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August 12, 2022

TO	:	All Bidders
FROM	:	Bob Lavey
PROJECT	:	Hollingworth Elementary School Restroom Building and Site Improvements Project W2105400AR.41
SUBJECT	:	Addendum 1
DSA	:	03-122206 / 19-92

The following changes, omissions, and/or additions to the Project Manual and/or Drawings shall apply to proposals made for and to the execution of the various parts of the work affected thereby, and all other conditions shall remain the same.

Careful note of the Addendum shall be taken by all parties of interest so that the proper allowances may be made in strict accordance with the Addendum, and that all trades shall be fully advised in the performance of the work which will be required of them.

Bidder shall acknowledge receipt of this Addendum in the space provided on the Bid Form. Failure to do so may subject Bidder to disqualification.

In case of conflict between Drawings, Project Manual, and this Addendum, this Addendum shall govern.

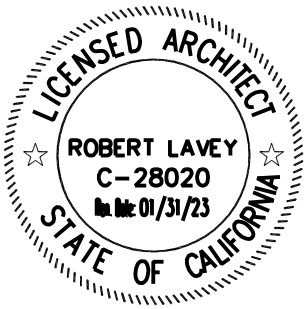
1. PROJECT MANUAL

1.1 SECTION 00 31 32 - GEOTECHNICAL DATA

A. Add this attached section marked with Delta 1 in its entirety.

END OF ADDENDUM 1

Submitted by,



BOB LAVEY
AIA, LEED AP
Managing Partner, Architect

BL:SA:br:/P4W2105400ARx1-add

Attachment: Section 00 31 32 - Geotechnical Data

DOCUMENT 00 31 32

GEOTECHNICAL DATA

1. SUMMARY

   A. This document describes geotechnical investigations conducted at the project site and the use of data from that investigation.

2. GEOTECHNICAL INVESTIGATION REPORT

   A. A Geotechnical Report, titled Geotechnical Investigation for Design and Construction of New Restroom and Associated Improvements at Hollingworth Elementary. 3003 East Hollingworth Street, West Covina, CA, dated August 18, 2021, has been prepared for the site of the Work by Harrington Geotechnical Engineering, Inc, a Geotechnical Engineer selected by the Owner.

   B. The Geotechnical Investigation Report is attached at the end of this section.

3. USE OF DATA

   A. Geotechnical Report was obtained by the Owner only for the Architect's use in design and is not a part of the Contract Documents.

   B. The opinions expressed in the report are those of the Geotechnical Engineer and represent interpretations for subsoil conditions, tests, and analysis of results conducted by the Geotechnical Engineer. The Architect is not responsible for the conclusions drawn from these opinions and interpretations.

   C. The report is made available for bidders' convenience and information only and is not a warranty of subsurface conditions.

   D. Any information obtained from the report as to subsurface conditions or elevations of underlying materials is approximate only and is not a guarantee of the continuity of such conditions or elevations.

   E. Any bidder using or interpreting the information described in the report shall accept full responsibility for their use and interpretation of the information.

4. EXAMINATION OF SITE

   A. Bidders shall visit the site and acquaint themselves with existing conditions.

   B. Bidders shall decide for themselves the conditions which will affect the Work and the character of the materials to be encountered in the Work.

   C. Bidders may make, at their own expense, their own subsurface investigations to satisfy themselves as to site and subsurface conditions, but such investigations will be performed only under time schedules and arrangements reviewed in advance by the Architect.

5. QUALITY ASSURANCE

   A. A Geotechnical Engineer will be retained by the Owner to observe performance of work in connection with excavation, trenching, filling, backfilling, grading, paving, and to perform compaction tests.

   B. Duties and limitations of the Geotechnical Engineer are as specified in Section 01 45 29.

   C. Readjust work performed that does not meet requirements of the Contract Documents.

   D. Make no deviation from the Contract Documents without specific and written approval of the Architect.

END OF DOCUMENT

Harrington Geotechnical Engineering, Inc.

August 18, 2021

Mr. Marcos Rodriquez
Director of Construction
ROWLAND UNIFIED SCHOOL DISTRICT
1018 South Otterbein Street
Rowland Heights, CA 91748

Subject: **Geotechnical Investigation for Design and Construction of New Restrooms and Associated Improvements at Hollingworth Elementary, 3003 East Hollingworth Street, West Covina, CA**
HGEI Project No. 21-01-4240

Dear Mr. Rodriquez:

This report presents the results of a geotechnical investigation performed at your request to establish information on the materials underlying the proposed construction area on the referenced school site and, based thereon, to provide recommendations for design and construction of the new school restrooms and associated improvements.

Preliminary plans and information, provided by WLC Architects, Inc. were used in outlining the scope of the investigation and preparing this report in accordance with generally accepted geotechnical engineering practice in this area and our Proposal No. P-5730, dated July 14, 2021.

Based on analysis and evaluation of the data obtained it has been concluded that the indicated construction is feasible from a geotechnical engineering standpoint provided the recommendations presented herein are incorporated into project design and construction.

Thank you for this opportunity to be of service again. If you have any questions concerning this report, or if we can be of further assistance at this time, please call at your convenience.

Very truly yours,
HARRINGTON GEOTECHNICAL ENGINEERING, INC.

Joseph L. Welch, P.E., G.E.
Senior Geotechnical Engineer

REGISTERED PROFESSIONAL ENGINEER
JOSEPH L. WELCH
No. GE2239
EXP. 9/30/22
GEOTECHNICAL
STATE OF CALIFORNIA

Allyson L. Steines, CEG
Senior Engineering Geologist

CERTIFIED ENGINEERING GEOLOGIST
ALLYSON L. STEINES
No. 1848
Expires: 12/22
STATE OF CALIFORNIA

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TABLE OF CONTENTS

Contents

INTRODUCTION 1
SCOPE OF WORK 1
SITE DESCRIPTION AND HISTORY 1
Vicinity Map - Figure 1 2
PROJECT DESCRIPTION 2
REGIONAL GEOLOGIC SETTING 3
Regional Geologic Map - Figure 2 3
SUBSURFACE CONDITIONS 4
Earth Materials 4
Groundwater 4
Caving 4
Consolidation 4
Expansion Potential 4
Water-Soluble Sulfate 5
Corrosivity 5
GEOLOGIC HAZARDS 5
Faulting/Fault Rupture 5
Historical Seismicity 6
Liquefaction/Seismically Induced Settlement 6
Earthquake Induced Landslide Potential 6
Tsunami/Sieches 6
Flood Hazard 6
State of California Earthquake Zones of Required Investigation - Figure 3 7
CONCLUSION 7
RECOMMENDATIONS 7
Site Clearing and Grading 8
Seismic Design 9
Foundation Design 9
Settlement 10
Concrete Flatwork 10
Concrete Quality 10

TABLE OF CONTENTS

Temporary Excavations 10
Site Drainage 10
Utility Trench Backfills 10
Plan Review 11
Observations and Testing 11
Pre-Grade/Construction Meeting 11
GENERAL COMMENTS 11
REFERENCES 13
APPENDIX A 15
FIELD INVESTIGATION 15
APPENDIX B 17
LABORATORY TEST RESULTS 17
Moisture and Density Determination (ASTM D2216-10 & D7263-09) 18
Expansion Index Test (ASTM 4829-11) 18
Corrosivity Suite (EPA 300.0, EPA 9045C, & CT 643) 18
Consolidation Test (ASTM D2435/D2435-11) 18
Direct Shear (ASTM D3080) 18
Sample Storage 19
APPENDIX C 20
SEISMIC DESIGN PARAMETERS 20
APPENDIX D 21
GRADING SPECIFICATIONS 21
APPENDIX D 22
Grading Specifications 22
2. Site Preparation 22
3. Subdrains 23
4. Compacted Fills/Fill Slopes 23
5. Keying and Benching 24
6. Cut Slopes 25
7. Retaining Wall Backfill 26
8. Utility Trench Backfills 26
9. Grading Observations 26

TABLE OF CONTENTS

LIST OF FIGURES		
PLATE	**NAME**	**LOCATION**
Plate A-1	Boring Location Map	Appendix A
Plate A-2	Regional Fault Map	Appendix A
Plates A-3 to A-4	Boring Logs	Appendix A
Plate A-5	Uniform Soil Classification System	Appendix A
Plates B-1 to B-2	Consolidation Curves	Appendix B
Plates B-3 to B-4	Shear Test Diagrams	Appendix B

INTRODUCTION

This report presents the results of a geotechnical investigation of the subject building site. The purposes of the investigation were to: 1) determine the types and condition of the materials underlying the proposed construction area; 2) establish static physical and limited chemical properties of the materials; 3) determine groundwater conditions; and 4) provide recommendations for design and construction of the new school restrooms and associated improvements.

SCOPE OF WORK

The scope of work for this geotechnical investigation consisted of the following:

Review of published regional geologic maps and reports (See References).

A field exploration was conducted on July 23, 2021 and consisted of drilling, sampling and logging two small diameter exploratory borings (B-1 to B-2) to depths of up to 10.5 feet. The field exploration is described in detail in Appendix A.

Selected samples were tested in HGEI's AMRL Accredited Geotechnical Laboratory to develop data necessary for analysis of subsurface conditions and used in preparation of this report. A description of the geotechnical laboratory testing conducted for the samples collected at the site and presentation of the results are found in the Laboratory Procedures & Test Results in Appendix B.

HGEI conducted engineering analysis, constructed figures, and prepared this report depicting the findings and conclusions of the investigation.

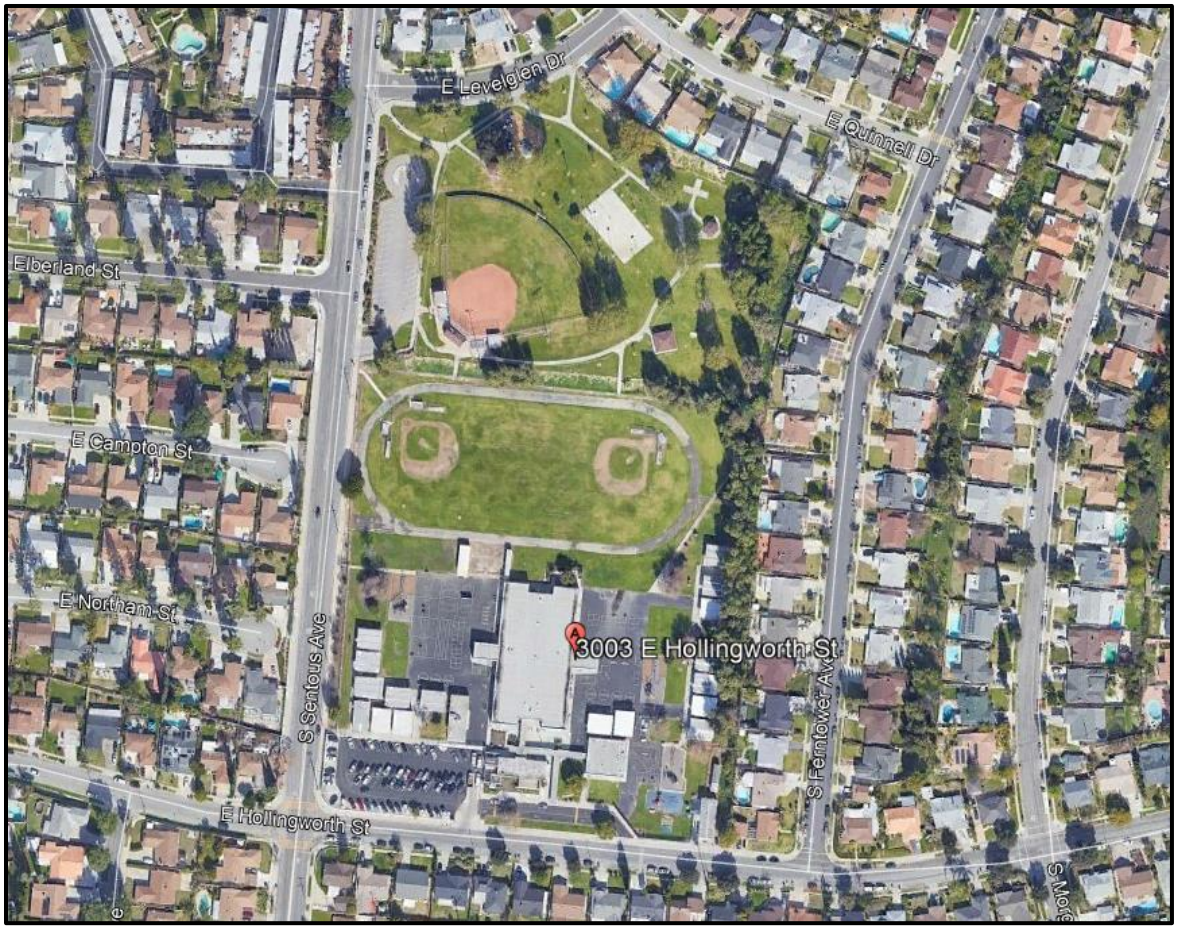
SITE DESCRIPTION AND HISTORY

The Hollingworth Elementary School is located at 3003 East Hollingworth Street in West Covina, CA as shown on the Vicinity Map, Figure 1, which follows. The existing school, situated on a relatively level pad on the northeast corner of E. Hollingworth Street and S. Sentous Avenue, was originally constructed in 1980. The site is bordered to the north By Friendship Park, to the east by single family homes, to the south by E. Hollingsworth Street and to the west by S. Sentous Avenue.

Existing school buildings are primarily located on the southerly portion of the property. The current athletic fields are located to the north and parking lots are located on the southwest

side of the school site. The main classroom area is on the south center of the site. Several portable buildings are to the east and west of the main classroom area. The site is also occupied by a playground, asphalt concrete pavement, concrete flatwork, surface vegetation, trees, and underground utilities.

Vicinity Map - Figure 1



PROJECT DESCRIPTION

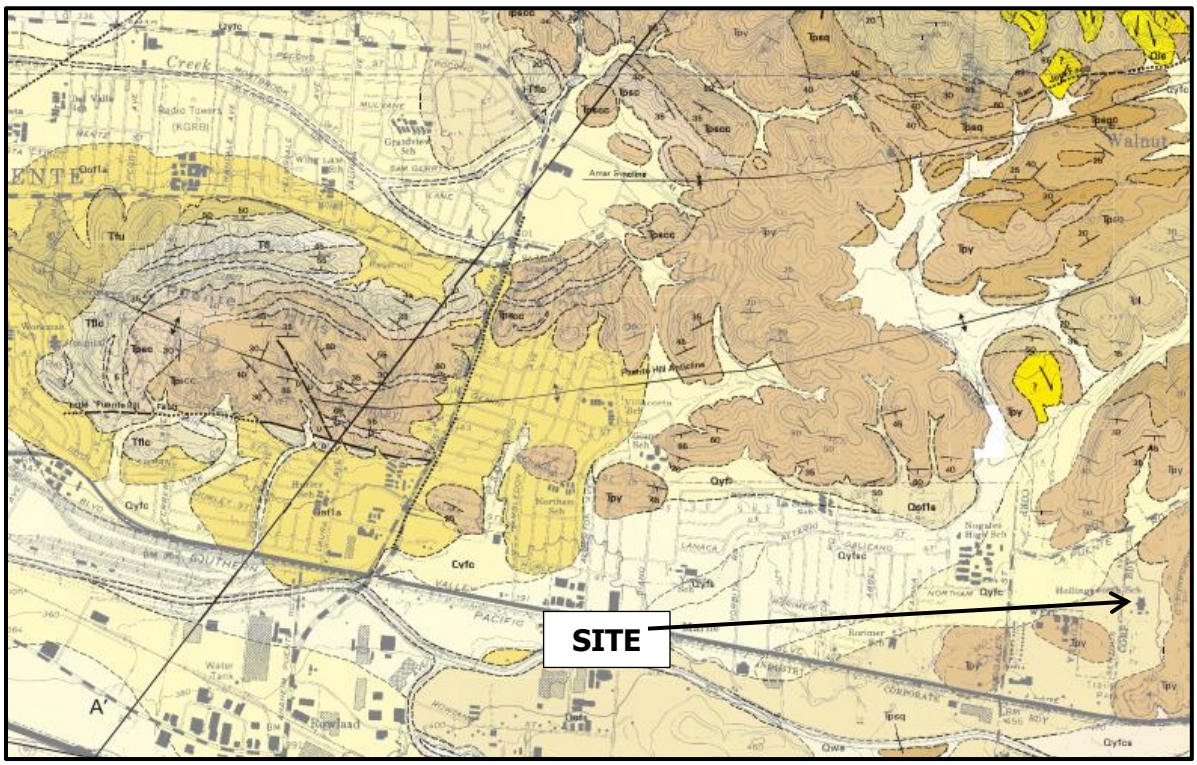
We understand that the project comprises demolition of an existing playground and the construction of a new prefabricated/modular restroom, playground and associated underground utilities and concrete flatwork. The proposed new structure and associated improvements are shown on Plate A-1 in Appendix A. Minor regrading is anticipated.

A single story prefabricated/modular building with wood stud walls, panelized roof systems and raised foundation are planned. Typical bearing wall and interior column loads on the order of 4 kips per lineal foot and 70 kips respectively, have been considered in preparation of this report. Revision of the recommendations may be necessary should actual loads exceed these values significantly.

REGIONAL GEOLOGIC SETTING

The subject site is situated in Los Angeles County near the southern foothills of the San Jose Hills within the Peninsular Ranges Geomorphic Province of Southern California. The Peninsular Ranges geomorphic province is characterized by elongated northwest to southeast trending ridges and valleys subparallel to faults branching from the San Andreas Fault. Published maps (Reference 6) have been used to identify the geologic unit underlying the property. As shown on Figure 2, these maps indicate that the property is underlain by older Alluvial Fan deposits (Qof) of Pleistocene geologic age.

Regional Geologic Map - Figure 2



Qof – Older (Pleistocene) undivided alluvial fan and valley deposits

SUBSURFACE CONDITIONS

Earth Materials

Subsurface materials encountered during this investigation are described in more detail in Appendix A. Logs of the borings are presented on Plates A-3 and A-4 and show the subject site to be capped by 6 to 6.5 feet of Artificial Fill (Af) consisting of interlayered silty sand, sandy silt and silty clay which is generally moist and moderately dense/stiff. The fill is underlain by Alluvium comprised of dark brown silty clay which is moist and moderately stiff. At a depth of 8.5 feet in B-1 siltstone Bedrock of the Puente Formation was encountered.

Groundwater

Groundwater was not encountered at the time of drilling and it is not expected to adversely affect the proposed development under normal conditions in the future. Historical groundwater depth in the area is reported to be greater than 20 feet (Reference 1).

Caving

Caving of the exploratory borings did not occur. Due to the presence of apparent cohesion in the upper 5 feet, caving is not expected to be a major concern during construction. The regulations of Cal/OSHA should be complied with during performance of all underground construction.

Consolidation

Samples of soil were loaded in increments from 400 to 6400 pounds per square foot (psf) at their overburden pressure and were saturated to determine their hydro-collapse potential. (Plates B-1 through B-2, Appendix B). The samples exhibited minor hydro-collapse potential (2.5% or less).

Expansion Potential

Based on the results of laboratory testing (Table 1, Appendix B), the on-site material has a medium expansion index (E.I.=51) as defined in section 1803.5.3 of the 2019 California Building Code and does require special consideration in design. Recommendations for mitigating post-construction movement due to this characteristic have been incorporated into the design recommendations presented herein and are consistent with the requirements of Section 1808.6.4 of the 2019 California Building Code.

Water-Soluble Sulfate

A soil sample was delivered to a state approved analytical laboratory for testing to evaluate water-soluble sulfate content. Based on the results of laboratory testing (Table 2, Appendix B) a moderate (S1) exposure category as indicated (ACI 318-19, Table 19.3.1.1).

Corrosivity

Samples were submitted to a state approved analytical laboratory for Corrosivity Testing. The results are presented in Table 2 in Appendix B and indicate highly corrosive soil condition to ferrous metals.

These results are only an indicator of soil corrosivity for the sample tested. Other soil found on the site may be more, less, or of a similar corrosive nature. Any imported fill material should also be tested to determine its corrosion potential is not more severe than those noted.

Harrington Geotechnical Engineering does not practice corrosion engineering and we recommend that a competent corrosion engineer be retained to review the results and recommend any mitigation methods necessary and/or recommend further testing.

GEOLOGIC HAZARDS

Faulting/Fault Rupture

The Southern California area contains numerous regional and local faults, and experiences substantial ground movement during frequent seismic events. The well-known San Andreas Fault forms the boundary between the Pacific and the North American Plates. Numerous seismically active faults traverse the southern California area (Plate A-2, Appendix A).

Historic earthquakes have affected the site; however, as shown on the State of California Earthquake Zones of Required Investigation for the Baldwin Park Quadrangle (References 2 and 3 and Figure 3) the site is not located within an Alquist-Priolo Earthquake Fault Zone. The site is in a portion of California that is seismically active and anticipated to be subjected to strong ground motions by earthquakes generated by active faults in the area (Plate A-2, Appendix A).

The site is situated approximately 3.8 km away from the nearest fault (Elysian Park Thrust Zone) and 4.1 km from the next nearest fault (San Jose Fault Zone) and the likelihood of surface rupture occurring at the site is considered low.

Historical Seismicity

The historical earthquake accelerations at the site from 1800 to 2021 were determined using the EQSEARCH V.3.00 Program by Blake (Reference 9).The site has been subjected to a 164 earthquakes with a magnitude of 5 or greater from 1800 to 2021 (222 years).

The closest earthquake recorded at the site had a magnitude of 5.0 with a peak ground acceleration of 0.119 g. which occurred on December 25, 1903 at a distance of 11.1 km.

The largest earthquake recorded at the site had a magnitude of 7.70 with a peak ground acceleration of 0.045g which occurred on July 21, 1952 at a distance of 94.3 km.

The largest peak ground acceleration recorded at the site had a magnitude of 7.0 with a peak ground acceleration of 0.162 g. which occurred on December 10, 1858 at a distance of 34.9 km.

Liquefaction/Seismically Induced Settlement

The site is not located in a potential liquefaction hazard zone as shown on the California Earthquake Zones of Required Investigation for the Baldwin Park Quadrangle (References 2 and 3 and Figure 3). Therefore, a liquefaction/dry sand settlement assessment was not conducted.

Earthquake Induced Landslide Potential

As shown on the Earthquake Zones of Required Investigation for the Baldwin Park Quadrangle (References 2 and 3 and Figure 3), the site is relatively level and not located within a potential earthquake induced landslide zone.

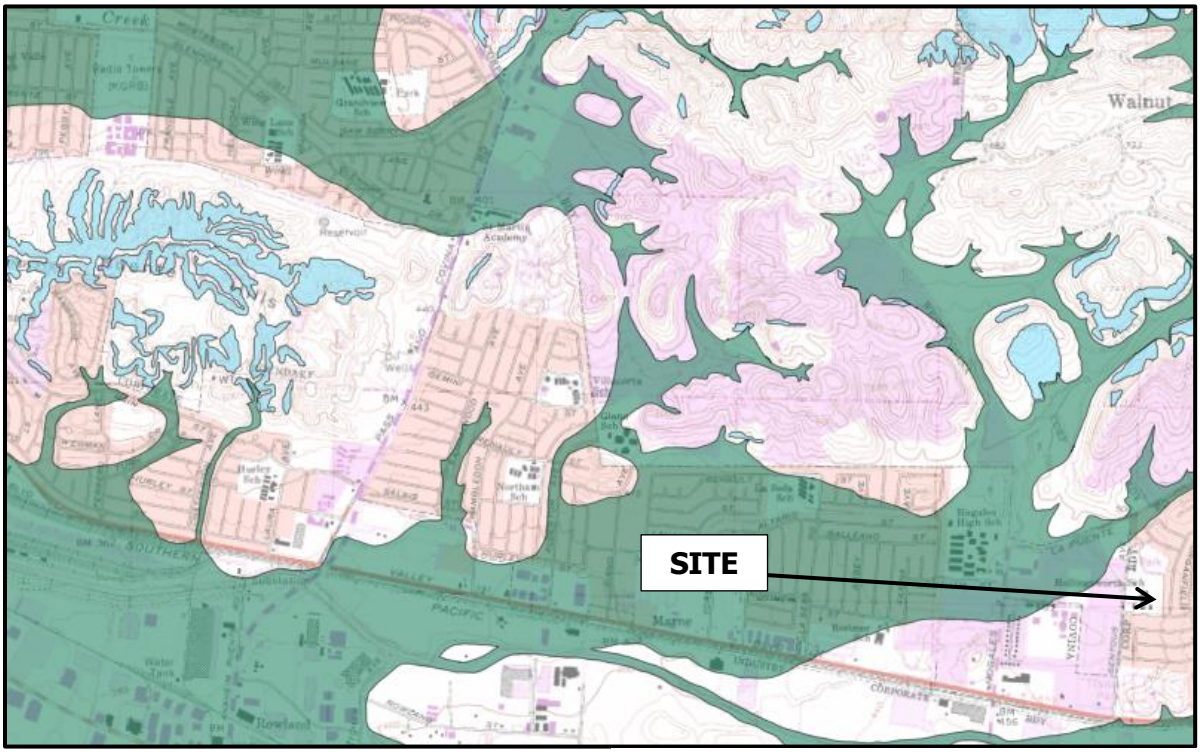
Tsunami/Sieches

The likelihood of the site being affected by a tsunami during an offshore seismic event is low according to California Emergency Management Agency, Tsunami Hazard Maps for Los Angeles County. The Baldwin Park Quadrangle (References 2 and 3) is beyond the mapped area of Tsunami Inundation. This is due to the distance from the coast line and elevation of the site. The likelihood of sieches affecting the site is nil since there are no lakes or reservoirs at higher elevations in the vicinity of the school site.

Flood Hazard

The site is not located within a Special Flood Hazard Area as determined by FEMA Flood Insurance Rate Map (Reference 10). The school site is located in Zone X which is an area determined to have a 0.2% annual chance flood hazard and 1% annual chance flood with average depth less than 1 foot.

State of California Earthquake Zones of Required Investigation - Figure 3



Liquefaction Zones
Areas where historical occurrence of liquefaction, or local geological, geotechnical and ground water conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

Earthquake-Induced Landslide Zones
Areas where previous occurrence of landslide movement, or local topographic, geological, geotechnical and subsurface water conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

CONCLUSION

Based on conditions encountered/established during this investigation, it is our conclusion that the currently planned construction is feasible from a geotechnical engineering standpoint provided the recommendations which follow are implemented during design and construction of the project.

RECOMMENDATIONS

Based on our evaluation of conditions encountered in the field exploration (Appendix A) and the analyses of laboratory test data (Appendix B), we recommend the following input for design

and construction of the proposed project. Our recommendations are subject to confirmation of site conditions during grading and construction.

It is recommended that plans and details be submitted to this office for geotechnical review for compliance with this report. Additional recommendations may be provided based on the review and/or in the course of work if warranted by conditions encountered.

Site Clearing and Grading

In general, all grading should be carried out in accordance with applicable sections of the Standard Specifications contained in Appendix D except as noted in the paragraphs below.

Considerable ground disturbance will result from clearing the site of structures, underground utilities, vegetation, etc. In order to develop increased, uniform support for the new structure, concrete flatwork, and asphalt concrete pavement the following, tentative, grading procedures are recommended. Some modification may be recommended during the course of work, based on actual conditions encountered.

Prior to major grading all vegetation and debris resulting from demolition of existing above-and below-grade structures/utilities should be disposed of off-site in an acceptable manner.

In order to develop increased, uniform support for the building and minimize post-construction settlement, it is recommended that the soil throughout the proposed building area be removed and replaced as uniformly compacted fill. The soil in the new building area plus three feet in each direction should be over-excavated to a depth of 2 feet deep; the exposed soil should be scarified to a depth of 12 inches, moisture conditioned by aeration or the addition of water as required to 2-3 % above the optimum moisture content, and compacted to a minimum relative compaction of 90% based on the results of compaction tests performed in accordance with ASTM Test Method D1557.

Soil throughout areas of new concrete flatwork and pavement should be similarly processed to a total depth of 2 feet.

Site material that is free of objectionable amounts of organic matter and/or debris will be suitable for fill material. If additional, imported soil is required it should be similar to site material and should be approved by the geotechnical engineer for expansion, corrosivity, and strength qualities prior to being transported to the project site. Final acceptance of any imported soil will be based on observation and/or testing of soil actually delivered to the site.

Fill material, if necessary, should be spread in thin lifts and moisture conditioned and compacted as indicated above.

Seismic Design

The provisions of Chapter 16, Section 1613, of the 2019 California Building Code and the Structural Engineer Associates of California guidelines are considered appropriate for design of the project.

Earthquake factors were determined using the ASCE data base website and Chapter 16 requirements and are presented in Appendix C.

Foundation Design

The site materials are expansive (Expansive Index >20) and pre-saturation during grading is recommended to mitigate this condition. We have provided this recommendation for pre-saturation, which is a stabilization procedure permitted by 2019 CBC Section 1808.6.4.

Conventional spread footings on the perimeter of the one-story modular structures should be at least 12 inches wide and embedded at least 18 inches below the lowest adjacent grade and founded on compacted fill material and may be designed using an allowable, net, dead load plus live load soil bearing pressure of 1,800 pounds per square foot. Interior pad footings below the raised floor should be at least 2 foot square and embedded at least 18 inches below the lowest adjacent grade and founded on compacted fill material and may be designed using an allowable, net, dead load plus live load soil bearing pressure of 1,800 pounds per square foot. A one-third increase in bearing may be assumed for short duration wind or seismic loading in combination with vertical loads.

For the purposes of resisting lateral forces, a passive soil pressure of 250 pounds per square foot per foot of depth may be used in design. A coefficient of friction of 0.40 may be used for concrete placed on approved compacted fill. These values may be combined without reduction. Appropriate safety factors must be used.

It is recommended that continuous footings be reinforced with two No. 4 bar, top and bottom. Reinforcement of pad footings will be governed by the structural requirement.

Frequently a three inch lift of asphalt is placed on the ground below the raised wood floor section to act as a rodent barrier.

It is recommended that the geotechnical engineer observe and/or test the foundation excavations in order to verify compliance with the recommendations of the report.

Settlement

Foundation settlement (total and differential) should not exceed 1/2 inch and 1/4 inch, respectively, and will not require special consideration in design provided any disturbed material is removed or compacted as previously recommended.

Concrete Flatwork

Miscellaneous flatwork should be a nominal 4-inches thick, reinforced at mid-depth with No. 4 bars at 24-inches on center, each way, and provided with adequate control joints. Low slump concrete should be used for all flatwork to further minimize cracking.

It should be noted that due to the expansive characteristic of the site material and normal concrete shrinkage some minor cracking of the miscellaneous flatwork may occur. Additional reinforcement beyond that recommended herein and careful control of concrete slump would be beneficial in reducing such cracking. Also, it is very important that all control joints be caulked and properly maintained to inhibit infiltration of surface water into the soil and thereby minimize expansion.

Concrete Quality

A moderate amount of water-soluble sulfate is indicated for the prevalent surface material however, special sulfate-resistant concrete will not be required on this project. The exposure class (ACI 318-19, Table 19.3.1.1) is S1. Based on this test result concrete may 4,000 psi concrete with a maximum w/c ratio of 0.5 using Type II cement (ACI 318-19, Table 19.3.2.1). These recommendations should be verified during construction.

Temporary Excavations

Temporary cuts for remedial removals or foundation excavations should be stable provided the regulations of Cal/OSHA are complied with during construction.

Site Drainage

The 2019 CBC Section 1804.4 requires that the minimum drainage for the ground around the perimeter of a building should be 5% away from the foundation for a distance of 10 feet. Impervious surfaces within 10 feet of the building foundation shall be sloped a minimum of 2%. In no case should the surface waters be allowed to flow over the slope surfaces in an uncontrolled manner.

Utility Trench Backfills

Backfill for any trenches associated with this project should consist of site material (the use of imported sand is not recommended) that must be adequately compacted to preclude

detrimental settlement. It is recommended, therefore, that backfills for all excavations associated with the project should consist of site material placed in appropriate lifts, moisture conditioned to 2% to 4% above optimum moisture content and compacted to 90% relative compaction based on the maximum dry density obtained in the laboratory in accordance with ASTM test method D1557.

Plan Review

It is recommended that final project plans, details and specifications be submitted to this office for geotechnical review for compliance with the findings and recommendations of this report. Additional recommendations can then be provided if necessary.

Observations and Testing

Grading and compaction operations, foundation construction and trench backfills should be observed and tested by members of our staff so that anticipated soil conditions can be confirmed and the recommendations contained herein validated. If deemed necessary as a result of changed conditions supplemental recommendations may then be provided. Results of those observations and tests should be provided in the final report which should include a statement by the geotechnical engineer concerning the adequacy of the completed work.

Pre-Grade/Construction Meeting

A pre-grade/construction meeting should be attended by the owner's representative, members of the design team, grading contractor, city/county inspector, and a representative from HGEI at the site to review the findings and recommendations of this report and project plans and specifications prior to starting work on the project.

GENERAL COMMENTS

The services provided under the purview of this report have been performed in accordance with generally accepted geotechnical engineering principals and standards of practice for this area. The comments and recommendations presented are professional opinions based on observations and our best estimation of project conditions and requirements as indicated by evaluation of presently available information and data. No further warranty, express or implied, is intended by issuance of this report.

The investigation did not include: 1) detailed study of geologic and seismic conditions; 2) assessment of the liquefaction potential (site is not in a mapped zone); or 3) sampling, field measurements or laboratory tests for the presence of any toxic/hazardous substances in the

earth materials at the site. However, this does not imply that the site is subject to any unusual geologic, seismic or environmental hazard.

Any unanticipated condition encountered in the course of grading and/or construction should be brought to the attention of the geotechnical engineer for evaluation prior to proceeding with the work.

This report has been developed for the sole use of the client and/or clients authorized representative. These conclusions and recommendations should be verified by a qualified geotechnical engineer based in part upon additional subsurface information obtained during grading and/or foundation construction. No part of the report should be taken out of context, nor utilized without full knowledge and awareness of its intent.

This report is issued on condition that HGEI will be retained to observe the grading and foundation construction operations. If another firm provides this service then that firm must review and accept this report, or provide alternate recommendations, and assume responsibility for the project. This report will be valid for a period of one year form date of issue and will then require updating.

0-0-0

REFERENCES

1. California Department of Conservation, Division of Mines & Geology, 1998, Seismic Hazard Zone Report for the Baldwin Park 7.5 Minute Quadrangle, Los Angeles County, California, Seismic Hazard Zone Report 022.

2. California Department of Conservation, California Geological Survey, State of California, Seismic Hazard Zones, Earthquake Zones of Required Investigation, Baldwin Park 7.5 Minute Quadrangle, March 25, 1999, Scale 1:24,000.

3. California Department of Conservation, California Geological Survey, Earthquake Zone App, https://maps.conservation.ca.gov/cgs/EQZApp/.

4. California Geological Survey, 2011, Note 48, Checklist for the Review of Engineering Geology and Seismology Reports for Public Schools, Hospitals, and Essential Service Buildings dated January 1, 2011.

5. California Department of Conservation, Division of Mines and Geology, 2008, Guidelines for Evaluating and Mitigating Seismic Hazards in California, Special Publication, 117a.

6. California Department of Conservation, Division of Mines and Geology, 1997, Tan, Siang S., "USGS Geologic Map of the Baldwin Park 7.5' Quadrangle Los Angeles County, California: A Digital Database", DMG Open-File Report 98-30, dated 1997.

7. Dibblee Jr., Thomas W., 1999, Geologic Map of the El Monte and Baldwin Park Quadrangles, Los Angeles County, California, Dibblee Foundation Map #DF-69, May, 1999.

8. ASCE 7 Hazard Tool, https://asce7hazardtool.online/, August 12, 2021.

9. Blake, Thomas F., 2000, FRISKSP (Version 4.00), EQFAULT and EQSEARCH (Version 3.00), Computer Programs for calculating the site to fault distances, Deterministic peak horizontal ground accelerations for a Maximum Magnitude Earthquake, and historic seismicity for an area from selected known faults in the southern California region (Rev. 2000).

10. FEMA, September 26, 2008, Flood Insurance Rate Map 06037C1695F

11. International Code Council (ICC), 2019, California Building Code, California Code of Regulations, Title 24, Part 2, Volume 2 of 2

12. WLC Architects, Inc., Modernization Remaining Permanent Classrooms (K-8), Hollingworth Elementary School, Rowland Unified School District, 3003 E. Hollingworth Street, West Covina, CA 91792, Sheet A-1.1, dated June 2013.

APPENDIX A

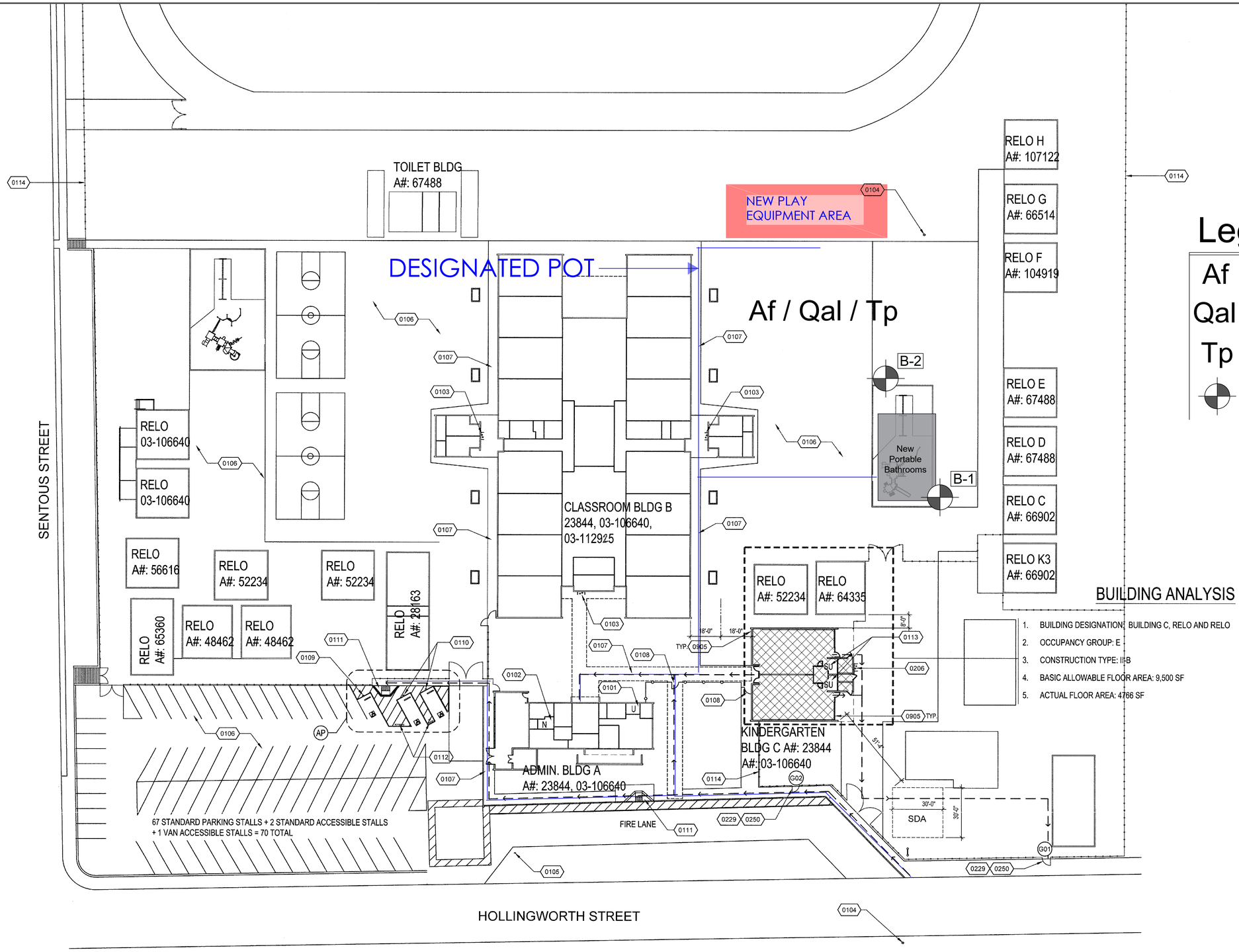
FIELD INVESTIGATION

HGEI conducted a field investigation of the subject site on July 23, 2021 consisting of drilling, sampling and logging two exploratory borings (B-1 and B-2) drilled with a 4-inch-diameter hand auger to depths of 10.5 feet. The boring locations are indicated on Plate A-1 and the logs of the exploratory borings are presented on Plates A-3 and A-4. The descriptions represent the prevalent soil types and slightly different material types may be present within the major groupings. Also, the transition from one soil type or condition to another may be gradual rather than abrupt as implied, and differing conditions may exist in unexplored areas.

Unified Soil Classification System Classification Criteria/Symbols are presented on Plate A-5.

A representative of the geotechnical engineer observed the field work, collected samples for transportation to our geotechnical laboratory, and prepared field logs by visual/tactile examination of the materials. Core samples were obtained at discreet intervals using a modified California Ring sampler loaded with 2.42" I.D. x 1"-long, thin-wall, brass rings. In addition to the core samples, large bulk samples of the earth materials were collected. Samples were placed in plastic bags immediately upon removal from the sampler to conserve moisture and labeled for identification.

The borings were backfilled with excavated soils immediately upon completion of sampling.



BUILDING ANALYSIS

1. BUILDING DESIGNATION: BUILDING C, RELO AND RELO
2. OCCUPANCY GROUP: E
3. CONSTRUCTION TYPE: II-B
4. BASIC ALLOWABLE FLOOR AREA: 9,500 SF
5. ACTUAL FLOOR AREA: 4766 SF

SAFETY DISPERSAL AREA (SDA)

REQUIRED: 58 OCC x 5SF/OCC = 290 SF
AREA PROVIDED: 30' x 30' = 900 SF
900 SF > 174 SF : OK

Legend

Af	Artificial Fill
Qal	Alluvium
Tp	Puente Formation (weathered)
⊕	Approximate Boring Location

N

Drawing Scale:
1" = 40'

HARRINGTON GEOTECHNICAL ENGINEERING INC.
ORANGE, CA
1590 North Brian St. Orange CA. 92867 T: (714) 637-3093

Project Name:
Hollingworth Elementary Portable Bathroom Units

Address: 3003 E. Hollingworth St, West Covina, CA 91792

HGEI No.: 21-01-4240

Sheet Title:
BORING LOCATION MAP

Drawn By: SBM
Checked By: JLW
Date: 8/16/21

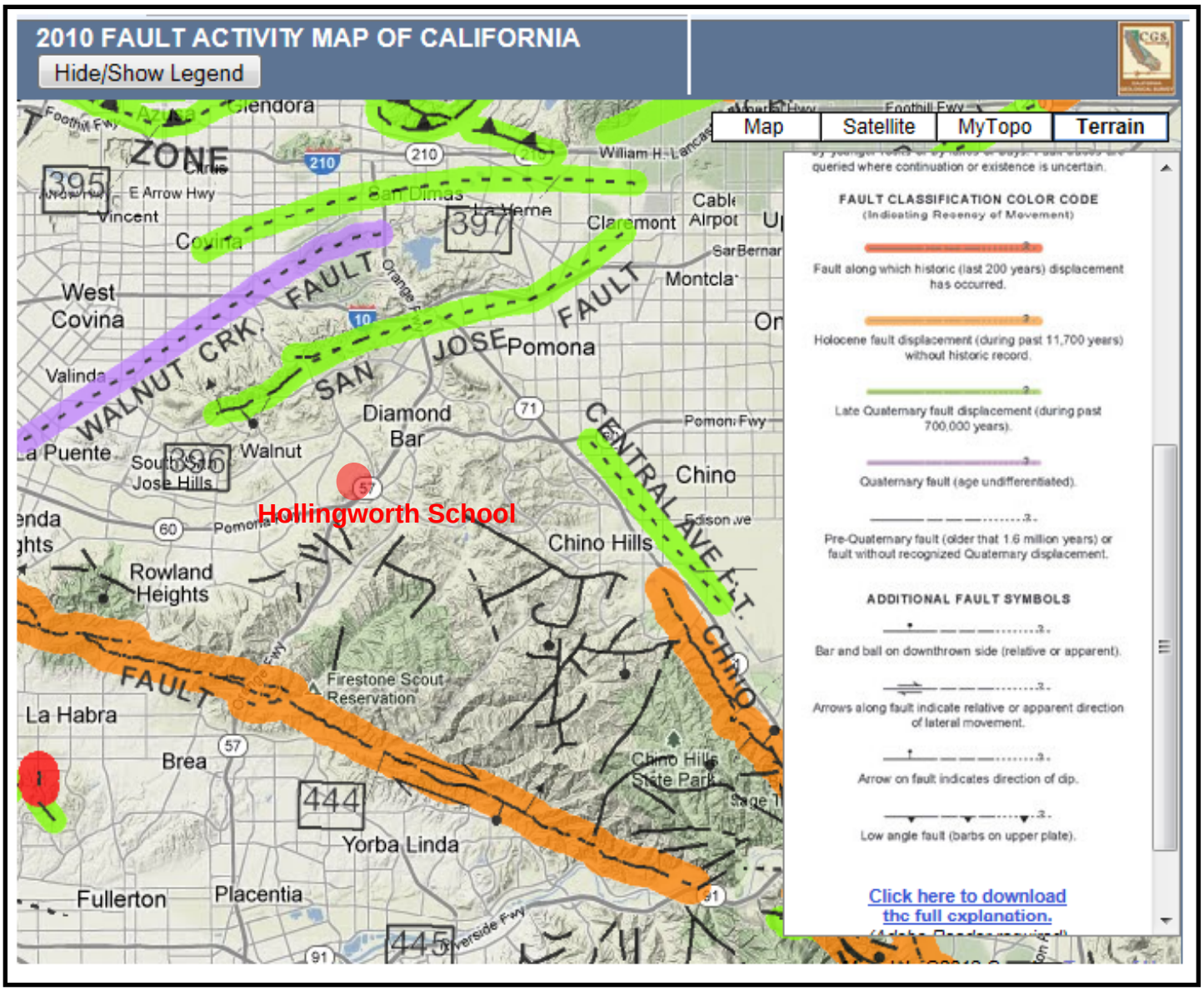
Revisions	By

Notes

Plate A-1

\\HGEI-PC\ENGINEERING\ACTIVE PROJECT FILES\4200\4240 3003 E. HOLLINGWORTH ST. WEST COVINA, CA\AUTOCAD\BORING LOCATION MAP.DWG

REGIONAL FAULT MAP



NORTH

Preliminary Geotechnical Investigation
Hollingworth Elementary School
3003 E Hollingworth Street
Los Angeles County, CA

HGEI Project No. 21-01-4240
August, 2021

Plate A-2

LOG OF BORING B-1

Project:	Hollingworth Elementary School	Surface Elev.:	Grade
Job No.:	21-01-4240	Top of Casing Elev.:	N/A
Location:	3003 E. Hollingworth Street, West Covina, CA	Drilling Method:	Hand Auger
Coordinates:		Sampling Method:	Ring

Elevation, feet	Depth, feet	Sample No.	Sampler Graphics	Symbol / USCS	Recovery %	MATERIAL DESCRIPTION	Blow Counts	Dry Unit Weight, lb/cu ft.	Water Content %
	0					**GRASS**			
						ARTIFICIAL FILL (Af):			
						SILTY SAND (SM), brown, moist, loose, fine grained, non-plastic			
						SANDY SILT (ML), light brown, damp to moist, medium stiff, fine grained with gravel to 1/2" diameter, non-plastic	35/8"	75	13
	5					SILTY CLAY (CL), dark brown, moist, medium stiff, low plasticity	29/8"	85	21
						SILTY SAND (ML), mottled, orange/light brown/white/black, moist, medium dense, fine grained			
						ALLUVIUM (Qal):			
						SILTY CLAY (CL), dark brown, moist, medium stiff, low plasticity	20/8"	97	20
						WEATHERED BEDROCK (Tp):			
	10					SANDY SILTSTONE, orange/light brown/olive brown, moist, hard, fine grained	30/8"	64	32

Completion Depth:	10.5
Date Boring Started:	7/23/20
Date Boring Completed:	7/23/20
Logged By:	KR
Drilling Contractor:	HGEI

Remarks:

The stratification lines represent approximate boundaries.
The transition may be gradual.

Harrington Geotechnical Engineering, Inc.

PLATE A-3

LOG OF BORING B-2

Project:	Hollingworth Elementary School	Surface Elev.:	Grade
Job No.:	21-01-4240	Top of Casing Elev.:	N/A
Location:	3003 E. Hollingworth Street, West Covina, CA	Drilling Method:	Hand Auger
Coordinates:		Sampling Method:	Ring

Elevation, feet	Depth, feet	Sample No.	Sampler Graphics	Symbol / USCS	Recovery %	MATERIAL DESCRIPTION	Blow Counts	Dry Unit Weight, lb/cu ft.	Water Content %
	0					**GRASS**			
						ARTIFICIAL FILL (Af):			
						SILTY SAND (SM), dark brown, moist, loose, fine to medium grained			
						SANDY SILT (ML), mottled, light brown/orange/white, damp to moist, medium stiff, fine to medium grained, low plasticity	30/8"	75	19
	5					SILTY CLAY (CL), dark brown, moist, medium stiff, low plasticity	25/8"	90	29
						SANDY SILT (ML), mottled, light brown/orange/dark brown/olive, moist, medium stiff, fine to medium grained, trace gravel to 1" diameter			
						ALLUVIUM (Qal):			
						SILTY CLAY (CL), dark brown, moist, medium stiff, low plasticity, organics, trace grass	33/8.5"	94	26
	10						25.7"	87	23

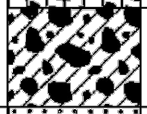
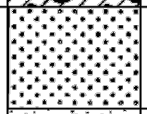
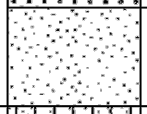
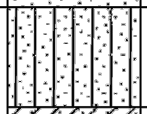
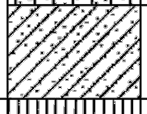
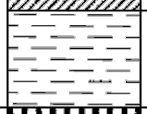
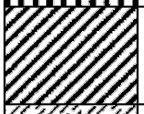
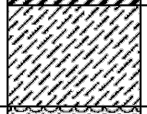
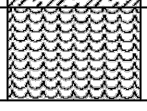
Completion Depth:	10.5
Date Boring Started:	7/23/20
Date Boring Completed:	7/23/20
Logged By:	KR
Drilling Contractor:	HGEI

Remarks:

The stratification lines represent approximate boundaries.
The transition may be gradual.

Harrington Geotechnical Engineering, Inc.

PLATE A-4

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO 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 (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SAND, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT 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 GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

HARRINGTON
GEOTECHNICAL • ENGINEERING • INC.
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DRAWN BY: BBC | USCS | CHECKED BY: MVD

SOIL CLASSIFICATION CHART

JUNE 22, 2017 | HGEI Project No. 21-01-4240 | PLATE A-5

APPENDIX B

LABORATORY TEST RESULTS

The samples collected during the field investigation were examined and classified by the geotechnical engineer/engineering geologist in the laboratory using the visual/tactile method and selected samples were assigned laboratory testing. Tests were performed in general accordance with latest ASTM standards. The following is a description of the laboratory testing and presents the results which are incorporated in the previous sections of the report.

Moisture and Density Determination (ASTM D2216-10 & D7263-09)

Field Moisture contents were determined for all samples. The core samples were trimmed and weighed and the dry units of the material calculated. Moisture and unit weight data are presented on the boring logs in Appendix A.

Expansion Index Test (ASTM 4829-11)

An Expansion Index Test was conducted on a sample considered representative of the surface soil at the site to establish data on which to base recommendations for foundation and slab design. The test result is presented in Table 1.

Corrosivity Suite (EPA 300.0, EPA 9045C, & CT 643)

The amount of water-soluble sulfate, Chlorides, pH, and resistivity present in selected samples of the surface material were determined. The test results are presented in Table 2.

Consolidation Test (ASTM D2435/D2435-11)

Consolidation tests were performed on undisturbed samples to determine the magnitude and rate of consolidation of the soil when subjected to incrementally applied controlled-stress loading. The graphs of the test results are presented on Plates B-1 through B-2.

Direct Shear (ASTM D3080)

Direct Shear tests were performed on undisturbed samples to determine the static strength of the soil. The tests were performed at increased moisture contents and at various confining pressures using a displacement rate of 0.004 in./min. to establish peak and ultimate strength parameters under adverse conditions of moisture. The test results are presented on Plates B-3 and B-4.

TABLE 1
Expansion Index Test Results (ASTM D4829-11)

Sample ID	Moisture Content (%)		Dry Density (pcf)		Calculated Expansion Index	Expansion Potential
	Initial	Final	Initial	Final		
B-2 @ 1'-3'	17.5	34	88.0	83.8	51	Medium

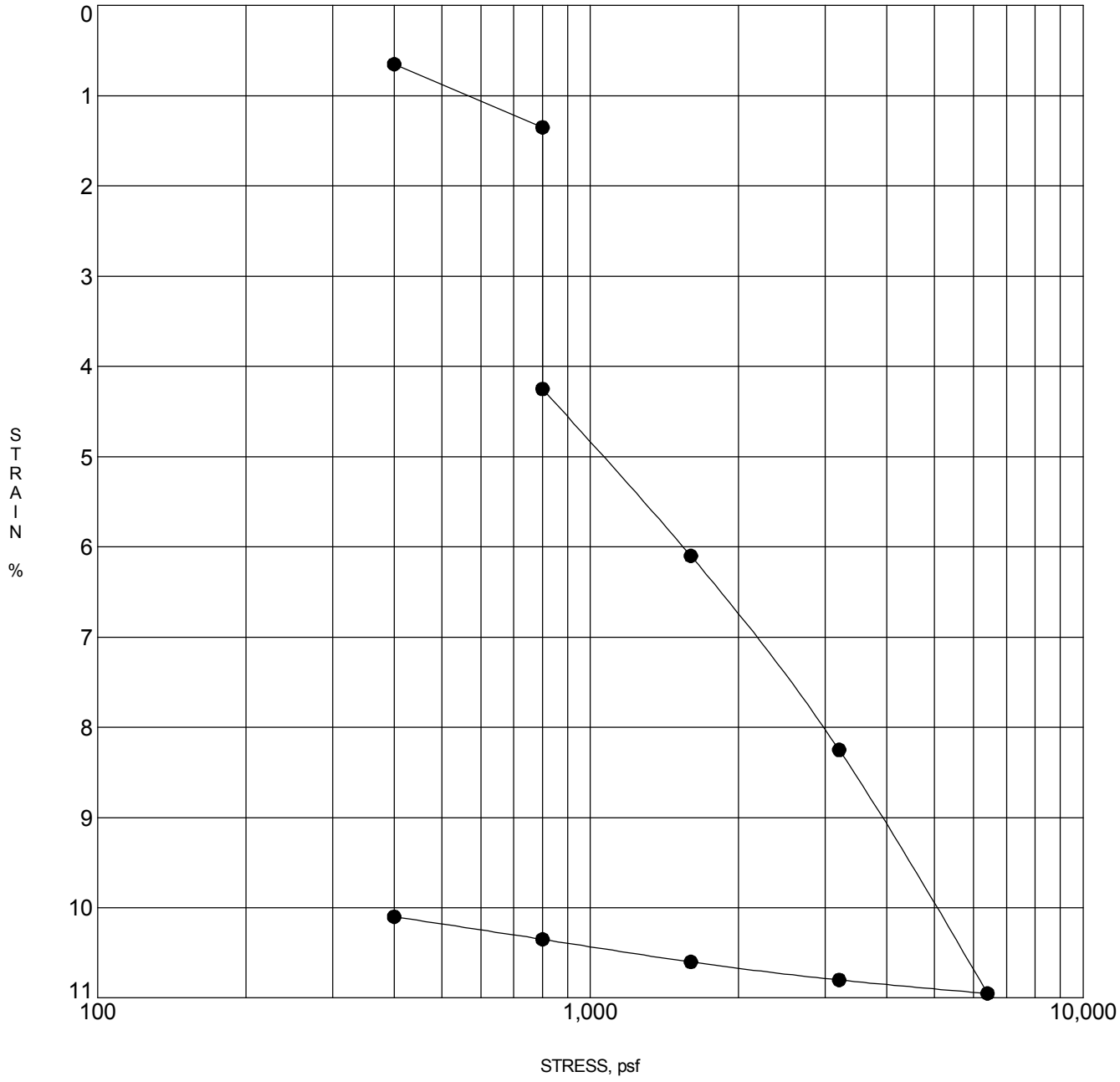
TABLE 2
Corrosivity Test Results (EPA 300.0, 9045C/CT643)

Sample ID	Water-Soluble Sulfate (%)	Chloride (mg/Kg)	pH	Resistivity (ohm/cm)
B-2 @ 1'-3'	0.110	83	7.3	532
B-1 @ 5'	0..014	-	-	-

Sample Storage

Soil samples presently stored in our laboratory will be discarded 30 days after the date of this report unless this office receives a written request to retain the samples for a longer period. Note that prolonged storage will result in sample degradation and may render them unsuitable for testing.

0-0-0



Specimen Identification		Classification	DD	MC%
● B-1 2.5		**Sandy Silt (ML), (Peak)**	**75**	**15**

PROJECT **Hollingworth Elementary School - 3003 E. Hollingworth Street, West Covina, CA**

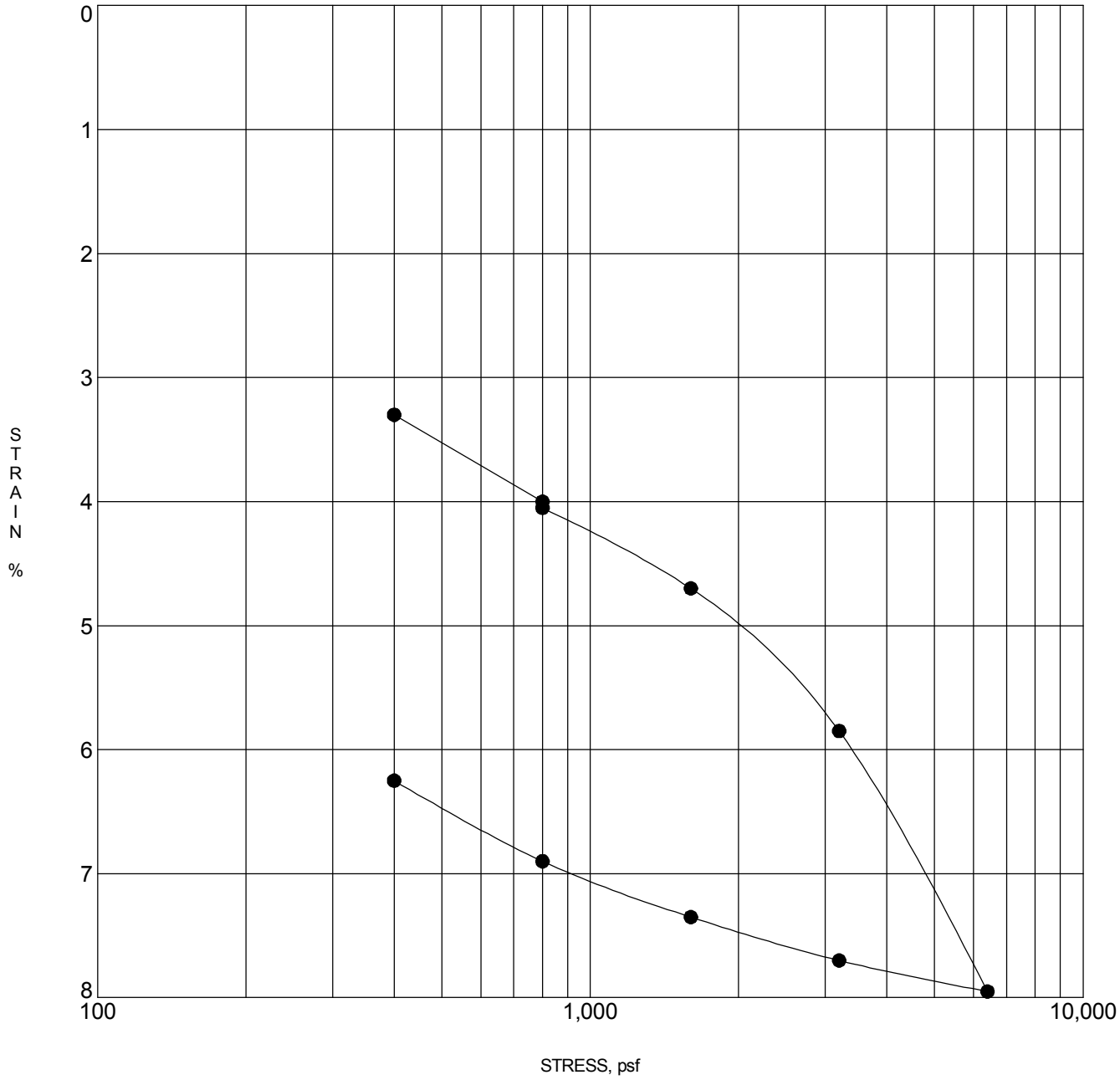
JOB NO. **21-01-4240**

DATE **8/19/21**

CONSOLIDATION TEST

Harrington Geotechnical Engineering, Inc.

PLATE B-1



Specimen Identification		Classification	DD	MC%
● B-2 5.0		**SILTY CLAY (CL), (Peak)**	**89**	**29**

PROJECT **Hollingworth Elementary School - 3003 E. Hollingworth Street, West Covina, CA**

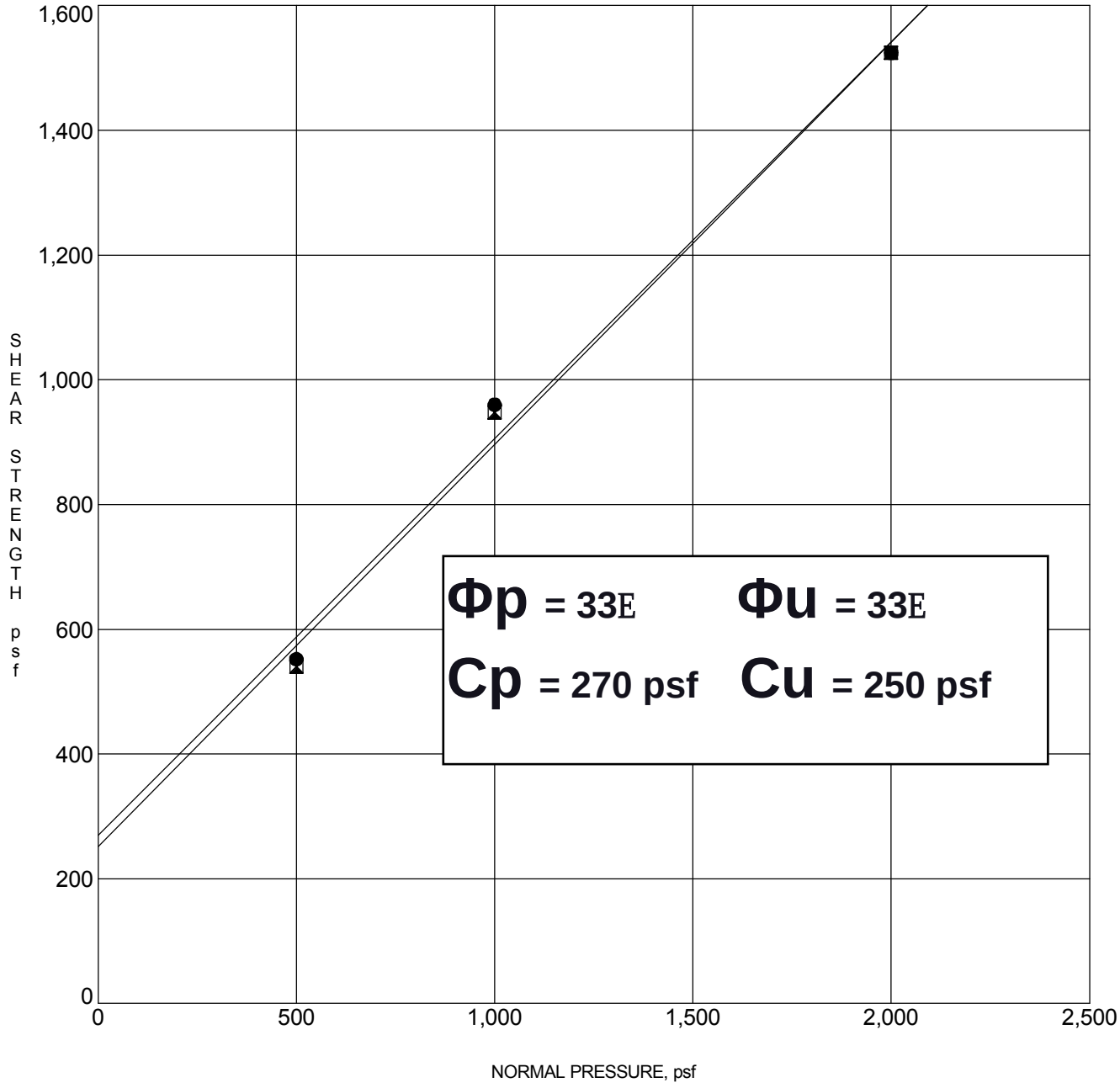
JOB NO. **21-01-4240**

DATE **8/19/21**

CONSOLIDATION TEST

Harrington Geotechnical Engineering, Inc.

PLATE B-2



Specimen Identification			Classification	DD	MC%
●	**B-1**	**2.5**	**Sand Silt (ML), (Peak)**	**46**	**84**
⊠	**B-1**	**2.5**	**(Ultimate)**		

PROJECT **Hollingworth Elementary School - 3003 E. Hollingworth Street, West Covina, CA**

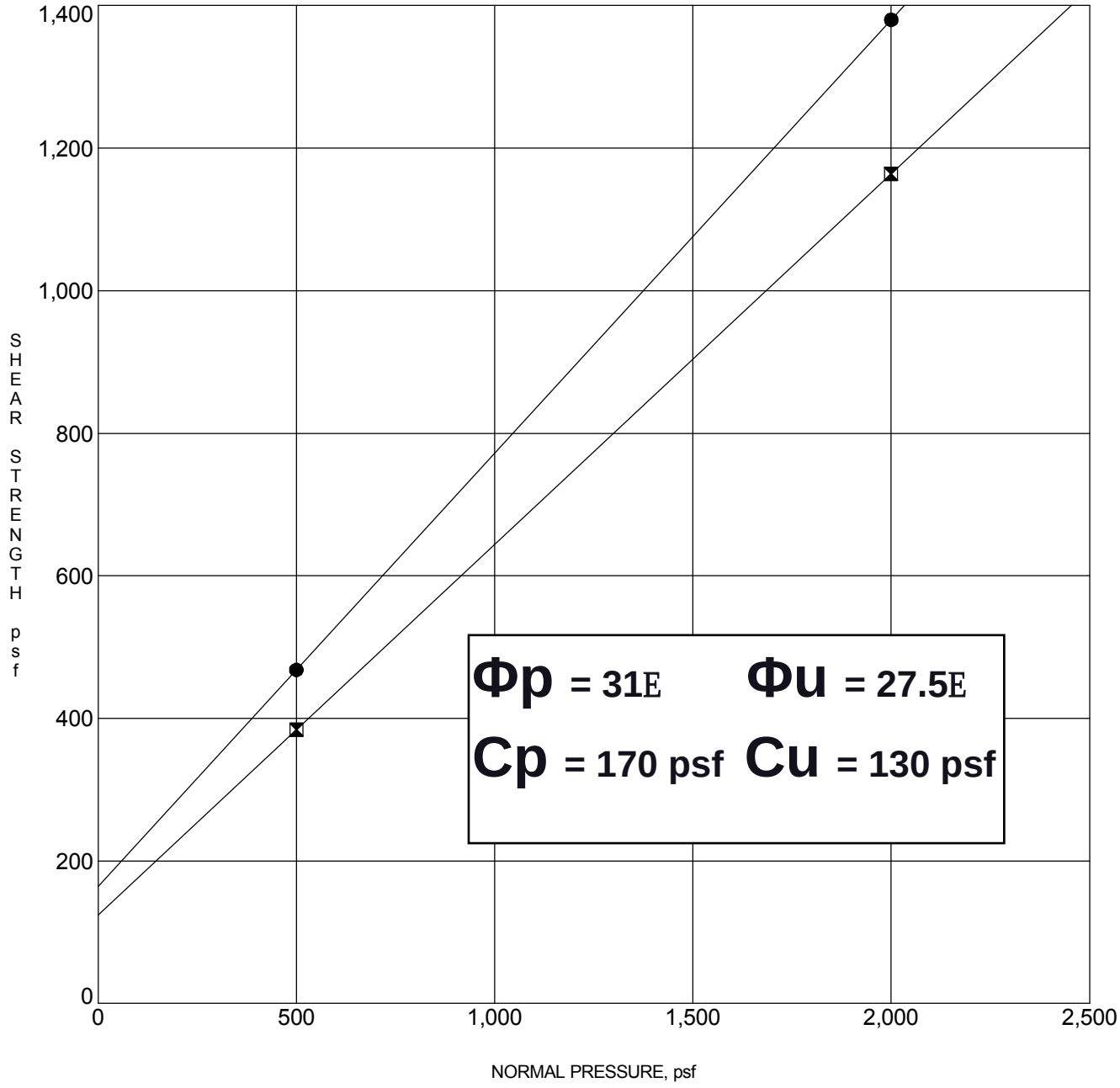
JOB NO. **21-01-4240**

DATE **8/19/21**

SHEAR TEST DIAGRAM

Harrington Geotechnical Engineering, Inc.

PLATE B-3



Specimen Identification			Classification	DD	MC%
●	B-2	5.0	SILTY CLAY (CL), (Peak)	89	30
⊠	B-2	5.0	(Ultimate)		

PROJECT **Hollingworth Elementary School - 3003 E. Hollingworth Street, West Covina, CA**

JOB NO. **21-01-4240**

DATE **8/19/21**

SHEAR TEST DIAGRAM

Harrington Geotechnical Engineering, Inc.

PLATE B-4

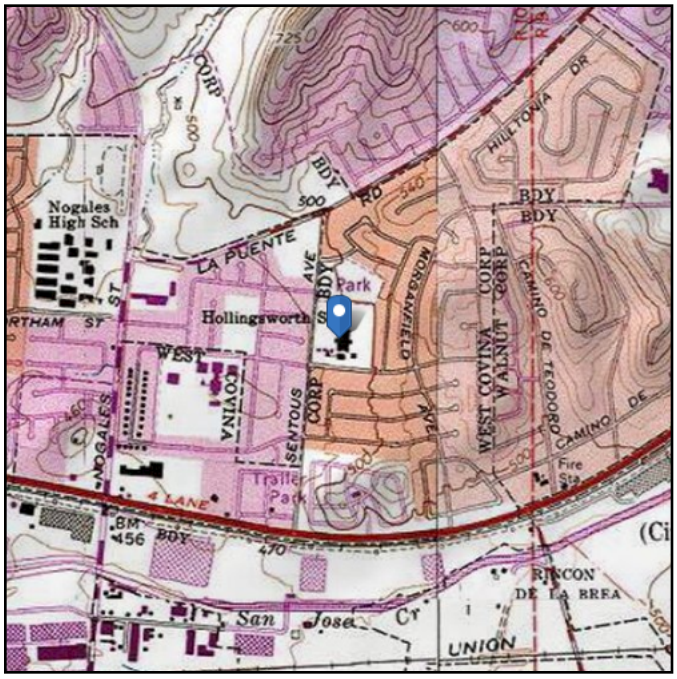
APPENDIX C

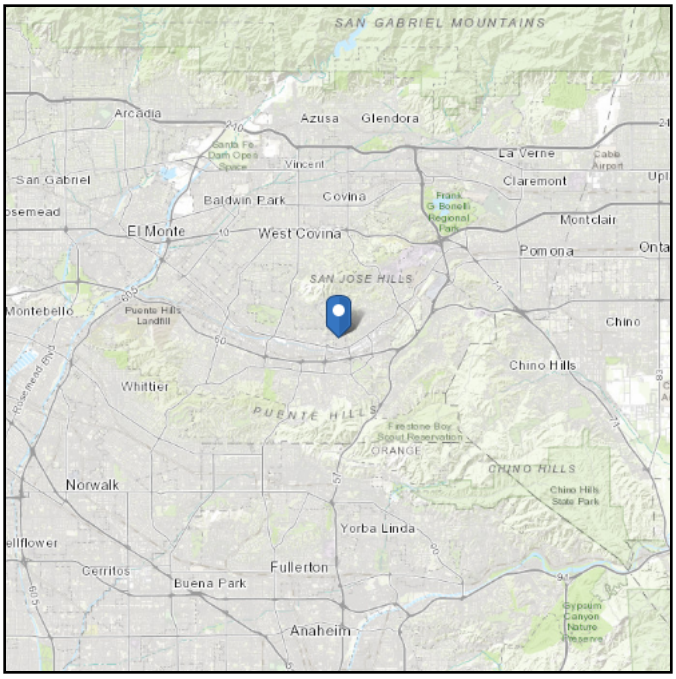
SEISMIC DESIGN PARAMETERS

ASCE 7 Hazards Report

Address:
3003 E Hollingworth St
West Covina, California
91792

Standard:	ASCE/SEI 7-16	**Elevation:**	491.84 ft (NAVD 88)
Risk Category:	III	**Latitude:**	34.007648
Soil Class:	D - Stiff Soil	**Longitude:**	-117.879321





Seismic

Site Soil Class: D - Stiff Soil

Results:

S_S :	1.784	S_{D1} :	N/A
S_1 :	0.63	T_L :	8
F_a :	1	PGA :	0.762
F_v :	N/A	PGA_M :	0.838
S_{MS} :	1.784	F_{PGA} :	1.1
S_{M1} :	N/A	I_e :	1.25
S_{DS} :	1.189	C_v :	1.457

Ground motion hazard analysis may be required. See ASCE/SEI 7-16 Section 11.4.8.

Data Accessed: Fri Aug 13 2021

Date Source: USGS Seismic Design Maps

Flood

Results:

Flood Zone Categorization: X (shaded)

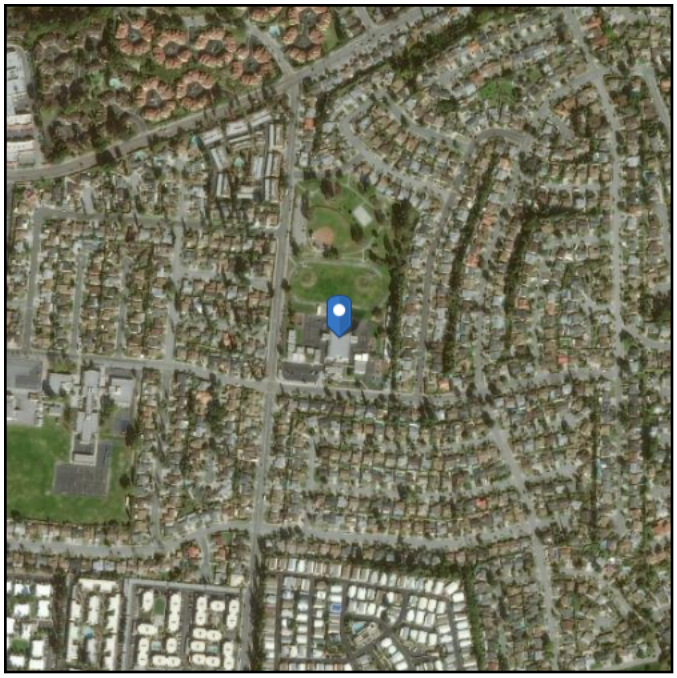
Base Flood Elevation:

Data Source: FEMA National Flood Hazard Layer - Effective Flood Hazard Layer for US, where modernized (https://msc.fema.gov/portal/search)

Date Accessed: Fri Aug 13 2021

FIRM Panel: If available, download FIRM panel here

Insurance Study Note: Download FEMA Flood Insurance Study for this area here



Tsunami

Results:

Tsunami: Not in mapped tsunami design zone.

Data Source: ASCE Tsunami Design Geodatabase

Date Accessed: Fri Aug 13 2021

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

ASCE does not intend, nor should anyone interpret, the results provided by this Tool to replace the sound judgment of a competent professional, having knowledge and experience in the appropriate field(s) of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the contents of this Tool or the ASCE 7 standard.

In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE 7 Hazard Tool.

APPENDIX D

GRADING SPECIFICATIONS

APPENDIX D

Grading Specifications

These specifications present generally accepted standards and minimum grading (earthwork) requirements for the development of the subject project. These specifications shall be the project guidelines for earthwork except where specifically superseded in the geotechnical report(s) for the subject project; including the approved grading plan; and/or approved grading permit.

The Project Geotechnical Engineer and Project Engineering Geologist should be properly notified for an opportunity to review the following recommendations in order to comment on the suitability of the recommendations on the proposed development.

1. General

1.1. The Contractor shall be responsible for the satisfactory completion of all earthwork (including grading of constructed fills and cuts) in accordance with the project plans and specifications.

1.2. The Project Geotechnical Engineer and Project Engineering Geologist or their authorized representatives shall perform observations, testing services and geotechnical consultation throughout the duration of the project.

1.3. It is the Contractor's responsibility to prepare the ground surface to receive the fill to the satisfaction of the Project Geotechnical Engineer and to place, spread, mix and compact the fill materials in accordance with the project specifications and as required by the Project Geotechnical Engineer. The Contractor shall also remove all material considered by the Project Geotechnical Engineer to be unsuitable for use in the construction of compacted fills.

1.4. The Contractor shall have suitable and sufficient equipment in operation to handle the volume of fill material being placed and provide support equipment to properly compact the material in accordance with project specifications. When necessary, equipment will be shut down temporarily in order to permit proper compaction of fills by support equipment.

2. Site Preparation

2.1. Excessive vegetation and all deleterious material shall be removed from the fill areas and disposed of offsite of the grading operation. Existing earth materials determined by the Project Geotechnical Engineer as being unsuitable (incompatible) for placement

in compacted fill areas shall be removed and disposed of offsite of the grading operation. When applicable, the Contractor may obtain the approval of the Project Geotechnical Engineer and the controlling authorities for the project to dispose of the above-described materials, or a portion thereof, in designated areas onsite.

2.2. The exposed surfaces in areas to receive fill shall be scarified to a depth specified by the geotechnical report or a nominal 6 inches as determined by the Project Geotechnical Engineer; moisture conditioned as necessary; and compacted. In areas where it is necessary to obtain the approval of the controlling agency prior to placing fill, it will be the Contractor's responsibility to arrange the required inspections.

2.3. Any underground structures, e.g. cesspools, cisterns, septic tanks, wells, pipelines, etc., encountered during the grading operation are to be removed or relocated and the ground prepared for fill (cut) in a proper manner as recommended by the Project Geotechnical Engineer and/or the controlling agency for the project.

3. Subdrains

3.1. All subdrains should be constructed below the fill areas. Horizontal subdrains should be constructed below sloping fill areas at approximate 30 feet vertical intervals. Typical subdrains (less than 300 linear feet in length) should of constructed of 4 inches diameter perforated Schedule 40 PVC pipe surrounded by one cubic foot per linear foot of gravel and filter fabric. Canyon subdrains should of constructed of 8 inches diameter perforated Schedule 40 PVC pipe surrounded by nine cubic feet per linear foot of gravel and filter fabric.

4. Compacted Fills/Fill Slopes

4.1. All material imported to the grading operation should be reviewed by the Project Geotechnical Engineer for compatibility prior to placement as fill. Laboratory testing of import materials may be required as recommended by the Project Geotechnical Engineer. Import materials deemed unacceptable for placement of fill should be removed from the fill areas and disposed of offsite of the grading operation.

4.2. All rock or rock fragments less than 8 inches in size should be incorporated into fill in a manner which will prevent nesting and the rock/rock fragments are completely surrounded with compacted fill.

4.3. All rocks greater than 8 inches in size shall be removed from the project site or placed in accordance with the recommendations of the Project Geotechnical Engineer and controlling agency code in areas designated as suitable for rock disposal.

4.4. All fill materials shall be placed in thin loose lifts, moisture conditioned as necessary and compacted in accordance with project specifications. Each layer shall be spread evenly and shall be thoroughly mixed during the spreading to obtain a nearly uniform moisture condition and a nearly uniform blend of materials.

4.5. All wet materials proposed for placement in fill areas should be moisture conditioned as necessary (either air dried or mechanically mixed). The Project Geotechnical Engineer may recommend removal of materials deemed too wet for placement of fill.

4.6. All fills shall be compacted to minimum project standards in compliance with the testing methods specified in the geotechnical report and in accordance with recommendations of the Project Geotechnical Engineer. Unless otherwise specified, the compaction standard shall be ASTM D1557 (latest approved standard).

4.7. All proposed slopes receiving fill (or ground sloping in excess of a ratio of five horizontal to one vertical), the fill shall be keyed and benched through all unsuitable topsoil, colluvium, alluvium, or creep-prone material into competent bedrock in accordance with the recommendations and approval of the Project Geotechnical Engineer or Project Engineering Geologist.

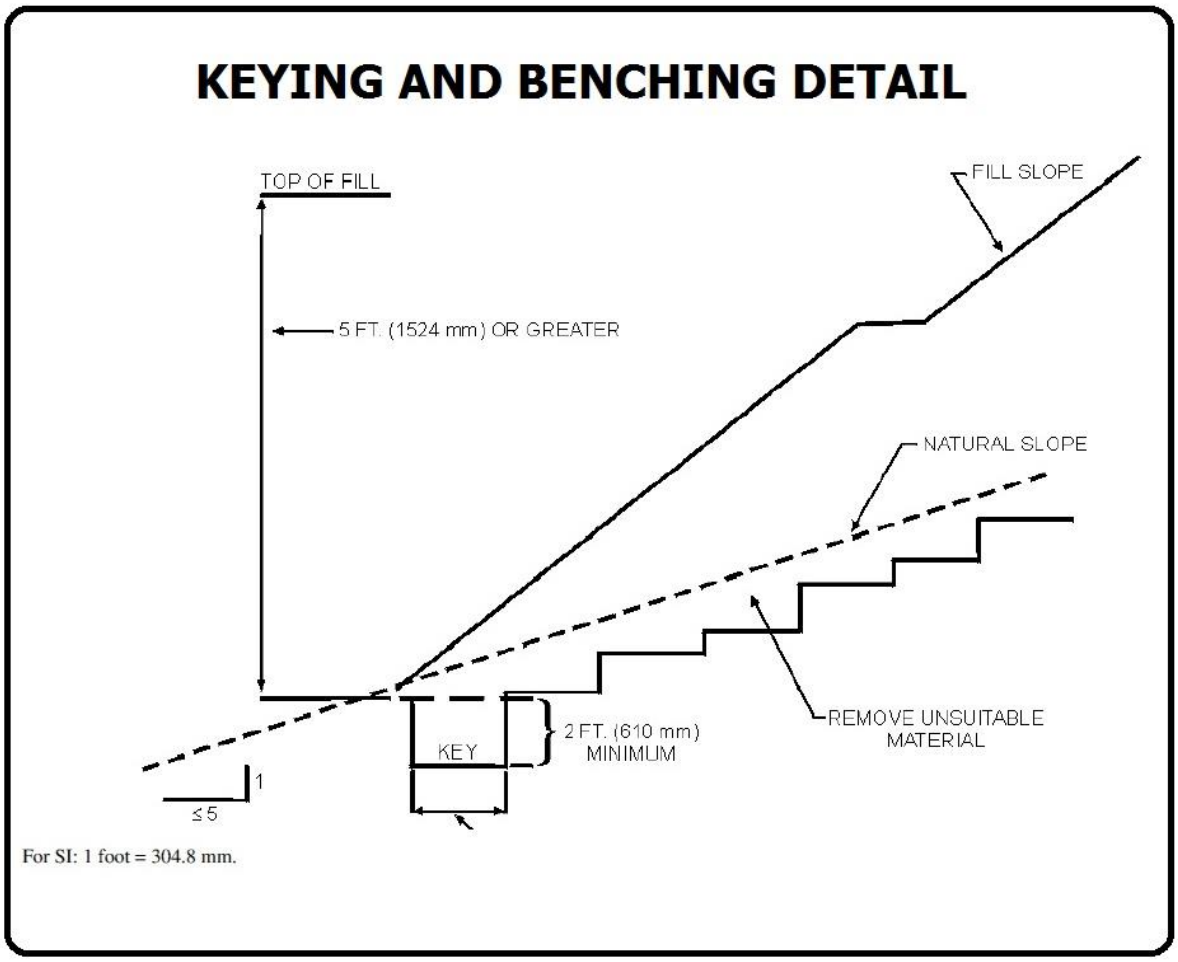
4.8. All drainage terraces for proposed fill slopes shall be constructed in compliance with the approved Grading Plan and/or the recommendations of the Project Civil Engineer. The preparation of the ground for construction of the drainage terraces should be reviewed for suitability by the Project Geotechnical Engineer.

4.9. All fill slopes (including buttresses and stabilization fills) shall be graded to a ratio not to exceed two horizontal to one vertical. The Contractor shall be required to obtain the specified minimum relative compaction out to the proposed finish slope face of slope. This may be achieved by both overbuilding the slope and cutting back to expose the compacted core, or by direct compaction of the slope face with suitable equipment, or by any other procedure which produces the designated result.

5. Keying and Benching

5.1. All fill-over-cut slopes shall be properly keyed through topsoil, colluvium or creep-prone material into bedrock or other firm material, and the transition shall be stripped of all unsuitable materials prior to placing fill. See the Keying and Benching Detail. The cut portion should be completed and then evaluated by the Project Engineering Geologist prior to placement of fill. The minimum dimensions of the key should be determined by the Project Engineering Geologist. All keys should include a subdrain as specified in Section 3.

Figure D1 Keying and Benching Detail



6. Cut Slopes

6.1. All cut slopes shall be inspected by the Project Engineering Geologist. The Contractor should notify the Project Engineering Geologist when cut slopes are started. If, during the course of grading, previously unforeseen and/or unanticipated adverse or potentially adverse geologic conditions are encountered, the Engineering Geologist and Geotechnical Engineer shall investigate, analyze and make recommendations for mitigation of these conditions.

6.2. All cut slopes shall be graded to a ratio not to exceed two horizontal to one vertical.

6.3. All drainage terraces for proposed cut slopes and shall be constructed in compliance with the approved Grading Plan and/or the recommendations of the Project Civil

Engineer. The preparation of the ground for construction of the drainage terraces should be reviewed for suitability by the Project Geotechnical Engineer.

7. Retaining Wall Backfill

The retaining wall backfill should include a 12" wide blanket of granular soil (with a sand equivalent of at least 30) above a constructed subdrain and extend to within 3 feet of finished grade. The top 3 feet of backfill should consist of site material compacted to at least 90 percent relative compaction to impede surface water infiltration. Benches at least 2 feet wide should be cut into the excavation slope (backcut) at 2 feet vertical intervals during backfill placement.

The subdrain should consist of a 3-inch-diameter, perforated, Schedule 40 PVC or ABS SDR-35 pipe surrounded by one cubic foot/foot of 3/4-inch gravel wrapped in Mirafi 140 N Geofabric or similar product. An adequate outlet for the subdrain should be provided and the location of the subdrain outlet should be reviewed by the project geotechnical engineer (engineering geologist) for suitability.

8. Utility Trench Backfills

Backfill for utility trenches should consist of site material that must be adequately compacted to preclude detrimental settlement. It is recommended, therefore, that backfills placed below the building foundation and to a distance of five feet outside thereof, and/or below concrete flatwork, be placed in appropriate lifts, moisture conditioned as necessary and mechanically compacted as to at least 90 percent of maximum dry density. Import materials (including sand) should be reviewed by the Project Geotechnical Engineer for suitability.

9. Grading Observations

9.1. Grading operations shall be observed by the Project Geotechnical Engineer (Geotechnical Technician) and where required, the Project Engineering Geologist.

9.2. All field density tests shall be made by the Geotechnical Technician to establish the relative compaction and moisture content of the fill in accordance with project specifications. Density tests shall generally be performed at (minimum) intervals not to exceed of 2 vertical feet or 1,000 cubic yards of material placed.

9.3. All field density testing of fill placed during the grading operation shall conform to the minimum project specifications. When test results indicate that the density of any layer of fill, or portion thereof, is below the required relative compaction (or outside the acceptable moisture range); the fill shall be reworked until the required density and/or moisture content has been attained; or the material shall be removed. No additional fill shall be placed over an area until the last placed lift of fill has been tested and found to meet the density and moisture requirements and that lift has been approved by the Project Geotechnical Engineer.