EXHIBIT D

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SUBSOIL STUDY
FOR FOUNDATION DESIGN
PROPOSED BELDEN PLACE
TRI-PLEX DEVELOPMENT
BELDEN WAY
MINTURN, COLORADO

PROJECT NO. 19-7-505.01

OCTOBER 14, 2021

PREPARED FOR:

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FIGURE 1 - LOCATION OF EXPLORATORY BORINGS

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TABLE 1- SUMMARY OF LABORATORY TEST RESULTS

PURPOSE AND SCOPE OF STUDY

This report presents the results of a subsoil study for the proposed Belden Place tri-plex development, Belden Way, Minturn, 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 agreement for geotechnical engineering services to Miners Base Camp LLC c/o Vail Land Company dated June 16, 2021. Kumar & Associates previously conducted a subsoil study which included the current project site for another development plan and presented the findings in a report dated September 18, 2019, Project No. 19-7-505.

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 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 includes 3-story buildings supported on a parking structure with a separate 3-story tri-plex building located as shown on Figure 1. Ground floors will be slab-on-grade. Grading for the structures is assumed to be relatively minor with cut depths between about 4 to 12 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 overall property was previously developed with single and double wide trailer homes in the eastern part and single-family residences in the southern, central and western parts of the property. Several of the single-family residences had basement foundations. The residences had been demolished at the time of our site visit and debris had been stockpiled in various areas. The terrain is generally flat and gently sloping down to the north. The ground surface is covered with concrete pavement, grass and weeds, and is bare in areas of demolition. Single-family residences are north, east and west of the site. Main Street (US Highway 24) is north of the site. A heavily wooded slope is to the south of the site.

FIELD EXPLORATION

The field exploration for the current project was conducted on July 19, 2021. Two exploratory borings were drilled at the locations shown on Figure 1 to evaluate the subsurface conditions. Borings 2, 3 and 5 of the previous subsoil study are also shown on Figure 1. 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 a 1⅜ inch I.D. spoon sampler. The sampler was 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 2 to 4 feet of mixed sand and gravel with construction debris fill material overlying relatively dense, slightly silty sand, gravel and cobbles with probable boulders. Drilling in the coarse granular soils with auger equipment was difficult due to the cobbles and boulders and drilling refusal was encountered in the deposit. Borings 2 and 5 of the previous subsoil study encountered similar subsurface materials to the maximum drilled depth of about 15 feet.

Laboratory testing performed on samples obtained from the borings included natural moisture content and gradation analyses. Results of gradation analyses performed on small diameter drive samples (minus 1½-inch fraction) of the coarse granular subsoils are shown on Figure 3. The laboratory testing is summarized in Table 1.

No free water was encountered in the boring at the time of drilling and the subsoils were moist.

FOUNDATION BEARING CONDITIONS

The natural coarse granular soils encountered below the fill soils have moderate bearing capacity and low settlement potential. Spread footings placed on the natural granular soils are suitable for the foundation support. Variable depth of fill soils should be expected and could result in sub-excavation to below design bearing level.

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 granular soils.

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 should be designed for an allowable bearing pressure of 4,000 psf. 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 10 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) The existing fill, debris, topsoil and any loose or disturbed soils should be removed and the footing bearing level extended down to the relatively dense natural granular soils. 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 placed to reestablish design bearing level should be a relatively well-graded granular material compacted to at least 98% of standard Proctor density at near optimum moisture content.

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 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.

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 near optimum moisture content. 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. Backfill should not contain organics, debris or rock larger than about 6 inches.

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 0.55. Passive pressure of compacted backfill against the sides of the footings can be calculated using an equivalent fluid unit weight of 450 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 to moderately 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 free-draining gravel should be placed beneath ground level slabs 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.

Structural fill placed for support of floor slabs should be a relatively well graded granular material 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 be used below living areas of slab-on-grade floors. 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 mountainous areas 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.

The drains should consist of 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 1% to a suitable gravity outlet or drywell. 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.

CORROSION TESTING

Samples taken from the current borings were subjected to chemical testing to assess their potential for corrosion on buried metal. Laboratory testing of combined samples from Boring 2 at 2½ and 5 feet was performed and the results are summarized below along with American Water Works Association (AWWA) Standard soil test evaluation points.

AWWA C105 Table A.1		**Points Rating**
Date Sampled	**07-19-21**	
Date Sample Received	**07-30-21**	
Lab Sample I.D. No.	**9572**	
Sample Visual Description	**Slightly Silty Sand with Gravel**	
Minimum Laboratory Resistivity	**1630 ohm-cm**	**8**
pH	**8.2**	**0**
Redox Potential E(h)	**278 mV**	**0**
Sulfides	**Negative**	**0**
Moisture Content	**5.2%**	**1**
Total Soluble Salts	**1000 ppm / 0.100%**	
Water Soluble Sulfates	**580 ppm / 0.0580%**	
Organic Matter Content	**1.9%**	
**** AWWA C105 Appendix A, Table A.1 Total Score: 9**		

*The Table A.1 soil test evaluation is based on the sample resistivity, pH, redox potential, sulfides, and moisture/drainage conditions. In scoring these samples, we assumed good to poor site drainage (0 to +2 points). The points rating for the coarse granular soil sample was 9. A ten-point score or greater indicates that the soil is corrosive to ductile iron pipe and protection is needed.

A certain level of corrosion protection from the soils to the pipe should be provided. Based on our experience in the area and the test results, poly-wrap of the pipe which is typically used in the area should be adequate at this site.

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 6 inches in the first 10 feet in unpaved areas and a minimum slope of 2 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 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.

Steven Pawlak, P.E.

Reviewed by:

Daniel E. Hardin, P.E.

SLP/kac

LEGEND:

● BORING FOR CURRENT STUDY.

○ BORING FOR PREVIOUS STUDY REPORT DATED SEPTEMBER 18, 2019 PROJECT NO 19-7-505

25 0 25 50

APPROXIMATE SCALE-FEET

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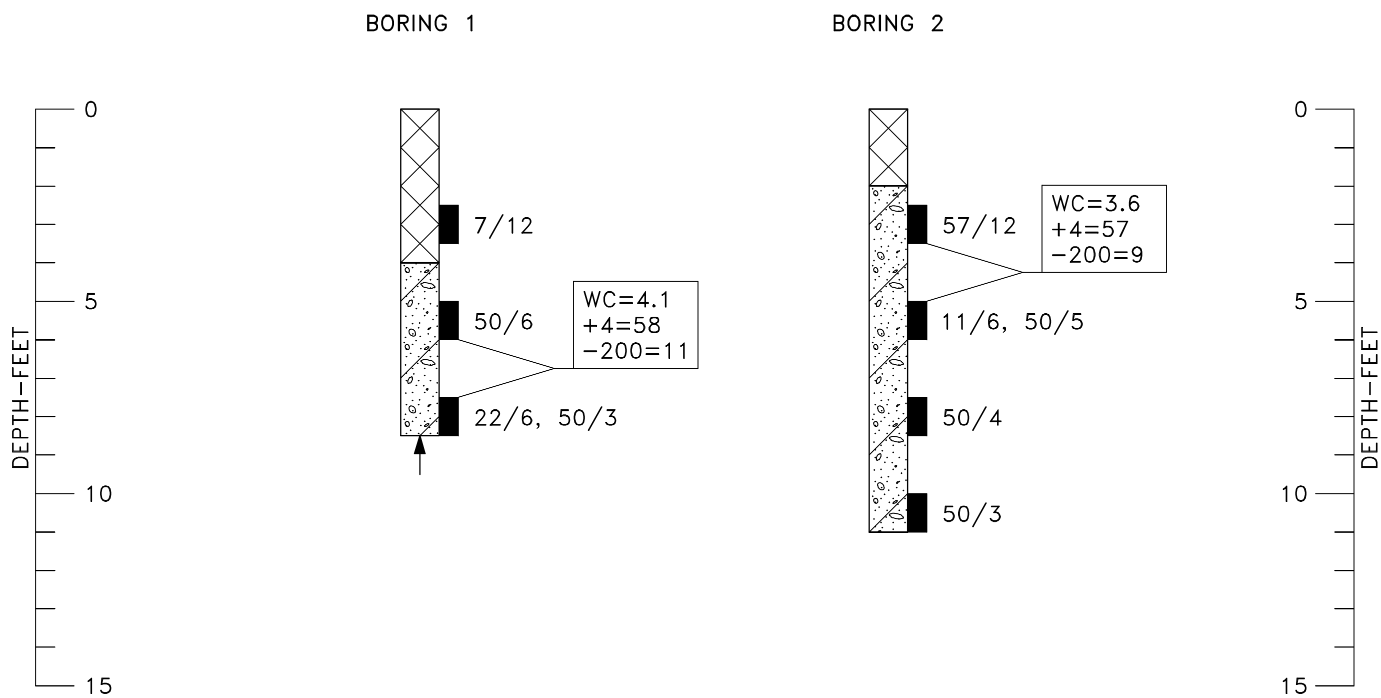
19-7-505.01	Kumar & Associates	LOCATION OF EXPLORATORY BORINGS	Fig. 1



LEGEND

FILL; SILTY SAND AND GRAVEL WITH COBBLES, ORGANICS AND DEBRIS, LOOSE, MOIST, DARK BROWN.

SAND, GRAVEL AND COBBLES (SM–GM); SLIGHTLY SILTY, PROBABLE BOULDERS, DENSE, MOIST, BROWN, SUBANGULAR TO ROUNDED ROCKS.

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

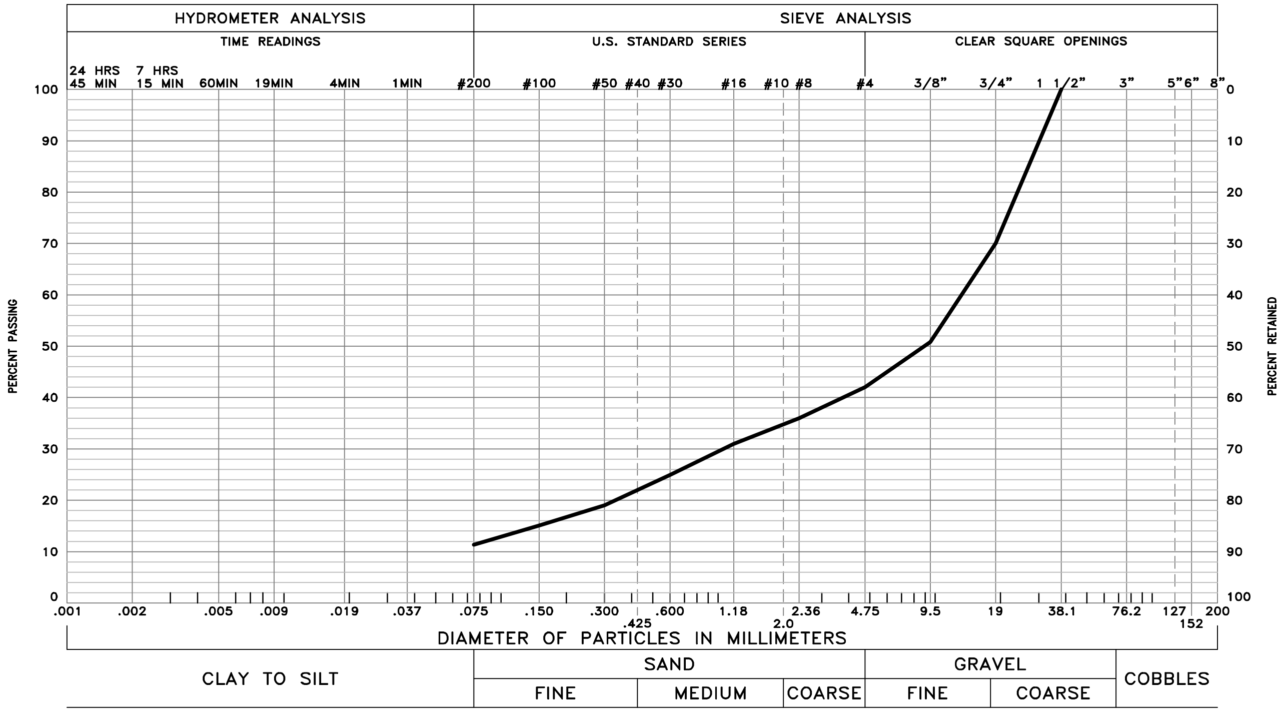
7/12 DRIVE SAMPLE BLOW COUNT. INDICATES THAT 7 BLOWS OF A 140–POUND HAMMER FALLING 30 INCHES WERE REQUIRED TO DRIVE THE SAMPLER 12 INCHES.

PRACTICAL AUGER REFUSAL.

NOTES

1. THE EXPLORATORY BORINGS WERE DRILLED ON JULY 19, 2021 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 WERE NOT MEASURED AND THE LOGS OF THE EXPLORATORY BORINGS ARE PLOTTED TO DEPTH.
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).

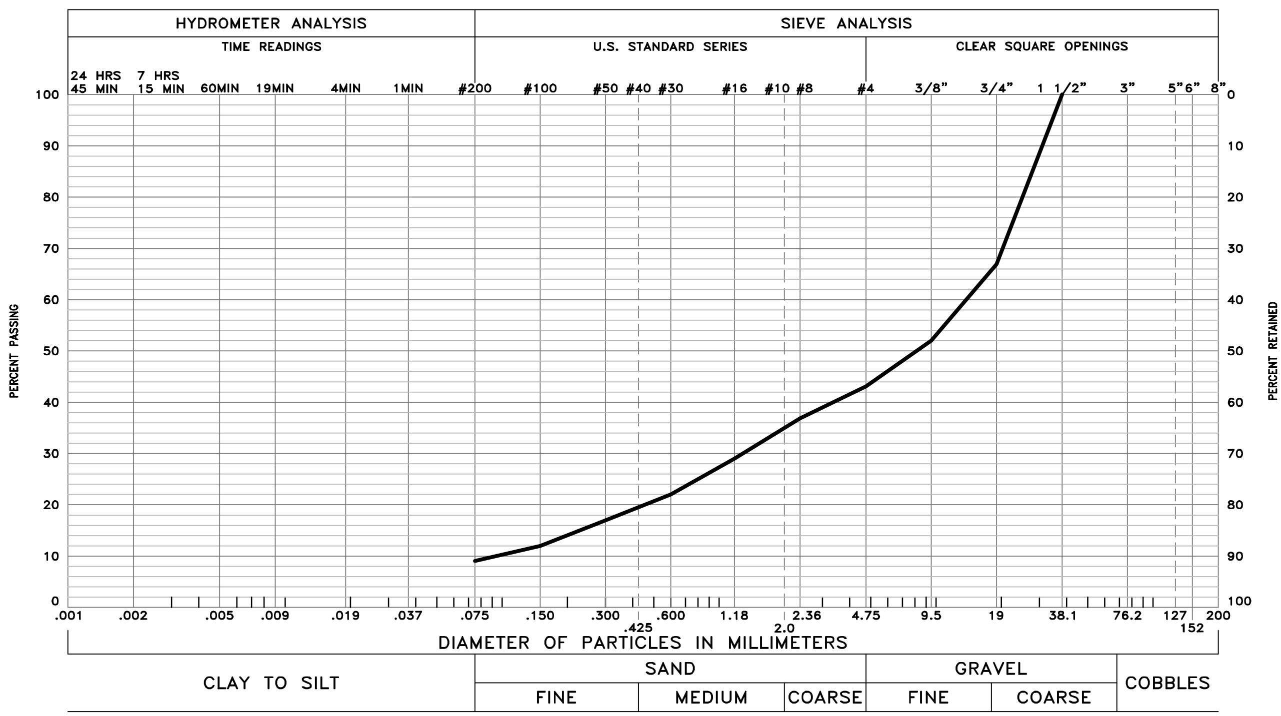
19–7–505.01	Kumar & Associates	LOGS OF EXPLORATORY BORINGS	Fig. 2



GRAVEL 58 % SAND 31 % SILT AND CLAY 11 %

LIQUID LIMIT PLASTICITY INDEX

SAMPLE OF: Slightly Silty Sandy Gravel FROM: Boring 1 @ 5' & 7.5' (Combined)



GRAVEL 57 % SAND 34 % SILT AND CLAY 9 %

LIQUID LIMIT PLASTICITY INDEX

SAMPLE OF: Slightly Silty Sandy Gravel FROM: Boring 2 @ 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.

19-7-505.01	Kumar & Associates	GRADATION TEST RESULTS	Fig. 3

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TABLE 1
SUMMARY OF LABORATORY TEST RESULTS

Project No. 19-7-505.01

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	5 and 7½ combined	4.1		58	31	11					Slightly Silty Sandy Gravel
2	2½ and 5 combined	3.6		57	34	9					Slightly Silty Sandy Gravel