

INLAND FOUNDATION ENGINEERING, INC.
Consulting Geotechnical Engineers and Geologists
P.O. Box 937, San Jacinto, California 92581

July 17, 2020

ENGINEERING RESOURCES OF SOUTHERN CALIFORNIA, INC.

1861 West Redlands Boulevard
Redlands, California 92373

Attention: Mr. Matt Brudin, P.E.

Subject: Site Grading Report
Soboba Band of Luiseno Indians
Horseshoe Property Commercial/Retail Development

Dear Mr. Brudin:

This report presents the results of our tests and observations made during rough grading of the Soboba Horseshoe Service project located in the San Jacinto area of Riverside County, California.

The following were used as references during site grading:

- Report entitled, "Geotechnical Investigation, Soboba Horseshoe Service Center, Phase I, SWC Lake Park Drive and Soboba Road, Soboba Nation, San Jacinto, California, prepared by Inland Foundation Engineering, Inc., dated May 13, 2020, Project No. E080-055
- Plans entitled, "Rough Grading Plan for the construction of Horseshoe Property Commercial/Retail Development", Sheets 3 of 3, prepared by Engineering Resources of Southern California, dated April 19, 2020

Project Description

The Soboba Horseshoe Service project site is located southwest of and adjacent to the intersection of Lake Park Drive and Soboba Road in San Jacinto, California. Phase I of the project occupies approximately 7.5 acres and includes a 5,000 square foot (sf) convenience store/gas station, 2,000 sf retail building, fuel dispensing island area, and 3,590 sf car wash structure. Paved access drives and parking areas are planned. The project includes a future development area in the southwest portion of the site. Project features are shown on the Site Plan, in Appendix A.

Site grades prior to rough grading ranged from about 10 to 13 feet below final design grades. Final site grades were achieved by filling with imported soil.

Scope of Service

Our testing and observation services were performed from April 28, 2020 through June 17, 2020 on a near-continuous basis. Our representative observed the contractor's operations and documented their fill placement and compaction activities. Geotechnical consultation was provided as necessary during the course of site grading.

Density testing was performed periodically in accordance with ASTM D6938 to evaluate the relative compaction achieved by the grading contractor. Samples were obtained periodically for laboratory maximum density - optimum moisture content testing. Upon completion of rough grading, additional near-surface samples were obtained from building areas and tested for sieve analysis, Atterberg limits, corrosivity and expansion index.

This report was prepared to document the site grading and includes results of site compaction testing and laboratory testing. It includes final design recommendations for building foundations, site paving and other improvements.

Note that all information in this report regarding test elevation and depth was obtained from the grading contractor. We did not perform any independent verification of the location or elevation of our compaction tests.

Geologic and Geotechnical Conditions

The project site had been previously graded as a residential subdivision. All existing fill soil encountered during site grading was considered to be undocumented and was removed and recompacted.

The site had also been used as a borrow source during construction of the new casino and hotel on the west side of Lake Park Drive. Prior to grading, site grades were 10 to 13 feet below final design grades.

The native site soil is younger alluvium generally comprised of interbedded layers of silty sand (SM), silty clayey sand (SM-SC), clayey sand (SC), sandy clay (CL) and sand with silt (SP-SM), based on testing performed during the referenced geotechnical investigation. Import soil was necessary to achieve final site grades and was initially trucked from the site of the Eastern Municipal Water District Mountain Avenue West Replenishment Basin project in San Jacinto. When the San Jacinto import source was depleted, additional import soil was obtained and trucked from a borrow source on the

Soboba reservation. Both import sources were similar in composition to the native site soil and consisted primarily of silty sand (SM), with occasional silty clayey sand (SM-SC) and sand with silt (SP-SM).

Upon completion of rough grading, near-surface soil samples were obtained from the convenience store, retail store, car wash and fuel pump area for laboratory characterization testing. The soil was tested for sieve analysis, plastic index, corrosion and expansion index. Laboratory test results are included with this report in Appendix C.

Site Grading and Fill Placement

Prior to placement of fill, the contractor removed existing vegetation, debris and other unsuitable material and disposed of it outside of the grading area. Existing site soil was removed to a depth of at least 10 feet below existing grades in proposed building pad areas and in the fuel island / dispensary area. The limits of removal extended at least five feet outside of exterior building lines at the excavation bottom. Existing soil was removed to a depth of at least six feet below existing grade in pavement areas.

Due to very moist and unstable conditions at the removal excavation bottoms, testing the native soil for 85 percent relative compaction, with subsequent scarification and recompaction, was not feasible. Alternatively, we recommended the contractor allow the exposed excavation bottom to dry to the extent necessary to support compaction equipment. After drying the excavation bottom, fill was then placed in lifts at near optimum moisture content and compacted to a minimum of 90 percent relative compaction.

Field and Laboratory Testing

Field density testing was performed in accordance with the ASTM D6938 test method. The results were compared with the appropriate laboratory maximum dry density obtained in accordance with ASTM D1557 to calculate the relative compaction percentage. The minimum acceptable degree of compaction was 90 percent of the maximum dry density. The results of our testing are presented in Appendix B. Maximum density – optimum moisture content tests are summarized in Appendix C.

Near-surface soil in graded building pad areas and the fuel dispensing island area was sampled for laboratory testing that consisted of sieve analysis, Atterberg limits, corrosivity and expansion index. Test results are included in Appendix C.

Conclusions and Recommendations

Based on our observations and compaction test results, site grading has been accomplished in accordance with the recommendations of the referenced geotechnical report, applicable requirements of the 2019 California Building Code and the County of Riverside grading ordinance.

Imported near-surface soil in the building and fuel island areas is similar in composition to the existing site soil sampled and tested for the referenced geotechnical investigation. As such, the recommended geotechnical design parameters in the referenced geotechnical investigation remain applicable and are summarized below.

Foundation Design: Shallow spread footings (continuous and isolated) should be designed using an allowable soil bearing pressure of 1,200 pounds per square foot (psf). Footings should have a minimum width of 12 inches and be founded a minimum depth of 12 inches below the lowest adjacent grade. The allowable bearing pressure can be increased by 300 psf for each additional foot of width and by 800 psf for each additional foot of depth, to a maximum allowable bearing pressure of 2,400 psf. The allowable bearing pressure may be increased by $\frac{1}{3}$ for short-term transient wind and seismic loads.

Static settlement of foundations properly designed and constructed as recommended herein is expected to be less than 1.0 inch. Static differential settlement between foundations of similar size and load is expected to be less than one-half inch.

Seismically-induced differential settlement is estimated to be on the order of 1.8 inches, with estimated differential settlement of 1.0 inch in 30 feet.

Lateral Resistance: A coefficient of friction of 0.40 between soil and concrete may be used with dead load forces only. A passive earth pressure of 240 psf, per foot of depth, may be used for the sides of footings poured against recompacted or suitably dense native material. Passive earth pressure should be ignored within the upper one foot except where confined as beneath a floor slab, for example.

Lateral Earth Pressure: Retaining walls should be designed for an active earth pressure equivalent to that exerted by a fluid weighing not less than 40 pcf. Any applicable construction or seismic surcharges should be added to this pressure.

Concrete Slabs-on-Grade: Concrete slabs-on-grade should have a minimum thickness of four inches. During final grading and prior to the placement of concrete, all surfaces to receive concrete slabs-on-grade should be compacted to maintain a

minimum compacted fill thickness of 12 inches. Load bearing slabs should be designed using a modulus of subgrade reaction not exceeding 100 pounds per square inch per inch.

Slabs should be designed and constructed in accordance with the provisions of the American Concrete Institute (ACI). Shrinkage of concrete should be anticipated and will result in cracks in all concrete slabs-on-grade. Shrinkage cracks may be directed to saw-cut "control joints" spaced on the basis of slab thickness and reinforcement. ACI typically recommend control joint spacings in unreinforced concrete at maximum intervals equal to the slab thickness times 24.

Slabs to receive moisture-sensitive coverings should be provided with a moisture vapor retarder/barrier designed and constructed according to the American Concrete Institute 302.1 R, Concrete Floor and Slab Construction, which addresses moisture vapor retarder/barrier construction. At a minimum, the vapor retarder/barrier should comply with ASTM E1745 and have a nominal thickness of at least 10 mils. The vapor retarder/barrier should be properly sealed, per the manufacturer's recommendations, and protected from punctures and other damage.

Corrosion: Analytical testing indicates that sulfate concentrations are less than 0.10 percent. In accordance with ACI 201.2R, Table 6.1.4.1a, the soil can be classified as Class S0 with respect to sulfate exposure.

Chloride concentrations tested range from 210 to 300 ppm and are generally not at levels high enough to be of concern with respect to corrosion of ferrous metals. The results should be considered in combination with the chloride content of the hardened concrete in determining the effect of chloride on reinforcing steel.

The soil is slightly alkaline with pH values ranging from 7.1 to 7.3.

Tested saturated resistivity values ranged from 800 to 2,000 ohm-cm, indicating that the soil may be severely corrosive with respect to buried ferrous metal. Specific corrosion control measures, such as coating of pipe with non-corrosive material or alternative non-metallic pipe material, are considered to be necessary. We recommend that a qualified corrosion engineer be consulted for additional guidance.

Expansive Soil: Expansion index test results indicate that near-surface soil in the building pad and fuel dispensary areas has a very low expansion potential. Design measures to mitigate the effects of soil expansion are not required.

Limitations

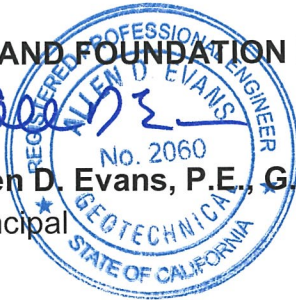
Our services were conducted in a manner consistent with the contemporary standard of care exercised by reputable geotechnical consultants practicing in this geographic area. No other warranty, either expressed or implied, is made.

We appreciate being of service to you on this project. If you have any questions, please contact our office.

Respectfully,

INLAND FOUNDATION ENGINEERING, INC.

Allen D. Evans, P.E., G.E.
Principal



ADE:es

Distribution: Addressee (2)

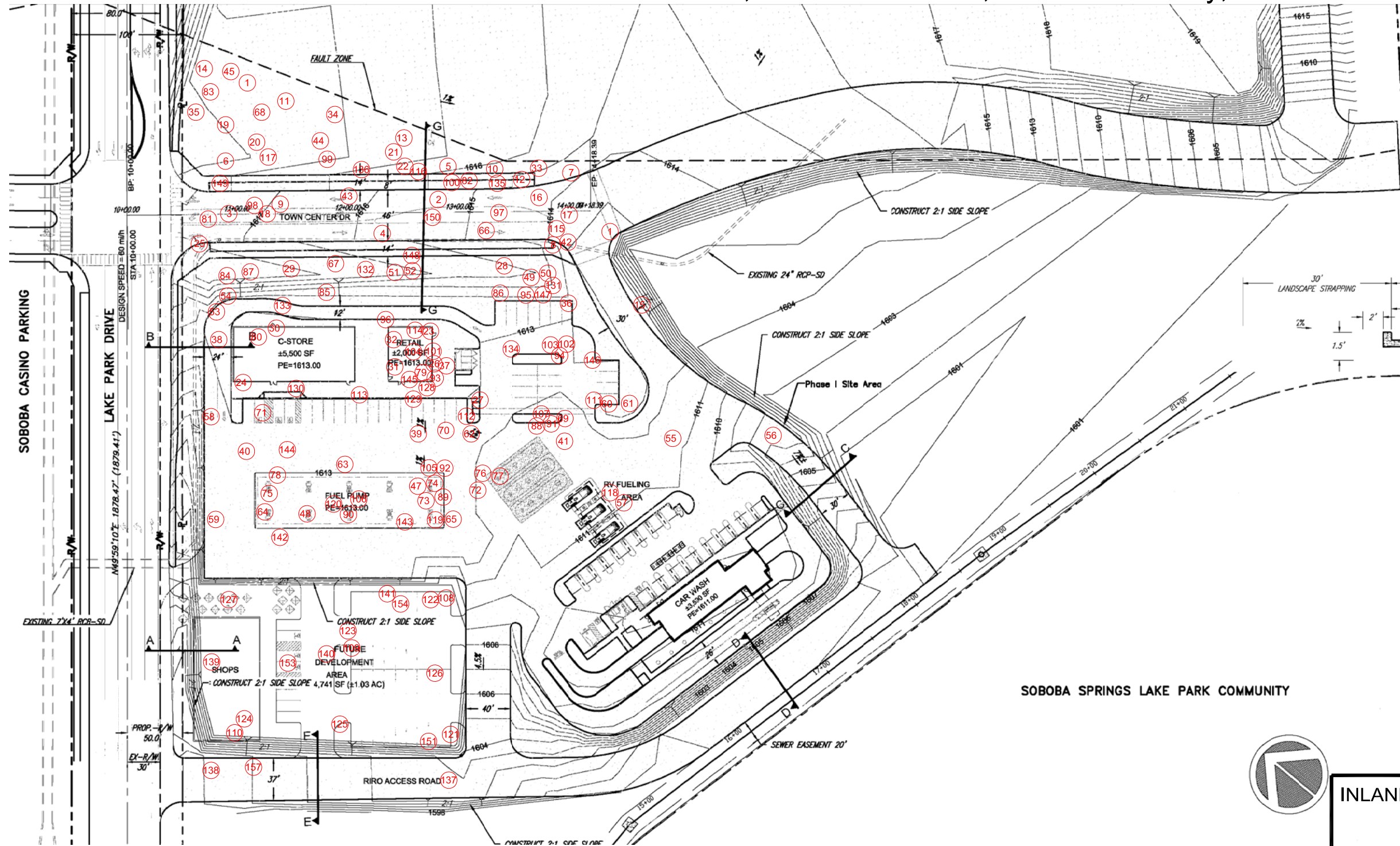
***APPENDIX A –
Site Plan***

SITE PLAN

Engineering Resources of Southern California, Inc.

Soboba Horseshoe Service Center, Phase 1

Lake Park Drive, San Jacinto Area, Riverside County, CA



Base Map - Entitled, "Hoseshoe Property Commercial/Retail Development" sheet 3, Prepared by ERSC, dated 4-19-20

LEGEND

① = Approximate Location of Compaction Test Numbers 1 to 154



INLAND FOUNDATION ENGINEERING, INC.

1310 South Santa Fe Avenue

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DRAWN BY: ES

JOB NO.: E080-056

SCALE: 1" = 100'

DATE: July 2020

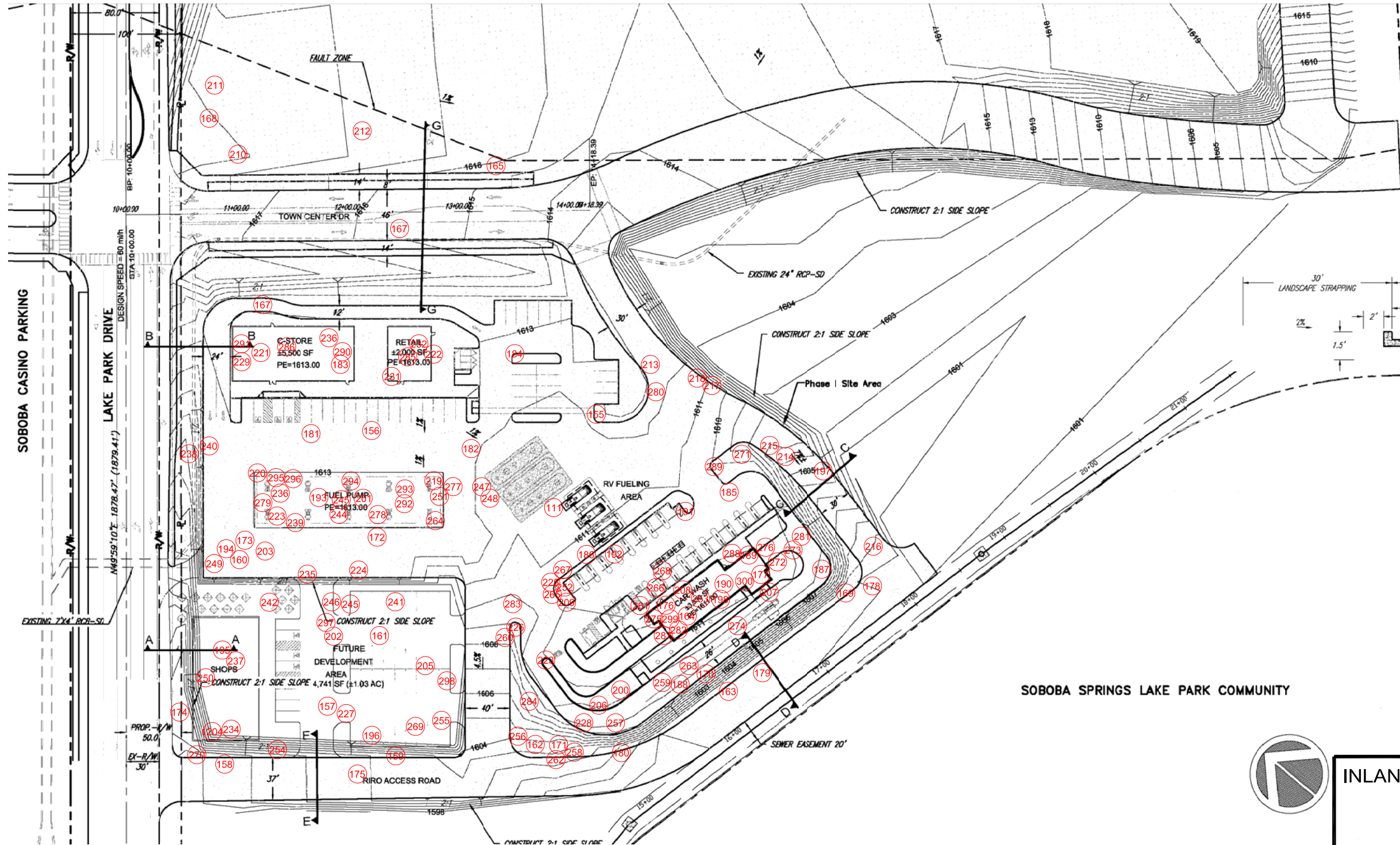
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SITE PLAN

Engineering Resources of Southern California, Inc.

Soboba Horseshoe Service Center, Phase 1

Lake Park Drive, San Jacinto Area, Riverside County, CA



LEGEND

① = Approximate Location of Compaction Test Numbers 155-300

Base Map - Entitled, "Hoseshoe Property Commercial/Retail Development" sheet 3, Prepared by ERSC, dated 4-19-20



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DATE: July 2020

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***APPENDIX B –
Summary of Field Density Testing***

Appendix B - Summary of Field Density Testing

TEST	DATE	SOIL TYPE	LOCATION	ELEV.	% MOIST.	DENSITY (pcf)		% REL. COMP.	RETEST
						DRY	MAX		
1	04-28-20	1	Southwest Side of Town Center Drive	1598	11.6	116.3	129.5	90	
2	04-28-20	1	Middle, East Side Town Center Drive	1598	14.7	117.7	129.5	91	
3	04-28-20	1	North End Town Center Drive	1598	8.9	116.4	129.5	90	
4	04-28-20	3	Middle, West Side Town Center Drive	1598	9.1	110.8	122.0	91	
5	04-28-20	3	Middle, West Side Fault Zone Area	1594	8.3	109.7	122.0	90	
6	04-28-20	3	Northwest Side of Fault Zone Area	1594	10.3	109.9	122.0	90	
7	04-28-20	3	South End Fault Zone Area	1594	9.4	111.4	122.0	91	
8	04-29-20	1	Southwest Side of Town Center Drive	1599	12.6	118.7	129.5	92	
9	04-29-20	1	Northeast Side Town Center Drive	1599	12.7	118.1	129.5	91	
10	04-29-20	1	South End Fault Zone Area	1596	8.6	117.9	129.5	91	
11	04-29-20	3	Middle, East Side Fault Zone Area	1596	11.1	115.5	122.0	95	
12	04-29-20	1	South End Fault Zone Area	1600	9.4	119.5	129.5	92	
13	04-29-20	1	Middle, East Side Fault Zone Area	1599	9.3	118.7	129.5	92	
14	04-29-20	1	Northeast Side Fault Zone	1598	9.2	116.6	129.5	90	
15	04-29-20	1	Southwest Side of Town Center Drive	1600	8.2	116.0	129.5	90	
16	04-29-20	1	Southeast Side of Town Center Drive	1600	9.3	118.4	129.5	91	
17	04-30-20	1	Middle, South Side of Town Center Drive	1602	10.7	118.3	129.5	91	
18	04-30-20	1	Middle, North Side of Town Center Drive	1603	10.6	117.5	129.5	91	
19	04-30-20	1	Middle, North End Fault Zone Area	1601	9.9	116.7	129.5	90	
20	04-30-20	3	Middle, North End Fault Zone Area	1603	13.7	113.6	122.0	93	
21	04-30-20	1	Middle, West End Fault Zone Area	1601	11.3	116.7	129.5	90	
22	04-30-20	1	Middle, West End Fault Zone Area	1601	10.7	119.2	129.5	92	
23	04-30-20	1	Southeast Side of Retail Store Pad	1591	10.3	109.2	122.0	90	
24	04-30-20	1	Northwest Corner of Convenience Store	1592	12.9	109.3	122.0	90	
25	05-01-20	3	West of Town Center Drive, South End	1598	12.6	111.3	122.0	91	
26	05-01-20	3	South of Retail Store Pad	1598	11.6	113.6	122.0	93	
27	05-01-20	3	Southwest Side of Retail Store Pad	1597	9.9	115.5	122.0	95	
28	05-01-20	3	West of Town Center Drive, Middle	1598	11.6	115.1	122.0	94	
29	05-01-20	3	West of Town Center Drive, North End	1597	10.8	110.1	122.0	90	
30	05-01-20	3	Middle of Convenience Store Pad	1594	10.8	111.6	122.0	91	
31	05-01-20	3	Northwest Side of Retail Store Pad	1594	12.6	113.6	122.0	93	
32	05-01-20	3	Northwest Side of Retail Store Pad	1595	12.6	112.3	122.0	92	

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TEST	DATE	SOIL TYPE	LOCATION	ELEV.	% MOIST.	DENSITY (pcf)		% REL. COMP.	RETEST
						DRY	MAX		
33	05-01-20	3	South End Fault Zone	1604	10.0	117.9	122.0	97	
34	05-01-20	3	Middle of Fault Zone	1603	11.5	111.6	122.0	91	
35	05-01-20	3	North End Fault Zone	1603	10.4	110.1	122.0	90	
36	05-04-20	3	Southeast Side of Retail Store Pad	1601	12.4	112.7	122.0	92	
37	05-04-20	3	Southwest Side of Retail Store Pad	1599	14.3	112.4	122.0	92	
38	05-04-20	3	Middle, North Side of Convenience Store	1596	14.4	110.9	122.0	91	
39	05-04-20	3	Southeast Side of Fueling Island	1596	10.9	112.4	122.0	92	
40	05-04-20	3	Northeast Side of Fueling Island	1596	11.5	114.5	122.0	94	
41	05-04-20	3	East of RV Fuel Stations	1597	12.2	109.8	122.0	90	
42	05-04-20	3	Southwest Side of Town Center Drive	1603	12.1	116.0	122.0	95	
43	05-04-20	3	Middle, East Side of Town Center Drive	1604	10.3	117.8	122.0	97	
44	05-04-20	3	Middle of Fault Zone	1603	11.6	116.2	122.0	95	
45	05-04-20	3	Northeast Side of Fault Zone	1604	11.3	119.2	122.0	98	
46	05-04-20	3	Northeast Side of Fault Zone	1605	12.8	116.1	122.0	95	
47	05-05-20	3	Southeast Side of Fuel Island	1588	15.3	110.4	122.0	90	
48	05-05-20	3	Middle, North Side of Fuel Island	1587	14.9	111.1	122.0	91	
49	05-05-20	3	Southeast of Retail Store Pad	1603	12.5	118.3	122.0	97	
50	05-05-20	3	Southeast of Retail Store Pad	1604	14.8	116.1	122.0	95	
51	05-05-20	3	East of Retail Store Pad	1603	12.9	115.9	122.0	95	
52	05-05-20	3	East of Retail Store Pad	1604	10.7	120.2	122.0	99	
53	05-05-20	3	Northeast Corner Convenience Store Pad	1602.5	11.7	114.4	122.0	94	
54	05-05-20	3	Northeast Corner Convenience Store Pad	1604	11.6	113.6	122.0	93	
55	05-06-20	3	Southeast of Car Wash	1597	11.1	111.1	122.0	91	
56	05-05-20	3	East of Car Wash	1597	9.0	114.2	122.0	94	
57	05-06-20	3	East of Car Wash around RV Fuel Station	1596	9.0	110.0	122.0	90	
58	05-05-20	3	Northeast of Fuel Island	1596	10.1	112.0	122.0	92	
59	05-06-20	3	North of Fuel Island	1596	9.8	112.1	122.0	92	
60	05-07-20	3	East of Car Wash	1599	10.3	114.3	122.0	94	
61	05-07-20	3	East of Car Wash	1601	13.3	109.8	122.0	90	
62	05-07-20	3	Southeast of Fuel Island	1598	14.1	111.1	122.0	91	
63	05-07-20	3	East of Fuel Island	1597	14.4	109.3	122.0	90	
64	05-07-20	3	North of Fuel Island	1590	10.7	113.4	122.0	93	

ERSC, Soboba Horseshoe Retail Center
Project No. E080-056, June 2020

Appendix B - Summary of Field Density Testing

TEST	DATE	SOIL TYPE	LOCATION	ELEV.	% MOIST.	DENSITY (pcf)		% REL. COMP.	RETEST
						DRY	MAX		
65	05-07-20	3	South of Fuel Island	1590	16.3	110.0	122.0	90	
66	05-07-20	2	South End of Town Center Drive	1605	8.0	119.0	128.0	93	
67	05-07-20	2	Middle East Side of Town Center Drive	1605	9.7	118.7	128.0	93	
68	05-07-20	2	Middle of Fault Zone	1604	10.5	117.7	128.0	92	
69	05-08-20	3	Southwest of Retail Store Pad	1600	12.2	110.6	122.0	91	
70	05-08-20	3	West of Retail Store Pad	1600	13.0	113.2	122.0	93	
71	05-08-20	3	West of Convenience Store	1600	15.0	109.8	122.0	90	
72	05-08-20	3	South of Fuel Island	1594	14.6	104.9	122.0	86	76
73	05-08-20	3	South End of Fuel Island	1592	11.9	112.1	122.0	92	
74	05-08-20	3	South End of Fuel Island	1593	12.0	111.5	122.0	91	
75	05-08-20	2	Northeast Side of Fuel Island	1592	10.2	107.7	122.0	88	78
76	05-08-20	2	Retest of No. 72	1594	14.6	114.4	122.0	94	
77	05-08-20	2	South of Fuel Island	1596	14.6	114.9	122.0	94	
78	05-08-20	3	Retest of No. 75	1592	13.9	111.8	122.0	92	
79	05-08-20	3	South Side Retail Store Pad	1600	11.7	116.5	122.0	95	
80	05-08-20	3	Middle, East Side of Convenience Store	1600	8.3	114.5	122.0	94	
81	05-08-20	2	Middle, North Side Town Center Drive	1600	7.0	119.0	128.0	93	
82	05-08-20	3	Southwest Side Fault Zone	1594	8.6	113.3	122.0	93	
83	05-08-20	2	North Side of Fault Zone	1592	9.6	118.6	128.0	93	
84	05-08-20	3	Northeast Side of Convenience Store	1593	11.6	102.7	122.0	84	87
85	05-08-20	3	East Side of Convenience Store	1592	12.5	110.1	122.0	90	
86	05-08-20	3	Southeast Side of Retail Store Pad	1594	16.0	110.5	122.0	91	
87	05-08-20	3	Retest of No. 84	1596	10.9	113.0	122.0	93	
88	05-11-20	3	East of RV Fueling Area	1601	13.6	102.2	122.0	84	91
89	05-11-20	3	Southeast of Fuel Island	1598	14.0	105.6	122.0	87	92
90	05-11-20	3	Middle, West Side of Fuel Island	1594	12.0	105.5	122.0	86	106
91	05-11-20	3	Retest of No. 88	1601	13.6	107.0	122.0	88	107
92	05-11-20	3	Retest of No. 89	1598	10.5	102.8	122.0	84	105
93	05-11-20	3	Southwest corner of Retail Store Pad	1602	13.3	108.0	122.0	89	101
94	05-11-20	3	South of Retail Store Pad	1602	12.0	105.0	122.0	86	102
95	05-11-20	4	Southeast of Retail Store Pad	1605	14.0	115.0	127.0	91	
96	05-11-20	4	Northeast corner of Retail Store Pad	1606	9.9	115.4	127.0	91	

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TEST	DATE	SOIL TYPE	LOCATION	ELEV.	% MOIST.	DENSITY (pcf)		% REL. COMP.	RETEST
						DRY	MAX		
97	05-11-20	4	South Side of Town Center Drive	1609	11.9	117.1	127.0	92	
98	05-11-20	4	Northeast Side of Town Center Drive	1609	13.6	116.4	127.0	92	
99	05-11-20	4	Middle of Fault Zone	1608	14.0	116.0	127.0	91	
100	05-11-20	4	South Side of Fault Zone	1608	12.0	117.5	127.0	93	
101	05-11-20	3	Retest of No. 93	1602	134.2	105.4	122.0	86	104
102	05-11-20	3	Retest of No. 94	1602	12.4	105.5	122.0	86	103
103	05-12-20	3	Retest of No. 102	1602	11.1	109.8	122.0	90	
104	05-12-20	3	Retest of No. 101	1602	12.2	110.7	122.0	91	
105	05-12-20	3	Retest of No. 92	1598	13.1	109.2	122.0	90	
106	05-12-20	3	Retest of No. 90	1594	10.4	111.7	122.0	92	
107	05-12-20	3	Retest of No. 91	1601	12.5	110.5	122.0	91	
108	05-12-20	3	Southeast Corner Commercial Lot	1588	16.8	92.6	122.0	76	122
109	05-12-20	3	Middle of Commercial Lot	1588	15.4	100.1	122.0	82	123
110	05-12-20	3	Northwest Side of Commercial Lot	1588	12.5	105.0	122.0	86	124
111	05-12-20	4	South of Retail Store Pad	1602	10.3	113.8	127.0	90	
112	05-12-20	4	Southwest of Retail Store Pad	1601	9.1	114.1	127.0	90	
113	05-12-20	4	West of Convenience Store	1602	10.6	114.6	127.0	90	
114	05-12-20	4	Middle east Side of Retail Store Pad	1606	9.6	116.0	127.0	91	
115	05-12-20	4	South End of Town Center Drive	1610	8.7	116.2	127.0	91	
116	05-12-20	4	Middle, East Side of Town Center Drive	1612	8.8	119.9	127.0	94	
117	05-12-20	4	Middle, North Side of Fault Zone	1611	12.0	116.4	127.0	92	
118	05-12-20	4	South of RV Fueling Area	1601	8.6	116.2	127.0	91	
119	05-12-20	4	Southwest of Fuel Island	1599	11.1	115.3	127.0	91	
120	05-12-20	4	Middle, West Side of Fuel Island	1598	8.0	117.1	127.0	92	
121	05-13-20	4	Southwest corner Commercial Pad	1588	9.0	116.8	127.0	92	
122	05-13-20	4	Retest of No. 108	1588	11.0	114.3	127.0	90	
123	05-13-20	4	Retest of No. 109	1588	8.9	119.4	127.0	94	
124	05-13-20	4	Retest of No. 110	1588	11.1	117.2	127.0	92	
125	05-13-20	4	Middle west Side of Commercial Pad	1590	9.6	115.2	127.0	91	
126	05-13-20	4	Middle south Side of Commercial Pad	1589	10.9	117.4	127.0	92	
127	05-13-20	4	Northeast Side Commercial Pad	1589	7.4	114.8	127.0	90	
128	05-13-20	4	Southwest of Retail Store Pad	1603	10.2	115.7	127.0	91	

ERSC, Soboba Horseshoe Retail Center
Project No. E080-056, June 2020

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TEST	DATE	SOIL TYPE	LOCATION	ELEV.	% MOIST.	DENSITY (pcf)		% REL. COMP.	RETEST
						DRY	MAX		
129	05-13-20	4	West of Retail Store Pad	1603	10.4	117.0	127.0	92	
130	05-13-20	4	Middle, West Side of Convenience Store	1604	9.6	116.4	127.0	92	
131	05-14-20	4	South Side Town Center Drive	1611	10.0	122.0	127.0	96	
132	05-14-20	4	Middle, North Side Town Center Drive	1611	8.2	114.1	127.0	90	
133	05-14-20	4	East Side Convenience Store	1609	11.1	115.3	127.0	91	
134	05-14-20	4	South Side of Retail Store Pad	1609	8.1	117.3	127.0	92	
135	05-14-20	4	South Side Fault Zone	1611	8.6	115.9	127.0	91	
136	05-14-20	4	Middle, West Side of Fault Zone	1611	10.2	119.8	127.0	94	
137	05-14-20	4	South Side Access Road	1592	7.7	115.8	127.0	91	
138	05-14-20	4	North Side Access Road	1592	7.6	114.4	127.0	90	
139	05-14-20	4	North Side Commercial Pad	1592	8.5	115.4	127.0	91	
140	05-14-20	4	Middle Commercial Pad	1592	9.7	116.9	127.0	92	
141	05-14-20	4	Southeast Side Commercial Pad	1592	8.9	114.7	127.0	90	
142	05-15-20	4	North Side between Fuel Island and Commercial Pad	1592	8.5	114.1	127.0	90	
143	05-15-20	4	South Side between Fuel Island and Commercial Pad	1592	8.9	119.1	127.0	94	
144	05-15-20	4	North End Fuel Island, East Side	1603	10.8	116.5	127.0	92	
145	05-15-20	4	West Side Retail Store Pad	1605	7.7	117.8	127.0	93	
146	05-15-20	4	South of Retail Store Pad	1606	9.8	114.3	127.0	90	
147	05-15-20	4	Southeast of Retail Store Pad	1611	9.8	115.5	127.0	91	
148	05-15-20	4	East of Retail Store Pad	1612	7.3	115.4	127.0	91	
149	05-15-20	4	Northeast Side of Town Center Drive	1613	10.0	113.7	127.0	90	
150	05-15-20	4	Middle, South End of Town Center Drive	1612	8.3	114.0	127.0	90	
151	05-15-20	4	Southwest Side of Commercial Pad	1594	9.2	117.8	127.0	93	
152	05-15-20	4	Access Road, West of Commercial Pad	1594.5	7.6	117.2	127.0	92	
153	05-15-20	4	Middle, North End Commercial Pad	1594.5	8.3	113.8	127.0	90	
154	05-15-20	4	Southeast Side of Commercial Pad	1594	11.4	116.5	127.0	92	
155	05-18-20	4	Southwest of Retail Store Pad	1605	7.2	115.5	127.0	91	
156	05-18-20	4	Northwest of Retail Store Pad	1605	7.9	114.8	127.0	90	
157	05-18-20	3	Middle of Commercial Pad	1596	8.7	111.2	122.0	91	
158	05-18-20	3	Northwest Side of Commercial Pad	1596	7.6	113.0	122.0	93	
159	05-18-20	3	Southwest of Commercial Pad	1596	8.2	109.8	122.0	90	
160	05-18-20	3	Northeast Side of Commercial Pad	1596	7.0	113.0	122.0	93	

ERSC, Soboba Horseshoe Retail Center
Project No. E080-056, June 2020

Appendix B - Summary of Field Density Testing

TEST	DATE	SOIL TYPE	LOCATION	ELEV.	% MOIST.	DENSITY (pcf)		% REL. COMP.	RETEST
						DRY	MAX		
161	05-18-20	3	Southeast Side of Commercial Pad	1596	15.2	111.7	122.0	92	
162	05-18-20	3	Northwest of Carwash, in Access Road	1594	8.6	103.4	122.0	85	171
163	05-18-20	3	West of Carwash, in Access Road.	1594	10.7	105.0	122.0	86	170
164	05-18-20	3	Middle of Carwash	1590	9.0	114.0	122.0	93	
165	05-19-20	4	South Side Fault Zone	1616	8.4	117.6	127.0	93	
166	05-19-20	4	Middle West, West Side Town Center Drive	1614.5	8.5	114.1	127.0	90	
167	05-19-20	4	Northeast of Convenience Store	1612	9.3	114.0	127.0	90	
168	05-19-20	4	Middle, North Side Fault Zone	1613	9.0	113.8	127.0	90	
169	05-19-20	3	Southwest Side of Carwash	1594	12.3	110.9	122.0	91	
170	05-19-20	3	Retest of No. 163	1594	9.5	109.8	122.0	90	
171	05-19-20	3	Retest of No. 162	1592	7.1	109.8	122.0	90	
172	05-19-20	4	Southwest Side of Fuel Island	1598	9.3	120.0	127.0	94	
173	05-19-20	4	Northwest of Fuel Island	1599	7.3	115.8	127.0	91	
174	05-19-20	4	Northwest Side of Commercial Pad	1598	8.8	117.6	127.0	93	
175	05-19-20	4	Access Road, West of Commercial Pad	1598	9.8	116.6	127.0	92	
176	05-19-20	2	Northeast Side of Carwash Pad	1591	7.6	118.4	128.0	93	
177	05-19-20	2	Southwest Side of Carwash Pad	1592	5.2	118.8	128.0	93	
178	05-19-20	2	Southwest Side of Carwash	1596	5.8	122.0	128.0	95	
179	05-19-20	2	West of Carwash	1597	6.2	120.3	128.0	94	
180	05-19-20	2	Northeast Side of Carwash	1595	5.5	122.0	128.0	95	
181	05-19-20	4	West of Convenience Store	1607	7.8	114.1	127.0	90	
182	05-19-20	4	Southwest of Retail Store Pad	1607	7.4	115.1	127.0	91	
183	05-19-20	4	Southwest Corner Convenience Store Pad	1609	8.6	115.5	127.0	91	
184	05-19-20	4	South of Retail Store Pad	1609	7.3	114.9	127.0	90	
185	05-20-20	3	Southeast of Carwash	1594	8.4	114.6	122.0	94	
186	05-20-20	3	Northeast of Carwash	1593	9.5	109.7	122.0	90	
187	05-20-20	2	Southwest Side of Carwash	1596	8.5	117.6	128.0	92	
188	05-20-20	2	Northwest of Carwash	1596	8.7	119.6	128.0	93	
189	05-20-20	2	Northeast Side of Carwash	1594	10.4	117.6	128.0	92	
190	05-21-20	1	Middle of Carwash	1596	7.8	121.1	129.5	94	
191	05-21-20	1	Middle, East of Carwash	1596.5	7.5	116.4	129.5	90	
192	05-21-20	1	Northwest Side of Carwash	1596	5.4	121.7	129.5	94	

Appendix B - Summary of Field Density Testing

TEST	DATE	SOIL TYPE	LOCATION	ELEV.	% MOIST.	DENSITY (pcf)		% REL. COMP.	RETEST
						DRY	MAX		
193	05-21-20	4	Middle, West Side of Fuel Island	1601	8.0	114.2	127.0	90	
194	05-21-20	4	Northwest Side of Fuel Island	1601	7.7	116.2	127.0	91	
195	05-21-20	4	Middle, North Side of Commercial Pad	1600	8.4	116.0	127.0	91	
196	05-21-20	4	Southwest Side of Commercial Pad	1600	9.1	114.4	127.0	90	
197	05-21-20	1	South of Carwash	1598	7.8	121.8	129.5	94	
198	05-21-20	1	Middle, West Side of Carwash	1598	7.5	122.3	129.5	94	
199	05-21-20	1	North of RV Fuel station	1598	8.6	117.8	129.5	91	
200	05-21-20	1	Northwest of Carwash	1597	8.8	119.4	128.5	93	
201	05-22-20	4	Middle of Fuel Island	1603	7.8	114.4	127.0	90	
202	05-22-20	4	Middle, West of Commercial Pad	1602	9.1	120.7	127.0	95	
203	05-22-20	4	Between Commercial Pad and Fuel Island	1602	6.9	116.3	127.0	92	
204	05-22-20	4	Northwest Side of Commercial Pad	1601	9.8	114.1	127.0	90	
205	05-22-20	4	Middle, South Side Commercial Pad	1602	11.1	114.2	127.0	90	
206	05-22-20	1	Northwest Side of Carwash	1598	8.6	121.4	129.5	94	
207	05-22-20	1	Southwest of Carwash	1599	7.0	120.4	129.5	93	
208	05-22-20	1	Middle of Carwash	1599	6.0	121.4	129.5	94	
209	05-22-20	1	Northeast of Carwash	1599	7.3	118.2	129.5	91	
210	05-26-20	4	Middle, North Side Fault Zone	1614	10.0	118.6	127.0	93	
211	05-26-20	4	Northeast Side Fault Zone	1616	8.6	115.7	127.0	91	
212	05-26-20	4	South Side of Fault Zone	1616	7.9	118.2	127.0	93	
213	05-27-20	1	Roadway East of Carwash	1610	7.6	118.5	129.5	92	
214	05-27-20	1	Roadway Southeast of Carwash	1605	8.0	117.5	129.5	91	
215	05-27-20	1	Roadway Southeast of Carwash	1607	9.3	120.2	129.5	93	
216	05-27-20	1	Roadway Southwest of Carwash	1602	10.3	116.0	129.5	90	
217	05-27-20	1	Roadway Southeast of Carwash	1612	9.8	106.1	129.5	82	218
218	05-27-20	1	Retest of No. 217	1612	8.1	116.3	129.5	90	
219	05-27-20	4	Southeast of Fuel Island	1610.5	7.5	122.2	127.0	96	
220	05-27-20	4	Northeast of Fuel Island	1610.5	11.0	116.0	127.0	91	
221	05-27-20	4	North End of Convenience Store	1611.5	8.3	113.8	127.0	90	
222	05-27-20	4	South End of Retail Store Pad	1611.5	8.4	114.9	127.0	90	
223	05-28-20	4	Northwest Corner Fuel Island	1606	9.5	115.5	127.0	91	
224	05-28-20	4	Middle, East Side of Commercial Pad	1604	8.4	115.1	127.0	91	

Appendix B - Summary of Field Density Testing

TEST	DATE	SOIL TYPE	LOCATION	ELEV.	% MOIST.	DENSITY (pcf)		% REL. COMP.	RETEST
						DRY	MAX		
225	05-28-20	4	Northeast of Carwash	1605	9.3	113.7	127.0	90	
226	05-28-20	4	North of Carwash	1603	8.1	116.3	127.0	92	
227	05-28-20	4	Middle, West Side of Commercial Pad	1605	9.1	114.4	127.0	90	
228	05-28-20	4	Northwest of Carwash	1600	7.2	116.7	127.0	92	
229	05-29-20	4	Northwest of Convenience Store	1612.5	8.4	116.4	127.0	92	
230	05-29-20	4	Southeast of Convenience Store	1612.5	8.5	115.6	127.0	91	
231	05-29-20	4	Northwest of Retail Store Pad	1612.5	6.0	119.6	127.0	94	
232	05-29-20	4	Middle, South Side of Retail Store Pad	1612.5	5.8	116.6	127.0	92	
233	05-29-20	4	Northwest of Carwash	1601	9.0	113.8	127.0	90	
234	05-29-20	4	Northwest Side of Commercial Pad	1603	8.1	117.8	127.0	93	
235	05-29-20	4	Middle, East Side of Commercial Pad	1604	9.3	116.3	127.0	92	
236	05-29-20	4	Northeast Side of Fuel Island	1607.5	7.7	115.1	127.0	91	
237	06-01-20	4	Middle, North Side of Commercial Pad	1605	8.1	115.7	127.0	91	
238	06-01-20	4	North End of Fuel Island	1605.5	7.9	110.5	127.0	87	240
239	06-01-20	4	Northwest Side of Fuel Island	1608	8.1	114.1	127.0	90	
240	06-01-20	4	Retest of No. 238	1605.5	6.2	115.2	127.0	91	
241	06-01-20	4	Southeast Side of Commercial Pad	1607.5	8.6	113.8	127.0	90	
242	06-02-20	4	Middle north/west Side Commercial Pad	1607	9.3	119.2	127.0	94	
243	06-02-20	4	Middle of Fuel Island	1608	7.3	116.0	127.0	91	
244	06-02-20	4	Middle of Fuel Island	1609.5	7.5	114.9	127.0	90	
245	06-02-20	4	Middle, West Side Commercial Pad	1606.5	9.2	115.5	127.0	91	
246	06-02-20	4	Middle, West Side Commercial Pad	1608	8.1	116.2	127.0	91	
247	06-02-20	4	South of Fuel Island	1607	7.6	115.7	127.0	91	
248	06-02-20	4	South of Fuel Island	1609	9.7	117.2	127.0	92	
249	06-02-20	4	Northwest Corner of Commercial Pad	1607	8.8	116.7	127.0	92	
250	06-02-20	4	Middle, North Side Commercial Pad	1605	9.1	120.6	127.0	95	
251	06-03-20	4	Southeast Corner Fuel Island	1608	8.0	117.1	127.0	92	
252	06-03-20	4	Northwest of RV Fuel Station	1605	7.9	115.6	127.0	91	
253	06-03-20	4	Middle Carwash Pad	1601	8.0	115.2	127.0	91	
254	06-03-20	4	Northwest Side of Commercial Pad	1604	9.8	118.3	127.0	93	
255	06-03-20	4	Southwest Corner of Commercial Pad	1605	7.6	118.4	127.0	93	
256	06-03-20	4	Northwest of Carwash	1600	6.0	114.1	127.0	90	

ERSC, Soboba Horseshoe Retail Center
Project No. E080-056, June 2020

Appendix B - Summary of Field Density Testing

TEST	DATE	SOIL TYPE	LOCATION	ELEV.	% MOIST.	DENSITY (pcf)		% REL. COMP.	RETEST
						DRY	MAX		
257	06-03-20	4	West of Carwash	1599	8.4	115.7	127.0	91	
258	06-04-20	4	Northwest of Carwash	1605	10.5	109.6	127.0	86	262
259	06-04-20	4	West of Carwash	1603	8.3	113.0	127.0	89	263
260	06-04-20	4	North of Carwash	1608	8.9	118.2	127.0	93	
261	06-04-20	4	Northeast Corner of Carwash	1606	9.4	113.9	127.0	90	
262	06-04-20	4	Retest of No. 258	1603	9.6	114.1	127.0	90	
263	06-04-20	4	Retest of No. 259	1608	9.4	114.4	127.0	90	
264	06-04-20	4	Southwest Side of Fuel Island	1610.5	8.3	113.7	127.0	90	
265	06-04-20	4	North of RV Fuel station	1609	9.1	108.6	127.0	86	267
266	06-04-20	4	Northeast Corner of Carwash	1606	9.2	109.4	127.0	86	268
267	06-05-20	4	Retest of No. 265	1609	8.7	114.3	127.0	90	
268	06-05-20	4	Retest of No. 266	1606	8.0	115.9	127.0	91	
269	06-05-20	4	Southwest Side of Commercial Pad	1608	9.2	115.2	127.0	91	
270	06-05-20	4	Northwest Side of Commercial Pad	1608	8.3	117.7	127.0	93	
271	06-08-20	4	Southeast of Carwash	1606	8.9	120.0	127.0	94	
272	06-08-20	4	South of Carwash	1603	9.2	110.2	127.0	87	276
273	06-08-20	4	South of Carwash	1605	7.5	114.5	127.0	90	
274	06-08-20	4	Middle West Side of Carwash	1604	9.0	114.7	127.0	90	
275	06-08-20	4	Northeast of Carwash	1605	10.0	114.8	127.0	90	
276	06-09-20	4	Retest of Test No. 272	1603	9.3	113.9	127.0	90	
277	06-09-20	4	Southeast of Fuel Island	1610	8.6	117.1	127.0	92	
278	06-09-20	4	Southwest Side of Fuel Island	1611	8.2	117.3	127.0	92	
279	06-09-20	4	Northeast Side of Fuel Island	1611	8.1	115.2	127.0	91	
280	06-09-20	4	Southeast of Carwash	1607.5	7.6	114.1	127.0	90	
281	06-09-20	4	South of Carwash	1606.6	7.4	114.6	127.0	90	
282	06-09-20	4	Northeast Side of Carwash	1607.5	7.9	117.5	127.0	93	
283	06-09-20	4	Northeast of Carwash	1608.5	9.4	115.0	127.0	91	
284	06-09-20	4	Northwest of Carwash	1607	9.0	116.1	127.0	91	
285	06-10-20	4	Middle, Convenience Store Pad	1613	8.7	113.8	127.0	90	
286	06-10-20	4	Northern Part, Convenience Store Pad	1613	10.0	113.8	127.0	90	
287	06-10-20	4	Northwest Corner of Carwash	1609	8.3	115.8	127.0	91	
288	06-10-20	4	Middle East of Carwash	1608.5	8.7	114.7	127.0	90	

Appendix B - Summary of Field Density Testing

TEST	DATE	SOIL TYPE	LOCATION	ELEV.	% MOIST.	DENSITY (pcf)		% REL. COMP.	RETEST
						DRY	MAX		
289	06-10-20	4	Southeast of Carwash	1608	9.5	114.0	127.0	90	
290	06-11-20	4	Middle, North of Convenience Store Pad	1613.8	8.2	118.7	127.0	93	
291	06-11-20	4	Middle, South of Convenience Store Pad	1613.8	8	117.9	127.0	93	
292	06-15-20	4	Middle, South Fuel Island	1613	7.4	111.1	127.0	87	293
293	06-15-20	4	Retest of No. 292	1613	10.1	118.2	127.0	93	
294	06-15-20	4	Middle of Fuel Island	1613	10.3	118.3	127.0	93	
295	06-15-20	4	Middle, North Fuel Island	1613	8.0	110.7	127.0	87	296
296	06-16-20	4	Retest of No. 295	1613	5.3	120.6	127.0	95	
297	06-16-20	4	Future Pad, Northeast Area	1608.5	6.3	128.8	127.0	99+	
298	06-16-20	4	Future Pad, Middle South Area	1608.5	7.5	123.0	127.0	97	
299	06-17-20	4	North, Middle, Carwash	1611	9.2	116.3	127.0	92	
300	06-17-20	4	Southwest Carwash	1611	7.5	113.7	127.0	90	

***APPENDIX C –
Laboratory Testing***

APPENDIX C

LABORATORY TESTING

Representative soil samples were obtained during site grading and returned to our laboratory for additional evaluation and testing. Descriptions of the tests performed are provided below.

Maximum Density-Optimum Moisture: Four soil samples were selected for maximum density testing in accordance with ASTM D1557. The maximum density is compared to the in-situ soil density to calculate the relative compaction of the soil. The results of this testing are presented in the following table.

Soil Type	Soil Description	Maximum Dry Density (lbs/ft ³)	Optimum Moisture Content (%)
1	Silty sand, brown	129.5	8.2
2	Import Site 1, Silty sand, brown	128.0	8.9
3	Silty sand, very fine, brown	122.0	12.0
4	Import Site 2, Silty clayey sand, brown	127.0	10.0

Sieve Analysis: Four near-surface building area samples were selected for sieve analysis testing in accordance with ASTM D6913. These tests provide information for classifying the soil in accordance with the Unified Classification System. The results of this testing are shown on Figure C-3.

Plastic Index: Four near-surface building area samples were selected for plastic index testing in accordance with ASTM D4318. These tests provide information regarding soil plasticity and are also used for developing classifications for the soil in accordance with the Unified Classification System. The results are shown on Figure No. C-3.

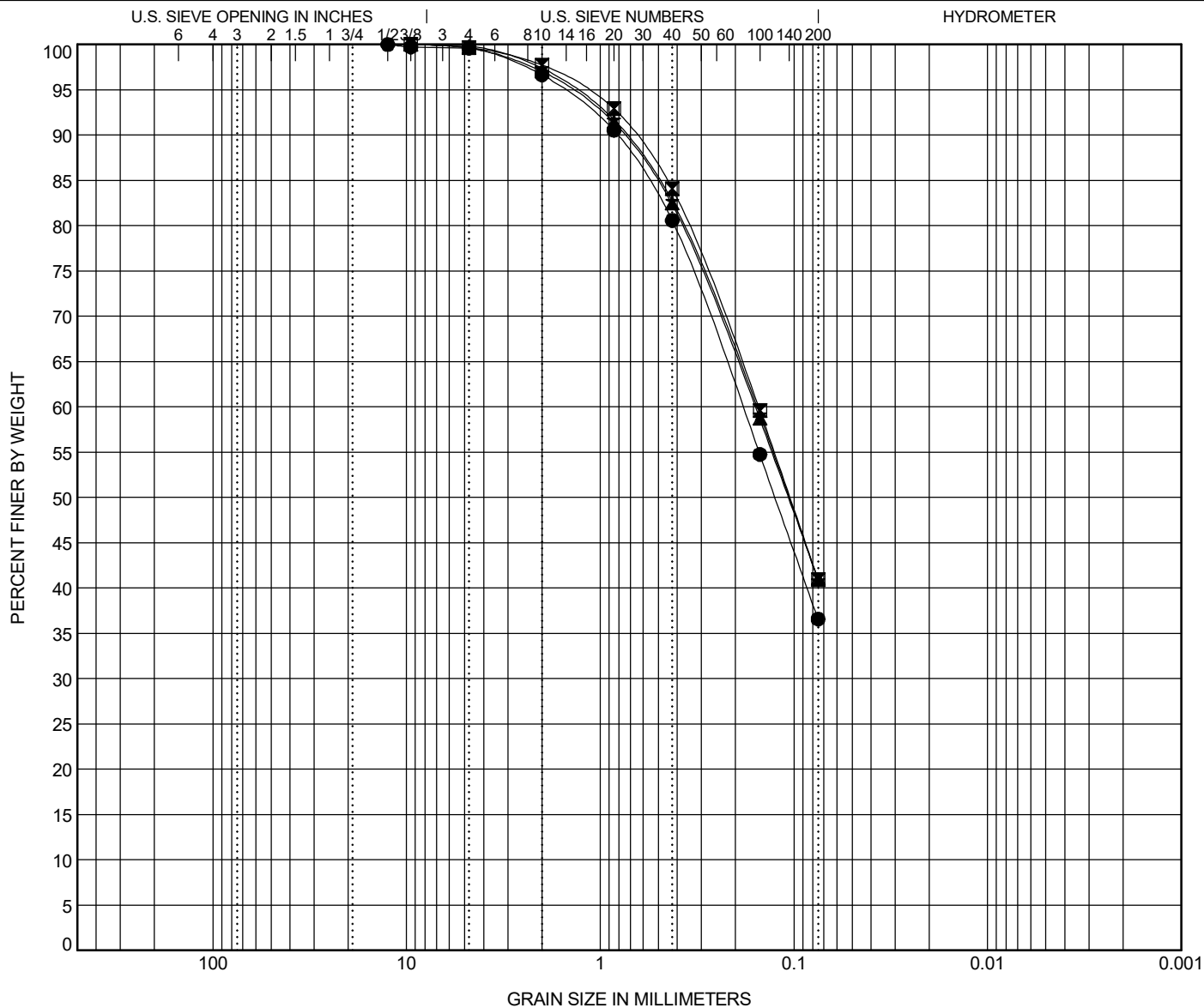
Analytical Testing: Four samples were selected to evaluate the concentration of soluble sulfates and chlorides, pH level, and resistivity of and within the near-surface building pad soils. The following table presents the results of this testing.

Sample Location	Water-Soluble Sulfates (%)	Chlorides (ppm)	Minimum Resistivity (ohm-cm)	pH
Commercial/ retail pad	0.011	210	1,400	7.2
Car wash pad	0.001	300	1,500	7.1
Fuel island pad	0.015	240	2,000	7.2
Future pad	0.019	210	800	7.3

Expansion Index: Four samples were selected for expansion index in accordance with ASTM D4829. This test provides information regarding the expansive characteristics of soil under standardized test conditions. The following table presents the results of this testing.

Sample Location	Initial Dry Density (pcf)	Initial Moisture Content (%)	Expansion Index	Expansion Class
Commercial/ retail pad	112.4	8.5	7	Very Low
Car wash pad	112.6	8.5	8	Very Low
Fuel island pad	114.1	8.8	8	Very Low
Future pad	114.4	8.0	9	Very Low

IFE SIEVE ANALYSIS - GINT STD US LAB.GDT - 7/21/20 17:10 - P:\E080\IE080-056 GRADING HORSESHOE\GINT.GPJ



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification					LL	PL	PI	Cc	Cu
● 1	1.0	SILTY, CLAYEY SAND(SC-SM)					25	19	6		
▣ 2	1.0	SILTY, CLAYEY SAND(SC-SM)					27	20	7		
▲ 3	1.0	SILTY SAND(SM)					26	22	4		
★ 4	1.0	SILTY, CLAYEY SAND(SC-SM)					25	20	5		
BOREHOLE	DEPTH	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● 1	1.0	12.5	0.185			0.4	63.0	36.6			
▣ 2	1.0	9.5	0.152			0.3	58.7	41.0			
▲ 3	1.0	9.5	0.159			0.4	58.6	41.0			
★ 4	1.0	9.5	0.156			0.1	59.0	40.9			

GRADATION CURVES (ASTM D422, ASTM D4318)



Inland Foundation Engineering, Inc.

FIGURE NO. C-3

CLIENT Engineering Resources of Southern California PROJECT NAME Soboba Horseshoe Property

PROJECT NUMBER E080-056 PROJECT LOCATION Lake Park Drive

San Jacinto, CA