

APPENDIX B

DRAFT GEOTECHNICAL ENGINEERING INVESTIGATION AND SOILS REPORTS

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**RESPONSE TO CITY OF SAN JUAN CAPISTRANO REVIEW LETTER
DATED MAY 29, 2018, PROPOSED RESIDENTIAL HOUSING,
SAN JUAN MIXED USE,
Intersection of Calle Arroyo and Paseo Tirador,
San Juan Capistrano, California**

for

Watt Communities, LLC

October 29, 2018

W.O. 7050

MDN 20139



October 29, 2018
W.O. 7050

WATT COMMUNITIES, LLC
2716 Ocean Park Boulevard, Suite 2025
Santa Monica, California 90405

Attention: Mr. Efrem Joelson

Subject: Response to City of San Juan Capistrano Review Letter dated May 29, 2018, Proposed Residential Housing, San Juan Mixed Use, Intersection of Calle Arroyo and Paseo Tirador, San Juan Capistrano, California

Dear Mr. Joelson:

As requested, GeoSoils Consultants, Inc. (GSC) has prepared this response to the City of San Juan Capistrano Review Letter prepared by Hetherington Engineering, Inc. dated May 29, 2018. The letter addresses our referenced reports dated July 10, 2017 and September 18, 2017. A copy of the review letter is included herein. The review items are addressed below.

Comment No. 1

The Consultant should review the project grading and foundation plans, provide any additional geotechnical analyses/recommendations considered necessary, and confirm that the plans have been prepared in accordance with the geotechnical recommendations.

Response to Comment No. 1

Acknowledged. These plans will be reviewed once they are available and additional recommendations provided if necessary.

MDN 20139

Comment No. 2

The Consultant should provide a detailed description of proposed site grading, structure/improvements, foundation type, etc.

Response to Comment No. 2

The proposed site grading will entail the removal of all fill within the location of all proposed structures and streets. Temporary excavations consisting of 5 foot verticals and 1:1 cuts above 5 feet will be utilized. As previously stated in the referenced GSC report dated July 10, 2017, care will be taken to protect the existing tieback anchors supporting the scour wall along the east side. The proposed development will consist of 43 single family homes and 89 townhomes with streets and guest parking areas.

The proposed habitable structures will be utilizing post-tension slab foundations while non habitable structures may utilize conventional foundations. The recommendations presented in the referenced report dated July 10, 2017 remain applicable. We have provided additional recommendations below for soldier piles to be used in the northwest corner of the property to protect the 24 Hour Fitness during grading.

Soldier Pile Recommendations

Excavations will be made directly adjacent to the property line; therefore, it is anticipated soldier piles may be utilized for the proposed excavations.

General

The Contractor should be solely responsible for safety during construction. A surveying program, or other types of instrumentation, should be implemented to check for movement of the shoring system. It is anticipated that minor yielding of adjacent soils may occur during construction. Care should be taken to ensure that any movements associated with yielding are not excessive.

GSC requests that we be notified 24 hours prior to and allowed to regularly inspect the excavation as work progresses in order to monitor earth strain and verify the conditions assumed for design remain unchanged.

Soldier Piles

Based upon soils encountered in the subsurface excavations, it is our opinion that temporary shoring system should be designed to withstand an equivalent fluid pressure of 40 pounds per cubic foot. A 20 foot excavation is anticipated. Please note this does not include surcharge loading.

Resistance to lateral loads can be assumed to be provided by passive earth pressures. An allowable passive earth pressure of 300 pounds per square foot, per foot of depth into competent alluvium, may be used. The maximum allowable passive pressure should be limited to 3,000 pounds per square foot. The passive pressure may be increased by 100 percent for isolated poles.

Piles should be a minimum of 18 inches in diameter. Maximum width of pile spacing should be no more than 8 feet on-center. Materials exposed in the face of any cut should be kept moist, but not saturated, to retard raveling and sloughing during construction. If soldier piles with timber lagging are used, the lagging should be pressure treated. Care should be taken to fill all void spaces between the excavation face and lagging. All lagging should be placed as soon as possible after the excavation is made.

Any anticipated surcharge loads should be considered in the design of the soldier pile system and determined by the Structural Engineer. These were not considered in the equivalent fluid pressure provided above.

Comment No. 3

The Consultant should provide an updated geotechnical map utilizing the current grading plan for the project to clearly show (at a minimum) a) existing site topography, b) proposed structures/improvements, c) proposed finished grades, d) geologic conditions, e) locations of the subsurface exploration, f) temporary construction slopes, g) remedial grading, etc.

Response to Comment No. 3

An updated geotechnical map is provided. The maps are included as Site Plan, Plates 1 and 2. The requested items have been provided, where available.

Comment No. 4

The Consultant should provide an updated geologic cross-sections utilizing the current grading plan for the project to clearly show (at a minimum) a) existing site topography, b) proposed structures/improvements, c) proposed finished grades, d) geologic contacts, e) geologic structure f) locations of the subsurface exploration, g) temporary construction slopes, h) remedial grading, etc.

Response to Comment No. 4

The geologic cross-sections have been updated to correspond to the new grading plan. The cross sections are included as Plate 3. The requested items have been provided when available.

Comment No. 5

The Consultant should address impacts to adjacent property and improvements as a result of site grading and construction.

Response to Comment No. 5

The proposed site grading and construction should not impact adjacent improvements providing that all of our recommendations are adhered to during grading and construction. This should include the soldier pile recommendations provided in this report to protect the existing 24 Hour Fitness.

Comment No. 6

The Consultant should provide a site location map.

Response to Comment No. 6

A site location map is included as Figure 1 showing the limits of the subject site as requested.

Comment No. 7

The Consultant should discuss regional and local faulting.

Response to Comment No. 7

The subject site is not adjacent to any Alquist-Priolo Fault Zones. The closest active fault is the Newport-Inglewood Fault with the southern terminus of the fault zone being 22 miles to the north. The Wildomar Fault south of Lake Elsinore is 22 miles to the east and the Mount Soledad Fault is 50 miles to the South in La Jolla. There are small localized inactive faults in the hills south and southeast of the site.

Comment No. 8

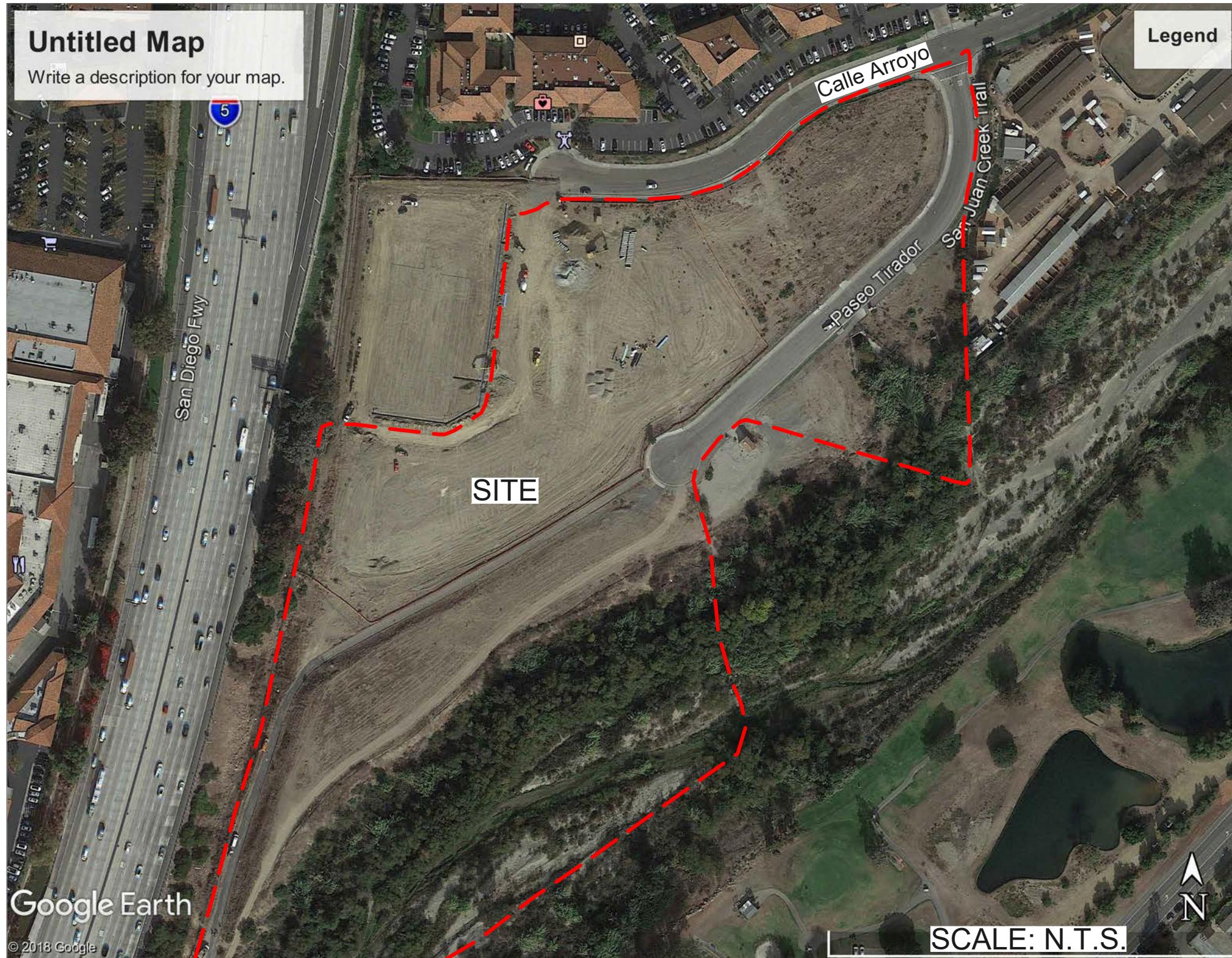
The Consultant should address whether the site is in a State of California Liquefaction Hazard Zone.

Response to Comment No. 8

The site is in a liquefaction zone as per the State of California Liquefaction Hazard Zone maps.

Comment No. 9

The liquefaction analyses used a depth to groundwater based on the groundwater levels encountered during drilling. The Consultant states reported historically high groundwater is 5-feet below the ground surface. California Geological Survey Special Publication 117A indicates historically high groundwater levels should be used, unless other levels are justified. The Consultant should modify the depth to groundwater utilized in the liquefaction analyses or justify any variations from historically high groundwater levels.



MDN 20139

GSC GeoSoils Consultants Inc. GEOTECHNICAL • GEOLOGIC • ENVIRONMENTAL		
6634 Valjean Avenue Van Nuys, CA 91406		
SITE LOCATION MAP SAN JUAN MIXED USE CALLE ARBOR AND PASEO TIRADOR SAN JUAN CAPISTRANO, CALIFORNIA WATT COMMUNITIES		
WORK ORDER 7050	DATE 10/2018	SCALE N.T.S.
REVISED —	FIGURE 1	—

Response to Comment No. 9

As mentioned in the referenced report, fill placed on site has altered the original ground elevation by as much as 5 to 20 feet. Table 1 lists the in-situ groundwater elevations encountered during our subsurface exploration performed in June of 2017. Given the amount of fill on-site and the current in-situ groundwater encountered, a historic high groundwater table of 5 feet below the existing ground surface appears unlikely as portions of the site would have been underwater. The liquefaction analysis has been revised, to utilize the highest groundwater level encountered, 17 feet in Boring B-4, to all borings considered for analysis analyzed. This is discussed in further detail in response to Comment 10.

TABLE 1 ENCOUNTERED GROUNDWATER LEVELS		
Boring	Total Exploration Depth (ft.)	Groundwater Elevation (ft.)
B-1	30	27.5
B-2	30	23.5
B-3	30	No Groundwater
B-4	50	17
B-5	50	28
B-6	50	28

Comment No. 10

The Consultant should provide more description regarding the liquefaction analyses, field methods, conversion of blow counts, etc. and should provide detailed input/output of the liquefaction analyses. The input/output was not provided to the reviewers.

Response to Comment No. 10

Acknowledged. Detailed data input/output is included in the revised liquefaction analysis presented in Appendix A. Field methods consisted of drilling with an 8-inch diameter hollow-stem auger to a maximum depth of 50 feet. Undisturbed California Modified Ring samples were collected by driving a sampler with a 140-pound hammer allowed to drop 30-inches. The soil samples were retained in brass rings and packaged in close-fitting, moisture-tight containers for laboratory testing. Testing performed on these samples determine moisture content, unit weights, consolidation, and other soil properties. Based on

laboratory testing results, a saturated unit weight is calculated and is applied at specific depths in the liquefaction analysis. In some instances, an average unit weight is determined considering values above and below the specified depth, typically within a 5-foot interval.

In addition to the California Modified Ring samples collected, SPT (Standard Penetration Test) samples were taken using a thick-walled, split-spoon sampler with no liner. The sampler was driven into the ground with the same 140-pound hammer weight and 30-inch drop as that of the California Ring sampler. Calibration testing determining the hammer energy ratios (ER) has been provided by the drilling company and the average energy ratio of 85.6 percent yields a C_E correction factor of 1.42. The SPT blow-counts are recorded during exploration and these values, N_{FIELD} blow-counts, are utilized in the analysis and are provided in the boring logs. It should be noted that only SPT blow-counts are used in the analyses and no ring conversions were performed.

Upon retrieval of the SPTs during exploration, the sample was closely inspected by visual examination and packaged in moisture-tight bags. Laboratory testing was performed to determine the fines content of specified SPT samples, based on their field description. These values were applied in the analysis at the depth they were taken, as shown on the graphical input pages preceding each boring analyzed for liquefaction.

The liquefaction and seismic settlement analysis has been revised from the previous submittal. The analysis now applies the highest groundwater level encountered to all borings analyzed, a depth of 17 feet below existing grade. The previous analysis considered the specific in-situ groundwater for the individual boring analyzed. The liquefaction appendix included herein includes input/output diagrams followed by raw analysis output.

Comment No. 11

The Consultant should address the potential for lateral spreading due to liquefaction and provide lateral spreading estimates.

Response to Comment No. 11

Lateral spread is described as the lateral movement of stiff, surficial, mostly intact blocks of sediment displaced down slope towards a free face along a shear zone that has formed within the liquefied sediment. The resulting ground deformation typically has extensional fissures at the head of the failure, shear deformations along the side margins, and compression or buckling of the soil at the toe. The extent of lateral displacement typically ranges from half inch to several feet.

Two types of lateral spread can occur: lateral spread towards a free-face (e.g. a drainage canal or embankment) and lateral spread down a gentle ground slope where a free face is absent. Factors such as earthquake magnitude, distance from the seismic energy source, thickness of the liquefiable layers, fines content and particle size of those sediments also correlate with ground displacement.

Given the amount of fill on site and the groundwater levels encountered, lateral spread is not considered a hazard to the site.

Comment No. 12

The Consultant should address the effects of site liquefaction on utilities and lifeline services and provide any recommendations necessary.

Response to Comment No. 12

The results of the liquefaction analysis, provided in Appendix A, indicate that while the potential for liquefaction does exist within the area of study, it poses a low risk to site development, utilities, and lifeline services. Should liquefaction develop, the migration of excess pore pressure within these layers (i.e. the movement of water) would be limited due to the confinement of these layers by dense materials and less permeable silts. Additionally, the estimated seismic settlement resulting from potential liquefaction is well within reason for post-tensioned or mat slab foundation systems.

When utilities plans become available, the plans should be reviewed by this office. Flexible utility lines/joints may be utilized if utility rupture is considered a hazard.

Comment No. 13

The Consultant should provide the site seismic design category

Response to Comment No. 13

The seismic design category is site class D as shown on the seismic design criteria in the referenced July 10, 2017 report by GSC.

Comment No. 14

The Consultant should provide ASTM or other test methods for all laboratory testing.

Response to Comment No. 14

The following ASTM test designations are provided:

- Compaction test D-1557
- Shear test D-3080
- Consolidation test D-2435
- Gradation analysis D-422
- Expansion index test D-4829
- Atterberg test D-4318
- Sulfate test C-1580

Comment No. 15

Foundation and slab recommendations for expansive soils should be consistent with Section 1808.6 of the 2016 California Building Code. The Consultant should provide a statement that the foundations and slab recommendations are consistent with Section 1808.6 of the 2016 California Building Code or revise the foundation and slab recommendations, as necessary.

Response to Comment No. 15

The foundation and slab recommendations provided are consistent with Section 1808.6 of the 2016 California Building Code.

Comment No. 16

The Consultant should provide the minimum width of footings: and minimum slab-on-grade floor thickness, reinforcement, and underlayment recommendations.

Response to Comment No. 16

As discussed in the referenced report dated July 10, 2017, all conventional foundations should have a minimum width of 12 inches. It is anticipated all habitable structures will be constructed using post-tensioned slabs. These slabs should be underlain by a minimum 10 mil Visqueen sandwiched between 2, two inch layers of sand.

Comment No. 17

The Consultant should specify the sulfate exposure category based on soluble sulfate testing or default to a severe category if testing is not available.

Response to Comment No. 17

As discussed in the referenced report, the on-site soils have a sulfate content of 320 parts per million (moderate expose). Additional testing will be performed following grading.

Comment No. 18

The Consultant should provide hardscape recommendations (thickness, reinforcement, etc.).

Response to Comment No. 18

All private sidewalks, private drives and patios should have a minimum concrete thickness of 4 inches. Joint spacing for sidewalks should not exceed five feet, while joint spacing for private drives should not exceed 10 feet or be quarter cut. Joint spacing for patios should not exceed 6 feet. Reinforcement should be a minimum of No. 4 bars at 16 inches on center.

Comment No. 19

The Consultant should provide a list of recommended testing/observations during grading and construction.

Response to Comment No. 19

GSC should be contacted for the recommended testing or observations:

- 1) pre-grade meeting with client, contractors and City
- 2) observe all bottoms to confirm the necessary removals are made
- 3) test fill placement during mass grading
- 4) observe all temporary excavations
- 5) provide utility testing as required
- 6) observe retaining wall footings, backdrains and test wall backfill.
- 7) observe residential footings
- 8) observe and test street subgrade and base
- 9) Any other testing/observation required by the City.

Comment No. 20

The Consultant should provide a list of published maps/reports/references used in the preparation of the report.

Response to Comment No. 20

The documentation used for the preparation of the report is included in our references.

Comment No. 21

The Consultant has provided preliminary asphalt concrete pavement design recommendations. Final pavement recommendations should be based on R-value testing of the subgrade soils at the completion of grading.

Response to Comment No. 21

Acknowledged. Final pavement recommendations will be provided at the completion of grading.

We appreciate this opportunity to be of service to you. If you have any questions regarding the content of this response report or any other aspects of the project, please do not hesitate to contact us.

Very truly yours,

GEOSOILS CONSULTANTS, INC.

KAREN L. MILLER
GE 2257

KLM.JLV.W:Geot Eng Inv



JAMES L. VAN METER
CEG 2031



Encl: References

City of San Juan Capistrano Review Letter dated May 29, 2018
Plates 1 and 2, Site Plan

Plate 3, Geologic Cross Sections

Appendix A, Revised Liquefaction Analyses

cc: (3) Addressee

MDN 20139

October 29, 2018
W.O. 7050

REFERENCES

1. GeoSoils Consultants, Inc. dated July 10, 2017, "Geotechnical Engineering Investigation, Proposed Residential Housing, San Juan Mixed Use, Intersection of Calle Arroyo and Paseo Tirador, San Juan Capistrano, California"
2. GeoSoils Consultants, Inc. dated September 18, 2017, "Infiltration Testing, Proposed Residential Housing, San Juan Mixed Use, Calle Arroyo and Paseo Tirador, San Juan Capistrano, California"
3. Department of Conservation, Division of Mines and Geology, 2001, "Seismic Hazard Zone Report For The Dana Point 7.5-Minute Quadrangle, Orange County, California"
4. Department of Conservation, Division of Mines and Geology, 2001, "Seismic Hazard Zone Report For The San Juan Capistrano 7.5-Minute Quadrangle, Orange County, California"
5. Guidelines for Evaluating and Mitigating Seismic Hazards in California, 2008
6. 2016 California Building Code, "California Code of Regulations Title 24, Part 2, Volume 2 of 2"

MDN 20139

HETHERINGTON ENGINEERING, INC.
SOIL & FOUNDATION ENGINEERING • ENGINEERING GEOLOGY • HYDROGEOLOGY

May 29, 2018
Project No. 8606.1
Log No. 19845

City of San Juan Capistrano
32400 Paseo Adelanto
San Juan Capistrano, California 92675

Attention: Mr. Joe Mankawich

Subject: THIRD-PARTY GEOTECHNICAL REVIEW (FIRST)
Proposed Mixed Use Residential Housing
Calle Arroyo and Paseo Tirador
San Juan Capistrano, California
AC17-0333

- Reference:
- 1) "Geotechnical Engineering Investigation, Proposed Residential Housing, San Juan Mixed Use, Intersection of Calle Arroyo and Paseo Tirador, San Juan Capistrano, California", by GeoSoils Consultants, Inc., dated July 10, 2017.
 - 2) "Infiltration Testing, Proposed Residential Housing, San Juan Mixed Use, Calle Arroyo and Paseo Tirador, San Juan Capistrano, California", by GeoSoils Consultants, Inc., dated September 18, 2017.
 - 3) "Tirador, Tentative Tract Map 18148, City of San Juan Capistrano, In the County of Orange, State of California, by IBI Group, stamp dated March 30, 2018, (Sheets 1 through 7 – Includes Conceptual Grading Plan).

Dear Mr. Mankawich:

In accordance with your request, Hetherington Engineering, Inc. has provided third-party geotechnical review of References 1 and 2. The following comments are provided for analyses and/or response by the Geotechnical Consultant. Two copies of the Geotechnical Consultant's response should be submitted to the City of San Juan Capistrano and one copy to Hetherington Engineering, Inc.

1. The Consultant should review the project grading and foundation plans, provide any additional geotechnical analyses/recommendations considered necessary, and confirm that the plans have been prepared in accordance with the geotechnical recommendations.

THIRD-PARTY GEOTECHNICAL REVIEW (FIRST)

Project No. 8606.1

Log No. 19845

May 29, 2018

Page 2

2. The Consultant should provide a detailed description of proposed site grading, structures/improvements, foundation type etc.
3. The Consultant should provide an updated geotechnical map utilizing the current grading plan for the project to clearly show (at a minimum) a) existing site topography, b) proposed structures/improvements, c) proposed finished grades, d) geologic conditions, e) locations of the subsurface exploration, f) temporary construction slopes, g) remedial grading, etc.
4. The Consultant should provide geologic cross-sections utilizing the current grading plan to clearly show (at a minimum) a) existing site topography, b) proposed structures/improvements, c) proposed finished grades, d) geologic contacts, e) geologic structure, f) locations of the subsurface exploration, g) temporary construction slopes, and h) remedial grading, etc.
5. The Consultant should address impacts to adjacent property and improvements as a result of site grading and construction.
6. The Consultant should provide a site location map.
7. The Consultant should discuss regional and local faulting.
8. The Consultant should address whether the site is in a State of California Liquefaction Hazard Zone.
9. The liquefaction analyses uses a depth to groundwater based on the groundwater levels encountered during drilling. The Consultant states reported historically high groundwater is 5-feet below the ground surface. California Geological Survey Special Publication 117A indicates historically high groundwater levels should be used, unless other levels are justified. The Consultant should modify the depth to groundwater utilized in the liquefaction analyses or justify any variations from historically high groundwater levels.
10. The Consultant should provide more description regarding the liquefaction analyses, field methods, conversion of blow counts, etc. and should provide detailed input/output of the liquefaction analyses. The input/output was not provided to the reviewers.
11. The Consultant should address the potential for lateral spreading due to liquefaction and provide lateral spreading estimates.

THIRD-PARTY GEOTECHNICAL REVIEW (FIRST)

Project No. 8606.1

Log No. 19845

May 29, 2018

Page 3

12. The Consultant should address the effects of site liquefaction on utilities and lifeline services and provide any recommendations necessary.
13. The Consultant should provide the site seismic design category.
14. The Consultant should provide ASTM or other test methods for all laboratory testing.
15. Foundation and slab recommendations for expansive soils should be consistent with Section 1808.6 of the 2016 California Building Code. The Consultant should provide a statement that the foundation and slab recommendations are consistent with Section 1808.6 of the 2016 California Building Code or revise the foundation and slab recommendations, as necessary.
16. The Consultant should provide the minimum width of footings; and minimum slab-on-grade floor thickness, reinforcement, and underlayment recommendations.
17. The Consultant should specify the sulfate exposure category based on soluble sulfate testing or default to a severe category if testing is not available.
18. The Consultant should provide hardscape recommendations (thickness, reinforcement, etc.).
19. The Consultant should provide a list of recommended testing/observations during grading and construction.
20. The Consultant should provide a list of published maps/reports/references used in the preparation of the report.
21. The Consultant has provided preliminary asphalt concrete pavement design recommendations. Final pavement recommendations should be based on R-value testing of the subgrade soils at the completion of grading.

THIRD-PARTY GEOTECHNICAL REVIEW (FIRST)

Project No. 8606.1

Log No. 19845

May 29, 2018

Page 4

Please call if there are any questions.

Sincerely,

HETHERINGTON ENGINEERING, INC.



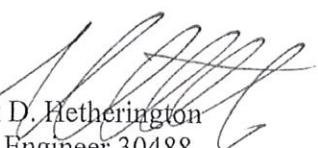
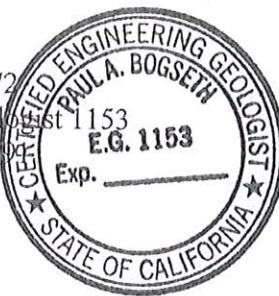
Paul A. Bogseth

Professional Geologist 3772

Certified Engineering Geologist 1153

Certified Hydrogeologist 599

(expires 3/31/20)



Mark D. Hetherington

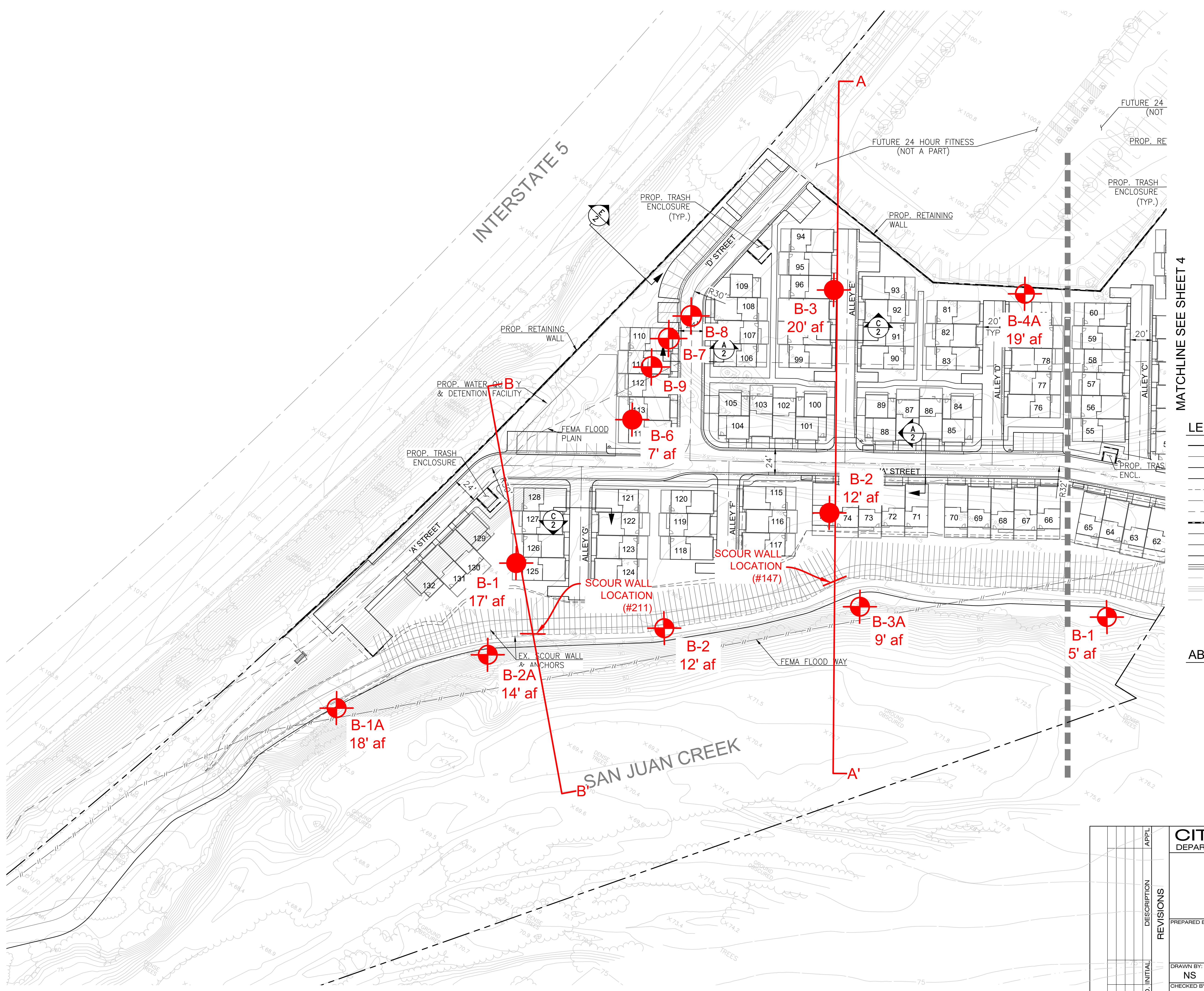
Civil Engineer 30488

Geotechnical Engineer 397

(expires 3/31/20)



Distribution: 1- via e-mail (jmankawich@sanjuancapistrano.org)
1-via e-mail (jdevore@sanjuancapistrano.org)
1- via e-mail (Hajideh@sanjuancapistrano.org)
1- via e-mail (Kmiller@geosoils.com)



MDN 20139

GSC GeoSoils Consultants Inc.
GEOTECHNICAL • GEOLOGIC • ENVIRONMENTAL

634 Valjean Avenue
Van Nuys, CA 91401

**SITE PLAN
SAN JUAN MIXED USE
CALLE ARBOR AND PASEO TIRADOR
SAN JUAN CAPISTRANO, CALIFORNIA
WATT COMMUNITIES**

PLATE	1
DATE	9/2018
SCALE	1" = 40'
PLATE NUMBER	7050

— — — — —

EXPLANATION

APPROXIMATE LOCATION OF CTE BORING

APPROXIMATE LOCATION OF GSC BORING

2' LINE OF GEOLOGIC SECTION

Y OF SAN JUAN CAPISTRANO

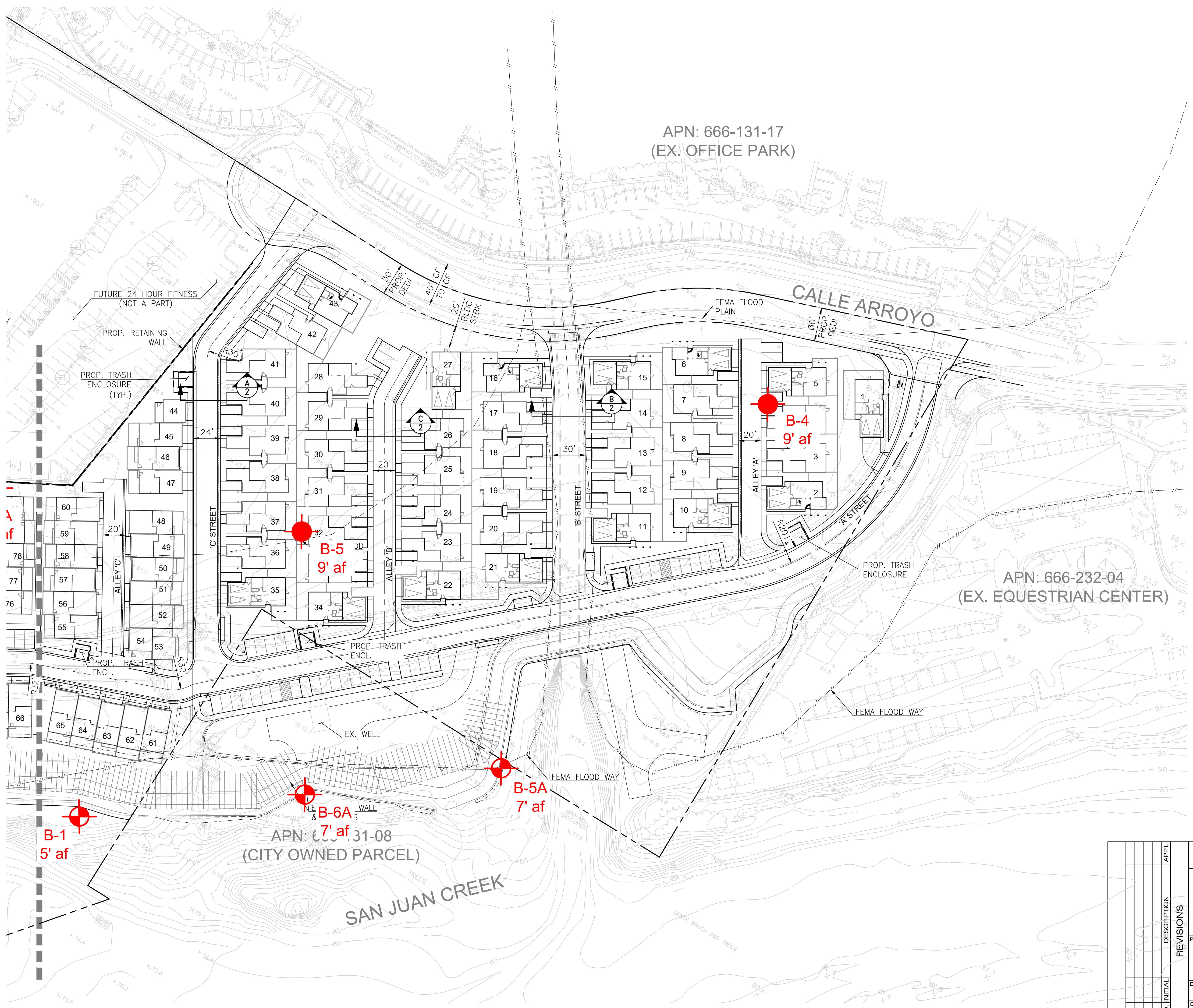
MENT OF PUBLIC WORKS & UTILITIES

CONCEPTUAL GRADING PLAN TIRADOR TENTATIVE TRACT MAP 18148

10 of 10

IBI GROUP
18401 Von Karman Avenue – Suite 110
Irvine CA 92612 USA
tel 949 833 5588 fax 949 833 5511
ibigroup.com

DESIGN BY: NS				SHEET
CHECKED BY: PC	GEORGE ALVAREZ CITY ENGINEER		DATE R.C.E. 25161 EXP. 12/31/2017	5 OF 7



MDN 20139



6634 Valjean Avenue
Van Nuys, CA 91401

**SITE PLAN
SAN JUAN MIXED USE
CALLE ARBOR AND PASEO TIRADOR
SAN JUAN CAPISTRANO, CALIFORNIA
WATT COMMUNITIES**

WORK ORDER	DATE	SCALE
<u>7050</u>	<u>9/2018</u>	<u>1" = 40'</u>

REVISED _____ PLATE 2

WILSONS BIRDS

EXPLANATION

XPLANATION

 APPROXIMATE LOCATION OF CTE BORING

 APPROXIMATE LOCATION OF GSC BORING

LINE OF GEOLOGIC SECTION

BLDG	BUILDING	IW	IRRIGATION WATER
BW	BACK OF WALK	JT	JOINT TRENCH
CF	CURB FACE	LL	LOT LINE
C&G	CURB & GUTTER	MWS	MODULAR WETLAND SYSTEM
DEDI	DEDICATION	PKWY	PARKWAY
DW	DOMESTIC WATER	PL	PROPERTY LINE
CL	CENTERLINE	PIP	PROTECT IN PLACE
ENCL.	ENCLOSURE	RG	ROUGH GRADE
ESMT	EASEMENT	R/W	RIGHT OF WAY
EX	EXISTING	S	SANITARY SEWER
FF	FINISHED FLOOR	SD	STORM DRAIN
FG	FINISHED GRADE	SWLK	SIDEWALK
FL	FLOWLINE	TC	TOP OF CURB
FS	FINISHED SURFACE		

CITY OF SAN JUAN CAPISTRANO

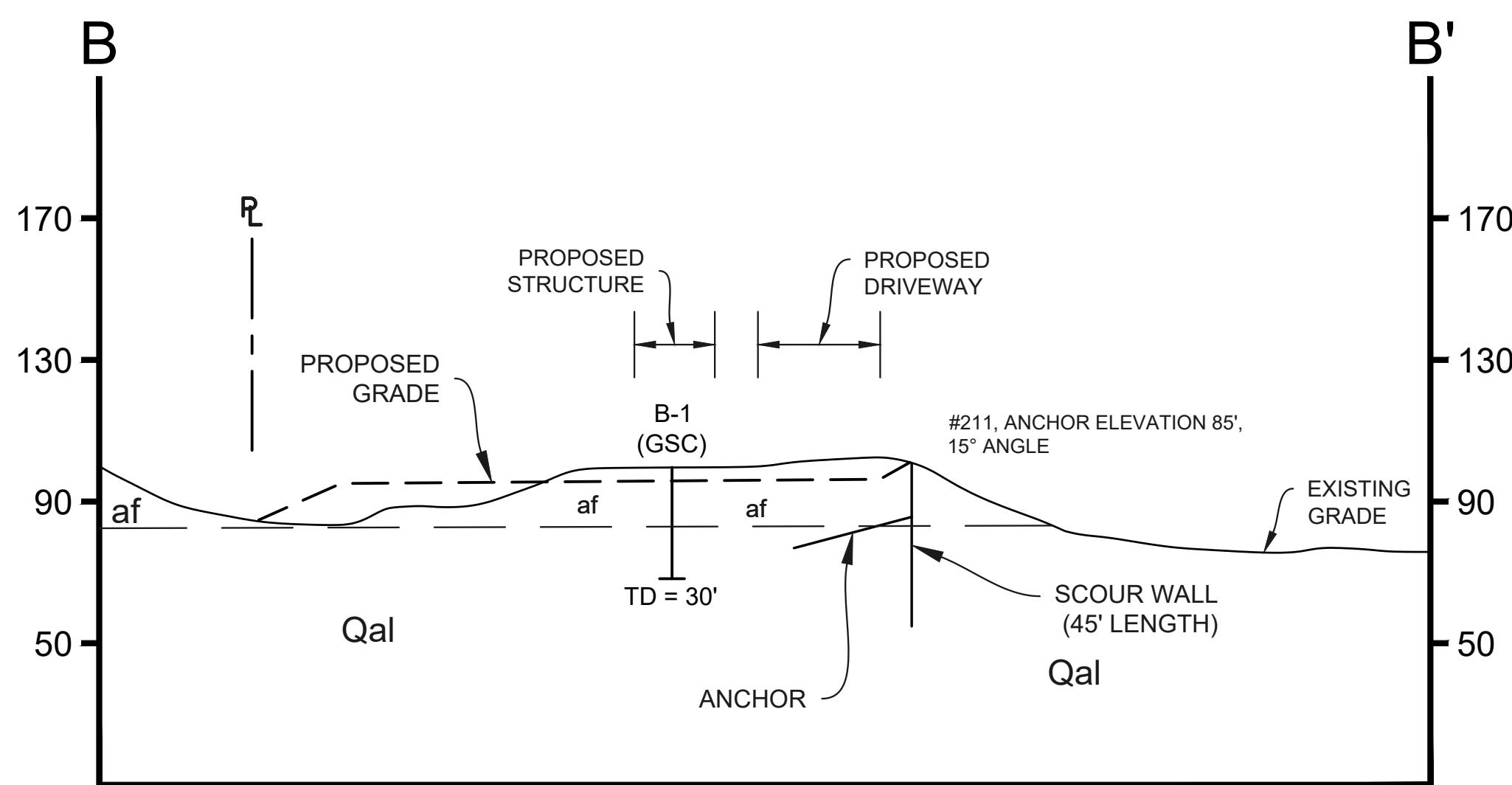
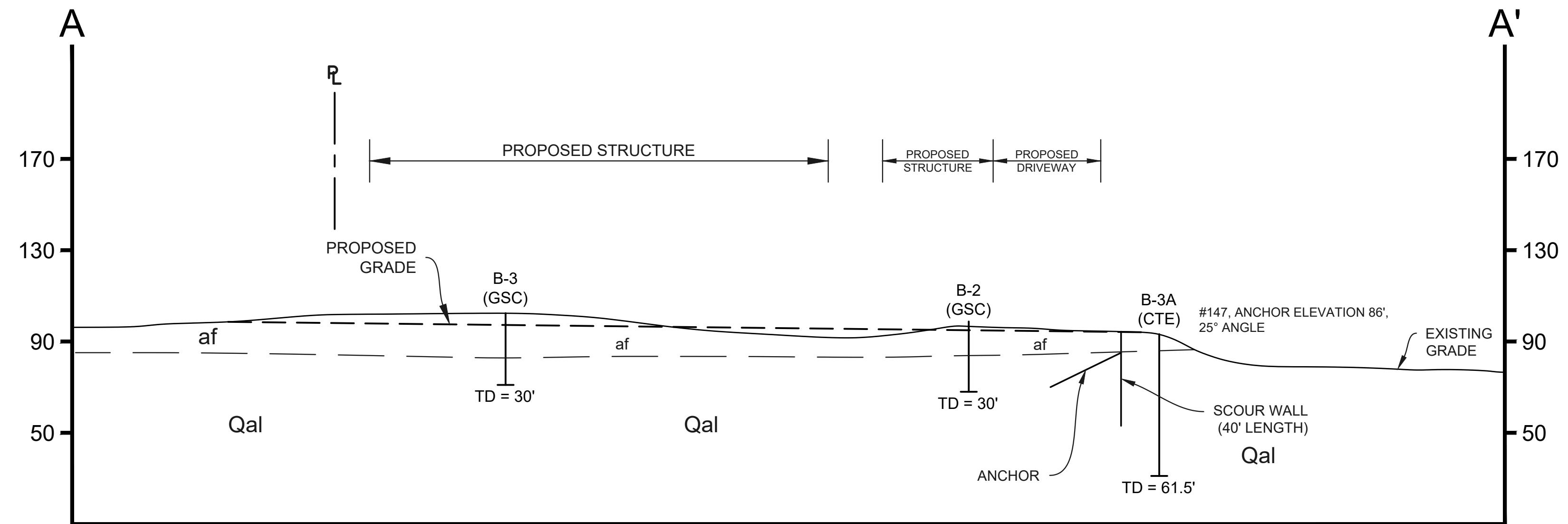
DEPARTMENT OF PUBLIC WORKS & UTILITIES

CONCEPTUAL GRADING PLAN TIRADOR TENTATIVE TRACT MAP 18148

PREPARED BY:

IBI GROUP
18401 Von Karman Avenue – Suite 110
Irvine CA 92612 USA
tel 949 833 5588 fax 949 833 5511
ibigroup.com

WN BY: NS	DESIGN BY: NS		SHEET 5 OF 7
CHECKED BY: PC	CHECKED BY: PC	GEORGE ALVAREZ CITY ENGINEER R.C.E. 25161	DATE EXP. 12/31/2017



October 29, 2018
W.O. 7050

APPENDIX A
REVISED LIQUEFACTION ANALYSES

MDN 20139

APPENDIX A
REVISED LIQUEFACTION ANALYSES

Introduction

Liquefaction describes a phenomenon where cyclic stresses, which are produced by earthquake-induced ground motions, create excess pore pressures in predominantly cohesionless soils. As a result, the soils may acquire a high degree of mobility, which can lead to lateral spreading, consolidation, and settlement of loose sediments, ground oscillation, flow failure, loss of bearing strength, ground fissuring, sand boils, and other damaging deformations. This phenomenon occurs only below the water table, but after liquefaction has developed, it can propagate upward into overlying, non-saturated soil.

Research has shown that saturated, loose sands with silt content less than about 25 percent are most susceptible to liquefaction, whereas other soil types are generally considered to have a low susceptibility.

Seismically-induced settlement in unsaturated (dry) and saturated soils generally occur due to the dissipation of pore pressure in a liquefiable soil layer. The controlling factors affecting settlement in saturated sands consist of the pore pressure drainage path, magnitude and duration of the seismic event, cyclic stresses, maximum shear strains, and the recorded normalized SPT blow-counts, (N_1)₆₀, of the soils.

The potential for seismically-induced settlement is greatest in loose granular soils (i.e., sands and silty sands), whereas cohesive soils (i.e., clays and silts) are generally not prone to settlement. It should be noted that granular soils are susceptible to settlement during a seismic event whether the soils liquefy or not.

Appendix A

Procedure

The method of liquefaction assessment in this report is based on the “simplified procedure” originally developed by Seed and Idriss (1971, 1982), with subsequent refinements by Seed et al. (1983), Seed and De Alba (1986), and Seed and Harder (1990). As generally defined by *CGS Special Publication 117A: Guidelines for Analyzing and Mitigating Liquefaction Hazards in California*, the procedure compares the cyclic resistance ratio (CRR) with the earthquake-induced cyclic stress ratio (CSR) at that depth from a specified design earthquake. The CRR is the ratio required to induce liquefaction for a cohesionless soil stratum at a given depth and is essentially the capacity of the soil to resist liquefaction. The CSR is defined generally as the seismic demand placed on a soil layer or the peak ground surface acceleration and an associated earthquake moment magnitude.

Values of CRR were established that were empirically correlated using extensive databases for sites that did or did not liquefy during previous earthquakes, values of $(N_1)_{60}$ could be correlated with the liquefied soil zones. The 1997 version of the baseline chart defines values of CRR as a function of $(N_1)_{60}$ for a moment magnitude 7.5 earthquake, CSR, and the percent fines. The factor of safety against liquefaction is obtained by calculating the ratio of CRR and CSR. The potential for seismically-induced settlement occurs when the factor of safety is less than 1.0.

The methodology used in estimating probable seismically-induced settlement in unsaturated and saturated soil deposits from SPT data is based on the procedures suggested by *CGS Special Publication 117A* and Tokimatsu and Seed (1987) with a magnitude scaling factor. The settlement analysis considers very thin layers for the soil deposit and calculates the settlement for each layer. The total settlement is the sum of these settlements in both dry (soil above the groundwater table) and saturated soils at their respective depths.

Appendix A

The CRR curves are based on clean sands, necessitating fines content correction to accurately assess liquefaction potential. Fines content correction for SPT data is generated using formulas developed by Idriss and Seed (1997). For specific depths where gradation tests were performed, the value of percent fines (passing the #200 sieve) obtained from laboratory testing was used in the analysis.

Analysis

The assessment of liquefaction potential provided in this report maintains current code requirements and generally accepted practice.

The predominant earthquake magnitude used is based on a 2 percent probability of exceedance in 50 years, obtained from the USGS Unified Hazard Tool. The peak ground acceleration corresponds to the PGA_M without any reductions and was obtained from the USGS Seismic Design Maps website. Table A-1 shows a summary of the parameters used in this analysis.

TABLE A-1 ANALYSIS PARAMETERS	
Earthquake Magnitude	6.63
Peak Ground Acceleration, PGA_M	0.5 g
Design Groundwater Table	17 feet
Energy Ratio, C_E	1.42
Borehole Diameter, C_B	1.15
Sampling Method, C_S	1.2

Site exploration for the assessment of liquefaction potential consisted of Borings B-4, B-5, and B-6. At the time of exploration, groundwater was encountered at depths ranging from 17 to 28 feet. The liquefaction analysis considers the highest groundwater level encountered, 17 feet, to all borings analyzed.

Appendix A

Results

Based on the results of this investigation, evaluated from blow count data and laboratory testing of the borings, the potential for liquefaction does exist within the area of study. If liquefaction should develop in liquefiable soil layers, the migration of excess pore pressure within these layers (i.e. the movement of water) and potential settlement would be limited due to the confinement of these layers by denser soils and less permeable silts. Therefore, the potential for liquefaction on the proposed tract poses a low risk to site development, assuming the conclusions and recommendations provided are incorporated into the final design and construction of the project.

The liquefaction settlement analysis was performed to a depth of 50 feet below the existing ground surface and is presented in Table A-2. Differential settlement was taken as 1/2 of the maximum total settlement. The results of the analysis using the LiquefyPro software are given below, detailed output is provided at the end of this appendix.

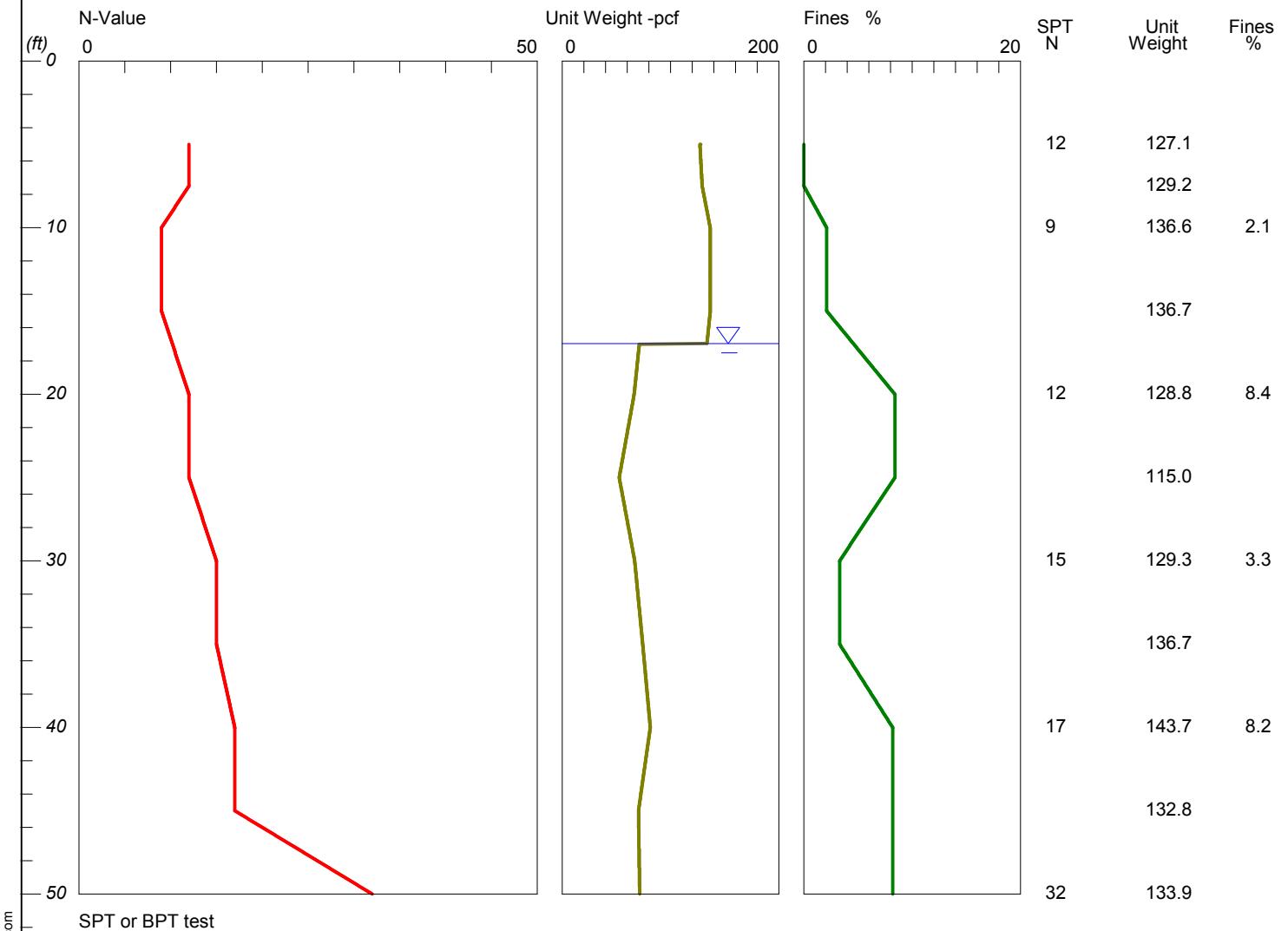
TABLE A-2 LIQUEFACTION SETTLEMENT ANALYSIS				
Boring	Unsaturated Settlement (in)	Saturated Settlement (in)	Total Settlement (in)	Differential Settlement (in)
B-4	0.19	2.67	2.86	1.43
B-5	0.12	1.79	1.91	
B-6	0.04	0.24	0.28	

LIQUEFACTION ANALYSIS

Watt - San Juan Capistrano

Hole No.=B-4 Water Depth=17 ft

Magnitude=6.63
Acceleration=0.5g

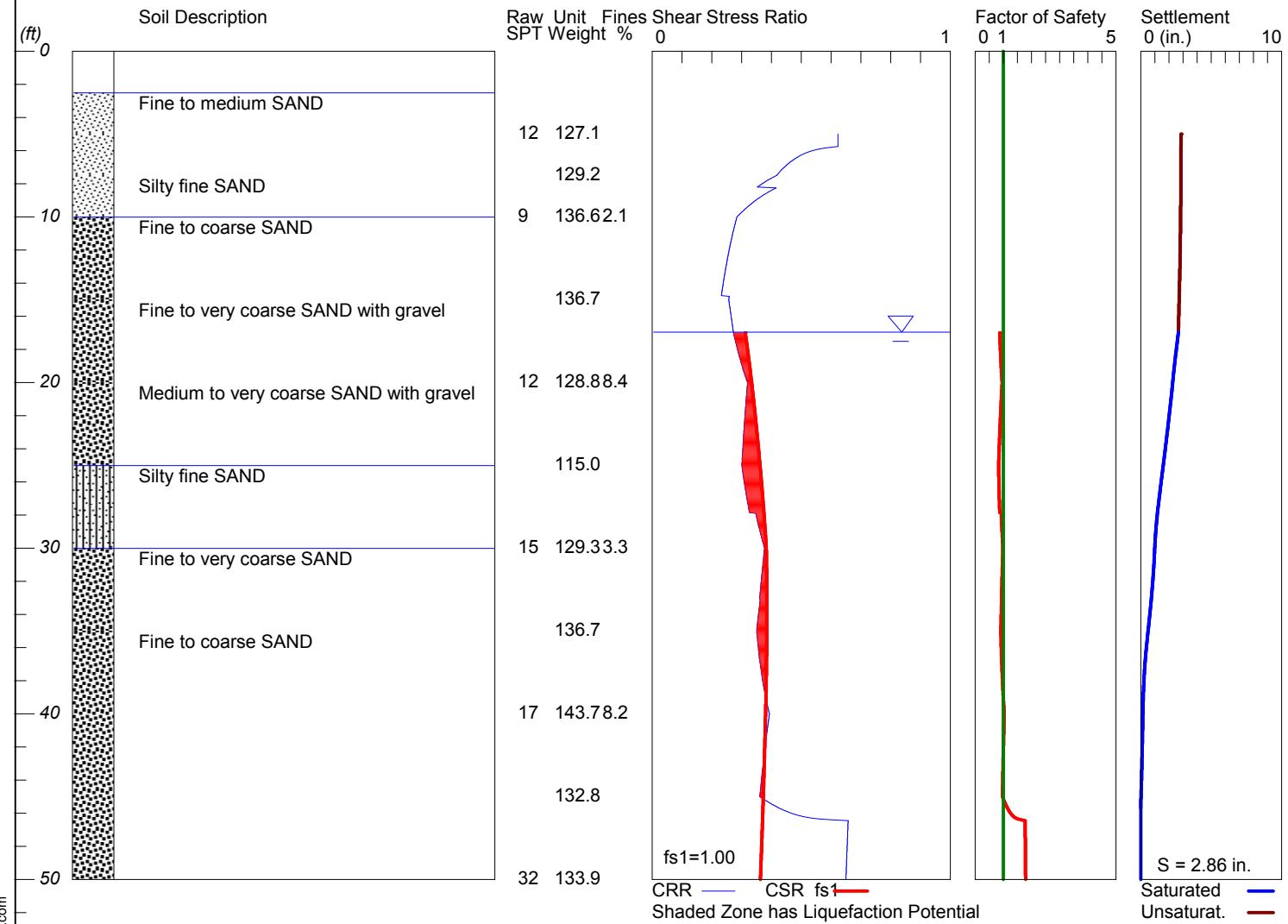


LIQUEFACTION ANALYSIS

Watt - San Juan Capistrano

Hole No.=B-4 Water Depth=17 ft

Magnitude=6.63
Acceleration=0.5g



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LIQUEFACTION ANALYSIS SUMMARY
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Input File Name: C:\Users\jgurunathan\OneDrive\Work\Projects\7050 -- Watt SJC
R1\Liquefaction\7050 B-4.liq
Title: Watt - San Juan Capistrano
Subtitle: Boring B-4

Surface Elev.=
Hole No.=B-4
Depth of Hole= 50.00 ft
Water Table during Earthquake= 17.00 ft
Water Table during In-Situ Testing= 17.00 ft
Max. Acceleration= 0.5 g
Earthquake Magnitude= 6.63

Input Data:
Surface Elev.=
Hole No.=B-4
Depth of Hole=50.00 ft
Water Table during Earthquake= 17.00 ft
Water Table during In-Situ Testing= 17.00 ft
Max. Acceleration=0.5 g
Earthquake Magnitude=6.63
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 = 1.42
7. Borehole Diameter, Cb= 1.15
8. Sampling Method, Cs= 1.2
9. User request factor of safety (apply to CSR) , User= 1.0
Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: Yes*

* Recommended Options

In-Situ Test Data:
Depth SPT gamma Fines
ft pcf %

5.00	12.00	127.10	0.00
7.50	12.00	129.20	0.00
10.00	9.00	136.60	2.10
15.00	9.00	136.70	2.10
20.00	12.00	128.80	8.40
25.00	12.00	115.00	8.40
30.00	15.00	129.30	3.30
35.00	15.00	136.70	3.30
40.00	17.00	143.70	8.20
45.00	17.00	132.80	8.20
50.00	32.00	133.90	8.20

Output Results:

Settlement of Saturated Sands=2.67 in.
Settlement of Unsaturated Sands=0.19 in.
Total Settlement of Saturated and Unsaturated Sands=2.86 in.
Differential Settlement=1.428 to 1.884 in.

Depth	CRRm	CSRfs	F.S.	S_sat.	S_dry	S_all
ft				in.	in.	in.
5.00	0.62	0.32	5.00	2.67	0.19	2.86
5.05	0.62	0.32	5.00	2.67	0.19	2.86

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5.10	0.62	0.32	5.00	2.67	0.19	2.85
5.15	0.62	0.32	5.00	2.67	0.19	2.85
5.20	0.62	0.32	5.00	2.67	0.19	2.85
5.25	0.62	0.32	5.00	2.67	0.19	2.85
5.30	0.62	0.32	5.00	2.67	0.19	2.85
5.35	0.62	0.32	5.00	2.67	0.19	2.85
5.40	0.62	0.32	5.00	2.67	0.19	2.85
5.45	0.62	0.32	5.00	2.67	0.19	2.85
5.50	0.62	0.32	5.00	2.67	0.19	2.85
5.55	0.62	0.32	5.00	2.67	0.19	2.85
5.60	0.62	0.32	5.00	2.67	0.19	2.85
5.65	0.62	0.32	5.00	2.67	0.19	2.85
5.70	0.62	0.32	5.00	2.67	0.19	2.85
5.75	0.62	0.32	5.00	2.67	0.19	2.85
5.80	0.60	0.32	5.00	2.67	0.19	2.85
5.85	0.58	0.32	5.00	2.67	0.19	2.85
5.90	0.56	0.32	5.00	2.67	0.19	2.85
5.95	0.55	0.32	5.00	2.67	0.19	2.85
6.00	0.54	0.32	5.00	2.67	0.19	2.85
6.05	0.53	0.32	5.00	2.67	0.18	2.85
6.10	0.52	0.32	5.00	2.67	0.18	2.85
6.15	0.51	0.32	5.00	2.67	0.18	2.85
6.20	0.51	0.32	5.00	2.67	0.18	2.85
6.25	0.50	0.32	5.00	2.67	0.18	2.85
6.30	0.50	0.32	5.00	2.67	0.18	2.85
6.35	0.49	0.32	5.00	2.67	0.18	2.85
6.40	0.49	0.32	5.00	2.67	0.18	2.85
6.45	0.48	0.32	5.00	2.67	0.18	2.85
6.50	0.48	0.32	5.00	2.67	0.18	2.85
6.55	0.47	0.32	5.00	2.67	0.18	2.85
6.60	0.47	0.32	5.00	2.67	0.18	2.85
6.65	0.47	0.32	5.00	2.67	0.18	2.85
6.70	0.46	0.32	5.00	2.67	0.18	2.85
6.75	0.46	0.32	5.00	2.67	0.18	2.85
6.80	0.46	0.32	5.00	2.67	0.18	2.85
6.85	0.45	0.32	5.00	2.67	0.18	2.85
6.90	0.45	0.32	5.00	2.67	0.18	2.85
6.95	0.45	0.32	5.00	2.67	0.18	2.85
7.00	0.44	0.32	5.00	2.67	0.18	2.85
7.05	0.44	0.32	5.00	2.67	0.18	2.85
7.10	0.44	0.32	5.00	2.67	0.18	2.85
7.15	0.43	0.32	5.00	2.67	0.18	2.85
7.20	0.43	0.32	5.00	2.67	0.18	2.85
7.25	0.43	0.32	5.00	2.67	0.18	2.85
7.30	0.43	0.32	5.00	2.67	0.18	2.85
7.35	0.42	0.32	5.00	2.67	0.18	2.85
7.40	0.42	0.32	5.00	2.67	0.18	2.85
7.45	0.42	0.32	5.00	2.67	0.18	2.85
7.50	0.42	0.32	5.00	2.67	0.18	2.85
7.55	0.41	0.32	5.00	2.67	0.18	2.84
7.60	0.41	0.32	5.00	2.67	0.18	2.84
7.65	0.40	0.32	5.00	2.67	0.18	2.84
7.70	0.40	0.32	5.00	2.67	0.18	2.84
7.75	0.39	0.32	5.00	2.67	0.18	2.84
7.80	0.39	0.32	5.00	2.67	0.18	2.84
7.85	0.38	0.32	5.00	2.67	0.18	2.84
7.90	0.38	0.32	5.00	2.67	0.18	2.84
7.95	0.37	0.32	5.00	2.67	0.18	2.84
8.00	0.37	0.32	5.00	2.67	0.18	2.84
8.05	0.36	0.32	5.00	2.67	0.18	2.84
8.10	0.36	0.32	5.00	2.67	0.17	2.84
8.15	0.36	0.32	5.00	2.67	0.17	2.84
8.20	0.35	0.32	5.00	2.67	0.17	2.84
8.25	0.42	0.32	5.00	2.67	0.17	2.84
8.30	0.41	0.32	5.00	2.67	0.17	2.84
8.35	0.41	0.32	5.00	2.67	0.17	2.84
8.40	0.40	0.32	5.00	2.67	0.17	2.84
8.45	0.39	0.32	5.00	2.67	0.17	2.84
8.50	0.39	0.32	5.00	2.67	0.17	2.84
8.55	0.39	0.32	5.00	2.67	0.17	2.84
8.60	0.38	0.32	5.00	2.67	0.17	2.84
8.65	0.38	0.32	5.00	2.67	0.17	2.84
8.70	0.37	0.32	5.00	2.67	0.17	2.84

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8.75	0.37	0.32	5.00	2.67	0.17	2.84
8.80	0.36	0.32	5.00	2.67	0.17	2.84
8.85	0.36	0.32	5.00	2.67	0.17	2.84
8.90	0.35	0.32	5.00	2.67	0.17	2.84
8.95	0.35	0.32	5.00	2.67	0.17	2.84
9.00	0.35	0.32	5.00	2.67	0.17	2.84
9.05	0.34	0.32	5.00	2.67	0.17	2.84
9.10	0.34	0.32	5.00	2.67	0.17	2.83
9.15	0.34	0.32	5.00	2.67	0.17	2.83
9.20	0.33	0.32	5.00	2.67	0.17	2.83
9.25	0.33	0.32	5.00	2.67	0.17	2.83
9.30	0.33	0.32	5.00	2.67	0.17	2.83
9.35	0.32	0.32	5.00	2.67	0.17	2.83
9.40	0.32	0.32	5.00	2.67	0.17	2.83
9.45	0.32	0.32	5.00	2.67	0.17	2.83
9.50	0.31	0.32	5.00	2.67	0.16	2.83
9.55	0.31	0.32	5.00	2.67	0.16	2.83
9.60	0.31	0.32	5.00	2.67	0.16	2.83
9.65	0.30	0.32	5.00	2.67	0.16	2.83
9.70	0.30	0.32	5.00	2.67	0.16	2.83
9.75	0.30	0.32	5.00	2.67	0.16	2.83
9.80	0.30	0.32	5.00	2.67	0.16	2.83
9.85	0.29	0.32	5.00	2.67	0.16	2.83
9.90	0.29	0.32	5.00	2.67	0.16	2.83
9.95	0.29	0.32	5.00	2.67	0.16	2.83
10.00	0.28	0.32	5.00	2.67	0.16	2.83
10.05	0.28	0.32	5.00	2.67	0.16	2.83
10.10	0.28	0.32	5.00	2.67	0.16	2.83
10.15	0.28	0.32	5.00	2.67	0.16	2.83
10.20	0.28	0.32	5.00	2.67	0.16	2.82
10.25	0.28	0.32	5.00	2.67	0.16	2.82
10.30	0.28	0.32	5.00	2.67	0.16	2.82
10.35	0.28	0.32	5.00	2.67	0.16	2.82
10.40	0.28	0.32	5.00	2.67	0.16	2.82
10.45	0.28	0.32	5.00	2.67	0.15	2.82
10.50	0.28	0.32	5.00	2.67	0.15	2.82
10.55	0.28	0.32	5.00	2.67	0.15	2.82
10.60	0.28	0.32	5.00	2.67	0.15	2.82
10.65	0.27	0.32	5.00	2.67	0.15	2.82
10.70	0.27	0.32	5.00	2.67	0.15	2.82
10.75	0.27	0.32	5.00	2.67	0.15	2.82
10.80	0.27	0.32	5.00	2.67	0.15	2.82
10.85	0.27	0.32	5.00	2.67	0.15	2.82
10.90	0.27	0.32	5.00	2.67	0.15	2.82
10.95	0.27	0.32	5.00	2.67	0.15	2.81
11.00	0.27	0.32	5.00	2.67	0.15	2.81
11.05	0.27	0.32	5.00	2.67	0.15	2.81
11.10	0.27	0.32	5.00	2.67	0.15	2.81
11.15	0.27	0.32	5.00	2.67	0.14	2.81
11.20	0.27	0.32	5.00	2.67	0.14	2.81
11.25	0.27	0.32	5.00	2.67	0.14	2.81
11.30	0.27	0.32	5.00	2.67	0.14	2.81
11.35	0.27	0.32	5.00	2.67	0.14	2.81
11.40	0.27	0.32	5.00	2.67	0.14	2.81
11.45	0.26	0.32	5.00	2.67	0.14	2.81
11.50	0.26	0.32	5.00	2.67	0.14	2.81
11.55	0.26	0.32	5.00	2.67	0.14	2.81
11.60	0.26	0.32	5.00	2.67	0.14	2.80
11.65	0.26	0.32	5.00	2.67	0.14	2.80
11.70	0.26	0.32	5.00	2.67	0.14	2.80
11.75	0.26	0.32	5.00	2.67	0.14	2.80
11.80	0.26	0.32	5.00	2.67	0.13	2.80
11.85	0.26	0.32	5.00	2.67	0.13	2.80
11.90	0.26	0.32	5.00	2.67	0.13	2.80
11.95	0.26	0.32	5.00	2.67	0.13	2.80
12.00	0.26	0.32	5.00	2.67	0.13	2.80
12.05	0.26	0.32	5.00	2.67	0.13	2.80
12.10	0.26	0.32	5.00	2.67	0.13	2.80
12.15	0.26	0.32	5.00	2.67	0.13	2.80
12.20	0.26	0.32	5.00	2.67	0.13	2.79
12.25	0.26	0.32	5.00	2.67	0.13	2.79
12.30	0.25	0.32	5.00	2.67	0.13	2.79
12.35	0.25	0.32	5.00	2.67	0.12	2.79

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12.40	0.25	0.32	5.00	2.67	0.12	2.79
12.45	0.25	0.32	5.00	2.67	0.12	2.79
12.50	0.25	0.32	5.00	2.67	0.12	2.79
12.55	0.25	0.32	5.00	2.67	0.12	2.79
12.60	0.25	0.32	5.00	2.67	0.12	2.79
12.65	0.25	0.32	5.00	2.67	0.12	2.79
12.70	0.25	0.32	5.00	2.67	0.12	2.78
12.75	0.25	0.32	5.00	2.67	0.12	2.78
12.80	0.25	0.32	5.00	2.67	0.12	2.78
12.85	0.25	0.32	5.00	2.67	0.11	2.78
12.90	0.25	0.32	5.00	2.67	0.11	2.78
12.95	0.25	0.32	5.00	2.67	0.11	2.78
13.00	0.25	0.32	5.00	2.67	0.11	2.78
13.05	0.25	0.32	5.00	2.67	0.11	2.78
13.10	0.25	0.32	5.00	2.67	0.11	2.78
13.15	0.25	0.32	5.00	2.67	0.11	2.77
13.20	0.25	0.31	5.00	2.67	0.11	2.77
13.25	0.25	0.31	5.00	2.67	0.10	2.77
13.30	0.24	0.31	5.00	2.67	0.10	2.77
13.35	0.24	0.31	5.00	2.67	0.10	2.77
13.40	0.24	0.31	5.00	2.67	0.10	2.77
13.45	0.24	0.31	5.00	2.67	0.10	2.77
13.50	0.24	0.31	5.00	2.67	0.10	2.77
13.55	0.24	0.31	5.00	2.67	0.10	2.76
13.60	0.24	0.31	5.00	2.67	0.10	2.76
13.65	0.24	0.31	5.00	2.67	0.09	2.76
13.70	0.24	0.31	5.00	2.67	0.09	2.76
13.75	0.24	0.31	5.00	2.67	0.09	2.76
13.80	0.24	0.31	5.00	2.67	0.09	2.76
13.85	0.24	0.31	5.00	2.67	0.09	2.76
13.90	0.24	0.31	5.00	2.67	0.09	2.75
13.95	0.24	0.31	5.00	2.67	0.09	2.75
14.00	0.24	0.31	5.00	2.67	0.09	2.75
14.05	0.24	0.31	5.00	2.67	0.08	2.75
14.10	0.24	0.31	5.00	2.67	0.08	2.75
14.15	0.24	0.31	5.00	2.67	0.08	2.75
14.20	0.24	0.31	5.00	2.67	0.08	2.75
14.25	0.24	0.31	5.00	2.67	0.08	2.74
14.30	0.24	0.31	5.00	2.67	0.08	2.74
14.35	0.24	0.31	5.00	2.67	0.07	2.74
14.40	0.23	0.31	5.00	2.67	0.07	2.74
14.45	0.23	0.31	5.00	2.67	0.07	2.74
14.50	0.23	0.31	5.00	2.67	0.07	2.74
14.55	0.23	0.31	5.00	2.67	0.07	2.74
14.60	0.23	0.31	5.00	2.67	0.07	2.73
14.65	0.23	0.31	5.00	2.67	0.07	2.73
14.70	0.23	0.31	5.00	2.67	0.06	2.73
14.75	0.23	0.31	5.00	2.67	0.06	2.73
14.80	0.26	0.31	5.00	2.67	0.06	2.73
14.85	0.26	0.31	5.00	2.67	0.06	2.73
14.90	0.26	0.31	5.00	2.67	0.06	2.72
14.95	0.26	0.31	5.00	2.67	0.06	2.72
15.00	0.26	0.31	5.00	2.67	0.06	2.72
15.05	0.26	0.31	5.00	2.67	0.05	2.72
15.10	0.26	0.31	5.00	2.67	0.05	2.72
15.15	0.26	0.31	5.00	2.67	0.05	2.72
15.20	0.26	0.31	5.00	2.67	0.05	2.72
15.25	0.26	0.31	5.00	2.67	0.05	2.72
15.30	0.26	0.31	5.00	2.67	0.05	2.71
15.35	0.26	0.31	5.00	2.67	0.05	2.71
15.40	0.26	0.31	5.00	2.67	0.04	2.71
15.45	0.26	0.31	5.00	2.67	0.04	2.71
15.50	0.26	0.31	5.00	2.67	0.04	2.71
15.55	0.26	0.31	5.00	2.67	0.04	2.71
15.60	0.26	0.31	5.00	2.67	0.04	2.71
15.65	0.26	0.31	5.00	2.67	0.04	2.70
15.70	0.26	0.31	5.00	2.67	0.04	2.70
15.75	0.26	0.31	5.00	2.67	0.03	2.70
15.80	0.26	0.31	5.00	2.67	0.03	2.70
15.85	0.26	0.31	5.00	2.67	0.03	2.70
15.90	0.26	0.31	5.00	2.67	0.03	2.70
15.95	0.26	0.31	5.00	2.67	0.03	2.70
16.00	0.26	0.31	5.00	2.67	0.03	2.69

7050 -Liquefy.sum						
16.05	0.27	0.31	5.00	2.67	0.03	2.69
16.10	0.27	0.31	5.00	2.67	0.03	2.69
16.15	0.27	0.31	5.00	2.67	0.02	2.69
16.20	0.27	0.31	5.00	2.67	0.02	2.69
16.25	0.27	0.31	5.00	2.67	0.02	2.69
16.30	0.27	0.31	5.00	2.67	0.02	2.69
16.35	0.27	0.31	5.00	2.67	0.02	2.69
16.40	0.27	0.31	5.00	2.67	0.02	2.68
16.45	0.27	0.31	5.00	2.67	0.02	2.68
16.50	0.27	0.31	5.00	2.67	0.01	2.68
16.55	0.27	0.31	5.00	2.67	0.01	2.68
16.60	0.27	0.31	5.00	2.67	0.01	2.68
16.65	0.27	0.31	5.00	2.67	0.01	2.68
16.70	0.27	0.31	5.00	2.67	0.01	2.68
16.75	0.27	0.31	5.00	2.67	0.01	2.67
16.80	0.27	0.31	5.00	2.67	0.01	2.67
16.85	0.27	0.31	5.00	2.67	0.00	2.67
16.90	0.27	0.31	5.00	2.67	0.00	2.67
16.95	0.27	0.31	5.00	2.67	0.00	2.67
17.00	0.27	0.31	0.87*	2.67	0.00	2.67
17.05	0.27	0.31	0.87*	2.66	0.00	2.66
17.10	0.27	0.31	0.88*	2.65	0.00	2.65
17.15	0.27	0.31	0.88*	2.64	0.00	2.64
17.20	0.28	0.31	0.88*	2.64	0.00	2.64
17.25	0.28	0.31	0.88*	2.63	0.00	2.63
17.30	0.28	0.31	0.88*	2.62	0.00	2.62
17.35	0.28	0.31	0.88*	2.61	0.00	2.61
17.40	0.28	0.32	0.88*	2.61	0.00	2.61
17.45	0.28	0.32	0.88*	2.60	0.00	2.60
17.50	0.28	0.32	0.88*	2.59	0.00	2.59
17.55	0.28	0.32	0.89*	2.59	0.00	2.59
17.60	0.28	0.32	0.89*	2.58	0.00	2.58
17.65	0.28	0.32	0.89*	2.57	0.00	2.57
17.70	0.28	0.32	0.89*	2.56	0.00	2.56
17.75	0.28	0.32	0.89*	2.56	0.00	2.56
17.80	0.28	0.32	0.89*	2.55	0.00	2.55
17.85	0.28	0.32	0.89*	2.54	0.00	2.54
17.90	0.28	0.32	0.89*	2.54	0.00	2.54
17.95	0.29	0.32	0.89*	2.53	0.00	2.53
18.00	0.29	0.32	0.90*	2.52	0.00	2.52
18.05	0.29	0.32	0.90*	2.51	0.00	2.51
18.10	0.29	0.32	0.90*	2.51	0.00	2.51
18.15	0.29	0.32	0.90*	2.50	0.00	2.50
18.20	0.29	0.32	0.90*	2.49	0.00	2.49
18.25	0.29	0.32	0.90*	2.49	0.00	2.49
18.30	0.29	0.32	0.90*	2.48	0.00	2.48
18.35	0.29	0.32	0.90*	2.47	0.00	2.47
18.40	0.29	0.32	0.91*	2.47	0.00	2.47
18.45	0.29	0.32	0.91*	2.46	0.00	2.46
18.50	0.29	0.32	0.91*	2.45	0.00	2.45
18.55	0.29	0.32	0.91*	2.45	0.00	2.45
18.60	0.30	0.32	0.91*	2.44	0.00	2.44
18.65	0.30	0.32	0.91*	2.43	0.00	2.43
18.70	0.30	0.32	0.91*	2.43	0.00	2.43
18.75	0.30	0.33	0.91*	2.42	0.00	2.42
18.80	0.30	0.33	0.92*	2.41	0.00	2.41
18.85	0.30	0.33	0.92*	2.41	0.00	2.41
18.90	0.30	0.33	0.92*	2.40	0.00	2.40
18.95	0.30	0.33	0.92*	2.39	0.00	2.39
19.00	0.30	0.33	0.92*	2.39	0.00	2.39
19.05	0.30	0.33	0.92*	2.38	0.00	2.38
19.10	0.30	0.33	0.93*	2.37	0.00	2.37
19.15	0.30	0.33	0.93*	2.37	0.00	2.37
19.20	0.30	0.33	0.93*	2.36	0.00	2.36
19.25	0.31	0.33	0.93*	2.35	0.00	2.35
19.30	0.31	0.33	0.93*	2.35	0.00	2.35
19.35	0.31	0.33	0.93*	2.34	0.00	2.34
19.40	0.31	0.33	0.94*	2.33	0.00	2.33
19.45	0.31	0.33	0.94*	2.33	0.00	2.33
19.50	0.31	0.33	0.94*	2.32	0.00	2.32
19.55	0.31	0.33	0.94*	2.32	0.00	2.32
19.60	0.31	0.33	0.94*	2.31	0.00	2.31
19.65	0.31	0.33	0.95*	2.30	0.00	2.30

					7050	-Liquefy.sum
19.70	0.31	0.33	0.95*	2.30	0.00	2.30
19.75	0.32	0.33	0.95*	2.29	0.00	2.29
19.80	0.32	0.33	0.95*	2.29	0.00	2.29
19.85	0.32	0.33	0.95*	2.28	0.00	2.28
19.90	0.32	0.33	0.96*	2.27	0.00	2.27
19.95	0.32	0.33	0.96*	2.27	0.00	2.27
20.00	0.32	0.33	0.96*	2.26	0.00	2.26
20.05	0.32	0.33	0.96*	2.26	0.00	2.26
20.10	0.32	0.33	0.96*	2.25	0.00	2.25
20.15	0.32	0.33	0.95*	2.25	0.00	2.25
20.20	0.32	0.33	0.95*	2.24	0.00	2.24
20.25	0.32	0.34	0.95*	2.24	0.00	2.24
20.30	0.32	0.34	0.95*	2.23	0.00	2.23
20.35	0.32	0.34	0.95*	2.22	0.00	2.22
20.40	0.32	0.34	0.95*	2.22	0.00	2.22
20.45	0.32	0.34	0.94*	2.21	0.00	2.21
20.50	0.32	0.34	0.94*	2.21	0.00	2.21
20.55	0.32	0.34	0.94*	2.20	0.00	2.20
20.60	0.32	0.34	0.94*	2.19	0.00	2.19
20.65	0.32	0.34	0.94*	2.19	0.00	2.19
20.70	0.32	0.34	0.94*	2.18	0.00	2.18
20.75	0.32	0.34	0.94*	2.18	0.00	2.18
20.80	0.32	0.34	0.93*	2.17	0.00	2.17
20.85	0.32	0.34	0.93*	2.16	0.00	2.16
20.90	0.32	0.34	0.93*	2.16	0.00	2.16
20.95	0.32	0.34	0.93*	2.15	0.00	2.15
21.00	0.32	0.34	0.93*	2.14	0.00	2.14
21.05	0.32	0.34	0.93*	2.14	0.00	2.14
21.10	0.31	0.34	0.93*	2.13	0.00	2.13
21.15	0.31	0.34	0.92*	2.13	0.00	2.13
21.20	0.31	0.34	0.92*	2.12	0.00	2.12
21.25	0.31	0.34	0.92*	2.11	0.00	2.11
21.30	0.31	0.34	0.92*	2.11	0.00	2.11
21.35	0.31	0.34	0.92*	2.10	0.00	2.10
21.40	0.31	0.34	0.92*	2.09	0.00	2.09
21.45	0.31	0.34	0.92*	2.09	0.00	2.09
21.50	0.31	0.34	0.91*	2.08	0.00	2.08
21.55	0.31	0.34	0.91*	2.07	0.00	2.07
21.60	0.31	0.34	0.91*	2.07	0.00	2.07
21.65	0.31	0.34	0.91*	2.06	0.00	2.06
21.70	0.31	0.34	0.91*	2.05	0.00	2.05
21.75	0.31	0.34	0.91*	2.05	0.00	2.05
21.80	0.31	0.34	0.91*	2.04	0.00	2.04
21.85	0.31	0.34	0.90*	2.04	0.00	2.04
21.90	0.31	0.35	0.90*	2.03	0.00	2.03
21.95	0.31	0.35	0.90*	2.02	0.00	2.02
22.00	0.31	0.35	0.90*	2.02	0.00	2.02
22.05	0.31	0.35	0.90*	2.01	0.00	2.01
22.10	0.31	0.35	0.90*	2.00	0.00	2.00
22.15	0.31	0.35	0.90*	2.00	0.00	2.00
22.20	0.31	0.35	0.90*	1.99	0.00	1.99
22.25	0.31	0.35	0.89*	1.98	0.00	1.98
22.30	0.31	0.35	0.89*	1.98	0.00	1.98
22.35	0.31	0.35	0.89*	1.97	0.00	1.97
22.40	0.31	0.35	0.89*	1.96	0.00	1.96
22.45	0.31	0.35	0.89*	1.95	0.00	1.95
22.50	0.31	0.35	0.89*	1.95	0.00	1.95
22.55	0.31	0.35	0.89*	1.94	0.00	1.94
22.60	0.31	0.35	0.89*	1.93	0.00	1.93
22.65	0.31	0.35	0.88*	1.93	0.00	1.93
22.70	0.31	0.35	0.88*	1.92	0.00	1.92
22.75	0.31	0.35	0.88*	1.91	0.00	1.91
22.80	0.31	0.35	0.88*	1.91	0.00	1.91
22.85	0.31	0.35	0.88*	1.90	0.00	1.90
22.90	0.31	0.35	0.88*	1.89	0.00	1.89
22.95	0.31	0.35	0.88*	1.89	0.00	1.89
23.00	0.31	0.35	0.88*	1.88	0.00	1.88
23.05	0.31	0.35	0.87*	1.87	0.00	1.87
23.10	0.31	0.35	0.87*	1.87	0.00	1.87
23.15	0.31	0.35	0.87*	1.86	0.00	1.86
23.20	0.31	0.35	0.87*	1.85	0.00	1.85
23.25	0.31	0.35	0.87*	1.84	0.00	1.84
23.30	0.31	0.35	0.87*	1.84	0.00	1.84

					7050	-Liquefy.sum
23.35	0.31	0.35	0.87*	1.83	0.00	1.83
23.40	0.31	0.35	0.87*	1.82	0.00	1.82
23.45	0.31	0.35	0.86*	1.82	0.00	1.82
23.50	0.31	0.35	0.86*	1.81	0.00	1.81
23.55	0.31	0.35	0.86*	1.80	0.00	1.80
23.60	0.31	0.35	0.86*	1.80	0.00	1.80
23.65	0.31	0.35	0.86*	1.79	0.00	1.79
23.70	0.31	0.36	0.86*	1.78	0.00	1.78
23.75	0.30	0.36	0.86*	1.77	0.00	1.77
23.80	0.30	0.36	0.86*	1.77	0.00	1.77
23.85	0.30	0.36	0.86*	1.76	0.00	1.76
23.90	0.30	0.36	0.85*	1.75	0.00	1.75
23.95	0.30	0.36	0.85*	1.75	0.00	1.75
24.00	0.30	0.36	0.85*	1.74	0.00	1.74
24.05	0.30	0.36	0.85*	1.73	0.00	1.73
24.10	0.30	0.36	0.85*	1.72	0.00	1.72
24.15	0.30	0.36	0.85*	1.72	0.00	1.72
24.20	0.30	0.36	0.85*	1.71	0.00	1.71
24.25	0.30	0.36	0.85*	1.70	0.00	1.70
24.30	0.30	0.36	0.85*	1.69	0.00	1.69
24.35	0.30	0.36	0.85*	1.69	0.00	1.69
24.40	0.30	0.36	0.84*	1.68	0.00	1.68
24.45	0.30	0.36	0.84*	1.67	0.00	1.67
24.50	0.30	0.36	0.84*	1.67	0.00	1.67
24.55	0.30	0.36	0.84*	1.66	0.00	1.66
24.60	0.30	0.36	0.84*	1.65	0.00	1.65
24.65	0.30	0.36	0.84*	1.64	0.00	1.64
24.70	0.30	0.36	0.84*	1.64	0.00	1.64
24.75	0.30	0.36	0.84*	1.63	0.00	1.63
24.80	0.30	0.36	0.84*	1.62	0.00	1.62
24.85	0.30	0.36	0.83*	1.61	0.00	1.61
24.90	0.30	0.36	0.83*	1.61	0.00	1.61
24.95	0.30	0.36	0.83*	1.60	0.00	1.60
25.00	0.30	0.36	0.83*	1.59	0.00	1.59
25.05	0.30	0.36	0.83*	1.58	0.00	1.58
25.10	0.30	0.36	0.83*	1.58	0.00	1.58
25.15	0.30	0.36	0.83*	1.57	0.00	1.57
25.20	0.30	0.36	0.83*	1.56	0.00	1.56
25.25	0.30	0.36	0.83*	1.55	0.00	1.55
25.30	0.30	0.36	0.83*	1.55	0.00	1.55
25.35	0.30	0.36	0.84*	1.54	0.00	1.54
25.40	0.30	0.36	0.84*	1.53	0.00	1.53
25.45	0.30	0.36	0.84*	1.52	0.00	1.52
25.50	0.30	0.36	0.84*	1.52	0.00	1.52
25.55	0.31	0.36	0.84*	1.51	0.00	1.51
25.60	0.31	0.36	0.84*	1.50	0.00	1.50
25.65	0.31	0.36	0.84*	1.50	0.00	1.50
25.70	0.31	0.37	0.84*	1.49	0.00	1.49
25.75	0.31	0.37	0.84*	1.48	0.00	1.48
25.80	0.31	0.37	0.84*	1.47	0.00	1.47
25.85	0.31	0.37	0.84*	1.47	0.00	1.47
25.90	0.31	0.37	0.84*	1.46	0.00	1.46
25.95	0.31	0.37	0.84*	1.45	0.00	1.45
26.00	0.31	0.37	0.84*	1.44	0.00	1.44
26.05	0.31	0.37	0.84*	1.44	0.00	1.44
26.10	0.31	0.37	0.84*	1.43	0.00	1.43
26.15	0.31	0.37	0.84*	1.42	0.00	1.42
26.20	0.31	0.37	0.84*	1.42	0.00	1.42
26.25	0.31	0.37	0.85*	1.41	0.00	1.41
26.30	0.31	0.37	0.85*	1.40	0.00	1.40
26.35	0.31	0.37	0.85*	1.39	0.00	1.39
26.40	0.31	0.37	0.85*	1.39	0.00	1.39
26.45	0.31	0.37	0.85*	1.38	0.00	1.38
26.50	0.31	0.37	0.85*	1.37	0.00	1.37
26.55	0.31	0.37	0.85*	1.37	0.00	1.37
26.60	0.31	0.37	0.85*	1.36	0.00	1.36
26.65	0.31	0.37	0.85*	1.35	0.00	1.35
26.70	0.31	0.37	0.85*	1.34	0.00	1.34
26.75	0.32	0.37	0.85*	1.34	0.00	1.34
26.80	0.32	0.37	0.85*	1.33	0.00	1.33
26.85	0.32	0.37	0.85*	1.32	0.00	1.32
26.90	0.32	0.37	0.85*	1.32	0.00	1.32
26.95	0.32	0.37	0.86*	1.31	0.00	1.31

					7050	-Liquefy.sum
27.00	0.32	0.37	0.86*	1.30	0.00	1.30
27.05	0.32	0.37	0.86*	1.29	0.00	1.29
27.10	0.32	0.37	0.86*	1.29	0.00	1.29
27.15	0.32	0.37	0.86*	1.28	0.00	1.28
27.20	0.32	0.37	0.86*	1.27	0.00	1.27
27.25	0.32	0.37	0.86*	1.27	0.00	1.27
27.30	0.32	0.37	0.86*	1.26	0.00	1.26
27.35	0.32	0.37	0.86*	1.25	0.00	1.25
27.40	0.32	0.37	0.86*	1.25	0.00	1.25
27.45	0.32	0.37	0.86*	1.24	0.00	1.24
27.50	0.32	0.37	0.86*	1.23	0.00	1.23
27.55	0.32	0.37	0.87*	1.23	0.00	1.23
27.60	0.32	0.37	0.87*	1.22	0.00	1.22
27.65	0.32	0.37	0.87*	1.21	0.00	1.21
27.70	0.32	0.37	0.87*	1.20	0.00	1.20
27.75	0.33	0.37	0.87*	1.20	0.00	1.20
27.80	0.33	0.37	0.87*	1.19	0.00	1.19
27.85	0.33	0.37	0.87*	1.18	0.00	1.18
27.90	0.35	0.37	0.93*	1.18	0.00	1.18
27.95	0.35	0.38	0.93*	1.17	0.00	1.17
28.00	0.35	0.38	0.93*	1.17	0.00	1.17
28.05	0.35	0.38	0.93*	1.16	0.00	1.16
28.10	0.35	0.38	0.93*	1.15	0.00	1.15
28.15	0.35	0.38	0.93*	1.15	0.00	1.15
28.20	0.35	0.38	0.93*	1.14	0.00	1.14
28.25	0.35	0.38	0.94*	1.14	0.00	1.14
28.30	0.35	0.38	0.94*	1.13	0.00	1.13
28.35	0.35	0.38	0.94*	1.12	0.00	1.12
28.40	0.35	0.38	0.94*	1.12	0.00	1.12
28.45	0.35	0.38	0.94*	1.11	0.00	1.11
28.50	0.35	0.38	0.94*	1.11	0.00	1.11
28.55	0.36	0.38	0.94*	1.10	0.00	1.10
28.60	0.36	0.38	0.94*	1.10	0.00	1.10
28.65	0.36	0.38	0.94*	1.09	0.00	1.09
28.70	0.36	0.38	0.95*	1.09	0.00	1.09
28.75	0.36	0.38	0.95*	1.08	0.00	1.08
28.80	0.36	0.38	0.95*	1.08	0.00	1.08
28.85	0.36	0.38	0.95*	1.07	0.00	1.07
28.90	0.36	0.38	0.95*	1.07	0.00	1.07
28.95	0.36	0.38	0.95*	1.06	0.00	1.06
29.00	0.36	0.38	0.95*	1.06	0.00	1.06
29.05	0.36	0.38	0.96*	1.06	0.00	1.06
29.10	0.36	0.38	0.96*	1.05	0.00	1.05
29.15	0.36	0.38	0.96*	1.05	0.00	1.05
29.20	0.36	0.38	0.96*	1.04	0.00	1.04
29.25	0.37	0.38	0.96*	1.04	0.00	1.04
29.30	0.37	0.38	0.96*	1.04	0.00	1.04
29.35	0.37	0.38	0.96*	1.03	0.00	1.03
29.40	0.37	0.38	0.97*	1.03	0.00	1.03
29.45	0.37	0.38	0.97*	1.02	0.00	1.02
29.50	0.37	0.38	0.97*	1.02	0.00	1.02
29.55	0.37	0.38	0.97*	1.02	0.00	1.02
29.60	0.37	0.38	0.97*	1.01	0.00	1.01
29.65	0.37	0.38	0.97*	1.01	0.00	1.01
29.70	0.37	0.38	0.98*	1.01	0.00	1.01
29.75	0.37	0.38	0.98*	1.00	0.00	1.00
29.80	0.37	0.38	0.98*	1.00	0.00	1.00
29.85	0.37	0.38	0.98*	1.00	0.00	1.00
29.90	0.38	0.38	0.98*	1.00	0.00	1.00
29.95	0.38	0.38	0.98*	0.99	0.00	0.99
30.00	0.38	0.38	0.98*	0.99	0.00	0.99
30.05	0.38	0.38	0.98*	0.99	0.00	0.99
30.10	0.38	0.38	0.98*	0.98	0.00	0.98
30.15	0.38	0.38	0.98*	0.98	0.00	0.98
30.20	0.38	0.38	0.98*	0.98	0.00	0.98
30.25	0.38	0.38	0.98*	0.98	0.00	0.98
30.30	0.38	0.38	0.98*	0.97	0.00	0.97
30.35	0.37	0.38	0.98*	0.97	0.00	0.97
30.40	0.37	0.38	0.98*	0.97	0.00	0.97
30.45	0.37	0.38	0.98*	0.96	0.00	0.96
30.50	0.37	0.38	0.98*	0.96	0.00	0.96
30.55	0.37	0.38	0.97*	0.96	0.00	0.96
30.60	0.37	0.38	0.97*	0.95	0.00	0.95

					7050	-Liquefy.sum
30.65	0.37	0.38	0.97*	0.95	0.00	0.95
30.70	0.37	0.38	0.97*	0.95	0.00	0.95
30.75	0.37	0.38	0.97*	0.95	0.00	0.95
30.80	0.37	0.38	0.97*	0.94	0.00	0.94
30.85	0.37	0.38	0.97*	0.94	0.00	0.94
30.90	0.37	0.38	0.97*	0.94	0.00	0.94
30.95	0.37	0.38	0.97*	0.93	0.00	0.93
31.00	0.37	0.38	0.97*	0.93	0.00	0.93
31.05	0.37	0.38	0.97*	0.92	0.00	0.92
31.10	0.37	0.38	0.97*	0.92	0.00	0.92
31.15	0.37	0.38	0.96*	0.92	0.00	0.92
31.20	0.37	0.38	0.96*	0.91	0.00	0.91
31.25	0.37	0.38	0.96*	0.91	0.00	0.91
31.30	0.37	0.38	0.96*	0.91	0.00	0.91
31.35	0.37	0.38	0.96*	0.90	0.00	0.90
31.40	0.37	0.38	0.96*	0.90	0.00	0.90
31.45	0.37	0.38	0.96*	0.89	0.00	0.89
31.50	0.37	0.38	0.96*	0.89	0.00	0.89
31.55	0.37	0.38	0.96*	0.89	0.00	0.89
31.60	0.37	0.38	0.96*	0.88	0.00	0.88
31.65	0.37	0.38	0.96*	0.88	0.00	0.88
31.70	0.37	0.38	0.96*	0.87	0.00	0.87
31.75	0.37	0.38	0.96*	0.87	0.00	0.87
31.80	0.37	0.38	0.95*	0.87	0.00	0.87
31.85	0.37	0.38	0.95*	0.86	0.00	0.86
31.90	0.37	0.38	0.95*	0.86	0.00	0.86
31.95	0.37	0.38	0.95*	0.85	0.00	0.85
32.00	0.37	0.38	0.95*	0.85	0.00	0.85
32.05	0.37	0.38	0.95*	0.84	0.00	0.84
32.10	0.37	0.38	0.95*	0.84	0.00	0.84
32.15	0.36	0.38	0.95*	0.84	0.00	0.84
32.20	0.36	0.38	0.95*	0.83	0.00	0.83
32.25	0.36	0.38	0.95*	0.83	0.00	0.83
32.30	0.36	0.38	0.95*	0.82	0.00	0.82
32.35	0.36	0.38	0.95*	0.82	0.00	0.82
32.40	0.36	0.38	0.95*	0.81	0.00	0.81
32.45	0.36	0.38	0.95*	0.81	0.00	0.81
32.50	0.36	0.38	0.94*	0.80	0.00	0.80
32.55	0.36	0.38	0.94*	0.80	0.00	0.80
32.60	0.36	0.38	0.94*	0.79	0.00	0.79
32.65	0.36	0.38	0.94*	0.79	0.00	0.79
32.70	0.36	0.38	0.94*	0.78	0.00	0.78
32.75	0.36	0.38	0.94*	0.78	0.00	0.78
32.80	0.36	0.38	0.94*	0.77	0.00	0.77
32.85	0.36	0.38	0.94*	0.77	0.00	0.77
32.90	0.36	0.38	0.94*	0.76	0.00	0.76
32.95	0.36	0.38	0.94*	0.76	0.00	0.76
33.00	0.36	0.38	0.94*	0.75	0.00	0.75
33.05	0.36	0.38	0.94*	0.75	0.00	0.75
33.10	0.36	0.38	0.94*	0.74	0.00	0.74
33.15	0.36	0.38	0.94*	0.74	0.00	0.74
33.20	0.36	0.38	0.94*	0.73	0.00	0.73
33.25	0.36	0.38	0.94*	0.72	0.00	0.72
33.30	0.36	0.38	0.94*	0.72	0.00	0.72
33.35	0.36	0.38	0.94*	0.71	0.00	0.71
33.40	0.36	0.38	0.94*	0.71	0.00	0.71
33.45	0.36	0.38	0.94*	0.70	0.00	0.70
33.50	0.36	0.38	0.94*	0.70	0.00	0.70
33.55	0.36	0.38	0.93*	0.69	0.00	0.69
33.60	0.36	0.38	0.93*	0.69	0.00	0.69
33.65	0.36	0.38	0.93*	0.68	0.00	0.68
33.70	0.36	0.38	0.93*	0.67	0.00	0.67
33.75	0.36	0.38	0.93*	0.67	0.00	0.67
33.80	0.36	0.38	0.93*	0.66	0.00	0.66
33.85	0.36	0.38	0.93*	0.66	0.00	0.66
33.90	0.36	0.38	0.93*	0.65	0.00	0.65
33.95	0.36	0.38	0.93*	0.64	0.00	0.64
34.00	0.36	0.38	0.93*	0.64	0.00	0.64
34.05	0.36	0.38	0.93*	0.63	0.00	0.63
34.10	0.36	0.38	0.93*	0.63	0.00	0.63
34.15	0.36	0.38	0.92*	0.62	0.00	0.62
34.20	0.36	0.38	0.92*	0.61	0.00	0.61
34.25	0.36	0.38	0.92*	0.61	0.00	0.61

7050 -Liquefy.sum							
34.30	0.35	0.38	0.92*	0.60	0.00	0.60	
34.35	0.35	0.38	0.92*	0.60	0.00	0.60	
34.40	0.35	0.38	0.92*	0.59	0.00	0.59	
34.45	0.35	0.38	0.92*	0.58	0.00	0.58	
34.50	0.35	0.38	0.92*	0.58	0.00	0.58	
34.55	0.35	0.38	0.92*	0.57	0.00	0.57	
34.60	0.35	0.38	0.92*	0.57	0.00	0.57	
34.65	0.35	0.38	0.92*	0.56	0.00	0.56	
34.70	0.35	0.38	0.92*	0.55	0.00	0.55	
34.75	0.35	0.38	0.92*	0.55	0.00	0.55	
34.80	0.35	0.38	0.91*	0.54	0.00	0.54	
34.85	0.35	0.38	0.91*	0.53	0.00	0.53	
34.90	0.35	0.38	0.91*	0.53	0.00	0.53	
34.95	0.35	0.38	0.91*	0.52	0.00	0.52	
35.00	0.35	0.38	0.91*	0.52	0.00	0.52	
35.05	0.35	0.38	0.91*	0.51	0.00	0.51	
35.10	0.35	0.38	0.91*	0.50	0.00	0.50	
35.15	0.35	0.38	0.91*	0.50	0.00	0.50	
35.20	0.35	0.38	0.91*	0.49	0.00	0.49	
35.25	0.35	0.38	0.92*	0.49	0.00	0.49	
35.30	0.35	0.38	0.92*	0.48	0.00	0.48	
35.35	0.35	0.38	0.92*	0.47	0.00	0.47	
35.40	0.35	0.38	0.92*	0.47	0.00	0.47	
35.45	0.35	0.38	0.92*	0.46	0.00	0.46	
35.50	0.35	0.38	0.92*	0.45	0.00	0.45	
35.55	0.35	0.38	0.92*	0.45	0.00	0.45	
35.60	0.35	0.38	0.92*	0.44	0.00	0.44	
35.65	0.35	0.38	0.92*	0.44	0.00	0.44	
35.70	0.35	0.38	0.92*	0.43	0.00	0.43	
35.75	0.35	0.38	0.92*	0.42	0.00	0.42	
35.80	0.35	0.38	0.92*	0.42	0.00	0.42	
35.85	0.36	0.38	0.92*	0.41	0.00	0.41	
35.90	0.36	0.38	0.93*	0.41	0.00	0.41	
35.95	0.36	0.38	0.93*	0.40	0.00	0.40	
36.00	0.36	0.38	0.93*	0.40	0.00	0.40	
36.05	0.36	0.38	0.93*	0.39	0.00	0.39	
36.10	0.36	0.38	0.93*	0.38	0.00	0.38	
36.15	0.36	0.38	0.93*	0.38	0.00	0.38	
36.20	0.36	0.38	0.93*	0.37	0.00	0.37	
36.25	0.36	0.38	0.93*	0.37	0.00	0.37	
36.30	0.36	0.38	0.93*	0.36	0.00	0.36	
36.35	0.36	0.38	0.93*	0.36	0.00	0.36	
36.40	0.36	0.38	0.93*	0.35	0.00	0.35	
36.45	0.36	0.38	0.93*	0.35	0.00	0.35	
36.50	0.36	0.38	0.93*	0.34	0.00	0.34	
36.55	0.36	0.38	0.94*	0.34	0.00	0.34	
36.60	0.36	0.38	0.94*	0.33	0.00	0.33	
36.65	0.36	0.38	0.94*	0.33	0.00	0.33	
36.70	0.36	0.38	0.94*	0.32	0.00	0.32	
36.75	0.36	0.38	0.94*	0.32	0.00	0.32	
36.80	0.36	0.38	0.94*	0.31	0.00	0.31	
36.85	0.36	0.38	0.94*	0.31	0.00	0.31	
36.90	0.36	0.38	0.94*	0.30	0.00	0.30	
36.95	0.36	0.38	0.94*	0.30	0.00	0.30	
37.00	0.36	0.38	0.95*	0.29	0.00	0.29	
37.05	0.36	0.38	0.95*	0.29	0.00	0.29	
37.10	0.36	0.38	0.95*	0.28	0.00	0.28	
37.15	0.36	0.38	0.95*	0.28	0.00	0.28	
37.20	0.36	0.38	0.95*	0.28	0.00	0.28	
37.25	0.36	0.38	0.95*	0.27	0.00	0.27	
37.30	0.36	0.38	0.95*	0.27	0.00	0.27	
37.35	0.37	0.38	0.95*	0.26	0.00	0.26	
37.40	0.37	0.38	0.95*	0.26	0.00	0.26	
37.45	0.37	0.38	0.96*	0.26	0.00	0.26	
37.50	0.37	0.38	0.96*	0.25	0.00	0.25	
37.55	0.37	0.38	0.96*	0.25	0.00	0.25	
37.60	0.37	0.38	0.96*	0.25	0.00	0.25	
37.65	0.37	0.38	0.96*	0.24	0.00	0.24	
37.70	0.37	0.38	0.96*	0.24	0.00	0.24	
37.75	0.37	0.38	0.96*	0.24	0.00	0.24	
37.80	0.37	0.38	0.96*	0.23	0.00	0.23	
37.85	0.37	0.38	0.97*	0.23	0.00	0.23	
37.90	0.37	0.38	0.97*	0.23	0.00	0.23	

7050 -Liquefy.sum						
37.95	0.37	0.38	0.97*	0.22	0.00	0.22
38.00	0.37	0.38	0.97*	0.22	0.00	0.22
38.05	0.37	0.38	0.97*	0.22	0.00	0.22
38.10	0.37	0.38	0.97*	0.21	0.00	0.21
38.15	0.37	0.38	0.97*	0.21	0.00	0.21
38.20	0.37	0.38	0.97*	0.21	0.00	0.21
38.25	0.37	0.38	0.98*	0.21	0.00	0.21
38.30	0.37	0.38	0.98*	0.20	0.00	0.20
38.35	0.37	0.38	0.98*	0.20	0.00	0.20
38.40	0.37	0.38	0.98*	0.20	0.00	0.20
38.45	0.37	0.38	0.98*	0.20	0.00	0.20
38.50	0.38	0.38	0.98*	0.19	0.00	0.19
38.55	0.38	0.38	0.98*	0.19	0.00	0.19
38.60	0.38	0.38	0.99*	0.19	0.00	0.19
38.65	0.38	0.38	0.99*	0.19	0.00	0.19
38.70	0.38	0.38	0.99*	0.19	0.00	0.19
38.75	0.38	0.38	0.99*	0.18	0.00	0.18
38.80	0.38	0.38	0.99*	0.18	0.00	0.18
38.85	0.38	0.38	0.99*	0.18	0.00	0.18
38.90	0.38	0.38	0.99*	0.18	0.00	0.18
38.95	0.38	0.38	1.00*	0.18	0.00	0.18
39.00	0.38	0.38	1.00*	0.17	0.00	0.17
39.05	0.38	0.38	1.00*	0.17	0.00	0.17
39.10	0.38	0.38	1.00	0.17	0.00	0.17
39.15	0.38	0.38	1.00	0.17	0.00	0.17
39.20	0.38	0.38	1.00	0.17	0.00	0.17
39.25	0.38	0.38	1.01	0.17	0.00	0.17
39.30	0.38	0.38	1.01	0.16	0.00	0.16
39.35	0.38	0.38	1.01	0.16	0.00	0.16
39.40	0.39	0.38	1.01	0.16	0.00	0.16
39.45	0.39	0.38	1.01	0.16	0.00	0.16
39.50	0.39	0.38	1.01	0.16	0.00	0.16
39.55	0.39	0.38	1.02	0.16	0.00	0.16
39.60	0.39	0.38	1.02	0.16	0.00	0.16
39.65	0.39	0.38	1.02	0.16	0.00	0.16
39.70	0.39	0.38	1.02	0.16	0.00	0.16
39.75	0.39	0.38	1.02	0.15	0.00	0.15
39.80	0.39	0.38	1.03	0.15	0.00	0.15
39.85	0.39	0.38	1.03	0.15	0.00	0.15
39.90	0.39	0.38	1.03	0.15	0.00	0.15
39.95	0.39	0.38	1.03	0.15	0.00	0.15
40.00	0.39	0.38	1.03	0.15	0.00	0.15
40.05	0.39	0.38	1.03	0.15	0.00	0.15
40.10	0.39	0.38	1.03	0.15	0.00	0.15
40.15	0.39	0.38	1.03	0.15	0.00	0.15
40.20	0.39	0.38	1.03	0.14	0.00	0.14
40.25	0.39	0.38	1.03	0.14	0.00	0.14
40.30	0.39	0.38	1.03	0.14	0.00	0.14
40.35	0.39	0.38	1.03	0.14	0.00	0.14
40.40	0.39	0.38	1.03	0.14	0.00	0.14
40.45	0.39	0.38	1.03	0.14	0.00	0.14
40.50	0.39	0.38	1.03	0.14	0.00	0.14
40.55	0.39	0.38	1.02	0.14	0.00	0.14
40.60	0.39	0.38	1.02	0.14	0.00	0.14
40.65	0.39	0.38	1.02	0.13	0.00	0.13
40.70	0.39	0.38	1.02	0.13	0.00	0.13
40.75	0.39	0.38	1.02	0.13	0.00	0.13
40.80	0.39	0.38	1.02	0.13	0.00	0.13
40.85	0.39	0.38	1.02	0.13	0.00	0.13
40.90	0.39	0.38	1.02	0.13	0.00	0.13
40.95	0.39	0.38	1.02	0.13	0.00	0.13
41.00	0.39	0.38	1.02	0.13	0.00	0.13
41.05	0.39	0.38	1.02	0.13	0.00	0.13
41.10	0.38	0.38	1.02	0.12	0.00	0.12
41.15	0.38	0.38	1.02	0.12	0.00	0.12
41.20	0.38	0.38	1.01	0.12	0.00	0.12
41.25	0.38	0.38	1.01	0.12	0.00	0.12
41.30	0.38	0.38	1.01	0.12	0.00	0.12
41.35	0.38	0.38	1.01	0.12	0.00	0.12
41.40	0.38	0.38	1.01	0.12	0.00	0.12
41.45	0.38	0.38	1.01	0.12	0.00	0.12
41.50	0.38	0.38	1.01	0.11	0.00	0.11
41.55	0.38	0.38	1.01	0.11	0.00	0.11

7050 -Liquefy.sum						
41.60	0.38	0.38	1.01	0.11	0.00	0.11
41.65	0.38	0.38	1.01	0.11	0.00	0.11
41.70	0.38	0.38	1.01	0.11	0.00	0.11
41.75	0.38	0.38	1.01	0.11	0.00	0.11
41.80	0.38	0.38	1.01	0.11	0.00	0.11
41.85	0.38	0.38	1.01	0.11	0.00	0.11
41.90	0.38	0.38	1.00	0.11	0.00	0.11
41.95	0.38	0.38	1.00	0.10	0.00	0.10
42.00	0.38	0.38	1.00	0.10	0.00	0.10
42.05	0.38	0.38	1.00	0.10	0.00	0.10
42.10	0.38	0.38	1.00	0.10	0.00	0.10
42.15	0.38	0.38	1.00	0.10	0.00	0.10
42.20	0.38	0.38	1.00	0.10	0.00	0.10
42.25	0.38	0.38	1.00	0.10	0.00	0.10
42.30	0.38	0.38	1.00*	0.10	0.00	0.10
42.35	0.38	0.38	1.00*	0.09	0.00	0.09
42.40	0.38	0.38	1.00*	0.09	0.00	0.09
42.45	0.38	0.38	1.00*	0.09	0.00	0.09
42.50	0.38	0.38	1.00*	0.09	0.00	0.09
42.55	0.38	0.38	1.00*	0.09	0.00	0.09
42.60	0.37	0.38	1.00*	0.09	0.00	0.09
42.65	0.37	0.38	1.00*	0.09	0.00	0.09
42.70	0.37	0.38	0.99*	0.09	0.00	0.09
42.75	0.37	0.38	0.99*	0.09	0.00	0.09
42.80	0.37	0.38	0.99*	0.08	0.00	0.08
42.85	0.37	0.38	0.99*	0.08	0.00	0.08
42.90	0.37	0.38	0.99*	0.08	0.00	0.08
42.95	0.37	0.38	0.99*	0.08	0.00	0.08
43.00	0.37	0.38	0.99*	0.08	0.00	0.08
43.05	0.37	0.38	0.99*	0.08	0.00	0.08
43.10	0.37	0.38	0.99*	0.08	0.00	0.08
43.15	0.37	0.38	0.99*	0.07	0.00	0.07
43.20	0.37	0.38	0.99*	0.07	0.00	0.07
43.25	0.37	0.38	0.99*	0.07	0.00	0.07
43.30	0.37	0.38	0.99*	0.07	0.00	0.07
43.35	0.37	0.38	0.99*	0.07	0.00	0.07
43.40	0.37	0.38	0.99*	0.07	0.00	0.07
43.45	0.37	0.38	0.99*	0.07	0.00	0.07
43.50	0.37	0.38	0.98*	0.06	0.00	0.06
43.55	0.37	0.38	0.98*	0.06	0.00	0.06
43.60	0.37	0.37	0.98*	0.06	0.00	0.06
43.65	0.37	0.37	0.98*	0.06	0.00	0.06
43.70	0.37	0.37	0.98*	0.06	0.00	0.06
43.75	0.37	0.37	0.98*	0.06	0.00	0.06
43.80	0.37	0.37	0.98*	0.06	0.00	0.06
43.85	0.37	0.37	0.98*	0.05	0.00	0.05
43.90	0.37	0.37	0.98*	0.05	0.00	0.05
43.95	0.37	0.37	0.98*	0.05	0.00	0.05
44.00	0.37	0.37	0.98*	0.05	0.00	0.05
44.05	0.37	0.37	0.98*	0.05	0.00	0.05
44.10	0.37	0.37	0.98*	0.05	0.00	0.05
44.15	0.37	0.37	0.98*	0.04	0.00	0.04
44.20	0.37	0.37	0.98*	0.04	0.00	0.04
44.25	0.37	0.37	0.98*	0.04	0.00	0.04
44.30	0.36	0.37	0.98*	0.04	0.00	0.04
44.35	0.36	0.37	0.98*	0.04	0.00	0.04
44.40	0.36	0.37	0.97*	0.04	0.00	0.04
44.45	0.36	0.37	0.97*	0.03	0.00	0.03
44.50	0.36	0.37	0.97*	0.03	0.00	0.03
44.55	0.36	0.37	0.97*	0.03	0.00	0.03
44.60	0.36	0.37	0.97*	0.03	0.00	0.03
44.65	0.36	0.37	0.97*	0.03	0.00	0.03
44.70	0.36	0.37	0.97*	0.03	0.00	0.03
44.75	0.36	0.37	0.97*	0.02	0.00	0.02
44.80	0.36	0.37	0.97*	0.02	0.00	0.02
44.85	0.36	0.37	0.97*	0.02	0.00	0.02
44.90	0.36	0.37	0.97*	0.02	0.00	0.02
44.95	0.36	0.37	0.97*	0.02	0.00	0.02
45.00	0.36	0.37	0.97*	0.01	0.00	0.01
45.05	0.37	0.37	0.98*	0.01	0.00	0.01
45.10	0.37	0.37	0.99*	0.01	0.00	0.01
45.15	0.37	0.37	1.00	0.01	0.00	0.01
45.20	0.38	0.37	1.01	0.01	0.00	0.01

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45.25	0.38	0.37	1.03	0.01	0.00	0.01
45.30	0.39	0.37	1.04	0.01	0.00	0.01
45.35	0.39	0.37	1.05	0.01	0.00	0.01
45.40	0.40	0.37	1.06	0.00	0.00	0.00
45.45	0.40	0.37	1.08	0.00	0.00	0.00
45.50	0.41	0.37	1.09	0.00	0.00	0.00
45.55	0.41	0.37	1.11	0.00	0.00	0.00
45.60	0.42	0.37	1.12	0.00	0.00	0.00
45.65	0.42	0.37	1.13	0.00	0.00	0.00
45.70	0.43	0.37	1.15	0.00	0.00	0.00
45.75	0.43	0.37	1.17	0.00	0.00	0.00
45.80	0.44	0.37	1.18	0.00	0.00	0.00
45.85	0.45	0.37	1.20	0.00	0.00	0.00
45.90	0.45	0.37	1.22	0.00	0.00	0.00
45.95	0.46	0.37	1.24	0.00	0.00	0.00
46.00	0.47	0.37	1.26	0.00	0.00	0.00
46.05	0.48	0.37	1.28	0.00	0.00	0.00
46.10	0.48	0.37	1.31	0.00	0.00	0.00
46.15	0.49	0.37	1.33	0.00	0.00	0.00
46.20	0.51	0.37	1.36	0.00	0.00	0.00
46.25	0.52	0.37	1.40	0.00	0.00	0.00
46.30	0.54	0.37	1.45	0.00	0.00	0.00
46.35	0.56	0.37	1.52	0.00	0.00	0.00
46.40	0.60	0.37	1.63	0.00	0.00	0.00
46.45	0.66	0.37	1.78	0.00	0.00	0.00
46.50	0.66	0.37	1.78	0.00	0.00	0.00
46.55	0.66	0.37	1.78	0.00	0.00	0.00
46.60	0.66	0.37	1.78	0.00	0.00	0.00
46.65	0.66	0.37	1.78	0.00	0.00	0.00
46.70	0.66	0.37	1.78	0.00	0.00	0.00
46.75	0.66	0.37	1.78	0.00	0.00	0.00
46.80	0.66	0.37	1.78	0.00	0.00	0.00
46.85	0.66	0.37	1.78	0.00	0.00	0.00
46.90	0.66	0.37	1.78	0.00	0.00	0.00
46.95	0.66	0.37	1.78	0.00	0.00	0.00
47.00	0.66	0.37	1.78	0.00	0.00	0.00
47.05	0.66	0.37	1.78	0.00	0.00	0.00
47.10	0.66	0.37	1.78	0.00	0.00	0.00
47.15	0.66	0.37	1.78	0.00	0.00	0.00
47.20	0.66	0.37	1.78	0.00	0.00	0.00
47.25	0.66	0.37	1.78	0.00	0.00	0.00
47.30	0.66	0.37	1.78	0.00	0.00	0.00
47.35	0.66	0.37	1.78	0.00	0.00	0.00
47.40	0.66	0.37	1.78	0.00	0.00	0.00
47.45	0.66	0.37	1.78	0.00	0.00	0.00
47.50	0.66	0.37	1.78	0.00	0.00	0.00
47.55	0.65	0.37	1.78	0.00	0.00	0.00
47.60	0.65	0.37	1.78	0.00	0.00	0.00
47.65	0.65	0.37	1.78	0.00	0.00	0.00
47.70	0.65	0.37	1.78	0.00	0.00	0.00
47.75	0.65	0.37	1.78	0.00	0.00	0.00
47.80	0.65	0.37	1.78	0.00	0.00	0.00
47.85	0.65	0.37	1.78	0.00	0.00	0.00
47.90	0.65	0.37	1.78	0.00	0.00	0.00
47.95	0.65	0.37	1.78	0.00	0.00	0.00
48.00	0.65	0.37	1.78	0.00	0.00	0.00
48.05	0.65	0.37	1.78	0.00	0.00	0.00
48.10	0.65	0.37	1.78	0.00	0.00	0.00
48.15	0.65	0.37	1.78	0.00	0.00	0.00
48.20	0.65	0.37	1.78	0.00	0.00	0.00
48.25	0.65	0.37	1.78	0.00	0.00	0.00
48.30	0.65	0.37	1.78	0.00	0.00	0.00
48.35	0.65	0.37	1.78	0.00	0.00	0.00
48.40	0.65	0.37	1.78	0.00	0.00	0.00
48.45	0.65	0.37	1.78	0.00	0.00	0.00
48.50	0.65	0.37	1.78	0.00	0.00	0.00
48.55	0.65	0.37	1.78	0.00	0.00	0.00
48.60	0.65	0.37	1.78	0.00	0.00	0.00
48.65	0.65	0.37	1.78	0.00	0.00	0.00
48.70	0.65	0.37	1.78	0.00	0.00	0.00
48.75	0.65	0.37	1.78	0.00	0.00	0.00
48.80	0.65	0.37	1.78	0.00	0.00	0.00
48.85	0.65	0.37	1.78	0.00	0.00	0.00

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48.90	0.65	0.37	1.79	0.00	0.00	0.00
48.95	0.65	0.37	1.79	0.00	0.00	0.00
49.00	0.65	0.37	1.79	0.00	0.00	0.00
49.05	0.65	0.36	1.79	0.00	0.00	0.00
49.10	0.65	0.36	1.79	0.00	0.00	0.00
49.15	0.65	0.36	1.79	0.00	0.00	0.00
49.20	0.65	0.36	1.79	0.00	0.00	0.00
49.25	0.65	0.36	1.79	0.00	0.00	0.00
49.30	0.65	0.36	1.79	0.00	0.00	0.00
49.35	0.65	0.36	1.79	0.00	0.00	0.00
49.40	0.65	0.36	1.79	0.00	0.00	0.00
49.45	0.65	0.36	1.79	0.00	0.00	0.00
49.50	0.65	0.36	1.79	0.00	0.00	0.00
49.55	0.65	0.36	1.79	0.00	0.00	0.00
49.60	0.65	0.36	1.79	0.00	0.00	0.00
49.65	0.65	0.36	1.79	0.00	0.00	0.00
49.70	0.65	0.36	1.79	0.00	0.00	0.00
49.75	0.65	0.36	1.79	0.00	0.00	0.00
49.80	0.65	0.36	1.79	0.00	0.00	0.00
49.85	0.65	0.36	1.79	0.00	0.00	0.00
49.90	0.65	0.36	1.79	0.00	0.00	0.00
49.95	0.65	0.36	1.79	0.00	0.00	0.00
50.00	0.65	0.36	1.79	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.

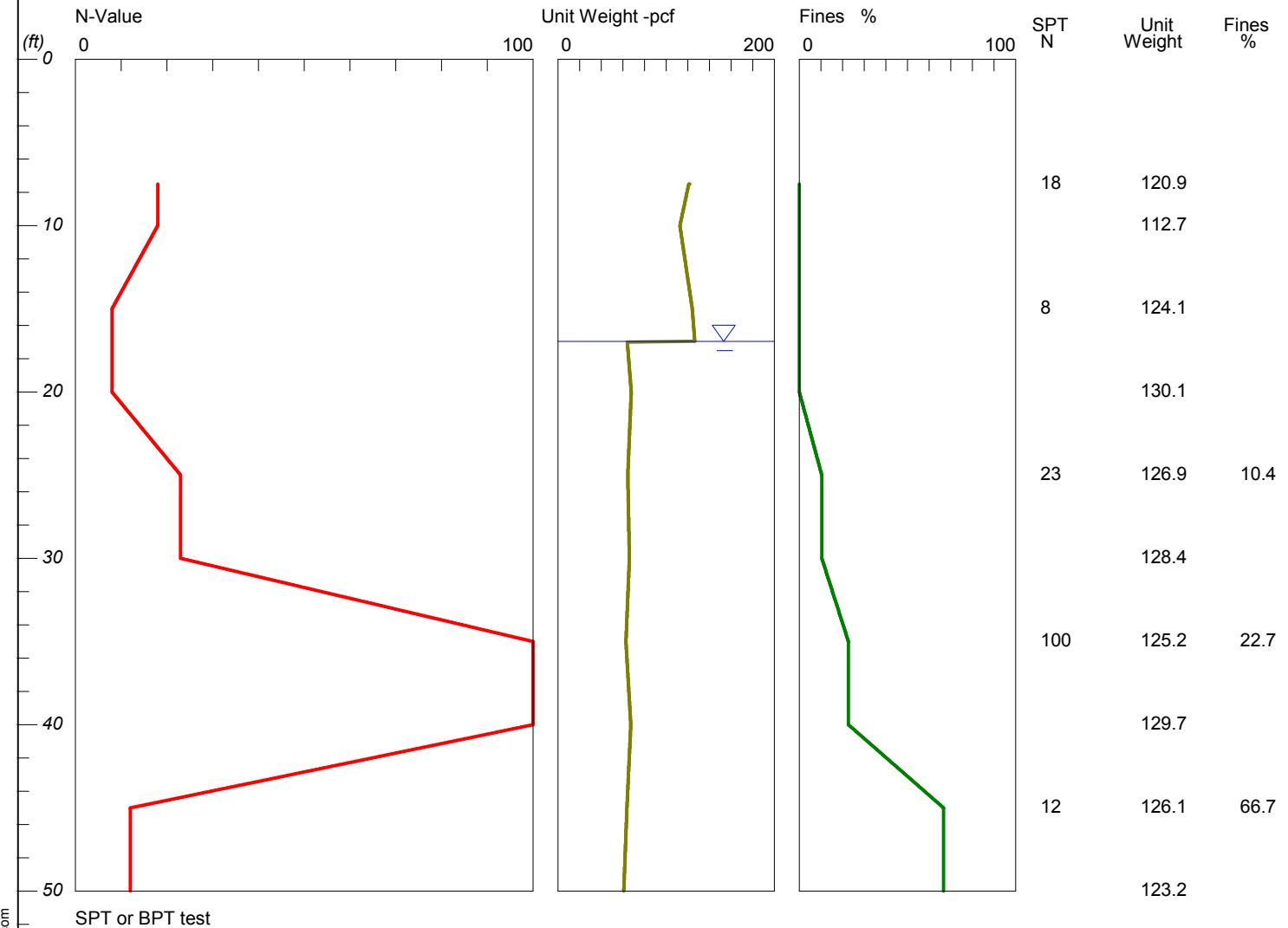
1 atm (atmosphere) = 1 tsf (ton/ft ²)	
CRRm	Cyclic resistance ratio from soils
CSRs _f	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRs _f
S _{sat}	Settlement from saturated sands
S _{dry}	Settlement from Unsaturated Sands
S _{all}	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

LIQUEFACTION ANALYSIS

Watt - San Juan Capistrano

Hole No.=B-5 Water Depth=17 ft

Magnitude=6.63
Acceleration=0.5g

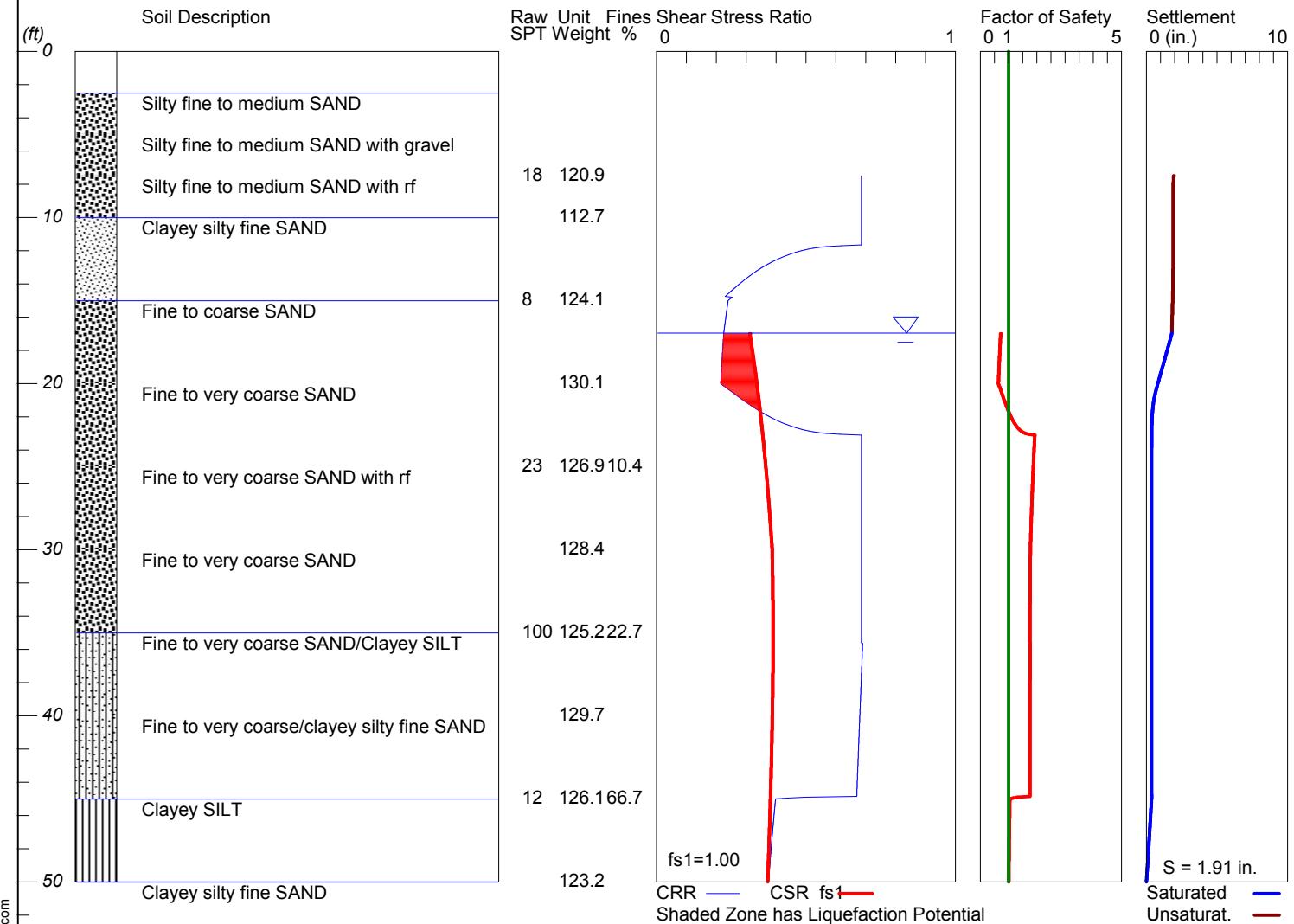


LIQUEFACTION ANALYSIS

Watt - San Juan Capistrano

Hole No.=B-5 Water Depth=17 ft

Magnitude=6.63
Acceleration=0.5g



7050 -Liquefy.sum

LIQUEFACTION ANALYSIS SUMMARY
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Input File Name: C:\Users\jgurunathan\OneDrive\Work\Projects\7050 -- Watt SJC
R1\Liquefaction\7050 B-5.liq
Title: Watt - San Juan Capistrano
Subtitle: Boring B-5

Surface Elev.=
Hole No.=B-5
Depth of Hole= 50.00 ft
Water Table during Earthquake= 17.00 ft
Water Table during In-Situ Testing= 17.00 ft
Max. Acceleration= 0.5 g
Earthquake Magnitude= 6.63

Input Data:
Surface Elev.=
Hole No.=B-5
Depth of Hole=50.00 ft
Water Table during Earthquake= 17.00 ft
Water Table during In-Situ Testing= 17.00 ft
Max. Acceleration=0.5 g
Earthquake Magnitude=6.63
No-Liquefiable Soils: Based on Analysis

1. SPT or BPT Calculation.
 2. Settlement Analysis Method: Ishihara / Yoshimine
 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 = 1.42
 7. Borehole Diameter, Cb= 1.15
 8. Sampling Method, Cs= 1.2
 9. User request factor of safety (apply to CSR) , User= 1.0
Plot one CSR curve (fs1=User)
 10. Use Curve Smoothing: Yes*
- * Recommended Options

In-Situ Test Data:
Depth SPT gamma Fines
ft pcf %

7.50	18.00	120.90	0.00
10.00	18.00	112.70	0.00
15.00	8.00	124.10	0.00
20.00	8.00	130.10	0.00
25.00	23.00	126.90	10.40
30.00	23.00	128.40	10.40
35.00	100.00	125.20	22.70
40.00	100.00	129.70	22.70
45.00	12.00	126.10	66.70
50.00	12.00	123.20	66.70

Output Results:

Settlement of Saturated Sands=1.79 in.
Settlement of Unsaturated Sands=0.12 in.
Total Settlement of Saturated and Unsaturated Sands=1.91 in.
Differential Settlement=0.956 to 1.262 in.

Depth	CRRm	CSRfs	F.S.	S_sat.	S_dry	S_all
ft				in.	in.	in.
7.50	0.69	0.32	5.00	1.79	0.12	1.91
7.55	0.69	0.32	5.00	1.79	0.12	1.91
7.60	0.69	0.32	5.00	1.79	0.12	1.91

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11.30	0.69	0.32	5.00	1.79	0.11	1.90
11.35	0.69	0.32	5.00	1.79	0.11	1.90
11.40	0.69	0.32	5.00	1.79	0.11	1.90
11.45	0.69	0.32	5.00	1.79	0.11	1.90
11.50	0.69	0.32	5.00	1.79	0.11	1.90
11.55	0.69	0.32	5.00	1.79	0.11	1.90
11.60	0.69	0.32	5.00	1.79	0.11	1.90
11.65	0.69	0.32	5.00	1.79	0.11	1.90
11.70	0.62	0.32	5.00	1.79	0.11	1.90
11.75	0.57	0.32	5.00	1.79	0.11	1.90
11.80	0.54	0.32	5.00	1.79	0.11	1.90
11.85	0.52	0.32	5.00	1.79	0.11	1.90
11.90	0.51	0.32	5.00	1.79	0.11	1.90
11.95	0.50	0.32	5.00	1.79	0.11	1.90
12.00	0.48	0.32	5.00	1.79	0.11	1.90
12.05	0.47	0.32	5.00	1.79	0.11	1.90
12.10	0.47	0.32	5.00	1.79	0.11	1.90
12.15	0.46	0.32	5.00	1.79	0.11	1.90
12.20	0.45	0.32	5.00	1.79	0.11	1.90
12.25	0.44	0.32	5.00	1.79	0.11	1.90
12.30	0.43	0.32	5.00	1.79	0.11	1.90
12.35	0.43	0.32	5.00	1.79	0.11	1.90
12.40	0.42	0.32	5.00	1.79	0.10	1.90
12.45	0.41	0.32	5.00	1.79	0.10	1.90
12.50	0.41	0.32	5.00	1.79	0.10	1.90
12.55	0.40	0.32	5.00	1.79	0.10	1.90
12.60	0.39	0.32	5.00	1.79	0.10	1.90
12.65	0.39	0.32	5.00	1.79	0.10	1.90
12.70	0.38	0.32	5.00	1.79	0.10	1.90
12.75	0.38	0.32	5.00	1.79	0.10	1.90
12.80	0.37	0.32	5.00	1.79	0.10	1.89
12.85	0.37	0.32	5.00	1.79	0.10	1.89
12.90	0.36	0.32	5.00	1.79	0.10	1.89
12.95	0.36	0.32	5.00	1.79	0.10	1.89
13.00	0.35	0.32	5.00	1.79	0.10	1.89
13.05	0.35	0.32	5.00	1.79	0.10	1.89
13.10	0.35	0.32	5.00	1.79	0.10	1.89
13.15	0.34	0.32	5.00	1.79	0.10	1.89
13.20	0.34	0.31	5.00	1.79	0.10	1.89
13.25	0.33	0.31	5.00	1.79	0.10	1.89
13.30	0.33	0.31	5.00	1.79	0.10	1.89
13.35	0.32	0.31	5.00	1.79	0.10	1.89
13.40	0.32	0.31	5.00	1.79	0.10	1.89
13.45	0.32	0.31	5.00	1.79	0.10	1.89
13.50	0.31	0.31	5.00	1.79	0.09	1.89
13.55	0.31	0.31	5.00	1.79	0.09	1.89
13.60	0.31	0.31	5.00	1.79	0.09	1.89
13.65	0.30	0.31	5.00	1.79	0.09	1.89
13.70	0.30	0.31	5.00	1.79	0.09	1.89
13.75	0.29	0.31	5.00	1.79	0.09	1.88
13.80	0.29	0.31	5.00	1.79	0.09	1.88
13.85	0.29	0.31	5.00	1.79	0.09	1.88
13.90	0.28	0.31	5.00	1.79	0.09	1.88
13.95	0.28	0.31	5.00	1.79	0.09	1.88
14.00	0.28	0.31	5.00	1.79	0.09	1.88
14.05	0.27	0.31	5.00	1.79	0.09	1.88
14.10	0.27	0.31	5.00	1.79	0.09	1.88
14.15	0.27	0.31	5.00	1.79	0.09	1.88
14.20	0.26	0.31	5.00	1.79	0.08	1.88
14.25	0.26	0.31	5.00	1.79	0.08	1.88
14.30	0.26	0.31	5.00	1.79	0.08	1.88
14.35	0.25	0.31	5.00	1.79	0.08	1.87
14.40	0.25	0.31	5.00	1.79	0.08	1.87
14.45	0.25	0.31	5.00	1.79	0.08	1.87
14.50	0.25	0.31	5.00	1.79	0.08	1.87
14.55	0.24	0.31	5.00	1.79	0.08	1.87
14.60	0.24	0.31	5.00	1.79	0.08	1.87
14.65	0.24	0.31	5.00	1.79	0.07	1.87
14.70	0.23	0.31	5.00	1.79	0.07	1.87
14.75	0.23	0.31	5.00	1.79	0.07	1.86
14.80	0.25	0.31	5.00	1.79	0.07	1.86
14.85	0.25	0.31	5.00	1.79	0.07	1.86
14.90	0.25	0.31	5.00	1.79	0.07	1.86

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14.95	0.24	0.31	5.00	1.79	0.07	1.86
15.00	0.24	0.31	5.00	1.79	0.07	1.86
15.05	0.24	0.31	5.00	1.79	0.06	1.86
15.10	0.24	0.31	5.00	1.79	0.06	1.86
15.15	0.24	0.31	5.00	1.79	0.06	1.85
15.20	0.24	0.31	5.00	1.79	0.06	1.85
15.25	0.24	0.31	5.00	1.79	0.06	1.85
15.30	0.24	0.31	5.00	1.79	0.06	1.85
15.35	0.24	0.31	5.00	1.79	0.06	1.85
15.40	0.24	0.31	5.00	1.79	0.05	1.85
15.45	0.24	0.31	5.00	1.79	0.05	1.85
15.50	0.24	0.31	5.00	1.79	0.05	1.84
15.55	0.24	0.31	5.00	1.79	0.05	1.84
15.60	0.23	0.31	5.00	1.79	0.05	1.84
15.65	0.23	0.31	5.00	1.79	0.05	1.84
15.70	0.23	0.31	5.00	1.79	0.05	1.84
15.75	0.23	0.31	5.00	1.79	0.04	1.84
15.80	0.23	0.31	5.00	1.79	0.04	1.84
15.85	0.23	0.31	5.00	1.79	0.04	1.83
15.90	0.23	0.31	5.00	1.79	0.04	1.83
15.95	0.23	0.31	5.00	1.79	0.04	1.83
16.00	0.23	0.31	5.00	1.79	0.04	1.83
16.05	0.23	0.31	5.00	1.79	0.03	1.83
16.10	0.23	0.31	5.00	1.79	0.03	1.83
16.15	0.23	0.31	5.00	1.79	0.03	1.82
16.20	0.23	0.31	5.00	1.79	0.03	1.82
16.25	0.23	0.31	5.00	1.79	0.03	1.82
16.30	0.23	0.31	5.00	1.79	0.03	1.82
16.35	0.23	0.31	5.00	1.79	0.02	1.82
16.40	0.23	0.31	5.00	1.79	0.02	1.82
16.45	0.23	0.31	5.00	1.79	0.02	1.81
16.50	0.23	0.31	5.00	1.79	0.02	1.81
16.55	0.23	0.31	5.00	1.79	0.02	1.81
16.60	0.23	0.31	5.00	1.79	0.02	1.81
16.65	0.23	0.31	5.00	1.79	0.01	1.81
16.70	0.23	0.31	5.00	1.79	0.01	1.80
16.75	0.23	0.31	5.00	1.79	0.01	1.80
16.80	0.23	0.31	5.00	1.79	0.01	1.80
16.85	0.23	0.31	5.00	1.79	0.01	1.80
16.90	0.23	0.31	5.00	1.79	0.00	1.80
16.95	0.23	0.31	5.00	1.79	0.00	1.80
17.00	0.22	0.31	0.72*	1.79	0.00	1.79
17.05	0.22	0.31	0.72*	1.78	0.00	1.78
17.10	0.22	0.31	0.72*	1.76	0.00	1.76
17.15	0.22	0.31	0.72*	1.74	0.00	1.74
17.20	0.22	0.31	0.71*	1.73	0.00	1.73
17.25	0.22	0.31	0.71*	1.71	0.00	1.71
17.30	0.22	0.31	0.71*	1.70	0.00	1.70
17.35	0.22	0.32	0.71*	1.68	0.00	1.68
17.40	0.22	0.32	0.71*	1.66	0.00	1.66
17.45	0.22	0.32	0.71*	1.65	0.00	1.65
17.50	0.22	0.32	0.70*	1.63	0.00	1.63
17.55	0.22	0.32	0.70*	1.62	0.00	1.62
17.60	0.22	0.32	0.70*	1.60	0.00	1.60
17.65	0.22	0.32	0.70*	1.58	0.00	1.58
17.70	0.22	0.32	0.70*	1.57	0.00	1.57
17.75	0.22	0.32	0.70*	1.55	0.00	1.55
17.80	0.22	0.32	0.70*	1.53	0.00	1.53
17.85	0.22	0.32	0.69*	1.52	0.00	1.52
17.90	0.22	0.32	0.69*	1.50	0.00	1.50
17.95	0.22	0.32	0.69*	1.48	0.00	1.48
18.00	0.22	0.32	0.69*	1.47	0.00	1.47
18.05	0.22	0.32	0.69*	1.45	0.00	1.45
18.10	0.22	0.32	0.69*	1.44	0.00	1.44
18.15	0.22	0.32	0.69*	1.42	0.00	1.42
18.20	0.22	0.32	0.68*	1.40	0.00	1.40
18.25	0.22	0.32	0.68*	1.39	0.00	1.39
18.30	0.22	0.32	0.68*	1.37	0.00	1.37
18.35	0.22	0.32	0.68*	1.35	0.00	1.35
18.40	0.22	0.32	0.68*	1.34	0.00	1.34
18.45	0.22	0.32	0.68*	1.32	0.00	1.32
18.50	0.22	0.32	0.68*	1.30	0.00	1.30
18.55	0.22	0.32	0.68*	1.29	0.00	1.29

7050 -Liquefy.sum						
18.60	0.22	0.33	0.67*	1.27	0.00	1.27
18.65	0.22	0.33	0.67*	1.25	0.00	1.25
18.70	0.22	0.33	0.67*	1.24	0.00	1.24
18.75	0.22	0.33	0.67*	1.22	0.00	1.22
18.80	0.22	0.33	0.67*	1.21	0.00	1.21
18.85	0.22	0.33	0.67*	1.19	0.00	1.19
18.90	0.22	0.33	0.67*	1.17	0.00	1.17
18.95	0.22	0.33	0.66*	1.16	0.00	1.16
19.00	0.22	0.33	0.66*	1.14	0.00	1.14
19.05	0.22	0.33	0.66*	1.12	0.00	1.12
19.10	0.22	0.33	0.66*	1.11	0.00	1.11
19.15	0.22	0.33	0.66*	1.09	0.00	1.09
19.20	0.22	0.33	0.66*	1.07	0.00	1.07
19.25	0.22	0.33	0.66*	1.06	0.00	1.06
19.30	0.22	0.33	0.66*	1.04	0.00	1.04
19.35	0.22	0.33	0.65*	1.02	0.00	1.02
19.40	0.22	0.33	0.65*	1.01	0.00	1.01
19.45	0.22	0.33	0.65*	0.99	0.00	0.99
19.50	0.22	0.33	0.65*	0.97	0.00	0.97
19.55	0.22	0.33	0.65*	0.96	0.00	0.96
19.60	0.22	0.33	0.65*	0.94	0.00	0.94
19.65	0.22	0.33	0.65*	0.92	0.00	0.92
19.70	0.22	0.33	0.65*	0.91	0.00	0.91
19.75	0.22	0.33	0.65*	0.89	0.00	0.89
19.80	0.22	0.33	0.64*	0.87	0.00	0.87
19.85	0.22	0.33	0.64*	0.86	0.00	0.86
19.90	0.22	0.34	0.64*	0.84	0.00	0.84
19.95	0.21	0.34	0.64*	0.82	0.00	0.82
20.00	0.21	0.34	0.64*	0.81	0.00	0.81
20.05	0.22	0.34	0.65*	0.79	0.00	0.79
20.10	0.22	0.34	0.66*	0.77	0.00	0.77
20.15	0.23	0.34	0.67*	0.76	0.00	0.76
20.20	0.23	0.34	0.68*	0.74	0.00	0.74
20.25	0.23	0.34	0.69*	0.72	0.00	0.72
20.30	0.24	0.34	0.70*	0.71	0.00	0.71
20.35	0.24	0.34	0.71*	0.69	0.00	0.69
20.40	0.24	0.34	0.72*	0.68	0.00	0.68
20.45	0.25	0.34	0.73*	0.66	0.00	0.66
20.50	0.25	0.34	0.74*	0.65	0.00	0.65
20.55	0.26	0.34	0.75*	0.63	0.00	0.63
20.60	0.26	0.34	0.76*	0.62	0.00	0.62
20.65	0.26	0.34	0.78*	0.61	0.00	0.61
20.70	0.27	0.34	0.79*	0.59	0.00	0.59
20.75	0.27	0.34	0.80*	0.58	0.00	0.58
20.80	0.28	0.34	0.81*	0.57	0.00	0.57
20.85	0.28	0.34	0.82*	0.56	0.00	0.56
20.90	0.28	0.34	0.83*	0.55	0.00	0.55
20.95	0.29	0.34	0.84*	0.54	0.00	0.54
21.00	0.29	0.34	0.85*	0.53	0.00	0.53
21.05	0.29	0.34	0.86*	0.52	0.00	0.52
21.10	0.30	0.34	0.87*	0.51	0.00	0.51
21.15	0.30	0.34	0.88*	0.50	0.00	0.50
21.20	0.31	0.34	0.89*	0.49	0.00	0.49
21.25	0.31	0.34	0.90*	0.48	0.00	0.48
21.30	0.31	0.34	0.91*	0.47	0.00	0.47
21.35	0.32	0.34	0.92*	0.47	0.00	0.47
21.40	0.32	0.35	0.94*	0.46	0.00	0.46
21.45	0.33	0.35	0.95*	0.45	0.00	0.45
21.50	0.33	0.35	0.96*	0.45	0.00	0.45
21.55	0.34	0.35	0.97*	0.44	0.00	0.44
21.60	0.34	0.35	0.98*	0.44	0.00	0.44
21.65	0.34	0.35	0.99*	0.43	0.00	0.43
21.70	0.35	0.35	1.01	0.43	0.00	0.43
21.75	0.35	0.35	1.02	0.42	0.00	0.42
21.80	0.36	0.35	1.03	0.42	0.00	0.42
21.85	0.36	0.35	1.05	0.42	0.00	0.42
21.90	0.37	0.35	1.06	0.41	0.00	0.41
21.95	0.37	0.35	1.07	0.41	0.00	0.41
22.00	0.38	0.35	1.09	0.41	0.00	0.41
22.05	0.38	0.35	1.10	0.40	0.00	0.40
22.10	0.39	0.35	1.12	0.40	0.00	0.40
22.15	0.40	0.35	1.13	0.40	0.00	0.40
22.20	0.40	0.35	1.15	0.39	0.00	0.39

					7050	-Liquefy.sum
22.25	0.41	0.35	1.16	0.39	0.00	0.39
22.30	0.41	0.35	1.18	0.39	0.00	0.39
22.35	0.42	0.35	1.19	0.39	0.00	0.39
22.40	0.43	0.35	1.21	0.39	0.00	0.39
22.45	0.43	0.35	1.23	0.38	0.00	0.38
22.50	0.44	0.35	1.25	0.38	0.00	0.38
22.55	0.45	0.35	1.28	0.38	0.00	0.38
22.60	0.46	0.35	1.30	0.38	0.00	0.38
22.65	0.47	0.35	1.32	0.38	0.00	0.38
22.70	0.48	0.35	1.35	0.38	0.00	0.38
22.75	0.49	0.35	1.37	0.37	0.00	0.37
22.80	0.50	0.35	1.40	0.37	0.00	0.37
22.85	0.51	0.35	1.44	0.37	0.00	0.37
22.90	0.52	0.35	1.48	0.37	0.00	0.37
22.95	0.54	0.35	1.53	0.37	0.00	0.37
23.00	0.57	0.35	1.60	0.37	0.00	0.37
23.05	0.61	0.36	1.73	0.37	0.00	0.37
23.10	0.69	0.36	1.93	0.37	0.00	0.37
23.15	0.69	0.36	1.93	0.37	0.00	0.37
23.20	0.69	0.36	1.93	0.37	0.00	0.37
23.25	0.69	0.36	1.92	0.37	0.00	0.37
23.30	0.69	0.36	1.92	0.37	0.00	0.37
23.35	0.69	0.36	1.92	0.37	0.00	0.37
23.40	0.69	0.36	1.92	0.37	0.00	0.37
23.45	0.69	0.36	1.92	0.37	0.00	0.37
23.50	0.69	0.36	1.92	0.37	0.00	0.37
23.55	0.69	0.36	1.91	0.37	0.00	0.37
23.60	0.69	0.36	1.91	0.37	0.00	0.37
23.65	0.69	0.36	1.91	0.37	0.00	0.37
23.70	0.69	0.36	1.91	0.37	0.00	0.37
23.75	0.69	0.36	1.91	0.37	0.00	0.37
23.80	0.69	0.36	1.91	0.37	0.00	0.37
23.85	0.69	0.36	1.91	0.37	0.00	0.37
23.90	0.69	0.36	1.90	0.37	0.00	0.37
23.95	0.69	0.36	1.90	0.37	0.00	0.37
24.00	0.69	0.36	1.90	0.37	0.00	0.37
24.05	0.69	0.36	1.90	0.37	0.00	0.37
24.10	0.69	0.36	1.90	0.37	0.00	0.37
24.15	0.69	0.36	1.90	0.37	0.00	0.37
24.20	0.69	0.36	1.90	0.37	0.00	0.37
24.25	0.69	0.36	1.89	0.37	0.00	0.37
24.30	0.69	0.36	1.89	0.37	0.00	0.37
24.35	0.69	0.36	1.89	0.37	0.00	0.37
24.40	0.69	0.36	1.89	0.37	0.00	0.37
24.45	0.69	0.36	1.89	0.37	0.00	0.37
24.50	0.69	0.36	1.89	0.37	0.00	0.37
24.55	0.69	0.36	1.89	0.37	0.00	0.37
24.60	0.69	0.36	1.89	0.37	0.00	0.37
24.65	0.69	0.36	1.88	0.37	0.00	0.37
24.70	0.69	0.36	1.88	0.37	0.00	0.37
24.75	0.69	0.36	1.88	0.37	0.00	0.37
24.80	0.69	0.36	1.88	0.37	0.00	0.37
24.85	0.69	0.36	1.88	0.37	0.00	0.37
24.90	0.69	0.37	1.88	0.37	0.00	0.37
24.95	0.69	0.37	1.88	0.37	0.00	0.37
25.00	0.69	0.37	1.87	0.37	0.00	0.37
25.05	0.69	0.37	1.87	0.37	0.00	0.37
25.10	0.69	0.37	1.87	0.37	0.00	0.37
25.15	0.69	0.37	1.87	0.37	0.00	0.37
25.20	0.69	0.37	1.87	0.37	0.00	0.37
25.25	0.69	0.37	1.87	0.37	0.00	0.37
25.30	0.69	0.37	1.87	0.37	0.00	0.37
25.35	0.69	0.37	1.87	0.37	0.00	0.37
25.40	0.69	0.37	1.86	0.37	0.00	0.37
25.45	0.69	0.37	1.86	0.37	0.00	0.37
25.50	0.69	0.37	1.86	0.37	0.00	0.37
25.55	0.69	0.37	1.86	0.37	0.00	0.37
25.60	0.69	0.37	1.86	0.37	0.00	0.37
25.65	0.69	0.37	1.86	0.37	0.00	0.37
25.70	0.69	0.37	1.86	0.37	0.00	0.37
25.75	0.69	0.37	1.86	0.37	0.00	0.37
25.80	0.69	0.37	1.86	0.37	0.00	0.37
25.85	0.69	0.37	1.85	0.37	0.00	0.37

7050 -Liquefy.sum						
44.15	0.67	0.38	1.76	0.37	0.00	0.37
44.20	0.67	0.38	1.76	0.37	0.00	0.37
44.25	0.67	0.38	1.76	0.37	0.00	0.37
44.30	0.67	0.38	1.76	0.37	0.00	0.37
44.35	0.67	0.38	1.76	0.37	0.00	0.37
44.40	0.67	0.38	1.76	0.37	0.00	0.37
44.45	0.67	0.38	1.76	0.37	0.00	0.37
44.50	0.67	0.38	1.76	0.37	0.00	0.37
44.55	0.67	0.38	1.76	0.37	0.00	0.37
44.60	0.67	0.38	1.76	0.37	0.00	0.37
44.65	0.67	0.38	1.76	0.37	0.00	0.37
44.70	0.67	0.38	1.76	0.37	0.00	0.37
44.75	0.67	0.38	1.76	0.37	0.00	0.37
44.80	0.67	0.38	1.76	0.37	0.00	0.37
44.85	0.67	0.38	1.76	0.37	0.00	0.37
44.90	0.50	0.38	1.31	0.37	0.00	0.37
44.95	0.44	0.38	1.15	0.36	0.00	0.36
45.00	0.40	0.38	1.05	0.36	0.00	0.36
45.05	0.40	0.38	1.04	0.36	0.00	0.36
45.10	0.40	0.38	1.04	0.36	0.00	0.36
45.15	0.40	0.38	1.04	0.35	0.00	0.35
45.20	0.40	0.38	1.04	0.35	0.00	0.35
45.25	0.40	0.38	1.04	0.35	0.00	0.35
45.30	0.40	0.38	1.04	0.34	0.00	0.34
45.35	0.40	0.38	1.04	0.34	0.00	0.34
45.40	0.40	0.38	1.04	0.34	0.00	0.34
45.45	0.40	0.38	1.04	0.33	0.00	0.33
45.50	0.40	0.38	1.04	0.33	0.00	0.33
45.55	0.40	0.38	1.04	0.33	0.00	0.33
45.60	0.40	0.38	1.04	0.32	0.00	0.32
45.65	0.39	0.38	1.04	0.32	0.00	0.32
45.70	0.39	0.38	1.04	0.32	0.00	0.32
45.75	0.39	0.38	1.04	0.31	0.00	0.31
45.80	0.39	0.38	1.04	0.31	0.00	0.31
45.85	0.39	0.38	1.04	0.31	0.00	0.31
45.90	0.39	0.38	1.04	0.30	0.00	0.30
45.95	0.39	0.38	1.04	0.30	0.00	0.30
46.00	0.39	0.38	1.04	0.30	0.00	0.30
46.05	0.39	0.38	1.04	0.29	0.00	0.29
46.10	0.39	0.38	1.03	0.29	0.00	0.29
46.15	0.39	0.38	1.03	0.28	0.00	0.28
46.20	0.39	0.38	1.03	0.28	0.00	0.28
46.25	0.39	0.38	1.03	0.28	0.00	0.28
46.30	0.39	0.38	1.03	0.27	0.00	0.27
46.35	0.39	0.38	1.03	0.27	0.00	0.27
46.40	0.39	0.38	1.03	0.27	0.00	0.27
46.45	0.39	0.38	1.03	0.26	0.00	0.26
46.50	0.39	0.38	1.03	0.26	0.00	0.26
46.55	0.39	0.38	1.03	0.26	0.00	0.26
46.60	0.39	0.38	1.03	0.25	0.00	0.25
46.65	0.39	0.38	1.03	0.25	0.00	0.25
46.70	0.39	0.38	1.03	0.25	0.00	0.25
46.75	0.39	0.38	1.03	0.24	0.00	0.24
46.80	0.39	0.38	1.03	0.24	0.00	0.24
46.85	0.39	0.38	1.03	0.24	0.00	0.24
46.90	0.39	0.38	1.03	0.23	0.00	0.23
46.95	0.39	0.38	1.03	0.23	0.00	0.23
47.00	0.39	0.38	1.03	0.22	0.00	0.22
47.05	0.39	0.38	1.03	0.22	0.00	0.22
47.10	0.39	0.38	1.03	0.22	0.00	0.22
47.15	0.39	0.38	1.03	0.21	0.00	0.21
47.20	0.39	0.38	1.03	0.21	0.00	0.21
47.25	0.39	0.38	1.03	0.21	0.00	0.21
47.30	0.39	0.38	1.03	0.20	0.00	0.20
47.35	0.39	0.38	1.02	0.20	0.00	0.20
47.40	0.39	0.38	1.02	0.20	0.00	0.20
47.45	0.39	0.38	1.02	0.19	0.00	0.19
47.50	0.39	0.38	1.02	0.19	0.00	0.19
47.55	0.39	0.38	1.02	0.19	0.00	0.19
47.60	0.39	0.38	1.02	0.18	0.00	0.18
47.65	0.39	0.38	1.02	0.18	0.00	0.18
47.70	0.38	0.38	1.02	0.17	0.00	0.17
47.75	0.38	0.38	1.02	0.17	0.00	0.17

							7050 -Liquefy.sum
47.80	0.38	0.38	1.02	0.17	0.00	0.17	
47.85	0.38	0.38	1.02	0.16	0.00	0.16	
47.90	0.38	0.38	1.02	0.16	0.00	0.16	
47.95	0.38	0.38	1.02	0.16	0.00	0.16	
48.00	0.38	0.38	1.02	0.15	0.00	0.15	
48.05	0.38	0.38	1.02	0.15	0.00	0.15	
48.10	0.38	0.38	1.02	0.14	0.00	0.14	
48.15	0.38	0.38	1.02	0.14	0.00	0.14	
48.20	0.38	0.38	1.02	0.14	0.00	0.14	
48.25	0.38	0.38	1.02	0.13	0.00	0.13	
48.30	0.38	0.38	1.02	0.13	0.00	0.13	
48.35	0.38	0.38	1.02	0.13	0.00	0.13	
48.40	0.38	0.38	1.02	0.12	0.00	0.12	
48.45	0.38	0.38	1.02	0.12	0.00	0.12	
48.50	0.38	0.38	1.02	0.11	0.00	0.11	
48.55	0.38	0.37	1.02	0.11	0.00	0.11	
48.60	0.38	0.37	1.02	0.11	0.00	0.11	
48.65	0.38	0.37	1.02	0.10	0.00	0.10	
48.70	0.38	0.37	1.01	0.10	0.00	0.10	
48.75	0.38	0.37	1.01	0.10	0.00	0.10	
48.80	0.38	0.37	1.01	0.09	0.00	0.09	
48.85	0.38	0.37	1.01	0.09	0.00	0.09	
48.90	0.38	0.37	1.01	0.08	0.00	0.08	
48.95	0.38	0.37	1.01	0.08	0.00	0.08	
49.00	0.38	0.37	1.01	0.08	0.00	0.08	
49.05	0.38	0.37	1.01	0.07	0.00	0.07	
49.10	0.38	0.37	1.01	0.07	0.00	0.07	
49.15	0.38	0.37	1.01	0.07	0.00	0.07	
49.20	0.38	0.37	1.01	0.06	0.00	0.06	
49.25	0.38	0.37	1.01	0.06	0.00	0.06	
49.30	0.38	0.37	1.01	0.05	0.00	0.05	
49.35	0.38	0.37	1.01	0.05	0.00	0.05	
49.40	0.38	0.37	1.01	0.05	0.00	0.05	
49.45	0.38	0.37	1.01	0.04	0.00	0.04	
49.50	0.38	0.37	1.01	0.04	0.00	0.04	
49.55	0.38	0.37	1.01	0.03	0.00	0.03	
49.60	0.38	0.37	1.01	0.03	0.00	0.03	
49.65	0.38	0.37	1.01	0.03	0.00	0.03	
49.70	0.38	0.37	1.01	0.02	0.00	0.02	
49.75	0.38	0.37	1.01	0.02	0.00	0.02	
49.80	0.38	0.37	1.01	0.02	0.00	0.02	
49.85	0.38	0.37	1.01	0.01	0.00	0.01	
49.90	0.38	0.37	1.01	0.01	0.00	0.01	
49.95	0.37	0.37	1.01	0.00	0.00	0.00	
50.00	0.37	0.37	1.01	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.

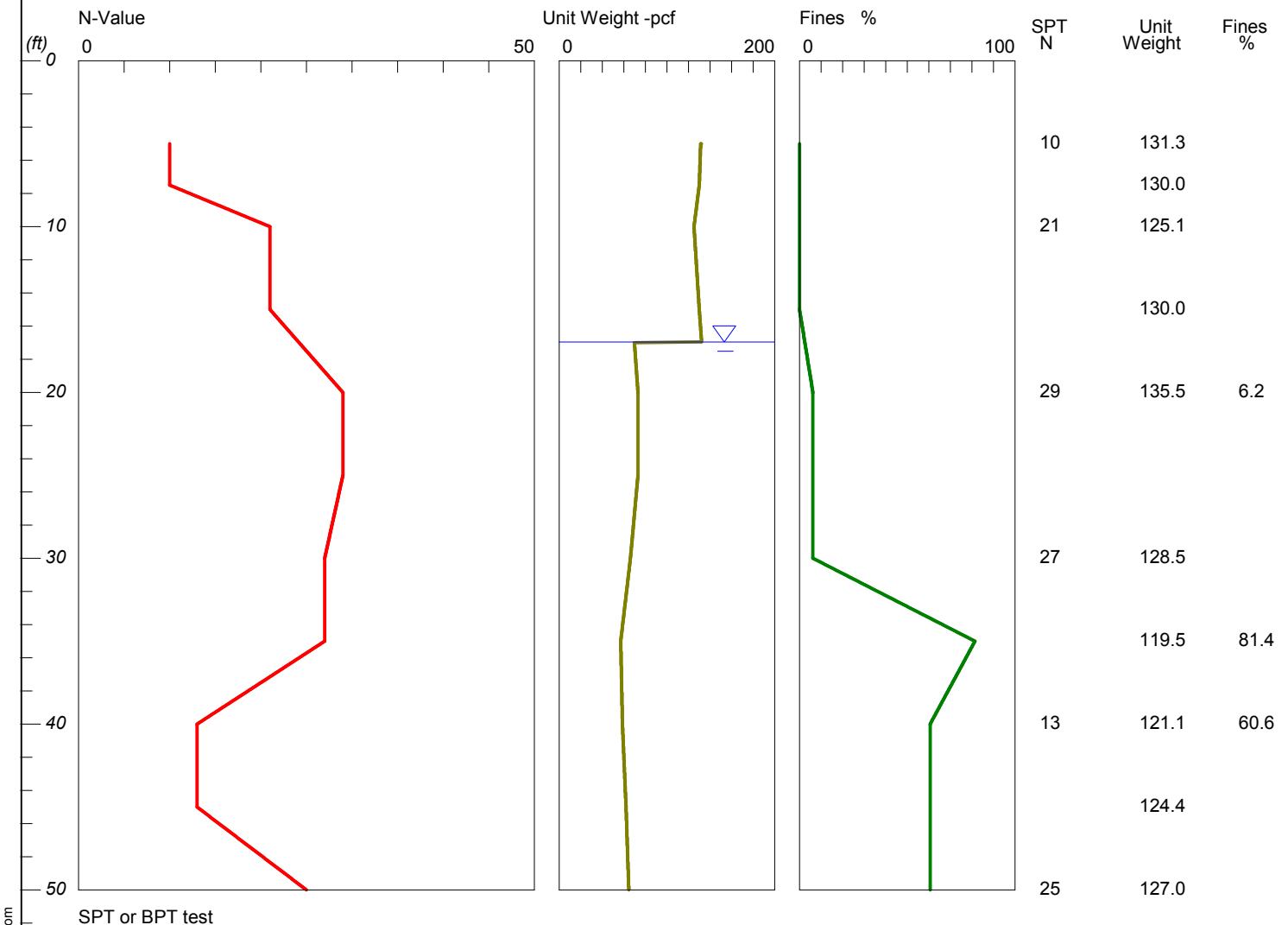
1 atm (atmosphere) = 1 tsf (ton/ft ²)
CRRm Cyclic resistance ratio from soils
CSRs _f Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S. Factor of Safety against liquefaction, F.S.=CRRm/CSRs _f
S _{sat} Settlement from saturated sands
S _{dry} Settlement from Unsaturated Sands
S _{all} Total Settlement from Saturated and Unsaturated Sands
NoLiq _q No-Liquefy Soils

LIQUEFACTION ANALYSIS

Watt - San Juan Capistrano

Hole No.=B-6 Water Depth=17 ft

Magnitude=6.63
Acceleration=0.5g

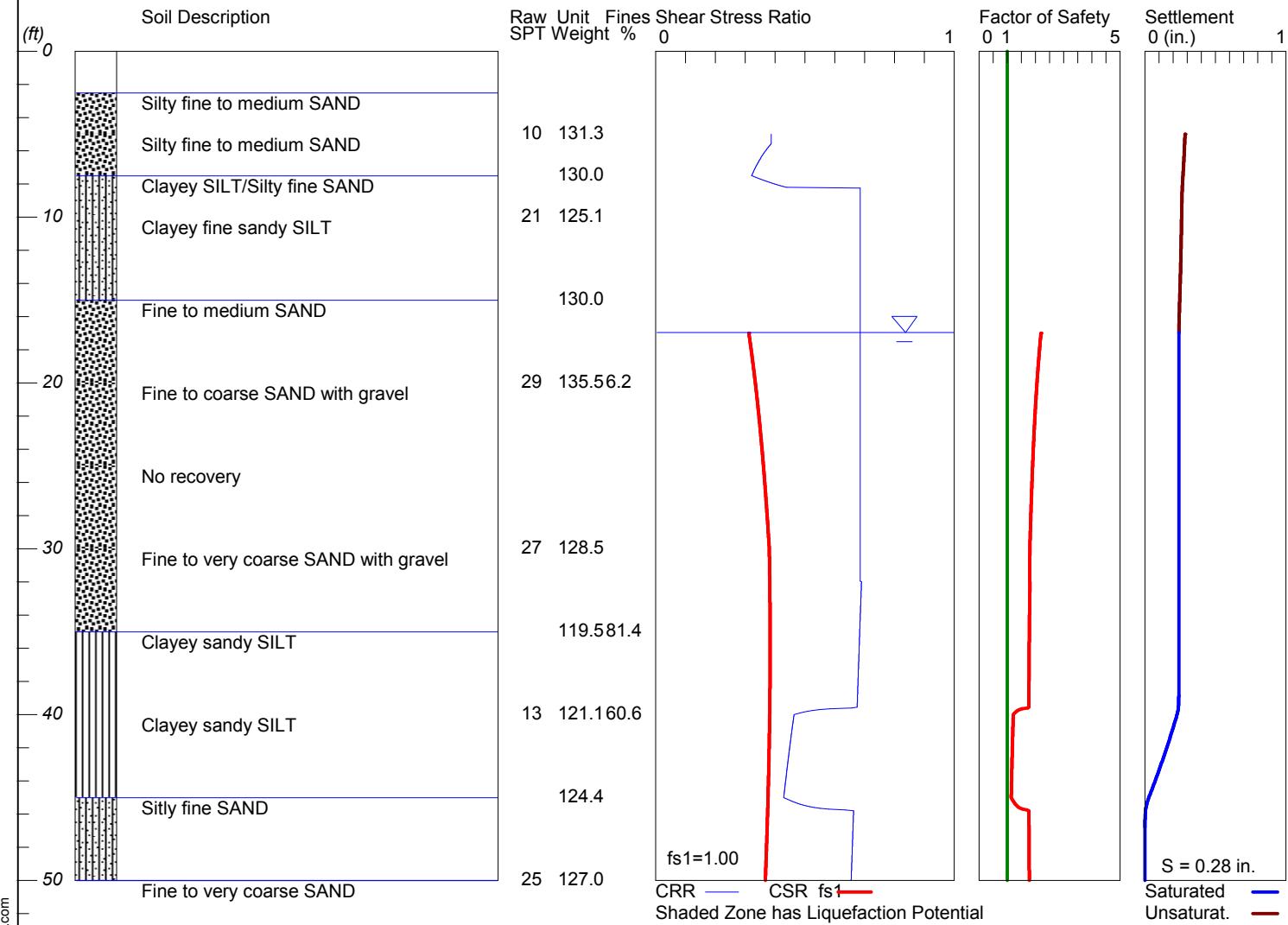


LIQUEFACTION ANALYSIS

Watt - San Juan Capistrano

Hole No.=B-6 Water Depth=17 ft

Magnitude=6.63
Acceleration=0.5g



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LIQUEFACTION ANALYSIS SUMMARY
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Input File Name: C:\Users\jgurunathan\OneDrive\Work\Projects\7050 -- Watt SJC
R1\Liquefaction\7050 B-6.liq
Title: Watt - San Juan Capistrano
Subtitle: Boring B-6

Surface Elev.=
Hole No.=B-6
Depth of Hole= 50.00 ft
Water Table during Earthquake= 17.00 ft
Water Table during In-Situ Testing= 17.00 ft
Max. Acceleration= 0.5 g
Earthquake Magnitude= 6.63

Input Data:
Surface Elev.=
Hole No.=B-6
Depth of Hole=50.00 ft
Water Table during Earthquake= 17.00 ft
Water Table during In-Situ Testing= 17.00 ft
Max. Acceleration=0.5 g
Earthquake Magnitude=6.63
No-Liquefiable Soils: Based on Analysis

1. SPT or BPT Calculation.
2. Settlement Analysis Method: Ishihara / Yoshimine
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 = 1.42
7. Borehole Diameter, Cb= 1.15
8. Sampling Method, Cs= 1.2
9. User request factor of safety (apply to CSR) , User= 1.0
Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: Yes*

* Recommended Options

In-Situ Test Data:
Depth SPT gamma Fines
ft pcf %

5.00	10.00	131.30	0.00
7.50	10.00	130.00	0.00
10.00	21.00	125.10	0.00
15.00	21.00	130.00	0.00
20.00	29.00	135.50	6.20
25.00	29.00	135.50	6.20
30.00	27.00	128.50	6.20
35.00	27.00	119.50	81.40
40.00	13.00	121.10	60.60
45.00	13.00	124.40	60.60
50.00	25.00	127.00	60.60

Output Results:

Settlement of Saturated Sands=0.24 in.
Settlement of Unsaturated Sands=0.04 in.
Total Settlement of Saturated and Unsaturated Sands=0.28 in.
Differential Settlement=0.142 to 0.188 in.

Depth	CRRm	CSRfs	F.S.	S_sat.	S_dry	S_all
ft				in.	in.	in.
5.00	0.39	0.32	5.00	0.24	0.04	0.28
5.05	0.39	0.32	5.00	0.24	0.04	0.28

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5.10	0.39	0.32	5.00	0.24	0.04	0.28
5.15	0.39	0.32	5.00	0.24	0.04	0.28
5.20	0.39	0.32	5.00	0.24	0.04	0.28
5.25	0.39	0.32	5.00	0.24	0.04	0.28
5.30	0.39	0.32	5.00	0.24	0.04	0.28
5.35	0.39	0.32	5.00	0.24	0.04	0.28
5.40	0.39	0.32	5.00	0.24	0.04	0.28
5.45	0.39	0.32	5.00	0.24	0.04	0.28
5.50	0.39	0.32	5.00	0.24	0.04	0.28
5.55	0.39	0.32	5.00	0.24	0.04	0.28
5.60	0.39	0.32	5.00	0.24	0.04	0.28
5.65	0.38	0.32	5.00	0.24	0.04	0.28
5.70	0.38	0.32	5.00	0.24	0.04	0.28
5.75	0.38	0.32	5.00	0.24	0.04	0.28
5.80	0.38	0.32	5.00	0.24	0.04	0.28
5.85	0.37	0.32	5.00	0.24	0.04	0.28
5.90	0.37	0.32	5.00	0.24	0.04	0.28
5.95	0.37	0.32	5.00	0.24	0.04	0.28
6.00	0.37	0.32	5.00	0.24	0.04	0.28
6.05	0.37	0.32	5.00	0.24	0.04	0.28
6.10	0.36	0.32	5.00	0.24	0.04	0.28
6.15	0.36	0.32	5.00	0.24	0.04	0.28
6.20	0.36	0.32	5.00	0.24	0.04	0.28
6.25	0.36	0.32	5.00	0.24	0.04	0.28
6.30	0.36	0.32	5.00	0.24	0.04	0.28
6.35	0.35	0.32	5.00	0.24	0.04	0.28
6.40	0.35	0.32	5.00	0.24	0.04	0.28
6.45	0.35	0.32	5.00	0.24	0.04	0.28
6.50	0.35	0.32	5.00	0.24	0.04	0.28
6.55	0.35	0.32	5.00	0.24	0.04	0.28
6.60	0.35	0.32	5.00	0.24	0.04	0.28
6.65	0.34	0.32	5.00	0.24	0.04	0.28
6.70	0.34	0.32	5.00	0.24	0.04	0.28
6.75	0.34	0.32	5.00	0.24	0.03	0.27
6.80	0.34	0.32	5.00	0.24	0.03	0.27
6.85	0.34	0.32	5.00	0.24	0.03	0.27
6.90	0.34	0.32	5.00	0.24	0.03	0.27
6.95	0.34	0.32	5.00	0.24	0.03	0.27
7.00	0.33	0.32	5.00	0.24	0.03	0.27
7.05	0.33	0.32	5.00	0.24	0.03	0.27
7.10	0.33	0.32	5.00	0.24	0.03	0.27
7.15	0.33	0.32	5.00	0.24	0.03	0.27
7.20	0.33	0.32	5.00	0.24	0.03	0.27
7.25	0.33	0.32	5.00	0.24	0.03	0.27
7.30	0.33	0.32	5.00	0.24	0.03	0.27
7.35	0.33	0.32	5.00	0.24	0.03	0.27
7.40	0.32	0.32	5.00	0.24	0.03	0.27
7.45	0.32	0.32	5.00	0.24	0.03	0.27
7.50	0.32	0.32	5.00	0.24	0.03	0.27
7.55	0.33	0.32	5.00	0.24	0.03	0.27
7.60	0.34	0.32	5.00	0.24	0.03	0.27
7.65	0.34	0.32	5.00	0.24	0.03	0.27
7.70	0.35	0.32	5.00	0.24	0.03	0.27
7.75	0.36	0.32	5.00	0.24	0.03	0.27
7.80	0.37	0.32	5.00	0.24	0.03	0.27
7.85	0.37	0.32	5.00	0.24	0.03	0.27
7.90	0.38	0.32	5.00	0.24	0.03	0.27
7.95	0.39	0.32	5.00	0.24	0.03	0.27
8.00	0.40	0.32	5.00	0.24	0.03	0.27
8.05	0.41	0.32	5.00	0.24	0.03	0.27
8.10	0.42	0.32	5.00	0.24	0.03	0.27
8.15	0.43	0.32	5.00	0.24	0.03	0.27
8.20	0.44	0.32	5.00	0.24	0.02	0.26
8.25	0.69	0.32	5.00	0.24	0.02	0.26
8.30	0.69	0.32	5.00	0.24	0.02	0.26
8.35	0.69	0.32	5.00	0.24	0.02	0.26
8.40	0.69	0.32	5.00	0.24	0.02	0.26
8.45	0.69	0.32	5.00	0.24	0.02	0.26
8.50	0.69	0.32	5.00	0.24	0.02	0.26
8.55	0.69	0.32	5.00	0.24	0.02	0.26
8.60	0.69	0.32	5.00	0.24	0.02	0.26
8.65	0.69	0.32	5.00	0.24	0.02	0.26
8.70	0.69	0.32	5.00	0.24	0.02	0.26

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16.05	0.69	0.31	5.00	0.24	0.00	0.24
16.10	0.69	0.31	5.00	0.24	0.00	0.24
16.15	0.69	0.31	5.00	0.24	0.00	0.24
16.20	0.69	0.31	5.00	0.24	0.00	0.24
16.25	0.69	0.31	5.00	0.24	0.00	0.24
16.30	0.69	0.31	5.00	0.24	0.00	0.24
16.35	0.69	0.31	5.00	0.24	0.00	0.24
16.40	0.69	0.31	5.00	0.24	0.00	0.24
16.45	0.69	0.31	5.00	0.24	0.00	0.24
16.50	0.69	0.31	5.00	0.24	0.00	0.24
16.55	0.69	0.31	5.00	0.24	0.00	0.24
16.60	0.69	0.31	5.00	0.24	0.00	0.24
16.65	0.69	0.31	5.00	0.24	0.00	0.24
16.70	0.69	0.31	5.00	0.24	0.00	0.24
16.75	0.69	0.31	5.00	0.24	0.00	0.24
16.80	0.69	0.31	5.00	0.24	0.00	0.24
16.85	0.69	0.31	5.00	0.24	0.00	0.24
16.90	0.69	0.31	5.00	0.24	0.00	0.24
16.95	0.69	0.31	5.00	0.24	0.00	0.24
17.00	0.69	0.31	2.20	0.24	0.00	0.24
17.05	0.69	0.31	2.19	0.24	0.00	0.24
17.10	0.69	0.31	2.19	0.24	0.00	0.24
17.15	0.69	0.31	2.19	0.24	0.00	0.24
17.20	0.69	0.31	2.18	0.24	0.00	0.24
17.25	0.69	0.31	2.18	0.24	0.00	0.24
17.30	0.69	0.31	2.18	0.24	0.00	0.24
17.35	0.69	0.31	2.18	0.24	0.00	0.24
17.40	0.69	0.32	2.17	0.24	0.00	0.24
17.45	0.69	0.32	2.17	0.24	0.00	0.24
17.50	0.69	0.32	2.17	0.24	0.00	0.24
17.55	0.69	0.32	2.17	0.24	0.00	0.24
17.60	0.69	0.32	2.16	0.24	0.00	0.24
17.65	0.69	0.32	2.16	0.24	0.00	0.24
17.70	0.69	0.32	2.16	0.24	0.00	0.24
17.75	0.69	0.32	2.15	0.24	0.00	0.24
17.80	0.69	0.32	2.15	0.24	0.00	0.24
17.85	0.69	0.32	2.15	0.24	0.00	0.24
17.90	0.69	0.32	2.15	0.24	0.00	0.24
17.95	0.69	0.32	2.14	0.24	0.00	0.24
18.00	0.69	0.32	2.14	0.24	0.00	0.24
18.05	0.69	0.32	2.14	0.24	0.00	0.24
18.10	0.69	0.32	2.14	0.24	0.00	0.24
18.15	0.69	0.32	2.13	0.24	0.00	0.24
18.20	0.69	0.32	2.13	0.24	0.00	0.24
18.25	0.69	0.32	2.13	0.24	0.00	0.24
18.30	0.69	0.32	2.13	0.24	0.00	0.24
18.35	0.69	0.32	2.13	0.24	0.00	0.24
18.40	0.69	0.32	2.12	0.24	0.00	0.24
18.45	0.69	0.32	2.12	0.24	0.00	0.24
18.50	0.69	0.32	2.12	0.24	0.00	0.24
18.55	0.69	0.32	2.12	0.24	0.00	0.24
18.60	0.69	0.32	2.11	0.24	0.00	0.24
18.65	0.69	0.32	2.11	0.24	0.00	0.24
18.70	0.69	0.33	2.11	0.24	0.00	0.24
18.75	0.69	0.33	2.11	0.24	0.00	0.24
18.80	0.69	0.33	2.10	0.24	0.00	0.24
18.85	0.69	0.33	2.10	0.24	0.00	0.24
18.90	0.69	0.33	2.10	0.24	0.00	0.24
18.95	0.69	0.33	2.10	0.24	0.00	0.24
19.00	0.69	0.33	2.09	0.24	0.00	0.24
19.05	0.69	0.33	2.09	0.24	0.00	0.24
19.10	0.69	0.33	2.09	0.24	0.00	0.24
19.15	0.69	0.33	2.09	0.24	0.00	0.24
19.20	0.69	0.33	2.09	0.24	0.00	0.24
19.25	0.69	0.33	2.08	0.24	0.00	0.24
19.30	0.69	0.33	2.08	0.24	0.00	0.24
19.35	0.69	0.33	2.08	0.24	0.00	0.24
19.40	0.69	0.33	2.08	0.24	0.00	0.24
19.45	0.69	0.33	2.08	0.24	0.00	0.24
19.50	0.69	0.33	2.07	0.24	0.00	0.24
19.55	0.69	0.33	2.07	0.24	0.00	0.24
19.60	0.69	0.33	2.07	0.24	0.00	0.24
19.65	0.69	0.33	2.07	0.24	0.00	0.24

						7050	-Liquefy.sum
19.70	0.69	0.33	2.06	0.24	0.00	0.24	
19.75	0.69	0.33	2.06	0.24	0.00	0.24	
19.80	0.69	0.33	2.06	0.24	0.00	0.24	
19.85	0.69	0.33	2.06	0.24	0.00	0.24	
19.90	0.69	0.33	2.06	0.24	0.00	0.24	
19.95	0.69	0.33	2.05	0.24	0.00	0.24	
20.00	0.69	0.33	2.05	0.24	0.00	0.24	
20.05	0.69	0.33	2.05	0.24	0.00	0.24	
20.10	0.69	0.33	2.05	0.24	0.00	0.24	
20.15	0.69	0.33	2.05	0.24	0.00	0.24	
20.20	0.69	0.34	2.04	0.24	0.00	0.24	
20.25	0.69	0.34	2.04	0.24	0.00	0.24	
20.30	0.69	0.34	2.04	0.24	0.00	0.24	
20.35	0.69	0.34	2.04	0.24	0.00	0.24	
20.40	0.69	0.34	2.04	0.24	0.00	0.24	
20.45	0.69	0.34	2.04	0.24	0.00	0.24	
20.50	0.69	0.34	2.03	0.24	0.00	0.24	
20.55	0.69	0.34	2.03	0.24	0.00	0.24	
20.60	0.69	0.34	2.03	0.24	0.00	0.24	
20.65	0.69	0.34	2.03	0.24	0.00	0.24	
20.70	0.69	0.34	2.03	0.24	0.00	0.24	
20.75	0.69	0.34	2.02	0.24	0.00	0.24	
20.80	0.69	0.34	2.02	0.24	0.00	0.24	
20.85	0.69	0.34	2.02	0.24	0.00	0.24	
20.90	0.69	0.34	2.02	0.24	0.00	0.24	
20.95	0.69	0.34	2.02	0.24	0.00	0.24	
21.00	0.69	0.34	2.02	0.24	0.00	0.24	
21.05	0.69	0.34	2.01	0.24	0.00	0.24	
21.10	0.69	0.34	2.01	0.24	0.00	0.24	
21.15	0.69	0.34	2.01	0.24	0.00	0.24	
21.20	0.69	0.34	2.01	0.24	0.00	0.24	
21.25	0.69	0.34	2.01	0.24	0.00	0.24	
21.30	0.69	0.34	2.00	0.24	0.00	0.24	
21.35	0.69	0.34	2.00	0.24	0.00	0.24	
21.40	0.69	0.34	2.00	0.24	0.00	0.24	
21.45	0.69	0.34	2.00	0.24	0.00	0.24	
21.50	0.69	0.34	2.00	0.24	0.00	0.24	
21.55	0.69	0.34	2.00	0.24	0.00	0.24	
21.60	0.69	0.34	1.99	0.24	0.00	0.24	
21.65	0.69	0.34	1.99	0.24	0.00	0.24	
21.70	0.69	0.34	1.99	0.24	0.00	0.24	
21.75	0.69	0.34	1.99	0.24	0.00	0.24	
21.80	0.69	0.34	1.99	0.24	0.00	0.24	
21.85	0.69	0.35	1.99	0.24	0.00	0.24	
21.90	0.69	0.35	1.98	0.24	0.00	0.24	
21.95	0.69	0.35	1.98	0.24	0.00	0.24	
22.00	0.69	0.35	1.98	0.24	0.00	0.24	
22.05	0.69	0.35	1.98	0.24	0.00	0.24	
22.10	0.69	0.35	1.98	0.24	0.00	0.24	
22.15	0.69	0.35	1.98	0.24	0.00	0.24	
22.20	0.69	0.35	1.98	0.24	0.00	0.24	
22.25	0.69	0.35	1.97	0.24	0.00	0.24	
22.30	0.69	0.35	1.97	0.24	0.00	0.24	
22.35	0.69	0.35	1.97	0.24	0.00	0.24	
22.40	0.69	0.35	1.97	0.24	0.00	0.24	
22.45	0.69	0.35	1.97	0.24	0.00	0.24	
22.50	0.69	0.35	1.97	0.24	0.00	0.24	
22.55	0.69	0.35	1.96	0.24	0.00	0.24	
22.60	0.69	0.35	1.96	0.24	0.00	0.24	
22.65	0.69	0.35	1.96	0.24	0.00	0.24	
22.70	0.69	0.35	1.96	0.24	0.00	0.24	
22.75	0.69	0.35	1.96	0.24	0.00	0.24	
22.80	0.69	0.35	1.96	0.24	0.00	0.24	
22.85	0.69	0.35	1.96	0.24	0.00	0.24	
22.90	0.69	0.35	1.95	0.24	0.00	0.24	
22.95	0.69	0.35	1.95	0.24	0.00	0.24	
23.00	0.69	0.35	1.95	0.24	0.00	0.24	
23.05	0.69	0.35	1.95	0.24	0.00	0.24	
23.10	0.69	0.35	1.95	0.24	0.00	0.24	
23.15	0.69	0.35	1.95	0.24	0.00	0.24	
23.20	0.69	0.35	1.95	0.24	0.00	0.24	
23.25	0.69	0.35	1.94	0.24	0.00	0.24	
23.30	0.69	0.35	1.94	0.24	0.00	0.24	

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37.95	0.68	0.38	1.77	0.24	0.00	0.24
38.00	0.68	0.38	1.77	0.24	0.00	0.24
38.05	0.68	0.38	1.77	0.24	0.00	0.24
38.10	0.68	0.38	1.77	0.24	0.00	0.24
38.15	0.68	0.38	1.77	0.24	0.00	0.24
38.20	0.68	0.38	1.77	0.24	0.00	0.24
38.25	0.68	0.38	1.77	0.24	0.00	0.24
38.30	0.68	0.38	1.77	0.24	0.00	0.24
38.35	0.68	0.38	1.77	0.24	0.00	0.24
38.40	0.68	0.38	1.77	0.24	0.00	0.24
38.45	0.68	0.38	1.77	0.24	0.00	0.24
38.50	0.68	0.38	1.77	0.24	0.00	0.24
38.55	0.68	0.38	1.77	0.24	0.00	0.24
38.60	0.68	0.38	1.77	0.24	0.00	0.24
38.65	0.68	0.38	1.77	0.24	0.00	0.24
38.70	0.68	0.38	1.77	0.24	0.00	0.24
38.75	0.68	0.38	1.77	0.24	0.00	0.24
38.80	0.68	0.38	1.77	0.24	0.00	0.24
38.85	0.68	0.38	1.77	0.24	0.00	0.24
38.90	0.68	0.38	1.77	0.24	0.00	0.24
38.95	0.68	0.38	1.77	0.24	0.00	0.24
39.00	0.68	0.38	1.77	0.24	0.00	0.24
39.05	0.68	0.38	1.77	0.24	0.00	0.24
39.10	0.68	0.38	1.77	0.24	0.00	0.24
39.15	0.68	0.38	1.77	0.24	0.00	0.24
39.20	0.68	0.38	1.77	0.24	0.00	0.24
39.25	0.68	0.38	1.77	0.24	0.00	0.24
39.30	0.68	0.38	1.77	0.24	0.00	0.24
39.35	0.68	0.38	1.77	0.24	0.00	0.24
39.40	0.68	0.38	1.77	0.24	0.00	0.24
39.45	0.68	0.38	1.77	0.24	0.00	0.24
39.50	0.68	0.38	1.77	0.24	0.00	0.24
39.55	0.67	0.38	1.77	0.24	0.00	0.24
39.60	0.66	0.38	1.72	0.24	0.00	0.24
39.65	0.58	0.38	1.52	0.24	0.00	0.24
39.70	0.55	0.38	1.43	0.24	0.00	0.24
39.75	0.53	0.38	1.38	0.23	0.00	0.23
39.80	0.51	0.38	1.33	0.23	0.00	0.23
39.85	0.50	0.38	1.30	0.23	0.00	0.23
39.90	0.48	0.38	1.27	0.23	0.00	0.23
39.95	0.47	0.38	1.24	0.23	0.00	0.23
40.00	0.46	0.38	1.21	0.23	0.00	0.23
40.05	0.46	0.38	1.21	0.23	0.00	0.23
40.10	0.46	0.38	1.21	0.22	0.00	0.22
40.15	0.46	0.38	1.21	0.22	0.00	0.22
40.20	0.46	0.38	1.21	0.22	0.00	0.22
40.25	0.46	0.38	1.21	0.22	0.00	0.22
40.30	0.46	0.38	1.21	0.22	0.00	0.22
40.35	0.46	0.38	1.21	0.22	0.00	0.22
40.40	0.46	0.38	1.21	0.21	0.00	0.21
40.45	0.46	0.38	1.21	0.21	0.00	0.21
40.50	0.46	0.38	1.20	0.21	0.00	0.21
40.55	0.46	0.38	1.20	0.21	0.00	0.21
40.60	0.46	0.38	1.20	0.21	0.00	0.21
40.65	0.46	0.38	1.20	0.20	0.00	0.20
40.70	0.46	0.38	1.20	0.20	0.00	0.20
40.75	0.46	0.38	1.20	0.20	0.00	0.20
40.80	0.46	0.38	1.20	0.20	0.00	0.20
40.85	0.46	0.38	1.20	0.20	0.00	0.20
40.90	0.46	0.38	1.20	0.20	0.00	0.20
40.95	0.46	0.38	1.20	0.19	0.00	0.19
41.00	0.46	0.38	1.20	0.19	0.00	0.19
41.05	0.46	0.38	1.20	0.19	0.00	0.19
41.10	0.46	0.38	1.19	0.19	0.00	0.19
41.15	0.45	0.38	1.19	0.19	0.00	0.19
41.20	0.45	0.38	1.19	0.18	0.00	0.18
41.25	0.45	0.38	1.19	0.18	0.00	0.18
41.30	0.45	0.38	1.19	0.18	0.00	0.18
41.35	0.45	0.38	1.19	0.18	0.00	0.18
41.40	0.45	0.38	1.19	0.18	0.00	0.18
41.45	0.45	0.38	1.19	0.18	0.00	0.18
41.50	0.45	0.38	1.19	0.17	0.00	0.17
41.55	0.45	0.38	1.19	0.17	0.00	0.17

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41.60	0.45	0.38	1.19	0.17	0.00	0.17
41.65	0.45	0.38	1.19	0.17	0.00	0.17
41.70	0.45	0.38	1.19	0.17	0.00	0.17
41.75	0.45	0.38	1.18	0.16	0.00	0.16
41.80	0.45	0.38	1.18	0.16	0.00	0.16
41.85	0.45	0.38	1.18	0.16	0.00	0.16
41.90	0.45	0.38	1.18	0.16	0.00	0.16
41.95	0.45	0.38	1.18	0.16	0.00	0.16
42.00	0.45	0.38	1.18	0.15	0.00	0.15
42.05	0.45	0.38	1.18	0.15	0.00	0.15
42.10	0.45	0.38	1.18	0.15	0.00	0.15
42.15	0.45	0.38	1.18	0.15	0.00	0.15
42.20	0.45	0.38	1.18	0.15	0.00	0.15
42.25	0.45	0.38	1.18	0.14	0.00	0.14
42.30	0.45	0.38	1.18	0.14	0.00	0.14
42.35	0.45	0.38	1.18	0.14	0.00	0.14
42.40	0.45	0.38	1.17	0.14	0.00	0.14
42.45	0.45	0.38	1.17	0.14	0.00	0.14
42.50	0.45	0.38	1.17	0.13	0.00	0.13
42.55	0.44	0.38	1.17	0.13	0.00	0.13
42.60	0.44	0.38	1.17	0.13	0.00	0.13
42.65	0.44	0.38	1.17	0.13	0.00	0.13
42.70	0.44	0.38	1.17	0.13	0.00	0.13
42.75	0.44	0.38	1.17	0.12	0.00	0.12
42.80	0.44	0.38	1.17	0.12	0.00	0.12
42.85	0.44	0.38	1.17	0.12	0.00	0.12
42.90	0.44	0.38	1.17	0.12	0.00	0.12
42.95	0.44	0.38	1.17	0.12	0.00	0.12
43.00	0.44	0.38	1.17	0.11	0.00	0.11
43.05	0.44	0.38	1.17	0.11	0.00	0.11
43.10	0.44	0.38	1.16	0.11	0.00	0.11
43.15	0.44	0.38	1.16	0.11	0.00	0.11
43.20	0.44	0.38	1.16	0.11	0.00	0.11
43.25	0.44	0.38	1.16	0.10	0.00	0.10
43.30	0.44	0.38	1.16	0.10	0.00	0.10
43.35	0.44	0.38	1.16	0.10	0.00	0.10
43.40	0.44	0.38	1.16	0.10	0.00	0.10
43.45	0.44	0.38	1.16	0.10	0.00	0.10
43.50	0.44	0.38	1.16	0.09	0.00	0.09
43.55	0.44	0.38	1.16	0.09	0.00	0.09
43.60	0.44	0.38	1.16	0.09	0.00	0.09
43.65	0.44	0.38	1.16	0.09	0.00	0.09
43.70	0.44	0.38	1.16	0.09	0.00	0.09
43.75	0.44	0.38	1.16	0.08	0.00	0.08
43.80	0.44	0.38	1.15	0.08	0.00	0.08
43.85	0.44	0.38	1.15	0.08	0.00	0.08
43.90	0.44	0.38	1.15	0.08	0.00	0.08
43.95	0.44	0.38	1.15	0.07	0.00	0.07
44.00	0.44	0.38	1.15	0.07	0.00	0.07
44.05	0.44	0.38	1.15	0.07	0.00	0.07
44.10	0.43	0.38	1.15	0.07	0.00	0.07
44.15	0.43	0.38	1.15	0.07	0.00	0.07
44.20	0.43	0.38	1.15	0.06	0.00	0.06
44.25	0.43	0.38	1.15	0.06	0.00	0.06
44.30	0.43	0.38	1.15	0.06	0.00	0.06
44.35	0.43	0.38	1.15	0.06	0.00	0.06
44.40	0.43	0.38	1.15	0.05	0.00	0.05
44.45	0.43	0.38	1.15	0.05	0.00	0.05
44.50	0.43	0.38	1.15	0.05	0.00	0.05
44.55	0.43	0.38	1.15	0.05	0.00	0.05
44.60	0.43	0.38	1.14	0.05	0.00	0.05
44.65	0.43	0.38	1.14	0.04	0.00	0.04
44.70	0.43	0.38	1.14	0.04	0.00	0.04
44.75	0.43	0.38	1.14	0.04	0.00	0.04
44.80	0.43	0.38	1.14	0.04	0.00	0.04
44.85	0.43	0.38	1.14	0.03	0.00	0.03
44.90	0.43	0.38	1.14	0.03	0.00	0.03
44.95	0.43	0.38	1.14	0.03	0.00	0.03
45.00	0.43	0.38	1.14	0.03	0.00	0.03
45.05	0.43	0.38	1.16	0.03	0.00	0.03
45.10	0.44	0.38	1.17	0.02	0.00	0.02
45.15	0.45	0.38	1.19	0.02	0.00	0.02
45.20	0.45	0.38	1.21	0.02	0.00	0.02

					7050	-Liquefy.sum
45.25	0.46	0.38	1.22	0.02	0.00	0.02
45.30	0.47	0.38	1.24	0.02	0.00	0.02
45.35	0.48	0.38	1.26	0.01	0.00	0.01
45.40	0.48	0.38	1.29	0.01	0.00	0.01
45.45	0.49	0.38	1.31	0.01	0.00	0.01
45.50	0.50	0.38	1.34	0.01	0.00	0.01
45.55	0.52	0.38	1.37	0.01	0.00	0.01
45.60	0.53	0.38	1.41	0.01	0.00	0.01
45.65	0.55	0.38	1.47	0.01	0.00	0.01
45.70	0.58	0.38	1.54	0.01	0.00	0.01
45.75	0.64	0.38	1.69	0.00	0.00	0.00
45.80	0.66	0.38	1.77	0.00	0.00	0.00
45.85	0.66	0.38	1.77	0.00	0.00	0.00
45.90	0.66	0.37	1.77	0.00	0.00	0.00
45.95	0.66	0.37	1.77	0.00	0.00	0.00
46.00	0.66	0.37	1.77	0.00	0.00	0.00
46.05	0.66	0.37	1.77	0.00	0.00	0.00
46.10	0.66	0.37	1.77	0.00	0.00	0.00
46.15	0.66	0.37	1.77	0.00	0.00	0.00
46.20	0.66	0.37	1.77	0.00	0.00	0.00
46.25	0.66	0.37	1.77	0.00	0.00	0.00
46.30	0.66	0.37	1.77	0.00	0.00	0.00
46.35	0.66	0.37	1.77	0.00	0.00	0.00
46.40	0.66	0.37	1.77	0.00	0.00	0.00
46.45	0.66	0.37	1.77	0.00	0.00	0.00
46.50	0.66	0.37	1.77	0.00	0.00	0.00
46.55	0.66	0.37	1.77	0.00	0.00	0.00
46.60	0.66	0.37	1.77	0.00	0.00	0.00
46.65	0.66	0.37	1.77	0.00	0.00	0.00
46.70	0.66	0.37	1.77	0.00	0.00	0.00
46.75	0.66	0.37	1.77	0.00	0.00	0.00
46.80	0.66	0.37	1.77	0.00	0.00	0.00
46.85	0.66	0.37	1.77	0.00	0.00	0.00
46.90	0.66	0.37	1.77	0.00	0.00	0.00
46.95	0.66	0.37	1.77	0.00	0.00	0.00
47.00	0.66	0.37	1.77	0.00	0.00	0.00
47.05	0.66	0.37	1.77	0.00	0.00	0.00
47.10	0.66	0.37	1.77	0.00	0.00	0.00
47.15	0.66	0.37	1.77	0.00	0.00	0.00
47.20	0.66	0.37	1.77	0.00	0.00	0.00
47.25	0.66	0.37	1.77	0.00	0.00	0.00
47.30	0.66	0.37	1.77	0.00	0.00	0.00
47.35	0.66	0.37	1.77	0.00	0.00	0.00
47.40	0.66	0.37	1.77	0.00	0.00	0.00
47.45	0.66	0.37	1.77	0.00	0.00	0.00
47.50	0.66	0.37	1.77	0.00	0.00	0.00
47.55	0.66	0.37	1.77	0.00	0.00	0.00
47.60	0.66	0.37	1.77	0.00	0.00	0.00
47.65	0.66	0.37	1.77	0.00	0.00	0.00
47.70	0.66	0.37	1.77	0.00	0.00	0.00
47.75	0.66	0.37	1.77	0.00	0.00	0.00
47.80	0.66	0.37	1.77	0.00	0.00	0.00
47.85	0.66	0.37	1.77	0.00	0.00	0.00
47.90	0.66	0.37	1.77	0.00	0.00	0.00
47.95	0.66	0.37	1.77	0.00	0.00	0.00
48.00	0.66	0.37	1.77	0.00	0.00	0.00
48.05	0.66	0.37	1.77	0.00	0.00	0.00
48.10	0.66	0.37	1.77	0.00	0.00	0.00
48.15	0.66	0.37	1.77	0.00	0.00	0.00
48.20	0.66	0.37	1.77	0.00	0.00	0.00
48.25	0.66	0.37	1.77	0.00	0.00	0.00
48.30	0.66	0.37	1.77	0.00	0.00	0.00
48.35	0.66	0.37	1.78	0.00	0.00	0.00
48.40	0.66	0.37	1.78	0.00	0.00	0.00
48.45	0.66	0.37	1.78	0.00	0.00	0.00
48.50	0.66	0.37	1.78	0.00	0.00	0.00
48.55	0.66	0.37	1.78	0.00	0.00	0.00
48.60	0.66	0.37	1.78	0.00	0.00	0.00
48.65	0.66	0.37	1.78	0.00	0.00	0.00
48.70	0.66	0.37	1.78	0.00	0.00	0.00
48.75	0.66	0.37	1.78	0.00	0.00	0.00
48.80	0.66	0.37	1.78	0.00	0.00	0.00
48.85	0.66	0.37	1.78	0.00	0.00	0.00

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48.90	0.66	0.37	1.78	0.00	0.00	0.00
48.95	0.66	0.37	1.78	0.00	0.00	0.00
49.00	0.66	0.37	1.78	0.00	0.00	0.00
49.05	0.66	0.37	1.78	0.00	0.00	0.00
49.10	0.66	0.37	1.78	0.00	0.00	0.00
49.15	0.66	0.37	1.78	0.00	0.00	0.00
49.20	0.66	0.37	1.78	0.00	0.00	0.00
49.25	0.66	0.37	1.78	0.00	0.00	0.00
49.30	0.66	0.37	1.78	0.00	0.00	0.00
49.35	0.66	0.37	1.78	0.00	0.00	0.00
49.40	0.66	0.37	1.78	0.00	0.00	0.00
49.45	0.66	0.37	1.78	0.00	0.00	0.00
49.50	0.66	0.37	1.78	0.00	0.00	0.00
49.55	0.66	0.37	1.78	0.00	0.00	0.00
49.60	0.66	0.37	1.78	0.00	0.00	0.00
49.65	0.66	0.37	1.78	0.00	0.00	0.00
49.70	0.66	0.37	1.78	0.00	0.00	0.00
49.75	0.66	0.37	1.78	0.00	0.00	0.00
49.80	0.66	0.37	1.78	0.00	0.00	0.00
49.85	0.66	0.37	1.78	0.00	0.00	0.00
49.90	0.66	0.37	1.78	0.00	0.00	0.00
49.95	0.66	0.37	1.78	0.00	0.00	0.00
50.00	0.65	0.37	1.78	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/ft ²)	
CRRm	Cyclic resistance ratio from soils
CSRs _f	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRs _f
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