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PRELIMINARY SUBSOIL STUDY FOR FOUNDATION DESIGN PROPOSED RESIDENTIAL DEVELOPMENT PARCEL 1, RED MOUNTIAN RANCH U.S. HIGHWAY 6 EAGLE, COLORADO

PROJECT NO. 23-7-513

DECEMBER 21, 2023

PREPARED FOR:

GRIFFIN DEVELOPMENT
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TABLE OF CONTENTS

PURPOSE AND SCOPE OF STUDY

This report presents the results of a preliminary subsoil study for a proposed residential development to be located on Parcel 1, Red Mountain Ranch, U.S. Highway 6, Eagle, Colorado. The project site is shown on Figure 1. The purpose of the study was to develop recommendations for the foundation design. The study was conducted in accordance with our proposal for geotechnical engineering services to Griffin Development dated August 3, 2023.

A field exploration program consisting of exploratory borings was conducted to obtain information on the subsurface conditions. Samples of the subsoils obtained during the field exploration were tested in the laboratory to determine their classification, compressibility or swell and other engineering characteristics. The results of the field exploration and laboratory testing were analyzed to develop recommendations for foundation types, depths and allowable pressures for the proposed building foundation. This report summarizes the data obtained during this study and presents our conclusions, design recommendations and other geotechnical engineering considerations based on the proposed construction and the subsurface conditions encountered.

PROPOSED CONSTRUCTION

The proposed residential development will include multiple single-family, duplex and triplex residences with detached covered parking areas and garages. There will be paved parking and access drives throughout the site. The buildings will include two- and three-story structures. Ground floors will likely be a combination of structural over crawlspace and slab-on-grade. Grading for the structures is assumed to be relatively minor with cut depths between about 3 to 10 feet. We assume relatively light foundation loadings, typical of the proposed type of construction.

If building loadings, location or grading plans change significantly from those described above, we should be notified to re-evaluate the recommendations contained in this report.

SITE CONDITIONS

The subject site was previously excavated as a gravel pit. There were no existing structures on Parcel 1 at the time of our field exploration but there were scattered spoils piles and dump piles left from the gravel pit operations. The ground surface terrain was variable and hilly with a general slope down to the south as indicated by the contour lines shown on Figure 1. Vegetation consists of grass and weeds with sagebrush and scattered trees and brush. The Eagle River flows to the southeast and below the proposed building area.

SUBSIDENCE POTENTIAL

Bedrock of the Pennsylvanian age Eagle Valley Evaporite underlies the subject site. These rocks are a sequence of gypsiferous shale, fine-grained sandstone and siltstone with some massive beds of gypsum and limestone. There is a possibility that massive gypsum deposits associated with the Eagle Valley Evaporite underlie portions of the lot. Dissolution of the gypsum under certain conditions can cause sinkholes to develop and can produce areas of localized subsidence. During previous work in the area, several sinkholes were observed scattered throughout the Gypsum and Eagle areas. These sinkholes appear similar to others associated with the Eagle Valley Evaporite in areas of the Eagle Valley.

Sinkholes were not observed in the immediate area of the subject property. No evidence of cavities was encountered in the subsurface materials; however, the exploratory borings were relatively shallow, for foundation design only. Based on our present knowledge of the subsurface conditions at the site, it cannot be said for certain that sinkholes will not develop. The risk of future ground subsidence on Parcel 1 throughout the service life of the proposed residences, in our opinion, is low; however, the owner should be made aware of the potential for sinkhole development. If further investigation of possible cavities in the bedrock below the site is desired, we should be contacted.

FIELD EXPLORATION

The field exploration for the project was conducted on September 21 and 27, 2023. Nine exploratory borings were drilled at the locations shown on Figure 1 to evaluate the subsurface conditions. The borings were advanced with 4-inch diameter continuous flight augers powered by a track-mounted CME 45 drill rig. The borings were logged by a representative of Kumar & Associates, Inc.

Samples of the subsoils were taken with 1⅜-inch and 2-inch I.D. spoon samplers. The samplers were driven into the subsoils at various depths with blows from a 140-pound hammer falling 30 inches. This test is similar to the standard penetration test described by ASTM Method D-1586. The penetration resistance values are an indication of the relative density or consistency of the subsoils. Depths at which the samples were taken and the penetration resistance values are shown on the Logs of Exploratory Borings, Figure 2. The samples were returned to our laboratory for review by the project engineer and testing.

SUBSURFACE CONDITIONS

Graphic logs of the subsurface conditions encountered at the site are shown on Figure 2. The subsoils consist of about ½ to 10½ feet of gravel, silt and clay mixed fill or topsoil overlying up to 3½ feet of stiff to very stiff, sandy clay. Below the fill or sandy clay, dense, silty sandy gravel and cobbles soil was encountered down to the maximum drilled depth of 16 feet. A layer of loose, sand and silt was encountered below the clay in Boring 5 from 3 feet to 11½ feet deep. Drilling in the coarse granular soils with auger equipment was difficult due to the cobbles and probable boulders and drilling refusal was encountered in the deposit.

Laboratory testing performed on samples obtained from the borings included natural moisture content and density, gradation analyses and Atterberg limits. Results of swell-consolidation testing performed on relatively undisturbed drive samples of the silt and clay soils, presented on Figures 4 and 5, indicate low to moderate compressibility under conditions of loading and wetting. Results of gradation analyses performed on small diameter drive samples (minus 1½-inch fraction) of the coarse granular subsoils are shown on Figure 6. The laboratory testing is summarized in Table 1.

We are in the process of performing corrosion potential evaluation of the onsite soils to buried metal DIP (ductile iron pipe). We will forward our findings when completed under separate cover. Based on our experience in the area, we expect the fine-grained soils at the site will have at least low corrosivity potential to the DIP. Concrete exposed to the on-site soils should contain Type I/II cement and be a relatively rich mix and air entrained, such as the recommended CDOT Class P or D mix.

Free water was encountered in Boring 5 at a depth of 11 feet at the time of drilling. The subsoils were typically slightly moist to moist above the groundwater and in the other borings.

FOUNDATION BEARING CONDITIONS

The fill soils encountered in Borings 1 through 4 and 9 are undocumented, contain debris and are not suitable for support of the proposed buildings or access drives. The upper silt, sand and clay soils possess low bearing capacity and low to moderate settlement potential. The deeper gravel soils possess moderate bearing capacity and typically low settlement potential. The proposed residences can be supported on spread footings bearing on the natural soils. At assumed shallow excavation depths we expect the foundation excavations could expose a variable combination of the upper soils. Spread footings bearing on the upper silt, sand and clay soils will have a risk of foundation settlement primarily if the bearing soils become wetted. A lower risk option would be to extend the bearing level down to the underlying gravel soils by sub-excavating the fine-grained soils to expose the underlying gravel soils or providing a depth of at least 3 feet of compacted structural fill below spread footings. Alternatively, in relatively deep fine-grained soil areas, the bearing level can be extended down to the gravel soils with a deep foundation system such as helical piers. Provided below are recommendations for a spread footing foundation. If a deep foundation system is desired, we should be contacted to provide additional evaluation and recommendations.

DESIGN RECOMMENDATIONS

FOUNDATIONS

Considering the subsurface conditions encountered in the exploratory borings and the nature of the proposed construction, we recommend the buildings be founded with spread footings bearing on the natural soils or compacted structural fill.

The design and construction criteria presented below should be observed for a spread footing foundation system.

1) Footings placed on the undisturbed natural soils should be designed for an allowable bearing pressure of 1,500 psf. Footings placed entirely on the gravel and cobble soils or compacted structural fill can be designed for an allowable bearing pressure of 2,500 psf. Based on experience, we expect settlement of footings designed and constructed as discussed in this section will be about 1 inch or less. Additional post-construction settlement, could occur for footings placed on the upper fine-grained soils. The magnitude of additional settlement would depend on the depth and extent of wetting but could be on the order of 1 inch.
2) The footings should have a minimum width of 18 inches for continuous walls and 2 feet for isolated pads.
3) Exterior footings and footings beneath unheated areas should be provided with adequate soil cover above their bearing elevation for frost protection. Placement of foundations at least 48 inches below exterior grade is typically used in this area.
4) Continuous foundation walls should be well reinforced top and bottom to span local anomalies and better resist differential movement such as by assuming an unsupported length of at least 12 feet. Foundation walls acting as retaining structures should also be designed to resist lateral earth pressures as discussed in the "Foundation and Retaining Walls" section of this report.
5) All existing fill, topsoil and any loose disturbed soils should be removed and the footing bearing level extended down to the relatively firm natural soils. The exposed soils in footing area should then be moistened and compacted. Structural fill below footing areas should extend at least 1½ feet beyond the edges of the footings and be compacted to at least 98% standard Proctor density at a moisture content near optimum.
6) A representative of the geotechnical engineer should observe all footing excavations and test structural fill for compaction on a regular basis prior to concrete placement to evaluate bearing conditions.

FOUNDATION AND RETAINING WALLS

Foundation walls and retaining structures which are laterally supported and can be expected to undergo only a slight amount of deflection should be designed for a lateral earth pressure computed on the basis of an equivalent fluid unit weight of at least 50 pcf for backfill consisting of the on-site granular soils. Cantilevered retaining structures which are separate from the buildings and can be expected to deflect sufficiently to mobilize the full active earth pressure condition should be designed for a lateral earth pressure computed on the basis of an equivalent fluid unit weight of at least 40 pcf for backfill consisting of the on-site granular soils. Backfill should not contain debris, organics, topsoil or rock larger than about 6 inches.

All foundation and retaining structures should be designed for appropriate hydrostatic and surcharge pressures such as adjacent footings, traffic, construction materials and equipment. The pressures recommended above assume drained conditions behind the walls and a horizontal backfill surface. The buildup of water behind a wall or an upward sloping backfill surface will increase the lateral pressure imposed on a foundation wall or retaining structure. An underdrain should be provided to prevent hydrostatic pressure buildup behind walls.

Backfill should be placed in uniform lifts and compacted to at least 90% of the maximum standard Proctor density at a moisture content near optimum. Backfill placed in pavement and walkway areas should be compacted to at least 95% of the maximum standard Proctor density. Care should be taken not to overcompact the backfill or use large equipment near the wall, since this could cause excessive lateral pressure on the wall. Some settlement of deep foundation wall backfill should be expected, even if the material is placed correctly, and could result in distress to facilities constructed on the backfill.

The lateral resistance of foundation or retaining wall footings will be a combination of the sliding resistance of the footing on the foundation materials and passive earth pressure against the side of the footing. Resistance to sliding at the bottoms of the footings can be calculated based on a coefficient of friction of 0.35 for fine-grained soils and 0.50 for granular soils. Passive pressure of compacted backfill against the sides of the footings can be calculated using an equivalent fluid unit weight of 375 pcf. The coefficient of friction and passive pressure values recommended above assume ultimate soil strength. Suitable factors of safety should be included in the design to limit the strain which will occur at the ultimate strength, particularly in the case of passive resistance. Fill placed against the sides of the footings to resist lateral loads should be a granular material compacted to at least 95% of the maximum standard Proctor density at a moisture content near optimum.

FLOOR SLABS

The natural on-site soils, exclusive of topsoil, are suitable to support lightly loaded slab-on-grade construction. To reduce the effects of some differential movement, floor slabs should be separated from all bearing walls and columns with expansion joints which allow unrestrained vertical movement. Floor slab control joints should be used to reduce damage due to shrinkage cracking. The requirements for joint spacing and slab reinforcement should be established by the designer based on experience and the intended slab use. A minimum 4-inch layer of relatively free draining gravel should be placed beneath basement slabs-on-grade to facilitate drainage. This material should consist of minus 2-inch aggregate with at least 50% retained on the No. 4 sieve and less than 2% passing the No. 200 sieve.

All fill materials for support of floor slabs should be compacted to at least 95% of maximum standard Proctor density at a moisture content near optimum. Required fill can consist of the on-site granular soils devoid of vegetation, topsoil and oversized rock.

UNDERDRAIN SYSTEM

Although free water encountered during our field exploration was deeper than the assumed lowest finish grade, it has been our experience in the area and where clay soils are present that local perched groundwater can develop during times of heavy precipitation or seasonal runoff. Frozen ground during spring runoff can create a perched condition. We recommend below-grade construction, such as retaining walls, crawlspaces and basement areas, be protected from wetting and hydrostatic pressure buildup by an underdrain system.

Where installed, the drains should consist of rigid perforated PVC drainpipe placed in the bottom of the wall backfill surrounded above the invert level with free-draining granular material. The drain should be placed at each level of excavation and at least 1 foot below lowest adjacent finish grade and sloped at a minimum ½% to a suitable gravity outlet. Free-draining granular material used in the underdrain system should contain less than 2% passing the No. 200 sieve, less than 50% passing the No. 4 sieve and have a maximum size of 2 inches. The drain gravel backfill should be at least 1½ feet deep and covered with filter fabric such as Mirafi 140N or 160N.

SITE GRADING

The risk of construction-induced slope instability at the site appears low provided the buildings are located away from steep slopes and cut and fill depths are limited. We assume the cut depths will not exceed one level, about 8 feet. Fills should be limited to about 8 to 10 feet deep, especially where the slope steepens. Embankment fills should be compacted to at least 95% of the maximum standard Proctor density near optimum moisture content. Prior to fill placement, the subgrade should be carefully prepared by removing all vegetation and topsoil and compacting to at least 95% of the maximum standard Proctor density. The fill should be benched into the portions of the hillside exceeding 20% grade.

Permanent unretained cut and fill slopes should be graded at 2 horizontal to 1 vertical or flatter and protected against erosion by revegetation or other means. The risk of slope instability will be increased if seepage is encountered in cuts and flatter slopes may be necessary. If seepage is encountered in permanent cuts, an investigation should be conducted to determine if the seepage will adversely affect the cut stability. This office should review site grading plans for the project prior to construction.

PAVEMENT DESIGN RECOMMENDATIONS

A pavement section is designed to distribute concentrated traffic loads to the subgrade. Pavement design procedures are based on strength properties of the subgrade and pavement materials assuming stable, uniform subgrade conditions. Certain soils, such as the fine-grained soils encountered in some of the borings, are frost susceptible and could impact pavement performance. Frost susceptible soils are problematic when there is a free water source. If those soils are wetted, the resulting frost heave movements can be large and erratic. Therefore, pavement design procedures assume dry subgrade conditions by providing proper surface and subsurface drainage.

The fine-grained soils encountered at the site are mainly low plasticity sandy silts and clays which are considered a poor support for pavement materials. For design purposes, the soil support value of the subgrade was selected based on an Hveem 'R' value of 10 for flexible (asphalt) pavements and a modulus of subgrade reaction of 50 pci was selected for rigid (portland cement) pavements. The fine-grained soils are considered moderately susceptible to frost action.

Since anticipated traffic loading information was not available at the time of report preparation, an 18 kip equivalent daily load application (EDLA) of 20 was assumed for combined automobile and truck traffic areas. This loading is typical of a residential street and should be checked by the project civil engineer. A Regional Factor of 2.0 was assumed for this area of Eagle County based on the site terrain, drainage and climatic conditions.

Based on the assumed parameters, the pavement section in areas of combined automobile and truck traffic should consist of 12 inches of high-quality base course and 4 inches of asphalt surface. Alternatively, the pavement section can consist of 10 inches of a suitable granular sub-base, 6 inches of high-quality base course and 3 inches of asphalt. An alternate full-depth asphalt section of 8 inches can be used.

As an alternative to asphalt pavement and in areas where truck turning movements are concentrated, the pavement section can consist of 6 inches of portland cement concrete on 4 inches of base course.

The above pavement section thickness recommendations are based on the assumption that the subgrade consists of the on-site fine-grained soils. In areas where the subgrade consists of the natural gravel soils (minimum “R” value of 30), the pavement section can consist of 4 inches of asphalt and 8 inches of aggregate base course or 6 inches of portland cement concrete on 4 inches of base course.

The section thicknesses assume structural coefficients of 0.12 for aggregate base course, 0.40 for asphalt surface and design strength of 4,500 psi for portland cement concrete. The material properties and compaction should be in accordance with the project specifications.

Prior to placing the pavement section, the entire subgrade area should be scarified to a depth of 8 inches, adjusted to a moisture content near optimum and compacted to at least 95% of the maximum standard Proctor density. The pavement subgrade should be proofrolled with a heavily loaded pneumatic-tired vehicle. Pavement design procedures assume a stable subgrade. Areas which deform excessively under heavy wheel loads are not stable and should be removed and replaced to achieve a stable subgrade prior to paving.

The collection and diversion of surface drainage away from paved areas is extremely important to the satisfactory performance of pavement. Drainage design should provide for the removal of water from paved areas and prevent wetting of the subgrade soils. Uphill roadside ditches should have an invert level at least 1 foot below the road base.

SURFACE DRAINAGE

The following drainage precautions should be observed during construction and maintained at all times after the buildings have been completed:

1) Inundation of the foundation excavations and underslab areas should be avoided during construction.
2) Exterior backfill should be adjusted to near optimum moisture and compacted to at least 95% of the maximum standard Proctor density in pavement and slab areas and to at least 90% of the maximum standard Proctor density in landscape areas.
3) The ground surface surrounding the exterior of the building should be sloped to drain away from the foundation in all directions. We recommend a minimum slope of 12 inches in the first 10 feet in unpaved areas and a minimum slope of 3 inches in the first 10 feet in paved areas. Free-draining wall backfill should be covered with filter fabric and capped with about 2 feet of the on-site finer graded soils to reduce surface water infiltration.
4) Roof downspouts and drains should discharge well beyond the limits of all backfill.
5) Landscaping which requires regular heavy irrigation should be located at least 10 feet from foundation walls.

LIMITATIONS

This study has been conducted in accordance with generally accepted geotechnical engineering principles and practices in this area at this time. We make no warranty either express or implied. The conclusions and recommendations submitted in this report are based upon the data obtained from the exploratory borings drilled at the locations indicated on Figure 1, the proposed type of construction and our experience in the area. Our services do not include determining the presence, prevention or possibility of mold or other biological contaminants (MOBC) developing in the future. If the client is concerned about MOBC, then a professional in this special field of practice should be consulted. Our findings include interpolation and extrapolation of the subsurface conditions identified at the exploratory borings and variations in the subsurface conditions may not become evident until excavation is performed. If conditions encountered during construction appear different from those described in this report, we should be notified so that re-evaluation of the recommendations may be made.

This report has been prepared for the exclusive use by our client for planning and preliminary design purposes. We are not responsible for technical interpretations by others of our information. As the project evolves, we should provide continued consultation and field services during construction to review and monitor the implementation of our recommendations, and to verify that the recommendations have been appropriately interpreted. Significant design changes may require additional analysis or modifications to the recommendations presented herein. We recommend on-site observation of excavations and foundation bearing strata and testing of structural fill by a representative of the geotechnical engineer.

Respectfully Submitted,

Kumar & Associates, Inc.

COLORADO REGISTERED JAMES H. PARSONS 58663 12/22/23 PROFESSIONAL ENGINEER

James H. Parsons, P.E.

Reviewed by:

Steven L. Pawlak, P.E.

JHP/kac

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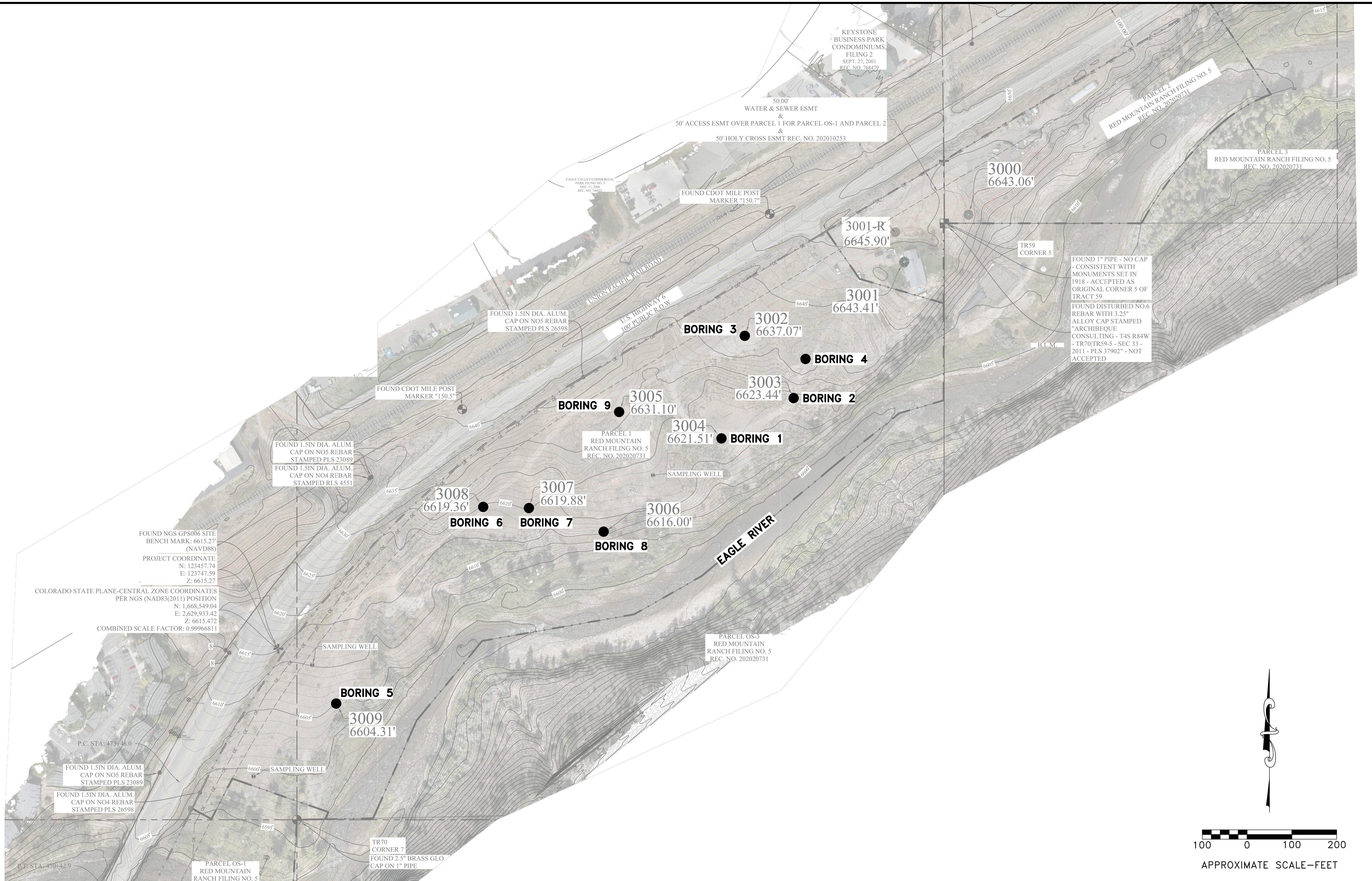

23-7-513	Kumar & Associates	PARCEL 1, RED MOUNTAIN RANCH	LOCATION OF EXPLORATORY BORINGS	Fig. 1

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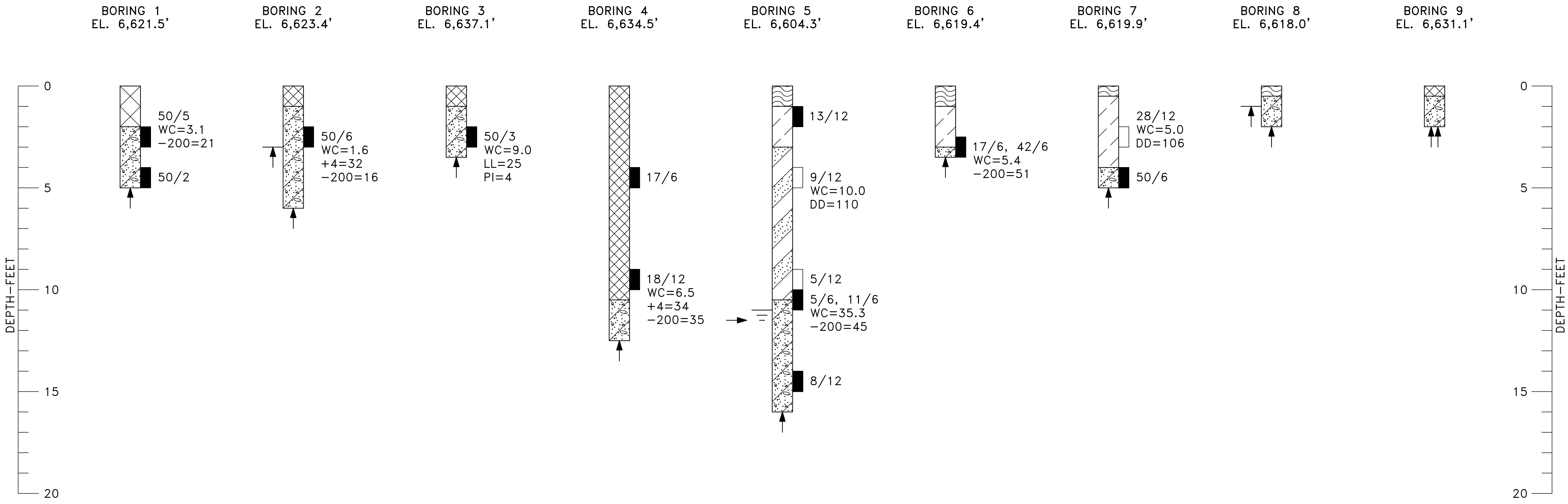

23−7−513	Kumar & Associates	PARCEL 1, RED MOUNTAIN RANCH	LOGS OF EXPLORATORY BORINGS	Fig. 2

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LEGEND

FILL: SILTY SANDY GRAVEL, ROOT ZONE AT SURFACE, MEDIUM DENSE, SLIGHTLY MOIST, GRAY AND BROWN.

FILL: MIXED SANDY SILT AND CLAY WITH GRAVEL, SCATTERED COBBLES, FIRM, SLIGHTLY MOIST, MIXED BROWN, ORGANICS.

TOPSOIL; ORGANIC SANDY SILT AND CLAY, FIRM, SLIGHTLY MOIST, DARK BROWN.

CLAY (CL); SILTY, SANDY, STIFF TO VERY STIFF, SLIGHTLY MOIST, BROWN, LOW PLASTICITY.

SAND (SM-ML); SILTY TO VERY SILTY, SLIGHTLY CLAYEY, SCATTERED GRAVEL, LOOSE, MOIST TO WET WITH DEPTH, MIXED BROWN AND RED-BROWN.

GRAVEL AND COBBLES (GM); WITH BOULDERS, SANDY, SILTY, OCCASIONALLY CLAYEY, DENSE, SLIGHTLY MOIST, LIGHT BROWN. WET AT BORING 5 WITH SILTY SAND LAYERS.

DRIVE SAMPLE, 2-INCH I.D. CALIFORNIA LINER SAMPLE.

DRIVE SAMPLE, 1 3/8-INCH I.D. SPLIT SPOON STANDARD PENETRATION TEST.

50/5 DRIVE SAMPLE BLOW COUNT. INDICATES THAT 50 BLOWS OF A 140-POUND HAMMER FALLING 30 INCHES WERE REQUIRED TO DRIVE THE SAMPLER 5 INCHES.

DEPTH TO WATER LEVEL ENCOUNTERED AT THE TIME OF DRILLING.

DEPTH AT WHICH BORING CAVED IMMEDIATELY AFTER DRILLING.

PRACTICAL AUGER REFUSAL. WHERE SHOWN ABOVE BOTTOM OF BORING, INDICATES THAT MULTIPLE ATTEMPTS WHERE MADE TO ADVANCE THE HOLE.

NOTES

1. THE EXPLORATORY BORINGS WERE DRILLED ON SEPTEMBER 21 AND 27, 2023 WITH A 4-INCH-DIAMETER CONTINUOUS-FLIGHT POWER AUGER.

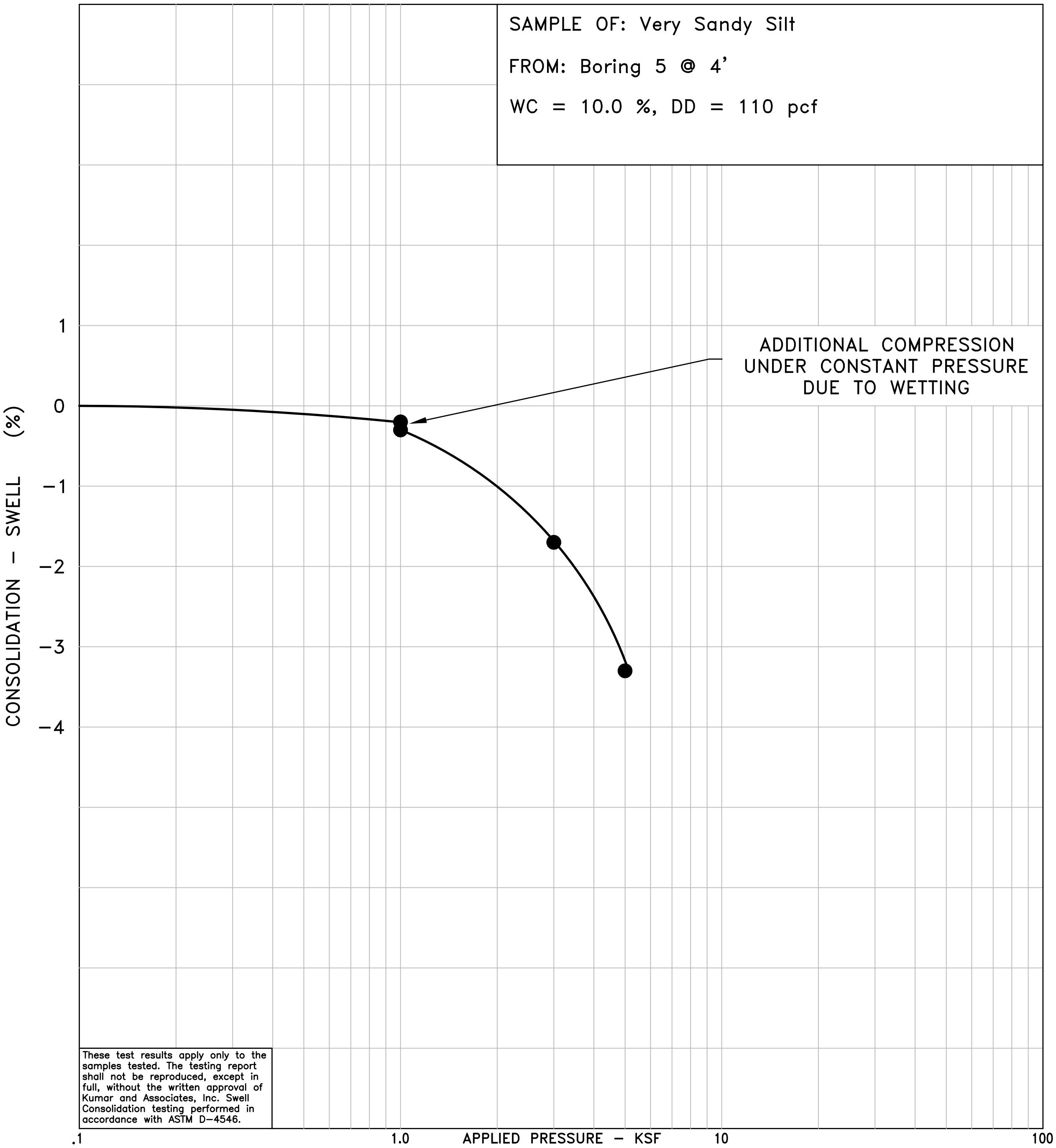
2. BORING LOCATIONS AND ELEVATIONS PROVIDED BY THE CLIENT, EXCEPT FOR BORINGS 2 AND 4 WHICH WERE MOVED FROM FIELD STAKE AND LOCATIONS AND ELEVATIONS APPROXIMATED FROM CONTOURS ON THE PLAN PROVIDED.

3. THE EXPLORATORY BORING LOCATIONS AND ELEVATIONS SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED.

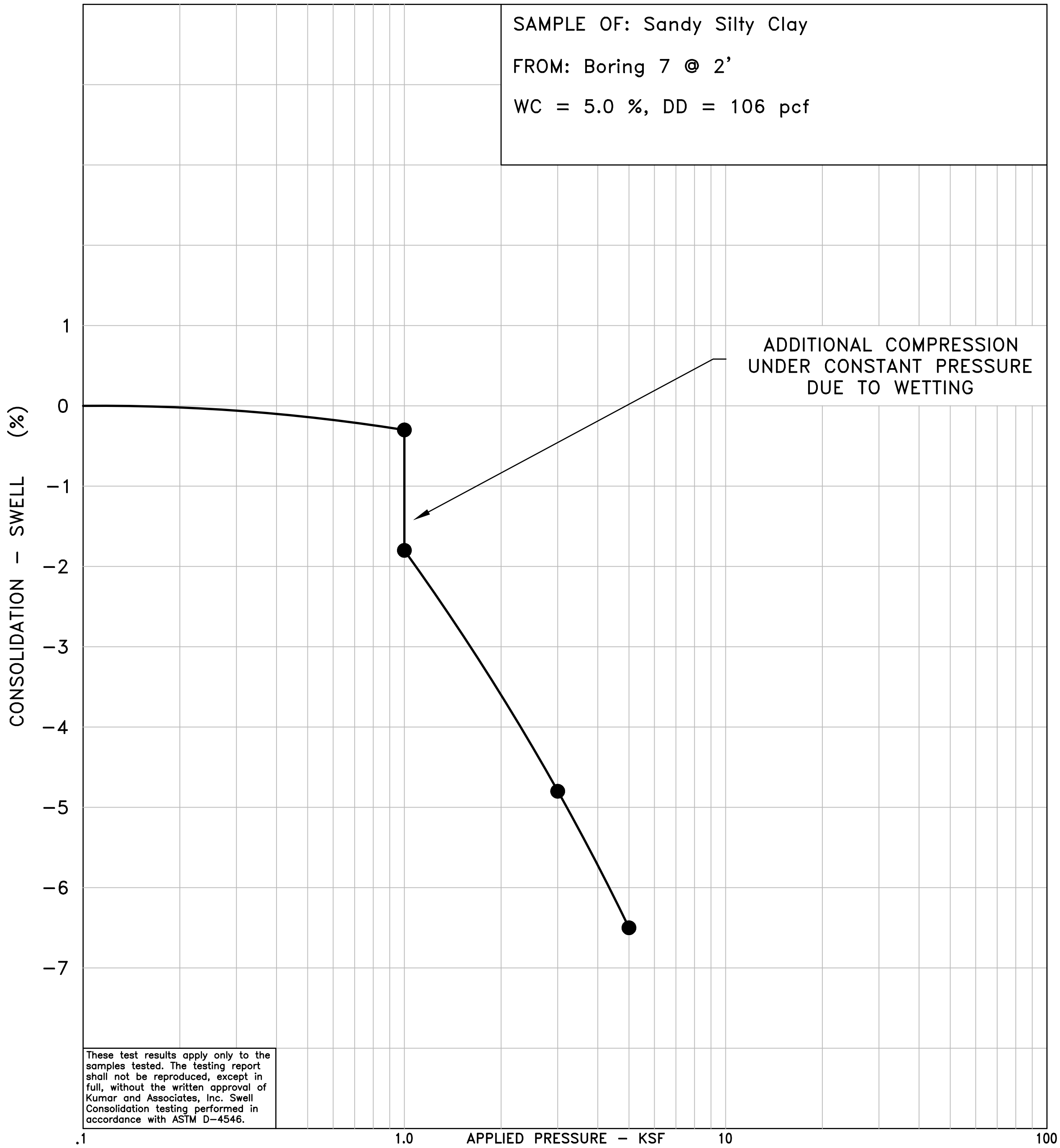
4. THE LINES BETWEEN MATERIALS SHOWN ON THE EXPLORATORY BORING LOGS REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN MATERIAL TYPES AND THE TRANSITIONS MAY BE GRADUAL.

5. GROUNDWATER WAS NOT ENCOUNTERED IN THE BORINGS AT THE TIME OF DRILLING EXCEPT FOR BORING 5. FLUCTUATIONS IN THE WATER LEVEL MAY OCCUR WITH TIME.

6. LABORATORY TEST RESULTS:
   WC = WATER CONTENT (%) (ASTM D2216);
   DD = DRY DENSITY (pcf) (ASTM D2216);
   +4 = PERCENTAGE RETAINED ON NO. 4 SIEVE (ASTM D6913);
   -200= PERCENTAGE PASSING NO. 200 SIEVE (ASTM D1140);
   LL = LIQUID LIMIT (ASTM D4318);
   PI = PLASTICITY INDEX (ASTM D4318).



23-7-513	Kumar & Associates	SWELL-CONSOLIDATION TEST RESULTS	Fig. 4



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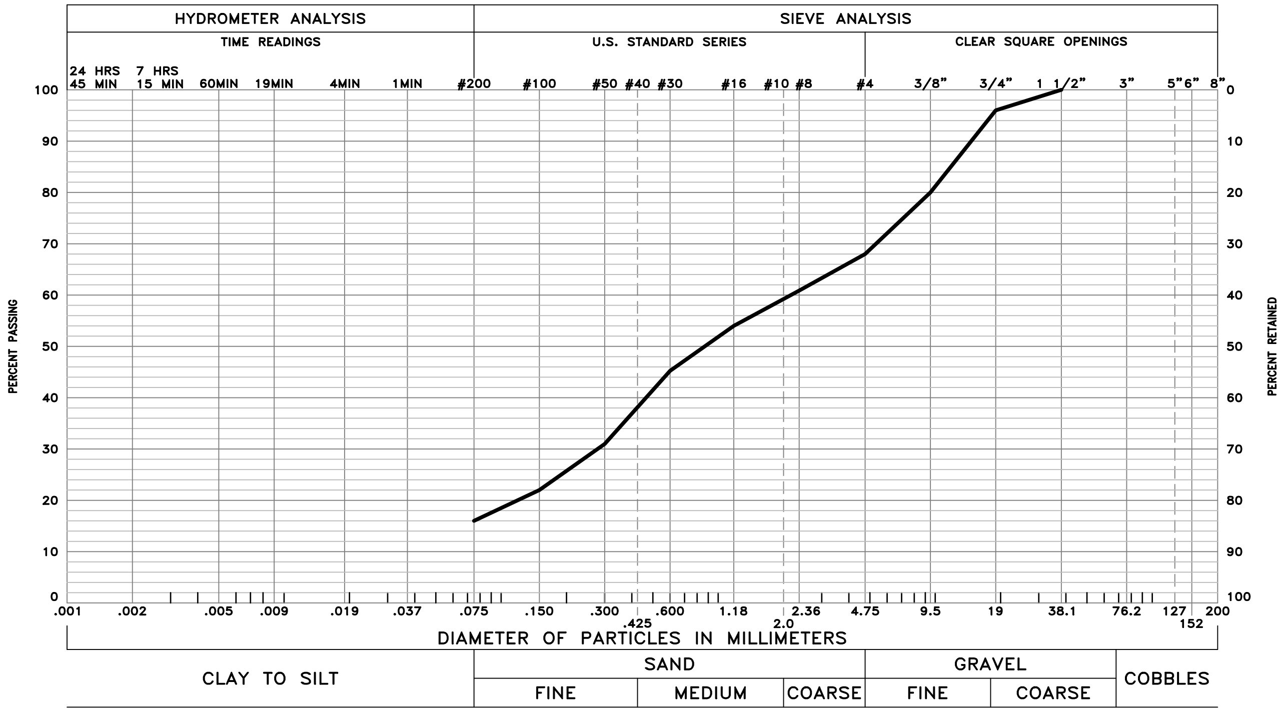
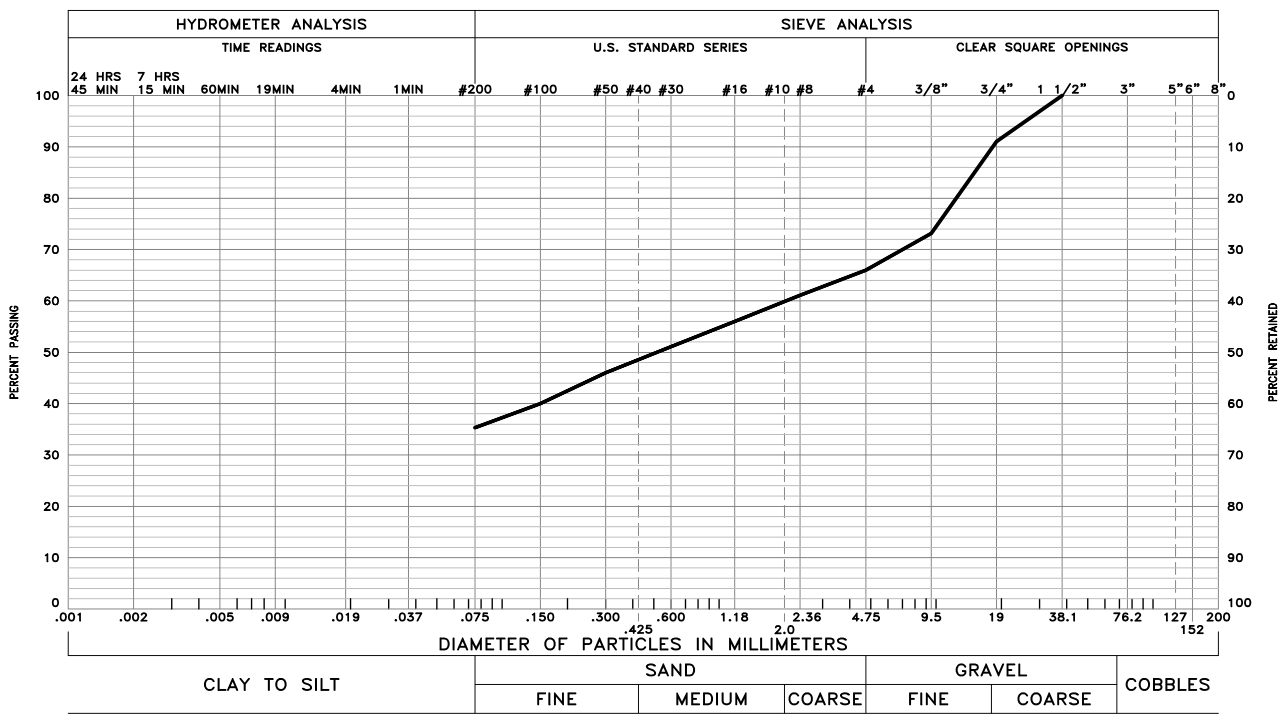
23-7-513	Kumar & Associates	SWELL-CONSOLIDATION TEST RESULTS	Fig. 5



GRAVEL 32 % SAND 52 % SILT AND CLAY 16 %

LIQUID LIMIT – PLASTICITY INDEX –

SAMPLE OF: Silty Sand and Gravel FROM: Boring 2 @ 2'



GRAVEL 34 % SAND 31 % SILT AND CLAY 35 %

LIQUID LIMIT – PLASTICITY INDEX –

SAMPLE OF: Silty Sand and Gravel (Fill) FROM: Boring 4 @ 9'

These test results apply only to the samples which were tested. The testing report shall not be reproduced, except in full, without the written approval of Kumar & Associates, Inc. Sieve analysis testing is performed in accordance with ASTM D6913, ASTM D7928, ASTM C136 and/or ASTM D1140.

23–7–513	Kumar & Associates	GRADATION TEST RESULTS	Fig. 6

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TABLE 1
SUMMARY OF LABORATORY TEST RESULTS

Project No. 23-7-513

SAMPLE LOCATION		NATURAL MOISTURE CONTENT	NATURAL DRY DENSITY	GRADATION		PERCENT PASSING NO. 200 SIEVE	ATTERBERG LIMITS		UNCONFINED COMPRESSIVE STRENGTH		SOIL TYPE
BORING	DEPTH (ft)	(%)	(pcf)	GRAVEL (%)	SAND (%)		LIQUID LIMIT (%)	PLASTIC INDEX (%)	(psf)		
1	2	3.1				21					Silty Sandy Gravel
2	2	1.6		32	52	16					Silty Sand and Gravel
3	2	9.0					25	4			Silty Clayey Sand and Gravel
4	9	6.5		34	31	35					Silty Sand and Gravel (Fill)
5	4	10.0	110								Very Sandy Silt
	10	35.3				45					Very Silty Clayey Sand
6	2½	5.4				51					Very Sandy Silty Clay
7	2	5.0	106								Sandy Silty Clay