

December 2, 2020

Susan Courtney
Director of Business Services
Glendale Community College District
1500 North Verdugo Road
Glendale, CA 91208

**RE: Preliminary Geotechnical Investigation
Proposed Instructional Building Conference Center (IBCC)
Glendale Community College
1500 North Verdugo Road
Glendale, California 91208
Langan Project No. 700091001**

Dear Ms. Courtney :

This letter summarizes our preliminary geotechnical investigation of the proposed Instructional Building Conference Center (IBCC) to be constructed within the southerly side of the existing Glendale Community College (GCC) main campus located at 1500 North Verdugo Road in Glendale, California. The site location is shown on Figure 1. Our services were performed in general accordance with our proposal dated November 5, 2020 and your Purchase Order dated November 6, 2020.

Based on our review of the IBCC project description presented on the GCC's web site, and the Initial Study/Notice of Preparation for the Glendale Community College 2019 Facilities Master Plan Update to the 2015 Facilities Master Plan, Glendale, California prepared by Chambers Group, the proposed development will include the construction of a multi-story building at the approximate location shown on Figure 2.

The multi-story building will include classrooms, laboratories, studio space for music, dance, film, television, and electronic media, faculty offices, and a conference center, among other components.

Based on preliminary information available to us, the building footprint may be on the order of 50,000 to 82,500 square feet in plan area.

The site is currently developed with existing modular buildings (aka the San Fernando Complex) and the Sierra Nevada Gym as shown on Figure 2. The existing buildings will be demolished to allow for the construction of the proposed IBCC.

The ground surface level at the site slopes down from east to west and ranges from approximately Elevation 820 at the east corner of the proposed IBCC footprint to approximately Elevation 800 at the west corner of the proposed ICBB footprint.

It's our preliminary understanding that the lowest finish floor level of the proposed IBCC will be established at approximately Elevation 800 so building walls will be up to 20 feet below grade within the easterly quadrant of proposed building footprint.

The San Rafael building is located to the north of the site and will remain. A cafeteria and a courtyard are located north of the proposed development area while the auditorium and Verdugo Gym are located west and south of the proposed development area.

Joe Lutz of Gafcon furnished us with a historical grading plan dated December 2, 1935 prepared by George M. Lindsey, Architect that shows pre-existing topographic contours. This data is useful in

evaluating the geologic conditions within the proposed IBCC footprint. Figure 3 shows the proposed IBCC footprint on the 1935 George M. Lindsey grading plan.

Mr. Lutz also furnished us with a report of a prior geotechnical investigation dated May 10, 2017 prepared by Koury Engineering & Testing, Inc. (KETI) for the proposed gymnasium renovation and extension of the adjacent Verdugo Gym, located immediately south of the subject site.

Two of the prior KETI borings (B-4 and B-5) were located approximately 100 feet west of the proposed IBCC footprint as shown on Figures 2 and 3. We referenced the data from the prior borings as general background information in our preliminary evaluation.

A brief overview of the historical site development is presented below followed by a description of our field explorations and preliminary conclusions and recommendations for the proposed IBCC development.

SITE DEVELOPMENT HISTORY

Based on our review of the historical grading plans, the subject site was originally graded circa 1935 as an athletic field and locker room building. The original site development including cuts on the order approximately 22 feet and fill on the order of approximately 10 feet to create a level athletic playing field as shown on Figure 3.

SUBSURFACE EXPLORATIONS

We drilled three exploratory borings (B-3, B-4 and B-12) at the approximate locations shown on Figure 2. The borings were drilled using a limited access hollow-stem auger drill rig to depths ranging from approximately 10½ and 60½ feet below existing ground surface (BGS).

We maintained a log of the subsurface materials encountered in each boring based and collected relatively undisturbed and bulk samples from the borings at regular intervals. The samples collected from the borings were transported to our office for further review and classification.

Upon completion of drilling, we backfilled the boreholes with the soil cuttings and the pre-existing surface conditions were restored.

Borings B-3 and B-12 were located in unpaved areas. Boring B-4 was located in an area with Portland cement concrete (PCC) pavement. PCC, approximately four inches in thickness, was encountered in boring B-4.

Beneath the PCC in boring B-4, and beginning at the top of borings B-3 and B-12, fill soils, approximately 3 to 9½ feet in thickness, were encountered in each boring. The fill soils consisted primarily of loose to medium dense moist silty sand.

Relatively young (Holocene and late Pleistocene) alluvial fan deposits, approximately 38 feet in thickness, were encountered underlying the fill soils in borings B-3 and B-4. The alluvial soils consisted primarily of moist, medium dense to dense silty sand with lenses of clayey sand. Gravel and cobbles were present typically below 35 feet BGS in borings B-3 and B-4.

Mesozoic-aged igneous bedrock consisting of medium grained, biotite-hornblende monzodiorite was encountered below the alluvial soils in borings B-3 and B-4, and below the fill in boring B-12 at depths of approximately 3 to 53 feet BGS. The bedrock resembled fine- to medium-grained silty sand after the auger excavation.

Neither groundwater nor groundwater seepage was encountered in our exploratory borings.

Based on our review of the *Seismic Hazard Evaluation of the Pasadena 7.5-Minute Quadrangle, Los Angeles County, California*, Seismic Hazard Zone Report 014 by the California Geological Survey, CGS (formerly known as the California Division of Mines and Geology, 1998), the historically high groundwater level (HHGWL) at the site has historically been on the order of approximately 20 feet bgs. This condition likely applies to the axis of the canyon adjacent to Verdugo Wash.

Figure 5 present typical geologic cross sections depicting the subsurface conditions at the site.

Logs of our exploratory borings are presented in Attachment A and logs of the prior KETI borings are presented in Attachment B.

CONCLUSIONS

Subsurface Conditions

The subsurface materials encountered in our explorations and observed in the prior nearby explorations are generally consistent with the information available from the historical site grading plan and in general, vary considerably across the proposed building footprint.

As shown on Figure 3, a majority of the proposed building footprint is within cut areas associated with the original grading circa 1935.

Undocumented fill soils that were placed primarily as part of the 1935 grading, as well as localized fill that may have been placed during the subsequent building developments are present within the westerly limits of the proposed IBCC footprint.

Based on that data available from B-12 and the historical grading plans, we anticipate bedrock is present at relatively shallow depths along the easterly proposed IBCC limit and increasing depth up to approximately 50 feet bgs in boring B-4 across the proposed IBCC footprint to the west.

The alluvial deposits present beneath the fill and above the bedrock range are generally medium dense to dense, however localized loose layers are present.

Geologic and Seismic Hazards

The site is generally free from geologic or seismic hazards that would preclude the proposed development and the proposed development is considered feasible from a geotechnical perspective.

However, based on our preliminary evaluations, loose granular alluvial soils encountered in boring B-4 may be subject to seismically-induced settlement as a result of strong ground shaking at the site.

A comprehensive geotechnical investigation is required to evaluate the precise depths and magnitude of the seismically-induced settlement, however, based on the data collected during this preliminary investigation, we estimate on the order of 1 to 2 inches of seismically induced settlement may occur within the loose granular alluvial soils present at the site within the approximately upper 15 feet in boring B-4.

PRELIMINARY FOUNDATION ALTERNATIVES

Foundation Consideration – Alternative 1

Existing undocumented fill soils and loose alluvial soils subject to seismically-induced settlement are not suitable for foundation support.

These soils should be removed and replaced as properly compacted fill soils to mitigate the potential for seismically-induced settlement where present.

Based on the data available from this preliminary investigation, this solution would require removal and recompaction up to approximately 15 feet BGS within the westerly proposed building limit.

For this alternative, entire site could be over-excavated a nominal depth below the bottom of planned foundation level, three feet for instance, and the entire building may be supported on spread and continuous footings established in properly compacted fill soils.

A customized foundation design would be required to address variable thicknesses beneath the foundations across the building footprint. However, this could be accomplished simply by gradually varying the allowable bearing pressure so that the differential settlement between adjacent footings is tolerable.

We anticipate allowable bearing pressures in the properly compacted fill on the order of 4,000 pounds per square foot typically. Although, it's likely that slightly higher bearing pressures will be appropriate where the thicknesses of compacted fill is lowest are present and slightly lower bearing pressures will be appropriate where the thickness of compacted fill is larger.

An added benefit of this alternative is that the potential for seismically-induced settlement of the building floor slab is also mitigated.

Foundation Consideration – Alternative 2

As an alternative to removal and recompaction over the entire building footprint, a combined foundation system could be considered.

A combined foundation system could consist of (a) spread and continuous footings established in bedrock, where present at the planned foundation level and (b) deep foundations where existing undocumented fill soils and/or loose alluvial soils are present.

This alternative, while feasible from a design and performance perspective, would necessarily warrant considerable regulatory review comments.

Thus, we are offering this alternative herein simply for consideration noting that we are confident we can engineer a practical and cost-effective solution however that solution would require a robust level of justification to obtain DSA approval.

This solution would likely require a structural floor slab for the deep foundation-supported portion of the building.

Foundation Consideration – Alternative 3

The entire building could be supported on a deep foundation system.

This alternative would also likely require a structural floor slab as a minimum within the westerly portion of the building footprint where undocumented fill soils are present and/or seismically-induced settlement potential exists in loose alluvial soils.

Foundation Consideration – Alternative 4

As an alternative to removal and recompaction and/or deep foundations, soil improvement may be considered to mitigate the potential for seismically-induced settlement.

Similar to Alternative 2, this solution would also warrant robust regulatory review comments and would also require some type of soil improvement verification testing during the construction phase.

Foundation Considerations – Other Alternatives

When data from supplemental field explorations is available, refinements to the above preliminary alternatives and/or development of additional alternatives will be provided as appropriate.

SUPPLEMENTAL EXPLORATIONS

As noted previously, the data available from our preliminary investigation provides insight regarding the overall trend of the subsurface conditions at the site and also some specific and detailed information regarding the east and west corners of the proposed IBCC footprint.

A comprehensive geotechnical investigation is required to refine the preliminary data so that the above foundation alternatives can be evaluated more conclusively.

A comprehensive exploration program should include at least one exploration boring for every 5,000 square feet of proposed building plan footprint and should also be planned to identify the boundary zone described herein.

CLOSING

We sincerely appreciate the opportunity to provide professional services for this project. Please contact us at your convenience to discuss any questions you may have regarding this report.

Sincerely,

Langan Engineering and Environmental Services, Inc.



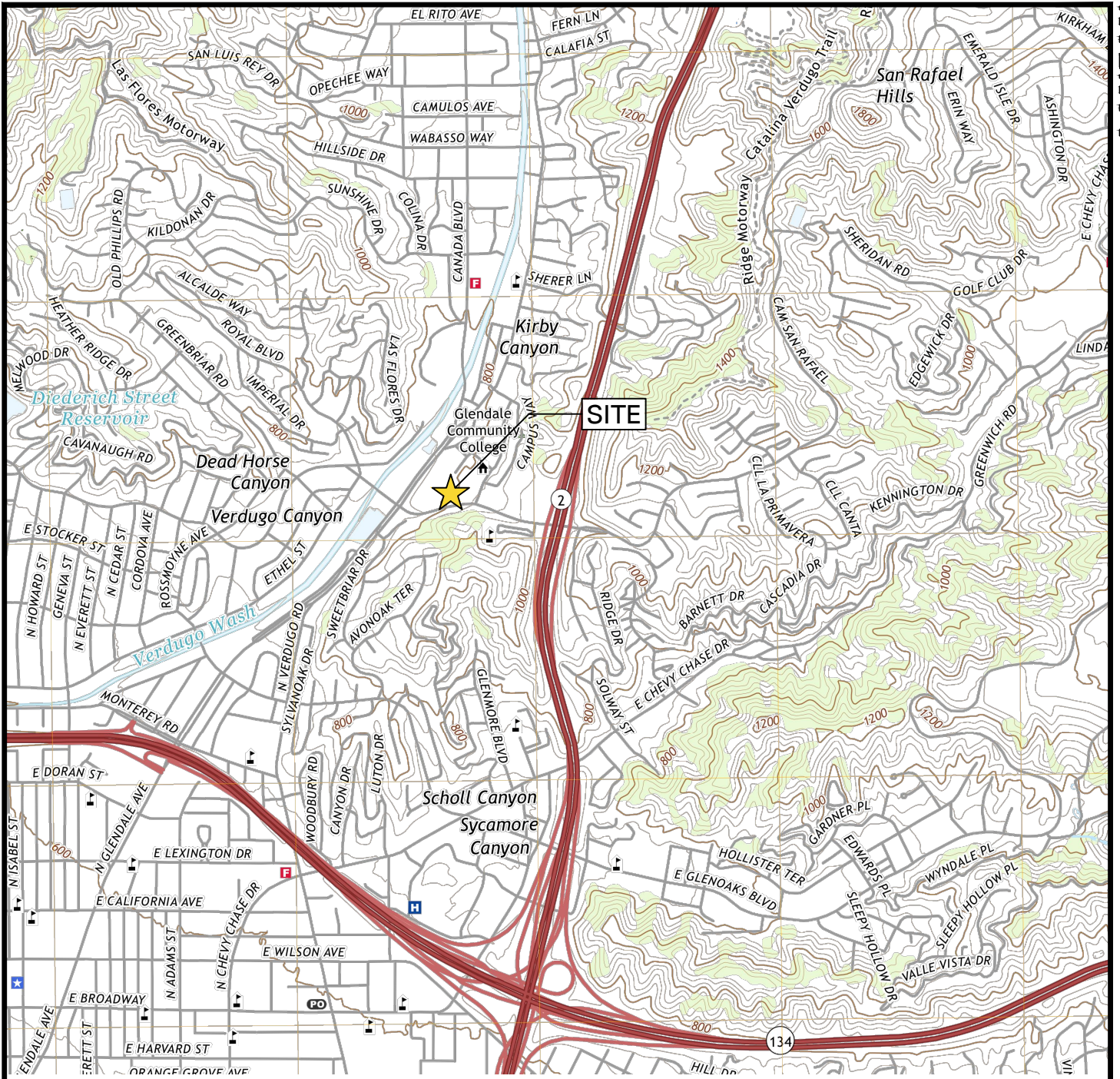
Shaun Wilkins
Senior Project Geologist



Christopher J. Zadoorian
Associate



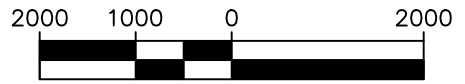
Figures



LEGEND:



SITE LOCATION



SCALE IN FEET

REFERENCE: USGS 7.5-MINUTE TOPOGRAPHIC MAP OF THE PASADENA, CALIFORNIA QUADRANGLE (2018).

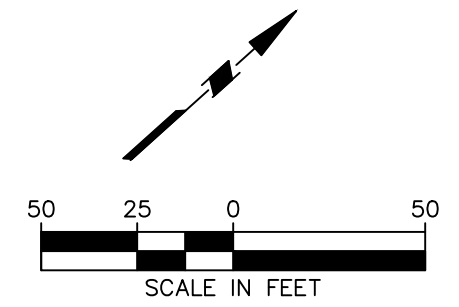
<p>LANGAN</p> <p>18575 Jamboree Road, Suite 150, Irvine, CA 92612 T: 949.561.9200 F: 949.561.9201 www.langan.com</p> <p>NEW JERSEY NEW YORK CONNECTICUT PENNSYLVANIA WASHINGTON DC VIRGINIA WEST VIRGINIA OHIO FLORIDA TEXAS ARIZONA CALIFORNIA</p> <p>ABU DHABI ATHENS DOHA DUBAI ISTANBUL LONDON PANAMA Langan Engineering & Environmental Services, Inc.</p>	Project	Figure Title	Project No.	Figure No.
	PROPOSED IBCC	SITE VICINITY MAP	700091001	1
	GLENDALE COMMUNITY COLLEGE		DECEMBER 2020	
	LOS ANGELES COUNTY CALIFORNIA		AS SHOWN	
			Drawn By	CDC



LEGEND:

- B-12 BORING LOCATION
- THICKNESS OF FILL (FEET)
ELEVATION TO ALLUVIUM OR BEDROCK (FEET, MSL)
- B-5 PRIOR BORING LOCATION
(KOURY, 2017)
- APPROXIMATE LIMITS OF PROPOSED IBCC
- EXISTING BUILDINGS
- LFFE=800±** LOWEST FINISHED FLOOR ELEVATION
(FEET, MSL)
- APPROXIMATE LIMIT OF CUT AND FILL

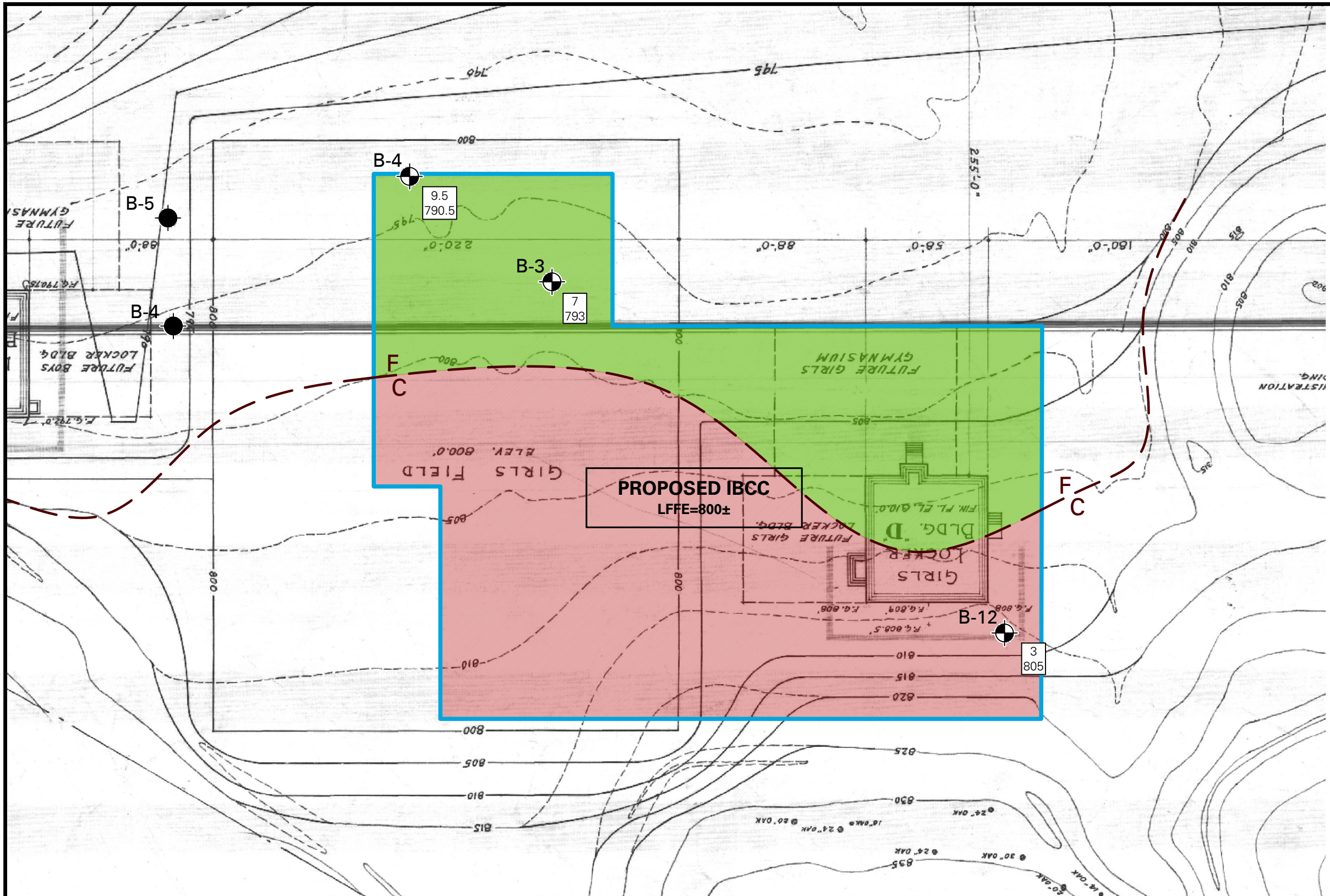
- NOTES:**
1. PRIOR KOURY BORINGS REFERENCED FROM REPORT TITLED, "GLENDALE COMMUNITY COLLEGE SCIENCE CENTER BUILDING & CAMINO REAL ELEVATOR BUILDING", PROJECT NO.: 18-0525, DATED MARCH 2020.
 2. APPROXIMATE LIMIT OF CUT AND FILL BASED ON PLOT PLAN PREPARED FOR GLENDALE JUNIOR COLLEGE BUILDINGS A-B-C-D, DATED DECEMBER 2, 1935.



CHAPARRO DRIVE

REFERENCE: BING MAPS (ACCESSED OCTOBER 27, 2020).

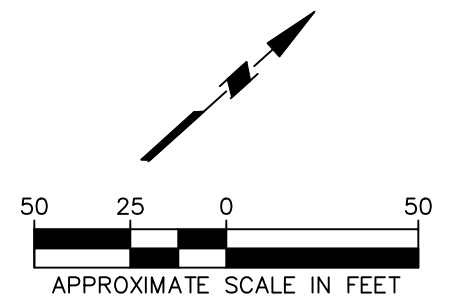
<p>LANGAN</p> <p>18575 Jamboree Road Suite 150, Irvine, CA 92612 T: 949.561.9200 F: 949.561.9201 www.langan.com</p> <p>NEW JERSEY NEW YORK CONNECTICUT PENNSYLVANIA WASHINGTON DC VIRGINIA WEST VIRGINIA OHIO FLORIDA TEXAS ARIZONA CALIFORNIA</p> <p>ABU DHABI ATHENS DOHA DUBAI ISTANBUL LONDON PANAMA Langan Engineering & Environmental Services, Inc.</p>	<p>Project</p> <p>PROPOSED IBCC</p> <p>GLENDALE COMMUNITY COLLEGE</p> <p>LOS ANGELES COUNTY CALIFORNIA</p>	<p>Figure Title</p> <p>SITE PLAN</p>	<p>Project No. 700091001</p> <p>Date DECEMBER 2020</p> <p>Scale AS SHOWN</p> <p>Drawn By MAG</p>	<p>Figure No.</p> <p>2</p>
	<p>© 2019 Langan</p>			



LEGEND:

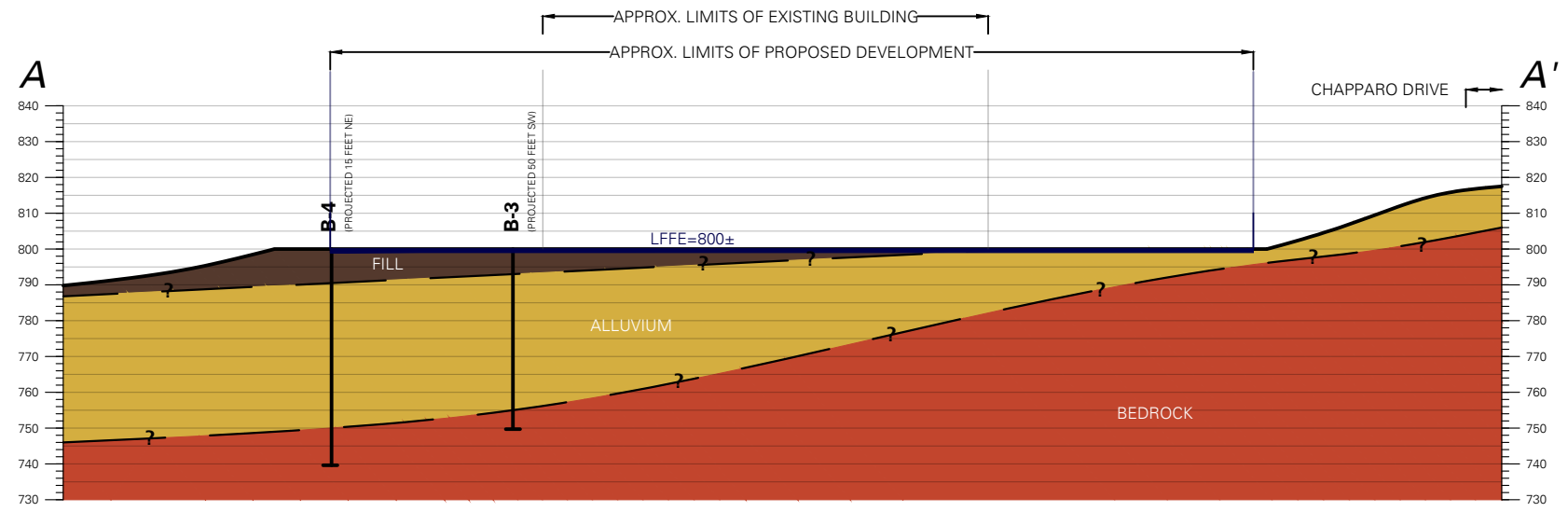
- B-12 BORING LOCATION
- THICKNESS OF FILL (FEET)
ELEVATION TO ALLUVIUM OR BEDROCK (FEET, MSL)
- B-5 PRIOR BORING LOCATION
(KOURY, 2017)
- APPROXIMATE LIMITS OF PROPOSED IBCC
- FORMER FILL AREA
- FORMER CUT AREA
- LFFE=800±** LOWEST FINISHED FLOOR ELEVATION
(FEET, MSL)
- APPROXIMATE LIMIT OF CUT AND FILL

- NOTES:**
1. PRIOR KOURY BORINGS REFERENCED FROM REPORT TITLED, "GLENDALE COMMUNITY COLLEGE SCIENCE CENTER BUILDING & CAMINO REAL ELEVATOR BUILDING", PROJECT NO.: 18-0525, DATED MARCH 2020.
 2. BACKGROUND TOPOGRAPHIC MAP REFERENCE FROM PLOT PLAN PREPARED FOR GLENDALE JUNIOR COLLEGE BUILDINGS A-B-C-D, DATED DECEMBER 2, 1935.



<p>LANGAN</p> <p>18575 Jamboree Road Suite 150, Irvine, CA 92612 T: 949.561.9200 F: 949.561.9201 www.langan.com</p> <p>NEW JERSEY NEW YORK CONNECTICUT PENNSYLVANIA WASHINGTON DC VIRGINIA WEST VIRGINIA OHIO FLORIDA TEXAS ARIZONA CALIFORNIA</p> <p>ABU DHABI ATHENS DOHA DUBAI ISTANBUL LONDON PANAMA Langan Engineering & Environmental Services, Inc.</p>	Project	Figure Title	Project No.	Figure No.
	PROPOSED IBCC	1935 SITE TOPOGRAPHY	700091001	3
	GLENDALE COMMUNITY COLLEGE		Date	
	LOS ANGELES COUNTY CALIFORNIA		DECEMBER 2020	
			Scale	
			AS SHOWN	
			Drawn By	
			MAG	

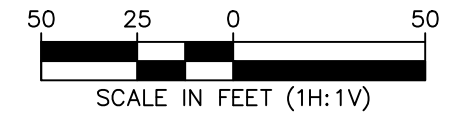
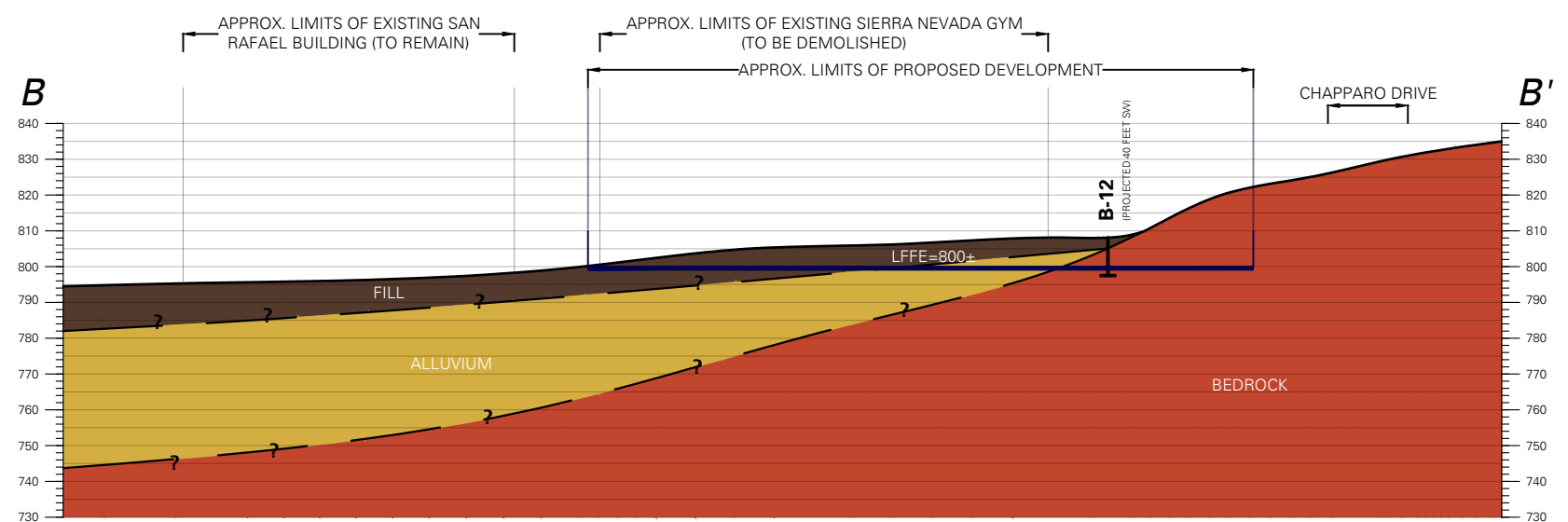
CROSS-SECTION A-A'



- LEGEND:**
- EXISTING GROUND SURFACE LEVEL
 - ARTIFICIAL FILL (af)
 - ALLUVIUM (Qyf)
 - BEDROCK (Mzdbh)
 - ?— GEOLOGIC CONTACT (QUERIED WHERE UNCERTAIN)
 - ⊥ BORING LOCATION (LANGAN)
 - LFFE=800± — LOWEST FINISHED FLOOR ELEVATION (FEET, MSL)

- NOTES:**
1. FIGURE DISPLAYS GENERALIZED SUBSURFACE CONDITIONS. FOR A DETAILED DESCRIPTION OF CONDITIONS ENCOUNTERED REFER TO BORING LOGS.
 2. REFER TO SITE PLAN FOR LOCATION OF CROSS-SECTION.

CROSS-SECTION B-B'



<p>LANGAN</p> <p>18575 Jamboree Road Suite 150, Irvine, CA 92612 T: 949.561.9200 F: 949.561.9201 www.langan.com</p> <p>NEW JERSEY NEW YORK CONNECTICUT PENNSYLVANIA WASHINGTON DC VIRGINIA WEST VIRGINIA OHIO FLORIDA TEXAS ARIZONA CALIFORNIA</p> <p>ABU DHABI ATHENS DOHA DUBAI ISTANBUL LONDON PANAMA</p> <p>Langan Engineering & Environmental Services, Inc.</p>	Project	Figure Title	Project No. 700091001	Figure No.	
	PROPOSED IBCC	CROSS-SECTIONS	Date DECEMBER 2020	4	
	GLENDALE COMMUNITY COLLEGE		Scale AS SHOWN		
	LOS ANGELES COUNTY CALIFORNIA		Drawn By MAG		

Attachment A
Langan Boring Logs

UNIFIED SOIL CLASSIFICATION SYSTEM

Major Divisions		Symbols	Typical Names
Coarse-Grained Soil (more than half of soil is larger than the no. 200 sieve size)	Gravels (more than half of coarse fraction is retained/> no. 4 sieve size)	GW	Well-graded GRAVELS with less than 5% fines or gravel-sand mixtures
		GP	Poorly-graded GRAVELS with less than 5% fines or gravel-sand mixtures
		GM	Silty gravels, gravel-sand-silt mixtures; GRAVELS with greater than 12% ML or MH fines
		GC	Clayey gravels, gravel-sand-clay mixtures; GRAVELS with greater than 12% CL or CH
	Sands (more than half of coarse fraction passes/< no. 4 sieve size)	SW	Well-graded sands with less than 5% fines or gravelly sands, little or no fines
		SP	Poorly-graded sands with less than 5% fines or gravelly sands, little or no fines
		SM	Silty sands, sand-silt mixtures; SANDS with greater than 12% ML or MH fines
Fine-Grained Soils (more than half of soil is smaller than the no. 200 sieve size)	Silts and Clays LL = < 50	ML	Inorganic silts and clayey silts of low plasticity, sandy non-plastic SILT, gravelly SILT
		CL	Inorganic clays of low to medium plasticity, silty CLAY, trace fines, sand
		OL	Organic silts and organic silt-clays of non-plastic to medium plasticity
	Silts and Clays LL = > 50	MH	Inorganic medium plastic silts, medium plastic to very plastic clayey silts.
		CH	Inorganic plastic to very plastic CLAYS, sandy plastic CLAY
		OH	Organic medium plastic to plastic silty CLAYS, and very plastic CLAYS
Highly Organic Soils	PT	Peat and other highly organic soils	

GRAIN SIZE CHART		
Classification	Range of Grain Sizes	
	U.S. Standard Sieve Size	Grain Size in Millimeters
Boulders	Above 12"	Above 305
Cobbles	12" to 3"	305 to 76.2
Gravel coarse fine	3" to No. 4	76.2 to 4.75
	3" to ¾" ¾" to No.4	76.2 to 19.1 19.1 to 4.75
Sand coarse medium fine	No. 4 to No. 200	4.76 to 0.075
	No. 4 to No. 10	4.76 to 2.00
	No. 10 to No. 40 No. 40 to No. 200	2.00 to 0.420 0.240 to 0.075
Silt and Clay	Below No. 200	Below 0.075

SOIL DESCRIPTIONS/SYMBOLS

	Well-graded GRAVEL (GW)		Low-Plasticity SILT (ML)
	Poorly-graded GRAVEL (GP)		High-Plasticity SILT (MH)
	Silty GRAVEL (GM)		Low-Plasticity CLAY (CL)
	Clayey GRAVEL (GC)		High-Plasticity CLAY (CH)
	Well-graded SAND (SW)		SANDSTONE
	Poorly-graded SAND (SP)		CLAYSTONE
	Silty SAND (SM)		SILTSTONE
	Clayey SAND (SC)		FILL
	AGGREGATE BASE		ASPHALT

GROUNDWATER READING

- Groundwater encountered during drilling
- Groundwater at completion
- Groundwater at 24 hours

SAMPLER TYPE

- CR - Modified California (CR) split-barrel ring sampler with 3.0-inch outside diameter and a 2.5-inch inside diameter.
- SPT - Standard Penetration Test (SPT) split-barrel sampler with a 2.00-inch outside diameter with a 1.5-inch inside diameter
- ST - Shelby Tube (3.0-inch outside diameter, thin-walled tube) advanced with hydraulic pressure
- BAG - Bulk Sample
- C - Core Barrel

LANGAN
 18575 Jamboree Road, Suite 150, Irvine, CA 92612
 T: 949.561.9200 F: 949.561.9201 www.langan.com

NEW JERSEY NEW YORK CONNECTICUT PENNSYLVANIA
 WASHINGTON DC VIRGINIA WEST VIRGINIA OHIO FLORIDA
 TEXAS ARIZONA CALIFORNIA

ABU DHABI ATHENS DOHA
 DUBAI ISTANBUL LONDON PANAMA
 Langan Engineering & Environmental Services, Inc.

Figure Title

BORING LOG LEGEND

Figure No.

APPENDIX A

Project Proposed IBCC			Project No. 700091001		
Location 1500 North Verdugo Road, Glendale, CA 91208			Elevation and Datum Approx. 800 feet		
Drilling Company 2R Drilling		Date Started 11/11/20		Date Finished 11/11/20	
Drilling Equipment CME 75 Track-mounted Drill Rig			Completion Depth 50.3 ft		Rock Depth -
Size and Type of Bit 8-inch O.D. Hollow Stem Auger			Number of Samples	Disturbed 1	Undisturbed 10
Casing Diameter (in) -	Casing Depth (ft) -	Water Level (ft.) First ▽	Completion ▽	24 HR. ▽	-
Casing Hammer	Weight (lbs) -	Drop (in) -	Drilling Foreman Shaun Wilkins		
Sampler 2-inch O.D. Split-Barrel SPT, 2.5-inch I.D. Cal Mod			Field Engineer		
Sampler Hammer Automatic	Weight (lbs) 140	Drop (in) 30			

I:\LANGAN.COM\DATA\IRV\DATA\700091001\PROJECT DATA\DISCIPLINE\GEO\GINTLOGS\700091001 - GINT LOGS.GPJ ... 12/2/2020 10:22:59 PM ... Report Log - LANGAN

MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data					Water Content	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
				Number	Type	Recov. (in)	Penetr. resist. BL/ft			
	+800.0		0							Started drilling: 10:45.
	799.8	Gravel. Artificial Fill (af) Silty SAND (SM), strong brown, medium dense, moist, fine to medium sand. [FILL]	1							
		Grayish-brown to brown.	2							
		Strong brown, loose, very moist, slightly micaceous.	3	S-1	CR	18	14	8		
			4				9			
			5							
			6	S-2	CR	18	3	2		
			7				2			
	793.0	Young Fan Deposits (Qyf) Clayey SAND (SC), brown to yellowish-brown, medium dense, very moist, fine to medium sand.	8	S-3	CR	18	7	12		
			9				20			
			10							
			11	S-4	CR	18	8	12		
			12				20			
			13	S-5	CR	18	8	12		
		Silty SAND (SM), grayish-brown to brown, medium dense, moist, fine to coarse sand, micaceous, with trace gravel, slightly porous.	14				20			
			15							
			16	S-6	CR	18	9	17		
			17				20			
			18							
			19							
			20							

Project Proposed IBCC	Project No. 700091001
Location 1500 North Verdugo Road, Glendale, CA 91208	Elevation and Datum Approx. 800 feet

MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data				Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)	
				Number	Type	Recov. (in)	Penetr. resist BL/6in		Water Content
[Symbol: Dotted pattern]	780.0	Dense, fine to medium sand, no pores, trace clay.	20	S-7	CR	18	15		
			21				17		
			22				30		
				23					
				24					
			Medium dense, very moist.	25	S-8	CR	18		11
				26					12
				27					17
				28					
				29					
		Becomes dense, fine to coarse sand.	30	S-9	CR	18	14		
			31				20		
			32				35		
			33						
			34						
		Yellowish-brown, very fine to fine sand, with cobbles.	35	S-10	CR	4	50/4"		
			36						
			37						
			38						
			39						
	760.0	Clayey SAND (SC), orangish-brown, dense, very moist, fine to coarse sand, with some gravel and cobbles.	40	CR		0	50		
			41						
			42						
			43						
			44						
	755.0		45						

I:\LANGAN\COMDATA\DATA\700091001\PROJECT DATA\DISCIPLINE\GINTLOGS\700091001 - GINT LOGS.GPJ ... 12/2/2020 10:22:59 PM ... Report Log - LANGAN

Project		Project No.						
Proposed IBCC		700091001						
Location		Elevation and Datum						
1500 North Verdugo Road, Glendale, CA 91208		Approx. 800 feet						
MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data				Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
				Number	Type	Recov. (in)	Penetr. resist BL/6in	
	+755.0	<p>Bedrock - biotite-hornblende monzodiorite (Mzdbh) Black and white speckled, moderately hard, slightly moist, medium to coarse grained, moderately weathered.</p>	45	CR	0	50/5"	<p>No sample recovery.</p>	
+			46					
+			47					
+			48					
+			49					
+			50					
+			51					
+			52					
+			53					
+			54					
	+749.7	<p>Olive gray to black and white speckled, medium grained, hard, limonite stained.</p> <p>Total Depth = 50.3 feet. Groundwater not encountered. Borehole backfilled with soil cuttings.</p>	50	S-1 SPT	4	50/4"	<p>No recovery from ring sample at 50 feet. 50 blows for 2 inches. Ended drilling: 12:45.</p>	
		51						
		52						
		53						
		54						
		55						
		56						
		57						
		58						
		59						
		60						
		61						
		62						
		63						
		64						
		65						
		66						
		67						
		68						
		69						
		70						

I:\LANGAN.COM\DATA\IRV\DATA\700091001\PROJECT DATA\DISCIPLINE\GEO\GINTLOGS\700091001 - GINT LOGS.GPJ ... 12/2/2020 10:22:59 PM ... Report Log - LANGAN

Project Proposed IBCC			Project No. 700091001		
Location 1500 North Verdugo Road, Glendale, CA 91208			Elevation and Datum Approx. 800 feet		
Drilling Company 2R Drilling		Date Started 11/11/20		Date Finished 11/11/20	
Drilling Equipment CME 75 Track-mounted Drill Rig			Completion Depth 60.4 ft		Rock Depth -
Size and Type of Bit 8-inch O.D. Hollow Stem Auger			Number of Samples	Disturbed 2	Undisturbed 14
Casing Diameter (in) -		Casing Depth (ft) -	Water Level (ft.) First ▽	Completion ▽	Core 24 HR. -
Casing Hammer	Weight (lbs) -	Drop (in) -	Drilling Foreman		
Sampler 2-inch O.D. Split-Barrel SPT, 2.5-inch I.D. Cal Mod, Bulk			Field Engineer		
Sampler Hammer Automatic	Weight (lbs) 140	Drop (in) 30	Shaun Wilkins		

I:\LANGAN.COM\DATA\AIRV\DATA\700091001\PROJECT\DATA\DISCIPLINE\GEO\GINTLOGS\700091001 - GINT LOGS.GPJ ... 12/2/2020 10:23:01 PM ... Report Log - LANGAN

MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data					Water Content	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
				Number	Type	Recov. (in)	Penetr. resist. BL/ft			
	800.0		0							Started drilling: 8:20. Bulk sample collected from 0-5 feet bgs.
	799.7	Concrete = 4 inches thick. Artificial Fill (af) Silty SAND (SM), grayish-brown, medium dense, moist, fine to medium sand, trace gravel. [FILL]	1							
			2							
			3	S-1	CR	18	10	12		
			4					12		
			5							
			6	S-2	CR	18	8	7		
			7					9		
		Slightly moist.	8	S-3	CR	18	6	7		
			9					9		
	790.5	Young Fan Deposits (Qvf) Silty SAND (SM), grayish-brown, loose, slightly moist, fine to medium sand, trace gravel. Decreased silt content.	10							
			11	S-4	CR	18	5	7		
			12					9		
		Medium dense.	13	S-5	CR	18	6	8		
			14					14		
		Strong brown, loose, moist, slightly porous, with trace organics (rootlets).	15							
			16	S-6	CR	18	6	5		
			17					6		
		Medium dense, fine to coarse sand, with trace fine gravel and clay.	18	S-7	CR	18	6	10		
			19					12		
			20							

Project		Project No.						
Proposed IBCC		700091001						
Location		Elevation and Datum						
1500 North Verdugo Road, Glendale, CA 91208		Approx. 800 feet						
MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data				Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
				Number	Type	Recov. (in)	Penetr. resist. BL/6in	
	+780.0		20					
		With pockets of sand and decreased fine content, no pores or rootlets.	21	S-8	CR	18	7 8 14	
			22					
			23					
			24					
			25					
			26	S-9	CR	18	11 14 23	
			27					
			28					
			29					
		Dense, fine to medium sand, micaceous, decreased silt content.	30					
			31	S-10	CR	18	18 24 32	
			32					
			33					
			34					
			35					
			36	S-11	CR	18	16 28 34	
			37					
			38					
			39					
		Olive brown to grayish-brown, very dense.	40					
			41	S-12	CR	18	14 28 43	
			42					
			43					
			44					
			45					

I:\LANGAN.COM\DATA\IRV\DATA\700091001\PROJECT DATA\DISCIPLINE\GEO\GINTLOGS\700091001 - GINT LOGS.GPJ ... 12/2/2020 10:23:01 PM ... Report Log - LANGAN

Project		Project No.						
Proposed IBCC		700091001						
Location		Elevation and Datum						
1500 North Verdugo Road, Glendale, CA 91208		Approx. 800 feet						
MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data				Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
				Number	Type	Recov. (in)	Penetr. resist. BL/6in	
[Cobbles Symbol]	755.0	Cobbles.	45	CR	0	50/5"	No sample recovery. Drill rig chatter.	
	750.0		46					
[Clay Symbol]	750.0	CLAY with Silt (CL), olive brown, very stiff, very moist, with limonite staining and few fine to coarse sand.	47					
	747.0		48					
[Bedrock Symbol]	747.0	Bedrock - biotite-hornblende monzodiorite (Mzdbh) Olive gray, moderately hard, slightly moist, medium grained, moderately weathered, limonite stained.	49					
	739.6		50	S-13	CR	18		14
[Soil Symbol]	739.6	Total Depth = 60.4 feet. Groundwater not encountered. Borehole backfilled with soil cuttings and concrete patched.	51					
			52					
[Soil Symbol]			53					
			54					
[Soil Symbol]			55	S-14	CR	5	50/5"	
			56					
[Soil Symbol]			57					
			58					
[Soil Symbol]			59					
			60	S-15	SP	5		70/5"
[Soil Symbol]			61				No recovery from ring sample at 60 feet. 70 blows for 2 inches. Ended drilling: 11:30.	
			62					
[Soil Symbol]			63					
			64					
[Soil Symbol]			65					
			66					
[Soil Symbol]			67					
			68					
[Soil Symbol]			69					
			70					

I:\LANGAN.COM\DATA\IRV\DATA\700091001\PROJECT DATA\DISCIPLINE\GEO\TECHNICAL\GINTLOGS\700091001 - GINT LOGS.GPJ ... 12/2/2020 10:23:02 PM ... Report Log - LANGAN

Project Proposed IBCC			Project No. 700091001		
Location 1500 North Verdugo Road, Glendale, CA 91208			Elevation and Datum Approx. 808 feet		
Drilling Company 2R Drilling		Date Started 11/11/20		Date Finished 11/11/20	
Drilling Equipment CME 75 Track-mounted Drill Rig			Completion Depth 10.5 ft		Rock Depth -
Size and Type of Bit 8-inch O.D. Hollow Stem Auger			Number of Samples	Disturbed -	Undisturbed 2
Casing Diameter (in) -	Casing Depth (ft) -		Water Level (ft.) First ▽	Completion ▽	Core 24 HR. ▽
Casing Hammer	Weight (lbs) -	Drop (in) -	Drilling Foreman		
Sampler 2.5-inch I.D. Cal Mod			Field Engineer		
Sampler Hammer Automatic	Weight (lbs) 140	Drop (in) 30	Shaun Wilkins		

I:\LANGAN.COM\DATA\DATA0700091001\PROJECT DATA\DISCIPLINE\GEO\GINTLOGS\700091001 - GINT LOGS.GPJ ... 12/2/2020 10:22:57 PM ... Report Log - LANGAN

MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
				Number	Type	Recov. (in)	Penetr. resist. BL/ft	Water Content	
	808.0	Artificial Fill (af) Clayey SAND (SC), strong brown, loose, very moist, fine to medium sand. [FILL]	0						Started drilling: 7:15. Hand auger from 0-5 feet bgs.
	806.5	Silty SAND (SM), orangish-brown and grayish-brown mottled, loose, moist, fine sand. [FILL]	1						
	805.0	Bedrock - biotite-hornblende monzodiorite (Mzdbh) Black and white speckled, hard, slightly moist, medium grained, slightly weathered, limonite stained.	2						
			3						
			4						
			5	S-1	CR	4	50/4"		
			6						
			7						
			8						
			9						
			10	S-2	CR	6	50/6"		
	797.5		11						Ended drilling: 8:00.
		Total Depth = 10.5 feet. Groundwater not encountered. Borehole backfilled with soil cuttings.	12						
			13						
			14						
			15						
			16						
			17						
			18						
			19						
			20						

Attachment B
KETI Boring Logs

KEY TO LOGS

SOILS CLASSIFICATION						
MAJOR DIVISIONS			GRAPHIC LOG	USCS SYMBOL	TYPICAL NAMES	
COARSE GRAINED SOILS	GRAVELS	CLEAN GRAVELS		GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	
		LESS THAN 5% FINES		GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	
		GRAVELS WITH FINES		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES	
	SANDS	MORE THAN 50% OF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN SANDS		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
			LESS THAN 5% FINES		SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		50% OR MORE OF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE	SANDS WITH FINES		SM	SILTY SANDS, SAND-SILT MIXTURES
			MORE THAN 12% FINES		SC	CLAYEY SANDS, SAND-CLAY MIXTURES
			SANDS AND SILTS		SM-SC	SANDS AND SILTS
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT IS LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY	
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS	
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	
	SILTS AND CLAYS	LIQUID LIMIT IS 50 OR MORE		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR GRAVELLY ELASTIC SILTS	
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS	
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS	
HIGHLY ORGANIC SOILS				PT	PEAT AND OTHER HIGHLY ORGANIC SOILS	

GRAIN SIZES							
SILT AND CLAY	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		
	#200	#40	#10	#4	3/4"	3"	12"
SIEVE SIZES							

KEY TO LOGS (continued)

SPT/CD BLOW COUNTS VS. CONSISTENCY/DENSITY					
FINE-GRAINED SOILS (SILTS, CLAYS, etc.)			GRANULAR SOILS (SANDS, GRAVELS, etc.)		
CONSISTENCY	*BLOWS/FOOT		RELATIVE DENSITY	*BLOWS/FOOT	
	SPT	CD		SPT	CD
SOFT	0-4	0-4	VERY LOOSE	0-4	0-8
FIRM	5-8	5-9	LOOSE	5-10	9-18
STIFF	9-15	10-18	MEDIUM DENSE	11-30	19-54
VERY STIFF	16-30	19-39	DENSE	31-50	55-90
HARD	over 30	over 39	VERY DENSE	over 50	over 90

* CONVERSION BETWEEN CALIFORNIA DRIVE SAMPLERS (CD) AND STANDARD PENETRATION TEST (SPT) BLOW COUNT HAS BEEN CALCULATED USING "FOUNDATION ENGINEERING HANDBOOK" BY H.Y. FANG. (VALUES ARE FOR 140 Lbs HAMMER WEIGHT ONLY)

DESCRIPTIVE ADJECTIVE VS. PERCENTAGE	
DESCRIPTIVE ADJECTIVE	PERCENTAGE REQUIREMENT
TRACE	1 - 10%
LITTLE	10 - 20%
SOME	20 - 35%
AND	35 - 50%

*THE FOLLOWING "DESCRIPTIVE TERMINOLOGY/ RANGES OF MOISTURE CONTENTS" HAVE BEEN USED FOR MOISTURE CLASSIFICATION IN THE LOGS.

APPROXIMATE MOISTURE CONTENT DEFINITION	
DEFINITION	DESCRIPTION
DRY	Dry to the touch; no observable moisture
SLIGHTLY MOIST	Some moisture but still a dry appearance
MOIST	Damp, but no visible water
VERY MOIST	Enough moisture to wet the hands
WET	Almost saturated; visible free water

Boring Log



Project No. : 17-0257
 Project Name : Glendale Community College
 Drilling Method : Hollow Stem 8" Auger
 Sampling Method : Bulk - CD - SPT
 Hammer Weight : 140 lbs Drop Height : 30"
 Location : See Figure A-2

Boring No. : B-1
 Sheet : 1 of : 2
 Ground Elevation:
 Drilling Co. : Cascade
 Date Drilled : 03-27-2017

Sample No.	Moisture Content (%)	Dry Unit Weight (pcf)	Blows per 6"	Depth (ft)	Sample Location	Graphic Log	Soil Type (USCS)	Description	Additional Tests
1	15.3			0				4" of concrete	
2	12.2		7 11 12				CL	FILL: Sandy Lean CLAY; layers of clayey sand, trace of gravel, moist, reddish brown with dark yellowish brown	#200 Wash Fines = 53% #200 Wash Fines = 50%
3	8.9	110	11 27 27	5				ALLUVIUM: Clayey SAND; layers of sandy lean clay, fine to medium, medium dense, moist, dark yellowish brown	#200 Wash Fines = 31% Consolidation
4	11.5		11 11 11						#200 Wash Fines = 38%
5	6.7	111	15 20 20	10				layers of silty sand	#200 Wash Fines = 23%
6	9.2		15 15 15	15			SC		#200 Wash Fines = 34%
7	10.9	117	15 25 30	20					#200 Wash Fines = 41%
8	10.5		25 25 30	25					#200 Wash Fines = 39%
9	10.5	126	20 30 50	30				Silty SAND; fine to medium, dense, moist, yellowish brown (similar to highly weathered decomposed granite)	#200 Wash Fines = 31%
10	11.8		50/6"	35			SM		#200 Wash Fines = 29%

Bulk

CD

SPT

Boring Log



Project No. : 17-0257
 Project Name : Glendale Community College

Boring No. : B-1

Sheet : 2 of : 2

Drilling Method : Hollow Stem 8" Auger

Sampling Method : Bulk - CD - SPT

Ground Elevation:

Hammer Weight : 140 lbs Drop Height : 30"

Drilling Co. : Cascade

Location : See Figure A-2

Date Drilled : 03-27-2017

Sample No.	Moisture Content (%)	Dry Unit Weight (pcf)	Blows per 6"	Depth (ft)	Sample Location	Graphic Log	Soil Type (USCS)	Description	Additional Tests
11	5.2	118	50/6"	40				Highly Weathered Decomposed Granite (D.G.); slightly moist, yellowish brown with white, gray and black	Fines = 15%
12	5.1		50/4"	45					Fines = 28%
			50/1"	50				End of Boring @ 50' 0" No groundwater encountered	

Bulk

CD

SPT

Boring Log



Project No. : 17-0257
 Project Name : Glendale Community College
 Drilling Method : Hollow Stem 8" Auger
 Sampling Method : CD - SPT
 Hammer Weight : 140 lbs Drop Height : 30"
 Location : See Figure A-2

Boring No. : B-2
 Sheet : 1 of : 1
 Ground Elevation:
 Drilling Co. : Geoboden, Inc.
 Date Drilled : 03-27-2017

Sample No.	Moisture Content (%)	Dry Unit Weight (pcf)	Blows per 6"	Depth (ft)	Sample Location	Graphic Log	Soil Type (USCS)	Description	Additional Tests
1	7.6			0				5" of asphalt	
2	5.9		12 50/6"				SC	FILL: Clayey SAND; layers of sandy clay, trace of gravel and asphalt, fine to coarse, dense, dark yellowish brown	Fines = 42% #200 Wash Fines = 35%
3	6.9	111	25 25 30	5			SC		#200 Wash Fines = 46%
4	10.2		20 20 20				CL	ALLUVIUM: Sandy Lean CLAY; very stiff, moist, dark yellowish brown	#200 Wash Fines = 57%
5	9.0	117	30 30 30	10			SC	Clayey SAND; layers of sandy clay, fine to coarse, very dense, moist, yellowish brown	#200 Wash Fines = 36%
6	7.1		25 25 15	15				layers of silty sand	#200 Wash Fines = 46%
7	5.7	114	29 30 30	20			SM	Silty SAND; fine, some clasts, dense, slightly moist, dark yellowish brown	#200 Wash Fines = 29%
				25				End of Boring @ 21' 6" No groundwater encountered	

Boring Log



Project No. : 17-0257
 Project Name : Glendale Community College

Boring No. : B-3

Sheet : 1 of 2

Drilling Method : Hollow Stem 8" Auger
 Sampling Method : Bulk - CD - SPT
 Hammer Weight : 140 lbs Drop Height : 30"
 Location : See Figure A-2

Ground Elevation:
 Drilling Co. : Cascade
 Date Drilled : 03-27-2017

Sample No.	Moisture Content (%)	Dry Unit Weight (pcf)	Blows per 6"	Depth (ft)	Sample Location	Graphic Log	Soil Type (USCS)	Description	Additional Tests
1	13.6			0				5" of concrete FILL:	Fines = 39%
							SC	Clayey SAND; fine to medium, trace of gravel, sandy clay inclusions, medium dense, reddish brown	
2	13.3	117	11 11 15	5				ALLUVIUM: Clayey SAND; layers of sandy clay, trace of gravel, fine to coarse, medium dense to dense, moist, brown	Fines = 35% Direct Shear Consolidation
3	12.3		11 15 15						#200 Wash Fines = 34%
4	10.7	122	20 20 25	10					#200 Wash Fines = 36%
5	8.4		25 25 25	15					#200 Wash Fines = 42%
6	9.0	120	28 30 30	20			SC		#200 Wash Fines = 45%
7	8.3		20 25 25	25					#200 Wash Fines = 35%
8	7.9	122	40 50/6"	30				very dense	#200 Wash Fines = 31%
9	9.7		50/6"	35				very dense	#200 Wash Fines = 37%
				40			SP-SM	Poorly Graded SAND with SILT and GRAVEL; fine to coarse, dense, slightly moist, yellowish brown	

Boring Log



Project No. : 17-0257
 Project Name : Glendale Community College
 Drilling Method : Hollow Stem 8" Auger
 Sampling Method : Bulk - CD - SPT
 Hammer Weight : 140 lbs Drop Height : 30"
 Location : See Figure A-2

Boring No. : B-3
 Sheet : 2 of : 2
 Ground Elevation:
 Drilling Co. : Cascade
 Date Drilled : 03-27-2017

Sample No.	Moisture Content (%)	Dry Unit Weight (pcf)	Blows per 6"	Depth (ft)	Sample Location	Graphic Log	Soil Type (USCS)	Description	Additional Tests
10	3.8	118	50/5"	40			SP-SM	Poorly Graded SAND with SILT and GRAVEL; fine to coarse, dense, slightly moist, yellowish brown	#200 Wash Fines = 5% Gravel = 37%
11	5.6		20 20 25	45			SM	Silty SAND; fine to coarse, dense, slightly moist, yellowish brown (decomposed-granite like)	#200 Wash Fines = 18%
12	5.8	121	28 50/6"	50				chunk of decomposed granite, yellowish brown, white and black	Fines = 13%
End of Boring @ 51' 0" No groundwater encountered									

Boring Log



Project No. : 17-0257
 Project Name : Glendale Community College
 Drilling Method : Hollow Stem 8" Auger
 Sampling Method : Bulk - CD - SPT
 Hammer Weight : 140 lbs Drop Height : 30"
 Location : See Figure A-2

Boring No. : B-4
 Sheet : 1 of : 2
 Ground Elevation:
 Drilling Co. : Cascade
 Date Drilled : 03-28-2017

Sample No.	Moisture Content (%)	Dry Unit Weight (pcf)	Blows per 6"	Depth (ft)	Sample Location	Graphic Log	Soil Type (USCS)	Description	Additional Tests
1	8.2			0				FILL:	#200 Wash Fines = 34%
2	10.5		11 10 7				SC	Clayey SAND; fine to coarse, trace of gravel, layers of silty sand, medium dense, moist, dark yellowish brown	#200 Wash Fines = 38%
3	7.7	104	10 15 15	5					#200 Wash Fines = 33% Gravel = 9%
4	6.3		7 10 10				SC	ALLUVIUM: Clayey SAND; layers of sandy clay, fine to coarse, clasts, slightly moist, yellowish brown	#200 Wash Fines = 35%
5	6.5	112	10 11 12	10					#200 Wash Fines = 33%
6	4.9		9 11 11	15			SM	Silty SAND; fine to coarse, trace of gravel, clasts, medium dense, slightly moist, yellowish brown	#200 Wash Fines = 27%
7	9.0	115	12 13 14	20			SC	Clayey SAND; fine to coarse, medium dense, moist, dark yellowish brown	
8	5.2		12 12 14	25			SM	Silty SAND; fine to coarse, trace of gravel, granitic clasts, medium dense, slightly moist, yellowish brown	#200 Wash Fines = 21%
9	10.2	115	15 15 30	30					#200 Wash Fines = 35%
10	8.0		50/6"	35			SC	Clayey SAND; fine to coarse, trace of gravel, medium dense to dense, moist, mottled reddish brown and yellowish brown	#200 Wash Fines = 34%

Bulk

CD

SPT

Boring Log



Project No. : 17-0257
 Project Name : Glendale Community College

Boring No. : B-4
 Sheet : 2 of 2

Drilling Method : Hollow Stem 8" Auger
 Sampling Method : Bulk - CD - SPT
 Hammer Weight : 140 lbs Drop Height : 30"
 Location : See Figure A-2

Ground Elevation:
 Drilling Co. : Cascade
 Date Drilled : 03-28-2017

Sample No.	Moisture Content (%)	Dry Unit Weight (pcf)	Blows per 6"	Depth (ft)	Sample Location	Graphic Log	Soil Type (USCS)	Description	Additional Tests
11	9.1	124	28 50/6"	40				layers of silty sand	#200 Wash Fines = 30%
12	10.0		50/6"	45			SC	layers of silty sand	#200 Wash Fines = 35%
			100/1"	50				no sample recovered	
								End of Boring @ 50' 0" No groundwater encountered	

Boring Log



Project No. : 17-0257
Project Name : Glendale Community College

Boring No. : B-5

Sheet : 1 of 2

Drilling Method : Hollow Stem 8" Auger

Sampling Method : Bulk - CD - SPT

Ground Elevation:

Hammer Weight : 140 lbs Drop Height : 30"

Drilling Co. : Cascade

Location : See Figure A-2

Date Drilled : 03-28-2017

Sample No.	Moisture Content (%)	Dry Unit Weight (pcf)	Blows per 6"	Depth (ft)	Sample Location	Graphic Log	Soil Type (USCS)	Description	Additional Tests
1	7.4			0				FILL: Clayey SAND; layers of sandy lean clay, fine to coarse, loose to medium dense, slightly moist to moist, brown to dark brown	#200 Wash Fines = 32%
2	9.8		3	3			SC		#200 Wash Fines = 32%
3	6.2	112	5	5					#200 Wash Fines = 31% Consolidation
4	5.2		6	6				ALLUVIUM: Clayey SAND; layers of sandy lean clay, fine to coarse, granitic clasts, medium dense, dark yellowish brown	#200 Wash Fines = 33%
5	5.5	117	12	12			SC		#200 Wash Fines = 32% Consolidation
6	3.8		10	15				Silty SAND; layers of sandy lean clay, fine to coarse, granitic clasts, medium dense, dark yellowish brown	#200 Wash Fines = 18%
7	4.0	118	15	20			SM		#200 Wash Fines = 16%
8	5.0		10	25				layers of clayey sand	#200 Wash Fines = 22%
9	7.5	123	13	30				Clayey SAND; layers of sandy lean clay, fine to coarse, granitic clasts, medium dense to dense, moist, dark yellowish brown	#200 Wash Fines = 34%
10	9.3		13	35			SC		#200 Wash Fines = 36%

Bulk

CD

SPT

Boring Log



Project No. : 17-0257
 Project Name : Glendale Community College

Boring No. : B-5

Sheet : 2 of : 2

Drilling Method : Hollow Stem 8" Auger
 Sampling Method : Bulk - CD - SPT
 Hammer Weight : 140 lbs Drop Height : 30"
 Location : See Figure A-2

Ground Elevation:
 Drilling Co. : Cascade
 Date Drilled : 03-28-2017

Sample No.	Moisture Content (%)	Dry Unit Weight (pcf)	Blows per 6"	Depth (ft)	Sample Location	Graphic Log	Soil Type (USCS)	Description	Additional Tests
11	9.4	123	11 50/6"	40					#200 Wash Fines = 34%
12	9.0		50/6"	45			SC	very dense	#200 Wash Fines = 29%
13	10.7	122	30 50/6"	50				trace of gravel, layers of silty sand, very dense	#200 Wash Fines = 26% Gravel = 12%
14	12.1		15 15 20	55					#200 Wash Fines = 31%
15	8.4	118	14 16 20	60				Poorly Graded SAND with SILT and GRAVEL; fine to coarse, large granitic clasts, dense, slightly moist to moist, yellowish brown to dark yellowish brown	#200 Wash Fines = 11% Gravel = 22%
16	7.6		21 25 26	65			SP-SM		#200 Wash Fines = 11% Gravel = 24%
17	10.0	133	9 9 10	70					#200 Wash Fines = 7%
				75				End of Boring @ 71' 6" Groundwater encountered @ 67'	
				80					

Bulk

CD

SPT