Appendix E Geotechnical Investigation Report

GEOTECHNICAL INVESTIGATION REPORT

for

PROPOSED ROBERTS CAMPUS SPORTS BOWL Claremont McKenna College West Arrow Route and Claremont Boulevard Claremont and Upland, California

Prepared For:

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January 12, 2024 Langan Project No.: 700114101



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January 12, 2024

Michelle Barlow, Andres Ramirez and Matthew Bibbens Claremont McKenna College 888 North Columbia Avenue Claremont, California 91711 Attn.: Michelle Barlow

Geotechnical Investigation Report Proposed Roberts Campus Sports Bowl Claremont McKenna College Claremont and Upland, California Langan Proposal No. 700114101

Dear Michelle, Andres and Matt:

Langan Engineering & Environmental Services, Inc. is pleased to submit this geotechnical engineering report for the Proposed Roberts Campus Sports Bowl to be constructed for Claremont McKenna College (CMC) in Claremont and Upland, California.

This report was prepared in general accordance with our proposal dated March 21, 2022 and our contract for professional services with CMC that was executed on June 28, 2022.

* * *

We sincerely appreciate the opportunity to be of service to you on this project. Please contact us if you have questions regarding this report.

Sincerely, Langan Engineering & Environmental Services, Inc.

18575 Jamboree Road, Suite 150

Christopher J. Zadoorian, G.E., F. ASCE Senior Associate

cc: Aran Coakley and Linqi Dong, BIG Architects Steve Methot, IDS Real Estate AJ Whitaker and Tyler Johnson, Atlas Civil Design Paul Rohrer and Elizabeth Camacho, Loeb and Loeb, LLP Michael Collins, Independent Consultant

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1.0 INTRODUCTION

1.1 General

Langan Engineering and Environmental Services, Inc. (LANGAN) has completed a geotechnical investigation for the proposed Roberts Campus Sports Bowl development. The proposed development will be constructed primarily within a portion of the existing Claremont Landfill (aka Roberts Campus East; previously known as East Campus) noting a pedestrian tunnel is also planned that will extend from the Claremont Landfill west beneath Claremont Boulevard and provide access to the Sports Bowl from the main campus. The site location is shown on Figure 1.

The existing landfill site is approximately 74 acres and is bound on the east by Monte Vista Avenue, on the west by Claremont Boulevard, on the north by Foothill Boulevard and on the south by West Arrow Route. The proposed Roberts Campus Sports Bowl is to be developed on approximately 66.5 acres of the 74-acre site.

The boundary between the City of Claremont (Los Angeles County) and the City of Upland (San Bernardino County) crosses the site diagonally with the northwesterly approximately 29 acres located with the City of Claremont and the southeasterly approximately 45 acres located in the City of Upland (San Bernardino County).

1.2 Site Background

The existing inert debris landfill site began as a quarry in the 1920s. Quarry operations ended in 1972. In late 1972, the site was permitted for disposal of inert debris consisting of non-decomposable, non-water soluble, inert solids. In 1984, landfilling operations were suspended pending potential development. Inert debris landfill operations resumed in 1991. By 1994, significant inert debris fills were placed in the northwestern corner and along the western side of the site.

The landfill is in Los Angeles and San Bernardino counties, however, in 1987 staff from the Regional Water Quality Control Board (RWQCB) for both Los Angeles and Santa Ana agreed that the Los Angeles RWQCB would assume jurisdictional responsibility for the entire landfill, including those portions within San Bernardino County.

In 1998, the inert debris landfill was purchased by The Claremont Colleges Services (TCCS) (formerly known as the Claremont University Consortium) which is the central coordinating and support organization for the seven independent colleges (including CMC) known as The Claremont Colleges.

Following TCCS's purchase of the inert debris landfill, waste disposal was restricted to inert debris from construction projects within TCCS, including CMC, Pomona College, Scripps College, Harvey Mudd College, Pitzer College, and Claremont Graduate University.

On May 4, 2000, updated Waste Discharge Requirements (WDR) were adopted by Los Angeles RWQCB Order 00-070, reflecting, among other things, the change to TCCS's ownership. Because TCCS limited disposal to material from construction sites or projects by TCCS or its associated colleges, the updated WDR included exemptions from certain provisions including the waste load checking program.

On August 19, 2019, a superseding WDR was issued, Order R4-2019-0087 (Current WDRs; 2019 RWQCB). These superseding WDRs were issued in anticipation of the commencement of an Inert Debris Engineered Fill Operation (IDEFO) on the site, which would have accepted inert debris from the general public (i.e. sources other than construction projects within TCCS). An IDEFO also would have been regulated by the California Department of Resources Recycling and Recovery (CalRecycle), through its Local Enforcement Agencies (LEAs), in accordance with Division 7, Chapter 3 of Title 14

of the California Code of Regulations (Title 14). Accordingly, the WDRs were revised to include updated requirements, including waste characterization, waste load checking, and groundwater quality monitoring, as required for the anticipated IDEFO. These superseding WDRs also reflected a change of the operator (to Arcadia Reclamation Inc.). The superseding WDRs did not change the acceptable materials that include soil, rock, gravel, broken concrete, broken asphalt, glass, brick, and other inert debris. Additionally, the superseding WDRs state that asphaltic material shall not be dumped into standing water, nor shall it be placed below the highest anticipated groundwater elevation.

However, despite the fact that the Current WDR (Order R4-2019-0087) anticipated operation of an IDEFO, the landfill was never operated as an IDEFO. Instead, the site has consistently continued to operate as it had since acquisition by TCCS. Thus, with one exception, operations since at least May, 2000 have been continuously limited to acceptance of inert debris waste from TCCS and its associated colleges, and this limited use continues to the present. The one exception consisted of disposal of soil and construction debris from a City of Upland stormwater basin expansion project in 2004 and 2007. The Los Angeles RWQCB approved waivers to allow the one-time acceptance of waste material from projects outside of TCCS. Although an IDEFO was never commenced on the site, the Detection Monitoring Program (DMP) reporting has occurred as required by the Current WDR. Because the landfill has only accepted inert debris, the landfill is unlined and does not include environmental control provisions for gas and leachate collection.

In 2021, CMC completed acquisition of all parcels comprising the inert debris landfill. CMC plans to close the landfill and implement existing entitlements approved by the cities of Claremont and Upland in 2016, with some modifications, to develop the majority of the property (i.e. approximately 66.5 acres) with sports fields, parking and related uses.

Based on our review of a topographic survey prepared by Atlas Civil Design, the ground surface level around the site perimeter ranges from approximately 1,330 feet at the northeast corner to 1,240 at the southwest corner. Existing slopes descend from the perimeter to a low point of approximately Elevation 1,184 near within the southerly portion of the site.

Concurrent with this geotechnical investigation and report, Langan also prepared a landfill closure plan dated December 15, 2023.

1.3 **Proposed Sports Bowl Development**

1.3.1 General

The following information describes currently contemplated development scenarios and is presented in this report to provide context for evaluation of geotechnical feasibility and development of geotechnical design recommendations provided herein. The development scenarios summarized herein may be subject to change as the planning process evolves.

Three alternative development options are currently contemplated for the site and are designated as Scenarios 1, 2 and 2B.

We were furnished with conceptual plans for the three alternative scenarios dated December 6, 2023, provided by BIG Architects and grading plans dated April 27, 2023 and December 11, 2023 for Scenarios 1 and 2/2B, respectively, provided by Atlas Civil Design.

The contemplated scenarios include development of athletic playing fields, a pedestrian access tunnel and various 'minor' structures with relatively small footprints, limited occupancy and relatively light foundation loading to service the planned athletic field development.

Scenarios 2 and 2B will also include a large-footprint parking structure and an adjacent maintenance facility structure.

The proposed pedestrian tunnel will be constructed by cut-and-cover methodology and the invert will be established approximately 21 feet below Claremont Boulevard and four to approximately nine feet of soil cover are planned above the top of the tunnel structure.

Surface parking is also planned along the northern end of the site, and along portions of the east and west sides of the site. Vehicular access driveways will be located along Claremont Boulevard, Foothill Boulevard and Monte Vista Avenue. Parking and vehicular access driveways vary with the three alternative development scenarios.

Another component of the proposed development is a network of paths and trails surrounding the proposed playing fields.

Mass grading will be required to accomplish the planned finish grades and the mass grading will include excavation, processing, and re-placement of the existing landfill materials. The planned grading will establish permanent slopes and will likely require construction of retaining walls at one or more locations.

Each of the alternate scenarios will include development of approximately 66.5 acres of the landfill site. The 66.5 acres encompass lots 1-4 of the Upland Parcel Maps 18989 and Lots 1-2 of the Claremont Parcel Map 70243.

Development is not currently contemplated as part of the Sports Bowl project within the southerly 10 acres, approximately 15 percent of the site (Lot 3 of the Claremont Parcel Map 70243 and Lots 5 and 6 of Upland Parcel Map 18989).

The following sections describe each of the alternate development scenarios.

1.3.2 Development Scenario 1

Scenario 1 would develop the northerly 66.5 acres and would consist of construction of a football / track / lacrosse field, three multi-purpose fields, a soccer / rugby field, and a baseball field, a softball field, and a golf practice facility.

Minor structures are planned that include an approximately 15,000 square foot (sf) sports pavilion (Field Sports Pavilion) along the north side of the football / track / lacrosse field, an approximately 14,000 sf field house (North Field House) south of the proposed baseball and softball fields, and an approximately 11,000 sf maintenance facility structure northeast of the proposed softball field. Dugout structures, batting cages and bullpens are planned adjacent to the baseball and softball fields.

A pedestrian access tunnel is planned to connect the Sports Bowl to the main (west) CMC campus adjacent to the football / track / lacrosse field. The invert of the tunnel will be established approximately 21 feet below Claremont Boulevard grade.

Surface parking lots are also planned along the southeast, west, and northerly sides of the site. Scenario 1 is depicted on Figure 2A.

1.3.3 Development Scenario 2

Scenario 2 would also develop the northerly 66.5 acres and would consist of construction of a football / track / lacrosse field, three multi-purpose fields, a soccer / rugby field, a baseball field, a softball field, and a golf practice facility.

A large-footprint subterranean parking structure is planned along the west side of the site. A preliminary concept for the proposed parking structure indicates it will consist of one-subterranean level that will be established approximately 11.5 feet below the existing ground surface level (bgs).

Minor structures are planned that include an approximately 11,200 sf field house (North Field House) south of the baseball and softball fields, an approximately 3,200 sf press box along the south side of the football / track / lacrosse field, three field storage support structures ranging from approximately 4,000 sf to 9,000 sf at the east, west and north sides of the football / track / lacrosse field. Dugout structures, batting cages, bullpens and approximately 1,800 sf support facilities are planned adjacent to the baseball and softball fields.

A pedestrian access tunnel is planned to connect the Sports Bowl to the main (west) CMC campus adjacent to the football / track / lacrosse field. The invert of the tunnel will be established approximately 21 feet below Claremont Boulevard grade.

A maintenance facility structure is planned immediately south of the parking structure and pedestrian tunnel. The lowest finish floor level for the maintenance facility structure will be established at Elevation 1,235.5.

Surface parking lots are also planned at the southeast, northerly and southwestern sides of the site. Scenario 2 is depicted on Figure 3A.

Phasing of Scenario 2 development is also being considered wherein the football / track / lacrosse fields, baseball and softball fields and golf practice facility will be constructed first and will utilize fill materials borrowed from the northerly side of the site.

1.3.4 Development Scenario 2B

Scenario 2B would also develop the northerly 66.5 acres and would consist of construction of a football / track / lacrosse field, three multi-purpose fields, a soccer / rugby field, a baseball field, a softball field, and a golf practice facility.

A large-footprint subterranean parking structure is planned along the west side of the site. A preliminary concept for the proposed parking structure indicates it will consist of one-subterranean level that will be established approximately 11.5 feet below the existing ground surface level (bgs).

Minor structures are planned including an approximately 29,200 sf field house (aka North Field House) along the north side of the football / track / lacrosse field, and an approximately 3,200 sf press box along the south side of the football / track / lacrosse field. Please note the North Field House planned in Scenario 2B consolidates several smaller structures planned in Scenario 2. Dugout structures, batting cages, bullpens, and approximately 1,800 sf support facilities are planned adjacent to the baseball and softball fields.

A pedestrian access tunnel is planned to connect the Sports Bowl to the main (west) CMC campus adjacent to the football/ track/ lacrosse field. The invert of the tunnel will be established approximately 21 feet below Claremont Boulevard grade.

Surface parking lots are also planned at the southeast, northerly, and southwestern sides of the site. Scenario 2B is depicted on Figure 3B.

Phasing of Scenario 2B development is also being considered wherein the football / track / lacrosse fields, baseball and softball fields and golf practice facility will be constructed first and will utilize fill materials borrowed from the northerly side of the site.

1.3.5 Summary of Alternative Development Scenarios 1, 2 and 2B

Each of the proposed alternative development concepts will require mass grading and the installation temporary shoring. To achieve the planned playing field finish surface level, cuts up to approximately 46 feet and fills up to approximately 24 feet are required for Scenario 1 and cuts and fills each up to approximately 40 feet are required for Scenarios 2 and 2B as summarized in Tables 1 and 2.

Playing Field / Structure	Finish Playing Field Surface Level or Lowest Finish Floor Level	Approximate Cut/Fill ¹ (Feet)	
	(feet, msl)	Max Cut	Max Fill
Football / Track / Lacrosse Field	1,209.0	31	24
Multi-purpose Field	1,224.0	21	9
Soccer / Rugby Field	1,243.0	7	15
Baseball Field	1,257.0	46	20
Softball Field	1,257.0	3	7
Golf Practice Area	1,257.0	39	7
Pedestrian Tunnel	1,233.0	21	0

Table 1 – Summary of Development Scenario 1

¹To achieve finish playing surface level / lowest finish floor level

Table 2 – Summary of Development Scenarios 2 and 2B

Playing Field / Structure	Finish Playing Field Surface Level or Lowest Finish Floor Level (feet,	Approximate Cut/Fill ¹ (Feet)	
	msl)	Max Cut	Max Fill
Football / Track / Lacrosse Field	1,216.0	24	31
Multi-purpose Field	1,260.0	40	17
Soccer / Rugby Field	1,251.0	4	16
Baseball Field	1,226.0	19	0
Softball Field	1,226.0	14	11
Golf Practice Area	1,226.0	19	11
Maintenance Facility Structure	1,235.5	27	0
Parking Structure	1,243.0 to 1,263.0	13	0
Pedestrian Tunnel	1,233.0	21	0

¹To achieve finish playing surface level / lowest finish floor level

Lowest finish floor elevations for the proposed structures remain a work in progress and will be provided in an addendum once finalized.

1.3.6 Stormwater Management

The proposed stormwater management concept will include infiltration as well as retention beneath the football / track / lacrosse field playing surface.

1.4 Prior Geotechnical Investigation

We have reviewed reports of prior geotechnical investigations for the landfill site dated December 23, 2020 and January 28, 2022 that were prepared by Geotechnical Professionals Inc. (GPI).

We have also reviewed a prior geotechnical report for the landfill site dated June 6, 2001, June 15, 2005, and August 21, 2007 prepared by RMA that summarize RMA's field observations during earthwork and grading within the southerly portion of the site.

We have reviewed the data presented in the prior reports and assume the responsibility for the use and interpretation of the prior available geotechnical data.

2.0 SUBSURFACE EXPLORATIONS AND CONDITIONS

2.1 Current Geotechnical Explorations

We drilled 49 borings (B-14 through B-62) at the site using truck-mounted and track-mounted hollowstem auger drilling equipment. The borings were drilled to depths ranging from ten to 60 feet below the existing ground surface level (bgs).

We also performed field percolation testing at six locations (FP-1 through FP-6) and installed three soil gas (methane) wells at the site during subsequent mobilizations. Field percolation testing and soil-gas (methane) testing are summarized in Sections 2.5 and 2.6, respectively.

During each our initial and subsequent exploration programs, our field representative maintained a log of the subsurface conditions, collected relatively undisturbed and bulk samples and performed standard penetration tests (SPT) at regular intervals during drilling. The samples collected from the borings were transported to our office for further review, classification, and assignment of geotechnical laboratory testing. Our laboratory testing program is summarized in Section 3.0.

Upon completion of drilling and/or percolation testing, the borings were backfilled with the drill cuttings.

The locations of our current explorations are shown on Figures 2A, through 3B and logs of our current explorations are presented in Appendix A.

2.2 **Prior Geotechnical Explorations**

GPI excavated 32 test pits to depths ranging from approximately three to 21 feet bgs, drilled 13 exploration borings to depths ranging from approximately six to 61 feet bgs as part of a prior investigation.

GPI also engaged a subconsultant to perform seismic refraction testing at 11 locations. Seismic refraction is a passive geophysical technique that utilizes introduces a low-strain signal at the ground surface level that propagates through the subsurface materials and is redirected (refracted) at interfaces between subsurface materials. The refracted waves are detected by the geophones and a subsurface profile is developed to estimate the stiffness and/or uniformity of the subsurface conditions.

The locations of the prior test pits, exploration borings and seismic refraction lines are shown on Figures 2A through 3B and logs of the prior explorations and geophysical testing are presented in Appendix B.

2.3 Subsurface Conditions

Documented fill materials were encountered at the south side of the site and ranged from one to 45 feet in thickness. The documented fill materials consisted of dry to moist silty sand with various amount of gravel and cobbles.

Undocumented inert landfill debris was encountered over a majority of the site. Fill thickness ranges from a few feet to over 30 feet in the central portion of the site to as much as 55 feet thick in the western and northern portions of the site. These materials consisted of dry silty sand with various amounts of gravel and cobbles, and various amounts of asphalt, brick, concrete, and metallic debris. A thin layer of scattered fills, less than a few feet thick, cover most of the old quarry bottom. Local stockpiles scatter the bottom of the quarry, consisting of undocumented fill soils and inert debris. A majority of the quarry bottom contains surficial undocumented fill that form a thin mantle over native alluvial soils.

Native soils consist of young and old alluvial fan deposits. Younger alluvial fan deposits are present at the northern end of the site and along the site boundaries, generally near street grade. Older alluvial fan deposits are present near surface and underlying fill soils. These units primarily consist of dense to very dense silty sands with various amounts of gravel and cobbles. More detailed description of on-site soils and units is presented in Sections 4.1 and 4.2.

Generalized subsurface conditions are presented on Figures 4A through 4H for development Scenario 1 and Figures 5A through 5H for development Scenarios 2 and 2B.

2.4 Groundwater

The site is somewhat unique in that a distinctive groundwater barrier, the San Jose fault, transects the site diagonally from the northeast to the southwest. The San Jose fault acts as a groundwater barrier and the depth to groundwater is very deep on the east side of the fault and is shallower on the west side of the fault as discussed below.

Based on our review of the California Geologic Survey (CGS) Seismic Hazard Zone Report (SHZR) 040 for the Ontario Quadrangle, the historical high groundwater level at the site ranges between depths of approximately 50 to 150 feet bgs (CGS, 2000) as shown on Figure 6 west of the San Jose fault.

Groundwater contour data prepared by Carson and Matti (1985) indicates that groundwater is estimated to be greater than $600\pm$ feet in depth east of the San Jose fault.

Groundwater data for a well located less than $2,000\pm$ feet to the west (Well 341006N1177096W001), indicates that groundwater has ranged from a depth of approximately156 to 184 feet between the time period of 2011 to 2022 (CDWR, 2022). This well is west of the San Jose Fault.

In 1983 groundwater was reported to be at a depth of 195 and 140 feet in the northwest and southwest portions of the site, respectively (RMA, 2007).

Three groundwater monitoring wells are located on the site. Pit Well No. 1, located at the north end of the site was installed in the 1980's and has been used for periodic water quality testing. r Additional groundwater monitoring wells we installed in August 2021, and, along with Pit Well No.1, make up the revised ground water monitoring network. Anacapa Geoservices has performed groundwater

monitoring and prepared semi-annual reports that are submitted to the State Water Board and available for reference on the GeoTracker data system (GeoTracker Global ID L10002913798).

Groundwater was measured in Pit Well 1 in 2004 at a depth of 417 feet bgs. Attempts in 2010 and 2011 to read this well were unsuccessful due to access limitations and/or complications with the measuring devices. No other measurements were made available.

Groundwater was not encountered to the maximum explored depths during prior field explorations at the site.

Tri-annual groundwater sampling events were conducted at the inert debris landfill from 2001 through 2017 as required by the Los Angeles RWQCB. These sampling events were conducted in accordance with the guidelines set by WDR (File No. 66-016) and Amended Monitoring and Reporting Program (MRP) No. 5766.

Groundwater data was collected from the one monitoring well located on site during this time period, Pit Well No. 1 (formerly Well No. A), located at the northernmost area of the Site, approximately 200 feet south of Foothill Boulevard. No exceedances of the California Primary or Secondary MCLs were reported, indicating that the inert landfill has not impacted the quality of groundwater represented by Pit Well No. 1 (Earthcon, 2017).

On 21 August 2019, the Los Angeles RWQCB issued the current WDRs (file No. 66-016, order number R4-2019-0087), which require semi-annual groundwater monitoring at Pit Well No. 1 and two additional groundwater wells. The two additional groundwater wells (CMW-1 and CMW-2) were installed by Arcadia Reclamation, Inc. (Arcadia) as the downgradient Point of Compliance as shown on Figures 2A through 3B. The wells were installed to the depth of approximately 150 below ground surface (bgs) (Arcadia, 2021).

Semi-annual monitoring and testing have been provided by Anacapa Geoservices Inc. (Anacapa) since 2021. Due to drought-induced declining groundwater elevation, none of the two onsite monitoring wells detected water during monitoring and sampling events. Therefore, calculation of the gradient and flow direction was not possible and no samples were collected. The production well (Pit Well No. 1) was reconditioned (repair pump, repair electrical, etc.) and was not monitored and sampled in 2021 (Arcadia, 2021).

Geotechnical and multiple phases of environmental investigations and on-going monitoring programs have been completed at the landfill, as described above. The investigation results and monitoring data obtained have not indicated any contamination of groundwater at the site. Because the former quarry and landfill have only accepted inert debris, the landfill is unlined and does not include environmental control measures for gas and leachate collection.

2.5 Field Percolation Testing

FP-1 was located within Los Angeles County and we performed field percolation testing in FP-1 within general conformance with the *Boring Percolation Test Procedure* outlined in the *County of Los Angeles, Department of Public Works, Guidelines for Geotechnical Investigation and Reporting Low Impact Development Stormwater Infiltration Manual (LA County Guidelines, GS200.2),* dated June 30, 2021.

FP-2 through FP-6 were located within San Bernardino County and we performed field percolation testing within FP-2 through FP-6 in general conformance with the *Technical Guidance Document Appendix VII. – Infiltration Rate Evaluation Protocol and Factor of Safety Recommendations, provided in the San Bernardino County technical guidance document* dated May 19, 2011.

Upon the completion of drilling, we installed solid and slotted 3-inch outside diameter PVC piping and filled the annular space between the PVC piping and the borehole sidewalls with gravel. The borings were drilled between approximately 10 to 70 feet bgs. The slotted PVC pipe was installed within the lower five feet of each boring to allow introduction of water for the percolation test.

After completion of the well construction, the well was pre-soaked in advance of field percolation testing. Pre-soaking and subsequent field percolation testing was performed in general conformance with LA County Guidelines (FP-1) and San Bernardino Guidelines (FP-2 through FP-6).

The testing was repeated in the test well until the measured rate of percolation stabilized and county testing requirements were achieved. Six trials were performed within each test well.

The results of the field percolation testing are presented in the Tables 3 (LA County) and 4 (San Bernardino County).

				A County)	
Field Percolation Test #		tion Depth Elevation Soil Type ¹		Measured Field	
				Percolation Rate (inches/hour)	
FP-1	12	1,235	SM	1.08	

Table 3 – Field Percolation Test Results (LA County)

Та	ble 4 – Fie	ld Perc	olatior	n Test	Results (SB (County)
		-		-		

Field Percolation Test #	Depth (Feet)	Ground Surface Elevation (feet/msl)	Soil Type ¹	Measured Field Percolation Rate (inches/hour)
FP-2	10	1,215	SP-SM	3.79
FP-3	10	1,229	SP-SM	3.18
FP-4	19	1,195	SP-SM	1.14
FP-5	70	1,247	SP-SM	5.37
FP-6	40	1,185	SP-SM	9.69

¹Field percolation testing was performed in native soils, in each case

The results of the field percolation testing are presented in Appendix C.

Please note the above test results do not include factors of safety that may be required by each respective county.

2.6 Soil-Gas (Methane) Monitoring Well Installation

We installed three soil-gas (methane) monitoring probes on site, MW-1 through MW-3, within the footprint of the proposed parking structure along the west side of the site (included in Scenarios 2 and 2B) on August 14th and 15th, 2023.

The methane wells boreholes were drilled using track-mounted hollow-stem auger drilling equipment and the construction of the methane wells consisted of installing a four-inch diameter PVC pipe within the borehole. Three one-inch diameter PVC pipes were installed within the four-inch diameter PVC section and the HDPE tubing was installed within the one-inch PVC pipes. The one-inch PVC pipes consisted of solid casing with the exception the sampling interval that consisted of slotted casing to allow soil-gas testing, also referred to as screened intervals. Screened intervals were established at depths of 17, 22, and 33 feet bgs, corresponding with depths of approximately five, ten and 20 feet below the currently planned lowest finish floor level of the parking structure. Each depth interval was isolated from the below interval by placing concrete slightly above and the remaining annular space was filled with fine gravel.

Soil-gas testing was performed in MW-1 through MW-3 using a Landtec GEM 5000 Plus Landfill Gas Monitor on two subsequent days. The results of the testing indicated zero methane gas was present at each screened depth interval.

Logs of the methane wells and results of the methane testing are presented in Appendix D.

3.0 GEOTECHNICAL LABORATORY TESTING

3.1 Current Laboratory Testing

As part of our current investigation, we performed the following geotechnical laboratory testing:

- In-situ moisture content and in-place dry-density
- Maximum dry density and optimum moisture content
- Direct Shear Strength
- Consolidation
- Corrosion Potential
- Expansion Index
- Percent Passing # 200 Sieve

The results of our current geotechnical laboratory testing are presented in Appendix A.

3.2 **Prior Laboratory Testing**

As part of their prior investigations, GPI performed the following geotechnical laboratory testing:

- Moisture Content and Dry Density
- Maximum Dry-Density and Optimum Moisture Content
- Direct Shear
- Grain-size Distribution

The results of the prior geotechnical laboratory testing are presented in Appendix B.

4.0 GEOLOGIC AND SEISMIC HAZARDS EVALUATION

4.1 Regional and Local Geologic Setting

The site is located in the northern portion of the Peninsular ranges Geomorphic Province along the southern side of the San Gabriel Mountains.

Regional topography is dominated by the presence of the faults that define the mountains and hills of the Southern California region including the Cucamonga Fault that locally defines the southern boundary of the San Gabriel Range, the Chino Fault to the west of the site that bounds the Chino Hills in that area, and the San Jacinto and San Andreas Faults to the east of the site. The Santa Ana River is located about ten miles south of the site where it flows to the southwest through the Prado Dam area (CDMG, 2007 and Morton & Miller, 2006). Figure 7 presents a local geologic map.

Based on review of available geologic maps (Morton & Miller, 2006), the site is specifically on the western extent of an alluvial fan deposit emanated from the San Antonio Creek at the base of the San Gabriel Mountains. The large, well-formed fan is largely mapped as mixtures of unconsolidated sand, gravel, and boulders deposited through braided streams.

Sediments at the site were mined for sand and gravel beginning in the 1920s and ending in 1972. In late 1972, the site was permitted for disposal of inert debris consisting of non-decomposable, non-water soluble, inert solids. In 1984, landfilling operations were suspended pending potential development. Inert debris landfill operations resumed in 1991. By 1994, significant inert debris fills were placed in the northwestern corner and along the western side of the site. Since at least May 2000, waste disposal has been restricted to inert debris from construction projects within TCCS and its associated colleges. Because the landfill only accepted inert debris, the landfill is unlined and does not include environmental control measures for gas and leachate collection. Previous filling operations were undocumented except for fill placed the southeast corner of the site. Large quantities of landfill generally consisting of silty sand were placed across the site up to thicknesses of approximately 55 feet.

Figures 2A through 3B also include geologic mapping conducted in this investigation in conjunction with GPI (2022) overlaying the Sports Bowl site plan. Figures 4A through 5H present geotechnical cross-sections of subsurface soils. A description of units in order of relative age, from youngest to oldest is presented below.

A historical summary of aerial photographs for the site is presented in Appendix E.

4.1.1 Undocumented Surficial Fill

Local stockpiles scatter the bottom of the quarry, consisting of undocumented fill soils and inert debris. A majority of the quarry bottom contains surficial undocumented fill that form a thin mantle over native alluvial soils.

4.1.2 Compacted Fill (a_{fc})

Between 2004 and 2005, up to approximately 75 feet of compacted fill was placed within Parcel 6 of Upland Parcel Map 18989 and a portion of Parcel 5 in the southeastern portion the site along Arrow Route (RMA, 2004 & 2005). Prior to placement of the compacted fill, undocumented fills and loose soils were reportedly removed, and a keyway was excavated along the toe of the north facing fill slope. Removals did not include the road embankment fill on the east side of Parcel 6 or landfill materials on the west side within Parcel 5. The compacted fill was reportedly benched into the road embankment fill placed along Monte Vista Avenue. Based on the report by RMA and the explorations, the compacted fill consists of silty sands and gravelly sands with variable amounts of silt, gravel, and cobbles and was compacted to at least 90 percent relative compaction.

4.1.3 Undocumented Fill (a_{fu})

Undocumented fill soils stockpiled and spread over the central portion of the site on the former quarry bottom range in thickness from a few feet to over 30 feet. These deposits consist generally of inert construction debris (concrete and asphalt rubble), sand, gravel, cobbles and occasional boulders. These undocumented rubble fills were likely end dumped and spread and contain significant voids. A thin layer of scattered fills, less than a few feet thick, cover most of the old quarry bottom.

4.1.4 Undocumented Inert Debris Landfill (a_{lf})

Undocumented inert debris fills up to approximately 55 feet thick were encountered overlying older alluvial fan deposits near the upper terrace area in the northwest and southwest corners and western side of the site. These materials consist of sand and gravel with varying amounts of silts, cobbles and local boulders and inert debris consisting primarily of concrete and asphalt rubble were encountered at variable depths throughout the unit. Pieces of concrete and asphalt up to three feet in size were

encountered by GPI (2022) in their test pits. Larger pieces of concrete and asphalt debris, and lesser deposits of clay pipe, brick, masonry block, and pieces of metal were observed near the surface. The inert debris fill soils were likely placed in an uncontrolled manner resulting in poorly compacted conditions. Based on surface expression, as well as drilling and sampling characteristics, these deposits likely include layers of nested concrete and asphalt rubble intermixed with layers of sand, gravel, cobbles, and boulders.

4.1.5 Old Access Road Fill (a_{rf})

Based on historic aerial photography, old access road fill was placed for site access to the quarry beginning between 1953 and 1959. Fill was likely placed on an ongoing basis as the quarry deepened. Where investigated near the quarry bottom, soils consisted of loose gray silty sand with zones of gravel, and some buried metal. Fill depth was observed at nine feet bgs, though actual depths may be deeper toward Monte Vista Avenue.

4.1.6 Road Embankment Fill (a_{rfe})

Research conducted by GPI (2020) utilized historic aerial photos to constrain the age of the road embankment fill associated with the construction of Monte Vista Avenue on the eastern side of the site to the early 1990s. The approximately 2:1 (horizontal:vertical, h:v) slope was constructed with fills between 30 to 50 feet in thickness, with a mid-slope terrace drain. GPI reports (2022) that the fill was placed under the jurisdiction of San Bernardino County prior to incorporation into the City of Upland, though geotechnical documentation of the fill has not been made available.

4.1.7 Alluvial Fan Deposits (Q_{yf} and Q_{of})

Native alluvial soils encountered in explorations generally consisted of sand and silty sands with gravel and cobbles. Surficial boulders mantle a majority of the site. The younger alluvial fan deposits were observed near the ground surface in the northeastern and perimeter portions of the site at higher elevations. The older alluvial fan deposits are exposed sporadically on the quarry bottom, and beneath landfill deposits at variable depths. Where observed, these deposits generally consist of an orangish brown silty sand with gravel. Many of these deposits contain manganese oxide-stained clasts and signs of oxidation.

4.2 Reclamation Backfill

Undocumented fill soils were encountered in a majority of geotechnical borings and test pits. These fill soils were divided into categories based on relative age to generalize materials imported to the site. Based on field explorations and surface mapping, these units consisted of soil, concrete, asphalt, brick, and metal debris and rubble. These units are delineated on Figures 2A, 2B, 3A and 3B. These units are classified into four generalized fill units based on prevailing material as soil fill (more than 50 percent soil), oversize cobbles and boulders (more than 50 oversize), concrete debris (more than 50 percent concrete), asphalt (more than 50 percent asphalt), brick (more than 50 percent brick), and miscellaneous debris including rebar, old pipes, plastic, and variable metals (misc. debris more than 50 percent). The estimated percentages of materials from each boring and their weighted averages are summarized in Table 5 and presented in detail in Appendix F.

	Veighted Average Summary of Debris in Reclamation Fill Units Approximate Percentage of Debris Generalized Fill Units Weighted Averages %					
Fill Type	>50% Oversize	>50% Concrete	>50% Asphalt	>50% Brick	Miscellaneous Debris	
a _{sf}	12	1	1	0	1	
a _{fc}	28	0	1	1	1	
a _{fu}	14	2	2	3	2	
alf	14	4	6	1	1	

Based on the weighted averages of the fill units listed in the above table, fill units are predominately composed of soil, complemented by significant amounts of oversized cobbles and boulders, and lesser amounts of concrete, asphalt, brick, and other miscellaneous debris. The distributions of these materials with depth in each fill unit is highly variable.

4.3 Geologic and Seismic Hazard Evaluation

We evaluated the geologic and seismic hazards at the site in general accordance with California Geological Survey (CGS) Special Publication 117A, "Guidelines for Evaluating and Mitigating Seismic Hazards in California." The results of our evaluation are summarized below.

4.4 Regional Faulting

We reviewed the CGS 2010 Fault Activity Map (FAM) of California and the USGS Quaternary Fault and Fold Database (QFFD), to identify mapped faults within 100 kilometers of the site. The FAM and QFFD show that the closest mapped fault to the site is the Indian Hills fault, located approximately 1 mile (1.6 km) to the northwest and the San Jose Fault, located approximately 1.1 mile (1.8 km) to the southwest. A queried portion of the San Jose fault has been mapped beneath the site. Additional discussions are presented in Section 4.6.

Figures 8A and 8B show the site location relative to the nearby seismic sources.

4.5 Regional Seismicity

The site is located in an active seismic area that has historically been affected by generally moderate to occasionally high levels of ground motion. Therefore, the proposed development will probably experience moderate to occasionally high levels of ground motion from nearby faults as well as ground motions from other active seismic areas of the southern California region.

A search of the USGS ANSS Comprehensive Earthquake Catalog (ComCat) using a web-based Earthquake Archive Search and URL builder tool, found that as of December 17, 2023, 66 earthquakes with magnitudes of 5.0 or greater have occurred within a 100-km radius of the site since 1800 as shown on Figure 8A and 8B.

4.6 Ground Surface Rupture Potential

Historically, ground surface displacements closely follow the traces of geologically young faults. The site is not located within a California Geologic Survey (CGS) Earthquake Fault Zone, as defined by the Alquist-Priolo Earthquake Fault Zoning Act.

GPI noted that a queried strand of the San Jose Fault running across the site warranted a surface rupture fault hazard investigation by RMA Group in 2001 to investigate suspected mapped traces. It

was concluded that the San Jose Fault does not pose a hazard toward surface fault rupture, and no setbacks were required.

Since active or potentially active faults are not present at the site, the potential for ground surface rupture is considered very low.

4.7 Liquefaction Potential

Liquefaction may occur in loose to medium dense granular soils and low-plasticity silts and clays below the groundwater level due to strong ground shaking.

Liquefaction occurs when the cyclic loading to the soil due to strong ground shaking results in a buildup of excessive pore-water pressure in the pore spaces between the soil grains and the grain-to-grain contact of the soils is disrupted temporarily resulting in settlement as the soil particles reconstitute.

Typically, liquefaction occurs within the upper approximately 50 feet bgs; at greater depths, the confining stress of the overburden soils is typically sufficient to preclude liquefaction.

The site is not located within a City- or State-designated liquefaction hazard zone as shown on Figure 9. Groundwater was not encountered within the upper 50 feet and the soils encountered in the explorations consist of medium dense to very dense granular material.

Thus, the potential for liquefaction at the site is negligible.

4.8 Lateral Spreading Potential

Lateral spreading is a seismically-induced slope instability phenomenon wherein slope failure can occur as a result of liquefaction. The site is not located within a liquefaction hazard zone as noted is Section 5.7, the potential for liquefaction at the site is negligible and therefore by definition, the potential for lateral spreading is also considered to be negligible.

4.9 Seismic (aka 'Dry') Settlement

Seismically-induced (aka 'dry') settlement may occur in loose granular soils due to strong ground shaking as the loose granular particles tend to redistribute during shaking resulting in settlement.

The native soils on site consist of dense to very dense granular deposits that are not subject to seismically induced settlement based on field blow count data.

Existing engineered fill materials present at the southerly portion of the site are also sufficiently dense to preclude seismically-induced settlement.

Existing landfill materials, however, are more challenging to evaluate since the field blow count data available is in some cases skewed (overly high) due to the presence of large concrete rubble or other similar debris.

As an alternative method to evaluate the potential for seismically-induced settlement of the existing landfill debris, we reviewed the geophysical data available from the prior GPI report noting that the prior data provides an indication of the stiffness of on-site materials as well as data available from shear strength testing on samples of the inert landfill materials. Based on our evaluation, the stiffness of the on-site landfill materials is generally comparable of greater than the stiffness of the engineering fill materials.

Therefore, the potential for seismically-induced settlement within the landfill debris very low.

4.10 Earthquake-Induced Landslides

Portions of the site are located in a zone of potential earthquake induced landsliding per the CGS Seismic Hazard Zones map for the Ontario Quadrangle as shown on Figure 9.

These areas consist of steep natural and man-made quarry slopes. However, the planned grading will generally remove the overly-steep existing slopes and the permanent condition will consist of slopes with a gradient of 2:1 (horizontal:vertical) or flatter. Therefore, the risk for earthquake-induced landsliding subsequent to site improvement is considered low.

4.11 Flood Mapping

Based on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Number 06037C1750F, the landfill site is located outside the 0.2 percent annual chance floodplain (Zone X).

4.12 Tsunamis, Seiche, and Dam Inundation

Based on information and maps available from the CGS, the site is not located within a Tsunami inundation hazard zone. Based on review of adjacent water bodies, the site is not subject to inundation from seiche. A review of the California Dam Breach Inundation Maps hosted by the California Division of Safety of Dams shows that the site is not located within an inundation boundary in the case of dam breach. Based on the City of Claremont General plan, the subject site is located within a flood zone from failure of the San Antonio Dam.

4.13 Subsidence

Land subsidence may be induced from withdrawal of oil, gas, or water from wells. Based on a search of the CalGEM (formerly known as Division of Oil, Gas, and Geothermal Resources [DOGGR]) GIS Well Finder online tool, there are no wells within 2.5 miles of the site. Thus, the likelihood of land subsidence caused by oil or gas withdrawal from oil wells is very low.

4.14 Expansive Soils

Expansive soils swell and shrink when the moisture content in the soil changes as a result of cyclic - wet/dry weather cycles, installation of irrigation systems, change in landscape plantings, or changes in grading.

Swelling and shrinking soils can result in differential movement of structures including floor slabs and foundations, and site work including hardscape, utilities, and sidewalks.

The materials encountered during the current and prior investigations at the site generally consist of sand with gravels, cobbles, and boulders and associated debris (primarily concrete and asphalt) and these materials have a low potential for expansion.

4.15 Soil-gas (Methane)

We installed three soil-gas wells at the site and performed soil gas measurements; the results of the soil-gas readings do not indicate the presence of methane gas at the site. These results are consistent with the inert (non-reactive) nature of the landfill materials.

Based on the data available, the potential for the accumulation of methane gas in confined spaces at the site is negligible.

5.0 CONCLUSIONS

5.1 General

The site is generally free from geologic or seismic hazards that would preclude the proposed development. Proposed development Scenarios 1, 2 and 2B are each feasible from a geotechnical perspective, provided that the recommendations presented herein are followed.

The proposed development will include mass grading and consist of construction of athletic playing fields and various support structures, a pedestrian tunnel, surface parking lots, and, in some scenarios, a large-footprint subterranean parking structure and a maintenance facility. Walking paths and site retaining walls are also planned as part of each alternate development scenario.

The primary geotechnical condition at the site that will impact the proposed development is the presence of undocumented landfill materials where these materials are present below the planned finish playing field surface levels and/or below the foundation and floor slab levels of the proposed structures.

The planned mass grading will include cuts into on-site landfill materials. Thus, sorting and processing of these materials will be required to allow reuse in required fills.

Existing landfill debris is not considered suitable for support of the proposed pedestrian tunnel planned for each scenario nor the proposed parking structure the maintenance facility structure planned as part of Scenarios 2 and 2B. For these structures, existing landfill debris should be removed and replaced as properly compacted fill as recommended herein.

Existing landfill debris may remain in place beneath the planned minor structures provided the recommendation presented herein are followed. In this regard, it's worth noting that the data collected from the existing landfill debris including field blow count data, laboratory test data, and the results of the prior geophysical testing, indicate these materials are reasonably firm and dense with isolated, discontinuous zones that are less firm and dense. Notably, the seismic refraction data collected as part of the prior investigation generally shows the landfill debris to be comparable to or stiffer than engineered fill that was placed at the south side of the site and generally comparable to the upper native soils at the site.

5.2 Parking Structure, Pedestrian Tunnel and Maintenance Facility Structure (Primary Structures)

The lowest finish floor level for each the proposed parking structure, the pedestrian tunnel and maintenance facility support structure are underlain by varying thickness of undocumented landfill materials. Although foundation loading information was not available for these structures at the time this report was prepared, we anticipate the magnitude of foundation loading and/or variation in thickness of landfill materials beneath the structures would preclude allowing existing landfill materials to remain in place beneath these structures.

Therefore, existing landfill materials present beneath foundation and floor slab level for these structures should be removed and replaced as properly compacted fill. Each structure may be supported on spread, continuous and/or mat-type foundations established in properly compacted fill and/or dense native soils where dense native soils are present at the foundation levels for the westerly side of the pedestrian tunnel.

For general reference, Table 6 summarizes the approximate thickness of landfill materials present beneath the lowest finish floor level for the proposed parking structure and maintenance facility structure and invert of the proposed pedestrian tunnel.

Structure	Lowest Finish Floor Level (feet, msl)	Landfill Thickness Beneath Lowest Finish Floor Level (feet)
Parking Structure	1,243.0 to 1,263.0	Up to ~ 35 feet
Maintenance Facility Structure	1,235.5	Up to ~ 26 feet
Pedestrian Tunnel	1,233.0	Up to ~ 33 feet

Table 6 – Summary of Landfill Materials Thickness Beneath Primary Structures

Recommendations for foundation design for the proposed structures are presented in Section 6.1. and recommendations for permanent walls below grade are presented in Section 6.4.

5.3 Press Box, Field House, Storage, Field Structures, Dugouts (Minor Structures)

As noted above, the existing landfill materials are generally firm and dense noting there are localized and apparently discontinuous zones that are less firm and dense. Based on this information, minor structures may be supported on spread and continuous footings established in a nominally thick layer of properly compacted select fill so that existing landfill materials present below the recommended properly compacted select fill may remain in place provided the recommendations presented herein are followed.

Spread and continuous footings should also be connected by grade beams to minimize potential differential settlement.

It would also be prudent to install settlement monuments after and possibly during the placement of the fill within the footprints of the planned minor structures to assure that any settlement due to placement of new fill, although expected to be minor, has sufficiently occurred to allow foundation and floor slab construction.

Recommendations for foundation support for minor structures are presented in Section 6.1.

5.4 Building Floor Slabs / Pedestrian Tunnel Bottom Slab

The proposed building floor slabs and pedestrian tunnel bottom slab may be established in properly compacted select fill and/or in dense native soils.

Properly compacted select fill should extend a minimum of two feet vertically below building and tunnel floor slabs on-grade and a minimum of two feet horizontally beyond the outside edges of the floor slabs-on-grade.

Recommendations for floor slab support are presented in Section 6.2.

5.5 Seismic Design

The site is also subject to strong ground shaking that would result from an earthquake occurring on a nearby or distant fault source; however, this hazard is common in Southern California and can be mitigated by following the seismic design requirements of the 2019 California Building Code and ASCE 7-16.

Due to the presence of undocumented landfill materials, the seismic site classification should be taken as S_D . Recommendations for seismic design are presented in Section 6.3.

5.6 Playing Fields

The finish levels of the planned playing field surfaces range from Elevation 1,209.0 to 1,2577.0 for Scenario 1 and from 1216.0 to 1260.0 for Scenarios 2 and 2B. In each case, existing undocumented landfill materials are present beneath the planned playing field surfaces ranging on the order of seven to 36 feet as summarized in Tables 7 and 8 for development Scenarios 1 / 1B and 2 / 2B.

	Summary of Landfill Materials Thickness by Playing Field				
Playing Field	Lowest Playing Surface (msl)	Existing Ground Surface Level (msl)	Planned Grading	Landfill Thickness Beneath Lowest Playing Surface	
Football / Track / Lacrosse Field	1,209.0	1,185 to 1,240	Cut up to 31 feet Fill up to 24 feet	Up to ~ 29 feet	
Multi-purpose Field	1,224.0	1,215 to 1,245	Cut up to 21 feet Fill up to 9 feet	Up to ~ 26 feet	
Soccer / Rugby	1,243.0	1,228 to 1,250	Cut up to 7 feet Fill up to 15 feet	Up to ~ 23.5 feet	
Golf Practice Area	1,257.0	1,250 to 1,296	Cut up to 39 feet Fill up to 7 feet	Up to ~ 7 feet	
Baseball Field	1,257.0	1,237 to 1,303	Cut up to 46 feet Fill up to 20 feet	Up to ~ 13 feet	
Softball Field	1,257.0	1,250 to 1,260	Cut up to 3 feet Fill up to 7 feet	Up to ~ 25 feet	

Table 7 – Scenario 1
Summary of Landfill Materials Thickness by Plaving Field

Table 8 – Scenarios 2 and 2B Summary of Landfill Materials Thickness by Playing Field

Playing Field	Lowest Playing Surface (msl)	Existing Ground Surface Level (msl)	Planned Grading	Landfill Thickness Beneath Lowest Playing Surface
Football / Track / Lacrosse Field	1,216.0	1,185 to 1,240	Cut up to 24 feet Fill up to 31 feet	Up to ~ 36 feet
Multi-purpose Field (Phase 2)	1,260.0	1,243 to 1,300	Cut up to 40 feet Fill up to 17 feet	Up to ~ 36 feet
Soccer / Rugby (Phase 2)	1,251.0	1,235 to 1,255	Cut up to 4 feet Fill up to 16 feet	Up to ~ 36 feet
Golf Practice Area	1,226.0	1,215 to 1,245	Cut up to 19 feet Fill up to 11 feet	Up to ~ 10 feet
Baseball Field	1,226.0	1,230 to 1,245	Cut up to 19 feet Fill up to 0 feet	Up to ~ 15 feet
Softball Field	1,226.0	1,215 to 1,240	Cut up to 14 feet Fill up to 11 feet	Up to ~ 28 feet

Based on the field blow count and geophysical data from our current and the prior investigations, landfill materials present below the lowest playing surface levels is generally stiff to dense noting there are localized and apparently discontinuous zones that are less dense and less stiff.

The only significant load increase within the planned playing fields is where new fill is planned to raise the ground surface level. In these areas, it would be prudent to install settlement monuments after and possibly during the placement of the fill to document the performance of the underlying landfill materials on a case-by-case basis.

Noting that the landfill materials are typically coarse-grained and/or over-sized particles, it's reasonable to conclude that settlement due to new loading may be considered 'immediate' meaning the settlement will occur as the fill is placed.

To assure uniform performance within each playing field, it would also be prudent to place a rigid cap of select backfill materials to bridge local softer or less stiff zones. Recommendations for each playing field are presented herein.

Recommendations for playing field support are presented in Section 6.5.

5.7 Pavement and Site Flatwork

To assure uniform support for pavement and site flatwork, the upper 12 inches of existing materials should be removed and replaced as properly compacted select fill. The results of laboratory testing indicate an R-value of 40 may be assumed for pavement design.

Recommendations for pavement are presented in Section 6.6 and recommendations for site flatwork are presented in Section 6.7.

5.8 Free-standing Site Retaining Walls

Free-standing site retaining walls may be supported on a properly compacted selected fill materials as recommended in Section 6.8.

5.9 Temporary Shoring

Temporary shoring may be utilized during construction of the pedestrian tunnel, parking structure and maintenance facility structure. A suitable method of temporary shoring is solider pile and timber lagging and recommendations for temporary shoring are presented in Section 6.9.

5.10 Groundwater

The groundwater level at the site is relatively deep and in general is not anticipated to impact the proposed development scenarios. Localized zones of perched water, however, may be seasonally present on less permeable layers within the overall granular landfill materials and coarse-grained native deposits at the site.

If encountered, localized perched groundwater could be routed away from excavations and discharged of off-site through a groundwater discharge permit process, removed from site in pump trucks and disposed off-site. Alternatively localized perched groundwater may be re-injected into the permeable native soils at the site if allowed to do so by permit.

5.11 Slope Stability, Earthwork and Grading

Permanent unreinforced slopes should not exceed a gradient of 2:1 (h:v) and earthwork and grading for the planned mass grading will need to be performed in accordance with an approved landfill closure plan and post closure land use plan, when available.

Recommendations for grading for permanent slopes as well as for general earthwork and grading are presented in Section 6.10.

5.12 Soil-Gas (Methane) Considerations

Based on the results of soil-gas testing performed as part of our current investigation, special provisions for methane gas are not required for the planned buildings, parking structure and pedestrian tunnel.

5.13 Corrosion Potential

Corrosion testing was performed as part of our investigation and the prior RMA investigation. The results of the current and prior testing indicate that the on-site materials have negligible potential for sulfate attack on concrete and are not corrosive to ferrous metals.

6.0 **RECOMMENDATIONS**

6.1 Foundation Design

6.1.1 Parking Structure, Pedestrian Tunnel and Maintenance Facility Structure (Primary Structures)

The proposed parking structure, pedestrian tunnel and maintenance facility structure may be supported on spread and continuous or mat-type footings established in properly compacted select fill materials or dense native soils where present noting that native soils are present at the planned foundation level within the pedestrian tunnel alignment west of the landfill west property line.

Where required, the select fill should extend a minimum of three horizontal feet beyond the limits of the footings.

Existing landfill materials should be removed to expose dense native soils and the exposed excavation bottoms should be observed and documented by a Langan field representative. Excavation bottoms should be scarified for a depth of eight inches, moisture conditioned and compacted as recommended in Section 6.10.

Spread and continuous footings a minimum of two feet in width and established at least two feet below the lowest adjacent grade or top of floor slab in properly compacted select fill and/or dense native soils may be designed using an allowable bearing pressure of 5,500 psf. The recommended bearing pressure may be increased by one-third when considering short term wind and seismic loading conditions.

We estimate the total static settlement for foundations designed as recommended herein will be on the order of one inch or less and the differential static settlement will be on the order of 1/4 inch or less.

Lateral loading may be resisted by passive pressure of the soils acting against the sides of the footings and friction along the bottom of the footing.

To resist lateral loading, an ultimate passive resistance equal to 800 psf per foot of embedment up to a maximum value of 8,000 psf and an ultimate coefficient of friction equal to 0.6 may be used. The ultimate passive pressure and the ultimate coefficient of friction may be combined noting that the ultimate passive resistance should be reduced in this case by 50 percent in consideration of the deformation required to mobilize the full passive resistance.

An allowable passive resistance equal to 400 psf per foot of embedment up to a maximum value of 6,000 psf and an allowable coefficient of friction equal to 0.4 may be used. The allowable passive pressure and the allowable coefficient of friction may be combined without reduction.

6.1.2 Press Box, Field House, Storage, Field Structures, Dugouts (Minor Structures)

Proposed minor structures may be supported on three feet of properly compacted select fill materials. The select fill should extend three horizontal feet beyond the limits of the footings.

The exposed excavation bottom should be compacted using a minimum 16-ton steel-drum vibratory compactor or similarly heavy vibratory equipment. The intent of the vibratory roller is to impart vibration to the existing landfill materials and provided an added measure of densification to these materials.

Settlement monitoring should be performed during and/or after the placement of the fill to confirm that any settlement due to the placement of the new fill has occurred to a sufficient degree to allow the construction of the support structure building foundations n the properly compacted select fill materials. A settlement monitoring program shall be developed by Langan in collaboration with the selected grading contractor prior to the start of earthwork.

Spread and continuous footings a minimum of two feet in width and established at least two feet below the lowest adjacent grade or top of floor slab in properly compacted select fill may be designed using an allowable bearing pressure of 2,500 psf. The recommended bearing pressure may be increased by one-third when considering short term wind and seismic loading conditions.

We estimate the total static settlement for foundations designed as recommended herein will be on the order of $1\frac{1}{2}$ inch or less and the differential static settlement will be on the order of $\frac{1}{2}$ inch or less.

Lateral loading may be resisted by passive pressure of the soils acting against the sides of the footings and friction along the bottom of the footing.

To resist lateral loading, an ultimate passive resistance equal to 600 psf per foot of embedment up to a maximum value of 6,000 psf and an ultimate coefficient of friction equal to 0.6 may be used. The ultimate passive pressure and the ultimate coefficient of friction may be combined noting that the ultimate passive resistance should be reduced in this case by 50 percent in consideration of the deformation required to mobilize the full passive resistance.

An allowable passive resistance equal to 400 psf per foot of embedment up to a maximum value of 6,000 psf and an allowable coefficient of friction equal to 0.4 may be used. The allowable passive pressure and the allowable coefficient of friction may be combined without reduction.

6.2 Building Floor Slabs / Pedestrian Tunnel Bottom Slab

The proposed building floor slabs and entire pedestrian tunnel bottom slab may be established in properly compacted select fill and/or in dense native soils.

Properly compacted select fill should extend a minimum of two feet vertically below building and tunnel floor slabs on-grade and a minimum of two feet horizontally beyond the outside edges of the floor slabs-on-grade.

Where moisture-sensitive flooring is planned, a capillary beath section should be installed beneath the building floor slab. The capillary break section should consist of six inches of gravel underlying a 15-mil visqueen moisture barrier. A capillary break section is not required for floor slabs where moisture-sensitive flooring is not planned.

6.3 Seismic Design Considerations

Considering undocumented landfill materials will remain in place, we determined the seismic site class to be Site Type D in accordance with Chapter 20 of ASCE-7-16. Seismic design parameters for Site Type D are presented in Table 9.

Criteria	Value	
MCE _R Ground Motion at Short Periods, S _s	1.697	
MCE _R Ground Motion at 1Second Period, S ₁	0.638	
Site-Modified Spectral Acceleration Value at Short Periods, S_{MS}	1.697	
Site-Modified Spectral Acceleration Value at 1 Second Period, S_{M1}	0.893	
Design Spectral Response Acceleration at short periods, S_{DS}	1.131	
Design Spectral Response Acceleration at 1 second period, S_{D1}	0.595	
MCE _G Peak Ground Acceleration, PGA _M	0.794	

Table 9 – CBC Prescriptive Seismic Design Parameters

Requirements outlined in Chapter 11 of ASCE 7-16 should be followed in determining the base shear for each proposed structure.

6.4 Permanent Below Grade Walls

6.4.1 Design Lateral Earth Pressures

For static conditions, drained below-grade building internally braced walls should be designed to resist a trapezoidal-shaped at-rest lateral earth pressure distribution equal to 28H psf as shown on Figure 10.

For seismic loading conditions, drained below-grade internally-braced building walls should be designed to resist a triangular-shaped active lateral earth pressure distribution equal to 35H psf in conjunction and a triangular-shaped seismic lateral earth pressure distribution equal to 15H psf as shown on Figure 11.

The upper 10 feet of the below-grade building walls should also be designed to resist a uniform lateral pressure of 100 psf to account for normal traffic loading as shown on Figures 10 and 11.

The recommended traffic surcharge is applicable where traffic loading is anticipated adjacent to walls below grade. Please note that the recommended surcharge should be increased by 50 percent when considering fire truck loading. For other areas subject to live loading conditions (non-traffic), we recommend applying one-third of the live load to the wall-below grade within the upper 10 feet. The geotechnical engineer of record can review any such cases and provide specific recommendations if needed.

The load combination (active and seismic earth pressure) and the shape of the seismic pressure distribution are each based on *Seismic Earth Pressures on Cantilevered Retaining Structures* (Atik and Sitar, 2010) and *Seismic Earth Pressures: Fact or Fiction* (Lew, Sitar, and Atik, 2010).

If the surface at the top of the wall is sloped, the recommended lateral earth pressures should be increased as indicated in Table 10.

Table 10 - Permanent Below-Grade Walls – Lateral Earth Pressures				
Slope Inclination at Top of Wall (H:V)	Increase in Lateral Earth Pressure (percent)			
1:1	200			
1.5:1	165			
2:1	150			

Lateral Foodle

6.4.2 Wall Back Drainage

For static conditions, drained below-grade permanent retaining walls should be constructed with adequate back-drainage to prevent the buildup of hydrostatic pressure behind the walls.

For shored walls, we recommend the use of a pre-fabricated geo-composite drainage board that is fixed to the shoring wall, and the below-grade building wall is constructed by the placement of shotcrete directly against the drainage board.

In cases where temporary construction slopes and retaining walls are utilized, a perimeter collector pipe could be installed at the base of the walls noting a suitable discharge outlet for the collector pipe will be required.

6.5 **Playing Fields**

Cuts up to approximately 46 feet in height and fills up to approximately 24 feet will be required for development Scenario 1 and cuts up to approximately 40 feet and fills up to approximately 31 feet will be required for development Scenarios 2 and 2B.

The finish levels of the planned playing field surfaces range from Elevation 1,209.0 to 1,257.0 for Scenario 1 and from 1216.0 to 1260.0 for Scenarios 2 and 2B. In each case, existing undocumented landfill materials are present beneath the planned playing field surfaces ranging on the order of seven to 39 feet.

The proposed playing fields may be established on three feet of properly compacted select fill materials where greater than ten feet of landfill materials are present and two feet of properly compacted select fill materials where ten feet or less.

The exposed excavation bottom should be compacted using a minimum 16-ton steel-drum vibratory compactor. The intent of the vibratory roller is to impart vibration to the existing landfill materials and provided an added measure of densification to these materials.

Settlement monitoring should be performed during and/or after the placement of the fill to confirm that any settlement due to the placement of the new fill has occurred to a sufficient degree to allow the construction of the playing fields on the properly compacted select fill materials.

Settlement monitoring requirements are presented in Section 6.10.

6.6 **Pavement Design Recommendations**

6.6.1 General

To provide uniform support for the proposed perimeter surface parking lot pavement sections, the upper 12 inches of existing soil should be removed and replaced as properly compacted fill. Based on the results of prior geotechnical laboratory testing, an R-value of 40 may be assumed in the design of AC and PCC pavement sections.

Excavation bottoms for pavement support should be carefully evaluated by a Langan field representative during construction to assure locally loose, soft or otherwise unsuitable materials are not present.

Pavement design recommendations for asphalt concrete (AC) and Portland cement concrete (PCC) are presented below.

6.6.2 Asphalt-Concrete Pavement Design

AC pavement for surface parking shall be designed in accordance with the CALTRANS method. Table 11 ow summarizes our AC pavement recommendations for assumed TIs of 4.5, 5, 6, and 7.

Traffic Use	ТІ	AC (inches)	AB (inches)			
Parking Areas	4.5	3.0	4.0			
Automobile Drive Lanes	5.0	3.5	4.0			
Truck and Trailer Drive Lanes	6.0	4.0	6.0			
Delivery Access and Loading Docks	7.0	5.0	6.5			

 Table 11 – AC Pavement Design Recommendations

Our Langan team can determine the recommended pavement and aggregate base thickness for other TIs if required. Careful inspection is recommended to confirm that the recommended thickness or greater is achieved and that proper construction procedures are followed.

The aggregate base should conform to requirements of Section 26 of State of California Standard Specifications for Public Works Construction (Green Book). The aggregate base should be compacted to at least 95 percent relative compaction.

6.6.3 Portland Concrete Pavement Design

Table 12 summarizes our Portland cement concrete (PCC) pavement recommendations for assumed TIs of 4.5, 5, 6, and 7 based on minimum compressive strength of 3,000 psi for the PCC.

Traffic Use	ТІ	PCC (inches)	AB (inches)		
Parking Areas	4.5	5.0	4.0		
Automobile Drive Lanes	5.0	5.5	4.0		
Truck and Trailer Drive Lanes	6.0	6.0	4.0		
Delivery Access and Loading Docks	7.0	7.0	4.0		

Table 12. PCC Pavement Design Recommendations

Our Langan team can determine the recommended pavement and aggregate base thickness for other TIs if required. Careful inspection is recommended to confirm that the recommended thickness or greater is achieved and that proper construction procedures are followed.

PCC pavement should be reinforced with Number 3 bars spaced 24 inches on-center in each direction.

Careful inspection is recommended to check that the recommended thickness or greater is achieved and that proper construction procedures are followed.

State of California Department of Transportation Type 2 base, or equivalent, should be used in the required sections. The base should be compacted to at least 95 percent relative compaction.

6.7 Site Flatwork

Site flatwork, including sidewalks, shall consist of five inches decomposed granite (DG) placed on a geotextile fabric placed on 12 inches of properly compacted select fill materials.

The select fill should be processed, placed and compacted as recommended in Section 6.10.

6.8 Site Retaining Walls

Site retaining walls may be supported on continuous footings established on 12 inches of properly compacted select fill. The select fill should consist of 1-inch minus crushed rock and should extend at least two horizontal feet beyond the limits of the footing.

Continuous retaining wall footings a minimum of two feet in width and established at least 18 inches below the lowest adjacent grade or top of floor slab in properly compacted select fill may be designed using an allowable bearing pressure of 2,000 psf. The recommended bearing pressure may be increased by one-third when considering short term wind and seismic loading conditions.

We estimate the total static settlement for retaining wall foundations designed as recommended herein will be on the order of 1 inch or less and the differential static settlement will be on the order of $\frac{1}{2}$ inch or less.

For drained conditions, unrestrained, free-standing retaining walls should be designed to resist a triangular lateral earth pressure distribution with a maximum value equal to 35H psf, where H is the height of the wall.

Per Section 1807A.2.2 of the 2019 CBC, seismic loading conditions shall be included in design of retaining walls supporting at least six feet of soil. Seismic lateral earth pressure distribution in this case should be taken as a triangular-shaped active lateral earth pressure with the maximum value equal to 35H psf in conjunction with a triangular-shaped seismic lateral earth pressure distribution with the maximum value equal to 15H psf.

In cases where free-standing below grade walls are situated adjacent to roadways, parking areas, or loading docks the upper 10 feet of the below-grade walls should also be designed to resist a uniform lateral earth pressure equal to 100 psf to account for normal traffic loading.

Additional surcharge loading may be required if below grade walls are situated in close proximity to any of the proposed building foundations and can be provided on a case-by-case basis.

If the surface at the top of the walls is slope, the recommended lateral earth pressures should be increased as indicated in Table 10.

Below-grade walls should be constructed with adequate back-drainage to prevent the build-up of hydrostatic pressure behind the walls. Pre-fabricated geo-composited drainage boards affixed to the back of the wall prior to backfill may be utilized.

Alternatively, a 12-inch wide zone of relatively free-draining aggregate material can be utilized behind walls to provide adequate drainage. To prevent water accumulation at the bottom of the wall weep holes should be provided or otherwise suitably discharged.

6.9 Temporary Shoring

6.9.1 Design Lateral Earth Pressure

Typically, cantilevered shoring is feasible for temporary shoring when the retained height is less than approximately 15 feet. Braced shoring typically becomes economical for retained heights in excess of 15 feet.

Cantilever shoring may be designed to resist a triangular lateral earth pressure distribution where the maximum value is 30H psf.

Internally brace shoring may be designed to resist a trapezoidal lateral earth pressure distribution where the maximum value is 26H psf.

Temporary shoring, should also be designed to resist a nominal surcharge load of 100 psf distributed uniformly within the upper 10 feet to account for vehicular traffic where adjacent to temporary roadways and parking areas.

For cantilevered shoring design, where the surface at the top of the shoring is sloped, the recommended lateral earth pressures should be increased as indicated in Table 10.

The design of temporary shoring walls should consider the location of construction cranes and other potentially heavy equipment or loads that may act against the shoring system. Surcharge loading for these features may be determined by using NAVFAC DM 7.2 Chapter 3, Section 4. If needed, we can provide additional surcharge loading on a case-by-case basis.

6.9.2 Soldier Pile Design and Installation

For the design of solider piles spaced at least two diameters on-center, the allowable lateral bearing value (passive pressure) of the native soils below the planned bottom of the excavation may be assumed to be 400 psf per foot of depth, up to a maximum value of 6,000 psf. To develop the full lateral bearing value, provides should be taken to assure firm contact between the soldier piles and the undisturbed native soils.

If the embedded portion of the solider pile shafts are filled with lean-mix concrete, the effective width of the soldier pile shaft for use in developing passive resistance may be assumed to be twice the diameter of the soldier pile shaft. If the embedded portion of the soldier pile shaft is filled with other material (such as low-strength sand-cement slurry, for instance), the effective width of the solider pile should be limited to be the diagonal dimension of the solider beam.

The portion of the soldier piles below the bottom of the excavation may also be relied on to support downward loading. For soldier piles that are drilled and filled with structural concrete below the bottom of the excavation, the frictional resistance between the concrete and surrounding soil may be taken as 600 psf. For solider piles that are vibrated into place, the frictional resistance may be taken as 800 psf.

6.9.3 Timber Lagging Design

Continuous lagging will be required between the solider piles. The soldier piles should be designed for the full anticipated lateral earth pressure; however, the pressure on the lagging will be less due to arching in the soil. For clear spans of up to six feet, we recommend the lagging be designed for a triangular where the maximum pressure is 400 psf at the mid-point between the solider piles and zero at the solider piles.

6.9.4 Tiebacks

The capacities of anchors should be determined by testing the initial anchors as outlined below. We anticipate that gravity-filled anchors will achieve an allowable bond strength of 1 kips to 2 kips per lineal foot of anchor in the on-site terrace deposits, depending on the method of construction. A variety of methods are available for construction of anchors. If post-grouted anchors are used, we estimate the anchors will develop resistance on the order of three times the estimated value. We recommend that the shoring designer and contractor be responsible for selecting the appropriate bond length and installation methods to achieve the required capacity. Only the frictional resistance developed beyond the active wedge would be effective in resisting lateral loads. If the anchors are spaced at least 6 feet on-center, reduction in the capacity of the anchors do not need to be considered due to group action.

The anchors are commonly installed at angles of 15 to 40 degrees below the horizontal: however, in some cases it is necessary to use steeper inclinations where adjacent private property is present. Caving of the anchor holes should be anticipated and provisions made to minimize such caving.

The geotechnical engineer of record representative should select a representative number of the initial anchors for 24-hour, 200 percent tests and 200 percent quick tests. The purpose of the 200 percent test is to verify the friction value assumed in design. The anchors should be tested to develop twice the assumed friction value. Where satisfactory tests are not achieved on the initial anchors, the anchor diameter and/or length should be increased until satisfactory test results are obtained.

For post-grouted anchors where concrete is used to backfill the anchor along its entire length, the test load should be computed as required to develop the appropriate friction along the entire bonded length of the anchor. We estimate that the influence of the post-grouting and the adjacent soil within the bonded length of the anchors will be less than 5 feet from the anchor.

Total deflection during the 24-hour, 200 percent test should not exceed 12 inches during loading. Anchor deflection should not exceed 0.75 inch during the 24-hour period. Measured after the 200 percent test load is applied. If the anchor movement after the 200 percent load has been applied for six hours is less than 0.5 inch and the movement over the previous four hours has been less than 0.1 inch, the test may be terminated.

For the quick 200 percent tests, the 200 percent test load should be maintained for 30 minutes. The total deflection of the anchor during the quick 200 percent tests should not exceed 12 inches. Anchor deflection after the 200 percent test load has been applied should not exceed 0.75 inch during the 30 minute period. Where satisfactory tests are not achieved on the initial anchors, the anchor diameter and/or length should be increased until satisfactory test results are obtained.

All the production anchors should be pre-tested to at least 150 percent of the design load. Total deflection during the tests should not exceed 12 inches. The rate of creep under the 150 percent test should not exceed 0.1 inch over a 15-minute period for the anchor to be approved for the design loading.

After satisfactory test, each production anchor should be locked off at the design load. The lockedoff load should be verified by rechecking the load in the anchor. If the locked-off load varies by more than 10 percent from the design load, the load should be until the anchor is locked off within 10 percent of the design load. Installation of the anchors and testing of the completed anchors should be observed by a representative of the geotechnical engineer of record.

6.9.5 Lateral Deflection and Shoring Monitoring

Some means of monitoring the performance of the shoring system is recommended. The monitoring should consist of periodic surveying of the lateral and vertical deflections of top of each soldier pile. When design of the shoring system is finalized, the geotechnical engineer of record can discuss appropriate monitoring methods with the design consultants and shoring contractor.

It is difficult to accurately predict the amount of deflection of a shoring system and it should be understood that the shoring system is designed to deflect at the top. We recommend the shoring system be designed to limit deflection at the top to be 0.5 inch or less where the shoring provides lateral support for existing buildings, and 1 inch or less where existing buildings are not present. If greater deflection occurs during construction, additional vertical support or lateral bracing may be required.

6.9.6 Construction Considerations

Drilling for soldier piles will encounter large-size granular particles and will likely require the use of core barrels of chopping buckets to advance. Additionally, caving of the solider pile shaft walls is also possible since the shafts will be advanced through predominantly granular materials. It's unlikely drilling mud will be very effective in the on-site soil conditions as we anticipate that circulation of the drilling mud will be difficult due to the large-particle sizes and corresponding void spaces. Casing or other provisions to mitigate caving may be required to advance the soldier pile shafts to the design depths.

The shoring contractor should include appropriate provisions to achieve solider pile installation.

6.10 Earthwork Considerations

6.10.1 Temporary Construction Slopes

Temporary, unsurcharged slopes may be excavated into the on-site engineering fill, undocumented fill and landfill materials may be constructed at a 1:1 (h:v) gradient for slopes less than 15 feet in height, 1¼:1 (h:v) for slopes less than 25 feet in height, and 1½:1 (h:v) for slopes greater than 25 feet in height.

Temporary construction slopes should be protected from erosion by directing surface water away from the top of the slope, by placing sand-bags at the top of the slopes cuts, and/or covering the slopes with plastic sheeting during rain events.

6.10.2 Permanent Slope Construction

The planned mass grading includes construction of permanent slopes. Permanent slopes should be constructed at a maximum gradient of 2:1 (h:v). In cases where steeper permanent slopes are planned, the steeper slopes should include geotextile reinforcement and/or soil-cement. Design of either geotextile reinforced or cement-improved permanent slopes should be done in collaboration with the selected grading contractor and/or specialty contractor.

Permanent slopes should be over-filled and trimmed back. Horizontal benches should be included for every 25 vertical feet of permanent slope; noting that if only one bench is required it should be constructed at the mid-height of the slope.

New fill should be benched into the existing slope using a minimum horizontal bench width of two feet for every four vertical feet. All benches should be observed by a representative of our firm noting that we anticipate significant degree of variation throughout the site.

A keyway should be constructed at the toe of each planned permanent slope; the keyway should be a minimum of five feet in width and four feet in height for slopes less than 25 feet in height and a minimum of ten feet in width and six feet in height for slopes great than 25 feet in height. The bottom of the keyway inclined two degrees towards the slope in each case.

6.10.3 Excavation Bottom Preparation

Exposed excavation bottoms should be carefully probed or otherwise evaluated by our field representative and any localized deposits of loose, soft or otherwise unsuitable soils should be removed and replaced as determined in the field with our Langan field technician.

The exposed bottom should be scarified for a depth of six inches to the extent possible, moistureconditioned and compacted as recommended below.

If the exposed bottom of the excavation consists of soft, compressible, wet and/or otherwise unsuitable materials, removal of an additional six to 12 inches of soil and replacement with ¾-inch crushed rock should be placed to provide a firm working surface suitable to receive new fill.

As recommended previously, where existing landfill materials are present in excavation bottoms, and these materials are allowed to remain in place as recommended herein, these materials should be densified using a 16-ton vibratory roller, or other suitable equipment, prior to placement and compaction of new fill.

6.10.4 Materials for Fill

Existing landfill materials are suitable for use in required fill provided these materials are processed so that less than one third of the materials is larger than one inch in maximum dimension and only five percent of the materials exceed eight inches in maximum particle size.

On-site alluvial materials are also suitable for use in required fills noting also the alluvial materials should be processed, if necessary, so that less than one third of the materials is larger than one inch in maximum dimension and only five percent of the materials exceed eight inches in maximum particle size.

In general, suitable materials to be included within inert debris fill include soil, gravel, rock, concrete, fully cured asphalt, glass, plaster products (except for plasterboard), brick, and clay products. Deleterious materials, materials other than those listed, should be removed; noting that reinforcing steel that is embedded in concrete should be cut flush to allow re-use.

Landfill debris and alluvial materials great than 12 inches in any dimension may be used in deep fills provided these materials are placed at least ten feet below the finish fill surface and placed in windrows are recommended in Section 6.10.5.

6.10.5 Fill Placement and Compaction

Fill soils shall be moisture conditioned as recommended herein, placed in loose lifts not exceeding 12-inches in thickness and mechanically compacted using heavy equipment. If lightweight equipment is used, the lift thickness should be limited to 8 inches in thickness.

The processed fill materials should be moisture conditioned within two percent of the optimum moisture content and compacted to at least 90 percent of the maximum dry density obtained per ASTM D-1557 when possible, and using large ring tests in accordance with ASTM D4914 or D5030 or other methods deem suitable and/or practical.

It should be understood that while performing field density testing is key quality control quality assurance provision, documentation of the number of passes (compactive effort), the response of the fill materials to the equipment (i.e. yielding / non-yielding bottom) and frequent probing of the fill as compacted by a qualified geotechnical engineer noting that these observations are equally important to confirm the adequacy of the compacted fill as field density testing.

Materials greater than 12 inches in largest dimension and up to 36 inches in largest dimension may be utilized in the deeper fills, defined as at least ten feet below the finish surface, The over-sized particles may be placed in trenches to create windrows that are spaced at least 15 horizontal feet center-to-center and at least five vertical feet. Windrows should be less than 100 feet in length. The trenches containing the over-sized particles should be filled with granular materials and densified using heavy compaction equipment.

6.10.6 Development of Detailed Grading Control and Settlement Monitoring Plan

A customized grading control plan should be developed prior to start of mass grading that takes into consideration the geotechnical requirements outlined herein and well as applicable environmental requirements outlined in our landfill closure report.

Settlement monitoring should be performed during the mass grading at locations where more than ten feet of new fill is planned over existing landfill materials. The primary purpose of the monitoring is to observe any potential settlement that may occur within existing landfill materials due to the increased weight of the new fill. The settlement monuments can be established at the planned finish surface.

Foundation and floor slab construction should not commence until satisfactory readings are obtained from the settlement monuments in accordance with a formal settlement monitoring program. The formal settlement monument program should be developed as part of the pre-construction phase of the project and included in the grading control plan.

7.0 GEOTECHNICAL FIELD OBSERVATION AND TESTING

Geotechnical field observation and testing is necessary during the construction phase of the project and that testing should be performed by a licensed geotechnical engineer including the following primary items:

- Observation and approval of excavation bottoms
- Processing and sorting of proposed fill materials
- Moisture-conditioning, placement and compaction of fill materials
- Installation of temporary shoring and lagging
- Observation and approval of foundation bottoms
- Observation and testing of utility trench backfill
- Observation and testing of pavement subgrade and base materials
- Observation and testing of retaining wall backfill and wall backdrainage provisions

8.0 LIMITATIONS

The conclusions and recommendations provided in this report are based on subsurface conditions inferred from available boring and test pit data, as well as project information provided to date. This report was prepared for CMC, their design consultants and subcontractors for use in the proposed development.

Geotechnical Investigation Report Proposed Roberts Campus Sports Bowl Claremont McKenna College Claremont and Upland, California Langan Project No. 700114101

If changes to the proposed development are made, we should be notified to review our conclusions and recommendations. Information on subsurface strata and groundwater levels shown on the logs represent conditions encountered only at the locations indicated and at the time of investigation.

9.0 CLOSING

We sincerely appreciate the opportunity to provide professional services for this project and look forward to working with you on 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.

Claudia Rangel Staff Engineer

Christopher J. Zadoorian Senior Associate



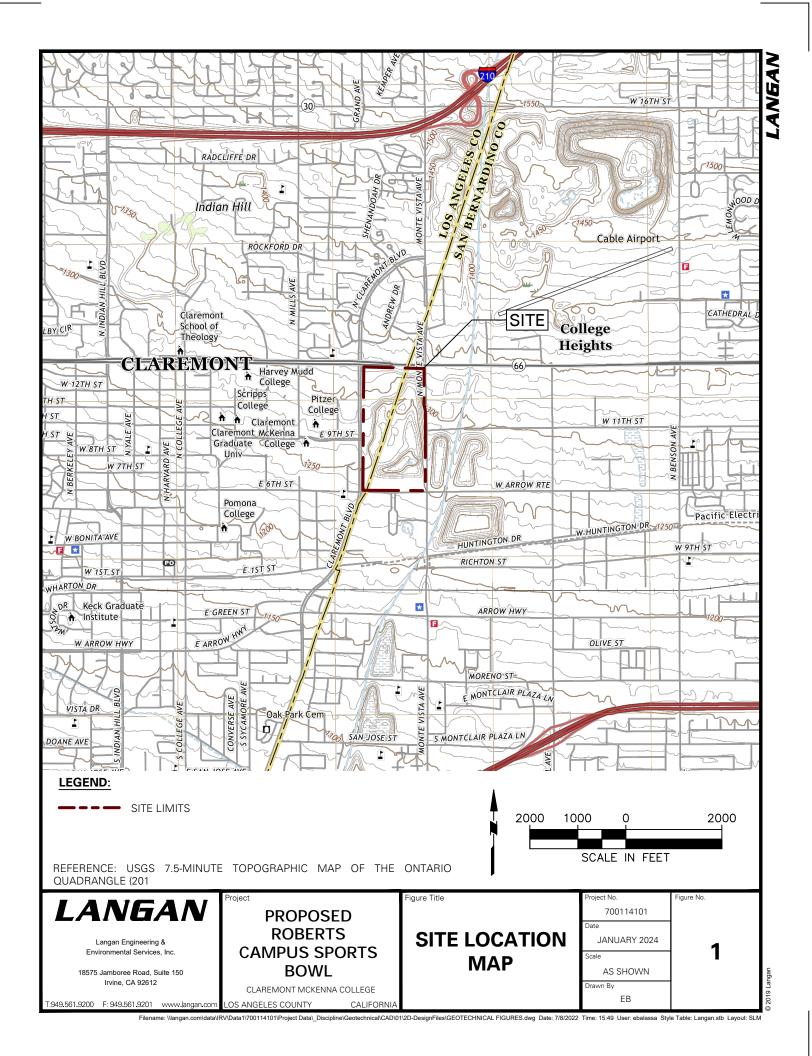
Andre Nichler

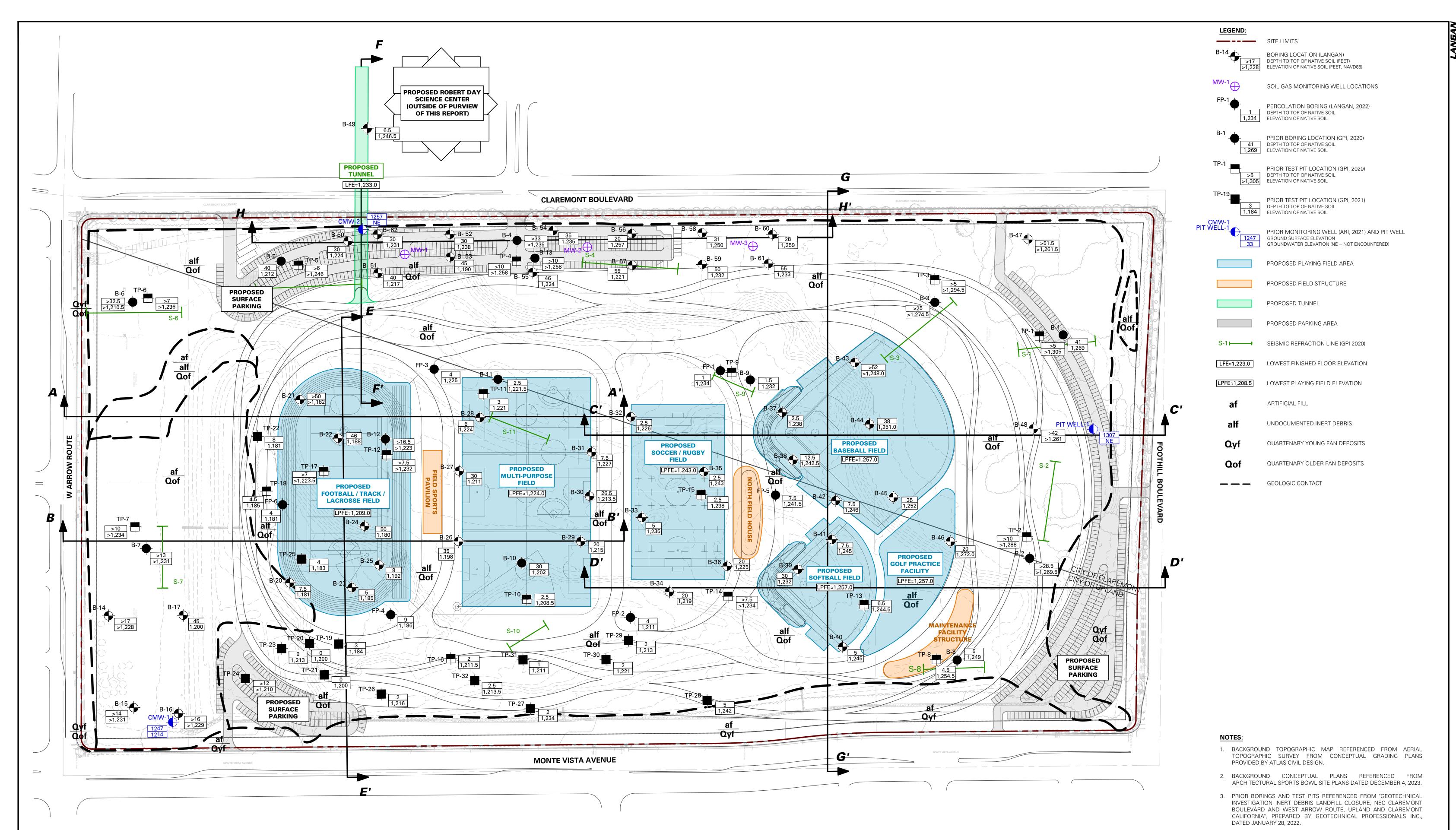
Andrew Nieblas Project Geologist

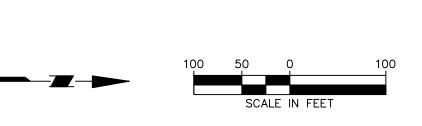


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FIGURES



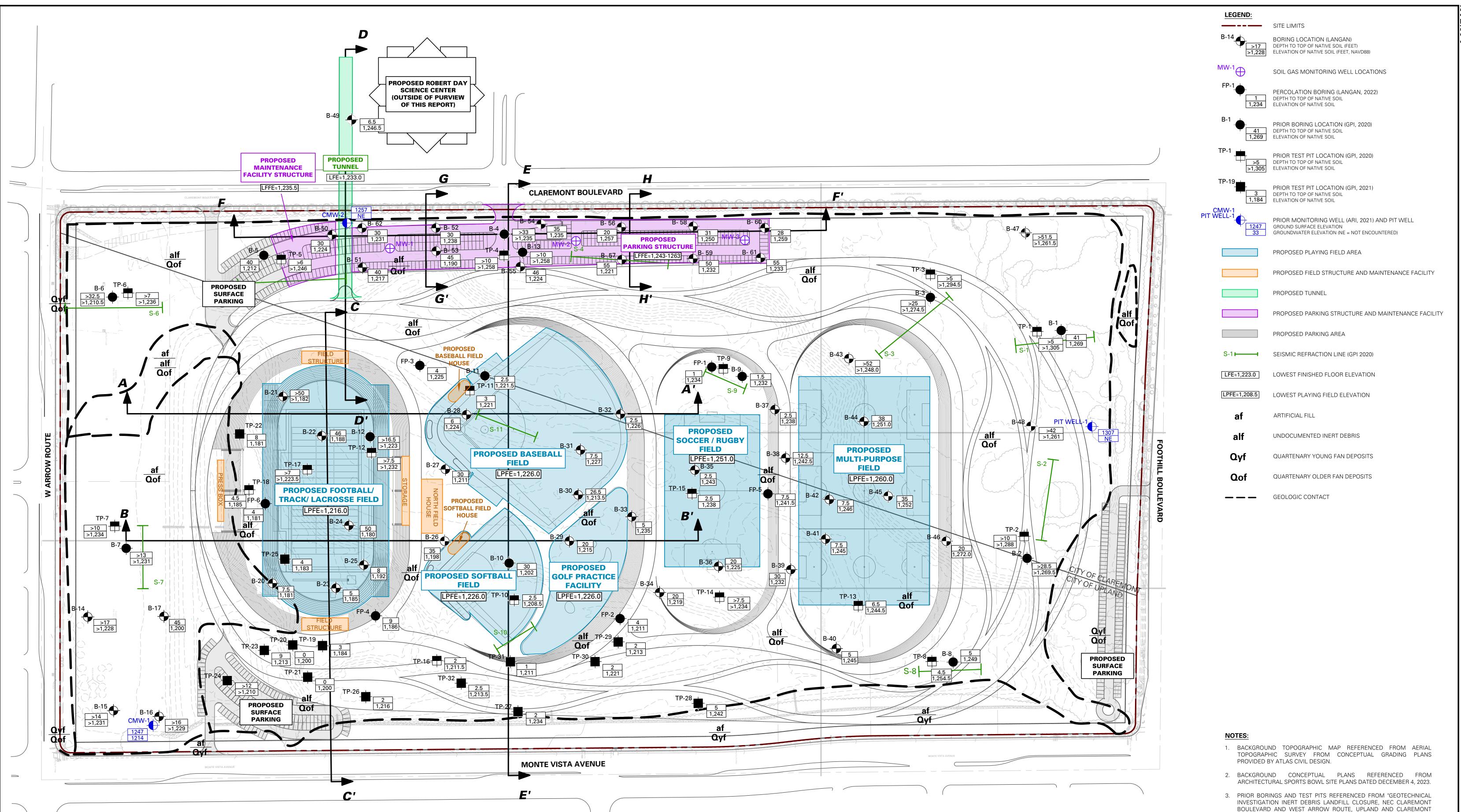


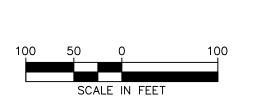




4. PRIOR BORINGS AND TEST PITS REFERENCED FROM "PRELIMINARY GEOTECHNICAL INVESTIGATION PROPOSED EAST CAMPUS EXPANSION NEC CLAREMONT BOULEVARD AND WEST ARROW ROUTE, UPLAND AND CLAREMONT CALIFORNIA", PREPARED BY GEOTECHNICAL PROFESSIONALS INC., DATED DECEMBER 23, 2022.

gure Title igure No. **PROPOSED ROBERTS** 700114101 **SCENARIO 1 CAMPUS SPORTS** JANUARY 2024 **CONCEPTUAL SITE 2A BOWL** CLAREMONT MCKENNA COLLEGE AS SHOWN PLAN awn By CR CALIFORNI Filename: \\langan.com\data\\RV\data1\700114101\Project Data_Discipline\Geotechnical\CAD\01\2D-DesignFiles\700114101 - SITE PLAN AND CROSS SECTIONS.dwg Date: 1/12/2024 Time: 17:19 User: crangel Style Table: Langan.stb Layout: FIG 2A- SCENARIO 1 24X36

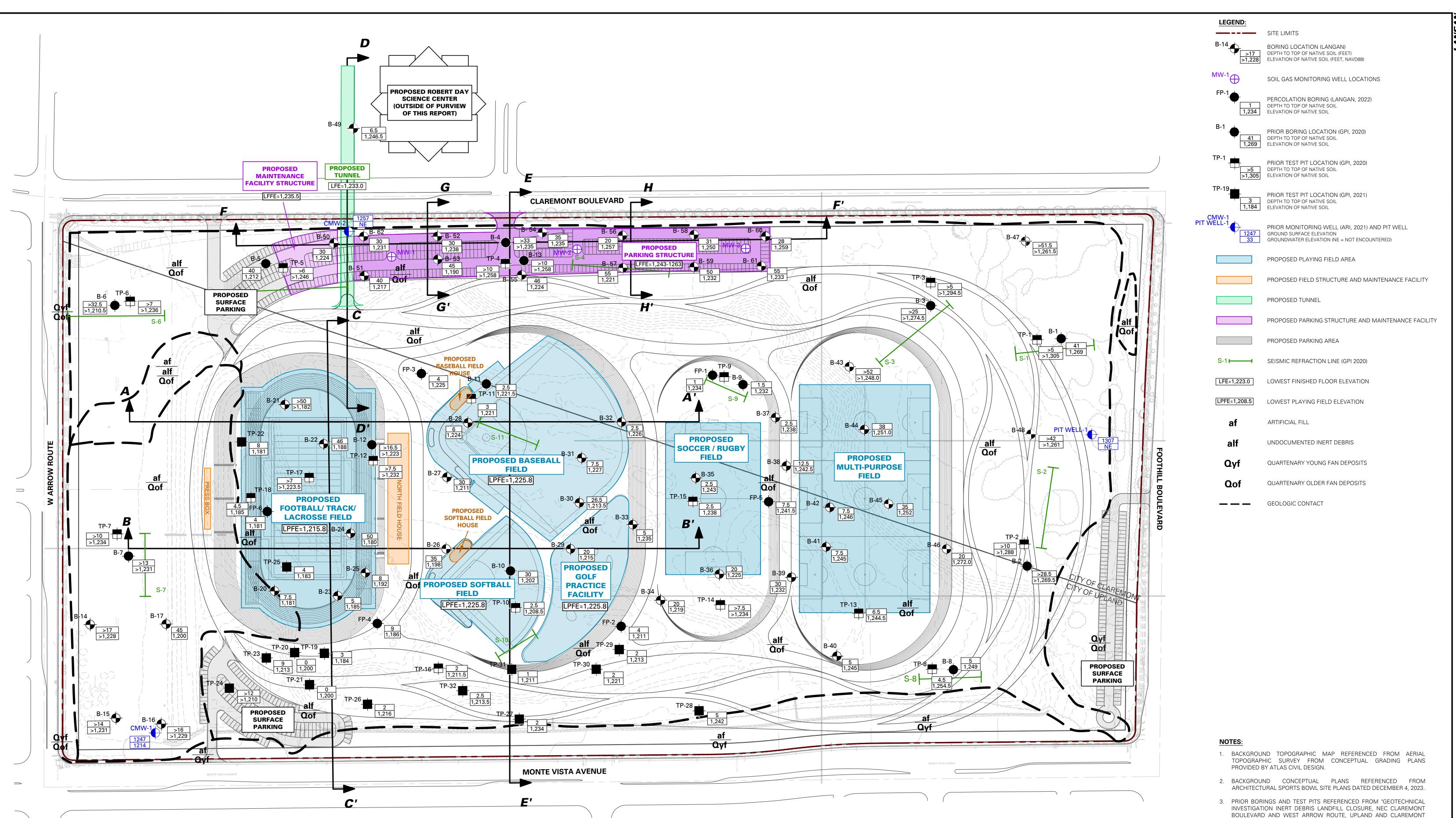


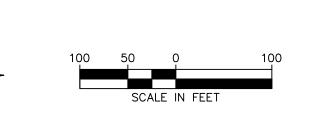


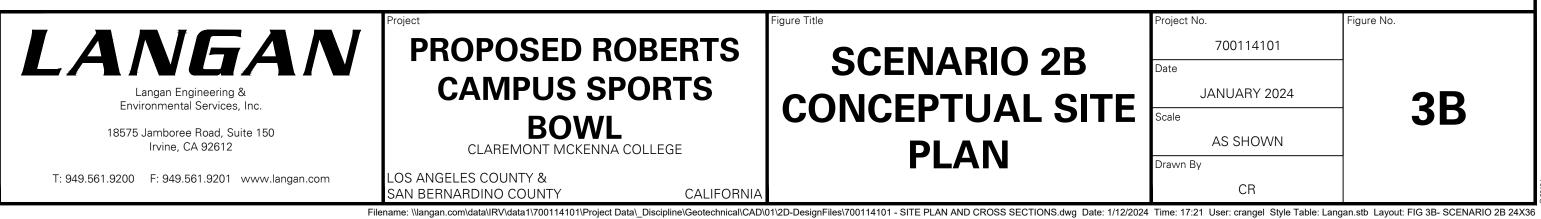


- BOULEVARD AND WEST ARROW ROUTE, UPLAND AND CLAREMONT CALIFORNIA", PREPARED BY GEOTECHNICAL PROFESSIONALS INC., DATED JANUARY 28, 2022.
- 4. PRIOR BORINGS AND TEST PITS REFERENCED FROM "PRELIMINARY GEOTECHNICAL INVESTIGATION PROPOSED EAST CAMPUS EXPANSION NEC CLAREMONT BOULEVARD AND WEST ARROW ROUTE, UPLAND AND CLAREMONT CALIFORNIA", PREPARED BY GEOTECHNICAL PROFESSIONALS INC., DATED DECEMBER 23, 2022.









- BOULEVARD AND WEST ARROW ROUTE, UPLAND AND CLAREMONT CALIFORNIA", PREPARED BY GEOTECHNICAL PROFESSIONALS INC., DATED JANUARY 28, 2022.
- 4. PRIOR BORINGS AND TEST PITS REFERENCED FROM "PRELIMINARY GEOTECHNICAL INVESTIGATION PROPOSED EAST CAMPUS EXPANSION NEC CLAREMONT BOULEVARD AND WEST ARROW ROUTE, UPLAND AND CLAREMONT CALIFORNIA", PREPARED BY GEOTECHNICAL PROFESSIONALS INC., DATED DECEMBER 23, 2022.

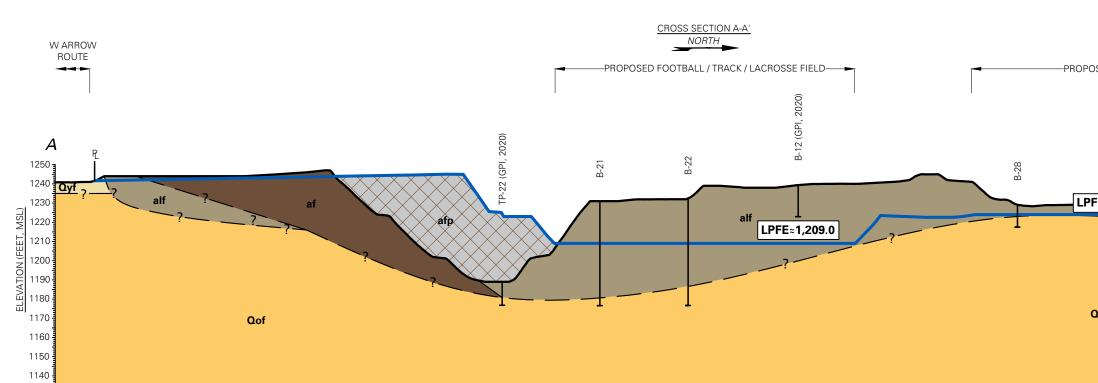
PROPOSED ROBERTS CAMPUS SPORTS BOWL CLAREMONT MCKENNA COLLEGE

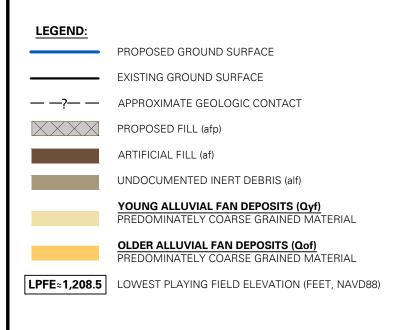
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SCENARIO 2B	
CONCEPTUAL SITE	
PLAN	

Project No.	Figure No.
700114101	
Date	
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NOTES:

- 1. CROSS SECTION DISPLAYS GENERALIZED SUBSURFACE CONDITIONS; FOR A DETAILED DESCRIPTION OF CONDITIONS ENCOUNTERED REFER TO BORING AND TEST PIT LOGS.
- 2. GROUND SURFACE ELEVATIONS REFERENCED FROM AERIAL TOPOGRAPHIC SURVEY FROM CONCEPTUAL GRADING PLANS PROVIDED BY ATLAS CIVIL DESIGN.
- 3. REFER TO SITE PLAN FOR LOCATION OF CROSS SECTION.



Filename: \\langan.com\data\\RV\data\\700114101\Project Data_Discipline\Geotechnical\CAD\01\2D-DesignFiles\700114101 - SITE PLAN AND CROSS SECTIONS.dwg Date: 1/12/2024 Time: 17:22 User: crangel Style Table: Langan.stb Layout: FIG 4A S1 XSA

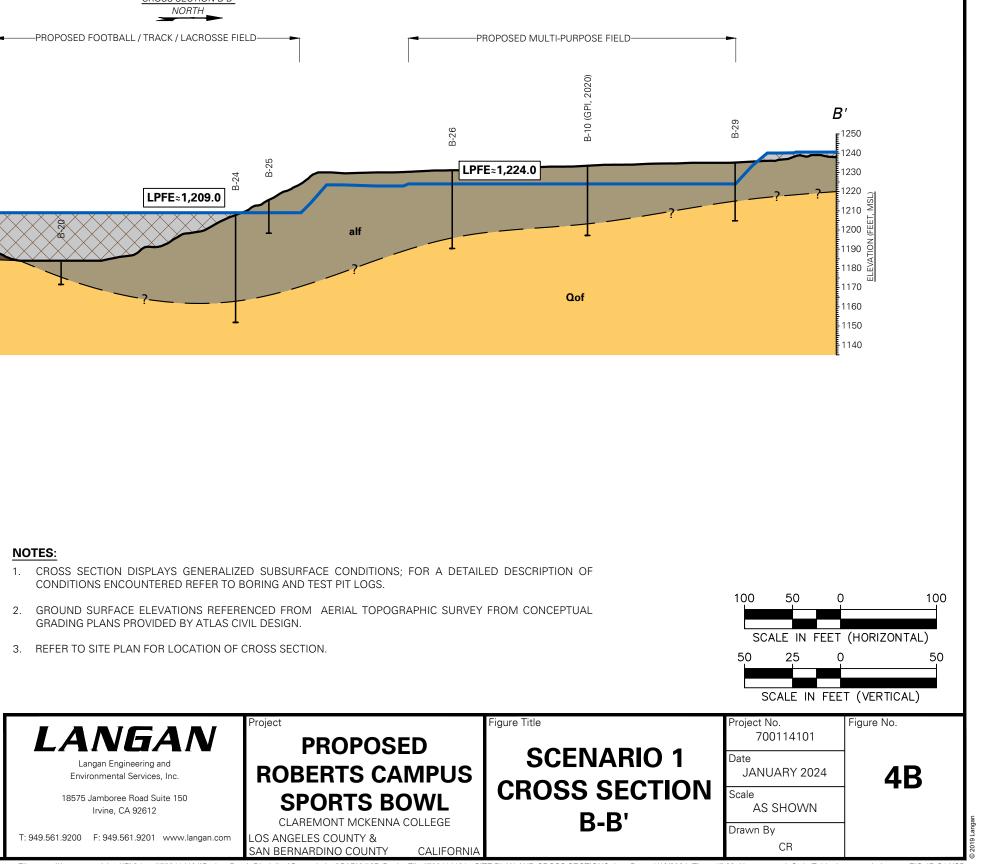
LANGAN -PROPOSED MULTI-PURPOSE FIELD-Α' 1250 1240 LPFE≈1,224.0 afp 1230 220 1210 1200 1190 1180 🗄 Qof 1170 1160 1150 1140 100 50 100 0 SCALE IN FEET (HORIZONTAL) 25 50 50 SCALE IN FEET (VERTICAL) roject No. Figure No. 700114101 **SCENARIO 1** Date JANUARY 2024 **4**A **CROSS SECTION** Scale AS SHOWN **A-A'** Drawn By

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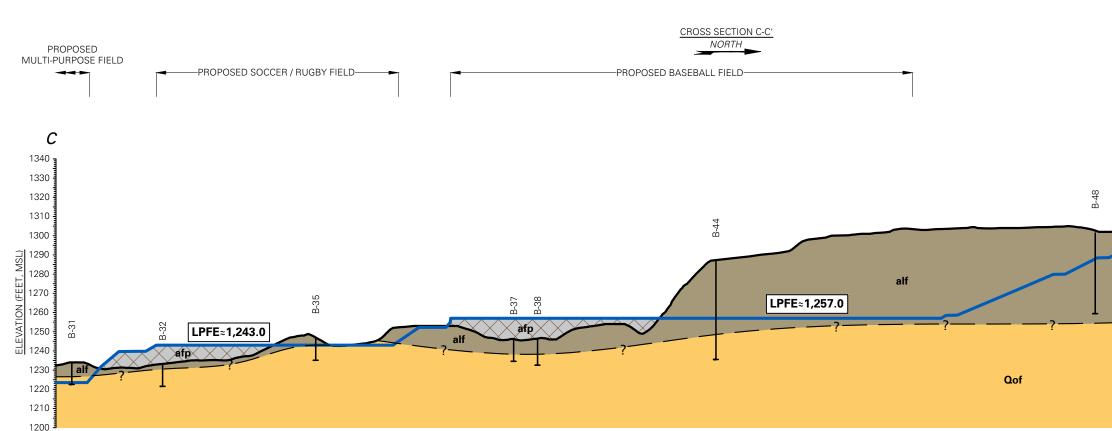
CROSS SECTION B-B' NORTH W ARROW ROUTE -PROPOSED FOOTBALL / TRACK / LACROSSE FIELD-(GPI, 2022) В Ľ-1250 -B-26 1240 Qy B-25 LPFE≈1,224.0 1230 B-24 1220 LPFE≈1,209.0 ELEVATION (FEET, N 1500 (FEET, N 1100 (FEET, N 1180 (FEET) afp 1170 Qof 1160 1150 1140

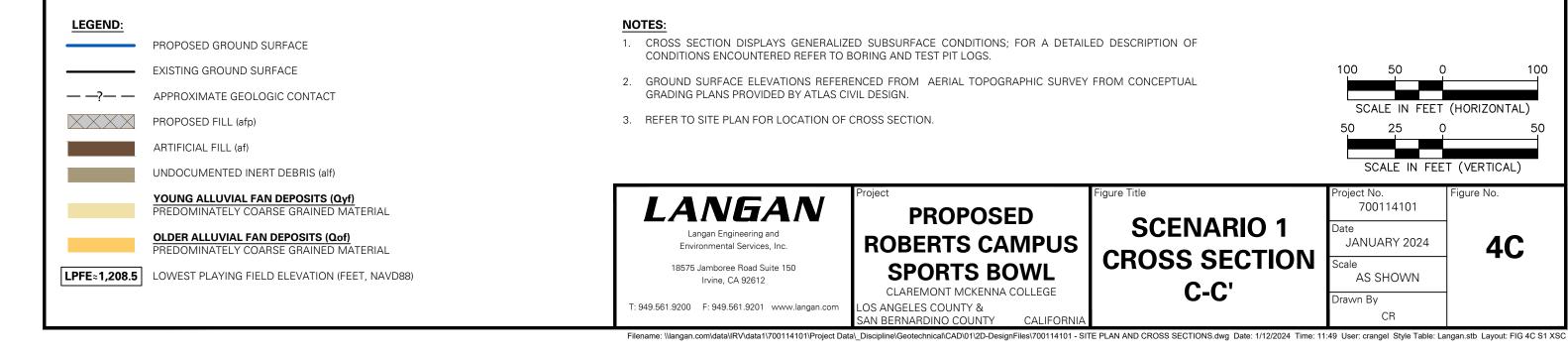


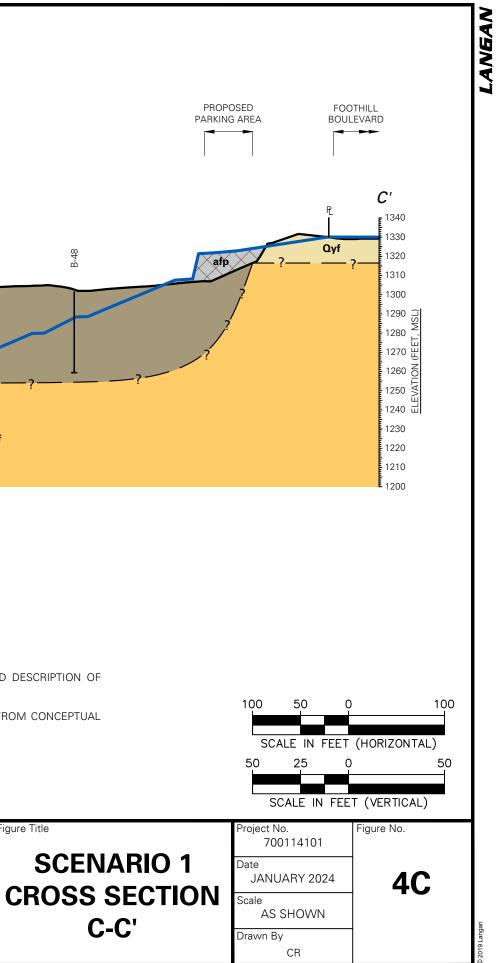
- GRADING PLANS PROVIDED BY ATLAS CIVIL DESIGN.



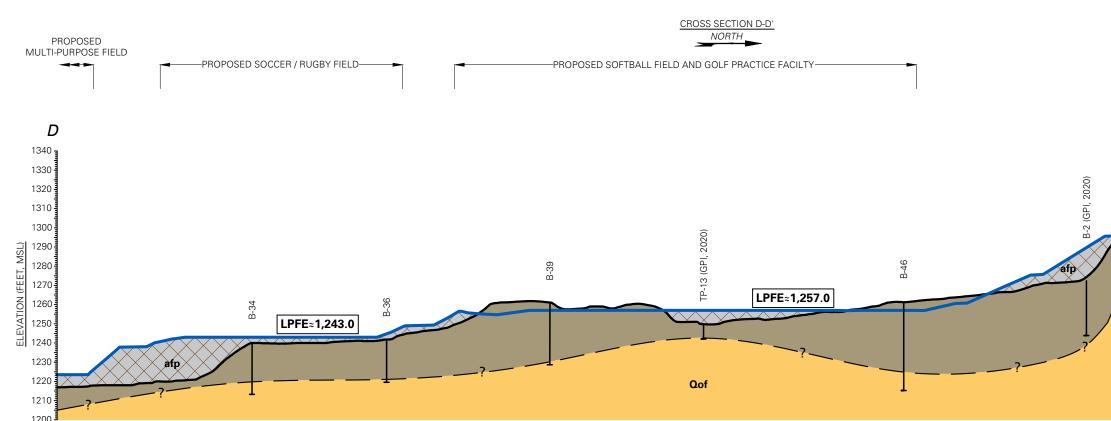
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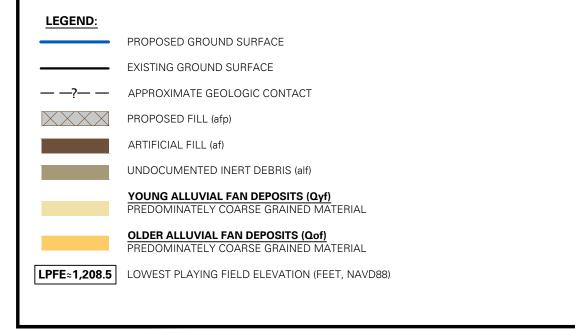




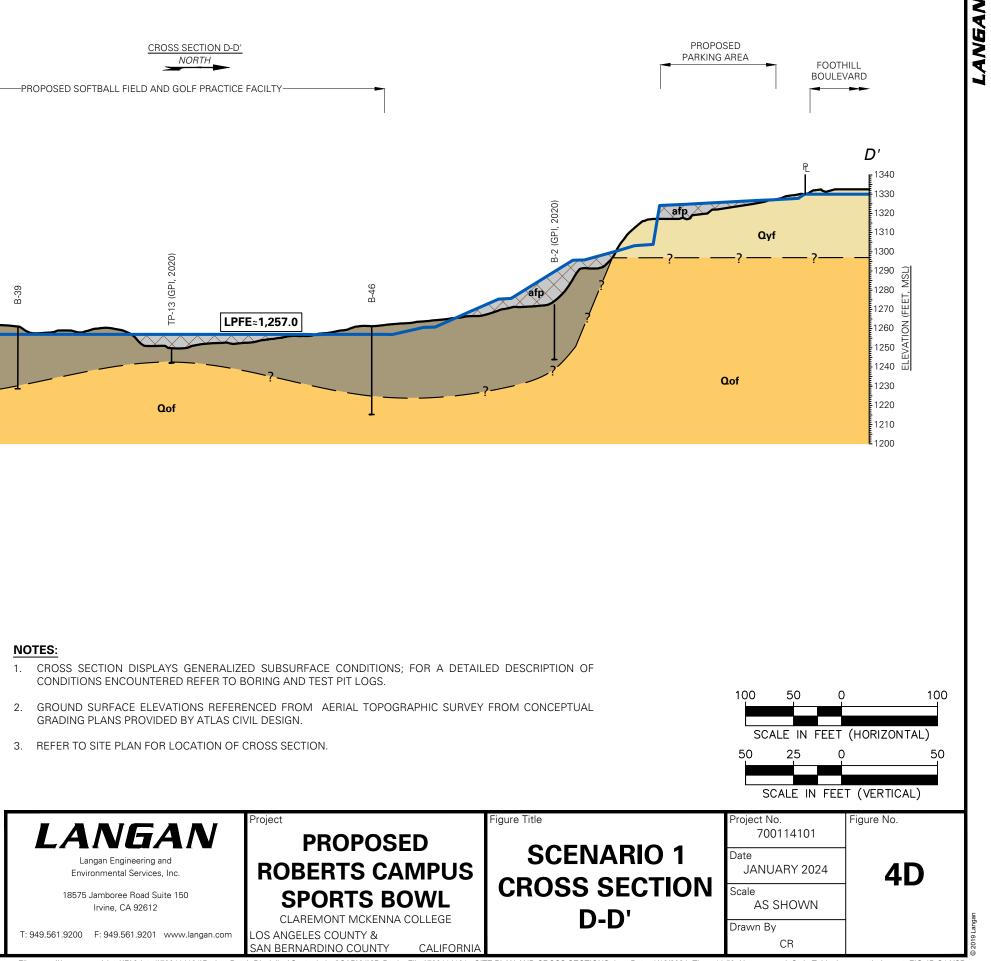


igure Title

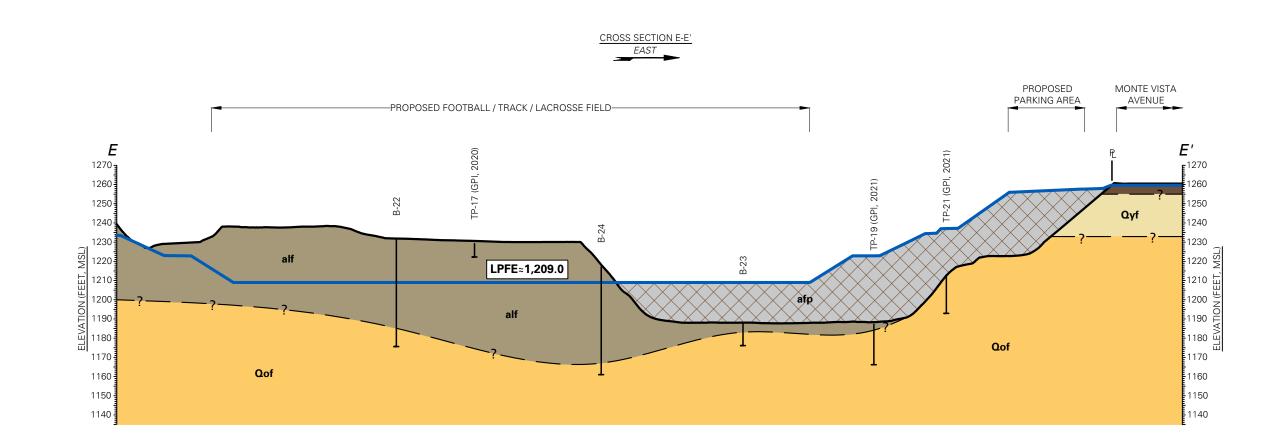


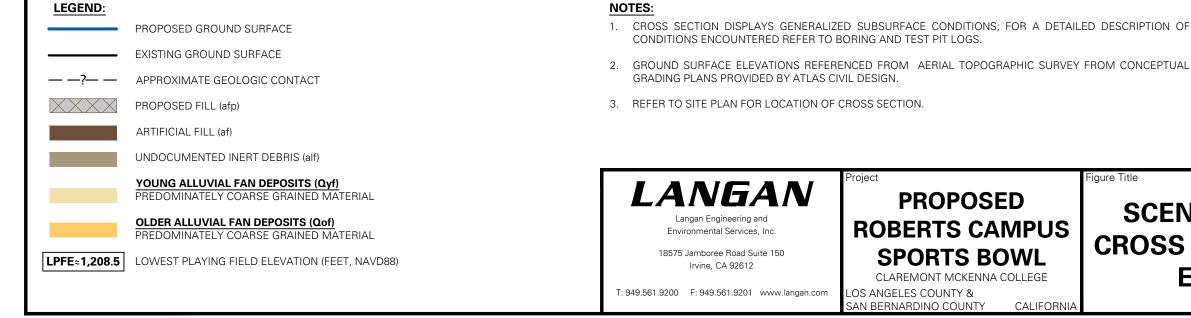


- CONDITIONS ENCOUNTERED REFER TO BORING AND TEST PIT LOGS.
- GRADING PLANS PROVIDED BY ATLAS CIVIL DESIGN.



Filename: \\langan.com\data\\RV\data\\700114101\Project Data_Discipline\Geotechnical\CAD\01\2D-DesignFiles\700114101 - SITE PLAN AND CROSS SECTIONS.dwg Date: 1/12/2024 Time: 11:53 User: crangel Style Table: Langan.stb Layout: FIG 4D S1 XSD

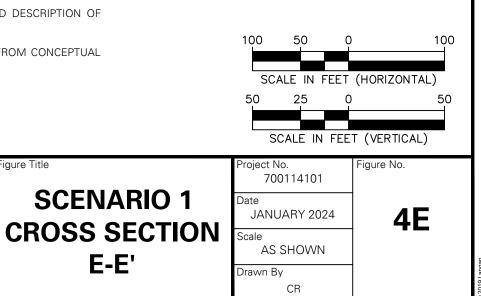


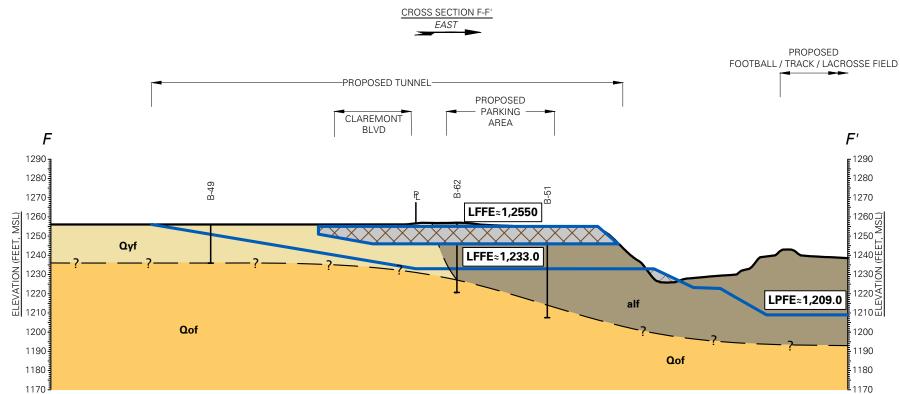


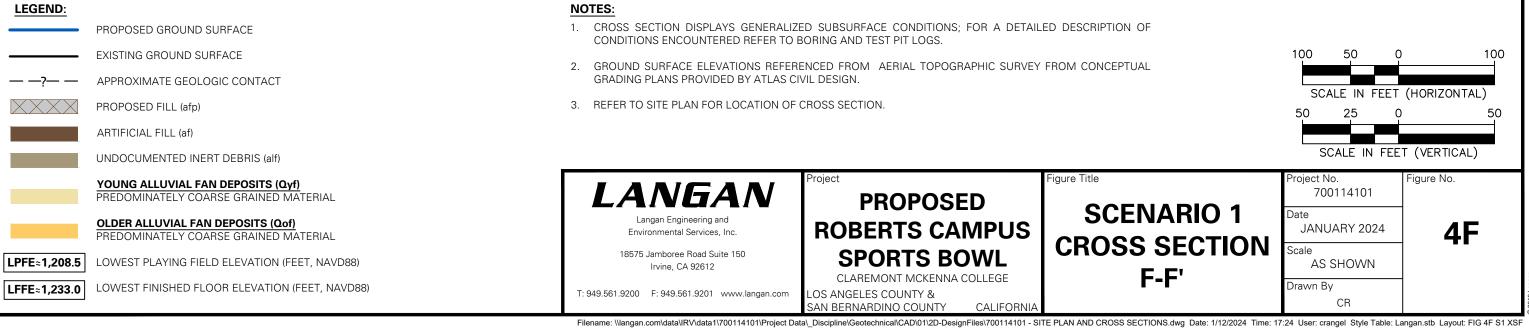
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CALIFORNI

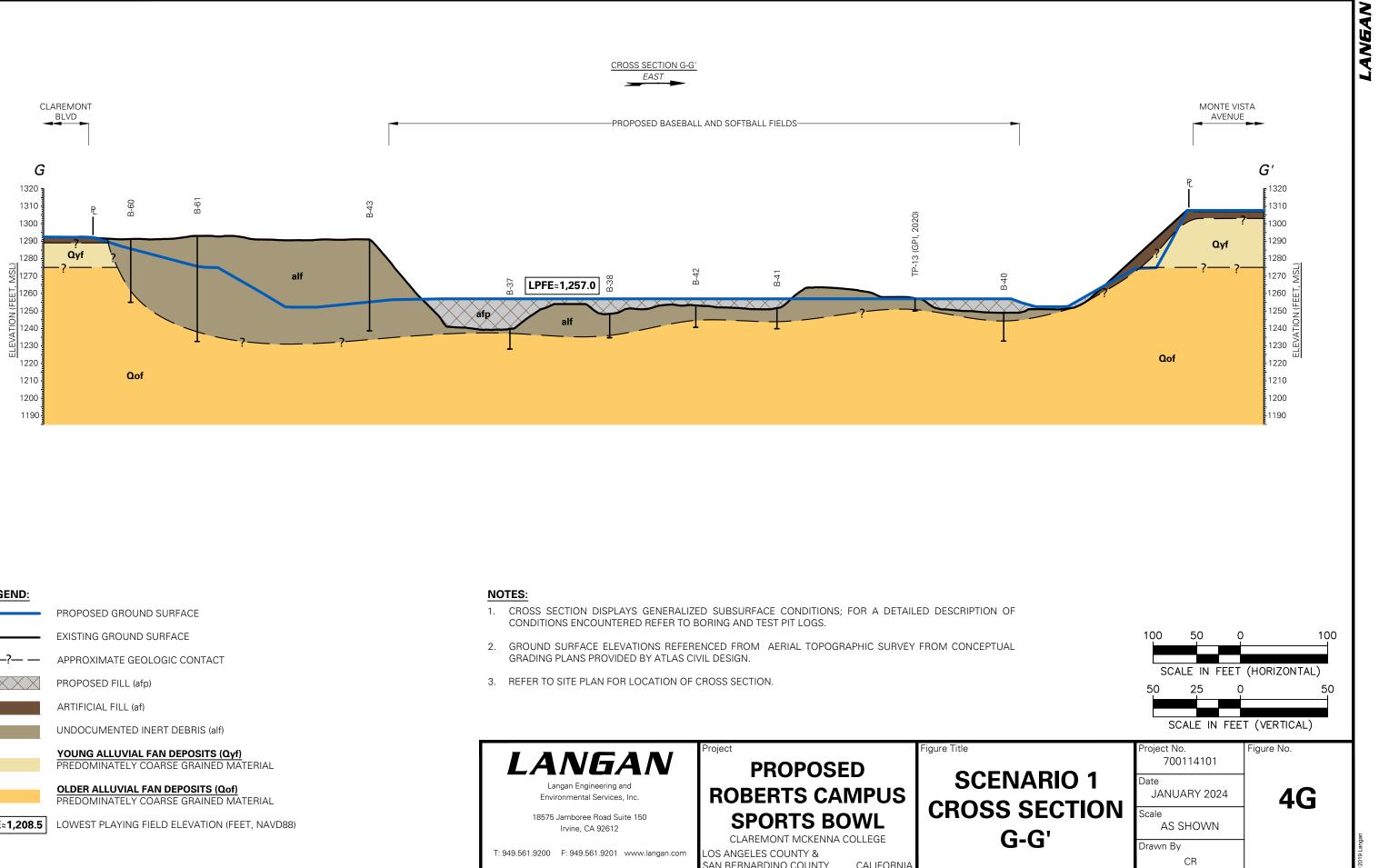
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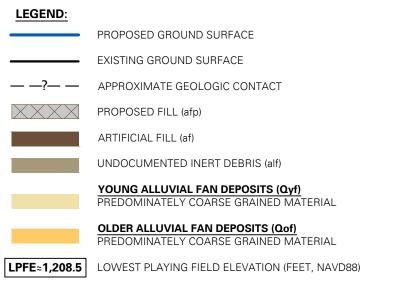


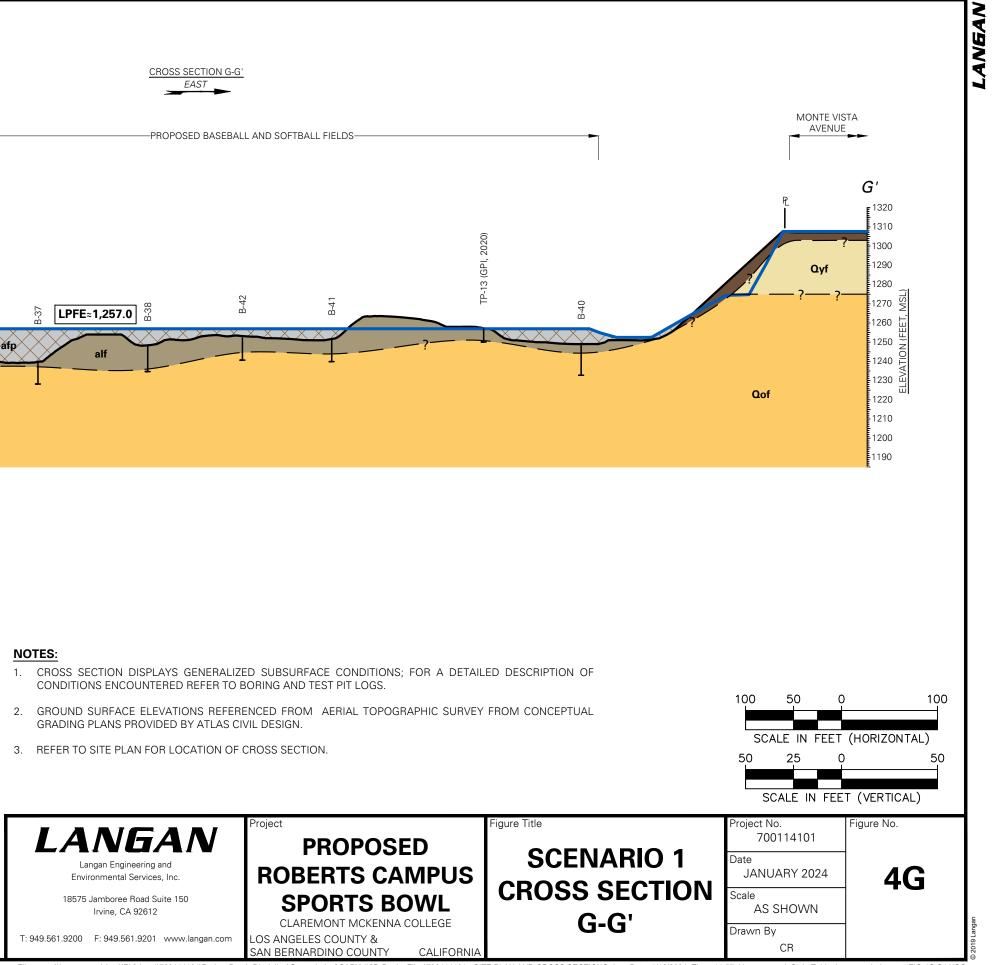




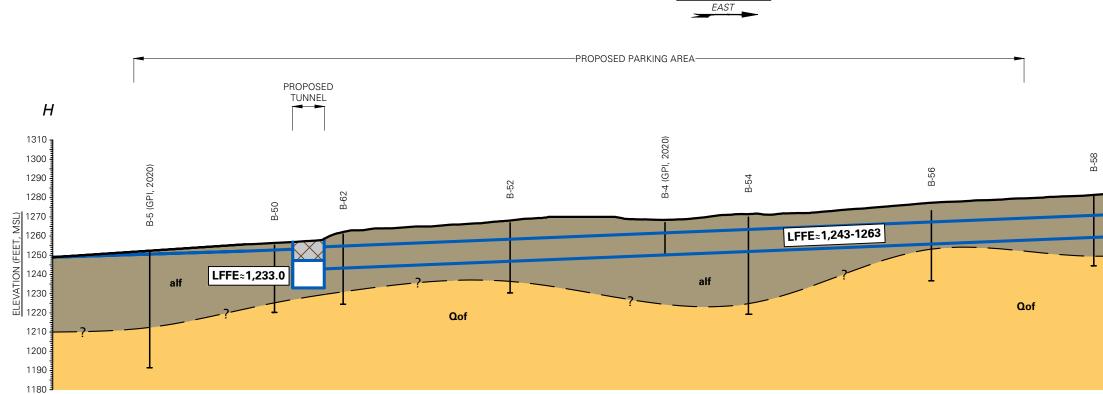


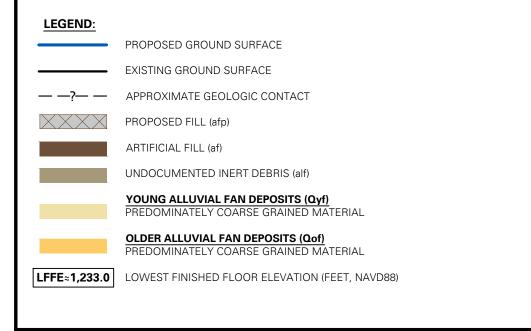






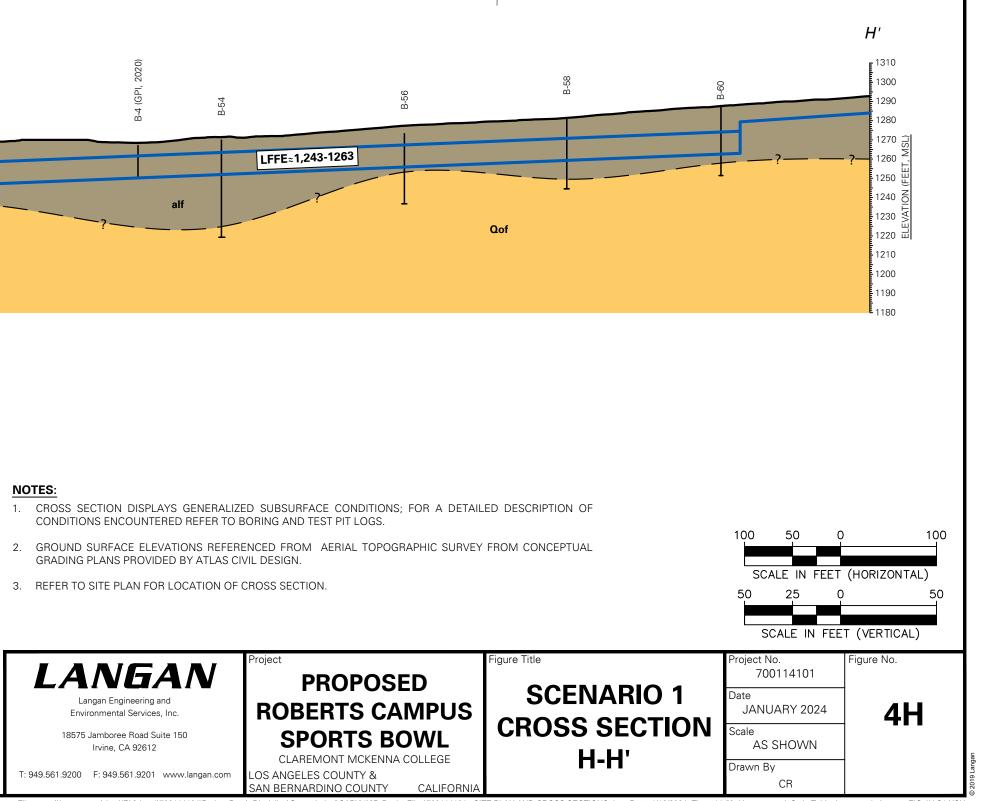
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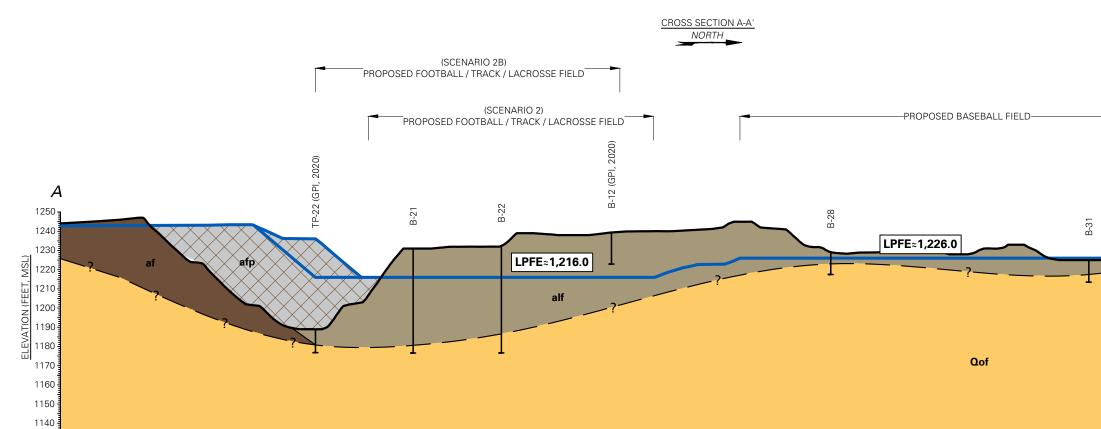


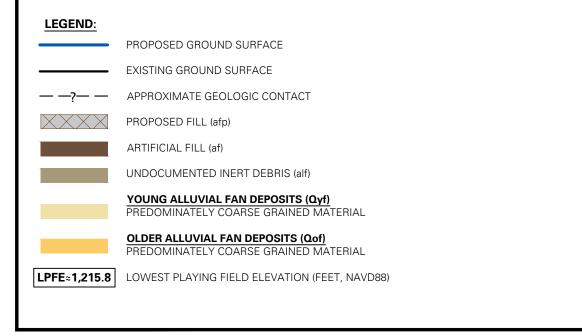
- CONDITIONS ENCOUNTERED REFER TO BORING AND TEST PIT LOGS.
- GRADING PLANS PROVIDED BY ATLAS CIVIL DESIGN.

CROSS SECTION H-H'

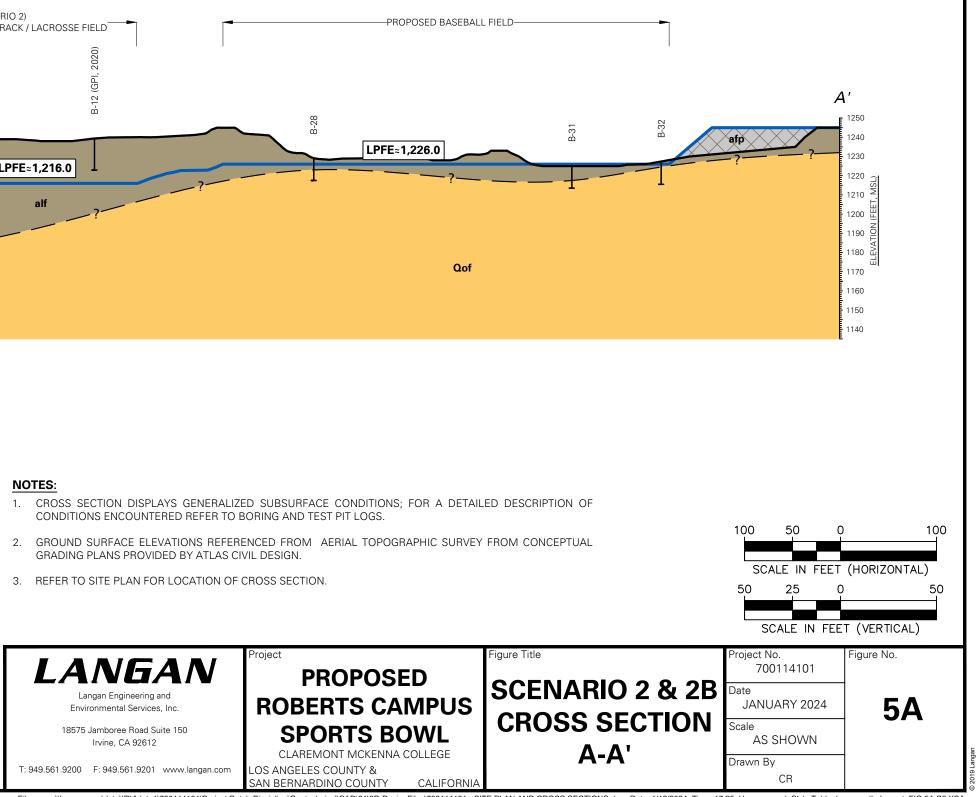


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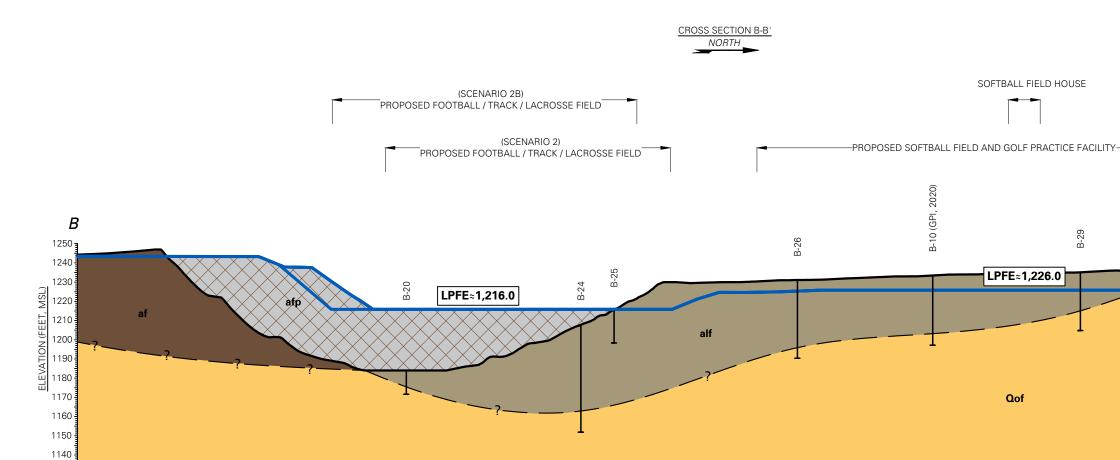


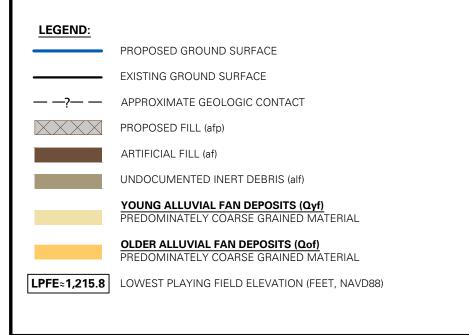


- GRADING PLANS PROVIDED BY ATLAS CIVIL DESIGN.

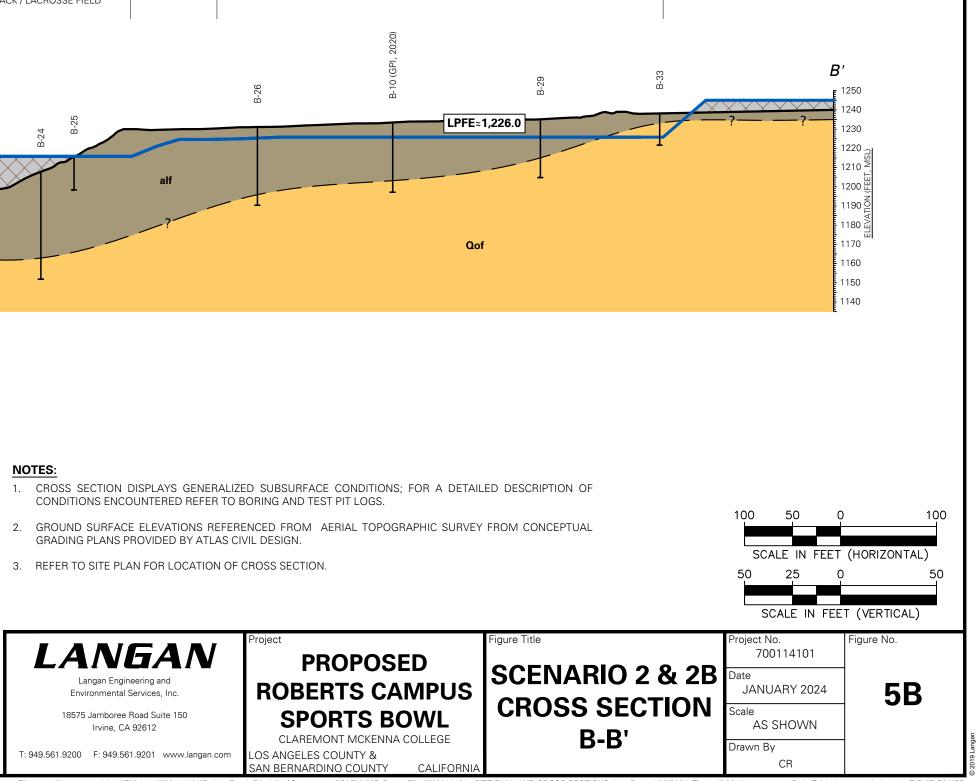


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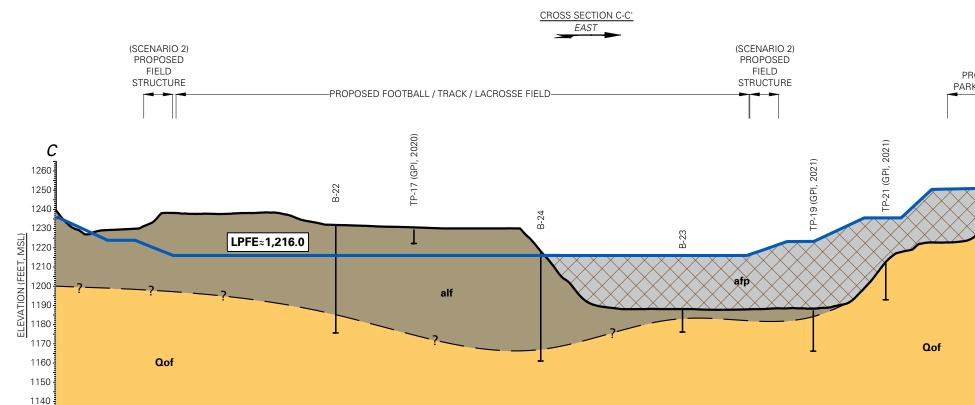


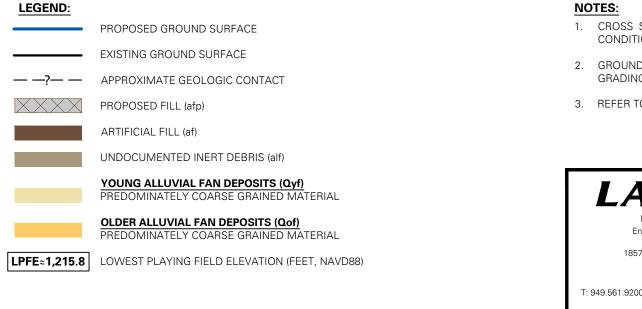


- CONDITIONS ENCOUNTERED REFER TO BORING AND TEST PIT LOGS.
- GRADING PLANS PROVIDED BY ATLAS CIVIL DESIGN.

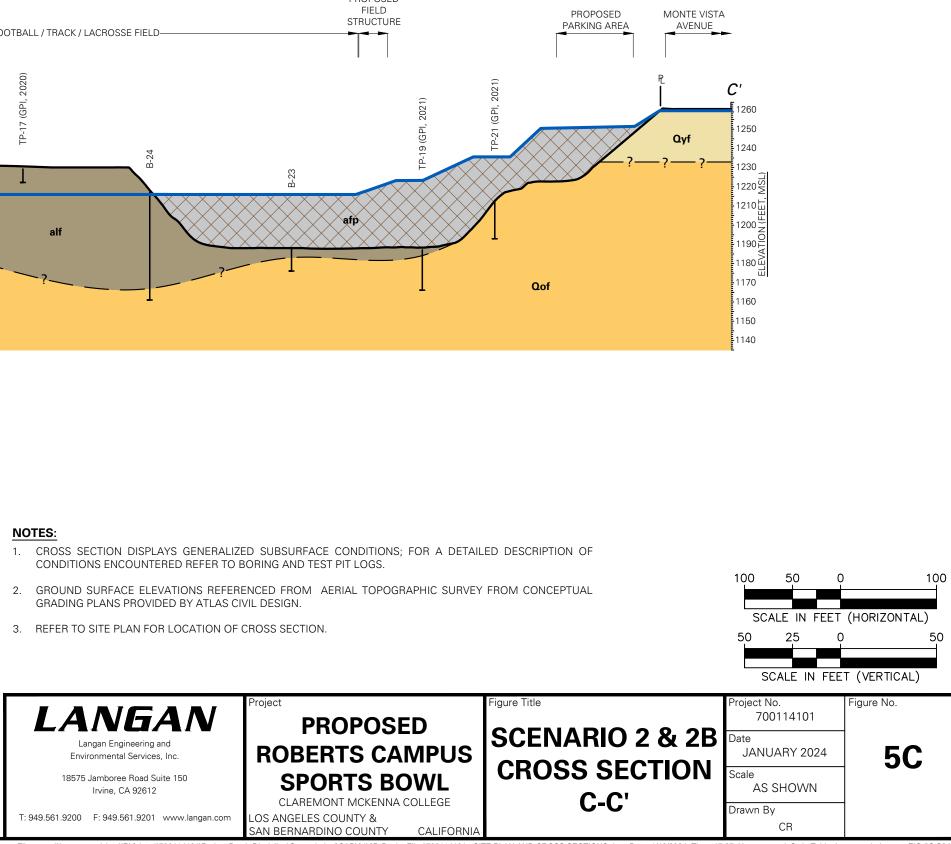


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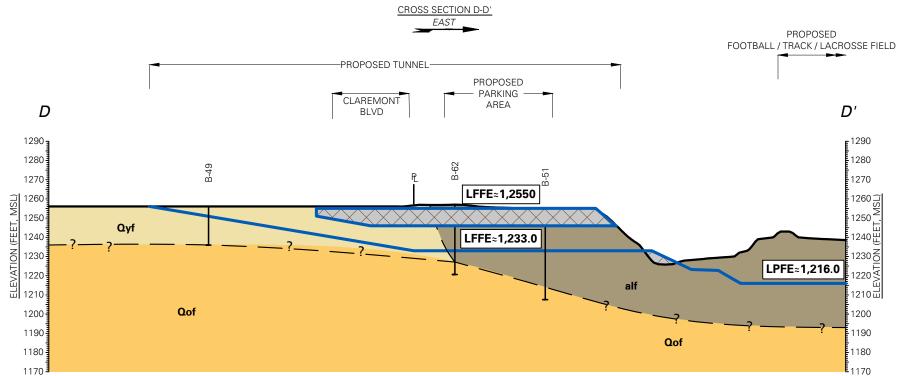


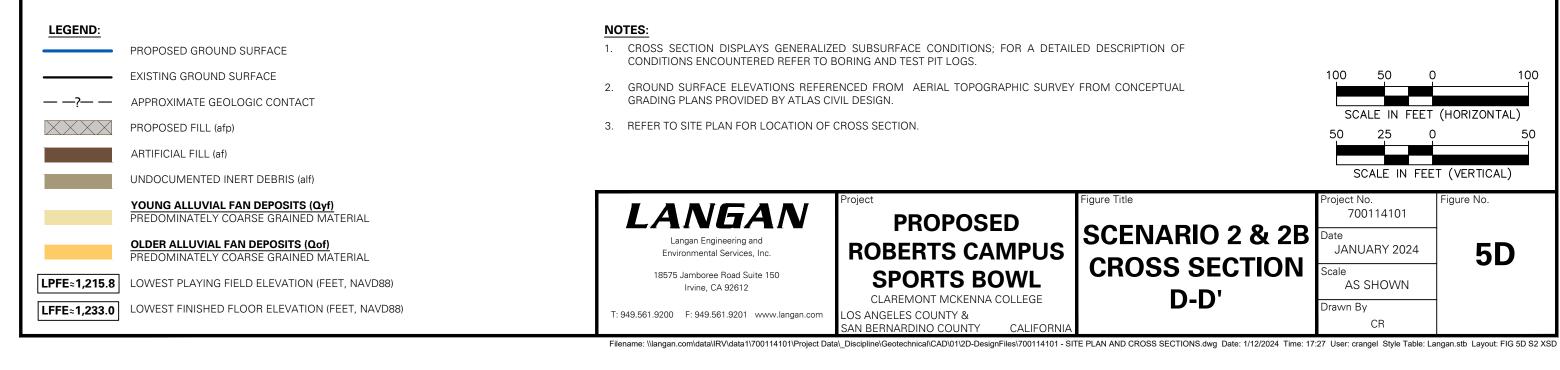


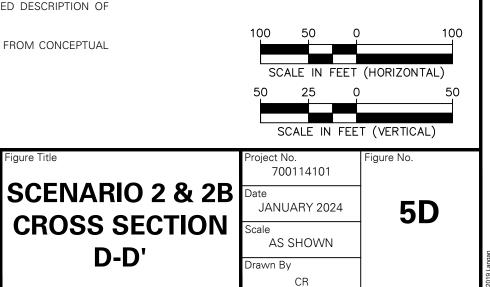
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- GRADING PLANS PROVIDED BY ATLAS CIVIL DESIGN.

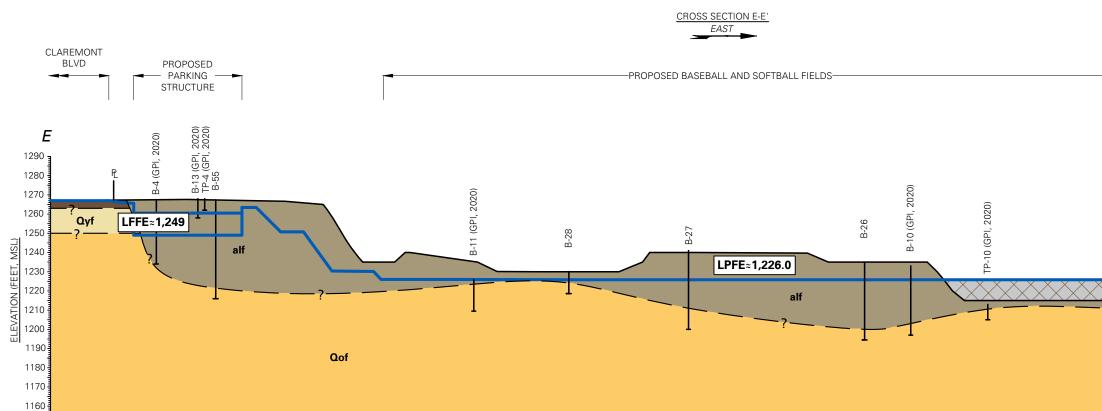


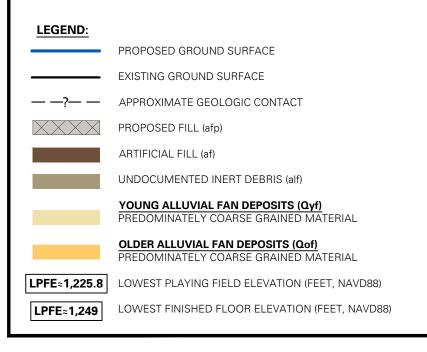
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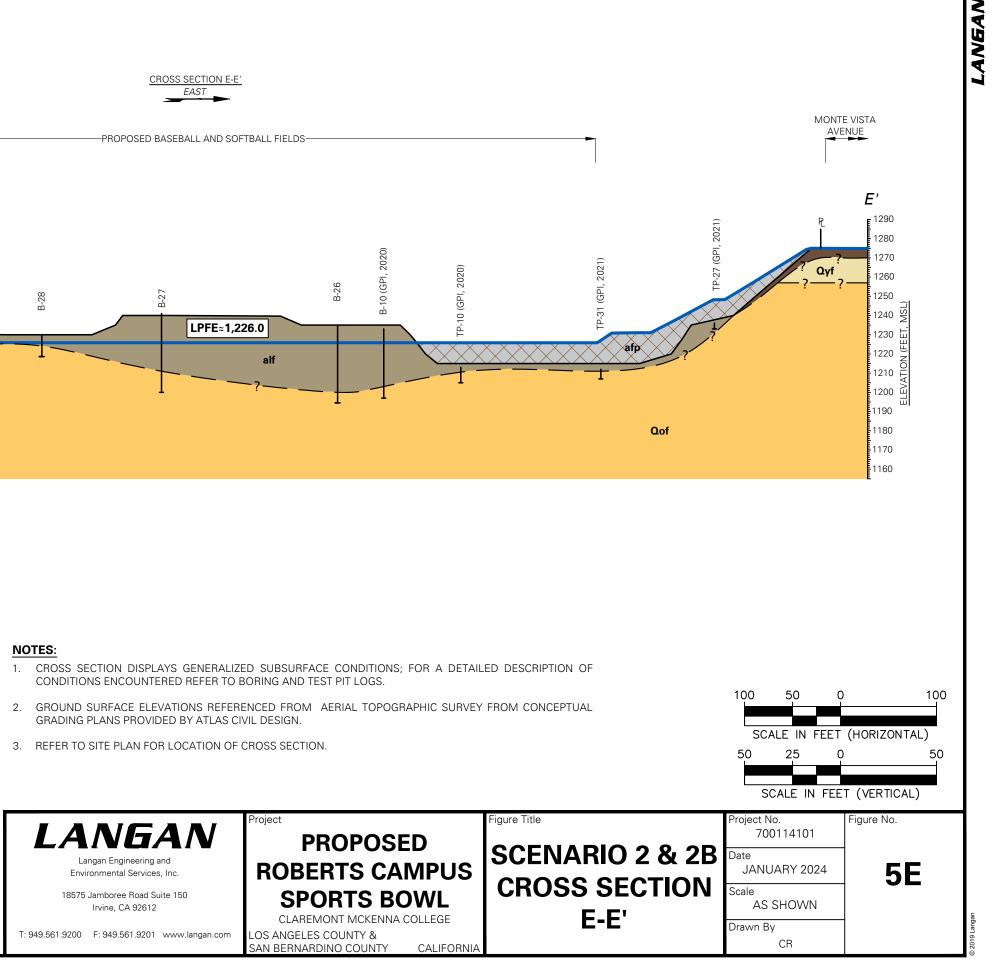




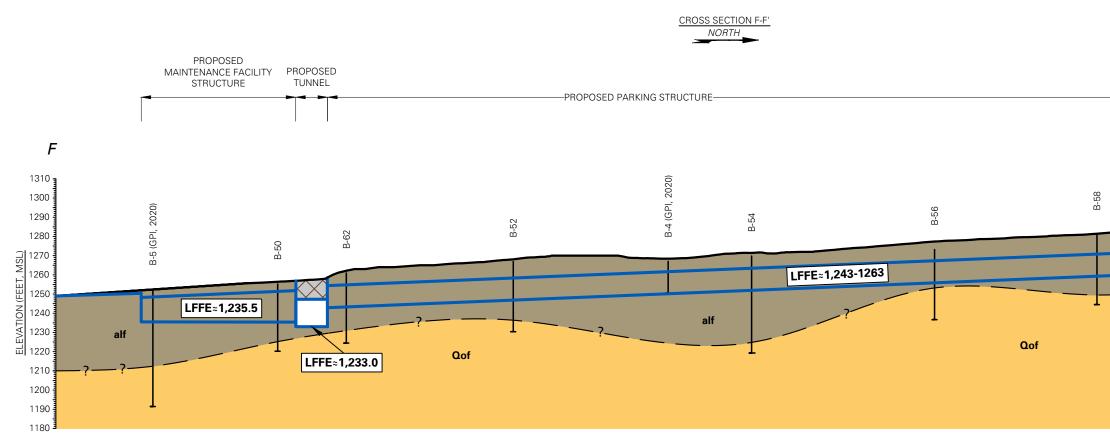


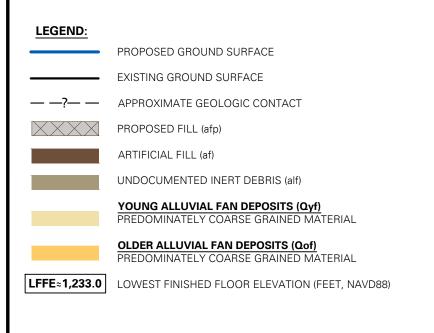


- CONDITIONS ENCOUNTERED REFER TO BORING AND TEST PIT LOGS.
- GRADING PLANS PROVIDED BY ATLAS CIVIL DESIGN.

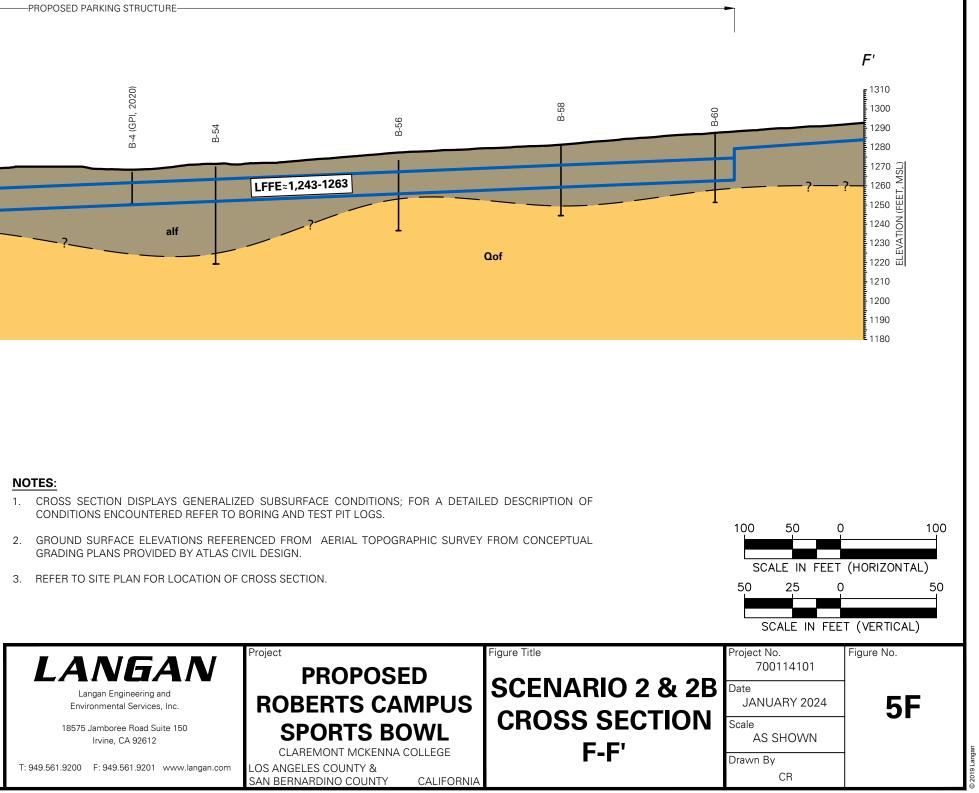


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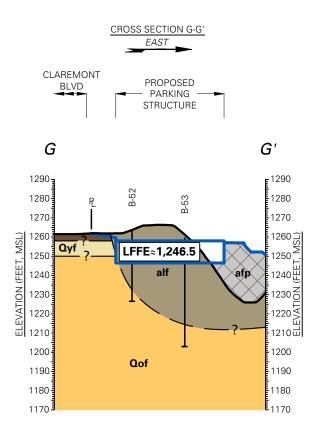




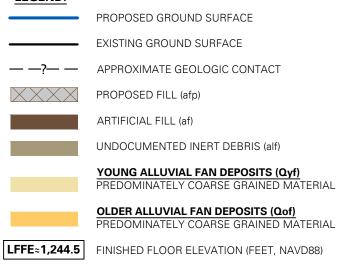
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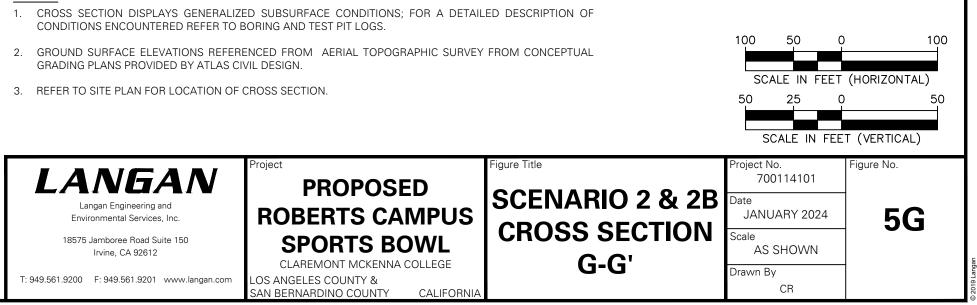




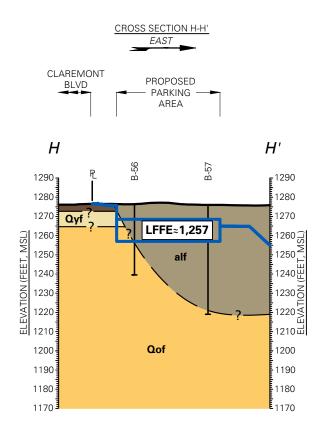


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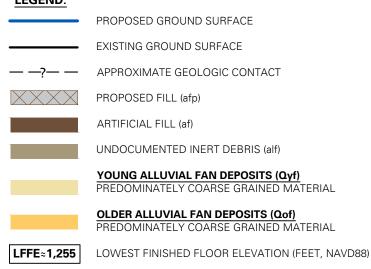
- CONDITIONS ENCOUNTERED REFER TO BORING AND TEST PIT LOGS.
- GRADING PLANS PROVIDED BY ATLAS CIVIL DESIGN.



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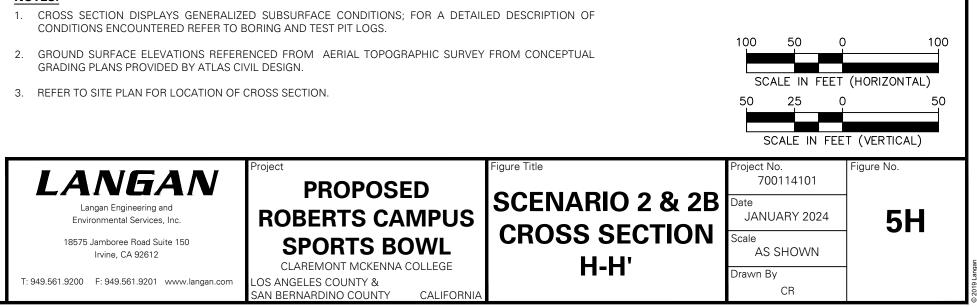




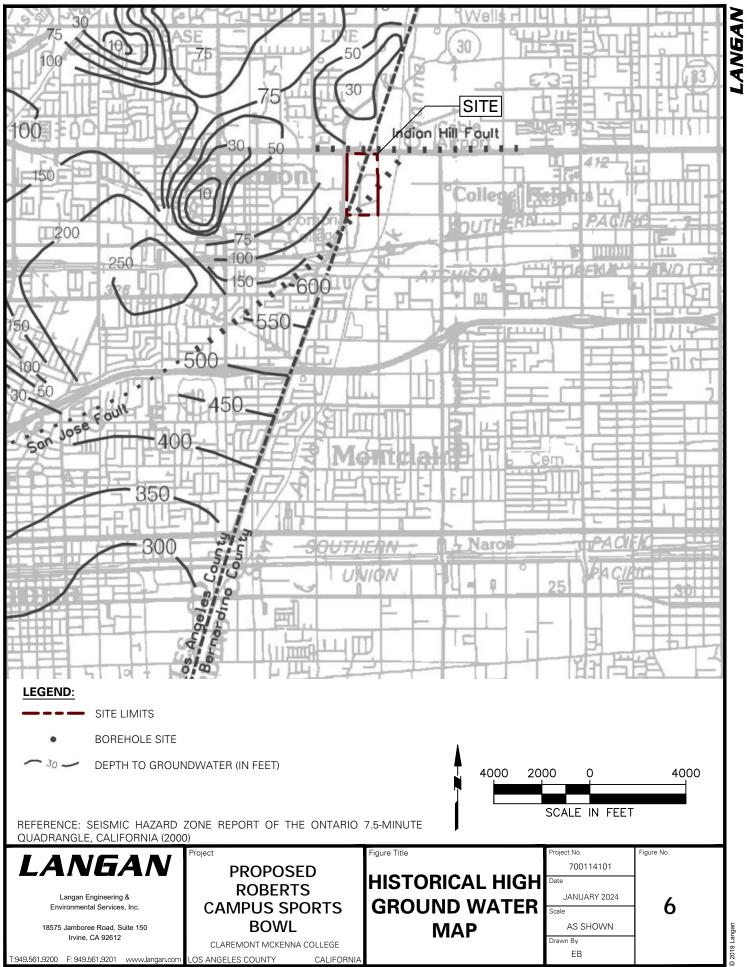


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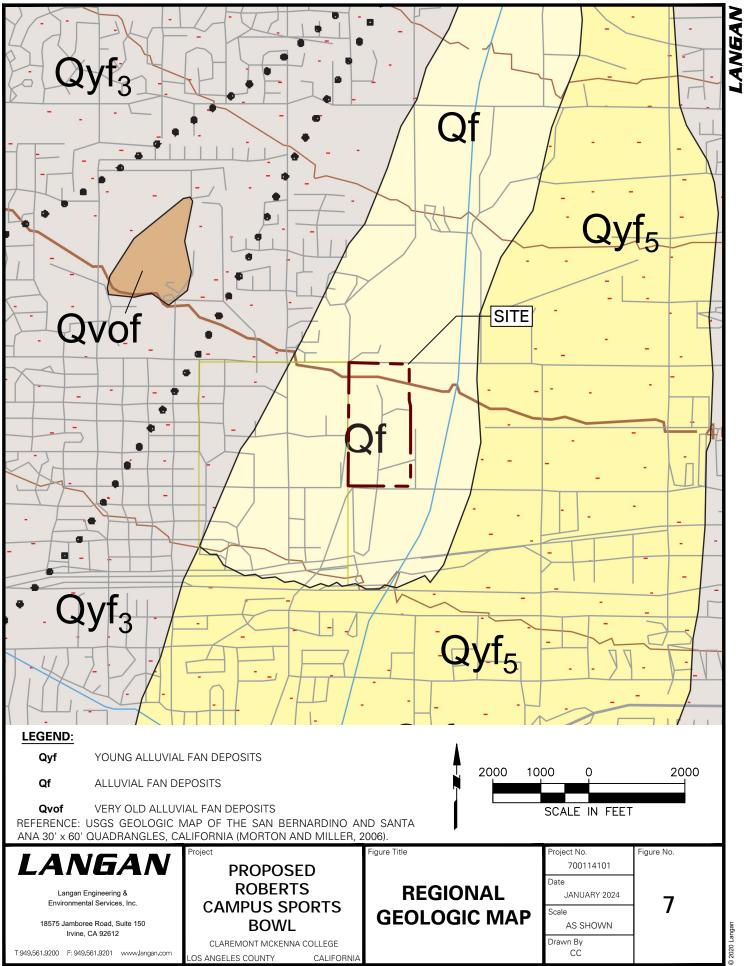
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- GRADING PLANS PROVIDED BY ATLAS CIVIL DESIGN.



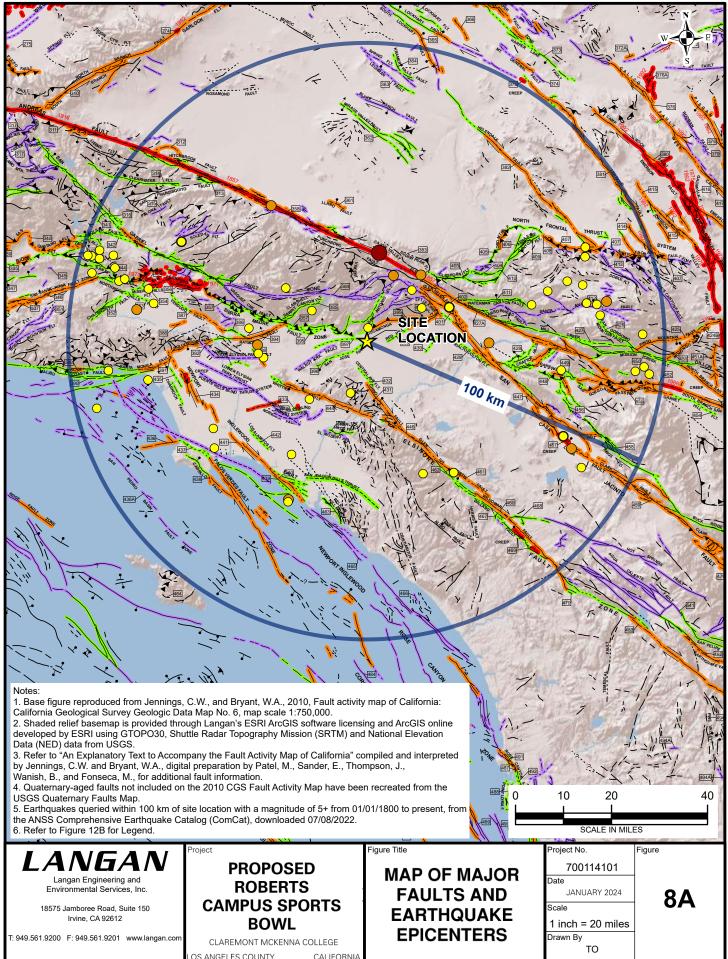
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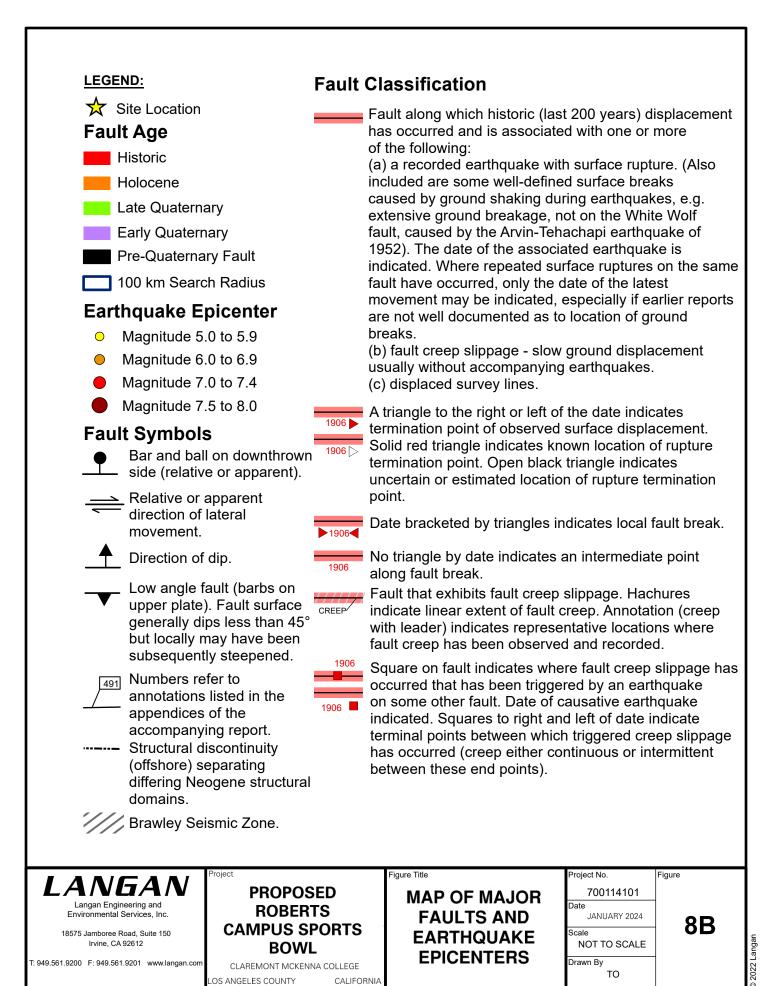
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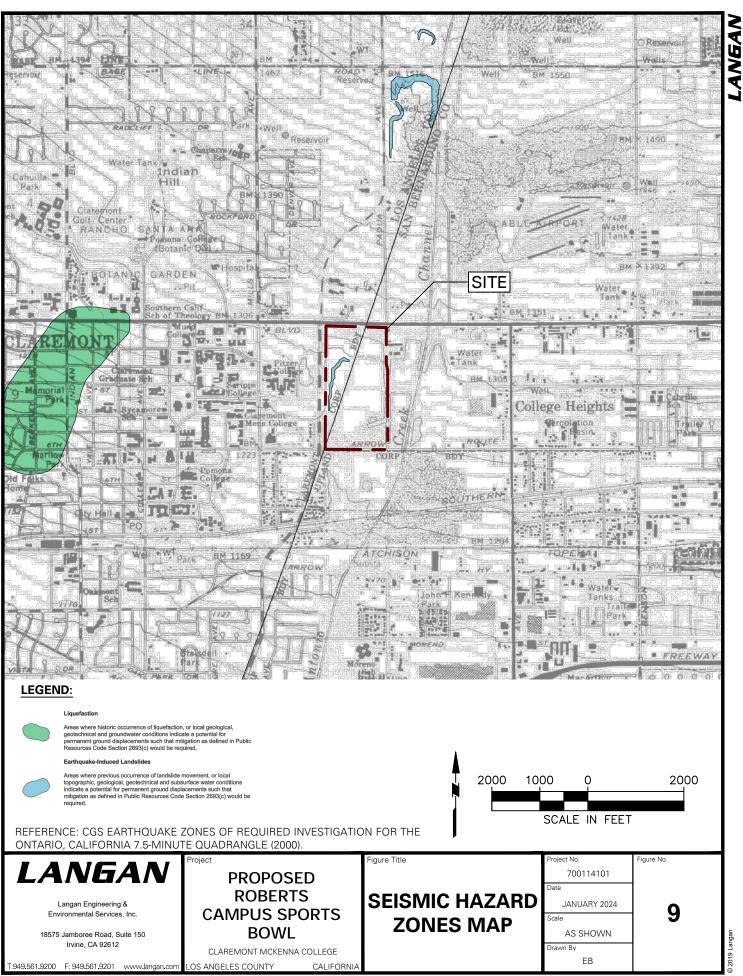
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AT-REST LATERAL EARTH TRAFFIC SURCHARGE PRESSURE -BELOW-GRADE 0.2H WALL 10' -100 PSF--Н + 1 -SLAB-ON-GRADE 0.2H -28H PSF-NOT TO SCALE Project Figure Title Project No. Figure No. LANGAN 700114101 PROPOSED ROBERTS Date Langan Engineering and CAMPUS SPORTS **AT-REST LATERAL** JANUARY 2024 Environmental Services, Inc. 10 Scale BOWL **EARTH PRESSURE** 18575 Jamboree Road, Suite 150 N.T.S. Irvine, CA 92612 CLAREMONT MCKENNA COLLEGE Drawn By T: 949.561.9200 F: 949.561.9201 www.langan.com LOS ANGELES COUNTY & CR SAN BERNARDINO COUNTY CALIFORNIA

Filename: \\langan.com\data\\RV\data1\700114101\Project Data_Discipline\Geotechnical\CAD\01\2D-DesignFiles\-LATERAL EARTH PRESSURES\LATERAL EARTH PRESSURE.dwg Date: 1/20/2023 Time: 18:02 User: crangel Style Table: Langan.stb Layout: 0

LANGAN ACTIVE LATERAL SEISMIC LATERAL TRAFFIC SURCHARGE EARTH PRESSURE EARTH PRESSURE -BELOW-GRADE WALL 10' 100 PSF Ĥ ++ -SLAB-ON-GRADE —35 PSF— −15H PSF-► NOT TO SCALE Project Figure Title Project No. Figure No. LANGAN 700114101 **PROPOSED ROBERTS** Date Langan Engineering and **CAMPUS SPORTS** DYNAMIC LATERAL JANUARY 2024 Environmental Services, Inc. 11 Scale BOWL EARTH PRESSURE 18575 Jamboree Road, Suite 150 N.T.S. Irvine, CA 92612 CLAREMONT MCKENNA COLLEGE Drawn By LOS ANGELES COUNTY & T: 949.561.9200 F: 949.561.9201 www.langan.com CR SAN BERNARDINO COUNTY CALIFORNIA

Filename: Wangan.com/data/IRV/data1/300114101/Project Data\ Discipline/Geotechnical/CAD/01/2D-DesignFiles\-LATERAL EARTH PRESSURES/LATERAL EARTH PRESSURE.dwg Date: 1/20/2023 Time: 18:02 User: crangel Style Table: Langan.stb Layout: 02

APPENDIX A

Current Field Explorations and Laboratory Testing

LA	NG/	4/V	Log	of E	Boring			B-	14			Sheet	1	of	1
Project				Pro	oject No.										
Location	Proposed Athletic C	Complex		Flé	evation a	nd Da		700	11410	1					
Loodion	Claremont Mckenna	a College			valoria			App	rox. 12	245 (fe	et M	SL)			
Drilling Compa				Da	te Starte	d		7.00	10/1.12	10 (10	,	Finished			
	2R Drilling							0/10)/2022				10/10/	/2022	
Drilling Equipr				Co	mpletior	Dept	h		47.0		Rock I	Depth			
Size and Type	CME-75 Track-mou	Inted Drill Rig		<u> </u>				Dist	17 ft urbed		Un	disturbed		- Core	
5.	8-inch O.D. Hollow	Stem Auger		Nu	mber of	Samp	les			4			1		
Casing Diame	ter (in)		Casing Depth (ft)	W	ater Leve	el (ft.)		First		-	Co	mpletion		24 HR. V	-
Casing Hamm	er_	Weight (lbs)	Drop (in)	Dr	illing For	eman						-			
Sampler	2 inch O D SDT Sr	olit-Barrel, 2.5-inch I.D.					Je	eff							
Sampler Ham	mor	Weight (lbs)	Drop (in)	Fie	eld Engin	eer	•	N.I							
	Automatic	140) 100 (11) 30				Α.		blas mple Da	ata		1			
Elev KWBOC (ft) +1245.0		Sample Descriptior	n		Depth	ber	e			N-V			Rema	rks oth of Casing	
H¥S (ft) ₩ +1245.0		Campic Description	1		Scale	Number	Type	Rec (in	Penetr. resist BL/6in		vs/ft) 30 40	Fluid Loss,	Drilling F	Resistance, el	c.)
a		getation, very cobbly.		~	- 0 -	-				10 20	30 40				
	Artificial Fill - Co	mpacted (afc)	- Is a well alway	_	Ē]									
	Slity SAND with C	Gravel (SM), light brown	i, nard, dry.		- 1 -	-									
					- 2 -	-									
					- 2	1									
					- 3 -		SPT	33	15			Heavy a		pler shoe; hatter	
					Ē		S		50/6"		50/6"	-	uger of		
					E 4 -	-									
					Ē	1									
					- 5 -	-	CR	0	50/5"						
					E				50/5		50/5"	ł			
					- 6 -	-									
					-	1									
					- 7 -	-									
	Gravelly Silty SA	ND (SM), brown, hard, o	dry, fine to coarse		E	<u> </u>		-	36						
	sand, medium gra	avel.			- 8 ·	S-3	SPT	10	50/6"						
					Ē	1					50/6"	t			
					_ 9 ·	-									
					- 10	-									
	SAND with Silt ar	nd Gravel (SP-SM), bro	wn, hard, slightly		- 10 · -	S-4	SPT	5	20						
0	moist, line to coa	rse sand and gravel.			- - 11 ·		N F		50/4"		50/4"	ł			
					- ''	-									
					- - 12 -	-									
					Ē	-									
					- 13 -	1						Refusal	Boring	g was mo	/ed
2235.0 22 22 22 22 22 22 22 22 22 22 22 22 22					F	-						5 feet ar	nd redr	illed.	, cu
					- 14 -	-									
0					E	1									
L	Gravelly SAND (S	SW), brown, hard, mois	t, fine to coarse		- 15 -	- S-5	SPT	5	50/5"			Cobble	n sam	pler shoe.	
	sand, fine to med	lium gravel.	,		E	1					50/5"	t			
					- 16 ·	1									
						1									
<u>v v p o ra</u> i220.1	Total depth = 17				- 17 ·	1									
	Groundwater not Borehole backfille	encountered. ed with soil cuttings.			- 10	1									
					- 18 · -	-									
					- - 19 ·	1									
					È '	1									
					E_ 20 -	-									

LA	NGA		Log	of E	Boring			B-	15			Sheet	1	of	1
Project				Pr	oject No.										
Location	Proposed Athletic C	complex		Ele	evation ar	nd Da		700	11410 ⁻	1					
Duilling Course	Claremont Mckenna	a College			t- 0t-st-			Арр	rox. 12	245 (fe					
Drilling Comp	any 2R Drilling			Da	ite Starteo	2	1	0/10)/2022		Date	inished	10/10/	/2022	
Drilling Equip				Co	mpletion	Dept		0/10	<i></i>		Rock I	Depth	10/10/	2022	
	CME-75 Track-mou	nted Drill Rig							14 ft					-	
Size and Type	e of Bit 8-inch O.D. Hollow \$	Stem Auger		Nu	Imber of S	Samp	les	Distu	urbed	3	Un	disturbed	1	Core	-
Casing Diame	eter (in)		Casing Depth (ft)		ater Leve	• •		First ∑		-	Co	mpletion	2	4 HR. 	-
Casing Hamn	ner_	Weight (lbs)	Drop (in)	Dr	illing Fore	man									
Sampler	2-inch O.D. SPT Sp	lit-Barrel, 2.5-inch I.D. (Cal Mod	Fie	eld Engine	er	Je	eff							
Sampler Ham	^{mer} Automatic	Weight (lbs) 140	Drop (in) 30		0		A.	Nie	blas						
					Denth	-			mple Da			-	Rema	rks	
LEINGAN SYMBOL (ft) +1245.		Sample Description	l		Depth Scale	Number	Type	ecov.	Penetr. resist BL/6in	N-Va (Blov		(Drilling	Fluid, Dep	oth of Casing	, (c)
+1245.		etation, abundant grave	and apphas		- o -	ź		æ	<u>م - ب</u>	10 20	30 40	Fluid Loss,		esistarice, e	
ц ц	Artificial Fill - Cor	mpacted (afc)				-									
	Silty SAND with G	Gravel (SM), light brown	, very dense, dry.		- 1 -	-						Heavy a	uger cł	natter.	
						1									
227					- 2 -	1									
1/23/2023 11:01:52 AM					- 3 -	S-1	SPT	6	50/6"		50/6"	Defuse	Doring		und
5023						1						5 feet a	nd redri	g was mo illed.	veu
1/23/					- 4 -	1									
						1									
1240.	Silty SAND with G	Fravel (SM) to Sandy SI	LT with Gravel		5 -	S-2	CR	3	50/5"		50/5"	Sample		ed.	
	(ML), light brown,	hard to very dense, dry	1.		6 -						50/5	WC = 0	.9%		
					- 7 -	-									
Log ±1237.	5	Gravel (SM), brown, very	v dense slightly			-			22						
Ŏ	moist, medium sa	ind, fine to medium grav	vel.		- 8 -	S-3	SPT	18	34						
						0	S	Ì	45		79	†			
					- 9 -	-									
품 <u>+</u> 1235.					- 10 -										
Egi	Silty SAND (SM),	light brown, very dense	9.			- S-4 :	SPT	2	50/5"		50/5"	ł			
Olar IIII					- 11 -	1									
						1									
					- 12 -	1						Very he	avy auç	ger chatte	er.
ATA					- 13 -	1									
						1									
≝ <u></u> 1231.	0 Total depth = 14 f	eet has			- 14 -	1									
AUPR 11/PR	Groundwater not e	encountered.			E										
1410	Borehole backfille	d with soil cuttings.			- 15 -	1									
/7001						-									
ATA1					- 16 -	1									
3VD,					- 17 -	1									
TANF					E :	1									
MDA					- 18 -	1									
0.7						1									
WLANGAN COMIDATAVIRYDATA11700114101/PROJECT DATA/ DISCIPLUNEGEDTECHNICAL/GINTI OGS7700114101 1012 1012 1012 1012 1012 1012 1012					- 19 -	1									
					E 20 -	1									

LA	NGAN	Log	of E	Boring			B-16		_	Sheet	1	of	1
Project			Pro	oject No.									
Location	Proposed Athletic Complex		Fle	evation ar	nd Da		700114	101					
Loodion	Claremont Mckenna College			oration a	ia Da		Approx	. 1245 (f	eet. M	SL)			
Drilling Compa	any		Da	ite Starteo	ł		- 			Finished			
Drilling Equipr	2R Drilling			mpletion	Dont		0/10/20	22	Rock [Donth	10/10/	2022	
	CME-75 Track-mounted Drill Rig			Inpletion	Depu	1	1	3 ft	ROCK	Deptil		_	
Size and Type	of Bit		Nu	Imber of S	Samn		Disturbe	d	Uno	disturbed		ore	
Casing Diame	8-inch O.D. Hollow Stem Auger ter (in)	Casing Depth (ft)	-				First	3	Cor	mpletion	2 2	4 HR.	-
	-	-		ater Leve			Ţ	-		Ľ		Ţ	-
Casing Hamm	er Weight (lbs)	Drop (in)	Dri	illing Fore	man	Je	ff						
Sampler	2-inch O.D. SPT Split-Barrel, 2.5-inch I.D.		Fie	eld Engine	er	Je	11						
Sampler Ham	^{ner} Automatic ^{Weight (lbs)} 140) Drop (in) 30		1		Α.	Niebla						
BOLL BRIAL Elev				Depth	لم ا		Sample		/alue	-	Remai	rks	
Elev (ft) 1372 Elev (ft)	Sample Description	า		Scale	Number	Type	Recov. (in) Penetr.	ii9/TB (Blo	ws/ft)	(Drilling Fluid Loss	Fluid, Dep , Drilling R	th of Casing esistance, e	, tc.)
Elev MATERIAL (Log LANGAN MATERIAL 1547 154		cobbles and		- 0 -	2			10 20	30 40				
bort	∖ gravel.				1								
BR	Artificial Fill - Compacted (afc) Silty SAND (SM), light brown, dry.			- 1 -	1					Heavy a	iuger ch	natter.	
				- 2 -	1								
01:53					S-1	CR	0 50/	4"		No sam	ple reco	overy; Co	bble
1/23/2023 11:01:53 AM				- 3 -					50/4"	in samp			
3/202													
12				- 4 -	-								
±1240.0	Silty SAND with Gravel and Cobbles (SN	A) light brown yon	<u>, </u>	- 5 -				_					
A9 LNI9	dense, dry to slightly moist.	vi), light brown, very	/		S-2	SPT	∞ 40	32					
				- 6 -	S		37		6 9	+			
1141				- 7 -									
S/700						000				Sample	dicturb	ad	
S I ● · · ·	Light brown and gray, dry.			- 8 -	<u>S-3</u>	CR	3 50/	5"	50/5"			eu.	
				- 9 -									
목. · · · · ·				- 10 -									
	Increase in silt content.				S-4	SPT	Q ²⁵						
				- 11 -	S	S	50/	28	50/2"	ļ			
				- 12 -	1								
ATA				- 13 -	1					Deferre	Denim		
				Ę	1					5 feet a		l was mo lled.	ved
				- 14 -	1								
				È ,	1								
4	Gravelly Silty SAND (SM), brown, very d	lense, moist, well		- 15 -	S-5	F	<u>۳</u> 35			Very dif cobbles		drill; Brol pler	ken
8 ↓ 1229.0	graded.			- 16 -	Ś	SPT	50	35	50/1"		in saill	pioi.	
	Groundwater not encountered.			E E									
	Borehole backfilled with soil cuttings.			- 17 -	-								
DATA]								
OMI				- 18 -									
AN.C				- 19 -									
ANG				E									
2				<u>لے 20 ل</u>	1					I			

LA	NGA	A / A	Log	of E	Boring			B-17		_	Sheet	1	of	3
Project				Pr	oject No.		-							
Location	Proposed Athletic C	complex		Ele	evation ar	nd Da		00114	101					
	Claremont Mckenna	a College					A	pprox.	1245 (1					
Drilling Compa	any 2R Drilling			Da	ate Starte	a	10	/10/20	22	Date	Finished	10/10/	/2022	
Drilling Equipr				Co	mpletion	Depth		10/20		Rock	Depth	10/10/		
Size and Type	CME-75 Track-mou	nted Drill Rig						51.5 Disturbe			disturbed	0	- Core	
	8-inch O.D. Hollow	Stem Auger		Nu	umber of S	Samp	es		11			1		-
Casing Diame	ter (in) -		Casing Depth (ft)	w	ater Leve	l (ft.)	F	irst ∑	-		mpletion	- 2	24 HR. V	-
Casing Hamm	er_	Weight (lbs)	Drop (in)	Dr	illing Fore	man		-			_			
Sampler	2-inch O.D. SPT Sp	lit-Barrel, 2.5-inch I.D.		Fie	eld Engine	er	Jef	I						
Sampler Ham	^{ner} Automatic	Weight (lbs) 140	Drop (in) 30		-	_	A. I	Vieblas						
					Depth	ъ		Sample		Value	-	Rema		
(ft)		Sample Description	1		Scale	Number	Type	(in) Penetr. resist	19/18 (Bk	ows/ft) 0 30 40	(Drilling Fluid Loss	Fluid, Dep , Drilling R	oth of Casing, Resistance, et	.)
		etation, abundant cobb	les and gravel.		<u> </u>				10 2	30 40				
	Artificial Fill (af) Silty SAND with C	Gravel (SM), light brown	verv dense drv			1								
			, vory doneo, dry.											
1/23/2023 11:01:55 AM					- 2 -	1								
						S-1 :	SPT	1 50/3	<u>, </u>	50/3"	•			
123 1					- 3 -	1								
123/20					- 4 -	1								
- F [] . [.]														
- GINT GPJ	Brown, slightly mo	pist, fine to coarse sand	d, fine to medium		- 5 -	2	SPT	0 27						
S S S S S S S S S S S S S S S S S S S	gravel.				- 6 -	S-2	SPT	€ ²⁷ 50/	5"	50/5"	,			
00117					- 7 -									
GS/7							ьĦ	o 30						
					- 8 -	S-3	SPT	♀ ³⁰ 50/-	<u>."</u>	50/4"	•			
					- 9 -	1								
						1								
합니다. 비원35.0	Silty SAND (SM)	to SAND with Silt (SP-S	SM), brown, very		- 10 -	- S-4 :	SPT	6 50/	;"					
	dense, slightly mo	bist.				1	-7			50/6"	' †			
					- 11 -									
ISCIE					- 12 -									
					- 13 -	1								
					- 14 -	1								
PRO														
È ₽ ₽ ₽ ₽ • • • • • • • • • • • • • • •	Silty SAND with G	Gravel (SM), brown, ver	v dense, moist.		- 15 -	1		15						
2001	,		,			S-5	SPT		3					
					- 16 -	1		50/	5"	50/5"	· 			
					- 17 -]								
					È :	1								
					- 18 -	1								
					- 19 -	1								
WANGAN COMIDATANTYOO114101/PROJECT DATA/ DISCIPLINEGEOTE CHNICAL/GINTL OGS700114101						1								
<u></u>]+1225.0					E 20 -	1								

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oject	Proposed Athletic Complex	Project No.		-	7001	14101	I				
cation		Elevation ar	d Dat	tum							
	Claremont Mckenna College		_		Appro	ox. 12	45 (feet, M	SL)			
		Donth	er -			iple Da	ta N-Value		Rema	rks	
≣≷ (fl		Depth Scale	Number	Type	Recov. (in) Penetr	resist 3L/6in	(Blows/ft)	(Drillin) Fluid Lo	ng Fluid, Dep oss, Drilling F	oth of Casing	g, etc.)
[≥] +122	Gravelly Silty SAND (SM), brown to gray brown, very	20	Z S-6 :	SPT		50/6"	10 20 30 40				,
	dense, slightly moist.	- 21 -					50/6"	' †			
		- 22 -									
		- 23 -									
		- 20									
		- 24 -									
±1220								0.11		f	4- ·
	Silty SAND with Gravel (SM), some cobbles.		S-7	SPT	1 !	50/2"	50/2"	samp	nd cobble ler.	iragmen	its I
		- 26 -									
		- 27 -									
		- 28 -									
		- 29 -									
	Brown, very dense, slightly moist to moist.	- 30 -	S-8 \$	SPT	5 5	0/5.5"	50/5.5"				
		- 31 -									
		- 32 -									
		- 33 -	-								
		- 34 -									
±1210	SAND with Silt (SP-SM), brown, hard, moist, fine sand.		6			27					
		- 36 -	S-9	SPT	·	50/5"	50/5"				
		- 37 -									
		- 38 -									
		- 39 -									
±120	5.0 SAND with Silt and Gravel (SP-SM), brown, very dense,		0.40			50/0"					
	moist, fine sand, angular gravel.		5-10	SPT	6 5	50/6"	50/6"	•			
		- 41 -									
, i f		42 -									
		- 43 -									
		- 44 -									
세티											

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oject		Proposed Athletic Complex	Project No.			700	11410 [.]	1					
ocation			Elevation ar	nd Da	atum	100							
		Claremont Mckenna College				Арр	rox. 12	245 (fe	et, M	SL)			
OL	Floy		Denth	-	1		mple Da			-	Remar	ks	
MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Number	Type	(in)	Penetr. resist BL/6in	N-Va (Blow	/s/ft)	(Drilling	g Fluid, Dept s, Drilling Re	h of Casing	, tc.)
2" + 	1200.0	Old Alluviual Fan Deposits (Qof)	45 -	Ī			<u>е</u> – ш 23	10 20	30 40		o, Dhining rec		
		Silty SAND with Gravel and Cobbles (SM), reddish brown.		S-11	SPT	18	23						
: \$		very dense, moist, fine to coarse sand, angular gravel.	- 46 -	S		Ì	27		53	†			
,			47 -										
	-			1									
			- 48 -	1						Auger	chatter.		
				1									
; : :			- 49 -										
•	1195.0	Silty SAND with Gravel (SM), reddish brown, very dense,	50 -	_	 					WC =	11.0%		
		moist, fine gravel, manganese oxide staining.		S-12	СR	18	24 28				19.0 pcf		
	1193.5		- 51 -	γ			35		63	†			
		Total depth = 51.5 feet bgs. Groundwater not encountered.	- 52 -	-									
		Borehole backfilled with soil cuttings.		1									
			- 53 -	1									
			- 54 -										
			- 55 -										
				1									
			- 56 -	1									
			- 57 -										
			- 58 -	1									
			- 59 -	-									
			F	1									
			60 -										
			61 -										
				1									
			-60 - 61 - 62 - 63 - 64 - 65 - 66 - 67 - 68 - 68 - 68 - 69 - 69 - 69 - 69 - 69										
			- 63 -										
			64 -										
				1									
			- 65 -										
			66 -										
				1									
			- 67 -	1									
			68 -										
			69 -										
			70	1									

LA	NGA	4/V	Log	of E	Boring			B-	20		_	Sheet 1 of 1
Project		х I		Pro	oject No.							
Location	Proposed Athletic C	Complex		Ele	evation ar	nd Da		700	1141()1		
	Claremont Mckenna	a College		_				Арр	rox. 1	188 (f		MSL)
Drilling Compa				Da	te Starteo	b	1	0/14	1/2022	,	Dat	te Finished
Drilling Equipn	2R Drilling			Co	mpletion	Deptl		0/1	/2022	<u> </u>	Roc	10/11/2022 ck Depth
	SIMCO Truck-mour	nted Drill Rig							11.5 f	t		-
Size and Type	of Bit 8-inch O.D. Hollow	Stem Auger		Nu	mber of S	Samp	les	Dist	urbed	3		Undisturbed Core 2 -
Casing Diame	ter (in) -		Casing Depth (ft)		ater Leve			First ∑		-		Completion 24 HR. Y - Y -
Casing Hamm	er_	Weight (lbs)	Drop (in) -	Dri	illing Fore	man	٨	driar				
Sampler		PT Split-Barrel, 2.5-inch	I.D. Cal Mod	Fie	eld Engine	er		unai	1			
Sampler Hamr	^{ner} Automatic	Weight (lbs) 140	Drop (in) 30		1		A		blas			Ī
					Depth	Ē	0		mple D		/alue	Remarks
Elev. (ft) +1188.0 +1187.0 +1187.0		Sample Description			Scale	Number	Type	(in)	Penetr. resist BL/6in	(Blo	ows/ft) 0 30 4	Fluid Loss Drilling Resistance etc.)
1188.0 + 2 م ب (+ 1187.8		etation, abundant cobb	les and gravel.	_	<u> </u>	-				10 20	304	40
	Undocumented S	burficial Fill (asf) nd Gravel (SP-SM), brov	vn slightly moist		- 1 -							
	medium dense, fir	ne to coarse sand, fine	to medium gravel.		- 1 -							Bulk sample collected from 1 to 5 feet bgs.
					- 2 -							Heavy auger chatter. Chemical Test.
						-		-	5			Chemical rest.
					- 3 -	۲- ۲-	SPT	6	5			
					4 -				5	10		
						1						
\mathcal{D}	Somo graval				- 5 -		 					WC = 5.0%
	Some gravel.					S-2	CR	<u>س</u>	11 9			DD = 102.0 pcf
					- 6 -	ι Ó			6	15+		
										1		
					- 7 -							
	Old Alluviual Fan SAND with Silt an	<u>i Deposits (Qof)</u> id Gravel (SP-SM), orar	naish brown.		- 8 -	6	SPT		7			
. ₽	medium dense, sl	lightly moist, medium sa	and, fine		- 8 -	S-3	R R	9	8	16•		
	subrounded grave	91.			- 9 -	<u> </u>			8	$+ \rangle$		
						1						
	Moist.				- 10 -				7	1		WC = 2.9% DD = 110.7 pcf
					- 11 -	S-4	СR	18	13		36•	Consolidation Test.
1176.5	Total depth = 11.5	5 feet bas				-			23			Direct Shear Test.
	Groundwater not	encountered.			- 12 -	1						
	Borehole backfille	ed with soil cuttings.										
					- 13 -	1						
					- 14 -	1						
						1						
					- 15 -	1						
						1						
					- 16 -							
					- 17 -	1						
						1						
					- 18 -	1						
						1						
					- 19 -	1						
					E 20 -	1						

Progress Progressed Athletic Complex T00114101 Location Clarement Mekenna College Environment Mekenna College 10/18/2022 Dring Gompany Oute Stand 10/18/2022 10/18/2022 Dring Gompany Oute Stand 10/18/2022 10/18/2022 Dring Gompany Oute Stand 10/18/2022 10/18/2022 Camp Denote ODEX Truck-mounted Drill Rig Camp Denote 10/18/2022 Camp Denote Image Company Water Level (t) Progression Standard Level (t) Sampler Immure Weight (bis) Tore (m) 30 The Sample Description Sample Description Sample Immure Automatic Sample Description Tore (m) 30 Sample Description Sample Description Sample Description Sample Description Sample Description Sample Data Sample Description Sample Data Sample Description Sample Data	f 3
Location Elevation and Datum Claremont Mckenna College Approx. 1232 (feet, MSL) Drilling Company Date Started Date Finished 2R Drilling 10/18/2022 10/18/2022 Drilling Equipment Completion Depth Rock Depth ODEX Truck-mounted Drill Rig Started Disturbed Size and Type of Bit 0.D. Hollow Stem Auger Casing Depth (ft) Casing Diameter (in) Casing Depth (ft) Water Level (ft.) First Completion Casing Hammer Weight (bs) Drop (in) Drilling Foreman Juan Sampler Hammer Automatic Weight (bs) 140 Drop (in) 30 Sampler Hammer Sample Description Sample Data Sample Data Remarks (Blowerh) 10 20 30 40 Fleid Engineer Start Sample Data Sample Data Sample Data Sample Data Sample Data Very Sample Data Sample Adam Sample Data Sample Data Completion of Casing Data Sample Data Sample Data Sample Data Sample Data Sample Data Sample Data Very Sample Data Samp	
Drilling Company Date Started Date Finished 2R Drilling 0/18/2022 10/18/2022 10/18/2022 Drilling Equipment Completion Depth Rock Depth Size and Type of Bit 8-inch O.D. Hollow Stem Auger Started Undisturbed Casing Diameter (in) Casing Depth (ft) Water Level (ft.) First Completion Casing Hammer Weight (lbs) Drop (in) Drilling Foreman Juan Sampler Bulk, 2-inch O.D. SPT Split-Barrel, 2.5-inch I.D. Cal Mod Drop (in) Drilling Foreman Sampler Hammer Automatic Weight (lbs) 140 Drop (in) Sampler Hammer Sample Description Sample Description Sample Data Nivalue Wood Field Engineer 10 10.20.30.40 Field Engineer Sample Description Depth Sample Data Nivalue (Drilling Read to the case	
2R Drilling 10/18/2022 10/18/2022 Drilling Equipment ODEX Truck-mounted Drill Rig Rock Depth Size and Type of Bit 8 Undisturbed Completion Depth Gasing Diameter (in) Casing Depth (ft) Water Level (ft.) First Completion Casing Hammer Weight (lbs) Drop (in) Drilling Foreman Juan Sampler Bulk, 2-inch O.D. SPT Split-Barrel, 2.5-inch I.D. Cal Mod Field Engineer A. Nieblas Sampler Bulk, 2-inch O.D. SPT Split-Barrel, 2.5-inch I.D. Cal Mod Field Engineer Completion Sampler Bulk, 2-inch O.D. SPT Split-Barrel, 2.5-inch I.D. Cal Mod Field Engineer Sample Data Sampler Bulk, 2-inch O.D. SPT Split-Barrel, 2.5-inch I.D. Cal Mod Field Engineer Sample Data Sampler Bulk, 2-inch O.D. SPT Split-Barrel, 2.5-inch I.D. Cal Mod Field Engineer Sample Data Vorture Weight (lbs) 140 Drop (in) 30 A. Nieblas Plud Loss, Driling Resistant Vorture Sample Description 0 - - - - - - - - - - - - - -<	
ODEX Truck-mounted Drill Rig 54 ft Size and Type of Bit B-inch O.D. Hollow Stem Auger Number of Samples Disturbed B Undisturbed B Core B Casing Diameter (in) Casing Depth (ft) Water Level (ft.) First D Completion 24 HR. Sampler Bulk, 2-inch O.D. SPT Split-Barrel, 2.5-inch I.D. Cal Mod Sampler Hammer Drop (in) Drilling Foreman Sampler Hammer Automatic Weight (lbs) 140 Drop (in) Sample Detata Sampler Hammer Automatic Weight (lbs) 140 Drop (in) A. Nieblas Very (ft) Sample Description Sample Detata Remarks (Bowsin) Conting Fluid Lose, Drilling Resistant Very 1 Sample Description 0 -1 -1 -1 -1 1 -1 -1 -1 -1 -1 -1 -1 1 -1 -1 -1 -1 -1 -1 -1 1 -1 -1 -1 -1 -1 -1 -1 1 -1 -1 -1 -1 -1 -1 -1 1 -1 -1 -1 -1 -1 -1 -1 1 -1 -1 <	2
Size and Type of Bit 8-inch O.D. Hollow Stem Auger Number of Samples Disturbed Undisturbed Core Casing Diameter (in) Casing Diameter (in) Casing Diameter (in) Casing Diameter (in) Dirp (in) Diffing Foreman Sampler Bulk, 2-inch O.D. SPT Split-Barrel, 2.5-inch 1.D. Cal Mod Drop (in) Drop (in) Diffing Foreman Juan Sampler Hammer Automatic Weight (lbs) 140 Drop (in) O A. Nieblas Weight Sample Description <	_
Casing Diameter (in) Casing Depth (ft) Water Level (ft.) First Completion 24 HR. Casing Hammer Weight (lbs) Drop (in) Drop (in) Drilling Foreman Juan Sampler Bulk, 2-inch O.D. SPT Split-Barrel, 2.5-inch I.D. Cal Mod Field Engineer Field Engineer Sampler Automatic Weight (lbs) 140 Drop (in) The deprint of C Sampler Bulk, 2-inch O.D. SPT Split-Barrel, 2.5-inch I.D. Cal Mod Field Engineer N.Value (Blowsft) Sampler Automatic Weight (lbs) 140 Drop (in) 30 A. Nieblas Very Sample Description Depth Sample Data N.Value (Blowsft) In 20 30 40 +1232.0 Undocumented Artificial Fill (afu) Silty SAND (SM), gravish brown, dry. 0 0 10 20 30 40 Fluid Loss, Drilling Resistar - </td <td>·</td>	·
Casing Hammer Weight (lbs) Drop (in) Drulling Foreman Sampler Bulk, 2-inch O.D. SPT Split-Barrel, 2.5-inch I.D. Cal Mod Field Engineer Sampler Hammer Automatic Weight (lbs) 140 Drop (in) 30 Sampler Hammer Automatic Weight (lbs) 140 Drop (in) 30 A. Nieblas Weight (lbs) 140 Drop (in) 30 A. Nieblas Sample Data Remarks Weight (lbs) 140 Drop (in) 30 A. Nieblas Sample Data Remarks Weight (lbs) 140 Drop (in) 0 A. Nieblas Sample Data Remarks (ft) Sample Description Depth Sample Data Sample Data Remarks (b) #1232.0 0 <td></td>	
Bulk, 2-inch O.D. SPT Split-Barrel, 2.5-inch I.D. Cal Mod Field Engineer Sampler Hammer Automatic Weight (lbs) 140 Drop (in) 30 A. Nieblas Word Elev. +1232.0 Sample Description Depth Sample Description Sample Detation Remarks (Drilling Fluid, Depth of C Fluid Loss, Drilling Resistar Word Undocumented Artificial Fill (afu) Silty SAND (SM), grayish brown, dry. 0 1 1 1 2	-
Sampler Hammer Automatic Weight (lbs) 140 Drop (in) 30 A. Nieblas V001 Elev. (1232.0) Sample Description Depth Scale Depth Scale Sample Data (Blowsft) (10 20 30 40) Remarks (Drilling Fluid, Depth of C Fluid Loss, Drilling Resistant) V001 Undocumented Artificial Fill (afu) Silty SAND (SM), grayish brown, dry. 0 1 <td< td=""><td></td></td<>	
Model Elev. (ft) Sample Description Depth Scale Depth Scale Depth Scale N-Value (Blows/ft) 10 20 30 40 N-Value (Blows/ft) 10 20 30 40 0 Undocumented Artificial Fill (afu) Silty SAND (SM), grayish brown, dry. 0	
$\begin{array}{c c} & & & \\ \hline \\ \hline$	
$\begin{array}{c c} & & & \\ \hline \\ \hline$	asing, ice, etc.)
$\begin{array}{c c} & & & \\ \hline \\ \hline$	
$\begin{array}{c c} & & & \\ \hline \\ \hline$	
Dry. Dry. $\begin{bmatrix} 5 \\ -5 \\ -6 \\ -6 \\ -6 \\ -6 \\ -6 \\ -6 \\ $	
Dry. Dry. $\begin{bmatrix} 5 \\ -5 \\ -6 \\ -6 \\ -6 \\ -6 \\ -6 \\ -6 \\ $	
Dry. $Dry.$	n cobble.
Dry. $Dry.$	
Dry. $Dry.$	
$\begin{bmatrix} 1 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\$	
6 0 0 24 7 - - 8 - - 9 - - 9 - - 9 - - 9 - - 9 - - 1224.5 - - 5 - - 9 - <t< td=""><td></td></t<>	
SAND with Silt and Gravel (SP-SM), brown, very dense, dry	
SAND with Silt and Gravel (SP-SM), brown, very dense, dry	
O Image: Solution of the strength of	n cobble.
Gravelly Silty SAND (SM), brown, very dense, slightly Fight Bulk sample collected to moist, fine to medium sand and gravel.	ed from
moist, fine to medium sand and gravel. $\begin{bmatrix} 10-15 \text{ feet bgs.} \\ -11 \end{bmatrix}$ $\begin{bmatrix} 10-15 \text{ feet bgs.} \\ -11 \end{bmatrix}$ $\begin{bmatrix} 10-15 \text{ feet bgs.} \\ -11 \end{bmatrix}$ $\begin{bmatrix} 10-15 \text{ feet bgs.} \\ -11 \end{bmatrix}$	
50/1" No sample recovery	′_

roject		Proposed Athletic Complex	Project No.			700	11410	1		
ocation	l		Elevation ar	nd Da	atum					
		Claremont Mckenna College							eet, M	SL)
MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Number	Type		Penetr. resist ald BL/6in D	N-\ (Blo	/alue ws/ft)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
+	1212.0	Gravelly Silty SAND (SM), brown, very dense, dry to slightly moist, fine to medium sand and gravel.	20		SPT		12 29 50/5"	10 20	<u>30</u> 40 50/5 "	Sampler bouncing on cobbl
	•		- 22 -							
	1207.0		- 24 -							
		Silty SAND with Gravel (SM), dark brown, very dense, slightly moist, fine to medium sand and gravel, some brick clasts.	- 25 -	S-7	CR	6	23 50/3"		50/3"	WC = 3.4% DD = 117.9 pcf
	•		- 27 -							
	1202.0	SAND with Silt and Gravel (SP-SM), brown, medium	- 29 -				_			
2		dense, slightly moist, some asphalt clasts.	- 31 -	8-S	SPT	15	5 6 7	13•		
2			- 32 -							
	1197.0	Silty SAND (SM), organish brown, medium dense, slighty	- 34 -				16			
		moist, fine to medium sand and gravel, some asphalt and concrete clasts.	- 36 -	6-S	CR	18	27 20		47	
	•		- 37 -							
			- 39 -				15			Added drilling fluid (H2O).
	•	Very dense.	- 41 -	S-10	SPT	18	44 9		53	WC = 5.3%
	•		- 42 -							
	•		- 44 -							

Project	Drangood Athlatic Complex	Project No.			700	11110	1					
ocation	Proposed Athletic Complex	Elevation ar	nd Da		700	11410	1					
	Claremont Mckenna College				Арр	rox. 12	232 (fee	et, MS	SL)			
L'A						mple Da				Rema	rko	
Elev (ft)		Depth Scale	Number	Type	ecov.	Penetr. resist BL/6in	N-Val (Blows	lue s/ft)	(Drilling	g Fluid, Dep	th of Casing,	-)
[≥] ‴ +1187.		45 -	ž		Å,		10 20 3	80 40		-	esistance, etc eet. Boring	
	with concrete clast.	E	S-11	H	9	6 6			was m	oved 10	feet and	9
		- 46 -	γ	SPT		21	27 4		redrille	α.		
		47 -						\setminus				
			1					$ \rangle$				
		- 48 -	1									
		- 49 -										
±1182.	Old Alluviual Fan Deposits (Qof)		1	╞		16						
	Silty SAND with Gravel (SM), orangish brown, very dense, slightly moist to moist, fine gravel, manganese oxide	- - 	S-12	SPT	9	35						
	staining, some clay rinds around gravel	- 51 -	Ľ			37		72	[
•		- 52 -		1								
				ΤE		25						
		- 53 -	S-13	SPT	9	45						
1 178.	0 Total depth = 54.0 feet bgs.		-	ĻΕ		50/6"		50/6"	•			
	Groundwater not encountered.											
	Borehole backfilled with soil cuttings. Drilling fluids (H2O) added at 40 feet.	- 55 -										
		56 -										
		È :										
		- 57 -										
		- 58 -										
		- 59 -										
		60 -										
		- 61 -										
		62 -										
				1								
		- 63 -										
		64 -		1								
		E		1								
		65 -										
		- 65 - - 66 - - 67 - - 68 -		1								
			1	1								
		- 67 -		1								
		68 -										
				1								
		- 69 -	1	1								
		E 70	-									

LA	NG/	4 /V	Log	of E	Boring			B-22			She	eet	1	of	3
Project				Pr	oject No.										
Location	Proposed Athletic	Complex		Ele	evation and	d Da	7 tum	<u>700114</u>	101						
	Claremont Mckenn	a College					A	Approx.	1234 (feet,	MSL)				
Drilling Comp		0		Da	te Started						e Finish	ed			
	2R Drilling						10)/19/20	22				10/19/	2022	
Drilling Equip				Co	mpletion [Depth	n			Roo	k Depth	ו			
Size and Typ	CME-75 Truck-mo	unted Drill Rig					1	55.5 Disturbed			Jndistur	bod		- Core	
Size and Typ	8-inch O.D. Hollow	Stem Auger		Nu	imber of S	amp	les	Jistui bet	' g		Jiluistui		1	016	-
Casing Diam			Casing Depth (ft)		ater Level		ſ	First 	-	. (Complet	ion	- 2	4 HR. <u> </u>	-
Casing Ham	mer_	Weight (lbs)	Drop (in)	Dr	illing Forer	nan	Je	orge							
Sampler	2-inch O.D. SPT S	plit-Barrel, 2.5-inch I.D.		_ Fie	eld Engine	er	000	Jige							
Sampler Han	^{nmer} Automatic	Weight (lbs) 140	Drop (in) 30				N.	Ghanta							
z zu								Sample	Data			F		ul ca	
		Sample Description	า		Depth Scale	Number	e	Recov. (in) Penetr. resist		Value ows/ft)			Rema	rKS oth of Casing,	
HAN (ft) ₩ +1234						Num	Type	Per (=: Keo		0 30 4	Elu	uid Loss, [Drilling R	esistance, et	c.)
	Undocumented /	Artificial Fill (afu)			- 0 -										
Ë I I I I I	Silty SAND with	Gravel (SM), dark grayi	sh brown, dry,		E E										
	cobble clasts.				- 1 -										
					F 1										
					- 2 -										
					E 3										
					- 3 -										
					E										
					- 4 -										
					F										
					5 -										
5					F , F										
					6 -										
					⊧_ =										
					- 7 -										
					- 8 -										
					Ē										
Ŕ					- 9 -										
					F 7										
	Silty SAND with	Gravel (SM), dark brow			- 10 -			19							
	moist, some con	crete fragments.	i, donoo, oliginay		F 1	÷	SPT								
		-			- 11 -	Ϋ́	히		3	4	5 •				
							日	22	_						
					- 12 -										
					Ē										
					- 13 -										
					- 14 -										
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					- 15 -										
₹ [.]: . ¶.					- 16 -										
§ [.].]:					⊧ <u> </u> ∃										
Į. I.					- 17 - -										
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					- 18 -										
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					- 19 -										
					F 4										
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roject		Proposed Athletic Complex	Project No.			7001141	01					
ocation	l	Proposed Athletic Complex	Elevation ar	nd Da		7001141	01					
		Claremont Mckenna College				Approx.	1234 (feet, M	ISL)			
۲ ^۲						Sample			_	Rema	rke	
MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Number	Type	Recov. (in) Penetr. resist	N (B	-Value lows/ft)	(Drillin	ng Fluid, Dep	th of Casing,	
≧ળ +	1214.0		20 -	Ĩ			5 10 2	20 30 40	Fluid Los	ss, Drilling R	esistance, et	.c.)
	:	Silty SAND with Gravel (SM), dark brown, dense, slightly moist, crushed cobbles, some clay.		S-2		0 11 2 13						
			- 21 -	Ó	SPT			31				
	.		- 22 -					$ \rangle$				
			E 22 -	-								
	.		- 23 -									
			E i	1								
			- 24 -	1								
	1209.0			<u> </u>	 							
		SAND with Clay and Gravel (SP-SC), dark brown, very dense, slightly moist, crushed cobbles.		S-3	SPT	∞ 24 50/2		50/2"				
. ///			- 26 -									
			- 27 -									
			E 21 -	-					Heavy Possik	v auger ch	natter; es	
			- 28 -	1							low drillin	ıg.
			E i	1								
			- 29 -	1								
			- 30 -	1					Some	ler bound	ing on	
		Medium dense.		4		21 ຕ 12			cobble	es.	-	
			- 31 -	S-4	SPT	ო 12 18		30			sampler	
				1							•	
			- 32 -									
			- 33 -									
			E i	1								
			- 34 -	1								
	1199.0			1								
///		Clayey SAND with Gravel (SC), dark brown, medium dense, slightly moist, some asphalt clasts and crushed	Ē	S-5	SPT	5 10						
[//		cobbles.	- 36 -	Ś	IS I	6	11					
///			- 37 -				1 \					
///			- 38 -	1								
								$ \rangle $				
///			- 39 -									
	1194.0	SAND with Clay and Gravel (SP-SC), gravish brown,		1	┝┍							
		dense, dry, some concrete and brick clasts, some crushed	E	S-6	SPT	22 ℃ 17		$ \rangle$				
		cobbles.	- 41 -	L O	°	25		42				
			42 -	-								
//			Ē	1				/				
			- 43 -	1								
			Ē									
: (//)	1		- 44 -	7								

Project		Proposed Athletic Complex	Project No.			700	111110	11					
ocation		Proposed Athletic Complex	Elevation a	nd Da	atum)11410	1					
		Claremont Mckenna College				Ар	orox. 1	234 (fe	et, M	SL)			
۲Ļ			·			Sa	ample D				Rema	rke	
MATERIAL SYMBOL +	Elev. (ft) 1189.0	Sample Description	Depth Scale	Number	Tvbe		Penetr. resist BL/6in	N-Va (Blow 10 20	vs/ft)		ng Fluid, Dep ss, Drilling F	oth of Casing esistance, e	, tc.)
	1188.0	Clayey SAND with Gravel (SC), dark brown, medium dense, slightly moist.	45 -	S-7	SPT	0	20 8			No sa	mple rec	overy.	
	1100.0	Old Alluviual Fan Deposits (Qof) Clayey SAND with Gravel (SC), brown to orangish brown, very dense, slightly moist to moist, fine to medium gravel, manganese oxide staining, weathered gravel clasts.	46 -	S-8	SPT	8	8 9 7 10	16					
			- 49 - - 50 -	6	SPT	13	9	-					
			- 51 - - - 52 -	S-9	SF		10 14	24					
			53 -										
			54 -										
	1178.5	Total depth = 55.5 feet bgs.	- 55 -	S-10	CR	6	50/6"		50/6"	WC =	10.9% 122.5 pc	F	
		Groundwater not encountered. Borehole backfilled with soil cuttings.	- 56 -										
			- 57 - - - - 58 -										
			59 -										
			60 -										
			61 -										
			62 -										
			63 -										
			65 -										
			66 -										
			67 -										
			- 68 - - - 69 -										
			70 -										

L	4	NGA		Log	of E	Borir	ng _			В-2	23			Sheet	1		of	1
Project					Pr	oject	No.											
Location		Proposed Athletic Co	omplex		FI	avatio	on and	I Dat		7001	1410	1						
Location		Claremont Mckenna	College			svalio	n and	Dai		Appi	тох. 11	190 (fe	et M	ISI)				
Drilling C	ompai		Conogo		Da	ate Sta	arted			, the	0/1.11	100 (10		Finished				
Drilling		2R Drilling				manle	tion F) o n th		0/11	/2022		Deak	Danth	10/	11/20	22	
Drilling E	quipm	ent SIMCO Truck-mount				ompie	tion D	eptr	1		11.5 ft		ROCK	Depth				
Size and	Туре	of Bit			NI	umbor	r of Sa	ampl	00		irbed		Un	ndisturbed		Core	- e	
Casing D	liamot	8-inch O.D. Hollow S	Stem Auger	Casing Depth (ft)	-					First		3		mpletion	2	24 F	1R	-
Casing L	lamet	-		-			.evel ($\underline{\nabla}$		-			-	$\overline{\mathbf{I}}$		-
Casing H	lamme	er	Weight (lbs)	- Drop (in) -	Dr	illing I	Foren	nan										
Sampler		Bulk, 2-inch O.D. SP	T Split-Barrel, 2.5-inc	h I.D. Cal Mod	Fie	eld En	nginee	er	Ac	drian								
Sampler	Hamm		Weight (lbs) 140	Drop (in)			. <u>.</u>		A.	Nie	blas							
AN AN				·							nple Da			-	Ren	nark	2	
MATERIAL SYMBOL	Elev. (ft)		Sample Description	า		De Sca	pth ale	Number	Type	ecov.	Penetr. resist BL/6in	N-V (Blov		(Drilli	ng Fluid, l	Depth o	of Casing	
	1190.0	Dirt let min-nur	tation chundant and			<u> </u>	\rightarrow	Z	-	Ϋ́	≝ ≞ ∎	10 20	30 40		oss, Drillin	y resi	siance, el	iu.)
Report: Log - LANGAN MATERIAL SYMBOL	1189.8	Undocumented Su	etation, abundant cobl urficial Fill (asf)			F	=											
Repo		SAND with Some	Gravel (SP), orangish	brown, very dense	,	F 1	1 -											
		dry to slightly mois	a, line gravel.			Ë.												
1/23/2023 11:02:08 AM						- 2	2 1											
11:02						F 3	_ 	S-1	CR	4	15				: 3.6% 109.2	ocf		
023						Ē			_ III		50/4"		50/4"	Cons	olidatio	n Tes	st.	
123/2						- 4	1 -											
	1185.5	Old Alluviual Fan	Deposits (Qof)			E	-											
- GINT.GPJ		Silty SAND with So	ome Gravel (SM), ora	ngish brown, very		E 5	5 +		E		32				sample		cted fr	om 5
5 .		dense, slightly moi	ISL.			F,		S-2	SPT	18	37		81	Chor	feet bg nical Te			
						— е Е) _				44		81	1				
0114						E 7	7 –											
\$2/20		Manganese oxide	staining			Ē	-	S-3	CD	3	50/6"			Samr	ole distu	ırbed	L	
ğ. () 🌢		Manganese oxide	stanning.			<u></u> - ε	3 🕂	0-0		5	30/0		50/6"		3.9%		-	
ICAL/GINTL OGS/700114101						Ē.	_											
						– 9 E												
물 : : : : :						E 1	<u>ل</u> ے م								0.00/			
						Ë '	- 1	4	⊢目	~	20			DD =	: 2.9% 109.2	pcf		
						<u>-</u> 1	1 –	S-4	SPT	18	26		55	Cons	olidatio	n Tes	st.	
5 [8	1178.5	Total depth = 11.5	feet bgs.			E	ł				29							
		Groundwater not e	ncountered.			E 1:	2 -											
TA		Borehole backfilled	a with soli cuttings.			F 1	<u> </u>											
						- 1: -	° -											
ONEC						F 1	4 –											
11PR						F	-											
1410						- 1	5 🚽											
7001						Ę,												
VTA1						- 1 -	0 -											
						E 1	7 =											
TANF						Ę.												
ADA						- 1	8 –											
						Ē	=											
						- 1	9 -											
//LAr						E_2												

LA	NG/	4/V	Log		Boring			B-2	4				Sheet	1	of	3
Project				Pr	oject No.											
Location	Proposed Athletic (Complex		Fl	evation a	nd Da		7001	1410	1						
Location	Claremont Mckenn	a College				u Da		Appro	12 12	230 (f	eet	M	SI)			
Drilling Comp	bany			Da	ate Starte	d		Αρρι	/A. 12	-00 (1			inished			
	2R Drilling						1	0/19/2	2022					10/1	9/2022	
Drilling Equip				Co	mpletion	Dept	h				Ro	ock [Depth			
Size and Typ	CME-75 Truck-mou	unted Drill Rig		_				Distur	56 ft			Unr	disturbed		- Core	
	8-inch O.D. Hollow	Stem Auger		Nu	Imber of S	Samp	les		JGU	8				-		-
Casing Diam	eter (in) -		Casing Depth (ft)		ater Leve			First 		-		Cor	mpletion	-	24 HR. 	-
Casing Hamr	mer	Weight (lbs)	- Drop (in) -	Dr	illing Fore	eman										
Sampler	2-inch O.D. SPT S	plit-Barrel		Fie	eld Engine	Per	Je	eorge								
Sampler Han		Weight (lbs)	0 Drop (in) 30	' '	Ligin		N	. Gha	nta							
	Automatic		0 0				IN	Sam	ple Da	ata				_		
(ft) (ft) (ft)		Sample Descriptio	n		Depth	ber	эс			N-\	/alue ws/f	;	(Drilling	Rem	l arks Depth of Casin	α.
HAS (ft) ₩ +1230					Scale	Number	Type	Recov. (in) Panetr	res BL/((Bic 10 20		<i>'</i>	Fluid Loss	, Drilling	Resistance,	etc.)
	Undocumented /	Artificial Fill (afu)			<u> </u>		1									
	Silty to Clayey S/ dry, cobble clasts	AND with Gravel (SC-S	SM), dark brown,		Ë,	1										
		з.			- 1 -	1										
<u> </u>					÷ _	1										
					- 2 -	1										
						1										
					- 3 -	1										
						1										
					- 4 -	1										
					÷ _ :	1										
					- 5 -											
					6 -	1										
						1										
					- 7 -	1										
					¢ 1	1										
					- 8 -	1										
						1										
					- 9 -	1										
					È	1										
// <u> </u> +1220					E 10 -	1							Samela	rbar	ncina ca	
	Silty SAND (SM) and gravel.	, brown, loose, dry, fine	e to medium sand		Ē	1_	ĻĒ	:	3				cobbles	n noni s: slow	ncing on / drilling.	
					- 11 -	<u>-</u>	SPT	9	2	; •				,		
					Ē	1	ĻΕ		3							
					- 12 -	1										
					Ē	1										
					- 13 -	1					\setminus					
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					- 15 -	1						$ \rangle$				
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					- 18 -											
					E	1										
					- 19 -	1										
					E	-										
					1 20	-										

Project		Proposed Athletic Complex	Project No.			700	11410 ⁻	1					
ocation			Elevation ar	nd Da	itum								
		Claremont Mckenna College						30 (fee	t, M	SL)			
0L 0L	Flow		Death	-			mple Da			-	Remar	ks	
SYN	Elev. (ft) 1210.0	Sample Description	Depth Scale	Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Valu (Blows/ 10 20 30	′ft)	(Drilling) Fluid Loss	Fluid, Dept s, Drilling Re	h of Casing, esistance, etc.	.)
+	1210.0	Silty SAND with Gravel and Cobble clasts (SM), brown, dry	20 -	<u>s</u> 2	SPT				2.5"	Sample	er bounci	ng on	
			- 21 -							No san	s; slow di uple reco	very.	
				1						Very lit	tle soil in cobbles.	cuttings,	
			- 22 -	1						neoteu	0000100.		
				1									
			- 23 -	1									
			- 24 -	1									
				1									
			_ 25 -										
			- 26 -										
				1									
			_ 27 -										
			- 28 -										
			_ 20										
			- 29 -	1									
	1200.0			1						/			
	1200.0	Silty SAND with Gravel (SM), dark brown, dense, moist, some brick and cobble clasts.			I.E		21						
			- 31 -	S-3	SPT	18	18	3	9				
$ \cdot $			-	-	E		21						
			- 32 -										
			- 33 -	1									
•			-	1									
			- 34 -										
	1195.0												
		Silty Clayey SAND (SC-SM), dark brown, medium dense, moist, some gravel and cobbles.		4	SPT		10						
		, 3	- 36 -	S-4	RP R	15	12 8	20					
				1									
			- 37 -										
			- 38 -										
				1									
			- 39 -	1									
	1190.0	Clayey SAND with Gravel (SC), dark brown, medium	- 40 -		┝┍								
		dense, moist, some gravel and cobbles, occasional brick		5	SPT	12	10 13						
		clasts.	- 41 -		S	,	9	22					
			- 42 -	-									
			- 43 -										
			- 44 -										
			- +4 -	1						1			

roject			Project No.										
ocation	1	Proposed Athletic Complex	Elevation an	d Da		700	114101						
		Claremont Mckenna College				Арр	rox. 12	30 (fe	eet, N	ISL)			
₹₋			•				mple Da	ta			Pom	arks	
MATERIAL SYMBOL +	Elev. (ft) 1185.0	Sample Description	Depth Scale	Number	Type	Recov. (in)	Penetr. resist BL/6in	N-V (Blov 10 20	alue vs/ft) 30 40		lling Fluid, D _oss, Drilling	epth of Casir Resistance,	
		Clayey SAND with Gravel (SC), dark brown, very loose, moist.	45 46		SPT	3	8 1 3	$\left \right $			pler hit r pler reco	ested roc very.	k; les
			- 47 -										
			- 48 - - 49 -										
	1180.0	Old Alluviual Fan Deposits (Qof) Clayey SAND with Gravel (SC), brown to orangish brown,	- 50 -	7	SPT		11			Cob shoe	ble stuck ; less sa	in sample mple reco	ər overy
		medium dense, slightly moist.	- 51 -	S-7	SF	3	11 11	22					
			- 53 -										
			- 54 -										
	1174.0	Very dense, fine to coarse gravel.	- 55 -	8- 8- 8-	SPT	12	39 50/6"		50/6'				
		Total depth = 56 feet bgs. Groundwater not encountered. Borehole backfilled with soil cuttings.	- 57 -										
			- 58 -										
			- 59 - - 60 -										
			- 61 -										
			62 - 63 -										
			64										
			65 -										
			66 - 67 -										
			- 68 -										
			69										

				Boring			B-	25				Shee	t 1	of	1
roject		Proposed Athlatic Complex	Pro	oject No.			700	11410	11						
ocation		Proposed Athletic Complex	Ele	evation a	nd Da		100	11410	/ 1						
rilling C	<u>`omno</u>	Claremont Mckenna College	Do	te Starte	4		Арр	rox. 1	200			ISL) Finished			
ming C	опра	2R Drilling			1	1	0/20)/2022	2		Dale	1 IIIISHEU		20/2022	
rilling E	quipm	ent	Co	mpletion	Dept						Rock	Depth			
ize and	Type	CME-75 Track-mounted Drill Rig of Bit	-					16.5 fi urbed	t		U	ndisturbe	d	- Core	
asing D	•	8-inch O.D. Hollow Stem Auger	Nu	mber of \$	Samp		First			4		ompletior	1	24 HR.	-
asing L	Jameu	-		ater Leve	• •		$\overline{\underline{\nabla}}$			-			-	<u>24 HR.</u>	-
asing ⊦		er Weight (lbs) Drop (in)	Dri	lling Fore	man	Je	ff								
ampler		2-inch O.D. SPT Split-Barrel, 2.5-inch I.D. Cal Mod	Fie	ld Engine	er	56	511								
ampler	Hamm	ner Automatic Weight (lbs) 140 Drop (in) 30			-	N		<mark>anta</mark> mple D	lata						
MATERIAL SYMBOL	Elev.	Sample Description		Depth	ber	φ				N-Va				narks	
SYN SYN	(ft) 1200.0			Scale	Number	Type	Rec i	Penetr. resist BL/6in	(I 10	Blow 20 3	s/ft) 30 40	Fluid	Loss, Drillin	Depth of Cas ng Resistance	, etc.)
		Undocumented Artificial Fill (afu) Silty SAND with Gravel (SM), brown, dry, cobble clasts.		_ 0 _	-										
				- 1 -											
	1197.5			- 2 -	1										
		Silty SAND with Gravel (SM), brown to orangish brown, medium dense, dry, fine to medium sand.		- 3 -	-	SPT		5							
				_	S-	S	8	8 5	13	1					
				- 4 -	-			-				Abu	ndant gr	avel and oper cutting	cobble
				- 5 -	-					V			is in aug		5.
		Brown to dark brown, slightly moist, fine to coarse gravel.		_	S-2	CR	10	6 11					= 3.4%	uibeu.	
				6 -	S			12	2	23					
•				- 7 -	-						\mathbb{N}				
		Very dense, slightly moist.		_	1	╞		14							
•	1192.0	Old Alluviual Fan Deposits (Qof)		- 8 -	S-3	SPT	12	30							
		Silty SAND with Gravel (SM), brown, very dense, dry to slightly moist, manganese oxide staining, fine to coarse		- 9 -				28			51	B			
		gravel.													
•		Brown to orangish brown.		- 10 -	-	F		21							
				- 11	8-4-	SPT	18	35							
				- 11 -	Ľ	Ē		45			8	Ĩ			
				12 -											
					1										
				- 13 -											
: 				- 14 -											
												/			
		Fine sand.		- 15 -				16	1						
				_ 16 -	S-5	SPT	18	18		33	3.				
	1183.5	Total depth = 16.5 feet bgs.			-	E		15	$\left \right $						
		Groundwater not encountered. Borehole backfilled with soil cuttings.		- 17 -											
				- 18 -	1										
				- 19 -											
				E	+	1									

LA	NG/	4 /V	Log	of E	Boring			В-2	26				Sheet	1	of	2
Project				Pr	oject No.											
Location	Proposed Athletic C	Complex		Ele	evation an	id Da		7001	1410	1						
	Claremont Mckenna	a College						Appr	ox. 1	233 (fee	t, M	SL)			
Drilling Comp	2R Drilling			Da	ate Starteo	1	1	0/19	/2022	,		ate I	Finished	10/19/2	2022	
Drilling Equip	oment			Co	mpletion I	Dept		0/10	12022	•	R	ock	Depth	10/10/2		
Size and Typ	CME-75 Truck-mou	unted Drill Rig		_				4 Distu	10.5 f	t		Un	disturbed		- ore	
	8-inch O.D. Hollow	Stem Auger		NL	Imber of S	Samp	les		indeu	5	5			-		-
Casing Diam	eter (in) -		Casing Depth (ft)		ater Level			First ∑			-		mpletion	- 24	∔HR. ⊈	-
Casing Ham	mer_	Weight (lbs)	Drop (in)	Dr	illing Fore	man	la									
Sampler	2-inch O.D. SPT Sp	plit-Barrel		Fie	eld Engine	er	Je	orge	;							
Sampler Han	^{nmer} Automatic	Weight (lbs) 140) Drop (in) 30				N.	Gha					1			
(jj) symbol	v.	Comula Description	_		Depth	er	۵		nple D ਸ਼ੁਸ਼ੁ		-Valu			Remar		
		Sample Description	1		Scale	Number	Type	Reco (in)	Penetr. resist BL/6in	(BI	ows/ 20 30	,	(Drilling FI Fluid Loss, E	Jid, Dept Drilling Re	h of Casing sistance, e	l, tc.)
	Undocumented A	Artificial Fill (afu) Gravel (SM), brown, dry	, aabbla alaata													
Gebor	Sity SAND with C	Slaver (Sivi), brown, dry	, CODDIE Clasts.		E 1 -											
2:14 A					- 2 -											
1					- 3 -											
1/23/2023 11:02:14 AM																
1/23					- 4 -											
					- 5 -	1										
- GINT.GPJ	Loose, cobble an	la gravel clasts.				<u>۲</u>	SPT	G	4 3							
					6 -	S	S		3	6•						
01141					- 7 -											
ŎĔ					- 8 -											
					- 9 -											
LICA INC.																
	Brown to orange	brown.			- 10 -											
					- 11 -											
					È '' E											
					- 12 -											
					- 13 -											
Role					- 14 -											
					- 15 -											
0114	Gravelly SAND (S	SP), brown, loose, dry.				2	⊢目		3				Sampler cobbles.	Poor re	ecovery.	
A1/70					- 16 -	S-2	SPT	2	3 2	\$ ┥			Abundan clasts in	t grave	and co	bble
						-	7		-							
TAUR					- 17 -					$ \rangle$						
MDA					- 18 -						$\left \right\rangle$					
						1										
					- 19 -	1										
					E 20 -]										

roject		Proposed Athletic Complex	Project No.			700	11410	1					
ocation	l		Elevation ar	nd Da	tum								
		Claremont Mckenna College						-	eet, MS	SL)			
OL	Elev.		Depth	5			mple Da		/alue		Rema	rks	
MATERIAL SYMBOL	(ft)	Sample Description	Scale	Number	Type	(in)	Penetr. resist BL/6in	(Blo	ws/ft)	(Drillir) Fluid Lo	ng Fluid, Dep ss, Drilling R	oth of Casing	J, etc.)
+	1213.0	Gravelly SAND (SP), brown, loose, dry.	20	Z		ш. 	<u>ш</u> ш	10 20	30 40				,
				1									
			- 21 -							Abuno clasts	lant grav in auger	el and co cuttings	bble
			- 22 -								5	5	
			- 23 -	1									
••••••			- 24 -	1									
			E										
77 /	1208.0	Clayey SAND with Gravel (SC), brown, very dense, dry,		S-3	SPT	2	50/2"		50/2"	Samp	ler bound es. Poor i	ing on	
		with cobble and rock clasts.	- 26 -	1								Goovery.	
///													
			- 27 -										
///			- 28 -	1									
			- 29 -										
			- 30 -				50/3.5"						
				<u>- 3-4</u>		3.5	50/3.5	4	50/3.5"	•			
////			- 31 -										
/ //			- 32 -							Цоруд	auger cl	aattor: cl	214/
) (drilling		141101, 310	500
			- 33 -										
///			- 34 -										
•///													
	1198.0	Old Alluviual Fan Deposits (Qof) Silty SAND with Gravel (SM), brown to orange brown, very	35 -	S-5	SPT	4	50/4"		50/4"	•			
		Silty SAND with Gravel (SM), brown to orange brown, very dense, slightly moist, manganese oxide staining, fine to	- 36 -										
		coarse gravel.											
			- 37 -										
			- 38 -	1									
			- 39 -										
			- 40 -										
<u>· : ,</u>	1192.5	Total depth = 40.5 feet bgs.	E	3-6	SPT	5	50/5"		50/5"	•			
		Groundwater not encountered. Borehole backfilled with soil cuttings.	- 41 -										
		Boronole baokilled with soll buttings.	- 42 -										
			Ē										
			- 43 -										
			- 44 -										
			E '' :	1									

LA	NG/	4 /V	Log	of E	Boring			B-2	27		-		Sheet	1	of	2
Project				Pr	oject No.											
Location	Proposed Athletic (Complex		Fle	evation an	d Da		7001	1410	1						
Loodiion	Claremont Mckenn	a College			, and a second second			Appr	ox. 12	241 (fe	eet.	MS	SL)			
Drilling Comp	any			Da	ate Started								inished			
Drilling Equip	2R Drilling				mpletion [Dentl		0/20/	2022		Ro	ck [Depth	10/20	/2022	
	CME-75 Track-mo	unted Drill Rig				Jepu			41 ft				Jepin		-	
Size and Type	e of Bit			NL	Imber of S	amp	les	Distu				Unc	listurbed	(Core	
Casing Diame	8-inch O.D. Hollow eter (in)	Stem Auger	Casing Depth (ft)		ater Level			First		6		Cor	npletion	-	24 HR.	-
Casing Hamn	ner_	Weight (lbs)	Drop (in)	Dr	illing Forer	man		<u> </u>		-					<u> </u>	-
Sampler	2-inch O.D. SPT S						Je	ff								
Sampler Ham		Weight (lbs) 140	Drop (in) 30	- FIE	eld Engine	er	N	Gha	nto							
z	Automatic	140	30	_			IN.		nple Da	ata						
Elev (ft) +1241. ************************************		Sample Description			Depth Scale	Number	Type	الم	letr. sist 6in	N-V (Blov	alue)	(Drilling F	Rema	arks pth of Casino	1.
Y ¥ (11) +1241.	0					NuN	Ύ	Be Be	Penetr. resist BL/6in	10 20			Fluid Loss,	Drilling F	pth of Casing Resistance, e	etc.)
	Undocumented /	Artificial Fill (afu) Gravel (SM), brown, dry,	fine to ecore													
ebout	sand and gravel,	some cobble clasts.	line to coarse													
AM P					2 -											
02:1																
133					- 3 -											
					4 -											
					5 -											
GINT GPJ																
					6 -											
1410																
					- 7 -											
					8 -											
É													Heavy a drilling.	uger c	hatter; slo	WC
ALKG					- 9 -											
					F 3											
	Very dense.				- 10 -				14							
	,				E . =	<u>۲</u>	PT III	12	38							
					- 11 -	0,	SPT		44			82				
					- 12 -											
ATA CAR					- 13 -											
					- 14 -											
1141					- 15 -											
					- 16 -											
ATA ATA																
					- 17 -											
ATA					E E											
					- 18 -											
WANGAN COMIDATAIRY/DATAI/700114101/PROJECT DATA/ DISCIPLINEGEDTE CHNICAL/GINTLOGS/700114101					- 19 -						/					
AGN					- 19 -											
∮	0				Ė_20 ₫											

		Proposed Athletic Complex	Project No.			700 [.]	11410 ⁻	1					
cation	l		Elevation a	nd Da	tum								
	,	Claremont Mckenna College		-			rox. 12		et, M	SL)			
MATERIAL SYMBOL +	Elev. (ft) 1221.0	Sample Description	Depth Scale	Number	Type		Penetr. resist BL/6in	N-V (Blov	alue vs/ft) 30 40	(Drillin Fluid Los	Remai g Fluid, Dep s, Drilling R	r ks th of Casing esistance, e	, tc.)
2	1221.0	SAND with Silt and Gravel (SP-SM), dark brown, loose, moist, fine to medium sand, fine to coarse gravel.	20 - 21 -	S-2	SPT		5 5	9	30 40				
> { 			22 -										
			- 24 -										
		Medium dense, cobble clasts.	- 25 - - - 26 -	S-3	SPT	9	4 10 20	3(
,			- 27 -										
) 			- 28 - - - 29 -										
	1211.0	Old Alluviual Fan Deposits (Qof) Gravelly SAND with Silt (SP-SM), brown to orange brown, very dense, slightly moist, cobble clasts.		S-4	SPT	18	40 40 42		82	+			
	•		- 32 -										
			- 34 -										
	•		- 35 - - - 36 -	S-5	SPT	5	40 50/5"		50/5"	ł			
	•		- 37 -										
	•		- 39 -										
	1200.0	Total depth = 41 feet bgs.	- 40 - 	9-S-6	SPT	12	28 50/6"		50/6"	ļ			
		Groundwater not encountered. Borehole backfilled with soil cuttings.	- - 42 -										
			- 43 -										

LA	NG/	4 / V	Log	of E	Boring			В-	28			Sheet	1	of	1
Project				Pr	oject No.										
Location	Proposed Athletic C	Complex		El	evation ar	nd Da		700	11410	1					
	Claremont Mckenna	a College						App	rox. 1:	230 (fe	et. M	SL)			
Drilling Compa				Da	ate Starteo	ł		<u>, , , , , , , , , , , , , , , , , , , </u>				Finished			
	2R Drilling							0/11	/2022				10/11/2	2022	
Drilling Equipr	nent			Co	ompletion	Dept	h				Rock	Depth			
	SIMCO Truck-mour	nted Drill Rig							11.5 ft					-	
Size and Type	e of Bit 8-inch O.D. Hollow	Stem Auger		Nu	umber of S	Samp	les	Dist	urbed	2	Un	disturbed	2 Co	ore	_
Casing Diame	eter (in)		Casing Depth (ft)	w	ater Level	(ft.)		First				mpletion	24	HR.	-
Casing Hamm	ner_	Weight (lbs)	- Drop (in) -	Dr	illing Fore	man						<u> </u>		<u>+</u>	
Sampler	2-inch O D SPT Sr	blit-Barrel, 2.5-inch I.D.	Cal Mod		eld Engine	or	A	driar	1						
Sampler Ham	mor	Weight (lbs)	Drop (in)		eia Engine	er	•	Nia	hlan						
	Automatic	140) 000 (11) 30		1		Α.		blas mple D	ata					
Elev HUBDL HI230.		0 I D			Depth	Ē	0				alue		Remarl		
THE HEAD (ft)		Sample Description	n		Scale	Number	Type	(in)	Penetr. resist BL/6in		vs/ft)	(Drilling Fl Fluid Loss, [uid, Depth Drilling Re	h of Casing sistance, et	, ic.)
+1230.					<u> </u>	z		œ.	с - п	10 20	30 40			olotanoo, o	
	Undocumented A	vegetation, abundant o	coddles.		Ē	1									
	Silty SAND with C	Gravel (SM), grayish br	own. dense. sliahtl	v	⊧ 1 -	1									
	moist.	,, g.a.j.c 2.	o, conco, og	,	F : :	1									
					- 2 -	1									
	5				2 2										
	Gravelly SAND w	ith Silt (SP-SM), grayis	h brown, dense,		₽ =		SPT		36						
	moist.				- 3 -	5	μE	9	18			Refusal.	Boring	was mo	ved
					E . :		ľΈ		22		40	and redri	lled.		
					- 4 -	-									
					F -	1									
					- 5 -	<u> </u>	- m		10			WC = 5.4	1%		
					E :	2			16			DD = 119	9.3 pcf		
		Demosite (Oof)			÷ 6 -	S-2	CR	18	20		46	Direct Sh	ear Te	st.	
	Old Alluviual Fan	SP-SC), dark reddish l	orown dense		E	<u> </u>			26						
1223.			deneo,	~	- 7 -	1									
		h Gravel (SC), dark red	dish brown,	_	= =	<u> </u>									
	medium dense, m	noist, fine gravel.			- 8 -		I. E		5		'				
					t i	S-3	SPT	18	6						
					F _ E	1	ΙE		8	14					
///////////////////////////////////////	5				<u> </u>					$ \rangle$					
		dark reddish brown ar	nd brown, dense,		1	1					$\langle $				
	moist.				- 10 -				16			WC = 3.9			
					E E	S-4	СR	18	20		$ \rangle$	DD = 97.		-10	
					- 11 -	^o			20		40	% Passir Consolid			
1218.	Total depth = 11.5	5 feet bas.			E 3	-						Direct Sh			
	Groundwater not	encountered.			- 12 -	1									
	Borehole backfille	ed with soil cuttings.			F :	1									
					- 13 -	1									
					E E										
					- 14 -	1									
					⊧ ∵ :	1									
					- 15 -]									
					¢ '3 '	1									
					F 10 F	1									
					- 16 -	-									
5					È	1									
					- 17 -	1									
					E E	1									
					- 18 -	1									
5					F =	1									
					- 19 -]									
					E E	1									
					<u>لہ ₂₀ بے</u>	1									

LA	NL:/	4/V	Log	of E	Boring			B-	29				Sheet	t 1	of	f 2
Project				Pr	oject No.											
Location	Proposed Athletic C	Complex		Ele	evation an	d Da		700	11410)1						
	Claremont Mckenna	a College						Арр	rox. 1	235	(fe	et, N	MSL)			
Drilling Comp	pany			Da	ate Starteo	ł							Finished			
Drilling Equip	2R Drilling ment			Cc	mpletion	Dept	<u>1</u> h	0/19)/2022	2		Rocł	<pre>C Depth</pre>	10/	19/2022	
	CME-75 Truck-mou	unted Drill Rig						;	30.3 f	t						
Size and Typ	e of Bit 8-inch O.D. Hollow	Stem Auger		Nu	Imber of S	Samp	les	Distu	urbed		3	U	ndisturbe	d 1	Core	_
Casing Diam	eter (in)		Casing Depth (ft)	W	ater Level	(ft.)		First			-		ompletion		24 HR.	_
Casing Hamr	ner	Weight (lbs)	Drop (in)	Dr	illing Fore	man							_			
Sampler	2-inch O.D. SPT Sp	blit-Barrel, 2.5-inch I.D.	Cal Mod	Fie	eld Engine	er	Je	eorge	e							
Sampler Ham		Weight (lbs) 140	Dron (in)	1			N.	Gh	anta							
				-				Sa	mple D				_	Por	narks	
(ft) (ft) (ft) (ft)		Sample Description	I		Depth Scale	Number	Type	cov.	Penetr. resist BL/6in		N-Va Blow	lue s/ft)	(Dri		Depth of C	asing,
≥∽ +1235	.0	A. 4161 - 1 - 1 - 1 - 1 - 6 - A			⊢ o −	Ĩ	+	Å,	a n Bl	10	20	30 40	Fluid L	.oss, Drillin	ng Resistar	ice, etc.)
Eleont: Log - LANGAN (4) +1532	Undocumented A Silty SAND with C	Artificial Fill (afu) Gravel (SM), dark brown	, dry, some cobble	Э		1										
de la	clasts.				- 1 -	1										
						1										
21 P					- 2 -	1										
1:02					- 3 -											
					- 4 -											
					5 -											
GINT.GPJ					6 -											
<u>5</u>																
					- 7 -											
					= =											
Ŏ					- 8 -											
					- 9 -	1										
					- 10 -	I										
	moist, some cobb	h Gravel (SC), dark bro ble clasts.	wn, loose, slightly			-	F	12	3							
					- 11 -	Ŷ	SPT	÷	3 3	61						
						-			•	11						
					- 12 -	1										
					- 13 -											
					- 14 -											
					E E											
					- 15 -											
					- 16 -											
ATA																
					- 17 -											
					É											
					- 18 -	}										
						1										
					- 19 -	1										
	0				<u>E 20 –</u>	1										

roject		Proposed Athletic Complex	Project No.			70	0011410	1					
ocation			Elevation a	ind Da	atun	n							
		Claremont Mckenna College				Ap	oprox. 12	235 (fe	et, M	SL)			
L'A	-						Sample D				Rema	rks	
MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Number	Lvna	Recov.	(in) Penetr. resist BL/6in	N-Va (Blow	s/ft)	(Drillin Fluid Los	ng Fluid, Dep	oth of Casing, esistance, etc	с.)
	1215.0	Old Alluviual Fan Deposits (Qof)	20 -	ž	_		7	10 20 3	30 40		_ 2, 211111y IX		/
		Old Alluviual Fan Deposits (Qof) Clayey SAND with Gravel (SC), brown to orange brown, dense, slightly moist, manganese oxide staining, fine	-	S-2	ЗРТ								
		gravel.	- 21	100	0,		10	23					
			22	-									
			- 23	-									
			- 24	-									
			- 25	-		Ē	26						
			26	S-3	SPT	10			40				
			-	+	+	Ħ	20		$ \rangle$				
			- 27 -	-									
			28	-									
			- 29	-									
	1205.0 1204.8	¬ Silty SAND with Gravel (SM), orange brown, very dense,				যা। ি	3 50/3"		50/3"	WC =	3 5%		
	204.0	\ slightly moist, manganese oxide staining, fine gravel.	_∕Ę	-					50/5	DD = 1	110.6 pcf plidation 1	Fost	
		Total depth = 30.25 feet bgs. Groundwater not encountered.	- 31	-						Conse		1031.	
		Borehole backfilled with soil cuttings.	- 32 -	-									
			-										
			- 33 -	-									
			- 34	-									
				-									
			- 35 ·	-									
			- 36	-									
				-									
			- 37	-									
			- 38										
			- 39	-									
			- 39										
			40	-									
			41										
			- 42	-									
			43	1									
			44	-									
			 45 -	-									

	NG			Log	of Boring			B-3	30		_	Sheet	1	of	2
Project					Project No).		7004							
ocation	Proposed Athletic	Complex			Elevation	and Da	atum	7001	1410	1					
	Claremont Mckenn	na College						Appr	<u>ox. 1</u> 2	240 (1		MSL)			
Drilling Comp					Date Start	ed			100000		Dat	e Finished			
Drilling Equip	2R Drilling				Completio	n Dept		0/20	/2022		Roo	ck Depth	10/2	20/2022	
	CME-75 Track-mo	unted Drill Rig				•			85.5 ft					-	
Size and Typ	e of Bit 8-inch O.D. Hollow	Stem Auger			Number o	Samp	oles	Distu	rbed	6		Undisturbed	1 0	Core	_
Casing Diam	eter (in)	Oten Auger	(Casing Depth (ft)	Water Lev	el (ft.)		First		0		Completion		24 HR.	-
Casing Hamr	- mer	Weight (lbs)		- Drop (in)	Drilling Fo	• • •		$\underline{\nabla}$		-		Ţ	-	<u> </u>	-
Sampler	-		-	-	-		Je	ff							
Sampler Han	2-inch O.D. SPT S	Weight (lbs)		Drop (in)	Field Engi	neer									
	Automatic		140	30 Drop (III)			Ν.	Gha Sar	anta nple Da	ata					
Elev (ft)		Sample Desc	rintion		Depth	per l	e				Value	(Drill		narks	
HTTP: (ft) (ft) (ft) (ft)		Campie Dese	npuon		Scale	Number	Type	(ji	Penetr. resist BL/6in	(Bio 10 2	ows/ft) 0 30 4	Fluid L	oss, Drillin	Depth of Casing g Resistance, e	, tc.)
	Undocumented /	Artificial Fill (afu) ND (SM), brown.	2		0	-									
		מיט), brown.			Ę 1	-									
					Ē	-									
					- 2	-									
					Ē	-									
					- 3	7						Heav	y auger	⁻ chatter; ble/bouldes	
					- 4	=						poss		bic/bouldes	
.					Ē	-									
					- 5	-									
					Ē	-									
					- 6	-									
					F 7	-									
					E	3									
					- 8	-									
					- 9	-									
					Ē	-									
	Gravelly Silty SA	ND (SM), orangis	sh brown	medium dense	- 10	1									
	dry, fine to coars	se sand and grave	el, some	cobble clasts.	E		SPT	9	9 7						
					- 11 -	- S	° ∏		7	14 •					
					- 12	Ŧ									
					È '	1									
					- 13	-									
					Ē.	-									
					- 14 -	1									
	Maint				- 15	1									
	Moist.				Ę	- - -	SPT	8	15						
					- 16		SPT	ω	10 10	20	•				
					Ē.	1	+								
					- 17 -	-									
					- 18	-									
1: •					Ę	-									
					- 19	-									
· I · I · I · I					F	-	1								

roject		Proposed Athletic Complex	Project No.			700	11410	1						
ocation			Elevation a	nd Da	atum	100	11410							
		Claremont Mckenna College					rox. 1		feet,	MSL)				
0L 0L	Elev.		Donth	4	1		mple D		Value			Remar	ks	
MATERIAL SYMBOL	(ft)	Sample Description	Depth Scale	Number	Type	Recov (in)	Penetr. resist BL/6in	(B	-Value lows/ft)	FI	(Drilling luid Loss	Fluid, Dept , Drilling Re	h of Casing, esistance, et	, tc.)
+	1220.0	Silty SAND (SM), brown to dark brown, medium dense,	20 -		FE	-	10	10 2	20 30 4	0				,
		moist, cobble clasts.	- 21 -	S-3	SPT	9	9	15						
				1	E	_	6							
			- 22 -											
			- 23 -											
				1										
			- 24 -											
L. L.	1215.0			1										
		<u>Old Alluviual Fan Deposits (Qof)</u> Silty SAND with Gravel (SM), orangish brown, very dense,	F	S-4	SPT		8 10							
: \$		dry to slightly moist, fine to coarse sand and gravel.	- 26 -		s		12	22						
			- 27 -											
										N				
			- 28 -											
			- 29 -											
? . .			- 30 -	1										
			- 30 -	S-5	SPT	10	35 50/4"							
			- 31 -	1			50/4		50/	4"•				
			- 32 -											
:														
			- 33 -											
			- 34 -	1										
			Ē											
· [•] ;	1204.5		- 35 -	S-6	SPT	5	50/5"		50/	5"•				
		Groundwater not encountered.	- 36 -	-										
		Borehole backfilled with soil cuttings.	-											
			- 37 -											
			- 38 -	1										
			- 39 -											
				1										
			- 40 -											
			- 41 -	1										
			Ē											
			- 42 -	1										
			- 43 -											
			Ë											
			- 44 -	1										

	./	4	NGA	4/V		Log	of E	Boring			B-	31			Sh	neet	1		of	1
Proje	ct						Pr	oject No.												
1			Proposed Athletic C	Complex			-	evation a		4	700	11410	1							
Locat	lion		Claramont Makanna				E	evation a	na Da		1 mm	rov 10	024 (fo	0+ N						
Drillin	ig Co		Claremont Mckenna	a College			Da	te Starte	d		Арр	rox. 12	234 (le		Finis	hed				
			2R Drilling								10/1	1/2022					10	/11/2	2022	
Drillin	ıg Eq						Co	mpletion	Dept	h				Rock	Dept	th				
Size a			SIMCO Truck-mour	nted Drill Rig								11.5 ft urbed			adiate	urbed			-	
Sizea	and I		8-inch O.D. Hollow	Stem Auger			Nu	Imber of	Samp	les	Dist	urbea	3		naist	libed	2	Co	ne	-
Casir	ng Dia	amete	er (in) -		Cas	sing Depth (ft) -		ater Leve			Firs 		-	C	omple T	etion	-		HR. L	-
Casir	ng Ha	amme	r	Weight (lbs)	-	Drop (in) -	Dr	illing Fore	eman											
Samp	oler		Bulk, 2-inch O.D. SI	PT Split-Barrel, 2.5-in	nch I.D). Cal Mod	Fi	eld Engin	eer	A	driar	1								
Samp	oler H			Weight (lbs)		Drop (in) 30	1		001	Δ	Nie	blas								
			,									mple Da	ata							
MATERIAL	E	Elev. (ft)		Sample Description	on			Depth Scale	Number	Type	Х С	Penetr. resist BL/6in	N-Va (Blow			(Drillir		marl Depth	<s n of Casing</s 	1 ,
i ₹	5 +12	234.0							Nur	L	Ee(BL re	10 20	'	F	luid Lo	ss, Drilli	ng Re	sistance, e	etc.)
	(+12	233.8		cobbles and gravel.				- 0 -	-											
• •		233.0	Coarse gravel.					E - 1 -												
			Undocumented A	Artificial Fill (afu) Gravel (SM), light brow	un vo	ny dense dry		- '	-								et ba		lected f	rom 1
			Silly SAND and G		vii, vei	ry dense, dry.		- 2 -]							0 0 10	Jot by	0.		
									1	_ m							mple	raca	lon	
² : :								- 3 -		К	0	26				NU 5a	inhie	IECO	very.	
								-	1			50/6"		50/6	•					
								- 4 -	-											
								-	-											
	+₁±l12	229.0	SAND with Silt an	nd Gravel (SW-SM), lig	aht or	angish brown		- 5 -	1	E	-	16								
			very dense, dry, fi	ine gravel.	gintoi	angion brown,		F	S-2	FE	18	25								
								- 6 -	- N	S		27		52	2•					
÷	И							E	}		1	21								
Ö.								- 7 -	4											
		226.5	Old Alluviual Fan	Deposits (Qof)				Ē	- S-3	CR	4	50/4"		50/4	F	oor s	sampl	e rec	overy.	
5	14		SAND with Silt an	nd Gravel (SP-SM), or pist, manganese oxide	rangis	h brown, very		- 8 - E	-					00/4	1 V	צ ⊃ע = חו	5.1 ['] % 102.1	ncf		
			dense, siightiy mo	Dist, manganese oxide	e stall	iirig.		F a	4								/ auge		atter.	
								- 9 - -	-							-	-			
0		224.0						÷ 10	4											
; ; ;			SAND with Grave	I (SP), orangish brow	n, ver	y dense,		⊨ 10 - F	-	SPT		21								
Ð.	- 4		slightly moist.					- 11 -	S-4	SPT	18	23		6	2					
	-+1:	222.5						È''	1			39								
3			Total depth = 11.5 Groundwater not					- - 12 -	-											
1				ed with soil cuttings.				-	-											
								- 13 -	4											
-								-	-											
								- 14 -	1											
								F	4											
								- 15 -	-											
8								E	1											
								- 16 -	4											
								E	-											
								- 17 -	4											
								É.	-											
								- 18 -	1											
Ś								F 40	4											
								- 19 - -]											
								لے ₂₀ ــ	1											

Project					3		Boring roject No.				-32			Sheet			
-		Proposed Athletic C	Complex							700	11410	1					
ocation		Cloromont Maler				El	evation ar	nd Da		۸		000 /F	not M				
rilling C	Compan	Claremont Mckenna y	a college			Da	ate Starte	d		мрр	prox. 12	228 (te		SL) Finished			
		2R Drilling								10/1	1/2022				10/	11/2022	
rilling E		nt SIMCO Truck-mour	nted Drill Rig				ompletion	Dept	n		11.5 ft		Rock [Depth			
Size and	Туре о	f Bit	-			N	umber of S	Samp	les		urbed		Uno	disturbed		Core	
Casing D	Diamete	8-inch O.D. Hollow r (in)	Stem Auger		Casing Depth (ft)	- W	ater Leve	I /ft)		Firs	ţ	3		mpletion	1	24 HR.	-
Casing H	lammer		Weight (lbs)		- Drop (in)		rilling Fore	• •		ĮΫ		-			-	Ţ	-
Sampler		-		-	-	-	-			driar	า						
Sampler		2-inch O.D. SPT Sp er	Weight (lbs)		Drop (in) 30	_ Fi	eld Engine	er	۸	Nie	blog						
•		^a Automatic		140	30				A		eblas Imple D	ata					
MATERIAL SYMBOL	Elev. (ft)		Sample Desc	ription			Depth Scale	Number	/pe	i) co	Penetr. resist BL/6in		/alue ws/ft)		ng Fluid, I	narks Depth of Casin	
[≦] ∽ +	1228.0						- 0 -	Z	F.	Re	Pe Pe	10 20	30 40	Fluid Lo	ss, Drillin	g Resistance, o	etc.)
		Undocumented A Silty SAND with C					E										
							- 1 -										
							- 2 -										
7	1225.5	Old Alluviual Fan	Deposits (Oof)				Ę	1	E	<u> </u>	7						
		Clayey SAND with dense, moist, fine	h Gravel (SC), o	rangish I	brown, medium		- 3 -		SPT	18	9						
		dense, moisi, line	e gravel, mangar	iese oxic	ie staining.		- 4 -	<u> </u>			11	20 •					
								1									
	1223.0	Silty SAND (SM)	to Clayey SAND	(SC) wit	th Gravel,		5 -				30			WC =			
		orangish brown m oxide staining.	nottled, very den	se, mois	t, manganese			S-2	CR	11	50/5"		50/5"		128.6 µ	ocf n Test.	
		Unde stammy.					- 6 -						50/5				
							- 7 -										
 		SAND with Grave		brown, v	/ery dense,		Ē	0	L E		17						
		slightly moist, fine	e gravel.				- 8 -	S-3	SPT	12	50/6"		50/6"				
							- 9 -										
							È :										
							- 10 -		İΕ		26						
							- 11 -	S 4	SPT	18	40		90	ļ			
·····+	1216.5	Total depth = 11.	5 feet bas.				£ 3	-	<u> </u> E	1	50						
		Groundwater not Borehole backfille	encountered.	as			- 12 -										
				90.			- 13 -	1									
							Ē										
							- 14 -										
							- 15 -										
							Ę	1									
							- 16 -	1									
							- 17 -										
							- 18 -	1									
								1									
							- 19 -	1									
							E 20 -										

LA		of E	Boring			в-:	33			Sheet 1 of 1
Project		Pr	oject No.							
Location	Proposed Athletic Complex	Flé	evation an	d Da		700	11410	1		
Location	Claremont Mckenna College		Svalion an			Ann	rox 1	240 (fe	et M	MSL)
Drilling Comp		Da	ate Starteo	ł		7 ipp	<u>ю</u> . п			e Finished
	2R Drilling					0/11	/2022			10/11/2022
Drilling Equip		Co	ompletion	Dept	h				Rock	k Depth
Size and Type	SIMCO Truck-mounted Drill Rig	+					16.5 ft urbed		U	- Indisturbed Core
	8-inch O.D. Hollow Stem Auger	Nu	umber of S	Samp	les			3		2 -
Casing Diame	eter (in) Casing Depth (ft)	w	ater Level	(ft.)		First		-		Completion 24 HR.
Casing Hamn	ner Weight (lbs) Drop (in)	Dr	illing Fore	man						± 1±
Sampler	2-inch O.D. SPT Split-Barrel, 2.5-inch I.D. Cal Mod				A	drian	1			
Sampler Ham	Woight (lbs) Drop (in)	_ Fie	eld Engine	er	^	Nia	blaa			
	Automatic Vergin (ibs) 140 Diop (in) 30			1	<u>A</u> .	Nie. Sa	mple D	ata		
Elev BATERIAL (ft) +1240.			Depth	ber	e		etr. ist Sin	N-V		(Drilling Fluid, Depth of Casing,
HAN (ft) HAN (ft) HAN (ft) HI240.			Scale	Number	Type	(jr	Penetr. resist BL/6in	(Blov 10 20	,	Fluid Loss Drilling Resistance etc.)
	Abundant cobbles.		E 0 -							
	0		- 1 -	1						
	Undocumented Artificial Fill (afu) Silty SAND (SM), light brown, dense, dry, scattered gravel									Heavy auger chatter.
Ne la		-	- 2 -							
1125/2023 11:02:2/ AM							12			
			- 3 -	۲- ۲-	SPT	15	14			
				0	l° E	Ì	16	30)	
			- 4 -							
-	0		- 5 -							
	Old Alluviual Fan Deposits (Qof) SAND with Silt and Gravel (SP-SM), light reddish brown,				~		12			WC = 2.8% DD = 113.2 pcf
	dense, dry to slightly moist.		- 6 -	S-2	CR	18	20		57	Consolidation Test
							37			Direct Shear Test.
			- 7 -	1						Refusal due to cobble layer.
				6	FE	~	21			Boring moved and redrilled.
			- 8 -	S-3	SPT	12	50/6"		FOUC	N
			- 9 -						50/6	
5	Vary dance elightly major manageness syide staining fine		- 10 -	 	 					WC = 2.9%
	Very dense, slightly moist, manganese oxide staining, fine to medium gravel.			S-4	CR	1.33	27 39			DD = 128.6 pcf
			- 11 -	5 S	Ŭ	-	50/4"		50/4	
									50/4	*
			- 12 -	1						
			- 13 -							
			E 'S E							
			- 14 -	1						
										\wedge
₽н±1225.	Silty SAND (SM), dark reddish brown, medium dense,		- 15 -	-	F		7			% Passing #200 = 32
	moist, manganese oxide staining, fine sand and gravel.		E =	S-5	SPT	18	7			
↓ +1223	5		- 16 -	0,0	ΓĒ		9	16		
	Total depth = 16.5 feet bgs.		- - - 17 -							
ANK	Groundwater not encountered. Borehole backfilled with soil cuttings.		£ '' -							
			- 18 -							
			F =	-						
GAN			- 19 -							
TAN				1						
· · · · ·			<u> </u>							

LA	NG/	4 /V	Log	of E	Boring			B-3	4		_		Sheet	1 of	2
Project				Pr	oject No.										
Location	Proposed Athletic C	Complex		Ele	evation an	d Da		7001	1410	1					
	Claremont Mckenna	a College					/	Appro	ox. 12	239 (f					
Drilling Com	pany 2R Drilling			Da	ite Started		1(0/10/	2022		Da	ite F	Finished	0/18/2022	
Drilling Equip	oment			Co	mpletion I	Deptl		0/10/	2022		Ro	ock [Depth	J/ 10/2022	
Size and Typ	CME-75 Truck-mou	unted Drill Rig						2 Distur	6.5 ft			Line	disturbed	- Core	
	8-inch O.D. Hollow	Stem Auger		Nu	imber of S	amp	les		beu	3			1		-
Casing Diam	neter (in) -		Casing Depth (ft)	W	ater Level	(ft.)		First		-		Cor	mpletion	24 HR. 	-
Casing Ham	mer_	Weight (lbs)	Drop (in)	Dr	illing Fore	man									
Sampler	2-inch O.D. SPT Sp	olit-Barrel, 2.5-inch I.D.		_ Fie	eld Engine	er	Ju	an							
Sampler Har	^{nmer} Automatic	Weight (lbs) 140) Drop (in) 30				Α.	Nieb					r		
the symbol symbo	v.	Comula Deceminities	_		Depth	er	۵		nple Da ≓ ta .≘	N-\	/alue			emarks	
- LANGAN SYMBOL +1238		Sample Description	n		Scale	Number	Type	Reco	resist BL/6in	(Blo 10 20	ws/ft	·	(Drilling Flui Fluid Loss, Dri	d, Depth of Cas illing Resistance	sing, e, etc.)
	Undocumented A	Artificial Fill (afu) Gravel (SM), brown, dry	, aabbla alaata												
	Silly SAND with C	Slavel (Sivi), brown, dry	, coddie clasis.		- 1 -										
29 A					- 2 -										
11:02					- 3 -										
1/23/2023 11:02:29 AM															
1/23					- 4 -										
					- 5 -										
- GINT.GPJ															
					6 -										
1141					- 7 -										
;s/100															
					- 8 -										
					- 9 -										
NICA															
	Silty SAND with C	Gravel (SM), brown, dry	, medium dense.		- 10 -				8						
GEO CEO						<u>2</u>	SPT	10	7	42.4					
					- 11 -				6	13•					
					- 12 -										
VD L					- 13 -										
					- 14 -										
11PR															
1141	Abundant cobbles	s.			- 15 -				19				No sample	recovery;	
					- 16 -	S-2	СR	0	17		32		Cobbles in	sampier.	
					Ē		╞╴╨┩		15						
					- 17 -										
					- 18 -										
Ś.															
VLANGAN COMIDATAVITY001141011PROJECT DATA\ DISCIPLINE/GEOTECHNICAL/GINTL 0GS/700114101					- 19 -										
¥ 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	2.0				E 20 -										

Project		Proposed Athletic Complex	Project No.			700	11410)1					
ocation			Elevation a	nd Da	atum								
		Claremont Mckenna College						239 (fe	eet, N	1SL)			
SYMBOL	Elev.	Ormala Decembric	Depth	Ē	0		imple D		/alue ws/ft)	-	Rema	irks	
SYM SYM	(ft) 219.0	Sample Description	Scale	Number	Type	Reco (in)	Penetr. resist BL/6in		ws/ft) 30 40	(Drilli Fluid Lo	ng Fluid, De oss, Drilling F	pth of Casing Resistance, e	l, tc.)
		Old Alluviual Fan Deposits (Qof) SAND with Silt and Gravel (SP-SM), brown, loose, slightly	20 - E	-	E		5						
		moist.	- 21 -	S-3	SPT	18	5 3	8					
			- 22 -	1				$ \rangle$					
			- 22						\setminus				
			- 23 -										
			- 24 -										
			Ē										
		Orangish brown, dry to slightly moist.	- 25 -	1	İ. E		29						
			- 26 -	S4	SPT	18	37 42		79	•			
<u>: : -</u> :	212.5	Total depth = 26.5 feet bgs.	 27 -	1		1							
		Groundwater not encountered. Borehole backfilled with soil cuttings.											
			- 28 -										
			- 29 -										
			- 30 -										
			- 31 -										
			- 32 -										
			- 33 -										
			- 34 -										
			- 35 -										
			- 36 -										
			- 37 -										
			È ao										
			- 38 -										
			- 39 -										
			- 40 -										
			-										
			- 41 -										
			- 42 -										
			- 43 -										
			E										
			- 44 -										
	1		<u>45</u> -	7						1			

		NGAN	Log o		•			B-	35			Sheet	1	of	1
Project				Pro	ject No.										
ocation		Proposed Athletic Complex		Ele	vation ar	nd Da		700	11410	1					
		Claremont Mckenna College						App	<u>rox.</u> 12	245 (fe	et, M	SL)			
Drilling Co				Dat	e Starte	d						Finished			
Drilling Eq		2R Drilling		Cor	npletion	Dept		0/11	/2022		Rock I	Depth	10/1	1/2022	
		SIMCO Truck-mounted Drill Rig							11.5 ft					-	
Size and 1	Туре о	f Bit		Nur	nber of S	Samp	les	Dist	urbed	2	Un	disturbed	2	Core	
Casing Dia	amete	8-inch O.D. Hollow Stem Auger r (in)	Casing Depth (ft)	Wa	ter Leve	(ft)		First	:	2		mpletion		24 HR.	-
Casing Ha	ammor	- Weight (lbs)	- Drop (in)		ling Fore	• •		ĮΫ		-		<u> </u>	-	Ā	-
Sampler			-				A	driar	ı						
Sampler F		2-inch O.D. SPT Split-Barrel, 2.5-inch I.D. (er Weight (lbs)	Dron (in)	Fiel	d Engine	eer									
		Automatic 140	30	<u> </u>		1	A		blas mple Da	ata		r			
	Elev.	Sample Description			Depth	ber	ō	-			alue		Rem	arks epth of Casing	
SYN SYN	(ft) 245.0				Scale	Number	Type	Rec(Penetr. resist BL/6in	(Blov 10 20	,	Fluid Loss,	Drilling	epth of Casing Resistance, e	, tc.)
		Undocumented Artificial Fill (afu)			- 0 -	1									
		Silty SAND with Gravel (SM), brown, dry.		ļ	- 1 -	1									
				ļ		1									
					- 2 -	1									
	242.5	Old Alluviual Fan Deposits (Qof)		· — [-	E		4						
D P		SAND with Silt and Gravel (SP-SM), dark medium dense, slightly moist.	orangish brown,	Ē	- 3 -	<u>-</u>	SPT	9	5						
		meanin dense, signity moist.		Ē	- 4 -		Ē		21	26	\mathbb{N}				
				Ē		1									
	240.0	Silty SAND with Gravel (SM), dark orangi	sh brown verv	· — [- 5 -				21			Verv poo	or san	nple recov	erv.
		dense, moist, manganese oxide staining,	fine to medium	ł		S-2	К		31 50/3"		50/3"	WC = 2.	8%		<i></i>
		gravel.			- 6 -										
						-									
	237.5				- 7 -										
		SAND with Gravel (SP), orangish brown, slightly moist.	very dense, dry to		- 8 -	S-3	SPT	9	27						
Ð		5 ,		F		 	Ë	-	50/6"		50/6"	•			
				F	- 9 -										
.D	235.0			_	_ 10										
		SAND (SP) and Silty SAND (SM) with Gr brown, dense, slightly moist to moist.	avel, orangish		- 10 -				30			WC = 8. DD = 10		cf	
		erewn, dense, silynuy moist to moist.		F	- 11 -	S-4	S	18	23		46 -	J	P		
	233.5	Total depth = 11.5 feet bgs.				-			23						
		Groundwater not encountered.			- 12 -										
		Borehole backfilled with soil cuttings.		F	10	1									
				ļ	- 13 -	1									
				ļ	- 14 -	1									
				ļ		1									
				ļ	- 15 -	1									
				ļ		1									
				ļ	- 16 -	1									
				ļ	- 17 -	1									
				ļ		1									
				ŀ	- 18 -	1									
				ļ		1									
				ŀ	- 19 -	1									
				Ŀ	: :	1									

L	4	NG/	4/V		Log	of E	Boring			B-	36				Shee	ət	1	of	2
Project						Pr	oject No.												
Location		Proposed Athletic C	Complex			Ele	evation ar	nd Da		700	1141()1							
		Claremont Mckenna	a College							Арр	rox. 1	245 (
Drilling Co						Da	ite Starteo	b		0.14				Date	Finishe		0/40/		
Drilling Eq		2R Drilling				Co	mpletion	Deptl		0/18	3/2022	2	F	Rock	Depth	1	0/18/:	2022	
		CME-75 Truck-mou	inted Drill Rig				-				21.5 f	t			-			-	
Size and T		of Bit 8-inch O.D. Hollow	Stem Auger			Nu	Imber of S	Samp	les	Dist	urbed	Z	1	Ur	ndisturb	ed 0		ore	-
Casing Dia			<u></u>	C	asing Depth (ft)	w	ater Leve	(ft.)		First					ompletio		24	1 HR. V	
Casing Ha	amme	r	Weight (lbs)		Drop (in)		illing Fore	• •		<u> </u>			-		<u> </u>		• •	<u>¥</u>	-
Sampler		-	lit Dorrol	-	-				Je	eorg	e								
Sampler H		<u>2-inch O.D. SPT Sp</u> ^{er} Automatic	Weight (lbs)	140	Drop (in) 30	_ Fie	eld Engine	er	^	Nio	blas								
z		Automatic		140					A.		mple [Data							
	∃lev. (ft)		Sample Descr	iption			Depth Scale	Number	Type	i) co	Penetr. resist BL/6in	N (B	-Val lows	ue s/ft)		Drilling Flu		h of Casing	
1≦໌ທ +12	245.0						- 0 -	Nur	ŕ	a	Pe	10 2	20 3	, 0 40	Fluid	I Loss, Di	rilling Re	esistance, e	tc.)
		Undocumented A Silty SAND with C	Artificial Fill (afu) Gravel (SM), brow	n, dry, c	obbles.			1											
		2					- 1 -	1											
								1											
1/23/2023 11:02:32 AM							- 2 -	1											
							- 3 -	1											
								1											
							- 4 -	1											
							- 5 -	1											
							- 6 -	1											
								1											
							- 7 -	1											
								1											
							- 8 -	1											
							- 9 -	1											
								1											
	235.0	SAND with Silt (S	P-SM), brown, lo	ose, slig	htly moist, grave		- 10 -	-			5								
		& small cobble in	sampler shoe.	-				۲- ۲-	SPT	9	4								
							- 11 -		Ē		4	8							
							- 12 -	-											
							E :												
							- 13 -												
							E 1												
							- 14 -												
							- 15 -		┝┍╡		5				No	sample	e reco	verv.	
								S-2	SPT	0	5 2				san	npler b	ounci	ng on	
							- 16 -	S	S III	-	2	4				oble/bo avy aug		atter; slo	w
		SAND with Silt an	nd Gravel (SP-SM	l), brown	, dry to slightly		- 17 -	1			3	1 \				ling.			
		moist.						S-3	SPT	0	8	20							
							- 18 -	1	μĒ		12	$\left \right $	$\left \right $						
5													$ \rangle$						
							- 19 -							\setminus					
	225.0						E 20 -												

roject			Project No.										
catior	<u>.</u>	Proposed Athletic Complex	Elevation ar	nd Da		700	11410	1					
JauOl	•	Claremont Mckenna College		u Da		App	rox. 12	245 (feet, l	MSI	_)			
	<u>т</u> т			1			mple Da			/			
MATERIAL SYMBOL	Elev.	Sample Description	Depth	ber	e			N-Value		(Drilling	Rema	arks	a
SYN SYN	(ft) +1225.0	Cample Description	Scale	Number	Type	Rec (j	Penetr. resist BL/6in	(Blows/ft)	5	Fluid Loss	, Drilling F	pth of Casin Resistance,	y, etc.)
		<u>Old Alluviual Fan Deposits (Qof)</u> Silty SAND with Gravel (SM), orangish brown, dense,			SPT		13						
		slightly moist, manganese oxide staining, fine gravel.	- 21 -	S-4	SPT	12	18	4	9				
<u>. .</u>	±1223.5	Total depth = 21.5 feet bgs.		-			31			Refusa	at 21.	5 feet.	
		Groundwater not encountered.	- 22 -										
		Borehole backfilled with soil cuttings.											
			- 23 -										
			_ 24 -										
				1									
			- 25 -	1									
			- 26 -	1									
				1									
			_ 27 -										
			- 28 -										
			20										
			29 -	1									
			- 30 -	1									
			- 31 -	1									
			- 32 -										
			- 33 -										
			- 34 -	1									
				-									
			- 35 -										
			- 36 -	1									
				1									
			- 37 -	1									
			- 38 -	1									
			- 39 -										
			40 -										
				1									
			41 -	1									
				1									
			- 42 -]									
			- 43 -										
			- 44 -	1									
	1		<u>45</u>	1									

		of Bo	-			B-	37			Sheet	1	of	1
Project	Proposed Athletic Complex	Proje	ct No.			700	11410	1					
ocation	Proposed Atmetic Complex	Eleva	ation ar	nd Da	tum	700	11410	1					
	Claremont Mckenna College					Арр	rox. 12	240 (fe	et, MS				
rilling Com	2R Drilling	Date	Starte	1	1	0/14	/2022		Date F	inished	10/11	/2022	
rilling Equi	oment	Com	pletion	Depth		0/1	12022		Rock D		10/11/	12022	
	SIMCO Truck-mounted Drill Rig						11.5 ft					-	
Size and Ty	e of Bit 8-inch O.D. Hollow Stem Auger	Num	ber of S	Sampl	les	Dist	urbed	2	Und	listurbed	2	Core	_
Casing Dian		Wate	er Leve	(ft.)		First		-	Con	npletion	- 2	24 HR. V	_
Casing Ham	merWeight (lbs)Drop (in)	Drillir	ng Fore	man		_				-		<u>+</u>	
Sampler	2-inch O.D. SPT Split-Barrel, 2.5-inch I.D. Cal Mod	Field	Engine	or	A	driar	1						
Sampler Hai			Ligin		A	. Nie	blas						
₹ , _,						Sa	mple Da			R	Rema	rks	
end the state of t			Depth Scale	Number	Type	ecov.	Penetr. resist BL/6in	N-V (Blov	alue vs/ft)			oth of Casing, Resistance, et	c)
≥°″ +124	0.0 Undocumented Artificial Fill (afu)		0 -	ž		Ω.	<u> </u>	10 20	30 40	T Iulu Loss, L	, ming r	Cesistance, et	
	Silty SAND with Gravel (SM), brown, dry.	E											
		E	1 -										
		E	2 -										
±123		E	-	<u> </u>			50/01			WC = 4.4	%		
	Old Alluviual Fan Deposits (Qof) Silty SAND with Gravel (SM), orangish brown, very dense,	E	3 -	S-1	CR	6	50/6"		50/6"			f	
	slightly moist.	E											
		E	4 -										
		E	5 -										
	Dry to slightly moist, manganese oxide staining, fine gravel	I. E	J .				11						
		E	6 -	S-2	SPT	18	31		70				
		E	-	-			39						
		E	7 -										
	Very silty, moist, scattered gravel.	E	8 -	S-3	CR	6	24			WC = 3.5 DD = 123		f	
		E			-		50/3"		50/3"	Consolida	ation ⁻	Test.	
		E	9 -							Direct Sh	ear I	est.	
		E											
	Dense.	E	10 -				22						
		Ē	11 -	S-4	SPT	12	22		40				
122	.5 Total depth = 11.5 feet bgs.	Ę		1			18						
	Groundwater not encountered.	-	12 -	1									
	Borehole backfilled with soil cuttings.	F		1									
		Ē	13 -	1									
		Ē	14 –	1									
		Ē		1									
		F	15 -	1									
		Ē	10										
		F	16 -	1									
		Ē	17 -										
		Ē	-	1									
		-	18 -	1									
		Ē		1									
		F	19 -	1									
		F	- 20 -	1									

LA	NGA	A/V	Log	of E	Boring			B-	38			Sheet	1	of	1
Project				Pro	oject No.										
Location	Proposed Athletic Co	omplex		Ele	evation a	nd Da	atum	700	11410 [.]	1					
-	Claremont Mckenna	College						Арр	rox. 12	255 (fe					
Drilling Compa	-			Da	te Starte	ed					Date	Finished	40/00	0000	
Drilling Equipm	2R Drilling			Co	mpletior	Dept		10/20)/2022		Rock	Depth	10/20	0/2022	
5 1 1	CME-75 Track-mour	nted Drill Ria							13.5 ft					-	
Size and Type	of Bit 8-inch O.D. Hollow S			Nu	mber of	Samp	les		urbed	5	Ur	ndisturbed	1	Core	-
Casing Diame	er (in) -		Casing Depth (ft)		ater Leve	• •		First 		-		ompletion		24 HR. 	-
Casing Hamm	er	Weight (lbs)	Drop (in) -	Dri	illing For	eman									
Sampler Sampler Hamr		it-Barrel, 2.5-inch I.D. Weight (lbs) 140	Drop (in)	_ Fie	eld Engin	ieer		eff . Gh	anta						
AN L'AL			·				-		mple Da				Rema	arke	
Elev. (ft) 1255.0 HILLOG - LANGAN HILLOG - LANGAN HIL		Sample Description	1		Depth Scale	Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Va (Blov	/s/ft)		ng Fluid, De	epth of Casing, Resistance, et	
9 +1255.0	Scattered asphalt a	and vegitation on surfa	ace.		- 0 -					10 20	30 40				
ti e	Undocumented Ar		due :		Ē	-									
8 • • • •	Silly SAND with Gi	ravel (SM), light brown	, ary.		- 1 · -	1									
					- 2 -	-									
5:32	Damaa dina aaaaai	anal brief alact as ma	a a u la alt			1									
1/23/2023 11:02:35 AM	Dense, dry, occasi	onal brick clast, some	asphait.		- 3 -	<u>-</u> -	SPT	8	14 12						
5023					-	- - -	SPT		24	:	36•				
1/23/					- 4 -	1			24						
					_	-									
GINT.GPJ	Very dense, crushe	ed cobbles.			5	- 2	SPT	8	9						
8					-	<u> </u>	S E	Ĩ	50/4"		50/4'	•			
					- 6 -	-									
0114					- 7 -	-									
2/3						1	<u> </u>					Nosa	mple red	roverv	
9 •					- 8 -	S-3	сR	0	27 24			110 34		Sovery.	
ICIALIGINITL OGSI700114101	Gravelly SAND wit	h Silt (SP-SM), dark b	rown, verv dense.	:	E	- 0	С	ľ	24		52	Samp	ler boun	cing on co	bble;
CAL	dry, some rock and		· · · · · , · · · , · · · · ,		- 9 -	4	La E		27			slow d	drilling.	-	
					Ē	<u> </u>	R	9	50/4"		50/4"				
Ĕ		D (SM), brown, very d	ense, dry, cobble		- 10 · -	S-5	۲.	9	25			Samp	ler boun Irilling.	cing on co	bble;
DISCIPLING CEOTECHT	and rock clasts.				- - 11 ·	- 0	SPT		50/6"		50/6"		anning.		
					E	1									
IS I I I I I I I I I I I I I I I I I I					- 12 -	-									
	Old Alluviual Fan	Deposits (Qof)		:	E	1		-	40						
	Silty SAND with G	ravel (SM), orangish b			- 13 -	- 9- - 9-	SPT	9	50/5"						
L 1241.5	 dry to slightly mois oxide staining. 	t, fine to coarse grave	I, manganese	Γ		-					50/5'	•			
SRO.	Total depth = 13.5	feet bgs.			- 14 ·	-									
101/	Groundwater not e Borehole backfilled				- 15 -	-									
0114	Boronolo Buokinio	with som outlings.			- 13	4									
1/1/20					- 16 -	4						1			
DATA					Ę	=									
RVI					- 17 -	-						1			
ATA					F	1									
OWO					- 18 ·	1									
N.C.					L 10	1						1			
WLANGAN.COMIDATAVIRVIDATA1/700114101/PROJECT DATA					- 19 · -	4									
					E ₂₀ -	-									

LA	NG/	4 /V	Log	of E	Boring			B-3	89			Sheet	1	of	2
Project				Pr	roject No.										
Location	Proposed Athletic (Complex		FI	evation ar	nd Da		7001	1410	1					
2000000	Claremont Mckenn	a College			oradion al			Appr	ox. 12	62 (fe	et, I	MSL)			
Drilling Comp	pany	0		Da	ate Starteo	d						e Finished			
Drilling Equip	2R Drilling				ompletion	Dent		0/18/	2022		Roc	k Depth	10/18/	/2022	
	CME-75 Truck-mou	unted Drill Rig			ompication	Dopu		3	1.5 ft		1,00	K Doptil		-	
Size and Typ	e of Bit			N	umber of S	Samp	les	Distu			L	Indisturbed	C	Core	
Casing Diam	8-inch O.D. Hollow eter (in)	Stem Auger	Casing Depth (ft)					First		6	-	Completion	- 2	4 HR.	-
	-	Maight (lbg)	-		ater Leve			$\overline{\Delta}$		-		▼		Ţ	-
Casing Ham	ner	Weight (lbs)	Drop (in)		rilling Fore	man	Ju	an							
Sampler		plit-Barrel, 2.5-inch I.D.		_ Fi	eld Engine	er	04								
Sampler Han	^{nmer} Automatic	Weight (lbs) 140) Drop (in) 30				Α.	Nieb							
	1				Depth	Ē			nple Da	nta N-V	alue	_	Rema	rks	
Elevision (ft)		Sample Description	ו		Scale	Number	Type	(ii)	Penetr. resist BL/6in	(Blov	vs/ft)	Fluid Loss	Fluid, Dep , Drilling P	oth of Casing Resistance, e	, tc.)
+1262		Artificial Fill (afu)			- 0 -	z				10 20	30 40)			,
WATERIAL MATERIAL +1265	Silty SAND with 0 scattered vegetat	Gravel and Cobbles (SN	/I), brown,		E . :	1									
	scallered vegela	uon.				1									
					- 2 -	1									
						1									
					- 3 -	1									
					È . :	1									
						1									
					- 5 -	1									
						1									
					- 6 -	1									
					E										
					- 7 -										
					- 8 -										
					E										
					- 9 -	-									
					E										
1252	SAND with Silt ar	nd Gravel (SP-SM), gra	yish brown,		<u>– 10 –</u>	m			10						
	medium dense, s	lightly moist.			- 11 -	S-1A/B	SPT	ი	9	26					
+1250	.5				E'' -	Ś			17	20	T				
	Silty SAND (SM),	, orangish brown, mediu	um dense, moist.		- 12 -	-									
					-										
					- 13 -	-									
						1									
					- 14 -	1									
±1247					- 15 -	1						Chemic	al odor		
	moist.	Gravel (SM), orangish b	rown, dense,		= :	2	SPT	0	13			Chemica		-	
±1252					- 16 -	S-2	SPT	-	15 15	3) 				
						╞	$ \uparrow$	\neg			$ \rangle$				
					- 17 -	1						N			
					- 18 -	1									
					Ē	1									
					- 19 -	1									
					E E	1									
					⊥20 —		<u> </u>								

Project	Proposed Athletic Complex	Project No.			700	11410 ⁻	1					
ocation	Proposed Athletic Complex	Elevation a	nd Da		700	11410	1					
	Claremont Mckenna College				Арр	rox. 12	262 (fee	et, MS	SL)			
						mple Da				Rema	ke	
Elev (ft)	Sample Description	Depth Scale	Number	Type	(in)	Penetr. resist BL/6in	N-Val (Blows	s/ft)	(Drilling Fluid Los	g Fluid, Dep s. Drilling Re	th of Casing esistance, e	l, tc.)
+1242.	Silty SAND with Gravel (SM), orangish brown, very dense,	20 -			-	30 30	10 20 3	30 40			,	,
	slightly moist, some clay and gravel clasts.	- 21 -	S-3	SPT	6	19 50/1"						
			1			50/1		50/1"				
		- 22 -										
		- 23 -										
									Heavy cobbly.	auger ch	natter - ve	ery
		- 24 -										
		- 25 -						E0/4"	N			
		E T	- S-4	CR	0	50/1"		50/1"•	sample	nple reco er bounci	overy; ng on co	bble
		- 26 -		1								
		- 27 -		SPT	0	50/1"		50/1"	No san	nple reco	overv:	
. .		Ē		1961		50/1			sample	er bounci	ng on co	bble
		- 28 -	1									
		_ 29 -	-									
. 	Old Alluviual Fan Deposits (Qof) SAND with Silt (SP-SM), orangish brown, very dense,		5	I.E		21						
	slightly moist, manganese oxide staining, gravel clasts.	- 31 -	м М	SPT	10	29 38		67				
<u></u> 1230.	Total depth = 31.5 feet bgs.		╞		-	30						
	Groundwater not encountered. Borehole backfilled with soil cuttings.	- 32 -										
		- 33 -										
		- 34 -										
		_ 34										
		- 35 -										
		- 36 -										
			1									
		- 37 -										
		- 38 -	1									
		- 39 -	1									
		- 40 -										
			1	1								
		- 41 -]	1								
		- 42 -		1								
		- 43 -		1								
		- 43 -	1	1								
		- 44 -	1	1								
			-									

	L	A	NGA	A N		Log	of E	Boring			В-	40			Sheet	1	of	1
F	Project	t					Pr	oject No.										
╞	ocatio	n	Proposed Athletic C	omplex			Fle	evation a	nd Da		700	11410	1					
	_000010		Claremont Mckenna	a College				ovation a			App	rox. 12	250 (fe	et. N	ISL)			
Ī	Drilling	Compa	ny	0			Da	ite Starte	d						Finished			
	Drillina	Equipm	2R Drilling				Cc	mpletion	Dept		0/11	/2022		Rock	Depth	10/1	1/2022	
ľ	2g	Ederbu	SIMCO Truck-moun	ited Drill Rig				pietieti	Dobr			16.5 ft			Dobar		-	
\$	Size ar	nd Type	of Bit 8-inch O.D. Hollow S	Stom Augor			Nu	mber of	Samp	les	Distu	urbed	3	Ur	ndisturbed	2	Core	
ſ	Casing	Diamet	er (in) -		Ca	asing Depth (ft)	w	ater Leve	l (ft.)		First		-		ompletion	-	24 HR.	-
(Casing	Hamm	er_	Weight (lbs)	-	Drop (in) -	Dr	illing Fore	eman									
(Sample	er	2-inch O.D. SPT Sp	lit-Barrel, 2.5-inch I.D	D. Ca	Mod	Fie	eld Engine	eer	Ac	driar	1						
ę	Sample	er Hamr	^{ner} Automatic	Weight (lbs)	40	Drop (in) 30		5		A.	Nie	blas						
AN	RIAL OL	Elev.						Depth	-			mple D		alua	_	Rem	arks	
Report: Log - LANGAN	MATERIAL SYMBOL	(ft)		Sample Description	on			Scale	Number	Type	(in)	Penetr. resist BL/6in	(Blov	vs/ft)		ing Fluid, D)epth of Casing g Resistance, e	
- 60	-	+1250.0	Undocumented A	rtificial Fill (afu)				0 -	z	-	Ľ.	<u>т</u> – п	10 20	30 40			,,.	,
or: L			Silty SAND (SM),	grayish brown, dry, f	ine to	medium sand,		Ë, i	1									
Reg			occasional fine gra	avel.				- 1 -	-									
								- 2 -										
1/23/2023 11:02:39 AM			Madium danaa						1									
1:0			Medium dense.					- 3 -		SPT	18	6 7						
/2023		÷						E	s L	SPT	÷	7	14•					
1/23								- 4 -										
E E		±1245.0																
- GINT.GPJ			Old Alluviual Fan	Deposits (Qof) Gravel (SM), dark redo	— — - dich k			- 5 -				25				10.0% = 127.9 p		
			moist, fine to med		usni	brown, dense,		6 -	S-2	R	18	29		53	3	127.0 p		
ICAL/GINTLOGS/700114101								Ē	-			24			1			
001								- 7 -										
CSU			Medium dense.					Ē	1	E		4			% Pa	issing #2	200 = 41	
Ę.								- 8 -	S.3	SPT	18	6						
								- 9 -				8						
Б	╌┟╴╏	.±1240.0	Sandy SILT (ML)	reddish brown, very	stiff		i —	- 10 -	_			45			WC =	= 10.7%		
E E E O			gravel.		Sun,		•	E	S-4	СR	18	15 18			DD =	123.4 p		
NE								- 11 -	- N		-	25		43		olidatior t Shear		
CIPL								E 10										
BIS								- 12 -	-									
ATA/								- 13 -	1									
С С									1									
ШО								- 14 -	1									
11/PF								E										
1410	-'	±1235.0		P-SM), dark reddish				- 15 -		E		8						
1001			slightly moist, fine	to coarse sand, som	ne gra	avel.		10	S-5	SPT	18	12						
ATA1		±1233.5						- 16 -	<u> </u>			28		40				
۵Ŋ			Total depth = 16.5 Groundwater not e					- 17 -	1									
TANF				d with soil cuttings.				Ē	1									
M/DA								- 18 -	1									
00.								È.	1									
VILANGAN.COMIDATAVIRVIDATA1/700114101/PROJECT DATAV_DISCIPLINE/GEOTECHN								- 19 -	1									
//LAI								E 20 -										

L	A	NGA	\/		Log	of E	Boring			B-	41			Sheet	1	of	1
Projec	t					Pro	oject No.										
		Proposed Athletic Co	omplex							700	11410)1					
Locati	on					Ele	evation ar	nd Da				/					
Drilling	g Compa	Claremont Mckenna	College			Da	te Starte	d		Арр	rox. 1	252 (fe		SL) Finished			
	y compa	2R Drilling					te otarie	u	1	0/11	/2022	,	Date I	moned	10/11/	2022	
Drilling	g Equipm					Co	mpletion	Dept		0/11	12022	-	Rock	Depth	10/11/	2022	
		SIMCO Truck-mount	ed Drill Rig								11.5 f	t				-	
Size a	nd Type		tom Augor			Nu	mber of \$	Samp	les	Dist	urbed	2	Un	disturbed	2 C	ore	
Casing	g Diamet	8-inch O.D. Hollow S er (in)	dem Auger	Casing De	pth (ft)	Wa	ater Leve	l (ft.)		First		2	Co	mpletion	24	4 HR. V	-
Casing	g Hamme	- er_	Weight (lbs)	_ Drop (in) _		lling Fore			<u> </u>		-		<u>L</u>	- .	<u>¥</u>	-
Sampl	er	2 inch O.D. CDT Cali	t Barral 25 inch ID						A	driar	ı						
Sampl	er Hamn	2-inch O.D. SPT Spli	Weight (lbs)	Dron (in) ee	Fie	eld Engine	eer									
		Automatic	140 140) '`	30			1	A	. Nie Sa	blas mple D	ata					
Report: Log - LANGAN	Elev.		0 I D · //				Depth	ē	0				alue		Remai		
MATE SYM	(ft)		Sample Descriptio	n			Scale	Number	Type	(in)	Penetr. resist BL/6in	(Blov	/s/ft)	(Drilling I Fluid Loss,	Fluid, Dep Drilling Re	th of Casing, esistance, et	ic.)
\$ b U	+1252.0 +1251.8	Dirt lot minor vege	tation, scattered cob	hles			_ 0 _	z		ш. —	<u>ш</u> ш	10 20	30 40		•		,
He F		Undocumented Ar		5103.													
Repo		Silty SAND with Gr	avel (SM), grayish br	own, slight	ly moist.		- 1 -	-									
	P							1									
O A							2 -										
1/23/2023 11:02:40 AM		Loose.						1			6			WC = 2.	.3%		
÷		200001					- 3 -	۲- ۲-	К	18	7			DD = 11			
202								S			6	13•		Direct S	hear le	est.	
1/23							- 4 -	_			0	$+ \setminus$					
								-									
	±1247.0	SAND with Silt and	Gravel (SP-SM), gra	yish brown	n, dense,		- 5 -	-	E		4		N				
- GINT.GPJ	4	dry to slightly moist	t. , , , , , , , , , , , , , , , , , , ,	,	, ,			S-2	SPT	12	18						
							- 6 -	- N	S		27		45				
1410								-									
<u>5</u>							- 7 -										
Sol	±1244.5	Old Alluviual Fan I	Deposits (Qof)					-			15			WC = 3.			
		Silty SAND (SM), c	orangish brown, very	dense, slig	htly		- 8 -	S-3	СR	16	27			DD = 11	9.1 pcf		
ND		moist, manganese	oxide staining, occas	sional line g	gravei.						50/4"		50/4"				
US :							- 9 -	1									
Į.																	
		Slightly moist to me	oist.				- 10 -		E		20						
8								\$ 7	SPT	18	24						
Ű	+1240.5						- 11 -]"	ľΕ		30		54	1			
		Total depth = 11.5					- 10										
DIS		Groundwater not en Borehole backfilled					- 12 -	1									
TA		Dorenole backlined	i with son cuttings.														
1D4							- 13 -	-									
JEC.							- 14 -										
SR0							- 14										
101							- 15 -	1									
1114							- 0 -	1									
1/70(- 16 -	1									
ATA.								1									
ÚV.							- 17 -]									
ANF								1									
DAT							- 18 -	1									
MO								1									
WLANGAN.COMIDATA/ITVIDATA/1700114101/PROJECT DATA_DISCIPLINE/GEOTECHNICAL/GINTL/OGS/700114101							- 19 -	1									
ANG								1									
							- 20 -	1									

	NGAN	of Borir				B -4	42		-	Sheet	1	of	
Project		Project	No.										
ocation	Proposed Athletic Complex	Elevatio	on and	d Dat		700	11410)1					_
	Claremont Mckenna College					App	rox 1	253 (fe	eet M	SL)			
Drilling Compa		Date St	arted			<u> </u>				Finished			
	2R Drilling					0/18	/2022	2	<u> </u>	<u> </u>	10/1	8/2022	_
Drilling Equipm		Comple	tion L	Jeptr	1		11 5 54		Rock	Depth			
Size and Type	CME-75 Truck-mounted Drill Rig of Bit	Number	e of C				11.5 ft urbed	L	Un	disturbed		- Core	
Casing Diamet	8-inch O.D. Hollow Stem Auger er (in) Casing Depth (ft)	number	01 58	ampi		Firet		2	C	mpletion	2	24 HR.	-
asing Diamet	- Casing Depth (it)	Water L	evel	(ft.)		First		-			-	<u>1</u> 24 HK.	-
Casing Hamme	erWeight (lbs)Drop (in)	Drilling I	Foren	nan									
Sampler	2-inch O.D. SPT Split-Barrel, 2.5-inch I.D. Cal Mod	Field Er	nainee	ər	Je	orge	9						
Sampler Hamm			.9.100		А	Nie	blas						
		•				Sa	mple D			_	Pom	narks	
Elev. (ft)	Sample Description		pth ale	Number	Type	in) č	Penetr. resist BL/6in	N-V (Blo	′alue ws/ft)	(Drilling	g Fluid, D	Depth of Casing,	
≝ ⁶⁰ +1253.0		(NU	ι) Γ	жॅ́	Pe BL	10 20	30 40	Fluid Los	s, Drilling	g Resistance, etc	.)
	<u>Undocumented Artificial Fill (afu)</u> Silty SAND with Gravel (SM), brown.	Ē											
		<u> </u>	1 -										
		È											
+1250.5		- 2	2 -										
	Silty SAND with Gravel (SM), grayish brown to orangish	t E ,	3 -		. 8		4						
	brown, dense, slightly moist.	Ē	, -	S-1	SPT	6	14		42 <				
		Ē 4	1 -				28						
		Ē	-										
	Brown, very dense, dry, concrete clasts.	- 5	5 🕂	S-2	CR	5	50/5"			WC =			
	,,,	E	1						50/5"	DD = 1	17.2 p	ocf	
		- e	5 -										
		= 7	, _										
. ±1245.5		È '	' <u>-</u>										
	Old Alluviual Fan Deposits (Qof) Silty SAND (SM), orangish brown, medium dense, moist.	<u></u> - ε	3 –	e.	SPT		7						
		-	=	S-3	R E	18	7 9	16					
		- e	9 🕂		- 6		5	$ \rangle$					
		Ē	Ę										
	Dense.	F 1	0 +				10]		WC = DD = 1	14.5%	ocf	
		- 1	1 –	S-4	CR	18	15		2	% Pas	sing #2	200 = 44	
+1241.5	Total depth = 11.5 feet bgs.	Ę .					17						
	Groundwater not encountered.	- 1	2 🚽										
	Borehole backfilled with soil cuttings.	Ē	Ē										
		- 1	3 -										
		Ē 1	4 –										
		È '	' =										
		- 1	5 –										
		E	=										
		<u>-</u> 1	6 -										
		Ē	,]										
		- 1 -	1										
		- 1	8 –										
		Ē											
		- 1	9 🚽										
		F	_							1			

		f BoringB-43 Sheet 1	of 3
Project		Project No.	
ocation	Proposed Athletic Complex	700114101 Elevation and Datum	
	Claremont Mckenna College	Approx. 1292 (feet, MSL)	
Drilling Com	pany	Date Started Date Finished	
Drilling Equi	2R Drilling	10/21/2022 10/2 Completion Depth Rock Depth	1/2022
ուսուց եզալ	CME-75 Truck-mounted Drill Rig	52 ft	-
Size and Typ	be of Bit	Number of Samples Disturbed Undisturbed	Core
Casing Diam	8-inch O.D. Hollow Stem Auger eter (in) Casing Depth (ft)	First Completion	- 24 HR.
	mer Weight (lbs) Drop (in)	Water Level (ft.)	- <u>¥</u> -
Casing Ham		Nick	
•	2-inch O.D. SPT Split-Barrel	Field Engineer	
Sampler Har	nmer Automatic Weight (lbs) 140 Drop (in) 30	A. Nieblas	
Ele	v. o h D i r	Depth Depth	
BATE (fl	Sample Description	Scale	epth of Casing, Resistance, etc.)
+1292	Undocumented Inert Debris Fill(alf)		,
	Silty SAND with Gravel & Cobbles (SM), brown, dry.		
		Heavy auger	chatter; slow
•			
±128	7.0	- 5 - Bock fragmer	
	Gravelly Silty SAND (SM), brown, dense, slightly moist.		nts stuck in e; poor sample
		$- 6 - 0$ \circ \circ $=$ $+ 16$ 30 recovery.	· · ·
		10 - 10 - No sample re	ecovery.
		15 No sample re	covery.
		10 + 10 + 10 10 + 10 12 + 10 1	
		- 19 -	
+127			

oject		Proposed Athletic Complex	Project No.			7001	1410	1						
ocation		Toposed Atmetic Complex	Elevation ar	nd Da		7001	1410	1						
		Claremont Mckenna College				Appr	юх. 12	292 (feet,	MS	SL)			
OL	Elev.		Dopth	5			nple Da		Value			Remar	ks	
MATERIAL SYMBOL	(ft)	Sample Description	Depth Scale	Number	Type	(in)	Penetr. resist BL/6in	(Bl	Value ows/ft))	(Drilling Fluid Loss	Fluid, Dept	h of Casing, sistance, etc	c.)
- +	1272.0	Gravelly Silty SAND (SM), brown, medium dense, slightly	20	z			5	10 2	20 30 4	10	Poor sa	mple ree	covery;	
		moist to moist.	E at	S-4	SPT	9	5				Cobble shoe.	stuck in	sampler	
			- 21 -				9	14						
			_ 22 -											
			- 23 -											
			- 24 -											
			E											
÷,	1267.0	Silty SAND with Gravel (SM), brown, medium dense, moist,	- 25 -		Ē		10							
:		some asphalt, manganese oxide staining, gravel.	- 26 -	S-5	SPT	9	19	2	28					
·]:			E	-	E		9							
			- 27 -											
			- 28 -											
			E											
: : ·			- 29 -											
		Denne to annuclul bound for annual alternation both	- 30 -											
		Brown to orangish brown, fine gravel, glass and asphalt fragments.		8-0 -0-5	FE	12	7 9							
			- 31 -	ن ک	SPT	-	10	19						
			- 32 -						$ \rangle$					
										Ν				
			- 33 -											
			- 34 -											
•			- 35 -	S-7	SPT	0	50/2"		50/	2"•	No sam	ple reco	very. ng on col	
:			- 36 -								Sample	er bounci	ng on co	bbl
· : :														
			- 37 -											
] :			- 38 -											
: • :			Ē											
			- 39 -											
t t	1252.0		- 40 -	1		\square								
:]!:		Silty SAND with asphalt (SM), dark brown, medium dense, moist.		φ	Ы	10	5 5							
: `			- 41 -	S	SPT		11	16 <						
			- 42 -						$ \rangle$					
										Ν				
			- 43 -								Cobble	; slow dr	illing.	
			- 44 -											
	1		+	1										

Project		Proposed Athletic Complex	Project No.			70	011410	1					
ocation			Elevation ar	id Da	itum	10	011410	1					
		Claremont Mckenna College				Ap	prox. 12	292 (fe	et, MS	SL)			
Ч,			•			S	ample D				Rema	rke	
SYN	Elev. (ft) 1247.0	Sample Description	Depth Scale	Number	Type	Recov.	Penetr. resist BL/6in	N-Va (Blow: 10 20 3	s/ft)	(Drillin Fluid Los	g Fluid, Dep ss, Drilling R	oth of Casing esistance, e], etc.)
	1247.0	Silty SAND with asphalt (SM), dark brown to orangish brown, medium dense, moist, asphalt and fabric debris,		S-9	SPT				50/5"•	,			
		some oxidized metal.	- 46 -										
			- 47 -										
			- 48 -	-									
•			- 49 -										
			E	S-10	SPT	3	50/5"		50/5"	No sar	mple rec	overy.	
			- 51 -							Refusa	al on cob	ble/bould	der.
₩J•]+	1240.0	Total depth = 52.0 feet bgs. Groundwater not encountered.	- 52 -										
		Borehole backfilled with soil cuttings.	- 53 -										
			- 54 -										
			- 55 -										
			- 56 -										
			- 57 -										
			- 58 -										
			- 59 -										
			60 -										
			- 61 -										
			62 -										
			$\begin{array}{c} 60 \\ 61 \\ 62 \\ 63 \\ 64 \\ 65 \\ 66 \\ 67 \\ 68 \\ 69 \\ 69 \\ 69 \\ 69 \\ 69 \\ 69 \\ 69$										
			64 -										
			65 -										
			66 -										
			67 -										
			68 -										
			- 69 - -										

LA		4/V	Log	of E	Boring			B-4	14		_	Sheet	1	of	3
Project				Pro	oject No.										
Lesstin	Proposed Athletic (Complex			water -			7001	1410	1					
Location	Cloroment Maker			Ele	evation an	ia Da		A	· · · · ·	200 /F	not N				
Drilling Comp	Claremont Mckenn			Da	te Starteo	ł		Appr	0X. 1	289 (fe		(ISL) Finished			
	2R Drilling						1	0/21	/2022				10/2 ⁻	1/2022	
Drilling Equip	ment			Co	mpletion	Depth	n				Rock	Depth			
0. 17	CME-75 Truck-mou	unted Drill Rig						D ' 1	51 ft				T	-	
Size and Typ	e of Bit 8-inch O.D. Hollow	Stem Auger		Nu	mber of S	Samp	les	Distu	rbed	5	Ur	ndisturbed	1	Core	-
Casing Diam	eter (in) -		Casing Depth (ft) -		ater Level			First 		-		ompletion		24 HR. 	-
Casing Hamr	ner	Weight (lbs)	Drop (in) -	Dri	illing Fore	man									
Sampler	2-inch O.D. SPT S	plit-Barrel		Fie	eld Engine	or	Ni	ck							
Sampler Harr		Weight (lbs) 140	Drop (in) 30	-1"			Δ	Nieł	nlae						
z	Automatic	140	50						nple D	ata					
- LANGAN MATERIAL (ft) +1269 +1269		Sample Description			Depth	ber	ЭС		etr. ist 3in	N-V	alue	(Drilli	Rema	arks epth of Casing,	
LEAN (ft) (ft) - LEAN (ft)					Scale	Number	Type	Rec (j	Penetr. resist BL/6in	(BIO 10,20	ws/ft) 30 40	Fluid Lo	oss, Drilling	Resistance, et	c.)
	Undocumented I	Inert Debris Fill(alf)			- 0 -	-					00 40				
Keport:	Silty SAND with scattered vegeta	Gravel and Cobbles (SM	I), brown,												
	scallered vegela	lion al sunace.			- 1 - -	1						Chem	nical Tes	t.	
AM															
4					- 2 -	1									
1:02:47															
					- 3 -	1									
1/23/2023															
					- 4 -	1									
					5 -										
GINT.GPJ															
					- 6 -										
1141															
					- 7 -										
					- 8 -										
					- 9 -										
풀					E 10 -										
ËI•IIII	Loose, moist, so	me asphalt and brick.			- 10 -		SPT		5						
					- 11 -	<u>.</u>	SPT	15	4	7.					
≝i: : .T:					- 11 -				3	7•					
50. €.					- 12 -	1									
ĕ l : I						1									
ATA I					- 13 -	1									
WANGAN COMIDATAIRY/DATA1700114101/PROJECT DATA/ DISCIPLINEGEOTECHNICAL/GINTL 0GS7700114101															
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0114					È '' :	1									
					- 16 -	1									
ATA ATA					Ē	1									
					- 17 -	1									
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					- 18 -	1									
						1									
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					E 3										
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oject	Proposed Athletic Complex	Project No.			7001	1410 [.]	1					
ocation	Proposed Athletic Complex	Elevation an	d Da	tum	7001	11410	I					
	Claremont Mckenna College				Appr	тох. 12	289 (f	feet, M	ISL)			
					Sar	nple Da	ata					
Ele (ft t1200	v. Sample Description	Depth Scale	ber	be		Penetr. resist BL/6in	N-\ (Blc	Value ows/ft)	(Dri	Rema illing Fluid. De	arks pth of Casing.	
HAN W +1269	, .0		Number	Type	Recov. (in)	Pen BL/	•	0 30 40	Fluid I	illing Fluid, De Loss, Drilling F	Resistance, et	ic.)
	Silty SAND with Gravel (SM), brown, dense, slightly moist some asphalt clasts.	t, <u></u> 20 <u></u>		I. E		22						
	some asphalt clasts.	- 21 -	S-2	SPT	9	24		43				
: T:			<u> </u>			19						
		- 22 -										
			1									
		- 23 -	1									
		- 24 -	1						1			
			1						1			
		_ 25 _	1						1			
			1									
		- 26 -	1									
		- 27 -	1						1			
			1						1			
		- 28 -	1						1			
			1									
		- 29 -	1									
		- 30 -										
	Brown, medium dense, dry to slightly moist, abundant gravel, concrete clasts.		6	ĿĒ		37						
	g,	- 31 -	S-3	SPT	10	10 11	21	$\left\{ \left \right\rangle \right\}$				
			-									
		- 32 -										
		- 33 -	1									
: •												
		- 34 -	1									
									Y			
		- 35 -	1									
		- 36 -	1									
		- 37 -							Hea	vy auger c	hatter; slo	w
									drilliı	ng.		
	Old Alluviual Fan Deposits (Qof) SAND with Silt & Gravel (SP-SM), brown to orangish	- 30 -							1			
	brown, slightly moist.	- 39 -										
									1			
	Very dense, weathered fine gravel.	- 40 -	4	FE		15			1			
		- 41 -	S-4	SPT	18	50/6"		50/6"				
		41 -						30/6	Í			
		42 -							1			
		- 43 -							1			
		- 44 -							1			
		- 44 -	{									

roject	Proposed Athletic Complex	Project No.			700	11410	1					
ocation		Elevation ar	nd Da	atum			•					
	Claremont Mckenna College				App	orox. 12	289 (feet	, MS	SL)			
L L				-		ample Da				Remar	ke	
Elev (ft)	Sample Description	Depth Scale	Number	Type	i) čo	Penetr. resist BL/6in	N-Value (Blows/f	e it)	(Drilling	g Fluid, Dept s, Drilling Re	h of Casing	,
≥ ⁰⁰ +1244.0		45 —	Ž			-	10 20 30	40	Fluid Los	s, Drilling Re	esistance, et	C.)
	SAND with Silt & Gravel (SP-SM), orangish brown, very dense, slightly moist, weathered gravel clasts.		S-5	SPT	18	12 33						
		- 46 -	s S	IS		50/6"						
		- 47 -					50	0/6"•				
		- 4/										
		- 48 -										
		- 49 -										
±1239.0		- 50 -	1						WC	7 00/		
	Silty SAND with Gravel (SM), orangish brown, very dense, moist.		S-6	CR	9	12 50/4"			WC = 1 DD = 1	7.2% 15.6 pcf		
1238.0	Total depth = 51.0 feet bgs.	- 51 -	-				50	0/4"•				
	Groundwater not encountered. Borehole backfilled with soil cuttings.	- 52 -										
		- 53 -										
		- 54 -										
		- 55 -										
		- 56 -										
		- 57 -										
		- 58 -										
		- 59 -										
		60 -										
		- 61 -										
		- 62 -	1									
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		64 -										
		65 -	1									
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		= :										
		67 -	1									
		- 68 -	1									
			1									
		- 69 -	1									
		F	-									

			Boring			B-	45		_		Sheet 1	of	3
Project	Proposed Athletic Complex	Pr	oject No.			700	11410	1					
ocation		Ele	evation an	d Da	tum			-					
rilling Com	Claremont Mckenna College		ate Starteo	4		Арр	rox. 12	287 (SL) ïnished		
	2R Drilling			4	1	0/21	/2022			ale i		21/2022	
rilling Equip		Co	mpletion	Deptl		0/2			R	ock E	Depth		
ize and Typ	CME-75 Truck-mounted Drill Rig	_				Diet	46 ft urbed			Line	listurbed	- Core	
	8-inch O.D. Hollow Stem Auger	Nu	Imber of S	Samp	les			6	6		-		-
Casing Diam	Leter (in) Casing Depth (ft)	w	ater Level	(ft.)		First		-		Con	npletion	24 HR.	_
asing Ham	mer Weight (lbs) Drop (in)	Dr	illing Fore	man		<u>-</u>					-		
ampler	2-inch O.D. SPT Split-Barrel		lat En año a		Je	org	e						
ampler Har		F⊮	eld Engine	er	N	Ch	anta						
7					IN.		mple D	ata			Dem		
MATERIAL SYMBOL (ft			Depth Scale	Number	Type	vov.	Penetr. resist BL/6in	N- (Bl	Value ows/f	e t)	Ren (Drilling Fluid, I Fluid Loss, Drillin	າ <mark>arks</mark> Depth of Casing	g,
¥.6 (11 +1287	7.0		- 0 -	Z Z	ŕ	Ξ. Ξ	Pel Te	10 2	0 30	· .	Fluid Loss, Drillin	g Resistance, e	etc.)
	<u>Undocumented Inert Debris Fill (alf)</u> Silty SAND with Gravel (SM), dark brown, rock and cobble	,											
	clasts, scattered vegetation at surface.		- 1 -										
			- 2 -										
			- 3 -										
			E 4 -										
			- 5 -	1									
				1									
[: .			6 -								Heavy auger cobbles.	chatter on	
			E 7 -								copples.		
			- 8 -										
			<u> </u>										
			- 10 -										
	Dense, slightly moist, fine to coarse gravel, crushed cobbl	e.		_			5						
			- 11 -	ς.	SPT	18	17		34•		Heavy auger	chatter on	
				-	┝╒╡		17			\setminus	cobbles.		
			- 12 -										
			L 12										
			- 13 -										
			- 14 -										
			E -										
			- 15 -										
			- 16 -										
			- 17 -	}									
			F -	1									
			- 18 -	1									
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roject	Proposed Athletic Complex	Project No.			700	11410	1			
ocation		Elevation ar	nd Da	itum						
	Claremont Mckenna College		_			orox. 1	-	feet,	MS	L)
Elev		Depth	5			mple D		Value	_	Remarks
IT (ft)	Sample Description	Scale	Number	Type	(in)	Penetr. resist BL/6in	(Bl	ows/ft)		(Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
+1267.	Brown to dark brown, very dense, dry to slightly moist, brick	20		SPT		50/6"	10 2	0 30 4	0	Sampler bouncing on
	clasts.		-		-			50/	6"•	cobbles.
		- 21 -	1							Heavy auger chatter on cobbles.
		- 22 -	1							
		E								
		- 23 -								
		- 24 -	1							
			1							
		- 25 -	1							
		- 26 -								
		_ 27 _	1							
			1					/		
		- 28 -	1							
		- 29 -	1							
		E						/		
	Dark brown, loose, moist, asphalt and crushed cobbles.	- 30 -		Ē		22	1 /			
		- 31 -	S-3	SPT	5	3	9			
			1			6				
		- 32 -	1				$ \rangle$			
		- 33 -					$ \rangle$			
		- 33 -						\setminus		
		- 34 -	1							
±1252.		= = =	1							
	Gravelly SAND with Silt (SP-SM), blackish brown, dense, moist, fine to coarse gravel and cobble clasts, asphalt and		1_	I.E		8				
:.::::::::::::::::::::::::::::::::::::	concrete fragments.	- 36 -	S-4	SPT	5	20		36+		
5 D			1	E	1	16		$ \rangle$		
		- 37 -	1						\mathbb{N}	
.U.		- 38 -	1							
3D. 										
·/\.o		- 39 -								
	 	- 40 -	1							% Descine #200 = 20
	Young Alluviual Fan Deposits (Qya) Silty SAND (SM), brown to orangish brown, dense, slightly		ņ		18	22				% Passing #200 = 30
	moist, manganese oxide staining, gravel.	41 -	S-5	SPT	-	24 36			60 -	
					1	-	1			
		- 42 -								
		- 43 -								
		È, i								
		- 44 -	4	1	1	1				

roject		Proposed Athletic Complex	Project No.			700	11110	1				
ocation	1	Proposed Athletic Complex	Elevation a	nd Da			11410 [.]	1				
		Claremont Mckenna College				Арр	rox. 12	287 (feet, I	MSL)			
ЧЧ					1		mple Da		_	Rema	arke	
MATERIAL SYMBOL	Elev. (ft) 1242.0	Sample Description	Depth Scale	Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Fluid I	lling Fluid, De _oss, Drilling F	pth of Casino	j, etc.)
	1241.0	Silty SAND (SM), brown to orangish brown, very dense, slightly moist, fine to coarse sand and gravel, manganese oxide staining.	45 -	8-6 S	SPT	12	40 50/6"	50/6				
		Total depth = 46.0 feet bgs. Groundwater not encountered. Borehole backfilled with soil cuttings.	- 47 -									
			- 48 -									
			- 49 -									
			- - 50 -									
			- 51 - -									
			- 52 -									
			- 53 -									
			- 54 -									
			- 55 -									
			- 56 - - - 57 -									
			- 58 -									
			- 59 -									
			Ē									
			- 61 -									
			- 62 -									
			63 -									
			- 64 -									
			65 -									
			- 66 -									
			- 67 -									
			- 68 - - - 69 -									
			_ 09 _	1								

LA	NGA	4/V	Log	of E	Boring			B-46	6			Sheet	1	of	3
Project				Pr	oject No.										
Location	Proposed Athletic C	Complex		Ele	evation ar	id Da		700114	4101						
	Claremont Mckenna	a College		_			/	Approx	k. 1292	(fe	et, N	ISL)			
Drilling Comp	2R Drilling			Da	ate Starteo	1	1(0/21/2	022		Date	Finished	10/2	1/2022	
Drilling Equip	oment			Co	ompletion	Depth		0/21/2	022		Rock	Depth	10/2	. 1/2022	
	CME-75 Truck-mou	nted Drill Rig							.5 ft					-	
Size and Typ	e of Bit 8-inch O.D. Hollow	Stem Auger		Nu	umber of S	Samp	les	Disturb	ed	6	Ur	ndisturbed	-	Core	-
Casing Diam			Casing Depth (ft) -		ater Level			First 		-		ompletion	-	24 HR. 	-
Casing Hamr	mer	Weight (lbs)	Drop (in)	Dr	illing Fore	man									
Sampler	2-inch O.D. SPT Sp	lit-Barrel		Fie	eld Engine	er	Je	orge							
Sampler Ham		Weight (lbs) 140	Drop (in) 30		0		N.	Ghan	ta						
			·		Dauth				le Data				Rem	arks	
		Sample Description			Depth Scale	Number	Type	Recov. (in) Penetr.	esist L/6in	N-Va Blow		(Drillin	g Fluid, D	epth of Casing Resistance, el	, (c)
- <u>≥</u> +1292		nert Debris Fill (alf)			<u> </u>	ž		<u> </u>	<u>- m</u> 10	20	30 40		ss, Driinig		
Report: Log	Silty SAND with C	Gravel (SM), dark brown	, rock and cobble												
∰ · • ·] ∰	clasts, scattered v	vegetation at surface.			- 1 -										
227					- 2 -							Heavy cobble		chatter on	
11:02 10:12					- 3 -							000010	.0.		
1/23/					- 4 -										
GINT.GPJ					5 -										
					6 -										
					- 7 -										
Ŏ Ĕ					8 -										
					- 9 -										
년 · · · · · · · · · · · · · · · · · · ·					- 10 -										
Ēġ∳ · · · · ·	dry, concrete clas	Bravel (SM), grayish bro ts.	wn, very dense,			ς γ	SPT	ഗ 19 50)/2"		50/2'				
					- 11 -				_		50/2		er boui	ncing on co	bble.
														0	
					- 12 -										
					- 13 -										
ji i i i					- 14 -	1									
					- 15 -	1									
					- 16										
					- 16 -										
					- 17 -							/			
					E E										
					- 18 -	1									
WANGAN COMUDATAITVI700114101/PROJECT DATA/ DISCIPLINEGEOTE CHNICAL/GINTLOGS/700114101					- 19 -										
¶ 	0				E 20 -	1				/					

Project		Proposed Athletic Complex	Project No.			70	01141	01						
ocatior	ı		Elevation ar	nd Da	atum		51141	01						
		Claremont Mckenna College				Ap	prox. ⁻	1292	(feet, I	MSL)				
PLA	_		Danth				ample I					Rema	rks	
MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Number	Type	tecov.	Penetr. resist		I-Value Blows/ft)	E F II	(Drilling	Fluid, Dep	th of Casing esistance, e	l, etc.)
- 	+1272.0	Clayey SAND with Gravel (SC), dark brown, loose, slightly	20	z	F		9	10	20 30 40	0		, .		
		Clayey SAND with Gravel (SC), dark brown, loose, slightly moist, rock and cobble clasts, trace asphalt fragments.		S-2	SPT	0								
			- 21 -				4	9						
			- 22 -						\setminus					
									$\left \right $					
			- 23 -						$ \rangle $					
			_ 24 _											
										\backslash				
			- 25 -							Y				
			_ 26 -											
			- 27 -											
			- 28 -											
			- 29 -											
	1262.0		30 -			_								
		dense, slightly moist, asphalt, fine to coarse gravel.		S-3	SPT	9	14 50/3		50/3	3"				
			- 31 -											
			- 32 -											
			- 33 -											
			- 34 -											
			- 35 -	1	I.E		10			/ C	obble	stuck in oor reco	sample	r
			_ 36 -	S-4	SPT	3	24 6		30		, p			
				-	╞	1	0							
			- 37 -											
			- 38 -											
: •	.			1										
			- 39 -											
	1252.0	Old Alluviual Fan Deposits (Qof)	- 40 -	-	╞	-	13	-						
		Old Alluviual Fan Deposits (Qof) Silty Clayey SAND with Gravel (SC-SM), brown to orangish brown, medium dense, slightly moist, fine to coarse sand.		S-5	SPT	18								
311			- 41 -	Ľ	Ē		16		26 •					
3.			42 -											
311				1										
31			- 43 -											
			- 44 -	1										
	1			1										

roject		Proposed Athletic Complex	Projec	t ino.			700	11410 [.]	1					
ocation	1	r roposou Athletic Complex	Elevat	ion an	d Da	tum	100	11410	1					
		Claremont Mckenna College					Арр	rox. 12	292 (fe	eet, M	SL)			
OL	Elev.			lonth	5			mple Da		alue		Rema	rks	
MATERIAL SYMBOL	(ft)	Sample Description		epth Scale	Number	Type	Recov (in)	Penetr. resist BL/6in	(Blov	vs/ft)	(Drilling Fluid Los	g Fluid, Dep s, Drilling R	th of Casing esistance, e	l, tc.)
	1247.0 1246.5	Silty SAND with Gravel (SM), brown to orangish brown,		45 —		SPT		50/6"	10 20	30 40	Sampl		ing on co	
	1240.3	very dense, slightly moist, fine to coarse sand and gravel. Total depth = 45.5 feet bgs.	-Æ	46 -						50/6"	•			
		Groundwater not encountered.	E											
		Borehole backfilled with soil cuttings.	-	47 –										
			Ē	48 -										
				-										
			F	49 -										
			Ē	50 -										
			F											
			Ē	51 -										
			-	52 -										
			Ē	-										
			F	53 -										
			Ē	54 -										
			Ē	55 -										
			- -	56 -										
				- 57 —										
			F											
				58 -										
				59 —										
			Ē	-										
			Ē	60 -										
			E F	61 -										
			-	-										
			F	62 -										
			Ē	63 -										
				64										
			Ē	64 -										
			F	65 -										
				66 -										
			F	-										
				67 –										
			Ē	68 -										
			F	-										
			Ē	69 -										
			F	70 —										

LA	NG/	4/V	Log	of E	Boring			B-4	7			Sh	neet	1	of	3
Project				Pro	oject No.											
Location	Proposed Athletic (Complex		Ek	evation an	d Da		7001	1410	1						
Location	Claremont Mckenn				svalion an	u Da		Δnnr	nv 19	813 (fe	ot N	MSL)	1			
Drilling Com				Da	ate Starteo	1		Лррі	JA. 10			Finis				
	2R Drilling							2/27/	2022					12/27/	2022	
Drilling Equip				Co	ompletion	Depth	ר	_			Rocl	k Dep	th			
Size and Typ	CME-75 Truck-mou be of Bit	unted Drill Rig						5 Distur	<u>1.5 ft</u> bed		lu	Indisti	urbed	C	- Core	
	8-inch O.D. Hollow	Stem Auger		Nu	Imber of S	Sampl	les		200	6				-		-
Casing Diam	eter (in) -		Casing Depth (ft)	Wa	ater Level	(ft.)		First		-		omple	etion		4 HR. V	-
Casing Ham	mer	Weight (lbs)	Drop (in)	Dri	illing Fore	man						_			_	
Sampler	2-inch O.D. SPT S	plit-Barrel		Fie	eld Engine	or	Ni	ck								
Sampler Har		Weight (lbs) 140	Drop (in) 30				Δ	Nieb	las							
	Automatic	140	50						nple Da	ata						
Ele SYMBOL (ft		Sample Description	n		Depth Scale	ber	be	:00.	eu. iist 6in	N-V (Blo)	alue vs/ft)				rKS oth of Casing	1.
HAN (ft HAN +1313						Number	Type	Recov.	BL/	10 20		, F	Fluid Loss, D	Drilling R	esistance, e	etc.)
	Undocumented I	Inert Debris Fill (alf)														
	Silty SAND with C	Gravel and Cobbles (SM etation, small boulders.	1), brown, slightly													
	inolot, miller vog				- 1 -											
					- 2 -											
					- 3 -											
±1309					E, E											
	Gravelly SAND w	vith Silt (SP-SM), brown	and dark brown.										Heavy au sampler b	iger ch	hatter;	bblo
												3	ampier L	Jound		JUDIE.
					5 -											
					=											
					6 -											
					- 7 -											
					- 8 -											
					È o E											
					- 9 -											
					= 10 =											
					- 10 -											
					= =											
					- 11 -											
					- 12 -											
					- 12											
					- 13 -											
					- 14 -											
					- 14											
±1298					- 15 -											
	Silty SAND with 0	Gravel (SM), brown, ver	y dense, slightly			S-1	SPT	9	5			S	Sampler I	bounc	ing on co	obble.
	moist, medium sa	and and gravel.			- 16 -	S	<u>s</u> F	-	50/5"		50/5					
					= 10 =											
					- 17 -	1										
					⊧ '′ ∃											
					- 18 -	1										
					+ '° -											
					- 19 -	1										
	0				F F	1										

oject			Project No.											
cation	1	Proposed Athletic Complex	Elevation a	nd Da		700	11410	1						
oation		Claremont Mckenna College	Lievation a			App	rox. 13	313 (feet	MSI	1)			
				-			mple D	-			-,			
MATERIAL SYMBOL	Elev.	Sample Description	Depth	Der	e				Value		(Deillin -	Rema	ks	
SYN +	(ft) 1293.0	Sample Description	Scale	Number	Type	Reco	Penetr. resist BL/6in	(BI	ows/ft) 20 30 4		(Drilling Fluid Los	s, Drilling R	th of Casing esistance, e	, tc.)
	1200.0	Clayey SAND with Gravel (SC), grayish brown, moist.	20 -	-										
			- 21 -	1										
///				1										
			- 22 -	1										
///			-	1										
			- 23 -	1										
///			- 24 -	1						1				
				1										
44	1288.0	Silty SAND with Gravel (SM), brown, dense, slightly moist.		1			9							
		,,	Ē	S-2	SPT	10	10							
			- 26 -	Ľ			22		32					
]	Orevel aired brief, else to	- 27 -	1										
		Gravel-sized brick clasts.	F	-										
			- 28 -	-										
				-										
			- 29 -	1										
			- 30 -	=										
			-	=										
			- 31 -	-										
				-										
			- 32 -	-										
			- 33 -	-										
			-	1										
			- 34 - E	1										
±	1278.0													
		Silty to Clayey SAND with Gravel (SM to SC), brown, medium dense, moist, medium gravel.		- - - -	SPT		6							
			- 36 -	S-3	I SF	10	8 13	21	+					
				1										
///			- 37 -	-										
///			- 38 -	=										
			F	-										
//			- 39 -	-										
	1273.0		_E	-										
		Silty SAND with Gravel (SM), brown, medium dense, moist, fine gravel.	- 40 - E		SPT		8							
]		41 -	S4	SP	5	5 °	13						
				1			8							
			- 42 -	1										
]		- 43 -	1										
				1										
			- 44 -	1										
	1		E	-										

roject	Proposed Athletic Complex	Project No.			70011	4101						
ocation		Elevation and	d Da	tum	, 0011							
	Claremont Mckenna College				Appro	x. 13	13 (fee	ət, M	SL)			
4		'				ole Da	ta			Daire	rlea	
Elev. (ft)	Sample Description	Depth Scale	Number	Type	Recov. (in) Penetr.	sist /6in	N-Va (Blows	lue s/ft)	(Drillin	Rema g Fluid, Dep ss, Drilling R	FKS oth of Casin	g,
≨ິດ (ແ) +1268.0						ВГ	10 20 3		Fluid Los	s, Drilling R	esistance,	etc.)
	Slightly moist.	E 3	ы		1	8						
		46 -	S-5	SPT	۳ ۱	5 7	22					
						<u>'</u>						
		- 47 -						\mathbb{N}				
		- 48 -						$ \rangle$				
		- 49 -										
	Very dense, moist.	- 50 - 			7				No sa	mple rec	overy.	
		- 51 -	S-6	SPT	0	40		68	ļ			
+1261.5	5 Total depth = 51.5 feet bgs.			ĻЕ	2	8						
	Groundwater not encountered.	- 52 -										
	Borehole backfilled with soil cuttings.											
		- 53 -										
		_ 54 _										
		- 56 -										
		- 57 -										
		- 58 -										
		- 59 -										
		60 -										
		- 61 -										
		62 -										
		F =										
		63 -										
		64										
		- 65 -										
		66 -										
		67										
		68 -										
		- 69 -										
		F_ 70 –				1						

			Boring			B-	48			Sheet 1	of	2
Project		Pro	oject No.									
ocation	Proposed Athletic Complex	Ele	evation an	d Da		700	11410	1				
	Claremont Mckenna College					App	rox. 1:	303 (fe	et. M	SL)		
Drilling Comp	any	Da	te Starteo	1		<u> 12 P</u>				Finished		
Drilling Equip	2R Drilling		mpletion	Dert		2/27	/2022		Rock I		/27/2022	
Juling Equip	CME-75 Truck-mounted Drill Rig		mpieuon	Depu	1		42 ft		ROCK	Depth		
Size and Type	e of Bit	Nu	mber of S	Samn	امد	Dist	urbed		Un	disturbed	Core	
Casing Diame	8-inch O.D. Hollow Stem Auger eter (in) Casing Depth (ft)	_			100	First		3	Co	- mpletion	24 HR.	-
			ater Level	• •		∇		-			Ţ	-
Casing Hamn	nerWeight (lbs)Drop (in)	Dri	lling Fore	man		:-1/						
Sampler	2-inch O.D. SPT Split-Barrel	Fie	ld Engine	er	IN	ick						
Sampler Ham	Imer Automatic Weight (lbs) 140 Drop (in) 30		Ū		A	. Nie	blas					
			Dauth	5		Sa	mple D			Re	marks	
Elev SYMBOL (ft)			Depth Scale	Number	Type	ecov.	Penetr. resist BL/6in	N-Va (Blow	ilue s/ft)	(Drilling Fluid, Fluid Loss, Drilli		ig,
[≥] +1303.			- 0 -	ź	-	r R	<u>م - م</u>	10 20	30 40		ng Resistance,	eic.)
	Undocumented Inert Debris Fill (alf) Silty SAND with Gravel, Cobbles, and Boulders (SM),											
	brown, dry, scattered vegetation.		- 1 -	1								
			- 2 -	1								
			- 3 -	1								
				1								
	Dark brown and brown.		- 4 -	1						Heavy auge	er chatter.	
	Dark Brown and Brown.									, , ,		
			- 5 -									
			- 6 -									
			- 7 -									
			- 8 -									
			- 9 -									
			- 10 -	1								
				1								
			- 11 -	1								
				1								
			- 12 -	1								
			- 13 -	1								
				1								
			- 14 -	1								
				1								
			- 15 -									
			- 16 -									
			- 17 -									
			- 18 -	1								
				1								
			- 19 -	1								
+1283			- ₂₀ -	ł								

roject		Proposed Athletic Complex	Project No.			700	11410	1						
ocation			Elevation ar	nd Da										
		Claremont Mckenna College					rox. 1		(feet	, MS	SL)			
	Elev.		Depth	-			mple D		N-Value	_		Remar	rks	
SYN	(ft)	Sample Description	Scale	Number	Type	(in)	Penetr. resist BL/6in	(E	Blows/f	ť)	(Drilling) Fluid Los	g Fluid, Depi s, Drilling Re	th of Casing esistance, e	l, tc.)
+1	283.0	Silty to Clayey SAND with Gravel (SM to SC), brown, very	20		TE		10	10	20 30	40				
		dense, slightly moist, medium gravel.	- 21 -	s -	SPT	9	23			66				
				1	E	1	43							
			- 22 -	1										
			- 23 -											
		Cobbles.	- 23											
			- 24 -	1										
//														
			- 25 -											
			- 26 -	1										
			- 27 -											
			- 21											
			- 28 -	1										
			- 29 -											
	273.0	Silty SAND with Gravel (SM), brown, loose, moist, small	- 30 -	-	F	-	7		/					
		brick gravel clast.	- 31 -	S-2	SPT	12	4	9						
				<u> </u>	E	-	5							
			- 32 -											
			- 33 -											
			- 34 -											
			- 35 -											
											Driller	added wa	ater.	
			- 36 -	1										
			- 37 -											
			- 38 -											
			- 39 -											
				1										
		Dark brown, medium dense.	- 40 -	-	FE		9				Sampl	er hit pie	ce of me	tal.
			- 41 -	S-3	SPT	5	12	17						
				1	E	-	5							
+1	261.0	Total depth = 42 feet bgs.	42 -								Refusa	al; piece o	of metal l	brc
		Groundwater not encountered. Borehole backfilled with soil cuttings.	- 43 -								sample	er.		
		-		1										
			- 44 -											
	1		<u>+</u>	1										

LA	NL	A/V	Log	of E	Boring			B-	49		_		Sheet	1	of	2
Project				Pr	oject No.											
Location	Proposed Athletic C	omplex			evation a	nd Do		700	11410	1						
Location	Claremont Mckenna	College			evalion a	lu Da		Δnn	rox. 12	253 (fe	oct	MS	31.)			
Drilling Compa		College		Da	ite Starte	d		Арр	107. 12	200 (16			inished			
	2R Drilling							3/03	8/2023					03/03	3/2023	
Drilling Equipr				Co	mpletion	Deptl	h				Roo	ck E	Depth			
Size and Type	CME-75 Truck-mour	nted Drill Rig		-					20.5 ft urbed			Unc	listurbed		- Core	
	8-inch O.D. Hollow S	Stem Auger		Nu	mber of	Samp	les			2				2		-
Casing Diame	-		Casing Depth (ft)		ater Leve			First ∑		-	(Con	npletion -	-	24 HR. 	-
Casing Hamm	ner	Weight (lbs)	Drop (in)	Dr	illing Fore	eman	l.									
Sampler	2-inch O.D. SPT Spl	lit-Barrel		Fie	eld Engin	eer	JC	orge								
Sampler Ham	^{mer} Automatic	Weight (lbs) 140	Drop (in) 30		5		N.	. Gh	anta							
z d''					_			Sa	mple Da					Rem	arke	
Leev (ft) +1253.		Sample Description	ı		Depth Scale	Number	Type	in) :	Penetr. resist BL/6in		alue ws/ft)		(Drilling	a Fluid. De	epth of Casino	g,
4 ≥ 0 +1253.0	D				- o -	Ž	μ.	Re Re	Pe Bl	10 20	30 4	40	Fluid Los	s, Drilling	Resistance, e	etc.)
	Artificial Fill SAND with Silt and	d Gravel (SP-SM), gra	v. slightly moist.			-										
Report:	fine to coarse san	d, coarse gravel, some	cobbles.		- 1 -	1										
[™]					-	1										
Ma					- 2 -	-										
4/13/2023 1:46:39 PM					Ē.	-										
12 23					- 3 -	1										
3/20						4										
4					- 4 -	-										
					- 5 -	-										
GINT.O	Gray and brown, n fragments.	noist, fine to coarse sa	nd, some cobble		Ē	1_	SPT		18							
<u></u>	iraginento.				F 6 -	- - -	L S P I	14	38			63				
						1			25							
5	Young Alluvial Fa Silty SAND (SM),	orangish brown, slightl	v moist to moist,		- 7 -	_										
SI/7	fine to coarse san	d, fine to coarse grave	l, some cobbles.		E	-										
					- 8 -	-										
GIN					E	1										
SAL					- 9 -	-										
N N N					E	-										
					- 10 -	-			33							
					F.,	S-2	К	17	40							
Ш.					- 11 - -				50/5"		50/	5"				
					- 12 -	-										
					- 12	4										
ATA					- 13 -	-										
						1										
					- 14 -	4										
A de la companya de l					Ē	-										
WLANGAN.COMIDATAIIRVIDATA1/700114101/PROJECT DATA_DISCIPLINE/GEOTECHNICAL/GINTL.OGS/700114101					- 15 -				27							
<u> </u>					F		SPT	6	27 50/3"		50/	,,				
A117					- 16 -]					50/				ing due to	
					E	-							possibl			
					- 17 -	-										
ATA					E	-										
JM/L					- 18 -	1										
ŭ					- - 19 -	-										
ØNGA NGA						4										
◄	0				E_ 20 -	-										

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Project		Proposed Athletic Complex	Project No.			700)11410	1				
ocation		· · ·	Elevation a	nd Da	atum							
,		Claremont Mckenna College		_				253 (feet, N	/ISL)			
MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Jumber	Type			N-Value (Blows/ft)	(Drillir Fluid Lo	Rema ng Fluid, Dep ss, Drilling R	rks oth of Casing esistance, e	l, etc.)
SYM	Elev. (ft) 233.0	Sample Description Total Depth = 20 feet. Boring terminated at 20 feet us to rig breakdown. Boring backfilled with auger cuttings.	Scale 20 - 21 - 22 - 23 - 24 - 25 - 26 - 26 - 27 - 28 - 29 - 30 - 31 - 32 - 33 - 33 - 34 -		Type	Recov.	Balance Di la construcción de la		" Samp	ng Fluid, Dep ss, Drilling R ler bound ble cobble	oth of Casing esistance, e	
			40 - 41 - 42 - 43 -									
			43 -									

LA	NGA	A/V	Log	of E	Boring			B -	50			Shee	t 1	of	2
Project				Pr	oject No).									
Location	Proposed Athletic C	Complex		Ek	evation	and Da		7001	11410	1					
	Claremont Mckenna	a College						Аррі	rox. 12	254 (fe	et, N	/ISL)			
Drilling Compa				Da	ate Start	ed	0	0/4 5	10000		Date	Finished		4 5 10000	
Drilling Equipn	2R Drilling			Co	mpletio	n Dept		3/15	/2023		Rock	Depth	03/	15/2023	
	GT8 Gtech Drill					-			35.2 ft			-		-	
Size and Type	of Bit 8-inch O.D. Hollow	Stem Auger		Nu	imber of	Samp	les	Distu	irbed	8	U	ndisturbe	d 1	Core	_
Casing Diame	er (in)		Casing Depth (ft) -		ater Lev			First		-		ompletior		24 HR.	-
Casing Hamm	er_	Weight (lbs)	Drop (in) -	Dr	illing Fo	reman									
Sampler	2-inch O.D. SPT Sp	lit-Barrel, 2.5-inch I.D.		_ Fie	eld Engi	neer	JU	lan							
Sampler Hamr	^{ner} Automatic	Weight (lbs) 140	Drop (in) 30				N.	. Gha							
NA POR Elev.					Depth				nple Da		alue	-	Rei	narks	
(ft)		Sample Description	l		Scale		Type	(in)	Penetr. resist BL/6in	(Blov	vs/ft)	Fluid	illing Fluid, Loss, Drilli	Depth of C ng Resistan	asing, ce, etc.)
-) - + <u>1254.0</u>	Artificial Fill				- 0	_ Z		ш. 	<u> </u>	10 20	30 40		,	5	. ,
	Silty SAND (SM),	blackish brown and lig	nt brown, slighlty		E.	-									
Kepo	moist.				- 1										
					- 2	_									
4/13/2023 1:44:53 PM						1									
4					- 3	_									
2023					F	-									
4/13/					- 4	-									
						-									
- GINT GPJ		ne to coarse sand, rock	fragments		- 5	1	İΕ		44						
	present.				- 6		SPT	15	18	28					
					Ē	1			10	20	\mathbb{N}				
00114					- 7	-									
					Ē		~		20			Nos	sample i	recovery	
ŏ ±1246.0 ≓	Young Alluvial Fa	an Deposit (Qya)			- 8	\$-2	S	0			50/1			,	
	Silty SAND (SM),	dark gray, dense, sligh	tly moist to moist,		Ē	- m			14						
	tine to coarse san	id, rock fragements pre	sent.		- 9 E	S-2B	SPT	9	26		48	3•			
B I I I					E 10	1			22						
		orangish brown, very d to coarse sand, cobble			- 10	_ <u>S-3</u>	SPT	4	50/4"		50/4				
	present.	to coarse sand, cobbie	e nagments		E - 11	1									
					-	-									
					- 12	-						Drill	rig grine	ding slov	/ly and
					E	1						loud	rig cha	tter. Pos	sible
					- 13	-								ountered	J.
					- 14	4									
					- 14	Ŧ									
					- 15		SPT	3	50/3"			Sam	nlorbo	uncina a	na
		l and Silt (SP-SM), gray e, dry, fine to coarse sa			Ē		ř E		00/0		50/3		sible col	uncing o oble	па
	fragments presen				- 16	-									
					E	1									
					- 17	-									
					-	-									
					- 18 -	Ŧ									
S S S S S S S S S S S S S S S S S S S					- 19	-									
					Ē	1									
≱ :::: : :					上 20 J	-									

roject		Proposed Athletic Complex	Project No.			700)11410	1				
ocation			Elevation a	nd Da	atum		71410	1				
		Claremont Mckenna College				Ар	orox. 12	254 (feet, N	/ISL)			
ЧЧ							ample Da		_	Rema	arke	
MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Number	Type	SCOV.	Penetr. resist BL/6in	N-Value (Blows/ft)	(Dr	illing Fluid, De	pth of Casing, Resistance, et	- \
≥″ +	1234.0	Orangish brown, slightly moist, fine to coarse sand, sine to	20 -		SPT		50/6"	10 20 30 40	Fiuld	Loss, Dhiling i	Resistance, et	.c.)
		coarse gravel	È	3-5		₽ °	50/6	50/6				
			- 21 -									
			- 22 -									
			Ē									
			- 23 -	-								
			- 24 -									
			_ 25 -	- S-6	SPT	5	50/5"					
			- 26 -					50/5	*			
			_ 20 -									
			- 27 -									
			- 20									
			- 28 -									
			- 29 -									
	1224.0		Ē	1								
	1224.0	Sandy SILT (ML), orangish brown, stiff, moist, fine to coarse sand, trace gravel.	30 -				14					
			- 31 -	S-7	SP	18	11 12	23				
			E aa	-		-	12					
			- 32 -	1								
			- 33 -									
			- 34 -	1								
+	1218.8		35 -	- 	eп	F 1	50/1"	50/1				
		Total depth = 35.2 feet. No groundwater encountered.	-		J	' '	50/1					
		Borehole backfilled with on-site fill soils.	- 36 -	1								
			- 37 -									
				1								
			- 38 -	1								
			- 39 -	-								
				1								
			- 40 -	1								
			- 41 -	-								
				1								
			- 42 -	1								
			- 43 -									
			Ē									
			_ 44 -	1								

L	A	NBA	A/V	Log	of E	Boring			B-	51		_		Sheet	1	of	3
Project					Pr	oject No.											
Location		Proposed Athletic C	omplex		Ele	evation an	nd Da		700	11410	1						
		Claremont Mckenna	ı College						Арр	rox. (1	feet, N	/ISL	_)				
Drilling C	Compar	-			Da	ate Starteo	ł	_				Da	ite F	inished			
Drilling E	quipm	2R Drilling ent			Co	mpletion	Deptl		8/10)/2023		Ro	ock E	08 Depth	3/10/2	2023	
		GT-8 Truck-mounted	d Drill							46.5 ft				-			
Size and	Туре	of Bit 8-inch O.D. Hollow \$	Stem Auger		Nu	Imber of S	Samp	les	Dist	urbed	5		Unc	listurbed	С	ore	
Casing D		er (in)		Casing Depth (ft)		ater Level			First ∑		-		Cor	npletion -		4 HR. ¥	
Casing H		r	Weight (lbs)	Drop (in)	Dr	illing Fore	man										
Sampler		2-inch O.D. SPT Sp			Fie	eld Engine	er	JU	lan								
Sampler	Hamm	^{ier} Automatic	Weight (lbs) 140	Drop (in) 30		1	-	Α.		blas							
Report: Log - LANGAN	Elev.		Sample Description			Depth	her	be		<u>وا</u> ن الم منابع الم		/alue		(Drilling Eluid	emar	th of Casing	
J - LA MAT SY	(ft)					Scale	Number	Type	Rec (ir	Penetr. resist BL/6in	10 20			Fluid Loss, Dri	lling Re	esistance, et	c.)
t: Loc		Artificial Fill Sandy SILT (ML) (to Silty SAND (SM): lig	ht brown dry	_	— 0 — E											
Zepor		scattered cobbles	, gravel, and vegetation	1.		- 1 -											
							1										
06 A						2 -	1										
10:04						- 3 -	1										
8/28/2023 10:04:06 AM							1										
8/28/						- 4 -	1										
							1										
- GINT.GPJ						- 5 -											
						6 -											
1410																	
7001						- 7 -											
OGS						8 -	1										
VICAL/GINTLOGS/700114101																	
CALIO						- 9 -	1										
							1										
		Silty to Sandy GR predominantly cru	AVEL (GM): light gray,	dry, dense,		- 10 -	_	L E		20							
		predominantly cru	sneu concrete.			- 11 -	۲. ۲	SPT	e	20	3	0					
							-	E		10							
						- 12 -							\setminus	Heavy aug	er		
						- 13 -								chatter-col slow drilling	obles g.	/boulders	,
EP OF																	
						- 14 -	1										
							1										
						- 15 -	1										
						- 16 -	1										
							1										
						- 17 -											
							1										
						- 18 -											
VLANGAN COMPATAIRVDATAI700114101PRQJECT DATAL DISCIPLINEGEOTECH						- 19 -											
						E											
≥ LO D						드 20 -	1										

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oject	Proposed Athletic Complex	Project No.		-	700114	4101			
cation		Elevation ar	nd Da	tum					
	Claremont Mckenna College				Approx			SL)	
Elev.		Depth	7		Sampl		a N-Vali	10	Remarks
Elev. Symbol (ft)	Sample Description	Scale	Number	Type	Recov. (in) Penetr.	resist BL/6in	(Blows	/ft)	(Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
ישל	Cuttings are Silty to Gravely SAND (SP): brown, slightly	20	Z S-2	SPT		2/1"	10 20 3	0 40 50/1''	 No sample recovery;
	moist, cobbles, medium to coarse gravel.	- 21 -							sampled on rock.
j D									
20		- 22 -	1						
			1						
\sim		- 23 -							
		_ 24 -							
		- 25 -	1						
		_ 26 -							
J.									
		- 27 -							
		- 28 -							
		- 29 -							
	Silty SAND with Gravel (SM): brown, slightly moist, medium	30 -							
	dense, coarse gravel, abundant concrete clasts-pulverized,	E	S-3	SPT	∞ 10	11		/	
	some asphalt.	- 31 -		S	16		27		
		- 32 -							
		- 33 -							
		- 34 -							
		- 35 -							
Хh		- 36 -							
		- 37 -							
		- 38 -							
		- 39 -							
	Young Alluvial Fan Deposit (Qya)	40 -	-		19				Easier drilling.
	Silty SAND (SM): orangish brown, slightly moist, dense, fine to medium sand, occasional rounded to subrounded		S-4	SPT		20			
	fine to medium sand, occasional rounded to subrounded fine to medium gravel.	- 41 -	Ľ		12	2	32		
		42 -							
		- 43 -							
		- 44 -							
		E	1						

Project			of Boring Project No.				-51			heet	3	of	3
ocation		Proposed Athletic Complex	Elevation a	nd Do	atum	700	11410	1					
ocaliUII		Claremont Mckenna College		iu Da	aturn		orox. (feet, MS	∟)				
z,			I		1		ample D	ata			Rema	ke	
SYMBOL (f	ev. ft)	Sample Description	Depth Scale	Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Valu (Blows/ 10 20 30	t)	(Drilling Fluid Loss	Fluid, Dep , Drilling Re	KS th of Casing esistance, el	, tc.)
		Orangish brown to brown mottled, medium dense, some limonite staining.	45 - - - 46 -	S-5	SPT		11 12 12	24•					
<u>+</u>		Total Depth = 46.5 feet No groundwater encountered. Boring backfilled with cuttings.	 47 -										
			- 48 -										
			- 49 -										
			- 50 -										
			- 51 -										
			- 52 -										
			- 53 - - - 54 -										
			- 54 -										
			- 56 -										
			- 57 -										
			- 58 -										
			- 59 -										
			60 -										
			- 61 -										
			- 62 -										
			- 63 -										
			- 64 -										
			- 65 -										
			- 66 - - - 67 -										
			68 -										
			- 69 -										
			70 -										

	1 / W 6	GAN	Log		Boring			B-5	52				Sheet	1	of	2
Project				Pr	oject No.											
ocation	Proposed A	Athletic Complex		Ele	evation ar	nd Da		7001	1410	1						
	Claremont I	Mckenna College						Appr	ox. (1	feet,	MS	SL)				
rilling Com	ipany	-		Da	ate Starte	ł							inished			
rilling Equi	2R Drilling			Cc	mpletion	Dent	08 h	8/07/	/2023		R	Rock [Depth	08/0	8/2023	
rining Equi		uck-mounted Drill Rig			mpiodon	Dopu		3	86.5 ft				Dopui			
ize and Ty	pe of Bit			Nu	umber of \$	Samp	les	Distu				Uno	disturbed	_	Core	
asing Dian	8-INCh O.D. neter (in)	Hollow Stem Auger	Casing Depth (ft)	_				First		4	4	Cor	mpletion	0	24 HR.	
-					ater Leve	• •		$\underline{\nabla}$							Ţ	
asing Harr	nmer		Drop (in)		illing Fore	man	hu	an	Jorge,	8. E	ddi	0				
ampler				_ Fie	eld Engine	er	Ju	an, c	Joige,	, α ∟	uur	6				
ampler Ha	^{mmer} Autor	matic Weight (lbs) 140	Drop (in) 30				N.	Gha	anta &	. A. I	Niek	olas				
Ele BOL FIE	ev.				Depth	5			nple Da		I-Valu	10		Rem	arks	
MATERIAL SYMBOL (f		Sample Description			Scale	Number	Type	(in)	Penetr. resist BL/6in	(B	lows/	/ft)	(Drilling Fluid Loss		epth of Casing, Resistance, et	, (C.)
	Artificial	Fill			_ 0 _	z			д - ш	10 :	20 30	0 40	1 1010 2000	, 211118	, , , , , , , , , , , , , , , , , , , ,	
	Silty SAN	ID with Gravel (SM): dark gray,	dry to slightly		È :	1										
	moist, roo	ck tragments.			- 1 -	1										
					- 2 -											
					- 3 -								Rocky f	rom 3	-10 feet, he	av
						1							auger c	hatter		Jui
Nor the					- 4 -	-										
						-										
K bit					- 5 -	1										
					- 6 -	1										
						1										
					- 7 -	1										
						1										
					- 8 -	1										
					- 9 -	1										
						1										
	Dark grav	and black medium dense fine	to coarse sand		- 10 -	-			14							
	fine to co	arse gravel, cobble and asphalt	ic fragments.			۲- ۲-	SPT		9							
					- 11 -	0	∬ ∃		7	16						
					- 12 -											
						1										
					- 13 -	1										
		Automatic Weight (lbs) 140 Sample Description Artificial Fill Silty SAND with Gravel (SM): dark gray, dry to noist, rock fragments.				1										
					- 14 -	1										
		ME-75 Truck-mounted Drill Rig Sit inch O.D. Hollow Stem Auger in) Casin weight (lbs) I inch O.D. SPT Split-Barrel Automatic Weight (lbs) 140 Sample Description Artificial Fill Silty SAND with Gravel (SM): dark gray, dry to moist, rock fragments. Dark gray and black, medium dense, fine to c			- 15 -											
		Iroposed Athletic Complex Claremont Mckenna College R Drilling t IME-75 Truck-mounted Drill Rig Bit -inch O.D. Hollow Stem Auger (in) Veight (lbs) Dr -inch O.D. SPT Split-Barrel Automatic Veight (lbs) 140 D				1							Slow dr chatter.	illing,	heavy auge	er
					- 16 -	1										
					- 17 -											
						-										
					- 18 -	1										
					- 19 -	1										
					E	1										
Bich I					느 ₂₀ _	1										

Project		Project No.										
ocation	Proposed Athletic Complex	Elevation an	d Da	atum	700	11410	1					
ocation	Claremont Mckenna College	Lievation ai			Anr	orox. (i	feet N	ASL)				
						mple D						
Elev (ft)	Sample Description	Depth	Der	e			N-\	/alue		Rema	rks	
IL MARK		Scale	Number	Type	Recov.	Penetr. resist BL/6in	(Blo	ws/ft) 30 40	(Drill Fluid Lo	oss, Drilling F	oth of Casing, Resistance, et	c.)
	Dark brown, slightly moist, occasional asphalt and concrete	20 -	-	E		22	10 20	1 30 40				
	clasts.	- 21 -	S-2	SPT	18	19	2					
						9		7				
		- 22 -										
		- 23 -										
		- 24 -										
	Very dense, abundant asphalt, some concrete clasts.	- 25 -		┝┍		40						
			5 N-3	SPT	3	12 		50/1'	•			
		- 26 -	-	F	╞	-						
		- 27 -										
		- 28 -										
		- 29 -										
		- 30 -										
	SAA Young Alluvial Fan Deposit (Qya)		4			9						
	Silty SAND with Gravel (SM): light orangish brown to yellowish brown, slightly moist, medium dense, fine to	- 31 -	8 4	SPT	18	9 11	20					
	yellowish brown, slightly moist, medium dense, fine to medium sand and gravel.		-									
		- 32 -										
		- 33 -										
		- 34 -										
		- 35 -										
	Orangish brown, dense, fine to medium sand with occarional coarse sand, some limonite/iron oxide staining.	- 35 -		LE		20						
		- 36 -	S-5	SPT	0	27		39				
	Total Depth = 36.5 feet		-	<u> </u> E	+	12						
	No groundwater encountered. Boring backfilled with cuttings.	- 37 -										
	Bonny Baokined with outlings.	- 38 -	1									
			1									
		- 39 -	1									
		- 40 -	1									
		- 41 -	1									
		Ē										
		- 42 -										
		40										
		- 43 -										
		44 -										
		F -	-		1							

	ject No.		
	-	700444464	
Proposed Athletic Complex Eleva	vation and Datum	700114101	
Claremont Mckenna College	ha Otauta d	Approx. (feet, N	
Drilling Company Date 2R Drilling	te Started	08/11/2023	Date Finished 08/11/2023
Drilling Equipment Com	mpletion Depth		Rock Depth
Track-mounted Drill Size and Type of Bit		56.5 ft Disturbed	Undisturbed Core
8-inch O.D. Hollow Stem Auger	mber of Samples	7	0
	ater Level (ft.)	First	Completion 24 HR.
	lling Foreman	1	
Sampler 2-inch O.D. SPT Split-Barrel Field	J Id Engineer	Jerry	
Sampler Hammer Automatic Weight (lbs) 140 Drop (in) 30	A	A. Nieblas	
	Depth 💆 👦	Sample Data	/alue Remarks
	Depth Jag add Scale L	(Blov)	(Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
Silty SAND with Gravel (SM): light brown, dry, scattered vegetation, scattered cobbles and small boulders.	- 1 -		
	2		
	- 3 -		
	4		
	- 5 -		Heavy auger chatter from
	- 6 -		0-23 feet.
	7 -		
	- 8 -		
	9 -		
Cuttings are Silty SAND (SM): light brown, dry to slightly	- 10 - <u>s-1 spt</u>	O 50/4"	50/4" No sample recovery; sampled on a rock.
moist.	- 11 -		sampled on a rock.
	_ 12 _		
E	- 13 -		
	_ 14 _		
	- 15 -		
	- 16 -		
	- 17 -		
	- 18 -		
	- 19 -		
	20		

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oject	Proposed Athletic Complex	Project No.			700	11410	1						
ocation	Proposed Athletic Complex	Elevation a	nd Da		700	11410	1						_
	Claremont Mckenna College				Арр	rox. (f	eet, I	NSL	_)				
r k		1				mple Da					Remar	ko	-
Elev. (ft)	Sample Description	Depth Scale	Number	Type	Recov. (in)	Penetr. resist BL/6in	N-\ (Blo 10 20	/alue ws/fl		(Drilling Fluid Los	s, Drilling Re	h of Casing, esistance, etc.	.)
	Silty SAND with Gravel (SM): brown and light brown, very dense, slightly moist.	20 - 21 -	S-2	SPT	10	16 32			62				
		- 22 -				30							
		- 23 -								Easier	drilling fr	om 23-27	
		- - 24 -								feet.	-		
		- 25 -											
		- 26 -											
		- 27 -											
		- 28 -											
		30 -											
	Silty SAND (SM): dark brown, dense, moist, scattered asphalt clasts.	- 31 -	S-3	SPT	13	14 9 29		38					
		- 32 -				23							
		- 33 -											
		- 34 -											
		- 35 -											
		- 37 -	-										
		- 38 -											
		- 39 -											
	Silty to Gravelly SAND (SM): dark brown with some orangish brown, very dense, moist, scattered asphalt, occasional concrete clast.	40 -	S-4	SPT	15	19 30							
		- 41 - - - 42 -		ľ E		47			77				
		- 43 -											
		- 44 -											

oject		Proposed Athletic Complex	Project No.			700	11410 [.]	1					
ocation			Elevation ar	d Da		100	11410						
		Claremont Mckenna College				Арр	rox. (f	eet, N	ISL)				
0LA							mple Da				Rema	rks	
MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Number	Type	ecov.	Penetr. resist BL/6in	N-V (Blov		(Drillin	na Fluid. Dep	oth of Casing esistance, e	l,
≥ °′ -!\		Young Alluvial Fan Deposit (Qva)	45 -	<i>ž</i>	' SPT		50/5"	10 20			ss, Drilling IV		
		Young Alluvial Fan Deposit (Qya) Silty SAND with Gravel (SM): light orangish brown, dry to	Ē		. T		00,0		50/5"	ł			
		slightly moist, fine to medium sand.	- 46 -										
			- 47 -										
			- 48 -										
! •:			- 49 -										
5													
N ,	ŀ	Silty SAND (SM): orangish brown, very dense, dry to		S-6	SPT	10	50/4"		50/4"	ļ			
		Silty SAND (SM): orangish brown, very dense, dry to slightly moist, occasional fine to medium gravel, fine to medium sand with occasional coarse sand.	- 51 -										
			- 52 -										
			- 53 -										
			- 54 -							1			
		Silty SAND (SM) to Sandy SILT (MLS): orangish brown, medium dense to very stiff, moist, limonite staining.		~	T		9						
			- 56 -	γ	SP	10	9 10	19					
-1-1-1		Total Depth = 56.5 feet	- 57 -	-									
		No groundwater encountered. Boring backfilled with cuttings.	57										
			- 58 -										
			- 59 -										
			60 -										
			- 61 -										
			62 -										
			- 63 -										
			64 -										
			- 65 -										
			66 -										
			- 67 -										
			68 -										
			69 -	1									

		NG/	4/V		Log		Boring			B-5	4			Sh	eet	1	of		3
Project	t	Proposed Athletic (Complex			Pr	oject No.		-	7001	1410 ⁻	1							
Locatio	on					El	evation ar	nd Da	tum										
Drilling	Compar	Claremont Mckenna	a College			Da	ate Starteo	ł	ŀ	Appro	ox. (f	eet, N) e Finisl	hed				
		2R Drilling								8/08/2	2023		_			08/0	08/2023		
Drilling	Equipm	ent CME-75 Truck-mou	inted Drill Rig			Co	ompletion	Depth	ר	5(0.5 ft		Roc	k Dept	h				
Size a	nd Type	of Bit 8-inch O.D. Hollow				Nu	umber of S	Samp	les	Distur		8	ι	Jndistu	irbed	0	Core		
Casing	Diamete	er (in)	Stelli Auger	C	asing Depth (ft)	w	ater Leve	(ft.)	1	First		0	0		etion	0	24 HR.		
Casing	Hamme	r	Weight (lbs)		Drop (in)	Dr	illing Fore	man						<u>+</u>			<u> </u>		
Sample	er	2-inch O.D. SPT Sp	plit-Barrel			Fie	eld Engine	er	Jo	rge &	. Edd	ie							
Sample	er Hamm	^{ler} Automatic	Weight (lbs)	140	Drop (in) 30				A.	Nieb									
LANGAN MATERIAL SYMBOL	Elev.						Depth	er			ple Da	N-V	alue				narks		
- LANGAN MATERIAL SYMBOL	(ft)		Sample Desc	cription			Scale	Number	Type	Recov. (in) Penetr	resis BL/6i	(Blov 10 20	vs/ft)	F	(Drilling luid Loss	Fluid, E , Drilling	Depth of Car g Resistanc	sing, e, etc.	.)
		Artificial Fill Silty SAND with (and broken cobbl Gravelly SAND w medium dense, c	ith Silt (SW): bro	own, sligh	egetation.		$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	S-1			9 17 12	29		Н	leavy a	auger	chatter.		

roject		Proposed Athletic Complex	10	ect No.			700	11410 [.]	1					
ocation	l		Elev	ation ar	nd Da	tum								
		Claremont Mckenna College						rox. (f		ISL)				
RIAL 30L	Elev.			Depth	ц.			mple Da	ata N-V	alue		Rema	rks	
MATERIAL SYMBOL	(ft)	Sample Description		Scale	Number	Type	Reco (in)	Penetr. resist BL/6in	(Blov	vs/ft)	Drillin) Fluid Los	ng Fluid, Dep ss, Drilling R	th of Casing, esistance, etc	c.)
	•	Cuttings are Silty SAND with Gravel (SM) to Gravelly SAN	ID -	- 20 -		SPT		50/1"	10 20	50/1	No sa	mple reco	overy;	
		with silt (SW): brown, slightly moist, very dense.		- 21 -	1						sampi	ed on a r	OCK.	
	•													
	•			- 22 -										
	•			- 23 -										
	•													
	•			- 24 -										
		Gravelly SAND with Silt (SW): brown and dark brown,		- 25 -	1									
	•	medium dense, slightly moist, medium to coarse gravel,			S-3	SPT	12	13 13						
	•	some dark brown to black asphalt.		- 26 -		S	`_	13	26					
•••••• ••••••	•			- 27 -										
	•													
	•		Ē	- 28 -										
	•			- 29 -										
	•			20						50/01				
	•	Very dense.		- 30 -	S-4	SPT	0	50/0"		50/0 " ·	No sa sampl	mple reco ed on a r	overy; ock.	
,	•		-	- 31 -										
	•			- 32 -										
,	•													
	•			- 33 -										
· · · · · · · · · · · · · · · · · · ·	•			- 34 -										
	•													
		Silty SAND with Gravel (SM): yellowish brown, slightly moist, dense, some limonite staining, some asphalt.		- 35 -		I.E		18						
		moisi, dense, some infonite staining, some asphait.		- 36 -	S-5	SPT	16	10 24		34				
				27	-			27						
				- 37 -										
				- 38 -										
]			- 39 -										
		Very dense.		- 40 -	S-6	SPT	0	50/1.5"	- E	5 0/1.5 " •	No sa	mple reco	overy;	
			ļ	- 41 -							sampl	eḋ on a r	UCK.	
				- 42 -										
			F	- 43 -										
Ŋ.T.			E E	- 44 -	1									

roject		Proposed Athletic Complex	Project No.			700	11410 [.]	1					
ocation			Elevation ar	id Da	tum	100	11410						
		Claremont Mckenna College				Арр	orox. (f	eet, M	SL)				
r A							mple Da				Rema	rke	
MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Va (Blow	alue /s/ft)	(Drillin	ig Fluid, Dep	oth of Casing, esistance, et	-)
≥″ 		Young Alluvial Ean Donosit (Ova)	45 -		SPT		ല്ല് <u></u> 50/6"	10 20	30 40		ss, Dhiling R	esistance, et	C.)
		Young Alluvial Fan Deposit (Qya) Silty SAND with Gravel (SM): orangish brown, slightly		3-7			50/6		50/6"	•			
		moist, very dense, medium to fine sand, medium to coarse gravel.	- 46 -										
N.		-	- 47 -										
			- 48 -										
			- 49 -										
			- 49 -										
		Medium gravel.	_ 50 -	- S-8	SPT	5	50/5"						
<u>. </u>	-	Total Depth = 50.5 feet							50/5 " ·	•			
		No groundwater encountered. Boring backfilled with cuttings.	- 51 -										
			- 52 -										
			- 53 -										
			- 54 -										
			- 55 -										
			- 56 -										
			- 57 -										
			- 58 -										
			- 59 -										
			60 -										
			61 -										
			- 62 -	1									
			-60 - 61 - 62 - 63 - 64 - 65 - 66 - 67 - 68 - 67 - 68 - 69 - 69 - 69 - 69 - 69 - 69 - 69										
			- 64 -	1									
			65 -	1									
				1									
			66 -										
			67 -										
			68 -	1									
			69 -	-									

	NG/	4/V		Log		Boring			В-	55			Sheet	t 1	С	of	3
Project	Proposed Athletic C	Complex			Pr	oject No.			700 1	1410	1						
Location					Ele	evation an	id Da	tum				401					
Drilling Com	Claremont Mckenna	a College			Da	ite Starteo	ł		Аррі	ox. (f	eet, I) e Finished				
Drilling Equi	2R Drilling					mpletion	Donth		8/10	/2023		Roc	k Depth	08/	10/202	3	
	GT-8 Truck-mounte	ed Drill				mpiction	Бери			51.5 ft			м Ворит				
Size and Ty	pe of Bit 8-inch O.D. Hollow	Stem Auger			Nu	Imber of S	Sampl	les	Distu	rbed	8		Jndisturbed	d O	Core		
Casing Dian	neter (in)	g	C	Casing Depth (ft)	w	ater Level	(ft.)		First						24 HR	l.	
Casing Ham	nmer	Weight (lbs)		Drop (in)	Dr	illing Fore	man		_				<u>+</u>		⊥ <u>-</u> ±-		
Sampler	2-inch O.D. SPT Sp	lit-Barrel			Fie	eld Engine	er	Ju	lan								
Sampler Ha	^{mmer} Automatic	Weight (lbs)	140	Drop (in) 30				A.	Nie								
SYMBOL SYMBOL (f		Sample Desc	ription			Depth Scale	Number	Type		Penetr. resist BL/6in gd	N-\ (Blo	/alue ws/ft)) 30 4	(Dril Fluid L	Ren Illing Fluid, Loss, Drillin	narks Depth of (ng Resista	Casing, ince, etc	c.)
	Artificial Fill SIIty SAND with C cobbles, and veg	etation.				$ \begin{array}{c} 1 \\ 2 \\ 3 \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ -$		SPT TITITITIT	12	6 3 4	7•						

Project	Proposed Athletic Complex	Project No.			700)114	101							
ocation		Elevation a	nd Da	atum	100	,	101							
	Claremont Mckenna College				Ap	prox.	(fe	et,	MS	L)				
₹				1		ample					_	Rema	arks	
Elev. (ft)	Sample Description	Depth Scale	Number	Type	ecov.	Penetr.	L/6in	N (B	-Valu lows/	e ft)	(Drillin	ng Fluid, De	epth of Casing Resistance, e	g,
≥ <i>°</i> V · II ·	Brown to dark brown, concrete and asphalt clasts.	20 -	ź		æ	-	- m	10 :	20 30	40		ss, Dhiing	Resistance, e	elc.)
	biowin to dark biowin, concrete and asphalt clasts.	-	S-2	Ы	15	5	4							
		<u> </u>	-100	SPT		3	7	t						
		- 22	1											
			1											
		- 23	-											
			-											
		- 24 -	-											
		25	=											
			1											
		- 26	1											
		- 27	1											
		-	-											
		- 28	-											
		- 29 -	-											
		_ 23	1											
	Orangish brown, medium dense, fine to medium gravel and	30	-			6	_							
	sand.	F	S-3		6		7							
		- 31	Ĩ			8	1	15						
		- 32 -	-											
		-	-											
		- 33	1											
		- 34 -	-											
		-	-											
	Brown with some orangish brown mottle.	- 35	-			6	-							
		- 36	S-4	SPT	12		6	17						
			1		-	11		"						
		- 37	-											
		Ē	-											
		- 38	3											
		- 39	-											
		E E	1											
	Sampler pushing rock.	- 40 ·				9	\neg							
		- 41	S-5	SPT	-		9	18	ļ					
		Ē	}	+ •	-	9	-		$\left \right $					
		- 42 ·	-						$ \rangle$					
		43								\setminus				
		43	1											
		44	-											
		F	1								1			

roject		Proposed Athletic Complex	Project No.			700	11410	1					
ocation			Elevation a	nd Da	atum								
		Claremont Mckenna College					orox. (MSL)	-			
OL	Elev.		Depth	5			mple D		/alue	-	Rema	rks	
MATERIAL SYMBOL	(ft)	Sample Description	Scale	Number	Type	Recov	Penetr. resist BL/6in	(Blo	ws/ft)	(Drilli Fluid Lo	ing Fluid, Dep oss, Drilling F	oth of Casing, esistance, et	, tc.)
		Silty SAND with Asphalt (SM): black, very dense, slightly	- 45 -	_	E		18	10 20	30 40				
		moist.	- 46 -	S-6A	SPT	18	31		68				
		Young Alluvial Fan Deposit (Qya) Silty SAND with Gravel (SM): orangish brown, very dense,		<u> </u>	E		37	-					
		slightly moist, fine to medium sand and gravel.	- 47 -										
			- 48 -										
			-							'			
			- 49 -										
				-									
		Silty SAND (SM) and Sandy SILT with Gravel (ML): orangish brown, medium dense to stiff, moist, limonite	Ē	S-7	SPT	128	8 8		/				
		staining, manganese oxide staining.	51 -	S	S	É	10	18•					
		Total Depth = 51.5 feet No groundwater encountered.	- 52 -										
		Boring backfilled with cuttings.	Ē										
			- 53 -										
			- 54 -										
			Ē										
			- 55 -										
			- 56 -										
			- 57 -										
			- 58 -										
			- 59 -										
			- 60 -										
			- 61 -										
			- 62 -										
			- 63 -										
			-										
			- 64 -										
			65 -										
			-										
			- 66 -										
			- 67 -										
			-										
			- 68 -										
			- 69 -										
			E	-									

								of Boring					;	Sheet	1	of	2	
Project		Description of Attlantic Operation					oject No.			700								
Location		Proposed Athletic Complex					700114101 Elevation and Datum											
	Claremont Mckenna College rilling Company						Approx. (feet, MSL) Date Started Date Started											
2R Drilling						08/08/2023 08/08/2023												
Drilling Ec	quipm	ent				Co	ompletion	Dept					Ro	ock D	Depth			
Size and ⁻	Type	CME-75 Truck-mou	nted Drill Rig			_					36.5 ft urbed			Und	listurbed		Core	
		8-inch O.D. Hollow Stem Auger					Number of Samples				5					0		
Casing Diamet		er (m)					Water Level (ft.)			First ⊥				Ţ	npletion -		24 HR. 	
Casing Ha	amme	r	Weight (lbs)		Drop (in)	Dr	illing Fore	man	lo	rao	& Edd	lio						
Sampler		2-inch O.D. SPT Sp	lit-Barrel			_ Fie	eld Engine	er	10	ige		lie						
Sampler H	Hamm	^{er} Automatic	Weight (lbs)	140	Drop (in) 30		1	1	Α.	Nie	blas	-4-		r				
	Elev.		Sample Description				Depth	Der	٥		Sample Data						arks	
SYN	(ft)						Scale	Number	Type	Reco (in)	Penetr. resist BL/6in	(Blo 10 20	ws/ft				pth of Casing Resistance, e	
		Artificial Fill					E 0 -											
		Silty SAND (SM): light brown, dry, scattered vegetation, abundant cobbles.						1										
					1													
							2 -	1										
								1										
							- 3 -	1										
							- 4 -	1										
								1										
							- 5 -	1										
								1										
							- 6 -	1										
							- 7 -	1										
								1										
					8 -	1												
						1												
							- 9 -	1										
				, _, -			- 10 -	1										
		Silty SAND with G medium dense, sl	ravel (SM): brown and o ghtly moist, scattered a te clast.	n and da ttered asp	dark brown, asphalt clasts,				ĿĒ		12							
		occasional concre					- 11 -	۲. ۲	SPT	18	10 12	22	•					
K bri								-			12							
							- 12 -	1										
							- 13 -	1										
								1										
							- 14 -	1										
								1										
X Q .							- 15 -	1										
							- 16 -	1										
								1										
							- 17 -	1										
							- 18 -	1										
							- 19 -	1										
								1										
							느 ₂₀ _	1										

oject	Proposed Athletic Complex	Project No.			700	11410	1						
ocation		Elevation ar	nd Da										
	Claremont Mckenna College					rox. (MSL)				
Elev. (ft)	Sample Description	Depth Scale	her	e		Gin etr. Gin etr.		I-Value Blows/ft)	<u> </u>	(Drilling	Remai	r ks th of Casino	J.
HTAN MATE MATE (ft)		20 -	Number	Type	Beo ⊜	Penetr. resist BL/6in	1	20 30 4		Fluid Loss	, Drilling R	th of Casing esistance, e	etc.)
	Young Alluvial Fan Deposit (Qya) Silty SAND with Gravel (SM): orangish brown, slightly moist, medium dense, fine to medium gravel.	- 21 -	S-2	SPT	18	5 6 8	14•						
		- 22 -											
		- 23 -											
	Brown to orangish brown.	- 25 -		SPT		10	-						
		- 26 -	S-3	SPI	9	7	14						
		- 27 -											
		- 29 -											
	Brown, dense, fine to medium subrounded and subangular gravel.	- 30 -	S-4	SPT	14	7 17	-						
		- 31 -		Ē		16	-	33•					
		- 33 -											
		- 34 -								No.com	ple reco		
	Cuttings are brown to orangish brown, medium dense.	- 36 -	S-5	SPT	0	41 8 14	2	2.		sample	d on a r	ock.	
	Total Depth: 36.5 feet No groundwater encountered. Boring backfilled with cuttings.	- 37 -											
		- 38 -											
		- 40 -											
		- 41 -											
		- 42 -											
		- 44 -											

	A	NG/	4/V		Log		Boring			B-	57		_	S	Sheet	1	of	3
Project		Proposed Athletic (Complex			Pr	oject No.			700	11410	1						
Location	ı					Ele	evation ar	nd Da	tum									
Drilling (Compa	Claremont Mckenn	a College			Da	ate Starteo	4		Арр	rox. (feet,			nished			
		2R Drilling								8/09	9/2023	3				08/0	9/2023	
Drilling E	Equipm					Co	ompletion	Dept	h				Ro	ck De	epth			
Size and	а Туре					NL	umber of §	Samp	les	Dist	57 f urbed			Undi	sturbed		Core	
Casing I	Diamet	8-inch O.D. Hollow er (in)	Stem Auger	0	Casing Depth (ft)	-	ater Leve			First	:	7		Com	pletion	0	24 HR.	
Casing I	Hamme	er	Weight (lbs)		Drop (in)		illing Fore			Ţ				<u> </u>			Ţ	
Sampler		2-inch O.D. SPT S	nlit-Barrel				eld Engine		Je	eff								
Sampler	Hamn		Weight (lbs)	140	Drop (in) 30				A.	. Nie	blas							
	Elev.						Denth			Sa	mple D			_		Rem	arks	
MATERIAL SYMBOL	(ft)		Sample Deso	cription			Depth Scale	Number	Type	Recov.	Penetr. resist BL/6in	(Blo	Value ows/ft)	(Drilling Fluid Los		epth of Casin Resistance,	g, etc.)
		Artificial Fill					<u> </u>	2		-		10 2	0 30	40				
		Silty SAND with cobbles, scattere	Gravel (SM): ligh ed vegetation.	t brown, o	dry, abundant		- 1 -											
			-					1										
							2 -	1										
							- 3 -	-										
							- 4 -	1										
								1										
	; •						- 5 -	1										
	,						6 -											
	'						- 7 -	1										
							- 8 -	1										
								1										
	2						- 9 -	-										
	•			-			- 10 -	1										
	2	Brown, slightly m fine to medium s	ioist, medium de and.	nse, fine	to coarse gravel	,		-	FE		12							
							- 11 -	ې ۲	SPT	8	6 5	11 -						
	•							1			•							
							- 12 -											
							- 13 -											
								1										
	-						- 14 -	1										
							- 15 -	1										
							- 16 -											
							- 17 -	1										
							È											
							- 18 -											
							- 19 -											
	:						E 20 -											

roject	Proposed Athletic Complex	Project No.			700	11410	1				
ocation		Elevation ar	nd Da	atum	100	11410					
	Claremont Mckenna College				Арр	rox. (f	eet,	MSL)		
		Denth				mple Da				Remarks	
Elev. (ft)	Sample Description	Depth Scale	Number	Type	Recov.	Penetr. resist BL/6in	N- (B	-Value lows/ft))	(Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc	(c)
ַ ⊉‴ עו}	Sandy to Silty Gravel (GM): gray, dry, medium dense.	20	ž	'⊨	R.	<u> </u>	10 2	20 30 4	40	Poor recovery; sampled	
0°F			S-2	PT I	2	15				rock.	
		- 21 -	Ľ	TAS		8	23	3			
₽°Ę °		- 22 -									
101											
		- 23 -									
١ ٩		- 24 -									
			1								
		- 25 -									
p91		- 26 -									
			1								
60		- 27 -									
		- 28 -									
Top 1		_ 20									
		- 29 -									
	Silty SAND with Gravel (SM): brown with some orange brown, moist, medium dense, may be native.			LE		13				Refusal, moved over 5 fe and redrilled to 30 feet.	et
		- 31 -	S-3	SPT	5	10 8	18				
			-		1	0					
- Ale		- 32 -									
		- 33 -									
		- 34 -									
		- 35 -									
		_ 36 -									
		- 37 -									
			1								
		- 38 -									
		- 39 -									
			1								
	Silty SAND (SM): brown with some orangish brown,		1	FE	-	12				Slow drilling from 40-50 f	fee
	medium dense, occasional fine subrounded gravel.	- 41 -	S-4	SPT	з	11	18			heavy auger chatter.	
		- 41	1	ļĒ	1	7	10				
		- 42 -						$ \rangle$			
		- 40									
		- 43 -						$ \rangle$	$\langle $		
		- 44 -	1						$\left \right\rangle$		
		E :	1	1	1				$ \rangle$		

roject		Drangend Athlatic Complex	Project No.			700	11140	1				
ocation		Proposed Athletic Complex	Elevation a	nd Da		700	11410 [.]	1				
		Claremont Mckenna College				Арр	orox. (f	eet, N	ISL)			
r F			<u> </u>				mple Da				Rema	rke
MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Number	Type	ecov.	Penetr. resist BL/6in	N-Va (Blov		(Drillii		th of Casing, esistance, etc.)
50			45 -	Ž		æ -	~ <u>~</u> = =	10 20	30 40	Fiuld La	ss, Drilling R	esistance, etc.)
			- 46 -	1								
			- 47 -	1								
			-	1								
			- 48 -	-								
			- 49 -	1								
				1								
			_ 50 -	S-5	SPT	0	50/2"		50/2"	No sa	imple reco	overy;
			- 51 -								leḋ on a r	
				1						rocky		drilling, less
			- 52 -									
			- 53 -									
			- 54 - -									
				1						David		
		Young Alluvial Fan Deposit (Qya) Sandy SILT with Gravel (ML): yellowish brown, dry, hard,		S-6	SPT	4	50/6"		50/6"	Bents	sampler.	
· · ·		occasional weathered/angular gravel, sample pulverized.	- 56 -									
			57 -						50/1"			- 4 4 -
		No Recovery, sampler shoe contained yellowish brown sluff.		- S-7	SPT	0	50/1"		50/1	boreh	added wole, no fo	ater to ward
		Total depth = 57 feet	- 58 -							progre	ess.	
		No groundwater encountered. Boring backfilled with cuttings.	- 59 -									
		Note: Native at 55 feet (possibly as early as 30 feet).		1								
			_ 60 -									
			- 61 -	1								
				1								
			- 62 -									
			$\begin{array}{c} 60 \\ - \\ 61 \\ - \\ 62 \\ - \\ 63 \\ - \\ 64 \\ - \\ 65 \\ - \\ 66 \\ - \\ 66 \\ - \\ 68 \\ - \\ 69 \\ - \\ 69 \\ - \end{array}$									
			- 64 -									
			65 -	1								
			- 66 -									
			67 -	1								
			- 68 -									
			- 69 -	1								
			L	1	1	1						

	A	NG	4 <i>N</i>		Log		Boring			B-	58		_	Sheet	t 1	of		2
Project		Proposed Athletic C	Complex			Pr	oject No.			700	11410)1						
Location	۱					Ele	evation an	id Da	tum									
Drilling	Compai	Claremont Mckenna	a College			Da	ate Starteo	ł		Арр	rox. (feet,) te Finished				
		2R Drilling								8/08	8/2023	3				08/2023		
Drilling I	Equipm	ent CME-75 Truck-mou	unted Drill Ria			Co	ompletion	Depth	ר	:	36.5 fi	t	Ro	ck Depth				
Size and	d Type	of Bit 8-inch O.D. Hollow				Nu	umber of S	Sampl	les		urbed	. 6		Undisturbe	d O	Core		
Casing	Diamet	er (in)	etern ruger	(Casing Depth (ft)	w	ater Level	(ft.)		First						24 HR.		
Casing	Hamme	er	Weight (lbs)	I	Drop (in)	Dr	illing Fore	man		_				<u> </u>				
Sample		2-inch O.D. SPT Sp				Fie	eld Engine	er	Jo	orge	& Edd	die						
Sampler	r Hamm	^{her} Automatic	Weight (lbs)	140	Drop (in) 30		1		A.		blas	oto						
- LANGAN MATERIAL SYMBOL	Elev. (ft)		Sample Desc	ription			Depth Scale	Number	Type		Penetr. <u>Wenetr.</u> resist ald BL/6in <u>D</u>	N- (Ble	Value ows/ft) 0 30 4) (Dri Fluid I	Ren Illing Fluid, I Loss, Drillin	n arks Depth of Ca Ig Resistan	asing, ce, etc	<i>.</i> .)
		Artificial Fill Silty SAND with 0 vegetation and we Silty SAND with 0 dense, slightly me Brown, medium of medium gravel.	eeds. Gravel (SM): brov bist, scattered as	vn and d phalt cla	ark brown, asts and sand.		$ \begin{array}{c} 1 \\ 2 \\ 3 \\ - 4 \\ - 5 \\ - 6 \\ - 7 \\ - 8 \\ - 7 \\ - 10 \\ - 12 \\ - 13 \\ - 14 \\ - 15 \\ - 16 \\ - 17 \\ - 18 \\ - 17 \\ - 18 \\ - 19 \\ - 20 \\ - $	8-1			16 14 23 2 5 10	15•	37					

roject	Proposed Athletic Complex	Project No.			700	11410 [.]	1				
ocation	Proposed Adhetic Complex	Elevation a	nd Da	atum	100	11410	1				
	Claremont Mckenna College				Арр	rox. (f	eet, MSL	.)			
7					Sa	mple Da	ata				
Elev (ft)		Depth Scale	Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) (I	Rem Drilling Fluid, D d Loss, Drilling	arks epth of Casing	,
Mág (n)			Nur	F	Ξ. Έ	Per BL	10 20 30	40 Flui	d Loss, Drilling	Resistance, e	tc.)
	Brown and dark brown, dense, occasional asphalt clast.	20	- -			2					
		- 21 -	S-3	SPT	15	8	32 •				
		-	-	<u> </u>		24					
		- 22 -									
		Ē									
	Orangish brown sand in cuttings.	- 23 -									
		- 24 -									
		-									
	Dark brown, medium dense, very few brick pieces (medium	- 25 -	-	╞	-	11					
	sand sized), glass in sampler shoe.	E	8 4	SPT	12	12					
		- 26 -	Ľ			17	29				
		- 27 -	-								
		-									
		- 28 -									
		- 29 -	1								
		- 30 -									
	Brown and dark brown, occasional bricks and asphalt pieces; native in sampler shoe.		2			11					
		- 31 -	S-5	SPT	15	10 12	22 •				
	Young Alluvial Fan Deposit (Qya)	E	-	╞╘	-	12					
	SAND (SP): orangish brown, medium dense, slightly moist.	- 32 -	1								
		- 33 -	-								
		- 34 -									
	SIIty SAND with Gravel (SM): orangish brown, medium					11					
	dense, slightly moist, fine to medium gravel, limonite staining around gravel clasts.	- 36 -	8-9-	SPT		10	20•				
			1	L E		10					
	Total Depth = 36.5 feet No groundwater encountered.	- 37 -	1								
	Boring backfilled with cuttings.		1								
		- 38 - E									
		- 30 -									
		- 39 - -									
		- 40 -	1								
		E									
		- 41 -	1								
		- 42 -									
		- 42									
		- 43 -	1								
		È									
		- 44 -	1								
		E	4								

L	4	NG/	4/V		Log		Boring			B-59)		_	;	Sheet	1	of	3
Project						Pr	oject No.											
Location		Proposed Athletic C	Complex			-	avetien en			70011	4101							
Location		Clarament Makazz					evation ar	iu Da		Annes	/ (f~	.t №	101	`				
Drilling C	Compa	Claremont Mckenna	a college			Da	ate Starteo	ł		Appro	k. (Tee	ει, N			inished			
		2R Drilling					-		C	08/10/2	023					08/1	0/2023	
Drilling E	quipm	nent				Co	ompletion	Dept					Roo	ck D)epth			
		GT-8 Truck-mounte	ed Drill								.5 ft							
Size and	Туре	of Bit 8-inch O.D. Hollow	Stem Auger			Nu	umber of S	Samp	les	Disturb	ed	7	1	Und	isturbed	0	Core	
Casing D	Diamet		Stelli Auger	C	Casing Depth (ft)	w	ater Level	(ft.)		First		1	(Con	npletion		24 HR.	
Casing H	lamm	er	Weight (lbs)		Drop (in)	Dr	illing Fore	man										
Sampler									Ju	uan								
Sampler	Home	2-inch O.D. SPT Sp	Weight (lbs)		Drop (in)	_ Fi	eld Engine	er										
Sampler		Automatic	Wolght (186)	140	30 Drop (III)			-	A	. Niebla				_				
	Elev.						Depth	5			le Data		/alue			Rem	arks	
	(ft)		Sample Desc	cription			Scale	Number	Type	Recov. (in) Penetr.	esist L/6ir	(Blo	ws/ft))	(Drilling	Fluid, D	epth of Casin Resistance, e	g, atc.)
, ≥ °°							— o —	ž		α d		10 20	30 4	10		, Drinng	Tresistance, a	510.)
	•	Artificial Fill Silty SAND (SM):	brown dry scat	ttered col	hbles gravel			-										
	1	and vegetation.	brown, ary, ood		bbieb, glavel,		<u></u>	1										
		_					E											
	•						- 2 -											
							E	-										
	1						- 3 -	-										
							Ę	1										
	1						E 4 -	1										
MN7 20-40.01 020210210								1										
	1						- 5 -]										
							= =	1										
]						6 -	1										
							=	1										
							- 7 -	1										
	1						¢ 1	1										
3																		
	1						- 8 -	-										
							F a F	1										
<u> </u>	}						- 9 -]										
								1										
	1	Sandy SILT (MLS	5) and Silty SAN	D with Gr	avel (SM): blac	k –	10 -		E	5								
		and orangish brow abundant asphalt	wn, medium den	se to stiff	r, moist,			<u>2</u>	SPT	12	8							
							- 11 -	1	ΪĒ	8	1	61						
							= 10 =											
3	ĺ						- 12 -	1										
								1										
							- 13 -	1										
							= =	1										
							E 14 -	-										
								1										
	1						- 15 -	1										
]							E _ E											
							- 16 -	1										
<u>s</u> ::::::::::::::::::::::::::::::::::::							E =]										
≩ : : : :							- 17 -	1										
	1						E E	1										
	1						- 18 -	1										
3							E =	1										
	1						- 19 -	1										
ŧŀŀŀ!	·						F =	1										
							<u> </u>	1										

Project	Proposed Athletic Complex	Project No.			700	1141(11						
ocation	Proposed Athletic Complex	Elevation a	nd Da	atum	100	11410	71						
	Claremont Mckenna College				Арр	rox.	(feet	, MS	L)				
		Denth	<u>ب</u>			imple [1.) /-1			Rema	rks	
Elev (ft)	Sample Description	Depth Scale	Number	Type	Recov.	Penetr. resist BI /6in		N-Valu Blows		(Drillin Fluid Los	ng Fluid, Dep ss. Drillina R	oth of Casing, tesistance, et	.)
	Silty SAND (SM): brown, medium dense, occasional coars	e - 20 -				37	10	20 30	40		, 3	,	
	gravel, pieces of clay brick.	- 21 -	S-2	SPT	1	6	15						
			<u> </u>	E	-	9							
		- 22 -											
		- 23 -											
		- 24 -											
		_ 25 -											
		- 26 -											
		_ 27 -											
		- 28 -											
		_ 20 _											
		- 29 -											
			_										
	Silty SAND with Gravel (SM): brown, medium dense, slightly moist.	E	S-3		2	7							
		- 31 -	ς	S		12	2	24•					
		- 32 -											
		- 33 -											
		- 34 -											
		- 25											
		- 35 -											
		- 36 -											
		- 37 -											
		Ē											
		- 38 -											
		39 -											
		-	1										
	Concrete gravel clasts.	- 40 -	4	LE		10	1						
		41 -	S-4	SPT	2	10 10	20	0					
		- 42 -	-		1		1						
		42											
		- 43 -											
		- 44 -											
		E 44	-	1				11					

oject		Proposed Athletic Complex	Project No.			70	011410	1					
ocation			Elevation a	nd Da	atum	I							
		Claremont Mckenna College				Ар	prox. (f	eet, MSL	_)				
₫ ⊣.							ample Da				Rema	rks	
MATERIAL SYMBOL (j	ev. ft)	Sample Description	Depth Scale	Number	Type	SCOV.	Penetr. resist BL/6in	N-Value (Blows/fl	e t)	(Drilling	Fluid, Dep	th of Casing esistance, e), ta)
≥″ 		Gray brown and dark brown, dense, some asphalt, oxidized	45 -	ź	_		-	10 20 30	40	FILIALOS	s, Dhiling R	esistance, e	ac.)
		and corroded metal.	E	S-5	SPT	15	27 20						
			- 46 -	- ^o	S] `	16	36					
			- 47 -										
			-	-									
			- 48 -	7									
			- 49 -										
			- 40										
		Young Alluvial Fan Deposit (Qya)		-		-	9						
		Sandy SILT (ML): orangish brown, very stiff, moist, scattered weathered gravel, limonite staining.		9-9-1	SPT	18							
		scattered weathered gravel, infolitie starting.	- 51 -	Ľ			21	29					
			- 52 -						\setminus				
			-										
			- 53 -	1									
			- 54 -	1									
				-									
		Silty SAND with Gravel (SM): orangish brown, very dense,				-	17						
		slightly moist, fine to medium sand and gravel, very weathered gravel clasts.	- 56 -	S-7	SPT	15							
<u>.</u>		Total Depth = 56.5 feet		-		╞	50/4"	50)/4"	•			
		No groundwater encountered. Boring backfilled with cuttings.	- 57 -										
			- 58 -	-									
				-									
			- 59 - -										
			- 60 -										
			- 61 -										
			- 62 -										
			63 -										
			64 -										
			E										
			65 -										
			66 -										
			F										
			- 67 -										
			68 -										
			- 69 -										
			F	7									

				Log		Boring			В-6	60		_		Sheet	1	of	2
Project	Dropood Athlatia	Complex			Pr	oject No.			7001	1410	1						
Location	Proposed Athletic	Complex			Ele	evation ar	id Da		7001	11410	1						
Drilling Com	Claremont Mcken	na College				ate Starteo	4		Appr	юх. (1	feet, N			inished			
	2R Drilling				De		1	0	8/08	/2023		Dat	le Fi		08/08	3/2023	
Drilling Equi	ipment				Co	ompletion	Dept					Roo	ck D	Depth			
Size and Ty	CME-75 Truck-mo rpe of Bit	ounted Drill Rig			-			.	3 Distu	36.5 ft irbed			Und	listurbed		Core	
Casing Dian	8-inch O.D. Hollov	v Stem Auger		sing Depth (ft)	NL	umber of S	Samp	les	First		7				0	24 HR.	
0	. ,		Ca			ater Leve			$\underline{\nabla}$			ľ				<u> </u>	
Casing Harr	nmer	Weight (lbs)		Drop (in)	Dr	illing Fore	man	Ic	irde	& Edd	انم						
Sampler	2-inch O.D. SPT S			Dara (in)	_ Fie	eld Engine	er	00	nge i								
Sampler Ha	Automatic	Weight (lbs)	140	Drop (in) 30		1	<u> </u>	Α.	Niel	b <mark>las</mark> nple Da	oto						
SYMBOL (f		Sample Descr	intion			Depth	Der	e				/alue			Rema		
MATR NYS (f	it)	Sample Descr	ιριιοπ			Scale	Number	Type	Reco	Penetr. resist BL/6in	(Blo 10 20	ws/ft)		(Drilling F Fluid Loss, I	Drilling F	pth of Casing Resistance, e	ic.)
	Artificial Fill): light brown, dry, a	obundant	aabblaa													
	SIILY SAIND (SIVI). light brown, dry, a	apundanı	copples.		- 1 -											
						2 -											
						- 3 -											
						- 4 -											
						- 5 -											
						6 -											
						- 7 -											
						- 8 -											
						- 9 -											
	Silty SAND with	Gravel (SM): light	grayish b	rown, medium		- 10 -	-	FE		15				Sampler	push	ed a rock.	
	dense, dry.						5	SPT	-	10							
						- 11 -		Ē		10	20•						
						- 12 -											
						- 13 -											
						- 14 -											
	Dark brown dry	to slightly moist, pr	redomina	telv asphalt		- 15 -	-	╞		8							
				, aoprian.			S-2	SPT	9	8							
						- 16 -		0		10	18						
						- 17 -	-										
							1										
						- 18 -	1										
							1										
						- 19 -											
						E 20 -	1										

.

Project	Proposed Athletic Complex	Project No.			700)1141(71						
ocation	Proposed Athletic Complex	Elevation a	nd Da	atum	700	/11410	51						
	Claremont Mckenna College				Ap	orox.	(feet,	MS	L)				
L'A						ample [Rema	rke	
Elev. (ft)	Sample Description	Depth Scale	Number	Type	ecov.	Penetr. resist BI //in	[N 2] (E	I-Valu 3lows/	e ft)	(Drillin	g Fluid, Dep	th of Casing, esistance, etc	- >
≥ <i>0</i> 7	Orangish brown and medium to dark brown, loose to	20 -	_		_	-	נ 10	20 30	40		s, Dhiling R	esistance, etc	<i></i>)
	medium dense, slightly moist and moist, rare brick pieces.	-	S-3A/B	SPT	18	5							
		- 21 -	- - - - - -	l s	Ì	4	8						
		- 22 -	-					Ν					
			-										
		- 23 -	-										
		- 24 -	-										
			-										
	Dark brown, very dense, slightly moist, occasional brick	_ 25 -		SPT	3	50/3"		5	0/3"	•			
	pieces.	- 26 -	-										
		- 20								Heavy slow d	auger cł rilling.	natter, ver	у
		- 27 -	-										
			-										
		- 28 -	-							Less c	hatter, fa	ster drillir	ıg.
		- 29 -	-							1			
	Young Alluvial Fan Deposit (Qya) Silty SAND with Gravel (SM): orangish brown, medium dense, slightly moist, medium to fine sand and gravel.		1.0			9							
	dense, slightly moist, medium to fine sand and gravel.	- 31 -	- - 	SPT	9	7 7	14						
			1			'							
		- 32 -											
		- 33 -	=										
		-	1										
		- 34 -											
	Brown to slightly orangish brown, fine gravel, minor limonite	- 35 -	1	F									
	staining.	E	9	SPT	15	12 12							
		- 36 -	- 0	S		11	2	3•					
	Total Depth = 36.5 feet No groundwater encountered.	- 37 -	-										
	Borings backfilled with cuttings.	Ē											
		- 38 -											
		- 39 -	-										
		Ē											
		- 40 -											
		- 41 -											
		- 42 -											
		- 43 -	1										
		43	1										
		44 -	1										
		þ	1			1							

		NGA		Log		Boring			B-	61		_		Sheet	1	of	3
Project		Proposed Athletic C	Complex		Pro	oject No.			700	11410)1						
Location	n				Ele	evation an	id Da	tum									
Drilling	Compa	Claremont Mckenna	a College		Da	te Starteo	ł		Арр	rox. (teet,			inished			
Drilling	Fauinm	2R Drilling			Co	mpletion	Dentł		8/09	9/2023	3	R	nck [Depth	08/09	9/2023	
Drining	Lquipin	Track-mounted Drill	I			mpletion	Бери			60.5 fl	t			John			
Size an	d Type	of Bit 8-inch O.D. Hollow	Stem Auger		Nu	mber of S	Sampl	les	Dist	urbed	6	3	Unc	disturbed	1	Core	
Casing	Diamet			Casing Depth (ft)	Wa	ater Level	(ft.)		First				Cor	mpletion		24 HR.	
Casing	Hamme	er	Weight (lbs)	Drop (in)	Dri	illing Fore	man	I	_				<u> </u>	-		<u>_</u>	
Sample	r	2-inch O.D. SPT Sp	blit-Barrel, 2.5-inch I.D.		Fie	eld Engine	er	Je	eff								
Sample	r Hamm	^{her} Automatic	Weight (lbs) 140	Drop (in) 30				A.		blas							
.LANGAN MATERIAL SYMBOL	Elev.		Comula Deceriation			Depth	er	ø		mple D		Value			Rema		
Report: Log - LANGAN	(ft)		Sample Description			Scale	Number	Type	Reco (in)	Penetr. resist BL/6in	(B	ows/f 20 30		(Drilling Fluid Loss	Fluid, De , Drilling	epth of Casing Resistance, e	l, tc.)
		Artificial Fill	light brown, dry, abund	ant gravel		- 0 -											
Zeport		cobbles, concrete	and asphalt clasts, sca	attered vegetation.		- 1 -											
	·]																
1:39 A						- 2 -											
10:01						- 3 -											
\$/2023																	
						- 4 -											
						- 5 -											
GINT																	
101						- 6 -											
AL/GINTLOGS/700114101 - GINT GPJ						- 7 -											
)GS/7																	
F						- 8 -											
AL/G						- 9 -											
ECHNIC	:																
		Silty SAND with C	Gravel (SM): dark brown bist, occasional concret	to brown, medium	n —	10 -	_			8							
		dense, siightiy me				- 11 -	ې ۲	SPT	10	11 8	19						
DISCIPLIN							-			0							
						- 12 -											
						- 13 -											
01/PROJ						- 14 -											
4101/						- 15 -											
7001																	
						- 16 -											
						- 17 -											
(INO)						- 18 -											
SAN C	:					- 19 -											
THE REAL																	
≈ ha ol	•					<u> </u>		I	I				-	I			

roject	Dranged Athletic Complex	Project No.			700	11110	4					
ocation	Proposed Athletic Complex	Elevation an	d Da		700	11410	1					
	Claremont Mckenna College				Арр	rox. (f	eet, M	SL)				
					Sa	mple Da	ata					
Elev (ft)	Sample Description	Depth Scale	Number	Type		Penetr. resist BL/6in	N-Va (Blow	alue /s/ft)	(Drilli	Rema ng Fluid, Dep	rKS oth of Casing Resistance, el	,
₩ S S S S S S S S S S S S S S S S S S S		20 -	Nur	ŕ	(i	Per BL	10 20 3		Fluid Lo	oss, Drilling F	Resistance, el	tc.)
	Dark brown, abundant asphalt clasts/gravel.		2	ĻĒ	+	7						
		- 21 -	S-2	SPT	14	12 12	24•					
			-									
		- 22 -										
		- 23 -										
		- 24 -										
		25 -										
		- 26 -										
		- 27 -										
		- 28 -										
		- 29 -										
	Dark brown and black, very dense, moist, abundant	- 30 -				18			Easy	drilling fro	om 30-34 t.	fee
	asphalt.	- 31 -	S-3	СR	18	34		66		at 34 fee	t.	
						32						
		- 32 -										
		- 33 -										
		- 34 -										
		- 35 -										
		- 36 -										
		- 37 -										
		- 38 -										
		- 39 -										
	Silty SAND (SM): dark brown and brown, dense, slightly	· - 40 -	-	E		9			Easy	drilling fro	om 40-44.	5
	moist, abundant asphalt.	- 41 -	S-4	SPT	15	16		49	sand	in cutting	n asphalt s, likely	
						33		49	neste	d asphalt at 45-50	at depth,	
		- 42 -										
		43 -										
		44 -										
		= =	1									

Project			Project No.			700							
ocation		Proposed Athletic Complex	Elevation ar	nd Da	tum	700	11410	1					
		Claremont Mckenna College				Арр	rox. (f	eet, M	SL)				
노노						Sa	mple Da	ata			Deme	ul ca	
MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Va (Blow	/s/ft)	(Drillir Fluid Lo	Remaing Fluid, Dep ss, Drilling R	th of Casing esistance, e	J, etc.)
			45 –	2		_		10 20	30 40				
			46 -										
			- 47 -										
			- 48 -										
			- 49 -										
			- 50 -	S-5	SPT	0	50/4"			No sa	mple reco	overv:	
									50/4"	sampl	eḋ on a r	ock.	
			- 51 -										
			- 52 -										
			- 53 -										
			- 54 -										
			- 34										
		Young Alluvial Fan Deposit (Qya)		S-6	SPT	5	50/5"		50/5"	Rocky	from 50-	55 feet,	
		Silty SAND with Gravel (SM): orangish brown and gray, very dense, slightly moist, fine to very coarse gravel (potentially cobble).	- 56 -							drilling	auger ch].	latter, sic	W
			57 -										
			- 58 -										
			- 59 -										
			- 60 -						50/2"				
		Silty SAND with some Gravel (SM): orangish brown, very dense, slightly moist, iron oxide or limonite staining, some		S-7	SPT	5	50/2"		50/2	Ī			
		↓ fine to medium gravel, manganese oxide stained gravel. Total Depth = 60.5 feet	/										
		No groundwater encountered. Boring backfilled with cuttings.	62 -										
			60										
			- 63 -										
			64 -										
			65 -										
			66 -										
			67 -										
			- 68 -										
			- 69 -										
			E E	1									

LA	4 <i>NL</i> /	4/V	Log	of E	Boring			B-	62		_		Sheet	1	of	2
Project				Pr	oject No.											
Location	Proposed Athletic C	Complex		FI	evation an	nd Da		700	11410	1						
Location	Claremont Mckenna	a College			svation a			App	rox. (1	feet N	/SI)				
Drilling Con	npany			Da	ate Starteo	ł							inished			
Deilling Free	2R Drilling					Devel		8/11	/2023			-1- 5	No. or Alla	08/1	1/2023	
Drilling Equ	Ipment Track-mounted Drill				mpletion	Depti	n		35.5 ft		Ro	CK L	Depth			
Size and Ty	ype of Bit			NI:	Imber of S	Some	loo		urbed			Unc	listurbed		Core	
Casing Diar	8-inch O.D. Hollow meter (in)	Stem Auger	Casing Depth (ft)	_	ater Level			First		5			npletion	0	24 HR.	
Casing Han	nmer	Weight (lbs)	Drop (in)		illing Fore			Ţ				Ţ			Ţ	
Sampler							Je	erry								
Sampler Ha	2-inch O.D. SPT Sp	Weight (lbs)	Drop (in)	_ Fi€	eld Engine	er										
	Automatic	140	30 Drop (III)			1	Α.	Nie Sa	blas mple Da	ata						
	lev.	Sample Description			Depth	ber	e			N-V	/alue		(Drilling	Rem	epth of Casing	
SYN (ft)				Scale	Number	Type	Rec (in	Penetr. resist BL/6in	(BIO 10 20	ws/ft	<i>'</i>	Fluid Loss	, Drilling	Resistance, e	, tc.)
<u> <u> </u></u>	Artificial Fill				<u> </u>					10 20						
tion in the second	Silty SAND (SM): gravel, and veget	light brown, dry, scatter ation	ed cobbles,		- 1 -											
₽ N	graver, and reget				F'-											
¥					- 2 -	-										
74:44						1										
					- 3 -	1										
8/28/2023 10:04:44 AM						1										
8/28					- 4 -	-										
					÷ _ :	1										
- GINT.GPJ					5 -	1										
ē.					6 -	1										
					Ē	1										
					- 7 -											
Z/SE						1										
Š.					- 8 -	-										
NICAL/GINTLOGS/700114101						1										
					- 9 -	1										
<u> </u>					- 10 -											
	Silty SAND with C	Gravel (SM): light gray a slightly moist, some as	nd dark brown,		E '' E	1_	LE	_	29							
		olightly molet, some at	priat.		- 11 -	Ś	SPT	14	43			78	,			
					E :		FE		35							
					- 12 -	1										
					E :	1										
					- 13 -	1										
					- 14 -											
					- '4	1										
					- 15 -	-										
						1										
					- 16 -	1										
						1										
					- 17 -	1										
					- 18 -	1										
o. Z					- 19 -	1										
SA SA SA SA SA SA SA SA SA SA SA SA SA S					Ē	1										
Z					<u>ئے ₂₀ کے ل</u>	1										

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roject	Proposed Athletic Complex	Project No.			70	011410	1				
ocation	Proposed Adhead Complex	Elevation a	nd Da	atun	n 70	011410	1				
	Claremont Mckenna College				Ap	prox. (feet, MSL)			
7		I		_	S	Sample D	ata				
Elev. (ft)	Sample Description	Depth Scale	Number	Tvne		(III) Penetr. resist BL/6in	N-Value (Blows/ft)	([Drilling Fluid,	marks Depth of Cas	sing,
≷∽ `´		20 -			-	-	10 20 30 4	0 Fluid	d Loss, Drilli	ng Resistance	e, etc.)
	Light brown to orangish brown.	-	S-2	SPT		2 36 50/3"	50/	2"			
		- 21 -									
		- 22 -									
			1								
		- 23 -	-								
		- 24 -									
	Light brown.	_ 25 -	<u>.</u>	SPT	⊨∝	29					
		- 26				50/5"	50/	5"•			
		- 26 -									
		_ 27 -									
			1								
		- 28 -									
		- 29 -									
			1								
	Young Alluvial Fan Deposit (Qya) Silty SAND (SM): orangish brown, very dense, slightly	30 -	S-4	SPT	E 6						
	moist, very weatherd gravel, limonite staining.	- 31 -	-	+		50/5"	50/	5"•			
		- 32 -	-								
		- 33 -	1								
			1								
		- 34 -									
	Silty SAND with Gravel (SM): orangish brown very dense		S-5	SP	t o	50/6"					
	Silty SAND with Gravel (SM): orangish brown, very dense, slightly moist, limonite and manganese oxide staining, very weathered fine to medium gravel.				Ħ		50/	6"•			
		36 -	-								
	Total Depth = 36.5 feet No groundwater encountered.	- 37 -	1								
	Boring backfilled with cuttings.		1								
		- 38 -									
		- 39 -	1								
			1								
		- 40 -]								
		41 -	1								
			1								
		- 42 -]								
		- 43 -	4								
			1								
		- 44 -	1								
			-								

MOISTURE DENSITY TESTS

PROJECT	Langan # 7001141	101	JOB NO.	2012-0057	BY	LD	DATE	11/15/22
Sample No.	B-15 / S-8	B-16 / S-3	B-17 / S-12	B-20 / S-2	B-21 / S-1	B-21 / S-3	B-21 / S-7	B-21 / S-9
Depth (ft)	5.0	7.5	50.0	5.0	2.5	7.5	25.0	35.0
Testing								
Soil Type	Brown, Silty Sand w. Gravel	Brown, Silty Sand w. Gravel	Brown, Silty Sand w. Gravel	Brown, Silty Sand w. Gravel	Brown, Silty Sand w. Gravel	Brown, Silty Sand w. Gravel	Brown, Silty Sand w. Gravel	Brown, Silty Sand w. Gravel
Wet+Tare	Disturbed	Disturbed	980.2	498.7	913.9	Disturbed	551.8	515.9
Tare			5	3	5		3	3
Wet Weight	304.2	160.0	167.9	84.0	173.7	228.7	186.8	123.9
Dry Weight	301.5	154.0	151.3	80.0	165.7	219.7	180.6	117.7
Wet density			132.0	107.1	121.0		121.9	111.9
% Water	0.9	3.9	11.0	5.0	4.8	4.1	3.4	5.3
Dry Density			119.0	102.0	115.4		117.9	106.3
O.B.Press(psf)								
Sample No.	B-22 / S-10	B-23 / S-1	B-23 / S-3	B-25 / S-2	B-28 / S-2	B-31 / S-3	B-33 / S-4	B-35 / S-2
Depth (ft)	55.0	2.5	7.5	5.0	5.0	7.5	10.0	5.0
Testing			SPT					
Soil Type	Brown, Clayey Sand w. Gravel	Brown, Silty Sand w. Gravel						
Wet+Tare	1003.4	346.7	Disturbed	Disturbed	942.4	665.8	589.1	Disturbed
No. Ring	5	2			5	4	3	
Wet Weight	216.2	138.0	254.6	127.5	148.5	150.5	208.5	123.0
Dry Weight	194.9	133.2	245.1	123.3	140.9	143.2	202.7	119.7
Wet density	135.9	113.1			125.7	107.3	132.3	
% Water	10.9	3.6	3.9	3.4	5.4	5.1	2.9	2.8
Dry Density	122.5	109.2			119.3	102.1	128.6	
O.B.Press(psf)								



MOISTURE DENSITY TESTS

PROJECT	Langan # 7001141	01	JOB NO.	2012-0057	BY	LD	DATE	11/15/22
Sample No.	B-35 / S-4	B-37 / S-1	B-40 / S-2	B-41 / S-1	B-41 / S-3	B-42 / S-2	B-42 / S-4	B-44 / S-6
Depth (ft)	10.0	2.5	5.0	2.5	7.5	5.0	10.0	50.0
Testing								
Soil Type	Brown, Silty Sand w. Gravel	Brown, Silty Sand w. Gravel	Brown, Clayey Sand w. Gravel	Brown, Silty Sand w. Gravel				
Wet+Tare	889.8	750.7	1238.3	713.8	1115.0	548.7	810.8	931.3
Tare	5	4	6	4	6	3	4	5
Wet Weight	144.6	108.4	126.9	114.8	150.9	253.1	312.4	145.3
Dry Weight	133.6	103.8	115.4	112.2	145.5	245.0	272.8	135.6
Wet density	116.9	125.1	140.7	117.3	123.5	121.1	137.6	123.9
% Water	8.2	4.4	10.0	2.3	3.7	3.3	14.5	7.2
Dry Density	108.0	119.7	127.9	114.7	119.1	117.2	120.2	115.6
O.B.Press(psf)								
Sample No.								
Depth (ft)								
Testing								
Soil Type								
Wet+Tare								
No. Ring								
Wet Weight								
Dry Weight								
Wet density								
% Water								
Dry Density								
O.B.Press(psf)								



WASH #200 SIEVE - ASTM D 1140-92

Job Name Langan # 700114101

Date 11-15-22

Job No. 2012-0057

By LD

Sample	B-28/S-4	Sample	B-33/S-5	Sample	B-40/S-3
Soil Type		Soil Type		Soil Type	
% water		% water		% water	
Wet weight		Wet weight		Wet weight	
Dry weight	238.3	Dry weight	210.5	Dry weight	234.2
+ 200 sieve	196.3	+ 200 sieve	143.6	+ 200 sieve	139.3
% Retained	82.4	% Retained	68.2	% Retained	59.5
%Pass. #200	18	%Pass. #200	32	%Pass. #200	41
					-
Sample	B-42/S-4	Sample	B-45/S-5	Sample	_
Soil Type		Soil Type		Soil Type	
% water		% water		% water	
Wet weight		Wet weight		Wet weight	
Dry weight	272.8	Dry weight	317.5	Dry weight	
+ 200 sieve	153.2	+ 200 sieve	222.8	+ 200 sieve	
% Retained	56.2	% Retained	70.2	% Retained	
%Pass. #200	44	%Pass. #200	30	%Pass. #200	
Sample		Sample		Sample	
Soil Type		Soil Type		Soil Type	
% water		% water		% water	
Wet weight		Wet weight		Wet weight	
Dry weight		Dry weight		Dry weight	
+ 200 sieve		+ 200 sieve		+ 200 sieve	
% Retained		% Retained		% Retained	
%Pass. #200		%Pass. #200		%Pass. #200	

Sample	Sample	Sample	
Soil Type	Soil Type	Soil Type	
% water	% water	% water	
Wet weight	Wet weight	Wet weight	
Dry weight	Dry weight	Dry weight	
+ 200 sieve	+ 200 sieve	+ 200 sieve	
% Retained	% Retained	% Retained	
%Pass. #200	%Pass. #200	%Pass. #200	

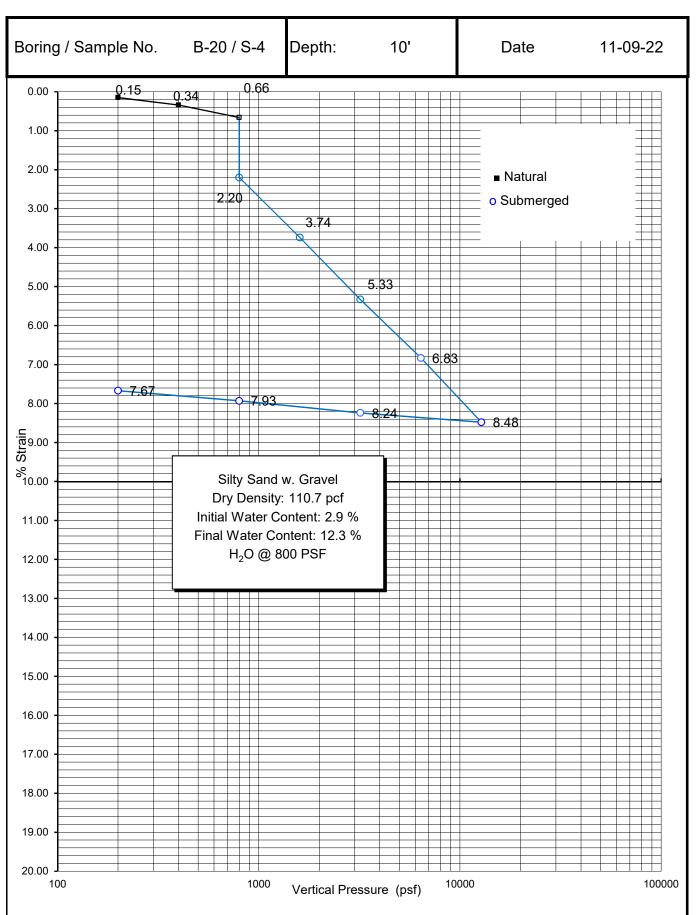


Langan # 700114101

SOIL TEST RESULTS

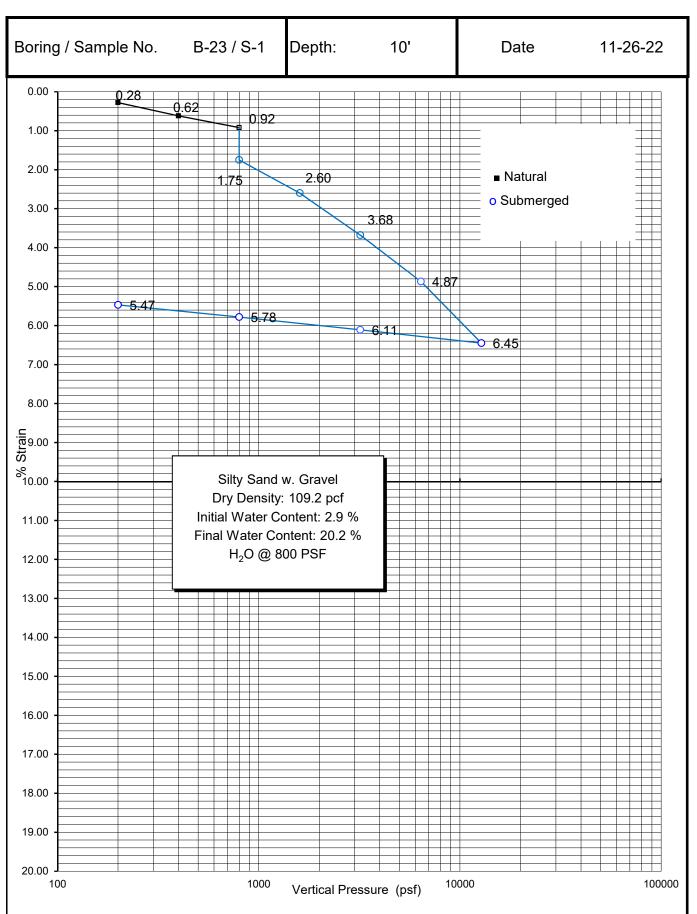
SAMPLE NO.:	B-20 / Bulk	B-21A / Bulk	B-23 / Bulk	B-44 / Bulk	
Depth:	1' - 5'	10' - 15'	5' - 10'	1' - 10'	
DIRECT SHEAR TEST (type)					
Initial Moisture Content %					
Dry Density (pcf)					
Normal Stress (psf)					
Peak Shear Stress (psf)					
Ultimate Shear Stress (psf)					
Cohesion (psf)					
Internal Friction Angle (degrees)					
EXPANSION TEST UBC STD 18-2					
Initial Dry Density (pcf)					
Initial Moisture Content %					
Final Moisture Content %					
Pressure (psf)					
Expansion Index Swell %					
CORROSIVITY TEST					
Resistivity (CTM643) (ohm-cm)	750	1800	7700	7100	
pH (CTM643)	7.6	7.2	7.3	7.4	
CHEMICAL TESTS					
Soluble Sulfate (CTM 417) (ppm)	189	4267	197	234	
Chloride Content (CTM 422) (ppm)	41	126	89	27	
Wash #200 Sieve (ASTM-1140) %					
Sand Equivalent (ASTM D2419)					

CONSOLIDATION TEST - ASTM D2435



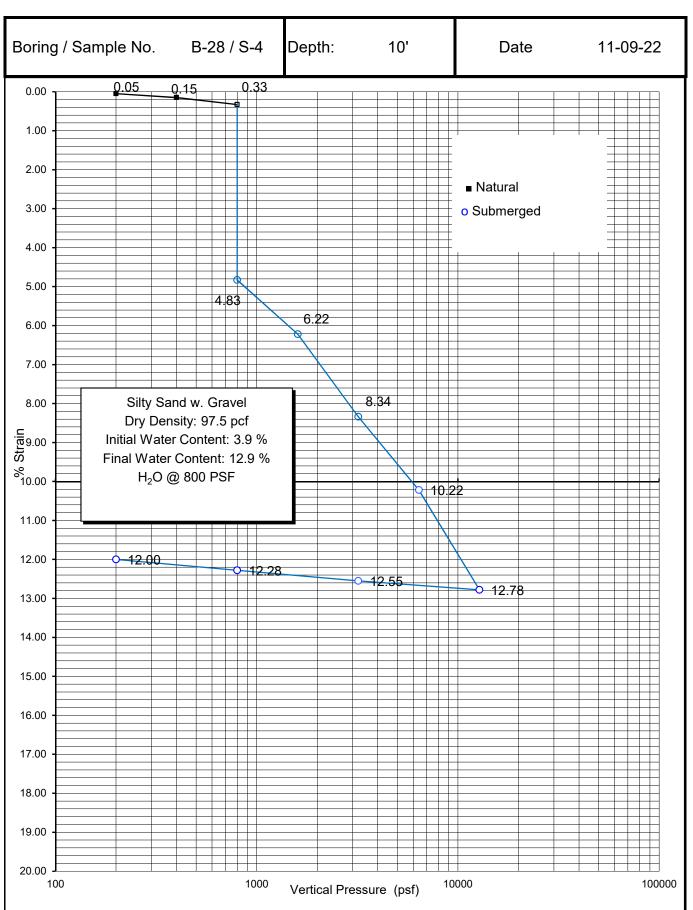


CONSOLIDATION TEST - ASTM D2435



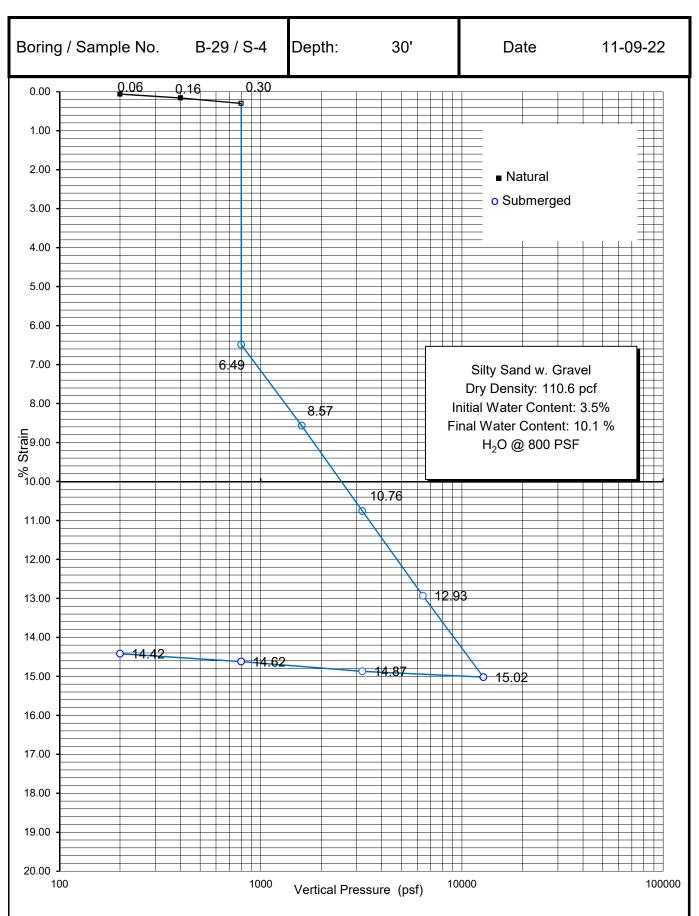


CONSOLIDATION TEST - ASTM D2435



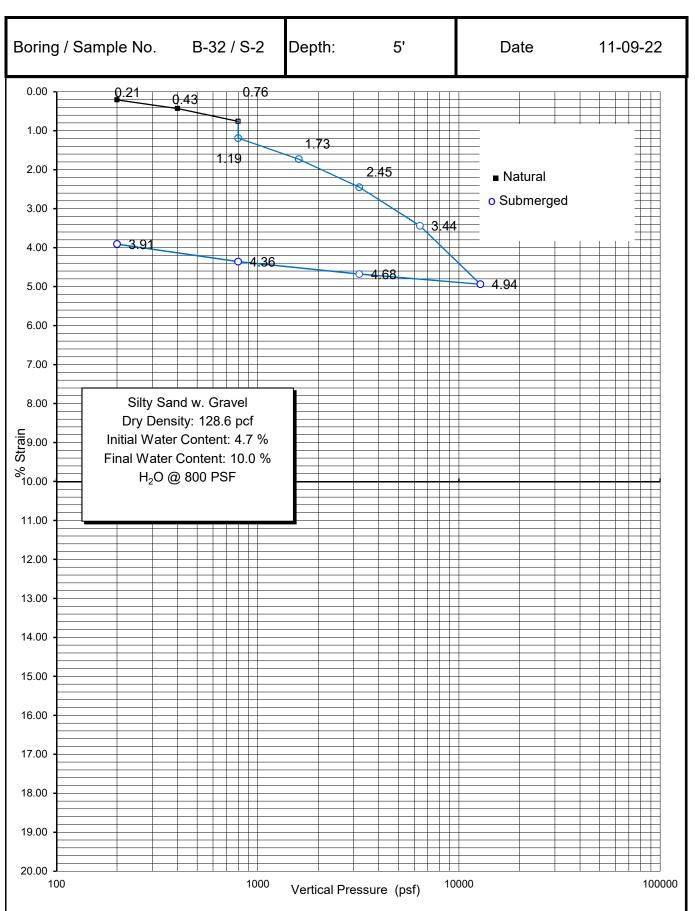


CONSOLIDATION TEST - ASTM D2435



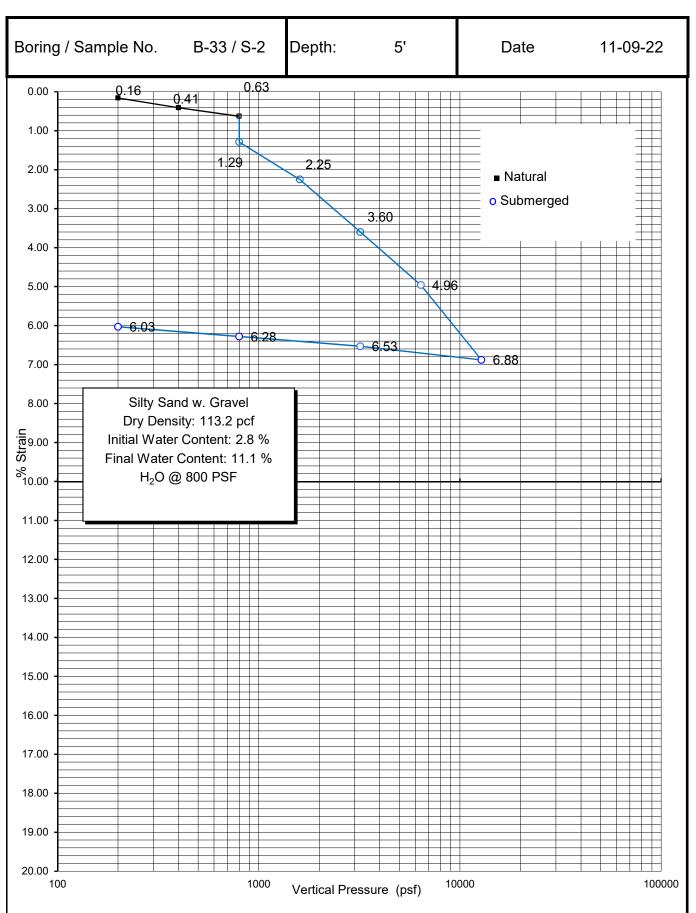


CONSOLIDATION TEST - ASTM D2435



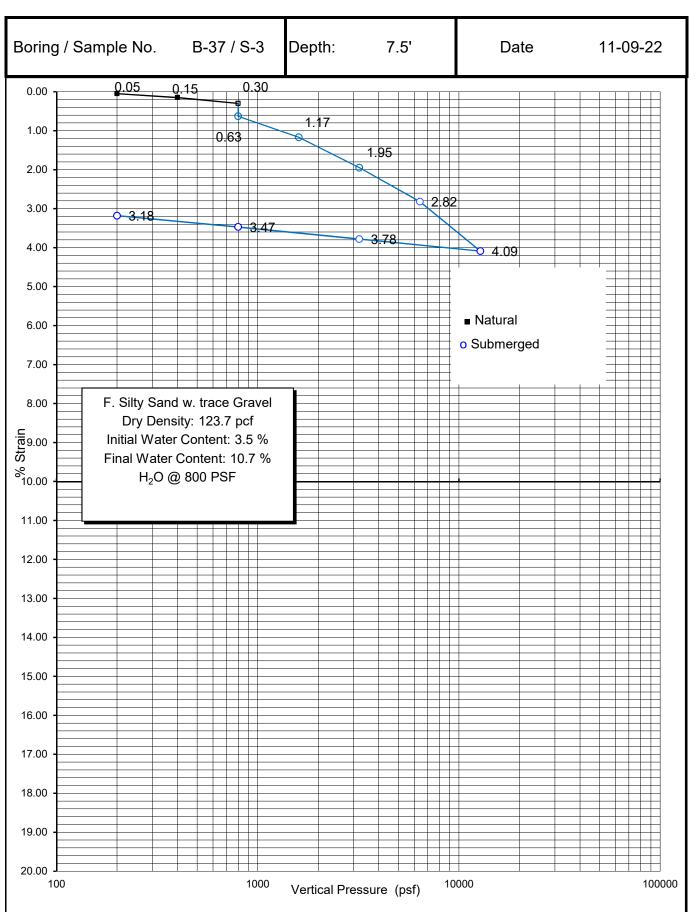


CONSOLIDATION TEST - ASTM D2435



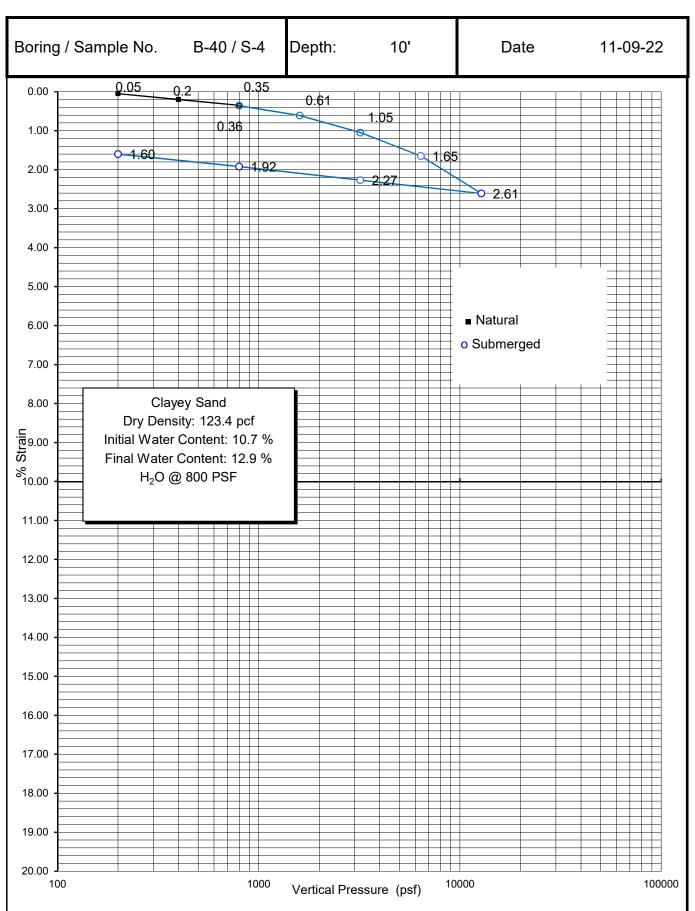


CONSOLIDATION TEST - ASTM D2435



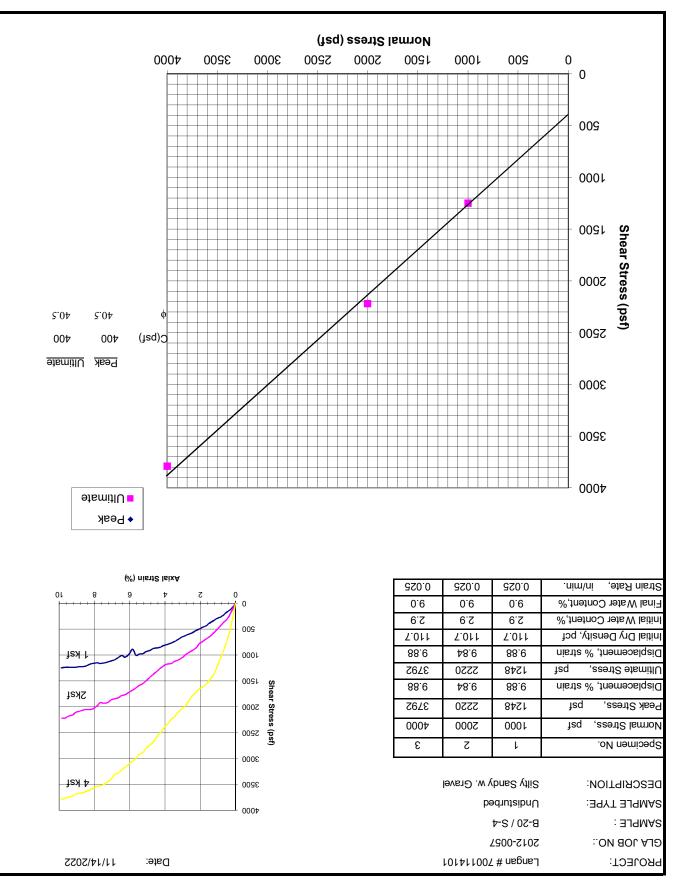


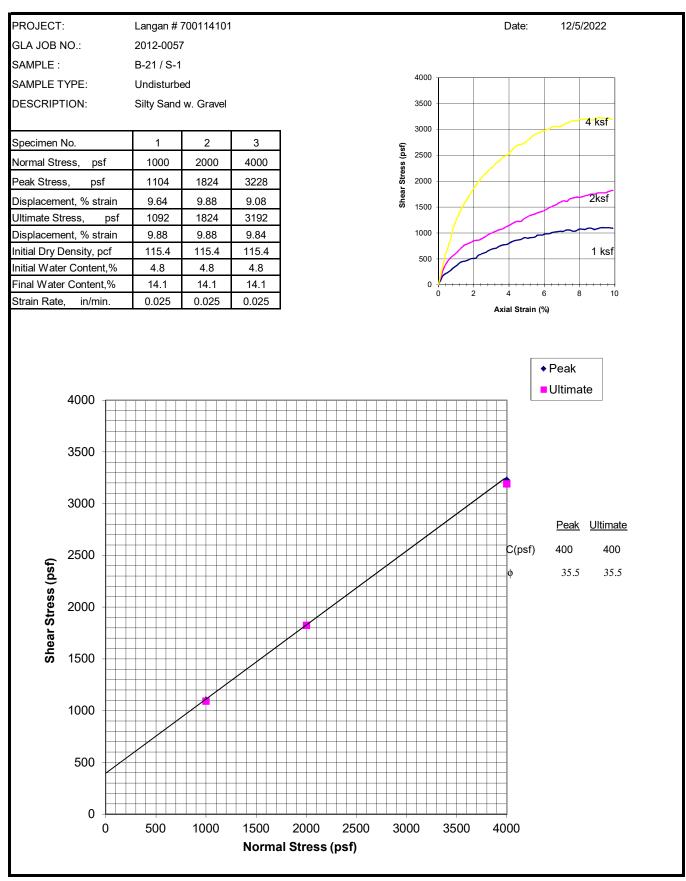
CONSOLIDATION TEST - ASTM D2435

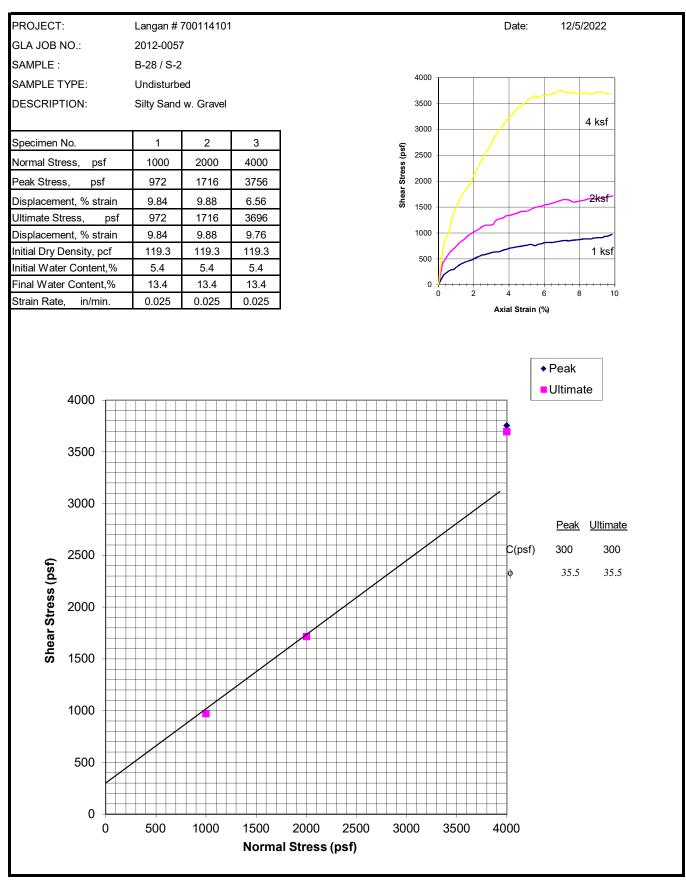


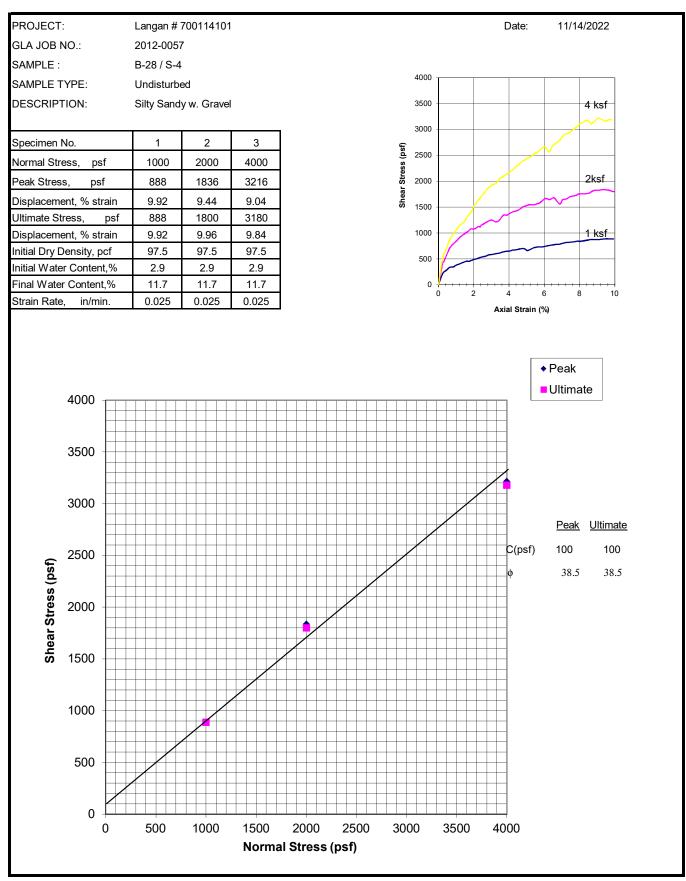


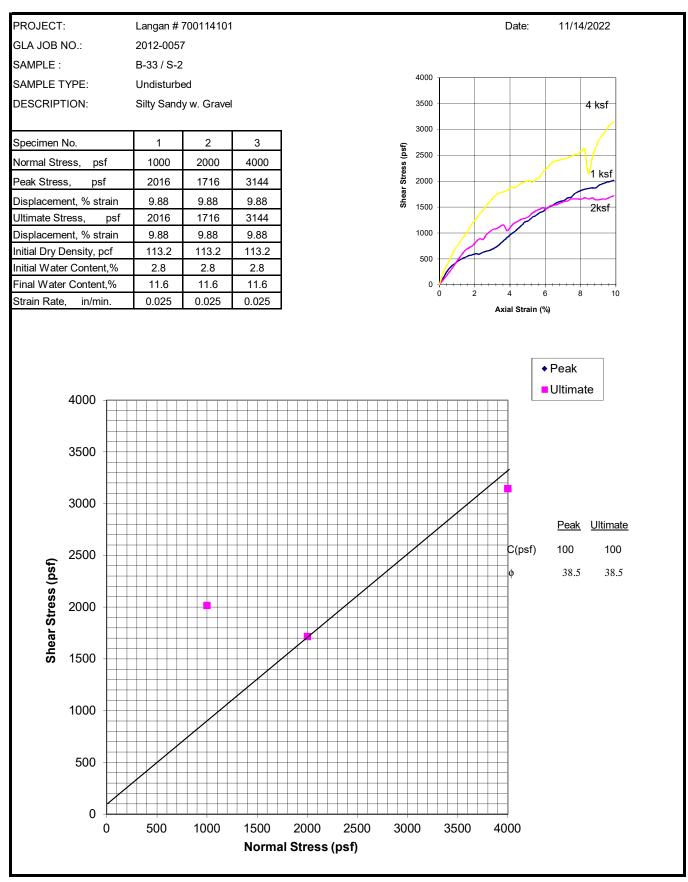
DIRECT SHEAR 0800 MTSA

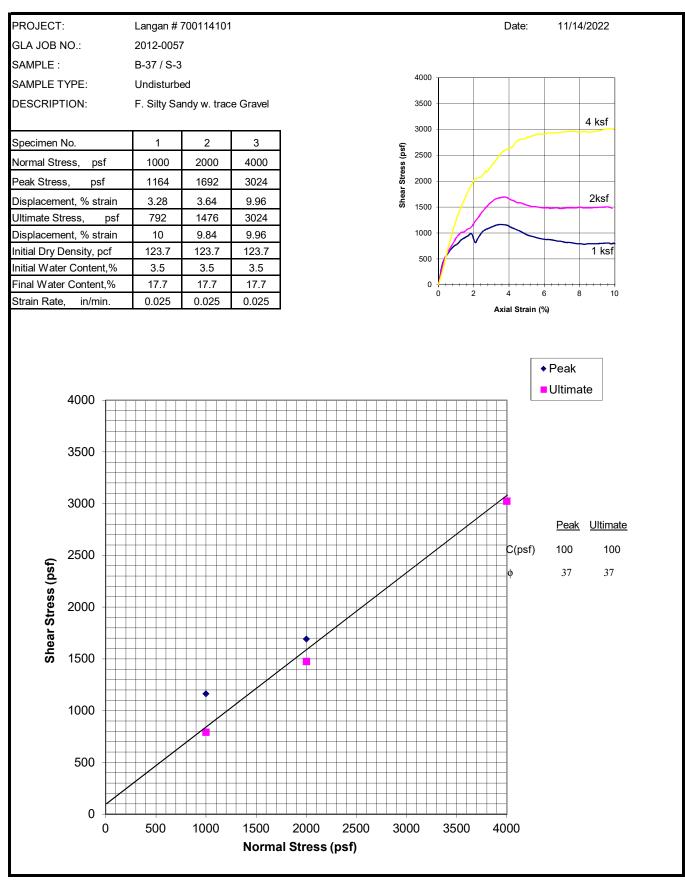


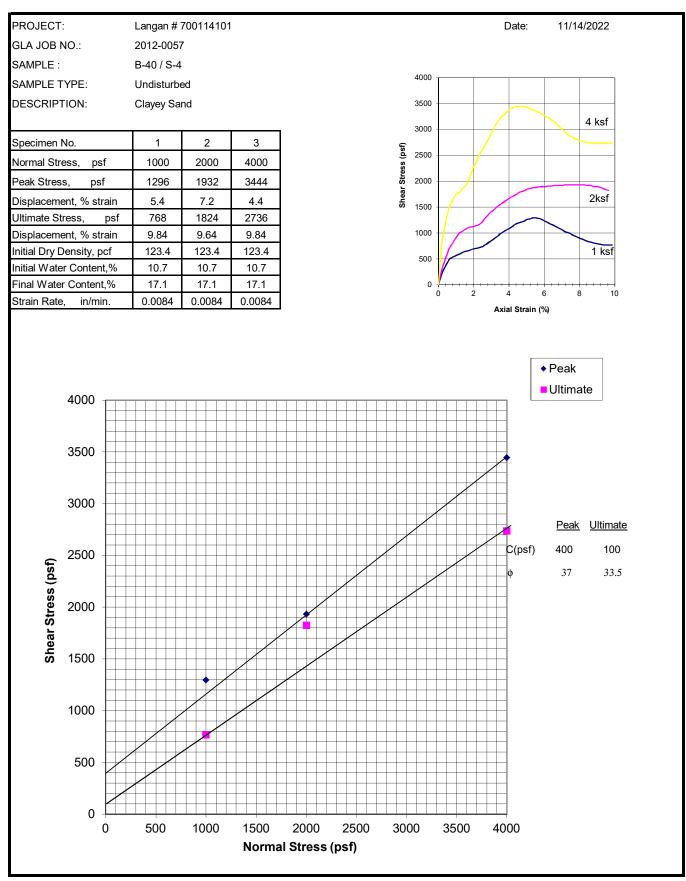


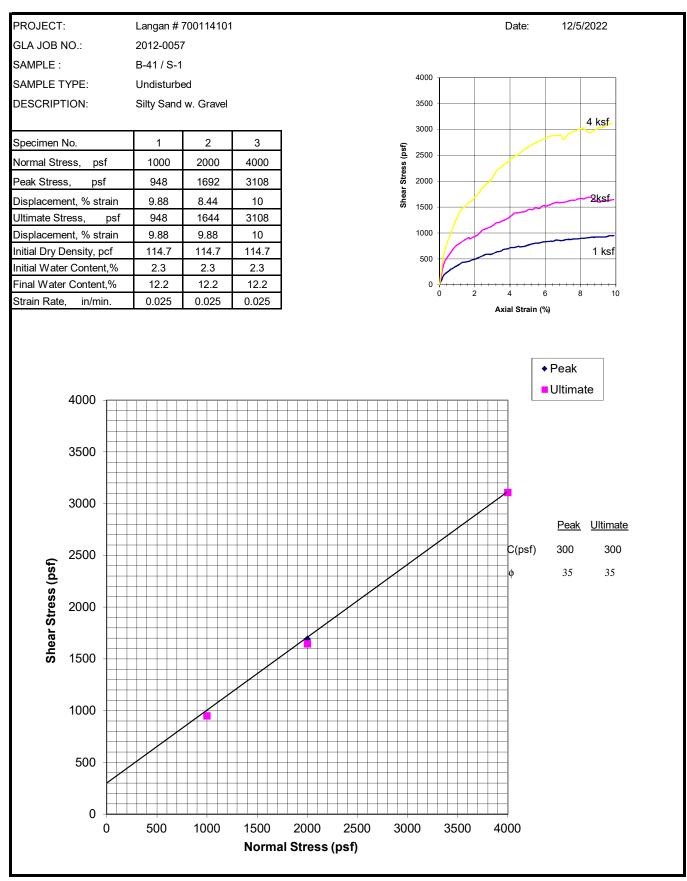




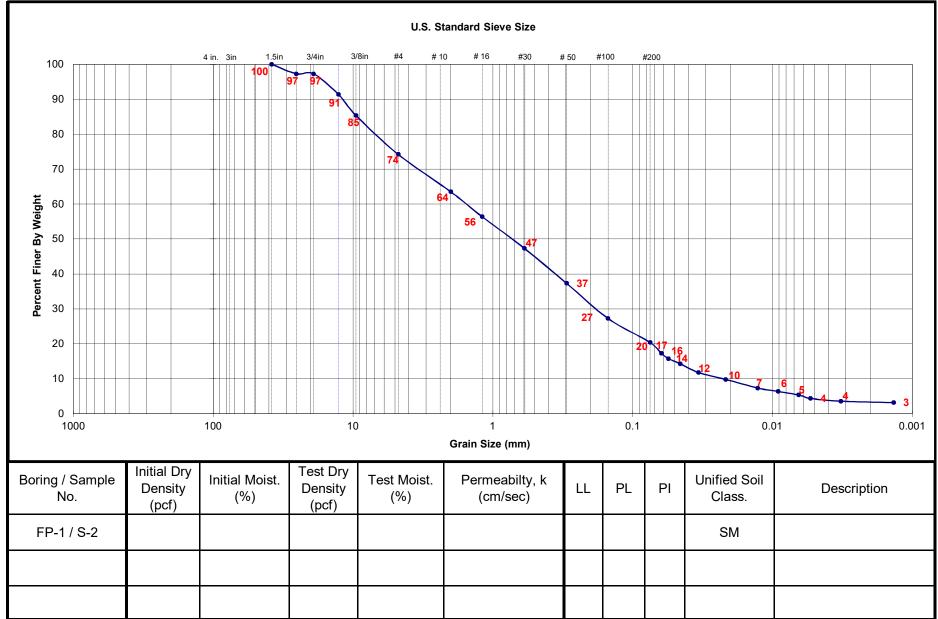






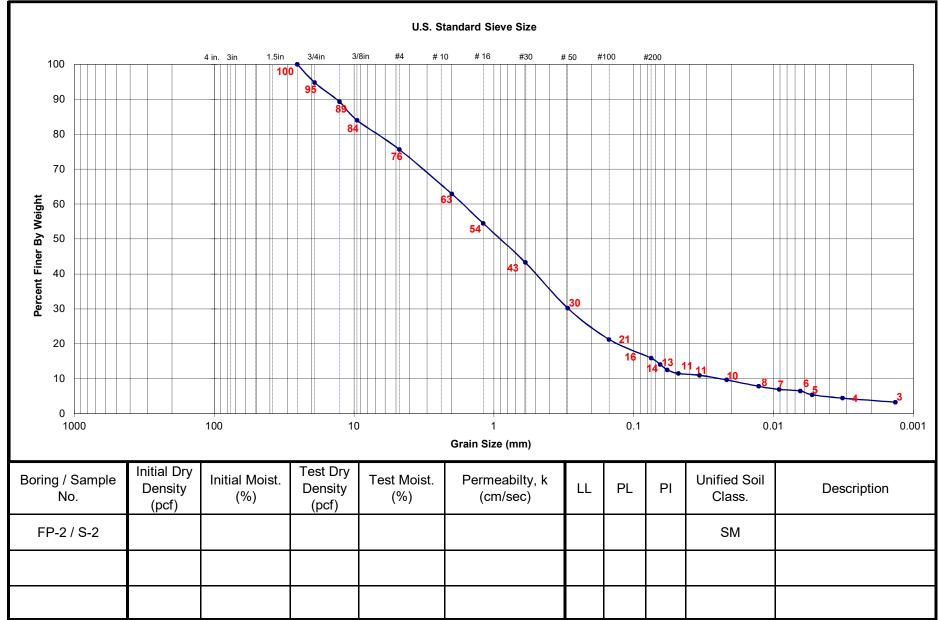






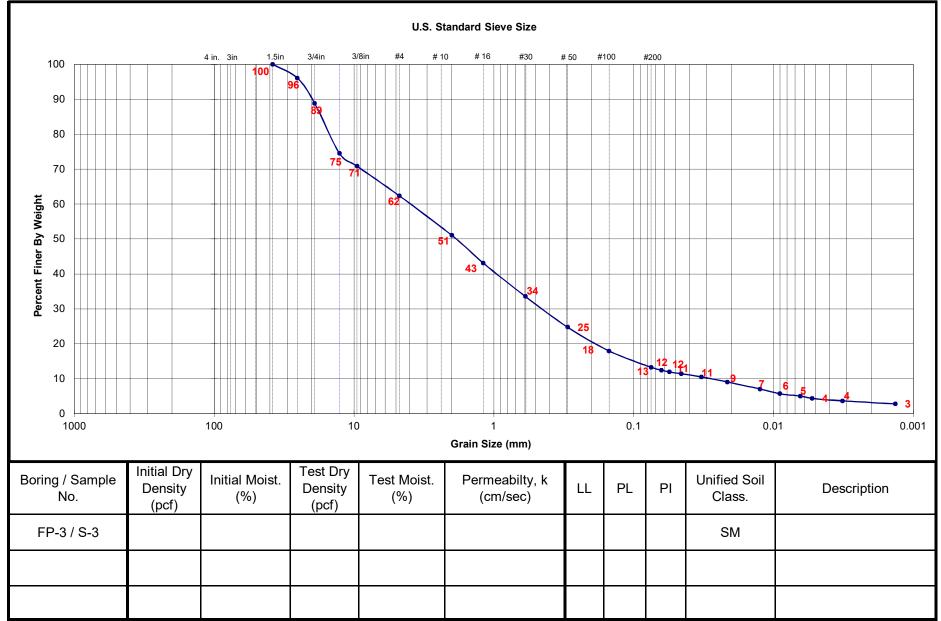




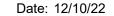


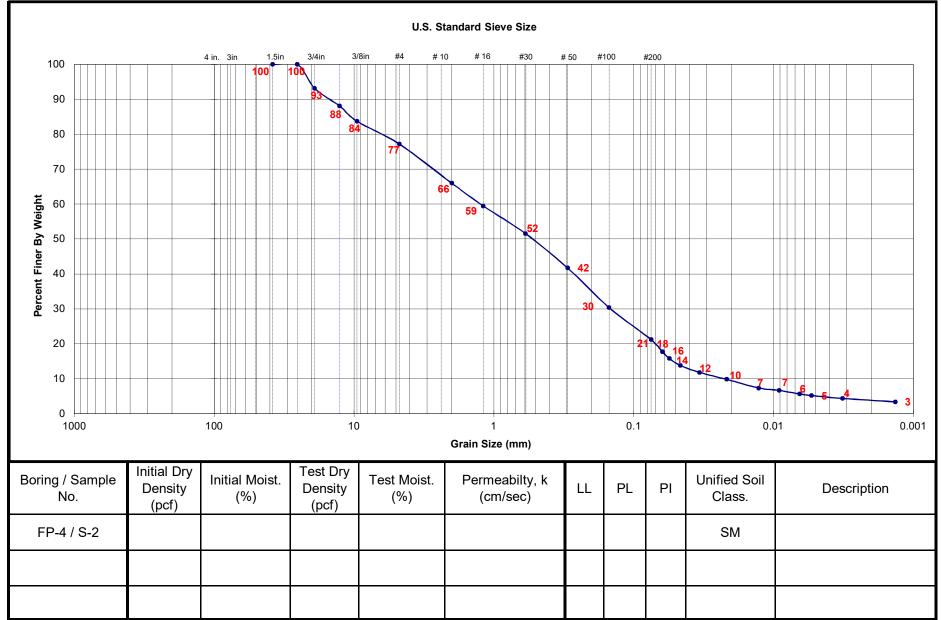




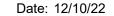


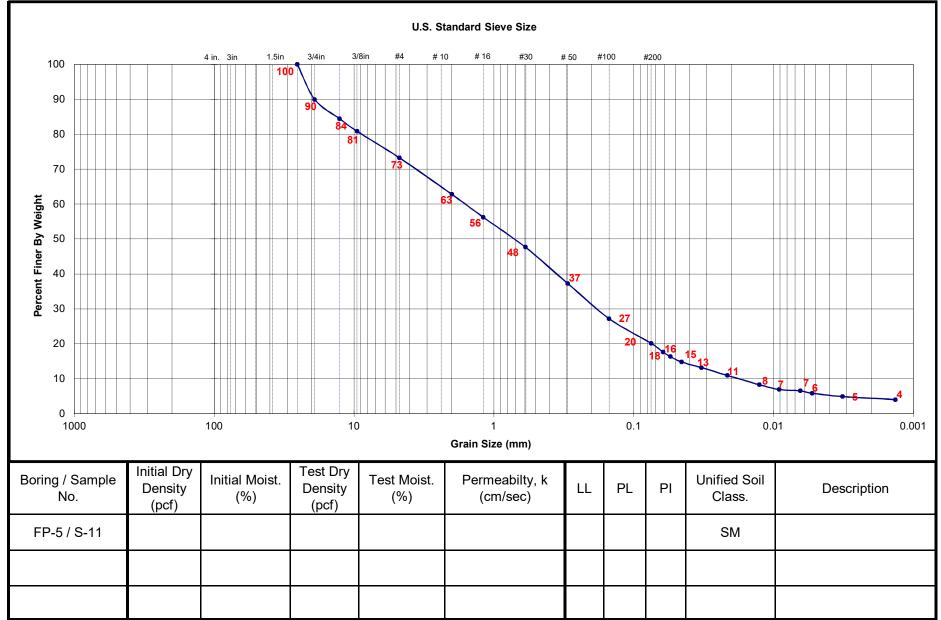






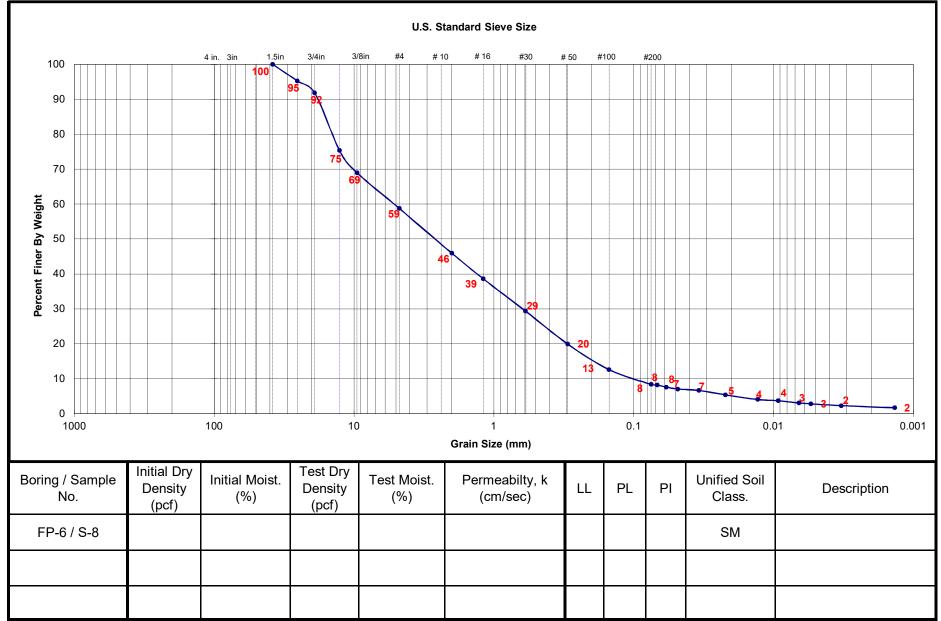














APPENDIX B

Prior Explorations and Laboratory Testing

EXPLORATORY BORINGS

We investigated the subsurface conditions at the site by drilling and sampling a total of 13 exploratory borings. Borings B-1 and B-3 through B-12 were drilled on August 24 and 25, 2020 using hollow-stem auger drilling equipment. Borings B-2 and B-13 were drilled on September 8, 2020 using bucket auger drilling equipment. The approximate locations of the explorations are shown on Figure 2.

The borings were advanced to depths of 6 to 61 feet below the existing ground surface. The borings were drilled to their target depths unless natural soils or refusal conditions were encountered at shallower depths. Multiple attempts were made a few feet away from the original boring location if shallow refusal conditions were encountered. Refusal conditions were commonly caused by cobbles, boulders, and inert debris (concrete, asphalt, etc.) being encountered.

The field explorations discussed herein were performed under the continuous technical supervision of GPI's representative, who visually inspected the site, maintained detailed logs of the borings, classified the soils encountered, and obtained relatively undisturbed and bulk samples for examination and laboratory testing. The soils encountered in the borings were classified in the field and through further examination in the laboratory in accordance with the Unified Soils Classification System. Detailed logs of the borings are presented in Figures A-1 to A-13 in this appendix.

The locations of the borings were laid out in the field by measuring from existing site features. Ground surface elevations at the exploration locations were estimated from a topographic survey plan prepared by Andreasen Engineering dated March 15, 2018 and should be considered approximate.

Hollow-Stem Auger Borings

Borings B-1 and B-3 through B-12 were drilled using truck-mounted hollow-stem auger drill equipment. An 8-inch outside diameter auger was used. Relatively undisturbed samples were obtained using a brass ring lined sampler (ASTM D 3550). The brass rings have an inside diameter of 2.4 2 inches. The ring samples were driven into the soil by a 140-pound hammer dropping 30 inches. The number of blows needed to drive the sampler into the soil was recorded as the penetration resistance.

At selected locations, disturbed samples were obtained using a split-spoon sampler by means of the Standard Penetration Test (SPT, ASTM D 6066). The spoon sampler was driven into the soil by a 140-pound hammer dropping 30 inches, employing the "free-fall" hammer described above. After an initial seating drive of 6 inches, the number of blows needed to drive the sampler into the soil a depth of 12 inches or portion thereof was recorded as the penetration resistance. These values are the raw uncorrected blow counts.

After completion, the borings were backfilled with the drill cuttings. Groundwater was not encountered.

Bucket Auger Borings

Borings B-2 and B-13 were drilled using truck mounted bucket auger drilling equipment. A 36inch outside diameter bucket was used. Relatively undisturbed samples were obtained using a brass ring lined sampler as described above. The ring samples were driven into the soil by using the Kelly bar as a hammer. The number of blows needed to drive the sampler into the soil was recorded as the penetration resistance.

After completion, the borings were backfilled with the drill cuttings. Groundwater was not encountered.

MOISTURE	DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (FEET)	DESCRIPTION OF SUBSURFACE MATERIALS	ELEVATION (FEET)
SIOM	DRY DE (PC	PENETF RESIS ⁻ (BLOWS	SAMPLI		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.	ELEV. (FE
			В	0	Landfill Material: À ! "#À\$%&À() with gravel and cobbles, light brown, dry	
3.6	119	98/8"	D	-	@ 2.5 feet, brown, slightly moist to moist, very dense, drilling rig chattering, debris likely	
1.2		79	D	5—	@ 5 feet, trace cobbles	1305
4.8		15	S	- - - 10 - -	@ 10 feet, slightly moist, cobble and boulder fragments	1300
4.9		75 17	DS	- 15 - -	 @ 15 feet, no recovery @ 16 feet, medium dense, brown, slightly moist 	1295
3.1	119	50/6"	D	- 20— -	@ 20 feet, trace granitic rock fragments	1290
3.7		41	S	- 25 - -		1285
2.7		26	S	- 30 - -		1280
				- 35— -		1275
						1270
SAMPLE TYPE C Rock Co S Standard			8-24- QUIPN	IENT U	SED:	8.041
D Drive Sa B Bulk San T Tube Sa	nple	G	ROUN		em Auger ER LEVEL (ft): ered FIGUE	RE A-1

	MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (FEET)	This su Sub locatio					E MATERIALS and at the time of drilling and may change at this s a simplification of actua	ELEVATION (FEET)
			90/11"	D	40—						ment in sampler tip)	
	7.9		39	S	-		Possible	Natural:	Ä!"# Ä Ä\$	5 %&ÃÄ() b	rown, moist, very	
						<u></u>	__ dense, w Refusal (-		obbles		
							1st Atten	pt had re	efusal @			
							2nd Atter 3rd Atten			6 feet 42.5 feet		
									0			
SAMPL	E TYPES		ח		RILLED).						
CR	ock Core tandard Sp	lit Snoo		8-24-					SF		PROJECT NO.: 299 INERT DEBRIS LAND	
DD	rive Samp	le		8 " H	ollow St	em Aug ER LEV			<u> </u>		/	
	ulk Sample ube Sampl		9		Incount		(").			, .		RF A-1

	MOISTURE (%)	DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (FEET)	DESCRIPTION OF SUBSURFACE MATERIALS	ELEVATION (FEET)			
	.SIOM	DRY DENSITY (PCF)	PENETF RESIST (BLOWS	SAMPLI		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.	ELEV, (FE			
					0	Landfill Material: Ä ! "#Ä\$%&Ä() light brown, dry with gravel and cobbles				
	4.1	124		D	-	 @ 2 feet, some asphalt debris @ 3 feet, rebar strand 	1295			
	2.5	116		D	5-	 @ 4 feet, concrete debris, cored through, 4-5 inches thick @ 5 feet, brown, slightly moist 				
					-	 @ 6 feet, concrete debris, cored through 4-5 inches thick @ 8 feet, dark brown, moist 	1290			
					- 10 -	 @ 9 feet, concrete debris, cored through 4-5 inches thick @ 10 feet, cobble and possible boulder fragments 				
					-		1285			
	2.7	115		D	- 15—	 @ 14 feet, trace gravel @ 15 feet, sand bag debris 				
							1280			
					- 20—		1200			
	1.9	109		D		@ 21 to 24 feet, some asphalt debris				
					-		1275			
					25-					
					-	@ 28 feet, some concrete debris, coring attempted Refusal @ 28.5 feet	1270			
						1st Attempt had refusal @ 8 feet 2nd Attempt had refusal @ 9 feet				
						3rd Attempt had refusal @ 28.5 feet				
C R S S				9-8-2 QUIPN	/ENT U	SED: INERT DEBRIS LANDF				
ВВ	B Bulk Sample GROUNDWATER LEVEL (ft): Not Encountered It *+Å*, Å*. %+Å%*/Å02									

	MOISTURE (%)	DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (FEET)	DESCRIPTION OF SUBSURFACE MATERIALS	ELEVATION (FEET)
	siom	DRY DENSITY (PCF)	PENET RESIS (BLOWS	SAMPL		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.	ELEV (FE
				В	0	Landfill Material: À ! "#À\$%&À() light brown, dry, with gravel and cobbles	
	2.3	114	60	D		 @ 2.5 feet, brown, slightly moist, dense, trace gravel @ 3 feet, drill rig chattering 	1005
	2.7		36	D	5	@ 5 feet, cobble fragments, disturbed sample	1295
					-		
	3.9		18	S	10-	@ 10 feet, with gravel	1290
					–		
					- 15 -		1285
					-		
	1.0		04	6	- 20-		1280
	4.9	114	21	D	-	@ 20 feet, medium dense, slightly moist	
					-		1275
					25—	Refusal @ 25 feet	
SAMPL	E TYPES		D	ATE D	RILLED	D: PROJECT NO.: 2993.	041
C R S S	ock Core tandard Sp rive Samp			8-24- QUIPN	20 /IENT U	JSED: tem Auger	
ВВ	ulk Sampl ube Samp	е	G	ROUN		ER LEVEL (ft): ! *+A *, A *. %+A%*/A0 3	E A-3

	MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (FEET)	DESCRIPTION OF SUBSURFACE MATERIALS	ELEVATION (FEET)
	MO	DRY I (PENE RESI (BLOV	SAMF		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.) Ere
					0	Landfill Material: À ! "#À\$%&À() light brown, dry, with gravel and cobbles	
	1.7		50/5"	D	-	0 to 4 feet, drill rig chattering	1265
	3.5		21	S	- 5 -	@ 5 feet, brown, moist, medium dense, trace cobbles	
					-		1260
	4.3		50/3"	D	- 10 - -	 @ 10 feet, some concrete debris, granitic rock fragments 	
					-		1255
					15— - - -		1250
	6.4		17	S	20	@ 20 feet, medium dense, slightly moist, gravel and cobble fragments	1245
					- 25 - -		
					-		1240
	4.8	110	28	D	30-	 @ 30 feet, slightly moist, some concrete debris 	
					-	Refusal @ 33 feet	1235
	E TYPES ock Core		D	ATE D 8-24-		PROJECT NO.: 2993	.041
S SI D D	tandard Sp rive Samp	le		QUIPN 8 " H	IENT U		FILL
	ulk Sample ube Sampl		G		IDWATE Encount	R LEVEL (ft): red FIGUE	RE A-4

	MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (FEET)	DESCRIPTION OF SUBSURFACE MATERIALS 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.	ELEVATION (FEET)
	7.3	104	64	B	-0 	I-Inch AGGREGATE BASE Landfill Material: Ä! "#Ä\$%&Ä() brown, slightly moist, with gravel @ 2.5 feet, moist, dense	1250
	1.9	106	30	D	5 - -	@ 5 feet, dry, some asphalt debris	1245
	10.3		10	S	- 10- - - -	 @ 10 feet, medium dense, moist, cobble fragments @ 10 to 15 feet, drill rig chattering 	1240
					15 - -		1235
	2.6		50/6" 52	DS	20— - - -	 @ 20 feet, no recovery @ 21 feet, dry, trace asphalt debris @ 20 to 30 feet, drill rig chattering 	1230
					25 — - - -		1225
	1.2		50/5"	S	30— - -	@ 30 feet, dry, trace cobbles, some gravel, light greyish brown	1220
					35— - -		1215
D Driv B Bull		e e	n E	8-24- QUIPN 8 " H ROUN	IENT U	SED: em Auger ER LEVEL (ft): ered	

	MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (FEET)	DESCRIPTION OF SUBSURFACE MATERIALS 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.	ELEVATION (FEET)
	5.0		50/6"	D	40 -	Natural: À ! "#À\$%&À() with gravel, reddish brown, slightly moist, disturbed sample	1210
					- 45— - - -		1205
	6.2		29	S	50—	Ä ! "#Â\$%&ÃA() reddish brown, slightly moist, medium dense, trace porosity, trace gravel	1200
					55— - - - - -		1195
			50/6"	D		Image: Image:	
CR SS DD	E TYPES ock Core tandard Sp rive Samp	le	n E	8-24- QUIPN 8 " H	IENT U	SED: MAuger	
C R S S D D B B	ock Core tandard Sp	le e	n E	8-24- QUIPN 8 " H ROUN	20 /IENT U ollow St	SED: am Auger R LEVEL (ft):	ILL

	ATION ET)
Image: State of the state	ELEVATION (FEET)
Landfill Material: Ä ! "#Ä\$%&Ä() brown, slightly moist, with gravel and cobbles	
3.3 114 35 D @ 0 to 3 feet, dry, drill rig chattering @ 2.5 feet, medium dense, pieces of asphalt	1240
1.0 111 15 5 @ 5 feet, trace cobbles, grayish brown, less silt	
	1235
2.9 14 S 10 @ 10 feet, slightly moist, cobble fragments in sample tip	
	1230
	1200
	1225
6.3 97 22 D 20 @ 20 feet, slightly moist, piece of glass in sampler tip	
	1220
25– @ 25 to 30 feet: strong organic odor	
	1215
5.6 50/5" D 30- À! "#Ã\$ %&Ã() dark brown, slightly moist, trace	
wood chips @ 32.5 Refusal	
SAMPLE TYPES DATE DRILLED: C Rock Core 8-25-20 S Standard Split Spoon EQUIPMENT USED:	
Standard Spin Spool 8 "Hollow Stem Auger B 8 "Hollow Stem Auger GROUNDWATER LEVEL (ft): 1 *+Å*, Å *. %+Å%*/Å0 6 Tube Sample Not Encountered	

SAMPLE TYPES IC Rock Core Bis Standard Split Spron DATE DRILLED: 25-5-0 DATE DRILLED: 25-5-0 Compacted Fill: 7* • . ##A • \$ 882Å · \$ \$981Å · \$; i Å I*35 % & \$282Å · \$ \$991Å · *; i Å I*35 % & \$282Å · \$ \$991Å · *; i Å I*35 % & \$282Å · \$ \$991Å · *; i Å I*35 % & \$282Å · \$ \$991Å · *; i Å I*35 % & \$282Å · \$ \$991Å · *; i Å I*35 % & \$282Å · \$ \$991Å · *; i Å I*35 % & \$282Å · \$ \$991Å · *; i Å I*35 % & \$282Å · \$ \$991Å · *; i Å I*35 % & \$282Å · \$ \$991Å · *; i Å I*35 % & \$282Å · \$ \$991Å · *; i Å I*35 % & \$282Å · \$ \$991Å · *; i Å I*35 % & \$282Å · \$ \$991Å · *; i Å I*35 % & \$282Å · \$ \$991Å · *; i @ 0 feet, slightly moist 1240 SAMPLE TYPES IC Rock Core Bis Standard Split Spron Bis Drive Sample DATE DRILLED: 25-50 PROJECT NO : 2993.04 I*1 Montemark Larger		MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (FEET)	DESCRIPTION OF SUBSURFACE MATERIALS 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.	ELEVATION (FEET)
6.0 118 50/5" D 10 @ 10 @ 10 @ 10 Image: Constraint of the state of t		3.6			D		Compacted Fill: 7 * * . ! #Ā+ . \$ &8&Ā * . \$98!Ā : " ; À ! "Ā \$% &Ā \$% &Ā * 70+ () Ā greyish brown, dry, with cobbles @ 2.5 feet, very dense, cobble fragments in sampler tip	1240
SAMPLE TYPES' DATE DRILLED: 8-25-20 E COLOMENT USED: B) Standard Split Spoon DATE DRILLED: 8-25-20 E COLOMENT USED: 8-25-20 E COLOMENT USED: 8-25-20		6.0	118	50/5"	D	- - 10- -	 @ 10 feet, slightly moist 	1235
C Rock Core 8-25-20 S Standard Split Spoon EQUIPMENT USED: 8 " Hollow Stem Auger D Drive Sample 8 " Hollow Stem Auger							1st Attempt had refusal @ 4 feet	
B Bulk Sample GROUNDWATER LEVEL (ft): ! *+A *, A *. %+A%*/ A0 <	C R S S D D	lock Core tandard Sp rive Samp	le	n E	8-25- QUIPN 8 " H ROUN	20 /ENT U ollow St IDWATE	JSED: INERT DEBRIS LANDFIL Stem Auger ! *+Å*, Å*. %+Å%*/Å0 <	

	MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (FEET)		CRIPTION OF SUBSURFACE s only at the location of this boring ions may differ at other locations a		ELEVATION (FEET)
	2	DR	PEI (BL	INS B	0—		s only at the location of this boring ions may differ at other locations a sage of time. The data presented is conditions encountered. CAS %&A) light brown, dry		ш
				D	-	cobbles		, with graver and	
	0.5		93/10"	D	-	@ 2.5 feet	, trace cobbles		1255
	4.0 4.5	114	95/9" 92	D S	5		! "#窳\$ %&Ã\() orange bro ist, very dense, with gravel,		
						Total Dept	h 7.5 feet		
	E TYPES ock Core		D	ATE D 8-25-	RILLED 20		CDI	PROJECT NO.: 2993	
S S D D	tandard Sp rive Samp	le		QUIPN 8 " H	IENT U	SED: em Auger ER LEVEL (ft):	! *+Ā*, Ā*.		ILL
	ulk Sample ube Samp		9		Encount		· · · · · ·		E A-8

	MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (FEET)	This su Sub locatior					E MATERIALS and at the time of o nd may change at a simplification of	drilling. this actual	ELEVATION (FEET)
	7.4	114	68	D	-0 		Fill: Ä ! "# Natural: À	#Â\$%& ÂÀ	() light br &Ā\() or:	rown, dry ange bro	, with gravel wn, slightly		1230
	2.8	119	68	D	5—		@ 5 feet, Total Dep		lense, tra	ce clay, s	some gravel		
	E TYPES		D		RILLED):					PROJECT NC).: 2993	.041
S Si D D B Bi	ock Core tandard Sp rive Samp ulk Sample ube Sample	le e		8 " H ROUN	IENT U	em Aug ER LEVE			* + Ā*,	Ā *.	INERT DEBRI	S LANDF	

	URE	JSITY =)	ATION ANCE FOOT)	ТҮРЕ	ΞÊ	DESCRIPTION OF SUBSURFACE MATERIALS	NOIT (T)
	MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (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.	ELEVATION (FEET)
					0	Fill: Ä ! "#Ä\$%&Ä() light brown, dry, with gravel and cobbles	1230
	2.5	110	25	D	_	@ 2.5 feet, slightly moist, medium dense	1200
	1.1		32 21	D S	- 5- -	 @ 4 to 10 feet, drill rig chattering @ 5 feet, no recovery 	1225
	2.0		14	S	- 10— -	@ 12 feet, drill rig chattering	1220
					- 15 - -		1215
	2.5	112	50/5"	D	- 20— - -	@ 20 feet, very dense, pieces of cobble in sampler tip	1210
					- 25 - - -		1205
	11.8		44	S	30— - -	Natural: À ! "#À\$ %&À() reddish brown, moist, dense to very dense, trace clay, some gravel	1200
	11.6	116	25	D	35—		
					-	Total Depth 36 feet	
C R	E TYPES ock Core			8-25-		PROJECT NO.: 2993.	
D D B B	tandard Sp rive Samp ulk Sample ube Sampl	le e		8 " H ROUN		em Auger R LEVEL (ft): !*+Ā*, Ā *. %+Ā%*/Ā01?	

	MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (FEET)	DESCRIPTION OF SUBSURFACE MATERIALS 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.	ELEVATION (FEET)
					0 — 0	Fill: Ä!"#Ä\$%&Ä() light brown, moist, with gravel and cobbles	
	6.2		76	D	-	Natural: Ä\$%&Ā "; Ä ! "ĀÄ70Ä() orange brown, slightly moist, very dense, trace gravel and cobbles	1220
	5.9		79/11" 50/6"	D S	5		
			50/3"	D	 –	@ 7.5 feet, no recovery	1015
	6.1	108	61	D	10—	@ 10 feet, trace cobble fragments in sampler	1215
					-		
	6.9		32	S	- 15—	Ä!"#Ã\$%&ÃA() reddish brown, slightly moist, dense,	1210
						Total Depth 16.5 feet 1st Attempt had refusal @ 2 feet 2nd Attempt had refusal @ 16.5 feet	
CR	E TYPES ock Core tandard Sp	plit Spoo		8-25- QUIPN	IENT U	JSED: INERT DEBRIS LANDFIL	
D D B B	rive Samp ulk Sample ube Sampl	le e		ROUN		item Auger ER LEVEL (ft): tered EIGURE	- Δ_12

	MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (FEET)	DESCRIPTION OF SUBSURFACE MATERIALS 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.	ELEVATION (FEET)		
			ш-ш	B	0	conditions encountered. Fill: Ä! "#Ã\$%&Ã() dry, with gravel and cobbles			
	2.8	113			-	@ 0 to 4 feet, drill rig chattering			
	3.1	117	46	S	- 5 - -	@ 5 feet, brown, some concrete debris, slightly moist, dense 1	1235		
	2.2	122	52	D	- - 10 - -	@ 10 feet, dark grey, some rootlets	1230		
	10.3		28	S	- 15 -	@ 15 feet, dark brown, moist, medium dense, some brick debris	1225		
						Total Depth 16.5 feet 1st Attempt had refusal @ 4 feet 2nd Attempt had refusal @ 16.5 feet			
C R S S				8-25- QUIPN	/ENT U	ISED:			
S Standard Split Spoon EQUIPMENT USED: 8 " Hollow Stem Auger D Drive Sample 8 " Hollow Stem Auger B Bulk Sample GROUNDWATER LEVEL (ft): Not Encountered									

	ш	≥	N II C	Щ			z
	MOISTURE (%)	DENSIT (PCF)	S/FO(LE TY	DEPTH (FEET)	DESCRIPTION OF SUBSURFACE MATERIALS	ELEVATION (FEET)
	SIOM	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE		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.	(FI ELEV
					0—	Fill: Ä! "#Ã\$%&ÃA() light brown, dry, with gravel	
						@ 0.5 feet, 6 inch asphalt debris (to 3 feet in size)	
						@ 2 feet, some cobbles	1065
					_	@ 3 feet, some brick and concrete debris	1265
					5—	@ 4 feet, slightly moist	
					-	@ 6 feet, drill rig chattering	
					-	@ 7 feet, brown, slightly moist to moist	
					-		1260
					10-	@ 9 feet, brick pieces, some cobbles, some metal debris	
					10-	Refusal @ 10 feet (boulder)	
						1st Attempt had refusal @ 10 feet 2nd Attempt had rig break down @ 6 feet	
						Zhu Allempt had ng break down @ 0 leet	
	E TYPES ['] ock Core		D,	ATE D 9-8-2	RILLED	D: PROJECT NO.: 2993.	041
S S	tandard Sp		n E	QUIPN	IENT U		
	rive Sampl ulk Sample		G		Bucket A	Auger ER LEVEL (ft): !*+Ā*, Ā*. %+Ā%*/Ā013	
	ulk Sample ube Sampl		-		Incount	tered	E A-13

APPENDIX B

APPENDIX B

TEST PITS

Test Pits (TP-1 through TP-18)

We investigated the subsurface conditions at the site by excavating eighteen test pits (TP-1 through TP-18) using a backhoe on August 26 and 27, 2020. These test pits were excavated to depths of approximately 3 to 10 feet below the existing ground surface. The approximate locations of the pits are shown Figure 3. Bulk samples of the materials encountered were obtained for examination and testing in our laboratory.

The test pits were performed under the continuous technical supervision of GPI's representative, who maintained detailed logs of the test pits, classified the soils encountered, and obtained bulk samples of the soils encountered for examination and laboratory testing. The soils encountered in the test pits were classified in the field and through further examination in the laboratory in accordance with the Unified Soils Classification System. After completion, the test pits were backfilled with the soil cuttings with only limited compaction. Detailed logs of the test pits TP-1 through TP-18 test pits are presented in Figures B-1 to B-18 in this appendix.

Test Pits (TP-19 through TP-32):

On November 5, 2021, an Engineering Geologist from GPI observed and logged 14 exploratory test pits excavated with a track mounted excavator operated by Arcadia Reclamation Inc. (ARI). The approximate locations of test pits TP-19 though TP-32 are shown on Figure 2. The materials encountered in each test pit are summarized in Table B-1 included in this appendix.

Test Pit Location and Elevation

The locations of the test pits were laid out in the field by measuring from existing site features. Ground surface elevations at the exploration locations were estimated from a topographic survey plan prepared by Andreasen Engineering dated March 15, 2018 and should be considered approximate.

r					1					
T PEN F)	TURE	NSITY F)	ATION ANCE /FOOT)	: ТҮРЕ	TH (Ti		DES	CRIPTION OF SUBSURFACE	MATERIALS	ATION ET)
POCKET PEN (TSF)	MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (FEET)	This su Sub locatio	immary appli surface cond n with the pa	es only at the location of this boring ditions may differ at other locations a ssage of time. The data presented is conditions encountered.	and at the time of drilling. nd may change at this a simplification of actual	ELEVATION (FEET)
				В	0		Landfill N		ht brown, dry,	
					-		Ũ	et, clay pipe debris		
					- 5 -			boulders		1305
					5-		Total De	oth 5 feet		1303
C R	E TYPES ock Core			8-26-				CDI	PROJECT NO.: 2993	
DD	tandard Sp rive Samp	le		24Ba	Ckhoe		FI (#) .	! * +Ā , Ā'' Ä''	inert debris landf	-ILL
	ulk Sample ube Sampl		G				EL (II).	: 'A,A-A		RE B-1
								Aaterial: Ä ! "#Ä\$%&Ä() lig bles, gravel, and rubble	ht brown, dry,	
					-		@ 2 feet,	concrete debris (pieces to 2	feet in size),	1295
					-		@ 3 feet,	few boulders asphalt debris, (pieces to 3 t	eet in size and 6 to	
						₩ ₩ ₩ ₩	8 inches @ 4 feet,	thick) concrete debris (pieces to 3	feet in size, 3-5	
					-		inches th	,	0/8 51) Alight	1290
					-		brown, di	Ā+2\$ &-&Ā+2\$3-!Ā4 "5ĀÄ\$ ry, with cobbles		
					10—			some asphalt and concrete sible transite)	debris, piece of	
							Total Dep	oth 10 feet		
	E TYPES ock Core			8-26-				CDI	PROJECT NO.: 2993	
DD	tandard Sp rive Samp	le .	-	24Ba	IENT U			! * + Ā , Ā" Ä"		·ILL
ВВ	ulk Sample	e	G		DWATE		EL (π):	: TA, A-A	A. A%/A. W	

· · · · · · · · · · · · · · · · · · ·				1						1		
T PEN F)	URE	NSITY F)	ATION ANCE (FOOT)	ТҮРЕ	HT (Fi		DES	CRIPTION OF SUBSUI	RFACE	MATERIALS	VTION ET)	
POCKET PEN (TSF)	MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (FEET)	This su Sub locatio	Immary appli surface conc n with the pa	es only at the location of this litions may differ at other loc ssage of time. The data pres conditions encounte	s boring a ations ar sented is	and at the time of drilling. nd may change at this a simplification of actual	ELEVATION (FEET)	
				В	0			laterial: À ! "#À\$%&À el and cobbles		nt brown, dry,		
					-		0		ot			
					_		@ 3 feet,	et, slightly moist to mois some brick and aspha		is (pieces to 1 foot	1295	
					5-	<u>. ·</u>	_∖ in size) Total dep	th 5 feet		/	1200	
							rotar dop					
	E TYPES		D,		RILLED):				PROJECT NO.: 2993	.041	
S S	ock Core tandard Sp	•	n E		20 /ENT U .ckhoe	SED:		GPI		INERT DEBRIS LANDF		
B B	rive Samp ulk Sample	e	G	ROUN	DWATE		EL (ft):	!*+Ā,Ā	\" Ä"	ā. "ā%/ā" 07		
ΤΤ	ube Sampl	e			_0_		Landfill M	laterial: À ! "#À\$%&À	Ä() ligi		RE B-3	
					-		-	el and cobbles concrete debris (1.5 fe	oot in c	iza 5 ta 6 inchas		
					-		thick), so	me asphalt debris	561 11 5		1265	
					5—			et, slightly moist oxidized iron pipe, 1 ir	nch in d	diameter		
					-		@ 5 feet, thick)	concrete debris (2 fee	t by 2.	5 feet, 4 inches		
					_		@ 7.5 fee				1260	
					10-		-	some asphalt debris				
CR	E TYPES ock Core			8-26-				GPI		PROJECT NO.: 2993 INERT DEBRIS LANDF		
DD	rive Samp	le	-	24Ba	ckhoe		⊏I (ff):		<u>" </u>			
	S Standard Split Spoon EQUIPMENT USED: 24Backhoe D Drive Sample 24Backhoe B Bulk Sample GROUNDWATER LEVEL (ft): Not Encountered T Tube Sample Not Encountered											

POCKET PEN (TSF)	MOISTURE (%)	DRY DENSITY (PCF) 118 118	PENETRATION RESISTANCE (BLOWS/FOOT)	G SAMPLE TYPE	DEPTH (FEET)	This su Sub location	mmary appli surface cond n with the pa 1 inch AC Landfill M	CRIPTION OF SUBS es only at the location of th ditions may differ at other lo ssage of time. The data pre conditions encour GGREGATE BASE Material: Ä! "#Ä\$%&	nis boring a ocations ar esented is ntered.	and at the time of drilling. nd may change at this a simplification of actual	(FEET) 1520
					- 5—		@ 2 feet,2 feet, 3@ 3 feet,	el and cobbles brown, slightly moist to 4 inches thick), reb some brick debris some asphalt debris oth 6 feet	ar	te debris (1 foot by	1200
C R S D D B B	E TYPES ock Core tandard Sp rive Samp ulk Sample ube Sample	e e	n E	8-26- QUIPN 24Ba ROUN	RILLED 20 /ENT U ckhoe DWATE	SED: ER LEVI	EL (ft):	CP !* + Ā , <i>I</i>	ā" à"	PROJECT NO.: 2993 INERT DEBRIS LANDF Ā. '' Ā% /Ā'' 09 FIGUR	
					0		with grav @ 2 feet, @ 3 feet,	Aaterial: À ! "#À\$%& el, trace cobbles some asphalt debris some asphalt debris et, slightly moist oth 7 feet			1240
C R S S	E TYPES ock Core tandard Sp rive Samp		n E	8-26- QUIPN 24Ba	/IENT U	SED:		CP	ĀIJ ĂIJ	PROJECT NO.: 2993 INERT DEBRIS LANDE	
ВВ	ulk Sample ube Sampl	e	G		DWATE Encounte		EL (ft):	!* +A ,/	A'' A''	Ā. "Ā%/Ā" Q Figur	E B-6

POCKET PEN (TSF)	MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	O DEPTH (FEET)		SCRIPTION OF SUBSURFACE es only at the location of this boring ditions may differ at other locations a ssage of time. The data presented is conditions encountered.	-	ELEVATION (FEET)		
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					- 10 -	Total De	oth 10 feet		1235		
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				В	- - - 5-	cobbles @ 3 feet @ 4 feet Natural: trace cob	#À\$%&À() light brown, dry , some asphalt debris , concrete debris (2 feet by 2 +2\$ 3-! !#À\$%&À) orang obles pth 5.5 feet	feet)	1255		
SAMPLE	E TYPES		D	ATE D	RILLED)			041		
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					0-	F	Fill: À! " ≉	# Ä\$%&ÄÄ() lig	ht brown, dry	, with gravel	
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	E TYPES		D.		RILLED):				PROJECT NO.: 2993	.041
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ET PEN (F)	TURE	ENSITY (F)	RATION FANCE (FOOT)	Е ТҮРЕ	РТН ЕТ)		CRIPTION OF SUBSURFACE		ELEVATION (FEET)
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						Fill: À! " :	# Ā\$%&ĀÄ() light brown, dry	, with cobbles	
					-		brick debris, rebar, boulders		
					- 5 -		À\$%&Ā "5 ̀ ! "ĀÀ.0 À() ora noist, with gravel and cobbles		1220
					-				
						Total Dep	oth 8 feet		
	E TYPES ock Core		D	ATE D 8-26-	RILLED	:	CDI	PROJECT NO.: 2993	.041
S S	tandard Sp rive Samp			24Ba	IENT U		! * +Ā , Ā" Ä".		ILL
	ulk Sample ube Sampl		G		Encounte			FIGUR	E B-11
						Fill: À ! " ; cobbles	#Ã\$%&Ã() light brown, dry	, with gravel and	
					-	@ 2 feet, thick)	concrete debris (1 foot by 2	feet, 3 to 4 inches	
					- 5 -	@ 2.5 fee	et, slightly moist, some brick o boulders	debris	1235
					-	@ 4 feet,	slightly moist to moist et, metal stake		
						@ 5 feet,	brown, moist		
						Total Dep	oth 7.5 feet		
	E TYPES ock Core		D.	ATE D 8-26-	RILLED 20	<u> </u>	CDI	PROJECT NO.: 2993	.041
S S	tandard Sp rive Samp		-	QUIPN 24Ba	/IENT U				ILL
ВВ	ulk Sample ube Sampl	e	G		DWATE Encounte	ER LEVEL (ft): ered	!* +Ā,Ā" Ä".		E B-12

, PEN							
	rure)	NSITY F)	ATION ANCE /FOOT)	: ТҮРЕ	TH (Ti	DESCRIPTION OF SUBSURFACE MATERIALS	ATION ET)
POCKET PEN (TSF)	MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE		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.	ELEVATION (FEET)
				В	0	Fill: À ! "#À\$ %&À) light brown, dry, with gravel and cobbles	1250
					-	 @ 2 to 4 feet, boulders, 1 to 4 feet in diameter 	
					5-		1245
					_	Natural: Ä ! "#Ä\$%&Ä() reddish brown, slightly moist, very dense, trace gravel	
						Total Depth 7 feet	
C R	E TYPES ock Core			8-27-		PROJECT NO.: 2993	
D Di	tandard Sp rive Samp	le		24Ba	IENT U ckhoe DWATE	ER LEVEL (ft): !* + Ā, Ā'' À''Ā. ''Ā%/Ā'' 017	
	ulk Sample ube Sampl				Incounte	ered	
				1	-0-		RE B-13
					-0	Fill: Ä!"#Ä\$%&Ä() light brown, dry, with gravel and cobbles	RE B-13 1240
					-0	Fill: À ! "#À\$ %&À() light brown, dry, with gravel and cobbles @ 0.5 feet, slightly moist	
					-0	Fill: Ä!"#Ä\$%&Ä() light brown, dry, with gravel and cobbles	
					0	Fill: À ! "#À\$ %&À() light brown, dry, with gravel and cobbles @ 0.5 feet, slightly moist @ 1 foot, some asphalt debris	
					0 5 	Fill: À ! "#À\$ %&À() light brown, dry, with gravel and cobbles @ 0.5 feet, slightly moist @ 1 foot, some asphalt debris	1240
					0 5 	Fill: À ! "#À\$ %&À() light brown, dry, with gravel and cobbles @ 0.5 feet, slightly moist @ 1 foot, some asphalt debris @ 2 feet, some boulders	1240
					0 5 	Fill: À ! "#À\$ %&À() light brown, dry, with gravel and cobbles @ 0.5 feet, slightly moist @ 1 foot, some asphalt debris @ 2 feet, some boulders	1240
					0 5 	Fill: À ! "#À\$ %&À() light brown, dry, with gravel and cobbles @ 0.5 feet, slightly moist @ 1 foot, some asphalt debris @ 2 feet, some boulders	1240
					0 - - 5 -	Fill: À ! "#À\$ %&À() light brown, dry, with gravel and cobbles @ 0.5 feet, slightly moist @ 1 foot, some asphalt debris @ 2 feet, some boulders	1240
					0 5 	Fill: À ! "#À\$ %&À() light brown, dry, with gravel and cobbles @ 0.5 feet, slightly moist @ 1 foot, some asphalt debris @ 2 feet, some boulders	1240
					0 5 	Fill: À ! "#À\$ %&À() light brown, dry, with gravel and cobbles @ 0.5 feet, slightly moist @ 1 foot, some asphalt debris @ 2 feet, some boulders	1240
					-	Fill: À ! "#À\$ %&À() light brown, dry, with gravel and cobbles @ 0.5 feet, slightly moist @ 1 foot, some asphalt debris @ 2 feet, some boulders Total Depth 7.5 feet	1240
CR	E TYPES ock Core			8-27-	RILLED 20	Fill: À ! "#À\$ %&À() light brown, dry, with gravel and cobbles @ 0.5 feet, slightly moist @ 1 foot, some asphalt debris @ 2 feet, some boulders Total Depth 7.5 feet	1240 1235 .04I
C R S St D D		Diit Spoor	n E	8-27- QUIPN 24Ba	RILLED 20 /ENT Uckhoe	Fill: À ! "#À\$ %&À() light brown, dry, with gravel and cobbles @ 0.5 feet, slightly moist @ 1 foot, some asphalt debris @ 2 feet, some boulders Total Depth 7.5 feet	1240 1235 .04I

Nade Nad Nade Nade	of drilling. e at this n of actual	ELEVATION (FEET)										
9.0 120 B 5- Fill: Å! "#Å\$%&ÅÅ() light brown, dry, with gravel cobbles 9.0 120 B 5- @ 1 foot, slightly moist 9.0 120 B 5- Natural: 4 - !! Å2\$ &-&Å+ 2\$ 3-! Å "5Å\$%&Å* 120 B 5- Total Depth 7 feet	∫ 4)Ā	1240										
SAMPLE TYPES DATE DRILLED: C Rock Core 8-27-20 S Standard Split Spoon EQUIPMENT USED: D Drive Sample 24Backhoe B Bulk Sample GROUNDWATER LEVEL (ft): T Tube Sample Not Encountered												
0 Fill: Ř ! "#Â\$%&Ä() light brown, dry, with gravel cobbles 1 Natural: À\$%&Ä "5Â ! "ÄÄ.0Å() light brown, slip moist, some gravel and cobbles 5 @ 4 feet, boulder (12 inches in diameter) Total Depth 6.5 feet	and	1210										
C Rock Core 8-27-20	NO.: 2993. EBRIS LANDF											

			-								
) EEN	JRE	USITY (∶	ATION NCE	TYPE	는 문 다		DES	CRIPTION OF SUBS	URFACE	MATERIALS	NOIT L
POCKET PEN (TSF)	MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (FEET)	This su Sub locatio	immary appli osurface cond n with the pa	es only at the location of t litions may differ at other l ssage of time. The data p conditions encou	this boring a locations ar resented is intered.	and at the time of drilling. nd may change at this a simplification of actual	ELEVATION (FEET)
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							Rubble F pieces of percent c @ 3 feet, @ 4 feet, cobbles	ill: Pieces of concret asphalt and brick. M if sand and gravel, d some concrete debu some concrete and <u>some concrete and</u> oth 7 feet	lixed with ry ris asphalt o	n approximately 30 debris, with	1225
C R S S	E TYPES ock Core tandard Sp	•		8-27- QUIPN	RILLED 20 /IENT U ickhoe			GP		PROJECT NO.: 2993	
Вв	rive Samp ulk Sample ube Sampl	e	G	ROUN	IDWATE Encounte		EL (ft):	!* + A , /	Ā" Â" /	ā. "ā%/ā": 01;	RE B-17
					-0		cobbles	#ÃÀ\$%&ÃÀ() light br	-	, with gravel and	
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				_	-		Natural:	À!"#ÃÀ\$%&ÃÀ() ora	ange bro	wn, slightly	
					-			noist, trace porosity oth 8 feet			
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	rive Samp ulk Sample				ickhoe IDWATE	ER LEV	EL (ft):	!* +Ā.	ā" Ä"	ā. "Ā%/Ā" 01<	

Table B-1: Summary of Test Pits TP19-TP32Excavated 11/5/2021; Logged TGH		
TEST PIT	FILL	NATIVE
TP-19	0-3' Fill: Gray sand and gravel w/well stratified sand & silt deposits from 0-12"	3-21': Interbedded reddish brown silty sand/sandy silt with beds and lenticular channels of sand and gravel.
TP-20	No Fill, Test pit excavated on steep natural slope	0-21'±: Existing near vertical embankment (old quarry wall?), scrapped with excavator. Older Alluvium: gray and reddish brown, interbedded sandy gravel, gravelly sand and silty sand. Horizontally stratified slightly moist, dense.
TP-21	No Fill, Test pit excavated on steep natural slope	20'±: Existing near vertical embankment (old quarry wall?), scrapped with excavator. Older Alluvium: Interbedded sand and gravel bed. Silty sand beds and dark reddish brown, silty sand/sandy silt, massive dense/stiff.
TP-22	0-8' Fill: Brown sand, gravel, and oversize asphalt fragments at alluvial contact	8-12': Older Alluvium: Brown silty sand fine to coarse sand w/gravel, cobbles, boulders, moist, and dense.
TP-23	0-9' Fill: (Old Access Road Fill): Gray, silty, fine to coarse sand, with zones of gravel, cobble/boulders, dry, loose caving. 4" iron pipe observed in fill	9-12': At 9', vegetation line above yellow brown, native alluvium consisting of silty, fine to coarse sand, with gravel, cobbles, and boulders.
TP-24	0-12' Fill: Brown silty sand with gravel, cobbles and boulders 18-24", concrete rubble to 36", dry, loose, and moderately caving. Steel railroad rail observed in bottom of excavation.	Native materials were not encountered
TP-25	0-4' Fill: Brown silty sand w/gravel, some plastic, sandbags, other debris	4-12': Older Alluvium: Dark reddish brown, silty sand/sandy silt. Moist stiff/dense, few thin beds and lenses of sand and gravel
TP-26	0-2' Fill: Brown, sand and gravel, little oversize, dry, loose	2-8': Older Alluvium: Horizontally stratified sand and gravel, slightly moist, dense
TP-27	0-2' Fill: Brown and gray sand and gravel, dry, loose	2-3': Older Alluvium: Dark reddish brown, sandy silt/silty sand, dry to slightly moist, dense/stiff
TP-28	0-5' Fill: Brown sand, gravel, and cobbles with few boulders, dry, loose	5-7.5' Older alluvium: Gray, horizontally stratified sand and gravel, slightly moist, dense
TP-29	0-2', Fill: Brown, sand, gravel, and cobbles, dry, loose	2-4': Older Alluvium: Yellow brown, horizontally stratified sand, gravel and cobbles, slightly moist, dense.
TP-30	0-2' Fill: Brown sand, gravel and cobbles, loose	2-5': Older Alluvium: Brown and reddish brown, horizontally stratified sand and gravel and reddish brown, sandy silt/silty sand, slightly moist, dense/stiff.
TP-31	0-1' Fill: Brown sand and gravel, loose	1-5': Older Alluvium: Yellow brown, horizontally stratified sand and gravel, with cobbles, slightly moist, dense.
TP-32	0-2.5" Fill: Gray sand, gravel and cobble. Trace concrete rubble and plastic debris.	2.5-5': Older Alluvium: Yellow brown, horizontally stratified sand, gravel, and cobbles, slight moist, dense.

APPENDIX D

INTRODUCTION

Representative relatively undisturbed soil samples and bulk samples from the explorations conducted in August 2020 and September 2020 were carefully packaged in the field and sealed to prevent moisture loss. The samples were then transported to our Cypress office and laboratory for examination and testing assignments. Laboratory tests were performed on selected representative samples as an aid in classifying the soils and to evaluate the physical properties of the soils affecting foundation design and construction procedures. Detailed descriptions of the laboratory tests are presented below under the appropriate test headings. Test results are presented in the figures that follow.

MOISTURE CONTENT AND DRY DENSITY

Moisture content and dry density were determined from a number of the ring samples. The samples were first trimmed to obtain volume and wet weight and then were dried in accordance with ASTM D2216. After drying, the weight of each sample was measured, and moisture content and dry density were calculated. Moisture content tests were also conducted on bulk/disturbed soil samples. Moisture content and dry density values are presented on the boring logs in Appendix A.

GRAIN SIZE DISTRIBUTION

Seven samples from the soil borings and test pits were dried and run through a standard set of sieves in accordance with ASTM D422. The portion of the sample passing the No. 4 sieve was then soaked in water until individual soil particles were separated, and then washed on the No. 200 sieve. That portion of the material retained on the No. 200 sieve was oven-dried and weighed to determine the percentage of the material passing the No. 200 sieve. The grain size distribution obtained from the full sieve analysis and the percentages passing the No. 200 sieve (%Silt and %Clay) for the samples tested are presented in Figures D-1 and D-2.

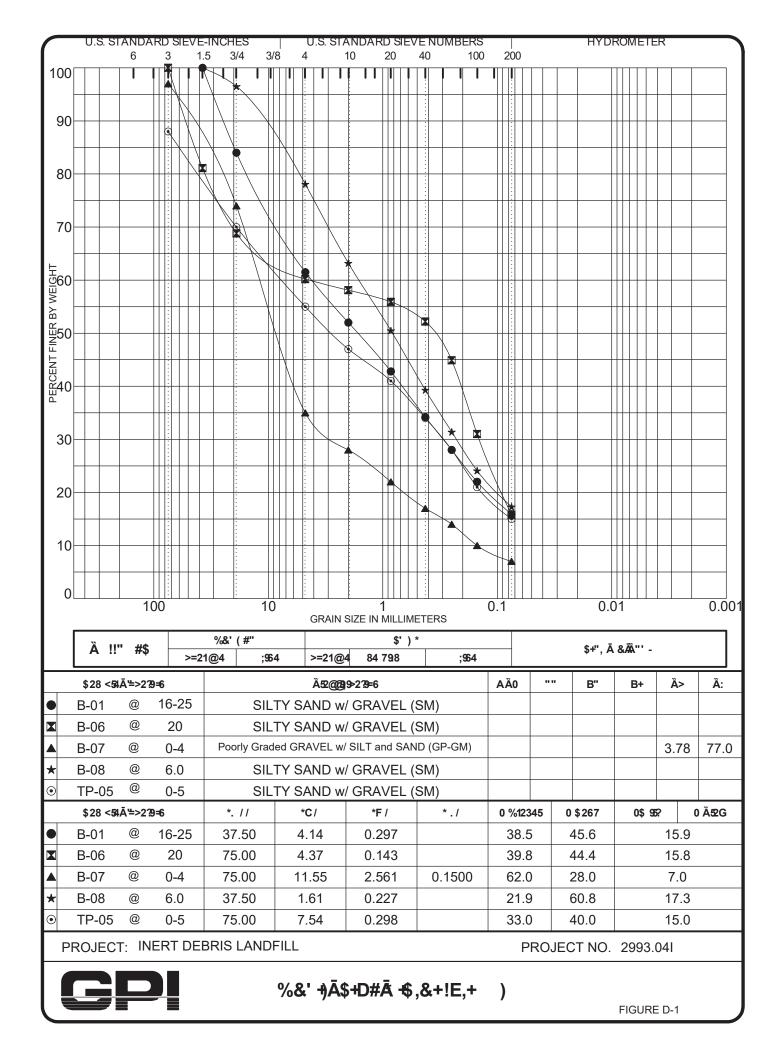
COMPACTION TEST

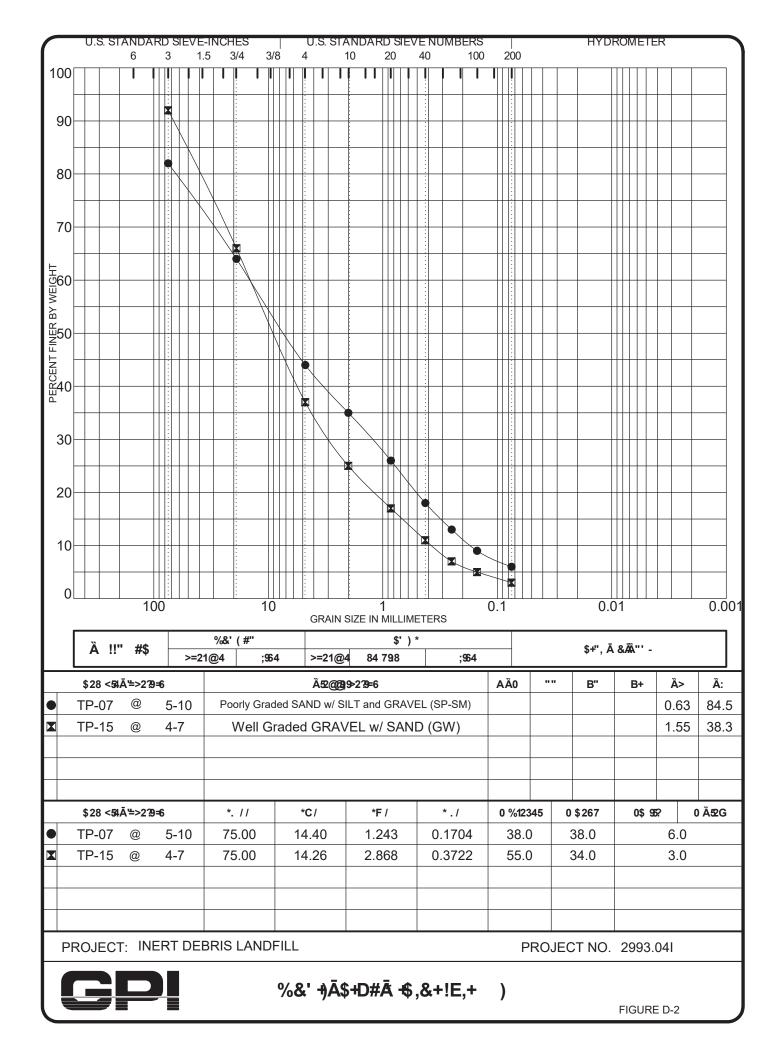
Maximum dry density/optimum moisture tests were performed in accordance with ASTM D1557 on representative bulk samples of the surficial soils. The test results are as follows. Because the maximum density curves were used to prepare remolded test samples for direct shear testing, the samples were screened through a No. 4 Sieve prior to conducting the test.

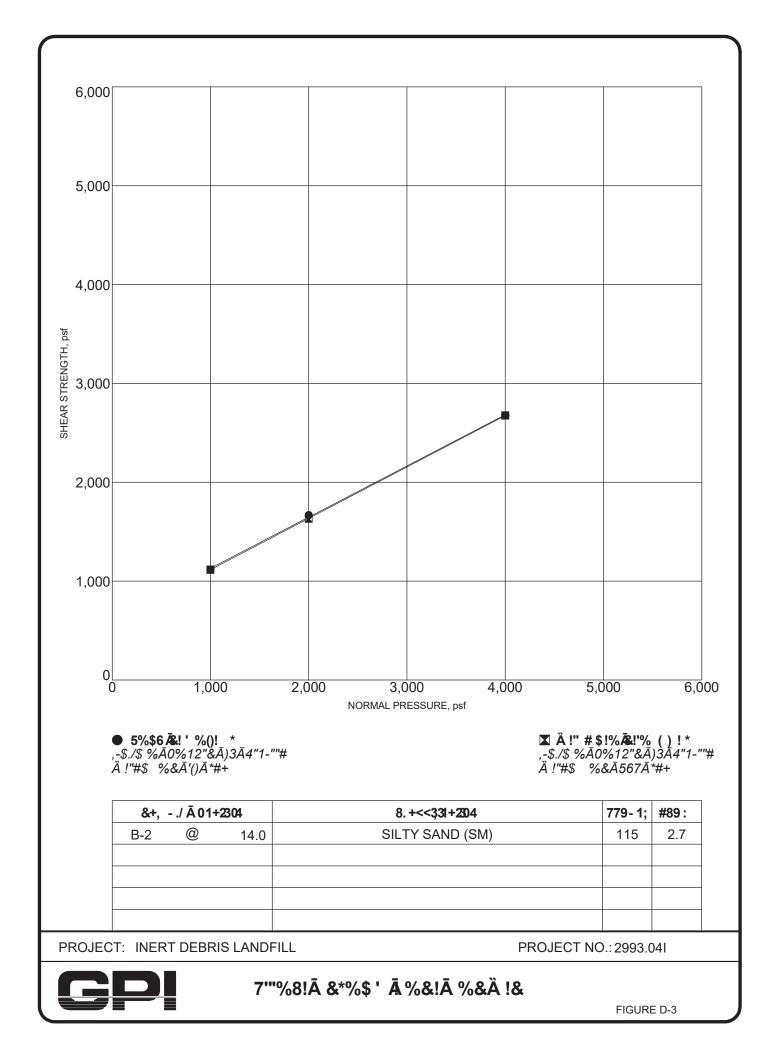
BORING NO.	DEPTH (ft)	SOIL DESCRIPTION	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)
B-7	0-4	Poorly Graded Gravel with Silt and Sand (GP-GM)	7.5	134
TP-5	0-5	Silty Sand with Gravel (SM)	8.5	131
TP-7	5-10	Poorly Graded Sand with Silt and Gravel (SP-SM)	9.0	132
TP-15	4-7	Well Graded Gravel with Sand (GW)	9.0	133

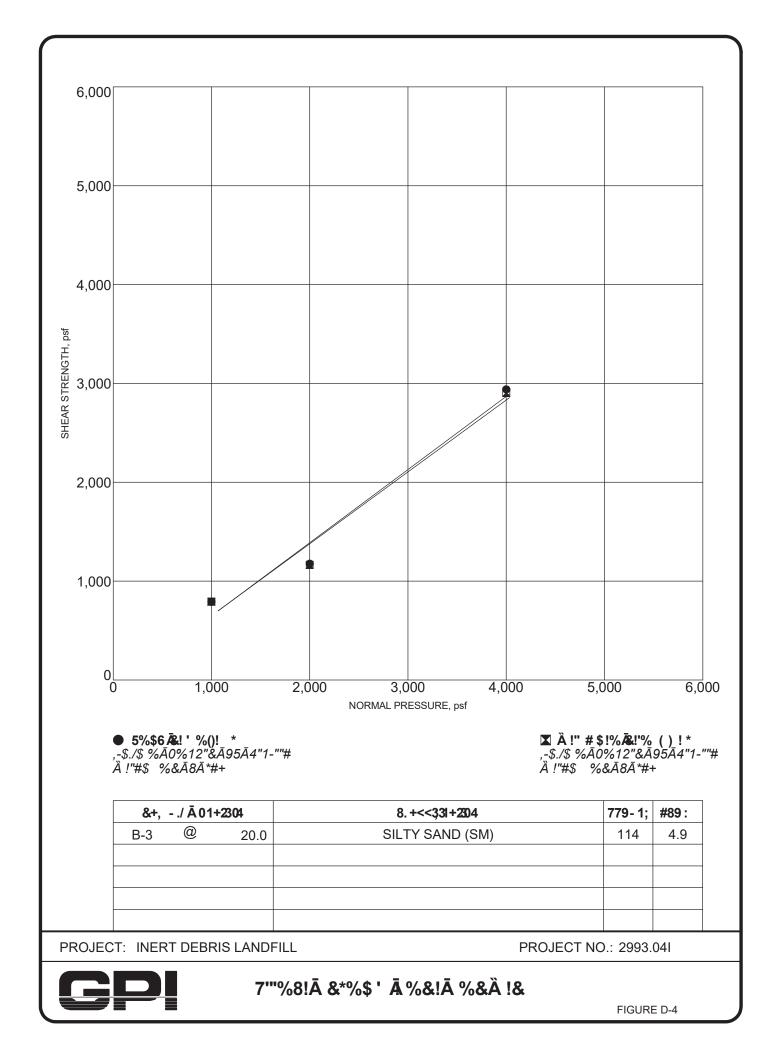
DIRECT SHEAR

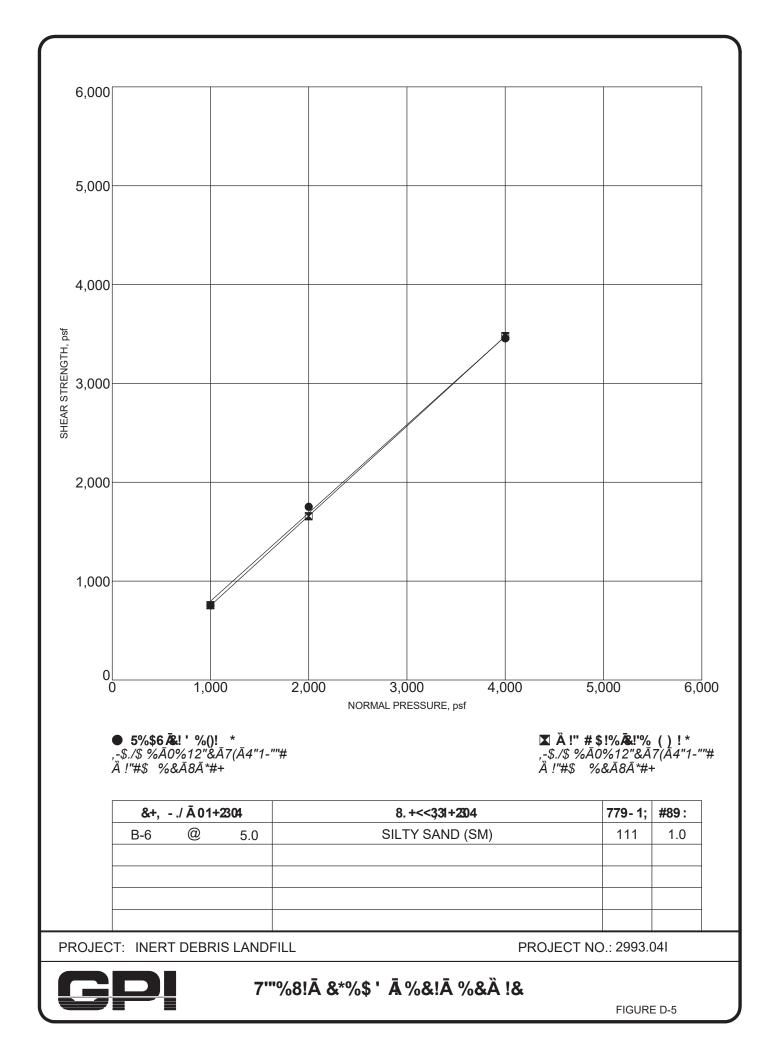
Direct shear tests were performed on three undisturbed and five remolded samples in accordance with ASTM D3080. The remolded samples were compacted to a dry density of 90% of the maximum dry density for the material. The samples were placed in the shear machine, and a normal load comparable to the in-situ overburden stress was applied. The samples were inundated, allowed to consolidate, and then was sheared to failure. The tests were repeated on additional test specimens under increased normal loads. Shear stress and sample deformation were monitored throughout the test. The results of the direct shear tests are presented in Figures D-3 to D-10.

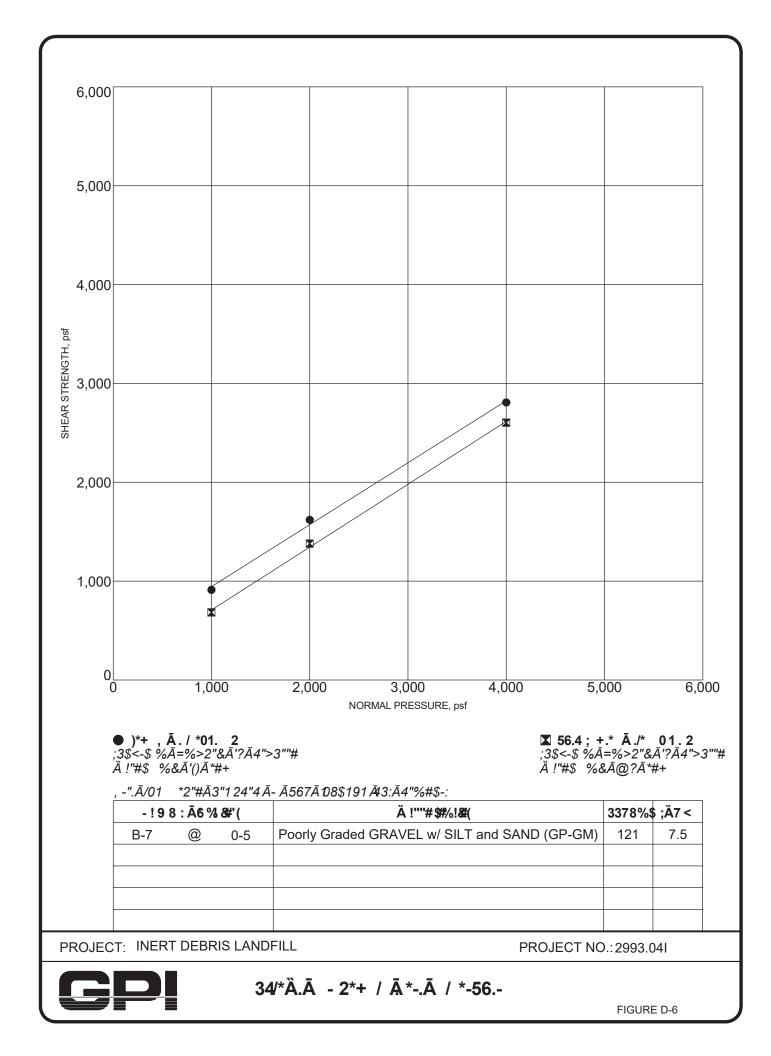


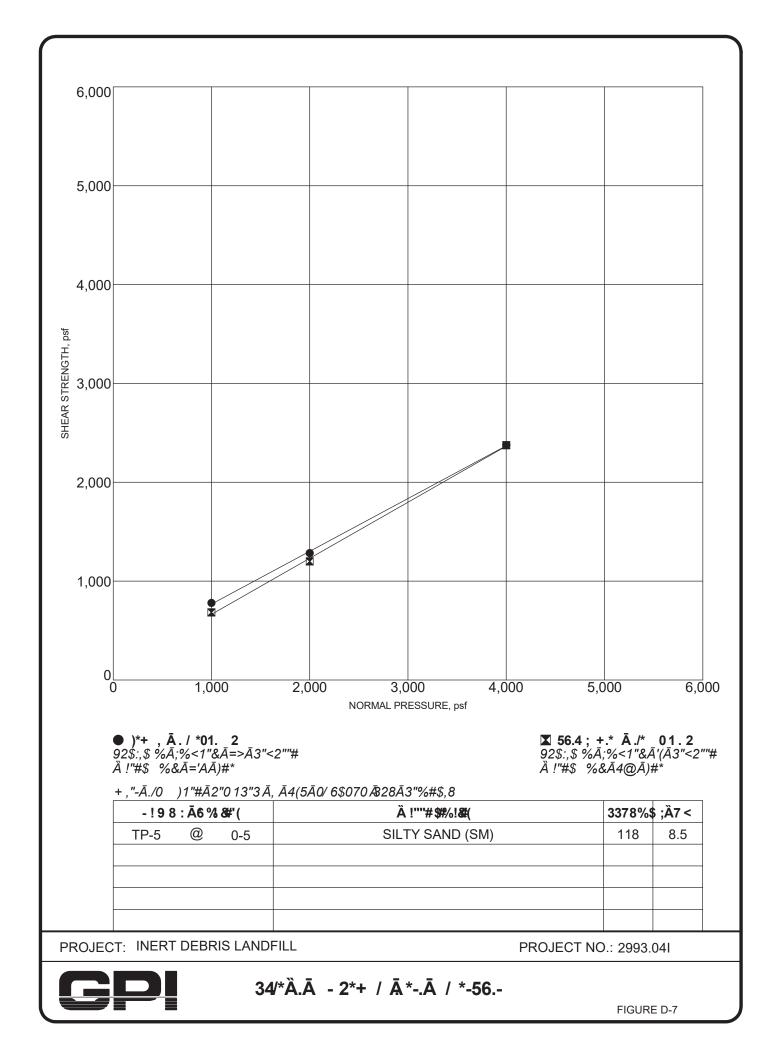


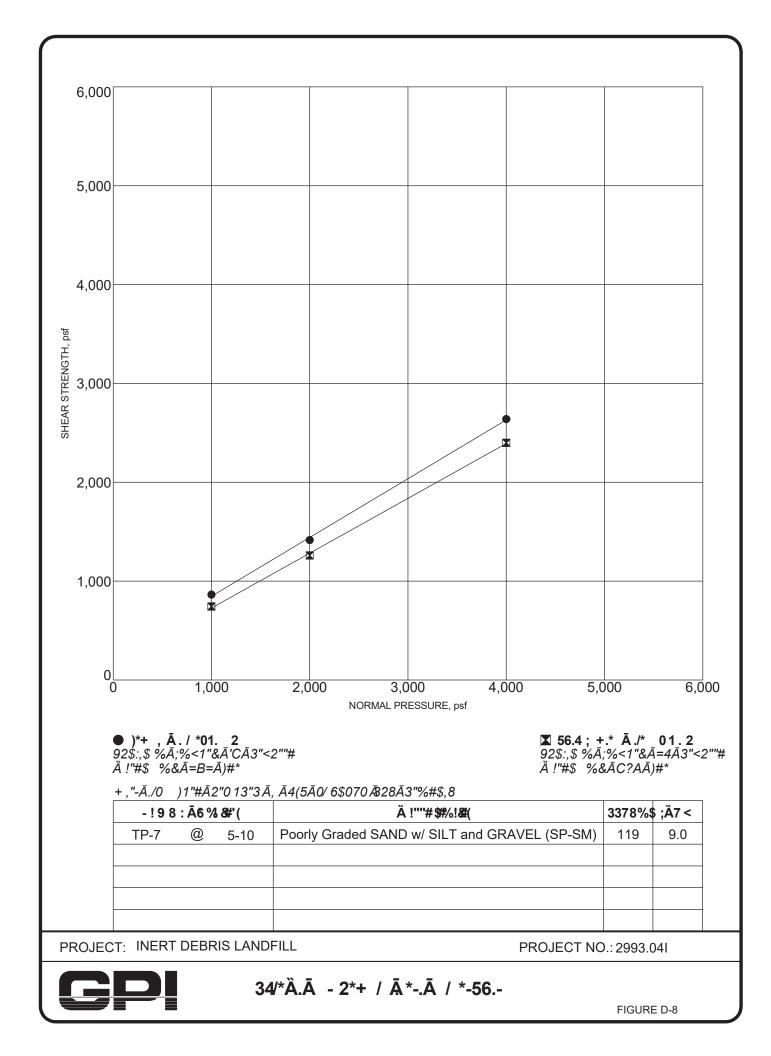


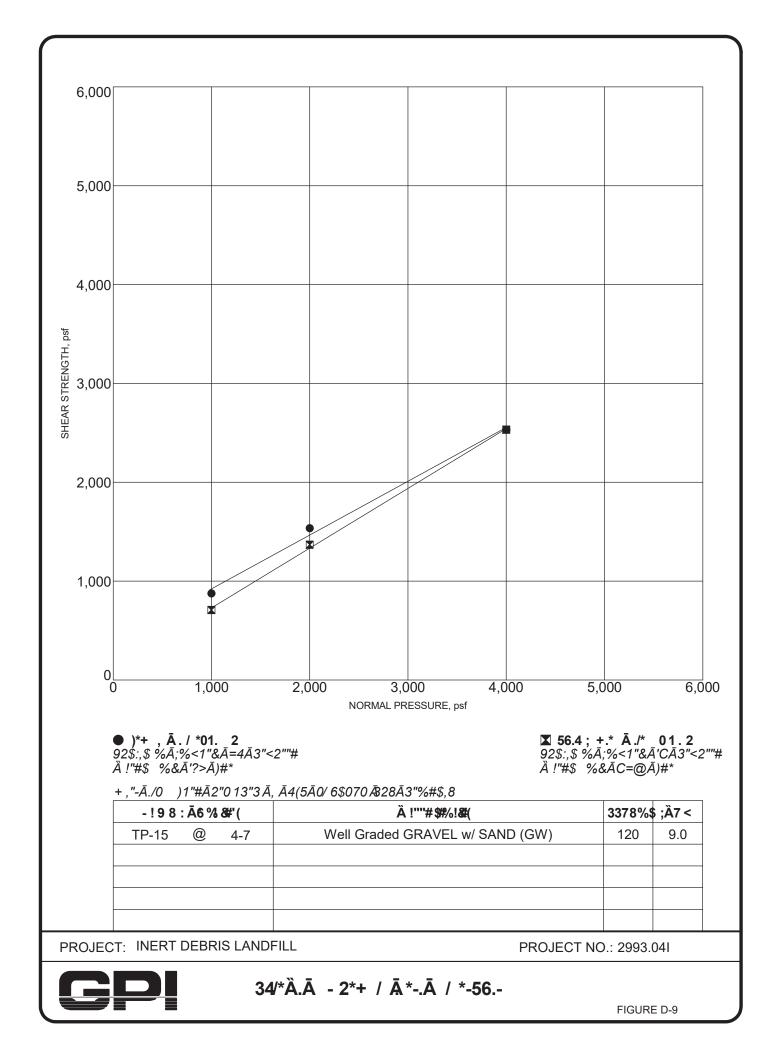












APPENDIX C

GEOPHYSICAL SURVEY

Terra Geosciences conducted a seismic refraction survey at the subject site on August 25, 26 and 28, 2020. Eleven refraction survey lines were performed (Seismic Lines S-1 through S-11). Details of the seismic refraction survey and the results of the survey are presented in the report dated August 31, 2020, by Terra Geosciences, which is included in this appendix.

The traverses were located in the field by use of Google™ Earth imagery (2020) and GPS coordinates and ranged from 125 to 250 feet in length. The approximate locations or the refraction survey lines are shown on Figure 2 and in the August 31, 2020 report by Terra Geosciences.



SEISMIC REFRACTION SURVEY INERT DEBRIS LANDFILL PROJECT NWC OF MONTE VISTA AVENUE AND ARROW ROUTE CITIES OF UPLAND AND CLAREMONT SAN BERNARDINO AND LOS ANGELES COUNTIES, CALIFORNIA

Project No. 203485-3

August 31, 2020

Prepared for:

Geotechnical Professionals Inc. 5736 Corporate Avenue Cypress, CA 90630

Consulting Engineering Geology & Geophysics

Geotechnical Professionals Inc. 5736 Corporate Avenue Cypress, CA 90630

Attention: Mr. Justin J. Kempton, GE

Regarding: Seismic Refraction Survey Inert Debris Landfill Project NWC of Monte Vista Avenue and Arrow Route Cities of Upland and Claremont San Bernardino and Los Angeles Counties, California GPI Project No. 2993.021

INTRODUCTION

In accordance with your request, we have completed a non-invasive geophysical survey using the seismic refraction method along selected portions of the subject site as referenced above. We understand that the subject site was previously used a sand and gravel quarry that has been partially backfilled with both compacted and uncompacted fill, of which the limits and depth are unknown at this time. This report describes in further detail the seismic refraction methodology, field procedures used, data processing of the various seismic modeling programs utilized, and the results of this survey, along with presentation of the subsurface seismic models, associated data, and representative survey line photographs. As authorized by you, the following services were performed:

- Review of available pertinent published and unpublished geologic and geotechnical data in our files pertaining to the site, along with a field reconnaissance.
- Conducting a geophysical survey using the seismic refraction method, which consisted of eleven survey traverses, to aid in evaluating the deeper subsurface lithology and geologic structure present beneath the subject site. The field survey and the data analysis were performed by a licensed State of California Professional Geophysicist.
- Preparation of representative geologic seismic models and associated data, created from a compilation of various computer data analytical programs.
- Preparation of this report, presenting the results of our interpretation of the geophysical data.

Accompanying Map and Appendices

- Plate 1 Seismic Line Location Map
- Appendix A Layer Velocity Models
- Appendix B References

PROJECT SUMMARY

As requested, we have performed a geophysical survey using the seismic refraction method along selected portions of the subject site as directed by you. The subject study area is located at the northwest corner of Monte Vista Avenue and Arrow Route, which straddles the cities of both Upland (San Bernardino County) to the east and Claremont (Los Angeles County) to the west. We understand that the subject site was previously occupied by a gravel quarry which had subsequently been partially filled both with undocumented and engineered fill materials. Additionally, the exact composition, limits, and depth of the fill materials are not known at this time.

The purpose of this geophysical study therefore, was to provide both a qualitative and quantified geophysical analysis of the subsurface earth materials, using the seismic refraction method, in order to ascertain the approximate contact boundaries between the native earth materials at depth, where practical, and the overlying landfill materials. The premise is that there may be a discernable seismic velocity differential between the presumed higher-velocity native earth materials at depth and the overlying lower-velocity uncontrolled landfill materials.

Our study involved using various seismic refraction computer modeling programs for both quality control and comparative purposes, which allowed for an unbiased and more thorough analysis. Each of these modeling programs, as described in more detail further in this report, have both strengths and limitations and it was our intention to compile these models to form a more coherent representation of the interpreted subsurface geologic structure. The traverses were located by your firm and are approximated on the Seismic Line Location Map, Plate 1, of which the base map is a captured Google[™] Earth (2020) image.

SUMMARY OF SEISMIC REFRACTION SURVEY

<u>Methodology</u>

The seismic refraction method is well suited to identify whether there is a distinct velocity change at depth which could represent a possible subsurface structural differential. The seismic refraction method consists of measuring (at known points along the surface of the ground) the travel times of compressional waves generated by an impulsive energy source and can be used to estimate the layering, structure, and seismic acoustic velocities of subsurface horizons. Seismic waves travel down and through the soils and rocks, and when the wave encounters a contact between two earth materials having different velocities, some of the wave's energy travels along the contact at the velocity of the lower layer. The fundamental assumption is that each successively deeper layer has a velocity greater than the layer immediately above it. As the wave travels along the contact, some of the wave's energy is refracted toward the surface where it is detected by a series of motion-sensitive transducers (geophones).

The arrival time of the seismic wave at each of the geophone locations can be related to the relative seismic velocities of the subsurface layers in feet per second (fps), which can then be used to aid in interpreting both the depth and type of materials encountered.

Field Procedures

Eleven refraction survey lines were performed (Seismic Lines S-1 through S-11) along various portions of the subject site as directed. The traverses were located in the field by use of Google[™] Earth imagery (2020) and GPS coordinates and have been delineated on the Seismic Line Location Map, as presented on Plate 1. The survey traverses ranged from 125 to 250 feet in length (depending of the local depth of interest), which consisted of a total of twenty-four 14-Hertz geophones, spaced at regular five- to ten-foot intervals, in order to detect both the direct and refracted waves. A 16-pound sledge-hammer was used as the energy source to produce the seismic waves at seven locations along each survey traverse. Multiple hammer impacts were utilized at each shot point in order to increase the signal to noise ratio, which enhanced the primary seismic "P"-waves.

The seismic wave arrivals were digitally recorded in SEG-2 format on a Geometrics StrataVisor[™] NZXP model signal enhancement refraction seismograph. Seven shot points were utilized along each spread using forward, reverse, and several intermediate locations in order to obtain high resolution survey data for velocity analysis and depth modeling purposes. The data was acquired using a sampling rate of 0.0625 milliseconds having a record length of 0.08 to 0.220 seconds. No acquisition filters were used during data collection.

During acquisition, the seismograph displays the seismic wave arrivals on the computer screen which were used to analyze the arrival time of the primary seismic "P"-waves at each geophone station, in the form of a wiggle trace for quality control purposes in the field. If spurious "noise" was observed, the shot location was resampled during relatively quieter periods. Each geophone and seismic shot location were surveyed using a hand level and ruler for topographic correction, with "0" being the lowest point along each survey line.

Data Reduction

All of the recorded seismic data was subsequently transferred to our office computer for further processing and analyzing, using the computer programs **SIPwin** (**S**eismic Refraction Interpretation **P**rogram for **Win**dows) developed by Rimrock Geophysics, Inc. (2004) and **Refractor** (Geogiga, 2001-2019), and are summarized below.

SIPwin is a ray-trace modeling program that evaluates the subsurface using layer assignments based on time-distance curves and is better suited for layered media, using the "Seismic Refraction Modeling by Computer" method (Scott, 1973). The first step in the modeling procedure is to compute layer velocities by least-squares techniques. Then the program uses the delay-time method to estimate depths to the top of layer-2. A forward modeling routine traces rays from the shot points to each geophone that received a first-arrival ray refracted along the top of layer-2. The travel time of each such ray is compared with the travel time recorded in the field by the seismic system.

The program then adjusts the layer-2 depths so as to minimize discrepancies between the computed ray-trace travel times and the first arrival times picked from the seismic waveform record. The process of ray tracing and model adjustment is repeated a total of three times to improve the accuracy of depths to the top of layer-2. The layers that were used for the analysis have been established by the creation of a Time-Distance Plot which displays the curve derived from the arrival times of the first P-wave impulse for each geophone receiver in reference to its respective shot point.

- Refractor is seismic refraction software that also evaluates the subsurface using selected layer assignments from the Time-Distance Plots (see Appendix A) utilizing interactive and interchangeable analytical methods that include the Delay-Time method, the ABC method, and the Generalized Reciprocal Method (GRM). These methods are used for defining irregular non-planar refractors and are briefly described below.
 - 1. The <u>Delay-Time</u> method will measure the delay time depth to a refractor beneath each geophone rather than at shot points. Delay-time is the time spent by a wave to travel up or down through the layer (slant path) compared to the time the wave would spend if traveling along the projection of the slant path on the refractor.
 - 2. The <u>ABC</u> (intercept time) method makes use of critically refracted rays converging on a common surface position. This method involves using three surface to surface travel times between three geophones and the velocity of the first layer in an equation to calculate depth under the central geophone and is applied to all other geophones on the survey line.
 - 3. The <u>*GRM*</u> method is a technique for delineating undulating refractors at any depth from in-line seismic refraction data consisting of forward and reverse travel-times and is capable of resolving dips of up to 20% and does not oversmooth or average the subsurface refracting layers. In addition, the technique provides an approach for recognizing and compensating for hidden layer conditions.

The combined use of these computer programs provided a more thorough analysis of the subsurface structure and velocity characteristics with respect to evaluating the contact boundary between the landfill materials and the underlying native alluvial deposits. All of the computer programs perform their analysis using exactly the same input data which includes first-arrival "P"-waves and survey line geometry.

SUMMARY OF DATA ANALYSIS

As previously discussed, the primary purpose of the seismic refraction survey was to attempt to discern the approximate contact boundaries between the native earth materials at depth and the overlying fill materials. In general, the site where locally surveyed, was noted to be characterized by two major subsurface layers (Layers V1 and V2) with respect to seismic velocities.

The following velocity layer summaries have been prepared using the **SIPwin** and **Refractor computer** analysis, with the representative Layer Velocity Models (Seismic Line S-1 through S-11) presented within Appendix A along with their respective Time-Distance Plots. The Time-Distance plots, also referred to as "travel-time curves", display the time it takes (in milliseconds) for the induced seismic waves (shot points) to arrive at each of the seismic receivers (geophones), with respect to their location along the survey line (distance, in feet).

Velocity Layer V1:

The predominance of the uppermost velocity layer (V1) is most likely comprised of uncompacted fill and/or landfill debris, having an average weighted velocity of 1,940 to 2,608 fps, which is typical for these types of unconsolidated surficial earth materials. This velocity range is consistent with some landfill velocities, which can vary widely due to both the composition of the materials and the compactive effort (if any) during disposal.

The V1 velocity layer(s) for Seismic Line S-7 (noted as V1a and V1b in Appendix A) were found to be 2,801 fps and 4,177 fps, respectively, and are comprised of compacted engineered fill. The relatively lower velocity for the upper layer V1a may be due to the use of finer-grained fill materials when approaching final grade.

Locally along Seismic Line S-10, a relatively lower-velocity of 1,802 fps was obtained, which is most likely comprised of recent and active alluvial sedimentation along the lower portion of the quarry bottom in the east.

Velocity Layer V2:

The second layer (V2) predominantly yielded a seismic velocity range of 3,285 to 3,960 fps, which is typical for native, deeper undisturbed and more consolidated older alluvial sediments. Locally along Seismic Line S-10, a relatively lower-velocity of 2,416 fps was obtained, which may be comprised of a localized finer-grained (i.e., lacking significant cobbles and/or boulders) older alluvial deposit at depth. Locally along Seismic Line S-11, there was not overlying lower-velocity V1 layer.

The following table summarizes the results of the survey lines with respect to the "weighted average" seismic velocities for each layer, as indicated on the Layer Velocity Models, as presented within Appendix A.

Seismic Line	V1 Layer (fps)	V2 Layer (fps)
S-1	2,608	3,926
S-2	2,233	3,867
S-3	2,111	3,689
S-4	2,071	3,849
S-5	2,164	3,285
S-6	1,940	3,587
S-7	V1a- 2,801	
	V1b- 4,177	
S-8	2,480	3,507
S-9	2,209	3,622
S-10	1,802	2,416
S-11		3,960

TABLE 1- VELOCITY SUMMARY OF SEISMIC SURVEY LINES

SUMMARY OF FINDINGS AND CONCLUSIONS

The raw field data was considered to be of fair to good quality with minor to moderate amounts of ambient "noise" that was introduced during our survey. The noise sources most likely were produced by a combination of vehicular traffic originating along the adjacent roadways, air traffic, and local high-frequency communication noise (possibly from the nearby airport to the northeast of the subject site. Analysis of the data and picking of the primary "P"-wave arrivals was therefore performed with some difficulty, with minor to moderate amounts of interpolation of the data being necessary. Application of both high- and low-frequency filters were partially necessary during processing as the raw first-wave distant arrivals were generally masked by the noise. The Time-Distance Plots, as presented within Appendix A, have been included to present the results of the data picks of the first-arrivals of the "P"-Waves recorded during our survey. It can be seen that the data points vary somewhat both in linearity and slope, suggesting the heterogenous nature of the underlying landfill materials. There may be many inconsistencies in the landfill, which could include dense pockets from local compactive effort, loose areas of fill including decomposing organics, large areas of concrete debris, etc. Wave-path travel through these conditions can be very complicated and convoluted, which most likely added to the difficulty in interpretation of the data.

It was noted that the seismic velocities recorded in both the fill/landfill materials (V1) and the native older alluvial deposits (V2) were fairly consistent across the site where locally surveyed, suggesting a good correlation, with a higher confidence level in the resultant data and models as a result.

We understand that there are documented compacted fill materials present along the southern portion of the site (locally along Seismic Line S-7). The contact between the native older alluvial materials and the documented compacted fill materials at depth may be difficult to differentiate, especially if the velocities are similar. It is generally considered to be a "rule-of-thumb" that a seismic velocity differential of around 50 percent is needed to produce another velocity layer boundary at depth. If the two earth materials are similar with respect to seismic velocities, then it is not possible to detect the contact between them.

Additionally, if the seismic velocities of the native alluvial materials are less than the overlying compacted fill, this would create a "blind zone" wherein the sound waves would be refracted downward at the contact, being undetectable at the surface, rendering this contact boundary unidentifiable. Noting that the seismic velocity of the deeper compacted fill materials was greater than 4,000 fps and that the velocities of the native older alluvial materials were less than 4,000 fps, this condition would be expected and therefore, the contact and conversely the depth between the two materials cannot be discerned.

In summary, despite the challenges in the data processing, the final seismic models appear to have close similarities with respect to seismic velocities, indicating the reliability of the data. Additionally, the average of the seismic velocities for both velocity layers appear to be within the typical range for their respective materials types. The only variance across the site, with respect to the undocumented fill and native materials, was found along Seismic Line S-10, wherein it is possible that a localized finer-grained lens of alluvial materials is present (lacking significant cobbles and/or boulders), resulting in a relatively lower seismic velocity, with the upper layer consisting of recent alluvial deposition. The compacted engineered fill locally found along the southern portion of the site (Seismic Line S-7) appears to have a high relative seismic velocity, most likely due to the addition of water and the compactive effort during the grading process.

CLOSURE

The field survey was performed by the undersigned during August 2020 using "state of the art" geophysical equipment and techniques along selected portions of the subject site as directed by you. It should be noted that our data was obtained along only eleven specific locations therefore other areas in the local vicinity beyond the limits of our seismic lines may contain different velocity layers, depths, and structures not encountered during this field survey. As a rule-of-thumb, the estimates of the layer velocity boundaries are generally considered to be within 10± percent of the total depth of the contact.

It is important to understand that the fundamental limitation for seismic refraction surveys is known as nonuniqueness, wherein a specific seismic refraction data set does not provide sufficient information to determine a single "true" earth model. Therefore, the interpretation of any seismic data set uses "best-fit" approximations along with the geologic models that appear to be most reasonable for the local area being surveyed. Client should also understand that when using the theoretical geophysical principles and techniques discussed in this report, sources of error are possible in both the data obtained and in the interpretation and that the results of this survey may not represent actual subsurface conditions.

These are all factors beyond **Terra Geosciences** control and no guarantees as to the results of this survey can be made. We make no warranty, either express or implied. If the client does not understand the limitations of this geophysical survey, additional input should be sought from the consultant.

This opportunity to be of service is sincerely appreciated. If you should have any questions regarding this report or do not understand the limitations of this study or the data that is presented, please do not hesitate to contact our office at your earliest convenience.

Respectfully submitted, **TERRA GEOSCIENCES**

Donn C. Schwartzkopf Professional Geophysicist PGP 1002



SEISMIC LINE LOCATION MAP



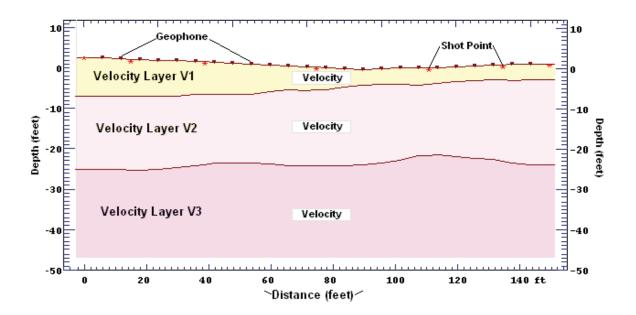
Base Map: Google™ Earth imagery (2020); Seismic traverses shown as yellow lines.

PLATE 1

APPENDIX A

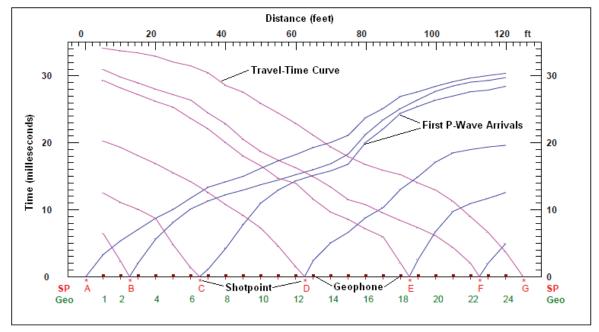


LAYER VELOCITY MODEL LEGEND

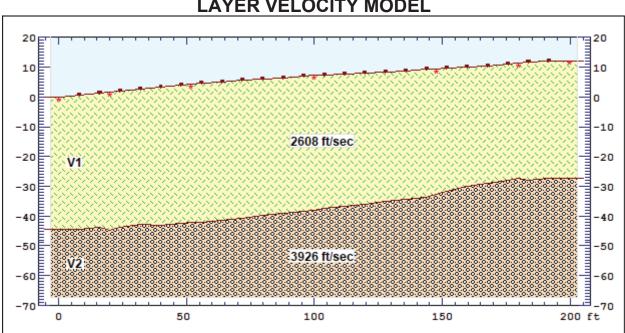


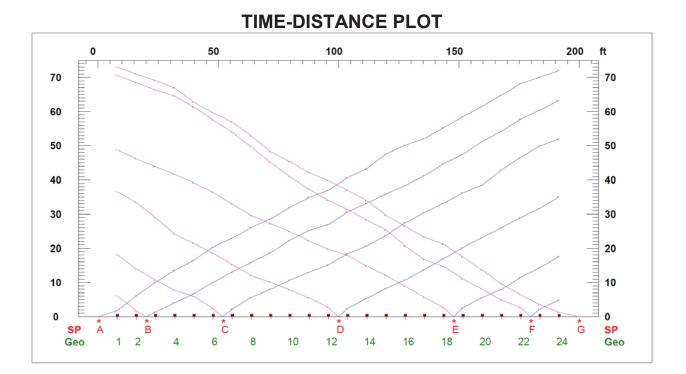
LAYER VELOCITY MODEL

TIME-DISTANCE PLOT

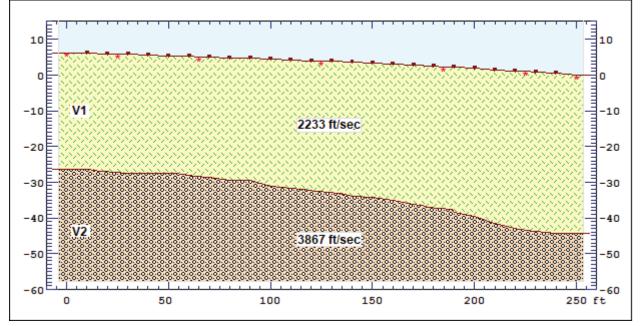


North 9° West >



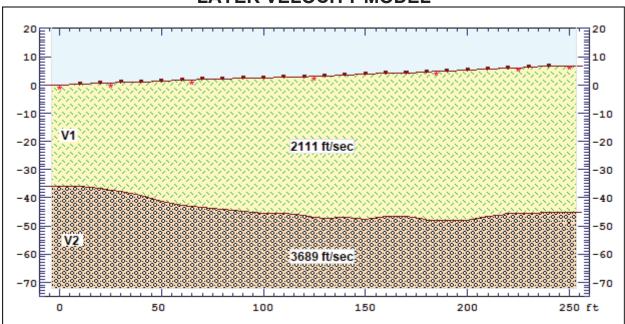


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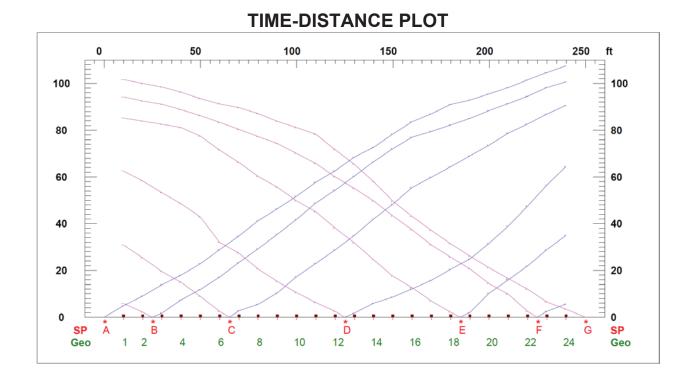




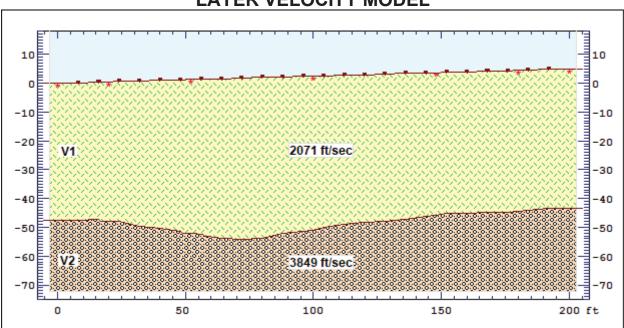
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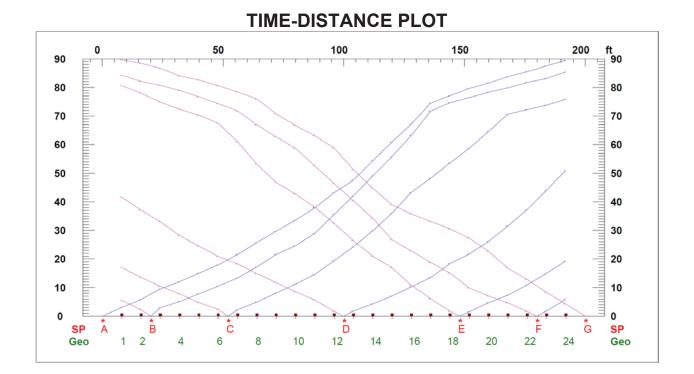




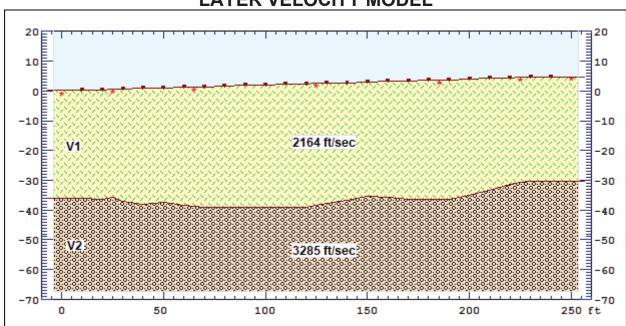
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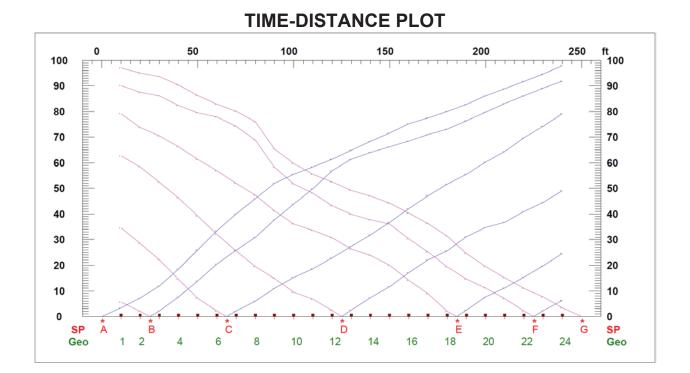






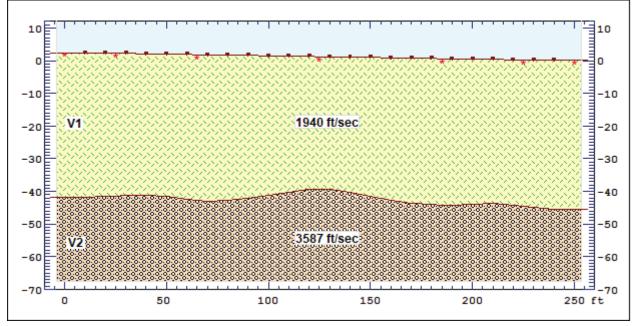
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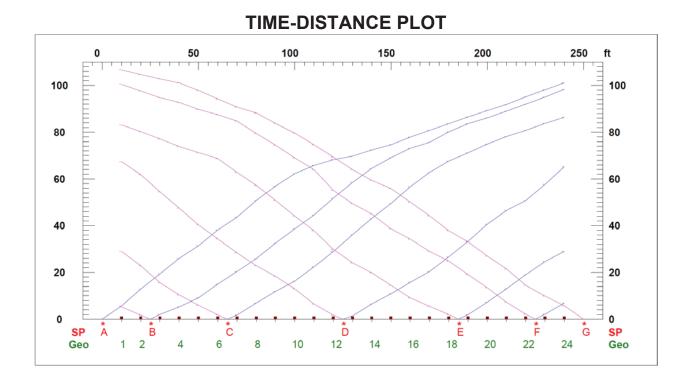




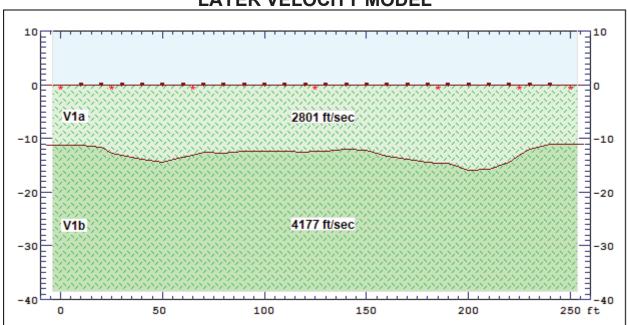
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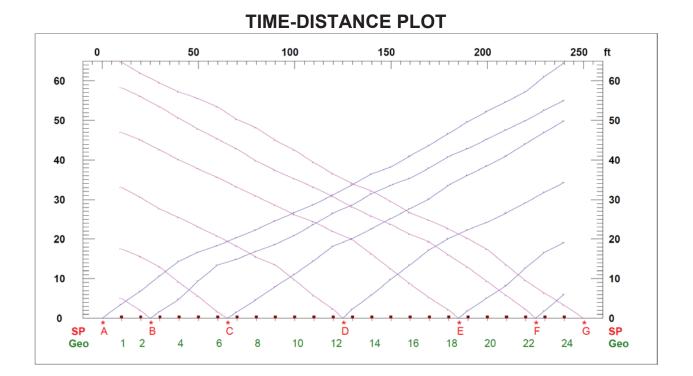




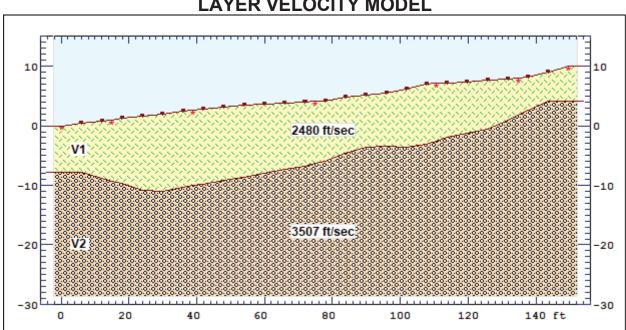


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North 3° West >

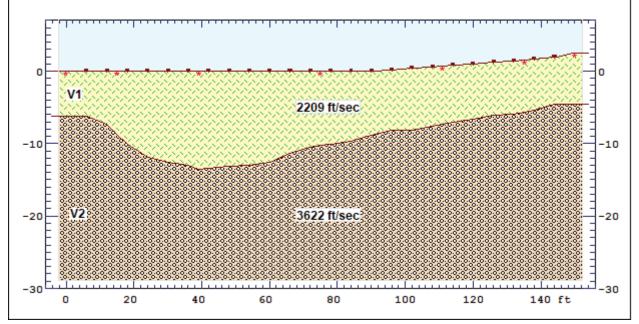


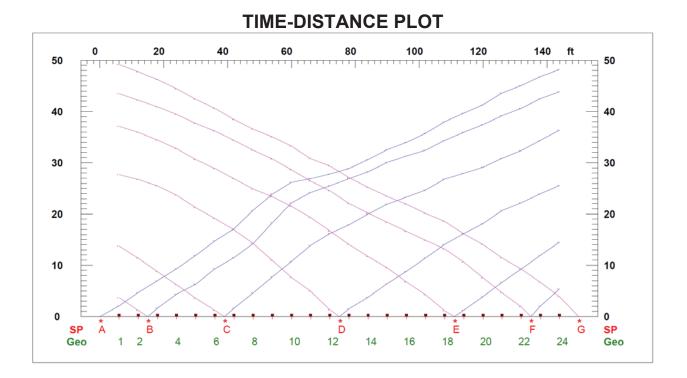




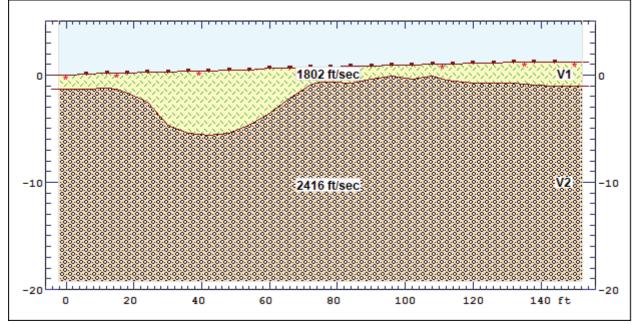
North 28° East >

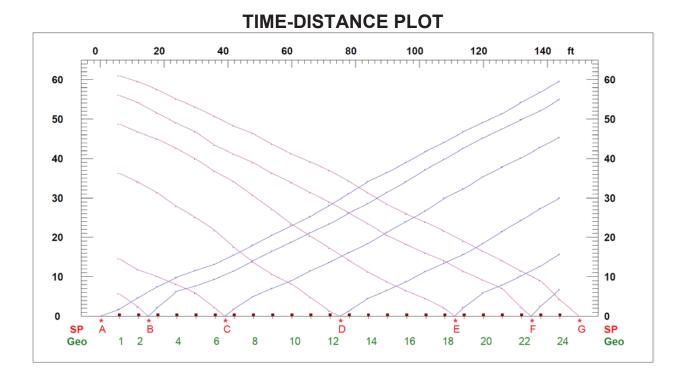




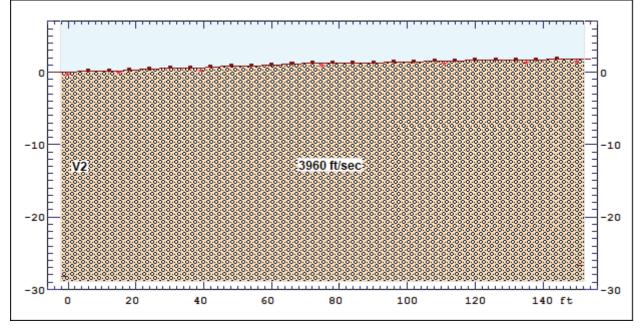


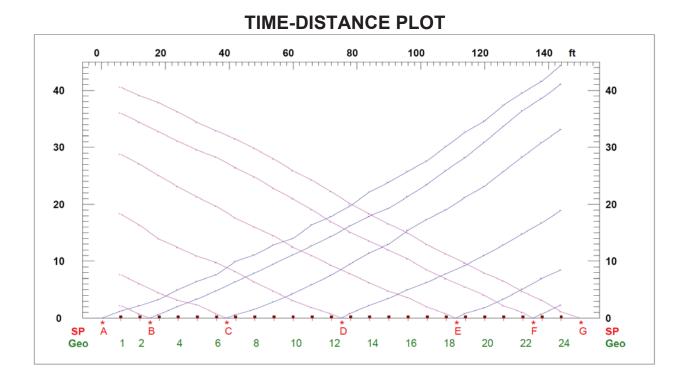
North 23° West >





North 19° East >





APPENDIX B

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REFERENCES

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APPENDIX C Field Percolation Testing

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dense, dry to slightly moist, manganese oxide (MnO) stained gravel.		1204.0	Old Alluviual Fan	Deposits (Qof)			-^		-									
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Proposed Athletic Complex TOTI1101 Claremont Mickenna College Approx.1215 (fleet, MSL) 24 Drilling Date Finished 24 Drilling Complex mounted Drill Rig Chilling Equipment Complex mounted Drill Rig Chilling Stagment Sample Description Diffier Stagment Diffier Stagment Diffier Stagment Diffier Stagment Diffier Stagment Sample Description Diffier Stagment Drilling Stagment Diffier Stagment Sample Description </th <th>LA</th> <th>NG/</th> <th>4/V</th> <th>Log</th> <th>of E</th> <th>Boring</th> <th></th> <th></th> <th>FP-2</th> <th>2</th> <th>_</th> <th>Sheet</th> <th>t 1</th> <th>of</th> <th>1</th>	LA	NG/	4 / V	Log	of E	Boring			FP-2	2	_	Sheet	t 1	of	1
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Camery Harmmer Weight (ths) Doop (in) During Foreman Joorge Sampler Zunch O. D. SPT Spill-Barrel Feed Engineer N. Ghanta Sampler Harmmer Automatic Weight (ths) 140 Doop (in) 20 Sampler Harmmer Automatic Sample Description N. Ghanta Semple Jobs N. Ghanta Sampler Jammer Undocumented Sufficial Fill (ssf) Sample Description Description Sample Jobs Sample Description Sample Jobs Percent Sample Description Sample Jobs Remarks Vision Sample Description Undocumented Sufficial Fill (ssf) Sample Jobs Sample Jobs Sample Jobs Percent Sample Jobs Sample Jobs Percent Sample Jobs	Casing Diame	eter (in) -		Casing Depth (ft)	Wa	ater Leve	l (ft.)		First √	-		— '	- -		-
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LA	NGAN	Log	ı of F	Boring			FP-3			Sheet	1	of	1
Project		9		roject No.					-		•		
Lestien	Proposed Athletic Complex		_				700114 ⁻	101					
Location	Claremont Mckenna College		E	evation ar	id Dai		honroy	1229 (fe	oot M	SI)			
Drilling Compa			Da	ate Starteo	ł		-φρισ <u>λ</u> .	1223 (10		Finished			
Drilling Fauling	2R Drilling			amplation	Danth)/21/202	22	Deals	Donth	10/21	/2022	
Drilling Equipm	CME-75 Truck-mounted Drill Rig			ompletion	Deptr	1	10	ft	ROCK	Depth		_	
Size and Type	of Bit		Nu	umber of S	Sampl	es [Disturbed	1	Un	disturbed	(Core	
Casing Diamet	8-inch O.D. Hollow Stem Auger er (in)	Casing Depth (ft)		ater Level			First	3	Co	mpletion	- 2	24 HR.	-
Casing Hamm	- Weight (lbs)	– – – – – – – – – – – – – – – – – – –		rilling Fore	• •		$\underline{\nabla}$	-		L	-	Ţ	-
Sampler	-			innig i ere		Jeo	orge						
Sampler Hamr	2-inch O.D. SPT Split-Barrel weight (lbs)	Drop (in)	Fie	eld Engine	er								
	Automatic Automatic	140 biop (iii) 30		Τ		Ν.	Ghanta Sample						
Elev. (ft) 1229.0	Sample Descrip	otion		Depth Scale	Number	Type	Recov. (in) Penetr. resist	u N-V	/alue ws/ft)	(Drilling	Rema		Ι.
Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y					Nun	Ύ	Per E		30 40	Fluid Los	s, Drilling F	pth of Casing Resistance, e	tc.)
	Undocumented Artificial Fill (afu) Silty SAND with Gravel (SM), dark b	rown. drv. crushed											
Generation and the second	cobble clasts.			= 1 -	1								
3:04 /				- 2 -		SDT	18 50/3			Comm			
	Very dense, dry to slightly moist.			- 3 -			10 50/3	<u>}</u>	50/3"	poor re	ecovery.		
WF 40:5011 1225.0										Heavy drilling		hattering;	slow
€2 E2 E2 E2 E2 E2 E2 E2 E2 E2 E2 E2 E2 E2	Old Alluviual Fan Deposits (Qof)			4 -						g			
	Silty SAND with Gravel (SM), brown dense, slightly moist, fine to coarse	to orangish brown, sand, manganese		- 5 -	1					1			
ALIGINIT OGSI/200114101 - GINT GPJ	oxide (MnO) stained gravel.	-			S-2	SPT	6 6 8	8					
5				6 -	ن	SPT	- 8	° 16 <					
									\mathbf{X}				
S/700				E' E									
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TN +1220.5	Gravelly SAND with Clay & Silt (SP-	SC), brown to orangis	<u>_</u> _		-	L L	21			Grain	Size Ana	alysis	
	brown, very dense, dry to slightly mo to coarse gravel.	pist, cobble clasts, fine	Э	- 9 -	S-3		₩ 3	8					
HOLE 1219.0	_			- + 10 -	<u> </u>		50/5	5"	50/5"	ł			
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	Percolation well installed and tested Borehole backfilled with cuttings sub		5.	E 11 -									
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LA	NG/	A/V	Log	of E	Boring			FP	-4			Sheet	1	of	2
Project				Pro	oject No.										
Location	Proposed Athletic C	omplex		Ele	evation an	d Da		700	11410 [.]	1					
	Claremont Mckenna	a College						App	rox. 11	95 (fe	et, N	MSL)			
Drilling Compa	ny			Da	te Starteo	ł						Finished			
Drilling Equipm	2R Drilling			Co	mpletion	Dept		0/21	/2022		Rocl	k Depth	10/21	1/2022	
Diming Edulpri	CME-75 Truck-mou	nted Drill Ria			pietieti	oop.			20 ft			. Dob		-	
Size and Type	of Bit			Nu	mber of S	Samp	les	Distu	urbed		U	Indisturbed		Core	
Casing Diamet	8-inch O.D. Hollow S eer (in) -	Stem Auger	Casing Depth (ft)	Wa	ater Level	(ft.)		First		2		Completion	-	24 HR.	- -
Casing Hamme	er_	Weight (lbs)	Drop (in)	Dri	illing Fore	man								<u> </u>	
Sampler	2-inch O.D. SPT Sp	lit-Barrel			eld Engine	or	Je	orge	•						
Sampler Hamn		Weight (lbs) 140	Drop (in) 30	-1''			N	Gh	anta						
Z Z J	, laternatio							Sa	mple Da	ata			Rema	arko	
Elev. (ft) (ft)		Sample Description	1		Depth Scale	Number	Type	cov.	Penetr. resist BL/6in	N-V (Blov	alue vs/ft)	(Drilling	Fluid, De	epth of Casing	,
± ± ± ± ± ± ± ± ± ± ± ± ± ± ± ± ± ± ±					- 0 -	n Z	É.	Re	Pe BL	10 20	30 40	Fluid Loss	s, Drilling	Resistance, e	tc.)
Elev. (tt) 1192-LANGAN MATERIAL ************************************	Undocumented S Silty SAND (SM).	dark brown, dry to sligh	ntlv moist. trace												
Repo	gravel.	, , 5	,		- 1 -	1									
05 A					- 2 -										
1.03					- 3 -										
1/23/2023 11:03:05 AM															
123/21					- 4 -										
GINT.GPJ					- 5 -	1									
GIN															
					- 6 -	1									
0114					- 7 -	1									
S/70						1									
					- 8 -	1									
NU 1186.0						1									
	Old Alluviual Fan				- 9 -	1									
For the second s	very dense, slightl	Fravel (SM), brown to or ly moist.	rangish brown,		- 10 -										
	, , ,					-	L∎	_	29						
					- 11 -	ς.	SPT	18	39 50/6"						
						-			30/0		50/6	5" •			
					- 12 -										
					- 13 -										
					- 13 -										
۳. e					- 14 -	1									
					- 15 -	}									
7007						1									
					- 16 -	1									
					- 17 -	1									
VDV					- 18 -	1									
	Fine to coarse sar	nd, manganese oxide (I	MnO) stained			S-2	SPT	5	50/5"			Grain S	Size An	alysis	
NAG	└∖ gravel.		,		- 19 -						50/5	•			
ILANGAN COMIDATAVITYOD114101PROJECT DATA/ DISCIPLINEGEOTECHNICAL/GINTL OGS/700114101	Total depth = 19 fe Groundwater not e	eet bgs. encountered.			E 20 -										

roject		Proposed Athletic Complex	Project No.			700	11410	1					
ocatior	I		Elevation an	d Da	tum	100	1410	ı					
		Claremont Mckenna College				Арр	orox. 1	195 (feet,	MSL)				
OL	F low		Darath	<u>ب</u>			imple D			Re	mark	s	
MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Number	Type	(in)	Penetr. resist BL/6in	N-Value (Blows/ft)	(D Fluid	rilling Fluid	l, Depth ling Res	of Casing, istance, et	, tc.)
	+1175.0	Percolation well installed and tested per county guidelines.	20	z		<u>ш</u>		10 20 30 4	0		5	,	
		Borehole backfilled with cuttings subsequent testing.											
			- 21 -										
			_ 22 _										
			- 23 -										
			_ 24 _										
			- 25 -										
			- 26 -										
			- 27 -										
			- 28 -										
			- 29 -										
			- 30 -										
			- 31 -										
			- 32 -										
			- 33 -										
			- 34 -										
			- 35 -										
			35 36 37 38 39 40 41 41 42 43 43										
			- 36 -										
			- 37 -										
			- 20										
			- 38 -										
			- 39 -										
			40 -										
			41 -										
			- 41 -										
			42										
			43 -										
			- 44 -										

LA	NG/	4 /V		Log	of E	Boring			FP	-5			Sheet	1	of	4
Project					Pr	oject No.										
Location	Proposed Athletic C	Complex				evation ar			700	11410	1					
Location	Claremont Mckenna				EIE	evalion ar	iu Da		۸nn	rov 11	247 (fe	ot N				
Drilling Comp	any	a College			Da	ite Starteo	d		Арр	107. 12	247 (IC		Finished			
	2R Drilling							1	1/29	/2022				11/2	29/2022	
Drilling Equip	ment				Сс	mpletion	Dept	n				Rock	Depth			
0. 17	CME-75 Truck-mou	unted Drill Rig								70.5 ft					-	
Size and Typ	8-inch O.D. Hollow	Stem Auger			Nu	imber of S	Samp	les	Disti	urbed	14		ndisturbed	-	Core	-
Casing Diam	eter (in)		Ca	asing Depth (ft)		ater Leve			First ∑		-		ompletion	-	24 HR. 	-
Casing Hamr	ner	Weight (lbs)	-	Drop (in) -	Dr	illing Fore	man									
Sampler	2-inch O.D. SPT Sp	olit-Barrel			Fie	eld Engine	er									
Sampler Han		Weight (lbs)	140	Drop (in) 30	1			s	Wil	kins						
z			140	00	-			0.		mple Da	ata					
Elen MATERIAL (ft)		Sample Descri	ption			Depth Scale	ber	Type		Penetr. resist BL/6in	N-V (Blov		(Drill		narks Depth of Casing	а.
(ft)							Number	Ţ	⊟ ≣	Per BL	10 20		Fluid Lo	oss, Drilling	g Resistance, e	etc.)
	Undocumented I	nert Debris Fill (all	<u>f)</u>			<u> </u>										
	Silty SAND with C	Gravel (SM), light y irse sand, abundan	/ellowish ht gravel	i brown, slightly and cobbles to												
	6-inches.		it graver			E' 3										
						- 2 -	1									
MM- 10:0011 12:02020	Brown.					= - :	1									
						- 3 -										
							1									
						- 4 -	1									
						E E	1									
						- 5 -		SPT	0	50/1"		50/1	No sa	ample re	ecovery;	
						= =		JF I		30/1				led on a		
						6 -	1									
						= :	1									
3						- 7 -										
	Older Alluvial Fa	n Deposits (Qof)					1									
	Silty SAND with C	Gravel (SM), reddis	sh browr	n, medium		- 8 -	1									
	gravel.	e to coarse sand, s	some fin	e to coarse			1									
5	9.4.701					<u> </u>										
Z 1237	0						1						Λ			
	Sandy SILT (ML)	to Silty SAND (SM		sh brown, hard		- 10 -		E		11						
	to very dense, mo	oist, fine gravel, fev	w clay.			- 11 -	S-2	SPT	15	13	3					
						⊧'':				18						
						- 12 -	1									
						- '										
						- 13 -										
							1									
5 + + + 1233						- 14 -	1									
		Gravel (SM), orang noist, fine to coarse				E :]									
	gravel.		,			- 15 -	1	┝╒┥		20						
						<u> </u>	ς.	に目	18	30						
						- 16 -	S-3	SPT		39 50		89	∍ ∮			
<u> </u>						E :	-	=	$\left - \right $	50						
						- 17 -										
						E	1									
						- 18 -	1									
						E . :]									
						- 19 -	1									
						<u> </u>										

roject		Proposed Athletic Complex	Project No.			700	11410 ⁻	1					
ocation	1		Elevation a	nd Da	tum								
		Claremont Mckenna College					rox. 12	-	et, MS	SL)			
SIAL	Elev.		Depth	5			mple Da	nta N-Va	duo		Rema	rks	
MATERIAL SYMBOL	(ft)	Sample Description	Scale	Number	Type	Recov	Penetr. resist BL/6in	(Blow	rs/ft)	Drillin) Fluid Los	g Fluid, Dep ss, Drilling R	oth of Casing esistance, e	J, ∋tc.)
$\overline{\ }$	1227.0		20 -	2	E	-	30	10 20	30 40				
			- 21 -	\$ 7	SPT	15	38		88				
				-			50						
			- 22 -										
	1224.0												
		SAND with Silt and Gravel (SP-SM), orangish brown and gray mottled, very dense, moist, fine to coarse sand and	_ 23										
		gravel, some silt.	_ 24 -	1									
			- 25 -	-									
				S-5	SPT	5.5	50/5.5"	5	0/5.5"	•			
		Cobbles.	- 26 -	1						Drill rig	g chatter.		
			- 27 -										
				1									
			- 28 -	1									
			- - 29 -										
				1									
			- 30 -	S-6	SPT	3	50/3"		50/3"				
			- 31 -										
										materi	al on ove al. Move	d, attemp	otec
			- 32 -							and re feet so	-drilled 5 outhwest.	, 10 and	15
	1214.0												
		Silty SAND with Gravel (SM), orangish brown, medium dense, moist, fine to coarse sand, some fine to coarse		1									
		gravel.	- 34 -										
			- 35 -										
			E	S-7		18	20 25						
			- 36 -	S	SPT		18		43				
			- 37 -	1									
			- 38 -	1									
]		- 39 -										
			- 40 -	S-8	SPT	0	50/0"		50/0"	No sa	mple reco	overy.	
			- 41 -	1									
			Ē										
			- 42 -										
			- 43 -										
			Ē										
			- 44 -	1									

ect		Project No.			700							
ation	Proposed Athletic Complex	Elevation a	nd Da		700	114101	1					
	Claremont Mckenna College				Арр	rox. 12	.47 (fe	et, MS	SL)			
	I				Sa	mple Da	ita					
Elev (ft)	Sample Description	Depth Scale	Number	Type	20 20	Penetr. resist BL/6in	N-Va (Blow	alue /s/ft)	(Drilling	Remai Fluid, Dep	th of Casing	g,
໌ດີ +1202.0		45 -	Z n	F	Ee Ee		10 20			s, Drilling R		etc.)
			<u>- S-9</u>	SPT	0	50/4"		50/4"	sample	ample re ed on a re	covery; ock.	
		- 46 -	-									
		-	-									
		- 47 -	-									
t 1199.	SAND with Silt (SP-SM), olive gray to yellowish brown, very	- 48 -	1									
	dense, moist, fine to coarse sand, few fine gravel.	-	-									
		- 49 -										
		- 50 -										
			0	LE		40						
		- 51 -	S-10	SPT	15	40 49		89				
+1195.0			-	╞╴	-	43						
	Silty SAND with Gravel (SM), orangish brown, very dense,	- 52 -	1									
	moist, fine to coarse sand, some fine to coarse gravel.	- 53 -	1									
		-	-									
		- 54 -										
		- 55 -	-									
			- J	SPT	9	50			Grain S	Size Ana	lysis	
		- 56 -	1									
		-	1									
		- 57 -	1									
		- 58 -	-									
			1									
		- 59 -	-									
		60 -										
	Increased gravel content and decreased silt content.		-S-12	SPT	5	50/5"		50/5"				
		- 61 -	1									
			1									
		- 62 -	=									
		63 -										
		-										
		64 -	1									
	la service di s'ite service i	- 65 -	-									
	Increased silt content.	_	13	SPT	18	31						
		66 -	S-13	1SF	Ĺ.	33 50		83				
		- 67 -	-									
				1								
+1179.	SAND with Silt and Gravel (SP-SM), orangish brown to	- 68 -		1								
	gravish brown, very dense, slightly moist, fine to coarse			1								
	sand, some fine to coarse gravel.	69 -	1	1								
		E 70 -	1	1								

roject		Proposed Athletic Complex	Project No.			70	011410	1					
ocation	l		Elevation a	nd Da	atum		511410	/ 1					
		Claremont Mckenna College				Ap	prox. 1	247 (feet, N	/ISL)			
4-					_		ample D				Rema	rke	
MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Number	Type	Recov.	Penetr. resist BL/6in	N- (Bl	-Value lows/ft)	(Drilli Fluid Lo	ng Fluid, Dep ss. Drilling F	ITKS pth of Casing Resistance, e	, tc.)
	1177.0 1176.5		- 70 -	4 Z	SPT		_	10 2	20 30 40		, ,	,	,
<u> </u>	1176.5	Total depth = 70.5 feet bgs.		S-14	5		- 50						
		Groundwater not encountered. Percolation well installed and tested per county guidelines.	- 71 -	1									
		Borehole backfilled with cuttings subsequent testing.	- 70	-									
			- 72 -	-									
			- 73 -	1									
			Ē	1									
			- 74 -	1									
			Ē	1									
			- 75 -	1									
			- 76 -	1									
			Ę	1									
			- 77 -	1									
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			- 78 -	1									
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			- 80 -	1									
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			- 85 -										
			- 86 -	-									
			F	1									
			- 87 -	1									
			- 88 -	1									
				1									
			- 89 -	1									
			-	1									
			- 90 -										
			- 92 -										
			E										
			- 93 -										
			E										
			- 94 -	-									
			₉₅ _	1									

LA	NL	A/V	Log	of E	Boring			FP	-6		_		Sheet	1	of	2
Project				Pr	oject No.											
Location	Proposed Athletic C	omplex		Ele	evation an	d Da		7001	11410	1						
	Claremont Mckenna	a College						Аррі	rox. 1	185 (f						
Drilling Com	,			Da	ate Starteo	1	4	4/00	0000		D	ate F	inished	44/0	0/2022	
Drilling Equi	2R Drilling			Co	mpletion I	Depth		1/29	/2022		R	ock l	Depth	11/2	9/2022	
	CME-75 Truck-mou	inted Drill Rig							40.3 ft						-	
Size and Ty	e of Bit 8-inch O.D. Hollow	Stem Auger		Nu	umber of S	Samp	les	Distu	irbed	8		Un	disturbed	-	Core	-
Casing Diam			Casing Depth (ft)		ater Level	. ,		First 		-		Co	mpletion	-	24 HR. 	-
Casing Ham	mer	Weight (lbs) -	Drop (in)	Dr	illing Fore	man										
Sampler Sampler Har	2-inch O.D. SPT Sp ^{nmer} Automatic	blit-Barrel Weight (lbs) 140	Drop (in) 30	_ Fie	eld Engine	er	s	. Will	kins							
Z ∃ J		140		-					nple D	ata			1	Rem	orko	
LANGAN SYMBOL +118)	Sample Description	1		Depth Scale	Number	Type	Recov. (in)	Penetr. resist BL/6in	N-\ (Blo 10 20	Valu ows/	ft)		ng Fluid, D	epth of Casing Resistance, e	
	Undocumented Ir	nert Debris Fill (alf)			E 0 -											
Report	fine to coarse san	Gravel (SM), light yellow nd, some fine to coarse	gravel.		- 1 -	1										
11:03:12 AN					- 2 -											
1:03:																
023 1					- 3 -											
1/23/2023	.0 Old Alluvial Fan I				- 4 -											
	Silty SAND with C	Clay and Gravel (SM), re		'												
		rse sand, some gravel a	and clay.		- 5 -				8							
d 0 1179 0 0 0 1179	Sandy SILT with (Clay and Gravel (ML), o	orangish brown,		- 6 -	<u>2</u>	SPT	18	9	19•						
	very sun, nne to n	nedium sand, few fine g	gravel, some clay.			<u> </u>	ĻΕ		10		$\setminus $					
0011					- 7 -											
Closed and the second s											ľ	\backslash				
Ŏ <u></u> , , , , , , , , , , , , , , , , , , ,	SAND with Silt an	nd Gravel (SP-SM), orar			- 8 -											
	grayish brown, de	ense, slightly moist, fine se gravel.	to coarse sand,		- 9 -											
NIC		0														
					- 10 -	-			34							
						S-2	SPT	18	34							
					- 11 -				37			71	†			
SCIP					- 12 -											
DAT					- 13 -	1										
					Ē., Ē	1										
PRO.					- 14 -	1						/				
4101					- 15 -	-						/				
0011					E =	S-3	ĿĔ	18	29 18			/				
	Sandy SILT (ML),	, orangish brown, hard,	moist, fine sand.		- 16 -	ن	SPT		15		33	(
VLANGAN.COMIDATA1/700114101PROJECT DATA_DISCIPLINEIGEOTECHNICALIGINTL.OGS/700114101	.0	-				-						\backslash				
	SAND with Silt an	nd Gravel (SP-SM), gray rse sand and gravel, so	yish brown, dense,		- 17 -							\setminus				
	of sandy silt.	se ound and graver, SU			- 18 -											
IC IC IC IC IC IC IC IC IC IC IC IC IC I					- 19 -											
					<u>⊧</u> 20 _											

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oject		Proposed Athletic Complex	Project No.			700.	11410 ⁻	1					
ocation			Elevation a	nd Da	itum	100							
		Claremont Mckenna College				Арр	rox. 11	85 (fe	et, MS	SL)			
ЧЧ							mple Da				Rema	rke	
MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Va (Blow	lue s/ft)	_ (Drillin	ig Fluid, Dep ss, Drilling R	oth of Casing	I,
≧″ +	1165.0		20 -	Ĩ				10 20 3	30 40	Fluid Los	ss, Drilling R	esistance, e	tc.)
			_	4	F		28 16						
			- 21 -	S-4	SPT	-	50		66	•			
				\vdash									
			- 22 -							Drill riç	g chatter.		
			_ 23 -										
			-										
			- 24 -	1									
			- 25 -	1	 								
		Olive gray to olive brown.		S-5	SPT	12	40						
			_ 26 -	1	Ē		50						
			- 27 -										
										Drill rig	g chatter.		
			- 28 -	1									
				1									
			- 29 -	1									
			- 30 -	S-6	SPT	4	50/4"			Drill rid	g chatter;	sampler	10
			_				00/4		50/4"	a rock		bampioe	1 01
			- 31 -										
			- 32 -	1									
				1									
			- 33 -	1									
			- 24	1									
			- 34 -										
			35	S-7	SPT	4	50/4"						
									50/4"	•			
			- 36 -	1									
			- 37 -	1									
			- 38 -							Drill rig	g chatter.		
			- 39 -										
				1									
	1144.7		40 -	S-8	SPT	4	50/4"		50/4"	Grain	Size Ana	lysis	
		Total depth = 40.3 feet bgs. Groundwater not encountered.							00/4				
		Percolation well installed and tested per county guidelines. Borehole backfilled with cuttings subsequent testing.	- 41 -										
		Borenoie backlined with cuttings subsequent testing.	42 -										
				1									
			- 43 -	1									
			- 44 -	1									
			F	1	1	1							

Project:			Claremont Mo	Kenna College		Project No.:	700114101	Date:	10/21/2022
Test Hole No.:			FF	P-1		Tested By:	S. Wilkins		
Depth of Test Ho	ble (ft):		1	0		USCS Soil Classifica	ation:		SM
PVC Pipe Dimen	sion:		3-in I.D. Perfora	ated by 10 Feet		Test Hole Diameter	· (in):		8
Trial No.	Date	Time of Measurement	Initial Depth to Water (ft)	Time of Measurement	Final Depth to Water (ft)	Volume of Water Infiltrated (cu.in.)	Surface Area (sq.in.)	Time Interval (min)	Inflitration Rate (in/hr)
#1 (Refill)	10/21/2022	1:16 PM	5.00	1:46 PM	6.56	941	1558	30	1.21
#2 (Refill)	10/21/2022	1:48 PM	5.00	2:18 PM	6.47	887	1558	30	1.14
#3 (Refill)	10/21/2022	2:20 PM	5.00	2:50 PM	6.38	832	1558	30	1.07
#4 (Refill)	10/21/2022	2:55 PM	5.00	3:25 PM	6.44	869	1558	30	1.11
#5 (Refill)	10/21/2022	3:26 PM	5.00	3:56 PM	6.40	844	1558	30	1.08
#6 (Refill)	10/21/2022	3:58 PM	5.00	4:28 PM	6.36	820	1558	30	1.05
							ilized Bato		1.02
Comments:	Procedure pro Low Impact D Angeles Depa	vided in the "Guid evelopment Storr	elines for Design,	with the Boring P Investigation, an n," prepared by Co une 2021.	d Reporting -	Average Stab Reduction RF _t =1, RF _v = Design Infiltratio	Factors 1, RF _s =1		1.08 3 0.36



Project:			Claremont Mo	cKenna College		Project No.:	700114101	Date:	10/21/2022
Test Hole No.:			FP	° - 2		Tested By:	shaun wilkins	Updated:	11/11/2022
Depth of Test Ho	ble (ft):		1	10		USCS Soil Classifica	ation:		SP-SM
PVP Pipe Dimens	sion:	2-in I.D.	x 10 ft long (10 ft	slotted) with 10		Test Hole Diameter	(in):		8
				SAND	Y SOIL CRITERIA	TEST*			
Trial No.	Date	Start Time	Stop Time	Time Interval (min)	Initial Depth to Water (ft)	Final Depth to Water (ft)	Change in wa	ater Level (in.)	Greater than or Equal to 6" (Y/N)
1	10/21/2022	11:10 AM	11:12 AM	2.0	5	5.5	(5	Y
2	10/21/2022	11:12 AM	11:15 AM	3.0	5.5	6	(5	Y
inches.		iii) overnight. Obi							a precision of at least 0.25
Trial No.	Date	Time of Measurement	Initial Depth to Water (ft)	Time of Measurement	Final Depth to Water (ft)	Volume of Water Infiltrated (cu.in.)	Surface Area (sq.in.)	Time Interval (min)	Infiltration Rate (in/hr)
#1 (Refill)	10/21/2022	11:15 AM	5.00	11:25 AM	6.50	905	1332	10.0	4.08
#2 (Refill)	10/21/2022	11:26 AM	5.00	11:36 AM	6.42	857	1344	10.0	3.82
#3 (Refill)	10/21/2022	11:37 AM	5.00	11:48 AM	6.43	863	1343	10.0	3.85
#4 (Refill)	10/21/2022	11:50 AM	5.00	12:00 PM	6.43	863	1343	10.0	3.85
#5 (Refill)	10/21/2022	12:01 PM	5.00	12:11 PM	6.42	857	1344	10.0	3.82
#6 (Refill)	10/21/2022	12:12 PM	5.00	12:22 PM	6.41	850	1346	10.0	3.79
		test was performe			Guidance	Stabilized Infiltrat	ion Rate (in/hr)		3.79
Comments:	(https://www. OCInfiltrationF	pendices provided <u>sbcounty.gov/uplo</u> <u>RateEvaluationProv</u> Rate is caluclated b	ads/DPW/docs/Ap tocol.pdf)	opendixD-	Sorehole method).	Combined Saf S _{TOT} =S _A x S _B (S			4.00
		unny and warm.				Design Infiltratio	on Rate (in/hr)		0.95



Project:			Claremont Mo	cKenna College		Project No.:	700114101	Date:	10/21/2022
Test Hole No.:			FP	°-3		Tested By:	shaun wilkins	Updated:	11/11/2022
Depth of Test Ho	ble (ft):		1	10		USCS Soil Classifica	ation:		SP-SM
PVP Pipe Dimens	sion:	2-in I.D. x 10 ft	long (5 ft solid a	nd 5 ft slotted) w		Test Hole Diameter	(in):		8
				SAND	Y SOIL CRITERIA	TEST*			
Trial No.	Date	Start Time	Stop Time	Time Interval (min)	Initial Depth to Water (ft)	Final Depth to Water (ft)	Change in wa	ater Level (in.)	Greater than or Equal to 6" (Y/N)
1	10/21/2022	1:26 PM	1:30 PM	4.0	3.5	4	6	5	Y
2	10/21/2022	1:30 PM	1:34 PM	4.0	4	4.5	E	5	Y
minutes. Otherw inches.	ise, pre-soak (f	ill) overnight. Obt	ain at least twelv	e measurements	per hole over at le	east six hours (appro	ximately 30 minu	ite intervals) with	a precision of at least 0.25
Trial No.	Date	Time of Measurement	Initial Depth to Water (ft)	Time of Measurement	Final Depth to Water (ft)	Volume of Water Infiltrated (cu.in.)	Surface Area (sq.in.)	Time Interval (min)	Infiltration Rate (in/hr)
#1 (Refill)	10/21/2022	1:38 PM	5.00	1:48 PM	6.46	881	1338	10.0	3.95
#2 (Refill)	10/21/2022	1:54 PM	5.00	2:04 PM	5.47	283	1487	10.0	1.14
#3 (Refill)	10/21/2022	2:06 PM	5.00	2:16 PM	6.23	742	1373	10.0	3.24
#4 (Refill)	10/21/2022	2:16 PM	5.00	2:26 PM	6.22	736	1374	10.0	3.21
#5 (Refill)	10/21/2022	2:27 PM	5.00	2:37 PM	6.22	736	1374	10.0	3.21
#6 (Refill)	10/21/2022	2:38 PM	5.00	2:48 PM	6.21	730	1376	10.0	3.18
		test was performe pendices provided		with the Technical	Guidance	Stabilized Infiltrat	ion Rate (in/hr)		3.18
Comments:	(https://www. OCInfiltrationF	sbcounty.gov/uplo RateEvaluationProt	ads/DPW/docs/Ap ocol.pdf)		Borehole method).	Combined Saf S _{TOT} =S _A x S _B (S			4.00
		unny and warm.				Design Infiltratic	on Rate (in/hr)		0.80



Project:			Claremont Mo	Kenna College		Project No.:	700114101	Date:	10/21/2022
Test Hole No.:			FP	9 - 4		Tested By:	shaun wilkins	Updated:	11/11/2022
Depth of Test Ho	ble (ft):		1	19		USCS Soil Classifica	ation:		SP-SM
PVP Pipe Dimens	sion:	2-in I.D. x 20 ft	long (5 ft solid ar	nd 15 ft slotted) w	vith 20 ft screen	Test Hole Diameter	(in):		8
				SAND	Y SOIL CRITERIA	TEST*			
Trial No.	Date	Start Time	Stop Time	Time Interval (min)	Initial Depth to Water (ft)	Final Depth to Water (ft)	Change in wa	iter Level (in.)	Greater than or Equal to 6" (Y/N)
1	10/21/2022	12:17 PM	12:21 PM	4.0	8.5	9	(5	Y
2	10/21/2022	12:21 PM	12:24 PM	3.0	9.05	9.55	(5	Y
inches.	ise, pre-soak (f	iii) overnight. Obt	ain at least twelv	e measurements	per noie over at le	east six nours (appro	ximately 30 minu	te intervais) with	a precision of at least 0.25
Trial No.	Date	Time of Measurement	Initial Depth to Water (ft)	Time of Measurement	Final Depth to Water (ft)	Volume of Water Infiltrated (cu.in.)	Surface Area (sq.in.)	Time Interval (min)	Infiltration Rate (in/hr)
#1 (Refill)	10/21/2022	12:28 PM	10.00	12:38 PM	10.68	410	2662	10.0	0.92
#2 (Refill)	10/21/2022	12:40 PM	10.00	12:50 PM	10.87	525	2633	10.0	1.20
#3 (Refill)	10/21/2022	12:51 PM	10.00	1:01 AM	10.88	531	2632	10.0	1.21
#4 (Refill)	10/21/2022	1:02 AM	10.00	1:12 AM	10.85	513	2636	10.0	1.17
#5 (Refill)	10/21/2022	1:13 AM	10.00	1:23 AM	10.84	507	2638	10.0	1.15
#6 (Refill)	10/21/2022	1:24 AM	10.00	1:34 AM	10.83	501	2639	10.0	1.14
		test was performe pendices provided			Guidance	Stabilized Infiltrat	ion Rate (in/hr)		1.14
Comments:	(https://www.s OCInfiltrationF	sendices provided sbcounty.gov/uplo RateEvaluationProv Rate is caluclated b	ads/DPW/docs/Ap tocol.pdf)	ppendixD-	Sorehole method).	Combined Sat S _{TOT} =S _A x S _B (S			4.00
		unny and warm.				Design Infiltratio	n Rate (in/hr)		0.28



Project:	Clare		College Sports Co	omplex	Project No.:	700114101	Date Tested:	11/29/2022
Test Hole No.:		FF	° - 5		Tested By:	SHW	Updated:	12/15/2023
Depth of Test Hole (ft):		-	70		USCS Soil Classific	cation:	S	P-SM
PVP Pipe Dimension:	3-in I.D. :	< 70 ft long (20 ft	perforated and 5	50 ft solid)	Test Hole Diamete	er (in):		8
			SANDY S	SOIL CRITERIA TE	ST*			
Trial No.	Start Time	Stop Time	Time Interval (sec)	Initial Depth to Water (ft)	Final Depth to Water (ft)	Change in wa	ater Level (in.)	Greater than or Equal to 6" (Y/N)
1	4:50 PM	4:50 PM	22	55.00	55.50	6	6	Y
2	4:51 PM	4:51 PM	28	55.50	56.00	6	6	Y
* If two consecutive meas taken every 10 minutes. C with a precision of at least	therwise, pre-soa			•				
Trial No.	Start Time	Stop Time	Time Interval (min)	Initial Depth to Water (ft)	Final Depth to Water (ft)	Change in water Level (ft)	Percolation Rate (min/in)	Infiltration Rate (in/hr)
#1 (Refill)	4:55 PM	5:05 PM	10.0	60.00	63.90	3.90	0.21	5.70
#2 (Refill)	5:16 PM	5:26 PM	10.0	60.00	63.87	3.87	0.22	5.64
#3 (Refill)	5:27 PM	5:37 PM	10.0	60.00	63.78	3.78	0.22	5.48
#4 (Refill)	5:39 PM	5:49 PM	10.0	60.00	63.75	3.75	0.22	5.43
#5 (Refill)	5:50 PM	6:00 PM	10.0	60.00	63.74	3.74	0.22	5.41
#6 (Refill)	6:02 PM	6:12 PM	10.0	60.00	63.72	3.72	0.22	5.37
			in accordance wit					
			provided on San B pov/uploads/DPW/	ernardino Gov. <i>(docs/AppendixD-</i>	Tested Infiltratio			5.37
Comments:		e <u>EvaluationProtoc</u> is caluclated bas		ethod (aka inverse	$S_{TOT} = S_A \times S_B$ (2
	borehole method <u>3 Weather[.] Part</u>	,	l		Design Infiltration	on Rate (in/hr)		2.69



Project:	Clare	mont McKenna (College Sports Co	omplex	Project No.:	700114101	Date Tested:	11/29/2022
Test Hole No.:		FF	°-6		Tested By:	SHW	Updated:	12/15/2023
Depth of Test Hole (ft):			40		USCS Soil Classifie	cation:	S	P-SM
PVP Pipe Dimension:	3-in I.D. :	x 40 ft long (20 ft	perforated and 2	20 ft solid)	Test Hole Diamete	er (in):		8
			SANDY	SOIL CRITERIA TE	ST*			
Trial No.	Start Time	Stop Time	Time Interval (sec)	Initial Depth to Water (ft)	Final Depth to Water (ft)	Change in wa	ater Level (in.)	Greater than or Equal to 6" (Y/N)
1	3:30 PM	3:30 PM	9	29.00	29.50	6	6	Y
2	3:30 PM	3:30 PM	11	29.50	30.00	E	6	Y
taken every 10 minutes. (with a precision of at leas		ak (fill) overnight.	Obtain at least ty	welve measureme	nts per hole over a	t least six hours (a	approximately 30) minute intervals)
Trial No.	Start Time	Stop Time	Time Interval (min)	Initial Depth to Water (ft)	Final Depth to Water (ft)	Change in Water Level (ft)	Percolation Rate (min/in)	Infiltration Rate (in/hr)
#1 (Refill)	3:30 AM	3:40 AM	10.0	30.00	37.40	7.40	0.11	13.73
#2 (Refill)	5:16 PM	5:26 PM	10.0	30.00	34.90	4.90	0.17	7.62
#3 (Refill)	5:27 PM	5:37 PM	10.0	30.00	36.22	6.30	0.13	10.58
#4 (Refill)	5:39 PM	5:49 PM	10.0	30.00	36.19	6.28	0.13	10.50
#5 (Refill)	5:50 PM	6:00 PM	10.0	30.00	35.90	6.12	0.14	9.81
#6 (Refill)	6:02 PM	6:12 PM	10.0	30.00	35.85	5.85	0.14	9.69
	Guidance Docum	st was performed ient Appendices p	provided on San B	ernardino Gov.	Tested Infiltrati	on Rate (in/hr)		9.69
Comments:	OCInfiltrationRat	<i>Www.sbcounty.g</i> eEvaluationProtoce e is caluclated bas	col.pdf)	/ <u>docs/AppendixD-</u> ethod (aka inverse	Combined Sa S _{TOT} =S _A x S _B	, .		2
	borehole method				Design Infiltrati	on Rate (in/hr)		4.85



APPENDIX D Soil-gas (Methane) Testing

	NGAN	Log		Boring			MW-1			Sheet	1	of	2
Project	Proposed Athletic Complex		Pro	oject No.			70011410	01					
Location			Ele	evation an	d Da	tum							
Drilling Corr	Claremont Mckenna College		Da	te Startec			Approx. 1	260 (fe		SL) Finished			
Drilling Equi	2R Drilling		Co	mpletion l	Denth		8/14/2023	3	Rock [8/14/2	2023	
	LAR - CME			mpiotion	Jopu		30.5 1	ft				-	
Size and Ty	8-inch O.D. Hollow Stem Auger		Nu	mber of S	ampl	les	Disturbed	-		disturbed	Co	ore	
Casing Diar Casing Han Casing Han Sampler Sampler Ha	neter (in)	Casing Depth (ft)	Wa	ater Level	(ft.)		First		Cor	mpletion	24	∔HR. ▼	-
Casing Han	mer Weight (lbs)	- Drop (in) -	Dri	lling Fore	man		_						
Sampler	-		Fie	eld Engine	er	Je	erry						
	nmer _ Weight (lbs)	- Drop (in) -				В.	Watkins Sample [Data		1			
2:43:06 PM . MATERIAL SYMBOL 1120 1120	i) Sample Descript	ion		Depth Scale	Number	Type	Recov. (in) Penetr. BI /6in		vs/ft)	V	Vell I	Diagram	1
WELLS GINT LOGS.GPJ 8/24/2023 2	Artificial Fill Silty SAND with Gravel and Cobbles fine to coarse sand, fine to coarse gra than 5inches in size.	SM): light brown, dry, wel, cobbles of less		0 - 1 - 2 - 3 3 4							U	tility box ast iron c	with
ATAL DISCIPLINE/GEOTECHNICAL/GINTLOGS/700114101 - METHANE	5.0 Silty GRAVEL with Sand (GM): brown moist, fine to coarse sand, fine to coa less than 4inches in size.	, slightly moist to	f	5 6 7 8 9 10 11 11 12 13						a de la construcción de la construcción de la construcción de la construcción de la construcción de la constru La construcción de la construcción d La construcción de la construcción d		-inch dia ipe	solid
ILANGAN COMIDATAIRWDATA1700114101/IPROJECT D	Light brown			14 14 15 16 17 17 17 20								2 Gravel oncrete p -inch dia ipe. A ga ttached t	slotted

Project	Proposed Athletic Complex	Project No.			70011410	1				
ocation		Elevation an	d Dat	tum						
	Claremont Mckenna College				Approx. 12		(feet, M	SL)		
Elev (ft) +1240.0	Sample Description	Depth Scale	Number	Type	Recov. (in) Penetr. BL/6in BL/6in	N (B	I-Value lows/ft) 20 30 40	- v	/ell Diagr	am
	Light brown to brown, moist	20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 34 35 36 37 38 39 40 41 42 43							6-inche gravel a bottom	ng from to cent slotted

		NG		Log		Boring			MΜ	-2A		-	She	eet	1	of	2
Project		Proposed Athletic	Complex		Pro	oject No.			700	11410	1						
Location		Toposed Athletic	Complex		Ele	evation an	d Da		100	11410	1						
Drilling C	omnan	Claremont Mckenr	na College		Da	te Starteo	1		Арр	rox. 12	273.5		t, MSL e Finish				
		2R Drilling)8/14	1/2023					08/1	5/2023	
Drilling E					Co	mpletion	Deptł	۱		00 F #		Ro	ck Depth	I			
Size and	Туре о				Nu	mber of S	amn	les		33.5 ft urbed			Undistur	bed		- Core	
Casing D)iamete	<u>8-inch O.D. Hollow</u> r (in)	/ Stem Auger	Casing Depth (ft)					Firs		-	-	Complet	ion	-	24 HR.	
			Weight (lbs)	Drop (in)		ater Level			∇				Ţ		-	Ţ	-
Casing H Sampler	ammer					ining i ore	man	Je	erry								
Sampler	Hamme		Weight (lbs)	Drop (in)	Fie	eld Engine	er	_									
		-						B		itkins mple Da	ata						
MATERIAL SYMBOL	Elev. (ft)		Sample Descrip	tion		Depth Scale	Number	Type		Penetr. resist BL/6in	N-V (Blo	/alue ws/ft)					
+	1273.5	Artificial Fill				<u> </u>	2			-	10 20	30 4	10				
		to sightly moist,	fine to coarse sand,	(SM): light brown, dry fine to coarse gravel,		- 1 -											
		cobbles of less t	han 6inches in size.	-													
						- 2 -											
	1270.5					- 3 -											
		moist, fine to coa		n, slightly moist to arse gravel, cobbles of													
		less than 4inche	s in size.			- 4 -											
						- 5 -											
						6 -											
						- 7 -											
\times						- 8 -											
						- 9 -											
7 ~ /																	
		Light brown				- 10 -											
						- 11 -											
						- 12 -											
						- 13 -											
						- 14 -											
						- 15 -											
XX																	
						- 16 -											
76X						- 17 -											
						- 18 -											
X						- 19 -											
						⊢ -	ł		1								

	NGAN	Log of Boring			M	W-2	Α		Sheet	2	of	2
Project		Project No).									
ocation	Proposed Athletic Complex	Elevation	and D	atun		0011	4101	1				
JoalUI	Claremont Mckenna College		unu De	atuli		oprov	(12	73.5 (feet,	MSL)			
		I				Samp						
MATERIAL SYMBOL (j)		Dept	า อั					N-Value	1			
HATE (f		Scale	Number	Tvp	Reco	(in) Penetr.	BL/6i	(Blows/ft)				
+125	3.5	20	-			-	_	10 20 30 40				
		Ē	-									
		- 21	-									
		- 22	_									
			-									
		- 23	-									
		Ē	Ę									
		- 24	Ŧ									
1 24		$\frac{1}{10} \frac{1}{10} 25$	-									
	Silty SAND with Gravel (SM): light brown, moist, fine coarse sand, fine to coarse gravel.											
		- 26	-									
		F or	-									
		- 27 -	-									
		- 28	-									
		-										
		- 29	-									
		E ao	-									
		- 30	-									
		- 31	-									
		Ē	-									
		- 32	_									
		- 33	_									
+124												
	Total Depth = 33.5 feet No groundwater encountered	- 34	-									
	Backfilled with augur cuttings.	E E										
		- 35										
		- 36	Ē									
		37	-									
		- 38										
		- 39	E									
		Ę										
		- 40	-									
		Ę,										
		- 41	-									
		- 42	-									
		F	$\frac{1}{1}$									
		- 43	7									
		Ę,,	-									
		- 44	-									
		F_ 45	1									

		NGA	4/V		Log o		Boring			MW-2	В		S	heet	1	of	2
Pro	oject	Proposed Athletic C	Complex			Pro	oject No.			700114	101						
Lo	cation					Ele	evation an	d Da	tum			- 10					
Dr	illing Compar	Claremont Mckenna	a College			Da	ite Started			Approx	. 1273		eet, MS ate Fini				
Dr	illing Equipme	2R Drilling				Co	mpletion I	Denth	0	8/15/20)23	R	ock Dep	oth	08/	15/2023	
		LAR - CME					mpiotion	Jopu			4 ft						
	ze and Type o	8-inch O.D. Hollow	Stem Auger			Nu	imber of S	ampl	les	Disturbe	ed	-	Undist		-	Core	
Report: Log - LANGAN	asing Diamete	er (in)		Casing E	Depth (ft)	Wa	ater Level	(ft.)		First			Comp	letion	-	24 HR.	-
√ − Ca	asing Hamme	r	Weight (lbs)	- Drop	o (in) -	Dri	illing Fore	man	·								
J Sa	Impler	-	Maight (lba)	Drer	(in)	Fie	eld Engine	er	Je	erry							
	mpler Hamm	er _	Weight (lbs)	- Drop	- ^(III)				В.	Watkii Sampl							
:43:09 PM	Elev. (ft) +1273.5		Sample Descript	ion			Depth Scale	Number	Type	Recov. (in) Penetr.	SL/6in	N-Valu Blows/ 20 30	ft)		We	ell Diagrar	n
ILANGAN.COMIDATAI/RV/DATA1/700114101PROJECT DATAL_DISCIPLINE/GEOTECHNICAL/GINTLOGS/700114101 - METHANE WELLS GINT LOGS.GPJ 8/24/2023 2		Artificial Fill Silty GRAVEL wit fine to coarse san than 4inches in si Brown	h Sand (GM): brown Id, fine to coarse gra ze.	, dry to slig vel, cobble	htly moist, s of less		0 1 1 2 3 4 -1								Konter and and and and and an and and and and	 Guage Va Utility box cast iron -1-inch dia pipe -4/2 Grave Concrete 	solid

Project			of Boring Project No.				-2B						
ocation		Proposed Athletic Complex	Elevation a	nd Da	tum	700	11410	1					
ocation		Claremont Mckenna College	Lievation a			Арр	rox. 12	273.5 (fee	et, MSL	.)			
7						Sa	mple D	ata			A/-	U D:	
SYM	Elev. (ft) 1253.5	Sample Description	Depth Scale	Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)		vve	ll Diagram	
			20 - - 21 - - 22 -									-1-inch dia	slott
		Large cobble between 23 to 24 feet	- 23 -								X	pipe. A gas attached to flexible tub extending	o a ing
			- 24 -									surface to of the slott pipe.	cen
é/	1248.5.	Silty SAND with Gravel (SM): light brown to brown, moist, fine to coarse sand, fine to coarse gravel.	25 - - 26 -										
			_ 20										
			- 28 -										
			- 29 -										
			- 30 -										
			- 31 -										
			- 33 -										
+'	1239.5	Total Depth = 34.0 feet	34 -									-1 feet of #2 at the bott	2 gr om
		No groundwater encountered Boring converted to methane test well.	- 35 -										
			- 36 -										
			- 37 - - - 38 -										
			- 39 -										
			- 40 -										
			- 41 -										
			- 42 - - 43 -										
			- 43 - - - 44 -										
			45 -										

LA	NG/		Log		Boring			MW-3			Sheet	1	of	2
Project				Pr	oject No.									
Location	Proposed Athletic C	omplex		E	evation an	id Da		70011410	1					
	Claremont Mckenna	1 College						Approx. 12	287 (fe	et, M	SL)			
Drilling Comp	any	0		Da	ate Starteo	4					Finished			
Drilling Equip	2R Drilling				ompletion l	Dent	0	8/15/2023		Rock	Depth	08/	15/2023	
	LAR - CME				ompietion	Depu	1	34 ft		NUCK	Deptil			
Size and Type	e of Bit			N	umber of S	Samp	les	Disturbed		Un	disturbed		Core	
Casing Diame	8-inch O.D. Hollow S	Stem Auger	Casing Depth (ft)	+				First	-	Co	mpletion	-	24 HR.	
					ater Level	• •		$\overline{\Delta}$			Ľ	-	Ţ	-
Casing Diame Casing Hamn Casing Hamn Sampler Sampler Ham	ner	Weight (lbs)	Drop (in) -		rilling Fore	man	Ic	erry						
Sampler	-			Fi	eld Engine	er	56	511 y						
Sampler Ham	imer _	Weight (lbs)	Drop (in)				B.	Watkins						
	,				Depth	5		Sample D		alue	-	W	ell Diagrar	n
(ft) SATE 33.10		Sample Description	I		Scale	Number	Type	Recov. (in) Penetr. resist BL/6in	(Blov	vs/ft)			-	
+1287. m	0 Artificial Fill				<u> </u>	z			10 20	30 40	1			
47202	Silty GRAVEL with	h Sand (GM): brown, dr d, fine to coarse gravel	ry to slightly moist	,									 Guage Va Utility box 	alve and
	line to coarse san	u, fine to coarse graver											cast iron	on top.
					- 2 -									
					E - 3									
					- 3 -									
					E E									
					4 -									
	Moist				- 5 -									
W A					6 -									
					Ē									
					- 7 -									
	Less than 7inch di	ia cobbles between 5 to	o 10 feet.											
Ę					- 8 -								4 in the slip	
					- 9 -								—1-inch dia pipe	SOLID
Z					Ē									
					- 10 -									
					- 11 -									
DISCIPLINE														
					- 12 -									
					- 13 -									
					- 14 -									
0 2 2 3 4 1272	Silty SAND with G	Gravel (SM): brown, moi	st, fine to coarse		15 -									
	sand, fine to coars	se gravel.			- 16 -									
						1								
					- 17 -								 #2 Gravel 	I
					È -									
					- 18 -								_	
					E								 Concrete 	plug
WANGAN COMIDATAIRPUDATA1/200114101/BROJECT DATA					- 19 -							ľ ľ		
≱					E 20 -	1								

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		NGAN	Log of Bori				MV	V-3		Sheet	2	of	2
Project		Proposed Athletic Complex	Project	No.			700	11440	1				
ocation	ı	Proposed Athletic Complex	Elevati	on and	d Dat	um	100	11410	1				
		Claremont Mckenna College					Арр	rox. 12	287 (feet, M	SL)		 I Diagram I-inch dia s pipe. A gas attached to flexible tubi extending f surface to c of the slotte pipe. I feet of #2 at the botte 	
OL	Elev.			epth	5			mple Da		_	We	ell Diagra	m
MATERIAL SYMBOL	(ft) +1267.0	Sample Description	So	cale	Number	Type	Recov (in)	Penetr. resist BL/6in	(Blows/ft)			Ū.	
	1207.0	Light brown to brown, moist		20 -	-				10 20 30 40				
			- 2	21 -									
			-	22 -								_1 inch di	o olotti
	•											pipe. A g	as pro
			- 2	23 -								flexible to	ubing
				24 -								surface t	o cente
			ļ,	,									lieu
				25 –									
			- 2	26 -									
				27 -									
. •			Ę	<u> </u>									
				28 -									
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			Ē	31 -									
			- : -	32 -									
			- :	33 –							日		
	±1253.0										-	-1 feet of at the bo	#2 gra
	1	Total Depth = 34 feet No groundwater encountered		34 –									
		Boring converted to methane test well.	- 3 - 3	35 -									
			E s	36 -									
				, - -									
				37 -									
				38 -									
			È.	39 -									
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			E 4	13 -									
				14 -									
				45 –									



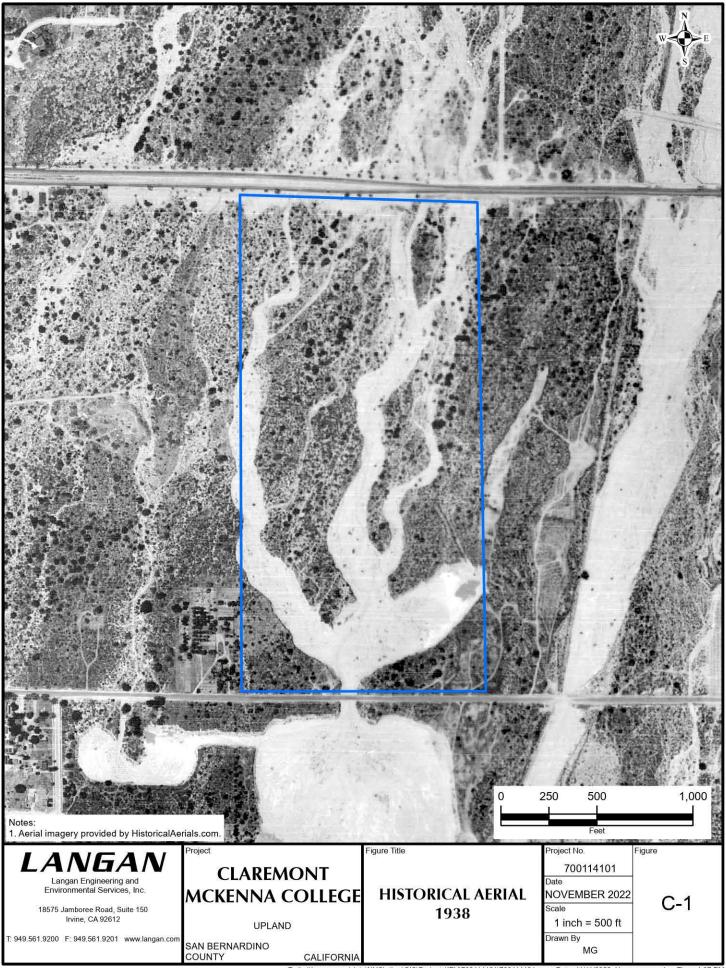
re

FORM 1 (CONTINUED) - CERTIFICATE OF COMPLIANCE FOR METHANE TEST DATA

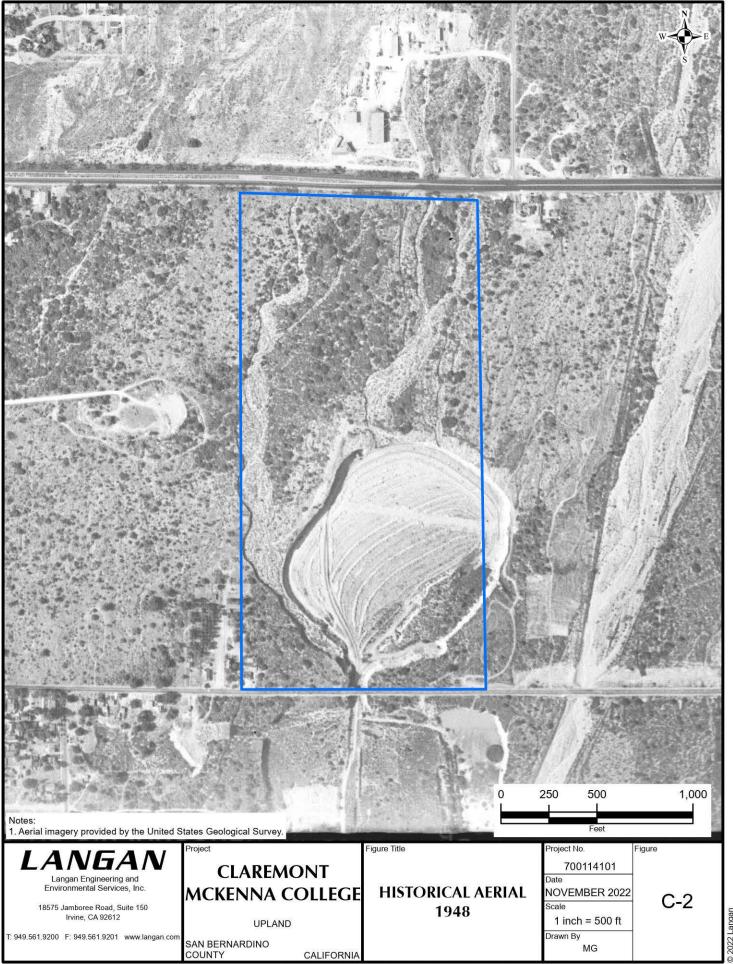
			Model: Land		00 Instrument	Accuracy: +	ppmv.
	Date	Time	Probe Set #	Concentration (ppmv)	Pressure (inches water column)	Probe Depth (feet)	Description / Probe Location
MWI	8/15/23	=1130AM	MW1-#1	0.0	0.02	29	south side of blda
1st	11	11	" #2	0.0	0.04	19	// 0
reading	11	11	" #3	0.0	0.02	14	11
TAN	24	127	A.	HAN	1AV	111	ANNA
MWI	8/6/23:	1200 pm	MWH-#1	0.0	0.01	29	south side of blog
2nd	"	11	〃 #2	0,0	0.04	19	0
reading	11	1]	1 #3	0.0	0.03	14	
MW2	8/16/23:	1230pm	MW2-#1	0.0	0,03	32	center of blog
Streating	11	11	#2	0.0	0.06	22	0
	11	IJ	E#	0,0	0.04	17	
MUJ3	8/16/23	\$130pm	MW3-#1	0.0	0.03	32	north side of bldg
15+	11	11	#2	0.0	0.05	22	0
reading	11	1)	#3	0.0	0.04	17	
-	200		M	1111	1111	ANT	MAAA
MW2	8/7/23:	1230pm	MW2-#1	0,0	0.02	32	center
MW2 2nd	11	И	#2	0.0	0.01	22	
reading	11	11	#3	0.0	0.02	17	
111.12	8/17/23	=130pm	M(1)3-#1	0.0	0.07	32	north side
and	11	1)	#2	0.0	0.07	22	
reading	11	h	#3	0,0	0.06	17	
					P. J. S. S. S.		

As a covered entity under Title II of the Americans with Disabilities Act, the City of Los Angeles does not discriminate on the basis of disability and, upon request, will provide reasonable accommodation to ensure equal access to its programs, services and activities.

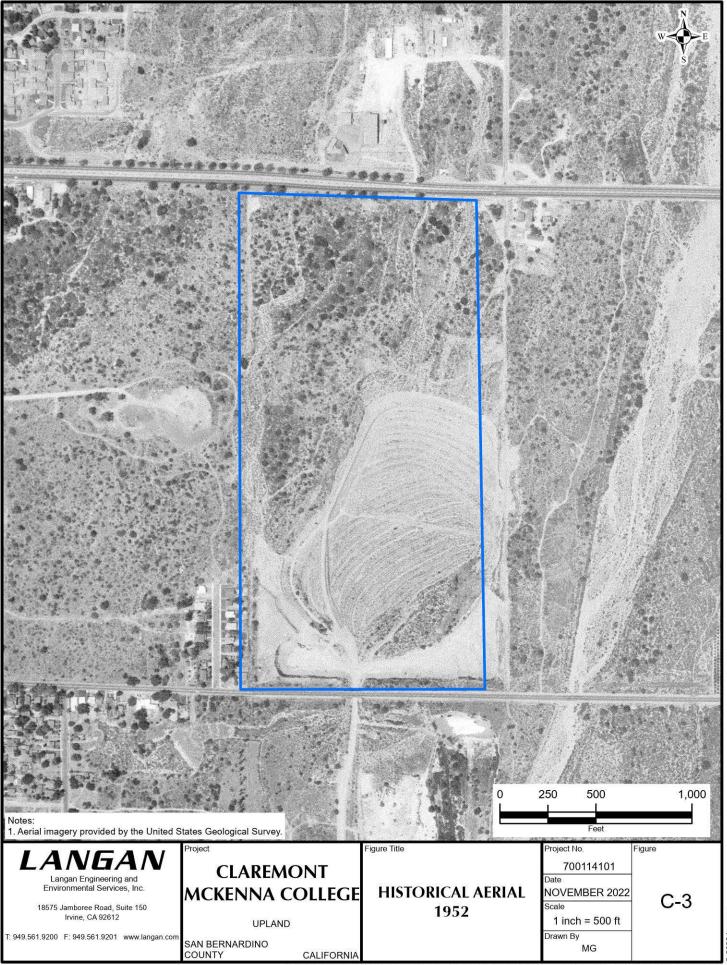
APPENDIX E Historical Aerial Photographs



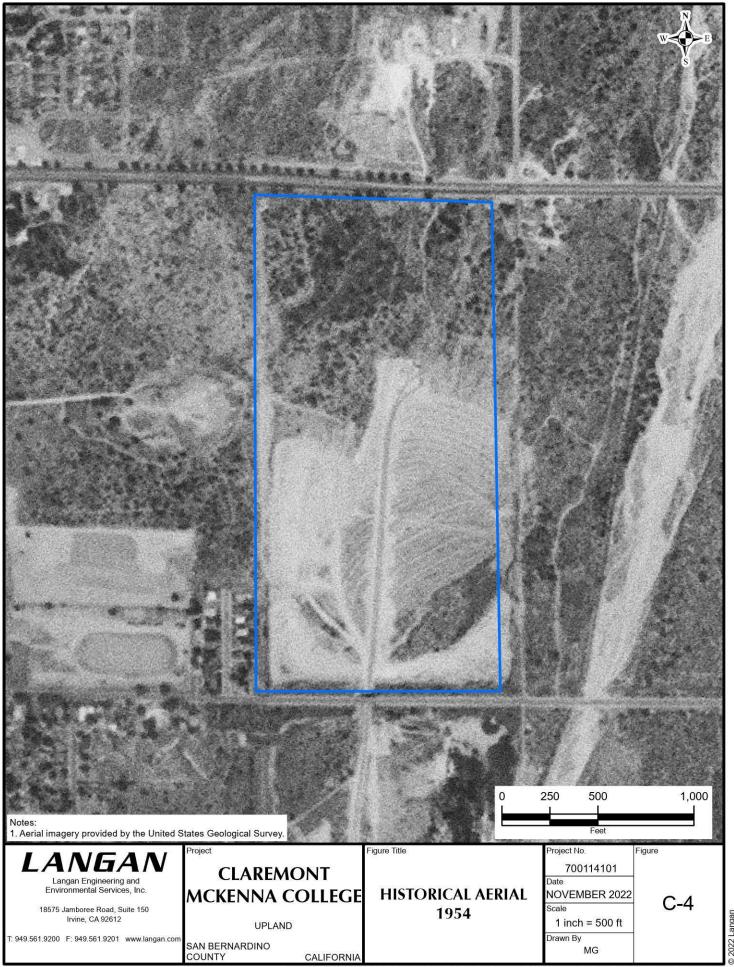
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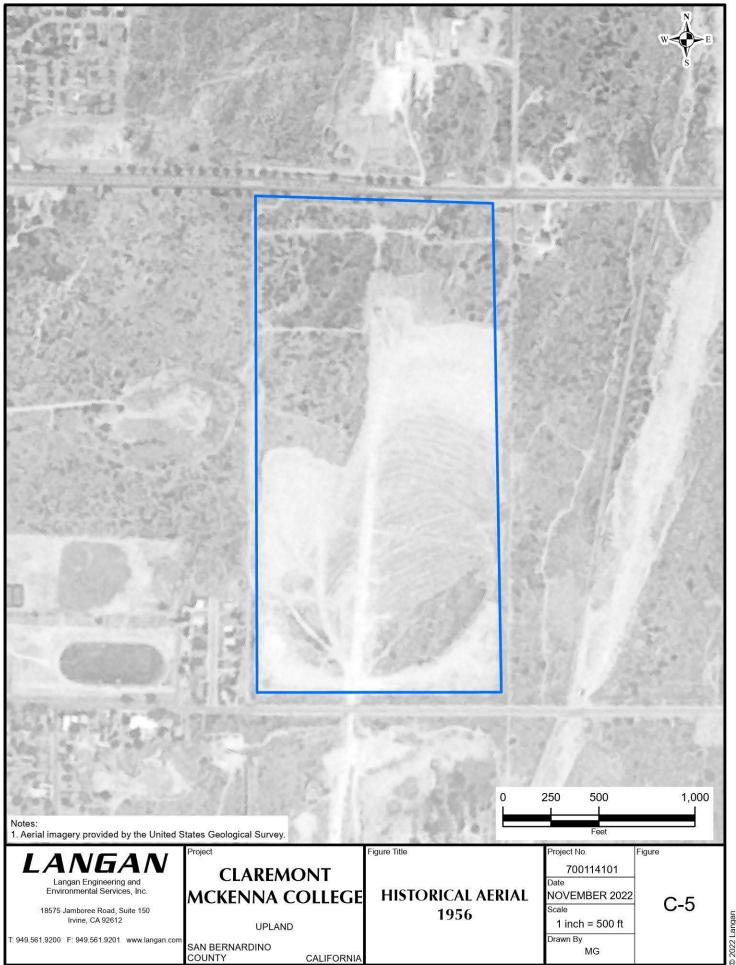
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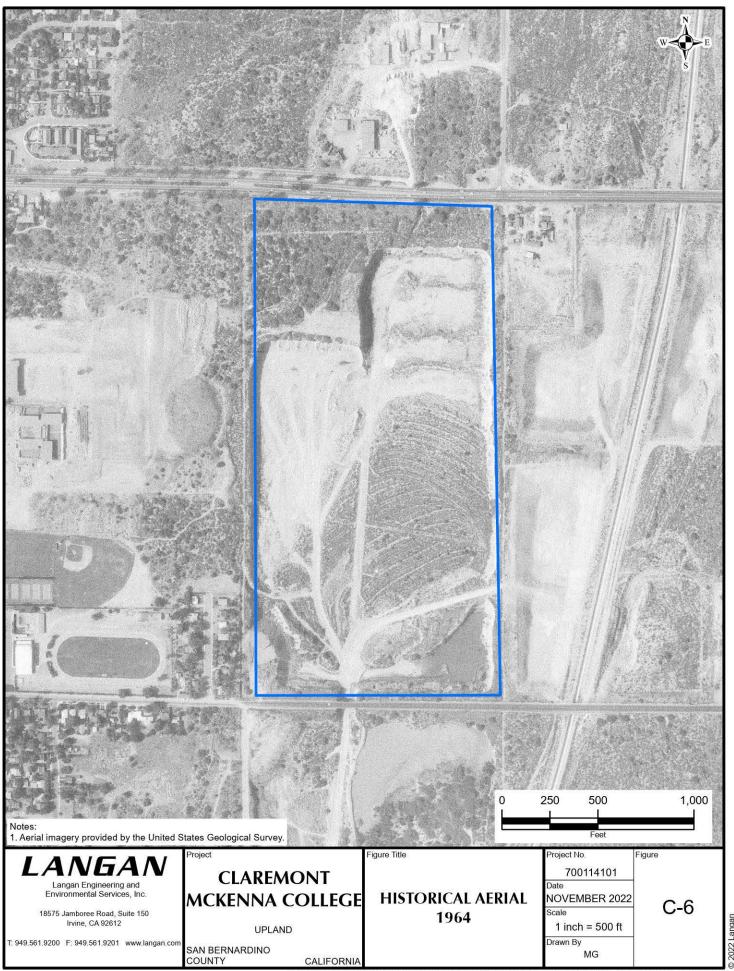
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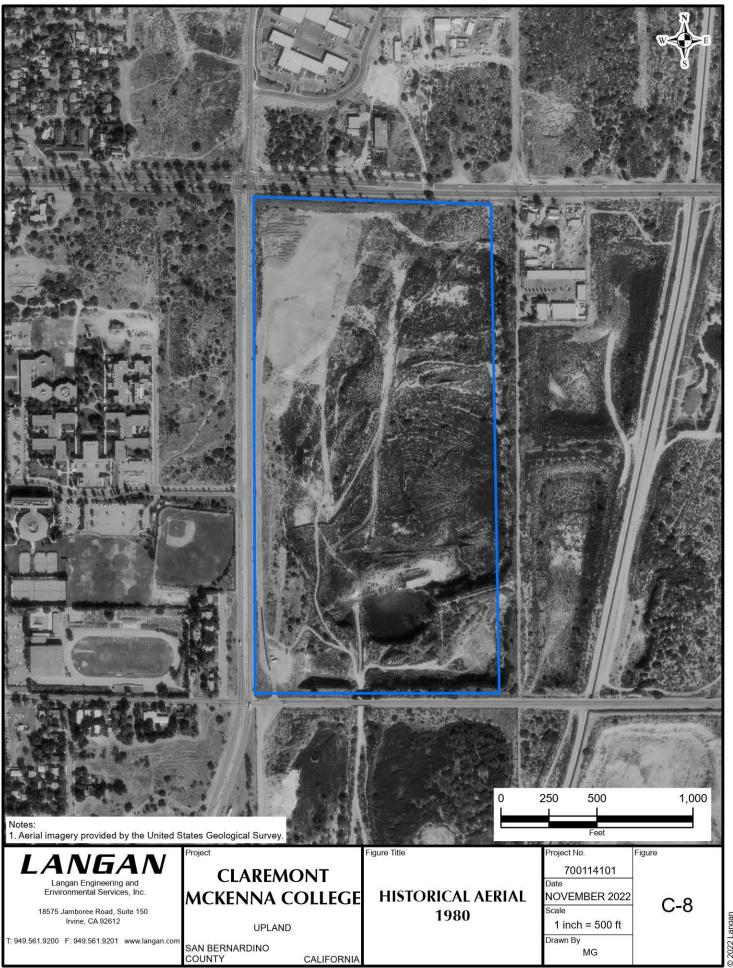
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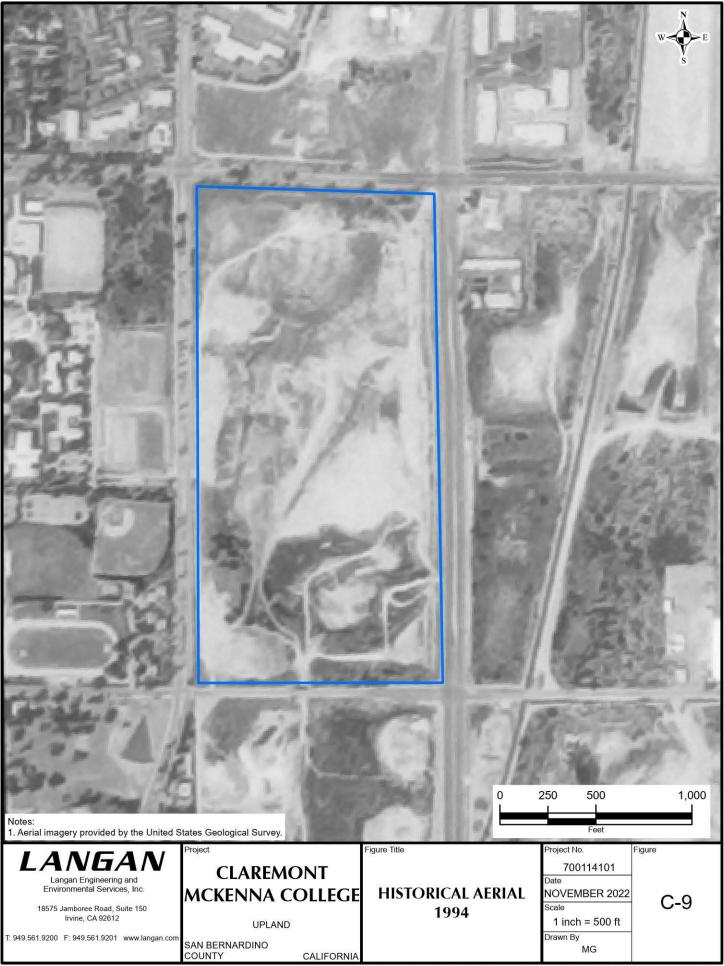


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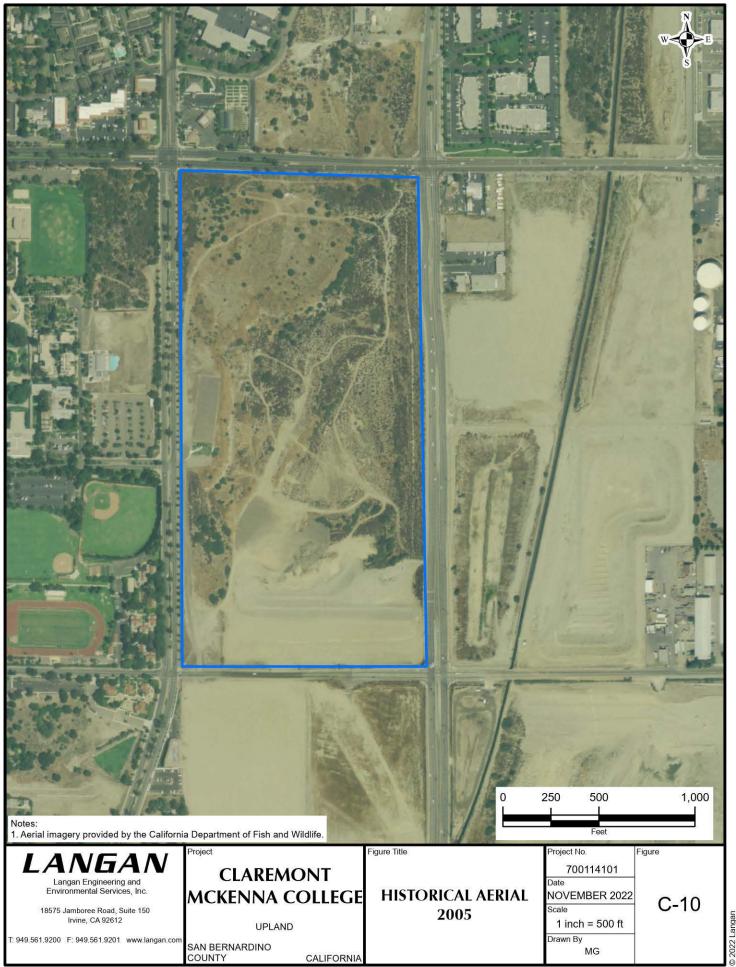




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APPENDIX F

Estimate of Landfill Materials Debris Type

Summary of Reclamation Fill Units

Deletive Leastien	D o vin v	Fill Line it		Approximate Percentage of Generalized Fill Units								
Relative Location	Boring	Fill Unit	Fill Thickness	>50% Soil	>50% Oversize	>50% Concrete	>50% Asphalt	>50% Brick	Misc. Debris			
	B-20	asf	7.5	75	25							
	B-23	asf	5	90	10							
	B-40	asf	5	85	15							
	B-8	asf	5	95	5							
	FP-2	asf	4	85	15							
	TP-13	asf	6.5	60	40							
	TP-16	asf	2	85	15							
	TP-18	asf	4.5	85	15							
Eastern Edge of Site,	TP-19	asf	3	100								
East of Proposed	TP-22	asf	8	90			10					
Fields/Sediment Pond	TP-25	asf	4	90					10			
	TP-26	asf	2	95	5							
	TP-27	asf	2	100								
	TP-28	asf	5	85	15							
	TP-29	asf	2	85	15							
	TP-30	asf	2	85	15							
	TP-31	asf	1	100								
	TP-32	asf	2.5	75	15	5			5			
	TP-8	asf	4.5	75	15	5	5					
	Weighted Ave	rage %		86%	12%	1%	1%	0%	1%			
	B-14	afc	>17	75	25							
South of Proposed	B-15	afc	>14	75	25							
Track and Football	B-16	afc	>15	75	25							
Field	B-17	afc	45	75	25							
Fleid	B-7	afc	13	50	50							
	TP-7	afc	>10	70	15		5	5	5			
	Weighted Ave	rage %		70%	28%	0%	1%	1%	1%			
	B-10	afu	30	75	25							
	B-11	afu	2.5	85	15							
	B-12	afu	16.5	75	15	5		5				
	B-21	afu	50	55	20	15	5	5				
L F	B-22	afu	46	55	25	10	5	5				
	B-24	afu	50	65	30			5				
South Central and	B-25	afu	8	85	15							
Central Portion of the	B-26	afu	35	85	15							
Site, South of G-G'	B-27	afu	30	85	15							
	B-28	afu	6	80	20							
	B-29	afu	20	85	15							
	B-30	afu	26.5	85	15							

і Г	B-31	afu	7.5	85	15				
	B-31 B-32	afu	2.5	100	15				
	B-32 B-33	afu	2.5 5	100					
-	B-33 B-34	afu	20	85	15				
-	B-34 B-35	afu	2.5	100	15				
-	B-35 B-36	afu	2.5	85	15				
-	B-30 B-37	afu	20	85	15				
-	B-37 B-38	afu	12.5	75	15		5	5	
-	B-38 B-39	afu	30	80	20		5	5	
-	<u>в-39</u> В-41	afu	7.5	85	15				
-	B-41 B-42	afu	7.5	80	15	F			
South Central and	<u>В-42</u> В-9	afu	1.5	100	15	5			
Central Portion of the	Б-9 FP-1	afu	1.5	85	15				
Site, South of G-G'	TP-10			85	15				
-	TP-10 TP-11	afu afu	>8 3	75	15			E	E
-	TP-11 TP-12	afu	>7.5	75	15	5		5	5
-	TP-12 TP-14	afu	>7.5	80	15	5	5	5	5
-	TP-14 TP-15	afu	2.5	85	15		5		
-	TP-15 TP-17	afu	>7	25	5	35	30	5	
–	TP-17	afu	>7	100	5	30	30	5	
	Weighted Avera		I	81%	14%	2%	2%	1%	0%
	-	-	11				2 /0	1 /0	070
	B-1	alf	41	80	15	5			
	B-1 B-13	alf alf	10	80 60	15 15		10	5	5
	B-1 B-13 B-3	alf alf alf	10 >25	80 60 80	15 15 20	5 5			
	B-1 B-13 B-3 B-4	alf alf alf alf	10 >25 >33	80 60 80 70	15 15 20 20	5	10		5
	B-1 B-13 B-3 B-4 B-43	alf alf alf alf alf	10 >25 >33 >52	80 60 80 70 55	15 15 20	5 5	10 		
	B-1 B-13 B-3 B-4 B-43 B-5	alf alf alf alf alf alf alf	10 >25 >33 >52 40	80 60 80 70 55 90	15 15 20 20 15	5 5	10		5
	B-1 B-13 B-3 B-4 B-43 B-5 B-50	alf alf alf alf alf alf alf alf	10 >25 >33 >52 40 30	80 60 80 70 55 90 80	15 15 20 20 15 20	5 5 10	10 		5
	B-1 B-13 B-3 B-4 B-43 B-5 B-50 B-51	alf alf alf alf alf alf alf alf alf	10 >25 >33 >52 40 30 40	80 60 80 70 55 90 80 80	15 15 20 20 15 20 15 20 15	5 5 10 5	10 25 10		5
	B-1 B-13 B-3 B-4 B-43 B-5 B-50 B-51 B-52	alf alf alf alf alf alf alf alf alf alf	10 >25 >33 >52 40 30 40 30	80 60 80 70 55 90 80 80 80 75	15 15 20 20 15 20 15 20 15 15	5 5 10	10 25 10 5		5
	B-1 B-13 B-3 B-4 B-43 B-5 B-50 B-51 B-52 B-53	alf alf alf alf alf alf alf alf alf alf	10 >25 >33 >52 40 30 40 30 40 30 45	80 60 80 70 55 90 80 80 80 75 80	15 15 20 20 15 20 15 20 15 15 15 10	5 5 10 5	10 25 10 5 10		5
	B-1 B-13 B-3 B-4 B-43 B-5 B-50 B-51 B-52 B-53 B-54	alf alf alf alf alf alf alf alf alf alf	10 >25 >33 >52 40 30 40 30 45 35	80 60 80 70 55 90 80 80 75 80 80 80 80	15 15 20 20 15 20 15 15 15 10 15	5 5 10 5 5 5	10 25 10 5 10 5		5
Western Edge of Site	B-1 B-13 B-3 B-4 B-43 B-5 B-50 B-51 B-52 B-53 B-54 B-55	alf alf alf alf alf alf alf alf alf alf	10 >25 >33 >52 40 30 40 30 45 35 46	80 60 80 70 55 90 80 80 75 80 80 75 80 80 75	15 15 20 20 15 20 15 15 15 10 15 10	5 5 10 5 5 5 5	10 25 10 5 10 5 10 5 10		5
near Proposed Tunnel	B-1 B-13 B-3 B-4 B-43 B-5 B-50 B-51 B-52 B-53 B-54 B-55 B-56	alf alf alf alf alf alf alf alf alf alf	10 >25 >33 >52 40 30 40 30 45 35 46 20	80 60 80 70 55 90 80 80 75 80 80 75 80 80 75 80	15 15 20 20 15 20 15 15 15 10 15 10 10 10	5 5 10 5 5 5	10 25 10 5 10 5		5
	B-1 B-13 B-3 B-4 B-43 B-5 B-50 B-51 B-52 B-53 B-54 B-55 B-56 B-57	alf alf alf alf alf alf alf alf alf alf	10 >25 >33 >52 40 30 40 30 45 35 46 20 55	80 60 80 70 55 90 80 80 75 80 80 75 80 80 75 80 95	15 15 20 20 15 20 15 15 15 10 15 10 10 10 5	5 5 10 5 5 5 5	10 25 10 5 10 5 10 5 10 5	5	5
near Proposed Tunnel	B-1 B-13 B-3 B-4 B-43 B-5 B-50 B-51 B-52 B-53 B-54 B-55 B-56 B-57 B-58	alf alf alf alf alf alf alf alf alf alf	10 >25 >33 >52 40 30 40 30 45 35 46 20 55 31	80 60 80 70 55 90 80 80 75 80 80 75 80 80 75 80 95 75	15 20 20 15 20 15 10 10 5 15	5 5 10 5 5 5 5 5	10 25 10 5 10 5 10 5 5 5	5 	5
near Proposed Tunnel	B-1 B-13 B-3 B-4 B-43 B-5 B-50 B-51 B-52 B-53 B-54 B-55 B-56 B-57 B-58 B-59	alf alf alf alf alf alf alf alf alf alf	$ \begin{array}{r} 10 \\ >25 \\ >33 \\ >52 \\ 40 \\ 30 \\ 40 \\ 30 \\ 45 \\ 35 \\ 46 \\ 20 \\ 55 \\ 31 \\ 50 \\ \end{array} $	80 60 80 70 55 90 80 80 75 80 80 75 80 95 75 75 75	15 20 20 15 20 15 10 15 10 5 15	5 5 10 5 5 5 5	10 25 10 5 10 5 10 5 10 5 5 5 5	5	5
near Proposed Tunnel	B-1 B-13 B-3 B-4 B-43 B-5 B-50 B-51 B-52 B-53 B-54 B-55 B-56 B-56 B-57 B-58 B-59 B-6	alf alf alf alf alf alf alf alf alf alf	$ \begin{array}{r} 10 \\ >25 \\ >33 \\ >52 \\ 40 \\ 30 \\ 40 \\ 30 \\ 45 \\ 35 \\ 46 \\ 20 \\ 55 \\ 31 \\ 50 \\ 30 \\ \end{array} $	80 60 80 70 55 90 80 80 75 80 80 75 80 95 75 75 80 80	15 20 20 15 20 15 10 15 10 5 15 15	5 5 10 5 5 5 5 5	10 25 10 5 10 5 10 5 10 5 5 5 5 5 5	5 	5
near Proposed Tunnel	B-1 B-13 B-3 B-4 B-43 B-5 B-50 B-51 B-52 B-53 B-54 B-55 B-56 B-57 B-58 B-59 B-6 B-60	alf alf alf alf alf alf alf alf alf alf	10 >25 >33 >52 40 30 40 30 45 35 46 20 55 31 50 30 28	80 60 80 70 55 90 80 80 75 80 95 75 80 95 75 80 95 75 80 75 80 75 75 75 75 80 75 75 75 80 75 75 75 75 80 75	15 20 20 15 20 15 10 15 10 5 15 15 10	5 5 10 5 5 5 5 5 5 5	10 25 10 5 10 5 10 5 5 5 5 5 10	5 	5
near Proposed Tunnel	B-1 B-13 B-3 B-4 B-43 B-5 B-50 B-51 B-52 B-53 B-54 B-55 B-56 B-57 B-58 B-59 B-6 B-60 B-61	alf alf alf alf alf alf alf alf alf alf	10 >25 >33 >52 40 30 40 30 45 35 46 20 55 31 50 30 28 55	80 60 80 70 55 90 80 80 75 80 95 75 80 95 75 80 95 75 75 75 75 75 75 75 75 75 75 75 75 75 70	15 20 20 15 20 15 10 15 10 5 15 15 10 15 10 15 10 15 15 10 15 15 10 15 15 5 15 15 15 15 15 15 15 15 15 15 15 15	5 5 10 5 5 5 5 5	10 25 10 5 10 5 10 5 5 5 5 5 10 10 10 10	5 	5
near Proposed Tunnel	B-1 B-13 B-3 B-4 B-43 B-5 B-50 B-51 B-52 B-53 B-54 B-55 B-56 B-57 B-58 B-59 B-6 B-60	alf alf alf alf alf alf alf alf alf alf	10 >25 >33 >52 40 30 40 30 45 35 46 20 55 31 50 30 28	80 60 80 70 55 90 80 80 75 80 95 75 80 95 75 80 95 75 80 75 80 75 75 75 75 80 75 75 75 80 75 75 75 75 80 75	15 20 20 15 20 15 10 15 10 5 15 15 10	5 5 10 5 5 5 5 5 5 5	10 25 10 5 10 5 10 5 5 5 5 5 10	5 	5

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Г	TP-24	alf	>12	55	15	25			5
	TP-3	alf	>5	80	10		5	5	
	TP-4	alf	>10	55	20	15	5		5
	TP-5	alf	>6	55	25	5	5	5	5
	TP-6	alf	>7	75	15		10		
	Weighted Avera	age %		74%	14%	4%	5%	1%	1%
	TP-2	alf	>10	50	17	15	15		3
	B-43	alf	>52	55	15		25		5
	B-2	alf	>28.5	50	20	10	15		5
	TP-1	alf	>5	60	35				5
	B-2	alf	>28.5	50	20	10	15		5
	TP-23	arf	9	80	15				5
North Central and	B-46	alf	20	65	15	10	10		
Northern Portion of	B-41	afu	7.5	85	15				
the Site, Near and N	B-42	afu	7.5	80	15	5			
of G-G'	B-44	alf	38	65	10	5	15	5	
	B-45	alf	35	70	15	5	5	5	
	B-46	alf	20	65	15	10	10		
	B-1	alf	41	80	15	5			
	B-3	alf	>25	80	20				
	TP-3	alf	>5	80	10		5	5	
	B-8	asf	5	95	5				
	Weighted Avera	age %		69%	16%	4%	7%	1%	2%