

Architecture
Structural
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Materials Testing
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ROCKY MOUNTAIN GROUP
EMPLOYEE OWNED

SUBSURFACE SOIL INVESTIGATION

**Lots 3 - 20
Trails at Sheep Draw - 1st Replat
Greeley, Colorado**

PREPARED FOR:

**Journey Homes, LLC
7251 W. 20th St., L-200
Greeley, CO 80634**

JOB NO. 170850

June 18, 2019

Respectfully Submitted,

RMG – Rocky Mountain Group

**Lauren Caruso, P.E.
Geotechnical Project Engineer**



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PROJECT DESCRIPTION AND SCOPE

Project Location

The project lies in part of the south half of Section 7, Township 5 North, Range 66 West of the 6th P.M., Town of Greeley, Colorado. The site is generally located to the west of the City of Greeley, Colorado. The site is located to the south of W. 10th Street and west of 83rd Avenue. The 1st Replat is located in the northeast portion of the larger Trails at Sheep Draw Subdivision. The approximate location of the proposed subdivision is shown in the Site Vicinity Map on Figure 1.

Project Description

The project is to consist of the development of a parcel of vacant, semi-developed property for residential use. It is our understanding that this portion of the development will be occupied by single family residences with no multifamily units planned at this time. The plat map indicates there are a total of 20 lots proposed within the Trails at Sheep Draw Subdivision – 1st Replat. RMG previously completed a subsurface soils investigation at the Trails at Sheep Draw, last dated December 20, 2017, RMG Project Number 160270. Lots 1 and 2 of the 1st Replat were included in the original investigation from 2017 and are not included within this report.

Scope of Work

RMG was retained to assess the soil conditions and develop geotechnical engineering recommendations to support the residential land development for the proposed project. Our scope of services consisted of a field investigation, laboratory testing, engineering analysis, and report preparation.

This report presents geotechnical engineering recommendations for the design of foundations for the single family residences located on the lots listed above. The recommendations in this report are also contingent upon completion of an Open Excavation Observation by RMG, prior to construction of the foundations in order to verify subsurface conditions for the specific excavated site.

The following is excluded from the scope of this report including but not limited to geologic, natural and environmental hazards such as landslides, unstable slopes, seismicity, snow avalanches, water flooding, corrosive soils, erosion, radon, wild fire protection, hazardous waste and natural resources.

Existing Site Conditions

At the time of our field exploration the subdivision was semi-developed and had residents living in many of the finished homes. Water and sewer services were installed previous to the investigation throughout the entire site. Curb and gutter was installed in most of the subdivision but was in the process of being installed along a portion of 85th Avenue. Generally, the subdivision was established with a few undeveloped blocks scattered throughout. The lots located within the 1st Replat were vacant. Topography of the site generally sloped gently down from the northwestern to the southeastern portion of the site. The southern portion of the site is the lowest portion of the subdivision. Vegetation was not present at the site.

FIELD INVESTIGATION AND LABORATORY TESTING

The information included in this report has been compiled from field reconnaissance, exploratory soil borings and soil laboratory testing. Monitoring programs, which typically include instrumentation and/or observations for surface water flows, slope stability, subsidence, and similar conditions, are not known to exist and were not considered applicable for the scope of this report.

Subsurface Investigation

The subsurface conditions on the site were investigated by drilling 9 exploratory test borings; one bore on every other lot. The approximate locations of the test borings are presented in the Boring Location Plan on Figure 2.

The test borings were advanced with a truck-mounted, continuous-flight auger drill rig to depths of about 20 feet below the existing ground surface (bgs). Soil samples were obtained from the test borings in general accordance with ASTM D-3550 utilizing a 2½-inch OD modified California sampler. The approximate depth of groundwater was investigated in each of the test borings at the time of drilling. The static groundwater levels were measured following the completion of drilling. The Test Boring Logs are presented in Figures 3 through 7. An Explanation of Test Boring Logs is presented in Figure 8.

Laboratory Testing

The moisture content for the recovered samples was obtained in the laboratory. Grain-size analysis, Atterberg Limits, and 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 8. Soil Classification and Atterberg Test Results are presented in Figure 9. Swell/Consolidation Test Results are presented in Figures 9 through 11.

SUBSURFACE CONDITIONS

Soil and Bedrock Profile

The subsurface materials encountered in the test borings were classified using the Unified Soils Classification System (USCS). The subsurface materials encountered in the test borings generally consisted of an upper soil that consisted of stiff to hard lean sandy clay. Medium hard to hard siltstone bedrock was encountered in 3 of the test borings at depths of 14 to 18 feet below grade.

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 5 of the 9 test borings at the time of drilling. When checked following the completion of drilling, static groundwater levels were encountered in 5 of the lots at depths

ranging between 14 and 19 feet below existing grade. 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. The groundwater appears to be a perched condition which means it will be more greatly impacted by surface water.

CONCLUSIONS

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. The results of this investigation indicate that the site is suitable for the proposed project provided the recommendations presented herein are implemented.

As previously discussed the site is underlain primarily by an upper materials comprised of stiff to hard sandy lean clay and medium hard to very hard siltstone bedrock. The sandy lean clay and siltstone bedrock samples tested generally exhibited consolidations of less than 0.4% when wetted against surcharge pressures of 1,000 pounds per square foot. The samples tested did not exhibit swell potential.

Geotechnical 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.

SITE DEVELOPMENT AND EARTHWORK

Site Preparation

Prior to construction the ground surface in proposed structure and improvement areas should be stripped of existing vegetation, debris, topsoil, undocumented fill, soft, loose, or disturbed native soils, and other deleterious material. Materials generated during clearing operations should be removed from the project site for disposal. Soft, loose, or yielding subgrade should be removed to a depth that exposes firm subgrade and replaced with structural fill. In areas to receive structural fill, the exposed subgrade should be scarified, moisture conditioned, and compacted per the recommendations set forth in this report.

Excavations

The on-site surface and near surface soils may generally be excavated with heavy-duty earthmoving or excavation equipment in good operating condition. The very hard bedrock encountered may require the use of heavier excavating equipment to break apart the siltstone and sandstone. During wet weather, earthen berms, swales, or other methods should be used where necessary to route water away from excavations. Water that accumulates in excavations should be promptly pumped out or otherwise removed and the area allowed to dry before resuming construction.

Foundation Wall Backfill

Backfill should be placed in loose lifts not exceeding 8 to 12 inches with material no greater than 4 inches in diameter, moisture conditioned to facilitate compaction (usually within 2 percent of the

optimum moisture content) and compacted to 90 percent of the maximum dry density as determined by the Standard Proctor test, ASTM D-698 on exterior sides of walls in landscaped areas. In areas where backfill supports pavement and concrete flatwork, the materials should be moisture conditioned to ± 2 percent optimum moisture content compacted to 95 percent of the maximum dry density as determined by the Standard Proctor test, ASTM D-698.

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 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.

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) 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 placed beneath the footing and slabs shall consist of granular, non-expansive material, and it 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. The materials should be compacted by mechanical means.

Materials used for structural fill should be approved by 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.

FOUNDATION OPTIONS

Anticipated Foundation Systems

A spread footing foundation system may be utilized on all lots included within this investigation. The maximum allowable bearing pressure of 1,500 psf with no minimum dead load requirement may be utilized for design purposes.

Foundation components must be below all organic material and should extend 30 inches or more below the lowest exterior finished grade for frost protection. 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.

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 SYSTEMS

Interior Floor Slabs

Vertical slab movement of one to two inches is considered possible for slabs bearing on the soils encountered. In some cases, vertical movement may exceed this range. 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. Control and construction joints should be placed in accordance with the latest guidelines and standards published by the American Concrete Institute (ACI) and applicable local Building Code requirements.

Interior Partitions

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 walls should be designed to resist lateral earth pressures. For the on-site upper sandy clay materials encountered at the site, we recommend an equivalent fluid pressure of 50 pcf. The lateral pressure applies to level, drained backfill conditions. These values assume the backfill will not become saturated during the life of the structure, therefore positive surface drainage must be maintained. It is also assumed that compaction within approximately 5 feet of the walls will be accomplished with relatively light compaction equipment. Equivalent Fluid Pressures for sloping/undrained conditions should be determined on an individual basis.

SURFACE GRADING AND DRAINAGE

Grading and Irrigation

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. Homeowners 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.

The perimeter drain can be installed as an interior (if a minimum of six inches of free draining aggregate is placed beneath the slab) or exterior perimeter drain system. The perforated drainage pipe should be installed so the top of the pipe is not above the top of the footing and should be surrounded by material to reduce the infiltration of silt into the drainage pipe. The pipe should be installed in one of the following manners:

1) The pipe may be installed as level as possible as long as the pipe is placed in a minimum of six inches of gravel or crushed stone and exits into a sump pit with mechanical means to remove the water.

Or

2) The pipe may be installed as a gravity system with a minimum 1/8 inch fall per 1 foot length surrounded by a minimum six inches of gravel or crushed stone that either daylight to allow free flow drainage or exits into a sump pit with mechanical means to remove the water.

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.

CONCRETE

Sulfate testing was performed on selected samples based on ASTM C1580. Test results showed 0% by weight, indicating the soils present Class 0 (Nil to Low) sulfate exposure. Based on these results Type I/II cement or equivalent mixture according to ACI 201.2R-10 is suggested for concrete in contact with the subsurface materials. Cement type shall be designed and approved by a licensed Colorado Professional Engineer and Foundation Designer. Calcium chloride should not be used for the onsite soils. 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.

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.

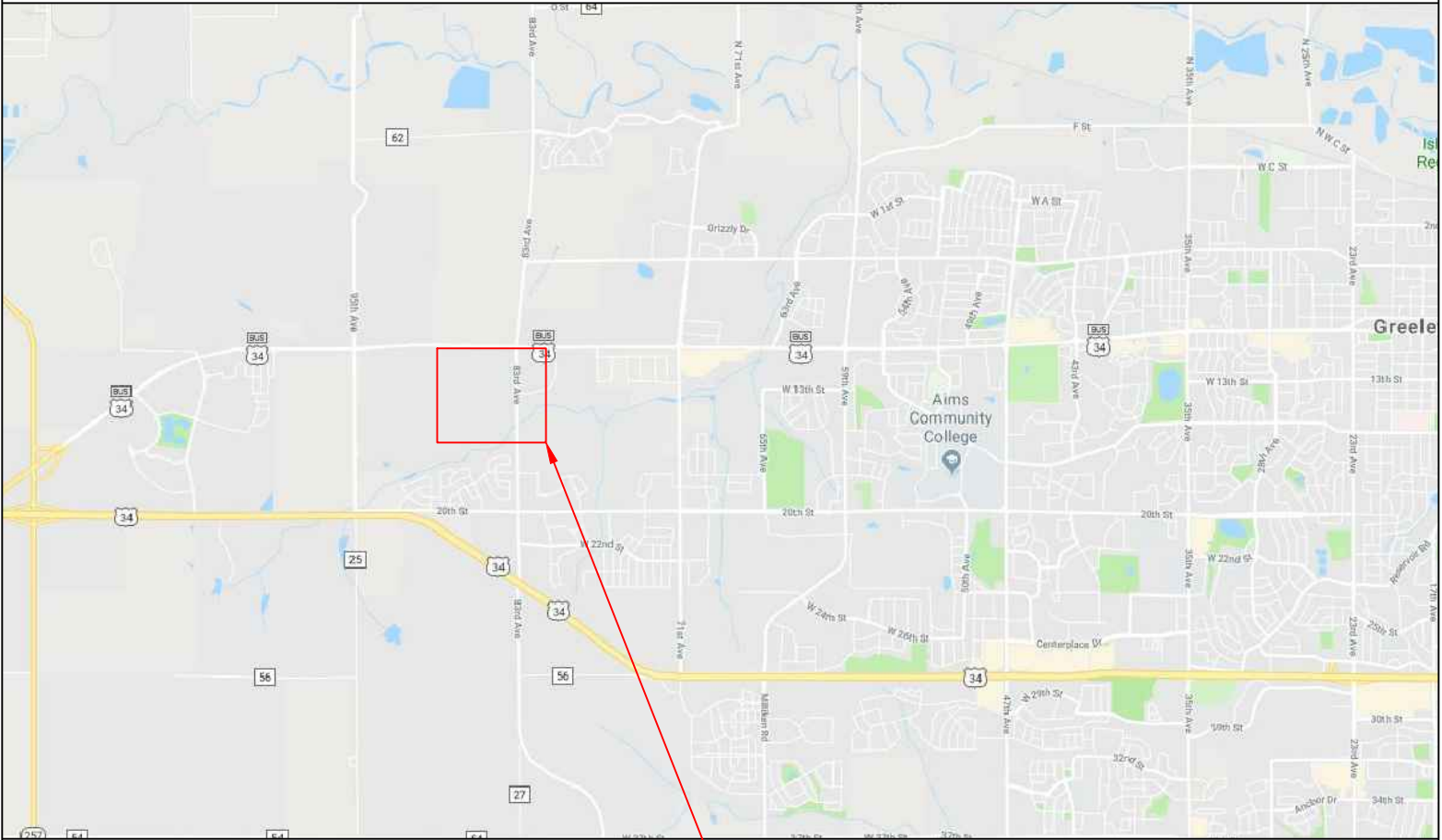
This report has been prepared for the exclusive use by **Journey Homes** for application as an aid in the design and construction of the proposed development in accordance with generally accepted geotechnical engineering practices. The analyses and recommendations in this report are based in part upon data obtained from test borings and site observations. 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



SITE

VICINITY MAP
 THE TRAILS AT
 SHEEPDRAW-1ST REPLAT
 GREELEY, CO

CLIENT:
 JOURNEY HOMES, LLC
 7251 W. 20TH ST., L-200
 GREELEY, CO 80634
 RMG PROJECT #: 170850
 DATE: 06/18/2019



ROCKY MOUNTAIN
 GROUP
 1601 37TH STREET
 EVANS, CO 80620
 PHONE: (970) 330-1071
 FAX: (970) 330-1252



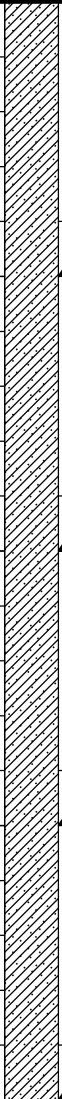

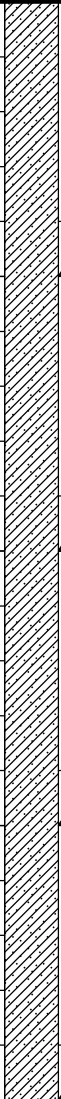

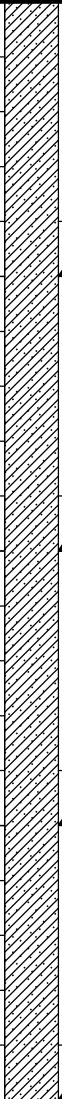

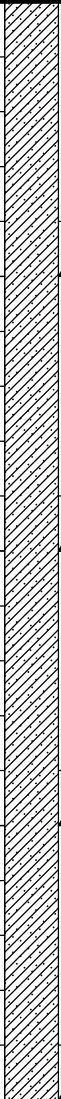

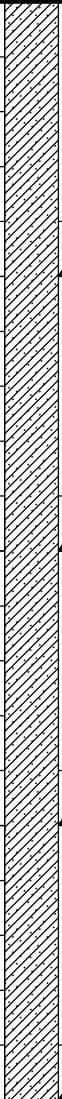

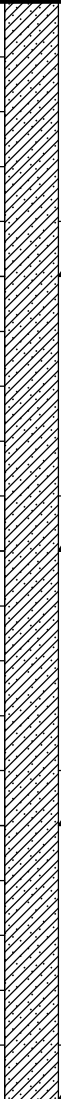

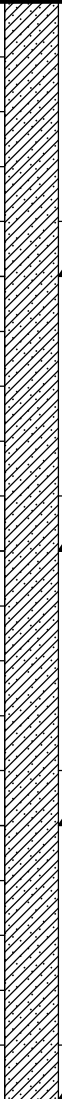


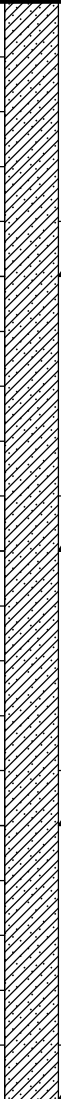

INCLUDED IN PREVIOUS
RMG SOILS INVESTIGATION #160270

BORE LOCATION PLAN
THE TRAILS AT
SHEEPDRAW-1ST REPLAT
GREELEY, CO

CLIENT:
JOURNEY HOMES, LLC
7251 W. 20TH ST., L-200
GREELEY, CO 80634
RMG PROJECT #: 170850
DATE: 06/18/2019



ROCKY MOUNTAIN
GROUP
1601 37TH STREET
EVANS, CO 80620
PHONE: (970) 330-1071
FAX: (970) 330-1252

TEST BORING: L04 DATE DRILLED: 5/24/19 REMARKS: NO GROUNDWATER ON 5/25/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	TEST BORING: L06 DATE DRILLED: 5/24/19 REMARKS: GROUNDWATER @ 19.0' 5/25/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
CLAY, sandy brown, very stiff to hard, moist	5			23	10.7	CLAY, sandy brown, very stiff to hard, dry to moist	5			21	10.8
	10			29	6.7		10			26	13.9
	15			22	19.4		15			21/6"	6.0
	20			44	10.5		 20			50/9"	14.5

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Colorado Springs - (Corporate Office)
2910 Austin Bluffs Parkway
Colorado Springs, CO 80918
(719) 548-0600

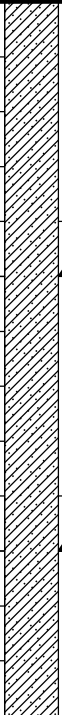

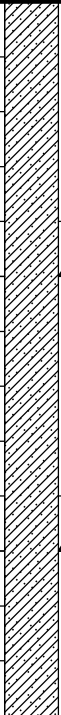



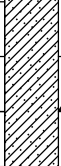



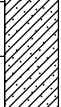


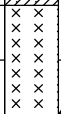

SOUTHERN COLORADO, DENVER METRO, NORTHERN COLORADO

TEST BORING LOGS

JOB No. 170850

FIGURE No. 3

DATE 6/17/19

TEST BORING: L08 DATE DRILLED: 5/24/19 REMARKS: NO GROUNDWATER ON 5/25/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	TEST BORING: L10 DATE DRILLED: 5/24/19 REMARKS: GROUNDWATER @ 16.0' 5/25/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
CLAY, sandy brown, very stiff, dry to moist	5			21	10.9	CLAY, sandy brown, very stiff, dry to moist	5			19	10.2
SAND, w/ gravel brown, medium dense, moist	10			22	13.8		10			24	13.2
Auger Refusal~16'	15			40	7.8		15			25	15.2
				AR	-	SILTSTONE orange to brown, medium hard, wet	20			50/10"	25.0

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2910 Austin Bluffs Parkway
Colorado Springs, CO 80918
(719) 548-0600

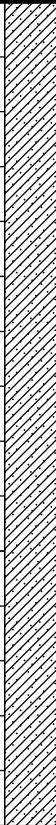

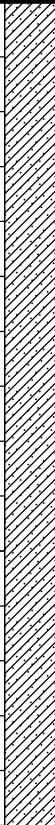

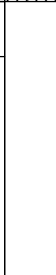

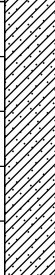

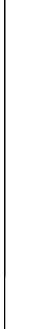

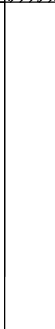



SOUTHERN COLORADO, DENVER METRO, NORTHERN COLORADO

TEST BORING LOGS

JOB No. 170850

FIGURE No. 4

DATE 6/17/19

TEST BORING: L12 DATE DRILLED: 5/24/19 REMARKS: NO GROUNDWATER ON 5/25/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	TEST BORING: L14 DATE DRILLED: 5/24/19 REMARKS: GROUNDWATER @ 19.0' 5/25/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
CLAY, sandy w/ gravel brown, stiff to very stiff, dry to moist	5			16	5.4	CLAY, sandy brown, stiff to very stiff, dry to moist	5			18	10.1
Auger Refusal~15'	10			20	6.0		10			21	13.6
	15			21	16.6		15			26	12.9
			AR	AR	--		20			22	20.7

ROCKY MOUNTAIN GROUP

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Structural
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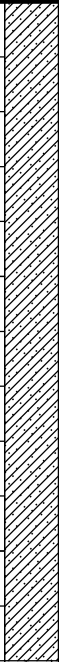
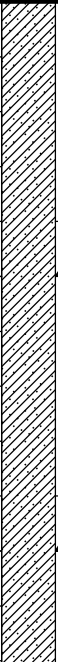




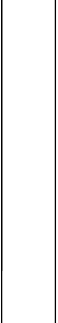
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TEST BORING LOGS

JOB No. 170850

FIGURE No. 5

DATE 6/17/19

TEST BORING: L15 DATE DRILLED: 5/24/19 REMARKS: NO GROUNDWATER ON 5/25/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	TEST BORING: L17 DATE DRILLED: 5/24/19 REMARKS: GROUNDWATER @ 14.0' 5/25/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
CLAY, sandy brown, very stiff, dry to moist	5		▲	20	11.0	CLAY, sandy brown, very stiff, dry to moist	5		▲	20	10.7
SAND, w/ gravel brown, medium hard, moist to wet	10		▲	23	6.4		10		▲	23	15.3
Auger Refusal~17'	15		▲	50/12"	14.5	SILTSTONE tan, medium hard to very hard, wet	15		▲	50/11"	--
							20		▲	50/5"	22.4

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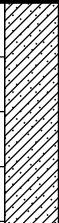



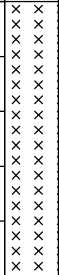



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TEST BORING LOGS

JOB No. 170850

FIGURE No. 6

DATE 6/17/19

TEST BORING: L19 DATE DRILLED: 5/24/19 REMARKS: GROUNDWATER @ 15.0' 5/25/19	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
CLAY, sandy brown, very stiff, dry to moist	5			22	7.1
SAND, w/ gravel brown, medium dense, moist to wet	10			26	11.5
SILTSTONE tan, hard to very hard, wet	15			44	17.4
	20			50/0"	--

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TEST BORING LOGS

JOB No. 170850

FIGURE No. 7

DATE 6/17/19

SOILS DESCRIPTION



SAND AND GRAVEL



SANDY CLAY



SILTSTONE

UNLESS NOTED OTHERWISE, ALL LABORATORY TESTS PRESENTED HEREIN WERE PERFORMED BY:
 RMG - ROCKY MOUNTAIN GROUP
 1601 37TH ST.
 EVANS, 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. 170850

FIGURE No. 8

DATE 6/17/19

Test Boring No.	Depth	Water Content (%)	Dry Density (pcf)	Liquid Limit	Plasticity Index	% Retained No.4 Sieve	% Passing No. 200 Sieve	Load (psf)	% Swell @ 1000 psf	USCS Classification
L04	4.0	10.7	111.8							
L04	9.0	6.7	116.0							
L04	14.0	19.4	106.6							
L04	19.0	10.5	92.9							
L06	4.0	10.8	120.9							
L06	9.0	13.9	116.9	30	15	2.2	50.7	1000	0.0	CL
L06	14.0	6.0								
L06	19.0	14.5	119.3							
L08	4.0	10.9	112.1							
L08	9.0	13.8	110.9							
L08	14.0	7.8	125.8							
L10	4.0	10.2	111.5	26	12	0.0	33.4	1000	- 0.5	SC
L10	9.0	13.2	119.6							
L10	14.0	15.2	117.0							
L10	19.0	25.0	99.0							
L12	4.0	5.4	120.1							
L12	9.0	6.0	110.9							
L12	14.0	16.6	113.2							
L14	4.0	10.1	112.2	26	12		48.5	1000	- 0.2	SC
L14	9.0	13.6	109.4							
L14	14.0	12.9	115.3							
L14	19.0	20.7	105.3							
L15	4.0	11.0	108.7							
L15	9.0	6.4	105.7							
L15	14.0	14.5	125.6							
L17	4.0	10.7	105.6					1000	- 0.4	
L17	9.0	15.3	116.0							
L17	19.0	22.4	99.4							
L19	4.0	7.1	115.0							
L19	9.0	11.5	120.7					1000	- 0.1	
L19	14.0	17.4	114.2							

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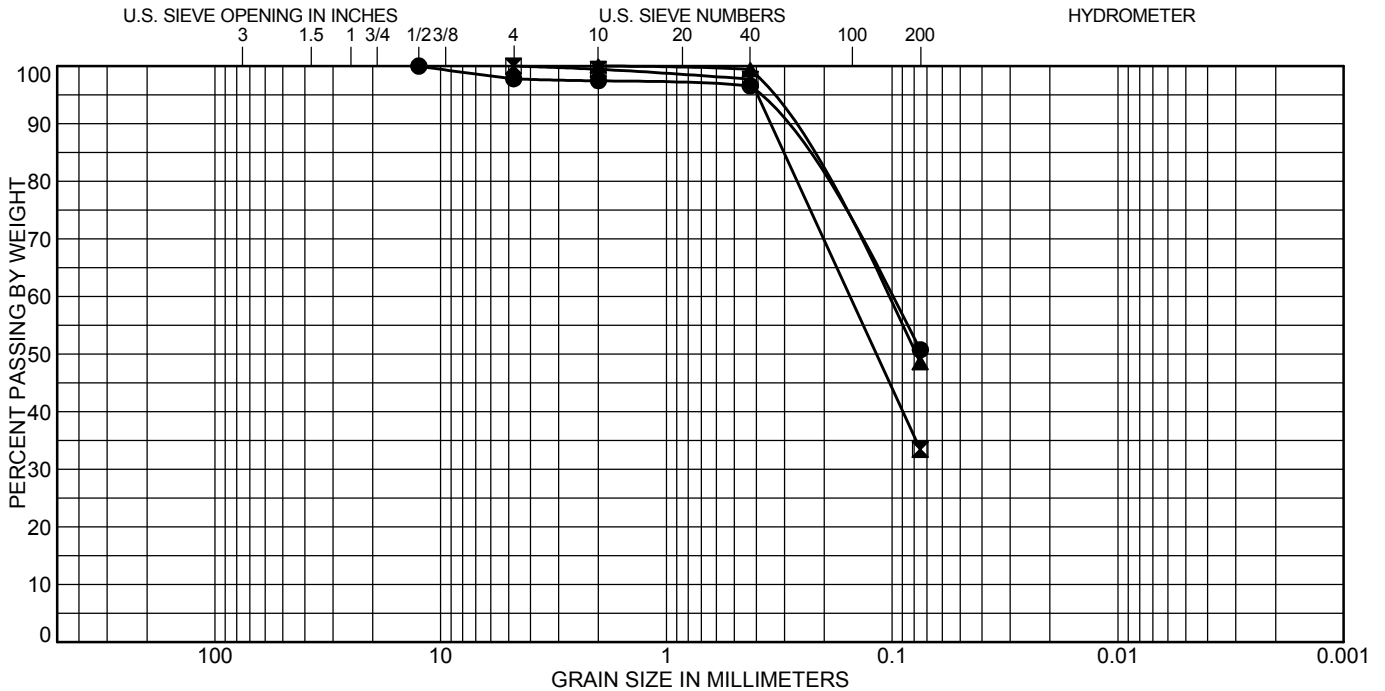
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SUMMARY OF LABORATORY TEST RESULTS

JOB No. 170850
 FIGURE No. 9
 PAGE 1 OF 1
 DATE 6/17/19



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Test Boring	Depth (ft)	Classification	LL	PL	PI
● L06	9.0	SANDY LEAN CLAY(CL)	30	15	15
⊠ L10	4.0	CLAYEY SAND(SC)	26	14	12
▲ L14	4.0	CLAYEY SAND(SC)	26	14	12

Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay
● L06	9.0	2.2	47.1	50.7	
⊠ L10	4.0	0.0	66.6	33.4	
▲ L14	4.0	0.0	51.5	48.5	

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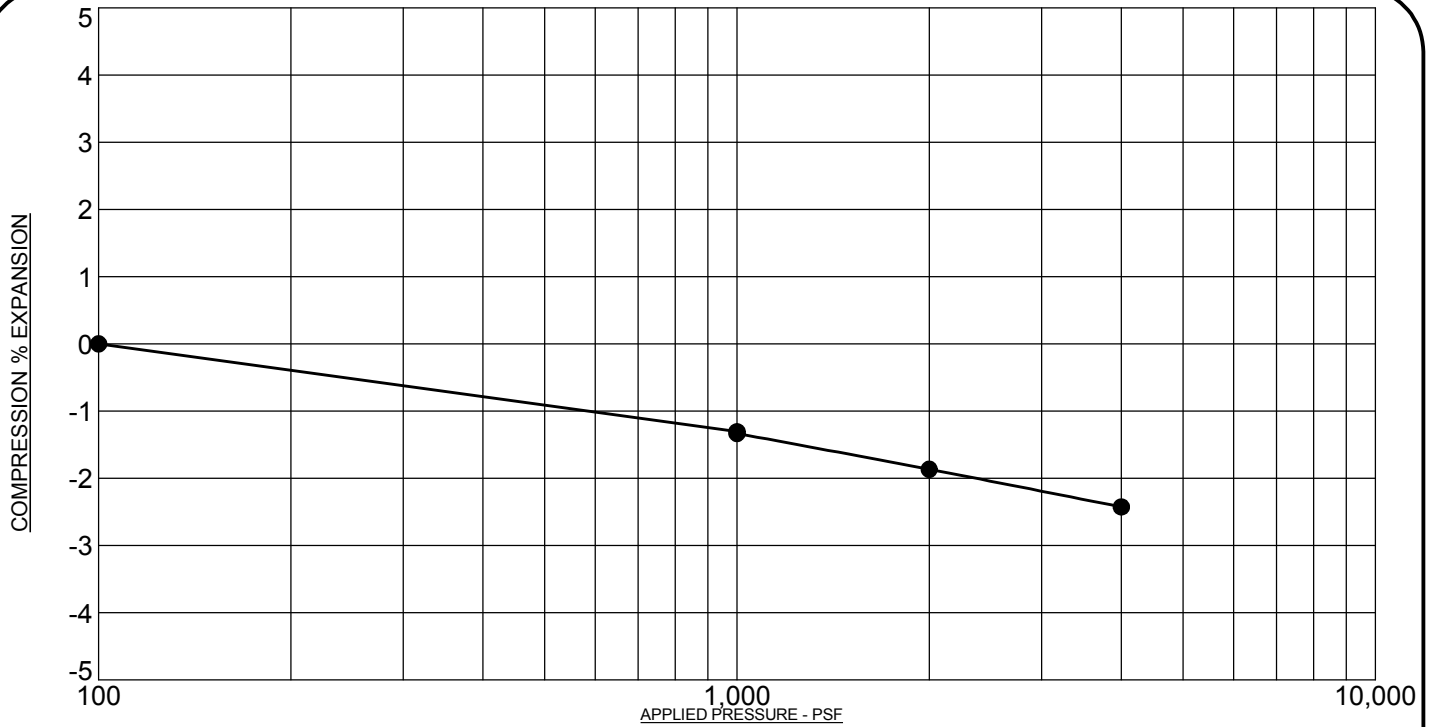
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SOIL CLASSIFICATION DATA

JOB No. 170850

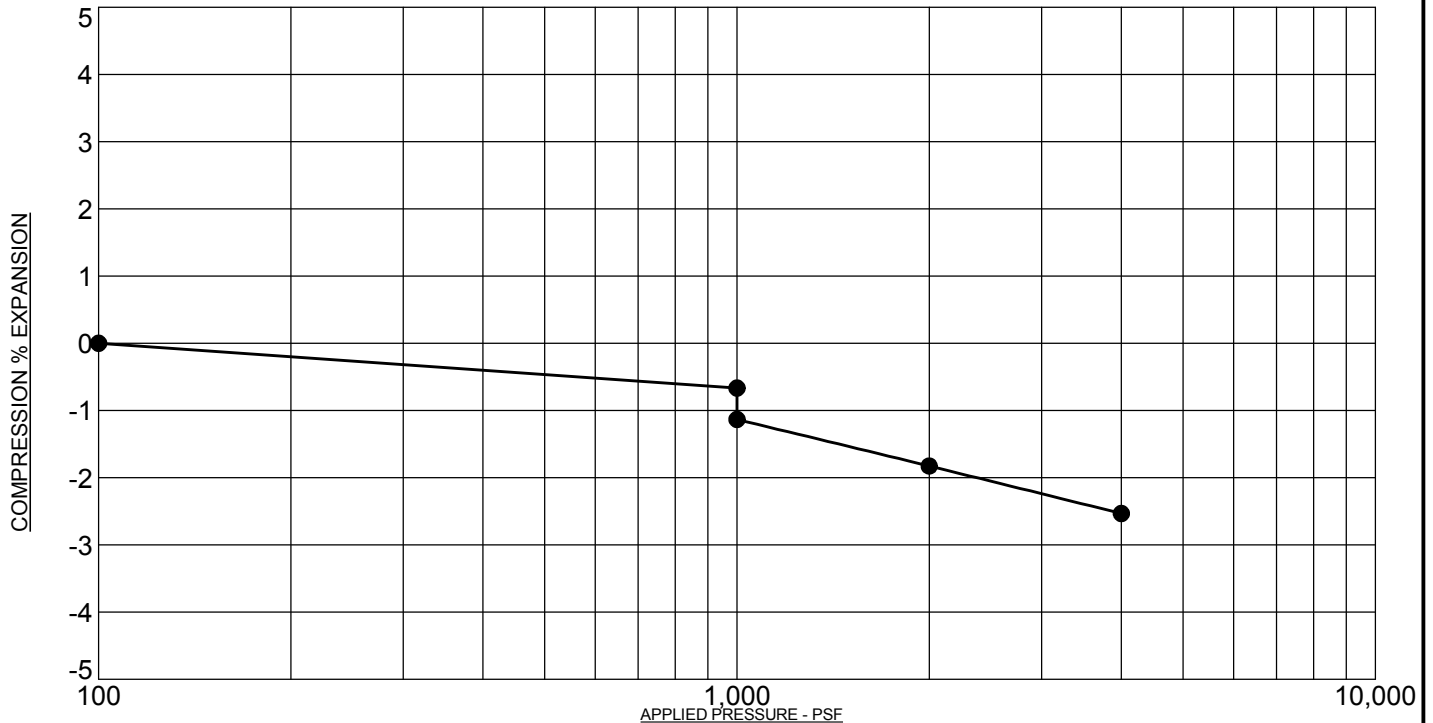
FIGURE No. 10

DATE 6/17/19



PROJECT: Trails at Sheepdraw Greeley, Colorado
 SAMPLE DESCRIPTION: sandy clay
 NOTE: SAMPLE WAS INUNDATED WITH WATER AT 1000 PSF

SAMPLE LOCATION: L06 @ 9 FT
 NATURAL DRY UNIT WEIGHT: 120.0 PCF
 NATURAL MOISTURE CONTENT: 13.4%
 PERCENT SWELL/COMPRESSION: 0.0



PROJECT: Trails at Sheepdraw Greeley, Colorado
 SAMPLE DESCRIPTION: sandy clay
 NOTE: SAMPLE WAS INUNDATED WITH WATER AT 1000 PSF

SAMPLE LOCATION: L10 @ 4 FT
 NATURAL DRY UNIT WEIGHT: 111.5 PCF
 NATURAL MOISTURE CONTENT: 9.8%
 PERCENT SWELL/COMPRESSION: -0.5

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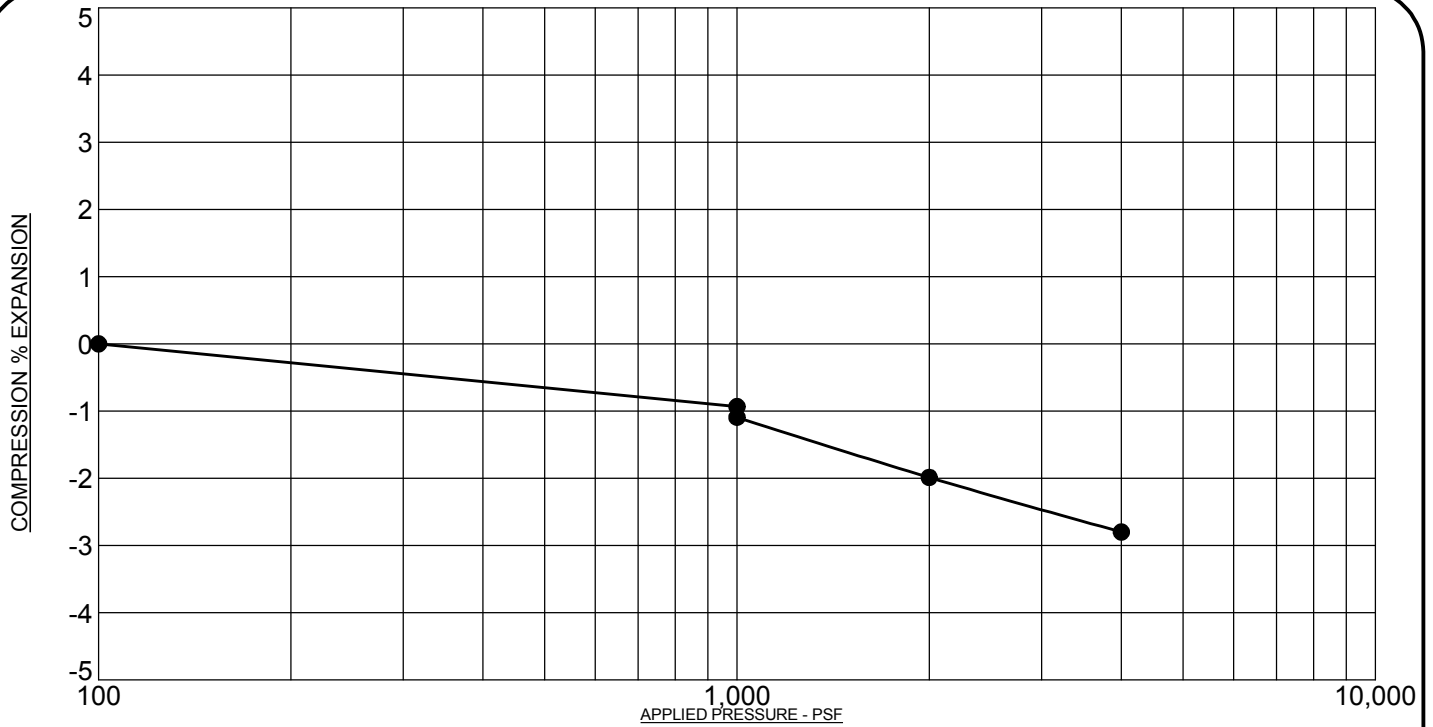
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SWELL/CONSOLIDATION TEST RESULTS

JOB No. 170850

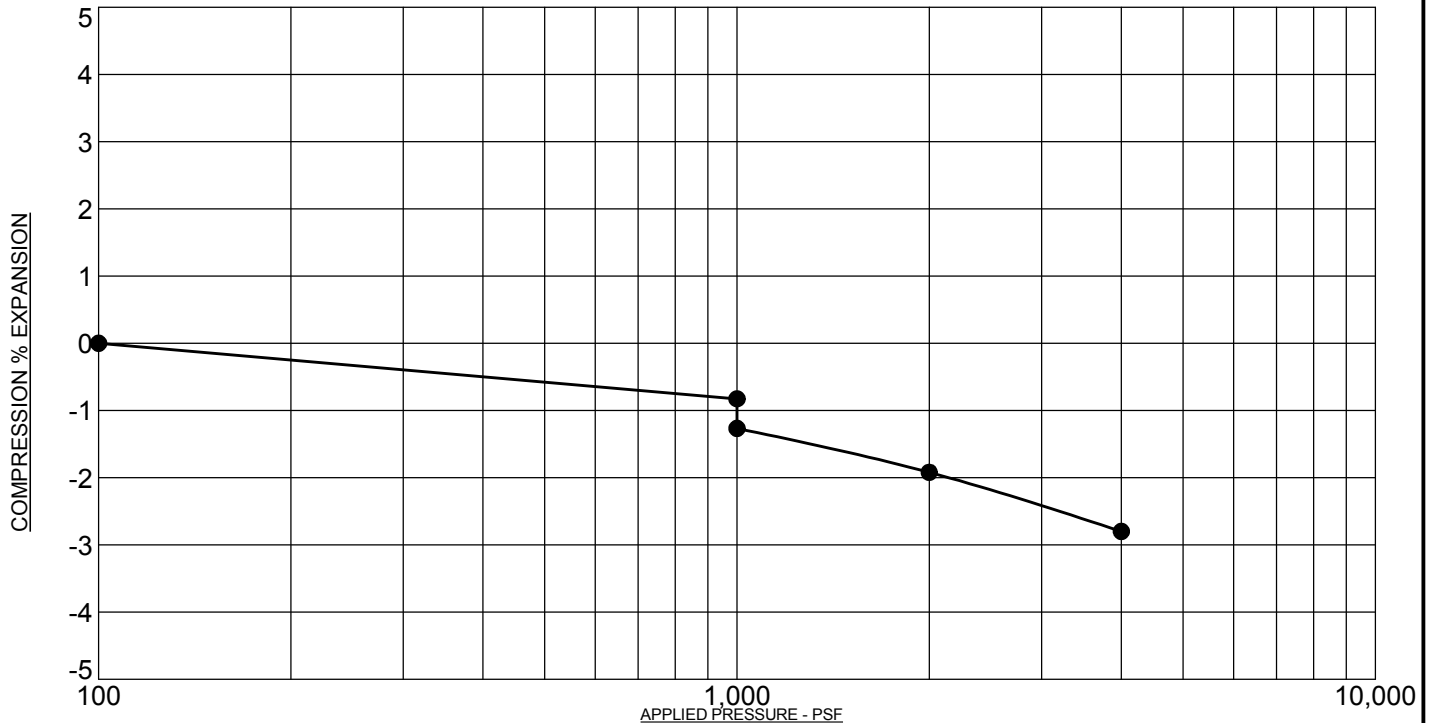
FIGURE No. 11

DATE 6/17/19



PROJECT: Trails at Sheepdraw Greeley, Colorado
 SAMPLE DESCRIPTION: sandy clay
 NOTE: SAMPLE WAS INUNDATED WITH WATER AT 1000 PSF

SAMPLE LOCATION: L14 @ 4 FT
 NATURAL DRY UNIT WEIGHT: 110.9 PCF
 NATURAL MOISTURE CONTENT: 10.9%
 PERCENT SWELL/COMPRESSION: - 0.2



PROJECT: Trails at Sheepdraw Greeley, Colorado
 SAMPLE DESCRIPTION: sandy clay
 NOTE: SAMPLE WAS INUNDATED WITH WATER AT 1000 PSF

SAMPLE LOCATION: L17 @ 4 FT
 NATURAL DRY UNIT WEIGHT: 107.9 PCF
 NATURAL MOISTURE CONTENT: 11.0%
 PERCENT SWELL/COMPRESSION: - 0.4

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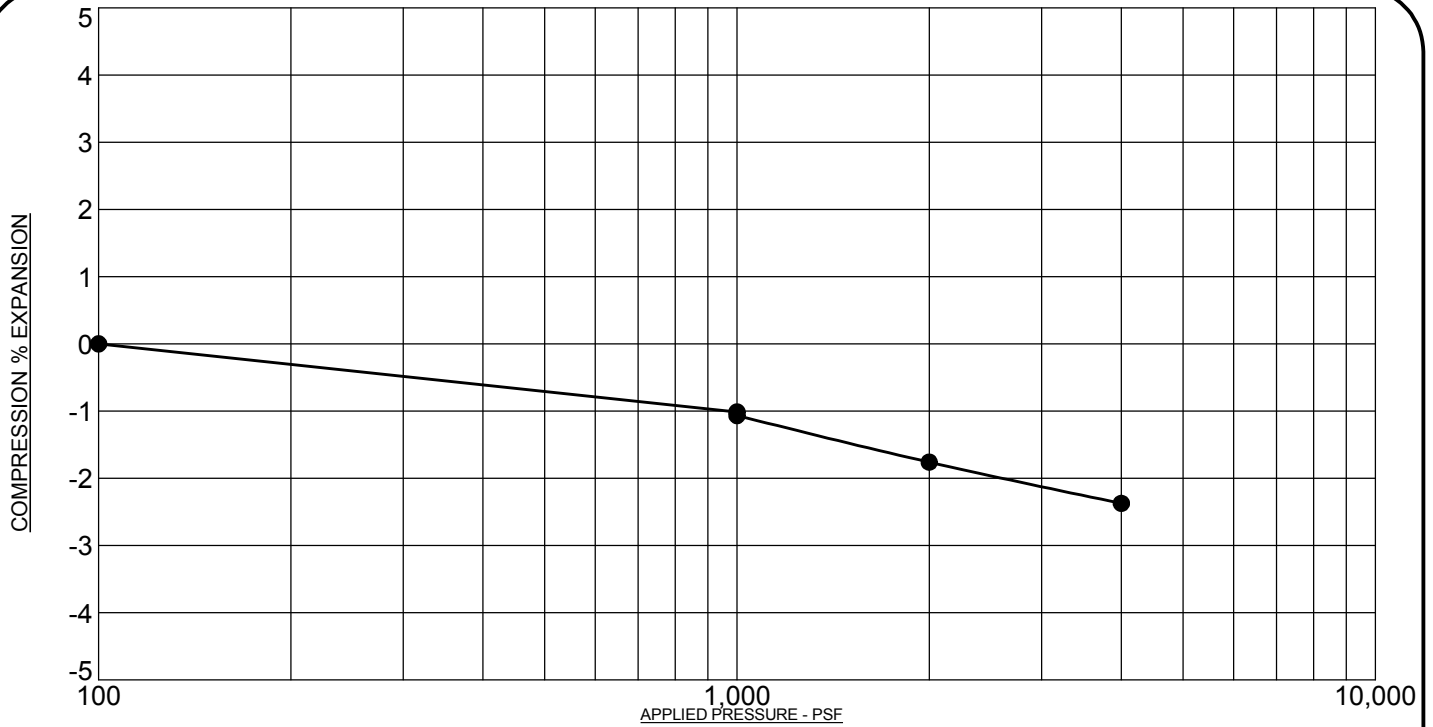
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SWELL/CONSOLIDATION TEST RESULTS

JOB No. 170850

FIGURE No. 12

DATE 6/17/19



PROJECT: Trails at Sheepdraw Greeley, Colorado
 SAMPLE DESCRIPTION: sandy clay
 NOTE: SAMPLE WAS INUNDATED WITH WATER AT 1000 PSF

SAMPLE LOCATION: L19 @ 9 FT
 NATURAL DRY UNIT WEIGHT: 121.4 PCF
 NATURAL MOISTURE CONTENT: 11.6%
 PERCENT SWELL/COMPRESSION: - 0.1

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SWELL/CONSOLIDATION TEST RESULTS

JOB No. 170850

FIGURE No. 13

DATE 6/17/19