH ENGINEERING, INC.

LABORATORY TEST RESULTS

URBAN LANDING, SPANISH BIT & STRUTHERS
ELITE PROPERTIES

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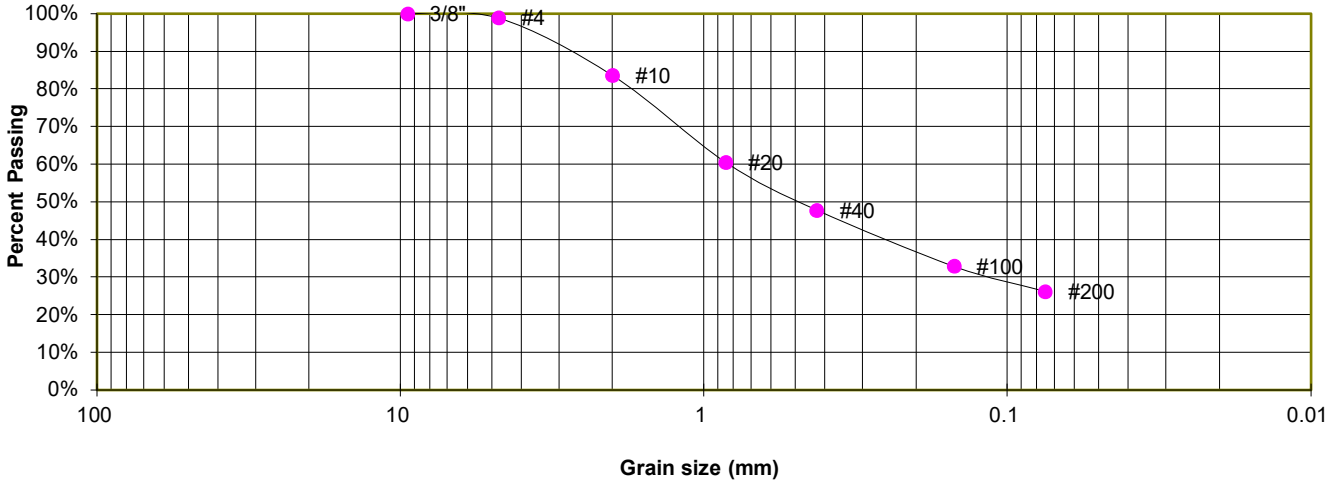
FIG. C-11

TEST BORING	3	SOIL DESCRIPTION	SANDSTONE (SAND, SILTY)
DEPTH (FT)	10	SOIL TYPE	3



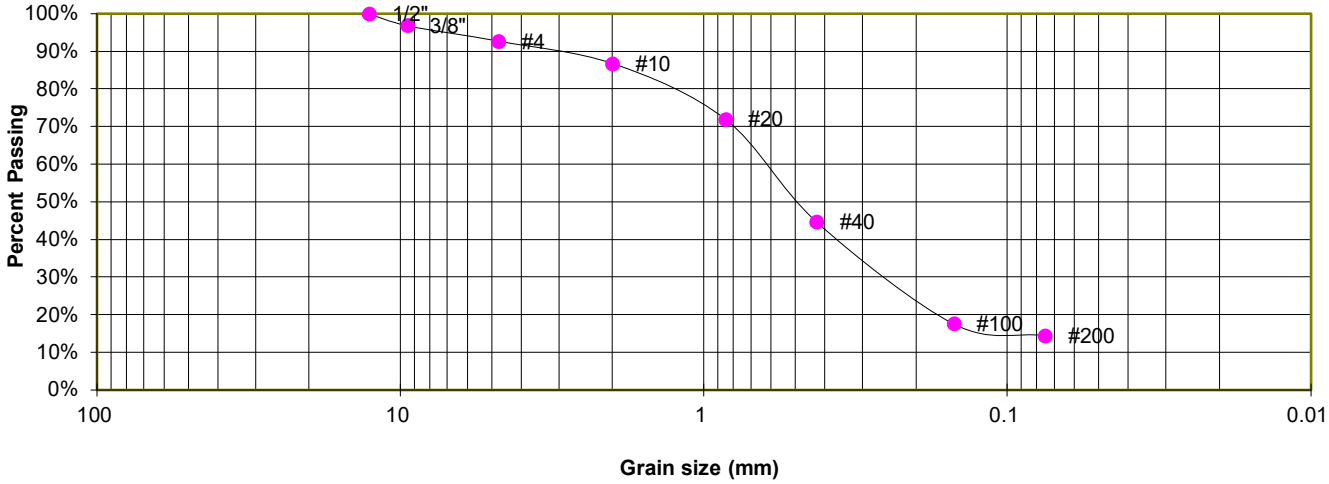
GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	98.9%
10	83.6%
20	60.5%
40	47.8%
100	33.0%
200	26.2%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM

TEST BORING	6	SOIL DESCRIPTION	SANDSTONE (SAND, SILTY)
DEPTH (FT)	15	SOIL TYPE	3



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	96.9%
4	92.7%
10	86.8%
20	72.0%
40	44.7%
100	17.6%
200	14.4%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM

ENTECH ENGINEERING, INC.

LABORATORY TEST RESULTS

URBAN LANDING, SPANISH BIT & STRUTHERS
ELITE PROPERTIES

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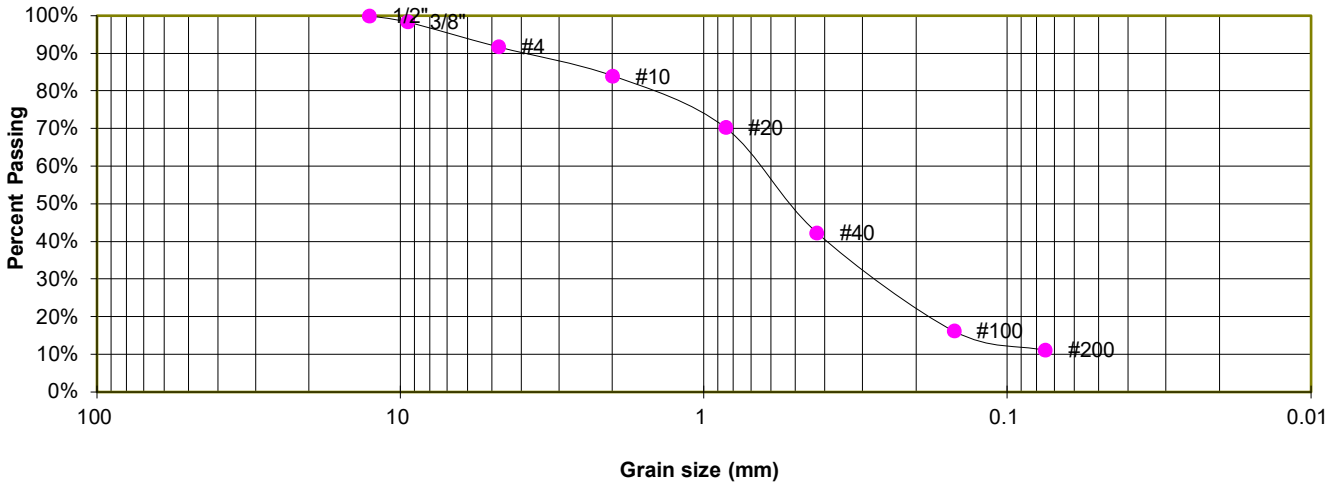
FIG. C-13

TEST BORING	7	SOIL DESCRIPTION	SAND, WITH SILT
DEPTH (FT)	1-2	SOIL TYPE	3



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	98.4%
4	91.8%
10	84.0%
20	70.3%
40	42.4%
100	16.2%
200	11.2%

ATTERBERG LIMITS

Plastic Limit	NP
Liquid Limit	NV
Plastic Index	NP

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM-SW

ENTECH ENGINEERING, INC.

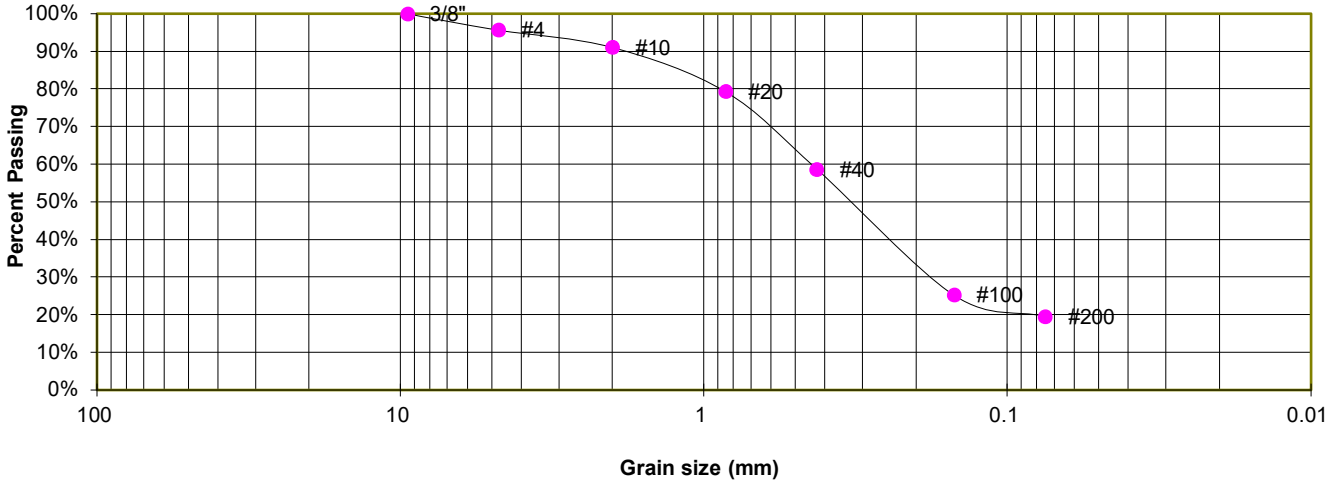
LABORATORY TEST RESULTS

URBAN LANDING, SPANISH BIT & STRUTHERS
ELITE PROPERTIES

JOB NO. 241188

FIG. C-14

TEST BORING	9	SOIL DESCRIPTION	SANDSTONE (SAND, SILTY)
DEPTH (FT)	10	SOIL TYPE	3



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	95.7%
10	91.1%
20	79.4%
40	58.7%
100	25.3%
200	19.6%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM

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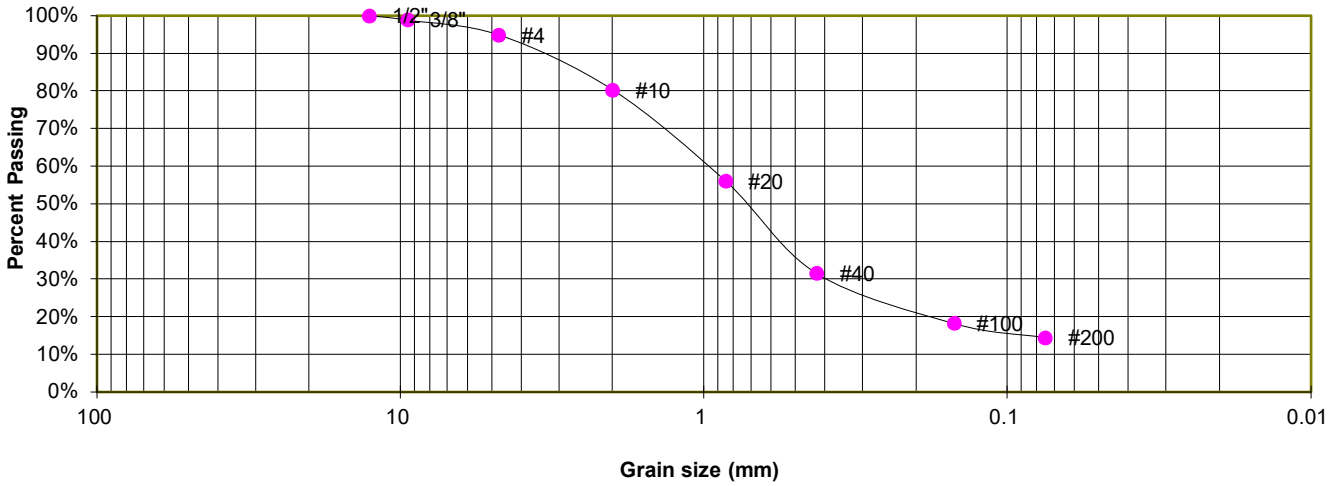
LABORATORY TEST RESULTS

URBAN LANDING, SPANISH BIT & STRUTHERS
ELITE PROPERTIES

JOB NO. 241188

FIG. C-15

TEST BORING	14	SOIL DESCRIPTION	SANDSTONE (SAND, SILTY)
DEPTH (FT)	10	SOIL TYPE	3



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	98.9%
4	94.9%
10	80.3%
20	56.1%
40	31.6%
100	18.3%
200	14.5%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM

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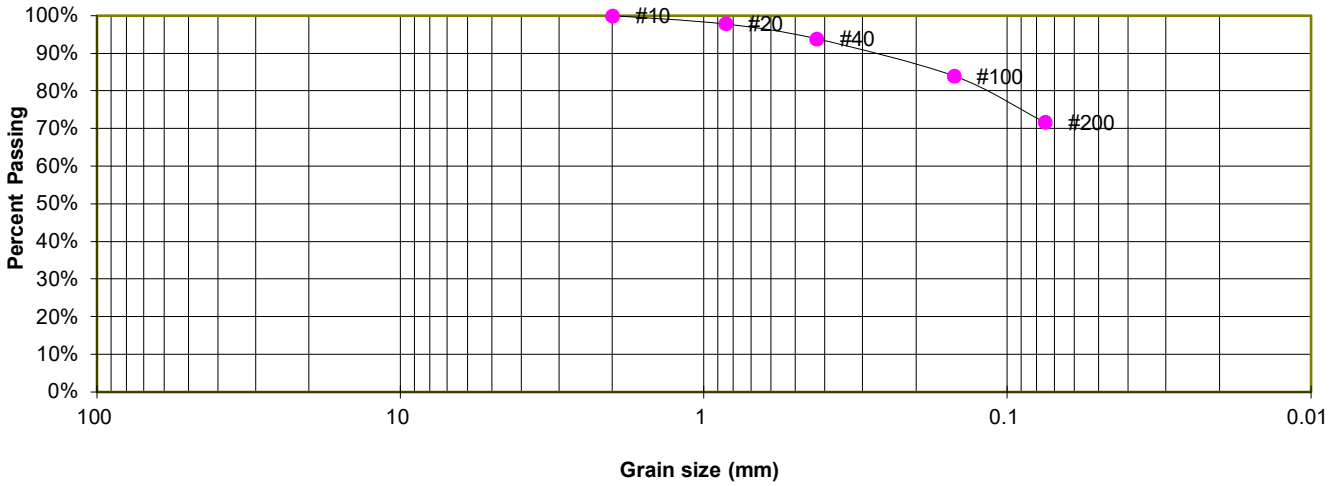
LABORATORY TEST RESULTS

URBAN LANDING, SPANISH BIT & STRUTHERS
ELITE PROPERTIES

JOB NO. 241188

FIG. C-16

TEST BORING	11	SOIL DESCRIPTION	SILTSTONE (SILT, WITH SAND)
DEPTH (FT)	15	SOIL TYPE	4



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	
10	100.0%
20	97.9%
40	93.9%
100	84.0%
200	71.7%

ATTERBERG LIMITS

Plastic Limit	26
Liquid Limit	39
Plastic Index	13

SOIL CLASSIFICATION

USCS CLASSIFICATION: ML

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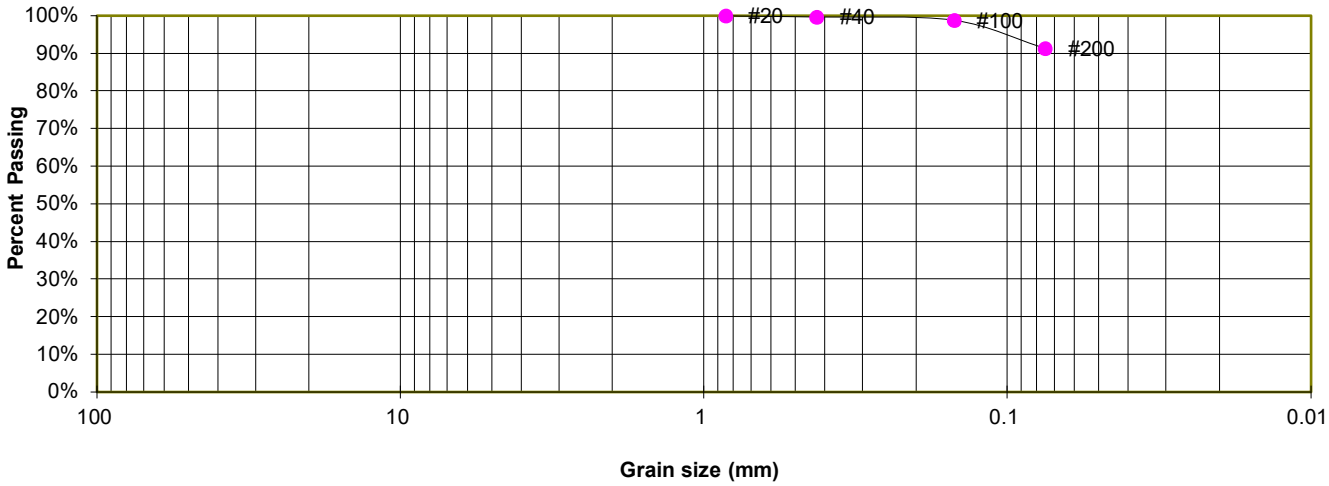
LABORATORY TEST RESULTS

URBAN LANDING, SPANISH BIT & STRUTHERS
ELITE PROPERTIES

JOB NO. 241188

FIG. C-17

TEST BORING	2	SOIL DESCRIPTION	CLAYSTONE-SILTSTONE (CLAY-SILT, SLIGHTLY SANDY)
DEPTH (FT)	20	SOIL TYPE	4



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	
10	
20	100.0%
40	99.7%
100	98.8%
200	91.3%

ATTERBERG LIMITS

Plastic Limit	21
Liquid Limit	27
Plastic Index	6

SOIL CLASSIFICATION

USCS CLASSIFICATION: CL-ML

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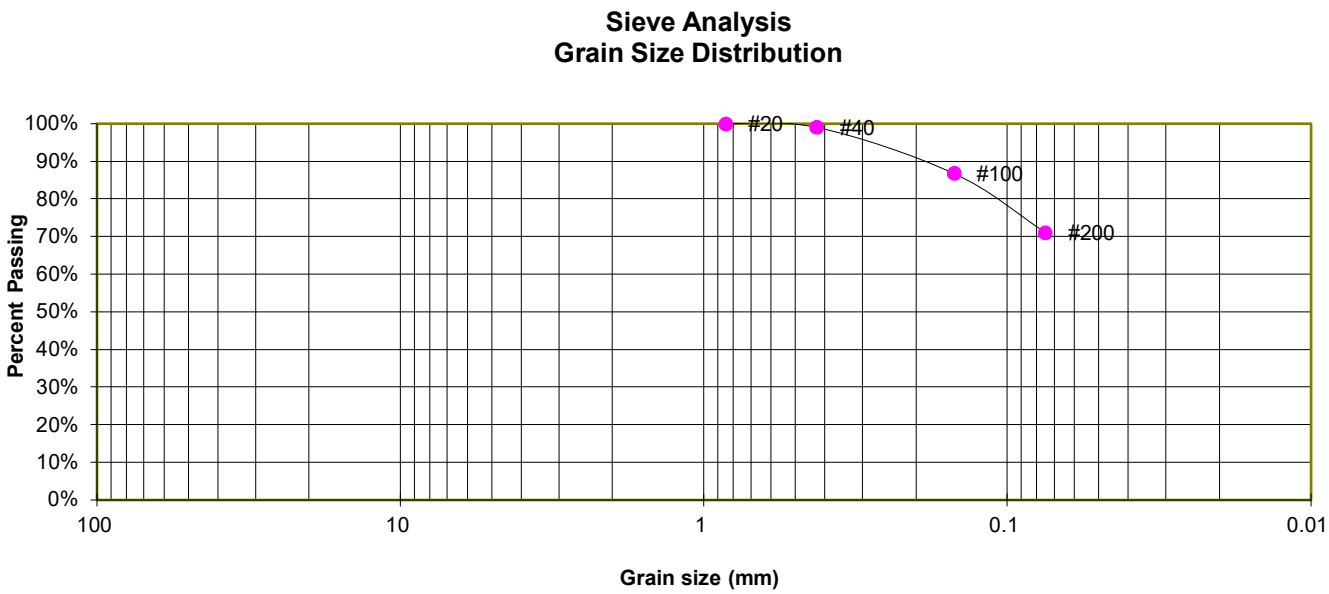
LABORATORY TEST RESULTS

URBAN LANDING, SPANISH BIT & STRUTHERS
ELITE PROPERTIES

JOB NO. 241188

FIG. C-18

TEST BORING	17	SOIL DESCRIPTION	SILTSTONE (SILT, WITH SAND)
DEPTH (FT)	15	SOIL TYPE	4



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	
10	
20	100.0%
40	99.1%
100	86.9%
200	71.1%

SOIL CLASSIFICATION

USCS CLASSIFICATION: ML

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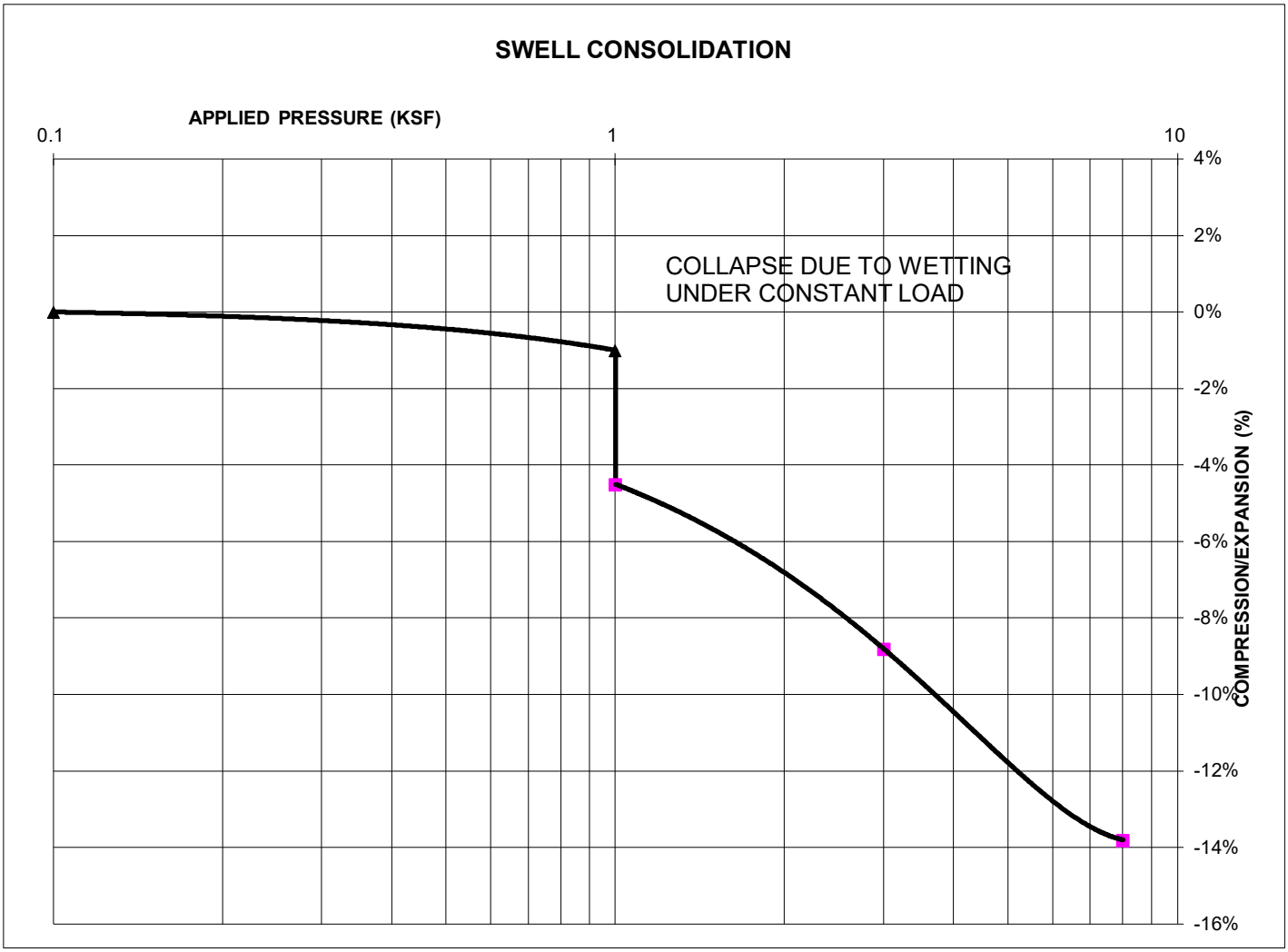
LABORATORY TEST RESULTS

URBAN LANDING, SPANISH BIT & STRUTHERS
ELITE PROPERTIES

JOB NO. 241188

FIG. C-19

TEST BORING	1	SOIL DESCRIPTION	CLAY, WITH SAND
DEPTH (FT)	10	SOIL TYPE	2



SWELL/COLLAPSE TEST RESULTS

NATURAL UNIT DRY WEIGHT (PCF): 99
NATURAL MOISTURE CONTENT: 13.5%
SWELL/COLLAPSE (%): -3.5%

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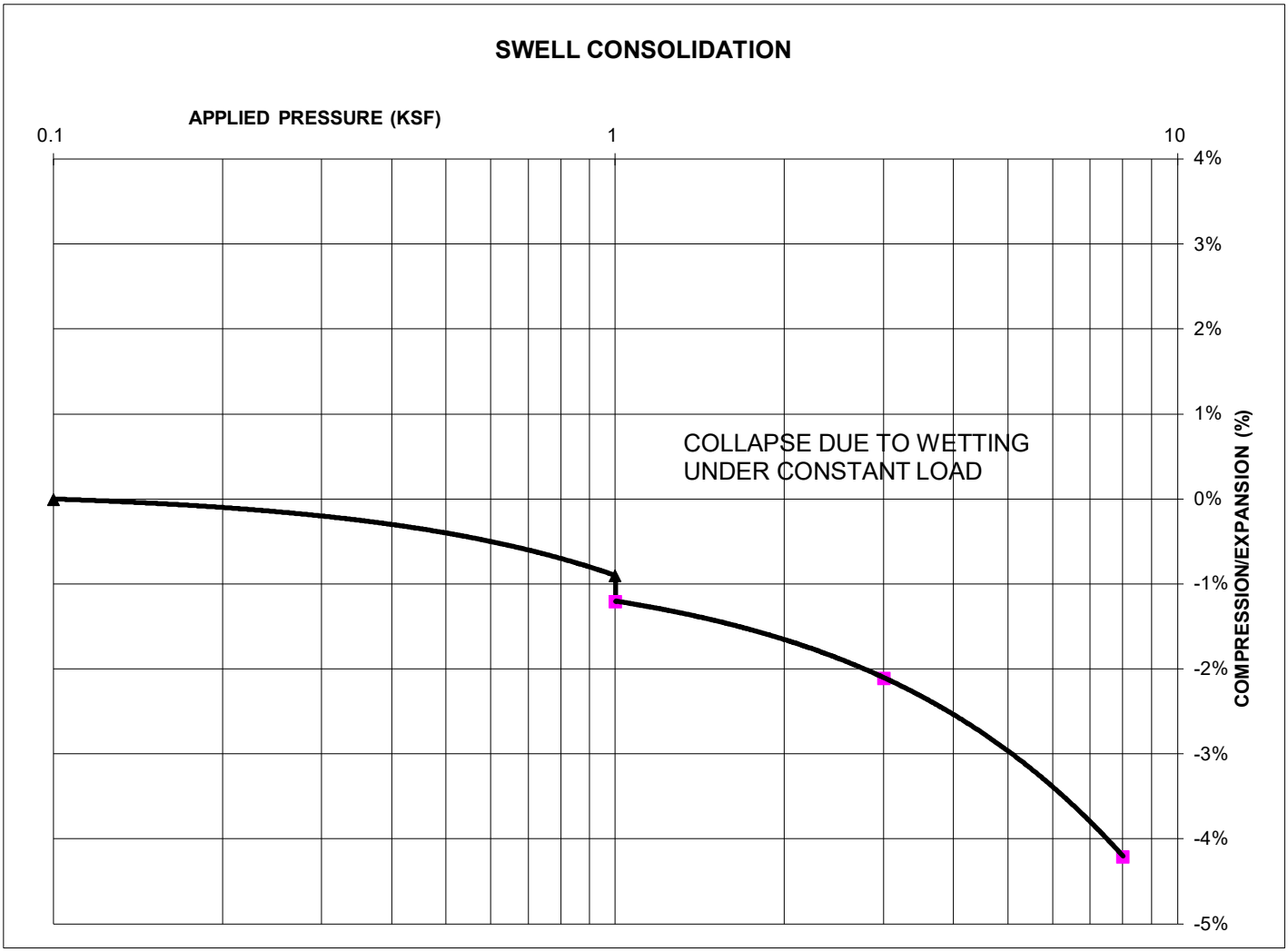
SWELL TEST RESULTS

URBAN LANDING, SPANISH BIT & STRUTHERS
ELITE PROPERTIES

JOB NO. 241188

FIG. C-20

TEST BORING	5	SOIL DESCRIPTION	CLAY, SANDY
DEPTH (FT)	10	SOIL TYPE	2



SWELL/COLLAPSE TEST RESULTS

NATURAL UNIT DRY WEIGHT (PCF): 101
NATURAL MOISTURE CONTENT: 12.1%
SWELL/COLLAPSE (%): -0.3%

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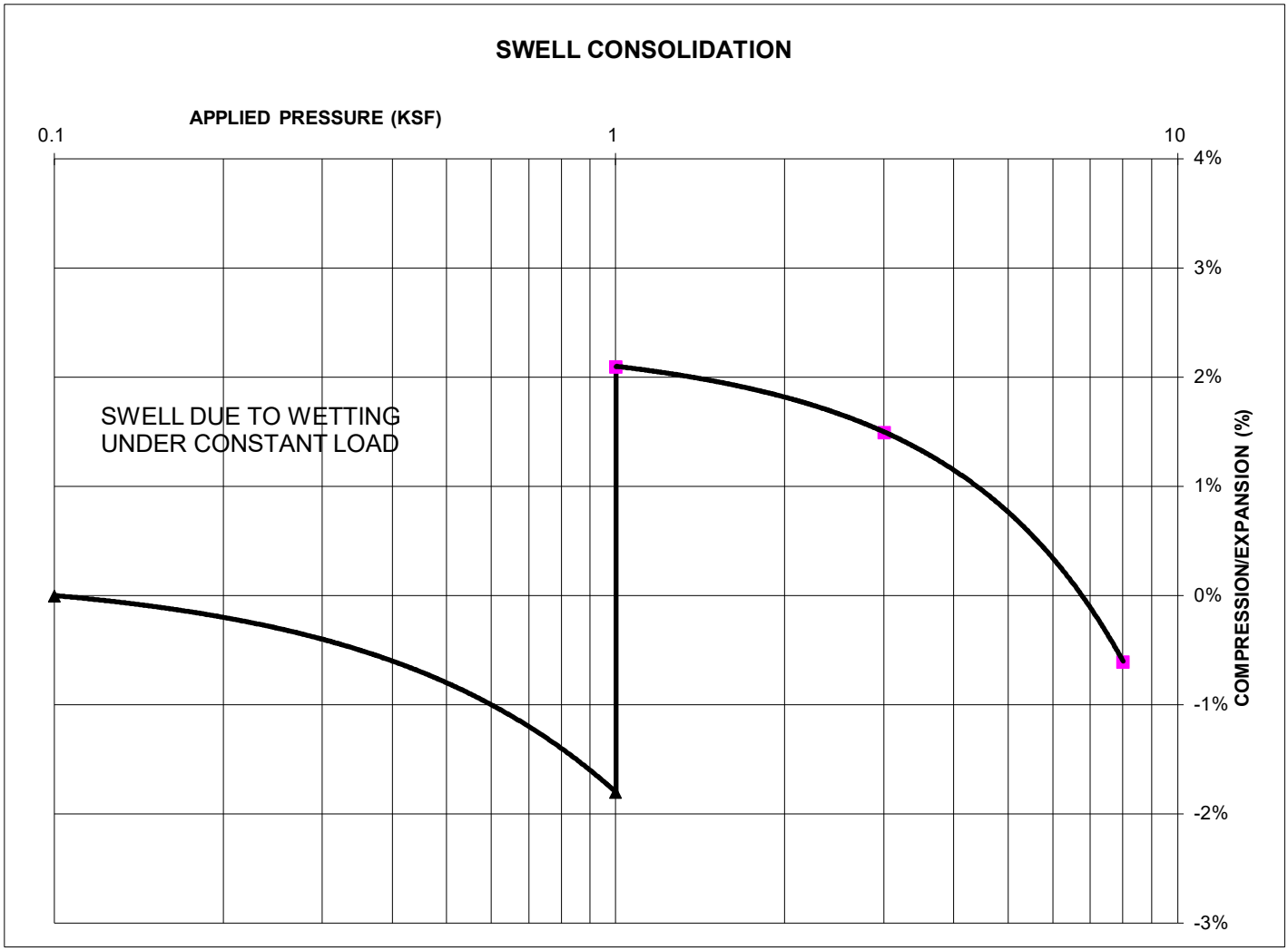
SWELL TEST RESULTS

URBAN LANDING, SPANISH BIT & STRUTHERS
ELITE PROPERTIES

JOB NO. 241188

FIG. C-21

TEST BORING	11	SOIL DESCRIPTION	CLAY, SANDY
DEPTH (FT)	15	SOIL TYPE	2



SWELL/COLLAPSE TEST RESULTS

NATURAL UNIT DRY WEIGHT (PCF): 121
NATURAL MOISTURE CONTENT: 14.4%
SWELL/COLLAPSE (%): 3.9%

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SWELL TEST RESULTS

URBAN LANDING, SPANISH BIT & STRUTHERS
ELITE PROPERTIES

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FIG. C-22

TEST BORING	17	SOIL DESCRIPTION	SILTSTONE (SILT, WITH SAND)
DEPTH (FT)	15	SOIL TYPE	4

SWELL/COLLAPSE TEST RESULTS

NATURAL UNIT DRY WEIGHT (PCF): 120
NATURAL MOISTURE CONTENT: 13.9%
SWELL/COLLAPSE (%): 2.2%

ENTECH ENGINEERING, INC.

SWELL TEST RESULTS

URBAN LANDING, SPANISH BIT & STRUTHERS
ELITE PROPERTIES

JOB NO. 241188

FIG. C-23

APPENDIX D: Soil Survey Descriptions

El Paso County Area, Colorado

14—Brussett loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 367j
Elevation: 7,200 to 7,500 feet
Frost-free period: 115 to 125 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Brussett and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Brussett

Setting

Landform: Flats
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Eolian deposits

Typical profile

A - 0 to 8 inches: loam
BA - 8 to 12 inches: loam
Bt - 12 to 26 inches: clay loam
Bk - 26 to 60 inches: silt loam

Properties and qualities

Slope: 1 to 3 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): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3c
Hydrologic Soil Group: B
Ecological site: R048AY222CO - Loamy Park
Hydric soil rating: No

Minor Components

Other soils

Percent of map unit:
Hydric soil rating: No

Data Source Information

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

El Paso County Area, Colorado

68—Peyton-Pring complex, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 369f
Elevation: 6,800 to 7,600 feet
Farmland classification: Not prime farmland

Map Unit Composition

Peyton and similar soils: 40 percent
Pring and similar soils: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Peyton

Setting

Landform: Hills
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Arkosic alluvium derived from sedimentary rock and/or arkosic residuum weathered from sedimentary rock

Typical profile

A - 0 to 12 inches: sandy loam
Bt - 12 to 25 inches: sandy clay loam
BC - 25 to 35 inches: sandy loam
C - 35 to 60 inches: sandy loam

Properties and qualities

Slope: 3 to 5 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): Moderately high (0.20 to 0.60 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: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4c
Hydrologic Soil Group: B
Ecological site: R049XY216CO - Sandy Divide
Hydric soil rating: No

Description of Pring

Setting

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

Typical profile

A - 0 to 14 inches: coarse sandy loam
C - 14 to 60 inches: gravelly sandy loam

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 6.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: R048AY222CO - Loamy Park
Hydric soil rating: No

Minor Components

Other soils

Percent of map unit:
Hydric soil rating: No

Pleasant

Percent of map unit:
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

71—Pring coarse sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 369k
Elevation: 6,800 to 7,600 feet
Farmland classification: Not prime farmland

Map Unit Composition

Pring and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pring

Setting

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

Typical profile

A - 0 to 14 inches: coarse sandy loam
C - 14 to 60 inches: gravelly sandy loam

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 6.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: R048AY222CO - Loamy Park
Hydric soil rating: No

Minor Components

Pleasant

Percent of map unit:
Landform: Depressions
Hydric soil rating: Yes

Other soils

Percent of map unit:
Hydric soil rating: No

Data Source Information

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