GEOTECHNICAL AND GEOLOGIC HAZARDS INVESTIGATION
NEW 6TH GRADE CAMPUS PROJECT
GOLDEN WEST MIDDLE SCHOOL
2651 DE RONDE DRIVE
FAIRFIELD, CALIFORNIA

for

Travis Unified School District
c/o AEDIS Architects
Attn: Ms. Michelle Netzley
2751 De Ronde Drive
Fairfield, California 94113

by

Cleary Consultants, Inc.
560 Division Street
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November 2024

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November 4, 2024
Project No. 1442.1
Ser. 7748

Travis Unified School District
c/o AEDIS Architects
Attn: Ms. Michelle Netzley
2751 De Ronde Drive
Fairfield, California 94113

RE: GEOTECHNICAL AND GEOLOGIC HAZARDS INVESTIGATION
NEW 6TH GRADE CAMPUS PROJECT
GOLDEN WEST MIDDLE SCHOOL
2651 DE RONDE DRIVE
FAIRFIELD, CALIFORNIA

Dear Ms. Netzley:

As requested, we have performed a geotechnical and geologic hazards investigation for the planned New 6th Grade Campus project at Golden West Middle School in Fairfield, California. The accompanying report presents the results of our field investigation, laboratory testing and engineering analyses. The site and subsurface conditions are discussed, recommendations for the soil and foundation engineering aspects of the project design are presented and potential geologic hazards are evaluated. The recommendations presented in this report are contingent upon our review of the grading and foundation plans for the proposed new construction and observation/testing of the earthwork and foundation installation phases of the project.

We refer you to the text of the report for detailed recommendations. If you have any questions concerning our findings or the report, please call.

Very truly yours,
CLEARY CONSULTANTS, INC.

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TABLE OF CONTENTS

	Page No.
Letter of Transmittal	
INTRODUCTION	1
SCOPE	1
A. Geotechnical Investigation	2
B. Geologic and Seismic Hazards Assessment	3
METHOD OF INVESTIGATION	5
A. Subsurface Exploration	5
B. Laboratory Testing	5
SITE CONDITIONS	6
A. Surface	6
B. Subsurface	7
C. Groundwater	8
GEOLOGY AND SEISMICITY	10
GEOLOGIC AND SEISMIC HAZARDS ASSESSMENT	14
A. Fault Offset Hazard	14
B. Ground Shaking Hazards	14
1. Strong Ground Shaking	14
2. Seismically-Induced Liquefaction and Dry Soil Settlement	15
3. Liquefaction-Induced Ground Surface Manifestations	17
4. Other Seismic Hazards	18
C. Flooding	19
D. Radon Gas Hazards	19
CONCLUSIONS AND RECOMMENDATIONS	19
A. Earthwork	21
1. Stripping and Site Preparation	21
2. Building Pad Overexcavation, Chemical Treatment, and Recompaction	21
3. Chemical Soil Stabilization	22
4. Recompaction of Surface Soils Outside of Chemically Treated Areas	23
5. Fill Placement and Compaction	24
6. Utility Trenches	24
7. Surface Drainage	25
8. Construction Observation	26
B. 6th Grade Campus and Administration/Multi-Use Building Spread Footing Foundations	26
C. Shade Structure Drilled Pier Foundations	27
D. Seismic Design Parameters	29
E. Slabs-on-Grade	29
F. Flexible Pavements	31
G. Soil Corrosivity	32

TABLE OF CONTENTS, CONTINUED

PLAN REVIEW AND CONSTRUCTION OBSERVATION 34

LIST OF REFERENCES

TABLES

Page No.

TABLE 1 - Summary of Significant Earthquake Faults Capable of Generating Strong Ground Shaking at the Golden West Middle School, New 6th Grade Campus Project Site 11

TABLE 2 - Summary of Significant Regional Historic Earthquakes in the Vicinity of the Golden West Middle School, New 6th Grade Campus Project Site 13

TABLE 3 – Seismically-Induced Liquefaction and Dry Soil Settlement Analysis Results at the Golden West Middle School, New 6th Grade Campus Project Site 17

TABLE 4 – Recommended Alternative Flexible Pavement Sections 31

TABLE 5 – Correlation Between Resistivity and Corrosion Potential 33

DRAWINGS

Drawing No.

SITE VICINITY MAP 1

LOCAL GEOLOGIC MAP 2

REGIONAL FAULT MAP 3

REGIONAL EARTHQUAKE EPICENTER MAP 4

SITE PLAN 5

KEY TO EXPLORATORY BORING LOGS 6

SUMMARY OF FIELD SAMPLING PROCEDURES 7

LABORATORY TESTING PROCEDURES 8

DRAWINGS, CONTINUED

LOGS OF EXPLORATORY BORINGS ONE THROUGH EIGHT..... 9-21

PLASTICITY CHARTS 22-23

R-VALUE TEST RESULTS..... 24-26

CORROSIVITY TEST SUMMARY 27

APPENDICES

APPENDIX A – Golden West Middle School, New 6th Grade Campus Project, Liquefaction and Dry Soil Settlement Analyses Results, EB-4, EB-5, and EB-8, Drilled September 16 and 17, 2024

APPENDIX B – Fugro USA Land, Inc., 2024, Site-Specific Hazard Assessment, New 6th Grade Campus Project, Golden West Middle School, Fairfield, California

INTRODUCTION

This report presents the results of our geotechnical and geologic hazards investigation for the planned New 6th Grade Campus project at Golden West Middle School in Fairfield, California (see Drawing 1, Site Vicinity Map for location). The purpose of this investigation was to explore the soil and foundation conditions in the general locations of the planned new buildings and associated site improvements, develop recommendations for the geotechnical engineering aspects of the project design, and evaluate potential geologic and seismic hazards at the site.

Based on our our review of the site plan (see Drawing 5, Site Plan) prepared by Aedis Architects, received via email on October 9, 2024, and the undated preliminary Classroom Expansion – Option 1B plan prepared by Aedis Architects, we understand that the project will include the construction of four one-story 6th Grade Campus buildings (Buildings A through D) totaling approximately 19,000 square feet and two 20-foot by 30-foot shade structures on the northeast side of the main campus building complex, ~~and the construction of an irregularly shaped, approximately 12,000 square foot tall one-story Administration/Multi-Use Building within the southeast portion of the main campus building complex.~~ The buildings will be of wood-frame construction with slab-on-grade floors. Structural loads are expected to be typical for these types of construction.

The project will also include the installation of asphaltic concrete playground and parking lot pavements, exterior concrete flatwork, and associated underground utilities.

SCOPE

As presented in our proposal letter dated July 22, 2024, the scope of our services for this investigation has included:

A. Geotechnical Investigation

1. A review of relevant published and unpublished and readily available geologic literature, maps and geotechnical information for the area.

2. Several reconnaissance visits to the site by our staff.

2. A subsurface investigation including the drilling of eight (8) exploratory borings at the project site and recovery of samples from borings.

3. Laboratory testing of samples obtained from the borings.

5. Engineering analysis of the field and laboratory data.

6. Preparation of this geotechnical investigation and geologic and seismic hazards evaluation report for use in the project design and construction. The report includes findings, conclusions and recommendations for the following:

   a. Geologic and seismic setting of the site and surrounding area, including literature research and review of available geologic/seismic reports and maps.

   b. 2022 CBC seismic design criteria.

   c. Site preparation and grading.

   d. Recommended foundation type and geotechnical engineering design parameters for the proposed new one-story 6th grade campus buildings and tall one-story Administration/Multi-Use Building.

e. Recommended foundation type and geotechnical engineering design parameters for the proposed new shade structures.

f. Estimated foundation settlements.

g. Subgrade preparation and aggregate base sections for interior and exterior concrete slabs-on-grade.

h. Subgrade preparation and aggregate base and asphalt pavement sections for new vehicular and pedestrian asphaltic concrete pavement areas.

i. Treatment of expansive soils (as required).

j. Backfilling and compaction of utility trenches.

k. Surface and subsurface drainage.

l. Unusual design or construction conditions encountered in the investigation.

B. Geologic and Seismic Hazards Evaluation

1. Discussion of geologic and seismic conditions and data on the nature of the site and potential earthquake damage including:

   a. Regional geology.

   b. Seismic conditions and historical information on the seismicity of the local and regional area.

c. Location of known active and potentially active faults in the vicinity of the site, as well as nearby known or judged inactive faults.

2. Earthquake ground motion acceleration design parameters and geologic site classification in accordance with the 2022 California Building Code study requirements.

3. Potential site impacts related to faulting, liquefaction, lateral spreading, seismic settlement and differential compaction, landsliding, radon gas, flooding and dam failure inundation with recommended mitigation measures, where appropriate.

4. Reconnaissance visit to the site by our certified engineering geologist, conducted October 3, 2024.

This report has been prepared for the specific use of the Travis Unified School District and their consultants in accordance with generally accepted geotechnical engineering principles and practices. No other warranty, either expressed or implied, is made. In the event that any substantial changes in the nature, design or location of the project are planned, the conclusions and recommendations of this report shall not be considered valid unless such changes are reviewed and the conclusions of this report modified or verified in writing. Any use or reliance of this report or the information herein by a third party shall be at such party's sole risk.

It should also be recognized that the passage of time may result in significant changes in technology, building code requirements, state of the practice, economic conditions or site variations which would render the report inaccurate. Accordingly, neither the owner, nor any other party, should rely on the information or conclusions contained in this report after three years from its date of issuance without the express written consent of Cleary Consultants, Inc.

METHOD OF INVESTIGATION

A. Subsurface Exploration

The subsurface investigation was performed on September 16 and 17, 2024, under the guidance of our Staff Engineering Geologist, Mr. Ian Severais, using track-mounted solid flight auger and rotary wash drilling equipment. Eight (8) exploratory borings were drilled to a maximum depth of 49.5 feet at the locations shown on Drawing 5, Site Plan.

A key describing the soil classification system and soil consistency terms used in this report is presented on Drawing 6, and the soil sampling procedures are described in Drawing 7. The logs of the exploratory borings are presented on Drawings 9 through 21.

The borings were located in the field by surveyor's wheel measurements made between location of features shown on available satellite imagery and the site plan provided to us. These locations should be considered accurate only to the degree implied by the method used.

B. Laboratory Testing

Samples of the soil materials from the borings were returned to our laboratory for classification and testing. The results of moisture content, dry density, percent finer than No. 4 and No. 200 sieves, plasticity index, free swell, pocket penetrometer and torvane testing are shown on the boring logs. The laboratory testing procedures followed during this investigation are summarized on Drawing 8. Drawings 22 and 23 summarize the results of the plasticity index testing. The results of R-Value testing performed on untreated and chemically-treated samples of the upper soils composited from the borings are presented on Drawings 24 through 26. Drawing 27 presents the results of soil corrosivity testing performed on a composite sample of the surficial soils collected from the borings.

A list of references consulted during the investigation is included at the end of the text.

SITE CONDITIONS

A. Surface

The relatively level Golden West Middle School campus is bounded by De Ronde Drive to the east, Dobe Lane to the south, residential homes to the west, and Travis Unified School District Office to the north.

The planned 6th grade campus site, which will include four new one-story buildings (Buildings A through D) and two shade structures, is situated on the northeast side of the main campus building complex, northeast of the existing Campus Building J. The site is presently a relatively level asphalt-paved playground.

A new parking lot will be constructed north of the 6th grade campus site, alongside De Ronde Drive, and an asphalt-paved playground expansion is planned west of the new parking lot. The planned parking lot and playground expansion areas are presently occupied by a dry grass-covered soil stockpile up to approximately six feet high, which we understand will be off hauled. The southwest portion of the playground expansion site is occupied by a rubber-surfaced exercise area.

The planned Administration/Multi-Use Building site is situated within the southeast portion of the main campus building complex, north of the existing Campus Building A. The site is presently occupied by Campus Building C, which we understand will be removed, and by sidewalks, grass lawns, and several small-to-medium-sized trees.

We observed the interior of the gym/multi-purpose building. We noted that a small area of the floor was uneven, with, at one location, an approximately one-inch depression in the floor spread

over an area of approximately 15 feet square. This occurrence appeared to be localized and not indicative of generalized site conditions. There were no indications of foundation settlement.

The existing asphalt pavements in the vicinity of the project site were observed to be in generally fair condition, with longitudinal cracking throughout.

The elevation of the project site is approximately 65 feet above Mean Sea Level. The overall regional topographic gradient is less than one percent toward the southwest in the site vicinity.

B. Subsurface

Exploratory Boring 1 (EB-1) was hand-augered due to possible conflicts with underground utilities, and penetration resistance was therefore not recorded. EB-1 encountered silty clay to the maximum depth explored, five and one-half (5½) feet.

EB-2 and EB-3 encountered firm to stiff silty clay to the maximum depths explored, six and one-half (6½) feet to 15 feet respectively.

EB-4 was hand-augered to a depth of approximately five feet, then drilled using track-mounted solid flight auger and rotary wash drilling equipment. Penetration resistance was not recorded in the portion of the boring that was hand-augered. EB-4 encountered silty clay in the upper 17 feet, with the consistency determined to be stiff to firm from a depth of five feet to 17 feet, underlain by firm clayey silt to an approximate depth of 22 feet, further underlain by stiff sandy silt to silty sand to an approximate depth of 27 feet. These layers were in turn underlain by very stiff to hard siltstone and very dense sandstone, likely of the Tehama Formation, to the maximum depth explored, 49.5 feet.

EB-5 encountered stiff silty clay in the upper 12 feet, underlain by medium dense gravelly silty sand to an approximate depth of 17 feet, further underlain by stiff to hard siltstone and very

dense sandstone, likely of the Tehama Formation, to the maximum depth explored due to practical drilling refusal, 34.5 feet.

EB-6 encountered firm to stiff silty clay in the upper seven and one-half (7½) feet, underlain by hard sandy silt to the maximum depth explored, 14.5 feet.

EB-7 encountered stiff to firm silty clay in the upper 12 feet, underlain by medium dense gravelly clayey sand to the maximum depth explored, 15 feet.

EB-8 encountered soft to stiff silty clay in the upper 13 feet, underlain by stiff to hard siltstone and very dense sandstone, likely of the Tehama Formation, to the maximum depth explored, 49.5 feet.

The near-surface soils encountered in the borings are considered to have a moderate to critically high expansion potential based on their plasticity characteristics (Plasticity Indices of 16 to 32 percent) and the free swell test data (Free Swells of 60 to 110 percent). The results of the free swell testing and plasticity index testing are shown on the boring logs. The results of the plasticity index testing are also presented on Drawings 22 and 23.

The attached boring logs and related information depict subsurface conditions only at the specific locations shown on Drawing 5 and on the particular dates designated on the logs. Soil conditions at other locations may differ from conditions occurring at the boring locations. Also, the passage of time may result in a change of soil conditions at these boring locations due to environmental changes.

C. Groundwater

Free groundwater was encountered in EB-4 and EB-7 of this investigation at approximate depths of 10 feet and 14 feet below the ground surface, respectively. The groundwater level was not

determined in EB-5 and EB-8 of this investigation, which were drilled with rotary wash drilling equipment. Groundwater was not encountered in EB-1, EB-2, EB-3, and EB-6 of this investigation within the respective maximum depths explored, five and one-half (5½) to 15 feet. It should be noted that the borings were only open for a short period of time and this may not have been sufficiently long to establish stabilized water level conditions. Fluctuations in the groundwater level can also occur because of variations in rainfall, temperature, run-off, irrigation and other factors not evident at the time our measurements were made and reported herein.

The State of California had not as of the date of this report prepared a seismic hazard zone report for the Elmira Quadrangle and information typically provided in such a report on the historically high ground water table was therefore not available.

The California State Water Resources Control Board GeoTracker website, which performs a search for groundwater well records based on the site address and search radius input, provided data from a monitoring well located approximately 1,500 feet southeast of the project site at 685 Parker Road, which indicated a high groundwater table of approximately 8.5 feet below the ground surface.

The Sustainable Groundwater Management Act (SGMA) Data Viewer online application provided groundwater well records for a monitoring well located approximately 2,500 feet northwest of the project site, on the north side of Markeley Lane, which indicated a historical high groundwater table of 6.9 feet below the ground surface in April 2006.

Based on our review of the above information, we have conservatively assumed an historic high groundwater depth of 6.9 feet for liquefaction analysis.

GEOLOGY AND SEISMICITY

The Golden West Middle School campus is located approximately two miles southeast of Cement Hill, five miles southeast of the eastern margin of the California Coast Mountain Range, and 10 miles northeast of Grizzly Bay. Geologic mapping of the site vicinity by CH2M Hill (1997) and Sims et al (1973) indicate that the site is underlain by Pleistocene-age older alluvium (map unit Qoal) composed of interbedded clays, silts, sands, and gravel. Mapping by Helley and Harwood (1985) similarly indicates that the site is underlain by Pleistocene-age alluvium consisting of unconsolidated, slightly weathered gravel, sand, silt, and clay (map unit Qml). Our investigation found that the site is underlain by alluvium consistent with the regional geologic mapping discussed above, overlying siltstone and sandstone, likely of the Tehama Formation. The Tehama, Markley Sandstone, and Domengine Sandstone bedrock formations occur at the ground surface in the near vicinity. A geologic map of the site vicinity, as prepared by CH2M Hill (1997), is presented on Drawing 2, Local Geologic Map.

The San Francisco Bay Area is recognized by geologists and seismologists as one of the most active seismic regions in the United States. The three major fault zones which pass through the Bay Area in a northwest direction have produced approximately a dozen earthquakes per century strong enough to cause structural damage. The faults causing these earthquakes are part of the San Andreas fault system, a major rift in the earth's crust that extends for at least 450 miles along the California Coast and includes the Hayward, Calaveras, and San Andreas faults. The site is located approximately 29 miles northeast of the Hayward fault, 32 miles northwest of the Calaveras fault northern termination, and 47 miles northeast of the San Andreas fault.

In addition, the site is located approximately 10 miles northeast of the active Green Valley fault, which trends northwesterly for about 38 miles along the westerly margin of Green Valley, 9.9 miles east of the potentially active Cordelia fault, 1.2 miles southwest and 2.6 miles east of the Vaca and Lagoon Valley faults, respectively, which have exhibited late Quaternary fault displacement, and 0.6 miles northwest of the inferred buried/concealed trace of the Quaternary

(age undifferentiated) Kirby Hills fault. A regional fault map (Jennings and Bryant, 2010) is presented on Drawing 3.

The distances between the site and "capable" segments of the above faults, as well as other significant faults within a radius of 60 miles from the site, were determined using the USGS Earthquake Hazards Program 2008 USGS National Seismic Hazard Maps – Fault Parameters, as presented below in Table 1.

TABLE 1 - Summary of Significant Earthquake Faults Capable of Generating Strong Ground Shaking at the Golden West Middle School, New 6th Grade Campus Project Site [(1), (2)]

Earthquake Generating Fault	Approximate Distance and Direction to Generating Fault (Miles)	Maximum Earthquake (Moment Magnitude)
Great Valley 5, Pittsburg Kirby Hills	0.6 SW	6.9
Green Valley Connected	10.1 SW	6.8
West Napa	17.4 SW	6.7
Hunting Creek-Berryessa	17.7 NW	7.1
Mount Diablo Thrust	28.0 SE	6.7
Greenville Connected	28.0 SE	7.0
Hayward-Rodgers Creek RC+HN+HS[(3)]	28.8 SW	7.3
Calaveras CN+CC+CS[(3)]	31.9 SW	7.0
Maacama-Garberville	44.8 NW	7.4
N. San Andreas SAO+SAN+SAP+SAS[(3)]	46.7 SW	8.1
San Gregorio Connected	50.2 SW	7.5
Collayomi	52.2 NW	6.7
Point Reyes	52.9 SW	6.9
Bartlett Springs	54.0 NW	7.3
Monte Vista - Shannon	60.1 SW	6.5

(1) USGS Earthquake Hazards Program 2008 USGS National Seismic Hazard Maps – Fault Parameters, ran August 20, 2024
(2) Site Latitude: 38.2777˚N; Site Longitude: 121.9610˚W
(3) Corresponds to portions of the scenario fault rupture

Since the early 1800's, a number of major regional earthquakes have occurred along the Hayward, Calaveras, San Andreas and other faults in the vicinity of the San Francisco Bay Area and the surrounding region, as shown on Drawing 4, Regional Earthquake Epicenter Map

(Toppozada, et al, 2000). A discussion of significant regional historic earthquakes within a radius of 60 miles from the site is presented below.

The San Francisco Earthquake of 1906 had a Richter Magnitude of approximately 8.3, the epicenter of which was located approximately 50 miles southwest of the site. An earthquake of magnitude 5.3 occurred in 1957 with the epicenter located approximately 51 miles southwest of the site; the 1957 Daly City earthquake caused approximately one million dollars (approximately eight million in 2018 dollars) in damage.

In 1868, an earthquake having an estimated Richter Magnitude of 7.0 occurred along the Hayward fault at a location approximately 41 miles south of the project site. This earthquake opened fissures at random locations along the fault from San Pablo to Mission San Jose.

Historical earthquakes along the Calaveras fault include events in 1861 and 2007 with estimated or recorded magnitudes of 6.5. These earthquakes had epicenters located approximately 37 miles south and 59 miles southeast of the project site, respectively.

An earthquake occurred on April 19, 1892, known as the Vacaville-Winters earthquake, with a strong aftershock occurring on April 21, 1892. The maximum estimated Richter magnitude was 6.8 and likely occurred along a blind thrust fault, possibly an extension of the Midland Fault Zone, located approximately 15 miles north to northwest of the site. An earthquake with Richter Magnitude 5.4 experienced on the Concord fault in 1955 had its epicenter approximately 22 miles southwest of the site. Two earthquakes in 1980, along traces of the Greenville fault, had their epicenters approximately 32 miles southeast of the site. These 1980 earthquakes had Richter magnitudes of 5.5 and 5.8. In addition, numerous earthquakes of magnitudes 4.0 or greater have been recorded throughout the San Francisco Bay Area along the San Andreas, Hayward, Calaveras and other faults.

Table 2 presents a summary of the regional historic earthquakes discussed above.

TABLE 2 - Summary of Significant Regional Historic Earthquakes in the Vicinity of the Golden West Middle School, New 6th Grade Campus Project Site[(1), (2), (3)]

Fault	Year (Name)	Magnitude (Richter)	Approximate Distance and Direction to Earthquake Epicenter (Miles)
San Andreas[(1)]	1906 (San Francisco)	7.8 (8.3)	50 SW
	1957 (Daly City)	5.3	51 SW
Calaveras[(1), (2)]	1861[(1)]	5.8 (6.5)	37 S
	2007[(2)] (Alum Rock)	5.6	59 SE
Hayward[(1)]	1868	7.0	41 SW
Concord[(1)]	1955	5.4	22 SW
Greenville[(1)]	1980 (Two Earthquakes)	5.5 & 5.8	32 SE
West Napa[(2)]	2014	6.0	20 SW
Unknown Concealed Fault, Possibly NW Extension of the Midland Fault Zone	1892 (Two Earthquakes)	6.8	15 N-NW

[(1)] USGS OFR 2007-1437H
[(2)] USGS Earthquakes Hazards Program Website
[(3)] Site Latitude: 38.2777˚N; Site Longitude: 121.9610˚W

Modeling of earthquake occurrence probabilities over the 30-year period of 2014 to 2043 on both a statewide and regional basis was performed by the 2014 Working Group on California Earthquake Probabilities. The results of the study are presented in the Long-Term Time-Dependent Probabilities for the Third Uniform California Earthquake Forecast (Field, E.H., et. al., 2015). The report indicates a 72 percent probability that one or more earthquakes of magnitude 6.7 or greater will occur in the San Francisco Bay region between 2014 and 2043. Additionally, the probability of one or more regional earthquakes of magnitude 6.0 or greater over the same time period is indicated to be 98 percent. Likewise, the occurrence of at least one regional earthquake of magnitude 5.0 or greater over this time period is evaluated as being a near certainty.

Therefore, similar to most of the San Francisco Bay Area, it is reasonable to assume that the planned buildings and associated improvements at the project site will be subjected to a moderate to large earthquake from one or more of the above-mentioned faults during their design lifetime. During such an earthquake, strong ground shaking is likely to occur at the site.

GEOLOGIC AND SEISMIC HAZARDS ASSESSMENT

A. Fault Offset Hazard

Alquist-Priolo Earthquake Fault Zones are state mandated regulatory zones surrounding the surface traces of active faults (faults that have ruptured the ground surface in the last 11,000 years) in California. According to the California Alquist-Priolo Act of 1973, structures for human occupancy cannot be placed over active or potentially active faults with the potential for surface rupture, and must be located more than a minimum distance from the fault (generally 50 feet).

Based on our site reconnaissance, field exploration and review of available geologic information, we conclude that there are no known active or potentially active faults crossing the planned project site. The site is also not within an Earthquake Fault Zone as defined by the State of California Alquist-Priolo Earthquake Fault Zoning Act. Therefore, the hazard resulting from surface fault rupture at the site is considered low.

B. Ground Shaking Hazards

1. Strong Ground Shaking

Strong ground shaking is likely to occur during the design lifetime of the proposed buildings and other site improvements as a result of sudden movement along one or more of the regional active faults discussed above. The buildings and other proposed improvements will need to be designed and constructed in accordance with current standards of earthquake-resistant construction.

Ground shaking during an earthquake could cause furnishings which are not rigidly attached (such as bookshelves and file cabinets) to undergo movement with respect to the buildings. Design measures that minimize such potential movement and also minimize the adverse effects of such movement where they cannot be prevented should be utilized.

2. Seismically-Induced Liquefaction and Dry Soil Settlement

Liquefaction is a phenomenon in which saturated cohesionless soils lose strength during strong ground shaking and experience horizontal and vertical movements. Soils that are most susceptible to liquefaction are clean, loose, saturated, uniformly graded, fine-grained, clay-free sands and sandy silts that lie within 50 feet of the ground surface. Seismically-induced dry soil settlement can occur in non-saturated soils, and is considered most applicable to non-cohesive clean, loose sands with less than five percent fines (Day, 2002).

As discussed above, our investigation found that the project site is underlain by soft to stiff silty clay, clayey silt, and sandy silt to silty sand, and medium dense gravelly silty sand overlying stiff to hard siltstone and very dense sandstone of the likely Tehama Formation to the maximum depth explored, 49.5 feet.

Our representative recorded one-inch blowcounts throughout the drilling of the borings of this investigation to evaluate potential gravel interference. However, gravel interference was not indicated based on the procedure by Vallee and Skryness (1980).

The fine-grained soil layers were additionally analyzed for liquefaction susceptibility using criteria from Bray, J.D. and Sancio, R.B. in their 2006 paper "Assessment of the Liquefaction Susceptibility of Fine-Grained Soils". This study found that fine-grained soils with a plasticity index of less than 12 and water content to liquid limit ratio of less than 0.85, or a plasticity index of 12 to 18 and water content to liquid limit ratio of less than 0.8, are not susceptible to liquefaction. Based on these criteria, the silty clay layers

encountered in the borings were found to be not susceptible to liquefaction. The plasticity index of the clayey silt and sandy silt layers encountered from a depth of approximately 17 feet to 27 feet in EB-4 were not determined by laboratory testing and, therefore, the layers were conservatively assumed to be potentially susceptible to liquefaction. The siltstone and sandstone bedrock of the likely Tehama Formation, at greater depth, in our opinion, is also considered to be non-liquefiable.

Soil characterizations from EB-4, EB-5, and EB-8 were analyzed for seismically-induced liquefaction and dry soil settlement using the LiquefyPro (Version 5.0) computer program, which evaluates liquefaction potential and calculates settlements using the SPT blowcount data obtained during soil sampling and total unit weight and fines content data obtained from the samples during laboratory testing. The program is based on the most recent publications of the NCEER Workshop and SP117 Implementation, and the analysis was performed using the Tokimatsu and Seed calculation method with earthquake magnitude scaling correction. The parameters used to analyze the borings were a maximum Peak Ground Acceleration (PGA_M) of 0.674g, earthquake Moment Magnitude of 8.50M_w and factor of safety (FS) of 1.3, per California Geological Survey Special Publication 117A (2008) and Note 48 (2019). The groundwater depth was conservatively assumed to be 6.9 feet below the ground surface, as discussed previously.

The results and supporting data for the seismically-induced liquefaction and dry soil settlement analyses of the borings are included in Appendix A of this report, and the tabulated results are presented in Table 3 below:

TABLE 3 – Seismically-Induced Liquefaction and Dry Soil Settlement Analysis Results at the Golden West Middle School, New 6th Grade Campus Project Site

	Liquefaction Settlement (Inches)		Dry Soil Settlement (Inches)		Combined Total Settlement (Inches)	
	Total	Differential[(1)]	Total	Differential[(1)]	Total	Differential[(1)]
EB-4	1.80	0.90	0.00	0.00	1.80	0.90
EB-5	0.63	0.32	0.00	0.00	0.63	0.32
EB-8	0.00	0.00	0.00	0.00	0.00	0.00

[(1)] Differential settlement predicted over a horizontal distance of 50 feet.

Our analysis indicates that the maximum predicted seismically-induced liquefaction settlement at the site is approximately one and three-quarter (1¾) inches, with approximately one inch of differential settlement predicted over a horizontal distance of 50 feet. The theoretical seismically-induced dry soil settlement is nil. Based on the above findings, the likelihood that the proposed buildings and other site improvements will be damaged by seismically-induced ground settlement is considered low.

3. Liquefaction-Induced Ground Surface Manifestations

The potential for liquefaction-induced ground surface manifestations was evaluated using the method of Ishihara (1985). This method provides empirical criteria to assess the potential for ground surface disturbance at liquefaction sites based on the thickness of the non-liquefiable surface layer (H_1) overlying the thickness of the underlying layer that exhibits liquefaction potential (H_2).

The liquefaction analyses of EB-4 and EB-5, as shown in Appendix A, indicates that a 12-to-17-foot-thick non-liquefiable layer (H_1) overlies a five-to-10-foot-thick layer with liquefaction potential (H_2), as determined based on Figure 7.12 (Southern California Earthquake Center, 1999) and a historic maximum high groundwater table of 6.9 feet.

The thickness of the surface layer and the potentially liquefiable layer encountered in the boring was used to plot a point on the chart titled "Proposed Boundary Curves for Site Identification of Liquefaction-Induced Damage" (Ishihara, 1985). EB-4 and EB-5 were found to fall in the region in which liquefaction-induced surface manifestations could potentially occur for maximum ground accelerations less than 0.4-0.5g. As stated above, the calculated peak ground acceleration predicted at the site is 0.674g.

In summary, it is our opinion that the proposed buildings and other site improvements may be subject to minor liquefaction-induced surface manifestations, but no loss of support due to liquefaction in the event of an earthquake along one or more of the faults in the site vicinity due to the thickness (12 feet minimum) of the non-liquefiable silty clay section supporting the structures.

4. Other Seismic Hazards

We have also considered the possibility of other seismically induced hazards that could potentially impact the planned buildings and other site improvements, such as lateral spreading, landsliding and ground cracking.

Because of the site's gentle topography, and the absence of a "free face" in the site vicinity, the potential for lateral spreading is considered to be remote.

Landslide hazard mapping of Solano County (Wentworth et al, 1997) indicates that the project site is located within an area of flat land with little or no potential for the formation of landsliding; since the site is essentially level, the likelihood of landsliding is also considered remote.

The predicted seismically-induced settlements at the project site are also below the threshold likely to result in ground cracking.

C. Flooding

F.E.M.A. Flood Insurance Mapping (May 2009) indicates the project site is located within Flood Area Zone X, "Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood."

The project site is not located within the dam failure inundation zones of the reservoirs in Solano and Napa Counties, including Pennsylvania Creek Dam (Mead and Hunt, 2018) and Lake Curry Dam (Water Resources Engineering, Inc., 2020; Division of Safety and Dams, 2024).

The site is outside of the runup zone resulting from a seismically generated tsunami (California Geological Survey, 2021). The site is also not within the vicinity of any large lakes or reservoirs, so there is not a hazard at the site from a seiche.

D. Radon Gas Hazards

The California Geological Survey had not as of the date of this report prepared Radon Potential Zone Mapping for Solano County. According to the Solano County General Plan (2008), "Radon hazards are generally low in Solano County, although some tests near Vacaville did have significant results."

CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of our investigation, we judge that there are no geologic or seismic hazards that would preclude the planned construction of the New 6th Grade Campus project at Golden West Middle School. From a soil and foundation engineering standpoint, we conclude that the

buildings and other improvements can be constructed as planned provided the recommendations of this report are incorporated into the design and construction of the project.

The upper soils encountered at the project site are of variable strength and consistency, and have a critically high expansion potential. Accordingly, in order to mitigate potentially damaging shrink-swell soil behavior and provide suitable support for conventional spread footing foundations, we recommend that the soils beneath the new building footprints consist of chemically-stabilized, properly compacted engineered fill, as described in Section A-2, Building Pad Overexcavation, Chemical Treatment, and Recompaction. The new buildings can then be supported on conventional isolated and continuous spread footing foundations obtaining support in properly compacted chemically treated engineered fill (see Section B, 6th Grade Campus and Administration/Multi-Use Building Spread Footing Foundations).

The planned shade structures can be supported on cast-in-place straight shaft drilled piers obtaining skin friction support in the undisturbed native soils underlying the site, as described in Section C, Shade Structure Drilled Pier Foundations.

A cushion of Class 2 aggregate baserock should be provided under building slabs, exterior concrete flatwork, and asphalt pavements, as described in Section E, Slabs-on-Grade and Section F, Flexible Pavements.

Our analysis indicates that the worst-case theoretical seismically-induced liquefaction settlement at the site is approximately one and three-quarter (1¾) inches, with up to approximately one inch of differential settlement predicted over a horizontal distance of 50 feet.

The recommendations presented in the remainder of this report are contingent on our review of the earthwork and foundation plans for the project and our observation of the grading, foundation installation, asphalt pavement installation, and concrete slab installation phases of the construction.

A. Earthwork

1. Stripping and Site Preparation

Existing foundations, underground utilities, tree root bulbs, as well as any other site improvements which are to be removed should be cleared from the construction area. Below grade obstructions, such as buried tanks and existing foundations, should then be removed to their full depth and extent and hauled from the site. The building sites and other improvement areas should then be stripped to a sufficient depth to remove any remaining organic laden topsoil. Any areas of loose or soft materials that are exposed during the grading should also be removed or recompacted, as determined by our representative in the field.

Holes resulting from the removal of underground obstructions (such as abandoned utilities, tree root bulbs or foundation demolition excavations) that extend below the bottom of building pad overexcavation depth or planned finished grade should be cleared of loose soil and debris, then backfilled with suitable material compacted to the requirements discussed below for engineered fill (see Section A-5, Fill Placement and Compaction).

2. Building Pad Overexcavation, Chemical Treatment and Recompaction

As discussed above, the soils underlying the new 6th grade campus building pads and Administration/Multi-Use building pad should be chemically stabilized by treating them with five (5) percent by dry weight Hi-Calcium Quicklime as described in Section A-3, Chemical Soil Stabilization. In order to provide uniform, homogeneous foundation support, the chemical soil treatment should extend to a minimum depth of five feet below finished pad subgrade or three feet below the bottoms of new spread footing foundations, whichever is deeper, and should extend horizontally at least five feet beyond the outer face of footings (including any associated walkway canopy footings).

3. Chemical Soil Stabilization

The required baserock section underneath exterior concrete flatwork and asphalt pavements can be reduced by chemically treating with five (5) percent by dry weight Hi-Calcium Quicklime to a depth of at least 18 inches below the finished subgrade (See Section E, Slabs-on-Grade and Section F, Flexible Pavements). Chemical treatment will also provide a stable subgrade for construction traffic and mitigate pumping subgrade conditions, particularly if construction occurs during the wet season.

The performance of the chemically-stabilized soil is highly dependent upon uniform mixing of the chemical additive into the soil and proper curing of the chemically treated soil mixture. Hence, this work should be performed by a specialty subcontractor using appropriately sized spreading and mixing equipment which will result in a uniform mixture throughout the recommended section to be treated.

It is anticipated that up to 18 inches of soil can be chemically treated in-place using heavy-duty compaction equipment, such as a Rex 3-70 or similar compactor. A maximum 12-inch lift thickness is recommended where materials are removed and replaced as chemically-treated soil.

After satisfactory soil mixing has been achieved and the moisture content has been brought to optimum moisture for compaction, the recommended section of chemically treated soil should be recompacted to at least 95 percent relative compaction in areas of vehicular pavement, and 90 percent in new building areas and within areas of pedestrian pavement. Compaction should be performed using heavy compaction equipment such as a sheepsfoot roller or segmented wheeled compactor. Field density tests should be performed in the chemically treated soil during the mixing and compaction process as a means of evaluating the contractor's compaction effort and compliance with the recommended minimum relative compaction.

The surface of the chemically treated subgrade should be kept moist for a minimum of four days after treatment and compaction is performed. Heavy vehicular loading should not be allowed on the treated subgrade surface during the four day curing period.

4. Recompaction of Surface Soils Outside of Chemically Treated Areas

After the site has been cleared, stripped and excavated to required grade, the exposed soil in areas to receive site improvements or fill outside of the new building pads and any other chemically treated areas should be moisture conditioned and recompacted. The upper 12 inches of the exposed subgrade should be processed such that the moisture is at the approximate laboratory established optimum moisture content, and then compacted to at least 90 percent relative compaction as determined by ASTM Test Designation D1557. The moisture conditioning process should be observed by our representative. Field testing of the moisture content and relative compaction in the upper 12 inches should be performed just prior to placing fill or aggregate base on the recompacted subgrade.

Any loose soil or undocumented fills should be removed and replaced as properly engineered fill.

Compaction should be performed using heavy compaction equipment, such as a self-propelled sheepsfoot roller or segmented wheeled compactor. After the exposed subgrade soils are compacted, any required fill and the required aggregate base material can be placed in thin lifts and compacted to the requirements given below for engineered fill.

The subgrade should not be allowed to dry below optimum moisture content prior to placing additional fill or Class 2 aggregate base. This is likely to require periodic sprinkling during the dry season. Should drying of the soils occur, they should again be scarified, moisture conditioned to the proper moisture content and recompacted.

Based on the moisture content of samples obtained from the borings, we anticipate that it may be necessary to adjust the soil moisture content at the time of construction in order to achieve satisfactory compaction in the subgrade and fill soils. This may require that water be added and thoroughly mixed into any soils which are too dry or that repeated scarification and "turning over" of the soils during periods of dry weather be performed in order to aerate and reduce the moisture content of any soils which are too wet.

5. Fill Placement and Compaction

Existing soils having an organic content of less than three percent by volume, and which are free of construction debris, can be used as fill. Fill material should not, however, contain rocks or lumps greater than six inches in greatest dimension with not more than 15 percent larger than 2.5 inches. Imported fill should be predominantly granular and have a plasticity index of 12 or less, and aggregate baserock placed within the building footprints should be virgin/non-recycled and free of ground-up asphalt.

Engineered fill should be compacted to at least 90 percent relative compaction, as determined by ASTM Test Designation D1557. Fill material should be spread and compacted in lifts not exceeding eight inches in uncompacted thickness. In order to achieve satisfactory compaction in the subgrade and fill soils, it is likely that it will be necessary to adjust the soil moisture content at the time of soil compaction. This may require that water be added and thoroughly mixed into any soils which are too dry, or that repeated scarification and "turning over" of the soils during periods of dry weather will be necessary in order to aerate and reduce the moisture content of any soils which are too wet.

6. Utility Trenches

The presently available subsurface information indicates that utility trenches can be excavated with conventional backhoe equipment. Trenches deeper than five feet should

be properly braced or sloped in accordance with the current requirements of CAL-OSHA or the local governmental agency, whichever is more stringent.

Utility trenches should be backfilled with engineered fill placed in lifts not exceeding eight inches in uncompacted thickness, except thicker lifts may be used with the approval of our representative provided satisfactory compaction is achieved. If on-site soil is used, the material should be compacted to at least 90 percent relative compaction by mechanical means only. Imported sand can also be used for backfilling trenches provided it is compacted to at least 90 percent relative compaction. In building, slab, and pavement areas, the upper three feet of trench backfill should be compacted to at least 90 percent relative compaction for on-site soils, and 95 percent where imported clean sand backfill is used. The upper foot of trench backfill underlying vehicular pavements should also be compacted to at least 95 percent relative compaction.

Chemically-treated soil removed during excavation of utility trenches should be replaced with Class 2 aggregate baserock.

Our firm recommends that water jetting to achieve the required level of backfill compaction not be permitted.

7. Surface Drainage

Positive surface gradients of at least two percent on porous surfaces and one percent on impervious surfaces should be provided adjacent to the planned buildings and other site improvements so that surface water is directed away from foundations and towards suitable discharge facilities. Ponding of surface water should not be allowed on pavements or slabs adjacent to the buildings. Water from roof downspouts should be collected into closed pipes which carry the runoff away from the new bulidings and discharge into approved drainage facilities or discharged onto hardscape surfaces which drain toward collection basins or surface collectors.

8. Construction Observation

Grading and earthwork operations should be observed and tested by our representative for conformance with the project plans/specifications and our recommendations. This work includes site preparation, selection of satisfactory fill materials, and placement and compaction of the subgrades and fills. Sufficient notification prior to commencement of earthwork is essential to make certain that the work will be properly observed.

B. 6th Grade Campus and Administration/Multi-Use Building Spread Footing Foundations

After the building pads have been properly prepared as described in Section A-2, the planned one-story 6th grade campus buildings and tall one-story Administration/Multi-Use Building can be supported on conventional continuous and isolated spread footings bearing in properly compacted chemically-treated engineered fill.

Footings for the tall one-story Administration/Multi-Use Building should be founded at least 24 inches below lowest adjacent finished grade and be embedded at least 18 inches into the supporting subgrade. Footings for the typical one-story 6th grade campus buildings (Buildings A through D) should be founded at least 18 inches below lowest adjacent finished grade and be embedded at least 12 inches into the supporting subgrade. Continuous footings should have a minimum width of 18 inches and isolated footings should be at least 24 inches square. Footings located adjacent to utility trenches should have their bearing surfaces below an imaginary 1.5:1 (horizontal to vertical) plane projected upward from the edge of the bottom of the trench. Care should be taken to keep the footings moist by spraying lightly prior to the concrete pour.

At the above depths, footings can be designed for an allowable bearing pressure of 2000 psf due to dead loads with a one-third increase for dead plus live loads (2667 psf) and a 50 percent

increase for total design loads (3000 psf) including wind and seismic. All continuous footings should be provided with adequate top and bottom reinforcement (as specified by the structural engineer) to provide structural continuity and to permit spanning of local irregularities. The steel reinforcement requirements should be determined by the structural engineer.

Lateral loads can be resisted by friction between the foundation bottoms and the supporting subgrade. A friction coefficient of 0.30 is considered applicable. As an alternative, an equivalent fluid pressure of 300 pcf starting one-half foot below the ground surface can be taken against the sides of footings poured neat.

Soil conditions in the foundation excavations should be checked by our representative prior to placing reinforcing steel or concrete. The excavation of footing trenches should be performed so that the trenches are left open for the minimum practical length of time prior to the placement of concrete. Footing trenches should be kept moist so that any drying-shrinkage cracks are closed prior to placement of concrete. Moisture should be added in a light mist spray.

Post-construction settlements of the spread footing foundations under proposed loads are expected to be within tolerable limits.

C. Shade Structure Drilled Pier Foundations

The planned shade structures within the new 6th grade campus can be supported on cast-in-place, straight shaft friction piers. The piers should have a minimum diameter of 18 inches and extend through any undocumented fill to a minimum depth of eight feet into the underlying native clayey soils. Final pier depths and diameters should be based on the structural engineer's analysis.

The drilled piers can be designed on the basis of 250 psf skin friction for vertical loads with a 50 percent increase for wind and seismic conditions. Point bearing resistance should be neglected.

For resistance to lateral loads, an equivalent fluid pressure of 250 pcf up to a maximum of 2500 psf can be assumed to act over 1.5 times the projected area of the individual pier shaft. The skin friction and passive pressures may be assumed to start 24 inches below the ground surface, below any fills and below a 2:1 influence zone plane projecting up from any adjacent excavations (such as utility trenches). An allowable negative skin friction value of 185 psf within native soil can be used on the pier sidewall to resist uplift forces.

Groundwater was encountered as shallow as 10 feet below the ground surface in borings during our investigation. The exploratory borings locally encountered soft soils which may be susceptible to caving if encountered during drilling of the shade structure foundations. Therefore, it is recommended that reinforcing steel and concrete be placed as soon as practical after drilling to minimize fall-in of the sidewall soils and possible caving. Any accumulated water in the pier holes should be removed prior to concrete installation, or concrete should be installed using the tremie method if drilling fluid is used or if a significant amount of groundwater is present in the holes. Casing of the piers may be required where zones of soft soil are encountered during drilling.

The bottom of the pier excavations should be dry and relatively free of loose soil or fall-in prior to installing reinforcing steel and placing concrete. Heavy-duty drilling equipment in good working condition should be used to drill the pier holes. Since the actual lengths of the piers may vary depending on the subsurface conditions encountered in the field, the excavation of piers should be performed under the observation of our representative.

Reinforcement of the piers should be provided for their full length as determined by the structural engineer's analysis.

Settlements under the anticipated loads are expected to be within tolerable limits for the proposed construction.

D. Seismic Design Parameters

Seismic design values for the project site were analyzed using the site latitude and longitude (38.2777° N, 121.9610° W) and the site classification, which was determined using subsurface information obtained from the exploratory borings. The OSHPD U.S. Seismic Design Maps online application was used to determine base ASCE 7-16 seismic design values. ASCE 7-16 and CBC 2022 site-specific design acceleration parameters for the project were determined by Fugro USA Land, Inc. (2024); the site-specific parameters should be used for structural design. Based on the above described analyses, the following seismic design parameters can be used in lateral force analyses at the project site.

Site Class D – Stiff Soil Profile (SPT Values of 15 to 50 Blows/Foot; Vs30 = 250 m/s)

ASCE 7-16 Values (OSHPD U.S. Seismic Design Maps):

Site Coefficient F_a = 1.0
Site Coefficient F_v = Null
Mapped Spectral Acceleration Values; S_S = 1.472, S_1 = 0.513
Spectral Response Accelerations; SM_S = 1.472, SM_1 = Null
Design Spectral Response Accelerations; SD_S = 0.981, SD_1 = Null

Site-Specific Ground Motion Analysis Values (ASCE 7-16 and 2022 CBC):

Maximum Considered EQ Spectral Response (0.2 Second Period); SM_S = 1.74
Maximum Considered EQ Spectral Response (1-Second Period); SM_1 = 1.41
Design Spectral Response Acceleration (0.2 Second Period); SD_S = 1.16
Design Spectral Response Acceleration (1-Second Period); SD_1 = 0.942

E. Slabs-on-Grade

Slab-on-grade construction will be used for the new 6th grade campus buildings (Buildings A through D), Administration/Multi-Use Building, and exterior concrete flatwork.

Interior slabs should be underlain by a minimum 15 mil vapor retarder of permeance less than or equal to 0.01 perms (as tested by ASTM F1249) placed over six inches of 3/4-inch clean, free draining crushed rock. Care should be taken to prevent wear, punctures and/or tearing of the membrane during the construction phase (such as could result from the placement of rebar) subsequent to its installation; any tears or punctures should be tightly sealed. The drain rock layer should be underlain by an additional six inches (minimum) of compacted, virgin (non-recycled) Class 2 aggregate baserock placed on the prepared subgrade and compacted to at least 90 percent relative compaction.

Exterior pedestrian concrete flatwork, sidewalks, and curb and gutters should be underlain by at least 12 inches of Class 2 aggregate baserock placed on the prepared subgrade, or six inches of Class 2 aggregate baserock placed on 18 inches of properly compacted chemically-treated subgrade.

Reinforcement of slabs should be provided in accordance with their anticipated use and loading, but as a minimum, slabs should be reinforced with No. 3 bars at 18 inches on center, both ways, or No. 4 bars at 24 inches on center, both ways. Concrete slabs should be articulated with a maximum joint spacing of ten feet in both directions.

The baserock and upper 12 inches of underlying subgrade should be compacted to at least 90 percent relative compaction, and 95 percent in areas of vehicular traffic.

Prior to final construction of slabs, the baserock and subgrade surface should be proof rolled to provide a smooth, firm non-yielding surface. The moisture content of the compacted baserock and subgrade should be maintained at, or slightly above, optimum moisture prior to placing non-expansive fill materials.

F. Flexible Pavements

The near-surface soils at the site were determined to have an untreated R-Value of <5 and a chemically-treated R-Value of 65 based on the laboratory test results. The required thickness of the pavement section can be reduced by chemically treating the subgrade (minimum 18 inches deep) with five percent by dry weight Hi-Cal Quicklime in new AC pavement areas. Chemical treatment will also mitigate pumping subgrade conditions, particularly if construction occurs during the wet season. Utilizing the above R-Values and Traffic Indices of 4.5 for automobile parking and 6.0 for fire truck and bus lanes, driveways, and drive aisles, and Procedure 301-F of the California Department of Transportation, we have developed the following alternative minimum flexible pavement sections for use on this project:

Table 4 - Recommended Alternative Flexible Pavement Sections

Traffic Condition	Asphaltic Concrete (inches)	Class 2 Aggregate Base (inches)	Chemical Subgrade Treatment (inches)	Total Thickness (inches)
Auto Parking (T.I. = 4.5)				
Untreated	**3.0**	**10.0**	**- -**	**13.0**
Chemically Treated	**3.0**	**6.0**	**18.0**	**27.0**
Fire/Bus Lanes, Driveways, Drive Aisles (T.I. = 6.0)				
Untreated	**4.0**	**12.0**	**- -**	**16.0**
Chemically Treated	**4.0**	**6.0**	**18.0**	**28.0**

New asphalt hardscape areas (anticipating only pedestrian traffic) required for the project should consist of two inches AC over 10 inches of Class 2 aggregate baserock, or six inches of Class 2 aggregate baserock placed on 18 inches of properly compacted chemically-treated subgrade.

The upper 12 inches of new pavement area subgrade should be compacted to at least 95 percent relative compaction. Any fill required below the upper six inches of subgrade should be compacted to at least 90 percent.

The subgrade should be statically rolled with a heavy, smooth drum roller to provide a smooth firm surface. Any unstable or pumping subgrade areas should be chemically treated as described above, or subexcavated, plugged with baserock and overlain with a stabilizing fabric such as Mirafi 600X. Fabric installation should be performed in accordance with the manufacturer's recommendations. The method and extent of any required stabilization work should be evaluated by our representative.

Class 2 aggregate base should have an R-Value of at least 78 and conform to the requirements of Section 26, State of California "CALTRANS" Standard Specifications, latest edition. The aggregate base material should be placed in thin lifts in a manner to prevent segregation, and should be uniformly moisture conditioned and compacted to at least 95 percent relative compaction to provide a smooth, unyielding surface.

The asphaltic concrete should conform to and be placed in accordance with the requirements of Section 39 in the State of California CALTRANS Standard Specifications, latest edition.

G. Soil Corrosivity

Laboratory resistivity, pH, chloride and sulfate testing was performed on a composite soil sample obtained from the upper three feet of the borings during our geotechnical investigation for this project. The testing was performed by Cooper Testing Laboratory for the purpose of evaluating the soils' corrosion potential for use in the design of underground utilities and embedded concrete on this project.

In summary, the test results indicated a minimum resistivity of 797 Ohm-Cm, a pH of 7.1, a chloride content of 52 ppm, and water-soluble sulfate content of 138 ppm. Soils with chloride contents of less than 500 ppm and sulfate contents of less than 1500 ppm are considered to be of low corrosivity. However, based on the resistivity testing, the soils are considered to be "corrosive."

Table 5 below shows the general correlation between resistivity and corrosion potential.

Table 5 - Correlation Between Resistivity and Corrosion Potential (c)

Soil Resistivity (ohm-cm)	Soil Classification
Below 500	Very Corrosive
500 to 1,000	Corrosive
1,000 to 2,000	Moderately Corrosive
2,000 to 10,000	Mildly Corrosive
Above 10,000	Progressively Less Corrosive

(c) National Association of Corrosion Engineers.

This condition combined with the slightly basic soil condition encountered at the site could result in reduced life span of buried steel piping and culverts for this project. Thicker gauge pipelines would have greater life spans. For example, the life spans for 18, 16 and 14-gauge steel culverts with a soil resistivity of 797 ohm-cm and a pH of 7.1 are estimated to be roughly 18, 23 and 29 years, respectively (California Department of Transportation, 2019).

Based on the resistivity and sulfate testing, for the purposes of design of concrete in contact with the soil against acid and sulfate exposure conditions, there are no cementitious material or water content restrictions (Portland Cement Association, 2002).

PLAN REVIEW AND CONSTRUCTION OBSERVATION

We should be provided the opportunity to review the foundation and grading plans and the specifications for the project when they are available. We should also be retained to provide soil engineering observation and testing services during the grading and foundation installation phases of the project. This will provide the opportunity for correlation of the soil conditions found in our investigation with those actually encountered in the field, and thus permit any necessary modifications in our recommendations resulting from changes in anticipated conditions.

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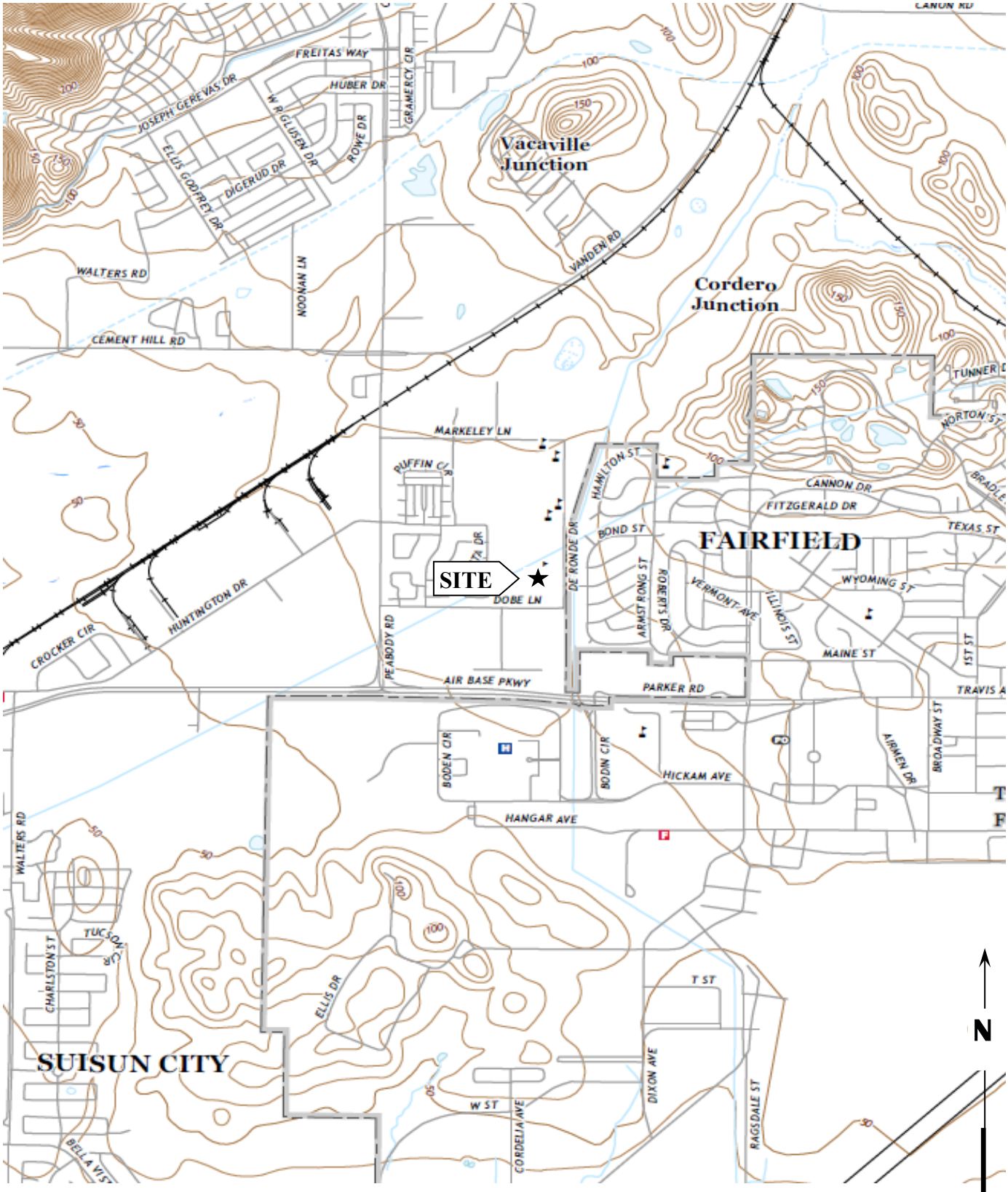
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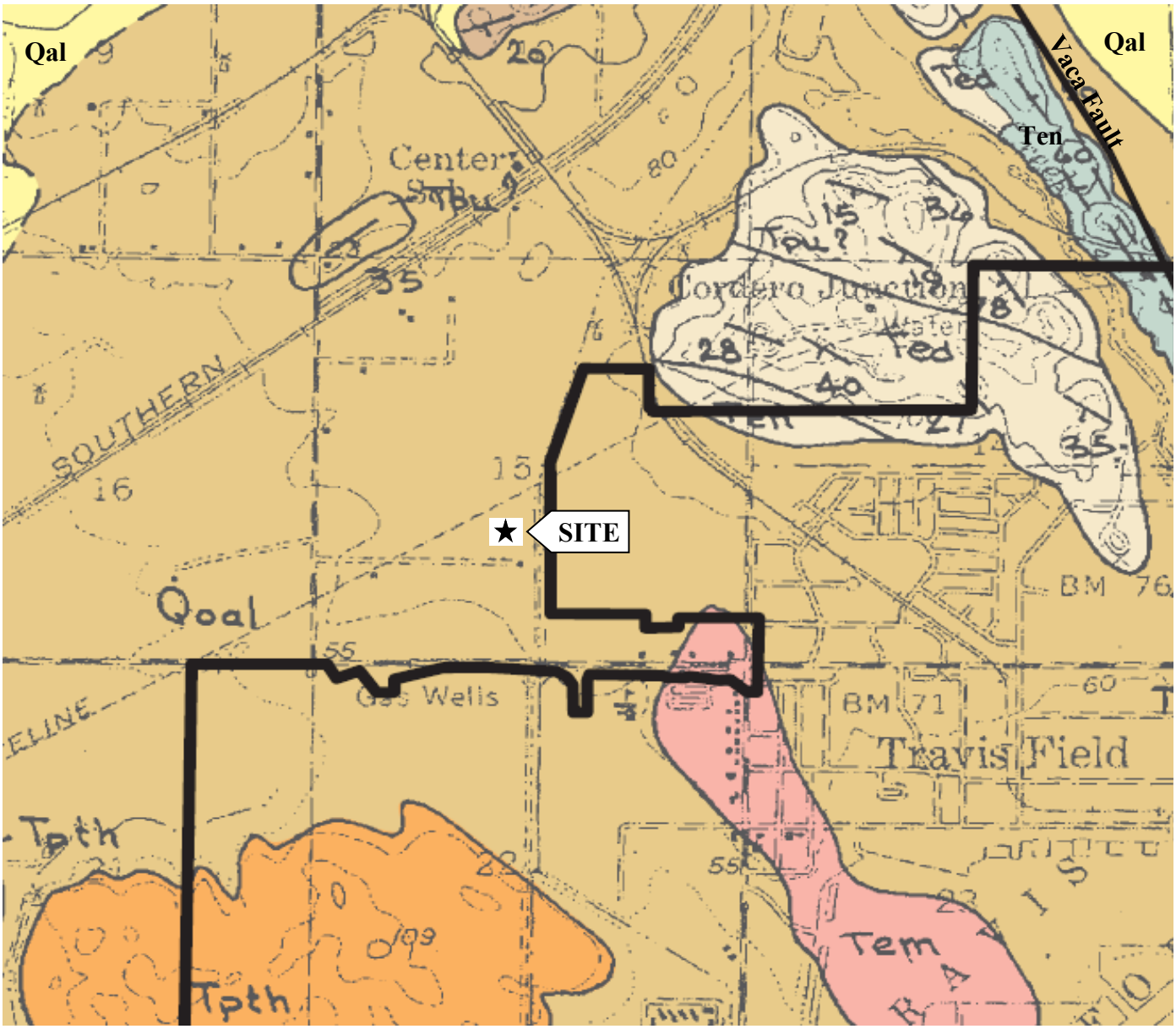
BASE: U.S. Geological Survey, 2022, Elmira 7.5' Quadrangle, Solano County, California

SITE VICINITY MAP

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NEW 6TH GRADE CAMPUS PROJECT
Golden West Middle School
Fairfield, California

APPROVED BY	SCALE	PROJECT NO.	DATE	DRAWING NO.
GF	1" = 2000'	1442.1	November 2024	1



EXPLANATION

Qal	Younger Alluvium (Holocene - Pleistocene)
Qoal	Older Alluvium (Pleistocene)
Tpth	Tehama Formation (Pliocene)
Tem	Markley Sandstone (Eocene)
Ten	Nortonville Shale (Eocene)
Ted	Domengine Sandstone (Eocene)
Tpu	Unnamed Formation (Paleocene)

Fault, dashed where inferred, dotted where concealed

Bedding Strike and Dip

N

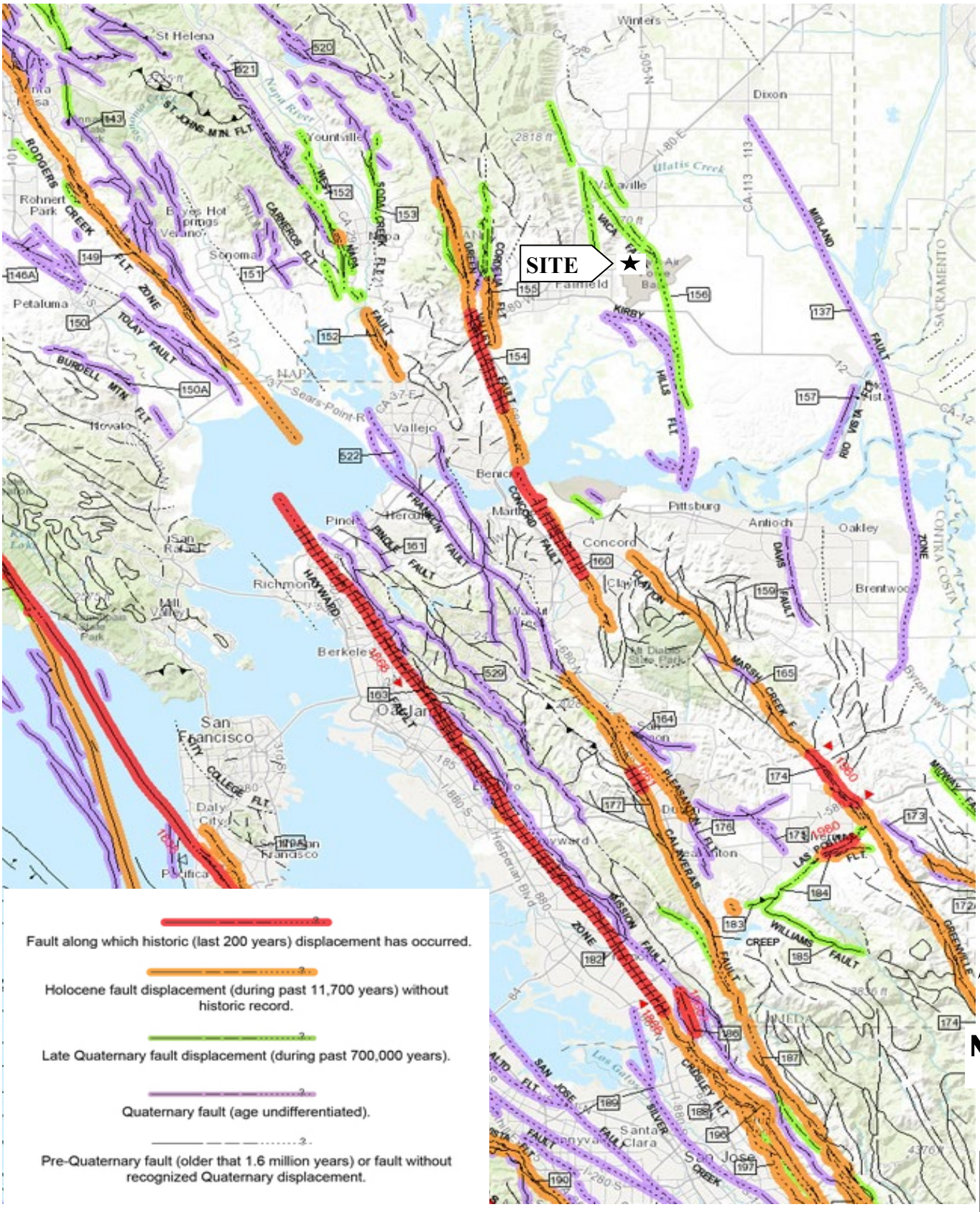
BASE: CH2M Hill, 1997, Geologic Map of Travis Air Force Base and Vicinity, Travis Air Force Base, CA (Based on Olmstead et al, 1950-1951)

LOCAL GEOLOGIC MAP

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NEW 6TH GRADE CAMPUS PROJECT
Golden West Middle School
Fairfield, California

APPROVED BY	SCALE	PROJECT NO.	DATE	DRAWING NO.
GF	1" = 2000'	1442.1	November 2024	2



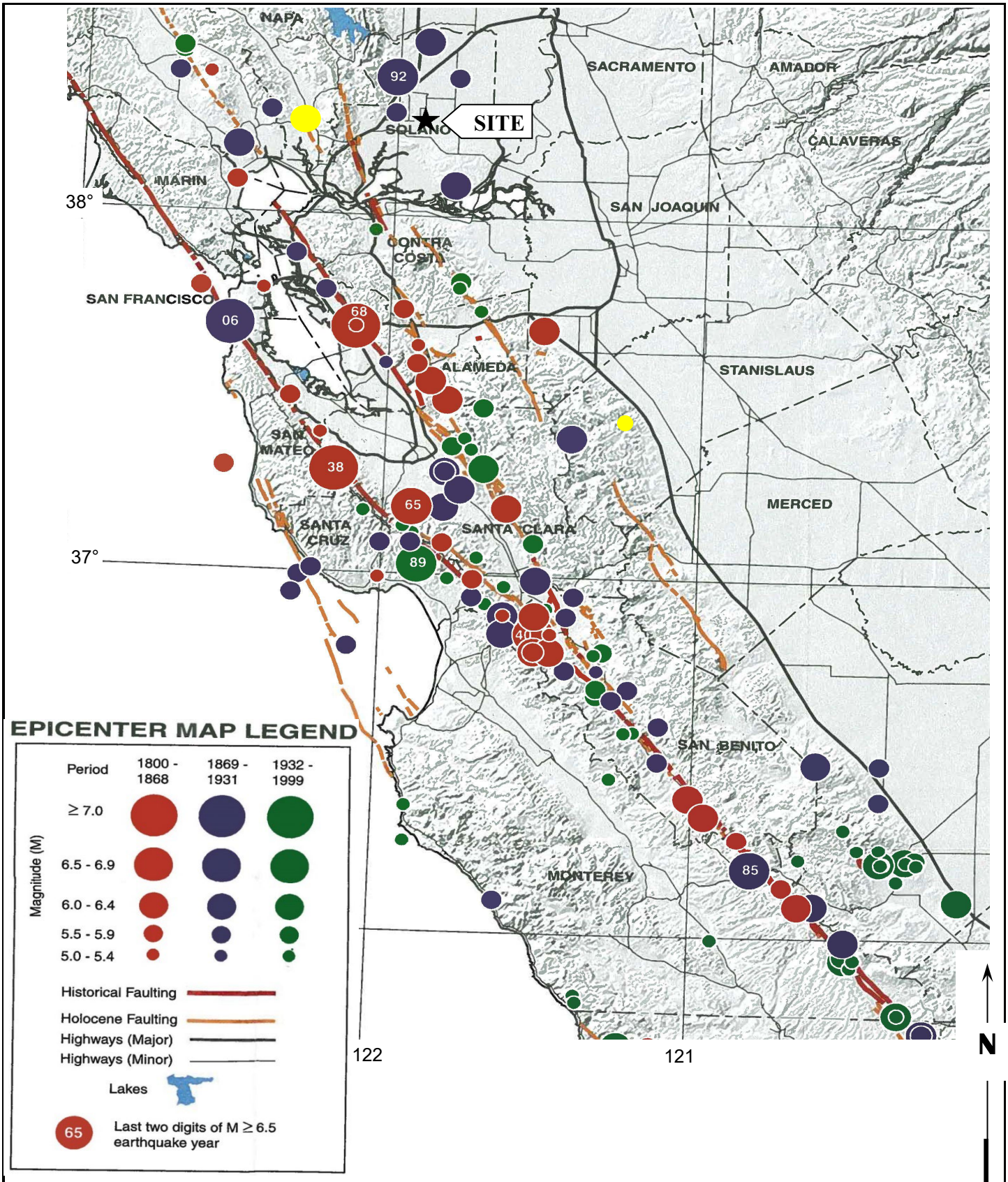
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REGIONAL FAULT MAP

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NEW 6TH GRADE CAMPUS PROJECT
Golden West Middle School
Fairfield, California

APPROVED BY	SCALE	PROJECT NO.	DATE	DRAWING NO.
GF	1" = 10 miles ±	1442.1	November 2024	3



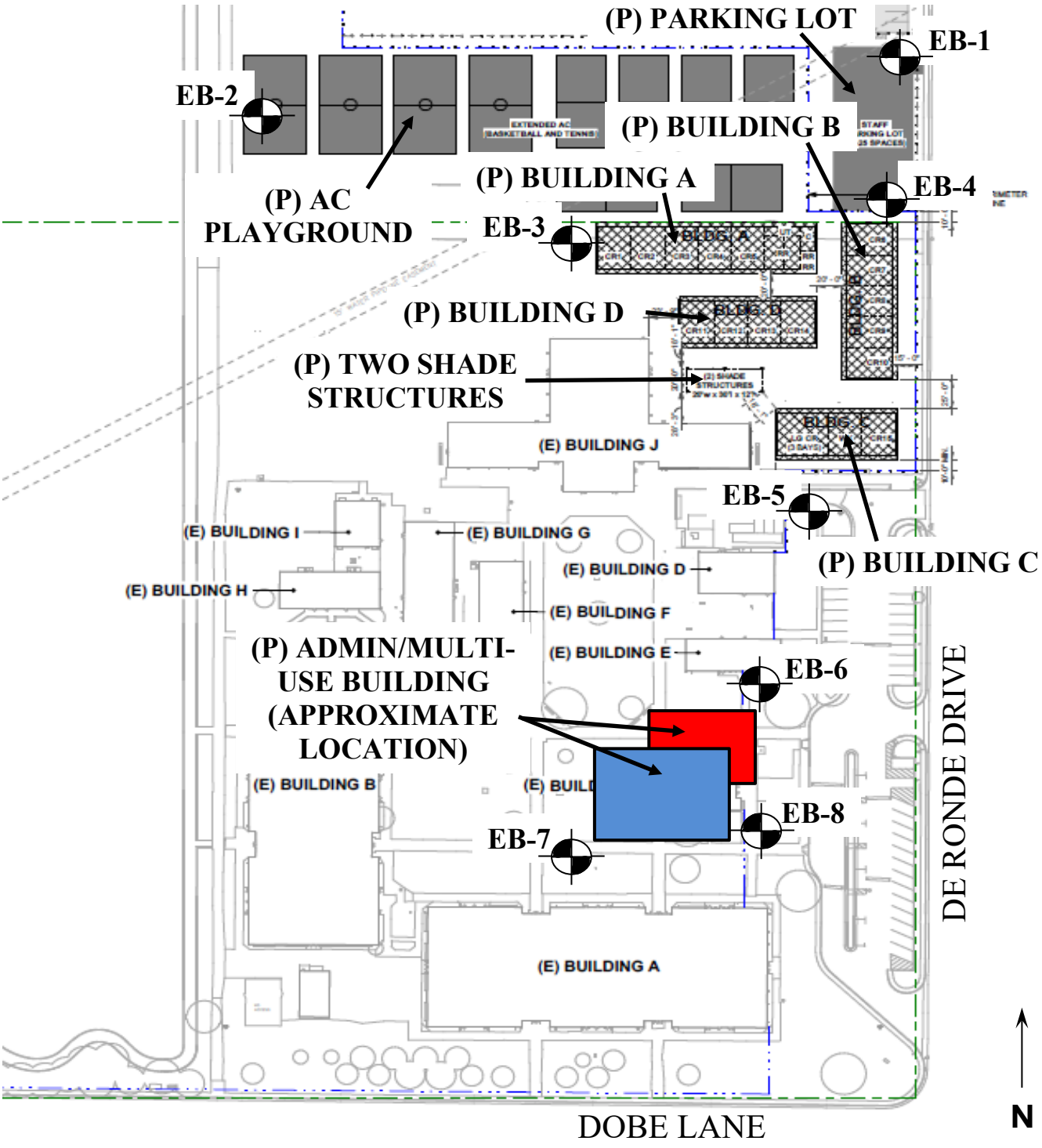
BASE: CDMG Map Sheet 49; Toppozada et al, 2000. Magnitude 5.0 and Greater Earthquakes Plotted Through 1999; Subsequent Earthquakes through August 2014 plotted in yellow.

REGIONAL EARTHQUAKE EPICENTER MAP

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NEW 6TH GRADE CAMPUS PROJECT
Golden West Middle School
Fairfield, California

APPROVED BY	SCALE	PROJECT NO.	DATE	DRAWING NO.
GF/CC	1" = 25 miles ±	1442.1	November 2024	4



EXPLANATION

EB-1 Approximate Location of Exploratory Boring

BASE: Prepared by Aedis Architects, Received via Email on October 9, 2024

SITE PLAN

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NEW 6TH GRADE CAMPUS PROJECT
Golden West Middle School
Fairfield, California

APPROVED BY	SCALE	PROJECT NO.	DATE	DRAWING NO.
GF	1" = 120' ±	1442.1	November 2024	5

PRIMARY DIVISIONS			GROUP SYMBOL	SECONDARY DIVISION
COARSE GRAINED SOILS MORE THAN HALF OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVELS MORE THAN HALF 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 or gravel-sand mixtures, little or no fines
		GRAVEL WITH FINES	GM	Silty gravels, gravel-sand-silt mixtures, non-plastic fines
			GC	Clayey gravels, gravel-sand-clay mixtures, plastic fines
	SANDS MORE THAN HALF 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 or gravelly sands, little or no fines
		SANDS WITH FINES	SM	Silty sands, sand-silt mixtures, non-plastic fines
			SC	Clayey sands, sand-clay mixtures, plastic fines
FINE GRAINED SOILS MORE THAN HALF 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 GREATER THAN 50%		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, 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

UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D-2487)

U.S. STANDARD SERIES SIEVE				CLEAR SQUARE SIEVE OPENINGS			
200	40	10	4	3/4"	3"	12"	
SILTS AND CLAYS	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		

GRAIN SIZES

SANDS AND GRAVELS	BLOWS/FOOT ✧
VERY LOOSE	0 - 4
LOOSE	4 - 10
MEDIUM DENSE	10 - 30
DENSE	30 - 50
VERY DENSE	OVER 50

RELATIVE DENSITY

SILTS AND CLAYS	STRENGTH ☆	BLOWS/FOOT ✧
VERY SOFT	0 - 1/4	0 - 2
SOFT	1/4 - 1/2	2 - 4
FIRM	1/2 - 1	4 - 8
STIFF	1 - 2	8 - 16
VERY STIFF	2 - 4	16 - 32
HARD	OVER 4	OVER 32

CONSISTENCY

✧ Number of blows of 140 pound hammer falling 30 inches to drive a 2 inch O.D. (1-3/8 inch I.D.) split barrel (ASTM D-1586).

☆ Unconfined compressive strength in tons/sq.ft. as determined by laboratory testing or approximated by the standard penetration test (ASTM D-1586), pocket penetrometer, torvane, or visual observation.

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KEY TO EXPLORATORY BORING LOGS

NEW 6TH GRADE CAMPUS PROJECT
Golden West Middle School
Fairfield, California

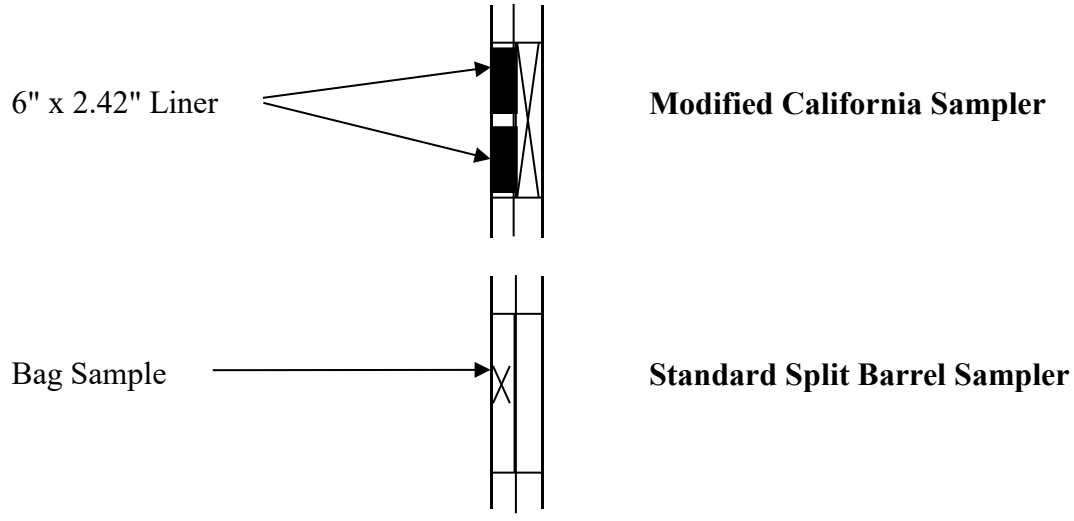
PROJECT NO.	DATE	DRAWING NO.
1442.1	November 2024	6

FIELD SAMPLING PROCEDURES

The soils encountered in the borings were continuously logged in the field by our representative and described in accordance with the Unified Soil Classification System (ASTM D-2487).

Representative soil samples were obtained from the borings at selected depths appropriate to the soil investigation. All samples were returned to our laboratory for classification and testing.

In accordance with the ASTM D1586 procedure, the standard penetration resistance was obtained by dropping a 140 pound hammer through a 30-inch free fall. The 2-inch O.D. Standard split barrel sampler was driven 18 inches or to practical refusal and the number of blows were recorded for each 6-inch penetration interval. The blows per foot recorded on the boring logs represent the accumulated number of blows, or N-value, required to drive the penetration sampler the final 12 inches. In addition, 3-inch O.D. x 2.42-inch I.D. drive samples were obtained using a Modified California Sampler and 140 pound hammer. Blow counts for the Modified California Sampler were converted to standard penetration resistance by multiplying by 0.6. The sampler type is shown on the boring logs in accordance with the designation below.



Where obtained, the shear strength of the soil samples using either Torvane (TV) or Pocket Penetrometer (PP) devices is shown on the boring logs in the far right hand column.

CLEARY CONSULTANTS, INC. *Geotechnical Engineers and Geologists*	SUMMARY OF FIELD SAMPLING PROCEDURES NEW 6TH GRADE CAMPUS PROJECT Golden West Middle School Fairfield, California		
	PROJECT NO.	**DATE**	**DRAWING NO.**
	1442.1	November 2024	7

LABORATORY TESTING PROCEDURES

The laboratory testing program was directed toward a quantitative and qualitative evaluation of the physical and mechanical properties of the soils underlying the site.

The natural water content was determined on 92 samples of the materials recovered from the borings in accordance with the ASTM D2216 Test Procedure. These water contents are recorded on the boring logs at the appropriate sample depths.

Dry density determinations were performed on 58 samples to measure the unit weight of the subsurface soils in accordance with the ASTM D2937 Test Procedure. The results of these tests are shown on the boring logs at the appropriate sample depths.

Atterberg Limit determinations were performed on 13 samples of the subsurface soils in accordance with the ASTM D4318 Test Procedure to determine the range of water contents over which the materials exhibited plasticity. The Atterberg Limits are used to classify the soils in accordance with the Unified Soil Classification System and to evaluate the soil's expansion potential. The results of these tests are presented on Drawings 22 and 23, and on the boring logs at the appropriate sample depths.

The percent soil fraction passing the #4 sieve and #200 sieves were determined on 26 samples of the subsurface soils in accordance with the ASTM D1140 Test Procedure to aid in the classification of the soils. The results of these tests are shown on the boring logs at the appropriate sample depths.

Free swell tests were performed on 26 samples of the soil materials to evaluate the swelling potential of the soil. The free swell tests were performed by slowly pouring 10 ml of air dried soil passing the No. 40 sieve into a 100 ml graduated cylinder filled with approximately 90 ml of distilled water. The suspension was stirred repeatedly to ensure thorough wetting of the soil specimen. The graduated cylinder was then filled with distilled water to the 100 ml mark and allowed to settle until equilibrium was reached (approximately 24 hours). The free swell volume of the soil was then noted. The percent free swell was calculated by subtracting the initial soil volume from the free swell volume, dividing the difference by the initial volume, and multiplying the result by 100 percent. The results of these tests are presented on the boring logs.

R-Value tests were performed by Cooper Testing Laboratory on composite samples of the subgrade soils to provide data for the pavement design. The tests were performed in accordance with California Test Method 301-F on untreated material, on material chemically treated with five percent hi-calcium quicklime, and on material chemically-treated with a five percent mixture of 50 percent hi-calcium quicklime and 50 percent Portland cement, indicating R-Values of <5, 65, and 65, respectively, at an exudation pressure of 300 pounds per square inch. The results of the tests are presented on Drawings 24 through 26.

Corrosion testing was performed on a composite sample of the surficial soil materials from the upper three feet of the exploratory borings. Testing included resistivity, pH, chloride and sulfate testing performed in accordance with ASTM G57, ASTM G51, Caltrans 422 (modified) and Caltrans 417 (modified), respectively. The results of this test are presented on Drawing 27 and discussed in Section G. Soil Corrosivity.

EQUIPMENT	3.5" Diameter Hand Auger	ELEVATION	---	LOGGED BY	IS
DEPTH TO GROUNDWATER	Not Enc.	DEPTH TO BEDROCK	Not Enc.	DATE DRILLED	9/16/2024

DESCRIPTION AND REMARKS	COLOR	CONSIST.	SOIL TYPE	DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	WATER CONTENT (%)	DRY DENSITY (PCF)	SHEAR STRENGTH (KSF)
Dry Grass Landscape	Dark Brown	N/A	CH	1	X		17		
SILTY CLAY, moist, trace fine grained sand									
@1.5': Liquid Limit = 58% Plasticity Index = 31% Finer Than #4 = 100% Finer Than #200 = 97% Free Swell = 90%	Dark Grayish Brown			2	X		19		
				3	X		18		
				4	X		19		
				5	X		19		
Bottom of Boring = 5.5'				6					
				7					
				8					
				9					
				10					
				11					
				12					
				13					
				14					
				15					
				16					
				17					
				18					
				19					
				20					

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL

CLEARY CONSULTANTS, INC.
Geotechnical Engineers and Geologists

LOG OF EXPLORATORY BORING NO. 1

NEW 6TH GRADE CAMPUS PROJECT
Golden West Middle School
Fairfield, California

PROJECT NO.	DATE	DRAWING NO.
1442.1	November 2024	9

EQUIPMENT	4" Diameter Solid Flight Auger*	ELEVATION	---	LOGGED BY	IS
DEPTH TO GROUNDWATER	Not Enc.	DEPTH TO BEDROCK	Not Enc.	DATE DRILLED	9/16/2024

DESCRIPTION AND REMARKS	COLOR	CONSIST.	SOIL TYPE	DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	WATER CONTENT (%)	DRY DENSITY (PCF)	SHEAR STRENGTH (KSF)
Dry Grass Landscape	Grayish Brown	Stiff	CH						
SILTY CLAY, moist, trace fine grained sand				1					
@1.5': Liquid Limit = 52% Plasticity Index = 30% Finer Than #4 = 100% Finer Than #200 = 99% Free Swell = 100%				2		12	15 16	89 104	
	Yellowish Brown			3		11	19		
@4.5': Finer Than #4 = 100% Finer Than #200 = 98% Free Swell = 60%				4		10	22 24	104 99	
		Firm		5					
				6		6	25		
Bottom of Boring = 6.5'				7					
				8					
				9					
				10					
				11					
				12					
				13					
				14					
				15					
				16					
				17					
				18					
				19					
				20					

* Drilled with CME-55 Track Mounted Rig

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL

CLEARY CONSULTANTS, INC.
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LOG OF EXPLORATORY BORING NO. 2

NEW 6TH GRADE CAMPUS PROJECT
Golden West Middle School
Fairfield, California

PROJECT NO.	DATE	DRAWING NO.
1442.1	November 2024	10

EQUIPMENT	4" Diameter Solid Flight Auger*	ELEVATION	---	LOGGED BY	IS
DEPTH TO GROUNDWATER	Not Enc.	DEPTH TO BEDROCK	Not Enc.	DATE DRILLED	9/16/2024

DESCRIPTION AND REMARKS	COLOR	CONSIST.	SOIL TYPE	DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	WATER CONTENT (%)	DRY DENSITY (PCF)	SHEAR STRENGTH (KSF)
Playground: 4" AC over 2" AB SILTY CLAY, very moist, trace fine grained sand	Dark Gray	Firm	CH	1			29	93	PP=1.81
				2		8	32	88	TV=0.70
@1.5': Liquid Limit = 65% Plasticity Index = 40% Finer Than #4 = 100% Finer Than #200 = 99% Free Swell = 90%				3		7	30		
		Stiff		4			29		PP=2.94
	Yellowish Brown			5		15	26	95	TV=0.75
@6.0': mottled Liquid Limit = 52% Plasticity Index = 28% Finer Than #4 = 100% Finer Than #200 = 99% Free Swell = 90%				6		10	27		
		Firm		7					
				8					
				9			32	91	PP=1.56
				10		7	32	88	TV=0.45
				11					
				12					
				13					
				14			33	89	
				15		8	32	90	
Bottom of Boring = 15.0'				16					
				17					
				18					
				19					
				20					

* Drilled with CME-55 Track Mounted Rig
PP = Pocket Penetrometer
TV = Torvane Test

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL

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LOG OF EXPLORATORY BORING NO. 3

NEW 6TH GRADE CAMPUS PROJECT
Golden West Middle School
Fairfield, California

PROJECT NO.	DATE	DRAWING NO.
1442.1	November 2024	11

EQUIPMENT	4" Diameter Rotary Wash*	ELEVATION	---	LOGGED BY	IS
DEPTH TO GROUNDWATER	±10.0'	DEPTH TO BEDROCK	±27.0'	DATE DRILLED	9/16/2024

DESCRIPTION AND REMARKS	COLOR	CONSIST.	SOIL TYPE	DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	WATER CONTENT (%)	DRY DENSITY (PCF)	SHEAR STRENGTH (KSF)
Playground: 5" AC over Soil SILTY CLAY, moist, fine grained sand @2.0': Liquid Limit = 55% Plasticity Index = 31% Finer Than #4 = 94% Finer Than #200 = 87% Free Swell = 100%	Brown to Yellowish Brown	N/A	CH	1 2	X		23		
@6.0': very moist, trace fine grained sand, mottled Liquid Limit = 56% Plasticity Index = 27% Finer Than #4 = 99% Finer Than #200 = 98% Free Swell = 60%	Yellowish Brown with Gray Mottling	Stiff		3 4 5 6 7 8 9 10		11 10 10	24 29 31 34 32	92 94 86 88	PP=2.82 TV=0.55
		Firm		11 12 13 14 15		6	35 34	84 89	PP=1.63 TV=0.40
CLAYEY SILT, very moist, fine grained sand, mottled @19.5': Finer Than #4 = 100% Finer Than #200 = 93% Free Swell = 20%	Yellowish Brown with Gray Mottling	Firm	ML	16 17 18 19 20		7	22 21	102 104	

▼ Water level as encountered 0.50 hours after drilling
▽ Water level as encountered during drilling
* Drilled with CME-55 Track Mounted Rig
PP = Pocket Penetrometer
TV = Torvane Test

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL

CLEARY CONSULTANTS, INC.
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LOG OF EXPLORATORY BORING NO. 4

NEW 6TH GRADE CAMPUS PROJECT
Golden West Middle School
Fairfield, California

PROJECT NO.	DATE	DRAWING NO.
1442.1	November 2024	12

EQUIPMENT	4" Diameter Rotary Wash*	ELEVATION	---	LOGGED BY	IS
DEPTH TO GROUNDWATER	±10.0'	DEPTH TO BEDROCK	±27.0'	DATE DRILLED	9/16/2024

DESCRIPTION AND CLASSIFICATION				DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	WATER CONTENT (%)	DRY DENSITY (PCF)	SHEAR STRENGTH (KSF)
DESCRIPTION AND REMARKS	COLOR	CONSIST.	SOIL TYPE						
CLAYEY SILT, very moist, continued...	Yellowish Brown with Gray Mottling	Firm	ML	21					
SANDY SILT TO SILTY SAND, very moist, fine to occasionally coarse grained sand	Yellowish Brown	Stiff	ML-SM	22					
@24.5': Finer Than #4 = 97% Finer Than #200 = 50% Free Swell = 20%				23 24 25		14	25 23	100 107	
SILTSTONE, very moist, trace fine grained sand, friable, fractured, oxidized veins, severely weathered (Tehama Formation)	Dark Gray	(Very Stiff)	(MH)	26 27 28					
@29.5': Liquid Limit = 80% Plasticity Index = 35% Finer Than #4 = 100% Finer Than #200 = 98% Free Swell = 100%				29 30 31		21	44 39	78 81	PP=4.00 TV=0.40
	Dark Gray to Black	(Hard)		32 33					
@34.0': moist Finer Than #4 = 100% Finer Than #200 = 100% Free Swell = 70%				34 35 36 37 38		30/4"	26	96	
				39		30/3"	22	96	
* Drilled with CME-55 Track Mounted Rig PP = Pocket Penetrometer TV = Torvane Test				40					

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL

CLEARY CONSULTANTS, INC.
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LOG OF EXPLORATORY BORING NO. 4

NEW 6TH GRADE CAMPUS PROJECT
Golden West Middle School
Fairfield, California

PROJECT NO.	DATE	DRAWING NO.
1442.1	November 2024	13

EQUIPMENT	4" Diameter Rotary Wash*	ELEVATION	---	LOGGED BY	IS
DEPTH TO GROUNDWATER	±10.0'	DEPTH TO BEDROCK	±27.0'	DATE DRILLED	9/16/2024

DESCRIPTION AND REMARKS	COLOR	CONSIST.	SOIL TYPE	DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	WATER CONTENT (%)	DRY DENSITY (PCF)	SHEAR STRENGTH (KSF)
SILTSTONE, moist, continued... (Tehama Formation)	Dark Gray to Black	(Hard)	(MH)	41					
				42					
				43					
				44					
				45	X	84	36		
				46					
				47					
SANDSTONE, moist, fine to coarse grained sand, severely weathered, silty (Tehama Formation)	Gray	(Very Dense)	(SM)	48					
				49	X	50/3"	29		
Bottom of Boring = 49.5'				50					
				51					
				52					
				53					
				54					
				55					
				56					
				57					
				58					
				59					
				60					

* Drilled with CME-55 Track Mounted Rig

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL

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LOG OF EXPLORATORY BORING NO. 4

NEW 6TH GRADE CAMPUS PROJECT
Golden West Middle School
Fairfield, California

PROJECT NO.	DATE	DRAWING NO.
1442.1	November 2024	14

EQUIPMENT	4" Diameter Rotary Wash*	ELEVATION	---	LOGGED BY	IS
DEPTH TO GROUNDWATER	N/A	DEPTH TO BEDROCK	±17.0'	DATE DRILLED	9/16/2024

DESCRIPTION AND REMARKS	COLOR	CONSIST.	SOIL TYPE	DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	WATER CONTENT (%)	DRY DENSITY (PCF)	SHEAR STRENGTH (KSF)
Irrigated Grass Lawn SILTY CLAY, moist, trace fine grained sand @3.0': Liquid Limit = 58% Plasticity Index = 32% Finer Than #4 = 100% Finer Than #200 = 99% Free Swell = 90%	Dark Brown	Stiff	CH	1 2 3		9 11	25 24		
SILTY CLAY, moist, fine grained sand @4.5': Finer Than #4 = 100% Finer Than #200 = 94% Free Swell = 50% @6.0': mottled Liquid Limit = 50% Plasticity Index = 23% Finer Than #4 = 99% Finer Than #200 = 97% Free Swell = 80%	Dark Brown Yellowish Brown	Stiff	CL-CH	4 5 6 7 8 9 10		13 10 9	19 13 26 22 21	101 111 103 106	PP=1.44 TV=0.30
GRAVELLY SILTY SAND, very moist, fine to coarse grained sand, fine subangular to subrounded gravel @14.5': Finer Than #4 = 84% Finer Than #200 = 24% Free Swell = 30%	Yellowish Brown	Medium Dense	SM	11 12 13 14 15		16	24 21	102 107	
SILTSTONE, very moist, trace fine grained sand, friable, severely weathered, mottled (Tehama Formation) @19.5': Liquid Limit = 95% Plasticity Index = 47% Finer Than #4 = 100% Finer Than #200 = 99% Free Swell = 150% * Drilled with CME-55 Track Mounted Rig PP = Pocket Penetrometer TV = Torvane Test	Yellowish Brown	(Stiff)	(MH)	16 17 18 19 20		16	41 45	79 76	

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL

CLEARY CONSULTANTS, INC.
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LOG OF EXPLORATORY BORING NO. 5

NEW 6TH GRADE CAMPUS PROJECT
Golden West Middle School
Fairfield, California

PROJECT NO.	DATE	DRAWING NO.
1442.1	November 2024	15

EQUIPMENT	4" Diameter Rotary Wash*	ELEVATION	---	LOGGED BY	IS
DEPTH TO GROUNDWATER	N/A	DEPTH TO BEDROCK	±17.0'	DATE DRILLED	9/16/2024

DESCRIPTION AND CLASSIFICATION				DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	WATER CONTENT (%)	DRY DENSITY (PCF)	SHEAR STRENGTH (KSF)
DESCRIPTION AND REMARKS	COLOR	CONSIST.	SOIL TYPE						
SILTSTONE, very moist, continued... (Tehama Formation)	Yellowish Brown	(Stiff)	(MH)	21					
				22					
	Yellowish Brown to Gray	(Very Stiff)		23					
				24		20	51	72	
				25			45	74	
SANDSTONE, moist, fine to coarse grained sand, severely weathered (Tehama Formation)	Yellowish Brown	(Very Dense)	(SM)	26					
				27					
				28					
				29		50/1.5"	16		
				30					
				31					
SILTSTONE, moist, fine grained sand, friable, severely weathered (Tehama Formation)	Black	(Hard)	(MH)	32					
				33					
				34		50/6"	36		
Bottom of Boring = 34.5' (Practical Drilling Refusal)				35					
				36					
				37					
				38					
				39					
				40					

* Drilled with CME-55 Track Mounted Rig

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL

CLEARY CONSULTANTS, INC.
Geotechnical Engineers and Geologists

LOG OF EXPLORATORY BORING NO. 5

NEW 6TH GRADE CAMPUS PROJECT
Golden West Middle School
Fairfield, California

PROJECT NO.	DATE	DRAWING NO.
1442.1	November 2024	16

EQUIPMENT	4" Diameter Solid Flight Auger*	ELEVATION	---	LOGGED BY	IS
DEPTH TO GROUNDWATER	Not Enc.	DEPTH TO BEDROCK	Not Enc.	DATE DRILLED	9/17/2024

DESCRIPTION AND REMARKS	COLOR	CONSIST.	SOIL TYPE	DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	WATER CONTENT (%)	DRY DENSITY (PCF)	SHEAR STRENGTH (KSF)
Irrigated Grass Lawn SILTY CLAY, moist, fine grained sand	Dark Brown	Stiff	CL-CH	1					
@1.5': Finer Than #4 = 100% Finer Than #200 = 94% Free Swell = 60%						10	11 12	94 96	
				2					
@3.0': Finer Than #4 = 99% Finer Than #200 = 92% Free Swell = 110%	Grayish Brown, mottled			3		14	19		
	Gray, mottled	Firm		4			41	90	
@4.5': Finer Than #4 = 100% Finer Than #200 = 98% Free Swell = 80%				5		8	35	84	
		Stiff		6		14	36		
				7					
SANDY SILT, slightly moist, fine grained sand	Yellowish Brown	Hard	ML	8					
				9		30/5"	11		
@10.0': Finer Than #4 = 100% Finer Than #200 = 76% Free Swell = 30%				10		88	12		
				11					
				12					
				13					
				14		50/6"	12		
Bottom of Boring = 14.5'				15					
				16					
				17					
				18					
				19					
* Drilled with CME-55 Track Mounted Rig				20					

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL

CLEARY CONSULTANTS, INC.
Geotechnical Engineers and Geologists

LOG OF EXPLORATORY BORING NO. 6

NEW 6TH GRADE CAMPUS PROJECT
Golden West Middle School
Fairfield, California

PROJECT NO.	DATE	DRAWING NO.
1442.1	November 2024	17

EQUIPMENT	4" Diameter Solid Flight Auger*	ELEVATION	---	LOGGED BY	IS
DEPTH TO GROUNDWATER	±14.0'	DEPTH TO BEDROCK	Not Enc.	DATE DRILLED	9/17/2024

DESCRIPTION AND REMARKS	COLOR	CONSIST.	SOIL TYPE	DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	WATER CONTENT (%)	DRY DENSITY (PCF)	SHEAR STRENGTH (KSF)
Irrigated Grass Lawn									
SILTY CLAY, moist, fine to coarse grained sand, oxidation veins	Dark Brown	Stiff	CL-CH	1					
@1.5': Finer Than #4 = 96% Finer Than #200 = 90% Free Swell = 80%				2		13	14	98	
							12	102	
				3		13			
							16		
	Yellowish Brown			4			19	106	PP=4.00
@4.5': trace fine grained sand Finer Than #4 = 99% Finer Than #200 = 97% Free Swell = 50%				5		10	21	98	TV=0.90
				6		9	23		
				7					
	Yellowish Brown with Gray Mottling	Firm		8					
				9			29	92	
						6	28	96	
				10					
				11					
GRAVELLY CLAYEY SAND, very moist, fine to coarse grained sand, fine subangular to subrounded gravel	Yellowish Brown	Medium Dense	SC	12					
				13					
@14.5': Finer Than #4 = 79% Finer Than #200 = 34% Free Swell = 40%				14			21	104	
						13	23		
				15					
Bottom of Boring = 15.0'				16					
				17					
				18					
				19					
				20					

Water level as encountered 0.50 hours after drilling

Water level as encountered during drilling

* Drilled with CME-55 Track Mounted Rig
PP = Pocket Penetrometer
TV = Torvane Test

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL

CLEARY CONSULTANTS, INC.
Geotechnical Engineers and Geologists

LOG OF EXPLORATORY BORING NO. 7

NEW 6TH GRADE CAMPUS PROJECT
Golden West Middle School
Fairfield, California

PROJECT NO.	DATE	DRAWING NO.
1442.1	October 2024	18

EQUIPMENT	4" Diameter Rotary Wash*	ELEVATION	---	LOGGED BY	IS
DEPTH TO GROUNDWATER	N/A	DEPTH TO BEDROCK	±13.0'	DATE DRILLED	9/17/2024

DESCRIPTION AND REMARKS	COLOR	CONSIST.	SOIL TYPE	DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	WATER CONTENT (%)	DRY DENSITY (PCF)	SHEAR STRENGTH (KSF)
Irrigated Grass Lawn									
SILTY CLAY, moist, fine to coarse grained sand, rootlets, mottled	Yellowish Brown with Gray Mottling	Soft	CL	1			19	103	
@1.5': Liquid Limit = 35% Plasticity Index = 16% Finer Than #4 = 100% Finer Than #200 = 93% Free Swell = 60%				2		3	26	98	
		Stiff		3	X	9	24		
SILTY CLAY, moist, trace fine grained sand, mottled	Yellowish Brown with Gray Mottling	Firm	CH	4			22	100	
@4.5': Liquid Limit = 55% Plasticity Index = 28% Finer Than #4 = 99% Finer Than #200 = 96% Free Swell = 110%				5		8	25	95	
		Stiff		6	X	13	21		
				7					
				8					
				9			26	96	
				10		11	26	97	
				11					
				12					
				13					
SILTSTONE, very moist, trace fine grained sand, friable, severely weathered	Gray	(Very Stiff)	(MH)	14			53	71	
(Tehama Formation)				15		17	39	84	
@14.5': Liquid Limit = 61% Plasticity Index = 24% Finer Than #4 = 100% Finer Than #200 = 98% Free Swell = 70%				16					
		(Stiff)		17					
				18					
				19			57	80	
* Drilled with CME-55 Track Mounted Rig				20		14	58	66	

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL

CLEARY CONSULTANTS, INC.
Geotechnical Engineers and Geologists

LOG OF EXPLORATORY BORING NO. 8

NEW 6TH GRADE CAMPUS PROJECT
Golden West Middle School
Fairfield, California

PROJECT NO.	DATE	DRAWING NO.
1442.1	November 2024	19

EQUIPMENT	4" Diameter Rotary Wash*	ELEVATION	---	LOGGED BY	IS
DEPTH TO GROUNDWATER	N/A	DEPTH TO BEDROCK	±13.0'	DATE DRILLED	9/17/2024

DESCRIPTION AND CLASSIFICATION				DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	WATER CONTENT (%)	DRY DENSITY (PCF)	SHEAR STRENGTH (KSF)
DESCRIPTION AND REMARKS	COLOR	CONSIST.	SOIL TYPE						
SILTSTONE, very moist, continued... (Tehama Formation)	Gray	(Stiff)	(MH)	21					
		(Hard)		22					
@23.5': sandstone fragments				23					
				24		30/1.5"	51	71	
				25					
				26					
SANDSTONE, moist, fine to coarse grained sand, severely weathered (Tehama Formation)	Gray	(Very Dense)	(SM)	27					
				28					
				29		50/5"	15		
				30					
				31					
				32					
				33					
				34		50/5"	21		
				35					
				36					
				37					
				38					
				39		50/6"	16		
				40					

* Drilled with CME-55 Track Mounted Rig

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL

CLEARY CONSULTANTS, INC.
Geotechnical Engineers and Geologists

LOG OF EXPLORATORY BORING NO. 8

NEW 6TH GRADE CAMPUS PROJECT
Golden West Middle School
Fairfield, California

PROJECT NO.	DATE	DRAWING NO.
1442.1	November 2024	20

EQUIPMENT	4" Diameter Rotary Wash*	ELEVATION	---	LOGGED BY	IS
DEPTH TO GROUNDWATER	N/A	DEPTH TO BEDROCK	±13.0'	DATE DRILLED	9/17/2024

DESCRIPTION AND CLASSIFICATION				DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	WATER CONTENT (%)	DRY DENSITY (PCF)	SHEAR STRENGTH (KSF)
DESCRIPTION AND REMARKS	COLOR	CONSIST.	SOIL TYPE						
SANDSTONE, moist, continued... (Tehama Formation)	Gray	(Very Dense)	(SM)	41					
				42					
				43					
				44	X	50/3.5"	7		
				45					
				46					
				47					
SILTSTONE, moist, fine grained sand, friable, severely weathered (Tehama Formation)	Dark Gray	(Hard)	(MH)	48					
				49	X	50/5"	29		
Bottom of Boring = 49.5'				50					
				51					
				52					
				53					
				54					
				55					
				56					
				57					
				58					
				59					
				60					

* Drilled with CME-55 Track Mounted Rig

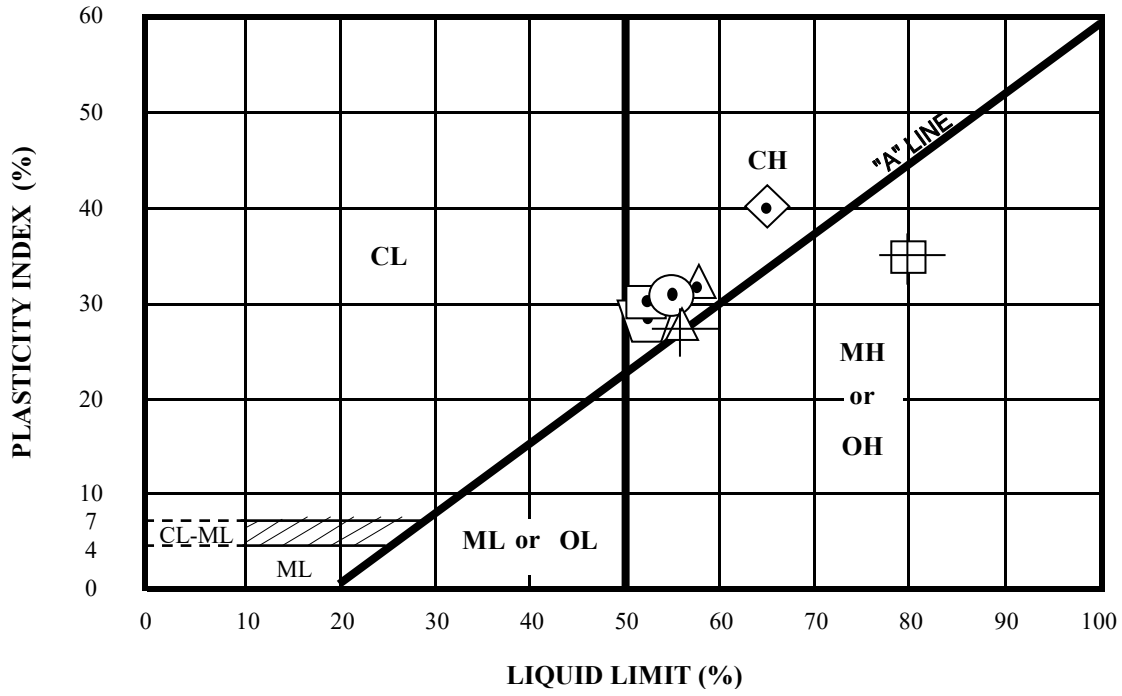
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL

CLEARY CONSULTANTS, INC.
Geotechnical Engineers and Geologists

LOG OF EXPLORATORY BORING NO. 8

NEW 6TH GRADE CAMPUS PROJECT
Golden West Middle School
Fairfield, California

PROJECT NO.	DATE	DRAWING NO.
1442.1	November 2024	21



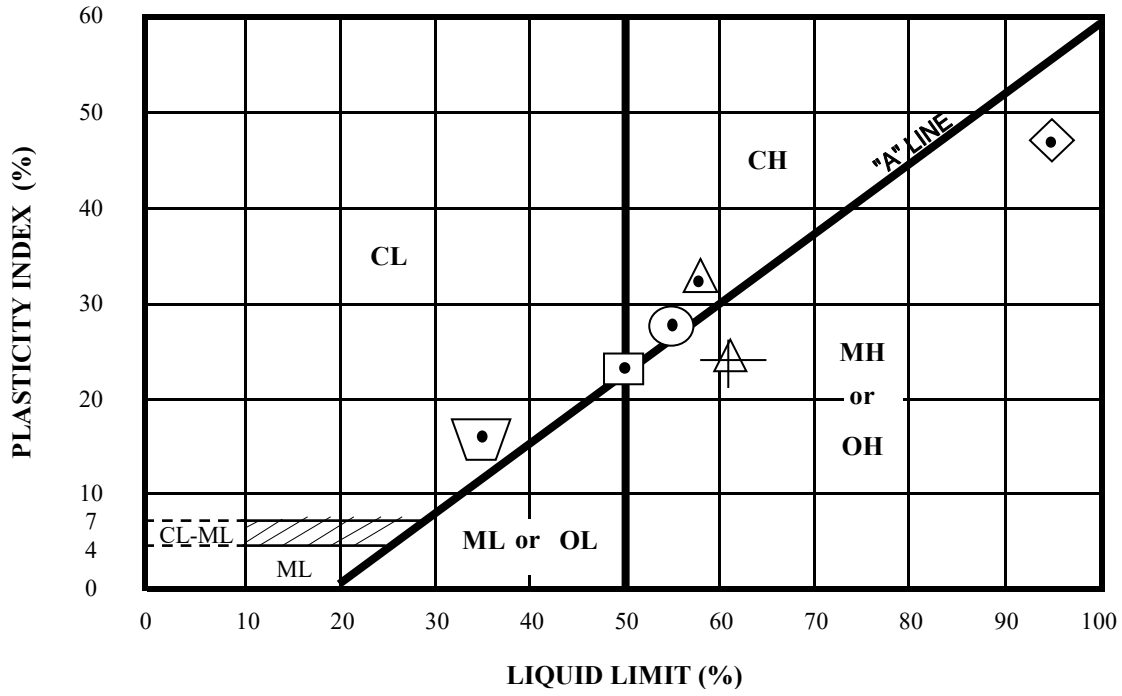
KEY SYMBOL	BORING NO.	SAMPLE DEPTH (feet)	NATURAL WATER CONTENT %	LIQUID LIMIT %	PLASTICITY INDEX %	PASSING NO. 200 SIEVE %	LIQUIDITY INDEX	UNIFIED SOIL CLASSIFICATION SYMBOL
△	1	1.0	17	58	31	97	-0.3	CH
⊡	2	1.5	16	52	30	99	-0.2	CH
◇	3	1.5	32	65	40	99	0.2	CH
▽	3	6.0	27	52	28	99	0.1	CH
⊙	4	2.0	23	55	31	87	0.0	CH
⋔	4	6.0	29	56	27	98	0.0	CH
⊞	4	29.5	39	80	35	98	-0.2	(MH)

CLEARY CONSULTANTS, INC.
Geotechnical Engineers and Geologists

PLASTICITY CHART

NEW 6TH GRADE CAMPUS PROJECT
Golden West Middle School
Fairfield, California

PROJECT NO.	DATE	DRAWING NO.
1442.1	November 2024	22



KEY SYMBOL	BORING NO.	SAMPLE DEPTH (feet)	NATURAL WATER CONTENT %	LIQUID LIMIT %	PLASTICITY INDEX %	PASSING NO. 200 SIEVE %	LIQUIDITY INDEX	UNIFIED SOIL CLASSIFICATION SYMBOL
△	5	3.0	24	58	32	99	-0.1	CH
▣	5	6.0	26	50	23	97	0.0	CL-CH
◇	5	19.5	45	95	47	99	-0.1	(MH)
▽	8	1.5	26	35	16	93	0.4	CL
⊙	8	4.5	25	55	28	96	-0.1	CH
⏃	8	14.5	39	61	24	98	0.1	(MH)

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Geotechnical Engineers and Geologists

PLASTICITY CHART

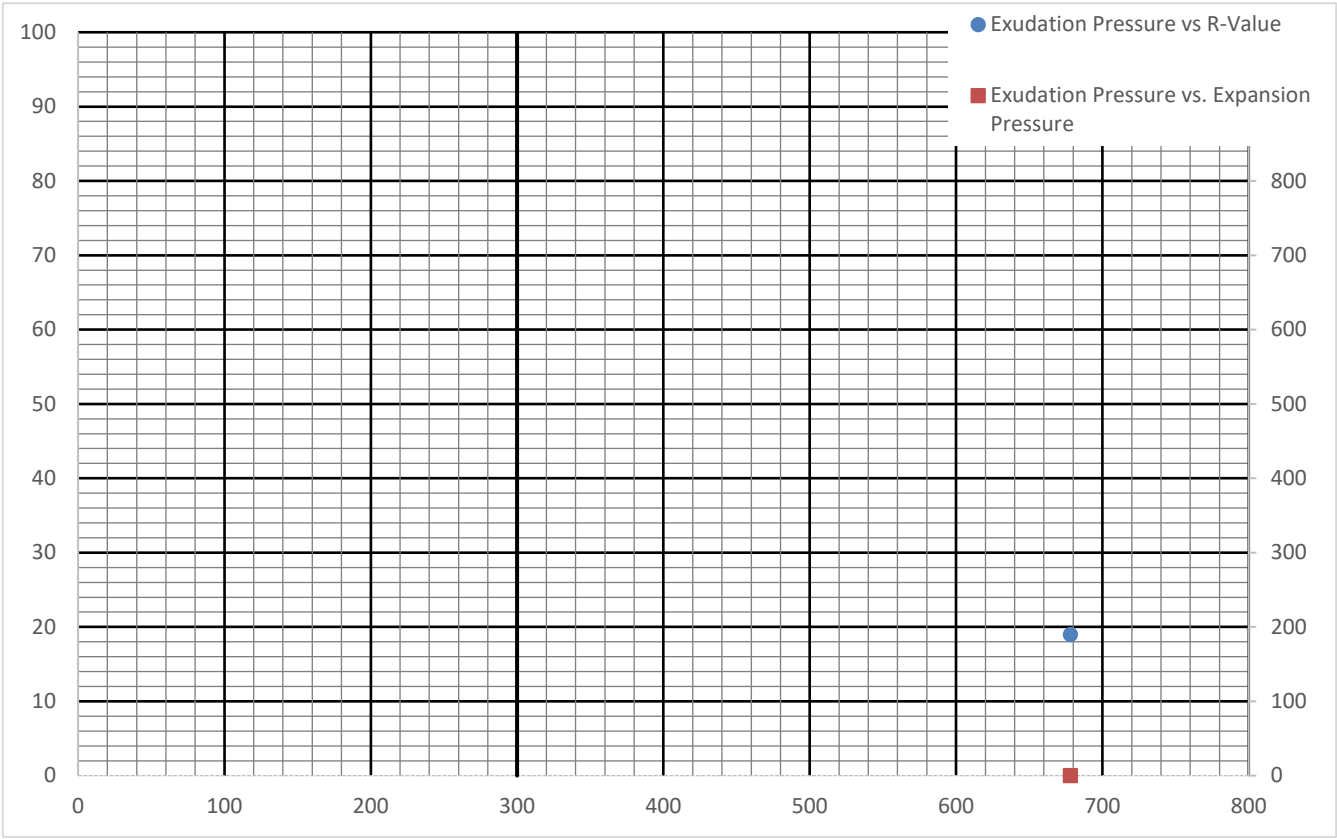
NEW 6TH GRADE CAMPUS PROJECT
Golden West Middle School
Fairfield, California

PROJECT NO.	DATE	DRAWING NO.
1442.1	November 2024	23

R-Value
CTM 301

CTL Job No.:	018-1225	Boring:	EB 1-8	Reduced By:	RU
Client:	Cleary Consultants	Sample:		Checked By:	PJ
Project Number:	1442.1	Depth:	0.5-3.0'	Date:	10/23/2024
Project Name:	Golden West Middle School - 6th Grade Campus		**R-Value**		**<5**
Soil Description:	Brown Silty Clay				
Remarks:	Soil extruded from the mold giving a false exudation pressure. Per Caltrans, the R-value test was terminated and an R-value of less than 5 was reported.		**Expansion Pressure**		

Specimen Designation	A	B	C	D	E
Compactor Foot Pressure (psi)	70				
Exudation Pressure (psi)	678				
Exudation Load (lbf)	8520				
Height After Compaction (in)	2.67				
Expansion Pressure (psf)	0				
Stabilometer @ 2000	134				
Turns Displacement	2.36				
R-value	17				
Corrected R-Value	19				
Moisture Content (%)	21.0				
Wet Density (pcf)	128.6				
Dry Density (pcf)	106.3				

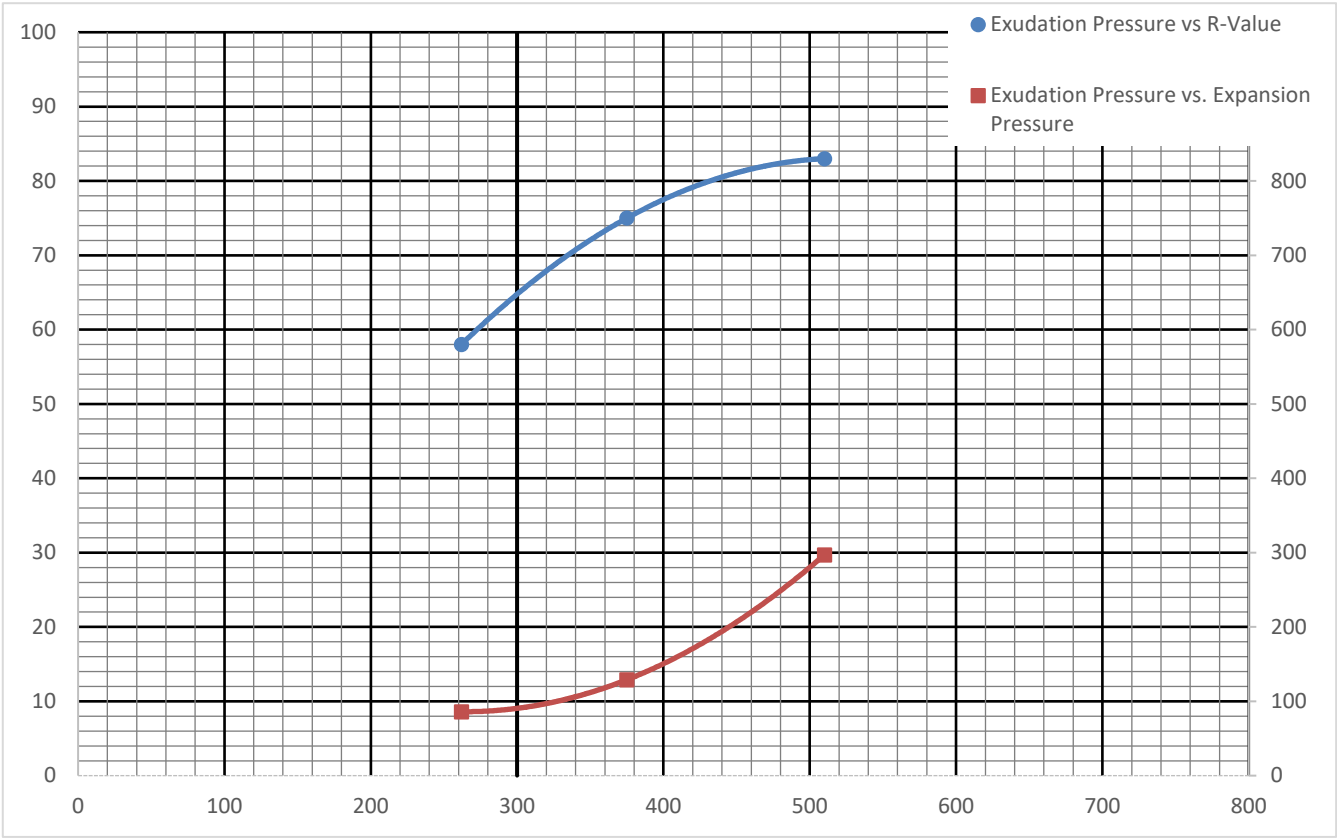


DRAWING NO. 24

R-Value
CTM 301

CTL Job No.:	018-1225	Boring:	EB 1-8	Reduced By:	RU
Client:	Cleary Consultants	Sample:		Checked By:	PJ
Project Number:	1442.1	Depth:	0.5-3.0	Date:	10/24/2024
Project Name:	Golden West Middle School - 6th Grade Campus		**R-Value**		**65**
Soil Description:	Brown Silty Clay (+5% Hi-Cal Quicklime)				
Remarks:			**Expansion Pressure**		**90**

Specimen Designation	A	B	C	D	E
Compactor Foot Pressure (psi)	300	300	300		
Exudation Pressure (psi)	262	375	510		
Exudation Load (lbf)	3292	4712	6409		
Height After Compaction (in)	2.42	2.55	2.44		
Expansion Pressure (psf)	86	129	297		
Stabilometer @ 2000	74	34	34		
Turns Displacement	1.94	3.09	1.80		
R-value	60	75	84		
Corrected R-Value	58	75	83		
Moisture Content (%)	21.5	19.6	18.2		
Wet Density (pcf)	125.8	125.5	127.5		
Dry Density (pcf)	103.5	104.9	107.9		

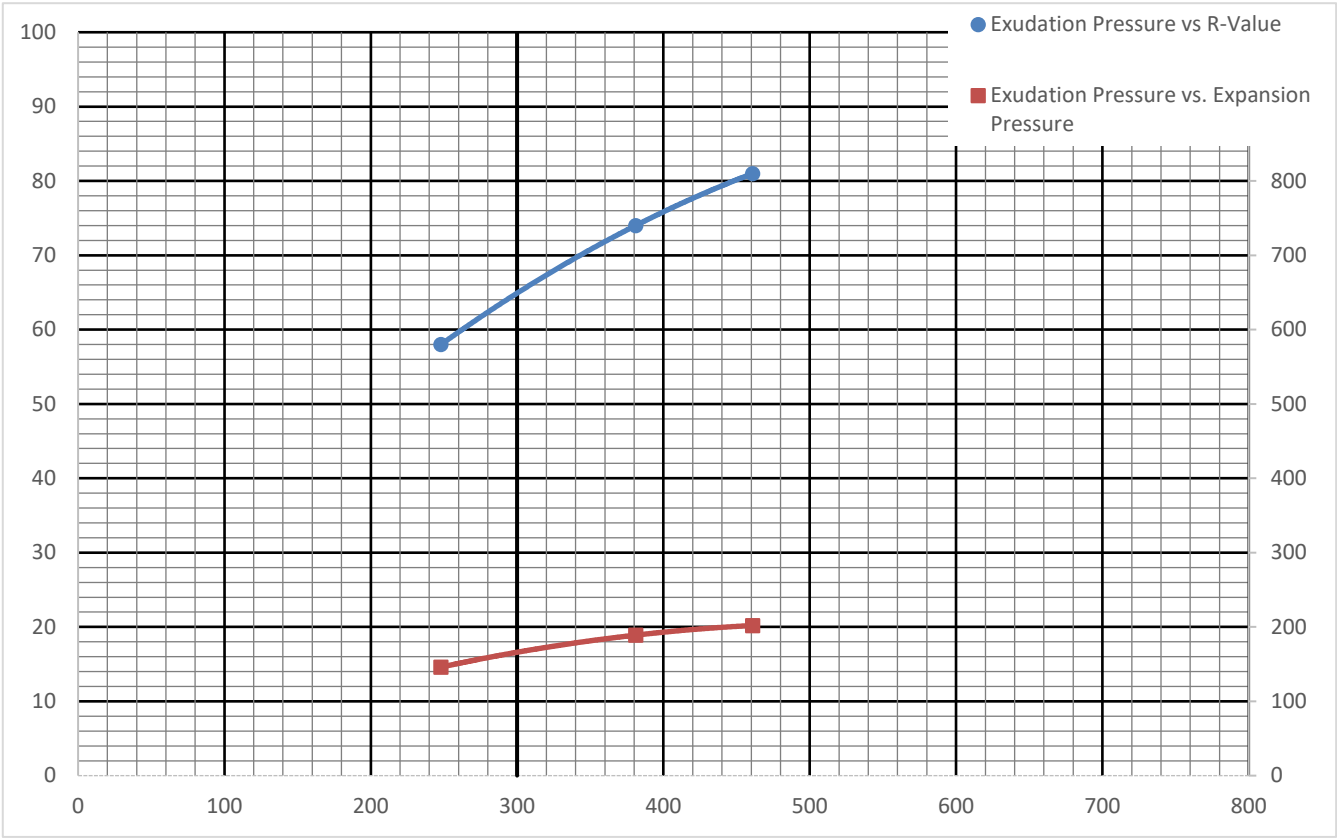


DRAWING NO. 25

R-Value
CTM 301

CTL Job No.:	018-1225	Boring:	EB 1-8	Reduced By:	RU
Client:	Cleary Consultants	Sample:		Checked By:	PJ
Project Number:	1442.1	Depth:	0.5-3.0'	Date:	10/24/2024
Project Name:	Golden West Middle School - 6th Grade Campus		**R-Value**		**65**
Soil Description:	Brown Silty Clay (+5% 50/50 Mix Quicklime/Cement)				
Remarks:			**Expansion Pressure**		**165**

Specimen Designation	A	B	C	D	E
Compactor Foot Pressure (psi)	300	300	250		
Exudation Pressure (psi)	461	381	248		
Exudation Load (lbf)	5793	4788	3116		
Height After Compaction (in)	2.54	2.51	2.60		
Expansion Pressure (psf)	202	189	146		
Stabilometer @ 2000	40	50	60		
Turns Displacement	1.80	1.95	3.30		
R-value	81	74	56		
Corrected R-Value	81	74	58		
Moisture Content (%)	20.5	21.4	24.2		
Wet Density (pcf)	125.6	125.1	123.7		
Dry Density (pcf)	104.3	103.0	99.6		



DRAWING NO. 26

Corrosivity Tests Summary

CTL # 018-1225 **Date:** 10/8/2024 **Tested By:** PJ **Checked:** PJ

Client: Cleary Consultants, Inc. **Project:** Golden West Middle School - 6th Grade Campus **Proj. No:** 1442.1

Remarks:

Sample Location or ID			Resistivity @ 15.5 °C (Ohm-cm)			Chloride	Sulfate		pH	ORP (Redox)		Sulfide	Moisture	Soil Visual Description
			As Rec.	Min	Sat.	mg/kg	mg/kg	%		E_H (mv)	At Test	Qualitative by Lead	At Test %	
						Dry Wt.	Dry Wt.	Dry Wt.						
Boring	Sample, No.	Depth, ft.	ASTM G57	Cal 643	ASTM G57	ASTM D4327	ASTM D4327	ASTM D4327	ASTM G51	ASTM G200	Temp °C	Acetate Paper	ASTM D2216	
EB 1-8	-	0.5-3.0	-	-	797	52	138	0.0138	7.1	500	22	-	18.7	Dark Brown Silty Clay

DRAWING NO. 27

APPENDIX A

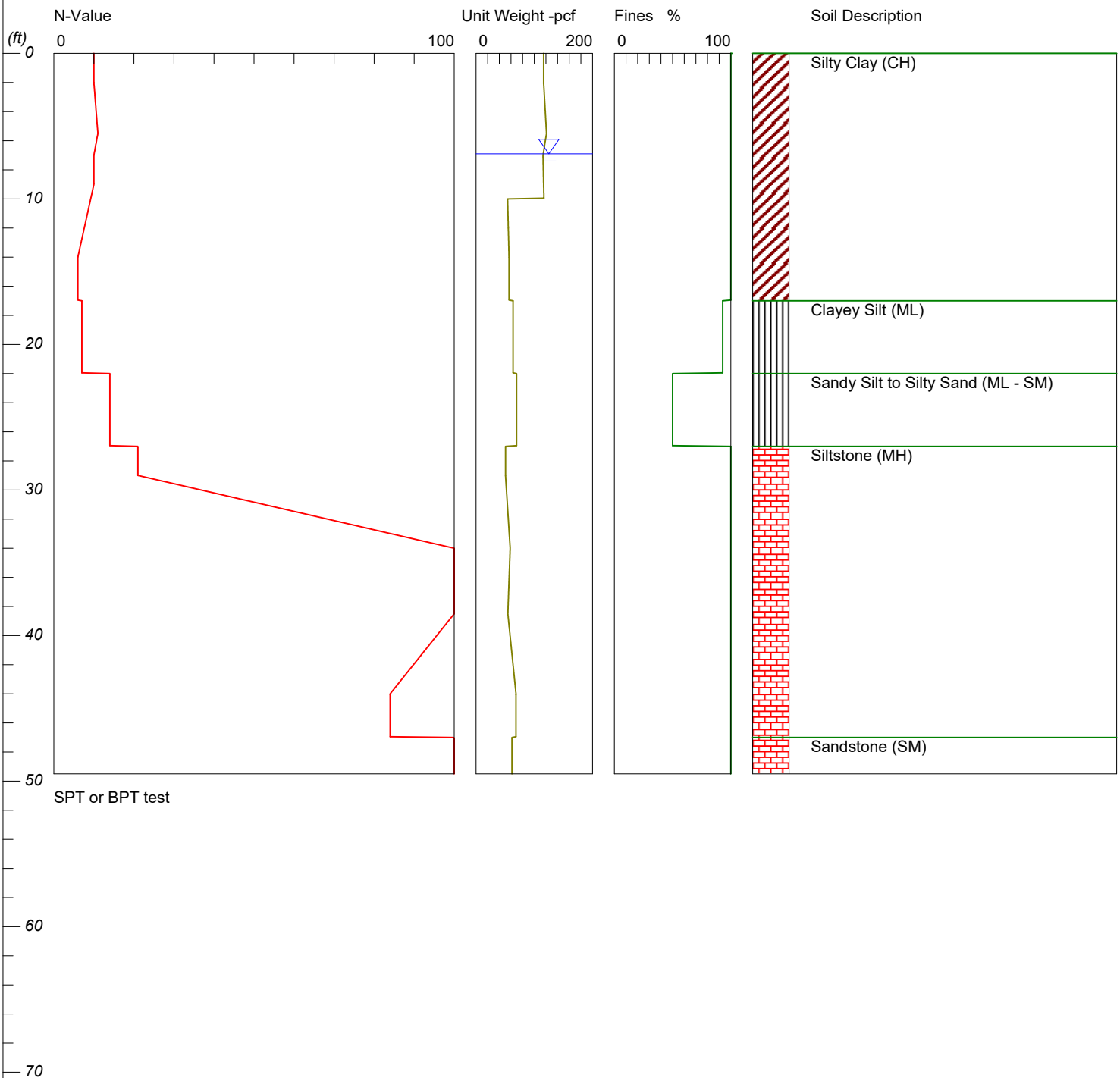
Golden West Middle School
New 6th Grade Campus Project
Liquefaction and Dry Settlement Analyses and Calculations
EB-4, EB-5, and EB-8
Drilled September 16 and 17, 2024

LIQUEFACTION ANALYSIS

NEW 6TH GRADE CAMPUS PROJECT

Hole No.=EB-4 Water Depth=6.9 ft

Magnitude=8.50
Acceleration=0.674g



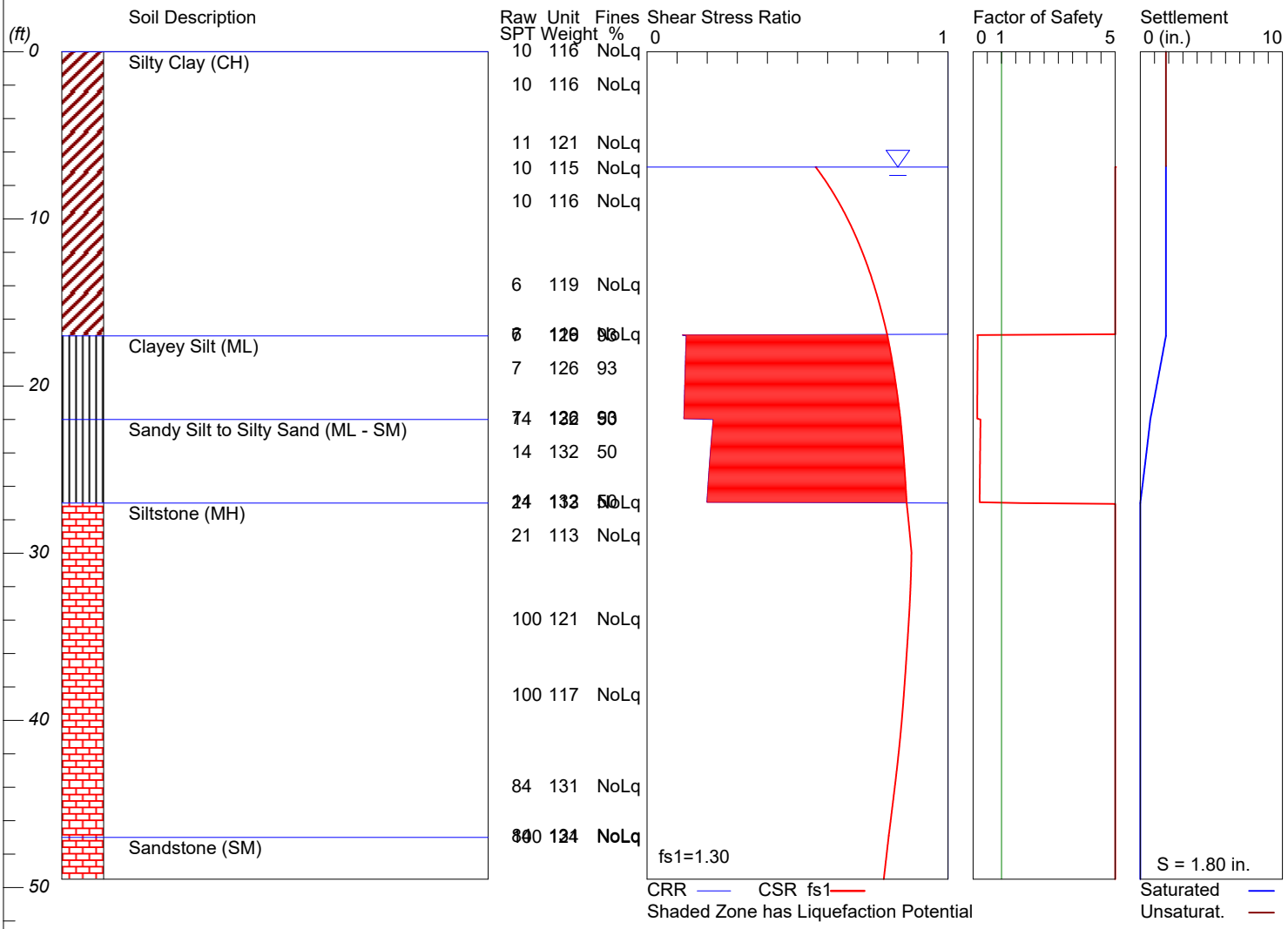
LiquefyPro CivilTech Software USA www.civiltech.com

LIQUEFACTION ANALYSIS

NEW 6TH GRADE CAMPUS PROJECT

Hole No.=EB-4 Water Depth=6.9 ft

Magnitude=8.50
Acceleration=0.674g



LiquefyPro CivilTech Software USA www.civiltech.com

CLEARY CONSULTANTS, INC.

Golden West Middle School

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LIQUEFACTION ANALYSIS SUMMARY
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Input File Name: \\CCISERVER\Shared Folders\Rough Drafts\Grant Foster Rough Drafts\Liquefy Pro Data Files grant\1442.1 Golden West MS 6th Grade Campus, EB-4.liq
Title: NEW 6TH GRADE CAMPUS PROJECT
Subtitle: Golden West Middle School

Surface Elev.=
Hole No.=EB-4
Depth of Hole= 49.50 ft
Water Table during Earthquake= 6.90 ft
Water Table during In-Situ Testing= 10.00 ft
Max. Acceleration= 0.67 g
Earthquake Magnitude= 8.50

Input Data:
Surface Elev.=
Hole No.=EB-4
Depth of Hole=49.50 ft
Water Table during Earthquake= 6.90 ft
Water Table during In-Situ Testing= 10.00 ft
Max. Acceleration=0.67 g
Earthquake Magnitude=8.50
No-Liquefiable Soils: Based on Analysis

1. SPT or BPT Calculation.
2. Settlement Analysis Method: Tokimatsu, M-correction
3. Fines Correction for Liquefaction: Idriss/Seed
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
9. User request factor of safety (apply to CSR) , User= 1.3
   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	10.00	116.00	NoLiq
2.00	10.00	116.00	NoLiq
5.50	11.00	121.00	NoLiq
7.00	10.00	115.00	NoLiq
9.00	10.00	116.00	NoLiq
14.00	6.00	119.00	NoLiq
16.95	6.00	119.00	NoLiq
17.00	7.00	126.00	93.00
19.00	7.00	126.00	93.00
21.95	7.00	126.00	93.00
22.00	14.00	132.00	50.00
24.00	14.00	132.00	50.00
26.95	14.00	132.00	50.00
27.00	21.00	113.00	NoLiq
29.00	21.00	113.00	NoLiq
34.00	100.00	121.00	NoLiq
38.50	100.00	117.00	NoLiq
44.00	84.00	131.00	NoLiq
46.95	84.00	131.00	NoLiq
47.00	100.00	124.00	NoLiq

Output Results:
Settlement of Saturated Sands=1.80 in.
Settlement of Unsaturated Sands=0.00 in.

Total Settlement of Saturated and Unsaturated Sands=1.80 in.
Differential Settlement=0.901 to 1.189 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.00	2.00	0.57	5.00	1.80	0.00	1.80
0.05	2.00	0.57	5.00	1.80	0.00	1.80
0.10	2.00	0.57	5.00	1.80	0.00	1.80
0.15	2.00	0.57	5.00	1.80	0.00	1.80
0.20	2.00	0.57	5.00	1.80	0.00	1.80
0.25	2.00	0.57	5.00	1.80	0.00	1.80
0.30	2.00	0.57	5.00	1.80	0.00	1.80
0.35	2.00	0.57	5.00	1.80	0.00	1.80
0.40	2.00	0.57	5.00	1.80	0.00	1.80
0.45	2.00	0.57	5.00	1.80	0.00	1.80
0.50	2.00	0.57	5.00	1.80	0.00	1.80
0.55	2.00	0.57	5.00	1.80	0.00	1.80
0.60	2.00	0.57	5.00	1.80	0.00	1.80
0.65	2.00	0.57	5.00	1.80	0.00	1.80
0.70	2.00	0.57	5.00	1.80	0.00	1.80
0.75	2.00	0.57	5.00	1.80	0.00	1.80
0.80	2.00	0.57	5.00	1.80	0.00	1.80
0.85	2.00	0.57	5.00	1.80	0.00	1.80
0.90	2.00	0.57	5.00	1.80	0.00	1.80
0.95	2.00	0.57	5.00	1.80	0.00	1.80
1.00	2.00	0.57	5.00	1.80	0.00	1.80
1.05	2.00	0.57	5.00	1.80	0.00	1.80
1.10	2.00	0.57	5.00	1.80	0.00	1.80
1.15	2.00	0.57	5.00	1.80	0.00	1.80
1.20	2.00	0.57	5.00	1.80	0.00	1.80
1.25	2.00	0.57	5.00	1.80	0.00	1.80
1.30	2.00	0.57	5.00	1.80	0.00	1.80
1.35	2.00	0.57	5.00	1.80	0.00	1.80
1.40	2.00	0.57	5.00	1.80	0.00	1.80
1.45	2.00	0.57	5.00	1.80	0.00	1.80
1.50	2.00	0.57	5.00	1.80	0.00	1.80
1.55	2.00	0.57	5.00	1.80	0.00	1.80
1.60	2.00	0.57	5.00	1.80	0.00	1.80
1.65	2.00	0.57	5.00	1.80	0.00	1.80
1.70	2.00	0.57	5.00	1.80	0.00	1.80
1.75	2.00	0.57	5.00	1.80	0.00	1.80
1.80	2.00	0.57	5.00	1.80	0.00	1.80
1.85	2.00	0.57	5.00	1.80	0.00	1.80
1.90	2.00	0.57	5.00	1.80	0.00	1.80
1.95	2.00	0.57	5.00	1.80	0.00	1.80
2.00	2.00	0.57	5.00	1.80	0.00	1.80
2.05	2.00	0.57	5.00	1.80	0.00	1.80
2.10	2.00	0.57	5.00	1.80	0.00	1.80
2.15	2.00	0.57	5.00	1.80	0.00	1.80
2.20	2.00	0.57	5.00	1.80	0.00	1.80
2.25	2.00	0.57	5.00	1.80	0.00	1.80
2.30	2.00	0.57	5.00	1.80	0.00	1.80
2.35	2.00	0.57	5.00	1.80	0.00	1.80
2.40	2.00	0.57	5.00	1.80	0.00	1.80
2.45	2.00	0.57	5.00	1.80	0.00	1.80
2.50	2.00	0.57	5.00	1.80	0.00	1.80
2.55	2.00	0.57	5.00	1.80	0.00	1.80
2.60	2.00	0.57	5.00	1.80	0.00	1.80
2.65	2.00	0.57	5.00	1.80	0.00	1.80
2.70	2.00	0.57	5.00	1.80	0.00	1.80
2.75	2.00	0.57	5.00	1.80	0.00	1.80
2.80	2.00	0.57	5.00	1.80	0.00	1.80
2.85	2.00	0.57	5.00	1.80	0.00	1.80
2.90	2.00	0.57	5.00	1.80	0.00	1.80
2.95	2.00	0.57	5.00	1.80	0.00	1.80
3.00	2.00	0.57	5.00	1.80	0.00	1.80
3.05	2.00	0.57	5.00	1.80	0.00	1.80
3.10	2.00	0.57	5.00	1.80	0.00	1.80
3.15	2.00	0.57	5.00	1.80	0.00	1.80
3.20	2.00	0.57	5.00	1.80	0.00	1.80
3.25	2.00	0.57	5.00	1.80	0.00	1.80
3.30	2.00	0.57	5.00	1.80	0.00	1.80
3.35	2.00	0.57	5.00	1.80	0.00	1.80
3.40	2.00	0.57	5.00	1.80	0.00	1.80

3.45	2.00	0.56	5.00	1.80	0.00	1.80
3.50	2.00	0.56	5.00	1.80	0.00	1.80
3.55	2.00	0.56	5.00	1.80	0.00	1.80
3.60	2.00	0.56	5.00	1.80	0.00	1.80
3.65	2.00	0.56	5.00	1.80	0.00	1.80
3.70	2.00	0.56	5.00	1.80	0.00	1.80
3.75	2.00	0.56	5.00	1.80	0.00	1.80
3.80	2.00	0.56	5.00	1.80	0.00	1.80
3.85	2.00	0.56	5.00	1.80	0.00	1.80
3.90	2.00	0.56	5.00	1.80	0.00	1.80
3.95	2.00	0.56	5.00	1.80	0.00	1.80
4.00	2.00	0.56	5.00	1.80	0.00	1.80
4.05	2.00	0.56	5.00	1.80	0.00	1.80
4.10	2.00	0.56	5.00	1.80	0.00	1.80
4.15	2.00	0.56	5.00	1.80	0.00	1.80
4.20	2.00	0.56	5.00	1.80	0.00	1.80
4.25	2.00	0.56	5.00	1.80	0.00	1.80
4.30	2.00	0.56	5.00	1.80	0.00	1.80
4.35	2.00	0.56	5.00	1.80	0.00	1.80
4.40	2.00	0.56	5.00	1.80	0.00	1.80
4.45	2.00	0.56	5.00	1.80	0.00	1.80
4.50	2.00	0.56	5.00	1.80	0.00	1.80
4.55	2.00	0.56	5.00	1.80	0.00	1.80
4.60	2.00	0.56	5.00	1.80	0.00	1.80
4.65	2.00	0.56	5.00	1.80	0.00	1.80
4.70	2.00	0.56	5.00	1.80	0.00	1.80
4.75	2.00	0.56	5.00	1.80	0.00	1.80
4.80	2.00	0.56	5.00	1.80	0.00	1.80
4.85	2.00	0.56	5.00	1.80	0.00	1.80
4.90	2.00	0.56	5.00	1.80	0.00	1.80
4.95	2.00	0.56	5.00	1.80	0.00	1.80
5.00	2.00	0.56	5.00	1.80	0.00	1.80
5.05	2.00	0.56	5.00	1.80	0.00	1.80
5.10	2.00	0.56	5.00	1.80	0.00	1.80
5.15	2.00	0.56	5.00	1.80	0.00	1.80
5.20	2.00	0.56	5.00	1.80	0.00	1.80
5.25	2.00	0.56	5.00	1.80	0.00	1.80
5.30	2.00	0.56	5.00	1.80	0.00	1.80
5.35	2.00	0.56	5.00	1.80	0.00	1.80
5.40	2.00	0.56	5.00	1.80	0.00	1.80
5.45	2.00	0.56	5.00	1.80	0.00	1.80
5.50	2.00	0.56	5.00	1.80	0.00	1.80
5.55	2.00	0.56	5.00	1.80	0.00	1.80
5.60	2.00	0.56	5.00	1.80	0.00	1.80
5.65	2.00	0.56	5.00	1.80	0.00	1.80
5.70	2.00	0.56	5.00	1.80	0.00	1.80
5.75	2.00	0.56	5.00	1.80	0.00	1.80
5.80	2.00	0.56	5.00	1.80	0.00	1.80
5.85	2.00	0.56	5.00	1.80	0.00	1.80
5.90	2.00	0.56	5.00	1.80	0.00	1.80
5.95	2.00	0.56	5.00	1.80	0.00	1.80
6.00	2.00	0.56	5.00	1.80	0.00	1.80
6.05	2.00	0.56	5.00	1.80	0.00	1.80
6.10	2.00	0.56	5.00	1.80	0.00	1.80
6.15	2.00	0.56	5.00	1.80	0.00	1.80
6.20	2.00	0.56	5.00	1.80	0.00	1.80
6.25	2.00	0.56	5.00	1.80	0.00	1.80
6.30	2.00	0.56	5.00	1.80	0.00	1.80
6.35	2.00	0.56	5.00	1.80	0.00	1.80
6.40	2.00	0.56	5.00	1.80	0.00	1.80
6.45	2.00	0.56	5.00	1.80	0.00	1.80
6.50	2.00	0.56	5.00	1.80	0.00	1.80
6.55	2.00	0.56	5.00	1.80	0.00	1.80
6.60	2.00	0.56	5.00	1.80	0.00	1.80
6.65	2.00	0.56	5.00	1.80	0.00	1.80
6.70	2.00	0.56	5.00	1.80	0.00	1.80
6.75	2.00	0.56	5.00	1.80	0.00	1.80
6.80	2.00	0.56	5.00	1.80	0.00	1.80
6.85	2.00	0.56	5.00	1.80	0.00	1.80
6.90	2.00	0.56	5.00	1.80	0.00	1.80
6.95	2.00	0.56	5.00	1.80	0.00	1.80
7.00	2.00	0.56	5.00	1.80	0.00	1.80
7.05	2.00	0.57	5.00	1.80	0.00	1.80
7.10	2.00	0.57	5.00	1.80	0.00	1.80
7.15	2.00	0.57	5.00	1.80	0.00	1.80

7.20	2.00	0.57	5.00	1.80	0.00	1.80
7.25	2.00	0.57	5.00	1.80	0.00	1.80
7.30	2.00	0.58	5.00	1.80	0.00	1.80
7.35	2.00	0.58	5.00	1.80	0.00	1.80
7.40	2.00	0.58	5.00	1.80	0.00	1.80
7.45	2.00	0.58	5.00	1.80	0.00	1.80
7.50	2.00	0.58	5.00	1.80	0.00	1.80
7.55	2.00	0.59	5.00	1.80	0.00	1.80
7.60	2.00	0.59	5.00	1.80	0.00	1.80
7.65	2.00	0.59	5.00	1.80	0.00	1.80
7.70	2.00	0.59	5.00	1.80	0.00	1.80
7.75	2.00	0.59	5.00	1.80	0.00	1.80
7.80	2.00	0.60	5.00	1.80	0.00	1.80
7.85	2.00	0.60	5.00	1.80	0.00	1.80
7.90	2.00	0.60	5.00	1.80	0.00	1.80
7.95	2.00	0.60	5.00	1.80	0.00	1.80
8.00	2.00	0.60	5.00	1.80	0.00	1.80
8.05	2.00	0.60	5.00	1.80	0.00	1.80
8.10	2.00	0.61	5.00	1.80	0.00	1.80
8.15	2.00	0.61	5.00	1.80	0.00	1.80
8.20	2.00	0.61	5.00	1.80	0.00	1.80
8.25	2.00	0.61	5.00	1.80	0.00	1.80
8.30	2.00	0.61	5.00	1.80	0.00	1.80
8.35	2.00	0.62	5.00	1.80	0.00	1.80
8.40	2.00	0.62	5.00	1.80	0.00	1.80
8.45	2.00	0.62	5.00	1.80	0.00	1.80
8.50	2.00	0.62	5.00	1.80	0.00	1.80
8.55	2.00	0.62	5.00	1.80	0.00	1.80
8.60	2.00	0.62	5.00	1.80	0.00	1.80
8.65	2.00	0.63	5.00	1.80	0.00	1.80
8.70	2.00	0.63	5.00	1.80	0.00	1.80
8.75	2.00	0.63	5.00	1.80	0.00	1.80
8.80	2.00	0.63	5.00	1.80	0.00	1.80
8.85	2.00	0.63	5.00	1.80	0.00	1.80
8.90	2.00	0.63	5.00	1.80	0.00	1.80
8.95	2.00	0.64	5.00	1.80	0.00	1.80
9.00	2.00	0.64	5.00	1.80	0.00	1.80
9.05	2.00	0.64	5.00	1.80	0.00	1.80
9.10	2.00	0.64	5.00	1.80	0.00	1.80
9.15	2.00	0.64	5.00	1.80	0.00	1.80
9.20	2.00	0.64	5.00	1.80	0.00	1.80
9.25	2.00	0.64	5.00	1.80	0.00	1.80
9.30	2.00	0.65	5.00	1.80	0.00	1.80
9.35	2.00	0.65	5.00	1.80	0.00	1.80
9.40	2.00	0.65	5.00	1.80	0.00	1.80
9.45	2.00	0.65	5.00	1.80	0.00	1.80
9.50	2.00	0.65	5.00	1.80	0.00	1.80
9.55	2.00	0.65	5.00	1.80	0.00	1.80
9.60	2.00	0.65	5.00	1.80	0.00	1.80
9.65	2.00	0.66	5.00	1.80	0.00	1.80
9.70	2.00	0.66	5.00	1.80	0.00	1.80
9.75	2.00	0.66	5.00	1.80	0.00	1.80
9.80	2.00	0.66	5.00	1.80	0.00	1.80
9.85	2.00	0.66	5.00	1.80	0.00	1.80
9.90	2.00	0.66	5.00	1.80	0.00	1.80
9.95	2.00	0.66	5.00	1.80	0.00	1.80
10.00	2.00	0.67	5.00	1.80	0.00	1.80
10.05	2.00	0.67	5.00	1.80	0.00	1.80
10.10	2.00	0.67	5.00	1.80	0.00	1.80
10.15	2.00	0.67	5.00	1.80	0.00	1.80
10.20	2.00	0.67	5.00	1.80	0.00	1.80
10.25	2.00	0.67	5.00	1.80	0.00	1.80
10.30	2.00	0.67	5.00	1.80	0.00	1.80
10.35	2.00	0.68	5.00	1.80	0.00	1.80
10.40	2.00	0.68	5.00	1.80	0.00	1.80
10.45	2.00	0.68	5.00	1.80	0.00	1.80
10.50	2.00	0.68	5.00	1.80	0.00	1.80
10.55	2.00	0.68	5.00	1.80	0.00	1.80
10.60	2.00	0.68	5.00	1.80	0.00	1.80
10.65	2.00	0.68	5.00	1.80	0.00	1.80
10.70	2.00	0.68	5.00	1.80	0.00	1.80
10.75	2.00	0.69	5.00	1.80	0.00	1.80
10.80	2.00	0.69	5.00	1.80	0.00	1.80
10.85	2.00	0.69	5.00	1.80	0.00	1.80
10.90	2.00	0.69	5.00	1.80	0.00	1.80

10.95	2.00	0.69	5.00	1.80	0.00	1.80
11.00	2.00	0.69	5.00	1.80	0.00	1.80
11.05	2.00	0.69	5.00	1.80	0.00	1.80
11.10	2.00	0.69	5.00	1.80	0.00	1.80
11.15	2.00	0.70	5.00	1.80	0.00	1.80
11.20	2.00	0.70	5.00	1.80	0.00	1.80
11.25	2.00	0.70	5.00	1.80	0.00	1.80
11.30	2.00	0.70	5.00	1.80	0.00	1.80
11.35	2.00	0.70	5.00	1.80	0.00	1.80
11.40	2.00	0.70	5.00	1.80	0.00	1.80
11.45	2.00	0.70	5.00	1.80	0.00	1.80
11.50	2.00	0.70	5.00	1.80	0.00	1.80
11.55	2.00	0.71	5.00	1.80	0.00	1.80
11.60	2.00	0.71	5.00	1.80	0.00	1.80
11.65	2.00	0.71	5.00	1.80	0.00	1.80
11.70	2.00	0.71	5.00	1.80	0.00	1.80
11.75	2.00	0.71	5.00	1.80	0.00	1.80
11.80	2.00	0.71	5.00	1.80	0.00	1.80
11.85	2.00	0.71	5.00	1.80	0.00	1.80
11.90	2.00	0.71	5.00	1.80	0.00	1.80
11.95	2.00	0.71	5.00	1.80	0.00	1.80
12.00	2.00	0.72	5.00	1.80	0.00	1.80
12.05	2.00	0.72	5.00	1.80	0.00	1.80
12.10	2.00	0.72	5.00	1.80	0.00	1.80
12.15	2.00	0.72	5.00	1.80	0.00	1.80
12.20	2.00	0.72	5.00	1.80	0.00	1.80
12.25	2.00	0.72	5.00	1.80	0.00	1.80
12.30	2.00	0.72	5.00	1.80	0.00	1.80
12.35	2.00	0.72	5.00	1.80	0.00	1.80
12.40	2.00	0.72	5.00	1.80	0.00	1.80
12.45	2.00	0.73	5.00	1.80	0.00	1.80
12.50	2.00	0.73	5.00	1.80	0.00	1.80
12.55	2.00	0.73	5.00	1.80	0.00	1.80
12.60	2.00	0.73	5.00	1.80	0.00	1.80
12.65	2.00	0.73	5.00	1.80	0.00	1.80
12.70	2.00	0.73	5.00	1.80	0.00	1.80
12.75	2.00	0.73	5.00	1.80	0.00	1.80
12.80	2.00	0.73	5.00	1.80	0.00	1.80
12.85	2.00	0.73	5.00	1.80	0.00	1.80
12.90	2.00	0.73	5.00	1.80	0.00	1.80
12.95	2.00	0.74	5.00	1.80	0.00	1.80
13.00	2.00	0.74	5.00	1.80	0.00	1.80
13.05	2.00	0.74	5.00	1.80	0.00	1.80
13.10	2.00	0.74	5.00	1.80	0.00	1.80
13.15	2.00	0.74	5.00	1.80	0.00	1.80
13.20	2.00	0.74	5.00	1.80	0.00	1.80
13.25	2.00	0.74	5.00	1.80	0.00	1.80
13.30	2.00	0.74	5.00	1.80	0.00	1.80
13.35	2.00	0.74	5.00	1.80	0.00	1.80
13.40	2.00	0.74	5.00	1.80	0.00	1.80
13.45	2.00	0.74	5.00	1.80	0.00	1.80
13.50	2.00	0.75	5.00	1.80	0.00	1.80
13.55	2.00	0.75	5.00	1.80	0.00	1.80
13.60	2.00	0.75	5.00	1.80	0.00	1.80
13.65	2.00	0.75	5.00	1.80	0.00	1.80
13.70	2.00	0.75	5.00	1.80	0.00	1.80
13.75	2.00	0.75	5.00	1.80	0.00	1.80
13.80	2.00	0.75	5.00	1.80	0.00	1.80
13.85	2.00	0.75	5.00	1.80	0.00	1.80
13.90	2.00	0.75	5.00	1.80	0.00	1.80
13.95	2.00	0.75	5.00	1.80	0.00	1.80
14.00	2.00	0.75	5.00	1.80	0.00	1.80
14.05	2.00	0.76	5.00	1.80	0.00	1.80
14.10	2.00	0.76	5.00	1.80	0.00	1.80
14.15	2.00	0.76	5.00	1.80	0.00	1.80
14.20	2.00	0.76	5.00	1.80	0.00	1.80
14.25	2.00	0.76	5.00	1.80	0.00	1.80
14.30	2.00	0.76	5.00	1.80	0.00	1.80
14.35	2.00	0.76	5.00	1.80	0.00	1.80
14.40	2.00	0.76	5.00	1.80	0.00	1.80
14.45	2.00	0.76	5.00	1.80	0.00	1.80
14.50	2.00	0.76	5.00	1.80	0.00	1.80
14.55	2.00	0.76	5.00	1.80	0.00	1.80
14.60	2.00	0.76	5.00	1.80	0.00	1.80
14.65	2.00	0.77	5.00	1.80	0.00	1.80

14.70	2.00	0.77	5.00	1.80	0.00	1.80
14.75	2.00	0.77	5.00	1.80	0.00	1.80
14.80	2.00	0.77	5.00	1.80	0.00	1.80
14.85	2.00	0.77	5.00	1.80	0.00	1.80
14.90	2.00	0.77	5.00	1.80	0.00	1.80
14.95	2.00	0.77	5.00	1.80	0.00	1.80
15.00	2.00	0.77	5.00	1.80	0.00	1.80
15.05	2.00	0.77	5.00	1.80	0.00	1.80
15.10	2.00	0.77	5.00	1.80	0.00	1.80
15.15	2.00	0.77	5.00	1.80	0.00	1.80
15.20	2.00	0.77	5.00	1.80	0.00	1.80
15.25	2.00	0.77	5.00	1.80	0.00	1.80
15.30	2.00	0.78	5.00	1.80	0.00	1.80
15.35	2.00	0.78	5.00	1.80	0.00	1.80
15.40	2.00	0.78	5.00	1.80	0.00	1.80
15.45	2.00	0.78	5.00	1.80	0.00	1.80
15.50	2.00	0.78	5.00	1.80	0.00	1.80
15.55	2.00	0.78	5.00	1.80	0.00	1.80
15.60	2.00	0.78	5.00	1.80	0.00	1.80
15.65	2.00	0.78	5.00	1.80	0.00	1.80
15.70	2.00	0.78	5.00	1.80	0.00	1.80
15.75	2.00	0.78	5.00	1.80	0.00	1.80
15.80	2.00	0.78	5.00	1.80	0.00	1.80
15.85	2.00	0.78	5.00	1.80	0.00	1.80
15.90	2.00	0.78	5.00	1.80	0.00	1.80
15.95	2.00	0.78	5.00	1.80	0.00	1.80
16.00	2.00	0.79	5.00	1.80	0.00	1.80
16.05	2.00	0.79	5.00	1.80	0.00	1.80
16.10	2.00	0.79	5.00	1.80	0.00	1.80
16.15	2.00	0.79	5.00	1.80	0.00	1.80
16.20	2.00	0.79	5.00	1.80	0.00	1.80
16.25	2.00	0.79	5.00	1.80	0.00	1.80
16.30	2.00	0.79	5.00	1.80	0.00	1.80
16.35	2.00	0.79	5.00	1.80	0.00	1.80
16.40	2.00	0.79	5.00	1.80	0.00	1.80
16.45	2.00	0.79	5.00	1.80	0.00	1.80
16.50	2.00	0.79	5.00	1.80	0.00	1.80
16.55	2.00	0.79	5.00	1.80	0.00	1.80
16.60	2.00	0.79	5.00	1.80	0.00	1.80
16.65	2.00	0.79	5.00	1.80	0.00	1.80
16.70	2.00	0.79	5.00	1.80	0.00	1.80
16.75	2.00	0.80	5.00	1.80	0.00	1.80
16.80	2.00	0.80	5.00	1.80	0.00	1.80
16.85	2.00	0.80	5.00	1.80	0.00	1.80
16.90	2.00	0.80	5.00	1.80	0.00	1.80
16.95	0.12	0.80	0.15*	1.80	0.00	1.80
17.00	0.13	0.80	0.16*	1.80	0.00	1.80
17.05	0.13	0.80	0.16*	1.79	0.00	1.79
17.10	0.13	0.80	0.16*	1.78	0.00	1.78
17.15	0.13	0.80	0.16*	1.77	0.00	1.77
17.20	0.13	0.80	0.16*	1.76	0.00	1.76
17.25	0.13	0.80	0.16*	1.75	0.00	1.75
17.30	0.13	0.80	0.16*	1.74	0.00	1.74
17.35	0.13	0.80	0.16*	1.73	0.00	1.73
17.40	0.13	0.80	0.16*	1.72	0.00	1.72
17.45	0.13	0.80	0.16*	1.71	0.00	1.71
17.50	0.13	0.80	0.16*	1.69	0.00	1.69
17.55	0.13	0.80	0.16*	1.68	0.00	1.68
17.60	0.13	0.81	0.16*	1.67	0.00	1.67
17.65	0.13	0.81	0.16*	1.66	0.00	1.66
17.70	0.13	0.81	0.16*	1.65	0.00	1.65
17.75	0.13	0.81	0.16*	1.64	0.00	1.64
17.80	0.13	0.81	0.16*	1.63	0.00	1.63
17.85	0.13	0.81	0.16*	1.62	0.00	1.62
17.90	0.13	0.81	0.16*	1.61	0.00	1.61
17.95	0.13	0.81	0.16*	1.60	0.00	1.60
18.00	0.13	0.81	0.16*	1.59	0.00	1.59
18.05	0.13	0.81	0.16*	1.58	0.00	1.58
18.10	0.13	0.81	0.16*	1.56	0.00	1.56
18.15	0.13	0.81	0.16*	1.55	0.00	1.55
18.20	0.13	0.81	0.16*	1.54	0.00	1.54
18.25	0.13	0.81	0.16*	1.53	0.00	1.53
18.30	0.13	0.81	0.16*	1.52	0.00	1.52
18.35	0.13	0.81	0.16*	1.51	0.00	1.51
18.40	0.13	0.81	0.16*	1.50	0.00	1.50

18.45	0.13	0.81	0.16*	1.49	0.00	1.49
18.50	0.13	0.81	0.16*	1.48	0.00	1.48
18.55	0.13	0.81	0.16*	1.47	0.00	1.47
18.60	0.13	0.82	0.16*	1.46	0.00	1.46
18.65	0.13	0.82	0.16*	1.45	0.00	1.45
18.70	0.13	0.82	0.16*	1.43	0.00	1.43
18.75	0.13	0.82	0.16*	1.42	0.00	1.42
18.80	0.13	0.82	0.16*	1.41	0.00	1.41
18.85	0.13	0.82	0.16*	1.40	0.00	1.40
18.90	0.13	0.82	0.16*	1.39	0.00	1.39
18.95	0.13	0.82	0.15*	1.38	0.00	1.38
19.00	0.13	0.82	0.15*	1.37	0.00	1.37
19.05	0.13	0.82	0.15*	1.36	0.00	1.36
19.10	0.13	0.82	0.15*	1.35	0.00	1.35
19.15	0.13	0.82	0.15*	1.34	0.00	1.34
19.20	0.13	0.82	0.15*	1.33	0.00	1.33
19.25	0.13	0.82	0.15*	1.31	0.00	1.31
19.30	0.13	0.82	0.15*	1.30	0.00	1.30
19.35	0.13	0.82	0.15*	1.29	0.00	1.29
19.40	0.13	0.82	0.15*	1.28	0.00	1.28
19.45	0.13	0.82	0.15*	1.27	0.00	1.27
19.50	0.13	0.82	0.15*	1.26	0.00	1.26
19.55	0.13	0.82	0.15*	1.25	0.00	1.25
19.60	0.13	0.82	0.15*	1.24	0.00	1.24
19.65	0.13	0.82	0.15*	1.23	0.00	1.23
19.70	0.13	0.83	0.15*	1.22	0.00	1.22
19.75	0.13	0.83	0.15*	1.20	0.00	1.20
19.80	0.13	0.83	0.15*	1.19	0.00	1.19
19.85	0.13	0.83	0.15*	1.18	0.00	1.18
19.90	0.13	0.83	0.15*	1.17	0.00	1.17
19.95	0.13	0.83	0.15*	1.16	0.00	1.16
20.00	0.13	0.83	0.15*	1.15	0.00	1.15
20.05	0.13	0.83	0.15*	1.14	0.00	1.14
20.10	0.12	0.83	0.15*	1.13	0.00	1.13
20.15	0.12	0.83	0.15*	1.12	0.00	1.12
20.20	0.12	0.83	0.15*	1.10	0.00	1.10
20.25	0.12	0.83	0.15*	1.09	0.00	1.09
20.30	0.12	0.83	0.15*	1.08	0.00	1.08
20.35	0.12	0.83	0.15*	1.07	0.00	1.07
20.40	0.12	0.83	0.15*	1.06	0.00	1.06
20.45	0.12	0.83	0.15*	1.05	0.00	1.05
20.50	0.12	0.83	0.15*	1.04	0.00	1.04
20.55	0.12	0.83	0.15*	1.03	0.00	1.03
20.60	0.12	0.83	0.15*	1.02	0.00	1.02
20.65	0.12	0.83	0.15*	1.01	0.00	1.01
20.70	0.12	0.83	0.15*	0.99	0.00	0.99
20.75	0.12	0.83	0.15*	0.98	0.00	0.98
20.80	0.12	0.83	0.15*	0.97	0.00	0.97
20.85	0.12	0.83	0.15*	0.96	0.00	0.96
20.90	0.12	0.83	0.15*	0.95	0.00	0.95
20.95	0.12	0.83	0.15*	0.94	0.00	0.94
21.00	0.12	0.84	0.15*	0.93	0.00	0.93
21.05	0.12	0.84	0.15*	0.92	0.00	0.92
21.10	0.12	0.84	0.15*	0.90	0.00	0.90
21.15	0.12	0.84	0.15*	0.89	0.00	0.89
21.20	0.12	0.84	0.15*	0.88	0.00	0.88
21.25	0.12	0.84	0.15*	0.87	0.00	0.87
21.30	0.12	0.84	0.15*	0.86	0.00	0.86
21.35	0.12	0.84	0.15*	0.85	0.00	0.85
21.40	0.12	0.84	0.15*	0.84	0.00	0.84
21.45	0.12	0.84	0.15*	0.83	0.00	0.83
21.50	0.12	0.84	0.15*	0.82	0.00	0.82
21.55	0.12	0.84	0.15*	0.80	0.00	0.80
21.60	0.12	0.84	0.15*	0.79	0.00	0.79
21.65	0.12	0.84	0.15*	0.78	0.00	0.78
21.70	0.12	0.84	0.15*	0.77	0.00	0.77
21.75	0.12	0.84	0.15*	0.76	0.00	0.76
21.80	0.12	0.84	0.15*	0.75	0.00	0.75
21.85	0.12	0.84	0.15*	0.74	0.00	0.74
21.90	0.12	0.84	0.15*	0.73	0.00	0.73
21.95	0.12	0.84	0.15*	0.71	0.00	0.71
22.00	0.22	0.84	0.26*	0.70	0.00	0.70
22.05	0.22	0.84	0.26*	0.70	0.00	0.70
22.10	0.22	0.84	0.26*	0.69	0.00	0.69
22.15	0.22	0.84	0.26*	0.68	0.00	0.68

22.20	0.22	0.84	0.26*	0.68	0.00	0.68
22.25	0.22	0.84	0.26*	0.67	0.00	0.67
22.30	0.22	0.84	0.26*	0.66	0.00	0.66
22.35	0.22	0.84	0.26*	0.66	0.00	0.66
22.40	0.22	0.84	0.26*	0.65	0.00	0.65
22.45	0.22	0.84	0.26*	0.64	0.00	0.64
22.50	0.22	0.84	0.26*	0.64	0.00	0.64
22.55	0.22	0.85	0.26*	0.63	0.00	0.63
22.60	0.22	0.85	0.26*	0.62	0.00	0.62
22.65	0.22	0.85	0.26*	0.62	0.00	0.62
22.70	0.22	0.85	0.26*	0.61	0.00	0.61
22.75	0.22	0.85	0.26*	0.60	0.00	0.60
22.80	0.22	0.85	0.25*	0.60	0.00	0.60
22.85	0.22	0.85	0.25*	0.59	0.00	0.59
22.90	0.22	0.85	0.25*	0.58	0.00	0.58
22.95	0.21	0.85	0.25*	0.57	0.00	0.57
23.00	0.21	0.85	0.25*	0.57	0.00	0.57
23.05	0.21	0.85	0.25*	0.56	0.00	0.56
23.10	0.21	0.85	0.25*	0.55	0.00	0.55
23.15	0.21	0.85	0.25*	0.55	0.00	0.55
23.20	0.21	0.85	0.25*	0.54	0.00	0.54
23.25	0.21	0.85	0.25*	0.53	0.00	0.53
23.30	0.21	0.85	0.25*	0.53	0.00	0.53
23.35	0.21	0.85	0.25*	0.52	0.00	0.52
23.40	0.21	0.85	0.25*	0.51	0.00	0.51
23.45	0.21	0.85	0.25*	0.51	0.00	0.51
23.50	0.21	0.85	0.25*	0.50	0.00	0.50
23.55	0.21	0.85	0.25*	0.49	0.00	0.49
23.60	0.21	0.85	0.25*	0.49	0.00	0.49
23.65	0.21	0.85	0.25*	0.48	0.00	0.48
23.70	0.21	0.85	0.25*	0.47	0.00	0.47
23.75	0.21	0.85	0.25*	0.46	0.00	0.46
23.80	0.21	0.85	0.25*	0.46	0.00	0.46
23.85	0.21	0.85	0.25*	0.45	0.00	0.45
23.90	0.21	0.85	0.25*	0.44	0.00	0.44
23.95	0.21	0.85	0.25*	0.44	0.00	0.44
24.00	0.21	0.85	0.25*	0.43	0.00	0.43
24.05	0.21	0.85	0.25*	0.42	0.00	0.42
24.10	0.21	0.85	0.25*	0.42	0.00	0.42
24.15	0.21	0.85	0.25*	0.41	0.00	0.41
24.20	0.21	0.85	0.25*	0.40	0.00	0.40
24.25	0.21	0.85	0.25*	0.39	0.00	0.39
24.30	0.21	0.85	0.24*	0.39	0.00	0.39
24.35	0.21	0.85	0.24*	0.38	0.00	0.38
24.40	0.21	0.85	0.24*	0.37	0.00	0.37
24.45	0.21	0.85	0.24*	0.37	0.00	0.37
24.50	0.21	0.85	0.24*	0.36	0.00	0.36
24.55	0.21	0.85	0.24*	0.35	0.00	0.35
24.60	0.21	0.85	0.24*	0.35	0.00	0.35
24.65	0.21	0.85	0.24*	0.34	0.00	0.34
24.70	0.21	0.85	0.24*	0.33	0.00	0.33
24.75	0.21	0.85	0.24*	0.32	0.00	0.32
24.80	0.21	0.86	0.24*	0.32	0.00	0.32
24.85	0.21	0.86	0.24*	0.31	0.00	0.31
24.90	0.21	0.86	0.24*	0.30	0.00	0.30
24.95	0.21	0.86	0.24*	0.30	0.00	0.30
25.00	0.21	0.86	0.24*	0.29	0.00	0.29
25.05	0.21	0.86	0.24*	0.28	0.00	0.28
25.10	0.21	0.86	0.24*	0.27	0.00	0.27
25.15	0.21	0.86	0.24*	0.27	0.00	0.27
25.20	0.21	0.86	0.24*	0.26	0.00	0.26
25.25	0.21	0.86	0.24*	0.25	0.00	0.25
25.30	0.20	0.86	0.24*	0.25	0.00	0.25
25.35	0.20	0.86	0.24*	0.24	0.00	0.24
25.40	0.20	0.86	0.24*	0.23	0.00	0.23
25.45	0.20	0.86	0.24*	0.22	0.00	0.22
25.50	0.20	0.86	0.24*	0.22	0.00	0.22
25.55	0.20	0.86	0.24*	0.21	0.00	0.21
25.60	0.20	0.86	0.24*	0.20	0.00	0.20
25.65	0.20	0.86	0.24*	0.20	0.00	0.20
25.70	0.20	0.86	0.24*	0.19	0.00	0.19
25.75	0.20	0.86	0.24*	0.18	0.00	0.18
25.80	0.20	0.86	0.24*	0.17	0.00	0.17
25.85	0.20	0.86	0.24*	0.17	0.00	0.17
25.90	0.20	0.86	0.24*	0.16	0.00	0.16

25.95	0.20	0.86	0.24*	0.15	0.00	0.15
26.00	0.20	0.86	0.24*	0.15	0.00	0.15
26.05	0.20	0.86	0.24*	0.14	0.00	0.14
26.10	0.20	0.86	0.23*	0.13	0.00	0.13
26.15	0.20	0.86	0.23*	0.12	0.00	0.12
26.20	0.20	0.86	0.23*	0.12	0.00	0.12
26.25	0.20	0.86	0.23*	0.11	0.00	0.11
26.30	0.20	0.86	0.23*	0.10	0.00	0.10
26.35	0.20	0.86	0.23*	0.09	0.00	0.09
26.40	0.20	0.86	0.23*	0.09	0.00	0.09
26.45	0.20	0.86	0.23*	0.08	0.00	0.08
26.50	0.20	0.86	0.23*	0.07	0.00	0.07
26.55	0.20	0.86	0.23*	0.07	0.00	0.07
26.60	0.20	0.86	0.23*	0.06	0.00	0.06
26.65	0.20	0.86	0.23*	0.05	0.00	0.05
26.70	0.20	0.86	0.23*	0.04	0.00	0.04
26.75	0.20	0.86	0.23*	0.04	0.00	0.04
26.80	0.20	0.86	0.23*	0.03	0.00	0.03
26.85	0.20	0.86	0.23*	0.02	0.00	0.02
26.90	0.20	0.86	0.23*	0.01	0.00	0.01
26.95	0.20	0.86	0.23*	0.01	0.00	0.01
27.00	1.45	0.86	1.68	0.00	0.00	0.00
27.05	2.00	0.86	5.00	0.00	0.00	0.00
27.10	2.00	0.86	5.00	0.00	0.00	0.00
27.15	2.00	0.86	5.00	0.00	0.00	0.00
27.20	2.00	0.86	5.00	0.00	0.00	0.00
27.25	2.00	0.86	5.00	0.00	0.00	0.00
27.30	2.00	0.86	5.00	0.00	0.00	0.00
27.35	2.00	0.86	5.00	0.00	0.00	0.00
27.40	2.00	0.86	5.00	0.00	0.00	0.00
27.45	2.00	0.87	5.00	0.00	0.00	0.00
27.50	2.00	0.87	5.00	0.00	0.00	0.00
27.55	2.00	0.87	5.00	0.00	0.00	0.00
27.60	2.00	0.87	5.00	0.00	0.00	0.00
27.65	2.00	0.87	5.00	0.00	0.00	0.00
27.70	2.00	0.87	5.00	0.00	0.00	0.00
27.75	2.00	0.87	5.00	0.00	0.00	0.00
27.80	2.00	0.87	5.00	0.00	0.00	0.00
27.85	2.00	0.87	5.00	0.00	0.00	0.00
27.90	2.00	0.87	5.00	0.00	0.00	0.00
27.95	2.00	0.87	5.00	0.00	0.00	0.00
28.00	2.00	0.87	5.00	0.00	0.00	0.00
28.05	2.00	0.87	5.00	0.00	0.00	0.00
28.10	2.00	0.87	5.00	0.00	0.00	0.00
28.15	2.00	0.87	5.00	0.00	0.00	0.00
28.20	2.00	0.87	5.00	0.00	0.00	0.00
28.25	2.00	0.87	5.00	0.00	0.00	0.00
28.30	2.00	0.87	5.00	0.00	0.00	0.00
28.35	2.00	0.87	5.00	0.00	0.00	0.00
28.40	2.00	0.87	5.00	0.00	0.00	0.00
28.45	2.00	0.87	5.00	0.00	0.00	0.00
28.50	2.00	0.87	5.00	0.00	0.00	0.00
28.55	2.00	0.87	5.00	0.00	0.00	0.00
28.60	2.00	0.87	5.00	0.00	0.00	0.00
28.65	2.00	0.87	5.00	0.00	0.00	0.00
28.70	2.00	0.87	5.00	0.00	0.00	0.00
28.75	2.00	0.87	5.00	0.00	0.00	0.00
28.80	2.00	0.87	5.00	0.00	0.00	0.00
28.85	2.00	0.87	5.00	0.00	0.00	0.00
28.90	2.00	0.87	5.00	0.00	0.00	0.00
28.95	2.00	0.87	5.00	0.00	0.00	0.00
29.00	2.00	0.87	5.00	0.00	0.00	0.00
29.05	2.00	0.87	5.00	0.00	0.00	0.00
29.10	2.00	0.87	5.00	0.00	0.00	0.00
29.15	2.00	0.87	5.00	0.00	0.00	0.00
29.20	2.00	0.87	5.00	0.00	0.00	0.00
29.25	2.00	0.88	5.00	0.00	0.00	0.00
29.30	2.00	0.88	5.00	0.00	0.00	0.00
29.35	2.00	0.88	5.00	0.00	0.00	0.00
29.40	2.00	0.88	5.00	0.00	0.00	0.00
29.45	2.00	0.88	5.00	0.00	0.00	0.00
29.50	2.00	0.88	5.00	0.00	0.00	0.00
29.55	2.00	0.88	5.00	0.00	0.00	0.00
29.60	2.00	0.88	5.00	0.00	0.00	0.00
29.65	2.00	0.88	5.00	0.00	0.00	0.00

29.70	2.00	0.88	5.00	0.00	0.00	0.00
29.75	2.00	0.88	5.00	0.00	0.00	0.00
29.80	2.00	0.88	5.00	0.00	0.00	0.00
29.85	2.00	0.88	5.00	0.00	0.00	0.00
29.90	2.00	0.88	5.00	0.00	0.00	0.00
29.95	2.00	0.88	5.00	0.00	0.00	0.00
30.00	2.00	0.88	5.00	0.00	0.00	0.00
30.05	2.00	0.88	5.00	0.00	0.00	0.00
30.10	2.00	0.88	5.00	0.00	0.00	0.00
30.15	2.00	0.88	5.00	0.00	0.00	0.00
30.20	2.00	0.88	5.00	0.00	0.00	0.00
30.25	2.00	0.88	5.00	0.00	0.00	0.00
30.30	2.00	0.88	5.00	0.00	0.00	0.00
30.35	2.00	0.88	5.00	0.00	0.00	0.00
30.40	2.00	0.88	5.00	0.00	0.00	0.00
30.45	2.00	0.88	5.00	0.00	0.00	0.00
30.50	2.00	0.88	5.00	0.00	0.00	0.00
30.55	2.00	0.88	5.00	0.00	0.00	0.00
30.60	2.00	0.88	5.00	0.00	0.00	0.00
30.65	2.00	0.88	5.00	0.00	0.00	0.00
30.70	2.00	0.88	5.00	0.00	0.00	0.00
30.75	2.00	0.88	5.00	0.00	0.00	0.00
30.80	2.00	0.88	5.00	0.00	0.00	0.00
30.85	2.00	0.88	5.00	0.00	0.00	0.00
30.90	2.00	0.88	5.00	0.00	0.00	0.00
30.95	2.00	0.88	5.00	0.00	0.00	0.00
31.00	2.00	0.88	5.00	0.00	0.00	0.00
31.05	2.00	0.88	5.00	0.00	0.00	0.00
31.10	2.00	0.88	5.00	0.00	0.00	0.00
31.15	2.00	0.88	5.00	0.00	0.00	0.00
31.20	2.00	0.88	5.00	0.00	0.00	0.00
31.25	2.00	0.88	5.00	0.00	0.00	0.00
31.30	2.00	0.88	5.00	0.00	0.00	0.00
31.35	2.00	0.88	5.00	0.00	0.00	0.00
31.40	2.00	0.88	5.00	0.00	0.00	0.00
31.45	2.00	0.88	5.00	0.00	0.00	0.00
31.50	2.00	0.88	5.00	0.00	0.00	0.00
31.55	2.00	0.88	5.00	0.00	0.00	0.00
31.60	2.00	0.88	5.00	0.00	0.00	0.00
31.65	2.00	0.88	5.00	0.00	0.00	0.00
31.70	2.00	0.88	5.00	0.00	0.00	0.00
31.75	2.00	0.88	5.00	0.00	0.00	0.00
31.80	2.00	0.88	5.00	0.00	0.00	0.00
31.85	2.00	0.88	5.00	0.00	0.00	0.00
31.90	2.00	0.88	5.00	0.00	0.00	0.00
31.95	2.00	0.88	5.00	0.00	0.00	0.00
32.00	2.00	0.88	5.00	0.00	0.00	0.00
32.05	2.00	0.88	5.00	0.00	0.00	0.00
32.10	2.00	0.88	5.00	0.00	0.00	0.00
32.15	2.00	0.88	5.00	0.00	0.00	0.00
32.20	2.00	0.87	5.00	0.00	0.00	0.00
32.25	2.00	0.87	5.00	0.00	0.00	0.00
32.30	2.00	0.87	5.00	0.00	0.00	0.00
32.35	2.00	0.87	5.00	0.00	0.00	0.00
32.40	2.00	0.87	5.00	0.00	0.00	0.00
32.45	2.00	0.87	5.00	0.00	0.00	0.00
32.50	2.00	0.87	5.00	0.00	0.00	0.00
32.55	2.00	0.87	5.00	0.00	0.00	0.00
32.60	2.00	0.87	5.00	0.00	0.00	0.00
32.65	2.00	0.87	5.00	0.00	0.00	0.00
32.70	2.00	0.87	5.00	0.00	0.00	0.00
32.75	2.00	0.87	5.00	0.00	0.00	0.00
32.80	2.00	0.87	5.00	0.00	0.00	0.00
32.85	2.00	0.87	5.00	0.00	0.00	0.00
32.90	2.00	0.87	5.00	0.00	0.00	0.00
32.95	2.00	0.87	5.00	0.00	0.00	0.00
33.00	2.00	0.87	5.00	0.00	0.00	0.00
33.05	2.00	0.87	5.00	0.00	0.00	0.00
33.10	2.00	0.87	5.00	0.00	0.00	0.00
33.15	2.00	0.87	5.00	0.00	0.00	0.00
33.20	2.00	0.87	5.00	0.00	0.00	0.00
33.25	2.00	0.87	5.00	0.00	0.00	0.00
33.30	2.00	0.87	5.00	0.00	0.00	0.00
33.35	2.00	0.87	5.00	0.00	0.00	0.00
33.40	2.00	0.87	5.00	0.00	0.00	0.00

33.45	2.00	0.87	5.00	0.00	0.00	0.00
33.50	2.00	0.87	5.00	0.00	0.00	0.00
33.55	2.00	0.87	5.00	0.00	0.00	0.00
33.60	2.00	0.87	5.00	0.00	0.00	0.00
33.65	2.00	0.87	5.00	0.00	0.00	0.00
33.70	2.00	0.87	5.00	0.00	0.00	0.00
33.75	2.00	0.87	5.00	0.00	0.00	0.00
33.80	2.00	0.87	5.00	0.00	0.00	0.00
33.85	2.00	0.87	5.00	0.00	0.00	0.00
33.90	2.00	0.87	5.00	0.00	0.00	0.00
33.95	2.00	0.87	5.00	0.00	0.00	0.00
34.00	2.00	0.87	5.00	0.00	0.00	0.00
34.05	2.00	0.87	5.00	0.00	0.00	0.00
34.10	2.00	0.87	5.00	0.00	0.00	0.00
34.15	2.00	0.87	5.00	0.00	0.00	0.00
34.20	2.00	0.87	5.00	0.00	0.00	0.00
34.25	2.00	0.87	5.00	0.00	0.00	0.00
34.30	2.00	0.87	5.00	0.00	0.00	0.00
34.35	2.00	0.87	5.00	0.00	0.00	0.00
34.40	2.00	0.87	5.00	0.00	0.00	0.00
34.45	2.00	0.87	5.00	0.00	0.00	0.00
34.50	2.00	0.87	5.00	0.00	0.00	0.00
34.55	2.00	0.87	5.00	0.00	0.00	0.00
34.60	2.00	0.87	5.00	0.00	0.00	0.00
34.65	2.00	0.87	5.00	0.00	0.00	0.00
34.70	2.00	0.87	5.00	0.00	0.00	0.00
34.75	2.00	0.87	5.00	0.00	0.00	0.00
34.80	2.00	0.87	5.00	0.00	0.00	0.00
34.85	2.00	0.87	5.00	0.00	0.00	0.00
34.90	2.00	0.87	5.00	0.00	0.00	0.00
34.95	2.00	0.87	5.00	0.00	0.00	0.00
35.00	2.00	0.87	5.00	0.00	0.00	0.00
35.05	2.00	0.87	5.00	0.00	0.00	0.00
35.10	2.00	0.87	5.00	0.00	0.00	0.00
35.15	2.00	0.87	5.00	0.00	0.00	0.00
35.20	2.00	0.87	5.00	0.00	0.00	0.00
35.25	2.00	0.87	5.00	0.00	0.00	0.00
35.30	2.00	0.87	5.00	0.00	0.00	0.00
35.35	2.00	0.87	5.00	0.00	0.00	0.00
35.40	2.00	0.86	5.00	0.00	0.00	0.00
35.45	2.00	0.86	5.00	0.00	0.00	0.00
35.50	2.00	0.86	5.00	0.00	0.00	0.00
35.55	2.00	0.86	5.00	0.00	0.00	0.00
35.60	2.00	0.86	5.00	0.00	0.00	0.00
35.65	2.00	0.86	5.00	0.00	0.00	0.00
35.70	2.00	0.86	5.00	0.00	0.00	0.00
35.75	2.00	0.86	5.00	0.00	0.00	0.00
35.80	2.00	0.86	5.00	0.00	0.00	0.00
35.85	2.00	0.86	5.00	0.00	0.00	0.00
35.90	2.00	0.86	5.00	0.00	0.00	0.00
35.95	2.00	0.86	5.00	0.00	0.00	0.00
36.00	2.00	0.86	5.00	0.00	0.00	0.00
36.05	2.00	0.86	5.00	0.00	0.00	0.00
36.10	2.00	0.86	5.00	0.00	0.00	0.00
36.15	2.00	0.86	5.00	0.00	0.00	0.00
36.20	2.00	0.86	5.00	0.00	0.00	0.00
36.25	2.00	0.86	5.00	0.00	0.00	0.00
36.30	2.00	0.86	5.00	0.00	0.00	0.00
36.35	2.00	0.86	5.00	0.00	0.00	0.00
36.40	2.00	0.86	5.00	0.00	0.00	0.00
36.45	2.00	0.86	5.00	0.00	0.00	0.00
36.50	2.00	0.86	5.00	0.00	0.00	0.00
36.55	2.00	0.86	5.00	0.00	0.00	0.00
36.60	2.00	0.86	5.00	0.00	0.00	0.00
36.65	2.00	0.86	5.00	0.00	0.00	0.00
36.70	2.00	0.86	5.00	0.00	0.00	0.00
36.75	2.00	0.86	5.00	0.00	0.00	0.00
36.80	2.00	0.86	5.00	0.00	0.00	0.00
36.85	2.00	0.86	5.00	0.00	0.00	0.00
36.90	2.00	0.86	5.00	0.00	0.00	0.00
36.95	2.00	0.86	5.00	0.00	0.00	0.00
37.00	2.00	0.86	5.00	0.00	0.00	0.00
37.05	2.00	0.86	5.00	0.00	0.00	0.00
37.10	2.00	0.86	5.00	0.00	0.00	0.00
37.15	2.00	0.86	5.00	0.00	0.00	0.00

37.20	2.00	0.86	5.00	0.00	0.00	0.00
37.25	2.00	0.86	5.00	0.00	0.00	0.00
37.30	2.00	0.86	5.00	0.00	0.00	0.00
37.35	2.00	0.86	5.00	0.00	0.00	0.00
37.40	2.00	0.86	5.00	0.00	0.00	0.00
37.45	2.00	0.86	5.00	0.00	0.00	0.00
37.50	2.00	0.86	5.00	0.00	0.00	0.00
37.55	2.00	0.86	5.00	0.00	0.00	0.00
37.60	2.00	0.86	5.00	0.00	0.00	0.00
37.65	2.00	0.86	5.00	0.00	0.00	0.00
37.70	2.00	0.86	5.00	0.00	0.00	0.00
37.75	2.00	0.86	5.00	0.00	0.00	0.00
37.80	2.00	0.86	5.00	0.00	0.00	0.00
37.85	2.00	0.86	5.00	0.00	0.00	0.00
37.90	2.00	0.86	5.00	0.00	0.00	0.00
37.95	2.00	0.86	5.00	0.00	0.00	0.00
38.00	2.00	0.86	5.00	0.00	0.00	0.00
38.05	2.00	0.85	5.00	0.00	0.00	0.00
38.10	2.00	0.85	5.00	0.00	0.00	0.00
38.15	2.00	0.85	5.00	0.00	0.00	0.00
38.20	2.00	0.85	5.00	0.00	0.00	0.00
38.25	2.00	0.85	5.00	0.00	0.00	0.00
38.30	2.00	0.85	5.00	0.00	0.00	0.00
38.35	2.00	0.85	5.00	0.00	0.00	0.00
38.40	2.00	0.85	5.00	0.00	0.00	0.00
38.45	2.00	0.85	5.00	0.00	0.00	0.00
38.50	2.00	0.85	5.00	0.00	0.00	0.00
38.55	2.00	0.85	5.00	0.00	0.00	0.00
38.60	2.00	0.85	5.00	0.00	0.00	0.00
38.65	2.00	0.85	5.00	0.00	0.00	0.00
38.70	2.00	0.85	5.00	0.00	0.00	0.00
38.75	2.00	0.85	5.00	0.00	0.00	0.00
38.80	2.00	0.85	5.00	0.00	0.00	0.00
38.85	2.00	0.85	5.00	0.00	0.00	0.00
38.90	2.00	0.85	5.00	0.00	0.00	0.00
38.95	2.00	0.85	5.00	0.00	0.00	0.00
39.00	2.00	0.85	5.00	0.00	0.00	0.00
39.05	2.00	0.85	5.00	0.00	0.00	0.00
39.10	2.00	0.85	5.00	0.00	0.00	0.00
39.15	2.00	0.85	5.00	0.00	0.00	0.00
39.20	2.00	0.85	5.00	0.00	0.00	0.00
39.25	2.00	0.85	5.00	0.00	0.00	0.00
39.30	2.00	0.85	5.00	0.00	0.00	0.00
39.35	2.00	0.85	5.00	0.00	0.00	0.00
39.40	2.00	0.85	5.00	0.00	0.00	0.00
39.45	2.00	0.85	5.00	0.00	0.00	0.00
39.50	2.00	0.85	5.00	0.00	0.00	0.00
39.55	2.00	0.85	5.00	0.00	0.00	0.00
39.60	2.00	0.85	5.00	0.00	0.00	0.00
39.65	2.00	0.85	5.00	0.00	0.00	0.00
39.70	2.00	0.85	5.00	0.00	0.00	0.00
39.75	2.00	0.85	5.00	0.00	0.00	0.00
39.80	2.00	0.85	5.00	0.00	0.00	0.00
39.85	2.00	0.85	5.00	0.00	0.00	0.00
39.90	2.00	0.85	5.00	0.00	0.00	0.00
39.95	2.00	0.85	5.00	0.00	0.00	0.00
40.00	2.00	0.85	5.00	0.00	0.00	0.00
40.05	2.00	0.85	5.00	0.00	0.00	0.00
40.10	2.00	0.85	5.00	0.00	0.00	0.00
40.15	2.00	0.85	5.00	0.00	0.00	0.00
40.20	2.00	0.85	5.00	0.00	0.00	0.00
40.25	2.00	0.85	5.00	0.00	0.00	0.00
40.30	2.00	0.84	5.00	0.00	0.00	0.00
40.35	2.00	0.84	5.00	0.00	0.00	0.00
40.40	2.00	0.84	5.00	0.00	0.00	0.00
40.45	2.00	0.84	5.00	0.00	0.00	0.00
40.50	2.00	0.84	5.00	0.00	0.00	0.00
40.55	2.00	0.84	5.00	0.00	0.00	0.00
40.60	2.00	0.84	5.00	0.00	0.00	0.00
40.65	2.00	0.84	5.00	0.00	0.00	0.00
40.70	2.00	0.84	5.00	0.00	0.00	0.00
40.75	2.00	0.84	5.00	0.00	0.00	0.00
40.80	2.00	0.84	5.00	0.00	0.00	0.00
40.85	2.00	0.84	5.00	0.00	0.00	0.00
40.90	2.00	0.84	5.00	0.00	0.00	0.00

40.95	2.00	0.84	5.00	0.00	0.00	0.00
41.00	2.00	0.84	5.00	0.00	0.00	0.00
41.05	2.00	0.84	5.00	0.00	0.00	0.00
41.10	2.00	0.84	5.00	0.00	0.00	0.00
41.15	2.00	0.84	5.00	0.00	0.00	0.00
41.20	2.00	0.84	5.00	0.00	0.00	0.00
41.25	2.00	0.84	5.00	0.00	0.00	0.00
41.30	2.00	0.84	5.00	0.00	0.00	0.00
41.35	2.00	0.84	5.00	0.00	0.00	0.00
41.40	2.00	0.84	5.00	0.00	0.00	0.00
41.45	2.00	0.84	5.00	0.00	0.00	0.00
41.50	2.00	0.84	5.00	0.00	0.00	0.00
41.55	2.00	0.84	5.00	0.00	0.00	0.00
41.60	2.00	0.84	5.00	0.00	0.00	0.00
41.65	2.00	0.84	5.00	0.00	0.00	0.00
41.70	2.00	0.84	5.00	0.00	0.00	0.00
41.75	2.00	0.84	5.00	0.00	0.00	0.00
41.80	2.00	0.84	5.00	0.00	0.00	0.00
41.85	2.00	0.84	5.00	0.00	0.00	0.00
41.90	2.00	0.84	5.00	0.00	0.00	0.00
41.95	2.00	0.84	5.00	0.00	0.00	0.00
42.00	2.00	0.84	5.00	0.00	0.00	0.00
42.05	2.00	0.84	5.00	0.00	0.00	0.00
42.10	2.00	0.84	5.00	0.00	0.00	0.00
42.15	2.00	0.83	5.00	0.00	0.00	0.00
42.20	2.00	0.83	5.00	0.00	0.00	0.00
42.25	2.00	0.83	5.00	0.00	0.00	0.00
42.30	2.00	0.83	5.00	0.00	0.00	0.00
42.35	2.00	0.83	5.00	0.00	0.00	0.00
42.40	2.00	0.83	5.00	0.00	0.00	0.00
42.45	2.00	0.83	5.00	0.00	0.00	0.00
42.50	2.00	0.83	5.00	0.00	0.00	0.00
42.55	2.00	0.83	5.00	0.00	0.00	0.00
42.60	2.00	0.83	5.00	0.00	0.00	0.00
42.65	2.00	0.83	5.00	0.00	0.00	0.00
42.70	2.00	0.83	5.00	0.00	0.00	0.00
42.75	2.00	0.83	5.00	0.00	0.00	0.00
42.80	2.00	0.83	5.00	0.00	0.00	0.00
42.85	2.00	0.83	5.00	0.00	0.00	0.00
42.90	2.00	0.83	5.00	0.00	0.00	0.00
42.95	2.00	0.83	5.00	0.00	0.00	0.00
43.00	2.00	0.83	5.00	0.00	0.00	0.00
43.05	2.00	0.83	5.00	0.00	0.00	0.00
43.10	2.00	0.83	5.00	0.00	0.00	0.00
43.15	2.00	0.83	5.00	0.00	0.00	0.00
43.20	2.00	0.83	5.00	0.00	0.00	0.00
43.25	2.00	0.83	5.00	0.00	0.00	0.00
43.30	2.00	0.83	5.00	0.00	0.00	0.00
43.35	2.00	0.83	5.00	0.00	0.00	0.00
43.40	2.00	0.83	5.00	0.00	0.00	0.00
43.45	2.00	0.83	5.00	0.00	0.00	0.00
43.50	2.00	0.83	5.00	0.00	0.00	0.00
43.55	2.00	0.83	5.00	0.00	0.00	0.00
43.60	2.00	0.83	5.00	0.00	0.00	0.00
43.65	2.00	0.83	5.00	0.00	0.00	0.00
43.70	2.00	0.83	5.00	0.00	0.00	0.00
43.75	2.00	0.82	5.00	0.00	0.00	0.00
43.80	2.00	0.82	5.00	0.00	0.00	0.00
43.85	2.00	0.82	5.00	0.00	0.00	0.00
43.90	2.00	0.82	5.00	0.00	0.00	0.00
43.95	2.00	0.82	5.00	0.00	0.00	0.00
44.00	2.00	0.82	5.00	0.00	0.00	0.00
44.05	2.00	0.82	5.00	0.00	0.00	0.00
44.10	2.00	0.82	5.00	0.00	0.00	0.00
44.15	2.00	0.82	5.00	0.00	0.00	0.00
44.20	2.00	0.82	5.00	0.00	0.00	0.00
44.25	2.00	0.82	5.00	0.00	0.00	0.00
44.30	2.00	0.82	5.00	0.00	0.00	0.00
44.35	2.00	0.82	5.00	0.00	0.00	0.00
44.40	2.00	0.82	5.00	0.00	0.00	0.00
44.45	2.00	0.82	5.00	0.00	0.00	0.00
44.50	2.00	0.82	5.00	0.00	0.00	0.00
44.55	2.00	0.82	5.00	0.00	0.00	0.00
44.60	2.00	0.82	5.00	0.00	0.00	0.00
44.65	2.00	0.82	5.00	0.00	0.00	0.00

44.70	2.00	0.82	5.00	0.00	0.00	0.00
44.75	2.00	0.82	5.00	0.00	0.00	0.00
44.80	2.00	0.82	5.00	0.00	0.00	0.00
44.85	2.00	0.82	5.00	0.00	0.00	0.00
44.90	2.00	0.82	5.00	0.00	0.00	0.00
44.95	2.00	0.82	5.00	0.00	0.00	0.00
45.00	2.00	0.82	5.00	0.00	0.00	0.00
45.05	2.00	0.82	5.00	0.00	0.00	0.00
45.10	2.00	0.82	5.00	0.00	0.00	0.00
45.15	2.00	0.82	5.00	0.00	0.00	0.00
45.20	2.00	0.81	5.00	0.00	0.00	0.00
45.25	2.00	0.81	5.00	0.00	0.00	0.00
45.30	2.00	0.81	5.00	0.00	0.00	0.00
45.35	2.00	0.81	5.00	0.00	0.00	0.00
45.40	2.00	0.81	5.00	0.00	0.00	0.00
45.45	2.00	0.81	5.00	0.00	0.00	0.00
45.50	2.00	0.81	5.00	0.00	0.00	0.00
45.55	2.00	0.81	5.00	0.00	0.00	0.00
45.60	2.00	0.81	5.00	0.00	0.00	0.00
45.65	2.00	0.81	5.00	0.00	0.00	0.00
45.70	2.00	0.81	5.00	0.00	0.00	0.00
45.75	2.00	0.81	5.00	0.00	0.00	0.00
45.80	2.00	0.81	5.00	0.00	0.00	0.00
45.85	2.00	0.81	5.00	0.00	0.00	0.00
45.90	2.00	0.81	5.00	0.00	0.00	0.00
45.95	2.00	0.81	5.00	0.00	0.00	0.00
46.00	2.00	0.81	5.00	0.00	0.00	0.00
46.05	2.00	0.81	5.00	0.00	0.00	0.00
46.10	2.00	0.81	5.00	0.00	0.00	0.00
46.15	2.00	0.81	5.00	0.00	0.00	0.00
46.20	2.00	0.81	5.00	0.00	0.00	0.00
46.25	2.00	0.81	5.00	0.00	0.00	0.00
46.30	2.00	0.81	5.00	0.00	0.00	0.00
46.35	2.00	0.81	5.00	0.00	0.00	0.00
46.40	2.00	0.81	5.00	0.00	0.00	0.00
46.45	2.00	0.81	5.00	0.00	0.00	0.00
46.50	2.00	0.81	5.00	0.00	0.00	0.00
46.55	2.00	0.81	5.00	0.00	0.00	0.00
46.60	2.00	0.81	5.00	0.00	0.00	0.00
46.65	2.00	0.80	5.00	0.00	0.00	0.00
46.70	2.00	0.80	5.00	0.00	0.00	0.00
46.75	2.00	0.80	5.00	0.00	0.00	0.00
46.80	2.00	0.80	5.00	0.00	0.00	0.00
46.85	2.00	0.80	5.00	0.00	0.00	0.00
46.90	2.00	0.80	5.00	0.00	0.00	0.00
46.95	2.00	0.80	5.00	0.00	0.00	0.00
47.00	2.00	0.80	5.00	0.00	0.00	0.00
47.05	2.00	0.80	5.00	0.00	0.00	0.00
47.10	2.00	0.80	5.00	0.00	0.00	0.00
47.15	2.00	0.80	5.00	0.00	0.00	0.00
47.20	2.00	0.80	5.00	0.00	0.00	0.00
47.25	2.00	0.80	5.00	0.00	0.00	0.00
47.30	2.00	0.80	5.00	0.00	0.00	0.00
47.35	2.00	0.80	5.00	0.00	0.00	0.00
47.40	2.00	0.80	5.00	0.00	0.00	0.00
47.45	2.00	0.80	5.00	0.00	0.00	0.00
47.50	2.00	0.80	5.00	0.00	0.00	0.00
47.55	2.00	0.80	5.00	0.00	0.00	0.00
47.60	2.00	0.80	5.00	0.00	0.00	0.00
47.65	2.00	0.80	5.00	0.00	0.00	0.00
47.70	2.00	0.80	5.00	0.00	0.00	0.00
47.75	2.00	0.80	5.00	0.00	0.00	0.00
47.80	2.00	0.80	5.00	0.00	0.00	0.00
47.85	2.00	0.80	5.00	0.00	0.00	0.00
47.90	2.00	0.80	5.00	0.00	0.00	0.00
47.95	2.00	0.80	5.00	0.00	0.00	0.00
48.00	2.00	0.80	5.00	0.00	0.00	0.00
48.05	2.00	0.80	5.00	0.00	0.00	0.00
48.10	2.00	0.80	5.00	0.00	0.00	0.00
48.15	2.00	0.80	5.00	0.00	0.00	0.00
48.20	2.00	0.79	5.00	0.00	0.00	0.00
48.25	2.00	0.79	5.00	0.00	0.00	0.00
48.30	2.00	0.79	5.00	0.00	0.00	0.00
48.35	2.00	0.79	5.00	0.00	0.00	0.00
48.40	2.00	0.79	5.00	0.00	0.00	0.00

48.45	2.00	0.79	5.00	0.00	0.00	0.00
48.50	2.00	0.79	5.00	0.00	0.00	0.00
48.55	2.00	0.79	5.00	0.00	0.00	0.00
48.60	2.00	0.79	5.00	0.00	0.00	0.00
48.65	2.00	0.79	5.00	0.00	0.00	0.00
48.70	2.00	0.79	5.00	0.00	0.00	0.00
48.75	2.00	0.79	5.00	0.00	0.00	0.00
48.80	2.00	0.79	5.00	0.00	0.00	0.00
48.85	2.00	0.79	5.00	0.00	0.00	0.00
48.90	2.00	0.79	5.00	0.00	0.00	0.00
48.95	2.00	0.79	5.00	0.00	0.00	0.00
49.00	2.00	0.79	5.00	0.00	0.00	0.00
49.05	2.00	0.79	5.00	0.00	0.00	0.00
49.10	2.00	0.79	5.00	0.00	0.00	0.00
49.15	2.00	0.79	5.00	0.00	0.00	0.00
49.20	2.00	0.79	5.00	0.00	0.00	0.00
49.25	2.00	0.79	5.00	0.00	0.00	0.00
49.30	2.00	0.79	5.00	0.00	0.00	0.00
49.35	2.00	0.79	5.00	0.00	0.00	0.00
49.40	2.00	0.79	5.00	0.00	0.00	0.00
49.45	2.00	0.79	5.00	0.00	0.00	0.00
49.50	2.00	0.79	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.

1 atm (atmosphere) = 1 tsf (ton/ft2)

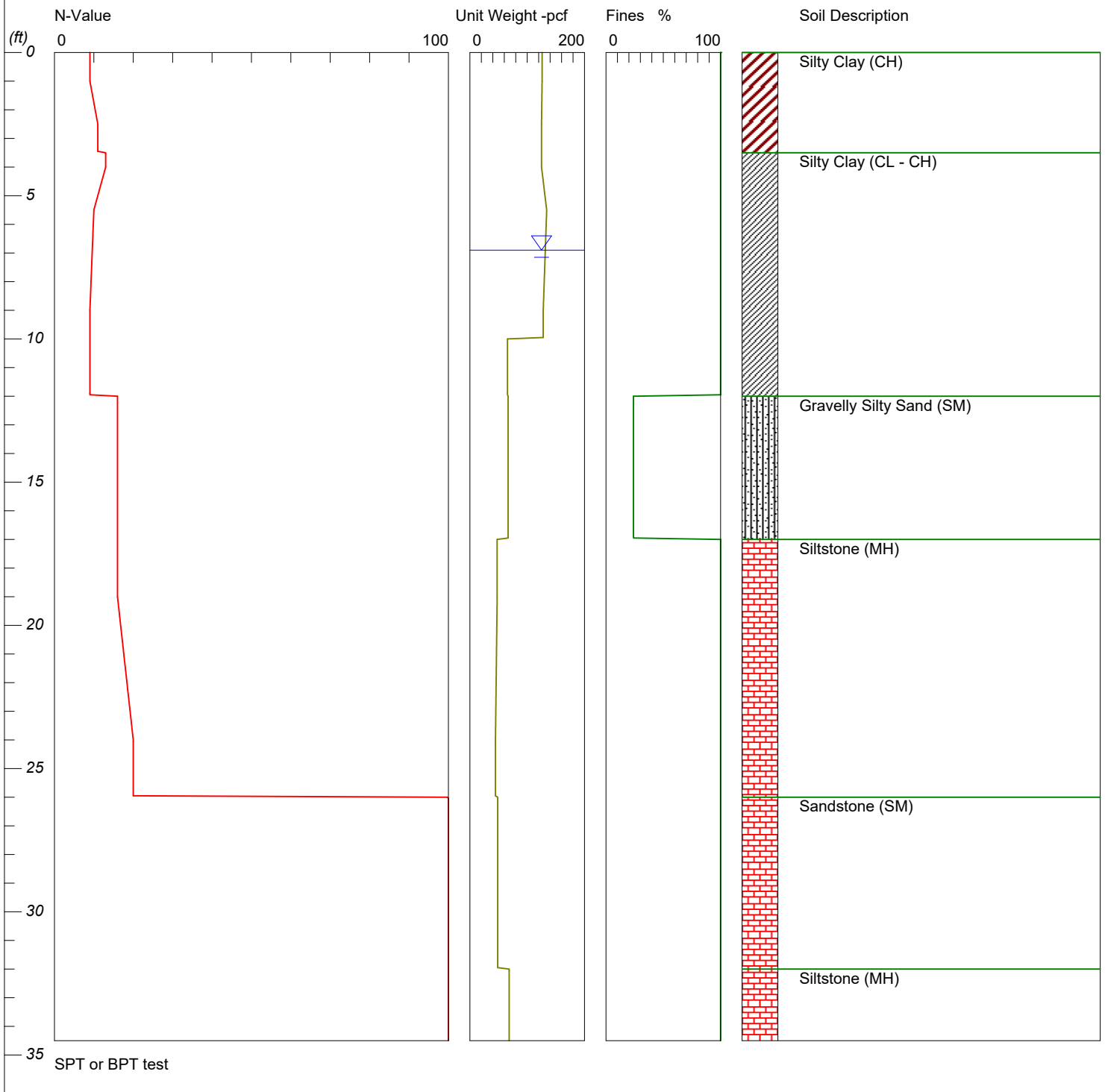
CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated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

LIQUEFACTION ANALYSIS

NEW 6TH GRADE CAMPUS PROJECT

Hole No.=EB-5 Water Depth=6.9 ft

Magnitude=8.50
Acceleration=0.674g



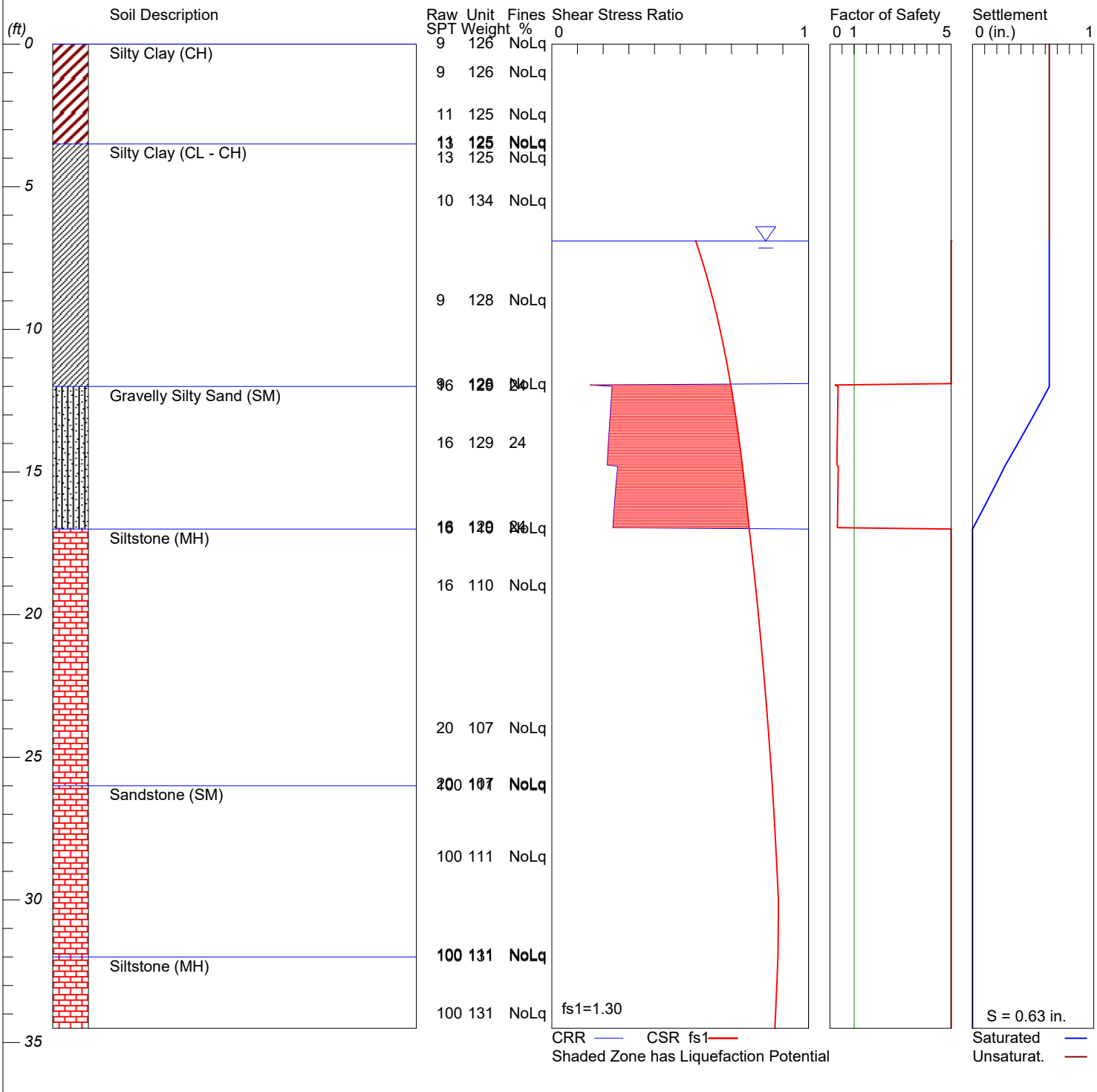
LiquefyPro CivilTech Software USA www.civiltech.com

LIQUEFACTION ANALYSIS

NEW 6TH GRADE CAMPUS PROJECT

Hole No.=EB-5 Water Depth=6.9 ft

Magnitude=8.50
Acceleration=0.674g



LiquefyPro CivilTech Software USA www.civiltech.com

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LIQUEFACTION ANALYSIS SUMMARY
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Input File Name: \\CCISERVER\Shared Folders\Rough Drafts\Grant Foster Rough Drafts\Liquefy Pro Data Files grant\1442.1 Golden West MS 6th Grade Campus, EB-5.liq
Title: NEW 6TH GRADE CAMPUS PROJECT
Subtitle: Golden West Middle School

Surface Elev.=
Hole No.=EB-5
Depth of Hole= 34.50 ft
Water Table during Earthquake= 6.90 ft
Water Table during In-Situ Testing= 10.00 ft
Max. Acceleration= 0.67 g
Earthquake Magnitude= 8.50

Input Data:
Surface Elev.=
Hole No.=EB-5
Depth of Hole=34.50 ft
Water Table during Earthquake= 6.90 ft
Water Table during In-Situ Testing= 10.00 ft
Max. Acceleration=0.67 g
Earthquake Magnitude=8.50
No-Liquefiable Soils: Based on Analysis

1. SPT or BPT Calculation.
2. Settlement Analysis Method: Tokimatsu, M-correction
3. Fines Correction for Liquefaction: Idriss/Seed
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
9. User request factor of safety (apply to CSR) , User= 1.3
   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	126.00	NoLiq
1.00	9.00	126.00	NoLiq
2.50	11.00	125.00	NoLiq
3.45	11.00	125.00	NoLiq
3.50	13.00	125.00	NoLiq
4.00	13.00	125.00	NoLiq
5.50	10.00	134.00	NoLiq
9.00	9.00	128.00	NoLiq
11.95	9.00	128.00	NoLiq
12.00	16.00	129.00	24.00
14.00	16.00	129.00	24.00
16.95	16.00	129.00	24.00
17.00	16.00	110.00	NoLiq
19.00	16.00	110.00	NoLiq
24.00	20.00	107.00	NoLiq
25.95	20.00	107.00	NoLiq
26.00	100.00	111.00	NoLiq
28.50	100.00	111.00	NoLiq
31.95	100.00	111.00	NoLiq
32.00	100.00	131.00	NoLiq
34.00	100.00	131.00	NoLiq

Output Results:
Settlement of Saturated Sands=0.63 in.

Settlement of Unsaturated Sands=0.00 in.
Total Settlement of Saturated and Unsaturated Sands=0.63 in.
Differential Settlement=0.317 to 0.418 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.00	2.00	0.57	5.00	0.63	0.00	0.63
0.05	2.00	0.57	5.00	0.63	0.00	0.63
0.10	2.00	0.57	5.00	0.63	0.00	0.63
0.15	2.00	0.57	5.00	0.63	0.00	0.63
0.20	2.00	0.57	5.00	0.63	0.00	0.63
0.25	2.00	0.57	5.00	0.63	0.00	0.63
0.30	2.00	0.57	5.00	0.63	0.00	0.63
0.35	2.00	0.57	5.00	0.63	0.00	0.63
0.40	2.00	0.57	5.00	0.63	0.00	0.63
0.45	2.00	0.57	5.00	0.63	0.00	0.63
0.50	2.00	0.57	5.00	0.63	0.00	0.63
0.55	2.00	0.57	5.00	0.63	0.00	0.63
0.60	2.00	0.57	5.00	0.63	0.00	0.63
0.65	2.00	0.57	5.00	0.63	0.00	0.63
0.70	2.00	0.57	5.00	0.63	0.00	0.63
0.75	2.00	0.57	5.00	0.63	0.00	0.63
0.80	2.00	0.57	5.00	0.63	0.00	0.63
0.85	2.00	0.57	5.00	0.63	0.00	0.63
0.90	2.00	0.57	5.00	0.63	0.00	0.63
0.95	2.00	0.57	5.00	0.63	0.00	0.63
1.00	2.00	0.57	5.00	0.63	0.00	0.63
1.05	2.00	0.57	5.00	0.63	0.00	0.63
1.10	2.00	0.57	5.00	0.63	0.00	0.63
1.15	2.00	0.57	5.00	0.63	0.00	0.63
1.20	2.00	0.57	5.00	0.63	0.00	0.63
1.25	2.00	0.57	5.00	0.63	0.00	0.63
1.30	2.00	0.57	5.00	0.63	0.00	0.63
1.35	2.00	0.57	5.00	0.63	0.00	0.63
1.40	2.00	0.57	5.00	0.63	0.00	0.63
1.45	2.00	0.57	5.00	0.63	0.00	0.63
1.50	2.00	0.57	5.00	0.63	0.00	0.63
1.55	2.00	0.57	5.00	0.63	0.00	0.63
1.60	2.00	0.57	5.00	0.63	0.00	0.63
1.65	2.00	0.57	5.00	0.63	0.00	0.63
1.70	2.00	0.57	5.00	0.63	0.00	0.63
1.75	2.00	0.57	5.00	0.63	0.00	0.63
1.80	2.00	0.57	5.00	0.63	0.00	0.63
1.85	2.00	0.57	5.00	0.63	0.00	0.63
1.90	2.00	0.57	5.00	0.63	0.00	0.63
1.95	2.00	0.57	5.00	0.63	0.00	0.63
2.00	2.00	0.57	5.00	0.63	0.00	0.63
2.05	2.00	0.57	5.00	0.63	0.00	0.63
2.10	2.00	0.57	5.00	0.63	0.00	0.63
2.15	2.00	0.57	5.00	0.63	0.00	0.63
2.20	2.00	0.57	5.00	0.63	0.00	0.63
2.25	2.00	0.57	5.00	0.63	0.00	0.63
2.30	2.00	0.57	5.00	0.63	0.00	0.63
2.35	2.00	0.57	5.00	0.63	0.00	0.63
2.40	2.00	0.57	5.00	0.63	0.00	0.63
2.45	2.00	0.57	5.00	0.63	0.00	0.63
2.50	2.00	0.57	5.00	0.63	0.00	0.63
2.55	2.00	0.57	5.00	0.63	0.00	0.63
2.60	2.00	0.57	5.00	0.63	0.00	0.63
2.65	2.00	0.57	5.00	0.63	0.00	0.63
2.70	2.00	0.57	5.00	0.63	0.00	0.63
2.75	2.00	0.57	5.00	0.63	0.00	0.63
2.80	2.00	0.57	5.00	0.63	0.00	0.63
2.85	2.00	0.57	5.00	0.63	0.00	0.63
2.90	2.00	0.57	5.00	0.63	0.00	0.63
2.95	2.00	0.57	5.00	0.63	0.00	0.63
3.00	2.00	0.57	5.00	0.63	0.00	0.63
3.05	2.00	0.57	5.00	0.63	0.00	0.63
3.10	2.00	0.57	5.00	0.63	0.00	0.63
3.15	2.00	0.57	5.00	0.63	0.00	0.63
3.20	2.00	0.57	5.00	0.63	0.00	0.63
3.25	2.00	0.57	5.00	0.63	0.00	0.63
3.30	2.00	0.57	5.00	0.63	0.00	0.63
3.35	2.00	0.57	5.00	0.63	0.00	0.63

3.40	2.00	0.57	5.00	0.63	0.00	0.63
3.45	2.00	0.56	5.00	0.63	0.00	0.63
3.50	2.00	0.56	5.00	0.63	0.00	0.63
3.55	2.00	0.56	5.00	0.63	0.00	0.63
3.60	2.00	0.56	5.00	0.63	0.00	0.63
3.65	2.00	0.56	5.00	0.63	0.00	0.63
3.70	2.00	0.56	5.00	0.63	0.00	0.63
3.75	2.00	0.56	5.00	0.63	0.00	0.63
3.80	2.00	0.56	5.00	0.63	0.00	0.63
3.85	2.00	0.56	5.00	0.63	0.00	0.63
3.90	2.00	0.56	5.00	0.63	0.00	0.63
3.95	2.00	0.56	5.00	0.63	0.00	0.63
4.00	2.00	0.56	5.00	0.63	0.00	0.63
4.05	2.00	0.56	5.00	0.63	0.00	0.63
4.10	2.00	0.56	5.00	0.63	0.00	0.63
4.15	2.00	0.56	5.00	0.63	0.00	0.63
4.20	2.00	0.56	5.00	0.63	0.00	0.63
4.25	2.00	0.56	5.00	0.63	0.00	0.63
4.30	2.00	0.56	5.00	0.63	0.00	0.63
4.35	2.00	0.56	5.00	0.63	0.00	0.63
4.40	2.00	0.56	5.00	0.63	0.00	0.63
4.45	2.00	0.56	5.00	0.63	0.00	0.63
4.50	2.00	0.56	5.00	0.63	0.00	0.63
4.55	2.00	0.56	5.00	0.63	0.00	0.63
4.60	2.00	0.56	5.00	0.63	0.00	0.63
4.65	2.00	0.56	5.00	0.63	0.00	0.63
4.70	2.00	0.56	5.00	0.63	0.00	0.63
4.75	2.00	0.56	5.00	0.63	0.00	0.63
4.80	2.00	0.56	5.00	0.63	0.00	0.63
4.85	2.00	0.56	5.00	0.63	0.00	0.63
4.90	2.00	0.56	5.00	0.63	0.00	0.63
4.95	2.00	0.56	5.00	0.63	0.00	0.63
5.00	2.00	0.56	5.00	0.63	0.00	0.63
5.05	2.00	0.56	5.00	0.63	0.00	0.63
5.10	2.00	0.56	5.00	0.63	0.00	0.63
5.15	2.00	0.56	5.00	0.63	0.00	0.63
5.20	2.00	0.56	5.00	0.63	0.00	0.63
5.25	2.00	0.56	5.00	0.63	0.00	0.63
5.30	2.00	0.56	5.00	0.63	0.00	0.63
5.35	2.00	0.56	5.00	0.63	0.00	0.63
5.40	2.00	0.56	5.00	0.63	0.00	0.63
5.45	2.00	0.56	5.00	0.63	0.00	0.63
5.50	2.00	0.56	5.00	0.63	0.00	0.63
5.55	2.00	0.56	5.00	0.63	0.00	0.63
5.60	2.00	0.56	5.00	0.63	0.00	0.63
5.65	2.00	0.56	5.00	0.63	0.00	0.63
5.70	2.00	0.56	5.00	0.63	0.00	0.63
5.75	2.00	0.56	5.00	0.63	0.00	0.63
5.80	2.00	0.56	5.00	0.63	0.00	0.63
5.85	2.00	0.56	5.00	0.63	0.00	0.63
5.90	2.00	0.56	5.00	0.63	0.00	0.63
5.95	2.00	0.56	5.00	0.63	0.00	0.63
6.00	2.00	0.56	5.00	0.63	0.00	0.63
6.05	2.00	0.56	5.00	0.63	0.00	0.63
6.10	2.00	0.56	5.00	0.63	0.00	0.63
6.15	2.00	0.56	5.00	0.63	0.00	0.63
6.20	2.00	0.56	5.00	0.63	0.00	0.63
6.25	2.00	0.56	5.00	0.63	0.00	0.63
6.30	2.00	0.56	5.00	0.63	0.00	0.63
6.35	2.00	0.56	5.00	0.63	0.00	0.63
6.40	2.00	0.56	5.00	0.63	0.00	0.63
6.45	2.00	0.56	5.00	0.63	0.00	0.63
6.50	2.00	0.56	5.00	0.63	0.00	0.63
6.55	2.00	0.56	5.00	0.63	0.00	0.63
6.60	2.00	0.56	5.00	0.63	0.00	0.63
6.65	2.00	0.56	5.00	0.63	0.00	0.63
6.70	2.00	0.56	5.00	0.63	0.00	0.63
6.75	2.00	0.56	5.00	0.63	0.00	0.63
6.80	2.00	0.56	5.00	0.63	0.00	0.63
6.85	2.00	0.56	5.00	0.63	0.00	0.63
6.90	2.00	0.56	5.00	0.63	0.00	0.63
6.95	2.00	0.56	5.00	0.63	0.00	0.63
7.00	2.00	0.56	5.00	0.63	0.00	0.63
7.05	2.00	0.57	5.00	0.63	0.00	0.63
7.10	2.00	0.57	5.00	0.63	0.00	0.63

7.15	2.00	0.57	5.00	0.63	0.00	0.63
7.20	2.00	0.57	5.00	0.63	0.00	0.63
7.25	2.00	0.57	5.00	0.63	0.00	0.63
7.30	2.00	0.58	5.00	0.63	0.00	0.63
7.35	2.00	0.58	5.00	0.63	0.00	0.63
7.40	2.00	0.58	5.00	0.63	0.00	0.63
7.45	2.00	0.58	5.00	0.63	0.00	0.63
7.50	2.00	0.58	5.00	0.63	0.00	0.63
7.55	2.00	0.58	5.00	0.63	0.00	0.63
7.60	2.00	0.59	5.00	0.63	0.00	0.63
7.65	2.00	0.59	5.00	0.63	0.00	0.63
7.70	2.00	0.59	5.00	0.63	0.00	0.63
7.75	2.00	0.59	5.00	0.63	0.00	0.63
7.80	2.00	0.59	5.00	0.63	0.00	0.63
7.85	2.00	0.59	5.00	0.63	0.00	0.63
7.90	2.00	0.60	5.00	0.63	0.00	0.63
7.95	2.00	0.60	5.00	0.63	0.00	0.63
8.00	2.00	0.60	5.00	0.63	0.00	0.63
8.05	2.00	0.60	5.00	0.63	0.00	0.63
8.10	2.00	0.60	5.00	0.63	0.00	0.63
8.15	2.00	0.60	5.00	0.63	0.00	0.63
8.20	2.00	0.61	5.00	0.63	0.00	0.63
8.25	2.00	0.61	5.00	0.63	0.00	0.63
8.30	2.00	0.61	5.00	0.63	0.00	0.63
8.35	2.00	0.61	5.00	0.63	0.00	0.63
8.40	2.00	0.61	5.00	0.63	0.00	0.63
8.45	2.00	0.61	5.00	0.63	0.00	0.63
8.50	2.00	0.61	5.00	0.63	0.00	0.63
8.55	2.00	0.62	5.00	0.63	0.00	0.63
8.60	2.00	0.62	5.00	0.63	0.00	0.63
8.65	2.00	0.62	5.00	0.63	0.00	0.63
8.70	2.00	0.62	5.00	0.63	0.00	0.63
8.75	2.00	0.62	5.00	0.63	0.00	0.63
8.80	2.00	0.62	5.00	0.63	0.00	0.63
8.85	2.00	0.62	5.00	0.63	0.00	0.63
8.90	2.00	0.63	5.00	0.63	0.00	0.63
8.95	2.00	0.63	5.00	0.63	0.00	0.63
9.00	2.00	0.63	5.00	0.63	0.00	0.63
9.05	2.00	0.63	5.00	0.63	0.00	0.63
9.10	2.00	0.63	5.00	0.63	0.00	0.63
9.15	2.00	0.63	5.00	0.63	0.00	0.63
9.20	2.00	0.63	5.00	0.63	0.00	0.63
9.25	2.00	0.64	5.00	0.63	0.00	0.63
9.30	2.00	0.64	5.00	0.63	0.00	0.63
9.35	2.00	0.64	5.00	0.63	0.00	0.63
9.40	2.00	0.64	5.00	0.63	0.00	0.63
9.45	2.00	0.64	5.00	0.63	0.00	0.63
9.50	2.00	0.64	5.00	0.63	0.00	0.63
9.55	2.00	0.64	5.00	0.63	0.00	0.63
9.60	2.00	0.65	5.00	0.63	0.00	0.63
9.65	2.00	0.65	5.00	0.63	0.00	0.63
9.70	2.00	0.65	5.00	0.63	0.00	0.63
9.75	2.00	0.65	5.00	0.63	0.00	0.63
9.80	2.00	0.65	5.00	0.63	0.00	0.63
9.85	2.00	0.65	5.00	0.63	0.00	0.63
9.90	2.00	0.65	5.00	0.63	0.00	0.63
9.95	2.00	0.65	5.00	0.63	0.00	0.63
10.00	2.00	0.66	5.00	0.63	0.00	0.63
10.05	2.00	0.66	5.00	0.63	0.00	0.63
10.10	2.00	0.66	5.00	0.63	0.00	0.63
10.15	2.00	0.66	5.00	0.63	0.00	0.63
10.20	2.00	0.66	5.00	0.63	0.00	0.63
10.25	2.00	0.66	5.00	0.63	0.00	0.63
10.30	2.00	0.66	5.00	0.63	0.00	0.63
10.35	2.00	0.66	5.00	0.63	0.00	0.63
10.40	2.00	0.66	5.00	0.63	0.00	0.63
10.45	2.00	0.67	5.00	0.63	0.00	0.63
10.50	2.00	0.67	5.00	0.63	0.00	0.63
10.55	2.00	0.67	5.00	0.63	0.00	0.63
10.60	2.00	0.67	5.00	0.63	0.00	0.63
10.65	2.00	0.67	5.00	0.63	0.00	0.63
10.70	2.00	0.67	5.00	0.63	0.00	0.63
10.75	2.00	0.67	5.00	0.63	0.00	0.63
10.80	2.00	0.67	5.00	0.63	0.00	0.63
10.85	2.00	0.67	5.00	0.63	0.00	0.63

10.90	2.00	0.68	5.00	0.63	0.00	0.63
10.95	2.00	0.68	5.00	0.63	0.00	0.63
11.00	2.00	0.68	5.00	0.63	0.00	0.63
11.05	2.00	0.68	5.00	0.63	0.00	0.63
11.10	2.00	0.68	5.00	0.63	0.00	0.63
11.15	2.00	0.68	5.00	0.63	0.00	0.63
11.20	2.00	0.68	5.00	0.63	0.00	0.63
11.25	2.00	0.68	5.00	0.63	0.00	0.63
11.30	2.00	0.68	5.00	0.63	0.00	0.63
11.35	2.00	0.69	5.00	0.63	0.00	0.63
11.40	2.00	0.69	5.00	0.63	0.00	0.63
11.45	2.00	0.69	5.00	0.63	0.00	0.63
11.50	2.00	0.69	5.00	0.63	0.00	0.63
11.55	2.00	0.69	5.00	0.63	0.00	0.63
11.60	2.00	0.69	5.00	0.63	0.00	0.63
11.65	2.00	0.69	5.00	0.63	0.00	0.63
11.70	2.00	0.69	5.00	0.63	0.00	0.63
11.75	2.00	0.69	5.00	0.63	0.00	0.63
11.80	2.00	0.69	5.00	0.63	0.00	0.63
11.85	2.00	0.70	5.00	0.63	0.00	0.63
11.90	2.00	0.70	5.00	0.63	0.00	0.63
11.95	0.15	0.70	0.21*	0.63	0.00	0.63
12.00	0.24	0.70	0.34*	0.63	0.00	0.63
12.05	0.23	0.70	0.34*	0.63	0.00	0.63
12.10	0.23	0.70	0.33*	0.62	0.00	0.62
12.15	0.23	0.70	0.33*	0.61	0.00	0.61
12.20	0.23	0.70	0.33*	0.61	0.00	0.61
12.25	0.23	0.70	0.33*	0.60	0.00	0.60
12.30	0.23	0.70	0.33*	0.60	0.00	0.60
12.35	0.23	0.70	0.33*	0.59	0.00	0.59
12.40	0.23	0.71	0.33*	0.58	0.00	0.58
12.45	0.23	0.71	0.33*	0.58	0.00	0.58
12.50	0.23	0.71	0.33*	0.57	0.00	0.57
12.55	0.23	0.71	0.33*	0.56	0.00	0.56
12.60	0.23	0.71	0.32*	0.56	0.00	0.56
12.65	0.23	0.71	0.32*	0.55	0.00	0.55
12.70	0.23	0.71	0.32*	0.54	0.00	0.54
12.75	0.23	0.71	0.32*	0.54	0.00	0.54
12.80	0.23	0.71	0.32*	0.53	0.00	0.53
12.85	0.23	0.71	0.32*	0.53	0.00	0.53
12.90	0.23	0.71	0.32*	0.52	0.00	0.52
12.95	0.23	0.71	0.32*	0.51	0.00	0.51
13.00	0.23	0.72	0.32*	0.51	0.00	0.51
13.05	0.23	0.72	0.32*	0.50	0.00	0.50
13.10	0.23	0.72	0.32*	0.49	0.00	0.49
13.15	0.23	0.72	0.31*	0.49	0.00	0.49
13.20	0.23	0.72	0.31*	0.48	0.00	0.48
13.25	0.23	0.72	0.31*	0.47	0.00	0.47
13.30	0.23	0.72	0.31*	0.47	0.00	0.47
13.35	0.22	0.72	0.31*	0.46	0.00	0.46
13.40	0.22	0.72	0.31*	0.45	0.00	0.45
13.45	0.22	0.72	0.31*	0.45	0.00	0.45
13.50	0.22	0.72	0.31*	0.44	0.00	0.44
13.55	0.22	0.72	0.31*	0.43	0.00	0.43
13.60	0.22	0.73	0.31*	0.43	0.00	0.43
13.65	0.22	0.73	0.31*	0.42	0.00	0.42
13.70	0.22	0.73	0.31*	0.41	0.00	0.41
13.75	0.22	0.73	0.31*	0.41	0.00	0.41
13.80	0.22	0.73	0.30*	0.40	0.00	0.40
13.85	0.22	0.73	0.30*	0.39	0.00	0.39
13.90	0.22	0.73	0.30*	0.39	0.00	0.39
13.95	0.22	0.73	0.30*	0.38	0.00	0.38
14.00	0.22	0.73	0.30*	0.37	0.00	0.37
14.05	0.22	0.73	0.30*	0.37	0.00	0.37
14.10	0.22	0.73	0.30*	0.36	0.00	0.36
14.15	0.22	0.73	0.30*	0.35	0.00	0.35
14.20	0.22	0.73	0.30*	0.35	0.00	0.35
14.25	0.22	0.73	0.30*	0.34	0.00	0.34
14.30	0.22	0.74	0.30*	0.33	0.00	0.33
14.35	0.22	0.74	0.30*	0.33	0.00	0.33
14.40	0.22	0.74	0.30*	0.32	0.00	0.32
14.45	0.22	0.74	0.29*	0.31	0.00	0.31
14.50	0.22	0.74	0.29*	0.31	0.00	0.31
14.55	0.22	0.74	0.29*	0.30	0.00	0.30
14.60	0.22	0.74	0.29*	0.29	0.00	0.29

14.65	0.22	0.74	0.29*	0.29	0.00	0.29
14.70	0.22	0.74	0.29*	0.28	0.00	0.28
14.75	0.22	0.74	0.29*	0.27	0.00	0.27
14.80	0.26	0.74	0.35*	0.27	0.00	0.27
14.85	0.26	0.74	0.34*	0.26	0.00	0.26
14.90	0.26	0.74	0.34*	0.25	0.00	0.25
14.95	0.25	0.74	0.34*	0.25	0.00	0.25
15.00	0.25	0.75	0.34*	0.24	0.00	0.24
15.05	0.25	0.75	0.34*	0.24	0.00	0.24
15.10	0.25	0.75	0.34*	0.23	0.00	0.23
15.15	0.25	0.75	0.34*	0.23	0.00	0.23
15.20	0.25	0.75	0.34*	0.22	0.00	0.22
15.25	0.25	0.75	0.34*	0.21	0.00	0.21
15.30	0.25	0.75	0.34*	0.21	0.00	0.21
15.35	0.25	0.75	0.33*	0.20	0.00	0.20
15.40	0.25	0.75	0.33*	0.20	0.00	0.20
15.45	0.25	0.75	0.33*	0.19	0.00	0.19
15.50	0.25	0.75	0.33*	0.18	0.00	0.18
15.55	0.25	0.75	0.33*	0.18	0.00	0.18
15.60	0.25	0.75	0.33*	0.17	0.00	0.17
15.65	0.25	0.75	0.33*	0.17	0.00	0.17
15.70	0.25	0.75	0.33*	0.16	0.00	0.16
15.75	0.25	0.75	0.33*	0.15	0.00	0.15
15.80	0.25	0.76	0.33*	0.15	0.00	0.15
15.85	0.25	0.76	0.33*	0.14	0.00	0.14
15.90	0.25	0.76	0.33*	0.14	0.00	0.14
15.95	0.25	0.76	0.32*	0.13	0.00	0.13
16.00	0.25	0.76	0.32*	0.12	0.00	0.12
16.05	0.24	0.76	0.32*	0.12	0.00	0.12
16.10	0.24	0.76	0.32*	0.11	0.00	0.11
16.15	0.24	0.76	0.32*	0.11	0.00	0.11
16.20	0.24	0.76	0.32*	0.10	0.00	0.10
16.25	0.24	0.76	0.32*	0.09	0.00	0.09
16.30	0.24	0.76	0.32*	0.09	0.00	0.09
16.35	0.24	0.76	0.32*	0.08	0.00	0.08
16.40	0.24	0.76	0.32*	0.07	0.00	0.07
16.45	0.24	0.76	0.32*	0.07	0.00	0.07
16.50	0.24	0.76	0.32*	0.06	0.00	0.06
16.55	0.24	0.76	0.31*	0.06	0.00	0.06
16.60	0.24	0.76	0.31*	0.05	0.00	0.05
16.65	0.24	0.77	0.31*	0.04	0.00	0.04
16.70	0.24	0.77	0.31*	0.04	0.00	0.04
16.75	0.24	0.77	0.31*	0.03	0.00	0.03
16.80	0.24	0.77	0.31*	0.02	0.00	0.02
16.85	0.24	0.77	0.31*	0.02	0.00	0.02
16.90	0.24	0.77	0.31*	0.01	0.00	0.01
16.95	0.24	0.77	0.31*	0.01	0.00	0.01
17.00	2.00	0.77	5.00	0.00	0.00	0.00
17.05	2.00	0.77	5.00	0.00	0.00	0.00
17.10	2.00	0.77	5.00	0.00	0.00	0.00
17.15	2.00	0.77	5.00	0.00	0.00	0.00
17.20	2.00	0.77	5.00	0.00	0.00	0.00
17.25	2.00	0.77	5.00	0.00	0.00	0.00
17.30	2.00	0.77	5.00	0.00	0.00	0.00
17.35	2.00	0.77	5.00	0.00	0.00	0.00
17.40	2.00	0.77	5.00	0.00	0.00	0.00
17.45	2.00	0.77	5.00	0.00	0.00	0.00
17.50	2.00	0.78	5.00	0.00	0.00	0.00
17.55	2.00	0.78	5.00	0.00	0.00	0.00
17.60	2.00	0.78	5.00	0.00	0.00	0.00
17.65	2.00	0.78	5.00	0.00	0.00	0.00
17.70	2.00	0.78	5.00	0.00	0.00	0.00
17.75	2.00	0.78	5.00	0.00	0.00	0.00
17.80	2.00	0.78	5.00	0.00	0.00	0.00
17.85	2.00	0.78	5.00	0.00	0.00	0.00
17.90	2.00	0.78	5.00	0.00	0.00	0.00
17.95	2.00	0.78	5.00	0.00	0.00	0.00
18.00	2.00	0.78	5.00	0.00	0.00	0.00
18.05	2.00	0.78	5.00	0.00	0.00	0.00
18.10	2.00	0.78	5.00	0.00	0.00	0.00
18.15	2.00	0.78	5.00	0.00	0.00	0.00
18.20	2.00	0.78	5.00	0.00	0.00	0.00
18.25	2.00	0.78	5.00	0.00	0.00	0.00
18.30	2.00	0.79	5.00	0.00	0.00	0.00
18.35	2.00	0.79	5.00	0.00	0.00	0.00

18.40	2.00	0.79	5.00	0.00	0.00	0.00
18.45	2.00	0.79	5.00	0.00	0.00	0.00
18.50	2.00	0.79	5.00	0.00	0.00	0.00
18.55	2.00	0.79	5.00	0.00	0.00	0.00
18.60	2.00	0.79	5.00	0.00	0.00	0.00
18.65	2.00	0.79	5.00	0.00	0.00	0.00
18.70	2.00	0.79	5.00	0.00	0.00	0.00
18.75	2.00	0.79	5.00	0.00	0.00	0.00
18.80	2.00	0.79	5.00	0.00	0.00	0.00
18.85	2.00	0.79	5.00	0.00	0.00	0.00
18.90	2.00	0.79	5.00	0.00	0.00	0.00
18.95	2.00	0.79	5.00	0.00	0.00	0.00
19.00	2.00	0.79	5.00	0.00	0.00	0.00
19.05	2.00	0.79	5.00	0.00	0.00	0.00
19.10	2.00	0.79	5.00	0.00	0.00	0.00
19.15	2.00	0.80	5.00	0.00	0.00	0.00
19.20	2.00	0.80	5.00	0.00	0.00	0.00
19.25	2.00	0.80	5.00	0.00	0.00	0.00
19.30	2.00	0.80	5.00	0.00	0.00	0.00
19.35	2.00	0.80	5.00	0.00	0.00	0.00
19.40	2.00	0.80	5.00	0.00	0.00	0.00
19.45	2.00	0.80	5.00	0.00	0.00	0.00
19.50	2.00	0.80	5.00	0.00	0.00	0.00
19.55	2.00	0.80	5.00	0.00	0.00	0.00
19.60	2.00	0.80	5.00	0.00	0.00	0.00
19.65	2.00	0.80	5.00	0.00	0.00	0.00
19.70	2.00	0.80	5.00	0.00	0.00	0.00
19.75	2.00	0.80	5.00	0.00	0.00	0.00
19.80	2.00	0.80	5.00	0.00	0.00	0.00
19.85	2.00	0.80	5.00	0.00	0.00	0.00
19.90	2.00	0.80	5.00	0.00	0.00	0.00
19.95	2.00	0.80	5.00	0.00	0.00	0.00
20.00	2.00	0.80	5.00	0.00	0.00	0.00
20.05	2.00	0.81	5.00	0.00	0.00	0.00
20.10	2.00	0.81	5.00	0.00	0.00	0.00
20.15	2.00	0.81	5.00	0.00	0.00	0.00
20.20	2.00	0.81	5.00	0.00	0.00	0.00
20.25	2.00	0.81	5.00	0.00	0.00	0.00
20.30	2.00	0.81	5.00	0.00	0.00	0.00
20.35	2.00	0.81	5.00	0.00	0.00	0.00
20.40	2.00	0.81	5.00	0.00	0.00	0.00
20.45	2.00	0.81	5.00	0.00	0.00	0.00
20.50	2.00	0.81	5.00	0.00	0.00	0.00
20.55	2.00	0.81	5.00	0.00	0.00	0.00
20.60	2.00	0.81	5.00	0.00	0.00	0.00
20.65	2.00	0.81	5.00	0.00	0.00	0.00
20.70	2.00	0.81	5.00	0.00	0.00	0.00
20.75	2.00	0.81	5.00	0.00	0.00	0.00
20.80	2.00	0.81	5.00	0.00	0.00	0.00
20.85	2.00	0.81	5.00	0.00	0.00	0.00
20.90	2.00	0.81	5.00	0.00	0.00	0.00
20.95	2.00	0.81	5.00	0.00	0.00	0.00
21.00	2.00	0.82	5.00	0.00	0.00	0.00
21.05	2.00	0.82	5.00	0.00	0.00	0.00
21.10	2.00	0.82	5.00	0.00	0.00	0.00
21.15	2.00	0.82	5.00	0.00	0.00	0.00
21.20	2.00	0.82	5.00	0.00	0.00	0.00
21.25	2.00	0.82	5.00	0.00	0.00	0.00
21.30	2.00	0.82	5.00	0.00	0.00	0.00
21.35	2.00	0.82	5.00	0.00	0.00	0.00
21.40	2.00	0.82	5.00	0.00	0.00	0.00
21.45	2.00	0.82	5.00	0.00	0.00	0.00
21.50	2.00	0.82	5.00	0.00	0.00	0.00
21.55	2.00	0.82	5.00	0.00	0.00	0.00
21.60	2.00	0.82	5.00	0.00	0.00	0.00
21.65	2.00	0.82	5.00	0.00	0.00	0.00
21.70	2.00	0.82	5.00	0.00	0.00	0.00
21.75	2.00	0.82	5.00	0.00	0.00	0.00
21.80	2.00	0.82	5.00	0.00	0.00	0.00
21.85	2.00	0.82	5.00	0.00	0.00	0.00
21.90	2.00	0.82	5.00	0.00	0.00	0.00
21.95	2.00	0.82	5.00	0.00	0.00	0.00
22.00	2.00	0.82	5.00	0.00	0.00	0.00
22.05	2.00	0.83	5.00	0.00	0.00	0.00
22.10	2.00	0.83	5.00	0.00	0.00	0.00

22.15	2.00	0.83	5.00	0.00	0.00	0.00
22.20	2.00	0.83	5.00	0.00	0.00	0.00
22.25	2.00	0.83	5.00	0.00	0.00	0.00
22.30	2.00	0.83	5.00	0.00	0.00	0.00
22.35	2.00	0.83	5.00	0.00	0.00	0.00
22.40	2.00	0.83	5.00	0.00	0.00	0.00
22.45	2.00	0.83	5.00	0.00	0.00	0.00
22.50	2.00	0.83	5.00	0.00	0.00	0.00
22.55	2.00	0.83	5.00	0.00	0.00	0.00
22.60	2.00	0.83	5.00	0.00	0.00	0.00
22.65	2.00	0.83	5.00	0.00	0.00	0.00
22.70	2.00	0.83	5.00	0.00	0.00	0.00
22.75	2.00	0.83	5.00	0.00	0.00	0.00
22.80	2.00	0.83	5.00	0.00	0.00	0.00
22.85	2.00	0.83	5.00	0.00	0.00	0.00
22.90	2.00	0.83	5.00	0.00	0.00	0.00
22.95	2.00	0.83	5.00	0.00	0.00	0.00
23.00	2.00	0.83	5.00	0.00	0.00	0.00
23.05	2.00	0.83	5.00	0.00	0.00	0.00
23.10	2.00	0.84	5.00	0.00	0.00	0.00
23.15	2.00	0.84	5.00	0.00	0.00	0.00
23.20	2.00	0.84	5.00	0.00	0.00	0.00
23.25	2.00	0.84	5.00	0.00	0.00	0.00
23.30	2.00	0.84	5.00	0.00	0.00	0.00
23.35	2.00	0.84	5.00	0.00	0.00	0.00
23.40	2.00	0.84	5.00	0.00	0.00	0.00
23.45	2.00	0.84	5.00	0.00	0.00	0.00
23.50	2.00	0.84	5.00	0.00	0.00	0.00
23.55	2.00	0.84	5.00	0.00	0.00	0.00
23.60	2.00	0.84	5.00	0.00	0.00	0.00
23.65	2.00	0.84	5.00	0.00	0.00	0.00
23.70	2.00	0.84	5.00	0.00	0.00	0.00
23.75	2.00	0.84	5.00	0.00	0.00	0.00
23.80	2.00	0.84	5.00	0.00	0.00	0.00
23.85	2.00	0.84	5.00	0.00	0.00	0.00
23.90	2.00	0.84	5.00	0.00	0.00	0.00
23.95	2.00	0.84	5.00	0.00	0.00	0.00
24.00	2.00	0.84	5.00	0.00	0.00	0.00
24.05	2.00	0.84	5.00	0.00	0.00	0.00
24.10	2.00	0.84	5.00	0.00	0.00	0.00
24.15	2.00	0.84	5.00	0.00	0.00	0.00
24.20	2.00	0.84	5.00	0.00	0.00	0.00
24.25	2.00	0.85	5.00	0.00	0.00	0.00
24.30	2.00	0.85	5.00	0.00	0.00	0.00
24.35	2.00	0.85	5.00	0.00	0.00	0.00
24.40	2.00	0.85	5.00	0.00	0.00	0.00
24.45	2.00	0.85	5.00	0.00	0.00	0.00
24.50	2.00	0.85	5.00	0.00	0.00	0.00
24.55	2.00	0.85	5.00	0.00	0.00	0.00
24.60	2.00	0.85	5.00	0.00	0.00	0.00
24.65	2.00	0.85	5.00	0.00	0.00	0.00
24.70	2.00	0.85	5.00	0.00	0.00	0.00
24.75	2.00	0.85	5.00	0.00	0.00	0.00
24.80	2.00	0.85	5.00	0.00	0.00	0.00
24.85	2.00	0.85	5.00	0.00	0.00	0.00
24.90	2.00	0.85	5.00	0.00	0.00	0.00
24.95	2.00	0.85	5.00	0.00	0.00	0.00
25.00	2.00	0.85	5.00	0.00	0.00	0.00
25.05	2.00	0.85	5.00	0.00	0.00	0.00
25.10	2.00	0.85	5.00	0.00	0.00	0.00
25.15	2.00	0.85	5.00	0.00	0.00	0.00
25.20	2.00	0.85	5.00	0.00	0.00	0.00
25.25	2.00	0.85	5.00	0.00	0.00	0.00
25.30	2.00	0.85	5.00	0.00	0.00	0.00
25.35	2.00	0.85	5.00	0.00	0.00	0.00
25.40	2.00	0.85	5.00	0.00	0.00	0.00
25.45	2.00	0.85	5.00	0.00	0.00	0.00
25.50	2.00	0.86	5.00	0.00	0.00	0.00
25.55	2.00	0.86	5.00	0.00	0.00	0.00
25.60	2.00	0.86	5.00	0.00	0.00	0.00
25.65	2.00	0.86	5.00	0.00	0.00	0.00
25.70	2.00	0.86	5.00	0.00	0.00	0.00
25.75	2.00	0.86	5.00	0.00	0.00	0.00
25.80	2.00	0.86	5.00	0.00	0.00	0.00
25.85	2.00	0.86	5.00	0.00	0.00	0.00

25.90	2.00	0.86	5.00	0.00	0.00	0.00
25.95	2.00	0.86	5.00	0.00	0.00	0.00
26.00	2.00	0.86	5.00	0.00	0.00	0.00
26.05	2.00	0.86	5.00	0.00	0.00	0.00
26.10	2.00	0.86	5.00	0.00	0.00	0.00
26.15	2.00	0.86	5.00	0.00	0.00	0.00
26.20	2.00	0.86	5.00	0.00	0.00	0.00
26.25	2.00	0.86	5.00	0.00	0.00	0.00
26.30	2.00	0.86	5.00	0.00	0.00	0.00
26.35	2.00	0.86	5.00	0.00	0.00	0.00
26.40	2.00	0.86	5.00	0.00	0.00	0.00
26.45	2.00	0.86	5.00	0.00	0.00	0.00
26.50	2.00	0.86	5.00	0.00	0.00	0.00
26.55	2.00	0.86	5.00	0.00	0.00	0.00
26.60	2.00	0.86	5.00	0.00	0.00	0.00
26.65	2.00	0.86	5.00	0.00	0.00	0.00
26.70	2.00	0.86	5.00	0.00	0.00	0.00
26.75	2.00	0.86	5.00	0.00	0.00	0.00
26.80	2.00	0.86	5.00	0.00	0.00	0.00
26.85	2.00	0.86	5.00	0.00	0.00	0.00
26.90	2.00	0.86	5.00	0.00	0.00	0.00
26.95	2.00	0.87	5.00	0.00	0.00	0.00
27.00	2.00	0.87	5.00	0.00	0.00	0.00
27.05	2.00	0.87	5.00	0.00	0.00	0.00
27.10	2.00	0.87	5.00	0.00	0.00	0.00
27.15	2.00	0.87	5.00	0.00	0.00	0.00
27.20	2.00	0.87	5.00	0.00	0.00	0.00
27.25	2.00	0.87	5.00	0.00	0.00	0.00
27.30	2.00	0.87	5.00	0.00	0.00	0.00
27.35	2.00	0.87	5.00	0.00	0.00	0.00
27.40	2.00	0.87	5.00	0.00	0.00	0.00
27.45	2.00	0.87	5.00	0.00	0.00	0.00
27.50	2.00	0.87	5.00	0.00	0.00	0.00
27.55	2.00	0.87	5.00	0.00	0.00	0.00
27.60	2.00	0.87	5.00	0.00	0.00	0.00
27.65	2.00	0.87	5.00	0.00	0.00	0.00
27.70	2.00	0.87	5.00	0.00	0.00	0.00
27.75	2.00	0.87	5.00	0.00	0.00	0.00
27.80	2.00	0.87	5.00	0.00	0.00	0.00
27.85	2.00	0.87	5.00	0.00	0.00	0.00
27.90	2.00	0.87	5.00	0.00	0.00	0.00
27.95	2.00	0.87	5.00	0.00	0.00	0.00
28.00	2.00	0.87	5.00	0.00	0.00	0.00
28.05	2.00	0.87	5.00	0.00	0.00	0.00
28.10	2.00	0.87	5.00	0.00	0.00	0.00
28.15	2.00	0.87	5.00	0.00	0.00	0.00
28.20	2.00	0.87	5.00	0.00	0.00	0.00
28.25	2.00	0.87	5.00	0.00	0.00	0.00
28.30	2.00	0.87	5.00	0.00	0.00	0.00
28.35	2.00	0.87	5.00	0.00	0.00	0.00
28.40	2.00	0.87	5.00	0.00	0.00	0.00
28.45	2.00	0.87	5.00	0.00	0.00	0.00
28.50	2.00	0.87	5.00	0.00	0.00	0.00
28.55	2.00	0.87	5.00	0.00	0.00	0.00
28.60	2.00	0.88	5.00	0.00	0.00	0.00
28.65	2.00	0.88	5.00	0.00	0.00	0.00
28.70	2.00	0.88	5.00	0.00	0.00	0.00
28.75	2.00	0.88	5.00	0.00	0.00	0.00
28.80	2.00	0.88	5.00	0.00	0.00	0.00
28.85	2.00	0.88	5.00	0.00	0.00	0.00
28.90	2.00	0.88	5.00	0.00	0.00	0.00
28.95	2.00	0.88	5.00	0.00	0.00	0.00
29.00	2.00	0.88	5.00	0.00	0.00	0.00
29.05	2.00	0.88	5.00	0.00	0.00	0.00
29.10	2.00	0.88	5.00	0.00	0.00	0.00
29.15	2.00	0.88	5.00	0.00	0.00	0.00
29.20	2.00	0.88	5.00	0.00	0.00	0.00
29.25	2.00	0.88	5.00	0.00	0.00	0.00
29.30	2.00	0.88	5.00	0.00	0.00	0.00
29.35	2.00	0.88	5.00	0.00	0.00	0.00
29.40	2.00	0.88	5.00	0.00	0.00	0.00
29.45	2.00	0.88	5.00	0.00	0.00	0.00
29.50	2.00	0.88	5.00	0.00	0.00	0.00
29.55	2.00	0.88	5.00	0.00	0.00	0.00
29.60	2.00	0.88	5.00	0.00	0.00	0.00

29.65	2.00	0.88	5.00	0.00	0.00	0.00
29.70	2.00	0.88	5.00	0.00	0.00	0.00
29.75	2.00	0.88	5.00	0.00	0.00	0.00
29.80	2.00	0.88	5.00	0.00	0.00	0.00
29.85	2.00	0.88	5.00	0.00	0.00	0.00
29.90	2.00	0.88	5.00	0.00	0.00	0.00
29.95	2.00	0.88	5.00	0.00	0.00	0.00
30.00	2.00	0.88	5.00	0.00	0.00	0.00
30.05	2.00	0.88	5.00	0.00	0.00	0.00
30.10	2.00	0.88	5.00	0.00	0.00	0.00
30.15	2.00	0.88	5.00	0.00	0.00	0.00
30.20	2.00	0.88	5.00	0.00	0.00	0.00
30.25	2.00	0.88	5.00	0.00	0.00	0.00
30.30	2.00	0.88	5.00	0.00	0.00	0.00
30.35	2.00	0.88	5.00	0.00	0.00	0.00
30.40	2.00	0.88	5.00	0.00	0.00	0.00
30.45	2.00	0.88	5.00	0.00	0.00	0.00
30.50	2.00	0.88	5.00	0.00	0.00	0.00
30.55	2.00	0.88	5.00	0.00	0.00	0.00
30.60	2.00	0.88	5.00	0.00	0.00	0.00
30.65	2.00	0.88	5.00	0.00	0.00	0.00
30.70	2.00	0.88	5.00	0.00	0.00	0.00
30.75	2.00	0.88	5.00	0.00	0.00	0.00
30.80	2.00	0.88	5.00	0.00	0.00	0.00
30.85	2.00	0.88	5.00	0.00	0.00	0.00
30.90	2.00	0.88	5.00	0.00	0.00	0.00
30.95	2.00	0.88	5.00	0.00	0.00	0.00
31.00	2.00	0.88	5.00	0.00	0.00	0.00
31.05	2.00	0.88	5.00	0.00	0.00	0.00
31.10	2.00	0.88	5.00	0.00	0.00	0.00
31.15	2.00	0.88	5.00	0.00	0.00	0.00
31.20	2.00	0.88	5.00	0.00	0.00	0.00
31.25	2.00	0.88	5.00	0.00	0.00	0.00
31.30	2.00	0.88	5.00	0.00	0.00	0.00
31.35	2.00	0.88	5.00	0.00	0.00	0.00
31.40	2.00	0.88	5.00	0.00	0.00	0.00
31.45	2.00	0.88	5.00	0.00	0.00	0.00
31.50	2.00	0.88	5.00	0.00	0.00	0.00
31.55	2.00	0.88	5.00	0.00	0.00	0.00
31.60	2.00	0.88	5.00	0.00	0.00	0.00
31.65	2.00	0.88	5.00	0.00	0.00	0.00
31.70	2.00	0.88	5.00	0.00	0.00	0.00
31.75	2.00	0.88	5.00	0.00	0.00	0.00
31.80	2.00	0.88	5.00	0.00	0.00	0.00
31.85	2.00	0.88	5.00	0.00	0.00	0.00
31.90	2.00	0.88	5.00	0.00	0.00	0.00
31.95	2.00	0.88	5.00	0.00	0.00	0.00
32.00	2.00	0.88	5.00	0.00	0.00	0.00
32.05	2.00	0.88	5.00	0.00	0.00	0.00
32.10	2.00	0.88	5.00	0.00	0.00	0.00
32.15	2.00	0.88	5.00	0.00	0.00	0.00
32.20	2.00	0.88	5.00	0.00	0.00	0.00
32.25	2.00	0.88	5.00	0.00	0.00	0.00
32.30	2.00	0.88	5.00	0.00	0.00	0.00
32.35	2.00	0.88	5.00	0.00	0.00	0.00
32.40	2.00	0.88	5.00	0.00	0.00	0.00
32.45	2.00	0.88	5.00	0.00	0.00	0.00
32.50	2.00	0.88	5.00	0.00	0.00	0.00
32.55	2.00	0.88	5.00	0.00	0.00	0.00
32.60	2.00	0.88	5.00	0.00	0.00	0.00
32.65	2.00	0.88	5.00	0.00	0.00	0.00
32.70	2.00	0.88	5.00	0.00	0.00	0.00
32.75	2.00	0.88	5.00	0.00	0.00	0.00
32.80	2.00	0.88	5.00	0.00	0.00	0.00
32.85	2.00	0.88	5.00	0.00	0.00	0.00
32.90	2.00	0.88	5.00	0.00	0.00	0.00
32.95	2.00	0.88	5.00	0.00	0.00	0.00
33.00	2.00	0.88	5.00	0.00	0.00	0.00
33.05	2.00	0.88	5.00	0.00	0.00	0.00
33.10	2.00	0.88	5.00	0.00	0.00	0.00
33.15	2.00	0.88	5.00	0.00	0.00	0.00
33.20	2.00	0.88	5.00	0.00	0.00	0.00
33.25	2.00	0.88	5.00	0.00	0.00	0.00
33.30	2.00	0.87	5.00	0.00	0.00	0.00
33.35	2.00	0.87	5.00	0.00	0.00	0.00

33.40	2.00	0.87	5.00	0.00	0.00	0.00
33.45	2.00	0.87	5.00	0.00	0.00	0.00
33.50	2.00	0.87	5.00	0.00	0.00	0.00
33.55	2.00	0.87	5.00	0.00	0.00	0.00
33.60	2.00	0.87	5.00	0.00	0.00	0.00
33.65	2.00	0.87	5.00	0.00	0.00	0.00
33.70	2.00	0.87	5.00	0.00	0.00	0.00
33.75	2.00	0.87	5.00	0.00	0.00	0.00
33.80	2.00	0.87	5.00	0.00	0.00	0.00
33.85	2.00	0.87	5.00	0.00	0.00	0.00
33.90	2.00	0.87	5.00	0.00	0.00	0.00
33.95	2.00	0.87	5.00	0.00	0.00	0.00
34.00	2.00	0.87	5.00	0.00	0.00	0.00
34.05	2.00	0.87	5.00	0.00	0.00	0.00
34.10	2.00	0.87	5.00	0.00	0.00	0.00
34.15	2.00	0.87	5.00	0.00	0.00	0.00
34.20	2.00	0.87	5.00	0.00	0.00	0.00
34.25	2.00	0.87	5.00	0.00	0.00	0.00
34.30	2.00	0.87	5.00	0.00	0.00	0.00
34.35	2.00	0.87	5.00	0.00	0.00	0.00
34.40	2.00	0.87	5.00	0.00	0.00	0.00
34.45	2.00	0.87	5.00	0.00	0.00	0.00
34.50	2.00	0.87	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.

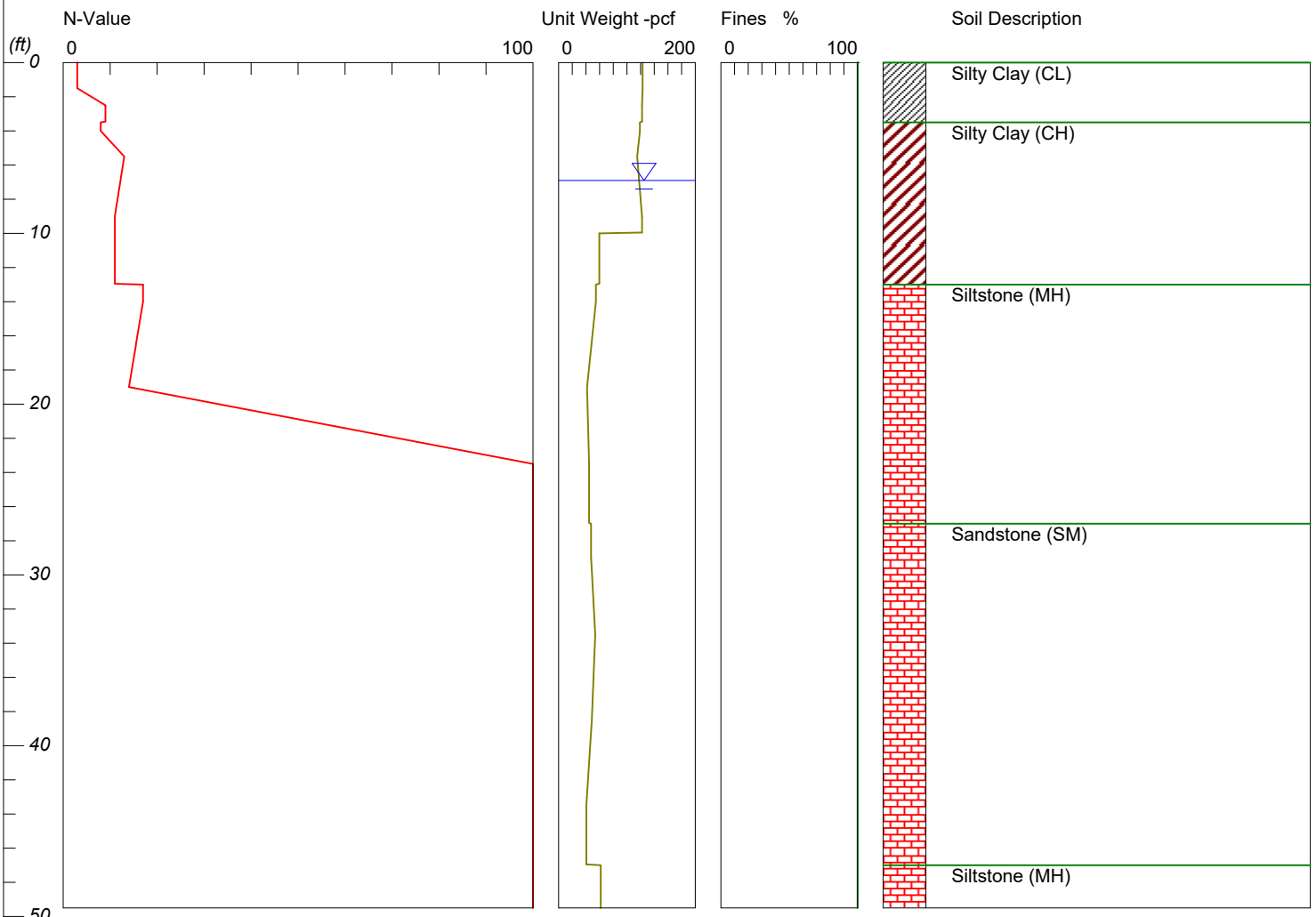
1 atm (atmosphere) = 1 tsf (ton/ft2)
CRRm Cyclic resistance ratio from soils
CSRsf Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S. Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat Settlement from saturated sands
S_dry Settlement from Unsaturated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

LIQUEFACTION ANALYSIS

NEW 6TH GRADE CAMPUS PROJECT

Hole No.=EB-8 Water Depth=6.9 ft

Magnitude=8.50
Acceleration=0.674g



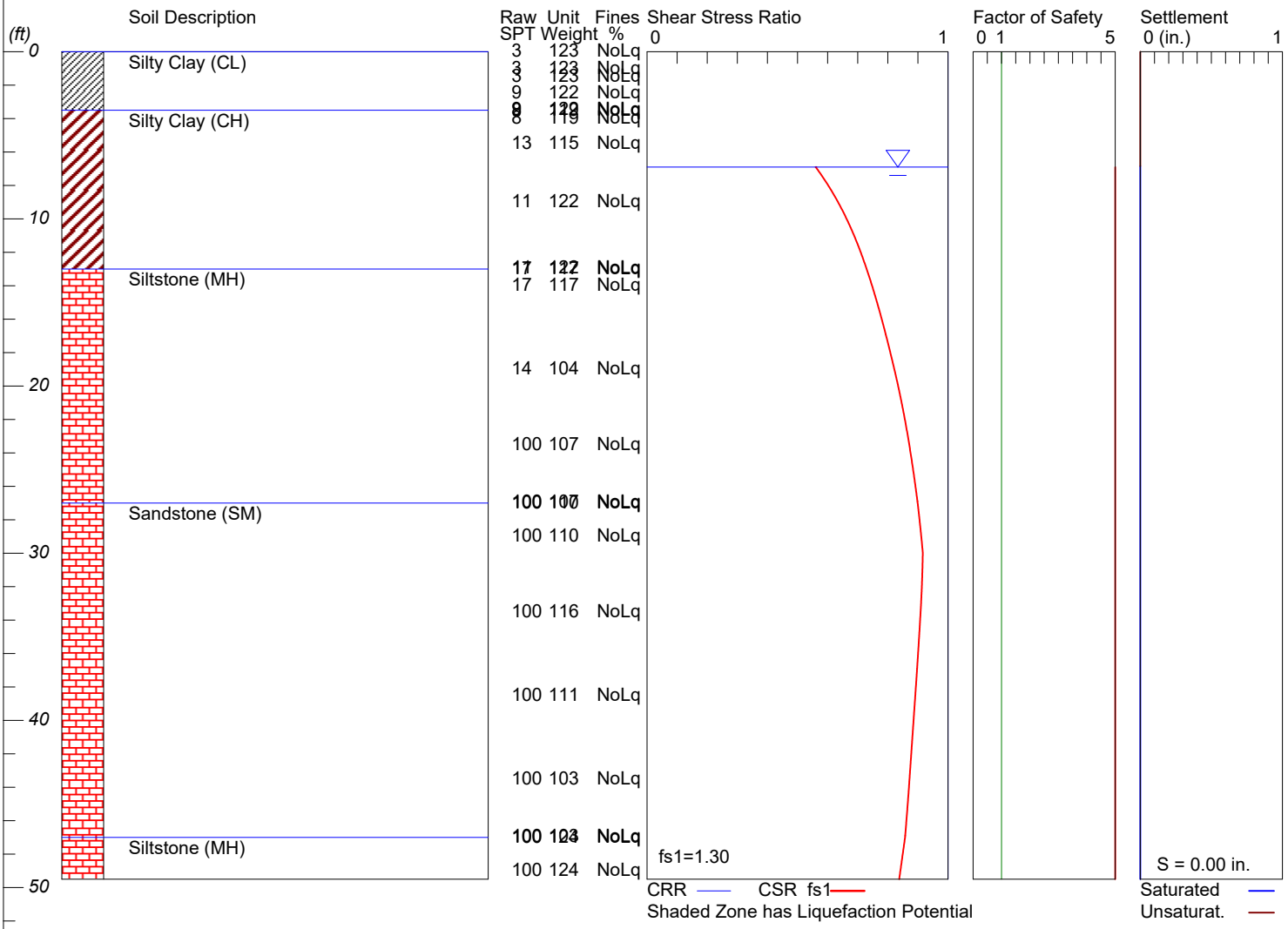
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LIQUEFACTION ANALYSIS

NEW 6TH GRADE CAMPUS PROJECT

Hole No.=EB-8 Water Depth=6.9 ft

Magnitude=8.50
Acceleration=0.674g



LiquefyPro CivilTech Software USA www.civiltech.com

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LIQUEFACTION ANALYSIS SUMMARY
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Input File Name: \\CCISERVER\Shared Folders\Rough Drafts\Grant Foster Rough Drafts\Liquefy Pro Data Files grant\1442.1 Golden West MS 6th Grade Campus, EB-8.liq
Title: NEW 6TH GRADE CAMPUS PROJECT
Subtitle: Golden West Middle School

Surface Elev.=
Hole No.=EB-8
Depth of Hole= 49.50 ft
Water Table during Earthquake= 6.90 ft
Water Table during In-Situ Testing= 10.00 ft
Max. Acceleration= 0.67 g
Earthquake Magnitude= 8.50

Input Data:
Surface Elev.=
Hole No.=EB-8
Depth of Hole=49.50 ft
Water Table during Earthquake= 6.90 ft
Water Table during In-Situ Testing= 10.00 ft
Max. Acceleration=0.67 g
Earthquake Magnitude=8.50
No-Liquefiable Soils: Based on Analysis

1. SPT or BPT Calculation.
2. Settlement Analysis Method: Tokimatsu, M-correction
3. Fines Correction for Liquefaction: Idriss/Seed
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
9. User request factor of safety (apply to CSR) , User= 1.3
   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	3.00	123.00	NoLiq	
1.00	3.00	123.00	NoLiq	
1.50	3.00	123.00	NoLiq	
2.50	9.00	122.00	NoLiq	
3.45	9.00	122.00	NoLiq	
3.50	8.00	119.00	NoLiq	
4.00	8.00	119.00	NoLiq	
5.50	13.00	115.00	NoLiq	
9.00	11.00	122.00	NoLiq	
12.95	11.00	122.00	NoLiq	
13.00	17.00	117.00	NoLiq	
14.00	17.00	117.00	NoLiq	
19.00	14.00	104.00	NoLiq	
23.50	100.00	107.00	NoLiq	
26.95	100.00	107.00	NoLiq	
27.00	100.00	110.00	NoLiq	
29.00	100.00	110.00	NoLiq	
33.50	100.00	116.00	NoLiq	
38.50	100.00	111.00	NoLiq	
43.50	100.00	103.00	NoLiq	
46.95	100.00	103.00	NoLiq	
47.00	100.00	124.00	NoLiq	
49.00	100.00	124.00	NoLiq	

Output Results:

Settlement of Saturated Sands=0.00 in.
Settlement of Unsaturated Sands=0.00 in.
Total Settlement of Saturated and Unsaturated Sands=0.00 in.
Differential Settlement=0.000 to 0.000 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.00	2.00	0.57	5.00	0.00	0.00	0.00
0.05	2.00	0.57	5.00	0.00	0.00	0.00
0.10	2.00	0.57	5.00	0.00	0.00	0.00
0.15	2.00	0.57	5.00	0.00	0.00	0.00
0.20	2.00	0.57	5.00	0.00	0.00	0.00
0.25	2.00	0.57	5.00	0.00	0.00	0.00
0.30	2.00	0.57	5.00	0.00	0.00	0.00
0.35	2.00	0.57	5.00	0.00	0.00	0.00
0.40	2.00	0.57	5.00	0.00	0.00	0.00
0.45	2.00	0.57	5.00	0.00	0.00	0.00
0.50	2.00	0.57	5.00	0.00	0.00	0.00
0.55	2.00	0.57	5.00	0.00	0.00	0.00
0.60	2.00	0.57	5.00	0.00	0.00	0.00
0.65	2.00	0.57	5.00	0.00	0.00	0.00
0.70	2.00	0.57	5.00	0.00	0.00	0.00
0.75	2.00	0.57	5.00	0.00	0.00	0.00
0.80	2.00	0.57	5.00	0.00	0.00	0.00
0.85	2.00	0.57	5.00	0.00	0.00	0.00
0.90	2.00	0.57	5.00	0.00	0.00	0.00
0.95	2.00	0.57	5.00	0.00	0.00	0.00
1.00	2.00	0.57	5.00	0.00	0.00	0.00
1.05	2.00	0.57	5.00	0.00	0.00	0.00
1.10	2.00	0.57	5.00	0.00	0.00	0.00
1.15	2.00	0.57	5.00	0.00	0.00	0.00
1.20	2.00	0.57	5.00	0.00	0.00	0.00
1.25	2.00	0.57	5.00	0.00	0.00	0.00
1.30	2.00	0.57	5.00	0.00	0.00	0.00
1.35	2.00	0.57	5.00	0.00	0.00	0.00
1.40	2.00	0.57	5.00	0.00	0.00	0.00
1.45	2.00	0.57	5.00	0.00	0.00	0.00
1.50	2.00	0.57	5.00	0.00	0.00	0.00
1.55	2.00	0.57	5.00	0.00	0.00	0.00
1.60	2.00	0.57	5.00	0.00	0.00	0.00
1.65	2.00	0.57	5.00	0.00	0.00	0.00
1.70	2.00	0.57	5.00	0.00	0.00	0.00
1.75	2.00	0.57	5.00	0.00	0.00	0.00
1.80	2.00	0.57	5.00	0.00	0.00	0.00
1.85	2.00	0.57	5.00	0.00	0.00	0.00
1.90	2.00	0.57	5.00	0.00	0.00	0.00
1.95	2.00	0.57	5.00	0.00	0.00	0.00
2.00	2.00	0.57	5.00	0.00	0.00	0.00
2.05	2.00	0.57	5.00	0.00	0.00	0.00
2.10	2.00	0.57	5.00	0.00	0.00	0.00
2.15	2.00	0.57	5.00	0.00	0.00	0.00
2.20	2.00	0.57	5.00	0.00	0.00	0.00
2.25	2.00	0.57	5.00	0.00	0.00	0.00
2.30	2.00	0.57	5.00	0.00	0.00	0.00
2.35	2.00	0.57	5.00	0.00	0.00	0.00
2.40	2.00	0.57	5.00	0.00	0.00	0.00
2.45	2.00	0.57	5.00	0.00	0.00	0.00
2.50	2.00	0.57	5.00	0.00	0.00	0.00
2.55	2.00	0.57	5.00	0.00	0.00	0.00
2.60	2.00	0.57	5.00	0.00	0.00	0.00
2.65	2.00	0.57	5.00	0.00	0.00	0.00
2.70	2.00	0.57	5.00	0.00	0.00	0.00
2.75	2.00	0.57	5.00	0.00	0.00	0.00
2.80	2.00	0.57	5.00	0.00	0.00	0.00
2.85	2.00	0.57	5.00	0.00	0.00	0.00
2.90	2.00	0.57	5.00	0.00	0.00	0.00
2.95	2.00	0.57	5.00	0.00	0.00	0.00
3.00	2.00	0.57	5.00	0.00	0.00	0.00
3.05	2.00	0.57	5.00	0.00	0.00	0.00
3.10	2.00	0.57	5.00	0.00	0.00	0.00
3.15	2.00	0.57	5.00	0.00	0.00	0.00
3.20	2.00	0.57	5.00	0.00	0.00	0.00
3.25	2.00	0.57	5.00	0.00	0.00	0.00

3.30	2.00	0.57	5.00	0.00	0.00	0.00
3.35	2.00	0.57	5.00	0.00	0.00	0.00
3.40	2.00	0.57	5.00	0.00	0.00	0.00
3.45	2.00	0.56	5.00	0.00	0.00	0.00
3.50	2.00	0.56	5.00	0.00	0.00	0.00
3.55	2.00	0.56	5.00	0.00	0.00	0.00
3.60	2.00	0.56	5.00	0.00	0.00	0.00
3.65	2.00	0.56	5.00	0.00	0.00	0.00
3.70	2.00	0.56	5.00	0.00	0.00	0.00
3.75	2.00	0.56	5.00	0.00	0.00	0.00
3.80	2.00	0.56	5.00	0.00	0.00	0.00
3.85	2.00	0.56	5.00	0.00	0.00	0.00
3.90	2.00	0.56	5.00	0.00	0.00	0.00
3.95	2.00	0.56	5.00	0.00	0.00	0.00
4.00	2.00	0.56	5.00	0.00	0.00	0.00
4.05	2.00	0.56	5.00	0.00	0.00	0.00
4.10	2.00	0.56	5.00	0.00	0.00	0.00
4.15	2.00	0.56	5.00	0.00	0.00	0.00
4.20	2.00	0.56	5.00	0.00	0.00	0.00
4.25	2.00	0.56	5.00	0.00	0.00	0.00
4.30	2.00	0.56	5.00	0.00	0.00	0.00
4.35	2.00	0.56	5.00	0.00	0.00	0.00
4.40	2.00	0.56	5.00	0.00	0.00	0.00
4.45	2.00	0.56	5.00	0.00	0.00	0.00
4.50	2.00	0.56	5.00	0.00	0.00	0.00
4.55	2.00	0.56	5.00	0.00	0.00	0.00
4.60	2.00	0.56	5.00	0.00	0.00	0.00
4.65	2.00	0.56	5.00	0.00	0.00	0.00
4.70	2.00	0.56	5.00	0.00	0.00	0.00
4.75	2.00	0.56	5.00	0.00	0.00	0.00
4.80	2.00	0.56	5.00	0.00	0.00	0.00
4.85	2.00	0.56	5.00	0.00	0.00	0.00
4.90	2.00	0.56	5.00	0.00	0.00	0.00
4.95	2.00	0.56	5.00	0.00	0.00	0.00
5.00	2.00	0.56	5.00	0.00	0.00	0.00
5.05	2.00	0.56	5.00	0.00	0.00	0.00
5.10	2.00	0.56	5.00	0.00	0.00	0.00
5.15	2.00	0.56	5.00	0.00	0.00	0.00
5.20	2.00	0.56	5.00	0.00	0.00	0.00
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5.35	2.00	0.56	5.00	0.00	0.00	0.00
5.40	2.00	0.56	5.00	0.00	0.00	0.00
5.45	2.00	0.56	5.00	0.00	0.00	0.00
5.50	2.00	0.56	5.00	0.00	0.00	0.00
5.55	2.00	0.56	5.00	0.00	0.00	0.00
5.60	2.00	0.56	5.00	0.00	0.00	0.00
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6.00	2.00	0.56	5.00	0.00	0.00	0.00
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6.20	2.00	0.56	5.00	0.00	0.00	0.00
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6.30	2.00	0.56	5.00	0.00	0.00	0.00
6.35	2.00	0.56	5.00	0.00	0.00	0.00
6.40	2.00	0.56	5.00	0.00	0.00	0.00
6.45	2.00	0.56	5.00	0.00	0.00	0.00
6.50	2.00	0.56	5.00	0.00	0.00	0.00
6.55	2.00	0.56	5.00	0.00	0.00	0.00
6.60	2.00	0.56	5.00	0.00	0.00	0.00
6.65	2.00	0.56	5.00	0.00	0.00	0.00
6.70	2.00	0.56	5.00	0.00	0.00	0.00
6.75	2.00	0.56	5.00	0.00	0.00	0.00
6.80	2.00	0.56	5.00	0.00	0.00	0.00
6.85	2.00	0.56	5.00	0.00	0.00	0.00
6.90	2.00	0.56	5.00	0.00	0.00	0.00
6.95	2.00	0.56	5.00	0.00	0.00	0.00
7.00	2.00	0.56	5.00	0.00	0.00	0.00

7.05	2.00	0.57	5.00	0.00	0.00	0.00
7.10	2.00	0.57	5.00	0.00	0.00	0.00
7.15	2.00	0.57	5.00	0.00	0.00	0.00
7.20	2.00	0.57	5.00	0.00	0.00	0.00
7.25	2.00	0.57	5.00	0.00	0.00	0.00
7.30	2.00	0.58	5.00	0.00	0.00	0.00
7.35	2.00	0.58	5.00	0.00	0.00	0.00
7.40	2.00	0.58	5.00	0.00	0.00	0.00
7.45	2.00	0.58	5.00	0.00	0.00	0.00
7.50	2.00	0.58	5.00	0.00	0.00	0.00
7.55	2.00	0.59	5.00	0.00	0.00	0.00
7.60	2.00	0.59	5.00	0.00	0.00	0.00
7.65	2.00	0.59	5.00	0.00	0.00	0.00
7.70	2.00	0.59	5.00	0.00	0.00	0.00
7.75	2.00	0.59	5.00	0.00	0.00	0.00
7.80	2.00	0.59	5.00	0.00	0.00	0.00
7.85	2.00	0.60	5.00	0.00	0.00	0.00
7.90	2.00	0.60	5.00	0.00	0.00	0.00
7.95	2.00	0.60	5.00	0.00	0.00	0.00
8.00	2.00	0.60	5.00	0.00	0.00	0.00
8.05	2.00	0.60	5.00	0.00	0.00	0.00
8.10	2.00	0.61	5.00	0.00	0.00	0.00
8.15	2.00	0.61	5.00	0.00	0.00	0.00
8.20	2.00	0.61	5.00	0.00	0.00	0.00
8.25	2.00	0.61	5.00	0.00	0.00	0.00
8.30	2.00	0.61	5.00	0.00	0.00	0.00
8.35	2.00	0.61	5.00	0.00	0.00	0.00
8.40	2.00	0.62	5.00	0.00	0.00	0.00
8.45	2.00	0.62	5.00	0.00	0.00	0.00
8.50	2.00	0.62	5.00	0.00	0.00	0.00
8.55	2.00	0.62	5.00	0.00	0.00	0.00
8.60	2.00	0.62	5.00	0.00	0.00	0.00
8.65	2.00	0.62	5.00	0.00	0.00	0.00
8.70	2.00	0.63	5.00	0.00	0.00	0.00
8.75	2.00	0.63	5.00	0.00	0.00	0.00
8.80	2.00	0.63	5.00	0.00	0.00	0.00
8.85	2.00	0.63	5.00	0.00	0.00	0.00
8.90	2.00	0.63	5.00	0.00	0.00	0.00
8.95	2.00	0.63	5.00	0.00	0.00	0.00
9.00	2.00	0.63	5.00	0.00	0.00	0.00
9.05	2.00	0.64	5.00	0.00	0.00	0.00
9.10	2.00	0.64	5.00	0.00	0.00	0.00
9.15	2.00	0.64	5.00	0.00	0.00	0.00
9.20	2.00	0.64	5.00	0.00	0.00	0.00
9.25	2.00	0.64	5.00	0.00	0.00	0.00
9.30	2.00	0.64	5.00	0.00	0.00	0.00
9.35	2.00	0.65	5.00	0.00	0.00	0.00
9.40	2.00	0.65	5.00	0.00	0.00	0.00
9.45	2.00	0.65	5.00	0.00	0.00	0.00
9.50	2.00	0.65	5.00	0.00	0.00	0.00
9.55	2.00	0.65	5.00	0.00	0.00	0.00
9.60	2.00	0.65	5.00	0.00	0.00	0.00
9.65	2.00	0.65	5.00	0.00	0.00	0.00
9.70	2.00	0.65	5.00	0.00	0.00	0.00
9.75	2.00	0.66	5.00	0.00	0.00	0.00
9.80	2.00	0.66	5.00	0.00	0.00	0.00
9.85	2.00	0.66	5.00	0.00	0.00	0.00
9.90	2.00	0.66	5.00	0.00	0.00	0.00
9.95	2.00	0.66	5.00	0.00	0.00	0.00
10.00	2.00	0.66	5.00	0.00	0.00	0.00
10.05	2.00	0.66	5.00	0.00	0.00	0.00
10.10	2.00	0.67	5.00	0.00	0.00	0.00
10.15	2.00	0.67	5.00	0.00	0.00	0.00
10.20	2.00	0.67	5.00	0.00	0.00	0.00
10.25	2.00	0.67	5.00	0.00	0.00	0.00
10.30	2.00	0.67	5.00	0.00	0.00	0.00
10.35	2.00	0.67	5.00	0.00	0.00	0.00
10.40	2.00	0.67	5.00	0.00	0.00	0.00
10.45	2.00	0.67	5.00	0.00	0.00	0.00
10.50	2.00	0.68	5.00	0.00	0.00	0.00
10.55	2.00	0.68	5.00	0.00	0.00	0.00
10.60	2.00	0.68	5.00	0.00	0.00	0.00
10.65	2.00	0.68	5.00	0.00	0.00	0.00
10.70	2.00	0.68	5.00	0.00	0.00	0.00
10.75	2.00	0.68	5.00	0.00	0.00	0.00

10.80	2.00	0.68	5.00	0.00	0.00	0.00
10.85	2.00	0.68	5.00	0.00	0.00	0.00
10.90	2.00	0.69	5.00	0.00	0.00	0.00
10.95	2.00	0.69	5.00	0.00	0.00	0.00
11.00	2.00	0.69	5.00	0.00	0.00	0.00
11.05	2.00	0.69	5.00	0.00	0.00	0.00
11.10	2.00	0.69	5.00	0.00	0.00	0.00
11.15	2.00	0.69	5.00	0.00	0.00	0.00
11.20	2.00	0.69	5.00	0.00	0.00	0.00
11.25	2.00	0.69	5.00	0.00	0.00	0.00
11.30	2.00	0.69	5.00	0.00	0.00	0.00
11.35	2.00	0.70	5.00	0.00	0.00	0.00
11.40	2.00	0.70	5.00	0.00	0.00	0.00
11.45	2.00	0.70	5.00	0.00	0.00	0.00
11.50	2.00	0.70	5.00	0.00	0.00	0.00
11.55	2.00	0.70	5.00	0.00	0.00	0.00
11.60	2.00	0.70	5.00	0.00	0.00	0.00
11.65	2.00	0.70	5.00	0.00	0.00	0.00
11.70	2.00	0.70	5.00	0.00	0.00	0.00
11.75	2.00	0.70	5.00	0.00	0.00	0.00
11.80	2.00	0.71	5.00	0.00	0.00	0.00
11.85	2.00	0.71	5.00	0.00	0.00	0.00
11.90	2.00	0.71	5.00	0.00	0.00	0.00
11.95	2.00	0.71	5.00	0.00	0.00	0.00
12.00	2.00	0.71	5.00	0.00	0.00	0.00
12.05	2.00	0.71	5.00	0.00	0.00	0.00
12.10	2.00	0.71	5.00	0.00	0.00	0.00
12.15	2.00	0.71	5.00	0.00	0.00	0.00
12.20	2.00	0.71	5.00	0.00	0.00	0.00
12.25	2.00	0.72	5.00	0.00	0.00	0.00
12.30	2.00	0.72	5.00	0.00	0.00	0.00
12.35	2.00	0.72	5.00	0.00	0.00	0.00
12.40	2.00	0.72	5.00	0.00	0.00	0.00
12.45	2.00	0.72	5.00	0.00	0.00	0.00
12.50	2.00	0.72	5.00	0.00	0.00	0.00
12.55	2.00	0.72	5.00	0.00	0.00	0.00
12.60	2.00	0.72	5.00	0.00	0.00	0.00
12.65	2.00	0.72	5.00	0.00	0.00	0.00
12.70	2.00	0.72	5.00	0.00	0.00	0.00
12.75	2.00	0.72	5.00	0.00	0.00	0.00
12.80	2.00	0.73	5.00	0.00	0.00	0.00
12.85	2.00	0.73	5.00	0.00	0.00	0.00
12.90	2.00	0.73	5.00	0.00	0.00	0.00
12.95	2.00	0.73	5.00	0.00	0.00	0.00
13.00	2.00	0.73	5.00	0.00	0.00	0.00
13.05	2.00	0.73	5.00	0.00	0.00	0.00
13.10	2.00	0.73	5.00	0.00	0.00	0.00
13.15	2.00	0.73	5.00	0.00	0.00	0.00
13.20	2.00	0.73	5.00	0.00	0.00	0.00
13.25	2.00	0.73	5.00	0.00	0.00	0.00
13.30	2.00	0.74	5.00	0.00	0.00	0.00
13.35	2.00	0.74	5.00	0.00	0.00	0.00
13.40	2.00	0.74	5.00	0.00	0.00	0.00
13.45	2.00	0.74	5.00	0.00	0.00	0.00
13.50	2.00	0.74	5.00	0.00	0.00	0.00
13.55	2.00	0.74	5.00	0.00	0.00	0.00
13.60	2.00	0.74	5.00	0.00	0.00	0.00
13.65	2.00	0.74	5.00	0.00	0.00	0.00
13.70	2.00	0.74	5.00	0.00	0.00	0.00
13.75	2.00	0.74	5.00	0.00	0.00	0.00
13.80	2.00	0.74	5.00	0.00	0.00	0.00
13.85	2.00	0.75	5.00	0.00	0.00	0.00
13.90	2.00	0.75	5.00	0.00	0.00	0.00
13.95	2.00	0.75	5.00	0.00	0.00	0.00
14.00	2.00	0.75	5.00	0.00	0.00	0.00
14.05	2.00	0.75	5.00	0.00	0.00	0.00
14.10	2.00	0.75	5.00	0.00	0.00	0.00
14.15	2.00	0.75	5.00	0.00	0.00	0.00
14.20	2.00	0.75	5.00	0.00	0.00	0.00
14.25	2.00	0.75	5.00	0.00	0.00	0.00
14.30	2.00	0.75	5.00	0.00	0.00	0.00
14.35	2.00	0.75	5.00	0.00	0.00	0.00
14.40	2.00	0.75	5.00	0.00	0.00	0.00
14.45	2.00	0.76	5.00	0.00	0.00	0.00
14.50	2.00	0.76	5.00	0.00	0.00	0.00

14.55	2.00	0.76	5.00	0.00	0.00	0.00
14.60	2.00	0.76	5.00	0.00	0.00	0.00
14.65	2.00	0.76	5.00	0.00	0.00	0.00
14.70	2.00	0.76	5.00	0.00	0.00	0.00
14.75	2.00	0.76	5.00	0.00	0.00	0.00
14.80	2.00	0.76	5.00	0.00	0.00	0.00
14.85	2.00	0.76	5.00	0.00	0.00	0.00
14.90	2.00	0.76	5.00	0.00	0.00	0.00
14.95	2.00	0.76	5.00	0.00	0.00	0.00
15.00	2.00	0.76	5.00	0.00	0.00	0.00
15.05	2.00	0.77	5.00	0.00	0.00	0.00
15.10	2.00	0.77	5.00	0.00	0.00	0.00
15.15	2.00	0.77	5.00	0.00	0.00	0.00
15.20	2.00	0.77	5.00	0.00	0.00	0.00
15.25	2.00	0.77	5.00	0.00	0.00	0.00
15.30	2.00	0.77	5.00	0.00	0.00	0.00
15.35	2.00	0.77	5.00	0.00	0.00	0.00
15.40	2.00	0.77	5.00	0.00	0.00	0.00
15.45	2.00	0.77	5.00	0.00	0.00	0.00
15.50	2.00	0.77	5.00	0.00	0.00	0.00
15.55	2.00	0.77	5.00	0.00	0.00	0.00
15.60	2.00	0.77	5.00	0.00	0.00	0.00
15.65	2.00	0.77	5.00	0.00	0.00	0.00
15.70	2.00	0.78	5.00	0.00	0.00	0.00
15.75	2.00	0.78	5.00	0.00	0.00	0.00
15.80	2.00	0.78	5.00	0.00	0.00	0.00
15.85	2.00	0.78	5.00	0.00	0.00	0.00
15.90	2.00	0.78	5.00	0.00	0.00	0.00
15.95	2.00	0.78	5.00	0.00	0.00	0.00
16.00	2.00	0.78	5.00	0.00	0.00	0.00
16.05	2.00	0.78	5.00	0.00	0.00	0.00
16.10	2.00	0.78	5.00	0.00	0.00	0.00
16.15	2.00	0.78	5.00	0.00	0.00	0.00
16.20	2.00	0.78	5.00	0.00	0.00	0.00
16.25	2.00	0.78	5.00	0.00	0.00	0.00
16.30	2.00	0.78	5.00	0.00	0.00	0.00
16.35	2.00	0.79	5.00	0.00	0.00	0.00
16.40	2.00	0.79	5.00	0.00	0.00	0.00
16.45	2.00	0.79	5.00	0.00	0.00	0.00
16.50	2.00	0.79	5.00	0.00	0.00	0.00
16.55	2.00	0.79	5.00	0.00	0.00	0.00
16.60	2.00	0.79	5.00	0.00	0.00	0.00
16.65	2.00	0.79	5.00	0.00	0.00	0.00
16.70	2.00	0.79	5.00	0.00	0.00	0.00
16.75	2.00	0.79	5.00	0.00	0.00	0.00
16.80	2.00	0.79	5.00	0.00	0.00	0.00
16.85	2.00	0.79	5.00	0.00	0.00	0.00
16.90	2.00	0.79	5.00	0.00	0.00	0.00
16.95	2.00	0.79	5.00	0.00	0.00	0.00
17.00	2.00	0.79	5.00	0.00	0.00	0.00
17.05	2.00	0.80	5.00	0.00	0.00	0.00
17.10	2.00	0.80	5.00	0.00	0.00	0.00
17.15	2.00	0.80	5.00	0.00	0.00	0.00
17.20	2.00	0.80	5.00	0.00	0.00	0.00
17.25	2.00	0.80	5.00	0.00	0.00	0.00
17.30	2.00	0.80	5.00	0.00	0.00	0.00
17.35	2.00	0.80	5.00	0.00	0.00	0.00
17.40	2.00	0.80	5.00	0.00	0.00	0.00
17.45	2.00	0.80	5.00	0.00	0.00	0.00
17.50	2.00	0.80	5.00	0.00	0.00	0.00
17.55	2.00	0.80	5.00	0.00	0.00	0.00
17.60	2.00	0.80	5.00	0.00	0.00	0.00
17.65	2.00	0.80	5.00	0.00	0.00	0.00
17.70	2.00	0.80	5.00	0.00	0.00	0.00
17.75	2.00	0.80	5.00	0.00	0.00	0.00
17.80	2.00	0.81	5.00	0.00	0.00	0.00
17.85	2.00	0.81	5.00	0.00	0.00	0.00
17.90	2.00	0.81	5.00	0.00	0.00	0.00
17.95	2.00	0.81	5.00	0.00	0.00	0.00
18.00	2.00	0.81	5.00	0.00	0.00	0.00
18.05	2.00	0.81	5.00	0.00	0.00	0.00
18.10	2.00	0.81	5.00	0.00	0.00	0.00
18.15	2.00	0.81	5.00	0.00	0.00	0.00
18.20	2.00	0.81	5.00	0.00	0.00	0.00
18.25	2.00	0.81	5.00	0.00	0.00	0.00

18.30	2.00	0.81	5.00	0.00	0.00	0.00
18.35	2.00	0.81	5.00	0.00	0.00	0.00
18.40	2.00	0.81	5.00	0.00	0.00	0.00
18.45	2.00	0.81	5.00	0.00	0.00	0.00
18.50	2.00	0.82	5.00	0.00	0.00	0.00
18.55	2.00	0.82	5.00	0.00	0.00	0.00
18.60	2.00	0.82	5.00	0.00	0.00	0.00
18.65	2.00	0.82	5.00	0.00	0.00	0.00
18.70	2.00	0.82	5.00	0.00	0.00	0.00
18.75	2.00	0.82	5.00	0.00	0.00	0.00
18.80	2.00	0.82	5.00	0.00	0.00	0.00
18.85	2.00	0.82	5.00	0.00	0.00	0.00
18.90	2.00	0.82	5.00	0.00	0.00	0.00
18.95	2.00	0.82	5.00	0.00	0.00	0.00
19.00	2.00	0.82	5.00	0.00	0.00	0.00
19.05	2.00	0.82	5.00	0.00	0.00	0.00
19.10	2.00	0.82	5.00	0.00	0.00	0.00
19.15	2.00	0.82	5.00	0.00	0.00	0.00
19.20	2.00	0.82	5.00	0.00	0.00	0.00
19.25	2.00	0.82	5.00	0.00	0.00	0.00
19.30	2.00	0.83	5.00	0.00	0.00	0.00
19.35	2.00	0.83	5.00	0.00	0.00	0.00
19.40	2.00	0.83	5.00	0.00	0.00	0.00
19.45	2.00	0.83	5.00	0.00	0.00	0.00
19.50	2.00	0.83	5.00	0.00	0.00	0.00
19.55	2.00	0.83	5.00	0.00	0.00	0.00
19.60	2.00	0.83	5.00	0.00	0.00	0.00
19.65	2.00	0.83	5.00	0.00	0.00	0.00
19.70	2.00	0.83	5.00	0.00	0.00	0.00
19.75	2.00	0.83	5.00	0.00	0.00	0.00
19.80	2.00	0.83	5.00	0.00	0.00	0.00
19.85	2.00	0.83	5.00	0.00	0.00	0.00
19.90	2.00	0.83	5.00	0.00	0.00	0.00
19.95	2.00	0.83	5.00	0.00	0.00	0.00
20.00	2.00	0.83	5.00	0.00	0.00	0.00
20.05	2.00	0.83	5.00	0.00	0.00	0.00
20.10	2.00	0.84	5.00	0.00	0.00	0.00
20.15	2.00	0.84	5.00	0.00	0.00	0.00
20.20	2.00	0.84	5.00	0.00	0.00	0.00
20.25	2.00	0.84	5.00	0.00	0.00	0.00
20.30	2.00	0.84	5.00	0.00	0.00	0.00
20.35	2.00	0.84	5.00	0.00	0.00	0.00
20.40	2.00	0.84	5.00	0.00	0.00	0.00
20.45	2.00	0.84	5.00	0.00	0.00	0.00
20.50	2.00	0.84	5.00	0.00	0.00	0.00
20.55	2.00	0.84	5.00	0.00	0.00	0.00
20.60	2.00	0.84	5.00	0.00	0.00	0.00
20.65	2.00	0.84	5.00	0.00	0.00	0.00
20.70	2.00	0.84	5.00	0.00	0.00	0.00
20.75	2.00	0.84	5.00	0.00	0.00	0.00
20.80	2.00	0.84	5.00	0.00	0.00	0.00
20.85	2.00	0.84	5.00	0.00	0.00	0.00
20.90	2.00	0.84	5.00	0.00	0.00	0.00
20.95	2.00	0.85	5.00	0.00	0.00	0.00
21.00	2.00	0.85	5.00	0.00	0.00	0.00
21.05	2.00	0.85	5.00	0.00	0.00	0.00
21.10	2.00	0.85	5.00	0.00	0.00	0.00
21.15	2.00	0.85	5.00	0.00	0.00	0.00
21.20	2.00	0.85	5.00	0.00	0.00	0.00
21.25	2.00	0.85	5.00	0.00	0.00	0.00
21.30	2.00	0.85	5.00	0.00	0.00	0.00
21.35	2.00	0.85	5.00	0.00	0.00	0.00
21.40	2.00	0.85	5.00	0.00	0.00	0.00
21.45	2.00	0.85	5.00	0.00	0.00	0.00
21.50	2.00	0.85	5.00	0.00	0.00	0.00
21.55	2.00	0.85	5.00	0.00	0.00	0.00
21.60	2.00	0.85	5.00	0.00	0.00	0.00
21.65	2.00	0.85	5.00	0.00	0.00	0.00
21.70	2.00	0.85	5.00	0.00	0.00	0.00
21.75	2.00	0.85	5.00	0.00	0.00	0.00
21.80	2.00	0.85	5.00	0.00	0.00	0.00
21.85	2.00	0.86	5.00	0.00	0.00	0.00
21.90	2.00	0.86	5.00	0.00	0.00	0.00
21.95	2.00	0.86	5.00	0.00	0.00	0.00
22.00	2.00	0.86	5.00	0.00	0.00	0.00

22.05	2.00	0.86	5.00	0.00	0.00	0.00
22.10	2.00	0.86	5.00	0.00	0.00	0.00
22.15	2.00	0.86	5.00	0.00	0.00	0.00
22.20	2.00	0.86	5.00	0.00	0.00	0.00
22.25	2.00	0.86	5.00	0.00	0.00	0.00
22.30	2.00	0.86	5.00	0.00	0.00	0.00
22.35	2.00	0.86	5.00	0.00	0.00	0.00
22.40	2.00	0.86	5.00	0.00	0.00	0.00
22.45	2.00	0.86	5.00	0.00	0.00	0.00
22.50	2.00	0.86	5.00	0.00	0.00	0.00
22.55	2.00	0.86	5.00	0.00	0.00	0.00
22.60	2.00	0.86	5.00	0.00	0.00	0.00
22.65	2.00	0.86	5.00	0.00	0.00	0.00
22.70	2.00	0.86	5.00	0.00	0.00	0.00
22.75	2.00	0.86	5.00	0.00	0.00	0.00
22.80	2.00	0.86	5.00	0.00	0.00	0.00
22.85	2.00	0.87	5.00	0.00	0.00	0.00
22.90	2.00	0.87	5.00	0.00	0.00	0.00
22.95	2.00	0.87	5.00	0.00	0.00	0.00
23.00	2.00	0.87	5.00	0.00	0.00	0.00
23.05	2.00	0.87	5.00	0.00	0.00	0.00
23.10	2.00	0.87	5.00	0.00	0.00	0.00
23.15	2.00	0.87	5.00	0.00	0.00	0.00
23.20	2.00	0.87	5.00	0.00	0.00	0.00
23.25	2.00	0.87	5.00	0.00	0.00	0.00
23.30	2.00	0.87	5.00	0.00	0.00	0.00
23.35	2.00	0.87	5.00	0.00	0.00	0.00
23.40	2.00	0.87	5.00	0.00	0.00	0.00
23.45	2.00	0.87	5.00	0.00	0.00	0.00
23.50	2.00	0.87	5.00	0.00	0.00	0.00
23.55	2.00	0.87	5.00	0.00	0.00	0.00
23.60	2.00	0.87	5.00	0.00	0.00	0.00
23.65	2.00	0.87	5.00	0.00	0.00	0.00
23.70	2.00	0.87	5.00	0.00	0.00	0.00
23.75	2.00	0.87	5.00	0.00	0.00	0.00
23.80	2.00	0.87	5.00	0.00	0.00	0.00
23.85	2.00	0.87	5.00	0.00	0.00	0.00
23.90	2.00	0.87	5.00	0.00	0.00	0.00
23.95	2.00	0.88	5.00	0.00	0.00	0.00
24.00	2.00	0.88	5.00	0.00	0.00	0.00
24.05	2.00	0.88	5.00	0.00	0.00	0.00
24.10	2.00	0.88	5.00	0.00	0.00	0.00
24.15	2.00	0.88	5.00	0.00	0.00	0.00
24.20	2.00	0.88	5.00	0.00	0.00	0.00
24.25	2.00	0.88	5.00	0.00	0.00	0.00
24.30	2.00	0.88	5.00	0.00	0.00	0.00
24.35	2.00	0.88	5.00	0.00	0.00	0.00
24.40	2.00	0.88	5.00	0.00	0.00	0.00
24.45	2.00	0.88	5.00	0.00	0.00	0.00
24.50	2.00	0.88	5.00	0.00	0.00	0.00
24.55	2.00	0.88	5.00	0.00	0.00	0.00
24.60	2.00	0.88	5.00	0.00	0.00	0.00
24.65	2.00	0.88	5.00	0.00	0.00	0.00
24.70	2.00	0.88	5.00	0.00	0.00	0.00
24.75	2.00	0.88	5.00	0.00	0.00	0.00
24.80	2.00	0.88	5.00	0.00	0.00	0.00
24.85	2.00	0.88	5.00	0.00	0.00	0.00
24.90	2.00	0.88	5.00	0.00	0.00	0.00
24.95	2.00	0.88	5.00	0.00	0.00	0.00
25.00	2.00	0.88	5.00	0.00	0.00	0.00
25.05	2.00	0.88	5.00	0.00	0.00	0.00
25.10	2.00	0.88	5.00	0.00	0.00	0.00
25.15	2.00	0.89	5.00	0.00	0.00	0.00
25.20	2.00	0.89	5.00	0.00	0.00	0.00
25.25	2.00	0.89	5.00	0.00	0.00	0.00
25.30	2.00	0.89	5.00	0.00	0.00	0.00
25.35	2.00	0.89	5.00	0.00	0.00	0.00
25.40	2.00	0.89	5.00	0.00	0.00	0.00
25.45	2.00	0.89	5.00	0.00	0.00	0.00
25.50	2.00	0.89	5.00	0.00	0.00	0.00
25.55	2.00	0.89	5.00	0.00	0.00	0.00
25.60	2.00	0.89	5.00	0.00	0.00	0.00
25.65	2.00	0.89	5.00	0.00	0.00	0.00
25.70	2.00	0.89	5.00	0.00	0.00	0.00
25.75	2.00	0.89	5.00	0.00	0.00	0.00

25.80	2.00	0.89	5.00	0.00	0.00	0.00
25.85	2.00	0.89	5.00	0.00	0.00	0.00
25.90	2.00	0.89	5.00	0.00	0.00	0.00
25.95	2.00	0.89	5.00	0.00	0.00	0.00
26.00	2.00	0.89	5.00	0.00	0.00	0.00
26.05	2.00	0.89	5.00	0.00	0.00	0.00
26.10	2.00	0.89	5.00	0.00	0.00	0.00
26.15	2.00	0.89	5.00	0.00	0.00	0.00
26.20	2.00	0.89	5.00	0.00	0.00	0.00
26.25	2.00	0.89	5.00	0.00	0.00	0.00
26.30	2.00	0.89	5.00	0.00	0.00	0.00
26.35	2.00	0.89	5.00	0.00	0.00	0.00
26.40	2.00	0.89	5.00	0.00	0.00	0.00
26.45	2.00	0.90	5.00	0.00	0.00	0.00
26.50	2.00	0.90	5.00	0.00	0.00	0.00
26.55	2.00	0.90	5.00	0.00	0.00	0.00
26.60	2.00	0.90	5.00	0.00	0.00	0.00
26.65	2.00	0.90	5.00	0.00	0.00	0.00
26.70	2.00	0.90	5.00	0.00	0.00	0.00
26.75	2.00	0.90	5.00	0.00	0.00	0.00
26.80	2.00	0.90	5.00	0.00	0.00	0.00
26.85	2.00	0.90	5.00	0.00	0.00	0.00
26.90	2.00	0.90	5.00	0.00	0.00	0.00
26.95	2.00	0.90	5.00	0.00	0.00	0.00
27.00	2.00	0.90	5.00	0.00	0.00	0.00
27.05	2.00	0.90	5.00	0.00	0.00	0.00
27.10	2.00	0.90	5.00	0.00	0.00	0.00
27.15	2.00	0.90	5.00	0.00	0.00	0.00
27.20	2.00	0.90	5.00	0.00	0.00	0.00
27.25	2.00	0.90	5.00	0.00	0.00	0.00
27.30	2.00	0.90	5.00	0.00	0.00	0.00
27.35	2.00	0.90	5.00	0.00	0.00	0.00
27.40	2.00	0.90	5.00	0.00	0.00	0.00
27.45	2.00	0.90	5.00	0.00	0.00	0.00
27.50	2.00	0.90	5.00	0.00	0.00	0.00
27.55	2.00	0.90	5.00	0.00	0.00	0.00
27.60	2.00	0.90	5.00	0.00	0.00	0.00
27.65	2.00	0.90	5.00	0.00	0.00	0.00
27.70	2.00	0.90	5.00	0.00	0.00	0.00
27.75	2.00	0.90	5.00	0.00	0.00	0.00
27.80	2.00	0.90	5.00	0.00	0.00	0.00
27.85	2.00	0.90	5.00	0.00	0.00	0.00
27.90	2.00	0.90	5.00	0.00	0.00	0.00
27.95	2.00	0.91	5.00	0.00	0.00	0.00
28.00	2.00	0.91	5.00	0.00	0.00	0.00
28.05	2.00	0.91	5.00	0.00	0.00	0.00
28.10	2.00	0.91	5.00	0.00	0.00	0.00
28.15	2.00	0.91	5.00	0.00	0.00	0.00
28.20	2.00	0.91	5.00	0.00	0.00	0.00
28.25	2.00	0.91	5.00	0.00	0.00	0.00
28.30	2.00	0.91	5.00	0.00	0.00	0.00
28.35	2.00	0.91	5.00	0.00	0.00	0.00
28.40	2.00	0.91	5.00	0.00	0.00	0.00
28.45	2.00	0.91	5.00	0.00	0.00	0.00
28.50	2.00	0.91	5.00	0.00	0.00	0.00
28.55	2.00	0.91	5.00	0.00	0.00	0.00
28.60	2.00	0.91	5.00	0.00	0.00	0.00
28.65	2.00	0.91	5.00	0.00	0.00	0.00
28.70	2.00	0.91	5.00	0.00	0.00	0.00
28.75	2.00	0.91	5.00	0.00	0.00	0.00
28.80	2.00	0.91	5.00	0.00	0.00	0.00
28.85	2.00	0.91	5.00	0.00	0.00	0.00
28.90	2.00	0.91	5.00	0.00	0.00	0.00
28.95	2.00	0.91	5.00	0.00	0.00	0.00
29.00	2.00	0.91	5.00	0.00	0.00	0.00
29.05	2.00	0.91	5.00	0.00	0.00	0.00
29.10	2.00	0.91	5.00	0.00	0.00	0.00
29.15	2.00	0.91	5.00	0.00	0.00	0.00
29.20	2.00	0.91	5.00	0.00	0.00	0.00
29.25	2.00	0.91	5.00	0.00	0.00	0.00
29.30	2.00	0.91	5.00	0.00	0.00	0.00
29.35	2.00	0.91	5.00	0.00	0.00	0.00
29.40	2.00	0.91	5.00	0.00	0.00	0.00
29.45	2.00	0.91	5.00	0.00	0.00	0.00
29.50	2.00	0.91	5.00	0.00	0.00	0.00

29.55	2.00	0.91	5.00	0.00	0.00	0.00
29.60	2.00	0.91	5.00	0.00	0.00	0.00
29.65	2.00	0.91	5.00	0.00	0.00	0.00
29.70	2.00	0.91	5.00	0.00	0.00	0.00
29.75	2.00	0.92	5.00	0.00	0.00	0.00
29.80	2.00	0.92	5.00	0.00	0.00	0.00
29.85	2.00	0.92	5.00	0.00	0.00	0.00
29.90	2.00	0.92	5.00	0.00	0.00	0.00
29.95	2.00	0.92	5.00	0.00	0.00	0.00
30.00	2.00	0.92	5.00	0.00	0.00	0.00
30.05	2.00	0.92	5.00	0.00	0.00	0.00
30.10	2.00	0.92	5.00	0.00	0.00	0.00
30.15	2.00	0.92	5.00	0.00	0.00	0.00
30.20	2.00	0.92	5.00	0.00	0.00	0.00
30.25	2.00	0.92	5.00	0.00	0.00	0.00
30.30	2.00	0.92	5.00	0.00	0.00	0.00
30.35	2.00	0.92	5.00	0.00	0.00	0.00
30.40	2.00	0.92	5.00	0.00	0.00	0.00
30.45	2.00	0.92	5.00	0.00	0.00	0.00
30.50	2.00	0.92	5.00	0.00	0.00	0.00
30.55	2.00	0.92	5.00	0.00	0.00	0.00
30.60	2.00	0.92	5.00	0.00	0.00	0.00
30.65	2.00	0.92	5.00	0.00	0.00	0.00
30.70	2.00	0.92	5.00	0.00	0.00	0.00
30.75	2.00	0.92	5.00	0.00	0.00	0.00
30.80	2.00	0.92	5.00	0.00	0.00	0.00
30.85	2.00	0.92	5.00	0.00	0.00	0.00
30.90	2.00	0.92	5.00	0.00	0.00	0.00
30.95	2.00	0.91	5.00	0.00	0.00	0.00
31.00	2.00	0.91	5.00	0.00	0.00	0.00
31.05	2.00	0.91	5.00	0.00	0.00	0.00
31.10	2.00	0.91	5.00	0.00	0.00	0.00
31.15	2.00	0.91	5.00	0.00	0.00	0.00
31.20	2.00	0.91	5.00	0.00	0.00	0.00
31.25	2.00	0.91	5.00	0.00	0.00	0.00
31.30	2.00	0.91	5.00	0.00	0.00	0.00
31.35	2.00	0.91	5.00	0.00	0.00	0.00
31.40	2.00	0.91	5.00	0.00	0.00	0.00
31.45	2.00	0.91	5.00	0.00	0.00	0.00
31.50	2.00	0.91	5.00	0.00	0.00	0.00
31.55	2.00	0.91	5.00	0.00	0.00	0.00
31.60	2.00	0.91	5.00	0.00	0.00	0.00
31.65	2.00	0.91	5.00	0.00	0.00	0.00
31.70	2.00	0.91	5.00	0.00	0.00	0.00
31.75	2.00	0.91	5.00	0.00	0.00	0.00
31.80	2.00	0.91	5.00	0.00	0.00	0.00
31.85	2.00	0.91	5.00	0.00	0.00	0.00
31.90	2.00	0.91	5.00	0.00	0.00	0.00
31.95	2.00	0.91	5.00	0.00	0.00	0.00
32.00	2.00	0.91	5.00	0.00	0.00	0.00
32.05	2.00	0.91	5.00	0.00	0.00	0.00
32.10	2.00	0.91	5.00	0.00	0.00	0.00
32.15	2.00	0.91	5.00	0.00	0.00	0.00
32.20	2.00	0.91	5.00	0.00	0.00	0.00
32.25	2.00	0.91	5.00	0.00	0.00	0.00
32.30	2.00	0.91	5.00	0.00	0.00	0.00
32.35	2.00	0.91	5.00	0.00	0.00	0.00
32.40	2.00	0.91	5.00	0.00	0.00	0.00
32.45	2.00	0.91	5.00	0.00	0.00	0.00
32.50	2.00	0.91	5.00	0.00	0.00	0.00
32.55	2.00	0.91	5.00	0.00	0.00	0.00
32.60	2.00	0.91	5.00	0.00	0.00	0.00
32.65	2.00	0.91	5.00	0.00	0.00	0.00
32.70	2.00	0.91	5.00	0.00	0.00	0.00
32.75	2.00	0.91	5.00	0.00	0.00	0.00
32.80	2.00	0.91	5.00	0.00	0.00	0.00
32.85	2.00	0.91	5.00	0.00	0.00	0.00
32.90	2.00	0.91	5.00	0.00	0.00	0.00
32.95	2.00	0.91	5.00	0.00	0.00	0.00
33.00	2.00	0.91	5.00	0.00	0.00	0.00
33.05	2.00	0.91	5.00	0.00	0.00	0.00
33.10	2.00	0.91	5.00	0.00	0.00	0.00
33.15	2.00	0.91	5.00	0.00	0.00	0.00
33.20	2.00	0.91	5.00	0.00	0.00	0.00
33.25	2.00	0.91	5.00	0.00	0.00	0.00

33.30	2.00	0.91	5.00	0.00	0.00	0.00
33.35	2.00	0.91	5.00	0.00	0.00	0.00
33.40	2.00	0.91	5.00	0.00	0.00	0.00
33.45	2.00	0.91	5.00	0.00	0.00	0.00
33.50	2.00	0.91	5.00	0.00	0.00	0.00
33.55	2.00	0.91	5.00	0.00	0.00	0.00
33.60	2.00	0.91	5.00	0.00	0.00	0.00
33.65	2.00	0.91	5.00	0.00	0.00	0.00
33.70	2.00	0.91	5.00	0.00	0.00	0.00
33.75	2.00	0.91	5.00	0.00	0.00	0.00
33.80	2.00	0.91	5.00	0.00	0.00	0.00
33.85	2.00	0.91	5.00	0.00	0.00	0.00
33.90	2.00	0.91	5.00	0.00	0.00	0.00
33.95	2.00	0.91	5.00	0.00	0.00	0.00
34.00	2.00	0.91	5.00	0.00	0.00	0.00
34.05	2.00	0.91	5.00	0.00	0.00	0.00
34.10	2.00	0.91	5.00	0.00	0.00	0.00
34.15	2.00	0.91	5.00	0.00	0.00	0.00
34.20	2.00	0.91	5.00	0.00	0.00	0.00
34.25	2.00	0.91	5.00	0.00	0.00	0.00
34.30	2.00	0.91	5.00	0.00	0.00	0.00
34.35	2.00	0.91	5.00	0.00	0.00	0.00
34.40	2.00	0.91	5.00	0.00	0.00	0.00
34.45	2.00	0.91	5.00	0.00	0.00	0.00
34.50	2.00	0.91	5.00	0.00	0.00	0.00
34.55	2.00	0.91	5.00	0.00	0.00	0.00
34.60	2.00	0.91	5.00	0.00	0.00	0.00
34.65	2.00	0.91	5.00	0.00	0.00	0.00
34.70	2.00	0.90	5.00	0.00	0.00	0.00
34.75	2.00	0.90	5.00	0.00	0.00	0.00
34.80	2.00	0.90	5.00	0.00	0.00	0.00
34.85	2.00	0.90	5.00	0.00	0.00	0.00
34.90	2.00	0.90	5.00	0.00	0.00	0.00
34.95	2.00	0.90	5.00	0.00	0.00	0.00
35.00	2.00	0.90	5.00	0.00	0.00	0.00
35.05	2.00	0.90	5.00	0.00	0.00	0.00
35.10	2.00	0.90	5.00	0.00	0.00	0.00
35.15	2.00	0.90	5.00	0.00	0.00	0.00
35.20	2.00	0.90	5.00	0.00	0.00	0.00
35.25	2.00	0.90	5.00	0.00	0.00	0.00
35.30	2.00	0.90	5.00	0.00	0.00	0.00
35.35	2.00	0.90	5.00	0.00	0.00	0.00
35.40	2.00	0.90	5.00	0.00	0.00	0.00
35.45	2.00	0.90	5.00	0.00	0.00	0.00
35.50	2.00	0.90	5.00	0.00	0.00	0.00
35.55	2.00	0.90	5.00	0.00	0.00	0.00
35.60	2.00	0.90	5.00	0.00	0.00	0.00
35.65	2.00	0.90	5.00	0.00	0.00	0.00
35.70	2.00	0.90	5.00	0.00	0.00	0.00
35.75	2.00	0.90	5.00	0.00	0.00	0.00
35.80	2.00	0.90	5.00	0.00	0.00	0.00
35.85	2.00	0.90	5.00	0.00	0.00	0.00
35.90	2.00	0.90	5.00	0.00	0.00	0.00
35.95	2.00	0.90	5.00	0.00	0.00	0.00
36.00	2.00	0.90	5.00	0.00	0.00	0.00
36.05	2.00	0.90	5.00	0.00	0.00	0.00
36.10	2.00	0.90	5.00	0.00	0.00	0.00
36.15	2.00	0.90	5.00	0.00	0.00	0.00
36.20	2.00	0.90	5.00	0.00	0.00	0.00
36.25	2.00	0.90	5.00	0.00	0.00	0.00
36.30	2.00	0.90	5.00	0.00	0.00	0.00
36.35	2.00	0.90	5.00	0.00	0.00	0.00
36.40	2.00	0.90	5.00	0.00	0.00	0.00
36.45	2.00	0.90	5.00	0.00	0.00	0.00
36.50	2.00	0.90	5.00	0.00	0.00	0.00
36.55	2.00	0.90	5.00	0.00	0.00	0.00
36.60	2.00	0.90	5.00	0.00	0.00	0.00
36.65	2.00	0.90	5.00	0.00	0.00	0.00
36.70	2.00	0.90	5.00	0.00	0.00	0.00
36.75	2.00	0.90	5.00	0.00	0.00	0.00
36.80	2.00	0.90	5.00	0.00	0.00	0.00
36.85	2.00	0.90	5.00	0.00	0.00	0.00
36.90	2.00	0.90	5.00	0.00	0.00	0.00
36.95	2.00	0.90	5.00	0.00	0.00	0.00
37.00	2.00	0.90	5.00	0.00	0.00	0.00

37.05	2.00	0.90	5.00	0.00	0.00	0.00
37.10	2.00	0.90	5.00	0.00	0.00	0.00
37.15	2.00	0.90	5.00	0.00	0.00	0.00
37.20	2.00	0.90	5.00	0.00	0.00	0.00
37.25	2.00	0.90	5.00	0.00	0.00	0.00
37.30	2.00	0.90	5.00	0.00	0.00	0.00
37.35	2.00	0.90	5.00	0.00	0.00	0.00
37.40	2.00	0.90	5.00	0.00	0.00	0.00
37.45	2.00	0.90	5.00	0.00	0.00	0.00
37.50	2.00	0.90	5.00	0.00	0.00	0.00
37.55	2.00	0.89	5.00	0.00	0.00	0.00
37.60	2.00	0.89	5.00	0.00	0.00	0.00
37.65	2.00	0.89	5.00	0.00	0.00	0.00
37.70	2.00	0.89	5.00	0.00	0.00	0.00
37.75	2.00	0.89	5.00	0.00	0.00	0.00
37.80	2.00	0.89	5.00	0.00	0.00	0.00
37.85	2.00	0.89	5.00	0.00	0.00	0.00
37.90	2.00	0.89	5.00	0.00	0.00	0.00
37.95	2.00	0.89	5.00	0.00	0.00	0.00
38.00	2.00	0.89	5.00	0.00	0.00	0.00
38.05	2.00	0.89	5.00	0.00	0.00	0.00
38.10	2.00	0.89	5.00	0.00	0.00	0.00
38.15	2.00	0.89	5.00	0.00	0.00	0.00
38.20	2.00	0.89	5.00	0.00	0.00	0.00
38.25	2.00	0.89	5.00	0.00	0.00	0.00
38.30	2.00	0.89	5.00	0.00	0.00	0.00
38.35	2.00	0.89	5.00	0.00	0.00	0.00
38.40	2.00	0.89	5.00	0.00	0.00	0.00
38.45	2.00	0.89	5.00	0.00	0.00	0.00
38.50	2.00	0.89	5.00	0.00	0.00	0.00
38.55	2.00	0.89	5.00	0.00	0.00	0.00
38.60	2.00	0.89	5.00	0.00	0.00	0.00
38.65	2.00	0.89	5.00	0.00	0.00	0.00
38.70	2.00	0.89	5.00	0.00	0.00	0.00
38.75	2.00	0.89	5.00	0.00	0.00	0.00
38.80	2.00	0.89	5.00	0.00	0.00	0.00
38.85	2.00	0.89	5.00	0.00	0.00	0.00
38.90	2.00	0.89	5.00	0.00	0.00	0.00
38.95	2.00	0.89	5.00	0.00	0.00	0.00
39.00	2.00	0.89	5.00	0.00	0.00	0.00
39.05	2.00	0.89	5.00	0.00	0.00	0.00
39.10	2.00	0.89	5.00	0.00	0.00	0.00
39.15	2.00	0.89	5.00	0.00	0.00	0.00
39.20	2.00	0.89	5.00	0.00	0.00	0.00
39.25	2.00	0.89	5.00	0.00	0.00	0.00
39.30	2.00	0.89	5.00	0.00	0.00	0.00
39.35	2.00	0.89	5.00	0.00	0.00	0.00
39.40	2.00	0.89	5.00	0.00	0.00	0.00
39.45	2.00	0.89	5.00	0.00	0.00	0.00
39.50	2.00	0.89	5.00	0.00	0.00	0.00
39.55	2.00	0.89	5.00	0.00	0.00	0.00
39.60	2.00	0.89	5.00	0.00	0.00	0.00
39.65	2.00	0.89	5.00	0.00	0.00	0.00
39.70	2.00	0.89	5.00	0.00	0.00	0.00
39.75	2.00	0.89	5.00	0.00	0.00	0.00
39.80	2.00	0.89	5.00	0.00	0.00	0.00
39.85	2.00	0.89	5.00	0.00	0.00	0.00
39.90	2.00	0.89	5.00	0.00	0.00	0.00
39.95	2.00	0.89	5.00	0.00	0.00	0.00
40.00	2.00	0.89	5.00	0.00	0.00	0.00
40.05	2.00	0.89	5.00	0.00	0.00	0.00
40.10	2.00	0.89	5.00	0.00	0.00	0.00
40.15	2.00	0.88	5.00	0.00	0.00	0.00
40.20	2.00	0.88	5.00	0.00	0.00	0.00
40.25	2.00	0.88	5.00	0.00	0.00	0.00
40.30	2.00	0.88	5.00	0.00	0.00	0.00
40.35	2.00	0.88	5.00	0.00	0.00	0.00
40.40	2.00	0.88	5.00	0.00	0.00	0.00
40.45	2.00	0.88	5.00	0.00	0.00	0.00
40.50	2.00	0.88	5.00	0.00	0.00	0.00
40.55	2.00	0.88	5.00	0.00	0.00	0.00
40.60	2.00	0.88	5.00	0.00	0.00	0.00
40.65	2.00	0.88	5.00	0.00	0.00	0.00
40.70	2.00	0.88	5.00	0.00	0.00	0.00
40.75	2.00	0.88	5.00	0.00	0.00	0.00

40.80	2.00	0.88	5.00	0.00	0.00	0.00
40.85	2.00	0.88	5.00	0.00	0.00	0.00
40.90	2.00	0.88	5.00	0.00	0.00	0.00
40.95	2.00	0.88	5.00	0.00	0.00	0.00
41.00	2.00	0.88	5.00	0.00	0.00	0.00
41.05	2.00	0.88	5.00	0.00	0.00	0.00
41.10	2.00	0.88	5.00	0.00	0.00	0.00
41.15	2.00	0.88	5.00	0.00	0.00	0.00
41.20	2.00	0.88	5.00	0.00	0.00	0.00
41.25	2.00	0.88	5.00	0.00	0.00	0.00
41.30	2.00	0.88	5.00	0.00	0.00	0.00
41.35	2.00	0.88	5.00	0.00	0.00	0.00
41.40	2.00	0.88	5.00	0.00	0.00	0.00
41.45	2.00	0.88	5.00	0.00	0.00	0.00
41.50	2.00	0.88	5.00	0.00	0.00	0.00
41.55	2.00	0.88	5.00	0.00	0.00	0.00
41.60	2.00	0.88	5.00	0.00	0.00	0.00
41.65	2.00	0.88	5.00	0.00	0.00	0.00
41.70	2.00	0.88	5.00	0.00	0.00	0.00
41.75	2.00	0.88	5.00	0.00	0.00	0.00
41.80	2.00	0.88	5.00	0.00	0.00	0.00
41.85	2.00	0.88	5.00	0.00	0.00	0.00
41.90	2.00	0.88	5.00	0.00	0.00	0.00
41.95	2.00	0.88	5.00	0.00	0.00	0.00
42.00	2.00	0.88	5.00	0.00	0.00	0.00
42.05	2.00	0.88	5.00	0.00	0.00	0.00
42.10	2.00	0.88	5.00	0.00	0.00	0.00
42.15	2.00	0.88	5.00	0.00	0.00	0.00
42.20	2.00	0.88	5.00	0.00	0.00	0.00
42.25	2.00	0.88	5.00	0.00	0.00	0.00
42.30	2.00	0.88	5.00	0.00	0.00	0.00
42.35	2.00	0.88	5.00	0.00	0.00	0.00
42.40	2.00	0.88	5.00	0.00	0.00	0.00
42.45	2.00	0.88	5.00	0.00	0.00	0.00
42.50	2.00	0.88	5.00	0.00	0.00	0.00
42.55	2.00	0.88	5.00	0.00	0.00	0.00
42.60	2.00	0.88	5.00	0.00	0.00	0.00
42.65	2.00	0.88	5.00	0.00	0.00	0.00
42.70	2.00	0.88	5.00	0.00	0.00	0.00
42.75	2.00	0.87	5.00	0.00	0.00	0.00
42.80	2.00	0.87	5.00	0.00	0.00	0.00
42.85	2.00	0.87	5.00	0.00	0.00	0.00
42.90	2.00	0.87	5.00	0.00	0.00	0.00
42.95	2.00	0.87	5.00	0.00	0.00	0.00
43.00	2.00	0.87	5.00	0.00	0.00	0.00
43.05	2.00	0.87	5.00	0.00	0.00	0.00
43.10	2.00	0.87	5.00	0.00	0.00	0.00
43.15	2.00	0.87	5.00	0.00	0.00	0.00
43.20	2.00	0.87	5.00	0.00	0.00	0.00
43.25	2.00	0.87	5.00	0.00	0.00	0.00
43.30	2.00	0.87	5.00	0.00	0.00	0.00
43.35	2.00	0.87	5.00	0.00	0.00	0.00
43.40	2.00	0.87	5.00	0.00	0.00	0.00
43.45	2.00	0.87	5.00	0.00	0.00	0.00
43.50	2.00	0.87	5.00	0.00	0.00	0.00
43.55	2.00	0.87	5.00	0.00	0.00	0.00
43.60	2.00	0.87	5.00	0.00	0.00	0.00
43.65	2.00	0.87	5.00	0.00	0.00	0.00
43.70	2.00	0.87	5.00	0.00	0.00	0.00
43.75	2.00	0.87	5.00	0.00	0.00	0.00
43.80	2.00	0.87	5.00	0.00	0.00	0.00
43.85	2.00	0.87	5.00	0.00	0.00	0.00
43.90	2.00	0.87	5.00	0.00	0.00	0.00
43.95	2.00	0.87	5.00	0.00	0.00	0.00
44.00	2.00	0.87	5.00	0.00	0.00	0.00
44.05	2.00	0.87	5.00	0.00	0.00	0.00
44.10	2.00	0.87	5.00	0.00	0.00	0.00
44.15	2.00	0.87	5.00	0.00	0.00	0.00
44.20	2.00	0.87	5.00	0.00	0.00	0.00
44.25	2.00	0.87	5.00	0.00	0.00	0.00
44.30	2.00	0.87	5.00	0.00	0.00	0.00
44.35	2.00	0.87	5.00	0.00	0.00	0.00
44.40	2.00	0.87	5.00	0.00	0.00	0.00
44.45	2.00	0.87	5.00	0.00	0.00	0.00
44.50	2.00	0.87	5.00	0.00	0.00	0.00

44.55	2.00	0.87	5.00	0.00	0.00	0.00
44.60	2.00	0.87	5.00	0.00	0.00	0.00
44.65	2.00	0.87	5.00	0.00	0.00	0.00
44.70	2.00	0.87	5.00	0.00	0.00	0.00
44.75	2.00	0.87	5.00	0.00	0.00	0.00
44.80	2.00	0.87	5.00	0.00	0.00	0.00
44.85	2.00	0.87	5.00	0.00	0.00	0.00
44.90	2.00	0.87	5.00	0.00	0.00	0.00
44.95	2.00	0.87	5.00	0.00	0.00	0.00
45.00	2.00	0.87	5.00	0.00	0.00	0.00
45.05	2.00	0.87	5.00	0.00	0.00	0.00
45.10	2.00	0.87	5.00	0.00	0.00	0.00
45.15	2.00	0.87	5.00	0.00	0.00	0.00
45.20	2.00	0.87	5.00	0.00	0.00	0.00
45.25	2.00	0.87	5.00	0.00	0.00	0.00
45.30	2.00	0.86	5.00	0.00	0.00	0.00
45.35	2.00	0.86	5.00	0.00	0.00	0.00
45.40	2.00	0.86	5.00	0.00	0.00	0.00
45.45	2.00	0.86	5.00	0.00	0.00	0.00
45.50	2.00	0.86	5.00	0.00	0.00	0.00
45.55	2.00	0.86	5.00	0.00	0.00	0.00
45.60	2.00	0.86	5.00	0.00	0.00	0.00
45.65	2.00	0.86	5.00	0.00	0.00	0.00
45.70	2.00	0.86	5.00	0.00	0.00	0.00
45.75	2.00	0.86	5.00	0.00	0.00	0.00
45.80	2.00	0.86	5.00	0.00	0.00	0.00
45.85	2.00	0.86	5.00	0.00	0.00	0.00
45.90	2.00	0.86	5.00	0.00	0.00	0.00
45.95	2.00	0.86	5.00	0.00	0.00	0.00
46.00	2.00	0.86	5.00	0.00	0.00	0.00
46.05	2.00	0.86	5.00	0.00	0.00	0.00
46.10	2.00	0.86	5.00	0.00	0.00	0.00
46.15	2.00	0.86	5.00	0.00	0.00	0.00
46.20	2.00	0.86	5.00	0.00	0.00	0.00
46.25	2.00	0.86	5.00	0.00	0.00	0.00
46.30	2.00	0.86	5.00	0.00	0.00	0.00
46.35	2.00	0.86	5.00	0.00	0.00	0.00
46.40	2.00	0.86	5.00	0.00	0.00	0.00
46.45	2.00	0.86	5.00	0.00	0.00	0.00
46.50	2.00	0.86	5.00	0.00	0.00	0.00
46.55	2.00	0.86	5.00	0.00	0.00	0.00
46.60	2.00	0.86	5.00	0.00	0.00	0.00
46.65	2.00	0.86	5.00	0.00	0.00	0.00
46.70	2.00	0.86	5.00	0.00	0.00	0.00
46.75	2.00	0.86	5.00	0.00	0.00	0.00
46.80	2.00	0.86	5.00	0.00	0.00	0.00
46.85	2.00	0.86	5.00	0.00	0.00	0.00
46.90	2.00	0.86	5.00	0.00	0.00	0.00
46.95	2.00	0.86	5.00	0.00	0.00	0.00
47.00	2.00	0.86	5.00	0.00	0.00	0.00
47.05	2.00	0.86	5.00	0.00	0.00	0.00
47.10	2.00	0.86	5.00	0.00	0.00	0.00
47.15	2.00	0.86	5.00	0.00	0.00	0.00
47.20	2.00	0.86	5.00	0.00	0.00	0.00
47.25	2.00	0.86	5.00	0.00	0.00	0.00
47.30	2.00	0.85	5.00	0.00	0.00	0.00
47.35	2.00	0.85	5.00	0.00	0.00	0.00
47.40	2.00	0.85	5.00	0.00	0.00	0.00
47.45	2.00	0.85	5.00	0.00	0.00	0.00
47.50	2.00	0.85	5.00	0.00	0.00	0.00
47.55	2.00	0.85	5.00	0.00	0.00	0.00
47.60	2.00	0.85	5.00	0.00	0.00	0.00
47.65	2.00	0.85	5.00	0.00	0.00	0.00
47.70	2.00	0.85	5.00	0.00	0.00	0.00
47.75	2.00	0.85	5.00	0.00	0.00	0.00
47.80	2.00	0.85	5.00	0.00	0.00	0.00
47.85	2.00	0.85	5.00	0.00	0.00	0.00
47.90	2.00	0.85	5.00	0.00	0.00	0.00
47.95	2.00	0.85	5.00	0.00	0.00	0.00
48.00	2.00	0.85	5.00	0.00	0.00	0.00
48.05	2.00	0.85	5.00	0.00	0.00	0.00
48.10	2.00	0.85	5.00	0.00	0.00	0.00
48.15	2.00	0.85	5.00	0.00	0.00	0.00
48.20	2.00	0.85	5.00	0.00	0.00	0.00
48.25	2.00	0.85	5.00	0.00	0.00	0.00

48.30	2.00	0.85	5.00	0.00	0.00	0.00
48.35	2.00	0.85	5.00	0.00	0.00	0.00
48.40	2.00	0.85	5.00	0.00	0.00	0.00
48.45	2.00	0.85	5.00	0.00	0.00	0.00
48.50	2.00	0.85	5.00	0.00	0.00	0.00
48.55	2.00	0.85	5.00	0.00	0.00	0.00
48.60	2.00	0.84	5.00	0.00	0.00	0.00
48.65	2.00	0.84	5.00	0.00	0.00	0.00
48.70	2.00	0.84	5.00	0.00	0.00	0.00
48.75	2.00	0.84	5.00	0.00	0.00	0.00
48.80	2.00	0.84	5.00	0.00	0.00	0.00
48.85	2.00	0.84	5.00	0.00	0.00	0.00
48.90	2.00	0.84	5.00	0.00	0.00	0.00
48.95	2.00	0.84	5.00	0.00	0.00	0.00
49.00	2.00	0.84	5.00	0.00	0.00	0.00
49.05	2.00	0.84	5.00	0.00	0.00	0.00
49.10	2.00	0.84	5.00	0.00	0.00	0.00
49.15	2.00	0.84	5.00	0.00	0.00	0.00
49.20	2.00	0.84	5.00	0.00	0.00	0.00
49.25	2.00	0.84	5.00	0.00	0.00	0.00
49.30	2.00	0.84	5.00	0.00	0.00	0.00
49.35	2.00	0.84	5.00	0.00	0.00	0.00
49.40	2.00	0.84	5.00	0.00	0.00	0.00
49.45	2.00	0.84	5.00	0.00	0.00	0.00
49.50	2.00	0.84	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.

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

APPENDIX B

Fugro USA Land, Inc., 2024
Site-Specific Hazard Assessment
New 6th Grade Campus Project
Golden West Middle School
Fairfield, California

6th Grade Campus Project, Golden West Middle School

Site-Specific Seismic Hazard Assessment | Fairfield, California

04.00263904-PR-001 02 | November 4, 2024
Final

Cleary Consultants, Inc.

Document Control

Document Information

Project Title	Site-Specific Seismic Hazard Assessment for the 6th Grade Campus Project, Golden West Middle School, Fairfield, California
Document Title	6th Grade Campus Project, Golden West Middle School
Fugro Project No.	04.00263904
Fugro Document No.	04.00263904-PR-001
Issue Number	02
Issue Status	Final
Fugro Legal Entity	Fugro USA Land, Inc.
Issuing Office Address	1777 Botelho Drive, Suite 262, Walnut Creek, California 94596

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Revision History

Issue	Date	Status	Comments on Content	Prepared By	Checked By	Approved By
01	November 1, 2024	For Review	Awaiting client comments	YK	AF	AF
02	November 4, 2024	Final	Final Report	YK	AF	AF

Project Team

Initials	Name	Role
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November 4, 2024

Dear Mr. Lettenberger,

We are pleased to submit thisreport summarizing the results and recommendations from the site-specific seismic hazard assessment conducted for the 6th Grade Campus Project at the Golden West Middle School located in Fairfield, California. Our services were performed in general accordance with our Proposal No. 04.P0263904, Document No. 04.P0263904-P-001(01), dated October 18, 2024, and authorized on October 18, 2024.

Introduction

We understand that the proposed project will consist of a 6th Grade Campus at the Golden West Middle School located in Fairfield, California. This report summarizes the analyses and results of a site-specific Probabilistic Seismic Hazard Analysis (PSHA) conducted to estimate the severity of ground motions that may affect the project site for specific design levels of hazard. The PSHA was conducted using the seismic source model adopted by the United States Geological Survey (USGS) to develop the 2014 National Seismic Hazard Map Project (NSHMP) (Petersen et al., 2014), and the NGA West 2 Ground Motion Models (Bozorgnia et al., 2014). The design ground motion parameters were calculated following the site-specific ground motion procedures defined in Chapter 21 of ASCE 7-16 (ASCE, 2016; 2018) as required by the 2022 California Building Code (CBC) (CBSC, 2022).

Subsurface Conditions

The site-specific geotechnical subsurface information available for review consisted of three geotechnical borings, EB-04, EB-05, and EB-08 conducted by Cleary Consultants, Inc. (2024). The geotechnical explorations extended to depths ranging from 34.5 to 49.5 feet (ft). According to the geotechnical boring logs, the subsurface conditions comprise primarily of clays and silts underlain by siltstone and sandstone extending to the maximum exploration depth.

The time-weighted average shear wave velocity (Vs) in the top 100 ft (30 meters [m]) (Vs30) is an important input parameter to include the local site conditions in the PSHA. In-situ Vs measurements are

not available at the project site, and therefore, Vs profiles were estimated using the empirical correlations between SPT data and Vs recommended by Wair et al. (2012) and Brandenberg et al. (2010). The estimated Vs profile for each exploration was calculated as the average of the empirical correlations mentioned above. The estimated Vs profile for all geotechnical borings (EB-04, EB-05, and EB-08) are presented on Figure 1.

None of these Vs profiles extend to a depth of 100 ft (30 m). Therefore, to calculate the Vs30 value, these Vs profiles were extrapolated to 100 ft (30 m) using a constant Vs. The constant Vs value was calculated as the mean minus half standard deviation of the Vs distribution estimated by Willis et al. (2015) for Tertiary siltstone and sandstone units, which are considered representative of the Tehama formation encountered in the geotechnical borings. The mean minus half standard deviation value was selected to account for some weathering in the rock formation. The Vs30 value for the site was calculated as the average Vs30 of all geotechnical borings. The calculated Vs30 value is 820 ft/sec (250 m/s). This Vs30 value corresponds to a Site Class D according to CBC (CBSC, 2022).

Probabilistic Seismic Hazard Analysis

Project Location

A Probabilistic Seismic Hazard Analysis (PSHA) was conducted for one representative location of the project site. The geographical coordinates of the location used for the seismic hazard analyses are tabulated in Table 1.

Table 1: Representative Project Location Coordinates used in the PSHA

Latitude	Longitude
38.2777°N	121.9610°W

Methodology

PSHA Framework

The methodology for a PSHA includes the following components:

1. Seismic Source Model. This includes defining the location, style, and rates of earthquake occurrence in the model area. The characterization includes developing values for the following seismic source parameters:
    a. Source location and geometry. All major active faults and seismotectonic provinces are defined within the model area. This includes the geographical extent at the surface as well as the orientation and depth of the source zones.
    b. Source type (e.g., shallow crustal area source zones, fault sources, subduction zones, etc.) and style of faulting (e.g., normal, strike-slip, reverse, etc.).

c. Magnitude potential (i.e., range of earthquake sizes possible on each source) and magnitude distribution (i.e., characterized using a magnitude probability density function).
d. Earthquake magnitude recurrence, which is a characterization of the annual rate at which earthquakes of a specified magnitude or greater occur in each source.

2. Ground Motion Model. Characterization of ground motion attenuation characteristics of each source is based on the geologic and tectonic environment. These characteristics are described by a series of ground motion models, or GMM (also known as "attenuation relationships," "attenuation models," or "ground motion prediction equations").
3. Probabilistic Seismic Hazard Analysis. A PSHA uses inputs from the seismic source model and GMMs selected for the specific environment, to estimate the ground motion hazard at the site. The hazard is expressed in terms of the annual frequency of exceeding a given spectral acceleration at the project site (i.e., annual hazard curves). This information also can be shown in the form of uniform hazard response spectra (UHRS), which correspond to spectral acceleration having the same probability of exceedance across all structural periods. The UHRS are typically used by different design codes to define the design response spectra.

PSHA Calculation

Computation of the seismic hazard involves the combination of uncertainties in earthquake size, location, frequency, and resulting ground motions. The estimated annual rate at which the ground motion, A, will exceed a particular value, a, is computed by (Cornell, 1968):

$$\lambda[A > a] = \sum_{i=1}^{Nsource} N(M_{\min}) \iint P[A > a | m, r]\ f_M(m)\ f_R(r)\, dm\, dr$$

Equation 1

where N_{source} is the total number of seismic sources; $N(M_{min})$ is the annual rate of earthquake with magnitude greater than or equal to M_{min}; $P[A > a|m, r]$ is the probability of the ground motion, A, exceeding the threshold value, a, given the earthquake magnitude and distance from the seismic source; and $f_M(m)$ and $f_R(r)$ are probability density functions describing magnitude and distance.

The computation of this integral is carried out numerically. By assuming that earthquake occurrence can be modeled as a Poisson process, the probability of exceedance in a specified exposure period (typically corresponding to the useful life of a project) may be estimated as follows:

$$P[A > a, t] = 1 - e^{-[\lambda(a)t]}$$

Equation 2

where $P[A > a, \mathrm{t}]$ is the conditional probability of the spectral acceleration (A) exceeding a specified acceleration (a) during a time interval (t) given that an earthquake will occur, and $\lambda(a)$ is the mean annual rate of exceedance of the specified acceleration level.

Seismic Source Model

The PSHA was conducted using the seismic source model adopted by the UGSG to develop the 2014 NSHMP (Petersen et al., 2014) for California which includes the Uniform California Earthquake Rupture Forecast, Version 3 (UCERF3) and the Cascadia subduction zone. The details of the UCERF3 and Cascadia subduction zone seismic source models can be found in Field et al. (2013) and Petersen et al. (2014), respectively.

Empirical Ground Motion Models

The attenuation of seismic waves from a seismic source was modeled using empirical ground motion models (GMM's). These empirical GMM's should model the type of rupture mechanism as well as the regional geology to properly estimate site-specific strong ground motion parameters. For the shallow crustal seismic sources, four of the Next Generation Attenuation (NGA) West 2 GMM's (Bozorgnia et al., 2014) were used. These four NGA West 2 GMM are Abrahamson et al. (2014), Boore et al. (2014), Campbell and Bozorgnia (2014), and Chiou and Youngs (2014). The four NGA West 2 GMM's were equally weighted, following the weighting scheme used in the development of the 2014 USGS NSHMP (Petersen et al., 2014).

Following the latest revision of the 2014 USGS NSHMP (https://github.com/usgs/nshm-cous-2014/releases/tag/v4.2.0), for the subduction interface sources, the GMM's proposed by Zhao et al. (2006), Atkinson and Macias (2009), and BC Hydro (Addo et al., 2012) were used. For the subduction intraslab sources, the GMM's proposed by Zhao et al. (2006) and BC Hydro (Addo et al., 2012) were used. The same weighting scheme of these GMM's used in latest revision of the 2014 USGS NSHMP (https://github.com/usgs/nshm-cous-2014/releases/tag/v4.2.0) was used in the PSHA.

Implementation

The PSHA was performed using the USGS computer code *nshmp-haz*, which has been used by the USGS to develop the US national seismic hazard maps.

Results from the PSHA

Figure 2 shows the mean annual seismic hazard curves for selected spectral periods ranging from 0.01 to 10 seconds for a Vs30 of 250 m/sec. A spectral period of 0.01 seconds is used to represent the peak ground acceleration (PGA). These hazard curves represent the total mean hazard from combining all seismic sources and ground motion models. This figure also indicates the annual frequency of exceedance corresponding to a return period of 2,475 years.

Table 2 tabulates the calculated mean magnitude, distance, and epsilon from the seismic hazard deaggregation for PGA and Sa at 1 second for a return period of 2,475 years. Epsilon is the number of standard deviations that the estimated ground motion amplitude deviates from the estimated median

ground motion amplitude. Thus, an epsilon of 1 indicates that the probabilistic value of the ground motion corresponds to a median plus one-standard-deviation value.

Table 2: Mean Seismic Hazard Deaggregation for a Return Period of 2,475 Years and Vs30 of 250 m/sec

	PGA	Sa at 1 second
Mean Magnitude (Mw)	6.6	6.9
Mean Distance (km)	13.1	18.4
Mean Epsilon	1.4	1.5

Figure 3 presents the 5 percent-damped mean horizontal UHRS for a return period of 2,475 years and a Vs30 of 250 m/sec. Table 3 tabulates the mean horizontal UHRS for periods ranging from 0.01 (i.e., PGA) to 10 seconds for a return period of 2,475 years.

Table 3: Mean Horizontal UHRS for Return Period of 2,475 Years and a Vs30 of 250 m/sec, 5% Damping

Period (sec)	Horizontal Spectral Acceleration (g)
0.01	0.690
0.03	0.704
0.05	0.789
0.075	0.993
0.1	1.17
0.15	1.44
0.2	1.59
0.25	1.70
0.3	1.78
0.4	1.77
0.5	1.68
0.75	1.34
1	1.09
1.5	0.750
2	0.551
3	0.339
4	0.233
5	0.176
7.5	0.107
10	0.0747

Design Response Spectrum

According to ASCE 7-16, for Site Class D sites with S1 (mapped 5 percent damped spectral response acceleration parameter at a period of 1 second) greater than or equal to 0.2 g, the design response spectrum and design acceleration parameters should be developed following the site-specific ground motion procedures defined in Section 21.2 of ASCE 7-16. The S1 for the project site was calculated as 0.513 g using the USGS web service (https://earthquake.usgs.gov/ws/designmaps/asce7-16.html). Therefore, the design ground motions for the site should be calculated using the site-specific procedures from ASCE 7-16.

ASCE 7-16 defines a site-specific Risk-Targeted Maximum Considered Earthquake (MCE_R) as the lesser of probabilistic (MCE_R) and deterministic (MCE_R) ground motions. The probabilistic MCE_R ground motion is calculated as the ground motion in the direction of maximum horizontal response that is expected to achieve 1 percent probability of collapse within a 50-year period. The deterministic MCE_R ground motion is defined as the 84th percentile ground motion in the direction of maximum horizontal response of the largest acceleration from deterministic seismic hazard analysis (DSHA) of the characteristic earthquakes on all known active faults within the project region. Additionally, ASCE 7-16 specifies a lower limit to the deterministic MCE_R ground motion. The site-specific MCE_R should not be less than 150 percent of the site-specific design response spectrum. The site-specific design response spectrum is calculated as 2/3 of the site-specific MCE_R. The site-specific design response spectrum should be greater than or equal to 80 percent of the spectral acceleration as determined by using the general response spectrum of Section 11.4.6 of ASCE 7-16, using modified Fa and Fv values provided in Section 21.3 of ASCE 7-16.

The PSHA results described in the previous section were used to calculate the probabilistic MCE_R spectrum. As specified in ASCE 7-16, to obtain ground motions with a uniform 1 percent probability of collapse within a 50-year period, the UHRS for a return period of 2,475 was scaled by a risk coefficient, C_R. The C_R values were calculated using Method 1 described in Chapter 21 of ASCE 7-16. The mapped risk coefficients at spectral periods of 0.2 and 1.0 sec, C_{RS} and C_{R1}, respectively, were determined using the USGS web service (https://earthquake.usgs.gov/ws/designmaps/asce7-16.html). The values of these risk coefficients C_{RS} and C_{R1} are 0.913 and 0.924, respectively. The ground motions in the direction of maximum horizontal response were calculated by applying the scaling factors recommended in ASCE 7-16. Figure 4 shows the UHRS for a return period of 2,475 years along with the probabilistic MCE_R response spectrum.

The deterministic MCE_R spectrum was calculated by performing a DSHA in EZ-FRISK™ (Fugro, 2021) using the same seismic sources and GMM's used in the PSHA. The UCERF3 source model includes magnitude frequency distributions (MFD's) which relate frequency of occurrence to earthquake magnitude; however, these MFD's include multi-fault ruptures scenarios with large magnitudes but with a low probability of occurrence. Therefore, following the current USGS approach to calculate deterministic ground motions from the UCERF3 source model, to estimate the characteristic magnitude for the seismic sources, we used the empirical relationships proposed by Wells and Coppersmith (1994) that relates rupture geometry to

earthquake magnitude. The calculated characteristic magnitude values were checked for consistency with the values provided in the catalog of deterministic ruptures from the 2014 NSHMP provided by the Building Seismic Safety Council (BSSC) (https://earthquake.usgs.gov/scenarios/catalog/bssc2014). The ground motions in the direction of maximum horizontal response were calculated by applying the scaling factors recommended in ASCE 7-16. Figure 4 illustrates the calculation of the deterministic MCE_R response spectrum. The deterministic MCE_R response spectrum was calculated as the maximum of the 84th DSHA response spectrum and the lower limit specified by ASCE 7-16 Supplement 1 calculated for a Site Class D.

Figure 5 presents the development of the site-specific MCE_R and design response spectra for the site. In this case, the probabilistic MCE_R spectrum is lower than the deterministic MCE_R spectrum for spectral periods ranging from 0.01 to 4 seconds. The deterministic MCE_R is lower than the probabilistic MCE_R for spectral periods between 5 and 10 seconds.. The site-specific MCE_R spectrum is the maximum of: 1) the minimum of the probabilistic and deterministic MCE_R, and 2) 150 percent of the design response spectrum. Following ASCE 7-16, the recommended design response spectrum for the site was calculated as the maximum of 2/3 of the site-specific MCE_R and the lower limit specified by ASCE 7-16 (80 percent of the general spectrum for Site Class D, using modified Fa and Fv values provided in Section 21.3 of ASCE 7-16). The transition period from constant velocity to constant displacement, T_L, required to calculate the lower limit, was estimated as 8 seconds using the USGS web service (https://earthquake.usgs.gov/ws/designmaps/asce7-16.html).

Table 4 tabulates the spectral ordinates of the recommended site-specific MCE_R and design response spectra per ASCE 7-16. The corresponding design acceleration parameters S_{MS}, S_{M1}, S_{DS}, and S_{D1} are tabulated in Table 5.

Table 4: MCE_R and Design Response Spectra per ASCE 7-16 for a Vs30 of 250 m/sec, 5% Damping

	Horizontal Spectral Acceleration (g)							
Period (sec)	UHRS for Return Period of 2,475 Years	Probabilistic MCE_R	84th Deterministic Spectrum	Deterministic Lower Limit	Deterministic MCE_R	Site-Specific MCE_R	80% General Response Spectrum	Design Response Spectrum
0.01 (PGA)	0.690	0.693	0.742	0.581	0.817	0.693	0.341	0.462
0.03	0.704	0.707	0.742	0.581	0.817	0.707	0.395	0.471
0.05	0.789	0.792	0.805	0.630	0.885	0.792	0.449	0.528
0.075	0.993	1.00	0.972	0.761	1.07	0.997	0.517	0.665
0.1	1.17	1.18	1.13	0.888	1.25	1.18	0.584	0.786
0.15	1.44	1.44	1.37	1.07	1.51	1.44	0.720	0.962
0.174	1.52	1.52	1.45	1.14	1.60	1.52	0.785	1.02
0.2	1.59	1.60	1.53	1.20	1.69	1.60	0.785	1.07
0.25	1.70	1.76	1.64	1.32	1.85	1.76	0.785	1.17
0.3	1.78	1.88	1.73	1.42	1.99	1.88	0.785	1.25
0.4	1.77	1.93	1.78	1.50	2.11	1.93	0.785	1.29
0.5	1.68	1.88	1.71	1.48	2.07	1.88	0.785	1.25
0.75	1.34	1.56	1.39	1.25	1.76	1.56	0.785	1.04
0.871	1.20	1.42	1.26	1.15	1.61	1.42	0.785	0.948
1	1.09	1.31	1.15	1.06	1.49	1.31	0.684	0.873
1.5	0.750	0.935	0.806	0.775	1.09	0.935	0.456	0.623
2	0.551	0.706	0.606	0.598	0.840	0.706	0.342	0.471
3	0.339	0.450	0.356	0.364	0.511	0.450	0.228	0.300
4	0.233	0.316	0.228	0.238	0.335	0.316	0.171	0.211
5	0.176	0.244	0.159	0.169	0.238	0.238	0.137	0.159
7.5	0.107	0.149	0.0768	0.0820	0.115	0.137	0.0912	0.0912
8	0.0990	0.137	0.0674	0.0719	0.101	0.128	0.0855	0.0855
10	0.0747	0.104	0.0428	0.0457	0.0641	0.0821	0.0547	0.0547

Table 5: Design Acceleration Parameters per ASCE 7-16 for a Vs30 of 250 m/sec, 5% Damping

Parameter	Value
S_{MS}	1.74 g
S_{M1}	1.41 g
S_{DS}	1.16 g
S_{D1}	0.942 g

Limitations of this Study

This report has been prepared solely to assist Cleary Consultants, Inc. with the seismic design of the 6th Grade Campus Project at the Golden West Middle School located in Fairfield, California. The results herein apply to the specific location mentioned and are not applicable to other locations.

Seismic hazard analysis is a dynamic, rapidly evolving field of earthquake engineering. It is likely that the standard of practice in the project region for these services will evolve over the next few years. Additionally, the analyses were conducted using the geotechnical information available to the date of issue of this report. Consequently, the results presented in this study should be reviewed if new standards of practice or geotechnical data are available during the design of the project.

This report has been prepared for the exclusive use of Cleary Consultants, Inc. and their agents for the specific application of the 6th Grade Campus Project at the Golden West Middle School located in Fairfield, California. In our opinion, the findings, conclusions, professional opinions, and recommendations presented herein were prepared in accordance with the generally accepted geotechnical earthquake engineering practice of the project region.

Although information contained in this report may be of some use for other purposes, it may not contain sufficient information for other parties or uses. If any changes are made to the project as described in this report, the conclusions and recommendations in this report shall not be considered valid unless the changes are reviewed, and the conclusions and recommendations of this report are modified or validated in writing by Fugro.

Sincerely,

Yassein Keshty
Senior Staff Engineer

Alfredo Fernandez, PhD, PE
Principal Engineer

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List of Figures

Title	Figure No.
Estimated Shear Wave Velocity Profiles	1
Mean Annual Seismic Hazard Curves for Vs30 of 250 m/s	2
Mean Horizontal Uniform Hazard Response Spectrum for a Return Period of 2,475 Years and Vs30 of 250 m/s	3
Calculation of the Probabilistic and Deterministic Horizontal MCE_R Response Spectra per ASCE 7-16 for Vs30 of 250 m/s	4
Calculation of the Site-Specific Horizontal MCE_R and Design Response Spectra per ASCE 7-16 for Vs30 of 250 m/s	5

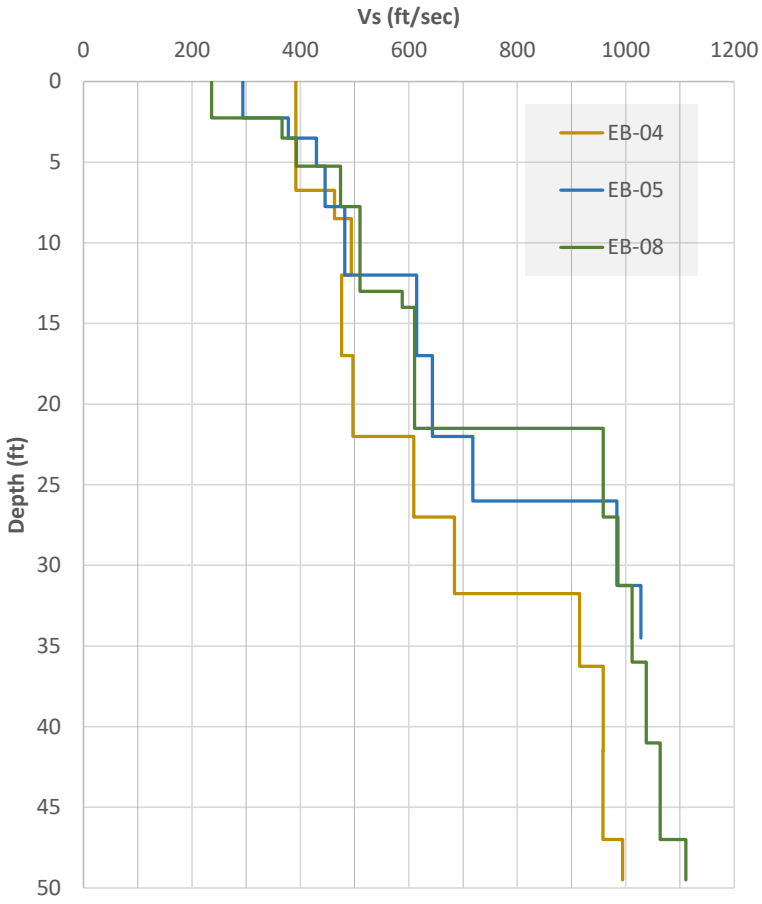


Figure 1: Estimated Shear Wave Velocity Profiles

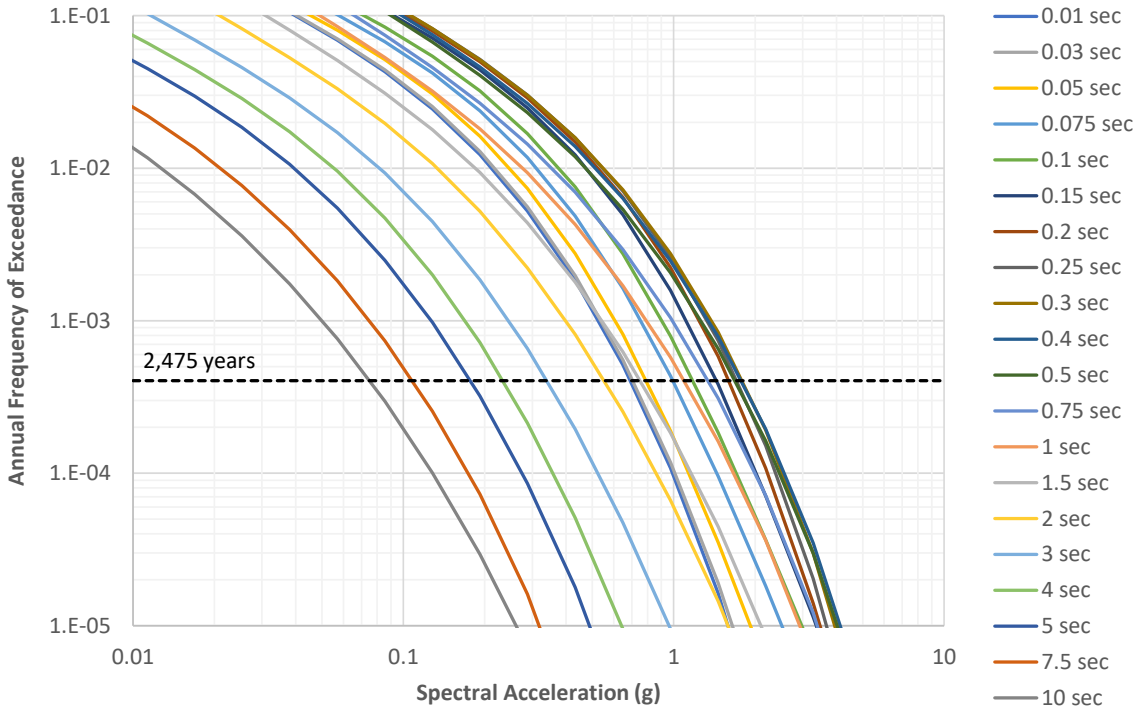


Figure 2: Mean Annual Seismic Hazard Curves for Vs30 of 250 m/s

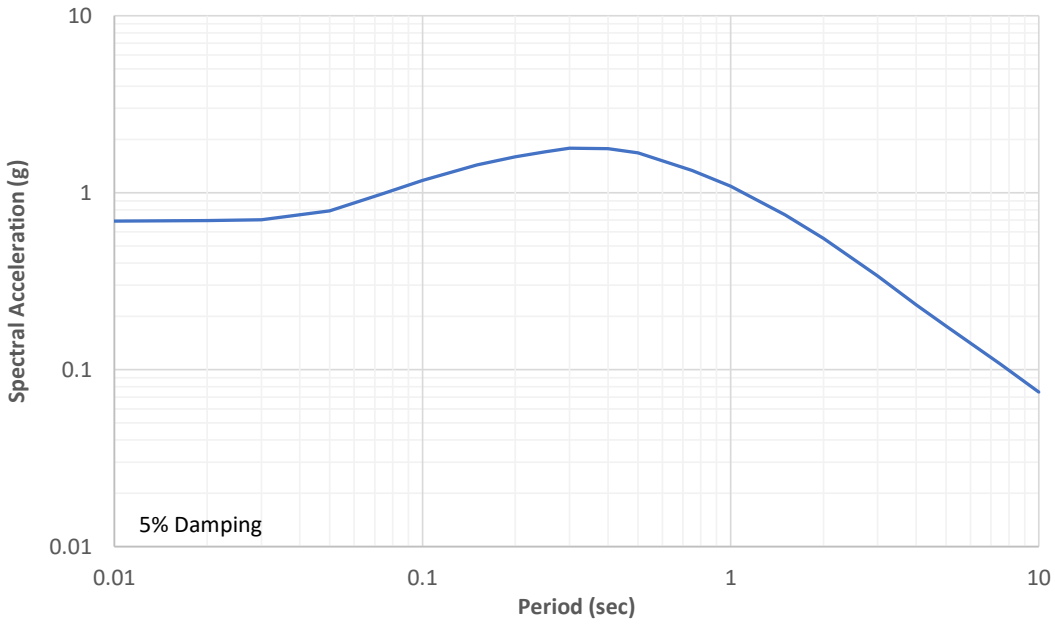


Figure 3: Mean Horizontal Uniform Hazard Response Spectrum for a Return Period of 2,475 Years and Vs30 of 250 m/s

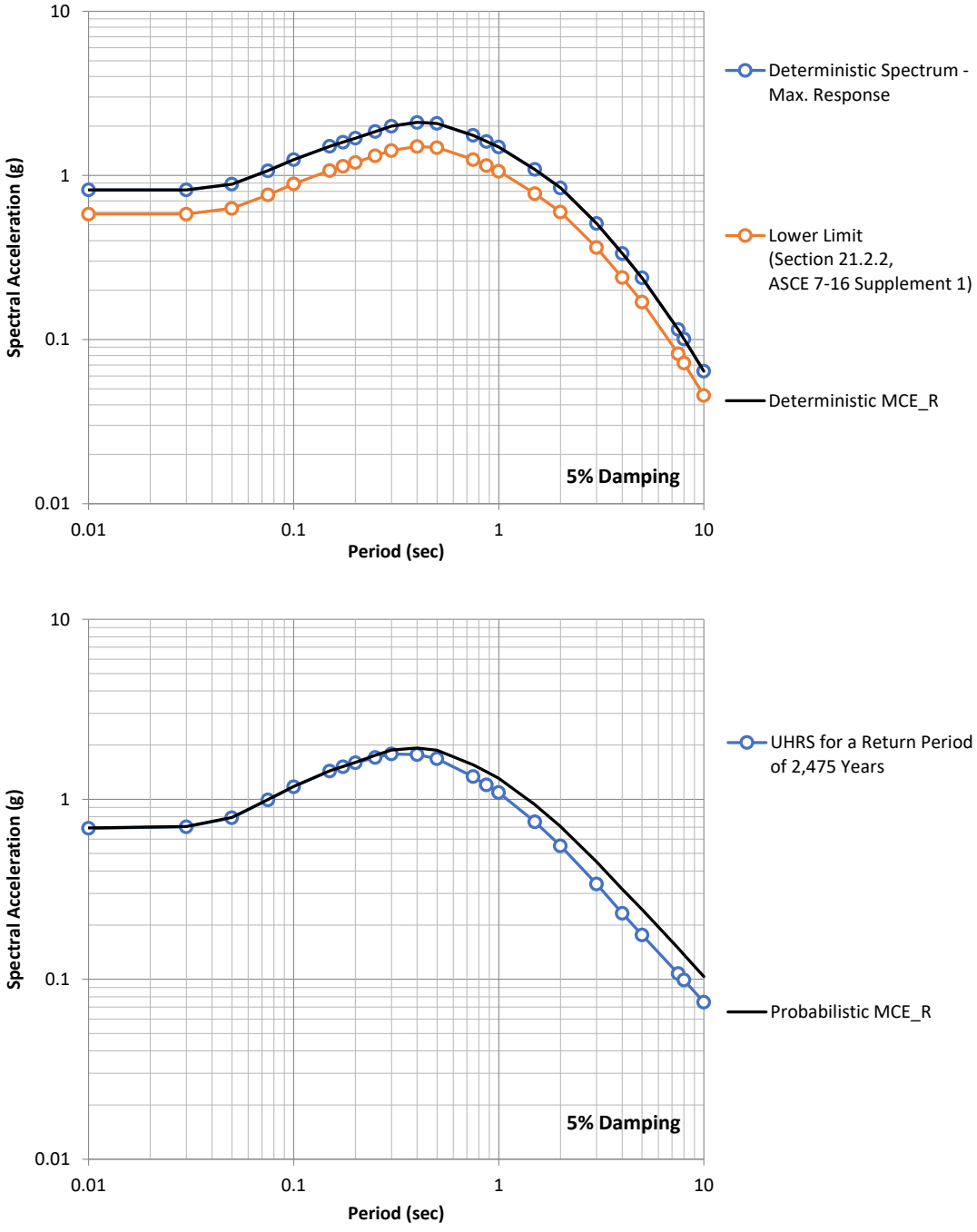


Figure 4: Calculation of the Probabilistic and Deterministic Horizontal MCE_R Response Spectra per ASCE 7-16 for Vs30 of 250 m/s

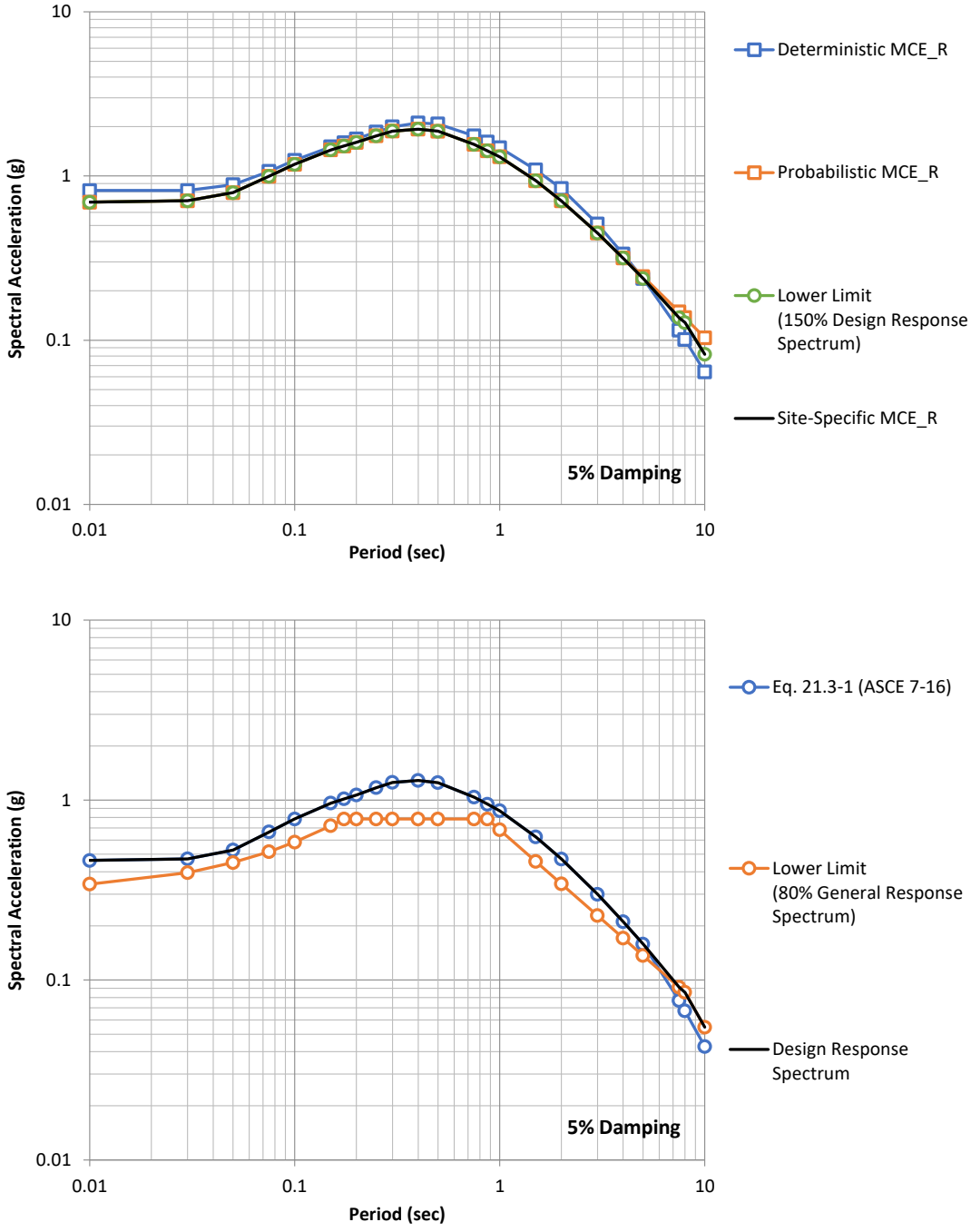


Figure 5: Calculation of the Site-Specific Horizontal MCE_R and Design Response Spectra per ASCE 7-16 for Vs30 of 250 m/s