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GEOTECHNICAL AND GEOLOGICAL ENGINEERING INVESTIGATION REPORT

PROPOSED CAMPUS IMPROVEMENTS
ALTADENA ARTS MAGNET SCHOOL
743 E CALAVERAS STREET
ALTADENA, CALIFORNIA 91001

PREPARED FOR:
PASADENA UNIFIED SCHOOL DISTRICT
351 S. HUDSON AVE.
PASADENA, CA 91109

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PROJECT NO. 25-3846
JANUARY 22, 2026

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January 22, 2026
Project No. 25-3846

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Pasadena Unified School District
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SUBJECT: Geotechnical and Geological Engineering Investigation
Proposed Campus Improvements
Altadena Arts Magnet School
743 E Calaveras Street
Altadena, CA 91101

1. INTRODUCTION

This report presents the results of a Geotechnical Engineering Investigation performed by Koury Engineering & Testing, Inc. (Koury) for the proposed site improvements within the Altadena Arts Magnet School campus located at 743 E Calaveras Street, Altadena, California. The investigation was carried out to evaluate the subsurface soil conditions in the area of the proposed improvements in order to provide geotechnical recommendations for design and construction. This report contains our findings and recommendations for the design and construction of the proposed improvements from a geotechnical standpoint.

The recommendations provided within this submittal are based on the results of our field exploration, laboratory testing and engineering analyses. Our services were performed in general accordance with our Proposal No. 25-3846, dated October 17, 2025.

Our professional services have been performed using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable geotechnical consultants practicing in this or similar localities. No other warranty, expressed or implied, is made as to the professional advice included in this report. This report has been prepared exclusively for the Pasadena Unified School District and their consultants for the proposed improvements. The report has not been prepared for use by other parties and may not contain sufficient information for the purposes of other parties or other uses.

2. SITE CONDITIONS

The Altadena Arts Magnet School campus is located approximately 1.6 miles northeast of the 210 Foothill Freeway and about 2.5 miles east of Devil Gate Reservoir. The improvement site lies 270 feet or more north of E Calaveras Street, south of E Mendocino Street, east of Catherine Road, and west of El Molino Avenue. The campus is bordered by residential and commercial developments on the north, east, and west, and by E Calaveras Street on the south. The main vehicle and pedestrian entrances to the campus are from the south side of the school site along E Calaveras Street. There is a student drop-off on the south side of the campus and a parking lot along the east side. A site Vicinity Map with approximate ground contour elevations is presented in Appendix A as Figure A-1.

The proposed campus improvements will generally be located in the northern two third portion of the campus.

The campus generally slopes from an elevation of approximately 1240 feet on the northeast to approximately 1210 feet on the southwest (NAVD88). Ground surface elevations within the proposed improvement footprints range from approximately 1227 to 1238 feet and exhibit an overall gentle slope toward the southwest, except where retaining walls are present. Surface drainage generally occurs as sheet flow toward the south and southwest.

3. PROPOSED IMPROVEMENTS

Koury understands that the Pasadena Unified School District is planning a series of campus improvements at the Arts Magnet School. It is understood that the proposed scope includes the construction of a new permeable asphalt parking lot, upgrades to the path of travel to meet accessibility standards, and new retaining walls. The existing volleyball courts will be shifted west to make room for the proposed decomposed granite trail. Additional site improvements are anticipated to include concrete pavers, brick pavers, concrete stairs, concrete ramps, wooden fences, a low wooden bridge, play striping, and site lighting. It is planned to construct a half circle 4-tier bench amphitheater with an inner and outer diameter of about 60 and 80 feet, respectively. The amphitheater seats will be supported on fill soil resting against a semi-circle 6-foot-high concrete terrace retaining wall on the northeasterly and northwesterly sides.

On the north side of the amphitheater, it is planned to construct a decomposed granite paved path with a length of approximately 425 feet and widths varying from about 4 to 8 feet. There will also be some decomposed granite paving on the south side of the fire entrance road and north of Building A, and adjacent to play equipment areas. On the west side of the amphitheater, there will be a large area, about 25 to 43 feet in width and 140 feet in length, covered with rubber mulch and containing various play equipment. On the east side of the amphitheater, it is planned to construct a 5-foot-wide ramp extending a distance of about 90 feet from the fire lane to the decomposed granite trail, and climbing about 6 feet. There will be a second set of ramp and stairs associated with proposed retaining walls extending over a distance of about 130 feet from the north side of the fire access road to the decomposed granite trail. This ramp will also provide access to the parking lot on the north side.

In the northeast area of the site, it is planned to remove the existing open green playfield and to replace the natural turf with asphalt paving. A new parking lot with dimensions of about 90 to 95 feet in width by 180 feet in length and containing 26 parking spaces will be constructed in this area. It is also understood that some of the existing asphalt pavements in other parts of the site may be rejuvenated or replaced, including the fire lane where needed. Other planned improvements may also involve upgrades to landscaping, hardscaping, and the addition of one or more shade structures. No new building is presently anticipated.

4. FIELD EXPLORATION

The field exploration program consisted of drilling four soil test borings for the proposed improvements on December 4, 2025, using a truck-mounted hollow-stem auger drill rig. The borings were drilled to depths ranging from about 16½ to 50.4 feet (B-1 through B-4). The locations of the borings are shown on the Boring Location Map, Figure A-2, presented in Appendix A.

Standard penetration test samples, California ring samples, and bulk samples were obtained from selected depths for laboratory testing. The depths, blow counts and description of the samples are shown on the attached boring logs presented in Appendix B of this report. The contractor used a 140-lbs automatic hammer to drive the samplers 18 inches into the soil or to refusal, whichever came first.

5. LABORATORY TESTING

Laboratory tests, including moisture content, dry unit weight, #200 sieve wash, direct shear, expansion index and consolidation were performed to aid in the classification of the materials encountered and to evaluate their engineering properties. Soluble sulfate, chloride, resistivity, and pH tests (corrosivity tests) were also performed on one sample. The results of pertinent laboratory tests are presented on the boring logs in Appendix B, and/or in Appendix C.

6. SOIL CONDITIONS

The subsurface soil profile within the proposed building footprint consists of fill underlain by alluvium. The fill depths range from about 5 to 10 feet at the boring locations with an average near 8 feet; deeper fill may be present at other locations, including utilities. The fill soils encountered consist predominantly of sandy lean clay, clayey sand, and poorly graded sand with silt. The pavement surface thickness encountered in the borings range from 3 to 6 inches of asphalt concrete (average ≈ 4.4 inches). No aggregate base was observed at the boring locations.

The older alluvium underlying the fill consists of interbedded silty sand, sandy lean clay, poorly graded sand with silt, and clayey sand. The alluvial sands are typically slightly moist to moist, and range from medium dense to very dense. The clayey soils encountered were generally moist and exhibited a consistency ranging from medium stiff to very stiff.

With one exception, the moisture contents of the fill range from about 4 to 9 percent with an average of about 7 percent. With a few exceptions, the alluvial materials have moisture contents ranging from about 7 to 16 percent with an average of approximately 10 percent. The unit weights of the alluvium range from about 114 to 131 pcf with an average of about 121 pcf while for the fill material the unit weights range from approximately 114 to 120 pcf (average ≈ 118 pcf).

The direct shear test on a sandy clay sample indicated peak and ultimate friction angles of about 33 and 34 degrees, respectively. The corresponding apparent peak and ultimate cohesion recorded are 304 and 208 psf, respectively. The two consolidation tests indicated low to moderate consolidation potential with small collapse for the clayey sand sample, which latter sample was classified as fill. Based on the test rebound curves, the sample tested generally indicated overconsolidated soil with low expansion potential.

For the fill, the standard penetration test blow counts (SPTs) and the California sampler equivalent blow counts indicated values ranging from about 9 to 19 with an average of approximately 12 blows per foot of the sampler penetration, which indicate a range of loose to medium dense sand and stiff to very stiff clay. Except where refusal was encountered, the alluvium blow counts range from about 10 to 50 with an average of about 27, which indicate a range of medium dense to very dense sand, and stiff to very stiff clay.

Variations in the soil conditions as well as detailed descriptions are indicated on the attached boring logs in Appendix B. The soil conditions described in this report are based on the soil observed in the test borings drilled for this investigation and laboratory test results. Variations between and beyond the borings should be anticipated.

7. GROUNDWATER

The proposed improvements are located at approximate elevations of about 1227 to 1238 feet (NAVD88). No groundwater was encountered in the exploratory borings drilled to a maximum depth of 50.4 feet. The map provided in the "Seismic Hazard Zone Report 014, for the Pasadena Quadrangle", published by the California Department of Conservation, Division of Mines and Geology (1998), indicates that the historic high groundwater is greater than 50 feet below the existing ground surface (see Figure A-3 for the Historically Highest Groundwater Map).

Based on our findings, other than nuisance surface water infiltration from rain or irrigation, it is unlikely that groundwater will be encountered during construction.

8. SITE GEOLOGY

The site is located in the San Gabriel Valley. The San Gabriel Valley is bounded on the north by the Sierra Madre Fault and the San Gabriel Mountains, on the south by the Elysian Park thrust fault, Repetto, Monterey Park, Montebello, Whittier and Puente Hills, on the east by the Walnut Creek and San Dimas Hills faults, and on the west by the San Rafael-Eagle Rock Hills. The San Gabriel Valley is also considered to be the northernmost portion of the Los Angeles physiographic basin. The Los Angeles Basin is bounded on the east and southeast by the Santa Ana Mountains and San Joaquin Hills and on the west and south by the Pacific Ocean. The Los Angeles Basin

represents a downwarped block of basement rock overlain by approximately 31,000 feet of sediment.

Dibblee (1989) showed most of the site to be underlain predominantly by materials consisting of alluvial fan deposits composed of gravel and sand derived from the San Gabriel Mountains, as shown on the attached Regional Geologic Map, Figure A-4 in Appendix A. The borings drilled during the investigation encountered alluvium and similar materials consisting mostly of interbedded silty sand, clayey sand, poorly graded sand with silt, and sandy clay.

9. OIL WELLS

The site is located about 9½ miles northeast of the Los Angeles City Oil/Gas Field. According to the California Division of Oil, Gas and Geothermal Resources (https://maps.conservation.ca.gov/doggr/wellfinder). The closest active oil/gas well is located about 6.8 miles southwest of the site. There is a plugged dry hole located approximately 8.2 miles southwest of the site. No evidence of hazardous materials related to oil field was encountered during the field investigation. It is our opinion that no hazardous materials associated with active oil fields should be present on site based on readily available oil/gas well information.

10. SEISMIC CONSIDERATIONS

10.1. General

The Altadena Arts Magnet School, like the rest of Southern California, is located within a seismically active region as a result of being located near the active margin between the North American and Pacific tectonic plates. The principal source of seismic activity is movement along the northwest-trending regional faults such as the San Andreas, San Jacinto, Newport-Inglewood and Whittier-Elsinore fault zones.

By definition of the California Geological Survey (CGS), an active fault is one which has had surface displacement within the Holocene Epoch (roughly the last 11,000 years). CGS has defined a pre-Holocene fault as any fault which has been active during the Quaternary Period (approximately the last 2,000,000 years, excluding the Holocene). These definitions are used in delineating Earthquake Fault Zones as mandated by the Alquist-Priolo Geologic Hazard Zones Act of 1972 and as subsequently revised in 1997 as the Alquist-Priolo Earthquake Fault Zones.

The intent of the act is to require fault investigations for sites located within Special Studies Zone to preclude new construction of certain inhabited structures across the trace of active faults.

The subject site is not located within an Alquist-Priolo Earthquake Fault Zone. Based on California Geological Survey maps, the two nearest Alquist-Priolo Earthquake Fault Zones are the reverse Sierra Madre and reverse Verdugo Fault located approximately 1.2 and 3.7 miles northeast and southwest, respectively. The strike slip Raymond fault is located approximately 4.4 miles south of the site. The strike slip Santa Monica fault is located about 10 miles southwest of the site (see Figure A-5 for some of the fault locations). No evidence of active or potentially active faults was observed on the subject site during our investigation. In our opinion, surface rupture has a low potential to occur.

Based on the information available at this time, according to USGS, there is a potential for an Mw6.9 earthquake on the Verdugo and Mw6.8 on the Raymond faults. The Sierra Madre Connected and the Santa Monica Fault have potential earthquake magnitudes of 7.2 and 7.4, respectively. Large earthquakes could occur on other faults in the general area, but because of their greater distance and/or lower probability of occurrence, they may be less important to the site from a seismic shaking standpoint. The following Table 1 summarizes some nearby active fault locations and their potential earthquake magnitudes.

Table 1 – Fault Locations and Earthquake Magnitudes

Fault Name	Fault Type	Distance	Earthquake Magnitude Mw
Sierra Madre	Reverse	1.2 Miles NE	7.2
Verdugo	Reverse	3.7 Miles SW	6.9
Raymond	Strike Slip	4.4 Miles S	6.8
Hollywood	Strike Slip	7.2 Miles SW	6.7
Clamshell-Sawpit	Reverse	7.7 Miles E	6.7
Upper Elysian Park	Reverse	8.3 Miles SW	6.7
Santa Monica Connected alt2	Strike Slip	10.1 Miles SW	7.4

Due to the proximity of the site to nearby faults, near field effects from strong ground motion associated with a large earthquake along these faults may occur at the site. These near field effects, including "fling" and directivity of strong ground motion, may result in significantly higher accelerations at the site. Due to the distance of the active faults from the site, fault rupture is not anticipated.

According to the EQSEARCH program, within a search radius of 60 miles, about 67 earthquakes of magnitude 5 or greater have been recorded up to the year 2000. Within that same period, there are records of 15 earthquakes of magnitude 6 or greater, 6 earthquakes of magnitude 6.5 or greater, and 4 earthquakes of magnitude 7 or greater within the same search area. The largest and closest earthquake for the search was reported to have occurred in 1812 at a location about 30 miles from the site. Using the attenuation relationship of Campbell and Bozorgnia for alluvium (1997), the highest acceleration at the site could have been on the order of 0.36g. A summary of the earthquakes with magnitudes 5 and greater with calculated site accelerations is attached in Appendix D.

10.2. Landsliding

The site is not located in a Landslide Hazards Zone on the State of California Seismic Hazards Zones Map (Figure A-6 in Appendix A). No evidence for landsliding was observed on or in the immediate vicinity of the site. Therefore, due to the lack of significant topographic changes at the project site, landsliding is not a potential geological hazard at the site.

10.3. Lateral Spreading

The damaging effect of liquefaction settlement can be exacerbated when the soils are subject to lateral spreading. Due to the absence of shallow groundwater and liquefaction, the potential for lateral spreading is remote.

10.4. Seismic Settlement

Liquefaction may occur when saturated, loose to medium dense, cohesionless soils are densified by ground shaking or vibrations. The densification results in increased pore water pressures if the soils are not sufficiently permeable to dissipate these pressures during and immediately following an

earthquake. When the pore water pressure is equal to or exceeds the overburden pressure, liquefaction of the affected soil layers occurs. For liquefaction to occur, three conditions are required:

- Ground shaking of sufficient magnitude and duration;
- Groundwater level at or above the level of the susceptible soils during the ground shaking; and
- Soils that are susceptible to liquefaction.

The Liquefaction Hazards Zone on the State of California Seismic Hazards Zones Map (Figure A-6 in Appendix A) indicates that the site is not located in a generalized liquefaction susceptibility zone. Due to the absence of shallow groundwater, it is our opinion that the potential for liquefaction is remote at the site. However, the site will be subject to strong ground shaking that may result in seismic dry settlement during the design seismic event.

For dry seismic settlement evaluation, we calculated an earthquake magnitude of M7.7 from a seismic-hazard deaggregation for Site Classes D and CD using the USGS Unified Hazard Tool with the NSHM Conterminous U.S. 2018 Model. The analysis also utilized a site acceleration of 0.93g (PGA_M) obtained from the ASCE 7-22 Seismic Design Ground Motion Analysis Web Site for Site Class CD. The California sampler blow counts were multiplied by a factor of 0.65 to obtain the equivalent SPT blow counts. The SPT tests were performed with an automatic hammer and unlined SPT samplers with an inner diameter of 1.5 inches. We used a hammer energy factor of 1.25 (Ce=1.25), a borehole diameter factor of 1.0 (Cb=1), and sampling method factors of 1.0 and 1.2 for California Ring samples and SPT samples, respectively.

Using the LiquefyPro software, we calculated total maximum dry seismic settlements on the order of 1½ inches for the three borings. In light of the calculated total seismic settlements and considering the proposed recommendations for grading and building support presented in this report and the recommendations in Section 7.66 of the SCEC Guidelines for Implementation of SP 117, it is our opinion that a differential seismic settlement on the order of ¾ inch in 40 feet should be considered for the design seismic event.

10.5. Tsunamis and Seiche

The proposed improvement site area is located at approximate elevations 1227 to 1238 feet (NAVD88) and about 30 miles away from the coastline. Therefore, tsunamis are not considered to

be potential hazards to the site. Since there are no large bodies of water located immediately adjacent to the site, seiches are also not considered a hazard.

11. FLOODING

The campus lies within an area of minimal flood hazard Zone X, non-shaded, which is determined to be outside the 0.2 percent annual chance of flood, as shown on the FEMA Flood Map # 06037C1375F, effective date September 26, 2008 (Figure A-7, Appendix A). According to the County of Los Angeles Flood Plain Map, the site is not located within the 500-year flood zone. The site is not located within the Devil Gate Dam inundation zone. Therefore, site flooding is considered a low potential.

12. COLLAPSIBLE SOILS

Soils prone to collapse are generally young sediments deposited by flash floods and wind. The site soils consist of fill underlain by older alluvium and most of the site is paved. In our opinion the shallow onsite soils have a low to moderate potential for hydro collapse. Overexcavation and re-compaction, and drainage measures are recommended to mitigate potential hydro collapse.

13. CONCLUSIONS AND RECOMMENDATIONS

13.1. General

In our opinion, the planned improvements are feasible from a geotechnical engineering point of view provided the geotechnical recommendations presented in this report are followed. The main concerns from a geotechnical standpoint are the presence of relatively deep undocumented fill within the upper portion of the soil profile and anticipated strong seismic shaking that will induce seismic settlement.

The following sections contain geotechnical recommendations for the design and construction of the subject improvements and include our recommendations and discussions about grading, bearing capacity, settlement, flatwork, slabs-on-grade, temporary excavations, and utility trenches.

13.2. Grading

Grading will be required for subgrade preparation and backfilling for playground, driveway, parking lot, retaining walls, and ramps. The main grading is anticipated for construction within the amphitheater area.

Prior to grading, any existing asphalt, foundation, vegetation, abandoned underground utilities and other debris should be removed from the proposed amphitheater area. There is presently an existing concrete wall separating the volleyball courts from the playground on the south. It is anticipated that the wall will be removed.

We recommend removing one foot of material below the asphalt pavement to expose suitable subgrade soil. The exposed subgrade should be scarified 8 inches, moisture conditioned above optimum and recompacted to 90 percent relative compaction. The fill should be placed in loose lifts not exceeding 8 inches, moisture conditioned above optimum for sand and 120 percent of optimum for clay and silt and compacted to 90 percent relative compaction. We recommend overfilling the slopes about one foot to expose well compacted fill for the benches/seats upon cutting.

For grading of the concrete flatwork for the new volleyball courts, ramps, and the concrete enclosed by the decomposed granite trail, we recommend overexcavating one foot of subgrade, scarifying one foot, moisture conditioning and recompacting to 90 percent relative compaction. For the rubber mulch area, depending upon the design, the mulch may be supported on asphalt pavement or on prepared subgrade soils. If it is to be placed on new pavement or on bare ground, we recommend scarifying the subgrade 10 inches following pavement removal, moisture conditioning the subgrade above optimum and recompacting to 90 percent relative compaction. For the decomposed granite trail, prior to fill placement, it is recommended to scarify the existing grade, moisture conditioning above optimum and recompacting to 90 percent relative compaction (see Table 2 for recommended compaction summary). For all excavation areas, the lateral overexcavation should extend at least one foot beyond area. In all cases, following overexcavation, the representative of the Geotechnical Engineer should check the exposed subgrade to verify there are no excessively soft or loose soil exposed. Additional overexcavation should be carried out in areas where such conditions are observed.

Table 2 - Recommended Compaction Summary

Soil Materials	Relative Compaction (%)		Moisture Conditioning	
	Building Pad	Outside of Pavement	Building Pad	Outside of Pad
Sand (SP, SM, SC) Gravel (GP, GM, GC)	-	*90	-	Above Optimum
Clayey (CL, CL-ML)	-	*90	-	120% of Optimum

***95% for upper 10 inches of pavement subgrade and footing bottom**

13.3. General Grading Requirements

1. All fill, unless otherwise specifically stated in the report, should be compacted to at least 90 percent of the maximum dry unit weight except for the upper 10 inches of pavement subgrade that should be compacted to 95 percent relative compaction as determined by ASTM D 1557 Method of Soil Compaction.

2. No fill should be placed until the area to receive the fill has been adequately prepared and approved by the Geotechnical Consultant or his representative.

3. Fill soils should be kept free of debris and organic material.

4. Rocks or hard fragments larger than 3 inches may not be placed in the fill below the building or foundations and within one foot of finished subgrade for exterior flatwork without approval of the Geotechnical Consultant or his representative, and in a manner specified for each occurrence. There should not be any concentrations of particles sizes of 2 inches or greater; proper mixing should be performed. If encountered, oversize materials should be disposed of outside the structural fill and flatwork areas, at the locations designated by the School District representative.

5. The fill material should be placed in lifts which, when loose, should not exceed 8 inches per lift. Each lift should be spread evenly and should be thoroughly mixed during the spreading to obtain uniformity of material and moisture.

6. When the moisture content of the fill material is lower than the specified value or is too low to obtain adequate compaction, water should be added and thoroughly dispersed until the soil has a moisture content above optimum for sand material and 120 percent of optimum (or 2½ percent above optimum, whichever is greater) for clayey soils unless indicated otherwise in this report and/or by the Geotechnical Engineer at the time of construction.

7. When the moisture content of fill material is too high to obtain adequate compaction, the fill material should be aerated by blading or other satisfactory methods until the soil has a moisture content as specified herein.

8. Permanent fill and cut slopes should be constructed at gradients no steeper than 2:1 (H:V) for heights up to 12 feet and at 2.5:1 (H:V) for higher slopes. Slopes constructed at gradients steeper than 5:1 (H:V) and heights exceeding 6½ feet should have a toe-of-fill key at least 10 feet wide and 2 feet deep with a tilt toward the heel unless indicated otherwise by the Geotechnical Engineer.

13.4. Fill Materials

Most of the onsite soils encountered in the borings are considered to have a low expansion potential and are suitable for backfilling purposes, following proper processing, provided they are free of organics, construction debris and deleterious materials. If expansive clay soils are encountered during grading, these soils can be used in landscaped areas and below asphalt pavement, or at depth of at least 2 feet below concrete flatwork. Also, non-expansive import materials (EI less than 20) may be used for backfilling purpose.

Overexcavation and re-compaction will induce fill shrinkage. Many factors such as mixing, relative compaction of the fill, and topographic approximations will affect shrinkage. We cannot estimate the exact amount of shrinkage; however, in our opinion, the shrinkage may be on the order of 10 percent for native material excavated and recompacted to and assumed average of 92 percent relative compaction. This estimate does not include the material that will be required to fill in the excavations after the removal of any subsurface structures left in-place from the prior use of the site and removal of topsoil.

Import materials should contain sufficient fines (binder material) in order to be relatively impermeable and result in a stable subgrade when compacted. The imported materials should have an expansion index (EI) of less than 20 and should be free of organic materials, debris, and cobbles larger than 2½ inches with no more than 45 percent and no less than 15 percent passing the # 200 sieve. A bulk sample of potential import material, weighing at least 35 pounds, should be submitted to the Geotechnical Consultant at least 4 days before fill operations. Other than aggregate base and bedding sand, all proposed import materials should be tested for corrosivity, should be environmentally cleared from contamination and should be approved by the Geotechnical Consultant prior to being imported onsite.

13.5. Temporary Excavations

Except for localized areas containing poorly graded sand with silt, the shallow undisturbed site soils are expected to be temporarily stable when excavated vertically to a depth of about 5 feet for unsurcharged cut. For deeper excavations up to a depth of 10 feet, we recommend a gradient no steeper than 1:1 (H:V) unless shoring is used. For areas containing poorly graded sand with silt, we recommend vertical cuts not exceeding 3½ feet and 1:1 inclination for cuts up to 7 feet deep.

The top of slopes should be barricaded to prevent vehicles, and storage loads within 6 feet of the tops of the slopes or within a distance equal to the depth of the excavation, whichever is greater. A greater setback may be necessary when considering heavy vehicles, such as concrete trucks and cranes; we should be advised of such heavy vehicle loadings so that specific setback requirements can be established. When excavating adjacent to existing footings or building supports, proper means should be employed to prevent any possible damage to the existing structures. Un-shored excavations should not extend below a 1½:1 (H:V) plane extending downward from the lower edge of adjacent footings and should start at least three feet away from the footing edge. Where there is insufficient space to slope back an excavation, shoring may be required. All regulations of State and Federal OSHA should be followed. Some sloughing and caving of excavations should be anticipated.

Temporary excavations are assumed to be those that will remain un-shored for a period not exceeding one week. In dry weather, the excavation slopes should be kept moist but not soaked. If excavations are made during the rainy season (normally from November through April), particular care should be taken to protect slopes against erosion. Mitigative measures, such as installation of berms, plastic sheeting, or other devices, may be warranted to prevent surface water from flowing over or ponding at the top of excavations.

13.6. Seismic Coefficients

Under the Earthquake Design Regulations of Chapter 16, Section 1613A of the CBC 2025, and based on ASCE 7-22, the following coefficients and factors presented in Table 3 were calculated using the USGS maps and the SEAOC/OSHPD seismic design maps tool (see Figures A-8a and A-8b). Since no site-specific shear velocity data is available for the site, we utilized the SPT data from the deepest borings (B-1 drilled to a depth of at least 50 feet) and the penetration resistance relationship and coefficients published by Brandenberg et al., 2010. The relationship is as follows:

$$\ln (Vs) = [C_0 + C_1 \ln (PR) + C_2 \ln (\sigma'v) + \varepsilon\, \sigma \ln (Vs)] \text{ - (Equation 1)}$$

where Vs is the shear velocity, PR is the N_{60} blow count, σ'v is the overburden pressure in kPa, and the other parameters are as indicated in the following Table C20.3.-1 from ASCE-22, Commentary. We assumed an epsilon (ε) value of zero to calculate the mean shear wave velocity for each soil layer in the boring selected.

Table C20.3-1 Coefficients for estimation of shear wave velocity in local model applicable to California (after Brandenberg et al., 2010).

Soil type	c_0	c_1	c_2	τ_{lnVS}	ϕ_{lnVS}	
					σ'_v<200 kPa	σ'_v>200 kPa
Sand	4.045	0.096	0.236	0.217	0.57- 0.07ln σ'_v	0.20
Silt	3.783	0.178	0.231	0.227	0.31- 0.03ln σ'_v	0.15
Clay	3.996	0.230	0.164	0.227	0.21- 0.01ln σ'_v	0.16

$$\sigma_{lnVs} = \sqrt{\tau_{lnVs}^2 + \phi_{lnVs}^2 +}$$ 42

Using the above Equation 1, we calculated a weighted average shear wave velocities ($\bar{v}_s$) on the order of 995 ft/sec for Boring B-1, ($\bar{v}_s$ is per Section 20.4.1 of ASCE 7-22).

Table 3 – Seismic Coefficients and Factors

Site Class (CBC 2025 – 1613A.2 and ASCE Chapter 20)	D	CD
Seismic Design Category based on Occupancy Category III (CBC 2025-1604A.5 &1613A.2)	D	D
Mapped Acceleration for Short Period (0.2 Second), S_S	2.19	2.19
Mapped Acceleration Parameter for 1.0 Second, S_1	0.73	0.73
Adjusted Maximum Spectral Response Parameter for Short Period (0.2 Second), S_{MS}	2.26	2.34
Maximum Spectral Response for Long Period 1.0 Second Period, S_{M1}	1.70	1.43
Design Spectral Response Acceleration Parameter, S_{DS}	1.51	1.56
Design Spectral Response Acceleration Parameter, S_{D1}	1.13	0.96
Peak Ground Acceleration (PGA_M)	0.86	0.93
Period (T_0/T_s) in second	.151/0.753	.122/0.612
Earthquake Design Magnitude (Deaggregation)	7.7	7.7

Project Site Coordinates: Longitude: W -118.13459° Latitude: N34.18519° (WGS84)

Because of uncertainty due to the use of empirical correlations, ASCE 7-22 requires the values calculated to be multiplied by 1.3 and divided by 1.3 to establish the range of shear wave velocity for site class determination (765-1293 ft/sec). Per ASCE 7-22 and the derived shear wave

velocities, the most critical site conditions of Site Class CD and Site Class D should be used unless determined otherwise by the CGS reviewer or by future onsite shear velocity measurements. The shear wave velocity calculations are presented in Appendix A following the Seismic Parameters, Figure A-8b.

13.7. Shade Structures

Koury understands that one or more shade structures will be constructed; however, the location and type of shade structure were not provided. The main concerns from a geotechnical standpoint for shade structures are the potential for ground settlement during a seismic event and the anticipated strong seismic shaking.

The following sections contain geotechnical recommendations for the design and construction of the shade structures and include our recommendations and discussions about cast-in-drilled hole (CIDH) concrete pile foundations (also referred to as caissons).

General: It is our opinion that the proposed shade structure posts may be supported on conventional cast-in-drilled-hole (CIDH) concrete pile foundations. For the purpose of preparing this report, we assumed the proposed shade structures will impose vertical downward loads, uplift loads, horizontal loads, and moments on the posts due to horizontal loading. The site has a S_S value greater than 1.7.

The column/pile spacing is presently assumed to be at least 20 feet, therefore, no reduction factor for lateral load resistance efficiency is required. The following sections of this report contain geotechnical recommendations for the design and construction of CIDH concrete pile foundations.

At the time of this report preparation no structural load information, such as anticipated pile axial download and uplift loads, and moment and shear at the top of the pile, was available to us. Due to the expected seismic shaking, we assumed piles diameter on the order of 2 feet and length on the order of about 10 feet. The following geotechnical design parameters or approved equivalent should be used in determining the actual pile depths needed:

***Downward and or Upward Capacity*:** The downward or upward capacities of cast-in-drilled-hole (CIDH) concrete pile foundations may be based on the friction resistance between the pile shaft and surrounding soils, and/or end bearing where acceptable to DSA. The weight of the shaft may be assumed to be taken by end-bearing resistance and should not be added to the structural loads

when only side friction is used for design. For vertical friction resistance capacity, the upper two feet of soil are normally neglected because of the very low overburden pressure, which generally results in low contribution to vertical side resistance. In addition, desiccation of soil over time reduces the adhesion of clay to the pile at shallow depth.

The shaft friction resistance will vary with depth due to changes in soil types and overburden pressures that provide confinement. Table 4 presents the recommended average side friction resistance with depth. For uplift resistance, skin friction may be used along with the weight of the pile shaft. For upward and downward capacities, a one-third increase in skin friction may be used when considering wind or seismic loads.

Table 4 – Summary of Downward and Upward Resistance

Soils Depth (ft)	Downward Skin Friction (psf)	Upward Skin Friction (psf)
0 – 2	Neglect	Neglect
2 - 5	100	50
5 - 10	175	87
10 - 11	Allowable End Bearing Pressure 1800 psf	

The actual length of the pile shaft should be calculated by the Structural Engineer for the project, considering the recommendations provided herein. The pile capacities provided are based on the strength of soil, not the pile section, which should be designed and checked by the project Structural Engineer. If a steel casing is used and left in place, the skin friction values should be reduced by 30 percent.

Some loss of friction capacity is anticipated during the design seismic event. The geotechnical capacity of the pile should not be affected significantly since as the pile settles, additional end bearing will be mobilized. With the presently expected pile depth of 10 feet, we anticipate drag loads to occur over a depth of about 6 feet for the worst condition indicated by the borings. Neglecting the upper 2 feet and using an average drag skin friction of 150 psf, we calculated drag loads on the order of 3¾ kips for 24 diameter piles. The drag load is considered within the portion of the pile where the seismic settlement exceeds ½ inch above the tip of the pile. In our opinion, if the seismic settlement above the pile tip does not exceed ½ inch, there should not be significant drag loads generated in the pile.

Lateral Resistance: Lateral loads can be resisted by passive pressure developed against the vertical shafts. The anticipated resisting lateral bearing pressures are as indicated in Table 5. An equivalent active fluid pressure for level ground of 45 pcf (Ka=0.40) may also be used.

Table 5 – Summary of Allowable Lateral Resistances

Soils Depth (ft)	Allowable Unit Resistance (psf/ft)	Maximum Allowable (psf)
0 – 1	Neglect	Neglect
1 – 5	250	2500
5 – 10	400	4000

The resisting lateral bearing pressure may be considered to act over an area equal to twice the pile diameter shaft where the piles are spaced at least 3 diameters apart in the direction perpendicular to loading. The values in Table 5 have already considered this increase. The increase due to allowable lateral movement and pile spacing should not be combined. The upper 12 inches of soil should be neglected in the passive pressure calculations for lateral loading unless the foundation is bound by hardscape or pavement on all sides. The maximum allowable lateral bearing pressure should not exceed the values indicated in Table 5.

13.8. Minor Shallow Foundations

Minor shallow foundations may be required for low planter walls, fences, seat benches, and similar facilities where seismic settlement and movement due to seasonal fluctuations of moisture contents are not a concern. These foundations should be supported on at least one foot of new engineered fill.

These footings should have a minimum width of one foot. The bottom of footings should be located at least 15 inches below the lowest adjacent finish grade, and reinforcement should consist of a minimum of two No. 4 bars or equivalent as determined by the Structural Engineer. A net vertical bearing value of 1,500 psf may be used to design the footings. The bearing value may be increased by up to 20 percent when considering wind or seismic loads.

Lateral Resistance: Lateral load resistance may be derived from passive resistance along the vertical sides of foundations, friction acting at the base of foundations, or a combination of the

two. A coefficient of friction of 0.3 may be used between footings and the supporting soils comprised of compacted soil.

The passive resistance of level properly compacted fill soils in direct contact with the footings may be assumed to be equal to the pressure developed by a fluid with a density of 200 pcf, to a maximum pressure of 1,500 psf (allowable). The passive value may be increased by up to 20 percent for wind or seismic loads. The frictional resistance and the passive resistance of the soil may be combined provided that the passive resistance is reduced by one third. We recommend that the upper 12 inches of soil cover be neglected in the passive resistance calculations if the ground surface is not protected from erosion or disturbance by a slab, pavement or in a similar manner.

13.9. Retaining Walls

Koury understands that three retaining walls associated with ADA ramps will be constructed near the southwest corner of the proposed new parking lot. These walls will have lengths of approximately 32, 40, and 47 feet and height of 2 to 6 feet.

The pressure behind retaining walls depends primarily on the allowable wall movement, wall inclination, type of backfill materials, backfill slopes, surcharge, and drainage. Determination of whether the active or at-rest condition is appropriate for design will depend on the flexibility of the walls. Walls that are free to rotate at least 0.002 radians at the top (deflection at the top of the wall of at least 0.002 x H, where H is the unbalanced wall height) can be designed for active conditions. The recommended active and at-rest pressures are presented in the following table, assuming that the walls will be backfilled with import granular soils or with onsite sand. No clay should be used to backfill behind retaining walls.

Table 6 - Earth Pressures for Retaining Walls

Wall Movement	Backfill Condition	Equivalent Fluid Pressure (sand) (pcf)
Free to Deflect	Level	40
Restrained	Level	63

The above lateral earth pressures do not include the effects of surcharge (e.g. traffic, footings, hydrostatic pressure) or compaction. Any surcharge (live, including traffic, or dead load) located within a 1:1 plane drawn upward from the base of the excavation should be added to the lateral earth pressures. The lateral pressure addition of a uniform surcharge load located immediately behind walls may be calculated by multiplying the surcharge by 0.33 for cantilevered walls and 0.5 for restrained walls. For vehicular surcharge adjacent to driveways or parking areas, a uniform lateral pressure of 100 pounds per square foot, acting as a result of an assumed 300 pounds per square foot traffic surcharge, should be used.

The soil passive pressure may be used to restrain lateral wall movement. An allowable equivalent passive fluid pressure of 200 psf may be used for that purpose. The maximum allowable passive pressure is 2000 psf. This pressure may be increased by one third for wind and seismic loading.

A drainage system should be provided behind the walls to reduce the potential for development of hydrostatic pressure. If a drainage system is not installed, the walls should be designed to resist hydrostatic pressure in addition to the earth pressure.

Except for the upper 1½ feet, the backfill immediately behind retaining walls (minimum horizontal distance of 12 inches measured perpendicular to the wall) should consist of free-draining ¾-inch crushed rock wrapped with filter fabric. The upper 1½ feet of cover backfill should consist of relatively impervious onsite material. A 4-inch diameter perforated PVC pipe, placed perforations down at the bottom of the crushed rock layer, leading to a suitable gravity outlet, should be installed at the base of the walls. As an alternative to extending the crushed rock to within 1½ feet of the ground surface for the wall drain, geocomposite panel drains may be used. With wall drain panels, the 4-inch diameter perforated pipe located at the heel of the wall/footing should be surrounded with one cubic foot of ¾-inch crushed rock wrapped with filter fabric; the pipe invert should be supported on about 1½ inches of crushed rock. All drainage should be directed to the street or to the storm drain in non-erosive devices or as indicated otherwise by the project Civil Engineer.

Due to the presence of relatively thick undocumented fill, it is recommended to overexcavate at least 2½ feet below the wall footing and to backfill the overexcavation with new engineered fill. The lateral overexcavation should extend at least 1 foot beyond the heel of wall footings (backside)

and 1½ feet beyond the toe (front side) and ends of walls. The maximum allowable bearing pressure for wall footing is 2000 psf. This pressure may be increased by one third for wind and seismic loading. The footing embedment should be at least 1½ feet below the lowest adjacent grade.

13.10. Utility Trench Backfill

Bedding material surrounding utility lines and extending to a point 12 inches above the lines should consist of either sand, fine-grained gravel, or sand-cement slurry to support and/or to protect the lines. Bedding material should be placed on a firm and unyielding subgrade. The bedding material should meet the specifications provided in the latest edition of the "Standard Specifications for Public Works Construction" (Greenbook). Sand or gravel should be compacted in accordance with Greenbook specifications and project specifications, whichever is more stringent.

Above the bedding, up to finished subgrade in areas other than landscape and up to one foot below flatworks and pavements, utility trenches should be backfilled with onsite material or imported granular materials and mechanically compacted to at least 90 percent of the maximum dry density.

Below pavements, a minimum relative compaction of 95 percent is recommended in the upper 10 inches of the subgrade. The material should be observed, tested and approved by the Geotechnical Consultant. The trench bedding materials should be placed in accordance with Sections 306-6 of the "Standard Specifications for Public Works Construction" (Greenbook).

When adjacent to any footings, utility trenches and pipes should be laid above an imaginary line measured at a gradient of 1½ :1 (H:V) projected down from the bottom edges of any footings. Otherwise, the pipe should be designed to accept the lateral effect from the footing load, or the footing bottom should be deepened as needed to comply with this requirement. Backfill consisting of 2-sack sand-cement slurry may also be used.

13.11. Lateral Pipe Restraint

All high-pressure fire water lines normally require lateral restraint at bends, Ts and dead ends. These restraints are often provided by bearing thrust blocks and gravity blocks. A horizontal bearing pressure of 1300 psf is recommended for thrust blocks with at least 1½ feet of cover. For thrust blocks with at least 2½ feet of cover, a lateral bearing pressure of 1700 psf, respectively,

may be used. Thrust blocks should be placed or constructed against undisturbed competent alluvium or engineered fill compacted to at least 90 percent relative compaction. The width of thrust blocks should not be less than one foot for a bearing pressure of 1300 psf and not less than 1½ feet for a bearing pressure of 1700 psf. In lieu of the bearing pressures indicated, the designer may choose to use the passive pressure as indicated for the foundation (the passive pressures may be doubled for isolated thrust blocks, i.e. separated by a distance of at least 3 block widths from each other.

13.12. Drainage

Slab, flatwork, and pavement performance depend greatly on proper drainage within and along the boundary of the development. Perimeter grades around structures and flatwork should be sloped in a manner allowing water to drain away from the structures and flatwork and not pond next to the foundations and pavement. Roof downdrains should be connected to underground pipes carrying water away from structures and pavements to prevent water from entering the subgrade. Per the CBC, landscape areas within 10 feet of structures should slope away at gradients of at least 5 percent. Paved areas within 10 feet of structures should slope away at gradients of at least 2 percent unless flatter pavement is required to satisfy ADA compliance. Proper drainage is recommended for all surfaces to reduce the potential settlement due to water infiltration. We recommend minimizing irrigation and using drought resistant planting.

13.13. Asphalt Concrete (AC) Pavement

The required pavement structural sections depend on the expected wheel loads, volume of traffic, and subgrade soils. The characteristics of subgrade soils are determined by R-value testing. Based on soil classification and prior experience with similar soils, we have selected an R-value of 20 for the sandy clay encountered at shallow depth. The R-value should be confirmed by testing, if necessary, at the time of construction. The following pavement sections were calculated based on assumed traffic indices of 3.5, 4, 5, 5.5, 6 and 7. The project Civil Engineer should determine the traffic index to be used for different areas of the site. A traffic index of 6 or higher is normally utilized to design pavements for fire lanes.

Table 7 - Asphalt Pavement Section

Traffic Index	Asphalt Thickness (Inches)	Base Course (CAB) Thickness (Inches)
*3.5	3	4
*3.5	4	0
4	3	5
5	3	7.5
5.5	3	9
6	3.5	9.5
6	4	8.5
7	4	12

*For play court only

Base course material should consist of Crushed Aggregate Base (CAB) as defined by Section 200-2.2 of the Standard Specifications for Public Works Construction ("Greenbook"). Base course should be compacted to at least 95 percent of the maximum dry density of that material. Crushed Miscellaneous Base (CMB) may be used only if the supplier can demonstrate that the aggregate does not contain contaminated material.

The grading for flatwork is addressed in Section 13.2 of this report except for the proposed porous pavement for the new parking lot in the northeast portion of the site. Based on review of historical topographic map, the grades in the area of the parking lot were raised above pre-existing grades and fill is anticipated at subgrade level. It is recommended to overexcavate the proposed pavement subgrade to obtain at least 18 inches of new engineered fill below the pavement section.

The overexcavation bottom should be scarified 8 inches, moisture conditioned above optimum, and recompacted to 90 percent relative compaction prior to backfilling. The subgrade should be in a "non-pumping" condition at the time of compaction. Any onsite surficial organic soils within landscaped/turf areas should not be used as subgrade materials. Where feasible, the overexcavation should extend laterally a minimum of 2 feet beyond the perimeters and edges of parking areas, roadways and curbs. If present, any abandoned footing and/or underground concrete structure within the work limit should be removed entirely and the excavation should be backfilled to grade.

For the new parking lot, Koury understands that it is proposed to construct a portion of the parking lot with permeable pavers. For asphaltic pavement, we anticipate a cap of 5 inches of porous

asphalt underlain by 2 inches of No. 57 stones, in turn underlain by approximately 10 inches or more of No. 2 stones, or approved equivalent material, underlain by filter fabric. The thickness of stones needs to be sufficient to temporarily store the volume of water expected. Since the underlying fill is not anticipated to allow significant water infiltration, a system of underdrain will be required to convey the water entering the porous pavement to the storm drain.

13.14. Cement Concrete Vehicular Pavement

The grading recommendations for vehicular cement pavement are provided in Section 13.2 of this report. Base course material, used in the vehicular pavement sections, should consist of Crushed Aggregate Base (CAB) as defined by Section 200-2.2 of the Standard Specifications for Public Works Construction (Greenbook 2024). The aggregate base course should be compacted to at least 95 percent of the maximum dry density of that material. Crushed Miscellaneous Base (CMB) may be used only if the supplier can demonstrate that the aggregate does not contain contaminated material.

The recommendations presented herein should be used for design and construction of the slabs and pertaining grading work underlying vehicular pavement areas. A minimum modulus of rupture of 550 psi for concrete has been assumed in designing the cement pavement sections; this corresponds to a concrete compressive strength of approximately 4,000 psi at 28 days. A qualified design professional should specify where heavy duty and standard duty slabs are used based on the anticipated type and frequency of traffic. Fire access roads are normally considered heavy duty pavement. The recommended vehicular cement pavement sections are provided in the following table.

Table 8 – Vehicular Cement Pavement Sections

Pavement Type	Cement Concrete Thickness (inches)	Base Course (CAB) Thickness (inches)
Light Duty	6.0	6.0
Heavy Duty	7.0	6.0

These concrete pavement sections should be increased for bus traffic where applicable. The following recommendations should also be incorporated into the design and construction of cement pavement section:

- The pavement sections may be reinforced with No. 3 rebars spaced at 18 inches on centers each way to reduce the potential for shrinkage cracking.
- Joint spacing in feet should not exceed twice the slab thickness in inches, e.g., 12 feet for a 6-inch-thick slab. Regardless of slab thickness, joint spacing should not exceed 15 feet.
- Layout joints should form square panels. When this is not practical, rectangular panels can be used if the long dimension is no more than 1.5 times the short one.
- Control joints should have a depth of at least 1/4 the slab thickness, e.g., 1 inch for a 4-inch-thick slab.
- Pavement section design assumes that proper maintenance such as sealing, and repair of localized distress will be performed on a periodic basis.

13.15. Cement Pedestrian Pavement and Pavers

The grading recommendations for exterior flatwork are provided in Section 13.2. Exterior concrete slabs for pedestrian traffic or landscape should be at least four inches thick. Weakened plane joints should be located at intervals of no more than about 8 feet unless slabs thicker than 4 inches are used.

The concrete strength for pedestrian walkways should be at least 2,500 psi unless determined otherwise by the Structural Engineer. To control shrinkage cracking, at the discretion of the Project Architect, the pavement sections may be reinforced with No. 3 rebars spaced no further than 18 inches on centers each way.

For pavers, it is recommended to prepare the subgrade as indicated in the grading section of this report. The recommendations of the paver manufacturer should be followed unless determined otherwise by the landscape architect. It is recommended to support the pavers over a thin leveling layer of sand over 3 to 4 inches of crushed aggregate base unless determined otherwise by the project landscape architect.

13.16. Pole Foundations for Light Fixtures

New light poles are anticipated in various locations throughout the site, including the new parking lot, the basketball court, and other play areas. These light poles are most likely to be supported on relatively short pile foundations (CIDH).

Downward Capacity of Pole Foundations: The downward capacity of cast-in-drilled-hole (CIDH) concrete pile foundations is based on the friction resistance between the pile shaft and surrounding soils. The weight of the shaft may be assumed to be taken by end-bearing resistance for pile. For vertical capacity calculations, the upper 4 feet of soil should be neglected, and a shaft friction resistance of 150 psf may be used from depths of 4 to 10 feet and 300 psf for the remainder of the pile shaft. The actual length of the pile shaft should be calculated by the Structural Engineer for the project, considering the recommendations provided herein. The pile capacities provided are based on the strength of the soil, not the pile section, which should be designed and checked by the project Structural Engineer.

Lateral Resistance of Pole Foundations: Lateral loads of pole foundations can be resisted by passive pressure developed against the vertical shafts. For level ground surfaces, an equivalent fluid passive pressure of 200 pcf may be used. This value may be doubled for isolated poles where the lateral deflection at the ground level may exceed 0.5 inch. An equivalent active fluid pressure for level ground of 40 pcf (K_a=0.33) may be used. The upper 18 inches of soil should be neglected in the passive pressure calculations unless the foundation is bounded by hardscape or pavement on all sides.

14. SOIL EXPANSIVITY

The subsurface soils encountered at shallow depths consist predominantly of silty sand and clayey sand. These types of soil generally have a low susceptibility to expansion when facing seasonal cycles of saturation/desiccation. One expansion index test on one sample of sandy clay of Boring B-4 at a depth of 1 to 5 feet yielded an expansion index value of less than 20. As such, the recommendations provided in this report regarding drainage, moisture content during compaction and other pertinent recommendations for site improvements should be incorporated into the design and construction.

15. SOIL CORROSIVITY

The corrosion potential of the onsite materials to steel and buried concrete was preliminarily evaluated. Laboratory testing was performed on a soil sample from the site area, evaluated pH, minimum resistivity, chloride and soluble sulfate content. The test results are presented in the

following table. A sulfide test, which is designed to detect naturally occurring H_2S gas that can be highly corrosive, was also performed. The sulfide test results were negative.

Table 9 - Corrosion Test Results

Boring	Depth (ft)	Minimum Resistivity (ohm-cm)	pH	Soluble Sulfate Content (ppm)	Soluble Chloride Content (ppm)
B-4	1 - 5	6112	7.7	77	12

These tests are only an indicator of soil corrosivity for the samples tested. Other soils found on site may be more, less, or of a similar corrosive nature. Imported fill materials should be tested to confirm their corrosion potential. Based on the minimum resistivity results from the soil tested, some of the near-surface site soils indicate a low to moderate potential for soil corrosivity towards buried ferrous metals.

The concentrations of soluble sulfates indicate that the potential of sulfate attack on concrete in contact with the onsite soils is "negligible" based on ACI 318 Table 4.3.1. Cement Type II or approved equivalent may be used in concrete. The exposures to site class in accordance with ACI 318-19, Table 19.3.1.1 are F_0, S_0, W_0, and C_1. Further interpretation of the corrosivity test results, including the resistivity value, and providing corrosion design and construction recommendations are the purview of corrosion specialists/consultants.

16. PERCOLATION TESTING

The drilling for the percolation holes was performed on December 4 and percolation testing occurred on a sunny day on December 5, 2025. The depth of the holes for percolation testing was 10 feet.

Koury performed the tests in substantial conformance with the boring percolation test procedure of the County of Los Angeles as defined in the Low Impact Development BMP Design Handbook dated 9/20/14, County Document GS200.1 dated 6/30/21. The test procedure consisted of drilling 8½-inch diameter boreholes to the test depth and placing a 2-inch layer of filter gravel at the bottom of the holes. We also placed a 3-inch diameter

perforated pipe in the holes and filter rock within the annulus to prevent caving in the test zones.

The percolation holes were presoaked per the test method and overnight. Following presoaking, percolation testing began by filling the lower portion of the percolation hole with water and measuring the drop-in water level. The water column heights were generally around 4 feet. Based on the rate of water dissipation observed during presoaking, a 30-minute measuring interval was selected. Refilling with water was repeated several times until consistent results were noted.

The following table summarizes the result of the falling head percolation test. The falling head percolation test yielded short-term infiltration rate of less than 0.1 inch per hour (See Appendix C for calculations).

Table 10 – Summary of Falling Head Percolation Testing

Test Number	Depth (ft)	Short Term Infiltration *(in/hour)	Adjusted Long Term Infiltration (in/hour)
P-1	10	0.04	0.01
P-2	10	0.04	0.01

*No correction factor applied

The in-situ field percolation tests performed provide short-term infiltration rates, which apply mainly to the initiation of the infiltration process due to the short time of the tests (hours instead of days) and the amount of water used. Where appropriate the short-term infiltration rates should be converted to long-term infiltration rate using reduction factors ranging from 3 to 9 depending upon the degree of infiltrate quality, maintenance access and frequency, site variability, subsurface stratigraphy variation, and other factors. The small-scale percolation testing cannot model the complexity of the effect of interbedded layers of different soil composition, and our test results should be considered an index value of infiltration rates.

We have applied a correction factor of 3 to determine the long-term infiltration rates presented in the above table. The correction factor was selected per the test method to account for the Boring Percolation Testing Method, subsurface soil variability and long-term maintenance. The correction factor calculations and assumptions are indicated on the percolation test data sheets

in Appendix C. For long-term maintenance, we used a correction factor of 1, assuming excellent maintenance. The design professional may re-adjust the correction factor, if deemed appropriate; however, a reduction factor that is too low may affect the longevity of the BMPs.

***Subsurface Soil Consideration*:** Percolation Test P-1 was performed in the immediate vicinity of Boring B-1 while Percolation Test P-2 was performed in the immediate vicinity of Boring B-4. Within the percolation zone of P-1, Boring B-1 indicates the presence of sandy clay and clayey sand soils, which are not conducive to percolation. For Percolation Test P-2, the entire percolation zone consists of sandy clay as indicated in Boring B-4.

***Conclusions and Recommendations for Infiltration*:** Based on the percolation test results, the locations tested do not appear suitable for infiltration. The soils observed in the borings are generally not conducive to infiltration. Infiltration within the locations/depths tested is not recommended.

17. OBSERVATION AND TESTING

This report has been prepared assuming that Koury Engineering & Testing, Inc. will perform all geotechnical-related field observations and testing. If the recommendations presented in this report are utilized, and observation of the geotechnical work is performed by others, the party performing the observations must review this report and assume responsibility for the recommendations contained herein. That party would then assume the title of "Geotechnical Consultant of Record". A representative of the Geotechnical Consultant should be present to observe all grading operations as well as all footing excavations.

18. CLOSURE

The findings and recommendations presented in this report were based on the results of our field and laboratory investigations, combined with professional engineering experience and judgment. The report was prepared in accordance with generally accepted engineering principles and practice. We make no other warranty, either expressed or implied. Subsurface variations between borings should be anticipated. Koury should be notified if subsurface conditions are encountered, which differ from those described in this report since revised recommendations may be required.

Samples obtained during this investigation will be retained in our laboratory for a period of 45 days from the date of this report and will be disposed of after this period.

Should you have any questions concerning this submittal, or the recommendations contained herewith, please do not hesitate to call our office.

Respectfully submitted,

KOURY ENGINEERING & TESTING, INC.

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Shaofu Chen, C.E.G. 2688
Principal Geologist

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APPENDICES

Appendix A: Maps and Plans

Vicinity Map – Figure A-1
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Geotechnical Cross Section A-A' Figure A-2c
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Appendix B: Field Exploratory Boring Logs

Borings B-1 through B-4

Appendix C: Laboratory Test Results and Calculations

Direct Shear Test Report
Consolidation Test Report
Seismic Settlement Analysis
Percolation Testing

Appendix D: Historical Earthquake Data

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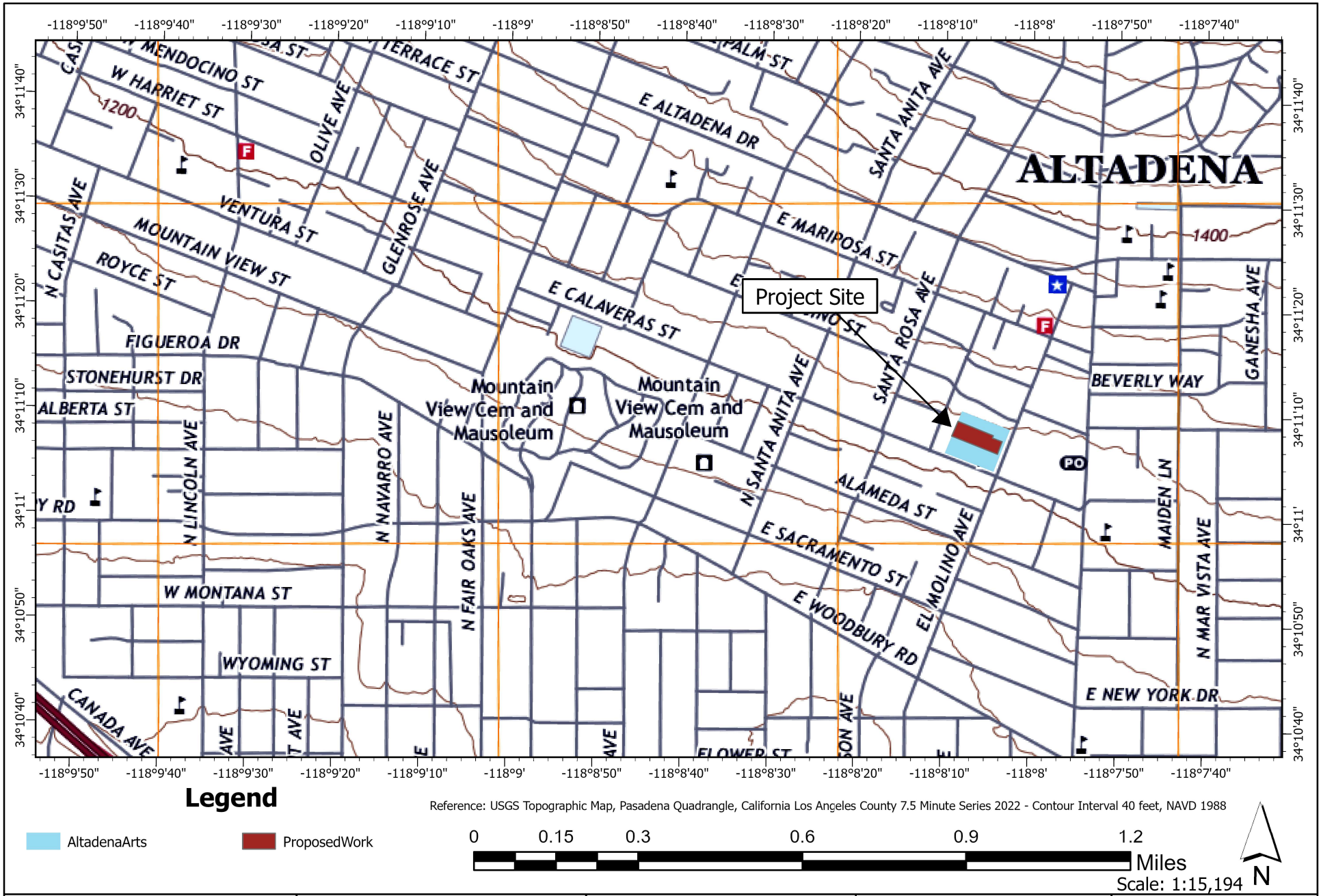
APPENDIX A

Maps and Plans/Figures



Legend

AltadenaArts

ProposedWork

Reference: USGS Topographic Map, Pasadena Quadrangle, California Los Angeles County 7.5 Minute Series 2022 - Contour Interval 40 feet, NAVD 1988

0 0.15 0.3 0.6 0.9 1.2 Miles

Scale: 1:15,194

N

KOURY
PASSION INTEGRITY QUALITY

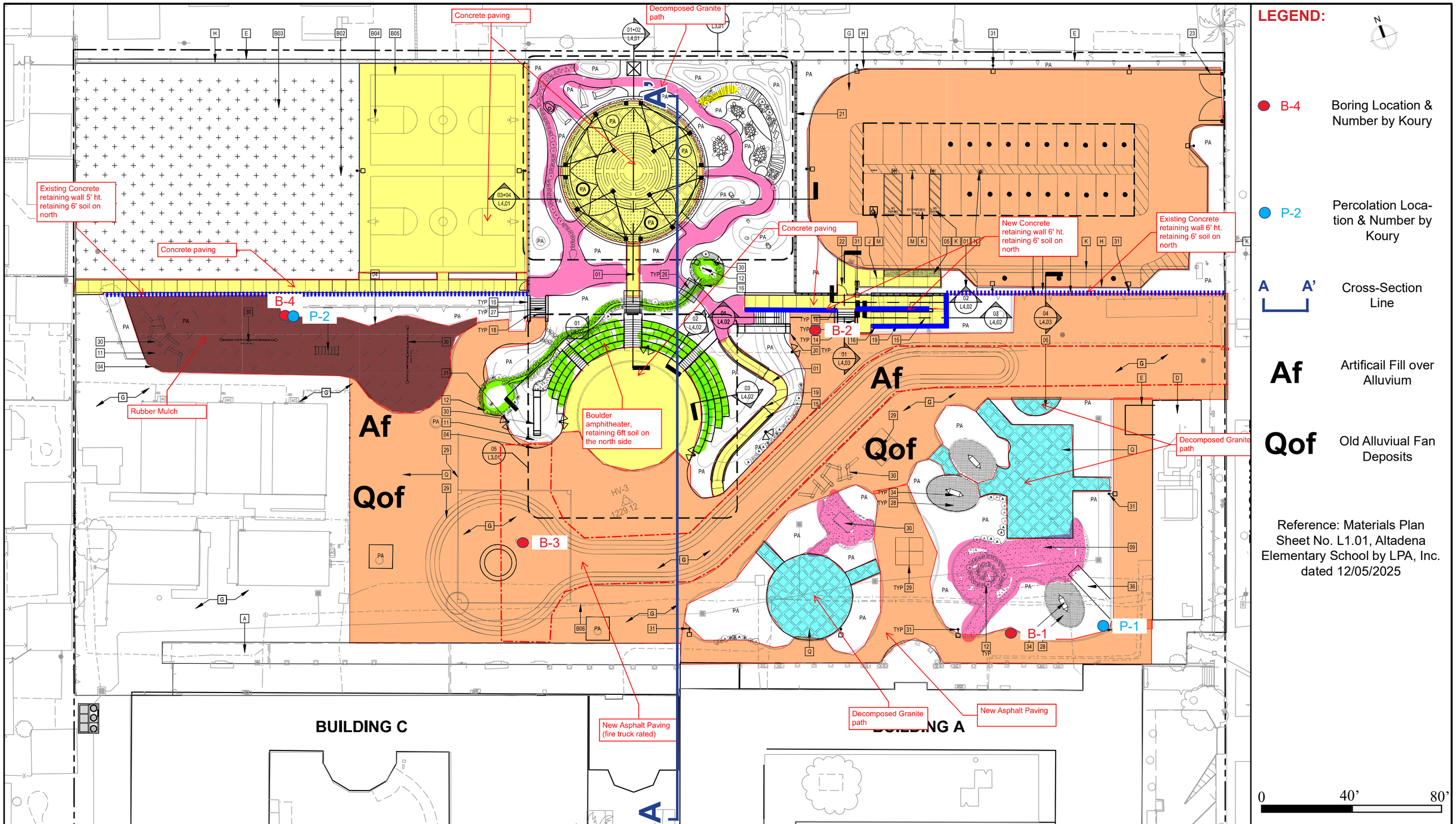
Project Name:	Project No:	Drawing Title:	Figure:
Altadena Arts Magnet School Proposed Campus Improvements	**25-3846**	**Vicinity Map**	**A-1**
	Date: **January 2026**		

LEGEND

- B-4 Boring Location & Number by Koury
- P-2 Percolation Location & Number by Koury

0 80’ 160’ N

KOURY PASSION INTEGRITY QUALITY	Project Name: **Altadena Arts Magnet School Proposed Campus Improvements**	Project No.: **25-3846** Date: **January 2026**	Drawing Title: **Boring and Cross-Section Location Map**	Figure: **A-2a**



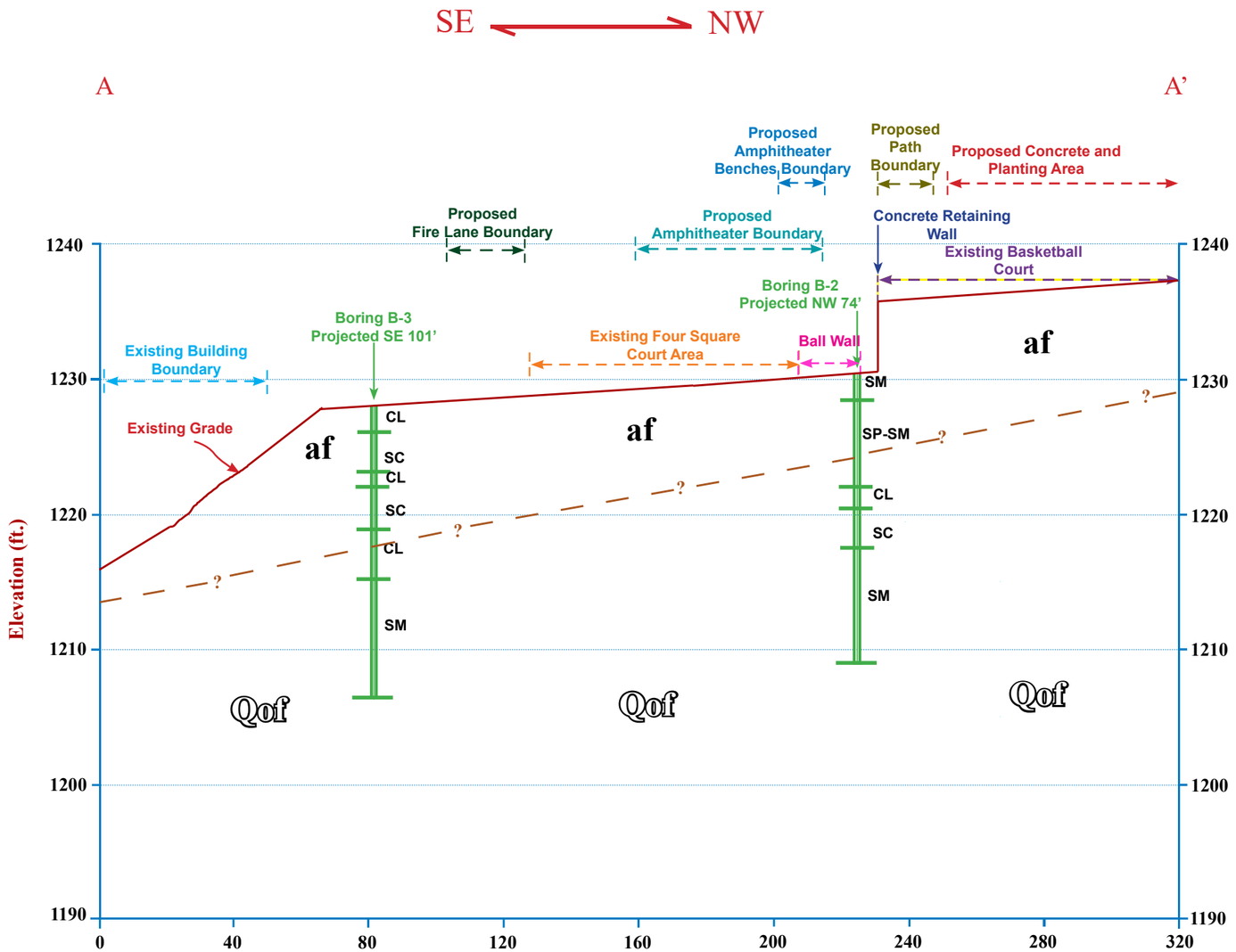
LEGEND:

- B-4 — Boring Location & Number by Koury
- P-2 — Percolation Location & Number by Koury
- A A' — Cross-Section Line
- **Af** — Artificail Fill over Alluvium
- **Qof** — Old Alluvial Fan Deposits

Reference: Materials Plan Sheet No. L1.01, Altadena Elementary School by LPA, Inc. dated 12/05/2025

0 40' 80'

KOURY PASSION INTEGRITY QUALITY	Project Name: **Altadena Arts Magnet School Proposed Campus Improvements**	Project No.: **25-3846** Date: **January 2026**	Drawing Title: **Proposed Campus Improvement Map**	Figure: **A-2b**



LEGEND:

af Artificial Fill

Qof Old Alluvial Fan Deposits

10
0
40
Scale:

KOURY PASSION INTEGRITY QUALITY	Project Name: **Altadena Arts Magnet School Proposed Campus Improvements**	Project No.: **25-3846** Date: **January 2026**	Drawing Title: **Geotechnical Cross Section A-A'**	Figure: **A-2c**

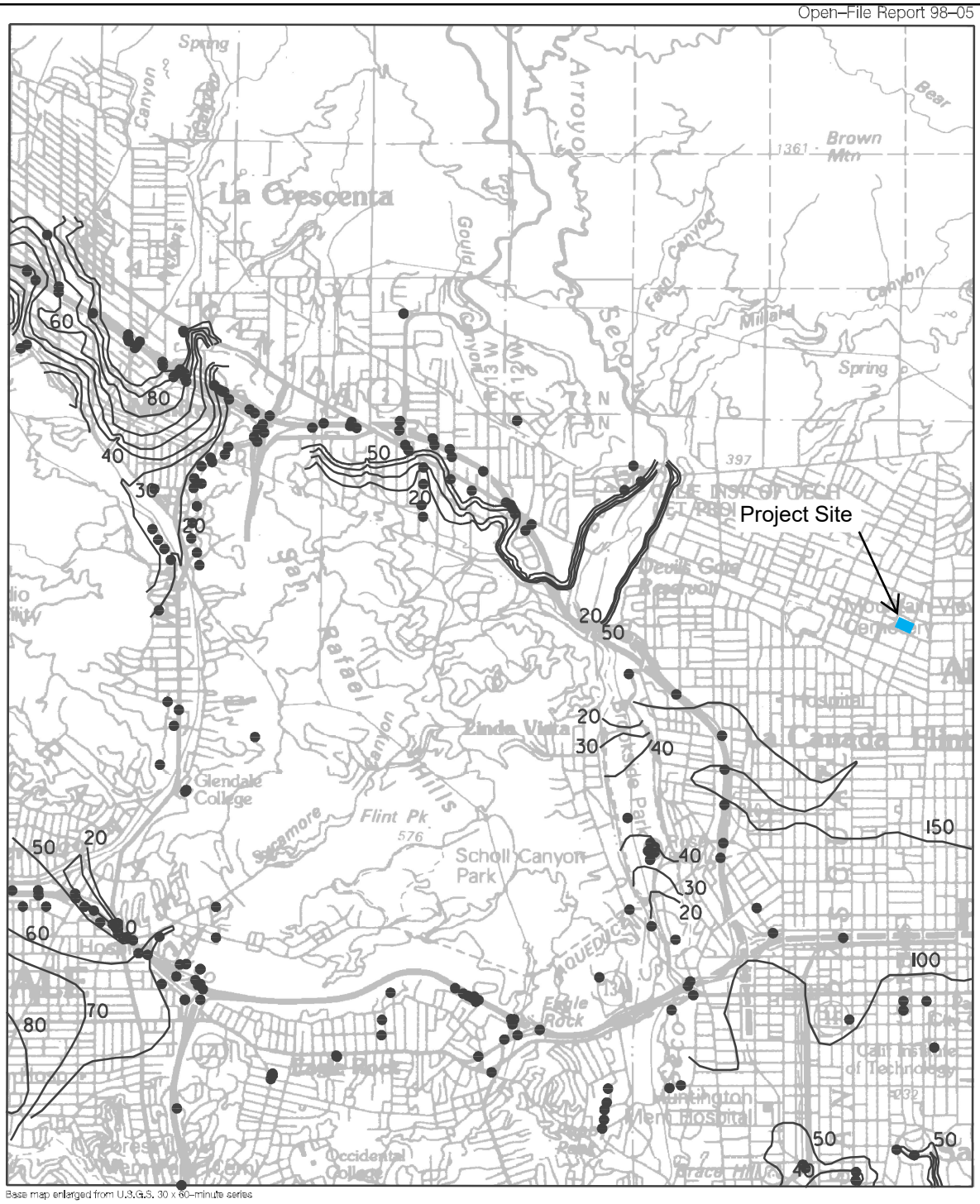


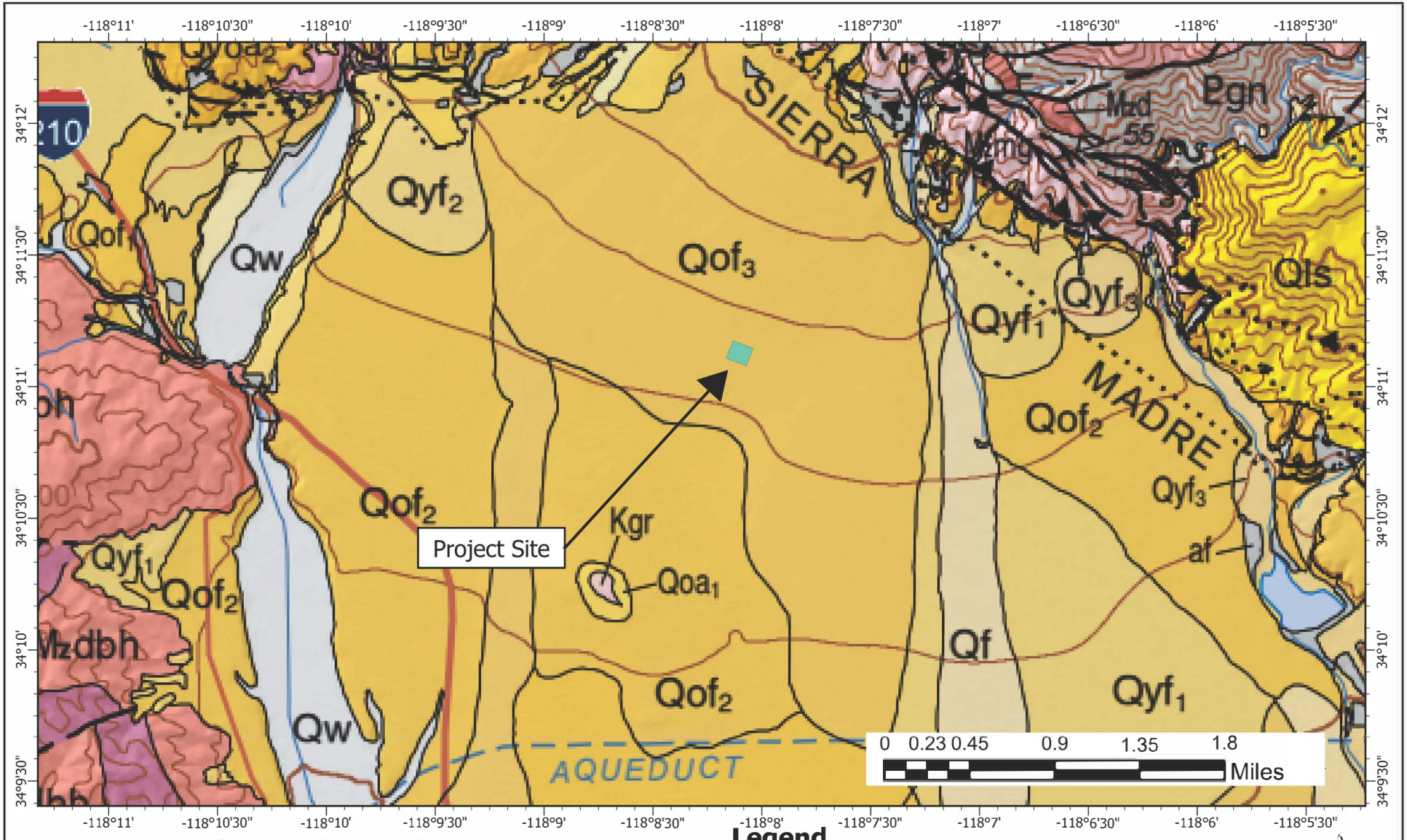
Plate 1.2 Historically Highest Ground Water Contours and Borehole Log Data Locations, Pasadena Quadrangle.

● Borehole Site

30 Depth to ground water in feet

ONE MILE
SCALE

	Project Name:	Project No.:	Drawing Title:	Figure:
KOURY PASSION INTEGRITY QUALITY	**Altadena Arts Magnet School Proposed Campus Improvements**	**25-3846** Date: **January 2026**	**Historically Highest Groundwater Map**	**A-3**



Legend

Old alluvial fan deposits

Qof	Undivided
Qof_3	Unit 3

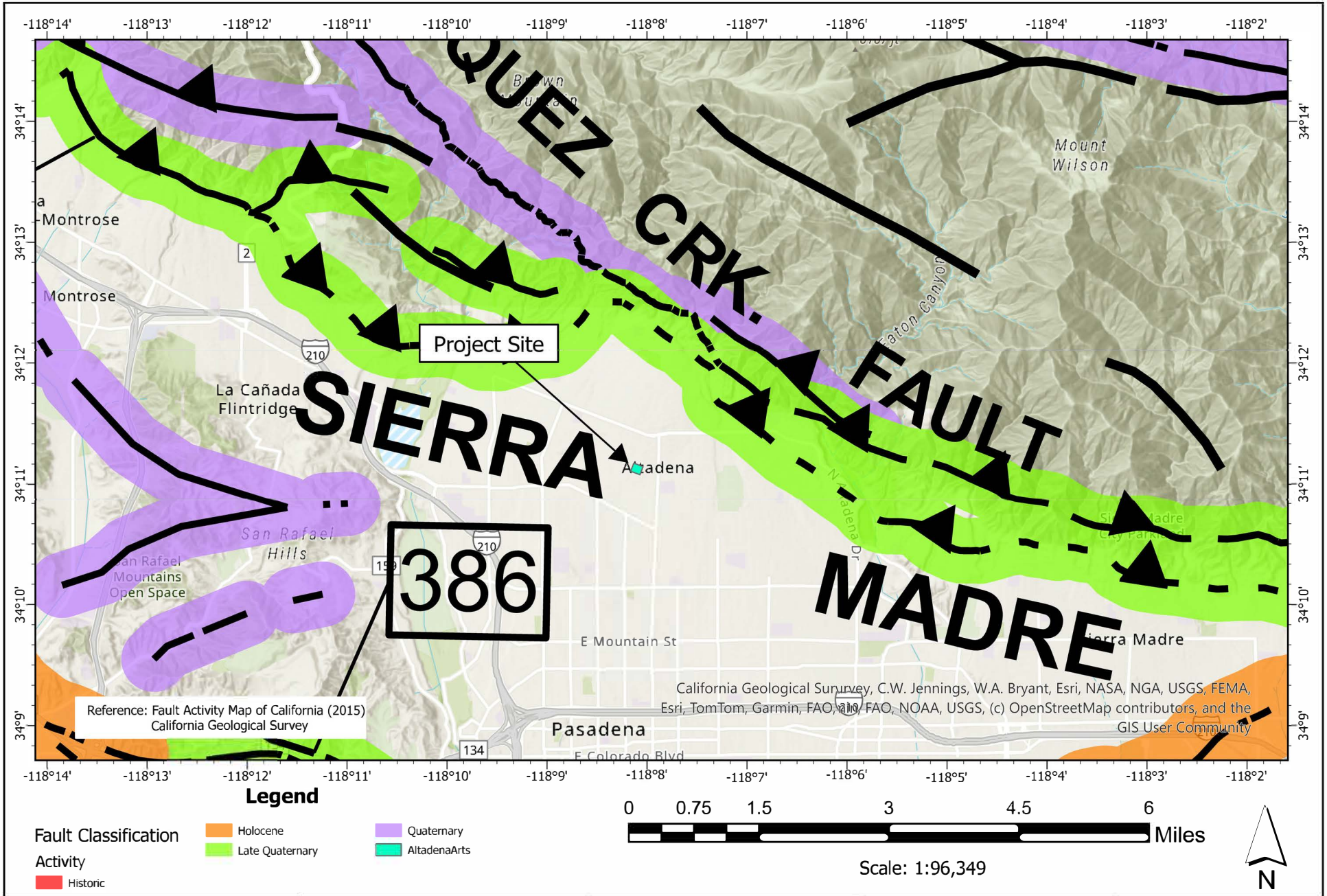
AltadenaArts

Scale: 1:46,905

N

Reference: California Geological Survey, Preliminary Geologic Map of Los Angeles 30' x 60', version 2.1, 2014. Compiled by Russel H. Campbell, Chris J. Wills, Pamela J. Irvine, and Brian Swanson State of California, Department of Conservation, 1 : 100,000.

KOURY PASSION INTEGRITY QUALITY	Project Name: **Altadena Arts Magnet School Proposed Campus Improvements**	Project No: **25-3846** Date: **January 2026**	Drawing Title: **Regional Geologic Map**	Figure: **A-4**



KOURY PASSION INTEGRITY QUALITY	Project Name: **Altadena Arts Magnet School Proposed Campus Improvements**	Project No: **25-3846** Date: **January 2026**	Drawing Title: **Fault Map**	Figure: **A-5**

EXPLANATION

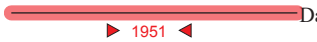
Fault traces on land are indicated by solid lines where well located, by dashed lines where approximately located or inferred, and by dotted lines where concealed by younger rocks or by lakes or bays. Fault traces are queried where continuation or existence is uncertain. Concealed faults in the Great Valley are based on maps of selected subsurface horizons, so locations shown are approximate and may indicate structural trend only. All offshore faults based on seismic reflection profile records are shown as solid lines where well defined, dashed where inferred, queried where uncertain.

FAULT CLASSIFICATION COLOR CODE (Indicating Recency of Movement)

Fault along which historic (last 200 years) displacement has occurred and is associated with one or more of the following:

(a) a recorded earthquake with surface rupture. (Also included are some well-defined surface breaks caused by ground shaking during earthquakes, e.g. extensive ground breakage, not on the White Wolf fault, caused by the Arvin-Tehachapi earthquake of 1952). The date of the associated earthquake is indicated. Where repeated surface ruptures on the same fault have occurred, only the date of the latest movement may be indicated, especially if earlier reports are not well documented as to location of ground breaks.
(b) fault creep slippage - slow ground displacement usually without accompanying earthquakes.
(c) displaced survey lines.

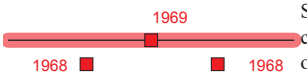
A triangle to the right or left of the date indicates termination point of observed surface displacement. Solid red triangle indicates known location of rupture termination point. Open black triangle indicates uncertain or estimated location of rupture termination point.



Date bracketed by triangles indicates local fault break.

No triangle by date indicates an intermediate point along fault break.

Fault that exhibits fault creep slippage. Hachures indicate linear extent of fault creep. Annotation (creep with leader) indicates representative locations where fault creep has been observed and recorded.

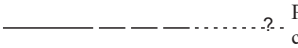


Square on fault indicates where fault creep slippage has occured that has been triggered by an earthquake on some other fault. Date of causative earthquake indicated. Squares to right and left of date indicate termi- nal points between which triggered creep slippage has occurred (creep either continuous or intermittent between these end points).

Holocene fault displacement (during past 11,700 years) without historic record. Geomorphic evidence for Holocene faulting includes sag ponds, scarps showing little erosion, or the following features in Holocene age deposits: offset stream courses, linear scarps, shutter ridges, and triangular faceted spurs. Recency of faulting offshore is based on the interpreted age of the youngest strata displaced by faulting.

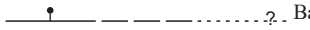
Late Quaternary fault displacement (during past 700,000 years). Geomorphic evidence similar to that described for Holocene faults except features are less distinct. Faulting may be younger, but lack of younger overlying deposits precludes more accurate age classification.

Quaternary fault (age undifferentiated). Most faults of this category show evidence of displacement some- time during the past 1.6 million years; possible exceptions are faults which displace rocks of undifferenti- ated Plio-Pleistocene age. Unnumbered Quaternary faults were based on Fault Map of California, 1975. See Bulletin 201, Appendix D for source data.



Pre-Quaternary fault (older that 1.6 million years) or fault without recognized Quaternary displacement. Some faults are shown in this category because the source of mapping used was of reconnaissnce nature, or was not done with the object of dating fault displacements.

ADDITIONAL FAULT SYMBOLS



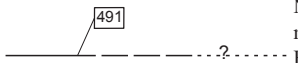
Bar and ball on downthrown side (relative or apparent).

Arrows along fault indicate relative or apparent direction of lateral movement.

Arrow on fault indicates direction of dip.

Low angle fault (barbs on upper plate). Fault surface generally dips less than 45° but locally may have been subsequently steepened. On offshore faults, barbs simply indicate a reverse fault regardless of steepness of dip

OTHER SYMBOLS



Numbers refer to annotations listed in the appendices of the accompanying report. Annotations include fault name, age of fault displacement, and pertinent references including Earthquake Fault Zone maps where a fault has been zoned by the Alquist-Priolo Earthquake Fault Zoning Act. This Act requires the State Geolo- gist to delineate zones to encompass faults with Holocene displacement.

Structural discontinuity (offshore) separating differing Neogene structural domains. May indicate disconti- nuities between basement rocks.

Brawley Seismic Zone, a linear zone of seismicity locally up to 10 km wide associated with the releasing step between the Imperial and San Andreas faults

KOURY PASSION INTEGRITY QUALITY	Project Name: **Altadena Arts Magnet School Proposed Campus Improvements**	Project No.: **25-3846** Date: **January 2026**	Drawing Title: **Fault Map Legend**	Figure: **A-5a**

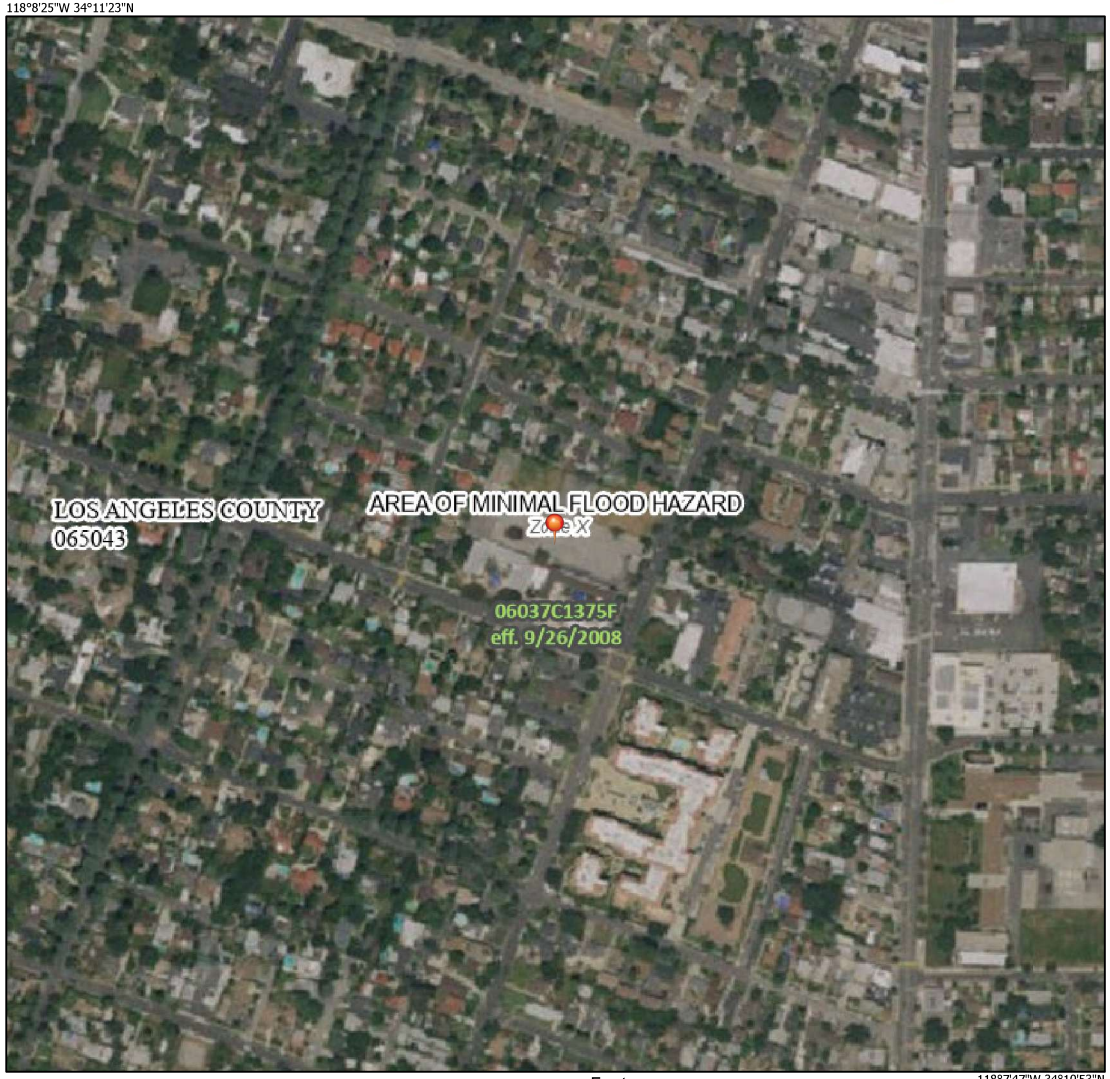
Scale: 1:8,704

KOURY PASSION INTEGRITY QUALITY	Project Name: **Altadena Arts Magnet School Proposed Campus Improvements**	Project No: **25-3846** Date: **January 2026**	Drawing Title: **Seismic Hazard Zones Map**	Figure: **A-6**

National Flood Hazard Layer FIRMette

FEMA

118°8'25"W 34°11'23"N



0 250 500 1,000 1,500 2,000 Feet

1:6,000

118°7'47"W 34°10'53"N

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN — Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20,2 — Cross Sections with 1% Annual Chance
- 17.5 — Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/24/2025 at 4:14 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

KOURY PASSION INTEGRITY QUALITY	Project Name: **Altadena Arts Magnet School Proposed Campus Improvements**	Project No.: **25-3846** Date: **January 2026**	Drawing Title: **Flood Map**	Figure: **A-7**

OSHPD

Latitude, Longitude: 34.18519, -118.13459

Date	1/2/2026, 5:55:22 PM
Design Code Reference Document	ASCE7-22
Risk Category	III
Site Class	D

Type	Value	Description (Data)
S_S	2.19	The MCE_R spectral response acceleration at 0.2 seconds for Site Class BC, in units of g.
S_1	0.73	The MCE_R spectral response acceleration at 1 second for Site Class BC, in units of g.
S_{MS}	2.26	$S_{MS} = 1.5 \times S_{DS}$, the Risk-Targeted Maximum Considered Earthquake (MCE_R) spectral response acceleration for short periods (of the two-period spectrum) and the user-specified Site Class.
S_{M1}	1.7	$S_{M1} = 1.5 \times S_{D1}$, the MCE_R spectral response acceleration for 1 second (of the two-period spectrum) and the user-specified Site Class.
S_{DS}	1.51	The design spectral response acceleration for short periods (of the two-period spectrum) and the user-specified Site Class, in units of g.
S_{D1}	1.13	The design spectral response acceleration for 1 second (of the two-period spectrum) and the user-specified Site Class, in units of g

Type	Value	Description (Data Contd.)
SDC	D	Seismic design category
PGA_M	0.86	PGA_M, the Geometric-Mean Maximum Considered Earthquake (MCE_G) peak ground acceleration for the user-specified Site Class, in units of g
T_S	0.753	$T_S = S_{D1}/S_{DS}$, in seconds, for construction of the two-period design spectrum
T_0	0.151	$T_0 = 0.2 \times T_S$, in seconds, for construction of the two-period design response spectrum

Type	Value	Description (Underlying Data and Metadata)
PGA_{uh}	0.86	Probabilistic uniform-hazard (2%-in-50-years), geometric-mean peak ground acceleration, in units of g.
PGA_{84th}	0.95	Deterministic 84th-percentile, geometric-mean peak ground acceleration (without deterministic lower limit), in units of g.
V_{S30}	260	The shear-wave velocity used for the user-specified Site Class, in units of m/s
Spatial Interpolation Method	linearloglinear	Identifier for spatial interpolation method used to obtain values for location of interest from underlying gridded values: "linearloglinear" for bilinear of natural logarithm of values.
PGA_{dFloor}	0.53	Deterministic lower limit peak ground acceleration (PGA_G) for the user-specified Site Class, in units of g.
riskTargetedSpectrum		Probabilistic risk-targeted, maximum direction response spectrum (for 1%-in-50-years collapse risk)
eightyFourthSpectrum		Deterministic 84th-percentile, maximum-direction response spectrum (without deterministic lower limit)

KOURY PASSION INTEGRITY QUALITY	Project Name: **Altadena Arts Magnet School Proposed Campus Improvements**	Project No.: **25-3846** Date: **January 2026**	Drawing Title: **Seismic Parameters Site Class D**	Figure: **A-8a**

Latitude, Longitude: 34.18519, -118.13459

Date	1/2/2026, 5:54:22 PM
Design Code Reference Document	ASCE7-22
Risk Category	III
Site Class	CD

Type	Value	Description (Data)
S_S	2.19	The MCE_R spectral response acceleration at 0.2 seconds for Site Class BC, in units of g.
S_1	0.73	The MCE_R spectral response acceleration at 1 second for Site Class BC, in units of g.
S_{MS}	2.34	$S_{MS} = 1.5 \times S_{DS}$, the Risk-Targeted Maximum Considered Earthquake (MCE_R) spectral response acceleration for short periods (of the two-period spectrum) and the user-specified Site Class.
S_{M1}	1.43	$S_{M1} = 1.5 \times S_{D1}$, the MCE_R spectral response acceleration for 1 second (of the two-period spectrum) and the user-specified Site Class.
S_{DS}	1.56	The design spectral response acceleration for short periods (of the two-period spectrum) and the user-specified Site Class, in units of g.
S_{D1}	0.96	The design spectral response acceleration for 1 second (of the two-period spectrum) and the user-specified Site Class, in units of g

Type	Value	Description (Data Contd.)
SDC	D	Seismic design category
PGA_M	0.93	PGA_M, the Geometric-Mean Maximum Considered Earthquake (MCE_G) peak ground acceleration for the user-specified Site Class, in units of g
T_S	0.612	$T_S = S_{D1}/S_{DS}$, in seconds, for construction of the two-period design spectrum
T_0	0.122	$T_0 = 0.2 \times T_S$, in seconds, for construction of the two-period design response spectrum
T_L	8	T_L, the long-period transition period, in seconds, for construction of the two-period design response spectrum

Type	Value	Description (Underlying Data and Metadata)
PGA_{uh}	0.93	Probabilistic uniform-hazard (2%-in-50-years), geometric-mean peak ground acceleration, in units of g.
PGA_{84th}	1.07	Deterministic 84th-percentile, geometric-mean peak ground acceleration (without deterministic lower limit), in units of g.
V_{S30}	365	The shear-wave velocity used for the user-specified Site Class, in units of m/s
Spatial Interpolation Method	linearloglinear	Identifier for spatial interpolation method used to obtain values for location of interest from underlying gridded values: "linearloglinear" for bilinear of natural logarithm of values.
PGA_{dFloor}	0.56	Deterministic lower limit peak ground acceleration (PGA_G) for the user-specified Site Class, in units of g.
riskTargetedSpectrum		Probabilistic risk-targeted, maximum direction response spectrum (for 1%-in-50-years collapse risk)
eightyFourthSpectrum		Deterministic 84th-percentile, maximum-direction response spectrum (without deterministic lower limit)

KOURY PASSION INTEGRITY QUALITY	Project Name: **Altadena Arts Magnet School Proposed Campus Improvements**	Project No.: **25-3846** Date: **January 2026**	Drawing Title: **Seismic Parameters Site Class CD**	Figure: **A-8b**

KOURY
PASSION INTEGRITY QUALITY

Table A - Shear Wave Velocity Calculation B-1

Altadena Arts Magnet School

Date: January 2026
Project No. 25-3846

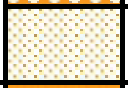
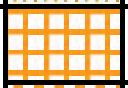
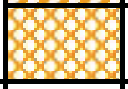
Layer No.	In situ Data									Basic Output Data	ASCE 7-22 C20.3-2
	Top of Layer (ft)	Bottom of Layer (ft)	SPT N-Value	Dry Unit Weight (pcf)	Moisture Content (%)	Soil type Brandenberg(2010)	C_B	C_R	C_S	N_{60}	$\overline{v_s}$ (ft/s)
1	0.0	5.0	11.05	120	7.8	Clay	1.0	0.75	1.2	12.4	514.4
2	5.0	7.5	19.00	120	9.1	Sand	1.0	0.75	1.2	21.4	579.7
3	7.5	10.0	11.05	120	9.0	Sand	1.0	0.75	1.2	12.4	601.1
4	10.0	15.0	16.00	120	8.2	Sand	1.0	0.75	1.2	18.0	663.0
5	15.0	20.0	27.30	123	8.5	Sand	1.0	0.85	1.2	34.8	779.3
6	20.0	25.0	26.00	120	8.5	Clay	1.0	0.95	1.2	37.1	907.2
7	25.0	30.0	21.45	117	11.5	Clay	1.0	0.95	1.2	30.6	899.9
8	30.0	35.0	43.00	122	8.8	Sand	1.0	1.00	1.2	64.5	968.9
9	3.0	40.0	65.00	120	8.6	Sand	1.0	1.00	1.2	97.5	1040.3
10	40.0	45.0	100.00	122	8.8	Sand	1.0	1.00	1.2	150.0	1120.1
11	45.0	50.0	100.00	122	8.8	Sand	1.0	1.00	1.2	150.0	1151.6
12	50.0	55.0	65.00	122	8.8	Sand	1.0	1.00	1.2	97.5	1156.5
13	55.0	60.0	100.00	122	8.8	Sand	1.0	1.00	1.2	150.0	1244.6
14	60.0	65.0	100.00	122	8.8	Sand	1.0	1.00	1.2	150.0	1275.9
15	65.0	70.0	100.00	122	8.8	Sand	1.0	1.00	1.2	150.0	1335.7
16	70.0	75.0	100.00	122	8.8	Sand	1.0	1.00	1.2	150.0	1371.3
										Avg.$\overline{v_s}$ (ft/s)	994.7
										Site Class	**D, CD**

APPENDIX B

Field Exploratory Boring Logs

KEY TO LOGS

SOILS CLASSIFICATION

MAJOR DIVISIONS			GRAPHIC LOG	USCS SYMBOL	TYPICAL NAMES
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVELS MORE THAN 50% OF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS LESS THAN 5% FINES		GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES MORE THAN 12% FINES		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SANDS 50% OR MORE OF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS LESS THAN 5% FINES		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES MORE THAN 12% FINES		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRAINED SOILS 50% OR MORE OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS LIQUID LIMIT IS LESS THAN 50			ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT IS 50 OR MORE			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR GRAVELLY ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT AND OTHER HIGHLY ORGANIC SOILS

GRAIN SIZES

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

KEY TO LOGS (continued)

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

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

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

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

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

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Geotechnical Log - Borehole

B-1

UTM	: 11S	Drill Rig	: 6 Inch Hollow Stem Auger	Job Number	: 25-3846
Latitude	: 34.18519	Driller Supplier	: OneWay Drilling	Client	: Pasadena USD
Longitude	: -118.13459	Logged By	: Albert Buffet	Project	: Altadena Arts Magnet School Campus Improvements
Ground Elevation	: 1228.91 (Ft)	Reviewed By	:	Location	: 743 E Calaveras St, Altadena, CA 91001, USA
Total Depth	: 50.4 Ft BGL	Date	: 12/04/2025	Loc Comment	:

Depth (ft)	Samples: Bulk	Samples: Mod Cal Sample	Samples: SPT Sample	Blows per 6"	Graphic Log	Soil Origin	Classification Code	Material Description	Fines (%)	Moisture (%)	Dry Density (pcf)	Other
0.25						Non-Soil	ASP	Non-Soil - Asphalt 3 inches of AC (no base)				
1.0						Fill	CL	SANDY LEAN CLAY WITH GRAVEL CL: fine to medium grained sand, with medium sized gravel, stiff, dark brown, trace of construction debris.				
1.5												
2.0						Fill	CL	SANDY LEAN CLAY CL: stiff, trace fine sized gravel, moist, brown, trace of construction debris.				
2.5												
3.0				Mod Cal 7, 8, 9, (N = 11)		Fill	CL	SANDY LEAN CLAY CL: fine grained sand, stiff, trace fine sized gravel, moist, brown, lumps of clay with sand, trace of construction debris.		7.8	120	
4.0												
5												
5.0				SPT 7, 8, 11, (N = 19)		Fill	SC	CLAYEY SAND SC: fine grained sand, medium dense, trace fine sized gravel, moist, brown.		9.1		
6.0												
7.0												
7.5												
8.0				Mod Cal 9, 8, 9, (N = 11)		Fill	SC	As above.		9.0	120	
9.0												
10												
10.0				SPT 4, 6, 10, (N = 16)		Alluvium	SC	CLAYEY SAND SC: fine to medium grained sand, medium dense, moist, trace fine sized gravel, dark yellowish brown.	26	8.2		
11.0												
12.0												
13												
13.0						Alluvium	SC	CLAYEY SAND SC: fine to medium grained sand, medium dense, moist, trace fine sized gravel, dark brown, layers of silty sand and pockets of light yellowish brown sand with silt.				
14.0												
15.0				Mod Cal 12, 16, 26, (N = 27)						8.5	123	
16.0												
17.0												
18.0												
19.0												

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Geotechnical Log - Borehole

B-1

UTM	: 11S	Drill Rig	: 6 Inch Hollow Stem Auger	Job Number	: 25-3846
Latitude	: 34.18519	Driller Supplier	: OneWay Drilling	Client	: Pasadena USD
Longitude	: -118.13459	Logged By	: Albert Buffet	Project	: Altadena Arts Magnet School Campus Improvements
Ground Elevation	: 1228.91 (Ft)	Reviewed By	:	Location	: 743 E Calaveras St, Altadena, CA 91001, USA
Total Depth	: 50.4 Ft BGL	Date	: 12/04/2025	Loc Comment	:

Depth (ft)	Samples: Bulk	Samples: Mod Cal Sample	Samples: SPT Sample	Blows per 6"	Graphic Log	Soil Origin	Classification Code	Material Description	Fines (%)	Moisture (%)	Dry Density (pcf)	Other
20												
21.0				SPT 17, 12, 14, (N = 26)		Alluvium	SC	CLAYEY SAND SC: fine grained sand, medium dense, moist, dark yellowish brown to light yellowish brown, layers of sandy clay with gravel, small pockets of silty sand.		8.5		
22.0												
23.0												
24												
24.0						Alluvium	CL	SANDY LEAN CLAY CL: very stiff, fine grained sand, low plasticity, moist, dark yellowish brown to light brown, layers of clayey sand.				
25.0				Mod Cal 23, 15, 18, (N = 21)						11.5	117	
26.0												
27.0												
28.0												
29												
29.0						Alluvium	SM	SILTY SAND SM: fine to medium grained, medium dense to dense, moist, dark yellowish brown.				
30.0				SPT 16, 18, 25, (N = 43)						8.8		
31.0												
32.0												
33.0												
34.0												
35												
35.0				Mod Cal 31, 50/6in, (N = > 50)		Alluvium	SP-SM	POORLY GRADED SAND WITH SILT SP-SM: fine to medium grained, very dense, moist, dark yellowish brown.				
36.0												
37.0												
38												
38.0						Alluvium	SM	SILTY SAND SM: fine to medium grained, very dense, moist, light yellowish brown, layers of sand with silt.				
39.0												

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Geotechnical Log - Borehole

B-1

UTM	: 11S	Drill Rig	: 6 Inch Hollow Stem Auger	Job Number	: 25-3846
Latitude	: 34.18519	Driller Supplier	: OneWay Drilling	Client	: Pasadena USD
Longitude	: -118.13459	Logged By	: Albert Buffet	Project	: Altadena Arts Magnet School Campus Improvements
Ground Elevation	: 1228.91 (Ft)	Reviewed By	:	Location	: 743 E Calaveras St, Altadena, CA 91001, USA
Total Depth	: 50.4 Ft BGL	Date	: 12/04/2025	Loc Comment	:

Depth (ft)	Samples: Bulk	Samples: Mod Cal Sample	Samples: SPT Sample	Blows per 6"	Graphic Log	Soil Origin	Classification Code	Material Description	Fines (%)	Moisture (%)	Dry Density (pcf)	Other
41.0				SPT 33, 50/6in, (N =)				SILTY SAND SM: fine to medium grained, very dense, moist, light yellowish brown, layers of sand with silt. (continued)				
42.0												
43.0												
44.0												
45.0				SPT 31, 50/4in, (N =)		Alluvium	SM					
46.0												
47.0												
48.0												
49.0												
50.0				Mod Cal 50/5in, (N = > 50)								
								B-1 Terminated at 50.4 Ft (No Groundwater Encountered)				

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Geotechnical Log - Borehole

B-2

UTM	: 11S	Drill Rig	: 6 Inch Hollow Stem Auger	Job Number	: 25-3846
Latitude	: 34.18562	Driller Supplier	: OneWay Drilling	Client	: Pasadena USD
Longitude	: -118.13470	Logged By	: Albert Buffet	Project	: Altadena Arts Magnet School Campus Improvements
Ground Elevation	: 1231.18 (Ft)	Reviewed By	:	Location	: 743 E Calaveras St, Altadena, CA 91001, USA
Total Depth	: 21.5 Ft BGL	Date	: 12/04/2025	Loc Comment	:

Depth (ft)	Samples: Bulk	Samples: Mod Cal Sample	Samples: SPT Sample	Blows per 6"	Graphic Log	Soil Origin	Classification Code	Material Description	Fines (%)	Moisture (%)	Dry Density (pcf)	Other
0.5						Non-Soil	ASP	Non-Soil - Asphalt 6 inches of AC (no base)				
1.0						Fill	SM	SILTY SAND SM: fine to medium grained, medium dense, moist, dark yellowish brown.				
2.0						Fill	SP-SM	POORLY GRADED SAND WITH SILT SP-SM: medium dense, trace fine sized gravel, moist, dark yellowish brown, pockets of clayey sand and silty sand.				
3.0				SPT 7, 6, 6, (N = 12)						4.1		
4.0												
5.0				Mod Cal 4, 6, 8, (N = 9)					8	4.3	117	
6.0												
7.0												
8.0				SPT 10, 8, 8, (N = 16)								
8.5						Alluvium	CL	SANDY LEAN CLAY CL: very stiff, fine grained sand, low plasticity, moist, brown.				
9.0												
10.0				Mod Cal 10, 17, 25, (N = 27)		Alluvium	SC	CLAYEY SAND SC: fine grained, medium dense, moist, trace fine sized gravel, dark yellowish brown, pockets of clayey sand.	39	11.2	121	
11.0												
12.0												
13.0						Alluvium	SM	SILTY SAND SM: fine to medium grained sand, medium dense to dense, moist, light yellowish brown.				
14.0												
15.0				SPT 20, 18, 19, (N = 37)						5.8		
16.0												
17.0												
18.0						Alluvium	SM	SILTY SAND SM: fine grained, dense, moist, dark yellowish brown.				
19.0												

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Geotechnical Log - Borehole

B-2

UTM	: 11S	Drill Rig	: 6 Inch Hollow Stem Auger	Job Number	: 25-3846
Latitude	: 34.18562	Driller Supplier	: OneWay Drilling	Client	: Pasadena USD
Longitude	: -118.13470	Logged By	: Albert Buffet	Project	: Altadena Arts Magnet School Campus Improvements
Ground Elevation	: 1231.18 (Ft)	Reviewed By	:	Location	: 743 E Calaveras St, Altadena, CA 91001, USA
Total Depth	: 21.5 Ft BGL	Date	: 12/04/2025	Loc Comment	:

Depth (ft)	Samples: Bulk	Samples: Mod Cal Sample	Samples: SPT Sample	Blows per 6"	Graphic Log	Soil Origin	Classification Code	Material Description	Fines (%)	Moisture (%)	Dry Density (pcf)	Other
21.0		■		Mod Cal 15, 21, 34, (N = 35)		Alluvium	SM	SILTY SAND SM: fine grained sand, dense, moist, dark yellowish brown. (continued)	35	11.5	122	
								B-2 Terminated at 21.5 Ft (No Groundwater Encountered)				

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Geotechnical Log - Borehole

B-3

UTM	: 11S	Drill Rig	: 6 Inch Hollow Stem Auger	Job Number	: 25-3846
Latitude	: 34.18551	Driller Supplier	: OneWay Drilling	Client	: Pasadena USD
Longitude	: -118.13518	Logged By	: Albert Buffet	Project	: Altadena Arts Magnet School Campus Improvements
Ground Elevation	: 1228.75 (Ft)	Reviewed By	:	Location	: 743 E Calaveras St, Altadena, CA 91001, USA
Total Depth	: 21.5 Ft BGL	Date	: 12/04/2025	Loc Comment	:

Depth (ft)	Samples: Bulk	Samples: Mod Cal Sample	Samples: SPT Sample	Blows per 6"	Graphic Log	Soil Origin	Classification Code	Material Description	Fines (%)	Moisture (%)	Dry Density (pcf)	Other
0.37						Non-Soil	ASP	Non-Soil - Asphalt 4.5 inches of AC (no base)				
1.0						Fill	CL	SANDY LEAN CLAY CL: fine grained sand, medium stiff, moist, dark yellowish brown, trace of construction debris.				
2.0	2											
3.0				SPT 7, 7, 7, (N = 14)		Fill	SC	CLAYEY SAND SC: fine grained, medium dense, moist, brown.	36	7.4		
4.0												
5.0	5											
6.0	6			Mod Cal 14, 16, 20, (N = 23)		Fill	CL	SANDY LEAN CLAY CL: fine grained sand, very stiff, moist, brown, pockets of clayey sand.				
7.0						Fill	SC	CLAYEY SAND SC: fine to medium grained, medium dense, moist, brown to dark yellowish brown.		8.7	113	Consolidation
8.0				SPT 9, 9, 11, (N = 20)					44	9.1		
9.0	9											
10.0						Alluvium	CL	SANDY LEAN CLAY CL: very stiff, fine grained sand, low plasticity, moist, brown.				
11.0				Mod Cal 14, 15, 18, (N = 21)						11.3	120	
12.0												
13.0	13											
14.0						Alluvium	SM	SILTY SAND SM: fine to medium grained, dense to very dense, moist, trace fine sized gravel, light yellowish brown, thin layers of clayey sand.				
15.0				SPT 21, 22, 26, (N = 48)						5.4		
16.0												
17.0												
18.0	18											
19.0						Alluvium	SM	SILTY SAND SM: fine to medium grained, very dense, moist, trace fine sized gravel, light yellowish brown.				

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Geotechnical Log - Borehole

B-3

UTM	: 11S	Drill Rig	: 6 Inch Hollow Stem Auger	Job Number	: 25-3846
Latitude	: 34.18551	Driller Supplier	: OneWay Drilling	Client	: Pasadena USD
Longitude	: -118.13518	Logged By	: Albert Buffet	Project	: Altadena Arts Magnet School Campus Improvements
Ground Elevation	: 1228.75 (Ft)	Reviewed By	:	Location	: 743 E Calaveras St, Altadena, CA 91001, USA
Total Depth	: 21.5 Ft BGL	Date	: 12/04/2025	Loc Comment	:

Depth (ft)	Samples: Bulk	Samples: Mod Cal Sample	Samples: SPT Sample	Blows per 6"	Graphic Log	Soil Origin	Classification Code	Material Description	Fines (%)	Moisture (%)	Dry Density (pcf)	Other
21.0		■		Mod Cal 25, 37, 40, (N = 50)		Alluvium	SM	SILTY SAND SM: fine to medium grained, very dense, moist, trace fine sized gravel, light yellowish brown. (continued)				
								B-3 Terminated at 21.5 Ft (No Groundwater Encountered)				

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Geotechnical Log - Borehole

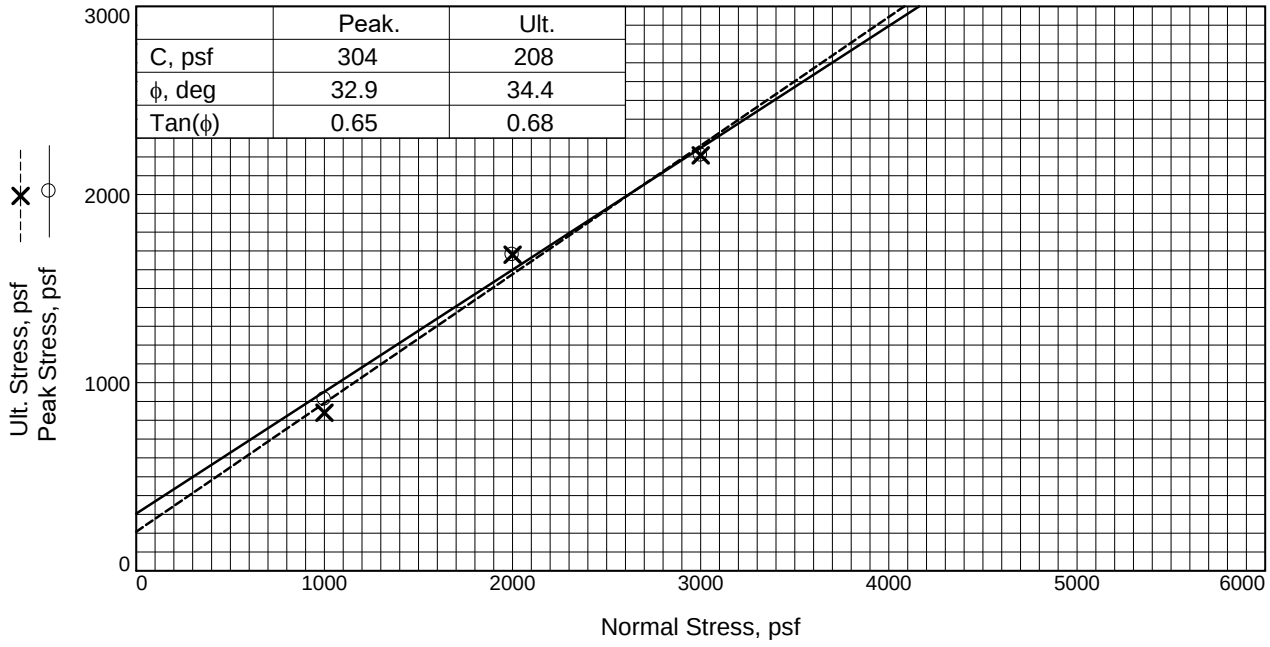
B-4

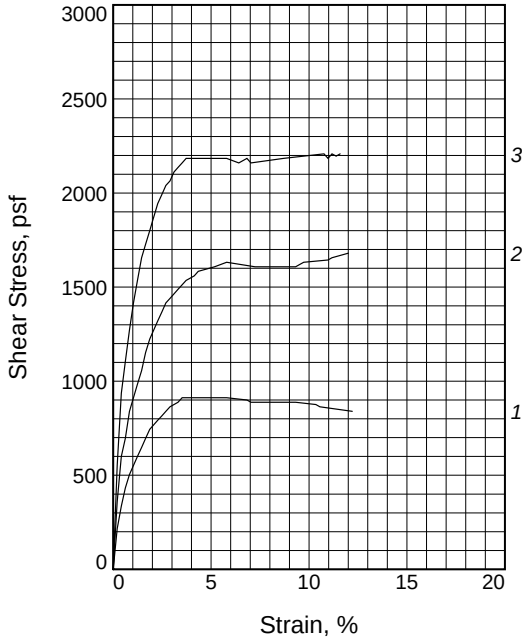
UTM	: 11S	Drill Rig	: 6 Inch Hollow Stem Auger	Job Number	: 25-3846
Latitude	: 34.18586	Driller Supplier	: OneWay Drilling	Client	: Pasadena USD
Longitude	: -118.13540	Logged By	: Albert Buffet	Project	: Altadena Arts Magnet School Campus Improvements
Ground Elevation	: 1231.74 (Ft)	Reviewed By	:	Location	: 743 E Calaveras St, Altadena, CA 91001, USA
Total Depth	: 16.5 Ft BGL	Date	: 12/04/2025	Loc Comment	:

Depth (ft)	Samples: Bulk	Samples: Mod Cal Sample	Samples: SPT Sample	Blows per 6"	Graphic Log	Soil Origin	Classification Code	Material Description	Fines (%)	Moisture (%)	Dry Density (pcf)	Other
0.33						Non-Soil	ASP	Non-Soil - Asphalt 4 inches of AC (no base)				
1.0						Fill	CL	SANDY LEAN CLAY CL: fine grained sand, soft to medium stiff, trace fine sized gravel, very moist to moist, brown.				Corrosivity EI < 20
2.5				Mod Cal 2, 5, 9, (N = 9)		Fill	CL	SANDY LEAN CLAY CL: fine to medium grained sand, stiff, very moist to moist, brown.		15.0	114	Direct Shear
5				SPT 4, 4, 6, (N = 10)		Alluvium	CL	SANDY LEAN CLAY CL: stiff, fine grained sand, low plasticity, moist, brown, pockets of very moist clay.	50	15.9		
9				Mod Cal 9, 12, 14, (N = 16)								
10.0				SPT 8, 9, 11, (N = 20)		Alluvium	CL	SANDY LEAN CLAY CL: stiff to very stiff, fine grained sand, low plasticity, moist, brown mottled with dark yellowish brown, layers of silty sand.		14.3	114	Consolidation
14										12.1		
15.0				Mod Cal 17, 18, 21, (N = 25)		Alluvium	SC	CLAYEY SAND SC: fine grained, medium dense, moist, light yellowish brown, layers of fine sandy clay.		7.2	131	
								B-4 Terminated at 16.5 Ft (No Groundwater Encountered)				

APPENDIX C

Laboratory Test Results and Calculations





Sample No.		1	2	3
Initial	Water Content, %	14.8	15.3	14.9
	Dry Density, pcf	113.9	113.4	114.7
	Saturation, %	86.8	88.5	89.4
	Void Ratio	0.4521	0.4585	0.4426
	Diameter, in.	2.42	2.42	2.42
	Height, in.	1.00	1.00	1.00
At Test	Water Content, %	14.2	14.4	14.0
	Dry Density, pcf	113.9	113.4	114.7
	Saturation, %	83.4	83.4	83.7
	Void Ratio	0.4521	0.4585	0.4426
	Diameter, in.	2.42	2.42	2.42
	Height, in.	1.00	1.00	1.00
Normal Stress, psf		1000	2000	3000
Fail. Stress, psf		912	1680	2208
Strain, %		3.5	12.0	11.6
Ult. Stress, psf		840	1680	2208
Strain, %		12.2	12.0	11.6
Strain rate, in./min.		0.001	0.001	0.001

Sample Type: ring
Description: CL, fine to medium sand, red/brn

Assumed Specific Gravity= 2.65
Remarks:

Figure _____

Client: PUSD

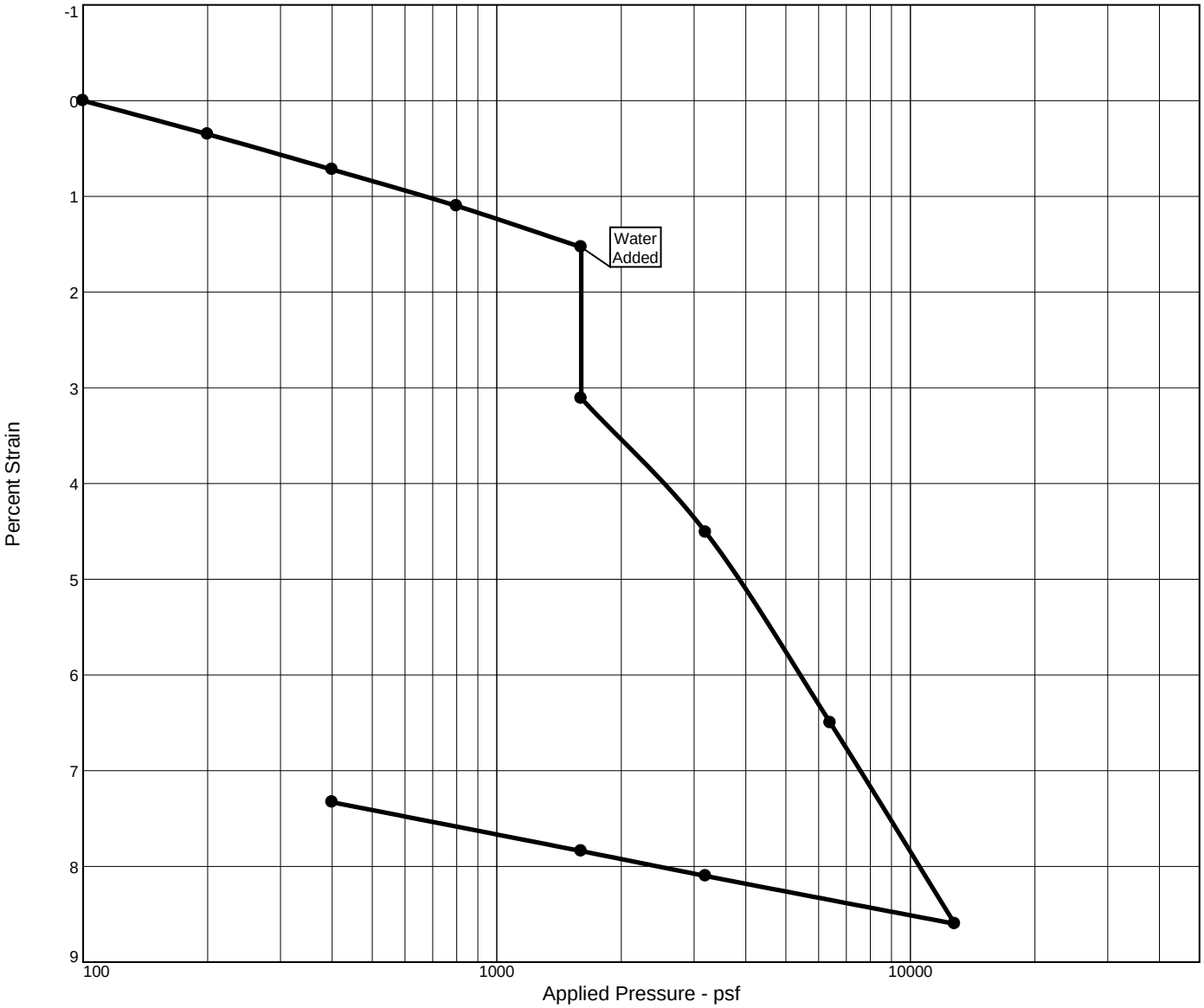
Project: AltaDena Arts

Location: AltaDena Arts
Sample Number: B4 **Depth:** 3.5'
Proj. No.: 25-3846 **Date Sampled:** 12-4-25

DIRECT SHEAR TEST REPORT
Koury Engineering & Testing, Inc.
Chino, CA

Tested By: kb

CONSOLIDATION TEST REPORT



Natural Sat.	Natural Moist.	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	P_c (psf)	C_c	C_s	Swell Press. (psf)	Clpse. %	e_o
49.7 %	8.7 %	113.2			2.65		3420	0.10	0.01		1.6	0.462

MATERIAL DESCRIPTION	USCS	AASHTO
SC, Clayey Sand, fine to medium, red/brn		

Project No. 25-3846 **Client:** PUSD

Project: AltaDena Arts

Location: AltaDena Arts **Depth:** 6' **Sample Number:** B3

Koury Engineering & Testing, Inc.

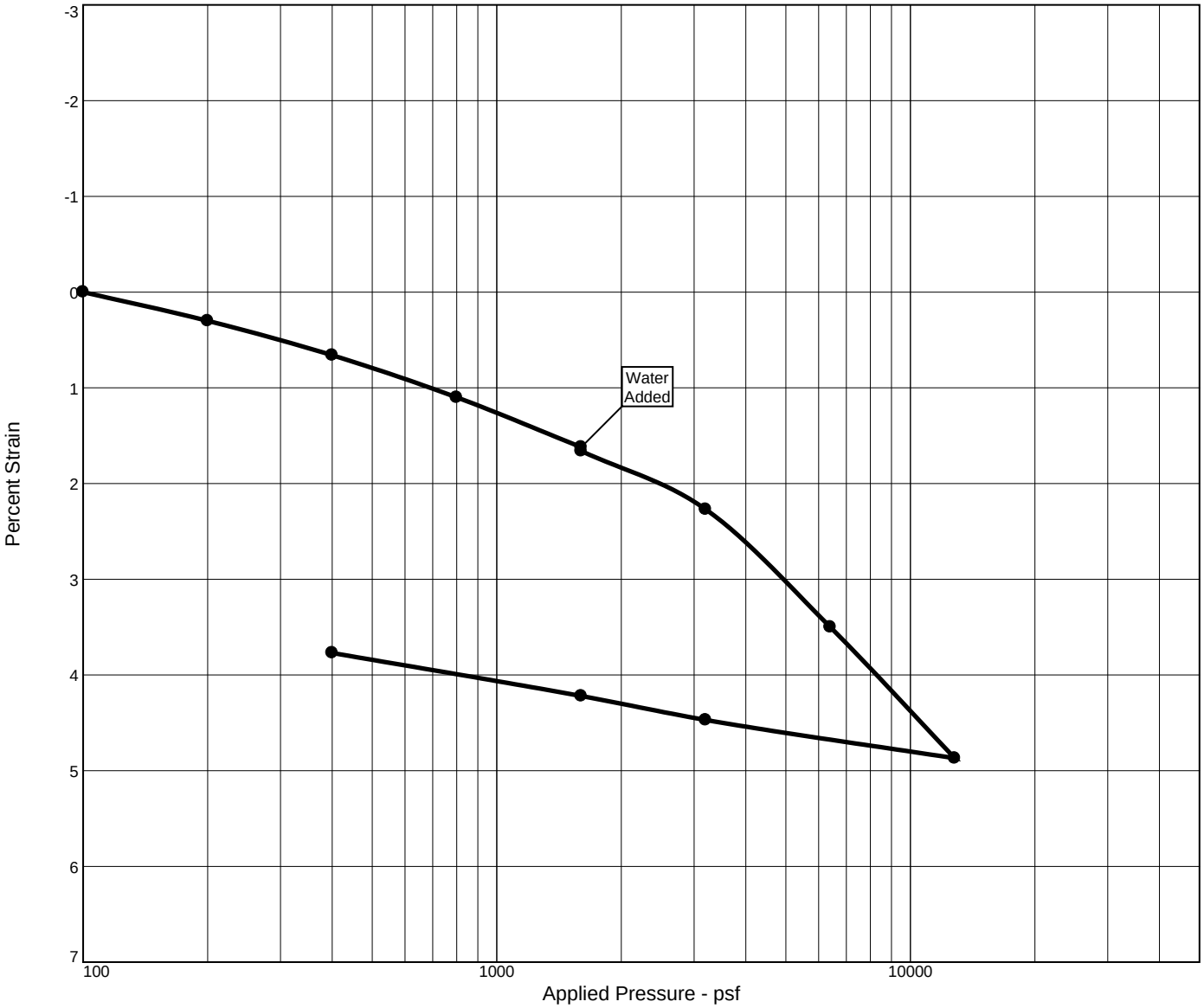
Chino, CA

Remarks:

Figure

Tested By: kb

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	P_c (psf)	C_c	C_s	Swell Press. (psf)	Clpse. %	e_o
Sat.	Moist.											
83.5 %	14.3 %	113.8			2.65		3425	0.07	0.01		0.0	0.454

MATERIAL DESCRIPTION	USCS	AASHTO
CL, Sandy Clay, fine to medium sand, red/brn		

Project No. 25-3846 **Client:** PUSD

Project: AltaDena Arts

Location: AltaDena Arts **Depth:** 8.5' **Sample Number:** B4

Koury Engineering & Testing, Inc.

Chino, CA

Remarks:

Figure

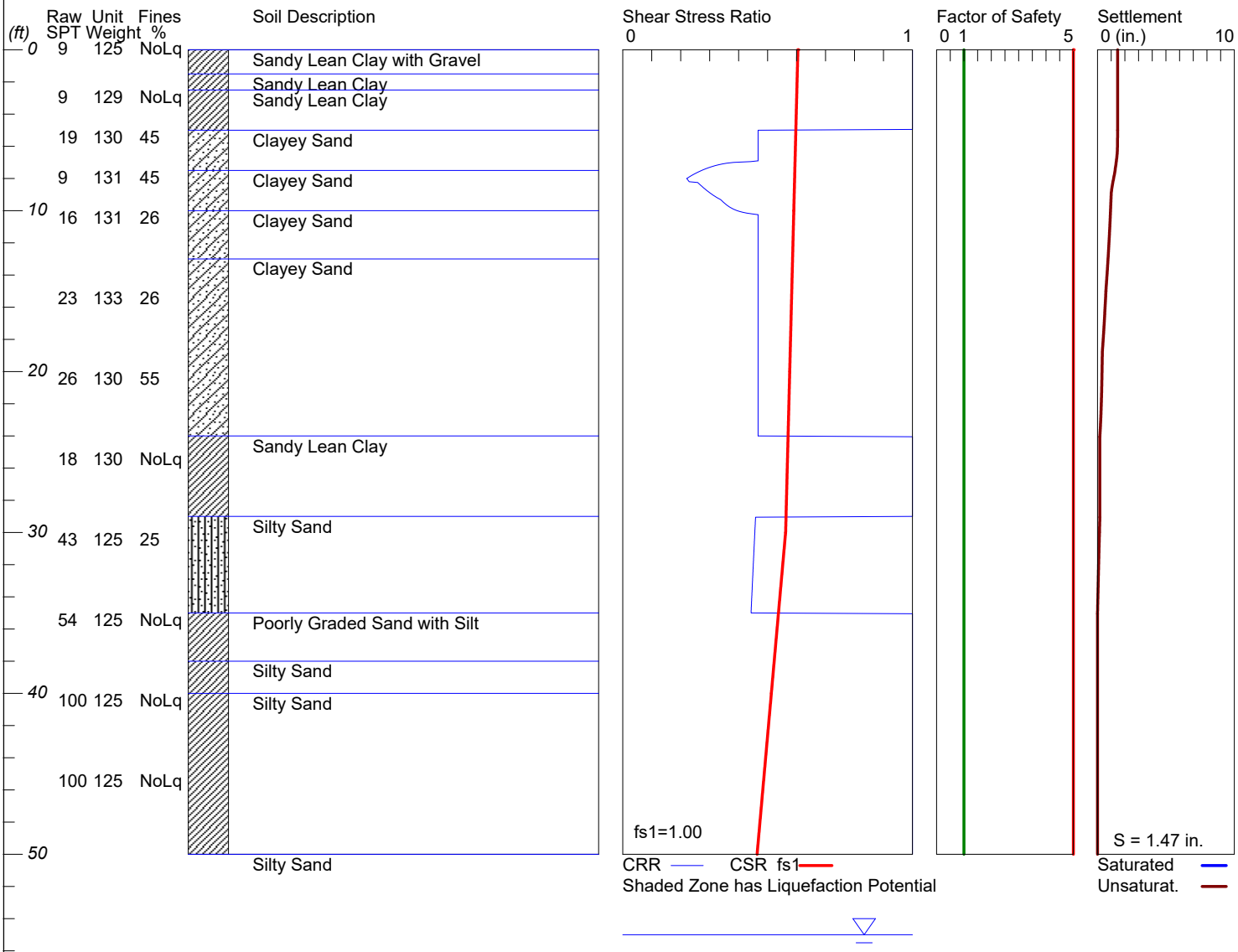
Tested By: K.B.

Dry Seismic Settlement

Altadena Arts Magnet

Hole No.=B-1 Water Depth=55 ft

Magnitude=7.7
Acceleration=0.93g



****
LIQUEFACTION ANALYSIS SUMMARY

****
Font: Courier New, Regular, Size 8 is recommended for this report.
Licensed to , 1/22/2026 6:45:04 AM

Input File Name: P:\2025\25-3846 PUSD - Geotechnical Services for Altadena Arts Magnet School Campus Improvements Project SI\Soils Folder\Calculations\Settlement\Seismic Settlement\Revised\B-1 Dry Set
Title: Altadena Arts Magnet
Subtitle: 25-3846

Surface Elev.=
Hole No.=B-1
Depth of Hole= 50.00 ft
Water Table during Earthquake= 55.00 ft
Water Table during In-Situ Testing= 55.00 ft
Max. Acceleration= 0.93 g
Earthquake Magnitude= 7.70

Input Data:
Surface Elev.=
Hole No.=B-1
Depth of Hole=50.00 ft
Water Table during Earthquake= 55.00 ft
Water Table during In-Situ Testing= 55.00 ft
Max. Acceleration=0.93 g
Earthquake Magnitude=7.70
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. SPT or BPT Calculation.
2. Settlement Analysis Method: Tokimatsu/Seed
3. Fines Correction for Liquefaction: Stark/Olson et al.*
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
6. Hammer Energy Ratio, Ce = 1.25
7. Borehole Diameter, Cb= 1
8. Sampling Method, Cs= 1.2
9. User request factor of safety (apply to CSR) , User= 1
   Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	SPT	gamma pcf	Fines %
0.00	9.00	125.00	NoLiq
3.00	9.00	129.00	NoLiq
5.50	19.00	130.00	45.00
8.00	9.00	131.00	45.00
10.50	16.00	131.00	26.00
15.50	23.00	133.00	26.00
20.50	26.00	130.00	55.00
25.50	18.00	130.00	NoLiq
30.50	43.00	125.00	25.00
35.50	54.00	125.00	NoLiq
40.50	100.00	125.00	NoLiq
45.50	100.00	125.00	NoLiq

Output Results:

Settlement of Saturated Sands=0.00 in.
Settlement of Unsaturated Sands=1.47 in.
Total Settlement of Saturated and Unsaturated Sands=1.47 in.
Differential Settlement=0.735 to 0.971 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.00	2.00	0.60	5.00	0.00	1.47	1.47
0.05	2.00	0.60	5.00	0.00	1.47	1.47
0.10	2.00	0.60	5.00	0.00	1.47	1.47
0.15	2.00	0.60	5.00	0.00	1.47	1.47
0.20	2.00	0.60	5.00	0.00	1.47	1.47
0.25	2.00	0.60	5.00	0.00	1.47	1.47
0.30	2.00	0.60	5.00	0.00	1.47	1.47
0.35	2.00	0.60	5.00	0.00	1.47	1.47
0.40	2.00	0.60	5.00	0.00	1.47	1.47
0.45	2.00	0.60	5.00	0.00	1.47	1.47
0.50	2.00	0.60	5.00	0.00	1.47	1.47
0.55	2.00	0.60	5.00	0.00	1.47	1.47
0.60	2.00	0.60	5.00	0.00	1.47	1.47
0.65	2.00	0.60	5.00	0.00	1.47	1.47
0.70	2.00	0.60	5.00	0.00	1.47	1.47
0.75	2.00	0.60	5.00	0.00	1.47	1.47
0.80	2.00	0.60	5.00	0.00	1.47	1.47
0.85	2.00	0.60	5.00	0.00	1.47	1.47
0.90	2.00	0.60	5.00	0.00	1.47	1.47
0.95	2.00	0.60	5.00	0.00	1.47	1.47
1.00	2.00	0.60	5.00	0.00	1.47	1.47
1.05	2.00	0.60	5.00	0.00	1.47	1.47
1.10	2.00	0.60	5.00	0.00	1.47	1.47

1.15	2.00	0.60	5.00	0.00	1.47	1.47
1.20	2.00	0.60	5.00	0.00	1.47	1.47
1.25	2.00	0.60	5.00	0.00	1.47	1.47
1.30	2.00	0.60	5.00	0.00	1.47	1.47
1.35	2.00	0.60	5.00	0.00	1.47	1.47
1.40	2.00	0.60	5.00	0.00	1.47	1.47
1.45	2.00	0.60	5.00	0.00	1.47	1.47
1.50	2.00	0.60	5.00	0.00	1.47	1.47
1.55	2.00	0.60	5.00	0.00	1.47	1.47
1.60	2.00	0.60	5.00	0.00	1.47	1.47
1.65	2.00	0.60	5.00	0.00	1.47	1.47
1.70	2.00	0.60	5.00	0.00	1.47	1.47
1.75	2.00	0.60	5.00	0.00	1.47	1.47
1.80	2.00	0.60	5.00	0.00	1.47	1.47
1.85	2.00	0.60	5.00	0.00	1.47	1.47
1.90	2.00	0.60	5.00	0.00	1.47	1.47
1.95	2.00	0.60	5.00	0.00	1.47	1.47
2.00	2.00	0.60	5.00	0.00	1.47	1.47
2.05	2.00	0.60	5.00	0.00	1.47	1.47
2.10	2.00	0.60	5.00	0.00	1.47	1.47
2.15	2.00	0.60	5.00	0.00	1.47	1.47
2.20	2.00	0.60	5.00	0.00	1.47	1.47
2.25	2.00	0.60	5.00	0.00	1.47	1.47
2.30	2.00	0.60	5.00	0.00	1.47	1.47
2.35	2.00	0.60	5.00	0.00	1.47	1.47
2.40	2.00	0.60	5.00	0.00	1.47	1.47
2.45	2.00	0.60	5.00	0.00	1.47	1.47
2.50	2.00	0.60	5.00	0.00	1.47	1.47
2.55	2.00	0.60	5.00	0.00	1.47	1.47
2.60	2.00	0.60	5.00	0.00	1.47	1.47
2.65	2.00	0.60	5.00	0.00	1.47	1.47
2.70	2.00	0.60	5.00	0.00	1.47	1.47
2.75	2.00	0.60	5.00	0.00	1.47	1.47
2.80	2.00	0.60	5.00	0.00	1.47	1.47
2.85	2.00	0.60	5.00	0.00	1.47	1.47
2.90	2.00	0.60	5.00	0.00	1.47	1.47
2.95	2.00	0.60	5.00	0.00	1.47	1.47
3.00	2.00	0.60	5.00	0.00	1.47	1.47
3.05	2.00	0.60	5.00	0.00	1.47	1.47
3.10	2.00	0.60	5.00	0.00	1.47	1.47
3.15	2.00	0.60	5.00	0.00	1.47	1.47
3.20	2.00	0.60	5.00	0.00	1.47	1.47
3.25	2.00	0.60	5.00	0.00	1.47	1.47
3.30	2.00	0.60	5.00	0.00	1.47	1.47
3.35	2.00	0.60	5.00	0.00	1.47	1.47
3.40	2.00	0.60	5.00	0.00	1.47	1.47
3.45	2.00	0.60	5.00	0.00	1.47	1.47
3.50	2.00	0.60	5.00	0.00	1.47	1.47
3.55	2.00	0.60	5.00	0.00	1.47	1.47
3.60	2.00	0.60	5.00	0.00	1.47	1.47

3.65	2.00	0.60	5.00	0.00	1.47	1.47
3.70	2.00	0.60	5.00	0.00	1.47	1.47
3.75	2.00	0.60	5.00	0.00	1.47	1.47
3.80	2.00	0.60	5.00	0.00	1.47	1.47
3.85	2.00	0.60	5.00	0.00	1.47	1.47
3.90	2.00	0.60	5.00	0.00	1.47	1.47
3.95	2.00	0.60	5.00	0.00	1.47	1.47
4.00	2.00	0.60	5.00	0.00	1.47	1.47
4.05	2.00	0.60	5.00	0.00	1.47	1.47
4.10	2.00	0.60	5.00	0.00	1.47	1.47
4.15	2.00	0.60	5.00	0.00	1.47	1.47
4.20	2.00	0.60	5.00	0.00	1.47	1.47
4.25	2.00	0.60	5.00	0.00	1.47	1.47
4.30	2.00	0.60	5.00	0.00	1.47	1.47
4.35	2.00	0.60	5.00	0.00	1.47	1.47
4.40	2.00	0.60	5.00	0.00	1.47	1.47
4.45	2.00	0.60	5.00	0.00	1.47	1.47
4.50	2.00	0.60	5.00	0.00	1.47	1.47
4.55	2.00	0.60	5.00	0.00	1.47	1.47
4.60	2.00	0.60	5.00	0.00	1.47	1.47
4.65	2.00	0.60	5.00	0.00	1.47	1.47
4.70	2.00	0.60	5.00	0.00	1.47	1.47
4.75	2.00	0.60	5.00	0.00	1.47	1.47
4.80	2.00	0.60	5.00	0.00	1.47	1.47
4.85	2.00	0.60	5.00	0.00	1.47	1.47
4.90	2.00	0.60	5.00	0.00	1.47	1.47
4.95	2.00	0.60	5.00	0.00	1.47	1.47
5.00	0.47	0.60	5.00	0.00	1.47	1.47
5.05	0.47	0.60	5.00	0.00	1.47	1.47
5.10	0.47	0.60	5.00	0.00	1.47	1.47
5.15	0.47	0.60	5.00	0.00	1.47	1.47
5.20	0.47	0.60	5.00	0.00	1.47	1.47
5.25	0.47	0.60	5.00	0.00	1.47	1.47
5.30	0.47	0.60	5.00	0.00	1.47	1.47
5.35	0.47	0.60	5.00	0.00	1.47	1.47
5.40	0.47	0.60	5.00	0.00	1.47	1.47
5.45	0.47	0.60	5.00	0.00	1.47	1.47
5.50	0.47	0.60	5.00	0.00	1.47	1.47
5.55	0.47	0.60	5.00	0.00	1.46	1.46
5.60	0.47	0.60	5.00	0.00	1.46	1.46
5.65	0.47	0.60	5.00	0.00	1.46	1.46
5.70	0.47	0.60	5.00	0.00	1.46	1.46
5.75	0.47	0.60	5.00	0.00	1.46	1.46
5.80	0.47	0.60	5.00	0.00	1.46	1.46
5.85	0.47	0.60	5.00	0.00	1.46	1.46
5.90	0.47	0.60	5.00	0.00	1.46	1.46
5.95	0.47	0.60	5.00	0.00	1.46	1.46
6.00	0.47	0.60	5.00	0.00	1.46	1.46
6.05	0.47	0.60	5.00	0.00	1.46	1.46
6.10	0.47	0.60	5.00	0.00	1.46	1.46

6.15	0.47	0.60	5.00	0.00	1.45	1.45
6.20	0.47	0.60	5.00	0.00	1.45	1.45
6.25	0.47	0.60	5.00	0.00	1.45	1.45
6.30	0.47	0.60	5.00	0.00	1.45	1.45
6.35	0.47	0.60	5.00	0.00	1.44	1.44
6.40	0.47	0.60	5.00	0.00	1.44	1.44
6.45	0.47	0.60	5.00	0.00	1.44	1.44
6.50	0.47	0.60	5.00	0.00	1.43	1.43
6.55	0.47	0.60	5.00	0.00	1.43	1.43
6.60	0.47	0.60	5.00	0.00	1.42	1.42
6.65	0.47	0.60	5.00	0.00	1.41	1.41
6.70	0.47	0.60	5.00	0.00	1.41	1.41
6.75	0.47	0.59	5.00	0.00	1.40	1.40
6.80	0.47	0.59	5.00	0.00	1.39	1.39
6.85	0.47	0.59	5.00	0.00	1.39	1.39
6.90	0.47	0.59	5.00	0.00	1.38	1.38
6.95	0.44	0.59	5.00	0.00	1.37	1.37
7.00	0.38	0.59	5.00	0.00	1.36	1.36
7.05	0.36	0.59	5.00	0.00	1.36	1.36
7.10	0.34	0.59	5.00	0.00	1.35	1.35
7.15	0.33	0.59	5.00	0.00	1.34	1.34
7.20	0.32	0.59	5.00	0.00	1.33	1.33
7.25	0.31	0.59	5.00	0.00	1.32	1.32
7.30	0.30	0.59	5.00	0.00	1.32	1.32
7.35	0.29	0.59	5.00	0.00	1.31	1.31
7.40	0.29	0.59	5.00	0.00	1.30	1.30
7.45	0.28	0.59	5.00	0.00	1.29	1.29
7.50	0.27	0.59	5.00	0.00	1.28	1.28
7.55	0.27	0.59	5.00	0.00	1.27	1.27
7.60	0.26	0.59	5.00	0.00	1.26	1.26
7.65	0.25	0.59	5.00	0.00	1.25	1.25
7.70	0.25	0.59	5.00	0.00	1.24	1.24
7.75	0.24	0.59	5.00	0.00	1.23	1.23
7.80	0.24	0.59	5.00	0.00	1.22	1.22
7.85	0.23	0.59	5.00	0.00	1.21	1.21
7.90	0.23	0.59	5.00	0.00	1.20	1.20
7.95	0.23	0.59	5.00	0.00	1.19	1.19
8.00	0.22	0.59	5.00	0.00	1.18	1.18
8.05	0.22	0.59	5.00	0.00	1.16	1.16
8.10	0.23	0.59	5.00	0.00	1.15	1.15
8.15	0.23	0.59	5.00	0.00	1.14	1.14
8.20	0.23	0.59	5.00	0.00	1.13	1.13
8.25	0.26	0.59	5.00	0.00	1.12	1.12
8.30	0.26	0.59	5.00	0.00	1.11	1.11
8.35	0.26	0.59	5.00	0.00	1.10	1.10
8.40	0.27	0.59	5.00	0.00	1.09	1.09
8.45	0.27	0.59	5.00	0.00	1.08	1.08
8.50	0.27	0.59	5.00	0.00	1.07	1.07
8.55	0.28	0.59	5.00	0.00	1.06	1.06
8.60	0.28	0.59	5.00	0.00	1.05	1.05

8.65	0.28	0.59	5.00	0.00	1.04	1.04
8.70	0.29	0.59	5.00	0.00	1.03	1.03
8.75	0.29	0.59	5.00	0.00	1.03	1.03
8.80	0.29	0.59	5.00	0.00	1.02	1.02
8.85	0.30	0.59	5.00	0.00	1.01	1.01
8.90	0.30	0.59	5.00	0.00	1.00	1.00
8.95	0.31	0.59	5.00	0.00	1.00	1.00
9.00	0.31	0.59	5.00	0.00	1.00	1.00
9.05	0.31	0.59	5.00	0.00	1.00	1.00
9.10	0.32	0.59	5.00	0.00	0.99	0.99
9.15	0.32	0.59	5.00	0.00	0.99	0.99
9.20	0.33	0.59	5.00	0.00	0.99	0.99
9.25	0.33	0.59	5.00	0.00	0.99	0.99
9.30	0.34	0.59	5.00	0.00	0.98	0.98
9.35	0.34	0.59	5.00	0.00	0.98	0.98
9.40	0.34	0.59	5.00	0.00	0.98	0.98
9.45	0.35	0.59	5.00	0.00	0.98	0.98
9.50	0.35	0.59	5.00	0.00	0.98	0.98
9.55	0.35	0.59	5.00	0.00	0.97	0.97
9.60	0.36	0.59	5.00	0.00	0.97	0.97
9.65	0.36	0.59	5.00	0.00	0.97	0.97
9.70	0.36	0.59	5.00	0.00	0.97	0.97
9.75	0.37	0.59	5.00	0.00	0.96	0.96
9.80	0.37	0.59	5.00	0.00	0.96	0.96
9.85	0.38	0.59	5.00	0.00	0.96	0.96
9.90	0.38	0.59	5.00	0.00	0.96	0.96
9.95	0.39	0.59	5.00	0.00	0.95	0.95
10.00	0.40	0.59	5.00	0.00	0.95	0.95
10.05	0.40	0.59	5.00	0.00	0.95	0.95
10.10	0.41	0.59	5.00	0.00	0.95	0.95
10.15	0.43	0.59	5.00	0.00	0.94	0.94
10.20	0.45	0.59	5.00	0.00	0.94	0.94
10.25	0.47	0.59	5.00	0.00	0.94	0.94
10.30	0.47	0.59	5.00	0.00	0.94	0.94
10.35	0.47	0.59	5.00	0.00	0.93	0.93
10.40	0.47	0.59	5.00	0.00	0.93	0.93
10.45	0.47	0.59	5.00	0.00	0.93	0.93
10.50	0.47	0.59	5.00	0.00	0.92	0.92
10.55	0.47	0.59	5.00	0.00	0.92	0.92
10.60	0.47	0.59	5.00	0.00	0.92	0.92
10.65	0.47	0.59	5.00	0.00	0.92	0.92
10.70	0.47	0.59	5.00	0.00	0.91	0.91
10.75	0.47	0.59	5.00	0.00	0.91	0.91
10.80	0.47	0.59	5.00	0.00	0.91	0.91
10.85	0.47	0.59	5.00	0.00	0.91	0.91
10.90	0.47	0.59	5.00	0.00	0.90	0.90
10.95	0.47	0.59	5.00	0.00	0.90	0.90
11.00	0.47	0.59	5.00	0.00	0.90	0.90
11.05	0.47	0.59	5.00	0.00	0.89	0.89
11.10	0.47	0.59	5.00	0.00	0.89	0.89

11.15	0.47	0.59	5.00	0.00	0.89	0.89
11.20	0.47	0.59	5.00	0.00	0.89	0.89
11.25	0.47	0.59	5.00	0.00	0.88	0.88
11.30	0.47	0.59	5.00	0.00	0.88	0.88
11.35	0.47	0.59	5.00	0.00	0.88	0.88
11.40	0.47	0.59	5.00	0.00	0.87	0.87
11.45	0.47	0.59	5.00	0.00	0.87	0.87
11.50	0.47	0.59	5.00	0.00	0.87	0.87
11.55	0.47	0.59	5.00	0.00	0.87	0.87
11.60	0.47	0.59	5.00	0.00	0.86	0.86
11.65	0.47	0.59	5.00	0.00	0.86	0.86
11.70	0.47	0.59	5.00	0.00	0.86	0.86
11.75	0.47	0.59	5.00	0.00	0.85	0.85
11.80	0.47	0.59	5.00	0.00	0.85	0.85
11.85	0.47	0.59	5.00	0.00	0.85	0.85
11.90	0.47	0.59	5.00	0.00	0.84	0.84
11.95	0.47	0.59	5.00	0.00	0.84	0.84
12.00	0.47	0.59	5.00	0.00	0.84	0.84
12.05	0.47	0.59	5.00	0.00	0.83	0.83
12.10	0.47	0.59	5.00	0.00	0.83	0.83
12.15	0.47	0.59	5.00	0.00	0.83	0.83
12.20	0.47	0.59	5.00	0.00	0.82	0.82
12.25	0.47	0.59	5.00	0.00	0.82	0.82
12.30	0.47	0.59	5.00	0.00	0.82	0.82
12.35	0.47	0.59	5.00	0.00	0.81	0.81
12.40	0.47	0.59	5.00	0.00	0.81	0.81
12.45	0.47	0.59	5.00	0.00	0.81	0.81
12.50	0.47	0.59	5.00	0.00	0.80	0.80
12.55	0.47	0.59	5.00	0.00	0.80	0.80
12.60	0.47	0.59	5.00	0.00	0.80	0.80
12.65	0.47	0.59	5.00	0.00	0.79	0.79
12.70	0.47	0.59	5.00	0.00	0.79	0.79
12.75	0.47	0.59	5.00	0.00	0.79	0.79
12.80	0.47	0.59	5.00	0.00	0.78	0.78
12.85	0.47	0.59	5.00	0.00	0.78	0.78
12.90	0.47	0.59	5.00	0.00	0.78	0.78
12.95	0.47	0.59	5.00	0.00	0.77	0.77
13.00	0.47	0.59	5.00	0.00	0.77	0.77
13.05	0.47	0.59	5.00	0.00	0.77	0.77
13.10	0.47	0.59	5.00	0.00	0.76	0.76
13.15	0.47	0.59	5.00	0.00	0.76	0.76
13.20	0.47	0.59	5.00	0.00	0.75	0.75
13.25	0.47	0.59	5.00	0.00	0.75	0.75
13.30	0.47	0.59	5.00	0.00	0.75	0.75
13.35	0.47	0.59	5.00	0.00	0.74	0.74
13.40	0.47	0.59	5.00	0.00	0.74	0.74
13.45	0.47	0.59	5.00	0.00	0.74	0.74
13.50	0.47	0.59	5.00	0.00	0.73	0.73
13.55	0.47	0.59	5.00	0.00	0.73	0.73
13.60	0.47	0.59	5.00	0.00	0.72	0.72

13.65	0.47	0.59	5.00	0.00	0.72	0.72
13.70	0.47	0.59	5.00	0.00	0.72	0.72
13.75	0.47	0.59	5.00	0.00	0.71	0.71
13.80	0.47	0.59	5.00	0.00	0.71	0.71
13.85	0.47	0.58	5.00	0.00	0.71	0.71
13.90	0.47	0.58	5.00	0.00	0.70	0.70
13.95	0.47	0.58	5.00	0.00	0.70	0.70
14.00	0.47	0.58	5.00	0.00	0.69	0.69
14.05	0.47	0.58	5.00	0.00	0.69	0.69
14.10	0.47	0.58	5.00	0.00	0.69	0.69
14.15	0.47	0.58	5.00	0.00	0.68	0.68
14.20	0.47	0.58	5.00	0.00	0.68	0.68
14.25	0.47	0.58	5.00	0.00	0.67	0.67
14.30	0.47	0.58	5.00	0.00	0.67	0.67
14.35	0.47	0.58	5.00	0.00	0.66	0.66
14.40	0.47	0.58	5.00	0.00	0.66	0.66
14.45	0.47	0.58	5.00	0.00	0.66	0.66
14.50	0.47	0.58	5.00	0.00	0.65	0.65
14.55	0.47	0.58	5.00	0.00	0.65	0.65
14.60	0.47	0.58	5.00	0.00	0.64	0.64
14.65	0.47	0.58	5.00	0.00	0.64	0.64
14.70	0.47	0.58	5.00	0.00	0.63	0.63
14.75	0.47	0.58	5.00	0.00	0.63	0.63
14.80	0.47	0.58	5.00	0.00	0.63	0.63
14.85	0.47	0.58	5.00	0.00	0.62	0.62
14.90	0.47	0.58	5.00	0.00	0.62	0.62
14.95	0.47	0.58	5.00	0.00	0.62	0.62
15.00	0.47	0.58	5.00	0.00	0.61	0.61
15.05	0.47	0.58	5.00	0.00	0.61	0.61
15.10	0.47	0.58	5.00	0.00	0.61	0.61
15.15	0.47	0.58	5.00	0.00	0.61	0.61
15.20	0.47	0.58	5.00	0.00	0.60	0.60
15.25	0.47	0.58	5.00	0.00	0.60	0.60
15.30	0.47	0.58	5.00	0.00	0.60	0.60
15.35	0.47	0.58	5.00	0.00	0.59	0.59
15.40	0.47	0.58	5.00	0.00	0.59	0.59
15.45	0.47	0.58	5.00	0.00	0.59	0.59
15.50	0.47	0.58	5.00	0.00	0.58	0.58
15.55	0.47	0.58	5.00	0.00	0.58	0.58
15.60	0.47	0.58	5.00	0.00	0.58	0.58
15.65	0.47	0.58	5.00	0.00	0.58	0.58
15.70	0.47	0.58	5.00	0.00	0.57	0.57
15.75	0.47	0.58	5.00	0.00	0.57	0.57
15.80	0.47	0.58	5.00	0.00	0.57	0.57
15.85	0.47	0.58	5.00	0.00	0.56	0.56
15.90	0.47	0.58	5.00	0.00	0.56	0.56
15.95	0.47	0.58	5.00	0.00	0.56	0.56
16.00	0.47	0.58	5.00	0.00	0.55	0.55
16.05	0.47	0.58	5.00	0.00	0.55	0.55
16.10	0.47	0.58	5.00	0.00	0.55	0.55

16.15	0.47	0.58	5.00	0.00	0.54	0.54
16.20	0.47	0.58	5.00	0.00	0.54	0.54
16.25	0.47	0.58	5.00	0.00	0.54	0.54
16.30	0.47	0.58	5.00	0.00	0.53	0.53
16.35	0.47	0.58	5.00	0.00	0.53	0.53
16.40	0.47	0.58	5.00	0.00	0.53	0.53
16.45	0.47	0.58	5.00	0.00	0.52	0.52
16.50	0.47	0.58	5.00	0.00	0.52	0.52
16.55	0.47	0.58	5.00	0.00	0.52	0.52
16.60	0.47	0.58	5.00	0.00	0.52	0.52
16.65	0.47	0.58	5.00	0.00	0.51	0.51
16.70	0.47	0.58	5.00	0.00	0.51	0.51
16.75	0.47	0.58	5.00	0.00	0.51	0.51
16.80	0.47	0.58	5.00	0.00	0.50	0.50
16.85	0.47	0.58	5.00	0.00	0.50	0.50
16.90	0.47	0.58	5.00	0.00	0.50	0.50
16.95	0.47	0.58	5.00	0.00	0.49	0.49
17.00	0.47	0.58	5.00	0.00	0.49	0.49
17.05	0.47	0.58	5.00	0.00	0.49	0.49
17.10	0.47	0.58	5.00	0.00	0.48	0.48
17.15	0.47	0.58	5.00	0.00	0.48	0.48
17.20	0.47	0.58	5.00	0.00	0.48	0.48
17.25	0.47	0.58	5.00	0.00	0.47	0.47
17.30	0.47	0.58	5.00	0.00	0.47	0.47
17.35	0.47	0.58	5.00	0.00	0.46	0.46
17.40	0.47	0.58	5.00	0.00	0.46	0.46
17.45	0.47	0.58	5.00	0.00	0.46	0.46
17.50	0.47	0.58	5.00	0.00	0.45	0.45
17.55	0.47	0.58	5.00	0.00	0.45	0.45
17.60	0.47	0.58	5.00	0.00	0.45	0.45
17.65	0.47	0.58	5.00	0.00	0.44	0.44
17.70	0.47	0.58	5.00	0.00	0.44	0.44
17.75	0.47	0.58	5.00	0.00	0.44	0.44
17.80	0.47	0.58	5.00	0.00	0.43	0.43
17.85	0.47	0.58	5.00	0.00	0.43	0.43
17.90	0.47	0.58	5.00	0.00	0.42	0.42
17.95	0.47	0.58	5.00	0.00	0.42	0.42
18.00	0.47	0.58	5.00	0.00	0.42	0.42
18.05	0.47	0.58	5.00	0.00	0.41	0.41
18.10	0.47	0.58	5.00	0.00	0.41	0.41
18.15	0.47	0.58	5.00	0.00	0.40	0.40
18.20	0.47	0.58	5.00	0.00	0.40	0.40
18.25	0.47	0.58	5.00	0.00	0.40	0.40
18.30	0.47	0.58	5.00	0.00	0.39	0.39
18.35	0.47	0.58	5.00	0.00	0.39	0.39
18.40	0.47	0.58	5.00	0.00	0.38	0.38
18.45	0.47	0.58	5.00	0.00	0.38	0.38
18.50	0.47	0.58	5.00	0.00	0.38	0.38
18.55	0.47	0.58	5.00	0.00	0.37	0.37
18.60	0.47	0.58	5.00	0.00	0.37	0.37

18.65	0.47	0.58	5.00	0.00	0.36	0.36
18.70	0.47	0.58	5.00	0.00	0.36	0.36
18.75	0.47	0.58	5.00	0.00	0.35	0.35
18.80	0.47	0.58	5.00	0.00	0.35	0.35
18.85	0.47	0.58	5.00	0.00	0.35	0.35
18.90	0.47	0.58	5.00	0.00	0.35	0.35
18.95	0.47	0.58	5.00	0.00	0.35	0.35
19.00	0.47	0.58	5.00	0.00	0.35	0.35
19.05	0.47	0.58	5.00	0.00	0.35	0.35
19.10	0.47	0.58	5.00	0.00	0.35	0.35
19.15	0.47	0.58	5.00	0.00	0.35	0.35
19.20	0.47	0.58	5.00	0.00	0.35	0.35
19.25	0.47	0.58	5.00	0.00	0.34	0.34
19.30	0.47	0.58	5.00	0.00	0.34	0.34
19.35	0.47	0.58	5.00	0.00	0.34	0.34
19.40	0.47	0.58	5.00	0.00	0.34	0.34
19.45	0.47	0.58	5.00	0.00	0.34	0.34
19.50	0.47	0.58	5.00	0.00	0.34	0.34
19.55	0.47	0.58	5.00	0.00	0.34	0.34
19.60	0.47	0.58	5.00	0.00	0.34	0.34
19.65	0.47	0.58	5.00	0.00	0.34	0.34
19.70	0.47	0.58	5.00	0.00	0.34	0.34
19.75	0.47	0.58	5.00	0.00	0.33	0.33
19.80	0.47	0.58	5.00	0.00	0.33	0.33
19.85	0.47	0.58	5.00	0.00	0.33	0.33
19.90	0.47	0.58	5.00	0.00	0.33	0.33
19.95	0.47	0.58	5.00	0.00	0.33	0.33
20.00	0.47	0.58	5.00	0.00	0.33	0.33
20.05	0.47	0.58	5.00	0.00	0.33	0.33
20.10	0.47	0.58	5.00	0.00	0.33	0.33
20.15	0.47	0.58	5.00	0.00	0.33	0.33
20.20	0.47	0.58	5.00	0.00	0.33	0.33
20.25	0.47	0.58	5.00	0.00	0.32	0.32
20.30	0.47	0.58	5.00	0.00	0.32	0.32
20.35	0.47	0.58	5.00	0.00	0.32	0.32
20.40	0.47	0.58	5.00	0.00	0.32	0.32
20.45	0.47	0.58	5.00	0.00	0.32	0.32
20.50	0.47	0.58	5.00	0.00	0.32	0.32
20.55	0.47	0.58	5.00	0.00	0.32	0.32
20.60	0.47	0.58	5.00	0.00	0.32	0.32
20.65	0.47	0.58	5.00	0.00	0.32	0.32
20.70	0.47	0.58	5.00	0.00	0.31	0.31
20.75	0.47	0.58	5.00	0.00	0.31	0.31
20.80	0.47	0.58	5.00	0.00	0.31	0.31
20.85	0.47	0.58	5.00	0.00	0.31	0.31
20.90	0.47	0.58	5.00	0.00	0.31	0.31
20.95	0.47	0.57	5.00	0.00	0.31	0.31
21.00	0.47	0.57	5.00	0.00	0.31	0.31
21.05	0.47	0.57	5.00	0.00	0.31	0.31
21.10	0.47	0.57	5.00	0.00	0.30	0.30

21.15	0.47	0.57	5.00	0.00	0.30	0.30
21.20	0.47	0.57	5.00	0.00	0.30	0.30
21.25	0.47	0.57	5.00	0.00	0.30	0.30
21.30	0.47	0.57	5.00	0.00	0.30	0.30
21.35	0.47	0.57	5.00	0.00	0.30	0.30
21.40	0.47	0.57	5.00	0.00	0.30	0.30
21.45	0.47	0.57	5.00	0.00	0.29	0.29
21.50	0.47	0.57	5.00	0.00	0.29	0.29
21.55	0.47	0.57	5.00	0.00	0.29	0.29
21.60	0.47	0.57	5.00	0.00	0.29	0.29
21.65	0.47	0.57	5.00	0.00	0.29	0.29
21.70	0.47	0.57	5.00	0.00	0.29	0.29
21.75	0.47	0.57	5.00	0.00	0.29	0.29
21.80	0.47	0.57	5.00	0.00	0.28	0.28
21.85	0.47	0.57	5.00	0.00	0.28	0.28
21.90	0.47	0.57	5.00	0.00	0.28	0.28
21.95	0.47	0.57	5.00	0.00	0.28	0.28
22.00	0.47	0.57	5.00	0.00	0.28	0.28
22.05	0.47	0.57	5.00	0.00	0.27	0.27
22.10	0.47	0.57	5.00	0.00	0.27	0.27
22.15	0.47	0.57	5.00	0.00	0.27	0.27
22.20	0.47	0.57	5.00	0.00	0.27	0.27
22.25	0.47	0.57	5.00	0.00	0.27	0.27
22.30	0.47	0.57	5.00	0.00	0.27	0.27
22.35	0.47	0.57	5.00	0.00	0.26	0.26
22.40	0.47	0.57	5.00	0.00	0.26	0.26
22.45	0.47	0.57	5.00	0.00	0.26	0.26
22.50	0.47	0.57	5.00	0.00	0.26	0.26
22.55	0.47	0.57	5.00	0.00	0.25	0.25
22.60	0.47	0.57	5.00	0.00	0.25	0.25
22.65	0.47	0.57	5.00	0.00	0.25	0.25
22.70	0.47	0.57	5.00	0.00	0.25	0.25
22.75	0.47	0.57	5.00	0.00	0.25	0.25
22.80	0.47	0.57	5.00	0.00	0.24	0.24
22.85	0.47	0.57	5.00	0.00	0.24	0.24
22.90	0.47	0.57	5.00	0.00	0.24	0.24
22.95	0.47	0.57	5.00	0.00	0.24	0.24
23.00	0.47	0.57	5.00	0.00	0.23	0.23
23.05	0.47	0.57	5.00	0.00	0.23	0.23
23.10	0.47	0.57	5.00	0.00	0.23	0.23
23.15	0.47	0.57	5.00	0.00	0.23	0.23
23.20	0.47	0.57	5.00	0.00	0.22	0.22
23.25	0.47	0.57	5.00	0.00	0.22	0.22
23.30	0.47	0.57	5.00	0.00	0.22	0.22
23.35	0.47	0.57	5.00	0.00	0.21	0.21
23.40	0.47	0.57	5.00	0.00	0.21	0.21
23.45	0.47	0.57	5.00	0.00	0.21	0.21
23.50	0.47	0.57	5.00	0.00	0.21	0.21
23.55	0.47	0.57	5.00	0.00	0.20	0.20
23.60	0.47	0.57	5.00	0.00	0.20	0.20

23.65	0.47	0.57	5.00	0.00	0.20	0.20
23.70	0.47	0.57	5.00	0.00	0.19	0.19
23.75	0.47	0.57	5.00	0.00	0.19	0.19
23.80	0.47	0.57	5.00	0.00	0.19	0.19
23.85	0.47	0.57	5.00	0.00	0.18	0.18
23.90	0.47	0.57	5.00	0.00	0.18	0.18
23.95	0.47	0.57	5.00	0.00	0.18	0.18
24.00	0.47	0.57	5.00	0.00	0.17	0.17
24.05	2.00	0.57	5.00	0.00	0.17	0.17
24.10	2.00	0.57	5.00	0.00	0.17	0.17
24.15	2.00	0.57	5.00	0.00	0.17	0.17
24.20	2.00	0.57	5.00	0.00	0.17	0.17
24.25	2.00	0.57	5.00	0.00	0.17	0.17
24.30	2.00	0.57	5.00	0.00	0.17	0.17
24.35	2.00	0.57	5.00	0.00	0.17	0.17
24.40	2.00	0.57	5.00	0.00	0.17	0.17
24.45	2.00	0.57	5.00	0.00	0.17	0.17
24.50	2.00	0.57	5.00	0.00	0.17	0.17
24.55	2.00	0.57	5.00	0.00	0.17	0.17
24.60	2.00	0.57	5.00	0.00	0.17	0.17
24.65	2.00	0.57	5.00	0.00	0.17	0.17
24.70	2.00	0.57	5.00	0.00	0.17	0.17
24.75	2.00	0.57	5.00	0.00	0.17	0.17
24.80	2.00	0.57	5.00	0.00	0.17	0.17
24.85	2.00	0.57	5.00	0.00	0.17	0.17
24.90	2.00	0.57	5.00	0.00	0.17	0.17
24.95	2.00	0.57	5.00	0.00	0.17	0.17
25.00	2.00	0.57	5.00	0.00	0.17	0.17
25.05	2.00	0.57	5.00	0.00	0.17	0.17
25.10	2.00	0.57	5.00	0.00	0.17	0.17
25.15	2.00	0.57	5.00	0.00	0.17	0.17
25.20	2.00	0.57	5.00	0.00	0.17	0.17
25.25	2.00	0.57	5.00	0.00	0.17	0.17
25.30	2.00	0.57	5.00	0.00	0.17	0.17
25.35	2.00	0.57	5.00	0.00	0.17	0.17
25.40	2.00	0.57	5.00	0.00	0.17	0.17
25.45	2.00	0.57	5.00	0.00	0.17	0.17
25.50	2.00	0.57	5.00	0.00	0.17	0.17
25.55	2.00	0.57	5.00	0.00	0.17	0.17
25.60	2.00	0.57	5.00	0.00	0.17	0.17
25.65	2.00	0.57	5.00	0.00	0.17	0.17
25.70	2.00	0.57	5.00	0.00	0.17	0.17
25.75	2.00	0.57	5.00	0.00	0.17	0.17
25.80	2.00	0.57	5.00	0.00	0.17	0.17
25.85	2.00	0.57	5.00	0.00	0.17	0.17
25.90	2.00	0.57	5.00	0.00	0.17	0.17
25.95	2.00	0.57	5.00	0.00	0.17	0.17
26.00	2.00	0.57	5.00	0.00	0.17	0.17
26.05	2.00	0.57	5.00	0.00	0.17	0.17
26.10	2.00	0.57	5.00	0.00	0.17	0.17

26.15	2.00	0.57	5.00	0.00	0.17	0.17
26.20	2.00	0.57	5.00	0.00	0.17	0.17
26.25	2.00	0.57	5.00	0.00	0.17	0.17
26.30	2.00	0.57	5.00	0.00	0.17	0.17
26.35	2.00	0.57	5.00	0.00	0.17	0.17
26.40	2.00	0.57	5.00	0.00	0.17	0.17
26.45	2.00	0.57	5.00	0.00	0.17	0.17
26.50	2.00	0.57	5.00	0.00	0.17	0.17
26.55	2.00	0.57	5.00	0.00	0.17	0.17
26.60	2.00	0.57	5.00	0.00	0.17	0.17
26.65	2.00	0.57	5.00	0.00	0.17	0.17
26.70	2.00	0.57	5.00	0.00	0.17	0.17
26.75	2.00	0.57	5.00	0.00	0.17	0.17
26.80	2.00	0.57	5.00	0.00	0.17	0.17
26.85	2.00	0.57	5.00	0.00	0.17	0.17
26.90	2.00	0.57	5.00	0.00	0.17	0.17
26.95	2.00	0.57	5.00	0.00	0.17	0.17
27.00	2.00	0.57	5.00	0.00	0.17	0.17
27.05	2.00	0.57	5.00	0.00	0.17	0.17
27.10	2.00	0.57	5.00	0.00	0.17	0.17
27.15	2.00	0.57	5.00	0.00	0.17	0.17
27.20	2.00	0.57	5.00	0.00	0.17	0.17
27.25	2.00	0.57	5.00	0.00	0.17	0.17
27.30	2.00	0.57	5.00	0.00	0.17	0.17
27.35	2.00	0.57	5.00	0.00	0.17	0.17
27.40	2.00	0.57	5.00	0.00	0.17	0.17
27.45	2.00	0.57	5.00	0.00	0.17	0.17
27.50	2.00	0.57	5.00	0.00	0.17	0.17
27.55	2.00	0.57	5.00	0.00	0.17	0.17
27.60	2.00	0.57	5.00	0.00	0.17	0.17
27.65	2.00	0.57	5.00	0.00	0.17	0.17
27.70	2.00	0.57	5.00	0.00	0.17	0.17
27.75	2.00	0.57	5.00	0.00	0.17	0.17
27.80	2.00	0.57	5.00	0.00	0.17	0.17
27.85	2.00	0.57	5.00	0.00	0.17	0.17
27.90	2.00	0.57	5.00	0.00	0.17	0.17
27.95	2.00	0.57	5.00	0.00	0.17	0.17
28.00	2.00	0.57	5.00	0.00	0.17	0.17
28.05	2.00	0.56	5.00	0.00	0.17	0.17
28.10	2.00	0.56	5.00	0.00	0.17	0.17
28.15	2.00	0.56	5.00	0.00	0.17	0.17
28.20	2.00	0.56	5.00	0.00	0.17	0.17
28.25	2.00	0.56	5.00	0.00	0.17	0.17
28.30	2.00	0.56	5.00	0.00	0.17	0.17
28.35	2.00	0.56	5.00	0.00	0.17	0.17
28.40	2.00	0.56	5.00	0.00	0.17	0.17
28.45	2.00	0.56	5.00	0.00	0.17	0.17
28.50	2.00	0.56	5.00	0.00	0.17	0.17
28.55	2.00	0.56	5.00	0.00	0.17	0.17
28.60	2.00	0.56	5.00	0.00	0.17	0.17

28.65	2.00	0.56	5.00	0.00	0.17	0.17
28.70	2.00	0.56	5.00	0.00	0.17	0.17
28.75	2.00	0.56	5.00	0.00	0.17	0.17
28.80	2.00	0.56	5.00	0.00	0.17	0.17
28.85	2.00	0.56	5.00	0.00	0.17	0.17
28.90	2.00	0.56	5.00	0.00	0.17	0.17
28.95	2.00	0.56	5.00	0.00	0.17	0.17
29.00	2.00	0.56	5.00	0.00	0.17	0.17
29.05	0.46	0.56	5.00	0.00	0.17	0.17
29.10	0.46	0.56	5.00	0.00	0.17	0.17
29.15	0.46	0.56	5.00	0.00	0.17	0.17
29.20	0.46	0.56	5.00	0.00	0.17	0.17
29.25	0.46	0.56	5.00	0.00	0.16	0.16
29.30	0.46	0.56	5.00	0.00	0.16	0.16
29.35	0.46	0.56	5.00	0.00	0.16	0.16
29.40	0.46	0.56	5.00	0.00	0.16	0.16
29.45	0.46	0.56	5.00	0.00	0.16	0.16
29.50	0.46	0.56	5.00	0.00	0.16	0.16
29.55	0.46	0.56	5.00	0.00	0.15	0.15
29.60	0.46	0.56	5.00	0.00	0.15	0.15
29.65	0.46	0.56	5.00	0.00	0.15	0.15
29.70	0.46	0.56	5.00	0.00	0.15	0.15
29.75	0.46	0.56	5.00	0.00	0.15	0.15
29.80	0.46	0.56	5.00	0.00	0.15	0.15
29.85	0.46	0.56	5.00	0.00	0.15	0.15
29.90	0.46	0.56	5.00	0.00	0.14	0.14
29.95	0.46	0.56	5.00	0.00	0.14	0.14
30.00	0.46	0.56	5.00	0.00	0.14	0.14
30.05	0.46	0.56	5.00	0.00	0.14	0.14
30.10	0.46	0.56	5.00	0.00	0.14	0.14
30.15	0.46	0.56	5.00	0.00	0.14	0.14
30.20	0.46	0.56	5.00	0.00	0.13	0.13
30.25	0.46	0.56	5.00	0.00	0.13	0.13
30.30	0.46	0.56	5.00	0.00	0.13	0.13
30.35	0.45	0.56	5.00	0.00	0.13	0.13
30.40	0.45	0.56	5.00	0.00	0.13	0.13
30.45	0.45	0.56	5.00	0.00	0.13	0.13
30.50	0.45	0.56	5.00	0.00	0.13	0.13
30.55	0.45	0.56	5.00	0.00	0.12	0.12
30.60	0.45	0.56	5.00	0.00	0.12	0.12
30.65	0.45	0.56	5.00	0.00	0.12	0.12
30.70	0.45	0.56	5.00	0.00	0.12	0.12
30.75	0.45	0.56	5.00	0.00	0.12	0.12
30.80	0.45	0.56	5.00	0.00	0.12	0.12
30.85	0.45	0.56	5.00	0.00	0.12	0.12
30.90	0.45	0.56	5.00	0.00	0.11	0.11
30.95	0.45	0.56	5.00	0.00	0.11	0.11
31.00	0.45	0.56	5.00	0.00	0.11	0.11
31.05	0.45	0.56	5.00	0.00	0.11	0.11
31.10	0.45	0.56	5.00	0.00	0.11	0.11

31.15	0.45	0.56	5.00	0.00	0.11	0.11
31.20	0.45	0.56	5.00	0.00	0.11	0.11
31.25	0.45	0.56	5.00	0.00	0.10	0.10
31.30	0.45	0.56	5.00	0.00	0.10	0.10
31.35	0.45	0.56	5.00	0.00	0.10	0.10
31.40	0.45	0.56	5.00	0.00	0.10	0.10
31.45	0.45	0.55	5.00	0.00	0.10	0.10
31.50	0.45	0.55	5.00	0.00	0.10	0.10
31.55	0.45	0.55	5.00	0.00	0.10	0.10
31.60	0.45	0.55	5.00	0.00	0.09	0.09
31.65	0.45	0.55	5.00	0.00	0.09	0.09
31.70	0.45	0.55	5.00	0.00	0.09	0.09
31.75	0.45	0.55	5.00	0.00	0.09	0.09
31.80	0.45	0.55	5.00	0.00	0.09	0.09
31.85	0.45	0.55	5.00	0.00	0.09	0.09
31.90	0.45	0.55	5.00	0.00	0.09	0.09
31.95	0.45	0.55	5.00	0.00	0.08	0.08
32.00	0.45	0.55	5.00	0.00	0.08	0.08
32.05	0.45	0.55	5.00	0.00	0.08	0.08
32.10	0.45	0.55	5.00	0.00	0.08	0.08
32.15	0.45	0.55	5.00	0.00	0.08	0.08
32.20	0.45	0.55	5.00	0.00	0.08	0.08
32.25	0.45	0.55	5.00	0.00	0.08	0.08
32.30	0.45	0.55	5.00	0.00	0.07	0.07
32.35	0.45	0.55	5.00	0.00	0.07	0.07
32.40	0.45	0.55	5.00	0.00	0.07	0.07
32.45	0.45	0.55	5.00	0.00	0.07	0.07
32.50	0.45	0.55	5.00	0.00	0.07	0.07
32.55	0.45	0.55	5.00	0.00	0.07	0.07
32.60	0.45	0.55	5.00	0.00	0.07	0.07
32.65	0.45	0.55	5.00	0.00	0.06	0.06
32.70	0.45	0.55	5.00	0.00	0.06	0.06
32.75	0.45	0.55	5.00	0.00	0.06	0.06
32.80	0.45	0.55	5.00	0.00	0.06	0.06
32.85	0.45	0.55	5.00	0.00	0.06	0.06
32.90	0.45	0.55	5.00	0.00	0.06	0.06
32.95	0.45	0.55	5.00	0.00	0.06	0.06
33.00	0.45	0.55	5.00	0.00	0.06	0.06
33.05	0.45	0.55	5.00	0.00	0.05	0.05
33.10	0.45	0.55	5.00	0.00	0.05	0.05
33.15	0.45	0.55	5.00	0.00	0.05	0.05
33.20	0.45	0.55	5.00	0.00	0.05	0.05
33.25	0.45	0.55	5.00	0.00	0.05	0.05
33.30	0.45	0.55	5.00	0.00	0.05	0.05
33.35	0.45	0.55	5.00	0.00	0.05	0.05
33.40	0.45	0.55	5.00	0.00	0.04	0.04
33.45	0.45	0.55	5.00	0.00	0.04	0.04
33.50	0.45	0.54	5.00	0.00	0.04	0.04
33.55	0.45	0.54	5.00	0.00	0.04	0.04
33.60	0.45	0.54	5.00	0.00	0.04	0.04

33.65	0.45	0.54	5.00	0.00	0.04	0.04
33.70	0.45	0.54	5.00	0.00	0.04	0.04
33.75	0.45	0.54	5.00	0.00	0.03	0.03
33.80	0.45	0.54	5.00	0.00	0.03	0.03
33.85	0.45	0.54	5.00	0.00	0.03	0.03
33.90	0.45	0.54	5.00	0.00	0.03	0.03
33.95	0.45	0.54	5.00	0.00	0.03	0.03
34.00	0.45	0.54	5.00	0.00	0.03	0.03
34.05	0.45	0.54	5.00	0.00	0.03	0.03
34.10	0.45	0.54	5.00	0.00	0.03	0.03
34.15	0.45	0.54	5.00	0.00	0.02	0.02
34.20	0.44	0.54	5.00	0.00	0.02	0.02
34.25	0.44	0.54	5.00	0.00	0.02	0.02
34.30	0.44	0.54	5.00	0.00	0.02	0.02
34.35	0.44	0.54	5.00	0.00	0.02	0.02
34.40	0.44	0.54	5.00	0.00	0.02	0.02
34.45	0.44	0.54	5.00	0.00	0.02	0.02
34.50	0.44	0.54	5.00	0.00	0.01	0.01
34.55	0.44	0.54	5.00	0.00	0.01	0.01
34.60	0.44	0.54	5.00	0.00	0.01	0.01
34.65	0.44	0.54	5.00	0.00	0.01	0.01
34.70	0.44	0.54	5.00	0.00	0.01	0.01
34.75	0.44	0.54	5.00	0.00	0.01	0.01
34.80	0.44	0.54	5.00	0.00	0.01	0.01
34.85	0.44	0.54	5.00	0.00	0.01	0.01
34.90	0.44	0.54	5.00	0.00	0.00	0.00
34.95	0.44	0.54	5.00	0.00	0.00	0.00
35.00	0.44	0.54	5.00	0.00	0.00	0.00
35.05	2.00	0.54	5.00	0.00	0.00	0.00
35.10	2.00	0.54	5.00	0.00	0.00	0.00
35.15	2.00	0.54	5.00	0.00	0.00	0.00
35.20	2.00	0.54	5.00	0.00	0.00	0.00
35.25	2.00	0.54	5.00	0.00	0.00	0.00
35.30	2.00	0.54	5.00	0.00	0.00	0.00
35.35	2.00	0.54	5.00	0.00	0.00	0.00
35.40	2.00	0.54	5.00	0.00	0.00	0.00
35.45	2.00	0.54	5.00	0.00	0.00	0.00
35.50	2.00	0.54	5.00	0.00	0.00	0.00
35.55	2.00	0.53	5.00	0.00	0.00	0.00
35.60	2.00	0.53	5.00	0.00	0.00	0.00
35.65	2.00	0.53	5.00	0.00	0.00	0.00
35.70	2.00	0.53	5.00	0.00	0.00	0.00
35.75	2.00	0.53	5.00	0.00	0.00	0.00
35.80	2.00	0.53	5.00	0.00	0.00	0.00
35.85	2.00	0.53	5.00	0.00	0.00	0.00
35.90	2.00	0.53	5.00	0.00	0.00	0.00
35.95	2.00	0.53	5.00	0.00	0.00	0.00
36.00	2.00	0.53	5.00	0.00	0.00	0.00
36.05	2.00	0.53	5.00	0.00	0.00	0.00
36.10	2.00	0.53	5.00	0.00	0.00	0.00

36.15	2.00	0.53	5.00	0.00	0.00	0.00
36.20	2.00	0.53	5.00	0.00	0.00	0.00
36.25	2.00	0.53	5.00	0.00	0.00	0.00
36.30	2.00	0.53	5.00	0.00	0.00	0.00
36.35	2.00	0.53	5.00	0.00	0.00	0.00
36.40	2.00	0.53	5.00	0.00	0.00	0.00
36.45	2.00	0.53	5.00	0.00	0.00	0.00
36.50	2.00	0.53	5.00	0.00	0.00	0.00
36.55	2.00	0.53	5.00	0.00	0.00	0.00
36.60	2.00	0.53	5.00	0.00	0.00	0.00
36.65	2.00	0.53	5.00	0.00	0.00	0.00
36.70	2.00	0.53	5.00	0.00	0.00	0.00
36.75	2.00	0.53	5.00	0.00	0.00	0.00
36.80	2.00	0.53	5.00	0.00	0.00	0.00
36.85	2.00	0.53	5.00	0.00	0.00	0.00
36.90	2.00	0.53	5.00	0.00	0.00	0.00
36.95	2.00	0.53	5.00	0.00	0.00	0.00
37.00	2.00	0.53	5.00	0.00	0.00	0.00
37.05	2.00	0.53	5.00	0.00	0.00	0.00
37.10	2.00	0.53	5.00	0.00	0.00	0.00
37.15	2.00	0.53	5.00	0.00	0.00	0.00
37.20	2.00	0.53	5.00	0.00	0.00	0.00
37.25	2.00	0.53	5.00	0.00	0.00	0.00
37.30	2.00	0.53	5.00	0.00	0.00	0.00
37.35	2.00	0.53	5.00	0.00	0.00	0.00
37.40	2.00	0.53	5.00	0.00	0.00	0.00
37.45	2.00	0.53	5.00	0.00	0.00	0.00
37.50	2.00	0.53	5.00	0.00	0.00	0.00
37.55	2.00	0.52	5.00	0.00	0.00	0.00
37.60	2.00	0.52	5.00	0.00	0.00	0.00
37.65	2.00	0.52	5.00	0.00	0.00	0.00
37.70	2.00	0.52	5.00	0.00	0.00	0.00
37.75	2.00	0.52	5.00	0.00	0.00	0.00
37.80	2.00	0.52	5.00	0.00	0.00	0.00
37.85	2.00	0.52	5.00	0.00	0.00	0.00
37.90	2.00	0.52	5.00	0.00	0.00	0.00
37.95	2.00	0.52	5.00	0.00	0.00	0.00
38.00	2.00	0.52	5.00	0.00	0.00	0.00
38.05	2.00	0.52	5.00	0.00	0.00	0.00
38.10	2.00	0.52	5.00	0.00	0.00	0.00
38.15	2.00	0.52	5.00	0.00	0.00	0.00
38.20	2.00	0.52	5.00	0.00	0.00	0.00
38.25	2.00	0.52	5.00	0.00	0.00	0.00
38.30	2.00	0.52	5.00	0.00	0.00	0.00
38.35	2.00	0.52	5.00	0.00	0.00	0.00
38.40	2.00	0.52	5.00	0.00	0.00	0.00
38.45	2.00	0.52	5.00	0.00	0.00	0.00
38.50	2.00	0.52	5.00	0.00	0.00	0.00
38.55	2.00	0.52	5.00	0.00	0.00	0.00
38.60	2.00	0.52	5.00	0.00	0.00	0.00

38.65	2.00	0.52	5.00	0.00	0.00	0.00
38.70	2.00	0.52	5.00	0.00	0.00	0.00
38.75	2.00	0.52	5.00	0.00	0.00	0.00
38.80	2.00	0.52	5.00	0.00	0.00	0.00
38.85	2.00	0.52	5.00	0.00	0.00	0.00
38.90	2.00	0.52	5.00	0.00	0.00	0.00
38.95	2.00	0.52	5.00	0.00	0.00	0.00
39.00	2.00	0.52	5.00	0.00	0.00	0.00
39.05	2.00	0.52	5.00	0.00	0.00	0.00
39.10	2.00	0.52	5.00	0.00	0.00	0.00
39.15	2.00	0.52	5.00	0.00	0.00	0.00
39.20	2.00	0.52	5.00	0.00	0.00	0.00
39.25	2.00	0.52	5.00	0.00	0.00	0.00
39.30	2.00	0.52	5.00	0.00	0.00	0.00
39.35	2.00	0.52	5.00	0.00	0.00	0.00
39.40	2.00	0.52	5.00	0.00	0.00	0.00
39.45	2.00	0.52	5.00	0.00	0.00	0.00
39.50	2.00	0.52	5.00	0.00	0.00	0.00
39.55	2.00	0.52	5.00	0.00	0.00	0.00
39.60	2.00	0.51	5.00	0.00	0.00	0.00
39.65	2.00	0.51	5.00	0.00	0.00	0.00
39.70	2.00	0.51	5.00	0.00	0.00	0.00
39.75	2.00	0.51	5.00	0.00	0.00	0.00
39.80	2.00	0.51	5.00	0.00	0.00	0.00
39.85	2.00	0.51	5.00	0.00	0.00	0.00
39.90	2.00	0.51	5.00	0.00	0.00	0.00
39.95	2.00	0.51	5.00	0.00	0.00	0.00
40.00	2.00	0.51	5.00	0.00	0.00	0.00
40.05	2.00	0.51	5.00	0.00	0.00	0.00
40.10	2.00	0.51	5.00	0.00	0.00	0.00
40.15	2.00	0.51	5.00	0.00	0.00	0.00
40.20	2.00	0.51	5.00	0.00	0.00	0.00
40.25	2.00	0.51	5.00	0.00	0.00	0.00
40.30	2.00	0.51	5.00	0.00	0.00	0.00
40.35	2.00	0.51	5.00	0.00	0.00	0.00
40.40	2.00	0.51	5.00	0.00	0.00	0.00
40.45	2.00	0.51	5.00	0.00	0.00	0.00
40.50	2.00	0.51	5.00	0.00	0.00	0.00
40.55	2.00	0.51	5.00	0.00	0.00	0.00
40.60	2.00	0.51	5.00	0.00	0.00	0.00
40.65	2.00	0.51	5.00	0.00	0.00	0.00
40.70	2.00	0.51	5.00	0.00	0.00	0.00
40.75	2.00	0.51	5.00	0.00	0.00	0.00
40.80	2.00	0.51	5.00	0.00	0.00	0.00
40.85	2.00	0.51	5.00	0.00	0.00	0.00
40.90	2.00	0.51	5.00	0.00	0.00	0.00
40.95	2.00	0.51	5.00	0.00	0.00	0.00
41.00	2.00	0.51	5.00	0.00	0.00	0.00
41.05	2.00	0.51	5.00	0.00	0.00	0.00
41.10	2.00	0.51	5.00	0.00	0.00	0.00

41.15	2.00	0.51	5.00	0.00	0.00	0.00
41.20	2.00	0.51	5.00	0.00	0.00	0.00
41.25	2.00	0.51	5.00	0.00	0.00	0.00
41.30	2.00	0.51	5.00	0.00	0.00	0.00
41.35	2.00	0.51	5.00	0.00	0.00	0.00
41.40	2.00	0.51	5.00	0.00	0.00	0.00
41.45	2.00	0.51	5.00	0.00	0.00	0.00
41.50	2.00	0.51	5.00	0.00	0.00	0.00
41.55	2.00	0.51	5.00	0.00	0.00	0.00
41.60	2.00	0.51	5.00	0.00	0.00	0.00
41.65	2.00	0.50	5.00	0.00	0.00	0.00
41.70	2.00	0.50	5.00	0.00	0.00	0.00
41.75	2.00	0.50	5.00	0.00	0.00	0.00
41.80	2.00	0.50	5.00	0.00	0.00	0.00
41.85	2.00	0.50	5.00	0.00	0.00	0.00
41.90	2.00	0.50	5.00	0.00	0.00	0.00
41.95	2.00	0.50	5.00	0.00	0.00	0.00
42.00	2.00	0.50	5.00	0.00	0.00	0.00
42.05	2.00	0.50	5.00	0.00	0.00	0.00
42.10	2.00	0.50	5.00	0.00	0.00	0.00
42.15	2.00	0.50	5.00	0.00	0.00	0.00
42.20	2.00	0.50	5.00	0.00	0.00	0.00
42.25	2.00	0.50	5.00	0.00	0.00	0.00
42.30	2.00	0.50	5.00	0.00	0.00	0.00
42.35	2.00	0.50	5.00	0.00	0.00	0.00
42.40	2.00	0.50	5.00	0.00	0.00	0.00
42.45	2.00	0.50	5.00	0.00	0.00	0.00
42.50	2.00	0.50	5.00	0.00	0.00	0.00
42.55	2.00	0.50	5.00	0.00	0.00	0.00
42.60	2.00	0.50	5.00	0.00	0.00	0.00
42.65	2.00	0.50	5.00	0.00	0.00	0.00
42.70	2.00	0.50	5.00	0.00	0.00	0.00
42.75	2.00	0.50	5.00	0.00	0.00	0.00
42.80	2.00	0.50	5.00	0.00	0.00	0.00
42.85	2.00	0.50	5.00	0.00	0.00	0.00
42.90	2.00	0.50	5.00	0.00	0.00	0.00
42.95	2.00	0.50	5.00	0.00	0.00	0.00
43.00	2.00	0.50	5.00	0.00	0.00	0.00
43.05	2.00	0.50	5.00	0.00	0.00	0.00
43.10	2.00	0.50	5.00	0.00	0.00	0.00
43.15	2.00	0.50	5.00	0.00	0.00	0.00
43.20	2.00	0.50	5.00	0.00	0.00	0.00
43.25	2.00	0.50	5.00	0.00	0.00	0.00
43.30	2.00	0.50	5.00	0.00	0.00	0.00
43.35	2.00	0.50	5.00	0.00	0.00	0.00
43.40	2.00	0.50	5.00	0.00	0.00	0.00
43.45	2.00	0.50	5.00	0.00	0.00	0.00
43.50	2.00	0.50	5.00	0.00	0.00	0.00
43.55	2.00	0.50	5.00	0.00	0.00	0.00
43.60	2.00	0.50	5.00	0.00	0.00	0.00

43.65	2.00	0.49	5.00	0.00	0.00	0.00
43.70	2.00	0.49	5.00	0.00	0.00	0.00
43.75	2.00	0.49	5.00	0.00	0.00	0.00
43.80	2.00	0.49	5.00	0.00	0.00	0.00
43.85	2.00	0.49	5.00	0.00	0.00	0.00
43.90	2.00	0.49	5.00	0.00	0.00	0.00
43.95	2.00	0.49	5.00	0.00	0.00	0.00
44.00	2.00	0.49	5.00	0.00	0.00	0.00
44.05	2.00	0.49	5.00	0.00	0.00	0.00
44.10	2.00	0.49	5.00	0.00	0.00	0.00
44.15	2.00	0.49	5.00	0.00	0.00	0.00
44.20	2.00	0.49	5.00	0.00	0.00	0.00
44.25	2.00	0.49	5.00	0.00	0.00	0.00
44.30	2.00	0.49	5.00	0.00	0.00	0.00
44.35	2.00	0.49	5.00	0.00	0.00	0.00
44.40	2.00	0.49	5.00	0.00	0.00	0.00
44.45	2.00	0.49	5.00	0.00	0.00	0.00
44.50	2.00	0.49	5.00	0.00	0.00	0.00
44.55	2.00	0.49	5.00	0.00	0.00	0.00
44.60	2.00	0.49	5.00	0.00	0.00	0.00
44.65	2.00	0.49	5.00	0.00	0.00	0.00
44.70	2.00	0.49	5.00	0.00	0.00	0.00
44.75	2.00	0.49	5.00	0.00	0.00	0.00
44.80	2.00	0.49	5.00	0.00	0.00	0.00
44.85	2.00	0.49	5.00	0.00	0.00	0.00
44.90	2.00	0.49	5.00	0.00	0.00	0.00
44.95	2.00	0.49	5.00	0.00	0.00	0.00
45.00	2.00	0.49	5.00	0.00	0.00	0.00
45.05	2.00	0.49	5.00	0.00	0.00	0.00
45.10	2.00	0.49	5.00	0.00	0.00	0.00
45.15	2.00	0.49	5.00	0.00	0.00	0.00
45.20	2.00	0.49	5.00	0.00	0.00	0.00
45.25	2.00	0.49	5.00	0.00	0.00	0.00
45.30	2.00	0.49	5.00	0.00	0.00	0.00
45.35	2.00	0.49	5.00	0.00	0.00	0.00
45.40	2.00	0.49	5.00	0.00	0.00	0.00
45.45	2.00	0.49	5.00	0.00	0.00	0.00
45.50	2.00	0.49	5.00	0.00	0.00	0.00
45.55	2.00	0.49	5.00	0.00	0.00	0.00
45.60	2.00	0.49	5.00	0.00	0.00	0.00
45.65	2.00	0.49	5.00	0.00	0.00	0.00
45.70	2.00	0.48	5.00	0.00	0.00	0.00
45.75	2.00	0.48	5.00	0.00	0.00	0.00
45.80	2.00	0.48	5.00	0.00	0.00	0.00
45.85	2.00	0.48	5.00	0.00	0.00	0.00
45.90	2.00	0.48	5.00	0.00	0.00	0.00
45.95	2.00	0.48	5.00	0.00	0.00	0.00
46.00	2.00	0.48	5.00	0.00	0.00	0.00
46.05	2.00	0.48	5.00	0.00	0.00	0.00
46.10	2.00	0.48	5.00	0.00	0.00	0.00

46.15	2.00	0.48	5.00	0.00	0.00	0.00
46.20	2.00	0.48	5.00	0.00	0.00	0.00
46.25	2.00	0.48	5.00	0.00	0.00	0.00
46.30	2.00	0.48	5.00	0.00	0.00	0.00
46.35	2.00	0.48	5.00	0.00	0.00	0.00
46.40	2.00	0.48	5.00	0.00	0.00	0.00
46.45	2.00	0.48	5.00	0.00	0.00	0.00
46.50	2.00	0.48	5.00	0.00	0.00	0.00
46.55	2.00	0.48	5.00	0.00	0.00	0.00
46.60	2.00	0.48	5.00	0.00	0.00	0.00
46.65	2.00	0.48	5.00	0.00	0.00	0.00
46.70	2.00	0.48	5.00	0.00	0.00	0.00
46.75	2.00	0.48	5.00	0.00	0.00	0.00
46.80	2.00	0.48	5.00	0.00	0.00	0.00
46.85	2.00	0.48	5.00	0.00	0.00	0.00
46.90	2.00	0.48	5.00	0.00	0.00	0.00
46.95	2.00	0.48	5.00	0.00	0.00	0.00
47.00	2.00	0.48	5.00	0.00	0.00	0.00
47.05	2.00	0.48	5.00	0.00	0.00	0.00
47.10	2.00	0.48	5.00	0.00	0.00	0.00
47.15	2.00	0.48	5.00	0.00	0.00	0.00
47.20	2.00	0.48	5.00	0.00	0.00	0.00
47.25	2.00	0.48	5.00	0.00	0.00	0.00
47.30	2.00	0.48	5.00	0.00	0.00	0.00
47.35	2.00	0.48	5.00	0.00	0.00	0.00
47.40	2.00	0.48	5.00	0.00	0.00	0.00
47.45	2.00	0.48	5.00	0.00	0.00	0.00
47.50	2.00	0.48	5.00	0.00	0.00	0.00
47.55	2.00	0.48	5.00	0.00	0.00	0.00
47.60	2.00	0.48	5.00	0.00	0.00	0.00
47.65	2.00	0.48	5.00	0.00	0.00	0.00
47.70	2.00	0.48	5.00	0.00	0.00	0.00
47.75	2.00	0.47	5.00	0.00	0.00	0.00
47.80	2.00	0.47	5.00	0.00	0.00	0.00
47.85	2.00	0.47	5.00	0.00	0.00	0.00
47.90	2.00	0.47	5.00	0.00	0.00	0.00
47.95	2.00	0.47	5.00	0.00	0.00	0.00
48.00	2.00	0.47	5.00	0.00	0.00	0.00
48.05	2.00	0.47	5.00	0.00	0.00	0.00
48.10	2.00	0.47	5.00	0.00	0.00	0.00
48.15	2.00	0.47	5.00	0.00	0.00	0.00
48.20	2.00	0.47	5.00	0.00	0.00	0.00
48.25	2.00	0.47	5.00	0.00	0.00	0.00
48.30	2.00	0.47	5.00	0.00	0.00	0.00
48.35	2.00	0.47	5.00	0.00	0.00	0.00
48.40	2.00	0.47	5.00	0.00	0.00	0.00
48.45	2.00	0.47	5.00	0.00	0.00	0.00
48.50	2.00	0.47	5.00	0.00	0.00	0.00
48.55	2.00	0.47	5.00	0.00	0.00	0.00
48.60	2.00	0.47	5.00	0.00	0.00	0.00

48.65	2.00	0.47	5.00	0.00	0.00	0.00
48.70	2.00	0.47	5.00	0.00	0.00	0.00
48.75	2.00	0.47	5.00	0.00	0.00	0.00
48.80	2.00	0.47	5.00	0.00	0.00	0.00
48.85	2.00	0.47	5.00	0.00	0.00	0.00
48.90	2.00	0.47	5.00	0.00	0.00	0.00
48.95	2.00	0.47	5.00	0.00	0.00	0.00
49.00	2.00	0.47	5.00	0.00	0.00	0.00
49.05	2.00	0.47	5.00	0.00	0.00	0.00
49.10	2.00	0.47	5.00	0.00	0.00	0.00
49.15	2.00	0.47	5.00	0.00	0.00	0.00
49.20	2.00	0.47	5.00	0.00	0.00	0.00
49.25	2.00	0.47	5.00	0.00	0.00	0.00
49.30	2.00	0.47	5.00	0.00	0.00	0.00
49.35	2.00	0.47	5.00	0.00	0.00	0.00
49.40	2.00	0.47	5.00	0.00	0.00	0.00
49.45	2.00	0.47	5.00	0.00	0.00	0.00
49.50	2.00	0.47	5.00	0.00	0.00	0.00
49.55	2.00	0.47	5.00	0.00	0.00	0.00
49.60	2.00	0.47	5.00	0.00	0.00	0.00
49.65	2.00	0.47	5.00	0.00	0.00	0.00
49.70	2.00	0.47	5.00	0.00	0.00	0.00
49.75	2.00	0.46	5.00	0.00	0.00	0.00
49.80	2.00	0.46	5.00	0.00	0.00	0.00
49.85	2.00	0.46	5.00	0.00	0.00	0.00
49.90	2.00	0.46	5.00	0.00	0.00	0.00
49.95	2.00	0.46	5.00	0.00	0.00	0.00
50.00	2.00	0.46	5.00	0.00	0.00	0.00

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* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

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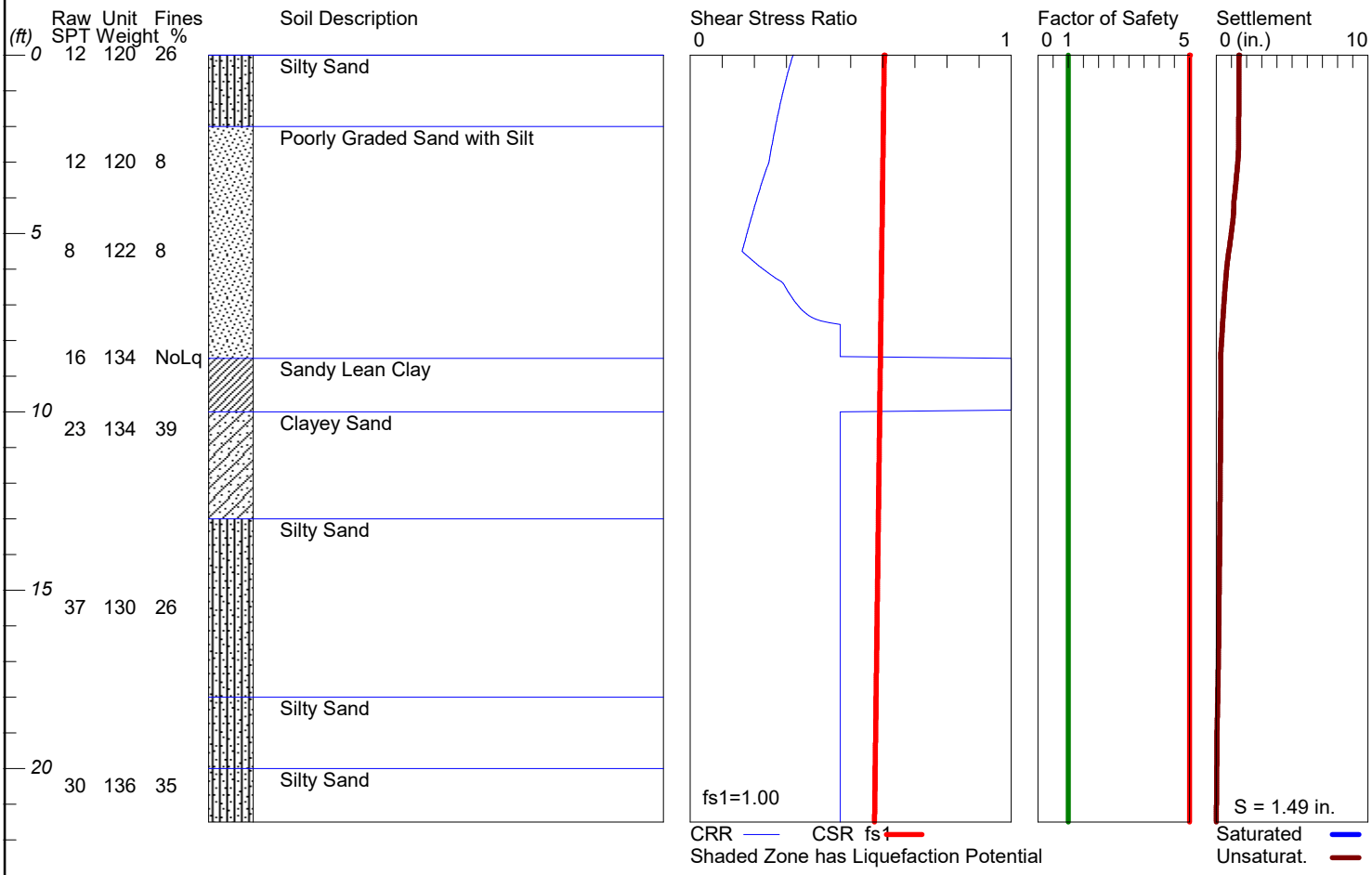
1 atm (atmosphere) = 1 tsf (ton/ft2)
CRRm Cyclic resistance ratio from soils
CSRsf Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S. Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat Settlement from saturated sands
S_dry Settlement from Unsaturated Sands
S_all Total Settlement from Saturated and Unsaturated Sands
NoLiq No-Liquefy Soils

DRY SEISMIC ANALYSIS

Altadena Arts Magnet

Hole No.=B-2 Water Depth=55 ft

Magnitude=7.7
Acceleration=0.93g



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LIQUEFACTION ANALYSIS SUMMARY

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Input File Name: P:\2025\25-3846 PUSD - Geotechnical Services for Altadena Arts Magnet School Campus Improvements Project SI\Soils Folder\Calculations\Settlement\Seismic Settlement\B-2.liq
Title: Altadena Arts Magnet
Subtitle: 25-3846

Surface Elev.=
Hole No.=B-2
Depth of Hole= 21.50 ft
Water Table during Earthquake= 55.00 ft
Water Table during In-Situ Testing= 55.00 ft
Max. Acceleration= 0.93 g
Earthquake Magnitude= 7.70

Input Data:
Surface Elev.=
Hole No.=B-2
Depth of Hole=21.50 ft
Water Table during Earthquake= 55.00 ft
Water Table during In-Situ Testing= 55.00 ft
Max. Acceleration=0.93 g
Earthquake Magnitude=7.70
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. SPT or BPT Calculation.
2. Settlement Analysis Method: Tokimatsu/Seed
3. Fines Correction for Liquefaction: Stark/Olson et al.*
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
6. Hammer Energy Ratio, Ce = 1.25
7. Borehole Diameter, Cb= 1
8. Sampling Method, Cs= 1.2
9. User request factor of safety (apply to CSR) , User= 1
   Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	SPT	gamma pcf	Fines %
0.00	12.00	120.00	26.00
3.00	12.00	120.00	8.00
5.50	8.00	122.00	8.00
8.50	16.00	134.00	NoLiq
10.50	23.00	134.00	39.00
15.50	37.00	130.00	26.00
20.50	30.00	136.00	35.00

Output Results:

Settlement of Saturated Sands=0.00 in.
Settlement of Unsaturated Sands=1.49 in.
Total Settlement of Saturated and Unsaturated Sands=1.49 in.
Differential Settlement=0.744 to 0.982 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.00	0.32	0.60	5.00	0.00	1.49	1.49
0.05	0.32	0.60	5.00	0.00	1.49	1.49
0.10	0.32	0.60	5.00	0.00	1.49	1.49
0.15	0.32	0.60	5.00	0.00	1.49	1.49
0.20	0.31	0.60	5.00	0.00	1.49	1.49
0.25	0.31	0.60	5.00	0.00	1.49	1.49
0.30	0.31	0.60	5.00	0.00	1.49	1.49
0.35	0.31	0.60	5.00	0.00	1.49	1.49
0.40	0.31	0.60	5.00	0.00	1.49	1.49
0.45	0.31	0.60	5.00	0.00	1.49	1.49
0.50	0.30	0.60	5.00	0.00	1.49	1.49
0.55	0.30	0.60	5.00	0.00	1.49	1.49
0.60	0.30	0.60	5.00	0.00	1.49	1.49
0.65	0.30	0.60	5.00	0.00	1.49	1.49
0.70	0.30	0.60	5.00	0.00	1.49	1.49
0.75	0.30	0.60	5.00	0.00	1.49	1.49
0.80	0.30	0.60	5.00	0.00	1.49	1.49
0.85	0.29	0.60	5.00	0.00	1.49	1.49
0.90	0.29	0.60	5.00	0.00	1.49	1.49
0.95	0.29	0.60	5.00	0.00	1.48	1.48
1.00	0.29	0.60	5.00	0.00	1.48	1.48
1.05	0.29	0.60	5.00	0.00	1.48	1.48
1.10	0.29	0.60	5.00	0.00	1.48	1.48
1.15	0.29	0.60	5.00	0.00	1.48	1.48
1.20	0.28	0.60	5.00	0.00	1.48	1.48
1.25	0.28	0.60	5.00	0.00	1.48	1.48
1.30	0.28	0.60	5.00	0.00	1.48	1.48
1.35	0.28	0.60	5.00	0.00	1.48	1.48

1.40	0.28	0.60	5.00	0.00	1.48	1.48
1.45	0.28	0.60	5.00	0.00	1.48	1.48
1.50	0.28	0.60	5.00	0.00	1.48	1.48
1.55	0.28	0.60	5.00	0.00	1.48	1.48
1.60	0.27	0.60	5.00	0.00	1.48	1.48
1.65	0.27	0.60	5.00	0.00	1.48	1.48
1.70	0.27	0.60	5.00	0.00	1.48	1.48
1.75	0.27	0.60	5.00	0.00	1.48	1.48
1.80	0.27	0.60	5.00	0.00	1.48	1.48
1.85	0.27	0.60	5.00	0.00	1.48	1.48
1.90	0.27	0.60	5.00	0.00	1.48	1.48
1.95	0.27	0.60	5.00	0.00	1.48	1.48
2.00	0.27	0.60	5.00	0.00	1.48	1.48
2.05	0.26	0.60	5.00	0.00	1.48	1.48
2.10	0.26	0.60	5.00	0.00	1.48	1.48
2.15	0.26	0.60	5.00	0.00	1.48	1.48
2.20	0.26	0.60	5.00	0.00	1.48	1.48
2.25	0.26	0.60	5.00	0.00	1.47	1.47
2.30	0.26	0.60	5.00	0.00	1.47	1.47
2.35	0.26	0.60	5.00	0.00	1.47	1.47
2.40	0.26	0.60	5.00	0.00	1.47	1.47
2.45	0.26	0.60	5.00	0.00	1.47	1.47
2.50	0.26	0.60	5.00	0.00	1.47	1.47
2.55	0.25	0.60	5.00	0.00	1.47	1.47
2.60	0.25	0.60	5.00	0.00	1.46	1.46
2.65	0.25	0.60	5.00	0.00	1.46	1.46
2.70	0.25	0.60	5.00	0.00	1.46	1.46
2.75	0.25	0.60	5.00	0.00	1.45	1.45
2.80	0.25	0.60	5.00	0.00	1.45	1.45
2.85	0.25	0.60	5.00	0.00	1.44	1.44
2.90	0.25	0.60	5.00	0.00	1.44	1.44
2.95	0.25	0.60	5.00	0.00	1.43	1.43
3.00	0.25	0.60	5.00	0.00	1.42	1.42
3.05	0.24	0.60	5.00	0.00	1.41	1.41
3.10	0.24	0.60	5.00	0.00	1.40	1.40
3.15	0.24	0.60	5.00	0.00	1.39	1.39
3.20	0.24	0.60	5.00	0.00	1.38	1.38
3.25	0.24	0.60	5.00	0.00	1.36	1.36
3.30	0.23	0.60	5.00	0.00	1.35	1.35
3.35	0.23	0.60	5.00	0.00	1.34	1.34
3.40	0.23	0.60	5.00	0.00	1.33	1.33
3.45	0.23	0.60	5.00	0.00	1.32	1.32
3.50	0.23	0.60	5.00	0.00	1.31	1.31
3.55	0.22	0.60	5.00	0.00	1.30	1.30
3.60	0.22	0.60	5.00	0.00	1.29	1.29
3.65	0.22	0.60	5.00	0.00	1.28	1.28
3.70	0.22	0.60	5.00	0.00	1.26	1.26
3.75	0.22	0.60	5.00	0.00	1.25	1.25
3.80	0.22	0.60	5.00	0.00	1.24	1.24
3.85	0.21	0.60	5.00	0.00	1.23	1.23

3.90	0.21	0.60	5.00	0.00	1.22	1.22
3.95	0.21	0.60	5.00	0.00	1.20	1.20
4.00	0.21	0.60	5.00	0.00	1.19	1.19
4.05	0.21	0.60	5.00	0.00	1.18	1.18
4.10	0.21	0.60	5.00	0.00	1.17	1.17
4.15	0.20	0.60	5.00	0.00	1.16	1.16
4.20	0.20	0.60	5.00	0.00	1.16	1.16
4.25	0.20	0.60	5.00	0.00	1.15	1.15
4.30	0.20	0.60	5.00	0.00	1.15	1.15
4.35	0.20	0.60	5.00	0.00	1.14	1.14
4.40	0.20	0.60	5.00	0.00	1.14	1.14
4.45	0.19	0.60	5.00	0.00	1.13	1.13
4.50	0.19	0.60	5.00	0.00	1.12	1.12
4.55	0.19	0.60	5.00	0.00	1.11	1.11
4.60	0.19	0.60	5.00	0.00	1.10	1.10
4.65	0.19	0.60	5.00	0.00	1.09	1.09
4.70	0.19	0.60	5.00	0.00	1.08	1.08
4.75	0.18	0.60	5.00	0.00	1.06	1.06
4.80	0.18	0.60	5.00	0.00	1.05	1.05
4.85	0.18	0.60	5.00	0.00	1.03	1.03
4.90	0.18	0.60	5.00	0.00	1.02	1.02
4.95	0.18	0.60	5.00	0.00	1.00	1.00
5.00	0.18	0.60	5.00	0.00	0.99	0.99
5.05	0.18	0.60	5.00	0.00	0.97	0.97
5.10	0.17	0.60	5.00	0.00	0.96	0.96
5.15	0.17	0.60	5.00	0.00	0.94	0.94
5.20	0.17	0.60	5.00	0.00	0.92	0.92
5.25	0.17	0.60	5.00	0.00	0.91	0.91
5.30	0.17	0.60	5.00	0.00	0.89	0.89
5.35	0.17	0.60	5.00	0.00	0.88	0.88
5.40	0.16	0.60	5.00	0.00	0.86	0.86
5.45	0.16	0.60	5.00	0.00	0.84	0.84
5.50	0.16	0.60	5.00	0.00	0.82	0.82
5.55	0.17	0.60	5.00	0.00	0.81	0.81
5.60	0.17	0.60	5.00	0.00	0.79	0.79
5.65	0.18	0.60	5.00	0.00	0.78	0.78
5.70	0.19	0.60	5.00	0.00	0.76	0.76
5.75	0.19	0.60	5.00	0.00	0.75	0.75
5.80	0.20	0.60	5.00	0.00	0.73	0.73
5.85	0.21	0.60	5.00	0.00	0.72	0.72
5.90	0.21	0.60	5.00	0.00	0.71	0.71
5.95	0.22	0.60	5.00	0.00	0.69	0.69
6.00	0.23	0.60	5.00	0.00	0.68	0.68
6.05	0.24	0.60	5.00	0.00	0.67	0.67
6.10	0.24	0.60	5.00	0.00	0.66	0.66
6.15	0.25	0.60	5.00	0.00	0.65	0.65
6.20	0.26	0.60	5.00	0.00	0.64	0.64
6.25	0.27	0.60	5.00	0.00	0.63	0.63
6.30	0.27	0.60	5.00	0.00	0.62	0.62
6.35	0.28	0.60	5.00	0.00	0.61	0.61

6.40	0.29	0.60	5.00	0.00	0.60	0.60
6.45	0.29	0.60	5.00	0.00	0.59	0.59
6.50	0.30	0.60	5.00	0.00	0.58	0.58
6.55	0.30	0.60	5.00	0.00	0.58	0.58
6.60	0.30	0.60	5.00	0.00	0.57	0.57
6.65	0.31	0.60	5.00	0.00	0.56	0.56
6.70	0.31	0.60	5.00	0.00	0.55	0.55
6.75	0.31	0.59	5.00	0.00	0.54	0.54
6.80	0.32	0.59	5.00	0.00	0.53	0.53
6.85	0.32	0.59	5.00	0.00	0.52	0.52
6.90	0.33	0.59	5.00	0.00	0.52	0.52
6.95	0.33	0.59	5.00	0.00	0.51	0.51
7.00	0.33	0.59	5.00	0.00	0.50	0.50
7.05	0.34	0.59	5.00	0.00	0.49	0.49
7.10	0.34	0.59	5.00	0.00	0.48	0.48
7.15	0.35	0.59	5.00	0.00	0.48	0.48
7.20	0.36	0.59	5.00	0.00	0.47	0.47
7.25	0.36	0.59	5.00	0.00	0.46	0.46
7.30	0.37	0.59	5.00	0.00	0.45	0.45
7.35	0.38	0.59	5.00	0.00	0.44	0.44
7.40	0.39	0.59	5.00	0.00	0.44	0.44
7.45	0.41	0.59	5.00	0.00	0.43	0.43
7.50	0.43	0.59	5.00	0.00	0.42	0.42
7.55	0.47	0.59	5.00	0.00	0.41	0.41
7.60	0.47	0.59	5.00	0.00	0.41	0.41
7.65	0.47	0.59	5.00	0.00	0.40	0.40
7.70	0.47	0.59	5.00	0.00	0.39	0.39
7.75	0.47	0.59	5.00	0.00	0.38	0.38
7.80	0.47	0.59	5.00	0.00	0.38	0.38
7.85	0.47	0.59	5.00	0.00	0.37	0.37
7.90	0.47	0.59	5.00	0.00	0.36	0.36
7.95	0.47	0.59	5.00	0.00	0.36	0.36
8.00	0.47	0.59	5.00	0.00	0.35	0.35
8.05	0.47	0.59	5.00	0.00	0.34	0.34
8.10	0.47	0.59	5.00	0.00	0.33	0.33
8.15	0.47	0.59	5.00	0.00	0.33	0.33
8.20	0.47	0.59	5.00	0.00	0.32	0.32
8.25	0.47	0.59	5.00	0.00	0.31	0.31
8.30	0.47	0.59	5.00	0.00	0.31	0.31
8.35	0.47	0.59	5.00	0.00	0.30	0.30
8.40	0.47	0.59	5.00	0.00	0.30	0.30
8.45	0.47	0.59	5.00	0.00	0.29	0.29
8.50	2.00	0.59	5.00	0.00	0.29	0.29
8.55	2.00	0.59	5.00	0.00	0.29	0.29
8.60	2.00	0.59	5.00	0.00	0.29	0.29
8.65	2.00	0.59	5.00	0.00	0.29	0.29
8.70	2.00	0.59	5.00	0.00	0.29	0.29
8.75	2.00	0.59	5.00	0.00	0.29	0.29
8.80	2.00	0.59	5.00	0.00	0.29	0.29
8.85	2.00	0.59	5.00	0.00	0.29	0.29

8.90	2.00	0.59	5.00	0.00	0.29	0.29
8.95	2.00	0.59	5.00	0.00	0.29	0.29
9.00	2.00	0.59	5.00	0.00	0.29	0.29
9.05	2.00	0.59	5.00	0.00	0.29	0.29
9.10	2.00	0.59	5.00	0.00	0.29	0.29
9.15	2.00	0.59	5.00	0.00	0.29	0.29
9.20	2.00	0.59	5.00	0.00	0.29	0.29
9.25	2.00	0.59	5.00	0.00	0.29	0.29
9.30	2.00	0.59	5.00	0.00	0.29	0.29
9.35	2.00	0.59	5.00	0.00	0.29	0.29
9.40	2.00	0.59	5.00	0.00	0.29	0.29
9.45	2.00	0.59	5.00	0.00	0.29	0.29
9.50	2.00	0.59	5.00	0.00	0.29	0.29
9.55	2.00	0.59	5.00	0.00	0.29	0.29
9.60	2.00	0.59	5.00	0.00	0.29	0.29
9.65	2.00	0.59	5.00	0.00	0.29	0.29
9.70	2.00	0.59	5.00	0.00	0.29	0.29
9.75	2.00	0.59	5.00	0.00	0.29	0.29
9.80	2.00	0.59	5.00	0.00	0.29	0.29
9.85	2.00	0.59	5.00	0.00	0.29	0.29
9.90	2.00	0.59	5.00	0.00	0.29	0.29
9.95	2.00	0.59	5.00	0.00	0.29	0.29
10.00	0.47	0.59	5.00	0.00	0.29	0.29
10.05	0.47	0.59	5.00	0.00	0.29	0.29
10.10	0.47	0.59	5.00	0.00	0.29	0.29
10.15	0.47	0.59	5.00	0.00	0.28	0.28
10.20	0.47	0.59	5.00	0.00	0.28	0.28
10.25	0.47	0.59	5.00	0.00	0.28	0.28
10.30	0.47	0.59	5.00	0.00	0.28	0.28
10.35	0.47	0.59	5.00	0.00	0.28	0.28
10.40	0.47	0.59	5.00	0.00	0.28	0.28
10.45	0.47	0.59	5.00	0.00	0.28	0.28
10.50	0.47	0.59	5.00	0.00	0.28	0.28
10.55	0.47	0.59	5.00	0.00	0.28	0.28
10.60	0.47	0.59	5.00	0.00	0.28	0.28
10.65	0.47	0.59	5.00	0.00	0.28	0.28
10.70	0.47	0.59	5.00	0.00	0.28	0.28
10.75	0.47	0.59	5.00	0.00	0.28	0.28
10.80	0.47	0.59	5.00	0.00	0.27	0.27
10.85	0.47	0.59	5.00	0.00	0.27	0.27
10.90	0.47	0.59	5.00	0.00	0.27	0.27
10.95	0.47	0.59	5.00	0.00	0.27	0.27
11.00	0.47	0.59	5.00	0.00	0.27	0.27
11.05	0.47	0.59	5.00	0.00	0.27	0.27
11.10	0.47	0.59	5.00	0.00	0.27	0.27
11.15	0.47	0.59	5.00	0.00	0.27	0.27
11.20	0.47	0.59	5.00	0.00	0.27	0.27
11.25	0.47	0.59	5.00	0.00	0.27	0.27
11.30	0.47	0.59	5.00	0.00	0.27	0.27
11.35	0.47	0.59	5.00	0.00	0.27	0.27

11.40	0.47	0.59	5.00	0.00	0.27	0.27
11.45	0.47	0.59	5.00	0.00	0.26	0.26
11.50	0.47	0.59	5.00	0.00	0.26	0.26
11.55	0.47	0.59	5.00	0.00	0.26	0.26
11.60	0.47	0.59	5.00	0.00	0.26	0.26
11.65	0.47	0.59	5.00	0.00	0.26	0.26
11.70	0.47	0.59	5.00	0.00	0.26	0.26
11.75	0.47	0.59	5.00	0.00	0.26	0.26
11.80	0.47	0.59	5.00	0.00	0.26	0.26
11.85	0.47	0.59	5.00	0.00	0.26	0.26
11.90	0.47	0.59	5.00	0.00	0.26	0.26
11.95	0.47	0.59	5.00	0.00	0.26	0.26
12.00	0.47	0.59	5.00	0.00	0.25	0.25
12.05	0.47	0.59	5.00	0.00	0.25	0.25
12.10	0.47	0.59	5.00	0.00	0.25	0.25
12.15	0.47	0.59	5.00	0.00	0.25	0.25
12.20	0.47	0.59	5.00	0.00	0.25	0.25
12.25	0.47	0.59	5.00	0.00	0.25	0.25
12.30	0.47	0.59	5.00	0.00	0.25	0.25
12.35	0.47	0.59	5.00	0.00	0.25	0.25
12.40	0.47	0.59	5.00	0.00	0.25	0.25
12.45	0.47	0.59	5.00	0.00	0.25	0.25
12.50	0.47	0.59	5.00	0.00	0.25	0.25
12.55	0.47	0.59	5.00	0.00	0.24	0.24
12.60	0.47	0.59	5.00	0.00	0.24	0.24
12.65	0.47	0.59	5.00	0.00	0.24	0.24
12.70	0.47	0.59	5.00	0.00	0.24	0.24
12.75	0.47	0.59	5.00	0.00	0.24	0.24
12.80	0.47	0.59	5.00	0.00	0.24	0.24
12.85	0.47	0.59	5.00	0.00	0.24	0.24
12.90	0.47	0.59	5.00	0.00	0.24	0.24
12.95	0.47	0.59	5.00	0.00	0.24	0.24
13.00	0.47	0.59	5.00	0.00	0.24	0.24
13.05	0.47	0.59	5.00	0.00	0.23	0.23
13.10	0.47	0.59	5.00	0.00	0.23	0.23
13.15	0.47	0.59	5.00	0.00	0.23	0.23
13.20	0.47	0.59	5.00	0.00	0.23	0.23
13.25	0.47	0.59	5.00	0.00	0.23	0.23
13.30	0.47	0.59	5.00	0.00	0.23	0.23
13.35	0.47	0.59	5.00	0.00	0.23	0.23
13.40	0.47	0.59	5.00	0.00	0.23	0.23
13.45	0.47	0.59	5.00	0.00	0.23	0.23
13.50	0.47	0.59	5.00	0.00	0.22	0.22
13.55	0.47	0.59	5.00	0.00	0.22	0.22
13.60	0.47	0.59	5.00	0.00	0.22	0.22
13.65	0.47	0.59	5.00	0.00	0.22	0.22
13.70	0.47	0.59	5.00	0.00	0.22	0.22
13.75	0.47	0.59	5.00	0.00	0.22	0.22
13.80	0.47	0.59	5.00	0.00	0.22	0.22
13.85	0.47	0.58	5.00	0.00	0.22	0.22

13.90	0.47	0.58	5.00	0.00	0.22	0.22
13.95	0.47	0.58	5.00	0.00	0.21	0.21
14.00	0.47	0.58	5.00	0.00	0.21	0.21
14.05	0.47	0.58	5.00	0.00	0.21	0.21
14.10	0.47	0.58	5.00	0.00	0.21	0.21
14.15	0.47	0.58	5.00	0.00	0.21	0.21
14.20	0.47	0.58	5.00	0.00	0.21	0.21
14.25	0.47	0.58	5.00	0.00	0.21	0.21
14.30	0.47	0.58	5.00	0.00	0.21	0.21
14.35	0.47	0.58	5.00	0.00	0.20	0.20
14.40	0.47	0.58	5.00	0.00	0.20	0.20
14.45	0.47	0.58	5.00	0.00	0.20	0.20
14.50	0.47	0.58	5.00	0.00	0.20	0.20
14.55	0.47	0.58	5.00	0.00	0.20	0.20
14.60	0.47	0.58	5.00	0.00	0.20	0.20
14.65	0.47	0.58	5.00	0.00	0.20	0.20
14.70	0.47	0.58	5.00	0.00	0.20	0.20
14.75	0.47	0.58	5.00	0.00	0.19	0.19
14.80	0.47	0.58	5.00	0.00	0.19	0.19
14.85	0.47	0.58	5.00	0.00	0.19	0.19
14.90	0.47	0.58	5.00	0.00	0.19	0.19
14.95	0.47	0.58	5.00	0.00	0.19	0.19
15.00	0.47	0.58	5.00	0.00	0.19	0.19
15.05	0.47	0.58	5.00	0.00	0.19	0.19
15.10	0.47	0.58	5.00	0.00	0.19	0.19
15.15	0.47	0.58	5.00	0.00	0.19	0.19
15.20	0.47	0.58	5.00	0.00	0.18	0.18
15.25	0.47	0.58	5.00	0.00	0.18	0.18
15.30	0.47	0.58	5.00	0.00	0.18	0.18
15.35	0.47	0.58	5.00	0.00	0.18	0.18
15.40	0.47	0.58	5.00	0.00	0.18	0.18
15.45	0.47	0.58	5.00	0.00	0.18	0.18
15.50	0.47	0.58	5.00	0.00	0.18	0.18
15.55	0.47	0.58	5.00	0.00	0.18	0.18
15.60	0.47	0.58	5.00	0.00	0.18	0.18
15.65	0.47	0.58	5.00	0.00	0.17	0.17
15.70	0.47	0.58	5.00	0.00	0.17	0.17
15.75	0.47	0.58	5.00	0.00	0.17	0.17
15.80	0.47	0.58	5.00	0.00	0.17	0.17
15.85	0.47	0.58	5.00	0.00	0.17	0.17
15.90	0.47	0.58	5.00	0.00	0.17	0.17
15.95	0.47	0.58	5.00	0.00	0.17	0.17
16.00	0.47	0.58	5.00	0.00	0.17	0.17
16.05	0.47	0.58	5.00	0.00	0.16	0.16
16.10	0.47	0.58	5.00	0.00	0.16	0.16
16.15	0.47	0.58	5.00	0.00	0.16	0.16
16.20	0.47	0.58	5.00	0.00	0.16	0.16
16.25	0.47	0.58	5.00	0.00	0.16	0.16
16.30	0.47	0.58	5.00	0.00	0.16	0.16
16.35	0.47	0.58	5.00	0.00	0.16	0.16

16.40	0.47	0.58	5.00	0.00	0.15	0.15
16.45	0.47	0.58	5.00	0.00	0.15	0.15
16.50	0.47	0.58	5.00	0.00	0.15	0.15
16.55	0.47	0.58	5.00	0.00	0.15	0.15
16.60	0.47	0.58	5.00	0.00	0.15	0.15
16.65	0.47	0.58	5.00	0.00	0.15	0.15
16.70	0.47	0.58	5.00	0.00	0.15	0.15
16.75	0.47	0.58	5.00	0.00	0.14	0.14
16.80	0.47	0.58	5.00	0.00	0.14	0.14
16.85	0.47	0.58	5.00	0.00	0.14	0.14
16.90	0.47	0.58	5.00	0.00	0.14	0.14
16.95	0.47	0.58	5.00	0.00	0.14	0.14
17.00	0.47	0.58	5.00	0.00	0.14	0.14
17.05	0.47	0.58	5.00	0.00	0.13	0.13
17.10	0.47	0.58	5.00	0.00	0.13	0.13
17.15	0.47	0.58	5.00	0.00	0.13	0.13
17.20	0.47	0.58	5.00	0.00	0.13	0.13
17.25	0.47	0.58	5.00	0.00	0.13	0.13
17.30	0.47	0.58	5.00	0.00	0.12	0.12
17.35	0.47	0.58	5.00	0.00	0.12	0.12
17.40	0.47	0.58	5.00	0.00	0.12	0.12
17.45	0.47	0.58	5.00	0.00	0.12	0.12
17.50	0.47	0.58	5.00	0.00	0.12	0.12
17.55	0.47	0.58	5.00	0.00	0.12	0.12
17.60	0.47	0.58	5.00	0.00	0.11	0.11
17.65	0.47	0.58	5.00	0.00	0.11	0.11
17.70	0.47	0.58	5.00	0.00	0.11	0.11
17.75	0.47	0.58	5.00	0.00	0.11	0.11
17.80	0.47	0.58	5.00	0.00	0.11	0.11
17.85	0.47	0.58	5.00	0.00	0.10	0.10
17.90	0.47	0.58	5.00	0.00	0.10	0.10
17.95	0.47	0.58	5.00	0.00	0.10	0.10
18.00	0.47	0.58	5.00	0.00	0.10	0.10
18.05	0.47	0.58	5.00	0.00	0.09	0.09
18.10	0.47	0.58	5.00	0.00	0.09	0.09
18.15	0.47	0.58	5.00	0.00	0.09	0.09
18.20	0.47	0.58	5.00	0.00	0.09	0.09
18.25	0.47	0.58	5.00	0.00	0.09	0.09
18.30	0.47	0.58	5.00	0.00	0.08	0.08
18.35	0.47	0.58	5.00	0.00	0.08	0.08
18.40	0.47	0.58	5.00	0.00	0.08	0.08
18.45	0.47	0.58	5.00	0.00	0.08	0.08
18.50	0.47	0.58	5.00	0.00	0.07	0.07
18.55	0.47	0.58	5.00	0.00	0.07	0.07
18.60	0.47	0.58	5.00	0.00	0.07	0.07
18.65	0.47	0.58	5.00	0.00	0.07	0.07
18.70	0.47	0.58	5.00	0.00	0.06	0.06
18.75	0.47	0.58	5.00	0.00	0.06	0.06
18.80	0.47	0.58	5.00	0.00	0.06	0.06
18.85	0.47	0.58	5.00	0.00	0.05	0.05

18.90	0.47	0.58	5.00	0.00	0.05	0.05
18.95	0.47	0.58	5.00	0.00	0.05	0.05
19.00	0.47	0.58	5.00	0.00	0.05	0.05
19.05	0.47	0.58	5.00	0.00	0.04	0.04
19.10	0.47	0.58	5.00	0.00	0.04	0.04
19.15	0.47	0.58	5.00	0.00	0.04	0.04
19.20	0.47	0.58	5.00	0.00	0.04	0.04
19.25	0.47	0.58	5.00	0.00	0.04	0.04
19.30	0.47	0.58	5.00	0.00	0.04	0.04
19.35	0.47	0.58	5.00	0.00	0.04	0.04
19.40	0.47	0.58	5.00	0.00	0.04	0.04
19.45	0.47	0.58	5.00	0.00	0.04	0.04
19.50	0.47	0.58	5.00	0.00	0.04	0.04
19.55	0.47	0.58	5.00	0.00	0.04	0.04
19.60	0.47	0.58	5.00	0.00	0.03	0.03
19.65	0.47	0.58	5.00	0.00	0.03	0.03
19.70	0.47	0.58	5.00	0.00	0.03	0.03
19.75	0.47	0.58	5.00	0.00	0.03	0.03
19.80	0.47	0.58	5.00	0.00	0.03	0.03
19.85	0.47	0.58	5.00	0.00	0.03	0.03
19.90	0.47	0.58	5.00	0.00	0.03	0.03
19.95	0.47	0.58	5.00	0.00	0.03	0.03
20.00	0.47	0.58	5.00	0.00	0.03	0.03
20.05	0.47	0.58	5.00	0.00	0.03	0.03
20.10	0.47	0.58	5.00	0.00	0.03	0.03
20.15	0.47	0.58	5.00	0.00	0.03	0.03
20.20	0.47	0.58	5.00	0.00	0.02	0.02
20.25	0.47	0.58	5.00	0.00	0.02	0.02
20.30	0.47	0.58	5.00	0.00	0.02	0.02
20.35	0.47	0.58	5.00	0.00	0.02	0.02
20.40	0.47	0.58	5.00	0.00	0.02	0.02
20.45	0.47	0.58	5.00	0.00	0.02	0.02
20.50	0.47	0.58	5.00	0.00	0.02	0.02
20.55	0.47	0.58	5.00	0.00	0.02	0.02
20.60	0.47	0.58	5.00	0.00	0.02	0.02
20.65	0.47	0.58	5.00	0.00	0.02	0.02
20.70	0.47	0.58	5.00	0.00	0.02	0.02
20.75	0.47	0.58	5.00	0.00	0.01	0.01
20.80	0.47	0.58	5.00	0.00	0.01	0.01
20.85	0.47	0.58	5.00	0.00	0.01	0.01
20.90	0.47	0.58	5.00	0.00	0.01	0.01
20.95	0.47	0.57	5.00	0.00	0.01	0.01
21.00	0.47	0.57	5.00	0.00	0.01	0.01
21.05	0.47	0.57	5.00	0.00	0.01	0.01
21.10	0.47	0.57	5.00	0.00	0.01	0.01
21.15	0.47	0.57	5.00	0.00	0.01	0.01
21.20	0.47	0.57	5.00	0.00	0.01	0.01
21.25	0.47	0.57	5.00	0.00	0.01	0.01
21.30	0.47	0.57	5.00	0.00	0.00	0.00
21.35	0.47	0.57	5.00	0.00	0.00	0.00

21.40	0.47	0.57	5.00	0.00	0.00	0.00
21.45	0.47	0.57	5.00	0.00	0.00	0.00
21.50	0.47	0.57	5.00	0.00	0.00	0.00

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

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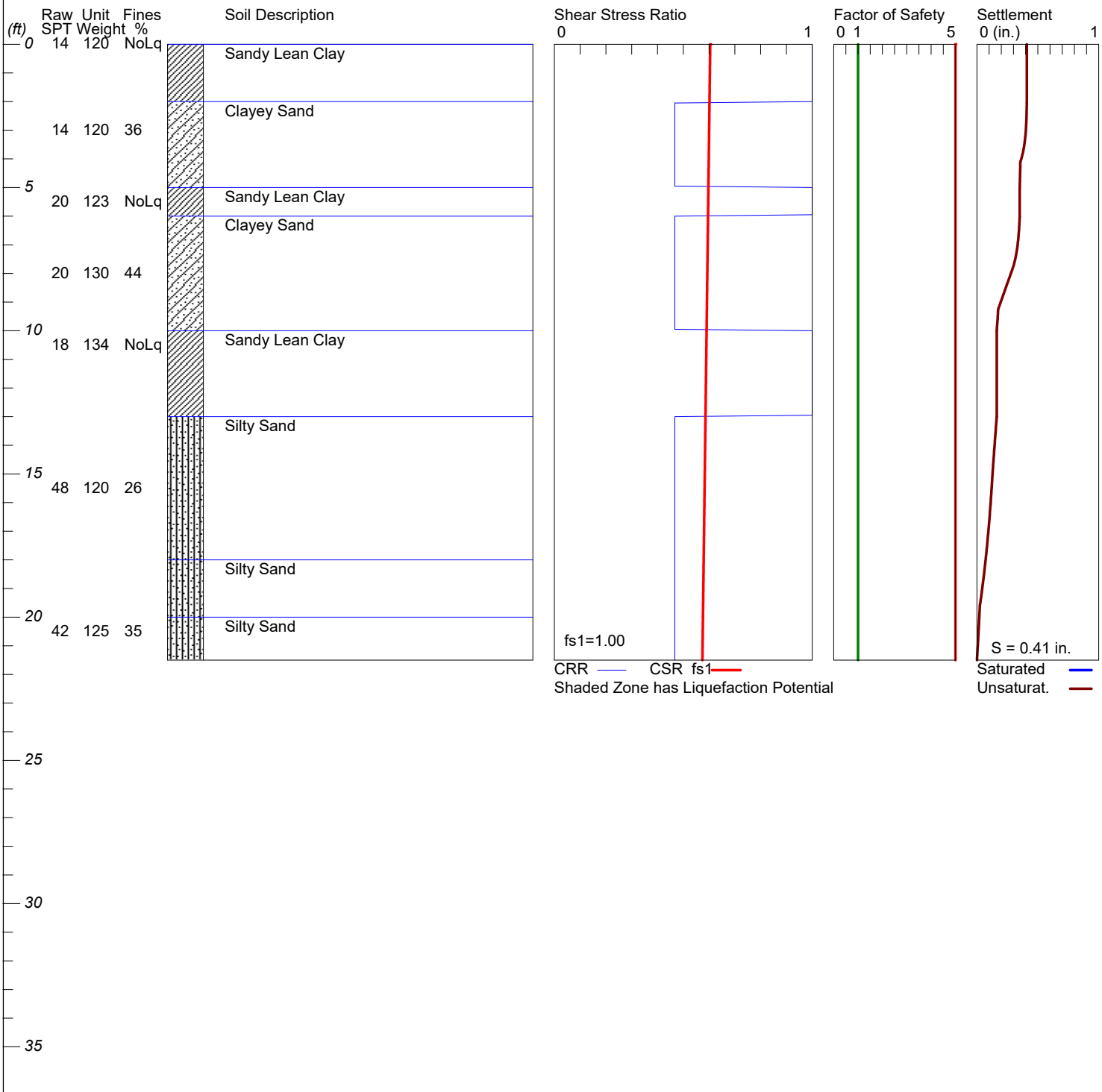
1 atm (atmosphere) = 1 tsf (ton/ft2)
CRRm Cyclic resistance ratio from soils
CSRsf Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S. Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat Settlement from saturated sands
S_dry Settlement from Unsaturated Sands
S_all Total Settlement from Saturated and Unsaturated Sands
NoLiq No-Liquefy Soils

Dry Seismic Settlement

Altadena Arts Magnet

Hole No.=B-3 Water Depth=55 ft

Magnitude=7.7
Acceleration=0.93g



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LIQUEFACTION ANALYSIS SUMMARY

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Input File Name: P:\2025\25-3846 PUSD - Geotechnical Services for Altadena Arts Magnet School Campus Improvements Project SI\Soils Folder\Calculations\Settlement\Seismic Settlement\B-3.liq
Title: Altadena Arts Magnet
Subtitle: 25-3846

Surface Elev.=
Hole No.=B-3
Depth of Hole= 21.50 ft
Water Table during Earthquake= 55.00 ft
Water Table during In-Situ Testing= 55.00 ft
Max. Acceleration= 0.93 g
Earthquake Magnitude= 7.70

Input Data:
Surface Elev.=
Hole No.=B-3
Depth of Hole=21.50 ft
Water Table during Earthquake= 55.00 ft
Water Table during In-Situ Testing= 55.00 ft
Max. Acceleration=0.93 g
Earthquake Magnitude=7.70
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. SPT or BPT Calculation.
2. Settlement Analysis Method: Tokimatsu/Seed
3. Fines Correction for Liquefaction: Stark/Olson et al.*
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
6. Hammer Energy Ratio, Ce = 1.25
7. Borehole Diameter, Cb= 1
8. Sampling Method, Cs= 1.2
9. User request factor of safety (apply to CSR) , User= 1
   Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	SPT	gamma pcf	Fines %
0.00	14.00	120.00	NoLiq
3.00	14.00	120.00	36.00
5.50	20.00	123.00	NoLiq
8.00	20.00	130.00	44.00
10.50	18.00	134.00	NoLiq
15.50	48.00	120.00	26.00
20.50	42.00	125.00	35.00

Output Results:

Settlement of Saturated Sands=0.00 in.
Settlement of Unsaturated Sands=0.41 in.
Total Settlement of Saturated and Unsaturated Sands=0.41 in.
Differential Settlement=0.205 to 0.270 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.00	2.00	0.60	5.00	0.00	0.41	0.41
0.05	2.00	0.60	5.00	0.00	0.41	0.41
0.10	2.00	0.60	5.00	0.00	0.41	0.41
0.15	2.00	0.60	5.00	0.00	0.41	0.41
0.20	2.00	0.60	5.00	0.00	0.41	0.41
0.25	2.00	0.60	5.00	0.00	0.41	0.41
0.30	2.00	0.60	5.00	0.00	0.41	0.41
0.35	2.00	0.60	5.00	0.00	0.41	0.41
0.40	2.00	0.60	5.00	0.00	0.41	0.41
0.45	2.00	0.60	5.00	0.00	0.41	0.41
0.50	2.00	0.60	5.00	0.00	0.41	0.41
0.55	2.00	0.60	5.00	0.00	0.41	0.41
0.60	2.00	0.60	5.00	0.00	0.41	0.41
0.65	2.00	0.60	5.00	0.00	0.41	0.41
0.70	2.00	0.60	5.00	0.00	0.41	0.41
0.75	2.00	0.60	5.00	0.00	0.41	0.41
0.80	2.00	0.60	5.00	0.00	0.41	0.41
0.85	2.00	0.60	5.00	0.00	0.41	0.41
0.90	2.00	0.60	5.00	0.00	0.41	0.41
0.95	2.00	0.60	5.00	0.00	0.41	0.41
1.00	2.00	0.60	5.00	0.00	0.41	0.41
1.05	2.00	0.60	5.00	0.00	0.41	0.41
1.10	2.00	0.60	5.00	0.00	0.41	0.41
1.15	2.00	0.60	5.00	0.00	0.41	0.41
1.20	2.00	0.60	5.00	0.00	0.41	0.41
1.25	2.00	0.60	5.00	0.00	0.41	0.41
1.30	2.00	0.60	5.00	0.00	0.41	0.41
1.35	2.00	0.60	5.00	0.00	0.41	0.41

1.40	2.00	0.60	5.00	0.00	0.41	0.41
1.45	2.00	0.60	5.00	0.00	0.41	0.41
1.50	2.00	0.60	5.00	0.00	0.41	0.41
1.55	2.00	0.60	5.00	0.00	0.41	0.41
1.60	2.00	0.60	5.00	0.00	0.41	0.41
1.65	2.00	0.60	5.00	0.00	0.41	0.41
1.70	2.00	0.60	5.00	0.00	0.41	0.41
1.75	2.00	0.60	5.00	0.00	0.41	0.41
1.80	2.00	0.60	5.00	0.00	0.41	0.41
1.85	2.00	0.60	5.00	0.00	0.41	0.41
1.90	2.00	0.60	5.00	0.00	0.41	0.41
1.95	2.00	0.60	5.00	0.00	0.41	0.41
2.00	2.00	0.60	5.00	0.00	0.41	0.41
2.05	0.47	0.60	5.00	0.00	0.41	0.41
2.10	0.47	0.60	5.00	0.00	0.41	0.41
2.15	0.47	0.60	5.00	0.00	0.41	0.41
2.20	0.47	0.60	5.00	0.00	0.41	0.41
2.25	0.47	0.60	5.00	0.00	0.41	0.41
2.30	0.47	0.60	5.00	0.00	0.41	0.41
2.35	0.47	0.60	5.00	0.00	0.41	0.41
2.40	0.47	0.60	5.00	0.00	0.41	0.41
2.45	0.47	0.60	5.00	0.00	0.41	0.41
2.50	0.47	0.60	5.00	0.00	0.41	0.41
2.55	0.47	0.60	5.00	0.00	0.41	0.41
2.60	0.47	0.60	5.00	0.00	0.41	0.41
2.65	0.47	0.60	5.00	0.00	0.41	0.41
2.70	0.47	0.60	5.00	0.00	0.41	0.41
2.75	0.47	0.60	5.00	0.00	0.40	0.40
2.80	0.47	0.60	5.00	0.00	0.40	0.40
2.85	0.47	0.60	5.00	0.00	0.40	0.40
2.90	0.47	0.60	5.00	0.00	0.40	0.40
2.95	0.47	0.60	5.00	0.00	0.40	0.40
3.00	0.47	0.60	5.00	0.00	0.40	0.40
3.05	0.47	0.60	5.00	0.00	0.40	0.40
3.10	0.47	0.60	5.00	0.00	0.40	0.40
3.15	0.47	0.60	5.00	0.00	0.40	0.40
3.20	0.47	0.60	5.00	0.00	0.40	0.40
3.25	0.47	0.60	5.00	0.00	0.40	0.40
3.30	0.47	0.60	5.00	0.00	0.40	0.40
3.35	0.47	0.60	5.00	0.00	0.39	0.39
3.40	0.47	0.60	5.00	0.00	0.39	0.39
3.45	0.47	0.60	5.00	0.00	0.39	0.39
3.50	0.47	0.60	5.00	0.00	0.39	0.39
3.55	0.47	0.60	5.00	0.00	0.39	0.39
3.60	0.47	0.60	5.00	0.00	0.39	0.39
3.65	0.47	0.60	5.00	0.00	0.38	0.38
3.70	0.47	0.60	5.00	0.00	0.38	0.38
3.75	0.47	0.60	5.00	0.00	0.38	0.38
3.80	0.47	0.60	5.00	0.00	0.38	0.38
3.85	0.47	0.60	5.00	0.00	0.37	0.37

3.90	0.47	0.60	5.00	0.00	0.37	0.37
3.95	0.47	0.60	5.00	0.00	0.37	0.37
4.00	0.47	0.60	5.00	0.00	0.36	0.36
4.05	0.47	0.60	5.00	0.00	0.36	0.36
4.10	0.47	0.60	5.00	0.00	0.36	0.36
4.15	0.47	0.60	5.00	0.00	0.36	0.36
4.20	0.47	0.60	5.00	0.00	0.36	0.36
4.25	0.47	0.60	5.00	0.00	0.36	0.36
4.30	0.47	0.60	5.00	0.00	0.36	0.36
4.35	0.47	0.60	5.00	0.00	0.36	0.36
4.40	0.47	0.60	5.00	0.00	0.35	0.35
4.45	0.47	0.60	5.00	0.00	0.35	0.35
4.50	0.47	0.60	5.00	0.00	0.35	0.35
4.55	0.47	0.60	5.00	0.00	0.35	0.35
4.60	0.47	0.60	5.00	0.00	0.35	0.35
4.65	0.47	0.60	5.00	0.00	0.35	0.35
4.70	0.47	0.60	5.00	0.00	0.35	0.35
4.75	0.47	0.60	5.00	0.00	0.35	0.35
4.80	0.47	0.60	5.00	0.00	0.35	0.35
4.85	0.47	0.60	5.00	0.00	0.35	0.35
4.90	0.47	0.60	5.00	0.00	0.35	0.35
4.95	0.47	0.60	5.00	0.00	0.35	0.35
5.00	2.00	0.60	5.00	0.00	0.35	0.35
5.05	2.00	0.60	5.00	0.00	0.35	0.35
5.10	2.00	0.60	5.00	0.00	0.35	0.35
5.15	2.00	0.60	5.00	0.00	0.35	0.35
5.20	2.00	0.60	5.00	0.00	0.35	0.35
5.25	2.00	0.60	5.00	0.00	0.35	0.35
5.30	2.00	0.60	5.00	0.00	0.35	0.35
5.35	2.00	0.60	5.00	0.00	0.35	0.35
5.40	2.00	0.60	5.00	0.00	0.35	0.35
5.45	2.00	0.60	5.00	0.00	0.35	0.35
5.50	2.00	0.60	5.00	0.00	0.35	0.35
5.55	2.00	0.60	5.00	0.00	0.35	0.35
5.60	2.00	0.60	5.00	0.00	0.35	0.35
5.65	2.00	0.60	5.00	0.00	0.35	0.35
5.70	2.00	0.60	5.00	0.00	0.35	0.35
5.75	2.00	0.60	5.00	0.00	0.35	0.35
5.80	2.00	0.60	5.00	0.00	0.35	0.35
5.85	2.00	0.60	5.00	0.00	0.35	0.35
5.90	2.00	0.60	5.00	0.00	0.35	0.35
5.95	2.00	0.60	5.00	0.00	0.35	0.35
6.00	0.47	0.60	5.00	0.00	0.35	0.35
6.05	0.47	0.60	5.00	0.00	0.35	0.35
6.10	0.47	0.60	5.00	0.00	0.35	0.35
6.15	0.47	0.60	5.00	0.00	0.35	0.35
6.20	0.47	0.60	5.00	0.00	0.35	0.35
6.25	0.47	0.60	5.00	0.00	0.35	0.35
6.30	0.47	0.60	5.00	0.00	0.35	0.35
6.35	0.47	0.60	5.00	0.00	0.35	0.35

6.40	0.47	0.60	5.00	0.00	0.35	0.35
6.45	0.47	0.60	5.00	0.00	0.35	0.35
6.50	0.47	0.60	5.00	0.00	0.34	0.34
6.55	0.47	0.60	5.00	0.00	0.34	0.34
6.60	0.47	0.60	5.00	0.00	0.34	0.34
6.65	0.47	0.60	5.00	0.00	0.34	0.34
6.70	0.47	0.60	5.00	0.00	0.34	0.34
6.75	0.47	0.59	5.00	0.00	0.34	0.34
6.80	0.47	0.59	5.00	0.00	0.34	0.34
6.85	0.47	0.59	5.00	0.00	0.34	0.34
6.90	0.47	0.59	5.00	0.00	0.34	0.34
6.95	0.47	0.59	5.00	0.00	0.34	0.34
7.00	0.47	0.59	5.00	0.00	0.33	0.33
7.05	0.47	0.59	5.00	0.00	0.33	0.33
7.10	0.47	0.59	5.00	0.00	0.33	0.33
7.15	0.47	0.59	5.00	0.00	0.33	0.33
7.20	0.47	0.59	5.00	0.00	0.33	0.33
7.25	0.47	0.59	5.00	0.00	0.33	0.33
7.30	0.47	0.59	5.00	0.00	0.32	0.32
7.35	0.47	0.59	5.00	0.00	0.32	0.32
7.40	0.47	0.59	5.00	0.00	0.32	0.32
7.45	0.47	0.59	5.00	0.00	0.32	0.32
7.50	0.47	0.59	5.00	0.00	0.31	0.31
7.55	0.47	0.59	5.00	0.00	0.31	0.31
7.60	0.47	0.59	5.00	0.00	0.31	0.31
7.65	0.47	0.59	5.00	0.00	0.31	0.31
7.70	0.47	0.59	5.00	0.00	0.30	0.30
7.75	0.47	0.59	5.00	0.00	0.30	0.30
7.80	0.47	0.59	5.00	0.00	0.30	0.30
7.85	0.47	0.59	5.00	0.00	0.29	0.29
7.90	0.47	0.59	5.00	0.00	0.29	0.29
7.95	0.47	0.59	5.00	0.00	0.28	0.28
8.00	0.47	0.59	5.00	0.00	0.28	0.28
8.05	0.47	0.59	5.00	0.00	0.27	0.27
8.10	0.47	0.59	5.00	0.00	0.27	0.27
8.15	0.47	0.59	5.00	0.00	0.27	0.27
8.20	0.47	0.59	5.00	0.00	0.26	0.26
8.25	0.47	0.59	5.00	0.00	0.26	0.26
8.30	0.47	0.59	5.00	0.00	0.25	0.25
8.35	0.47	0.59	5.00	0.00	0.25	0.25
8.40	0.47	0.59	5.00	0.00	0.25	0.25
8.45	0.47	0.59	5.00	0.00	0.24	0.24
8.50	0.47	0.59	5.00	0.00	0.24	0.24
8.55	0.47	0.59	5.00	0.00	0.23	0.23
8.60	0.47	0.59	5.00	0.00	0.23	0.23
8.65	0.47	0.59	5.00	0.00	0.22	0.22
8.70	0.47	0.59	5.00	0.00	0.22	0.22
8.75	0.47	0.59	5.00	0.00	0.22	0.22
8.80	0.47	0.59	5.00	0.00	0.21	0.21
8.85	0.47	0.59	5.00	0.00	0.21	0.21

8.90	0.47	0.59	5.00	0.00	0.20	0.20
8.95	0.47	0.59	5.00	0.00	0.20	0.20
9.00	0.47	0.59	5.00	0.00	0.20	0.20
9.05	0.47	0.59	5.00	0.00	0.19	0.19
9.10	0.47	0.59	5.00	0.00	0.19	0.19
9.15	0.47	0.59	5.00	0.00	0.18	0.18
9.20	0.47	0.59	5.00	0.00	0.18	0.18
9.25	0.47	0.59	5.00	0.00	0.17	0.17
9.30	0.47	0.59	5.00	0.00	0.17	0.17
9.35	0.47	0.59	5.00	0.00	0.17	0.17
9.40	0.47	0.59	5.00	0.00	0.17	0.17
9.45	0.47	0.59	5.00	0.00	0.17	0.17
9.50	0.47	0.59	5.00	0.00	0.17	0.17
9.55	0.47	0.59	5.00	0.00	0.17	0.17
9.60	0.47	0.59	5.00	0.00	0.17	0.17
9.65	0.47	0.59	5.00	0.00	0.17	0.17
9.70	0.47	0.59	5.00	0.00	0.17	0.17
9.75	0.47	0.59	5.00	0.00	0.17	0.17
9.80	0.47	0.59	5.00	0.00	0.17	0.17
9.85	0.47	0.59	5.00	0.00	0.17	0.17
9.90	0.47	0.59	5.00	0.00	0.16	0.16
9.95	0.47	0.59	5.00	0.00	0.16	0.16
10.00	2.00	0.59	5.00	0.00	0.16	0.16
10.05	2.00	0.59	5.00	0.00	0.16	0.16
10.10	2.00	0.59	5.00	0.00	0.16	0.16
10.15	2.00	0.59	5.00	0.00	0.16	0.16
10.20	2.00	0.59	5.00	0.00	0.16	0.16
10.25	2.00	0.59	5.00	0.00	0.16	0.16
10.30	2.00	0.59	5.00	0.00	0.16	0.16
10.35	2.00	0.59	5.00	0.00	0.16	0.16
10.40	2.00	0.59	5.00	0.00	0.16	0.16
10.45	2.00	0.59	5.00	0.00	0.16	0.16
10.50	2.00	0.59	5.00	0.00	0.16	0.16
10.55	2.00	0.59	5.00	0.00	0.16	0.16
10.60	2.00	0.59	5.00	0.00	0.16	0.16
10.65	2.00	0.59	5.00	0.00	0.16	0.16
10.70	2.00	0.59	5.00	0.00	0.16	0.16
10.75	2.00	0.59	5.00	0.00	0.16	0.16
10.80	2.00	0.59	5.00	0.00	0.16	0.16
10.85	2.00	0.59	5.00	0.00	0.16	0.16
10.90	2.00	0.59	5.00	0.00	0.16	0.16
10.95	2.00	0.59	5.00	0.00	0.16	0.16
11.00	2.00	0.59	5.00	0.00	0.16	0.16
11.05	2.00	0.59	5.00	0.00	0.16	0.16
11.10	2.00	0.59	5.00	0.00	0.16	0.16
11.15	2.00	0.59	5.00	0.00	0.16	0.16
11.20	2.00	0.59	5.00	0.00	0.16	0.16
11.25	2.00	0.59	5.00	0.00	0.16	0.16
11.30	2.00	0.59	5.00	0.00	0.16	0.16
11.35	2.00	0.59	5.00	0.00	0.16	0.16

11.40	2.00	0.59	5.00	0.00	0.16	0.16
11.45	2.00	0.59	5.00	0.00	0.16	0.16
11.50	2.00	0.59	5.00	0.00	0.16	0.16
11.55	2.00	0.59	5.00	0.00	0.16	0.16
11.60	2.00	0.59	5.00	0.00	0.16	0.16
11.65	2.00	0.59	5.00	0.00	0.16	0.16
11.70	2.00	0.59	5.00	0.00	0.16	0.16
11.75	2.00	0.59	5.00	0.00	0.16	0.16
11.80	2.00	0.59	5.00	0.00	0.16	0.16
11.85	2.00	0.59	5.00	0.00	0.16	0.16
11.90	2.00	0.59	5.00	0.00	0.16	0.16
11.95	2.00	0.59	5.00	0.00	0.16	0.16
12.00	2.00	0.59	5.00	0.00	0.16	0.16
12.05	2.00	0.59	5.00	0.00	0.16	0.16
12.10	2.00	0.59	5.00	0.00	0.16	0.16
12.15	2.00	0.59	5.00	0.00	0.16	0.16
12.20	2.00	0.59	5.00	0.00	0.16	0.16
12.25	2.00	0.59	5.00	0.00	0.16	0.16
12.30	2.00	0.59	5.00	0.00	0.16	0.16
12.35	2.00	0.59	5.00	0.00	0.16	0.16
12.40	2.00	0.59	5.00	0.00	0.16	0.16
12.45	2.00	0.59	5.00	0.00	0.16	0.16
12.50	2.00	0.59	5.00	0.00	0.16	0.16
12.55	2.00	0.59	5.00	0.00	0.16	0.16
12.60	2.00	0.59	5.00	0.00	0.16	0.16
12.65	2.00	0.59	5.00	0.00	0.16	0.16
12.70	2.00	0.59	5.00	0.00	0.16	0.16
12.75	2.00	0.59	5.00	0.00	0.16	0.16
12.80	2.00	0.59	5.00	0.00	0.16	0.16
12.85	2.00	0.59	5.00	0.00	0.16	0.16
12.90	2.00	0.59	5.00	0.00	0.16	0.16
12.95	2.00	0.59	5.00	0.00	0.16	0.16
13.00	0.47	0.59	5.00	0.00	0.16	0.16
13.05	0.47	0.59	5.00	0.00	0.16	0.16
13.10	0.47	0.59	5.00	0.00	0.16	0.16
13.15	0.47	0.59	5.00	0.00	0.16	0.16
13.20	0.47	0.59	5.00	0.00	0.16	0.16
13.25	0.47	0.59	5.00	0.00	0.16	0.16
13.30	0.47	0.59	5.00	0.00	0.16	0.16
13.35	0.47	0.59	5.00	0.00	0.16	0.16
13.40	0.47	0.59	5.00	0.00	0.16	0.16
13.45	0.47	0.59	5.00	0.00	0.15	0.15
13.50	0.47	0.59	5.00	0.00	0.15	0.15
13.55	0.47	0.59	5.00	0.00	0.15	0.15
13.60	0.47	0.59	5.00	0.00	0.15	0.15
13.65	0.47	0.59	5.00	0.00	0.15	0.15
13.70	0.47	0.59	5.00	0.00	0.15	0.15
13.75	0.47	0.59	5.00	0.00	0.15	0.15
13.80	0.47	0.59	5.00	0.00	0.15	0.15
13.85	0.47	0.58	5.00	0.00	0.15	0.15

13.90	0.47	0.58	5.00	0.00	0.15	0.15
13.95	0.47	0.58	5.00	0.00	0.15	0.15
14.00	0.47	0.58	5.00	0.00	0.14	0.14
14.05	0.47	0.58	5.00	0.00	0.14	0.14
14.10	0.47	0.58	5.00	0.00	0.14	0.14
14.15	0.47	0.58	5.00	0.00	0.14	0.14
14.20	0.47	0.58	5.00	0.00	0.14	0.14
14.25	0.47	0.58	5.00	0.00	0.14	0.14
14.30	0.47	0.58	5.00	0.00	0.14	0.14
14.35	0.47	0.58	5.00	0.00	0.14	0.14
14.40	0.47	0.58	5.00	0.00	0.14	0.14
14.45	0.47	0.58	5.00	0.00	0.14	0.14
14.50	0.47	0.58	5.00	0.00	0.14	0.14
14.55	0.47	0.58	5.00	0.00	0.14	0.14
14.60	0.47	0.58	5.00	0.00	0.13	0.13
14.65	0.47	0.58	5.00	0.00	0.13	0.13
14.70	0.47	0.58	5.00	0.00	0.13	0.13
14.75	0.47	0.58	5.00	0.00	0.13	0.13
14.80	0.47	0.58	5.00	0.00	0.13	0.13
14.85	0.47	0.58	5.00	0.00	0.13	0.13
14.90	0.47	0.58	5.00	0.00	0.13	0.13
14.95	0.47	0.58	5.00	0.00	0.13	0.13
15.00	0.47	0.58	5.00	0.00	0.13	0.13
15.05	0.47	0.58	5.00	0.00	0.13	0.13
15.10	0.47	0.58	5.00	0.00	0.13	0.13
15.15	0.47	0.58	5.00	0.00	0.13	0.13
15.20	0.47	0.58	5.00	0.00	0.13	0.13
15.25	0.47	0.58	5.00	0.00	0.12	0.12
15.30	0.47	0.58	5.00	0.00	0.12	0.12
15.35	0.47	0.58	5.00	0.00	0.12	0.12
15.40	0.47	0.58	5.00	0.00	0.12	0.12
15.45	0.47	0.58	5.00	0.00	0.12	0.12
15.50	0.47	0.58	5.00	0.00	0.12	0.12
15.55	0.47	0.58	5.00	0.00	0.12	0.12
15.60	0.47	0.58	5.00	0.00	0.12	0.12
15.65	0.47	0.58	5.00	0.00	0.12	0.12
15.70	0.47	0.58	5.00	0.00	0.12	0.12
15.75	0.47	0.58	5.00	0.00	0.12	0.12
15.80	0.47	0.58	5.00	0.00	0.12	0.12
15.85	0.47	0.58	5.00	0.00	0.11	0.11
15.90	0.47	0.58	5.00	0.00	0.11	0.11
15.95	0.47	0.58	5.00	0.00	0.11	0.11
16.00	0.47	0.58	5.00	0.00	0.11	0.11
16.05	0.47	0.58	5.00	0.00	0.11	0.11
16.10	0.47	0.58	5.00	0.00	0.11	0.11
16.15	0.47	0.58	5.00	0.00	0.11	0.11
16.20	0.47	0.58	5.00	0.00	0.11	0.11
16.25	0.47	0.58	5.00	0.00	0.11	0.11
16.30	0.47	0.58	5.00	0.00	0.11	0.11
16.35	0.47	0.58	5.00	0.00	0.11	0.11

16.40	0.47	0.58	5.00	0.00	0.11	0.11
16.45	0.47	0.58	5.00	0.00	0.10	0.10
16.50	0.47	0.58	5.00	0.00	0.10	0.10
16.55	0.47	0.58	5.00	0.00	0.10	0.10
16.60	0.47	0.58	5.00	0.00	0.10	0.10
16.65	0.47	0.58	5.00	0.00	0.10	0.10
16.70	0.47	0.58	5.00	0.00	0.10	0.10
16.75	0.47	0.58	5.00	0.00	0.10	0.10
16.80	0.47	0.58	5.00	0.00	0.10	0.10
16.85	0.47	0.58	5.00	0.00	0.10	0.10
16.90	0.47	0.58	5.00	0.00	0.10	0.10
16.95	0.47	0.58	5.00	0.00	0.09	0.09
17.00	0.47	0.58	5.00	0.00	0.09	0.09
17.05	0.47	0.58	5.00	0.00	0.09	0.09
17.10	0.47	0.58	5.00	0.00	0.09	0.09
17.15	0.47	0.58	5.00	0.00	0.09	0.09
17.20	0.47	0.58	5.00	0.00	0.09	0.09
17.25	0.47	0.58	5.00	0.00	0.09	0.09
17.30	0.47	0.58	5.00	0.00	0.09	0.09
17.35	0.47	0.58	5.00	0.00	0.09	0.09
17.40	0.47	0.58	5.00	0.00	0.09	0.09
17.45	0.47	0.58	5.00	0.00	0.08	0.08
17.50	0.47	0.58	5.00	0.00	0.08	0.08
17.55	0.47	0.58	5.00	0.00	0.08	0.08
17.60	0.47	0.58	5.00	0.00	0.08	0.08
17.65	0.47	0.58	5.00	0.00	0.08	0.08
17.70	0.47	0.58	5.00	0.00	0.08	0.08
17.75	0.47	0.58	5.00	0.00	0.08	0.08
17.80	0.47	0.58	5.00	0.00	0.08	0.08
17.85	0.47	0.58	5.00	0.00	0.07	0.07
17.90	0.47	0.58	5.00	0.00	0.07	0.07
17.95	0.47	0.58	5.00	0.00	0.07	0.07
18.00	0.47	0.58	5.00	0.00	0.07	0.07
18.05	0.47	0.58	5.00	0.00	0.07	0.07
18.10	0.47	0.58	5.00	0.00	0.07	0.07
18.15	0.47	0.58	5.00	0.00	0.07	0.07
18.20	0.47	0.58	5.00	0.00	0.07	0.07
18.25	0.47	0.58	5.00	0.00	0.06	0.06
18.30	0.47	0.58	5.00	0.00	0.06	0.06
18.35	0.47	0.58	5.00	0.00	0.06	0.06
18.40	0.47	0.58	5.00	0.00	0.06	0.06
18.45	0.47	0.58	5.00	0.00	0.06	0.06
18.50	0.47	0.58	5.00	0.00	0.06	0.06
18.55	0.47	0.58	5.00	0.00	0.06	0.06
18.60	0.47	0.58	5.00	0.00	0.06	0.06
18.65	0.47	0.58	5.00	0.00	0.05	0.05
18.70	0.47	0.58	5.00	0.00	0.05	0.05
18.75	0.47	0.58	5.00	0.00	0.05	0.05
18.80	0.47	0.58	5.00	0.00	0.05	0.05
18.85	0.47	0.58	5.00	0.00	0.05	0.05

18.90	0.47	0.58	5.00	0.00	0.05	0.05
18.95	0.47	0.58	5.00	0.00	0.04	0.04
19.00	0.47	0.58	5.00	0.00	0.04	0.04
19.05	0.47	0.58	5.00	0.00	0.04	0.04
19.10	0.47	0.58	5.00	0.00	0.04	0.04
19.15	0.47	0.58	5.00	0.00	0.04	0.04
19.20	0.47	0.58	5.00	0.00	0.04	0.04
19.25	0.47	0.58	5.00	0.00	0.04	0.04
19.30	0.47	0.58	5.00	0.00	0.03	0.03
19.35	0.47	0.58	5.00	0.00	0.03	0.03
19.40	0.47	0.58	5.00	0.00	0.03	0.03
19.45	0.47	0.58	5.00	0.00	0.03	0.03
19.50	0.47	0.58	5.00	0.00	0.03	0.03
19.55	0.47	0.58	5.00	0.00	0.03	0.03
19.60	0.47	0.58	5.00	0.00	0.02	0.02
19.65	0.47	0.58	5.00	0.00	0.02	0.02
19.70	0.47	0.58	5.00	0.00	0.02	0.02
19.75	0.47	0.58	5.00	0.00	0.02	0.02
19.80	0.47	0.58	5.00	0.00	0.02	0.02
19.85	0.47	0.58	5.00	0.00	0.02	0.02
19.90	0.47	0.58	5.00	0.00	0.02	0.02
19.95	0.47	0.58	5.00	0.00	0.02	0.02
20.00	0.47	0.58	5.00	0.00	0.02	0.02
20.05	0.47	0.58	5.00	0.00	0.02	0.02
20.10	0.47	0.58	5.00	0.00	0.02	0.02
20.15	0.47	0.58	5.00	0.00	0.02	0.02
20.20	0.47	0.58	5.00	0.00	0.02	0.02
20.25	0.47	0.58	5.00	0.00	0.02	0.02
20.30	0.47	0.58	5.00	0.00	0.02	0.02
20.35	0.47	0.58	5.00	0.00	0.02	0.02
20.40	0.47	0.58	5.00	0.00	0.01	0.01
20.45	0.47	0.58	5.00	0.00	0.01	0.01
20.50	0.47	0.58	5.00	0.00	0.01	0.01
20.55	0.47	0.58	5.00	0.00	0.01	0.01
20.60	0.47	0.58	5.00	0.00	0.01	0.01
20.65	0.47	0.58	5.00	0.00	0.01	0.01
20.70	0.47	0.58	5.00	0.00	0.01	0.01
20.75	0.47	0.58	5.00	0.00	0.01	0.01
20.80	0.47	0.58	5.00	0.00	0.01	0.01
20.85	0.47	0.58	5.00	0.00	0.01	0.01
20.90	0.47	0.58	5.00	0.00	0.01	0.01
20.95	0.47	0.57	5.00	0.00	0.01	0.01
21.00	0.47	0.57	5.00	0.00	0.01	0.01
21.05	0.47	0.57	5.00	0.00	0.01	0.01
21.10	0.47	0.57	5.00	0.00	0.01	0.01
21.15	0.47	0.57	5.00	0.00	0.00	0.00
21.20	0.47	0.57	5.00	0.00	0.00	0.00
21.25	0.47	0.57	5.00	0.00	0.00	0.00
21.30	0.47	0.57	5.00	0.00	0.00	0.00
21.35	0.47	0.57	5.00	0.00	0.00	0.00

21.40	0.47	0.57	5.00	0.00	0.00	0.00
21.45	0.47	0.57	5.00	0.00	0.00	0.00
21.50	0.47	0.57	5.00	0.00	0.00	0.00

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

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1 atm (atmosphere) = 1 tsf (ton/ft2)
CRRm Cyclic resistance ratio from soils
CSRsf Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S. Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat Settlement from saturated sands
S_dry Settlement from Unsaturated Sands
S_all Total Settlement from Saturated and Unsaturated Sands
NoLiq No-Liquefy Soils

Percolation Testing

Job Name: Altadena Arts Magnet School - SI

Job No.: 25-3846

Test Location: East of El Molino Avenue, 743 E Calaveras Street, Altadena, CA 91001, Lat.: 34.185155° Long.: -118.134465°

Water Table Depth (Perched) (ft): >50.4 **Relatively Impervious Layer Depth (ft):** 0-50.4

Test Date: 12/5/2025

Test No.: P-1 Falling Head

Depth of Boring (d_b): 120 in

Diameter of Boring (D): 8.5 in

Test Performer: JG

Trial No.	Initial Time T_1 (min)	Final Time T_2 (min)	Time Interval $\Delta T = T_2 - T_1$ (min)	Initial Depth to Water d_1 (in)	Final Depth to Water d_2 (in)	Initial Height of Water Column $d_{H1} = d_b - d_1$ (in)	Final Height of Water Column $d_{H2} = d_b - d_2$ (in)	Average Height of Water Column $d_{avg} = (d_{H1}+d_{H2})/2$ (in)	Drop in Height $\Delta d_H = d_{H1} - d_{H2}$ (in)	Boring Wet Surface Area (ft^2)	Volume of Water Drop (ft^3)	Calculated Flow Rate (ft^3/min)	Calculated Flow Rate (ft^3/hr)	Infiltration Rate (in/hr)
1	0.0	30.0	30.0	70 6/8	72	49 2/8	48	48 5/8	1 2/8	9.41	0.04	0.001	0.08	0.10
2	0.0	30.0	30.0	72	72 7/8	48	47 1/8	47 5/8	7/8	9.22	0.03	0.001	0.06	0.07
3	0.0	30.0	30.0	71 2/8	72	48 6/8	48	48 3/8	6/8	9.36	0.02	0.001	0.05	0.06
4	0.0	30.0	30.0	72	72 5/8	48	47 3/8	47 6/8	5/8	9.24	0.02	0.001	0.04	0.05
5	0.0	30.0	30.0	72	72 3/8	48	47 5/8	47 7/8	3/8	9.26	0.01	0.000	0.02	0.03
6	0.0	30.0	30.0	71 6/8	72 1/8	48 2/8	47 7/8	48	3/8	9.31	0.01	0.000	0.02	0.03

During Testing:

Average Infiltration Rate (in/hr)=	0.06
Median Infiltration Rate (in/hr)=	0.06
Lowest Infiltration Rate (in/hr)=	0.03
Average Water Depth (ft) =	4.00
Median Water Depth (ft) =	4.00
Total Time of Test Conducted (hr) =	3.00

$RF = RF_t + RF_v + RF_s = 3$

RF_t= 1 Range 1 to 3

RF_v= 1 Range 1 to 3

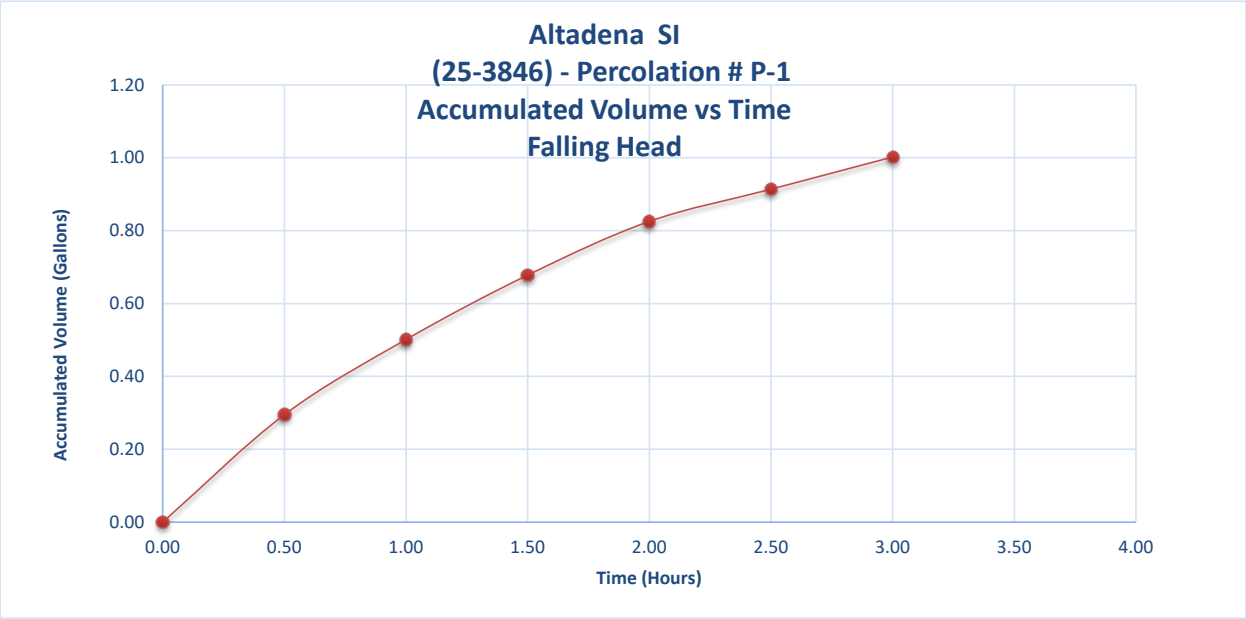
RF_s= 1 Range 1 to 3

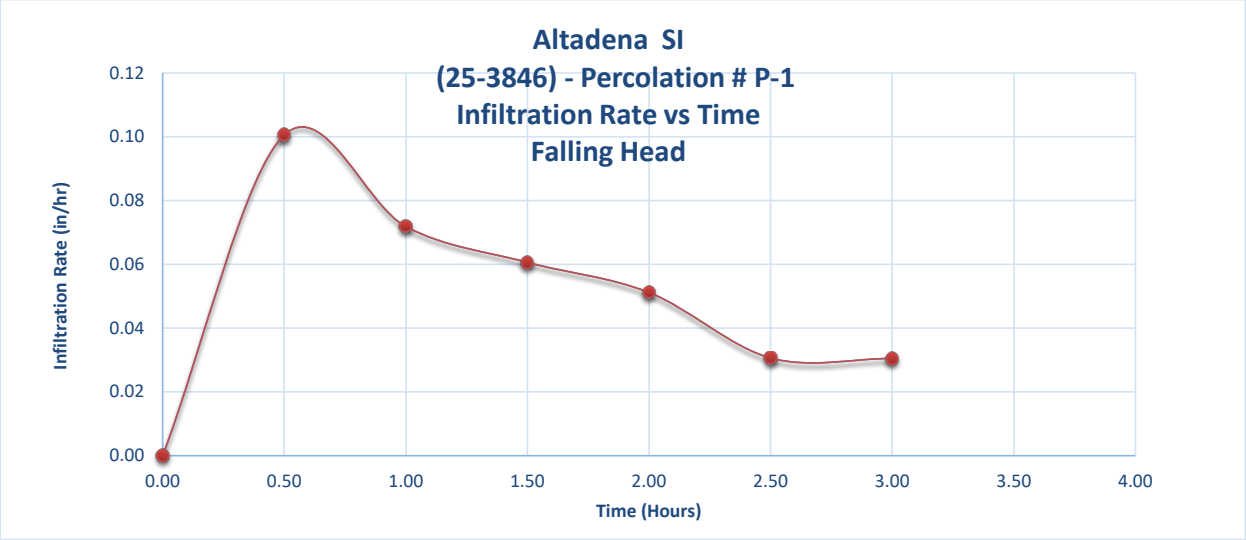
Reduction Factor for Boring Percolation Testing RFt, Site Variability, Number of Tests & Borings RFv, and Long Term Maintenance RFs

Short Term Infiltration Rate (in/hr) = 0.04

Long Term Infiltration Rate (in/hr) = 0.01

Reference: Administrative Manual - Los Angeles County Public works, Geotechnical & Materials Engineering Division, GS200.1 dated 06/30/21


Altadena SI
(25-3846) - Percolation # P-1
Accumulated Volume vs Time
Falling Head
Accumulated Volume (Gallons)
1.20
1.00
0.80
0.60
0.40
0.20
0.00
0.00
0.50
1.00
1.50
2.00
2.50
3.00
3.50
4.00
Time (Hours)


Altadena SI
(25-3846) - Percolation # P-1
Infiltration Rate vs Time
Falling Head
Infiltration Rate (in/hr)
0.12
0.10
0.08
0.06
0.04
0.02
0.00
0.00
0.50
1.00
1.50
2.00
2.50
3.00
3.50
4.00
Time (Hours)

Percolation Testing

Job Name: Altadena Arts Magnet School - SI

Job No.: 25-3846

Test Location: North of existing modular buildings, 743 E Calaveras Street, Altadena, CA 91001, Latitude: 34.185861° Longitude: -118.135422°

Water Table Depth (Perched) (ft): >50.4 **Relatively Impervious Layer Depth (ft):** 0-50.4

Test Date: 12/5/2025

Test No.: P-2 Falling Head

Depth of Boring (d_b): 120 in

Diameter of Boring (D): 8.5 in

Test Performer: JG

Trial No.	Initial Time T_1 (min)	Final Time T_2 (min)	Time Interval $\Delta T = T_2 - T_1$ (min)	Initial Depth to Water d_1 (in)	Final Depth to Water d_2 (in)	Initial Height of Water Column $d_{H1} = d_b - d_1$ (in)	Final Height of Water Column $d_{H2} = d_b - d_2$ (in)	Average Height of Water Column $d_{avg} = (d_{H1}+d_{H2})/2$ (in)	Drop in Height $\Delta d_H = d_{H1} - d_{H2}$ (in)	Boring Wet Surface Area (ft^2)	Volume of Water Drop (ft^3)	Calculated Flow Rate (ft^3/min)	Calculated Flow Rate (ft^3/hr)	Infiltration Rate (in/hr)
1	0.0	30.0	30.0	72	72 6/8	48	47 2/8	47 5/8	6/8	9.23	0.02	0.00	0.05	0.06
2	0.0	30.0	30.0	72	72 5/8	48	47 3/8	47 6/8	5/8	9.24	0.02	0.00	0.04	0.05
3	0.0	30.0	30.0	72	72 4/8	48	47 4/8	47 6/8	4/8	9.25	0.02	0.00	0.03	0.04
4	0.0	30.0	30.0	72	72 4/8	48	47 4/8	47 6/8	4/8	9.25	0.02	0.00	0.03	0.04
5	0.0	30.0	30.0	72	72 4/8	48	47 4/8	47 6/8	4/8	9.25	0.02	0.00	0.03	0.04
6	0.0	30.0	30.0	72	72 4/8	48	47 4/8	47 6/8	4/8	9.25	0.02	0.00	0.03	0.04

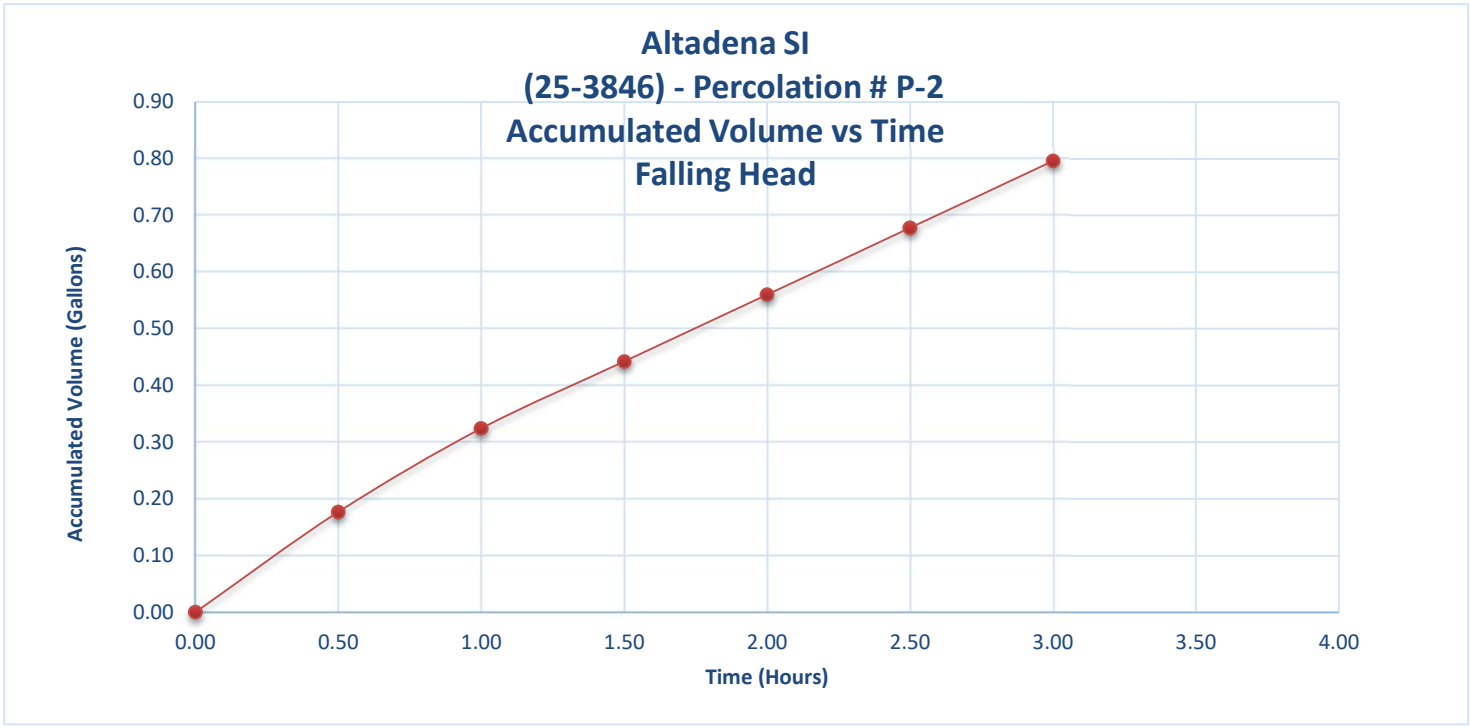
During Testing:

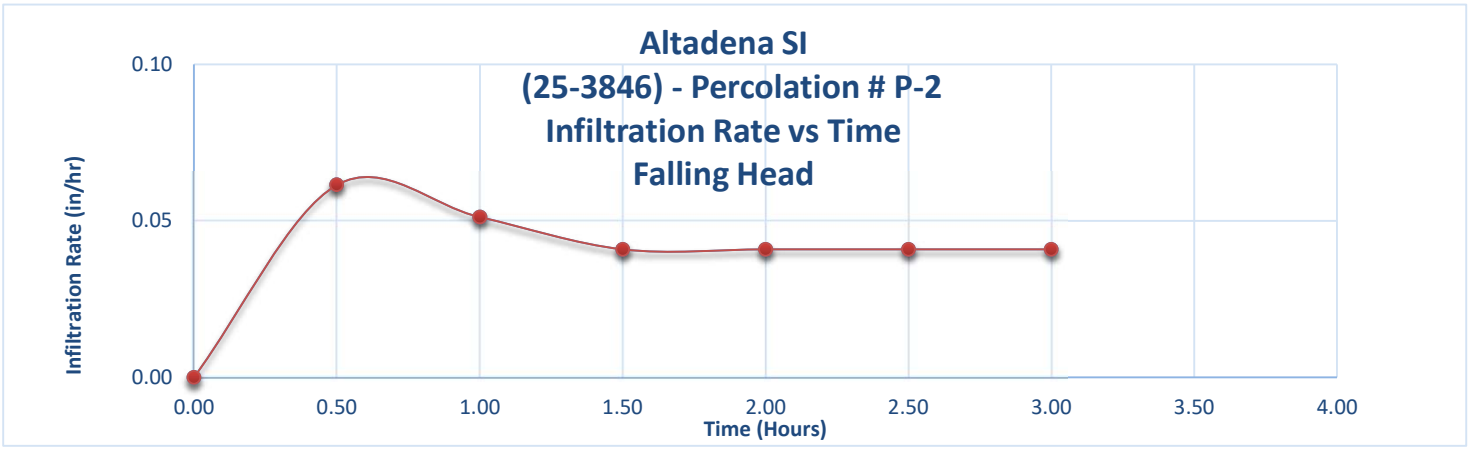
Average Infiltration Rate (in/hr)=	0.05	$RF = RF_t + RF_v + RF_s$ = 3	
Median Infiltration Rate (in/hr)=	0.04	RF_t= 1	Range 1 to 3
Lowest Infiltration Rate (in/hr)=	0.04	RF_v= 1	Range 1 to 3
Average Water Depth (ft) =	3.98	RF_s= 1	Range 1 to 3
Median Water Depth (ft) =	3.98	Reduction Factor for Boring Percolation Testing RFt, Site Variability, Number of Tests & Borings RFv, and Long Term Maintenance RFs	
Total Time of Test Conducted (hr) =	3.00		

Short Term Infiltration Rate (in/hr) = 0.04

Long Term Infiltration Rate (in/hr) = 0.01

Reference: Administrative Manual - Los Angeles County Public works, Geotechnical & Materials Engineering Division, GS200.1 dated 06/30/21


Altadena SI
(25-3846) - Percolation # P-2
Accumulated Volume vs Time
Falling Head
Accumulated Volume (Gallons)
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
0.00
0.50
1.00
1.50
2.00
2.50
3.00
3.50
4.00
Time (Hours)


Altadena SI
(25-3846) - Percolation # P-2
Infiltration Rate vs Time
Falling Head
Infiltration Rate (in/hr)
0.10
0.05
0.00
0.00
0.50
1.00
1.50
2.00
2.50
3.00
3.50
4.00
Time (Hours)

APPENDIX D

Historical Earthquake Data

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*************************
*                       *
*    E Q S E A R C H    *
*                       *
*     Version 3.00      *
*                       *
*************************
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ESTIMATION OF
PEAK ACCELERATION FROM
CALIFORNIA EARTHQUAKE CATALOGS

JOB NUMBER: 25-3846

DATE: 12-29-2025

JOB NAME: Altadena Arts

EARTHQUAKE-CATALOG-FILE NAME: ALLQUAKE.DAT

MAGNITUDE RANGE:
   MINIMUM MAGNITUDE: 5.00
   MAXIMUM MAGNITUDE: 9.00

SITE COORDINATES:
   SITE LATITUDE: 34.1852
   SITE LONGITUDE: 118.1346

SEARCH DATES:
           START DATE: 1800
           END DATE: 2000

SEARCH RADIUS:
           60.0 mi
           96.6 km

ATTENUATION RELATION: 14) Campbell & Bozorgnia (1997 Rev.) - Alluvium
   UNCERTAINTY (M=Median, S=Sigma): M   Number of Sigmas: 0.0
   ASSUMED SOURCE TYPE: DS [SS=Strike-slip, DS=Reverse-slip, BT=Blind-thrust]
   SCOND: 0 Depth Source: A
   Basement Depth: 5.00 km   Campbell SSR: 0   Campbell SHR: 0
   COMPUTE PEAK HORIZONTAL ACCELERATION

MINIMUM DEPTH VALUE (km): 3.0

EARTHQUAKE SEARCH RESULTS

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
MGI	34.1000	118.1000	07/11/1855	415 0.0	0.0	6.30	0.359	IX	6.2(10.0)
PAS	34.0730	118.0980	10/04/1987	105938.2	8.2	5.30	0.134	VIII	8.0(12.9)
PAS	34.0610	118.0790	10/01/1987	144220.0	9.5	5.90	0.190	VIII	9.1(14.7)
GSP	34.2620	118.0020	06/28/1991	144354.5	11.0	5.40	0.125	VII	9.2(14.9)
MGI	34.0800	118.2600	07/16/1920	18 8 0.0	0.0	5.00	0.079	VII	10.2(16.4)
DMG	34.2000	117.9000	08/28/1889	215 0.0	0.0	5.50	0.086	VII	13.4(21.6)
T-A	34.0000	118.2500	01/10/1856	0 0 0.0	0.0	5.00	0.052	VI	14.4(23.1)
T-A	34.0000	118.2500	09/23/1827	0 0 0.0	0.0	5.00	0.052	VI	14.4(23.1)
T-A	34.0000	118.2500	03/26/1860	0 0 0.0	0.0	5.00	0.052	VI	14.4(23.1)
MGI	34.0000	118.0000	12/25/1903	1745 0.0	0.0	5.00	0.050	VI	14.9(24.0)
MGI	34.0000	118.3000	09/03/1905	540 0.0	0.0	5.30	0.059	VI	15.9(25.6)
GSP	34.2310	118.4750	03/20/1994	212012.3	13.0	5.30	0.044	VI	19.7(31.7)
DMG	34.3080	118.4540	02/09/1971	144346.7	6.2	5.20	0.039	V	20.1(32.3)
DMG	34.4110	118.4010	02/09/1971	14 041.8	8.4	6.40	0.092	VII	21.8(35.0)
DMG	34.4110	118.4010	02/09/1971	14 1 8.0	8.0	5.80	0.058	VI	21.8(35.0)
DMG	34.4110	118.4010	02/09/1971	141028.0	8.0	5.30	0.038	V	21.8(35.0)
DMG	34.4110	118.4010	02/09/1971	14 244.0	8.0	5.80	0.058	VI	21.8(35.0)
GSP	34.2130	118.5370	01/17/1994	123055.4	18.0	6.70	0.107	VII	23.1(37.1)
DMG	34.5190	118.1980	08/23/1952	10 9 7.1	13.1	5.00	0.027	V	23.3(37.5)
DMG	33.8500	118.2670	03/11/1933	1425 0.0	0.0	5.00	0.026	V	24.3(39.2)
DMG	34.0000	118.5000	08/04/1927	1224 0.0	0.0	5.00	0.026	V	24.5(39.4)
MGI	34.0000	118.5000	11/19/1918	2018 0.0	0.0	5.00	0.026	V	24.5(39.4)
GSP	34.1400	117.7000	02/28/1990	234336.6	5.0	5.20	0.029	V	25.0(40.3)
GSB	34.3010	118.5650	01/17/1994	204602.4	9.0	5.20	0.028	V	25.8(41.6)
GSP	34.3050	118.5790	01/29/1994	112036.0	1.0	5.10	0.025	V	26.7(42.9)
DMG	34.3000	118.6000	04/04/1893	1940 0.0	0.0	6.00	0.048	VI	27.7(44.6)
DMG	33.7830	118.1330	10/02/1933	91017.6	0.0	5.40	0.030	V	27.8(44.7)
DMG	33.7830	118.2500	11/14/1941	84136.3	0.0	5.40	0.029	V	28.5(45.9)
DMG	33.7500	118.0830	03/13/1933	131828.0	0.0	5.30	0.024	V	30.2(48.6)
DMG	33.7500	118.0830	03/11/1933	323 0.0	0.0	5.00	0.019	IV	30.2(48.6)
DMG	33.7500	118.0830	03/11/1933	910 0.0	0.0	5.10	0.021	IV	30.2(48.6)
DMG	33.7500	118.0830	03/11/1933	2 9 0.0	0.0	5.00	0.019	IV	30.2(48.6)
DMG	33.7500	118.0830	03/11/1933	230 0.0	0.0	5.10	0.021	IV	30.2(48.6)
DMG	34.3700	117.6500	12/08/1812	15 0 0.0	0.0	7.00	0.092	VII	30.4(49.0)
GSP	34.3780	118.6180	01/19/1994	211144.9	11.0	5.10	0.020	IV	30.6(49.3)
DMG	34.3000	117.6000	07/30/1894	512 0.0	0.0	6.00	0.040	V	31.5(50.7)
DMG	33.9500	118.6320	08/31/1930	04036.0	0.0	5.20	0.020	IV	32.8(52.7)
GSP	34.3690	118.6720	04/26/1997	103730.7	16.0	5.10	0.018	IV	33.2(53.4)
GSP	34.3260	118.6980	01/17/1994	233330.7	9.0	5.60	0.027	V	33.6(54.0)
PAS	33.9190	118.6270	01/19/1989	65328.8	11.9	5.00	0.016	IV	33.6(54.1)
GSP	34.3940	118.6690	06/26/1995	084028.9	13.0	5.00	0.016	IV	33.7(54.3)
DMG	33.7000	118.0670	03/11/1933	85457.0	0.0	5.10	0.018	IV	33.7(54.3)
DMG	33.7000	118.0670	03/11/1933	51022.0	0.0	5.10	0.018	IV	33.7(54.3)
DMG	34.2700	117.5400	09/12/1970	143053.0	8.0	5.40	0.022	IV	34.4(55.4)
GSP	34.3770	118.6980	01/18/1994	004308.9	11.0	5.20	0.018	IV	34.8(55.9)
DMG	33.6830	118.0500	03/11/1933	658 3.0	0.0	5.50	0.023	IV	35.0(56.3)
PAS	33.9440	118.6810	01/01/1979	231438.9	11.3	5.00	0.015	IV	35.4(57.0)
GSB	34.3790	118.7110	01/19/1994	210928.6	14.0	5.50	0.023	IV	35.5(57.1)
DMG	34.3000	117.5000	07/22/1899	2032 0.0	0.0	6.50	0.048	VI	37.1(59.7)
MGI	34.0000	117.5000	12/16/1858	10 0 0.0	0.0	7.00	0.067	VI	38.5(61.9)
DMG	33.6170	118.0170	03/14/1933	19 150.0	0.0	5.10	0.014	IV	39.8(64.1)
DMG	33.6170	117.9670	03/11/1933	154 7.8	0.0	6.30	0.036	V	40.4(65.0)
MGI	33.8000	117.6000	04/22/1918	2115 0.0	0.0	5.00	0.013	III	40.5(65.2)

EARTHQUAKE SEARCH RESULTS

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	34.2000	117.4000	07/22/1899	046 0.0	0.0	5.50	0.018	IV	42.0(67.5)
DMG	33.5750	117.9830	03/11/1933	518 4.0	0.0	5.20	0.014	III	43.0(69.2)
MGI	34.1000	117.3000	07/15/1905	2041 0.0	0.0	5.30	0.013	III	48.1(77.3)
DMG	33.6990	117.5110	05/31/1938	83455.4	10.0	5.50	0.014	IV	49.0(78.9)
DMG	34.0000	119.0000	09/24/1827	4 0 0.0	0.0	7.00	0.045	VI	51.1(82.2)
MGI	34.0000	119.0000	12/14/1912	0 0 0.0	0.0	5.70	0.016	IV	51.1(82.2)
DMG	34.0650	119.0350	02/21/1973	144557.3	8.0	5.90	0.018	IV	52.1(83.9)

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DMG |34.0000|117.2500|07/23/1923| 73026.0|  0.0| 6.25| 0.024 |  V  | 52.2( 84.0)
DMG |33.7000|117.4000|05/15/1910|1547 0.0|  0.0| 6.00| 0.019 | IV  | 53.8( 86.5)
DMG |33.7000|117.4000|05/13/1910| 620 0.0|  0.0| 5.00| 0.008 | III | 53.8( 86.5)
DMG |33.7000|117.4000|04/11/1910| 757 0.0|  0.0| 5.00| 0.008 | III | 53.8( 86.5)
T-A |34.8300|118.7500|11/27/1852| 0 0 0.0|  0.0| 7.00| 0.039 |  V  | 56.6( 91.1)
DMG |33.9000|117.2000|12/19/1880| 0 0 0.0|  0.0| 6.00| 0.017 | IV  | 57.0( 91.7)
DMG |34.2000|117.1000|09/20/1907| 154 0.0|  0.0| 6.00| 0.017 | IV  | 59.1( 95.1)

********************************************************************************
-END OF SEARCH-   67 EARTHQUAKES FOUND WITHIN THE SPECIFIED SEARCH AREA.

TIME PERIOD OF SEARCH:   1800  TO  2000

LENGTH OF SEARCH TIME:   201  years

THE EARTHQUAKE CLOSEST TO THE SITE IS ABOUT 6.2 MILES (10.0 km) AWAY.

LARGEST EARTHQUAKE MAGNITUDE FOUND IN THE SEARCH RADIUS: 7.0

LARGEST EARTHQUAKE SITE ACCELERATION FROM THIS SEARCH: 0.359 g

COEFFICIENTS FOR GUTENBERG & RICHTER RECURRENCE RELATION:
  a-value=  1.022
  b-value=  0.342
  beta-value=  0.788


-------------------------------------
TABLE OF MAGNITUDES AND EXCEEDANCES:
-------------------------------------

  Earthquake | Number of Times | Cumulative
   Magnitude |    Exceeded     | No. / Year
  -----------+-----------------+------------
     4.0     |       67        |   0.33333
     4.5     |       67        |   0.33333
     5.0     |       67        |   0.33333
     5.5     |       26        |   0.12935
     6.0     |       15        |   0.07463
     6.5     |        6        |   0.02985
     7.0     |        4        |   0.01990
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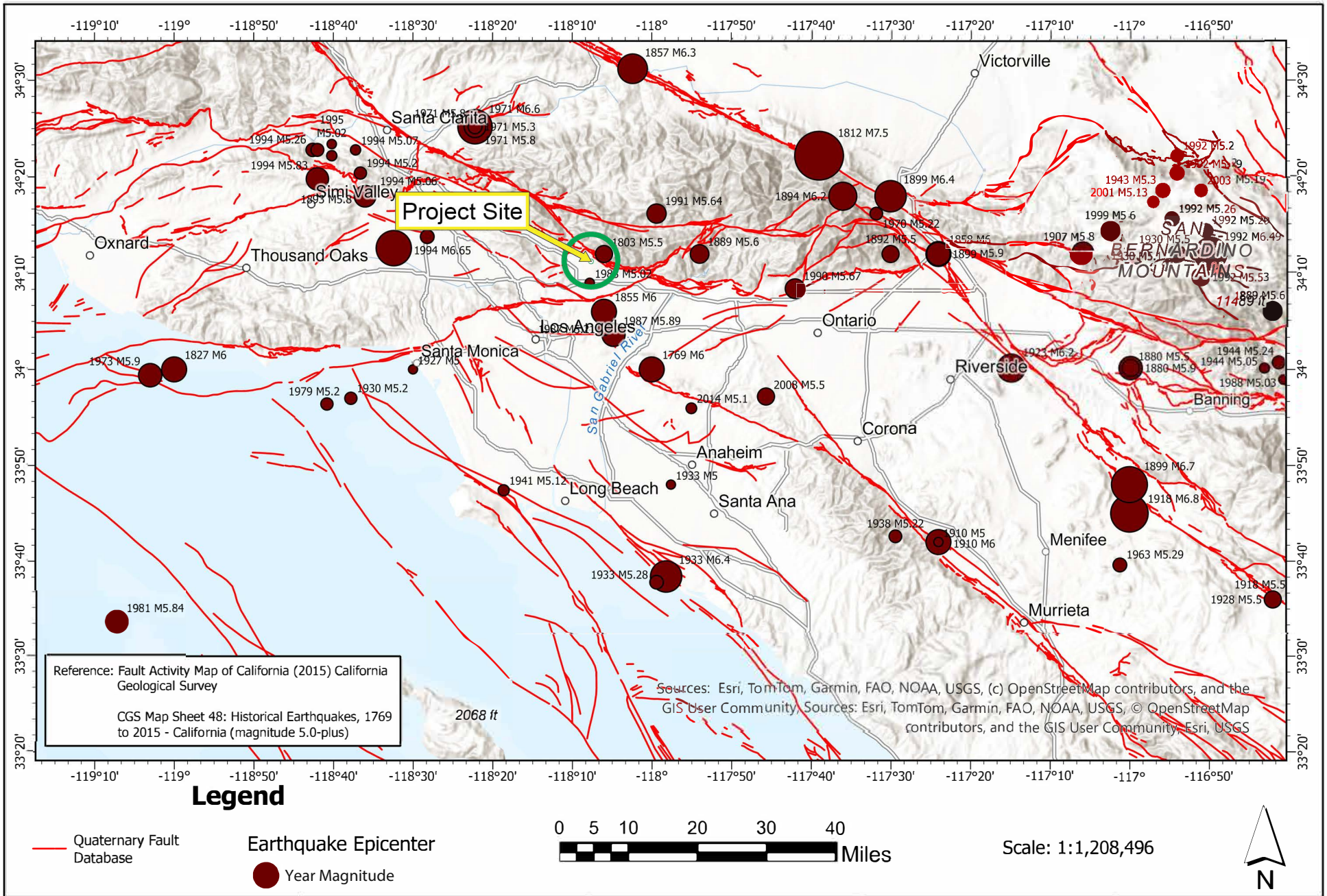

Legend

Quaternary Fault Database

Earthquake Epicenter

Year Magnitude

0 5 10 20 30 40 Miles

Scale: 1:1,208,496

N

KOURY PASSION INTEGRITY QUALITY	Project Name: **Altadena Arts Magnet School Proposed Campus Improvements**	Project No: **25-3846** Date: **January 2026**	Drawing Title: **Historical Seismicity Map**	Figure: **D-1**

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