

November 6, 2020

VBSB, LLC
c/o LJC Enterprises
P.O. Box 2739
Mammoth Lakes, CA 93456

Attention: Mr. Larry Canale

Subject: Geotechnical Feasibility Investigation
Excavation Characteristics of Weathered Bedrock
Proposed Woodcrest Retail Center
NWC Van Buren Boulevard and Washington Street
Woodcrest, Riverside County, California
GPI Project No. 2995.1I

Dear Mr. Canale:

In accordance with your request, this letter presents the results of our geotechnical feasibility investigation for the subject project. We previously performed a Feasibility Investigation aimed at determining if significant geotechnical conditions were present onsite and provided a report of our findings dated August 10, 2020.

We understand that our evaluation of the site is desired to determine the feasibility of the project by VBSB, LLC. Specifically, our investigation was aimed at determining the ability to excavate to the desired depths for the proposed site improvements using a standard backhoe. This letter is not intended to be a design-level document and should not be submitted to any regulatory agency for building design purposes.

PROJECT DESCRIPTION

A new retail development is planned for a site covering 8.1 acres. Specifically, the retail center will include a market (Stater Bros.), a shops building, and three satellite buildings. The buildings will be single-story structures. The market will cover a footprint of approximately 46,500 square feet (sf) and the other buildings range from 3,000 to 5,000 sf. The satellite building at the southeast corner of the site will be a gas station. New paved and landscaped areas are also planned. We were provided plans from DRC Engineering detailing the depths of the proposed storm drain inverts, along with the proposed site configuration. The preliminary site configuration is shown on Figure 1, Site Plan.

2.0 SCOPE OF WORK

Our scope of work for this investigation consisted of limited subsurface exploration, photographs and videos, and the preparation of this report.

Our field exploration consisted of a total of 12 exploratory test pits within the building pads, and at the proposed underground utility locations. The test pits were advanced to depths of approximately 2 to 9½-feet below existing grades using a JCB 1400 Site Master Backhoe with a 24-inch wide bucket with wide teeth. Excavations were terminated when the weathered granitic bedrock became very difficult to excavate using the backhoe excavator. Bulk samples of the subsurface soils were obtained and bagged at select locations within the excavations. Details of the explorations are presented in Appendix A. The locations of the subsurface explorations are shown on Figure 1, Site Plan.

The test pit excavations were backfilled as temporary fill without proper compaction. We placed a PVC pipe in the temporary fill of each test pit location.

SOIL CONDITIONS

With the exception of TP-12, the soils consisted of a thin (½ to 1-foot thick) layer of sandy clay fill soils over natural soils. We encountered sandy clay fill soils in TP-12 to a depth of approximately 7 feet. The natural soils consist of a layer of residual soil deposits underlain by slightly to moderately weathered granite bedrock. The residual soils consist predominately of sandy clays and clayey sands and were highly variable in depths, extending from approximately 1 to 11 feet below the existing grade with the average being approximately 5 feet. The residual soils were relatively easy to excavate using the backhoe, and consist of decomposed granite formed by the weathering over time of the underlying bedrock. The weathered bedrock is moderately weathered near the ground surface with less weathering with depth. The soils in the weathered bedrock consist predominantly of sand and silty sand. In general, at depths of 1 to 11 feet, the bedrock becomes less weathered, more intact, and very dense or hard. In general, the bedrock was difficult to excavate using the backhoe with the 24-inch bucket until refusal. Photographs and videos of the exploratory test pit excavations have been provided with this report.

Detailed descriptions of the materials encountered are shown on the Logs of Test Pits in Appendix A.

CONCLUSIONS

Based on our observations and findings, the backhoe with a 24-inch bucket was able to reach the desired depths of the proposed utility inverts at only one of the eight test pit locations near the proposed storm drain lines. At the remainder of the test pit-locations, the excavation depth did not reach the desired depths by about 1 to 10 feet. We have included the approximate invert depth of the storm drain on the test pit logs. At the location of Test Pits TP-4 in the center of the site, we observed very shallow refusal at a depth of 2 feet.

The test pits within the Market Pad, Pad B and Pad C were able to be excavated to depths ranging from 5½ to 9½ feet below existing grades. At a distance of about 40 feet east of the Market Pad, the backhoe refused at a depth of 4 feet below existing grade. These depths of excavations are likely greater than overexcavation depths and footing depths for the anticipated grading of the buildings. The depth of plumbing trenches may be deeper than excavation depth achieved with the backhoe.

The weathered granitic bedrock encountered could possibly be excavated using a larger excavator, by using a hydraulic concrete attachment, or ripping with D8R or D9R shank ripper. Further investigation would be required to determine the feasibility of these methods. A seismic evaluation using geophysical methods could be performed to better determine the rippability of the weathered bedrock and to better determine if blasting the rock would be required.

LIMITATIONS

The geotechnical investigation reported herein was performed for the exclusive use by VBSB, LLC, and their consultants, in evaluating the feasibility of constructing the proposed improvements. This report should not be used for evaluating the feasibility of developing the site for other uses or for the detailed design of the proposed project, because this report does not contain sufficient or appropriate information for such use.

Soil deposits may vary in type, strength, and many other important properties between points of exploration due to non-uniformity of the geologic formations or to man-made cut and fill operations. While we cannot evaluate the consistency of the properties of materials in areas not explored, the conclusions drawn in this report are based on the assumption that the data obtained in the field and laboratory are reasonably representative of field conditions and are conducive to interpolation and extrapolation.

As noted previously, additional geotechnical investigations will be needed for design and construction. Furthermore, our recommendations were developed with the assumption that a proper level of field observation and construction review will be provided by a qualified geotechnical consulting firm during grading, excavation, and foundation construction. If design- and construction-phase geotechnical services are performed by others they must accept full responsibility for all geotechnical aspects of the project.

Our investigation and evaluations were performed using generally accepted engineering approaches and principles available at this time and the degree of care and skill ordinarily exercised under similar circumstances by reputable Geotechnical Engineers practicing in this area. No other representation, either expressed or implied, is included or intended in our report.

Geotechnical Professionals Inc.



Patrick I.F. McGervey, P.E.
Project Engineer

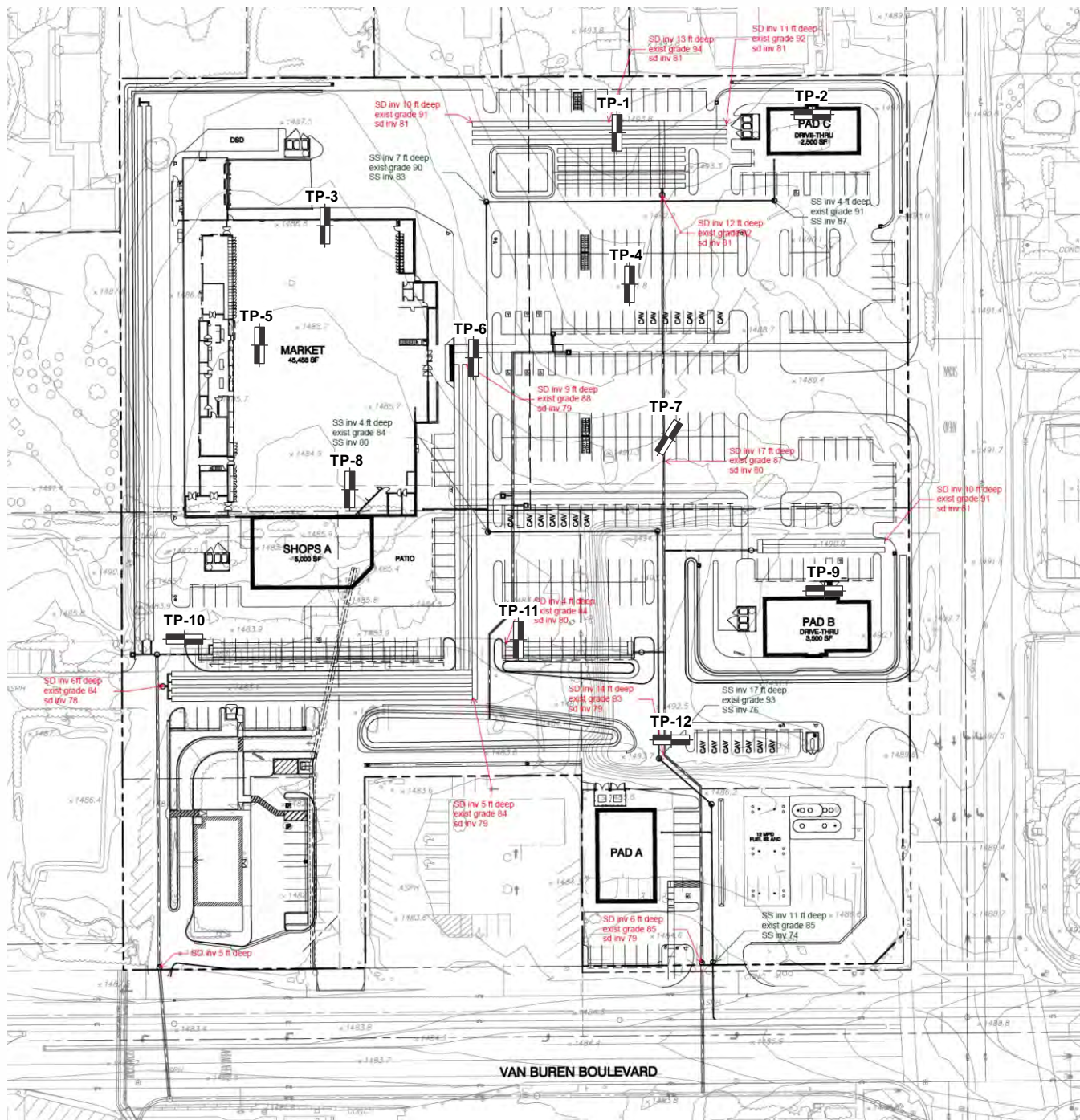


Donald A. Cords, G.E.
Principal



Enclosures:

- | | |
|-------------|--|
| Figure 1 | - Site Plan |
| Appendix A | - Logs of Test Pits |
| Flash Drive | - Photographs and Videos of Test Pit Excavations |



0 120 240 FEET

EXPLANATION

TP-12
APPROXIMATE LOCATION, NUMBER AND ORIENTATION OF EXPLORATORY TEST PIT

BASE PLAN REPRODUCED FROM CONCEPTUAL SITE PLAN SCHEME Cv6 BY GK PIERCE ARCHITECTURE MODIFIED BY DRC TO SHOW PROPOSED UTILITIES



GEOTECHNICAL
PROFESSIONALS, INC.

WOODCREST RETAIL

GPI PROJECT NO.: 2995.1

SCALE: 1" = 120'

SITE PLAN

FIGURE 1

APPENDIX A

	MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (FEET)	DESCRIPTION OF SUBSURFACE MATERIALS	ELEVATION (FEET)
						This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	
					0	 Fill: SANDY CLAY (CL) red brown, moist, with brush	1490
					 Residual Soils: SANDY CLAY (CL) red brown, moist to very moist, decomposed granite		
			B	5	 Weathered Granitic Bedrock: SAND WITH SILT (SP-SM) grey, slightly moist, moderately weathered, difficulty excavating		
						Backhoe refused @ 7.5 feet SD Invert 13 feet deep (DRC)	

SAMPLE TYPES
☐ Rock Core
☐ Standard Split Spoon
☐ Drive Sample
☐ Bulk Sample
☐ Tube Sample

DATE DRILLED:
 10-28-20
EQUIPMENT USED:
 24 " Backhoe Bucket
GROUNDWATER LEVEL (ft):
 Not Encountered



PROJECT NO.: 2995.I
 WOODCREST RETAIL

LOG OF TEST PIT NO. TP-1
 FIGURE A-1

	MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (FEET)	DESCRIPTION OF SUBSURFACE MATERIALS	ELEVATION (FEET)
						This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	
					0	Fill: SANDY CLAY (CL) red brown, moist, with brush	1490
			B		<u>Residual Soils:</u> SANDY CLAY (CL) red brown, moist to very moist, decomposed granite		
				5	<u>Weathered Granitic Bedrock:</u> SAND WITH SILT (SP-SM) grey, slightly moist, moderately weathered, difficulty excavating Backhoe refused @ 5.5 feet Pad C		
SAMPLE TYPES ☐ Rock Core ☐ Standard Split Spoon ☐ Drive Sample ☐ Bulk Sample ☐ Tube Sample DATE DRILLED: 10-28-20 EQUIPMENT USED: 24 " Backhoe Bucket GROUNDWATER LEVEL (ft): Not Encountered  PROJECT NO.: 2995.I WOODCREST RETAIL							
LOG OF TEST PIT NO. TP-2 FIGURE A-2							

	MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (FEET)	DESCRIPTION OF SUBSURFACE MATERIALS	ELEVATION (FEET)
						This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	
					0	Fill: SANDY CLAY (CL) red brown, moist, with brush	1485
			B		<u>Residual Soils:</u> SANDY CLAY (CL) red brown, moist to very moist, decomposed granite		
					CLAYEY SAND (SC) red brown, moist, decomposed granite		
					5	<u>Weathered Granitic Bedrock:</u> SAND WITH SILT (SP-SM) grey, slightly moist, moderately weathered, difficulty excavating	1480
					Backhoe refused @ 7.5 feet		
						Market Pad - North	

SAMPLE TYPES

C

 Rock Core

S

 Standard Split Spoon

D

 Drive Sample

B

 Bulk Sample

T

 Tube Sample

DATE DRILLED:

10-28-20

EQUIPMENT USED:

24 " Backhoe Bucket

GROUNDWATER LEVEL (ft):

Not Encountered

GPI

PROJECT NO.: 2995.I

WOODCREST RETAIL

LOG OF TEST PIT NO. TP-3

FIGURE A-3

	MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (FEET)	DESCRIPTION OF SUBSURFACE MATERIALS	ELEVATION (FEET)
					0	This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	
						 Fill: SANDY CLAY (CL) red brown, moist, with brush <u>Residual Soils:</u>  SANDY CLAY (CL) red brown, slightly moist, decomposed granite <u>Weathered Granitic Bedrock:</u>  SAND WITH SILT (SP-SM) grey, slightly moist, moderately weathered, difficulty excavating Backhoe refused @ 2 feet SD Invert 12 feet (DRC)	1490

SAMPLE TYPES ☐ Rock Core ☐ Standard Split Spoon ☐ Drive Sample ☐ Bulk Sample ☐ Tube Sample	DATE DRILLED: 10-28-20 EQUIPMENT USED: 24 " Backhoe Bucket GROUNDWATER LEVEL (ft): Not Encountered	 LOG OF TEST PIT NO. TP-4	PROJECT NO.: 2995.I WOODCREST RETAIL
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FIGURE A-4

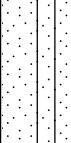
	MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (FEET)	DESCRIPTION OF SUBSURFACE MATERIALS	ELEVATION (FEET)
						This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	
				B	0	Fill: SANDY CLAY (CL) red brown, moist, with brush <u>Residual Soils:</u> SANDY CLAY (CL) red brown, moist to very moist, decomposed granite	1480
					5	CLAYEY SAND (SC) red brown, moist, decomposed granite	
						<u>Weathered Granitic Bedrock:</u> SAND WITH SILT (SP-SM) grey, slightly moist, moderately weathered, difficulty excavating Backhoe refused @ 9.5 feet Market Pad - West	
SAMPLE TYPES		DATE DRILLED:		GPI		PROJECT NO.: 2995.I	
☐ Rock Core ☐ Standard Split Spoon ☐ Drive Sample ☐ Bulk Sample ☐ Tube Sample		10-28-20 EQUIPMENT USED: 24 " Backhoe Bucket GROUNDWATER LEVEL (ft): Not Encountered		WOODCREST RETAIL LOG OF TEST PIT NO. TP-5		FIGURE A-5	

	MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (FEET)	DESCRIPTION OF SUBSURFACE MATERIALS	ELEVATION (FEET)
					0	This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered. Fill: SANDY CLAY (CL) red brown, moist, with brush Residual Soils: CLAYEY SAND (SC) red brown, moist to very moist, decomposed granite Weathered Granitic Bedrock: SAND WITH SILT (SP-SM) grey, moist, moderately weathered, difficulty excavating Backhoe refused @ 4 feet SD Invert 9 feet (DRC) Market Pad - 40 feet East	1485
SAMPLE TYPES ☐ Rock Core ☐ Standard Split Spoon ☐ Drive Sample ☐ Bulk Sample ☐ Tube Sample					DATE DRILLED: 10-28-20 EQUIPMENT USED: 24 " Backhoe Bucket GROUNDWATER LEVEL (ft): Not Encountered		 LOG OF TEST PIT NO. TP-6 FIGURE A-6
					PROJECT NO.: 2995.I WOODCREST RETAIL		

	MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (FEET)	DESCRIPTION OF SUBSURFACE MATERIALS	ELEVATION (FEET)
						This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	
					0	 Natural: SANDY CLAY (CL) brown, moist	1485
						<u>Residual Soils:</u> CLAYEY SAND (SC) red brown, moist, decomposed granite	
				B	5	<u>Weathered Granitic Bedrock:</u> SAND WITH SILT (SP-SM) grey, slightly moist, moderately weathered, difficulty excavating	
						Backhoe refused @ 5.5 feet SD Invert 17 feet (DRC)	

SAMPLE TYPES ☐ Rock Core ☐ Standard Split Spoon ☐ Drive Sample ☐ Bulk Sample ☐ Tube Sample	DATE DRILLED: 10-28-20 EQUIPMENT USED: 24 " Backhoe Bucket GROUNDWATER LEVEL (ft): Not Encountered		PROJECT NO.: 2995.I WOODCREST RETAIL
LOG OF TEST PIT NO. TP-7			
FIGURE A-7			

	MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (FEET)	DESCRIPTION OF SUBSURFACE MATERIALS	ELEVATION (FEET)
					0	This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered. Fill: SANDY CLAY (CL) red brown, moist, with brush	1480
				B		<u>Residual Soils:</u> CLAYEY SAND (SC) red brown, moist, decomposed granite	
					5	<u>Weathered Granitic Bedrock:</u> SAND WITH SILT (SP-SM) grey, slightly moist, moderately weathered, difficulty excavating Backhoe refused @ 5.5 feet Market Pad - South	
SAMPLE TYPES ☐ Rock Core ☐ Standard Split Spoon ☐ Drive Sample ☐ Bulk Sample ☐ Tube Sample DATE DRILLED: 10-28-20 EQUIPMENT USED: 24 " Backhoe Bucket GROUNDWATER LEVEL (ft): Not Encountered  PROJECT NO.: 2995.1 WOODCREST RETAIL LOG OF TEST PIT NO. TP-8 FIGURE A-8							

	MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (FEET)	DESCRIPTION OF SUBSURFACE MATERIALS	ELEVATION (FEET)
						This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	
					0	 Fill: CLAYEY SAND (SC) brown, moist	1490
						<u>Residual Soils:</u>  SILTY SAND (SM) white with brown streaks, dry to slightly moist, decomposed granite	
						 CLAYEY SAND (SC) red brown, moist, decomposed granite	
					5	<u>Weathered Granitic Bedrock:</u>  SAND WITH SILT (SP-SM) grey, slightly moist, moderately weathered, difficulty excavating	
						Backhoe refused @ 6 feet Pad B Building	1485

SAMPLE TYPES
☐ Rock Core
☐ Standard Split Spoon
☐ Drive Sample
☐ Bulk Sample
☐ Tube Sample

DATE DRILLED:
10-28-20
EQUIPMENT USED:
24 " Backhoe Bucket
GROUNDWATER LEVEL (ft):
Not Encountered



PROJECT NO.: 2995.I
WOODCREST RETAIL

LOG OF TEST PIT NO. TP-9

FIGURE A-9

	MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (FEET)	DESCRIPTION OF SUBSURFACE MATERIALS	ELEVATION (FEET)
				B	0	Residual Soils: CLAYEY SAND (SC) red brown, slightly moist to moist	
						Weathered Granitic Bedrock: SAND WITH SILT (SP-SM) grey, slightly moist, moderately weathered, difficulty excavating Backhoe refused @ 2 feet SD Invert 6 feet (DRC)	

SAMPLE TYPES
☐ Rock Core
☐ Standard Split Spoon
☐ Drive Sample
☐ Bulk Sample
☐ Tube Sample

DATE DRILLED:
10-28-20
EQUIPMENT USED:
24 " Backhoe Bucket
GROUNDWATER LEVEL (ft):
Not Encountered



PROJECT NO.: 2995.I
WOODCREST RETAIL

LOG OF TEST PIT NO. TP-10
FIGURE A-10

	MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (FEET)	DESCRIPTION OF SUBSURFACE MATERIALS		ELEVATION (FEET)
						This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.		
					0		<u>Residual Soils:</u> CLAYEY SAND (SC) red brown, moist, decomposed granite	1480
							<u>Weathered Granitic Bedrock:</u> SAND WITH SILT (SP-SM) grey, moist, moderately weathered, difficulty excavating	
					5		Backhoe refused @ 5 feet SD Invert 4 feet (DRC)	

SAMPLE TYPES ☐ Rock Core ☐ Standard Split Spoon ☐ Drive Sample ☐ Bulk Sample ☐ Tube Sample	DATE DRILLED: 10-28-20 EQUIPMENT USED: 24 " Backhoe Bucket GROUNDWATER LEVEL (ft): Not Encountered		PROJECT NO.: 2995.I WOODCREST RETAIL
LOG OF TEST PIT NO. TP-11			
FIGURE A-11			

	MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (FEET)	DESCRIPTION OF SUBSURFACE MATERIALS	ELEVATION (FEET)
						This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	
					0	Fill: SANDY CLAY (CL) red brown, moist, trace debris	1490
					5		
						<u>Residual Soils:</u> SANDY CLAY (CL) red brown, moist to very moist, decomposed granite	
					10	CLAYEY SAND (SC) red brown, very moist, decomposed granite	1485
						<u>Weathered Granitic Bedrock:</u> SAND WITH SILT (SP-SM) grey, slightly moist, moderately weathered, difficulty excavating	
						Backhoe refused @ 13 feet SD Invert 14 feet (DRC)	1480
SAMPLE TYPES ☐ C Rock Core ☐ S Standard Split Spoon ☐ D Drive Sample ☐ B Bulk Sample ☐ T Tube Sample						DATE DRILLED: 10-28-20 EQUIPMENT USED: 24 " Backhoe Bucket GROUNDWATER LEVEL (ft): Not Encountered	GPI PROJECT NO.: 2995.I WOODCREST RETAIL
						LOG OF TEST PIT NO. TP-12	
						FIGURE A-12	