

Architecture
Structural
Geotechnical



Materials Testing
Forensic
Civil/Planning

ROCKY MOUNTAIN GROUP
EMPLOYEE OWNED

SUBSURFACE SOIL INVESTIGATION

**Lots 1-178
Bent Grass Residential, Filing No. 2
El Paso County, Colorado**

PREPARED FOR:

**Challenger Colorado, LLC
8605 Explorer Drive, Suite 250
Colorado Springs, CO 80920**

JOB NO. 173093

January 21, 2020

Respectfully Submitted,
RMG – Rocky Mountain Group

Reviewed by,
RMG – Rocky Mountain Group

A handwritten signature in purple ink, appearing to read "Brian Griffith".

**Brian Griffith, E.I.
Geotechnical Staff Engineer**



**Tony Munger, P.E.
Geotechnical Project Manager**

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GENERAL SITE AND PROJECT DESCRIPTION

Project Description

The site is located in the north central portion of El Paso County, Colorado, northwest of the intersection of East Woodmen Road and Meridian Road. More specifically, the site is located along Thedford Court, Silky Thread Road, Barley Court, Ansley Court, Niebrara Drive, Willmore Drive, Bent Grass Meadows Drive, Berwyn Drive, Lemon Grass Road, Silver Grass Drive, Avenda Road, and Bossett Drive. The approximate location of the site is shown on the Site Vicinity Map, Figure 1.

The project is to consist of single-family residential construction on 178 lots at the Bent Grass Residential subdivision, Filing No. 2. The structures are anticipated to be one to two-stories in height with multi-car garages. The homes may either be constructed with or without basements. RMG – Rocky Mountain Group was retained to explore the subsurface conditions at the site and develop geotechnical engineering recommendations for design and construction.

Existing Site Conditions

At the time of our field exploration, the site was in an undisturbed, native state. Significant vegetation consisting of native weeds and grasses was present. The topography across the site consists of a mild slope downwards to the south and west.

Previous Studies and Field Investigation

Reports of previous geotechnical engineering/geologic investigations for this site were available for our review and are listed below:

1. “*Preliminary Subsurface Soil Investigation, Bent Grass Meadows Filing No. 2,*” Colorado Springs, Colorado, by RMG – Rocky Mountain Group, Job No. 169845, dated May 15, 2019, revised August 6, 2019.
2. “*Geology and Soils Report, Bent Grass Residential, Filing No. 2,*” El Paso County, Colorado, by RMG – Rocky Mountain Group, Job No. 169845, dated October 21, 2019, amended January 13, 2020.

The findings, conclusions and recommendations contained in these reports were considered during the preparation of this report.

FIELD INVESTIGATION AND LABORATORY TESTING

Drilling

The subsurface conditions on the site were investigated by drilling 167 test boings to supplement the 11 exploratory test borings performed at the time of the *Preliminary Surface Soil Investigation* referenced above. Analysis contained in this report considers data from both investigations. The site plot plan and Anticipated Overexcavation Recommendations are shown in Figures 2 and 2A.

The test borings were advanced with a power-driven, continuous-flight auger drill rig to depths of about 20 to 25 feet below the existing ground surface. Samples were obtained in general accordance with

ASTM D-1586 utilizing a 2-inch OD split-barrel sampler or in general accordance with ASTM D-3550 utilizing a 2½-inch OD modified California sampler. An Explanation of Test Boring Logs is presented in Figure 3. The Test Boring Logs are presented in Figures 4 through 87.

Laboratory Testing

The moisture content for the recovered samples was obtained in the laboratory. Grain-size analysis, Atterberg Limits, and Denver Swell/Consolidation tests were performed on selected samples for purposes of classification and to develop pertinent engineering properties. A Summary of Laboratory Test Results is presented in Figure 88. Soil Classification Data are presented in Figures 89 through 121. Swell/Consolidation Test Results are presented in Figures 122 through 140.

SUBSURFACE CONDITIONS

Subsurface Materials

The subsurface materials encountered in the test borings were classified using the Unified Soils Classification System (USCS) and the materials were grouped into the general categories of native silty to clayey sand, native sandy clay, silty to clayey sandstone, and sandy claystone.

Additional descriptions and the interpreted distribution (approximate depths) of the subsurface materials are presented on the Test Boring Logs. The classifications shown on the logs are based upon the engineer's classification of the samples at the depths indicated. Stratification lines shown on the logs represent the approximate boundaries between material types and the actual transitions may be gradual and vary with location.

Groundwater

Groundwater was observed in the test borings on twenty-four of the lots at depths ranging from 7 to 19 feet below the existing ground surface at the time of field exploration. When checked two to seven days subsequent to drilling, groundwater was measured at depths of about 5 to 21 feet below the existing ground surface. Fluctuations in groundwater and subsurface moisture conditions may occur due to variations in rainfall and other factors not readily apparent at this time. Development of the property and adjacent properties may also affect groundwater levels.

CONCLUSIONS AND RECOMMENDATIONS

The following discussion is based on the subsurface conditions encountered in the test borings and on the project characteristics previously described. If conditions are different from those described in this report or the project characteristics change, RMG should be retained to review our recommendations and adjust them, if necessary.

Geotechnical Considerations

Fill soils were not encountered during our investigation. Very loose to loose soils were encountered in twenty-four of the test borings and expansive soils/bedrock were encountered in ninety-one of the test borings. As with fill soils, loose soils and/or expansive soils/bedrock may be encountered in the excavations, even on lots where none are indicated on the test boring logs. If encountered in the

excavation, these materials will require additional compaction and/or removal (overexcavation) and replacement as indicated under the **Overexcavation and Replacement** section of this report.

Foundation design recommendations, based on the field investigation and laboratory testing, are presented below. It must be understood that these recommendations should be verified after the excavation on each individual lot is completed.

Soil Mitigation Recommendations

The client has requested an option to mitigate unsuitable soil conditions using “mass” subexcavation across all or parts of the site during land development lot-specific overexcavation and replacement at the time of construction, or a combination of both. It is our opinion that either approach may be utilized.

If loose soils are encountered during the Open Excavation Observations, additional compaction may be required to achieve the allowable bearing pressure indicated in this report. Fluctuations in material density may occur. In some cases, removal and recompaction of up to 2 feet of soil may be required. The removal and recompaction shall extend a minimum of 2 feet beyond the building perimeter, and at least that same distance beyond the perimeter of counterfort and "T" wall footings. The use of track-mounted excavation equipment, or other low ground pressure equipment, is recommended on loose soils to reduce the likelihood of loss of stability during excavation.

Our recommendations for mitigation of expansive soils/bedrock are as follows:

Stiffened Slab-on-Grade Foundations

- Lots 1-74 and 82-178

If stiffened slab-on-grade foundations are to be installed on these lots, no subexcavation or overexcavation is required below the foundation grades.

- Lots 75-81

If stiffened slab-on-grade foundations are to be installed on these lots, subexcavation or overexcavation is recommended which results in at least 3 feet of compacted structural fill below foundation components and floor slabs. The zone of subexcavation or overexcavation shall extend at least 3 feet beyond building perimeters, and at least that same distance beyond the perimeter of counterfort and "T" wall footings.

Structural Fill utilized on these lots may consist of either granular, non-cohesive materials (native or imported) that have been selected, placed, and compacted as indicated in the **Granular Structural Fill** section of this report or expansive materials derived from Lots 1-74 and 82-178 that have been processed, placed, and compacted as indicated in the **Moisture-Conditioned Structural Fill** section of this report.

Spread Footing Foundations

- Lots 17, 18, 20, 21, 24-29, 35-37, 49-53, 86-88, 100-102, 115-117, 121-123, 143-146, 169-171, 173-175, 177, and 178

If spread footing foundations are to be installed on these lots, no subexcavation or overexcavation is required below the foundation grades.

- Lots 1-3, 5-14, 16, 19, 22, 23, 30, 34, 38, 48, 54-57, 59, 60, 63-65, 74-85, 89, 99, 103, 106-114, 124-129, 139-142, 147, 153, 163-168, 172, and 176

If spread footing foundations are to be installed on these lots, subexcavation during land development is an option. However, based on the limited amount of expansive materials encountered in the test borings on these lots, overexcavation and replacement at the time of construction may be a more economical solution. Where subexcavation or overexcavation is utilized on these lots, subexcavation or overexcavation is recommended which results in at least 3 feet of compacted structural fill below foundation components and floor slabs. The zone of subexcavation or overexcavation shall extend at least 3 feet beyond building perimeters, and at least that same distance beyond the perimeter of counterfort and "T" wall footings. Structural fill utilized on these lots should consist of entirely granular, non-cohesive materials (native or imported) that have been selected, placed, and compacted as indicated in the **Granular Structural Fill** section of this report.

- Lots 4, 130-138, 154-156, 161, and 162

If spread footing foundations are to be installed on these lots, subexcavation during land development is an option. However, based on the limited amount of expansive materials encountered in the test borings on these lots, overexcavation and replacement at the time of construction may be a more economical solution. Where subexcavation or overexcavation is utilized on these lots, subexcavation or overexcavation is recommended which results in at least 3 feet of compacted structural fill below foundation components and floor slabs. The zone of subexcavation or overexcavation shall extend at least 3 feet beyond building perimeters, and at least that same distance beyond the perimeter of counterfort and "T" wall footings. Structural fill utilized on these lots should consist of entirely granular, non-cohesive materials (native or imported) that have been selected, placed, and compacted as indicated in the **Granular Structural Fill** section of this report.

Note, due to the depth of groundwater encountered in the test borings on these lots, groundwater conditions at the time of construction may result in additional drainage and/or stabilization measures.

- Lots 118-120

If spread footing foundations are to be installed on these lots, subexcavation during land development is an option. However, based on the limited amount of expansive materials encountered in the test borings on these lots, overexcavation and replacement at the time of construction may be a more economical solution. Where subexcavation or overexcavation is utilized on these lots, subexcavation or overexcavation is recommended which results in at least 3 feet of compacted structural fill below foundation components and floor slabs. The zone of subexcavation or overexcavation shall extend at least 3 feet beyond building perimeters, and at least that same distance beyond the perimeter of counterfort and "T" wall footings. Structural fill utilized on these lots should consist of entirely granular, non-cohesive materials (native or imported) that have been selected, placed, and compacted as indicated in the **Granular Structural Fill** section of this report.

Note, due to the depth of groundwater encountered in the test borings on these lots, basement construction is not recommended on these lots.

- Lot 157

If a spread footing foundation is to be installed on this lot, subexcavation during land development or overexcavation during construction may be utilized. Where subexcavation or overexcavation is utilized on this lot, subexcavation or overexcavation is recommended which results in at least 3 feet of compacted structural fill below foundation components and floor slabs. The zone of subexcavation or overexcavation shall extend at least 3 feet beyond building perimeters, and at least that same distance beyond the perimeter of counterfort and "T" wall footings. Structural fill utilized on this lot should consist of entirely granular, non-cohesive materials (native or imported) that have been selected, placed, and compacted as indicated in the **Granular Structural Fill** section of this report.

Note, due to the depth of groundwater encountered in the test boring on this lot, groundwater conditions at the time of construction may result in additional drainage and/or stabilization measures.

- Lots 15, 31-33, 39-47, 58, 61, 62, 66-73, 90-98, 104, 105, 148-152, and 158-160

If spread footing foundations are to be installed on these lots, subexcavation during land development or overexcavation during construction may be utilized. Where subexcavation or overexcavation is utilized on these lots, subexcavation or overexcavation is recommended which results in at least 3 feet of compacted structural fill below foundation components and floor slabs. The zone of subexcavation or overexcavation shall extend at least 3 feet beyond building perimeters, and at least that same distance beyond the perimeter of counterfort and "T" wall footings. Structural fill utilized on these lots should consist of entirely granular, non-cohesive materials (native or imported) that have been selected, placed, and compacted as indicated in the **Granular Structural Fill** section of this report.

The sandstone and claystone bedrock at this site ranges from weathered to very hard in density and may require the use of specialized heavy-duty equipment to facilitate rock break-up and removal.

Foundation Recommendations

Stiffened Slab-on-Grade Foundations

A stiffened slab-on-grade foundation is suitable for the proposed residential structures. A maximum allowable bearing pressure of 2,000 psf with no minimum dead load requirement may be used for design. A total movement of 1 inch with a differential movement of ½ inch of a horizontal distance of 10 feet has been estimated. We have anticipated the deepest excavation cuts for stiffened slab construction will be approximately 2 to 3 feet below the existing ground surface.

Spread Footing Foundations

A spread footing foundation is suitable for the proposed residential structures. We have anticipated that the deepest excavation butts for basement level construction will be approximately 6 to 8 feet below the existing ground surface.

If the bottom of the excavation consists entirely of sandstone, a maximum allowable bearing pressure of 3,000 psf with no minimum dead load requirement may be used for design. However, the structure shall not be supported atop soils/bedrock of significantly different bearing capacities. If any portion of the structure is to be supported atop the on-site sand soils or on structural fill, the remaining portions of the

excavation shall have the top 12 inches of exposed sandstone bedrock removed and replaced with structural fill.

For a spread footing foundation supported entirely atop undisturbed native sand soils and/or **Granular Structural Fill**, a maximum allowable bearing pressure of 2,000 psf with no minimum dead load requirement may be used for design.

All Foundations

The foundation design should be prepared by a qualified Colorado Registered Professional Engineer using the recommendations presented in this report. This foundation system should be designed to span a minimum of 10 feet under the design loads. The bottoms of exterior foundations should be at least 30 inches below finished grade for frost protection.

Open Excavation Observations

During construction, foundation excavations should be observed by RMG prior to placing structural fill, forms, or concrete to verify the foundation bearing conditions for each structure. Based on the conditions observed in the foundation excavation, the recommendations made at the time of construction may vary from those contained herein. In the case of differences, the Open Excavation Observation report shall be considered to be the governing document. The recommendations presented herein are intended only as preliminary guidelines to be used for interpreting the subsurface soil conditions exposed in the excavation and determining the final recommendations for foundation construction.

Interior Floor Slabs

For interior floor slabs not comprising an integral part of a stiffened slab foundation (such as garage or basement slabs), vertical slab movements on the order of one to three inches have been estimated for the subsurface conditions encountered. If movement and associated damage to floors and finishes cannot be tolerated, a structural floor system should be used. Floor slabs should be separated from structural components to allow for vertical movement.

Exterior Slabs

Recommendations for exterior concrete slabs such as patios, driveways, and sidewalks are not included in this report.

Interior Partitions

Interior non-bearing partitions and other attached finishes do not require isolation from floor slabs that comprise a stiffened slab-on-grade foundation system.

Where basement construction with an isolated concrete slab floor is utilized, interior non-bearing partitions and attached furnishings (e.g., cabinets, shower stalls, etc.) on concrete slabs should be constructed with a void so that they do not transmit floor slab movement to the roof or overlying floor. A void of at least 1-1/2 inches is recommended beneath non-bearing partitions. The void may require reconstruction over the life of the structure to re-establish the void due to vertical slab movement.

Lateral Earth Pressures

Foundation and basement walls should be designed to resist lateral pressures. For non-expansive backfill materials, we recommend an equivalent fluid pressure of 40 pcf for design. Expansive soils or bedrock should not be used as backfill against walls.

The above lateral pressure applies to level, drained backfill conditions. Equivalent Fluid Pressures for sloping/undrained conditions should be determined on an individual basis.

Surface Grading and Drainage

The ground surface should be sloped from the building with a minimum gradient of 10 percent for the first 10 feet. This is equivalent to 12 inches of fall across this 10-foot zone. If a 10-foot zone is not possible on the upslope side of the structure, then a well-defined swale should be created a minimum 5 feet from the foundation and sloped parallel with the wall with a minimum slope of 2 percent to intercept the surface water and transport it around and away from the structure. Roof drains should extend across backfill zones and landscaped areas to a region that is graded to direct flow away from the structure. Owners should maintain the surface grading and drainage recommended in this report to help prevent water from being directed toward and/or ponding near the foundations.

Landscaping should be selected to reduce irrigation requirements. Plants used close to foundation walls should be limited to those with low moisture requirements and irrigated grass should not be located within 5 feet of the foundation. To help control weed growth, geotextiles should be used below landscaped areas adjacent to foundations. Impervious plastic membranes are not recommended.

Irrigation devices should not be placed within 5 feet of the foundation. Irrigation should be limited to the amount sufficient to maintain vegetation. Application of more water will increase the likelihood of slab and foundation movements.

The recommendations listed in this report are intended to address normal surface drainage conditions, assuming the presence of groundcover (established vegetation, paved surfaces, and/or structures) throughout the regions upslope from this structure. However, groundcover may not be present due to a variety of factors (ongoing construction/development, wildfires, etc.). During periods when groundcover is not present in the "upslope" regions, higher than normal surface drainage conditions may occur, resulting in perched water tables, excess runoff, flash floods, etc. In these cases, the surface drainage recommendations presented herein (even if properly maintained) may not mitigate all groundwater problems or moisture intrusion into the structure. We recommend that the site plan be prepared with consideration of increased runoff during periods when groundcover is not present on the upslope areas.

Perimeter Drain

A subsurface perimeter drain is recommended around portions of the structure which will have habitable or storage space located below the finished ground surface. This includes crawlspace areas but not the walkout trench, if applicable. A typical drain detail is presented in Figure 141.

A subsurface perimeter drain is designed to intercept some types of subsurface moisture and not others. Therefore, the drain could operate properly and not mitigate all moisture problems relating to foundation performance or moisture intrusion into the basement area.

Where main level slab-on-grade foundation systems (stiffened, monolithic, or isolated) are utilized, a subsurface perimeter drain will not be required around the foundation.

Overexcavation Drain

If an overexcavation is performed and granular, non-expansive backfill is used for the replacement soils, a subsurface drain may be recommended around the perimeter of the excavation. This drain is to be placed at the bottom of the overexcavated portion of the excavation (in this case 3 feet below the bottom of the foundation components) prior to backfilling. A typical drain detail is presented in Figure 142.

It must be understood that the drain is designed to intercept some types of subsurface moisture and not others. Therefore, the drain could operate properly and not mitigate all moisture problems relating to foundation performance or moisture intrusion into the basement area.

Underslab Drain

Shallow groundwater conditions were encountered in the test borings at the time of field exploration. Depending on the conditions observed at the time of the Open Excavation Observation, an underslab drainage layer may also be recommended to help intercept groundwater before it enters the slab area should the groundwater levels rise. In general, if groundwater was encountered within 4 to 6 feet of the proposed basement slab elevation, an underslab drain should be anticipated. Careful attention should be paid to grade and discharge of the drain pipe. A typical drain detail is presented in Figure 143.

It must be understood that the drain is designed to intercept some types of subsurface moisture and not others. Therefore, the drain could operate properly and not mitigate all moisture problems relating to foundation performance or moisture intrusion into the basement area.

Foundation Stabilization

If groundwater conditions encountered at the time of foundation excavation result in either water flow into the excavation or destabilization of the foundation bearing soils, stabilization techniques should be implemented. Various stabilization methods can be employed and can be discussed at the time of construction. However, a method that affords potentially a reduced amount of overexcavation (versus other methods) and provides increased performance under moderately to severely unstable conditions is the use of a layered geogrid and structural fill system.

Additionally, dependent upon the rate of groundwater flow into the excavation, a geosynthetic vertical drain and an overexcavation perimeter drain may be required around the lower portions of the excavation to allow for installation of the layered geogrid and structural fill system.

Concrete

Type I/II cement is recommended for concrete in contact with the subsurface materials. Calcium chloride should be used with caution for soils with high sulfate contents. The concrete should not be placed on frozen ground. If placed during periods of cold temperatures, the concrete should be kept from freezing. This may require covering the concrete with insulated blankets and heating. Concrete work should be completed in accordance with the latest applicable guidelines and standards published by ACI.

Exterior Backfill

Backfill should be placed in loose lifts not exceeding 8 to 12 inches, moisture conditioned to facilitate compaction (usually within 2 percent of the optimum moisture content) and compacted to 85 percent of the maximum dry density as determined by the Modified Proctor test, ASTM D-1557 on exterior sides of walls in landscaped areas. In areas where backfill supports pavement and concrete flatwork, the materials should be compacted to 92 percent of the maximum dry density.

Fill placed on slopes should be benched into the slope. Maximum bench heights should not exceed 4 feet, and bench widths should be wide enough to accommodate compaction equipment.

The appropriate government/utility specifications should be used for fill placed in utility trenches. If material is imported for backfill, the material should be approved by the Geotechnical Engineer prior to hauling it to the site.

The backfill should not be placed on frozen subgrade or allowed to freeze during moisture conditioning and placement. Backfill should be compacted by mechanical means, and foundation walls should be braced during backfilling and compaction.

Granular Structural Fill

Areas to receive structural fill should have topsoil, organic material, or debris removed. The upper 6 inches of the exposed surface soils should be scarified and moisture conditioned to facilitate compaction (usually within 2 percent of the optimum moisture content) and compacted to a minimum of 95 percent of the maximum dry density as determined by the Standard Proctor test (ASTM D-698) or to a minimum of 92 percent of the maximum dry density as determined by the Modified Proctor test (ASTM D-1557) prior to placing structural fill.

Structural fill placed on slopes should be benched into the slope. Maximum bench heights should not exceed 4 feet, and bench widths should be wide enough to accommodate compaction equipment.

Structural fill should be placed in loose lifts not exceeding 8 to 12 inches, moisture conditioned to facilitate compaction (usually within 2 percent of the optimum moisture content) and compacted to a minimum of 95 percent of the maximum dry density as determined by the Standard Proctor test (ASTM D-698) or to a minimum of 92 percent of the maximum dry density as determined by the Modified Proctor test (ASTM D-1557). The materials should be compacted by mechanical means.

Materials used for structural fill should be approved by the RMG prior to use. Structural fill should not be placed on frozen subgrade or allowed to freeze during moisture conditioning and placement.

To verify the condition of the compacted soils, density tests should be performed during placement. The first density tests should be conducted when 24 inches of fill have been placed.

Moisture-Conditioned Structural Fill

Areas to receive moisture-conditioned expansive soils used as structural fill should have topsoil, organic material, or debris removed. The upper 6 inches of the exposed surface soils should be scarified and moisture conditioned to facilitate compaction (usually within 2 percent of the optimum moisture

content) and compacted to a minimum of 95 percent of the maximum dry density as determined by the Standard Proctor test (ASTM D-698) or to a minimum of 92 percent of the maximum dry density as determined by the Modified Proctor test (ASTM D-1557) prior to placing structural fill.

Moisture-conditioned structural fill placed on slopes should be benched into the slope. Maximum bench heights should not exceed 4 feet, and bench widths should be wide enough to accommodate compaction equipment.

Moisture conditioned structural fill shall consist of a moisture-conditioned, on-site cohesive fill material derived from **lots 1-74 and 82-178**. The fill material shall be moisture conditioned and replaced as follows:

- Fill shall be free of deleterious material and shall not contain rocks or cobbles greater than 6 inches in diameter.
- Claystone fill shall be thoroughly "pulverized" and shall not contain claystone chunks greater than 1 1/2 inches in diameter.
- When claystone is to be incorporated, the fill materials shall be processed in a stockpile (**processing these materials in the excavations will not be permitted**). These stockpiled fill materials shall be moisture-conditioned to a minimum of 1 percent to 4 percent above optimum moisture content (as determined by the Standard Proctor test, ASTM D-698), with an average of not less than 1 1/2 percent above optimum moisture content. These materials, once moisture conditioned and thoroughly mixed, should rest in the stockpile a minimum of 24 hours to ensure proper distribution of the moisture through the material. After resting, the materials should be re-wet and re-mixed to replace the surficial moisture lost to evaporation during the resting period. Fill materials not containing claystone do not require processing in a stockpile.
- Fill materials shall be moisture-conditioned to a minimum of 1 percent to 4 percent above optimum moisture content (as determined by the Standard Proctor test, ASTM D-698), with an average of not less than 1 1/2 percent above optimum moisture content.
- The moisture-conditioned materials should be placed in maximum 6" compacted lifts. These materials should be compacted to a minimum of 95 percent of the maximum dry density as determined by the Standard Proctor test (ASTM D-698). Material not meeting the above requirements shall be reprocessed.

Materials used for moisture-conditioned structural fill should be approved by RMG prior to use. Moisture-conditioned structural fill should not be placed on frozen subgrade or allowed to freeze during moisture conditioning and placement.

To verify the condition of the compacted soils, density tests should be performed during placement. The first density tests should be conducted when 24 inches of fill have been placed.

CLOSING

This report has been prepared for the exclusive purpose of providing geotechnical engineering information and recommendations for development described in this report. RMG should be retained to

review the final construction documents prior to construction to verify our findings, conclusions and recommendations have been appropriately implemented.

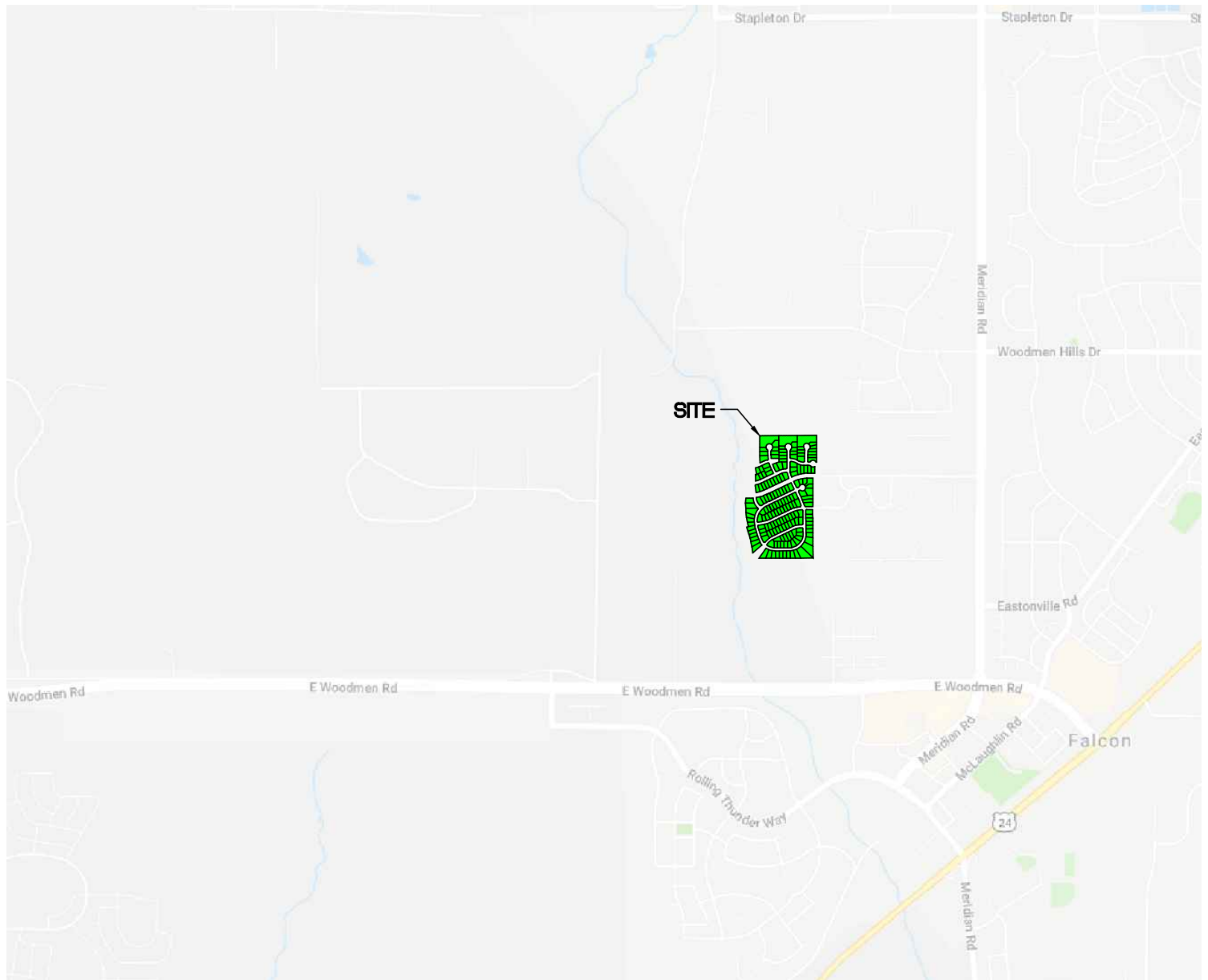
This report has been prepared for the exclusive use by **Challenger Colorado, LLC** for application as an aid in the design and construction of the proposed development in accordance with generally accepted geotechnical engineering practices. The analyses and recommendations in this report are based in part upon data obtained from test borings, site observations and the information presented in referenced reports. The nature and extent of variations may not become evident until construction. If variations then become evident, RMG should be retained to review the recommendations presented in this report considering the varied condition, and either verify or modify them in writing.

Our professional services were performed using that degree of care and skill ordinarily exercised, under similar circumstances, by geotechnical engineers practicing in this or similar localities. RMG does not warrant the work of regulatory agencies or other third parties supplying information which may have been used during the preparation of this report. No warranty, express or implied is made by the preparation of this report. Third parties reviewing this report should draw their own conclusions regarding site conditions and specific construction techniques to be used on this project.

The scope of services for this project does not include, either specifically or by implication, environmental assessment of the site or identification of contaminated or hazardous materials or conditions. Development of recommendations for the mitigation of environmentally related conditions, including but not limited to biological or toxicological issues, are beyond the scope of this report. If the Client desires investigation into the potential for such contamination or conditions, other studies should be undertaken.

If we can be of further assistance in discussing the contents of this report or analysis of the proposed development, from a geotechnical engineering point-of-view, please feel free to contact us.

FIGURES



NOT TO SCALE



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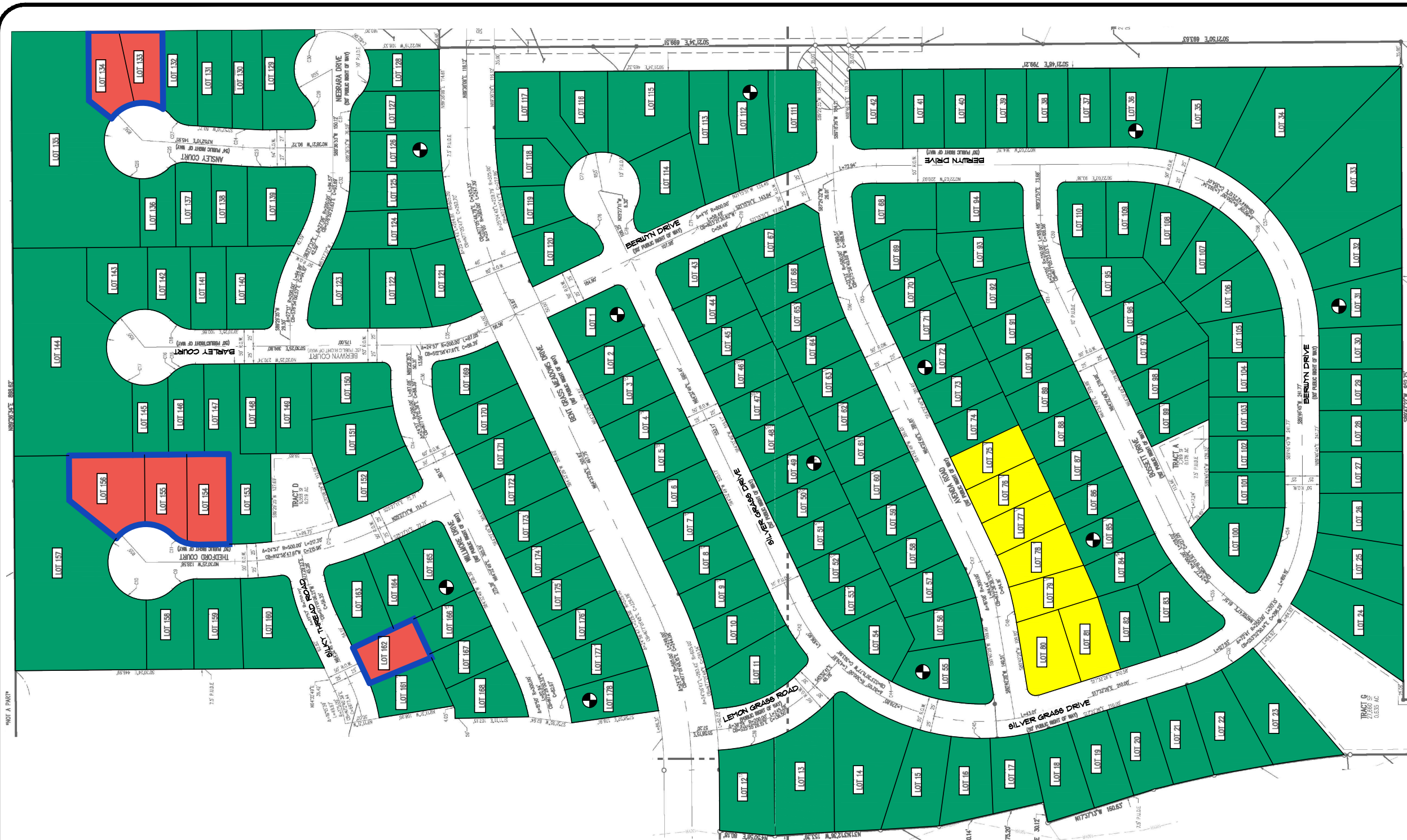
SITE VICINITY MAP

BENT GRASS RESIDENTIAL
FILING NO. 2
EL PASO COUNTY, CO
CHALLENGER COLORADO, LLC

JOB No. 173093

FIG No. 1

DATE 1-21-2020



NOT TO SCALE

STIFFENED
SLABS



LOTS WHERE OVEREXCAVATION IS NOT ANTICIPATED FOR EXPANSIVE SOILS/BEDROCK. HOWEVER, LOOSE SOILS MAY BE ENCOUNTERED, WHICH WOULD REQUIRE ADDITIONAL COMPACTION AND/OR REMOVAL/RECOMPACTION OF ON-SITE SAND SOIL



LOTS WHERE SUBEXCAVATION (DURING LAND DEVELOPMENT) OR OVEREXCAVATION (AT THE TIME OF CONSTRUCTION) FOR EXPANSIVE SOIL AND BEDROCK IS NOT ANTICIPATED. HOWEVER, LOOSE SOILS MAY BE ENCOUNTERED, WHICH WOULD REQUIRE ADDITIONAL COMPACTION AND/OR REMOVAL/RECOMPACTION OF ON-SITE SAND SOIL
ADDITIONAL DRAINAGE AND/OR STABILIZATION MAY BE REQUIRED DUE TO SHALLOW GROUNDWATER



LOTS WHERE SUBEXCAVATION (DURING LAND DEVELOPMENT) OR OVEREXCAVATION (AT THE TIME OF CONSTRUCTION) TO A DEPTH OF 3 FEET BELOW LOWEST FOUNDATION COMPONENT IS ANTICIPATED TO BE REQUIRED



ONE TEST BORING WAS PERFORMED ON EACH INCLUDED LOT NOT PREVIOUSLY DRILLED DURING PREPARATION OF 169845

DENOTES APPROXIMATE LOCATION OF TEST BORINGS PERFORMED FOR THE PRELIMINARY SUBSURFACE SOILS INVESTIGATION BY RMG - ROCKY MOUNTAIN GROUP (JOB NO. 169845)

JOB No. 173093

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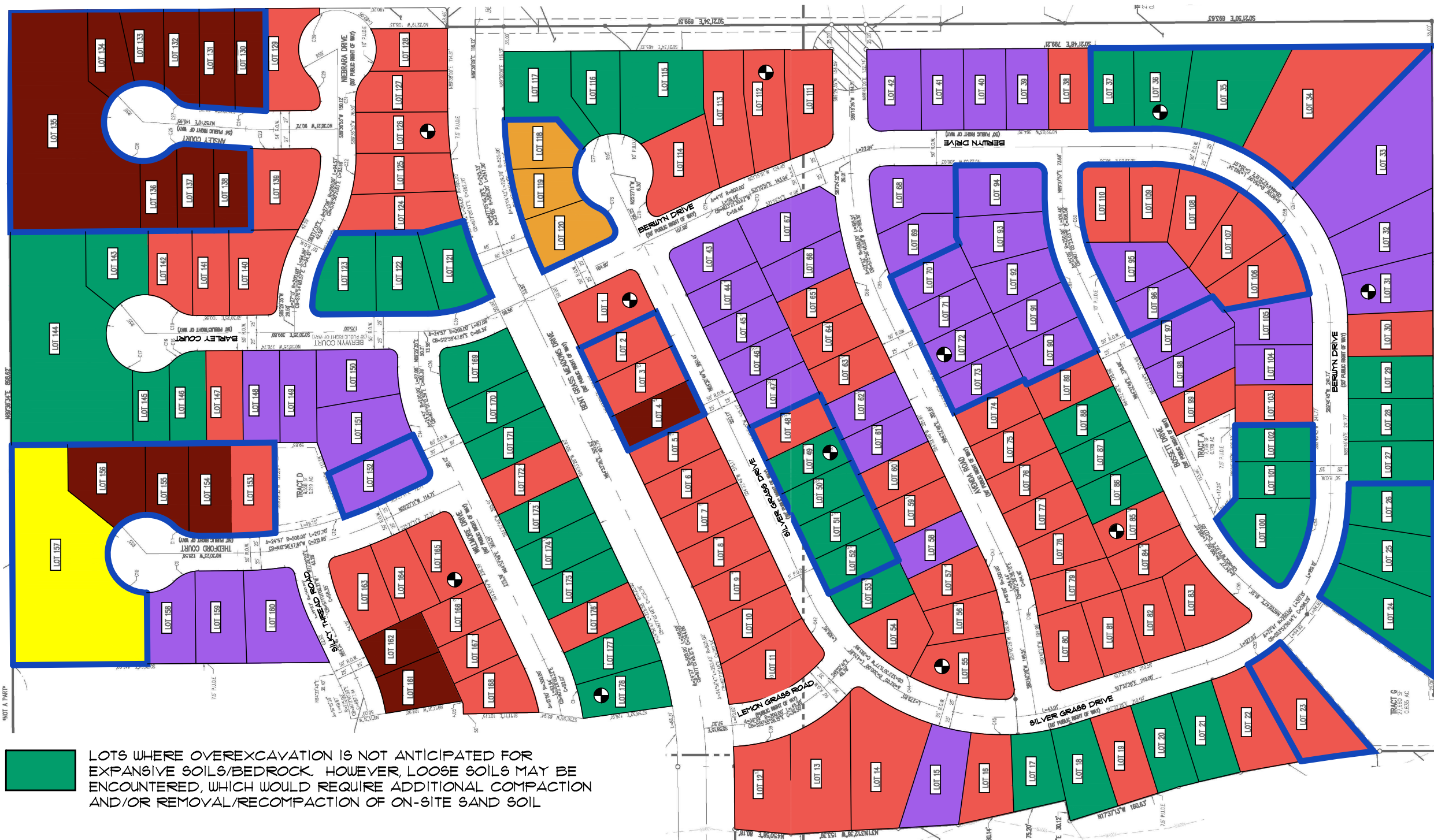
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BENT GRASS RESIDENTIAL
FILING NO. 2
EL PASO COUNTY, CO
CHALLENGER COLORADO, LLC

ENGINEER:	TM
DRAWN BY:	BG
CHECKED BY:	TM
ISSUED:	1-21-2020

ANTICIPATED
OVEREXCAVATION
RECOMMENDATIONS -
STIFFENED SLABS

SHEET No.
FIG-2



NOT TO SCALE

BASEMENTS

ONE TEST BORING WAS PERFORMED ON EACH INCLUDED LOT NOT PREVIOUSLY DRILLED DURING PREPARATION OF 169845

- LOTS WHERE OVEREXCAVATION IS NOT ANTICIPATED FOR EXPANSIVE SOILS/BEDROCK. HOWEVER, LOOSE SOILS MAY BE ENCOUNTERED, WHICH WOULD REQUIRE ADDITIONAL COMPACTION AND/OR REMOVAL/RECOMPACTION OF ON-SITE SAND SOIL
- LOTS WHERE BASEMENTS ARE SUITABLE, BUT LIMITED SEAMS OF CLAY/ CLAYSTONE MAY BE ENCOUNTERED BELOW FOUNDATION GRADE AT THE TIME OF CONSTRUCTION. SUBEXCAVATION (DURING LAND DEVELOPMENT) OR OVEREXCAVATION (AT THE TIME OF CONSTRUCTION) IS ANTICIPATED TO BE REQUIRED FOR EXPANSIVE SOILS WITHIN 3 FEET OF FOUNDATION COMPONENTS
- LOTS WHERE BASEMENTS ARE SUITABLE, BUT LIMITED SEAMS OF CLAY/ CLAYSTONE MAY BE ENCOUNTERED BELOW FOUNDATION GRADE AT TIME OF CONSTRUCTION. SUBEXCAVATION (DURING LAND DEVELOPMENT) OR OVEREXCAVATION (AT THE TIME OF CONSTRUCTION) IS ANTICIPATED TO BE REQUIRED FOR EXPANSIVE SOILS WITHIN 3 FEET OF FOUNDATION COMPONENTS. ADDITIONALLY, GROUNDWATER CONDITIONS MAY RESULT IN ADDITIONAL CHALLENGES DURING CONSTRUCTION AND/OR LONG-TERM PERFORMANCE ISSUES
- LOTS WHERE SUBEXCAVATION (DURING LAND DEVELOPMENT) OR OVEREXCAVATION (AT THE TIME OF CONSTRUCTION) TO A DEPTH OF 3 FEET BELOW LOWEST FOUNDATION COMPONENT IS ANTICIPATED TO BE REQUIRED IF BASEMENT CONSTRUCTION IS PLANNED
- LOTS WHERE SUBEXCAVATION TO A DEPTH OF 3 FEET BELOW LOWEST FOUNDATION COMPONENT (DURING LAND DEVELOPMENT) OR OVEREXCAVATION (AT THE TIME OF CONSTRUCTION) IS REQUIRED IF BASEMENTS ARE PLANNED. ADDITIONALLY, GROUNDWATER CONDITIONS MAY RESULT IN ADDITIONAL CHALLENGES DURING CONSTRUCTION AND/OR LONG-TERM PERFORMANCE ISSUES
- LOTS WHERE BASEMENTS ARE SUITABLE, BUT LIMITED SEAMS OF CLAY/ CLAYSTONE MAY BE ENCOUNTERED BELOW FOUNDATION GRADE AT THE TIME OF CONSTRUCTION. SUBEXCAVATION (DURING LAND DEVELOPMENT) OR OVEREXCAVATION (AT THE TIME OF CONSTRUCTION) IS ANTICIPATED TO BE REQUIRED FOR EXPANSIVE SOILS WITHIN 3 FEET OF FOUNDATION COMPONENTS. ADDITIONALLY, LOTS WHERE BASEMENTS SHOULD BE AVOIDED DUE TO SHALLOW GROUNDWATER CONDITIONS
- LOTS WHERE UNDERSLAB DRAINS MAY BE REQUIRED IF BASEMENTS ARE USED
- DENOTES APPROXIMATE LOCATION OF TEST BORINGS PERFORMED FOR THE PRELIMINARY SUBSURFACE SOILS INVESTIGATION BY RMG - ROCKY MOUNTAIN GROUP (JOB NO. 169845)

JOB No. 173093

ARCHITECTS
RMG
ENGINEERS

ROCKY MOUNTAIN GROUP

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CHALLENGER COLORADO, LLC

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DRAWN BY:	BG
CHECKED BY:	TM
ISSUED:	1-21-2020

ANTICIPATED
OVEREXCAVATION
RECOMMENDATIONS -
BASEMENTS

SHEET No.
FIG-2A

SOILS DESCRIPTION



CLAYEY SAND



CLAYSTONE



SANDSTONE



SANDY CLAY



SILTY SAND



SILTY TO CLAYEY SAND

UNLESS NOTED OTHERWISE, ALL LABORATORY
TESTS PRESENTED HEREIN WERE PERFORMED BY:
RMG - ROCKY MOUNTAIN GROUP
2910 AUSTIN BLUFFS PARKWAY
COLORADO SPRINGS, COLORADO

SYMBOLS AND NOTES



XX

STANDARD PENETRATION TEST - MADE BY DRIVING A SPLIT-BARREL SAMPLER INTO THE SOIL BY DROPPING A 140 LB. HAMMER 30", IN GENERAL ACCORDANCE WITH ASTM D-1586. NUMBER INDICATES NUMBER OF HAMMER BLOWS PER FOOT (UNLESS OTHERWISE INDICATED).



XX

UNDISTURBED CALIFORNIA SAMPLE - MADE BY DRIVING A RING-LINED SAMPLER INTO THE SOIL BY DROPPING A 140 LB. HAMMER 30", IN GENERAL ACCORDANCE WITH ASTM D-3550. NUMBER INDICATES NUMBER OF HAMMER BLOWS PER FOOT (UNLESS OTHERWISE INDICATED).



FREE WATER TABLE



DEPTH AT WHICH BORING CAVED



BULK DISTURBED BULK SAMPLE



AUG AUGER "CUTTINGS"

4.5

WATER CONTENT (%)

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EXPLANATION OF TEST BORING LOGS

JOB No. 173093

FIGURE No. 3

DATE 1/21/20

LOT No.: 2 DATE DRILLED: 11/1/19 REMARKS: GROUNDWATER @ 12.0 ' 11/7/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 3 DATE DRILLED: 11/1/19 REMARKS: GROUNDWATER @ 12.0 ' 11/7/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, light brown to brown, medium dense, moist				18	1.1	SAND, SILTY, light brown to gray, medium dense, moist				19	0.7
SANDSTONE, SILTY, light brown to light gray, hard, moist	5			50/10"	9.3		5			17	7.8
						SANDSTONE, SILTY TO CLAYEY, brown to gray and blue, hard to very hard, moist to wet				50/6"	11.5
CLAYSTONE, SANDY, brown to gray, moist to wet	10			50/10"	9.0		10				
SANDSTONE, SILTY TO CLAYEY, gray, very hard, moist to wet	15			50/5"	9.7		15				
										50/5"	12.6
							20				

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
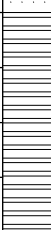

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TEST BORING LOGS

JOB No. 173093

FIGURE No. 4

DATE 1/21/20

LOT No.: 4 DATE DRILLED: 11/1/19 REMARKS: GROUNDWATER @ 9.0 ' 11/7/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 5 DATE DRILLED: 11/1/19 REMARKS: NO GROUNDWATER ON 11/7/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, light brown to light gray, loose to dense, moist to wet	5			8	1.9	SAND, SILTY, light brown to light gray, medium dense, moist	5			12	2.1
				34	12.1					26	7.9
				18	12.9					50/10.5"	11.1
SAND, CLAYEY, gray to olive, medium dense, moist to wet	15			27	13.3	CLAYSTONE, SANDY, gray to olive, moist	15			50/6"	13.6
					SANDSTONE, SILTY, very hard, moist						

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FIGURE No. 5

DATE 1/21/20

LOT No.: 6 DATE DRILLED: 11/7/19 REMARKS: NO GROUNDWATER ON 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 7 DATE DRILLED: 11/7/19 REMARKS: NO GROUNDWATER ON 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, light brown, medium dense, moist	5			11	1.5	SAND, SILTY TO CLAYEY, light brown, medium dense, moist	5			10	1.6
				28	1.5					17	7.8
CLAY, SANDY, olive, very stiff, moist	10			30	16.4	CLAYSTONE, SANDY, olive with rust staining, medium hard, moist	10			50	13.9
SANDSTONE, SILTY TO CLAYEY, light brown, hard, moist	15			50/6"	9.8		15				
						SANDSTONE, SILTY TO CLAYEY, gray to blue, very hard, moist	20			50/6"	9.9

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FIGURE No. 6

DATE 1/21/20

LOT No.: 8 DATE DRILLED: 11/7/19 REMARKS: NO GROUNDWATER ON 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 9 DATE DRILLED: 11/7/19 REMARKS: GROUNDWATER @ 14.0 ' 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, light brown, medium dense, moist	5			10	1.3	SAND, SILTY, brown, medium dense, moist	5			10	2.3
				33	6.0	SANDSTONE, SILTY TO CLAYEY, light brown to olive, medium hard, moist				35	10.4
SANDSTONE, SILTY TO CLAYEY, with gravel, light brown to olive, medium hard, moist	10			50/8"	9.8	CLAYSTONE, SANDY, olive with rust staining, medium hard, moist	10			50	15.9
				50/9"	12.4					15	
	15					SANDSTONE, CLAYEY, gray, very hard, moist	15				
							20			50/5"	8.2

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FIGURE No. 7

DATE 1/21/20

LOT No.: 10 DATE DRILLED: 11/7/19 REMARKS: NO GROUNDWATER ON 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 11 DATE DRILLED: 11/7/19 REMARKS: GROUNDWATER @ 13.0 ' 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, light brown, medium dense, moist	5			13	2.7	SAND, SILTY, with gravel, light brown to brown, medium dense, moist	5			14	3.6
				27	8.4					28	7.4
SANDSTONE, SILTY, with gravel, light brown, medium hard to hard, moist	10			50/8"	9.4	SANDSTONE, SILTY, light brown to olive and gray, medium hard, moist to wet	10			45	9.4
				50/6"	10.7						
	15						15				
							20			50/8"	12.7

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FIGURE No. 8

DATE 1/21/20

LOT No.: 12 DATE DRILLED: 11/13/19 REMARKS: GROUNDWATER @ 16.0 ' 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 13 DATE DRILLED: 11/13/19 REMARKS: NO GROUNDWATER ON 11/20/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, light brown, medium dense, moist	5			17	2.2	SAND, SILTY, with gravel, brown, medium dense, moist	5		13	1.7	
						SANDSTONE, SILTY, with gravel, light brown, medium hard, moist					
SANDSTONE, CLAYEY, brown to olive, medium hard to hard, moist to wet	10			50/8"	9.7	CLAYSTONE, SANDY, with clayey sandstone seams, brown to gray, medium hard, moist	10		50	14.3	
	15						15				
	20			50/8"	15.0				50/6"	11.4	

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FIGURE No. 9

DATE 1/21/20

LOT No.: 14 DATE DRILLED: 11/13/19 REMARKS: NO GROUNDWATER ON 11/20/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 15 DATE DRILLED: 11/13/19 REMARKS: NO GROUNDWATER ON 11/20/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, light brown, medium dense, moist	5			29	3.8	CLAY, SANDY, brown to olive, very stiff, moist	5			29	12.5
CLAYSTONE, SANDY, olive, medium hard, moist	10			50/10"	13.1	SANDSTONE, SILTY, light brown, medium hard, moist	10			50/9"	13.8
SANDSTONE, SILTY, with gravel, light brown, very hard, moist	15					CLAYSTONE, SANDY, brown, moist	15			50/6"	10.2
	20			50/5"	8.1	SANDSTONE, SILTY, light brown, hard, moist					

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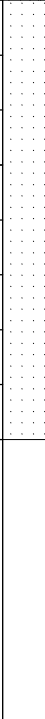



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FIGURE No. 10

DATE 1/21/20

LOT No.: 16 DATE DRILLED: 11/13/19 REMARKS: NO GROUNDWATER ON 11/20/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 17 DATE DRILLED: 11/13/19 REMARKS: NO GROUNDWATER ON 11/20/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY TO CLAYEY, light brown, medium dense, moist	5			29	6.6	SAND, SILTY, with gravel, light brown, medium dense, moist	5			17	2.1
SANDSTONE, SILTY, with gravel, light brown, hard, moist	10			50/6"	8.0	SANDSTONE, SILTY, with gravel, light brown, hard, moist	10			50/8"	6.0
	15						15			50/6"	12.4
	20			50/8"	10.1						

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FIGURE No. 11

DATE 1/21/20

LOT No.: 18 DATE DRILLED: 11/9/19 REMARKS: NO GROUNDWATER ON 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 19 DATE DRILLED: 11/9/19 REMARKS: NO GROUNDWATER ON 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, brown, moist						SAND, SILTY, with gravel, brown, medium dense, moist					
SANDSTONE, SILTY, hard to very hard, moist	5			50/10"	6.2	CLAYSTONE, SANDY, olive to brown, hard, moist	5		35	9.9	
	10			50/6"	5.3	SANDSTONE, SILTY, light brown, hard to very hard, moist	10		50/5"	8.3	
	15						15		50/6"	6.8	
	20			50/5"	8.1						

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FIGURE No. 12

DATE 1/21/20

LOT No.: 20 DATE DRILLED: 11/15/19 REMARKS: NO GROUNDWATER ON 11/20/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 21 DATE DRILLED: 11/15/19 REMARKS: NO GROUNDWATER ON 11/20/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, light brown, medium dense, moist	5			27	8.4	SANDSTONE, SILTY TO CLAYEY, with gravel, light brown to brown and gray, medium hard to very hard, moist	5			45	4.9
	10			50/7"	11.0		10			50/7"	4.7
SANDSTONE, SILTY TO CLAYEY, light brown to brown with rust staining, very hard, moist	15						15			50/5"	10.6
	20			50/7"	17.0						

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





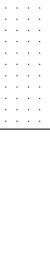


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TEST BORING LOGS

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FIGURE No. 13

DATE 1/21/20

LOT No.: 22 DATE DRILLED: 11/19/19 REMARKS: GROUNDWATER @ 17.0 ' 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 23 DATE DRILLED: 11/19/19 REMARKS: GROUNDWATER @ 9.0 ' 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, tan, loose, moist	5			8	5.7	SAND, SILTY, with gravel, brown, medium dense, moist	5		 	16 24	1.3 2.1
SANDSTONE, CLAYEY, brown to olive, hard to very hard, moist to wet	10			50	12.3	CLAYSTONE, SANDY, brown to olive, medium hard, moist to wet	10			50/10"	15.1
						SANDSTONE, SILTY, light brown, hard, moist to wet					
	15			50/6"	14.8		15			50/8"	9.5
	20										

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FIGURE No. 14

DATE 1/21/20

LOT No.: 24 DATE DRILLED: 11/19/19 REMARKS: GROUNDWATER @ 11.0 ' 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 25 DATE DRILLED: 11/19/19 REMARKS: GROUNDWATER @ 12.0 ' 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, light brown, moist						SAND, SILTY, with gravel, tan, medium dense, moist					
SANDSTONE, SILTY, brown to gray, medium dense, hard, moist to wet	5		28	5.5			5		21	1.2	
	10		39	6.1		SANDSTONE, CLAYEY, light brown, weathered to hard, moist to wet	10		50	6.7	
	15						15		13	16.9	
	20		50/8"	13.2							

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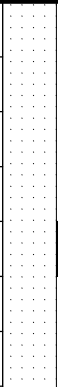



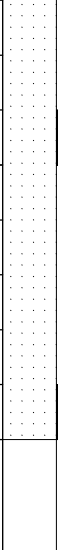







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JOB No. 173093

FIGURE No. 15

DATE 1/21/20

LOT No.: 26 DATE DRILLED: 11/20/19 REMARKS: GROUNDWATER @ 16.0 ' 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 27 DATE DRILLED: 11/20/19 REMARKS: NO GROUNDWATER ON 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, light brown, medium dense, moist	5			23	1.2	SANDSTONE, SILTY, with gravel, light brown, medium hard to very hard, moist	5			39	4.8
SANDSTONE, SILTY, with gravel, light brown, hard, moist to wet	10			50	6.8		10			50/9"	7.8
CLAYSTONE, SANDY, brown with rust staining, medium hard, moist to wet	15			48	21.9		15			50/6"	10.8
	20										

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FIGURE No. 16

DATE 1/21/20

LOT No.: 28 DATE DRILLED: 11/20/19 REMARKS: GROUNDWATER @ 17.0 ' 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 29 DATE DRILLED: 11/20/19 REMARKS: NO GROUNDWATER ON 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SANDSTONE, SILTY, with gravel, light brown to gray, hard to very hard, moist to wet	5			50/11"	1.9	SANDSTONE, SILTY, with gravel, light brown to gray, hard to very hard, moist	5			50/11"	2.3
	10			50/7"	6.7		10			50/9"	6.9
	15						15			50/5"	9.3
	20			50/6"	17.8						

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FIGURE No. 17

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LOT No.: 30 DATE DRILLED: 11/7/19 REMARKS: GROUNDWATER @ 17.0 ' 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 32 DATE DRILLED: 11/7/19 REMARKS: GROUNDWATER @ 17.0 ' 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, light brown, dense, moist				31	1.9	SAND, SILTY TO CLAYEY, with gravel, light brown, loose, moist			5	1.8	
SANDSTONE, SILTY, light brown, very hard, moist	5			50/7"	4.5		5		8	7.2	
	10			50/6"	5.3	CLAY, SANDY, olive, moist	10		27	7.3	
	15						15				
CLAYSTONE, SANDY, olive, hard, moist to wet	20			50/8"	9.9	CLAYSTONE, SANDY, olive, very hard, moist to wet	20		50/6"	10.4	

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FIGURE No. 18

DATE 1/21/20

LOT No.: 33 DATE DRILLED: 11/7/19 REMARKS: NO GROUNDWATER ON 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 34 DATE DRILLED: 11/7/19 REMARKS: GROUNDWATER @ 16.0 ' 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
CLAY, SANDY, olive, stif to very stiff, moist	5		 	13 39	10.8 17.8	SAND, SILTY, light brown, medium dense, moist	5		 	12 25	5.1 6.3
SANDSTONE, CLAYEY, light brown to olive with rust staining, medium hard to hard, moist	10			50/8"	13.1	SANDSTONE, SILTY TO CLAYEY, light brown to gray with rust staining, hard to very hard, moist to wet	10			50/8"	10.1
	15			50/6"	10.6		15				
							20			50/6"	10.2

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FIGURE No. 19

DATE 1/21/20

LOT No.: 35 DATE DRILLED: 11/7/19 REMARKS: GROUNDWATER @ 12.0 ' 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 37 DATE DRILLED: 11/19/19 REMARKS: GROUNDWATER @ 12.0 ' 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, light brown to brown, loose to medium dense, moist	5			7	3.0	SAND, SILTY, tan to brown, medium dense, moist	5			13	3.6
				13	3.1					22	9.7
SANDTONE, SILTY, with gravel, light brown, hard to very hard, moist to wet	10			50/9"	7.6	SANDSTONE, SILTY, tan to gray with rust staining, hard, moist to wet	10			50/11"	12.0
				50/6"	7.9					50/6"	10.4

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FIGURE No. 20

DATE 1/21/20

LOT No.: 38 DATE DRILLED: 11/19/19 REMARKS: NO GROUNDWATER ON 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 39 DATE DRILLED: 11/19/19 REMARKS: NO GROUNDWATER ON 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY TO CLAYEY, tan to brown, dense, moist	5			31	3.8	SAND, SILTY, tan, moist	5			11	20.0
						CLAY, SANDY, gray to olive, stiff, moist					
SANDSTONE, SILTY TO CLAYEY, gray to olive with rust staining, medium hard to very hard, moist	10			49	12.1	CLAYSTONE, SANDY, with silty to clayey sandstone seams, gray to olive, medium hard to very hard, moist	10			50/8"	13.3
	15										
	20			50/6"	9.5					10/0"	

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FIGURE No. 21

DATE 1/21/20

LOT No.: 40 DATE DRILLED: 11/19/19 REMARKS: NO GROUNDWATER ON 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 41 DATE DRILLED: 11/19/19 REMARKS: NO GROUNDWATER ON 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, tan, medium dense, moist	5			16	7.8	SAND, SILTY, tan, loose, moist	5				
									7	1.7	
									13	3.9	
CLAYSTONE, SANDY, brown to olive, firm, moist	10			20	15.0	CLAYSTONE, SANDY, brown to olive, weathered, moist	10			21	17.1
						SANDSTONE, SILTY, light brown, very hard, moist					
	15						15		50/7"	7.5	
SANDSTONE, SILTY, brown, very hard, moist											
	20			50/6"	8.5						

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FIGURE No. 22

DATE 1/21/20

LOT No.: 42 DATE DRILLED: 11/19/19 REMARKS: NO GROUNDWATER ON 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 43 DATE DRILLED: 11/18/19 REMARKS: NO GROUNDWATER ON 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, tan, medium dense, moist	5			10	2.9	SAND, SILTY TO CLAYEY, light brown to brown, medium dense, moist	5			17	1.0
										14	10.9
CLAYSTONE, SANDY, with clayey sandstone seams, brown to olive, firm, moist	10			21	18.8	SANDSTONE, CLAYEY, with gravel, light brown, hard, moist	10			50/6"	7.9
	15						15			50/10"	13.7
SANDSTONE, CLAYEY, light brown, very hard, moist	20			50/5"	7.9						

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FIGURE No. 23

DATE 1/21/20

LOT No.: 44 DATE DRILLED: 11/18/19 REMARKS: NO GROUNDWATER ON 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 45 DATE DRILLED: 11/18/19 REMARKS: NO GROUNDWATER ON 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, light brown, moist						SAND, SILTY, brown, moist					
CLAYSTONE, SANDY, brown to olive, firm, moist	5			45	10.4	SANDSTONE, CLAYEY, light brown, medium hard, moist	5		33	7.6	
SANDSTONE, SILTY, light brown, very hard, moist	10			50/11"		CLAYSTONE, SANDY, brown to olive, medium hard, moist	10		50/8"	14.6	
	15					SANDSTONE, SILTY, light brown, hard, moist	15		50/11"	14.9	
	20			50/7"	12.1						

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FIGURE No. 24

DATE 1/21/20

LOT No.: 46 DATE DRILLED: 11/18/19 REMARKS: NO GROUNDWATER ON 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 47 DATE DRILLED: 11/18/19 REMARKS: NO GROUNDWATER ON 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, light brown, medium dense, moist	5			25	6.1	SAND, SILTY, with gravel, light brown, very loose to medium dense, moist	5				
CLAYSTONE, SANDY, brown to olive, medium hard, moist	10			50/10"	14.1	CLAYSTONE, SANDY, brown to olive, weathered, moist	10			17	13.8
	15					SANDSTONE, SILTY, light gray, very hard, moist	15			50/7"	12.3
SANDSTONE, SILTY, light gray, very hard, moist	20			50/7"	13.1						

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FIGURE No. 25

DATE 1/21/20

LOT No.: 48 DATE DRILLED: 11/18/19 REMARKS: GROUNDWATER @ 16.0 ' 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 50 DATE DRILLED: 11/18/19 REMARKS: GROUNDWATER @ 15.0 ' 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, tan, medium dense, moist	5			22	5.2	SAND, SILTY, tan, moist	5			31	2.7
SANDSTONE, CLAYEY, with gravel, brown, weathered to medium hard, moist to wet	10			50/9"	10.0	SANDSTONE, SILTY TO CLAYEY, light brown to light gray, medium hard, moist to wet	10			50/8"	9.4
	15			8	12.4		15			50/7"	12.0
	20						20				

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FIGURE No. 26

DATE 1/21/20

LOT No.: 51 DATE DRILLED: 11/18/19 REMARKS: GROUNDWATER @ 13.0 ' 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 52 DATE DRILLED: 11/13/19 REMARKS: GROUNDWATER @ 17.0 ' 11/20/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, light brown, dense, moist	5			31	3.8	SAND, CLAYEY, light brown to olive, medium dense, moist	5			28	8.8
SANDSTONE, SILTY, light brown, medium hard, moist to wet	10			50/9"	10.6	SANDSTONE, SILTY, with gravel, light brown to olive, hard, moist to wet	10			50/9"	10.2
	15			48	14.0		15				
						CLAYSTONE, SANDY, brown with rust staining, medium hard, wet	20			38	14.3

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FIGURE No. 27

DATE 1/21/20

DATE 1/21/20

LOT No.: 56 DATE DRILLED: 11/8/19 REMARKS: GROUNDWATER @ 17.0 ' 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 57 DATE DRILLED: 11/8/19 REMARKS: NO GROUNDWATER ON 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, light brown, medium dense, moist				15	3.8	SAND, SILTY, with gravel, dark brown to light brown and olive, medium dense, moist			10	1.3	
CLAY, SANDY, brown to olive, stiff, moist	5						5		13	7.6	
SANDSTONE, SILTY, light brown, medium hard to hard, moist to wet	10			50/9"	13.8	SANDSTONE, SILTY, light brown with rust staining, medium hard to hard, moist	10		50/9"	10.0	
	15						15		50/9"	8.5	
	20			50/10"	14.3						

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FIGURE No. 29

DATE 1/21/20

LOT No.: 58 DATE DRILLED: 11/8/19 REMARKS: NO GROUNDWATER ON 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 59 DATE DRILLED: 11/8/19 REMARKS: NO GROUNDWATER ON 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, light brown, moist						SAND, SILTY, with gravel, light brown, medium dense, moist					
CLAY, SANDY, olive, stiff, moist	5			11	20.0		5		35	1.0	
SANDSTONE, SILTY TO CLAYEY, light brown to olive and gray, medium hard to very hard, moist	10			50/9"	12.8	SANDSTONE, SILTY, with gravel, light brown, medium hard, moist	10		50/7"	7.5	
	15						15		45	12.9	
	20			50/3"	6.2						

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FIGURE No. 30

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LOT No.: 62 DATE DRILLED: 11/9/19 REMARKS: GROUNDWATER @ 17.0 ' 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 63 DATE DRILLED: 11/9/19 REMARKS: NO GROUNDWATER ON 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, light brown, medium dense, moist						SAND, SILTY, light brown, medium dense, moist					
	5			19	5.5		5		14	3.6	
CLAYSTONE, SANDY, with clayey sandstone seams, olive to brown, hard, moist											
	10			48	16.2	SANDSTONE, SILTY TO CLAYEY, brown, moist	10		19	14.6	
						CLAYSTONE, SANDY, light gray, hard, moist					
	15						15		50/7"	12.5	
SANDSTONE, SILTY TO CLAYEY, light gray, hard, moist to wet											
	20			50/10"	10.3						

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FIGURE No. 32

DATE 1/21/20

LOT No.: 64 DATE DRILLED: 11/9/19 REMARKS: GROUNDWATER @ 16.0 ' 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 65 DATE DRILLED: 11/9/19 REMARKS: NO GROUNDWATER ON 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, brown, medium dense, moist	5			13	5.9	SAND, SILTY, with gravel, light brown, medium dense, moist	5			14	1.7
SANDSTONE, SILTY TO CLAYEY, light gray, hard, moist to wet	10			50	9.9	SANDSTONE, SILTY TO CLAYEY, light brown to brown, medium hard to hard, moist	10			50	16.0
	15			50/7"	11.4		15			50/7"	9.5
	20			50/7"	11.4						

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FIGURE No. 33

DATE 1/21/20

LOT No.: 66 DATE DRILLED: 11/9/19 REMARKS: NO GROUNDWATER ON 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 67 DATE DRILLED: 11/18/19 REMARKS: NO GROUNDWATER ON 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, brown, moist	5			35	7.3	SAND, SILTY, brown, moist	5			50/11"	13.0
SANDSTONE, SILTY TO CLAYEY, brown, medium hard, moist						CLAYSTONE, SANDY, with clayey sandstone seams, brown, hard, moist					
CLAYSTONE, SANDY, brown, medium hard, moist						SANDSTONE, SILTY, light brown, medium hard to very hard, moist					
SANDSTONE, SILTY, brown, very hard, moist	10			50/11"	14.8		10			50/7"	15.9
	15			50/5"	10.6		15			50/5"	7.2
	20			50/5"	10.6						

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FIGURE No. 34

DATE 1/21/20

LOT No.: 68 DATE DRILLED: 11/14/19 REMARKS: NO GROUNDWATER ON 11/20/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 69 DATE DRILLED: 11/14/19 REMARKS: NO GROUNDWATER ON 11/20/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, light brown, medium dense to dense, moist	5			30	14.1	SAND, SILTY, with gravel, light brown, medium dense, moist	5		18	11.0	
CLAYSTONE, SANDY, brown with rust staining, hard, moist	10			31	2.0	CLAYSTONE, SANDY, brown to olive, medium hard, moist	10		40	8.1	
	15			50	10.2		15		50/9"	14.7	
	20										

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FIGURE No. 35

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LOT No.: 70 DATE DRILLED: 11/14/19 REMARKS: GROUNDWATER @ 12.0 ' 11/20/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 71 DATE DRILLED: 11/14/19 REMARKS: GROUNDWATER @ 9.0 ' 11/20/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, light brown, medium dense, moist	5			25	12.8	SAND, SILTY, light brown to brown, medium dense, moist to wet	5		12	5.7	
CLAYSTONE, SANDY, brown to olive, medium hard, moist to wet	10			50/11"	4.6	CLAYSTONE, SANDY, brown, medium hard, moist to wet	10		21	10.9	
SANDSTONE, SILTY TO CLAYEY, light brown to brown with rust staining, very hard, moist to wet	15						15		39	13.8	
	20			50/3"	8.8						

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FIGURE No. 36

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LOT No.: 73 DATE DRILLED: 11/14/19 REMARKS: GROUNDWATER @ 12.0 ' 11/20/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 74 DATE DRILLED: 11/14/19 REMARKS: GROUNDWATER @ 16.0 ' 11/20/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, light brown, medium dense, moist						SAND, SILTY, light brown, medium dense, moist					
CLAY, SANDY, brown to olive, very stiff, moist	5			17	16.0		5		22	15.6	
CLAYSTONE, SANDY, brown to olive, medium hard, moist to wet	10			50/11"	14.0	SANDSTONE, SILTY, with gravel, light brown, medium hard to hard, moist to wet	10		33	2.2	
SANDSTONE, CLAYEY, light brown to brown, hard, moist to wet	15			50/6"			15				
							20		50/6"	9.8	

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FIGURE No. 37

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LOT No.: 75 DATE DRILLED: 11/9/19 REMARKS: NO GROUNDWATER ON 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 76 DATE DRILLED: 11/9/19 REMARKS: GROUNDWATER @ 16.0 ' 11/9/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, brown, moist						SAND, SILTY TO CLAYEY, with gravel, brown, medium dense, moist					
CLAYSTONE, SANDY, with clayey sandstone seams, brown to olive, hard, moist	5			36	14.5	CLAYSTONE, SANDY, olive to brown, moist	5		26		12.6
SANDSTONE, SILTY, brown, hard, moist	10			35	13.8	SANDSTONE, CLAYEY, light gray, hard, moist to wet	10		50/7"		9.7
	15			50/10"	10.7		15				
							20		50/6"		8.5

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FIGURE No. 38

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LOT No.: 79 DATE DRILLED: 11/8/19 REMARKS: NO GROUNDWATER ON 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 80 DATE DRILLED: 11/8/19 REMARKS: GROUNDWATER @ 17.0 ' 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, brown, moist						SAND, SILTY, with gravel, brown, moist					
CLAYSTONE, SANDY, olive to brown, hard, moist	5			50/10"	7.3	CLAY, SANDY, brown to olive, very stiff, moist	5		17		8.9
SANDSTONE, SILTY, medium hard to hard, moist	10			50/6"	6.4	SANDSTONE, CLAYEY, brown, medium hard to very hard, moist to wet	10		50/8"		8.5
	15			50/6"	8.3		15				
							20		50/6"		9.4

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FIGURE No. 40

DATE 1/21/20

LOT No.: 81 DATE DRILLED: 11/8/19 REMARKS: NO GROUNDWATER ON 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 82 DATE DRILLED: 11/18/19 REMARKS: NO GROUNDWATER ON 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, light brown, loose, dry to moist				8	1.4	SAND, SILTY, light brown, medium dense, moist					
SAND, CLAYEY, brown, medium dense, moist	5			18	12.5		5			17	8.1
SANDSTONE, SILTY, brown, hard, moist	10			50/7"	7.6	SANDSTONE, SILTY, gray with rust staining, medium hard to very hard, moist	10			50/10.5"	8.9
	15			50/6"	9.7		15				
										50/4"	8.0

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FIGURE No. 41

DATE 1/21/20

LOT No.: 83 DATE DRILLED: 11/18/19 REMARKS: NO GROUNDWATER ON 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 84 DATE DRILLED: 11/18/19 REMARKS: GROUNDWATER @ 17.0 ' 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, light brown, medium dense to dense, moist				12	2.0	SAND, SILTY, light brown to gray with rust staining, medium dense, moist					
SANDSTONE, SILTY, gray with rust staining, hard to very hard, moist	5			37	4.2		5			14	6.1
	10			50/9"	6.6	CLAY, SANDY, dark gray with rust staining, hard, moist	10			35	16.8
	15			50/6"	7.8	SANDSTONE, SILTY, gray with rust staining, very hard, moist to wet	15				
							20			50/4"	8.6

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FIGURE No. 42

DATE 1/21/20

LOT No.: 86 DATE DRILLED: 11/18/19 REMARKS: NO GROUNDWATER ON 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 87 DATE DRILLED: 11/18/19 REMARKS: NO GROUNDWATER ON 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, light brown to gray with rust staining, medium dense, moist	5			19	1.7	SAND, SILTY, light brown, moist	5			50/9"	4.9
				22	8.0	SANDSTONE, SILTY, gray, hard to very hard, moist					
SANDSTONE, SILTY, gray with rust staining, very hard, moist	10			50/7"	7.5		10			50/7.5"	8.4
	15						15			50/6.5"	8.7
	20			50/7"	10.7						

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FIGURE No. 43

DATE 1/21/20

LOT No.: 88 DATE DRILLED: 11/18/19 REMARKS: GROUNDWATER @ 16.0 ' 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 89 DATE DRILLED: 11/9/19 REMARKS: NO GROUNDWATER ON 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, light brown, moist						SAND, SILTY, brown, medium dense, moist				25	4.3
SANDSTONE, SILTY, gray with rust staining, medium hard to hard, moist to wet	5			42	6.2	SANDSTONE, SILTY TO CLAYEY, brown, firm to hard, moist	5			49	5.7
	10			50/9"	9.1		10			50/10"	9.6
	15						15			50/9"	11.1
	20			50/7"	10.0						

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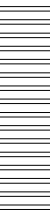
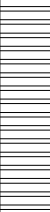


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FIGURE No. 44

DATE 1/21/20

LOT No.: 90 DATE DRILLED: 11/9/19 REMARKS: GROUNDWATER @ 16.0 ' 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 91 DATE DRILLED: 11/9/19 REMARKS: NO GROUNDWATER ON 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, light brown, dense, moist	5			31	7.8	SAND, SILTY, with gravel, brown, moist	5			7	34.7
						CLAY, SANDY, olive to brown, medium stiff, moist					
CLAYSTONE, SANDY, brown to olive, medium hard, moist to wet	10			50/11"	15.8	CLAYSTONE, SANDY, olive to brown, medium hard, moist	10			50/9"	13.6
SANDSTONE, CLAYEY, brown with rust staining, hard, moist to wet	15			50/6"	12.0	SANDSTONE, SILTY TO CLAYEY, brown, hard, moist	15			50/8"	15.1
	20										

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FIGURE No. 45

DATE 1/21/20

LOT No.: 92 DATE DRILLED: 11/9/19 REMARKS: GROUNDWATER @ 14.0 ' 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 93 DATE DRILLED: 11/9/19 REMARKS: GROUNDWATER @ 12.0 ' 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, light brown, loose, moist	5			18	5.4	SAND, SILTY, light brown, medium dense, moist	5			11	4.2
	10			39	17.2		10			50/10"	16.7
CLAYSTONE, SANDY, brown to olive, firm, moist to wet	15					CLAYSTONE, SANDY, brown to olive, medium hard to very hard, moist to wet	15			50/7"	
SANDSTONE, SILTY TO CLAYEY, brown, very hard, moist to wet	20			50/7"	10.4						

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FIGURE No. 46

DATE 1/21/20

LOT No.: 94 DATE DRILLED: 11/9/19 REMARKS: GROUNDWATER @ 15.0 ' 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 95 DATE DRILLED: 11/19/19 REMARKS: GROUNDWATER @ 11.0 ' 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY TO CLAYEY, brown, medium dense, moist				14	7.6	SAND, SILTY, gray to olive, medium dense, moist					
SANDSTONE, SILTY TO CLAYEY, brown, firm, moist	5			23	7.8	CLAYSTONE, SANDY, gray to olive, medium hard, moist to wet	5			50/10"	6.8
CLAYSTONE, SANDY, brown to olive, firm to hard, moist to wet	10			24	8.6		10			50/10.5"	15.9
	15					SANDSTONE, SILTY, gray to olive, hard, moist to wet	15			50/9"	10.5
	20			50/9"	14.0						

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FIGURE No. 47

DATE 1/21/20

LOT No.: 96 DATE DRILLED: 11/19/19 REMARKS: GROUNDWATER @ 14.0' 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 97 DATE DRILLED: 11/18/19 REMARKS: NO GROUNDWATER ON 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY TO CLAYEY, gray to olive, medium dense, moist				16	8.5	SAND, SILTY, light brown to gray, dense, moist					
CLAY, SANDY, gray to olive with rust staining, very stiff, moist	5			17	7.7		5		32	6.0	
SANDSTONE, SILTY TO CLAYEY, tan to gray and olive with rust staining, medium hard to very hard, moist to wet	10			50/9"	14.9	CLAY, SANDY, olive with rust staining, very stiff, moist	10		29	13.1	
	15					CLAYSTONE, SANDY, gray to olive, hard, moist	15		50/6"	16.9	
	20			50/7"	15.3						

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FIGURE No. 48

DATE 1/21/20

LOT No.: 98 DATE DRILLED: 11/18/19 REMARKS: GROUNDWATER @ 16.0 ' 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 99 DATE DRILLED: 11/18/19 REMARKS: NO GROUNDWATER ON 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, gray, moist						SAND, SILTY, light brown, medium dense to dense, moist					
SANDY CLAY TO CLAYEY SAND, gray with rust staining, stiff, moist	5			14	9.9	SANDSTONE, SILTY TO CLAYEY, tan and brown to gray with rust stining, hard, moist	5		10	1.6	
SANDSTONE, SILTY TO CLAYEY, gray with rust staining, medium hard, moist	10			48	18.1		10		39	4.0	
CLAYSTONE, SANDY, gray with rust staining, moist to wet	15						15		50/8.5"	7.0	
SANDSTONE, SILTY, gray with rust staining, medium hard, moist to wet	20			37	21.9				50/8"	18.4	

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FIGURE No. 49

DATE 1/21/20

LOT No.: 100 DATE DRILLED: 11/13/19 REMARKS: GROUNDWATER @ 17.0 ' 11/20/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 101 DATE DRILLED: 11/18/19 REMARKS: NO GROUNDWATER ON 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, light brown, medium dense, moist	5			25	3.6	SAND, SILTY, with gravel, light brown, medium dense, moist	5			15	2.0
SANDSTONE, SILTY, light gray, hard to very hard, moist to wet	10			50	15.4	SANDSTONE, CLAYEY, light gray, hard to very hard, moist	10			50/9"	9.6
	15			50/5"	13.6		15			50/6"	8.5
	20										

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FIGURE No. 50

DATE 1/21/20

LOT No.: 102 DATE DRILLED: 11/18/19 REMARKS: GROUNDWATER @ 15.0 ' 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 103 DATE DRILLED: 11/18/19 REMARKS: NO GROUNDWATER ON 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, light brown, medium dense, moist	5			22	5.3	SAND, SILTY, light brown, moist	5			50	5.8
SANDSTONE, SILTY, with gravel, light gray, very hard, moist to wet	10			50/9"	7.5	SANDSTONE, SILTY TO CLAYEY, brown to light gray, hard to very hard, moist	10			50/8"	6.9
	15						15			50/5"	8.1
	20			50/5"	10.1						

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FIGURE No. 51

DATE 1/21/20

LOT No.: 104 DATE DRILLED: 11/18/19 REMARKS: GROUNDWATER @ 16.0 ' 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 105 DATE DRILLED: 11/18/19 REMARKS: NO GROUNDWATER ON 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, light brown, medium dense, moist	5			26	2.4	SAND, SILTY, with gravel, light brown, medium dense, moist	5			11	1.2
CLAYSTONE, SANDY, brown to olive, medium hard, moist to wet	10			43	14.2	SANDSTONE, CLAYEY, olive, medium hard, moist	10			50/10"	13.4
						CLAYSTONE, SANDY, brown to olive, medium hard, moist					
SANDSTONE, SILTY, light gray, very hard, moist to wet	15			50/7"	8.7		15			50/8"	12.3
	20										

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FIGURE No. 52

DATE 1/21/20

LOT No.: 106 DATE DRILLED: 11/18/19 REMARKS: GROUNDWATER @ 14.0 ' 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 107 DATE DRILLED: 11/18/19 REMARKS: NO GROUNDWATER ON 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, light brown, dense, moist	5			30	8.1	SAND, SILTY, tan, medium dense, moist	5			25	4.9
SANDSTONE, SILTY, light brown, very hard, moist to wet	10			50/6"	7.0	SANDSTONE, CLAYEY, light gray, firm to hard, moist	10			48	8.2
	15			50/7"	14.6		15			50/8"	8.2
	20										

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FIGURE No. 53

DATE 1/21/20

LOT No.: 108 DATE DRILLED: 11/18/19 REMARKS: GROUNDWATER @ 15.0 ' 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 109 DATE DRILLED: 11/19/19 REMARKS: NO GROUNDWATER ON 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, tan, medium dense, moist	5			25	3.9	SAND, SILTY, tan, medium dense, moist	5			16	17.8
SANDSTONE, SILTY TO CLAYEY, light brown to light gray, medium hard to very hard, moist to wet	10			32	10.6	CLAY, SANDY, stiff, moist	10			50/10"	7.4
	15			50/6"	12.3	SANDSTONE, SILTY, tan to gray with rust staining, hard to very hard, moist	15			50/7"	8.9
	20			50/6"	12.3						

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FIGURE No. 54

DATE 1/21/20

LOT No.: 110 DATE DRILLED: 11/19/19 REMARKS: GROUNDWATER @ 16.0 ' 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 111 DATE DRILLED: 11/19/19 REMARKS: NO GROUNDWATER ON 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, tan to gray with rust staining, dense, moist	5			31	2.9	SAND, SILTY, with gravel, tan, medium dense, moist	5			18	3.0
SANDSTONE, SILTY, tan to gray with rust staining, very hard, moist to wet	10			47	10.7	SANDSTONE, CLAYEY, brown to olive, medium dense, moist	10			34	9.4
	15			50/6"	14.4	CLAYSTONE, SANDY, brown, hard, moist	15			50/9"	13.7

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FIGURE No. 55

DATE 1/21/20

LOT No.: 113 DATE DRILLED: 11/11/19 REMARKS: NO GROUNDWATER ON 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 114 DATE DRILLED: 11/11/19 REMARKS: GROUNDWATER @ 17.0 ' 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, light brown, medium dense, moist	5			15	2.8	SAND, SILTY, light brown, medium dense, moist	5			25	2.7
CLAY, SANDY, gray to olive with rust staining, very stiff, moist	10			16	19.9	SANDSTONE, SILTY TO CLAYEY, gray, hard, moist CLAYSTONE, SANDY, brown to gray with rust staining, hard, moist to wet	10		50/6"		12.2
SAND, SILTY, light brown to gray, loose, moist	15			15	6.4		15				
							20		50/6"		12.8

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FIGURE No. 56

DATE 1/21/20

LOT No.: 115 DATE DRILLED: 11/11/19 REMARKS: NO GROUNDWATER ON 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 116 DATE DRILLED: 11/11/19 REMARKS: NO GROUNDWATER ON 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, light brown, loose to medium dense, moist	5			8	6.3	SAND, SILTY, light brown, medium dense, moist	5			11	3.2
										10	8.7
	10			28	3.4		10			29	3.4
SANDSTONE, SILTY, gray to olive, hard, moist	15			50/8"	9.2		15				
						CLAYSTONE, SANDY, olive, medium hard, moist	20			47	13.1

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TEST BORING LOGS

JOB No. 173093

FIGURE No. 57

DATE 1/21/20

<p>ROCKY MOUNTAIN GROUP</p> <div><p>ARCHITECTS</p><p>RMG</p><p>ENGINEERS</p></div> <p><i>Colorado Springs: (Corporate Office)</i> 2910 Austin Bluffs Parkway Colorado Spings, CO 80918 (719) 548-0600</p> <p>SOUTHERN COLORADO, DENVER METRO, NORTHERN COLORADO</p>	<p>TEST BORING LOGS</p>	<p>JOB No. 173093</p> <p>FIGURE No. 58</p> <p>DATE 1/21/20</p>
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LOT No.: 119 DATE DRILLED: 11/11/19 REMARKS: GROUNDWATER @ 9.0 ' 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 120 DATE DRILLED: 11/11/19 REMARKS: GROUNDWATER @ 8.0 ' 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, light brown, medium dense, moist to wet	5			22	3.8	SAND, SILTY, light brown, loose to dense, moist to wet	5			7	2.7
CLAY, SANDY, gray, stiff, moist to wet	10			14	15.3		10			30	11.1
CLAYSTONE, SANDY, gray to olive, hard, moist to wet	15			50/9"	6.5	CLAYSTONE, SANDY, gray to blue with rust staining, hard, moist to wet	15				
							20			50/11"	17.3

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FIGURE No. 59

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LOT No.: 121 DATE DRILLED: 11/11/19 REMARKS: GROUNDWATER @ 12.0 ' 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 122 DATE DRILLED: 11/11/19 REMARKS: GROUNDWATER @ 14.0 ' 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, light brown, loose to medium dense, moist to wet	5			5	1.4	SAND, SILTY, with gravel, light brown, medium dense, moist to wet	5			19	4.0
SANDSTONE, SILTY, light brown with rust staining, hard, moist to wet	10			26	7.0		10			20	5.3
	15			50/9"	8.6		15				
						SANDSTONE, SILTY, light brown to gray, very hard, moist to wet	20			50/4"	7.7
							25			50/6"	9.9

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FIGURE No. 60

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LOT No.: 123 DATE DRILLED: 11/11/19 REMARKS: GROUNDWATER @ 17.0 ' 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 124 DATE DRILLED: 11/11/19 REMARKS: GROUNDWATER @ 17.0 ' 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, light brown, medium dense, moist	5			12	4.2	SAND, SILTY, with gravel, light brown, loose to medium dense, moist	5			9	4.8
SANDSTONE, SILTY, with gravel, gray, hard to very hard, moist to wet	10			25	10.3	SANDSTONE, SILTY TO CLAYEY, brown to gray, hard, moist to wet	10			18	15.7
	15			50/9"	9.7		15				
	20						20			50/11"	14.4
	25										

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FIGURE No. 61

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LOT No.: 125 DATE DRILLED: 11/11/19 REMARKS: NO GROUNDWATER ON 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 127 DATE DRILLED: 11/11/19 REMARKS: NO GROUNDWATER ON 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, light brown, loose to medium dense, moist	5			10	5.0	SAND, SILTY, light brown, medium dense, moist	5			10	4.4
	10			18	10.2	CLAY, SANDY, brown to olive, very stiff, moist	10			24	15.0
CLAY, SANDY, brown, moist						SANDSTONE, SILTY, light brown to brown, hard, moist					
SANDSTONE, CLAYEY, brown to gray, hard, moist	15			50/8"	9.1		15			50/9"	11.7

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FIGURE No. 62

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LOT No.: 128 DATE DRILLED: 11/11/19 REMARKS: NO GROUNDWATER ON 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 129 DATE DRILLED: 11/11/19 REMARKS: NO GROUNDWATER ON 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, light brown, medium dense, moist	5			27	3.9	SAND, SILTY, light brown to brown, loose to medium dense, moist	5				
CLAY, SANDY, brown to olive, stiff, moist	10			13	18.0	CLAY, SANDY, brown to gray, very stiff to hard, moist	10			9	1.2
SANDSTONE, SILTY, light brown to gray, very hard, moist	15						15			14	1.5
	20			50/6"	8.8					16	15.9
										50	12.2

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FIGURE No. 63

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LOT No.: 130 DATE DRILLED: 11/11/19 REMARKS: GROUNDWATER @ 10.0 ' 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 131 DATE DRILLED: 11/11/19 REMARKS: GROUNDWATER @ 12.0 ' 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, light brown to gray, medium dense, moist	5			24	4.6	SAND, SILTY, light brown, medium dense, moist	5			22	3.4
SANDY CLAY TO CLAYEY SAND, brown to gray, very stiff, moist to wet	10			19	15.3	CLAY, SANDY, brown to gray, very stiff, moist to wet	10			20	17.0
SAND, SILTY TO CLAYEY, gray with rust staining, dense, moist to wet	15					CLAYSTONE, SANDY, with clayey sandstone seams, gray with rust staining, very hard, moist to wet	15			50/5"	14.5
	20			46	10.2						

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FIGURE No. 64

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LOT No.: 132 DATE DRILLED: 11/11/19 REMARKS: GROUNDWATER @ 7.0 ' 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 133 DATE DRILLED: 11/11/19 REMARKS: GROUNDWATER @ 6.0 ' 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, light brown to brown and gray, medium dense, moist to wet	5			18	2.5	SAND, SILTY, light brown and brown to gray. medium dense, moist to wet	5			28	1.7
	10			28	14.4		10			23	17.8
SANDSTONE, SILTY, gray, moist to wet	15										17.6
CLAYSTONE, SANDY, gray, hard, moist to wet	20			50/11"	9.9						

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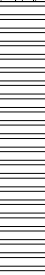








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FIGURE No. 65

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LOT No.: 134 DATE DRILLED: 11/11/19 REMARKS: GROUNDWATER @ 9.0 ' 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 135 DATE DRILLED: 11/11/19 REMARKS: GROUNDWATER @ 10.0 ' 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, light brown to brown and gray, loose to dense, moist to wet	5		 	9 24	1.3 2.2	SAND, SILTY, light brown to brown with rust staining, medium dense to dense, moist to wet	5			12	1.7
CLAYSTONE, SANDY, brown to gray, hard, moist to wet	10			33	9.2		10			33	5.8
	15			50/8"	15.9		15			38	13.3
	20										

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FIGURE No. 66

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LOT No.: 136 DATE DRILLED: 11/11/19 REMARKS: GROUNDWATER @ 12.0 ' 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 137 DATE DRILLED: 11/11/19 REMARKS: GROUNDWATER @ 10.0 ' 11/13/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, light brown to brown and gray, medium dense, moist to wet						SAND, SILTY TO CLAYEY, light brown to brown and gray, medium dense to dense, moist to wet					
	5			12	2.8		5			10	3.1
										11	4.1
	10			29	7.5		10			21	8.7
	15						15			31	18.2
SANDSTONE, SILTY TO CLAYEY, brown to gray with rust staining, hard, moist to wet											
	20			50/10"	14.3						

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FIGURE No. 67

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LOT No.: 138 DATE DRILLED: 11/13/19 REMARKS: GROUNDWATER @ 14.0 ' 11/20/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 139 DATE DRILLED: 11/13/19 REMARKS: NO GROUNDWATER ON 11/20/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, light brown, medium dense, moist	5			20	4.0	SAND, SILTY, with gravel, light brown, medium dense, moist	5			29	4.3
SANDSTONE, SILTY, with gravel, light brown, hard, moist to wet	10			30	10.4	CLAY, SANDY, brown, stiff, moist	10			11	15.0
	15			50/10"	16.5	CLAYSTONE, SANDY, with clayey sandstone seams, brown to olive, medium hard, moist	15			50/10"	13.2
20											

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FIGURE No. 68

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LOT No.: 140 DATE DRILLED: 11/14/19 REMARKS: NO GROUNDWATER ON 11/20/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 141 DATE DRILLED: 11/14/19 REMARKS: NO GROUNDWATER ON 11/20/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, light brown, medium dense, moist	5			20	4.6	SAND, SILTY, with gravel, light brown, medium dense, moist	5			16	7.3
CLAY, SANDY, brown to olive, very stiff, moist	10			27	13.7		10			20	9.3
CLAYSTONE, SANDY, brown to gray, very hard, moist	15					CLAYSTONE, SANDY, brown to olive, medium hard, moist	15			50/9"	15.1
	20			50/7"	12.1		20				
	25			50/7"	14.5	SANDSTONE, CLAYEY, brown to olive, hard, moist	25			50/11"	9.4

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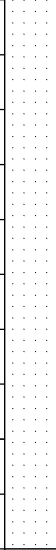









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FIGURE No. 69

DATE 1/21/20

LOT No.: 142 DATE DRILLED: 11/15/19 REMARKS: GROUNDWATER @ 21.0 ' 11/20/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 143 DATE DRILLED: 11/15/19 REMARKS: NO GROUNDWATER ON 11/20/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, light brown, medium dense, moist	5			21	5.6	SAND, SILTY, with gravel, light brown, medium dense, moist	5			13	5.5
SANDSTONE, SILTY, with gravel, light brown to gray, medium hard to hard, moist to wet	10			43	7.1		10			22	9.7
	15			50/7"	14.9	SANDSTONE, SILTY, with gravel, brown to gray, medium hard, moist	15			50/8"	11.0
CLAYSTONE, SANDY, brown to gray and olive with rust staining, hard, moist to wet	20			50/7"	14.9		20			50/8"	11.9
	25			50/9"	13.2		25			50/8"	11.9

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FIGURE No. 70

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LOT No.: 144 DATE DRILLED: 11/15/19 REMARKS: GROUNDWATER @ 17.0 ' 11/20/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 145 DATE DRILLED: 11/15/19 REMARKS: GROUNDWATER @ 11.0 ' 11/20/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, light brown to gray, loose to medium dense, moist	5			4	3.1	SAND, SILTY TO CLAYEY, with gravel, light brown to gray, medium dense, moist	5			25	7.5
	10			13	9.9	SANDSTONE, SILTY TO CLAYEY, with gravel, hard to very hard, moist to wet	10			50/8"	8.6
SANDSTONE, SILTY, with gravel, gray, very hard, moist to wet	15						15			50/6"	7.6
	20			50/5"	7.6						

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FIGURE No. 71

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LOT No.: 146 DATE DRILLED: 11/15/19 REMARKS: NO GROUNDWATER ON 11/20/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 147 DATE DRILLED: 11/15/19 REMARKS: NO GROUNDWATER ON 11/20/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, light brown, medium dense, moist	5			22	5.7	SAND, SILTY, with gravel, light brown to brown, medium dense, moist	5			12	1.6
										24	5.1
SANDSTONE, SILTY TO CLAYEY, with gravel, light brown to brown, hard, moist	10			50/10"	8.5	SANDSTONE, CLAYEY, light brown, medium hard to hard, moist	10			50/10"	9.1
	15						15			50/11"	13.0
	20			50/9"	13.7						

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FIGURE No. 72

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LOT No.: 148 DATE DRILLED: 11/8/19 REMARKS: NO GROUNDWATER ON 11/11/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 149 DATE DRILLED: 11/8/19 REMARKS: GROUNDWATER @ 16.0 ' 11/11/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, light brown, medium dense, moist	5			26	3.3	SAND, SILTY, light brown, medium dense, moist	5			26	7.1
CLAYSTONE, SANDY, with clayey sandstone seams, olive to brown, hard, moist	10			50/11"	11.7	CLAYSTONE, SANDY, olive brown, hard, moist to wet	10			50/11"	14.7
SANDSTONE, CLAYEY, olive to brown, hard, moist	15			50/9"	11.7		15				
						SANDSTONE, SILTY, olive brown, hard, moist to wet	20			50/9"	13.6

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FIGURE No. 73

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LOT No.: 150 DATE DRILLED: 11/8/19 REMARKS: NO GROUNDWATER ON 11/11/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 151 DATE DRILLED: 11/8/19 REMARKS: NO GROUNDWATER ON 11/11/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, light brown, medium dense, moist	5			25	7.7	SAND, SILTY, brown, medium dense, moist	5			16	5.7
CLAYSTONE, SANDY, olive brown, firm, moist	10			25	19.4	CLAYSTONE, SANDY, live brown, firm, moist	10			29	13.5
	15			50/6"	11.0	SANDSTONE, CLAYEY, brown, hard, moist	15				
SANDSTONE, CLAYEY, light gray, very hard, moist	20						20			50/7"	12.3
	25			50/4"	8.6						

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FIGURE No. 74

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LOT No.: 152 DATE DRILLED: 11/8/19 REMARKS: GROUNDWATER @ 13.0 ' 11/11/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 153 DATE DRILLED: 11/8/19 REMARKS: GROUNDWATER @ 15.0 ' 11/11/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, brown, moist						SAND, SILTY, dark brown, loose, moist				8	2.4
CLAYSTONE, SANDY, olive to brown, medium hard to hard, moist to wet	5			15	19.6	SANDSTONE, SILTY TO CLAYEY, dark brown to brown, medium hard, moist to wet	5			46	7.5
	10			50/9"	15.9		10			50/10"	9.7
	15			37	19.5		15			43	17.3

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FIGURE No. 75

DATE 1/21/20

LOT No.: 154 DATE DRILLED: 11/8/19 REMARKS: GROUNDWATER @ 6.0 ' 11/11/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 155 DATE DRILLED: 11/8/19 REMARKS: GROUNDWATER @ 6.0 ' 11/11/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, brown, moist						SAND, SILTY, brown, moist					
SANDSTONE, SILTY TO CLAYEY, brown, hard, moist to wet	5			32	5.7	SANDSTONE, SILTY TO CLAYEY, brown, hard to very hard, moist to wet	5		47	6.4	
	10			50/9"	11.1		10		50/9"	12.8	
	15			50/9"	7.5		15				
							20		50/5"	8.4	

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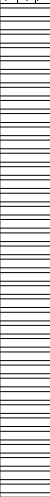


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FIGURE No. 76

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LOT No.: 156 DATE DRILLED: 11/8/19 REMARKS: GROUNDWATER @ 5.0 ' 11/11/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 157 DATE DRILLED: 11/8/19 REMARKS: GROUNDWATER @ 10.0 ' 11/11/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, light brown, medium dense, moist to wet	5			15	10.2	SAND, SILTY, with gravel, light brown, medium dense, moist	5			19	6.6
SANDSTONE, SILTY TO CLAYEY, brown, hard to very hard, moist to wet	10			50/8"	11.1	CLAYSTONE, SANDY, brown to olive with rust staining, firm to medium hard, moist to wet	10			40	
	15			50/6"	14.0		15			50/7"	

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FIGURE No. 77

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LOT No.: 158 DATE DRILLED: 11/8/19 REMARKS: NO GROUNDWATER ON 11/11/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 159 DATE DRILLED: 11/8/19 REMARKS: NO GROUNDWATER ON 11/11/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, light brown, medium dense, moist	5			19	6.2	SAND, SILTY, with gravel, light brown to brown, medium dense, moist	5			11	2.0
CLAY, SANDY, brown to olive, very stiff, moist											
SANDSTONE, SILTY TO CLAYEY, brown to olive, medium hard, moist	10			50/10"	11.9	CLAYSTONE, SANDY, brown, medium hard, moist	10			50/9"	13.0
CLAYSTONE, SANDY, olive, moist											
	15						15			50/7"	12.5
SANDSTONE, SILTY TO CLAYEY, light brown to olive, hard, moist	20			50/8"	10.5						

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FIGURE No. 78

DATE 1/21/20

LOT No.: 160 DATE DRILLED: 11/8/19 REMARKS: GROUNDWATER @ 16.0 ' 11/11/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 161 DATE DRILLED: 11/8/19 REMARKS: GROUNDWATER @ 12.0 ' 11/11/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, light brown, medium dense, moist						SAND, SILTY, with gravel, light brown, medium dense, moist					
CLAY, SANDY, light brown, stiff, moist	5			12	12.1		5		22	6.3	
CLAYSTONE, SANDY, brown to dark gray and olive, medium hard to hard, moist to wet	10			50/10"	10.9	CLAY, SANDY, with clayey sand seams, brown, very stiff, moist to wet	10		36	14.4	
	15					CLAYSTONE, SANDY, brown to olive, hard, moist to wet	15		50/6"	11.2	
	20			50/9"							

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FIGURE No. 79

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LOT No.: 162 DATE DRILLED: 11/8/19 REMARKS: GROUNDWATER @ 6.0' 11/11/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 163 DATE DRILLED: 11/8/19 REMARKS: NO GROUNDWATER ON 11/11/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, light brown, medium dense, moist to wet	5			12	1.3	SAND, SILTY, with gravel, light brown, loose, moist	5				
				12	1.4				9	1.4	
						CLAY, SANDY, light brown to brown, very stiff, moist					
SANDSTONE, CLAYEY, with gravel, light brown to gray and dark gray, medium hard to very hard, moist to wet	10			46	13.5	CLAYSTONE, SANDY, brown to dark brown, moist	10		30	8.2	
						SANDSTONE, SILTY, brown to dark brown, hard, moist					
	15						15		50/6"	13.5	
	20			50/7"	16.2						

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FIGURE No. 80

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LOT No.: 164 DATE DRILLED: 11/8/19 REMARKS: NO GROUNDWATER ON 11/11/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 166 DATE DRILLED: 11/8/19 REMARKS: GROUNDWATER @ 17.0 ' 11/11/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, light brown, loose, moist	5			5	1.2	SAND, SILTY TO CLAYEY, with gravel, light brown, medium dense, moist	5			19	1.7
CLAYSTONE, SANDY, brown to olive, medium hard, moist	10			50/11"	15.5	CLAY, SANDY, brown to olive, moist	10			22	13.2
SANDSTONE, SILTY TO CLAYEY, light brown, very hard, moist	15					CLAYSTONE, SANDY, gray to dark gray, hard, moist to wet	15				
	20			50/5"	11.3		20			50/9"	14.3

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FIGURE No. 81

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LOT No.: 167 DATE DRILLED: 11/8/19 REMARKS: NO GROUNDWATER ON 11/11/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 168 DATE DRILLED: 11/15/19 REMARKS: NO GROUNDWATER ON 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, light brown, medium dense, moist to wet	5			14	2.2	SAND, SILTY, with gravel, light brown, medium dense, moist	5			29	4.9
	10			26	11.2	SANDSTONE, SILTY, with gravel, light brown, hard to very hard, moist	10			50/8"	8.6
CLAYSTONE, SANDY, olive, medium hard, moist to wet	15			36			15				
							20			50/6"	8.5

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FIGURE No. 82

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LOT No.: 169 DATE DRILLED: 11/8/19 REMARKS: NO GROUNDWATER ON 11/11/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 170 DATE DRILLED: 11/8/19 REMARKS: NO GROUNDWATER ON 11/11/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, light brown, loose to dense, moist	5			8	6.7	SAND, SILTY, with gravel, brown, loose to medium dense, moist	5			6	2.8
										11	5.0
	10			31	7.5		10			40	2.3
SANDSTONE, CLAYEY, with gravel, gray, moist	15					SANDSTONE, SILTY, dark brown, hard, moist	15			50/9"	11.7
CLAYSTONE, SANDY, gray, hard, moist	20			50/8"	13.1						

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FIGURE No. 83

DATE 1/21/20

LOT No.: 171 DATE DRILLED: 11/8/19 REMARKS: NO GROUNDWATER ON 11/11/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 172 DATE DRILLED: 11/8/19 REMARKS: NO GROUNDWATER ON 11/11/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, medium dense, moist	5			18	2.9	SAND, SILTY, with gravel, light brown, dense, moist	5			30	4.9
SANDSTONE, SILTY TO CLAYEY, dark brown to light gray, hard, moist	10			50/11"	15.1	CLAYSTONE, SANDY, olive brown, firm, moist	10			24	17.9
	15					SANDSTONE, CLAYEY, dark brown, hard, moist	15			50/6"	10.8
	20			50/8"	11.1						

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FIGURE No. 84

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LOT No.: 173 DATE DRILLED: 11/8/19 REMARKS: NO GROUNDWATER ON 11/11/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 174 DATE DRILLED: 11/8/19 REMARKS: GROUNDWATER @ 13.0 ' 11/11/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, brown, medium dense, moist	5			22	8.0	SAND, SILTY, with gravel, light brown, medium dense, moist	5		13	9.4	
SANDSTONE, SILTY, with gravel, brown, hard, moist	10			50/6"	7.2	SANDSTONE, SILTY, with gravel, brown, hard, moist to wet	10		50/9"	1.9	
	15						15		50/7"	8.3	
	20			50/6"	13.9						

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FIGURE No. 85

DATE 1/21/20

LOT No.: 175 DATE DRILLED: 11/15/19 REMARKS: NO GROUNDWATER ON 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	LOT No.: 176 DATE DRILLED: 11/15/19 REMARKS: GROUNDWATER @ 16.0 ' 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY TO CLAYEY, with gravel, light brown to gray, medium dense, moist	5			28	6.1	SAND, SILTY, with gravel, light brown, medium dense, moist	5		14	3.8	
						CLAY, SANDY, brown with rust staining, stiff, moist					
SANDSTONE, SILTY TO CLAYEY, with gravel, light brown to brown and gray, medium hard, moist	10			42	13.0	SANDSTONE, SILTY TO CLAYEY, light brown to brown, medium hard to hard, moist to wet	10		50/8"	8.4	
	15			50/9"	17.1		15				
							20		50/8"	8.8	

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FIGURE No. 86

DATE 1/21/20

LOT No.: 177 DATE DRILLED: 11/15/19 REMARKS: NO GROUNDWATER ON 11/22/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	
SAND, SILTY, with gravel, light brown, medium dense, moist	5			18	0.8	
SANDSTONE, SILTY, with gravel, light brown to gray with rust staining, hard, moist	10			50/10"	8.3	
	15			50/10"	9.2	

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FIGURE No. 87

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Test Boring No.	Depth	Water Content (%)	Dry Density (pcf)	Liquid Limit	Plasticity Index	% Retained No.4 Sieve	% Passing No. 200 Sieve	FHA Expansion Pressure (psf)	% Swell/ Collapse	USCS Classification
2	2.0	1.1								
2	4.0	9.3		NP	NP	9.4	15.1			SM
2	9.0	9.0								
2	14.0	9.7								
3	2.0	0.7		NP	NP	6.6	12.4			SM
3	4.0	7.8								
3	9.0	11.5								
3	19.0	12.6								
4	2.0	1.9								
4	4.0	12.1								
4	9.0	12.9								
4	14.0	13.3		34	21	1.5	42.9			SC
5	2.0	2.1								
5	4.0	7.9								
5	9.0	11.1		NP	NP	3.0	15.7			SM
5	19.0	13.6								
6	2.0	1.5								
6	4.0	1.5		NP	NP	17.0	6.7			SW-SM
6	9.0	16.4								
6	14.0	9.8								
7	2.0	1.6								
7	4.0	7.8								
7	9.0	13.9	118.7	34	20		49.7		- 0.9	SC
7	19.0	9.9								
8	2.0	1.3								
8	4.0	6.0								
8	9.0	9.8								
8	14.0	12.4	119.6	NP	NP	0.0	32.5		- 0.4	SM
9	2.0	2.3								
9	4.0	10.4								
9	9.0	15.9	113.9	40	26		54.6		1.0	CL
9	19.0	8.2								
10	2.0	2.7		NP	NP	6.7	16.2			SM
10	4.0	8.4								

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SUMMARY OF LABORATORY TEST RESULTS

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Test Boring No.	Depth	Water Content (%)	Dry Density (pcf)	Liquid Limit	Plasticity Index	% Retained No.4 Sieve	% Passing No. 200 Sieve	FHA Expansion Pressure (psf)	% Swell/ Collapse	USCS Classification
10	9.0	9.4								
10	14.0	10.7								
11	2.0	3.6								
11	4.0	7.4		NP	NP	10.7	13.5			SM
11	9.0	9.4								
11	19.0	12.7								
12	4.0	2.2		NP	NP	12.1	6.5			SW-SM
12	9.0	9.7								
12	19.0	15.0								
13	2.0	1.7								
13	4.0	6.4								
13	9.0	14.3	114.6			0.0	53.6		0.2	
13	14.0	11.4	112.1	35	18		26.7		- 1.7	SC
14	4.0	3.8								
14	9.0	13.1	116.1	36	21	0.3	52.0		0.2	CL
14	19.0	8.1								
15	4.0	12.5				0.2	61.4			
15	9.0	13.8								
15	14.0	10.2								
16	4.0	6.6								
16	9.0	8.0		NP	NP	24.5	7.4			SW-SM
16	19.0	10.1								
17	4.0	2.1		NP	NP	8.4	7.7			SW-SM
17	9.0	6.0								
17	14.0	12.4								
18	4.0	6.2		NP	NP	2.4	12.0			SW-SM
18	9.0	5.3								
18	19.0	8.1								
19	2.0	2.3								
19	4.0	9.9								
19	9.0	8.3		NP	NP	0.0	29.9			SM
19	14.0	6.8								
20	4.0	8.4								
20	9.0	11.0		NP	NP	0.2	22.2			SM

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Test Boring No.	Depth	Water Content (%)	Dry Density (pcf)	Liquid Limit	Plasticity Index	% Retained No.4 Sieve	% Passing No. 200 Sieve	FHA Expansion Pressure (psf)	% Swell/ Collapse	USCS Classification
20	19.0	17.0								
21	4.0	4.9		NP	NP	4.5	17.2			SM
21	9.0	4.7								
21	14.0	10.6								
22	4.0	5.7		NP	NP	1.0	16.6			SM
22	9.0	12.3								
22	19.0	14.8								
23	2.0	1.3								
23	4.0	2.1								
23	9.0	15.1		34	17	0.0	57.6		0.1	CL
23	14.0	9.5								
24	4.0	5.5								
24	9.0	6.1		NP	NP	13.0	11.0			SW-SM
24	19.0	13.2								
25	4.0	1.2		NP	NP	7.8	6.2			SP-SM
25	9.0	6.7								
25	14.0	16.9								
26	4.0	1.2		NP	NP	7.8	6.2			SW-SM
26	9.0	6.8								
26	19.0	21.9								
27	4.0	4.8								
27	9.0	7.8		NP	NP	5.2	12.3			SM
27	14.0	10.8								
28	4.0	1.9		NP	NP	16.0	5.8			SW-SM
28	9.0	6.7								
28	19.0	17.8								
29	4.0	2.3								
29	9.0	6.9		NP	NP	12.5	11.0			SW-SM
29	14.0	9.3								
30	2.0	1.9								
30	4.0	4.5		NP	NP	9.1	14.4			SM
30	9.0	5.3								
30	19.0	9.9								
32	2.0	1.8								

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Test Boring No.	Depth	Water Content (%)	Dry Density (pcf)	Liquid Limit	Plasticity Index	% Retained No.4 Sieve	% Passing No. 200 Sieve	FHA Expansion Pressure (psf)	% Swell/ Collapse	USCS Classification
32	4.0	7.2								
32	9.0	7.3	124.0	35	19	21.9	26.1		- 1.8	SC
32	19.0	10.4								
33	2.0	10.8								
33	4.0	17.8	114.0	37	20		64.0		0.6	CL
33	9.0	13.1								
33	14.0	10.6								
34	2.0	5.1		NP	NP	4.4	4.9			SP
34	4.0	6.3								
34	9.0	10.1								
34	19.0	10.2								
35	2.0	3.0								
35	4.0	3.1		NP	NP	9.3	8.9			SW-SM
35	9.0	7.6								
35	14.0	7.9								
37	2.0	3.6		NP	NP	4.8	15.7			SM
37	4.0	9.7								
37	9.0	12.0								
37	14.0	10.4								
38	4.0	3.8		NP	NP	4.0	9.0			SW-SM
38	9.0	12.1								
38	19.0	9.5								
39	4.0	20.0								
39	9.0	13.3		38	13	0.0	41.5		- 1.0	SM
39	14.0	13.4								
40	4.0	7.8		NP	NP	6.6	14.9			SM
40	9.0	15.0								
40	19.0	8.5								
41	2.0	1.7								
41	4.0	3.9								
41	9.0	17.1		37	23	0.0	61.0		- 0.1	CL
41	14.0	7.5								
42	4.0	2.9								
42	9.0	18.8					48.6			

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Test Boring No.	Depth	Water Content (%)	Dry Density (pcf)	Liquid Limit	Plasticity Index	% Retained No.4 Sieve	% Passing No. 200 Sieve	FHA Expansion Pressure (psf)	% Swell/ Collapse	USCS Classification
42	19.0	7.9								
43	2.0	1.0								
43	4.0	10.9								
43	9.0	7.9		NP	NP	14.0	10.5			SW-SM
43	14.0	13.7								
44	4.0	10.4		38	23	0.0	63.0		1.1	CL
44	19.0	12.1								
45	4.0	7.6								
45	9.0	14.6		38	21	0.0	59.0		0.5	CL
45	14.0	14.9								
46	4.0	6.1								
46	9.0	14.1		32	15	0.0	64.2		- 0.9	CL
46	19.0	13.1								
47	2.0	0.9								
47	4.0	3.8		NP	NP	19.4	5.6			SW-SM
47	9.0	13.8								
47	14.0	12.3								
48	4.0	5.2								
48	9.0	10.0		NP	NP	13.0	10.4			SW-SM
48	19.0	12.4								
50	4.0	2.7		NP	NP	16.6	7.1			SW-SM
50	9.0	9.4								
50	19.0	12.0								
51	4.0	3.8								
51	9.0	10.6		NP	NP	9.7	14.0			SM
51	14.0	14.0								
52	4.0	8.8								
52	9.0	10.2		NP	NP	19.6	8.6			SW-SM
52	19.0	14.3								
53	4.0	7.8		29	15	17.1	15.7			SC
53	9.0	8.2								
53	14.0	11.9								
54	4.0	5.0								
54	9.0	10.0		NP	NP	5.4	17.6			SM

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Test Boring No.	Depth	Water Content (%)	Dry Density (pcf)	Liquid Limit	Plasticity Index	% Retained No.4 Sieve	% Passing No. 200 Sieve	FHA Expansion Pressure (psf)	% Swell/ Collapse	USCS Classification
54	19.0	13.6								
56	4.0	3.8		NP	NP	7.0	17.3			SM
56	9.0	13.8								
56	19.0	14.3								
57	2.0	1.3								
57	4.0	7.6								
57	9.0	10.0								
57	14.0	8.5		NP	NP	8.7	15.4			SM
58	4.0	20.0		37	19	0.0	84.8			CL
58	9.0	12.8								
58	19.0	6.2								
59	4.0	1.0								
59	9.0	7.5		NP	NP	22.2	9.5			SW-SM
59	14.0	12.9								
60	4.0	7.2		NP	NP	14.7	4.2			SW
60	9.0	7.1								
60	19.0	10.1								
61	4.0	10.1								
61	9.0	13.3	119.3	37	21	0.0	66.0		- 0.3	CL
61	14.0	17.7								
62	4.0	5.5								
62	9.0	16.2	113.3	32	12	0.0	48.0		- 0.2	SC
62	19.0	10.3								
63	4.0	3.6								
63	9.0	14.6								
63	14.0	12.5	116.8	33	19	0.0	68.1		- 0.5	CL
64	4.0	5.9		NP	NP	4.6	6.9			SW-SM
64	9.0	9.9								
64	19.0	11.4								
65	2.0	1.7								
65	4.0	7.7								
65	9.0	16.0								
65	14.0	9.5		NP	NP	11.2	8.9			SW-SM
66	4.0	7.3		NP	NP	21.1	12.6			SM

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Test Boring No.	Depth	Water Content (%)	Dry Density (pcf)	Liquid Limit	Plasticity Index	% Retained No.4 Sieve	% Passing No. 200 Sieve	FHA Expansion Pressure (psf)	% Swell/ Collapse	USCS Classification
66	9.0	14.8								
66	19.0	10.6								
67	4.0	13.0		38	20	0.4	36.8			SC
67	9.0	15.9								
67	14.0	7.2								
68	4.0	14.1								
68	9.0	2.0		NP	NP	1.9	22.6			SM
68	19.0	10.2								
69	2.0	11.0				3.8	12.3			
69	4.0	1.5								
69	9.0	8.1								
69	14.0	14.7								
70	4.0	12.8								
70	9.0	4.6	121.6	42	23		53.0		0.0	CL
70	14.0	15.6								
70	19.0	8.8								
71	4.0	5.7				0.0	26.7			
71	9.0	10.9								
71	14.0	13.8								
73	4.0	16.0								
73	9.0	14.0	111.0	42	25		53.1		0.3	CL
74	4.0	15.6								
74	9.0	2.2								
74	19.0	9.8				14.7	11.4			
75	4.0	14.5	112.4	39	22		45.2		2.3	SC
75	9.0	13.8								
75	14.0	10.7								
76	4.0	12.6				2.9	34.0			
76	9.0	9.7								
76	19.0	8.5								
77	2.0	1.5								
77	4.0	4.2								
77	9.0	10.0		NP	NP	10.4	10.2			SW-SM
77	14.0	9.2								

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Test Boring No.	Depth	Water Content (%)	Dry Density (pcf)	Liquid Limit	Plasticity Index	% Retained No.4 Sieve	% Passing No. 200 Sieve	FHA Expansion Pressure (psf)	% Swell/ Collapse	USCS Classification
78	4.0	9.6	120.6	38	25	0.0	56.4		1.0	CL
78	9.0	13.6								
78	19.0	10.1								
79	4.0	7.3								
79	9.0	6.4		NP	NP	4.3	17.6			SM
79	14.0	8.3								
80	4.0	8.9		27	15		53.2			CL
80	9.0	8.5								
80	19.0	9.4								
81	2.0	1.4								
81	4.0	12.5				0.9	39.2			
81	9.0	7.6								
81	14.0	9.7								
82	4.0	8.1								
82	9.0	8.9		NP	NP	2.3	13.1			SM
82	19.0	8.0								
83	2.0	2.0				12.1	23.9			
83	4.0	4.2								
83	9.0	6.6								
83	14.0	7.8								
84	4.0	6.1		NP	NP	6.9	12.0			SW-SM
84	9.0	16.8								
84	19.0	8.6								
86	2.0	1.7								
86	4.0	8.0								
86	9.0	7.5		NP	NP	4.6	16.2			SM
86	19.0	10.7								
87	4.0	4.9		NP	NP	1.9	19.7			SM
87	9.0	8.4								
87	14.0	8.7								
88	4.0	6.2		NP	NP	2.7	27.2			SM
88	9.0	9.1								
88	19.0	10.0								
89	2.0	4.3								

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Test Boring No.	Depth	Water Content (%)	Dry Density (pcf)	Liquid Limit	Plasticity Index	% Retained No.4 Sieve	% Passing No. 200 Sieve	FHA Expansion Pressure (psf)	% Swell/ Collapse	USCS Classification
89	4.0	5.7				7.1	19.6			
89	9.0	9.6								
89	14.0	11.1								
90	4.0	7.8								
90	9.0	15.8	115.7	29	15		74.1		0.0	CL
90	19.0	12.0								
91	4.0	34.7								
91	9.0	13.6	111.6	35	21		69.4		1.2	CL
91	14.0	15.1								
92	4.0	5.4		NP	NP	8.2	6.6			SP-SM
92	9.0	17.2								
92	19.0	10.4								
93	4.0	4.2								
93	9.0	16.7		38	20	0.0	66.9			CL
93	14.0	10.1								
94	2.0	7.6		NP	NP	0.5	23.0			SM
94	4.0	7.8								
94	9.0	8.6		38	20	0.0	66.9			CL
94	19.0	14.0								
95	4.0	6.8								
95	9.0	15.9		34	17				- 0.7	
95	14.0	10.5								
96	2.0	8.5		33	20	0.0	34.5			SC
96	4.0	7.7								
96	9.0	14.9								
96	19.0	15.3								
97	4.0	6.0								
97	9.0	13.1								
97	14.0	16.9		29	16	0.0	73.3		- 2.3	CL
98	4.0	9.9		33	21	0.0	41.0			SC
98	9.0	18.1								
98	19.0	21.9								
99	2.0	1.6								
99	4.0	4.0								

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Test Boring No.	Depth	Water Content (%)	Dry Density (pcf)	Liquid Limit	Plasticity Index	% Retained No.4 Sieve	% Passing No. 200 Sieve	FHA Expansion Pressure (psf)	% Swell/ Collapse	USCS Classification
99	9.0	7.0		NP	NP	6.8	9.7			SW-SM
99	14.0	18.4								
100	4.0	3.6				9.9	6.2			
100	9.0	15.4								
100	19.0	13.6								
101	4.0	2.0								
101	9.0	9.6								
101	14.0	8.5								
102	4.0	5.3		NP	NP	0.6	9.8			SW-SM
102	9.0	7.5								
102	19.0	10.1								
103	4.0	5.8								
103	9.0	6.9		NP	NP	12.7	9.7			SW-SM
103	14.0	8.1								
104	4.0	2.4		NP	NP	10.0	5.2			SW-SM
104	9.0	14.2								
104	19.0	8.7								
105	2.0	1.2								
105	4.0	2.6								
105	9.0	13.4								
105	14.0	12.3		32	17				- 0.3	
106	4.0	8.1		NP	NP	1.4	19.3			SM
106	9.0	7.0								
106	19.0	14.6								
107	4.0	4.9								
107	9.0	8.2		NP	NP	18.4	14.4			SM
107	14.0	8.2								
108	4.0	3.9		NP	NP	7.5	6.6			SW-SM
108	9.0	10.6								
108	19.0	12.3								
109	4.0	17.8								
109	9.0	7.4		NP	NP	3.1	21.4			SM
109	14.0	8.9								
110	4.0	2.9		NP	NP	14.6	9.4			SW-SM

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Test Boring No.	Depth	Water Content (%)	Dry Density (pcf)	Liquid Limit	Plasticity Index	% Retained No.4 Sieve	% Passing No. 200 Sieve	FHA Expansion Pressure (psf)	% Swell/ Collapse	USCS Classification
110	9.0	10.7								
110	19.0	14.4								
111	4.0	3.0								
111	9.0	9.4		NP	NP	3.3	24.8			SM
111	14.0	13.7								
113	4.0	2.8								
113	9.0	19.9					56.5			
113	14.0	6.4								
114	4.0	2.7								
114	9.0	12.2	110.2	29	15		49.7		- 1.7	SC
114	19.0	12.8								
115	4.0	6.3								
115	9.0	3.4								
115	14.0	9.2				2.5	27.8			
116	2.0	3.2								
116	4.0	8.7				0.5	20.7			
116	9.0	3.4								
116	19.0	13.1								
117	4.0	3.2				0.0	5.2			
117	9.0	4.4								
117	14.0	9.7								
118	4.0	3.8				0.0	8.9			
118	9.0	5.8								
118	19.0	14.3								
119	4.0	3.8								
119	9.0	15.3								
119	14.0	6.5	125.5	37	21		39.3		- 1.0	SC
120	2.0	2.7								
120	4.0	5.0								
120	9.0	11.1				7.9	16.8			
120	19.0	17.3								
121	2.0	1.4								
121	4.0	3.3								
121	9.0	7.0								

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Test Boring No.	Depth	Water Content (%)	Dry Density (pcf)	Liquid Limit	Plasticity Index	% Retained No.4 Sieve	% Passing No. 200 Sieve	FHA Expansion Pressure (psf)	% Swell/ Collapse	USCS Classification
121	14.0	8.6		NP	NP	2.6	14.8			SM
122	4.0	4.0								
122	9.0	5.3		NP	NP	6.5	7.0			SP-SM
122	19.0	7.7								
122	24.0	9.9								
123	4.0	4.2								
123	9.0	10.3								
123	14.0	9.7		NP	NP	5.0	17.9			SM
123	24.0	8.0								
124	4.0	4.8								
124	9.0	15.7		NP	NP	6.4	11.2			SW-SM
124	19.0	14.4								
125	4.0	5.0								
125	9.0	10.2								
125	14.0	9.1				1.6	27.4			
127	4.0	4.4				0.4	5.4			
127	9.0	15.0								
127	14.0	11.7								
128	4.0	3.9								
128	9.0	18.0				0.3	50.5			
128	19.0	8.8								
129	2.0	1.2								
129	4.0	1.5								
129	9.0	15.9								
129	14.0	12.2	117.4	30	14	0.0	25.6		- 0.6	SC
130	4.0	4.6								
130	9.0	15.3	111.0	35	20	0.0	28.4		- 0.7	SC
130	19.0	10.2								
131	4.0	3.4								
131	9.0	17.0								
131	14.0	14.5	115.2	33	15	0.0	30.3		1.1	SC
132	4.0	2.5				6.7	6.7			
132	9.0	14.4								
132	19.0	9.9								

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Test Boring No.	Depth	Water Content (%)	Dry Density (pcf)	Liquid Limit	Plasticity Index	% Retained No.4 Sieve	% Passing No. 200 Sieve	FHA Expansion Pressure (psf)	% Swell/ Collapse	USCS Classification
133	4.0	1.7								
133	9.0	17.8				14.2	5.4			
133	13.0	17.6								
134	2.0	1.3				9.8	6.9			
134	4.0	2.2								
134	9.0	9.2								
134	19.0	15.9								
135	4.0	1.7								
135	9.0	5.8				10.9	10.7			
135	14.0	13.3								
136	4.0	2.8				3.0	6.8			
136	9.0	7.5								
136	19.0	14.3								
137	2.0	3.1								
137	4.0	4.1								
137	9.0	8.7								
137	14.0	18.2								
138	4.0	4.0				3.9	5.3			
138	9.0	10.4								
138	19.0	16.5								
139	4.0	4.3								
139	9.0	15.0								
139	14.0	13.2					31.8			
140	4.0	4.6								
140	9.0	13.7	114.3	31	19		62.4		- 1.2	CL
140	19.0	12.1								
140	24.0	14.5								
141	4.0	7.3								
141	9.0	9.3								
141	14.0	15.1								
141	24.0	9.4				4.9	15.6			
142	4.0	5.6				11.1	8.6			
142	9.0	7.1								
142	19.0	14.9								

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Test Boring No.	Depth	Water Content (%)	Dry Density (pcf)	Liquid Limit	Plasticity Index	% Retained No.4 Sieve	% Passing No. 200 Sieve	FHA Expansion Pressure (psf)	% Swell/ Collapse	USCS Classification
142	24.0	13.2								
143	4.0	5.5								
143	9.0	9.7								
143	14.0	11.0				1.4	10.4			
143	24.0	11.9								
144	4.0	3.1				0.0	3.1			SW
144	9.0	9.9								
144	19.0	7.6								
145	4.0	7.5								
145	9.0	8.6				1.4	13.0			
145	14.0	7.6								
146	4.0	5.7				9.0	9.6			
146	9.0	8.5								
146	19.0	13.7								
147	2.0	1.6				10.2	6.5			
147	4.0	5.1								
147	9.0	9.1								
147	14.0	13.0								
148	4.0	3.3								
148	9.0	11.7	122.6			5.5	39.8		- 0.4	
148	14.0	11.7								
149	4.0	7.1				5.5	7.4			
149	9.0	14.7								
149	19.0	13.6								
150	4.0	7.7								
150	9.0	19.4				0.1	60.4			
150	14.0	11.0								
150	24.0	8.6								
151	4.0	5.7								
151	9.0	13.5	117.3	31	19		53.7		0.0	CL
151	19.0	12.3								
152	4.0	19.6				0.0	63.5			
152	9.0	15.9								
152	14.0	19.5								

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Test Boring No.	Depth	Water Content (%)	Dry Density (pcf)	Liquid Limit	Plasticity Index	% Retained No.4 Sieve	% Passing No. 200 Sieve	FHA Expansion Pressure (psf)	% Swell/ Collapse	USCS Classification
153	2.0	2.4								
153	4.0	7.5								
153	9.0	9.7				8.3	9.5			
153	19.0	17.3								
154	4.0	5.7				23.1	11.0			
154	9.0	11.1								
154	14.0	7.5								
155	4.0	6.4								
155	9.0	12.8				12.8	10.9			
155	19.0	8.4								
156	4.0	10.2								
156	9.0	11.1				7.1	10.5			
156	14.0	14.0								
157	4.0	6.6				8.0	8.4			
158	4.0	6.2								
158	9.0	11.9	125.0	34	18	0.4	39.2		0.0	SC
158	19.0	10.5								
159	2.0	2.0				16.6	7.5			
159	4.0	5.9								
159	9.0	13.0								
159	14.0	12.5								
160	4.0	12.1				11.3	15.6			
160	9.0	10.9								
160	14.0	15.6								
161	4.0	6.3								
161	9.0	14.4	113.2	37	19	0.0	32.7		1.3	SC
161	14.0	11.2								
162	2.0	1.3				21.7	4.8			SW
162	4.0	1.4								
162	9.0	13.5								
162	19.0	16.2								
163	4.0	1.4								
163	9.0	8.2								
163	14.0	13.5		NP	NP		42.1		- 0.1	SM

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Test Boring No.	Depth	Water Content (%)	Dry Density (pcf)	Liquid Limit	Plasticity Index	% Retained No.4 Sieve	% Passing No. 200 Sieve	FHA Expansion Pressure (psf)	% Swell/ Collapse	USCS Classification
164	4.0	1.2				12.8	3.8			SW
164	9.0	15.5								
164	19.0	11.3								
166	4.0	1.7								
166	9.0	13.2		36	19		34.1			SC
166	19.0	14.3								
167	4.0	2.2				16.3	6.4			
167	9.0	11.2								
167	19.0	18.2								
168	4.0	4.9				19.4	9.2			
168	9.0	8.6								
168	19.0	8.5								
169	4.0	6.7								
169	9.0	7.5				15.1	6.2			
169	19.0	13.1								
170	2.0	2.8				0.0	4.2			SP
170	4.0	5.0								
170	9.0	2.3								
170	14.0	11.7								
171	4.0	2.9								
171	9.0	15.1				0.5	14.1			
171	19.0	11.1								
172	4.0	4.9				12.6	8.5			
172	9.0	17.9								
172	14.0	10.8								
173	4.0	8.0								
173	9.0	7.2								
173	19.0	13.9				1.0	16.2			
174	4.0	9.4								
174	9.0	1.9				17.7	4.9			SW
174	14.0	8.3								
175	4.0	6.1								
175	9.0	13.0								
175	14.0	17.1				13.4	9.3			

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SUMMARY OF LABORATORY TEST RESULTS

JOB No. 173093
FIGURE No. 88
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Test Boring No.	Depth	Water Content (%)	Dry Density (pcf)	Liquid Limit	Plasticity Index	% Retained No.4 Sieve	% Passing No. 200 Sieve	FHA Expansion Pressure (psf)	% Swell/ Collapse	USCS Classification
176	4.0	3.8				8.0	6.4			
176	9.0	8.4								
176	19.0	8.8								
177	4.0	0.8								
177	9.0	8.3				12.8	11.1			
177	14.0	9.2								

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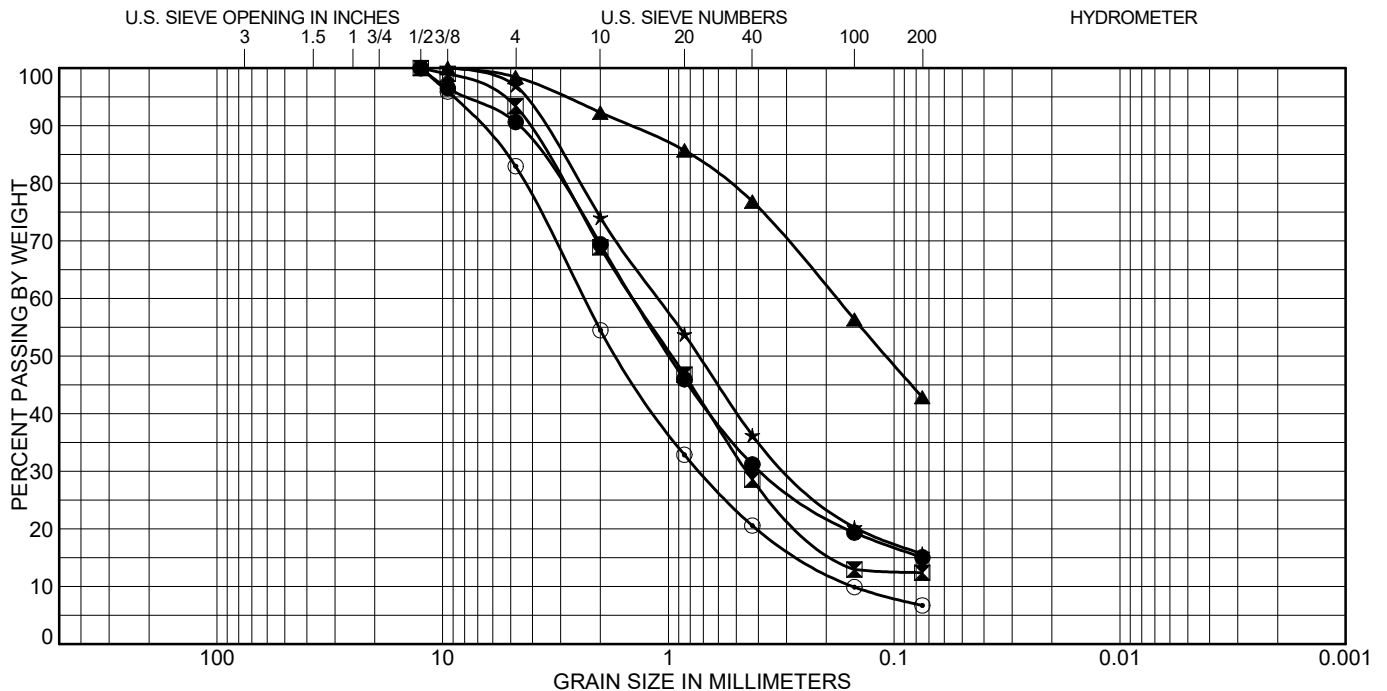
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SUMMARY OF LABORATORY TEST RESULTS

JOB No. 173093
FIGURE No. 88
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COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Test Boring	Depth (ft)	Classification	LL	PL	PI
● 2	4.0	SILTY SAND(SM)	NP	NP	NP
⊠ 3	2.0	SILTY SAND(SM)	NP	NP	NP
▲ 4	14.0	CLAYEY SAND(SC)	34	13	21
★ 5	9.0	SILTY SAND(SM)	NP	NP	NP
⊙ 6	4.0	WELL-GRADED SAND with SILT and GRAVEL(SW-SM)	NP	NP	NP

Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay
● 2	4.0	9.4	75.6	15.1	
⊠ 3	2.0	6.6	81.0	12.4	
▲ 4	14.0	1.5	55.6	42.9	
★ 5	9.0	3.0	81.4	15.7	
⊙ 6	4.0	17.0	76.3	6.7	

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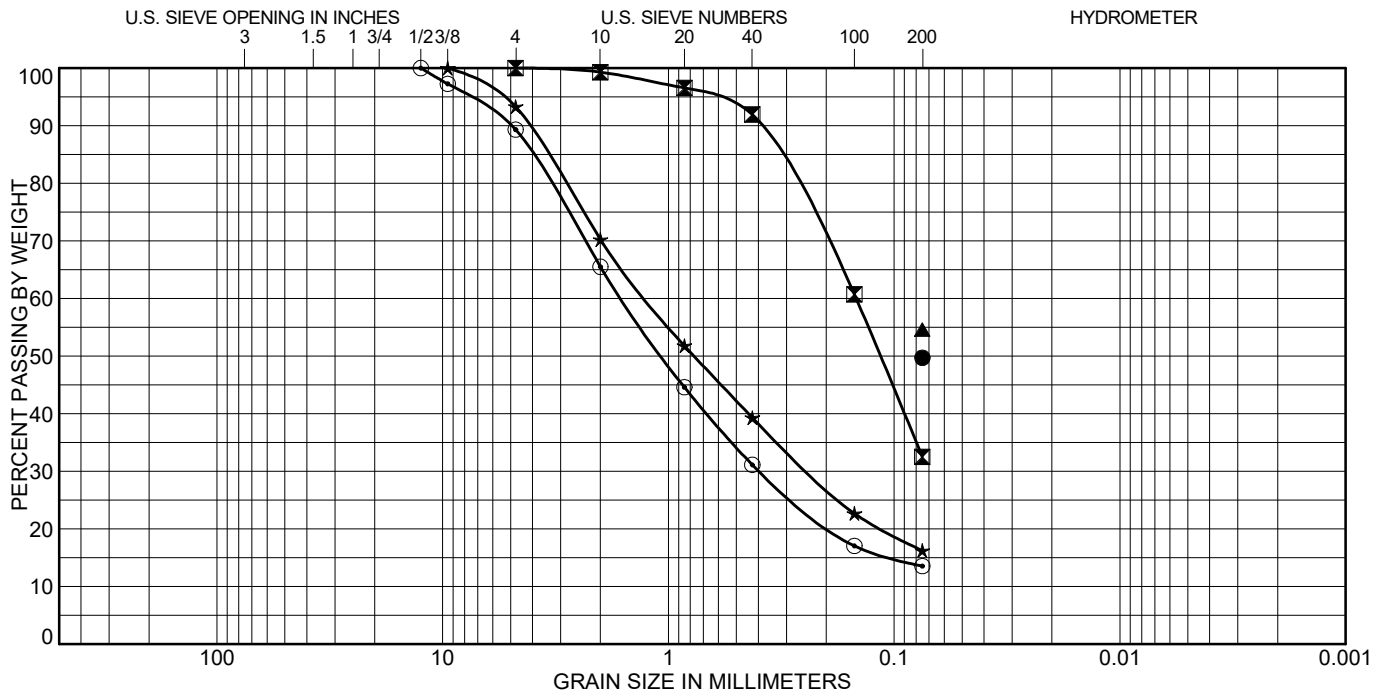
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SOIL CLASSIFICATION DATA

JOB No. 173093

FIGURE No. 89

DATE 1/21/20



Test Boring	Depth (ft)	Classification	LL	PL	PI
● 7	9.0	CLAYEY SAND(SC)	34	14	20
⊠ 8	14.0	SILTY SAND(SM)	NP	NP	NP
▲ 9	9.0	SANDY LEAN CLAY(CL)	40	14	26
★ 10	2.0	SILTY SAND(SM)	NP	NP	NP
⊙ 11	4.0	SILTY SAND(SM)	NP	NP	NP
Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay
● 7	9.0			49.7	
⊠ 8	14.0	0.0	67.5	32.5	
▲ 9	9.0			54.6	
★ 10	2.0	6.7	77.1	16.2	
⊙ 11	4.0	10.7	75.8	13.5	

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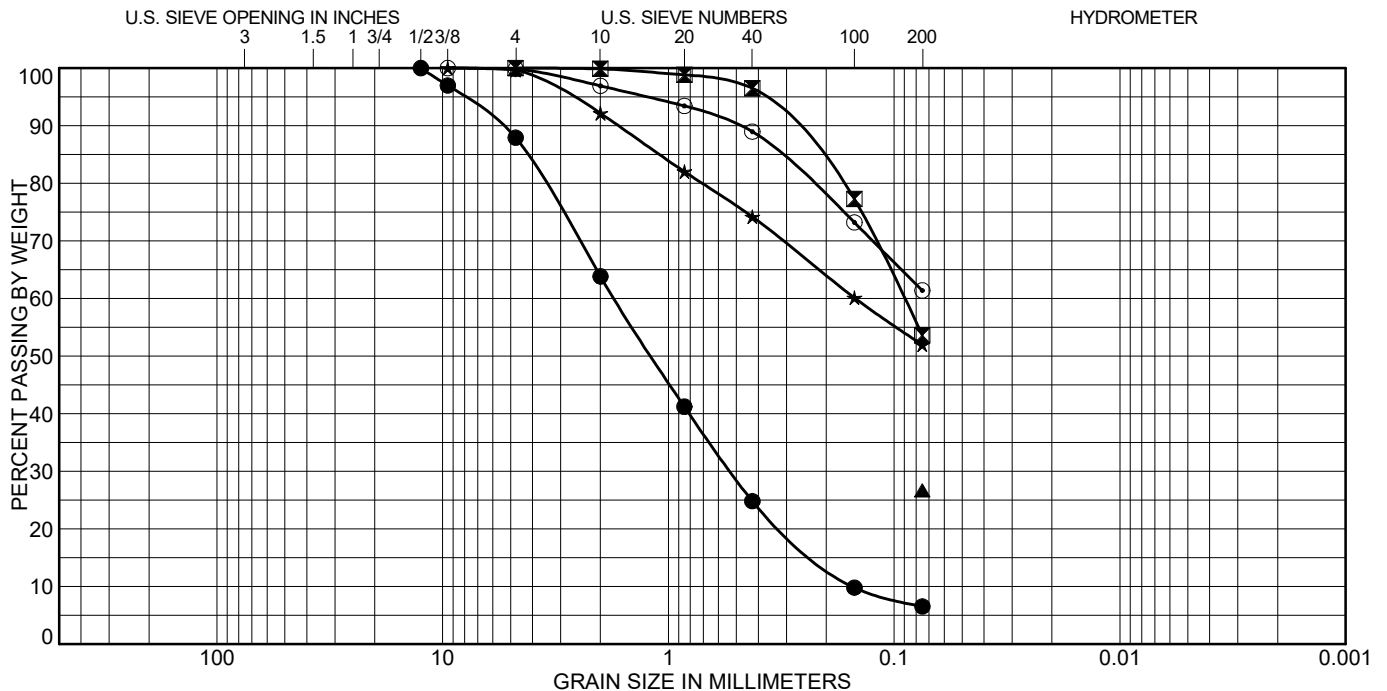
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SOIL CLASSIFICATION DATA

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FIGURE No. 90

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COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Test Boring	Depth (ft)	Classification	LL	PL	PI
● 12	4.0	WELL-GRADED SAND with SILT(SW-SM)	NP	NP	NP
⊠ 13	9.0				
▲ 13	14.0	CLAYEY SAND(SC)	35	17	18
★ 14	9.0	SANDY LEAN CLAY(CL)	36	15	21
⊙ 15	4.0				

Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay
● 12	4.0	12.1	81.4	6.5	
⊠ 13	9.0	0.0	46.4	53.6	
▲ 13	14.0			26.7	
★ 14	9.0	0.3	47.7	52.0	
⊙ 15	4.0	0.2	38.5	61.4	

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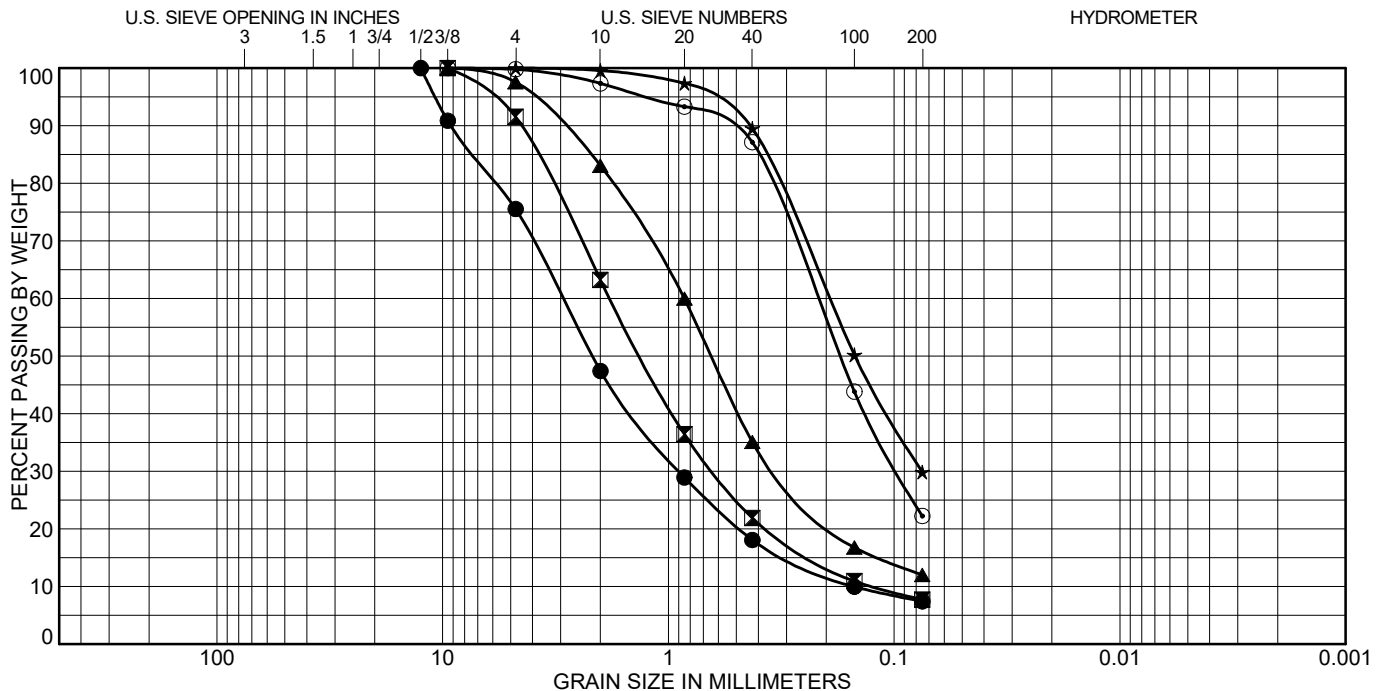
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FIGURE No. 91

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Test Boring	Depth (ft)	Classification	LL	PL	PI
● 16	9.0	WELL-GRADED SAND with SILT and GRAVEL(SW-SM)	NP	NP	NP
⊠ 17	4.0	WELL-GRADED SAND with SILT(SW-SM)	NP	NP	NP
▲ 18	4.0	WELL-GRADED SAND with SILT(SW-SM)	NP	NP	NP
★ 19	9.0	SILTY SAND(SM)	NP	NP	NP
⊙ 20	9.0	SILTY SAND(SM)	NP	NP	NP
Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay
● 16	9.0	24.5	68.1	7.4	
⊠ 17	4.0	8.4	83.8	7.7	
▲ 18	4.0	2.4	85.6	12.0	
★ 19	9.0	0.0	70.1	29.9	
⊙ 20	9.0	0.2	77.6	22.2	

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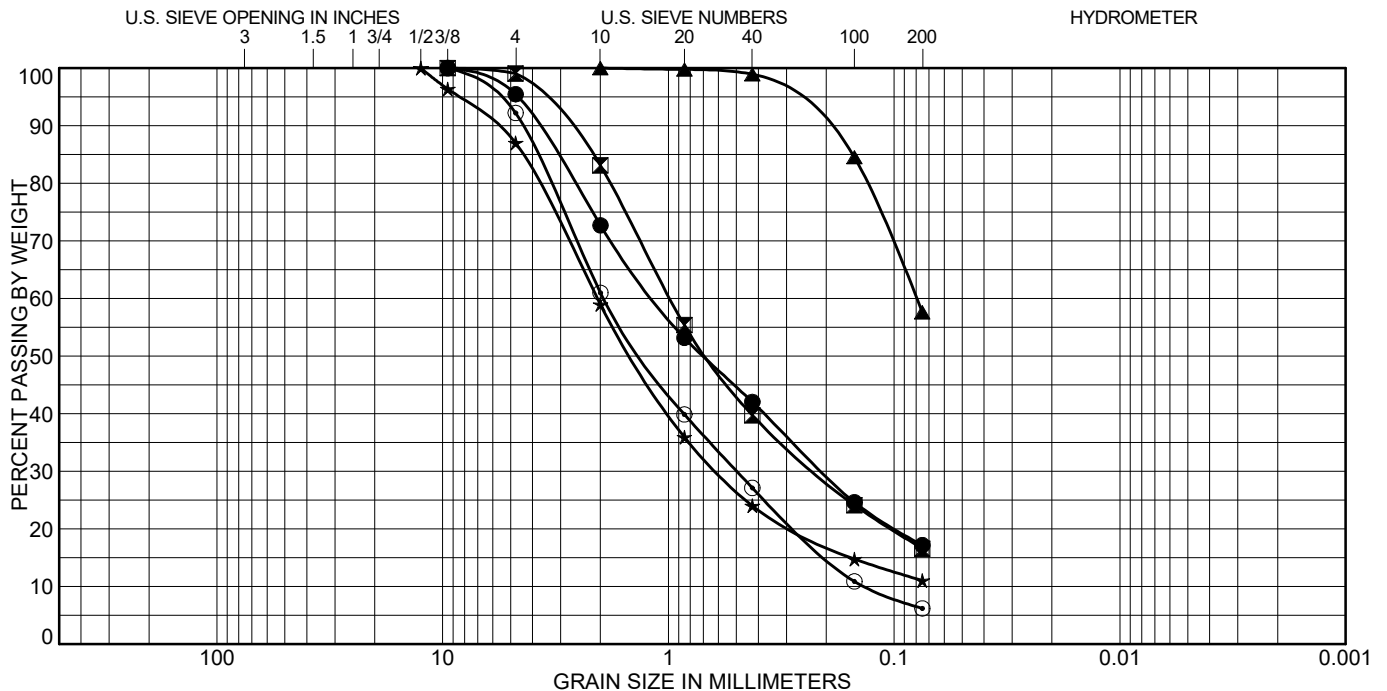
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FIGURE No. 92

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Test Boring	Depth (ft)	Classification	LL	PL	PI
● 21	4.0	SILTY SAND(SM)	NP	NP	NP
⊠ 22	4.0	SILTY SAND(SM)	NP	NP	NP
▲ 23	9.0	SANDY LEAN CLAY(CL)	34	17	17
★ 24	9.0	WELL-GRADED SAND with SILT(SW-SM)	NP	NP	NP
⊙ 25	4.0	POORLY GRADED SAND with SILT(SP-SM)	NP	NP	NP

Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay
● 21	4.0	4.5	78.3	17.2	
⊠ 22	4.0	1.0	82.5	16.6	
▲ 23	9.0	0.0	42.4	57.6	
★ 24	9.0	13.0	76.0	11.0	
⊙ 25	4.0	7.8	86.0	6.2	

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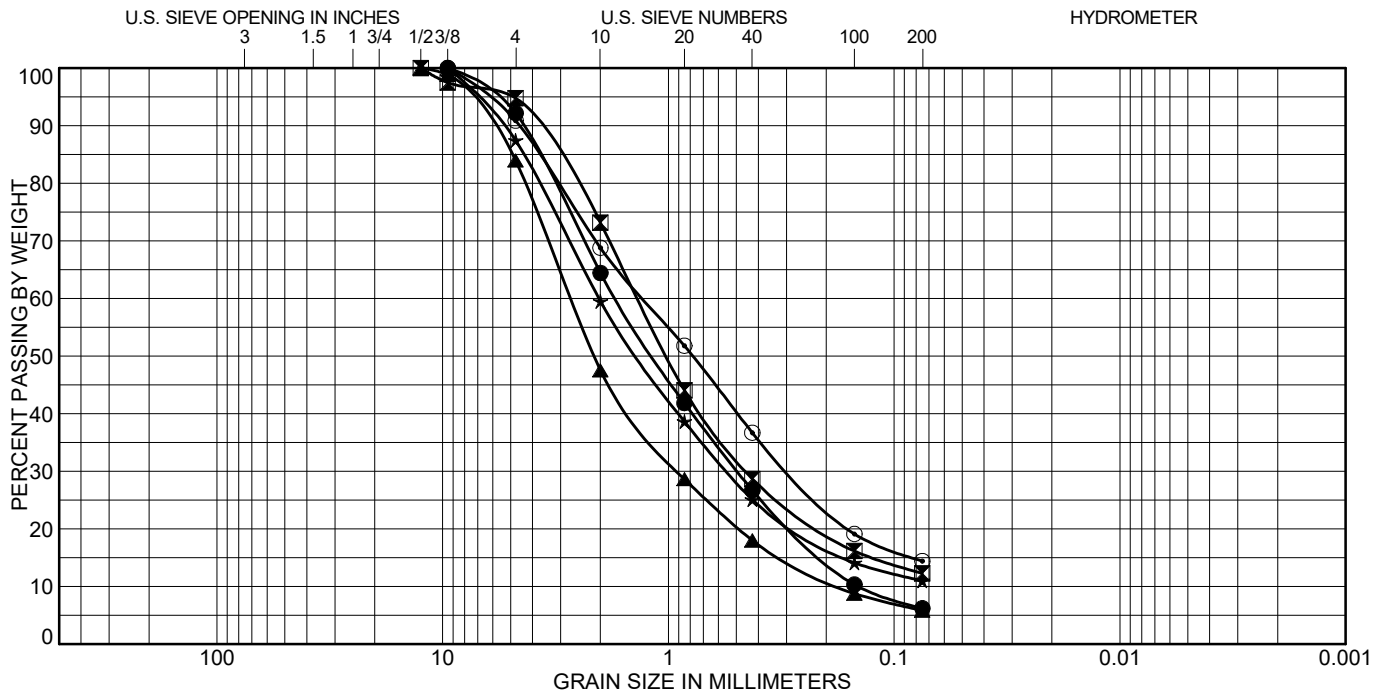
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SOIL CLASSIFICATION DATA

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FIGURE No. 93

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COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Test Boring	Depth (ft)	Classification	LL	PL	PI
● 26	4.0	WELL-GRADED SAND with SILT(SW-SM)	NP	NP	NP
⊠ 27	9.0	SILTY SAND(SM)	NP	NP	NP
▲ 28	4.0	WELL-GRADED SAND with SILT and GRAVEL(SW-SM)	NP	NP	NP
★ 29	9.0	WELL-GRADED SAND with SILT(SW-SM)	NP	NP	NP
⊙ 30	4.0	SILTY SAND(SM)	NP	NP	NP

Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay
● 26	4.0	7.8	86.0	6.2	
⊠ 27	9.0	5.2	82.5	12.3	
▲ 28	4.0	16.0	78.2	5.8	
★ 29	9.0	12.5	76.5	11.0	
⊙ 30	4.0	9.1	76.5	14.4	

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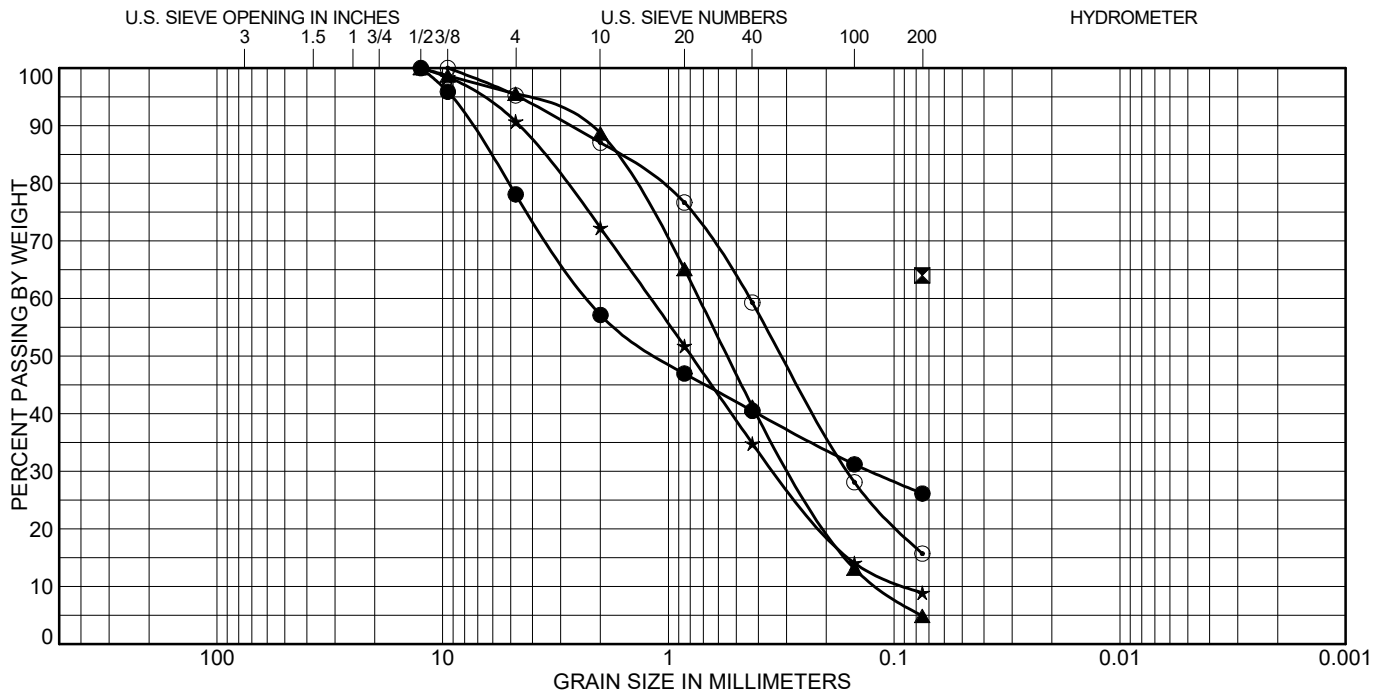
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SOIL CLASSIFICATION DATA

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FIGURE No. 94

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COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Test Boring	Depth (ft)	Classification	LL	PL	PI
● 32	9.0	CLAYEY SAND with GRAVEL(SC)	35	16	19
⊠ 33	4.0	SANDY LEAN CLAY(CL)	37	17	20
▲ 34	2.0	POORLY GRADED SAND(SP)	NP	NP	NP
★ 35	4.0	WELL-GRADED SAND with SILT(SW-SM)	NP	NP	NP
⊙ 37	2.0	SILTY SAND(SM)	NP	NP	NP

Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay
● 32	9.0	21.9	51.9	26.1	
⊠ 33	4.0			64.0	
▲ 34	2.0	4.4	90.7	4.9	
★ 35	4.0	9.3	81.8	8.9	
⊙ 37	2.0	4.8	79.5	15.7	

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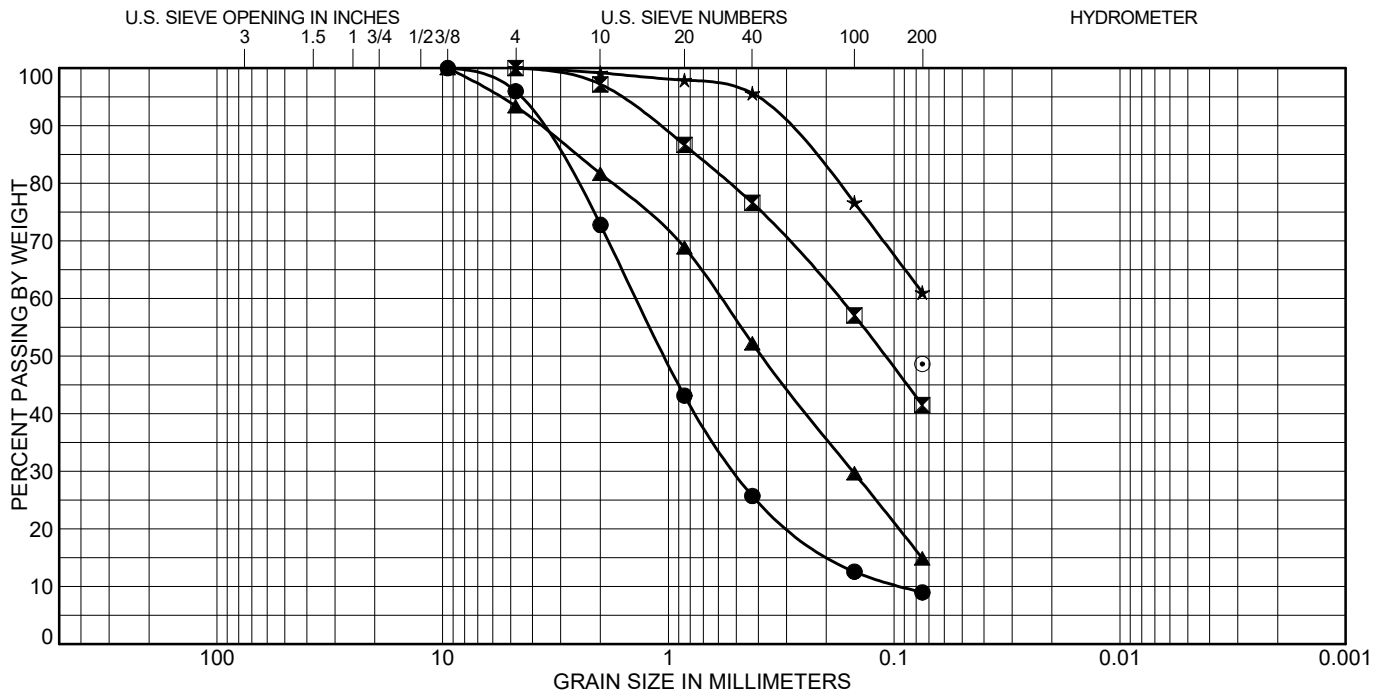
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FIGURE No. 95

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COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Test Boring	Depth (ft)	Classification	LL	PL	PI
● 38	4.0	WELL-GRADED SAND with SILT(SW-SM)	NP	NP	NP
⊠ 39	9.0	SILTY SAND(SM)	38	25	13
▲ 40	4.0	SILTY SAND(SM)	NP	NP	NP
★ 41	9.0	SANDY LEAN CLAY(CL)	37	14	23
⊙ 42	9.0				

Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay
● 38	4.0	4.0	87.0	9.0	
⊠ 39	9.0	0.0	58.5	41.5	
▲ 40	4.0	6.6	78.5	14.9	
★ 41	9.0	0.0	39.0	61.0	
⊙ 42	9.0			48.6	

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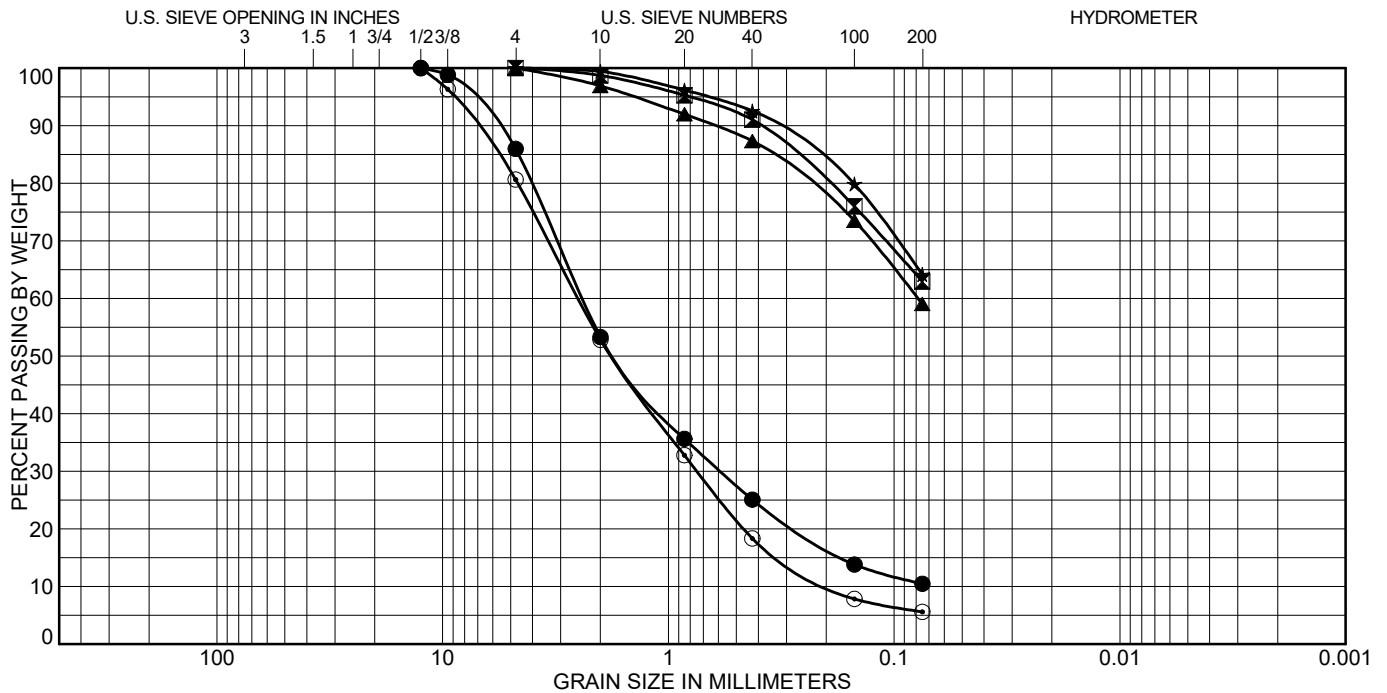
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SOIL CLASSIFICATION DATA

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FIGURE No. 96

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COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Test Boring	Depth (ft)	Classification	LL	PL	PI
● 43	9.0	WELL-GRADED SAND with SILT(SW-SM)	NP	NP	NP
⊠ 44	4.0	SANDY LEAN CLAY(CL)	38	15	23
▲ 45	9.0	SANDY LEAN CLAY(CL)	38	17	21
★ 46	9.0	SANDY LEAN CLAY(CL)	32	17	15
⊙ 47	4.0	WELL-GRADED SAND with SILT and GRAVEL(SW-SM)	NP	NP	NP

Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay
● 43	9.0	14.0	75.5	10.5	
⊠ 44	4.0	0.0	37.0	63.0	
▲ 45	9.0	0.0	41.0	59.0	
★ 46	9.0	0.0	35.8	64.2	
⊙ 47	4.0	19.4	75.1	5.6	

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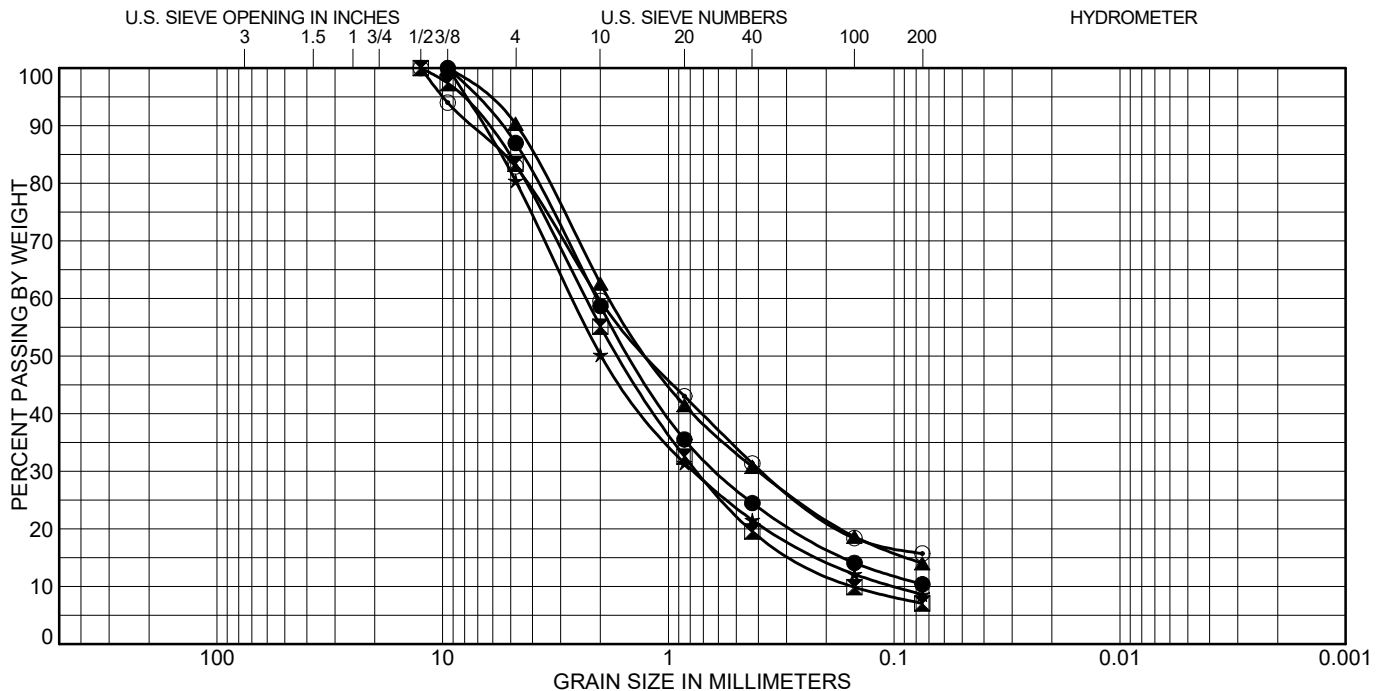
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FIGURE No. 97

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COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Test Boring	Depth (ft)	Classification				LL	PL	PI
● 48	9.0	WELL-GRADED SAND with SILT(SW-SM)				NP	NP	NP
⊠ 50	4.0	WELL-GRADED SAND with SILT and GRAVEL(SW-SM)				NP	NP	NP
▲ 51	9.0	SILTY SAND(SM)				NP	NP	NP
★ 52	9.0	WELL-GRADED SAND with SILT and GRAVEL(SW-SM)				NP	NP	NP
⊙ 53	4.0	CLAYEY SAND with GRAVEL(SC)				29	14	15
Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay			
● 48	9.0	13.0	76.6	10.4				
⊠ 50	4.0	16.6	76.4	7.1				
▲ 51	9.0	9.7	76.3	14.0				
★ 52	9.0	19.6	71.8	8.6				
⊙ 53	4.0	17.1	67.2	15.7				

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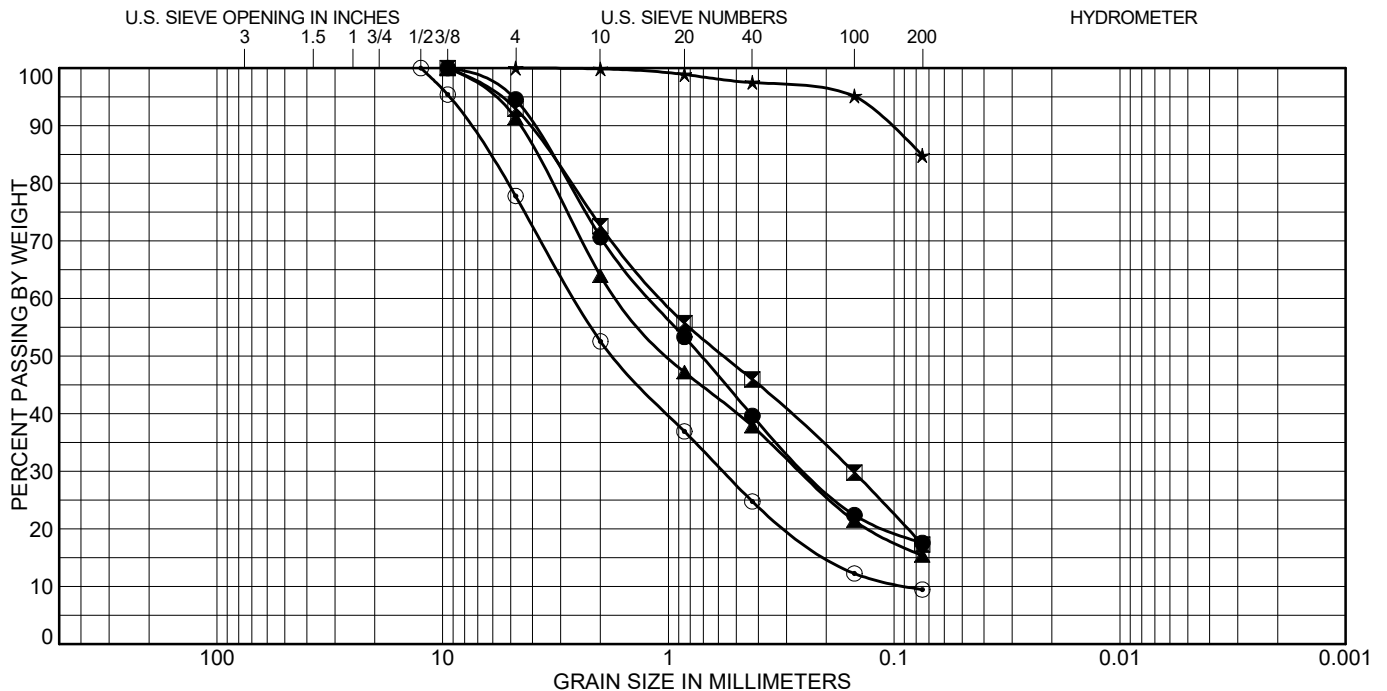
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FIGURE No. 98

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Test Boring	Depth (ft)	Classification	LL	PL	PI
● 54	9.0	SILTY SAND(SM)	NP	NP	NP
⊠ 56	4.0	SILTY SAND(SM)	NP	NP	NP
▲ 57	14.0	SILTY SAND(SM)	NP	NP	NP
★ 58	4.0	LEAN CLAY with SAND(CL)	37	18	19
⊙ 59	9.0	WELL-GRADED SAND with SILT and GRAVEL(SW-SM)	NP	NP	NP
Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay
● 54	9.0	5.4	77.0	17.6	
⊠ 56	4.0	7.0	75.7	17.3	
▲ 57	14.0	8.7	76.0	15.4	
★ 58	4.0	0.0	15.2	84.8	
⊙ 59	9.0	22.2	68.3	9.5	

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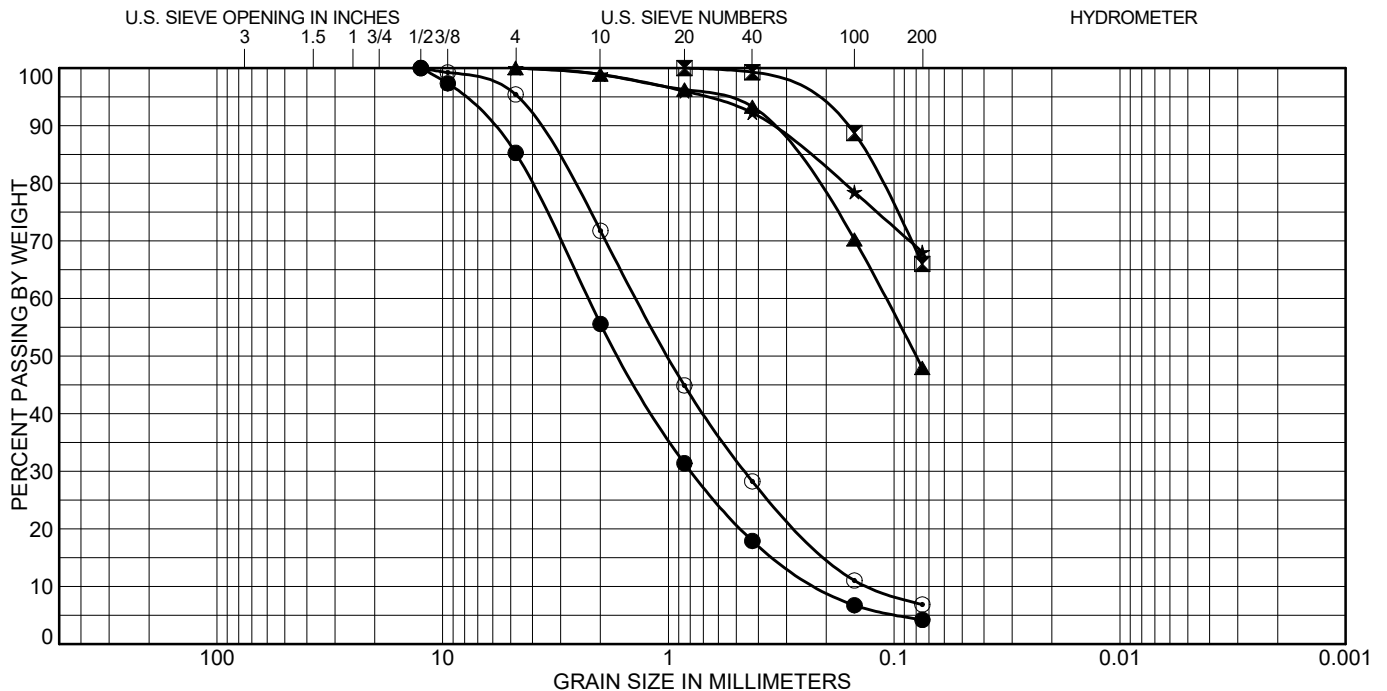
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FIGURE No. 99

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COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Test Boring	Depth (ft)	Classification	LL	PL	PI
● 60	4.0	WELL-GRADED SAND(SW)	NP	NP	NP
⊠ 61	9.0	SANDY LEAN CLAY(CL)	37	16	21
▲ 62	9.0	CLAYEY SAND(SC)	32	20	12
★ 63	14.0	SANDY LEAN CLAY(CL)	33	14	19
⊙ 64	4.0	WELL-GRADED SAND with SILT(SW-SM)	NP	NP	NP

Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay
● 60	4.0	14.7	81.1	4.2	
⊠ 61	9.0	0.0	34.0	66.0	
▲ 62	9.0	0.0	52.0	48.0	
★ 63	14.0	0.0	31.9	68.1	
⊙ 64	4.0	4.6	88.5	6.9	

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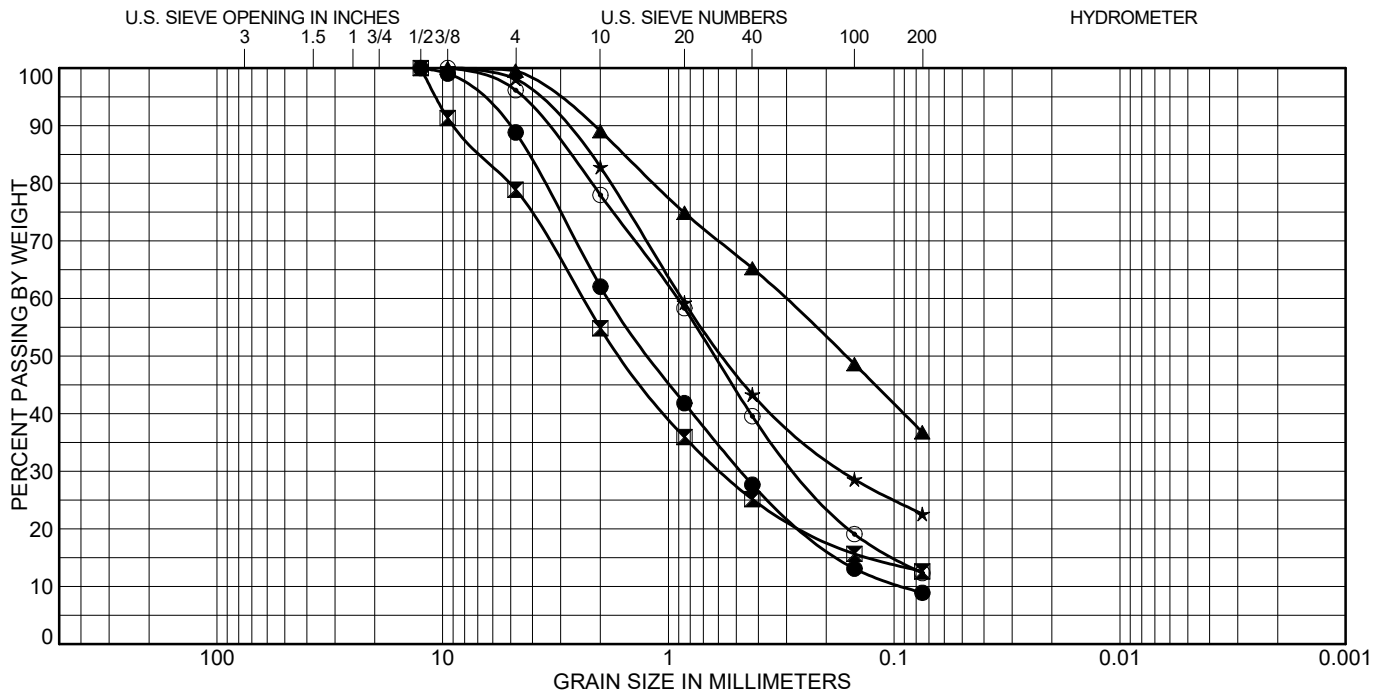
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FIGURE No. 100

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COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Test Boring	Depth (ft)	Classification	LL	PL	PI
● 65	14.0	WELL-GRADED SAND with SILT(SW-SM)	NP	NP	NP
⊠ 66	4.0	SILTY SAND with GRAVEL(SM)	NP	NP	NP
▲ 67	4.0	CLAYEY SAND(SC)	38	18	20
★ 68	9.0	SILTY SAND(SM)	NP	NP	NP
⊙ 69	2.0				

Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay
● 65	14.0	11.2	79.9	8.9	
⊠ 66	4.0	21.1	66.3	12.6	
▲ 67	4.0	0.4	62.8	36.8	
★ 68	9.0	1.9	75.5	22.6	
⊙ 69	2.0	3.8	83.8	12.3	

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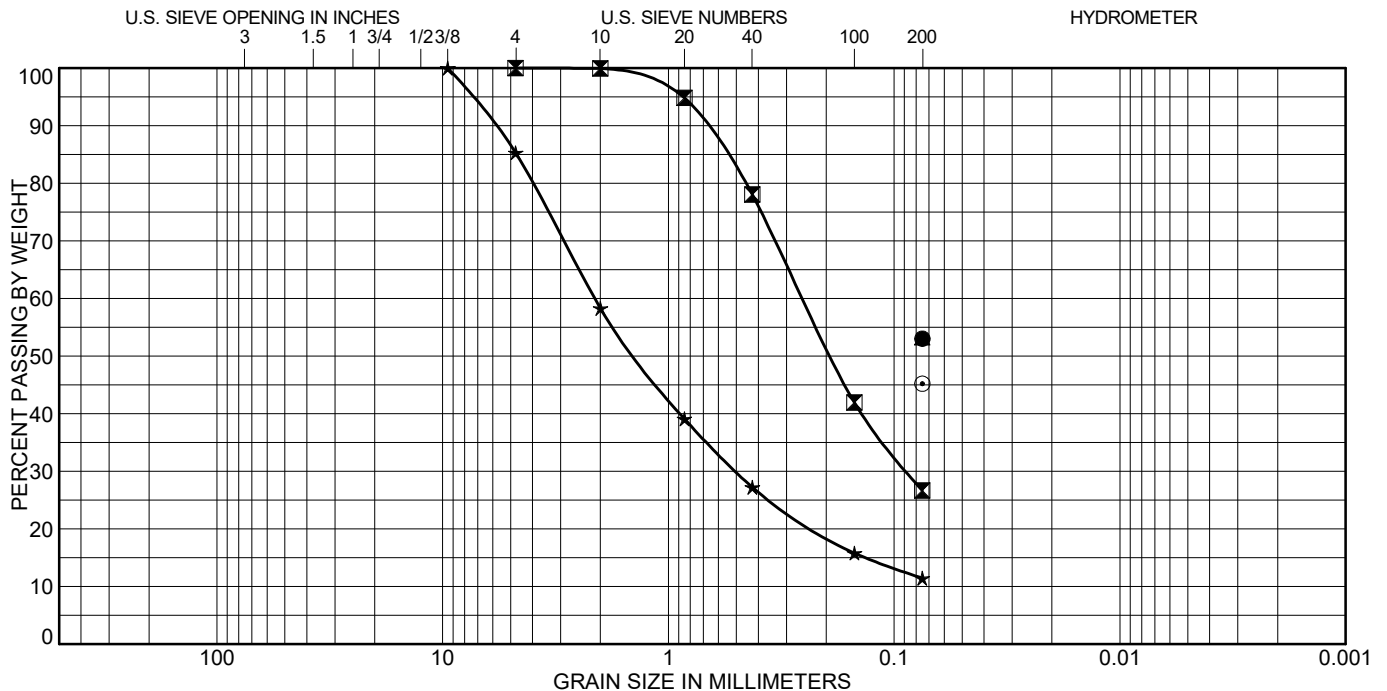
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SOIL CLASSIFICATION DATA

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FIGURE No. 101

DATE 1/21/20



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Test Boring	Depth (ft)	Classification	LL	PL	PI
● 70	9.0	SANDY LEAN CLAY(CL)	42	19	23
☒ 71	4.0				
▲ 73	9.0	SANDY LEAN CLAY(CL)	42	17	25
★ 74	19.0				
⊙ 75	4.0	CLAYEY SAND(SC)	39	17	22

Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay
● 70	9.0			53.0	
☒ 71	4.0	0.0	73.3	26.7	
▲ 73	9.0			53.1	
★ 74	19.0	14.7	73.9	11.4	
⊙ 75	4.0			45.2	

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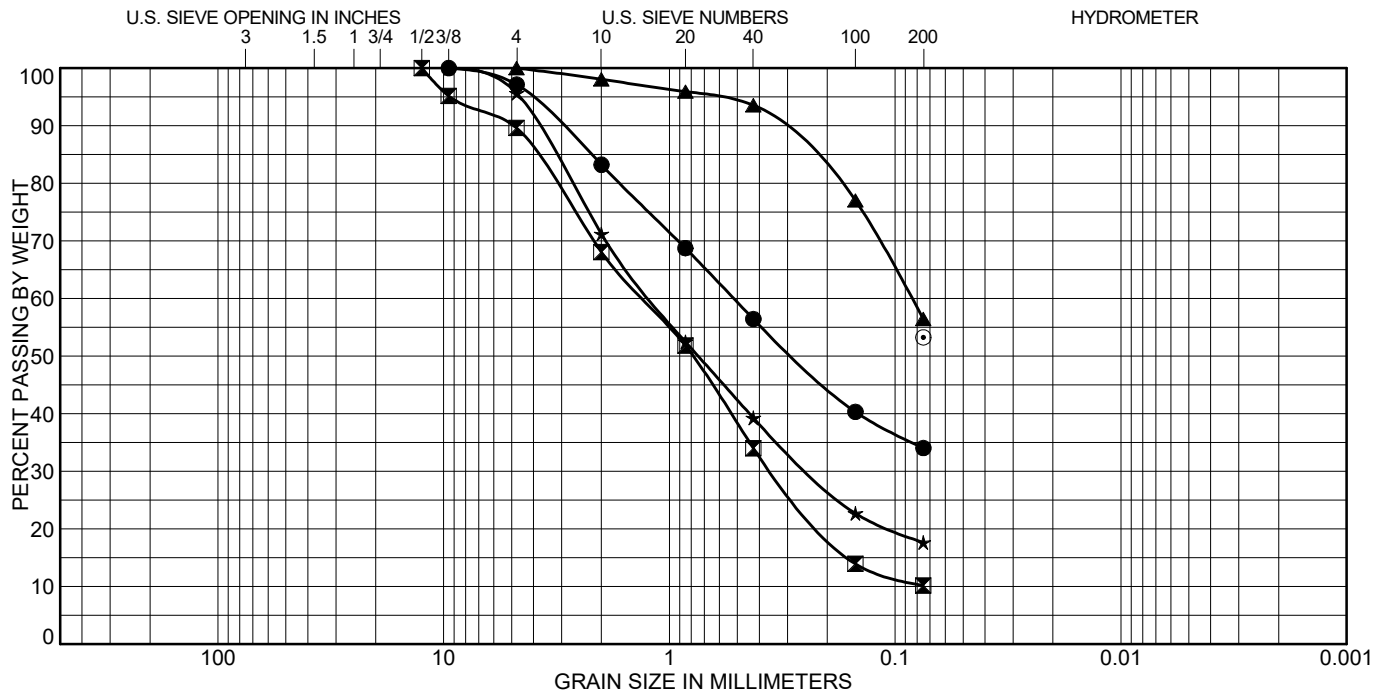
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FIGURE No. 102

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COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Test Boring	Depth (ft)	Classification				LL	PL	PI
● 76	4.0							
⊠ 77	9.0	WELL-GRADED SAND with SILT(SW-SM)				NP	NP	NP
▲ 78	4.0	SANDY LEAN CLAY(CL)				38	13	25
★ 79	9.0	SILTY SAND(SM)				NP	NP	NP
⊙ 80	4.0	SANDY LEAN CLAY(CL)				27	12	15
Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay			
● 76	4.0	2.9	63.1	34.0				
⊠ 77	9.0	10.4	79.4	10.2				
▲ 78	4.0	0.0	43.6	56.4				
★ 79	9.0	4.3	78.0	17.6				
⊙ 80	4.0			53.2				

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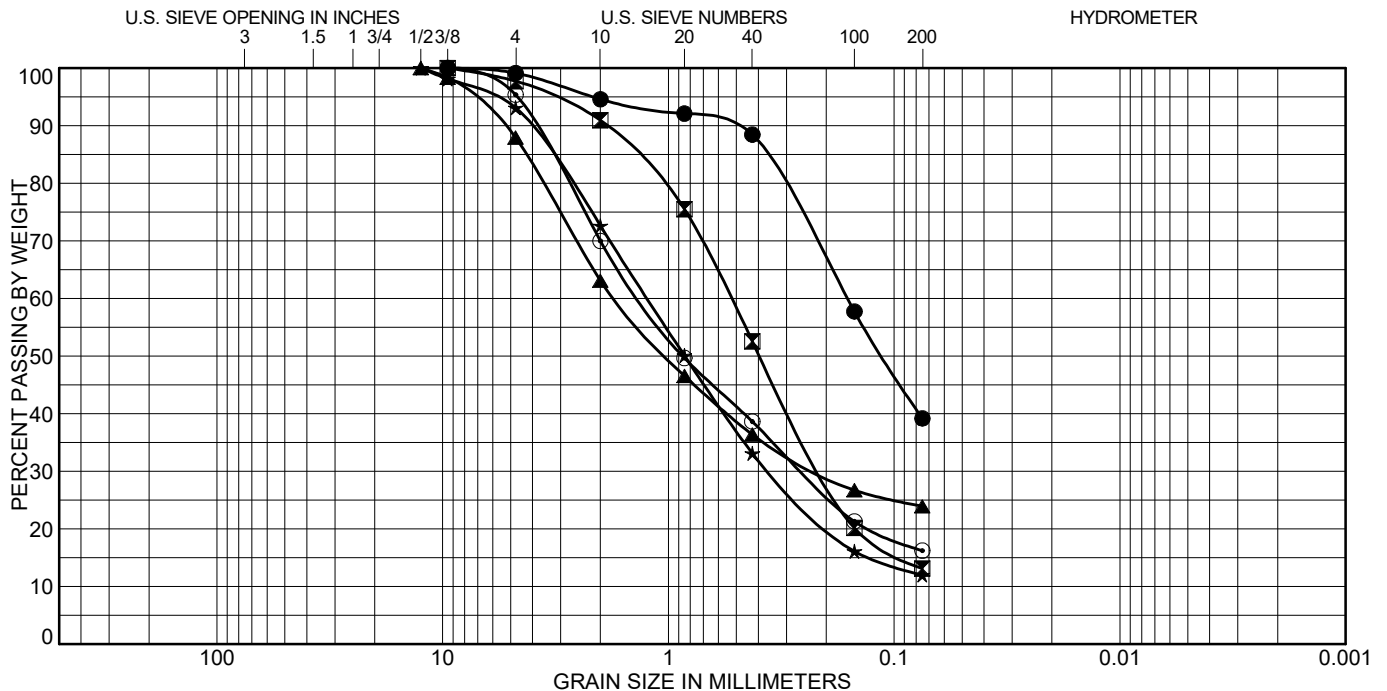
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FIGURE No. 103

DATE 1/21/20



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Test Boring	Depth (ft)	Classification	LL	PL	PI
● 81	4.0				
⊠ 82	9.0	SILTY SAND(SM)	NP	NP	NP
▲ 83	2.0				
★ 84	4.0	WELL-GRADED SAND with SILT(SW-SM)	NP	NP	NP
⊙ 86	9.0	SILTY SAND(SM)	NP	NP	NP

Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay
● 81	4.0	0.9	59.9	39.2	
⊠ 82	9.0	2.3	84.6	13.1	
▲ 83	2.0	12.1	64.0	23.9	
★ 84	4.0	6.9	81.1	12.0	
⊙ 86	9.0	4.6	79.1	16.2	

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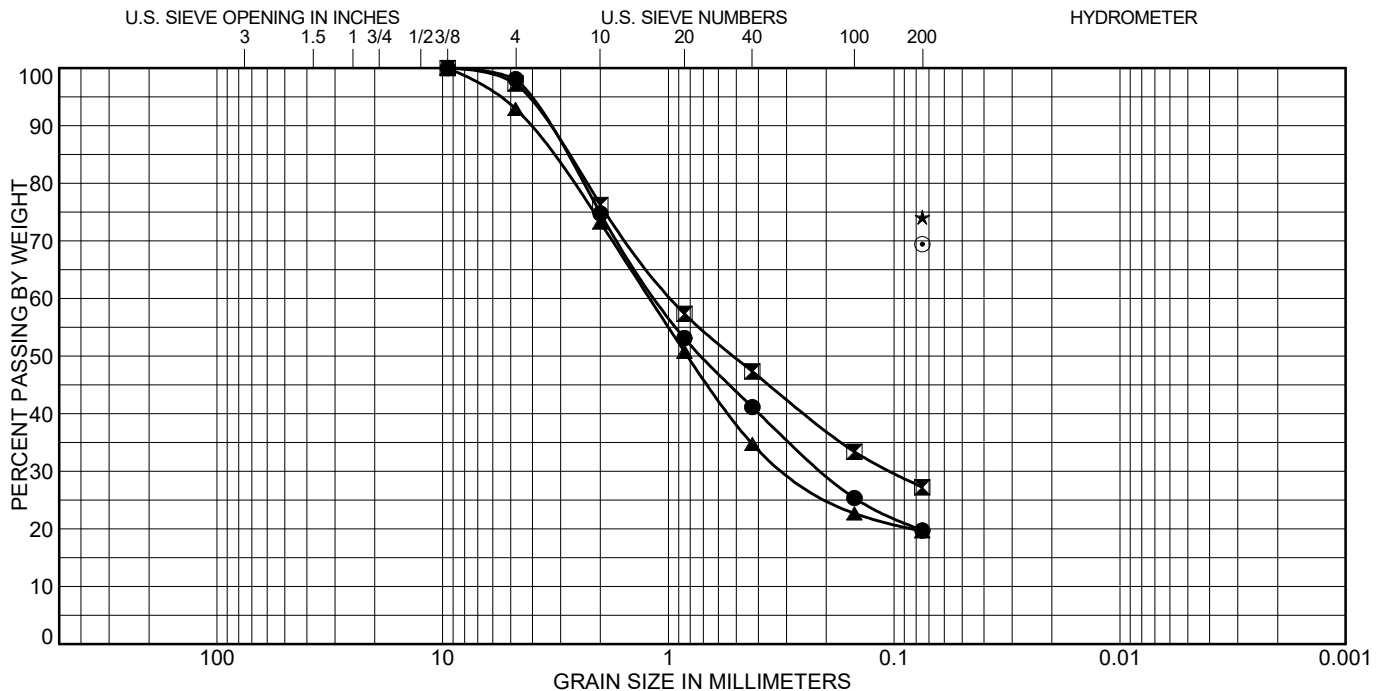
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FIGURE No. 104

DATE 1/21/20



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Test Boring	Depth (ft)	Classification	LL	PL	PI
● 87	4.0	SILTY SAND(SM)	NP	NP	NP
⊠ 88	4.0	SILTY SAND(SM)	NP	NP	NP
▲ 89	4.0				
★ 90	9.0	LEAN CLAY with SAND(CL)	29	14	15
⊙ 91	9.0	SANDY LEAN CLAY(CL)	35	14	21

Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay
● 87	4.0	1.9	78.4	19.7	
⊠ 88	4.0	2.7	70.1	27.2	
▲ 89	4.0	7.1	73.3	19.6	
★ 90	9.0			74.1	
⊙ 91	9.0			69.4	

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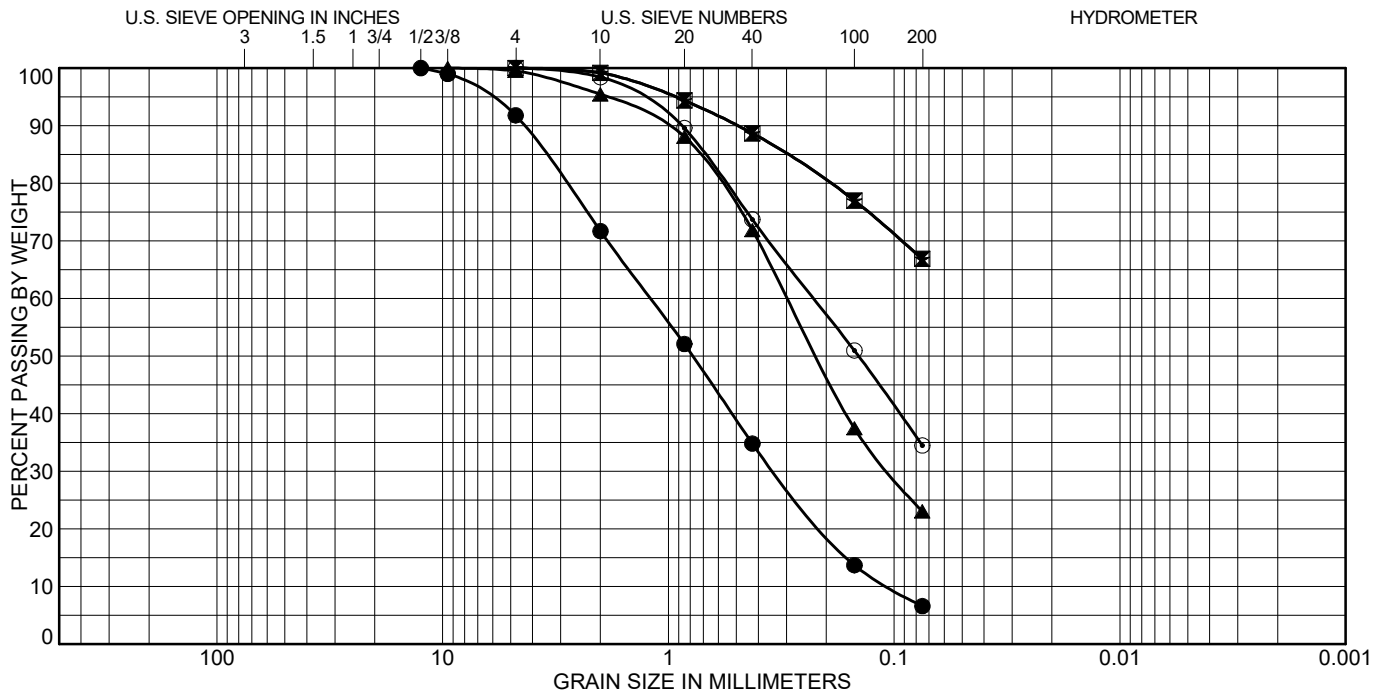
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SOIL CLASSIFICATION DATA

JOB No. 173093

FIGURE No. 105

DATE 1/21/20



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Test Boring	Depth (ft)	Classification				LL	PL	PI
● 92	4.0	POORLY GRADED SAND with SILT(SP-SM)				NP	NP	NP
⊠ 93	9.0	SANDY LEAN CLAY(CL)				38	18	20
▲ 94	2.0	SILTY SAND(SM)				NP	NP	NP
★ 94	9.0	SANDY LEAN CLAY(CL)				38	18	20
⊙ 96	2.0	CLAYEY SAND(SC)				33	13	20
Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay			
● 92	4.0	8.2	85.2	6.6				
⊠ 93	9.0	0.0	33.1	66.9				
▲ 94	2.0	0.5	76.5	23.0				
★ 94	9.0	0.0	33.1	66.9				
⊙ 96	2.0	0.0	65.5	34.5				

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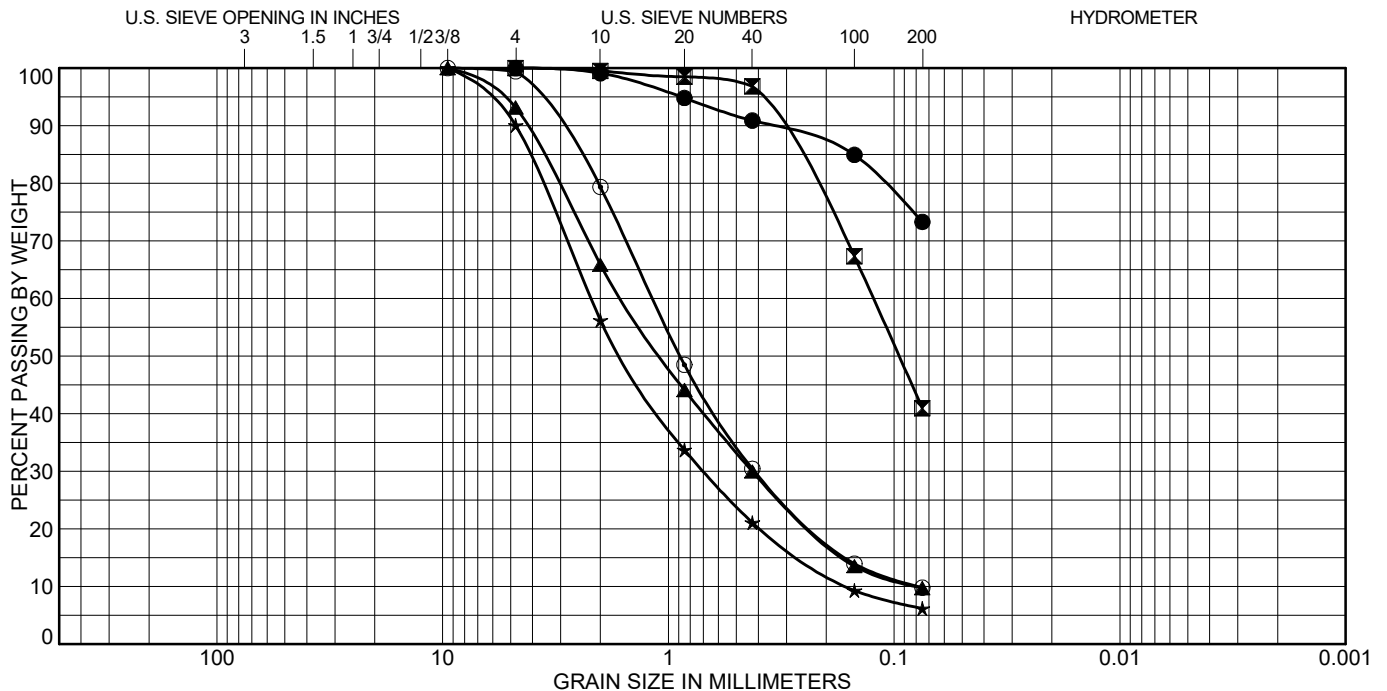
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FIGURE No. 106

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Test Boring	Depth (ft)	Classification	LL	PL	PI
● 97	14.0	LEAN CLAY with SAND(CL)	29	13	16
⊠ 98	4.0	CLAYEY SAND(SC)	33	12	21
▲ 99	9.0	WELL-GRADED SAND with SILT(SW-SM)	NP	NP	NP
★ 100	4.0				
⊙ 102	4.0	WELL-GRADED SAND with SILT(SW-SM)	NP	NP	NP

Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay
● 97	14.0	0.0	26.7	73.3	
⊠ 98	4.0	0.0	59.0	41.0	
▲ 99	9.0	6.8	83.4	9.7	
★ 100	4.0	9.9	83.9	6.2	
⊙ 102	4.0	0.6	89.6	9.8	

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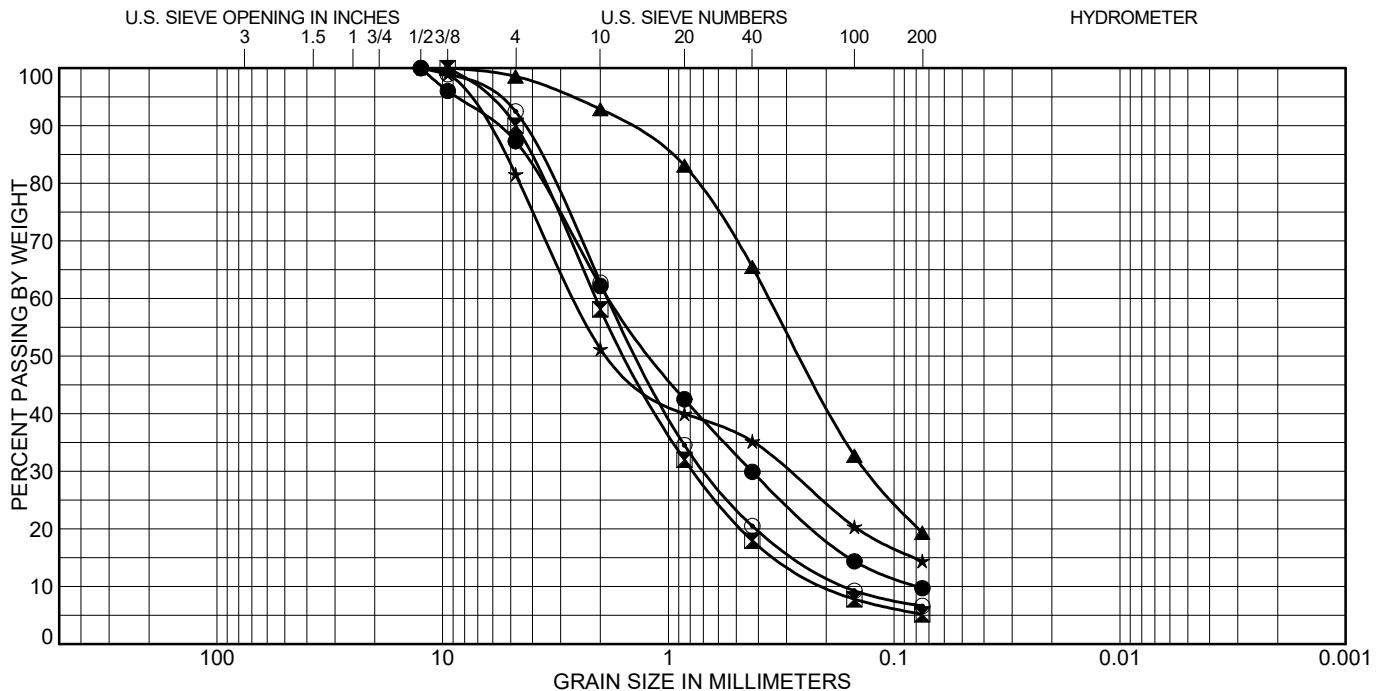
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FIGURE No. 107

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COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Test Boring	Depth (ft)	Classification	LL	PL	PI
● 103	9.0	WELL-GRADED SAND with SILT(SW-SM)	NP	NP	NP
⊠ 104	4.0	WELL-GRADED SAND with SILT(SW-SM)	NP	NP	NP
▲ 106	4.0	SILTY SAND(SM)	NP	NP	NP
★ 107	9.0	SILTY SAND with GRAVEL(SM)	NP	NP	NP
⊙ 108	4.0	WELL-GRADED SAND with SILT(SW-SM)	NP	NP	NP

Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay
● 103	9.0	12.7	77.6	9.7	
⊠ 104	4.0	10.0	84.8	5.2	
▲ 106	4.0	1.4	79.2	19.3	
★ 107	9.0	18.4	67.2	14.4	
⊙ 108	4.0	7.5	85.9	6.6	

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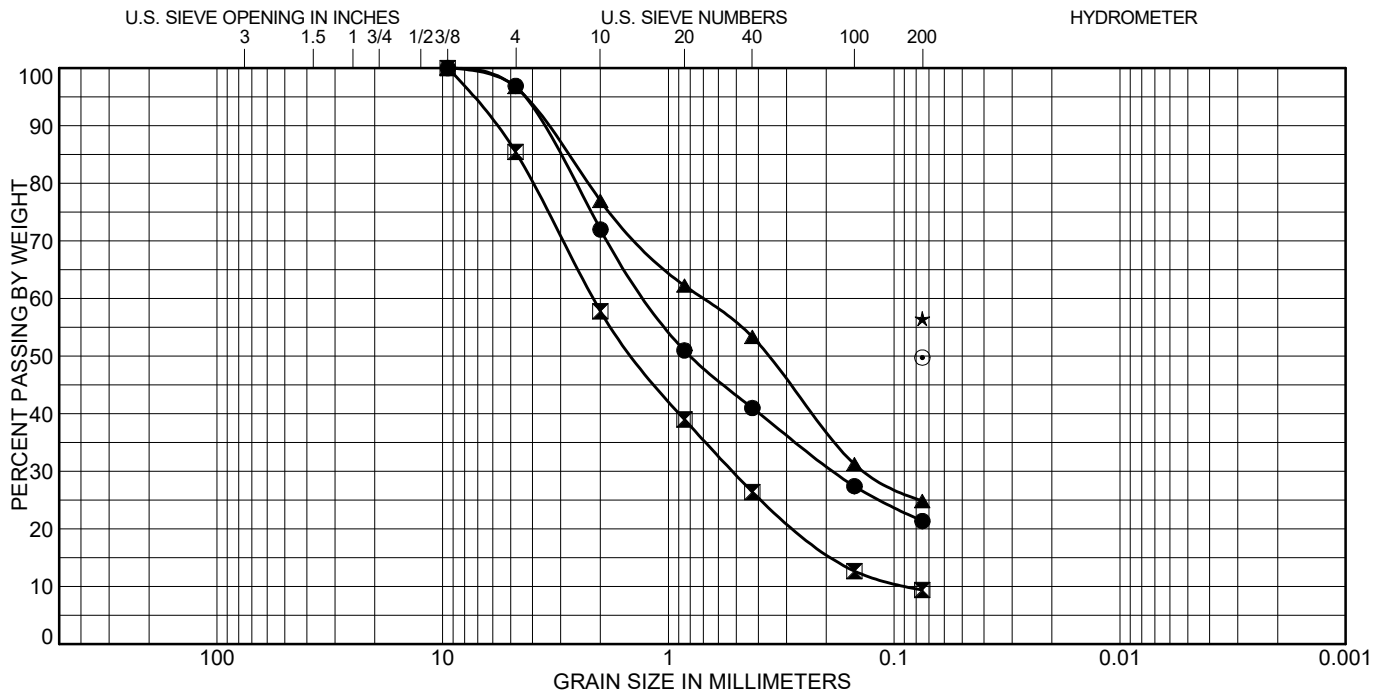
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FIGURE No. 108

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COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Test Boring	Depth (ft)	Classification				LL	PL	PI
● 109	9.0	SILTY SAND(SM)				NP	NP	NP
⊠ 110	4.0	WELL-GRADED SAND with SILT(SW-SM)				NP	NP	NP
▲ 111	9.0	SILTY SAND(SM)				NP	NP	NP
★ 113	9.0							
⊙ 114	9.0	CLAYEY SAND(SC)				29	14	15
Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay			
● 109	9.0	3.1	75.6	21.4				
⊠ 110	4.0	14.6	76.1	9.4				
▲ 111	9.0	3.3	71.9	24.8				
★ 113	9.0			56.5				
⊙ 114	9.0			49.7				

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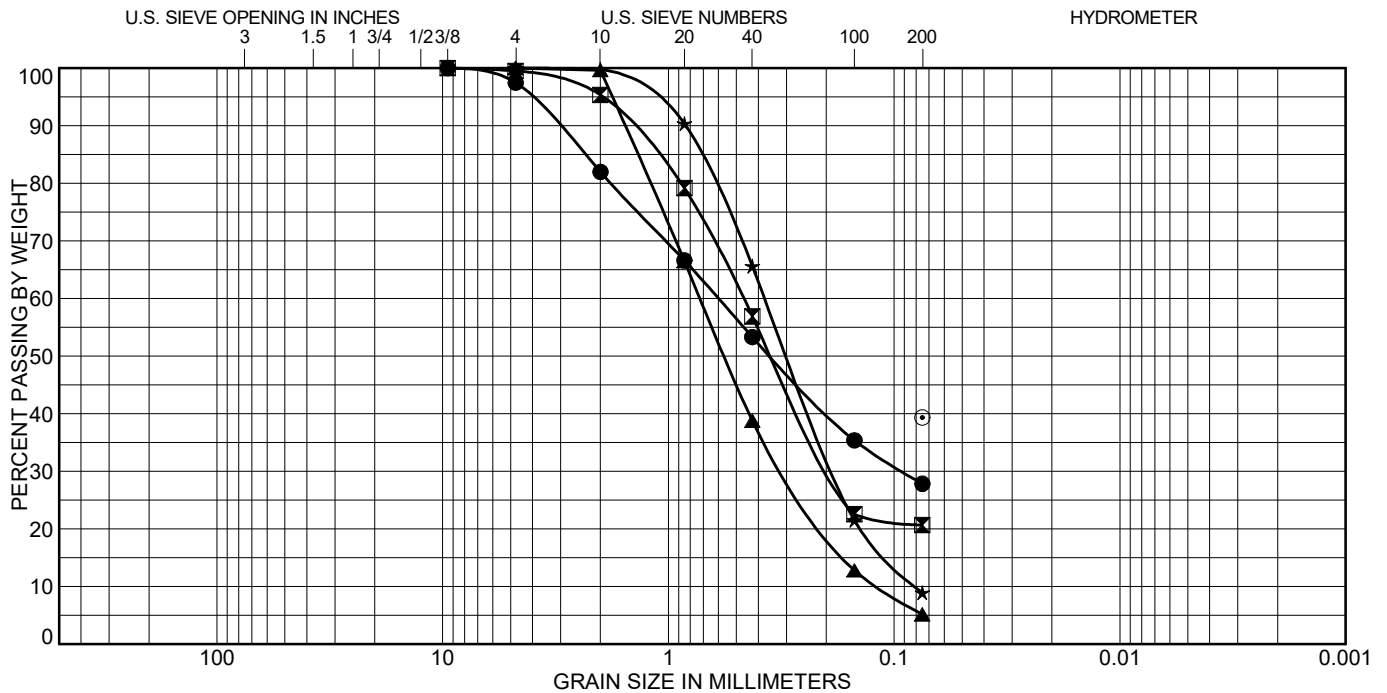
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FIGURE No. 109

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COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Test Boring	Depth (ft)	Classification				LL	PL	PI
● 115	14.0							
⊠ 116	4.0							
▲ 117	4.0							
★ 118	4.0							
⊙ 119	14.0	CLAYEY SAND(SC)				37	16	21
Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay			
● 115	14.0	2.5	69.6	27.8				
⊠ 116	4.0	0.5	78.8	20.7				
▲ 117	4.0	0.0	94.8	5.2				
★ 118	4.0	0.0	91.1	8.9				
⊙ 119	14.0			39.3				

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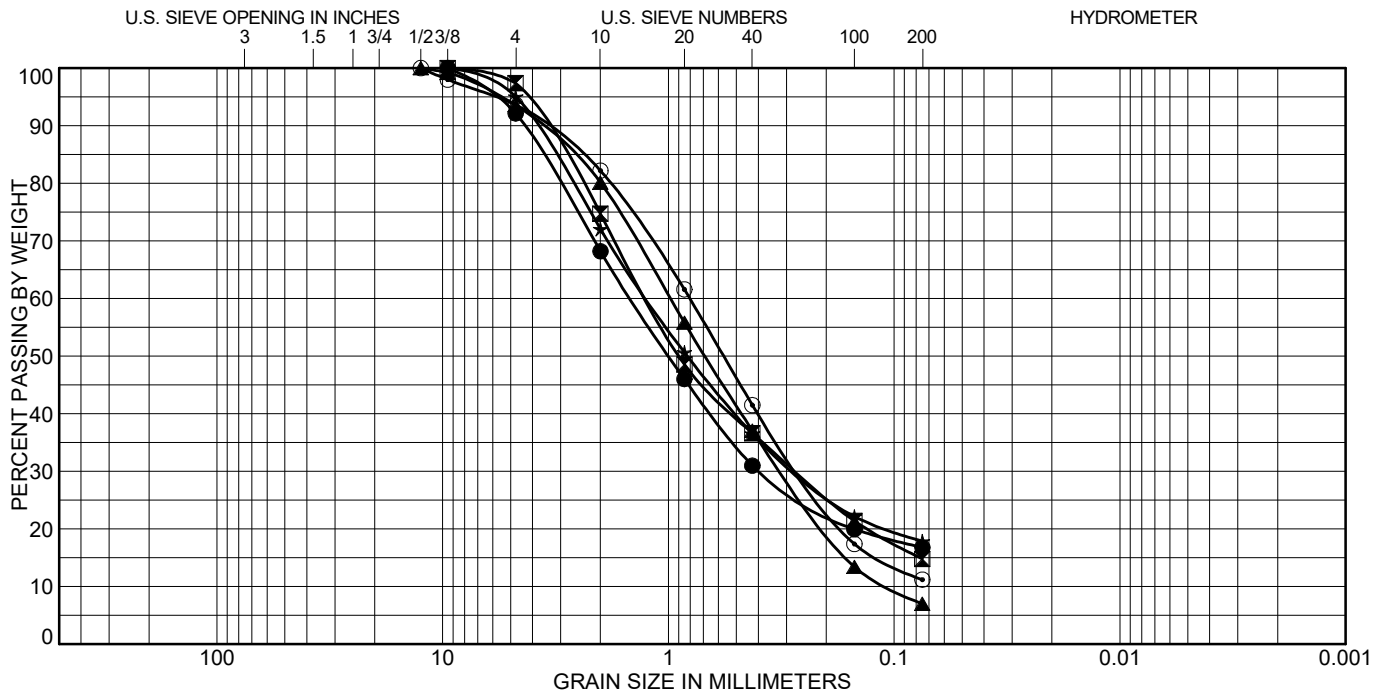
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FIGURE No. 110

DATE 1/21/20



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Test Boring	Depth (ft)	Classification	LL	PL	PI
● 120	9.0				
☒ 121	14.0	SILTY SAND(SM)	NP	NP	NP
▲ 122	9.0	POORLY GRADED SAND with SILT(SP-SM)	NP	NP	NP
★ 123	14.0	SILTY SAND(SM)	NP	NP	NP
⊙ 124	9.0	WELL-GRADED SAND with SILT(SW-SM)	NP	NP	NP
Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay
● 120	9.0	7.9	75.4	16.8	
☒ 121	14.0	2.6	82.6	14.8	
▲ 122	9.0	6.5	86.5	7.0	
★ 123	14.0	5.0	77.2	17.9	
⊙ 124	9.0	6.4	82.4	11.2	

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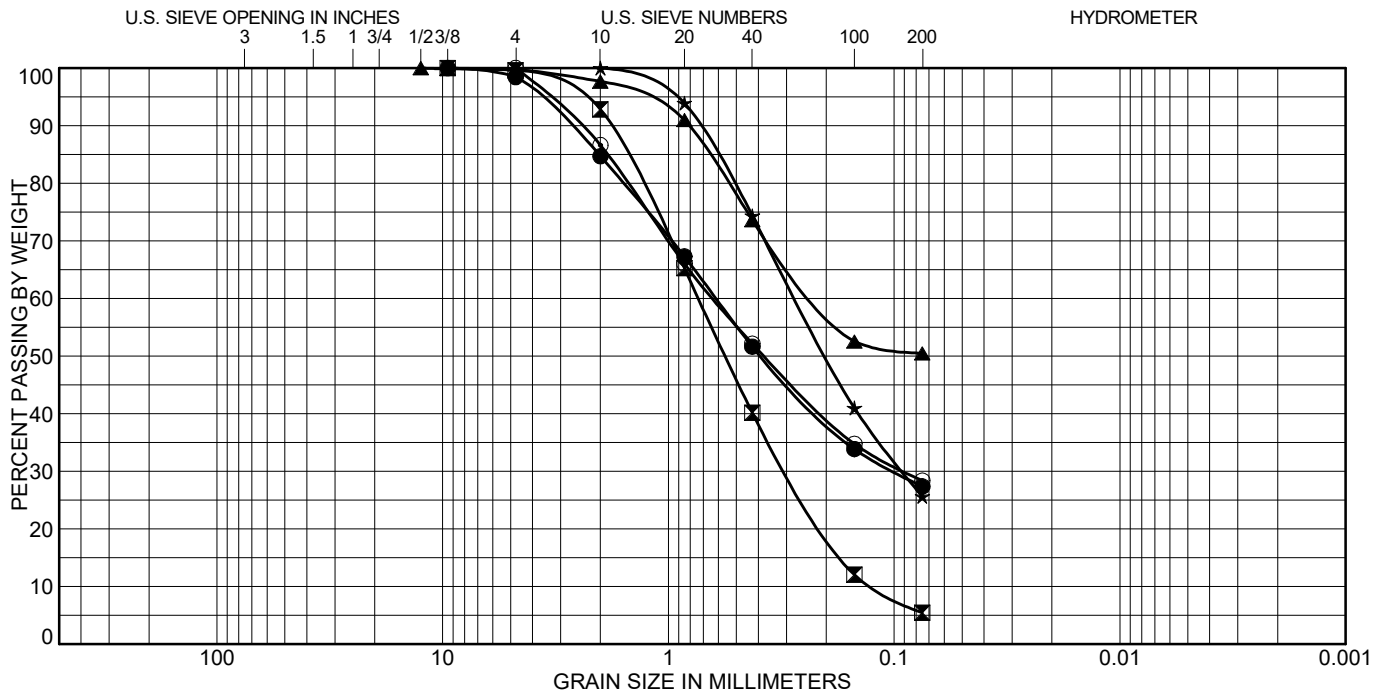
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FIGURE No. 111

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Test Boring	Depth (ft)	Classification	LL	PL	PI
● 125	14.0				
⊠ 127	4.0				
▲ 128	9.0				
★ 129	14.0	CLAYEY SAND(SC)	30	16	14
⊙ 130	9.0	CLAYEY SAND(SC)	35	15	20
Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay
● 125	14.0	1.6	71.1	27.4	
⊠ 127	4.0	0.4	94.2	5.4	
▲ 128	9.0	0.3	49.2	50.5	
★ 129	14.0	0.0	74.4	25.6	
⊙ 130	9.0	0.0	71.6	28.4	

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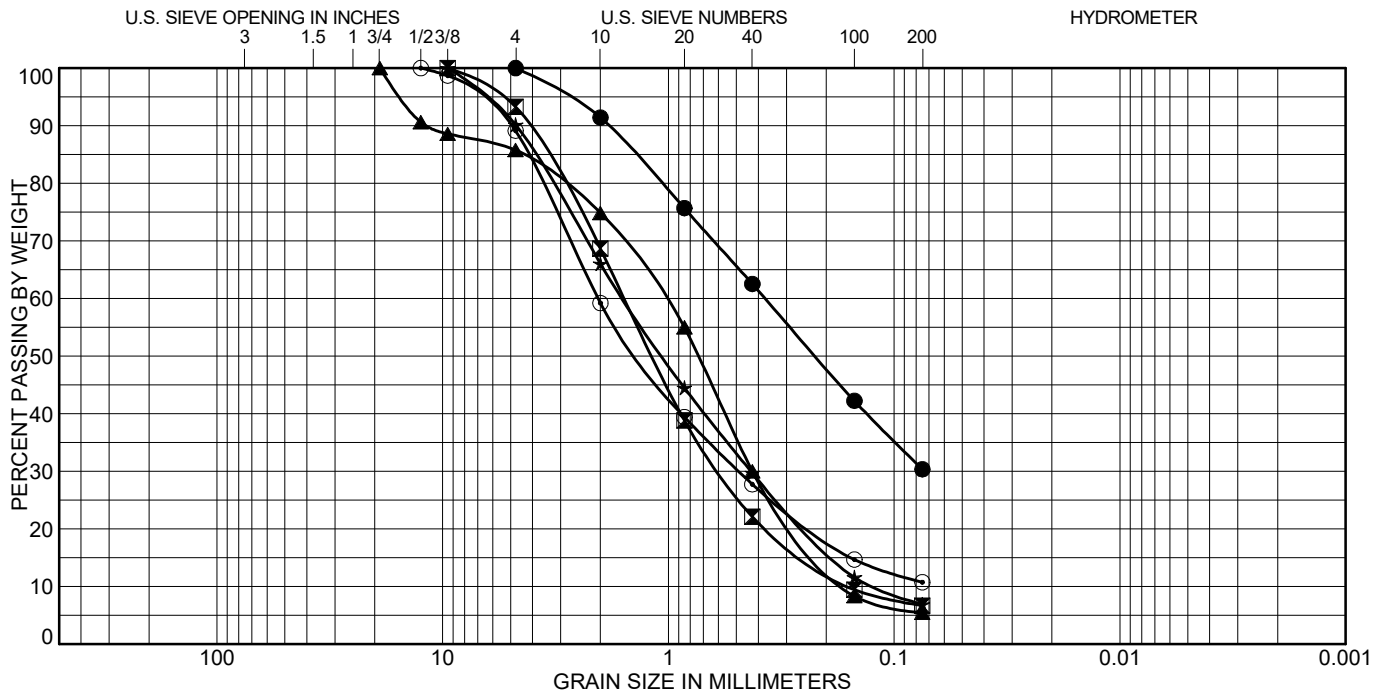
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FIGURE No. 112

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Test Boring	Depth (ft)	Classification	LL	PL	PI
● 131	14.0	CLAYEY SAND(SC)	33	18	15
⊠ 132	4.0				
▲ 133	9.0				
★ 134	2.0				
⊙ 135	9.0				

Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay
● 131	14.0	0.0	69.7	30.3	
⊠ 132	4.0	6.7	86.6	6.7	
▲ 133	9.0	14.2	80.3	5.4	
★ 134	2.0	9.8	83.3	6.9	
⊙ 135	9.0	10.9	78.4	10.7	

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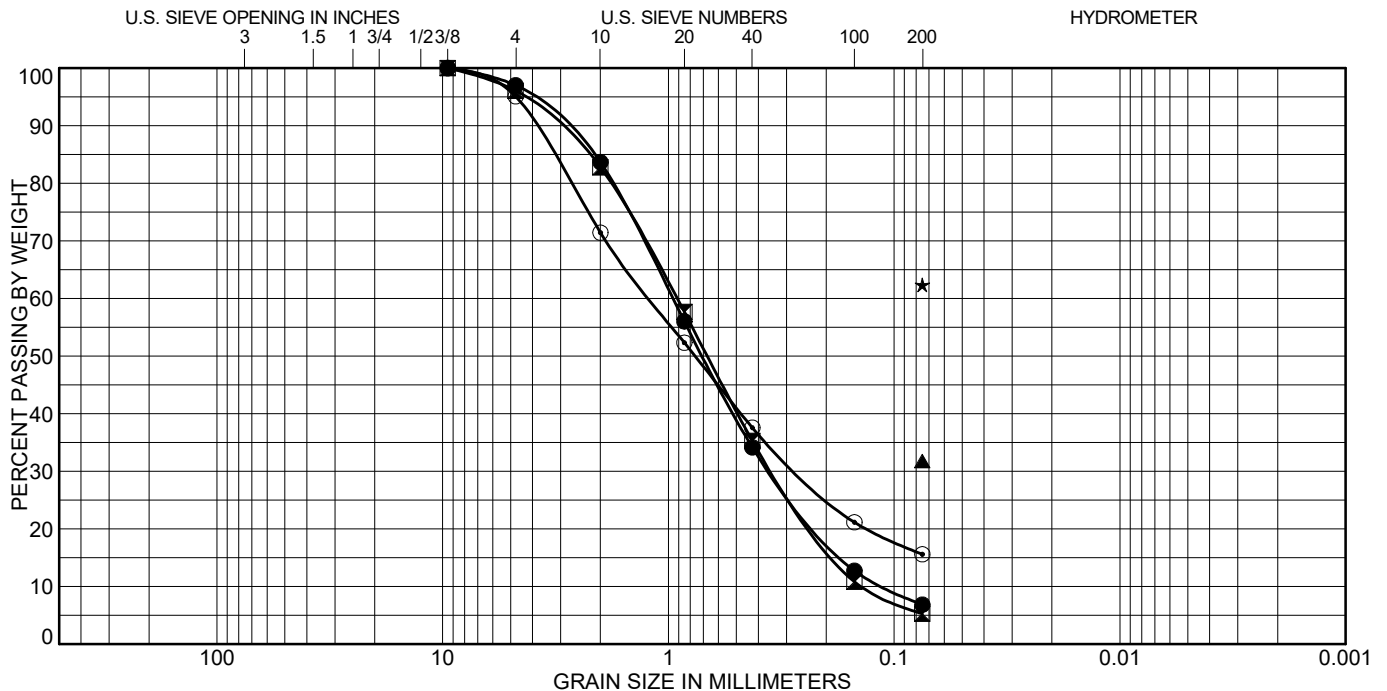
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FIGURE No. 113

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COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Test Boring	Depth (ft)	Classification				LL	PL	PI
● 136	4.0							
☒ 138	4.0							
▲ 139	14.0							
★ 140	9.0	SANDY LEAN CLAY(CL)				31	12	19
⊙ 141	24.0							
Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay			
● 136	4.0	3.0	90.2	6.8				
☒ 138	4.0	3.9	90.8	5.3				
▲ 139	14.0			31.8				
★ 140	9.0			62.4				
⊙ 141	24.0	4.9	79.5	15.6				

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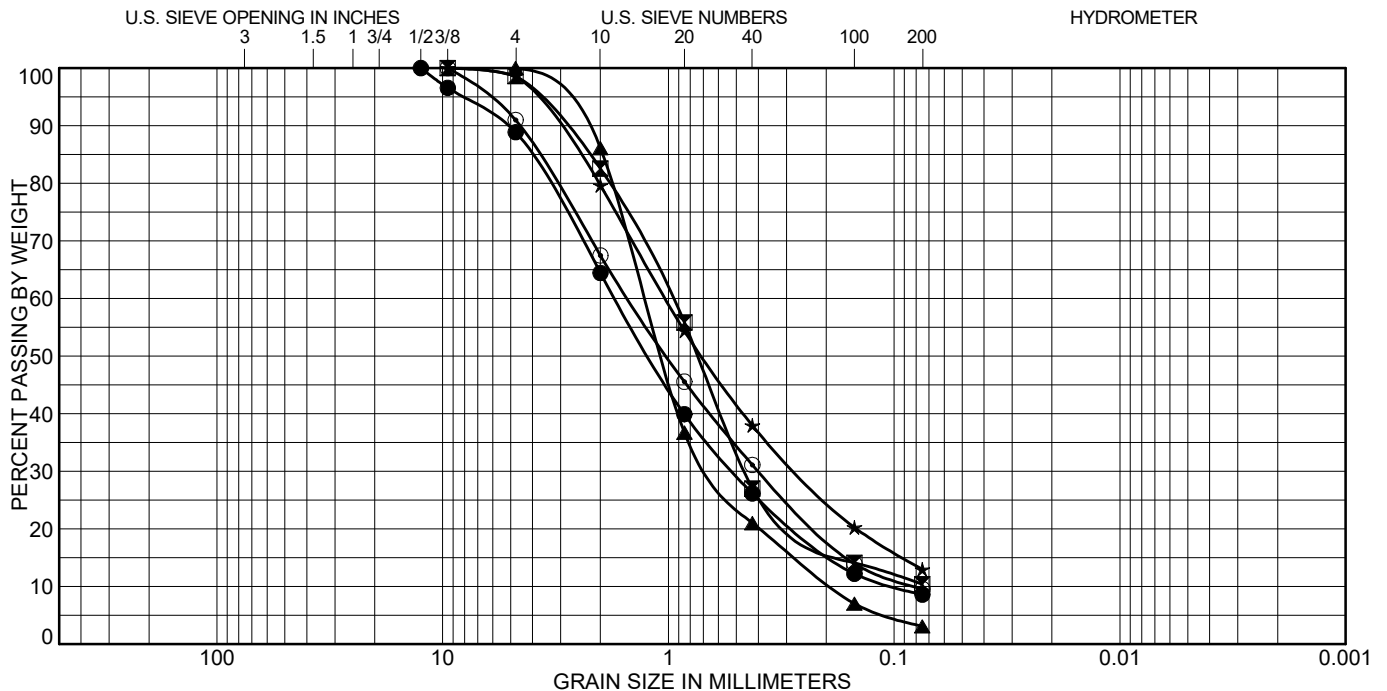
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FIGURE No. 114

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COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Test Boring	Depth (ft)	Classification			LL	PL	PI
● 142	4.0						
☒ 143	14.0						
▲ 144	4.0	WELL-GRADED SAND(SW)					
★ 145	9.0						
⊙ 146	4.0						
Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay		
● 142	4.0	11.1	80.3	8.6			
☒ 143	14.0	1.4	88.2	10.4			
▲ 144	4.0	0.0	96.9	3.1			
★ 145	9.0	1.4	85.6	13.0			
⊙ 146	4.0	9.0	81.4	9.6			

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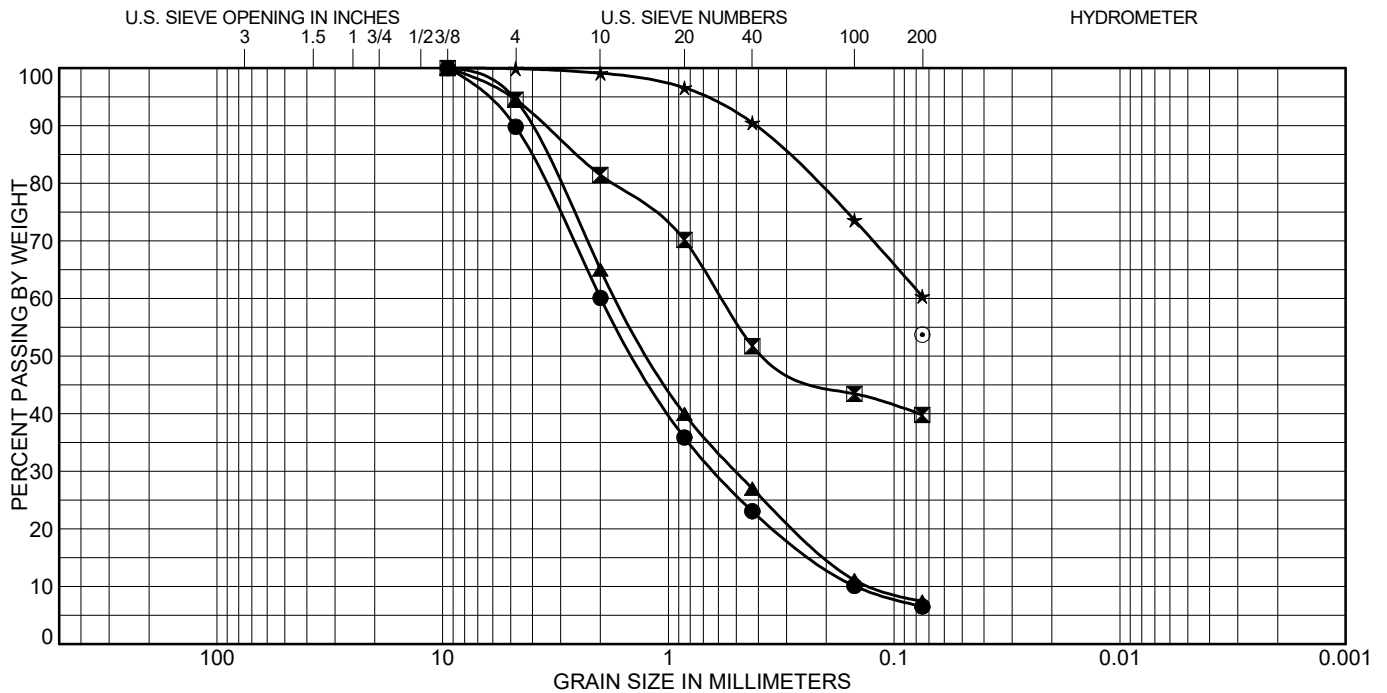
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FIGURE No. 115

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Test Boring	Depth (ft)	Classification				LL	PL	PI
● 147	2.0							
⊠ 148	9.0							
▲ 149	4.0							
★ 150	9.0							
⊙ 151	9.0	SANDY LEAN CLAY (CL)				31	12	19
Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay			
● 147	2.0	10.2	83.3	6.5				
⊠ 148	9.0	5.5	54.7	39.8				
▲ 149	4.0	5.5	87.1	7.4				
★ 150	9.0	0.1	39.5	60.4				
⊙ 151	9.0			53.7				

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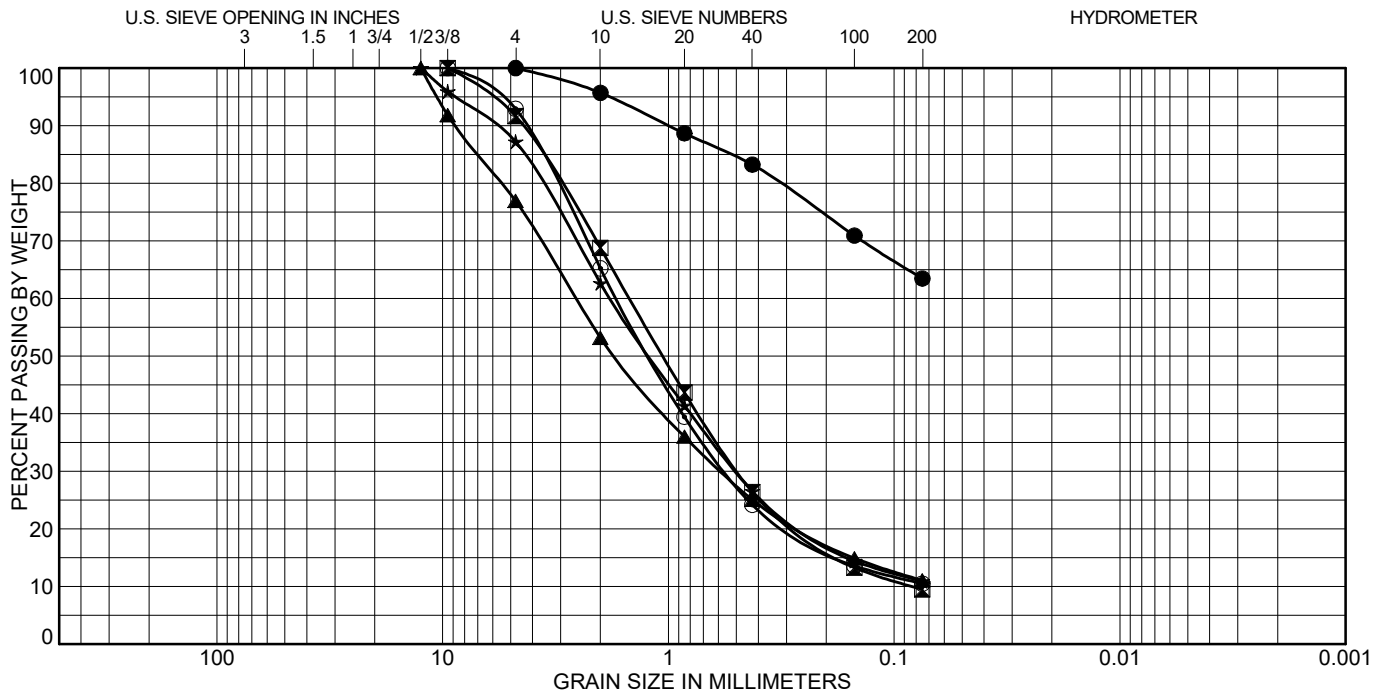
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SOIL CLASSIFICATION DATA

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FIGURE No. 116

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COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Test Boring	Depth (ft)	Classification				LL	PL	PI
● 152	4.0							
☒ 153	9.0							
▲ 154	4.0							
★ 155	9.0							
⊙ 156	9.0							

Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay
● 152	4.0	0.0	36.5	63.5	
☒ 153	9.0	8.3	82.2	9.5	
▲ 154	4.0	23.1	65.9	11.0	
★ 155	9.0	12.8	76.3	10.9	
⊙ 156	9.0	7.1	82.4	10.5	

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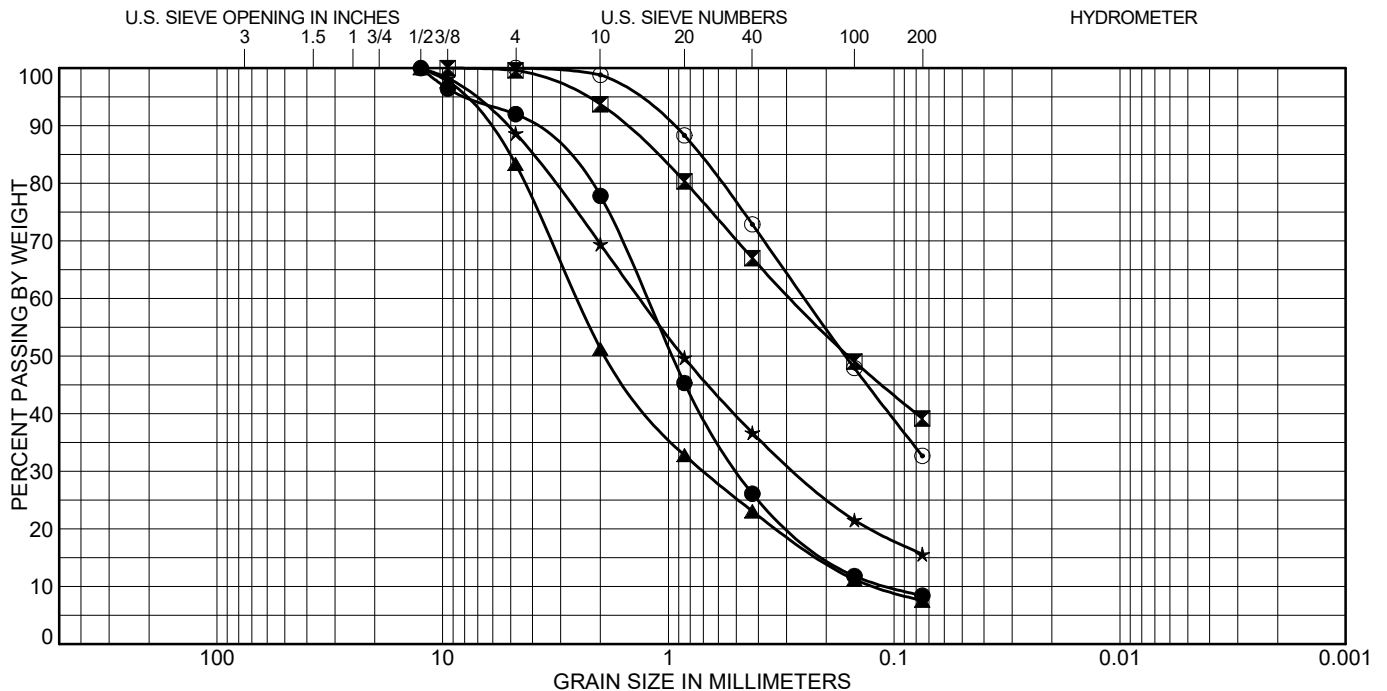
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FIGURE No. 117

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COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Test Boring	Depth (ft)	Classification				LL	PL	PI
● 157	4.0							
⊠ 158	9.0	CLAYEY SAND(SC)				34	16	18
▲ 159	2.0							
★ 160	4.0							
⊙ 161	9.0	CLAYEY SAND(SC)				37	18	19
Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay			
● 157	4.0	8.0	83.6	8.4				
⊠ 158	9.0	0.4	60.5	39.2				
▲ 159	2.0	16.6	75.8	7.5				
★ 160	4.0	11.3	73.1	15.6				
⊙ 161	9.0	0.0	67.3	32.7				

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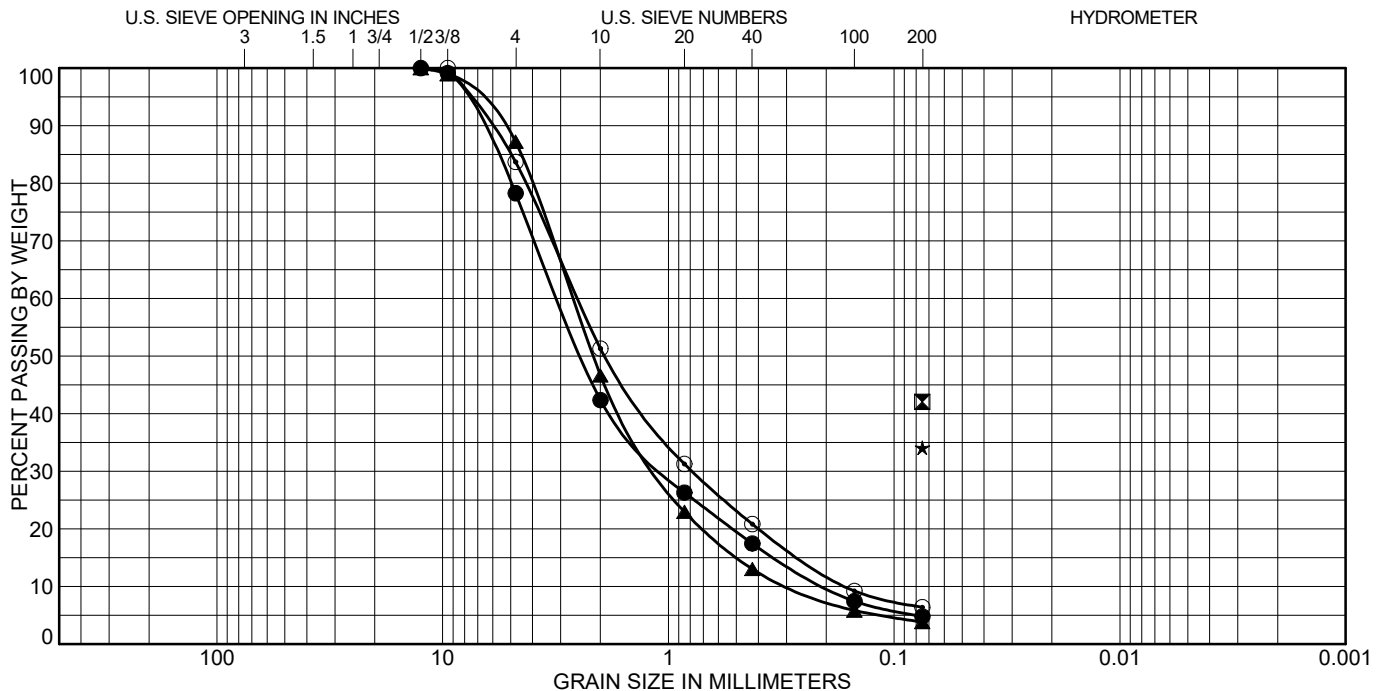
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SOIL CLASSIFICATION DATA

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FIGURE No. 118

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COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Test Boring	Depth (ft)	Classification			LL	PL	PI
● 162	2.0	WELL-GRADED SAND with GRAVEL(SW)					
⊠ 163	14.0	SILTY SAND(SM)			NP	NP	NP
▲ 164	4.0	WELL-GRADED SAND(SW)					
★ 166	9.0	CLAYEY SAND(SC)			36	17	19
⊙ 167	4.0						
Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay		
● 162	2.0	21.7	73.5	4.8			
⊠ 163	14.0			42.1			
▲ 164	4.0	12.8	83.4	3.8			
★ 166	9.0			34.1			
⊙ 167	4.0	16.3	77.3	6.4			

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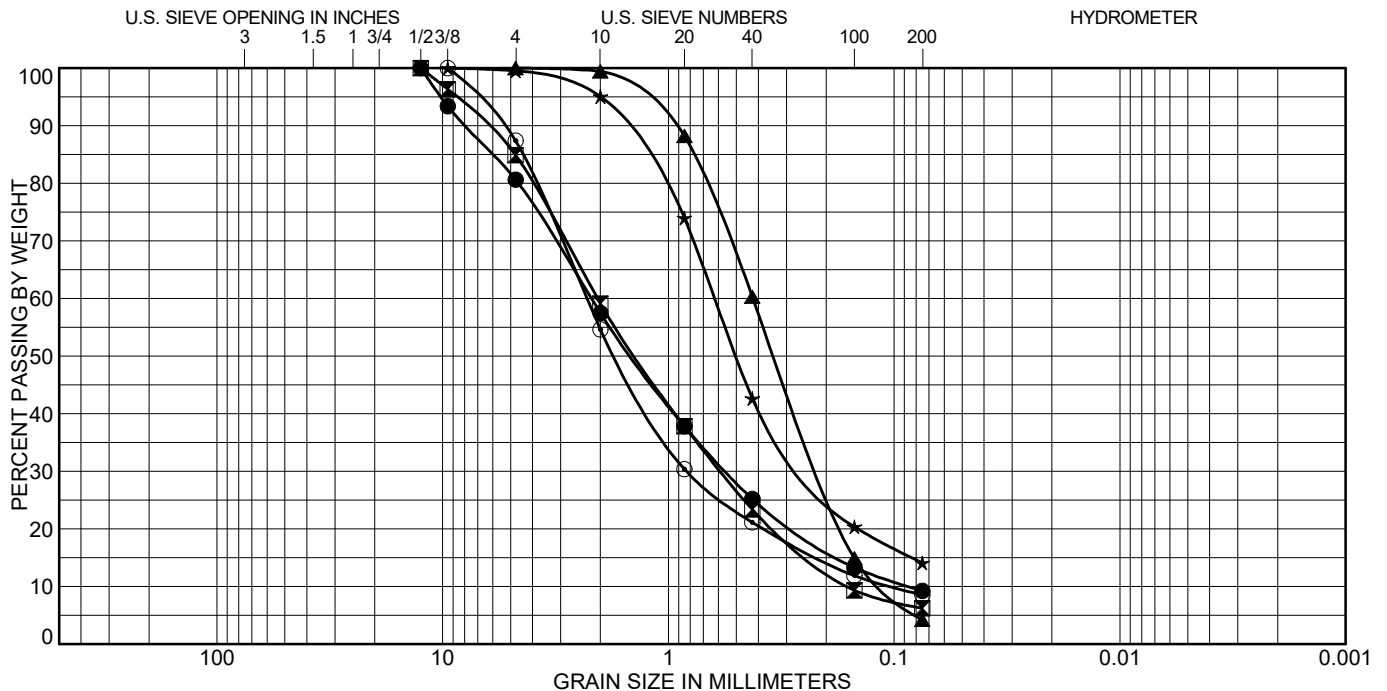
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SOIL CLASSIFICATION DATA

JOB No. 173093

FIGURE No. 119

DATE 1/21/20



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Test Boring	Depth (ft)	Classification			LL	PL	PI
● 168	4.0						
☒ 169	9.0						
▲ 170	2.0	POORLY GRADED SAND(SP)					
★ 171	9.0						
⊙ 172	4.0						
Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay		
● 168	4.0	19.4	71.4	9.2			
☒ 169	9.0	15.1	78.7	6.2			
▲ 170	2.0	0.0	95.8	4.2			
★ 171	9.0	0.5	85.4	14.1			
⊙ 172	4.0	12.6	78.9	8.5			

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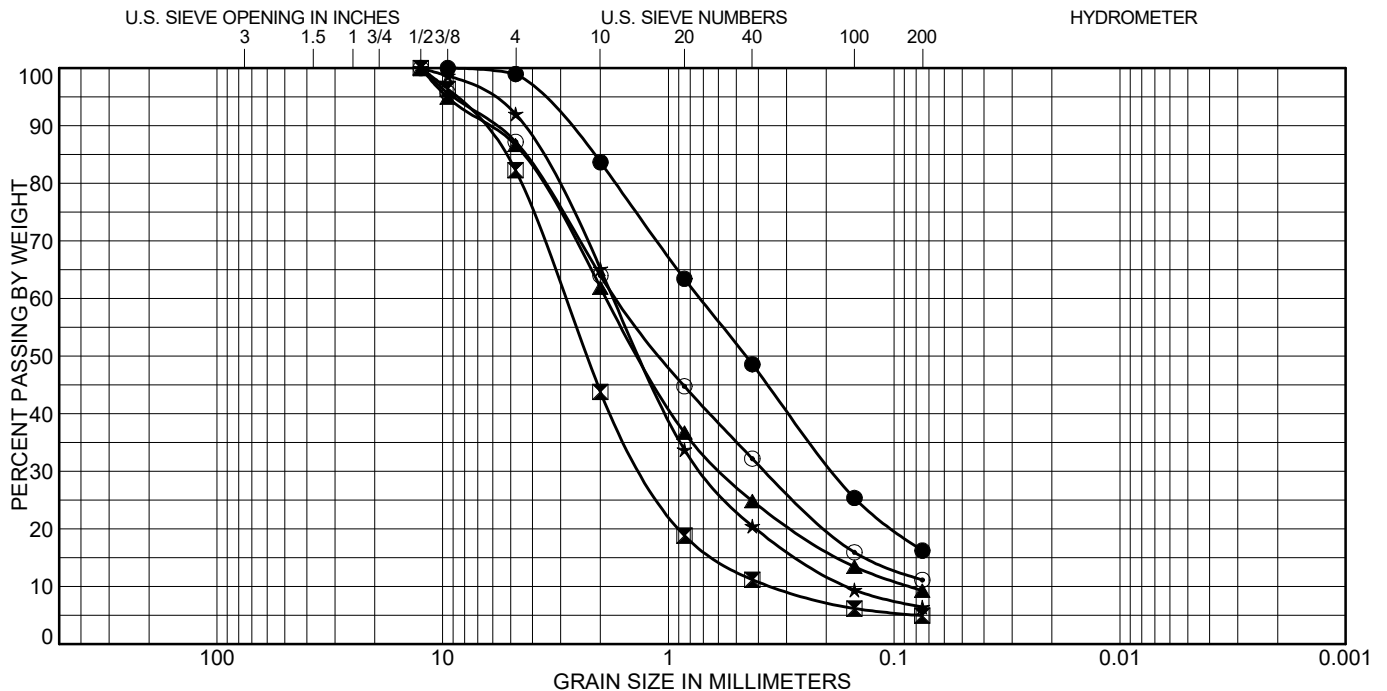
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SOIL CLASSIFICATION DATA

JOB No. 173093

FIGURE No. 120

DATE 1/21/20



Test Boring	Depth (ft)	Classification				LL	PL	PI
● 173	19.0	WELL-GRADED SAND with GRAVEL(SW)						
⊠ 174	9.0							
▲ 175	14.0							
★ 176	4.0							
⊙ 177	9.0							
Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay			
● 173	19.0	1.0	82.7	16.2				
⊠ 174	9.0	17.7	77.3	4.9				
▲ 175	14.0	13.4	77.4	9.3				
★ 176	4.0	8.0	85.6	6.4				
⊙ 177	9.0	12.8	76.1	11.1				

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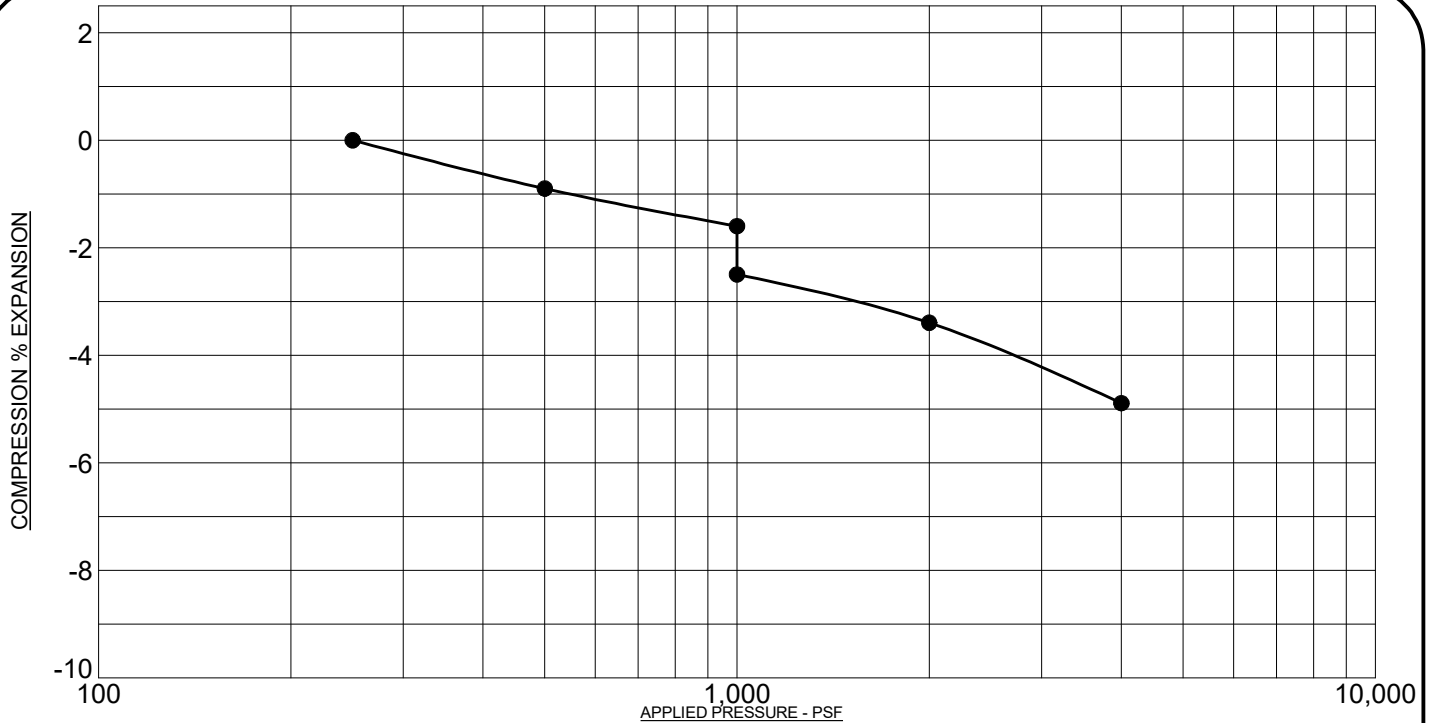
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SOIL CLASSIFICATION DATA

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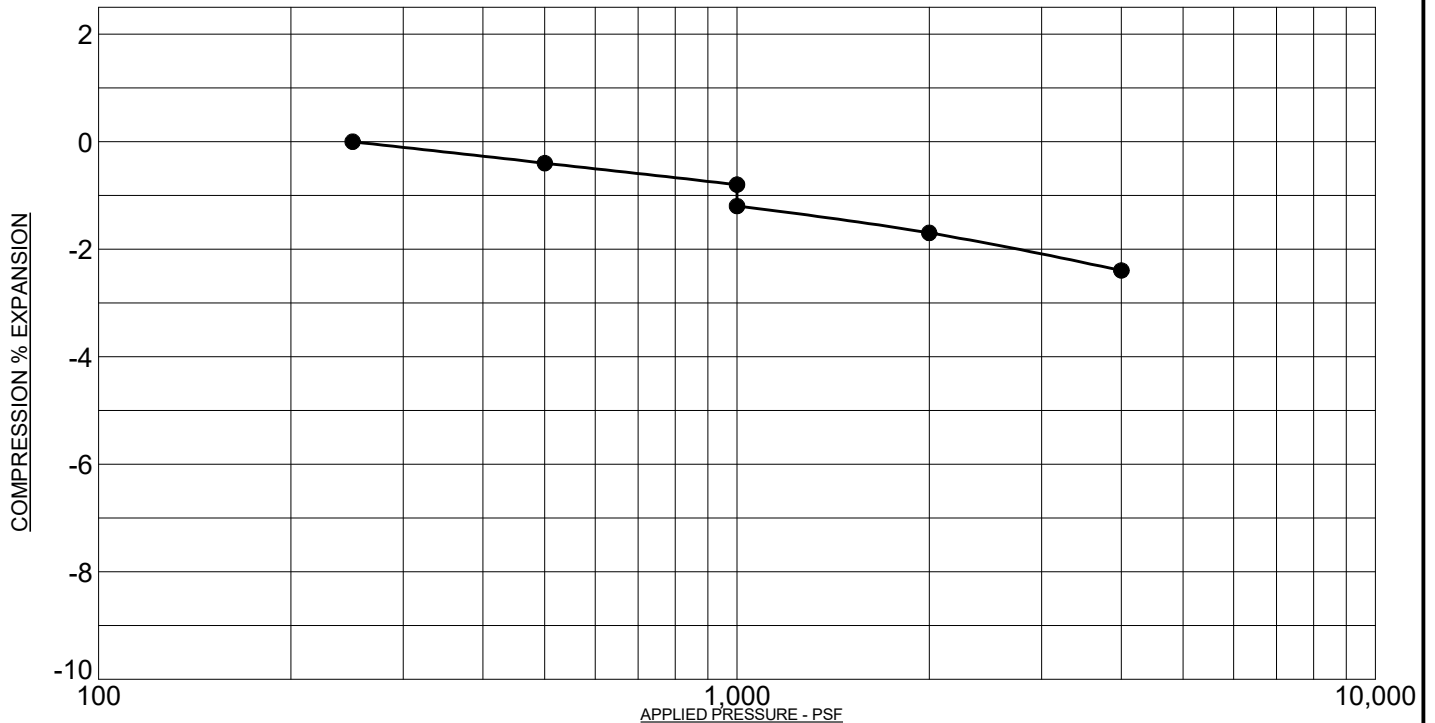
FIGURE No. 121

DATE 1/21/20



PROJECT: **Bent Grass Residential, Filing No. 2, El Paso County, Colorado**
 SAMPLE DESCRIPTION: **CLAYSTONE, SANDY**
 NOTE: **SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF**

SAMPLE LOCATION: **7 @ 9 FT**
 NATURAL DRY UNIT WEIGHT: **118.7 PCF**
 NATURAL MOISTURE CONTENT: **13.9%**
 PERCENT SWELL/COMPRESSION: **- 0.9**



PROJECT: **Bent Grass Residential, Filing No. 2, El Paso County, Colorado**
 SAMPLE DESCRIPTION: **SANDSTONE, SILTY TO CLAYEY, with gravel**
 NOTE: **SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF**

SAMPLE LOCATION: **8 @ 14 FT**
 NATURAL DRY UNIT WEIGHT: **119.6 PCF**
 NATURAL MOISTURE CONTENT: **12.4%**
 PERCENT SWELL/COMPRESSION: **- 0.4**

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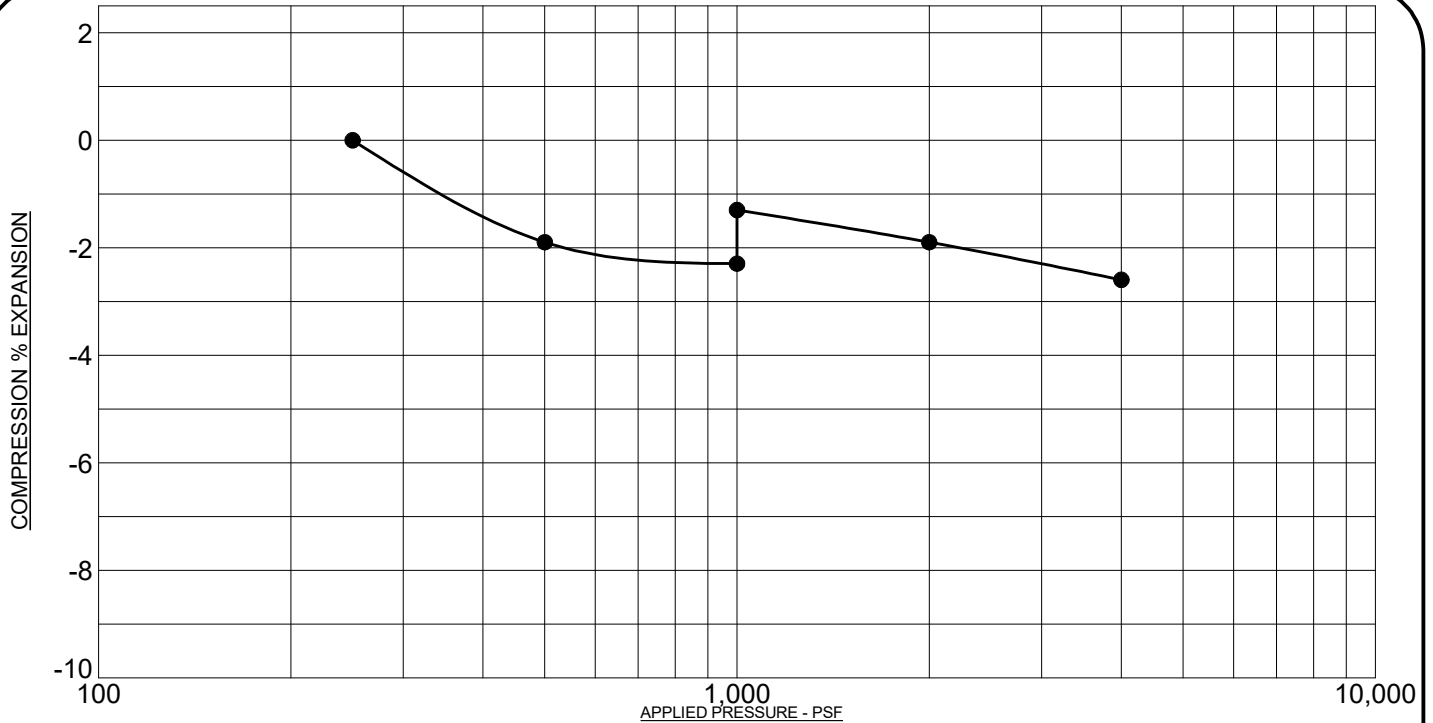
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SWELL/CONSOLIDATION TEST RESULTS

JOB No. 173093

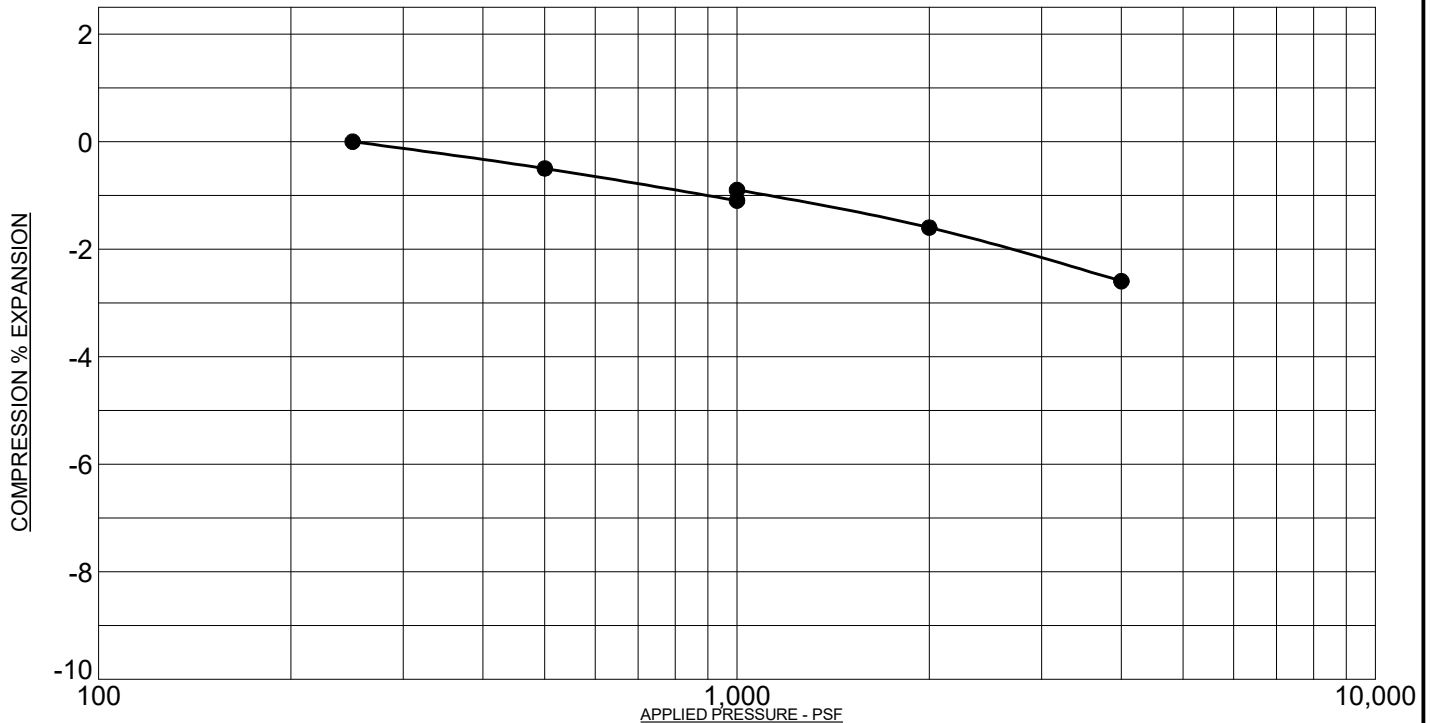
FIGURE No. 122

DATE 1/21/20



PROJECT: **Bent Grass Residential, Filing No. 2, El Paso County, Colorado**
 SAMPLE DESCRIPTION: **CLAYSTONE, SANDY**
 NOTE: **SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF**

SAMPLE LOCATION: **9 @ 9 FT**
 NATURAL DRY UNIT WEIGHT: **113.9 PCF**
 NATURAL MOISTURE CONTENT: **15.9%**
 PERCENT SWELL/COMPRESSION: **1.0**



PROJECT: **Bent Grass Residential, Filing No. 2, El Paso County, Colorado**
 SAMPLE DESCRIPTION: **CLAYSTONE, SANDY**
 NOTE: **SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF**

SAMPLE LOCATION: **13 @ 9 FT**
 NATURAL DRY UNIT WEIGHT: **114.6 PCF**
 NATURAL MOISTURE CONTENT: **14.3%**
 PERCENT SWELL/COMPRESSION: **0.2**

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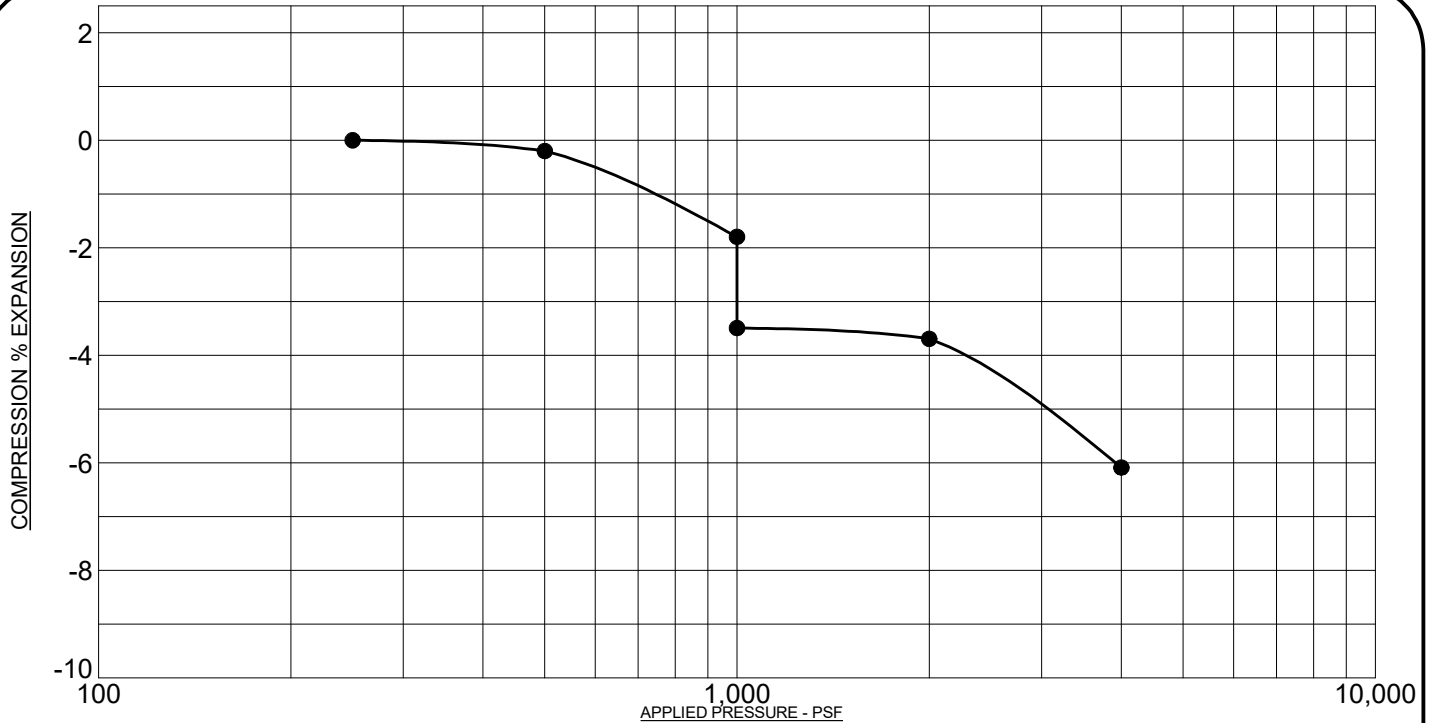
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SWELL/CONSOLIDATION TEST RESULTS

JOB No. 173093

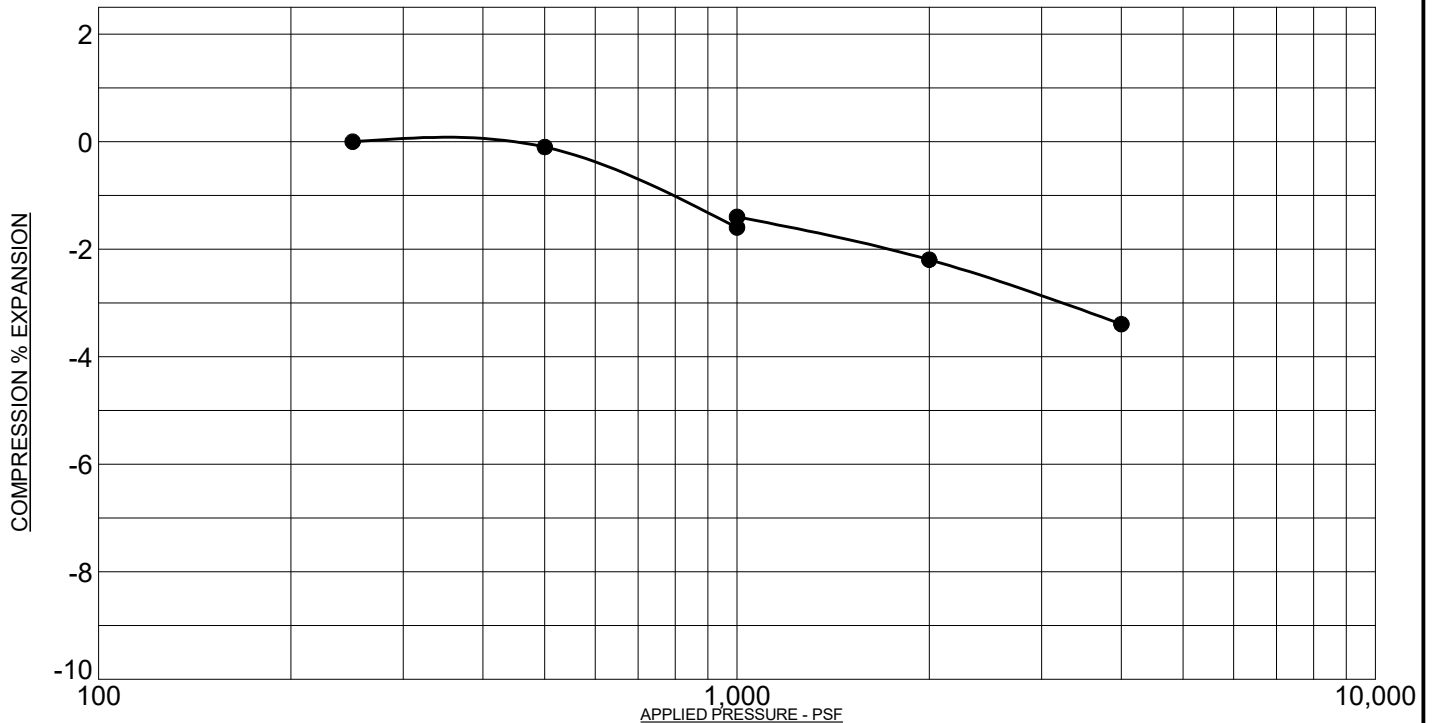
FIGURE No. 123

DATE 1/21/20



PROJECT: **Bent Grass Residential, Filing No. 2, El Paso County, Colorado**
 SAMPLE DESCRIPTION: **CLAYSTONE, SANDY**
 NOTE: **SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF**

SAMPLE LOCATION: **13 @ 14 FT**
 NATURAL DRY UNIT WEIGHT: **112.1 PCF**
 NATURAL MOISTURE CONTENT: **11.4%**
 PERCENT SWELL/COMPRESSION: **- 1.7**



PROJECT: **Bent Grass Residential, Filing No. 2, El Paso County, Colorado**
 SAMPLE DESCRIPTION: **CLAYSTONE, SANDY**
 NOTE: **SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF**

SAMPLE LOCATION: **14 @ 9 FT**
 NATURAL DRY UNIT WEIGHT: **116.1 PCF**
 NATURAL MOISTURE CONTENT: **13.1%**
 PERCENT SWELL/COMPRESSION: **0.2**

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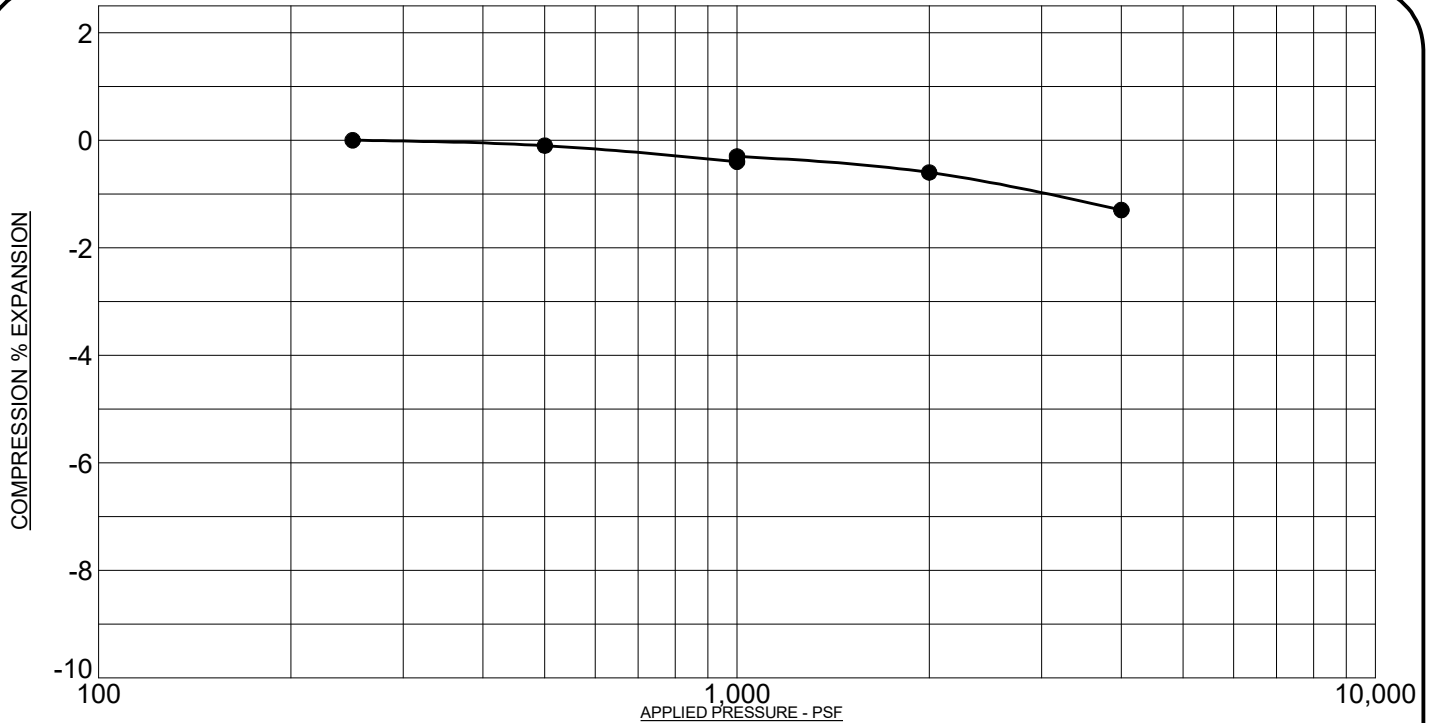
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SWELL/CONSOLIDATION TEST RESULTS

JOB No. 173093

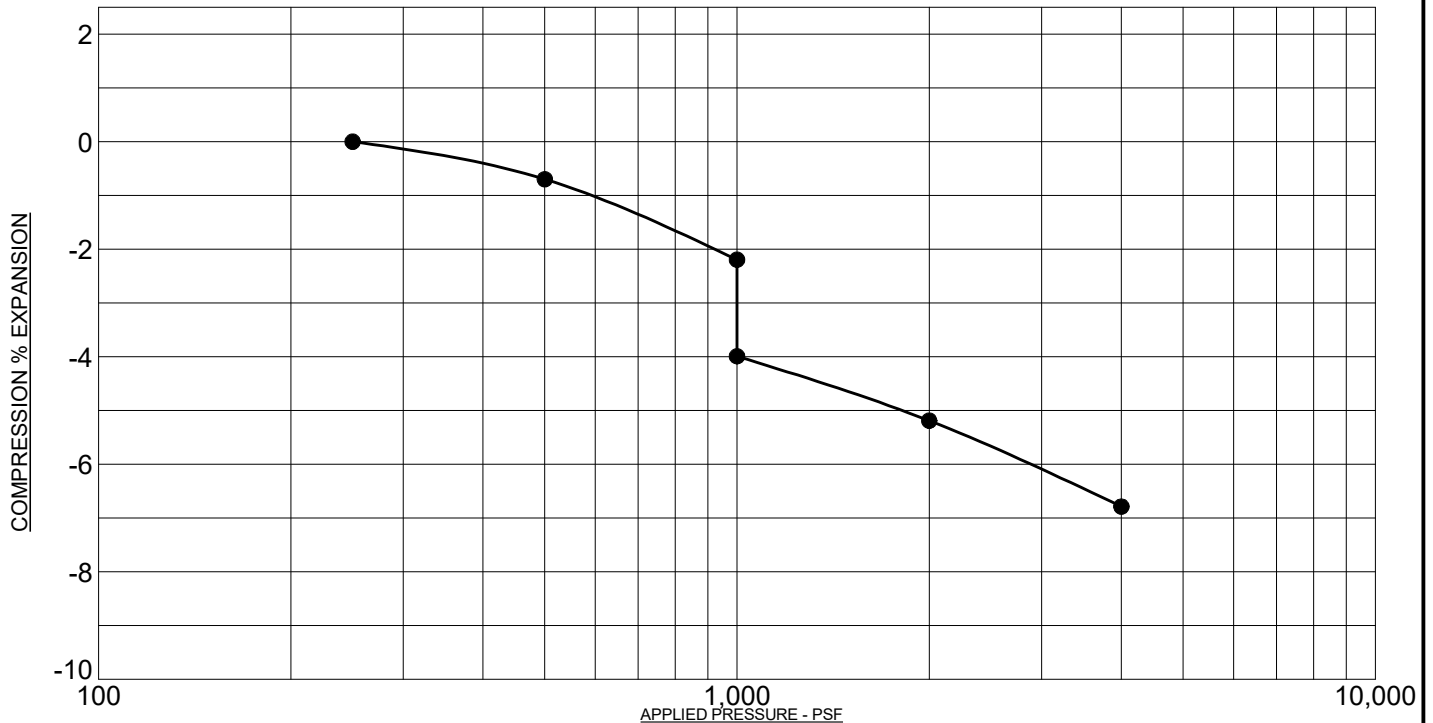
FIGURE No. 124

DATE 1/21/20



PROJECT: **Bent Grass Residential, Filing No. 2, El Paso County, Colorado**
 SAMPLE DESCRIPTION: **CLAYSTONE, SANDY**
 NOTE: **SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF**

SAMPLE LOCATION: **23 @ 9 FT**
 NATURAL DRY UNIT WEIGHT: **PCF**
 NATURAL MOISTURE CONTENT: **%**
 PERCENT SWELL/COMPRESSION: **0.1**



PROJECT: **Bent Grass Residential, Filing No. 2, El Paso County, Colorado**
 SAMPLE DESCRIPTION: **CLAY, SANDY**
 NOTE: **SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF**

SAMPLE LOCATION: **32 @ 9 FT**
 NATURAL DRY UNIT WEIGHT: **124.0 PCF**
 NATURAL MOISTURE CONTENT: **7.3%**
 PERCENT SWELL/COMPRESSION: **- 1.8**

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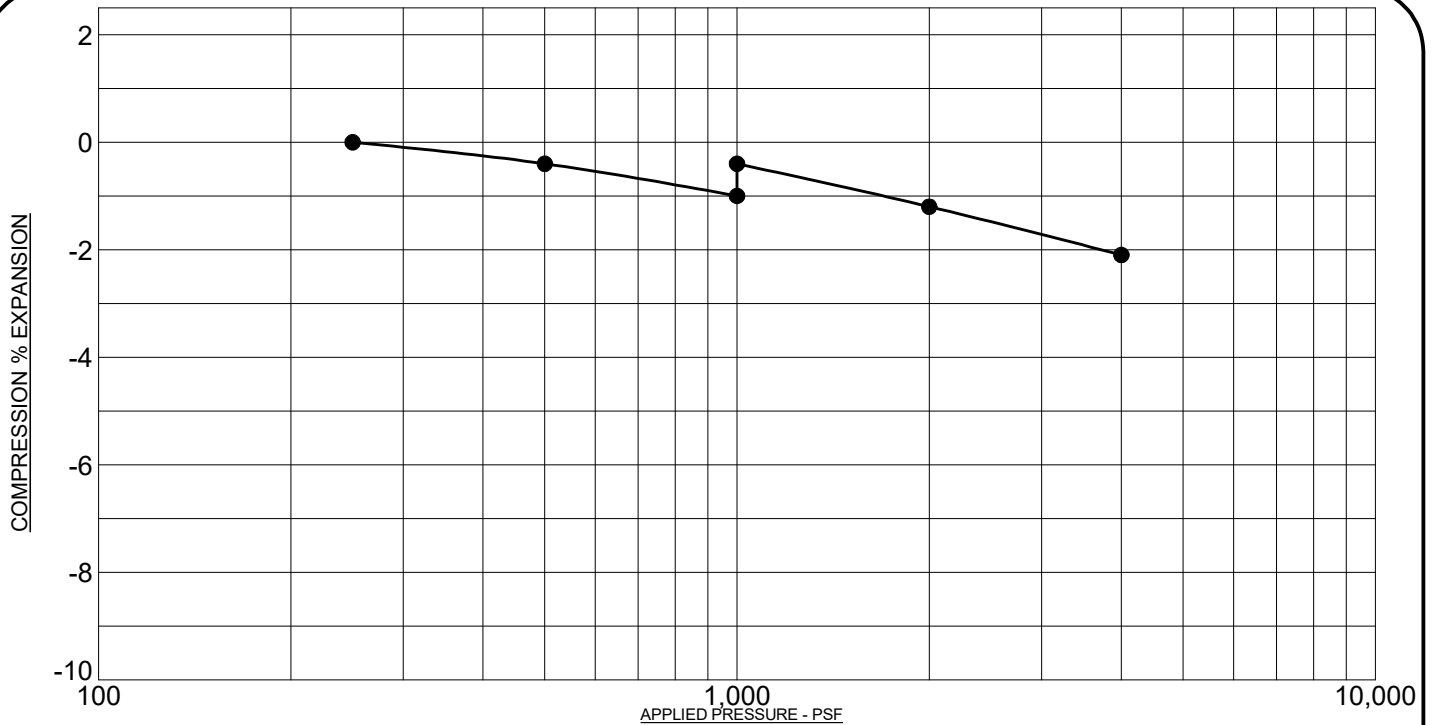
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SWELL/CONSOLIDATION TEST RESULTS

JOB No. 173093

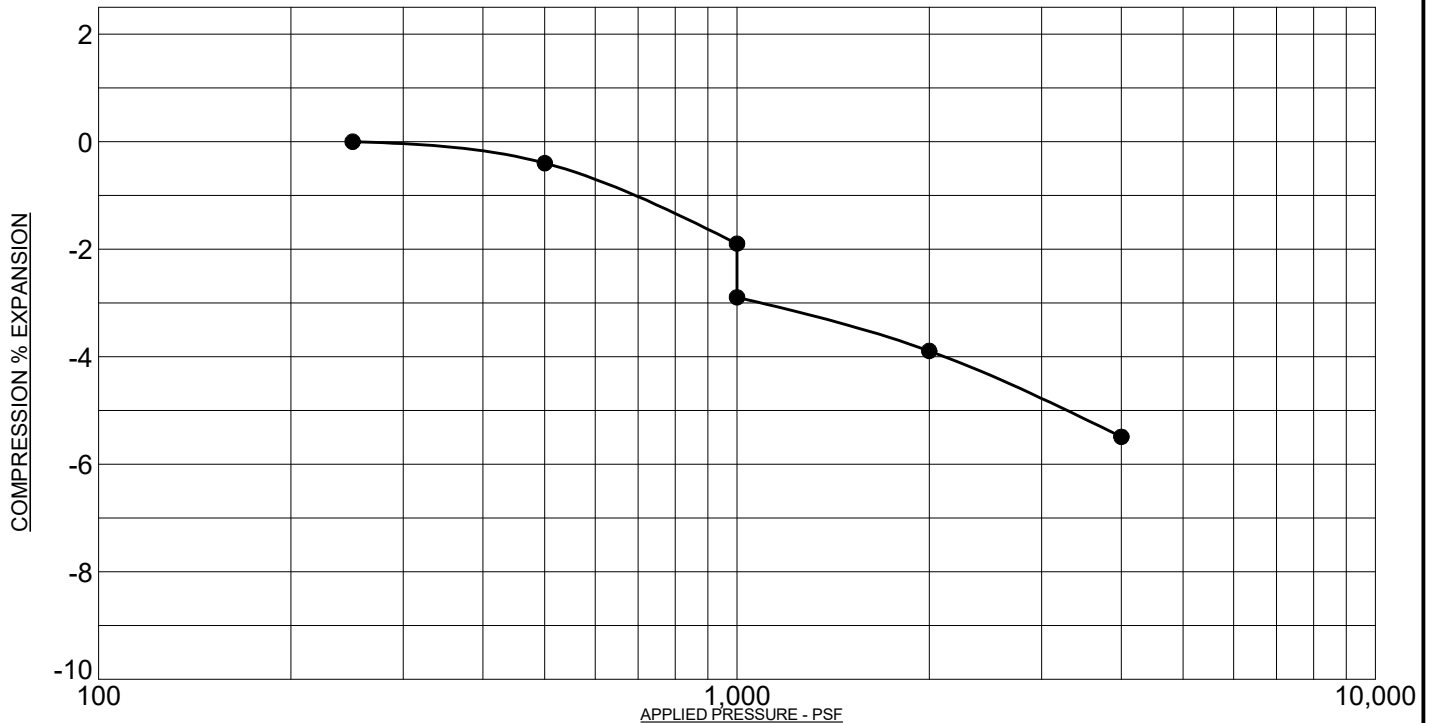
FIGURE No. 125

DATE 1/21/20



PROJECT: Bent Grass Residential, Filing No. 2, El Paso County, Colorado
 SAMPLE DESCRIPTION: CLAY, SANDY
 NOTE: SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF

SAMPLE LOCATION: 33 @ 4 FT
 NATURAL DRY UNIT WEIGHT: 114.0 PCF
 NATURAL MOISTURE CONTENT: 17.8%
 PERCENT SWELL/COMPRESSION: 0.6



PROJECT: Bent Grass Residential, Filing No. 2, El Paso County, Colorado
 SAMPLE DESCRIPTION: CLAYSTONE, SANDY
 NOTE: SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF

SAMPLE LOCATION: 39 @ 9 FT
 NATURAL DRY UNIT WEIGHT: PCF
 NATURAL MOISTURE CONTENT: %
 PERCENT SWELL/COMPRESSION: - 1.0

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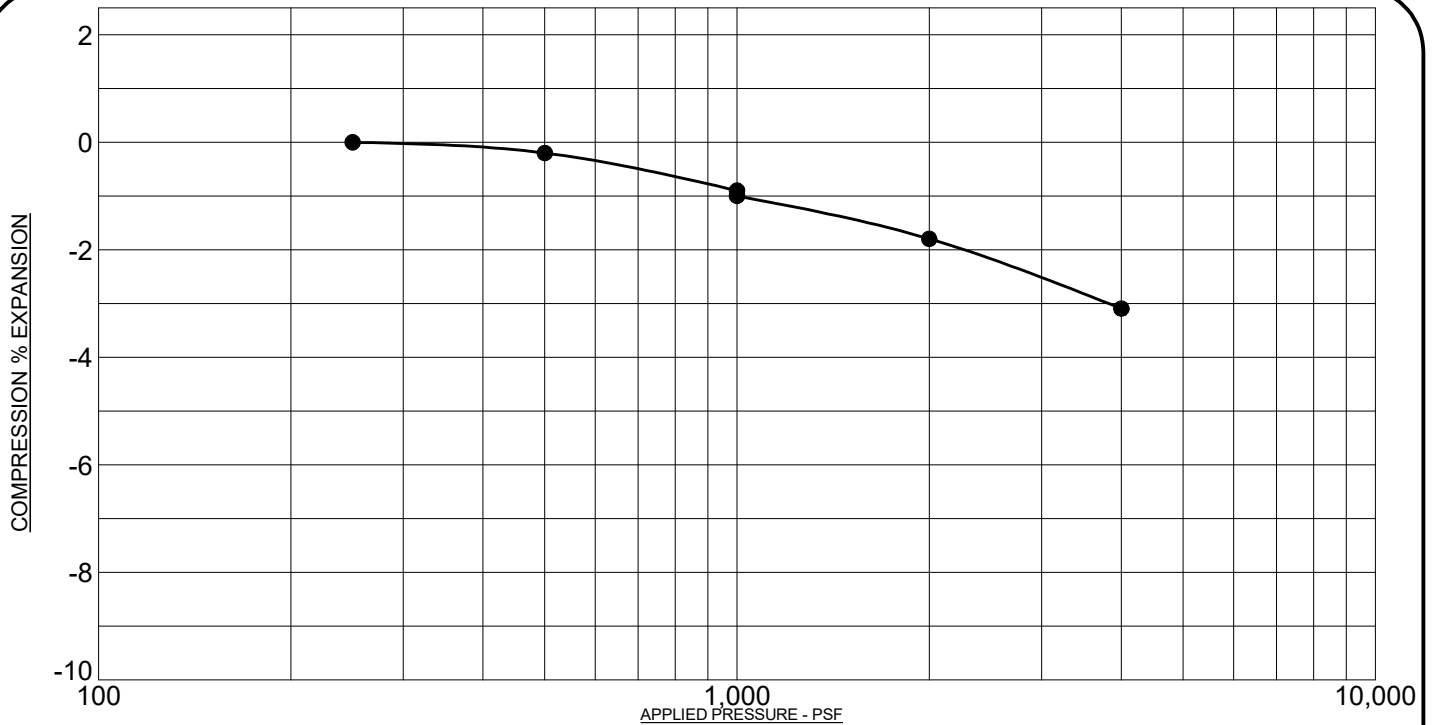
Geotechnical
Materials Testing
Civil, Planning

SWELL/CONSOLIDATION TEST RESULTS

JOB No. 173093

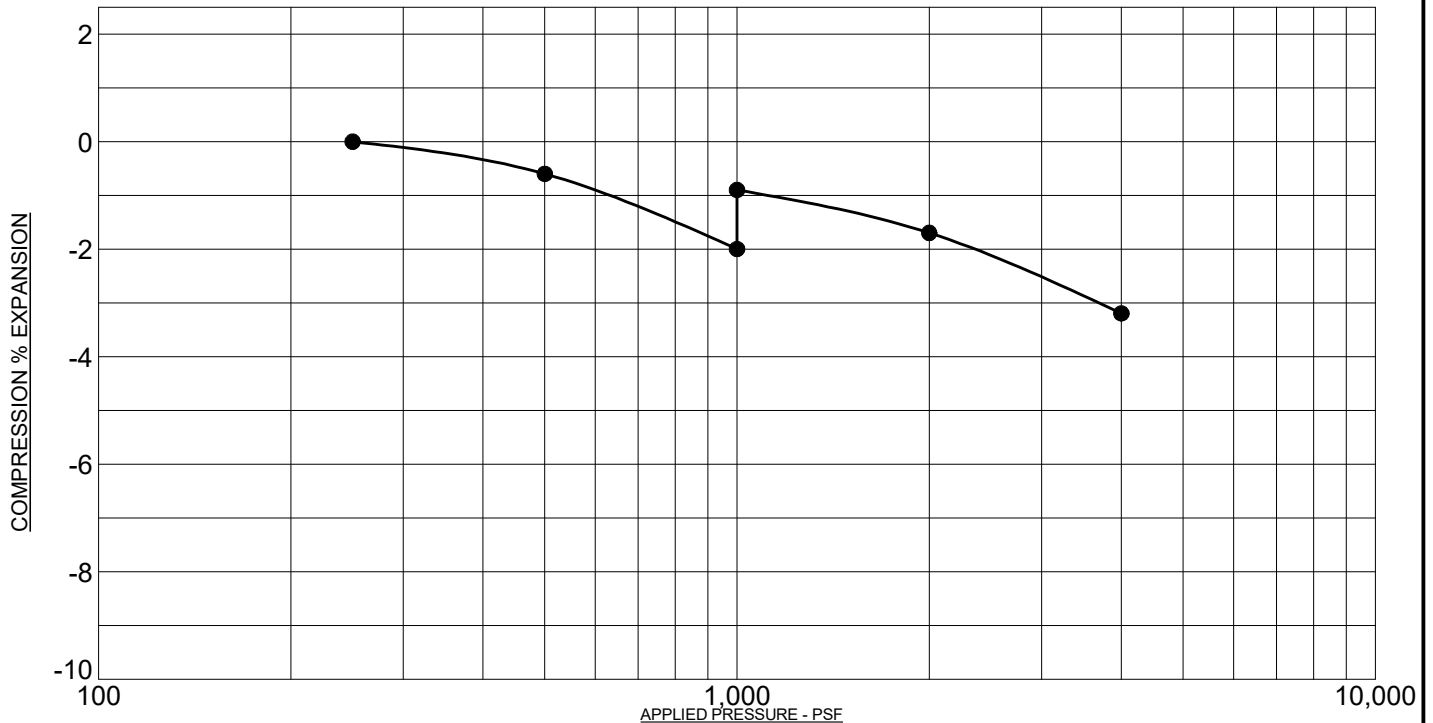
FIGURE No. 126

DATE 1/21/20



PROJECT: **Bent Grass Residential, Filing No. 2, El Paso County, Colorado**
 SAMPLE DESCRIPTION: **CLAYSTONE, SANDY**
 NOTE: **SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF**

SAMPLE LOCATION: **41 @ 9 FT**
 NATURAL DRY UNIT WEIGHT: **PCF**
 NATURAL MOISTURE CONTENT: **%**
 PERCENT SWELL/COMPRESSION: **- 0.1**



PROJECT: **Bent Grass Residential, Filing No. 2, El Paso County, Colorado**
 SAMPLE DESCRIPTION: **CLAYSTONE, SANDY**
 NOTE: **SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF**

SAMPLE LOCATION: **44 @ 4 FT**
 NATURAL DRY UNIT WEIGHT: **PCF**
 NATURAL MOISTURE CONTENT: **%**
 PERCENT SWELL/COMPRESSION: **1.1**

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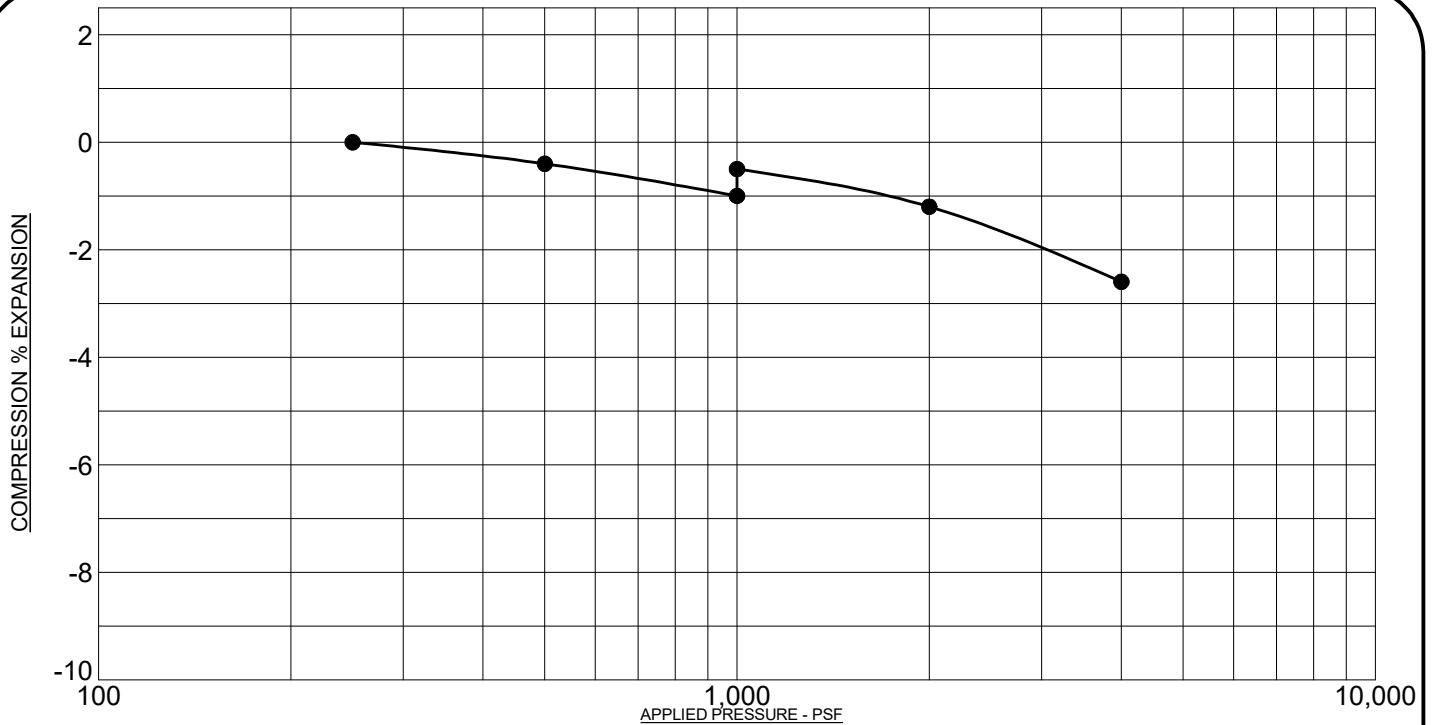
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JOB No. 173093

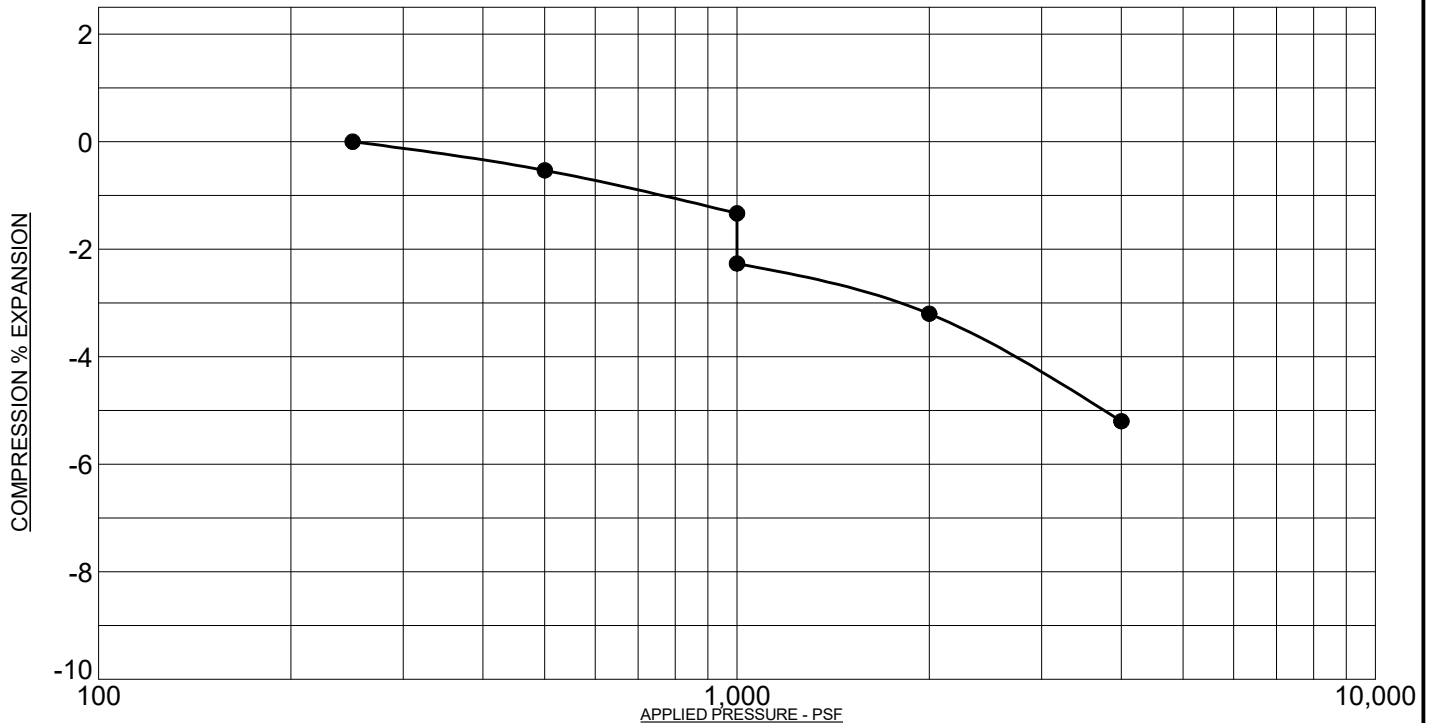
FIGURE No. 127

DATE 1/21/20



PROJECT: **Bent Grass Residential, Filing No. 2, El Paso County, Colorado**
 SAMPLE DESCRIPTION: **CLAYSTONE, SANDY**
 NOTE: **SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF**

SAMPLE LOCATION: **45 @ 9 FT**
 NATURAL DRY UNIT WEIGHT: **PCF**
 NATURAL MOISTURE CONTENT: **%**
 PERCENT SWELL/COMPRESSION: **0.5**



PROJECT: **Bent Grass Residential, Filing No. 2, El Paso County, Colorado**
 SAMPLE DESCRIPTION: **CLAYSTONE, SANDY**
 NOTE: **SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF**

SAMPLE LOCATION: **46 @ 9 FT**
 NATURAL DRY UNIT WEIGHT: **PCF**
 NATURAL MOISTURE CONTENT: **%**
 PERCENT SWELL/COMPRESSION: **- 0.9**

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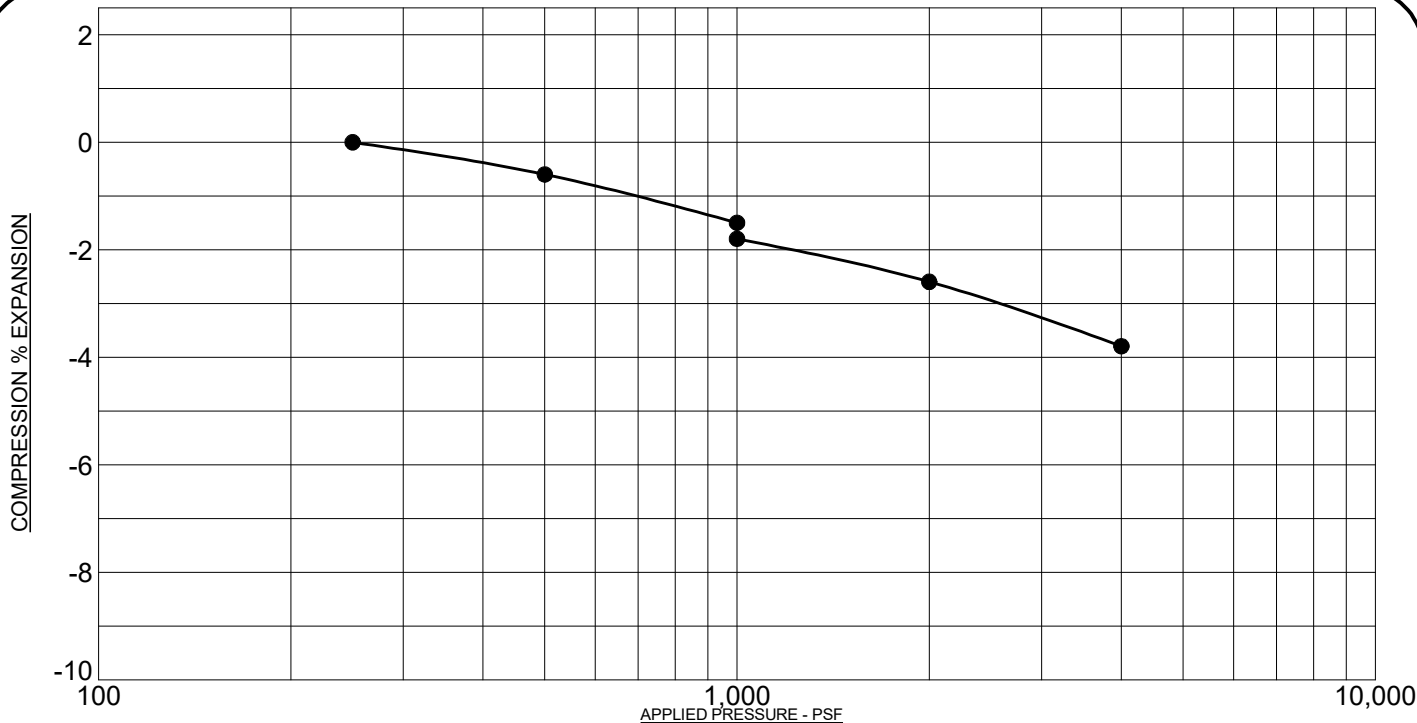
Geotechnical
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SWELL/CONSOLIDATION TEST RESULTS

JOB No. 173093

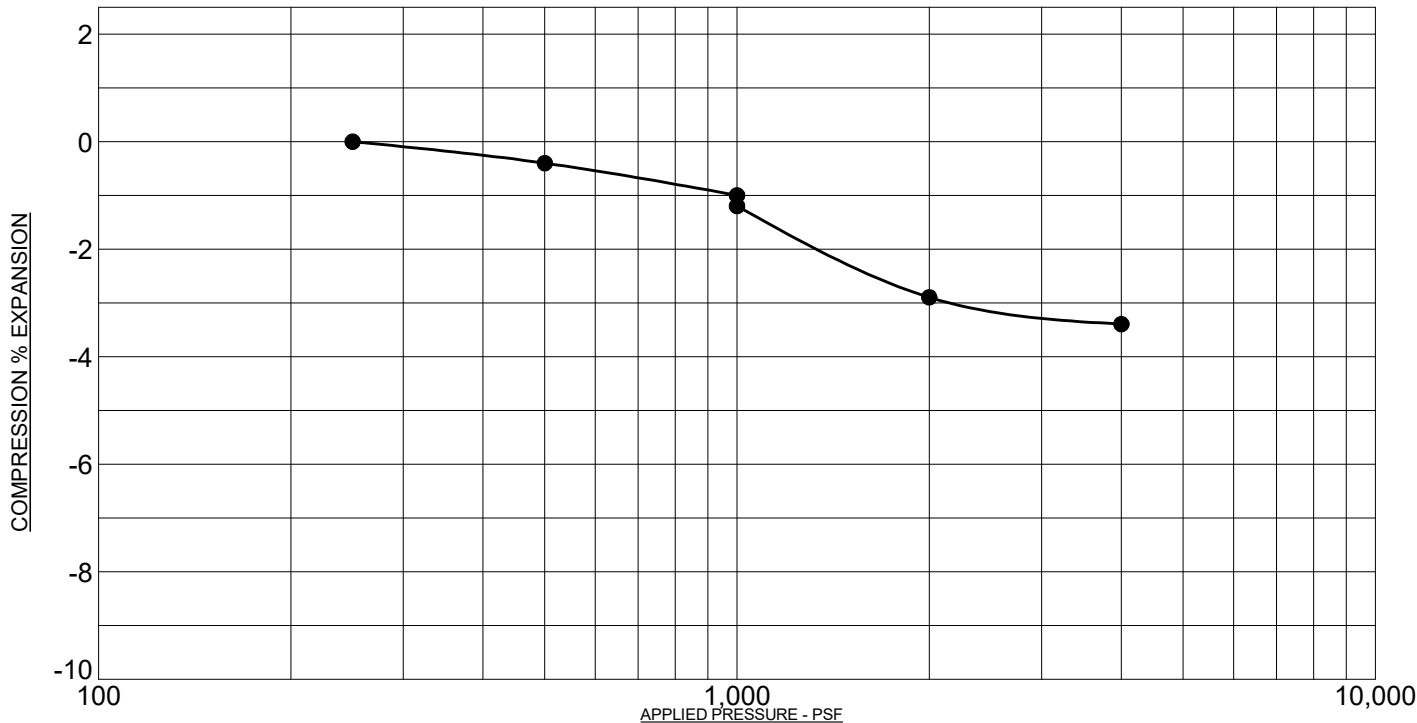
FIGURE No. 128

DATE 1/21/20



PROJECT: **Bent Grass Residential, Filing No. 2, El Paso County, Colorado**
 SAMPLE DESCRIPTION: **CLAYSTONE, SANDY**
 NOTE: **SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF**

SAMPLE LOCATION: **61 @ 9 FT**
 NATURAL DRY UNIT WEIGHT: **119.3 PCF**
 NATURAL MOISTURE CONTENT: **13.3%**
 PERCENT SWELL/COMPRESSION: **- 0.3**



PROJECT: **Bent Grass Residential, Filing No. 2, El Paso County, Colorado**
 SAMPLE DESCRIPTION: **CLAYSTONE, SANDY**
 NOTE: **SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF**

SAMPLE LOCATION: **62 @ 9 FT**
 NATURAL DRY UNIT WEIGHT: **113.3 PCF**
 NATURAL MOISTURE CONTENT: **16.2%**
 PERCENT SWELL/COMPRESSION: **- 0.2**

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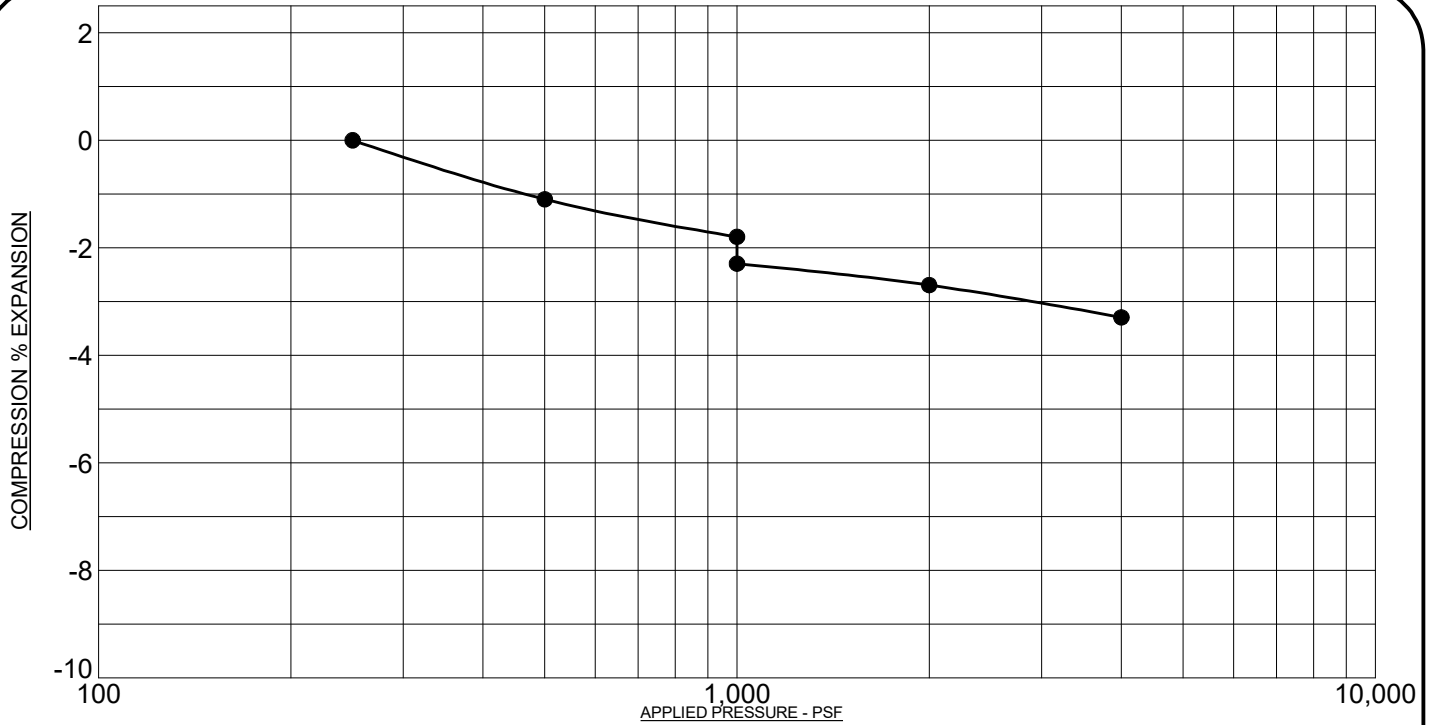
Geotechnical
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SWELL/CONSOLIDATION TEST RESULTS

JOB No. 173093

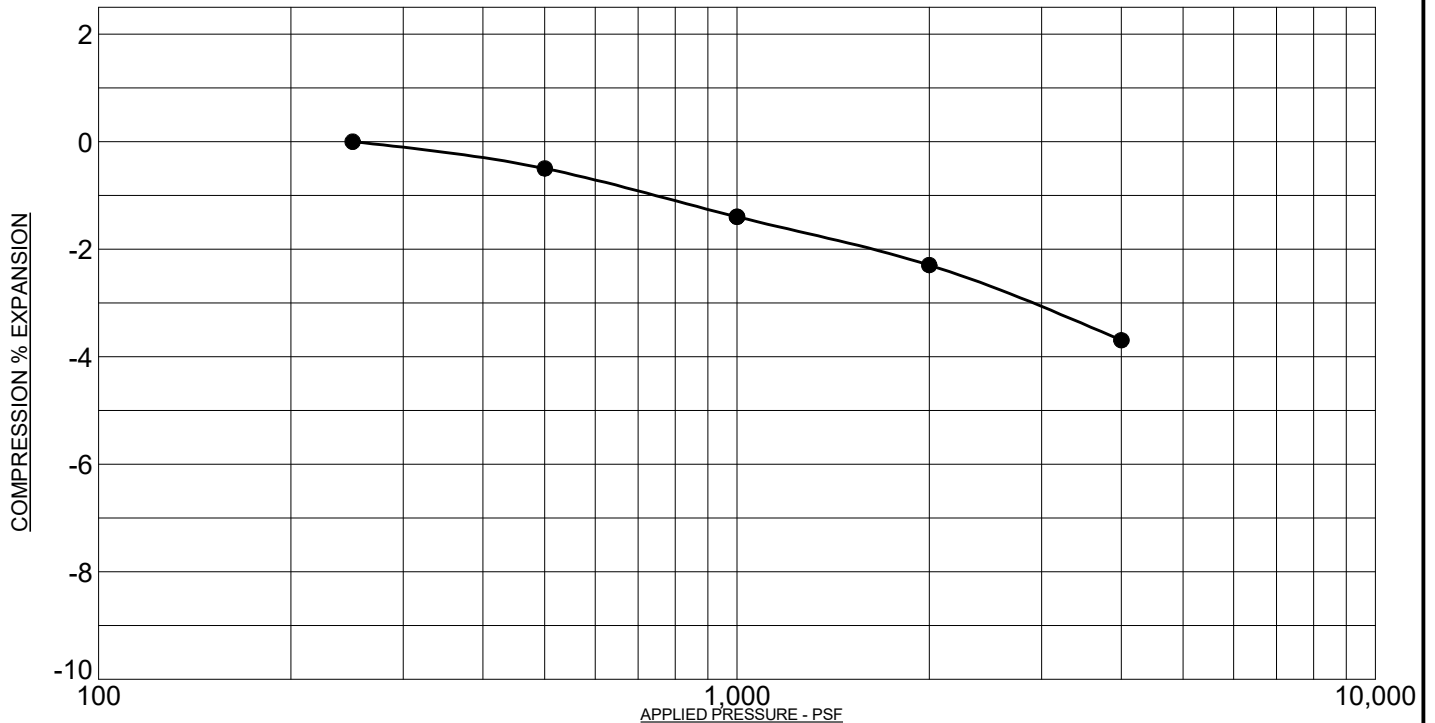
FIGURE No. 129

DATE 1/21/20



PROJECT: **Bent Grass Residential, Filing No. 2, El Paso County, Colorado**
 SAMPLE DESCRIPTION: **CLAYSTONE, SANDY**
 NOTE: **SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF**

SAMPLE LOCATION: **63 @ 14 FT**
 NATURAL DRY UNIT WEIGHT: **116.8 PCF**
 NATURAL MOISTURE CONTENT: **12.5%**
 PERCENT SWELL/COMPRESSION: **- 0.5**



PROJECT: **Bent Grass Residential, Filing No. 2, El Paso County, Colorado**
 SAMPLE DESCRIPTION: **CLAYSTONE, SANDY**
 NOTE: **SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF**

SAMPLE LOCATION: **70 @ 9 FT**
 NATURAL DRY UNIT WEIGHT: **121.6 PCF**
 NATURAL MOISTURE CONTENT: **4.6%**
 PERCENT SWELL/COMPRESSION: **0.0**

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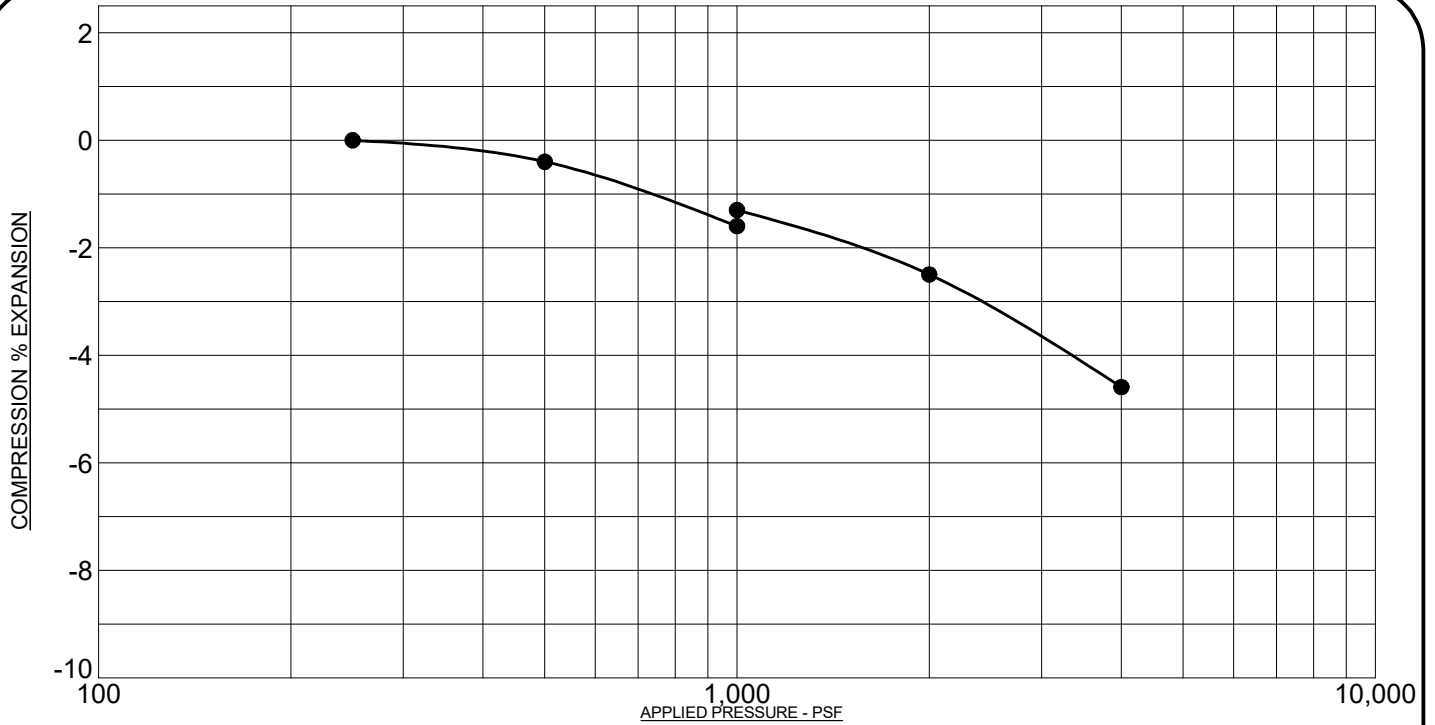
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JOB No. 173093

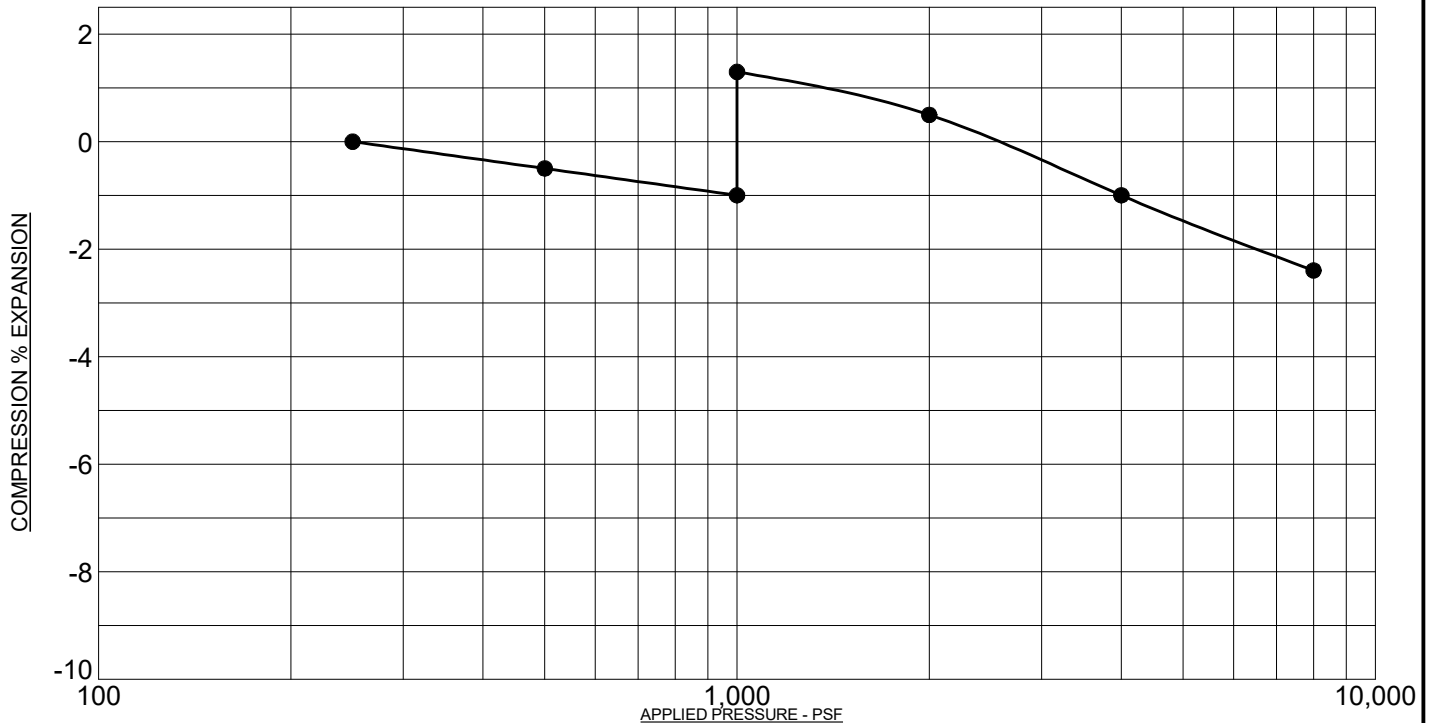
FIGURE No. 130

DATE 1/21/20



PROJECT: **Bent Grass Residential, Filing No. 2, El Paso County, Colorado**
 SAMPLE DESCRIPTION: **CLAYSTONE, SANDY**
 NOTE: **SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF**

SAMPLE LOCATION: **73 @ 9 FT**
 NATURAL DRY UNIT WEIGHT: **111.0 PCF**
 NATURAL MOISTURE CONTENT: **14.0%**
 PERCENT SWELL/COMPRESSION: **0.3**



PROJECT: **Bent Grass Residential, Filing No. 2, El Paso County, Colorado**
 SAMPLE DESCRIPTION: **CLAYSTONE, SANDY**
 NOTE: **SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF**

SAMPLE LOCATION: **75 @ 4 FT**
 NATURAL DRY UNIT WEIGHT: **112.4 PCF**
 NATURAL MOISTURE CONTENT: **14.5%**
 PERCENT SWELL/COMPRESSION: **2.3**

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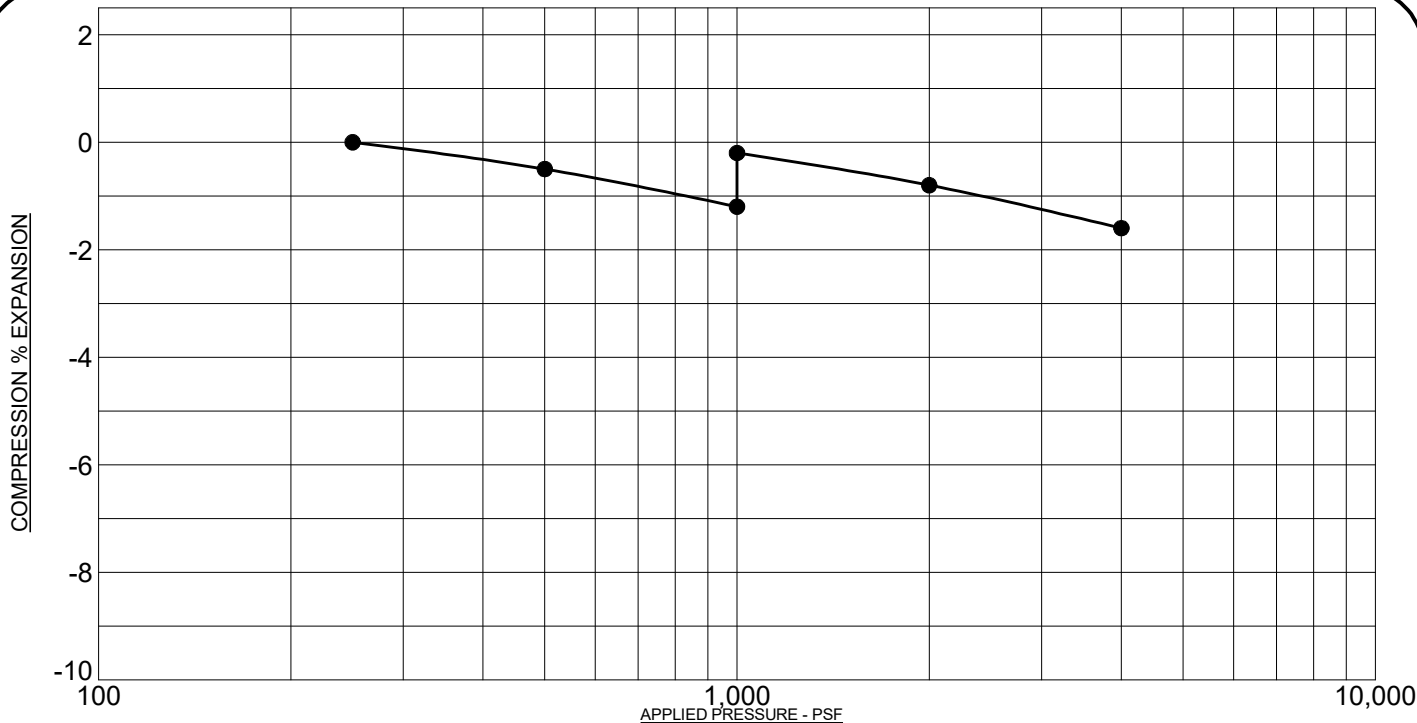
Geotechnical
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SWELL/CONSOLIDATION TEST RESULTS

JOB No. 173093

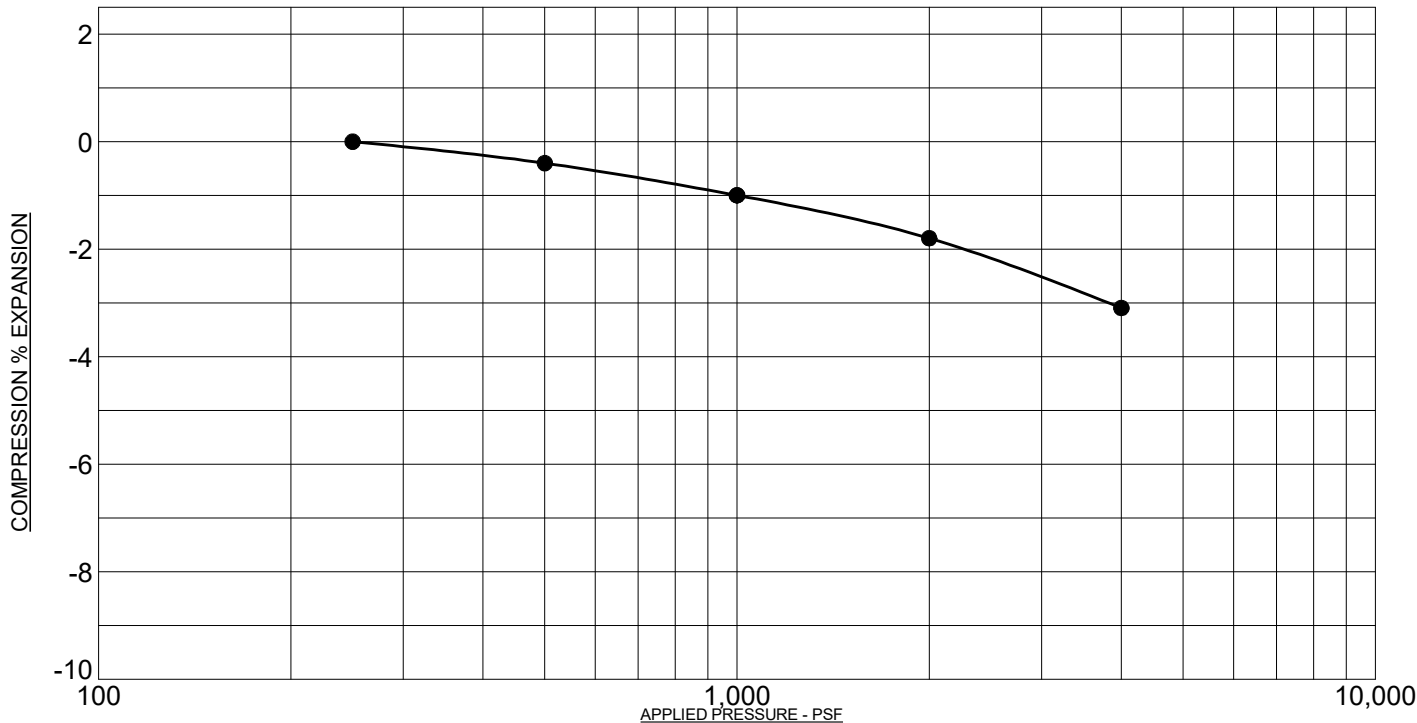
FIGURE No. 131

DATE 1/21/20



PROJECT: Bent Grass Residential, Filing No. 2, El Paso County, Colorado
 SAMPLE DESCRIPTION: CLAYSTONE, SANDY
 NOTE: SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF

SAMPLE LOCATION: 78 @ 4 FT
 NATURAL DRY UNIT WEIGHT: 120.6 PCF
 NATURAL MOISTURE CONTENT: 9.6%
 PERCENT SWELL/COMPRESSION: 1.0



PROJECT: Bent Grass Residential, Filing No. 2, El Paso County, Colorado
 SAMPLE DESCRIPTION: CLAYSTONE, SANDY
 NOTE: SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF

SAMPLE LOCATION: 90 @ 9 FT
 NATURAL DRY UNIT WEIGHT: 115.7 PCF
 NATURAL MOISTURE CONTENT: 15.8%
 PERCENT SWELL/COMPRESSION: 0.0

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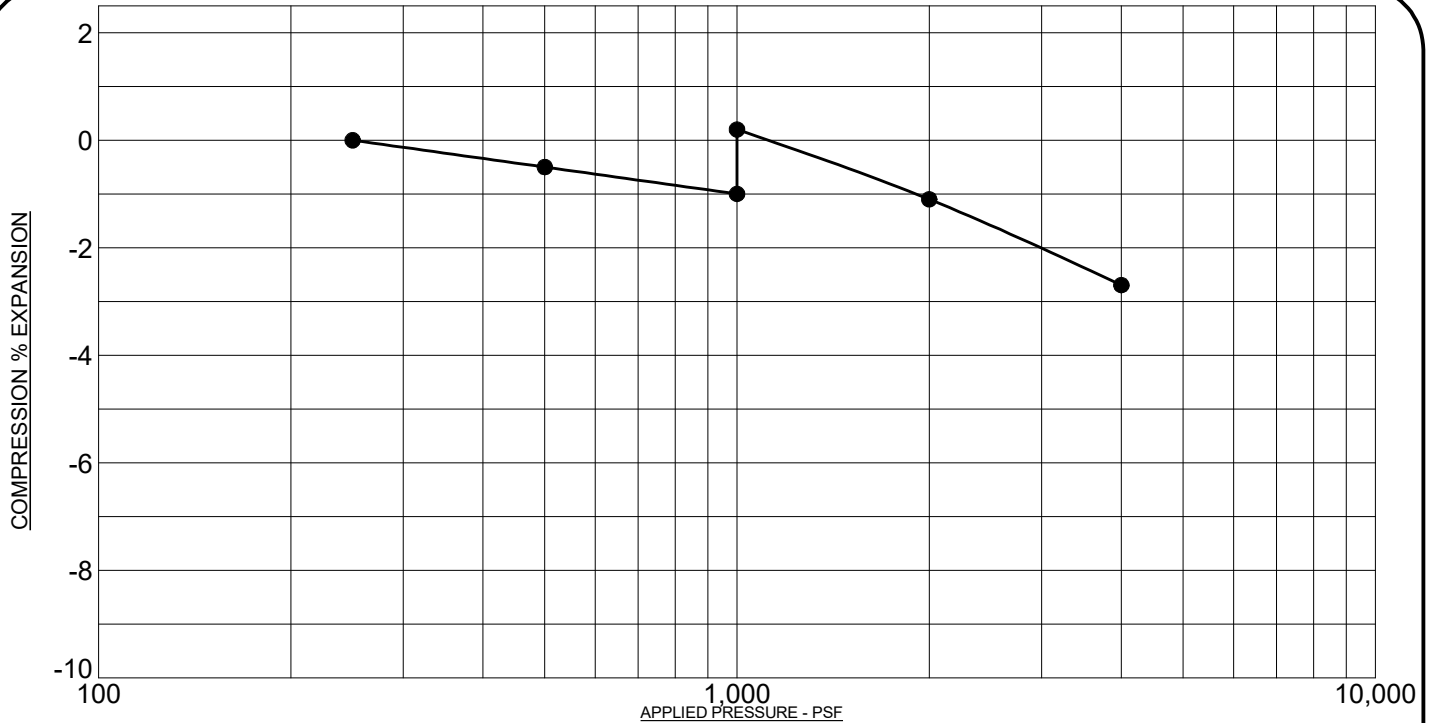
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SWELL/CONSOLIDATION TEST RESULTS

JOB No. 173093

FIGURE No. 132

DATE 1/21/20



PROJECT: **Bent Grass Residential, Filing No. 2, El Paso County, Colorado**
 SAMPLE DESCRIPTION: **CLAYSTONE, SANDY**
 NOTE: **SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF**

SAMPLE LOCATION: **91 @ 9 FT**
 NATURAL DRY UNIT WEIGHT: **111.6 PCF**
 NATURAL MOISTURE CONTENT: **13.6%**
 PERCENT SWELL/COMPRESSION: **1.2**



PROJECT: **Bent Grass Residential, Filing No. 2, El Paso County, Colorado**
 SAMPLE DESCRIPTION: **CLAYSTONE, SANDY**
 NOTE: **SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF**

SAMPLE LOCATION: **95 @ 9 FT**
 NATURAL DRY UNIT WEIGHT: **PCF**
 NATURAL MOISTURE CONTENT: **%**
 PERCENT SWELL/COMPRESSION: **- 0.7**

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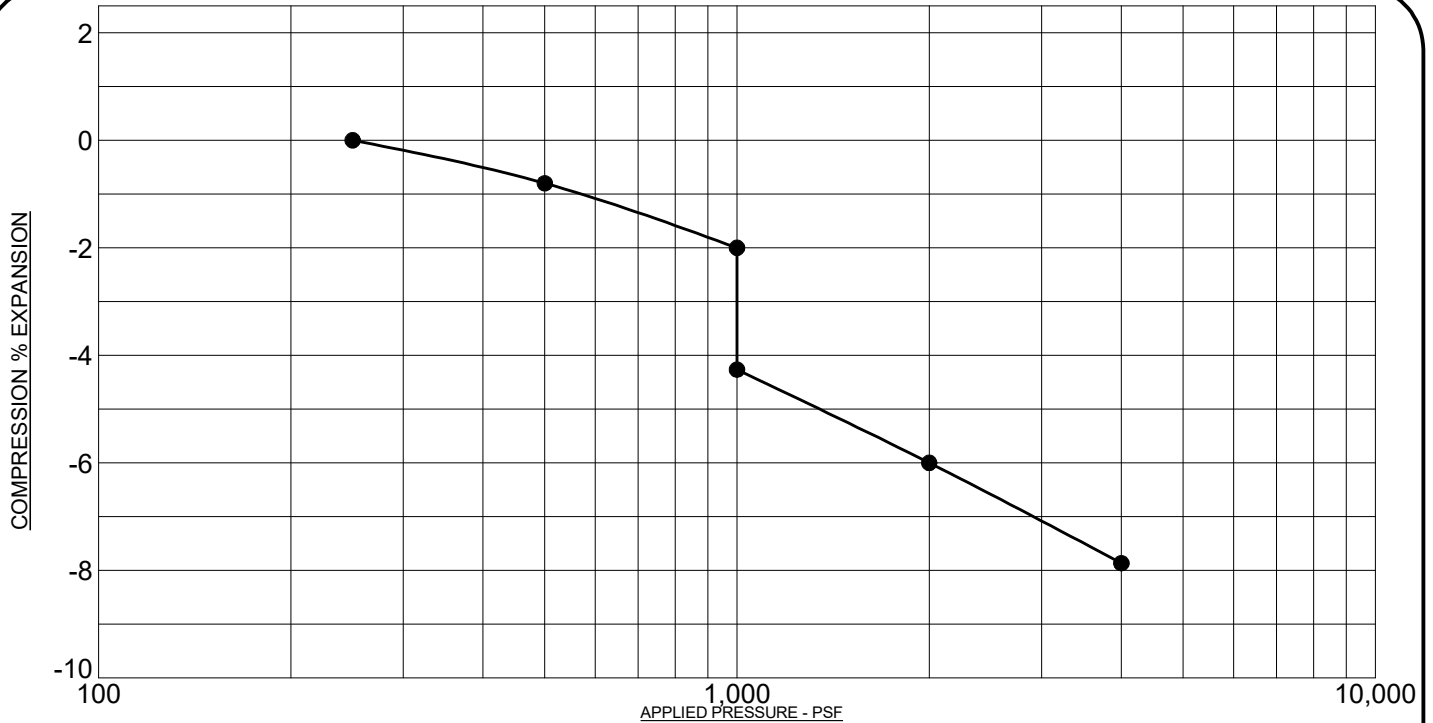
Geotechnical
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SWELL/CONSOLIDATION TEST RESULTS

JOB No. 173093

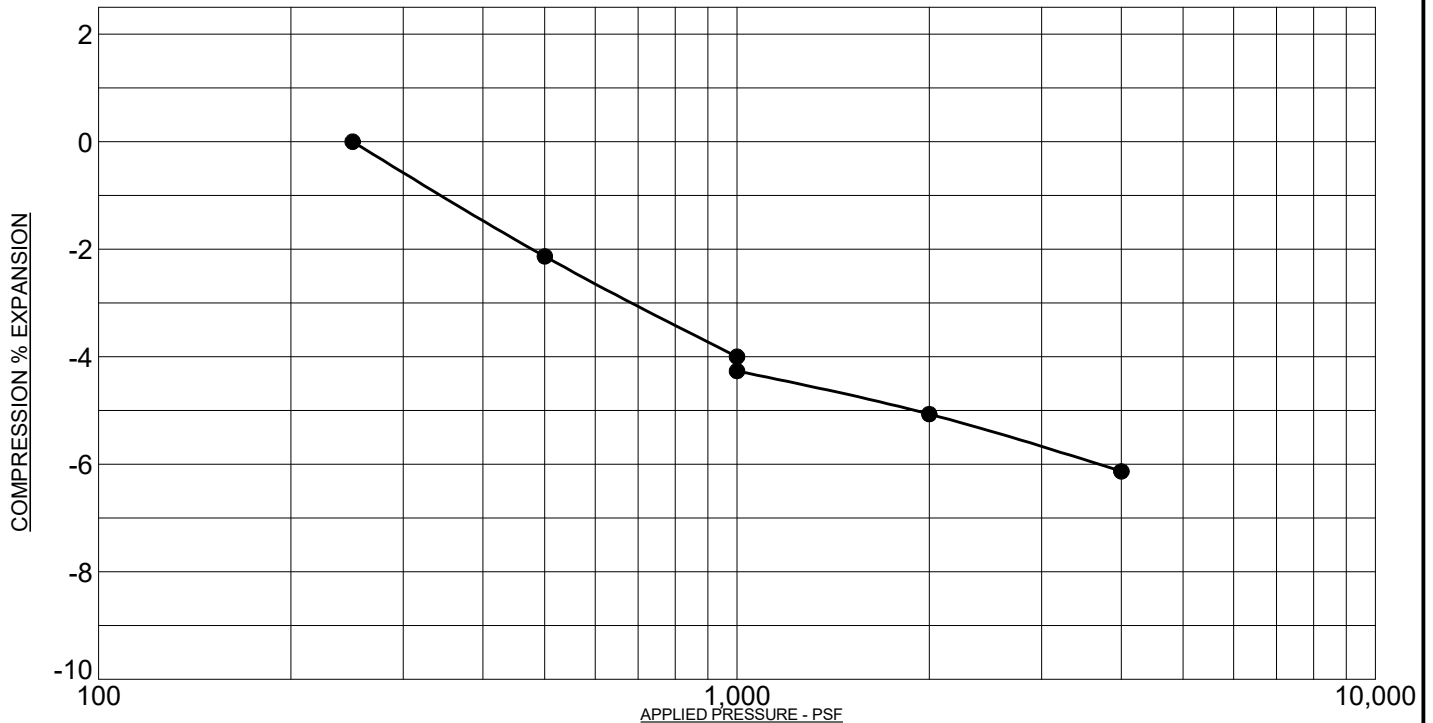
FIGURE No. 133

DATE 1/21/20



PROJECT: **Bent Grass Residential, Filing No. 2, El Paso County, Colorado**
 SAMPLE DESCRIPTION: **CLAYSTONE, SANDY**
 NOTE: **SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF**

SAMPLE LOCATION: **97 @ 14 FT**
 NATURAL DRY UNIT WEIGHT: **PCF**
 NATURAL MOISTURE CONTENT: **%**
 PERCENT SWELL/COMPRESSION: **- 2.3**



PROJECT: **Bent Grass Residential, Filing No. 2, El Paso County, Colorado**
 SAMPLE DESCRIPTION: **CLAYSTONE, SANDY**
 NOTE: **SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF**

SAMPLE LOCATION: **105 @ 14 FT**
 NATURAL DRY UNIT WEIGHT: **PCF**
 NATURAL MOISTURE CONTENT: **%**
 PERCENT SWELL/COMPRESSION: **- 0.3**

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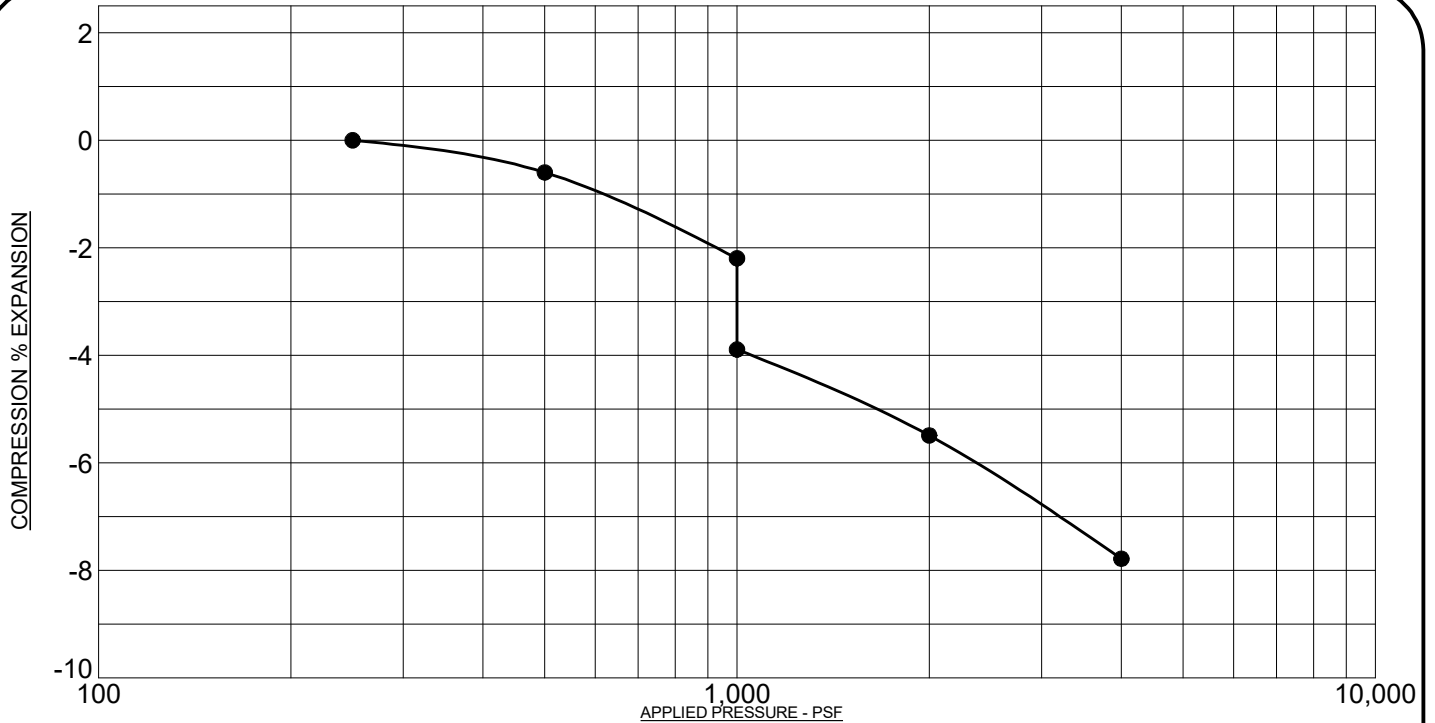
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SWELL/CONSOLIDATION TEST RESULTS

JOB No. 173093

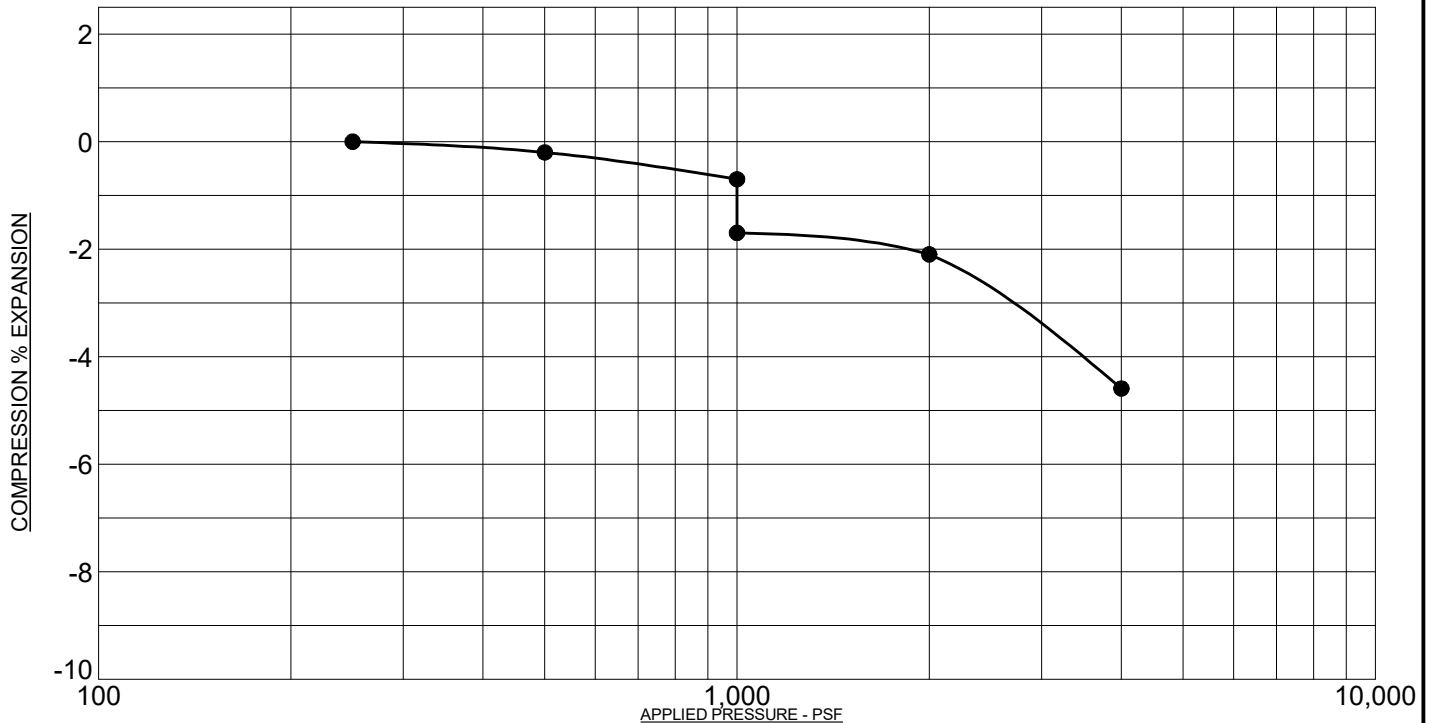
FIGURE No. 134

DATE 1/21/20



PROJECT: **Bent Grass Residential, Filing No. 2, El Paso County, Colorado**
 SAMPLE DESCRIPTION: **CLAYSTONE, SANDY**
 NOTE: **SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF**

SAMPLE LOCATION: **114 @ 9 FT**
 NATURAL DRY UNIT WEIGHT: **110.2 PCF**
 NATURAL MOISTURE CONTENT: **12.2%**
 PERCENT SWELL/COMPRESSION: **- 1.7**



PROJECT: **Bent Grass Residential, Filing No. 2, El Paso County, Colorado**
 SAMPLE DESCRIPTION: **CLAYSTONE, SANDY**
 NOTE: **SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF**

SAMPLE LOCATION: **119 @ 14 FT**
 NATURAL DRY UNIT WEIGHT: **125.5 PCF**
 NATURAL MOISTURE CONTENT: **6.5%**
 PERCENT SWELL/COMPRESSION: **- 1.0**

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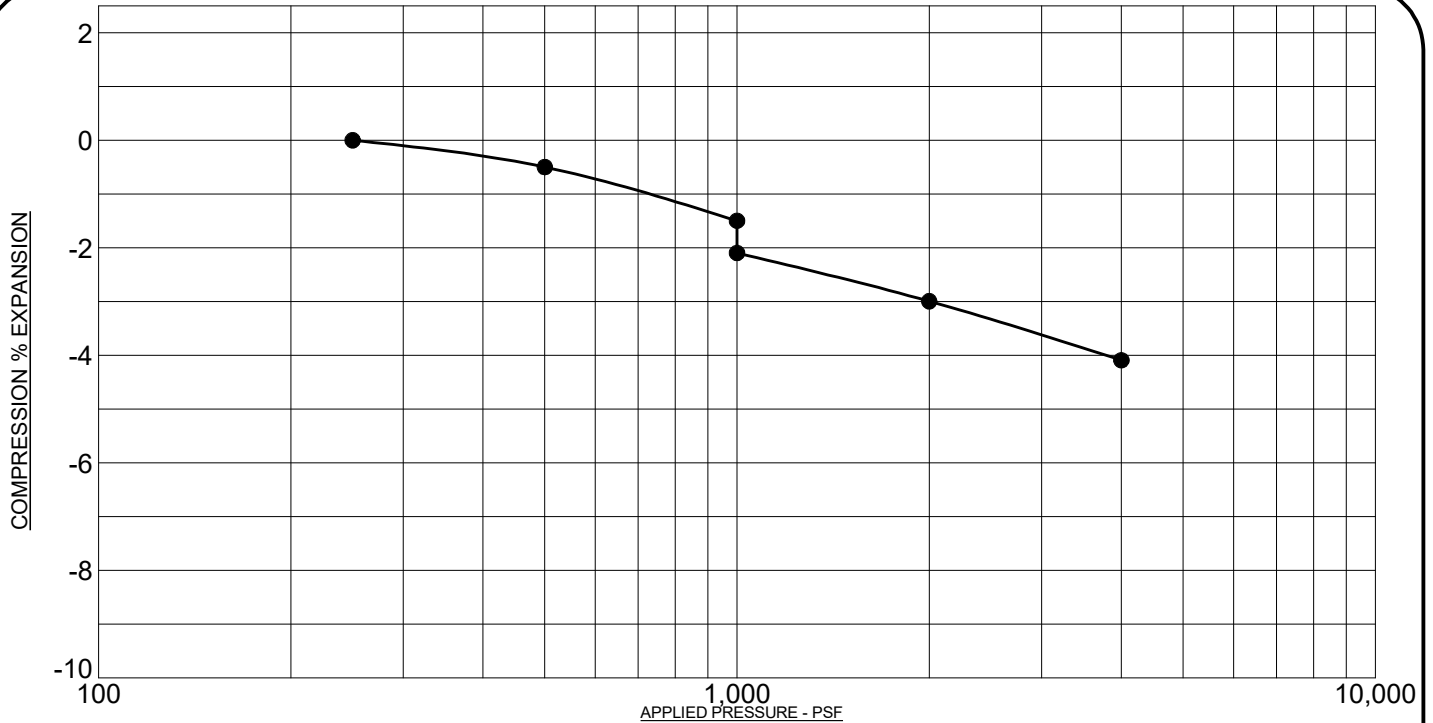
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JOB No. 173093

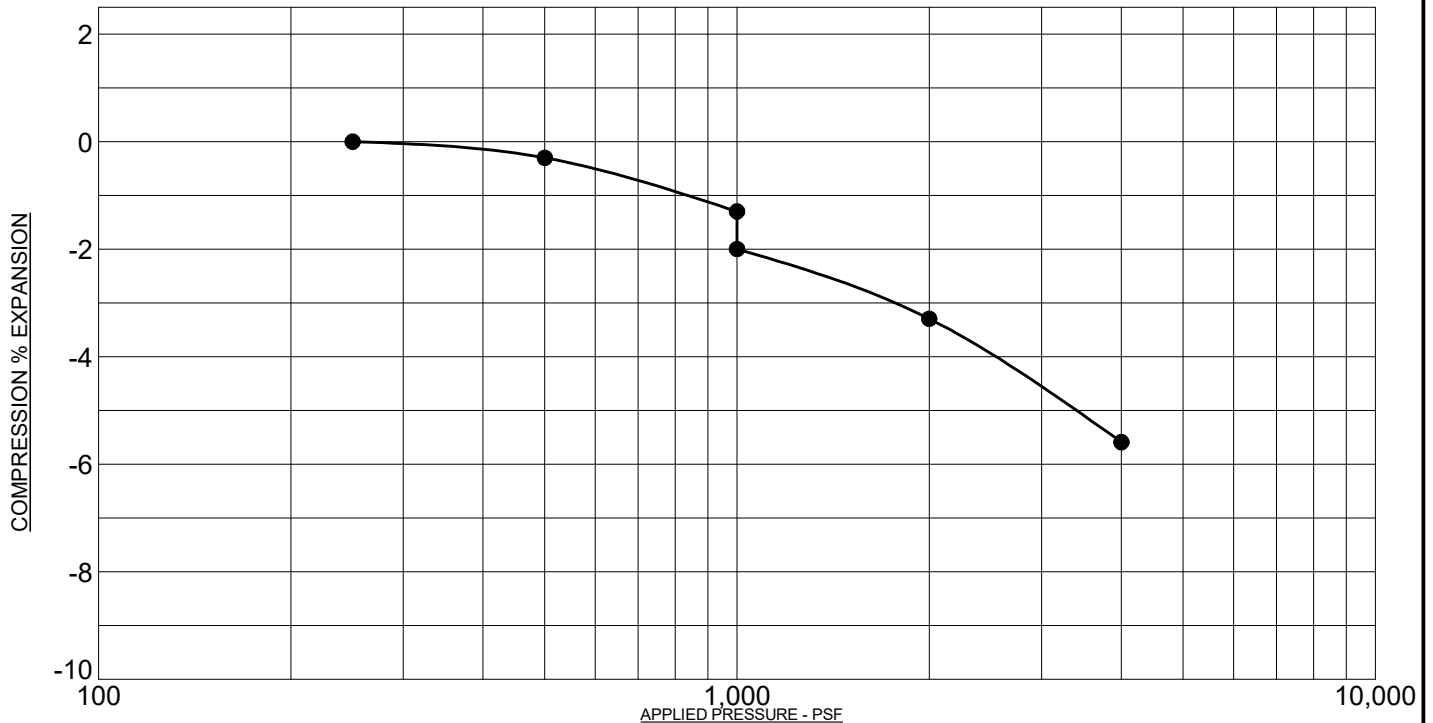
FIGURE No. 135

DATE 1/21/20



PROJECT: **Bent Grass Residential, Filing No. 2, El Paso County, Colorado**
 SAMPLE DESCRIPTION: **CLAYSTONE, SANDY**
 NOTE: **SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF**

SAMPLE LOCATION: **129 @ 14 FT**
 NATURAL DRY UNIT WEIGHT: **117.4 PCF**
 NATURAL MOISTURE CONTENT: **12.2%**
 PERCENT SWELL/COMPRESSION: **- 0.6**



PROJECT: **Bent Grass Residential, Filing No. 2, El Paso County, Colorado**
 SAMPLE DESCRIPTION: **CLAY, SANDY**
 NOTE: **SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF**

SAMPLE LOCATION: **130 @ 9 FT**
 NATURAL DRY UNIT WEIGHT: **111.0 PCF**
 NATURAL MOISTURE CONTENT: **15.3%**
 PERCENT SWELL/COMPRESSION: **- 0.7**

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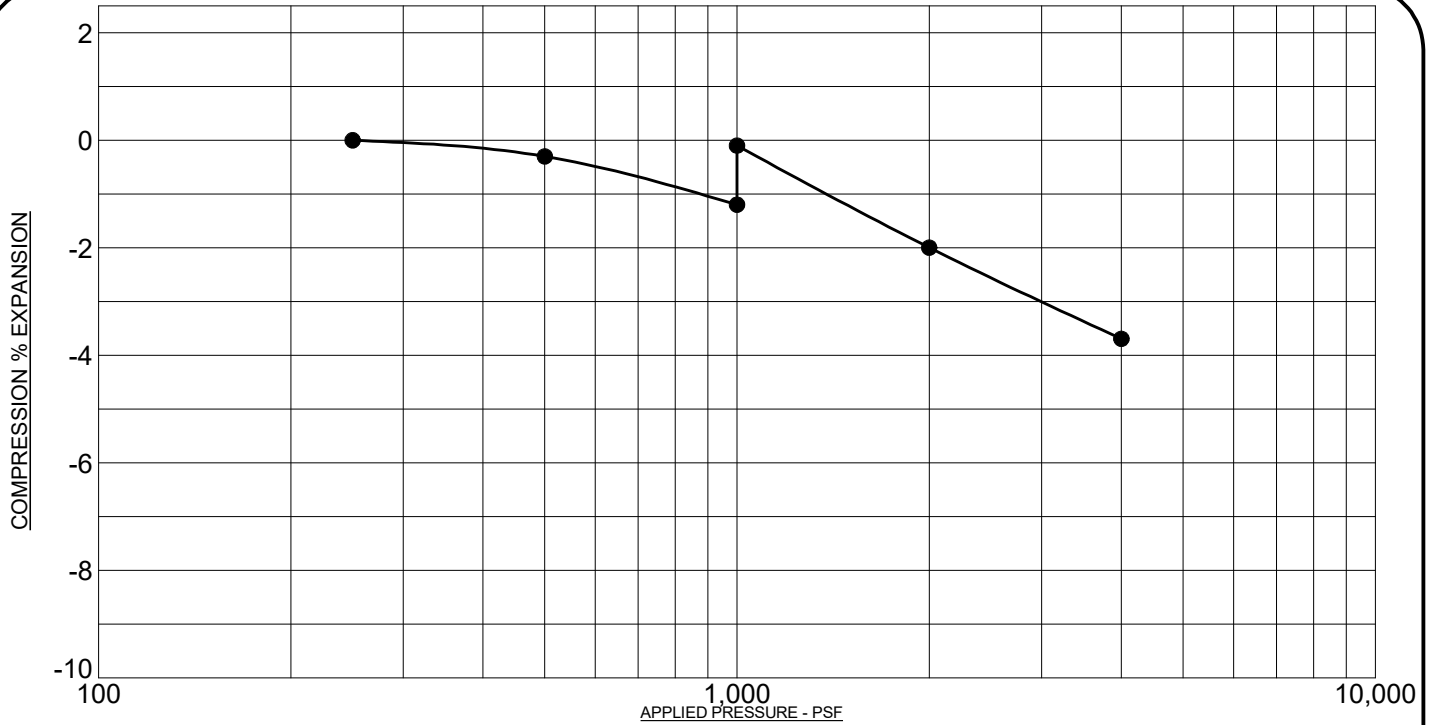
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JOB No. 173093

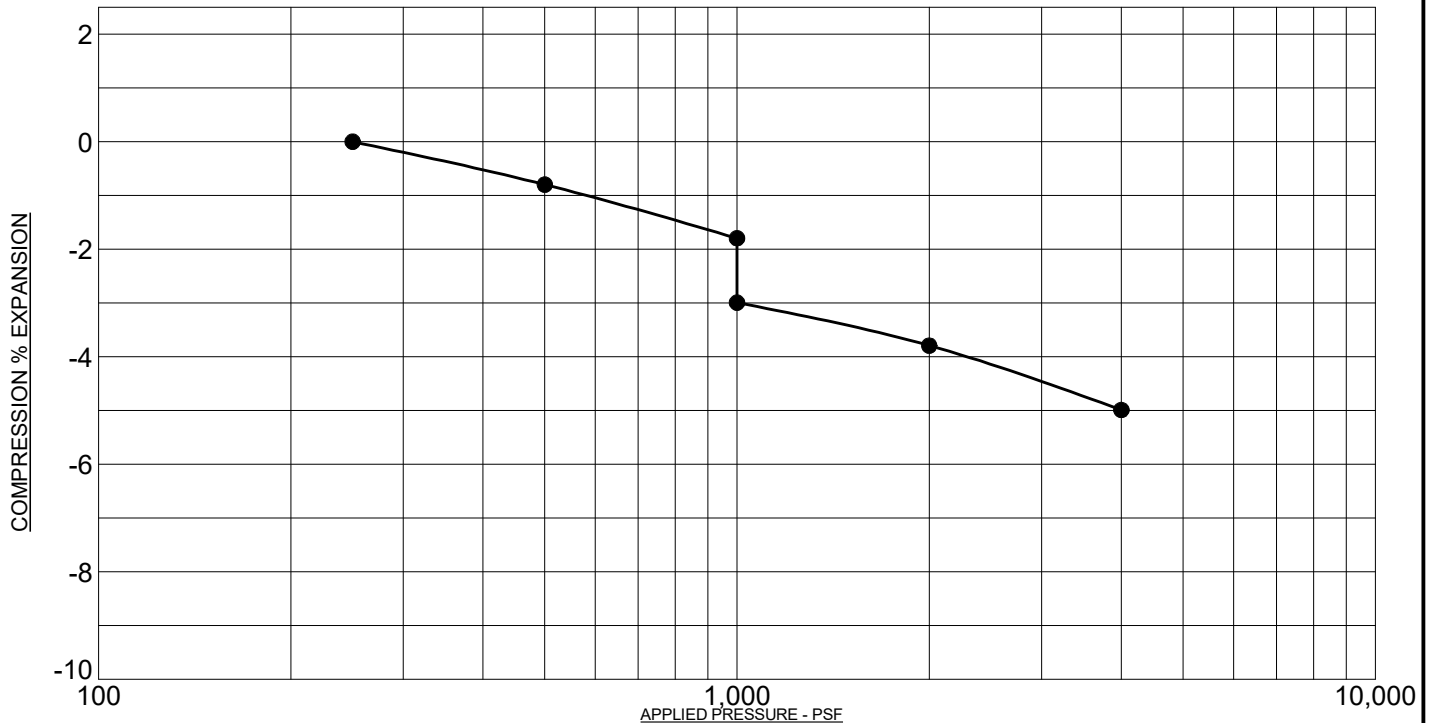
FIGURE No. 136

DATE 1/21/20



PROJECT: **Bent Grass Residential, Filing No. 2, El Paso County, Colorado**
 SAMPLE DESCRIPTION: **CLAYSTONE, SANDY**
 NOTE: **SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF**

SAMPLE LOCATION: **131 @ 14 FT**
 NATURAL DRY UNIT WEIGHT: **115.2 PCF**
 NATURAL MOISTURE CONTENT: **14.5%**
 PERCENT SWELL/COMPRESSION: **1.1**



PROJECT: **Bent Grass Residential, Filing No. 2, El Paso County, Colorado**
 SAMPLE DESCRIPTION: **CLAY, SANDY**
 NOTE: **SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF**

SAMPLE LOCATION: **140 @ 9 FT**
 NATURAL DRY UNIT WEIGHT: **114.3 PCF**
 NATURAL MOISTURE CONTENT: **13.7%**
 PERCENT SWELL/COMPRESSION: **- 1.2**

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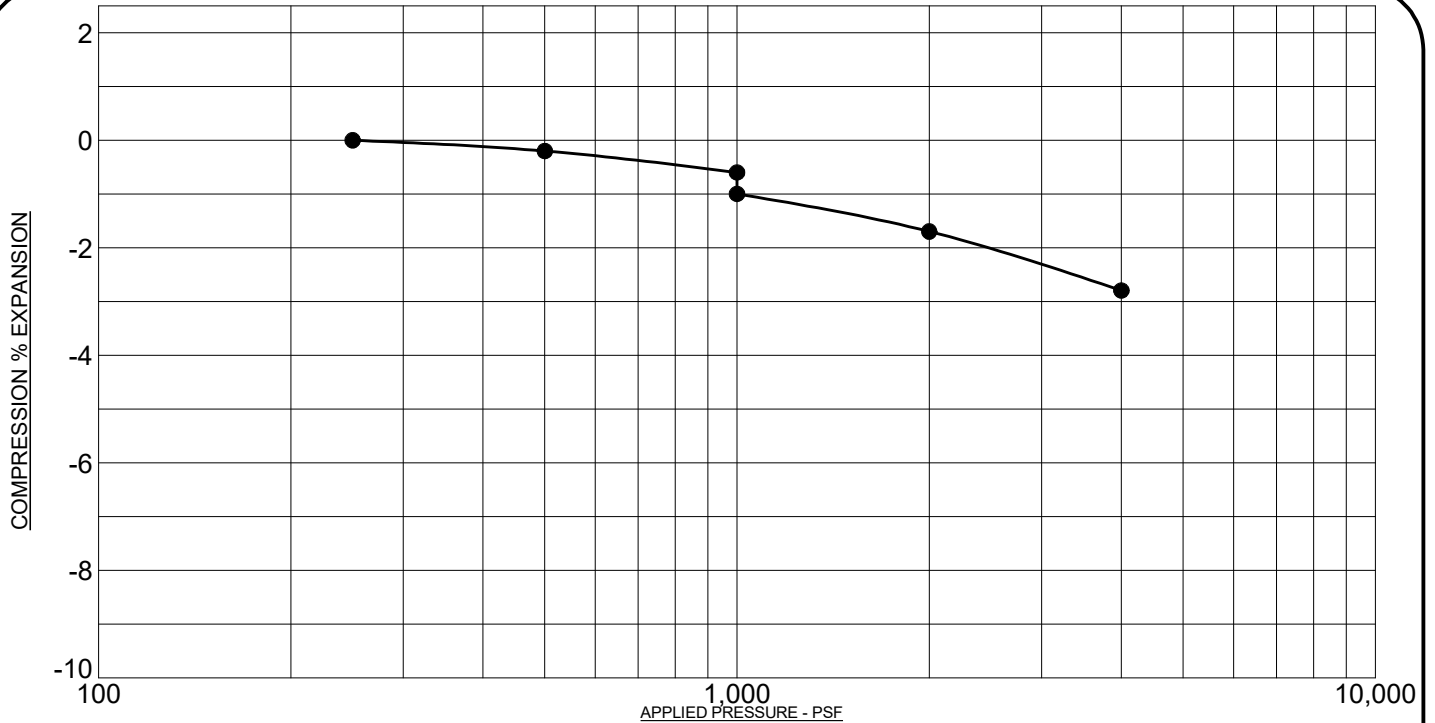
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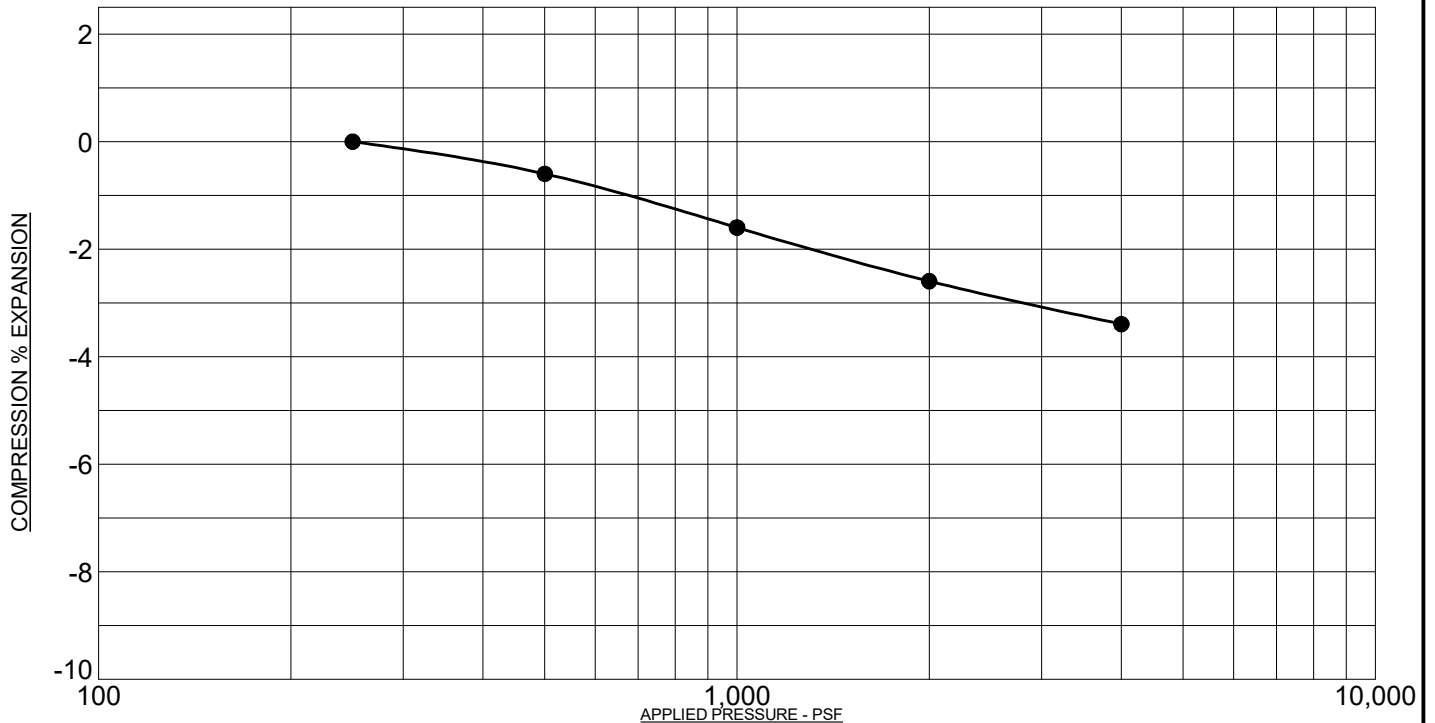
FIGURE No. 137

DATE 1/21/20



PROJECT: **Bent Grass Residential, Filing No. 2, El Paso County, Colorado**
 SAMPLE DESCRIPTION: **CLAYSTONE, SANDY**
 NOTE: **SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF**

SAMPLE LOCATION: **148 @ 9 FT**
 NATURAL DRY UNIT WEIGHT: **122.6 PCF**
 NATURAL MOISTURE CONTENT: **11.7%**
 PERCENT SWELL/COMPRESSION: **- 0.4**



PROJECT: **Bent Grass Residential, Filing No. 2, El Paso County, Colorado**
 SAMPLE DESCRIPTION: **CLAYSTONE, SANDY**
 NOTE: **SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF**

SAMPLE LOCATION: **151 @ 9 FT**
 NATURAL DRY UNIT WEIGHT: **117.3 PCF**
 NATURAL MOISTURE CONTENT: **13.5%**
 PERCENT SWELL/COMPRESSION: **0.0**

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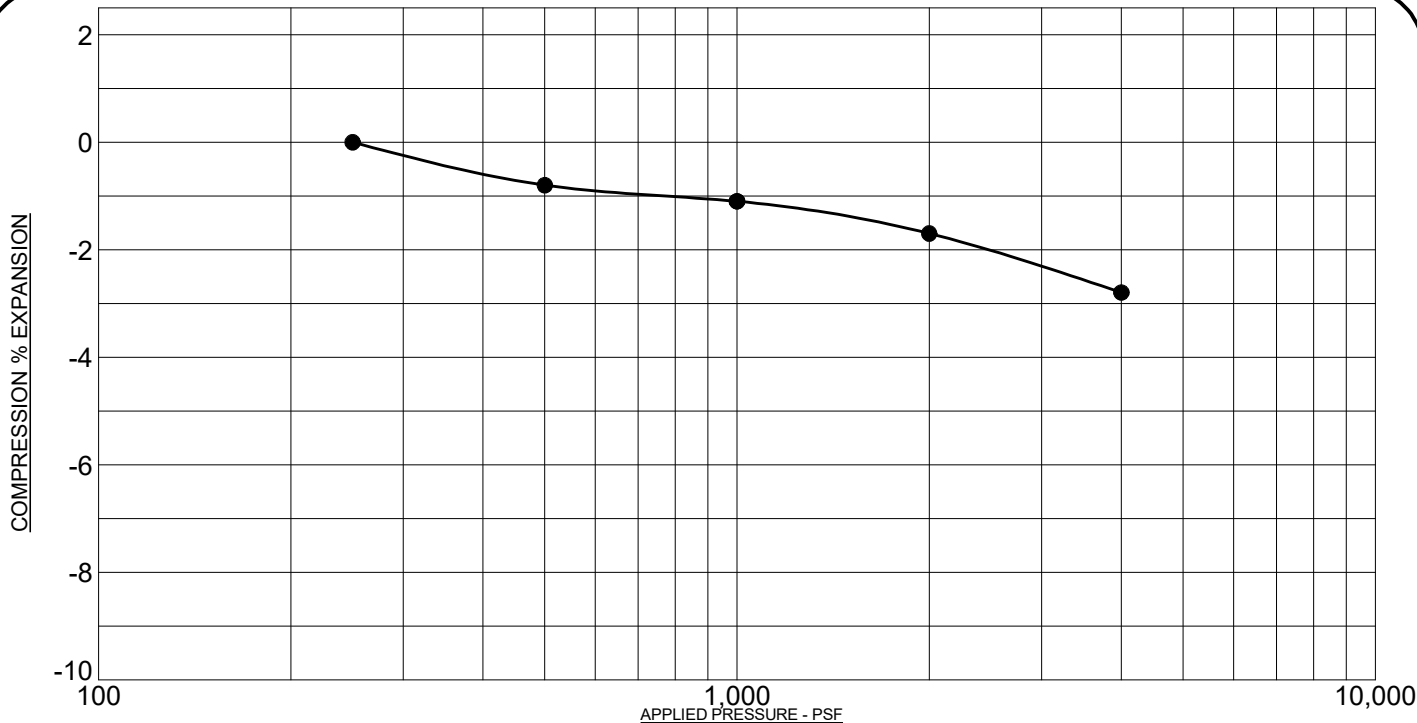
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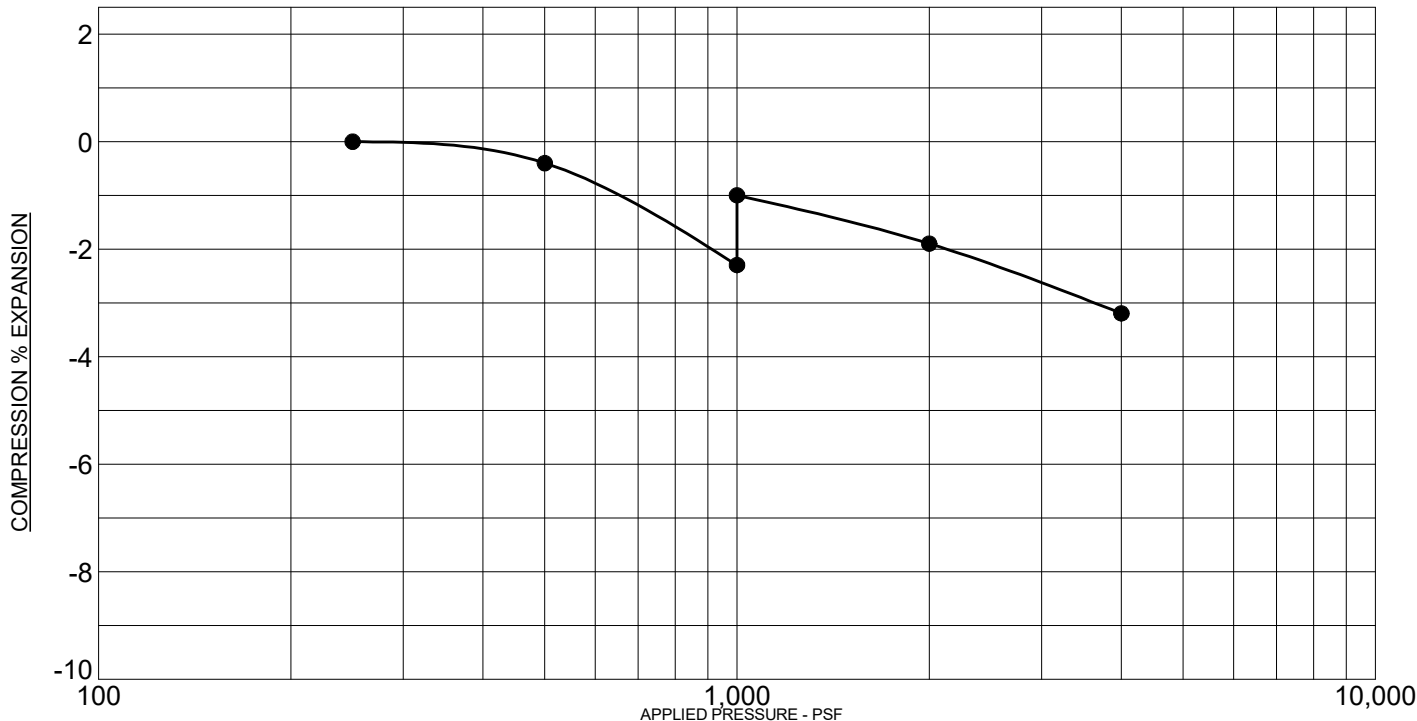
FIGURE No. 138

DATE 1/21/20



PROJECT: **Bent Grass Residential, Filing No. 2, El Paso County, Colorado**
 SAMPLE DESCRIPTION: **CLAYSTONE, SANDY**
 NOTE: **SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF**

SAMPLE LOCATION: **158 @ 9 FT**
 NATURAL DRY UNIT WEIGHT: **125.0 PCF**
 NATURAL MOISTURE CONTENT: **10.9%**
 PERCENT SWELL/COMPRESSION: **0.0**



PROJECT: **Bent Grass Residential, Filing No. 2, El Paso County, Colorado**
 SAMPLE DESCRIPTION: **CLAY, SANDY**
 NOTE: **SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF**

SAMPLE LOCATION: **161 @ 9 FT**
 NATURAL DRY UNIT WEIGHT: **113.2 PCF**
 NATURAL MOISTURE CONTENT: **14.4%**
 PERCENT SWELL/COMPRESSION: **1.3**

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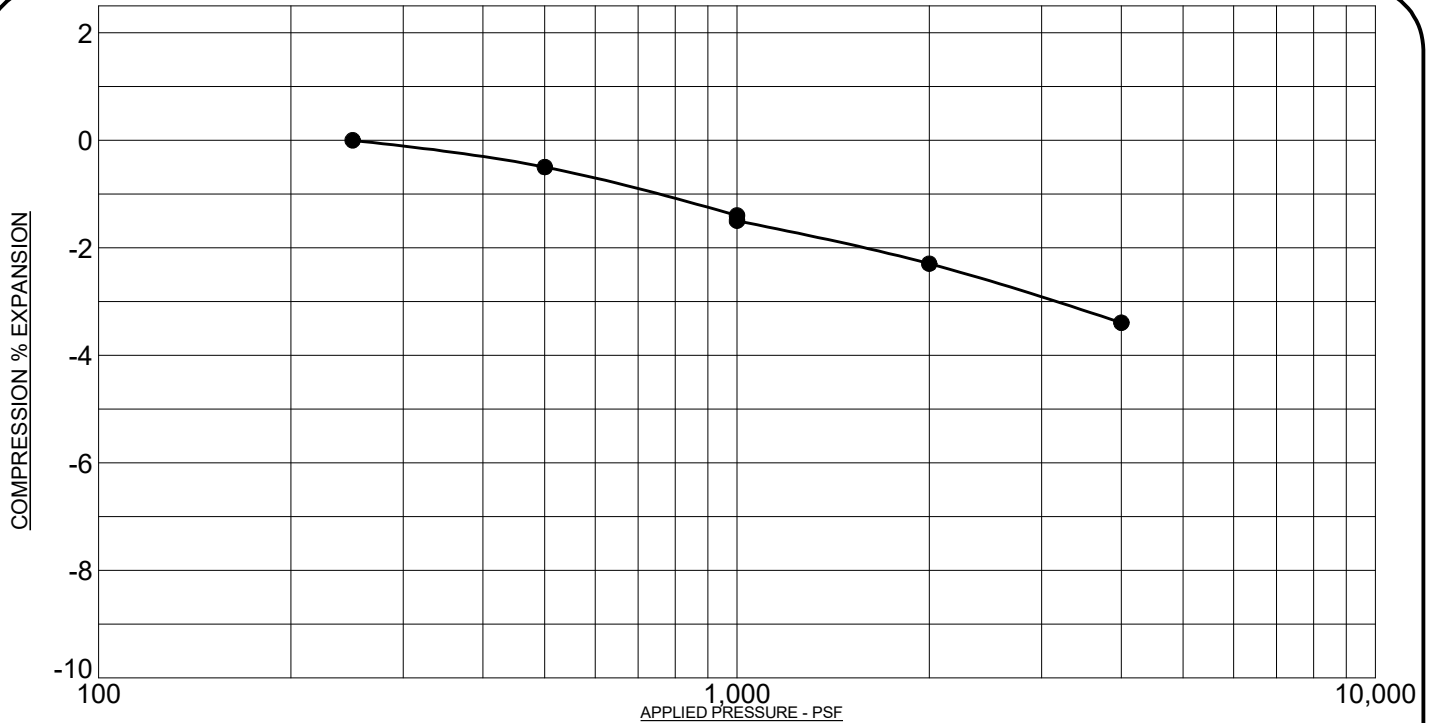
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SWELL/CONSOLIDATION TEST RESULTS

JOB No. 173093

FIGURE No. 139

DATE 1/21/20



PROJECT: **Bent Grass Residential, Filing No. 2, El Paso County, Colorado**
 SAMPLE DESCRIPTION: **CLAYSTONE, SANDY**
 NOTE: **SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF**

SAMPLE LOCATION: **163 @ 14 FT**
 NATURAL DRY UNIT WEIGHT: **PCF**
 NATURAL MOISTURE CONTENT: **%**
 PERCENT SWELL/COMPRESSION: **- 0.1**

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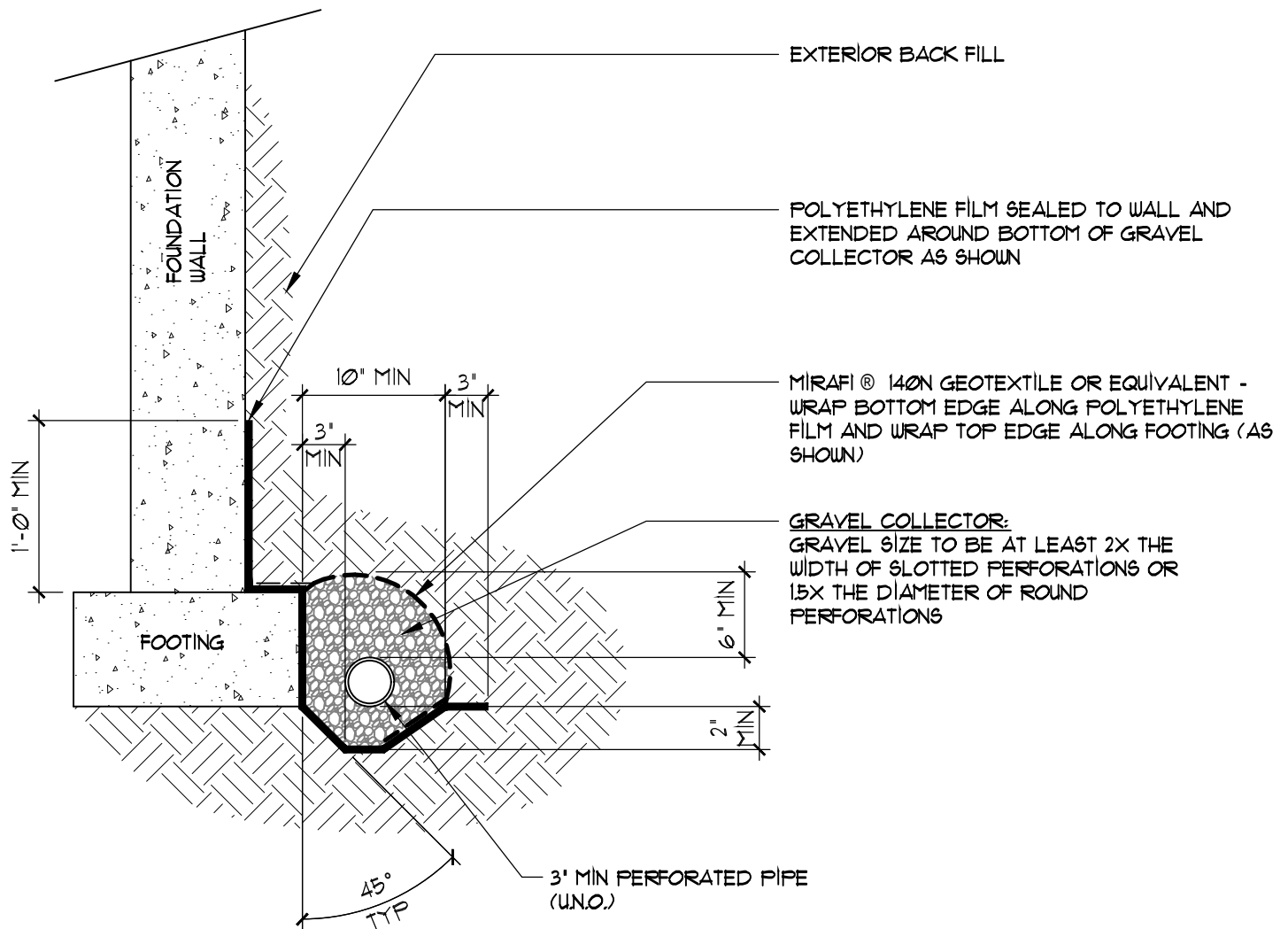
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FIGURE No. 140

DATE 1/21/20



GENERAL NOTES:

1. BOTTOM OF DRAIN PIPE SHALL BE AT OR BELOW BOTTOM OF FOOTING AT ALL LOCATIONS
2. ALL DRAIN PIPE SHALL BE PERFORATED PLASTIC, WITH THE EXCEPTION OF THE DISCHARGE PORTION WHICH SHALL BE SOLID, NON-PERFORATED PIPE.
3. DRAIN PIPE SHALL HAVE POSITIVE FALL THROUGHOUT.
4. DRAIN PIPE SHALL BE PROVIDED WITH A FREE GRAVITY OUTFALL, IF POSSIBLE. IF A GRAVITY OUTFALL CANNOT BE ACHIEVED, THEN A SUMP PIT AND PUMP SHALL BE USED.
5. ALL DRAIN COMPONENTS SHALL BE RATED/APPROVED BY THE MANUFACTURER FOR THE INSTALLED DEPTH AND APPLICATION
6. DRAIN SYSTEM, INCLUDING THE OUTFALL OF THE DRAIN, SHALL BE OBSERVED BY QUALIFIED PERSONNEL PRIOR TO BACKFILLING TO VERIFY INSTALLATION.

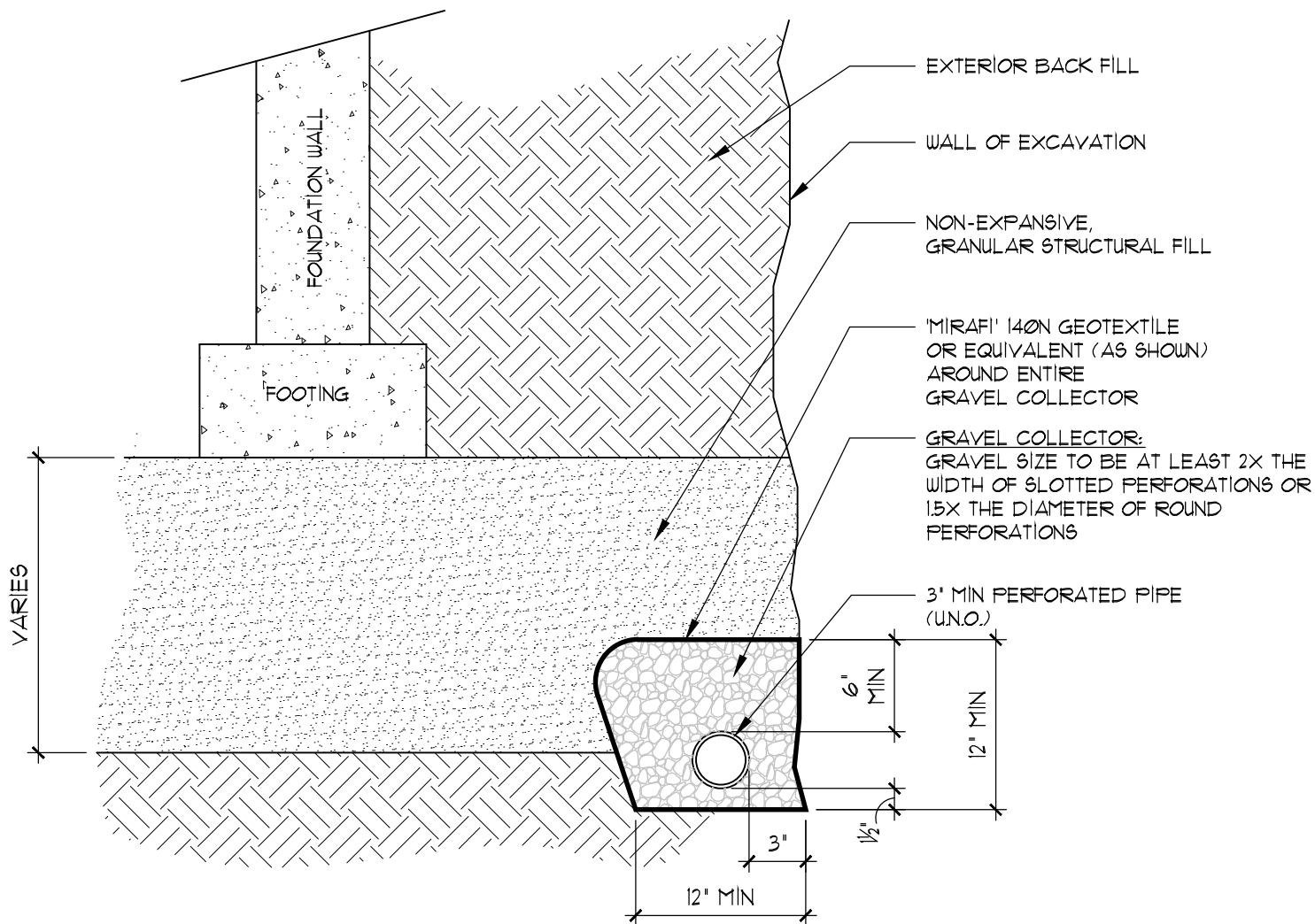


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PERIMETER DRAIN

FIG No. 141



GENERAL NOTES:

1. ALL DRAIN PIPE SHALL BE PERFORATED PLASTIC, WITH THE EXCEPTION OF THE DISCHARGE PORTION WHICH SHALL BE SOLID, NON-PERFORATED PIPE.
2. DRAIN PIPE SHALL HAVE POSITIVE FALL THROUGHOUT.
3. DRAIN PIPE SHALL BE PROVIDED WITH A FREE GRAVITY OUTFALL, IF POSSIBLE. IF A GRAVITY OUTFALL CANNOT BE ACHIEVED, THEN A SUMP PIT AND PUMP SHALL BE USED.
4. ALL DRAIN COMPONENTS SHALL BE RATED/APPROVED BY THE MANUFACTURER FOR THE INSTALLED DEPTH AND APPLICATION
5. DRAIN SYSTEM, INCLUDING THE OUTFALL OF THE DRAIN, SHALL BE OBSERVED BY QUALIFIED PERSONNEL PRIOR TO BACKFILLING TO VERIFY INSTALLATION.

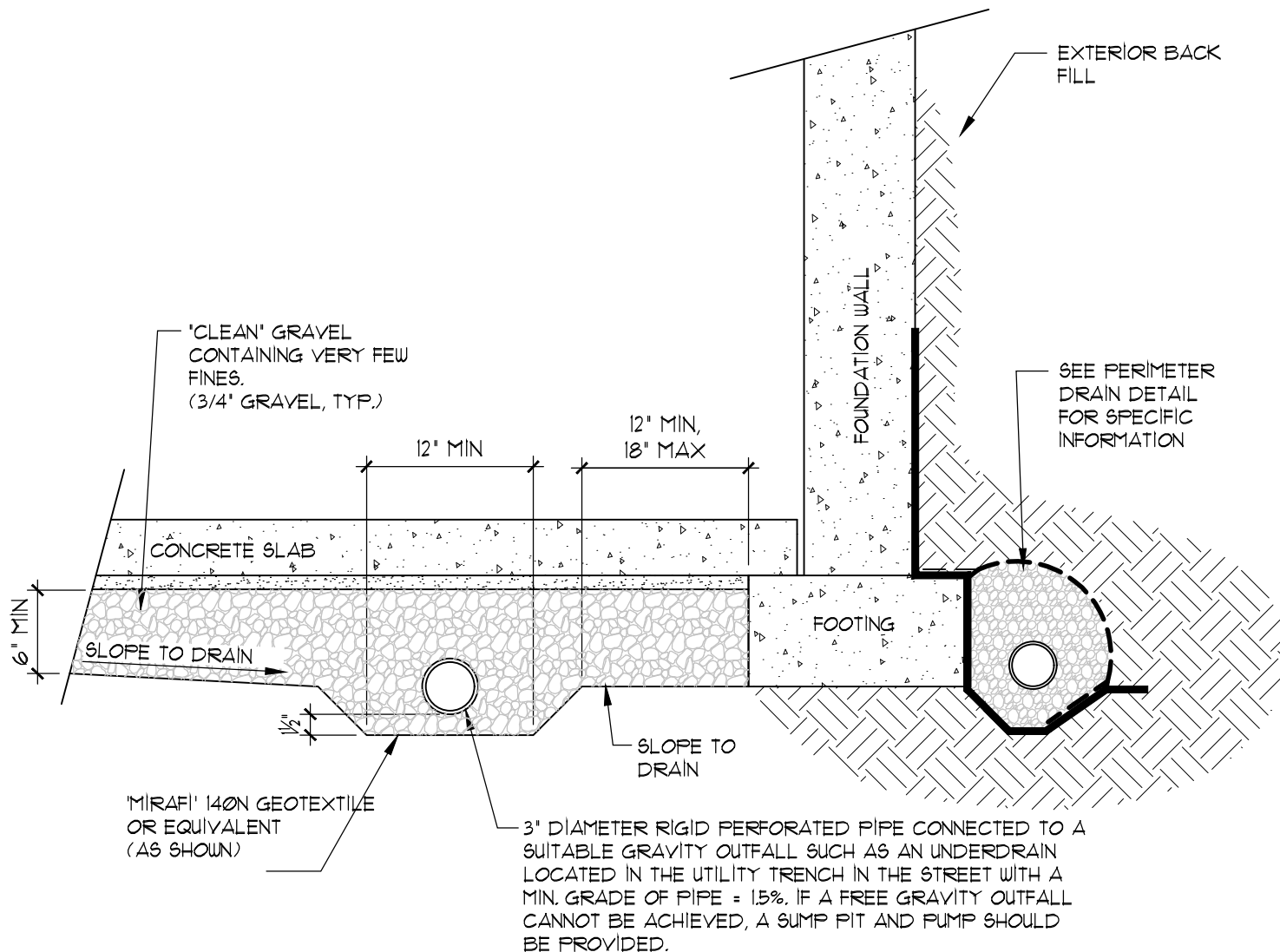


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OVEREXCAVATION
DRAIN

FIG No. 142



GENERAL NOTES:

1. ALL DRAIN PIPE SHALL BE PERFORATED PLASTIC, WITH THE EXCEPTION OF THE DISCHARGE PORTION WHICH SHALL BE SOLID, NON-PERFORATED PIPE.
2. DRAIN PIPE SHALL HAVE POSITIVE FALL THROUGHOUT.
3. DRAIN PIPE SHALL BE PROVIDED WITH A FREE GRAVITY OUTFALL, IF POSSIBLE. IF A GRAVITY OUTFALL CANNOT BE ACHIEVED, THEN A SUMP PIT AND PUMP SHALL BE USED.
4. ALL DRAIN COMPONENTS SHALL BE RATED/APPROVED BY THE MANUFACTURER FOR THE INSTALLED DEPTH AND APPLICATION
5. DRAIN SYSTEM, INCLUDING THE OUTFALL OF THE DRAIN, SHALL BE OBSERVED BY QUALIFIED PERSONNEL PRIOR TO BACKFILLING TO VERIFY INSTALLATION.



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UNDERSLAB DRAIN

FIG No. 143