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and Environmental Scientists

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SUBSOIL STUDY
FOR FOUNDATION DESIGN
PROPOSED BUILDING 11
LOT 5, BASE VILLAGE
WOOD ROAD
SNOWMASS VILLAGE, COLORADO

PROJECT NO. 19-7-406.01

JUNE 11, 2020

PREPARED FOR:

SV BUILDING 11 DEVELOPMENT, LLC
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SNOWMASS VILLAGE, COLORADO 81615
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PURPOSE AND SCOPE OF STUDY

This report presents the results of a subsoil study for proposed Building 11 to be located on Lot 5, Base Village, Wood Road, Snowmass Village, 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 SV Building Development, LLC dated May 13, 2020. The findings of a previous subsoil study conducted for the proposed development, report dated October 14, 2019 have been incorporated into the current study.

A field exploration program consisting of exploratory borings was conducted to obtain information on the subsurface conditions. Samples of the subsoils and bedrock obtained during the field exploration were tested in the laboratory to determine their classification 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 development will consist of a six-story, mixed-use residential structure and swimming pool and grill area, located as shown on Figure 1. A single level underground parking garage is proposed below the building with a second partial lower level of mixed use below the western part of the building area. Ground floors could be structural over crawlspace or slab-on-grade. Grading for the structure is assumed to be moderate with cut depths between about 10 to 15 feet. We assume moderate to relatively heavy foundation loadings for 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 project site was being utilized as a storage yard and parking area for current construction at the base village. The ground surface slope is somewhat irregular and generally down to the northwest at a grade of between 5 and 10% then relatively steep at the northwest side. The ground surface is generally barren of vegetation due to the use as a parking and storage area.

FIELD EXPLORATION

Exploratory borings were drilled at the approximate locations shown on Figure 1 to evaluate the subsurface conditions at the project site. Five exploratory borings were initially drilled on July 30, 2019. Four additional exploratory borings were drilled on May 20, 2020. The borings were advanced with 4-inch diameter continuous flight augers powered by a truck-mounted CME-45B 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 and hardness of the bedrock. Depths at which the samples were taken and the penetration resistance values are shown on the Logs of Exploratory Borings, Figures 2 and 3. 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 Figures 2 and 3. The subsoils consist of between about 6 and 15 feet of various type fill soils typically overlying variable depths of dense, clayey gravel and cobbles. Claystone bedrock was encountered in the borings at depths between about 12 and 26 feet. Occasional layers of very stiff, sandy clay and stiff clay with shale fragments were encountered. The fill soils varied in type and density and contained some organics and debris. Drilling in the coarse granular soils with auger equipment was difficult due to the cobbles and possible boulders and drilling refusal was encountered in the deposit at Boring 1.

Laboratory testing performed on samples obtained from the borings included natural moisture content and density, gradation analyses and liquid and plastic limits. Swell-consolidation testing performed on a relatively undisturbed clay sample, shown on Figure 5 indicated a minor expansion potential when wetted under light loading. Results of gradation analyses performed on small diameter drive samples (minus 1½ to 2-inch fraction) of the fill and natural coarse granular soils are shown on Figures 6, 7 and 8. The liquid and plastic limits testing indicate the fine fraction of the soils have medium plasticity. The laboratory test results are summarized in Table 1. Temperature of each sample was taken immediately following removal from Borings 6 throught 9 and the measurements are presented in Table 2.

No free water was encountered in the borings at the time of drilling and the subsoils were generally slightly moist to moist with localized higher moisture fill soils. When checked 6 days following drilling, Boring 8 had a minor depth of water at about 18 feet below ground surface. Free water has been encountered in previous borings at this site and at other nearby areas typical of perched groundwater on or near the top of bedrock.

FOUNDATION BEARING CONDITIONS

The natural soils and bedrock encountered at the site are typically adequate for support of moderately loaded spread footings with low settlement potential. The existing fill soil types, depths and compaction are undocumented and based on our findings are unsuitable for foundation support due to high risk of excessive building movements. Some of the natural clay soils may possess expansion potential warranting mitigation such a sub-excavation and replacement with structural fill if encountered. Presence of expansive clay soils and suitability of the existing fill to support slabs-on-grade, site retaining walls and pavements should be evaluated at the time of construction. It appears most of the existing fill that is free of organics, debris and oversize rock can be used as structural fill but should be further evaluated at the time of construction.

Moderate depth excavations are proposed for the two below grade levels and swimming pool. Additional excavation depth could be needed to remove the existing fill and topsoil if encountered. Replacement of the sub-excavated materials with compacted structural fill up to a maximum depth of about 5 feet below foundation bearing level should be suitable for building support. As an alternative, a deep foundation such as drilled piers that extend down into bedrock could be used to achieve high load capacity with low settlement potential. An IBC seismic Site Class C can be used in the building design for the dense soil and firm bedrock conditions encountered at the site.

DESIGN RECOMMENDATIONS

FOUNDATIONS

Considering the subsurface conditions encountered in the exploratory borings and the nature of the proposed construction, we recommend the building be founded with spread footings bearing on the natural, predominantly granular soils, claystone bedrock or up to 5 feet of compacted structural fill. If a deep foundation is proposed, we should be contacted for additional recommendations.

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

1) Footings placed on the undisturbed natural granular soils, bedrock or compacted structural fill should be designed for an allowable bearing pressure of 4,000 psf. A one-third increase in the allowable soil bearing pressure can be taken for eccentrically loaded footings with the resultant force in the middle third of the footing section. Mat/structural slab foundations proposed below stair towers can be designed for a subgrade modulus of 150 tsf. Based on experience, we expect settlement of footings designed and constructed as discussed in this section will be about 1 inch or less.
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 42 inches below exterior grade is typically used in this area.
4) Continuous foundation walls should be reinforced top and bottom to span local anomalies 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, clay soil layers and any loose disturbed soils should be removed and the footing bearing level extended down to the relatively dense natural granular soils or bedrock. The exposed soils in footing area should then be moistened and compacted. If water seepage is encountered, the footing areas should be dewatered before concrete placement. Structural fill should consist of granular soils compacted to at least 100% of standard Proctor density at near optimum moisture content and extend beyond the footing edges a distance at least equal to one-half the depth of fill below the footing. The depth of structural fill below footings should be limited to about 5 feet.

6) A representative of the geotechnical engineer should observe all footing excavations 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 predominantly granular soils. Cantilevered retaining structures which are separate from the structures 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 predominantly granular soils. Backfill should not contrain organics, debris 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. Backfilling walls with an imported, relatively well graded granular soil such as road base and compaction to at least 98% of standard Proctor density will help to reduce the settlement risk.

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 0.45. Passive pressure of compacted backfill against the sides of the footings can be calculated using an equivalent fluid unit weight of 400 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 granular soils, exclusive of topsoil, are suitable to support lightly loaded slab-on-grade construction. Existing fill and clay soils could possess variable settlement/heave potential and should be further evaluated as slab support at the time of 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 free-draining gravel should be placed beneath basement level slabs to facilitate drainage and should be connected to the perimeter foundation drain. 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.

We recommend vapor retarders conform to at least the minimum requirements of ASTM E1745 Class C material. Certain floor types are more sensitive to water vapor transmission than others. For floor slabs bearing on angular gravel or where flooring system sensitive to water vapor transmission are utilized, we recommend a vapor barrier be utilized conforming to the minimum requirements of ASTM E1745 Class A material. The vapor retarder should be installed in accordance with the manufacturers' recommendations and ASTM E1643.

UNDERDRAIN SYSTEM

Although free water was not encountered during our exploration, it has been our experience in the Snowmass Base Village area 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, crawlspace and basement areas, be protected from wetting and hydrostatic pressure buildup by an underdrain system. If the pool is constructed on-grade, a minimum 6-inch deep layer of drain gravel should underlie the bottom slab and connect to the perimeter underdrain.

The drains should consist of rigid PVC slotted 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.

SITE GRADING

The risk of construction-induced slope instability at the site appears low provided cut and fill depths are limited and the cut slopes are laid back to a stable grade. We assume the cut depths for the parking garage level will not exceed one level, about 10 to 15 feet. Fills should be limited to about 8 to 10 feet deep. 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.

Permanent unretained cut and fill slopes should be graded at 2½ 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.

SURFACE DRAINAGE

The following drainage precautions should be observed during construction and maintained at all times after the construction has 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 6 inches in the first 10 feet in unpaved areas and a minimum slope of 2½ inches in the first 10 feet in paved areas. Free-draining wall backfill should be covered with filter fabric and capped with at least 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 5 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 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 STEVEN L. PAWLAK 15222 6/12/20 PROFESSIONAL ENGINEER

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Reviewed by:

Daniel E. Hardin, P.E.

SLP/kac

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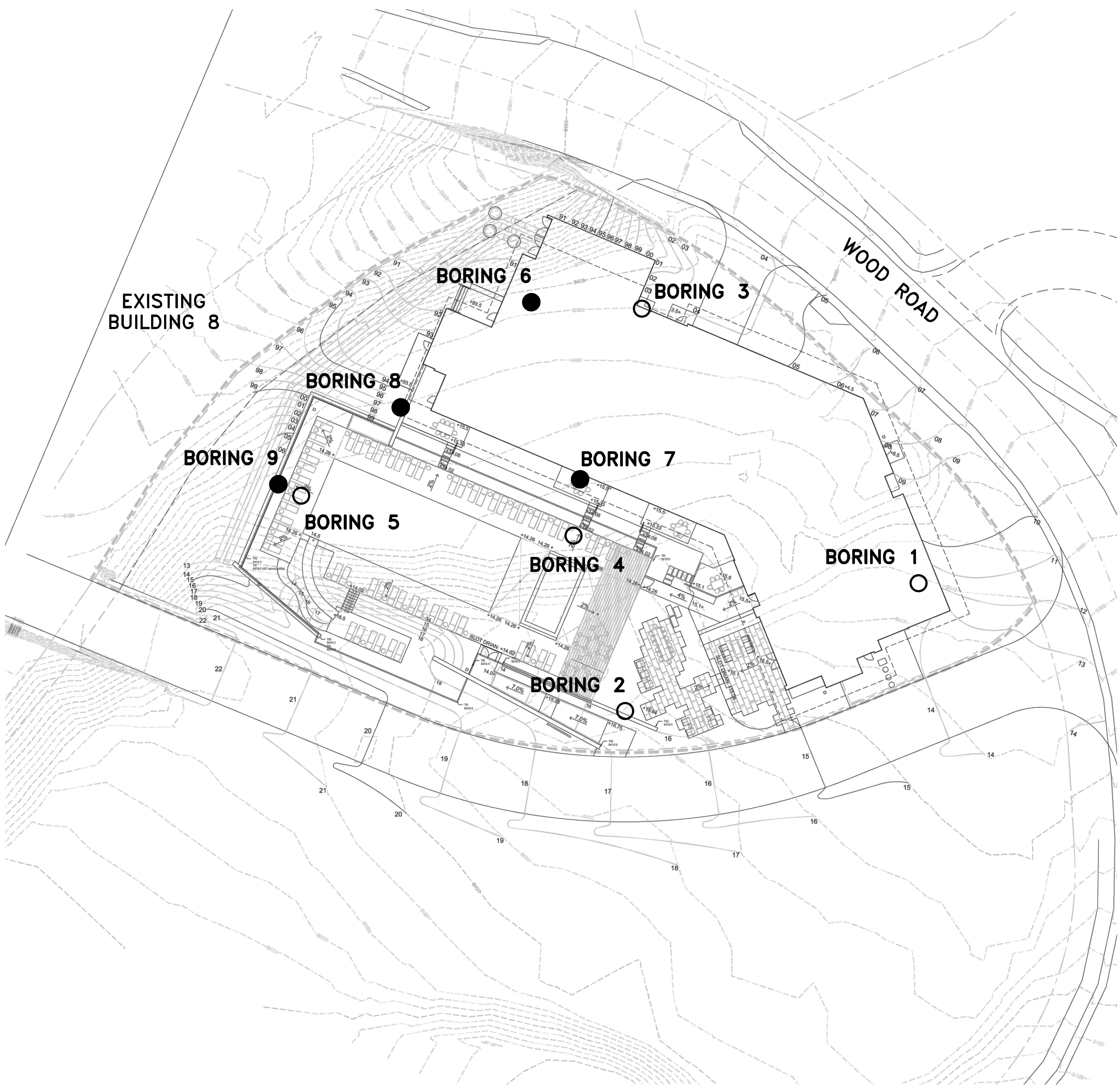

LEGEND:

○ BORINGS FOR PREVIOUS STUDY, OCTOBER 14, 2019, PROJECT NO. 19-7-406.

● BORINGS FOR CURRENT STUDY.

30 0 30 60

APPROXIMATE SCALE—FEET

19-7-406.01	Kumar & Associates	LOCATION OF EXPLORATORY BORINGS	Fig. 1

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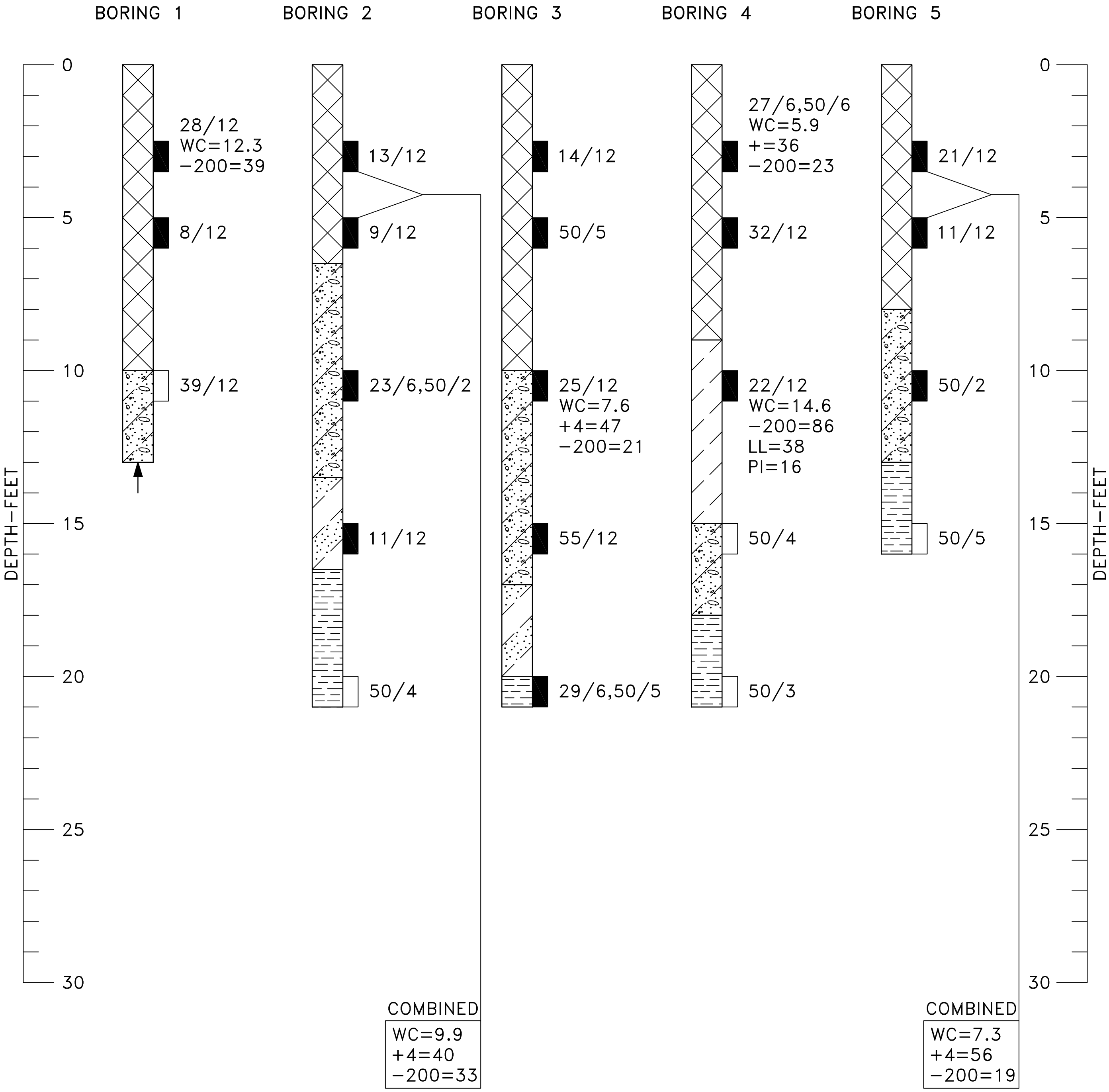
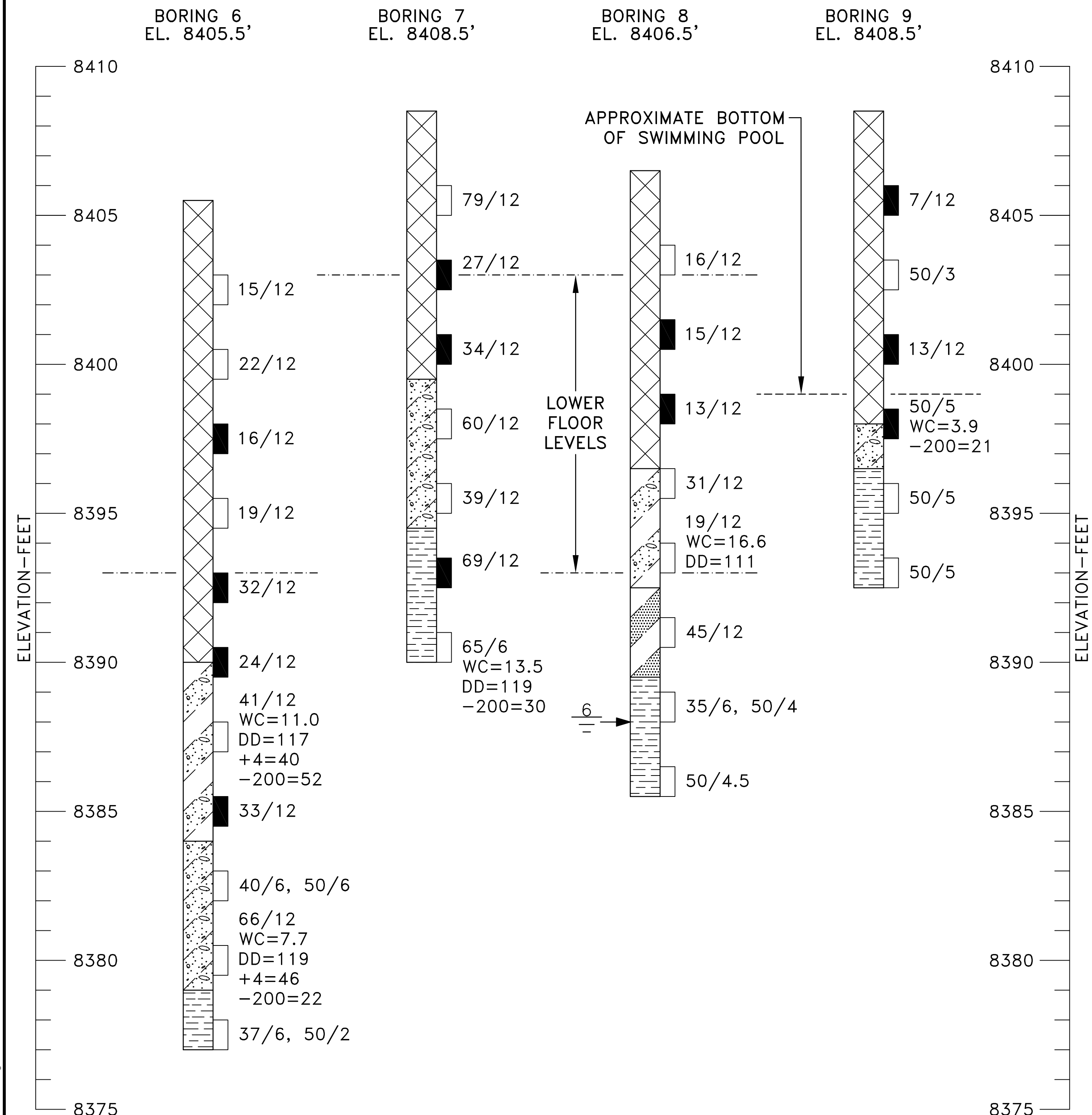


19-7-406.01	Kumar & Associates	LOGS OF EXPLORATORY BORINGS	Fig. 2



19−7−406.01	Kumar & Associates	LOGS OF EXPLORATORY BORINGS	Fig. 3

LEGEND

FILL; MIXED SANDY CLAY AND GRAVEL, SOME DEBRIS, ORGANICS AND COBBLES, LOOSE TO MEDIUM DENSE, MOIST, MIXED BROWN.

CLAY (CL); SANDY, SCATTERED GRAVEL, VERY STIFF, MOIST, BROWN, MEDIUM PLASTIC.

CLAY AND GRAVEL (CL-GC); SANDY, COBBLES, POSSIBLE BOULDERS, VERY STIFF/DENSE, MOIST, BROWN.

GRAVEL AND COBBLES (GM-GC); SILTY TO CLAYEY, SANDY, PROBABLE BOULDERS, DENSE, MOIST, BROWN.

CLAY AND SHALE FRAGMENTS (CL-SC); STIFF/MEDIUM DENSE, VERY MOIST, BLACK.

WEATHERED CLAYSTONE; MEDIUM HARD, MOIST, DARK GRAY. MANCOS SHALE.

CLAYSTONE BEDROCK; VERY HARD, SLIGHTLY MOIST, BLACK. MANCOS SHALE.

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

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

6 — DEPTH TO WATER LEVEL AND NUMBER OF DAYS AFTER DRILLING MEASUREMENT WAS MADE. (BORING 8)

55/12 DRIVE SAMPLE BLOW COUNT. INDICATES THAT 55 BLOWS OF A 140-POUND HAMMER FALLING 30 INCHES WERE REQUIRED TO DRIVE THE SAMPLER 12 INCHES.

→ CAVED DEPTH WHEN CHECKED ON MAY 26, 2020

↑ PRACTICAL AUGER REFUSAL. (BORING 1)

NOTES

1. EXPLORATORY BORINGS 1 THROUGH 5 WERE DRILLED ON JULY 30, 2019 AND EXPLORATORY BORINGS 6 THROUGH 9 WERE DRILLED ON MAY 20, 2020 WITH A 4-INCH-DIAMETER CONTINUOUS-FLIGHT POWER AUGER.

2. THE LOCATIONS OF THE EXPLORATORY BORINGS WERE MEASURED APPROXIMATELY BY PACING FROM FEATURES SHOWN ON THE SITE PLAN PROVIDED.

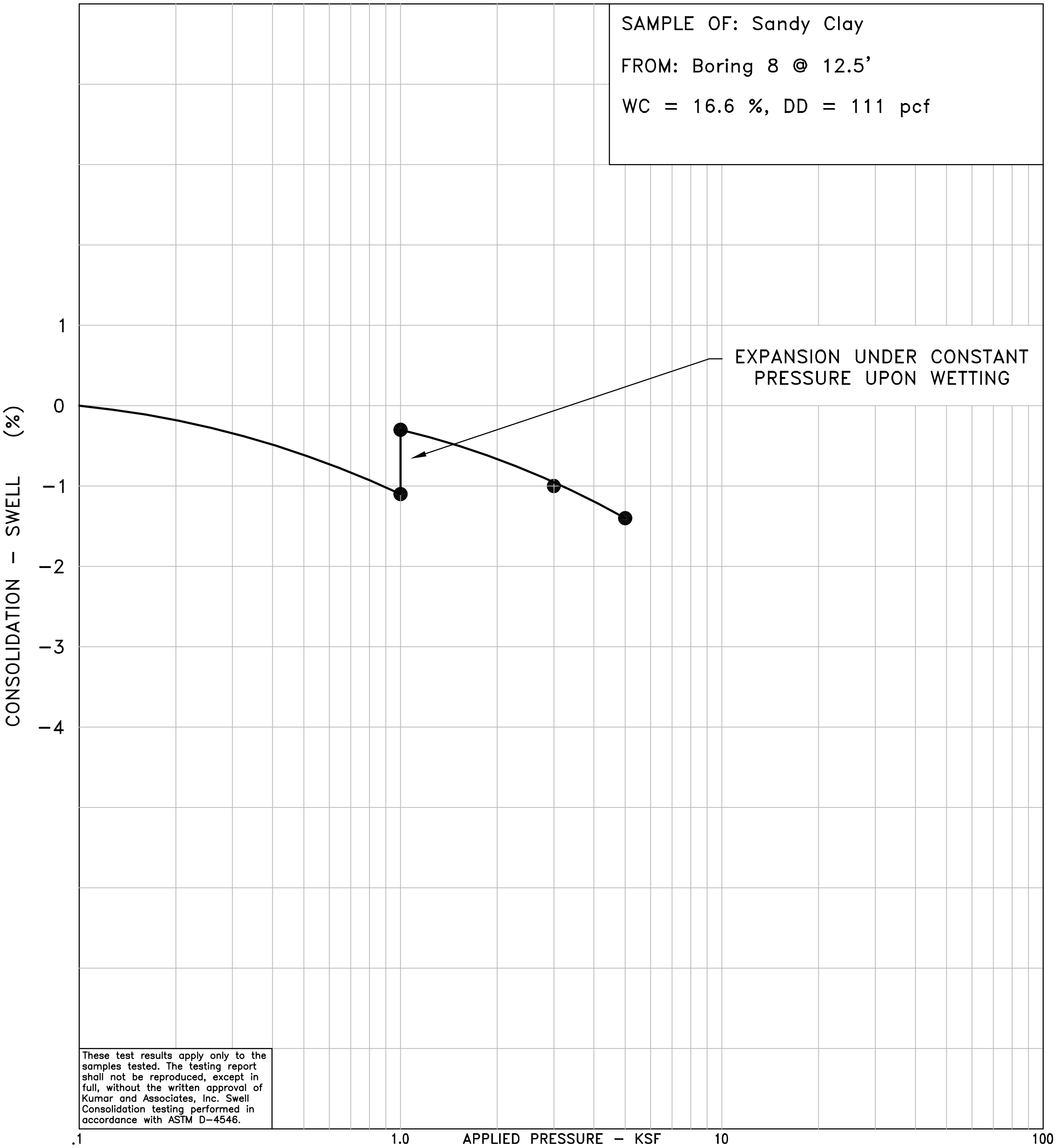
3. THE ELEVATIONS OF THE EXPLORATORY BORINGS 1 THROUGH 5 WERE NOT MEASURED AND THE LOGS OF THE EXPLORATORY BORINGS ARE PLOTTED TO DEPTH. THE ELEVATIONS OF EXPLORATORY BORINGS 6 THROUGH 9 WERE OBTAINED BY INTERPOLATION BETWEEN CONTOURS ON THE SITE PLAN PROVIDED.

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

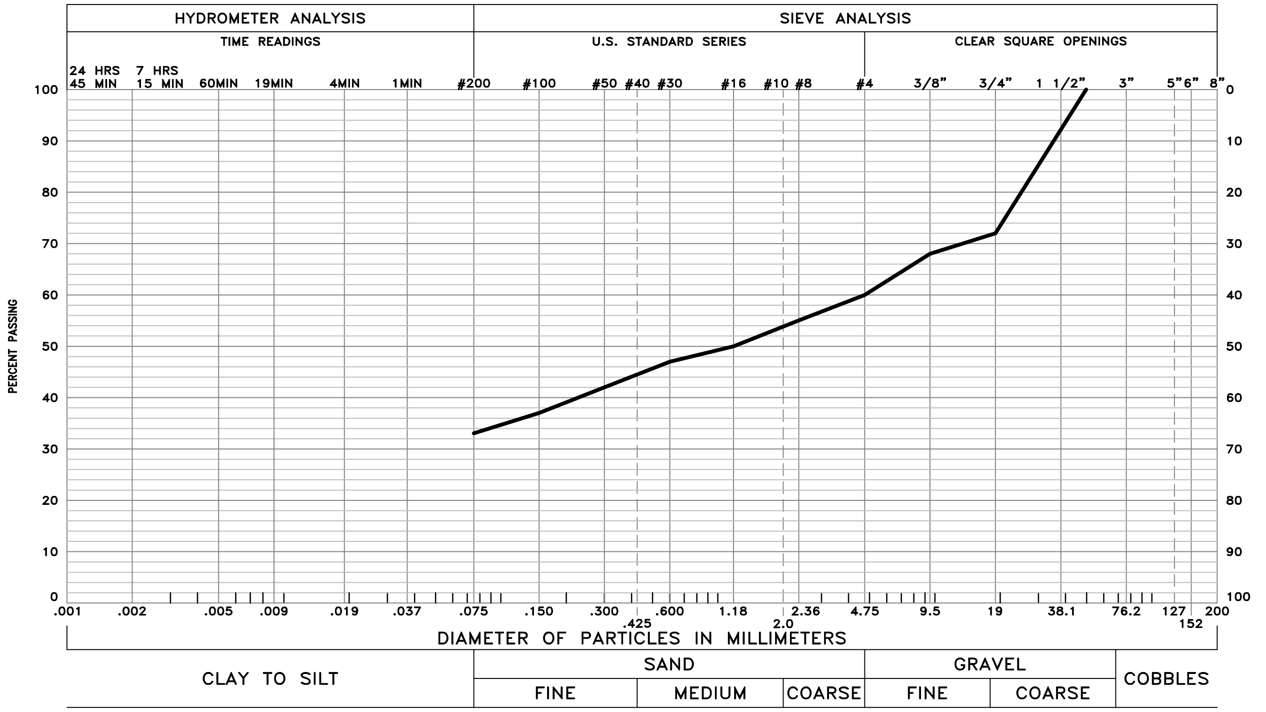
5. THE LINES BETWEEN MATERIALS SHOWN ON THE EXPLORATORY BORING LOGS REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN MATERIAL TYPES AND THE TRANSITIONS MAY BE GRADUAL.

6. GROUNDWATER WAS NOT ENCOUNTERED IN THE BORINGS AT THE TIME OF DRILLING.

7. LABORATORY TEST RESULTS:
   WC = WATER CONTENT (%) (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).



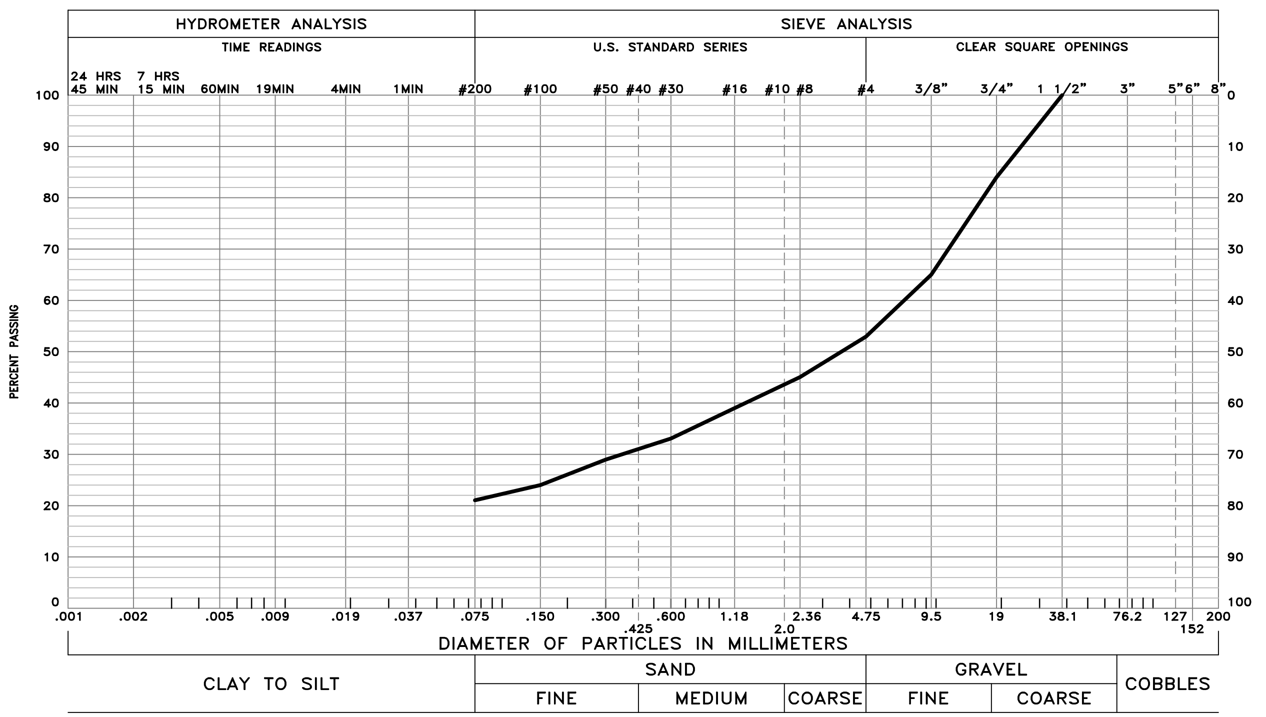
19-7-406.01	Kumar & Associates	SWELL-CONSOLIDATION TEST RESULTS	Fig. 5



GRAVEL 40 % SAND 27 % SILT AND CLAY 33 %

LIQUID LIMIT PLASTICITY INDEX

SAMPLE OF: Silty Clayey Sandy Gravel (Fill) FROM: Boring 2 @ 2.5' & 5' (Combined)



GRAVEL 47 % SAND 32 % SILT AND CLAY 21 %

LIQUID LIMIT PLASTICITY INDEX

SAMPLE OF: Silty Clayey Sandy Gravel FROM: Boring 3 @ 10'

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.

19-7-406.01	Kumar & Associates	GRADATION TEST RESULTS	Fig. 6

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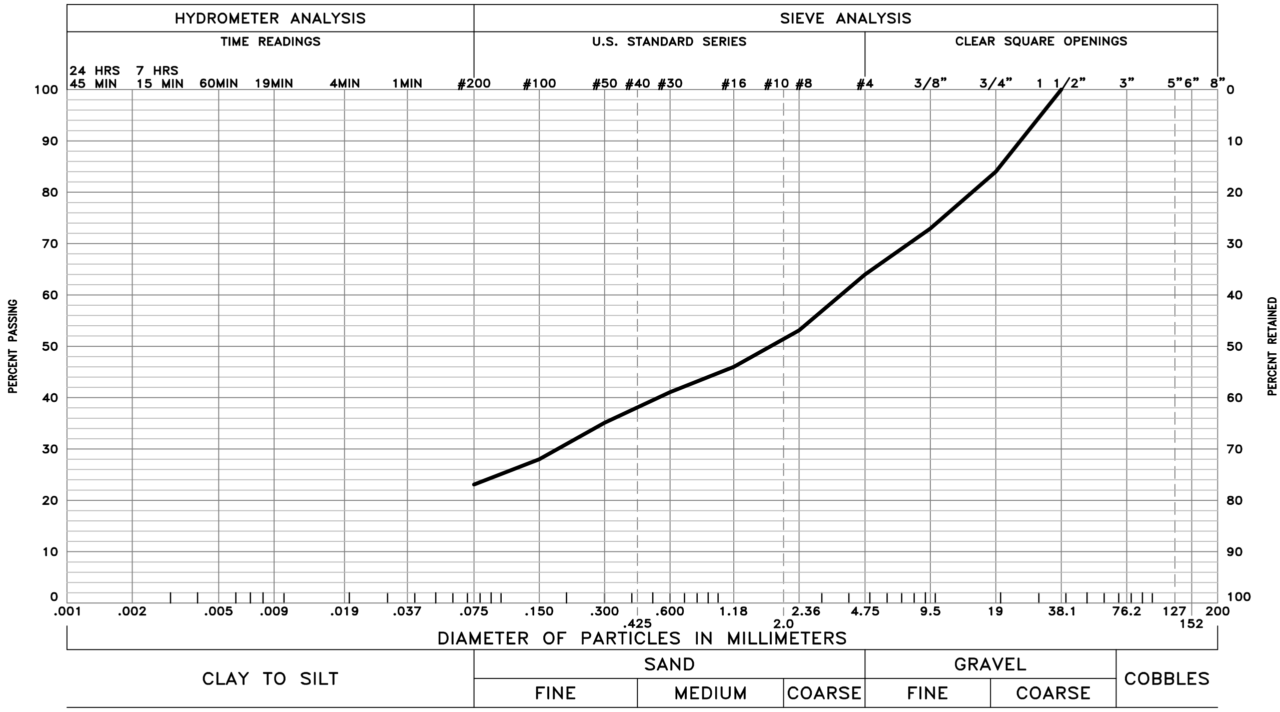
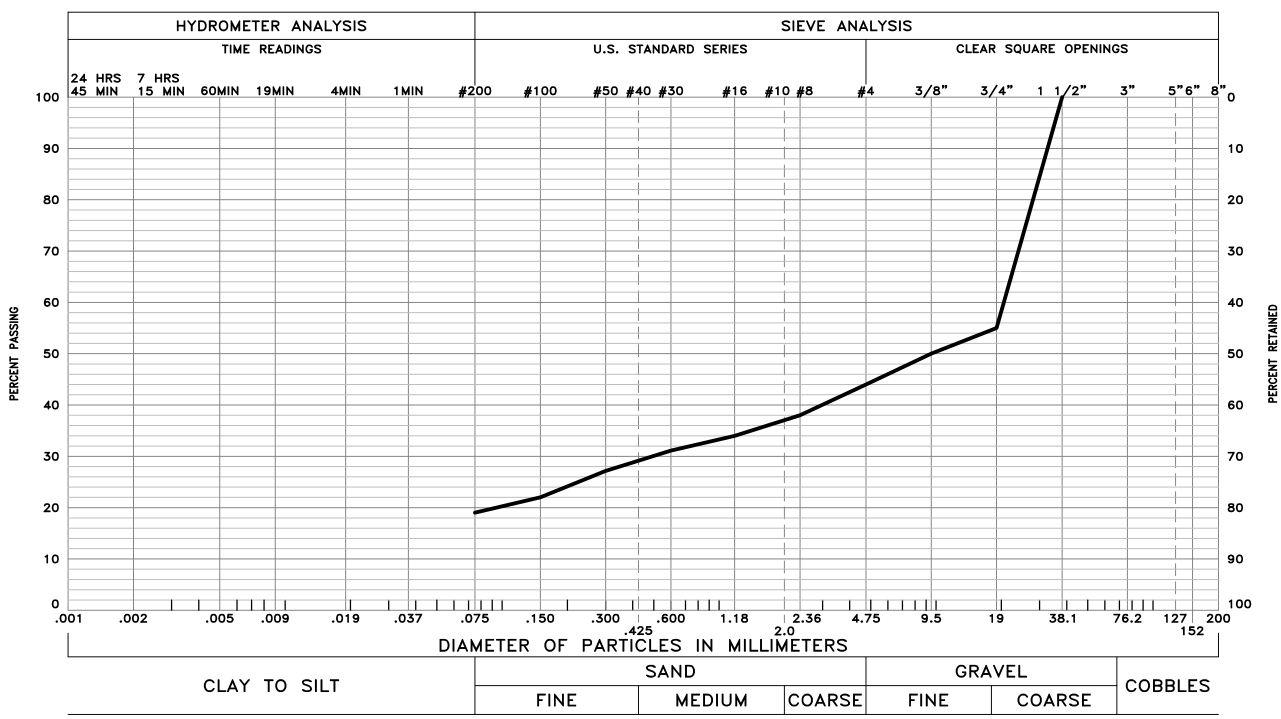


GRAVEL 36 % SAND 41 % SILT AND CLAY 23 %

LIQUID LIMIT PLASTICITY INDEX

SAMPLE OF: Silty Clayey Sand with Gravel (Fill) FROM: Boring 4 @ 2.5'



GRAVEL 56 % SAND 25 % SILT AND CLAY 19 %

LIQUID LIMIT PLASTICITY INDEX

SAMPLE OF: Silty Clayey Sandy Gravel (Fill) FROM: Boring 5 @ 2.5' & 5' (Combined)

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.

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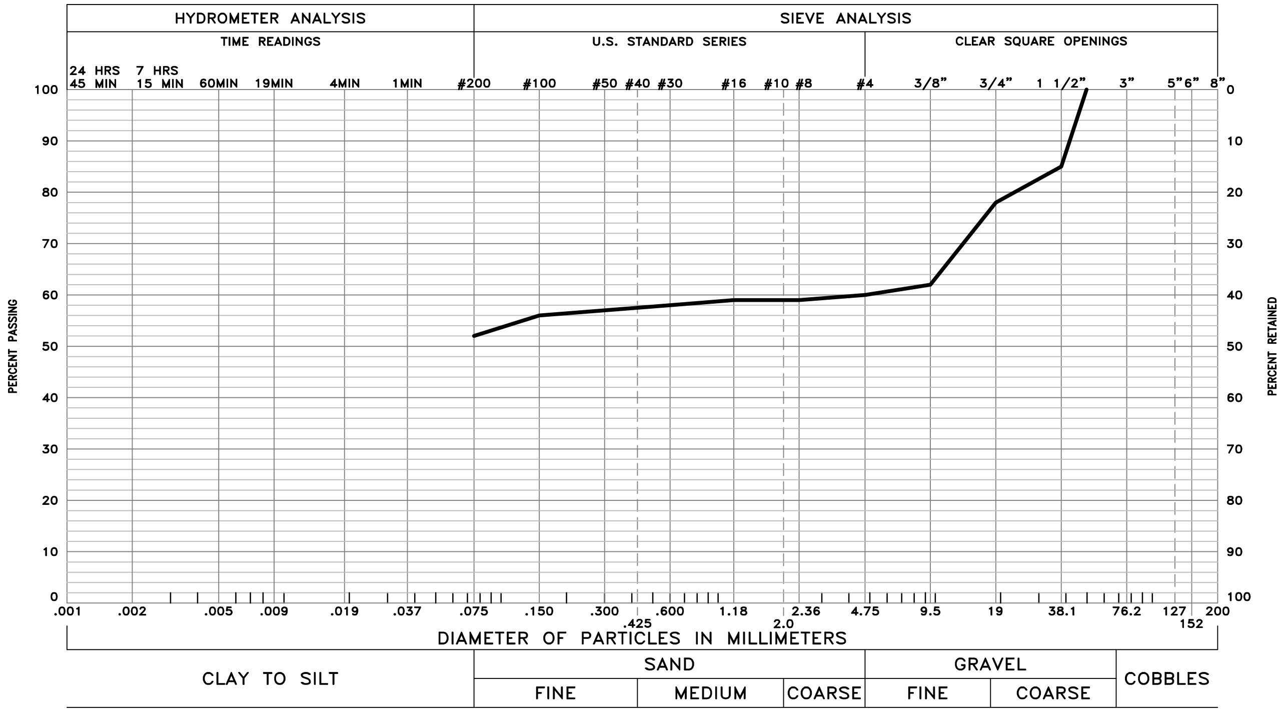
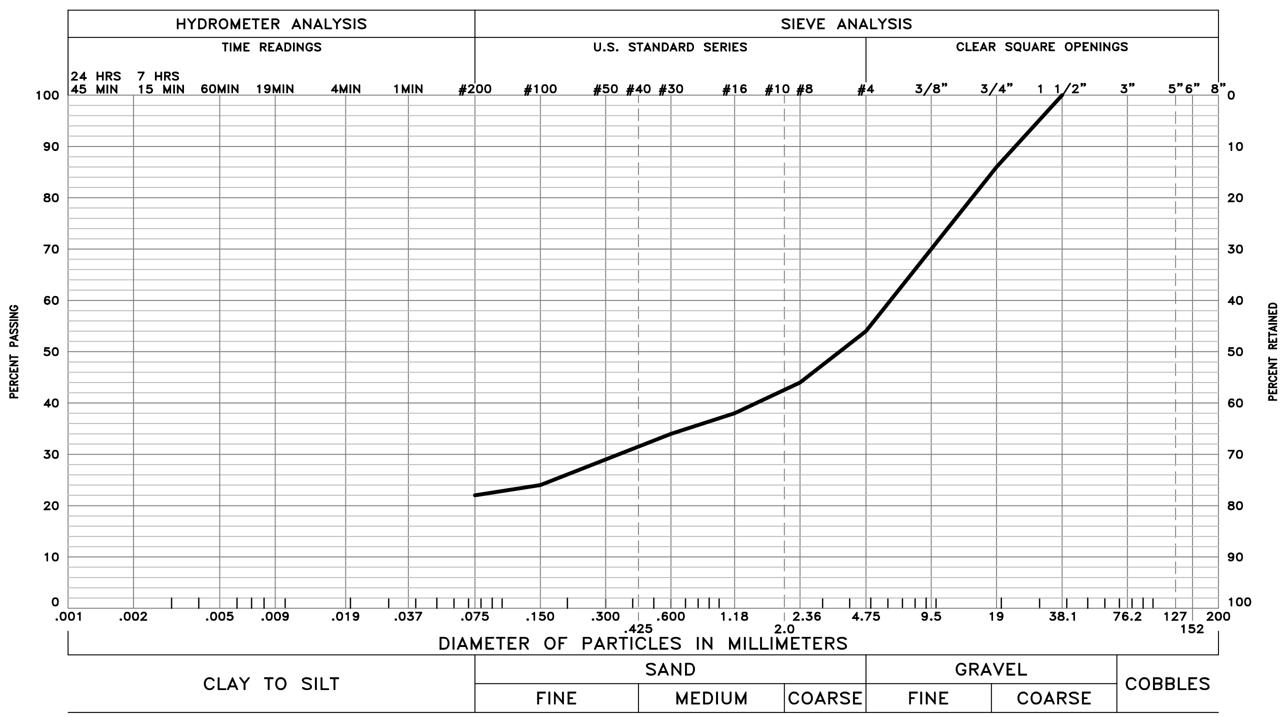


GRAVEL 40 % SAND 8 % SILT AND CLAY 52 %

LIQUID LIMIT PLASTICITY INDEX

SAMPLE OF: Sandy Gravel and Clay FROM: Boring 6 @ 17.5'



GRAVEL 46 % SAND 32 % SILT AND CLAY 22 %

LIQUID LIMIT PLASTICITY INDEX

SAMPLE OF: Clayey Sandy Gravel FROM: Boring 6 @ 25'

 Sieve analysis testing is performed in accordance with ASTM D6913, ASTM D7928, ASTM C136 and/or ASTM D1140.

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TABLE 1
SUMMARY OF LABORATORY TEST RESULTS

Project No. 19-7-406.01

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	2½	12.3				39					Silty Clayey Sandy Gravel (Fill)
2	2½ and 5 combined	9.9		40	27	33					Silty Clayey Sandy Gravel (Fill)
3	10	7.6		47	32	21					Silty Clayey Sandy Gravel
4	2½	5.9		36	41	23					Silty Clayey Sand with Gravel (Fill)
	10	14.6				86	38	16			Sandy Clay
5	2½ and 5 combined	7.3		56	25	19					Silty Clayey Sandy Gravel (Fill)
6	17½	11.0	117	40	8	52					Sandy Gravel and Clay
	25	7.7	119	46	32	22					Clayey Sandy Gravel

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TABLE 1
SUMMARY OF LABORATORY TEST RESULTS

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)		
7	20	13.5	119			30					Clayey Sandy Gravel
8	12½	16.6	111								Sandy Clay
9	10	3.9				21					Clayey Sandy Gravel

TABLE 2

SAMPLE DEPTH AND TEMPERATURE

DEPTH (FT) Degrees Fahrenheit	BORING 6	BORING 7	BORING 8	BORING 9
2½	49	No Reading	51	56
5	45	56	63	53
7½	46	65	51	49
10	38	45	53	57
12½	46	49	43	47
15	43	47	49	45
17½	49	47	45	Bottom of Hole
20	63	45	48	
22½	60	Bottom of Hole	Bottom of Hole	
25	49			
27½	49			
	Bottom of Hole			

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An Employee Owned Company

Office Locations: Denver (HQ), Parker, Colorado Springs, Fort Collins, Glenwood Springs, and Summit County, Colorado

June 29, 2020

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emccready@ewpartners.com

Project No. 19-7-406.01

Subject: Additional Comments and Grading Recommendations, Proposed Building 11, Lot 5, Base Village, Wood Road, Snowmass Village, Colorado

Dear Ms. McCready:

As requested, the undersigned representative of Kumar & Associates, Inc. participated in a conference call with the project team on June 26, 2020 to discuss design and construction issues. We previously conducted a subsoil study for design of foundations at the site and presented our findings in a report dated June 11, 2020, Project No. 19-7-406.01.

The issues discussed mainly had to do with excavation conditions impacted by existing fill conditions and depths across the property. The majority of the existing fill will probably be removed for the building foundation construction. In the pool and site wall areas (south of the building), excavation to design grades is expected to remove little of the existing fill and sub-excavation down to the natural soils is recommended. The pool will be earth formed and the bottom slab should be designed to structurally support the pool, similar to the building foundation since the pool is a settlement sensitive structure. It was also discussed that the bottom pool slab could be supported on a deep foundation extending down into the natural soils but the existing fill will still need to be sub-excavated and replaced with compacted structural fill since the pool decks will be slab-on-grade.

We expect site walls separate from the building can move somewhat without risk to their structural integrity and can be supported on the existing fill provided the fill does not contain excessive unsuitable material such as debris and organics. Likewise, the emergency vehicle road along the project site south perimeter is expected to be on fill soils which can be evaluated for new pavement support at the times of construction. The existing fill when removed will be evaluated for suitability to be processed and reused as structural fill at the time of construction with unsuitable materials being hauled off.

In our June 11, 2020 report, the bottom pool elevation was incorrectly shown about 10 feet too low which has been corrected on the attached Figure 3.

If you have any questions or need further assistance, please call our office.

Sincerely,

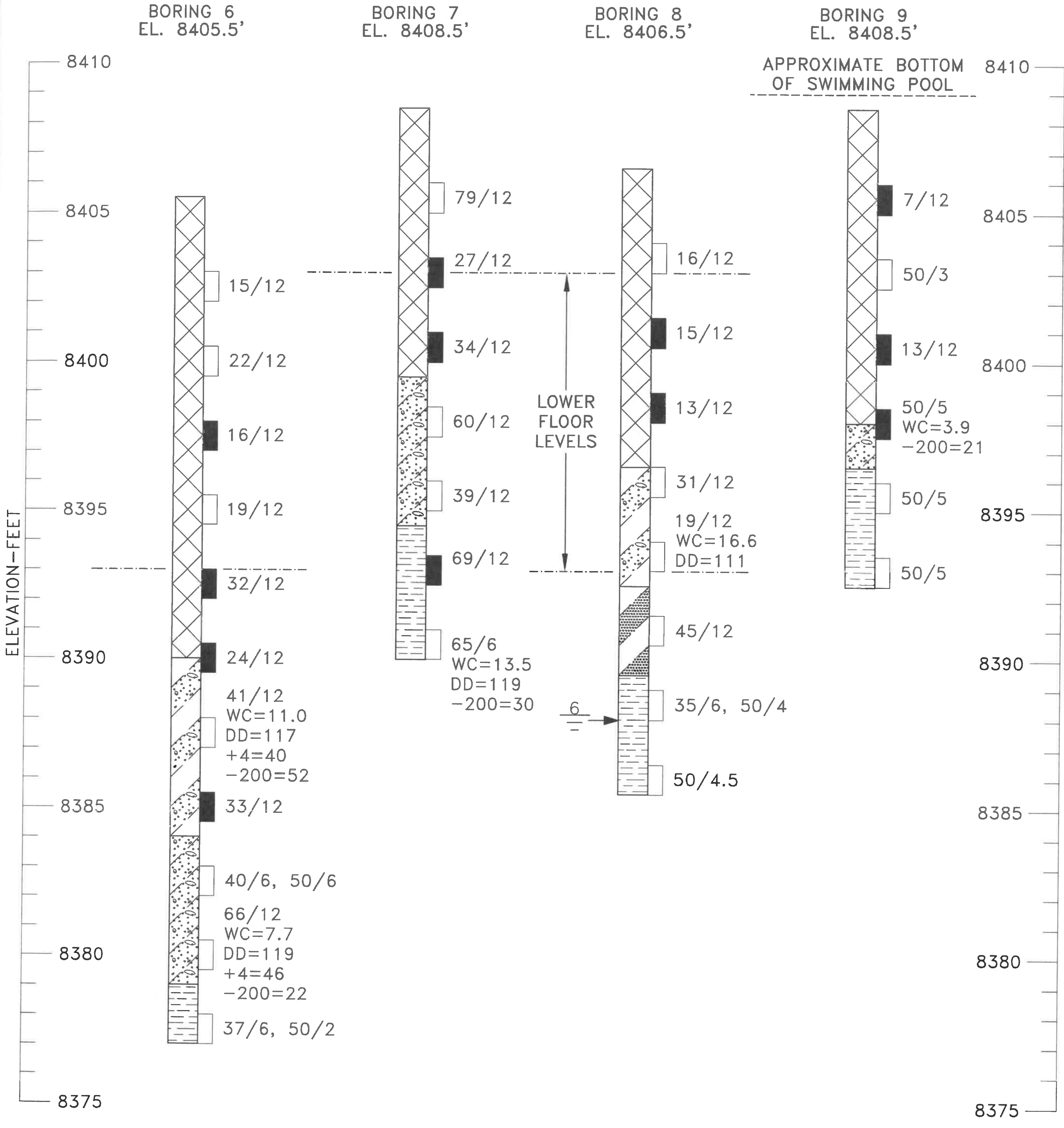
Kumar & Associates, Inc.

Steven L. Pawlak, P.E.
Rev. by: DEH
SLP/kac

COLORADO REGISTERED PROFESSIONAL ENGINEER STEVEN L. PAWLAK 15222 6/29/20

Attachment: Figure 3 – Logs of Exploratory Borings

Cc: KL&A – Casey Champion (cchampion@klaa.com)
4240 Architects - Ian Wilson (iwilson@4240arch.com)



REVISED 6/29/2020

June 29, 2020 - 07:40am
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19-7-406.01	Kumar & Associates	LOGS OF EXPLORATORY BORINGS	Fig. 3