Materials Testing Forensic Civil/Planning

SUBSURFACE SOIL INVESTIGATION

Hunters Crossing Sec 3, T6N, R67W of the 6th P.M. Severance, Colorado

PREPARED FOR:

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

JOB NO. 167717

August 23, 2019

Respectfully Submitted,

RMG - Rocky Mountain Group

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PROJECT DESCRIPTION AND SCOPE

Project Location

The project lies in part of the northeast quarter of Section 3, Township 6 North, Range 67 West of the 6th Principal Meridian. The site is generally located to the west of the Town of Severance in Weld County, Colorado. The site is located south of County Road 74 and west of County Road 21. The approximate location of the site 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 development will be occupied by single family residences with no multifamily units planned at this time. RMG was retained to evaluate the subsurface conditions for the 409 lots within the proposed Hunter's Crossing Subdivision.

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 overlot grading was being completed. Water and sewer connections were being installed during our investigation in the northern and central portions of the site. Curb and gutter had not been installed and the roads had not been paved. Topography of the site generally sloped gently down from the northwest to the south and southeast portion of the site. Vegetation was not present at the site due to the overlot grading. The surrounding areas consisted of residential properties to the east of County Road 21 and agricultural land to the south of the subdivision.

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 204 exploratory test borings, approximately one bore advanced on every other lot in this investigation. The bores were placed near the center of each lot investigated. 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 104. An Explanation of Test Boring Logs is presented in Figure 105.

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 106. Soil Classification and Atterberg Test Results are presented in Figures 107 through 117. Swell/Consolidation Test Results are presented in Figures 118 through 144.

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 fill material comprised of stiff to very stiff sandy silty clay as well as native soft to medium stiff sandy clay and very loose to loose silty to clayey sand. Underlying the surface material, heard to very hard siltstone bedrock was encountered. The siltstone contained thinly interbedded claystone lens in many of the test borings. The siltstone bedrock was encountered in 179 of the test borings at depths ranging from approximately 1 foot to 18 feet below existing grade. The shallow siltstone was encountered near anticipated foundation depths in the northwestern and southeastern lots of the subdivision including portions of Blocks 1, 2, 8, 9, 10, 11, 12, 14 and 20. Bedrock was encountered at grade in several lots on Block 14. Claystone bedrock was encountered in two of the test borings at depths of approximately 16 and 19 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 encountered in 178 of the test bores at the time of drilling at depths ranging from 6 feet bgs to 18.5 feet bgs. When checked following the completion of drilling, static groundwater was observed in each of the 178 test bores at depths ranging from 4.5 to 18 feet bgs. Groundwater was encountered at depths of 10 feet or less below existing grade in 39 of the test bores. Shallow groundwater was primarily encountered in the west-central portion of the subdivision surrounding the pond located on Tract C. The lots that encountered static groundwater at depths shallower than 8 feet below grade included Lot 5 Block 1, Lots 10 through 16, Block 2, Lots 37 though 45, Block 10, Block 14 and Lot 23 Block 20.

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 fill material comprised of stiff to very stiff sandy silty clay and sandy to clayey native soils. The native soils included loose to medium dense silsty to clayey sand and medium stiff to stiff sandy clay. Underlying the upper soils, medium hard to hard siltstone bedrock was encountered. The siltstone contained thinly interbedded claystone lens. The clay fill samples tested generally exhibited no consolidation and up to 1.9% swell. The native clay samples consolidated up to 1.3% and exhibited up to 1.1% swell. The silty to clayey sand samples exhibited up to 3.6% consolidations and no exhibited no swell potential. Finally, the siltstone bedrock samples tested generally exhibited less than 0.3% consolidation and less than 1.2% swell. Swell/consolidation tests for this investigation were performed by wetting all samples against 1,000 psf surcharge pressures.

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. In the areas where auger refusal was encountered due to the sandstone bedrock, heavier equipment may be required to break through the 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.

Geotechnical Considerations

Groundwater:

Groundwater was found near the vicinity of anticipated foundation depths in 39 test bores located in the west central portion of the subdivision. The blocks with groundwater at depths of less than 10 feet include lots in Blocks 1, 2, 8, 9, 10, 14, 15, and 20. The groundwater encountered within 7 feet of existing grade was found in Blocks 1, 2, 10, 14 and 20.

A minimum 3 foot separation is recommended between the bottom of the foundation components and slab from the estimated seasonal high water table levels. A 3 foot layer of 34" to 1.5" diameter angular washed rock or 34" to 3.0" diameter crushed concrete with both of these options containing less than 5% passing the #200 sieve is recommended directly beneath the footings and slabs if the groundwater is identified to be within 3 feet of the bottom of the foundation or if saturated or soft soils are encountered at foundation bearing depths during the Open Hole Observation.

For lots where groundwater was encountered within 6 feet of grade, full depth basements are not recommended unless the footing elevation is raised to allow for the minimum separation.

Soft/Loose Soils:

Soft/loose soils were encountered at anticipated foundation depths throughout the subdivision with the majority located in the northern portion of the subdivision. Blocks 1 through 11 had the majority of the Soft/loose soils encountered with 5 additional lots spread throughout Blocks 15, 19, and 20. Soft/loose soils under foundation components should have the top 6 inches scarified, moisture-

conditioned to within -1% to +3% of optimum moisture content, and compacted to a minimum of 95% maximum dry density as determined by the Standard Proctor (ASTM-698).

Isolated pockets of loose soils may be encountered in the excavations, even on lots where none are indicated on the test borings. If soft/loose soils are encountered, they may also require additional compaction and/or stabilization as previously mentioned to achieve the allowable bearing pressure indicated in this report.

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.

Expansive bedrock should not be used as backfill materials. 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 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 at this site bearing on the appropriate material as determined during the Open Hole Excavation. A maximum allowable bearing pressure of 1,500 psf with a minimum dead load of 300 psf may be used 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.

INTERIOR FLOOR SYSTEMS

Interior Floor Slabs

Vertical slab movement of one to two inches is considered possible for all soil types. 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 cohesive, non-expansive backfill materials such as the on-site clay soils (native and fill), we recommend an active fluid pressure of 50 pcf and an at-rest fluid pressure of 70 pcf be used for design. Expansive soils or bedrock should not be used as backfill against foundation walls.

The above lateral earth 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

Grading and Irrigation

The ground surface should be sloped from the building with a minimum gradient of 5 percent for the first 10 feet. This is equivalent to 6 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 daylights 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 yielded 0.0% to 0.14% sulfate by weight, indicating the soils present low sulfate exposure. Based on these results 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.

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

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.

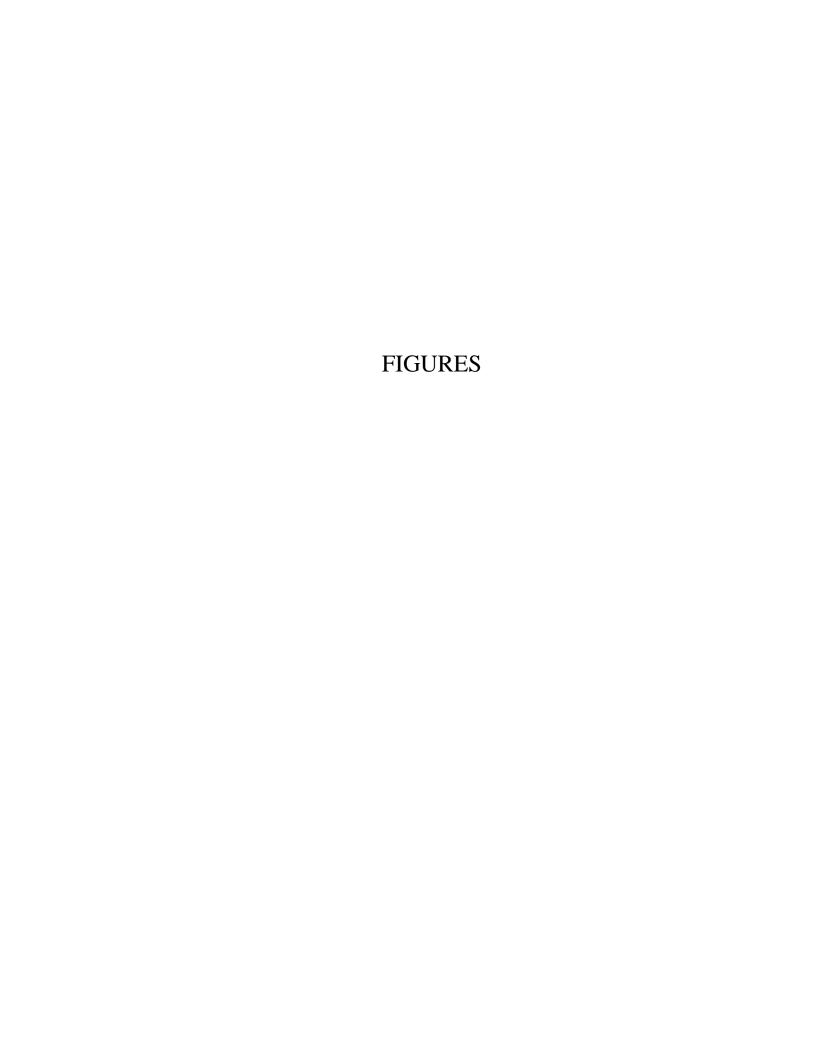
This report has been prepared for the exclusive use by **Journey Homes** for application as an aid in the design and construction of the proposed development in accordance with generally accepted geotechnical engineering practices. The analyses and recommendations in this report are based in part upon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

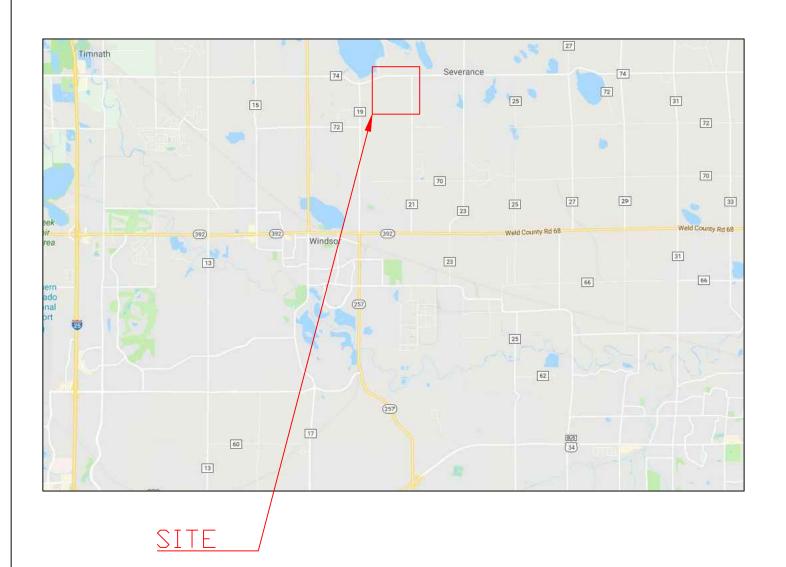
Our professional services were performed using that degree of care and skill ordinarily exercised, under similar circumstances, by geotechnical engineers practicing in this or similar localities. RMG does not warrant the work of regulatory agencies or other third parties supplying information which may 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.

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VICINITY MAP HUNTERS CROSSING **SUBDIVISION**

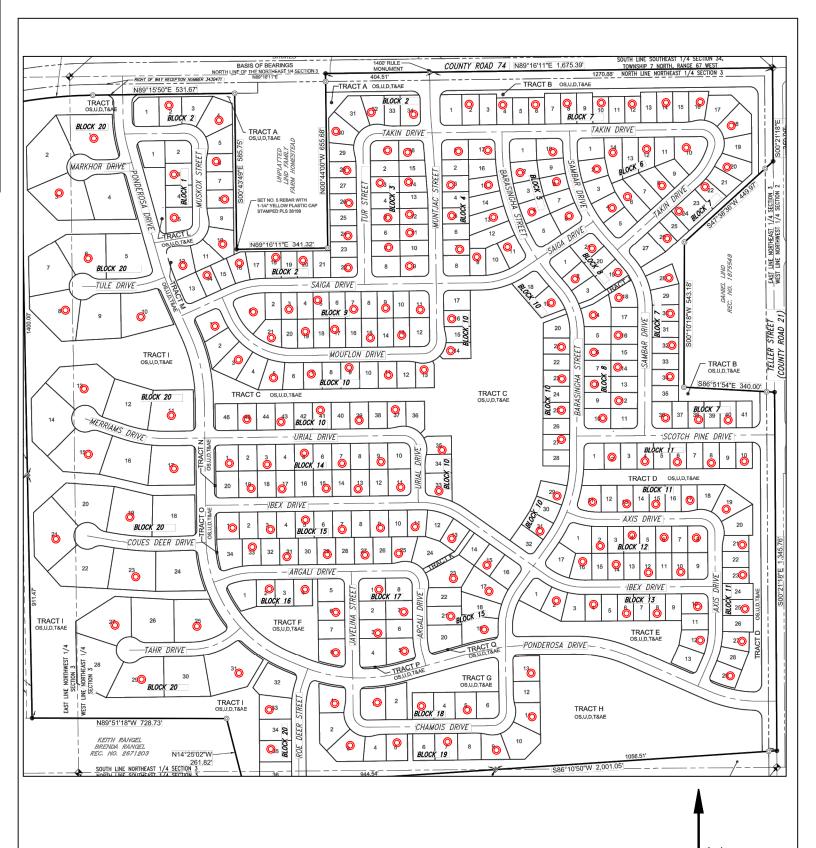
SEVERANCE, CO

CLIENT: JOURNEY HOMES, LLC 7251 W. 20TH ST., L-200 GREELEY, CO 80631

RMG PROJECT #: 167717 DATE: 07/22/2019



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



BORE LOCATION PLAN HUNTERS CROSSING SUBDIVISION

SEVERANCE, CO

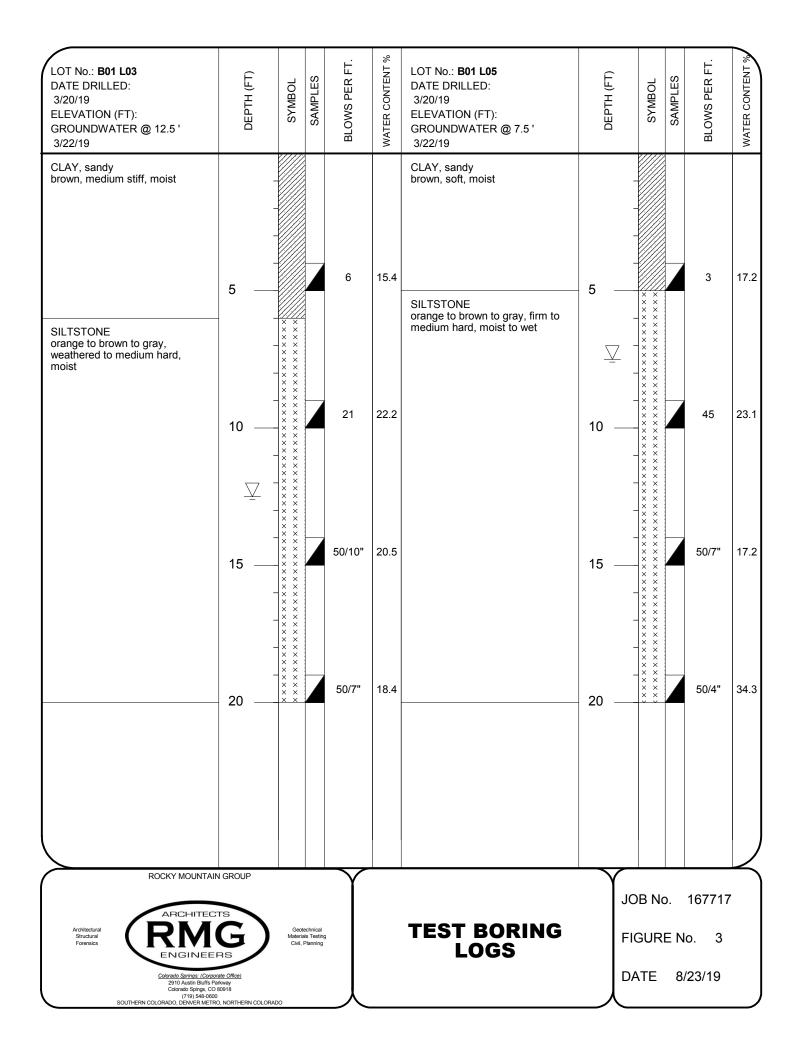
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GREELEY, CO 80631

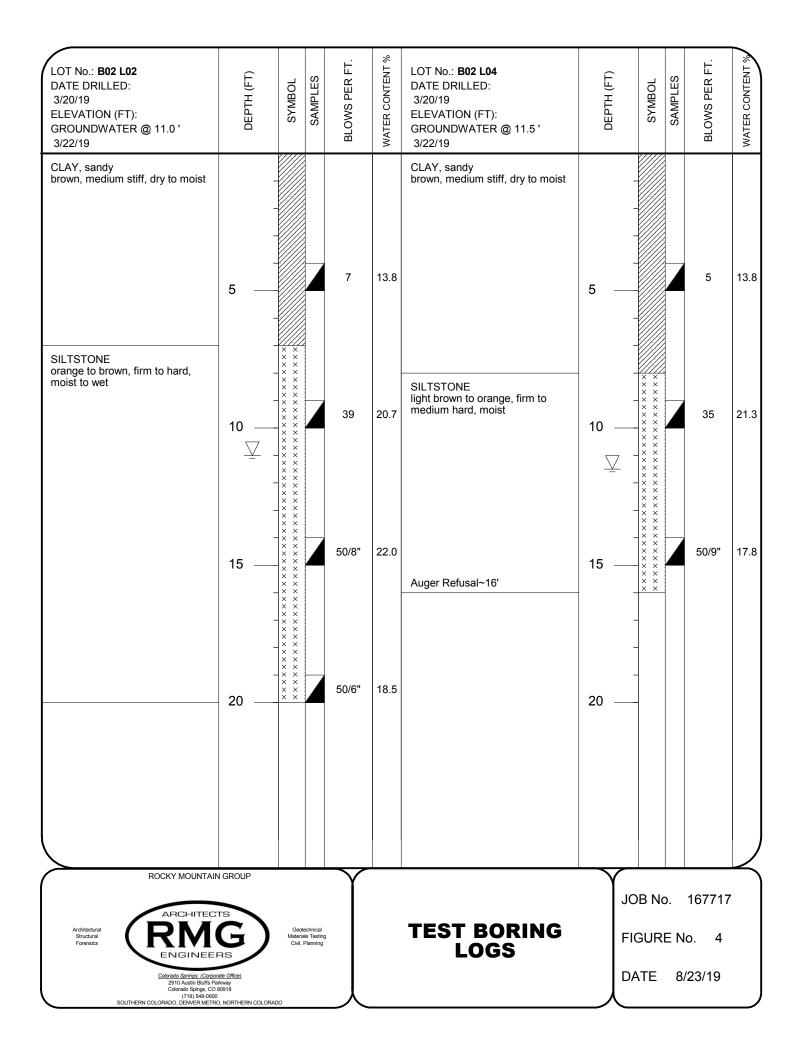
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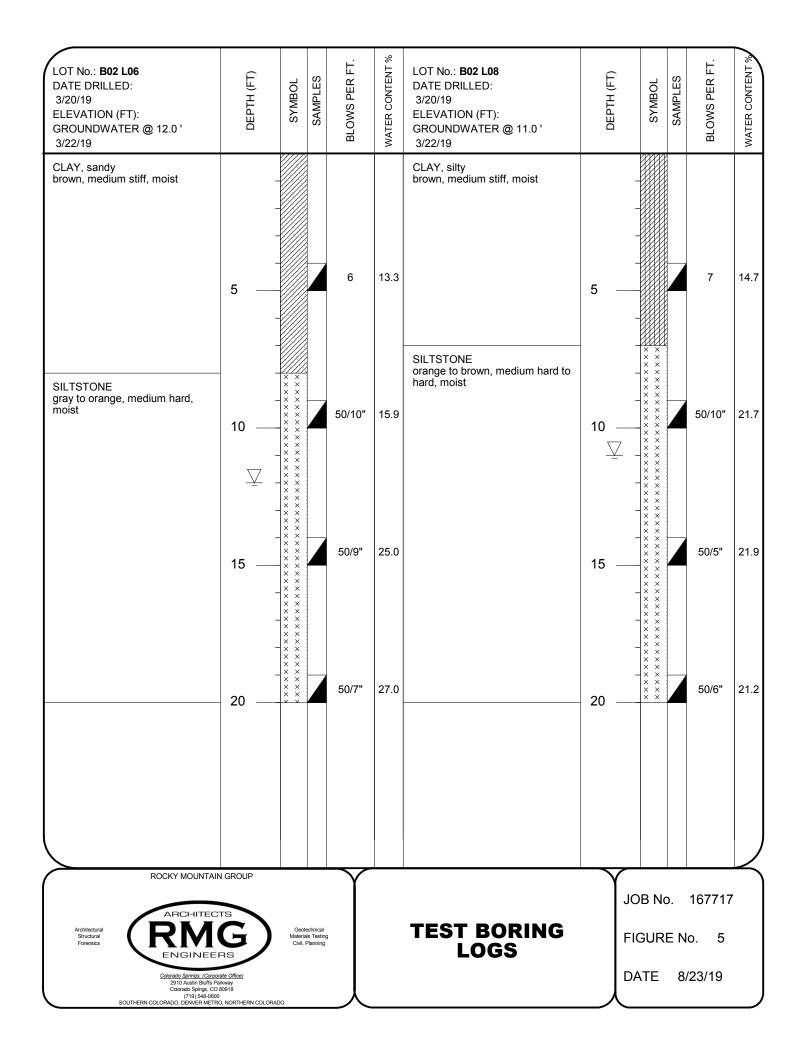


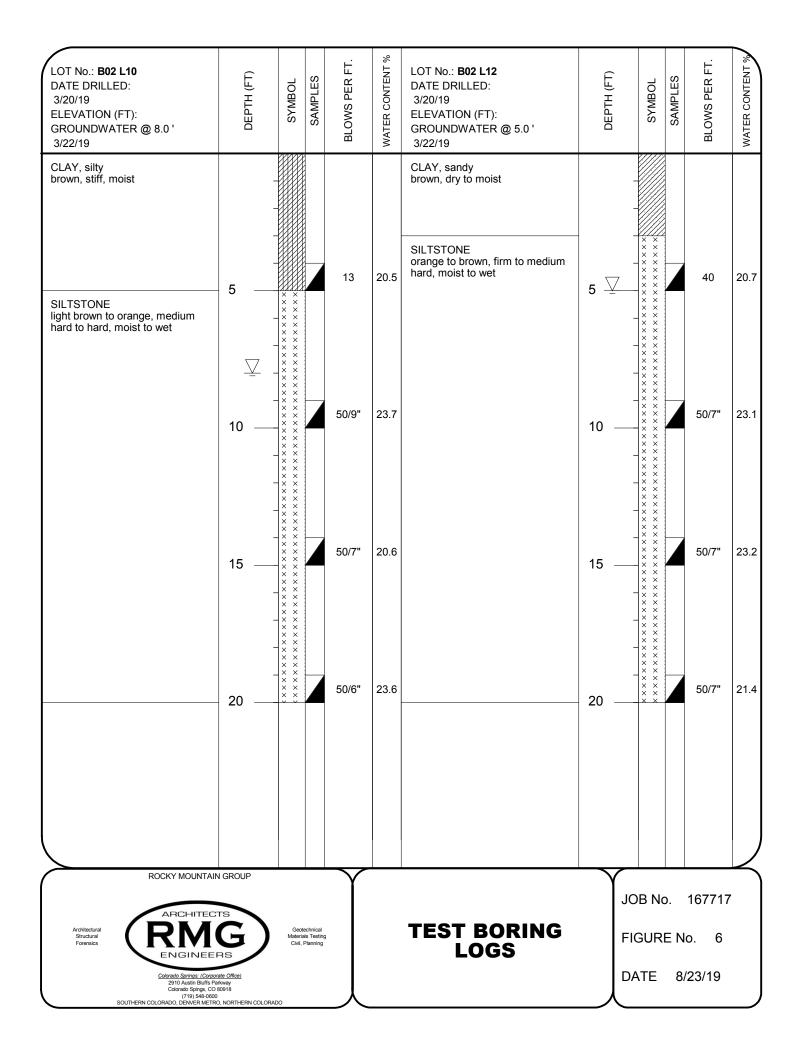
ROCKY MOUNTAIN GROUP

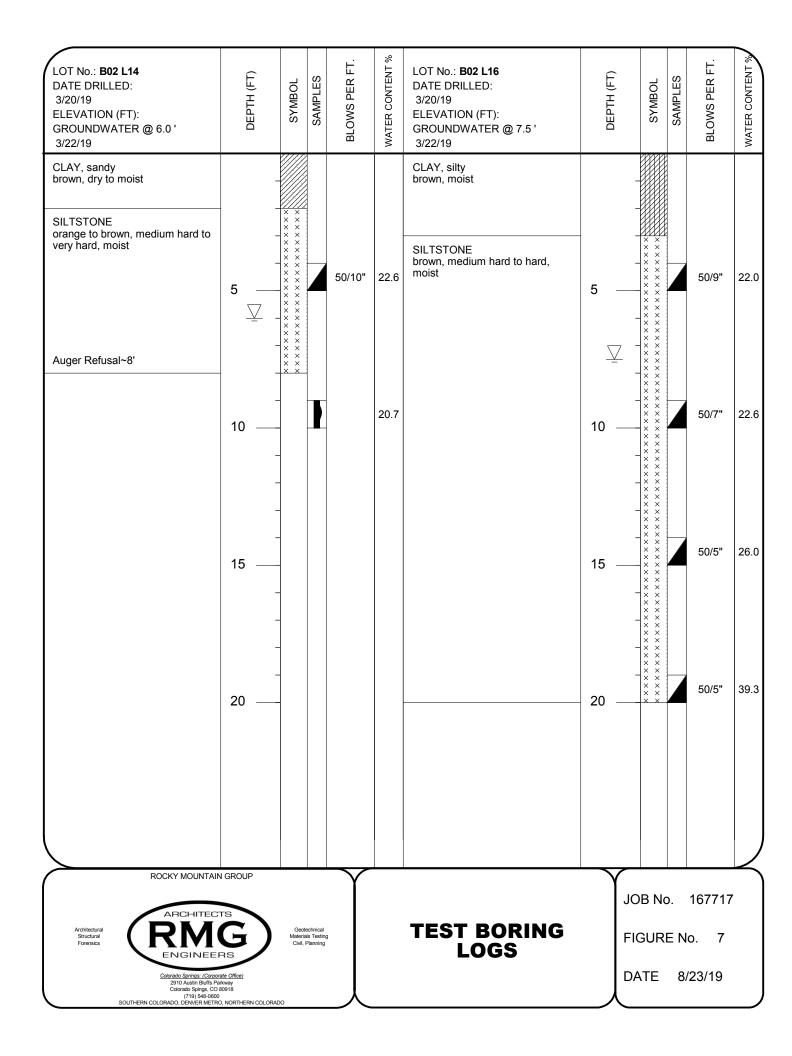
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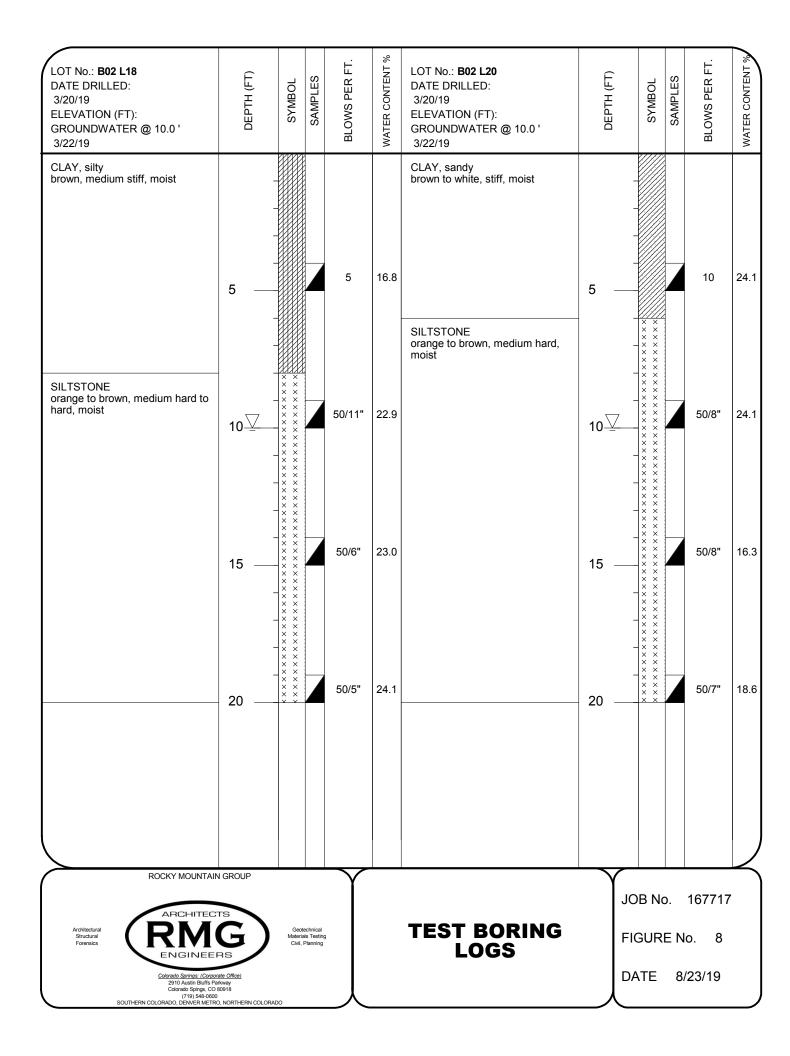


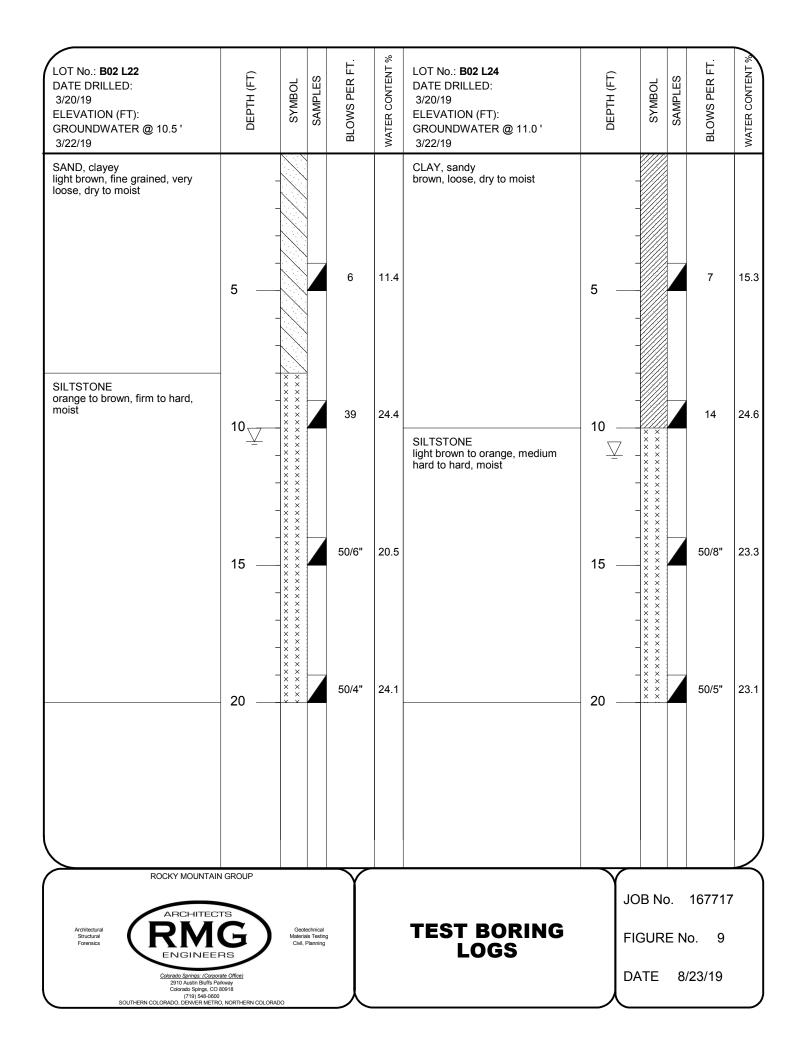


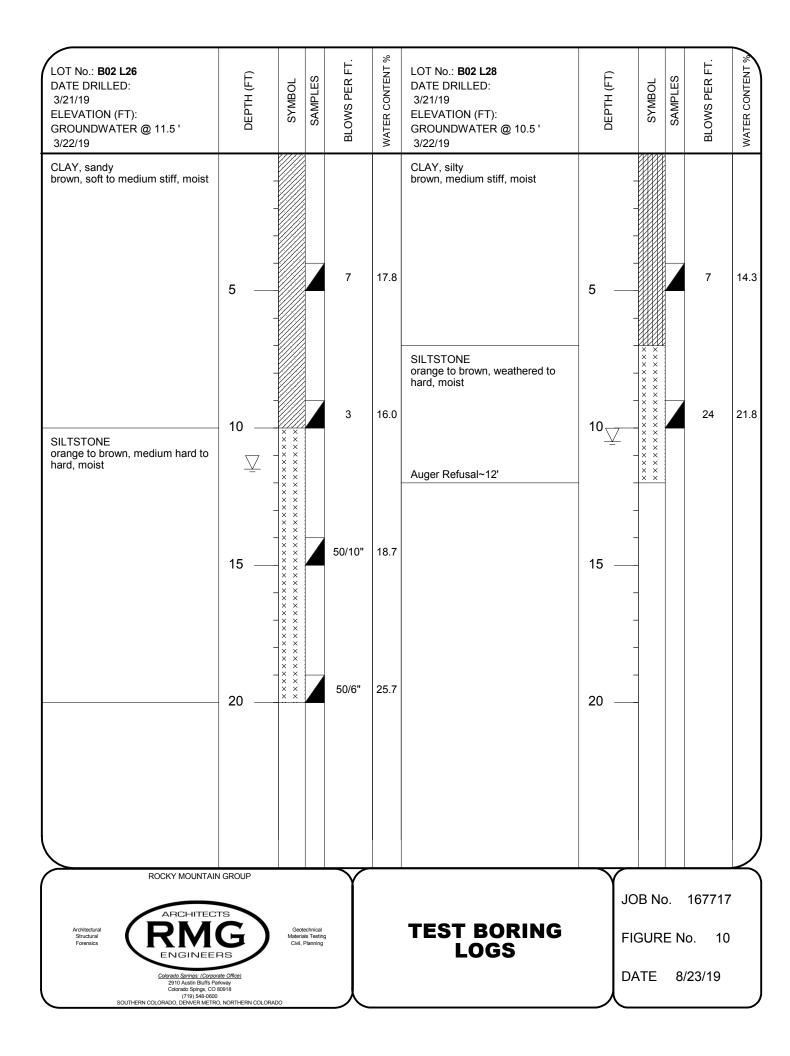


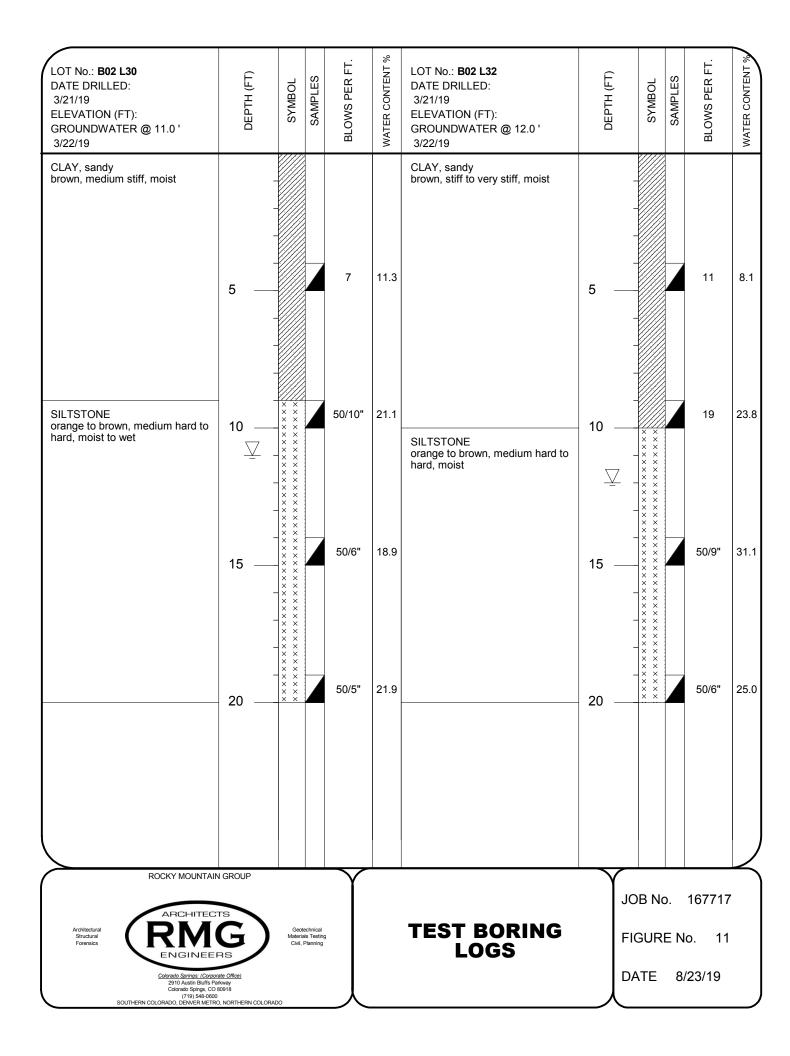


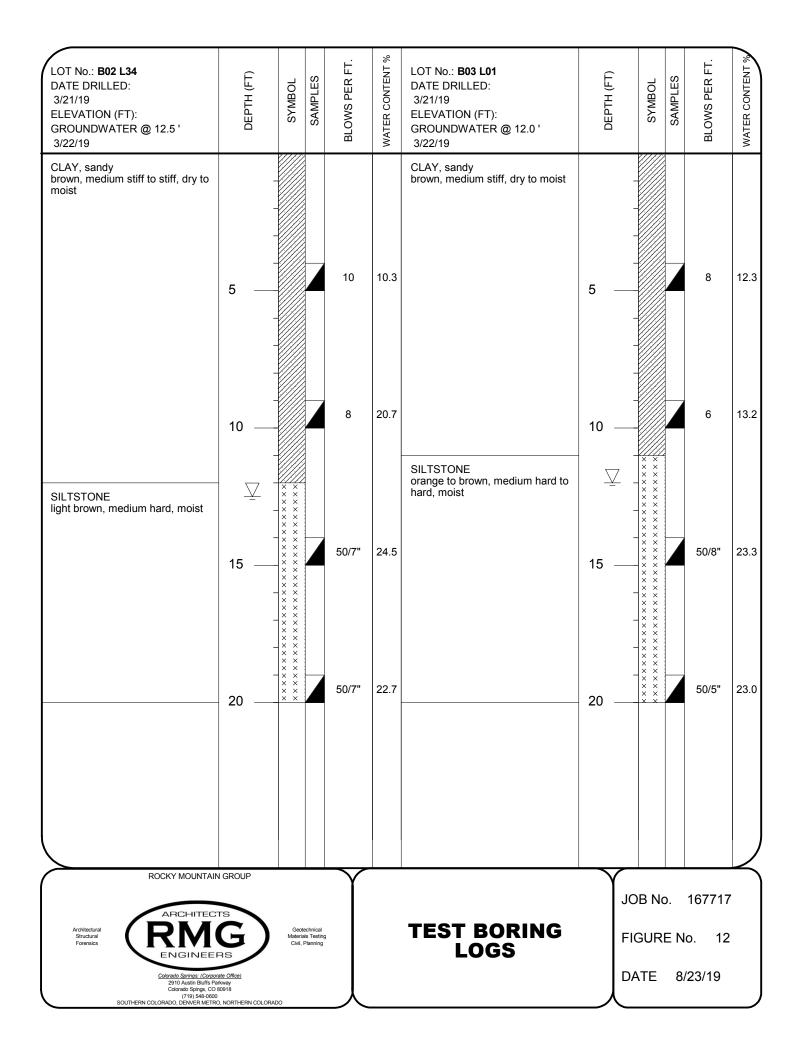


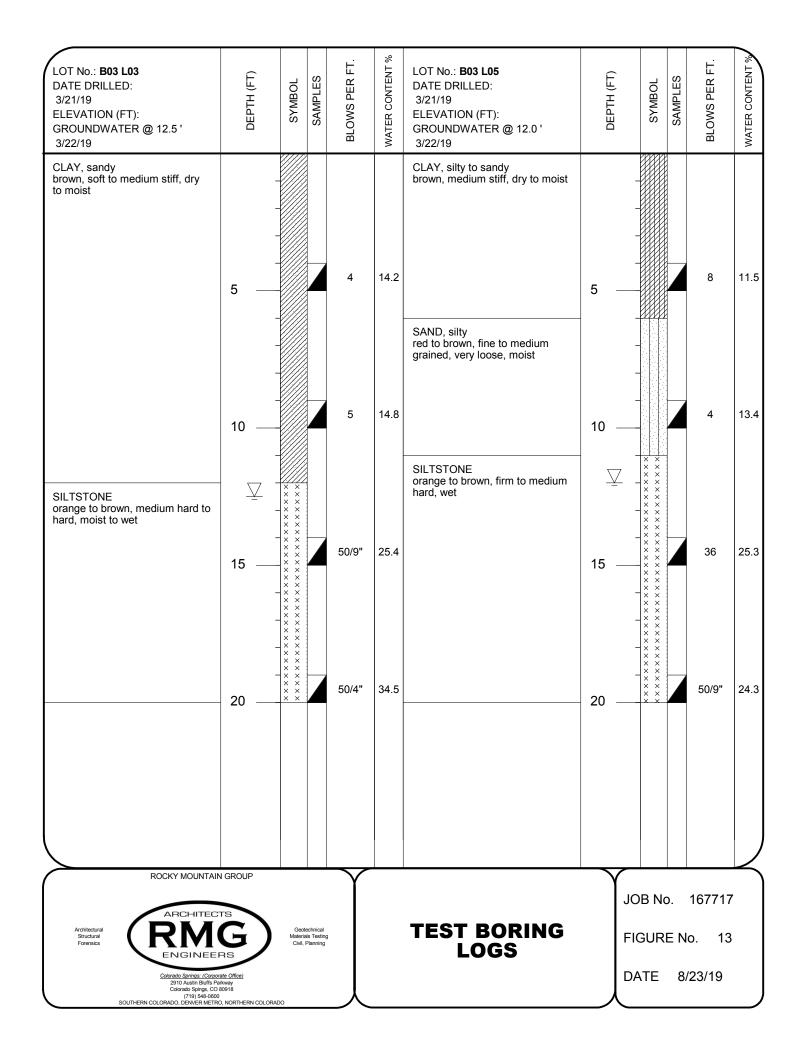


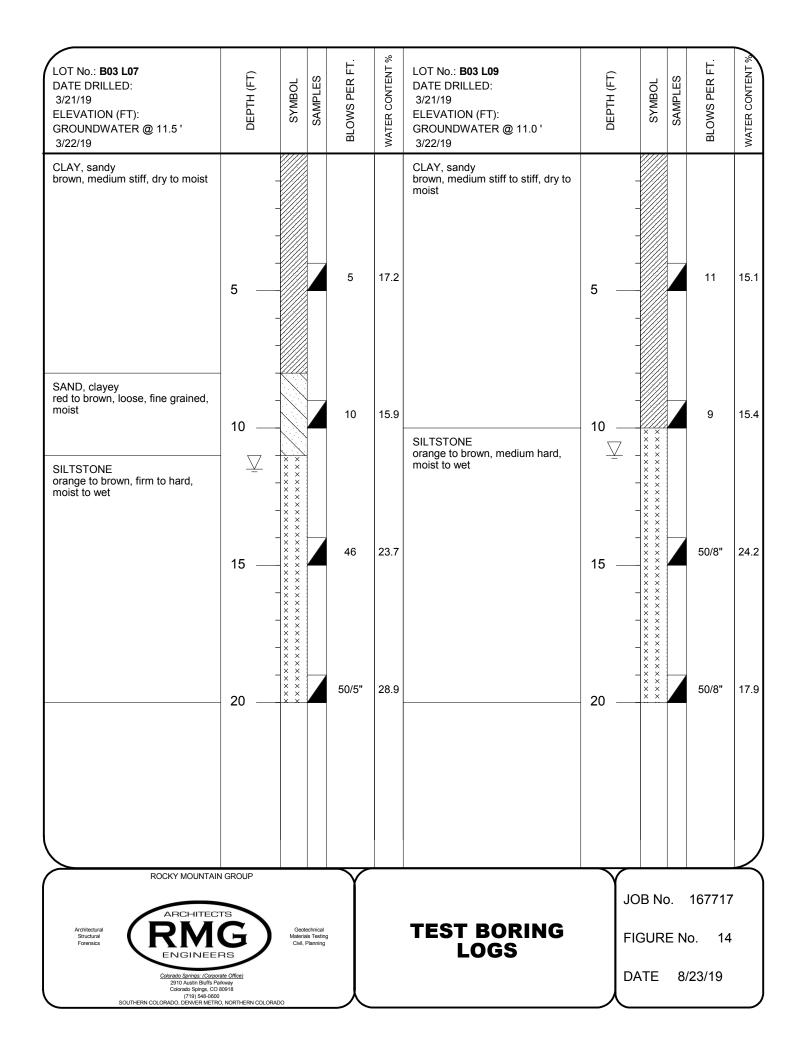


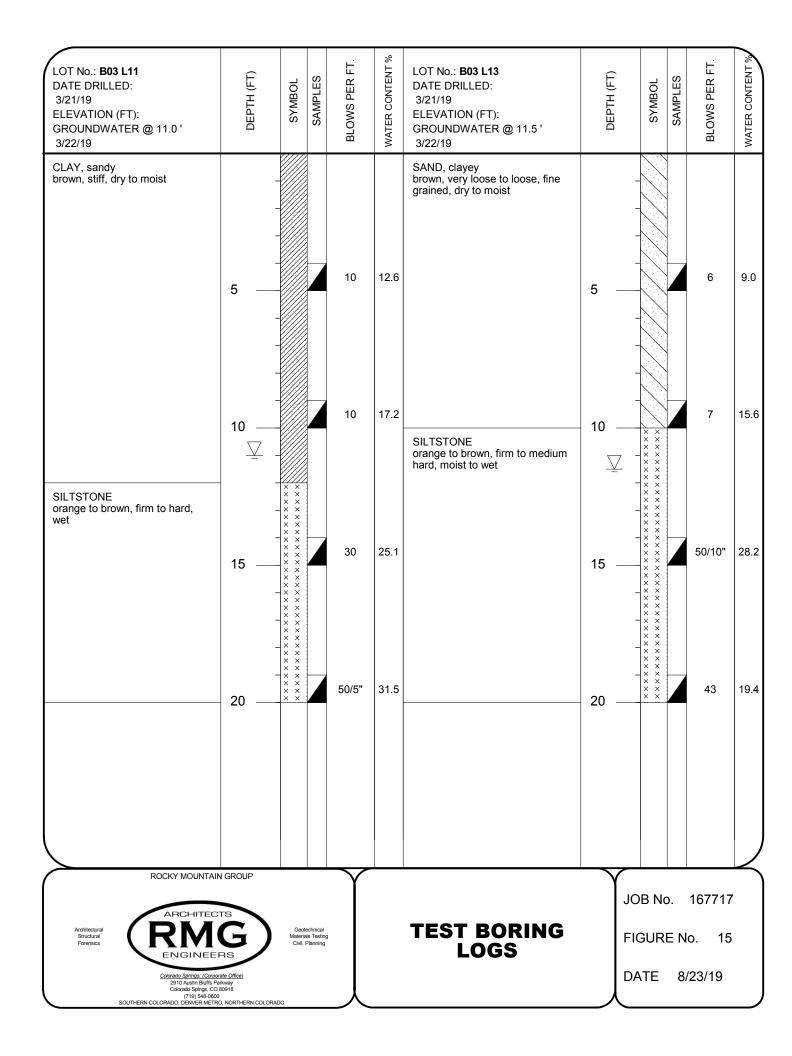


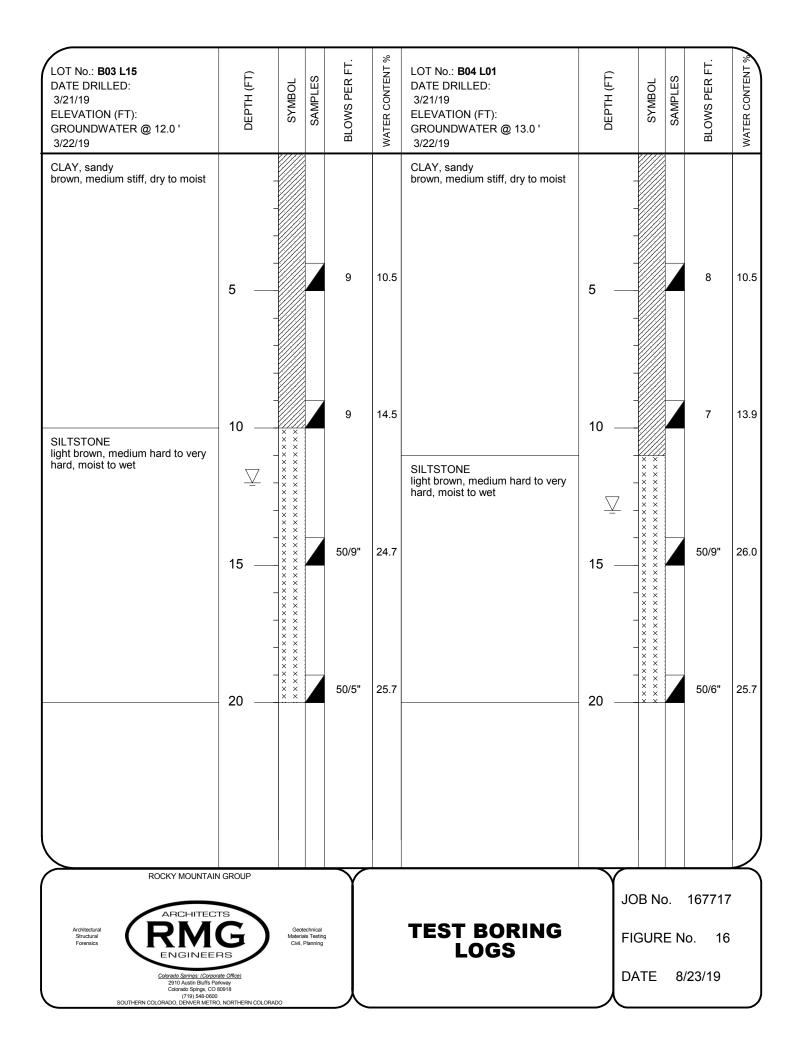


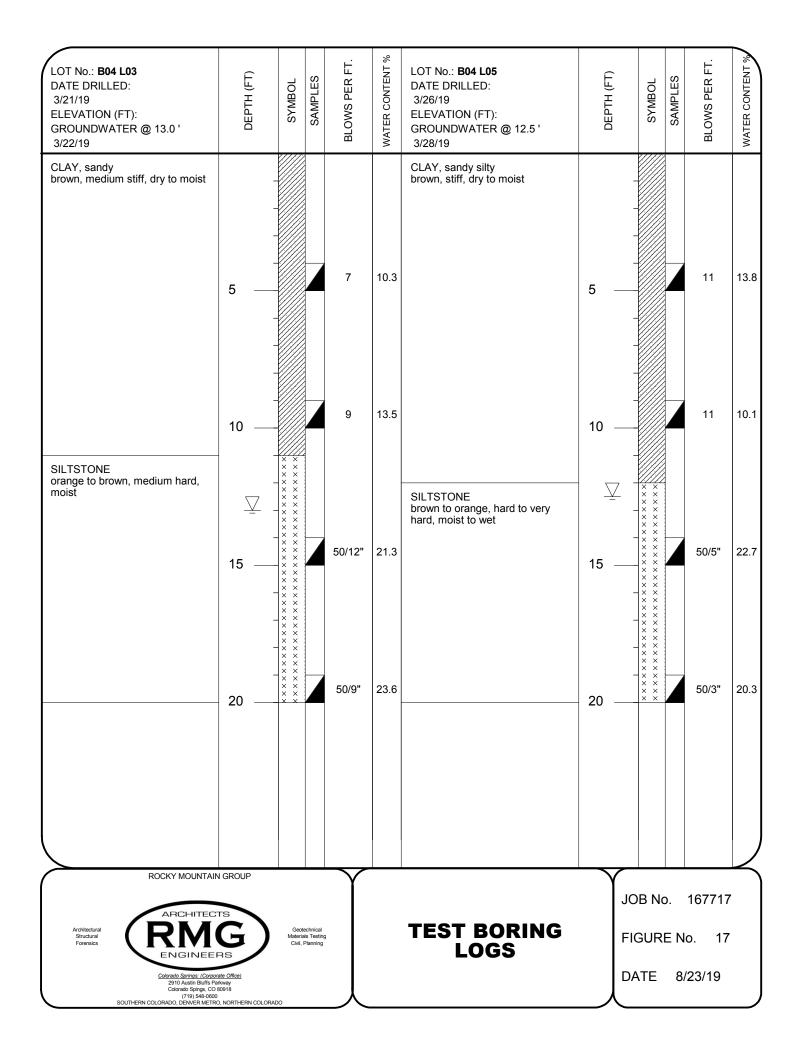


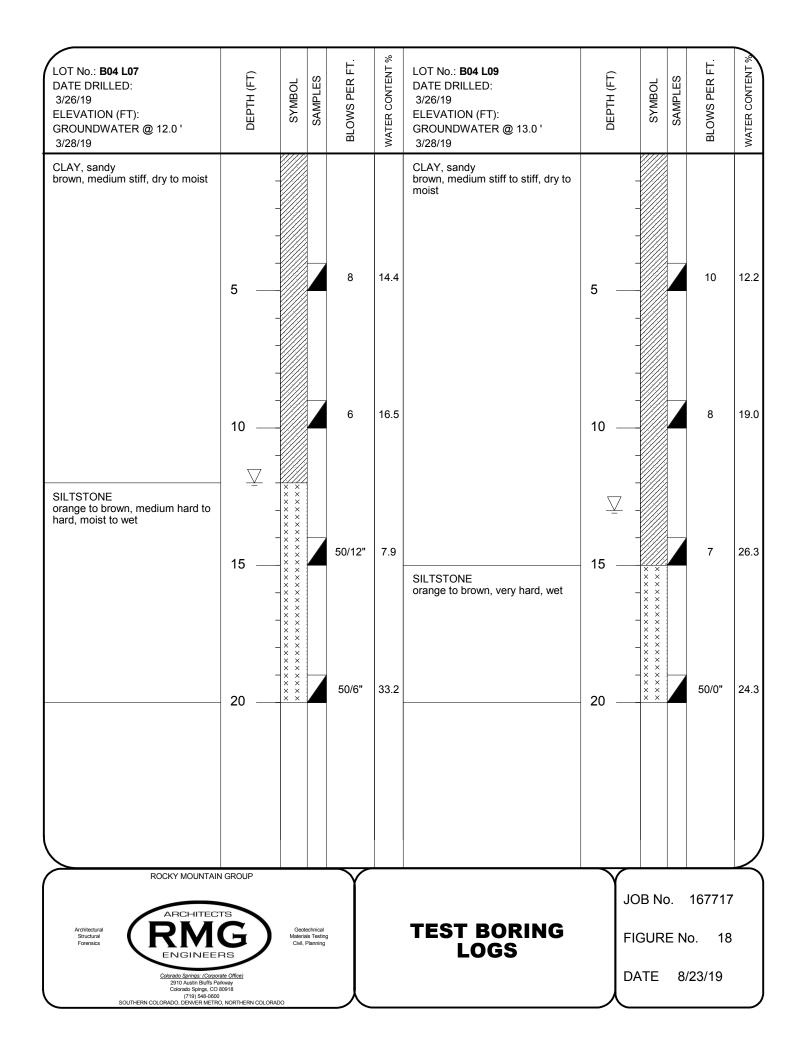


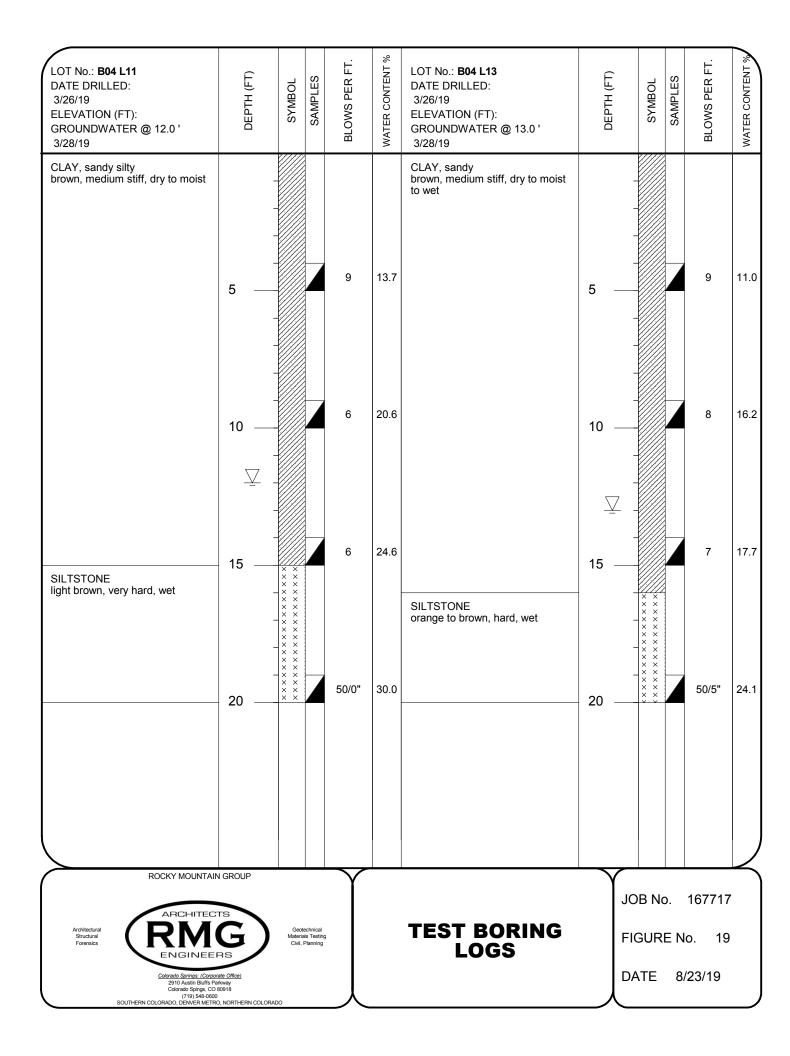


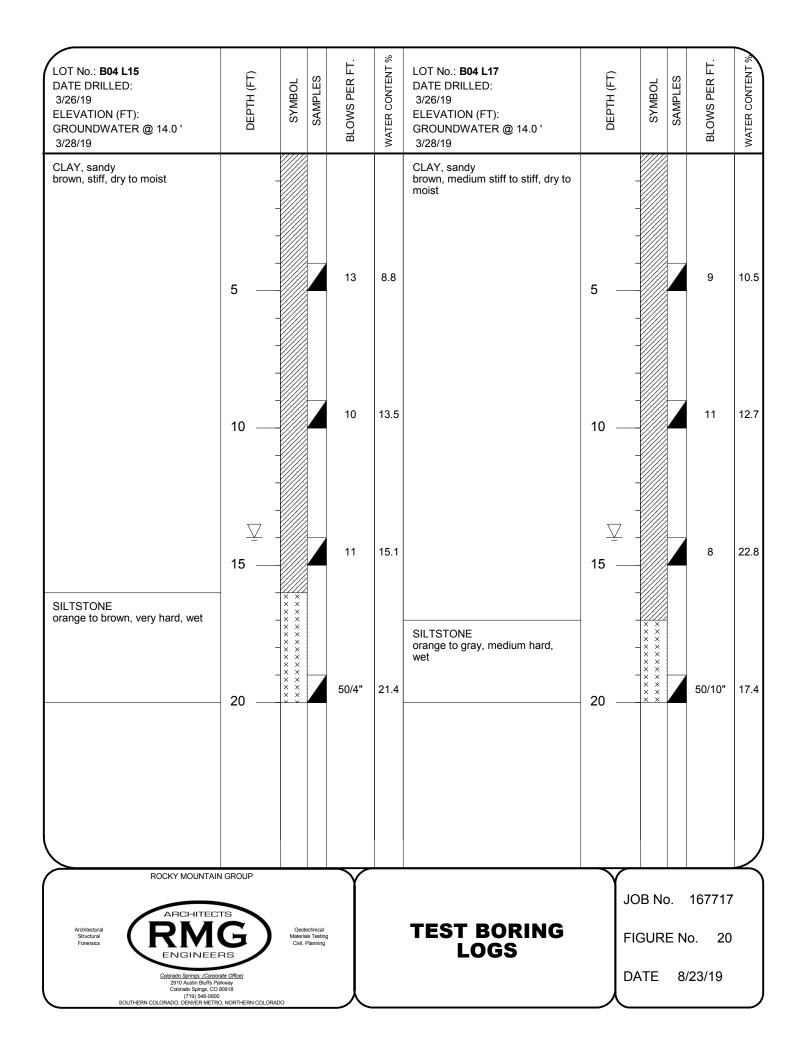


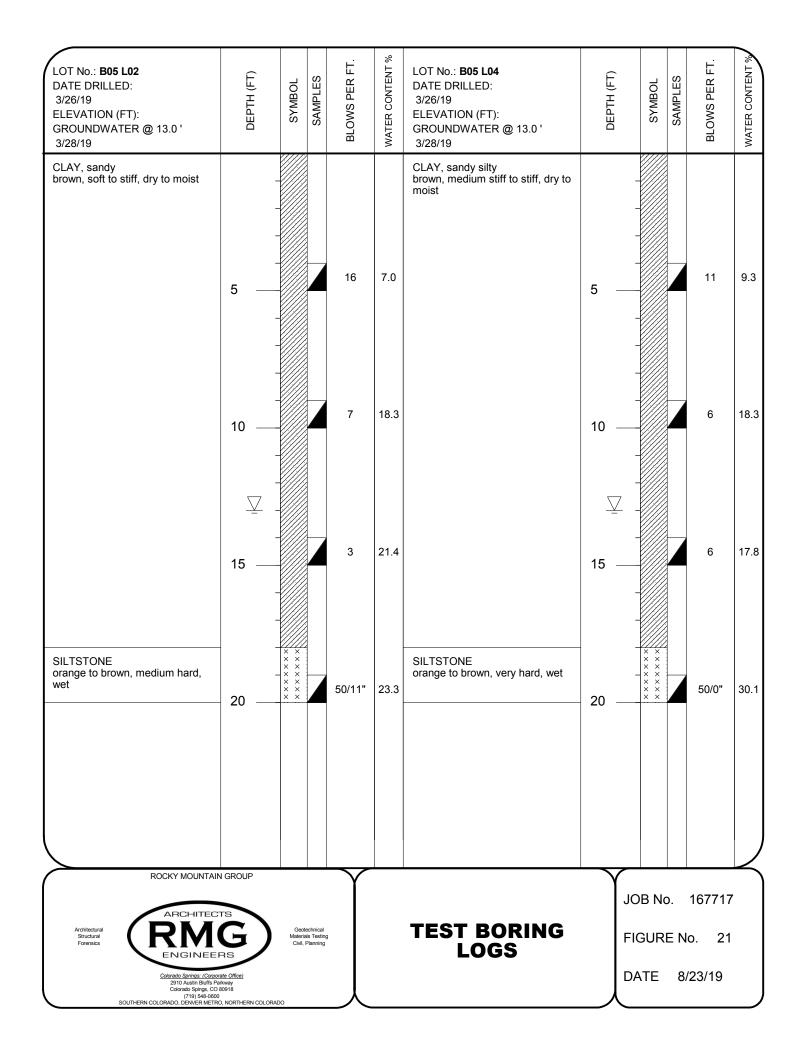


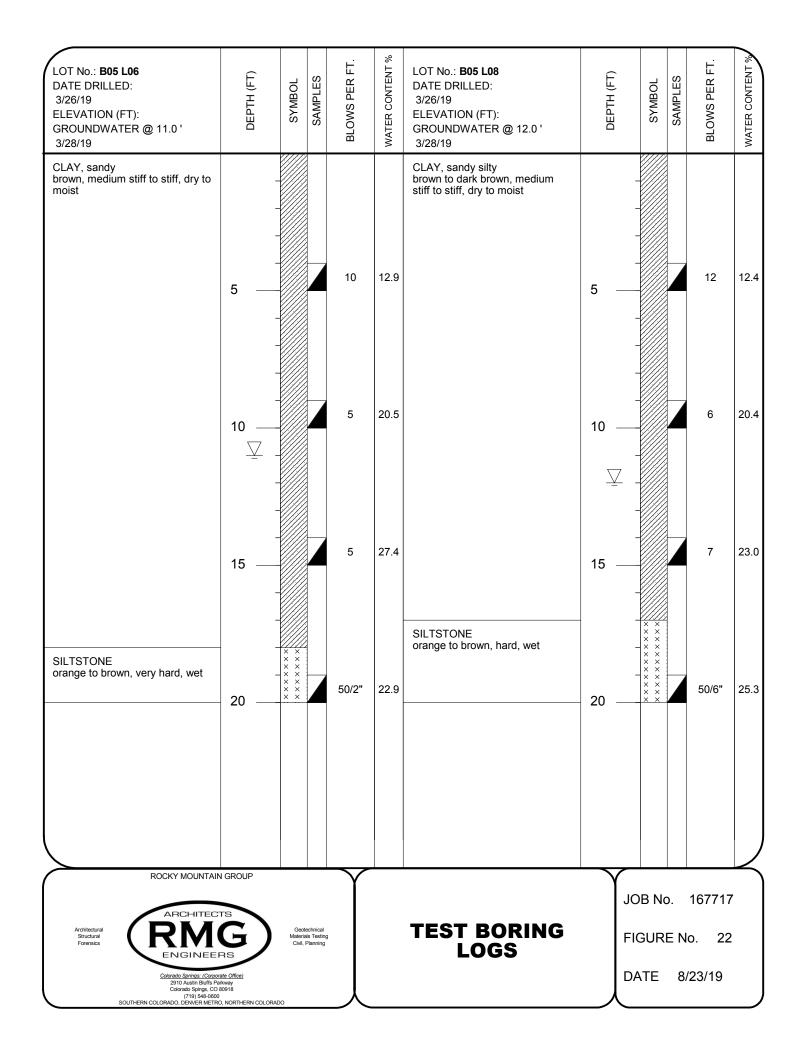


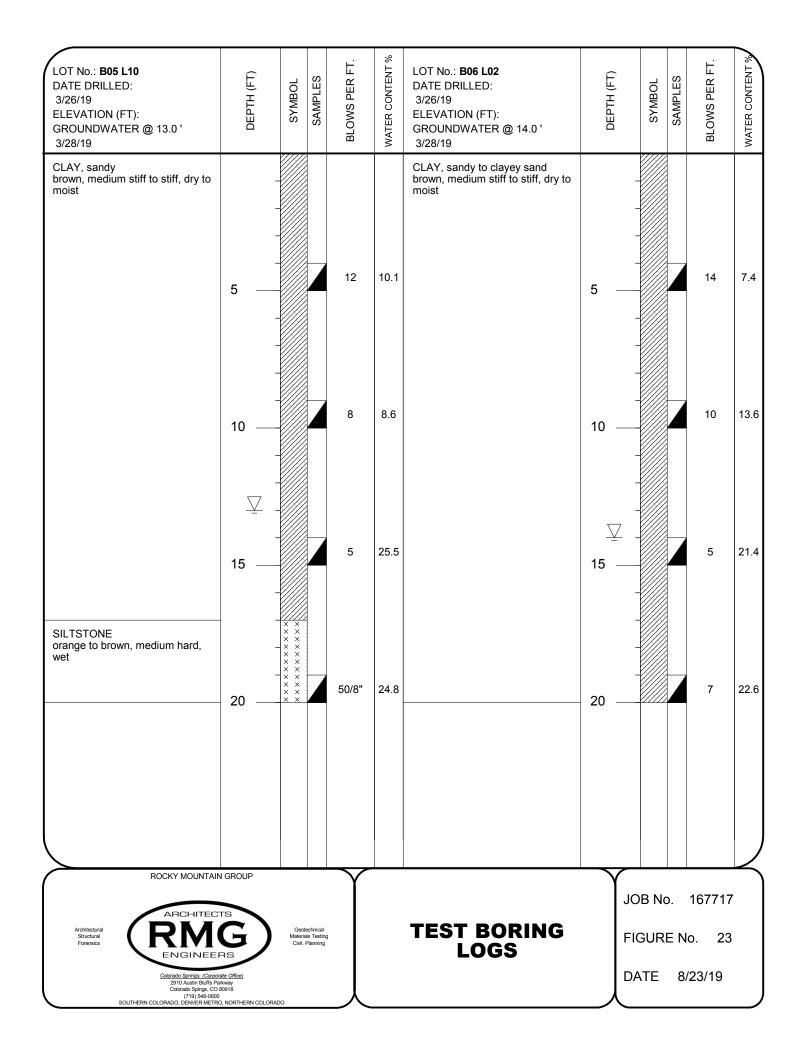


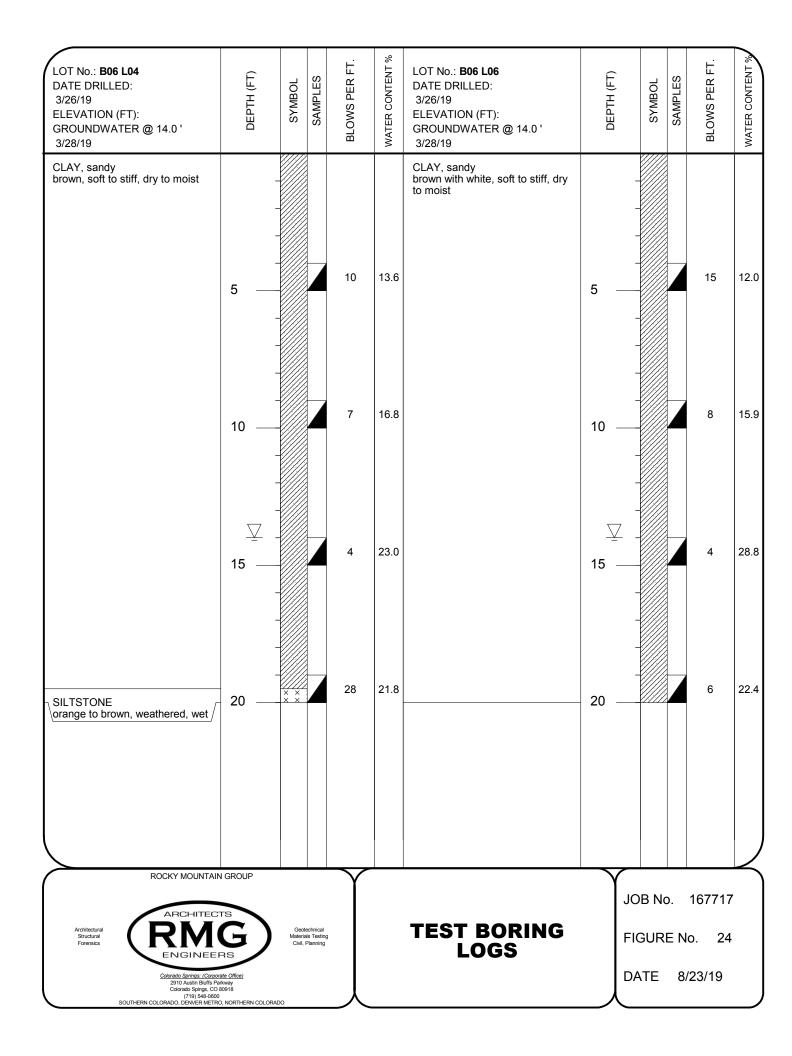


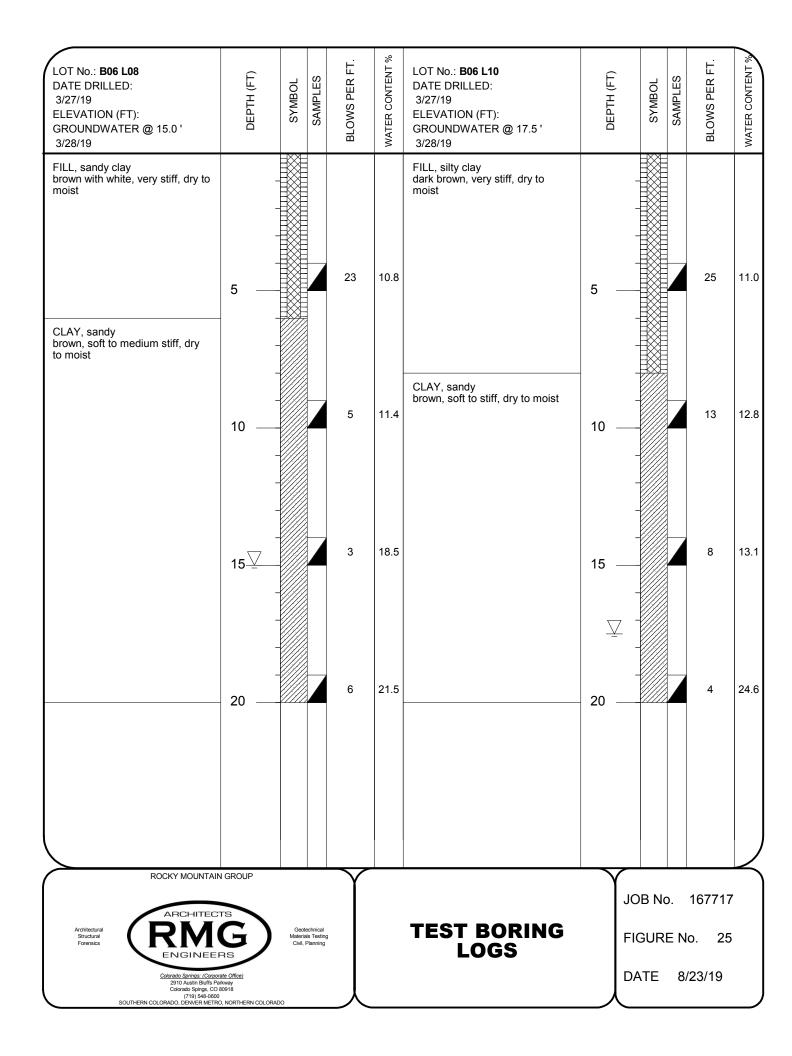


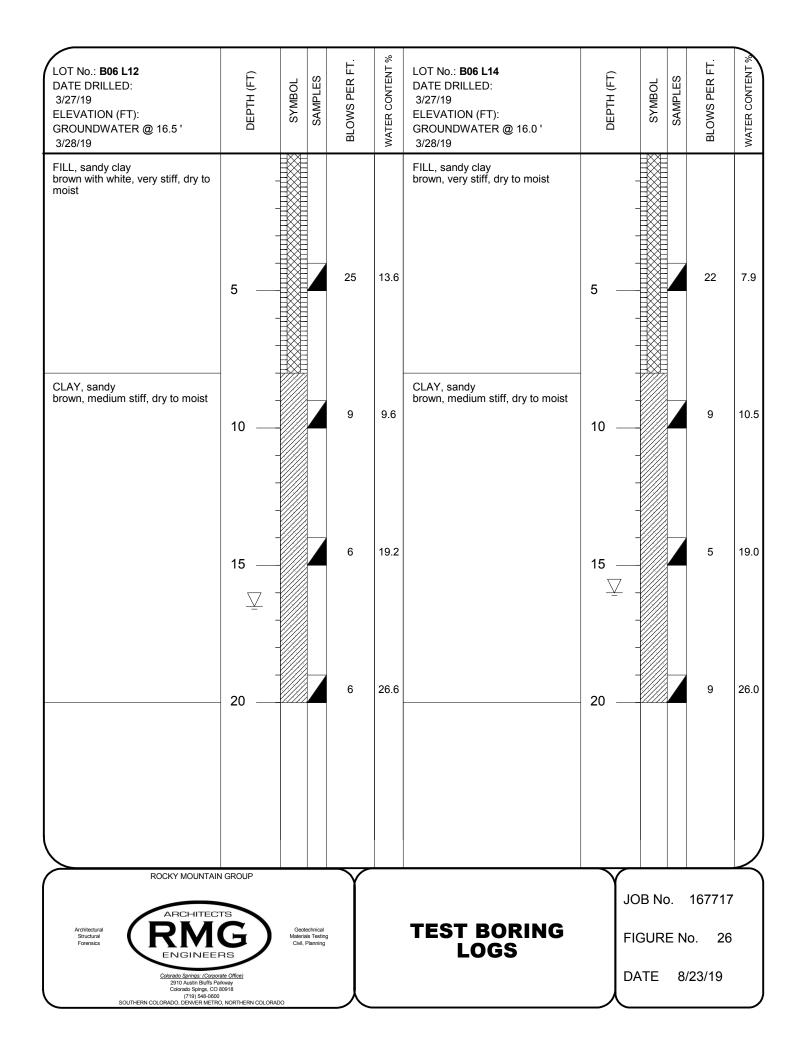


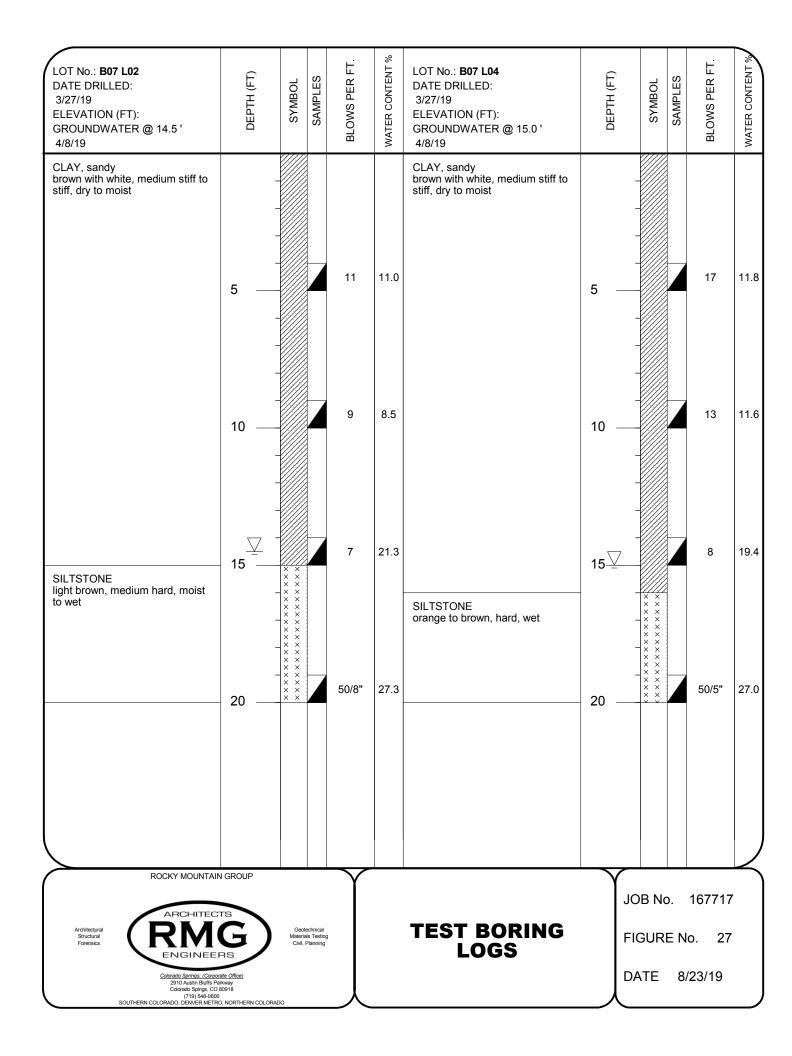


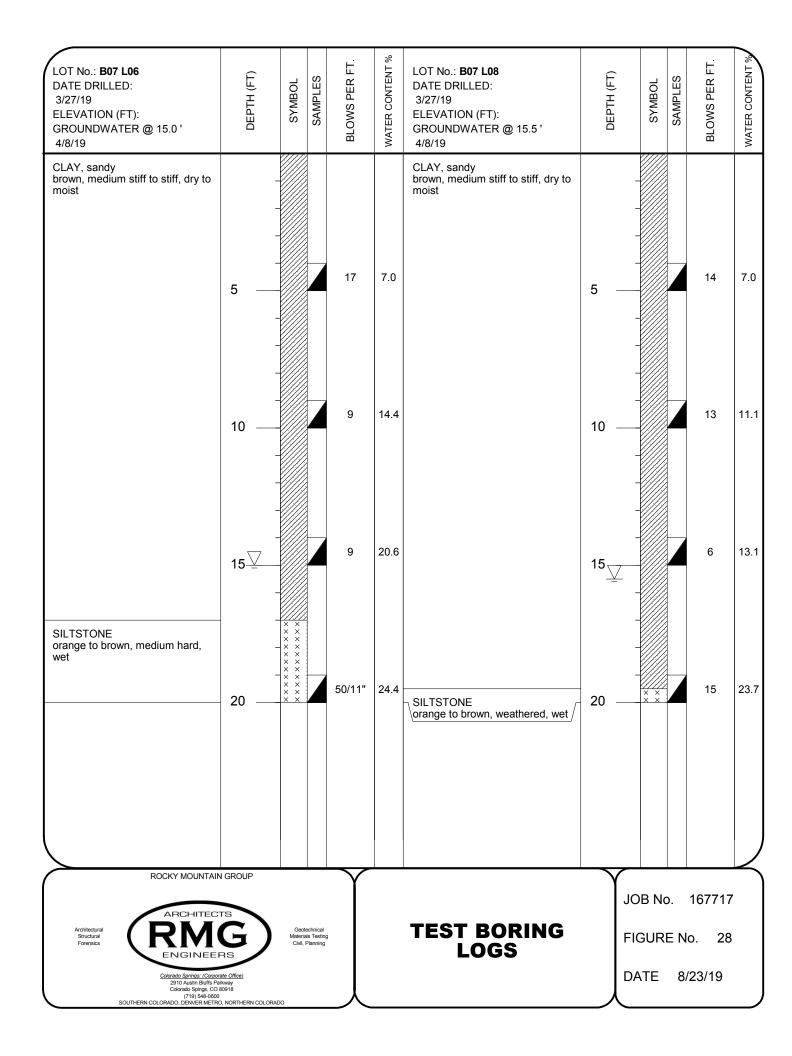


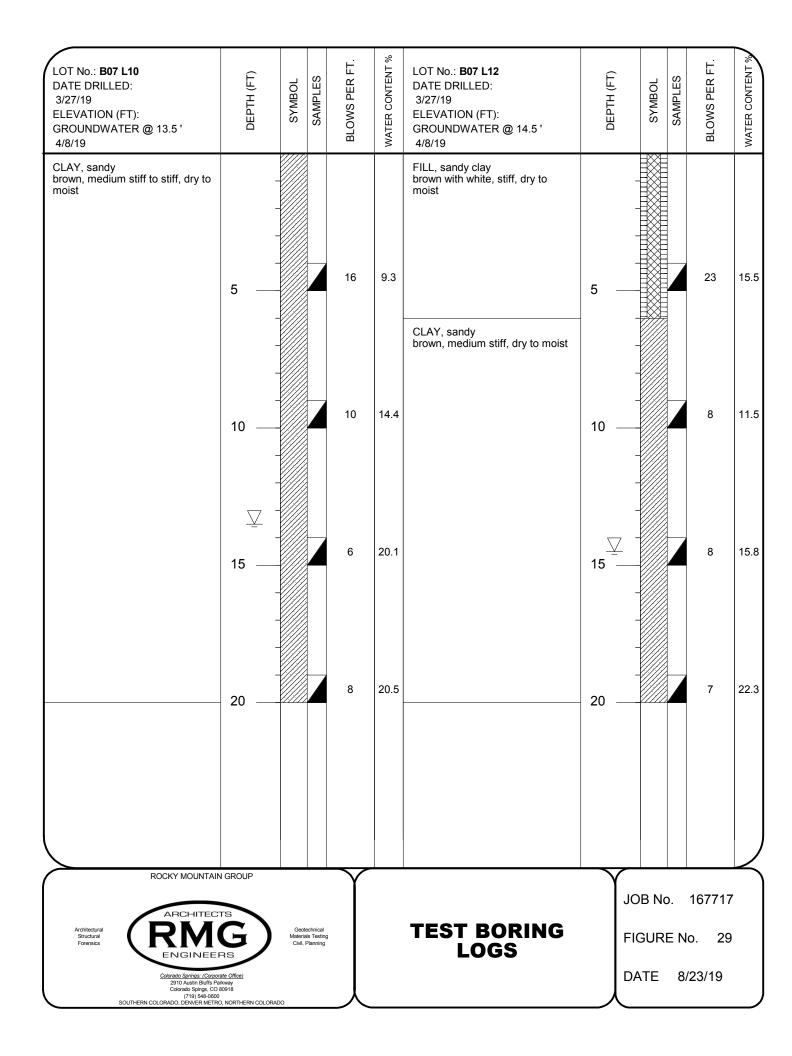


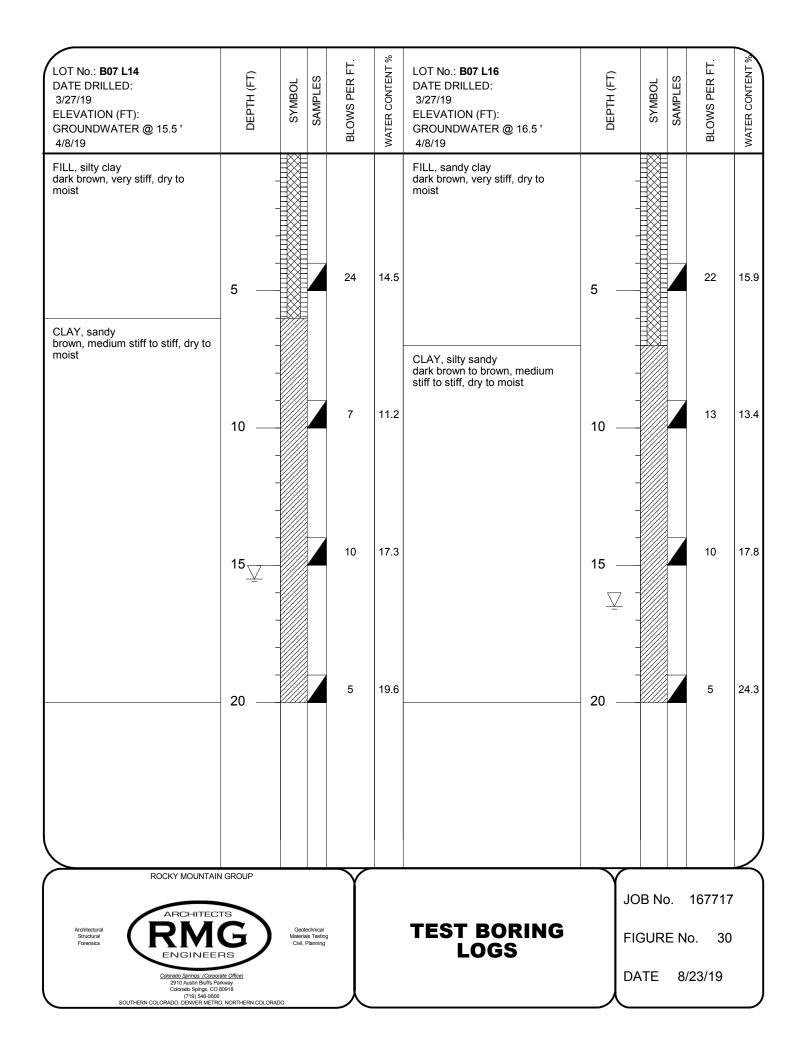


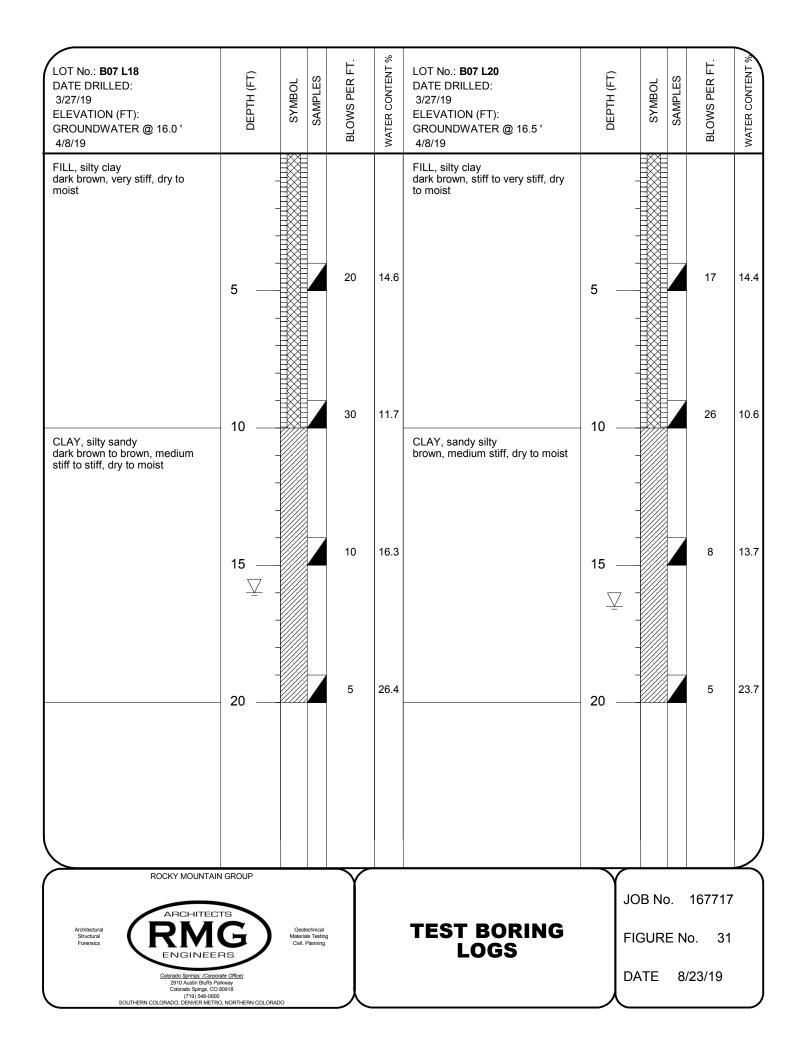


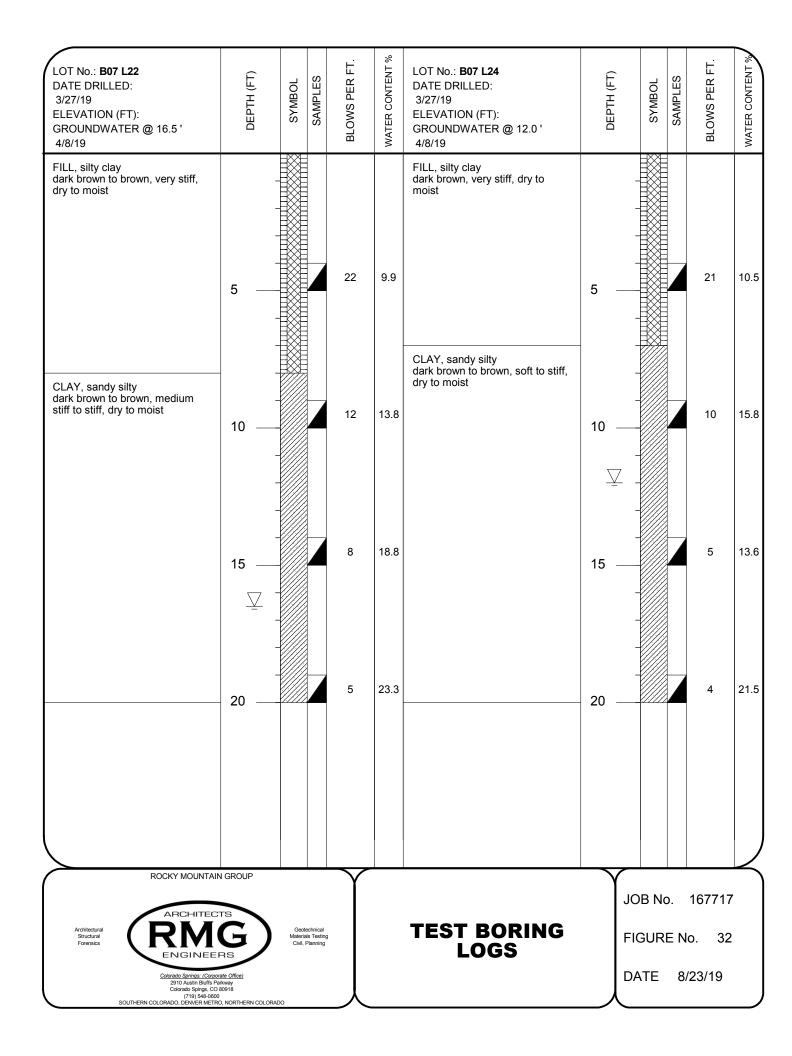


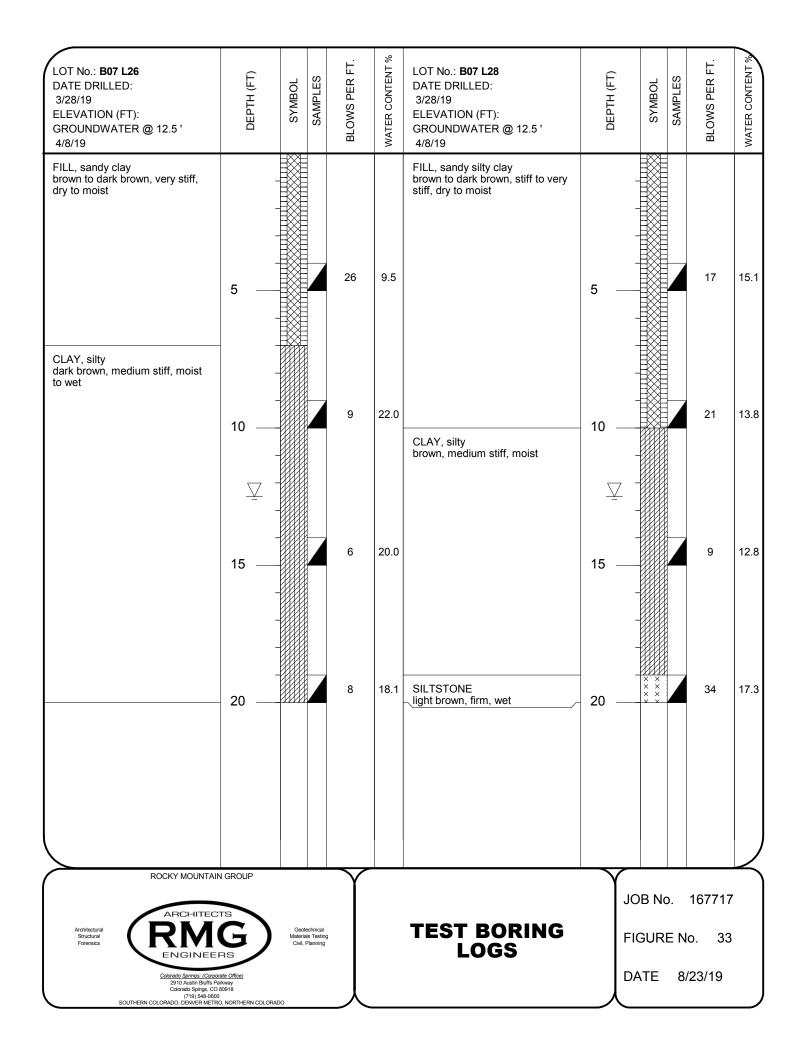


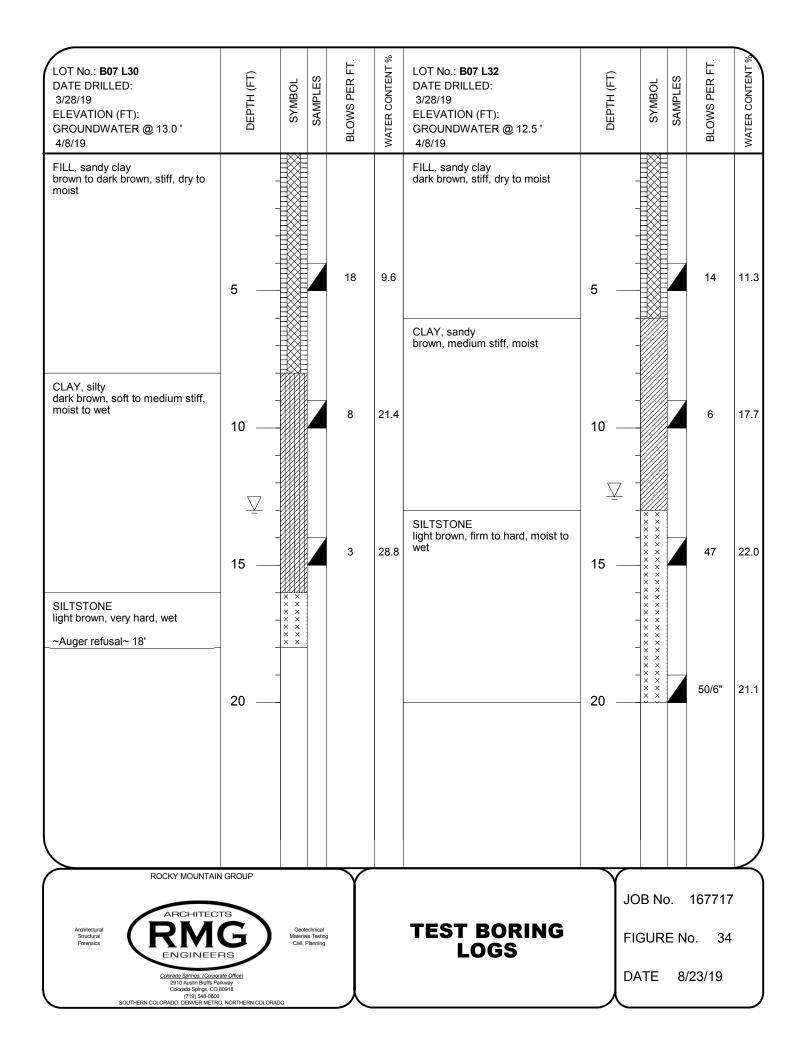


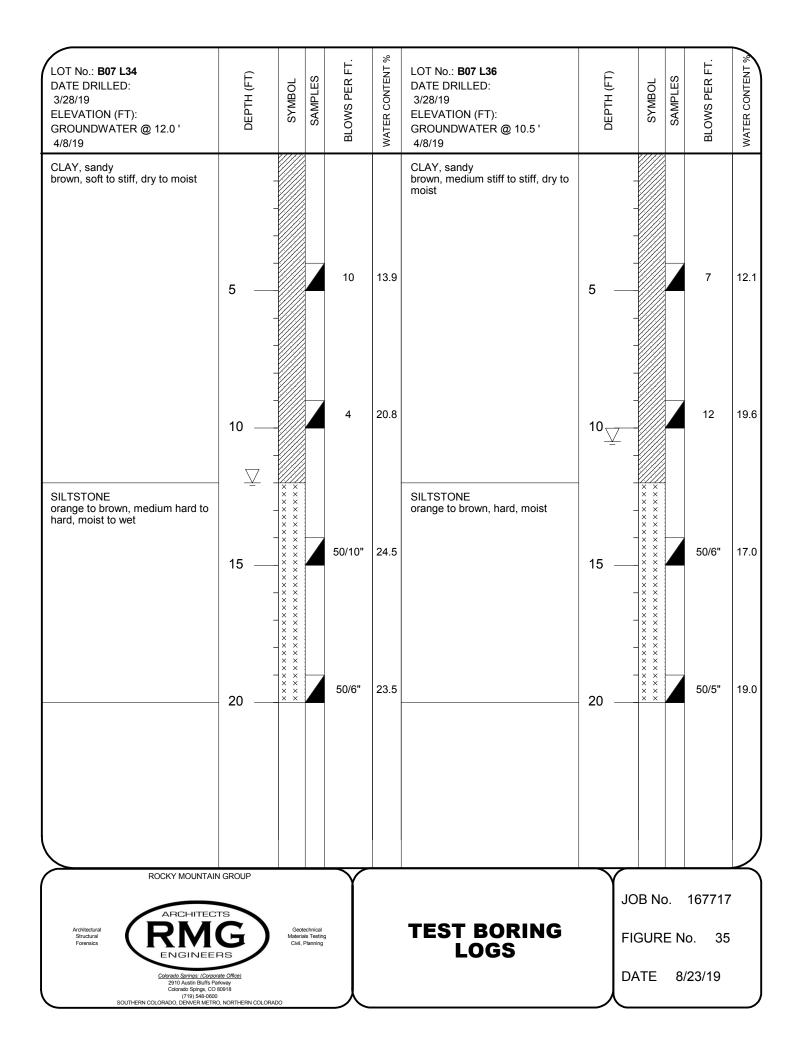


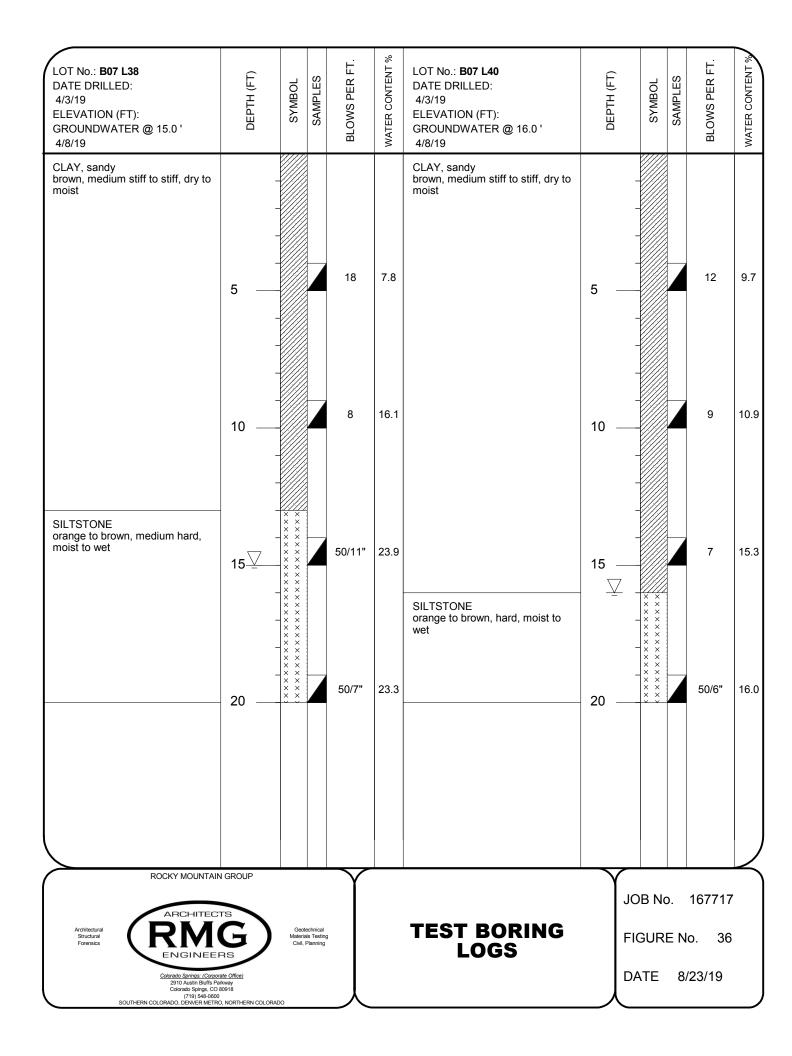


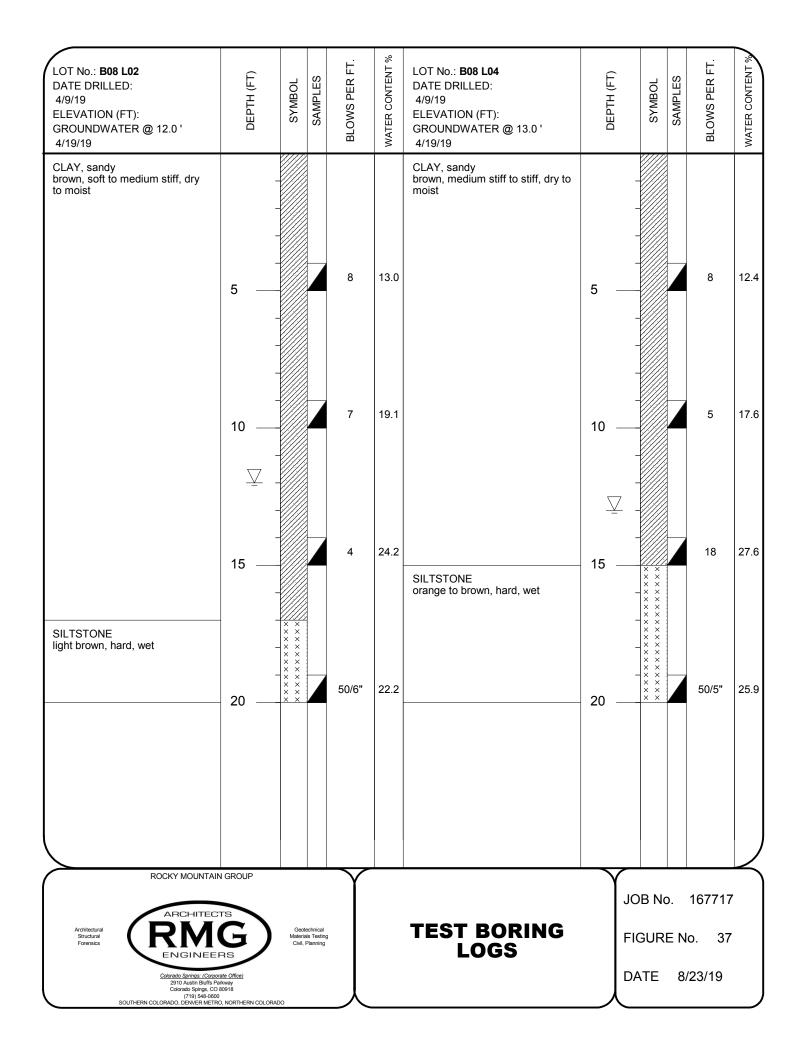


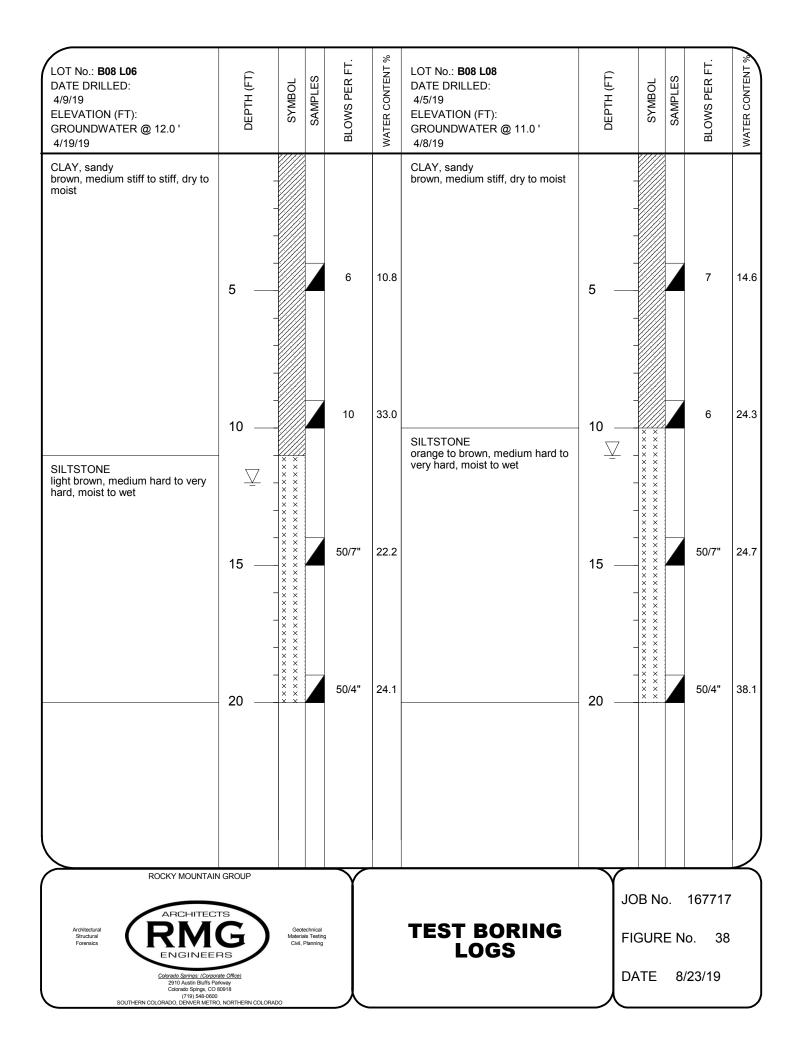


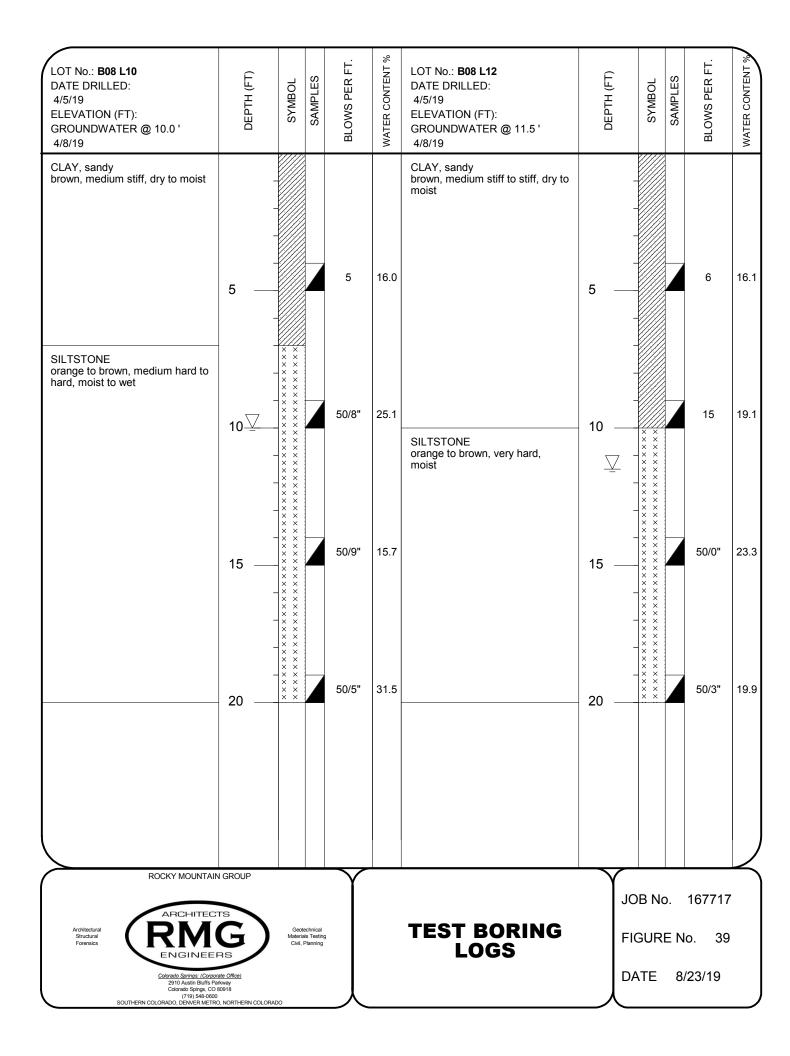


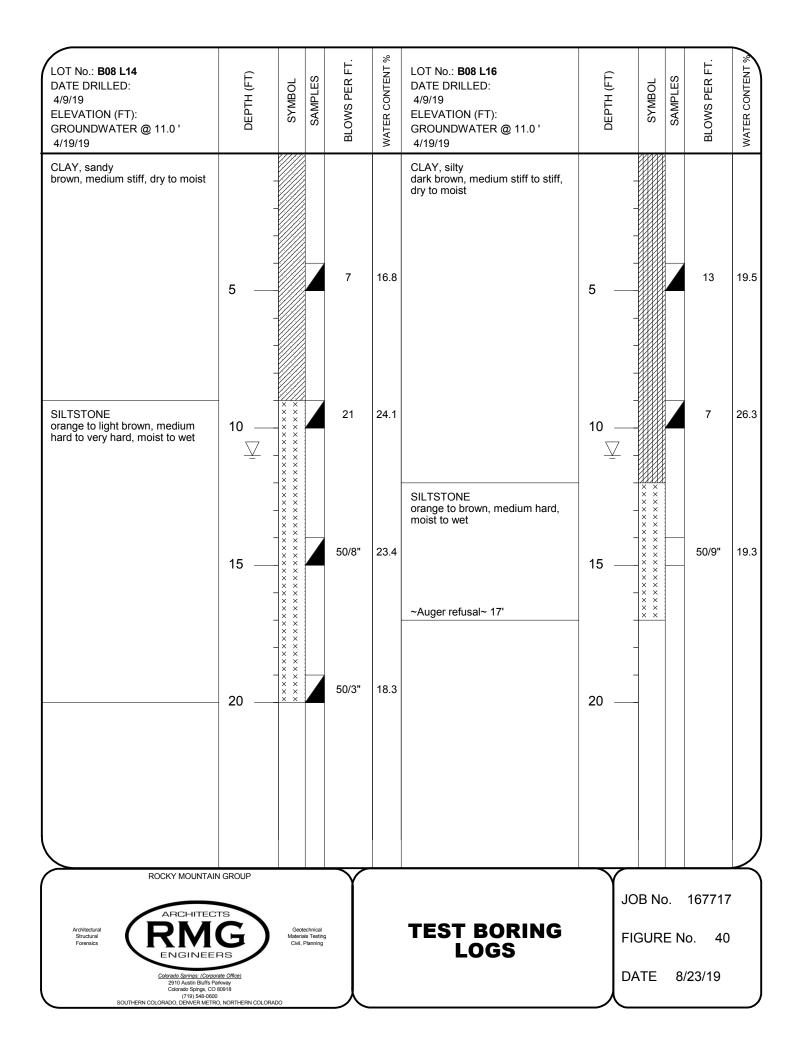


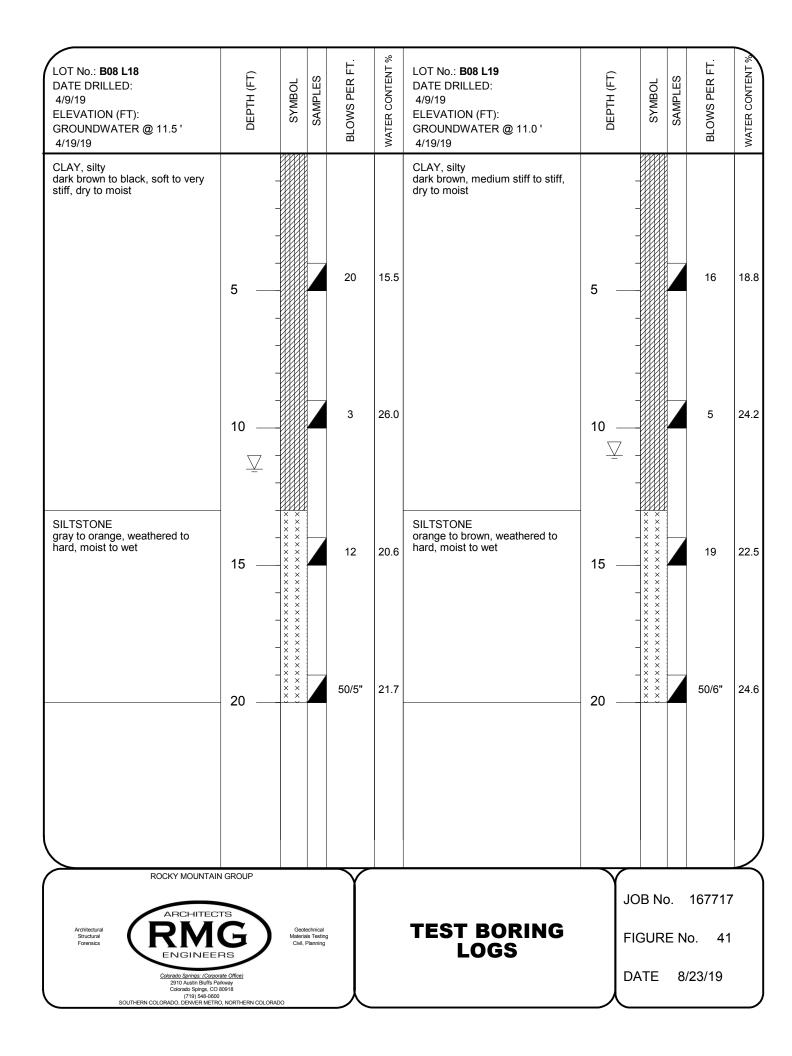


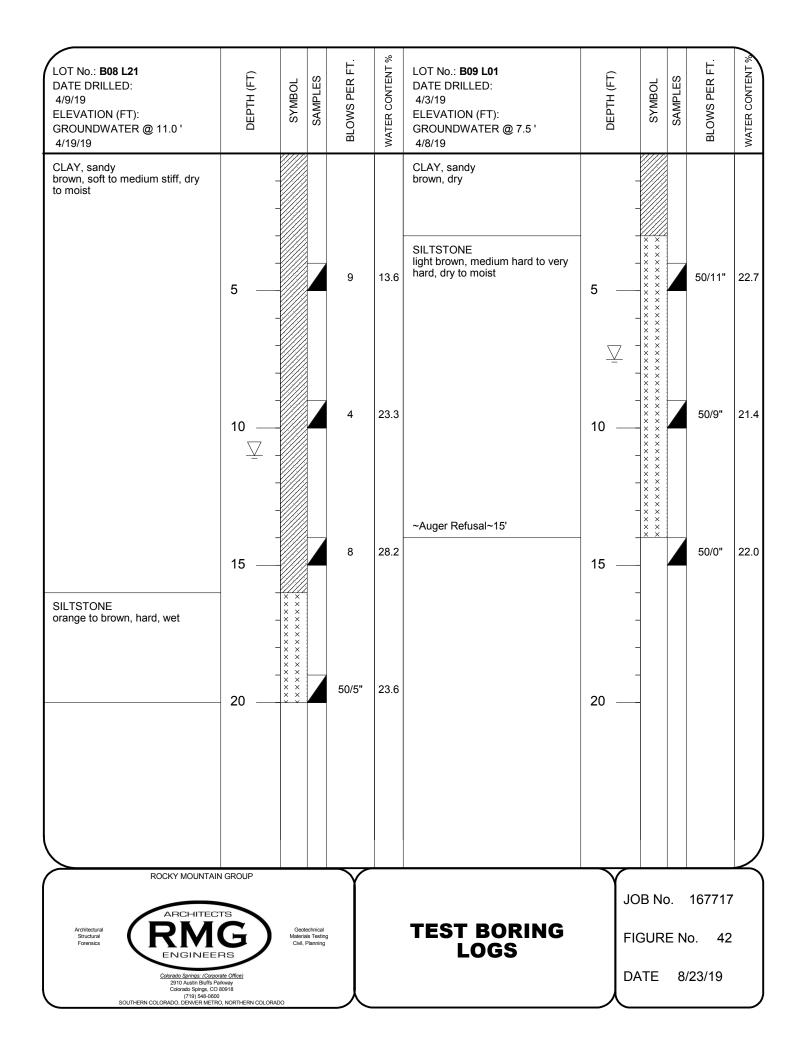


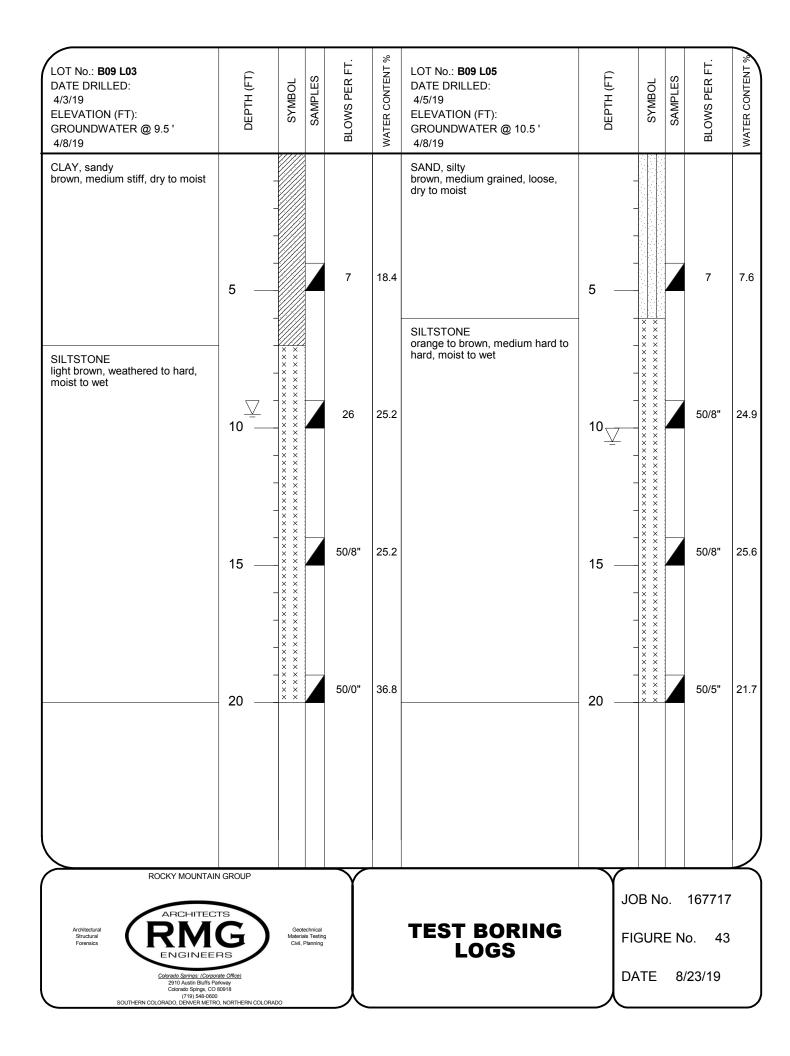


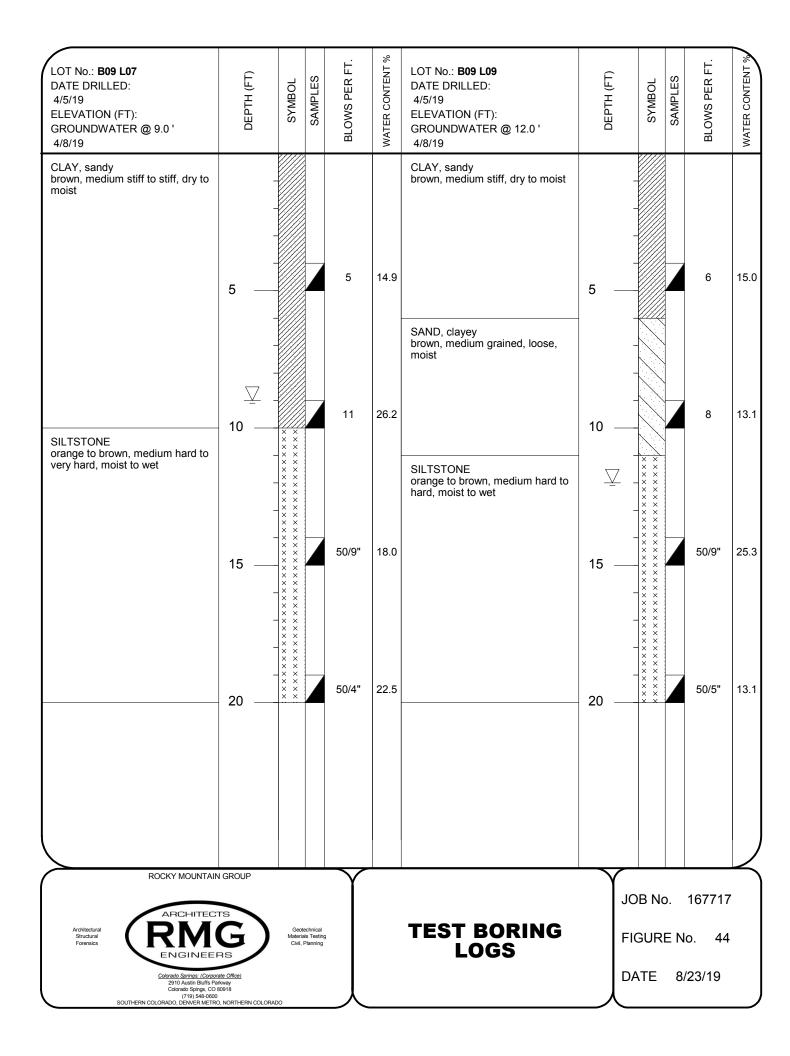


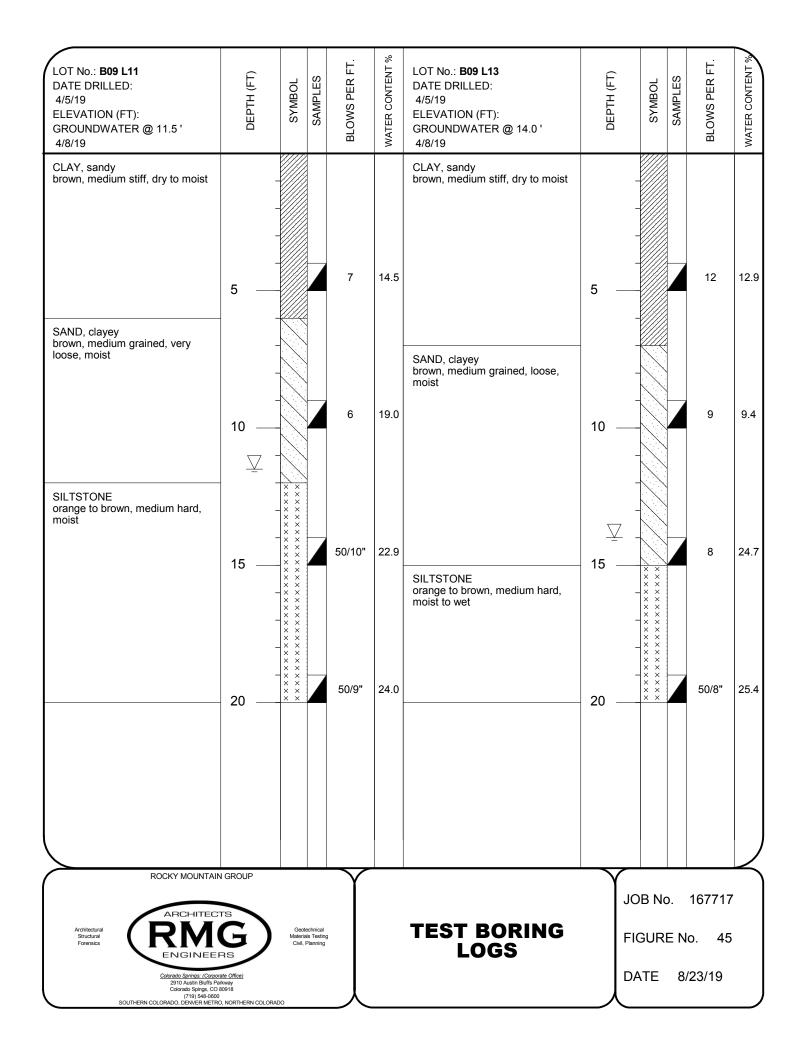


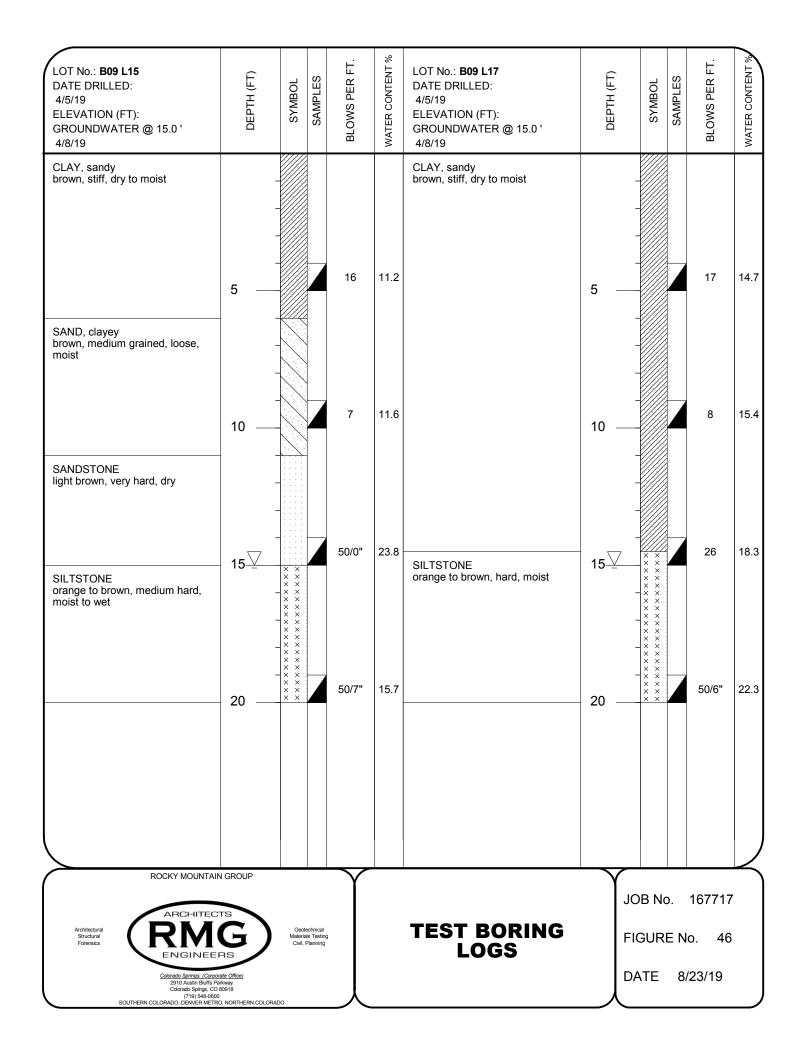


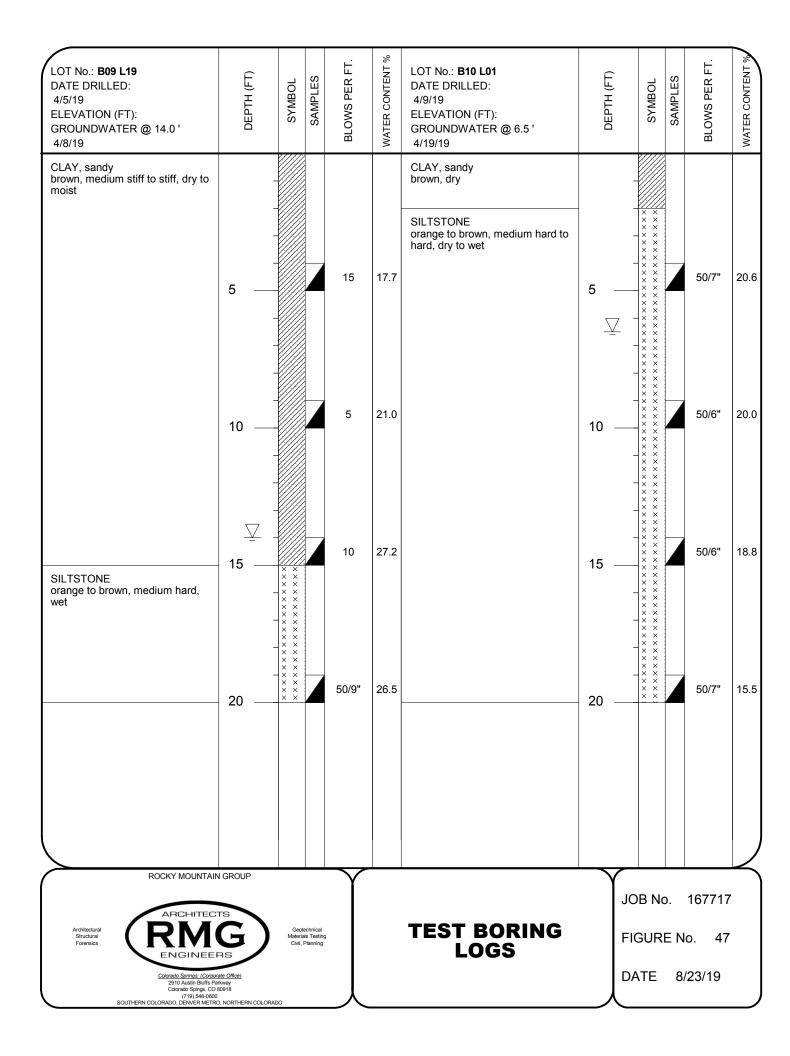


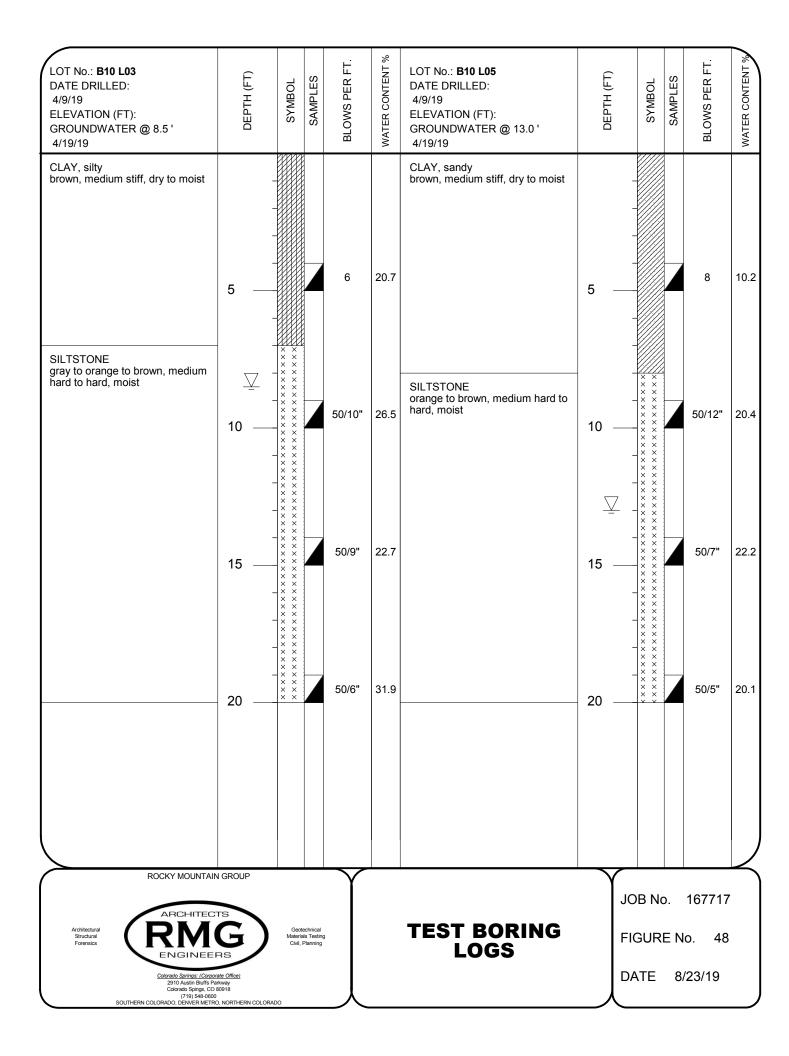


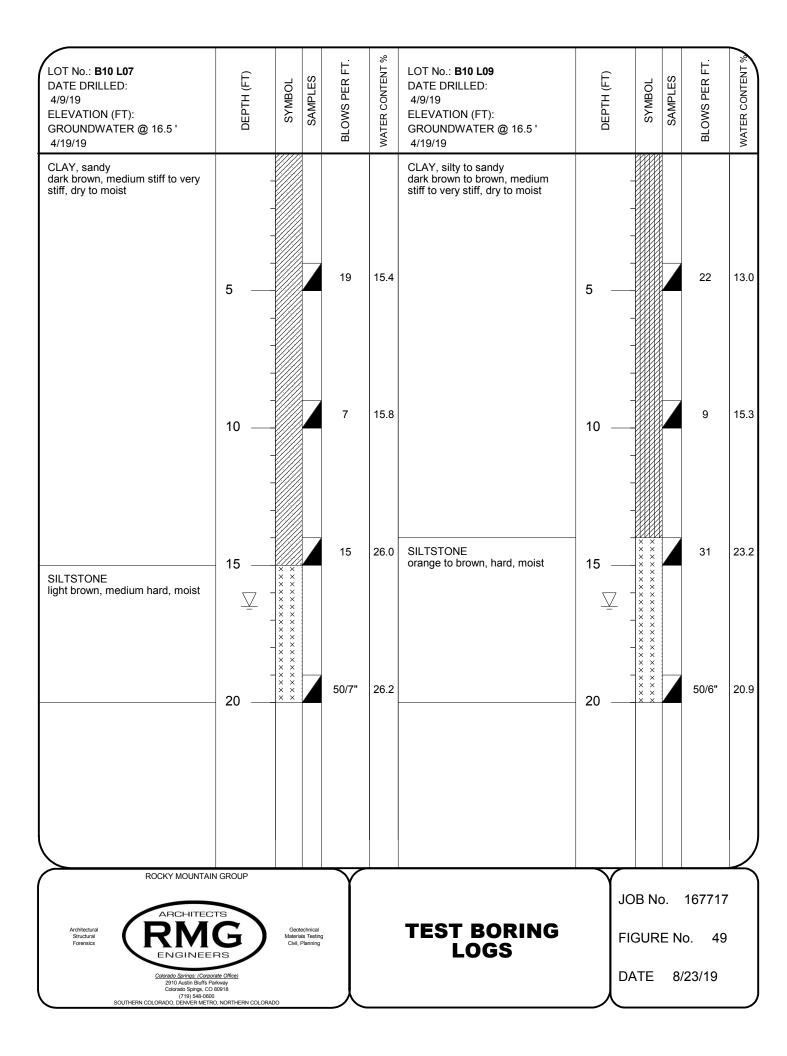


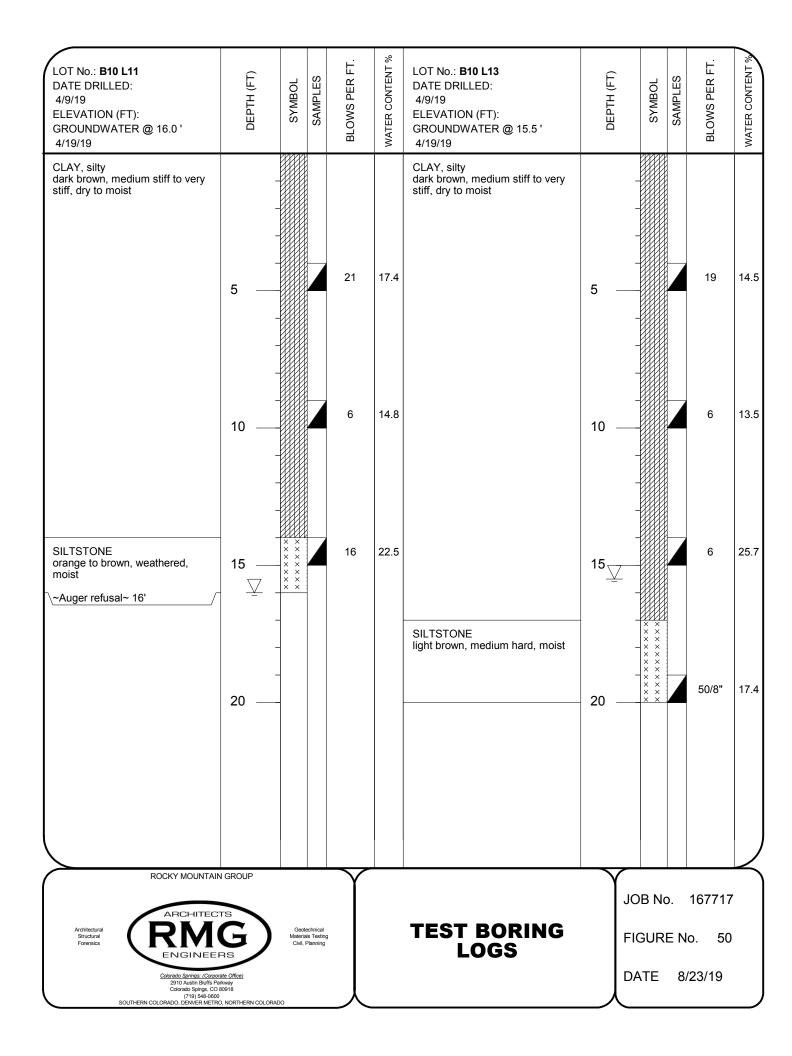


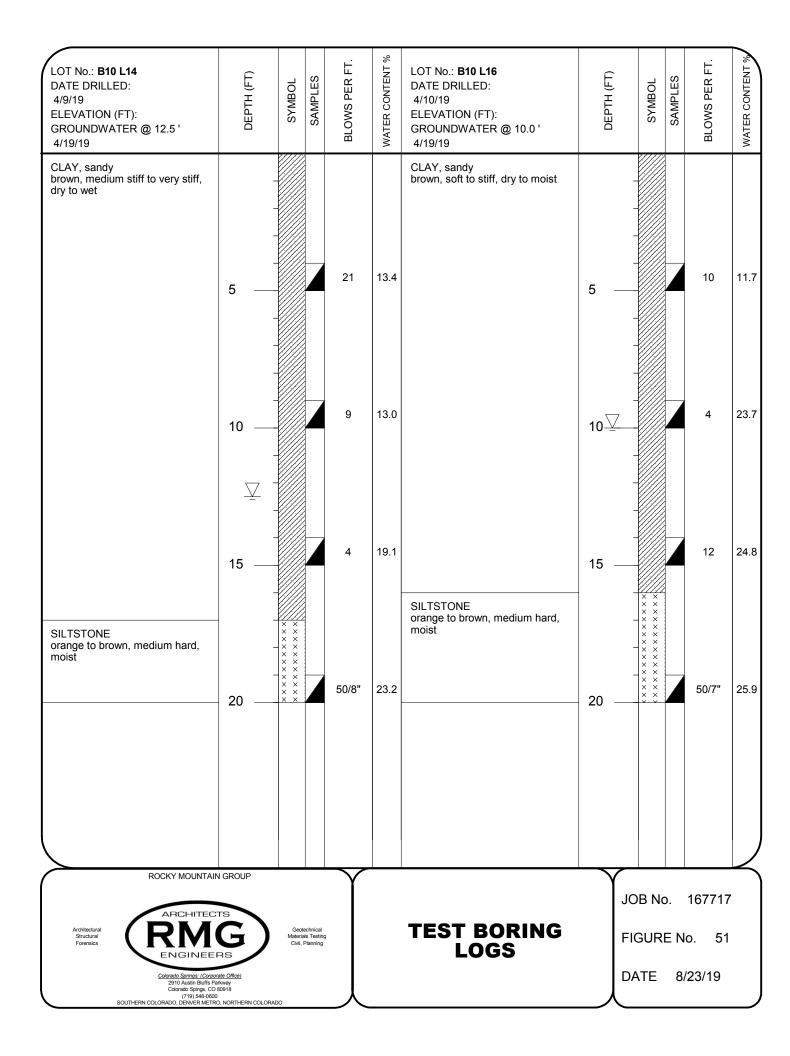


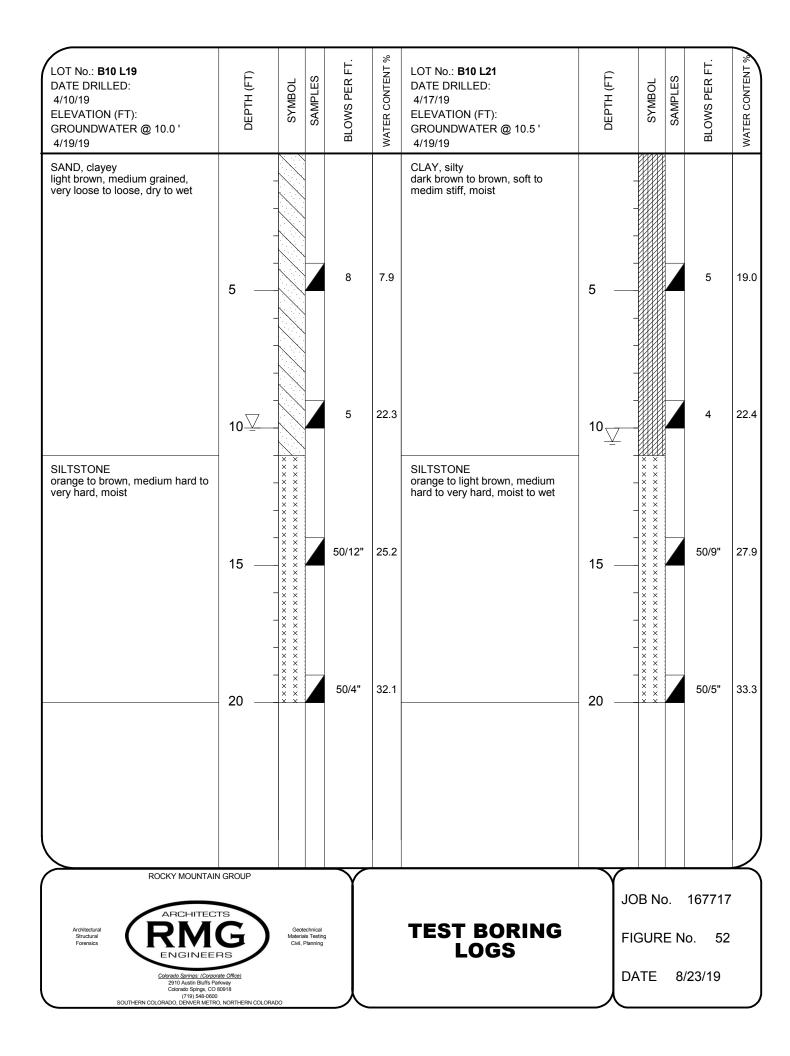


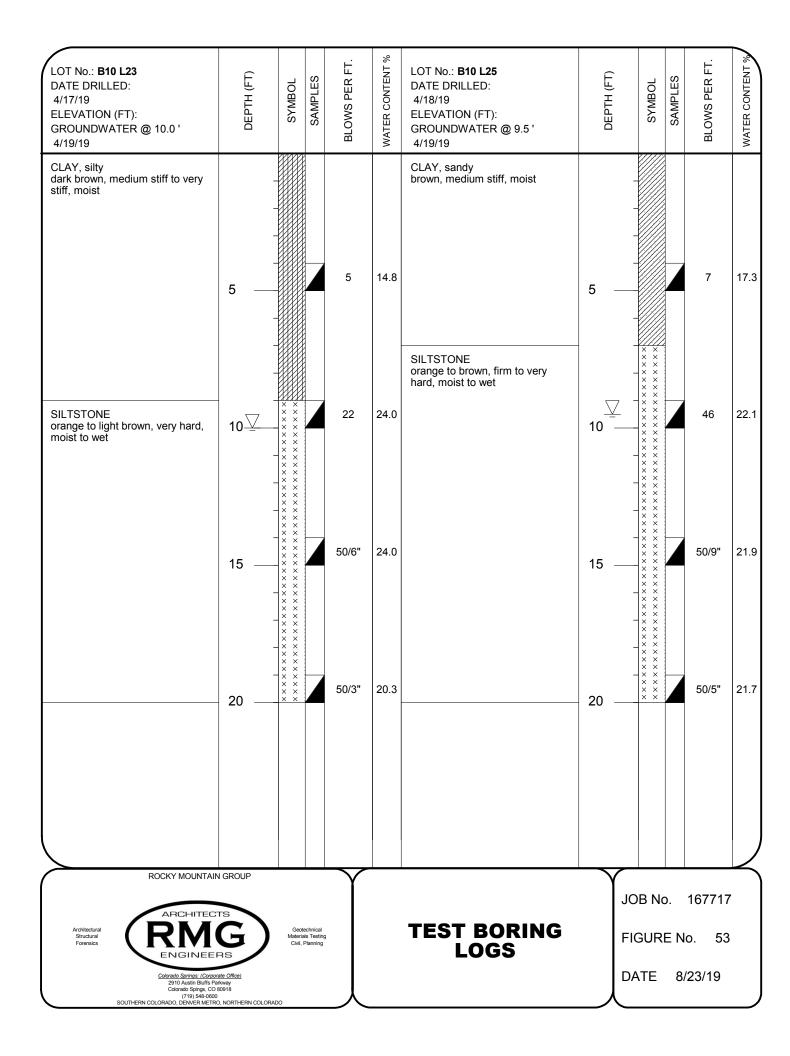


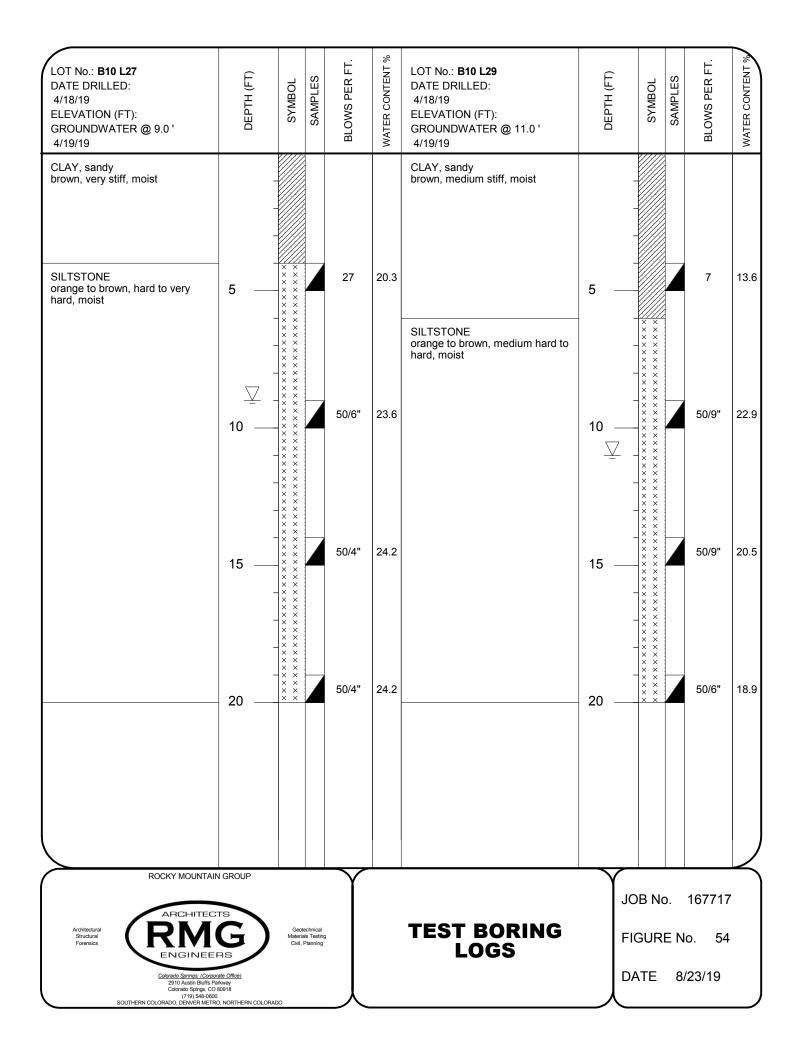


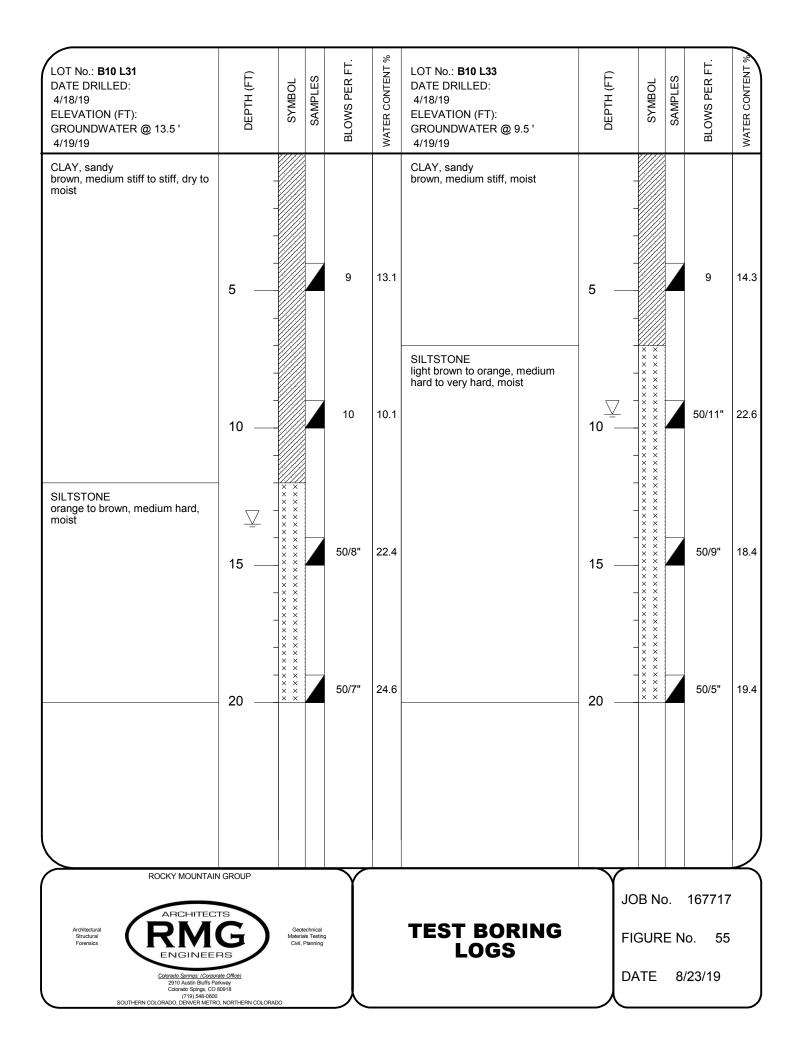


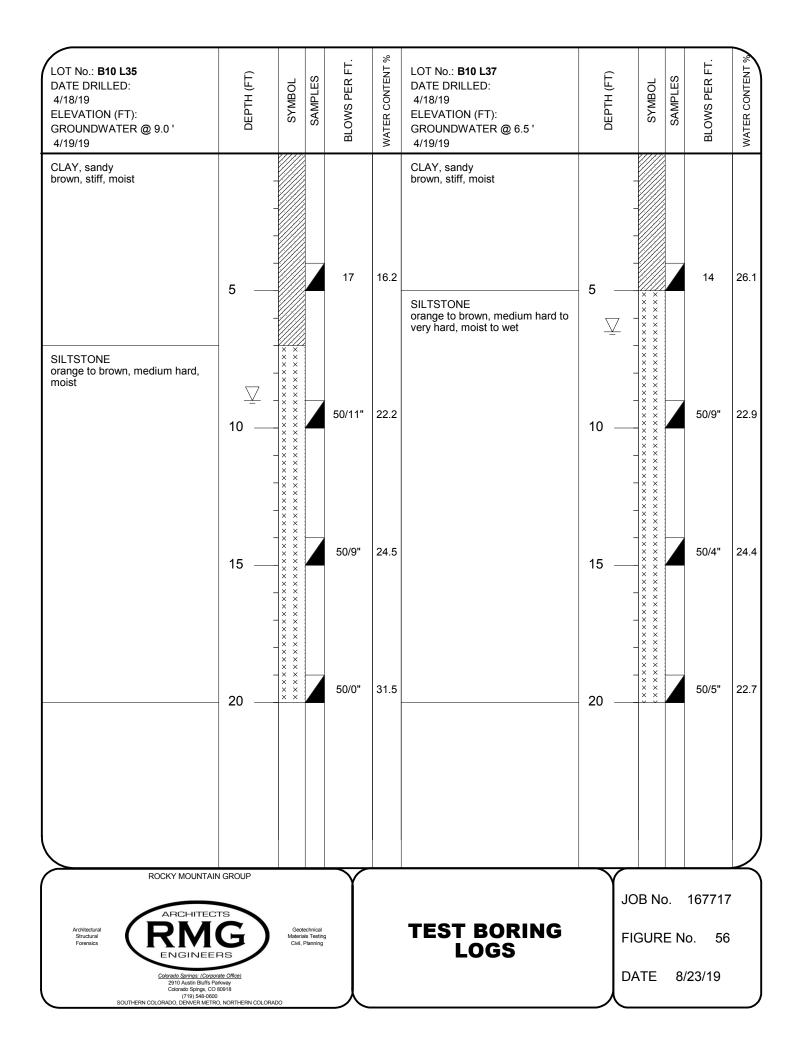


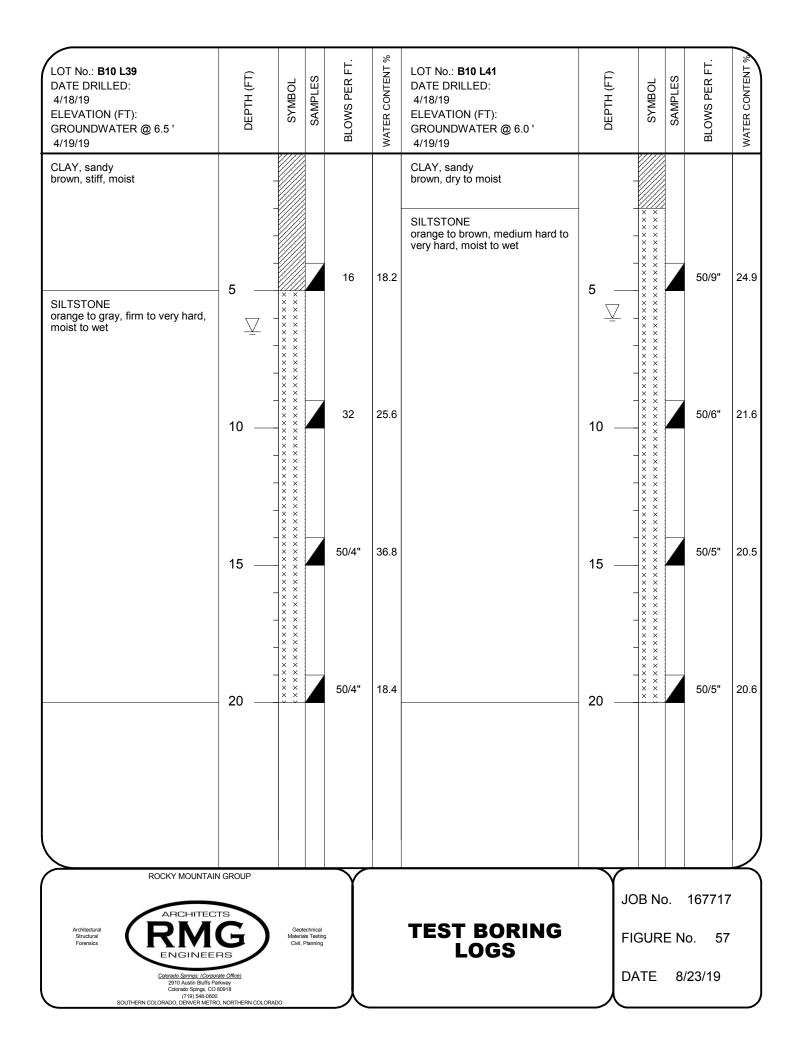


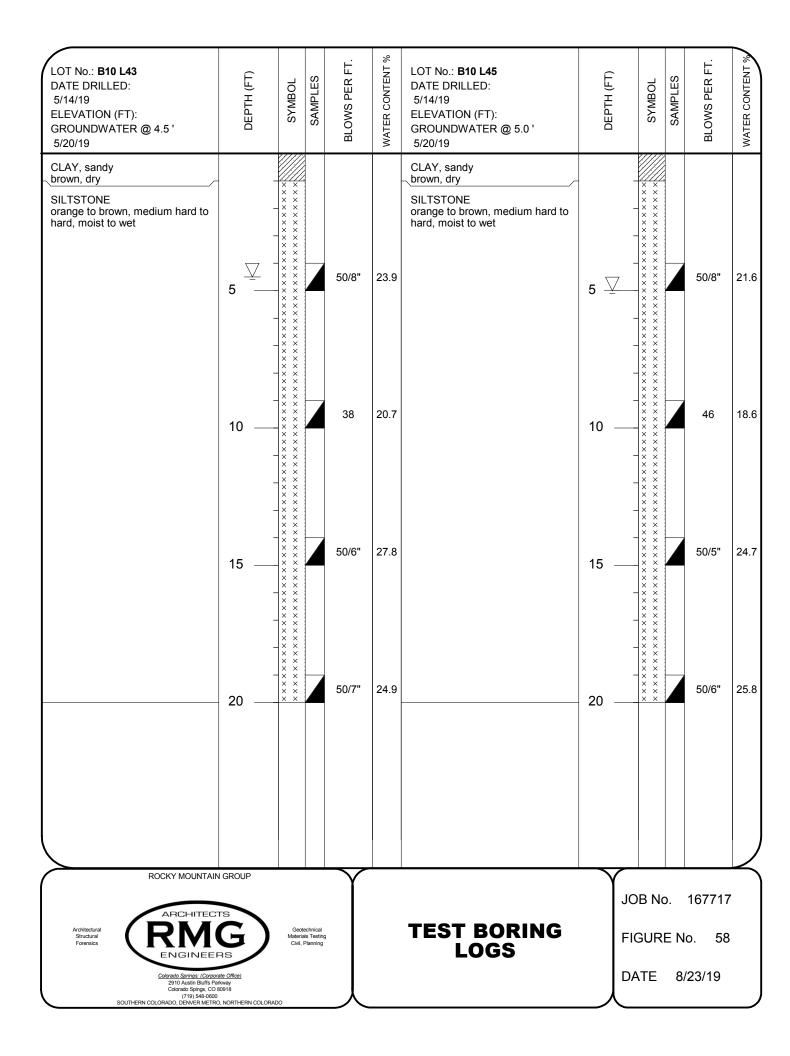


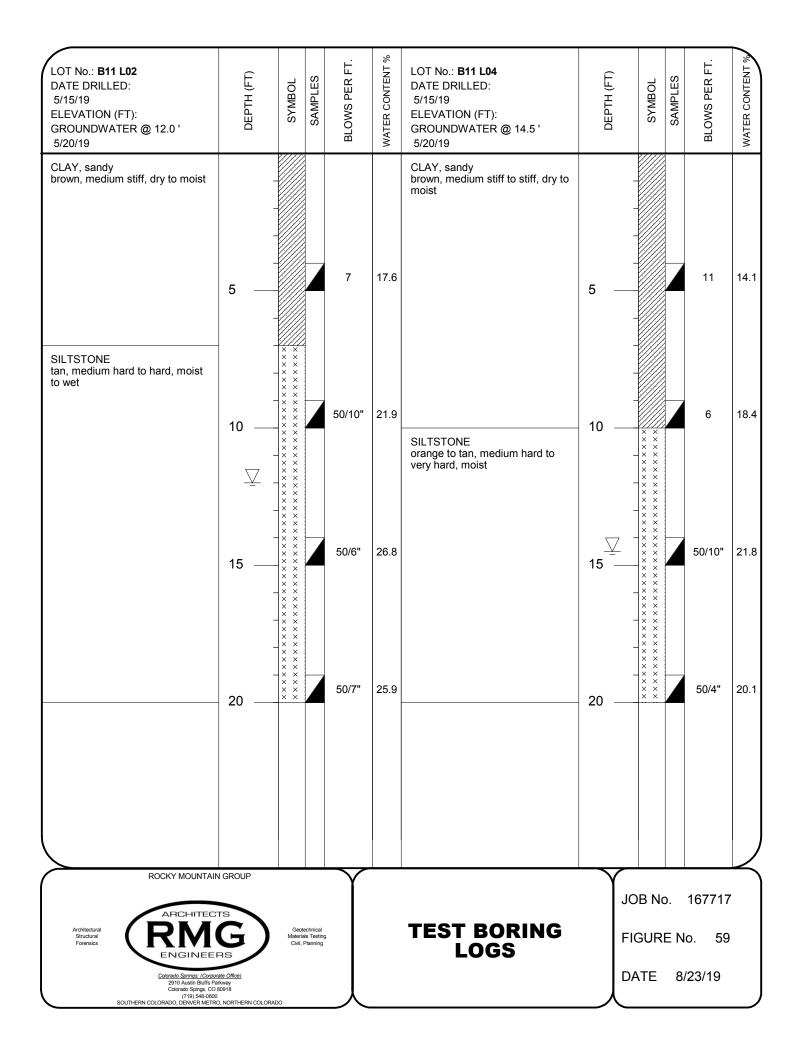


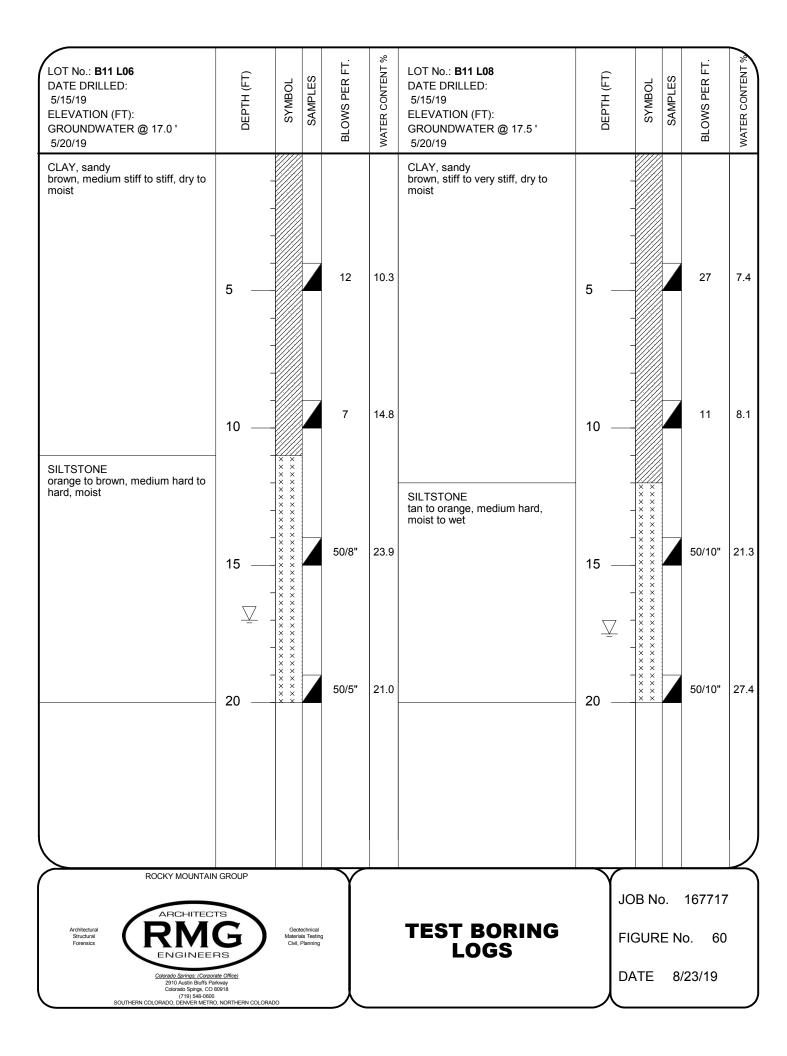


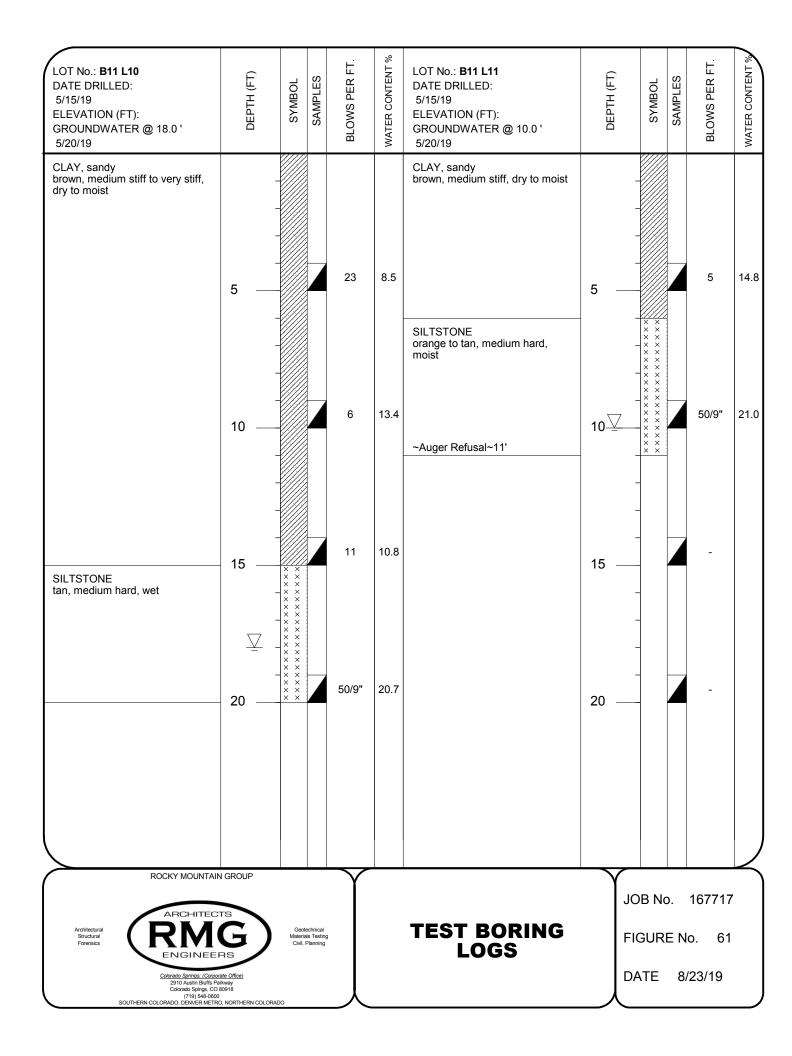


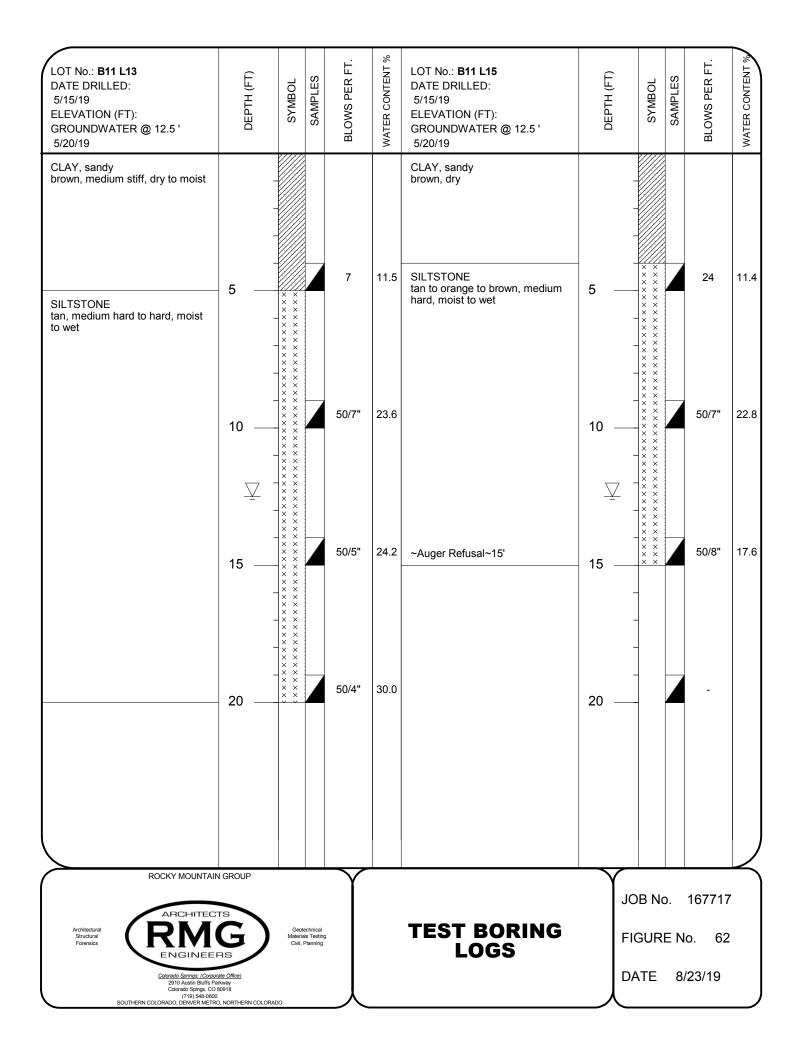


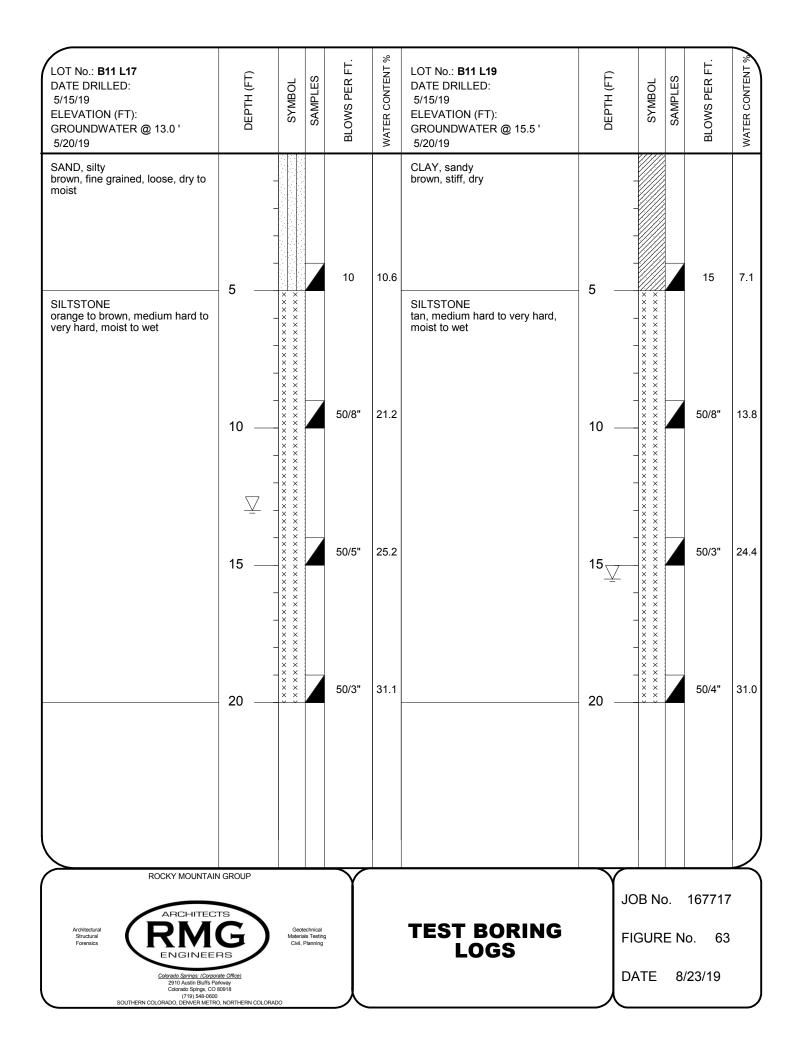


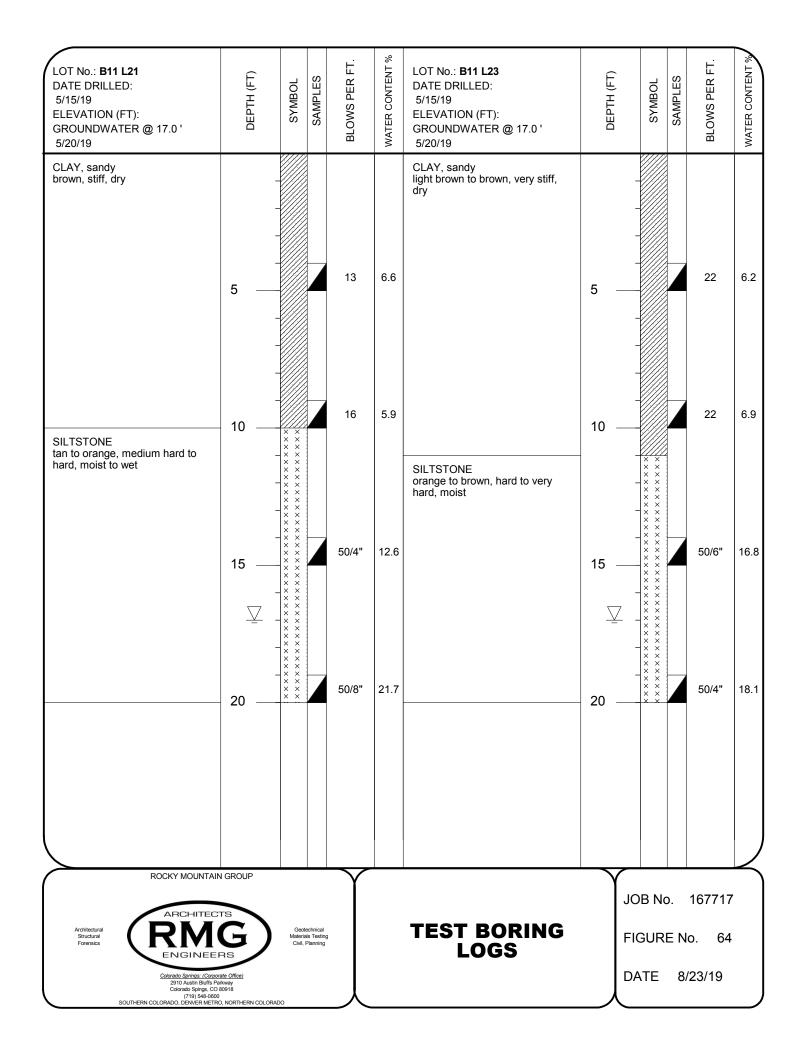


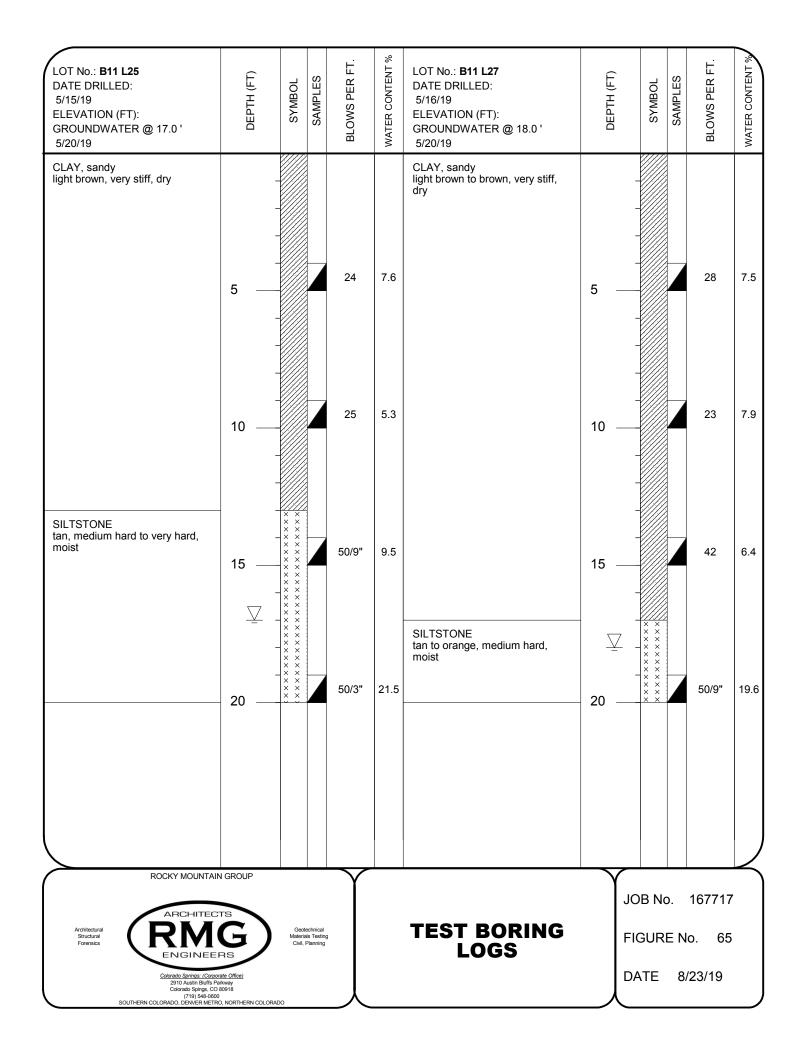


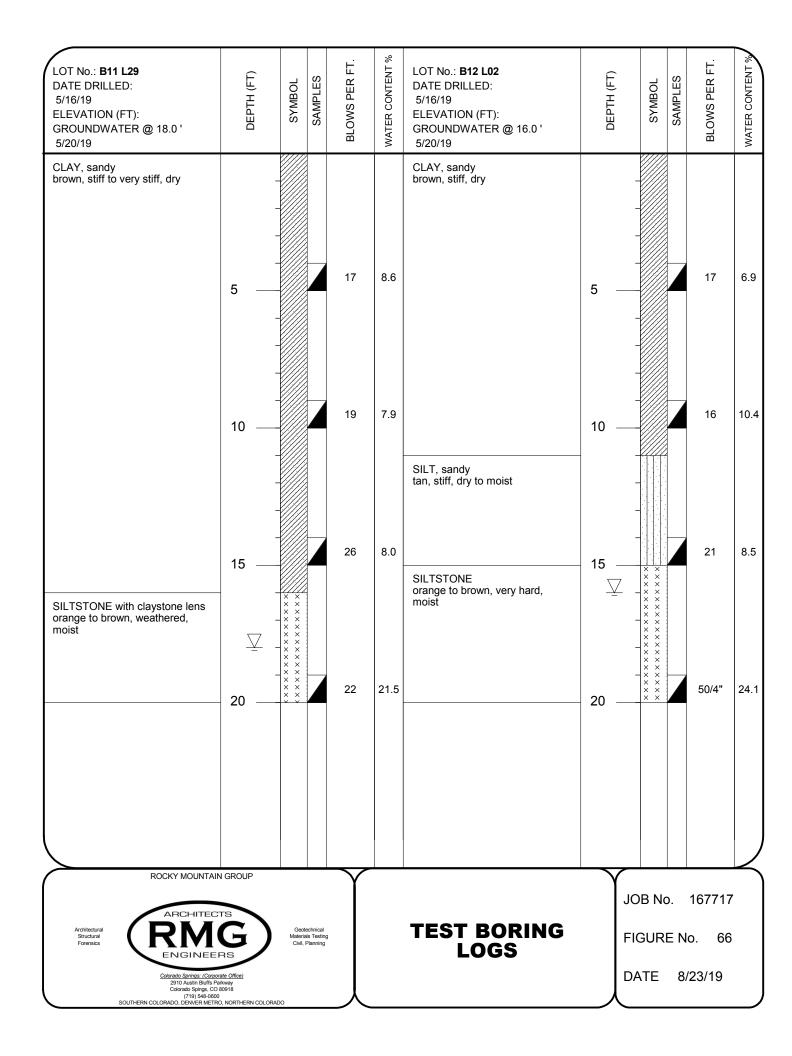


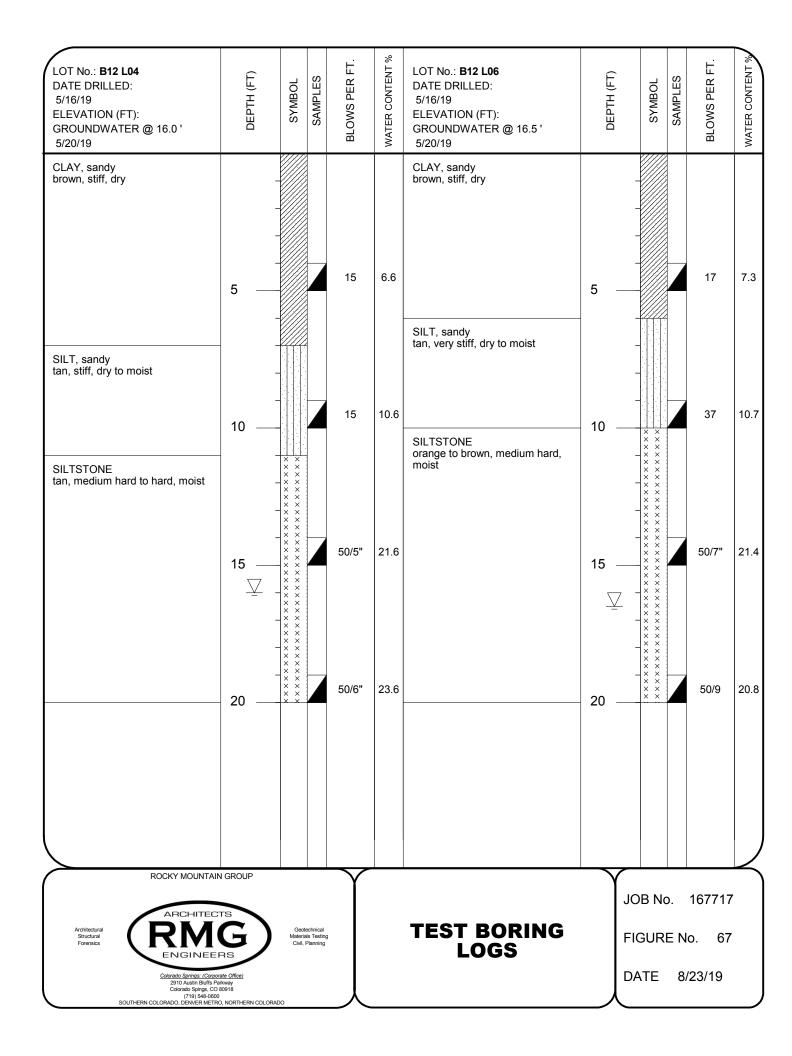


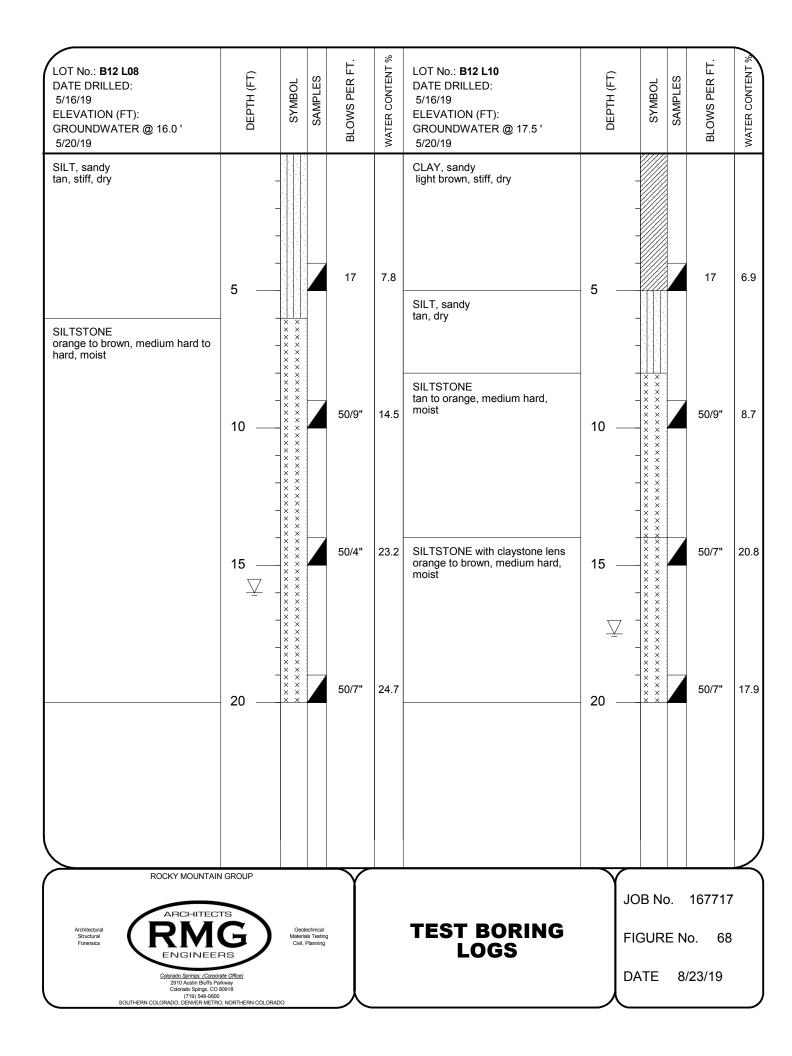


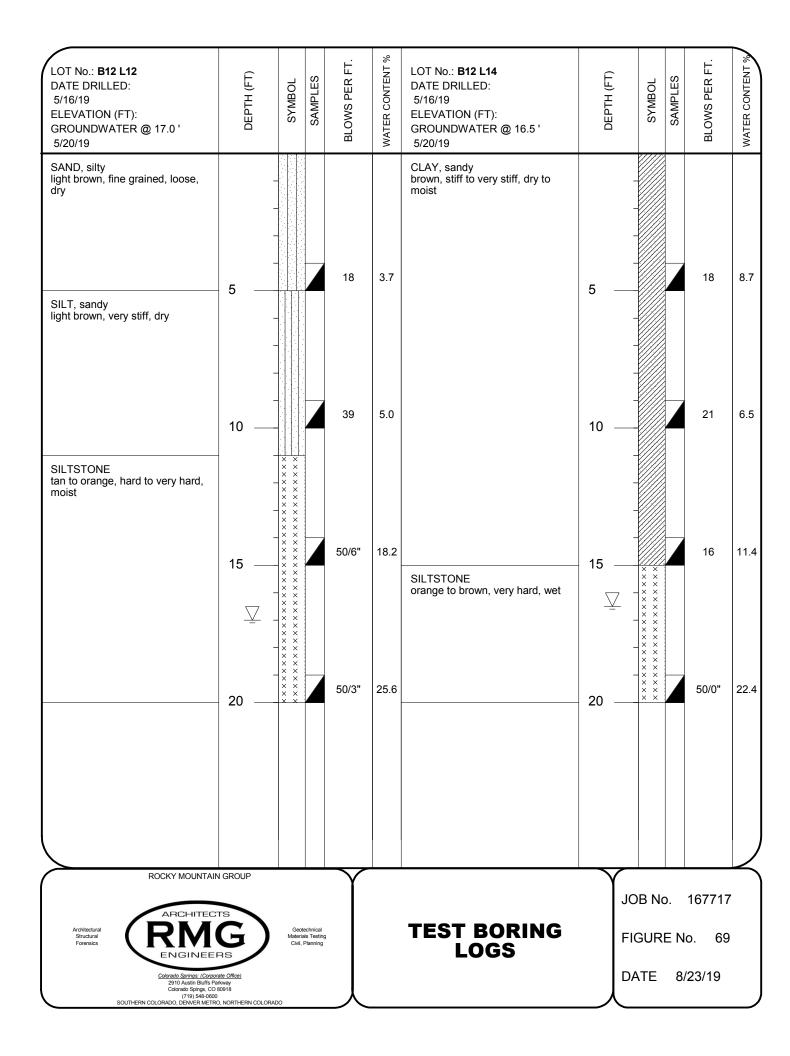


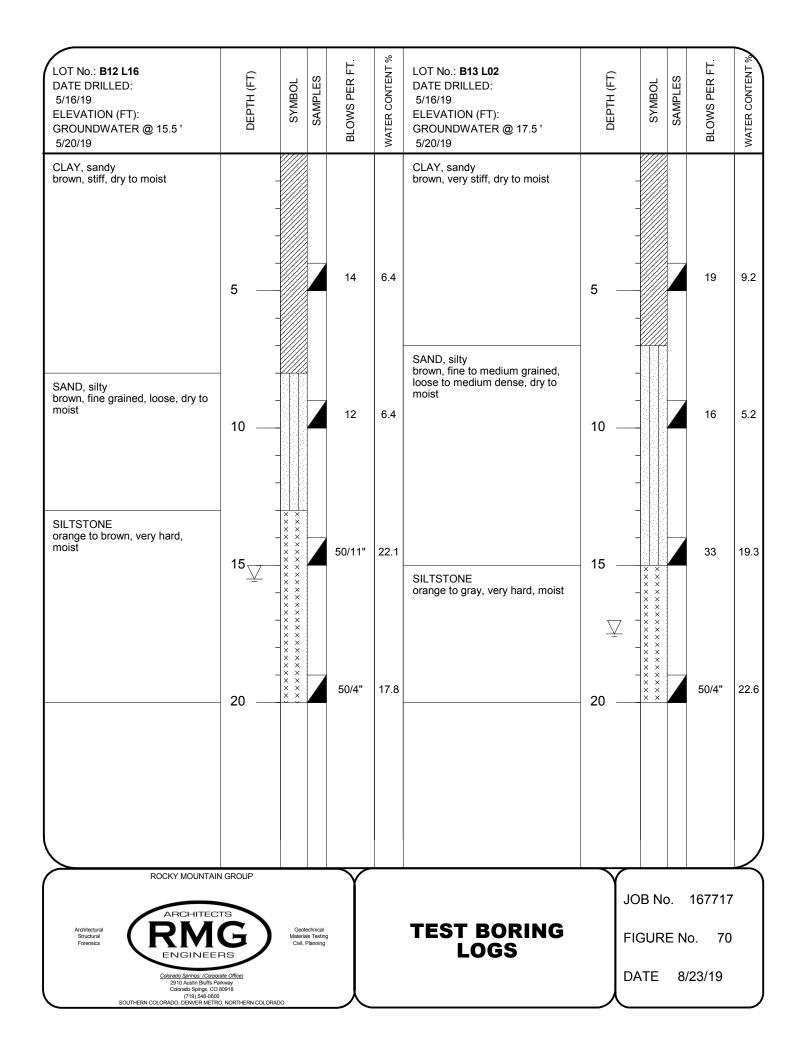


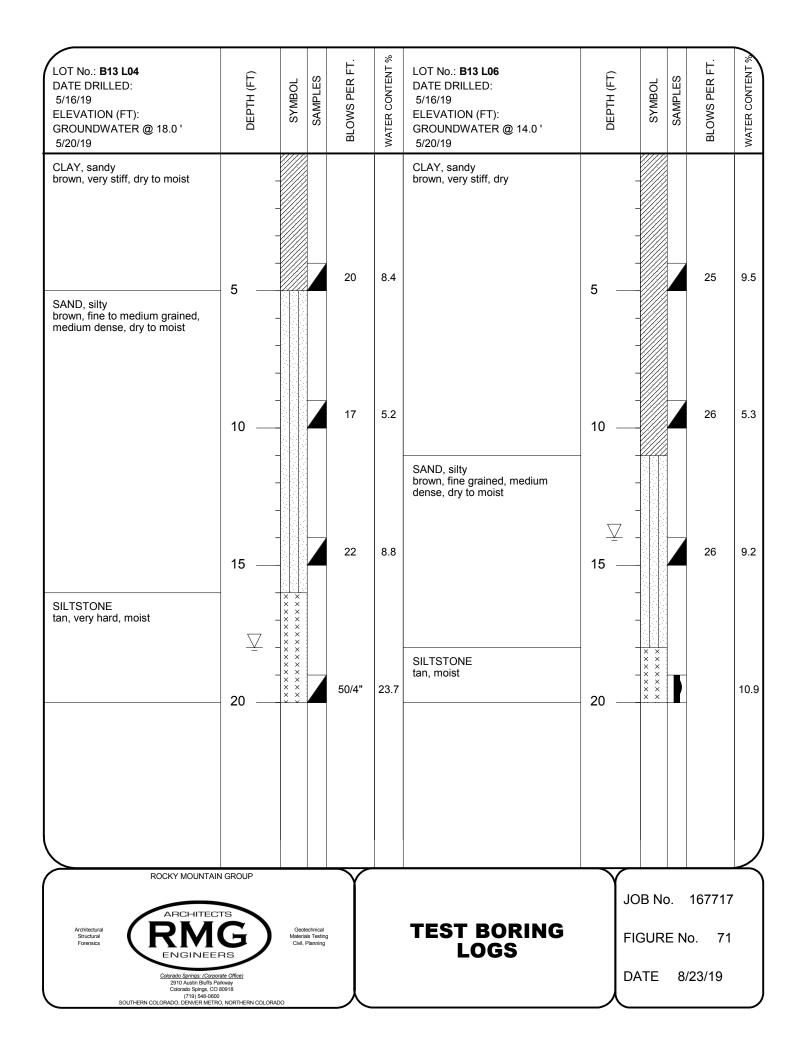


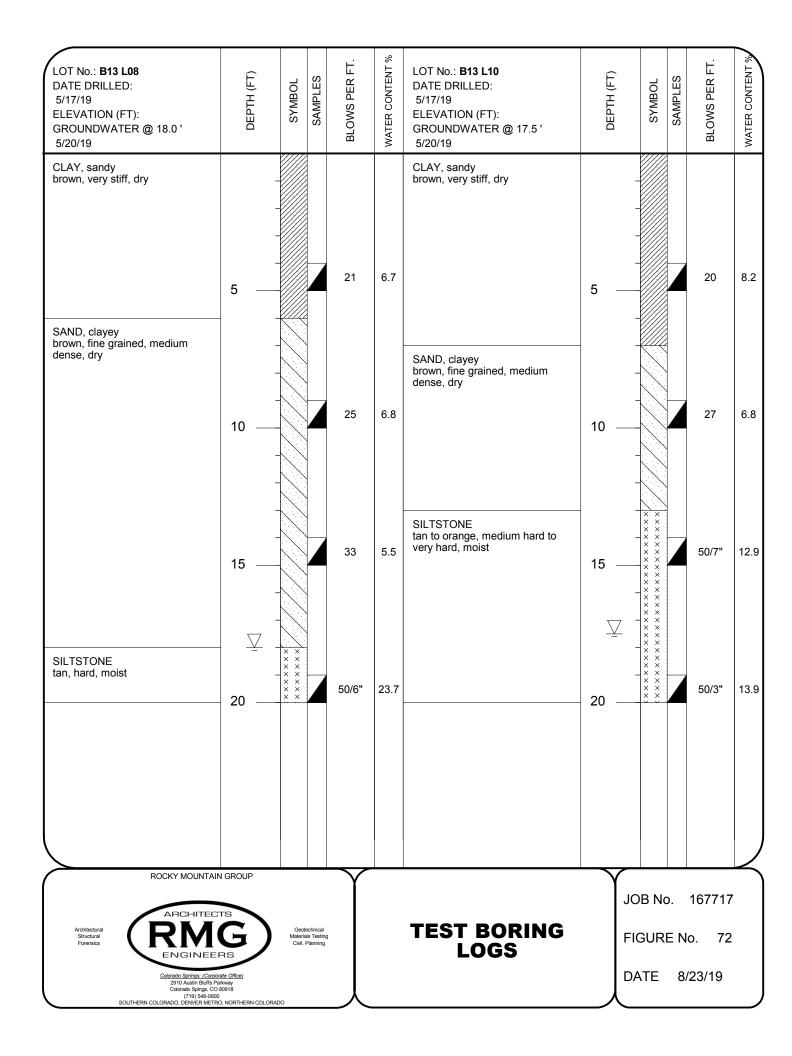


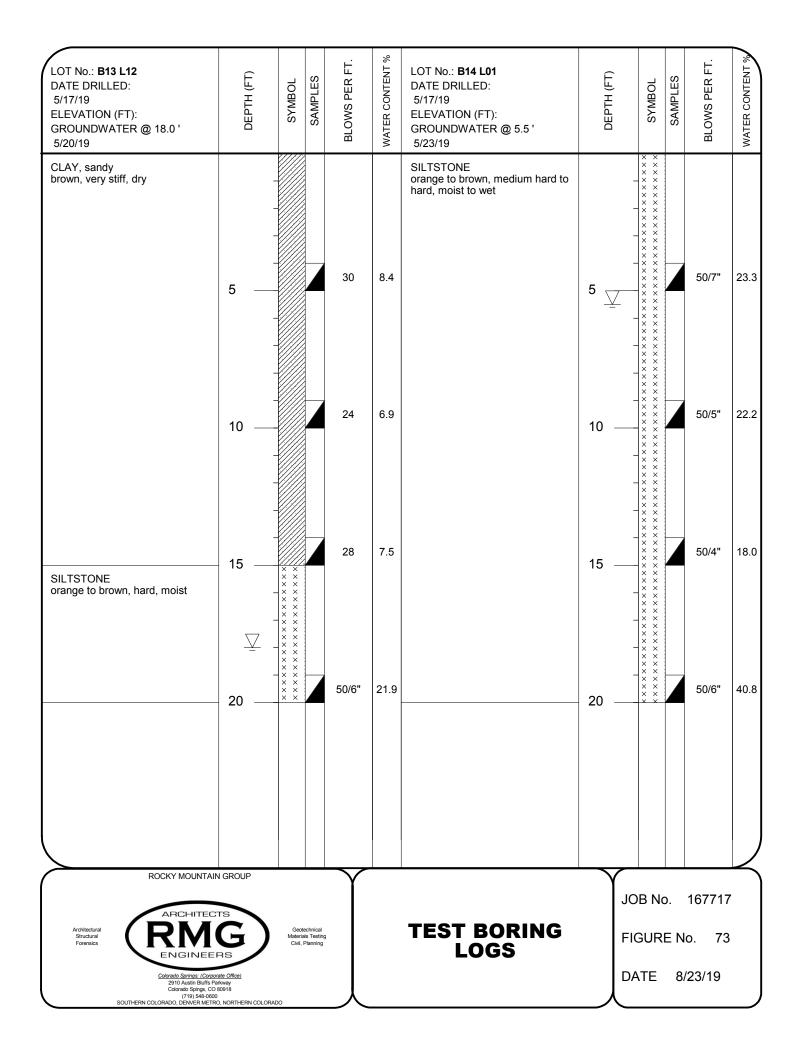


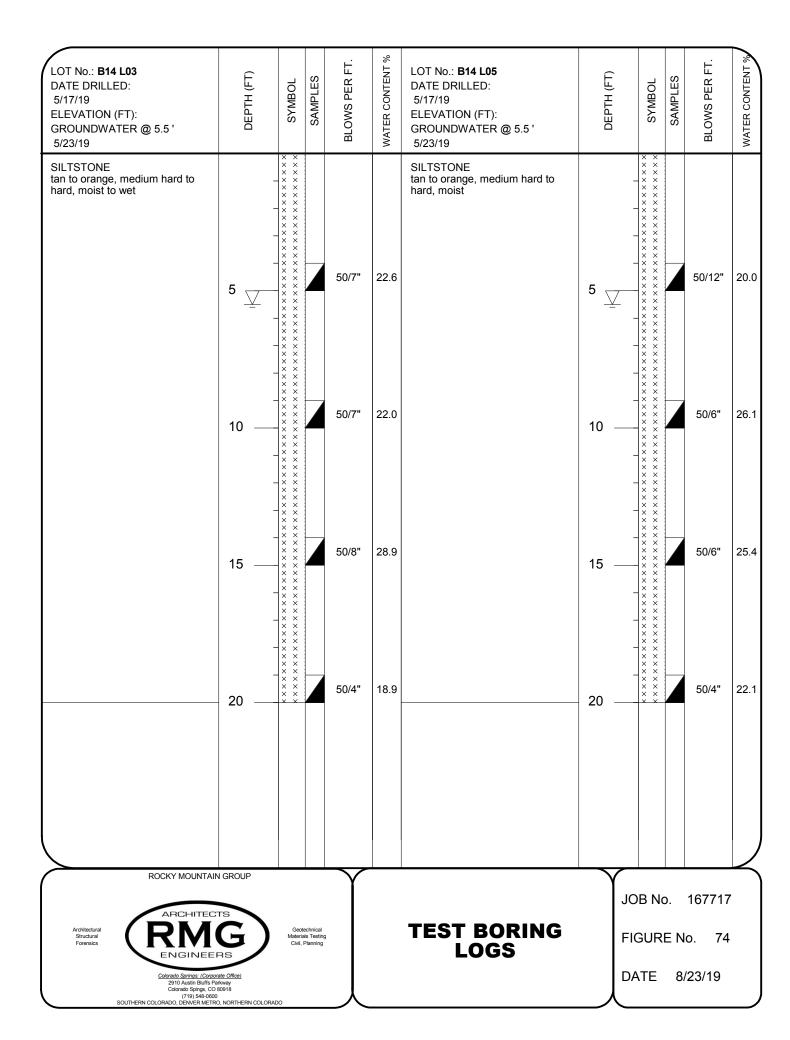


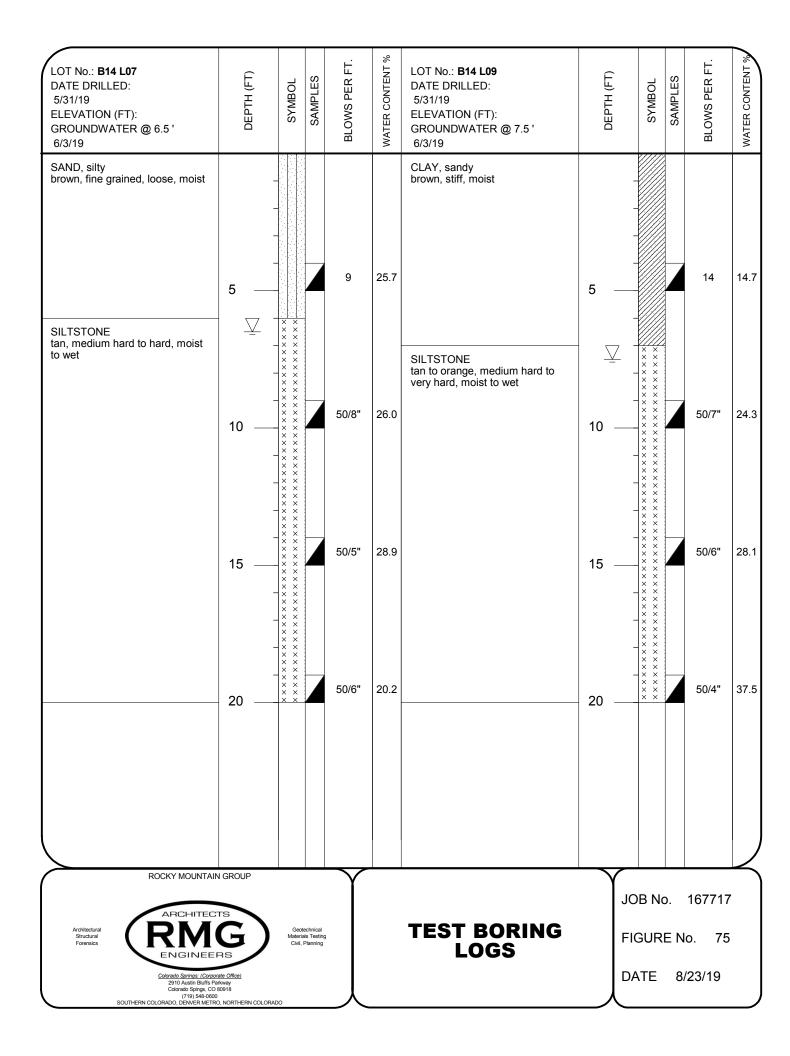


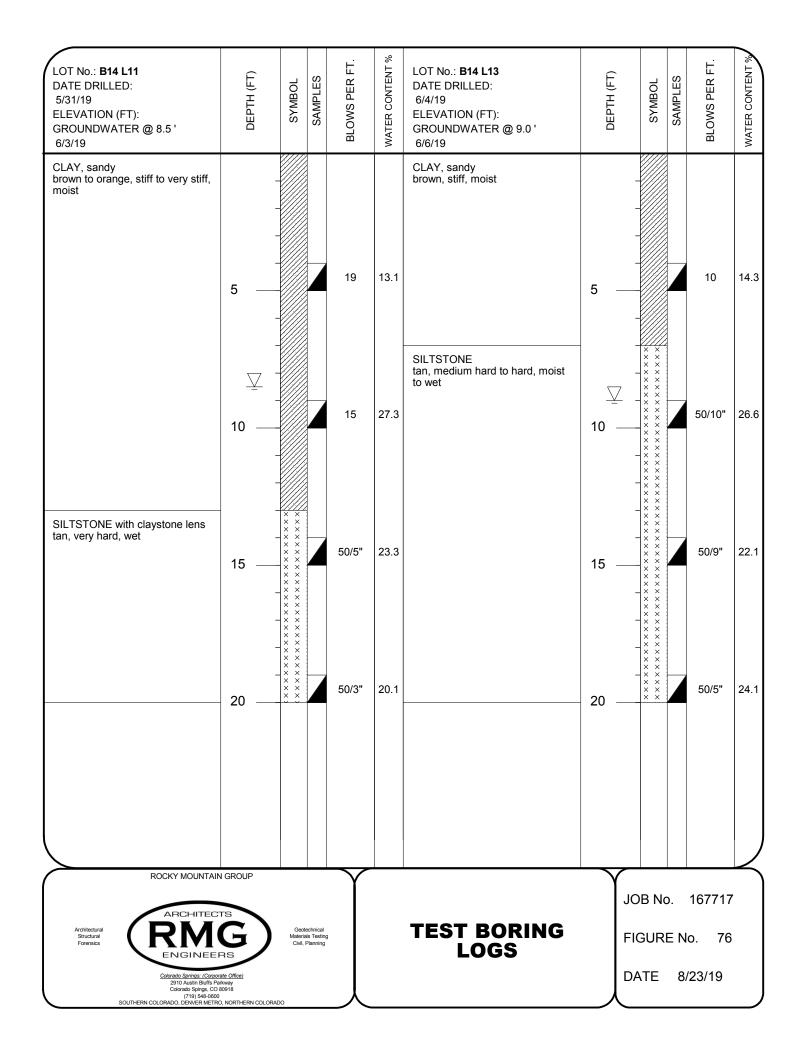


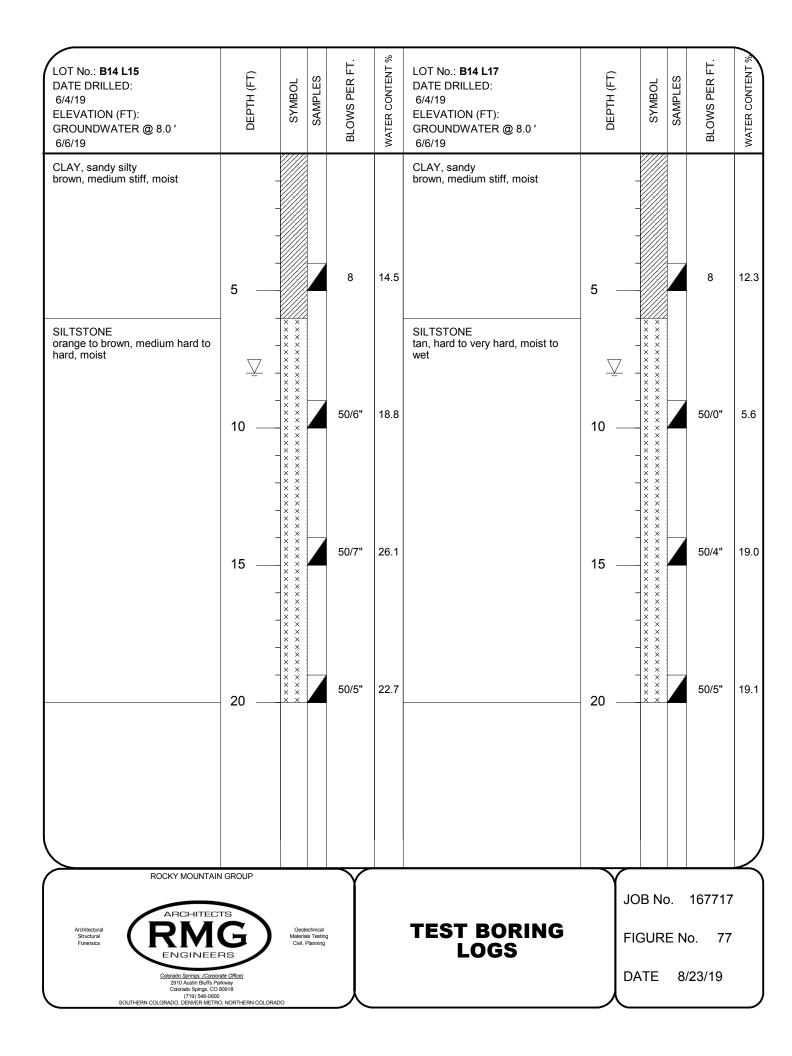


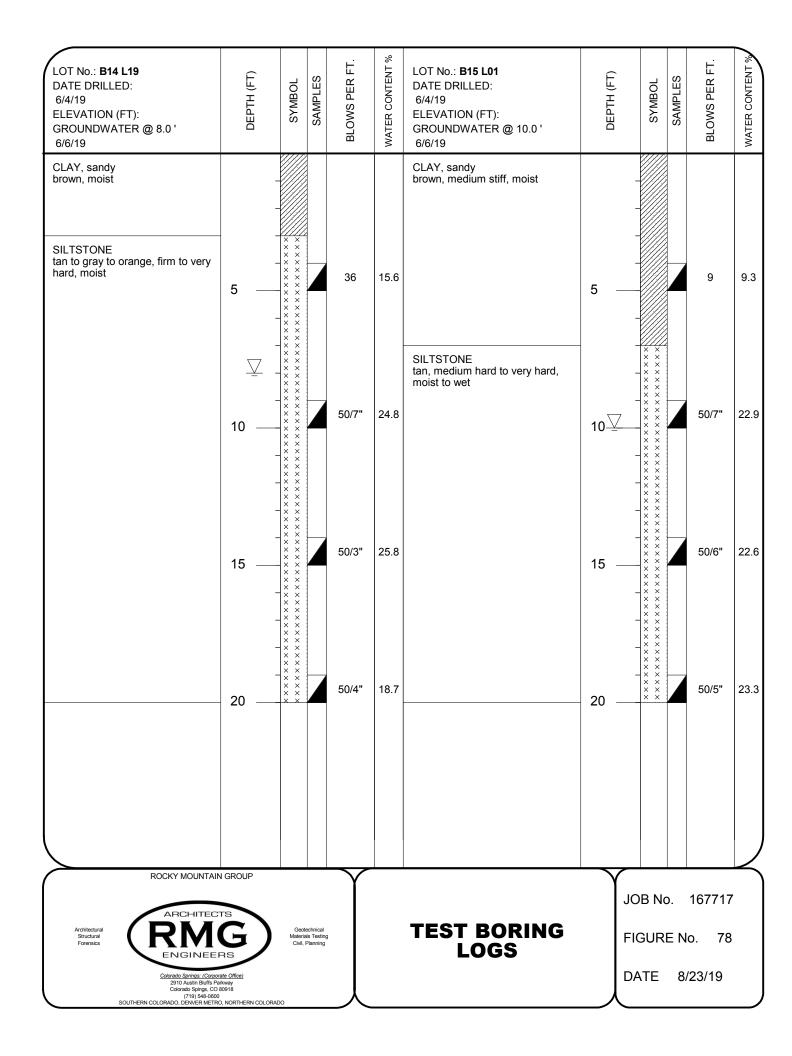


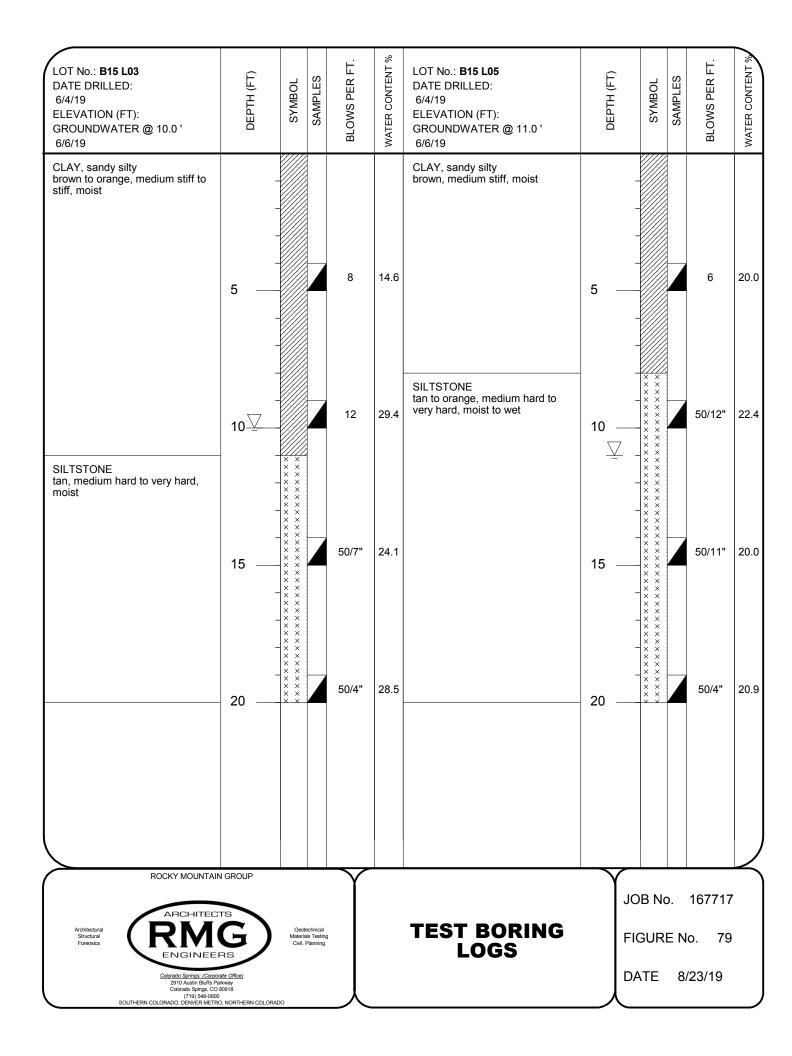


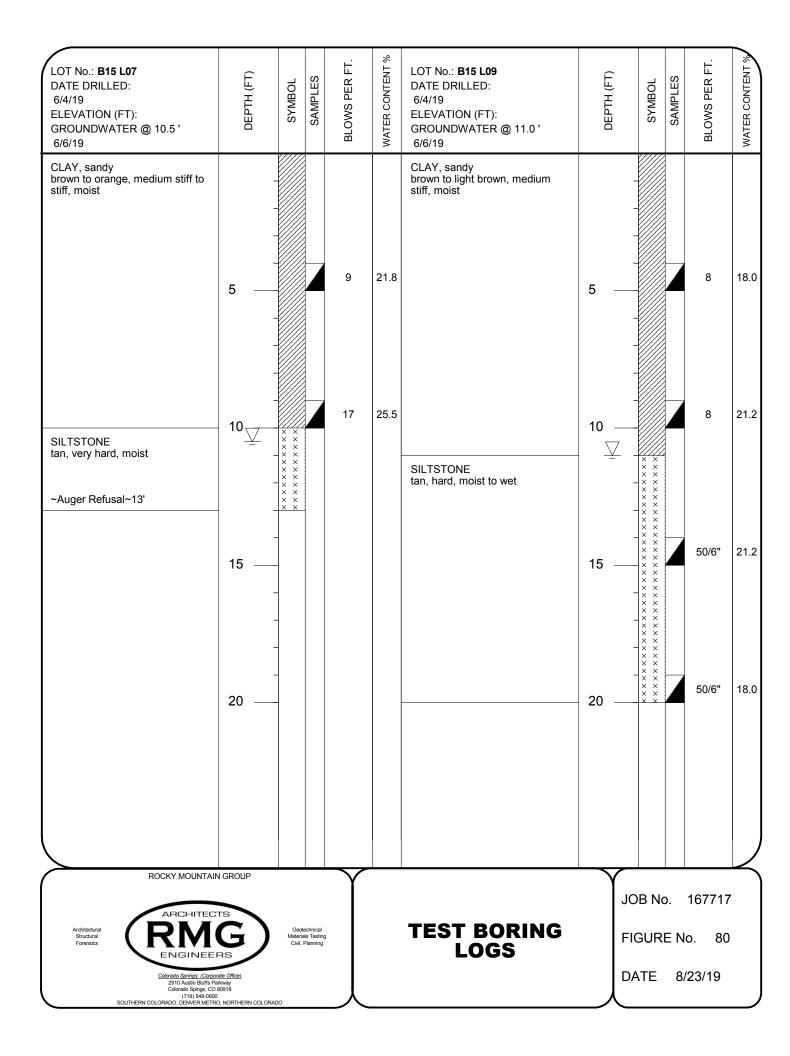


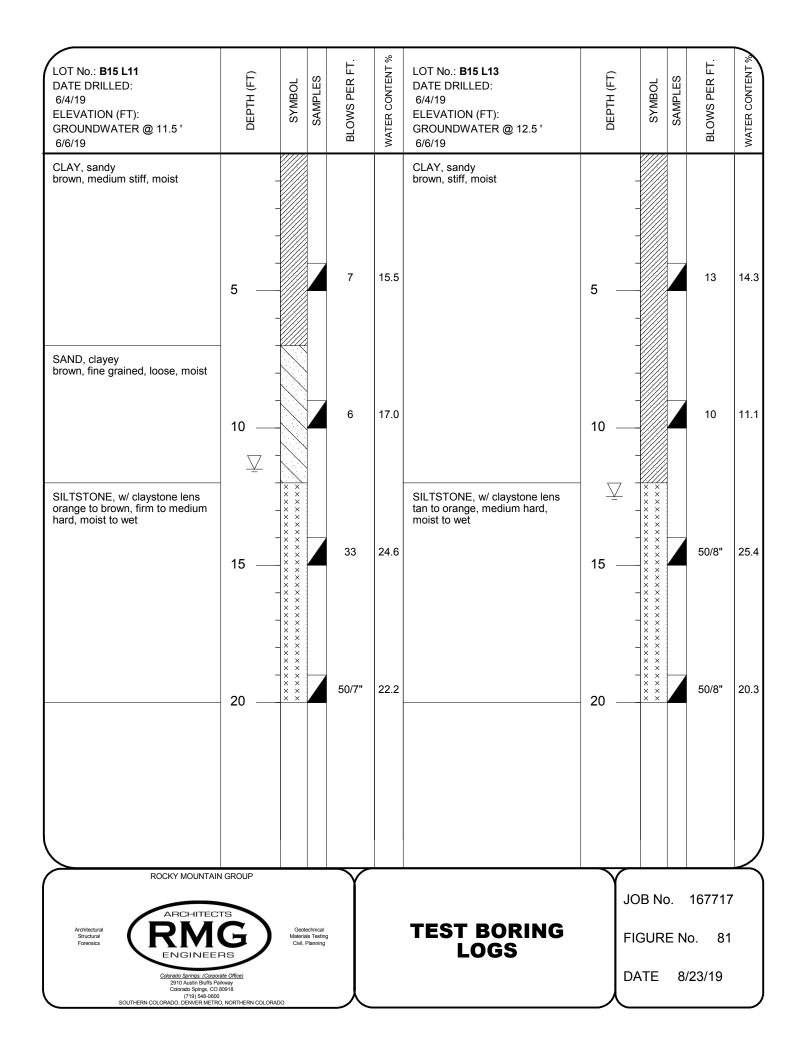


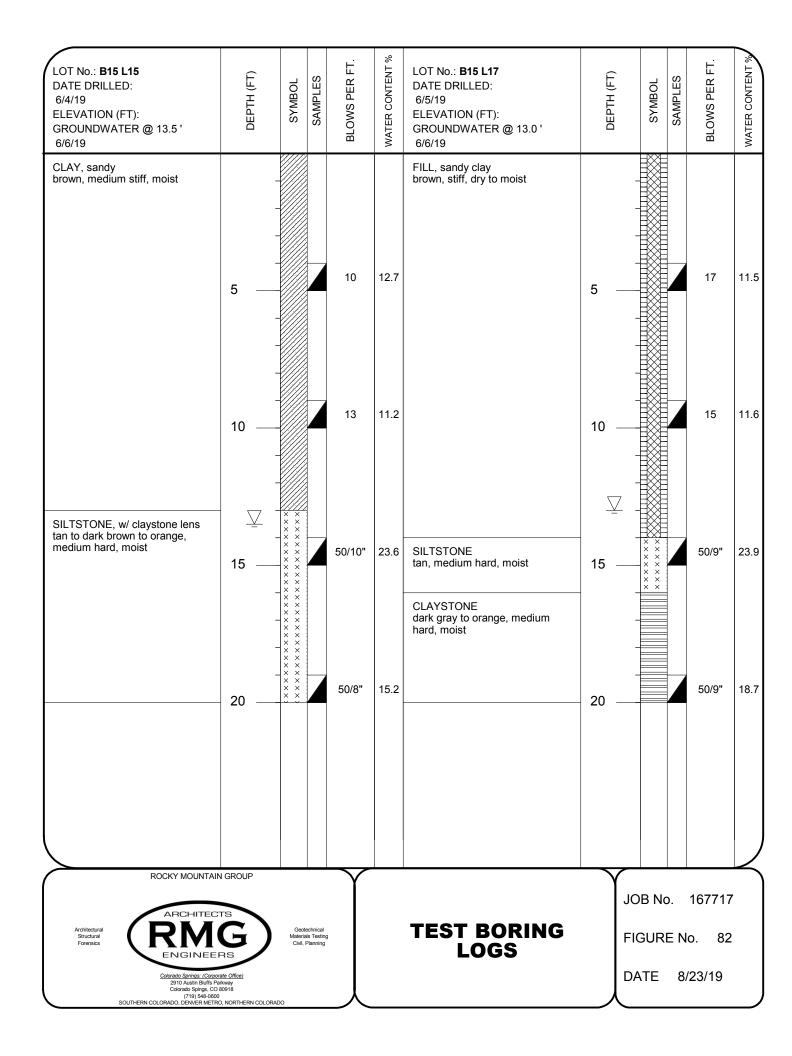


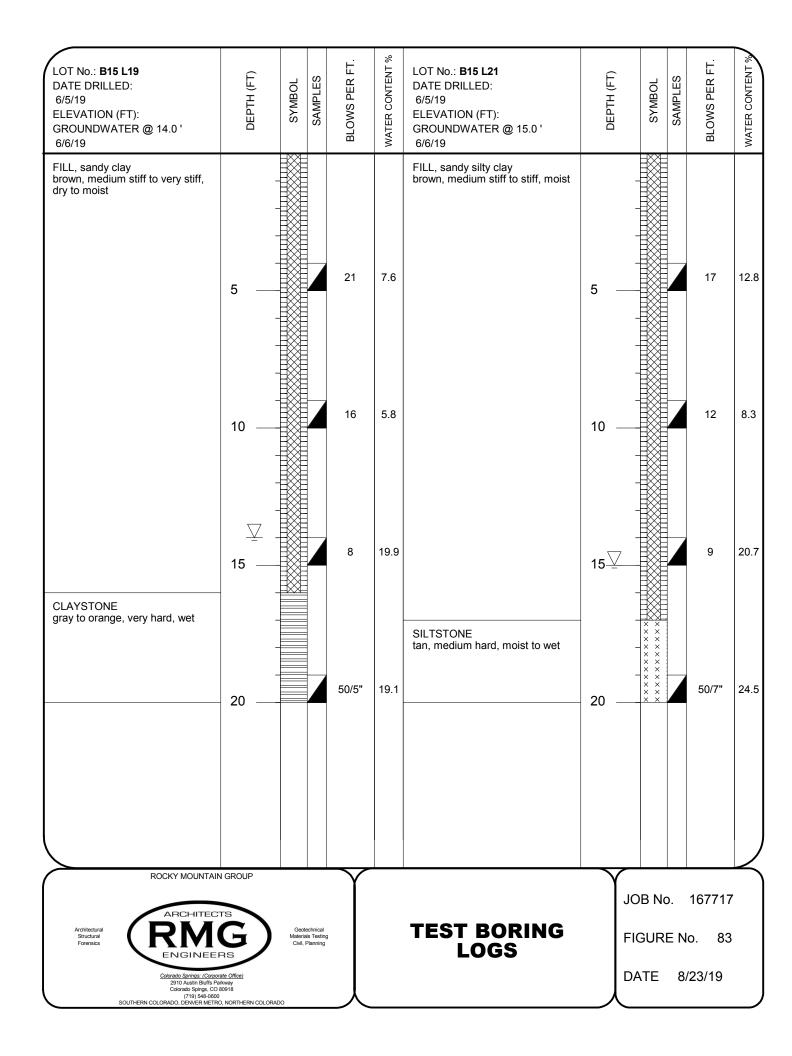


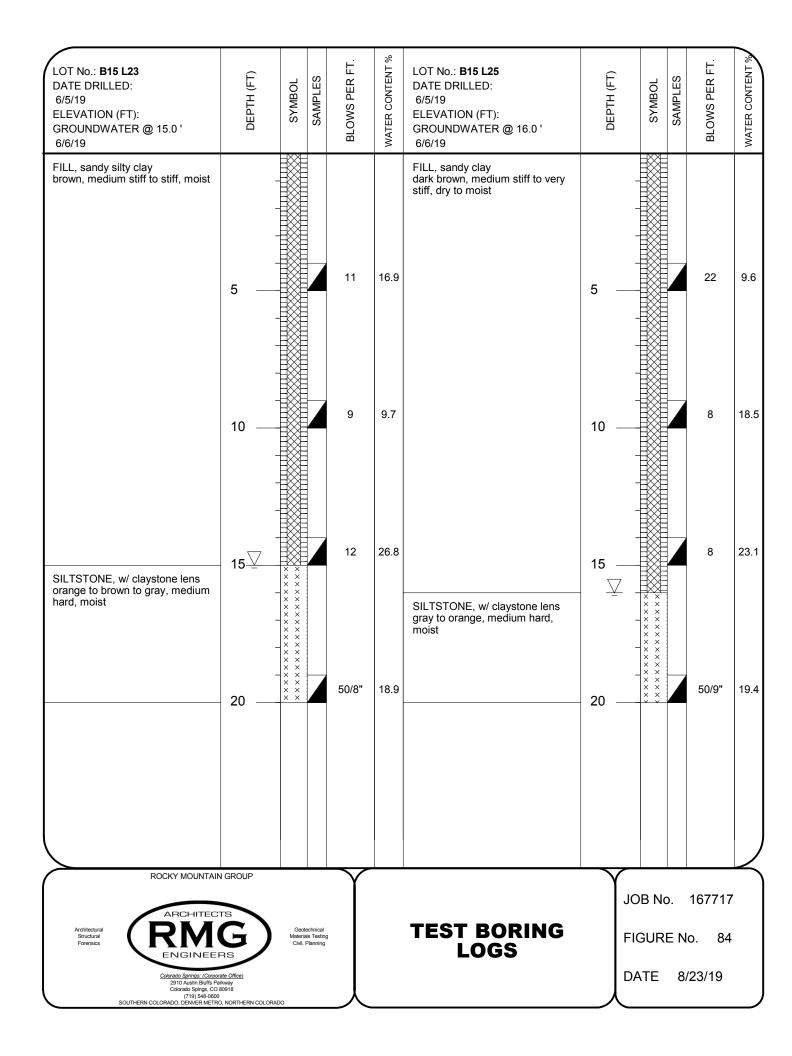


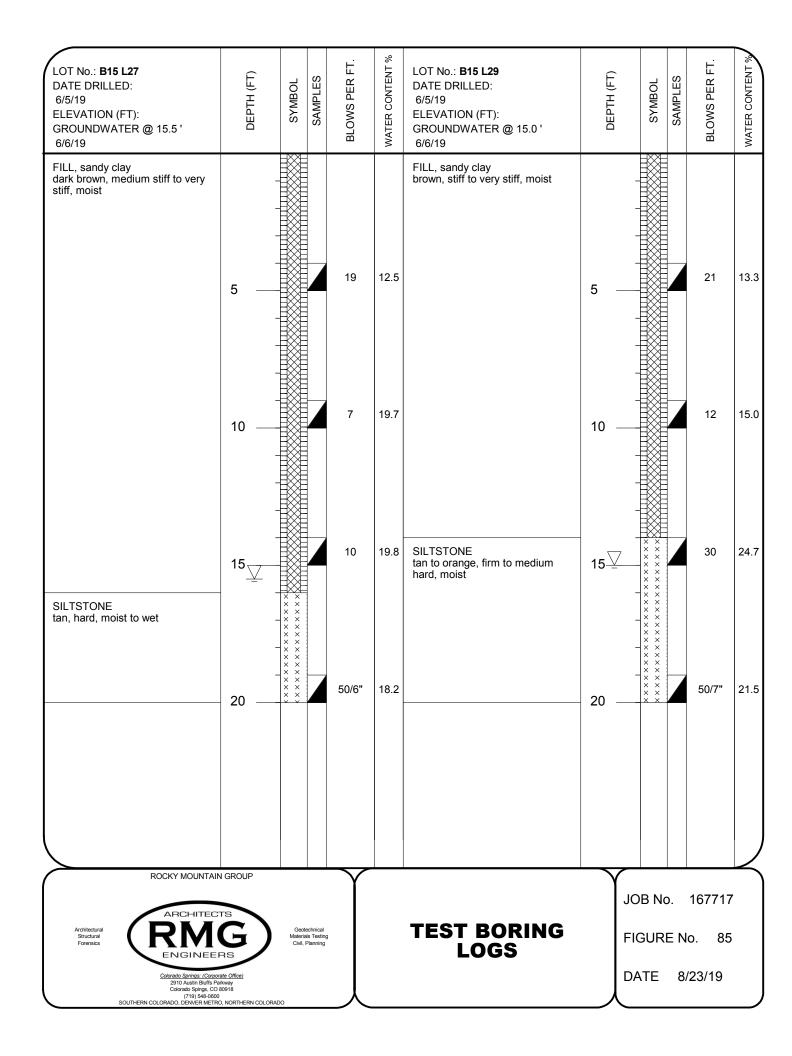


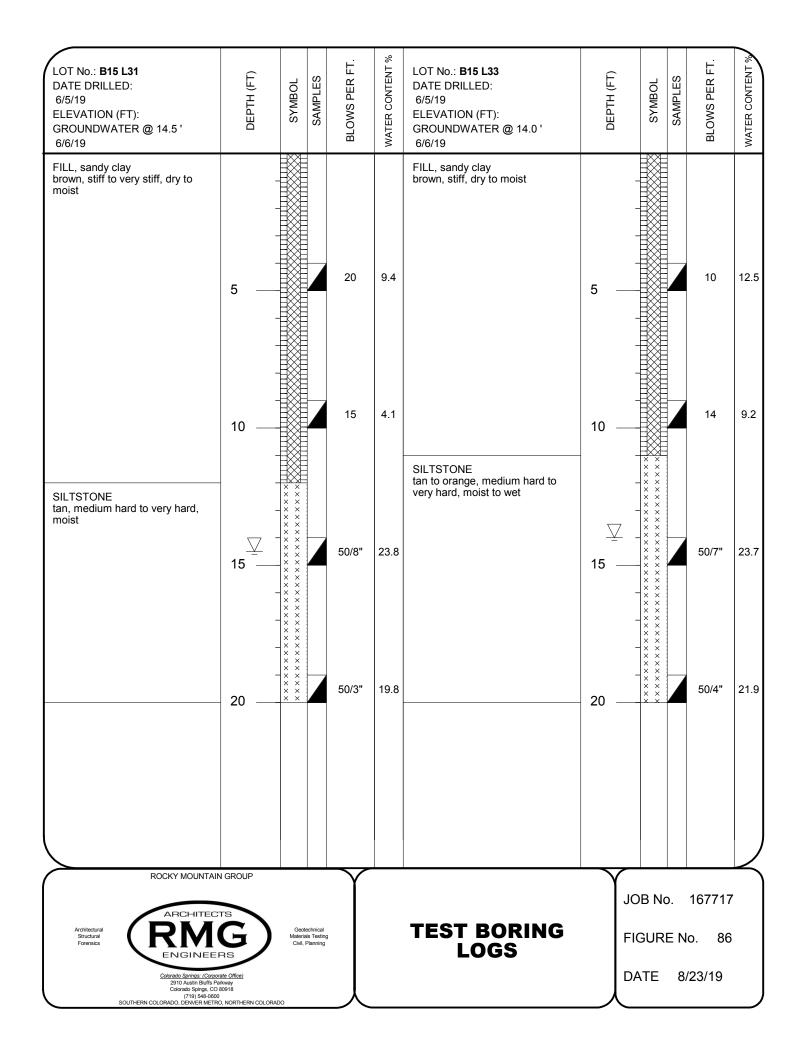


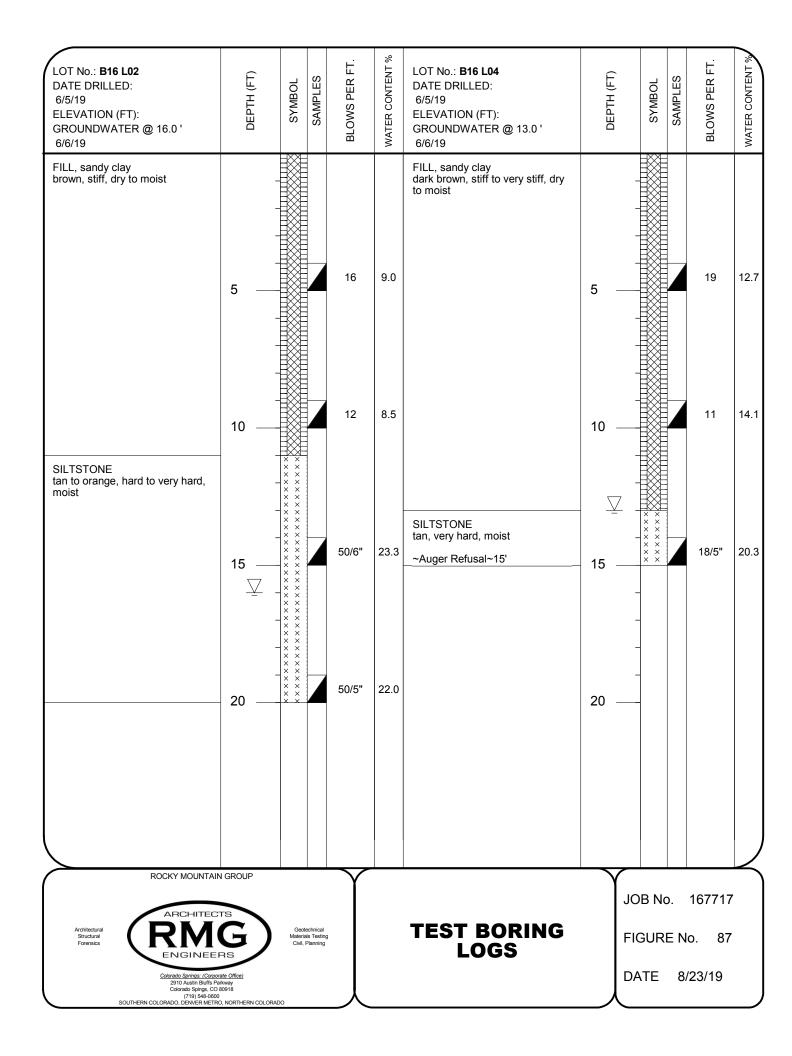


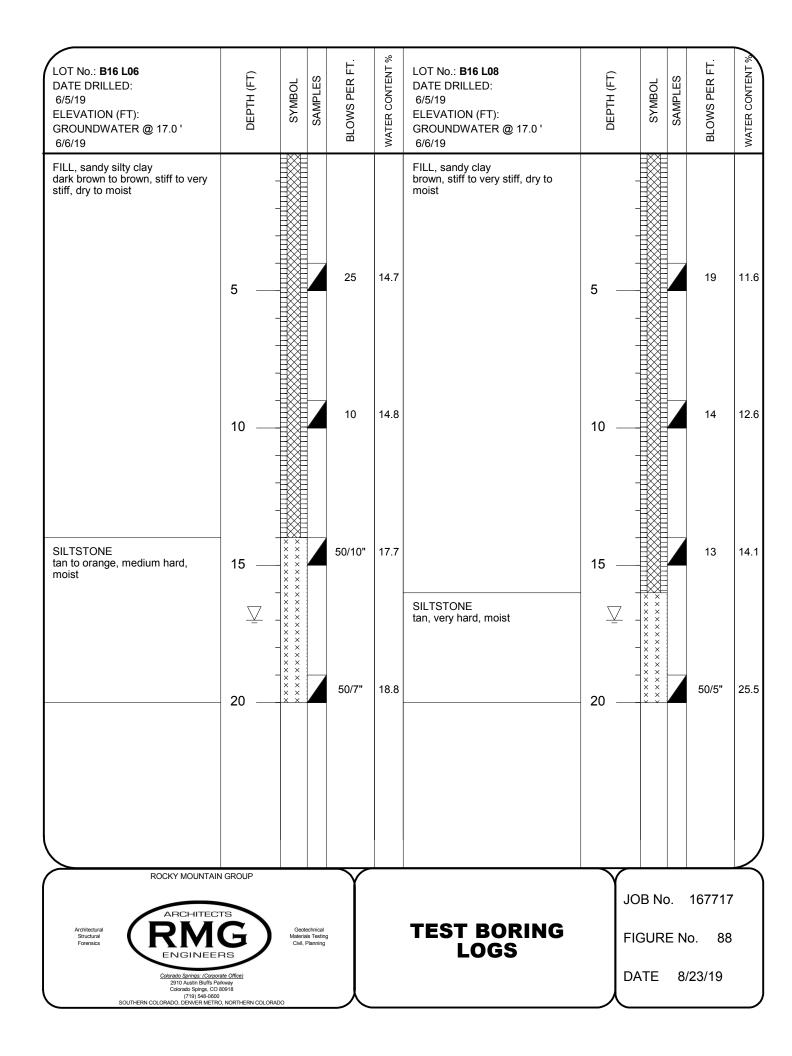


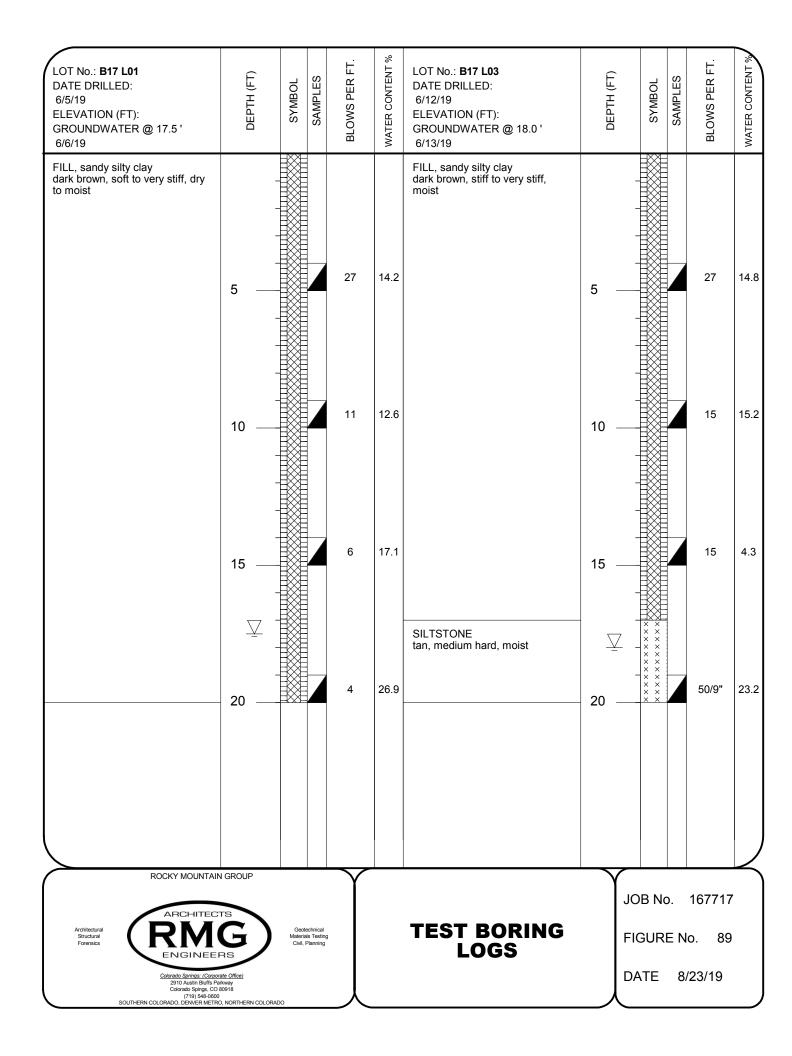


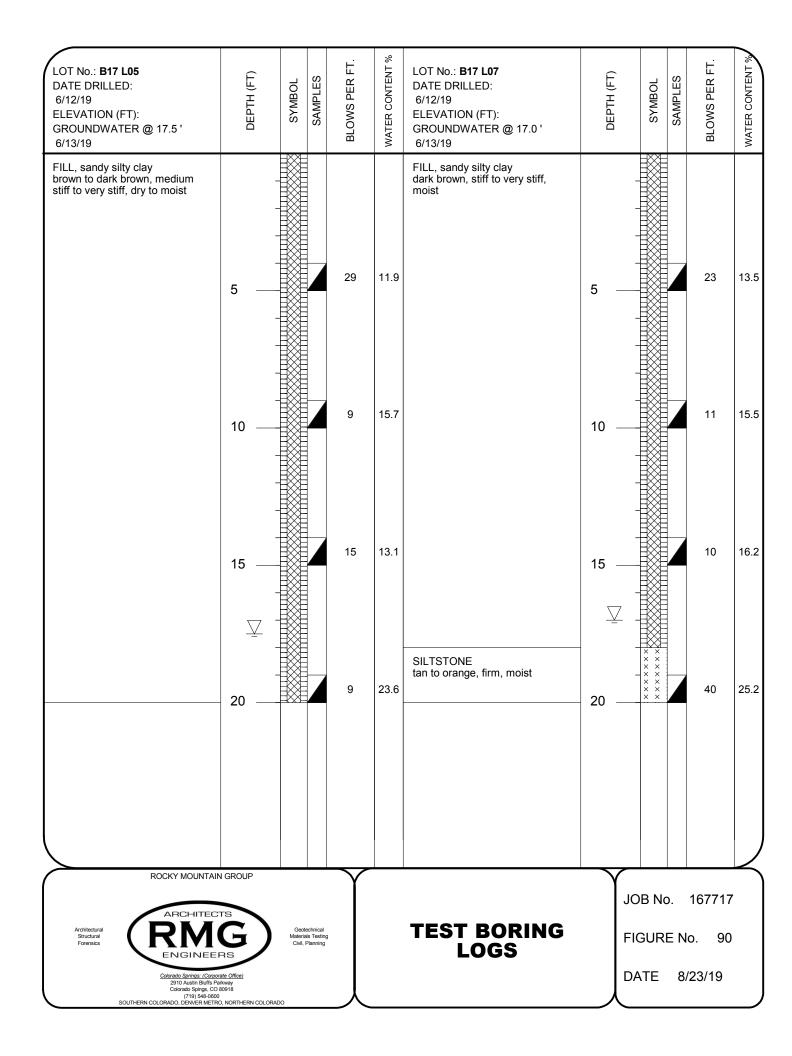


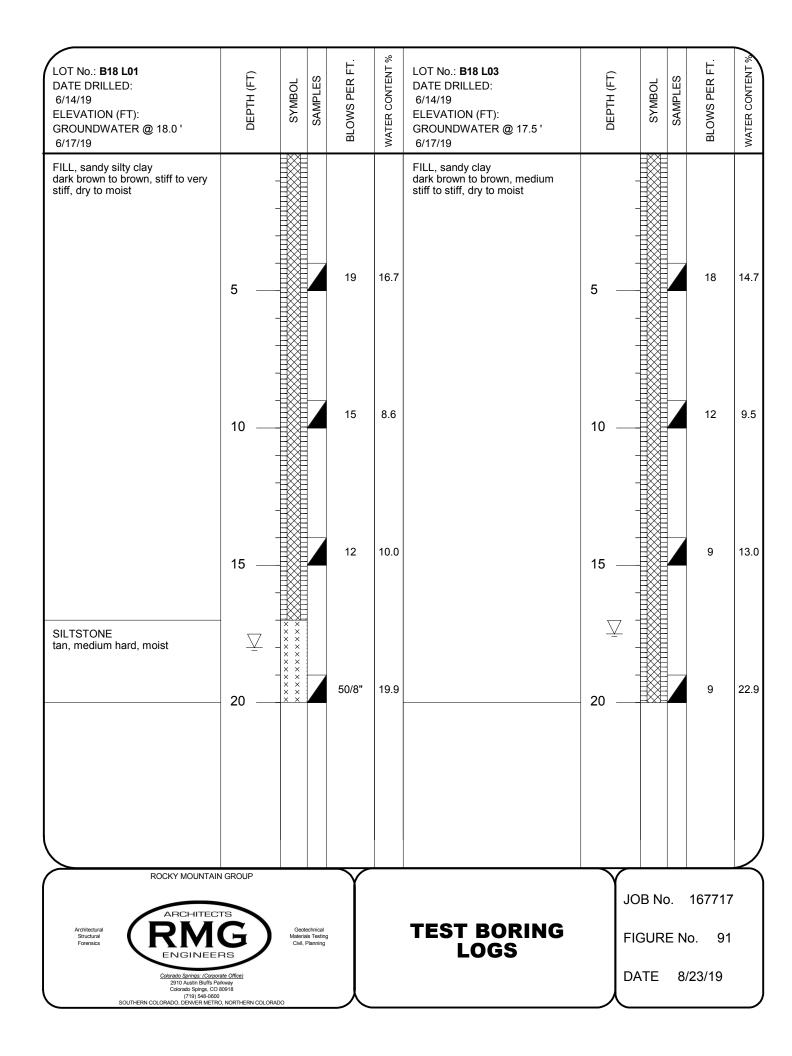


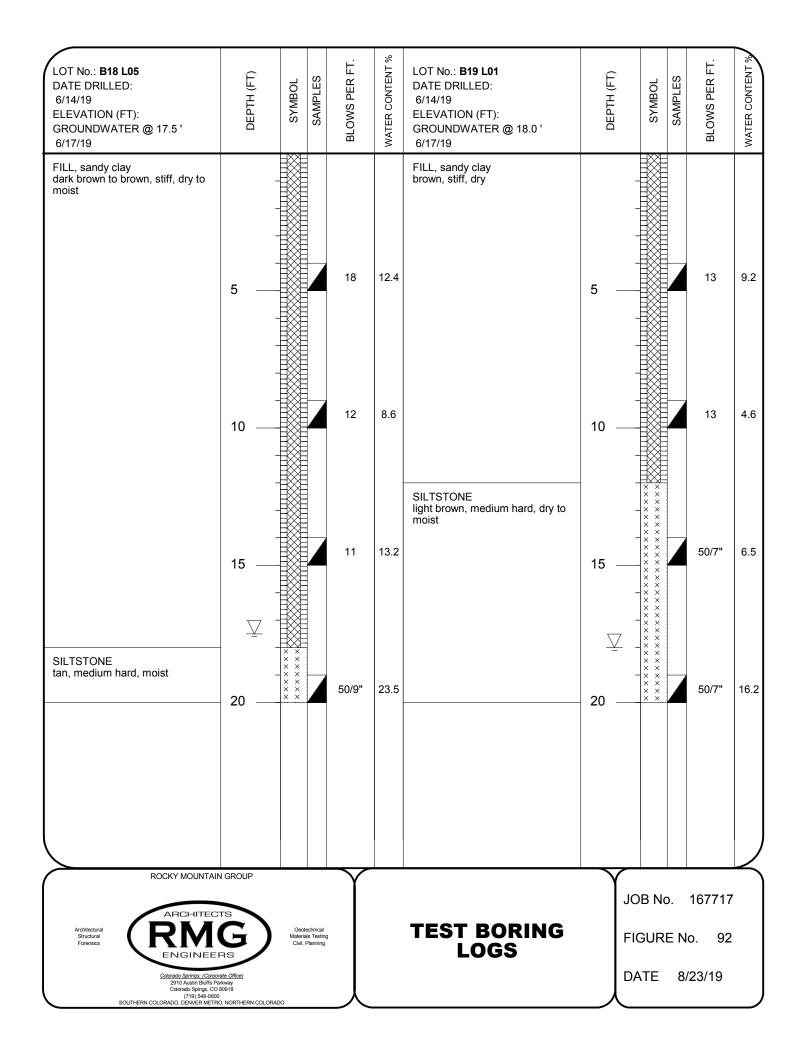


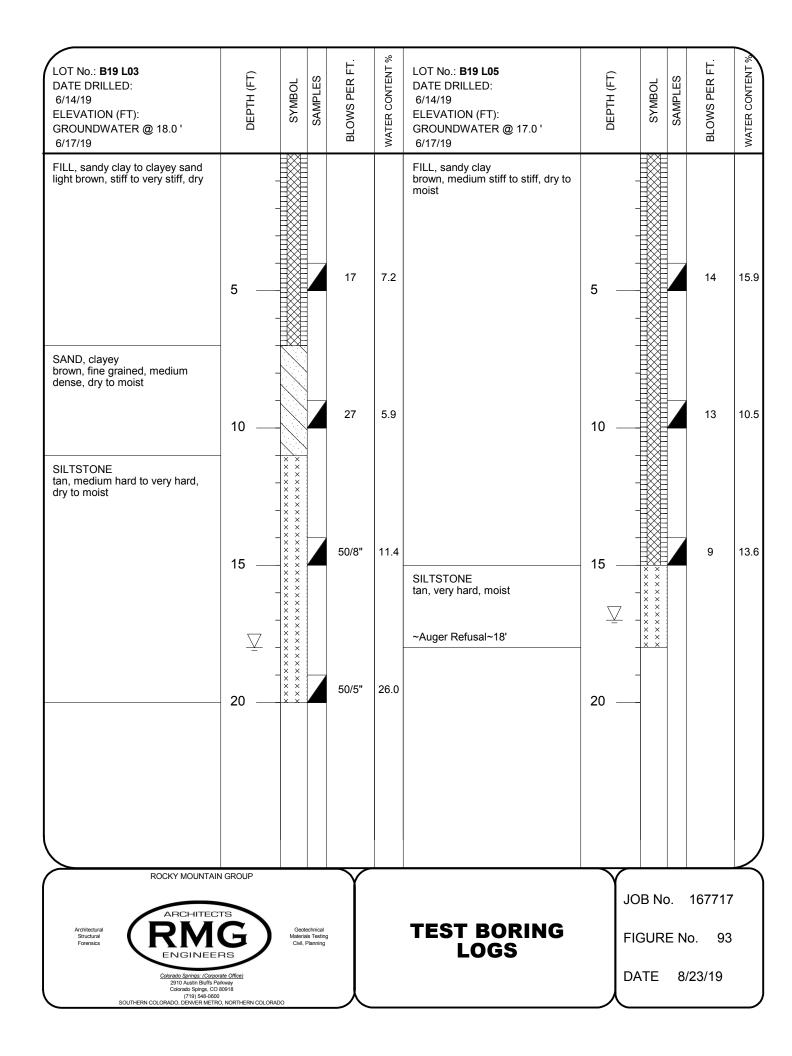


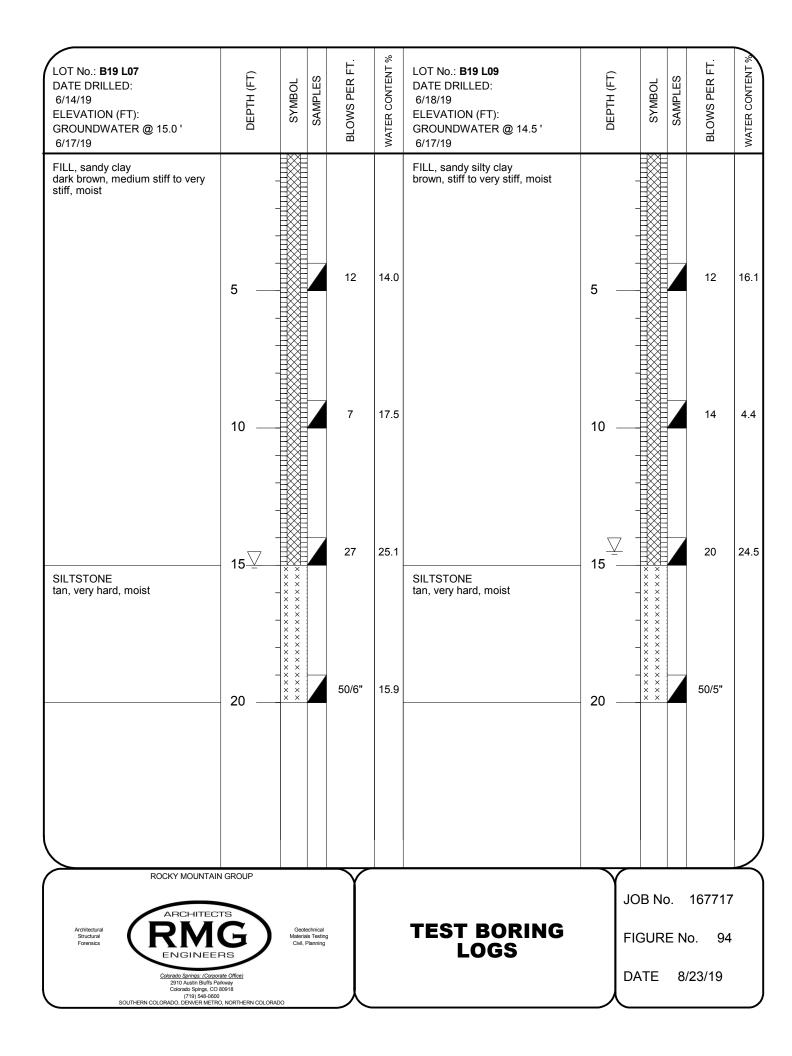


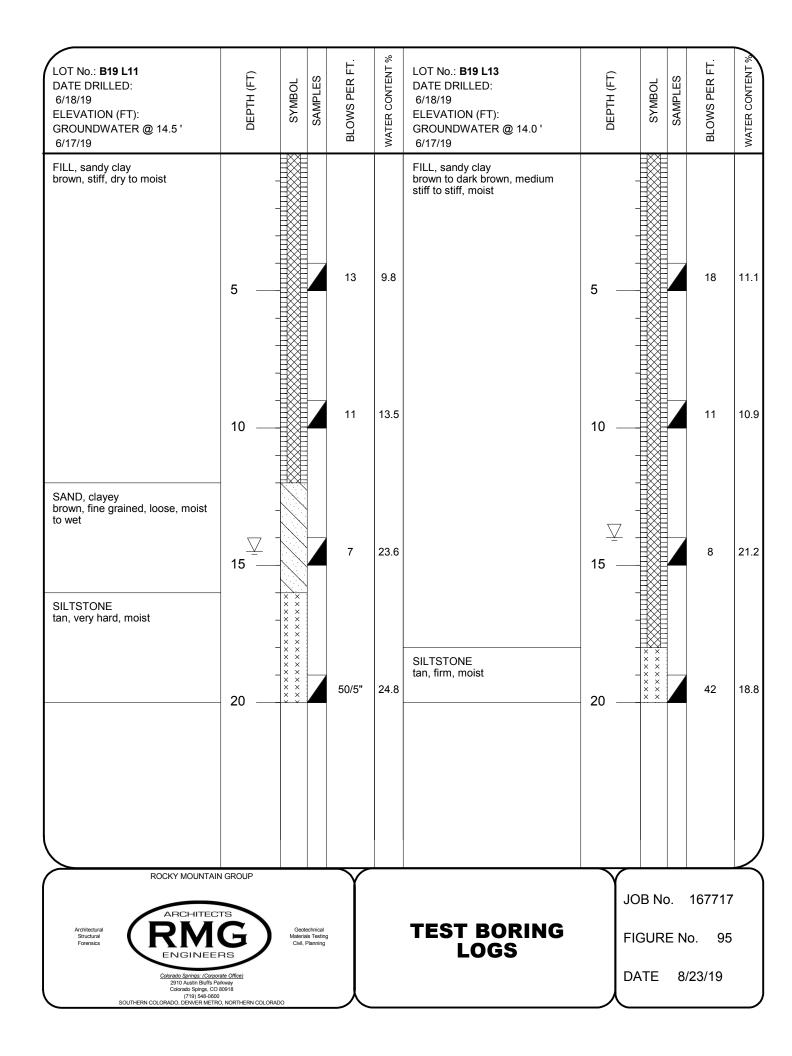


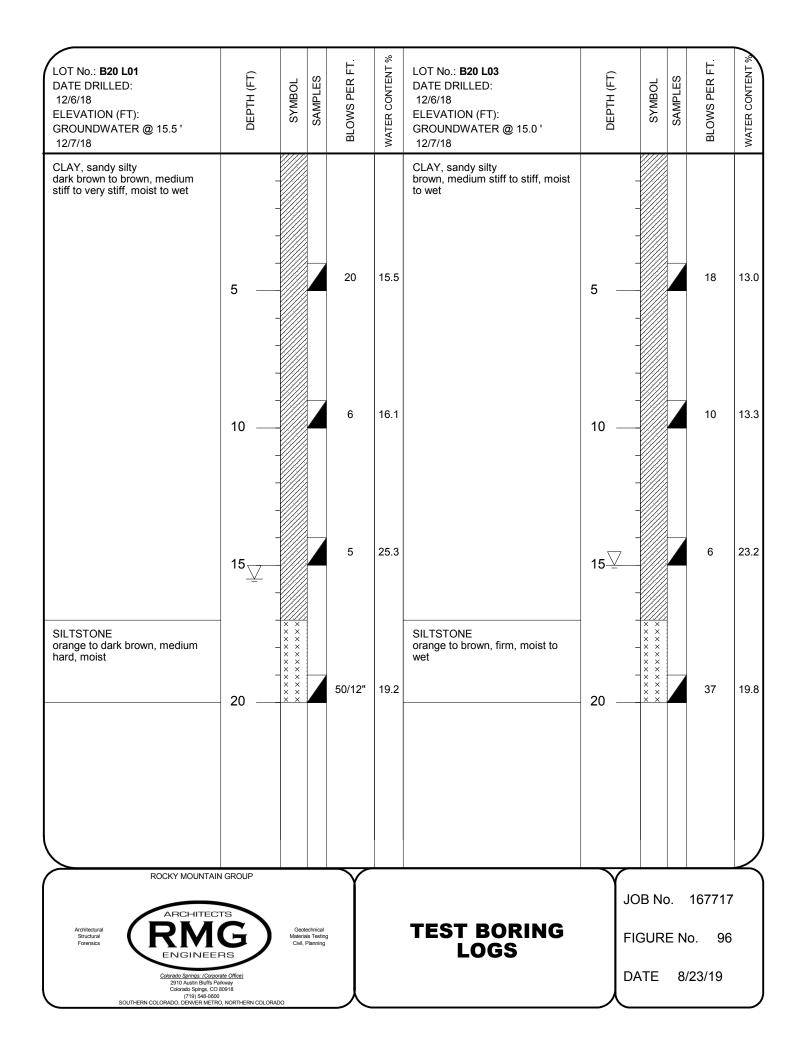


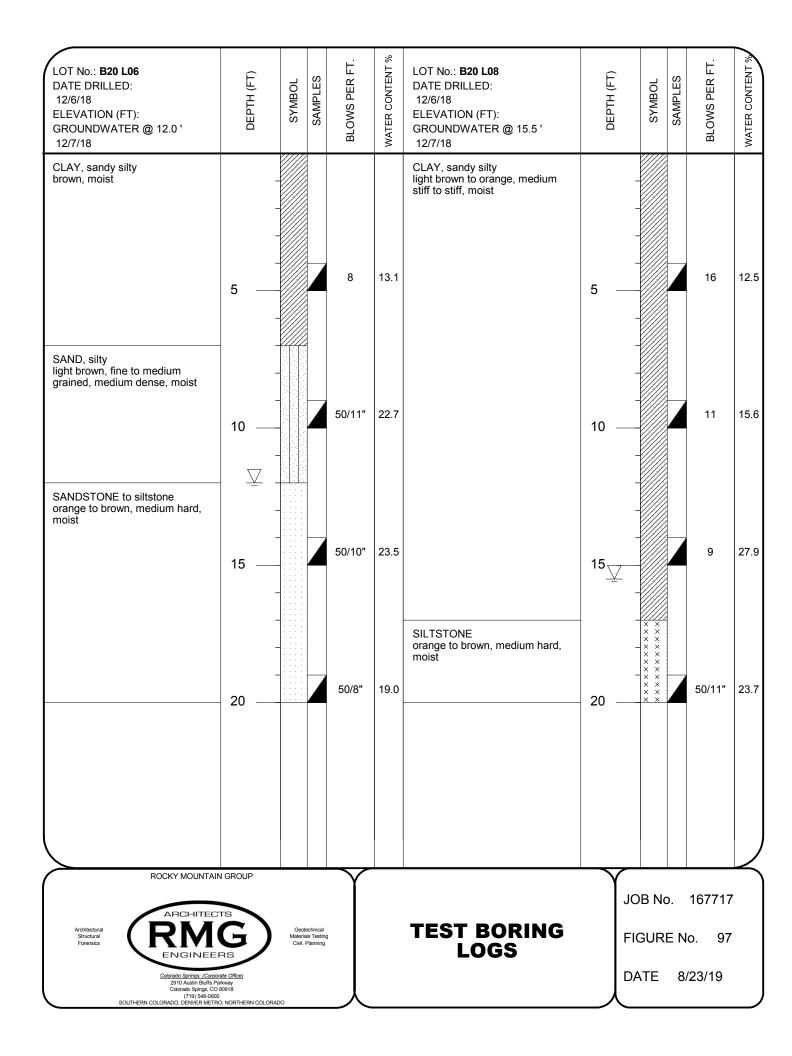


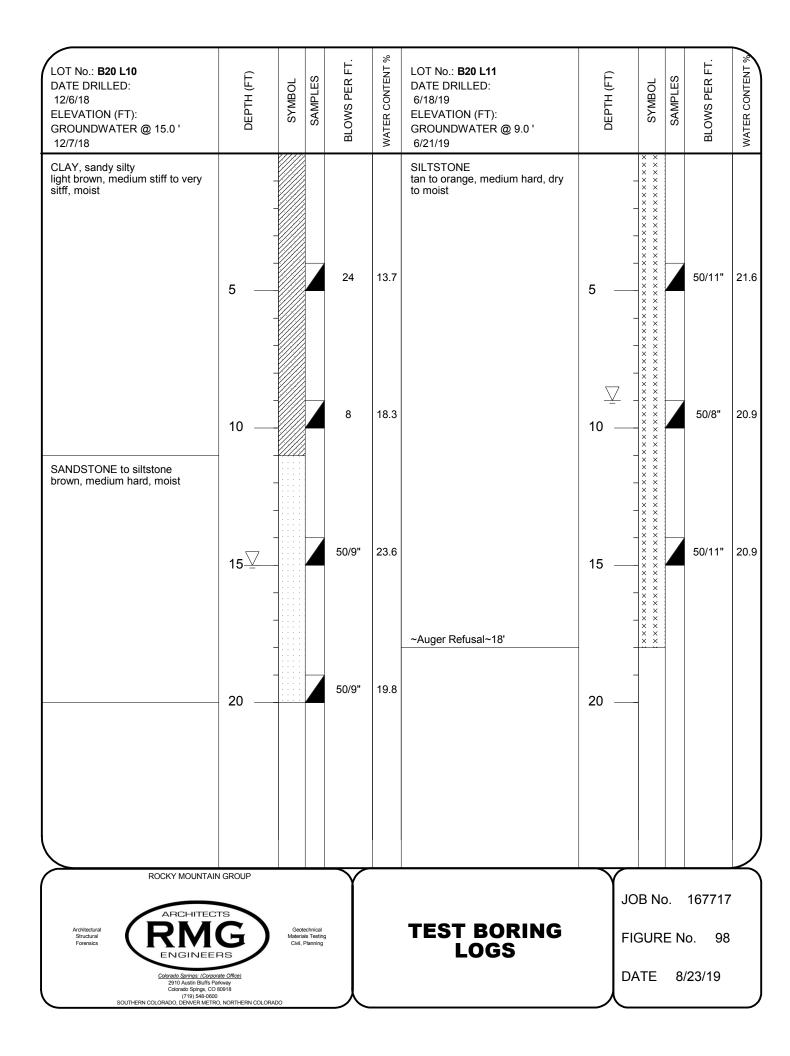


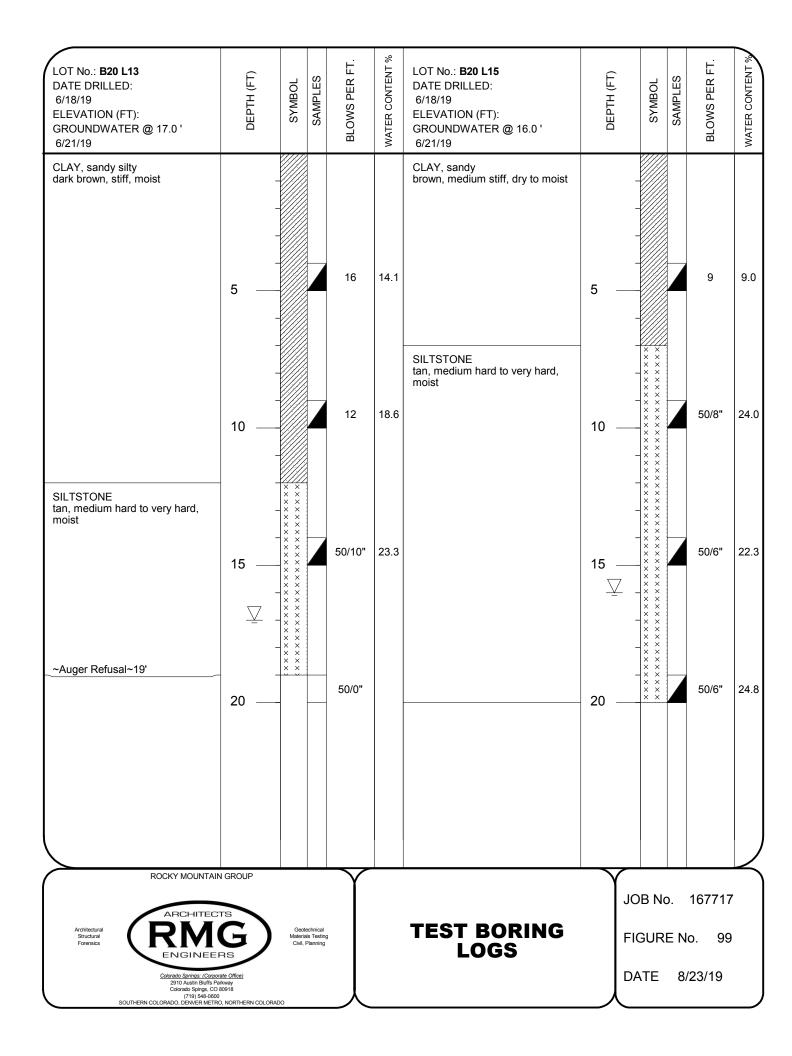


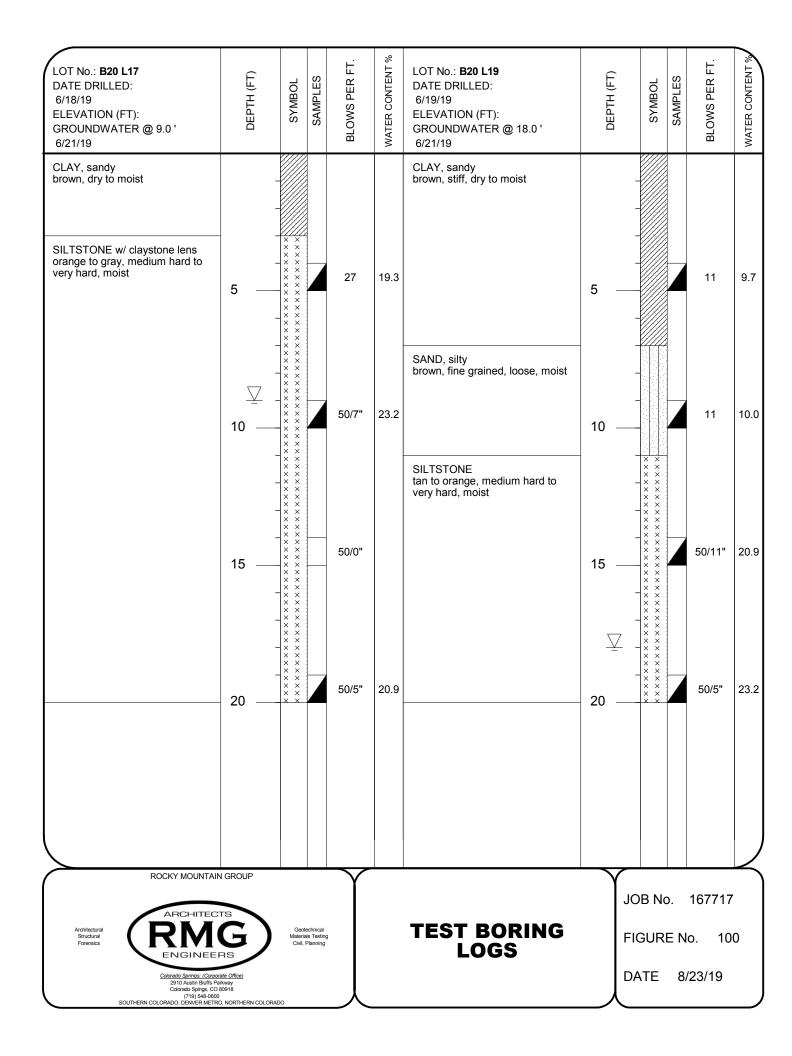


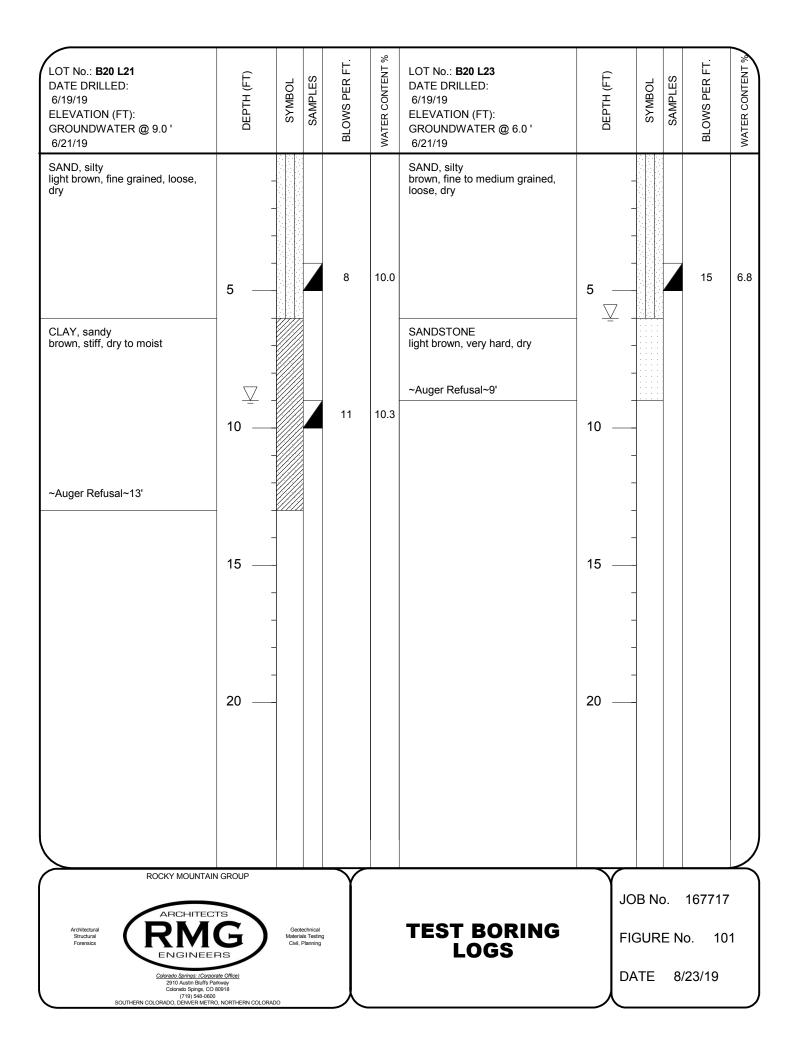


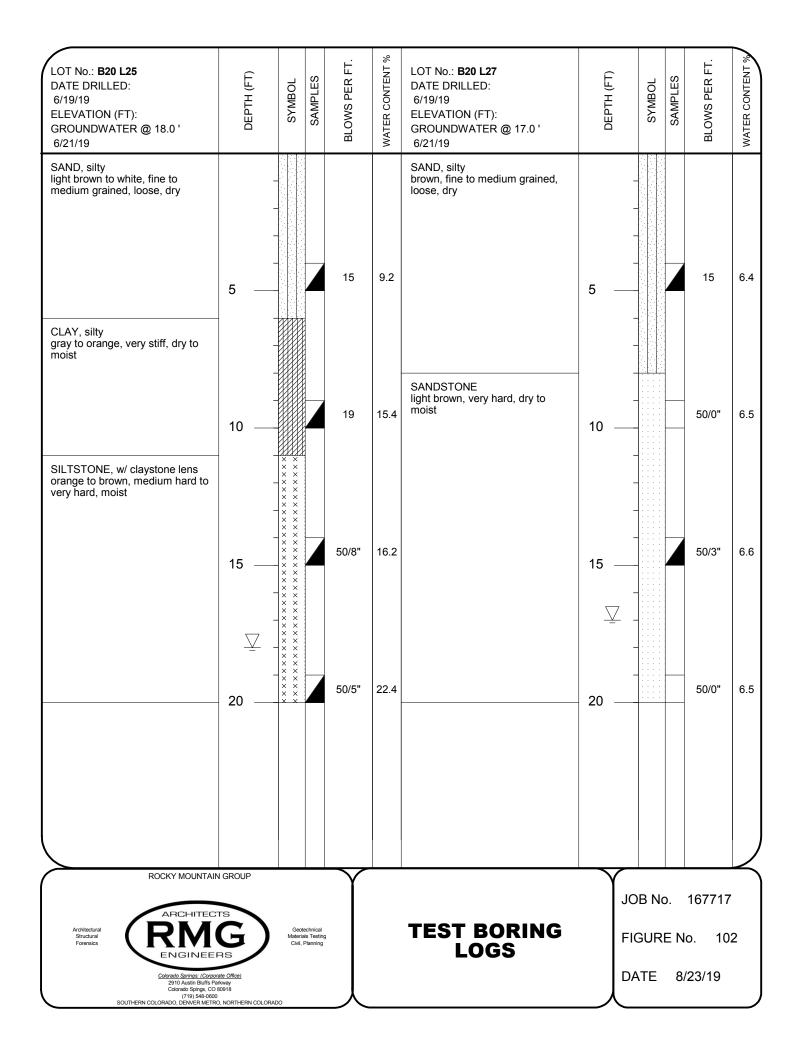


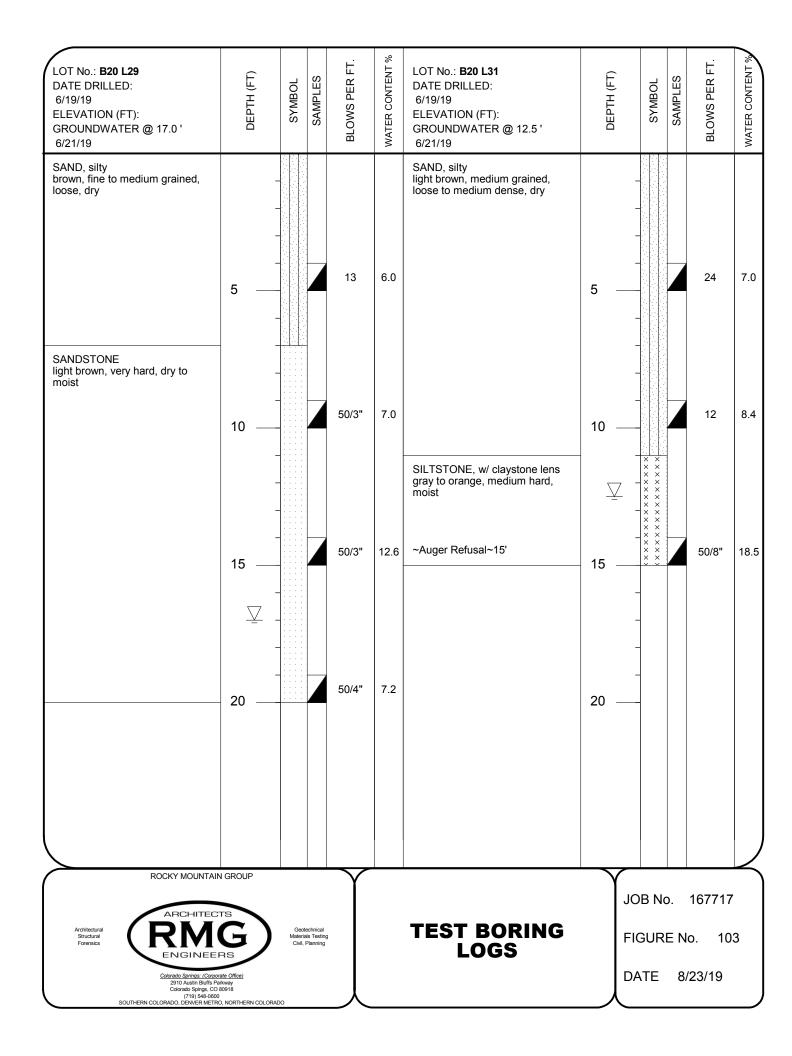


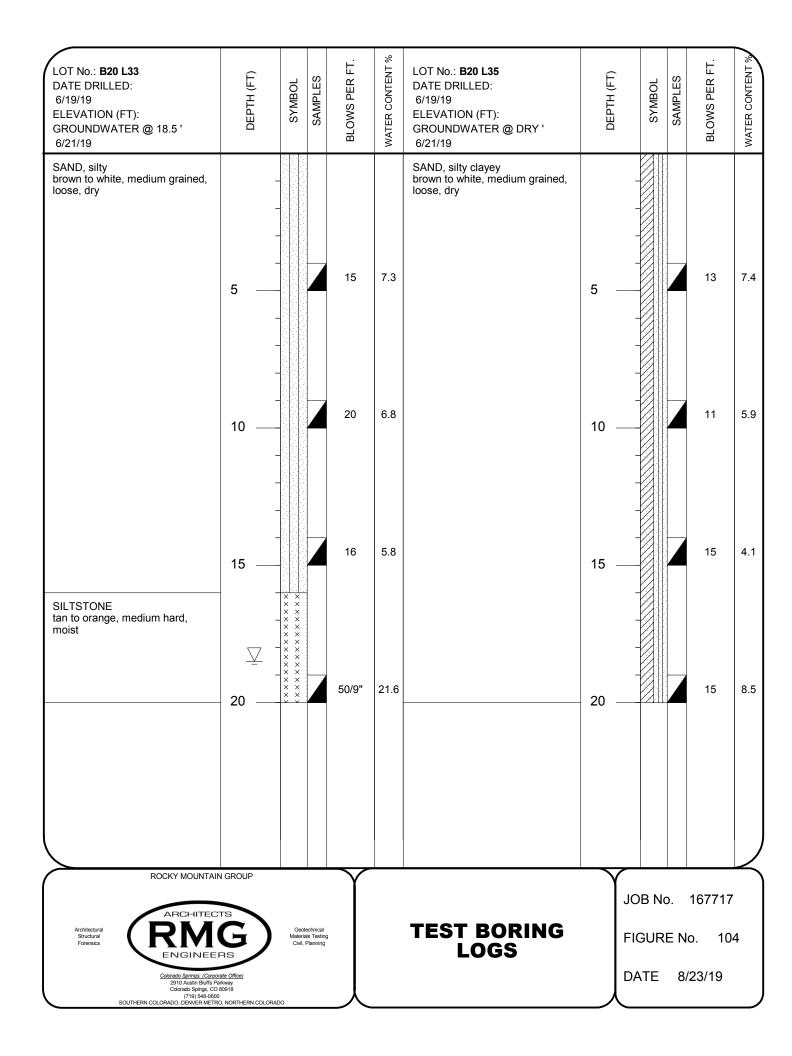












SOILS DESCRIPTION

CLAYEY SAND

CLAYSTONE

FILL: CLAY, SANDY

SANDSTONE

SANDY CLAY

SLIGHTLY SANDY TO SANDY SILT

SILTSTONE

SILTY CLAY

SILTY SAND

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

SYMBOLS AND NOTES

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).

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 (%)

ROCKY MOUNTAIN GROUP

Architectural Structural Forensics RMG ENGINEERS

Geotechnical Materials Testin Civil, Planning

Colorado Serinas: (Comorate Office)
2910 Austin Bulfis Parkway
Colorado Songas, CO 80916
(719) 548-0600
SOUTHERN COLORADO, DENVIER METRO, NORTHERN COLORADO

EXPLANATION OF TEST BORING LOGS

JOB No. 167717

FIGURE No. 105

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
B01 L03	4.0	15.4	104.9	29	13	0.0	56.2	1000	- 0.2	CL
B01 L03	9.0	22.2	91.8							
B01 L03	14.0	20.5	102.1							
B01 L03	19.0	18.4	104.8							
B01 L05	4.0	17.2	99.5							
B01 L05	9.0	23.1	99.3	NP	NP	0.0	49.7	1000	0.0	SM
B01 L05	14.0	17.2	101.5							
B01 L05	19.0	34.3								
B02 L02	4.0	13.8	107.9							
B02 L02	9.0	20.7	101.9							
B02 L02	14.0	22.0	101.5							
B02 L02	19.0	18.5	95.5							
B02 L04	4.0	13.8	107.1							
B02 L04	9.0	21.3	101.3							
B02 L04	14.0	17.8	109.6							
B02 L06	4.0	13.3	101.2							
B02 L06	9.0	15.9	100.6					1000	0.5	
B02 L06	14.0	25.0	96.4							
B02 L06	19.0	27.0	100.7							
B02 L08	4.0	14.7	106.4							
B02 L08	9.0	21.7	102.2							
B02 L08	14.0	21.9								
B02 L08	19.0	21.2	88.5							
B02 L10	4.0	20.5	96.5	29	8	0.0	59.6	1000	0.0	CL
B02 L10	9.0	23.7	97.4							
B02 L10	14.0	20.6	101.9							
B02 L10	19.0	23.6	98.7							
B02 L12	4.0	20.7	104.1							
B02 L12	9.0	23.1	99.8							
B02 L12	14.0	23.2	93.2							
B02 L12	19.0	21.4	102.9							
B02 L14	4.0	22.6	100.3							
B02 L14	9.0	20.7	101.3							
B02 L14	14.0	22.1	96.2							

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Geotechnical Materials Testing

Colorado Sarings: (Corporate Office)
2910 Austin Bluffs Partway
Colorado Springs, CO 89916
(719) 548-0600
SOUTHERN COLORADO, DENVER METRO, NORTHERN COLORADO

SUMMARY OF LABORATORY TEST RESULTS

JOB No. 167717 FIGURE No. 106 PAGE 1 OF 24 DATE 7/9/19

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
B02 L14	19.0	25.1	99.2							
B02 L16	4.0	22.0								
B02 L16	9.0	22.6								
B02 L16	14.0	26.0								
B02 L16	19.0	39.3								
B02 L18	4.0	16.8	103.0							
B02 L18	9.0	22.9	101.6							
B02 L18	14.0	23.0	96.1							
B02 L18	19.0	24.1								
B02 L20	4.0	24.1	94.4							
B02 L20	9.0	24.1	99.9							
B02 L20	14.0	16.3								
B02 L20	19.0	18.6	109.5							
B02 L22	4.0	11.4								
B02 L22	9.0	24.4	102.2							
B02 L22	14.0	20.5	96.8							
B02 L22	19.0	24.1								
B02 L24	4.0	15.3	109.5	28	13	0.0	65.1	1000	- 0.2	CL
B02 L24	9.0	24.6								
B02 L24	14.0	23.3	97.8							
B02 L24	19.0	23.1								
B02 L26	4.0	17.8	105.1							
B02 L26	9.0	16.0								
B02 L26	14.0	18.7	101.8							
B02 L26	19.0	25.7								
B02 L28	4.0	14.3	111.4							
B02 L28	9.0	21.8	102.8							
B02 L30	4.0	11.3	113.0							
B02 L30	9.0	21.1	103.2							
B02 L30	14.0	18.9	96.5							
B02 L30	19.0	21.9								
B02 L32	4.0	8.1	113.2							
B02 L32	9.0	23.8	97.4							
B02 L32	14.0	31.1	91.6							

Architectural Structural Forensics



Geotechnical Materials Testing

Colorado Springs: (Corporate Office)
2910 Austin Bluffs Parkway
Colorado Springs, CO 80918
(719) 848-0800
SOUTHERN COLORADO, DENVER METRO, NORTHERN COLORADO

SUMMARY OF LABORATORY TEST RESULTS

JOB No. 167717 FIGURE No. 106 PAGE 2 OF 24 DATE 7/9/19

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
B02 L32	19.0	25.0	100.9							
B02 L34	4.0	10.3	110.2							
B02 L34	9.0	20.7	103.0							
B02 L34	14.0	24.5	96.8							
B02 L34	19.0	22.7								
B03 L01	4.0	12.3	108.2							
B03 L01	9.0	13.2	115.2							
B03 L01	14.0	23.3	97.6							
B03 L01	19.0	23.0								
B03 L03	4.0	14.2	99.3							
B03 L03	9.0	14.8	107.6							
B03 L03	14.0	25.4	96.8							
B03 L03	19.0	34.5								
B03 L05	4.0	11.5	106.2							
B03 L05	9.0	13.4	96.9	NP	NP	0.8	21.3	1000	- 0.6	SM
B03 L05	14.0	25.3	96.7							
B03 L05	19.0	24.3	100.3							
B03 L07	4.0	17.2	100.7							
B03 L07	9.0	15.9	113.7							
B03 L07	14.0	23.7	96.9							
B03 L07	19.0	28.9								
B03 L09	4.0	15.1	107.7							
B03 L09	9.0	15.4								
B03 L09	14.0	24.2	99.2							
B03 L09	19.0	17.9	106.3							
B03 L11	4.0	12.6	109.1							
B03 L11	9.0	17.2								
B03 L11	14.0	25.1	97.8							
B03 L11	19.0	31.5								
B03 L13	4.0	9.0	105.9							
B03 L13	9.0	15.6	109.8							
B03 L13	14.0	28.2	93.2							
B03 L13	19.0	19.4	105.6							
B03 L15	4.0	10.5	108.4							

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SUMMARY OF LABORATORY TEST RESULTS

JOB No. 167717 FIGURE No. 106 PAGE 3 OF 24 DATE 7/9/19

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
B03 L15	9.0	14.5	114.3							
B03 L15	14.0	24.7								
B03 L15	19.0	25.7								
B04 L01	4.0	10.5	111.2							
B04 L01	9.0	13.9	109.8							
B04 L01	14.0	26.0	95.6							
B04 L01	19.0	25.7								
B04 L03	4.0	10.3	99.4							
B04 L03	9.0	13.5	113.6							
B04 L03	14.0	21.3	98.8							
B04 L03	19.0	23.6	101.8							
B04 L05	4.0	13.8	105.4							
B04 L05	9.0	10.1	119.2							
B04 L05	14.0	22.7	100.9							
B04 L05	19.0	20.3								
B04 L07	4.0	14.4	107.9							
B04 L07	9.0	16.5	104.4							
B04 L07	14.0	7.9	130.5							
B04 L07	19.0	33.2								
B04 L09	4.0	12.2	112.4							
B04 L09	9.0	19.0	102.3							
B04 L09	14.0	26.3								
B04 L09	19.0	24.3								
B04 L11	4.0	13.7	107.7							
B04 L11	9.0	20.6	101.2							
B04 L11	14.0	24.6								
B04 L11	19.0	30.0								
B04 L13	4.0	11.0	108.2							
B04 L13	9.0	16.2	108.8							
B04 L13	14.0	17.7								
B04 L13	19.0	24.1								
B04 L15	4.0	8.8	109.6							
B04 L15	9.0	13.5	111.4							
B04 L15	14.0	15.1								

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SUMMARY OF LABORATORY TEST RESULTS

JOB No. 167717 FIGURE No. 106 PAGE 4 OF 24 DATE 7/9/19

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
B04 L15	19.0	21.4								
B04 L17	4.0	10.5	109.7							
B04 L17	9.0	12.7	112.5							
B04 L17	14.0	22.8								
B04 L17	19.0	17.4	97.7							
B05 L02	4.0	7.0	110.1							
B05 L02	9.0	18.3	105.1							
B05 L02	14.0	21.4								
B05 L02	19.0	23.3	102.1							
B05 L04	4.0	9.3	116.7							
B05 L04	9.0	18.3	99.1							
B05 L04	14.0	17.8								
B05 L04	19.0	30.1								
B05 L06	4.0	12.9	111.8							
B05 L06	9.0	20.5	98.8							
B05 L06	14.0	27.4								
B05 L06	19.0	22.9								
B05 L08	4.0	12.4	109.5					1000	- 1.3	
B05 L08	9.0	20.4	99.4							
B05 L08	14.0	23.0								
B05 L08	19.0	25.3								
B05 L10	4.0	10.1	111.0							
B05 L10	9.0	8.6	100.5							
B05 L10	14.0	25.5								
B05 L10	19.0	24.8	97.3							
B06 L02	4.0	7.4	105.6	24	10	0.0	48.3	1000	- 2.3	SC
B06 L02	9.0	13.6	107.0							
B06 L02	14.0	21.4								
B06 L02	19.0	22.6								
B06 L04	4.0	13.6	110.2							
B06 L04	9.0	16.8	107.0							
B06 L04	14.0	23.0								
B06 L04	19.0	21.8	101.8							
B06 L06	4.0	12.0	111.0							

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SUMMARY OF LABORATORY TEST RESULTS

JOB No. 167717 FIGURE No. 106 PAGE 5 OF 24 DATE 7/9/19

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
B06 L06	9.0	15.9	110.9							
B06 L06	14.0	28.8	94.8							
B06 L06	19.0	22.4	106.3							
B06 L08	4.0	10.8	113.0	42	26	0.0	54.6	1000	1.4	CL
B06 L08	9.0	11.4	110.9							
B06 L08	14.0	18.5	97.6							
B06 L08	19.0	21.5	105.0							
B06 L10	4.0	11.0	117.2							
B06 L10	9.0	12.8	110.0							
B06 L10	14.0	13.1	108.2							
B06 L10	19.0	24.6								
B06 L12	4.0	13.6	106.5							
B06 L12	9.0	9.6	115.5							
B06 L12	14.0	19.2	104.2							
B06 L12	19.0	26.6	101.3							
B06 L14	4.0	7.9	112.1							
B06 L14	9.0	10.5	114.6							
B06 L14	14.0	19.0	101.9							
B06 L14	19.0	26.0	99.1							
B07 L02	4.0	11.0	96.9							
B07 L02	9.0	8.5	115.0							
B07 L02	14.0	21.3								
B07 L02	19.0	27.3	97.9							
B07 L04	4.0	11.8	114.5							
B07 L04	9.0	11.6	113.9							
B07 L04	14.0	19.4								
B07 L04	19.0	27.0								
B07 L06	4.0	7.0	112.5							
B07 L06	9.0	14.4	105.0							
B07 L06	14.0	20.6	105.0							
B07 L06	19.0	24.4	97.5							
B07 L08	4.0	7.0	112.9							
B07 L08	9.0	11.1	109.8							
B07 L08	14.0	13.1								

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SUMMARY OF LABORATORY TEST RESULTS

JOB No. 167717 FIGURE No. 106 PAGE 6 OF 24 DATE 7/9/19

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
B07 L08	19.0	23.7	102.7							
B07 L10	4.0	9.3	111.6							
B07 L10	9.0	14.4	111.7							
B07 L10	14.0	20.1	102.5							
B07 L10	19.0	20.5								
B07 L12	4.0	15.5	108.3							
B07 L12	9.0	11.5	112.1							
B07 L12	14.0	15.8	107.1							
B07 L12	19.0	22.3								
B07 L14	4.0	14.5	116.4							
B07 L14	9.0	11.2	104.6							
B07 L14	14.0	17.3	107.6							
B07 L14	19.0	19.6								
B07 L16	4.0	15.9	109.9	39	22	0.0	59.1	1000	0.1	CL
B07 L16	9.0	13.4	104.7							
B07 L16	14.0	17.8	104.6							
B07 L16	19.0	24.3								
B07 L18	4.0	14.6	113.6							
B07 L18	9.0	11.7	110.1							
B07 L18	14.0	16.3	107.5							
B07 L18	19.0	26.4								
B07 L20	4.0	14.4	114.4							
B07 L20	9.0	10.6	117.9							
B07 L20	14.0	13.7	108.2							
B07 L20	19.0	23.7								
B07 L22	4.0	9.9	115.1							
B07 L22	9.0	13.8	111.8							
B07 L22	14.0	18.8	104.0							
B07 L22	19.0	23.3								
B07 L24	4.0	10.5	112.5							
B07 L24	9.0	15.8	108.9							
B07 L24	14.0	13.6								
B07 L24	19.0	21.5								
B07 L26	4.0	9.5	114.2	37	21	0.0	64.0	1000	1.9	CL

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SUMMARY OF LABORATORY TEST RESULTS

JOB No. 167717 FIGURE No. 106 PAGE 7 OF 24 DATE 7/9/19

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
B07 L26	9.0	22.0	94.8							
B07 L26	14.0	20.0	102.7							
B07 L26	19.0	18.1								
B07 L28	4.0	15.1	111.7							
B07 L28	9.0	13.8	117.3	32	17	0.0	62.0	1000	- 0.1	CL
B07 L28	14.0	12.8								
B07 L28	19.0	17.3	104.4							
B07 L30	4.0	9.6	115.0							
B07 L30	9.0	21.4	100.2							
B07 L30	14.0	28.8								
B07 L32	4.0	11.3	110.7							
B07 L32	9.0	17.7	103.8	28	15		40.3	1000	- 0.2	SC
B07 L32	14.0	22.0	100.8							
B07 L32	19.0	21.1	103.3							
B07 L34	4.0	13.9	109.4							
B07 L34	9.0	20.8	99.5							
B07 L34	14.0	24.5	97.8							
B07 L34	19.0	23.5								
B07 L36	4.0	12.1	105.1	26	9	0.0	54.1	1000	- 0.5	CL
B07 L36	9.0	19.6	105.7							
B07 L36	14.0	17.0	109.7							
B07 L36	19.0	19.0	104.5							
B07 L38	4.0	7.8	111.4							
B07 L38	9.0	16.1	106.0							
B07 L38	14.0	23.9	99.4							
B07 L38	19.0	23.3	101.2							
B07 L40	4.0	9.7	111.5							
B07 L40	9.0	10.9	102.5							
B07 L40	14.0	15.3								
B07 L40	19.0	16.0								
B08 L02	4.0	13.0	112.1							
B08 L02	9.0	19.1	104.8							
B08 L02	14.0	24.2								
B08 L02	19.0	22.2								

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SUMMARY OF LABORATORY TEST RESULTS

JOB No. 167717 FIGURE No. 106 PAGE 8 OF 24 DATE 7/9/19

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
B08 L04	4.0	12.4	108.6							
B08 L04	9.0	17.6	110.3							
B08 L04	14.0	27.6	93.8							
B08 L04	19.0	25.9	114.9							
B08 L06	4.0	10.8	96.5							
B08 L06	9.0	33.0	89.6							
B08 L06	14.0	22.2	103.4	NP	NP	0.0	69.1	1000	- 0.1	ML
B08 L06	19.0	24.1								
B08 L08	4.0	14.6	107.5							
B08 L08	9.0	24.3	105.1							
B08 L08	14.0	24.7								
B08 L08	19.0	38.1								
B08 L10	4.0	16.0								
B08 L10	9.0	25.1	96.0							
B08 L10	14.0	15.7	114.4							
B08 L10	19.0	31.5								
B08 L12	4.0	16.1	103.1							
B08 L12	9.0	19.1	100.4							
B08 L12	14.0	23.3								
B08 L12	19.0	19.9								
B08 L14	4.0	16.8	105.8							
B08 L14	9.0	24.1	99.7	NP	NP	0.0	50.3	1000	- 0.1	ML
B08 L14	14.0	23.4	102.2							
B08 L14	19.0	18.3	107.2							
B08 L16	4.0	19.5	103.9							
B08 L16	9.0	26.3								
B08 L16	14.0	19.3	107.1							
B08 L18	4.0	15.5								
B08 L18	9.0	26.0	93.8							
B08 L18	14.0	20.6	107.9							
B08 L18	19.0	21.7	100.2							
B08 L19	4.0	18.8	105.5							
B08 L19	9.0	24.2								
B08 L19	14.0	22.5	101.9							

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SUMMARY OF LABORATORY TEST RESULTS

JOB No. 167717 FIGURE No. 106 PAGE 9 OF 24 DATE 7/9/19

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
B08 L19	19.0	24.6	99.0							
B08 L21	4.0	13.6	108.9							
B08 L21	9.0	23.3								
B08 L21	14.0	28.2								
B08 L21	19.0	23.6								
B09 L01	4.0	22.7	101.0	NP	NP		61.8	1000	- 0.1	ML
B09 L01	9.0	21.4	98.6							
B09 L01	14.0	22.0								
B09 L03	4.0	18.4	102.0							
B09 L03	9.0	25.2	97.4							
B09 L03	14.0	25.2	97.6							
B09 L03	19.0	36.8								
B09 L05	4.0	7.6	106.6	NP	NP	0.0	22.7	1000	- 1.9	SM
B09 L05	9.0	24.9	93.8	NP	NP	0.0	35.5	1000	- 0.2	SM
B09 L05	14.0	25.6	95.9							
B09 L05	19.0	21.7	102.1							
B09 L07	4.0	14.9	107.6							
B09 L07	9.0	26.2	98.7							
B09 L07	14.0	18.0								
B09 L07	19.0	22.5	101.6							
B09 L09	4.0	15.0	112.0							
B09 L09	9.0	13.1	106.9							
B09 L09	14.0	25.3	93.8							
B09 L09	19.0	13.1	113.4							
B09 L11	4.0	14.5	109.1							
B09 L11	9.0	19.0	104.2							
B09 L11	14.0	22.9	98.5							
B09 L11	19.0	24.0	96.9							
B09 L13	4.0	12.9								
B09 L13	9.0	9.4	115.8							
B09 L13	14.0	24.7	99.7							
B09 L13	19.0	25.4	99.0							
B09 L15	4.0	11.2	113.1	33	18	0.0	52.7	1000	0.1	CL
B09 L15	9.0	11.6	110.1		1					~-

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SUMMARY OF LABORATORY TEST RESULTS

JOB No. 167717 FIGURE No. 106 PAGE 10 OF 24 DATE 7/9/19

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
B09 L15	14.0	23.8								
B09 L15	19.0	15.7	111.7							
B09 L17	4.0	14.7	107.9							
B09 L17	9.0	15.4	110.9	29	14	0.0	55.5	1000	0.0	CL
B09 L17	14.0	18.3	103.0							
B09 L17	19.0	22.3								
B09 L19	4.0	17.7	105.6							
B09 L19	9.0	21.0	97.2							
B09 L19	14.0	27.2	95.6							
B09 L19	19.0	26.5	95.5							
B10 L01	4.0	20.6	100.0							
B10 L01	9.0	20.0	96.2							
B10 L01	14.0	18.8	108.1							
B10 L01	19.0	15.5	107.5							
B10 L03	4.0	20.7								
B10 L03	9.0	26.5	97.3	NP	NP		94.0	1000	- 0.2	ML
B10 L03	14.0	22.7	98.5							
B10 L03	19.0	31.9								
B10 L05	4.0	10.2	108.0							
B10 L05	9.0	20.4	100.0							
B10 L05	14.0	22.2	105.0							
B10 L05	19.0	20.1	101.8							
B10 L07	4.0	15.4	112.9	37	23	0.0	52.9	1000	- 0.1	CL
B10 L07	9.0	15.8	104.8							
B10 L07	14.0	26.0	92.6							
B10 L07	19.0	26.2								
B10 L09	4.0	13.0	114.2							
B10 L09	9.0	15.3	107.9							
B10 L09	14.0	23.2	99.2							
B10 L09	19.0	20.9								
B10 L11	4.0	17.4	111.1							
B10 L11	9.0	14.8	109.7							
B10 L11	14.0	22.5	103.4							
B10 L13	4.0	14.5	102.7							

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SUMMARY OF LABORATORY TEST RESULTS

JOB No. 167717 FIGURE No. 106 PAGE 11 OF 24 DATE 7/9/19

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
B10 L13	9.0	13.5	110.8							
B10 L13	14.0	25.7								
B10 L13	19.0	17.4	108.6							
B10 L14	4.0	13.4	114.1	35	20	0.0	51.6	1000	0.3	CL
B10 L14	9.0	13.0	112.5							
B10 L14	14.0	19.1								
B10 L14	19.0	23.2	100.8							
B10 L16	4.0	11.7	103.0							
B10 L16	9.0	23.7	99.6							
B10 L16	14.0	24.8	106.3							
B10 L16	19.0	25.9	95.7							
B10 L19	4.0	7.9	102.2							
B10 L19	9.0	22.3								
B10 L19	14.0	25.2	100.5							
B10 L19	19.0	32.1	92.1							
B10 L21	4.0	19.0	101.9							
B10 L21	9.0	22.4	101.0							
B10 L21	14.0	27.9	96.7							
B10 L21	19.0	33.3	95.1							
B10 L23	4.0	14.8	96.8							
B10 L23	9.0	24.0	100.6							
B10 L23	14.0	24.0	97.0							
B10 L23	19.0	20.3	107.9							
B10 L25	4.0	17.3	107.9							
B10 L25	9.0	22.1	103.7	NP	NP	0.0	45.0	1000	0.0	SM
B10 L25	14.0	21.9	102.6							
B10 L25	19.0	21.7	103.2							
B10 L27	4.0	20.3	102.2							
B10 L27	9.0	23.6	99.3							
B10 L27	14.0	24.2								
B10 L27	19.0	24.2	94.2							
B10 L29	4.0	13.6	110.2							
B10 L29	9.0	22.9	98.6							
B10 L29	14.0	20.5	103.3							

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SUMMARY OF LABORATORY TEST RESULTS

JOB No. 167717 FIGURE No. 106 PAGE 12 OF 24 DATE 7/9/19

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
B10 L29	19.0	18.9	93.5							
B10 L31	4.0	13.1	108.8							
B10 L31	9.0	10.1	106.6							
B10 L31	14.0	22.4	101.9							
B10 L31	19.0	24.6	97.9							
B10 L33	4.0	14.3	105.0							
B10 L33	9.0	22.6	101.4							
B10 L33	14.0	18.4	106.1							
B10 L33	19.0	19.4	102.8							
B10 L35	4.0	16.2	112.1	28	14	0.0	61.0	1000	0.0	CL
B10 L35	9.0	22.2	102.1							
B10 L35	14.0	24.5	97.2							
B10 L35	19.0	31.5								
B10 L37	4.0	26.1	97.1							
B10 L37	9.0	22.9	99.2							
B10 L37	14.0	24.4								
B10 L37	19.0	22.7	94.7							
B10 L39	4.0	18.2	104.7							
B10 L39	9.0	25.6	96.1							
B10 L39	14.0	36.8								
B10 L39	19.0	18.4	109.0							
B10 L41	4.0	24.9	92.9							
B10 L41	9.0	21.6	98.0	NP	NP	0.0	43.3	1000	- 0.3	SM
B10 L41	14.0	20.5	104.7							
B10 L41	19.0	20.6	103.4							
B10 L43	4.0	23.9	95.5							
B10 L43	9.0	20.7	105.4							
B10 L43	14.0	27.8	94.6							
B10 L43	19.0	24.9	99.2							
B10 L45	4.0	21.6	95.1							
B10 L45	9.0	18.6	107.3							
B10 L45	14.0	24.7	101.4							
B10 L45	19.0	25.8								
B11 L02	4.0	17.6	105.2	32	16		63.7	1000	- 0.1	CL

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SUMMARY OF LABORATORY TEST RESULTS

JOB No. 167717 FIGURE No. 106 PAGE 13 OF 24 DATE 7/9/19

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
B11 L02	9.0	21.9	102.1							
B11 L02	14.0	26.8								
B11 L02	19.0	25.9	94.0							
B11 L04	4.0	14.1	112.4							
B11 L04	9.0	18.4	102.6							
B11 L04	14.0	21.8	99.5							
B11 L04	19.0	20.1	109.4							
B11 L06	4.0	10.3	112.2							
B11 L06	9.0	14.8	112.5							
B11 L06	14.0	23.9								
B11 L06	19.0	21.0								
B11 L08	4.0	7.4	117.8	31	16	0.0	57.7	1000	1.1	CL
B11 L08	9.0	8.1	111.3							
B11 L08	14.0	21.3	105.5							
B11 L08	19.0	27.4	98.8							
B11 L10	4.0	8.5	115.0							
B11 L10	9.0	13.4	112.3							
B11 L10	14.0	10.8	117.9							
B11 L10	19.0	20.7								
B11 L11	4.0	14.8	107.4							
B11 L11	9.0	21.0	105.4							
B11 L13	4.0	11.5	111.5							
B11 L13	9.0	23.6	95.5							
B11 L13	14.0	24.2	98.8							
B11 L13	19.0	30.0								
B11 L15	4.0	11.4	98.7							
B11 L15	9.0	22.8	100.6							
B11 L15	14.0	17.6	109.9							
B11 L17	4.0	10.6	100.4							
B11 L17	9.0	21.2	103.3							
B11 L17	14.0	25.2								
B11 L17	19.0	31.1								
B11 L19	4.0	7.1	115.3							
B11 L19	9.0	13.8	102.6							

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SUMMARY OF LABORATORY TEST RESULTS

JOB No. 167717 FIGURE No. 106 PAGE 14 OF 24 DATE 7/9/19

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
B11 L19	14.0	24.4								
B11 L19	19.0	31.0	84.6							
B11 L21	4.0	6.6	111.6							
B11 L21	9.0	5.9	107.0							
B11 L21	14.0	12.6								
B11 L21	19.0	21.7	99.7							
B11 L23	4.0	6.2	106.2							
B11 L23	9.0	6.9	112.6							
B11 L23	14.0	16.8	100.6							
B11 L23	19.0	18.1								
B11 L25	4.0	7.6	104.1							
B11 L25	9.0	5.3	114.4							
B11 L25	14.0	9.5	100.6							
B11 L25	19.0	21.5	94.9							
B11 L27	4.0	7.5	111.3	33	16		56.0	1000	- 0.7	CL
B11 L27	9.0	7.9	117.9							
B11 L27	14.0	6.4	118.6							
B11 L27	19.0	19.6	105.3							
B11 L29	4.0	8.6	113.1							
B11 L29	9.0	7.9	115.7							
B11 L29	14.0	8.0	117.0							
B11 L29	19.0	21.5	102.8							
B12 L02	4.0	6.9	112.7							
B12 L02	9.0	10.4	126.2							
B12 L02	14.0	8.5	114.0							
B12 L02	19.0	24.1	97.5							
B12 L04	4.0	6.6	112.2							
B12 L04	9.0	10.6	101.6							
B12 L04	14.0	21.6	100.9							
B12 L04	19.0	23.6	105.0							
B12 L06	4.0	7.3	109.3							
B12 L06	9.0	10.7	101.8							
B12 L06	14.0	21.4	100.8							
B12 L06	19.0	20.8	104.6							

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SUMMARY OF LABORATORY TEST RESULTS

JOB No. 167717 FIGURE No. 106 PAGE 15 OF 24 DATE 7/9/19

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
B12 L08	4.0	7.8	104.3							
B12 L08	9.0	14.5	99.4	NP	NP		41.0	1000	- 0.1	SM
B12 L08	14.0	23.2	99.3							
B12 L08	19.0	24.7	96.7							
B12 L10	4.0	6.9	108.7							
B12 L10	9.0	8.7	100.3							
B12 L10	14.0	20.8	107.2							
B12 L10	19.0	17.9	107.3							
B12 L12	4.0	3.7	110.6							
B12 L12	9.0	5.0	120.8							
B12 L12	14.0	18.2	105.1							
B12 L12	19.0	25.6	95.8							
B12 L14	4.0	8.7	111.0							
B12 L14	9.0	6.5	114.2							
B12 L14	14.0	11.4	111.2							
B12 L14	19.0	22.4								
B12 L16	4.0	6.4	112.2							
B12 L16	9.0	6.4	113.4							
B12 L16	14.0	22.1	106.4							
B12 L16	19.0	17.8								
B13 L02	4.0	9.2	111.7							
B13 L02	9.0	5.2	110.9							
B13 L02	14.0	19.3	105.3							
B13 L02	19.0	22.6	99.3							
B13 L04	4.0	8.4	116.5							
B13 L04	9.0	5.2	117.0							
B13 L04	14.0	8.8	118.9							
B13 L04	19.0	23.7	101.5							
B13 L06	4.0	9.5	113.0							
B13 L06	9.0	5.3	120.5							
B13 L06	14.0	9.2	119.7							
B13 L06	19.0	10.9								
B13 L08	4.0	6.7	113.7							
B13 L08	9.0	6.8	112.4							

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SUMMARY OF LABORATORY TEST RESULTS

JOB No. 167717 FIGURE No. 106 PAGE 16 OF 24 DATE 7/9/19

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
B13 L08	14.0	5.5	111.0							
B13 L08	19.0	23.7	100.9							
B13 L10	4.0	8.2	112.8							
B13 L10	9.0	6.8	119.2	26	12	0.0	40.3	1000	- 0.5	SC
B13 L10	14.0	12.9	101.5							
B13 L10	19.0	13.9	99.3							
B13 L12	4.0	8.4	111.4	32	17				- 1.3	
B13 L12	9.0	6.9	119.2					1000		
B13 L12	14.0	7.5	121.4							
B13 L12	19.0	21.9	99.6							
B14 L01	4.0	23.3	93.3	NP	NP		32.5	1000	- 0.1	SM
B14 L01	9.0	22.2	101.8							
B14 L01	14.0	18.0	91.4							
B14 L01	19.0	40.8								
B14 L03	4.0	22.6	103.6							
B14 L03	9.0	22.0	101.6							
B14 L03	14.0	28.9	94.9							
B14 L03	19.0	18.9	104.4							
B14 L05	4.0	20.0	105.9							
B14 L05	9.0	26.1	99.2							
B14 L05	14.0	25.4	92.7							
B14 L05	19.0	22.1	97.5							
B14 L07	4.0	25.7	94.4	NP	NP	0.0	37.7	1000	0.0	SM
B14 L07	9.0	26.0	93.8							
B14 L07	14.0	28.9								
B14 L07	19.0	20.2	101.0							
B14 L09	4.0	14.7								
B14 L09	9.0	24.3		NP	NP	0.0	38.4			SM
B14 L09	14.0	28.1								
B14 L09	19.0	37.5								
B14 L11	4.0	13.1	115.7							
B14 L11	9.0	27.3	98.0							
B14 L11	14.0	23.3								
B14 L11	19.0	20.1	104.5							

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SUMMARY OF LABORATORY TEST RESULTS

JOB No. 167717 FIGURE No. 106 PAGE 17 OF 24 DATE 7/9/19

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
B14 L13	4.0	14.3	110.5							
B14 L13	9.0	26.6	95.8							
B14 L13	14.0	22.1	99.3							
B14 L13	19.0	24.1	99.5							
B14 L15	4.0	14.5	106.0							
B14 L15	9.0	18.8	105.4							
B14 L15	14.0	26.1	98.4							
B14 L15	19.0	22.7	99.6							
B14 L17	4.0	12.3	111.3							
B14 L17	9.0	5.6								
B14 L17	14.0	19.0	103.8							
B14 L17	19.0	19.1	101.6							
B14 L19	4.0	15.6	106.0							
B14 L19	9.0	24.8	99.0	NP	NP		42.5	1000	0.0	SM
B14 L19	14.0	25.8								
B14 L19	19.0	18.7	100.1							
B15 L01	4.0	9.3	113.7							
B15 L01	9.0	22.9								
B15 L01	14.0	22.6	96.5							
B15 L01	19.0	23.3	97.9							
B15 L03	4.0	14.6	108.3							
B15 L03	9.0	29.4	94.0							
B15 L03	14.0	24.1								
B15 L03	19.0	28.5								
B15 L05	4.0	20.0	101.5							
B15 L05	9.0	22.4	103.0							
B15 L05	14.0	20.0	105.3							
B15 L05	19.0	20.9	101.6							
B15 L07	4.0	21.8	100.3							
B15 L07	9.0	25.5	99.1							
B15 L09	4.0	18.0	105.8							
B15 L09	9.0	21.2	106.1							
B15 L09	14.0	21.2								
B15 L09	19.0	18.0	108.3							

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SUMMARY OF LABORATORY TEST RESULTS

JOB No. 167717 FIGURE No. 106 PAGE 18 OF 24 DATE 7/9/19

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
B15 L11	4.0	15.5	108.2							
B15 L11	9.0	17.0		28	13	1.3	26.0			SC
B15 L11	14.0	24.6	100.4							
B15 L11	19.0	22.2	99.7							
B15 L13	4.0	14.3	106.4							
B15 L13	9.0	11.1	111.8							
B15 L13	14.0	25.4	96.9							
B15 L13	19.0	20.3	105.0							
B15 L15	4.0	12.7	108.0							
B15 L15	9.0	11.2	116.3							
B15 L15	14.0	23.6	104.8							
B15 L15	19.0	15.2	111.7							
B15 L17	4.0	11.5	109.7	32	16		79.0	1000	- 0.4	CL
B15 L17	9.0	11.6	111.4							
B15 L17	14.0	23.9	95.3							
B15 L17	19.0	18.7	110.2							
B15 L19	4.0	7.6	119.2							
B15 L19	9.0	5.8	114.6							
B15 L19	14.0	19.9								
B15 L19	19.0	19.1	105.1							
B15 L21	4.0	12.8	115.6							
B15 L21	9.0	8.3	119.5							
B15 L21	14.0	20.7	108.0							
B15 L21	19.0	24.5	97.7							
B15 L23	4.0	16.9	107.2							
B15 L23	9.0	9.7	108.3							
B15 L23	14.0	26.8	97.5							
B15 L23	19.0	18.9	107.1							
B15 L25	4.0	9.6	114.8	31	17	0.0	53.5	1000	1.3	CL
B15 L25	9.0	18.5	105.8		··-					
B15 L25	14.0	23.1	102.6							
B15 L25	19.0	19.4	106.8							
B15 L27	4.0	12.5	119.0							
B15 L27	9.0	19.7	101.4		1					

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SUMMARY OF LABORATORY TEST RESULTS

JOB No. 167717 FIGURE No. 106 PAGE 19 OF 24 DATE 7/9/19

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
B15 L27	14.0	19.8	108.2							
B15 L27	19.0	18.2								
B15 L29	4.0	13.3	113.0							
B15 L29	9.0	15.0	114.4							
B15 L29	14.0	24.7	98.6							
B15 L29	19.0	21.5	102.6							
B15 L31	4.0	9.4	114.0							
B15 L31	9.0	4.1								
B15 L31	14.0	23.8	99.8							
B15 L31	19.0	19.8	93.1							
B15 L33	4.0	12.5	110.8							
B15 L33	9.0	9.2	111.0							
B15 L33	14.0	23.7								
B15 L33	19.0	21.9	98.8							
B16 L02	4.0	9.0	106.6							
B16 L02	9.0	8.5	115.4							
B16 L02	14.0	23.3								
B16 L02	19.0	22.0	100.1							
B16 L04	4.0	12.7	118.1							
B16 L04	9.0	14.1	111.7							
B16 L04	14.0	20.3								
B16 L06	4.0	14.7	115.5	35	19	0.0	63.1	1000	1.5	CL
B16 L06	9.0	14.8	111.2							
B16 L06	14.0	17.7	109.5							
B16 L06	19.0	18.8	99.4							
B16 L08	4.0	11.6	108.5							
B16 L08	9.0	12.6	112.0	27	12		61.3	1000	0.3	CL
B16 L08	14.0	14.1	113.0							
B16 L08	19.0	25.5	91.2							
B17 L01	4.0	14.2	120.8	36	20	0.0	56.6	1000	0.9	CL
B17 L01	9.0	12.6	113.2							
B17 L01	14.0	17.1	106.7							
B17 L01	19.0	26.9								
B17 L03	4.0	14.8	113.3							

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SUMMARY OF LABORATORY TEST RESULTS

JOB No. 167717 FIGURE No. 106 PAGE 20 OF 24 DATE 7/9/19

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
B17 L03	9.0	15.2	113.6							
B17 L03	14.0	4.3	117.7							
B17 L03	19.0	23.2	102.6							
B17 L05	4.0	11.9	118.2							
B17 L05	9.0	15.7	112.3							
B17 L05	14.0	13.1	115.8							
B17 L05	19.0	23.6								
B17 L07	4.0	13.5	109.7							
B17 L07	9.0	15.5	111.4							
B17 L07	14.0	16.2	106.8							
B17 L07	19.0	25.2	96.9							
B18 L01	4.0	16.7	112.7	36	21	0.0	69.0	1000	0.1	CL
B18 L01	9.0	8.6	99.3							
B18 L01	14.0	10.0	108.0							
B18 L01	19.0	19.9	108.2							
B18 L03	4.0	14.7	114.1							
B18 L03	9.0	9.5	90.7							
B18 L03	14.0	13.0	110.6							
B18 L03	19.0	22.9								
B18 L05	4.0	12.4	111.1							
B18 L05	9.0	8.6	94.1	29	12	0.0	71.1	1000	- 2.6	CL
B18 L05	14.0	13.2	111.8							
B18 L05	19.0	23.5								
B19 L01	4.0	9.2								
B19 L01	9.0	4.6	101.0							
B19 L01	14.0	6.5	102.8	31	5	4.0	71.8	1000	- 0.8	ML
B19 L01	19.0	16.2	108.3							
B19 L03	4.0	7.2	96.9							
B19 L03	9.0	5.9	116.6	26	14	0.0	39.4	1000	0.3	SC
B19 L03	14.0	11.4	106.4							
B19 L03	19.0	26.0	88.6							
B19 L05	4.0	15.9	113.1							
B19 L05	9.0	10.5	98.3							
B19 L05	14.0	13.6	103.4							

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SUMMARY OF LABORATORY TEST RESULTS

JOB No. 167717 FIGURE No. 106 PAGE 21 OF 24 DATE 7/9/19

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
B19 L07	4.0	14.0	105.5							
B19 L07	9.0	17.5	102.5							
B19 L07	14.0	25.1	97.5							
B19 L07	19.0	15.9								
B19 L09	4.0	16.1	105.6							
B19 L09	9.0	4.4	109.3							
B19 L09	14.0	24.5								
B19 L11	4.0	9.8	97.3							
B19 L11	9.0	13.5	104.6							
B19 L11	14.0	23.6								
B19 L11	19.0	24.8	99.9							
B19 L13	4.0	11.1	103.7	31	16	0.0	54.7	1000	0.3	CL
B19 L13	9.0	10.9								
B19 L13	14.0	21.2								
B19 L13	19.0	18.8	108.3							
B20 L01	4.0	15.5	110.9							
B20 L01	9.0	16.1	105.3	31	17	0.0	51.9	1000	- 0.4	CL
B20 L01	14.0	25.3	99.9							
B20 L01	19.0	19.2	102.5							
B20 L03	4.0	13.0	113.3							
B20 L03	9.0	13.3	110.3							
B20 L03	14.0	23.2	104.5							
B20 L03	19.0	19.8	109.4							
B20 L06	4.0	13.1	101.9							
B20 L06	9.0	22.7	100.9							
B20 L06	14.0	23.5	99.4							
B20 L06	19.0	19.0	105.7							
B20 L08	4.0	12.5	110.7							
B20 L08	9.0	15.6	101.9							
B20 L08	14.0	27.9	93.4							
B20 L08	19.0	23.7	98.7							
B20 L10	4.0	13.7	107.0	29	11	0.4	47.1	1000	- 0.4	SC
B20 L10	9.0	18.3	103.9	40	21	0.0	78.5			CL
B20 L10	14.0	23.6	98.7							

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SUMMARY OF LABORATORY TEST RESULTS

JOB No. 167717 FIGURE No. 106 PAGE 22 OF 24 DATE 7/9/19

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
B20 L10	19.0	19.8	105.0							
B20 L11	4.0	21.6	102.9							
B20 L11	9.0	20.9	96.6							
B20 L11	14.0	20.9	107.1							
B20 L13	4.0	14.1	111.5	33	18		65.6	1000	0.0	CL
B20 L13	9.0	18.6	105.0							
B20 L13	14.0	23.3	113.2							
B20 L15	4.0	9.0	101.0							
B20 L15	9.0	24.0	95.0							
B20 L15	14.0	22.3	94.0							
B20 L15	19.0	24.8								
B20 L17	4.0	19.3	101.0	37	14	0.0	68.3	1000	1.1	CL
B20 L17	9.0	23.2	93.9	NP	NP	0.0	55.2	1000	- 0.1	ML
B20 L17	19.0	20.9								
B20 L19	4.0	9.7	99.2							
B20 L19	9.0	10.0	98.8							
B20 L19	14.0	20.9	99.1							
B20 L19	19.0	23.2								
B20 L21	4.0	10.0	93.6							
B20 L21	9.0	10.3	96.6							
B20 L23	4.0	6.8	101.3							
B20 L23	9.0	6.4								
B20 L25	4.0	9.2								
B20 L25	9.0	15.4	109.7	28	11		91.7	1000	0.1	CL
B20 L25	14.0	16.2	114.4							
B20 L25	19.0	22.4								
B20 L27	4.0	6.4	101.5							
B20 L27	9.0	6.5								
B20 L27	14.0	6.6								
B20 L27	19.0	6.5								
B20 L29	4.0	6.0								
B20 L29	9.0	7.0								
B20 L29	14.0	12.6								
B20 L29	19.0	7.2								

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SUMMARY OF LABORATORY TEST RESULTS

JOB No. 167717 FIGURE No. 106 PAGE 23 OF 24 DATE 7/9/19

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
B20 L31	4.0	7.0								
B20 L31	9.0	8.4	104.4	NP	NP	0.9	40.9			SM
B20 L31	14.0	18.5	106.6							
B20 L33	4.0	7.3	95.2							
B20 L33	9.0	6.8								
B20 L33	14.0	5.8								
B20 L33	19.0	21.6	98.1							
B20 L35	4.0	7.4	91.8							
B20 L35	9.0	5.9	97.1	23	6	1.2	31.3		- 3.6	SC-SM
B20 L35	14.0	4.1	100.7							
B20 L35	19.0	8.5	101.4							

Architectural Structural Forensics

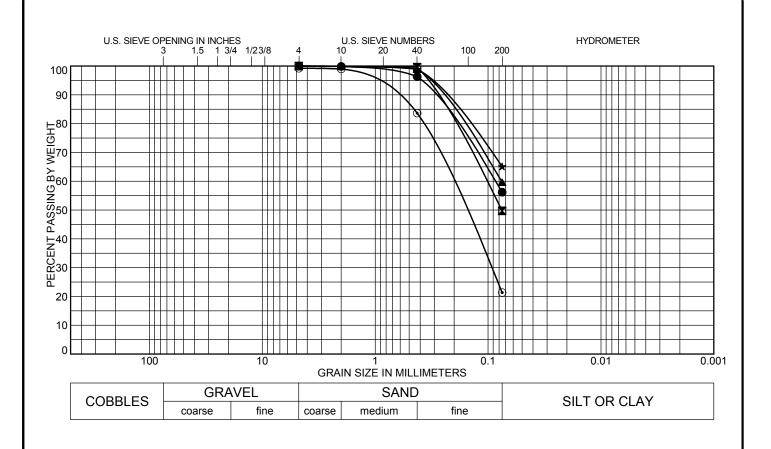


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SUMMARY OF LABORATORY TEST RESULTS

JOB No. 167717 FIGURE No. 106 PAGE 24 OF 24 DATE 7/9/19



1	est Boring	Depth (ft)		Classification				LL	PL	PI
	B01 L03	4.0		SANDY LEAN CLAY(CL)						13
2	B01 L05	9.0		SILTY SAND(SM)						NP
4	B02 L10	4.0		SANDY LEAN CLAY(CL)					21	8
*	B02 L24	4.0		SANDY LEAN CLAY(CL)					15	13
•	B03 L05	9.0		SILTY SAND(SM)					NP	NP
	Foot Boring	Donth (ft)	9/ Croyol 9/ Card 9/ Cilt 9/ Cloy							

L	est Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay
•	B01 L03	4.0	0.0	43.8	56	5.2
\blacksquare	B01 L05	9.0	0.0	50.3	49).7
lack	B02 L10	4.0	0.0	40.4	59).6
*	B02 L24	4.0	0.0	34.9	65	5.1
•	B03 L05	9.0		77.9	21	.3

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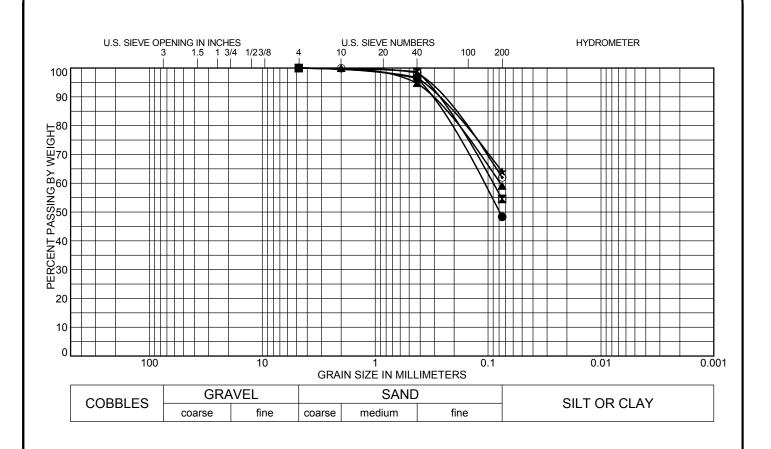
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SOIL CLASSIFICATION DATA

JOB No. 167717

FIGURE No. 107



Ī	Test Boring	Depth (ft)		Classification				LL	PL	PI
	B06 L02	4.0		CLAYEY SAND(SC)						10
	B06 L08	4.0		SANDY LEAN CLAY(CL)						26
4	B07 L16	4.0		SANDY LEAN CLAY(CL)						22
7	B07 L26	4.0		SANDY LEAN CLAY(CL)					16	21
•	B07 L28	9.0		SANDY LEAN CLAY(CL)					15	17
-	Foot Poring	Donth (ft)	Donth (ft) 9/ Crovel 9/ Cond 9/ Silt 9/ Clov							•

L	est Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay
•	B06 L02	4.0	0.0	51.7	48	3.3
\blacksquare	B06 L08	4.0	0.0	45.4	54	l.6
lack	B07 L16	4.0	0.0	40.9	59).1
*	B07 L26	4.0	0.0	36.0	64	l.0
•	B07 L28	9.0	0.0	38.0	62	2.0

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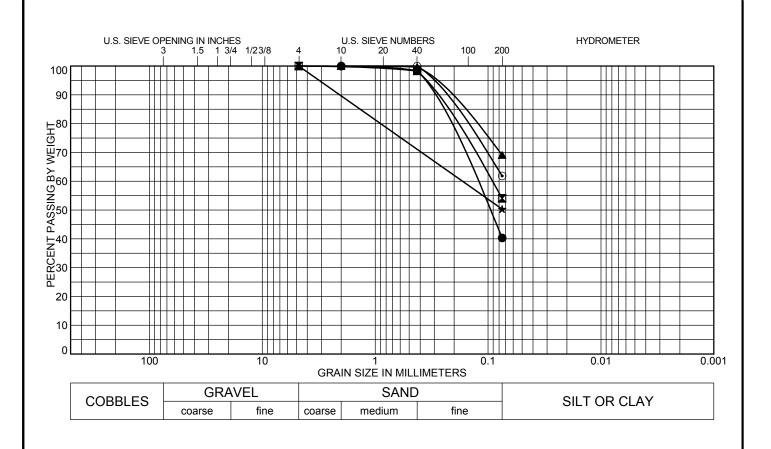
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SOIL CLASSIFICATION DATA

JOB No. 167717

FIGURE No. 108



T	est Boring	Depth (ft)		Classification					PL	PI
	B07 L32	9.0		CLAYEY SAND(SC)						15
I	B07 L36	4.0		SANDY LEAN CLAY(CL)						9
4	B08 L06	14.0		SANDY SILT(ML)					NP	NP
*	B08 L14	9.0		SANDY SILT(ML)						NP
•	B09 L01	4.0		SANDY SILT(ML)						NP
Г	oot Poring	Donth (ft)	9/ Croyol 9/ Court 9/ City 9/ Cloy							

10	est Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay
•	B07 L32	9.0	0.0	59.7	40	.3
	B07 L36	4.0	0.0	45.9	54	l.1
	B08 L06	14.0	0.0	30.9	69).1
*	B08 L14	9.0	0.0	49.7	50	.3
\odot	B09 L01	4.0	0.0	38.2	61	.8

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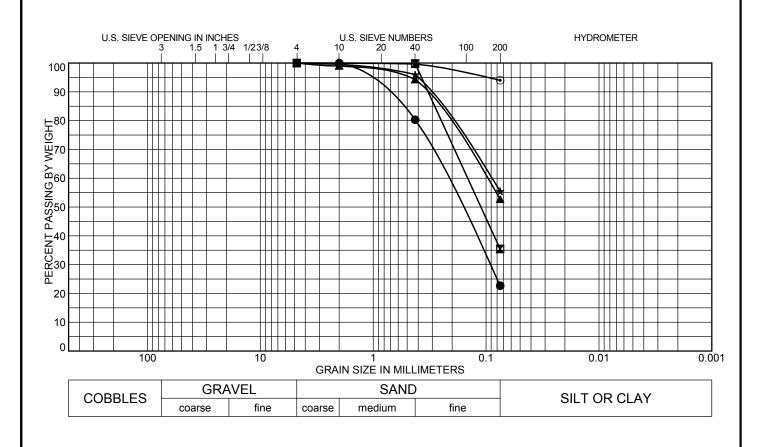
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SOIL CLASSIFICATION DATA

JOB No. 167717

FIGURE No. 109



Т	est Boring	Depth (ft)	Classification	LL	PL	PI
•	B09 L05	4.0	SILTY SAND(SM)	NP	NP	NP
X	B09 L05	9.0	SILTY SAND(SM)	NP	NP	NP
A	B09 L15	4.0	SANDY LEAN CLAY(CL)	33	15	18
*	B09 L17	9.0	SANDY LEAN CLAY(CL)	29	15	14
•	B10 L03	9.0	SILT(ML)	NP	NP	NP
Т	ant Davisor	D = = 41= /f4)	0/ 0/2014 0/ 0/ 1			-

10	est Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay
•	B09 L05	4.0	0.0	77.3	22.7	
X	B09 L05	9.0	0.0	64.5	35.5	
▲	B09 L15	4.0	0.0	47.3	52.7	
*	B09 L17	9.0	0.0	44.5	55.5	
•	B10 L03	9.0	0.0	6.0	94	l.0

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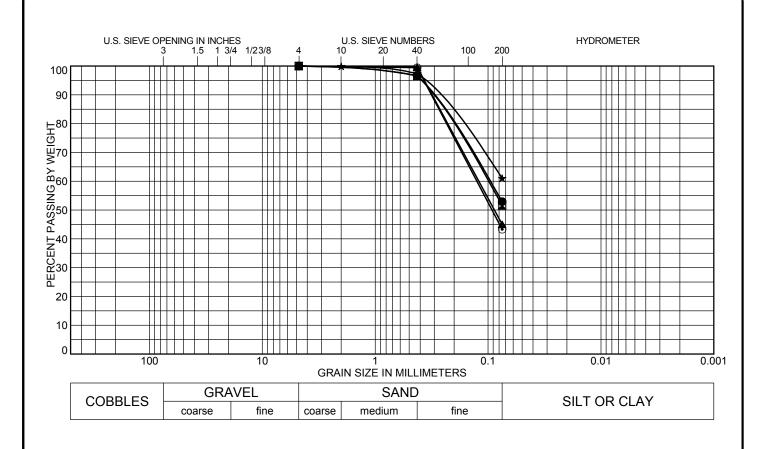
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SOIL CLASSIFICATION DATA

JOB No. 167717

FIGURE No. 110



Т	est Boring	Depth (ft)	Classification	LL	PL	PI
•	B10 L07	4.0	SANDY LEAN CLAY(CL)	37	14	23
X	B10 L14	4.0	SANDY LEAN CLAY(CL)	35	15	20
A	B10 L25	9.0	SILTY SAND(SM)	NP	NP	NP
*	B10 L35	4.0	SANDY LEAN CLAY(CL)	28	14	14
•	B10 L41	9.0	SILTY SAND(SM)	NP	NP	NP
Г	ant Davison	D = 14 (ft)	0/ 0/2014 0/ 0/ 1			

L	est Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay
•	B10 L07	4.0	0.0	47.1	52.9	
	B10 L14	4.0	0.0	48.4	51	.6
▲	B10 L25	9.0	0.0	55.0	45	5.0
*	B10 L35	4.0	0.0	39.0	61	.0
•	B10 L41	9.0	0.0	56.7	43	3.3

Architectural Structural Forensics



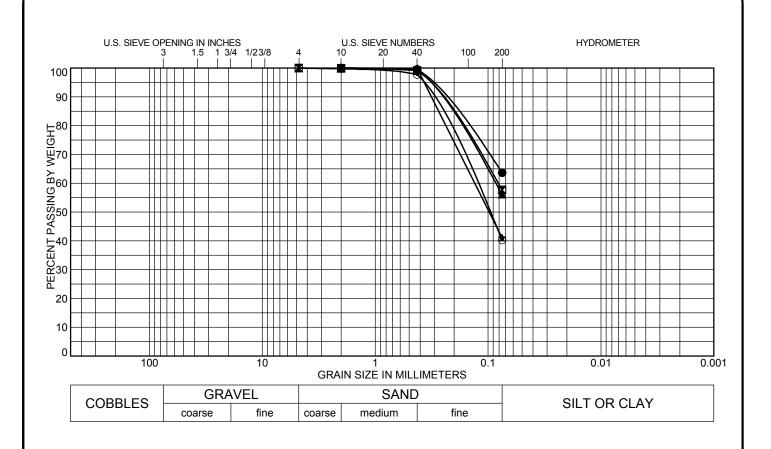
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SOIL CLASSIFICATION DATA

JOB No. 167717

FIGURE No. 111



Т	Test Boring Depth (ft)		Classification		LL	PL	PI			
•	B11 L02	4.0		SA	ANDY LEAN	CLAY(CL)		32	16	16
	B11 L08	4.0		SANDY LEAN CLAY(CL)				31	15	16
A	B11 L27	4.0		SANDY LEAN CLAY(CL)				33	17	16
*	B12 L08	9.0			SILTY SAN	ID(SM)		NP	NP	NP
•	B13 L10	9.0		CLAYEY SAND(SC)			26	14	12	
Т	oet Boring	Donth (ft)	% Gravel	0/ Cand	0/, Cilt	%Clay			•	•

T	est Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay
•	B11 L02	4.0	0.0	36.3	63.7	
\blacksquare	B11 L08	4.0	0.0	42.3	57.7	
▲	B11 L27	4.0	0.0	44.0	56	6.0
*	B12 L08	9.0	0.0	59.0	41	1.0
•	B13 L10	9.0	0.0	59.7	40).3

Architectural Structural Forensics



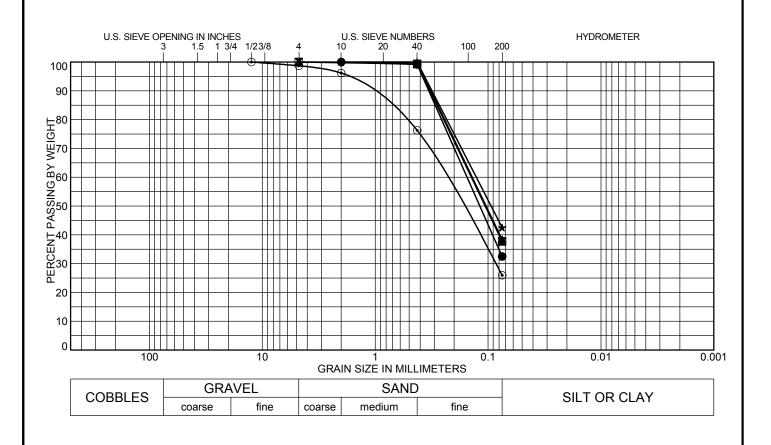
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SOIL CLASSIFICATION DATA

JOB No. 167717

FIGURE No. 112



Т	Test Boring Depth (ft)		Classification		PL	PI
	B14 L01	4.0	SILTY SAND(SM)	NP	NP	NP
X	B14 L07	4.0	SILTY SAND(SM)	NP	NP	NP
A	B14 L09	9.0	SILTY SAND(SM)	NP	NP	NP
*	B14 L19	9.0	SILTY SAND(SM)	NP	NP	NP
•	B15 L11	9.0	CLAYEY SAND(SC)	28	15	13
Г	t D i	D 41- (ft)	0/ 0/	-	-	

L	est Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay
•	B14 L01	4.0	0.0	67.5	32.5	
	B14 L07	4.0	0.0	62.3	37.7	
▲	B14 L09	9.0	0.0	61.6	38.4	
*	B14 L19	9.0	0.0	57.5	42	2.5
•	B15 L11	9.0	1.3	72.7	26	5.0

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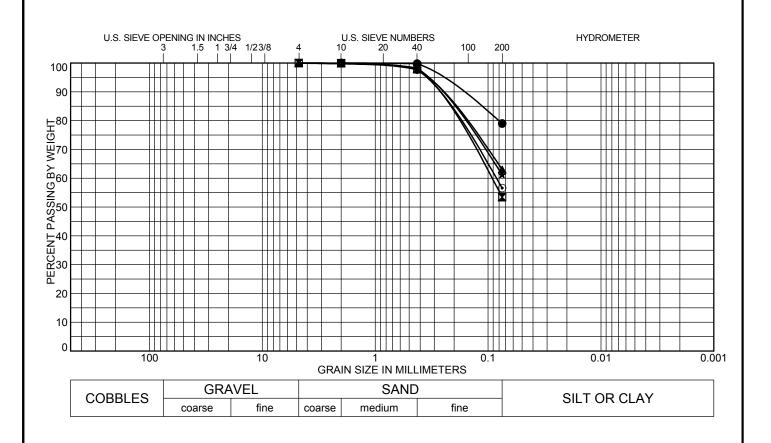
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SOIL CLASSIFICATION DATA

JOB No. 167717

FIGURE No. 113



ľ	est Boring	Depth (ft)	Classification	LL	PL	PI
	B15 L17	4.0	LEAN CLAY with SAND(CL)	32	16	16
Z	B15 L25	4.0	SANDY LEAN CLAY(CL)	31	14	17
4	B16 L06	4.0	SANDY LEAN CLAY(CL)	35	16	19
*	B16 L08	9.0	SANDY LEAN CLAY(CL)	27	15	12
•	B17 L01	4.0	SANDY LEAN CLAY(CL)	36	16	20
1	Foot Dominor	D = = 41= /ft)	0/ 0/2014 0/ 0/ 1			

10	est Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay
•	B15 L17	4.0	0.0	21.0	79.0	
X	B15 L25	4.0	0.0	46.5	53.5	
A	B16 L06	4.0	0.0	36.9	63.1	
*	B16 L08	9.0	0.0	38.7	61	.3
•	B17 L01	4.0	0.0	43.4	56	5.6

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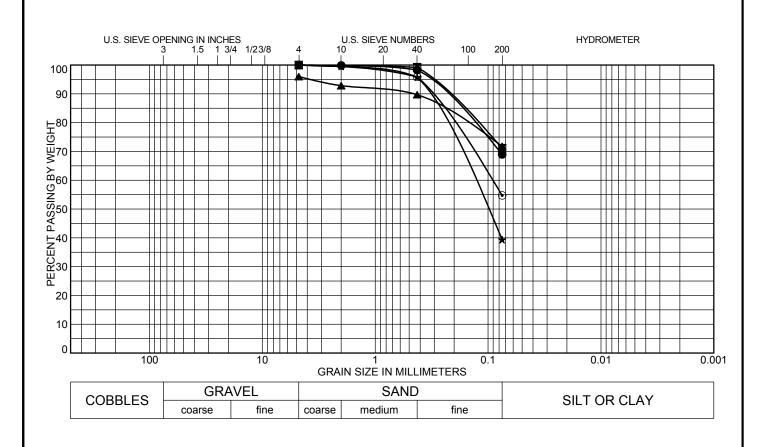
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SOIL CLASSIFICATION DATA

JOB No. 167717

FIGURE No. 114



Т	est Boring	Depth (ft)	Classification	LL	PL	PI
•	B18 L01	4.0	SANDY LEAN CLAY(CL)	36	15	21
X	B18 L05	9.0	LEAN CLAY with SAND(CL)	29	17	12
A	B19 L01	14.0	SILT with SAND(ML)	31	26	5
*	B19 L03	9.0	CLAYEY SAND(SC)	26	12	14
•	B19 L13	4.0	SANDY LEAN CLAY(CL)	31	15	16
_	4 D!	D 41- (ft)	0/ 0/2011 0/ 0/ 1 0/ 0/14 0/ 0/ 0/	-	-	

	est Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay
•	B18 L01	4.0	0.0	31.0	69	0.0
	B18 L05	9.0	0.0	28.9	71.1	
▲	B19 L01	14.0		24.2	71	.8
*	B19 L03	9.0	0.0	60.6	39).4
•	B19 L13	4.0	0.0	45.3	54	1.7

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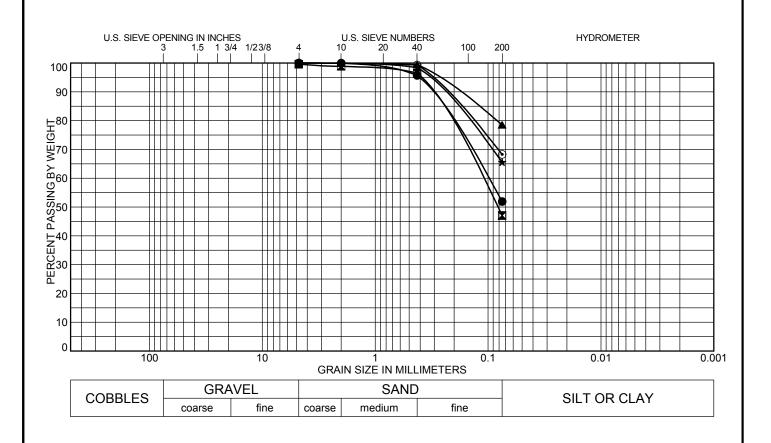
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SOIL CLASSIFICATION DATA

JOB No. 167717

FIGURE No. 115



T	Test Boring Depth (ft)		Classification	LL	PL	PI
	B20 L01	9.0	SANDY LEAN CLAY(CL)	31	14	17
X	B20 L10	4.0	CLAYEY SAND(SC)	29	18	11
4	B20 L10	9.0	LEAN CLAY with SAND(CL)	40	19	21
*	B20 L13	4.0	SANDY LEAN CLAY(CL)	33	15	18
•	B20 L17	4.0	SANDY LEAN CLAY(CL)	37	23	14
	t D i	D 41- 750	0/ 0 0/ 0 !! 0/ 0!			

1	est Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay
•	B20 L01	9.0	0.0	48.1	51.9	
	B20 L10	4.0		52.5	47.1	
▲	B20 L10	9.0	0.0	21.5	78.5	
*	B20 L13	4.0	0.0	34.4	65.6	
\odot	B20 L17	4.0	0.0	31.7	68	.3

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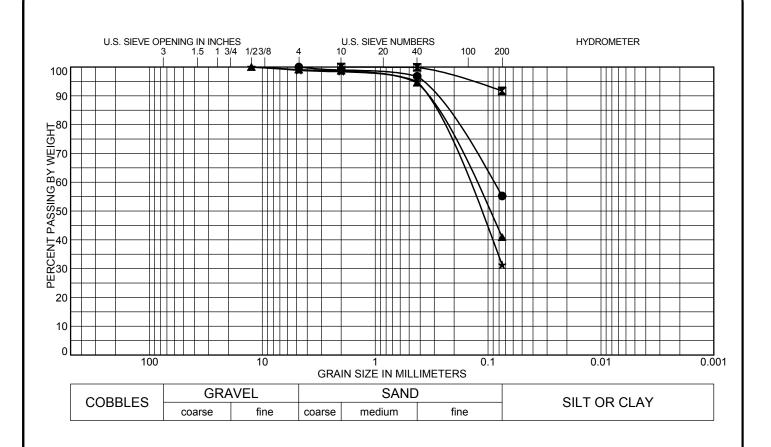
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SOIL CLASSIFICATION DATA

JOB No. 167717

FIGURE No. 116



Test Boring Depth (ft)		Classification			LL	PL	PI		
•	B20 L17	9.0		SANDY SILT(ML)				NP	NP
X	B20 L25	9.0		LEAN CLAY(CL)				17	11
A	B20 L31	9.0		SILTY SAND(SM)				NP	NP
*	B20 L35	9.0		SILTY, CLAYEY SAND(SC-SM)				17	6
Т	Test Boring Depth (ft)		%Gravel	0/ Cand	% Silt	%Clay	•		

T	Test Boring Depth (ft)		%Gravel	%Sand	%Silt	%Clay
•	B20 L17	9.0	0.0	44.8	55.2	
X	B20 L25	9.0	0.0	8.3	91.7	
▲	B20 L31	9.0	0.9	58.1	40).9
*	B20 L35	9.0	1.2	67.5	31	.3
						·



Architectural Structural Forensics



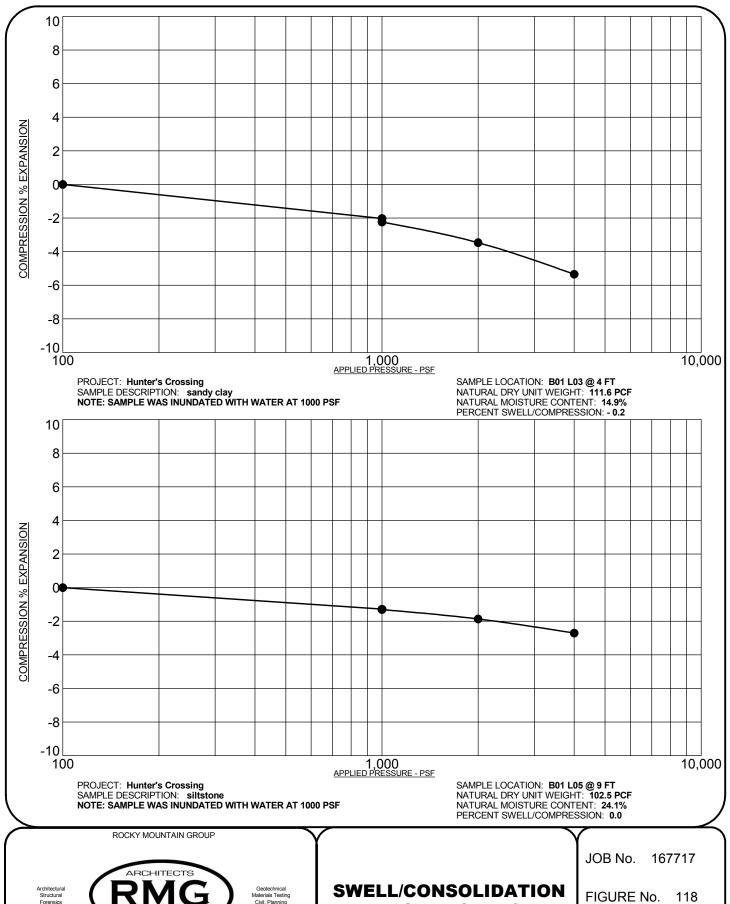
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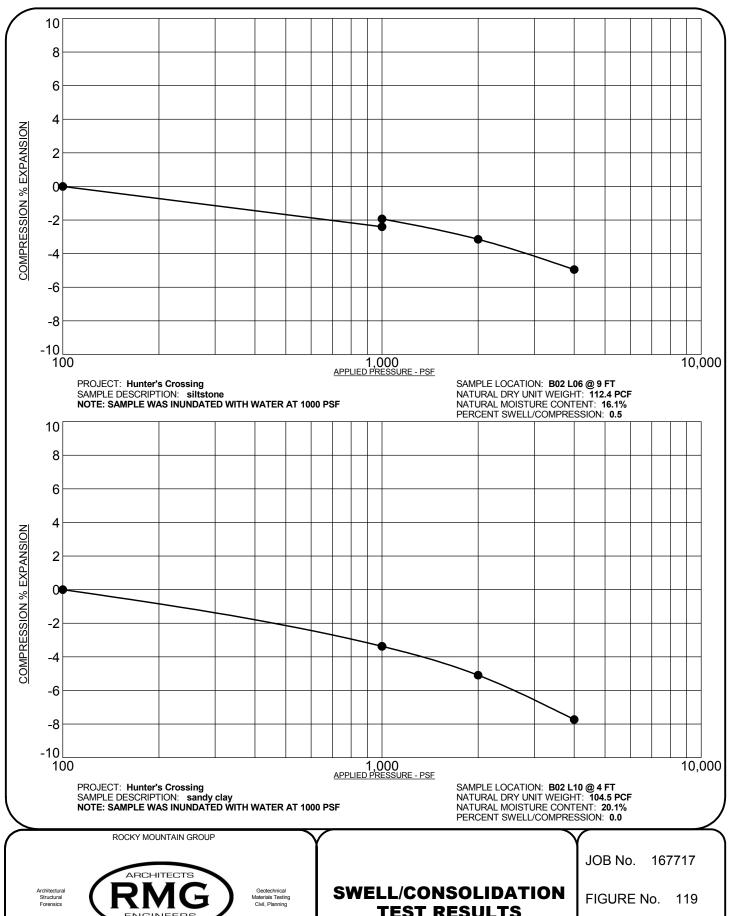
SOIL CLASSIFICATION DATA

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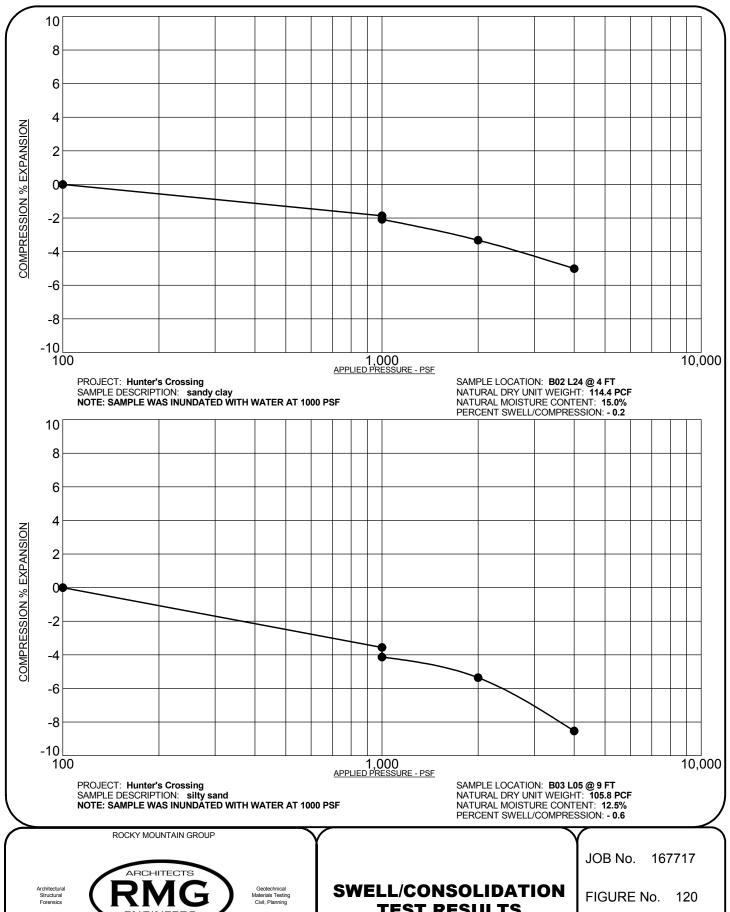
FIGURE No. 117



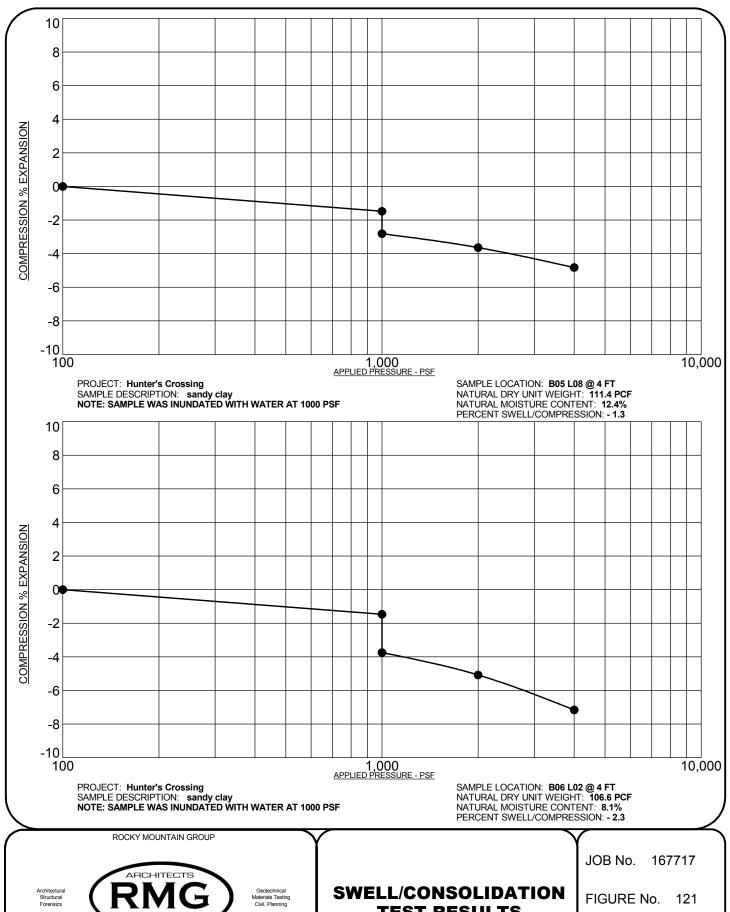






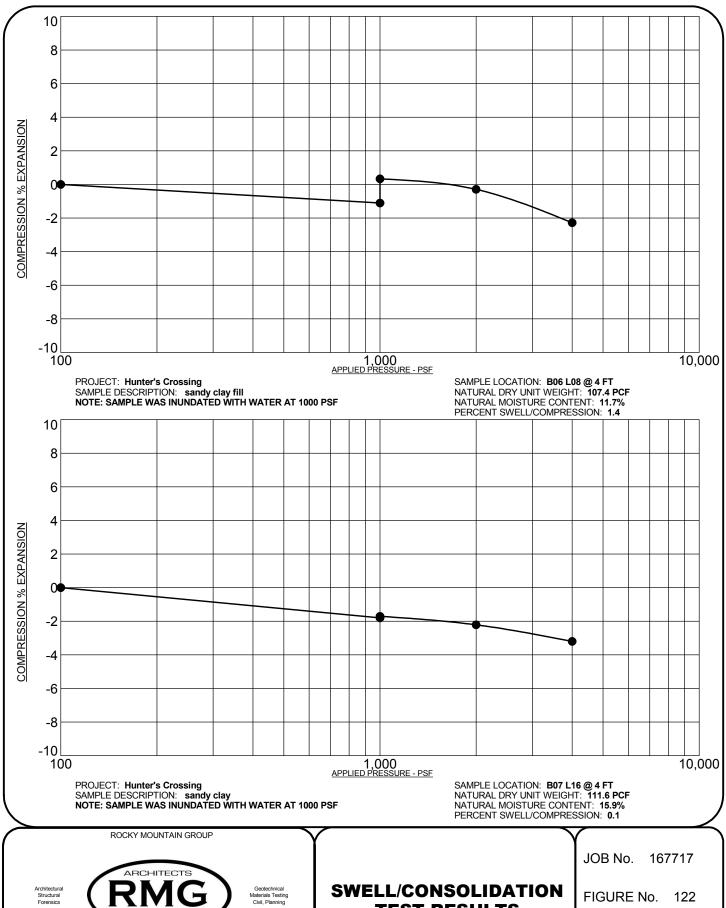






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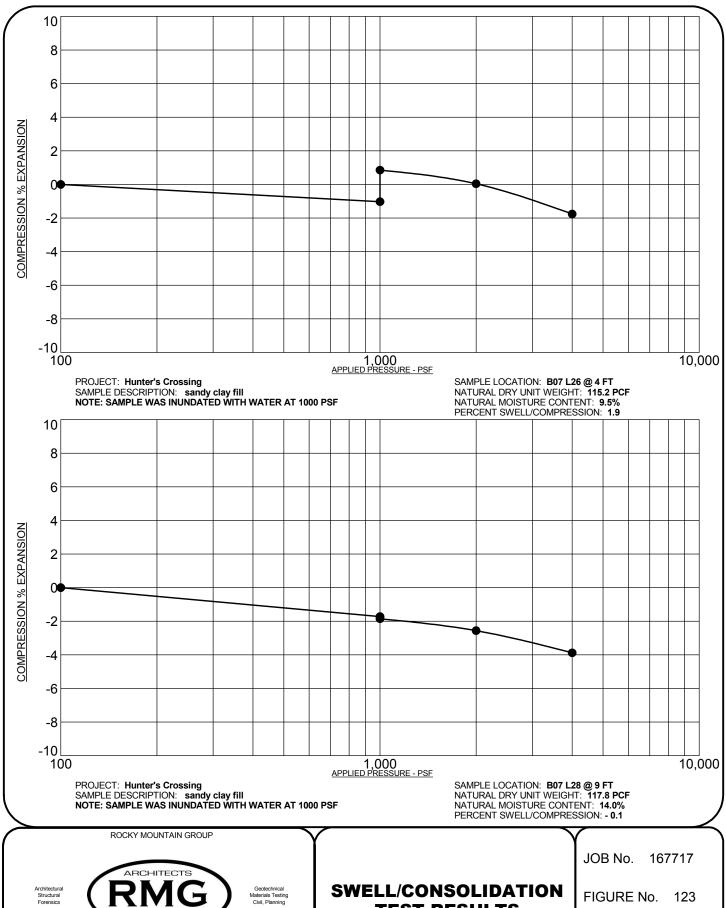
TEST RESULTS





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2910 Austin Bluffs Partway
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(719) 548-0600
SOUTHERN COLORADO, DENVER METRO, NORTHERN COLORADO

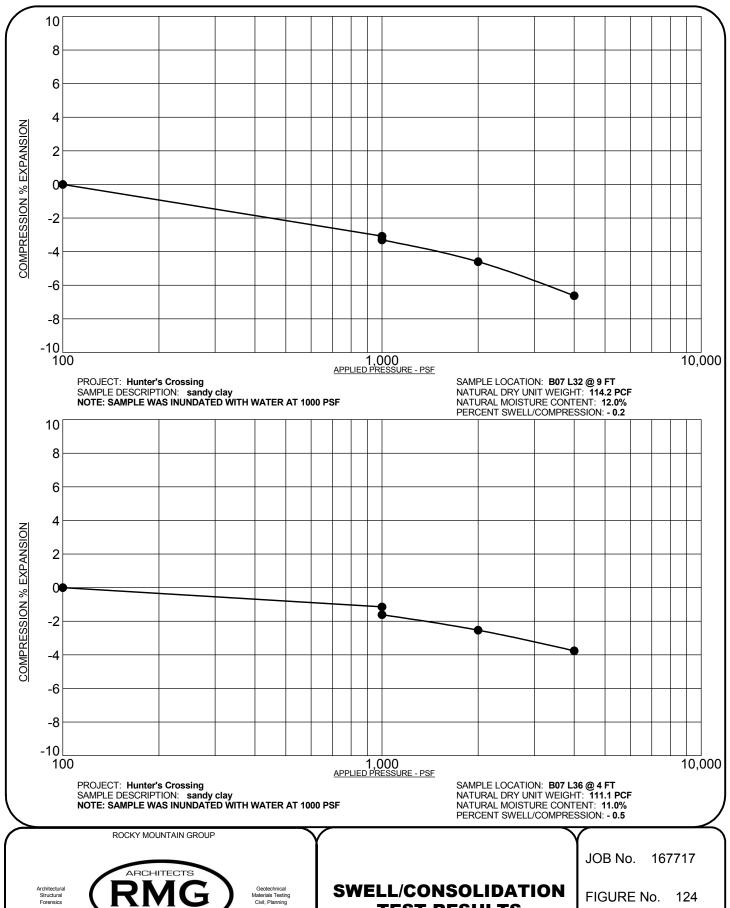
TEST RESULTS





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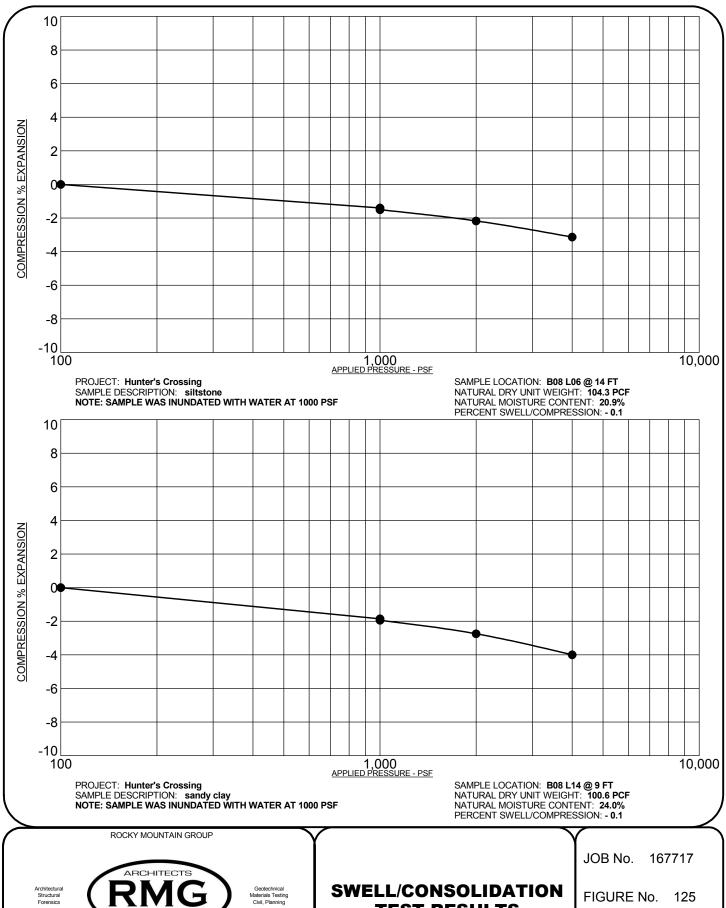
TEST RESULTS



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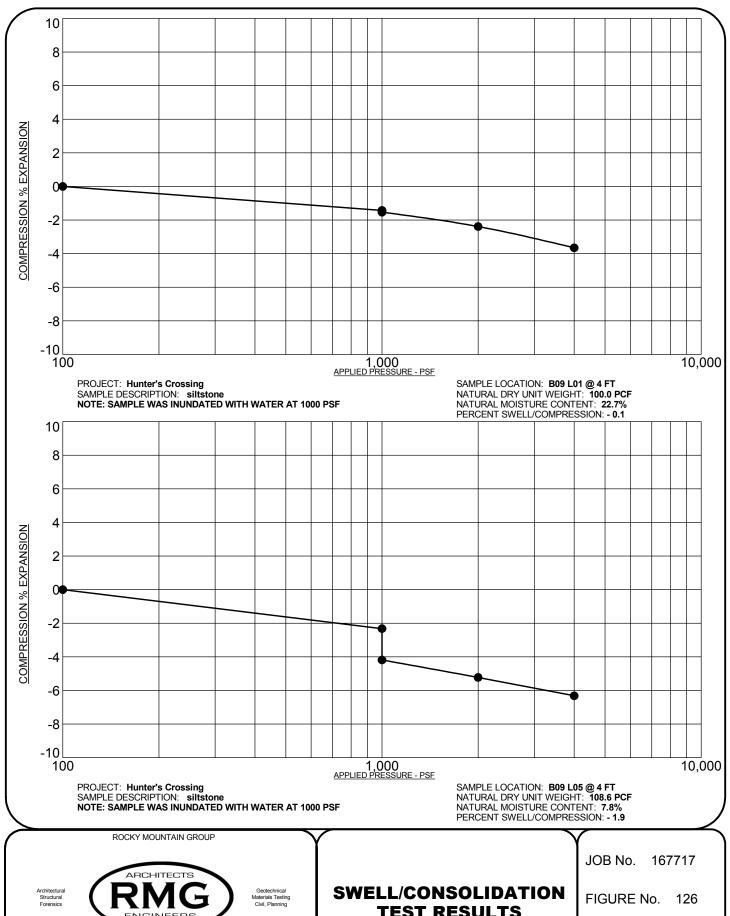
TEST RESULTS



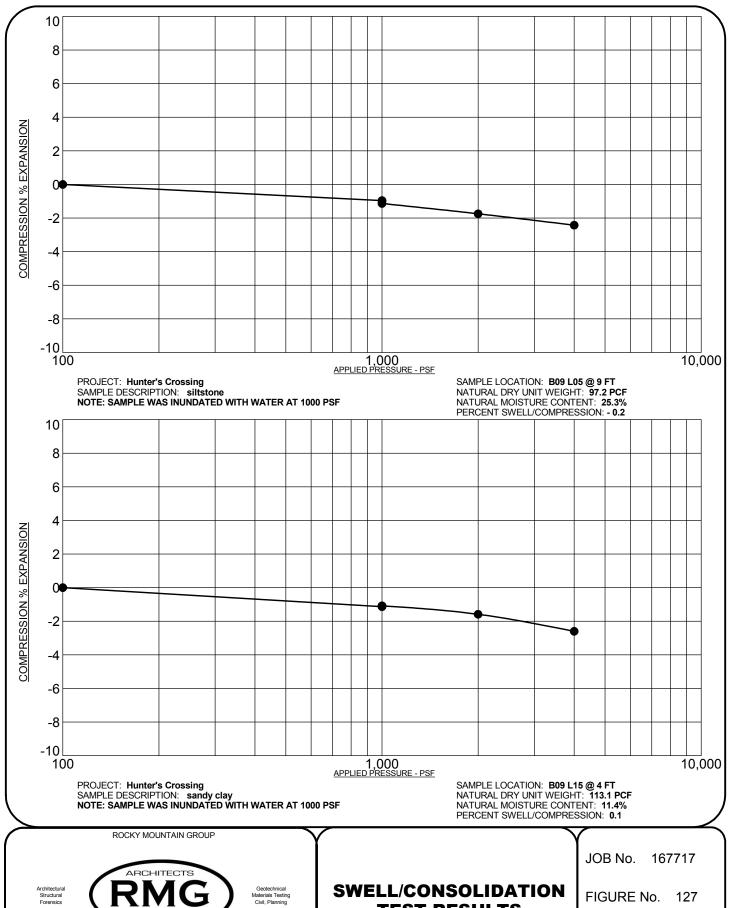


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TEST RESULTS



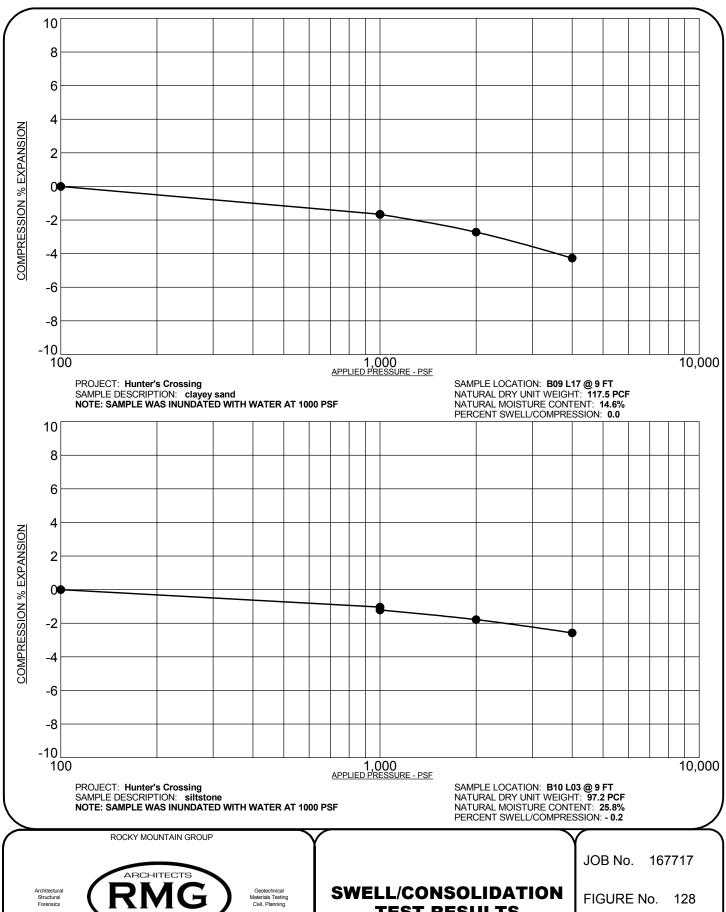




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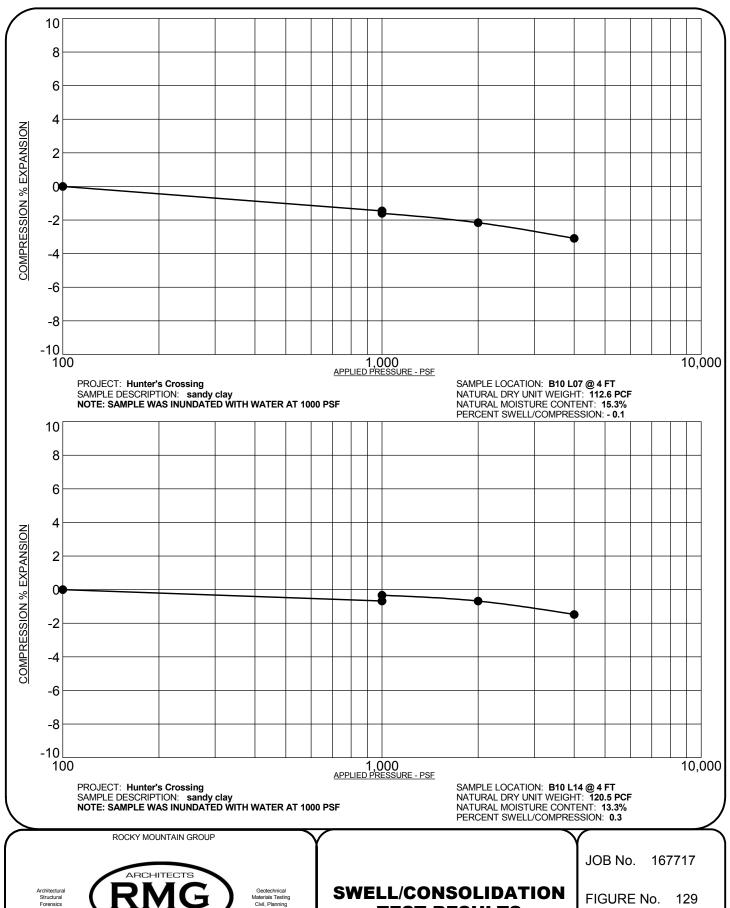
TEST RESULTS



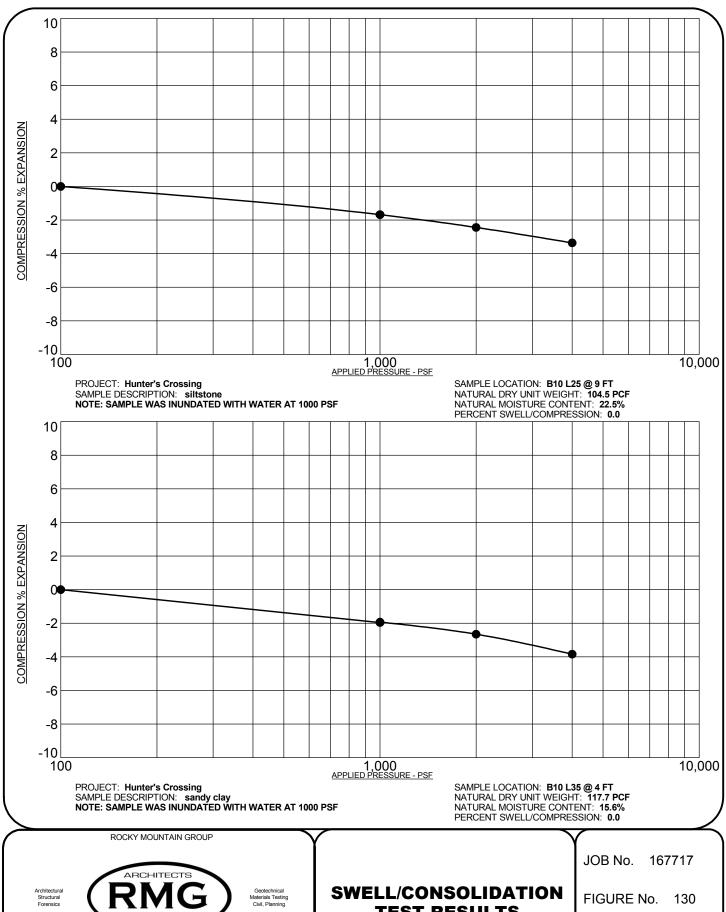


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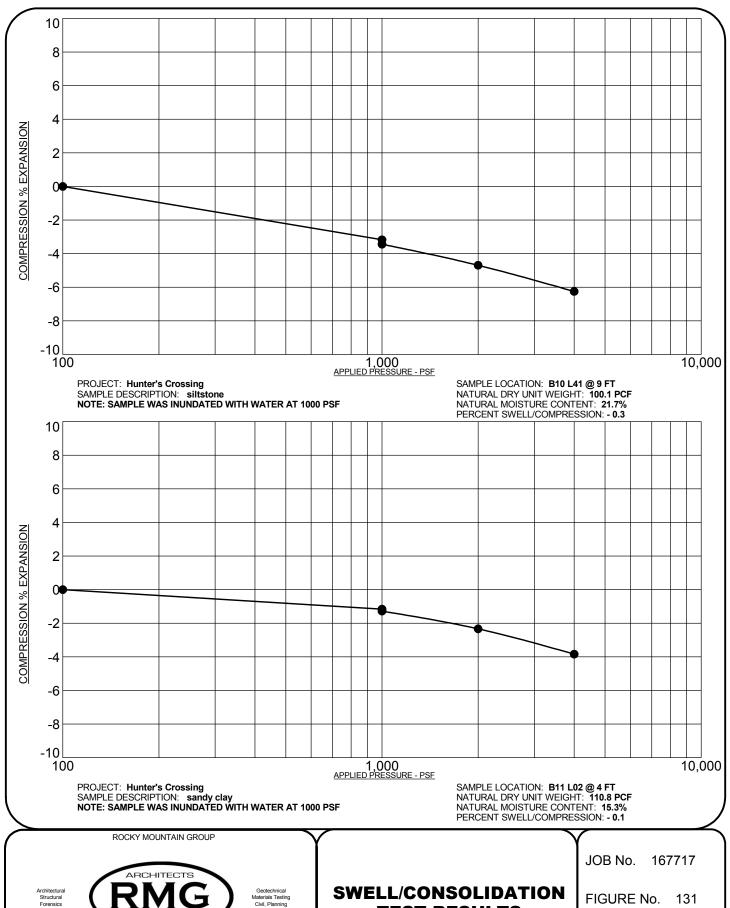




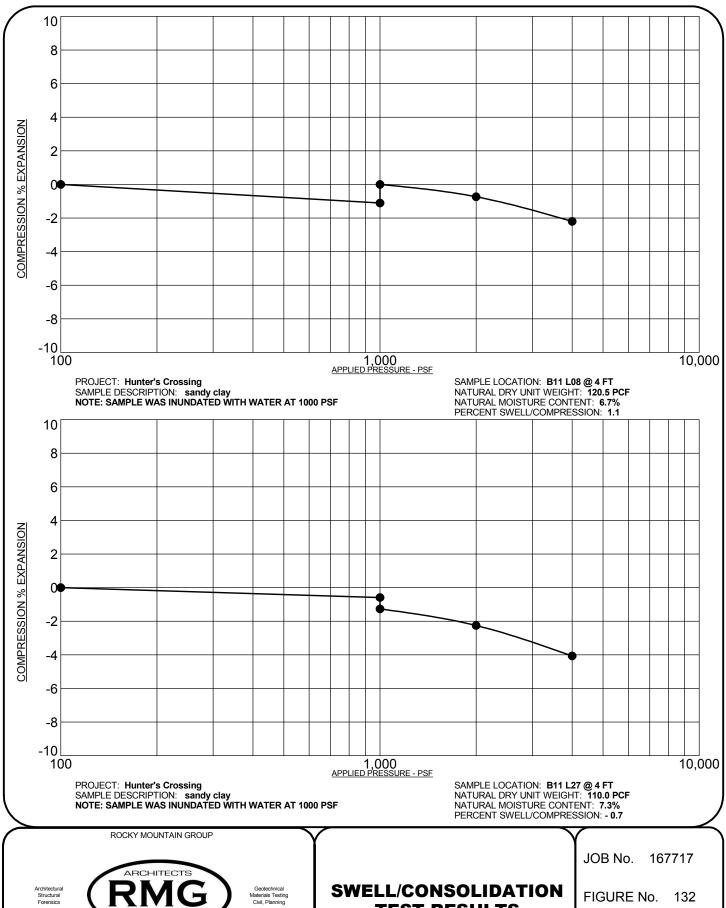


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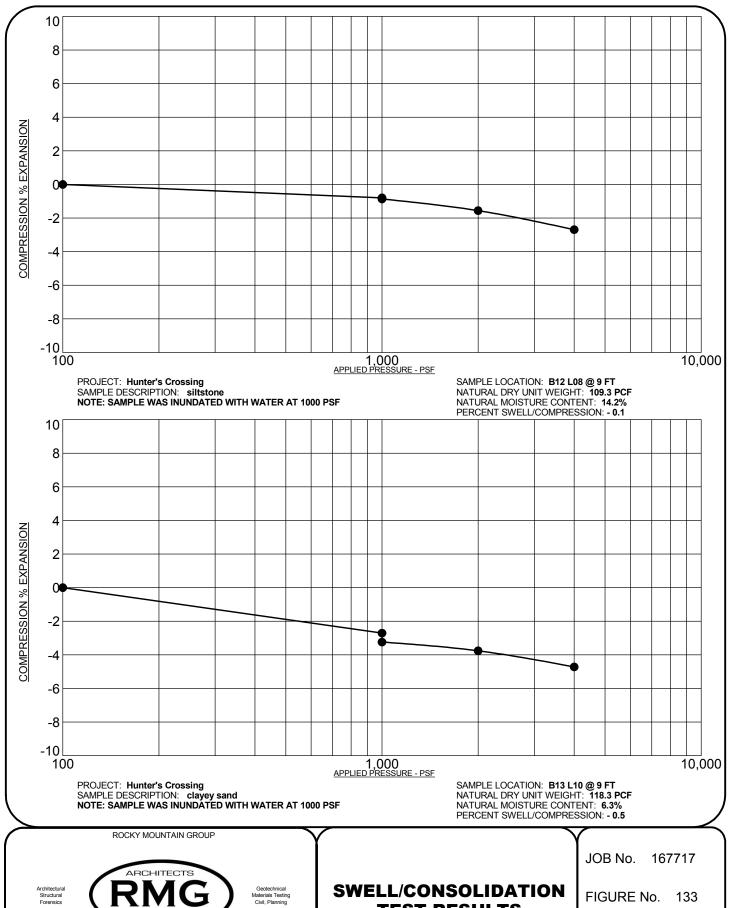






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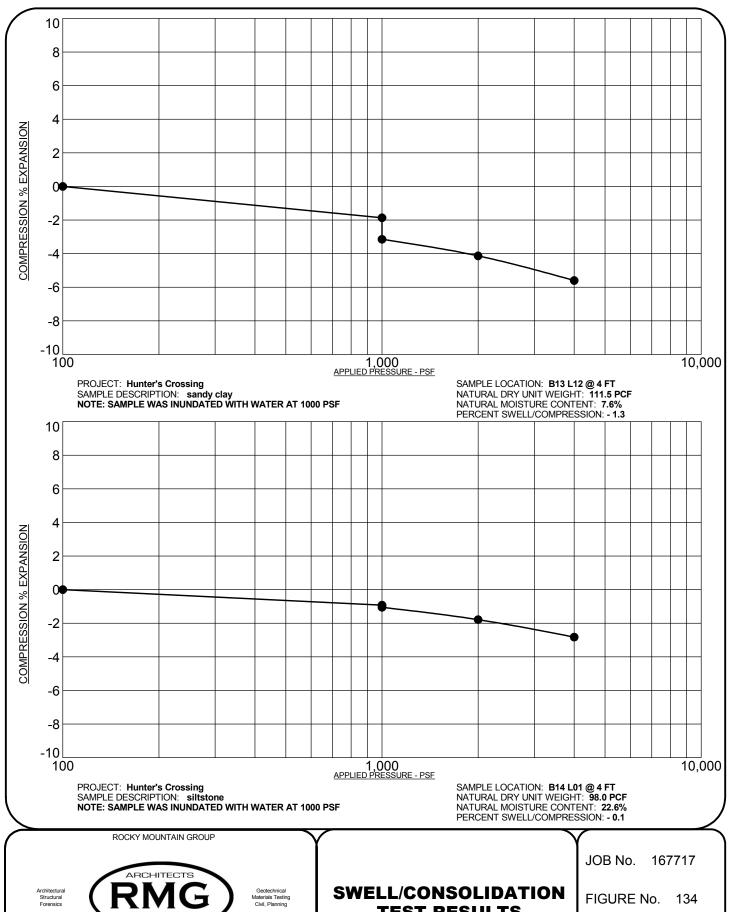
TEST RESULTS



ENGINEERS

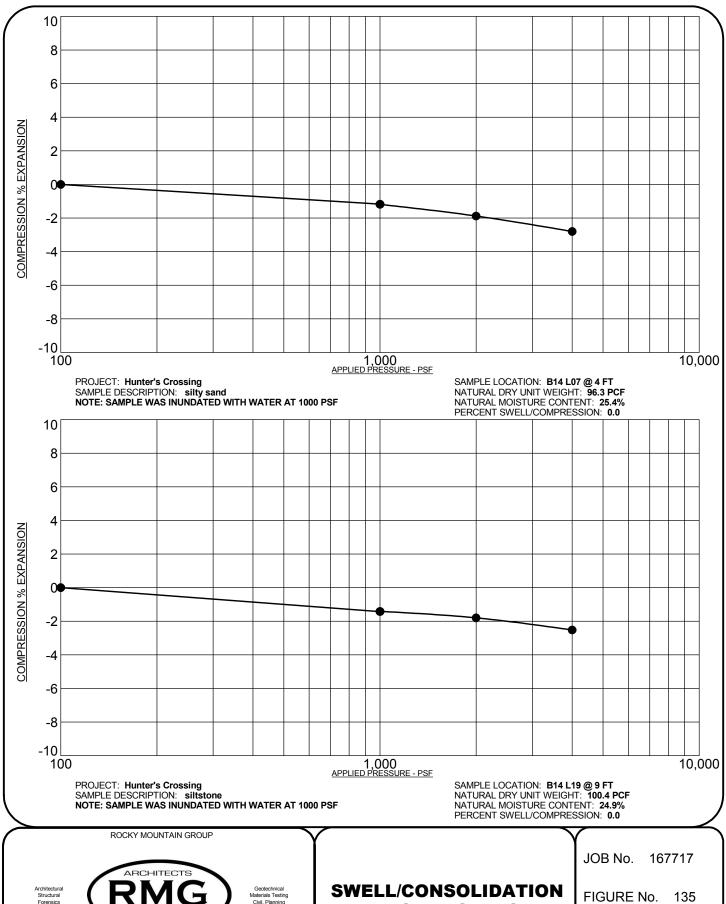
Colorado Springs: (Corporate Office)
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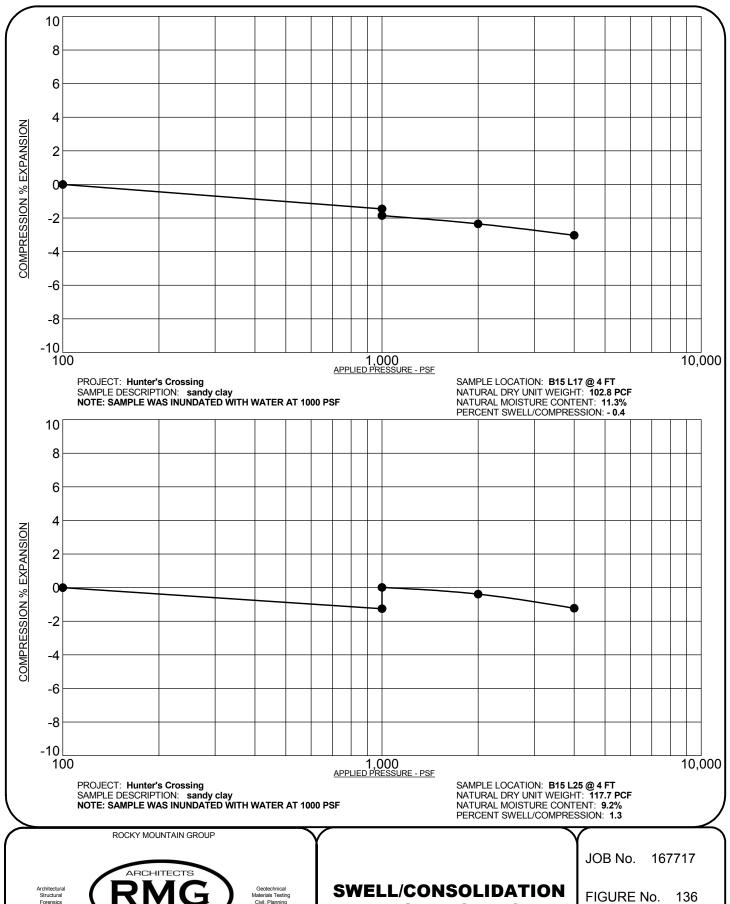
ENGINEERS Colorado Springs: (Corporate Office)
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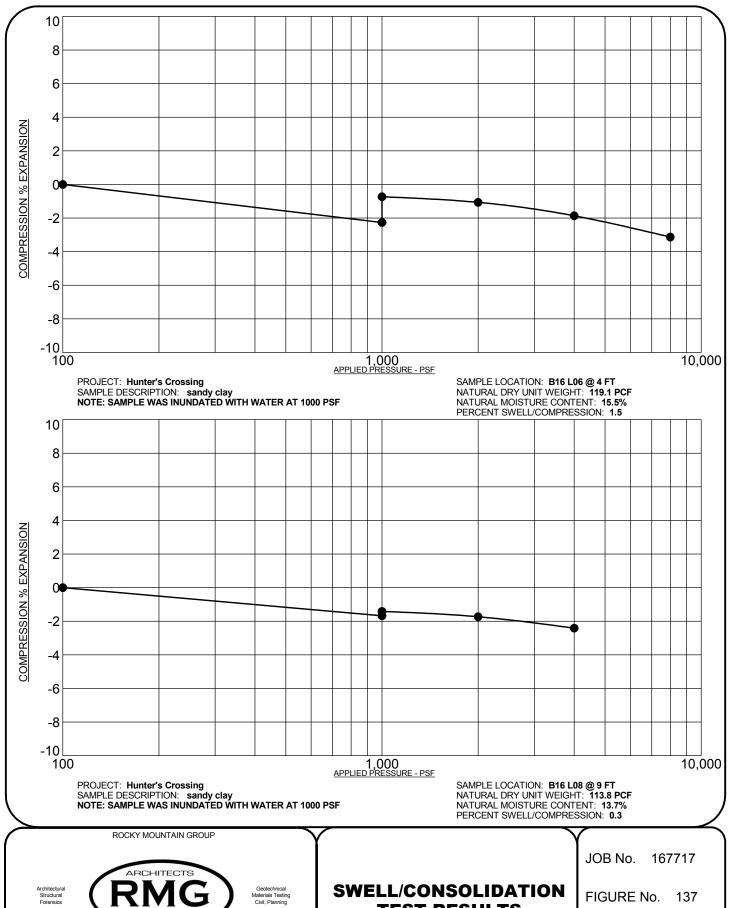


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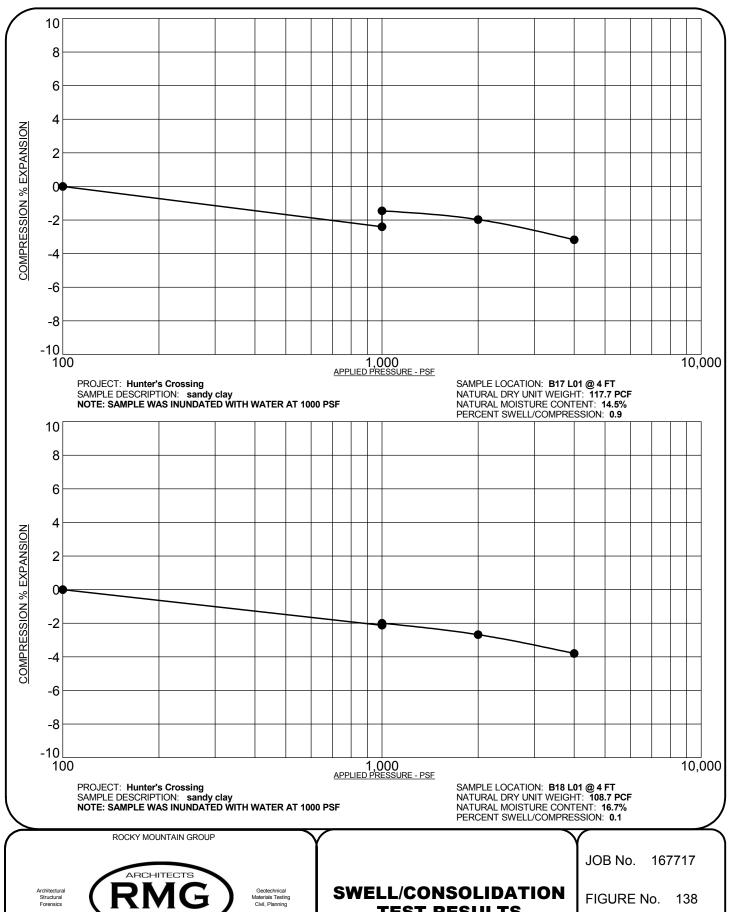




ENGINEERS

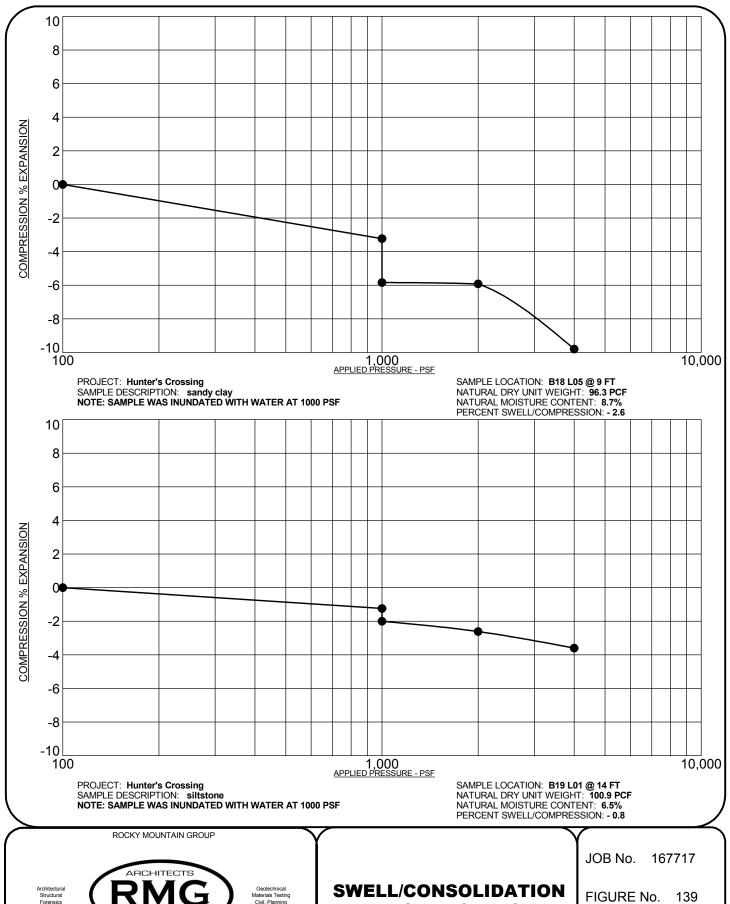
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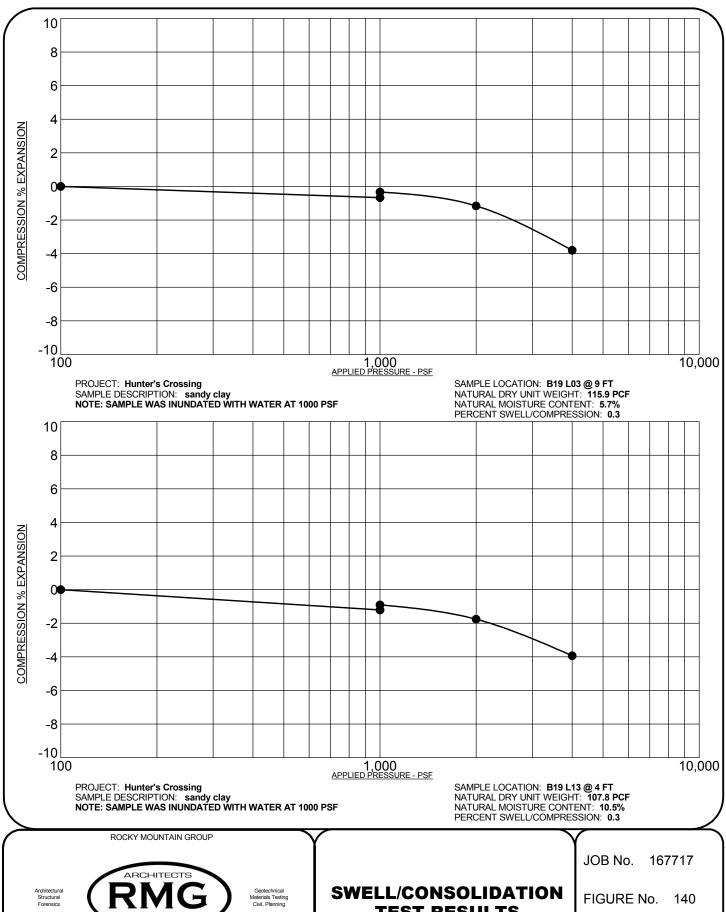


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TEST RESULTS



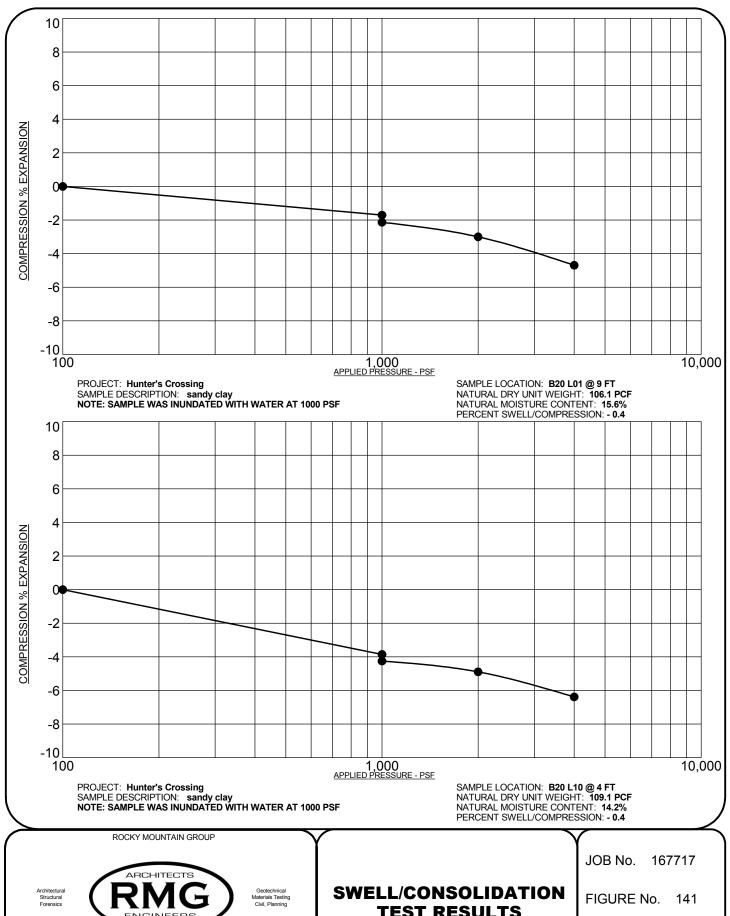




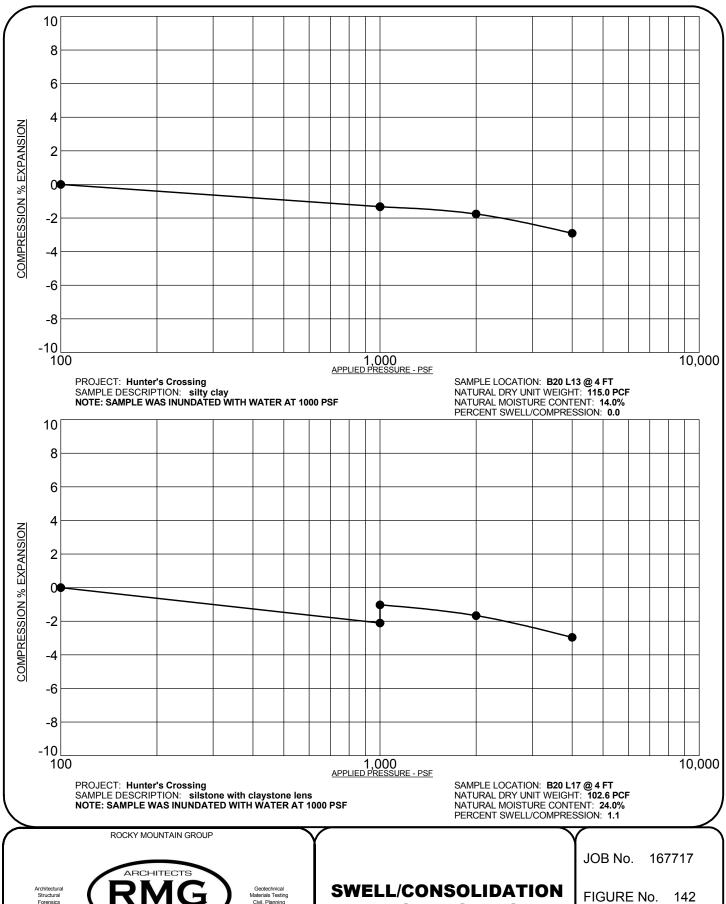


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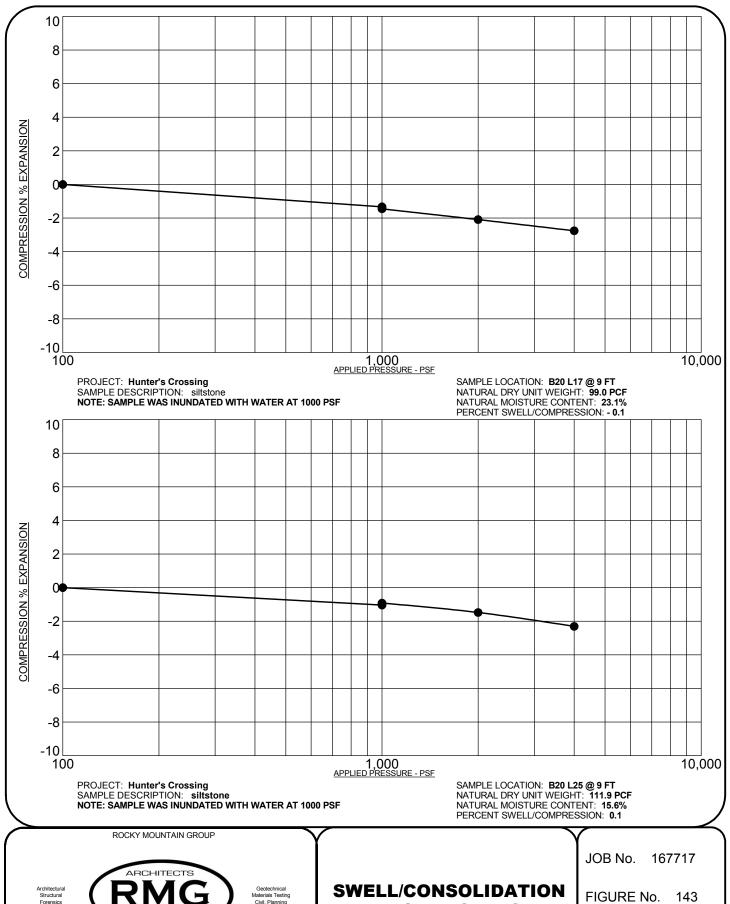




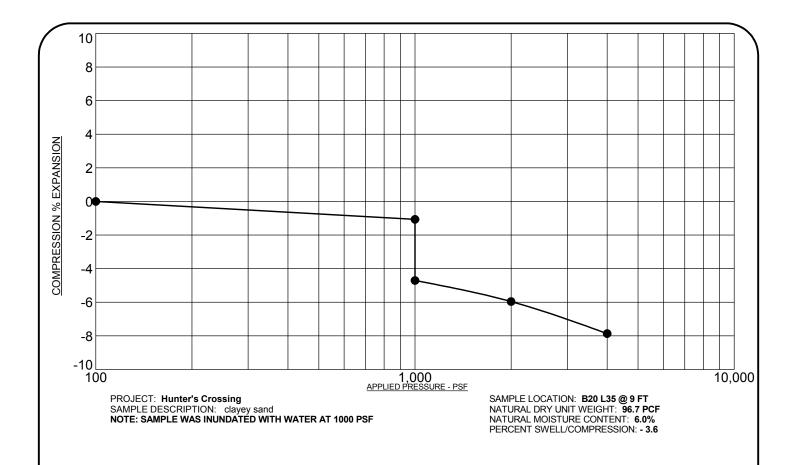


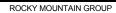
ENGINEERS Colorado Sprinas: (Corporate Office)
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TEST RESULTS









Structural Forensics



Geotechnical Materials Testin Civil, Planning

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SWELL/CONSOLIDATION TEST RESULTS

JOB No. 167717

FIGURE No. 144