Initial Study / Mitigated Negative Declaration

For

Rancho Polo Equestrian Center

Plot Plan 220034

Lead Agency:

County of Riverside
4080 Lemon Street, 12th Floor
Riverside, CA 92502
Point of Contact: Scott Nespor, Urban and Regional Planner III
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Project Applicant:

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Prepared by:

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August 2023

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Appendices

Section 1
Project Description

This section is based on the following items, which is included as **Appendix A** to this MND:

A-1 Plans, Continental Development Group, December 15, 2022

A-2 Landscape Plans, Summers/Murphy & Partners, July 25, 2022

1 Project Information

Project Title: Rancho Polo Equestrian Center Project

Document Type: Initial Study / Mitigated Negative Declaration (IS/MND) for new guest and worker overnight accommodations (the Project)

Plot Plan: 220034

Project Location: 82800 58th Avenue Suite 1, Thermal CA 92274 (Project Site or Site)

Lead Agency: County of Riverside
4080 Lemon Street, 12th Floor
Riverside, CA 92502
Point of Contact: Scott Nespor, Urban and Regional Planner III
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2 Regulatory Setting

California Environmental Quality Act (CEQA) Guidelines, Article 6 (Negative Declaration Process):

15070. DECISION TO PREPARE A NEGATIVE OR MITIGATED NEGATIVE DECLARATION

A public agency shall prepare or have prepared a proposed negative declaration or mitigated negative declaration for a project subject to CEQA when:

> *(a) The initial study shows that there is no substantial evidence, in light of the whole record before the agency, that the project may have a significant effect on the environment, or*

(b) The initial study identifies potentially significant effects, but:

(1) Revisions in the project plans or proposals made by, or agreed to by the applicant before a proposed mitigated negative declaration and initial study are released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur, and

(2) There is no substantial evidence, in light of the whole record before the agency, that the project as revised may have a significant effect on the environment.

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A Negative Declaration circulated for public review shall include:

(a) A brief description of the project, including a commonly used name for the project, if any;

(b) The location of the project, preferably shown on a map, and the name of the project proponent;

(c) A proposed finding that the project will not have a significant effect on the environment;

(d) An attached copy of the Initial Study documenting reasons to support the finding; and

(e) Mitigation measures, if any, included in the project to avoid potentially significant effects.

3 Environmental Setting

3.1 Project Location

The Project Site is located on the north side of Avenue 58, between Oasis Street to the west and Jackson Street to the east, in the unincorporated community Thermal in the Eastern Coachella Valley Area Plan in the County of Riverside.[1]

The Site is 0.5-mile (2,640 feet) east of the City of La Quinta (with boundary at Avenue 58 and Monroe Street).

The Site is 1 mile southwest of the City of Coachella (with boundary at Airport Boulevard and Van Buren Street).

3.2 Surrounding Land Uses

North across Csilla Street (an unimproved dirt road) is an agricultural field with a land use designation as Agriculture and zoned A-1-20.

South across Avenue 58 is an agricultural field with a land use designation as Medium Density

[1] Riverside County, General Plan, Chapter 3: Land Use Element: https://planning.rctlma.org/General-Plan-Zoning/General-Plan

Residential and Agriculture and zoned R-5 and A-1-10.

West across Oasis Street (an unimproved dirt road) is an agricultural field with a land use designation as Local Importance Agriculture and zoned A-1-20.

East across Jackson Street is an agricultural field with a land use designation as Local Importance Agriculture and zoned A-1-10.

The nearest residential use:

- Single-family home (mobile home) located at 82400 Avenue 58, 320 feet west of the Site's southwest corner boundary.
- Single-family home (mobile home) located at 83254 Avenue 58, 1,250 feet east of the Site's southeast corner boundary.
- Single-family home (mobile home) located at 57310 Jackson Street, 550 feet east of the Site's northeast corner boundary.

The nearest schools:

- Westside Elementary School located at 82225 Airport Boulevard, 3,700 feet northwest of the Site's northwest corner boundary.
- Coachella Valley High School located at 83800 Airport Boulevard, 1 mile northeast of the Site's northeast corner boundary.

3.3 Regional and Local Access

Regional access is provided by:

- SR-86 Freeway, 4.9 miles northeast of the Site

Local access is provided by:[2]

- SR-111 / Grapefruit Boulevard (classified as Arterial Street), 4.5 miles northeast of the Site
- Avenue 58 (classified as Major Street), adjacent south of the Site
- Jackson Street (classified as Arterial), adjacent east of the Site
- Oasis Street (classified as Collector), adjacent west of the Site
- Csilla Street (classified as Collector), adjacent north of the Site

[2] Riverside County, General Plan, Eastern Coachella Valley Area Plan Figure 8 Circulation: ihttps://planning.rctlma.org/Portals/14/genplan/GPA%202022/Compiled%20ECVAP_4-2022%20rev.pdf?ver=2022-06-27-145207-383

3.4 Bicycle Facilities

Avenue 58 and Jackson Street are designated Class II Bike Paths and Design Guidelines Trails. A Class II bikeway are provided for within the paved area of roadways. [3]

3.5 Pedestrian Facilities

There is a dirt sidewalk along Avenue 58.

3.6 Public Transit

The Site is in a rural area and there is no nearby public transit. SunLine Transit Agency provides Route 7 in the City of La Quinta and Route 8 in the Coachella area.[4] Route 7 stops at Washington Street and Calle Tampico, 5.3 miles northwest of the Site. Route 8 stops at Airport Boulevard and Shady Lane, 2.6 miles northeast of the Site.

3.7 Planning and Zoning

Table 1-1, Project Site, lists the Site's APNs, zoning, and General Plan land use designation:

- W-2-10 (Zoning Controlled Development Areas – 10 Acre Minimum). Guest ranches are permitted upon the approval of a Plot Plan.[5]

- The General Plan designates the Project Site for "Rural Residential" land uses. This land use designation allows for single-family residences with a minimum lot size of 5 acres, and allows limited animal keeping and agricultural uses, recreational uses, compatible resource development (not including the commercial extraction of mineral resources) and associated uses and governmental uses.[6]

- The gross land area is 78.01 acres.[7]

Table 1-1
Project Site

Address	APN	Size (acre)	Zone	Land Use
82800 Avenue 58	764-130-027	38.42	W-2-10	Rural Residential
	764-130-030	37.63		
Riverside County, Map My County: https://gis1.countyofriverside.us/Html5Viewer/index.html?viewer=MMC_Public				

3 Riverside County, General Plan, Eastern Coachella Valley Area Plan, Figure 9 Trails and Bikeways System: ihttps://planning.rctlma.org/Portals/14/genplan/GPA%202022/Compiled%20ECVAP_4-2022%20rev.pdf?ver=2022-06-27-145207-383

4 SunLine Transit Agency: https://sunline.org/sites/default/files/Inside_Front_System%20Map.pdf

5 Riverside County Zoning Ordinance No. 348.4978, Article XV, Section 15.1.C.1: https://planning.rctlma.org/Portals/14/Ord348Update/348.4978/Ord.%20348%20Clean%20Version.pdf?ver=2022-03-02-162154-373

6 Riverside County, General Plan, Chapter 3: Land Use Element Table LU-4: https://planning.rctlma.org/Portals/14/Ch03_Land%20Use_FINAL%209-28-21.pdf

7 Plans, Continental Development Group, September 21, 2022.

3.8 Existing Conditions

The Project Site is primarily devoted to serving the equestrian needs of visitors from Riverside County and beyond. The Site is home to the Rancho Polo Equestrian Center, which provides commercial stables and features a diverse inventory of facilities for equestrian training, breeding, and equine boarding. In addition to the site's equestrian focus, Rancho Polo also features significant agricultural uses, including the cultivation and annual harvesting of approximately 300 date palm trees, 50 citrus trees, and 20 avocado trees. Hay fields are also farmed and harvested and provide feed and bedding for horses boarded at Rancho Polo.

Rancho Polo has eight barns, which together accommodate 148 horse stalls. In addition, piped corals and fenced pastures accommodate another 50 horses. These boarding facilities are complemented with several agricultural and equestrian-serving structures and buildings, hay barns, ranch offices, equipment and tool sheds, and observation decks, along with various other improvements, equipment and tanks required to operate Rancho Polo's equestrian and agricultural activities.

The Site's development area is currently improved with 8 prefabricated mobile homes that are used by workers, the property's managers and owner, and their respective family members.[8] One of these mobile homes shares its interior space with an administrative office area. The Site also contains an in-ground swimming pool.

See **Table 1-2, Existing Uses**, for the current uses and structures at the Site.

Table 1-2
Existing Uses

APN	Uses
APN 764-130-027 (west site)	Pastures
	Agricultural Water Pond
	Barn H - I (18 stalls plus tack rooms) Barn G (20 Stalls plus tack rooms plus tack rooms, bathrooms and laundry)
	Generators and Water Well Water Tank & Pressurized Water Tank and Pond 2 Fuel Tanks
	20 Residential pads (20 RV spaces) Pool 8 Residences (Houses) Ranch Office (shares space with a worker dwelling)
	Horse Turn Outs Horse Paddocks West portion of 2-mile Horse Trail around Property ½ Mile Horse Track Arena Stick and Ball Field Agricultural Huts

[8] 7 of these worker dwelling units (Migrant Agricultural Worker Mobile Home Park) are located on the southwest portion of the property within the proposed development area while the 8th worker unit (Grounds Keeper Unit) is located on the north-central portion of the property adjacent to the Polo Field.

	Agricultural and Equestrian Observation Deck and Hut Agricultural Office Hay Fields Date Palm Trees Citrus and Avocado Trees
APN 764-130-030 (east site)	Workshop/Maintenance
	Hay Storage Barn Maintenance Yard
	Groundskeeper Residence
	¾ Mile Track Polo Field
	Barns A-E (12 stalls each and tack rooms and bathrooms, laundry rooms, feed rooms))
	Barn F (40 stalls and tack rooms and bathrooms, laundry rooms, feed rooms)
	Horse Turn Outs Horse Paddocks East portion of 2-mile Horse Trail around Property 2 Arenas 3 Equestrian Observation Decks and Reception Equestrian Office Hay Fields Date Palm Trees
Plans, Continental Development Group, December 15, 2022.	

See **Tables 1-3A and 1-3B** for general areas at the Site, existing and proposed, respectively.

Table 1-3A
Existing Site Areas

Use	Size
Gross Building	64,345 sf
Hardscape Area	133,498 sf
Landscape Area	3,191,156.6 sf
Misc (Trash, etc.) Area	6,197 sf
Total	**3,439,005.6 sf**
Plans, Continental Development Group, December 15, 2022.	

Table 1-3B
Proposed Site Areas

Use	Size
Gross Building	127,230 sf
Hardscape Area	163,905 sf
Landscape Area	3,505,206.6 sf
Misc (Trash, etc.) Area	75,465 sf
Total	**3,911,284.6 sf**
Plans, Continental Development Group, December 15, 2022.	

4 Project Description

4.1 Project Overview

The proposed development area is within the southwest portion of the Site and is approximately 358,000 square feet (8.22 acres).

Rancho Polo has submitted a Plot Plan for the County's review that proposes new and modified land uses that will greatly enhance the quality of its guest services and agricultural operations. If approved, Plot Plan No. 220034 will enable Rancho Polo to provide a combination of guest and worker overnight accommodations, with stays ranging between one night to six months or more. Unlike the current Conditional Use Permit, which requires that 80% of the approved worker units be used by migrant agricultural workers for not more than 9 months in any 12 month period, Applicant is proposing that: (a) up to 100% of these units could be permanently affixed to the land on customary concrete foundations, (b) the units could be occupied by non-transient workers, as well as by the property managers, property owner, and their respective family members, and (c) the units could be kept in service year-round and would not have to be vacant for any period of time.[9]

These units would be much better quality than what is allowed under the current Conditional Use Permit, as prefabricated mobile homes would be eschewed in favor of permanent structures that are firmly anchored to the ground with customary reinforced concrete foundations.

These residential accommodations will be a vital improvement in the operation of Rancho Polo and will enable Applicant to avoid overbuilding to meet intermittent peaks in demand. During periods of heightened agricultural activity, additional housing is often needed for permanent and migrant workers, as well as for their dependents. During multi-day equestrian events, lodging is needed for event participants and spectators, while horse owners using Ranch Polo's boarding services want the convenience of guest rooms for overnight stays in lieu of having to make roundtrips to Palm Desert or other area townships.

The availability of onsite rooms will not only benefit workers, guests, and ultimately the Applicant, but will also have benefits far beyond the boundaries of Rancho Polo, since each guest using an onsite room will mean one less car traveling on local roads.

See **Table 1-4** for the proposed structures.

Table 1-4
Proposed Structures

Structure	Quantity	Existing Uses	Proposed Uses
W1, W6 - W8	4	Worker Units	Continue as worker housing
F1 - F4	4	Worker Units	Convert to worker/guest units
F5 - F14	10	-	New construction worker/guest units
G1 - G3	3	-	New construction guest rooms/suites
Service/Storage	1	-	New construction accessory use for guests
Gift Shop	1	-	New construction accessory use for guests
Office-reception	1	-	New construction accessory use for guests
Agricultural Huts A1 & A2	2	Worker areas	Continue as worker break areas

[9] In contrast, under the terms of Conditional Use Permit No. 190066, Revision 1, Applicant is only allowed to establish and maintain a 20-space Migrant Agricultural Worker Mobilehome Park where: (a) at least 16 of the spaces are reserved for transient seasonal workers, (b) who can stay in each dwelling not more than 9 months out of any 12 month period, and (c) where each dwelling unit is prefabricated and mobile, and not permanently affixed to an in-ground foundation.

Agricultural & Equestrian Observation Deck and Hut	1	Worker Area and Guest Viewing Area	Continue as worker break area and as guest viewing area
Ranch Office	1	Ranch Office	Continue as ranch office
Agricultural Office	1	Agricultural Office	Continue as agricultural office
Agricultural & Equestrian Observation Deck & Reception	1	Agricultural & Equestrian Office	Continue as agricultural & equestrian office
Plans, Continental Development Group, December 15, 2022.			

See **Table 1-5** for the existing and proposed buildings on the Site and uses. As shown:

- 4 existing 1-story worker units (W1, W6 to W8) would remain as worker housing units.
- 4 existing 1-story worker units (F1 to F4) would remain and be converted to worker or guest units.
- 10 new 1-story units (F5 to F14) would be constructed as worker or guest units.
- 3 new 2-story guest units (G1 to G3) would be constructed as guest hospitality units.
- 3 new accessory buildings would be constructed for an office/reception, a gift shop, and service/storage uses.
- 2 existing agricultural huts, 1 Agricultural & Equestrian Observation Deck and Hut, 8 barns, the ranch office, agricultural office, agricultural & equestrian observation deck & reception, maintenance workshop, and tool shed, bathrooms, laundry rooms, would remain.

Table 1-5
Proposed Buildings and Uses

Status	Structure	Use	Floors	Size
Existing to remain	**4 Worker Units (Existing)**			
	W1	Worker Housing	1-story	2,900 sf
	W6			1,800 sf
	W7			1,260 sf
	W8			1,620 sf
			Subtotal Worker Units	**7,580 sf**
Existing to remain	**4 Units (Existing)**			
	F1 (formerly W2)	Worker or Guest Housing (guest housing includes entire 2- or 3-bedroom unit)	1-story	2,300 sf
	F2 (formerly W3)			2,300 sf
	F3 (formerly W4)			2,300 sf
	F4 (formerly W5)			2,400 sf
			Subtotal (Existing) Units	**9,300 sf**
New construction	**10 Units (New)**			
	F5	Worker or Guest Housing (guest housing in each includes up to 4 bedrooms and common area)	1-story	2,560 sf
	F6			2,560 sf
	F7			2,560 sf
	F8			2,560 sf
	F9			2,560 sf
	F10			2,560 sf
	F11			2,560 sf

	F12			2,560 sf
	F13			2,560 sf
	F14			2,560 sf
		Subtotal (New) Units		**25,600 sf**
New construction	**3 Guest Buildings (New)**			
	G1	Guest Rooms + Common Area (guest housing in each building includes up to 8 bedrooms and common area)	2-story	5,120 sf
	G2			5,120 sf
	G3			5,120 sf
		Subtotal Guest (New) Units		**15,360 sf**
New construction	**Accessory Use**			
	-	Service / Storage	1-story	300 sf
		Subtotal Accessory Use		**300 sf**
Existing to remain	**Other Uses**			
	-	Office / Reception (portion of Unit W8/F4)	1-story	780 sf
	-	Gift Shop (garage conversion)		540 sf
	A1	Agricultural Hut		875 sf
	A2	Agricultural Hut		500 sf
	-	Agricultural & Equestrian Observation Deck and Hut		500 sf
	-	Agricultural Office		750 sf
	-	Maintenance Workshop		1,200 sf
	-	Tool Shed		600 sf
	-	Hay Storage Barn, all Horse Barns, all horse paddocks (and respective tack rooms, bathrooms, laundry rooms)		-
		Subtotal Other Uses		**5.745 sf**
		Total		**63,885 sf**
Plans, Continental Development Group, December 15, 2022.				

4.2 Hours of Operation

Rancho Polo is both a working guest ranch and a farm. Due to the horses, livestock, cultivation and harvesting activities, Rancho Polo must operate seven days per week, twenty-four hours per day. The horses and livestock require constant care, feeding, medical attention and supervision. Cultivation and harvesting activities will be undertaken as needed. Generally, equestrian activities, polo games and other events will take place during daytime hours, and although the polo and event field is lighted, only a few evening games and events will take place in the evening. While some activities could extend into other hours, no amenities or scheduled guest events will take place before the hour of 7:00 AM or after 10:00 PM each day.

4.3 Landscaping

Within the development area, there are a number of existing trees including date palms. 6 new proposed trees would be planted, including 4 Australian Willows and 2 Crape Myrtle trees. In

addition, 141 shrubs will be planted.[10]

4.4 Access and Circulation

Existing access to the Site is midblock on 58th Avenue and is provided by a gated vehicle entrance.

Internally, several private roads provide circulation to the various uses:

- Brook Street is a paved private road that continues from the main gate on 58th Avenue and bisects the property in a north-south direction.

- Orchard Lane (also known as A Street) is a paved private road that runs east and west, starting at Brook Street and terminating just before Oasis Street, and provides access to the property's guest and worker accommodations.

- Applicant is proposing to develop two additional conduits for site access and egress, with the first being at the junction of Brook Street with the public ROW at Csilla Avenue, and a second being at the junction of Orchard Street with the public ROW at Oasis Street.

4.5 Vehicle Parking

Adequate vehicle parking will be provided in surface parking spaces and garages for each of the guest and worker accommodations meeting the off-street parking requirements of Riverside County Code Section 17.188. In addition, Applicant will provide a minimum of 100 additional parking spaces for the use of guests attending events held on the property.

4.6 Onsite Workers

In the off season, Rancho Polo employs a staff of approximately 10 to 15 full-time employees for both equestrian and agricultural work activities. During the peak season, Rancho Polo staffing may increase to 16 to 20 full-time employees, with additional contractors being needed on occasion. During the harvest season, the number of part-time employees is projected to increase by an additional three to six part-time employees. Moreover, if the property's boarding accommodations reach full capacity (at just under 200 horses), our staffing will correspondingly increase to about 25 employees.

Significantly, this is only a fraction of the number of workers that will be on the ranch at any given time. During each peak season since 1988, Rancho Polo's onsite workforce is supplemented each day by between 100 to 130 additional workers. This is because our boarders frequently bring their own grooms, trainers, and riders to the site to care for their animals, as well as veterinarians, farriers and variety of other equestrian professionals. Very often, the time spent by these workers at Rancho Polo will span multiple days. Currently, any of these workers who are from out of town must commute to Rancho Polo daily from hotels located in nearby towns.

10 Landscape Plans, Summers/Murphy & Partners, July 25, 2022

4.7 Visitors

During the peak season, boarders can be expected to visit their horses at Rancho Polo every day, and in many instances, 2-3 times per day; and participate in the wide variety of equestrian-related activities that are offered on the property. In addition, many of boarders invite guests to join them at Rancho Polo, while others hire riders to give their horses a professional workout. With a diverse assortment of activities available, during the peak season our boarders and their grooms and workers, often spend several days at a time on the property. However, many of boarders and their grooms and workers, are from out of the Coachella Valley area, and they must make multiple trips back and forth from local hotels.

In addition to guests using the site's boarding services, Rancho Polo receives a substantial number of visitors who come to either participate in, or attend as a spectator, equestrian and other events held on the premises. On average, each event can be expected to draw between 200-300 people to the ranch. Some of these events will span multiple days, and the availability of onsite rooms will save our guests from having to make multiple round trips to the property from a distant hotel room.

4.8 Daily Visitors

Daily visits to Rancho Polo during the peak season have averaged between 215 to 300 people per day.

Equines are labor intensive, as they require regular feeding, exercise, and individual care. Accordingly, most horses boarded at Rancho Polo are cared for at least twice per day— once in the early morning hours, and a second time in the late afternoon. Some owners also attend to their horses a third time in the middle of each day. As a result, most of our boarders (or their trainers, riders, and groomers) make at least two or three round trips each day to Rancho Polo.

A typical schedule is as follows:

First Trip in the Morning:	Arrive 6:00 AM to 8:00 AM Depart 9:00 AM to 12:00 PM
Second Trip in the Late Afternoon:	Arrive 2:00 PM to 3:30 PM Depart 6:30 PM to 9:00 PM
Third Trip Mid-Day:	Depart 10:00 AM to 1:00 PM Arrive 12:00 AM to 3:30 PM

It is estimated that workers who care for horses boarded at the ranch make approximately 400 to 800 round trips to Rancho Polo each day. The availability of permanent, year-round, housing will result in a 35% decline in the daily number of trips to and from Rancho Polo. This is expected to decrease worker travel to between 260 to 520 round trips per day.

The availability of overnight lodging for site workers and our guests will result in a substantial reduction in traffic, fewer vehicles on the road, less fuel will be consumed, and less emissions and traffic noise will be generated.

4.9 Lighting

All barns, residential buildings and other structures on the property have access to electricity and are improved with interior lighting. In addition, certain exterior portions of Rancho Polo have night illumination. This will extend to the new parking lots and landscaped areas, as well as the walkways and grounds adjacent to all proposed structures, and the roadway serving all residential dwellings and guest units. Lighting is already available at the property's main entry gate on 58th Avenue, the polo and event field, the horse track, and all barns and stables. All exterior lighting will be shielded and will comply with the illumination standards of the Mount Palomar Special Lighting Area, as defined in Ordinance No. 655.

4.10 Site Security

A site manager and maintenance personnel are present on the property 24 hours per day, seven days per week. During the peak season, Rancho Polo has security on site around the clock. This includes the regular patrol of the horse barns during overnight hours. In the off season, when there are fewer animals being boarded, site security is reduced to nighttime patrolling of the horse stables.

Rancho Polo is private property and is not open to the public for unscheduled visits. Generally, access to the grounds and facilities of Rancho Polo is limited to: (a) horse owners boarding their animals on the premises, (b) their invited guests, (c) their respective groomers, trainers, coaches, riders, and other equestrian professionals, (d) participants in equestrian and other events hosted at the site, as well as their respective guests and spectators, (e) students and guests who attend equestrian and agricultural classes, (f) local residents, and (g) Rancho Polo's owners, managers and employees.

4.11 Sustainability Features

The Project will comply with the applicable California Green Building Standards Code (CalGreen, CFR Title 24, 2022 version effective January 1, 2023).[11] The applicability is determined when the Project is submitted and accepted by plan check.

All building systems will meet applicable Title 24 Energy Standards. These standards will reduce energy and water usage and waste and, thereby, reduce associated greenhouse gas emissions and help minimize the impact on natural resources and infrastructure.

The sustainability features to be incorporated into the Project will include, but not be limited to, WaterSense-labeled plumbing fixtures and Energy Star-labeled appliances, reduction of indoor and outdoor water use, weather-based controller and drip irrigation systems, and water-efficient landscape design.

4.12 Construction Assumptions

The Applicant intends to develop these overnight accommodations in three separate development

11 California Building Codes: https://www.dgs.ca.gov/BSC/CALGreen, accessed on November 7, 2022.

phases, as follows:

Phase One

Of the seven existing one-story, single-family dwelling units on the site, four of these will be dedicated full-time use by Rancho Polo's employees, managers, and owners, and their respective family members, while the remaining three single-family dwellings will be made available for worker housing or group guest stays, depending on need.[12]

Phase Two

Supplementing these dwelling units, ten additional one-story buildings will be constructed on the property. Each of these structures will be designed to be used either as a four-bedroom single-family dwelling or as four separate guest rooms, with each building "able to efficiently adjust to shifts in demand driven by factors such as agricultural needs (such as the annual harvesting of the site's date palms), scheduled equestrian events, and seasonal demand for boarding services.

Phase Three

Finally, in the third phase of development, Applicant is proposing to build three two-story buildings that will be dedicated to use by our guests and their companions and professional hires. Each of these buildings will contain eight guest rooms and feature a modern, contemporary open design Each floor will also have common space including a living area, kitchen, and outdoor areas that will be available for guest use.

Accessory Improvements

In addition to guest and worker lodging, a number of complementary improvements are planned for the property. These include a service building for storage and supplies,[13] a management office that will oversee the guest rentals, and a small gift shop.[14] An existing swimming pool will be maintained and made available as a guest amenity. The project will also include additional paved parking areas will meet State and County accessibility requirements. All newly constructed parking lots and buildings will be enhanced by ample landscaping improvements. In accordance with Conditional Use Permit No. 190066, Rancho Polo will make continue to available a minimum of 100 additional parking spaces for visitors attending temporary events held on the property.

The residential and guest buildings will allow Applicant to efficiently swap between long-term and short-term overnight accommodations. This will enable ranch operations to adapt to significant variations in the housing needs of the property owners, Rancho Polo employees and contractors,

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12 It should be noted that the Applicant is requesting the right to provide worker housing that is not limited by the definition of a "migrant agricultural worker mobilehome park" that was incorporated into Conditional Use Permit No. 190066. For example, Applicant is proposing that the existing and new housing units could: (1) use permanent construction instead of a prefabricated build, (2) be occupied by permanent employees instead of transient migrant workers, and (3) be occupied on a year-round basis instead of having to be vacant for 3 months each year.

13 The storage building will support the guest rentals, and will contain a washing machine and dryer, room supplies such as towels, bedding, soaps and shampoos, trash bags and light bulbs, and cleaning equipment such as vacuum cleaners and a floor polisher.

14 The gift shop will cater to Rancho Polo's guests and would sell travel incidentals (toothpaste, facial creams, logoed items such as hats and T-shirts, a small selection of newspapers and magazines, and non-alcoholic beverages and prepared food items. To minimize construction, the gift shop and rental office will each utilize existing but separate structures, which is why they are not shown in the plans as being integrated into a single building.

event participants, officials and spectators, and our boarders, together with their respective guests, including visiting trainers, groomers, veterinarians, breeders, farriers, and riding instructors.

With the flexibility this design offers, Rancho Polo will be able to provide as many as 18 dwelling units and 24 single rooms, or in the alternate, these structures can be easily reconfigured into 8 dwelling units with 64 single rooms. In addition, the flexible design we are proposing will allow numerous variations between these two extremes.

The estimated construction schedule is shown in **Table 1-6, Construction Schedule**.

Note for a conservative purpose and to present a worst-case scenario for environmental impacts and emissions, it is assumed that the entire Project will be constructed in a single phase.

- The estimated operational year is 2024.
- The Project assumes no existing structures require demolition.
- Site preparation will clear existing vegetation.
- Utilities are already installed and in place and need only be extended and connected to each proposed dwelling unit.
- Minimal grading on the Site is necessary to provide foundation work and the extension of the proposed utilities to each dwelling unit from the existing utility lines.
- It is assumed that approximately 40,000 square feet will be lightly graded to support the new construction.
- No fill will be imported to the Site. The amount of materials to be exported will be up to approximately 6,000 cubic yards (which includes a swell expansion potential). The dirt could be potentially relocated to the western part of the Site. The assumption of export represents a conservative, worse-case assumption.
- Construction will include the following buildings:

Use	Quantity	Rooms	Size
Worker or guest units	10 units	4 bedroom	25,600 sf
Guest Buildings	3 units	8 bedrooms	15,360 sf
Accessory building (service/storage)	-	-	300 sf
		Total	**40,960 sf Housing 300 sf Accessory**

- Paving will include a total of 31,656 square feet for parking areas that will serve the new buildings.
- Architectural coatings will include painting and finishing for the interior and exterior of each

of the new buildings. This work will be undertaken in the final stages of construction (See **Table 1-6** below).

Table 1-6
Construction Schedule

Phase	Schedule	Duration (Working Days)
Site Preparation	June 1, 2024 – June 14, 2024	12 days
Grading	June 15, 2024 – August 5, 2024	45 days
Construction	July 1, 2024 – October 31, 2024	104 days
Paving	August 15, 2024 – September 30, 2024	41 days
Architectural Coatings	September 1, 2024 – November 15, 2024	65 days

Working Days include Monday through Saturday, with no Sundays.
Demolition involves removing buildings or structures.
Site Preparation involves clearing vegetation (grubbing and tree/stump removal) and removing stones and other unwanted material or debris prior to grading.
Grading involves the cut and fill of land to ensure that the proper base and slope is created for the foundation.
Building Construction involves the construction of the foundation, structures, and buildings.)
Trenching is associated with underground utilities, including gas, water, electricity, telecommunications.
Paving involves the laying of concrete or asphalt such as in parking lots, roads, driveways, or sidewalks.
Architectural Coating involves the application of coatings to both the interior and exterior of buildings or structures, the painting of parking lot or parking garage striping, associated signage and curbs, and the painting of the walls or other components such as stair railings inside parking structures.

Construction schedule, including start, end, and duration dates are estimates only. Some overlap of phasing may occur.

This analysis assumes that construction will start in 2023. In practice, construction could begin at a later time, such as 2024. However, using an earlier start date represents a worst-case scenario for the analysis of construction emissions, because equipment and vehicle emission factors for later years will be slightly less due to more stringent standards for in-use off-road equipment and heavy-duty trucks, as well as fleet turnover replacing older equipment and vehicles in later years.

Estimates provided by the Applicant in November 2022.

4.13 Discretionary Requests

Discretionary entitlements, reviews, permits and approvals required to implement the Project will include, but are not necessarily limited to, the following:[15]

- **Plot Plan No. 220034** will allow Applicant to operate a true guest ranch on the property by supplementing Rancho Polo's existing accommodations for guest day trips with new facilities that will for the first time make overnight stays on the property possible. This will be accomplished by converting the three of the previously approved mobile homes into housing units, and by building new accommodations for the use of Rancho Polo employees and contractors, event participants, officials and spectators, and our boarders, and their respective guests, including visiting trainers, groomers, veterinarians, breeders, farriers, and riding

15 Riverside County, Plot Plan.

instructors. In addition, three additional buildings will be constructed that will be dedicated to ranch guests, and their respective family members and invitees. These guest improvements will be complemented by the construction of a service/storage building, by the conversion of an existing garage into a gift shop, and by the provision of appropriate parking areas and landscaping.

COUNTY OF RIVERSIDE
ENVIRONMENTAL ASSESSMENT FORM: INITIAL STUDY

Environmental Assessment (CEQ / EA) Number: CEQ220085
Project Case Type (s) and Number(s): Plot Plan 220034
Lead Agency Name: County of Riverside Planning Department
Address: 4080 Lemon Street 12th Floor, Riverside, CA 92501
Contact Person: Scott Nespor, Urban and Regional Planner III
Telephone Number: (760) 863-7050
Applicant's Name: Triple Sky Ranch, Juri Ripinsky
Applicant's Address: 4114 Sepulveda Boulevard, Suite L, Second Floor, Culver City, CA 90230

I. PROJECT INFORMATION

Project Description: New guest and worker overnight accommodations for Rancho Polo Equestrian Center. Additional details are in Section 1, Project Description, of this document.

A. Type of Project: Site Specific ☒; Countywide ☐; Community ☐; Policy ☐.

B. Total Project Area:

Residential Acres: N/A	**Lots:** N/A	**Units:** None	**Projected No. of Residents:** None
Commercial Acres: 78.01	**Lots:** N/A	**Sq. Ft. of Bldg. Area:** 39,664	**Est. No. of Employees:** 10 to 25
		Accessory Worker Dwellings: 4 to 18, depending on need	
		Accessory Guest Units: 0 to 4 guest dwellings & 24 to 64 guest rooms	
Industrial Acres: N/A	**Lots:** N/A	**Sq. Ft. of Bldg. Area:** N/A	**Est. No. of Employees:** N/A
Other: N/A			

C. Assessor's Parcel No(s): 764-130-027 and 764-130-030

Street References: The property is located on the north side of Avenue 58, and is bounded by Oasis Street to the west, Csilla Street to the north, and Jackson Street to the east

D. Section, Township & Range Description or reference/attach a Legal Description: Section 23, Township 6 South, Range 7 East, San Bernardino Principal Meridian in the County of Riverside.[1]

E. Brief description of the existing environmental setting of the project site and its surroundings: The Project Site is home to the Rancho Polo Equestrian Center, a business devoted to serving the equestrian needs of visitors from Riverside County and beyond. The Site includes commercial stables to board horses and features a diverse inventory of facilities for equestrian training, breeding, and boarding. In addition to the site's equestrian focus, Rancho Polo also features significant agricultural uses, including the cultivation and annual harvesting of approximately 300 date palm trees, 50 citrus trees, and 20 avocado trees.

[1] Riverside County, Map My County

North across Csilla Street (an unimproved dirt road) is an agricultural field with a land use designation as Agriculture and zoned A-1-20.

South across Avenue 58 is an agricultural field with a land use designation as Medium Density Residential and Agriculture and zoned R-5 and A-1-10.

West across Oasis Street (an unimproved dirt road) is an agricultural field with a land use designation as Local Importance Agriculture and zoned A-1-20.

East across Jackson Street is an agricultural field with a land use designation as Local Importance Agriculture and zoned A-1-10.

F. Other Public Agency Involvement and Required Permits: None known.

II. APPLICABLE GENERAL PLAN AND ZONING REGULATIONS

A. General Plan Elements/Policies:

1. **Land Use:** Proposed uses are consistent with the W-2-10 Zone and will be consistent with the Eastern Coachella Valley Area Plan (ECVAP) and other applicable land use policies applicable to Rural Residential property under the County's General Plan. In particular, Policies LU 2.1, LU 3.1, LU 21.1, and LU 21.2 are implemented by this Project. Policy ECVAP 6.1 provides for associated housing for farm work.

2. **Circulation:** Adequate circulation facilities exist to serve the Project. Avenue 58 is classified as a Major Street. The Project meets with all other applicable circulation policies of the General Plan. In particular, Policies C 3.24 are implemented by this Project. The Project access driveway, drive aisles and turnaround have been designed consistent with Riverside County Transportation Department and Fire Department standards. Policy ECVAP 12.3 separates vehicular traffic from pedestrians and equestrian traffic, which is implemented on the Project Site.

3. **Multipurpose Open Space:** According to the Multipurpose Open Space Element, the Project Site contains land designated as Prime Farmland, Urban and Built-Up Land, and Other Land. Specifically, the proposed development area of the Site is designated Urban and Built-Up Land.[2] The Site is also within a high sensitivity zone for paleontological resources.[3] The Project is adjacent to open space lands but does not contain any habitat for listed or otherwise sensitive species, riparian/riverine areas, natural drainages, or other important biological resources under the Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP). The Project meets with all other applicable Multipurpose Open Space element policies. Policies OS 3.2, OS 3.4, and OS 3.6 have been implemented in this Project such as connecting to a sewer system, compliance with the NPDES and SWPPP requirements, and stormwater retention.

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2 California Department of Conservation: https://www.conservation.ca.gov/dlrp/fmmp/Pages/Riverside.aspx

3 County of Riverside, General Plan, Chapter 5: Multipurpose Open Space Element: https://planning.rctlma.org/General-Plan-Zoning/General-Plan

4. **Safety:** According to the ECVAP, the Project Site is not within a flood hazard area; dam inundation area; steep slope area; slope instability area, or very high fire hazard severity zone. The Project will be reviewed by all relevant departments within Riverside County with respect to design and safety standards. The Project is being designed to comply with all applicable standards related to fire safety.

5. **Noise:** The Noise Element requires projects to limit the volume of noise effecting residential or other noise-sensitive uses. A Noise Technical Report was submitted for review. The Project is not expected to result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the general plan or noise ordinance, or applicable standards of other agencies. Noise mitigation will mainly be achieved with the distance between activity areas and the nearest neighbors. The Project meets all other applicable Noise Element Policies. In particular, policies N 2.3, N 3.5, N 4.4, N 14.1 are implemented by this Project.

6. **Housing:** The Project includes a combination of guest and worker overnight accommodations. Unlike the current Conditional Use Permit (which requires that 80% of the worker units be used by migrant agricultural workers for not more than 9 months in any 12 month period), Applicant is proposing that: (a) up to 100% of these units could be permanently affixed to the land on customary concrete foundations, (b) the units could be used occupied by non-transient workers, as well as by the property managers, the property owner, and their respective family members, and (c) the units could be kept in service year-round and would not be have required to be vacant for any period of time. The hospitality units will be to Rancho Polo guests and their invitees. A number of the units could accommodate either workers or guests, as may be needed at any given time.

7. **Air Quality:** The Project Site is within the South Coast Air Basin and is within the jurisdiction of the South Coast Air Quality Management District. An Air Quality and Greenhouse Gas Technical Report was submitted for review. The Project is in compliance with all applicable policies of the Air Quality Element. The Project is a relatively low intensity overnight accommodations use and has been conditioned to control any fugitive dust during grading and construction activities. The Project meets all other applicable Air Quality element policies. In particular, AQ 2.1 is implemented by the Project.

8. **Healthy Communities:** The Health Communities Element states that, where feasible, air pollutant sources and sensitive receptors should be sited apart from each other.

9. **Environmental Justice Summary:** According to the Land Use Element, the Project Site is located within the boundaries of the Vista Santa Rosa Environmental Justice Community in unincorporated Riverside County. The Project Site already contains a physical wall, fencing and a landscape buffer along the street frontages to buffer and screen the existing and proposed uses from the public right-of-way and neighboring properties. The Project will meet all County codes and regulations, including the requirements of the Model Water Efficient Landscape Ordinance. The Project will not remove any existing housing or create a new use that would adversely impact low-income or minority communities. The Project will be

developed on an 8.22-acre area in the southwest portion of the Project Site. The majority of the Site will remain unchanged.

B. General Plan Area Plan(s): Eastern Coachella Valley

C. Foundation Component(s): Rural

D. Land Use Designation(s): Rural Residential

E. Overlay(s), if any: Community Development

F. Policy Area(s), if any: None

G. Adjacent and Surrounding:

1. **General Plan Area Plan(s):** Eastern Coachella Valley
2. **Foundation Component(s):** Rural
3. **Land Use Designation(s):** Rural Residential
4. **Overlay(s), if any:** Community Development
5. **Policy Area(s), if any:** None

H. Adopted Specific Plan Information

1. **Name and Number of Specific Plan, if any:** None
2. **Specific Plan Planning Area, and Policies, if any:** None

I. Existing Zoning: W-2-10

J. Proposed Zoning, if any: N/A

K. Adjacent and Surrounding Zoning: North (A-1-20); South (R-5 and A-1-10); West (A-1-20); East (A-1-10)

III. ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below (x) would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" or "Less than Significant with Mitigation Incorporated" as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Hazards & Hazardous Materials	☐ Recreation
☐ Agriculture & Forest Resources	☐ Hydrology / Water Quality	☐ Transportation

☐ Air Quality	☐ Land Use / Planning	☒ Tribal Cultural Resources
☐ Biological Resources	☐ Mineral Resources	☐ Utilities / Service Systems
☒ Cultural Resources	☐ Noise	☐ Wildfire
☐ Energy	☐ Paleontological Resources	☒ Mandatory Findings of Significance
☐ Geology / Soils	☐ Population / Housing	
☐ Greenhouse Gas Emissions	☐ Public Services	

IV. DETERMINATION

On the basis of this initial evaluation:

A PREVIOUS ENVIRONMENTAL IMPACT REPORT/NEGATIVE DECLARATION WAS NOT PREPARED
☐ I find that the proposed project **COULD NOT** have a significant effect on the environment, and a **NEGATIVE DECLARATION** will be prepared.
☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project, described in this document, have been made or agreed to by the project proponent. **A MITIGATED NEGATIVE DECLARATION** will be prepared.
☐ I find that the proposed project MAY have a significant effect on the environment, and an **ENVIRONMENTAL IMPACT REPORT** is required.

A PREVIOUS ENVIRONMENTAL IMPACT REPORT/NEGATIVE DECLARATION WAS PREPARED
☐ I find that although the proposed project could have a significant effect on the environment, **NO NEW ENVIRONMENTAL DOCUMENTATION IS REQUIRED** because (a) all potentially significant effects of the proposed project have been adequately analyzed in an earlier EIR or Negative Declaration pursuant to applicable legal standards, (b) all potentially significant effects of the proposed project have been avoided or mitigated pursuant to that earlier EIR or Negative Declaration, (c) the proposed project will not result in any new significant environmental effects not identified in the earlier EIR or Negative Declaration, (d) the proposed project will not substantially increase the severity of the environmental effects identified in the earlier EIR or Negative Declaration, (e) no considerably different mitigation measures have been identified and (f) no mitigation measures found infeasible have become feasible.
☐ I find that although all potentially significant effects have been adequately analyzed in an earlier EIR or Negative Declaration pursuant to applicable legal standards, some changes or additions are necessary but none of the conditions described in California Code of Regulations, Section 15162 exist. An **ADDENDUM** to a previously-certified EIR or Negative Declaration has been prepared and will be considered by the approving body or bodies.
☐ I find that at least one of the conditions described in California Code of Regulations, Section 15162 exist, but I further find that only minor additions or changes are necessary to make the previous EIR adequately apply to the project in the changed situation; therefore a **SUPPLEMENT TO THE ENVIRONMENTAL IMPACT REPORT** is required that need only contain the information necessary to make the previous EIR adequate for the project as revised.
☐ I find that at least one of the following conditions described in California Code of Regulations, Section 15162, exist and **a SUBSEQUENT ENVIRONMENTAL IMPACT REPORT** is required: (1) Substantial changes are proposed in the project which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; (2) Substantial changes have occurred with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or (3) New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the negative declaration was adopted, shows any the following: (A) The project will have one or more significant

effects not discussed in the previous EIR or negative declaration; (B) Significant effects previously examined will be substantially more severe than shown in the previous EIR or negative declaration; (C) Mitigation measures or alternatives previously found not to be feasible would in fact be feasible. and would substantially reduce one or more significant effects of the project. but the project proponents decline to adopt the mitigation measures or alternatives; or. (D) Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR or negative declaration would substantially reduce one or more significant effects of the project on the environment. but the project proponents decline to adopt the mitigation measures or alternatives.

Signature

08/30/23
Date

Scott A. Nasper
Printed Name

For: John Hildebrand
Planning Director

V. ENVIRONMENTAL ISSUES ASSESSMENT

In accordance with the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000-21178.1), this Initial Study has been prepared to analyze the proposed project to determine any potential significant impacts upon the environment that would result from construction and implementation of the project. In accordance with California Code of Regulations, Section 15063, this Initial Study is a preliminary analysis prepared by the Lead Agency, the County of Riverside, in consultation with other jurisdictional agencies, to determine whether a Negative Declaration, Mitigated Negative Declaration, or an Environmental Impact Report is required for the proposed project. The purpose of this Initial Study is to inform the decision-makers, affected agencies, and the public of potential environmental impacts associated with the implementation of the proposed project.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
AESTHETICS Would the project:				
1. Scenic Resources a) Have a substantial effect upon a scenic highway corridor within which it is located?	☐	☐	☐	☒
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings and unique or landmark features; obstruct any prominent scenic vista or view open to the public; or result in the creation of an aesthetically offensive site open to public view?	☐	☐	☒	☐
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage points.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐

Source(s): Riverside County General Plan, Circulation Element, Figure C-8, Scenic Highways[4]
Eastern Coachella Valley Area Plan, Figure 10, Scenic Highways[5]
Caltrans, Officially Designated State Scenic Highways[6]

Findings of Fact:

a) There are three designated state scenic highways in Riverside County as defined by the California Department of Transportation. The nearest state-designated scenic highway to the study area is the

[4] https://planning.rctlma.org/Portals/14/genplan/2019/elements/Ch04_Circulation_072720v2.pdf
[5] https://planning.rctlma.org/Portals/14/genplan/GPA%202022/Compiled%20ECVAP_4-2022%20rev.pdf?ver=2022-06-27-145207-383
[6] https://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=465dfd3d807c46cc8e8057116f1aacaa

segment of State Route 74 (SR-74) from the San Bernardino National Forest boundary to Highway 111 in the City of Palm Desert begins approximately 10 miles east of the Project Site.

The Ramona Expressway, Gilman Springs Road, State Route 79, and Soboba Road are all County Eligible Scenic Highways in San Jacinto Valley. State Route 74 (Florida Avenue), as it passes east to west through Hemet, is considered a State Eligible Scenic Highway. These highways traverse urban and rural land, providing scenic views of the San Jacinto Valley. The Project Site is not located proximal to any state or County designated or eligible scenic highways.

While the Site would visually change, it would generally be consistent with the equestrian nature, worker and guest overnight accommodations that already existing on the proposed development portion. Views within the area are not designated scenic.

There will be no impacts.

b) The Project is in an area that has views of the hills and distant mountains to the southwest of the Site. Since this development is only on the southwest portion of property along Avenue 58, the distant views are very limited. The Project Site will be consistent with the existing developments in the surrounding area. No specific visual features are noted in the General Plan that pertain to the general project area nor does it include policy guidance referencing the protection or preservation of visual resources. Implementation of the project would occur on a portion of the vacant undeveloped site. Views into the site are of flat. While views would change, no designated scenic views or resources would be affected. The proposed structures would be similar in bulk and height to the existing surrounding development and would not substantially impact views.

Impacts will be less than significant.

c) The Project site is located in a non-urbanized area. The area is primarily rural-residential, rural-agricultural, and open space in nature, as well as remote as compared to the immediate vicinity. The Rural Residential designation applies to the level and moderately undulating portions of the Project site and the Rural Mountainous designation applies to the moderately to rugged sloping areas of the Site.

The entire site is zoned W-2-10 (Controlled Development Areas with a 10 Acre Minimum parcel size) and is designated by the General Plan for Rural-Residential land uses. The Project is being designed in compliance with the General Plan – Eastern Coachella Valley Area Plan. The Project would expand, but would remain generally consistent in terms of size, scale, and massing associated with the current worker housing and overnight accommodations. The Project would be developed on a vacant portion of the Site in an area that is more rural than urbanized. Moreover, because the interior of the property is largely screened from public view by a combination of walls and a thick hedge, any impact of scenic resources would be minimal. While from some vantage points the views would change, such views are not considered scenic nor does the site contain any unique visual features that would be adversely affected by the Project.

Impacts will be less than significant.

Mitigation: No mitigation is required.

Monitoring: No monitoring is required.

2. Mt. Palomar Observatory a) Interfere with the nighttime use of the Mt. Palomar Observatory, as protected through Riverside County Ordinance No. 655?	☐	☐	☒	☐

Source(s): Ordinance No. 655 (Regulating Light Pollution)
Ordinance No. 915 (Regulating Outdoor Lighting)
Eastern Coachella Valley Area Plan, Figure 7, Mt Palomar Policy Area[7]

Findings of Fact:

a) Ordinance No.665 designates two zones, Zone A and Zone B, that are required to meet specific lighting design standards to minimize light that could have a detrimental effect on Mt. Palomar Observatory's astronomical observation and research. Zone A includes areas within 15 miles from the observatory. Zone B includes areas between 15 and 45 miles from the observatory.

The Project Site is located approximately 42 miles northeast of the Mt. Palomar Observatory and is subject to lighting restrictions per Zone B. Since the Project Site is located within Zone B, the Project would be subject to Ordinance No. 655, which requires outdoor light fixtures to be shielded. Parking lot, walkway, security, and decorative lighting would be restricted to 4050 lumens and below. Ordinance No. 655 would also require the Project limit total lumens per acre for the Project Site to 8,100. Any new street lights proposed as a part of street improvements would be restricted to low pressure sodium lights. Additionally, based on the lighting class as outlined in Ordinance No. 655, the Project would be subject to hours of operation for lighting onsite.

The Project must also comply with another County ordinance regarding lighting; Ordinance No. 915 provides minimum requirements for outdoor lighting in order to reduce light trespass, and to protect the health, property, and well-being of residents in the unincorporated areas of the County. All outdoor lighting shall be hooded and directed so as not to shine directly upon adjoining property or public rights-of-way. All outdoor luminaires shall be appropriately located and adequately shielded and directed such that no direct light falls outside the parcel of origin, or onto the public right-of-way. Outdoor luminaires shall not blink, flash, or rotate. To ensure that lighting meets the required standards, the Project is required to submit lighting plans for approval as part of the permitting process to the Department of Building and Safety. Adherence to ordinances are required and is a standard condition of approval; it is not considered unique mitigation pursuant to CEQA, as it applies to all development projects uniformly.

Impacts will be less than significant.

Mitigation: No mitigation is required.

Monitoring: No monitoring is required.

[7] https://planning.rctlma.org/Portals/14/genplan/GPA%202022/Compiled%20ECVAP_4-2022%20rev.pdf?ver=2022-06-27-145207-383

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
3. Other Lighting Issues a) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐
b) Expose residential property to unacceptable light levels?	☐	☐	☒	☐

Source(s): Project Application Description

Findings of Fact:

a) Light sources at the Project site include those associated with the existing buildings and recreational activities previously used in conjunction with the uses previously described. New sources of light and glare associated with construction activities. These additional artificial light sources are typically associated with nighttime security lighting since all exterior construction activities are limited to daylight hours in the County. In addition, workers, either arriving to the site before dawn, or leaving the site after dusk, may generate additional construction-related light sources. The amount and intensity of light anticipated from these construction sources would be modest as the lighting needed will be solely for visibility or for security of the site during the nighttime hours. Additionally, these impacts will be temporary, of short-duration, and will cease when Project construction is completed.

The Project would add new exterior, interior, and landscape lights lighting. Lighting would be visible from passing vehicles; however, the Site is located in a rural agricultural area with a landscaped wall on the property line and visibility from area residences would be minimal. All outdoor lighting would be designed to Riverside County standards Ordinance No. 915. It is not anticipated that the Project would result in the creation of a new substantial light sources.

Since the Project Site is largely undeveloped, the Project would create new sources of lighting from construction and operation of the proposed development. The Project must comply with County Ordinance No. 915, which requires outdoor lighting to reduce light trespass and County Ordinance 655, which regulates light pollution. Specifically, Ordinance No. 655 would require shielding and maximum lumen thresholds for the Project Site, as well as hours of operation for certain light fixture types.

Impacts will be less than significant.

b) the Project would comply with County Ordinance Nos. 655 and 915 which require all outdoor lighting to reduce light trespass by shielding and redirecting light downwards as to not shine directly upon adjoining property or public rights-of-way and limit hours of operation on certain light fixture types. All outdoor luminaires shall be appropriately located and adequately shielded and directed such that no direct light falls outside the parcel of origin, or onto the public right-of-way. Compliance with County Ordinance Nos. 655 and 915 would reduce impacts related to lighting.

Based on the above information, the Project will have no environmental impact to aesthetics. The Project would be required to comply with the County of Riverside conditions of approval that requires lighting restrictions. These are typically standard conditions of approval and are not considered unique mitigation pursuant to CEQA.

Impacts will be less than significant.

Mitigation: No mitigation is required.

Monitoring: No monitoring is required.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
AGRICULTURE & FOREST RESOURCES Would the project:				
4. Agriculture a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☒	☐
b) Conflict with existing agricultural zoning, agricultural use or with land subject to a Williamson Act contract or land within a Riverside County Agricultural Preserve?	☐	☐	☒	☐
c) Cause development of non-agricultural uses within 300 feet of agriculturally zoned property (Ordinance No. 625 "Right-to-Farm")?	☐	☐	☒	☐
d) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	☐	☐	☒	☐

Source(s): Riverside County General Plan, Multipurpose Open Space Element, Figure OS-2, Agricultural Resources[8]
Project Application Materials
California Department of Conservation, Farmland Mapping and Monitoring Program [9]

Findings of Fact:

a) The Project Site contains land designated as Prime Farmland, Urban and Built-Up Land, and Other Land. Specifically, the proposed development area of the Site is designated Urban and Built-Up Land. In addition to the site's equestrian focus, Rancho Polo also features significant agricultural uses, including the cultivation and annual harvesting of approximately 300 date palm trees, 50 citrus trees, and some avocado trees. Hay fields are also farmed and harvested and provide feed and bedding for horses boarded at Rancho Polo. However, no Prime Farmland, Unique Farmland, or Farmland of Statewide Importance occurs on the portion of the Project Site to be developed and these resources would not be affected by Project implementation.

Impacts will be less than significant.

b) The project site is not enrolled in a Williamson Act contract or land within a Riverside County Agricultural Preserve. The Project would not conflict with any zoning designations designed to promote agriculture.

[8] https://planning.rctlma.org/Portals/14/genplan/general_Plan_2017/elements/OCT17/Ch05_MOSE_120815.pdf?ver=2017-10-11-102103-833
[9] https://www.conservation.ca.gov/dlrp/fmmp/Pages/Riverside.aspx

Impacts will be less than significant.

c) The Project Site and surrounding properties is located within an area zoned for agricultural use; and thus, would not conflict with Ordinance No. 625 “Right to Farm”. The Project Site is located within 300-feet of an agriculturally zoned property, as the properties immediately adjacent tin all directions are zoned Agriculture.

The Project would entail the construction of new worker and guest overnight accommodations and related parking and amenities. However, the Project would not cause changes to County Ordinance No. 625, which conserves, protects, and encourages the development, improvement, and continued viability of its agricultural land and industries for the long-term production of food and other agricultural products. The Project is wholly contained on the southwest portion of the Project Site. The Project would be subject to the County’s adopted ordinances, including Ordinance No. 625, which establishes existing agricultural uses in operations prior to an non-agricultural adjacent use from being considered nuisances.

Impacts will be less than significant.

d) No Prime Farmland, Unique Farmland, or Farmland of Statewide Importance occurs on the portion of the Project Site to be developed and these resources would not be affected by Project implementation. While there are adjacent parcels which are zoned for agricultural uses, the Project would occur wholly on the Site. The proposed use would not result in conversion of farmland to non-farmland uses, as the areas for development is already used for worker housing and prefabricated mobile homes.

The Project would increase human activity on the site which would result in incremental increases in area traffic, noise, etc. However, the existing property wall and the ROW of Avenue 58 and Oasis Street would act as a “buffer” against any potential conversion of the land zoned A-1-20 (Agriculture) adjacent to the Site.

Impacts will be less than significant.

Mitigation: No mitigation is required.

Monitoring: No monitoring is required.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
5. Forest	☐	☐	☐	☒
a) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Govt. Code section 51104(g))?				
b) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of forest land to non-forest use?	☐	☐	☐	☒

Source(s): Riverside County General Plan, Multipurpose Open Space Element, Figure OS-3b, Forestry Resources Eastern Riverside County Parks, Forests, and Recreation Areas Project Application Materials

Findings of Fact:

a-c) Public Resources Code Section 12220(g) identifies forest land as:

> *"Land that can support 10-percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits." The Project Site and surrounding properties are not currently being defined, zoned, managed, or used as forest land as identified in Public Resources Code Section 12220(g).*

Neither the Project Site nor surrounding areas are used for timber production or is located on designated forest land. The Project would not conflict with any zoning designations designed to preserve timber or forest land. The Project is not located within a forest.

There will be no impacts.

Mitigation: No mitigation is required.

Monitoring: No monitoring is required.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
AIR QUALITY Would the project:				
6. Air Quality Impacts a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐
c) Expose sensitive receptors, which are located within one (1) mile of the project site, to substantial pollutant concentrations?	☐	☐	☒	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

Source(s): Riverside County General Plan, Riverside County Climate Action Plan ("CAP") SCAQMD CEQA Air Quality Handbook
Riverside County General Plan, Air Quality Element
CalEEMod version 2022.1 emission calculations. Air Quality Technical Report and Appendix, prepared by DKA Planning, March 2023 (Appendix B)

Findings of Fact:

a) The Project's air quality emissions would not exceed any state or federal standards. Therefore, the Project would not increase the frequency or severity of an existing violation or cause or contribute to new violations for these pollutants. As the Project would not exceed any of the state and federal standards, the Project would also not delay timely attainment of air quality standards or interim emission reductions specified in the AQMP.

With respect to the determination of consistency with AQMP growth assumptions, the projections in the AQMP for achieving air quality goals are based on assumptions in SCAG's 2016–2040 RTP/SCS regarding population, housing, and growth trends. Determining whether or not a project exceeds the assumptions reflected in the AQMP involves the evaluation of three criteria: (1) consistency with applicable population, housing, and employment growth projections; (2) project mitigation measures; and (3) appropriate incorporation of AQMP land use planning strategies. The following discussion provides an analysis with respect to each of these three criteria.

- Is the project consistent with the population, housing, and employment growth projections upon which AQMP forecasted emission levels are based?

A project is consistent with the AQMP, in part, if it is consistent with the population, housing, and employment assumptions that were used in the development of the AQMP. In the case of the 2016 AQMP, two sources of data form the basis for the projections of air pollutant emissions: the County of

Riverside's General Plan and SCAG's RTP. The General Plan serves as a comprehensive, long-term plan for future development of the unincorporated County.

The 2016-2040 RTP/SCS provides socioeconomic forecast projections of regional population growth.[10] The population, housing, and employment forecasts, which are adopted by SCAG's Regional Council, are based on local plans and policies applicable to the specific area; these are used by SCAG in all phases of implementation and review. Based on the average 2018 persons-per-household rate for the unincorporated portion of Riverside County of 3.2 persons per household,[11] the Project would add a net residential population of approximately 42 people to the Project Site based on the thirteen dwelling units proposed. The Project's residential population would represent approximately 0.03 percent of the forecast growth between 2012 and 2040 in the County and would therefore be consistent with the projections in the AQMP.

As of September 3, 2020, the 2020 RTP/SCS is the adopted metropolitan transportation plan for the region. The 2020 RTP/SCS accommodates 525,600 persons; 180,900 households; and 139,600 jobs in the unincorporated County by 2045. The Project's residential population would represent approximately 0.027 percent of the forecast population growth between 2016 and 2045. When the AQMP is updated in 2022, it will use these growth forecasts as the basis of its attainment plan.

- Does the project implement feasible air quality mitigation measures?

As discussed below under Thresholds (b), (c), and (d), the Project would not result in any significant air quality impacts and therefore would not require mitigation. In addition, the Project would comply with all applicable regulatory standards as required by SCAQMD. Furthermore, with compliance with the regulatory requirements identified above, no significant air quality impacts would occur. As such, the Project meets this AQMP consistency criterion.

- To what extent is project development consistent with the land use policies set forth in the AQMP?

With regard to land use developments such as the Project, the AQMP's air quality policies focus on the reduction of vehicle trips and vehicle miles traveled (VMT). The Project would serve to implement a number of land use policies of the County of Riverside, SCAQMD, and SCAG. The Project would be designed and constructed to support and promote environmental sustainability. "Green" principles are incorporated throughout the Project to comply with the California Green Building Standards Code (CALGreen) through energy conservation, water conservation, and waste reduction features.

The air quality plan applicable to the Project area is the 2016 AQMP. The 2016 AQMP is the SCAQMD plan for improving regional air quality in the Basin. The 2016 AQMP is the current management plan for continued progression toward clean air and compliance with State and federal requirements. It includes

[10] The current applicable air quality attainment plan for the region is the 2016 AQMP, which is based on the growth assumptions in the 2016 RTP/SCS. As such, the 2016 RTP/SCS was used as the basis for this analysis.

[11] Southern California Association of Governments, 2019 Local Profile for Riverside County; https://scag.ca.gov/sites/main/files/file-attachments/unincareariversidecounty_0.pdf?1606013120

a comprehensive strategy aimed at controlling pollution from all sources, including stationary sources, on- and off-road mobile sources, and area sources. The 2016 AQMP also incorporates current scientific information and meteorological air quality models. It also updates the federally approved 8-hour O_3 control plan with new commitments for short-term NO_X and VOC reductions. The 2016 AQMP includes short-term control measures related to facility modernization, energy efficiency, good management practices, market incentives, and emissions growth management.

As demonstrated in the following analyses, the Project would not result in significant regional emissions. The 2016 AQMP adapts previously conducted regional air quality analyses to account for the recent unexpected drought conditions and presents a revised approach to demonstrated attainment of the 2006 24-hour $PM_{2.5}$ NAAQS for the Basin. Directly applicable to the Project, the 2016 AQMP proposes robust NO_X reductions from residential appliances. The Project would be required to comply with all new and existing regulatory measures set forth by the SCAQMD. Implementation of the Project would not interfere with air pollution control measures listed in the 2016 AQMP.

The Project Site is designated for "Rural Residential" land uses in the General Plan, a classification that allows worker and guest housing such as that proposed by the Project. As such, the RTP/SCS' assumptions about growth in the unincorporated County accommodate the projected population on the Project Site. As a result, the Project would be consistent with the growth assumptions in the County's General Plan. Because the AQMP accommodates growth forecasts from local General Plans, the emissions associated with this Project are accounted for and mitigated in the region's air quality attainment plans. The air quality impacts of development on the Project Site are accommodated in the region's emissions inventory for the 2016 RTP/SCS and 2016 AQMP. Therefore, Project impacts with respect to AQMP consistency would be less than significant.

County of Riverside Policies

The Project would provide worker or guest housing that would reduce air quality impacts associated with off-site commuting for workers or guests. The County's General Plan Air Quality Element identifies numerous policies with specific strategies for advancing clean air goals. As illustrated in **Table 2-1**, the Project would not conflict with the applicable policies in the Air Quality Element, as the Project would reduce vehicular trips and reduce VMT by improving the on-site jobs/housing balance. Therefore, the Project would result in a less than significant impact related to consistency with the Air Quality Element.

Impacts will be less than significant.

Table 2-1
Project Consistency with County of Riverside General Plan Air Quality Element

Strategy	Project Consistency
Policy AQ 1.4: Coordinate with the SCAQMD…to ensure that all elements of air quality plans regarding reduction of air pollutant emissions are being enforced.	**No Conflict.** The Project would comply with all applicable SCAQMD rules and regulations during the construction and operation phases. This includes compliance with Rule

Table 2-1
Project Consistency with County of Riverside General Plan Air Quality Element

Strategy	Project Consistency
	403, which regulates fugitive dust emissions during earthmoving activities.
Policy AQ 2.1: The County land use planning efforts shall assure that sensitive receptors are separated and protected from polluting point sources to the greatest extent possible.	**No Conflict.** The proposed housing would not be a significant polluting point or area source and would be over 300 feet away from any off-site sensitive receptors.
Policy Q 2.2: Require site plan designs to protect people and land uses sensitive to air pollution through the use of barriers and/or distance from emissions sources when possible.	**No Conflict.** The site plan provides substantial setbacks from other proposed residences and existing land uses.
Policy AQ 2.3: Encourage the use of pollution control measures such as landscaping, vegetation and other materials, which trap particulate matter or control pollution.	**No Conflict.** The site plan would reduce unpaved surfaces on the Project Site that contribute to localized fugitive dust exposure and entrained fugitive dust on Avenue 58 and other localized roadways that contribute to off-site fugitive dust concentrations in the Coachella Valley. The additional of paved surfaces will help reduce overall particulate emissions.
Policy AQ 3.1: Allow the market place, as much as possible, to determine the most economical approach to relieve congestion and cut emissions.	**No Conflict.** The proposed on-site housing is a market-based response to the demand for workforce housing that will reduce the need for vehicle trips, VMT, and the air quality emissions from vehicle travel.
Policy AQ 4.1: Require the use of all feasible building materials/methods which reduce emissions.	**No Conflict.** The Project will incorporate all Title 24 and Green Building requirements for new construction, as well as use VOC-complaint coatings during the construction process.
Policy AQ 4.2: Require the use of all feasible efficient heating equipment and other appliances, such as water heaters, swimming pool heaters, cooking equipment, refrigerators, furnaces and boiler units.	**No Conflict.** The Project will incorporate all Title 24 and Green Building requirements for new construction, including the minimization of combustion-based energy sources while including conduits and infrastructure for on-site electrical use.
Policy AQ 4.6: Require stationary air pollution sources to comply with applicable air district rules and control measures.	**No Conflict.** The Project will comply with all SCAQMD regulations and incorporate all Title 24 and Green Building requirements for new construction, including the minimization of combustion-based energy sources while including conduits and infrastructure for on-site electrical use.
Policy AQ 4.7: To the greatest extent possible, require every project to mitigate any of its anticipated emissions which exceed allowable emissions as established by the SCAQMD, MDAQMD, SoCAB, the Environmental Protection Agency and the California Air Resources Board.	**No Conflict.** The Project will improve jobs-housing balance on the Project Site and produce negligible emissions from home-work commutes as such.

Table 2-1
Project Consistency with County of Riverside General Plan Air Quality Element

Strategy	Project Consistency
Policy AQ 4.9: Require compliance with SCAQMD Rules 403 and 403.1, and support appropriate future measures to reduce fugitive dust emanating from construction sites.	**No Conflict.** The Project will comply with fugitive dust rules during the construction process that will help ensure on-site activities do not exacerbate overall particulate concentrations in the Coachella Valley.
Source: DKA Planning, 2022.	

b) A cumulatively considerable net increase would occur if the project's construction impacts substantially contribute to air quality violations when considering other projects that may undertake construction activities at the same time. Individual projects that generate emissions that do not exceed SCAQMD's significance thresholds would not contribute considerably to any potential cumulative impact. SCAQMD neither recommends quantified analyses of the emissions generated by a set of cumulative development projects nor provides thresholds of significance to assess the impacts associated with these emissions.[12]

Construction-related emissions were estimated using the SCAQMD's CalEEMod 2022.1 model and a projected construction schedule of approximately six months. While there are three proposed phases of development, this analysis assumes a conservative scenario where all improvements are built concurrently, ensuring this report's findings are most protective of public health. There would be some overlap between some phases, particularly given the proposed phasing of development. **Table 2-2** summarizes the estimated construction schedule that was modeled for air quality impacts.

Table 2-2
Construction Schedule Assumptions

Phase	Duration	Notes
Site Preparation	Month 1 (two weeks)	Grubbing and removal of trees, plants, landscaping, weeds
Grading	Months 1-3	Fine grading of 40,000 square feet of area and approximately 6,000 cubic yards of soil (including swell factors) hauled 40 miles to landfill in 10-cubic yard capacity trucks.
Trenching	Months 2-4	Trenching for utilities, including gas, water, electricity, and telecommunications.
Building Construction	Months 3-6	Foundation work, framing, welding; installing mechanical, electrical, and plumbing. Floor assembly, cabinetry and carpentry, low voltage systems, trash management.
Paving	Month 5	Flatwork, including paving of walkways and other living areas, and surface parking lot for worker parking.

[12] South Coast Air Quality Management District, 2003 White Paper on Potential Control Strategies to Address Cumulative Impacts from Air Pollution: "As Lead Agency, the AQMD uses the same significance thresholds for project specific and cumulative impacts for all environmental topics analyzed in an Environmental Assessment or EIR…Projects that exceed the project-specific significance threshold are considered by the SCAQMD to be cumulatively considerable. This is the reason project-specific and cumulative thresholds are the same. Conversely, projects that do not exceed the project-specific thresholds are not considered to be cumulatively significant.

Table 2-2
Construction Schedule Assumptions

Architectural Coatings	Months 4-6	Application of interior and exterior coatings and sealants.
Source: DKA Planning, 2022.		

The Project would be required to comply with the following regulations, as applicable:

- SCAQMD Rule 402, which states that a person shall not discharge from any source whatsoever such quantities of air contaminants or other materials which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.

- SCAQMD Rule 403, would reduce the amount of particulate matter entrained in ambient air as a result of anthropogenic fugitive dust sources by requiring actions to prevent, reduce or mitigate fugitive dust emissions.

- SCAQMD Rule 431.2, would require use of low-sulfur fuel in construction equipment.

- SCAQMD Rule 445 would prohibit the inclusion of wood burning fireplaces in any residences.

- SCAQMD Rule 1113, which limits the VOC content of architectural coatings.

- In accordance with Section 2485 in Title 13 of the California Code of Regulations, the idling of all diesel-fueled commercial vehicles (with gross vehicle weight over 10,000 pounds) during construction would be limited to five minutes at any location.

- In accordance with Section 93115 in Title 17 of the California Code of Regulations, operation of any stationary, diesel-fueled, compression-ignition engines would meet specific fuel and fuel additive requirements and emissions standards.

Construction

Regional Emissions

Construction activity creates air quality impacts through the use of heavy-duty construction equipment and through vehicle trips generated by construction workers traveling to and from the Project Site. NO_X emissions would primarily result from the use of construction equipment and truck trips.

Fugitive dust emissions would peak during grading activities, where approximately 6,000 cubic yards of soil (including swell factors) would be exported from the Project Site. All construction projects in the Basin must comply with SCAQMD Rule 403 for fugitive dust. Rule 403 control requirements include measures to prevent the generation of visible dust plumes. Measures include, but are not limited to,

applying water and/or soil binders to uncovered areas, reestablishing ground cover as quickly as possible, utilizing a wheel washing system or other control measures to remove bulk material from tires and vehicle undercarriages before vehicles exit the Project Site, and maintaining effective cover over exposed areas. Compliance with Rule 403 would reduce regional $PM_{2.5}$ and PM_{10} emissions associated with construction activities by approximately 61 percent.

During the building finishing phase, the application of architectural coatings (e.g., paints) would potentially release VOCs (regulated by SCAQMD Rule 1113). The assessment of construction air quality impacts considers each of these potential sources. Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation and, for dust, the prevailing weather conditions.

As shown in **Table 2-3**, construction of the Project would produce VOC, NO_X, CO, SO_X, PM_{10} and $PM_{2.5}$ emissions that do not exceed the SCAQMD's regional thresholds. As a result, construction of the Project would not contribute substantially to an existing violation of air quality standards for regional pollutants (e.g., ozone). This impact is considered less than significant.

Table 2-3
Daily Construction Emissions

Construction Phase Year	Daily Emissions (Pounds Per Day)					
	VOC	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Year 1	7.0	39.8	38.4	0.1	9.7	5.7
Maximum Regional Total	7.0	39.8	38.4	0.1	9.7	5.7
Regional Threshold	75	100	550	150	150	55
Exceed Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
Maximum Localized Total	5.7	31.8	32.5	<0.1	4.3	2.7
Localized Threshold	N/A	340	3,237	N/A	11	11
Exceed Threshold?	**N/A**	**No**	**No**	**N/A**	**No**	**No**

The construction dates are used for the modeling of air quality emissions in the CalEEMod software. If construction activities commence later than what is assumed in the environmental analysis, the actual emissions would be lower than analyzed because of the increasing penetration of newer equipment with lower certified emission levels. Assumes implementation of SCAQMD Rule 403 (Fugitive Dust Emissions) Source: DKA Planning, 2022 based on CalEEMod 2022.1 model runs. LST analyses based on five-acre site with 50-meter distances to receptors in Coachella Valley source receptor area. Estimates reflect the peak summer or winter season, whichever is higher. Totals may not add up due to rounding. Modeling sheets included in the Technical Appendix.

Localized Emissions

In addition to maximum daily regional emissions, maximum localized (on-site) emissions were quantified for each construction activity. The localized construction air quality analysis was conducted using the methodology promulgated by the SCAQMD. Look-up tables provided by the SCAQMD were

used to determine localized construction emissions thresholds for the Project.[13] LSTs represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard and are based on the most recent background ambient air quality monitoring data (2018-2020) for the Project area.

Maximum on-site daily construction emissions for NO_X, CO, PM_{10}, and $PM_{2.5}$ were calculated using CalEEMod and compared to the applicable SCAQMD LSTs for the Coachella Valley SRA based on construction site acreage that is five acres or more. Potential impacts were evaluated at the closest off-site sensitive receptor, which is the residence to the west of the Project Site on Avenue 58.

As shown in **Table 3**, above**,** the Project would produce emissions that do not exceed the SCAQMD's recommended localized standards of significance for NO_2 and CO during the construction phase. Similarly, construction activities would not produce PM_{10} and $PM_{2.5}$ emissions that exceed localized thresholds recommended by the SCAQMD. These estimates assume the use of Best Available Control Measures (BACMs) that address fugitive dust emissions of PM_{10} and $PM_{2.5}$ through SCAQMD Rule 403. This would include watering portions of the site that are disturbed during grading activities and minimizing tracking of dirt onto local streets. Therefore, construction impacts on localized air quality are considered less than significant.

Operation

Operational emissions of criteria pollutants would come from area, energy, and mobile sources. Area sources include consumer products such as household cleaners, architectural coatings for routine maintenance, and landscaping equipment. Energy sources include electricity and natural gas use for space heating and water heating. The CalEEMod program generates estimates of emissions from energy use based on the land use type and size. The Project would also produce long-term air quality impacts to the region primarily from motor vehicles that access the Project Site. The Project could add up to 95 vehicle trips to the local roadway network on a weekday at the start of operations.[14]

As shown in **Table 2-4**, the Project's emissions would not exceed the SCAQMD's regional or localized significance thresholds. Therefore, the operational impacts of the Project on regional and localized air quality are considered less than significant.

Impacts will be less than significant.

Table 2-4
Daily Operations Emissions

Emissions Source	Daily Emissions (Pounds Per Day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Area Sources	0.9	<0.1	0.7	<0.1	<0.1	<0.1
Energy Sources	<0.1	0.1	<0.1	<0.1	<0.1	<0.1

[13] South Coast Air Quality Management District, LST Methodology Appendix C-Mass Rate LST Look-up Table, revised October 2009.
[14] DKA Planning 2022, using CalEEMod model, version 2022.1.

Table 2-4
Daily Operations Emissions

Mobile Sources	0.5	0.4	3.3	<0.1	0.2	<0.1
Regional Total	1.4	0.4	4.1	<0.1	0.2	<0.1
Regional Significance Threshold	55	55	550	150	150	55
Exceed Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
Localized Total	0.9	0.1	0.7	<0.1	<0.1	<0.1
Localized Significance Threshold	N/A	340	3,237	N/A	5	3
Exceed Threshold?	**N/A**	**No**	**No**	**N/A**	**No**	**No**

LST analyses based on five-acre site with 50-meter distances to receptors in Coachella Valley SRA
Source: DKA Planning, 2022 based on CalEEMod 2022.1 model runs (included in the Technical Appendix).
Totals reflect the summer season maximum and may not add up due to rounding.

c) There are sensitive receptors within one mile of the Project Site that could be exposed to air pollution from construction and operation of the Project, including, but are not limited to, the following representative sampling:

- Single-family home (mobile home) located at 82400 Avenue 58, 320 feet west of the Site's southwest corner boundary.

- Single-family home (mobile home) located at 57310 Jackson Street, 550 feet northeast of the Site's northeast corner boundary.

- Single-family home (mobile home) located at 83254 Avenue 58, 1,250 feet east of the Site's southeast corner boundary.

- Westside Elementary School located at 82225 Airport Boulevard, 3,700 feet northwest of the Site's northwest corner boundary.

- Coachella Valley High School located at 83800 Airport Boulevard, one mile northeast of the Site's northeast corner boundary.

Construction

Construction of the Project could expose sensitive receptors to substantial pollutant concentrations if maximum daily emissions of regulated pollutants generated by sources located on and/or near the Project Site exceeded the applicable LST values, or if construction activities generated significant emissions of TACs that could result in carcinogenic risks or non-carcinogenic hazards exceeding the SCAQMD Air Quality Significance Thresholds of 10 excess cancers per million or non-carcinogenic Hazard Index greater than 1.0, respectively. As discussed above, the LST values were derived by the SCAQMD for the criteria pollutants NO_X, CO, PM_{10}, and $PM_{2.5}$ to prevent the occurrence of concentrations exceeding the air quality standards at sensitive receptor locations based on proximity and construction site size.

As shown in **Table 2-3**, during construction of the Project, maximum daily localized unmitigated emissions of NO_2, CO, PM_{10}, and $PM_{2.5}$ from sources on the Project Site would remain below each of the respective LST values. Unmitigated maximum daily localized emissions would not exceed any of the localized standards for receptors that are approximately 50 meters from the Project's construction activities. Therefore, based on SCAQMD guidance, localized emissions of criteria pollutants would not have the potential to expose sensitive receptors to substantial concentrations that would present a public health concern.

The primary TAC that would be generated by construction activities is diesel PM, which would be released from the exhaust stacks of construction equipment. The construction emissions modeling conservatively assumed that all equipment present on the Project Site would be operating simultaneously throughout most of the day, while in all likelihood this would rarely be the case. Average daily emissions of diesel PM would be less than one pound per day throughout the course of Project construction. Therefore, the magnitude of daily diesel PM emissions, would not be sufficient to result in substantial pollutant concentrations at off-site locations nearby.

Furthermore, according to SCAQMD methodology, health risks from carcinogenic air toxics are usually described in terms of individual cancer risk. "Individual Cancer Risk" is the likelihood that a person exposed to concentrations of TACs over a 30-year period will contract cancer based on the use of standard risk-assessment methodology. The entire duration of construction activities associated with implementation of the Project is anticipated to be approximately six months, and the magnitude of daily diesel PM emissions will vary over this time period. No residual emissions and corresponding individual cancer risk are anticipated after construction. Because there is such a short-term exposure period, construction TAC emissions would result in a less than significant impact. Therefore, construction of the Project would not expose sensitive receptors to substantial diesel PM concentrations, and this impact would be less than significant.

Operation

The Project Site would be redeveloped with overnight guest accommodations and worker-related housing, land uses that are not typically associated with TAC emissions. Typical sources of acutely and chronically hazardous TACs include industrial manufacturing processes (e.g., chrome plating, electrical manufacturing, petroleum refinery). The Project would not include these types of potential industrial manufacturing process sources. It is expected that quantities of hazardous TACs generated on-site (e.g., cleaning solvents, paints, landscape pesticides) for the types of proposed land uses would be below thresholds warranting further study under California Accidental Release Program.

When considering potential air quality impacts under CEQA, consideration is given to the location of sensitive receptors within close proximity of land uses that emit TACs. CARB has published and adopted the Air Quality and Land Use Handbook: A Community Health Perspective, which provides recommendations regarding the siting of new sensitive land uses near potential sources of air toxic emissions (e.g., freeways, distribution centers, rail yards, ports, refineries, chrome plating facilities, dry

cleaners, and gasoline dispensing facilities).[15] The SCAQMD adopted similar recommendations in its Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning.[16] Together, the CARB and SCAQMD guidelines recommend siting distances for both the development of sensitive land uses in proximity to TAC sources and the addition of new TAC sources in proximity to existing sensitive land uses.

The primary sources of potential air toxics associated with Project operations include DPM from delivery trucks (e.g., truck traffic on local streets and idling on adjacent streets) and to a lesser extent, facility operations (e.g., natural gas fired boilers). However, these activities, and the land uses associated with the Project, are not considered land uses that generate substantial TAC emissions. It should be noted that the SCAQMD recommends that health risk assessments (HRAs) be conducted for substantial individual sources of DPM (e.g., truck stops and warehouse distribution facilities that generate more than 100 trucks per day or more than 40 trucks with operating transport refrigeration units) and has provided guidance for analyzing mobile source diesel emissions.[17]

Based on this guidance, the Project would not include these types of land uses and is not considered to be a substantial source of DPM warranting a refined HRA since daily truck trips to the Project Site would not exceed 100 trucks per day or more than 40 trucks with operating transport refrigeration units. In addition, the CARB-mandated airborne toxic control measures (ATCM) limits diesel-fueled commercial vehicles (delivery trucks) to idle for no more than five minutes at any given time, which would further limit diesel particulate emissions.

As the Project would not contain substantial TAC sources and is consistent with the CARB and SCAQMD guidelines, the Project would not result in the exposure of off-site sensitive receptors to carcinogenic or toxic air contaminants that exceed the maximum incremental cancer risk of 10 in one million or an acute or chronic hazard index of 1.0, and potential TAC impacts would be less than significant.

The Project would generate long-term emissions on-site from area and energy sources that would generate negligible pollutant concentrations of CO, NO_2, $PM_{2.5}$, or PM_{10} at nearby sensitive receptors. While long-term operations of the Project would add traffic to local roads that produces off-site emissions, these would not result in exceedances of CO air quality standards at roadways in the area due to three key factors. First, CO hotspots are extremely rare and only occur in the presence of unusual atmospheric conditions and extremely cold conditions, neither of which applies to this Project area. Second, auto-related emissions of CO continue to decline because of advances in fuel combustion technology in the vehicle fleet. Finally, the Project would all but eliminate home-based work trips, as workers would now live on-site. While there would be some non-work related trips from the 13 new

[15] California Air Resources Board, Air Quality and Land Use Handbook, a Community Health Perspective, April 2005.

[16] South Coast Air Quality Management District, Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning, May 6, 2005.

[17] South Coast Air Quality Management District, Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis, 2002.

residential buildings, they would be negligible and would not contribute to substantial congestion on Avenue 58 or any other local roadways in the Coachella Valley.

Finally, the Project would not result in any substantial emissions of TACs during the construction or operations phase. During the construction phase, the primary air quality impacts would be associated with the combustion of diesel fuels, which produce exhaust-related particulate matter that is considered a toxic air contaminant by CARB based on chronic exposure to these emissions.[18] However, construction activities would not produce chronic, long-term exposure to diesel particulate matter. During long-term project operations, the Project does not include typical sources of acutely and chronically hazardous TACs such as industrial manufacturing processes and automotive repair facilities. As a result, the Project would not create substantial concentrations of TACs.

In addition, the SCAQMD recommends that health risk assessments be conducted for substantial sources of diesel particulate emissions (e.g., truck stops and warehouse distribution facilities) and has provided guidance for analyzing mobile source diesel emissions.[19] The Project would not generate a substantial number of truck trips. Based on the limited activity of TAC sources, the Project would not warrant the need for a health risk assessment associated with on-site activities. Therefore, the Project's operational impacts on local sensitive receptors would be less than significant.

Impacts will be less than significant.

d) The Project would not result in activities that create objectionable odors. The Project is a housing development that would not include any activities typically associated with unpleasant odors and local nuisances (e.g., rendering facilities, dry cleaners). SCAQMD regulations that govern nuisances (i.e., Rule 402, Nuisances) would regulate any occasional odors associated with residences. As a result, any odor impacts from the Project would be considered less than significant.

Impacts will be less than significant.

Mitigation: No mitigation is required.

Monitoring: No monitoring is required.

[18] California Office of Environmental Health Hazard Assessment. Health Effects of Diesel Exhaust. www. http://oehha.ca.gov/public_info/facts/dieselfacts.html

[19] South Coast Air Quality Management District, Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Emissions, December 2002.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
BIOLOGICAL RESOURCES Would the project:				
7. Wildlife & Vegetation a) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or state conservation plan?	☐	☐	☒	☐
b) Have a substantial adverse effect, either directly or through habitat modifications, on any endangered, or threatened species, as listed in Title 14 of the California Code of Regulations (Sections 670.2 or 670.5) or in Title 50, Code of Federal Regulations (Sections 17.11 or 17.12)?	☐	☐	☒	☐
c) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U. S. Wildlife Service?	☐	☐	☒	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐
e) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or U. S. Fish and Wildlife Service?	☐	☐	☐	☒
f) Have a substantial adverse effect on State or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
g) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒

Source(s): GIS database, WRCMSHCP and/or CVMSHCP

Findings of Fact:

a) The Project Site is located within the boundaries of the Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP). However, the development area has been previous disturbed to support prefabricated mobile homes and other worker housing buildings.

Impacts will be less than significant.

b) - d) Habitat linkages provide connections between larger habitat areas that are separated by development. Wildlife corridors are similar to linkages but provide specific opportunities for animals to disperse or migrate between areas. A corridor can be defined as a linear landscape feature of sufficient width to allow animal movement between two comparatively undisturbed habitat fragments. Adequate cover is essential for a corridor to function as a wildlife movement area. It is possible for a habitat corridor to be adequate for one species yet still inadequate for others. Wildlife corridors are features that allow for the dispersal, seasonal migration, breeding, and foraging of a variety of wildlife species. Additionally, open space can provide a buffer against both human disturbance and natural fluctuations in resources. The Project Site has the potential to support suitable habitat for foraging and nesting birds, which are protected by the Migratory Bird Treaty Act (MBTA) and Fish and Game Code.

If construction occurs between February 1st and August 31st, a pre-construction clearance survey for nesting birds shall be conducted within three (3) days of the start of any vegetation removal or ground disturbing activities to ensure that no nesting birds will be disturbed during construction. The biologist conducting the clearance survey should document a negative survey with a brief letter report indicating that no impacts to active avian nests will occur. If an active avian nest is discovered during the preconstruction clearance survey, construction activities should stay outside of a no-disturbance buffer. The size of the no-disturbance buffer will be determined by the wildlife biologist and will depend on the level of noise and/or surrounding anthropogenic disturbances, line of sight between the nest and the construction activity, type and duration of construction activity, ambient noise, species habituation, and topographical barriers. These factors will be evaluated on a case-by-case basis when developing buffer distances. Limits of construction to avoid an active nest will be established in the field with flagging, fencing, or other appropriate barriers; and construction personnel will be instructed on the sensitivity of nest areas. A biological monitor should be present to delineate the boundaries of the buffer area and to monitor the active nest to ensure that nesting behavior is not adversely affected by the construction activity. Once the young have fledged and left the nest, or the nest otherwise becomes inactive under natural conditions, construction activities within the buffer area can occur.

Under the federal Endangered Species Act, “Critical Habitat” is designated at the time of listing of a species or within one year of listing. Critical Habitat refers to specific areas within the geographical range of a species at the time it is listed that include the physical or biological features that are essential to the survival and eventual recovery of that species. Maintenance of these physical and biological features requires special management considerations or protection, regardless of whether individuals or the species are present or not. All federal agencies are required to consult with the United States Fish and Wildlife Service (USFWS) regarding activities they authorize, fund, or permit which may affect a federally listed species or its designated Critical Habitat. The purpose of the consultation is to ensure that projects will not jeopardize the continued existence of the listed species or adversely modify or destroy its designated Critical Habitat. The designation of Critical Habitat does not affect private landowners, unless a project they are proposing is on federal lands, uses federal funds, or requires federal authorization or permits (e.g., funding from the Federal Highways Administration or a CWA Permit from the Corps). If there is a federal nexus, then the federal agency that is responsible for providing the funding or permit would consult with the USFWS.

The Project Site is not located with federally designated Critical Habitat. Therefore, the loss or adverse modification of Critical Habitat will not occur as a result of the Project and consultation with the USFWS will not be required for implementation of the Project.

Impacts will be less than significant.

e) - f) As defined in the MSHCP, riparian/riverine areas are lands that contain habitat dominated by trees, shrubs, persistent emergent or emergent mosses and lichens that occur close to or depend on a nearby freshwater source or areas that contain a freshwater flow during all or a portion of the year. Vernal pools are seasonal wetlands that occur in depressions, typically have wetland indicators that represent all three parameters (soils, vegetation, and hydrology), and are defined based on vernal pool indicator plant species during the wetter portion of the growing season but normally lack wetland indicators associated with vegetation and/or hydrology during the drier portion of the growing season.

Vernal pool conditions do not exist on the Project Site. There are no depressions, basins, impoundment, or tire ruts on the Project Site suggestive of any water retention or of possessing hydric soil conditions. Soils on the Project Site appear to be sufficiently silty, sandy, and porous as to be incapable of holding water for vernal pools, even if the depressions did exist on the Site. The biological functions and values of vernal pools do not exist for the development of any fairy shrimp species. Riverine/riparian and vernal pool habitats do not occur on the Project Site. No evidence of blue-line drainages, ponds, or lakes. Moreover, there are no drainage features on the development portion. The Project would not result in a substantial adverse effect on any riparian habitat or other sensitive natural community. The Project Site does not contain any natural drainage features and is absent of federally protected wetlands as defined by Section 404 of the Clean Water Act.

There will be no impacts.

g) The Project would not conflict with any local policies or ordinances protecting biological resources. The County of Riverside Ordinance No. 559 regulates the removal of trees above 5,000 feet in elevation. The elevation of the Project Site is at approximately 66 feet below sea level.[20]

There will be no impacts.

Mitigation: No mitigation is required.

Monitoring: No monitoring is required.

[20] https://gis1.countyofriverside.us/Html5Viewer/?viewer=MMC_Public

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
CULTURAL RESOURCES Would the project:				
8. Historic Resources a) Alter or destroy a historic site?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of a historical resource, pursuant to California Code of Regulations, Section 15064.5?	☐	☐	☐	☒

Source(s): Project Application Materials
Riverside County General Plan, Multipurpose Open Space Element, Figure OS-7, Historical Resources

Findings of Fact:

a) - b) Currently the development area of the Project Site contains prefabricated mobile homes, Rancho Polo offices and accessory structures.

According to the County, there is a historic ranch recorded within ¼ mile south of the Site, two other historic structures within 1 mile of the Site, and a historic palm grove within 1 mile of the Site. Due to intervening topography, distance, and built infrastructure (e.g., roads, buildings) the Project would not significantly impact any of the County's designated resources.

According to the CEQA Guidelines, a resource that meets one or most listing criteria of the California Register of Historic Resources (CRHR) can be considered historically significant. A resource may be listed in the CRHR if it meets any of the following criteria:

(1) Is associated with events that have made a significant contribution to the broad patterns of California history and cultural heritage.

(2) Is associated with the lives of persons important in our past.

(3) Embodies the distinctive character of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.

(4) Has yielded, or may be likely to yield, information important in prehistory or history

According to Public Resources Code (PRC) §5020.1(j), "'historical resource' includes, but is not limited to, any object, building, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California."

More specifically, CEQA guidelines state that the term "historical resources" applies to any such resources listed in or determined to be eligible for listing in the California Register of Historical Resources, included in a local register of historical resources, or determined to be historically significant by the lead agency (Title 14 CCR §15064.5(a)(1)-(3)). Regarding the proper criteria for the evaluation

of historical significance, CEQA guidelines mandate that “generally a resource shall be considered by the lead agency to be ‘historically significant’ if the resource meets the criteria for listing on the California Register of Historical Resources” (Title 14 CCR §15064.5(a)(3)).

Standard practices for development projects mandate the inclusion of conditions of approval that will mitigate impacts to unknown resources discovered during the course of construction.

There will be no impacts.

Mitigation: No mitigation is required.

Monitoring: No monitoring is required.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
9. Archaeological Resources a) Alter or destroy an archaeological site?	☐	☒	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource, pursuant to California Code of Regulations, Section 15064.5?	☐	☒	☐	☐
c) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☒	☐

Source(s): Project Application Materials

Findings of Fact:

a) – b) A significant impact would occur if a known or unknown archaeological resource would be removed, altered, or destroyed as a result of the proposed development. Sate CEQA Guidelines Section 15064.5 defines significant archaeological resources as resources that meet the criteria for historical resources or resources that constitute unique archaeological resources. A project-related significant impact could occur if a project would significantly affect archaeological resources that fall under either of these categories.

The Project would require excavation for mechanical uses, utility and foundation work, and grading. As such, there is a possibility for unknown archaeological resources to be encountered within the underlying alluvium during grading and excavation activities associated with development of the Project.

It is recommended that the project be allowed to proceed with the implementation of a cultural resources monitoring program conducted by an archaeologist and Native American representative during grading of the property. The cultural resources Mitigation Monitoring and Reporting Program (CUL-MM-1) is recommended as a condition of approval to reduce potential cultural resource impacts to a level of insignificance.

Impacts will be less than significant with mitigation incorporated.

c) The Project Site does not contain a cemetery, and no known formal cemeteries are located within the immediate vicinity of the Project Site. Nevertheless, should human remains be unearthed during grading and excavation activities associated with project development, the construction contractor would be required by California law to comply with California Health and Safety Code Section 7050.5 and Public Resources Code Section 5097.98. According to Section 7050.5(b) and (c), if human remains are discovered, the County Coroner must be contacted and if the Coroner recognizes the human remains to be those of a Native American or has reason to believe that they are those of a Native American, the Coroner is required to contact the Native American Heritage Commission (NAHC) by telephone within 24 hours.

Pursuant to California Public Resources Code Section 5097.98, whenever the NAHC receives notification of a discovery of Native American human remains from a county coroner, the NAHC is required to immediately notify those persons it believes to be most likely descended from the deceased Native American. The descendants may, with the permission of the owner of the land, or his or her authorized representative, inspect the site of discovery of the Native American human remains and may recommend to the owner or the person responsible for the excavation work means for treatment or disposition, with appropriate dignity, of the human remains and any associated grave goods. The descendants shall complete their inspection and make recommendations or preferences for treatment within 48 hours of being granted access to the site. According to Public Resources Code Section 5097.98(k), the NAHC is authorized to mediate disputes arising between landowners and known descendants relating to the treatment and disposition of Native American human burials, skeletal remains, and items associated with Native American burials. There is no record of human remains on the project site.

Impacts will be less than significant.

Mitigation:

Mitigation Measure CUL-1: Archaeological Monitoring

Prior to issuance of grading permits: The applicant/developer shall provide evidence to the County of Riverside Planning Department that a County certified professional archaeologist (Project Archaeologist) has been contracted to implement a Cultural Resource Monitoring Program (CRMP). A Cultural Resource Monitoring Plan shall be developed that addresses the details of all activities and provides procedures that must be followed in order to reduce the impacts to cultural and historic resources to a level that is less than significant as well as address potential impacts to undiscovered buried archaeological resources associated with this project. A fully executed copy of the contract and a wet-signed copy of the Monitoring Plan shall be provided to the County Archaeologist to ensure compliance with this condition of approval.

Working directly under the Project Archaeologist, an adequate number of qualified Archaeological Monitors shall be present to ensure that all earth moving activities are observed and shall be on-site during all grading activities for areas to be monitored including off-site improvements. Inspections will vary based on the rate of excavation, the materials excavated, and the presence and abundance of artifacts and features. The frequency and location of inspections will be determined by the Project Archaeologist.

Prior to Grading Permit Final Inspection, the landowner(s) shall relinquish ownership of all cultural resources that are unearthed on the Project property during any ground-disturbing activities, including previous investigations and/or Phase III data recovery.

Historic Resources- all historic archaeological materials recovered during the archaeological investigations (this includes collections made during an earlier project, such as testing of archaeological

sites that took place years ago), shall be curated at the Western Science Center, a Riverside County curation facility that meets State Resources Department Office of Historic Preservation Guidelines for the Curation of Archaeological Resources ensuring access and use pursuant to the Guidelines Prehistoric Resources- One of the following treatments shall be applied.

a. Reburial of the resources on the Project property. The measures for reburial shall include, at least, the following: Measures to protect the reburial area from any future impacts. Reburial shall not occur until all required cataloguing, analysis and studies have been completed.

Monitoring: Cultural resource monitoring will be required as detailed in Mitigation Measure CUL-1 by a qualified Archaeologist in coordination with the County Archaeologist.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
ENERGY Would the project:				
10. Energy Impacts a) Result in potentially significant environmental impacts due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
b) Conflict with or obstruct a State or Local plan for renewable energy or energy efficiency?	☐	☐	☒	☐

Source(s): Riverside County General Plan, Riverside County Climate Action Plan ("CAP") Project Application Materials

Findings of Fact:

a) The 2018 amendments and additions to the CEQA Checklist includes an Energy Section that analyzes the Project's energy consumption in order to avoid or reduce inefficient, wasteful, or unnecessary consumption of energy. No state or local agencies have adopted specific criteria or thresholds to be utilized in an energy impact analysis. However, the 2018 Guidelines for the Implementation of the California Environmental Quality Act, provide the following direction on how to analyze a project's energy consumption:

> "If analysis of the project's energy use reveals that the project may result in significant environmental effects due to wasteful, inefficient, or unnecessary use of energy, or wasteful use of energy resources, the EIR shall mitigate that energy use. This analysis should include the project's energy use for all project phases and components, including transportation-related energy, during construction and operation. In addition to building code compliance, other relevant considerations may include, among others, the project's size, location, orientation, equipment use and any renewable energy features that could be incorporated into the project. (Guidance on information that may be included in such an analysis is presented in Appendix F.) This analysis is subject to the rule of reason and shall focus on energy use that is caused by the project. This analysis may be included in related analyses of air quality, greenhouse gas emissions, transportation or utilities in the discretion of the lead agency."

The Project would impact energy resources during construction and operation. Energy resources that would be potentially impacted include electricity, natural gas, and petroleum-based fuel supplies and distribution systems. This analysis includes a discussion of the potential energy impacts of the Project, with particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy. A general definition of each of these energy resources are provided below.

- Electricity, a consumptive utility, is a man-made resource. The production of electricity requires the consumption or conversion of energy resources, including water, wind, oil, gas, coal, solar, geothermal, and nuclear resources, into energy. The delivery of electricity involves a number of system components, including substations and transformers that lower transmission line power

(voltage) to a level appropriate for on-site distribution and use. The electricity generated is distributed through a network of transmission and distribution lines commonly called a power grid. Conveyance of electricity through transmission lines is typically responsive to market demands.

- Natural gas is a combustible mixture of simple hydrocarbon compounds (primarily methane) that is used as a fuel source. Natural gas consumed in California is obtained from naturally occurring reservoirs, mainly located outside the State, and delivered through high-pressure transmission pipelines. The natural gas transportation system is a nationwide network and, therefore, resource availability is typically not an issue. Natural gas satisfies almost one-third of the State's total energy requirements and is used in electricity generation, space heating, cooking, water heating, industrial processes, and as a transportation fuel. Natural gas is measured in terms of cubic feet.

- Petroleum-based fuels currently account for a majority of the California's transportation energy sources and primarily consist of diesel and gasoline types of fuels. However, the state has been working on developing strategies to reduce petroleum use. Over the last decade California has implemented several policies, rules, and regulations to improve vehicle efficiency, increase the development and use of alternative fuels, reduce air pollutants and GHG emissions from the transportation sector, and reduce vehicle miles traveled (VMT). Accordingly, petroleum-based fuel consumption in California has declined.

California's estimated annual energy use as of 2020 included:

- Approximately 272,576 gigawatt hours of electricity;[21]

- Approximately 2,074,302 million cubic feet of natural gas per year[22] and

- Approximately 23.2 billion gallons of transportation fuel (for the year 2015).[23]

Construction

1. Electricity associated with the conveyance of water that would be used during project construction for dust control (supply and conveyance) and electricity to power any necessary lighting during construction, electronic equipment, or other construction activities necessitating electrical power;

2. Petroleum-based fuels used to power off-road construction vehicles and equipment on the Project Site, construction worker travel to and from the Project Site, as well as delivery and haul truck trips (e.g., hauling of demolition material to off-site reuse and disposal facilities); and,

[21] California Energy Commission. Energy Almanac. Total Electric Generation. https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2020-total-system-electric-generation

[22] Natural Gas Consumption by End Use. U.S. Energy Information Administration. https://www.eia.gov/dnav/ng/ng_cons_sum_dcu_SCA_a.htm.

[23] California Energy Commission. Revised Transportation Energy Demand Forecast 2018-2030. https://www.energy.ca.gov/data-reports/planning-and-forecasting

3. Energy used in the production of construction materials, such as asphalt, steel, concrete, pipes, and manufactured or processed materials such as lumber and glass.

Construction-Related Electricity

The Project would consume electricity to construct the new buildings and infrastructure. Electricity would be supplied to the Project Site by Imperial Irrigation District (IID) and would be obtained from the existing electrical lines in the vicinity of the site. The use of electricity from existing power lines, rather than temporary diesel or gasoline powered generators, would minimize impacts on energy use. Electricity consumed during project construction would vary throughout the construction period based on the construction activities being performed. Various construction activities include electricity associated with the conveyance of water that would be used during project construction for dust control (supply and conveyance) and electricity to power any necessary lighting during construction, electronic equipment, or other construction activities necessitating electrical power. Such electricity demand would be temporary, nominal, and would cease upon the completion of construction. Overall, construction activities associated with the Project would require limited electricity consumption that would not be expected to have an adverse impact on available electricity supplies and infrastructure. The use of electricity during project construction would not be wasteful, inefficient, or unnecessary.

Since there are power poles running along the south side of the Project Site along Avenue 58, only nominal improvements would be required to IID distribution lines and equipment with development of the Project. Where feasible, the new service installations and connections would be scheduled and implemented in a manner that would not result in electrical service interruptions to other properties. Compliance with County's guidelines and requirements would ensure that the Project fulfills its responsibilities relative to infrastructure installation, coordinates any electrical infrastructure removals or relocations, and limits any impacts associated with construction of the project. Construction of the Project's electrical infrastructure would not adversely affect the electrical infrastructure serving the surrounding uses or utility system capacity. Therefore, potential impacts to the electricity supply and infrastructure associated with project construction would be less than significant and no mitigation is required.

Construction-Related Natural Gas

Construction of the Project typically would not involve the consumption of natural gas. Natural gas would not be supplied to support construction activities, thus there would be no demand generated by construction. Since the Project Site is an infill development where natural gas service is currently provided to the area via pipes on Avenue 58, construction of the Project would be limited to installation of new natural gas connections within the Project Site. Development of the Project would likely not require extensive infrastructure improvements to serve the site. Construction-related energy usage impacts associated with the installation of natural gas connections are expected to be confined to trenching in order to place the lines below surface. Prior to ground disturbance, the Project would notify and coordinate with SoCalGas to identify the locations and depth of all existing gas lines and avoid

disruption of gas service. Therefore, potential impacts to natural gas supply and infrastructure associated with the project construction would be less than significant and no mitigation is required.

Construction-Related Petroleum Fuel Use

Petroleum-based fuel usage represents the highest amount of transportation energy potentially consumed during construction, which would be utilized by both off-road equipment operating on the Project Site and on-road automobiles transporting workers to and from the site and on-road trucks transporting equipment and supplies to the Project Site.

The project would utilize construction contractors which practice compliance with applicable CARB regulation regarding retrofitting, repowering, or replacement of diesel off-road construction equipment. Additionally, CARB has adopted the Airborne Toxic Control Measure to limit heavy-duty diesel motor vehicle idling in order to reduce public exposure to diesel particulate matter and other Toxic Air Contaminants. Compliance with these measures would result in a more efficient use of construction-related energy and would minimize or eliminate wasteful or unnecessary consumption of energy. Idling restrictions and the use of newer engines and equipment would result in less fuel combustion and energy consumption.

Additionally, as required by California Code of Regulations Title 13, Motor Vehicles, Section 2449(d)(3) limits idling times of construction vehicles to no more than five minutes, thereby minimizing or eliminating unnecessary and wasteful consumption of fuel due to unproductive idling of construction equipment. Enforcement of idling limitations is realized through periodic site inspections conducted by County building officials, and/or in response to citizen complaints. Construction activities associated with the Project would be required to adhere to all State and SCAQMD regulations for off-road equipment and on-road trucks, which provide minimum fuel efficiency standards. Development of the Project would not result in the need to manufacture construction materials or create new building material facilities specifically to supply the Project. It is difficult to measure the energy used in the production of construction materials including asphalt, steel, and concrete; however, it is reasonable to assume that the production of these building materials would employ all reasonable energy conservation practices in the interest of minimizing the cost of doing business. Construction activities for the Project would not result in the wasteful, inefficient, and unnecessary consumption of energy resources. Therefore, potential impacts associated with construction-related petroleum fuel use for transportation and associated infrastructure would be less than significant and no mitigation is required.

Operation

The on-going operation of the Project would require the use of energy resources for multiple purposes including, but not limited to, transportation energy demands (energy consumed by employee and patron vehicles accessing the Project Site) and facilities energy demands (energy consumed by building operations and site maintenance activities). Building operation and site maintenance (including landscape maintenance) would result in the consumption of electricity (provided by IID) and natural gas (provided by Southern California Gas Company).

As shown in CalEEMod, the estimated electricity demand for the Project is approximately 103,432 kWh per year. In 2020, the non-residential sector of the County of Riverside consumed approximately 8,014 million kWh of electricity.

As shown in CalEEMod, the estimated natural gas consumption for the Project is approximately 220,613 kBTU per year. In 2020, the non-residential sector of the County of Riverside consumed approximately 135 million therms of gas. The increase in both electricity and natural gas demand from the Project is insignificant compared to the County's non-residential sector demand.

Energy use in buildings is divided into energy consumed by the built environment and energy consumed by uses that are independent of the construction of the building such as in plug-in appliances. In California, the California Building Standards Code Title 24 governs energy consumed by the built environment, mechanical systems, and some types of fixed lighting. Non-building energy use, or "plugin" energy use can be further subdivided by specific end-use (refrigeration, cooking, appliances, etc.). The Project would be required to comply with Title 24 standards during the building permit process. The Project energy demands in total would be comparable to other non-residential projects of similar scale and configuration. Therefore, the Project facilities' energy demands and energy consumption would not be considered inefficient, wasteful, or otherwise unnecessary. Therefore, potential impacts to the electricity and natural gas supply and infrastructure associated with project operation would be less than significant and no mitigation is required.

The Project would comply with all Federal, State, and County requirements related to the consumption of transportation energy that includes California Code of Regulations Title 24, Part 11 California Green Building Standards that require the Project to provide electric vehicle charging stations in the parking lots of the non-residential use. Existing and planned capacity and supplies of transportation fuels would be sufficient to support the Proposed demand. Therefore, potential impacts associated with operation-related petroleum fuel use for transportation and associated infrastructure capacity would be less than significant and no mitigation is required.

The Project would comply with regulatory compliance measures outlined by the State and County related to Air Quality, Greenhouse Gas Emissions (GHG), Transportation/Circulation, and Water Supply. The Project would be constructed in accordance with all applicable County Building and Fire Codes. The Project would not result in the wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation. Therefore, potential impacts associated with the wasteful, inefficient, or unnecessary consumption of energy resources would be less than significant, and no mitigation is required.

Impacts will be less than significant.

b) The Project would be constructed consistent with Title 24 of the California Energy Code as applicable as well as policies contained within the Climate Action Plan to further reduce energy demand. The Project would recycle up to 75% of solid waste per AB 341 and compost organic material to avoid

transporting it off-site. Further, the Project would incorporate drought tolerant landscaping to minimize water demand. The Project would not conflict with or obstruct the implementation of State or Local plans for renewable energy or energy efficiency.

The Project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. The applicable energy plan for the Project is the Riverside County Climate Action Plan (CAP) and County of Riverside General Plan 2035. The County of Riverside's CAP was completed in November 2019. The CAP Update describes Riverside County's GHG emissions for the year 2017, projects how these emissions will increase into 2020, 2030, and 2050, and includes strategies to reduce emissions to a level consistent with the State of California's emissions reduction targets. The CAP Update sets a target to reduce community-wide GHG emission emissions by 15 percent from 2008 levels by 2020, 49 percent by 2030, and 83 percent by 2050.

As described in detail in Section V.VIII - Greenhouse Gas Emissions, the Riverside County CAP states that project's that do not exceed the CAP's screening threshold of 3,000 MTCO2e per year are in compliance with the County's CAP. The Project would not exceed the threshold set by the CAP Update and therefore would be consistent with the County's CAP.

Impacts will be less than significant.

Mitigation: No mitigation is required.

Monitoring: No monitoring is required.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
GEOLOGY AND SOILS Would the project directly or indirectly:				
11. Alquist-Priolo Earthquake Fault Zone or County Fault Hazard Zones a) Be subject to rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?	☐	☐	☒	☐

Source(s): Riverside County General Plan Figure S-2 "Earthquake Fault Study Zones"
California Department of Conservation, EQZApp[24]
California Earthquake Hazards Zone Application
Riverside County, Map My County[25]
Geotechnical Investigation, GeoCon West, July 22, 2022 (included as Appendix C-1)
Custom Soil Resource Report, USDA NRCS, February 10, 2020 (included as Appendix C-2)

Findings of Fact:

a) According to the Riverside County General Plan and Map My County, as well as the California Department of Conservation, the Project Site is not within an Alquist-Priolo Fault Zone. The Project would be required to comply with applicable provisions of the 2022 California Building Code (CBC). Title 24, Part 2, the CBC establishes minimum standards for building design in the state, and it is consistent with or more stringent than Uniform Building Code requirements.

The California CBC provides procedures for earthquake resistant structural design that include considerations for on-site soil conditions, occupancy, and the configuration of the structure including the structural system and height. Local codes are permitted to be more restrictive than Title 24 but are required to be no less restrictive. The CBC is designed and implemented to improve building safety, sustainability, and consistency, and to integrate new technology and construction methods to construction projects throughout California. Moreover, the Riverside County Department of Building and Safety permitting process would ensure that all required CBC seismic safety measures are incorporated into the building.

Impacts will be less than significant.

Mitigation: No mitigation is required.

Monitoring: No monitoring is required.

[24] CA Department of Conservation: https://maps.conservation.ca.gov/cgs/EQZApp/app/, accessed November 10, 2022.
[25] https://gis1.countyofriverside.us/Html5Viewer/?viewer=MMC_Public

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
12. Liquefaction Potential Zone a) Be subject to seismic-related ground failure, including liquefaction?	☐	☐	☒	☐

Source(s): Riverside County General Plan, Safety Element, Figure 2, Liquefaction Zones
Eastern Coachella Valley Area Plan, Figure 15, Seismic Hazards
Geotechnical Investigation, GeoCon West, July 22, 2022 (included as Appendix C-1)
Custom Soil Resource Report, USDA NRCS, February 10, 2020 (included as Appendix C-2)

Findings of Fact:

a) Liquefaction occurs when vibrations or water pressure causes soil particles to lose its friction properties. As a result, soil behaves like a liquid, has an inability to support weight, and can flow down very gentle slopes. This condition is usually temporary and is most often caused by an earthquake vibrating water-saturated fill or unconsolidated soil.

However, effects of liquefaction can include sand boils, settlement, and structural foundation failures. The primary factors which influence the potential for liquefaction include groundwater table elevation, soil type and plasticity characteristics, relative density of the soil, initial confining pressure, and intensity and duration of ground shaking. Soils that are most susceptible to liquefaction are clean, loose, saturated, and uniformly graded fine-grained sands in areas where the groundwater table is within approximately 50 feet below ground surface.

The Project Site is within a High Liquefaction area. The historic high groundwater level in the vicinity of the site is reported at a depth of approximately 20 feet beneath the ground surface. The Coachella Valley Water District is actively recharging the groundwater in the area; it is assumed that groundwater could be recharged to a depth of approximately 10 feet below the ground surface.

The liquefaction analysis was also performed for the Maximum Considered Earthquake level by using a historic high groundwater table of 10 feet below the ground surface, a magnitude 7.23 earthquake, and a peak horizontal acceleration of 0.69g (PGAM). The liquefaction analyses, included herein for CPTs 1 through 4, indicates that the alluvial soils below the historic high groundwater depth could be susceptible up to approximately 3.28 inches of total settlement during Maximum Considered Earthquake ground motion.

The foundation system for the proposed structures must be able to provide sufficient support for the structures and minimize the effects of differential settlement resulting from a liquefaction event. Based on these considerations, it is recommended that the proposed structures be supported on a reinforced concrete mat foundation or a post-tensioned foundation system deriving support on a blanket of newly placed engineered fill. Recommendations for a mat foundation or a post-tensioned foundation system are provided in the Geotechnical Investigation. These recommendations are regulatory compliance. Regulatory compliance requirements are appropriately considered in the CEQA analysis (See, e.g., San Francisco Beautiful v. City and County of San Francisco (2014) 226 Cal.App.4th 1012, 1033 (“An

agency may rely on generally applicable regulations to conclude an environmental impact will not be significant and therefore does not require mitigation.").

All structures built in the County are required to be developed in compliance with the CBC (California Code of Regulations, Title 24, Part 2) which is adopted by the County of Riverside. Compliance with the CBC, requires proper construction of building footings and foundations ensuring that the building withstand the effects of potential ground movement, including liquefaction. The Riverside County Department of Building and Safety reviews structural plans and geotechnical data prior to issuance of a grading permit and conducts inspections during construction, which would ensure that all required CBC measures are incorporated.

Impacts will be less than significant.

Mitigation: No mitigation is required.

Monitoring: No monitoring is required.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
13. Ground-shaking Zone a) Be subject to strong seismic ground shaking?	☐	☐	☒	☐

Source(s): Riverside County General Plan, Safety Element, Figure 1, Fault Lines
California Department of Conservation, EQZApp[26]
Geotechnical Investigation, GeoCon West, July 22, 2022 (included as Appendix C-1)

Findings of Fact:

a) The Project Site, like most of southern California, could be subject to seismically related strong ground shaking. Ground shaking is a major cause of structural damage from earthquakes. The amount of motion expected at a building site can vary from none to forceful depending upon the distance to the fault, the magnitude of the earthquake, and the local geology.

The Project Site is not within an Alquist-Priolo Fault Zone. The Project Site is located approximately 7 miles west of the nearest mapped fault line (San Andreas – Coachella Valley) near the I-10 Freeway. A major earthquake along these faults could cause substantial seismic ground shaking at the Project Site.

However, structures built in the County are required to be built in compliance with the CBC (California Code of Regulations, Title 24, Part 2) that provides provisions for earthquake safety based on factors including building occupancy type, the types of soils onsite, and the probable strength of ground motion. Compliance with the CBC would require the incorporation of 1) seismic safety features to minimize the potential for significant effects as a result of earthquakes; 2) proper building footings and foundations; and 3) construction of the building structure so that it would withstand the effects of strong ground shaking. The Riverside County Department of Building and Safety permitting process would ensure that all required CBC seismic safety measures are incorporated into the Project.

Impacts will be less than significant.

Mitigation: No mitigation is required.

Monitoring: No monitoring is required.

[26] CA Department of Conservation: https://maps.conservation.ca.gov/cgs/EQZApp/app/, accessed November 10, 2022.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
14. Landslide Risk a) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, collapse, or rockfall hazards?	☐	☐	☐	☒

Source(s): Riverside County General Plan, Safety Element, Figure 3, Landslide Risk
Eastern Coachella Valley Area Plan, Figure 16, Slope Map
Geotechnical Investigation, GeoCon West, July 22, 2022 (included as Appendix C-1)

Findings of Fact:

a) Landslides are the downhill movement of masses of earth and rock and are often associated with earthquakes; but other factors, including the slope, moisture content of the soil, composition of the subsurface geology, heavy rains, and improper grading can influence the occurrence of landslides.

The Project Site is not identified in the General Plan or the ECVAP as an area located with steep slopes, or slope instability which includes areas identified with existing landslides and/or low to high susceptibility. The Project Site to be developed is generally flat. No slopes would be disturbed by grading and no steep slopes would be created by the Project.

There will be no impacts.

Mitigation: No mitigation is required.

Monitoring: No monitoring is required.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
15. Ground Subsidence a) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in ground subsidence?	☐	☐	☒	☐

Source(s): Riverside County General Plan, Safety Element
Riverside County, Map My County[27]
Geotechnical Investigation, GeoCon West, July 22, 2022 (included as Appendix C-1)

Findings of Fact:

Ground subsidence is a general lowering of the ground surface over a large area that is generally attributed to lowering of the ground water levels within a groundwater basin. Localized or focal subsidence or settlement of the ground can occur as a result of earthquake motion in an area where groundwater in a basin is lowered. Subsidence typically occurs throughout a susceptible valley. In addition, differential displacement and fissures occur at or near the valley margin, and along faults. In the County of Riverside, the worst damage to structures as a result of regional subsidence may be expected at the valley margins. Alluvial valley regions are especially susceptible. Expansive soils have a significant amount of clay particles which can give up water (shrink) or take on water (swell). The change in volume exerts stress on buildings and other loads placed on these soils. The occurrence of these soils is often associated with geologic units having marginal stability. Expansive soils can be widely dispersed and can be found in hillside areas as well as low-lying alluvial basins. Expansion testing and mitigation are required by current County grading and building codes. Special engineering designs are used effectively to alleviate problems caused by expansive soils.

According to Figure S-7 “Documented Subsidence Areas Map” of the County General Plan, the Project Site is located within an area susceptible to subsidence.

Ground subsidence could occur in the future and the site could be affected especially if groundwater withdrawal were to re-initiate. The subsidence is on a regional scale that could cause settlement across the Project Site. However, the settlement occurs over a relatively large geographic area and typically does not cause differential settlement over a relatively short horizontal distance that should be addressed as a design concern as part of the site development.

Compliance with the California Building Code is a standard practice and would be required by the Riverside County Department of Building and Safety. Compliance with the requirements of the CBC as part of the building plan check and development review process, would ensure that potential soil stability impacts would be less than significant.

Impacts will be less than significant.

[27] https://gis1.countyofriverside.us/Html5Viewer/?viewer=MMC_Public

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

Mitigation: No mitigation is required.

Monitoring: No monitoring is required.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
16. Other Geologic Hazards a) Be subject to geologic hazards, such as seiche, mudflow, or volcanic hazard?	☐	☐	☐	☒

Source(s): Project Application Materials
Geotechnical Investigation, GeoCon West, July 22, 2022 (included as Appendix C-1)

Findings of Fact:

Seiches are oscillations of the surface of inland bodies of water that vary in period from a few minutes to several hours. Seismic excitations can induce such oscillations. Tsunamis are large sea waves produced by submarine earthquakes or volcanic eruptions. The Project is located well inland (approximately 75 miles) from the Pacific Ocean and is not subject to tsunami hazard. The nearest inland body of water is the Salton Sea located approximately 12 miles to the southeast. Impacts from seiches are not an issue of concern associated with the Project. The developed areas would not be subject to a mudflow hazard. There are no known active volcanoes in the study area that could present a volcanic hazard.

There will be no impacts.

Mitigation: No mitigation is required.

Monitoring: No monitoring is required.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
17. Slopes a) Change topography or ground surface relief features?	☐	☐	☐	☒
b) Create cut or fill slopes greater than 2:1 or higher than 10 feet?	☐	☐	☐	☒
c) Result in grading that affects or negates subsurface sewage disposal systems?	☐	☐	☐	☒

Source(s): Riv. Co. 800-Scale Slope Maps, Project Application Materials
Eastern Coachella Valley Area Plan, Figure 17, Slope Instability
Geotechnical Investigation, GeoCon West, July 22, 2022 (included as Appendix C-1)

Findings of Fact:

a) The Project would require grading to create the building pads, driveway and parking area as well as excavation for underground utilities. There are no sensitive geological features located on the site that would be adversely affected by the project. All grading would occur consistent with the County of Riverside Grading Ordinance and conditions imposed by the County of Riverside Building and Safety Department.

There will be no impacts.

b) The proposed development area is generally flat. Fill or cut slopes are not present or proposed for the improvement construction. No slopes greater than 2:1 or 10 feet in height would be created by grading activities.

There will be no impacts.

c) All Project grading would occur on-site. No existing septic/sewage disposal systems would be affected.

There will be no impacts.

Mitigation: No mitigation is required.

Monitoring: No monitoring is required.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
18. Soils a) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
b) Be located on expansive soil, as defined in Section 1803.5.3 of the California Building Code (2022), creating substantial direct or indirect risks to life or property?	☐	☐	☒	☐
c) Have soils incapable of adequately supporting use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒

Source(s): Geotechnical Investigation, GeoCon West, July 22, 2022 (included as Appendix C-1)
Custom Soil Resource Report, USDA NRCS, February 10, 2020 (included as Appendix C-2)

Findings of Fact:

a) The Project would result in the grading of the Project Site to accommodate the development. However, earthwork specifications and grading details would be implemented to reduce and prevent soil erosion and loss of topsoil. These specifications include maintaining proper drainage to avoid ponding of water and percent water from running into excavations.

Based on the field investigation and published geologic maps of the area, the soil units within the Site include undocumented artificial fill and recent alluvium. Undocumented artificial fill was encountered in the upper 2 to 4 feet throughout the site. With depths of 2 feet encountered on the northern three lots and 4 feet encountered where the 10 lots are proposed along Avenue 58. The fill consists of brown, grayish brown to olive silty to poorly graded sand which is moist and medium dense. Alluvium was encountered beneath the undocumented artificial fill and likely underlies the site to depths of several hundred feet. The alluvium is olive brown to olive and consists of layers of poorly graded sand, silty sand, silt, and clay. The soils are moist to wet and loose to medium dense (soft to hard).

The Project must also comply with the County's grading permit requirements, which would ensure that construction practices include BMPs to protect exposed soils. During operation of the project, the Project Site would be covered with asphalt for drive aisles and roads, along with sidewalks and pedestrian pathways. Areas of permeable surface (e.g., common open space and landscape planters) would be landscaped to reduce and prevent soil erosion and topsoil loss.

Impacts will be less than significant.

b) Expansive soils have a significant amount of clay particles which can give up water (shrink) or take on water (swell). The change in volume exerts stress on buildings and other loads placed on these soils. Expansive soils can be widely dispersed and can be found in hillside areas as well as low-lying alluvial basins. Expansion testing and mitigation are required by current County grading and building codes. Special engineering designs are used effectively to alleviate problems caused by expansive soils.

Soils types found on the Project Site include manure, artificial fill, and younger and older alluvium. Recommendations of a site-specific geotechnical report include the use of non-expansive materials for import, to be approved by the soils engineer.

The upper 5 feet of existing site soils encountered during the investigation are considered to have a "very low" expansive potential (EI = 0) and are classified as "non-expansive" in accordance with the 2019 California Building Code (CBC) Section 1803.5.3. The recommendations presented assume that the building foundations and slabs will derive support in these materials.

Compliance with the California Building Code (CBC) is a standard practice and would be required by the Riverside County Department of Building and Safety, which would include staff review of the site-specific geotechnical report to ensure the recommendations are implemented.

Impacts will be less than significant.

c) The Project would not involve the use of septic tanks or alternative wastewater disposal systems. The Project would include connecting to existing sewer infrastructure located within Avenue 58 and would not rely on alternative means of wastewater disposal.

There will be no impacts.

Mitigation: No mitigation is required.

Monitoring: No monitoring is required.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
19. Wind Erosion and Blowsand from project either on or off site. a) Be impacted by or result in an increase in wind erosion and blowsand, either on or off site?	☐	☐	☒	☐

Source(s): Riverside County General Plan Figure S-8, Wind Erosion Susceptibility Map Ord. No. 460, Article XV & Ord. No. 484
Eastern Coachella Valley Area Plan

Findings of Fact:

a) Wind erosion most commonly occurs when barren sand or sandy loam soils are exposed to high wind in the absence of moisture. Alluvial fans in the Eastern Coachella Valley are especially prone to wind erosion, although wind erosion is not limited to these areas. Human activity can increase wind erosion by disrupting soil formations and compaction, disturbing the stabilizing and wind-breaking effect of dunes, and most significantly, removing surface vegetation and its stabilizing effects.

Blowsand, the most severe form of wind erosion, occurs largely due to natural conditions. Blown sand can cause significant damage to property, and also results in the nuisance and expense of removing sand from roadways and other property, where it interferes with normal activity. Additionally, blowsand introduces a high level of suspended particulates into the air, which can create respiratory problems.

All grading shall conform to the California Building Code, Ordinance No. 457, and all other relevant laws, rules, and regulations governing grading in Riverside County and prior to commencing any grading which includes 50 or more cubic yards, the applicant shall obtain a grading permit from the Building and Safety Department. This is a standard condition for the County of Riverside and is not considered mitigation for CEQA implementation purposes.

The Project will be required to implement a Storm Water Pollution Prevention Plan (SWPPP) to address wind erosion and blow sand during the construction process. The SWPPP is required by the California Regional Water Quality Board and the NPDES General Permit Number R8-2010-0033 (County MS4 Permit). As part of the SWPPP, the Project will implement construction BMPs per the California Stormwater Quality Association Construction BMP Handbook that are used to control wind erosion and blow sand, as well as stormwater runoff. This is a standard condition for the County of Riverside as well as compliance with required state regulations and is not considered mitigation for CEQA implementation purposes.

The County of Riverside Ordinance 484 requires property consisting of sandy soils to protect the site from windblow erosion of sand. In addition to the County's regulations on sandy soils to prevent windblown erosion, SCAQMD requires implementation of Rule 403 to control fugitive dust and is applicable to any activity capable of generating fugitive dust. These preventative measures include, but are not limited to, watering all exposed areas on active sites at least three times per day, pre watering areas prior to clearing and soil moving activities, and replanting all distributed areas as soon as

practically possible. Upon completion of the Project, the site would contain asphalt and concrete cover, as well as landscaped areas, all of which would reduce and suppress potential blowsand generation from the Project Site.

Impacts will be less than significant.

Mitigation: No mitigation is required.

Monitoring: No monitoring is required.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
GREENHOUSE GAS EMISSIONS Would the project:				
20. Greenhouse Gas Emissions a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

Source(s): Riverside County General Plan, Riverside County Climate Action Plan ("CAP") Project Application Materials
CalEEMod version 2022.1 emission calculations. Greenhouse Gas Emissions Technical Report and Appendix, prepared by DKA Planning, March 2023 (Appendix D)

Findings of Fact:

a) The Project would generate direct and indirect GHG emissions because of different types of emissions sources, including the following:

- Construction: emissions from construction-related equipment and vehicular activity;
- Area source: emissions associated with landscape equipment;
- Energy source (building operations): emissions associated with electricity and natural gas use for space heating and cooling, water heating, energy consumption, and lighting;
- Mobile source: emissions associated with vehicles accessing the Project Site;
- Solid Waste: emissions associated with the decomposition of the waste, which generates methane based on the total amount of degradable organic carbon; and
- Water/Wastewater: emissions associated with energy used to pump, convey, deliver, and treat water.
- Refrigerants: These are substances used in equipment for air conditioning and refrigeration. Most refrigerants are HFCs or blends of them, which can have high GWP values.

The Project would generate an incremental contribution to and a cumulative increase in GHG emissions. A specific discussion regarding potential GHG emissions associated with the construction and operational phases of the Project is provided below.

Construction

Project construction is anticipated to be completed with occupancy the same year. A summary of construction details (e.g., schedule, equipment mix, and vehicular trips) and CalEEMod modeling output files are provided in the Technical Appendix. The GHG emissions associated with construction of the Project were calculated for each year of construction activity.

Construction of the Project is estimated to generate a total of 271 $MTCO_2e$ (**Table 2-5**). As recommended by the SCAQMD, the total GHG construction emissions were amortized over the 30-year lifetime of the Project (i.e., total construction GHG emissions were divided by 30 to determine an annual construction emissions estimate that can be added to the Project's operational emissions) to determine the Project's annual GHG emissions inventory.[28] This results in annual Project construction emissions of nine $MTCO_2e$. A complete listing of the construction equipment by on-site and off-site activities, duration, and emissions estimation model input assumptions used in this analysis is included within the emissions calculation worksheets that are provided in the Technical Appendix.

Table 2-5
Combined Construction-Related Emissions ($MTCO_2e$)

Year	$MTCO_2e$[a]
Year 1	271
Total	**271**
Amortized Over 30 Years	**9**

a CO_2e was calculated using CalEEMod version 2022.1. Detailed results are provided in the Technical Appendix.
Source: DKA Planning, 2022.

Operation

Area Source Emissions

Area source emissions were calculated using the CalEEMod emissions inventory model, which includes landscape maintenance equipment, use of consumer products, and other everyday sources. As shown in **Table 2-6**, the Project would result in 0.16 $MTCO_2e$ per year from area sources.

Table 2-6
Annual GHG Emissions Summary (Buildout)[a]
(metric tons of carbon dioxide equivalent [MTCO2e])

Year	$MTCO_2$[a]
Area[b]	<0.1
Energy[c] (electricity and natural gas)	33
Mobile	92
Solid Waste[d]	3

[28] SCAQMD Governing Board Agenda Item 31, December 5, 2008.

Water/Wastewater[e]	1
Refrigerants	<0.1
Construction	9
Total Emissions	**139**

a CO2e was calculated using CalEEMod and the results are provided in the Technical Appendix.
b Area source emissions are from landscape equipment and other operational equipment only; hearths omitted.
c Energy source emissions are based on CalEEMod default electricity and natural gas usage rates.
d Solid waste emissions are calculated based on CalEEMod default solid waste generation rates.
e Water/Wastewater emissions are calculated based on CalEEMod default water consumption rates.
Source: DKA Planning, 2022.

Electricity and Natural Gas Generation Emissions

GHG emissions are emitted because of activities in buildings when electricity and natural gas are used as energy sources. Combustion of any type of fuel emits CO_2 and other GHG emissions directly into the atmosphere; when this occurs in a building, it is a direct emission source associated with that building. GHG emissions are also emitted during the generation of electricity from fossil fuels. When electricity is used in a building, the electricity generation typically takes place off-site at the power plant; electricity use in a building generally causes emissions in an indirect manner.

Electricity and natural gas emissions were calculated for the Project using the CalEEMod emissions inventory model, which multiplies an estimate of the energy usage by applicable emissions factors chosen by the utility company. GHG emissions from electricity use are directly dependent on the electricity utility provider. In this case, GHG emissions intensity factors for IID were selected in CalEEMod. The carbon intensity ((pounds per megawatt an hour (lbs/MWh)) for electricity generation was calculated for the Project buildout year based on IID projections. A straight-line interpolation was performed to estimate the IID carbon intensity factor for the Project buildout year. IID carbon intensity projections also consider SB 350 RPS requirements for renewable energy. This approach is conservative, given the 2018 chaptering of SB 100 (De Leon), which requires electricity providers to provide renewable energy for at least 60 percent of their delivered power by 2030 and 100 percent use of renewable energy and zero-carbon resources by 2045. SB 100 also increases existing renewable energy targets, called Renewables Portfolio Standard (RPS), to 44 percent by 2024 and 52 percent by 2027.

The 2022 Title 24 standards contain more substantial energy efficiency requirements for new construction, emphasizing the importance of building design and construction flexibility to establish performance standards that substantially reduce energy consumption for water hating, lighting, and insulation for attics and walls. Energy use in buildings is divided into energy consumed by the built environment and energy consumed by uses that are independent of the construction of the building, such as in plug-in appliances. CalEEMod calculates energy use from systems covered by Title 24 (e.g., HVAC system, water heating system, and lighting system); energy use from lighting; and other sources not covered by Title 24 or lighting. CalEEMod electricity and natural gas usage rates are based on the CEC-sponsored California Commercial End-Use Survey (CEUS) and the California Residential

Appliance Saturation Survey (RASS) studies.[29] As shown in **Table 2-6**, Project GHG emissions from electricity and natural gas usage would result in a total of 33 $MTCO_2e$ per year.

Mobile Source Emissions

Mobile-source emissions were calculated using the SCAQMD-recommended CalEEMod emissions inventory model. CalEEMod calculates the emissions associated with on-road mobile sources associated with residents, employees, visitors, and delivery vehicles visiting the Project Site based on the number of daily trips generated and VMT. Mobile source operational GHG emissions were calculated using CalEEMod and are based on the Project trip-generation estimates. To calculate daily trips, the number of hotel rooms and amount of building area for the restaurant uses were multiplied by the applicable trip-generation rates based on the Institute of Transportation Engineers (ITE)'s *Trip Generation, 11th Edition*. CalEEMod calculates VMT based on the type of land use, trip purpose, and trip type percentages for each land use subtype in the project (primary, diverted, and pass-by). As shown in **Table 6**, the Project GHG emissions from mobile sources would result in a total of 92 $MTCO_2e$ per year. This estimate reflects reductions attributable to the Project's characteristics (e.g., elimination of work-related trips for several dozen workers and/or visitors), as described above.

Solid Waste Generation Emissions

Emissions related to solid waste were calculated using the CalEEMod emissions inventory model, which multiplies an estimate of the waste generated by applicable emissions factors provided in Section 2.4 of the USEPA's AP-42, Compilation of Air Pollutant Emission Factors. CalEEMod solid waste generation rates for each applicable land use were selected for this analysis. As shown in **Table 2-6**, the Project scenario is expected to result in a total of three $MTCO_2e$ per year from solid waste that accounts for a 50-percent recycling/diversion rate.[30]

Water Usage and Wastewater Generation Emissions

GHG emissions are related to the energy used to convey, treat, and distribute water, and treat wastewater. Thus, these emissions are generally indirect emissions from the production of electricity to power these systems. Three processes are necessary to supply potable water; these include (1) supply and conveyance of the water from the source; (2) treatment of the water to potable standards; and (3) distribution of the water to individual users. After use, energy is used as the wastewater is treated and reused as reclaimed water.

Emissions related to water usage and wastewater generation were calculated for the Project using the CalEEMod emissions inventory model, which multiplies an estimate of the water usage by the applicable

[29] California Energy Commission, Commercial End-Use Survey, March 2006, and California Residential Appliance Saturation Survey, October 2010.

[30] AB 341 (2012) increased the Statewide waste diversion goal from 50 to 75 percent from baseline rates established by CalRecycle by 2020 and beyond. Further, SB 1383 (2016) requires jurisdictions to reduce 75 percent of organic waste disposal in landfills by 2030.

energy intensity factor to determine the embodied energy necessary to supply potable water.[31] GHG emissions are then calculated based on the amount of electricity consumed multiplied by the GHG emissions intensity factors for the utility provider. In this case, embodied energy for Southern California supplied water and GHG emissions intensity factors for IID were selected in CalEEMod. Water usage rates were calculated consistent with the requirements under the 2022 California Plumbing Code (which is based on the 2021 Uniform Plumbing Code) and 2022 CALGreen, and reflect an approximately 20-percent reduction as compared to the base demand. As shown in **Table 2-6**, Project GHG emissions from water/wastewater usage would result in a total of one $MTCO_2e$ per year as compared to the Project without sustainability features related to water conservation.

Refrigerants

Emissions related to cooling structures and refrigeration needs were calculated using the CalEEMod emissions inventory model. As shown in **Table 2-6**, the Project scenario is expected to result in less than one $MTCO_2e$ per year from use of refrigerants that used HFCs and have high GWP values.

Combined Construction and Operational Emissions

As shown in **Table 2-6**, when taking into consideration implementation of project design features, including the requirements set forth in the County's Building Code and the full implementation of current state mandates, the GHG emissions for the Project would equal 139 $MTCO_2e$ annually (as amortized over 30 years) during construction.

Estimated Reduction of Project Related GHG Emissions Resulting from Consistency with Plans

As noted earlier, one approach to demonstrating a project's consistency with GHG plans is to show how a project will reduce its incremental contribution through a Project Without Reduction Features comparison. The analysis in this section includes potential emissions under a Project Without Reduction Features scenario and from the Project at build-out based on actions and mandates in force in 2023. As shown in **Table 2-7**, the emissions for the Project and its associated CARB 2023 Project Without Reduction Features scenario are estimated to be 139 and 202 $MTCO_2e$ per year, respectively, which shows the Project would reduce emissions by 32.1 percent from CARB's 2023 Project Without Reduction Features scenario.

The analysis in this section uses the 2017 Scoping Plan's statewide goals as one approach to evaluate the Project's incremental contribution to climate change. The methodology is to compare the Project's emissions as proposed to the Project's emissions as if the Project were built using a Project Without Reduction Features approach in terms of design, methodology, and technology. This means the Project's emissions were calculated as if the Project was constructed with project design features to reduce GHG emissions that are not required by state or local code and with several regulatory measures adopted in furtherance of AB 32.

[31] The intensity factor reflects the average pounds of CO_2e per megawatt generated by a utility company.

While the AB 32 Scoping Plan's cumulative statewide objectives were not intended to serve as the basis for project-level assessments, this analysis finds that its Project Without Reduction Features comparison based on the Scoping Plan is appropriate, because the Project would contribute to statewide GHG emissions reduction goals. Specifically, the Project would eliminate work-related vehicle commuting for dozens of workers and/or visitors that would reduce GHG emissions from vehicle operations.

Table 2-7
Estimated Reduction of Project-Related GHG Emissions

Scenario and Source	Project Without Reduction Features Scenario*	As Proposed Scenario	Reduction from Project Without Reduction Features Scenario	Change from Project Without Reduction Features Scenario
Area Sources	<0.1	<0.1	-	0%
Energy Sources	57	33	-24	-42%
Mobile Sources	131	92	-39	-30%
Waste Sources	3	3	-	0%
Water Sources	1	1	-	0%
Refrigerants	<0.1	<0.1	-	0%
Construction	9	9	-	0%
Total Emissions	202	139	-63	-31.2%

Daily construction emissions amortized over 30-year period pursuant to SCAQMD guidance. Annual construction emissions derived by taking total emissions over duration of activities and dividing by construction period.
* Project Without Reduction Features scenario does not assume 30% reduction in in mobile source emissions from Pavley emission standards (19.8%), low carbon fuel standards (7.2%), vehicle efficiency measures 2.8%); does not assume 42% reduction in energy production emissions from the State's renewables portfolio standard (33%), natural gas extraction efficiency measures (1.6%), and natural gas transmission and distribution efficiency measures (7.4%).
Source: DKA Planning, 2022.

Post-2020 Analysis

Recent studies show that the state's existing and proposed regulatory framework will put the state on a pathway to reduce its GHG emissions level to 40 percent below 1990 levels by 2030, and to 80 percent below 1990 levels by 2050 if additional appropriate reduction measures are adopted.[32] Even though

[32] Energy and Environmental Economics (E3). "Summary of the California State Agencies' PATHWAYS Project: Long-term Greenhouse Gas Reduction Scenarios" (April 2015); Greenblatt, Jeffrey, Energy Policy, "Modeling California Impacts on Greenhouse Gas Emissions" (Vol. 78, pp. 158–172). The California Air Resources Board, California Energy Commission, California Public Utilities Commission, and the California Independent System Operator engaged E3 to evaluate the feasibility and cost of a range of potential 2030 targets along the way to the state's goal of reducing GHG emissions to 80 percent below 1990 levels by 2050. With input from the agencies, E3 developed scenarios that explore the potential pace at which emission reductions can be achieved, as well as the mix of technologies and practices deployed. E3 conducted the analysis using its California PATHWAYS model. Enhanced specifically

these studies did not provide an exact regulatory and technological roadmap to achieve the 2030 and 2050 goals, they demonstrated that various combinations of policies could allow the statewide emissions level to remain very low through 2050, suggesting that the combination of new technologies and other regulations not analyzed in the studies could allow the state to meet the 2050 target. After the findings of these studies, SB 32 was passed on September 8, 2016, and would require the state board to ensure that statewide GHG emissions are reduced to 40 percent below the 1990 level by 2030. As discussed above, the new plan, outlined in SB 32, involves increasing renewable energy use, imposing tighter limits on the carbon content of gasoline and diesel fuel, putting more electric cars on the road, improving energy efficiency, and curbing emissions from key industries.

As discussed above, SCAG's 2020-2045 RTP/SCS establishes a regulatory framework for achieving GHG reductions from the land use and transportation sectors pursuant to SB 375 and the state's long-term climate policies. The 2020-2045 RTP/SCS ensures VMT reductions and other measures that reduce regional emissions from the land use and transportation sectors. The Project is the type of land use development that is encouraged by the RTP/SCS to reduce VMT by creating more on-site workforce housing that eliminates vehicle use for commute purposes by including housing on-site. In addition, the Project would be consistent with the Actions and Strategies set forth in the 2020-2045 RTP/SCS. Therefore, the Project would be consistent with the 2020-2045 RTP/SCS.

Conclusion

Given the Project's consistency with state, SCAG, and County GHG emissions reduction goals and objectives, the Project is consistent with applicable plans, policies, and regulations adopted for the purpose of reducing the emissions of GHGs. In the absence of adopted standards and established significance thresholds, and given this consistency, it is concluded that the Project's incremental contribution to greenhouse gas emissions and their effects on climate change would not be cumulatively considerable.

Impacts will be less than significant.

b) The discussion below describes the extent the Project complies with or exceeds the performance-based standards included in the regulations outlined in the *Climate Change Scoping Plan* and the 2020-2045 RTP/SCS, each of which identify GHG-reducing measures that directly and indirectly apply to the Project. This analysis also evaluates the Project's consistency with County plans and programs that generally address climate change. As shown herein, the Project would be consistent with the applicable GHG reduction plans and policies.

Statewide: Climate Change Scoping Plan

for this study, the model encompasses the entire California economy with detailed representations of the buildings, industry, transportation, and electricity sectors.

Table 2-8 evaluates the Project's consistency with applicable reduction actions/strategies by emissions source category outlined in the *2017 Climate Change Scoping Plan Update*.[33] When compared to SB 32, the Project would be consistent with its objectives and the GHG reduction-related actions and strategies of the 2017 Scoping Plan. **Table 2-8** confirms that the Project is consistent with the Scoping Plan's focus on increasing renewable energy use, imposing tighter limits on the carbon content of gasoline and diesel fuel, putting more electric cars on the road, improving energy efficiency, and curbing emissions from key industries. Although a number of these strategies are currently promulgated, some have not yet been formally proposed or adopted. It is expected that these measures or similar actions to reduce GHG emissions will be adopted as required to achieve statewide GHG emissions targets. Based on the following analysis, the Project would be consistent with the State's Climate Change Scoping Plan's objective of reducing 2030 GHG emissions in accord with SB 32. Based on the analysis in **Table 2-8**, the Project would be consistent with the State's Climate Change Scoping Plan and, thus, impacts related to consistency with the Scoping Plan would be less than significant impact.

Table 2-8
Consistency Analysis—2017 Scoping Plan Update

Actions and Strategies	Responsible Party(ies)	Project Consistency Analysis
Senate Bill 350 (SB 350): The Clean Energy and Pollution Reduction Act of 2015 increases the standards of the California RPS program by requiring that the amount of electricity generated and sold to retail customers per year from eligible renewable energy resources be increased to 50 percent by 2030.[a] Required measures include: • Increase RPS to 50 percent of retail sales by 2030. • Establish annual targets for statewide energy efficiency that achieve a cumulative doubling of statewide energy efficiency savings in electricity and natural gas end uses by 2030. • Reduce GHG emissions in the electricity sector to meet reduction targets. Load-serving entities and publicly owned utilities meet GHG emissions reductions planning	California Public Utilities Commission (CPUC), California Energy Commission (CEC), CARB	**No Conflict.** IID is required to generate electricity that would increase renewable energy resources to 33 percent by 2020 and 50 percent by 2030. As IID would provide electricity service to the Project Site, by 2030 the Project would use electricity consistent with the requirements of SB 350. As required under SB 350, doubling of the energy efficiency savings from retail customers by 2030 would primarily rely on the existing suite of building energy efficiency standards under CCR Title 24, Part 6 (consistency with this regulation is discussed below) and utility-sponsored programs such as rebates for high-efficiency appliances, HVAC systems, and insulation. The Project would comply with this this action/strategy being located within the IID service area and would comply with CalGreen and Title 24 energy efficiency standards.

[33] An evaluation of stationary sources is not necessary as the stationary sources emissions will be created by emergency generators that would only be used in an emergency.

Table 2-8
Consistency Analysis—2017 Scoping Plan Update

Actions and Strategies	Responsible Party(ies)	Project Consistency Analysis
targets through measures as described in IRPs.		
Senate Bill 100 (SB 100): The California Renewables Portfolio Standard Program (2018) requires retail sellers to procure renewable energy that is at least 50 percent by December 31, 2026 and 60 percent by December 31, 2030. It requires local publicly owned electric utilities to procure a minimum quantity of electricity from renewable energy resources of 44 percent of retail sales by December 31, 2024 and 60 percent by December 31, 2030.	Imperial Irrigation District, CPUC	**No Conflict.** IID is required to generate electricity that would increase renewable energy resources to 33 percent by 2020 and 50 percent by 2030. As IID would provide electricity service to the Project, by 2030 the Project would use electricity consistent with SB 100. The Project would comply with this this action/strategy being located within the IID service area and would comply with CalGreen and Title 24 energy efficiency standards.
Implement Mobile Source Strategy (Cleaner Technology and Fuels) • At least 1.5 million zero emission and plug-in hybrid light-duty electric vehicles by 2025. • At least 4.2 million zero emission and plug-in hybrid light-duty electric vehicles by 2030. • Increase GHG stringency on light-duty vehicles beyond existing Advanced Clean Cars regulations. • Medium- and heavy-duty GHG Phase 2. • Transition to a suite of innovative clean transit options. Assumed zero-emission technology ramped up to 100 percent of new sales in 2030. Requires new transit buses meet the optional heavy-duty low-NO_x standard. • Requires low NO_x or cleaner engines and the deployment of zero-emission trucks primarily for class 3-7 last mile delivery trucks in California. Assumes ZEVs comprise 2.5 percent of new Class	CARB, California State Transportation Agency (CalSTA), California Department of Transportation (Caltrans) CEC, Office of Planning and Research (OPR), Local agencies	**No Conflict.** CARB approved the Advanced Clean Cars Program in 2012 that establishes an emissions control program for model year 2017 through 2025. Standards apply to passenger and light duty trucks used by visitors, employees, and deliveries to the Project Site. The Program also requires auto manufacturers to produce an increasing number of zero emission vehicles in the 2018 through 2025 model years. Extension of the Program could increase emissions reductions stringency on light duty autos and continue adding zero emission and plug in vehicles through 2030. EPA issued a Notice of Decision on March 14, 2022 giving California the authority to implement its own standards. CARB adopted the Innovative Clean Transit measure in 2018 that requires all public transit agencies to transition to zero emission fleets. CARB is also considering new approaches and strategies to achieve zero emission trucks under the Advanced Clean Local Trucks (Last Mile Delivery) Program.[b,c] GHG emissions generated by Project-related vehicular travel would benefit from this regulation, and mobile source emissions generated by the Project would be reduced with implementation of standards under the

Table 2-8
Consistency Analysis—2017 Scoping Plan Update

Actions and Strategies	Responsible Party(ies)	Project Consistency Analysis
3–7 truck sales in local fleets in 2020, increasing to 10 percent in 2025 and remaining flat through 2030. • Reduce VMT through SB 375 and regional Sustainable Communities Strategies; forthcoming statewide implementation of SB 743; and potential additional VMT reduction strategies not specified in the Mobile Source Strategy but included in the document "Potential VMT Reduction Strategies for Discussion."		Advanced Clean Cars Program, consistent with reduction of GHG emissions under AB 32. Mobile source GHG emissions estimates conservatively do not include this additional 34-percent reduction in mobile source emissions. SB 375 requires SCAG to direct the development of the SCS for the region. The Project would be consistent with SB 375 and the 2020-2045 RTP/SCS.
Increase Stringency of SB 375 Sustainable Communities Strategy (2035 Targets). Under SB 375, CARB sets regional targets for GHG emission reductions from passenger vehicle use. In 2010, the CARB established targets for 2020 and 2035 for each region. As required under SB 375, CARB is required to update regional GHG emissions targets every 8 years. As part of the 2018 updates, the CARB proposed a passenger vehicle related GHG reduction of 19 percent for 2035 for the SCAG region, which is more stringent than the previous reduction target of 13 percent.	CARB	**No Conflict.** The Project would be consistent with SB 375 by shortening commute trips for workers at the Project Site by providing workforce housing. Specific regulations that would help reduce transportation-related emissions include Assembly Bill 1493/Pavley Regulations, the Low Carbon Fuel Standard, and CARB's Advanced Clean Cars Regulation. The Project would not conflict with SB 375 and the 2020–2045 RTP/SCS.
By 2019, adjust performance measures used to select and design transportation facilities. This includes harmonizing project performance with emissions reductions, and increase competitiveness of transit and active transportation modes (e.g. via guideline documents, funding programs, project selection).	CalSTA, OPR, CARB, California Office of Business and Economic Development (GoBiz), IBank, California Department of Finance (DOF), California	**Not Applicable.** The Project would not involve construction of transportation facilities. State agencies have adjusted their performance measures to reflect climate change policy priorities.

Table 2-8
Consistency Analysis—2017 Scoping Plan Update

Actions and Strategies	Responsible Party(ies)	Project Consistency Analysis
	Transportation Commission (CTC)	
By 2019, develop pricing policies to support low-GHG transportation (e.g. low-emission vehicle zones for heavy duty, road user, parking pricing, transit discounts).	CalSTA, Caltrans, CTC, OPR/Strategic Growth Council (SGC), CARB	**Not Applicable.** This strategy is to be implemented by Statewide entities with authority over pricing policies for transportation (e.g., road taxes and tolls).
Implement California Sustainable Freight Action Plan. This includes improving freight system efficiency and deploying over 100,000 freight vehicles and equipment capable of zero emission operation and maximizing zero and near-zero emission freight vehicles and equipment powered by renewable energy by 2030.	CARB	**Not Applicable.** The Project's land uses would not include freight transportation or warehousing that would be subject to the California Sustainable Freight Action Plan. Therefore, the Project would not interfere or impede the implementation of the Sustainable Freight Action Plan.
Adopt a Low Carbon Fuel Standard with a CI reduction of 18 percent.	CARB	**Not Applicable.** This regulatory program applies to fuel suppliers, not directly to land use development. GHG emissions related to vehicular travel associated with the Project would benefit from this regulation because fuel used by Project-related vehicles would be required to comply with the LCFS. Mobile source GHG emissions estimates were calculated using CalEEMod that includes implementation of the LCFS into mobile source emission factors. The current LCFS targets a 20 percent reduction in CI from a 2010 baseline by 2030.
Mobile		
Implement the Short-Lived Climate Pollutant Strategy by 2030. This includes a 40 percent reduction in methane and hydrofluorocarbon emissions below 2013 levels and a 50 percent reduction in black carbon emissions below 2013 levels.	CARB, CalRecycle, California Department of Food and Agriculture (CDFA), State Water Resources Control Board (SWRCB), Local air districts	**No Conflict.** SB 605 (2014) directed CARB to develop a comprehensive Short-Lived Climate Pollutant (SLCP) strategy. SB 1383 (2016) requires CARB to set 2030 emission reduction targets of 40 percent for methane and hydrofluorocarbons and 50 percent black carbon emissions below 2013 levels.[e] The Project would comply with the CARB SLCP Reduction Strategy by using HVAC equipment with lower GWP refrigerants.

Table 2-8
Consistency Analysis—2017 Scoping Plan Update

Actions and Strategies	Responsible Party(ies)	Project Consistency Analysis
Develop regulations and programs to support organic waste landfill reduction goals in the SLCP and SB 1383.	CARB, CalRecycle, CDFA, SWRCB, Local air districts	**Not Applicable.** This strategy called on regulators to reduce GHG emissions from landfills and is not applicable to a development project. Under SB 1383, CalRecycle has implemented regulations that will divert 75 percent of organic waste from landfills by 2025, focusing largely on food generators (e.g., restaurants, grocery stores), of which the Proposed Project would not include any.
Implement the post-2020 Cap-and-Trade Program with declining annual caps.	CARB	**Not Applicable.** This applies to State regulators and is not applicable to a development project. Assembly Bill 398 (AB 398) was enacted in 2017 to extend and clarify the role of the state's Cap-and-Trade Program from January 1, 2021, through December 31, 2030. As part of AB 398, refinements were made to the Cap-and-Trade program to establish updated protocols and allocation of proceeds to reduce GHG emissions.
Develop Integrated Natural and Working Lands Implementation Plan to secure California's land base as a net carbon sink. This includes protecting land from conversion through conservation easements, increasing the long-term resilience of carbon storage in the land base and enhancing sequestration capacity, and utilizing wood and agricultural products to increase the amount of carbon stored in the natural and built environments.	California Natural Resources Agency (CNRA) and departments within, CDFA, CalEPA, CARB	**Not Applicable.** This applies to State regulators and is not applicable to a development project. This regulatory program applies to Natural and Working Lands, not directly related to development of the Project. However, the Project would not interfere or impede implementation of the Integrated Natural and Working Lands Implementation Plan.
Solid Waste		
Establish a carbon accounting framework for natural and working lands as described in SB 859 by 2018	CARB	**Not Applicable.** This applies to State regulators and is not applicable to a development project**.** This regulatory program applies to Natural and Working Lands, not directly related to development of the Project. However, the Project would not interfere or impede implementation of the Integrated Natural and Working Lands Implementation Plan.
Water (Three percent of project inventory)		
Implement Forest Carbon Plan	CNRA, CAL FIRE, CalEPA	**Not Applicable.** This applies to State regulators and is not applicable to a development project**.**

Table 2-8
Consistency Analysis—2017 Scoping Plan Update

Actions and Strategies	Responsible Party(ies)	Project Consistency Analysis
	and departments within	This regulatory program applies to state and federal forest land, not directly related to development of the Project. However, the Project would not interfere or impede implementation of the Forest Carbon Plan.
Identify and expand funding and financing mechanisms to support GHG reductions across all sectors.	State Agencies & Local Agencies	**Not Applicable.** This applies to State regulators and is not applicable to a development project**.** Funding and financing mechanisms are the responsibility of state and local agencies. The Project would not conflict with funding and financing mechanisms to support GHG reductions.

a Senate Bill 350 (2015–2016 Regular Session) Stats 2015, Ch. 547.
b CARB, Advance Clean Cars, Midterm Review, www.arb.ca.gov/msprog/acc/acc-mtr.htm.
c CARB, Advanced Clean Local Trucks (Last mile delivery and local trucks), www.arb.ca.gov/msprog/actruck/actruck.htm.
d CARB, LCFS Rulemaking Documents, www.arb.ca.gov/fuels/lcfs/rulemakingdocs.htm.
e CARB, Reducing Short-Lived Climate Pollutants in California, www.arb.ca.gov/cc/shortlived/shortlived.htm.
f CARB, Short-Lived Climate Pollutants (SLCP): Organic Waste Methane Emissions Reductions, www.calrecycle.ca.gov/climate/slcp/.
Source: California Air Resources Board, California's 2017 Climate Change Scoping Plan, November 2017.

Regional: 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy

Table 2-9 provides a comparison of the Project against the GHG-related performance measures of the 2020-2045 RTP/SCS.

Table 2-9
Consistency with the 2020 RTP/SCS

Objectives	Consistency Analysis[a]
Increase percentage of region's total household growth occurring within HQTAs.	**Not Applicable.** The Project Site is not located within an HQTA. Nevertheless, it would increase the amount of workforce housing for this commercial facility.
Increase percent of the region's total employment growth occurring within HQTAs.	**Not Applicable.** The Project Site is not located within an HQTA.
Decrease total acreage of greenfield or otherwise rural land uses converted to urban use.	**No Conflict.** The Project would not convert any additional rural uses to urban use, but rather reduce the demand for workforce housing in the general community by providing on-site residences.
Decrease daily vehicle miles driven per person.	**No Conflict.** The Project would reduce VMT per person by providing on-site workforce housing that would all but eliminate commute-related VMT for dozens of workers and/or visitors.

Objectives	Consistency Analysis[a]
Decrease average daily distance traveled for work and non-work trips (in miles)	**No Conflict.** The Project would eliminate average commute travel distance for dozens or workers and/or visitors by providing on-site workforce housing.
Increase percentage of work and non-work trips which are less than 3 miles in length.	**No Conflict.** The Project would eliminate average commute travel distance for dozens or workers and/or visitors by providing on-site workforce housing that would increase the rate of travel less than three miles in length.
Increase share of short trip lengths for commute purposes.	**No Conflict.** The Project would eliminate average commute travel distance for dozens or workers and/or visitors by providing on-site workforce housing. This would eliminate work-related driving distances for employees.
Decrease average minutes of delay experienced per capita due to traffic congestion.	**No Conflict.** The Project would eliminate average commute travel distance for dozens or workers and/or visitors by providing on-site workforce housing. This would eliminate work-related driving distances for employees that will reduce the rate of growth in auto traffic and congestion.
Decrease excess travel time resulting from the difference between a reference speed and actual speed.	**No Conflict.** The Project would eliminate average commute travel distance for dozens or workers and/or visitors by providing on-site workforce housing. This would eliminate work-related driving distances for employees. As such, the Project would help reduce recurrent traffic congestion delay for general vehicles.
Decrease excess travel time for heavy-duty trucks result from the difference between reference speed and actual speed.	**No Conflict.** The Project would eliminate average commute travel distance for dozens or workers and/or visitors by providing on-site workforce housing. This would eliminate work-related driving distances for employees. As such, the Project would help reduce recurrent traffic congestion delay for heavy-duty trucks.
Increase percentage of PM peak period trips completed within 45 minutes by travel mode.	**No Conflict.** The Project would eliminate average commute travel distance for dozens or workers and/or visitors by providing on-site workforce housing. This would eliminate work-related driving distances for employees; as such, the share of P.M. peak period trips that are less than 45 minutes would increase.
Increase percentage of trips that use transit (work and all trips)	**No Conflict.** The Project would eliminate average commute travel distance for dozens or workers and/or visitors by providing on-site workforce housing. This would eliminate work-related driving distances for employees.
Decrease average travel time to work (all modes)	**No Conflict.** The Project would eliminate average commute travel time for dozens or workers and/or visitors by providing on-site workforce housing.
Increase percentage of trips using either walking or biking (by trip type)	**No Conflict.** The Project would eliminate average commute travel time for dozens or workers and/or visitors by providing on-site workforce housing. These commuters would walk to their jobs on the Project Site.

Objectives	Consistency Analysis[a]
Reduce per capita GHG emissions (from 2005 levels)	**No Conflict.** The Project would eliminate average commute travel time for dozens or workers and/or visitors by providing on-site workforce housing. As such, it is consistent with AB 32, SB 32, SB 375, and other initiatives designed to reduce per capita GHG emissions from 2005 levels.
Increase percentage of trips using a travel mode other than single occupancy vehicle (SOV)	**No Conflict.** The Project would eliminate average commute travel time for dozens or workers and/or visitors by providing on-site workforce housing that will reduce the rate of growth in SOV use and congestion.

Local: Riverside County Climate Action Plan

The County's 2019 CAP Update proposes new targets that are consistent with the State policies in order to meet the requirements of SB 32. The State recommended a 15 percent reduction below 2005–2008 baseline levels by 2020, a 49 percent reduction below 2008 levels by 2030, and an 80 percent reduction below 2008 levels by 2050. To align with the State's long-term emissions reduction goals, the County would need to reduce emissions in 2030 by 525,511 $MTCO_2e$ from an ABAU forecast and by 2,982,947 $MTCO_2e$ from an ABAU forecast by 2050. The County of Riverside's target is consistent with the SB 32 target and ensures that the County of Riverside will be providing GHG reductions locally that will complement State efforts to reduce GHG emissions. Because the County of Riverside's CAP addresses GHG emissions reductions and is consistent with the requirements of SB 32 and international efforts to reduce GHG emissions, compliance with the CAP fulfills the description of mitigation found in the State CEQA Guidelines.

As discussed above, the Project would be approximately 31.2 percent more efficient than a 2023 Project Without Reduction Features scenario. Based on the project-level analysis guidance included with the CAP, the Project would achieve the required reduction in emissions to be consistent with the County of Riverside CAP reductions which are consistent with the State goals contained in the 2017 Scoping Plan and enumerated by SB 32. Therefore, the Project would have a less-than-significant impact on GHG reduction plans at the local and State levels.

Conclusion

In summary, the plan consistency analysis provided above demonstrates that the Project complies with the applicable plans, policies, regulations and GHG emissions reduction actions/strategies outlined in the *Climate Change Scoping Plan and Update*, the 2020-2045 RTP/SCS, the County's CAP Update. Consistency with the above plans, policies, regulations, and GHG emissions reduction actions/strategies would reduce the Project's incremental contribution of GHG emissions. Thus, the Project would not conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing emissions of GHG emissions. Furthermore, because the Project is consistent and does not conflict with these plans, policies, and regulations, the Project's incremental increase in GHG emissions as described above would not result in a significant impact on the environment. Therefore, Project-specific impacts regarding climate change would be less than significant.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

Impacts will be less than significant.

Mitigation: No mitigation is required.

Monitoring: No monitoring is required.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
HAZARDS AND HAZARDOUS MATERIALS Would the project:				
21. Hazards and Hazardous Materials a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Impair implementation of or physically interfere with an adopted emergency response plan or an emergency evacuation plan?	☐	☐	☐	☒
d) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter (1/4) mile of an existing or proposed school?	☐	☐	☐	☒
e) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒

Source(s): Project Application Materials
State Water Board Geotracker database and Department of Toxic and Substance Control database[34]
Riverside County, Map My County[35]

Findings of Fact:

a) Fertilizer and other products needed to support the agricultural and equestrian uses as well as common household chemicals associated with building sanitation and maintenance would be stored on-site. These are not considered hazardous; thus, the Project would not require the ongoing use, storage or routine transport of hazardous materials.

Construction of the Project would entail routine transport of potentially hazardous materials, including gasoline, oil solvents, cleaners, paint, and soil from the Project Site. Proper BMPs, preparation of a SWPPP, and hazardous material handling protocols would be required to ensure safe storage, handling, transport, use, and disposal of all hazard materials during the construction phase of the Proposed Project. Construction would also be required to adhere to any local standards set forth by the County, as well as state and federal health and safety requirements that are intended to minimize hazardous materials risks to the public, including California OSHA requirements, the Hazardous Waste Control Act, the California Accidental Release Prevention program, and the California Health and Safety Code.

[34] https://www.envirostor.dtsc.ca.gov/public/
[35] https://gis1.countyofriverside.us/Html5Viewer/?viewer=MMC_Public

As detailed in the County of Riverside Local Hazard Mitigation Plan, the transport, use, and storage of hazardous materials during site preparation and project operation would be conducted pursuant to all applicable local, State, and federal laws, and in cooperation with the County of Riverside Department of Environmental Health Services, Hazardous Materials Division. Ground disturbance would include grubbing of vegetation, minor excavation for erection fences, and spreading of on-site soil from high areas to low areas to create a generally level surface. Minor grading would occur on site to provide for the foundations of the buildings. Due to the relatively small size of the Project Site and scale of proposed construction activities, construction is not expected to require hazardous materials or a mixture containing a hazardous material in a quantity at any one time above the thresholds described in California Health and Safety Code Section 25503 and Section 25507(a) (1) through (6).

Impacts will be less than significant.

b) During construction, there is a potential for accidental release of petroleum products from vehicles and equipment that would pose a significant hazard to people and the environment. Impacts may occur during construction; however, with the incorporation of standard conditions, such as the SWPPP P, any impacts will remain less than significant. These standard conditions are applicable to all development; therefore, they are not considered mitigation for CEQA implementation purposes.

Hazardous materials anticipated during operations are anticipated to be those most commonly associated with overnight accommodations, which include cleaning products, petroleum products, etc. These types of hazardous materials are not potentially hazardous to large numbers of people, especially at the scale they would be stored and used in conjunction with the Project's proposed use

Some use of potentially hazardous materials, such as herbicides, may be used for the maintenance of the drainage facilities and ornamental landscaped areas. The use of such materials will be in accordance with state and federal regulations pertaining to their use. Therefore, no phase of the Project would create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

Impacts will be less than significant.

c) The Project Site does not contain any emergency facilities, nor does it serve as an emergency evacuation route. Under long-term operational conditions, the Project would be required to maintain adequate emergency access for emergency vehicles on-site as required by the County. Access would continue to be maintained in a driveway on Avenue 58. Furthermore, the Project would not result in a substantial alteration to the design or capacity of any existing public road that would impair or interfere with the implementation of evacuation procedures.

There will be no impacts.

d) The Project Site is not located within one-quarter mile of an existing or proposed school. The closest school to the Site is Westside Elementary School located at 82225 Airport Boulevard, 3,700 feet northwest of the Site's northwest corner boundary. Therefore, no impacts associated with emissions of hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school would occur and no mitigation is required.

There will be no impacts.

e) The Project Site is not included on a list of hazardous materials sites pursuant to Government Code Section 65962.5., also known as the Cortese List. Furthermore, the Project would not add any uses to the Site that require hazardous materials that would qualify the Site for listing pursuant to Government Code Section 65962.5 in the future.

There will be no impacts.

Mitigation: No mitigation is required.

Monitoring: No monitoring is required.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
22. Airports a) Result in an inconsistency with an Airport Master Plan?	☐	☐	☐	☒
b) Require review by the Airport Land Use Commission?	☐	☐	☐	☒
c) For a project located within an airport land use plan or, where such a plan has not been adopted, within two (2) miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
d) For a project within the vicinity of a private airstrip, or heliport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒

Source(s): Riverside County General Plan Figure S-20, Airport Locations
Eastern Coachella Valley Area Plan, Figure 5, Jacqueline Cochran Airport[36]
Riverside County, Map My County[37]

Findings of Fact:

a) - d) The closest airport is Jacqueline Cochran Airport approximately 2.5 miles east of the Project Site. A small portion of the eastern Project Site is located within Airport Influence Area, Compatibility Zone E. However, the western ¾ of the Site, including the development area is outside the Compatibility Zone. Review and approval of the County of Riverside Airport Land Use Commission (ALUC) is not required. The Project Site is not located within 2 miles of a privately owned, public use airport. Development of the Project would not create a hazard to flight or otherwise create a safety concern for employees, vendors or customers.

There will be no impacts.

Mitigation: No mitigation is required.

Monitoring: No monitoring is required.

[36] https://planning.rctlma.org/Portals/14/genplan/GPA%202022/Compiled%20ECVAP_4-2022%20rev.pdf?ver=2022-06-27-145207-383
[37] https://gis1.countyofriverside.us/Html5Viewer/?viewer=MMC_Public

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
HYDROLOGY AND WATER QUALITY Would the project:				
23. Water Quality Impacts a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☒	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces?	☐	☐	☒	☐
d) Result in substantial erosion or siltation on-site or off-site?	☐	☐	☒	☐
e) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on-site or off-site?	☐	☐	☒	☐
f) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☒	☐
g) Impede or redirect flood flows?	☐	☐	☒	☐
h) In flood hazard, tsunami, or seiche zones, risk the release of pollutants due to project inundation?	☐	☐	☐	☒
i) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐

Source(s): Riverside County General Plan, Safety Element, Figure 4, Flood Hazard Zone
Riverside County General Plan, Safety Element, Figure 5, Dam Hazard Inundation
Eastern Coachella Valley Area Plan, Figure 12, Flood Hazard Zone[38]

Findings of Fact:

a) A major portion of the development area is pervious and the majority of the site will remain pervious after construction due to landscaping areas. Various LID BMPs are proposed to meet the water quality requirements per the Riverside County WQMP guidelines. Given that all the impervious areas are from the green house rooftops, all storm water from the building rooftops will drain directly to landscape areas prior to reaching the bioretention basin. This will allow for percolation into the landscape areas or

[38] https://planning.rctlma.org/Portals/14/genplan/GPA%202022/Compiled%20ECVAP_4-2022%20rev.pdf?ver=2022-06-27-145207-383

evapotranspiration, which meet the key LID practice to “disconnect impervious surfaces.” The MS4 Permit requires that each project evaluate susceptibility for hydromodification to downstream natural channels or water bodies. Surface and groundwater features would not be degraded by the Project. The Project will not violate any discharge requirements or otherwise substantially degrade surface or groundwater quality.

Impacts will be less than significant.

b) Groundwater resources in Riverside County are defined by their quality as well as quantity. Most groundwater basins within Riverside County store local and imported water for later use to meet seasonal and drought-year demands. Under these groundwater recharge programs, groundwater is artificially replenished in wet years with surplus imported water. Water is then extracted during drought years or during emergency situations. Groundwater recharge that may also involve the recharge of reclaimed water, enhances the region’s ability to meet water demand during years of short supply, and increases overall local supply reliability. Groundwater recharge is also affected by reduced natural percolation capacity due to impervious, urban surfaces and pollution from specific intensive industrial and agricultural uses. Floodplains are a natural filtering system, with water percolating back into the ground and replenishing groundwater. When a watercourse is divorced from its floodplain with levees and other flood control facilities, then natural, built in benefits are either lost, altered, or significantly reduced, including those related to groundwater replenishment and quality.

The Project Site is not located within any flood hazard area associated with the floodplains and watercourses that run through the Coachella Valley area. Although the Project would result in additional impervious surfaces onsite, the project includes LID BMP bioretention systems with underground retention chambers which would detain and treat stormwater runoff for infiltration. The Coachella Valley Water District would provide water service to the Project Site. The Project would infiltrate stormwater runoff onsite through the use of bioretention basins.

Impacts will be less than significant.

c) The proposed site design also increases the imperviousness of the Project Site, but the length of the flow path is nearly unchanged. The volume of storm water discharged site is increased by the proposed development at discharge points. Any increase in storm water runoff would be reduced by to proposed detention systems to be constructed per LID requirements. Therefore, the discharge rate will not be increased by the Project. The development area contains no rivers or streams onsite. There are no depressions, basins, impoundment, or tire ruts on the Project Site suggestive of any water retention or of possessing hydric soil conditions.

Impacts will be less than significant.

d) Grading activities during construction of the Project may result in wind driven soil erosion and loss of topsoil. However, all construction and grading activities would comply with the County’s grading requirements which would be monitored through the grading permit plan check. Upon project

completion, the Project Site would be developed with several buildings and paved surfaces and landscaping, which would prevent substantial erosion from occurring.

Impacts will be less than significant.

e) - g) The Project Site is not located within a 100 Year or 500 Year Flood Zone. The bioretention basin per LID would be designed and sized to retain projected runoff volumes and allow limited infiltration. The majority of the site will remain pervious after construction. No on- or off-site flooding is anticipated to occur. The Project will not impede flood flows.

Impacts will be less than significant.

h) Seismic seiches are standing waves set up on rivers, reservoirs, ponds, and lakes when seismic waves from an earthquake pass through the area. They are in direct contrast to tsunamis which are giant sea waves created by the sudden uplift of the sea floor. The Project Site is surrounded by a relatively flat and not adjacent to any enclosed body of water (e.g., a lake or reservoir) and is not located within a flood hazard zone. The Project Site is located approximately 75 miles from the Pacific Ocean and would not likely be impacted by a tsunami. The surrounding topography of the Project Site is generally flat and would not be subject to inundation by mudflow. The Project Site is not located within a dam inundation area.

There will be no impacts.

i) The Project would preserve the existing drainage pattern for the Project Site. Under the operating condition, the Project Site drainage would be similar except that onsite drainage would be collected, stored, and treated via detention systems per LID requirements. Development of the Project would not significantly alter the existing drainage pattern of the Project Site or alter the course of a stream or river. Implementation of the NPDES permit requirements would reduce potential impacts from erosion and siltation during the Project Site's preparation and earthmoving phases. Furthermore, due to separation of the infiltration system from the groundwater, there would be no conflict with EMWD's implementation of the Groundwater Sustainability Plan.

Impacts will be less than significant.

Mitigation: No mitigation is required.

Monitoring: No monitoring is required.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
LAND USE AND PLANNING Would the project:				
24. Land Use				
a) Physically divide an established community?	☐	☐	☐	☒
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐

Source(s): Riverside County General Plan, Project Application Materials
Eastern Coachella Valley Area Plan
Riverside County, Map My County[39]

Findings of Fact:

a) A significant impact may occur if a project were sufficiently large enough or otherwise configured in such a way as to create a physical barrier within an established community. A typical example would be a project that involved a continuous right-of-way such as a roadway, which would divide a community and impede access between parts of the community.

The Project conforms to the existing land use patterns of providing worker and guest overnight accommodations. The Project would not cause any permanent street closures, block access to any surrounding land use, or cause any change in the existing street grid system. The Project is not of a scale or nature that would physically divide an established community. The Project is not affecting any right-of-ways. The Project will be built on an existing urban infill site and is contiguous and bounded by streets. In addition, the Site is not large enough to encompass an established community.

The Project does not propose a new construction of highways, freeways, rails or flood control channel that are generally associated with the physical division of an established community. It will conform to the existing street grid and continues with the existing pattern of residential-related and amenity development and would not create barriers within an existing community or otherwise physically divide an established community.

There will be no impacts.

b) The Site is zoned W-2-10 (Zoning Controlled Development Areas – 10 Acre Minimum). Guest ranches are permitted provided approval of a plot plan first.). The Project is allowed as a conditional use permit in the zone; and thus, would require approval of a Conditional Use Permit. The Project would not require a zone change or result in the construction of any use that would allow a use not currently allowed per the zoning code.

[39] https://gis1.countyofriverside.us/Html5Viewer/?viewer=MMC_Public

The Project would not require a General Plan Amendment or land use action that could result in the alternation of the present or planned land use in the area. The Project would not change land use within an existing City sphere of influence and/or within adjacent city or county boundaries.

Vista Santa Rosa is a special community where country club and residential development interface with agricultural and rural, equestrian-oriented lifestyles. In order to ensure that the community develops in a harmonious manner that protects and enhances its value to area residents and landowners and Riverside County, the County of Riverside has begun the preparation of a detailed Vista Santa Rosa community land use plan that will be incorporated into the Eastern Coachella Valley Area Plan. The area is an important producer of date crops. Rural Residential and Rural Community uses are also prevalent, with an emphasis on equestrian lifestyles.

The Project provided a Vista Santa Rose Design Compatibility Plan and Operations/Business Plan dated April 28, 2020. Any Temporary Events (more than 300 persons) that are proposed beyond the uses of the private equestrian facility is subject to permit requirements of Article XIXa (Temporary Events) as indicated in Ordinance No. 348. The Project would be consistent with the County of Riverside General Plan designation and applicable policies within the Eastern Coachella Valley Area Plan.

The Project's proposed uses and requested CUP would not cause significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

Impacts will be less than significant.

Mitigation: No mitigation is required.

Monitoring: No monitoring is required.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
MINERAL RESOURCES Would the project:				
25. Mineral Resources a) Result in the loss of availability of a known mineral resource that would be of value to the region or the residents of the State?	☐	☐	☐	☒
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒
c) Potentially expose people or property to hazards from proposed, existing, or abandoned quarries or mines?	☐	☐	☐	☒

Source(s): Riverside County General Plan, Multipurpose Open Space Element, Figure OS-6, Mineral Resource Area
Eastern Coachella Valley Area Plan, Figure 3, Land Use Plan[40]

Findings of Fact:

a) - c) The Site area is designated by the County as Mineral Resource Zone (MRZ-1), which is no significant mineral deposits. The Project would not require excavation of mineral resources nor would construction result in the loss of availability of any known regional or local mineral resources. The Project Site is not located in proximity to a mine. Visitors and employees would not be exposed to hazards from an existing or abandoned quarry or mine.

There will be no impacts.

Mitigation: No mitigation is required.

Monitoring: No monitoring is required.

[40] https://planning.rctlma.org/Portals/14/genplan/GPA%202022/Compiled%20ECVAP_4-2022%20rev.pdf?ver=2022-06-27-145207-383

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
NOISE Would the project result in:				
26. Airport Noise a) For a project located within an airport land use plan or, where such a plan has not been adopted, within two (2) miles of a public airport or public use airport would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
b) For a project located within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Source(s): Riverside County General Plan Figure S-20 "Airport Locations," County of Riverside Airport Facilities Map
Noise and Vibration Technical Report and Appendix, prepared by DKA Planning, March 2023 (Appendix E)
Eastern Coachella Valley Area Plan, Figure 5, Jacqueline Cochran Airport[41]
Riverside County, Map My County[42]

Findings of Fact:

a) - b) The closest airport is Jacqueline Cochran Airport approximately 2.5 miles east of the Project Site. A small portion of the eastern Project Site is located within Airport Influence Area, Compatibility Zone E. However, the western ¾ of the Site, including the development area is outside the Compatibility Zone. Review and approval of the County of Riverside Airport Land Use Commission (ALUC) is not required. The Project Site is not located within 2 miles of a privately owned, public use airport. Development of the Project would not create a hazard to flight or otherwise create a safety concern for employees, vendors or customers.

There will be no impacts.

Mitigation: No mitigation is required.

Monitoring: No monitoring is required.

[41] https://planning.rctlma.org/Portals/14/genplan/GPA%202022/Compiled%20ECVAP_4-2022%20rev.pdf?ver=2022-06-27-145207-383
[42] https://gis1.countyofriverside.us/Html5Viewer/?viewer=MMC_Public

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
27. Noise Effects by the Project a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan, noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b) Generation of excessive ground-borne vibration or ground-borne noise levels?	☐	☐	☒	☐

Source(s): Riverside County General Plan, Table N-1 ("Land Use Compatibility for Community Noise Exposure"), Project Application Materials
Noise and Vibration Technical Report and Appendix, prepared by DKA Planning, November 2022 (Appendix D)

Findings of Fact:

a) In November 2022, DKA Planning took short-term noise measurements near the Project site to identify ambient noise conditions near local sensitive receptors.[43] As shown in **Table 2-10**, noise levels along roadways near the Project Site ranged from 53.6 to 67.5 dBA L_{eq}, which was generally consistent with the traffic volumes on applicable street(s), which range from local roads like Wilton Place to major arterials like Western Avenue. **Figure 2-1** illustrates where ambient noise levels were measured near to establish the noise environment and their relationship to the applicable sensitive receptor(s). 24-hour CNEL noise levels are generally considered "Normally Acceptable" and "Conditionally Acceptable" for the types of land uses near the Project Site.

Table 2-10
Existing Noise Levels

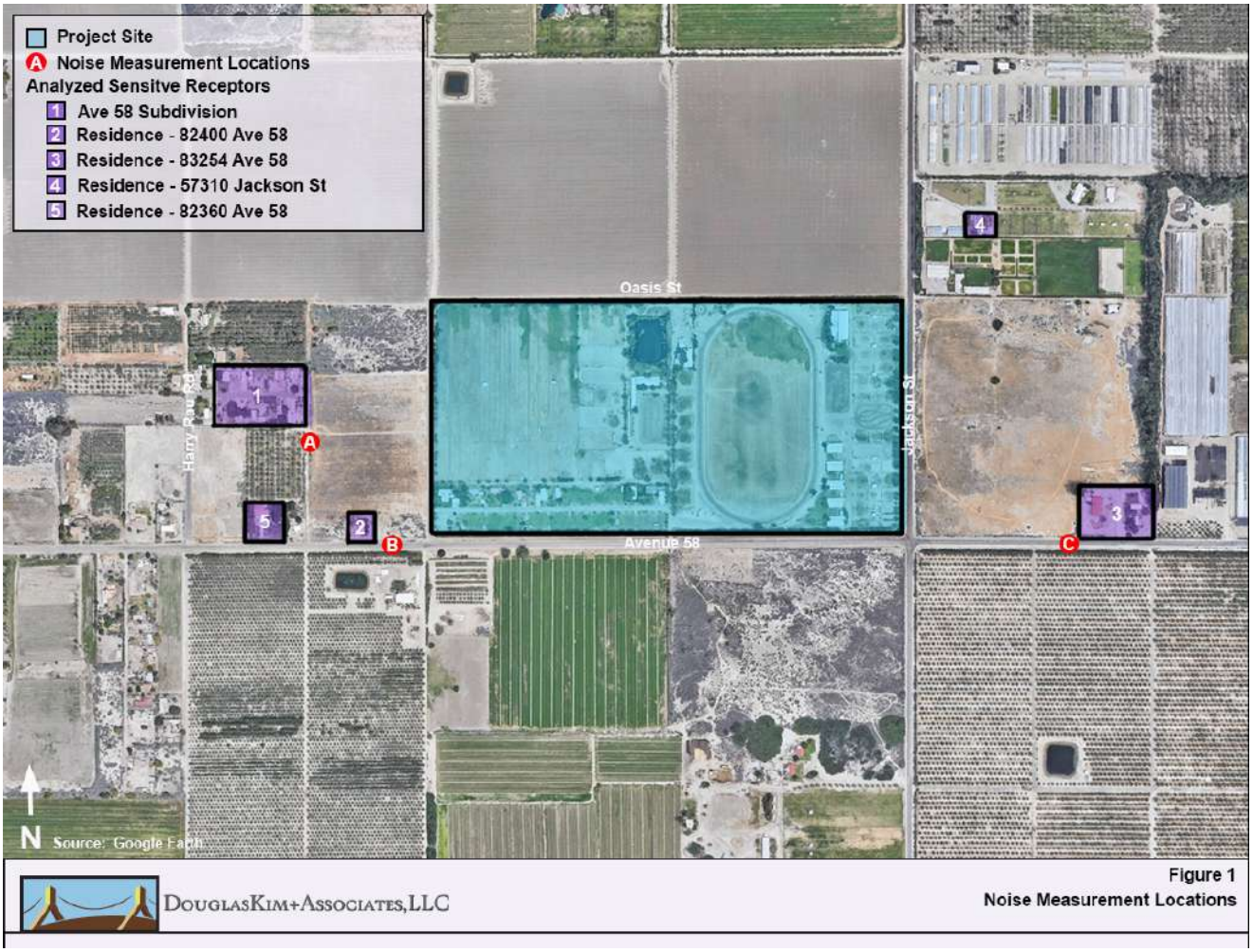
Noise Measurement Locations	Primary Noise Source	Sound Levels		Nearest Sensitive Receptor(s)	Noise/Land Use Compatibility[b]
		dBA (L_{eq})	dBA (CNEL)[a]		
A. Avenue 58 Subdivision	Traffic on Avenue 58	59.0	57.0	Residences – Avenue 58 Subdivision	Normally Acceptable
B. 82400 Avenue 58	Traffic on Avenue 58	63.5	61.5	Residences – 82400 and 82360 Avenue 58	Conditionally Acceptable
C. 83150 Avenue 58	Traffic on Avenue 58	63.6	61.6	Residence - 83254 Avenue 58, 57310 Jackson St.	Conditionally Acceptable

[a] Estimated based on short-term (15-minute) noise measurement using Federal Transit Administration procedures from 2018 Transit Noise and Vibration Impact Assessment Manual, Appendix E, Option 4.

[43] Noise measurements were taken using a Quest Technologies Sound Examiner SE-400 Meter. The Sound Examiner meter complies with the American National Standards Institute (ANSI) and International Electrotechnical Commission (IEC) for general environmental measurement instrumentation. The meter was equipped with an omni-directional microphone, calibrated before the day's measurements, and set at approximately five feet above the ground.

[b] Pursuant to California Office of Planning and Research "General Plan Guidelines, Noise Element Guidelines, 2017. When noise measurements apply to two or more land use categories, the more noise-sensitive land use category is used. See Appendix D for definition of compatibility designations.
Source: DKA Planning, 2022

Figure 2-1
Noise Measurement Locations



Construction

Off-Site Construction Activities

Construction would generate noise during the construction process that would span six months of site preparation, grading, utilities trenching, building construction, paving, and application of architectural coatings, as shown in **Table 2-11**. During all construction phases, noise-generating activities could occur at the Project Site during daytime hours.

Table 2-11
Construction Schedule Assumptions

Phase	Duration	Notes
Site Preparation	Month 1 (two weeks)	Grubbing and removal of trees, plants, landscaping, weeds.
Grading	Months 1-3	Fine grading of 40,000 square feet of area and approximately 6,000 cubic yards of soil (including swell factors) hauled 40 miles to landfill in 10-cubic yard capacity trucks.
Trenching	Months 2-4	Trenching for utilities, including gas, water, electricity, and telecommunications.
Building Construction	Months 3-6	Foundation work, framing, welding; installing mechanical, electrical, and plumbing. Floor assembly, cabinetry and carpentry, low voltage systems, trash management.
Paving	Month 5	Flatwork, including paving of walkways and other living areas, and surface parking lot for worker parking.
Architectural Coatings	Months 4-6	Application of interior and exterior coatings and sealants.
Source: DKA Planning, 2022.		

Noise levels would generally peak during the grading phase, when diesel-fueled heavy-duty equipment like excavators and dozers are used to move large amounts of dirt. This equipment is mobile in nature and does not always operate at in a steady-state mode full load, but rather powers up and down depending on the duty cycle needed to conduct work. As such, equipment is occasionally idle during which time no noise is generated.

During other phases of construction (e.g., trenching, building construction, paving, architectural coatings), noise impacts are generally lesser than during grading because they are less reliant on using heavy equipment with internal combustion engines. Smaller equipment such as forklifts, generators, and various powered hand tools and pneumatic equipment would generally be utilized. Off-site secondary noises would be generated by construction worker vehicles, vendor deliveries, and haul trucks. **Figure 2-2** illustrates how noise would propagate from the construction site during the demolition and grading phase.

Because the Project's construction phase would occur for more than three months, the applicable County threshold of significance for the Project's construction noise impacts is an increase of 5 dBA over existing ambient noise levels. As shown in **Table 2-12**, when considering ambient noise levels, the use of multiple pieces of powered equipment simultaneously would increase ambient noise negligibly. These construction noise levels would not exceed the County's significance threshold of 5 dBA. Therefore, the Project's on-site construction noise impact would be less than significant.

Figure 2-2
Construction Noise Sound Contours

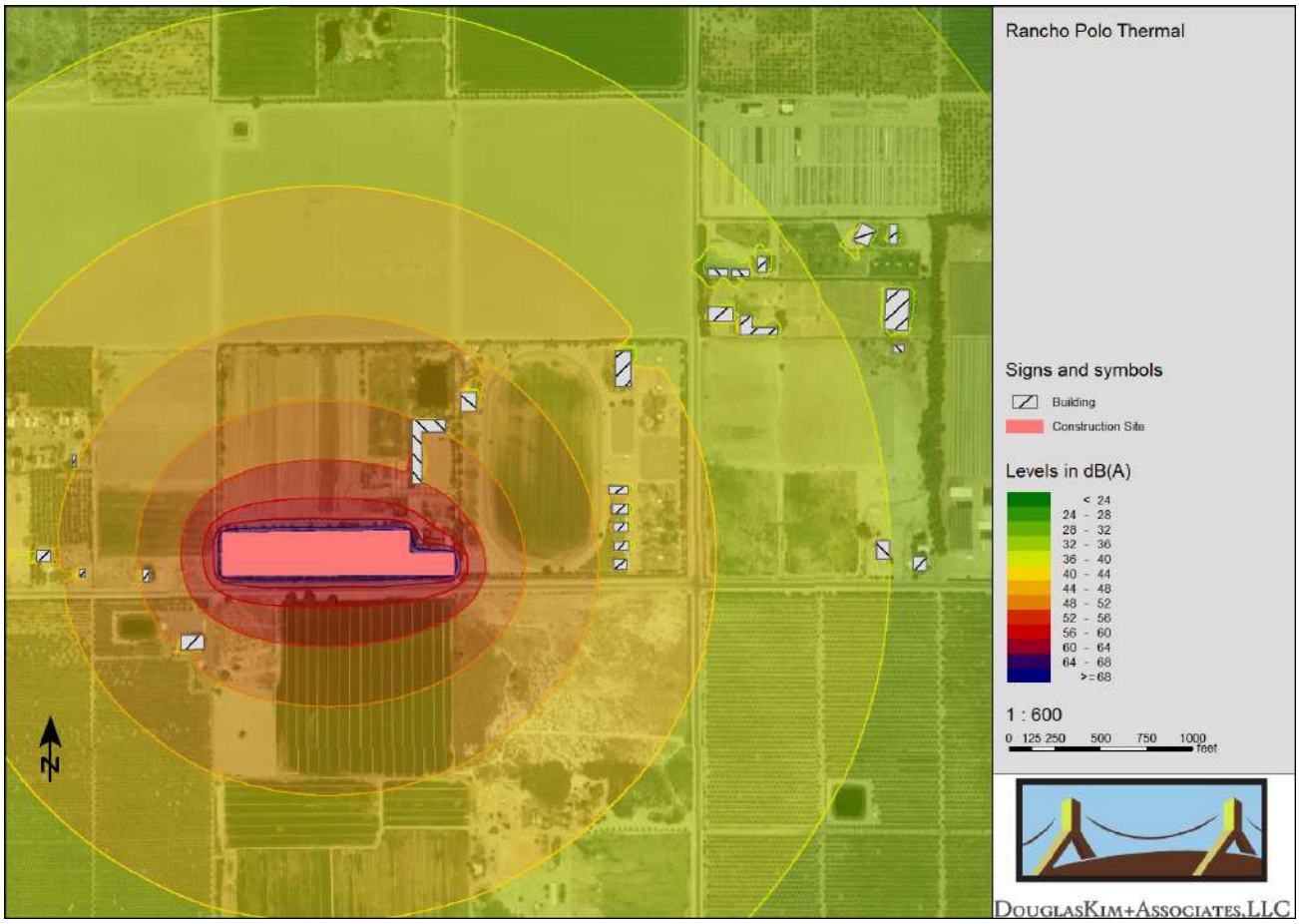


Table 2-12
Construction Noise Impacts at Off-Site Sensitive Receptors

Receptor	Maximum Construction Noise Level (dBA L_{eq})	Existing Ambient Noise Level (dBA L_{eq})	New Ambient Noise Level (dBA L_{eq})	Increase (dBA L_{eq})	Potentially Significant ?
1. Residences – Ave. 58 Subdivision	44.0	59.0	59.1	0.1	No
2. Residence – 82400 Ave. 58	39.2	63.5	63.5	0.0	No
3. Residence – 83254 Ave. 58	35.4	63.6	63.6	0.0	No
4. Residence – 57310 Jackson St.	36.8	63.6	63.6	0.0	No
5. Residence – 82360 Ave. 58	39.4	63.5	63.5	0.0	No
Source: DKA Planning, 2022.					

Off-Site Construction Activities

The Project would also generate noise at off-site locations from haul trucks moving soil from the Project Site during grading activities; vendor and contractor trips; and worker commute trips. These activities would generate up to an estimated 103 peak hourly PCE vehicle trips, as summarized in **Table 2-13**, during the grading phase, assuming all workers travel to the worksite at the same time. This includes converting noise from heavy-duty truck trips to an equivalent number of passenger vehicle trips.

Airport Boulevard would likely serve as part of the haul route for any construction vehicle activity given its direct to the 86 Freeway to the east. Based on Caltrans traffic volume data, Airport Avenue carries about 2,522 peak hourly vehicles.[44] The 103 peak hourly PCE vehicle trips would represent about 4.1 percent of traffic on this arterial, assuming all construction traffic uses this one roadway. Even under this worst-case scenario, the Project's construction-related trips would not cause a doubling in traffic volumes (i.e., 100 percent increase) on Airport Boulevard. As such, the Project's construction-related traffic would not increase existing noise levels by 3 dBA or more. Therefore, the Project's noise impacts from construction-related traffic would be less than significant.

Table 2-13
Construction Vehicle Trips (Maximum Hourly)

Construction Phase	Worker Trips [a]	Vendor Trips	Haul Trips	Total Trips	Percent of Peak Hour Trips on Airport Blvd.[d]
Site Preparation	18	0	0	**18**	0.7
Grading	15	0	89[b]	**103**	4.1
Trenching	5	0	0	**5**	0.2
Building Construction	9	4[c]	0	**13**	0.5
Paving	15	0	0	**15**	0.6
Architectural Coating	2	0	0	**2**	0.1

[a] Assumes all worker trips occur in the peak hour of construction activity.
[b] The project would generate 1,200 haul trips over a 54-day period with seven-hour work days. Because haul trucks emit more noise than passenger vehicles, a 19.1 passenger car equivalency (PCE) was used to convert haul truck trips to a passenger car equivalent.
[c] This phase would generate about 1.4 vendor truck trips daily over a seven-hour work day. Assumes a 19.1 PCE.
[d] Percent of existing traffic volumes on Airport Boulevard.
Source: DKA Planning, 2022

Operation

On-Site Operational Noise

[44] Caltrans 2017 Traffic Volumes; https://dot.ca.gov/programs/traffic-operations/census/traffic-volumes/2017/route-82-86. 2017 traffic counts adjusted to 2022 existing conditions assuming one percent annual ambient growth in traffic volumes.

During long-term operations, the Project would produce noise from both on- and off-site sources. As discussed below, the Project would not result in an exposure of persons to or a generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. The Project would also not increase surrounding noise levels by more than 5 dBA CNEL, the minimum threshold of significance based on the noise/land use category of sensitive receptors near the Project Site. As a result, the Project's on-site operational noise impacts would be less than significant.

Mechanical Equipment

The Project would operate HVAC equipment on the roof that would generate negligible impacts at off-site receptors that are over 320 feet away from the Project Site. As a result, noise from HVAC units would negligibly elevate ambient noise levels, far less than the 5 dBA CNEL threshold of significance for operational impacts.

Auto-Related Activities

The majority of vehicle-related noise impacts at the Project Site would come from 95 vehicles entering and exiting the development from the main driveway off Avenue 58. The Project would generate negligible noise impacts from the incremental vehicle trips made to the worker and visitor homes. As off-site receptors would be over 320 feet away from the Project Site, these impacts would be negligible at sensitive receptors.

Outdoor Uses

While most operations would be conducted inside the new residential buildings, outdoor activities could generate noise that could impact local sensitive receptors. This would include human conversation, trash collection, and landscape maintenance. These are discussed below:

- Human conversation. Noise associated with everyday residential activities would largely be contained internally within the Project. Noise could include passive activities such as human conversation and socializing in outdoor spaces. All these areas would be used for passive socializing and recreation. There would be intermittent activities that would produce negligible impacts from human speech, based on the Lombard effect. This phenomenon recognizes that voice noise levels in face-to-face conversations generally increase proportionally to background ambient noise levels, but only up to approximately 67 dBA at a reference distance of one meter. Specifically, vocal intensity increases about 0.38 dB for every 1.0 dB increase in noise levels above 55 dB, meaning people talk slightly above ambient noise levels in order to communicate.[45]

[45] Acoustical Society of America, Volume 134; Evidence that the Lombard effect is frequency-specific in humans, Stowe and Golob, July 2013.

- Trash collection. On-site trash and recyclable materials for the workers and/or visitors would be managed from haul trucks that currently serve the Equestrian Center.

- Landscape maintenance. Noise from gas-powered leaf flowers, lawnmowers, and other landscape equipment can generated substantial bursts of noise during regular maintenance. Any intermittent landscape equipment would operate during the day and would represent a negligible impact that would not increase 24-hour noise levels at off-site locations by 5 dBA CNEL or more.[46]

As off-site receptors would be over 320 feet away from the Project Site, these impacts would be negligible at sensitive receptors. As such, the impact of on-site operational noise sources would be less than significant.

Off-Site Operational Noise

The majority of the Project's operational noise impacts would be off-site from vehicles traveling to and from the development. The Project could add 95 vehicle trips to the local roadway network on a peak weekday at the start of operations. This level of vehicle activity would not double traffic volumes on Avenue 58 or any other local roadways. Because it takes a doubling of traffic to elevate ambient noise levels by 3 dBA L_{eq}, the Project's traffic would neither increase ambient noise levels 3 dBA or more into "normally unacceptable" or "clearly unacceptable" noise/land use compatibility categories, nor increase ambient noise levels 5 dBA or more. Twenty-four hour CNEL impacts would similarly be minimal, far below criterion for significant operational noise impacts, which begin at 3 dBA. As such, this impact would be considered less than significant.

Consistency with General Plan

As illustrated below (**Table 2-14**), the Project's construction and operation of the worker and/or visitor housing would be consistent with the County's Noise Element.

Table 2-14
Project Consistency with County of Riverside General Plan Noise Element

Policy	Project Consistency
Policy N 1.1. Protect noise-sensitive land uses from high levels of noise by restricting noise-producing land uses from these areas. If the noise-producing land use cannot be relocated, then noise buffers such as setbacks, landscaping, or block walls shall be used.	**No Conflict.** The Project would set back noise-sensitive housing units at least 60 feet from Avenue 58.
Policy N 1.3. Consider the following uses noise-sensitive and discourage these uses in areas in excess of 65 CNEL: Schools	**No Conflict.** The Project locate workforce housing in an area with ambient noise levels below 65 dBA CNEL in areas considered "Normally Acceptable" or

[46] While AB 1346 (Berman, 2021) bans the sale of new gas-powered leaf blowers by 2024, existing equipment can continue to operate indefinitely.

Table 2-14
Project Consistency with County of Riverside General Plan Noise Element

Policy	Project Consistency
Hospitals Rest Homes Long Term Care Facilities o Mental Care Facilities Residential Uses Libraries Passive Recreation Uses Places of Worship	"Conditionally Acceptable" under the State's General Plan guidance on land use compatibility.
Policy N 1.4. Determine if existing land uses will present noise compatibility issues with proposed projects by undertaking site surveys.	**No Conflict.** The workforce housing would be located in areas considered "Normally Acceptable" or "Conditionally Acceptable" under the State's General Plan guidance on land use compatibility.
Policy N 1.5. Prevent and mitigate the adverse impacts of excessive noise exposure on the residents, employees, visitors, and noise-sensitive uses of Riverside County.	**No Conflict.** The workforce housing would be located in areas considered "Normally Acceptable" or "Conditionally Acceptable" under the State's General Plan guidance on land use compatibility.
Policy N 1.7. Require proposed land uses, affected by unacceptably high noise levels, to have an acoustical specialist prepare a study of the noise problems and recommend structural and site design features that will adequately mitigate the noise problem.	**No Conflict.** The workforce housing would be located in an area with acceptable ambient noise levels of less than 65 dBA CNEL.
Policy N 4.1. Prohibit facility-related noise, received by any sensitive use, from exceeding the following worst-case noise levels: a. 45 dBA 10-minute Leq between 10:00 p.m. and 7:00 a.m.; b. 65 dBA 10-minute Leq between 7:00 a.m. and 10:00 p.m.	**No Conflict.** The residential project would not generate substantial operational noise that could elevate ambient noise levels at sensitive receptors that are over 320 feet away from the Project Site.
Policy N 12.1. Utilize natural barrier such as hills, berms, boulders, and dense vegetation to assist in noise reduction.	**No Conflict.** The residential project would incorporate vegetation and permeable surfaces to attenuate operational noise.
Policy N 13.1. Minimize the impacts of construction noise on adjacent uses within acceptable standards.	**No Conflict.** Construction activities would not elevate ambient noise levels at nearby sensitive receptors by more than 0.1 dBA L_{eq}.
Policy N 13.2. Ensure that construction activities are regulated to establish hours of operation in order to prevent and/or mitigate the generation of excessive or adverse impacts on surrounding areas.	**No Conflict.** Construction activities would comply with County noise ordinance restrictions governing hours of operation and would not elevate ambient noise levels at nearby sensitive receptors by more than 0.1 dBA L_{eq}.
Policy N 13.4. Require that all construction equipment utilizes noise reduction features (e.g. mufflers and engine shrouds) that are no less effective than those originally installed by the manufacturer.	**No Conflict.** Construction activities would use noise reduction features that are consistent with manufacturer's specifications.

Table 2-14
Project Consistency with County of Riverside General Plan Noise Element

Policy	Project Consistency
Policy N 14.1. Enforce the California Building Standards that sets standards for building construction to mitigate interior noise levels to the tolerable 45 CNEL limit. These standards are utilized in conjunction with the Uniform Building Code by the County's Building Department to ensure that noise protection is provided to the public. Some design features may include extra-dense insulation, double-paned windows, and dense construction materials.	**No Conflict.** The worker and/or visitor housing will comply with Title 24 acoustic requirements for windows and other openings, as well as the Uniform Building Code overall.
Policy N 14.3. Incorporate acoustic site planning into the design of new development, particularly large scale, mixed-use, or master planned development, through measures which may include: Separation of noise sensitive building from noise generating sources. Use of natural topography and intervening structures to shield noise sensitive land uses. Adequate sound proofing within the receiving structure.	**No Conflict.** The Project would set back noise-sensitive housing units at least 60 feet from Avenue 58.
Policy N 14.4. Consider and, when necessary, to lower noise to acceptable limits, require noise barriers and landscaped berms.	**No Conflict.** The Project's construction and operations will not require noise barriers or other features to attenuate or mitigate noise impacts.
Policy N 14.8. Review all development applications for consistency with the standards and policies of the Noise Element of the General Plan.	**No Conflict.** The Project is being reviewed through the CEQA process for consistency with the Noise Element of the General Plan.
Policy N 16.2. Consider the following land uses sensitive to vibration: Hospitals Residential areas Concert halls Libraries Sensitive research operations Schools Offices N 16.3 Prohibit exposure of residential dwellings to perceptible ground vibration from passing trains as perceived at the ground or second floor. Perceptible motion shall be presumed to be a motion velocity of 0.01 inches/second over a range of 1 to 100 Hz.	**No Conflict.** The Project's exposure to vibration will be address by setting back noise-sensitive housing units at least 60 feet from Avenue 58.
Source: DKA Planning, 2022.	

Impacts will be less than significant.

b)

Fundamentals of Vibration

Characteristics of Vibration. Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, and acceleration. Unlike noise, vibration is not a common environmental problem, as it is unusual for vibration from vehicle sources to be perceptible. Common sources of vibration include trains, construction activities, and certain industrial operations.

Vibration Definitions. This analysis discusses vibration in terms of Peak Particle Velocity (PPV). PPV is commonly used to describe and quantify vibration impacts to buildings and other structures. PPV levels represent the maximum instantaneous peak of a vibration signal and are usually measured in inches per second.[47]

Effects of Vibration. High levels of vibration may cause physical personal injury or damage to buildings. However, groundborne vibration levels rarely affect human health. Instead, most people consider groundborne vibration to be an annoyance that can disrupt concentration or disturb sleep. Groundborne vibration can also interfere with certain types of highly sensitive equipment and machines, especially imaging devices used in medical laboratories.

Perceptible Vibration Changes. Unlike noise, groundborne vibration is not an environmental issue that most people experience every day. Background vibration levels in residential areas are usually well below the threshold of perception for humans, approximately 0.01 inches per second.[48] Perceptible indoor vibrations are most often caused by sources within buildings themselves, such as slamming doors or heavy footsteps. Common outdoor sources of groundborne vibration include construction equipment, trains, and traffic on rough or unpaved roads. Traffic vibration from smooth and well-maintained roads is typically not perceptible.

Regulatory Framework

Federal Transit Administration (FTA). In 2018, the FTA published the Transit Noise and Vibration Impact Assessment Manual to aid in the estimation and analysis of vibration impacts. Typically, potential building and structural damages are the foremost concern when evaluating the impacts of construction-related vibrations. **Table 2-15** summarizes FTA's vibration guidelines for building and structural damage. While these are reference values for vibration levels at 25 feet of distance, this analysis uses logarithmic equations to determine whether building damage would occur regardless of actual distance between construction activity and nearby buildings.

[47] California Department of Transportation, Transportation and Construction Vibration Guidance Manual, September 2013.
[48] Ibid.

Table 2-15
FTA Vibration Damage Potential Threshold Criteria

Structure and Condition	Threshold Criteria (in/sec PPV) at 25 Feet
I. Reinforced-concrete, steel or timber (no plaster)	0.5
II. Engineered concrete and masonry (no plaster)	0.3
III. Non-engineered timber and masonry buildings	0.2
IV. Buildings extremely susceptible to vibration damage	0.12
Source: Federal Transit Administration "Transit Noise and Vibration Impact Assessment Manual", September 2018.	

The FTA Assessment Manual also cites criteria for cases where more detailed analysis may be required. For buildings consisting of concrete wall and floor foundations, masonry or concrete walls, or stone masonry retaining walls, continuous vibrations of 0.3 inches per second PPV can be damaging. For buildings consisting of steel or reinforced concrete, such as factories, retaining walls, bridges, steel towers, open channels, underground chambers and tunnels with and without concrete alignment, continuous vibrations of 0.5 inches per second PPV can be damaging.

California's Civil Code Section 832 protects adjacent properties when excavation of a site occurs.

> *Each coterminous owner is entitled to the lateral and subjacent support which his land receives from the adjoining land, subject to the right of the owner of the adjoining land to make proper and usual excavations on the same for purposes of construction or improvement, under the following conditions:*
>
> *1. Any owner of land or his lessee intending to make or to permit an excavation shall give reasonable notice to the owner or owners of adjoining lands and of buildings or other structures, stating the depth to which such excavation is intended to be made, and when the excavating will begin.*
>
> *2. In making any excavation, ordinary care and skill shall be used, and reasonable precautions taken to sustain the adjoining land as such, without regard to any building or other structure which may be thereon, and there shall be no liability for damage done to any such building or other structure by reason of the excavation, except as otherwise provided or allowed by law.*
>
> *3. If at any time it appears that the excavation is to be of a greater depth than are the walls or foundations of any adjoining building or other structure, and is to be so close as to endanger the building or other structure in any way, then the owner of the building or other structure must be allowed at least 30 days, if he so desires, in which to take measures to protect the same from any damage, or in which to extend the foundations thereof, and he must be given for the same purposes reasonable license to enter on the land on which the excavation is to be or is being made.*

4. If the excavation is intended to be or is deeper than the standard depth of foundations, which depth is defined to be a depth of nine feet below the adjacent curb level, at the point where the joint property line intersects the curb and if on the land of the coterminous owner there is any building or other structure the wall or foundation of which goes to standard depth or deeper than the owner of the land on which the excavation is being made shall, if given the necessary license to enter on the adjoining land, protect the said adjoining land and any such building or other structure thereon without cost to the owner thereof, from any damage by reason of the excavation, and shall be liable to the owner of such property for any such damage, excepting only for minor settlement cracks in buildings or other structures.

County of Riverside. While the County of Riverside does not have vibration standards for construction activities, the General Plan Noise Element does address the human reaction to typical vibration levels. Vibration levels with peak particle velocity of 0.0787 inches per second are considered readily perceptible and above 0.1968 in/sec are considered annoying to people in buildings.

Methodology

Construction Vibration. Ground-borne vibration impacts during construction activities were evaluated for both on-site and off-site construction activities by identifying potential vibration sources (e.g., construction equipment), estimating the vibration levels at off-site structures, and comparing the proposed impacts against applicable vibration significance thresholds.

Operational Vibration. As with many non-industrial projects, the Project does not include land uses that would generate high levels of ground-borne vibration. Instead, any vibration related to operation of the Proposed Project would involve vehicle activity traveling to and from the Project Site. However, vibration from vehicle activities using rubber-tired wheels is unlikely to be perceptible by people. As such, operational impacts on ground-borne vibration are not analyzed further.

Threshold of Significance

Groundborne Vibration Thresholds. In assessing impacts related to noise and vibration in this section, the County uses Appendix G as the thresholds of significance. The FTA's criteria in its 2018 Transit Noise and Vibration Impact Assessment manual will be used where applicable and relevant to assist in analyzing the Appendix G thresholds.

With regard to human annoyance, any vibration levels with peak particle velocity above 0.1968 in/sec would be considered annoying to people in buildings and would be considered significant.

Existing Conditions

Existing Ambient Vibration Levels

The portion of the Project Site to be developed is currently vacant. As such, there are no on-site sources of groundborne vibration.

The primary source of groundborne vibration near the Project Site is vehicle travel, including Avenue 58 south of the Project Site. The blend of passenger vehicles, trucks, delivery trucks, transit buses, and other light-, medium-, and heavy-duty vehicles generate minimal levels of vibration from this roadway. As noted by federal guidance, "[i]t is unusual for vibration from sources such as buses and trucks to be perceptible…"[49] As such, vehicle movement generates imperceptible ground vibration, with the occasional exception of heavy-duty vehicles that travel over speed bumps, potholes, and other street irregularities. As noted earlier, the Project Site is in a largely rural area, with no buildings or structures any closer than 320 feet from the Project Site. The closest structures are:

- Single-family home (mobile home) located at 82400 Avenue 58, 320 feet west of the Site's southwest corner boundary. The only source of vibration affecting this structure is vehicle and truck traffic on Avenue 58.

- Commercial building located at 82379 Avenue 58, 340 feet southwest of the Site's southwest corner boundary. The only source of vibration affecting this structure is vehicle and truck traffic on Avenue 58.

Construction

Building Damage Vibration Impact – On-Site Sources

Construction equipment can produce groundborne vibration based on equipment and methods employed. While this spreads through the ground and diminishes in strength with distance, buildings on nearby soil can be affected. This ranges from no perceptible effects at the lowest levels, low rumbling sounds and perceptible vibration at moderate levels, and slight damage at the highest levels. **Table 2-16** summarizes vibratory levels for common construction equipment.

Table 2-16
Vibration Source Levels for Construction Equipment

Equipment	Approximate PPV at 25 feet (in/sec)
Pile Driver (impact)	0.644
Pile Drive (sonic)	0.170
Clam shovel drop (slurry wall)	0.202
Hydromill (slurry wall)	0.008
Vibratory Roller	0.210
Hoe Ram	0.089
Large Bulldozer	0.089

[49] Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, September 2018.

Caisson Drilling	0.089
Loaded Truck	0.076
Jackhammer	0.035
Small Bulldozer	0.003
Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, 2018.	

Minor groundborne vibration would be generated by construction activities at the Project site. As a result of equipment that could include on-site bulldozer operations or the vibrational equivalent, vibration velocities of up to 0.007 inches per second PPV could occur at the construction site (**Table 2-17**). This impact is below the 0.2 inches per second PPV threshold from FTA that is considered potentially harmful to non-engineered timber and masonry buildings. Construction of the Project would protect adjacent properties during the excavation process by complying with California Civil Code Section 832. Other potential construction activities would produce less vibration and have lesser potential impacts on nearby sensitive receptors. As a result, construction-related structural vibration impacts would be considered less than significant.

Table 2-17
Building Damage Vibration Levels – On-Site Sources

Off-Site Receptor Location	Distance to Project Site (feet)	Vibration Velocity Levels at Off-Site Sensitive Receptors from Construction Equipment (in/sec PPV)					Significance Criterion (PPV)	Potentially Significant Impact?
		Large Bulldozer	Caisson Drilling	Loaded Trucks	Jack-hammer	Small Bulldozer		
FTA Reference Vibration Level (25 Feet)	N/A	0.089	0.089	0.076	0.035	0.003	--	--
Residence, 82400 Ave 58	320	0.007	0.007	0.006	0.003	0.000	0.2[a]	No
Building, 82379 Ave 58	320	0.007	0.007	0.006	0.003	0.000	0.2[a]	No
[a] FTA criterion for Category III (non-engineered timber and masonry buildings) Source: DKA Planning, 2022.								

Building Damage Vibration Impact – Off-Site Sources

Construction of the Project would generate trips from large trucks including haul trucks, concrete mixing trucks, concrete pumping trucks, and vendor delivery trucks. Regarding building damage, based on FTA data, the vibration generated by a typical heavy-duty truck would be approximately 63 VdB (0.006

PPV) at a distance of 50 feet from the truck.[50] According to the FTA "[i]t is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads." Nonetheless, there are buildings along the Project's anticipated haul route(s) on Avenue 58 and other local roads that are generally situated away from the right-of-way and would be exposed to groundborne vibration levels of no more than 0.006 PPV. This estimated vibration generated by construction trucks traveling along the anticipated haul route(s) would be well below the most stringent building damage criteria of 0.2 PPV for non-engineered timber and masonry buildings. The Project's potential to damage roadside buildings and structures as the result of groundborne vibration generated by its truck trips would therefore be considered less than significant.

Human Annoyance Impact

With the nearest vibration-sensitive receptors located 320 feet away from the Project Site (i.e., 82400 Avenue 58), the peak particle velocity for any sensitive receptors would be negligible, far below the 0.1968 in/sec threshold would be considered annoying to people in buildings. As such, human annoyance impacts would be negligible and would be less than significant.

Operation

During operation of the overnight accommodations development, there would be no significant stationary sources of groundborne vibration, such as heavy equipment or industrial operations. Operational groundborne vibration in the Project Site's vicinity would be generated by its related vehicle travel on local roadways. However as previously discussed, road vehicles rarely create vibration levels perceptible to humans unless road surfaces are poorly maintained and have potholes or bumps. As a result, the Project's long-term vibration impacts would be less than significant.

Impacts will be less than significant.

Mitigation: No mitigation is required.

Monitoring: No monitoring is required.

[50] Federal Transit Administration, "Transit Noise and Vibration Impact Assessment," May 2006, Figure 7-3.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
PALEONTOLOGICAL RESOURCES:				
28. Paleontological Resources a) Directly or indirectly destroy a unique paleontological resource, site, or unique geologic feature?	☐	☐	☒	☐

Source(s): Riverside County General Plan, Multipurpose Open Space Element, Figure OS-8, Paleontological Sensitivity
Riverside County, Map My County[51]

Findings of Fact:

Paleontological resources are the fossilized biotic remains of ancient environments. They are valued for the information they yield about the history of the earth and its past ecological settings. Riverside County has been inventoried for geologic formations known to potentially contain paleontological resources. Lands with high, low, or undetermined potential for finding paleontological resources are mapped within the County.

The Site is designated by the County as an area of High A (Ha) paleontological sensitivity based on geologic formations or mappable rock units that are rocks that contain fossilized body elements, and trace fossils such as tracks, nests and eggs. these fossils occur on or below the surface.

According to the General Plan policies OS 19.6 and OS 19.9, the Project would be required to provide a Paleontological Resource Impact Mitigation Program (PRIMP) with the County Geologist prior to any ground disturbing activities as a condition of approval. General Plan policy OS 19.6 would ensure that in the event a paleontological resource is found during project construction, the PRIMP would provide specific direction for addressing a potential resource(s) and policy OS 19.9 would ensure the County Geologist would provide guidance to the Applicant and direct them to a facility within Riverside County for curation, including the Western Science Center in the City of Hemet.

As a Condition of Approval, the Applicant will retain a qualified paleontologist approved by the County to create and implement a project-specific plan for monitoring site grading/earthmoving activities (project paleontologist). The project paleontologist retained will review the approved development plan and grading plan and conduct any pre-construction work necessary to render appropriate monitoring and mitigation requirements as appropriate. These requirements will be documented by the project paleontologist in a Paleontological Resource Impact Mitigation Program (PRIMP). This PRIMP will be submitted to the County Geologist for approval prior to issuance of a Grading Permit. Information to be contained in the PRIMP, at a minimum and in addition to other industry standards and Society of Vertebrate Paleontology standards.

Therefore, implementation of the Project will result in less than significant impacts that would directly or indirectly destroy a unique paleontological resource, or site, or unique geologic features.

[51] https://gis1.countyofriverside.us/Html5Viewer/?viewer=MMC_Public

In addition to the County's General Plan policies outlined above, there are a number of State and federal laws that regulate development impacts to paleontological resources, including those outlined under the California Public Resources Code Paleontological Resources Preservation Act. Section 5097.5 of the California Public Resources Code specifies that any unauthorized removal of paleontological remains is a misdemeanor. Furthermore, California Penal Code Section 622.5 includes penalties for damage or removal of paleontological resources.

Impacts will be less than significant.

Mitigation: No mitigation is required.

Monitoring: No monitoring is required.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
POPULATION AND HOUSING Would the project:				
29. Housing a) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
b) Create a demand for additional housing, particularly housing affordable to households earning 80% or less of the County's median income?	☐	☐	☐	☒
c) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒

Source(s): Project Application Materials
Riverside County General Plan, Housing Element

Findings of Fact:

a) The development area contains existing pre-fabricated mobile dwellings for the use of migrant agricultural workers, the property owner and managers. All of these existing structures will be maintained. The Project would not result in the removal of existing housing or the displacement of residents that would require the construction of replacement housing.

There will be no impacts.

b) The Project would provide new worker and guest accommodations. The overnight guests would not be considered permanent residents, as most guest stays are expected to vary between 1 week and 6 months. The Project may indirectly contribute to population growth within the County by creating jobs both during construction and operation. However, it is anticipated that the majority of jobs would be filled by workers who already reside in the area and work at the Site, and would not attract a significant number of new residents to the County.

There will be no impacts.

c) All water/wastewater requirements are met by existing system connections. No offsite infrastructure improvements would be required. The Project would not induce substantial or unplanned growth.

There will be no impacts.

Mitigation: No mitigation is required.

Monitoring: No monitoring is required.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
PUBLIC SERVICES Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services:				
30. Fire Services	☐	☐	☒	☐

Source(s): Riverside County General Plan, Safety Element
Riverside County Fire Department[52]
Ordinance No. 659 (An Ordinance of the County of Riverside Establishing a Development Impact Fee Program)
Riverside County, Map My County[53]

Findings of Fact:

The Riverside County Department of Building and Safety provides technical expertise in reviewing and enforcing the County Building and Fire Codes. These codes establish site-specific investigation requirements, construction standards, and inspection procedures to ensure that development does not pose a threat to the health, safety, and welfare of the public. They contain baseline minimum standards to guard against unsafe development. The General Plan Safety Element outlines policies related to Building Code and Performance Standards (S 5.1(c)), which require adherence to the Riverside County Fire Code Protection Ordinance (Ordinance No. 787). The project would be designed consistent with California Building Code and Riverside County Ordinance 787 which defines uniform fire code standards for access, brush control and related factors.

The Project Site is not in a Fire Hazard Zone or Fire Responsibility Area. The Project Site is served by the Riverside County Fire Department (RCFD) and the California Department of Forestry and Fire Protection (CALFIRE). The closest RCFD station is Battalion 6's Station 70, located at 54001 Madison Street in La Quinta, approximately 3.8 miles driving distance, and the approximate response time is 7 minutes assuming an average driving speed of 35 miles per hour. The Project would accommodate overnight workers and guests to the Site which would incrementally increase the need for fire protection services especially during wind-driven wildfire events.

Funding for the RCFD is obtained from various sources, including the County's general fund, city general and benefit assessment funds, and other sources. RCFD capital funding is mostly provided by Development Impact Fees (DIF) collected by Riverside County or by the cities in which the specific project is located, pursuant to Ordinance No. 659. DIF for fire protection shall be paid prior to the issuance of a certificate of occupancy. Payment of DIF is a standard condition of approval and is not considered unique mitigation pursuant to CEQA.

[52] https://www.rvcfire.org/resources/fire-stations
[53] https://gis1.countyofriverside.us/Html5Viewer/?viewer=MMC_Public

The Project may increase demand for fire service; however, the project is consistent with the land use designation for the site as designated in the Eastern Coachella Valley Area Plan and would not increase the population beyond what was anticipated in the Riverside County General Plan. Further, the Project would be designed and constructed consistent with RCFD standards for access, fire suppression infrastructure and fuel control/modification and be required to pay Development Impact Fees (DIF) to cover the fair share portion of future improvements required to maintain fire service ratios in the area. The Project would not require the construction of a new fire station to maintain service ratios.

Impacts will be less than significant.

Mitigation: No mitigation is required.

Monitoring: No monitoring is required.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
31. Sheriff Services	☐	☐	☒	☐

Source(s): Riverside County General Plan, Safety Element
Riverside County Sheriff's Department[54]
Ordinance No. 659 (An Ordinance of the County of Riverside Establishing a Development Impact Fee Program)

Findings of Fact:

Law enforcement services are provided by the Riverside County Sheriff's Department (RCSD). The closest RCSD station is the Thermal Station, located at 86625 Airport Boulevard in Thermal, approximately 5 miles driving distance, and the approximate response time is 8.5 minutes assuming an average driving speed of 35 miles per hour. The Project would accommodate overnight workers and guests to the Site which would incrementally increase calls for service. The Project would potentially increase demand for law enforcement services. However, the Project is consistent with the land use designation for the Site and would not increase the population beyond what was anticipated in the Riverside County General Plan.

Emergency access to the Project Site would be provided by the existing street system. The Project would not require any additional officers. Furthermore, the Project Site is part of an existing patrol area covered by RCSD. Therefore, with existing personnel, law enforcement personnel are anticipated to be able to respond in a timely manner, and within set standard response times, to emergency calls in the Project area. Therefore, the Project would not result in the need for, new or expansion of police protection facilities.

Temporary construction fencing will be placed along the periphery of the active construction areas to screen as much of the construction activity from view at the local street level and to keep unpermitted persons from entering the construction area. These security measures would ensure that valuable materials (e.g., building supplies, metals such as copper wiring) and construction equipment are not easily stolen or abused.

A site manager and maintenance personnel are present on the property 24 hours per day, seven days per week. During the peak season, Rancho Polo has security on site around the clock. This includes the regular patrol of the horse barns during overnight hours. In the off season, when there are fewer animals being boarded, site security is reduced to nighttime patrolling of the horse stables.

Funding for the RCSD is obtained from various sources, including the County's general fund, city general and benefit assessment funds, and other sources. RCSD capital funding is mostly provided by Development Impact Fees (DIF) collected by Riverside County or by the cities in which the specific project is located, pursuant to Ordinance No. 659. DIF to cover the fair share portion of future

[54] https://www.riversidesheriff.org/168/Patrol-Stations

improvements required to maintain law enforcement service ratios in the area. Payment of DIF is a standard condition of approval and is not considered unique mitigation pursuant to CEQA.

Impacts will be less than significant.

Mitigation: No mitigation is required.

Monitoring: No monitoring is required.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
32. Schools	☐	☐	☐	☒

Source(s): Coachella Valley Unified School District[55]
Ordinance No. 659 (An Ordinance of the County of Riverside Establishing a Development Impact Fee Program)

Findings of Fact:

The Project includes overnight accommodations for workers and guests. However, it is anticipated that the majority of jobs would be filled by workers who already reside in the area and work at the Site, and would not attract a significant number of new residents to the County. The Project would not directly generate any school-aged children requiring public education, and would not create a direct demand for public school services, nor would it indirectly draw a substantial number of students to the area. Thus, the Project would not result in a direct demand for school services.

Additionally, pursuant to the California Government Code Section 65995, the Project would be required to pay school fees established by the Coachella Valley Unified School District (CVUSD), payment of which in accordance with existing rules and regulations regarding the calculation and payment of such fees would, by law, provide full and complete mitigation for any potential direct and indirect impacts to schools as a result of the Project. Payment of school fees is a standard condition and is not considered unique mitigation under CEQA.

There will be no impacts.

Mitigation: No mitigation is required.

Monitoring: No monitoring is required.

[55] https://www.cvusd.us/

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
33. Libraries	☐	☐	☐	☒

Source(s): Riverside County General Plan
Riverside County Library System

Findings of Fact:

The Project includes overnight accommodations for workers and guests. It would not increase the demand for library services. While employees would be required to operate the facility, the additional demand on library services generated by the employees would be negligible. Demand placed on libraries is based on the generation of a resident population associated with a person's place of residence, and not typically their place of employment.

The Project applicant shall comply with the provisions of Ordinance No. 659, which requires payment of the appropriate fees set forth in the Ordinance. Adherence to the Ordinance No. 659 is typically a standard condition of approval and is not considered unique mitigation pursuant to CEQA. With payment of the DIF, any impacts from implementation of the Project that would result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for library services.

There will be no impacts.

Mitigation: No mitigation is required.

Monitoring: No monitoring is required.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
34. Health Services	☐	☐	☒	☐

Source(s): Riverside County General Plan

Findings of Fact: The workers and guests may use area health care services; however, it would not impact the overall provision of health care in the area. Ambulance response times would not be impacted with project construction or operations because no roadways would be impacted and all development improvements would occur on-site.

Impacts will be less than significant.

Mitigation: No mitigation is required.

Monitoring: No monitoring is required.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
RECREATION Would the project:				
35. Parks and Recreation a) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☒	☐
b) Increase the use of existing neighborhood or regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐
c) Be located within a Community Service Area (CSA) or recreation and park district with a Community Parks and Recreation Plan (Quimby fees)?	☐	☐	☒	☐

Source(s): Ord. No. 460, Section 10.35 (Regulating the Division of Land – Park and Recreation Fees and Dedications)
Ord. No. 659 (Establishing Development Impact Fees), Parks & Open Space Department Review
Riverside County, Map My County[56]
Riverside County, Office of Economic Development, CSA[57]

Findings of Fact:

a) - b) The Project includes new guest and worker overnight accommodations. The Site contains equestrian and other recreational activities. No increase in demand for park services would occur as a result of the Project. The Project would not require the construction or expansion of public recreational facilities which might have an adverse physical effect on the environment.

The Project would be subject to Riverside County Ordinance No. 659, which outlines development impact fees in order for the County to construct or acquire needed public facilities, including recreational facilities. Development fees are based on the fair share cost of providing public facilities reasonably needed to serve the development. Nonresidential development subject to Ordinance No. 659 include industrial and commercial uses, however industrial and commercial uses are not required to pay development impact fees for recreational facilities because these types of developments do not increase the demand for recreational facilities. Adherence to the Ordinance No. 659 is typically a standard condition of approval and is not considered unique mitigation pursuant to CEQA.

Impacts will be less than significant.

c) The Project is located in the Thermal Community Service Area (CSA) #125 or park/recreation district that is managed by the Community Parks and Recreation Plan. The Project would be required to pay impact fees, a portion of which would be allocated to parks and recreation resources. Adherence to the

[56] https://gis1.countyofriverside.us/Html5Viewer/?viewer=MMC_Public
[57] https://rivcoed.org/recreation

Ordinance No. 659 is typically a standard condition of approval and is not considered unique mitigation pursuant to CEQA.

Impacts will be less than significant.

Mitigation: No mitigation is required.

Monitoring: No monitoring is required.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
36. Recreational Trails a) Include the construction or expansion of a trail system?	☐	☐	☐	☒

Source(s): Riverside County General Plan, Circulation Element, Figure C-6 Trails and Bikeway System Eastern Coachella Valley Area Plan, Figure 9, Trails & Bikeways System[58]

Findings of Fact:

a) No trails are proposed as part of the Project. No trails are required to be constructed as part of Project approval. Avenue 58 and Jackson Street are designated as Design Guidelines Trails. These would not be affected by the Project, which is entirely contains on a small section in the southwest portion of the Site, and with a buffer wall on the property line.

There will be no impacts.

Mitigation: No mitigation is required.

Monitoring: No monitoring is required.

[58] https://planning.rctlma.org/Portals/14/genplan/GPA%202022/Compiled%20ECVAP_4-2022%20rev.pdf?ver=2022-06-27-145207-383

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
TRANSPORTATION Would the project:				
37. Transportation a) Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?	☐	☐	☒	☐
b) Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☐	☒	☐
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)?	☐	☐	☒	☐
d) Cause an effect upon, or a need for new or altered maintenance of roads?	☐	☐	☒	☐
e) Cause an effect upon circulation during the project's construction?	☐	☐	☒	☐
f) Result in inadequate emergency access or access to nearby uses?	☐	☐	☐	☒

Source(s): Riverside County General Plan, Project Application Materials
Riverside County, Transportation Analysis Guidelines, December 2020[59]
Eastern Coachella Valley Area Plan, Figure 9, Trails & Bikeways System[60]

Findings of Fact:

a) Although the vehicle miles traveled (VMT) methodology is now applied in evaluating potential transportation impacts of a project, the County's General Plan identifies standards for maintaining an adequate level of service (LOS) for County streets and intersections.

The Project's proposed uses would qualify it for a traffic analysis level of service (LOS) analysis exemption since it is proposing worker housing and guest accommodations of less than 150 units and would generate less than 100 vehicle trips during the peak hour.[61]

Transit

There is currently no bus service in the immediate vicinity of the Project site, mainly due to its rural nature. SunLine Transit Agency provides Route 7 in the City of La Quinta and Route 8 in the Coachella area.[62]

Bicycle and Pedestrian Trails

[59] https://rctlma.org/Portals/7/2020-12-15%20-%20Transportation%20Analysis%20Guidelines.pdf
[60] https://planning.rctlma.org/Portals/14/genplan/GPA%202022/Compiled%20ECVAP_4-2022%20rev.pdf?ver=2022-06-27-145207-383
[61] Riverside County, Transportation Analysis Guidelines, Appendix B.
[62] SunLine Transit Agency: https://sunline.org/sites/default/files/Inside_Front_System%20Map.pdf

According to ECVAP, there are no Regional Open Space Trails located in the immediate surrounding area. Therefore, the Project does not include construction or expansion of any trails at this time.

Roadways

Every county in California is required to develop a Congestion Management Program (CMP) that looks at the links between land use, transportation, and air quality. In its role as Riverside County's Congestion Management Agency, the Riverside County Transportation Commission (RCTC) prepares and periodically updates the County's CMP to meet federal Congestion Management System guidelines as well as state CMP legislation. The Southern California Association of Governments (SCAG) is required under federal planning regulations to determine that CMPs in the region are consistent with the Regional Transportation Plan. The RCTC's current Congestion Management Program was adopted in March 2011. The RCTC CMP does not require traffic impact assessments for development proposals if they generate less than 50 peak hour trips at a particular intersection. However, local agencies are required to maintain the minimum level of service (LOS) thresholds included in their respective general plans. If a street or highway segment included as part of the CMP falls below the adopted minimum level of service of E, a deficiency plan is required.

The Project could conflict with the CMP if the Project were to cause the CMP facility to operate at an unacceptable LOS. Based on the analysis it is anticipated that the Project will not generate 50 or more peak hour trips at any intersection.

The Project will also be required to pay its Transportation Uniform Mitigation Fee (TUMF) and Development Impact Fees (DIF), assessed on all County projects, which collectively help reduce overall impacts to the transportation system (i.e., roads and intersections).

Summary

Based on this information, the Project will not conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities

Impacts will be less than significant.

b) In accordance with Senate Bill (SB) 743, the California Natural Resources Agency (CNRA) adopted changes to the CEQA Guidelines in December 2018, which identify that starting on July 1, 2020, vehicle miles traveled (VMT) is the appropriate metric to evaluate a project's transportation impacts. As of December 2018, when the revised CEQA Guidelines were adopted, automobile delay, as measured by "level of service" (LOS) and other similar metrics, no longer constitutes a significant environmental effect under CEQA. Lead agencies in California are required to use VMT to evaluate project-related transportation impacts.

The proposed on-site housing is a market-based response to the demand for workforce housing that will reduce the need for vehicle trips, VMT, and the air quality emissions from vehicle travel. The Project

would reduce VMT per person by providing on-site workforce housing that would all but eliminate commute-related VMT for dozens of workers and/or visitors.

According to the County's TA Guidelines, there are several criteria that can be applied to screen projects from VMT project-level assessments. The purpose is to screen out projects that are presumed to have a non-significant transportation impact based on the facts of a project and to avoid unnecessary analysis and findings that would be inconsistent with the intent of SB 743. The following lists the screening criteria:

1. Small Projects

2. Projects Near High Quality Transit

3. Local Serving Retail

4. Affordable Housing

5. Local Essential Service

6. Map-Based Screening

7. Redevelopment Projects

The most appropriate and applicable criteria from the above list is Small Projects. The screening applicable to the project is that it would generate less than 110 daily trips and/or generate less than 3,000 MT of CO2E annually.

It is estimated that workers who care for horses boarded at the ranch have made approximately 400 to 800 round trips to Rancho Polo each day. Further, the project is conservatively estimated to generate approximately 139 MT of CO2E annually (per **Table 7** above). This is less than the 3,000 MT CO2E criteria in the VMT guidelines. As a result, the Project is presumed to have a less than significant VMT impact per the County's screening criteria and no additional VMT analysis is required.

Impacts will be less than significant.

c) All access driveways and on-site drive aisles would be designed consistent with County of Riverside Transportation Department standards. All circulation onsite would allow for two-way vehicle traffic. All entry gates would contain Knox boxes for emergency access purposes.

Impacts will be less than significant.

d) Project-related use of surrounding roadways would include workers and guests, same as current situation. The anticipated use would not cause a greater level of wear on the road to the extent that

maintenance beyond what is typically required would occur. Public roads require periodic maintenance as part of their inherent operational activities, and such maintenance would not result in substantial impacts to the environment. Public roadway maintenance would be funded through the payment of DIF and the Project site owner(s) future payment of property taxes.

Impacts will be less than significant.

e) During the construction phase of the Project, traffic to and from the Project Site would be generated by activities such as construction employee trips, delivery of construction materials, and use of heavy equipment. Vehicular traffic associated with construction employees would be substantially less than daily and peak hour traffic volumes generated during Project operational activities, especially because construction activities typically begin and end outside of the peak hour; therefore, a majority of the construction employees would not be driving to or from the Project Site during hours of peak congestion. Traffic volumes from construction workers is not expected to result in a substantial adverse effect to the local roadway system because most trips would occur during non-peak hours. Deliveries of construction materials to the Project Site would also have a nominal effect to the local roadway network because most trips would occur during non-peak hours.

Construction materials would be delivered to the site throughout the construction phase based on need and would not occur on an everyday basis. Heavy equipment would be utilized on the Project site during the construction phase. Because most heavy equipment is not authorized to be driven on public roadways, most equipment would be delivered and removed from the site via flatbed trucks. As with the delivery of construction materials, the delivery of heavy equipment to the Project site would not occur on a daily basis, but would occur periodically throughout the construction phase on need. Avenue 58 would remain open with no reasonably foreseeable lane closures.

In addition, compliance with Ordinance No. 457 regulating construction hours of operation and other County of Riverside Transportation Department procedures and permits will ensure that the safety of the traveling public is protected during construction. Following construction, emergency access to the Project site and area will remain as it was prior to the proposed Project. The Project is required to comply with RCFD requirements for adequate access. Project site access and onsite circulation will provide adequate access and turning radius for emergency vehicles, consistent with the Fire Department's requirements.

Access improvements would facilitate the safety of traffic operation on adjacent roads and provide safe site ingress/egress. The Project would not increase the need for road improvements. The project would require the transport of heavy equipment to the site. Construction worker/vendor trips would be generated daily throughout the duration of construction. Project construction is not anticipated to adversely impact traffic on Avenue 58 because the Site is large enough to accommodate staging of building materials and would provide construction worker parking onsite.

Impacts will be less than significant.

f) The Project Site does not contain any emergency facilities, nor does it serve as an emergency evacuation route. Under long-term operational conditions, the Project would be required to maintain adequate emergency access for emergency vehicles on-site as required by the County. Access would continue to be maintained in a driveway on Avenue 58. Applicant is proposing to develop two additional conduits for site access and egress, with the first being a at the junction of Brook Street with the public ROW at Csilla Avenue, and with the second being at the junction of Orchard Street with the public ROW at Oasis Street. Furthermore, the Project would not result in a substantial alteration to the design or capacity of any existing public road that would impair or interfere with the implementation of evacuation procedures.

There will be no impacts.

Mitigation: No mitigation is required.

Monitoring: No monitoring is required.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
38. Bike Trails a) Include the construction or expansion of a bike system or bike lanes?	☐	☐	☐	☒

Source(s): Riverside County General Plan
Eastern Coachella Valley Area Plan, Figure 9, Trails & Bikeways System[63]

Findings of Fact:

a) Avenue 58 and Jackson Street are designated Class II Bike Paths and Design Guidelines Trails. A Class II bikeway is provided for within the paved area of roadways. The Project would not include the construction or expansion of a bike system or trail system.

There will be no impacts.

Mitigation: No mitigation is required.

Monitoring: No monitoring is required.

[63] https://planning.rctlma.org/Portals/14/genplan/GPA%202022/Compiled%20ECVAP_4-2022%20rev.pdf?ver=2022-06-27-145207-383

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
TRIBAL CULTURAL RESOURCES Would the project cause a substantial adverse change in the significance of a Tribal Cultural Resource, defined in Public Resources Code section 21074 as either a site, feature, place, or cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American Tribe, and that is:				
39. Tribal Cultural Resources a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1 (k)?	☐	☒	☐	☐
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1? (In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.)	☐	☒	☐	☐

Source(s): Native American Consultation

Findings of Fact:

a) - b) Changes in the California Environmental Quality Act, effective July 2015, require that the County address a new category of cultural resources – tribal cultural resources – not previously included within the law's purview. Tribal Cultural Resources are those resources with inherent tribal values that are difficult to identify through the same means as archaeological resources. These resources can be identified and understood through direct consultation with the tribes who attach tribal value to the resource. Tribal cultural resources may include Native American archaeological sites, but they may also include other types of resources such as cultural landscapes or sacred places. The appropriate treatment of tribal cultural resources is determined through consultation with tribes.

In compliance with Assembly Bill 52 (AB52), notices regarding this project were mailed to all requesting tribes on June 14, 2023.

No response was received from the Soboba Band of Mission Indians, the Santa Rosa Band of Cahuilla Indians, Ramona Band of Cahuilla Mission Indians, Cabazon Band of Indians, Torres Martinez Band of Desert Cahuilla Indians, Cahuilla Band of Indians or the Colorado River Indian Tribe.

The Quechan Indian Nation responded in an email dated June 14, 2023, and deferred consultation to closer tribes.

The Augustine Band of Cahuilla Indians responded in an emailed letter dated June 16, 2023 stating that they were unaware of specific cultural resources that may be affected by the proposed project but that if there were any discovered during project development, please contact their office.

The Morongo Band of Mission Indians responded in an email dated June 26, 2023, requesting consultation. The email stated that the project was located within the ancestral territory and traditional use area of the Morongo people. An email response was sent to Morongo by Planning the same day. There was no response from the tribe. Another follow-up email was sent on July 25, 2023, to Morongo and to date, there has been no response.

Agua Caliente Band of Cahuilla Indians requested consultation in an emailed letter dated June 23, 2023. Consultation was initiated and on June 29, 2023, Agua Caliente provided information that there are Tribal Cultural Resources in the area. Although no specific physical Tribal Cultural Resources were identified Agua Caliente expressed concerns that the project has the potential for as yet unidentified subsurface tribal cultural resources. The tribes request that a Native American monitor be present during ground disturbing activities so any unanticipated finds will be handled in a timely and culturally appropriate manner. The project conditions of approval were provided to the tribe on June 30, 2023, and consultation was concluded by Agua Caliente on July 07, 2023.

The project will be required to adhere to State Health and Safety Code Section 7050.5. In the event that human remains are encountered and by ensuring that no further disturbance occur until the County Coroner has made the necessary findings as to origin of the remains. Furthermore, pursuant to Public Resources Code Section 5097.98 (b), remains shall be left in place and free from disturbance until a final decision as to the treatment and their disposition has been made. This is State Law and a standard condition of approval and is not considered a mitigation measure for the purposes of this project.

CEQA requires the Lead Agency to address any unanticipated cultural resources discoveries during Project construction. Therefore, a condition of approval that dictates the procedures to be followed should any unanticipated cultural resources be identified during ground disturbing activities[64] has been placed on this project. This is a standard condition of approval and is not considered a mitigation measure for the purposes of this project.

Based on information provided by the consulting tribes this project will require a Native American Monitor to be present during ground disturbing activities**.**

Impacts will be less than significant with mitigation incorporated.

Mitigation:

Mitigation Measure TCR 1: Native American Monitoring

64 Ground-disturbing activities are those that would disturb the ground beyond normal agricultural activities.

Prior to the issuance of grading permits, the developer/permit applicant shall enter into an agreement with the consulting tribe(s) for a Native American Monitor.

The Native American Monitor(s) shall be on-site during all initial ground disturbing activities and excavation of each portion of the project site including clearing, grubbing, tree removals, grading and trenching. In conjunction with the Archaeological Monitor(s), the Native American Monitor(s) shall have the authority to temporarily divert, redirect, or halt the ground disturbance activities to allow identification, evaluation, and potential recovery of cultural resources.

The developer/permit applicant shall submit a fully executed copy of the agreement to the County Archaeologist to ensure compliance with this condition of approval. Upon verification, the Archaeologist shall clear this condition.

This agreement shall not modify any condition of approval or mitigation measure.

Monitoring: Prior to the issuance of the first grading permit, the applicant shall provide a letter to the County Planning Department, or designee identifying the terms of the agreement for the Native American monitor for activities detailed in Mitigation Measure TCR-1.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
UTILITIES AND SERVICE SYSTEMS Would the project:				
40. Water				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment, or storm water drainage systems, whereby the construction or relocation would cause significant environmental effects?	☐	☐	☒	☐
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?	☐	☐	☒	☐

Source(s): Project Application Materials
Coachella Valley Water District[65]
Coachella Valley Water District Letter, February 4, 2020
Coachella Valley Regional Urban Water Management Plan, 2020[66]

Findings of Fact:

a) The Project would obtain water from the Coachella Valley Water District (CVWD), which also serves as the sanitation (wastewater) provider. The development area would connect to the existing water mains and sewer lines that currently serve the Project Site. The CVWD owns and operates five wastewater reclamation plants that receive a combined average of 17 million gallons of wastewater per day. Potential impacts associated with the installation of on-site and off-site utility improvements are evaluated throughout this MND and best management practices would reduce construction-phase impacts to the maximum feasible extent.

All new development in the County of Riverside is required to comply with provisions of the National Pollutant Discharge Elimination System (NPDES) program, including Waste Discharge Requirements (WDR), as enforced by the Colorado River Regional Water Quality Board (CRRWQCB).

The Project will not require new or expanded water, wastewater or stormwater systems that could cause significant environmental effects.

Impacts will be less than significant.

b) Riverside County incorporates four major watershed areas in which river systems, numerous lakes and reservoirs, and natural drainage areas are located. Management of the amount of water available (local and imported) and its quality, is an important response to the gap between supply and demand in Riverside County. The economy of the developed portions of western Riverside County is sustained primarily by water imported from Northern California via the State Water Project and the allocations from the Colorado River. Local groundwater production provides a secondary water supply.

[65] https://www.cvwd.org/333/CVWD-Map
[66] https://www.cvwd.org/DocumentCenter/View/5482/Coachella-Valley-RUWMP

On April 7, 2017, Gov. Jerry Brown declared the 2014 statewide drought emergency over but put into place long-term conservation goals. Because the Valley is located in a desert, by definition, drought is normal and CVWD has a long history of effective groundwater management planning to ensure future water supplies. The CVWD details several strategies and projects to eliminate overdraft of the aquifer, including increased conservation, utilization of recycled and imported water for golf and farm irrigation and continued groundwater replenishment. One of CVWD's key tools for groundwater sustainability, in addition to conservation, is imported water for groundwater replenishment and source substitution.

Urban Water Management Plans (UWMPs) are required to support the water suppliers' long-term resource planning to ensure that adequate water supplies are available to meet existing and future water needs. UWMPs must assess the reliability of water sources over a 20-year planning horizon during normal, single-dry, and multiple-dry years, describe management measures and water shortage contingency plans, report progress toward meeting conservation goals and targeted reduction in per-capita urban water consumption, and discuss the uses and planned uses of recycled water.

The UWMP describes CVWD's water supply and projects the reliability for the next 25 years, including an analysis for normal years, single dry years, and multiple dry years. As shown in the UWMP, the multiple dry year urban water supply reliability is 100 percent.

Impacts will be less than significant.

Mitigation: No mitigation is required.

Monitoring: No monitoring is required.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
41. Sewer a) Require or result in the construction of new wastewater treatment facilities, including septic systems, or expansion of existing facilities, whereby the construction or relocation would cause significant environmental effects?	☐	☐	☒	☐
b) Result in a determination by the wastewater treatment provider that serves or may service the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☒	☐

Source(s): Coachella Valley Water District[67]
Coachella Valley Water District Letter, February 4, 2020
Coachella Valley Regional Urban Water Management Plan, 2020[68]

Findings of Fact:

a) - b) The development area would connect to the existing sewer lines that currently serve the Project Site. The construction of sewer lines necessary to serve the Project would not result in any significant physical effects on the environment that are not already identified and disclosed as part of this project. Wastewater generated by the Project would be treated by the CVWD' Water Reclamation Plant (WRP-4). WRP-4 is a 9.9 million gallons per day (MGD) capacity treatment facility located in Thermal. WRP-4 became operational in 1986 and serves communities from La Quinta to Mecca. WRP-4 provides secondary treatment consisting of pre-aeration ponds, aeration lagoons, polishing ponds, and disinfection. The treated effluent is discharged to the CVSC pursuant to a National Pollution Discharge Elimination System (NPDES) permit. Effluent from WRP-4 is not currently recycled. CVWD plans to add tertiary treatment and reuse effluent from this plant in the future primarily for agricultural irrigation. CVWD has filed a Change Petition (WW0093) with the SWRCB to move forward with recycling at WRP-4. The facility can meet the current and future demands to the region as well as help to meet the increasing demand for recycled water throughout CVWD's service area. The WRP-4 has sufficient capacity to treat wastewater generated by the Project in addition to existing commitments. The Project would not create the need for any new or expanded wastewater facility (such as conveyance lines, treatment facilities, or lift stations).

Impacts will be less than significant.

Mitigation: No mitigation is required.

Monitoring: No monitoring is required.

[67] https://www.cvwd.org/333/CVWD-Map
[68] https://www.cvwd.org/DocumentCenter/View/5482/Coachella-Valley-RUWMP

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
42. Solid Waste a) Generate solid waste in excess of State or Local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☒	☐
b) Comply with federal, state, and local management and reduction statutes and regulations related to solid wastes including the CIWMP (County Integrated Waste Management Plan)?	☐	☐	☒	☐

Source(s): Riverside County General Plan
CalRecycle Estimated Solid Waste Generation Rates[69]

Findings of Fact:

a) The Riverside County Waste Management Department (RCWMD) is responsible for the efficient and effective landfill disposal of non-hazardous county waste. To accomplish this, the RCWMD operates six active landfills and administers a contract agreement for waste disposal at the private El Sobrante Landfill. The Department also oversees several transfer station leases, as well as a number of recycling and other special waste diversion programs. All of the private haulers serving unincorporated Riverside County ultimately dispose of their waste to Riverside County-owned or contracted facilities. All of the active landfills currently located in Riverside County are rated as Class III landfills according to Title 27 of the California Code of Regulations (CCR). Such landfills only accept nonhazardous, municipal solid wastes. Franchise solid waste collection companies are granted permits to collect commercial and residential waste throughout unincorporated Riverside County under Riverside County's general operating authority. These companies are regulated by the Riverside County Department of Environmental Health (RCDEH).

The Project would generate minimal construction/demolition waste (C/DW). There will be no demolition of existing structures since this is raw land. There is minimal grading and any soils will be reused in the Project Site. Any green waste will be composted on site. There will not be any green waste in the trash. There will be recycling and all green waste will be composed on site and that soil will be reused. Oasis Sanitary Landfill is owned and operated by Riverside County Department of Waste Resources. The landfill has a permitted capacity of 400 tons per day and has an estimated disposal capacity of 247,411 tons.

The California Integrated Waste Management Act (CIWMA) of 1989 mandates that all cities and counties in California reduce solid waste disposed at landfills generated within their jurisdictions by 50%. AB 341 increased the recycling goal to 75% by 2020. C/DW associated with the Project will be recycled to the extent practicable with the remainder sent to a landfill. The construction debris would be processed and recycled or sent to the landfill. As required by Riverside County, a Waste Recycling Plan

[69] https://www2.calrecycle.ca.gov/WasteCharacterization/General/Rates

will be prepared to categorize and quantify types of construction debris and identify how this material would be sorted and recycled consistent with CIWMA requirements.

The Project's worker and guest rooms total 64 bedrooms, which would generate approximately 128 pounds of waste daily (or 0.064 tons).

Assuming Oasis Sanitary Landfill receives the waste, this would increase the total volume going to landfill daily by 0.016%.

Impacts will be less than significant.

b) The Project would be required to comply with all federal, State, and local regulations regarding solid waste disposal. For example, development would be required to demonstrate compliance with the 2022 Green Building Code, which implements design and construction measures intended to reduce construction-related waste through material conservation measures and other efficiency measures.

The Project would also be required to comply with the California Integrated Waste Management Act (AB 939) which requires each city and county to prepare, adopt, and submit to CalRecycle a source reduction and recycling element (SSRE) that demonstrates how the jurisdiction will meet the Integrated Waste Management Act's mandated diversion goals. Each jurisdiction's SRRE must include specific components, as defined in Public Resources Code Sections 41003 and 41303.

All solid waste disposals within the unincorporated County of Riverside are subject to the requirements set forth in Title 8, Health and Safety, Chapter 8.136 - Comprehensive Collection and Disposal of Solid Waste within Specified Unincorporated Areas and Chapter 8.24 - County Solid Waste Facilities, other, as provided in the Municipal Code. Chapters 8.136 and 8.24 provide integrated waste management guidelines for service, prohibitions, and provisions of service. The provisions of service require that the County of Riverside shall provide for or furnish integrated waste management services relating to the collection, transfer, and disposal of refuse, recyclables, and compostables within and throughout the unincorporated County jurisdiction. The Project would be required to comply with applicable elements of AB 1327, Chapter 18 (California Solid Waste Reuse and Recycling Access Act of 1991), AB 939, Title 8 of the County Municipal Code, and other applicable local, State, and federal solid waste disposal standards as a matter of regulatory policy, thereby ensuring that the solid waste stream to the waste disposal facilities is reduced in accordance with existing regulations.

Impacts will be less than significant.

Mitigation: No mitigation is required.

Monitoring: No monitoring is required.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
43. Utilities				
Would the project impact the following facilities requiring or resulting in the construction of new facilities or the expansion of existing facilities, whereby the construction or relocation would cause significant environmental effects?				
a) Electricity?	☐	☐	☒	☐
b) Natural gas?	☐	☐	☒	☐
c) Communications systems?	☐	☐	☒	☐
d) Street lighting?	☐	☐	☒	☐
e) Maintenance of public facilities, including roads?	☐	☐	☒	☐
f) Other governmental services?	☐	☐	☒	☐

Source(s): Project Application Materials, Riverside County Code
Ordinance No. 655 (An Ordinance of the County Of Riverside Regulating Light Pollution)
Ordinance No. 659 (An Ordinance of the County of Riverside Establishing a Development Impact Fee Program)

Findings of Fact:

a-c) Electricity would be provided by IID. Natural gas would be provided by SoCalGas. Communications would be provided by Spectrum via a connection to existing infrastructure. Utility providers forecast demand based on zoning designations within each service area to ensure that adequate supply is available. While the Project would increase demand for utility services, it is assumed that adequate supply is available without the need for installation of new infrastructure. The Site is already served by pipes and power poles o Avenue 58. This is already next to the Project Site and no offsite trenching will be required.

Impacts will be less than significant.

d) On-site lighting would be provided consistent with County Ordinance 655 and Ordinance 915, which regulates outdoor lighting.

Impacts will be less than significant.

e) The project is already served by a road, Avenue 58. This would not change.

Impacts will be less than significant.

f) No adverse impact to the provision of government services is anticipated with the payment of impact fees. Prior to the issuance of a certificate of occupancy, the Project applicant shall comply with the provisions of Ordinance No. 659, which requires payment of the appropriate fees set forth in the Ordinance to offset any incremental increase in or demand for such services generated by the Project. Payment of such fees would ensure that the Project would not require or result in the construction of

new facilities or the expansion of existing facilities, whereby the construction or relocation would cause significant environmental effects to other governmental services.

Impacts will be less than significant.

Mitigation: No mitigation is required.

Monitoring: No monitoring is required.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
WILDFIRE If located in or near a State Responsibility Area ("SRA"), lands classified as very high fire hazard severity zone, or other hazardous fire areas that may be designated by the Fire Chief, would the project:				
44. Wildfire Impacts a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	☒
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	☒
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒
e) Expose people or structures either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?	☐	☐	☐	☒

Source(s): Riverside County General Plan Figure S-11 "Wildfire Susceptibility"
Riverside County General Plan, Safety Element
Riverside County Fire Department[70]
Ordinance No. 659 (An Ordinance of the County of Riverside Establishing a Development Impact Fee Program)
Riverside County, Map My County[71]
CalFire Fire Hazard Safety Zone Viewer[72]

Findings of Fact:

a) - e) The Project Site is not in a Fire Hazard Zone or Fire Responsibility Area. The Project Site would not expose occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. The Project does not require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utility). The Project Site is not subject to downslope or flooding, or landslides.

[70] https://www.rvcfire.org/resources/fire-stations
[71] https://gis1.countyofriverside.us/Html5Viewer/?viewer=MMC_Public
[72] https://egis.fire.ca.gov/FHSZ/

The Project Site does not contain any emergency facilities, nor does it serve as an emergency evacuation route. Under long-term operational conditions, the Project would be required to maintain adequate emergency access for emergency vehicles on-site as required by the County. Access would continue to be maintained in a driveway on Avenue 58. Applicant is proposing to develop two additional conduits for site access and egress, with the first being a at the junction of Brook Street with the public ROW at Csilla Avenue, and with the second being at the junction of Orchard Street with the public ROW at Oasis Street. Furthermore, the Project would not result in a substantial alteration to the design or capacity of any existing public road that would impair or interfere with the implementation of evacuation procedures.

There will be no impacts.

Mitigation: No mitigation is required.

Monitoring: No monitoring is required

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
MANDATORY FINDINGS OF SIGNIFICANCE Does the Project:				
45. Have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self- sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐

Source(s): Staff Review, Project Application Materials

Findings of Fact:

As discussed above, ground-disturbing activities have the potential to expose previously unknown archaeological resources and tribal cultural resources during construction. Therefore, Mitigation Measure CUL-1 and Mitigation Measure TCR-1 are included to require measures in case of incidental discoveries of resources.

Mitigation Measure CUL-1 is included to require an archaeological monitor to be present for all initial ground disturbing activities to monitor for any unexpected resources that may be unearthed during ground disturbing activities. With implementation of Mitigation Measure CUL-1, impacts to a archaeological resource would be less than significant.

Mitigation Measure TCR-1 is included to require a Native American monitor to be present for all initial ground disturbing activities to monitor for any unexpected resources that may be unearthed during ground disturbing activities. With implementation of Mitigation Measure TCR-1, impacts to a tribal cultural resource would be less than significant.

Therefore, with Implementation of mitigation measures and compliance with regulatory requirements of the MBTA and CDFG code, the Project would not substantially degrade the quality of the environment, substantially reduce the habitat of fish or wildlife species, cause a fish or wildlife populations to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory.

Impacts will be less than significant with mitigation incorporated.

46. Have impacts which are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of	☐	☐	☒	☐

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
past projects, other current projects and probable future projects)?				

Source(s): Staff Review, Project Application Materials

Findings of Fact:

The project does not have impacts which are individually limited, but cumulatively considerable. As presented in the discussion of environmental checklist Sections 1 through 44, the project would have no impact, or a less than significant impact with respect to all environmental issues. Thus, while the project will have direct and indirect environmental effects, the project along with other cumulative projects is expected to result in a less than significant cumulative impact with respect to all environmental issues.

Impacts will be less than significant.

47. Have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐

Source(s): Staff Review, Project Application Materials

Findings of Fact:

In general, impacts to human beings are associated with air quality, hazards and hazardous materials, and noise. As presented in the environmental discussions throughout this document, the Project would have no impact or a less than significant impact with respect to air quality, hazards and hazardous materials and noise. The Project would not result in environmental effects which would cause substantial adverse effects on human beings, either directly or indirectly.

Impacts will be less than significant.

VI. EARLIER ANALYSES

Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration as per California Code of Regulations, Section 15063 (c) (3) (D). In this case, a brief discussion should identify the following:

Earlier Analyses Used, if any: None

Location Where Earlier Analyses, if used, are available for review:

Location: County of Riverside Planning Department
4080 Lemon Street 12th Floor
Riverside, CA 92501

Revised: 8/29/2023 5:21 PM
Y:\Planning Master Forms\Templates\CEQA Forms\EA-IS_Template.docx

MITIGATION MEASURES

Mitigation Measure CUL-1: Archaeological Monitoring

Prior to issuance of grading permits: The applicant/developer shall provide evidence to the County of Riverside Planning Department that a County certified professional archaeologist (Project Archaeologist) has been contracted to implement a Cultural Resource Monitoring Program (CRMP). A Cultural Resource Monitoring Plan shall be developed that addresses the details of all activities and provides procedures that must be followed in order to reduce the impacts to cultural and historic resources to a level that is less than significant as well as address potential impacts to undiscovered buried archaeological resources associated with this project. A fully executed copy of the contract and a wet-signed copy of the Monitoring Plan shall be provided to the County Archaeologist to ensure compliance with this condition of approval.

Working directly under the Project Archaeologist, an adequate number of qualified Archaeological Monitors shall be present to ensure that all earth moving activities are observed and shall be on-site during all grading activities for areas to be monitored including off-site improvements. Inspections will vary based on the rate of excavation, the materials excavated, and the presence and abundance of artifacts and features. The frequency and location of inspections will be determined by the Project Archaeologist.

Prior to Grading Permit Final Inspection, the landowner(s) shall relinquish ownership of all cultural resources that are unearthed on the Project property during any ground-disturbing activities, including previous investigations and/or Phase III data recovery.

Historic Resources- all historic archaeological materials recovered during the archaeological investigations (this includes collections made during an earlier project, such as testing of archaeological sites that took place years ago), shall be curated at the Western Science Center, a Riverside County curation facility that meets State Resources Department Office of Historic Preservation Guidelines for the Curation of Archaeological Resources ensuring access and use pursuant to the Guidelines Prehistoric Resources- One of the following treatments shall be applied.

a. Reburial of the resources on the Project property. The measures for reburial shall include, at least, the following: Measures to protect the reburial area from any future impacts. Reburial shall not occur until all required cataloguing, analysis and studies have been completed.

Monitoring: Cultural resource monitoring will be required as detailed in Mitigation Measure CUL-1 by a qualified Archaeologist in coordination with the County Archaeologist.

Mitigation Measure TCR 1: Native American Monitoring

Prior to the issuance of grading permits, the developer/permit applicant shall enter into an agreement with the consulting tribe(s) for a Native American Monitor.

The Native American Monitor(s) shall be on-site during all initial ground disturbing activities and excavation of each portion of the project site including clearing, grubbing, tree removals, grading and trenching. In conjunction with the Archaeological Monitor(s), the Native American Monitor(s) shall have the authority to temporarily divert, redirect, or halt the ground disturbance activities to allow identification, evaluation, and potential recovery of cultural resources.

The developer/permit applicant shall submit a fully executed copy of the agreement to the County Archaeologist to ensure compliance with this condition of approval. Upon verification, the Archaeologist shall clear this condition.

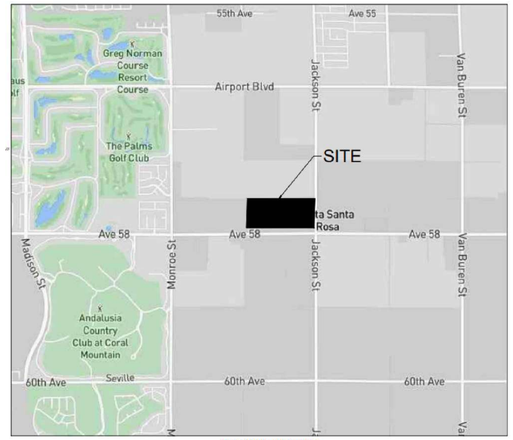
This agreement shall not modify any condition of approval or mitigation measure.

Monitoring: Prior to the issuance of the first grading permit, the applicant shall provide a letter to the County Planning Department, or designee identifying the terms of the agreement for the Native American monitor for activities detailed in Mitigation Measure TCR-1.

Appendices

Appendix A-1

Plans,
Continental Development Group, December 15, 2022



VICINITY MAP

N.T.S.

OWNER:

TRIPLE SKY RANCH, A CALIFORNIA LIMITED LIABILITY COMPANY

GROSS LAND AREA:

78.01 GROSS ACRES

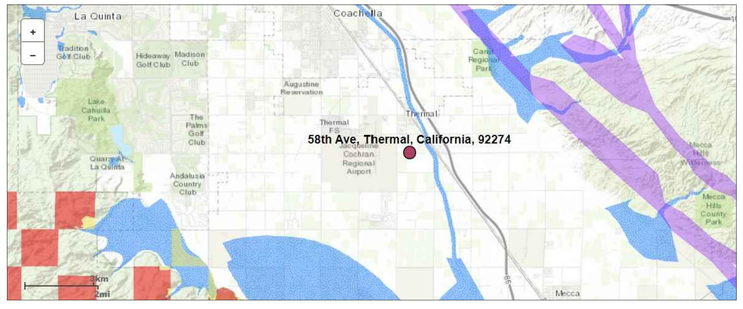
ZONING AND LAND USE:

GENERAL PLAN LAND USE DESIGNATION: RURAL RESIDENTIAL
ZONING: W–2–10 (CONTROLLED DEVELOPMENT AREAS)
SPECIFIC PLAN: NONE

FLOOD ZONE:

THE PROPERTY IS LOCATED WITHIN AN AREA HAVING A ZONE DESIGNATION OF ZONE X, AREA OF MINIMAL FLOOD HAZARD BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), ON FLOOD INSURANCE RATE MAP NO. 06065C2263H & 06065C2264H, WITH A DATE OF IDENTIFICATION OF 04/19/2017 & 03/06/2018, FOR COMMUNITY NO. 060245, IN RIVERSIDE COUNTY, STATE OF CALIFORNIA, WHICH IS THE CURRENT FLOOD INSURANCE RATE MAP FOR THE COMMUNITY IN WHICH THE PROPERTY IS SITUATED.

LIQUEFACTION ZONES:



100-Year Floodplains
FEMA/DWR Awareness/Regional Studies /USACE Comprehensive Study

TsunamiHazardAreas_July2021

State Responsibility Areas (2007), Severity
SRA, Very High
SRA, High
SRA, Moderate

Liquefaction Zone of Required Investigation
Liquefaction Zone Area

Earthquake Fault Zone of Required Investigation

The State Responsibility Area (SRA) is the area of the state where the State of California is financially responsible for the prevention and suppression of wildfires. SRA does not include lands within city boundaries or in federal ownership. FEMA's Flood Map Service Center

LEGAL DESCRIPTION:

THE LAND REFERRED TO HEREIN BELLOW IS SITUATED IN THE UNINCORPORATED AREA OF THERMAL, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS:

PARCEL 1 TOGETHER WITH PARCELS 2,3, AND 4 AND LETTERED LOTS F,G,H,I,J,K AND L OF PARCEL MAP NO. 13907, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS PER MAP FILED IN BOOK 82, PAGE 22 OF PARCEL MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY, DESCRIBED AS FOLLOWS:

COMMENCING AT THE POINT OF INTERSECTION OF THE CENTER LINES OF JACKSON STREET AND 58TH AVENUE, SAID POINT ALSO BEING THE SOUTHEAST CORNER OF THE SAID SECTION 23;

THENCE SOUTH 89° 05' 30" WEST ALONG THE CENTER LINE OF SAID 58TH AVENUE, 77.24 FEET;

THENCE NORTH 48° 01' 15" WEST, 34.12 FEET, TO AN ANGLE POINT OF THE EASTERLY RIGHT–OF–WAY LINE OF OASIS STREET;

THENCE NORTH 00° 54' 30" WEST, 50.00 FEET, TO AN ANGLE POINT ON THE NORTHERLY RIGHT–OF–WAY LINE OF SAID 58TH AVENUE, TO THE TRUE POINT OF BEGINNING;

THENCE SOUTH 89° 05' 40" WEST, ALONG SAID NORTHERLY RIGHT–OF–WAY LINE 50.00 FEET NORTHERLY OF, AND PARALLEL TO THE CENTER LINE OF SAID OF 58TH AVENUE, A DISTANCE OF 2,493.94 FEET, TO AN ANGLE POINT;

THENCE NORTH 48° 01' 15" WEST, 34.12 FEET, TO AN ANGLE POINT ON THE EASTERLY RIGHT–OF–WAY LINE OF OASIS STREET;

THENCE NORTH 00° 24' 20" WEST, ALONG THE SAID EASTERLY RIGHT–OF–WAY LINE, 30.00 FEET EASTERLY OF, AND PARALLEL TO THE CENTER LINE OF SAID OASIS STREET, A DISTANCE OF 1,205.94 FEET TO AN ANGLE POINT;

THENCE NORTH 44° 22' 25" EAST, A DISTANCE OF 21.13 TO AN ANGLE POINT ON THE SOUTHERLY RIGHT–OF–WAY LINE OF OSILLA STREET;

THENCE NORTH 89° 08' 25" EAST, ALONG SAID SOUTHERLY RIGHT–OF–WAY LINE 30.00, FEET SOUTHERLY OF AND PARALLEL TO THE CENTER LINE OF SAID OSILLA STREET, A DISTANCE OF 2,505.97 FEET TO AN ANGLE POINT;

THENCE SOUTH 43° 13' 08" EAST, A DISTANCE OF 34.13 FEET TO AN ANGLE POINT ON THE WESTERLY RIGHT–OF–WAY LINE OF SAID JACKSON STREET;

THENCE SOUTH 00° 18' 15" EAST, ALONG SAID WESTERLY RIGHT–OF–WAY LINE 55.00 FEET WESTERLY OF, AND PARALLEL TO THE SAID CENTER LINE OF SAID JACKSON STREET, A DISTANCE OF 1,194.00 FEET TO AN ANGLE POINT;

THENCE SOUTH 44° 23' 43" WEST, 32.36 FEET TO THE TRUE POINT OF BEGINNING.

APN: 764–013–027, 764–130–030

UTILITIES:

WATER: COACHELLA VALLEY WATER DISTRICT 760–398–2641
SEWER: COACHELLA VALLEY WATER DISTRICT 760–398–2641
PHONE: VERIZON 1–800–922–0204
PROPANE: ARUIRRE'S PROPANE 760–342–1645
PHONE: VERIZON 1–800–922–0204
ELECTRICITY: IMPERIAL IRRIGATION DISTRICT 760–339–0510
INTERNET: PACIFIC LIGHTWAVE 760–834–0230
TRASH: BURRTECH WASTE & RECYCLING SVC 760–393–0635

EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO, AS GRANTED IN A DOCUMENT:

IN FAVOR OF: IMPERIAL IRRIGATION DISTRICT
PURPOSE: UNDERGROUND ELECTRIC LINES
RECORDING DATE: NOVEMBER 21, 1989
RECORDING NO: 407266, OF OFFICIAL RECORDS
AFFECTS: A PORTION OF SAID LAND AS MORE PARTICULARLY DESCRIBED IN SAID DOCUMENT.

EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO, DOCUMENT.

IN FAVOR OF: THE UNITED STATES OF AMERICA
PURPOSE: IRRIGATION DISTRIBUTION SYSTEM
RECORDING DATE: JUNE 23, 1949
RECORDING NO: 3085, BOOK 1086, PAGE 436, OF OFFICIAL RECORDS
AFFECTS: A PORTION OF SAID LAND AS MORE PARTICULARLY DESCRIBED IN SAID DOCUMENT.

EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO, DOCUMENT.

IN FAVOR OF: COACHELLA VALLEY COUNTY WATER DISTRICT
PURPOSE: IRRIGATION, DRAINAGE AND STORM WATER PROTECTION WORKS AND CANALS, LATERALS, AND APPURTENANT WORKS AND STRUCTURES.
RECORDING DATE: JUNE 5, 1942
RECORDING NO: 3085, BOOK 547, PAGE 248, OF OFFICIAL RECORDS AND BY DEED RECORDED MAY 19, 1943 IN BOOK 583 PAGE 118 OF OFFICIAL RECORDS IS NOT PLOTTABLE.
AFFECTS: A PORTION OF SAID LAND AS MORE PARTICULARLY DESCRIBED IN SAID DOCUMENT.

PLOT PLAN PROJECT DESCRIPTION:

THE PROJECT CONSISTS OF THE CONSTRUCTION OF NEW FACILITIES THAT WILL ENHANCE THE PROPERTY'S ONGOING EQUESTRIAN MISSION, AS PREVIOUSLY APPROVED BY RIVERSIDE COUNTY IN CONDITIONAL USE PERMIT NO. 190066, AND WILL MEET URGENT NEEDS FOR WORKER HOUSING AND GUEST RANCH OVERNIGHT ACCOMMODATIONS. THE PROJECT WILL UTILIZE EXISTING MANUFACTURED HOMES ON THE PROPERTY, AND PROPOSES TO BUILD NEW STRUCTURES, SOME OF WHICH ARE BEING DEDICATED TO GUEST STAYS, WHILE OTHERS WILL BE DESIGNED TO "FLEX" AND SERVE EITHER A WORKER HOUSING OR GUEST ROOM NEED, AS MAY BE REQUIRED AT ANY GIVEN TIME. THE PROJECT WILL BE COMPLETED WITH THE CONVERSION OF AN EXISTING GARAGE TO A GIFT SHOP/FOOD SHOP, AND THE ADDITION OF A NEW SERVICE/STORAGE BUILDING AND A SWIMMING POOL.

EARTHQUAKE FAULT ZONES:

QUAD NAME	FAULT NAME	FAULT ZONE	LINE TYPE	LINE STYLE	COMMENTS
Indio		Coachella Fan Fault Zone	Accurately Located	Solid Line	
Indio		Coachella Fan Fault Zone	Accurately Located	Solid Line	
Indio		Coachella Fan Fault Zone	Approximately Located	Long Dash	
Indio	San Andreas Fault	San Andreas Fault Zone	Inferred	Short Dash	
Indio	San Andreas Fault	San Andreas Fault Zone	Accurately Located	Solid Line	

SCHOOL DISTRICT:

COACHELLA VALLEY UNIFIED SCHOOL DISTRICT

GEOLOGIC:

NOT IN A FAULT ZONE.
LIQUEFACTION POTENTIAL: HIGH
SUBSIDENCE: ACTIVE
PALEONTOLOGICAL SENSITIVITY: HIGH SENSITIVITY (HIGH A): BASED ON GEOLOGIC FORMATIONS OR MAPPABLE ROCK UNITS THAT ARE ROCKS THAT CONTAIN FOSSILIZED BODY ELEMENTS, AND TRACE FOSSILS SUCH AS TRACKS, NESTS, AND EGGS. THESE FOSSILS OCCUR ON OR BELOW THE SURFACE.

LAND OWNER: TRIPLE SKY RANCH
4114 SEPULVEDA BLVD
CULVER CITY, CA 90230
WORK: (310)253–9998
jr@continentaldevelopmentgroup.com

PROJECT ADDRESS:
82800 58TH AVE STE 1
THERMAL, CA 92274

PREPARED BY: MARIA FASANO
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APPLICANT: TRIPLE SKY RANCH
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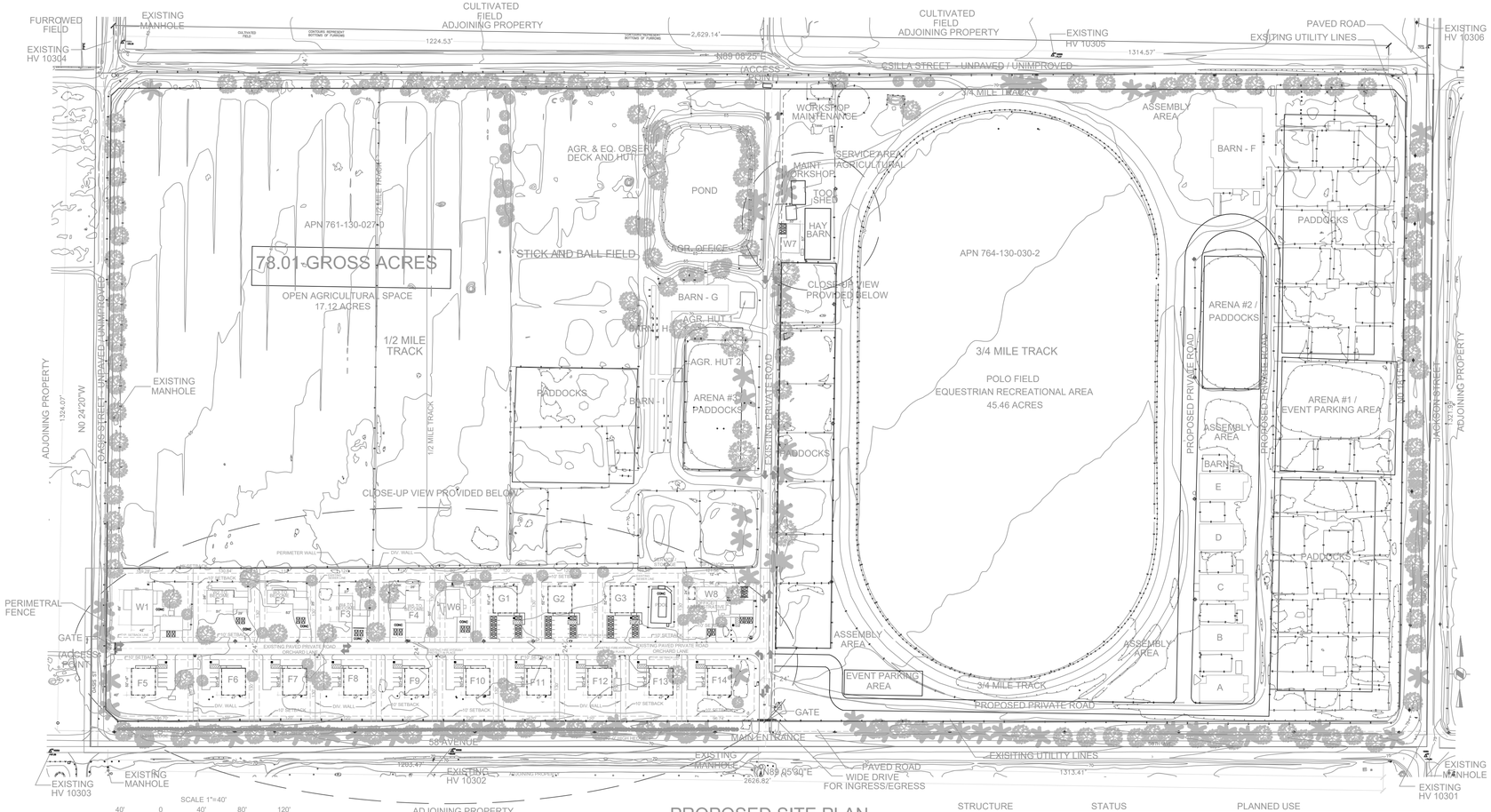
WORK: (310)253–9998
jr@continentaldevelopmentgroup.com

REVISION NUMBER	DATE

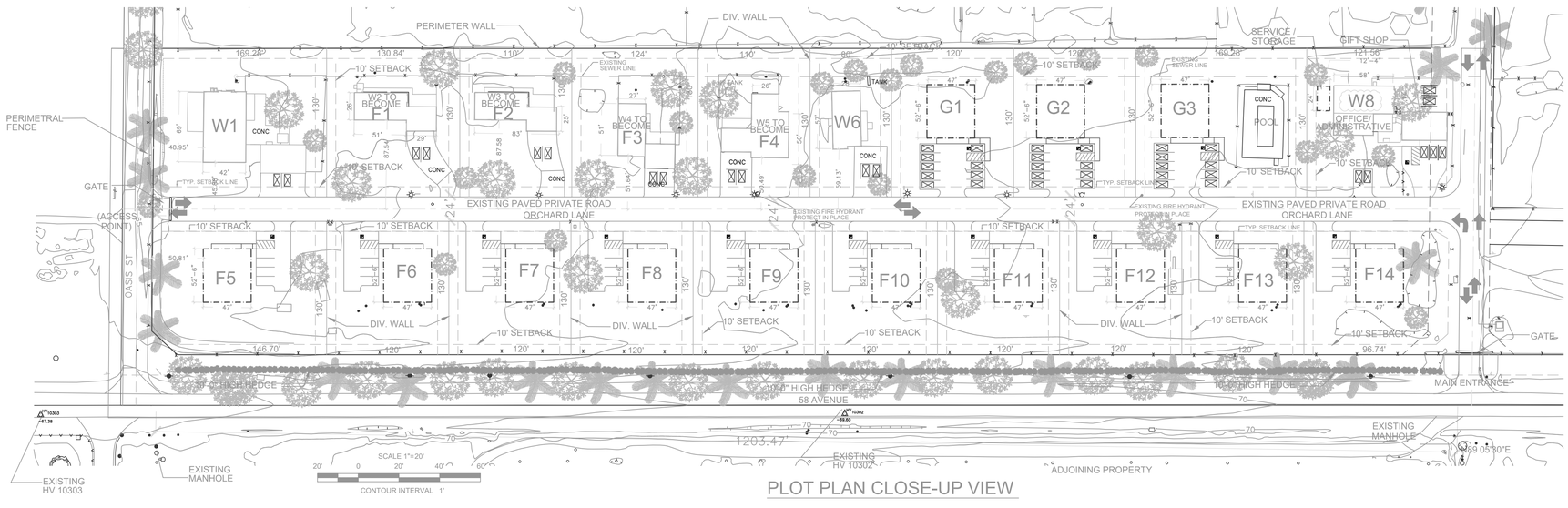
SITE INFORMATION

DATE:	DRAWING Nº	TOTAL
SEPTEMBER 21, 2022	A-01	A-07

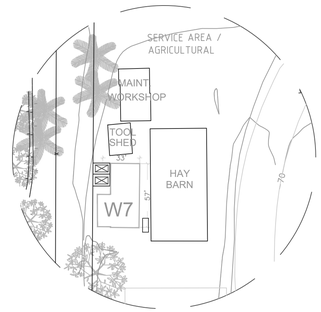


PROPOSED SITE PLAN

STRUCTURE	STATUS	PLANNED USE
W1 , W6 - W8	EXISTING WORKER UNITS	CONTINUED USE AS WORKER HOUSING
F1 - F4	EXISTING WORKER UNITS	TO BE CONVERTED TO WORKER/GUEST "FLEX UNITS"
F5 - F14	NEW CONSTRUCTION	WORKER/GUEST "FLEX UNITS"
G1 - G3	NEW CONSTRUCTION	GUEST ROOMS
SERVICE/STORAGE	NEW CONSTRUCTION	ACCESSORY USE FOR GUEST LODGING
GIFT SHOP	NEW CONSTRUCTION	ACCESSORY USE FOR GUEST LODGING
OFFICE-RECEPTION	NEW CONSTRUCTION	ACCESSORY USE FOR GUEST LODGING
A1 - A3 RANCH OFFICE	EXISTING WORKER BREAK AREAS EXISTING RANCH OFFICE	CONTINUED USE AS WORKER BREAK AREAS CONTINUED USE AS RANCH OFFICE



PLOT PLAN CLOSE-UP VIEW



CLOSE-UP VIEW

PROJECT SUMMARY

SITE AREA: 78.01 GROSS ACRES

GROSS BUILDING AREA:	127,230 S.F.
HARDSCAPE AREA:	163,905 S.F.
LANDSCAPE AREA:	3,505,206.6 S.F.
PARKING AREA:	75,465 S.F.
MISC. (TRASH, ETC) AREA:	39,478 S.F.
TOTAL:	3,911,284.6 S.F.

WORKER AND GUEST ACCOMMODATIONS:

WORKER UNITS:

W1 – WORKER HOUSING:	2,900 S.F.
W6 – WORKER HOUSING:	1,800 S.F.
W7 – WORKER HOUSING:	1,260 S.F.
W8 – WORKER HOUSING:	1,620 S.F.

FLEX UNITS:

F1 – F3 – FLEX UNITS (EXISTING):

–WHEN USED FOR WORKER HOUSING:	2,300 S.F. EACH
–WHEN USED FOR GUEST SUITE:	2,300 S.F. EACH

F4 FLEX UNITS (EXISTING):

–WHEN USED FOR WORKER HOUSING:	2,400 S.F.
–WHEN USED FOR GUEST SUITE:	2,400 S.F.

F5 – F14 – FLEX UNITS (NEW):

–WHEN USED FOR WORKER HOUSING:	2,560 S.F. EACH
–WHEN USED FOR GUEST SUITE:	2,560 S.F. EACH
–WHEN USED FOR GUEST ROOM:	465 S.F. EACH, WITCH COMMON AREA OF 740 S.F. PER FLOOR

GUEST UNITS:

G1 – G3 – EACH TWO STORIES WITH FOUR GUEST ROOMS PER FLOOR (NEW)

– GUEST SUITE:	2,560 S.F. EACH
– GUEST ROOM:	465 S.F. EACH
– COMMON AREA:	740 S.F. PER FLOOR

ACCESSORY USES:

OFFICE / ADMINISTRATIVE:	780 S.F.
SERVICE / STORAGE:	300 S.F.
GIFT SHOP:	540 S.F.

OTHER SITE STRUCTURES:

AGRICULTURAL HUT 1:	875 S.F.
AGRICULTURAL & EQUESTRIAN OBSERVATION DECK AND HUT:	500 S.F.
AGRICULTURAL HUT 2:	500 S.F.
AGRICULTURAL OFFICE:	750 S.F.
MAINTENANCE WORKSHOP:	1,200 S.F.
TOOL SHED:	600 S.F.
TOTAL:	63,885 S.F.

NOTE: ADDITIONAL STRUCTURES ON THE PROPERTY INCLUDE ONE HAY STORAGE BARN AND NINE HORSE BARNS

TYP. PARKING STALL SIZE: 9'–0" X 18'–0"
TYP. ADA PARKING STALL SIZE: 17'–0" X 18'–0"

BUILDING AND SAFETY PERMITS

294268– MOBILEHOME INSTALL 1904 SF
316970– RENEW #601590 MOBILEHOME
316984– AG MOBILEHOME INSTALL
316985– AG MOBILEHOME
316987– AG MOBILEHOME 1157 SF
320822– SITE PREP & LOW PROFILE
321139– SITE PREP & LOW PROFILE
322480– HORSE BARN #2 AGRIC490 M–3 II–N 12480 185078
323783– HORSE BARN #3 AGRIC490 M–3 II–N 2760 40930
323784– HORSE BARN #1 AGRIC490 M–3 II–N 6200 91946
327348– 4X32 GARDEN WALL WALL490 M–2 WALL 128 256
327349– 12X40 AG SHACK
356823– GARAGE & CARPORT TO MH CARPRT490 M–1 V–N 330 4257 PRIGR490 M–1 WOOD 330 5940
356824– GARAGE & CARPORT TO MH CARPRT490 M–1 V–N 330 4257 PRIGR490 M–1 WOOD 330 5940
356825– GARAGE & CARPORT TO MH CARPRT490 M–1 V–N 330 4257 PRIGR490 M–1 WOOD 330 5940
386245– MOBILE HOME INSTALLATION
388234– RELOCATE MOBILEHOME/TIE DOWNS REQD
388235– MOBILE HOME INSTALLATION
388242– LOW PROFILE TO MOBILEHOME
388750– SITE PREP TO MH– RELOCATE
388751– GARAGE TO MH–RELOCATE PRIGR490 M–1 WOOD 600 11880.
388753– SITE PREP TO MH– RELOCATE
389471– ATTACHED GARAGE & CARPORT TO MH CARPRT490 M–1 V–N 360 4644 PRIGR490 M–1 WOOD 576 10368
389472– DETACHED GARAGE/CARPORT/PATIO TO MH CARPRT490 M–1 V–N 416 5366 PAT490 PRIGR490 M–1 WOOD 576 10368

NOTE:
THE GUEST ROOMS WILL BE TYPE V, WOOD FRAME, RESIDENTIAL.

LEGEND

- UNIT LOT LINE
- NEW CURB LINE
- ON SITE DIRECTIONAL ARROWS
- R.O.W. TRAFFIC MOVEMENTS

LAND OWNER:
TRIPLE SKY RANCH
4114 SEPULVEDA BLVD
CULVER CITY, CA 90230
WORK: (310)253–9998
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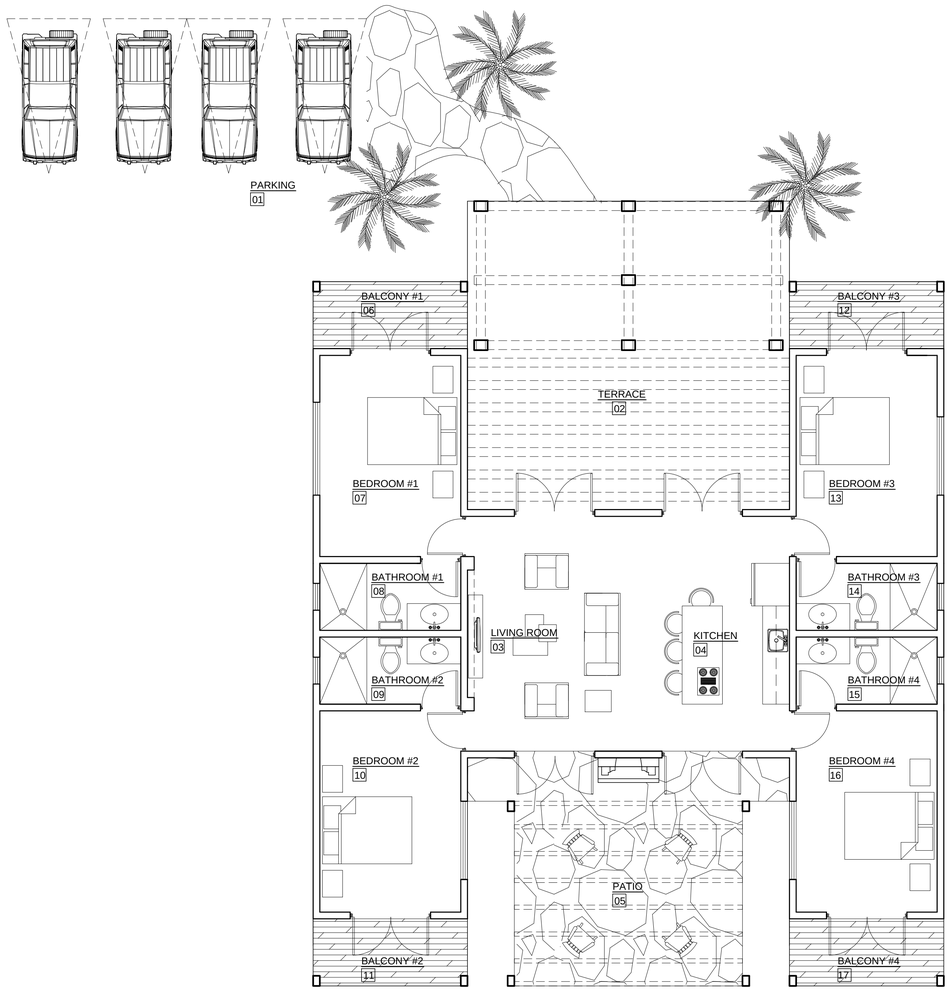
REVISION NUMBER	DATE

PLOT PLAN REVIEW -
GUEST RANCH ACCOMMODATIONS

DATE:	DRAWING Nº	TOTAL
DECEMBER 15, 2022	A-02	A-07



REFERENCE FLOOR PLAN

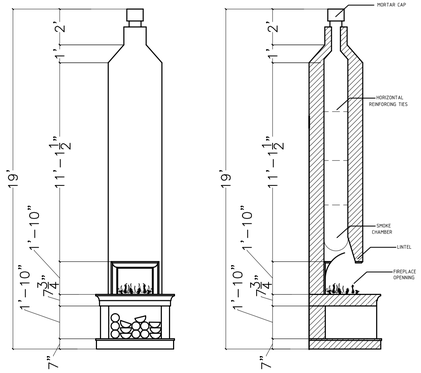
PROPOSED FLEX UNIT
SCALE 3/16"=1'-0"

PROPOSED MATERIAL CHART

N°	AREA	FLOORING DESCRIPTION	BASE DETAIL	WALL FINISHES DESCRIPTION	CEILING DESCRIPTION	OBSERVATIONS
1	PARKING	CONCRETE				
2	TERRACE	TILES	TILES	SMOOTH FINISH + PAINT	STRUCUTURE VIEW	WHITE COLOR T.B.D. BY OWNER
3	LIVING ROOM	TILES	TILES	SMOOTH FINISH + PAINT	GYPSUM BOARD + PAINT	WHITE COLOR T.B.D. BY OWNER
4	KITCHEN	TILES	TILES	SMOOTH FINISH + PAINT	GYPSUM BOARD + PAINT	WHITE COLOR T.B.D. BY OWNER
5	PATIO	TILES	TILES	SMOOTH FINISH + PAINT	GYPSUM BOARD + PAINT	WHITE COLOR T.B.D. BY OWNER
6	BALCONY #1	TILES	TILES	SMOOTH FINISH + PAINT	STRUCUTURE VIEW	WHITE COLOR T.B.D. BY OWNER
7	BEDROOM #1	TILES	TILES	SMOOTH FINISH + PAINT	GYPSUM BOARD + PAINT	WHITE COLOR T.B.D. BY OWNER
8	BATHROOM #1	TILES	TILES	PAINT + TILES IN SHOWER	GYPSUM BOARD + PAINT	WHITE COLOR T.B.D. BY OWNER
9	BATHROOM #2	TILES	TILES	PAINT + TILES IN SHOWER	GYPSUM BOARD + PAINT	WHITE COLOR T.B.D. BY OWNER
10	BEDROOM #2	TILES	TILES	SMOOTH FINISH + PAINT	GYPSUM BOARD + PAINT	WHITE COLOR T.B.D. BY OWNER
11	BALCONY #2	TILES	TILES	SMOOTH FINISH + PAINT	STRUCUTURE VIEW	WHITE COLOR T.B.D. BY OWNER
12	BALCONY #3	TILES	TILES	SMOOTH FINISH + PAINT	STRUCUTURE VIEW	WHITE COLOR T.B.D. BY OWNER
13	BEDROOM #3	TILES	TILES	SMOOTH FINISH + PAINT	GYPSUM BOARD + PAINT	WHITE COLOR T.B.D. BY OWNER
14	BATHROOM #3	TILES	TILES	PAINT + TILES IN SHOWER	GYPSUM BOARD + PAINT	WHITE COLOR T.B.D. BY OWNER
15	BATHROOM #4	TILES	TILES	PAINT + TILES IN SHOWER	GYPSUM BOARD + PAINT	WHITE COLOR T.B.D. BY OWNER
16	BEDROOM #4	TILES	TILES	SMOOTH FINISH + PAINT	GYPSUM BOARD + PAINT	WHITE COLOR T.B.D. BY OWNER
17	BALCONY #4	TILES	TILES	SMOOTH FINISH + PAINT	STRUCUTURE VIEW	WHITE COLOR T.B.D. BY OWNER

CAPTIONS

F.F.L	FLOOR FINISH LEVEL
C.F.L	CELING FINISH LEVEL
L.S.L	LOWER SLAB LEVEL
00	COLUMNS REFERENCE NUMBER
00	FINISH REFERENCE NUMBER
P 00	DOOR REFERENCE NUMBER
V0	WINDOW REFERENCE NUMBER
00 / 00	DETAILS
00 / 00	REFERENCE FOR ELEVATIONS
00 / 00	REFERENCE FOR SECTION



CHIMNEY DETAIL

SCALE 1/4"=1'- 0"

LAND OWNER:
TRIPLE SKY RANCH
4114 SEPULVEDA BLVD
CULVER CITY, CA 90230
WORK: (310)253-9998
jr@continentaldevelopmentgroup.com

PROJECT ADDRESS:
82800 58TH AVE STE 1
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PREPARED BY:
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maria@continentaldevelopmentgroup.com

APPLICANT:
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CULVER CITY, CA 90230
WORK: (310)253-9998
jr@continentaldevelopmentgroup.com

REVISION NUMBER	DATE

PROPOSED FLOOR PLAN AND MATERIALS

DATE:	DRAWING N°	TOTAL
SEPTEMBER 21, 2022	A-03	A-07

REFERENCE DOOR CHART

#	TYPE	SIZE		FRAME	FINISH	LOCATION	REMARKS
		WIDTH	HEIGHT				
1	A	6' X 7'		WOOD	TO BE DEFINED BY OWNER	EXTERIOR	DOBLE DOOR
2	B	3' X 7'		WOOD	TO BE DEFINED BY OWNER	INTERIOR	SINGLE DOOR

DOORS NOTES

ALL THE HARDWARE OF THE DOORS WILL BE SUPPLIED BY THE OWNER AND MUST BE INSTALLED BY THE SUB-CONTRACTORS OF THE CABINETMAKING UNDER THE SUPERVISION OF THE CONTRACTOR.

ALL MEASURES MUST BE CHECKED BEFORE BEGINNING THEIR INSTALLATION.

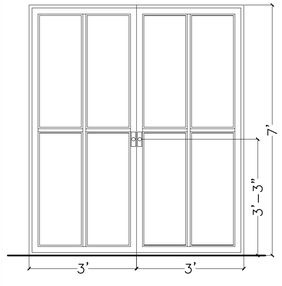
REFERENCE WINDOW CHART

#	TYPE	SIZE		FRAME	FINISH	LOCATION	REMARKS
		WIDTH	HEIGHT				
1	A	6' 11" X 4' 9 3/4"		WOOD	TO BE DEFINED BY OWNER	BEDROOMS	
2	B	2' X 2' 5 1/4"		WOOD	TO BE DEFINED BY OWNER	BATHROOMS	

WINDOW NOTES

ALL THE HARDWARE OF THE WINDOWS WILL BE SUPPLIED BY THE OWNER AND MUST BE INSTALLED BY THE SUB-CONTRACTORS UNDER THE SUPERVISION OF THE CONTRACTOR.

ALL MEASURES MUST BE CHECKED BEFORE BEGINNING THEIR INSTALLATION.



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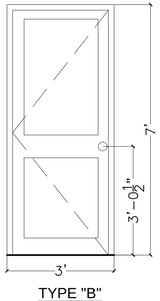

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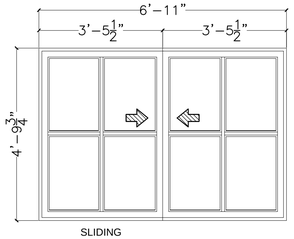

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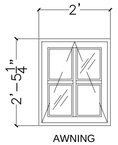

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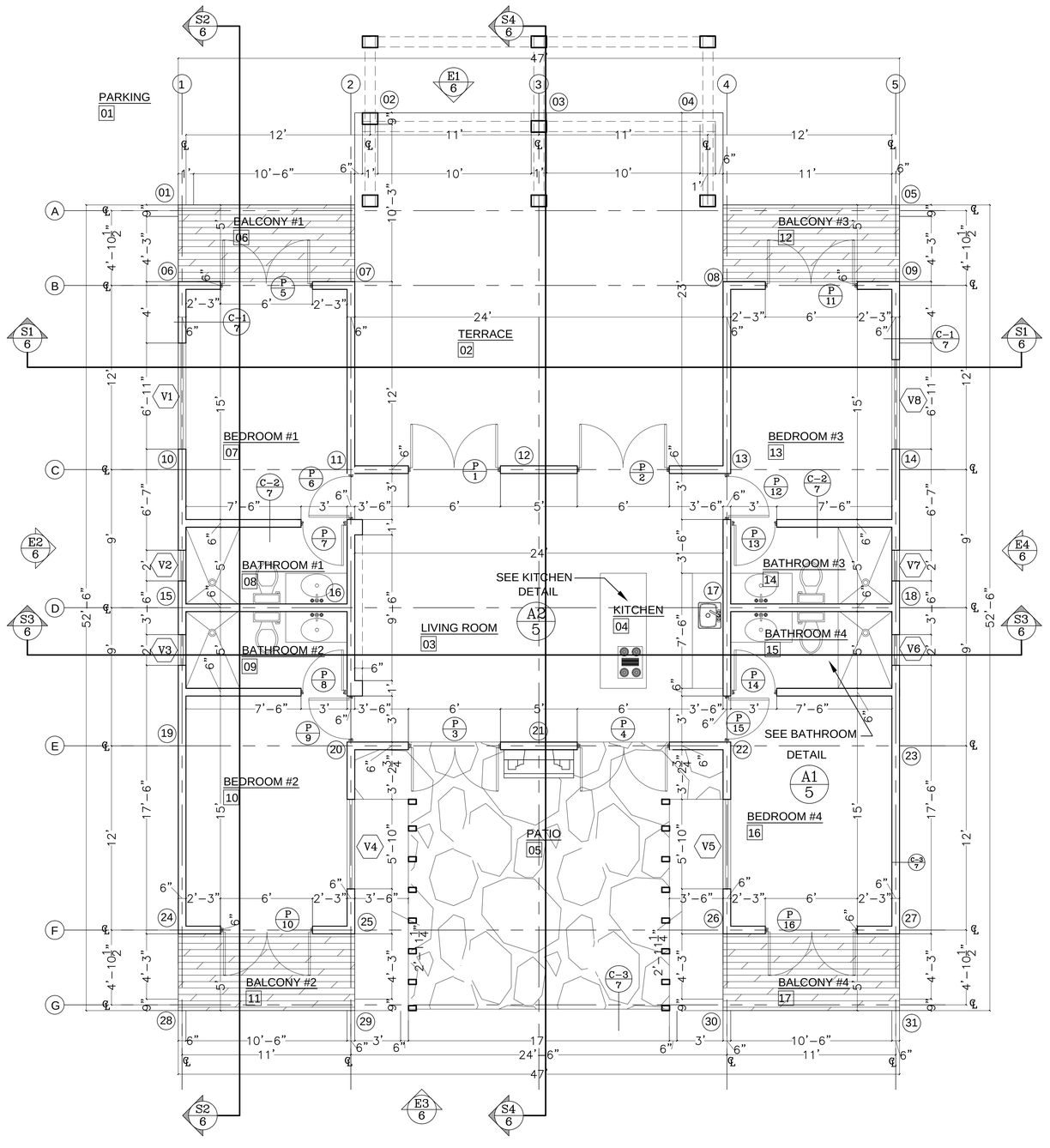


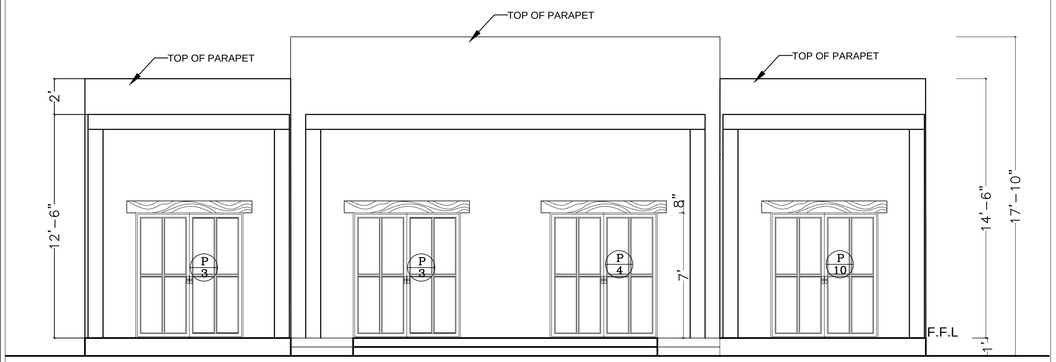
FLOOR PLAN
SCALE 3/16"=1'-0"

LAND OWNER:	TRIPLE SKY RANCH 4114 SEPULVEDA BLVD CULVER CITY, CA 90230 WORK: (310)253-9998 jr@continentaldevelopmentgroup.com
PROJECT ADDRESS:	82800 58TH AVE STE 1 THERMAL, CA 92274
PREPARED BY:	MARIA FASANO CONTINENTAL DEVELOPMENT GROUP 4114 SEPULVEDA BLVD CULVER CITY, CA 90230 WORK: (310)253-9998 CELL: (978)394-0116 maria@continentaldevelopmentgroup.com
APPLICANT:	TRIPLE SKY RANCH 4114 SEPULVEDA BLVD CULVER CITY, CA 90230 WORK: (310)253-9998 jr@continentaldevelopmentgroup.com

REVISION NUMBER	DATE

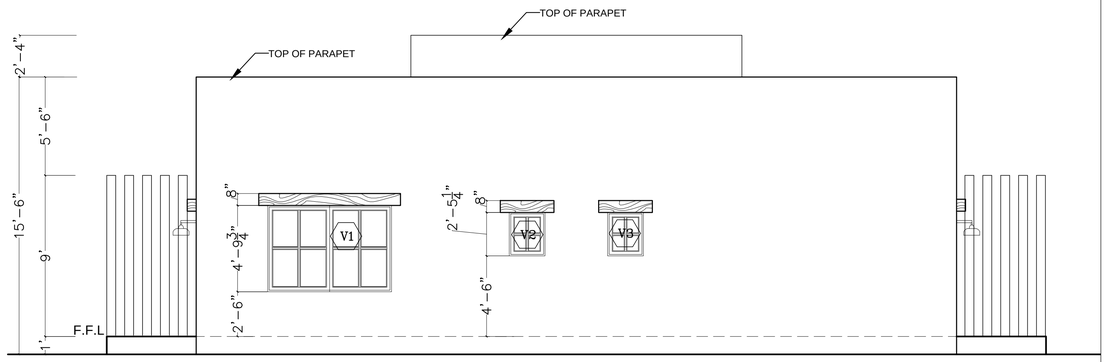
FLOOR PLAN AND DETAILS

DATE:	DRAWING Nº	TOTAL
SEPTEMBER 21, 2022	A-04	A-07



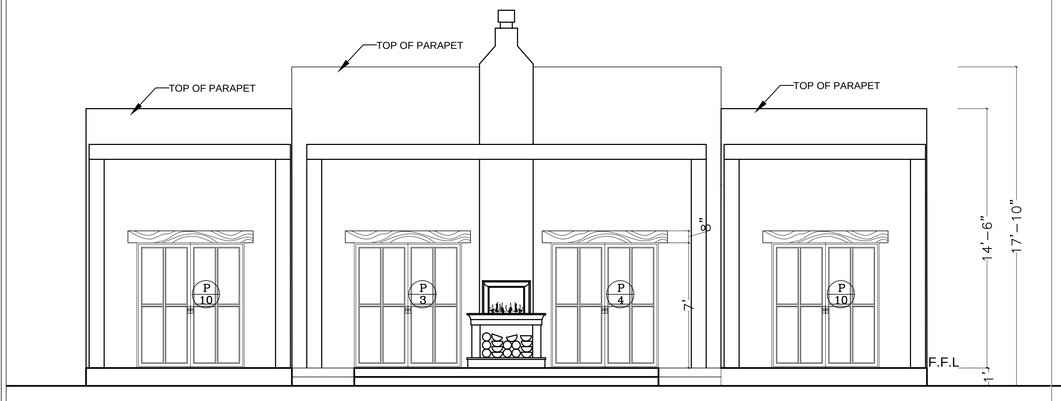
NORTH ELEVATION E1 6

SCALE 1/4"=1'-0"



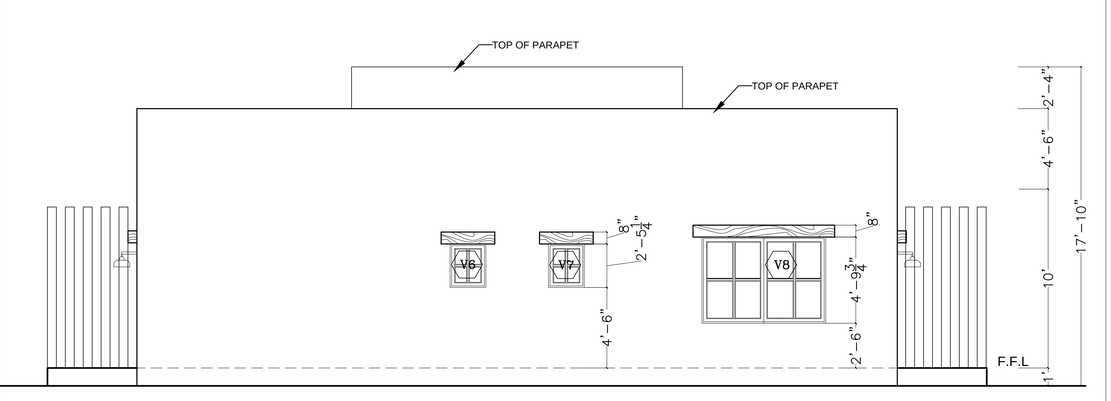
WEST ELEVATION E2 6

SCALE 1/4"=1'-0"



SOUTH ELEVATION E3 6

SCALE 1/4"=1'-0"



EAST ELEVATION E4 6

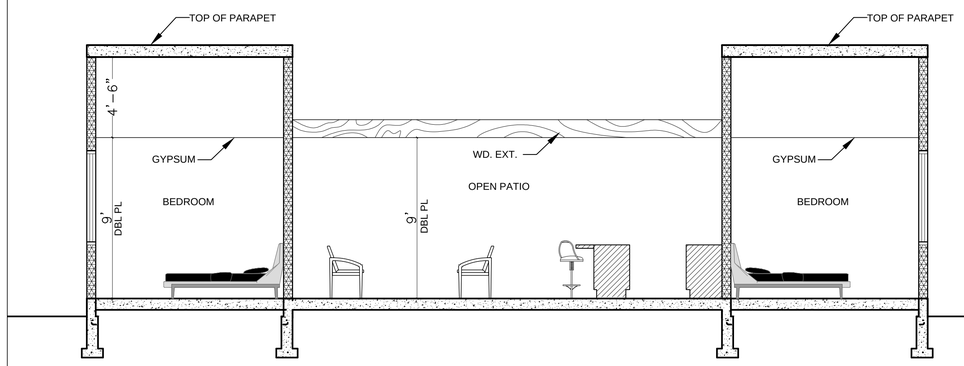
SCALE 1/4"=1'-0"

LAND OWNER:	TRIPLE SKY RANCH 4114 SEPULVEDA BLVD CULVER CITY, CA 90230 WORK: (310)253-9998 jr@continentaldevelopmentgroup.com
PROJECT ADDRESS:	82800 58TH AVE STE 1 THERMAL, CA 92274
PREPARED BY:	MARIA FASANO CONTINENTAL DEVELOPMENT GROUP 4114 SEPULVEDA BLVD CULVER CITY, CA 90230 WORK: (310)253-9998 CELL: (978)394-0116 maria@continentaldevelopmentgroup.com
APPLICANT:	TRIPLE SKY RANCH 4114 SEPULVEDA BLVD CULVER CITY, CA 90230 WORK: (310)253-9998 jr@continentaldevelopmentgroup.com

REVISION NUMBER	DATE

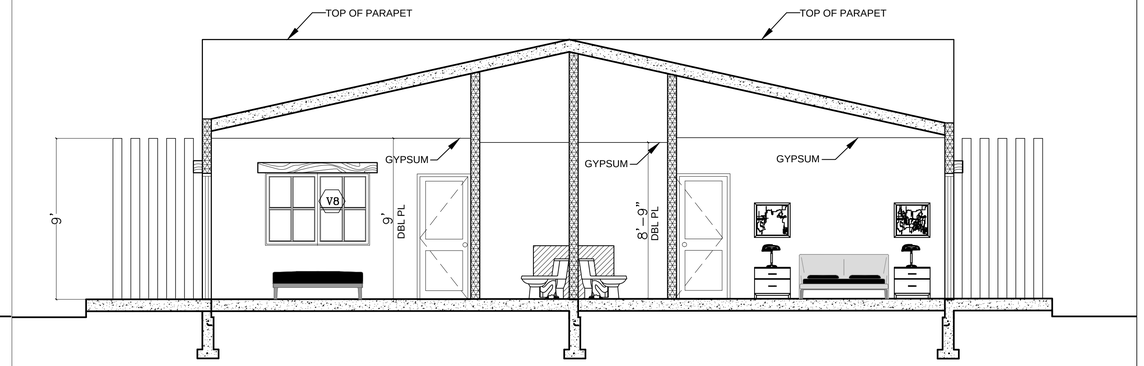
ELEVATIONS

DATE:	DRAWING Nº	TOTAL
SEPTEMBER 21, 2022	A-05	A-07



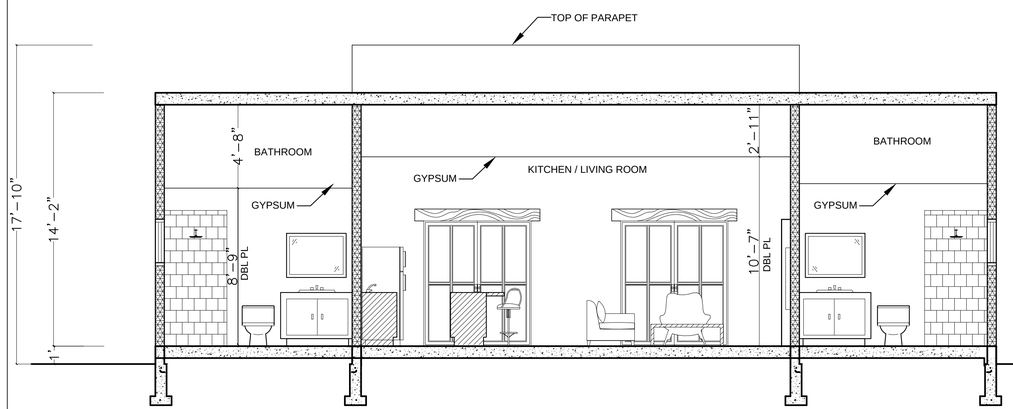
SECTION S1 6

SCALE 1/4"=1'-0"



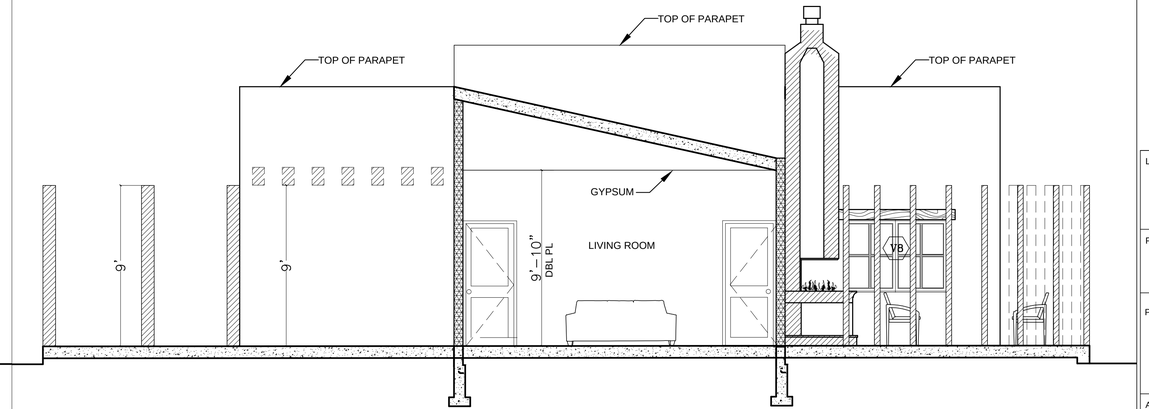
SECTION S2 6

SCALE 1/4"=1'-0"



SECTION S3 6

SCALE 1/4"=1'-0"



SECTION S4 6

SCALE 1/4"=1'-0"

LAND OWNER:
TRIPLE SKY RANCH
4114 SEPULVEDA BLVD
CULVER CITY, CA 90230
WORK: (310)253-9998
jr@continentaldevelopmentgroup.com

PROJECT ADDRESS:
82800 58TH AVE STE 1
THERMAL, CA 92274

PREPARED BY:
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APPLICANT:
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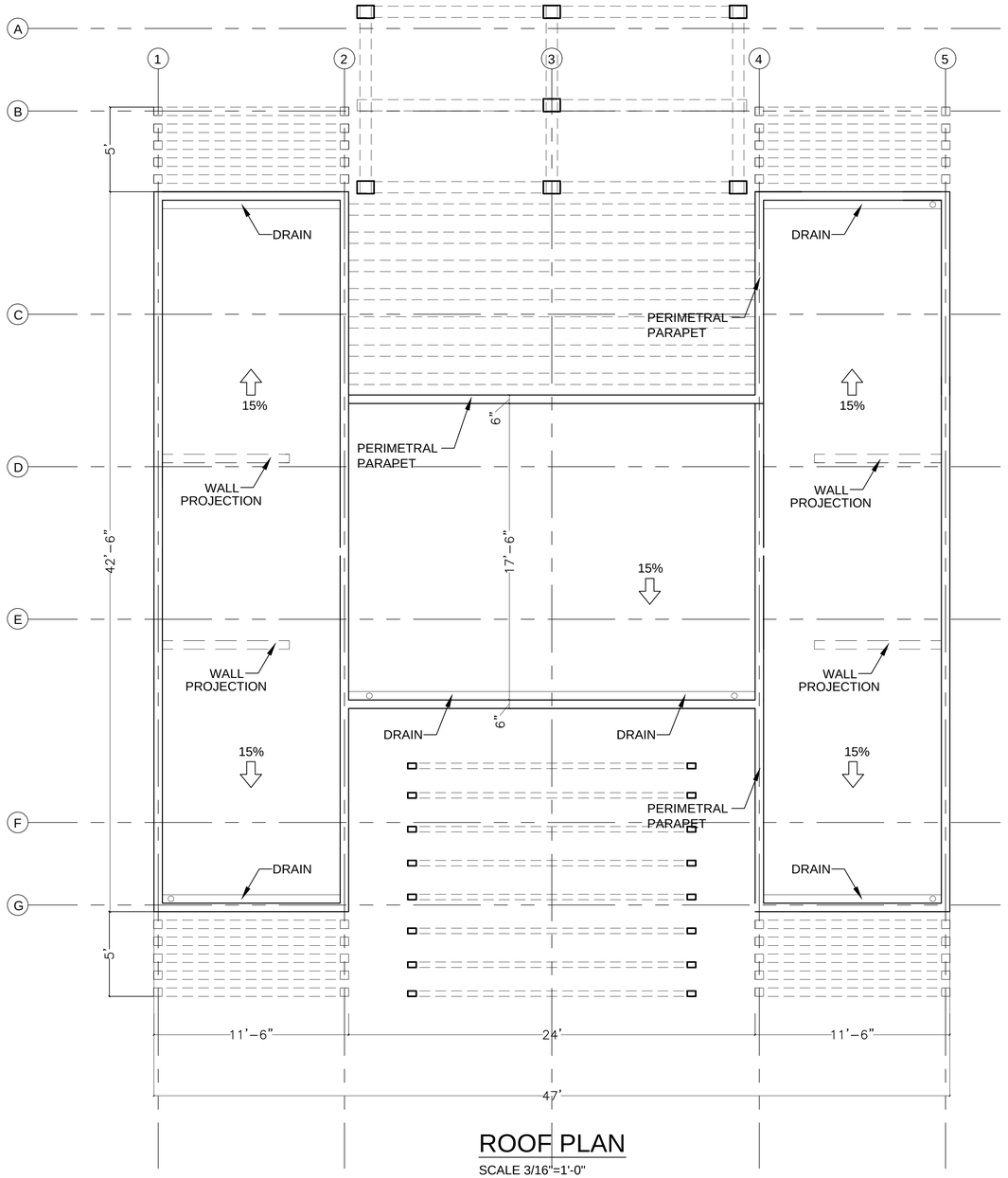
REVISION NUMBER	DATE

SECTIONS

DATE:	DRAWING N°	TOTAL
SEPTEMBER 21, 2022	A-06	A-07



ROOF PLAN

SCALE 3/16"=1'-0"

LAND OWNER:	TRIPLE SKY RANCH 4114 SEPULVEDA BLVD CULVER CITY, CA 90230 WORK: (310)253–9998 jr@continentaldevelopmentgroup.com
PROJECT ADDRESS:	82800 58TH AVE STE 1 THERMAL, CA 92274
PREPARED BY:	MARIA FASANO CONTINENTAL DEVELOPMENT GROUP 4114 SEPULVEDA BLVD CULVER CITY, CA 90230 WORK: (310)253–9998 CELL: (978)394–0116 maria@continentaldevelopmentgroup.com
APPLICANT:	TRIPLE SKY RANCH 4114 SEPULVEDA BLVD CULVER CITY, CA 90230 WORK: (310)253–9998 jr@continentaldevelopmentgroup.com

REVISION NUMBER	DATE

ROOF PLAN

DATE:	DRAWING N°	TOTAL
SEPTEMBER 21, 2022	A-07	A-07

GENERAL REQUIREMENTS

1. CONSTRUCTION SHALL BE IN CONFORMITY WITH THE 2019 EDITION OF THE CALIFORNIA BUILDING CODE (CBC) AND ALL APPLICABLE LOCAL AND STATE CODES AND ORDINANCES.
2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS AT JOB SITE PRIOR TO ORDERING ANY MATERIAL AND/OR COMMENCING WORK AND SHALL REPORT ANY DISCREPANCIES TO "ASHOT SHAGIRIAN, P.E." HEREINAFTER CALLED "THE ENGINEER OR ENGINEER OF RECORD".
3. CONTRACTOR SHALL PROVIDE BARRICADES AND PEDESTRIAN PROTECTION AS REQUIRED BY STATE AND LOCAL CODES.
4. CONTRACTOR SHALL CONSULT WITH REPRESENTATIVES OF CITY AND UTILITY COMPANIES CONCERNING AVAILABLE FACILITIES BEFORE COMMENCING WORK OR CONNECTING TO SEWER, PIPING OR WIRING, ETC., AND REPORT ANY PROBLEMS TO THE ENGINEER.
5. OMISSIONS OR CONFLICTS BETWEEN VARIOUS ELEMENTS OF THE ARCHITECTURAL AND STRUCTURAL DRAWINGS, NOTES, AND DETAILS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER AND RESOLVED BEFORE PROCEEDING WITH THE WORK.
6. CONTRACTOR SHALL INSTALL TEMPORARY TOILETS BEFORE START OF JOB.
7. NOTES AND DETAILS ON DRAWINGS SHALL TAKE PRECEDENCE OVER THESE GENERAL NOTES.
8. TYPICAL DETAILS SHOWN SHALL APPLY WHERE NO SPECIAL DETAIL IS SHOWN.
9. WRITTEN DIMENSIONS (NOT SCALED DIMENSIONS) SHALL BE USED.
10. TEMPORARY ERECTION BRACING AND SHORING SHALL BE PROVIDED AS REQUIRED ON ALL BEAMS, WALLS, ETC., ADEQUATE TO PROVIDE FULL STRUCTURAL STABILITY AND SAFETY. BRACING SHALL NOT BE REMOVED UNTIL THE ELEMENTS ARE FULLY CONNECTED AND ARE CAPABLE OF SUPPORTING THE DESIGN LOADING.
11. CONTRACTOR AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNER AND THE ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR THE ENGINEER.

FOUNDATIONS

1. THE CONTRACTOR SHALL ESTABLISH ALL BUILDING LINES AND PROCEED WITH THE EXCAVATION OF ALL FOOTINGS AS CALLED FOR ON THE DRAWINGS.
2. FOOTINGS SHALL BEAR ON NATURAL UNDISTURBED UNIFORM EARTH OR ENGINEERED COMPACTED FILL.
3. NO REINFORCING STEEL AND NO CONCRETE SHALL BE PLACED IN ANY EXCAVATION PRIOR TO APPROVAL BY THE BUILDING DEPARTMENT.
4. THE TOP OF ALL EXCAVATIONS SHALL BE PROTECTED AGAINST HEAVY SURCHARGE LOADS AND FROM EROSION DUE TO RAINFALL OR SURFACE RUN-OFF DURING THE ENTIRE CONSTRUCTION PERIOD.
5. SOILS REPORT IS PROVIDED
   SEE SHEET SGN-2 FOR ALL PERTAINING INFO

   ALLOWABLE SOIL BEARING PRESSURE PER SOIL REPORT

   ISOLATED PAD FOOTINGS ....2.500 PSF

   CONTINUOUS FOOTINGS ....2,000 PSF

REINFORCING STEEL

1. ALL REINFORCING STEEL, UNLESS NOTED OTHERWISE, SHALL CONFORM TO A.S.T.M. SPECIFICATIONS A615 AND BE INTERMEDIATE GRADE 60 FOR BARS #4 AND GREATER, AND GRADE 40 FOR BARS LESS THAN #4 AND ALL TIES AND DOWELS.
2. ALL REINFORCEMENT TO BE WELDED SHALL CONFORM TO A.S.T.M. A706, UNLESS NOTED OTHERWISE.
3. REINFORCEMENT MARKED CONTINUOUS MAY BE SPLICED BY LAPPING 42 BAR DIAMETERS IN CONCRETE AND 48 BAR DIAMETERS IN MASONRY WITH 24 INCH MINIMUM LAP IN EACH CASE, UNLESS OTHERWISE NOTED ON PLANS. ALL SPLICES WHEN DETAILED SHALL BE LOCATED WHERE SHOWN ON PLANS.
4. REINFORCING STEEL SHALL BE ACCURATELY PLACED AND SECURED IN POSITION WITH METAL OR CONCRETE BLOCKS, CHAIRS, SPACERS, ETC., BEFORE PLACING CONCRETE.
5. ADDITIONAL REINFORCING REQUIRED FOR ERECTION OF PRECAST CONCRETE SHALL BE ADDED PER THE CONTRACTORS DETAILS.
6. WELDED WIRE FABRIC FOR SLABS ON GRADE SHALL CONFORM TO A.S.T.M. A185, BE IN FLAT SHEETS AND HAVE MIN. LAP OF ONE PARALLEL STRAND BUT NOT LESS THAN 6".
7. MINIMUM CONCRETE COVER FOR REINFORCING STEEL SHALL BE AS FOLLOWS, UNLESS NOTED OTHERWISE.
   A) CONCRETE BELOW GRADE OR IN CONTACT WITH SOIL: WHEN CAST AGAINST EARTH 3", WHEN FORMED 2".
   B) WALLS ABOVE GRADE: EXTERIOR FACE 1 1/2", INTERIOR FACE 1".
   C) PRECAST CONCRETE ELEMENTS: AS DETAILED.
   D) CONCRETE SLAB ON GRADE: REINFORCING STEEL AT CENTER OF SLAB, UNLESS NOTED OTHERWISE.
8. REINFORCEMENT DETAILING SHALL BE IN ACCORDANCE WITH CBC SECTION 1907.
9. PROVIDE MIN. 1" OR ONE BAR DIA. SPACING, WHICHEVER IS GRATER, BETWEEN ADJACENT BARS

WELDING

1. ALL WELDING SHALL BE DONE USING THE SHIELDED ELECTRIC ARC PROCESS BY CERTIFIED WELDERS, USING E70XX ELECTRODES.
2. WELDING OF STEEL REINFORCING BARS SHALL BE DONE WITH LOW HYDROGEN ELECTRODES, A233, CLASS E70XX SERIES.
3. WELDS IDENTIFIED AS REQUIRING CONTINUOUS OR PERIODIC SPECIAL INSPECTION NEED NOT HAVE SPECIAL INSPECTION WHEN WELDING IS DONE IN AN APPROVED FABRICATOR'S SHOP, HOWEVER, THE APPROVED FABRICATOR MUST SUBMIT A CERTIFICATE OF COMPLIANCE IN ACCORDANCE WITH CBC SECTION 1704.2.5.2
4. SHOP WELDS MUST BE PERFORMED IN A LA CITY BLDG. DEPT. LICENSED FABRICATOR'S SHOP

TYPICAL LARR # or RR#	
"SIMPSON" CONNECTORS	
STRAPS	25713
HOLDOWN (IF ANY)	25720, 25744
A34/A35 ANCHOR	25716
POST CAPS	25149, 25076
GLB CONNECTIONS	25726
COLUMN CAPS - ECC, CC	25714
HANGERS	25076, 24947, 24949

CONCRETE

1. ALL CONCRETE MIX DESIGNS, CONFORMING TO CBC SECTIONS 1904 & 1905, SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL BEFORE ANY CONCRETE IS PLACED. ALL CONCRETE MIXES SHALL HAVE A MINIMUM CEMENT CONTENT OF 5.25 SACKS OF CEMENT PER CUBIC YARD OF MIX. ALL CONCRETE MIXES SHALL BE CERTIFIED BY A CONCRETE TESTING LABORATORY AND SIGNED BY A CALIFORNIA REGISTERED CIVIL ENGINEER.
2. CONCRETE SHALL HAVE MINIMUM 28 DAY COMPRESSIVE STRENGTH GIVEN BELOW:
   STANDARD .... 2,500 PSI CONCRETE.
   3,000 PSI MIN FOR GRADE BEAMS AND CAISSONS
   SLAB ON GRADE AND/OR FOOTINGS .... 2,500 MIN PSI
   PILES AND CAISSONS STRUCTURE .... 4,000 MIN PSI, W/ SPECIAL INSPECTION
   ALL OTHER CONCRETE .... 2,500 MIN PSI
   THE MAXIMUM CONCRETE SLUMP SHALL NOT EXCEED 4".
3. GROUT UNDER STEEL COLUMN BASE PLATES SHALL BE "POR-ROK" OR "FIVE STAR GROUT" OR APPROVED EQUAL.
4. PORTLAND CEMENT SHALL BE TYPE II, OR TYPE V WHERE SPECIFIED IN THE SOILS REPORT, CONFORMING TO A.S.T.M. C150 AND SHALL BE TESTED. AGGREGATES SHALL BE NORMAL WEIGHT (145 PCF) U.N.O. CONFORMING TO A.S.T.M. C33, WITH CONCRETE SHRINKAGE CHARACTERISTICS OF LESS THAN 0.050% ; WATER-CEMENT RATIO SHALL NOT EXCEED 0.52. WHERE SPECIFIED, LIGHT WEIGHT CONCRETE FOR WALLS AND FLOOR SLABS SHALL HAVE AN IN-PLACE DENSITY OF 110 PCF. LIGHT WEIGHT AGGREGATE SHALL BE EXPANDED SHALE OR APPROVED EQUAL CONFORMING TO A.S.T.M. C330.
5. CONCRETE TEST SAMPLES SHALL BE TAKEN IN ACCORDANCE WITH A.S.T.M. AND U.B.C. STANDARDS. RESULTS OF THE 7 & 28 DAY TESTS SHALL BE SUBMITTED TO THE ENGINEER FOR HIS RECORDS. SLUMP TESTS ARE REQUIRED FOR ALL TEST SAMPLES AND MUST ALSO BE REPORTED. ADDITIONALLY, ALL LIGHT WEIGHT CONCRETE SAMPLES MUST HAVE THEIR IN-PLACE DENSITIES DETERMINED AND REPORTED.
6. SIDES OF FOOTING PADS MAY BE POURED AGAINST STABLE EARTH.
7. TROWEL AND RETROWEL SLAB FOR SMOOTH FINISH WITH NO TROWEL MARKS SHOWING WHEREVER CONCRETE FLOOR IS EXPOSED.
8. SEE ARCHITECTURAL NOTES FOR COLORED OR TEXTURED CONCRETE.
9. CONCRETE FORM WORK TOLERANCES SHALL BE IN ACCORDANCE WITH C.B.C. AND A.C.I. STANDARDS.
10. ALL STEEL REINFORCING, ANCHOR BOLTS, DOWELS AND OTHER INSERTS SHALL BE SECURED IN POSITION AND INSPECTED BY THE LOCAL BUILDING DEPARTMENT INSPECTOR, PRIOR TO THE PLACING OF ANY CONCRETE.
11. WHERE NOTED, SOUND INSULATING CELLULAR CONCRETE SHALL BE 100 PCF (13 PSF AT 1-1/2" THICKNESS) FOR SECOND FLOOR FILL OVER PLYWOOD SHEATHING. ALL AREAS ARE TO BE TROWELED AND RETROWELED TO A SMOOTH FLAT FINISH SUITABLE FOR INTERIOR COVERINGS. PROVIDE WATERPROOFING PAPER AND MESH.
12. ALL CONCRETE TO BE CURED FOR A MINIMUM OF 3 DAYS
13. TOP OF SLAB OR FOOTING UNDER COLUMN BASE PLATES SHALL BE FINISHED SMOOTH AND LEVEL FOR FULL BEARING.
14. PLACING OF ANY CONCRETE WITH 28 DAY STRENGTH GREATER THAN 2500 PSI (SEE ITEM 2 ABOVE) SHALL BE CONTINUOUSLY INSPECTED BY A REGISTERED DEPUTY INSPECTOR PAID FOR BY THE OWNER.

SPECIAL INSPECTIONS

1. IN ADDITION TO THE REQUIREMENTS OF CBC, SECTION 1701 (i.e. : CONCRETE WITH 28 DAY COMPRESSIVE STRENGTH GREATER THAN 2500 PSI, BOLTS INSTALLED IN CONCRETE, REINFORCING STEEL, FIELD WELDING OF ALL STEEL WORK, WELDING OF REINFORCING STEEL AND HIGH STRENGTH BOLTS), SPECIAL INSPECTION IS REQUIRED ON THE FOLLOWING ITEMS:
2. PERIODIC (NON-CONTINUOUS) SPECIAL INSPECTION ON PLYWOOD FASTENERS PRIOR TO PLACEMENT OR ROOFING, AS NOTED BELOW:
   A) WHERE 23/32" THICK SHEATHING, WITH TWO ROWS OF NAILING, IS SPECIFIED (IN COMPLIANCE WITH ICBO NO. 1952).
   B) WHERE STEEL TRAXX SCREWS OR PNEUTEK SHOT PINS ARE SPECIFIED FOR FASTENING SHEATHING TO STEEL LEDGERS.
3. THE INSTALLATION OF ANCHOR BOLTS, ADHESIVE ROD ANCHORS AND EXPANSION BOLTS IN ALL CONCRETE AND MASONRY WORKS.
4. SPECIAL INSPECTIONS SHALL BE DONE BY ONE OR MORE REGISTERED DEPUTY (SPECIAL) INSPECTORS, APPROVED BY THE BUILDING DEPARTMENT, ONLY HIRED AND PAID FOR BY THE OWNER.
5. SITE VISITS CONDUCTED BY THE ENGINEER ARE MERELY FOR OBSERVATION PURPOSE ONLY AND DO NOT CONSTITUTE AN INSPECTION.
6. TWO (2) PROPERLY COMPLETED AND SIGNED COPIES OF THE SPECIAL INSPECTION AGREEMENT MUST BE SUBMITTED TO THE PERMIT SERVICES DIVISION PRIOR TO ISSUANCE OF THE PERMIT.

SPECIAL INSPECTION ADDITIONAL NOTES

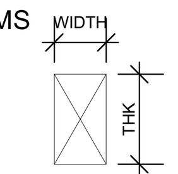
1. If special inspection or testing is requred a "Statement of Special Inspection" will be shown on the plans. Contractors responsible for the construction of a wind or seismic force resisting system/component listed in the "Statement of Special Inspection" shall submit a written statement of responsibility to the LADBS inspectors and the owner prior to the commencing of work on such system or component per Sec 1706.1
2. Continuous Special Inspection by a registered deputy inspector is required for field welding, concrete strength f'c>2,500 psi, high strength bolting, sprayed-on fireproofing, engineered masonry, high-lift grouting, pre-stressed concrete, high load diaphragms and special moment-resisting concrete frames. (1704 & Chapter 19, 21 and 22)
3. Field Welding to be done by welders certidied by LADBS for (structural steel)(reinforcing steel)(light gauge steel). Continuous inspection by deputy inspector is required in such cases.
4. Shop welds must be performed in a LADBS licensed fabricator's shop. LADBS Licensed fabricator is requred for Structural Steel.

ADDITIONAL NOTES

1. FASTENERS IN PRESERVATIVE TREATED WOOD OR FIRE RETARDANT TREATED WOOD SHALL BE OF HOT DIPPED ZINC COATED GALVANIZED STEEL OR STAINLESS STEEL.
2. WHEN BOLTING TO AN EXISTING FOOTING, REFERENCE TO LA RESEARCH REPORT APPROVAL # GIVEN ON PLANS FOR THE TYPE OF BOLT, ALLOWABLE DESIGN LOADS AND REQUIED EDGE DISTANCES. DEPUTY INSPECTION IS GENERALLY REQUIRED BY LADBS.

STRUCTURAL LUMBER

1. ALL ROUGH LUMBER USED IN THE WORK SHALL BE OF THE FOLLOWING GRADE OF DOUGLAS FIR-LARCH, WITH THE BASE DESIGN VALUES COMPLYING WITH WESTERN WOOD PRODUCTS ASSOCIATION (WWPA) GRADING SPECIFICATIONS, UNLESS OTHERWISE NOTED ON PLANS.
   A) HORIZONTAL FRAMING MEMBERS 2" TO 4" THICK AND 2" AND WIDER 1000F-NO. 1
   B) HORIZONTAL FRAMING MEMBERS 5" OR MORE IN THICKNESS, 5" AND WIDER (BEAMS & STRINGERS) 1350F-NO. 1
   C) POSTS (POSTS & TIMBERS) 1200F-NO. 1
   D) STUDS 2" TO 4" THICK, 4" WIDE 1000F-CONST
   E) ALL OTHER WOOD MEMBERS (FRAMING JOISTS).................. 875F-NO. 2



2. SHEATHING SHALL BE DFPA GRADE STAMPED, TYPE STRUCTURAL I, OR CDX (24/0), EXTERIOR GLUE, UNLESS NOTED OTHERWISE. 15/32" AND 19/32" THICK SHEATHING SHALL HAVE INDEX NO. 32/16. 23/32" SHEATHING SHALL HAVE INDEX NO. 48/24.
3. ROOF FRAMING, SHEATHING AND NAILING SHALL BE INSPECTED PRIOR TO PLACING OF ROOFING MATERIALS.
4. PROVIDE METAL WASHERS FOR ALL BOLTS AND NUTS BEARING ON WOOD.
5. ALL BOLT HOLES IN WOOD MEMBERS SHALL BE A MINIMUM OF 1/32 INCH TO A MAXIMUM OF 1/16 INCH LARGER THAN THE BOLT DIAMETER (PER NDS 11.1.2). WOOD MEMBERS WITH HOLES NOT MEETING THE ABOVE CRITERIA SHALL BE REMOVED AND REPLACED BY THE CONTRACTOR AT HIS OWN EXPENSE.
6. ALL LUMBER IN CONTACT WITH CONCRETE THAT IS IN CONTACT WITH THE GROUND, SHALL BE REDWOOD OR APPROVED PRESSURE TREATED WOOD.
7. INDIVIDUAL PIECES OF SHEATHING SHALL NOT BE LESS THAN 2'-0" IN THEIR LEAST PLAN DIMENSION, NOR LESS THAN 8 SQUARE FEET IN AREA.
8. MECHANICAL DUCTS AND EQUIPMENT, SPRINKLER PIPES, SUSPENDED CEILING MAY NOT BE SUPPORTED BY OR CONNECTED TO THE ROOF SUBPURLINS OR ANY 2x4 FRAMING MEMBER.
9. CEILING JOISTS NOT SHOWN ON THE DRAWINGS SHALL BE PER TABLE 2308.10.2 OF THE CBC.
10. PROVIDE DOUBLE JOIST UNDER PARALLEL PARTITION WALLS

NAILING SCHEDULE

1. ALL NAILS SHALL BE COMMON WIRE NAILS. USE THE FOLLOWING SCHEDULE EXCEPT WHERE OTHERWISE DETAILED.
2. JOISTS OR RAFTERS TO ALL BEARING
   TOE NAILS, EACH SIDE: 2-10d
3. STUDS TO BEARING
   TOE NAILS, EACH SIDE: 2-10d
4. BLOCKING BETWEEN 2-10d, OR 2-16d
5. ROOF AND FLOORS SHEATHING (SEE ROOF AND FLOOR PLANS)
6. WALL PLYWOOD (SEE ELEVATIONS).
7. RIBBONS TO STUDS:
   1 INCH RIBBONS 2-8d
   2 INCH RIBBONS 2-16d
8. DOUBLE TOP PLATES (2 INCH NOMINAL THICKNESS):
   LOWER PLATE TO TOP OF STUDS: 2-20d
   UPPER PLATE TO LOWER PLATE (STAGGERED) 16d @ 18"
   UPPER PLATES TO LOWER PLATE AT INTERSECTIONS: 3-16d
9. MULTIPLE STUDS (STAGGER FOR WIDTHS MORE THAN 4 INCHES) 16d @ 18"
10. DOUBLE JOISTS UNDER PARTITIONS:
    WHERE NUT BLOCKED APART (STAGGERED) 16d @ 12"
    WHERE BLOCKED APART -AT EACH BLOCK EACH SIDE: 2-16d
11. UNLESS OTHERWISE SHOWN OR NOTED ALL TWO INCH MATERIAL SHALL BE NAILED WITH 2-16d AT EACH BEARING OR JOINT, AND ALL ONE INCH MATERIAL WITH 2-8d AT EACH BEARING OR JOINT.
12. WHERE POSSIBLE NAILS DRIVEN PERPENDICULAR TO THE GRAIN SHALL BE USED INSTEAD OF TOE NAILS.

NAILING & FASTENERS

1. ALL NAILS SHALL BE COMMON WIRE NAILS, UNLESS NOTED OTHERWISE.
2. NAILING OTHER THAN ROOF OR FLOOR DIAPHRAGM SHOWN ON THE DRAWINGS SHALL BE IN ACCORDANCE WITH THE UNIFORM BUILDING CODE.
3. NAILS FOR ROOF AND FLOOR SHEATHING SHALL BE TWO AND THREE EIGHTHS OF AN INCH (2 3/8") LONG AND SHALL HAVE A MINIMUM OF ONE AND FIVE EIGHTHS OF AN INCH (1 5/8") PENETRATION INTO THE FRAMING MEMBERS.
4. WHERE NAIL SPACING IS REQUIRED TO BE LESS THAN 3" O.C., NAILS SHALL BE STAGGERED.
5. PLACEMENT AND NAILING OF ALL SHEATHING MUST BE INSPECTED AND APPROVED BEFORE COVERING.
6. ADHESIVE ANCHOR BOLTS SHALL BE AS MANUFACTURED BY SIMPSON "SET" ADHESIVE ANCHORS (IN COMPLIANCE WITH ICBO NO. ER 5279 & LARR #25279). UNLESS NOTED OTHERWISE ON THE DRAWINGS, USE MINIMUM 5/8" DIA WITH 5" EMBEDMENT.

PLYWOOD SHEATHING

1. PRODUCT STANDARD PS 1-95, DOUGLAS FIR-LARCH, STRUCT. 1 (OR CDX)

HOLES & BOLTS

1. PROVIDE LEAD HOLE 40%-70% OF THREADED SHANK DIA. AND FULL DIA. FOR SMOOTH SHANK PORTION. (NDS-2015)

SHOT PINS

1. USE FOR PRESSURE TREATED SILL PLATE CONNECTION TO CONCRETE FLOOR SLAB AT (BEARING/NONBEARING) WOOD WALLS - USE 0.145" DIAM HILTI SHOT PINS @ 24" o.c. LARR 22668

PRINTED - SUBMITTAL SET
Tuesday, September 20, 2022 22:31

GENERAL ADDITIONAL NOTES

1. B. MATERIAL SPECIFICATION & INSPECTIONS
   1A. TYPE OF SOIL AND BEARING VALUE PER TABLE 1806.2. => CLASS (5) CLAY, SANDY CLAY, SILT ... (CL,ML, MH, CH) ALOOWABLE VERTICAL FOUNDATION PRESSURE = 1,500 PSF
   1B. USE STANDARD 2500 PSI MIN CONCRETE (FOR GROUP R OR U OF LIGHT-FRAME CONSTRUCTION, TWO STORIES OR LESS IN SDC D, E, OR F) (1808.8.1)
   C. 4000 PSI MIN FOR PRECAST NON-PRESTRESSED DRIVEN PILES, SOCKETED DRILLED SHAFTS, AND MICROPILES. 5000 PSI MIN FOR PRECAST PRESTRESSED DRIVEN PILES.
   D. 3000 PSI MIN. FOR CONCRETE FOUNDATIONS IN SDC D, E, OR F OTHER THAN LISTED ABOVE.
   E. TYPE AND F'M OF MASONRY UNITS. PROPORTIONS OF MORTAR AND GROUT MIXES. - SEE MASONRY NOTES ON THIS PAGE (BUT ONLY WHEN MASONRY USED IN CURRENT PROJECT)
   F. TYPE OF STRUCTURAL STEEL, STRUCTURAL PIPE, TUBING, REINFORCING BARS. - SEE REINFORCING NOTES ON THIS PAGE
   G. GRADE, SPECIES, AND MOISTURE CONTENT OF ALL LUMBER. TYPE AND GRADE OF PLYWOOD SHEETHING. - SEE STRUCTURAL LUMBER NOTES, PLWOOD SHEATHING NOTES ON THIS SHEET
   H. THE SIZE, LA RESEARCH REPORT # AND MANUFACTURER OF THE SHOT PINS. SHOW ON PLANS, THE MAXIMUM SPACING OF THE SHOT PINS IN BEARING/NONBEARING WALLS.
   ADDITIONAL NOTES:
   1. CONTRACTORS RESPONSIBLE FOR THE CONSTRUCTION OF A WIND OR SEISMIC FORCE RESISTING SYSTEM/COMPONENT LISTED IN THE STATEMENT OF SPECIAL INSPECTION SHALL SUBMIT A WRITTEN STATEMENT OF RESPONSIBILITY TO THE LADBS INSPECTORS AND THE OWNER PRIOR TO THE COMMENCEMENT OF WORK ON SUCH SYSTEM OR COMPONENT PER SEC 1704.4.
   2. CONTINUOUS SPECIAL INSPECTION BY A REGISTERED DEPUTY INSPECTOR IS REQUIRED FOR FIELD WELDING, POST-INSTALLED ADHESIVE ANCHORS INSTALLED HORIZONTALLY OR UPWARDLY INCLINED TO RESIST SUSTAINED TENSION LOADS, SHOTCRETE PLACEMENT, CONCRETE STRENGTH F=C > 2500 PSI, SPRAYED-ON FIREPROOFING, ENGINEERED MASONRY, HIGH-LIFT GROUTING, HIGH LOAD DIAPHRAGMS, SPECIAL MOMENT-RESISTING CONCRETE FRAMES, AND HELICAL PILE FOUNDATIONS. (1705 & CHAPTERS 19, 21, AND 22)
   3. FOUNDATION SILLS SHALL BE NATURALLY DURABLE OR PRESERVATIVE-TREATED WOOD. (2304.12.1.4)
   4. FIELD WELDING TO BE DONE BY WELDERS CERTIFIED BY THE LADBS FOR (STRUCTURAL STEEL) (REINFORCING STEEL) (LIGHT GAUGE STEEL). CONTINUOUS INSPECTION BY A DEPUTY INSPECTOR IS REQUIRED.
   5. SHOP WELDS MUST BE PERFORMED IN A LADBS LICENSED FABRICATOR SHOP.
   6. LADBS LICENSED FABRICATOR IS REQUIRED FOR (TRUSSES), (STRUCTURAL STEEL), _________________________.
   7. GLUED-LAMINATED TIMBERS MUST BE FABRICATED IN A LADBS LICENSED SHOP. IDENTIFY GRADE SYMBOL AND LAMINATION SPECIES PER 2015 NDS SUPPLEMENT TABLE 5A. - USE DF/DF "Type 24F-V8" Fb=2400psi - NOT USED IN THIS PROJECT
   8. PROVIDE LEAD HOLE 40% - 70% OF THREADED SHANK DIAMETER AND FULL DIAMETER FOR SMOOTH SHANK PORTION.
   9A. PERIODIC SPECIAL INSPECTION IS REQUIRED FOR WOOD SHEAR WALLS, SHEAR PANELS, AND DIAPHRAGMS, INCLUDING NAILING, BOLTING, ANCHORING, AND OTHER FASTENING TO COMPONENTS OF THE SEISMIC FORCE RESISTING SYSTEM.
   9B. SPECIAL INSPECTION BY A DEPUTY INSPECTOR IS REQUIRED WHERE THE FASTENER SPACING OF THE SHEATHING IS 4 INCHES ON CENTER OR LESS. (1705.12.2)
   10. SPECIAL ACTIVITY INSPECTION IS REQUIRED FOR (BUILDINGS OVER 5 STORIES OR 60' IN HEIGHT) (BUILDINGS OVER 50,000 SQ. FT. OF GROUND FLOOR AREA) - NOT APPLICABLE
   ADDITIONAL NOTES:
   1. IF ADVERSE SOIL CONDITIONS ARE ENCOUNTERED, A SOILS INVESTIGATION REPORT MAY BE REQUIRED. (1803.5.2)
   E. LATERAL LOADS - SEE SHEET SGN-2 FOR DESIGN CRITERIA TABLE WITH GRAVITY & SEISMIC WITH WIND LOADS
   ADDITIONAL NOTES:
   1. HOLD-DOWN CONNECTOR BOLTS INTO WOOD FRAMING REQUIRE APPROVED PLATE WASHERS; AND HOLD-DOWNS SHALL BE FINGER TIGHT AND WRENCH TURNED JUST PRIOR TO COVERING THE WALL FRAMING. CONNECTOR BOLTS INTO WOOD FRAMING REQUIRE STEEL PLATE WASHERS ON THE POST ON THE OPPOSITE SIDE OF THE ANCHORAGE DEVICE. PLATE SIZE SHALL BE A MINIMUM OF 0.299 INCH BY 3 INCHES BY 3 INCHES.
   2. ROOF DIAPHRAGM NAILING TO BE INSPECTED BEFORE COVERING. FACE GRAIN OF PLYWOOD SHALL BE PERPENDICULAR TO SUPPORTS. FLOOR SHALL HAVE TONGUE AND GROOVE OR BLOCKED PANEL EDGES. PLYWOOD SPANS SHALL CONFORM WITH TABLE 2304.8(1).
   3. ALL DIAPHRAGM AND SHEAR WALL NAILING SHALL UTILIZE COMMON NAILS OR GALVANIZED BOX.
   4. ALL BOLT HOLES SHALL BE DRILLED 1/32" TO 1/16" OVERSIZED.
   5. HOLD-DOWN HARDWARE MUST BE SECURED IN PLACE PRIOR TO FOUNDATION INSPECTION.

PLAN CHECK / PERMIT NUMBER:
___-____

ABBREVIATIONS

A.B.	ANCHOR BOLT	LDGR	LEDGER
A.C.	ASPHALT CONCRETE	LG	LONG
A/C	AIR CONDITIONING	LLH	LONG LEG HORIZONTAL
A.C.P.	ASPHALT CONCR. PAVING	LLV	LONG LEG VERTICAL
ADDL	ADDITIONAL	LONGIT	LONGITUDINAL
A.F.F.	ABOVE FINISH FLOOR	L.P.	LOW POINT
ALUM	ALUMINUM	LT	LIGHT
ALT	ALTERNATE	MATL	MATERIAL
ANOD	ANODIZED	MAX	MAXIMUM
ARCHT	ARCHITECTURAL	M.B.	MACHINE BOLT
B.B.	BOTTOM OF BEAM	MECH	MECHANICAL
BET	BETWEEN	MEZZ	MEZZANINE
BLDG	BUILDING	MFD	MANUFACTURED
BLKG	BLOCKING	MFR	MANUFACTURER
BM	BEAM	MIN	MINIMUM
B.N.	BOUNDARY NAILING	MISC	MISCELLANEOUS
BOT	BOTTOM	M.F.O	METAL FRAMED OPENING
B.W.	BOTTOM OF WALL	MLB	MICROLLAM BEAM
C	CHANNEL	M.P.H.	MILES PER HOUR
CANT	CANTILEVER	MTL	METAL
C.G.	CENTER OF GRAVITY	(N)	NEW
CIP	CAST IN PLACE CONCRETE	N.I.C.	NOT IN CONTRACT
C.J.	CEILING JOIST	NO.	NUMBER
C.J.	CONSTRUCTION JOINT	N.S.	NELSON STUD OR NEAR SIDE
CL	CENTER LINE	N.T.S.	NOT TO SCALE
CLG	CEILING	O.C.	ON CENTER
CLR	CLEAR	OFF	OFFICE
C.M.U.	CONCRETE MASONRY UNIT	OPNG	OPENING
COL	COLUMN	OPP HD	OPPOSITE HAND
COMPO	COMPOSITION	O.S.F.	OUTSIDE FACE
		P.A.	POST ABOVE
		P.B.	POST BELOW
		PAD	PAD FOOTING
CONC	CONCRETE	P.C.	PILE COLUMN
CONN	CONNECTION	PEN	PENETRATION
CONT	CONTINUOUS	PL	PLATE OF PROPERTY LINE
CONST	CONSTRUCTION	PILAS	PILASTER
CORR	CORRIDOR	PLYWD	PLYWOOD
CTR	CENTER	PSF	POUNDS PER SQUARE FOOT
DBL	DOUBLE	PSI	POUNDS PER SQUARE INCH
DET	DETAIL	P.T.	PRESURE TREATED
DF	DOUGLAS FIR	R.D.	ROOF DRAIN
DIAG	DIAGONAL	REBAR	REINFORCING BAR
DIAPH	DIAPHRAGM	R.B.	ROOF BEAM
DIA	DIAMETER	REQD	REQUIRED
DIM	DIMENSION	REINF	REINFORCING
DN	DOWN	REF	REFERENCE
DP	DEEP	REV	REVISION
D.S.	DOWNSPOUT	R.R.	ROOF RAFTERS/JOISTS
DWGS	DRAWINGS	RM	ROOM
(E)	EXISTING	R.O.	ROUGH OPENING
		S.A.	SHEAR ANCHOR BOLT
EA	EACH	SCH	SCHEDULE
E.F.	EACH FACE	SEC	SECTION
ELEC	ELECTRICAL	SHTG	SHEATHING
ELEV	ELEVATION	SHT	SHEET
EMBED	EMBEDMENT, EMBEDDED	SIM	SIMILAR
E.N.	EDGE NAILING	S.J.	SAWCUT JOINT
EQ	EQUAL	S.P.	SPLICE POINT
E.S.	EACH SIDE	SPA	SPACING
E.W.	EACH WAY	SPECS	SPECIFICATIONS
EXIST	EXISTING	SQ	SQUARE
EXP	EXPANSION	STAGG	STAGGERED
EXT	EXTERIOR	STD	STANDARD
F.B. FB	FLOOR BEAM		
F.D.	FLOOR DRAIN	STIFF	STIFFENER
FDN	FOUNDATION	STL	STEEL
F.F.	FINISH FLOOR	S.S.	SELECT STRUCTURAL
F.G.	FINISH GRADE	STRUCT	STRUCTURAL
FIN	FINISH	SYM	SYMMETRICAL
		T.A.	TENSION ANCHOR BOLT
F.J. FJ	FLOOR JOIST	T & B	TOP & BOTTOM
FLG	FLANGE	T & G	TONGUE & GROVE
FLR	FLOOR	TEMP.	TEMPERED
F.O.C.	FACE OF CONCRETE	T.F.	TOP OF FOOTING
F.O.M.	FACE OF MASONRY	T.B.	TOP OF BEAM
F.O.S.	FACE OF STUD	TG	TAPERED GIRDER
F.N.	FIELD NAILING	T.G.	TOP OF GIRDER
F.S.	FAR SIDE	THK	THICK
F.T.	FEET OR FOOT	THRU	THROUGH
FTG	FOOTING	T.L.	TOP OF LEDGER
F.V.	FIELD VERIFY	T.N.	TOP OF NAILER
GALV	GALVANIZED	T.O.	TOP OF
GA	GAUGE	T.O.P.	TOP OF PARAPET
G.I.	GALVANIZED IRON	T.O.P.	TOP OF PANEL
GLB	GLU-LAM BEAM	T.O.S.	TOP OF STEEL
GYP BD	GYPSUM BOARD	TOT	TOTAL
"HUS" "U"	HANGER / SIMPSON		
HDR	HEADER	TRANSV	TRANSVERSE
HGR	HANGER	TRANSF	TRANSFER
HK.	HOOK	TS	TUBE STEEL
HORIZ.	HORIZONTAL	T.S.	TOP OF SLAB
H.P.	HIGH POINT	T.W.	TOP OF WALL
HT	HEIGHT	TYP	TYPICAL
H.S.	HIGH STRENGTH	U.N.O.	UNLESS NOTED OTHERWISE
HLDW	HOLDOWN (SEE T.A.)	UNDERP	UNDERPINNED FOOTING
HVAC	HEATING, VENTILATING	VERT	VERTICAL
HVAC	& AIR CONDITIONING	V.I.F.	VERIFY IN FIELD
IN	INCH	W/	WITH
INFO	INFORMATION	WD	WOOD
INT	INTERIOR	W	WIDE FLANGE
J.B.	JOIST BEARING	W/O	WITHOUT
J.G.	JOIST GIRDER	W.P.	WORK POINT
JST	JOIST	W.R.	WATER RESISTANT
JT	JOINT	WT	WEIGHT
K.P.	KING POST		
K.O.	KNOCK OUT	W.W.F.	WELDED WIRE FABRIC
L	ANGLE	X	EXTRA STRONG
LAT	LATERAL	XX	DOUBLE EXTRA STRONG

REVISIONS
No. | Date | Approved | Notes

ISSUES
No. | Date | Approved | Notes

DRAWING TITLE

CLIENT NAME, PHONE, EMAIL - PROJECT ADDRESS
TRIPLE SKY RANCH
New 1-story Unit
82800 58th Ave.
Thermal, CA 92274

DRAWING TYPE
Structural General Notes

DESIGN FIRM STRUCTURAL ENGINEERING SERVICES

Ashot Shagirian, P.E.
Address: 11337 Runnymede St.
Sun Valley, CA 91352-4745
Tel: (818) 731-4051
e-mail: ashot@mac.com
website: ashot.me

ashot.me

REGISTERED PROFESSIONAL ENGINEER
ASHOT SHAGIRIAN
No. 79415
Exp. March 31, 2024
CIVIL
STATE OF CALIFORNIA

DRAWN BY: Ash
DATE CREATED: Sep 07, 2022
DATE MODIFIED:
SCALE: N.A.
JOB NO: 2022-57
DRAWING NUMBER:

SGN-1

Tuesday, September 20, 2022 22:31:37 : plot date
2022-57 VW.vwx : CAD file name

BUILDING & SAFETY DIVISION
4080 Lemon Street
Riverside, CA 92501
Phone: 951-955-1800

Sam Shahrouri
Deputy Director of TLMA Building Official

STRUCTURAL OBSERVATION REPORT FORM

STRUCTURAL OBSERVATION means the visual observation of the structural system, for general conformance to the approved plans and specifications, at significant construction stages and at completion of the structural system. Structural observation does not include or waive the responsibility for the inspections required by Section 110, 1701 or other sections of the Building Code.

Project Address:		Structural Observer of Record (SOR):	SOR Phone No.:
82800 58th Ave Thermal CA 92274		Ashot Shagirian	(818) 731-4051
Building Permit No.:	Structural Observation performed by:	Observer Professional Lic./Reg. No.: C-79415	Observer Phone No.:

Report No. _____ Page No. _____ of _____

This report includes all construction work through _____ (DAY) of _____ (MONTH), 20

OBSERVED STRUCTURAL ELEMENTS AND THEIR CONNECTIONS

FOUNDATION	WALL	FRAMES	FLOOR	PORTION OBSERVED, IF NOT WHOLE
☒ Footing, Stem Walls	☐ Concrete	☐ Steel Moment Frame	☐ Concrete	
☐ Mat Foundation	☐ Masonry	☐ Steel Braced Frame	☐ Steel Deck	
☒ ~~Caisson, Piles,~~ Grade Beams	☐ Wood	☐ Concrete Moment Frame	☐ Wood	
☐ Retaining Foundation, Hillside Special Anchors	☒ Other	☐ Masonry Wall Frame	☒ Others:	
☒ Others: Holdowns	Shearwalls	☐ Others:	Roof Sheathing	

OBSERVED DEFICIENCIES: _____

I DECLARE THAT THE FOLLOWING STATEMENTS ARE TRUE TO THE BEST OF MY KNOWLEDGE:

1. I AM THE ENGINEER OR ARCHITECT RETAINED BY THE OWNER TO BE IN RESPONSIBLE CHARGE FOR THE STRUCTURAL OBSERVATION IN ACCORDANCE WITH THE REQUIREMENTS OF THE COUNTY OF RIVERSIDE.
2. I, OR ANOTHER ENGINEER OR ARCHITECT WHO I HAVE DESIGNATED ABOVE AND IS UNDER MY RESPONSIBLE CHARGE, HAS PERFORMED THE REQUIRED SITE VISITS AT EACH SIGNIFICANT CONSTRUCTION STAGE TO VERIFY IF THE STRUCTURE IS IN GENERAL CONFORMANCE WITH APPROVED PLANS AND SPECIFICATIONS;
3. ALL DEFICIENCIES WHICH REMAIN TO BE CORRECTED HAVE BEEN INDICATED ABOVE;
4. RECOMMEND THAT ACCEPTANCE OF THE STRUCTURAL SYSTEMS BY THE COUNTY OF RIVERSIDE BE WITHHELD UNTIL ALL OBSERVED DEFICIENCIES ARE CORRECTED.

STAMP OF STRUCTURAL OBSERVER OF RECORD

SIGNATURE (OBSERVER OF RECORD) DATE

284-028 (Rev. 07/2021)

STRUCTURAL OBSERVATION/ SIGNIFICANT CONSTRUCTION STAGES

(Only Checked items are required)

New 1-story Typical Residential Unit 82800 58th Ave Thermal CA 92274

Architect or Engineer of Record for the project to be responsible for the "Structural Observation":

Name: Ashot Shagirian ☐ Licensed Architect ☒ Registered Engineer

Phone: (818) 731-4051 California Registration Number: C-79415

CONSTRUCTION STAGE	CONSTRUCTION TYPE	ELEMENTS/CONNECTIONS TO BE OBSERVED
Foundation	☒ Footing, Stem Walls, Piers	Foundation, Size & Rebars
	☐ Mat Foundation	
	☒ Caisson, Pile, Grade Beams	Structural Slab & Grade Beams, Size & Rebars
	☐ Stepping/Retaining Foundation	
	☐ Special Anchors	
	☒ Others:	Holdowns
Wall	☐ Concrete	
	☐ Masonry	
	☒ Wood	Shearwalls
	☐ Others	
Frame	☐ Steel Moment Frame	
	☐ Steel Braced FrameShearwalls	
	☐ Concrete Moment Frame	
	☐ Masonry Moment Frame	
	☐ Others	
Diaphragm	☐ Concrete	
	☐ Steel Deck	
	☒ Wood	Roof Sheathing
	☐ Others	
Others		

DECLARATION BY OWNER OR OWNER'S REPRESENTATIVE

I, ☐ the owner of the project ☐ the owner's representative, declare that the above listed firm or individual is hired by me to be the Structural Observer.

Signature Date

SEISMIC DESIGN CRITERIA for Bldg Roof DL=22 psf LL=20 psf Trellis DL=12psf LL=10psf

a	SEISMIC IPMOPTANCE FACTOR RISK CATEGORY	I = 1.0 RC-II
b	MAPPED SPECTRAL RESPONSE ACCELERATIONS	S_S = 1.500 g S_1 = 0.600 g
c	SITE CLASS: **(Per soil report)**	'D' (Stiff soil)
d	SPECTRAL RESPONSE COEFFICIENTS	S_{ds} = 1.000 g S_{d1} = 0.680 g
e	SEISMIC DESIGN CATEGORY	SDC = 'D' (when S_1<0.75)
f	BASIC SEISMIC-FORCE-RESISTING SYSTEM(S)	Lightframe Shearwalls - Bldg Cantilevered System - Trellis
g	DESIGN BASE SHEAR.(ASD with ρ =1.3) BLDG | Trellis Total BLDG Roof | Trellis Weight @ 100%g	V = 12.9 kips | 0.467 kips max W= 92 kips | 1.025 kips
h	SEISMIC RESPONSE COEFFICIENT (for LRDF w/ ρ = 1.0) for BLDG used ASD with ρ =1.3 for Trellis ASD with ρ=1.3	Cs =0.1538 Bldg | 0.66 Cant Cs =0.1430 Bldg | 0.91 Cant
i	REPONSE MODIFICATION FACTOR	R = 6.5 for Shearwalls R = 1 for knee brace
j	ANALYSIS PROCEDURE USED	Equivalent Lateral Force Analysis Sec 12.8
k	REDUNDANCY FACTOR USED Bldg | Trellis	ρ = 1.3 | ρ = 1.3
l	THE DESIGN LOAD BEARING OF SOILS (Per soil report)	2,500 psf PAD | 2,000 Cont
m	SYSTEM OVERSTRENGTH FACTOR: Bldg | Trellis	Ω = 2.5 | 1.0
n	DEFLECTION AMPLIFICATION: Bldg | Trellis	Cd = 4.0 | 1.0

WIND LOAD CRITERIA
ASCE 7-16 and IBC 2015

1a	BASIC WIND SPEED	v = 110 mph
1b	OCCUPANCY CATEGORY	OC-II
2		
3a	EXPOSURE CATEGORY	B
3b	TOPOGRAPHIC FACTOR	Kzt = 1
4a 4b	MINIMUM DESIGN PRESSURE APPLICABLE INTERNAL PRESSURE COEFFICIENT	10 psf ± 0.18
5	VELOCITY PRESSURE – for Walls; for wall Parapets C/C & Parapet	18.55; 24.64 psf -30.73 psf

FOUNDATIONS

1. THE CONTRACTOR SHALL ESTABLISH ALL BUILDING LINES AND PROCEED WITH THE EXCAVATION OF ALL FOOTINGS AS CALLED FOR ON THE DRAWINGS.
2. THIS SET OF STRUCTURAL PLANS USES GRADE BEAM FOUNDATION DESIGN SYSTEM AS DESCRIBED BY ITEM 7.8 from GEOTECHNICAL SOIL REPORT PREPARED BY GEOCON WEST, INC. No. T2990-22-01 July 22, 2022
3. NO REINFORCING STEEL AND NO CONCRETE SHALL BE PLACED IN ANY EXCAVATION PRIOR TO APPROVAL BY THE BUILDING DEPARTMENT.
4. THE TOP OF ALL EXCAVATIONS SHALL BE PROTECTED AGAINST HEAVY SURCHARGE LOADS AND FROM EROSION DUE TO RAINFALL OR SURFACE RUN-OFF DURING THE ENTIRE CONSTRUCTION PERIOD.

NOTES: BY GEOTECHNICAL ENGINEER:
by GEOCON WEST, Inc. Project No. T2990-22-01 Dated July 22, 2022

1. FOUNDATION EXCAVATION MUST BE INSPECTED AND APPROVED IN WRITING BY THE GEOTECHNICAL CONSULTANT PRIOR TO PLACING OF REINFORCING STEEL AND/OR CONCRETE.
2. THE APPROVED SET OF THE BUILDING PLANS BEARING THE GEOLOGIST ENGINEER SIGNATURE SHOULD BE ON THE SITE AT ALL TIMES DURING THE GEOLOGIST INSPECTIONS. INSPECTIONS WILL NOT BE GRANTED UNLESS AN APPROVED SET OF PLANS BEARING THE GEOLOGIST ENGINEER SIGNATURE IS AVAILABLE FOR CONSULTATION.

SOIL REPORT PROVIDED:
THE ORIGINAL REPORT IS BY GEOLOGIST DATED JULY 22, 2022

EXCERPT FROM GEOLOGIST ORIGINAL REPORT DATA:
REPORT NO. T-2990-22-01
FOR RESIDENTIAL DEVELOPMENT PLANNED FOR 4.25 ACRES LOCATED NORTH OF AVENUE 58 AND EAST OASIS STREET IN THERMAL AREA OF RIVERSIDE COUNTY, CALIFORNIA.
BY GEOCON WEST, INC.
TEL: (760) 565-2002 FAX: (951) 304-2392
78-086 MAIN STREET, G-203 LAQUINTA, CA 92253
ORIGINAL REPORT PREPARED FOR RANCHO POLO LLC EQUESTRIAN CLUB

1)
ALLOWABLE SOIL BEARING PRESSURE:
ISOLATED PAD FOOTINGS: 2,500 PSF WITH MAX 3,000 PSF
CONTINIOUS FOOTINGS: 2,000 PSF WITH MAX 3,000 PSF

2)
FOR GEOGRID REINFORCED ENGINEERED FILL FOR FOUNDATION BEARING USE MODULUS OF SUBGRADE REACTION OF 200 PCI

3)
SOIL FRICTION 0.35 BETWEEN CONCRETE SLAB AND SUBGRADE SOIL WITHOUT MOISTURE BARRIER
SOIL FRICTION 0.15 BETWEEN CONCRETE SLAB AND SUBGRADE SOIL WITH MOISTURE BARRIER

4)
SLAB-ON-GRADE: MINIMUM 4" THICK CONCRETE WITH #3@18" o.c. EACH WAY AT CENTER CONCRETE ON TOP OF 15 MIL EXTRUDED POLYOLEFIN PLASTIC, OVER 95% COMACTED SUBGRADE

PLEASE **REFER TO** SOIL REPORT DATED JULY 22, 2022 TO READ ABOUT:

SECTION **4** PAGE 3 FOR GEOLOGICAL MATERIALS

SECTION **7.2** PAGE 15 EXCAVATION & SHORING

SECTION **7.4** PAGE 16 FOR GRADING

SECTION **7.8** PAGE 23 FOR **GRADE BEAM FOUNDATION DFESIGN**

SECTION **7.10** PAGE 25 FOR MISCELLANEOUS FOUNDATIONS

SECTION **7.12** PAGE 26 FOR SLABS-ON-GRADE

SECTION **7.14** PAGE 29 FOR RETAINING WALLS

SECTION **7.16** PAGE 31 FOR TEMPRARY EXCAVATIONS

SECTION **7.18** PAGE 33 FOR SURFACE DRAINAGE

PLAN CHECK / PERMIT NUMBER:
—-—

REVISIONS
No. | Date | Approved | Notes

ISSUES
No. | Date | Approved | Notes

DRAWING TITLE

CLIENT NAME, PHONE, EMAIL - PROJECT ADDRESS
TRIPLE SKY RANCH
82800 58th Ave.
Thermal, CA 92274
New 1-story Unit
DRAWING TYPE
Structural General Notes

DESIGN FIRM
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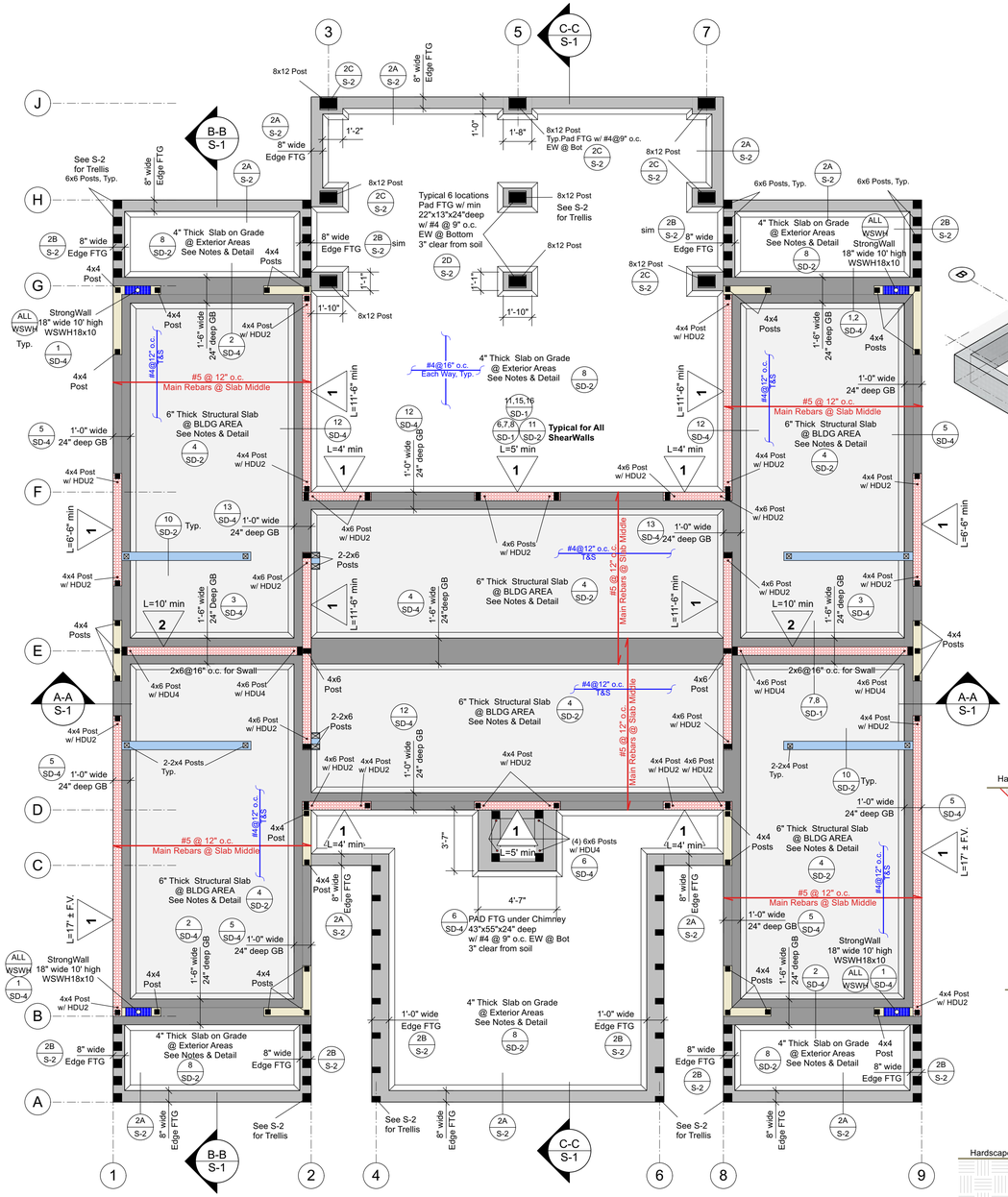
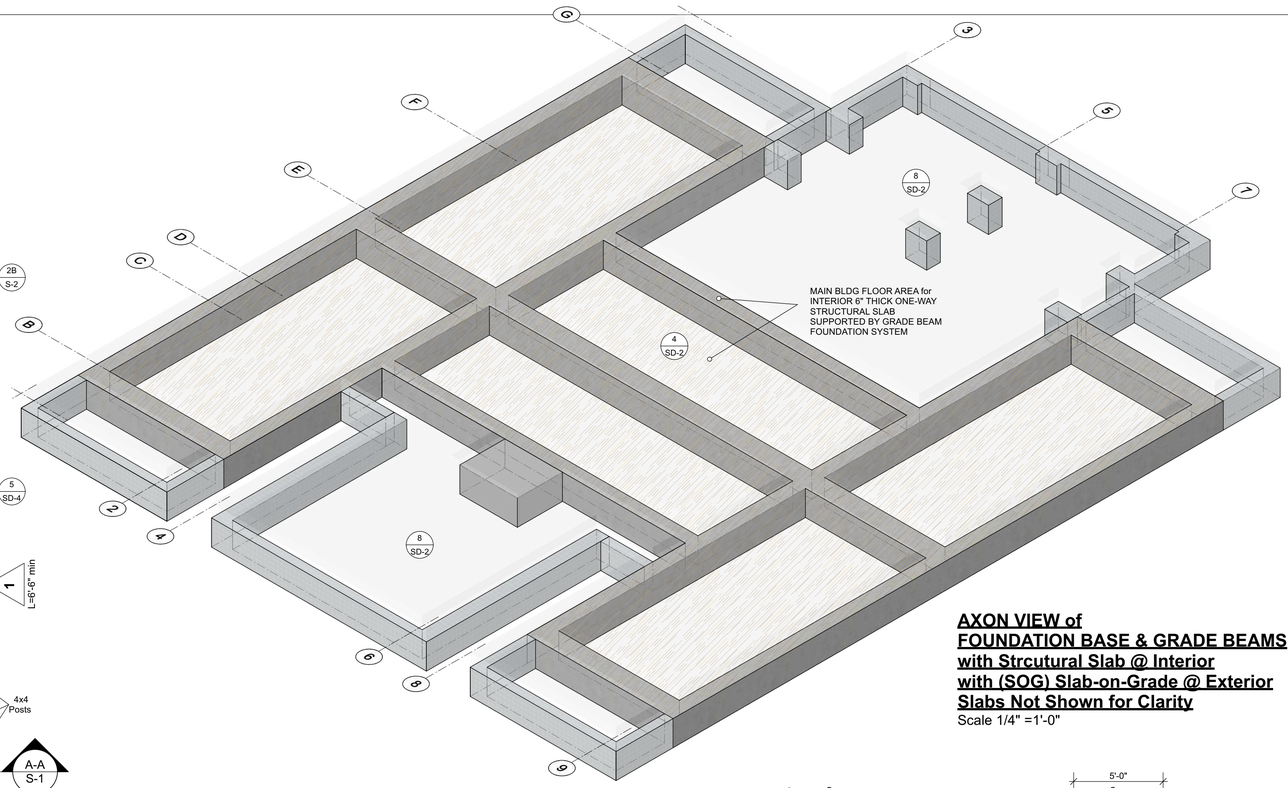
REGISTERED PROFESSIONAL ENGINEER
ASHOT SHAGIRIAN
No. 79415
Exp. March 31, 2024
CIVIL
STATE OF CALIFORNIA

DRAWN BY: Ash
DATE CREATED: Sep 07, 2022
DATE MODIFIED:
SCALE: N.A.
JOB NO: 2022-57
DRAWING NUMBER:
SGN-2
2 OF 12
TOTAL SHEETS

Tuesday, September 20, 2022 22:31:37 : plot date
2022-57 VW.vwx : CAD file name





AXON VIEW of FOUNDATION BASE & GRADE BEAMS with Strcutural Slab @ Interior with (SOG) Slab-on-Grade @ Exterior Slabs Not Shown for Clarity

Scale 1/4" =1'-0"

FOUNDATION PLAN W/ BLDG F.F. EL=0.0 with FLOOR WALLS & EXTERIOR POSTS

Scale 1/4" =1'-0"

FOUNDATION GENERAL NOTES:

FOR CONCRETE and REBAR SPECS SEE GENERAL NOTES SHEET SGN-1
FOR REBARS SPLICE AND DEVELOPMETS SEE DETAIL 10 on SD-3
FOR REBARS HOOKS AND CONCRETE COVER SEE DETAIL 11 on SD-3
FOR SIZE OF WALL STUDS SEE NOTES ON SHEET S-3

1. For all dimensioning refer to architectural plans. Contractor to verify rough openings for windows and doors.
2. Refer to sheet SGN-1 for General Notes and SD-1 SD-2 for Typical Details at Foundation level.
3. Holdowns for 1st floor shear walls are shown on foundation plan.
4. Install 5/8Ø A.B.X12" Long with 9" Embedment at 4'-0"o.c. Typical, U.N.O. on plans and Shear Wall Schedule on sheet S-1 Holdowns should not be counted as anchor bolts.
5. All holdowns in concrete shall be set in place by template prior to foundation inspection and holdowns shall be re-tightened just prior to covering the wall framing.
6. All New sill plates at foundations shall be 2x P.T. wood at Shearwall Type "1" and 3x P.T. wood for Swall Types "2" and above.
7. Provide corrosion resistant weep screed below stucco at or below sill plate line, at a height = 4" minimum above grade. See SD-sheet details.

NOTE FOR STRUCTURAL SLAB
1. CONCRETE STRUCTURAL SLAB IS 6" THICK SUPPORTED BY GRADE BEAMS.
2. STRUCTURAL SLAB COVERS ALL INTERIOR FLOOR AREAS AND THUS NEEDS MOISTURE BARRIER UNDERNEATH. **SEE DETAIL 4/SD-2**
3. CONCRETE SLAB-ON-GRADE IS ONLY 4" THICK SUPPORTED BY REGULAR FOUNDATION & CONNECTED TO GRADE BEAMS AT LINE OF CONTACTS.
4. SLAB-ON-GRADE COVERS ALL EXTERIOR FLOOR AREAS AND DOES NOT NEED MOISTURE BARRUER UNDERNEATH. **SEE DETAIL 8/SD-2**

NOTE FOR SIMPSON STRONG WALLS:
1. CONTRACTOR TO VERIFY ACTUAL CLEAR HEIGHT BEFORE ORDERING STRONGWALLS.
2. STRONG WALLS for this project DESIGNED FOR 10 FT HIGH. DO NOT TRIM STRONG WALLS in this project.
3. STRONG WALLS MUST BE BASED DIRECTLY ON CONCRETE, FOLLOW ALL INSTRUCTIONS ON SIMPSON STANDARD SHEETS WSWH-1, WSWH-1.1, WSWH-2 with Details

NOTES from GEOTECHNICAL CONSULTANT:
GEOCON WEST, Inc. Project No. T2990-22-01 Dated July 22, 2022

1. THIS FOUNDATION PLAN S-1 UTILIZES GRADE BEAM FOUNDATION SYSTEM RECOMMENDED BY **SECTION 7.8 & Figure 6** (pages 27 & 46) from GEOTECHNICAL SOIL FREPORT PREPARED BY GEOCON WEST, Inc.
2. DESIGNED GRADE BEAMS & STRUCTURAL SLAB FORM STIFF FOUNDATION SYSTEM REDUCING DIFFERENTIAL SETTLEMENTS.
3. GRADE BEAMS & STRUCTURAL SLAB SHOULD BE POURED MONOLITHICALLY. WHEREVER POSSIBLE AVOID COLD JOINTS TO FORM BETWEEN GRADE BEAMS AND SLAB DURING THE CONSTRUCTION.
4. CONTINIOUS GRADE BEAM DESIGNED FOR ALLOWABLE BEARING SOIL CAPACITY 2000 psf.
5. ISOLATED PAD FOOTING DESIGNED FOR SOIL CAPACITY 2500 psf.
6. FOUNDATION SYSTEM SHOULD BE UNDERLAIN BY A MINIMUM **2-FOOT-THICK** BLANKET OF GEOGRID REINFORCED EBGINEERED FILL - **SEE SECTIONS "A-A", "B-B", "C-C".**
7. SOIL REPORT'S OTHER RECOMMENDED ALTERNATIVE FOUNDATION SYSTEMS SUCH AS MAT FOUNDATION AND POST TENSIONED FOUNDATION ARE LESS FEASIBLE AND NOT USED IN THIS PROJECT.

NOTES (Typical for all Slab to FTG Base Intersection):

"L" SHAPE DOWELS @ MIDDLE OF SLAB

EXTEND FROM 4" SLAB On GRADE
#4 @ 16" o.c. with h/v = 24" x 24"

EXTEND FROM 6" STRUCTURAL SLAB
#4 @ 12" o.c. with h/v = 24" x 24"

PLAN CHECK / PERMIT NUMBER:
___-___

REVISIONS			
No.	Date	Approved	Notes
ISSUES			
No.	Date	Approved	Notes

DRAWING TITLE

CLIENT NAME, PHONE, EMAIL - PROJECT ADDRESS
TRIPLE SKY RANCH
82800 58th Ave.
Thermal, CA 92274

DRAWING TYPE
Foundation Plan

DESIGN FIRM
STRUCTURAL ENGINEERING SERVICES
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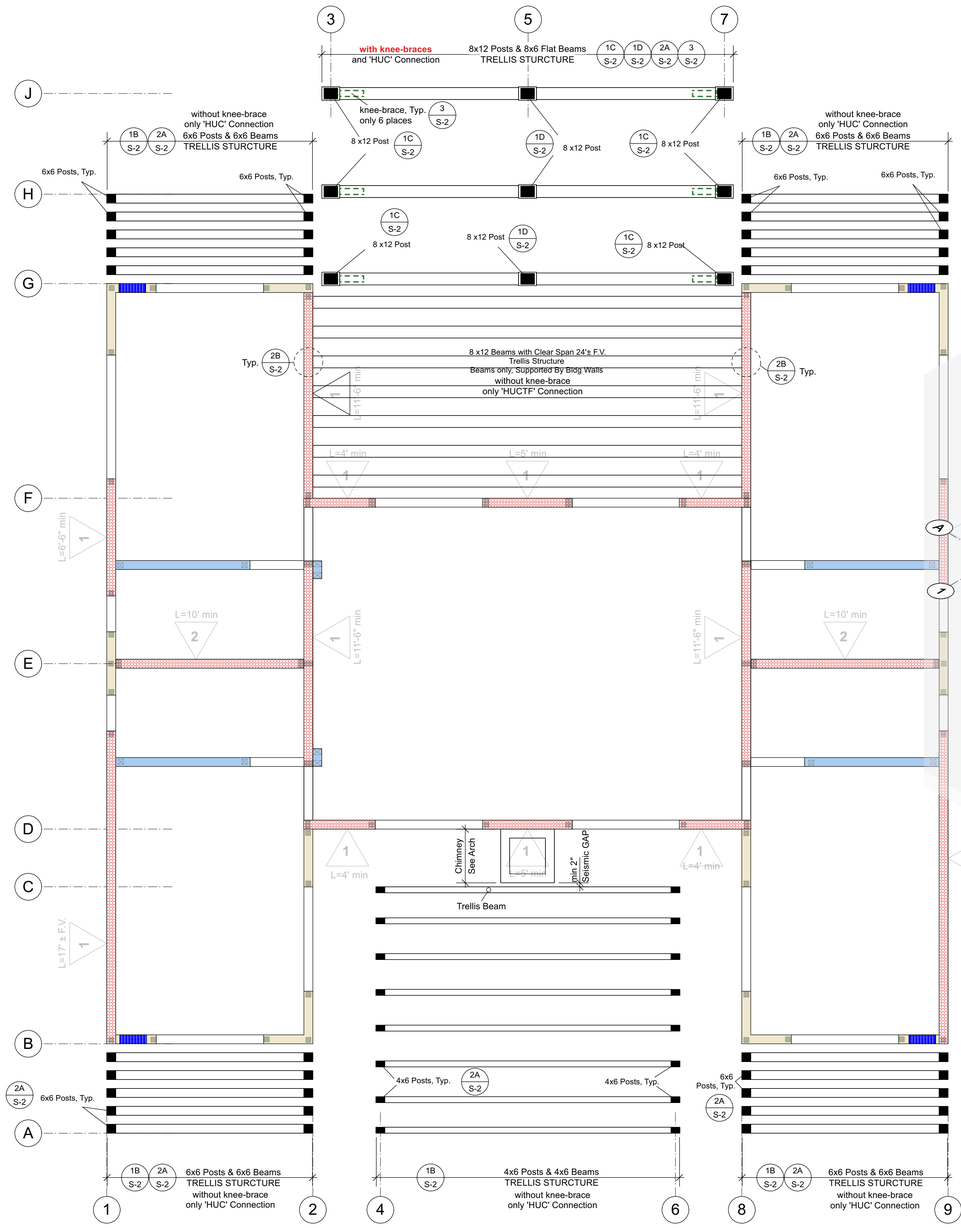
REGISTERED PROFESSIONAL ENGINEER ASHOT SHAGIRIAN No. 79415 Exp. March 31, 2024 CIVIL STATE OF CALIFORNIA

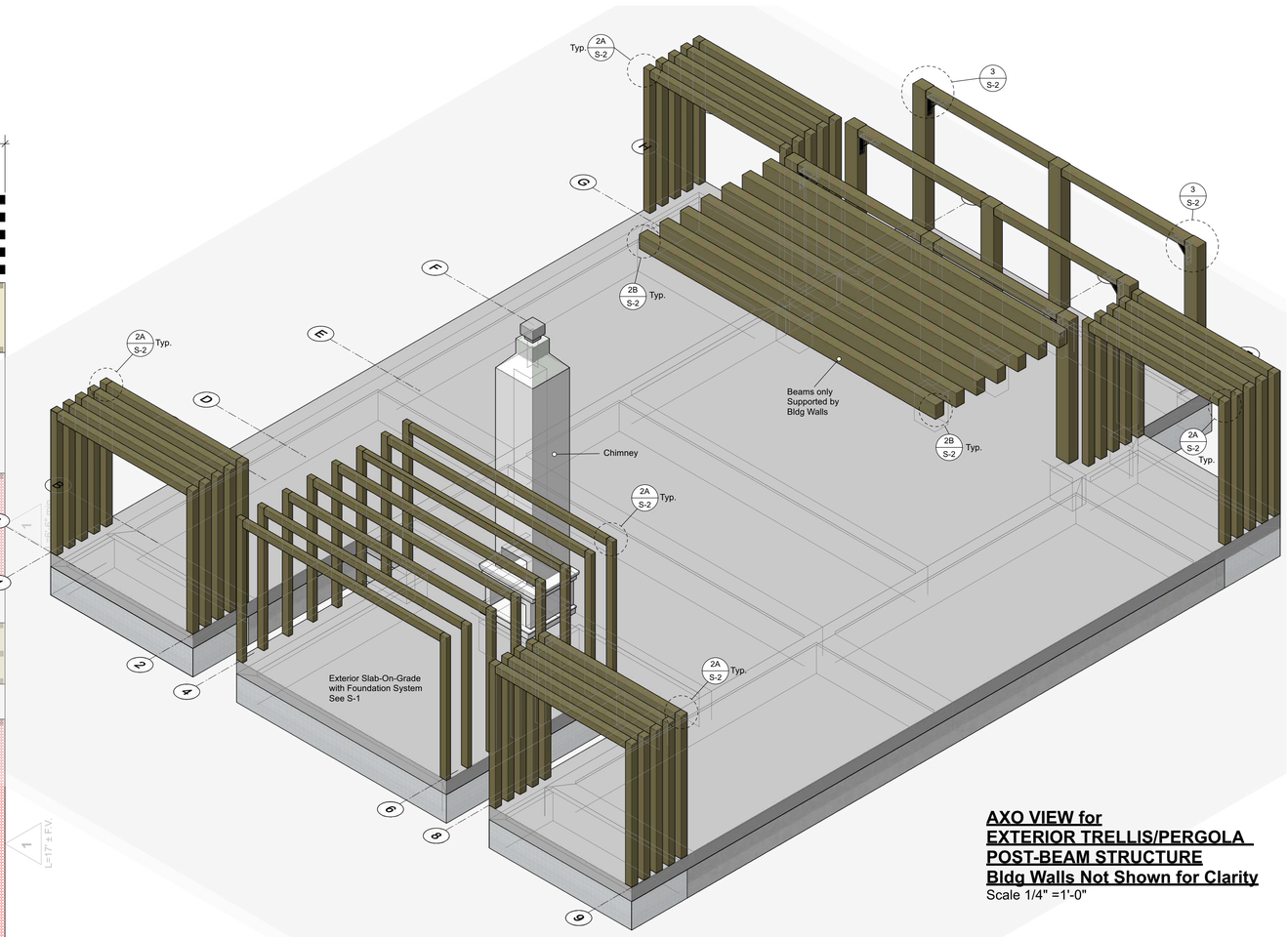
DRAWN BY:	Ash
DATE CREATED:	Sep 07, 2022
DATE MODIFIED:	
SCALE:	1/4"=1'-0"
JOB NO:	2022-57
DRAWING NUMBER:	S-1
	3 OF 12 TOTAL SHEETS

Tuesday, September 20, 2022 22:31:37 : plot date
2022-57 VW.vwx : CAD file name



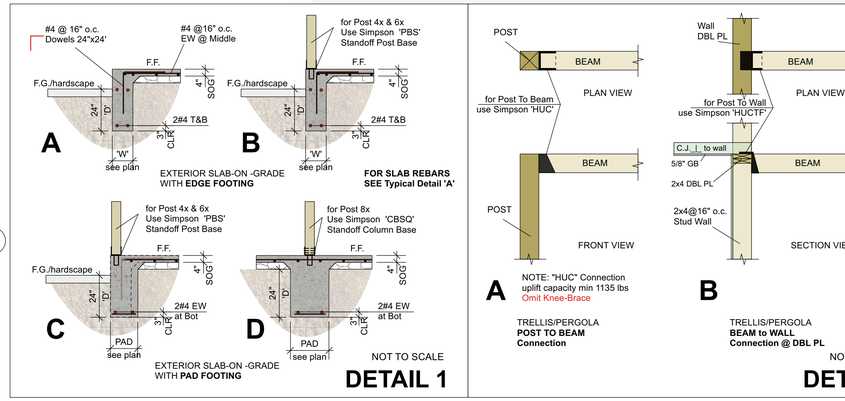
EXTERIOR TRELLIS/PERGOLA POST-BEAM STRUCTURE with FLOOR WALLS LAYOUT

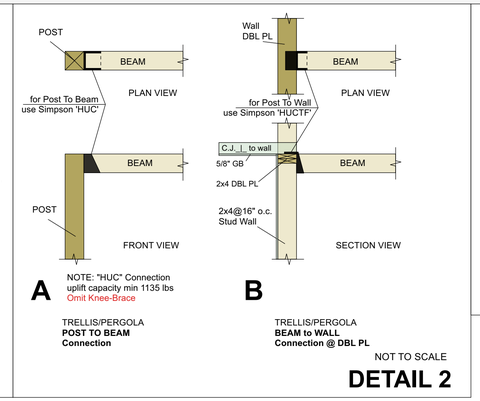
Scale 1/4" =1'-0"

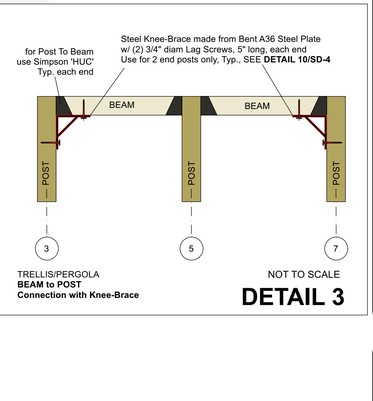


AXO VIEW for EXTERIOR TRELLIS/PERGOLA POST-BEAM STRUCTURE Bldg Walls Not Shown for Clarity

Scale 1/4" =1'-0"







NOTES:
1. FOR FINAL FINISH OF WOOD, OVERALL LENGTH, SPAN & DIMESIONS SEE ARCHITECTIURAL DRAWINGS (ALWAYS GOVERN)
2. USE WOOD GRADE MINIMUM DOUGLAS FIR-LARCH GRADE #1
3. WOOD MEMBER SECTION SIZES ARE CALLED-OUT ON THIS FRAMING PLAN.
4. FOR FOUNDATION PLAN SEE SHEET S-1
5. MAINTAIN AT LEAST 2" STRUCTURAL GAP BETWEEN FACE OF CHIMNEY AND FACE OF TRELLIS BEAMS.

PLAN CHECK / PERMIT NUMBER:
—-—

REVISIONS
No. | Date | Approved | Notes

ISSUES
No. | Date | Approved | Notes

DRAWING TITLE

CLIENT NAME, PHONE, EMAIL - PROJECT ADDRESS
TRIPLE SKY RANCH
82800 58th Ave.
Thermal, CA 92274
New 1-story Unit

DRAWING TYPE
Trellis Framing Plan

DESIGN FIRM STRUCTURAL ENGINEERING SERVICES
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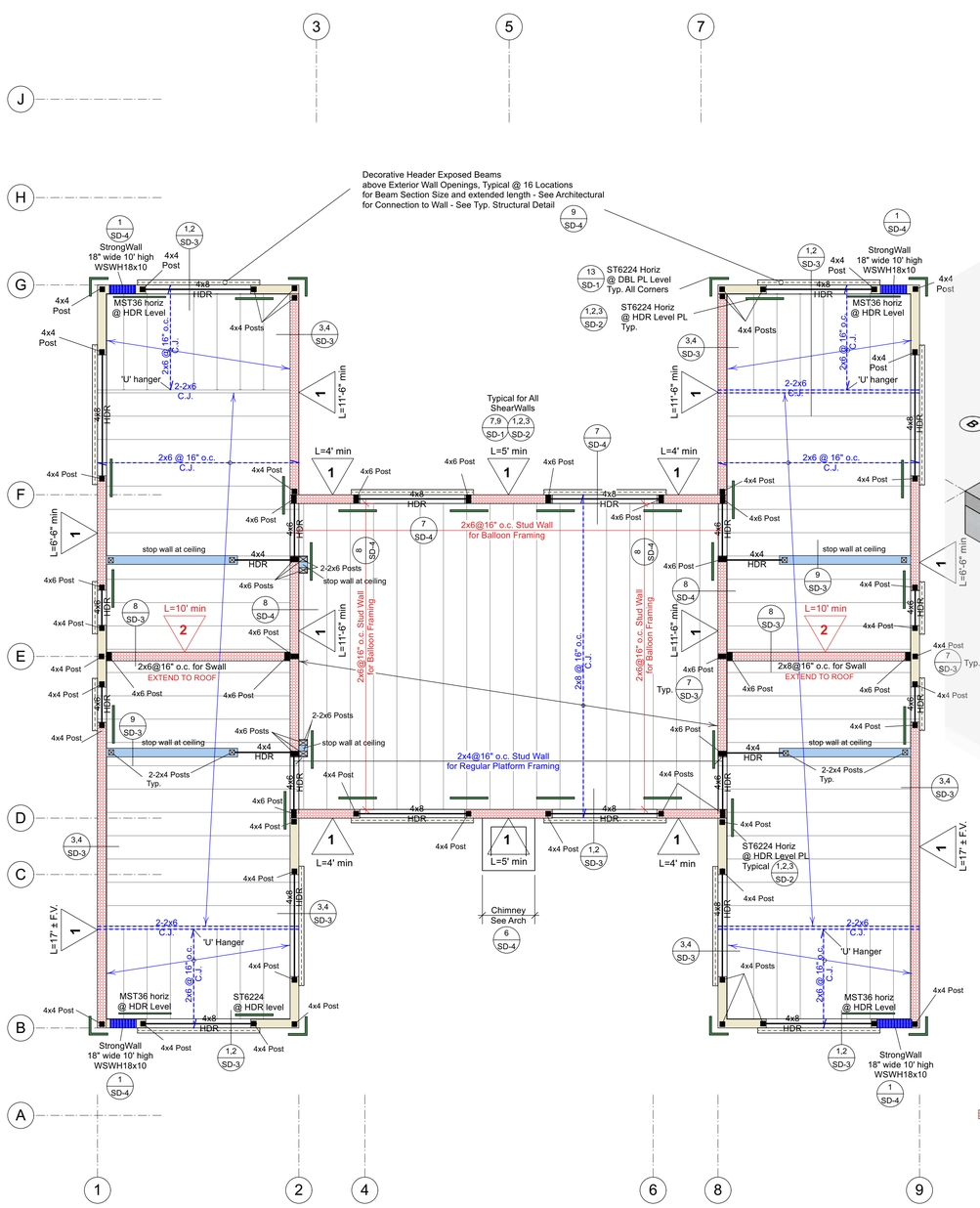
REGISTERED PROFESSIONAL ENGINEER
ASHOT SHAGIRIAN
No. 79415
Exp. March 31, 2024
STATE OF CALIFORNIA
CIVIL

DRAWN BY: Ash
DATE CREATED: Sep 09, 2022
DATE MODIFIED:
SCALE: 1/4"=1'-0"
JOB NO: 2022-57
DRAWING NUMBER:

S-2

4 OF 12
TOTAL SHEETS

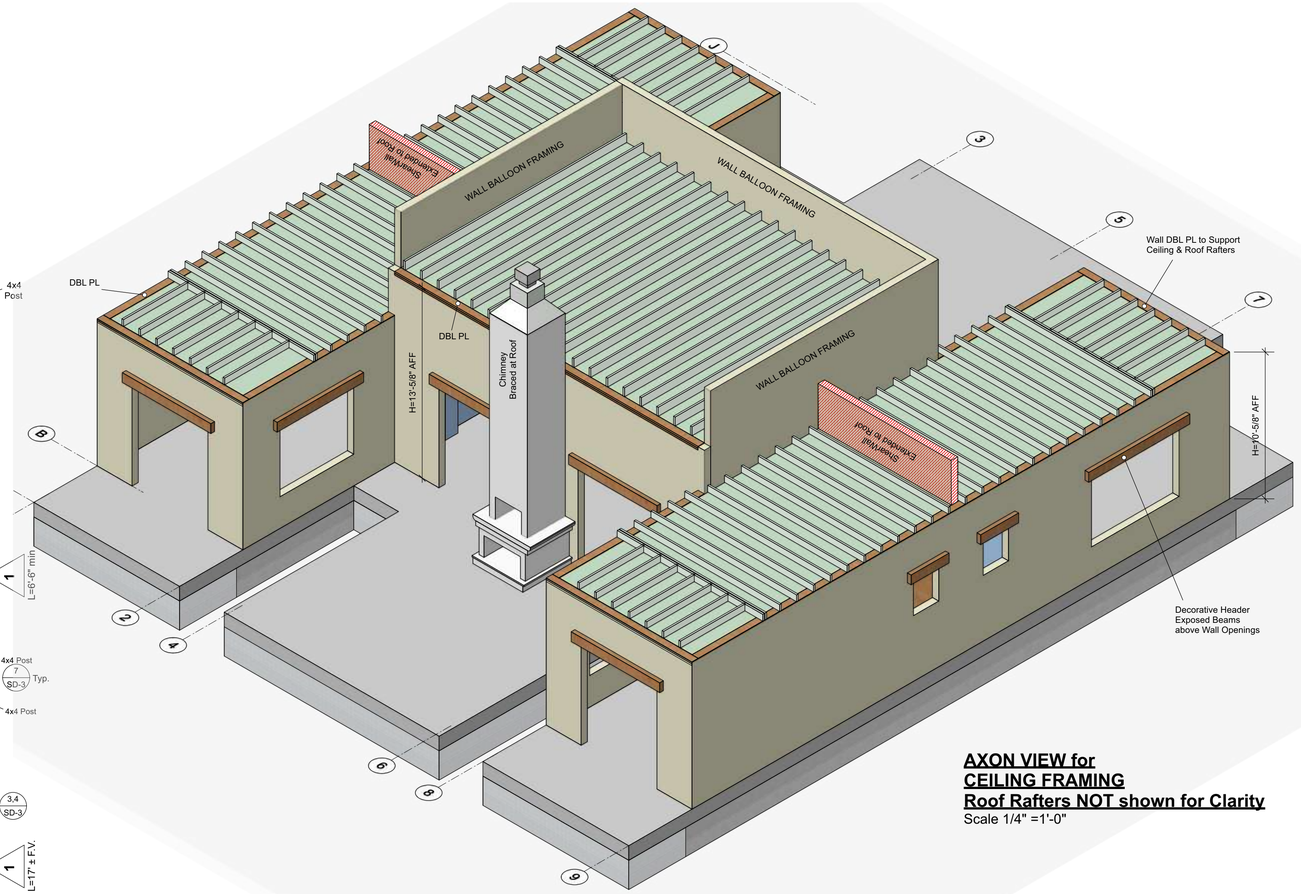
Tuesday, September 20, 2022 22:31:37 : plot date
2022-57 VW.vwx : CAD file name



CEILING FRAMING PLAN
Scale 1/4" =1'-0"

NOTES:

1. FOR ROOF RAFTERS SEE S-4
2. FOR ROOF OR CEILING PENETRATION SEE DETAIL 12/SD-3



AXON VIEW for CEILING FRAMING
Roof Rafters NOT shown for Clarity
Scale 1/4" =1'-0"

LEGEND:

- L=6'-0" ± / 1 — SHEARWALL with Length "L" and Type with end posts
- 2-2x6 POSTS
- 4x6 POSTS, U.N.O.
- HDR — HEADER
- CB or RB — CEILING or ROOF BEAM
- R.R. — ROOF RAFTERS
- U.N.O. ST6224 Horizontal Straps (Typ. @ HDR Level) OK to apply Straps either from Interior or Exterior side of walls
- U.N.O. ST6224 Horizontal Straps (Typ. @ DBL PL Level) See Typcal Detail 13/SD-1

NOTES about Interior Wood Walls:
1) Provide 2x horizontal fire blocking @ H=8' o.c. vertically for all INTERIOR and EXTERIOR stud walls with H=9' or more.
2) Use 2X6@16" o.c. studs at all **plumbing** walls for all INTERIOR Partiton walls.
3) Use 2X6@16" o.c. studs for any INTERIOR Shearwall.
4) U.N.O. use **2x4@16" o.c.** studs for all INTERIOR **regular** Partition walls.

NOTES about Exterior Wood Walls:
1) Use **2X4 @ 16" o.c.** wall studs throughout one-story building for **all Perimeter EXTERIOR walls**, **U.N.O. in Items below**
2) Use 2X6@16" o.c. studs at all **plumbing** walls for any EXTERIOR wall.
3) Use 2X6@16" o.c. studs for any **Balloon Framing,** e.g. Interior Walls along Grid Lines "2" & "8" and Exterior Wall along Grid Line "F" with continious stud walls up to 17 feet high (from Finish Floor F.F. to top of double plate at Wall Parapet)

GENERAL NOTES:
1. On exterior walls (including cripple walls and walls above the headers or Parapet Walls) where no shear walls are called-out, use continious strip of minimum Type 1 shearwall with 1/2" plywood w/ 10d nailing 6"o.c. at edges and boundaries, and 12" o.c. at field. If strip wall is not continous and short, use next note.
2. U.N.O. on plans, for exterior and interior cripple walls with shear wall extended above, use same shear wall # and nailing, if the length of extended wall above are kept the same length as shearwall below.
3. Use typical details on SD- sheets for all windows, doors and top plate corner and shear wall connections.
4. Use Common nails throughout the building (alternative: use Galvanized Box nails for plywood nailing).
5. Avoid any mechanical wall opening penetration more than 8"x8" at sherawalls with 2-side sheathing, like in Shearwall Schedule for Type "7" and "8". Provide additional nailing and blocking around perimeter of such openings.
6. At shear walls with one side sheathing any mechanical wall openings need additional nailing and blocking around perimeter of openings. Maximum opening size = 29"x29" for shearwalls with length over 6 ft. For shearwalls less then 6ft long maximum opening size = 14" x14".
7. U.N.O. Beams and headers are DF#1. DF#1 or #1 indicates Douglas Fir-Larch, Grade No. 1 lumber.
For Wall Studs use DF Construction Grade - see SGN-1 General Structural Lumber Notes for grades.
8. Beams or header sizes shown with Parallam, indicate Parallam PSL 2.0 Grade for engineered wood.
9. Provie 2x blocking @ L/2 and max. @ 8'-0" o.c. at roof rafters and ceiling joists with length over 12'.
10. For Ceiling Framing Penetration for Attic Access or for Roof Framing Penetration for any skylight refer to Architectural set for the location and use the standard Structurtal Detail 12 on sheet SD-3.
11. Wherever the size of structural post called out as 4x4 it may replaced with bigger size post, like 4x6 or bigger, in case if contractor choose to do so for any reason. Posts 2-2x6 may always replaced with 4x6 if needed.
12. On Roof framing plan all Shearwall callouts show floor below = 1st floor shear walls.

PLAN CHECK / PERMIT NUMBER:
—-—

WALL FRAMING TYPICAL NOTE:
1. WALL STUDS WOOD GRADE - DOUGLAS FIR-LARCH, CONSTRUCTION

2. IN ORDER FOR TO OPTIMIZE THE EVEN WALL THICKNESS, WHERE NEEDED:
FOR ALL 2x4 STUDS AND 4x4 POSTS CALLED OUT ON THE PLANS AS A MINIMUM SIZE. THE CONTRACTOR MAY CHOOSE TO SUBSTITUTE THEM WITH 2X6 STUDS OR 4x6 OR 6x6 POSTS - (to size up)
FOR THAT NO SPECIAL APPROVAL FROM THE ENGINEER OF THE RECORD (EOR) IS REQUIRED.

REVISIONS
No. | Date | Approved | Notes

ISSUES
No. | Date | Approved | Notes

DRAWING TITLE

CLIENT NAME, PHONE, EMAIL - PROJECT ADDRESS
TRIPLE SKY RANCH
82800 58th Ave.
Thermal, CA 92274
New 1-story Unit
DRAWING TYPE
Ceiling Framing Plan

DESIGN FIRM
STRUCTURAL ENGINEERING SERVICES
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REGISTERED PROFESSIONAL ENGINEER
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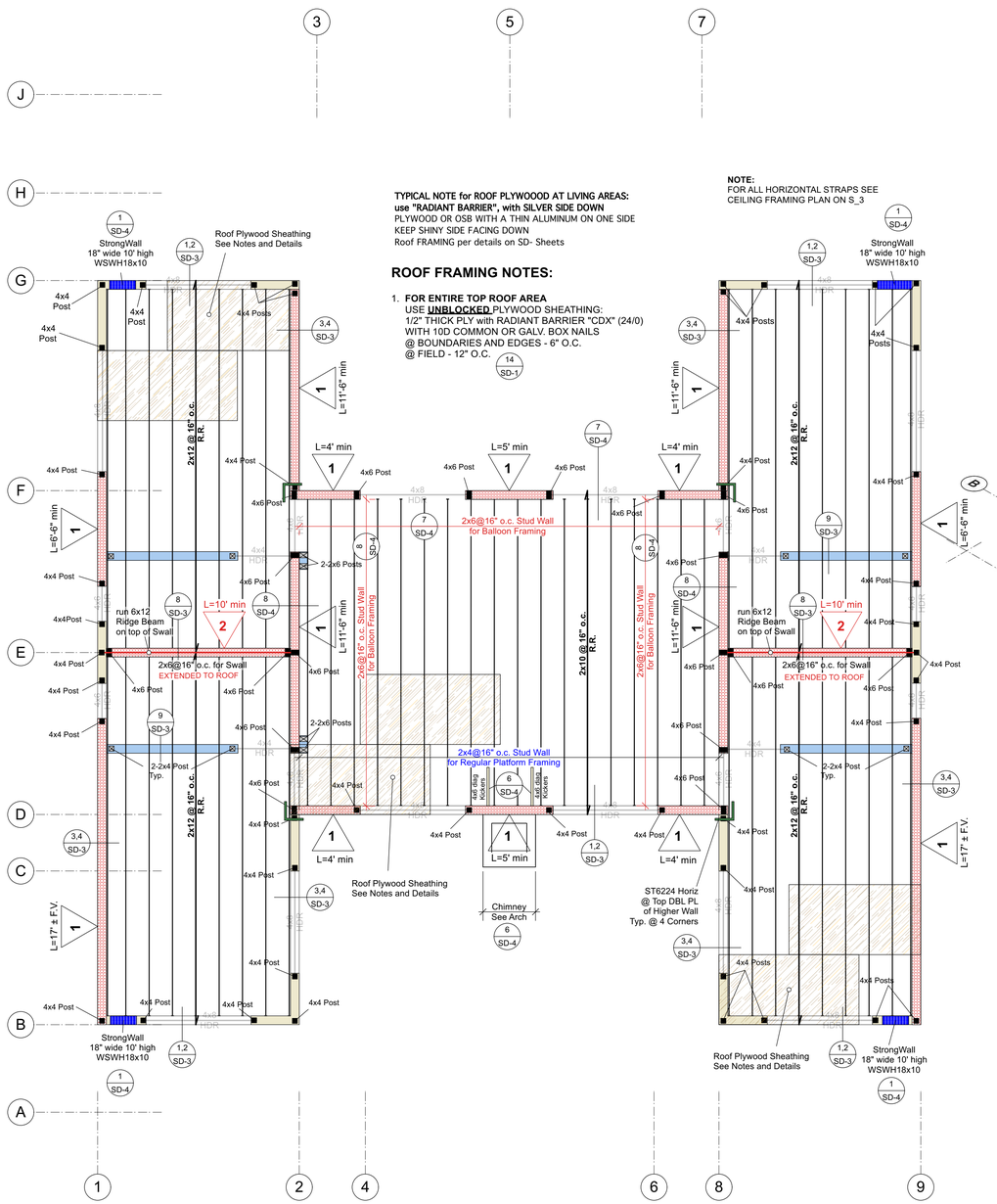
No. 79415
Exp. March 31, 2024
CIVIL
STATE OF CALIFORNIA

DRAWN BY: Ash
DATE CREATED: Sep 09, 2022
DATE MODIFIED:
SCALE: 1/4"=1'-0"
JOB NO: 2022-57
DRAWING NUMBER:
S-3
5 OF 12
TOTAL SHEETS

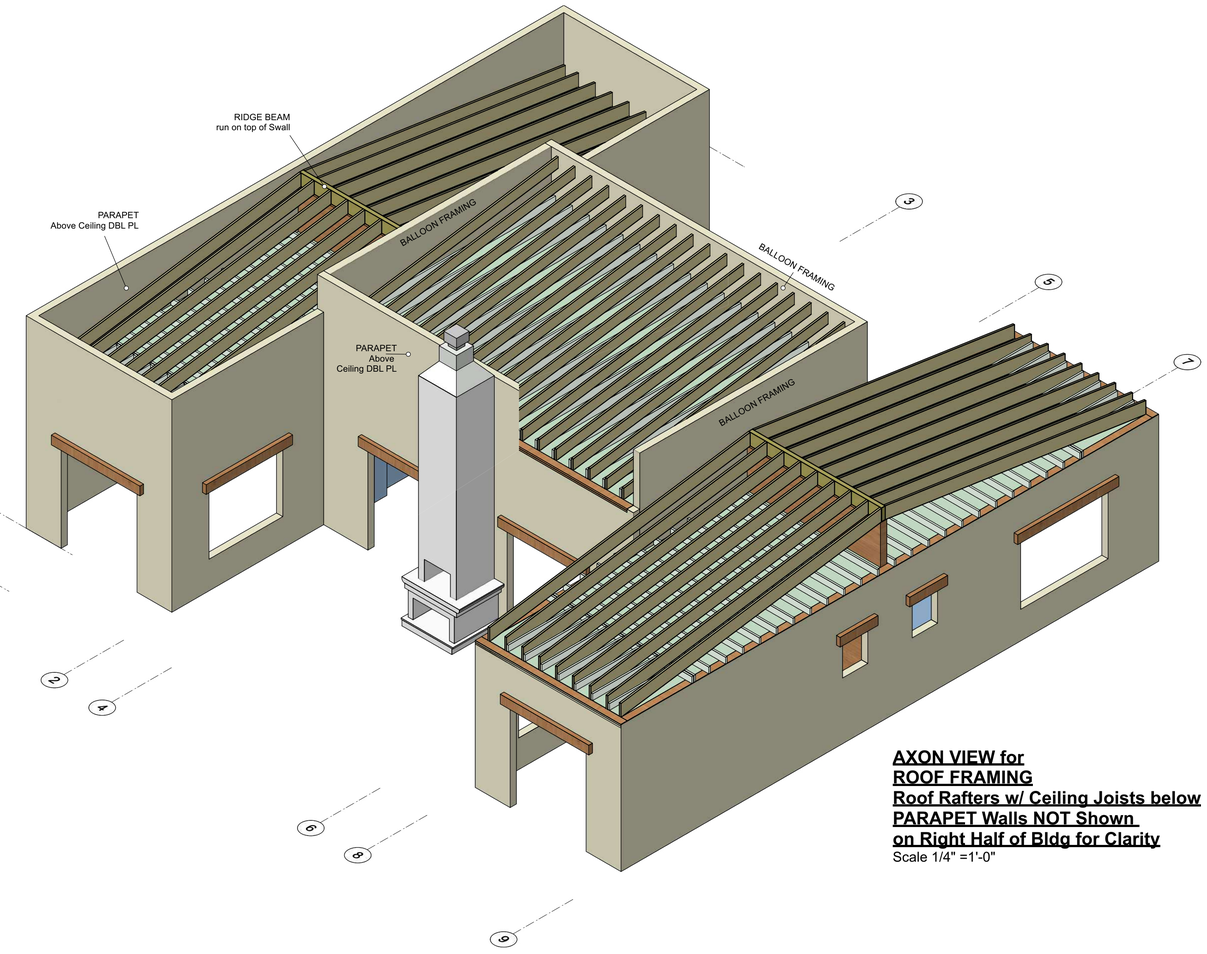
Tuesday, September 20, 2022 22:31:37 : plot date
2022-57 VW.vwx : CAD file name



ROOF FRAMING PLAN
w/ Floor Walls
PARAPET WALLS Not Shown on Plan
Scale 1/4" =1'-0"

NOTES:

1. FOR CEILING JOISTS AND HEADERS SEE S-3
2. FOR ROOF OR CEILING PENETRATION SEE DETAIL 12/SD-3



AXON VIEW for
ROOF FRAMING
Roof Rafters w/ Ceiling Joists below
PARAPET Walls NOT Shown
on Right Half of Bldg for Clarity
Scale 1/4" =1'-0"

PLAN CHECK / PERMIT NUMBER:
—-—

REVISIONS
No. | Date | Approved | Notes

ISSUES
No. | Date | Approved | Notes

DRAWING TITLE

CLIENT NAME, PHONE, EMAIL - PROJECT ADDRESS
TRIPLE SKY RANCH
82800 58th Ave.
Thermal, CA 92274
New 1-story Unit
DRAWING TYPE
Roof Framing Plan

DESIGN FIRM: STRUCTURAL ENGINEERING SERVICES
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REGISTERED PROFESSIONAL ENGINEER
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Exp. March 31, 2024
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STATE OF CALIFORNIA

DRAWN BY: Ash
DATE CREATED: Sep 09, 2022
DATE MODIFIED:
SCALE: 1/4"=1'-0"
JOB NO: 2022-57
DRAWING NUMBER:
S-4
5 OF 12
TOTAL SHEETS

Tuesday, September 20, 2022 22:31:37 : plot date
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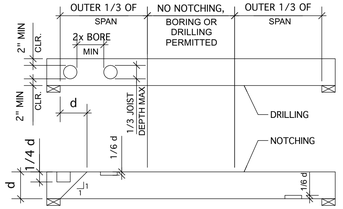


NOTES :

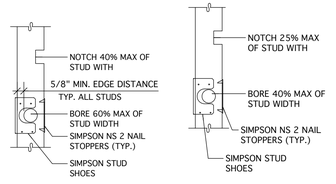
1. NOTCH MAX 1/4 d WITHIN d OF SUPPORT ON TOP SURFACE ONLY
2. NOTCH MAX 1/6 d WITHIN (OUTER 1/3 OF SPAN -d)
3. NO NOTCHING, DRILLING OR BORING SHALL BE ALLOWED WITHIN THE MIDDLE 1/3 OF THE SPAN, ON ALL SIDES OF THE MEMBER.

NOTCH/BORE % OF JOIST	2x6	2x8	2x10	2x12	2x14
16 2/3%	7/8"	1 3/16"	1 1/2"	1 7/8"	2 1/8"
33 1/3 %	1 1 3/16"	2 3/8"	3"	3 3/4"	4 3/8"

NOT TO SCALE

TYP. DRILLING & NOTCHING OF WOOD JOIST

DETAIL 1



NON-BEARING STUDS

EXTERIOR & BEARING STUDS

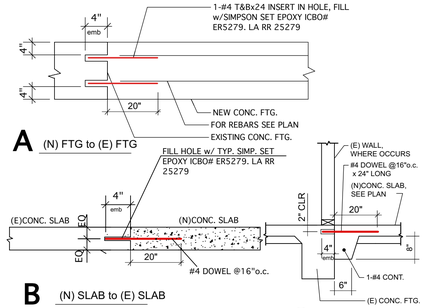
NOTE : NOTCHING & BORING ARE NOT TO OCCUR IN THE SAME STUD.

NOTCH / BORE % OF STUD	2x4	2x6
25%	7/8"	1 3/8"
40%	1 3/8"	2 3/8"
60%	2"	3 1/4"

NOT TO SCALE

TYP. DRILLING & NOTCHING OF WOOD STUDS

DETAIL 2



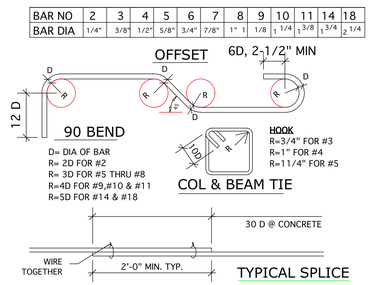
* DEPUTY INSPECTION IS REQUIRED

NOT TO SCALE

CONNECTION BEWTEEN EXISTING & NEW

DETAIL 3

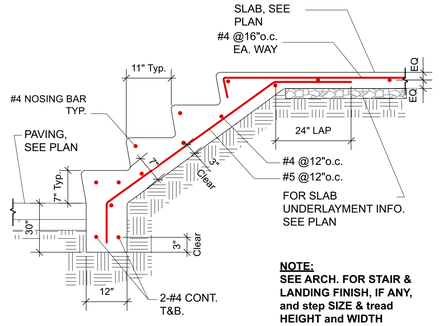
BAR NO	2	3	4	5	6	7	8	9	10	11	14	18
BAR DIA	1/4"	3/8"	1/2"	5/8"	3/4"	7/8"	1"	1 1/8	1 1/4	1 3/8	1 3/4	2 1/4



NOT TO SCALE

TYPICAL REINFORCING BAR BEND & SPLICE

DETAIL 4

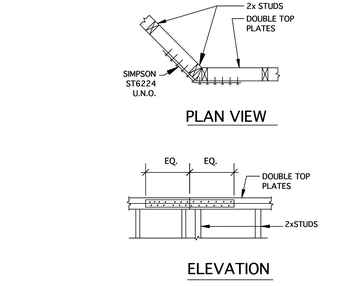


NOTE:
SEE ARCH. FOR STAIR & LANDING FINISH, IF ANY, and step SIZE & tread HEIGHT and WIDTH

NOT TO SCALE

TYPICAL STEPS ON GRADE

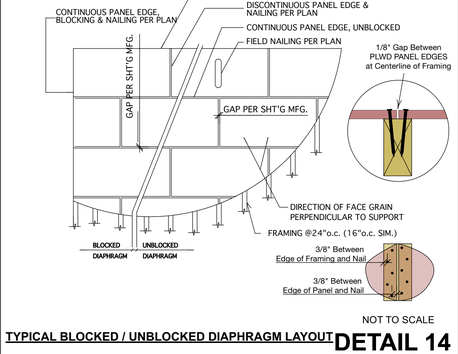
DETAIL 5



NOT TO SCALE

SCHEMATIC SKETCH FOR INSULATION REQUIREMENTS

DETAIL 6



TYPE	MATERIAL (BLOCKED)	FACES	PLYWOOD NAILS SPACING	SILL PLATE CONNECTION AT FLOORS, SEE DET. ON SHEET (IN PRE-DRILL HOLES)	BOT CONN. S.A. (Shear AB) 785 #/ANCHOR BOLT SEE FOUND. DETAILS	TOP PL CONN. A35 450# /ft SEE TYP. EAVE DETAILS AT ROOF	CBC SHEAR CAP.#/'	SILL PL @ FOUNDATION PRESSURE TREATED
1	1/2"PLY ST 1	1	10D @ 6"	20D @ 6"	5/8" @ 4'-0"	A35 @ 20"	245	2x
2	1/2"PLY ST 1	1	10D @ 6"	20D @ 4"	5/8" @ 2'-8"	A35 @ 16"	340	3x
3	1/2"PLY ST 1	1	10D @ 4"	20D @ 3"	5/8" @ 2'-0"	A35 @ 10"	510	3x
4	1/2"PLY ST 1	1	10D @ 3"	1/4"DIAM X6" LAG @ 5" o.c.	5/8" @ 2'-0"	A35 @ 8"	665	3x
5	1/2"PLY ST 1	1	10D @ 2"	1/4"DIAM X6" LAG @ 4" o.c.	5/8" @ 1'-4"	A35 @ 6"	870	3x
6	1/2"PLY ST 1	2	10D @ 6"	1/4"DIAM X6" LAG @ 4" o.c.	5/8" @ 1'-4"	A35 @ 8"	640	3x
7	1/2"PLY ST 1	2	10D @ 4"	1/4"DIAM X6" LAG @ 3" o.c.	5/8" @ 1'-0"	2-A35 @ 10"	1020	3x
8	1/2"PLY ST 1	2	10D @ 3"	5/8"DIAM X6" LAG @ 6" o.c.	5/8" @ 1'-0"	2-A35 @ 8"	1330	3x

1) USE 2-2x STUDS OR BLOCKING AT ALL ADJOINING PLYWOOD EDGES
2) USE "A35" @ 32"o.c. @ ROOF & FLOOR TOP CONNECTION PLATES, U.N.O. BY SHEAR WALL SCHEDULE
3) ALL STUDS TO BE @ 16" O.C.
4) NAILS SPACED AT 2" O.C. SHALL BE STAGGERED.
5) USE MIN 2x6 STUDS AT PLUMBING WALL(S).
6) THE ANCHOR BOLTS SHALL HAVE AN APPROVED PLATE WASHER UNDER EACH NUT, SEE SCHED. AND THE NUT SHALL BE TIGHTENED JUST PRIOR TO COVERING THE WALL FRAMING.
7) A.B. TO HAVE 7" EMBEDMENT. DO NOT COUNT HOLDOWNS AS SHEAR ANCHOR BOLTS.
8) USE COMMON NAILS OR GALVANIZED BOX NAILS w/ FULL HEADS
9) 1/2" EDGE DISTANCE FOR PLYWOOD BOUNDARY NAILING
10) PROVIDE MIN. EDGE DISTANCE OF 1.5 x DIAMETER FOR LAG SCREW BOLTS
11) PROVIDE MIN. PENETRATION OF 8 x DIAMETER FOR LAG SCREW BOLTS INTO THE HOLDING MEMBER
12) PLYWOOD FIELD NAILING: 10d @ 12" o.c.
13) FOR MORE INFORMATION SEE DETAILS
14) WOOD STRUCTURAL PANEL JOINTS AND SILL PLATE NAILING SHALL BE STAGGERED AT ALL PANEL EDGES WHERE THE DESIGN VALUES OF THE SHEAR WALL EXCEEDS 350 plf.
15) USE OF 1/2" OSB STRUCT " I " IS OKAY IN LIEU OF STRUCT " I " PLYWOOD.
16) NON-SHEAR WALL SILL PLATES SHOULD HAVE 16d @ 6" o.c.

BOLT SIZE	WASHER PLATE SIZE
1/2"	1/4"x3"x3"
5/8"	1/4"x3"x3"
3/4"	5/16"x3"x3"
7/8"	5/16"x3"x3"
1"	3/8"x3 1/2"x3 1/2"

NOT TO SCALE

SHEARWALL SCHEDULE

DETAIL 7

SIMPSON TYPE	A.B. DIA	POST SIZE MIN	HDU TENSION CAPACITY *	(T.A.) TENSION A.B. TYPE	(T.A.) TENSION STEEL A.B. CAPACITY	EMBED	STEM WALL THK
HDU2	5/8"	2-2x	3,075	SSTB16	4,420	13"	6"
HDU4	5/8"	4x4	4,565	SSTB20	4,600	17"	6"
HDU5	5/8"	4x4	5,175	SSTB24	5,175	21"	6"
HDU8	7/8"	4x4	5,980	SSTB28	10,100	25"	8"
		4x6	7,870				
		4x6	9,335	SSTB28	10,100	25"	8"
HDU11	7/8"	4x6	9,335	SB1 x30	13,675 8,605 END WALL CONDITION	24"	10"
		4x8	11,175				
HDU14	1"	6x6	13,675	SB1 x30	13,675 8,605 END WALL CONDITION	24"	10"
		4x8					

* 1. USE FASTENER SDS SCREW 1/4"x2 1/2"
2. MIN. CONCRETE 2,500 psi

SCHEDULE 'A'

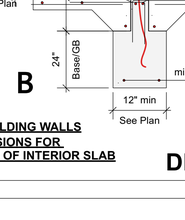
THIS SCHEDULE IS FOR **NEW FOOTINGS** w/ SSTB A.B. & HOLDOWNS

U.N.O. FOR BOLT CONNECTION: USE MINIMUM 1/4"x3"x3" PL. WASHERS

3x P.T. SILL PLATE

NOTES:

1. HOLDOWN ANCHORS MUST BE TIED IN PLACE PRIOR TO DEEPEN FTG. AS REQ'D TO OBTAIN ANCHOR EMBEDMENT & CONCRETE COVER.
2. THE ABOVE EMBEDMENT FOR A.B. IS VALID FOR 1-POUR FOUNDATION. FOR 2-POUR FOUNDATION, ADD 6" TO THE EMBEDMENT.
3. TIGHTEN THE BOLTS AFTER ALL FRAMING IS DONE.
4. DO NOT COUNT TENSION BOLTS for HOLDOWNS (T.A.) AS SHEAR ANCHOR BOLTS (S.A.).

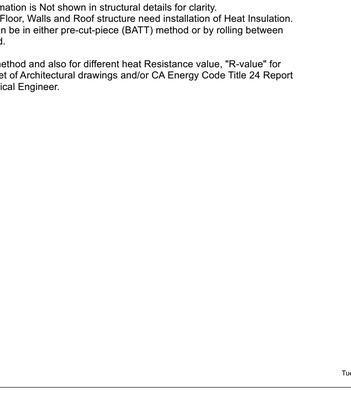


ALLOWABLE TENSILE CAPACITY BASED ON BOND STRENGTH SET EPOXY						
Threaded Rod A.B. DIA	POST SIZE MIN	MIN. EMBED.	(T.A.) TENSION A.B. CAPACITY*	EDGE DISTANCE de	END DISTANCE dc	STEM WALL THK
5/8"	2-2x	10"	3,000	1 7/8"	5"	6"
7/8"	4x4	15"	5,100	2 5/8"	5"	8"
5/8"	2-2x	5"	4,100	7 1/2"		
	4x4	10"	4,920	14 1/2"		
7/8"	4x4	6"	5,100	7 1/2"		
	4x6	10"	6,120	14 1/2"		
1"	4x6	7"	5,700	7 1/2"		
		10"	6,840	14 1/2"		

SCHEDULE 'B' THIS SCHEDULE IS FOR EPOXY CONNECTION AT **EXISTING FOOTINGS** with HOLDOWNS NOT GREATER THAN HDU8. FOR HDU11 and Bigger Force use only UNDERPINNED DETAIL

SPECIAL INSPECTION REQ'D FOR SSTB BOLTS AND EPOXY

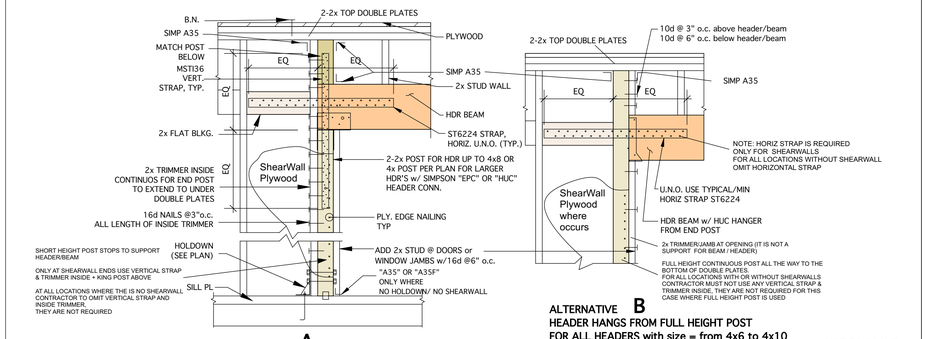
for (E) FTG STEM WALL use Epoxy for Shear Anchor S.A. w/ min 7 inch EMBEDMENT, see 3/SD-2



NOT TO SCALE

TYPICAL SIMPSON HOLDOWN

DETAIL 8

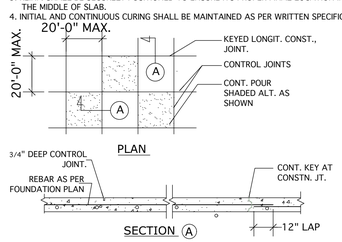


NOT TO SCALE

TYPICAL SHEARWALL: HEADER & END POSTS W/ HARDWARE

DETAIL 9

1. PANELS SHALL BE POURED IN LONG STRIPS OR SECTIONS HAVING A MAX WIDTH OF 20'-0".
2. PANELS SHALL BE SUBDIVIDED BY CONTROL JOINTS HAVING A MAX SPACING OF 20'-0"
3. REINF. SHALL BE SECURELY POSITIONED TO ENSURE ITS PROPER FINAL LOCATION IN THE MIDDLE OF SLAB.
4. INITIAL AND CONTINUOUS CURING SHALL BE MAINTAINED AS PER WRITTEN SPECIFICATIONS.



TYP. POURING SEQUENCE

IN THIS PROJECT SLAB ON GRADE TO BE USED ONLY FOR EXTERIOR

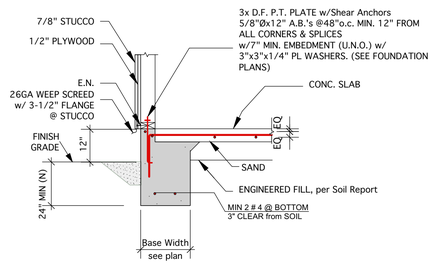
INFO FOR CONCRETE SLAB ON GRADE

DETAIL 9/SD-2 GOVERNS SEE 9/SD-2 FOR MORE INFO

NOT TO SCALE

DETAIL 10

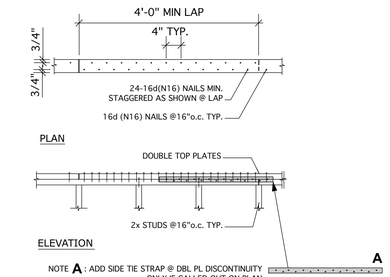
FOR BALANCE OF INFORMATION SEE DETAIL 15/SD-1



NOT TO SCALE

TYPICAL NEW FOOTING & EDGE OF INTERIOR SLAB

DETAIL 11



NOT TO SCALE

TYPICAL DOUBLE PLATE SPLICE DETAIL

DETAIL 12

ALL CORNER CONDITIONS, TYP. @ ROOF AND FLOORS

NOT TO SCALE

TYPICAL DOUBLE PLATE CONNECTION AT CORNERS

DETAIL 13

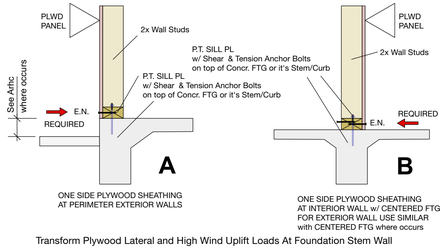
NOT TO SCALE

TYPICAL BLOCKED / UNBLOCKED DIAPHRAGM LAYOUT

DETAIL 14

NOTE for EPOXY: (IN MANY CASES EPOXY CONDITION CAN OCCUR IN NEW STRUCTURES TOO)
FOR **NEW SHEAR ANCHORS w/ EPOXY** SEE DETAIL 11/SD-1 & 8/SD-1.
FOR **NEW TENSION ANCHORS w/ EPOXY** SEE SCHEDULE "B" for 8/SD-1

NOTE:
IN ALL FOUNDATION DETAIL CONNECTIONS PROVIDE EDGE NAILING FOR PLYWOOD PANELS BE CARRIED BY THE PRESSURE TREATED SILL PLATE WITH A.B. INTO CONCRETE FOUNDATION (e.g. STEM WALL, CURB)



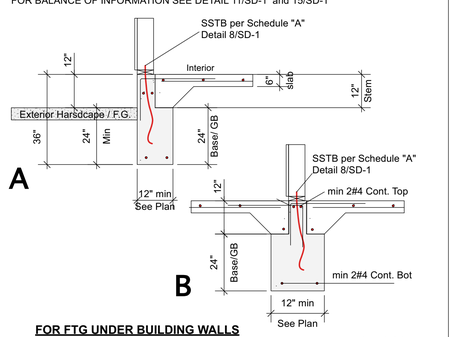
Transform Plywood Lateral and High Wind Uplift Loads At Foundation Stem Wall

NOT TO SCALE

SHEARWALL PLYWOOD PANEL SHEATHING NAILING AT FOUNDATION SILL PLATE

DETAIL 15

FOR BALANCE OF INFORMATION SEE DETAIL 11/SD-1 and 15/SD-1



FOR FTG UNDER BUILDING WALLS
TYPICAL MIN DIMENSIONS FOR NEW FOOTING/EDGE OF INTERIOR SLAB

NOT TO SCALE

DETAIL 16

NOTES ABOUT INSULATION and it's "R"-Value:

Heat insulation information is Not shown in structural details for clarity. However, all Raised Floor, Walls and Roof structure need installation of Heat Insulation. Insulation method can be in either pre-cut-piece (BATT) method or by rolling between joists (ROLL) method.

For recommended method and also for different heat Resistance value, "R-value" for each strcuture see set of Architectural drawings and/or CA Energy Code Title 24 Report prepared by Mechanical Engineer.

PLAN CHECK / PERMIT NUMBER:
_____

REVISIONS

No.	Date	Approved	Notes

ISSUES

No.	Date	Approved	Notes

DRAWING TITLE

CLIENT NAME, PHONE, EMAIL - PROJECT ADDRESS
TRIPLE SKY RANCH
82800 58th Ave.
Thermal, CA 92274

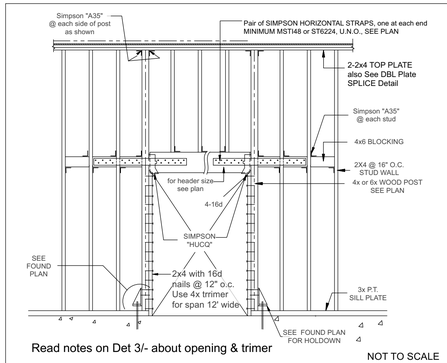
DRAWING TYPE
Structural Details

DESIGN FIRM
STRUCTURAL ENGINEERING SERVICES
Ashot Shagirian, P.E.
Address: 11337 Runnymede St.
Sun Valley, CA 91352-4745
Tel: (818) 731-4051
e-mail: ashot@mac.com
website: ashot.me

REGISTERED PROFESSIONAL ENGINEER ASHOT SHAGIRIAN No. 79415 Exp. March 31, 2024 STATE OF CALIFORNIA

DRAWN BY:	Ash
DATE CREATED:	Sep 07, 2022
DATE MODIFIED:	
SCALE:	N.T.S.
JOB NO:	2022-57
DRAWING NUMBER:	SD-1
	6 OF 12 TOTAL SHEETS

Tuesday, September 20, 2022 22:31:37 : plot date
2022-57 VW.vwx : CAD file name

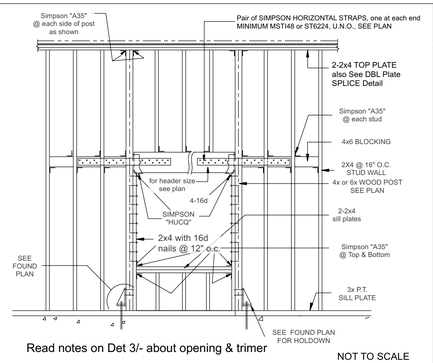


Read notes on Det 3/- about opening & trimer

NOT TO SCALE

ELEVATION AT DOOR

DETAIL 1

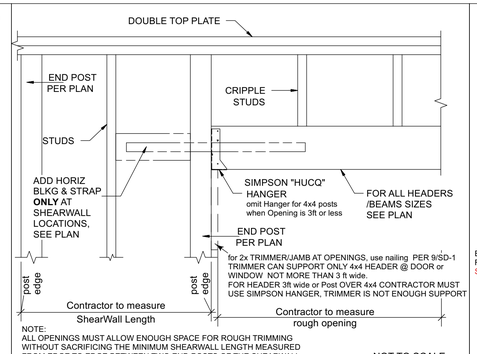


Read notes on Det 3/- about opening & trimer

NOT TO SCALE

ELEVATION AT WINDOW

DETAIL 2

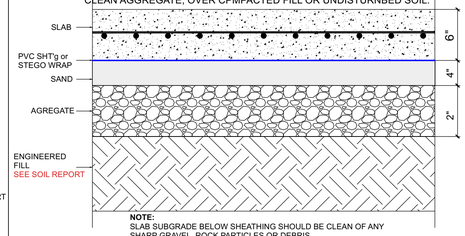


NOTE:
ALL OPENINGS MUST ALLOW ENOUGH SPACE FOR ROUGH TRIMMING WITHOUT SACRIFICING THE MINIMUM SHEARWALL LENGTH MEASURED FROM EDGE TO EDGE BETWEEN TWO END POSTS OF THE SHEARWALL

NOT TO SCALE

HEADER/BEAM @ FACE OF POST

DETAIL 3



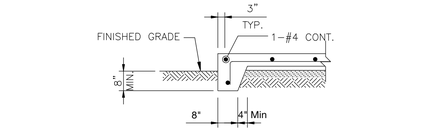
INTERIOR STRUCTURAL SLAB DETAIL
USE 6" THICK STRUCTURAL SLAB GRADE (F'c= 2,500 PSI)
with **#5 BARS @ 12" o.c. MAIN REBARS @ MID-DEPTH;**
with ties in opposite direction **#4@12" o.c. T&S** (for Temperature & Shrinkage);
OVER 10 MIL VISQUEEN SHEATHING OR 15 MIL STEGO WRAP;
OVER 4 INCH OF SAND; OVER 2 INCH 1/2" OR LARGER
CLEAN AGGREGATE; OVER CPMPACTED FILL OR UNDISTURNBED SOIL.

NOTE:
SLAB SUBGRADE BELOW SHEATHING SHOULD BE CLEAN OF ANY SHARP GRAVEL, ROCK PARTICLES OR DEBRIS.

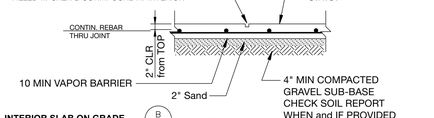
NOT TO SCALE

INTERIOR STRUCTURAL SLAB
IN CONTACT WITH GRADE

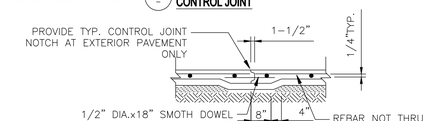
DETAIL 4



EXTERIOR SLAB ON GRADE A — **THICKENED EDGE AT EXTERIOR SLAB**



INTERIOR SLAB ON GRADE B — **CONTROL JOINT**



INTERIOR SLAB ON GRADE C — **CONSTRUCTION JOINT**

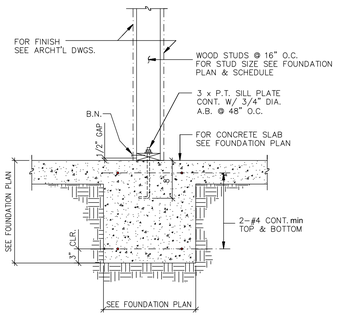
NOTE:
CONTROL JOINT OR CONSTCURTION JOINT SHALL DIVIDE SLAB ON GRADEINTO SECTIONS WITH AREAS NOT EXCEEDING 225 SQ. FT. (15'X15') WITHOUT RESTRAINED CORNERS AND WITH LENGTH TO WIDTH RATIOS NOT EXCEEDING 1.5 TO 1.

NOTES:
1. PROVIDE TOOLED JT OR SAW CUT AS SOON AS THE CONC HAS HARDENED SUFFICIENTLY TO PERMIT CUTTING WITHOUT CHIPPING, SPALLING, OR TEARING (BUT NOT MORE THAN 12 HOURS AFTER CASTING)

CONCRETE SLAB ON GRADE (SOG) DETAILS
INTERIOR / EXTERIOR SLAB ON GRADE (SOG)
(DO NOT USE FOR STRUCTURAL SLABS)

NOT TO SCALE

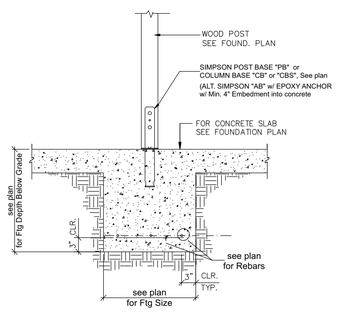
DETAIL 9



CONTIN. FOOTING under
LOAD BEARING WALL (NOT A SHEARWALL)

NOT TO SCALE

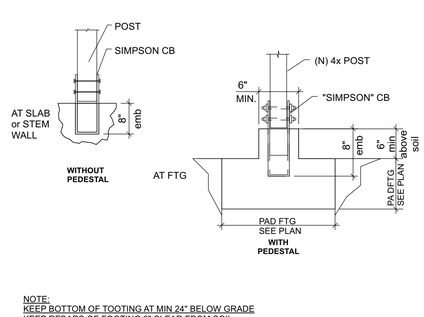
DETAIL 5



WOOD POST @ PAD FTG

NOT TO SCALE

DETAIL 6



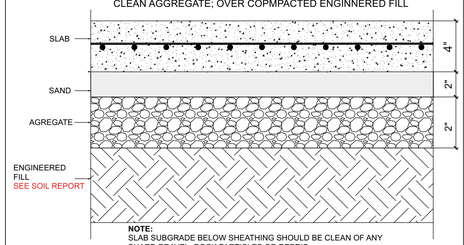
NOTE:
KEEP BOTTOM OF TOOTING AT MIN 24" BELOW GRADE
KEEP REBARS OF FOOTING 3" CLEAR FROM SOIL
FOR FTG & SLAB REINFORCING SEE PLAN

TYPICAL PAD FOOTING

NOT TO SCALE

DETAIL 7

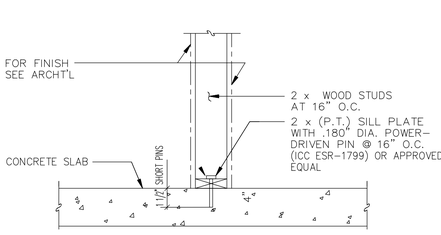
EXTERIOR SLAB-ON GRADE DETAIL
USE 4" THICK SLAB GRADE (F'c= 2,500 PSI)
W/ **#4 BARS @ 16" o.c. EACH WAY @ MID-DEPTH or 2" clear from top;**
OVER 2 INCH OF SAND; OVER 2 INCH 1/2" OR LARGER
CLEAN AGGREGATE; OVER COPMPACTED ENGINNERED FILL



NOTE:
SLAB SUBGRADE BELOW SHEATHING SHOULD BE CLEAN OF ANY SHARP GRAVEL, ROCK PARTICLES OR DEBRIS.

EXTERIOR SLAB ON GRADE (SOG) DETAIL

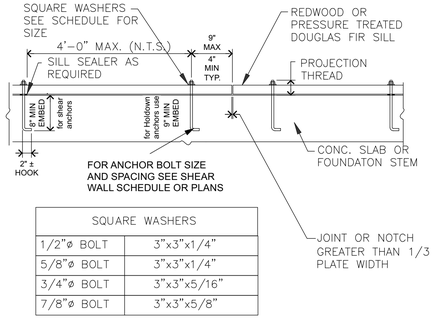
DETAIL 8



PARTITION WALL TO CONCRETE SLAB

NOT TO SCALE

DETAIL 10

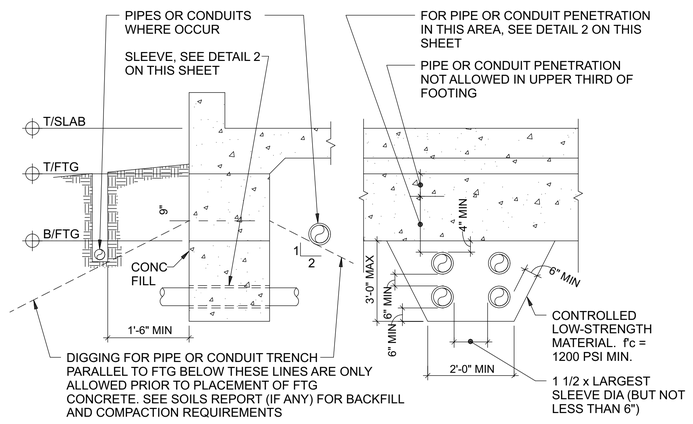


SQUARE WASHERS	
1/2"ø BOLT	3"x3"x1/4"
5/8"ø BOLT	3"x3"x1/4"
3/4"ø BOLT	3"x3"x5/16"
7/8"ø BOLT	3"x3"x5/8"

TYPICAL SILL PLATE CONNECTION TO CONCRETE

NOT TO SCALE

DETAIL 11



NOTES:

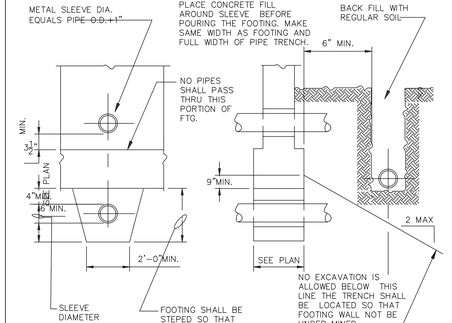
1. CONTRACTOR SHALL BE RESPONSIBLE FOR SHORING OR OTHERWISE MAINTAINING THE SIDES OF THE EXCAVATION FROM CAVE-IN UNTIL ALL BACKFILL IS COMPLETED.
2. ALL PIPES AND CONDUITS SHALL CLEAR SLEEVE BY 1" ALL AROUND, UNO
3. FIRE SERVICE LINES SHALL CLEAR SLEEVES 2" ALL AROUND.
4. TRENCHES FOR PIPES AND CONDUITS WITH INVERT ELEVATION BELOW 2'-6" FROM BOTTOM OF FOOTING SHALL BE FILLED PER GEOTECHNICAL ENGINEER'S RECOMMENDATIONS.
5. CAULK SEAL GAP AT SLEEVE-TO-PIPE/CONDUIT INTERFACE ON EXTERIOR SIDE OF FOOTING.

PIPE OR CONDUIT CLEARANCE AT FOOTINGS

SEE SOIL REPORT FOR SPECIAL CASE RECOMMENDATIONS

NOT TO SCALE

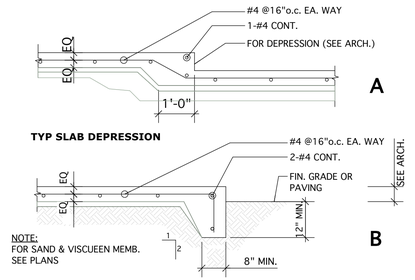
DETAIL 13



PENETRATION THRU FOOTING
SEE SOIL REPORT FOR SPECIAL CASE RECOMMENDATIONS

NOT TO SCALE

DETAIL 14



NOT TO SCALE

DETAIL 15

NOT TO SCALE

DETAIL 16

PLAN CHECK / PERMIT NUMBER:
- ____

REVISIONS
No. | Date | Approved | Notes

ISSUES
No. | Date | Approved | Notes

DRAWING TITLE

CLIENT NAME, PHONE, EMAIL - PROJECT ADDRESS
TRIPLE SKY RANCH
82800 58th Ave.
Thermal, CA 92274

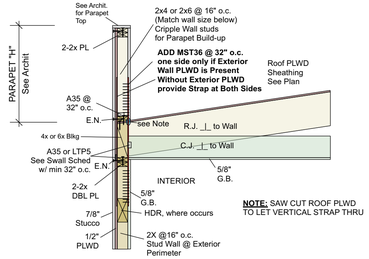
DRAWING TYPE
Structural Details

DESIGN FIRM
STRUCTURAL ENGINEERING SERVICES
Ashot Shagirian, P.E.
Address: 11337 Runnymede St.
Sun Valley, CA 91352-4745
Tel: (818) 731-4051
e-mail: ashot@mac.com
website: ashot.me

REGISTERED PROFESSIONAL ENGINEER
ASHOT SHAGIRIAN
No. 79415
Exp. March 31, 2024
CIVIL
STATE OF CALIFORNIA

DRAWN BY: Ash
DATE CREATED: Sep 08, 2022
DATE MODIFIED:
SCALE: N.T.S.
JOB NO: 2022-57
DRAWING NUMBER:
SD-2
7 OF 12
TOTAL SHEETS

Tuesday, September 20, 2022 22:31:37 - plot date
2022-57 VW.vwx - CAD file name

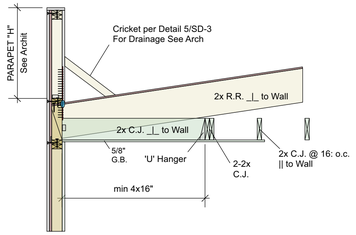


NOTE: SAW CUT ROOF PLWD TO LET VERTICAL STRAP THRU

Roof rafters Perpendicular to Wall
PARAPET DETAIL
AT EXTERIOR WALLS

NOT TO SCALE

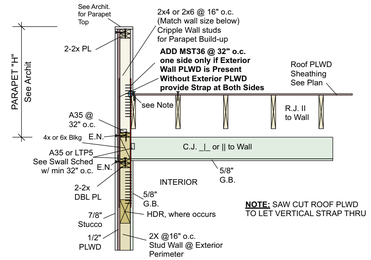
DETAIL 1



PARAPET & CRICKET
AT EXTERIOR WALLS

NOT TO SCALE

DETAIL 2

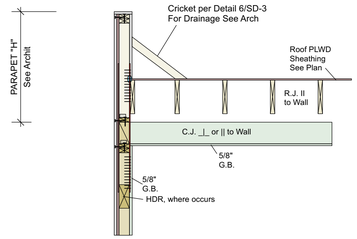


NOTE: SAW CUT ROOF PLWD TO LET VERTICAL STRAP THRU

Roof rafters Perpendicular to Wall
PARAPET DETAIL
AT EXTERIOR WALLS

NOT TO SCALE

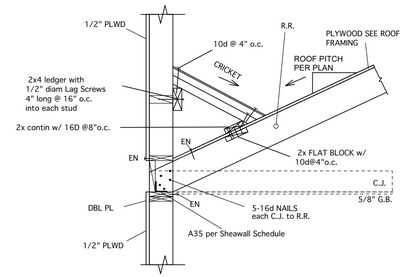
DETAIL 3



PARAPET & CRICKET
AT EXTERIOR WALLS

NOT TO SCALE

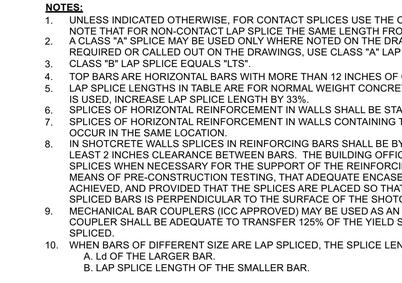
DETAIL 4



CRICKET AT WALL

NOT TO SCALE

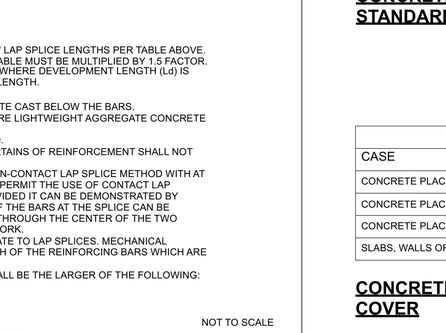
DETAIL 5



CRICKET AT WALL

NOT TO SCALE

DETAIL 6



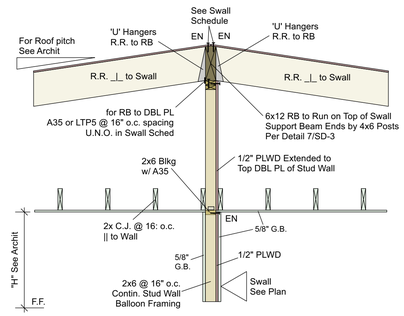
TYP. WALL POST UNDER BEAM TOP & BOT

TYP. BEARING STUD WALL

NOT TO SCALE

TO SUPPORT LOADS APPLIED AT TOP OF WALL

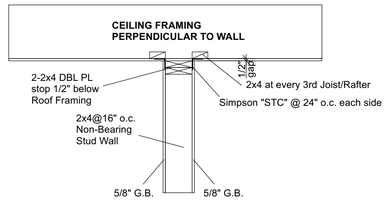
DETAIL 7

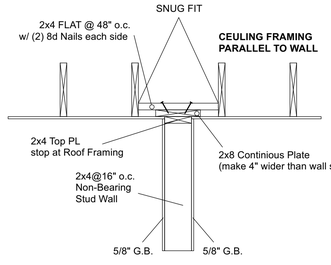


INTERIOR SHEARWALL
EXTENDED TO ROOF

NOT TO SCALE

DETAIL 8



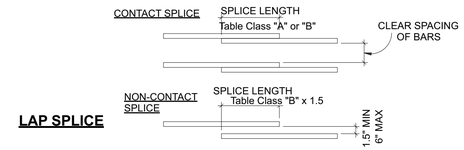


TOP CONNECTION FOR TYICAL INTERIOR NON-LOAD-BEARING PARTITION WALLS

NOT TO SCALE

DETAIL 9

CONCRETE STRENGTH	f'c = 2500 PSI f'c = 3000 PSI				f'c = 4000 PSI			
CLASS OF LAP SPLICE	CLASS "A"		CLASS "B"		CLASS "A"		CLASS "B"	
BAR SIZE \ CASE	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS
#3	1'-10"	1'-5"	2'-4"	1'-10"	1'-7"	1'-3"	2'-1"	1'-7"
#4	2'-5"	1'-10"	3'-1"	2'-5"	2'-1"	1'-7"	2'-9"	2'-1"
#5	3'-0"	2'-4"	3'-11"	3'-0"	2'-7"	2'-0"	3'-5"	2'-7"
#6	3'-7"	2'-9"	4'-8"	3'-7"	3'-1"	2'-5"	4'-1"	3'-1"
#7	5'-3"	4'-0"	6'-9"	5'-3"	4'-6"	3'-6"	5'-11"	4'-6"
#8	6'-0"	4'-7"	7'-9"	6'-0"	5'-2"	4'-0"	6'-9"	5'-2"
#9	6'-9"	5'-2"	8'-9"	6'-9"	5'-10"	4'-6"	7'-7"	5'-10"
#10	7'-7"	5'-10"	9'-10"	7'-7"	6'-7"	5'-1"	8'-6"	6'-7"
#11	8'-5"	6'-6"	10'-11"	8'-5"	7'-3"	5'-7"	9'-5"	7'-3"



LAP SPLICE

NOTES:

1. UNLESS INDICATED OTHERWISE, FOR CONTACT SPLICES USE THE CLASS "B" LAP SPLICE LENGTHS PER TABLE ABOVE. NOTE THAT FOR NON-CONTACT LAP SPLICE THE SAME LENGTH FROM THE TABLE MUST BE MULTIPLIED BY 1.5 FACTOR.
2. A CLASS "A" SPLICE MAY BE USED ONLY WHERE NOTED ON THE DRAWINGS. WHERE DEVELOPMENT LENGTH (Ld) IS REQUIRED OR CALLED OUT ON THE DRAWINGS, USE CLASS "A" LAP SPLICE LENGTH.
3. CLASS "B" LAP SPLICE EQUALS "LTS".
4. TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12 INCHES OF CONCRETE CAST BELOW THE BARS.
5. LAP SPLICE LENGTHS IN TABLE ARE FOR NORMAL WEIGHT CONCRETE. WHERE LIGHTWEIGHT AGGREGATE CONCRETE IS USED, INCREASE LAP SPLICE LENGTH BY 33%.
6. SPLICES OF HORIZONTAL REINFORCEMENT IN WALLS SHALL BE STAGGERED.
7. SPLICES OF HORIZONTAL REINFORCEMENT IN WALLS CONTAINING TWO CURTAINS OF REINFORCEMENT SHALL NOT OCCUR IN THE SAME LOCATION.
8. IN SHOTCRETE WALLS SPLICES IN REINFORCING BARS SHALL BE BY THE NON-CONTACT LAP SPLICE METHOD WITH AT LEAST 2 INCHES CLEARANCE BETWEEN BARS. THE BUILDING OFFICIAL ANY PERMIT THE USE OF CONTACT LAP SPLICES WHEN NECESSARY FOR THE SUPPORT OF THE REINFORCING PROVIDED IT CAN BE DEMONSTRATED BY MEANS OF PRE-CONSTRUCTION TESTING, THAT ADEQUATE ENCASEMENT OF THE BARS AT THE SPLICE CAN BE ACHIEVED, AND PROVIDED THAT THE SPLICES ARE PLACED SO THAT A LINE THROUGH THE CENTER OF THE TWO SPLICED BARS IS PERPENDICULAR TO THE SURFACE OF THE SHOTCRETE WORK.
9. MECHANICAL BAR COUPLERS (ICC APPROVED) MAY BE USED AS AN ALTERNATE TO LAP SPLICES. MECHANICAL COUPLER SHALL BE ADEQUATE TO TRANSFER 125% OF THE YIELD STRENGTH OF THE REINFORCING BARS WHICH ARE SPLICED.
10. WHEN BARS OF DIFFERENT SIZE ARE LAP SPLICED, THE SPLICE LENGTH SHALL BE THE LARGER OF THE FOLLOWING:
    A. Ld OF THE LARGER BAR.
    B. LAP SPLICE LENGTH OF THE SMALLER BAR.

CONCRETE:
REBAR OFFSET, LAP SPLICE, DEVELOPMENT LENGTH

NOT TO SCALE

DETAIL 10

BAR SIZE	MAIN REINFORCEMENT 90° HOOK LENGTH "L"	MAIN REINFORCEMENT INSIDE DIA "D1"	MAIN REINFORCEMENT 180° HOOK LENGTH "L"	STIRRUPS & TIES 90° HOOK LENGTH "L"	STIRRUPS & TIES INSIDE DIA "D2"	STIRRUPS & TIES 135° HOOK LENGTH "L"	Ldh, DEVELOPMENT LENGTH (1) CONCRETE STRENGTH f'c = 2500 PSI f'c = 3000 PSI	f'c = 4000 PSI	f'c = 5000 PSI
	90° HOOK		180° HOOK	90° HOOK		135° HOOK			
#3	4 1/2"	2 1/4"	2 1/2"	3"	1 1/2"	3"	0'-8"	0'-7"	0'-6"
#4	6"	3"	2 1/2"	3"	2"	3"	0'-11"	0'-9"	0'-9"
#5	7 1/2"	3 3/4"	2 1/2"	3 3/4"	2 1/2"	3 3/4"	1'-2"	1'-0"	0'-11"
#6	9"	4 1/2"	3"	9"	4 1/2"	4 1/2"	1'-4"	1'-2"	1'-1"
#7	10 1/2"	5 1/4"	3 1/2"	10 1/2"	5 1/4"	5 1/4"	1'-7"	1'-5"	1'-3"
#8	1'-0"	6"	4"	1'-0"	6"	6"	1'-10"	1'-7"	1'-5"
#9	1'-1 1/2"	9 1/2"	4 1/2"	-	-	-	2'-1"	1'-9"	1'-7"
#10	1'-3 1/4"	10 3/4"	5 1/4"	-	-	-	2'-3"	2'-0"	1'-10"
#11	1'-5"	1'-0"	5 3/4"	-	-	-	2'-6"	2'-2"	2'-0"

NOTE: 1. DEVELOPMENT LENGTHS IN TABLE ARE FOR NORMAL WEIGHT CONCRETE. WHERE LIGHTWEIGHT AGGREGATE CONCRETE IS USED, INCREASE DEVELOPMENT LENGTH BY 33%.

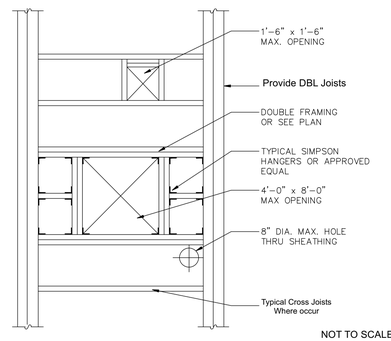
CONCRETE:
STANDARD HOOKS

CONCRETE COVER	
CASE	COVER (IN)
CONCRETE PLACED AGAINST EARTH	3
CONCRETE PLACED IN FORMS, EXPOSED TO WEATHER OR EARTH	2
CONCRETE PLACED ON VOID FORMS WITH MASONITE OR PLYWOOD COVERING	2
SLABS, WALLS OR PILASTERS NOT EXPOSED TO EARTH OR WEATHER	1

CONCRETE:
COVER

NOT TO SCALE

DETAIL 11



MAX OPENING SIZES IN ROOF

NOT TO SCALE

DETAIL 12

PLAN CHECK / PERMIT NUMBER: _____

REVISIONS
No. | Date | Approved | Notes

ISSUES
No. | Date | Approved | Notes

DRAWING TITLE

CLIENT NAME, PHONE, EMAIL - PROJECT ADDRESS
TRIPLE SKY RANCH
82800 58th Ave.
Thermal, CA 92274

DRAWING TYPE
New 1-story plant
Structural Details

DESIGN FIRM
STRUCTURAL ENGINEERING SERVICES

Ashot Shagirian, P.E.
Address: 11337 Rumrymede St.
Sun Valley, CA 91352-4745
Tel: (818) 731-4051
e-mail: ashot@mac.com
website: ashot.me

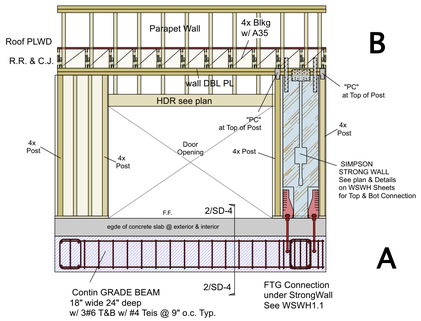
REGISTERED PROFESSIONAL ENGINEER
ASHOT SHAGIRIAN
No. 79415
Exp. March 31, 2024
CIVIL
STATE OF CALIFORNIA

DRAWN BY: Ash
DATE CREATED: Sep 09, 2022
DATE MODIFIED:
SCALE: N.T.S.
JOB NO: 2022-57
DRAWING NUMBER:

SD-3

8 OF 12
TOTAL SHEETS

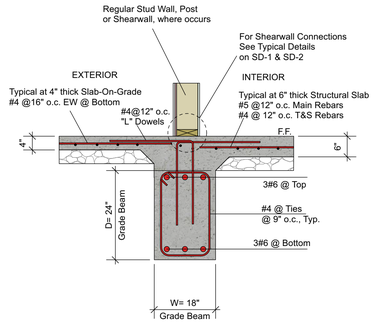
Tuesday, September 20, 2022 22:31:37 , plot date
2022-57 VW.vwx , CAD file name



FOOTINGS & SIMPSON STRONG WALL

NOT TO SCALE

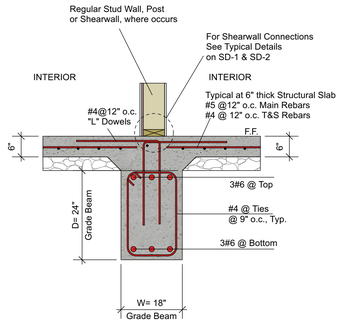
DETAIL 1



GRADE BEAM SECTION

NOT TO SCALE

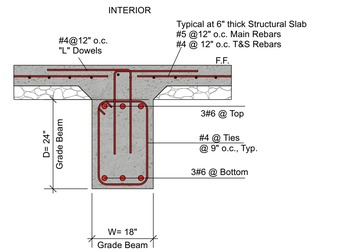
DETAIL 2



GRADE BEAM SECTION

NOT TO SCALE

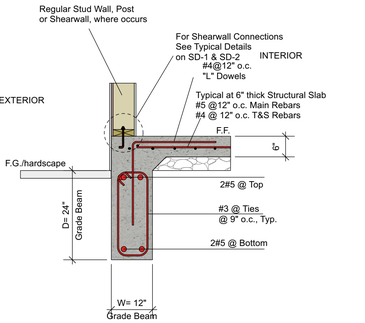
DETAIL 3



GRADE BEAM SECTION

NOT TO SCALE

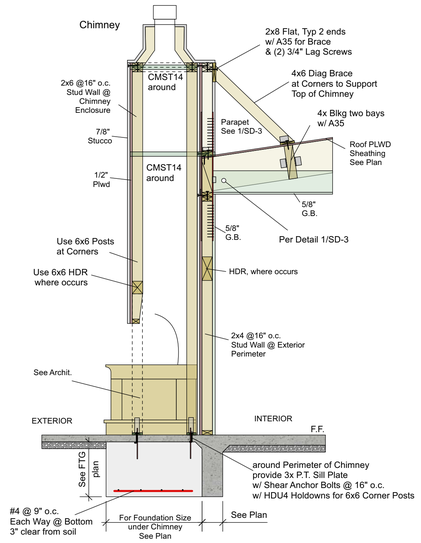
DETAIL 4



GRADE BEAM SECTION

NOT TO SCALE

DETAIL 5

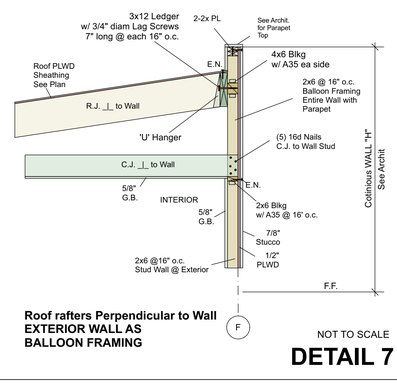


NOTE:
1) ARCHITECTURAL DETAILS GOVERN
2) FOR PREMANUFACTURED PARTS SEE CUT SHEETS

CHIMNEY WALL

NOT TO SCALE

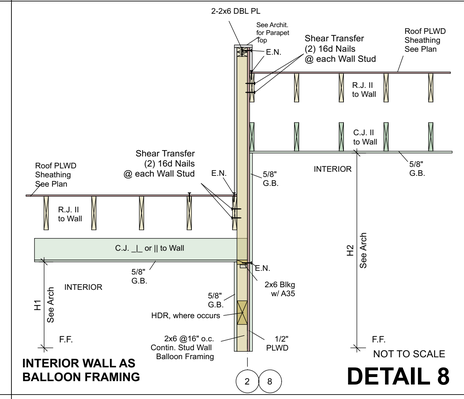
DETAIL 6



Roof rafters Perpendicular to Wall
EXTERIOR WALL AS BALLOON FRAMING

NOT TO SCALE

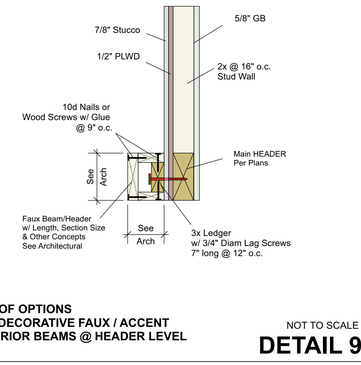
DETAIL 7



INTERIOR WALL AS BALLOON FRAMING

NOT TO SCALE

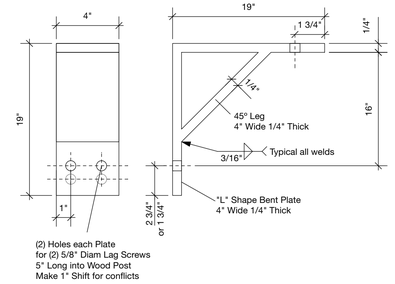
DETAIL 8



ONE OF OPTIONS
FOR DECORATIVE FAUX / ACCENT
EXTERIOR BEAMS @ HEADER LEVEL

NOT TO SCALE

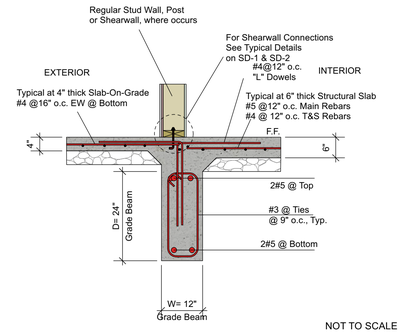
DETAIL 9



KNEE BRACE Made from A36 Steel Plate

NOT TO SCALE

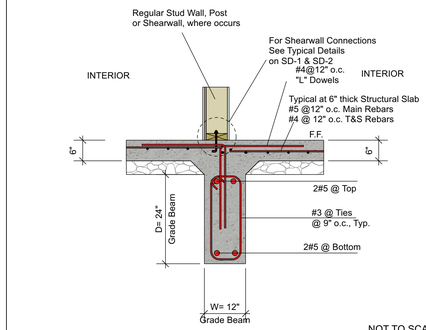
DETAIL 10



GRADE BEAM SECTION

NOT TO SCALE

DETAIL 12



GRADE BEAM SECTION

NOT TO SCALE

DETAIL 13

NOT TO SCALE

DETAIL 14

NOT TO SCALE

DETAIL 15

NOT TO SCALE

DETAIL 16

NOT TO SCALE

DETAIL 17

NOT TO SCALE

DETAIL 18

NOT TO SCALE

DETAIL 19

PLAN CHECK / PERMIT NUMBER:
- ____

REVISIONS

No.	Date	Approved	Notes

ISSUES

No.	Date	Approved	Notes

DRAWING TITLE

CLIENT NAME, PHONE, EMAIL - PROJECT ADDRESS
TRIPLE SKY RANCH
82800 58th Ave.
Thermal, CA 92274

New 1-story Shell

DRAWING TYPE
Structural Details

DESIGN FIRM
STRUCTURAL ENGINEERING SERVICES
Ashot Shagirian, P.E.
Address: 11337 Runnymede St.
Sun Valley, CA 91352-4745
Tel: (818) 731-4051
e-mail: ashot@mac.com
website: ashot.me

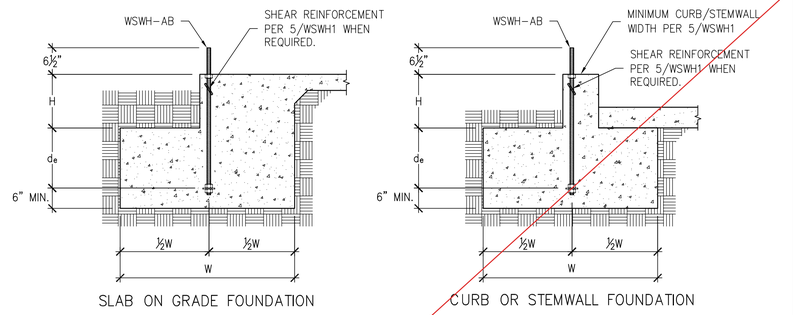
REGISTERED PROFESSIONAL ENGINEER
ASHOT SHAGIRIAN
No. 79415
Exp. March 31, 2024
CIVIL
STATE OF CALIFORNIA

DRAWN BY: Ash
DATE CREATED: Sep 09, 2022
DATE MODIFIED:
SCALE: N.T.S.
JOB NO: 2022-57
DRAWING NUMBER:

SD-4

9 OF 12
TOTAL SHEETS

Tuesday, September 20, 2022 22:31:37 - plot date
2022-57 VW.vwx : CAD file name

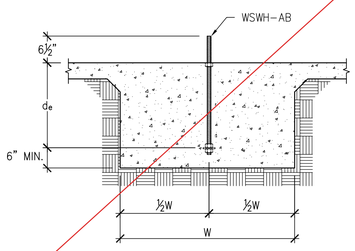


SLAB ON GRADE FOUNDATION

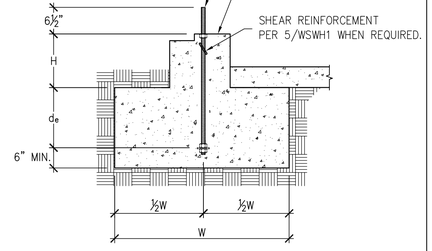
CURB OR STEMWALL FOUNDATION

NOTES :
1. SEE 2/WSWH1 FOR DIMENSIONS AND ADDITIONAL NOTES.
2. SEE 5/WSWH1 FOR SHEAR REINFORCEMENT WHEN REQUIRED.
3. MAXIMUM H = l_e–d_e. SEE 3/WSWH1 AND 4/WSWH1 FOR l_e.

DESIGNER IS PERMITTED TO MODIFY DETAILS FOR SPECIFIC CONDITIONS.

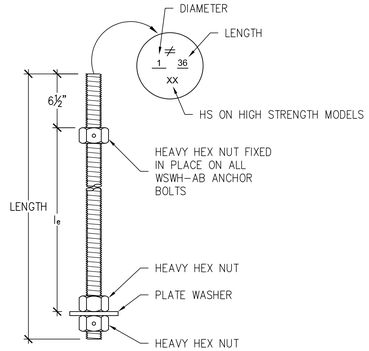


INTERIOR FOUNDATION



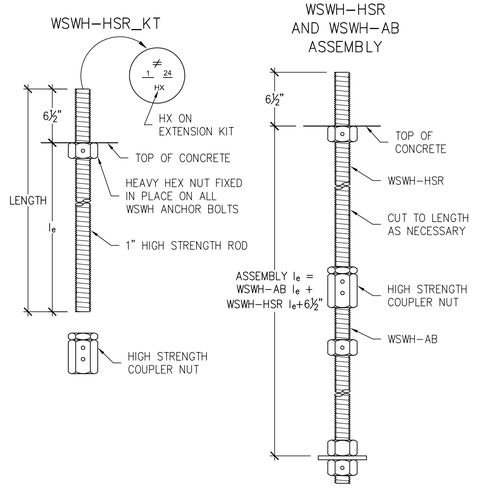
BRICK LEDGE FOUNDATION

STRONG–WALL® WSWH ANCHORAGE – TYPICAL SECTIONS | 1



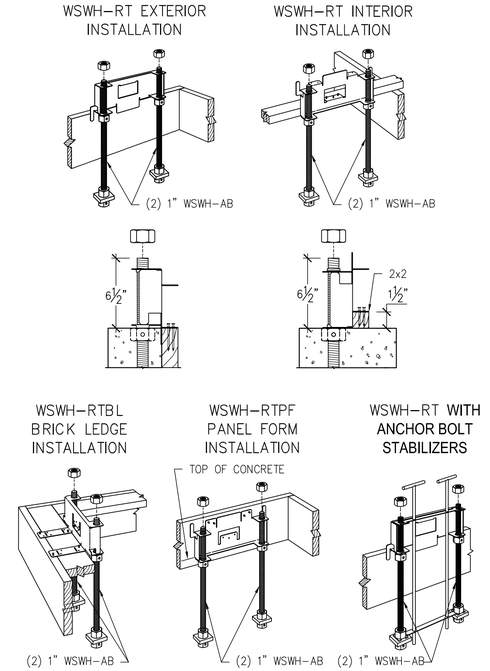
WSWH PANEL MODEL	MODEL NO.	DIAMETER	LENGTH	l_e
WSWH12, WSWH18 AND WSWH24	WSWH–AB1x24	1"	24"	15½"
	WSWH–AB1x24HS	1"	24"	15½"
	WSWH–AB1x30	1"	30"	21½"
	WSWH–AB1x30HS	1"	30"	21½"
	WSWH–AB1x36	1"	36"	27½"
	WSWH–AB1x36HS	1"	36"	27½"

WSWH ANCHOR BOLTS | 3

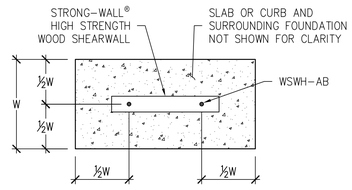


WSWH PANEL MODEL	MODEL NO.	DIAMETER	LENGTH	l_e
WSWH12, WSWH18 AND WSWH24	WSWH–HSR1x24KT	1"	24"	17½"
	WSWH–HSR1x36KT	1"	36"	29½"

WSWH ANCHOR BOLT EXTENSION | 4



WSWH ANCHOR BOLT TEMPLATES | 6



FOUNDATION PLAN VIEW

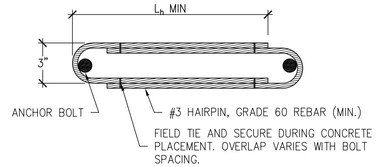
NOTES :
1. ANCHORAGE DESIGNS CONFORM TO ACI 318–11 APPENDIX D, ACI 318–14 CHAPTER 17 AND ACI 318–19 CHAPTER 17 WITH NO SUPPLEMENTARY REINFORCEMENT FOR CRACKED OR UNCRACKED CONCRETE AS NOTED.
2. ANCHOR STRENGTH INDICATES REQUIRED GRADE OF WSWH–AB ANCHOR BOLT. STANDARD (ASTM F1554 GRADE 36) OR HIGH STRENGTH (HS) (ASTM A193 GRADE B7).
3. SEISMIC INDICATES SEISMIC DESIGN CATEGORY C–F. DETACHED 1 AND 2 FAMILY DWELLINGS IN SDC C MAY USE WIND ANCHORAGE SOLUTIONS. SEISMIC ANCHORAGE DESIGNS CONFORM TO ACI 318–11 SECTION D.3.3.4.3, ACI 318–14 SECTION 17.2.3.4.3 AND ACI 318–19 SECTION 17.10.5.3.
4. WIND INCLUDES SEISMIC DESIGN CATEGORY A AND B AND DETACHED 1 AND 2 FAMILY DWELLINGS IN SDC C.
5. FOUNDATION DIMENSIONS ARE FOR ANCHORAGE ONLY. FOUNDATION DESIGN (SIZE AND REINFORCEMENT) BY OTHERS. THE DESIGNER MAY SPECIFY ALTERNATE EMBEDMENT, FOOTING SIZE OR ANCHOR BOLT.
6. REFER TO 1/WSWH1 FOR d_e.

WSWH ANCHORAGE SOLUTIONS FOR 2500 PSI CONCRETE					
DESIGN CRITERIA	CONCRETE CONDITION	ANCHOR STRENGTH	WSWH–AB1 ANCHOR BOLT		
			ASD ALLOWABLE UPLIFT (lbs)	W (in)	d_e (in)
SEISMIC	CRACKED	STANDARD	16,000	33	11
			17,100	35	12
		HIGH STRENGTH	34,100	52	18
			36,800	55	19
	UNCRACKED	STANDARD	15,700	28	10
			17,100	30	10
		HIGH STRENGTH	33,500	45	15
			36,800	48	16
WIND	CRACKED	STANDARD	6,200	16	6
			11,400	24	8
		HIGH STRENGTH	17,100	32	11
			21,100	36	12
			27,300	42	14
			34,100	48	16
			36,800	51	17
	UNCRACKED	STANDARD	6,400	14	6
			12,500	22	8
		HIGH STRENGTH	17,100	28	10
			22,900	33	11
			26,400	36	12
			34,200	42	14
			36,800	44	15

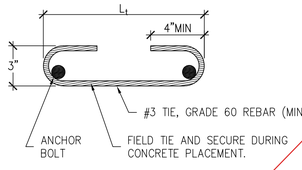
WSWH ANCHORAGE SOLUTIONS FOR 3000 PSI CONCRETE					
DESIGN CRITERIA	CONCRETE CONDITION	ANCHOR STRENGTH	WSWH–AB1 ANCHOR BOLT		
			ASD ALLOWABLE UPLIFT (lbs)	W (in)	d_e (in)
SEISMIC	CRACKED	STANDARD	16,000	31	11
			17,100	33	11
		HIGH STRENGTH	33,900	49	17
			36,800	52	18
	UNCRACKED	STANDARD	16,300	27	9
			17,100	28	10
		HIGH STRENGTH	34,000	43	15
			36,800	46	16
WIND	CRACKED	STANDARD	5,600	14	6
			10,200	21	7
		HIGH STRENGTH	17,100	30	10
			20,000	33	11
			26,500	39	13
			33,600	45	15
			36,800	48	16
	UNCRACKED	STANDARD	6,200	13	6
			12,800	21	7
		HIGH STRENGTH	17,100	26	9
			21,800	30	10
			28,900	36	12
			33,100	39	13
			36,800	42	14

WSWH ANCHORAGE SOLUTIONS FOR 4500 PSI CONCRETE					
DESIGN CRITERIA	CONCRETE CONDITION	ANCHOR STRENGTH	WSWH–AB1 ANCHOR BOLT		
			ASD ALLOWABLE UPLIFT (lbs)	W (in)	d_e (in)
SEISMIC	CRACKED	STANDARD	16,000	27	9
			17,100	29	10
		HIGH STRENGTH	34,700	44	15
			36,800	46	16
	UNCRACKED	STANDARD	15,700	23	8
			17,100	25	9
		HIGH STRENGTH	33,900	38	13
			36,800	40	14
WIND	CRACKED	STANDARD	6,800	14	6
			11,600	20	7
		HIGH STRENGTH	17,100	26	9
			21,400	30	10
			28,400	36	12
			32,400	39	13
			36,800	43	15
	UNCRACKED	STANDARD	6,800	12	6
			12,400	18	6
		HIGH STRENGTH	17,100	23	8
			22,800	27	9
			26,700	30	10
			30,700	33	11
			36,800	37	13

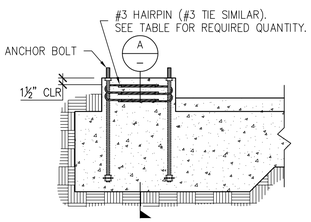
STRONG–WALL® HIGH STRENGTH WOOD SHEARWALL TENSION ANCHORAGE SCHEDULE 2,500, 3,000 AND 4,500 PSI | 2



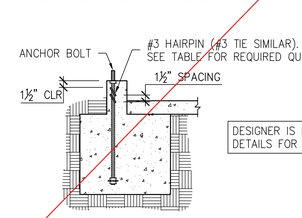
HAIRPIN SHEAR REINFORCEMENT



TIE SHEAR REINFORCEMENT



HAIRPIN INSTALLATION
(GARAGE CURB SHOWN. OTHER FOOTING TYPES SIMILAR.)



DESIGNER IS PERMITTED TO MODIFY DETAILS FOR SPECIFIC CONDITIONS.

SECTION A

STRONG–WALL® HIGH STRENGTH WOOD SHEARWALL SHEAR ANCHORAGE						
MODEL	SEISMIC[3]			WIND[4]		
	L_t OR L_h (in.)	SHEAR REINFORCEMENT	MIN. CURB/ STEMWALL WIDTH (in.)	SHEAR REINFORCEMENT	MIN. CURB/ STEMWALL WIDTH (in.)	ASD ALLOWABLE SHEAR LOAD, V (lb.)
						UNCRACKED / CRACKED
WSWH12	10¼	(1) #3 TIE	6	SEE NOTE 7	6	1,080 / 770
WSWH18	15	(2) #3 HAIRPINS[5,6]	6	(1) #3 HAIRPIN	6	HAIRPIN REINF. ACHIEVES MAX. ALLOW SHEAR LOAD OF THE WSWH
WSWH24	19	(2) #3 HAIRPINS[5]	6	(2) #3 HAIRPINS[5]	6	

NOTES :
1. SHEAR ANCHORAGE DESIGNS CONFORM TO ACI 318–19, ACI 318–11 AND ACI 318–14 AND ASSUME MINIMUM 2,500 PSI CONCRETE.
2. SHEAR REINFORCEMENT IS NOT REQUIRED FOR INTERIOR FOUNDATION APPLICATIONS (PANEL INSTALLED AWAY FROM EDGE OF CONCRETE), OR BRACED WALL PANEL APPLICATIONS.
3. SEISMIC INDICATES SEISMIC DESIGN CATEGORY C THROUGH F. DETACHED 1 AND 2 FAMILY DWELLINGS IN SDC C MAY USE WIND ANCHORAGE SOLUTIONS. SEISMIC SHEAR REINFORCEMENT DESIGNS CONFORM TO ACI 318–19, SECTION 17.10.6.3, ACI 318–14, SECTION 17.2.3.5.3
4. WIND INCLUDES SEISMIC DESIGN CATEGORY A AND B.
5. ADDITIONAL TIES MAY BE REQUIRED AT GARAGE CURB OR STEMWALL INSTALLATIONS BELOW ANCHOR REINFORCEMENT PER DESIGNER.
6. USE (1) #3 HAIRPIN FOR WSWH18 WHEN STANDARD STRENGTH ANCHOR IS USED.
7. USE (1) #3 TIE FOR WSWH12 WHEN PANEL DESIGN SHEAR FORCE EXCEEDS TABULATED ANCHORAGE ALLOWABLE SHEAR LOAD.
8. #4 GRADE 40 SHEAR REINFORCEMENT MAY BE SUBSTITUTED FOR WSWH SHEAR ANCHORAGE SOLUTIONS.
9. CONCRETE EDGE DISTANCE FOR ANCHORS MUST COMPLY WITH ACI 318–19 SECTION 17.9.2, ACI 318–14 SECTION 17.7.2 AND ACI 318–11 SECTION D.8.2.
10. THE DESIGNER MAY SPECIFY ALTERNATE SHEAR ANCHORAGE.

STRONG–WALL® WSWH SHEAR ANCHORAGE SCHEDULE AND DETAILS | 5

NO.	DATE	REVISIONS
0	02-26-2021	FIRST RELEASE - 2018 IBC
1	03-16-2021	2021 IBC REVISIONS

REGISTERED PROFESSIONAL ENGINEER
ASHOT SHAGIRIAN
C 79415
Exp. March 31, 2024
CIVIL
STATE OF CALIFORNIA

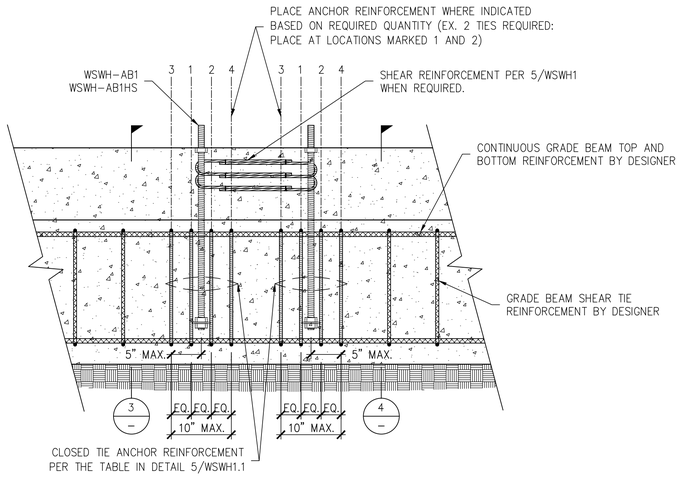
SIMPSON Strong-Tie, Co. Inc.
• 5956 W. Las Positas Blvd.
Pleasanton, CA 94588
• Tel: (800) 999-5099
• • Website: www.strongtie.com

SIMPSON StrongTie THERE IS NO EQUAL

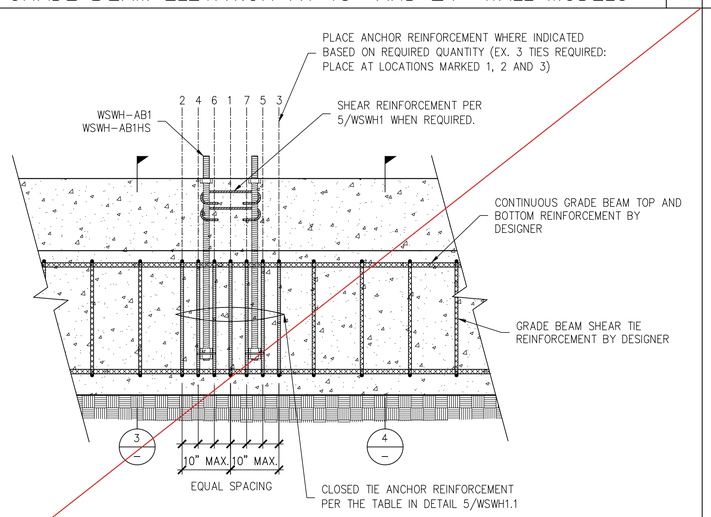
STRONG-WALL® WSWH
ANCHORAGE DETAILS
ENGINEERED DESIGNS

SIMPSON StrongTie THERE IS NO EQUAL

NAME	
DATE	03-16-2021
SCALE	N.T.S.
CHECKED	
SHEET	WSWH1
OF	SHEETS
JOB NO.	

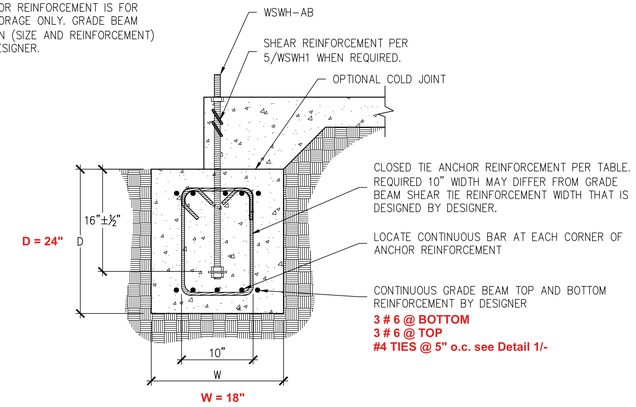


GRADE BEAM ELEVATION AT 18" AND 24" WALL MODELS | 1



GRADE BEAM ELEVATION AT 12" WALL MODEL | 2

NOTES :
ANCHOR REINFORCEMENT IS FOR ANCHORAGE ONLY. GRADE BEAM DESIGN (SIZE AND REINFORCEMENT) BY DESIGNER.



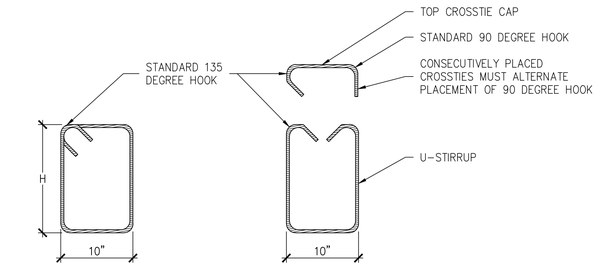
ANCHOR REIN. NOTE :
MINIMUM DISTANCES FROM THE ANCHOR BOLT PLATE WASHER TO TOP AND BOTTOM OF CLOSED TIE REINFORCEMENT ARE 13" AND 5" RESPECTIVELY.

DIMENSIONING NOTES :
D: DEPTH BY DESIGNER (24" MIN.)
W: WIDTH BY DESIGNER (18" MIN.)

GRADE BEAM SECTION AT ANCHOR REINFORCEMENT | 3

DIMENSIONING NOTES :
D: DEPTH BY DESIGNER (24" MIN.)
W: WIDTH BY DESIGNER (18" MIN.)

GRADE BEAM SECTION AWAY FROM ANCHOR REINFORCEMENT | 4



#4 SINGLE PIECE HOOP #4 TWO PIECE ASSEMBLY

DIMENSIONING NOTES :
H: HEIGHT OF ANCHOR REINFORCEMENT ASSEMBLY BY DESIGNER, SEE DETAIL 3/WSWH1.1 FOR MINIMUM REQUIREMENTS

CLOSED TIE ANCHOR REINFORCEMENT | 6

WSWH GRADE BEAM ANCHOR REINFORCEMENT

HIGH STRENGTH STRONG–WALL® WOOD SHEARWALL WIDTH (in.)	ANCHOR MODEL NO.	ANCHOR DIAMETER (in.)	ANCHOR REINFORCEMENT FOR WIND AND SEISMIC[3,8,9]		AMPLIFIED LRFD APPLIED DESIGN SEISMIC MOMENT (ft.–lbs.)[4,5,6,7]	
			STANDARD STRENGTH WSWH–AB1	HIGH STRENGTH (HS) WSWH–AB1HS	STANDARD STRENGTH WSWH–AB1	HIGH STRENGTH (HS) WSWH–AB1HS
12" MODEL	WSWH–AB1 WSWH–AB1HS	1	3–#4 CLOSED TIES PER (2 / –)	7–#4 CLOSED TIES PER (2 / –)	29,500	31,300
18" MODEL			2–#4 CLOSED TIES PER (1 / –)	4–#4 CLOSED TIES PER (1 / –)	48,000	72,900
24" MODEL					67,100	103,500

NOTE :
1. ANCHOR REINFORCEMENT CONFORMS TO ACI 318–19 SECTION 17.5.2, ACI 318–14 SECTION 17.4.2.9 AND ACI 318–11 SECTION D.5.2.9. FULL–SCALE TESTING WAS USED TO VALIDATE ANCHOR REINFORCEMENT CONFIGURATION AND PLACEMENT.
2. MINIMUM CONCRETE COMPRESSIVE STRENGTH, f'_c = 2500 psi.
3. CLOSED TIE ANCHOR REINFORCEMENT TO BE ASTM A615 GRADE 60 (MIN) #4 REBAR.
4. GRADE BEAM LONGITUDINAL AND TIE REINFORCEMENT SHALL BE SPECIFIED BY THE DESIGNER FOR FLEXURE AND SHEAR LOADING. DESIGN SHOULD CONSIDER PROJECT SPECIFIC DESIGN LOADS AND ALLOWABLE SOIL PRESSURE.
5. SIMPSON STRONG–TIE RECOMMENDS USING THE TABULATED MINIMUM AMPLIFIED LRFD APPLIED SEISMIC DESIGN MOMENT TO ENSURE GRADE BEAM DESIGN FLEXURE AND SHEAR STRENGTH IS ADEQUATE TO PREVENT PLASTIC HINGE FORMATION UNDER DEMANDS ASSOCIATED WITH ANCHORAGE FORCES CORRESPONDING TO ACI 318–19 SECTION 17.10.5.3, ACI 318–14 SECTION 17.2.3.4.3 AND ACI 318–11 SECTION D.3.3.4.3.
6. DESIGNER MAY USE REDUCED MOMENT DUE TO APPLIED WSWH LATERAL LOAD. MINIMUM MOMENT SHALL BE THE LESSER OF THE TABULATED MOMENT OR THE AMPLIFIED LRFD DESIGN MOMENT FOR SEISMIC: (ASD DESIGN DEMAND SHEAR/0.7) x Ω_o x WSWH WALL HEIGHT FOR GRADE BEAM DESIGN.
7. MINIMUM GRADE BEAM DESIGN MOMENT FOR WIND AND SEISMIC IN SEISMIC DESIGN CATEGORY A AND B AND DETACHED 1 AND 2 FAMILY DWELLINGS IN SDC C: (ASD DESIGN DEMAND SHEAR/0.6) x WSWH WALL HEIGHT.
8. CLOSED TIE MAY BE SINGLE PIECE HOOP OR TWO PIECE ASSEMBLY WITH A U–STIRRUP WITH STANDARD 135 DEGREE HOOKS AND A TOP CROSS TIE CAP. SEE DETAIL 6/WSWH1.1.
9. SEE DETAILS FOR GRADE BEAM ANCHOR REINFORCEMENT PLACEMENT, INSTALLATION AND SPACING REQUIREMENTS. CLOSED TIE ANCHOR REINFORCEMENT QUANTITY IS PER WALL FOR THE 12" WALL MODEL AND PER ANCHOR FOR THE 18" AND 24" MODELS.

WSWH–AB ANCHOR GRADE BEAM REINFORCEMENT AND DESIGN MOMENTS | 5

NO.	DATE	REVISIONS
0	10-12-2020	FIRST RELEASE - 2018 IBC
1	03-16-2021	2021 IBC REVISIONS

REGISTERED PROFESSIONAL ENGINEER
ASHOT SHAGIRIAN
C 79415
Exp. March 31, 2024
CIVIL
STATE OF CALIFORNIA

SIMPSON Strong-Tie, Co. Inc.
• 5956 W. Las Positas Blvd.
Pleasanton, CA 94588
• Tel: (800) 999–5099
• Website: www.strongtie.com

SIMPSON Strong-Tie THERE IS NO EQUAL

STRONG-WALL® WSWH
ALTERNATE ANCHORAGE DETAILS
ENGINEERED DESIGNS

SIMPSON Strong-Tie THERE IS NO EQUAL

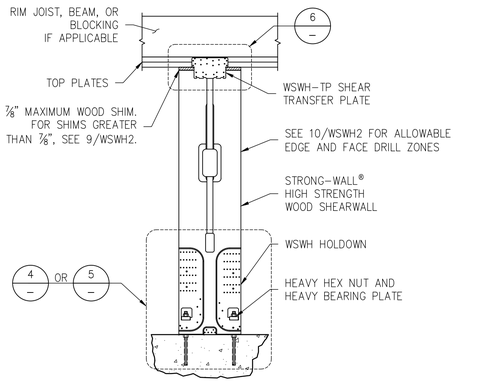
NAME	
DATE	03-16-2021
SCALE	N.T.S.
CHECKED	
SHEET	WSWH1.1
OF	SHEETS
JOB NO.	

STRONG-WALL® HIGH STRENGTH WOOD SHEARWALL MODELS

MODEL NO.	W (in.)	H (in.)	ANCHOR BOLTS		TOTAL WALL WEIGHT (lb.)
			QUANTITY	DIA. (in.)	
WSWH12x7	12	84	2	1	105
WSWH18x7	18	84	2	1	155
WSWH12x8	12	96	2	1	120
WSWH18x8	18	96	2	1	175
WSWH24x8	24	96	2	1	225
WSWH12x9	12	108	2	1	130
WSWH18x9	18	108	2	1	195
WSWH24x9	24	108	2	1	250
WSWH12x10	12	120	2	1	145
WSWH18x10	18	120	2	1	210
WSWH24x10	24	120	2	1	275
WSWH12x12	12	144	2	1	165
WSWH18x12	18	144	2	1	245
WSWH24x12	24	144	2	1	325
WSWH18x14	18	168	2	1	285
WSWH24x14	24	168	2	1	370
WSWH24x16	24	192	2	1	420
WSWH18x20	18	240	2	1	390
WSWH24x20	24	240	2	1	520

NOTES :
1. FOR HEIGHTS NOT LISTED, ORDER THE NEXT TALLEST PANEL AND TRIM TO FIT. MINIMUM TRIMMED HEIGHT FOR ALL PANELS IS 74½".
2. ALL PANELS COME WITH PRE-ATTACHED HOLDOWNS, TWO HEAVY HEX NUTS, TWO HEAVY BEARING PLATES, ONE WSWH-TP TOP CONNECTION PLATE WITH REQUIRED FASTENERS AND INSTALLATION INSTRUCTIONS.
3. ALL PANELS ARE 3½" THICK.

STRONG-WALL® WSWH MODELS | 1



DESIGNER IS PERMITTED TO MODIFY DETAILS FOR SPECIFIC CONDITIONS.

ENSURE CONCRETE IS LEVEL AND SMOOTH BENEATH PANEL. GRIND OR FILL AS NECESSARY.

SINGLE STORY WSWH ON CONCRETE | 2

DESIGNER IS PERMITTED TO MODIFY DETAILS FOR SPECIFIC CONDITIONS.

WHEN WSWH-PS STRAPS OMITTED, ALLOWABLE SHEAR VALUES FOR STANDARD PANEL APPLY.

GARAGE HEADER ROUGH OPENING HEIGHT

MODEL NO.	TRIMMED PANEL HEIGHT	H CURB	ROUGH OPENING HEIGHT
WSWH12x7 WSWH18x7 WSWH24x7	78"	5½"	6'-11½"
		6"	7'-0"
WSWH12x8 WSWH18x8 WSWH24x8	85½"	0"	7'-1½"
	93¾"	5½"	8'-2¾"
		6"	8'-3¼"

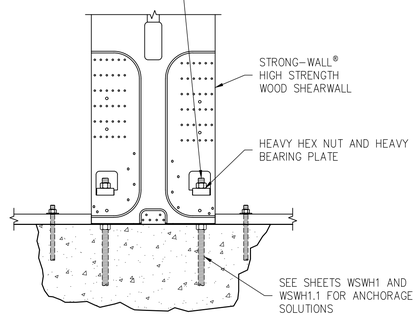
NOTES :
1. IF REQUIRED ROUGH OPENING HEIGHT EXCEEDS TABLE VALUE, SPECIFY NEXT TALLER PANEL AND TRIM AS NECESSARY. THE STRONG-WALL® HIGH STRENGTH WOOD SHEARWALL MAY BE TRIMMED TO A MINIMUM HEIGHT OF 74½".
2. FURRING DOWN GARAGE HEADER MAY BE REQUIRED FOR CORRECT ROUGH OPENING HEIGHT.

FOR GARAGE WALL OPTION 2, DESIGNER SHALL DESIGN AND DETAIL FOR:
1. SHEAR TRANSFER
2. OUT-OF-PLANE LOADING EFFECT
3. INCREASED OVERTURNING AND DRIFT DUE TO ADDITIONAL HEIGHT

ALTERNATE WSWH GARAGE FRONT OPTIONS | 3

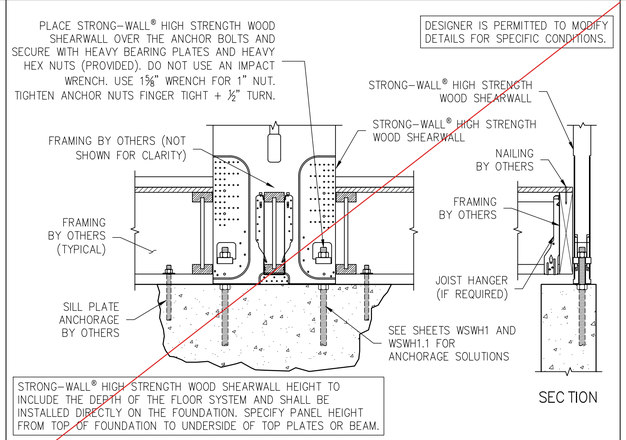
STANDARD INSTALLATION BASE CONNECTION | 4

PLACE STRONG-WALL® HIGH STRENGTH WOOD SHEARWALL OVER THE ANCHOR BOLTS AND SECURE WITH HEAVY BEARING PLATES AND HEAVY HEX NUTS (PROVIDED). DO NOT USE AN IMPACT WRENCH. USE 1⅜" WRENCH FOR 1" NUT. TIGHTEN ANCHOR NUTS FINGER TIGHT + ½" TURN.



DESIGNER IS PERMITTED TO MODIFY DETAILS FOR SPECIFIC CONDITIONS.

WOOD FLOOR SYSTEM BASE CONNECTION | 5



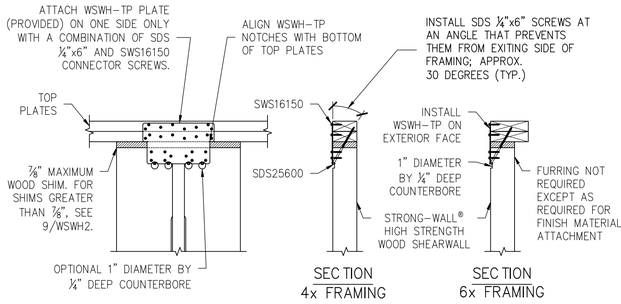
DESIGNER IS PERMITTED TO MODIFY DETAILS FOR SPECIFIC CONDITIONS.

STRONG-WALL® HIGH STRENGTH WOOD SHEARWALL HEIGHT TO INCLUDE THE DEPTH OF THE FLOOR SYSTEM AND SHALL BE INSTALLED DIRECTLY ON THE FOUNDATION. SPECIFY PANEL HEIGHT FROM TOP OF FOUNDATION TO UNDERSIDE OF TOP PLATES OR BEAM.

TOP CONNECTION | 6

WSWH-TP CONNECTION		
MODEL NO.	FASTENER QUANTITY	
	SWS16150	SDS25600
WSWH-TP12	14	2
WSWH-TP18	26	4
WSWH-TP24	46	8

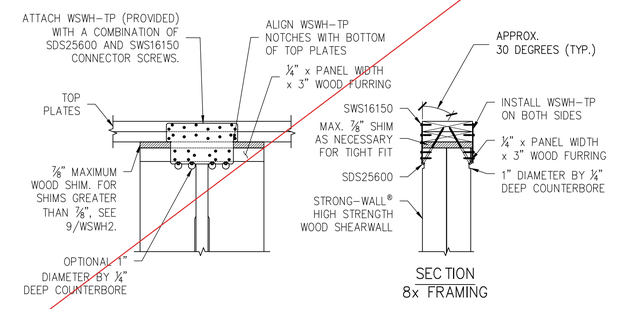
DESIGNER IS PERMITTED TO MODIFY DETAILS FOR SPECIFIC CONDITIONS.



BACK-TO-BACK TOP CONNECTION | 7

WSWH-TP CONNECTION		
MODEL NO.	FASTENER QUANTITY	
	SWS16150	SDS25600
WSWH-TP12	28	4
WSWH-TP18	52	8
WSWH-TP24	92	16

DESIGNER IS PERMITTED TO MODIFY DETAILS FOR SPECIFIC CONDITIONS.



RAKE WALL | 8

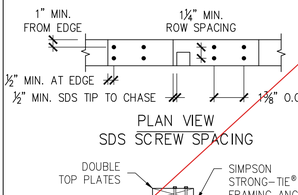
QTY. OF SDS¼"x6" SCREWS REQ'D.

WSWH12	4
WSWH18	8
WSWH24	16

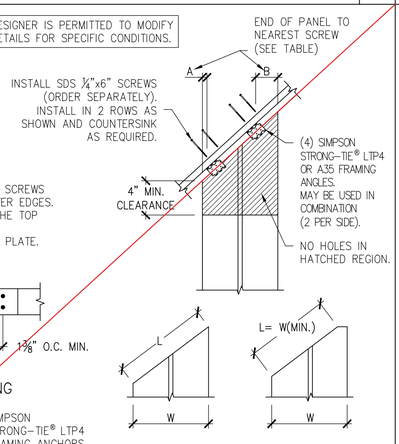
EDGE DISTANCE FOR SCREWS

SLOPE	A (in.)	B (in.)
0:12-4:12	2	3
5:12-8:12	1½	4½
9:12-12:12	1½	5½

NOTES :
1. MAINTAIN END DISTANCES TO PREVENT SCREWS FROM PENETRATING THROUGH THE OUTER EDGES.
2. INSTALL SCREWS PERPENDICULAR TO THE TOP PLATE.
3. EDGE DISTANCES ASSUME DOUBLE TOP PLATE.



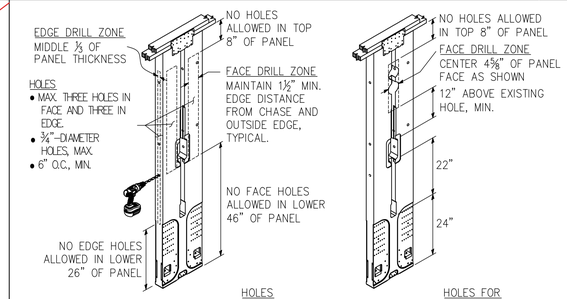
DESIGNER IS PERMITTED TO MODIFY DETAILS FOR SPECIFIC CONDITIONS.



INSTALLATION NOTES :
1. ACTUAL CUT LENGTH (L) MUST BE GREATER THAN OR EQUAL TO PANEL WIDTH (W).
2. THIS DETAIL APPLICABLE FOR SLOPES UP TO 12:12.
3. PANELS TALLER THAN 12' MUST BE DESIGNED FOR THE APPLICATION.

RAKE WALL | 8

TOP OF WALL HEIGHT ADJUSTMENTS | 9

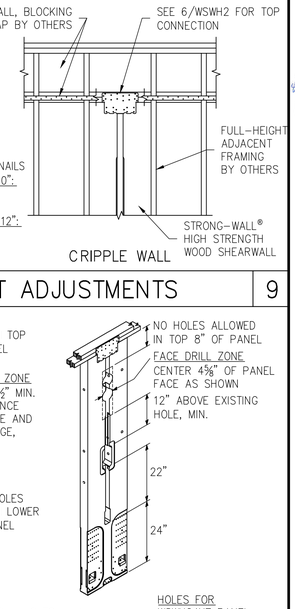


DESIGNER SHALL DESIGN AND DETAIL FOR:
1. SHEAR TRANSFER
2. OUT-OF-PLANE LOADING EFFECT
3. INCREASED OVERTURNING AND DRIFT DUE TO ADDITIONAL HEIGHT

FOR 8" TO 12" BLOCK DEPTHS:
ATTACH SIMPSON STRONG-TIE® CS16 STRAPS AT EDGE OF WSWH PANEL (EACH SIDE) USING 10dx1½" NAILS

SHIM BLOCK HEIGHTS GREATER THAN 8" AND UP TO 10":
- 8 NAILS INTO BLOCK
- 8 NAILS INTO WSWH PANEL

SHIM BLOCK HEIGHTS GREATER THAN 10" AND UP TO 12":
- 10 NAILS INTO BLOCK
- 10 NAILS INTO WSWH PANEL



TRIM ZONE AND ALLOWABLE HOLES | 10

NOTES | 11

1. STRONG-WALL® HIGH STRENGTH WOOD SHEARWALL IS MANUFACTURED AND TRADEMARKED BY "SIMPSON STRONG-TIE COMPANY INC." HOME OFFICE: 5956 W. LAS POSITAS BLVD., PLEASANTON, CA 94588 TEL: (800) 999-5099, FAX: (925) 847-1597. "SIMPSON STRONG-TIE COMPANY INC." IS AN ISO 9001-2008 REGISTERED COMPANY.
2. USE OF THIS PRODUCT IS SUBJECT TO THE APPROVAL OF THE LOCAL BUILDING DEPARTMENT.
3. THIS PRODUCT IS PART OF THE OVERALL LATERAL FORCE RESISTING SYSTEM OF THE STRUCTURE. DESIGN OF THE BUILDING'S LATERAL FORCE RESISTING SYSTEM, INCLUDING THE LOAD PATH TO TRANSFER LATERAL FORCES FROM THE STRUCTURE TO THE GROUND, IS THE RESPONSIBILITY OF THE DESIGNER.
4. ENGINEER OF RECORD IS PERMITTED TO MODIFY DETAILS FOR SPECIFIC CONDITIONS.
5. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, CONDITIONS, ELEVATIONS, ETC. PRIOR TO INSTALLATION OF ANY COMPONENTS FOR THE STRONG-WALL SB SYSTEM. IF ANY DISCREPANCIES ARE FOUND, THEY SHALL BE BROUGHT TO THE ATTENTION OF THE DESIGNER FOR CLARIFICATION PRIOR TO CONSTRUCTION.
6. INSTALLATION OF PRODUCT SHALL BE DONE IN CONFORMANCE TO THESE DRAWINGS. THE PERFORMANCE OF MODIFIED PRODUCTS OR ALTERED INSTALLATION PROCEDURES ARE THE SOLE RESPONSIBILITY OF THE DESIGNER.
7. SIMPSON STRONG-TIE COMPANY INC. RESERVES THE RIGHT TO CHANGE SPECIFICATIONS, DESIGNS, AND MODELS WITHOUT NOTICE OR LIABILITY FOR SUCH CHANGES.
8. ALL HARDWARE CALLED OUT IS SIMPSON STRONG-TIE.
9. SEE ICC-ES ESR-2652 OR CITY OF LOS ANGELES RR25730 AS APPLICABLE FOR ADDITIONAL INFORMATION.

NO.	DATE	REVISIONS
0	11-20-2020	FIRST RELEASE - 2018 IBC
1	03-16-2021	2021 IBC REVISIONS

REGISTERED PROFESSIONAL ENGINEER
ASHOT SHAGIRIAN
C 79415
Exp. March 31, 2024
CIVIL
STATE OF CALIFORNIA

SIMPSON Strong-Tie, Co. Inc.
• 5956 W. Las Positas Blvd.
• Pleasanton, CA 94588
• Tel: (800) 999-5099
• Website: www.strongtie.com

SIMPSON Strong-Tie THERE IS NO EQUAL

STRONG-WALL® WSWH
FRAMING DETAILS
ENGINEERED DESIGNS

NAME	
DATE	03-16-2021
SCALE	N.T.S.
CHECKED	
SHEET	WSWH2
OF	SHEETS
JOB NO.	

GENERAL NOTES:

1. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS. CONTRACTOR SHALL VERIFY, AND BE RESPONSIBLE FOR All DIMENSIONS AND CONDITIONS ON THE JOB. THE DESIGNER MUST BE NOTIFIED OF ANY VARIATIONS FROM THE DIMENSIONS OR CONDITIONS SHOWN ON THESE DRAWINGS. SHOP DRAWINGS MUST BE SUBMITTED TO THE DESIGNER FOR COMPLIANCE REVIEW BEFORE PROCEEDING WITH FABRICATION.
2. All DIMENSIONS ARE TO FINISH UNLESS NOTED OTHERWISE.
3. ALUMINUM WIRES SMALLER THAN 1Ø PROHIBITED
4. DO NOT SCALE DRAWINGS.
5. A DEDICATED 125V,20A (10AWG COPPER BRANCH CIRCUIT) ELECTRICAL RECEPTACLE THAT IS WITHIN 3 FEET FROM THE WATER HEATER AND ACCESSIBLE TO THE WATER HEATER WITH NO OBSTRUCTIONS. THERE SHALL BE A RESERVED SINGLE POLE SPACE IN THE ELECTRICAL PANEL LABEL "FUTURE 240V USE".

   A CATAGORY III OR IV VENT, OR A TYPE B VENT WITH STRAIGHT PIPE BETWEEN THE OUTSIDE TERMINATION AND THE SPACE WHERE THE WATER HEATER IS INSTALLED.

   A CONDESATE DRAIN THAT IS NO MORE THAN 2 INCHES HIGHER THAN THE BASE OF THE INSTALLED WATER HEATER, AND ALLOWS NOTURAL DRAINING WITHOUT PUMP ASSISTANCE.

   A GAS SUPPLY LINE WITH A CAPACITY OF AT LEAST 2000,000 BTU/HR.
6. KITCHENS. ALL INSTALLED WATTAGE OF LUMINARIES IN KITCHEN SHALL BE HIGH EFFICACY.

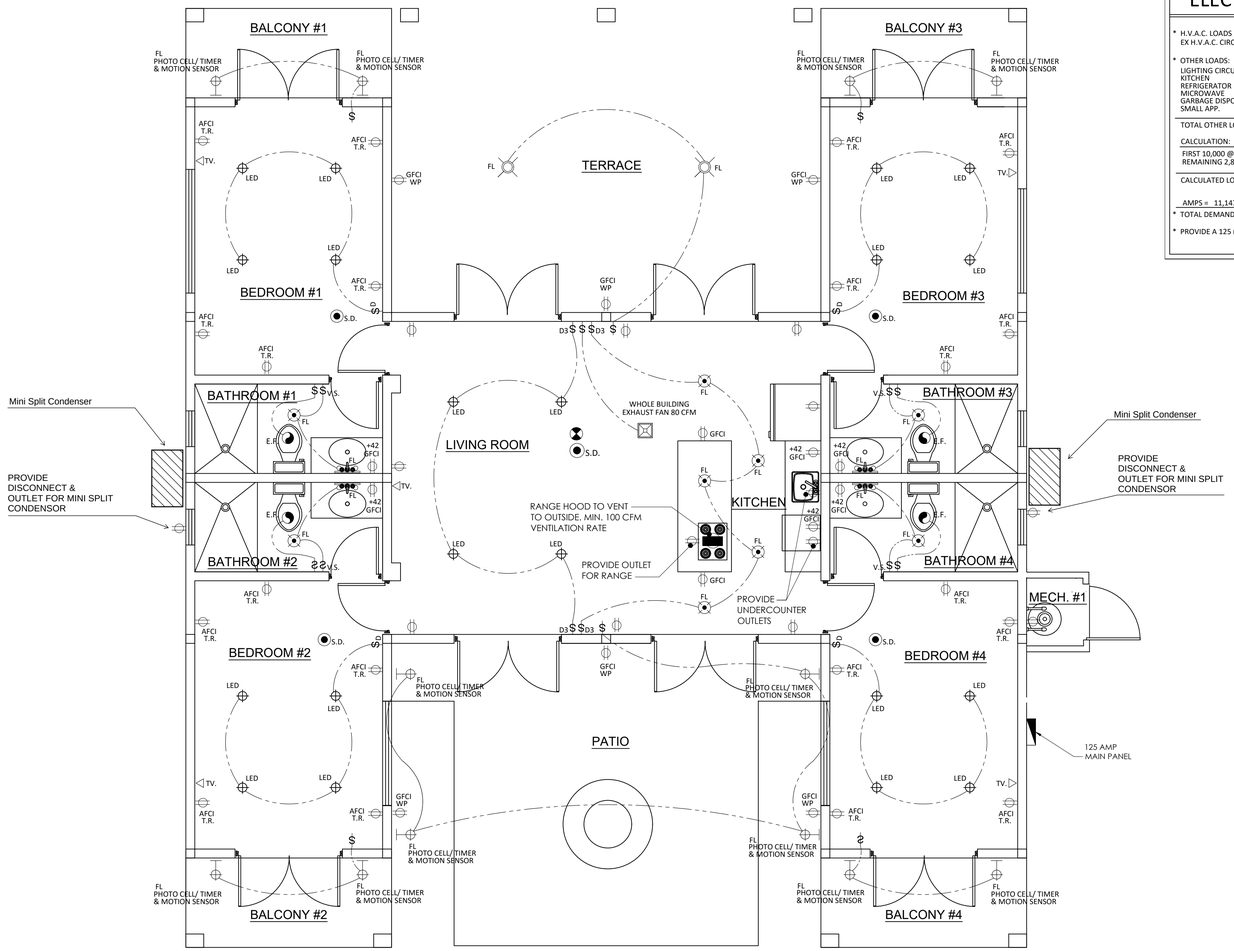
   LIGHTING IN BATHRROMS, GARAGE, LAUNDRY ROOMS AND UTILITY ROOMS. ALL LUMINARIES SHALLBE HIGH EFFICACY AND SHALL BE CONTROLLED BY A VACANCY SENSOR.

   OTHER ROOMS. ALL LUMINARIES SHALL BE HIGH EFFICACY AND SHALL BE CONTROLLED BY A VACANCYSENSON OR DIMMER. CLOSETS THAT ARE LESS THAN 70 SQUARE FOOT ARE EXEMPT FROM THIS REQUIREMENT.

   OUTDOOR LIGHTING. ALL LUMINARIES MOUTED TO THE BUILDING OR TO OTHER BUILDINGS ON THE SAME LOTSHALL BE HIGH EFICACY LUMINARIES OR SHALL BE CONTROLLED BY A PHOTOCONTROL/MOTION SENSOR CONBINATION (WITH OVERRIDE).
7. THE WHOLE HOUSE VENTILATION EXHAUST FAN WILL OPERATE CONTINUOSLY AND REQUIRED TO BE RATED FOR SOUND AT A MAX.OF 1 SONE AND TO BE CONTROLLED BY A STANDARD ON/OFF SWITCH BUT THE SWITCH MUST BE LABELED. NO SPECIFIC WORDING IS MANDATED, BUT THE WORDING NEEDS TO BE CLEAR, THIS MAY BE AS SIMPLE AS "VENTILATION CONTROL" OR MIGHT INCLUDE WORDING SUSH AS: "OPERATE WHEN THE HOUSE IS IN USE" OR "KEEP ON EXCEPT WHEN GONE OVER 7 DAYS" OR "FAN IS TO BE LEFT ON TO ENSURE INDOOR QUALITY".
8. BOND GROUNDING ELECTRODES TO METAL GAS AND WATER PIPING. (CEC 250.104(A) & (B))
9. INSTALL GROUND CONDUCTOR IN ALL NON-METALIC CONDUITS PER NEC TABLE 250-95.
10. UNLESS SPECIFIED OTHERWISE, ALL WIRING SHALL BE PER THE LATEST EDITION OF THE CEC.
11. PROVIDE GFI PROTECTION TO ALL 120VOLT, 15 AND 20AMP RECEPTACLE INTALLED OUTDOORS, IN BATHROOMS, INBASEMENT, AT COUNTER TOP SURFACES AND GARAGE (CEC210.8(A))
12. ALL BRANCH CIRCUITS THAT SUPPLY 150VOLT, SINGLE PHASE, 15 AND 20 AMPERE OUTLETS INSTALED IN DWELLING UNITS SHAL BE PROTECTED BY AN ARC-FAULT CIRCUIT INTERRUPTER(S). (CEC 210.12) NOTE THIS REQUIREMENT IS FOR THE ENTIRE CIRCUIT, NOT JUST OUTLETS.
13. LISTED TAMPER-RESISTANT RECEPTACLES SHALL BE PROVIDED WHERE REPLACEMENTS ARE MADE AT RECEPTACLE OUTLETS THAT ARE REQUIRED TO BE TAMPER-RESISTANT ELSE-WHERE IN THIS CODE, EXCEPT WHERE A NON-GROUNDING RECEPTACLE IS REPLACED WITH ANOTHER NON-GROUNDING RECEPTACLE. (CEC406.4(D)(5))
14. ARC-FAULT CIRCUIT PROTECTION IS NOW REQUIRED FOR BRANCH CIRCUITS INSTALLED IN DWELLING UNIT KITCHENS AND LAUNDRY AREAS: (CEC210.12(A),406.4(D)(4))
15. ALL INSTALLED LUMINARIES SHALL BE HIGH-EFFICACY IN ACCORDANCE WITH ES TABLE 150.0-A.
16. RECESSED CA LIGHT FIXTURES SHALL BE IC LISTED, AIR-TIGHT LABELED, AND NOT BE EQUIPPED WITH A STANDARD MEDIUM BASE SCREW SHELL LAMP HOLDER. ES 150.0(K)
17.

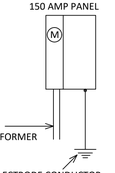
LEGEND

- NEW WALL CONSTRUCTION WITH 2x6 STUDS D.F. No.2 @ 16"O.C. ON EXTERIOR WALLS AND 2x4 STUDS D.F. No.2 @ 16"O.C. ON INTERIOR WALLS.
  NOTES: a. USE 2x6 STUDS D.F. No.2 @ 16"O.C. FOR PLUMBING WALLS
  b. SEE STRUCTURAL PLANS FOR NEW WALLS WITH 2x6 STUDS AT 12" O.C. *FULL HEIGHT*
- EXISTING 2x STUD WALL TO BE REINFORCED WITH 2x6 AT 16" O.C. STUDS *(SEE DETAIL 5/S4.1, WHERE APPLIES ONLY)*
- HARD-WIRED CARBON MONOXIDE ALARM WITH A BATTERY BACKUP
- S.D. PHOTOELECTRIC SMOKE ALARM. 110 V. / HARD WIRE W/ BATTERY BACKUP. AND BATTERY OPERATE FOR EXISTING LIVING AREA NOTE: SHALL BE INSTALLED NOT LESS THAT A 3 FT. HORIZONTAL DISTANCE FROM THE DOOR OR OPENING OF A BATHROOM THAT CONTAINS A BATHTUB OR SHOWER.
- E.F. EXHAUST FAN WITH HUMIDISTAT,5-AIR CHANGE PER HR. MIN. EXHAUST FANS SHALL BE ENERGY STAR COMPLIANT AND BE DUCTED TO TERMINATE TO THE OUTSIDE OF THE BUILDING.
- DOWNSPOUT
- DRAIN
- INDICATES DIRECTION OF SLOPE
- RECEPTACLE OUTLET
- GFI G.F.C.I. (GROUND -FAULT CIRCUIT INTERRUPTER) RECEPTACLE OUTLET
- $ SWITCH
- $3 3 WAY SWITCH
- $M SWITCH W/ MANUAL-ON OCCUPANCY SENSOR
- $V.S. SWITCH W/ VACANCY SENSOR
- $D SWITCH W/ DIMMER
- FLUORESCENT RECESSED LIGHT
- HIGH EFFICIENCY RECESSED LIGHT
- W.P. HIGH EFFICIENCY WATERPROOF WALL MOUNTED LIGHT FIXTURE CONTROLLED BY A MANUAL ON AND OFF SWITCH
- W.P. EXTERIOR WATER PROOF OUTLET
- INDICATES FLOOR DROP
- WHOLE BUILDING EXHAUST FAN 80CFM BROAN MODEL# SSQTXE080
- FL PENDANT LIGHT FIXTURE



1 Electrical Plan
SCALE: 1/4" = 1'-0"

SINGLE LINE DIAGRAM



ELECTRICAL LOAD CALC.

* H.V.A.C. LOADS (@ 100% LOAD)				
EX H.V.A.C. CIRCUITS	1 CIR. @ 40 AMPS			40 AMPS
* OTHER LOADS:				
LIGHTING CIRCUITS	1,422 SQ. FT. x 3	=	4,266	
KITCHEN	1,500 VA	=	1,500	
REFRIGERATOR		=	900	
MICROWAVE		=	900	
GARBAGE DISPOSAL		=	800	
SMALL APP.	1,500 VA x 3	=	4,500	
TOTAL OTHER LOADS:		=	12,866 VA	
CALCULATION:				
FIRST 10,000 @ 100%		=	10,000 VA	
REMAINING 2,866 WATTS @ 40%		=	1,147 VA	
CALCULATED LOAD:		=	11,147 VA	
AMPS = 11,147 WATTS / 240 VOLTS			=	46.4 AMPS
* TOTAL DEMAND LOADS (AMPS.)			=	86.4 AMPS

* PROVIDE A 125 (AMPS.) PANEL FOR SERVICE

ELECTRICAL PLAN

E1

MECHANICAL LEGEND

NEW AIR SUPPLY DUCT

NEW A/C CEILING SUPPLY GRILLE

NEW A/C WALL SUPPLY GRILLE

EXHAUST FAN 50 C.F.M.

RETURN SUPPLY
AIR DUCT

R/A A/C F.A.U. RETURN

R/A A/C F.A.U. FLOOR RETURN

WHOLE BUILDING
EXHAUST FAN 80 CFM
BROAN MODEL# SSQTXE080

THERMOSTAT

INSTANTANEOUS
WATER HEATER

ELECTRICAL SUB PANEL

ELECTRICAL METER

MECHANICAL NOTES

1.- A/C CONTRACTOR SHALL BE RESPONSIBLE FOR FINAL DESIGN, SIZING AND BALANCE OF THE SYSTEM, DUCT RUNS AND SIZES SHOWN HERE ARE PRELIMINARY ONLY, A/C CONTRACTOR SHALL PERFORM CALCULATION AND FINAL DESIGN; A/C CONTRACTOR WILL SHOP DERATE FURNACE HEATING BONNET CAPACITY AS REQUIRED, THE BUILDING DESIGNER SHALL BE NOTIFIED OF ALL CHANGES PRIOR TO CONSTRUCTION.

2.- FURNACES SHALL HAVE PILOTLESS IGNITION.

3.- FURNACE HEATING BONNET CAPACITY SHALL BE SHOP DERATED TO THE CAPACITY INDICATED IN THE ENERGY CALCULATIONS.

4.- USE- No 26 GALVANIZED SHEET GUAGE FOR AIR DUCTS PENETRATING THROUGH THE WALL, FLOOR OR CEILING, SEPARATING A Group R, Division 3 OCCUPANCY FROM A GROUP M OCCUPANCY Note: THIS IS ING LINE FIRE DAMPERS INSTALLED IN THE AIR DUCTS REFER TO THE UBC SECTION 503 (d).

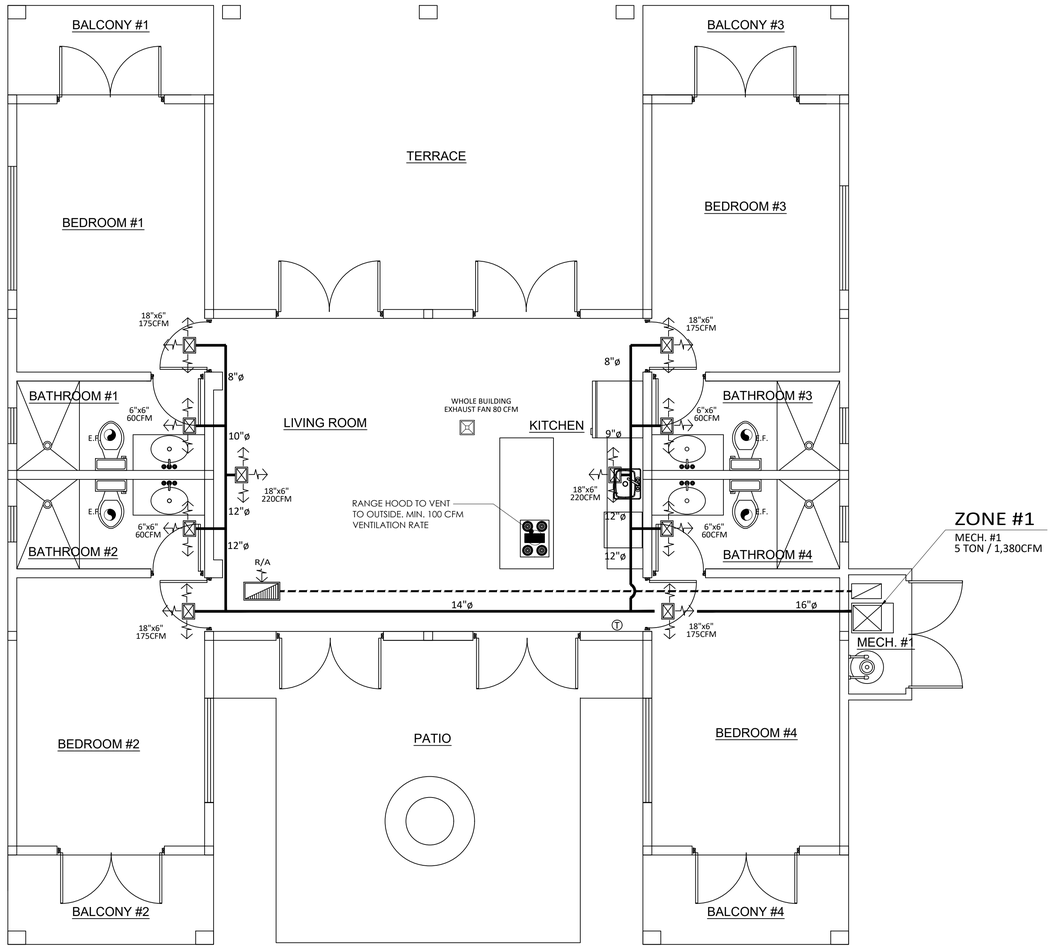
5.- ALL HARD SURFACES SHALL BE IN PLACE FOR FINAL INSPECTION.

6.- APPLIANCES DESIGNED TO BE FIXED IN POSITION SHALL BE SECURELY FASTENED IN PLACE. (CMC 304.4)

7.- SYSTEM TO BE 1N CRAWLING SPACE, LOCATION OF GRILLES AND DUCTS TO BE REVIEW ON SITE BEFORE INSTALLATION, CONTRACTOR TO VERIFY INSTALLATION WITH SUB-CONTRACTOR

8.- THE EXHAUST TERMINATION WILL NOT BE CLOSER THAN 3' TO THE WINDOW OR ROOFTOP OPERABLE SKYLIGHTS. CMC 502.2.1

9.- RESIDENTIAL BATHROOM EXHAUST FANS SHALL BE ENERGY STAR RATED AND SHALL BE CONTROL BY A HUMIDISTAT CAPABLE OF AN ADJUSTMENT BETWEEN 50 AND 80% HUMIDITY. CALGREEN 4.506.1.



1 Mechanical Plan
SCALE: 1/4" = 1'-0"

MECHANICAL PLAN

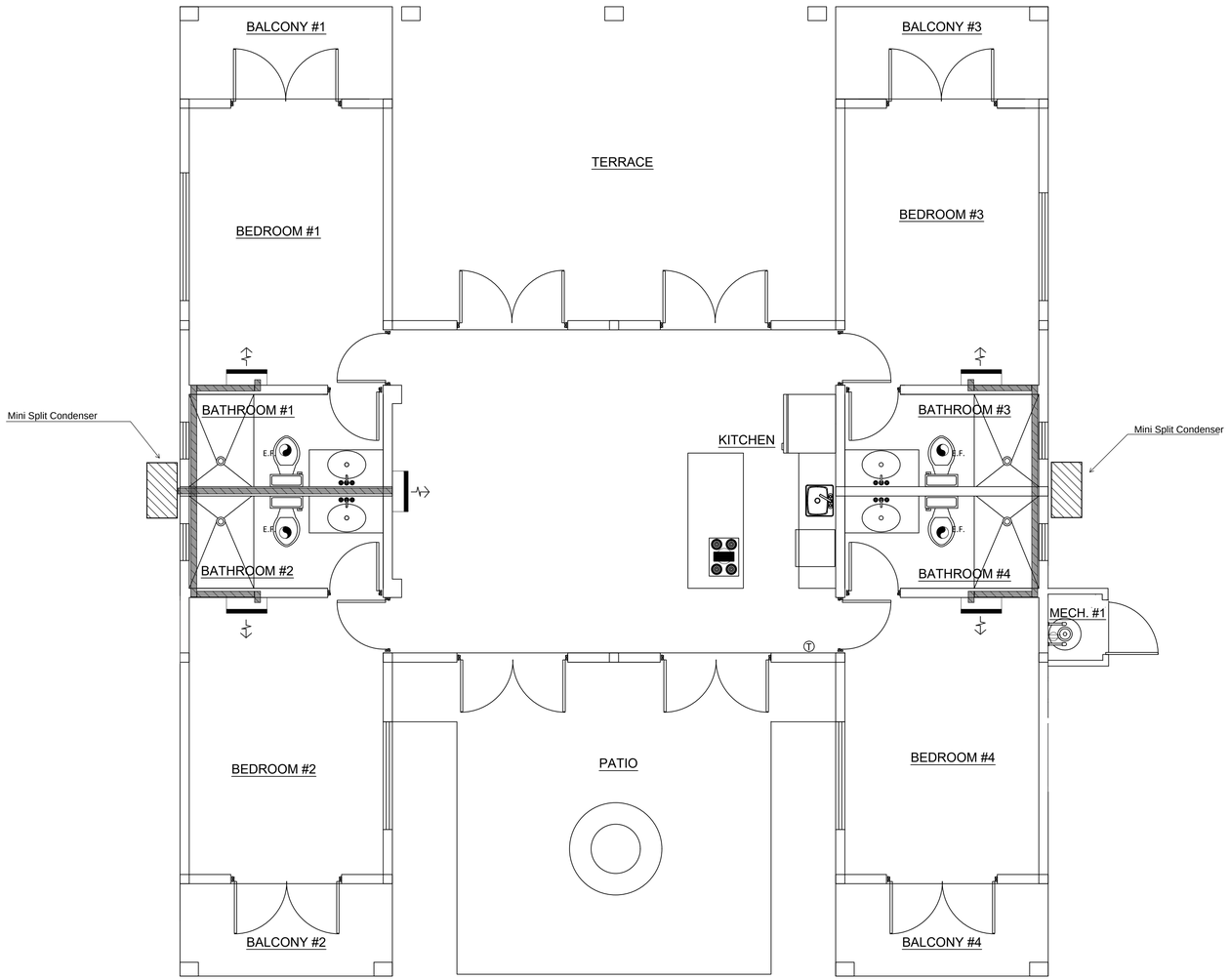
M1

MECHANICAL LEGEND

DUCTLESS MINI-SPLIT AIR CONDITIONER INDOOR UNIT WALL MONTED HEATING AND COOLING SUSTEM MINIMUM 12,000 BTU CAPABLE OF MAINTAINING A ROOM TEMPERATURE OF 68°F.

MINI-SPLIT CONDENSER

Mini Split Connection



1 Mechanical Plan

SCALE: 1/4" = 1'-0"

PLUMBING LEGEND

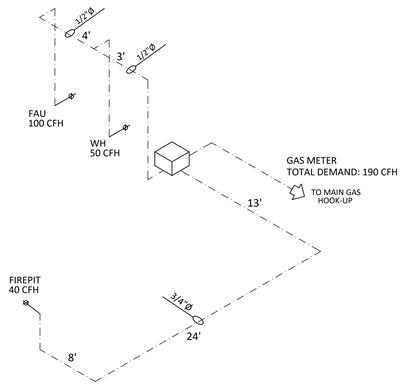
- NEW SEWER LINE
- SEWER VENT LINE
- SEWER CLEAN OUT
- (VTR) VENTILATION PIPE
- G — GAS LINE
- GAS HOOK UP
- HB — EXTERIOR HOSE BIB

PLUMBING MATERIALS

DWV BELOW SLAB.....	☒ ABS SCHED 40
	☐ HUBLESS CAST IRON
WASTE ABOVE SLAB.....	☒ ABS SCHED 40
	☐ HUBLESS CAST IRON
VENT ABOVE SLAB.....	☒ ABS SCHED 40
	☐ HUBLESS CAST IRON
SEWER.....	☒ ABS SCHED 40
WATER ABOVE SLAB.....	☐ COPPER TYPE M
	☒ COPPER TYPE L
	☐ COPPER TYPE K
	☐ WIRSBO AQUAPEX
	☒ CPVC
WATER SERVICE.....	☐ COPPER TYPE K
	☒ PVC 40
	☐ PVC 80
GAS ABOVE GRADE.....	☒ STEEL PIPE BLK SCHED 40
	☒ CSST (TRACPIPE BLK SCHED 40
GAS BELOW GRADE.....	☐ POLYETHYLENES
INSULATION.....	☒ POLYETHYLENE CLOSET CELL
	☐ FIBERGLASS W/AP JACKET
	☐ CELLULAR GLASS INSERTS
INSULATION REQUIRED.....	☒ DWV
	☐ COLD WATER
	☒ HOT WATER
	☐ ROOF DRAINS
	☐ CONDENSATE
INDIRECT WASTE.....	☒ PVC SCHED 40
	☐ TYPE M COPPER
ROOF VENT PIPING	☒ PVC SCHED 80
ROOF DRAIN	☒ PVC SCHED 40

PLUMBING NOTES

1. HOT MOPPED SHOWER PAN SHALL BE INSPECTED UPON COMPLETION OF HOT MOOPING AND SHALL BE FILLED WITH WATER FOR INSPECTION.
2. PROVIDE PRESSURE REGULATOR FOR WATER SERVICE IF PRESSURE EXCEEDS 80 PSI. UPC 608.2
3. IN SHOWERS & TUB-SHOWER COMBINATIONS, CONTROL VALVES MUST BE PRESSURE BALANCED OR THERMOSTATIC MIXING VALVES. UPC, Section 410.7
4. NEW WATER CLOSETS & ASSOCIATED FLUSHOMETER VALVES, IF ANY, SHALL USE NO MORE THAN 1.6 GALLONS PER FLUSH & SHALL MEET PERFORMANCE STANDARDS ESTABLISHED BY THE AMERICAN NATIONAL STANDARDS INSTITUTE STANDARD A112.19.2. H&S CODE Section 17921.3 (b).
5. GAS PIPING SEDIMENT TRAP INSTALLED DOWNSTREAM OF THE APPLIANCE SHUTOFF VALVE AS CLOSE TO THE INLET APPLIANCE AS PRACTICAL. CPC 1212.9
6. WATER HEATER INSTALLED TO SERVE INDIVIDUAL DWELLING UNITS: ES150.0(n)
   a. GAS PIPING SIZING BASED UPON A MINIMUM INPUT OF 200,000 BTU/HR. AS ¾" PIPE ON ISO. PLANS
   b. A CONDENSATE DRAIN INSTALLED NO HIGHER THAN 2" ABOVE THE BASE OF THE HEATER THAT ALSO ALLOWS FOR GRAVITY DRAINAGE.
   c. A 120VOLT RECEPTACLE ACCESSIBLE TO THE HEATER INSTALLED WITHIN 3'.
7. EACH HORIZONTAL DRAINAGE PIPE SHALL BE PROVIDED WITH A CLEANOUT AT ITS UPPER TERMINAL, AND EACH RUN OF PIPING, THAN IS MORE THAN 100 FEET (30 480MM) IN TOTAL DEVELOPED LENGTH, SHALL BE PROVIDED WITH A CLEANOUT FOR EACH 100 FEET, OR FRACTION THEREOF, IN LENGTH OF SUCH PIPING, AN ADDITIONAL CLEANOUT SHALL BE PROVIDED IN A DRAINAGE LINE FOR EACH AGGREGATE HORIZONTAL CHANGE IN DIRECTION EXCEEDING 135 DEGREES (2.36RAD). A CLEANOUT SHALL BE INSTALLED ABOVE THE FIXTURE CONNECTION FITTING, SERVING EACH URINAL, REGARDLESS OF THE LOCATION OF THE URINAL IN THE BUILDING. CPC 707.4
8. BUILDING OFFICIAL APPROVAL TO USE CPVC PIPE FOR PORTABLE WATER IS REQUIRED PRIOR TO BEGINNING CONSTRUCTION CPC604.1.1
9. NO GAS PIPE SHALL BE INSTALLED UNDER IT IS PROPERLY SLEEVED CPC1210.1.6



Gas Isometric

SCALE: NTS

WATER SUPPLY FIXTURE UNITS (WSFU)				
FIXTURE TYPE	QUANTITY	FIXTURE UNITS PRIVATE	PUBLIC	TOTAL
BATHTUB OR COMBO BATH/SHOWER		4	4	
CLOTHES WASHER		4	4	
DISHWASHER, DOMESTIC	1	1.5	1.5	1.5
HOSE BIBB	1	2.5	2.5	2.5
HOSE BIBB, EACH ADDITIONAL	1	1	1	1
LAVATORY	4	1	1	4
SINKS				
BAR		1	2	
KITCHEN, DOMESTIC	1	1.5	1.5	1.5
LAUNDRY		1.5	1.5	
SHOWER PER HEAD	4	2	2	8
WATER CLOSET, 1.6 GPF GRAVITY TANK	4	2.5	2.5	10
			TOTAL F.U. =	28.5
			DEMAND (gpm)=	20
			METER SIZE=	5/8"

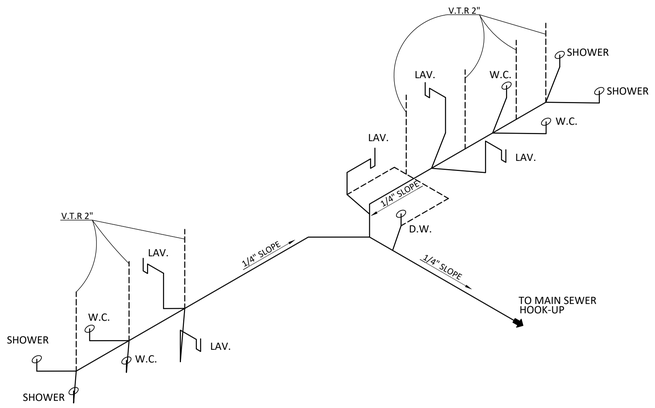
WATER DEMAND

WATER SIZING			
QUANTITY	FIXTURE	F/U	TOTAL
4	Lavatory	1.2	4.8
4	Shower	1.8	7.2
1	Kitch. Sink	1.8	1.8
1	Dish Wash.	1.5	1.5
4	Water Clos	1.28	5.12
1	Hose Bib	2.5	2.5
1	Additional Hose Bib	1	1
TOTAL F/U THIS SYSTEM			61.58

TOTAL DEVELOPED LENGTH:
FROM METER TO REGULATOR — >100
FROM REGULATOR TO MOST REMOTE OUTLET — >150
PRESSURES RANGES
AT METER OUTLET — >60
AT REGULATOR OUTLET — 46-60
SIZING:
WATER METER SIZE — 1 1/4"
REQUIRED GPM — 46
AT REGULATOR OUTLET — >60
WATER SERVICE SIZE — 1 1/4"
PRESSURE REGULATOR SIZE — 1 1/4"
PRESSURE RANGE: ☐ 30-45 PSI ☐ 46-60 PSI ☒ OVER 60
MAXIMUM F/U:

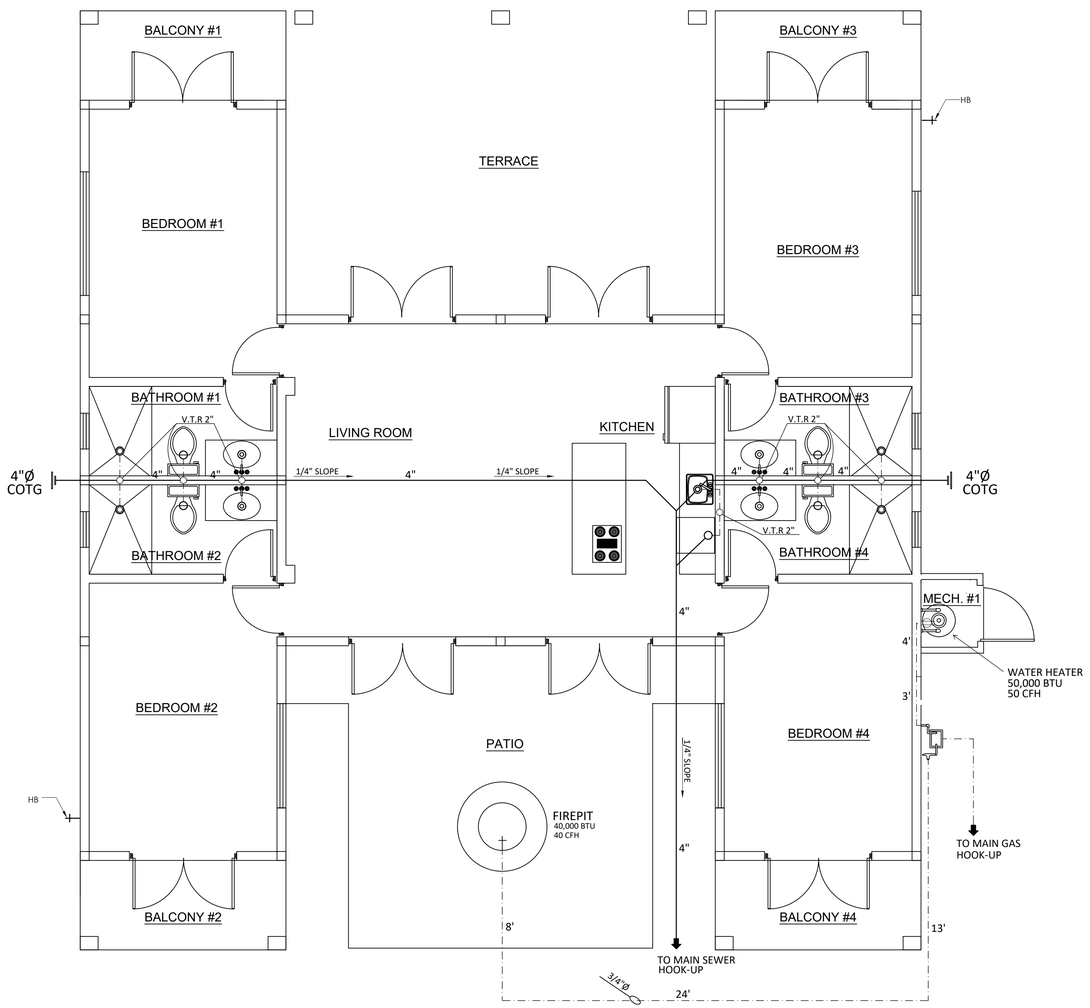
SIZE	F/U
1/2"	6 F/U
3/4"	18 F/U
1"	35 F/U
1 1/4"	60 F/U
1 1/2"	85 F/U
2"	85 F/U

* SIZING CALCULATION PER CPC 2019 EDITION



Sewer Isometric

SCALE: NTS



1 Plumbing Plan

SCALE: 1/4" = 1'-0"

GAS DEMAND

(1)	W.H.	@ 50K	50,000	50
(1)	FIREPIT	@ 40K	40,000	40
(1)	F.A.U.	@ 100K	100,000	100
TOTAL			190,000 BTU	190 CFH

PLUMBING PLAN

P1

Appendix A-2
Landscape Plans,
Summers/Murphy & Partners, July 25, 2022

EXISTING TREES

SYMBOL	DESCRIPTION
	EXISTING SHADE TREE TO REMAIN - PROTECT IN PLACE
	EXISTING DATE PALM TO REMAIN - PROTECT IN PLACE
	EXISTING 8' HIGH PYRACANTHA HEDGE TO REMAIN - PROTECT IN PLACE

PROPOSED TREES

SYMBOL	DESCRIPTION
	PROPOSED PARKING SHADE TREES TO PROVIDE A MINIMUM OF 30% COVERAGE AT 15 YEARS MATURITY. REFER TO GUEST & FLEX UNIT ENLARGEMENTS FOR SPECIES AND SIZE

TURF AND TOPPING

SYMBOL	DESCRIPTION
	DECORATIVE GRAVEL, HARDSCAPE AND PLANTING REFER TO ENLARGEMENTS FOR FLEX AND GUEST UNITS
	EXISTING TURF TO REMAIN

Rancho Polo | Preliminary Landscape Plan - Overall Site Plan

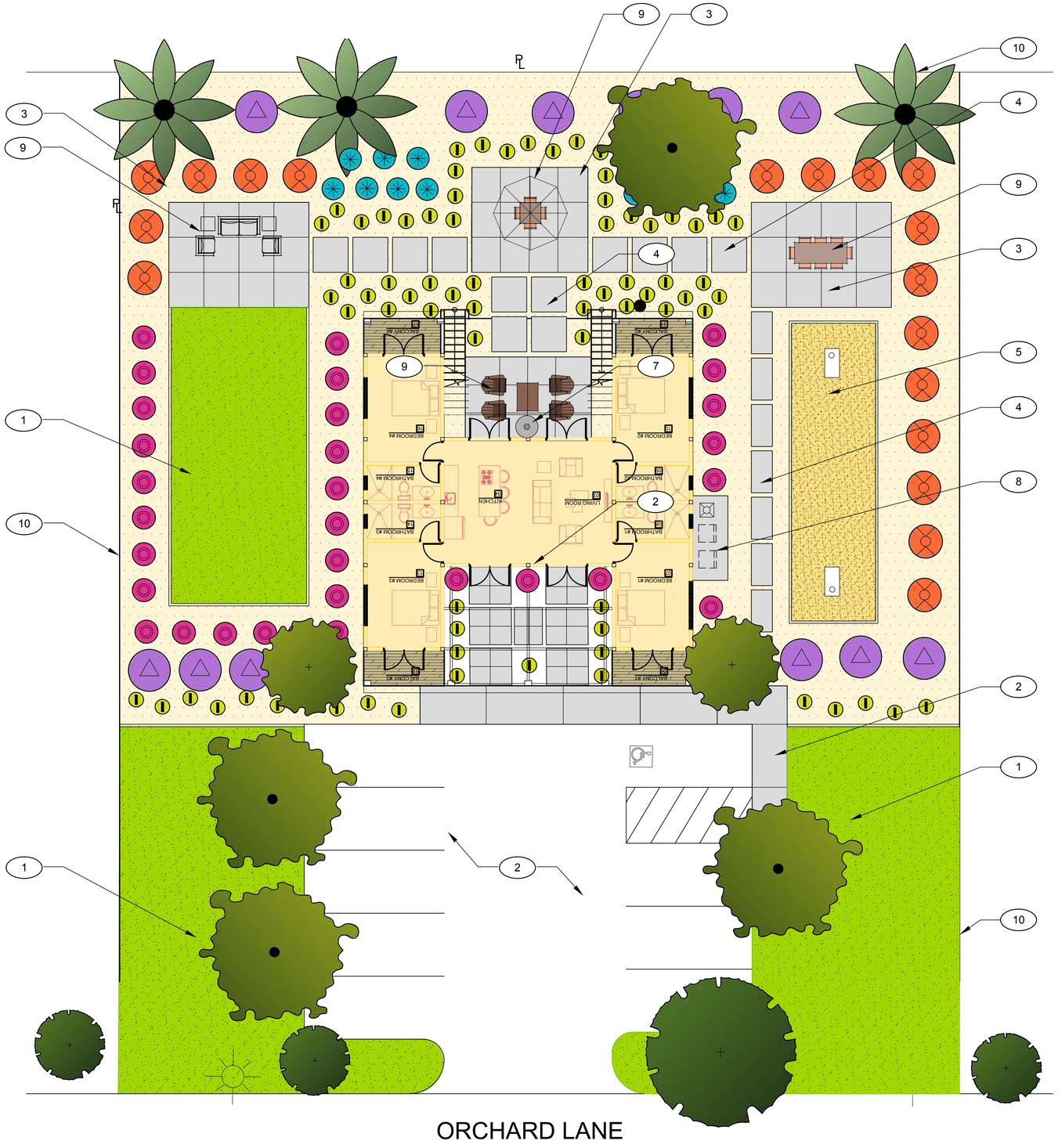
Continental Dev Group | Thermal , CA | July 25, 2022

NORTH

SCALE: 1" = 40' - 0"

0 40 80 120 160

SMP ENVIRONMENTAL DESIGN
SUMMERS/MURPHY & PARTNERS, INC.
34197 COAST HWY SUITE 200
DANA POINT CA 92629
(949) 443-1446



SITE LEGEND

1. EXISTING LAWN TO REMAIN
2. PARKING LOT WITH 9 SPACES, INCLUDING 1 HANDICAP SPACE.
3. NATURAL GRAY CONCRETE PAVING WITH BROOM FINISH
4. NATURAL GREY CONCRETE STEP PAD
5. BOCCE BALL/ CORNHOLE COURT WITH HEADER
6. EXISTING LAWN WITH PROPOSED CONCRETE HEADER
7. OUTDOOR FIREPLACE
8. AC UNIT AND TRASH CAN AREA ON CONCRETE PAD
9. FURNITURE BY OWNER
10. PROPERTY LINE

TREES

EXISTING TREES/ PALMS

SYMBOL	BOTANICAL/COMMON NAME	SIZE
	UNKNOWN SPECIES	VARIES
	PHOENIX DACTILYFERA DATE PALM	VARIES

PROPOSED TREES

SYMBOL	BOTANICAL/COMMON NAME	SIZE	QTY.	WUCOLS
	GEIJERA PARVIFLORA AUSTRALIAN WILLOW	15 GAL STD	4	L
	LAGERSTROEMIA 'NATCHEZ' CRAPE MYRTLE	15 GAL MULTI-BRANCH	2	M

SHRUBS

FOUNDATION SHRUBS

SYMBOL	BOTANICAL/COMMON NAME	SIZE / MIN. SPACING	QTY.	WUCOLS
	BOUGAINVILLEA 'TORCH GLOW' BOUGAINVILLEA	15 GAL. / 6' O.C.	12	M
	LEUCOPHYLLUM L. RIO BRAVO' TEXAS RANGER	15 GAL. / 5' O.C.	18	L

MID-GROUND SHRUBS

SYMBOL	BOTANICAL/COMMON NAME	SIZE / MIN. SPACING	QTY.	WUCOLS
	CALLESTEMON 'LITTLE JOHN' WEEPING BOTTLEBRUSH	5 GAL. / 3' O.C.	31	M
	MUHLENBERGIA C. 'REGAL MIST' PINK MUHLY GRASS	5 GAL. / 5' O.C.	14	M

FOREGROUND SHRUBS

SYMBOL	BOTANICAL/COMMON NAME	SIZE / MIN. SPACING	QTY.	WUCOLS
	MUHLENBERGIA RIGENS DEER GRASS	1 GAL. / 2' O.C.	66	L

GROUNDCOVER AND TOPPING

SYMBOL	DESCRIPTION
	DECOMPOSED GRANITE - DESERT GOLD (OR EQ) AVAIL FROM: SOUTHWEST BOULDER (southwestboulder.com)
	DECORATIVE GRAVEL - MOJAVE GOLD CRUSHED STONE (3" DIA) AVAIL FROM: SOUTHWEST BOULDER (southwestboulder.com)
	EXISTING LAWN TO REMAIN

Rancho Polo | Preliminary Landscape Plan - Typical Guest Unit

Continental Dev Group | Thermal , CA | July 25, 2022

NORTH

SCALE: 1/8" = 1' - 0"

0 1/8 1/4 3/8 1/2

SMP ENVIRONMENTAL DESIGN
SUMMERS/MURPHY & PARTNERS, INC.
34197 COAST HWY SUITE 200
DANA POINT CA 92629
(949) 443-1446

SITE LEGEND

1. EXISTING LAWN TO REMAIN
2. PARKING LOT WITH 5 SPACES, INCLUDING 1 HANDICAP SPACE.
3. NATURAL GRAY CONCRETE PAVING WITH BROOM FINISH
4. NATURAL GRAY CONCRETE STEP PAD
5. BOCCE BALL/ CORNHOLE COURT WITH HEADER
6. EXISTING LAWN WITH PROPOSED CONCRETE HEADER
7. OUTDOOR FIREPLACE
8. AC UNIT AND TRASH CAN AREA ON CONCRETE PAD
9. FURNITURE BY OWNER
10. PROPERTY LINE
11. EXISTING 8' HIGH PYRACANTHA HEDGE ON FENCE TO REMAIN

TREES

EXISTING TREES/ PALMS

SYMBOL	BOTANICAL/COMMON NAME	SIZE
	UNKNOWN SPECIES	VARIES
	PHOENIX DACTILYFERA DATE PALM	VARIES

PROPOSED TREES

SYMBOL	BOTANICAL/COMMON NAME	SIZE	QTY.	WUCOLS
	GEIJERA PARVIFLORA AUSTRALIAN WILLOW	15 GAL STD	3	L
	LAGERSTROEMIA 'NATCHEZ' CRAPE MYRTLE	15 GAL MULTI-BRANCH	2	M

SHRUBS

FOUNDATION SHRUBS

SYMBOL	BOTANICAL/COMMON NAME	SIZE / MIN. SPACING	QTY.	WUCOLS
	BOUGAINVILLEA 'TORCH GLOW' BOUGAINVILLEA	15 GAL. / 6' O.C.	15	M
	LEUCOPHYLLUM L. RIO BRAVO' TEXAS RANGER	15 GAL. / 5' O.C.	11	L

MID-GROUND SHRUBS

SYMBOL	BOTANICAL/COMMON NAME	SIZE / MIN. SPACING	QTY.	WUCOLS
	CALLESTEMON 'LITTLE JOHN' WEEPING BOTTLEBRUSH	5 GAL. / 3' O.C.	45	M
	MUHLENBERGIA C. 'REGAL MIST' PINK MUHLY GRASS	5 GAL. / 5' O.C.	14	M

FOREGROUND SHRUBS

SYMBOL	BOTANICAL/COMMON NAME	SIZE / MIN. SPACING	QTY.	WUCOLS
	MUHLENBERGIA RIGENS DEER GRASS	1 GAL. / 2' O.C.	54	L

GROUNDCOVER AND TOPPING

SYMBOL	DESCRIPTION
	DECOMPOSED GRANITE - DESERT GOLD (OR EQ) AVAIL FROM: SOUTHWEST BOULDER (southwestboulder.com)
	DECORATIVE GRAVEL - MOJAVE GOLD CRUSHED STONE @ 3" DIA) AVAIL FROM: SOUTHWEST BOULDER (southwestboulder.com)
	EXISTING LAWN TO REMAIN

Rancho Polo | Preliminary Landscape Plan - Typical Flex Unit

Continental Dev Group | Thermal , CA | July 25, 2022

NORTH

SCALE: 1/8" = 1' - 0"

0 1/8 1/4 3/8 1/2

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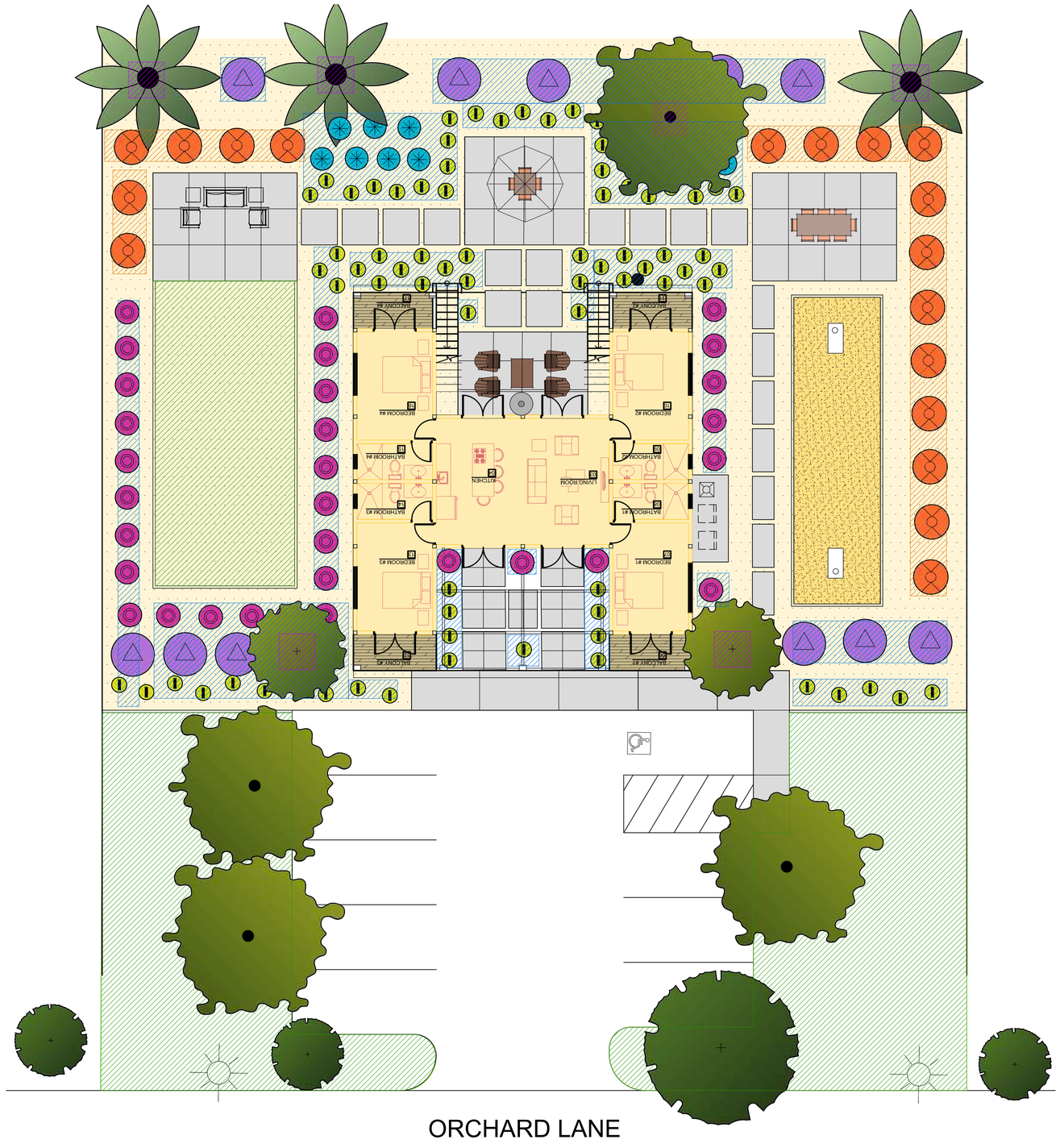

IRRIGATION

ZONES

SYMBOL	DESCRIPTION
	TURF - STREAM ROTOR - HIGH TOTAL AREA: 3,989 S.F.
	TREE - BUBBLER IRRIGATION - MED TOTAL AREA: 140 S.F.
	SHRUB - DRIP IRRIGATION - MED TOTAL AREA: 2,091 S.F.
	SHRUB - DRIP IRRIGATION - LOW TOTAL AREA: 625 S.F.
	DECOMPOSED GRANITE - NO IRRIGATION TOTAL AREA: 510 S.F.
	DECORATIVE ROCK - NO IRRIGATION TOTAL AREA: 5,545 S.F.

Water Efficient Landscape Worksheet

Fill in all items in this color
Answer is shown in this color

Project Name	Project Address
Rancho Polo - Guest Unit Typical	**Thermal, CA**

Reference Evapotranspiration (ETo)		**54.6**	**Thermal**	Residential		**0.55**	
	ETWU requirement	**ETWU requirement**	**ETWU requirement**	**ETWU requirement**	**MAWA requirement**	**ETWU requirement**	
Hydrozone#/Planting Description	Plant Factor (PF)	Irrigation Method	Irrigation Efficiency (IE)	**ETAF** (PF/IE)	Landscape Area (**LA**) (sq. ft.)	ETAF x Area	Estimated Total Water Use (ETWU)
Regular Landscape Areas							
1)Low water use Shrubs	0.3	Drip	0.81	0.370	625	231.48	7,836
2)Med water use Shrubs	0.5	Drip	0.81	0.617	2,091	1,290.74	43,694
3)Med water use Trees	0.5	Bubbler	0.75	0.667	140	93.33	3,160
4)High water Lawn	1.0	Spray Rotors	0.8	1.333	3,989	5,318.67	180,048
			Totals		6,845	6,934.22	234,737
Special Landscape Areas (SLA): Recycled Water							
5)Decomposed Granite				1	510	510	17,265
6)Decorative Rock				1	5,445	5,445	184,324
				1	0	0	0
				Totals	5,955	5,955	201,589
						Estimated Total Water Use (ETWU)	**234,737**
						Maximum Allowed Water Allowance (MAWA)	**238,318**

Plant Water Use Type	**Plant Factor**	**Irrigation method**	**Irrigation Efficiency**
very low	0-0.1	overhead spray	0.75
low	0.1-0.3	drip	0.81
medium	0.4-0.6		
high	0.7-1.0		

Percentage of MAWA
98%

AC of ETWU
0.72

AC of MAWA
0.73

MAWA (annual gallons allowed)= (Eto) (0.62) [(ETAF x LA) + ((1-ETAF) x SLA)]

where 0.62 is a conversion factor that converts acre-inches per acre/year to gallons per sq. ft./year. LA is the total landsape area in sq. ft, SLA is the total special landscape area in sq. ft., and ETAF is .55 for residential areas and 0.45 for non residential areas.

ETAF Calculations

Regular Landscape Areas

Total ETAF x Area	6,934
Total Area	6,845
Average ETAF	**1.01**

Average ETAF for Regular Landscape Areas must be 0.55 or below for residential areas, and 0.45 or below for non-residential areas.

All Landscape Areas

Total ETAF x Area	12,889
Total Area	6,845
Sitewide ETAF	**1.01**

Rancho Polo | Preliminary Landscape Plan - Typical Guest Unit - MAWA

Continental Dev Group | Thermal , CA | July 25, 2022

NORTH

SCALE: 1/8" = 1' - 0"

0 1/8 1/4 3/8 1/2

SMP ENVIRONMENTAL DESIGN
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34197 COAST HWY SUITE 200
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(949) 443-1446

IRRIGATION

ZONES

SYMBOL	DESCRIPTION
	TURF - STREAM ROTOR - HIGH TOTAL AREA: 4373 S.F.
	TREE - BUBBLER IRRIGATION - MED TOTAL AREA: 200 S.F.
	SHRUB - DRIP IRRIGATION - MED TOTAL AREA: 2839 S.F.
	SHRUB - DRIP IRRIGATION - LOW TOTAL AREA: 431 S.F.
	DECOMPOSED GRANITE - NO IRRIGATION TOTAL AREA: 510 S.F.
	DECORATIVE ROCK - NO IRRIGATION TOTAL AREA: 3256 S.F.

Water Efficient Landscape Worksheet

Fill in all items in this color
Answer is shown in this color

Project Name	Project Address
Rancho Polo - Flex Units Typical	**Thermal, CA**

Reference Evapotranspiration (ETo)		**54.6**	**Thermal**	Residential		**0.55**	
	ETWU requirement	**ETWU requirement**	**ETWU requirement**	**ETWU requirement**	**MAWA requirement**	**ETWU requirement**	
Hydrozone#/Planting Description	Plant Factor (PF)	Irrigation Method	Irrigation Efficiency (IE)	**ETAF** (PF/IE)	Landscape Area (**LA**) (sq. ft.)	ETAF x Area	Estimated Total Water Use (ETWU)
Regular Landscape Areas							
1)Low water use Shrubs	0.3	Drip	0.81	0.370	431	159.63	5,404
2)Med water use Shrubs	0.5	Drip	0.81	0.617	2,839	1,752.47	59,325
3)Med water use Trees	0.5	Bubbler	0.75	0.667	200	133.33	4,514
4)High water use Lawn	0.7	Spray Rotors	0.8	0.933	4,373	4,081.47	138,166
			Totals		7,843	6,126.90	207,408
Special Landscape Areas (SLA): Recycled Water							
5)Decomposed Granite				1	510	510	17,265
6)Decorative Rock				1	3,256	3,256	110,222
				1	0	0	0
				Totals	3,766	3,766	127,487
						Estimated Total Water Use (ETWU)	**207,408**
						Maximum Allowed Water Allowance (MAWA)	**216,143**

Plant Water Use Type	**Plant Factor**	**Irrigation method**	**Irrigation Efficiency**
very low	0-0.1	overhead spray	0.75
low	0.1-0.3	drip	0.81
medium	0.4-0.6		
high	0.7-1.0		

Percentage of MAWA
96%

AC of ETWU
0.64
AC of MAWA
0.66

MAWA (annual gallons allowed)= (Eto) (0.62) [(ETAF x LA) + ((1-ETAF) x SLA)]

where 0.62 is a conversion factor that converts acre-inches per acre/year to gallons per sq. ft./year. LA is the total landspape area in sq. ft, SLA is the total special landscape area in sq. ft., and ETAF is .55 for residential areas and 0.45 for non residential areas.

ETAF Calculations

Regular Landscape Areas	
Total ETAF x Area	6,127
Total Area	7,843
Average ETAF	**0.78**

Average ETAF for Regular Landscape Areas must be 0.55 or below for residential areas, and 0.45 or below for non-residential areas.

All Landscape Areas	
Total ETAF x Area	6,127
Total Area	7,843
Sitewide ETAF	**0.85**

Rancho Polo | Preliminary Landscape Plan - Typical Flex Unit - MAWA

Continental Dev Group | Thermal , CA | July 25, 2022

NORTH

SCALE: 1/8" = 1' - 0"

0 1/8 1/4 3/8 1/2

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Appendix B
Air Quality Technical Report and Appendix, DKA Planning, March 2023

Air Quality Technical Report

Rancho Polo Equestrian Center

Plot Plan 220034

Lead Agency:
County of Riverside
4080 Lemon Street, 12th Floor
Riverside, CA 92502
Point of Contact: Scott Nespor, Urban and Regional Planner III
(760) 863-7050

Project Applicant:
Triple Sky Ranch
4114 Sepulveda Boulevard, Suite L, Second Floor
Culver City, CA 90230
(310) 253-9998

Prepared by:
CAJA Environmental Services, LLC
9410 Topanga Canyon Blvd., Suite 101
Chatsworth, CA 91311
Point of Contact: Seth Wulkan, Project Manager
310-469-6700, seth-@ceqa-nepa.com

Douglas Kim + Associates, LLC
Douglas Kim, AICP
310-316-2800, doug@dkaplanning.com

March 2023

Table of Contents

Technical Appendix

Air Quality Technical Appendix, DKA Planning, November 2022

Air Quality Technical Report

1 Project Description

1.1 Project Information

Project Title: Rancho Polo Equestrian Center Project

Document Type: Initial Study / Negative Declaration (IS/ND) for new guest and worker overnight accommodations (the Project)

Plot Plan: 220034

Project Location: 82800 58th Avenue Suite 1, Thermal CA 92274 (Project Site or Site)

Lead Agency: County of Riverside
4080 Lemon Street, 12th Floor, Riverside, CA 92502
Point of Contact: Scott Nespor, Urban and Regional Planner III
(760) 863-7050

Applicant: Triple Sky Ranch
4114 Sepulveda Boulevard, Suite L, Second Floor, Culver City, CA 90230

1.2 Project Location

The Project Site is located on the north side of Avenue 58, between Oasis Street to the west and Jackson Street to the east, in the unincorporated community Thermal in the Eastern Coachella Valley Area Plan in the County of Riverside.[1] The Site is 0.5-mile (2,640 feet) east of the City of La Quinta (with boundary at Avenue 58 and Monroe Street). The Site is 1 mile southwest of the City of Coachella (with boundary at Airport Boulevard and Van Buren Street).

1.3 Surrounding Land Uses

North across Csilla Street (an unimproved dirt road) is an agricultural field with a land use designation as Agriculture and zoned A-1-20.

South across Avenue 58 is an agricultural field with a land use designation as Medium Density Residential and Agriculture and zoned R-5 and A-1-10.

West across Oasis Street (an unimproved dirt road) is an agricultural field with a land use designation

[1] Riverside County, General Plan, Chapter 3: Land Use Element: https://planning.rctlma.org/General-Plan-Zoning/General-Plan

as Local Importance Agriculture and zoned A-1-20.

East across Jackson Street is an agricultural field with a land use designation as Local Importance Agriculture and zoned A-1-10.

1.4 Planning and Zoning

Table 1-1, Project Site, lists the Site's APNs, zoning, and General Plan land use designation:

W-2-10 (Zoning Controlled Development Areas – 10 Acre Minimum). Guest ranches are permitted upon the approval of a Plot Plan.[2]

The General Plan designates the Project Site for "Rural Residential" land uses. This land use designation allows for single-family residences with a minimum lot size of 5 acres, and allows limited animal keeping and agricultural uses, recreational uses, compatible resource development (not including the commercial extraction of mineral resources) and associated uses and governmental uses.[3]

Table 1-1
Project Site

Address	APN	Size (acre)	Zone	Land Use
82800 Avenue 58	764-130-027	38.42	W-2-10	Rural Residential
	764-130-030	37.63		
Riverside County, Map My County: https://gis1.countyofriverside.us/Html5Viewer/index.html?viewer=MMC_Public				

1.5 Existing Conditions

The gross land area is 78.01 acres.[4] The Project Site is primarily devoted to serving the equestrian needs of visitors from Riverside County and beyond. The Site is home to the Rancho Polo Equestrian Center, which provides commercial stables and features a diverse inventory of facilities for equestrian training, breeding, and equine boarding. In addition to the site's equestrian focus, Rancho Polo also features significant agricultural uses, including the cultivation and annual harvesting of approximately 300 date palm trees, 50 citrus trees, and 20 avocado trees. Hay fields are also farmed and harvested and provide feed and bedding for horses boarded at Rancho Polo. Rancho Polo has eight barns, which together accommodate 148 horse stalls. In addition, piped corals and fenced pastures accommodate another 50 horses. These boarding facilities are complemented with several agricultural and equestrian-serving structures and buildings, hay barns, ranch offices, equipment and tool sheds, and observation decks, along with various other improvements, equipment and tanks required to operate Rancho Polo's equestrian and agricultural activities. The Site's development area is currently improved with 8 prefabricated mobile homes that are used by workers, the property's managers and owner, and their

2 Riverside County Zoning Ordinance No. 348.4978, Article XV, Section 15.1.C.1: https://planning.rctlma.org/Portals/14/Ord348Update/348.4978/Ord.%20348%20Clean%20Version.pdf?ver=2022-03-02-162154-373

3 Riverside County, General Plan, Chapter 3: Land Use Element Table LU-4: https://planning.rctlma.org/Portals/14/Ch03_Land%20Use_FINAL%209-28-21.pdf

4 Plans, Continental Development Group, September 21, 2022.

respective family members.[5] One of these mobile homes shares its interior space with an administrative office area. The Site also contains an in-ground swimming pool.

1.6 Project Overview

The proposed development area is within the southwest portion of the Site and is approximately 358,000 square feet (8.22 acres). Rancho Polo has submitted a Plot Plan for the County's review that proposes new and modified land uses that will greatly enhance the quality of its guest services and agricultural operations. If approved, Plot Plan No. 220034 will enable Rancho Polo to provide a combination of guest and worker overnight accommodations, with stays ranging between one night to six months or more. Unlike the current Conditional Use Permit, which requires that 80% of the approved worker units be used by migrant agricultural workers for not more than 9 months in any 12 month period, Applicant is proposing that: (a) up to 100% of these units could be permanently affixed to the land on customary concrete foundations, (b) the units could be occupied by non-transient workers, as well as by the property managers, property owner, and their respective family members, and (c) the units could be kept in service year-round and would not have to be vacant for any period of time.[6]

The development includes 10 new worker/guest flex units and 3 new guest rooms/suites. The area of development is shown in the Plans (included as Appendix A-1 to the ND). These units would be much better quality than what is allowed under the current Conditional Use Permit, as prefabricated mobile homes would be eschewed in favor of permanent structures that are firmly anchored to the ground with customary reinforced concrete foundations. These residential accommodations will be a vital improvement in the operation of Rancho Polo and will enable Applicant to avoid overbuilding to meet intermittent peaks in demand. During periods of heightened agricultural activity, additional housing is often needed for permanent and migrant workers, as well as for their dependents. During multi-day equestrian events, lodging is needed for event participants and spectators, while horse owners using Ranch Polo's boarding services want the convenience of guest rooms for overnight stays in lieu of having to make roundtrips to Palm Desert or other area townships. The availability of onsite rooms will not only benefit workers, guests, and ultimately the Applicant, but will also have benefits far beyond the boundaries of Rancho Polo, since each guest using an onsite room will mean one less car traveling on local roads.

1.7 Construction Assumptions

The estimated construction schedule is shown in **Table 1-2, Construction Schedule**. Note for a conservative purpose and to present a worst-case scenario for environmental impacts and emissions, it is assumed that the entire Project will be constructed in a single phase. The estimated operational year is 2024. The Project assumes no existing structures require demolition. Site preparation will clear existing vegetation. Utilities are already installed and in place and need only be extended and connected

5 Six of these worker dwelling units are located on the southwest portion of the property within the proposed development area while the seventh worker unit is located on the north-central portion of the property adjacent to the Polo Field.

6 In contrast, under the terms of Conditional Use Permit No. 190066, Revision 1, Applicant is only allowed to establish and maintain a 20-space Migrant Agricultural Worker Mobilehome Park where: (a) at least 16 of the spaces are reserved for transient seasonal workers, (b) who can stay in each dwelling not more than 9 months out of any 12 month period, and (c) where each dwelling unit is prefabricated and mobile, and not permanently affixed to an in-ground foundation.

to each proposed dwelling unit. Minimal grading on the Site is necessary to provide foundation work and the extension of the proposed utilities to each dwelling unit from the existing utility lines. It is assumed that approximately 40,000 square feet will be lightly graded to support the new construction. No fill will be imported to the Site. The amount of materials to be exported will be up to approximately 6,000 cubic yards (which includes a swell expansion potential). Architectural coatings will include painting and finishing for the interior and exterior of each of the new buildings. This work will be undertaken in the final stages of construction.

Table 1-2
Construction Schedule

Phase	Schedule	Duration (Working Days)
Site Preparation	June 1, 2023 – June 14, 2023	10 days
Grading	June 15, 2023 – August 5, 2023	37 days
Trenching	July 1, 2023 – September 30, 2023	65 days
Construction	July 1, 2023 – October 31, 2023	87 days
Paving	August 15, 2023 – September 30, 2023	34 days
Architectural Coatings	September 1, 2023 – November 15, 2023	54 days

Working Days include Monday through Friday, with no weekends.
Site Preparation involves clearing vegetation (grubbing and tree/stump removal) and removing stones and other unwanted material or debris prior to grading.
Grading involves the cut and fill of land to ensure that the proper base and slope is created for the foundation. Building Construction involves the construction of the foundation, structures, and buildings.)
Trenching is associated with underground utilities, including gas, water, electricity, telecommunications.
Paving involves the laying of concrete or asphalt such as in parking lots, roads, driveways, or sidewalks.
Architectural Coating involves the application of coatings to both the interior and exterior of buildings or structures, the painting of parking lot or parking garage striping, associated signage and curbs, and the painting of the walls or other components such as stair railings inside parking structures.
Construction schedule, including start, end, and duration dates are estimates only. Some overlap of phasing may occur. This analysis assumes that construction will start in 2023. In practice, construction could begin at a later time. However, using an earlier start date represents a worst-case scenario for the analysis of construction emissions, because equipment and vehicle emission factors for later years will be slightly less due to more stringent standards for in-use off-road equipment and heavy-duty trucks, as well as fleet turnover replacing older equipment and vehicles in later years.
Estimates provided by the Applicant in November 2022.

1.8 Related Projects

No reasonably foreseeable future project phases or related projects are assumed in the area. Given the Project Site's proposed development area's existing setbacks, fencing, and vegetation barriers, no cumulative impact is assumed.

1.9 Measures or Corrective Actions

As shown in the analysis below, impacts would be less than significant. No measures or corrective actions are required to avoid or minimize environmental impacts.

2 Analysis

2.1 Introduction

This technical report addresses the air quality impacts generated by construction and operation of the Rancho Polo Equestrian Club Project at 82800 Avenue 58 in the community of Thermal in unincorporated Riverside County. The analysis evaluates the consistency of the Project with the air quality policies set forth within the South Coast Air Quality Management District's (SCAQMD) Air Quality Management Plan (AQMP) and the County's General Plan. The analysis of Project-generated air emissions focuses on whether the Project would cause an exceedance of an ambient air quality standard or SCAQMD significance threshold. Calculation worksheets, assumptions, and model outputs used in the analysis are included in the Technical Appendix to this analysis.

2.2 Regulatory Framework

2.2.1 Federal

The Federal Clean Air Act (CAA) was first enacted in 1955 and has been amended numerous times in subsequent years, with the most recent amendments in 1990. At the federal level, the United States Environmental Protection Agency (USEPA) is responsible for implementation of some portions of the CAA (e.g., certain mobile source and other requirements). Other portions of the CAA (e.g., stationary source requirements) are implemented by state and local agencies. In California, the CCAA is administered by the California Air Resources Board (CARB) at the state level and by the air quality management districts and air pollution control districts at the regional and local levels.

The 1990 amendments to the CAA identify specific emission reduction goals for areas not meeting the National Ambient Air Quality Standard (NAAQS). These amendments require both a demonstration of reasonable further progress toward attainment and incorporation of additional sanctions for failure to attain or to meet interim milestones. The sections of the CAA which are most applicable to the Project include Title I (Nonattainment Provisions) and Title II (Mobile Source Provisions).

NAAQS have been established for seven major air pollutants: CO (carbon monoxide), NO_2 (nitrogen dioxide), O_3 (ozone), $PM_{2.5}$ (particulate matter, 2.5 microns), PM_{10} (particulate matter, 10 microns), SO_2 (sulfur dioxide), and Pb (lead).

The Clean Air Act (CAA) requires the USEPA to designate areas as attainment, nonattainment, or maintenance (previously nonattainment and currently attainment) for each criteria pollutant based on whether the National Ambient Air Quality Standards (NAAQS) have been achieved. Title I provisions are implemented for the purpose of attaining NAAQS. The federal standards are summarized in **Table 2-1**. The USEPA has classified the Riverside County portion of the Salton Sea Air Basin (Basin) as a nonattainment area for O_3 and $PM_{2.5}$.

Table 2-1
State and National Ambient Air Quality Standards / Attainment Status for Riverside County

Pollutant	Averaging Period	California		Federal	
		Standards	Attainment Status	Standards	Attainment Status
Ozone (O_3)	1-hour	0.09 ppm (180 µg/m^3)	Non-attainment	--	--
	8-hour	0.070 ppm (137 µg/m^3)	N/A[1]	0.070 ppm (137 µg/m^3)	Non-attainment
Respirable Particulate Matter (PM_{10})	24-hour	50 µg/m^3	Non-attainment	150 µg/m^3	Attainment
	Annual Arithmetic Mean	20 µg/m^3	Non-attainment	--	--
Fine Particulate Matter ($PM_{2.5}$)	24-hour	--	--	35 µg/m^3	Non-attainment
	Annual Arithmetic Mean	12 µg/m^3	Non-attainment	12 µg/m^3	Non-attainment
Carbon Monoxide (CO)	1-hour	20 ppm (23 mg/m^3)	Attainment	35 ppm (40 mg/m^3)	Unclassifiable/ Attainment
	8-hour	9.0 ppm (10 mg/m^3)	Attainment	9 ppm (10 mg/m^3)	Unclassifiable/ Attainment
Nitrogen Dioxide (NO_2)	1-hour	0.18 ppm (338 µg/m^3)	Attainment	100 ppb (188 µg/m^3)	Unclassifiable/ Attainment
	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)	Attainment	53 ppb (100 µg/m^3)	Unclassifiable/ Attainment
Sulfur Dioxide (SO_2)	1-hour	0.25 ppm (655 µg/m^3)	Unclassifiable/ Attainment	75 ppb (196 µg/m^3)	Unclassifiable/ Attainment
	24-hour	0.04 ppm (105 µg/m^3)	Unclassifiable/ Attainment	--	--
Lead (Pb)	30-day average	1.5 µg/m^3	Attainment	--	--
	Calendar Quarter	--	--	0.15 µg/m^3	Unclassifiable/ Attainment
Visibility Reducing Particles	8-hour	Extinction of 0.07 per kilometer	N/A	No Federal Standards	
Sulfates	24-hour	25 µg/m^3	Attainment	No Federal Standards	
Hydrogen Sulfide (H_2S)	1-hour	0.03 ppm (42 µg/m^3)	Unclassified	No Federal Standards	
Vinyl Chloride	24-hour	0.01 ppm (26 µg/m^3)	N/A	No Federal Standards	

Table 2-1
State and National Ambient Air Quality Standards / Attainment Status for Riverside County

Pollutant	Averaging Period	California		Federal	
		Standards	Attainment Status	Standards	Attainment Status
[1]N/A = not available					
Source: CARB, Ambient Air Quality Standards, and attainment status: https://ww2.arb.ca.gov/resources/documents/maps-state-and-federal-area-designations and https://ww2.arb.ca.gov/resources/california-ambient-air-quality-standards					

CAA Title II pertains to mobile sources, such as cars, trucks, buses, and planes. Reformulated gasoline and automobile pollution control devices are examples of the mechanisms the USEPA uses to regulate mobile air emission sources. The provisions of Title II have resulted in tailpipe emission standards for vehicles, which have been strengthened in recent years to improve air quality. For example, the standards for NO_X emissions have been lowered substantially and the specification requirements for cleaner burning gasoline are more stringent.

The USEPA regulates emission sources that are under the exclusive authority of the federal government, such as aircraft, ships, and certain types of locomotives. USEPA has jurisdiction over emission sources outside state waters (e.g., beyond the outer continental shelf) and establishes various emission standards, including those for vehicles sold in states other than California. Automobiles sold in California must meet stricter emission standards established by CARB. USEPA adopted multiple tiers of emission standards to reduce emissions from non-road diesel engines (e.g., diesel-powered construction equipment) by integrating engine and fuel controls as a system to gain the greatest emission reductions. The first federal standards (Tier 1) for new non-road (or off-road) diesel engines were adopted in 1994 for engines over 50 horsepower, to be phased-in from 1996 to 2000. On August 27, 1998, USEPA introduced Tier 1 standards for equipment under 37 kW (50 horsepower) and increasingly more stringent Tier 2 and Tier 3 standards for all equipment with phase-in schedules from 2000 to 2008. The Tier 1 through 3 standards were met through advanced engine design, with no or only limited use of exhaust gas after-treatment (oxidation catalysts). Tier 3 standards for NO_X and hydrocarbon are similar in stringency to the 2004 standards for highway engines. However, Tier 3 standards for particulate matter were never adopted. On May 11, 2004, USEPA signed the final rule introducing Tier 4 emission standards, which were phased-in between 2008 and 2015. The Tier 4 standards require that emissions of particulate matter and NO_X be further reduced by about 90 percent. Such emission reductions are achieved through the use of control technologies—including advanced exhaust gas after-treatment.

2.2.2 State

California Clean Air Act. In addition to being subject to the requirements of CAA, air quality in California is also governed by more stringent regulations under the California Clean Air Act (CCAA). In California, CCAA is administered by CARB at the state level and by the air quality management districts and air pollution control districts at the regional and local levels. CARB, which became part of the California Environmental Protection Agency in 1991, is responsible for meeting the state requirements of the CAA, administering the CCAA, and establishing the California Ambient Air Quality Standards (CAAQS). The CCAA, as amended in 1992, requires all air districts in the State to endeavor to achieve and maintain the CAAQS. CAAQS are generally more stringent than the corresponding federal standards and

incorporate additional standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles.

CARB regulates mobile air pollution sources, such as motor vehicles. CARB is responsible for setting emission standards for vehicles sold in California and for other emission sources, such as consumer products and certain off-road equipment. CARB established passenger vehicle fuel specifications in March 1996. CARB oversees the functions of local air pollution control districts and air quality management districts, which, in turn, administer air quality activities at the regional and county levels. The State standards are summarized in **Table 2-1**.

The CCAA requires CARB to designate areas within California as either attainment or nonattainment for each criteria pollutant based on whether the CAAQS thresholds have been achieved. Under the CCAA, areas are designated as nonattainment for a pollutant if air quality data shows that a state standard for the pollutant was violated at least once during the previous three calendar years. Exceedances that are affected by highly irregular or infrequent events are not considered violations of a state standard and are not used as a basis for designating areas as nonattainment. Under the CCAA, the non-desert Riverside County portion of the Basin is designated as a nonattainment area for O_3 and $PM_{2.5}$.

In August 2022, CARB approved regulations to ban new gasoline-powered cars beginning with 2035 models. Automakers will gradually electrify their fleet of new vehicles, beginning with 35 percent of 2026 models sold. In September 2022, CARB proposes regulations that mandate that all new medium- and heavy-duty trucks would be zero emissions in 2040. Trucking companies would also have to gradually convert their existing fleets to zero emission vehicles, buying more over time until all are zero emissions by 2042.

Toxic Air Contaminant Identification and Control Act. The public's exposure to toxic air contaminants (TACs) is a significant public health issue in California. CARB's statewide comprehensive air toxics program was established in the early 1980s. The Toxic Air Contaminant Identification and Control Act created California's program to reduce exposure to air toxics. Under the Toxic Air Contaminant Identification and Control Act, CARB is required to use certain criteria in the prioritization for the identification and control of air toxics. In selecting substances for review, CARB must consider criteria relating to "the risk of harm to public health, amount or potential amount of emissions, manner of, and exposure to, usage of the substance in California, persistence in the atmosphere, and ambient concentrations in the community" [Health and Safety Code Section 39666(f)].

The Toxic Air Contaminant Identification and Control Act also requires CARB to use available information gathered from the Air Toxics "Hot Spots" Information and Assessment Act program to include in the prioritization of compounds. CARB identified particulate emissions from diesel-fueled engines (diesel PM) TACs in August 1998. Following the identification process, CARB was required by law to determine if there is a need for further control, which led to the risk management phase of the program. For the risk management phase, CARB formed the Diesel Advisory Committee to assist in the development of a risk management guidance document and a risk reduction plan. With the assistance of the Diesel Advisory Committee and its subcommittees, CARB developed the Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles and the Risk Management Guidance for the Permitting of New Stationary Diesel-Fueled Engines. The Board approved these documents on September 28, 2000, paving the way for the next step in the regulatory process: the control measure

phase. During the control measure phase, specific Statewide regulations designed to further reduce diesel PM emissions from diesel-fueled engines and vehicles have and continue to be evaluated and developed. The goal of each regulation is to make diesel engines as clean as possible by establishing state-of-the-art technology requirements or emission standards to reduce diesel PM emissions. Breathing H_2S at levels above the state standard could result in exposure to a disagreeable rotten eggs odor. The State does not regulate other odors.

California Air Toxics Program. The California Air Toxics Program was established in 1983, when the California Legislature adopted Assembly Bill (AB) 1807 to establish a two-step process of risk identification and risk management to address potential health effects from exposure to toxic substances in the air.[7] In the risk identification step, CARB and the Office of Environmental Health Hazard Assessment (OEHHA) determine if a substance should be formally identified, or "listed," as a TAC in California. Since inception of the program, a number of such substances have been listed, including benzene, chloroform, formaldehyde, and particulate emissions from diesel-fueled engines, among others.[8] In 1993, the California Legislature amended the program to identify the 189 federal hazardous air pollutants as TACs.

In the risk management step, CARB reviews emission sources of an identified TAC to determine whether regulatory action is needed to reduce risk. Based on results of that review, CARB has promulgated a number of airborne toxic control measures (ATCMs), both for mobile and stationary sources. In 2004, CARB adopted an ATCM to limit heavy-duty diesel motor vehicle idling in order to reduce public exposure to diesel PM and other TACs. The measure applies to diesel-fueled commercial vehicles with gross vehicle weight ratings greater than 10,000 pounds that are licensed to operate on highways, regardless of where they are registered. This measure does not allow diesel-fueled commercial vehicles to idle for more than five minutes at any given time.

In addition to limiting exhaust from idling trucks, CARB adopted regulations on July 26, 2007 for off-road diesel construction equipment such as bulldozers, loaders, backhoes, and forklifts, as well as many other self-propelled off-road diesel vehicles to reduce emissions by installation of diesel particulate filters and encouraging the replacement of older, dirtier engines with newer emission-controlled models. In April 2021, CARB proposed a 2020 Mobile Source Strategy that seeks to move California to 100 percent zero-emission off-road equipment by 2035.

Assembly Bill 2588 Air Toxics "Hot Spots" Program. The AB 1807 program is supplemented by the AB 2588 Air Toxics "Hot Spots" program, which was established by the California Legislature in 1987. Under this program, facilities are required to report their air toxics emissions, assess health risks, and notify nearby residents and workers of significant risks if present. In 1992, the AB 2588 program was amended by Senate Bill (SB) 1731 to require facilities that pose a significant health risk to the community to reduce their risk through implementation of a risk management plan.

7 California Air Resources Board, California Air Toxics Program, https://ww2.arb.ca.gov/our-work/programs/air-toxics-program, accessed March 16, 2023.

8 California Air Resources Board, Toxic Air Contaminant Identification List, https://ww2.arb.ca.gov/resources/documents/carb-identified-toxic-air-contaminants, accessed March 16, 2023.

Air Quality and Land Use Handbook: A Community Health Perspective. The *Air Quality and Land Use Handbook: A Community Health Perspective* provides important air quality information about certain types of facilities (e.g., freeways, refineries, rail yards, ports) that should be considered when siting sensitive land uses such as residences.[9] CARB provides recommended site distances from certain types of facilities when considering siting new sensitive land uses. The recommendations are advisory and should not be interpreted as defined "buffer zones." If a project is within the siting distance, CARB recommends further analysis. Where possible, CARB recommends a minimum separation between new sensitive land uses and existing sources.

Air Quality and Land Use Handbook. CARB published the *Air Quality and Land Use Handbook* (CARB Handbook) on April 28, 2005 to serve as a general guide for considering health effects associated with siting sensitive receptors proximate to sources of TAC emissions. The recommendations provided therein are voluntary and do not constitute a requirement or mandate for either land use agencies or local air districts. The goal of the guidance document is to protect sensitive receptors, such as children, the elderly, acutely ill, and chronically ill persons, from exposure to TAC emissions. Some examples of CARB's siting recommendations include the following: (1) avoid siting sensitive receptors within 500 feet of a freeway, urban road with 100,000 vehicles per day, or rural roads with 50,000 vehicles per day; (2) avoid siting sensitive receptors within 1,000 feet of a distribution center (that accommodates more than 100 trucks per day, more than 40 trucks with operating transport refrigeration units per day, or where transport refrigeration unit operations exceed 300 hours per week); and (3) avoid siting sensitive receptors within 300 feet of any dry cleaning operation using perchloroethylene and within 500 feet of operations with two or more machines.

California Code of Regulations. The California Code of Regulations (CCR) is the official compilation and publication of regulations adopted, amended or repealed by the state agencies pursuant to the Administrative Procedure Act. The CCR includes regulations that pertain to air quality emissions. Specifically, Section 2485 in CCR Title 13 states that the idling of all diesel-fueled commercial vehicles (weighing over 10,000 pounds) used during construction shall be limited to five minutes at any location. In addition, Section 93115 in CCR Title 17 states that operation of any stationary, diesel-fueled, compression-ignition engines shall meet specified fuel and fuel additive requirements and emission standards.

2.2.3 Regional

South Coast Air Quality Management District

The SCAQMD was created in 1977 to coordinate air quality planning efforts throughout Southern California. SCAQMD is the agency principally responsible for comprehensive air pollution control in the region. Specifically, SCAQMD is responsible for monitoring air quality, as well as planning, implementing, and enforcing programs designed to attain and maintain the CAAQS and NAAQS in the district. SCAQMD has jurisdiction over an area of 10,743 square miles consisting of Orange County; the non-desert portions of Los Angeles, Riverside, and San Bernardino counties; and the Riverside County

9 California Air Resources Board, Air Quality and Land Use Handbook, a Community Health Perspective, April 2005.

portion of the Salton Sea Air Basin (SSAB) and Mojave Desert Air Basin. The Project Site lies outside the South Coast Air Basin, in the SSAB.

Programs that were developed by SCAQMD to attain and maintain the CAAQS and NAAQS include air quality rules and regulations that regulate stationary sources, area sources, point sources, and certain mobile source emissions. SCAQMD is also responsible for establishing stationary source permitting requirements and for ensuring that new, modified, or relocated stationary sources do not create net emission increases. All projects in the SCAQMD jurisdiction are subject to SCAQMD rules and regulations, including, but not limited to the following:

- Rule 401 Visible Emissions – This rule prohibits an air discharge that results in a plume that is as dark or darker than what is designated as No. 1 Ringelmann Chart by the United States Bureau of Mines for an aggregate of three minutes in any one hour.

- Rule 402 Nuisance – This rule prohibits the discharge of "such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of people or the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property."

- Rule 403 Fugitive Dust – This rule requires that future projects reduce the amount of particulate matter entrained in the ambient air as a result of fugitive dust sources by requiring actions to prevent, reduce, or mitigate fugitive dust emissions from any active operation, open storage pile, or disturbed surface area.

Air Quality Management Plan. SCAQMD adopted the 2022 Air Quality Management Plan (AQMP) on December 2, 2022, updating the region's air quality attainment plan to address the "extreme" ozone non-attainment status for the Basin and the severe ozone non-attainment for the Coachella Valley Basin by laying a path for attainment by 2037. This includes reducing NOx emissions by 67 percent more than required by adopted rules and regulations in 2037. The AQMP calls on strengthening many stationary source controls and addressing new sources like wildfires, but still concludes that the region will not meet air quality standards without a significant shift to zero emission technologies and significant federal action. The 2022 AQMP relies on the growth assumptions in SCAG's 2020-2045 RTP/SCS.

Multiple Air Toxics Exposure Study V. To date, the most comprehensive study on air toxics in the Basin is the Multiple Air Toxics Exposure Study V, released in August 2021.[10] The report included refinements in aircraft and recreational boating emissions and diesel conversion factors. It finds a Basin average cancer risk of 455 in a million (population-weighted, multi-pathway), which represents a decrease of 54 percent compared to the estimate in MATES IV (page ES-13). The monitoring program measured more than 30 air pollutants, including both gases and particulates. The monitoring study was accompanied by computer modeling that estimated the risk of cancer from breathing toxic air pollution based on emissions and weather data. About 88 percent of the risk is attributed to emissions associated with

[10] South Coast Air Quality Management District, MATES-V Study. https://www.aqmd.gov/home/air-quality/air-quality-studies/health-studies/mates-v

mobile sources, with the remainder attributed to toxics emitted from stationary sources, which include large industrial operations, such as refineries and metal processing facilities, as well as smaller businesses such as gas stations and chrome plating facilities (page ES-12). The results indicate that diesel PM is the largest contributor to air toxics risk, accounting on average for about 50 percent of the total risk (Figure ES-2).

Southern California Association of Governments

SCAG is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial Counties, and addresses regional issues relating to transportation, the economy, community development and the environment. SCAG coordinates with various air quality and transportation stakeholders in Southern California to ensure compliance with the federal and state air quality requirements, including the Transportation Conformity Rule and other applicable federal, state, and air district laws and regulations. As the federally designated Metropolitan Planning Organization (MPO) for the six-county Southern California region, SCAG is required by law to ensure that transportation activities "conform" to, and are supportive of, the goals of regional and state air quality plans to attain the NAAQS. In addition, SCAG is a co-producer, with the SCAQMD, of the transportation strategy and transportation control measure sections of the AQMP for the Air Basin.

SCAG adopted the 2020–2045 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) on September 23, 2020.[11] The RTP/SCS aims to address the transportation and air quality impacts of 3.7 million additional residents, 1.6 additional households, and 1.6 million additional jobs from 2016 to 2045. The Plan calls for $639 billion in transportation investments and reducing VMT by 19 percent per capita from 2005 to 2035. The updated plan accommodates 21.3 percent growth in population from 2016 (3,933,800) to 2045 (4,771,300) and a 15.6 percent growth in jobs from 2016 (1,848,300) to 2045 (2,135,900). The regional plan projects several benefits:

- Decreasing drive-along work commutes by three percent
- Reducing per capita VMT by five percent and vehicle hours traveled per capita by nine percent
- Increasing transit commuting by two percent
- Reducing travel delay per capita by 26 percent
- Creating 264,500 new jobs annually
- Reducing greenfield development by 29 percent by focusing on smart growth
- Locating six more percent household growth in High Quality Transit Areas (HQTAs), which concentrate roadway repair investments, leverage transit and active transportation investments, reduce regional life cycle infrastructure costs, improve accessibility, create local jobs, and have the potential to improve public health and housing affordability.
- Locating 15 percent more jobs in HQTAs
- Reducing $PM_{2.5}$ emissions by 4.1 percent
- Reducing GHG emissions by 19 percent by 2035

11 California Air Resources Board, Executive Order G-20-239, SCAG 20202045 SCS ARB Acceptance of GHG Quantification Determination, October 2020, https://ww2.arb.ca.gov/our-work/programs/sustainable-communities-program/regional-plans-evaluations/southern-california, accessed March 16, 2023.

2.2.4 Local

County of Riverside

The Riverside County General Plan Air Quality Element identifies goals, policies, and programs that are meant to balance Riverside County's actions regarding land use, circulation, and other issues with their potential effects on air quality. The Air Quality Element addresses ambient air quality standards set forth by the EPA and CARB. The Air Quality Element contains policies designed to establish a regional basis for improving air quality and include the following relevant policies from Riverside County's General Plan Air Quality Element:

- AQ 1.4: Coordinate with the SCAQMD…to ensure that all elements of air quality plans regarding reduction of air pollutant emissions are being enforced.

- AQ 2.1: The County land use planning efforts shall assure that sensitive receptors are separated and protected from polluting point sources to the greatest extent possible.

- AQ 2.2: Require site plan designs to protect people and land uses sensitive to air pollution through the use of barriers and/or distance from emissions sources when possible.

- AQ 2.3: Encourage the use of pollution control measures such as landscaping, vegetation and other materials, which trap particulate matter or control pollution.

- AQ 3.1: Allow the market place, as much as possible, to determine the most economical approach to relieve congestion and cut emissions.

- AQ 4.1: Require the use of all feasible building materials/methods which reduce emissions.

- AQ 4.2: Require the use of all feasible efficient heating equipment and other appliances, such as water heaters, swimming pool heaters, cooking equipment, refrigerators, furnaces and boiler units.

- AQ 4.6: Require stationary air pollution sources to comply with applicable air district rules and control measures.

- AQ 4.7: To the greatest extent possible, require every project to mitigate any of its anticipated emissions which exceed allowable emissions as established by the SCAQMD, MDAQMD, SoCAB, the Environmental Protection Agency and the California Air Resources Board.

- AQ 4.9: Require compliance with SCAQMD Rules 403 and 403.1, and support appropriate future measures to reduce fugitive dust emanating from construction sites.

California Environmental Quality Act. In accordance with CEQA requirements, the County assesses the air quality impacts of new development projects, requires mitigation of potentially significant air quality impacts by conditioning discretionary permits, and monitors and enforces implementation of such

mitigation. The County uses the SCAQMD's *CEQA Air Quality Handbook* and SCAQMD's supplemental online guidance/information for the environmental review of development proposals within its jurisdiction.

2.3 Existing Conditions

2.3.1 Pollutants and Effects

Air quality is defined by ambient air concentrations of seven specific pollutants identified by the USEPA to be of concern with respect to health and welfare of the general public. These specific pollutants, known as "criteria air pollutants," are defined as pollutants for which the federal and State governments have established ambient air quality standards, or criteria, for outdoor concentrations to protect public health. Criteria air pollutants include carbon monoxide (CO), ground-level ozone (O_3), nitrogen oxides (NO_X), sulfur oxides (SO_X), particulate matter ten microns or less in diameter (PM_{10}), particulate matter 2.5 microns or less in diameter ($PM_{2.5}$), and lead (Pb). The following descriptions of each criteria air pollutant and their health effects are based on information provided by the SCAQMD.[12]

Carbon Monoxide (CO). CO is primarily emitted from combustion processes and motor vehicles due to incomplete combustion of fuel. Elevated concentrations of CO weaken the heart's contractions and lower the amount of oxygen carried by the blood. It is especially dangerous for people with chronic heart disease. Inhalation of CO can cause nausea, dizziness, and headaches at moderate concentrations and can be fatal at high concentrations.

Ozone (O_3). O_3 is a gas that is formed when volatile organic compounds (VOCs) and nitrogen oxides (NO_X)—both byproducts of internal combustion engine exhaust—undergo slow photochemical reactions in the presence of sunlight. O_3 concentrations are generally highest during the summer months when direct sunlight, light wind, and warm temperature conditions are favorable. An elevated level of O_3 irritates the lungs and breathing passages, causing coughing and pain in the chest and throat, thereby increasing susceptibility to respiratory infections and reducing the ability to exercise. Effects are more severe in people with asthma and other respiratory ailments. Long-term exposure may lead to scarring of lung tissue and may lower lung efficiency.

Nitrogen Dioxide (NO_2). NO_2 is a byproduct of fuel combustion and major sources include power plants, large industrial facilities, and motor vehicles. The principal form of nitrogen oxide produced by combustion is nitric oxide (NO), which reacts quickly to form NO_2, creating the mixture of NO and NO_2 commonly called NO_X. NO_2 absorbs blue light and results in a brownish-red cast to the atmosphere and reduced visibility. NO_2 also contributes to the formation of PM_{10}. Nitrogen oxides irritate the nose and throat, and increase one's susceptibility to respiratory infections, especially in people with asthma. The principal concern of NO_X is as a precursor to the formation of ozone.

Sulfur Dioxide (SO_2). Sulfur oxides (SO_X) are compounds of sulfur and oxygen molecules. SO_2 is the pre- dominant form found in the lower atmosphere and is a product of burning sulfur or burning materials

[12] South Coast Air Quality Management District, Final Program Environmental Impact Report for the 2022 AQMP, November 2022: http://www.aqmd.gov/home/research/documents-reports/lead-agency-scaqmd-projects.

that contain sulfur. Major sources of SO_2 include power plants, large industrial facilities, diesel vehicles, and oil-burning residential heaters. Emissions of sulfur dioxide aggravate lung diseases, especially bronchitis. It also constricts the breathing passages, especially in asthmatics and people involved in moderate to heavy exercise. SO_2 potentially causes wheezing, shortness of breath, and coughing. High levels of particulates appear to worsen the effect of sulfur dioxide, and long-term exposures to both pollutants leads to higher rates of respiratory illness.

Particulate Matter (PM_{10} and $PM_{2.5}$). The human body naturally prevents the entry of larger particles into the body. However, small particles, with an aerodynamic diameter equal to or less than 10 microns (PM_{10}), and even smaller particles with an aerodynamic diameter equal to or less than 2.5 microns ($PM_{2.5}$), can enter the body and become trapped in the nose, throat, and upper respiratory tract. These small particulates can potentially aggravate existing heart and lung diseases, change the body's defenses against inhaled materials, and damage lung tissue. The elderly, children, and those with chronic lung or heart disease are most sensitive to PM_{10} and $PM_{2.5}$. Lung impairment can persist for two to three weeks after exposure to high levels of particulate matter. Some types of particulates can become toxic after inhalation due to the presence of certain chemicals and their reaction with internal body fluids.

Lead (Pb). Lead is emitted from industrial facilities and from the sanding or removal of old lead-based paint. Smelting or processing the metal is the primary source of lead emissions, which is primarily a regional pollutant. Lead affects the brain and other parts of the body's nervous system. Exposure to lead in very young children impairs the development of the nervous system, kidneys, and blood forming processes in the body.

State-Only Criteria Pollutants

Visibility-Reducing Particles. Deterioration of visibility is one of the most obvious manifestations of air pollution and plays a major role in the public's perception of air quality. Visibility reduction from air pollution is often due to the presence of sulfur and NO_X, as well as PM.

Sulfates (SO_4^{2-}). Sulfates are the fully oxidized ionic form of sulfur. Sulfates occur in combination with metal and/or hydrogen ions. In California, emissions of sulfur compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. This sulfur is oxidized during the combustion process and subsequently converted to sulfate compounds in the atmosphere. Effects of sulfate exposure at levels above the standard include a decrease in ventilatory function, aggravation of asthmatic symptoms, and an increased risk of cardio-pulmonary disease. Sulfates are particularly effective in degrading visibility, and, due to fact that they are usually acidic, can harm ecosystems and damage materials and property.

Hydrogen Sulfide (H_2S). H_2S is a colorless gas with the odor of rotten eggs. It is formed during bacterial decomposition of sulfur-containing organic substances. Also, it can be present in sewer gas and some natural gas and can be emitted as the result of geothermal energy exploitation. Breathing H_2S at levels above the state standard could result in exposure to a very disagreeable odor.

Vinyl Chloride. Vinyl chloride is a colorless, flammable gas at ambient temperature and pressure. It is also highly toxic and is classified as a known carcinogen by the American Conference of Governmental

Industrial Hygienists and the International Agency for Research on Cancer. At room temperature, vinyl chloride is a gas with a sickly-sweet odor that is easily condensed. However, it is stored at cooler temperatures as a liquid. Due to the hazardous nature of vinyl chloride to human health, there are no end products that use vinyl chloride in its monomer form. Vinyl chloride is a chemical intermediate, not a final product. It is an important industrial chemical chiefly used to produce polyvinyl chloride (PVC). The process involves vinyl chloride liquid fed to polymerization reactors where it is converted from a monomer to a polymer PVC. The final product of the polymerization process is PVC in either a flake or pellet form. Billions of pounds of PVC are sold on the global market each year. From its flake or pellet form, PVC is sold to companies that heat and mold the PVC into end products such as PVC pipe and bottles. Vinyl chloride emissions are historically associated primarily with landfills.

Toxic Air Contaminants (TACs)

TACs refer to a diverse group of "non-criteria" air pollutants that can affect human health but have not had ambient air quality standards established for them. This is not because they are fundamentally different from the pollutants discussed above but because their effects tend to be local rather than regional. TACs are classified as carcinogenic and noncarcinogenic, where carcinogenic TACs can cause cancer and noncarcinogenic TAC can cause acute and chronic impacts to different target organ systems (e.g., eyes, respiratory, reproductive, developmental, nervous, and cardiovascular). CARB and OEHHA determine if a substance should be formally identified, or "listed," as a TAC in California. A complete list of these substances is maintained on CARB's website.[13]

Diesel particulate matter (DPM), which is emitted in the exhaust from diesel engines, was listed by the state as a TAC in 1998. DPM has historically been used as a surrogate measure of exposure for all diesel exhaust emissions. DPM consists of fine particles (fine particles have a diameter less than 2.5 micrometer (µm)), including a subgroup of ultrafine particles (ultrafine particles have a diameter less than 0.1 µm). Collectively, these particles have a large surface area which makes them an excellent medium for absorbing organics. The visible emissions in diesel exhaust include carbon particles or "soot." Diesel exhaust also contains a variety of harmful gases and cancer-causing substances.

Exposure to DPM may be a health hazard, particularly to children whose lungs are still developing and the elderly who may have other serious health problems. DPM levels and resultant potential health effects may be higher in close proximity to heavily traveled roadways with substantial truck traffic or near industrial facilities. According to CARB, DPM exposure may lead to the following adverse health effects: (1) aggravated asthma; (2) chronic bronchitis; (3) increased respiratory and cardiovascular hospitalizations; (4) decreased lung function in children; (5) lung cancer; and (6) premature deaths for people with heart or lung disease.[14,15]

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13 California Air Resources Board, Toxic Air Contaminant Identification List, https://ww2.arb.ca.gov/resources/documents/carb-identified-toxic-air-contaminants, accessed March 16, 2023.

14 California Air Resources Board, Overview: Diesel Exhaust and Health, https://ww2.arb.ca.gov/resources/overview-diesel-exhaust-and-health, accessed March 16, 2023.

15 California Air Resources Board, Fact Sheet: Diesel Particulate Matter Health Risk Assessment Study for the West Oakland Community: Preliminary Summary of Results, March 2008, https://ww2.arb.ca.gov/resources/documents/west-oakland-study.

2.3.2 Project Site

The Project Site is located in the Coachella Valley portion of the Salton Sea Air Basin (SSAB or Air Basin). Meteorological conditions in the Coachella Valley are largely attributable to the low desert geographic setting. The mountains surrounding the region isolate the Coachella Valley from moderating coastal influences and create a hot and dry low-lying desert condition. As the desert heats up, a large area of thermal low pressure develops, which draws cooler coastal air from the north through the narrow San Gorgonio Pass and into the valley, generating strong winds that cross the most active fluvial erosion zones in the valley. These winds sweep up, suspend and transport large quantities of sand and dust, reducing visibility, damaging property, and constituting a significant health threat. The region is also subject to seasonal northeasterly Santa Ana winds that are associated with areas of high pressure situated over Nevada and the southwest region.

USEPA has classified Riverside County as a nonattainment area for O_3 and $PM_{2.5}$. This classification denotes that the Basin does not meet the NAAQS for these pollutants. In addition, under the CCAA, the Riverside County portion of the Basin is designated as a nonattainment area for O_3, PM_{10}, and $PM_{2.5}$. The air quality within the Basin is primarily influenced by a wide range of emissions sources, such as dense population centers, heavy vehicular traffic, industry, and meteorology.

Air pollutant emissions are generated in the local vicinity by stationary and area-wide sources, such as commercial activity, space and water heating, landscaping maintenance, consumer products, and mobile sources primarily consisting of automobile traffic.

Air Pollution Climatology. The topography and climate of Southern California combine to make the Basin an area of high air pollution potential. During the summer months, a warm air mass frequently descends over the cool, moist marine layer produced by the interaction between the ocean's surface and the lowest layer of the atmosphere. The warm upper layer forms a cap over the cooler surface layer which inhibits the pollutants from dispersing upward. Light winds during the summer further limit ventilation. Additionally, abundant sunlight triggers photochemical reactions which produce O_3 and the majority of particulate matter.

The Coachella Valley is typical of a low desert climate, with summer daytime temperatures that frequently exceed 110°F and drop into the 20°Fs during winter nights. It receives an average of four to six inches of rainfall per year, with greater precipitation at higher elevations. Air inversions, where a layer of stagnant air is trapped near the ground and has high pollutant concentrations, occasionally occur in the Coachella Valley due to local geological and climatic conditions. Inversions create conditions of haziness caused by suspended water vapor, dust, and chemical aerosols emitted by vehicles, furnaces, and other sources. Due to local conditions, inversions generally occur 6,000 to 8,000 feet above the desert floor.

Air Monitoring Data. The SCAQMD monitors air quality conditions at 38 source receptor areas (SRA) throughout the Basin. The Project Site is located in SCAQMD's Coachella Valley receptor area (Area 30). Historical data from the area was used to characterize existing conditions in the vicinity of the Project area. **Table 2-2** shows pollutant levels, State and federal standards, and the number of exceedances recorded in the area from 2018 through 2020. The one-hour State standard for O_3 was exceeded 25 times during this three-year period. The federal standard was exceeded 148 times in that same period.

In addition, the daily State standard for PM_{10} was exceeded 176 times. The daily federal standard for $PM_{2.5}$ was not exceeded during this period. CO and NO_2 levels did not exceed the CAAQS from 2018 to 2020 for 1-hour (and 8-hour for CO).

Table 2-2
Ambient Air Quality Data

Pollutants and State and Federal Standards	Maximum Concentrations and Frequencies of Exceedance Standards		
	2018	2019	2020
Ozone (O_3)			
Maximum 1-hour Concentration (ppm)	0.111	0.103	0.119
Days > 0.09 ppm (State 1-hour standard)	11	5	9
Days > 0.070 ppm (Federal 8-hour standard)	56	43	49
Carbon Monoxide (CO_2)			
Maximum 1-hour Concentration (ppm)	1.1	1.3	0.8
Days > 20 ppm (State 1-hour standard)	0	0	0
Maximum 8-hour Concentration (ppm)	0.8	0.7	0.5
Days > 9.0 ppm (State 8-hour standard)	0	0	0
Nitrogen Dioxide (NO_2)			
Maximum 1-hour Concentration (ppm)	0.0426	0.0414	0.0474
Days > 0.18 ppm (State 1-hour standard)	0	0	0
PM_{10}			
Maximum 24-hour Concentration (µg/m^3)	274	154	259
Days > 50 µg/m^3 (State 24-hour standard)	63	44	69
$PM_{2.5}$			
Maximum 24-hour Concentration (µg/m^3)	30.2	15.5	25.6
Days > 35 µg/m^3 (Federal 24-hour standard)	0	0	0
Sulfur Dioxide (SO_2)			
Maximum 24-hour Concentration (ppb)	N/A	N/A	N/A
Days > 0.04 ppm (State 24-hour standard)	0	0	N/A

ppm = parts by volume per million of air.
µg/m^3 = micrograms per cubic meter.
N/A = not available at this monitoring station.
Source: SCAQMD annual monitoring data at Coachella Valley subregion (http://www.aqmd.gov/home/air-quality/air-quality-data-studies/historical-data-by-year) accessed November 26, 2022. Represents the highest of the three Coachella Valley locations with data.

Sensitive Receptors. Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. The California Air Resources Board (CARB) has identified the following groups who are most likely to be affected by air pollution: children less than 14 years of age, the elderly over 65 years of age, athletes, and people with cardiovascular and chronic respiratory diseases. According to the SCAQMD, sensitive receptors include residences, schools, playgrounds, childcare centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes.

Sensitive receptors within one mile of the Project Site include, but are not limited to, the following representative sampling (distances are from the closest corner of the overall Rancho Polo Equestrian Club, not necessarily from the portion that would be developed under the Proposed Project):

- Single-family home (mobile home) located at 82400 Avenue 58, 320 feet west of the Site's southwest corner boundary.
- Single-family home (mobile home) located at 57310 Jackson Street, 550 feet northeast of the Site's northeast corner boundary.
- Single-family home (mobile home) located at 83254 Avenue 58, 1,250 feet east of the Site's southeast corner boundary.
- Westside Elementary School located at 82225 Airport Boulevard, 3,700 feet northwest of the Site's northwest corner boundary.
- Coachella Valley High School located at 83800 Airport Boulevard, one mile northeast of the Site's northeast corner boundary.

Existing Project Site Emissions. The Project Site contains the Rancho Polo Equestrian Center which serves the equestrian needs of visitors from Riverside County and beyond. The Site includes commercial stables to board horses and features a diverse inventory of facilities for equestrian training, breeding, and boarding. In addition to the site's equestrian focus, Rancho Polo also features significant agricultural uses, including hay fields that are farmed and harvested.

The Project Site includes eight barns, which accommodate 148 horse stalls, as well as piped corrals and fenced pastures that accommodate another 50 horses. These boarding facilities are complemented with several agricultural and equestrian-serving structures and buildings, hay barns, ranch offices, equipment and tool sheds, and observation decks, along with various other improvements, equipment and tanks required to operate Rancho Polo's equestrian and agricultural activities.

The Proposed Project would develop 8.22 acres at the southwest portion of the Site, which contains several structures:

- Seven prefabricated mobile homes that function as worker units (six on the development area and one adjacent to the Polo Field) and one mobile home that is used as an office/reception building. These would be retained in their current capacity.
- Three agricultural huts, an agricultural office, maintenance workshop, and tool shed totaling 4,425 square feet. These would be retained in their current capacity.

The balance of the 8.22-acre development site is generally vacant open space. While there are occasional temporary recreational vehicles that park in these spaces, this analysis assumes there are no anthropogenic emissions from the portion of the development that would involve new structures.

2.4 Methodology

The air quality analysis conducted for the Project is consistent with the methods described in the SCAQMD CEQA Air Quality Handbook (1993 edition), as well as the updates to the CEQA Air Quality Handbook, as provided on the SCAQMD website. The SCAQMD recommends the use of the California Emissions Estimator Model (CalEEMod, version 2022.1) as a tool for quantifying emissions of air pollutants that will be generated by constructing and operating development projects. The analyses focus on the potential change in air quality conditions due to Project implementation. Air pollutant emissions would result from both construction and operation of the Project. Specific methodologies used to evaluate these emissions are discussed below.

Construction. Sources of air pollutant emissions associated with construction activities include heavy-duty off-road diesel equipment and vehicular traffic to and from the Project construction site. Project-specific information was provided describing the schedule of construction activities and the equipment inventory required from the Applicant. Details pertaining to the schedule and equipment can be found in the Technical Appendix to this analysis. The CalEEMod model provides default values for daily equipment usage rates and worker trip lengths, as well as emission factors for heavy-duty equipment, passenger vehicles, and haul trucks that have been derived by the CARB. Maximum daily emissions were quantified for each construction activity based on the number of equipment and daily hours of use, in addition to vehicle trips to and from the Project Site.

The SCAQMD recommends that air pollutant emissions be assessed for both regional scale and localized impacts. The regional emissions analysis includes both on-site and off-site sources of emissions, while the localized emissions analysis focuses only on sources of emissions that would be located on the Project Site.

Localized impacts were analyzed in accordance with the SCAQMD Localized Significance Threshold (LST) methodology.[16] The localized effects from on-site portion of daily emissions were evaluated at sensitive receptor locations potentially impacted by the Project according to the SCAQMD's LST methodology, which uses on-site mass emission look-up tables and Project-specific modeling, where appropriate.[17] SCAQMD provides LSTs applicable to the following criteria pollutants: NO_X, CO, PM_{10}, and $PM_{2.5}$. SCAQMD does not provide an LST for SO_2 since land use development projects typically result in negligible construction and long-term operation emissions of this pollutant. Since VOCs are not a criteria pollutant, there is no ambient standard or SCAQMD LST for VOCs. Due to the role VOCs play in O_3 formation, it is classified as a precursor pollutant, and only a regional emissions threshold has been established.

LSTs represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard and are developed based on the ambient concentrations of that pollutant for each source receptor area and distance to the nearest sensitive receptor. The mass rate look-up tables were developed for each source receptor area and can be used to determine whether or not a project may generate significant adverse localized air quality impacts. SCAQMD provides LST mass rate look-up tables for projects with active

16 South Coast Air Quality Management District, Final Localized Significance Methodology, revised July 2008.

17 South Coast Air Quality Management District, LST Methodology Appendix C-Mass Rate LST Look-Up Table, October 2009.

construction areas that are less than or equal to five acres. If the project exceeds the LST look-up values, then the SCAQMD recommends that project-specific air quality modeling must be performed. Please refer to **Threshold b** below, for the analysis of localized impacts from on-site construction activities. In accordance with SCAQMD guidance, maximum daily emissions of NO_X, CO, PM_{10}, and $PM_{2.5}$ from on-site sources during each construction activity were compared to LST values for a five-acre site having sensitive receptors within 50 meters (164 feet).[18] This is appropriate given the 8.22-acre development site and the proximity of the nearest sensitive receptor (residence at 82400 Avenue 58) 0.97 meters (320 feet) from the Project Site.

The Basin is divided into 38 SRAs, each with its own set of maximum allowable LST values for on-site emissions sources during construction and operations based on locally monitored air quality. Maximum on-site emissions resulting from construction activities were quantified and assessed against the applicable LST values.

The significance criteria and analysis methodologies in the SCAQMD's CEQA Air Quality Handbook were used in evaluating impacts in the context of the CEQA significance criteria listed below. The SCAQMD localized significance thresholds (LSTs) for NO_2, CO, and PM_{10} were initially published in June 2003 and revised in July 2008.[19] The LSTs for $PM_{2.5}$ were established in October 2006.[20] Updated LSTs were published on the SCAQMD website on October 21, 2009.[21] **Table 2-3** presents the significance criteria for both construction and operational emissions.

Table 2-3
SCAQMD Emissions Thresholds

Criteria Pollutant	Construction Emissions (ppd)		Operation Emissions (ppd)	
	Regional	Localized /a/	Regional	Localized /a/
Volatile Organic Compounds (VOC)	75	--	55	--
Nitrogen Oxides (NO_X)	100	340	55	340
Carbon Monoxide (CO)	550	3,237	550	3,237
Sulfur Oxides (SO_X)	150	--	150	--
Respirable Particulates (PM_{10})	150	44	150	11
Fine Particulates ($PM_{2.5}$)	55	11	55	3

ppd – pounds per day
/a/ Localized significance thresholds assumed a five-acre site and 50-meter (164-foot) receptor distance in the Coachella Valley source receptor area. The SCAQMD has not developed LST values for VOC or SO_X.
Sources: SCAQMD, Final Localized Significance Threshold Methodology Appendix C – Mass Rate LST Look-Up Tables, October 21, 2009: http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/appendix-c-mass-rate-lst-look-up-tables.pdf?sfvrsn=2, accessed March 16, 2023.
SCAQMD, South Coast AQMD Air Quality Significance Thresholds, 2019: http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf, accessed March 16, 2023.

18 South Coast Air Quality Management District, Fact Sheet for Applying CalEEMod to Localized Significance Thresholds, 2008.

19 South Coast Air Quality Management District, Fact Sheet for Applying CalEEMod to Localized Significance Thresholds, 2008.

20 South Coast Air Quality Management District, Final – Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, October 2006.

21 South Coast Air Quality Management District, Final Localized Significance Threshold Methodology Appendix C – Mass Rate LST Look-Up Tables, October 21, 2009.

Operations. CalEEMod also generates estimates of daily and annual emissions of air pollutants resulting from future operation of a project. Operational emissions of air pollutants are produced by mobile sources (vehicular travel) and stationary sources (utilities demand). Utilities for the Project Site are provided by the Imperial Irrigation District for electricity and Southern California Gas for natural gas. CalEEMod has derived default emissions factors for electricity and natural gas usage that are applied to the size and land use type of the Project in question. CalEEMod also generates estimated operational emissions associated water use, wastewater generation, and solid waste disposal.

Similar to construction, SCAQMD's CalEEMod software was used for the evaluation of Project emissions during operation. CalEEMod was used to calculate on-road fugitive dust, architectural coatings, landscape equipment, energy use, mobile source, and stationary source emissions. To determine if a significant air quality impact would occur, the net increase in regional and local operational emissions generated by the Project was compared against the SCAQMD's significance thresholds.[22] Details describing the operational emissions of the Project can be found in in the Technical Appendix.

Toxic Air Contaminants Impacts (Construction and Operations). Potential TAC impacts are evaluated by conducting a qualitative analysis consistent with the CARB Handbook followed by a more detailed analysis (i.e., dispersion modeling), as necessary. The qualitative analysis consists of reviewing the Project to identify any new or modified TAC emissions sources. If the qualitative evaluation does not rule out significant impacts from a new source, or modification of an existing TAC emissions source, a more detailed analysis is conducted.

2.5 Thresholds of Significance

2.5.1 State CEQA Guidelines Appendix G

Would the Project:

a) *Conflict with or obstruct implementation of the applicable air quality plan;*

b) *Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard;*

c) *Expose sensitive receptors to substantial pollutant concentrations; or*

d) *Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?*

22 South Coast Air Quality Management District, Air Quality Significance Thresholds, revised March 2015. SCAQMD based these thresholds, in part on the federal Clean Air Act and, to enable defining "significant" for CEQA purposes, defined the setting as the South Coast Air Basin. (See SCAQMD, CEQA Air Quality Handbook, April 1993, pp. 6-1-6-2).

2.5.2 County and SCAQMD Thresholds

For this analysis the Appendix G Thresholds are relied upon. The analysis utilizes factors and considerations recommended by the SCAQMD Thresholds, as appropriate, to assist in answering the Appendix G Threshold questions.

(a) Construction

This analysis considers the following criteria to evaluate construction-related air emissions:

(i) Combustion Emissions from Construction Equipment

- Type, number of pieces and usage for each type of construction equipment;
- Estimated fuel usage and type of fuel (diesel, natural gas) for each type of equipment; and
- Emission factors for each type of equipment.

(ii) Fugitive Dust—Grading, Excavation and Hauling

- Amount of soil to be disturbed on-site or moved off-site;
- Emission factors for disturbed soil;
- Duration of grading, excavation and hauling activities;
- Type and number of pieces of equipment to be used; and
- Projected haul route.

(iii) Fugitive Dust—Heavy-Duty Equipment Travel on Unpaved Road

- Length and type of road;
- Type, number of pieces, weight and usage of equipment; and
- Type of soil.

(iv) Other Mobile Source Emissions

- Number and average length of construction worker trips to Project Site, per day; and
- Duration of construction activities.

In addition, the following criteria set forth in the SCAQMD's *CEQA Air Quality Handbook* serve as quantitative air quality standards to be used to evaluate project impacts under the Appendix G Thresholds. Under these thresholds, a significant threshold would occur when:[23]

- Regional emissions from both direct and indirect sources would exceed any of the following SCAQMD prescribed threshold levels: (1) 100 pounds per day for NO_X; (2) 75 pounds a day for

23 South Coast Air Quality Management District, Air Quality Significance Thresholds, revised March 2015.

VOC; (3) 150 pounds per day for PM_{10} or SO_X; (4) 55 pounds per day for $PM_{2.5}$; and (5) 550 pounds per day for CO.

- Maximum on-site daily localized emissions exceed the LST, resulting in predicted ambient concentrations in the vicinity of the Project Site greater than the most stringent ambient air quality standards for CO (20 ppm [23,000 µg/m^3] over a 1-hour period or 9.0 ppm [10,350 µg/m^3] averaged over an 8-hour period) and NO_2 (0.18 ppm [339 µg/m^3] over a 1-hour period, 0.1 ppm [188 µg/m^3] over a three-year average of the 98th percentile of the daily maximum 1-hour average, or 0.03 ppm [57 µg/m^3] averaged over an annual period).

- Maximum on-site localized PM_{10} or $PM_{2.5}$ emissions during construction exceed the applicable LSTs, resulting in predicted ambient concentrations in the vicinity of the Project Site to exceed the incremental 24-hour threshold of 10.4 µg/m^3 or 1.0 µg/m^3 PM_{10} averaged over an annual period.

(b) Operation

The determination of significance of operational air quality impacts is based on criteria set forth in the SCAQMD's *CEQA Air Quality Handbook*.[24] Accordingly, the following serve as quantitative air quality standards to be used to evaluate project impacts under the Appendix G thresholds. Under these thresholds, a significant threshold would occur when:

- Operational emissions exceed 10 tons per year of volatile organic gases or any of the following SCAQMD prescribed threshold levels: (1) 55 pounds a day for VOC;[25] (2) 55 pounds per day for NO_X; (3) 550 pounds per day for CO; (4) 150 pounds per day for SO_X; (5) 150 pounds per day for PM_{10}; and (6) 55 pounds per day for $PM_{2.5}$.[26]

- Maximum on-site daily localized emissions exceed the LST, resulting in predicted ambient concentrations in the vicinity of the Project Site greater than the most stringent ambient air quality standards for CO (20 parts per million (ppm) over a 1-hour period or 9.0 ppm averaged over an 8-hour period) and NO_2 (0.18 ppm over a 1-hour period, 0.1 ppm over a 3-year average of the 98th percentile of the daily maximum 1-hour average, or 0.03 ppm averaged over an annual period).[27]

- Maximum on-site localized operational PM_{10} and $PM_{2.5}$ emissions exceed the incremental 24-hour threshold of 2.5 µg/m^3 or 1.0 µg/m^3 PM_{10} averaged over an annual period.[28]

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24 South Coast Air Quality Management District, Air Quality Significance Thresholds, revised March 2015.

25 For purposes of this analysis, emissions of VOC and reactive organic compounds (ROG) are used interchangeably since ROG represents approximately 99.9 percent of VOC emissions.

26 South Coast Air Quality Management District, Quality Significance Thresholds, www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf, last updated March 2015.

27 South Coast Air Quality Management District, Final Localized Significance Threshold Methodology, revised July 2008.

28 South Coast Air Quality Management District, Final—Methodology to Calculate Particulate Matter (PM) 2.5 and $PM_{2.5}$ Significance Thresholds, October 2006.

- The Project causes or contributes to an exceedance of the California 1-hour or 8-hour CO standards of 20 or 9.0 ppm, respectively; or

- The Project creates an odor nuisance pursuant to SCAQMD Rule 402.

(c) Toxic Air Contaminants

The determination of significance in this analysis considers the following criteria to evaluate TACs:

- Would the project use, store, or process carcinogenic or non-carcinogenic toxic air contaminants which could result in airborne emissions?

The criteria identified above will be used where applicable and relevant to assist in analyzing the Appendix G thresholds. In addition, the following criteria set forth in the SCAQMD's *CEQA Air Quality Handbook* serve as quantitative air quality standards to be used to evaluate project impacts under Appendix G thresholds. Under these thresholds, a significant threshold would occur when:[29]

- The Project results in the exposure of sensitive receptors to carcinogenic or toxic air contaminants that exceed the maximum incremental cancer risk of 10 in one million or an acute or chronic hazard index of 1.0.[30] For projects with a maximum incremental cancer risk between 1 in one million and 10 in one million, a project would result in a significant impact if the cancer burden exceeds 0.5 excess cancer cases.

(d) Consistency with Applicable Air Quality Plans

CEQA Guidelines Section 15125 requires an analysis of project consistency with applicable governmental plans and policies. This analysis is conducted to assess potential project impacts against Threshold (a) from the Appendix G thresholds. In accordance with the SCAQMD's *CEQA Air Quality Handbook*, the following criteria are used to evaluate a project's consistency with the AQMP:[31]

- Will the Project result in any of the following:
  - An increase in the frequency or severity of existing air quality violations;
  - Cause or contribute to new air quality violations; or
  - Delay timely attainment of air quality standards or the interim emission reductions specified in the AQMP?

- Will the Project exceed the assumptions utilized in preparing the AQMP?

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29 South Coast Air Quality Management District, CEQA Air Quality Handbook, April 1993, Chapter 6 (Determining the Air Quality Significance of a Project) and Chapter 10 (Assessing Toxic Air Pollutants).

30 Hazard index is the ratio of a toxic air contaminant's concentration divided by its Reference Concentration, or safe exposure level. If the hazard index exceeds one, people are exposed to levels of TACs that may pose noncancer health risks.

31 South Coast Air Quality Management District, CEQA Air Quality Handbook, April 1993, p. 12-3.

- Is the Project consistent with the population and employment growth projections upon which AQMP forecasted emission levels are based;
- Does the Project include air quality mitigation measures; or
- To what extent is Project development consistent with the AQMP land use policies?

The Project's impacts with respect to these criteria are discussed to assess the consistency with the SCAQMD's AQMP and SCAG regional plans and policies. In addition, the Project's consistency with the County's General Plan Air Quality Element is discussed.

Project Design Features. The Project would comply with the update to the 2022 California Building Code and California Green Building Standards Code (CalGreen), both effective January 1, 2023.[32] Further energy efficiency and sustainability features would include native plants and drip/subsurface irrigation systems, individual metering or sub metering for water use, leak detection systems, and electric vehicle charging capacity.

2.6 Analysis of Project Impacts

AIR QUALITY Would the project:				
1. Air Quality Impacts a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐
c) Expose sensitive receptors, which are located within one (1) mile of the project site, to substantial pollutant concentrations?	☐	☐	☒	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

2.6.1 a) Would the Project conflict with or obstruct implementation of the applicable air quality plan?

Less Than Significant Impact. The air quality plan applicable to the Project area is the 2022 AQMP, the current management plan for progression toward compliance with State and federal clean air requirements. In addition, as demonstrated in the following analyses, the Project would not result in significant emissions that would jeopardize regional or localized air quality standards.

32 California Building Codes: http://www.bsc.ca.gov/Codes.aspx.

The Project's air quality emissions would not exceed any state or federal standards. Therefore, the Project would not increase the frequency or severity of an existing violation or cause or contribute to new violations for these pollutants. As the Project would not exceed any of the state and federal standards, the Project would also not delay timely attainment of air quality standards or interim emission reductions specified in the 2022 AQMP.

With respect to the determination of consistency with AQMP growth assumptions, the projections in the 2022 AQMP for achieving air quality goals are based on assumptions in SCAG's 2020–2045 RTP/SCS regarding population, housing, and growth trends. Determining whether or not a project exceeds the assumptions reflected in the AQMP involves the evaluation of three criteria: (1) consistency with applicable population, housing, and employment growth projections; (2) project mitigation measures; and (3) appropriate incorporation of AQMP land use planning strategies. The following discussion provides an analysis with respect to each of these three criteria.

- Is the project consistent with the population and employment growth projections upon which AQMP forecasted emission levels are based?

A project is consistent with the AQMP, in part, if it is consistent with the population, housing, and employment assumptions that were used in the development of the AQMP. In the case of the 2022 AQMP, two sources of data form the basis for the projections of air pollutant emissions: the County of Riverside's General Plan and SCAG's RTP. The General Plan serves as a comprehensive, long-term plan for future development of the unincorporated County.

The 2020-2045 RTP/SCS provides socioeconomic forecast projections of regional population growth.[33] The population, housing, and employment forecasts, which are adopted by SCAG's Regional Council, are based on local plans and policies applicable to the specific area; these are used by SCAG in all phases of implementation and review. Based on the average 2018 persons-per-household rate for the unincorporated portion of Riverside County of 3.2 persons per household,[34] the Project would add a net residential population of approximately 42 people to the Project Site based on the thirteen dwelling units proposed. The Project's residential population would represent approximately 0.03 percent of the forecast growth between 2016 and 2045 in the County and would therefore be consistent with the projections in the AQMP.

As of September 3, 2020, the 2020 RTP/SCS is the adopted metropolitan transportation plan for the region. The 2020 RTP/SCS accommodates 525,600 persons; 180,900 households; and 139,600 jobs in the unincorporated County by 2045. The Project's residential population would represent approximately 0.027 percent of the forecast population growth between 2016 and 2045. When the AQMP is updated in 2022, it will use these growth forecasts as the basis of its attainment plan.

- Does the project include air quality mitigation measures?

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33 The current applicable air quality attainment plan for the region is the 2022 AQMP, which is based on the growth assumptions in the 2020-2045 RTP/SCS. As such, the 2020-2045 RTP/SCS was used as the basis for this analysis.

34 Southern California Association of Governments, 2019 Local Profile for Riverside County; https://scag.ca.gov/sites/main/files/file-attachments/unincareariversidecounty_0.pdf?1606013120

As discussed below under Thresholds (b), (c), and (d), the Project would not result in any significant air quality impacts and therefore would not require mitigation. In addition, the Project would comply with all applicable regulatory standards as required by SCAQMD. Furthermore, with compliance with the regulatory requirements identified above, no significant air quality impacts would occur. As such, the proposed Project meets this AQMP consistency criterion.

- To what extent is project development consistent with the land use policies set forth in the AQMP?

With regard to land use developments such as the Project, the AQMP's air quality policies focus on the reduction of vehicle trips and vehicle miles traveled (VMT). The Project would serve to implement a number of land use policies of the County of Riverside, SCAQMD, and SCAG. The Project would be designed and constructed to support and promote environmental sustainability. "Green" principles are incorporated throughout the Project to comply with the California Green Building Standards Code (CALGreen) through energy conservation, water conservation, and waste reduction features.

The air quality plan applicable to the Project area is the 2022 AQMP. The 2022 AQMP is the SCAQMD plan for improving regional air quality in the Basin. The 2022 AQMP is the current management plan for continued progression toward clean air and compliance with State and federal requirements. It includes a comprehensive strategy aimed at controlling pollution from all sources, including stationary sources, on- and off-road mobile sources, and area sources. The 2022 AQMP also incorporates current scientific information and meteorological air quality models. It also updates the federally approved 8-hour O_3 control plan with new commitments for short-term NO_X and VOC reductions. The 2022 AQMP includes short-term control measures related to facility modernization, energy efficiency, good management practices, market incentives, and emissions growth management.

As demonstrated in the following analyses, the Project would not result in significant regional emissions. The 2022 AQMP adapts previously conducted regional air quality analyses to account for the recent unexpected drought conditions and presents a revised approach to demonstrated attainment of the 2006 24-hour $PM_{2.5}$ NAAQS for the Basin. Directly applicable to the Project, the 2022 AQMP proposes robust NO_X reductions from residential appliances. The Project would be required to comply with all new and existing regulatory measures set forth by the SCAQMD. Implementation of the Project would not interfere with air pollution control measures listed in the 2022 AQMP.

The Project Site is classified as "Rural Residential" in the General Plan, a classification that allows worker or guest housing such as that proposed by the Project. As such, the RTP/SCS' assumptions about growth in the unincorporated County accommodate the projected population on the Project Site. As a result, the Project would be consistent with the growth assumptions in the County's General Plan. Because the AQMP accommodates growth forecasts from local General Plans, the emissions associated with this Project are accounted for and mitigated in the region's air quality attainment plans. The air quality impacts of development on the Project Site are accommodated in the region's emissions inventory for the 2020-2045 RTP/SCS and 2022 AQMP. Therefore, Project impacts with respect to AQMP consistency would be less than significant.

County of Riverside Policies

The Project would provide worker or guest housing that would reduce air quality impacts associated with off-site commuting for workers or guests. The County's General Plan Air Quality Element identifies numerous policies with specific strategies for advancing clean air goals. As illustrated in **Table 2-4**, the Project would not conflict with the applicable policies in the Air Quality Element, as the Project would reduce vehicular trips and reduce VMT by improving the on-site jobs/housing balance. Therefore, the Project would result in a less than significant impact related to consistency with the Air Quality Element.

Table 2-4
Project Consistency with County of Riverside General Plan Air Quality Element

Strategy	Project Consistency
Policy AQ 1.4: Coordinate with the SCAQMD…to ensure that all elements of air quality plans regarding reduction of air pollutant emissions are being enforced.	**No Conflict.** The Project would comply with all applicable SCAQMD rules and regulations during the construction and operation phases. This includes compliance with Rule 403, which regulates fugitive dust emissions during earthmoving activities.
Policy AQ 2.1: The County land use planning efforts shall assure that sensitive receptors are separated and protected from polluting point sources to the greatest extent possible.	**No Conflict.** The proposed housing would not be a significant polluting point or area source and would be over 300 feet away from any off-site sensitive receptors.
Policy Q 2.2: Require site plan designs to protect people and land uses sensitive to air pollution through the use of barriers and/or distance from emissions sources when possible.	**No Conflict.** The site plan provides substantial setbacks from other proposed residences and existing land uses.
Policy AQ 2.3: Encourage the use of pollution control measures such as landscaping, vegetation and other materials, which trap particulate matter or control pollution.	**No Conflict.** The site plan would reduce unpaved surfaces on the Project Site that contribute to localized fugitive dust exposure and entrained fugitive dust on Avenue 58 and other localized roadways that contribute to off-site fugitive dust concentrations in the Coachella Valley. The additional of paved surfaces will help reduce overall particulate emissions.
Policy AQ 3.1: Allow the market place, as much as possible, to determine the most economical approach to relieve congestion and cut emissions.	**No Conflict.** The proposed on-site housing is a market-based response to the demand for workforce housing that will reduce the need for vehicle trips, VMT, and the air quality emissions from vehicle travel.
Policy AQ 4.1: Require the use of all feasible building materials/methods which reduce emissions.	**No Conflict.** The Project will incorporate all Title 24 and Green Building requirements for new construction, as well as use VOC-complaint coatings during the construction process.
Policy AQ 4.2: Require the use of all feasible efficient heating equipment and other appliances, such as water heaters, swimming pool heaters, cooking equipment, refrigerators, furnaces and boiler units.	**No Conflict.** The Project will incorporate all Title 24 and Green Building requirements for new construction, including the minimization of combustion-based energy sources while including conduits and infrastructure for on-site electrical use.
Policy AQ 4.6: Require stationary air pollution sources to comply with applicable air district rules and control measures.	**No Conflict.** The Project will comply with all SCAQMD regulations and incorporate all Title 24 and Green Building requirements for new construction, including the minimization of combustion-based energy sources

Table 2-4
Project Consistency with County of Riverside General Plan Air Quality Element

Strategy	Project Consistency
	while including conduits and infrastructure for on-site electrical use.
Policy AQ 4.7: To the greatest extent possible, require every project to mitigate any of its anticipated emissions which exceed allowable emissions as established by the SCAQMD, MDAQMD, SoCAB, the Environmental Protection Agency and the California Air Resources Board.	**No Conflict.** The Project will improve jobs-housing balance on the Project Site and produce negligible emissions from home-work commutes as such.
Policy AQ 4.9: Require compliance with SCAQMD Rules 403 and 403.1, and support appropriate future measures to reduce fugitive dust emanating from construction sites.	**No Conflict.** The Project will comply with fugitive dust rules during the construction process that will help ensure on-site activities do not exacerbate overall particulate concentrations in the Coachella Valley.
Source: DKA Planning, 2022.	

2.6.2 b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

Less Than Significant Impact. A cumulatively considerable net increase would occur if the project's construction impacts substantially contribute to air quality violations when considering other projects that may undertake construction activities at the same time. Individual projects that generate emissions that do not exceed SCAQMD's significance thresholds would not contribute considerably to any potential cumulative impact. SCAQMD neither recommends quantified analyses of the emissions generated by a set of cumulative development projects nor provides thresholds of significance to assess the impacts associated with these emissions.[35]

Construction

Construction-related emissions were estimated using the SCAQMD's CalEEMod 2022.1 model and a projected construction schedule of approximately six months during 2023. While there are three proposed phases of development, this analysis assumes a conservative scenario where all improvements are built concurrently, ensuring this report's findings are most protective of public health. There would be some overlap between some phases, particularly given the proposed phasing of

35 South Coast Air Quality Management District, 2003 White Paper on Potential Control Strategies to Address Cumulative Impacts from Air Pollution: "As Lead Agency, the AQMD uses the same significance thresholds for project specific and cumulative impacts for all environmental topics analyzed in an Environmental Assessment or EIR…Projects that exceed the project-specific significance threshold are considered by the SCAQMD to be cumulatively considerable. This is the reason project-specific and cumulative thresholds are the same. Conversely, projects that do not exceed the project-specific thresholds are not considered to be cumulatively significant.

development. **Table 2-5** summarizes the estimated construction schedule that was modeled for air quality impacts.

Table 2-5
Construction Schedule Assumptions

Phase	Duration	Notes
Site Preparation	Month 1 (two weeks)	Grubbing and removal of trees, plants, landscaping, weeds
Grading	Months 1-3	Fine grading of 40,000 square feet of area and approximately 6,000 cubic yards of soil (including swell factors) hauled 40 miles to landfill in 10-cubic yard capacity trucks.
Trenching	Months 2-4	Trenching for utilities, including gas, water, electricity, and telecommunications.
Building Construction	Months 3-6	Foundation work, framing, welding; installing mechanical, electrical, and plumbing. Floor assembly, cabinetry and carpentry, low voltage systems, trash management.
Paving	Month 5	Flatwork, including paving of walkways and other living areas, and surface parking lot for worker parking.
Architectural Coatings	Months 4-6	Application of interior and exterior coatings and sealants.
Source: DKA Planning, 2022.		

The Project would be required to comply with the following regulations, as applicable:

- SCAQMD Rule 402, which states that a person shall not discharge from any source whatsoever such quantities of air contaminants or other materials which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.

- SCAQMD Rule 403, would reduce the amount of particulate matter entrained in ambient air as a result of anthropogenic fugitive dust sources by requiring actions to prevent, reduce or mitigate fugitive dust emissions.

- SCAQMD Rule 431.2, would require use of low-sulfur fuel in construction equipment.

- SCAQMD Rule 445 would prohibit the inclusion of wood burning fireplaces in any residences.

- SCAQMD Rule 1113, which limits the VOC content of architectural coatings.

- In accordance with Section 2485 in Title 13 of the California Code of Regulations, the idling of all diesel-fueled commercial vehicles (with gross vehicle weight over 10,000 pounds) during construction would be limited to five minutes at any location.

- In accordance with Section 93115 in Title 17 of the California Code of Regulations, operation of any stationary, diesel-fueled, compression-ignition engines would meet specific fuel and fuel additive requirements and emissions standards.

Regional Emissions

Construction activity creates air quality impacts through the use of heavy-duty construction equipment and through vehicle trips generated by construction workers traveling to and from the Project Site. NO_X emissions would primarily result from the use of construction equipment and truck trips.

Fugitive dust emissions would peak during grading activities, where approximately 6,000 cubic yards of soil (including swell factors) would be exported from the Project Site. All construction projects in the Basin must comply with SCAQMD Rule 403 for fugitive dust. Rule 403 control requirements include measures to prevent the generation of visible dust plumes. Measures include, but are not limited to, applying water and/or soil binders to uncovered areas, reestablishing ground cover as quickly as possible, utilizing a wheel washing system or other control measures to remove bulk material from tires and vehicle undercarriages before vehicles exit the Project Site, and maintaining effective cover over exposed areas. Compliance with Rule 403 would reduce regional $PM_{2.5}$ and PM_{10} emissions associated with construction activities by approximately 61 percent.

During the building finishing phase, the application of architectural coatings (e.g., paints) would potentially release VOCs (regulated by SCAQMD Rule 1113). The assessment of construction air quality impacts considers each of these potential sources. Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation and, for dust, the prevailing weather conditions.

As shown in **Table 2-6**, construction of the Project would produce VOC, NO_X, CO, SO_X, PM_{10} and $PM_{2.5}$ emissions that do not exceed the SCAQMD's regional thresholds. As a result, construction of the Project would not contribute substantially to an existing violation of air quality standards for regional pollutants (e.g., ozone). This impact is considered less than significant.

Table 2-6
Daily Construction Emissions

Construction Phase Year	Daily Emissions (Pounds Per Day)					
	VOC	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
2023	7.0	39.8	38.4	0.1	9.7	5.7
Maximum Regional Total	7.0	39.8	38.4	0.1	9.7	5.7
Regional Threshold	75	100	550	150	150	55
Exceed Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
Maximum Localized Total	5.7	31.8	32.5	<0.1	4.3	2.7
Localized Threshold	N/A	340	3,237	N/A	44	11
Exceed Threshold?	**N/A**	**No**	**No**	**N/A**	**No**	**No**

The construction dates are used for the modeling of air quality emissions in the CalEEMod software. If construction activities commence later than what is assumed in the environmental analysis, the actual emissions would be lower than analyzed because of the increasing penetration of newer equipment with lower certified emission levels. Assumes implementation of SCAQMD Rule 403 (Fugitive Dust Emissions)
Source: DKA Planning, 2022 based on CalEEMod 2022.1 model runs. LST analyses based on five-acre site with 50-meter distances to receptors in Coachella Valley source receptor area. Estimates reflect the peak summer or winter season, whichever is higher. Totals may not add up due to rounding. Modeling sheets included in the Technical Appendix.

Localized Emissions

In addition to maximum daily regional emissions, maximum localized (on-site) emissions were quantified for each construction activity. The localized construction air quality analysis was conducted using the methodology promulgated by the SCAQMD. Look-up tables provided by the SCAQMD were used to determine localized construction emissions thresholds for the Project.[36] LSTs represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard and are based on the most recent background ambient air quality monitoring data (2018-2020) for the Project area.

Maximum on-site daily construction emissions for NO_X, CO, PM_{10}, and $PM_{2.5}$ were calculated using CalEEMod and compared to the applicable SCAQMD LSTs for the Coachella Valley SRA based on construction site acreage that is five acres or more. Potential impacts were evaluated at the closest off-site sensitive receptor, which is the residence to the west of the Project Site on Avenue 58.

As shown in **Table 2-6**, above**,** the Project would produce emissions that do not exceed the SCAQMD's recommended localized standards of significance for NO_2 and CO during the construction phase. Similarly, construction activities would not produce PM_{10} and $PM_{2.5}$ emissions that exceed localized thresholds recommended by the SCAQMD. These estimates assume the use of Best Available Control Measures (BACMs) that address fugitive dust emissions of PM_{10} and $PM_{2.5}$ through SCAQMD Rule 403. This would include watering portions of the site that are disturbed during grading activities and minimizing tracking of dirt onto local streets. Therefore, construction impacts on localized air quality are considered less than significant.

Operation

Operational emissions of criteria pollutants would come from area, energy, and mobile sources. Area sources include consumer products such as household cleaners, architectural coatings for routine maintenance, and landscaping equipment. Energy sources include electricity and natural gas use for space heating and water heating. The CalEEMod program generates estimates of emissions from energy use based on the land use type and size. The Project would also produce long-term air quality impacts to the region primarily from motor vehicles that access the Project Site. The Project could add up to 95 vehicle trips to the local roadway network on a weekday at the start of operations in 2023.[37]

As shown in **Table 2-7**, the Project's emissions would not exceed the SCAQMD's regional or localized significance thresholds. Therefore, the operational impacts of the Project on regional and localized air quality are considered less than significant.

Table 2-7
Daily Operations Emissions

Emissions Source	Daily Emissions (Pounds Per Day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Area Sources	0.9	<0.1	0.7	<0.1	<0.1	<0.1
Energy Sources	<0.1	0.1	<0.1	<0.1	<0.1	<0.1

[36] South Coast Air Quality Management District, LST Methodology Appendix C-Mass Rate LST Look-up Table, revised October 2009.

[37] DKA Planning 2022, using CalEEMod model, version 2022.1.

Table 2-7
Daily Operations Emissions

Mobile Sources	0.5	0.4	3.3	<0.1	0.2	<0.1
Regional Total	1.4	0.4	4.1	<0.1	0.2	<0.1
Regional Significance Threshold	55	55	550	150	150	55
Exceed Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
Localized Total	0.9	0.1	0.7	<0.1	<0.1	<0.1
Localized Significance Threshold	N/A	340	3,237	N/A	11	3
Exceed Threshold?	**N/A**	**No**	**No**	**N/A**	**No**	**No**

LST analyses based on five-acre site with 50-meter distances to receptors in Coachella Valley SRA.
Source: DKA Planning, 2022 based on CalEEMod 2022.1 model runs (included in the Technical Appendix).
Totals reflect the summer season maximum and may not add up due to rounding.

2.6.3 c) Expose sensitive receptors which are located with one (1) mile of the project site, to substantial pollutant concentrations?

Less Than Significant Impact. There are sensitive receptors within one mile of the Project Site that could be exposed to air pollution from construction and operation of the Project, including, but are not limited to, the following representative sampling:

- Single-family home (mobile home) located at 82400 Avenue 58, 320 feet west of the Site's southwest corner boundary.
- Single-family home (mobile home) located at 57310 Jackson Street, 550 feet northeast of the Site's northeast corner boundary.
- Single-family home (mobile home) located at 83254 Avenue 58, 1,250 feet east of the Site's southeast corner boundary.
- Westside Elementary School located at 82225 Airport Boulevard, 3,700 feet northwest of the Site's northwest corner boundary.
- Coachella Valley High School located at 83800 Airport Boulevard, one mile northeast of the Site's northeast corner boundary.

Construction

Construction of the Project could expose sensitive receptors to substantial pollutant concentrations if maximum daily emissions of regulated pollutants generated by sources located on and/or near the Project Site exceeded the applicable LST values presented in **Table 2-3**, or if construction activities generated significant emissions of TACs that could result in carcinogenic risks or non-carcinogenic hazards exceeding the SCAQMD Air Quality Significance Thresholds of 10 excess cancers per million or non-carcinogenic Hazard Index greater than 1.0, respectively. As discussed above, the LST values were derived by the SCAQMD for the criteria pollutants NO_X, CO, PM_{10}, and $PM_{2.5}$ to prevent the occurrence of concentrations

exceeding the air quality standards at sensitive receptor locations based on proximity and construction site size.

As shown in **Table 2-6**, during construction of the Project, maximum daily localized unmitigated emissions of NO_2, CO, PM_{10}, and $PM_{2.5}$ from sources on the Project Site would remain below each of the respective LST values. Unmitigated maximum daily localized emissions would not exceed any of the localized standards for receptors that are approximately 50 meters from the Project's construction activities. Therefore, based on SCAQMD guidance, localized emissions of criteria pollutants would not have the potential to expose sensitive receptors to substantial concentrations that would present a public health concern.

The primary TAC that would be generated by construction activities is diesel PM, which would be released from the exhaust stacks of construction equipment. The construction emissions modeling conservatively assumed that all equipment present on the Project Site would be operating simultaneously throughout most of the day, while in all likelihood this would rarely be the case. Average daily emissions of diesel PM would be less than one pound per day throughout the course of Project construction. Therefore, the magnitude of daily diesel PM emissions, would not be sufficient to result in substantial pollutant concentrations at off-site locations nearby.

Furthermore, according to SCAQMD methodology, health risks from carcinogenic air toxics are usually described in terms of individual cancer risk. "Individual Cancer Risk" is the likelihood that a person exposed to concentrations of TACs over a 30-year period will contract cancer based on the use of standard risk-assessment methodology. The entire duration of construction activities associated with implementation of the Project is anticipated to be approximately six months, and the magnitude of daily diesel PM emissions will vary over this time period. No residual emissions and corresponding individual cancer risk are anticipated after construction. Because there is such a short-term exposure period, construction TAC emissions would result in a less than significant impact. Therefore, construction of the Project would not expose sensitive receptors to substantial diesel PM concentrations, and this impact would be less than significant.

Operation

The Project Site would be redeveloped with worker-related housing, a land use that is not typically associated with TAC emissions. Typical sources of acutely and chronically hazardous TACs include industrial manufacturing processes (e.g., chrome plating, electrical manufacturing, petroleum refinery). The Project would not include these types of potential industrial manufacturing process sources. It is expected that quantities of hazardous TACs generated on-site (e.g., cleaning solvents, paints, landscape pesticides) for the types of proposed land uses would be below thresholds warranting further study under California Accidental Release Program.

When considering potential air quality impacts under CEQA, consideration is given to the location of sensitive receptors within close proximity of land uses that emit TACs. CARB has published and adopted the Air Quality and Land Use Handbook: A Community Health Perspective, which provides recommendations regarding the siting of new sensitive land uses near potential sources of air toxic emissions (e.g., freeways, distribution centers, rail yards, ports, refineries, chrome plating facilities, dry cleaners, and gasoline dispensing facilities).[38] The SCAQMD adopted similar recommendations in its Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning.[39] Together, the CARB and SCAQMD guidelines recommend siting distances for both the development of sensitive land uses in proximity to TAC sources and the addition of new TAC sources in proximity to existing sensitive land uses.

The primary sources of potential air toxics associated with Project operations include DPM from delivery trucks (e.g., truck traffic on local streets and idling on adjacent streets) and to a lesser extent, facility operations (e.g., natural gas fired boilers). However, these activities, and the land uses associated with the Project, are not considered land uses that generate substantial TAC emissions. It should be noted that the SCAQMD recommends that health risk assessments (HRAs) be conducted for substantial individual sources of DPM (e.g., truck stops and warehouse distribution facilities that generate more than 100 trucks per day or more than 40 trucks with operating transport refrigeration units) and has provided guidance for analyzing mobile source diesel emissions.[40] Based on this guidance, the Project would not include these types of land uses and is not considered to be a substantial source of DPM warranting a refined HRA since daily truck trips to the Project Site would not exceed 100 trucks per day or more than 40 trucks with operating transport refrigeration units. In addition, the CARB-mandated airborne toxic control measures (ATCM) limits diesel-fueled commercial vehicles (delivery trucks) to idle for no more than five minutes at any given time, which would further limit diesel particulate emissions.

As the Project would not contain substantial TAC sources and is consistent with the CARB and SCAQMD guidelines, the Project would not result in the exposure of off-site sensitive receptors to carcinogenic or toxic air contaminants that exceed the maximum incremental cancer risk of 10 in one million or an acute or chronic hazard index of 1.0, and potential TAC impacts would be less than significant.

The Project would generate long-term emissions on-site from area and energy sources that would generate negligible pollutant concentrations of CO, NO_2, $PM_{2.5}$, or PM_{10} at nearby sensitive receptors. While long-term operations of the Project would add traffic to local roads that produces off-site emissions, these would not result in exceedances of CO air quality standards at roadways in the area due to three key factors. First, CO hotspots are extremely rare and only occur in the presence of unusual atmospheric conditions and extremely cold conditions, neither of which applies to this Project area. Second, auto-related emissions of CO continue to decline because of advances in fuel combustion technology in the vehicle fleet. Finally, the Project would all but eliminate home-based work trips, as workers would now live on-site. While there would be some non-work related trips from the 13 new

38 California Air Resources Board, Air Quality and Land Use Handbook, a Community Health Perspective, April 2005.

39 South Coast Air Quality Management District, Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning, May 6, 2005.

40 South Coast Air Quality Management District, Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis, 2002.

residential buildings, they would be negligible and would not contribute to substantial congestion on Avenue 58 or any other local roadways in the Coachella Valley.

Finally, the Project would not result in any substantial emissions of TACs during the construction or operations phase. During the construction phase, the primary air quality impacts would be associated with the combustion of diesel fuels, which produce exhaust-related particulate matter that is considered a toxic air contaminant by CARB based on chronic exposure to these emissions.[41] However, construction activities would not produce chronic, long-term exposure to diesel particulate matter. During long-term project operations, the Project does not include typical sources of acutely and chronically hazardous TACs such as industrial manufacturing processes and automotive repair facilities. As a result, the Project would not create substantial concentrations of TACs.

In addition, the SCAQMD recommends that health risk assessments be conducted for substantial sources of diesel particulate emissions (e.g., truck stops and warehouse distribution facilities) and has provided guidance for analyzing mobile source diesel emissions.[42] The Project would not generate a substantial number of truck trips. Based on the limited activity of TAC sources, the Project would not warrant the need for a health risk assessment associated with on-site activities. Therefore, the Project's operational impacts on local sensitive receptors would be less than significant.

2.6.4 d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Less Than Significant Impact. The Project Site includes livestock barns, corrals, fenced pastures, and several agricultural and equestrian-serving facilities. As a result, the Project Site supports existing land uses that generate odors. These uses would remain and not be affected by the Project.

During construction, equipment exhaust and architectural coatings odors would be localized and temporary in nature and would not be sufficient to affect a substantially number of people. The Project would comply with the California Health and Safety Code and SCAQMD Rules and Regulations. SCAQMD regulations that govern nuisances (i.e., Rule 402, Nuisances) would regulate any occasional odors associated with construction or operation. SCAQMD Rule 401 regulates visible emissions and SCAQMD Rule 403 regulates fugitive dust.

The Project operation would not result in activities that create objectionable odors. The Project is a housing development that would not include any activities typically associated with unpleasant odors and local nuisances (e.g., rendering facilities, dry cleaners). Solid waste generation typically associated with residential uses would be stored in appropriate containers and removed as part of the overall disposal system of the Site. As a result, any odor impacts from the Project would be considered less than significant.

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41 California Office of Environmental Health Hazard Assessment. Health Effects of Diesel Exhaust. www. http://oehha.ca.gov/public_info/facts/dieselfacts.html

42 South Coast Air Quality Management District, Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Emissions, December 2002.

2.7 Cumulative Impacts

While the Proposed Project would generate short- and long-term emissions during the construction and operations phases, respectively, the presence of any other development projects could produce cumulative impacts. No specific related projects are known in the immediate area around the Site.

2.7.1 AQMP Consistency

Cumulative development is not expected to result in a significant impact in terms of conflicting with, or obstructing implementation of the 2022 AQMP. As discussed previously, growth considered to be consistent with the AQMP would not interfere with attainment because this growth is included in the projections utilized in the formulation of the AQMP. Consequently, as long as growth in the Basin is within the projections for growth identified in the 2020-2045 RTP/SCS, implementation of the AQMP will not be obstructed by such growth. In addition, as discussed previously, the population growth resulting from the Project would be consistent with the growth projections of the AQMP. Any related project would implement feasible air quality mitigation measures to reduce the criteria air pollutants, if required due to any significant emissions impacts. In addition, each related project would be evaluated for its consistency with the land use policies set forth in the AQMP. Therefore, the Project's contribution to the cumulative impact would not be cumulatively considerable and, therefore, would be less than significant.

2.7.2 Construction

SCAQMD recommends that any construction-related emissions and operational emissions from individual development projects that exceed the project-specific mass daily emissions thresholds identified above also be considered cumulatively considerable.[43] Individual projects that generate emissions not in excess of SCAQMD's significance thresholds would not contribute considerably to any potential cumulative impact. SCAQMD neither recommends quantified analyses of the emissions generated by a set of cumulative development projects nor provides thresholds of significance to be used to assess the impacts associated with these emissions.

As summarized in **Table 2-6**, the Proposed Project would not exceed the SCAQMD's mass emissions thresholds and would not contribute to any potential cumulative impact. If any related project was projected to exceed LST thresholds (after mitigation), it could perform dispersion modeling to confirm whether health-based air quality standards would be violated. The SCAQMD's LST thresholds recognize the influence of a receptor's proximity, setting mass emissions thresholds for PM_{10} and $PM_{2.5}$ that generally double with every doubling of distance.

The Project would comply with regulatory requirements, including the SCAQMD Rule 403 requirements listed above. Based on SCAQMD guidance, individual construction projects that exceed the SCAQMD's recommended daily thresholds for project-specific impacts would cause a cumulatively considerable increase in emissions for those pollutants for which the Air Basin is in non-attainment. As shown above, construction-related daily emissions at the Project Site would not exceed any of the SCAQMD's regional

[43] White Paper on Regulatory Options for Addressing Cumulative Impacts from Air Pollution Emissions, SCAQMD Board Meeting, September 5, 2003, Agenda No. 29, Appendix D, p. D-3.

or localized significance thresholds. Therefore, the Project's contribution to cumulative air quality impacts would not be cumulatively considerable and, therefore, would be less than significant.

Similar to the Project, the greatest potential for TAC emissions at each related project would generally involve diesel particulate emissions associated with heavy equipment operations during grading and excavation activities. According to SCAQMD methodology, health effects from carcinogenic air toxics are usually described in terms of individual cancer risk. "Individual Cancer Risk" is the likelihood that a person exposed to concentrations of TACs over a 30-year period will contract cancer, based on the use of standard risk-assessment methodology. Construction activities are temporary and short-term events, thus construction activities at each related project would not result in a long-term substantial source of TAC emissions. Additionally, the SCAQMD CEQA guidance does not require a health risk assessment for short-term construction emissions. It is therefore not meaningful to evaluate long-term cancer impacts from construction activities, which occur over relatively short durations. As such, given the short-term nature of these activities, cumulative toxic emission impacts during construction would be less than significant.

2.7.3 Operation

As discussed above, the Project's operational air quality emissions and cumulative impacts would be less than significant. According to the SCAQMD, if an individual project results in air emissions of criteria pollutants that exceed the SCAQMD's recommended daily thresholds for project-specific impacts, then the project would also result in a cumulatively considerable net increase of these criteria pollutants. As operational emissions would not exceed any of the SCAQMD's regional or localized significance thresholds, the emissions of non-attainment pollutants and precursors generated by Project operations would not be cumulatively considerable.

With respect to TAC emissions, neither the Project nor any likely related projects, would represent a substantial source of TAC emissions, which are typically associated with large-scale industrial, manufacturing, and transportation hub facilities. The Project and related projects would be consistent with the recommended screening level siting distances for TAC sources, as set forth in CARB's Land Use Guidelines, and the Project and related projects would not result in a cumulative impact requiring further evaluation. However, any related projects could generate minimal TAC emissions related to the use of consumer products and landscape maintenance activities, among other things.

Pursuant to AB 1807, which directs the CARB to identify substances as TACs and adopt airborne toxic control measures to control such substances, the SCAQMD has adopted numerous rules (primarily in Regulation XIV) that specifically address TAC emissions. These SCAQMD rules have resulted in and will continue to result in substantial Basin-wide TAC emissions reductions. As such, cumulative TAC emissions during long-term operations would be less than significant. Therefore, the Project would not result in any substantial sources of TACs that have been identified by the CARB's Land Use Guidelines, and thus, would not contribute to a cumulative impact.

TECHNICAL APPENDIX

DouglasKim+Associates,LLC

FUTURE EMISSIONS

Rancho Polo Club Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Rancho Polo Club
Lead Agency	County of Riverside
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.00
Precipitation (days)	8.80
Location	82800 Avenue 58, Thermal, CA 92274, USA
County	Riverside-Salton Sea
City	Unincorporated
Air District	South Coast AQMD
Air Basin	Salton Sea
TAZ	5662
EDFZ	19
Electric Utility	Imperial Irrigation District
Gas Utility	Southern California Gas

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Apartments Low Rise	13.0	Dwelling Unit	7.70	36,000	3,600	—	42.0	—
Parking Lot	42.0	Space	0.38	0.00	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Unmit.	7.04	39.8	38.4	0.07	1.81	7.89	9.70	1.66	3.99	5.65
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Unmit.	5.72	12.9	15.1	0.03	0.59	0.16	0.75	0.54	0.04	0.58
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—
Unmit.	1.44	7.52	8.13	0.01	0.34	0.66	1.00	0.32	0.28	0.60
Annual (Max)	—	—	—	—	—	—	—	—	—	—
Unmit.	0.26	1.37	1.48	< 0.005	0.06	0.12	0.18	0.06	0.05	0.11

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—
2023	7.04	39.8	38.4	0.07	1.81	7.89	9.70	1.66	3.99	5.65
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—
2023	5.72	12.9	15.1	0.03	0.59	0.16	0.75	0.54	0.04	0.58

Average Daily	—	—	—	—	—	—	—	—	—	—
2023	1.44	7.52	8.13	0.01	0.34	0.66	1.00	0.32	0.28	0.60
Annual	—	—	—	—	—	—	—	—	—	—
2023	0.26	1.37	1.48	< 0.005	0.06	0.12	0.18	0.06	0.05	0.11

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Unmit.	1.37	0.41	4.10	0.01	0.01	0.19	0.20	0.01	0.03	0.04
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Unmit.	1.19	0.44	2.41	0.01	0.01	0.19	0.20	0.01	0.03	0.04
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—
Unmit.	1.22	0.38	2.74	0.01	0.01	0.17	0.18	0.01	0.03	0.04
Annual (Max)	—	—	—	—	—	—	—	—	—	—
Unmit.	0.22	0.07	0.50	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Mobile	0.46	0.35	3.34	0.01	< 0.005	0.19	0.19	< 0.005	0.03	0.04
Area	0.90	0.01	0.73	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005
Energy	< 0.005	0.06	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005

Water	—	—	—	—	—	—	—	—	—	—
Waste	—	—	—	—	—	—	—	—	—	—
Refrig.	—	—	—	—	—	—	—	—	—	—
Total	1.37	0.41	4.10	0.01	0.01	0.19	0.20	0.01	0.03	0.04
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Mobile	0.36	0.38	2.39	0.01	< 0.005	0.19	0.19	< 0.005	0.03	0.04
Area	0.83	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00
Energy	< 0.005	0.06	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005
Water	—	—	—	—	—	—	—	—	—	—
Waste	—	—	—	—	—	—	—	—	—	—
Refrig.	—	—	—	—	—	—	—	—	—	—
Total	1.19	0.44	2.41	0.01	0.01	0.19	0.20	0.01	0.03	0.04
Average Daily	—	—	—	—	—	—	—	—	—	—
Mobile	0.34	0.32	2.36	0.01	< 0.005	0.17	0.17	< 0.005	0.03	0.03
Area	0.87	< 0.005	0.36	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005
Energy	< 0.005	0.06	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005
Water	—	—	—	—	—	—	—	—	—	—
Waste	—	—	—	—	—	—	—	—	—	—
Refrig.	—	—	—	—	—	—	—	—	—	—
Total	1.22	0.38	2.74	0.01	0.01	0.17	0.18	0.01	0.03	0.04
Annual	—	—	—	—	—	—	—	—	—	—
Mobile	0.06	0.06	0.43	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01
Area	0.16	< 0.005	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005
Energy	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005
Water	—	—	—	—	—	—	—	—	—	—
Waste	—	—	—	—	—	—	—	—	—	—
Refrig.	—	—	—	—	—	—	—	—	—	—

Total	0.22	0.07	0.50	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01

3. Construction Emissions Details

3.1. Site Preparation (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T
Onsite	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.95	39.7	35.5	0.05	1.81	—	1.81	1.66	—	1.66
Dust From Material Movement	—	—	—	—	—	7.67	7.67	—	3.94	3.94
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11	1.09	0.97	< 0.005	0.05	—	0.05	0.05	—	0.05
Dust From Material Movement	—	—	—	—	—	0.21	0.21	—	0.11	0.11
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.20	0.18	< 0.005	0.01	—	0.01	0.01	—	0.01
Dust From Material Movement	—	—	—	—	—	0.04	0.04	—	0.02	0.02

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.11	1.98	0.00	0.00	0.01	0.01	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.04	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.3. Grading (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T
Onsite	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.04	20.0	19.7	0.03	0.94	—	0.94	0.87	—	0.87
Dust From Material Movement	—	—	—	—	—	2.77	2.77	—	1.34	1.34

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.21	2.03	2.00	< 0.005	0.10	—	0.10	0.09	—	0.09
Dust From Material Movement	—	—	—	—	—	0.28	0.28	—	0.14	0.14
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.37	0.36	< 0.005	0.02	—	0.02	0.02	—	0.02
Dust From Material Movement	—	—	—	—	—	0.05	0.05	—	0.02	0.02
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.09	1.70	0.00	0.00	0.01	0.01	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.04	2.97	0.46	0.02	0.05	0.20	0.25	0.05	0.05	0.11
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.12	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.32	0.05	< 0.005	0.01	0.02	0.03	0.01	0.01	0.01
Annual	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.06	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

3.5. Building Construction (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T
Onsite	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.26	11.8	13.2	0.02	0.55	—	0.55	0.51	—	0.51
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.26	11.8	13.2	0.02	0.55	—	0.55	0.51	—	0.51
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.30	2.82	3.14	0.01	0.13	—	0.13	0.12	—	0.12
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.51	0.57	< 0.005	0.02	—	0.02	0.02	—	0.02
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.06	1.06	0.00	0.00	0.01	0.01	0.00	0.00	0.00
Vendor	< 0.005	0.05	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.07	0.60	0.00	0.00	0.01	0.01	0.00	0.00	0.00
Vendor	< 0.005	0.06	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.18	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00
Vendor	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.03	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.7. Paving (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T
Onsite	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.88	8.06	10.0	0.01	0.41	—	0.41	0.38	—	0.38
Paving	0.03	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.08	0.75	0.93	< 0.005	0.04	—	0.04	0.04	—	0.04
Paving	< 0.005	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.14	0.17	< 0.005	0.01	—	0.01	0.01	—	0.01
Paving	< 0.005	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.09	1.70	0.00	0.00	0.01	0.01	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.11	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.9. Architectural Coating (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T

Onsite	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.93	1.15	< 0.005	0.04	—	0.04	0.03	—	0.03
Architectural Coatings	4.26	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.93	1.15	< 0.005	0.04	—	0.04	0.03	—	0.03
Architectural Coatings	4.26	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.14	0.17	< 0.005	0.01	—	0.01	0.01	—	0.01
Architectural Coatings	0.63	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.03	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005
Architectural Coatings	0.11	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.21	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.12	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.11. Trenching (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T
Onsite	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.29	1.86	1.77	< 0.005	0.09	—	0.09	0.09	—	0.09
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.33	0.31	< 0.005	0.02	—	0.02	0.02	—	0.02

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.06	0.06	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.57	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	0.01	0.07	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	0.46	0.35	3.34	0.01	< 0.005	0.03	0.04	< 0.005	0.01	0.01
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.46	0.35	3.34	0.01	< 0.005	0.03	0.04	< 0.005	0.01	0.01
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	0.36	0.38	2.39	0.01	< 0.005	0.03	0.04	< 0.005	0.01	0.01
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.36	0.38	2.39	0.01	< 0.005	0.03	0.04	< 0.005	0.01	0.01
Annual	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	0.06	0.06	0.43	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.06	0.06	0.43	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	< 0.005	0.06	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005
Parking Lot	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00
Total	< 0.005	0.06	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	< 0.005	0.06	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005
Parking Lot	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00
Total	< 0.005	0.06	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005
Annual	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005

Parking Lot	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00
Total	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005

4.3. Area Emissions by Source

4.3.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Hearths	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00
Consumer Products	0.77	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.06	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.07	0.01	0.73	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005
Total	0.90	0.01	0.73	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Hearths	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00
Consumer Products	0.77	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.06	—	—	—	—	—	—	—	—	—
Total	0.83	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—
Hearths	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00
Consumer Products	0.14	—	—	—	—	—	—	—	—	—

Architectural Coatings	0.01	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.01	< 0.005	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005
Total	0.16	< 0.005	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005

4.4. Water Emissions by Land Use

4.4.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—

4.5. Waste Emissions by Land Use

4.5.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—

Subtotal	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Site Preparation	Site Preparation	6/1/2023	6/14/2023	5.00	10.0	—

Grading	Grading	6/15/2023	8/5/2023	5.00	37.0	—
Building Construction	Building Construction	7/1/2023	10/31/2023	5.00	87.0	—
Paving	Paving	8/15/2023	9/30/2023	5.00	34.0	—
Architectural Coating	Architectural Coating	9/1/2023	11/15/2023	5.00	54.0	—
Trenching	Trenching	7/1/2023	9/30/2023	5.00	65.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Rubber Tired Dozers	Diesel	Average	3.00	8.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	4.00	8.00	84.0	0.37
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Excavators	Diesel	Average	1.00	8.00	36.0	0.38
Grading	Tractors/Loaders/Backhoes	Diesel	Average	3.00	8.00	84.0	0.37
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Building Construction	Forklifts	Diesel	Average	3.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Cranes	Diesel	Average	1.00	7.00	367	0.29
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
Paving	Pavers	Diesel	Average	2.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48

Trenching	Dumpers/Tenders	Diesel	Average	1.00	8.00	16.0	0.38
Trenching	Trenchers	Diesel	Average	1.00	8.00	40.0	0.50

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	17.5	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	—	10.2	HHDT,MHDT
Site Preparation	Hauling	0.00	40.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	15.0	18.5	LDA,LDT1,LDT2
Grading	Vendor	—	10.2	HHDT,MHDT
Grading	Hauling	20.3	40.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	9.36	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	1.39	10.2	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	15.0	18.5	LDA,LDT1,LDT2
Paving	Vendor	—	10.2	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT

Architectural Coating	—	—	—	—
Architectural Coating	Worker	1.87	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	10.2	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT
Trenching	—	—	—	—
Trenching	Worker	5.00	18.5	LDA,LDT1,LDT2
Trenching	Vendor	—	10.2	HHDT,MHDT
Trenching	Hauling	0.00	20.0	HHDT
Trenching	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	72,900	24,300	0.00	0.00	988

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Site Preparation	—	—	15.0	0.00	—
Grading	—	6,000	8.20	0.00	—
Paving	0.00	0.00	0.00	0.00	0.38

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	2	61%	61%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Apartments Low Rise	—	0%
Parking Lot	0.38	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2023	0.00	457	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Apartments Low Rise	95.2	106	81.6	34,584	614	682	526	222,981
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

Hearth Type	Unmitigated (number)
Apartments Low Rise	—
Wood Fireplaces	0
Gas Fireplaces	0
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	13
Conventional Wood Stoves	0
Catalytic Wood Stoves	0
Non-Catalytic Wood Stoves	0
Pellet Wood Stoves	0

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
72900	24,300	0.00	0.00	988

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Apartments Low Rise	89,008	457	0.0330	0.0040	220,613
Parking Lot	14,424	457	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Apartments Low Rise	528,759	82,569
Parking Lot	0.00	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Apartments Low Rise	2.98	0.00
Parking Lot	0.00	0.00

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Apartments Low Rise	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Apartments Low Rise	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type
–	–

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	23.5	annual days of extreme heat
Extreme Precipitation	0.05	annual days with precipitation above 20 mm
Sea Level Rise	0.00	meters of inundation depth
Wildfire	0.14	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider different increments of sea level rise coupled with extreme storm events. Users may select from four model simulations to view the range in potential inundation depth for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 50 meters (m) by 50 m, or about 164 feet (ft) by 164 ft.
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	0	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	0	0	0	N/A
Snowpack	N/A	N/A	N/A	N/A
Air Quality	N/A	N/A	N/A	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	1	1	2
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	1	1	1	2
Snowpack	N/A	N/A	N/A	N/A
Air Quality	N/A	N/A	N/A	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	84.6
AQ-PM	8.56
AQ-DPM	17.9
Drinking Water	75.4
Lead Risk Housing	48.1
Pesticides	93.9
Toxic Releases	4.26
Traffic	10.2
Effect Indicators	—
CleanUp Sites	50.3
Groundwater	67.5
Haz Waste Facilities/Generators	62.5
Impaired Water Bodies	77.3
Solid Waste	94.1
Sensitive Population	—
Asthma	18.0
Cardio-vascular	37.2

Low Birth Weights	21.6
Socioeconomic Factor Indicators	—
Education	95.8
Housing	63.6
Linguistic	99.3
Poverty	89.2
Unemployment	96.7

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	11.35634544
Employed	12.60105223
Median HI	4.18324137
Education	—
Bachelor's or higher	4.157577313
High school enrollment	100
Preschool enrollment	1.873476197
Transportation	—
Auto Access	26.42114718
Active commuting	45.28422944
Social	—
2-parent households	62.53047607
Voting	20.37726165
Neighborhood	—
Alcohol availability	85.40998332

Park access	10.65058386
Retail density	11.22802515
Supermarket access	2.399589375
Tree canopy	7.224432183
Housing	—
Homeownership	45.0019248
Housing habitability	7.622225074
Low-inc homeowner severe housing cost burden	57.84678558
Low-inc renter severe housing cost burden	18.27280893
Uncrowded housing	16.28384448
Health Outcomes	—
Insured adults	15.33427435
Arthritis	0.0
Asthma ER Admissions	67.6
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	11.6
Cognitively Disabled	6.9
Physically Disabled	18.0
Heart Attack ER Admissions	59.0
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0

Pedestrian Injuries	63.8
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	19.0
Elderly	57.3
English Speaking	2.7
Foreign-born	72.5
Outdoor Workers	3.0
Climate Change Adaptive Capacity	—
Impervious Surface Cover	92.8
Traffic Density	6.5
Traffic Access	23.0
Other Indices	—
Hardship	93.0
Other Decision Support	—
2016 Voting	23.5

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	72.0

Healthy Places Index Score for Project Location (b)	8.00
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	EasternCoachellaValley

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	Project plans
Construction: Construction Phases	Developer information
Construction: Off-Road Equipment	Defaults except trenching (consultant assumptions)
Construction: Dust From Material Movement	Developer information
Construction: Trips and VMT	Defaults except 40-mile distance to landfills and 600 one-way haul trips x 2 = 1,200 haul trips over grading phase
Operations: Hearths	Project plans

Appendix C-1
Geotechnical Investigation, GeoCon West, July 22, 2022

GEOTECHNICAL INVESTIGATION

RANCHO POLO EQUESTRIAN CLUB
NEC AVENUE 58 & OASIS STREET
THERMAL, CALIFORNIA

GEOCON
WEST, INC.
GEOTECHNICAL
ENVIRONMENTAL
MATERIALS

PREPARED FOR

RANCHO POLO, LLC
CULVER CITY, CALIFORNIA

JULY 22, 2022

PROJECT NO. T2990-22-01

GEOCON
WEST, INC.
GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS

Project No. T2990-22-01
July 22, 2022

Rancho Polo, LLC
4114 Sepulveda Boulevard, Suite & 2nd Floor
Culver City, California 90230

Attention: Mr. Juri Ripinsky

Subject: GEOTECHNICAL INVESTIGATION
RANCHO POLO EQUESTRIAN CLUB
NEC AVENUE 58 & OASIS STREET
THERMAL, CALIFORNIA

Dear Mr. Ripinsky:

In accordance with the authorization of our Proposal LP-2022-270 dated June 15, 2022, Geocon West, Inc. (Geocon) herein submits the results of our geotechnical investigation for the single-family residential development planned for approximately 4.25 acres located north of Avenue 58 and east of Oasis Street in the Thermal area of Riverside County, California. The accompanying report presents our findings, conclusions and recommendations pertaining to the geotechnical aspects of the proposed improvements. Based on the results of this study, it is our opinion the site is considered suitable for the proposed improvements provided the recommendations of this report are followed.

Should you have any questions regarding this report, or if we may be of further service, please contact the undersigned at your convenience.

Very truly yours,

GEOCON WEST, INC.

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(email) Addressee

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GEOTECHNICAL INVESTIGATION

1. PURPOSE AND SCOPE

This report presents the results of our geotechnical investigation for the single-family residential development planned for approximately 4.25 acres located north of Avenue 58 and east of Oasis Street in the Thermal area of Riverside County, California. The improvements are proposed north of Avenue 58 and east of Oasis Street, as depicted on the *Vicinity Map*, Figure 1.

The purpose of the investigation was to evaluate subsurface soil and geologic conditions underlying the site and, based on conditions encountered, to provide conclusions and recommendations pertaining to the geotechnical aspects of design and construction.

The scope of our investigation included review of published geologic information and aerial photographs, public subsurface utility location, subsurface exploration and sample collection, percolation testing, laboratory testing, engineering analyses, and preparation of this report. A summary of the information and documentation reviewed for this study is presented in the *List of References*.

Our field investigation was conducted on June 27, 28, and 29, 2022 and included the advancement of four cone penetration tests (CPTs), five geotechnical borings, and four percolation borings, to observe the subsurface geological and groundwater conditions at the site, and to collect relatively undisturbed and disturbed bulk samples for laboratory testing. *Appendix A* presents a discussion of the field investigation, and detailed logs of the CPTs and borings. The approximate locations of the CPTs, borings, and percolation tests are presented on Figure 2, *Geologic Map*.

We performed laboratory testing on select soil samples obtained from our field investigation to evaluate physical and chemical properties for engineering analysis. *Appendix B* presents the results of the laboratory testing performed for the site.

The recommendations presented herein are based on analysis of the data obtained during the investigation and our experience with similar soil and geologic conditions. References reviewed to prepare this report are provided in the *List of References* section.

If project details vary significantly from those described herein, Geocon should be contacted to determine the necessity for review and possible revision of this report.

2. SITE AND PROJECT DESCRIPTION

The site is located within the Rancho Polo Equestrian Club. The area of the proposed project is bounded to the north and east by Polo Equestrian Club, to the south by Avenue 58, and to the west by Oasis Street. Surrounding parcels are utilized for farming or as rural residential. The latitude and longitude of the site are 33.6278 degrees, -116.2225 degrees, respectively.

At the time of our investigation, the site was covered with a grass lawn. A paved east-west roadway bisects the site. Trees were present along Avenue 58 and isolated throughout the site. The property has been used for RV camping since at least 1996.

The site is relatively level, sloping gently to the east with a relief of five feet across the site. Site elevations range from approximately -75 feet relative to mean sea level (MSL) in the western area of the property to approximately -80 feet MSL in the eastern area of the site. Drainage is to the west by sheet flow.

Thirteen single-family homes will be added to the six existing homes at the Rancho Polo Equestrian Club. Ten residences along Avenue 58 will be one-story buildings and three residences west of the community pool area will be two-story homes. The structures will be constructed at or near present site grade.

Based on the preliminary nature of the design at this time, wall and column loads were not available. It is anticipated that column loads for the proposed structures will be up to 150 kips, and wall loads will be up to 2 kips per linear foot.

Once the design phase and foundation loading configuration proceeds to a more finalized plan, the recommendations within this report should be reviewed and revised, if necessary. Any changes in the design, location or elevation of any structure, as outlined in this report, should be reviewed by this office. Geocon should be contacted to determine the necessity for review and possible revision of this report.

3. GEOLOGIC SETTING

The project site lies within the Colorado Desert Geomorphic Province, specifically, within the Salton Trough, a major topographic depression that extends from the Transverse Ranges north of Interstate 10 to the Mexican border to the south. The majority of the Trough lies below sea level and was once occupied by ancient Lake Cahuilla. The axis is oriented in a southeasterly to northwesterly direction, parallel with the regional faulting within southern California. The Salton Trough is bounded on the east by the San Andreas fault zone and on the west by the Santa Rosa Mountains. The trough is a result of extensional faulting during the Miocene geologic epoch.

4. GEOLOGIC MATERIALS

4.1 General

Based on our field investigation and published geologic maps of the area, the soil units within the site include undocumented artificial fill and recent alluvium. The unit classifications herein follow Dibblee & Minch, 2008. The units are described in detail on the boring logs in *Appendix A.* The soil and geologic units encountered at the site are discussed in general terms below.

4.2 Undocumented Artificial Fill (afu)

Undocumented artificial fill was encountered in the upper 2 to 4 feet throughout the site. With depths of 2 feet encountered on the northern three lots and 4 feet encountered where the 10 lots are proposed along Avenue 58. The fill consists of brown, grayish brown to olive silty to poorly graded sand which is moist and medium dense.

4.3 Alluvium (Qa)

Alluvium was encountered beneath the undocumented artificial fill and likely underlies the site to depths of several hundred feet. The alluvium is olive brown to olive and consists of layers of poorly graded sand, silty sand, silt, and clay. The soils are moist to wet and loose to medium dense (soft to hard).

5. GROUNDWATER

The historic high depth to groundwater is reported to be approximately 20 feet below ground surface. Groundwater was encountered in B-3 at 21.8 feet. The table below presents well records from the Department of Water Resources within 1 mile of the site. Groundwater elevations are dependent on seasonal precipitation, irrigation, and land use, among other factors, and vary as a result.

Well Number	Location	Ground Surface Elevation in Feet relative to MSL	Years Measured	Shallowest Measured Depth from Ground Surface (ft)
06S07E23F001S	Se Airport Blvd & Monroe St	-52.68	2012-2022	57
06S07E13M002S	On Jackson S of Ave 55	-57.50	2011-2022	25
06S07E13J004S	N of Coachella Valley HS	-75.16	2004-2022	12
06S07E16A002S	In PGA West on Southern Heights, N of Winged Foot	-3.16	1987-2022	74

It is our understanding that the Coachella Valley Water District is actively recharging the groundwater in the area. Based on preliminary review of available information from nearby projects, it is reasonable to assume that the groundwater could be recharged to a depth of approximately 10 feet below the ground surface.

6. GEOLOGIC HAZARDS

6.1 Surface Fault Rupture

The numerous faults in southern California include active, potentially active, and inactive faults. The criteria for these major groups are based on criteria developed by the California Geological Survey (CGS, formerly known as CDMG) for the Alquist-Priolo Earthquake Fault Zone Program (Bryant and Hart, 2007). By definition, an active fault is one that has had surface displacement within Holocene time (about the last 11,700 years). A potentially active fault has demonstrated surface displacement during Quaternary time (approximately the last 1.6 million years) but has had no known Holocene movement. Faults that have not moved in the last 1.6 million years are considered inactive.

The closest active fault to the site is the San Andreas – Coachella Valley fault located 7 miles northeast of the project. Faults within a 50-mile radius of the site are listed in Table 6.1A. Historic earthquakes in southern California of magnitude 6.0 and greater, their magnitude, distance, and direction from the site are listed in Table 6.1B.

TABLE 6.1A
ACTIVE FAULTS WITHIN 50 MILES OF THE SITE

Fault Name	Maximum Magnitude (Mw)	Distance from Site (mi)	Direction from Site
San Andreas – Coachella Valley	7.5	7	NE
San Andreas – South Branch	7.5	12	N
San Andreas – North Branch	7.4	13	N
Clark	7.2	17	SW
Burnt Mountain	7.2	22	N
Coyote Creek	6.8	24	SW
San Gorgonio Pass	7.0	32	NW
Morongo Valley	7.2	34	NW
Pinto Mountain	7.2	35	NW
Mesquite Lake	7.3	37	N
Johnson Valley	6.7	37	N
Extra Fault	unknown	38	S
Emerson	7.0	38	N
Earthquake Valley	6.5	40	S
Casa Loma	6.9	40	NW
Elsinore	7.1	41	S
Homestead Valley	7.3	43	N
Hildago	7.3	44	N

TABLE 6.1B
Historic Earthquake Events with Respect to the Site

Earthquake (Oldest to Youngest)	Date of Earthquake	Magnitude	Distance to Epicenter (Miles)	Direction to Epicenter
Near Redlands	July 23, 1923	6.3	64	WNW
Long Beach	March 10, 1933	6.4	100	W
Tehachapi	July 21, 1952	7.5	185	WNW
San Fernando	February 9, 1971	6.6	136	WNW
Whittier Narrows	October 1, 1987	5.9	110	WNW
Sierra Madre	June 28, 1991	5.8	111	WNW
Landers	June 28, 1992	7.3	41	NNW
Big Bear	June 28, 1992	6.4	53	NW
Northridge	January 17, 1994	6.7	138	WNW
Hector Mine	October 16, 1999	7.1	67	N
Ridgecrest China Lake Fault	July 5, 2019	7.1	167	NW

6.2 Seismic Design Criteria

The following table summarizes the site-specific design criteria obtained from the 2019 California Building Code (CBC; Based on the 2018 International Building Code [IBC] and ASCE 7-16), Chapter 16 Structural Design, Section 1613 Earthquake Loads. The data was calculated using the online application *Seismic Design Maps*, provided by OSHPD. The short spectral response uses a period of 0.2 second. We evaluated the Site Class based on the discussion in Section 1613.2.2 of the 2019 CBC and Table 20.3-1 of ASCE 7-16. The values presented below are for the risk-targeted maximum considered earthquake (MCE_R).

2019 CBC SEISMIC DESIGN PARAMETERS

Parameter	Value	2019 CBC Reference
Site Class	D	Section 1613.2.2
MCE_R Ground Motion Spectral Response Acceleration – Class B (short), S_S	1.5g	Figure 1613.2.1(1)
MCE_R Ground Motion Spectral Response Acceleration – Class B (1 sec), S_1	0.6g	Figure 1613.2.1(2)
Site Coefficient, F_A	1	Table 1613.2.3(1)
Site Coefficient, F_V	1.7*	Table 1613.2.3(2)
Site Class Modified MCE_R Spectral Response Acceleration (short), S_{MS}	1.5g	Section 1613.2.3 (Eqn 16-36)
Site Class Modified MCE_R Spectral Response Acceleration – (1 sec), S_{M1}	1.02g*	Section 1613.2.3 (Eqn 16-37)
5% Damped Design Spectral Response Acceleration (short), S_{DS}	1g	Section 1613.2.4 (Eqn 16-38)
5% Damped Design Spectral Response Acceleration (1 sec), S_{D1}	0.68g*	Section 1613.2.4 (Eqn 16-39)

Note:

*Per Section 11.4.8 of ASCE/SEI 7-16, a ground motion hazard analysis shall be performed for projects for Site Class "E" sites with Ss greater than or equal to 1.0g and for Site Class "D" and "E" sites with S1 greater than 0.2g. Section 11.4.8 also provides exceptions which indicates that the ground motion hazard analysis may be waived provided the exceptions are followed. Using the code based values presented in the table above, in lieu of a performing a ground motion hazard analysis, requires the exceptions outlined in ASCE 7-16 Section 11.4.8 be followed.

The table below presents the mapped maximum considered geometric mean (MCE_G) seismic design parameters for projects located in Seismic Design Categories of D through F in accordance with ASCE 7-16.

ASCE 7-16 PEAK GROUND ACCELERATION

Parameter	Value	ASCE 7-16 Reference
Mapped MCE_G Peak Ground Acceleration, PGA	0.628g	Figure 22-9
Site Coefficient, F_{PGA}	1.1	Table 11.8-1
Site Class Modified MCE_G Peak Ground Acceleration, PGA_M	0.691g	Section 11.8.3 (Eqn 11.8-1)

The Maximum Considered Earthquake Ground Motion (MCE) is the level of ground motion that has a 2 percent chance of exceedance in 50 years, with a statistical return period of 2,475 years. According to the 2019 California Building Code and ASCE 7-16, the MCE is to be utilized for the evaluation of liquefaction, lateral spreading, seismic settlements, and it is our understanding that the intent of the building code is to maintain "Life Safety" during an MCE event. The Design Earthquake Ground Motion (DE) is the level of ground motion that has a 10 percent chance of exceedance in 50 years, with a statistical return period of 475 years.

Deaggregation of the MCE peak ground acceleration was performed using the USGS online Unified Hazard Tool, 2014 Conterminous U.S. Dynamic edition (v4.2.0). The result of the deaggregation analysis indicates that the mean earthquake contributing to the MCE peak ground acceleration is characterized as a 7.23 magnitude event occurring at a hypocentral distance of 12.08 kilometers from the site.

Deaggregation was also performed for the Design Earthquake (DE) peak ground acceleration, and the result of the analysis indicates that the mean earthquake contributing to the DE peak ground acceleration is characterized as a 7.08 magnitude event occurring at a hypocentral distance of 14.31 kilometers from the site.

Conformance to the criteria in the above tables for seismic design does not constitute any kind of guarantee or assurance that significant structural damage or ground failure will not occur if a large earthquake occurs. The primary goal of seismic design is to protect life, not to avoid all damage, since such design may be economically prohibitive.

6.3 Liquefaction

Liquefaction is a phenomenon in which loose, saturated, relatively cohesionless soil deposits lose shear strength during strong ground motions. Primary factors controlling liquefaction include intensity and duration of ground motion, gradation characteristics of the subsurface soils, in-situ stress conditions, and the depth to groundwater. Liquefaction is typified by a loss of shear strength in the liquefied layers due to rapid increases in pore water pressure generated by earthquake accelerations.

The current standard of practice, as outlined in the "Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Liquefaction in California" and "Special Publication 117A, Guidelines for Evaluating and Mitigating Seismic Hazards in California" requires liquefaction analysis to a depth of 50 feet below the lowest portion of the proposed structure. Liquefaction typically occurs in areas where the soils below the water table are composed of poorly consolidated, fine to medium-grained, primarily sandy soil. In addition to the requisite soil conditions, the ground acceleration and duration of the earthquake must also be of a sufficient level to induce liquefaction.

The site is located within an area of high liquefaction potential per Riverside County Map My County website. The historic high groundwater level in the vicinity of the site is reported at a depth of approximately 20 feet beneath the ground surface. As discussed in the *Groundwater* section of this report (see Section 5), the Coachella Valley Water District is actively recharging the groundwater in the area; it is assumed that groundwater could be recharged to a depth of approximately 10 feet below the ground surface.

Liquefaction analyses of the CPT soundings were performed using the program CLiq (Version 3.0.3.2). This program utilizes the NCEER method of analysis. This semi-empirical method is based on correlations with the data collected from the CPT soundings.

Prior to analysis, the Standard Penetration Test (SPT) blow counts were compared with the blow counts estimated from the CPT soundings. SPTs were performed in boring HSA-3. In order to supplement the SPT blow count data, select California Modified Sampler blow count data were converted to equivalent SPT blow counts based on a correlation factor of 0.55 (Rogers, 2006). The field collected blow counts were corrected for hammer efficiency to N60 blow count values. The boring N60 values were compared with the N60 values generated by the program CPeT-IT (Version 3.7.1.5). The comparisons are shown as Figure 3. It is our opinion that the boring and CPT N60 values show a reasonable correlation, and that analysis of the liquefaction potential may be based on the CPT data.

The liquefaction analysis was performed for a Design Earthquake level by using a historic high groundwater table of 10 feet below the ground surface, a magnitude 7.08 earthquake, and a peak horizontal acceleration of 0.46g (⅔PGA_M). The enclosed liquefaction analyses, included herein for CPTs 1 through 4, indicate that the alluvial soils below the historic high groundwater depth could be susceptible up to approximately 2.76 inches of total settlement during Design Earthquake ground motion. A summary of the anticipated liquefaction induced settlements is provided as Figure 4; calculations and output from CLiq are provided in Appendix C.

It is our understanding that the intent of the Building Code is to maintain "Life Safety" during Maximum Considered Earthquake level events. Therefore, additional analysis was performed to evaluate the potential for liquefaction during a MCE event. The structural engineer should evaluate the proposed structure for the anticipated MCE liquefaction induced settlements and verify that anticipated deformations would not cause the foundation system to lose the ability to support the gravity loads and/or cause collapse of the structure.

The liquefaction analysis was also performed for the Maximum Considered Earthquake level by using a historic high groundwater table of 10 feet below the ground surface, a magnitude 7.23 earthquake, and a peak horizontal acceleration of 0.69g (PGA_M). The enclosed liquefaction analyses, included herein for CPTs 1 through 4, indicates that the alluvial soils below the historic high groundwater depth could be susceptible up to approximately 3.28 inches of total settlement during Maximum Considered Earthquake ground motion. A summary of the anticipated liquefaction induced settlements is provided as Figure 5; calculations and output from CLiq are provided in Appendix C.

6.4 Hydrocompression

Hydrocompression is the tendency of unsaturated soil structure to collapse upon wetting resulting in the overall settlement of the affected soil and overlying foundations or improvements supported thereon. Potentially compressible soils underlying the site are typically removed and compacted during remedial site grading. However, if compressible soil is left in-place, a potential for settlement due to hydrocompression of the soil exists.

We tested for hydrocompression during the consolidation testing of select soil samples obtained through our field investigation. The highest collapse potential was calculated to be 0.81 percent under high-pressure loading conditions. Provided the recommendations for remedial grading presented herein are followed, the potential for hydrocompression will be effectively mitigated.

6.5 Landslides & Rock Falls

The site topography consists of a relatively flat site and surrounding properties, therefore, landslides and rock falls are not design considerations.

6.6 Slope Stability

Fill or cut slopes are not present or proposed for the improvement construction.

6.7 Tsunamis and Seiches

A tsunami is a series of long period waves generated in the ocean by a sudden displacement of large volumes of water. Causes of tsunamis include underwater earthquakes, volcanic eruptions, or offshore slope failures. The first order driving force for locally generated tsunamis offshore southern California is expected to be tectonic deformation from large earthquakes. The site is located approximately 75 miles from the nearest coastline, separated by two mountain ranges, therefore, the risk associated with tsunamis is not a design consideration.

A seiche is a run-up of water within a lake or embayment triggered by fault- or landslide-induced ground displacement. The project site is not located within 5 miles of a lake or reservoir, therefore, seiches are not a design consideration for the site.

6.8 Dam Inundation and Flooding

The site is not located within an area which could be subjected with reduced flood risk due to dam inundation.

6.9 Regional Ground Subsidence

Regional subsidence has occurred in recent history within the Coachella Valley. Initial subsidence occurred between the 1920's and 1940's when groundwater was over-pumped and groundwater levels declined on the order of 50 feet. Introduction of Colorado River water in 1949 reduced groundwater pumping and the related subsidence temporarily stopped. In the 1970's overdraft of the groundwater occurred resulting in groundwater level declines of 50 to 100 feet and subsidence resumed. In 1996, the United States Geologic Survey (USGS) in cooperation with CVWD implemented a geodetic measurement of ground levels from Palm Desert, southwestward to the Salton Sea. The site is located within the La Quinta Subsidence Zone. Subsidence of 0.39 to 0.57 ft. has occurred within the La Quinta Subsidence Zone, between 1996 and 2005. Subsidence at Lake Cahuilla was measured at 0.942 feet between 1996 and 2005. CVWD has embarked on a groundwater replenishment program which has slowed the rate of subsidence in the region. Ongoing studies from the USGS have discovered that the dominant factor in ground subsidence is the presence of silt layers which compress upon groundwater withdraw (Sneed, APWA Presentation March 2013). Ground subsidence could occur in the future and the site could be affected especially if groundwater withdrawal were to re-initiate. We anticipate the subsidence to be on a regional scale that could cause settlement across the project site. However, the settlement occurs over a relatively large geographic area and typically does not cause differential settlement over a relatively short horizontal distance that should be addressed as a design concern as part of the site development.

7. CONCLUSIONS AND RECOMMENDATIONS

7.1 General

7.1.1 It is our opinion that neither soil nor geologic conditions were encountered during the investigation that would preclude construction of the proposed project provided the recommendations presented herein are followed and implemented during design and construction.

7.1.2 Up to 4 feet of existing undocumented artificial fill was encountered during the site investigation. The existing fill encountered is believed to be the result of past grading and site use activities. Deeper fill may exist in other areas of the site that were not directly explored. It is our opinion that the existing fill, in its present condition, is not suitable for direct support of proposed foundations or slabs. The existing fill and site soils are suitable for re-use as engineered fill provided the recommendations in the *Grading* section of this report are followed (see Section 7.4).

7.1.3 The enclosed seismically induced settlement analyses indicate that the site soils could be susceptible to approximately 2.76 inches of total settlement as a result of the Design Earthquake peak ground acceleration ($⅔PGA_M$). Differential settlement at the foundation level is anticipated to be less than 1.38 inches over a distance of 30 feet. The grading and foundation recommendations presented herein are intended to reduce the effects of settlement on proposed structures.

7.1.4 The foundation system for the proposed structures must be able to provide sufficient support for the structures and minimize the effects of differential settlement resulting from a liquefaction event. Based on these considerations, it is recommended that the proposed structures be supported on a reinforced concrete mat foundation or a post-tensioned foundation system deriving support on a blanket of newly placed engineered fill. Recommendations for a mat foundation or a post-tensioned foundation system are provided in Sections 7.6 and 7.7, respectively.

7.1.5 Where structures will be supported on a reinforced concrete mat foundation or a post-tensioned foundation system, it is recommended that the upper 5 feet of existing earth materials within the building footprint areas be excavated and properly compacted for foundation and slab support. Deeper excavations should be conducted as needed to remove any encountered fill or soft soils as necessary at the direction of the Geotechnical Engineer (a representative of Geocon). The excavation should extend laterally a minimum distance of 5 feet beyond the building footprint areas, including building appurtenances, or a distance equal to the depth of fill below the foundation, whichever is greater. Proposed building foundations should be underlain by a minimum of 3 feet of newly placed engineered fill and earthwork should be conducted and deepened where necessary to maintain at least three feet of engineered fill below the bottoms of all foundations. The limits of existing fill and/or soft soil removal will be verified by the Geocon representative during site grading activities. Recommendations for earthwork are provided in the *Grading* section of this report (see Section 7.4).

7.1.6 As an alternative, the proposed structures may be supported on a grade beam foundation system underlain by a blanket of properly compacted engineered fill that is reinforced with geosynthetic materials consisting of Tensar TriAx InterAx NX850 Geogrid or equivalent. The geogrid reinforced engineered fill blanket will provide a ductile sublayer that can accommodate earthquake-induced ground displacement and reduce the displacements transferred to the structure. Recommendations for placement of geogrid reinforced engineered fill and for a grade beam foundation system are provided in Sections 7.4 and 7.8, respectively, and a schematic is provided on Figure 6.

7.1.7 It is recommended that a minimum 2-foot-thick blanket of geogrid reinforced engineered fill be placed below the bottom of the foundation. A minimum of 2 layers of geogrid reinforcement, placed at 12-inch intervals, should be used within the blanket of geogrid reinforced engineered fill. The material used within the geogrid reinforced engineered fill should consist of granular material with a fines content of less than 15 percent. The existing onsite poorly graded sands appears to be suitable for use with the geogrid reinforcement. The poorly graded sand should be selectively excavated and stockpiled for use with the geogrid. Crushed concrete (2-inches or less), asphalt millings, and crushed miscellaneous base (CMB) are acceptable for use as engineered fill within the geogrid reinforced engineered fill. The excavation and geogrid reinforcement should extend laterally a minimum distance of 5 feet beyond the building footprint area.

7.1.8 It should be noted that implementation of the recommendations presented herein is not intended to completely prevent damage to the structures during the occurrence of strong ground shaking because of nearby earthquakes. It is intended that the structures be designed in such a way that the amount of damage incurred as a result of strong ground shaking be minimized.

7.1.9 It is recommended that flexible utility connections be utilized for all rigid utilities to minimize or prevent damage to utilities from minor differential movements.

7.1.10 All excavations must be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon). Prior to placing any fill, the upper 12 inches of the excavation bottom must be scarified, moistened, and proof-rolled with heavy equipment in the presence of the Geotechnical Engineer (a representative of Geocon West, Inc.).

7.1.11 It is anticipated that stable excavations for the recommended grading associated with the proposed structures can be achieved with sloping measures. However, if excavations in close proximity to an adjacent property line and/or structure are required, special excavation measures may be necessary in order to maintain lateral support of offsite improvements. Excavation recommendations are provided in the *Temporary Excavations* section of this report (Section 7.16).

7.1.12 Foundations for small outlying structures, such as block walls up to 6 feet high, planter walls or trash enclosures, which will not be tied to proposed structures, may be supported on conventional foundations bearing on a minimum of 12 inches of newly placed engineered fill which extends laterally at least 12 inches beyond the foundation area. Where excavation and proper compaction cannot be performed, foundations may derive support directly in the undisturbed alluvial soils generally found at or below a depth of 24 inches below existing ground surface, and should be deepened as necessary to maintain a minimum 12-inch embedment into the recommended bearing materials. If the soils exposed in the excavation bottom are soft or loose, compaction of the soils will be required prior to placing steel or concrete. Compaction of the foundation excavation bottom is typically accomplished with a compaction wheel or mechanical whacker and must be observed and approved in writing by a Geocon representative.

7.1.13 Where new paving is to be placed, it is recommended that all existing fill and soft alluvial soils be excavated and properly compacted for paving support. The client should be aware that excavation and compaction of all existing fill and soft alluvial soils in the area of new paving is not required; however, paving constructed over existing uncertified fill or unsuitable alluvial soil may experience increased settlement and/or cracking, and may therefore have a shorter design life and increased maintenance costs. As a minimum, the upper 12 inches of subgrade soil should be scarified and properly compacted for paving support. Paving recommendations are provided in *Preliminary Pavement Recommendations* section of this report (see Section 7.13).

7.1.14 Based on the results of percolation testing performed at the site, a stormwater infiltration system is considered feasible for this project. Recommendations for infiltration are provided in the *Stormwater Infiltration* section of this report (see Section 7.17).

7.1.15 Once the design and foundation loading configuration for the proposed development proceeds to a more finalized plan, the recommendations within this report should be reviewed and revised, if necessary. Based on the final foundation loading configurations, the potential for settlement should be re-evaluated by this office.

7.1.16 Any changes in the design, location or elevation, as outlined in this report, should be reviewed by this office. Geocon should be contacted to determine the necessity for review and possible revision of this report.

7.2 Soil and Excavation Characteristics

7.2.1 The in-situ soils at the site should generally be excavatable with moderate effort using conventional earth moving equipment in proper functioning order. Due to the granular nature of the soils, moderate to excessive caving should be anticipated in vertical excavations, especially where granular soils are encountered. Formwork may be required to prevent caving of foundation excavations.

7.2.2 It is the responsibility of the contractor to ensure that all excavations and trenches are properly shored and maintained in accordance with applicable OSHA rules and regulations to maintain safety and maintain the stability of existing adjacent improvements.

7.2.3 All onsite excavations must be conducted in such a manner that potential surcharges from existing structures, construction equipment, and vehicle loads are resisted. The surcharge area may be defined by a 1:1 projection down and away from the bottom of an existing foundation or vehicle load. Penetrations below this 1:1 projection will require special excavation measures such as sloping or shoring. Excavation recommendations are provided in the *Temporary Excavations* section of this report (see Section 7.16).

7.2.4 The upper 5 feet of existing site soils encountered during the investigation are considered to have a "very low" expansive potential (EI = 0) and are classified as "non-expansive" in accordance with the 2019 California Building Code (CBC) Section 1803.5.3. The recommendations presented herein assume that the building foundations and slabs will derive support in these materials.

7.3 Minimum Resistivity, pH, and Water-Soluble Sulfate

7.3.1 Potential of Hydrogen (pH) and resistivity testing as well as chloride content testing were performed on representative samples of soil to generally evaluate the corrosion potential to surface utilities. The tests were performed in accordance with California Test Method Nos. 643 and 422 and indicate that the soils are considered "moderately corrosive" with respect to corrosion of buried ferrous metals on site. The results are presented in Appendix B (Figure B-3) and should be considered for design of underground structures.

7.3.2 Laboratory tests were performed on representative samples of the site materials to measure the percentage of water-soluble sulfate content. Results from the laboratory water-soluble sulfate tests are presented in Appendix B (Figure B-3) and indicate that the on-site materials possess a sulfate exposure class of "S0" to concrete structures as defined by 2019 CBC Section 1904 and ACI 318-19 Chapter 19.

7.3.3 Geocon West, Inc. does not practice in the field of corrosion engineering and mitigation. If corrosion sensitive improvements are planned, it is recommended that a corrosion engineer be retained to evaluate corrosion test results and incorporate the necessary precautions to avoid premature corrosion of buried metal pipes and concrete structures in direct contact with the soils.

7.4 Grading

7.4.1 A preconstruction conference should be held at the site prior to the beginning of grading operations with the owner, contractor, civil engineer and soil engineer in attendance. Special soil handling requirements can be discussed at that time.

7.4.2 Earthwork should be observed, and compacted fill tested by representatives of Geocon West, Inc. The existing fill and alluvial soils encountered during exploration are suitable for reuse as engineered fill, provided any encountered oversize material (greater than 6 inches) and any encountered deleterious debris is removed.

7.4.3 Grading should commence with the removal of all existing vegetation and existing improvements from the area to be graded. Deleterious debris such as wood and root structures should be exported from the site and should not be mixed with the fill soils. Asphalt and concrete should not be mixed with the fill soils unless approved by the Geotechnical Engineer. All existing underground improvements planned for removal should be completely excavated and the resulting depressions properly backfilled in accordance with the procedures described herein. Once a clean excavation bottom has been established it must be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon West, Inc.).

7.4.4 Where structures will be supported on a reinforced concrete mat foundation or a post-tensioned foundation system, it is recommended that the upper 5 feet of existing earth materials within the building footprint areas be excavated and properly compacted for foundation and slab support. Deeper excavations should be conducted as needed to remove any encountered fill or soft soils as necessary at the direction of the Geotechnical Engineer (a representative of Geocon). The excavation should extend laterally a minimum distance of 5 feet beyond the building footprint areas, including building appurtenances, or a distance equal to the depth of fill below the foundation, whichever is greater. Proposed building foundations should be underlain by a minimum of 3 feet of newly placed engineered fill. The limits of existing fill and/or soft soil removal will be verified by the Geocon representative during site grading activities.

7.4.5 As an alternative, the proposed structures may be supported on a grade beam foundation system underlain by a blanket of properly compacted engineered fill that is reinforced with geosynthetic materials consisting of Tensar TriAx InterAx NX850 Geogrid or equivalent. The geogrid reinforced engineered fill blanket will provide a ductile sublayer that can accommodate earthquake-induced ground displacement and reduce the displacements transferred to the structure.

7.4.6 It is recommended that a minimum 2-foot-thick blanket of geogrid reinforced engineered fill be placed below the bottom of the foundation. A minimum of 2 layers of geogrid reinforcement, placed at 12-inch intervals, should be used within the blanket of geogrid reinforced engineered fill. The material used within the geogrid reinforced engineered fill should consist of granular material with a fines content of less than 15 percent. The existing onsite poorly graded sands appears to be suitable for use with the geogrid reinforcement. The poorly graded sand should be selectively excavated and stockpiled for use with the geogrid. Crushed concrete (2-inches or less), asphalt millings, and crushed miscellaneous base (CMB) are acceptable for use as engineered fill within the geogrid reinforced engineered fill. The excavation and geogrid reinforcement should extend laterally a minimum distance of 5 feet beyond the building footprint area.

7.4.7 The initial layer of geogrid reinforcement should be placed at the excavation bottom. A 12-inch layer of granular fill (onsite poorly graded sand) should be placed and compacted, and an additional layer of geogrid reinforcement placed. Adjacent strips of geogrid reinforcement should overlap in accordance with the manufactures' requirements. This procedure should be continued until a minimum 2-foot-thick blanket of geogrid reinforced engineered fill has been placed below the bottom of the proposed foundation. The geogrid should be installed in accordance with the manufacture's recommendations, including a minimum 12-inch-thick layer of engineered fill placed over the uppermost geogrid layer. It is recommended that the civil and structural engineers coordinate on the depth of all foundations relative to the depth of the geogrid layers in order to maintain the minimum soil cover over the uppermost geogrid layer. An illustration of the recommended geogrid reinforced engineered fill is provided as Figure 6.

7.4.8 All excavations must be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon). Prior to placing any fill, the upper 12 inches of the excavation bottom must be scarified, moistened, and proof-rolled with heavy equipment in the presence of the Geotechnical Engineer (a representative of Geocon West, Inc.).

7.4.9 All fill and backfill soils should be placed in horizontal loose layers approximately 6 to 8 inches thick, moisture conditioned to near optimum moisture content, and properly compacted to a minimum of 90 percent of the maximum dry density per ASTM D 1557 (latest edition).

7.4.10 It is anticipated that stable excavations for the recommended grading can be achieved with sloping measures. However, if excavations in close proximity to an adjacent property line and/or structure are required, special excavation measures may be necessary in order to maintain lateral support of the existing offsite improvements. Excavation recommendations are provided in the *Temporary Excavations* section of this report (Section 7.16).

7.4.11. Where new paving is to be placed, it is recommended that all existing fill and soft alluvium be excavated and properly compacted for paving support. As a minimum, the upper 12 inches of soil should be scarified, moisture conditioned to near optimum moisture content, and compacted to at least 95 percent relative compaction, as determined by ASTM Test Method D 1557 (latest edition). Paving recommendations are provided in *Preliminary Pavement Recommendations* section of this report (see Section 7.13).

7.4.12 Foundations for small outlying structures, such as block walls up to 6 feet high, planter walls or trash enclosures, which will not be tied to the proposed structure, may be supported on conventional foundations bearing on a minimum of 12 inches of newly placed engineered fill which extends laterally at least 12 inches beyond the foundation area. Where excavation and proper compaction cannot be performed, foundations may derive support directly in the undisturbed alluvial soils found at or below a depth of 24 inches, and should be deepened as necessary to maintain a minimum 12-inch embedment into the recommended bearing materials. If the soils exposed in the excavation bottom are soft or loose, compaction of the soils will be required prior to placing steel or concrete. Compaction of the foundation excavation bottom is typically accomplished with a compaction wheel or mechanical whacker and must be observed and approved in writing by a Geocon representative.

7.4.13 All imported fill shall be observed, tested, and approved by Geocon West, Inc. prior to bringing soil to the site. Rocks larger than 6 inches in diameter shall not be used in the fill. Import soils used as structural fill should have an expansion index less than 20 and corrosivity properties that are equally or less detrimental to that of the existing onsite soils (see Figure B-3). Import soils placed in the building area should be placed uniformly across the building pad or in a manner that is approved by the Geotechnical Engineer (a representative of Geocon).

7.4.14 It is recommended that flexible utility connections be utilized for all rigid utilities to minimize or prevent damage to utilities from minor differential movements. Utility trenches should be properly backfilled in accordance with the following. The pipe should be bedded with clean sands (Sand Equivalent greater than 30) to a depth of at least 1 foot over the pipe, and the bedding material must be inspected and approved in writing by the Geotechnical Engineer (a representative of Geocon). The use of gravel is not acceptable unless used in conjunction with filter fabric to prevent the gravel from having direct contact with soil. The remainder of the trench backfill may be derived from onsite soil or approved import soil, compacted as necessary, until the required compaction is obtained. The use of minimum 2-sack slurry as backfill is also acceptable. Prior to placing any bedding materials or pipes, the trench excavation bottom must be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon).

7.4.15 All trench and foundation excavation bottoms must be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon), prior to placing bedding sands, fill, steel, gravel, or concrete.

7.5 Shrinkage

7.5.1 Shrinkage results when a volume of material removed at one density is compacted to a higher density. A shrinkage factor between 10 and 15 percent should be anticipated when excavating and compacting the upper 5 feet of existing earth materials on the site to an average relative compaction of 92 percent.

7.5.2 If import soils will be utilized in the building pad, the soils must be placed uniformly and at equal thickness at the direction of the Geotechnical Engineer (a representative of Geocon West, Inc.). Soils can be borrowed from non-building pad areas and later replaced with imported soils.

7.6 Mat Foundation Recommendations

7.6.1 Subsequent to the recommended grading, a reinforced concrete mat foundation may be utilized for support of the proposed structures. The reinforced concrete mat foundation must be underlain by at least 3 feet of newly placed engineered fill.

7.6.2 The recommended maximum allowable bearing value for the design of a reinforced concrete mat foundation is 3,000 pounds per square foot (psf). The allowable bearing pressure may be increased by up to one-third for transient loads due to wind or seismic forces.

7.6.3 It is recommended that a modulus of subgrade reaction of 150 pounds per cubic inch (pci) be utilized for the design of the mat foundation bearing in newly placed engineered fill. This value is a unit value for use with a 1-foot square footing. The modulus should be reduced in accordance with the following equation when used with larger foundations:

$$K_R = K\left[\frac{B+1}{2B}\right]^2$$

where: K_R = reduced subgrade modulus
K = unit subgrade modulus
B = foundation width (in feet)

7.6.4 The thickness of and reinforcement for the mat foundation should be designed by the project structural engineer.

7.6.5 For seismic design purposes, a coefficient of friction of 0.35 may be utilized between concrete slab and newly placed engineered fill without a moisture barrier, and 0.15 for slabs underlain by a moisture barrier.

7.6.6 Foundation excavations should be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon West, Inc.), prior to the placement of reinforcing steel and concrete to verify that the exposed soil conditions are consistent with those anticipated. If unanticipated soil conditions are encountered, foundation modifications may be required.

7.6.7 This office should be provided a copy of the final construction plans so that the recommendations presented herein could be properly reviewed and revised if necessary.

7.7 Post Tensioned Foundation Recommendations

7.7.1 A post-tensioned concrete slab and foundation system may also be used for support of the proposed structures. The post-tensioned system should derive support in the newly placed engineered fill and be underlain by at least 3 feet of newly placed engineered fill. The post-tensioned system should be designed by a structural engineer experienced in post-tensioned slab design and design criteria of the Post-Tensioning Institute (PTI) DC 10.5-12 *Standard Requirements for Design and Analysis of Shallow Post-Tensioned Concrete Foundations on Expansive Soils* or *WRI/CRSI Design of Slab-on-Ground Foundations*, as required by the 2019 California Building Code (CBC Section 1808.6.2). Although this procedure was developed for expansive soil conditions, we understand it can also be used to reduce the potential for foundation distress due to differential settlement. The post-tensioned design should incorporate the geotechnical parameters presented in the following table, which are based on the guidelines presented in the PTI design manual.

POST-TENSIONED FOUNDATION SYSTEM DESIGN PARAMETERS

Post-Tensioning Institute (PTI) Third Edition Design Parameters	Value
Thornthwaite Index	-20
Equilibrium Suction	3.9
Edge Lift Moisture Variation Distance, e_M (feet)	5.3
Edge Lift, y_M (inches)	0.61
Center Lift Moisture Variation Distance, e_M (feet)	9.0
Center Lift, y_M (inches)	0.3

7.7.2 The foundations for the post-tensioned slabs should be embedded in accordance with the recommendations of the structural engineer. If a post-tensioned mat foundation system is planned, the slab should possess a thickened edge with a minimum width of 12 inches and extend below the clean sand or crushed rock layer.

7.7.3 If the structural engineer proposes a post-tensioned foundation design method other than PTI DC 10.5:

- The post-tensioned foundation system design parameters above are still applicable.
- Interior stiffener beams should be used.
- The width of the perimeter foundations should be at least 12 inches.
- The perimeter footing embedment depths should be at least 12 inches. The embedment depths should be measured from the lowest adjacent pad grade.

7.7.4 Our experience indicates post-tensioned slabs may be susceptible to excessive edge lift, regardless of the underlying soil conditions. Placing reinforcing steel at the bottom of the perimeter footings and the interior stiffener beams may mitigate this potential. The structural engineer should design the foundation system to reduce the potential of edge lift occurring for the proposed structures

7.7.5 During the construction of the post-tension foundation system, the concrete should be placed monolithically. Under no circumstances should cold joints form between the footings/grade beams and the slab during the construction of the post-tension foundation system unless specifically designed by the structural engineer.

7.7.6 Foundations may be designed for an allowable soil bearing pressure of 3,000 psf (dead plus live load). This bearing pressure may be increased by one-third for transient loads due to wind or seismic forces.

7.7.7 Consideration should be given to connecting patio slabs, which exceed 5 feet in width, to the building foundation to reduce the potential for future separation to occur.

7.7.8 Interior stiffening beams should be incorporated into the design of the foundation system in accordance with the PTI design procedures.

7.7.9 Foundation excavations should be observed by the Geotechnical Engineer (a representative of Geocon West, Inc.) prior to the placement of reinforcing steel and concrete to check that the exposed soil conditions are consistent with those expected and have been extended to appropriate bearing strata. If unexpected soil conditions are encountered, foundation modifications may be required.

7.7.10 Special subgrade presaturation is not deemed necessary prior to placing concrete; however, the exposed foundation and slab subgrade soil should be moisture conditioned, as necessary, to maintain a moist condition as would be expected in any such concrete placement.

7.7.11 Geocon should be consulted to provide additional design parameters as required by the structural engineer.

7.8 Grade Beam Foundation Design

7.8.1 As an alternative, the proposed structures may be supported on a grade beam foundation system deriving support on a geogrid reinforced engineered fill blanket (see Figure 6). The system of grade beams, in conjunction with the slab, provides a stiffer foundation system which is capable of distributing loads and reducing differential settlements. The grade beams and slab should be poured monolithically wherever possible. Proposed foundations should be underlain by a minimum 2-foot-thick blanket of geogrid reinforced engineered fill.

7.8.2 Continuous grade beams foundations may be designed for an allowable bearing capacity of 2,000 pounds per square foot (psf), and should be a minimum of 12 inches in width, 18 inches in depth below the lowest adjacent grade, and 12 inches into the recommended bearing material.

7.8.3 Isolated spread foundations which are interconnected to the grade beam system may be designed for an allowable bearing capacity of 2,500 psf, and should be a minimum of 24 inches in width, 18 inches in depth below the lowest adjacent grade, and 12 inches into the recommended bearing material.

7.8.4 The soil bearing pressure above may be increased by 250 psf and 500 psf for each additional foot of foundation width and depth, respectively. However, in order to minimize static settlements, the recommended maximum allowable bearing value is 3,000 pounds per square foot (psf).

7.8.5 The allowable bearing pressures may be increased by one-third for transient loads due to wind or seismic forces.

7.8.6 It is recommended that a modulus of subgrade reaction of 200 pounds per cubic inch be utilized for the design of the foundation bearing in geogrid reinforced engineered fill. This value is a unit value for use with a 1-foot square footing. The modulus should be reduced in accordance with the following equation when used with larger foundations:

$$K_R = K\left[\frac{B+1}{2B}\right]^2$$

where: K_R = reduced subgrade modulus
K = unit subgrade modulus
B = foundation width (in feet)

7.8.7 If depth increases are utilized for the perimeter foundations, this office should be provided a copy of the final construction plans so that the excavation recommendations presented herein could be properly reviewed and revised if necessary. It is recommended that the civil and structure engineers coordinate on the depth of all foundations relative to the depth of the geogrid layers in order to maintain the minimum soil cover over the uppermost geogrid layer.

7.8.8 Continuous footings should be reinforced with four No. 4 steel reinforcing bars, two placed near the top of the footing and two near the bottom. Reinforcement for spread footings should be designed by the project structural engineer.

7.8.9 The above foundation dimensions and minimum reinforcement recommendations are based on soil conditions and building code requirements only, and are not intended to be used in lieu of those required for structural purposes.

7.8.10 The moisture content in the slab and foundation subgrade should be maintained subsequent to grading and as necessary until concrete placement.

7.8.11 Foundation excavations should be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon West, Inc.), prior to the placement of reinforcing steel and concrete to verify that the excavations and exposed soil conditions are consistent with those anticipated. If unanticipated soil conditions are encountered, foundation modifications may be required.

7.8.12 This office should be provided a copy of the final construction plans so that the excavation recommendations presented herein could be properly reviewed and revised if necessary.

7.9 Foundation Settlement

7.9.1 The enclosed seismically induced settlement analyses indicate that the site soils could be susceptible to approximately 2.76 inches of total settlement as a result of the Design Earthquake peak ground acceleration ($⅔PGA_M$). Differential settlement at the foundation level is anticipated to be less than 1.38 inches over a distance of 30 feet. These settlements are in addition to the static settlements indicated below and must be considered in the structural design.

7.9.2 The maximum expected static settlement for a structure supported on a mat foundation system, post-tensioned foundation system, or a grade beam foundation system deriving support in the recommended bearing materials and designed with a maximum bearing pressure of 3,000 psf is estimated to be less than 1 inch and occur below the heaviest loaded structural element. Settlement of the foundation system is expected to occur on initial application of loading. Differential settlement is not expected to exceed ½ inch over a distance of 20 feet. Based on seismic considerations, the proposed structures should be designed for a combined static and seismically-induced differential settlement of 1¾ inches over a distance of 20 feet.

7.9.3 Once the design and foundation loading configurations for the proposed structures proceeds to a more finalized plan, the estimated settlements presented in this report should be reviewed and revised, if necessary. If the final foundation loading configurations are greater than the assumed loading conditions, the potential for settlement should be reevaluated by this office.

7.10 Miscellaneous Foundations

7.10.1 Foundations for small outlying structures, such as block walls up to 6 feet in height, planter walls or trash enclosures, which will not be structurally supported by the proposed building, may be supported on conventional foundations deriving support on a minimum of 12 inches of newly placed engineered fill which extends laterally at least 12 inches beyond the foundation area. Where excavation and compaction cannot be performed, such as adjacent to property lines, foundations may derive support in the undisturbed alluvial soils found at or below a depth of 24 inches, and should be deepened as necessary to maintain a minimum 12-inch embedment into the recommended bearing materials.

7.10.2 If the soils exposed in the excavation bottom are loose, compaction of the soils will be required prior to placing steel or concrete. Compaction of the foundation excavation bottom is typically accomplished with a compaction wheel or mechanical whacker and must be observed and approved by a Geocon representative. Miscellaneous foundations may be designed for a bearing value of 1,500 psf, and should be a minimum of 12 inches in width, 18 inches in depth below the lowest adjacent grade and 12 inches into the recommended bearing material. The allowable bearing pressure may be increased by up to one-third for transient loads due to wind or seismic forces.

7.10.3 Foundation excavations should be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon West, Inc.), prior to the placement of reinforcing steel and concrete to verify that the excavations and exposed soil conditions are consistent with those anticipated.

7.11 Lateral Design

7.11.1 Resistance to lateral loading may be provided by friction acting at the base of foundations, slabs and by passive earth pressure. An allowable coefficient of friction of 0.35 may be used with the dead load forces in the undisturbed alluvial soils and newly placed engineered fill.

7.11.2 Passive earth pressure for the sides of foundations and slabs poured against newly placed engineered fill or undisturbed alluvial soils may be computed as an equivalent fluid having a density of 250 pounds per cubic foot (pcf) with a maximum earth pressure of 2,500 psf. When combining passive and friction for lateral resistance, the passive component should be reduced by one-third. A one-third increase in the passive value may be used for wind or seismic loads.

7.12 Concrete Slabs-on-Grade

7.12.1 Concrete slabs-on-grade subject to vehicle loading should be designed in accordance with the recommendations in the *Preliminary Pavement Recommendations* section of this report (Section 7.13).

7.12.2 Subsequent to the recommended grading, concrete slabs-on-grade for structures, not subject to vehicle loading, should be a minimum of 4 inches thick and minimum slab reinforcement should consist of No. 3 steel reinforcing bars placed 18 inches on center in both horizontal directions. Steel reinforcing should be positioned vertically near the slab midpoint.

7.12.3 Slabs-on-grade at the ground surface that may receive moisture-sensitive floor coverings or may be used to store moisture-sensitive materials should be underlain by a vapor retarder placed directly beneath the slab. The vapor retarder and acceptable permeance should be specified by the project architect or developer based on the type of floor covering that will be installed. The vapor retarder selection and design should be consistent with the guidelines presented in Section 9.3 of the American Concrete Institute's (ACI) Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials (ACI 302.2R-06) as well as ASTM E1745 and should be installed in general conformance with ASTM E 1643 (latest edition) and the manufacturer's recommendations. A minimum thickness of 15 mils extruded polyolefin plastic is recommended; vapor retarders which contain recycled content or woven materials are not recommended. The vapor retarder should have a permeance of less than 0.01 perms demonstrated by testing before and after mandatory conditioning is recommended. The vapor retarder should be installed in direct contact with the concrete slab with proper perimeter seal. If the California Green Building Code requirements apply to this project, the vapor retarder should be underlain by 4 inches of clean aggregate. It is important that the vapor retarder be puncture resistant since it will be in direct contact with angular gravel. As an alternative to the clean aggregate suggested in the Green Building Code, it is our opinion that the concrete slab-on-grade may be underlain by a vapor retarder over 4-inches of clean sand (sand equivalent greater than 30), since the sand will serve a capillary break and will minimize the potential for punctures and damage to the vapor barrier.

7.12.4 For seismic design purposes, a coefficient of friction of 0.35 may be utilized between concrete slabs and subgrade soils without a moisture barrier, and 0.15 for slabs underlain by a moisture barrier.

7.12.5 Exterior slabs, not subject to traffic loads, should be at least 4 inches thick and reinforced with No. 3 steel reinforcing bars placed 18 inches on center in both horizontal directions, positioned near the slab midpoint. Prior to construction of slabs, the upper 12 inches of subgrade should be moistened to near optimum moisture content and properly compacted to at least 95 percent relative compaction, as determined by ASTM Test Method D 1557 (latest edition). Crack control joints should be spaced at intervals not greater than 10 feet and should be constructed using saw-cuts or other methods as soon as practical following concrete placement. Crack control joints should extend a minimum depth of one-fourth the slab thickness. The project structural engineer should design construction joints as necessary.

7.12.6 The moisture content of the slab subgrade should be maintained and sprinkled as necessary to maintain a moist condition as would be expected in any concrete placement.

7.12.7 The recommendations of this report are intended to reduce the potential for cracking of slabs due to settlement. However, even with the incorporation of the recommendations presented herein, foundations, stucco walls, and slabs-on-grade may exhibit some cracking due to minor soil movement and/or concrete shrinkage. The occurrence of concrete shrinkage cracks is independent of the supporting soil characteristics. Their occurrence may be reduced and/or controlled by limiting the slump of the concrete, proper concrete placement and curing, and by the placement of crack control joints at periodic intervals, in particular, where re-entrant slab corners occur.

7.13 Preliminary Pavement Recommendations

7.13.1 Where new paving is to be placed, it is recommended that all existing fill and soft alluvium materials be excavated and properly compacted for paving support. The client should be aware that excavation and compaction of all existing artificial fill and soft alluvium in the area of new paving is not required; however, paving constructed over existing uncertified fill or unsuitable alluvium material may experience increased settlement and/or cracking, and may therefore have a shorter design life and increased maintenance costs. As a minimum, the upper 12 inches of paving subgrade should be scarified, moisture conditioned to near optimum moisture content, and properly compacted to at least 95 percent relative compaction, as determined by ASTM Test Method D 1557 (latest edition).

7.13.2 The following pavement sections are based on an assumed R-Value of 20. Once site grading activities are complete an R-Value should be obtained by laboratory testing to confirm the properties of the soils serving as paving subgrade, prior to placing pavement.

7.13.3 The Traffic Indices listed below are estimates. Geocon does not practice in the field of traffic engineering. The actual Traffic Index for each area should be determined by the project civil engineer. If pavement sections for Traffic Indices other than those listed below are required, Geocon should be contacted to provide additional recommendations. Pavement thicknesses were determined following procedures outlined in the *California Highway Design Manual* (Caltrans). It is anticipated that the majority of traffic will consist of automobile and large truck traffic.

PRELIMINARY PAVEMENT DESIGN SECTIONS

Location	Estimated Traffic Index (TI)	Asphalt Concrete (inches)	Class 2 Aggregate Base (inches)
Automobile Parking and Driveways	4.0	3.0	4.0
Trash Truck & Fire Lanes	7.0	4.0	12.0

7.13.4 Asphalt concrete should conform to Section 203-6 of the "*Standard Specifications for Public Works Construction"* (Green Book). Class 2 aggregate base materials should conform to Section 26-1.02A of the "*Standard Specifications of the State of California, Department of Transportation"* (Caltrans). The use of Crushed Miscellaneous Base (CMB) in lieu of Class 2 aggregate base is acceptable. Crushed Miscellaneous Base should conform to Section 200-2.4 of the "*Standard Specifications for Public Works Construction"* (Green Book).

7.13.5 Unless specifically designed and evaluated by the project structural engineer, where exterior concrete paving will be utilized for support of vehicles, it is recommended that the concrete be a minimum of 6 inches of concrete reinforced with No. 3 steel reinforcing bars placed 18 inches on center in both horizontal directions. Concrete paving supporting vehicular traffic should be underlain by a minimum of 4 inches of aggregate base and a properly compacted subgrade. The subgrade and base material should be compacted to 95 percent relative compaction, as determined by ASTM Test Method D 1557 (latest edition).

7.13.6 The performance of pavements is highly dependent upon providing positive surface drainage away from the edge of pavements. Ponding of water on or adjacent to the pavement will likely result in saturation of the subgrade materials and subsequent cracking, subsidence and pavement distress. If planters are planned adjacent to paving, it is recommended that the perimeter curb be extended at least 12 inches below the bottom of the aggregate base to minimize the introduction of water beneath the paving.

7.14 Retaining Wall Design

7.14.1 The recommendations presented below are generally applicable to the design of rigid concrete or masonry retaining walls having a maximum height of 5 feet. In the event that walls significantly higher than 5 feet are planned, Geocon should be contacted for additional recommendations.

7.14.2 Retaining wall foundations may be designed in accordance with the recommendations provided in the Foundation Design sections of this report (see Sections 7.6 through 7.8).

7.14.3 Retaining walls with a level backfill surface that are not restrained at the top should be designed utilizing a triangular distribution of pressure (active pressure) of 30 pcf.

7.14.4 Restrained walls are those that are not allowed to rotate more than 0.001H (where H equals the height of the retaining portion of the wall in feet) at the top of the wall. Where walls are restrained from movement at the top, walls may be designed utilizing a triangular distribution of pressure (at-rest pressure) of 66 pcf.

7.14.5 The wall pressures provided above assume that the retaining wall will be properly drained preventing the buildup of hydrostatic pressure. If retaining wall drainage is not implemented, the equivalent fluid pressure to be used in design of undrained walls is 95 pcf. The value includes hydrostatic pressures plus buoyant lateral earth pressures.

7.14.6 The wall pressures provided above also assume that the proposed retaining walls will support relatively undisturbed alluvial soils or engineered fill derived from onsite soils. If import soil will be utilized to backfill proposed retaining walls, revised earth pressures may be required to account for the geotechnical properties of the import soil used as engineered fill. This should be evaluated once the use of import soil is established. All imported fill shall be observed, tested, and approved by Geocon West, Inc. prior to bringing soil to the site.

7.14.7 Additional active pressure should be added for a surcharge condition due to sloping ground, vehicular traffic or adjacent structures and should be designed for each condition as the project progresses.

7.15 Retaining Wall Drainage

7.15.1 Retaining walls not designed for hydrostatic pressures should be provided with a drainage system extended at least two-thirds the height of the wall. At the base of the drain system, a subdrain covered with a minimum of 12 inches of gravel should be installed, and a compacted fill blanket or other seal placed at the surface (see Figure 7). The clean bottom and subdrain pipe, behind a retaining wall, should be observed by the Geotechnical Engineer (a representative of Geocon), prior to placement of gravel or compacting backfill.

7.15.2 As an alternative, a plastic drainage composite such as Miradrain or equivalent may be installed in continuous, 4-foot-wide columns along the entire back face of the wall, at 8 feet on center. The top of these drainage composite columns should terminate approximately 18 inches below the ground surface, where either hardscape or a minimum of 18 inches of relatively cohesive material should be placed as a cap (see Figure 8).

7.15.3 Subdrainage pipes at the base of the retaining wall drainage system should outlet to an acceptable location via controlled drainage structures. Drainage should not be allowed to flow uncontrolled over descending slopes.

7.15.4 Moisture affecting below grade walls is one of the most common post-construction complaints. Poorly applied or omitted waterproofing can lead to efflorescence or standing water. Particular care should be taken in the design and installation of waterproofing to avoid moisture problems, or actual water seepage into the structure through any normal shrinkage cracks which may develop in the concrete walls, floor slab, foundations and/or construction joints. The design and inspection of the waterproofing is not the responsibility of the geotechnical engineer. A waterproofing consultant should be retained in order to recommend a product or method, which would provide protection to subterranean walls, floor slabs and foundations.

7.16 Temporary Excavations

7.16.1 Excavations up to 5 feet in height may be required during grading and construction operations. The excavations are expected to expose fill and alluvial soils, which may be subject to caving. Vertical excavations up to 5 feet in height may be attempted where not surcharged; however, the contractor should be prepared for caving, sloughing, and raveling in open excavations. Due to the granular nature of soils and potential for caving, the contractor should also be prepared to form foundation excavations at the excavation bottom.

7.16.2 Vertical excavations greater than 5 feet or where surcharged by existing structures will require sloping or shoring measures in order to provide a stable excavation. Where sufficient space is available, temporary unsurcharged embankments could be sloped back at a uniform 1:1 slope gradient or flatter up to maximum height of 8 feet. A uniform slope does not have a vertical portion.

7.16.3 If excavations in close proximity to an adjacent property line and/or structure are required, special excavation measures such as slot-cutting or shoring may be necessary in order to maintain lateral support of offsite improvements. Recommendations for special excavation measures can be provided under separate cover, as necessary.

7.16.4 Where temporary construction slopes are utilized, the top of the slope should be barricaded to prevent vehicles and storage loads at the top of the slope within a horizontal distance equal to the height of the slope. If the temporary construction slopes are to be maintained during the rainy season, berms are suggested along the tops of the slopes where necessary to prevent runoff water from entering the excavation and eroding the slope faces. Geocon personnel should inspect the soils exposed in the cut slopes during excavation so that modifications of the slopes can be made if variations in the soil conditions occur. All excavations should be stabilized within 30 days of initial excavation.

7.17 Stormwater Infiltration

7.17.1 Percolation testing was performed in accordance with the procedures outlined in *Riverside County Flood Control and Water Conservation District LID BMP, Appendix A* for the proposed infiltration structures along the eastern area of the site. The percolation test locations are depicted on the *Geologic Map*, Figure 2.

7.17.2 Percolation test holes were excavated to a depth of 5 feet below existing grade. Approximately two inches of gravel was placed at the bottom of each test hole and a perforated pipe was placed atop the gravel to keep the test hole open. Gravel was placed around the bottom of the test hole to support the test pipe. The test locations were pre-saturated prior to testing. Percolation testing began within 24 hours after the holes were presaturated. Results of the converted percolation test rates to infiltration test rates are presented in the table below. Percolation data sheets are presented as Figures 9 through 12.

INFILTRATION TEST RATES FOR PERCOLATION AREAS

Parameter	P-1	P-2	P-3	P-4
Depth (inches)	60	60	60	60
Average head: Havg (inches)	20.6	18.6	19.9	18.5
Time Interval (minutes): Δt (minutes)	10	10	10	10
Radius of test hole: r (inches)	4	4	4	4
Tested Infiltration Rate: It (inches/hour)	3.6	6.3	4.5	6.4

7.17.3 The results of the infiltration testing indicate that infiltration at the locations tested ranged from 3.6 to 6.4 inches per hour. Additional correction factors may be required and should be applied by the engineer in responsible charge of the design of the stormwater infiltration system and based on applicable guidelines.

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

7.18 Surface Drainage

7.18.1 Proper surface drainage is critical to the future performance of the project. Uncontrolled infiltration of irrigation excess and storm runoff into the soils can adversely affect the performance of the planned improvements. Saturation of a soil can cause it to lose internal shear strength and increase its compressibility, resulting in a change in the original designed engineering properties. Proper drainage should be maintained at all times.

7.18.2 All site drainage should be collected and controlled in non-erosive drainage devices. Drainage should not be allowed to pond anywhere on the site, and especially not against any foundation or retaining wall. The site should be graded and maintained such that surface drainage is directed away from structures in accordance with 2019 CBC 1804.4 or other applicable standards. In addition, drainage should not be allowed to flow uncontrolled over any descending slope. Discharge from downspouts, roof drains and scuppers are not recommended onto unprotected soils within 5 feet of the building perimeter. Planters which are located adjacent to foundations should be sealed to prevent moisture intrusion into the soils providing foundation support. Landscape irrigation is not recommended within 5 feet of the building perimeter footings except when enclosed in protected planters.

7.18.3 Positive site drainage should be provided away from structures, pavement, and the tops of slopes to swales or other controlled drainage structures. The building pad and pavement areas should be fine graded such that water is not allowed to pond.

7.18.4 Landscaping planters immediately adjacent to paved areas are not recommended due to the potential for surface or irrigation water to infiltrate the pavement's subgrade and base course. Either a subdrain, which collects excess irrigation water and transmits it to drainage structures, or impervious above-grade planter boxes should be used. In addition, where landscaping is planned adjacent to the pavement, it is recommended that consideration be given to providing a cutoff wall along the edge of the pavement that extends at least 12 inches below the base material.

7.19 Plan Review

7.19.1 Grading, foundation, and if applicable, shoring plans should be reviewed by the Geotechnical Engineer (a representative of Geocon West, Inc.), prior to finalization to verify that the plans have been prepared in substantial conformance with the recommendations of this report and to provide additional analyses or recommendations.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

The recommendations of this report pertain only to the site investigated and are based upon the assumption that the soil conditions do not deviate from those disclosed in the investigation. If any variations or undesirable conditions are encountered during construction, or if the proposed construction will differ from that anticipated herein, Geocon should be notified so that supplemental recommendations can be given. The evaluation or identification of the potential presence of hazardous materials was not part of the scope of services provided by Geocon.

This report is issued with the understanding that it is the responsibility of the owner, or of their representative, to ensure that the information and recommendations contained herein are brought to the attention of the architect and engineer for the project and incorporated into the plans, and the necessary steps are taken to see that the contractor and subcontractors carry out such recommendations in the field.

The requirements for concrete and steel reinforcement presented in this report are preliminary recommendations from a geotechnical perspective. The Structural Engineer should provide the final recommendations for structural design of concrete and steel reinforcement for foundation systems, floor slabs, exterior concrete, or other systems where concrete and steel reinforcement are utilized, in accordance with the latest version of applicable codes.

The findings of this report are valid as of the date of this report. However, changes in the conditions of a property can occur with the passage of time, whether they are due to natural processes or the works of man on this or adjacent properties. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review and should not be relied upon after a period of three years.

The firm that performed the geotechnical investigation for the project should be retained to provide testing and observation services during construction to provide continuity of geotechnical interpretation and to check that the recommendations presented for geotechnical aspects of site development are incorporated during site grading, construction of improvements, and excavation of foundations. If another geotechnical firm is selected to perform the testing and observation services during construction operations, that firm should prepare a letter indicating their intent to assume the responsibilities of project geotechnical engineer of record. A copy of the letter should be provided to the regulatory agency for their records. In addition, that firm should provide revised recommendations concerning the geotechnical aspects of the proposed development, or a written acknowledgement of their concurrence with the recommendations presented in our report. They should also perform additional analyses deemed necessary to assume the role of Geotechnical Engineer of Record.

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0’ 1,000’ 2,000’

SCALE: 1” = 1,000’

N

SOURCE: Google Earth, 2022

VICINITY MAP

GEOCON WEST, INC.
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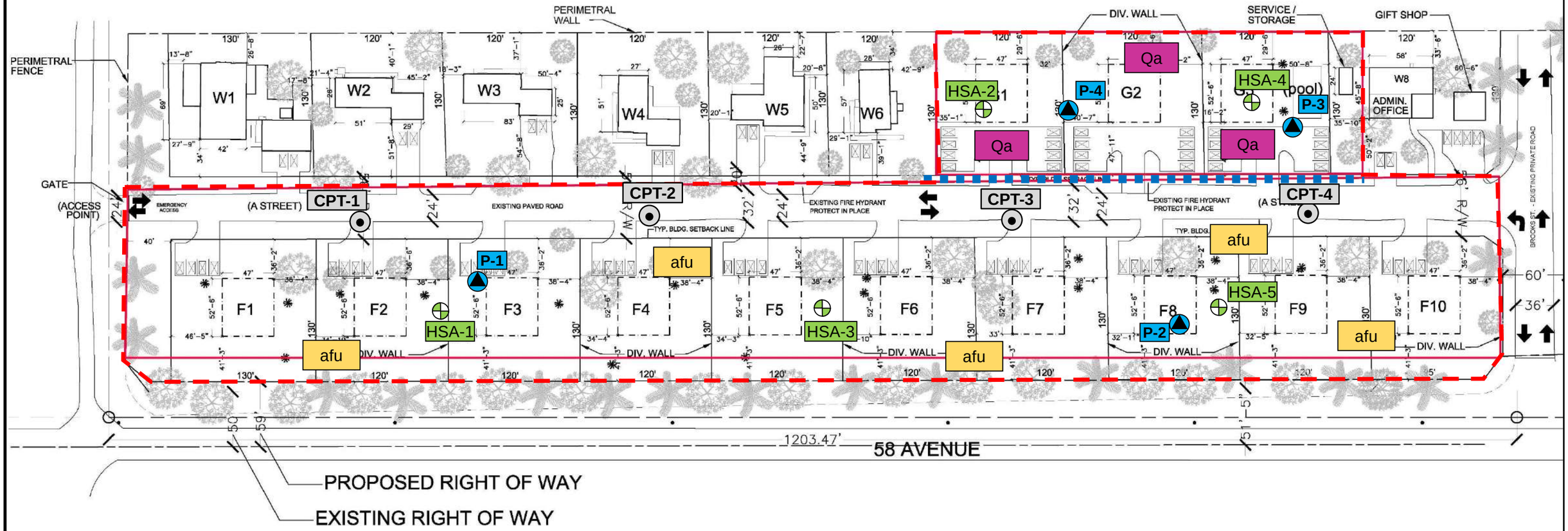
Telephone 760.565.2002 ■ Fax 951.304.2392

HD		

RANCHO POLO EQUESTRIAN CLUB
NEC OF AVENUE 58 & OASIS STREET
THERMAL, CALIFORNIA

JULY 2022	PROJECT NO. T2990-22-01	FIG. 1



GEOCON LEGEND

Locations are approximate

HSA-5 ..... GEOCON BORING LOCATION (CURRENT)

CPT-4 ..... CONE PENETROMETER BORING

P-4 ..... PERCOLATION TEST LOCATION

..... LIMITS OF THIS INVESTIGATION

..... GEOLOGIC CONTACT

afu ..... UNDOCUMENTED ARTIFICIAL FILL

Qa ..... YOUNG ALLUVIUM

N

SCALE 1"=20'

20' 0 20' 40' 60'

CONTOUR INTERVAL 1'

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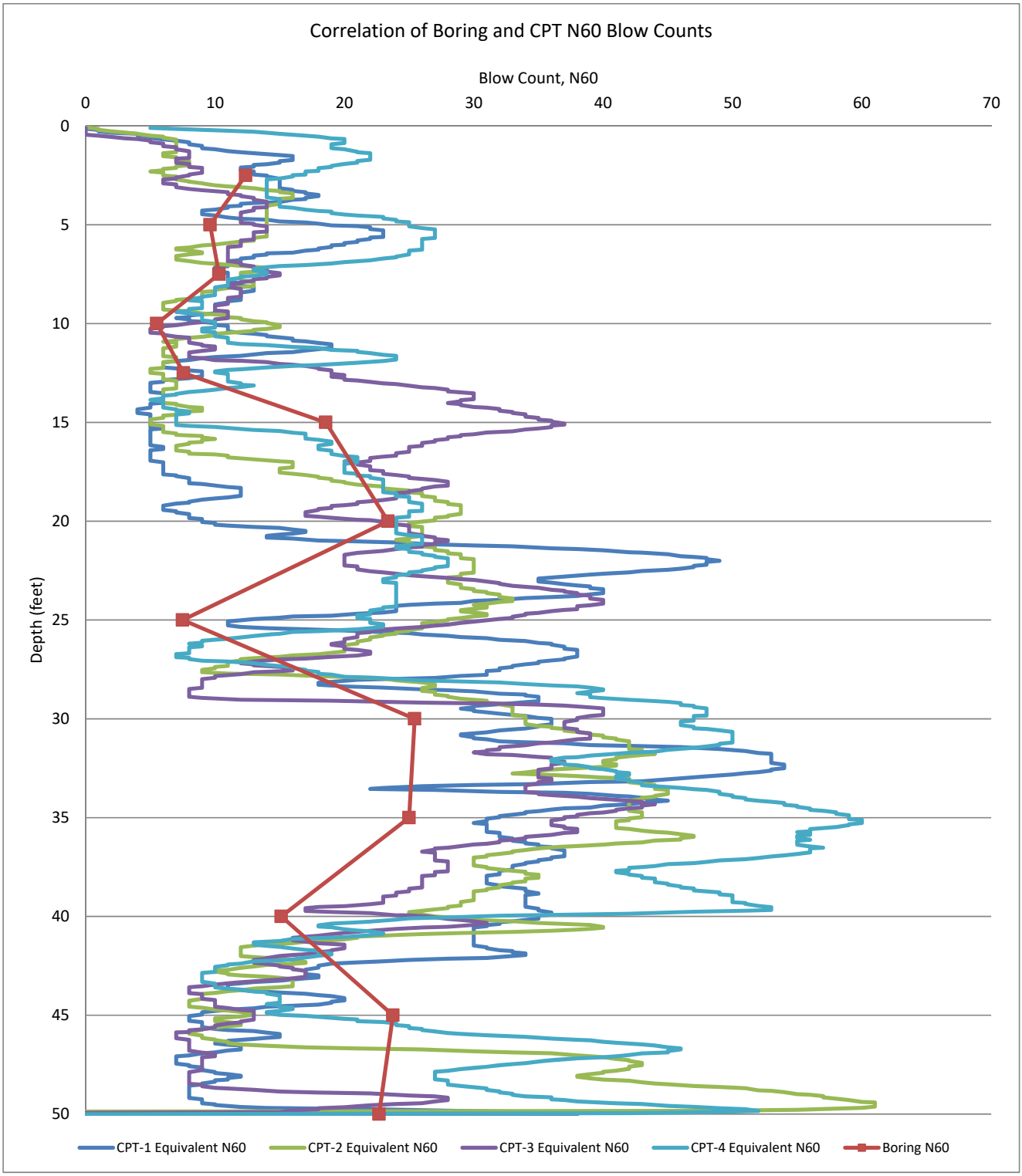
GEOLOGIC MAP

RANCHO POLO EQUESTRIAN CLUB
NEC OF AVENUE 58 & OASIS STREET
THERMAL, CALIFORNIA

JULY 2022 | PROJECT NO. T2990-22-01 | FIG. 2



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PHONE (818) 841-8388 - FAX (818) 841-1704

PZ		

CORRELATION OF BORING & CPT N60

RANCHO POLO EQUESTRIAN CLUB
NEC OF AVENUE 58 & OASIS STREET
THERMAL, CALIFORNIA

JULY 2022	PROJECT NO. T2990-22-01	FIG. 3

Geocon West, Inc.
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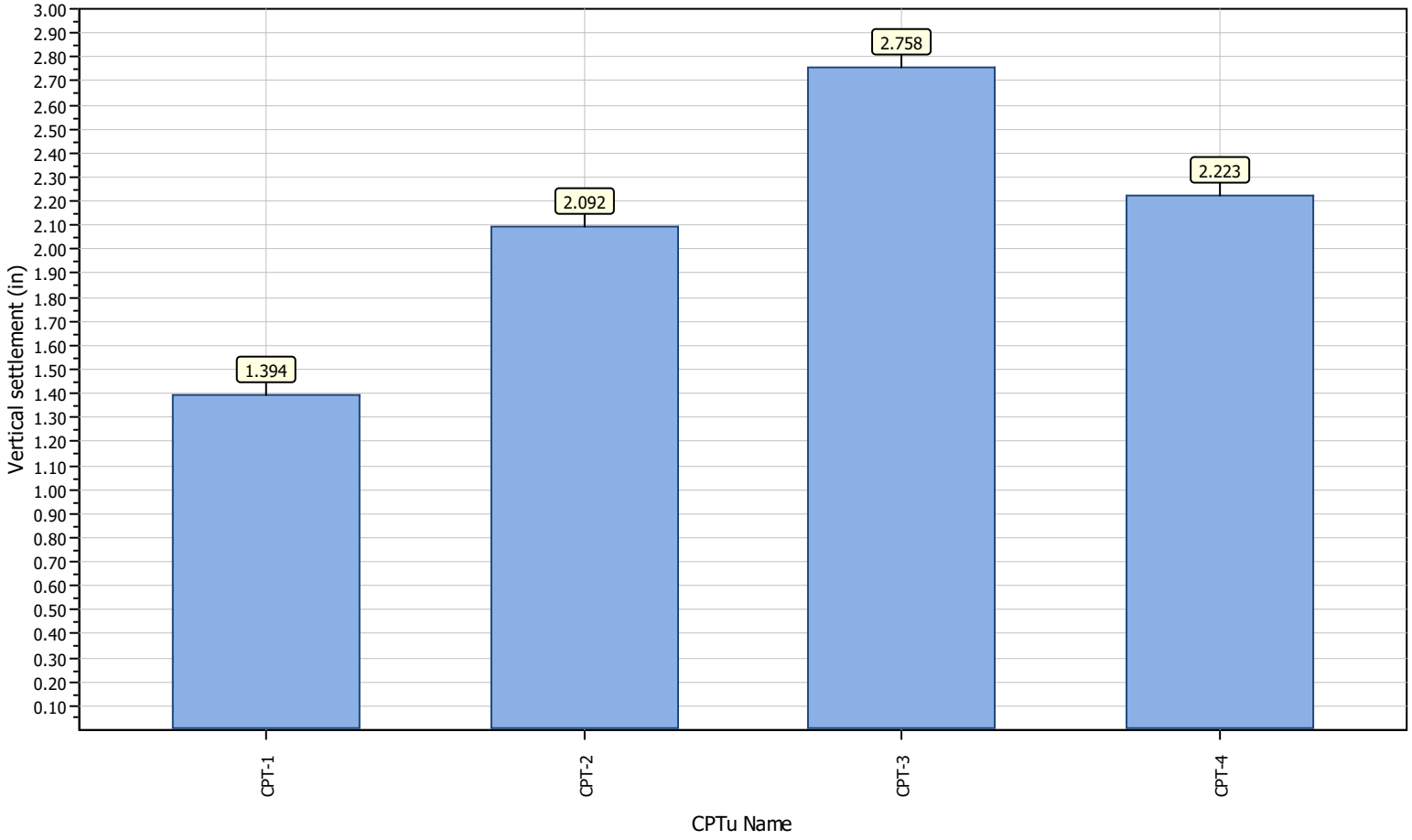
Burbank, CA 91504
(818) 841-8388

Project title : T2990-22-01 Continental Rancho Polo

Location : Northeast Corner of 58th Avenue & Oasis Street, Thermal, CA

Overall vertical settlements report - Design Earthquake

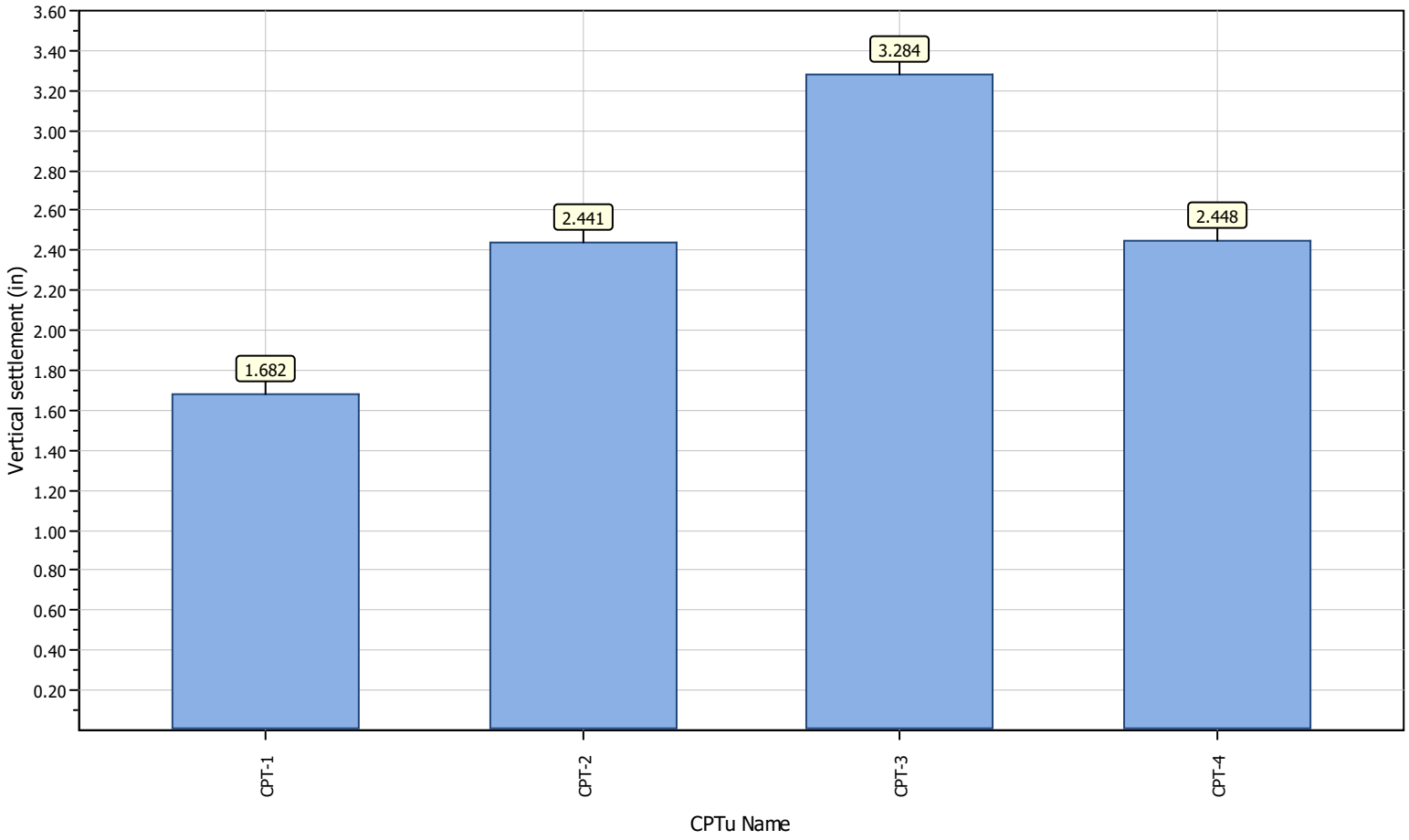


Geocon West, Inc.
3303 N. San Fernando Blvd., Suite 100
Burbank, CA 91504
(818) 841-8388

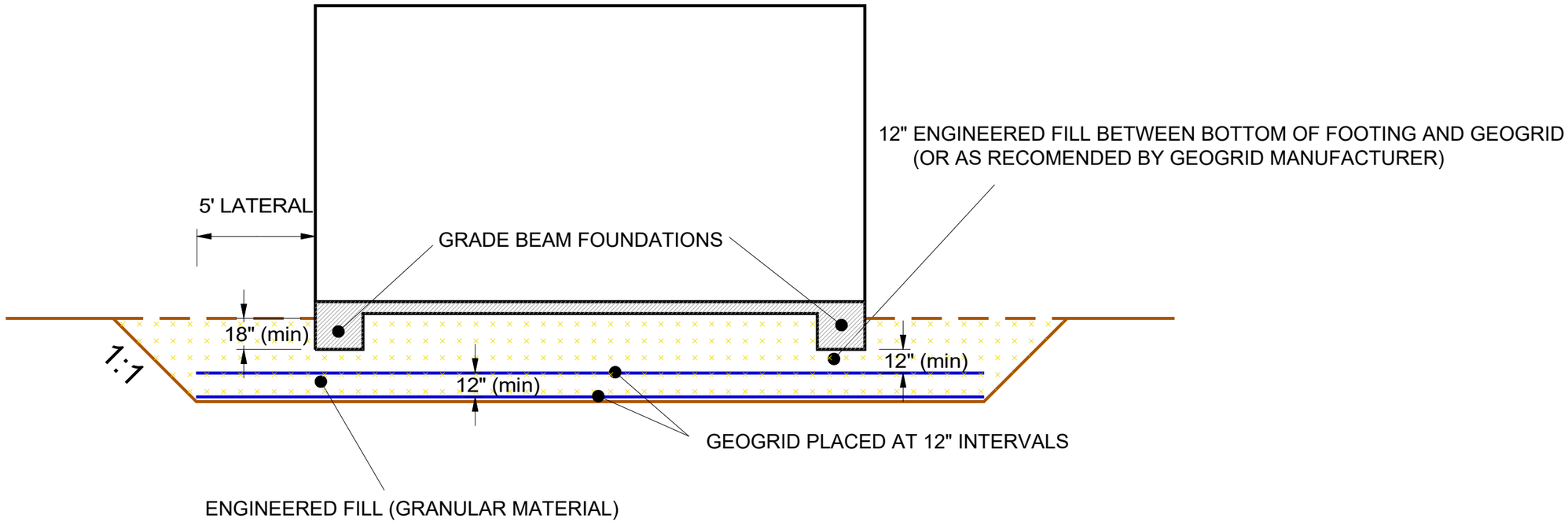
Project title : T2990-22-01 Continental Rancho Polo

Location : Northeast Corner of 58th Avenue & Oasis Street, Thermal, CA

Overall vertical settlements report - Maximum Considered Earthquake



FOR ILLUSTRATION PURPOSES ONLY. NOT FOR CONSTRUCTION.



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WEST, INC.
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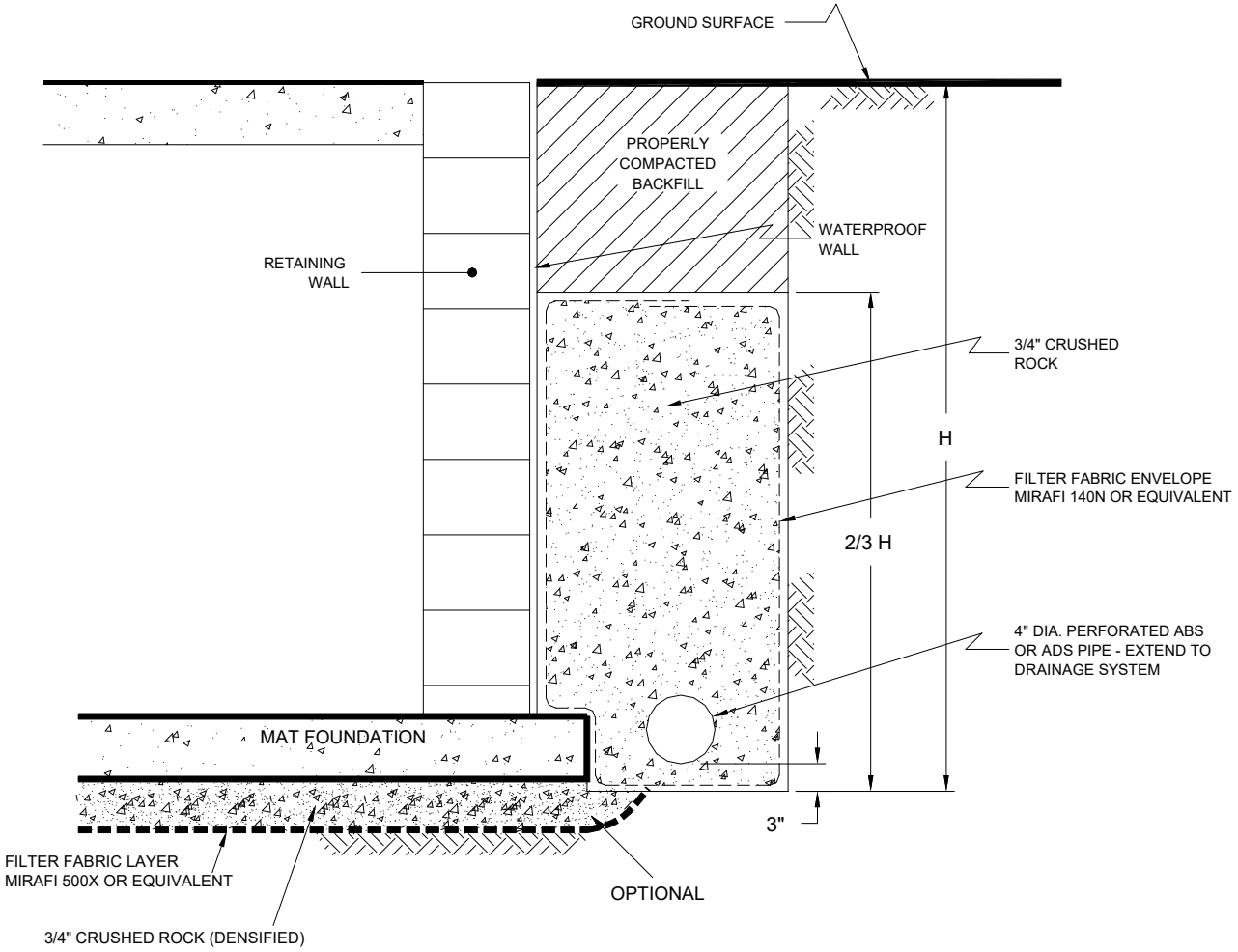
PHONE (760) 565-2002 - FAX (951) 304-2392

CHECKED BY: NDB | DRAFTED BY: PZ

GEOGRID REINFORCED ENGINEERED FILL DETAIL

RANCHO POLO EQUESTRIAN CLUB
NEC OF AVENUE 58 & OASIS STREET
THERMAL, CALIFORNIA

JULY 2022 | PROJECT NO. T2990-22-01 | FIG. 6



NO SCALE

GEOCON WEST, INC.

ENVIRONMENTAL GEOTECHNICAL MATERIALS
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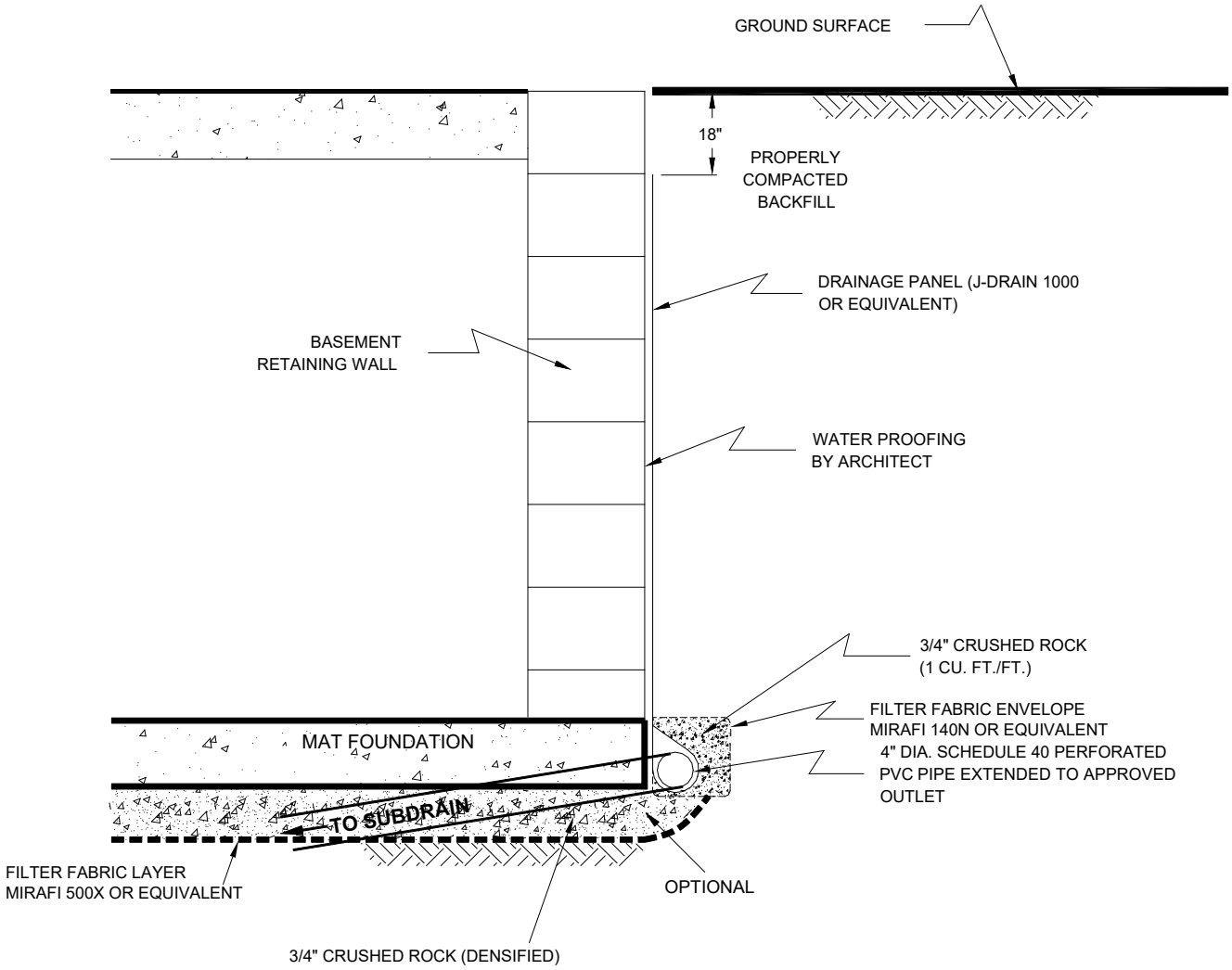
PHONE (760) 565-2002 - FAX (951) 304-2392

DRAFTED BY: PZ	CHECKED BY: NDB

RETAINING WALL DRAIN DETAIL

RANCHO POLO EQUESTRIAN CLUB
NEC OF AVENUE 58 & OASIS STREET
THERMAL, CALIFORNIA

JULY 2022	PROJECT NO. T2990-22-01	FIG. 7



NOTE: TOP OF DRAINAGE PANEL NOT MORE THAN 18 INCHES FROM GROUND SURFACE

NO SCALE

GEOCON WEST, INC.

ENVIRONMENTAL GEOTECHNICAL MATERIALS
78-075 MAIN STREET #G-203 - LA QUINTA, CALIFORNIA 92253
PHONE (760) 565-2002 - FAX (951) 304-2392

DRAFTED BY: PZ	CHECKED BY: NDB

RETAINING WALL DRAIN DETAIL

RANCHO POLO EQUESTRIAN CLUB
NEC OF AVENUE 58 & OASIS STREET
THERMAL, CALIFORNIA

JULY 2022	PROJECT NO. T2990-22-01	FIG. 8

PERCOLATION TEST REPORT

Project Name:		Rancho Polo Equestrian Club		**Project No.:**		T2990-22-01
Test Hole No.:		P-1		**Date Excavated:**		6/27/2022
Length of Test Pipe:		60.0	inches	**Soil Classification:**		SP
Height of Pipe above Ground:		0.0	inches	**Presoak Date:**		6/27/2022
Depth of Test Hole:		60.0	inches	**Perc Test Date:**		6/28/2022
Check for Sandy Soil Criteria Tested by:			JJK	**Percolation Tested by:**		JJK

Water level measured from BOTTOM of hole

Sandy Soil Criteria Test

Trial No.	Time Interval (min)	Total Elapsed Time (min)	Initial Water Level (in)	Final Water Level (in)	Δ in Water Level (in)	Percolation Rate (min/inch)
1	25	25	24.0	10.3	13.7	1.8
2	25	50	24.0	10.4	13.6	1.8

Soil Criteria: Sandy

Percolation Test

Reading No.	Time Interval (min)	Total Elapsed Time (min)	Initial Water Head (in)	Final Water Head (in)	Δ in Water Level (in)	Percolation Rate (min/inch)
1	10	10	24.0	17.2	6.8	1.5
2	10	20	24.0	17.3	6.7	1.5
3	10	30	24.0	17.0	7.0	1.4
4	10	40	24.0	17.2	6.8	1.5
5	10	50	24.0	17.4	6.6	1.5
6	10	60	24.0	17.3	6.7	1.5

Infiltration Rate (in/hr):		3.6			
Radius of test hole (in):		4			
Average Head (in):		20.6			**Figure 9**

PERCOLATION TEST REPORT

Project Name:		Rancho Polo Equestrian Club		**Project No.:**		T2990-22-01
Test Hole No.:		P-2		**Date Excavated:**		6/27/2022
Length of Test Pipe:		60.0	inches	**Soil Classification:**		SP / SM
Height of Pipe above Ground:		0.0	inches	**Presoak Date:**		6/27/2022
Depth of Test Hole:		60.0	inches	**Perc Test Date:**		6/28/2022
Check for Sandy Soil Criteria Tested by:			JJK	**Percolation Tested by:**		JJK

Water level measured from BOTTOM of hole

Sandy Soil Criteria Test

Trial No.	Time Interval (min)	Total Elapsed Time (min)	Initial Water Level (in)	Final Water Level (in)	Δ in Water Level (in)	Percolation Rate (min/inch)
1	25	25	24.0	2.9	21.1	1.2
2	25	50	24.0	3.2	20.8	1.2

Soil Criteria: Sandy

Percolation Test

Reading No.	Time Interval (min)	Total Elapsed Time (min)	Initial Water Head (in)	Final Water Head (in)	Δ in Water Level (in)	Percolation Rate (min/inch)
1	10	10	24.0	12.4	11.6	0.9
2	10	20	24.0	12.7	11.3	0.9
3	10	30	24.0	13.2	10.8	0.9
4	10	40	24.0	13.1	10.9	0.9
5	10	50	24.0	13.1	10.9	0.9
6	10	60	24.0	13.2	10.8	0.9

Infiltration Rate (in/hr):		6.3			
Radius of test hole (in):		4			
Average Head (in):		18.6			**Figure 10**

PERCOLATION TEST REPORT

Project Name:		Rancho Polo Equestrian Club		**Project No.:**		T2990-22-01
Test Hole No.:		P-3		**Date Excavated:**		6/27/2022
Length of Test Pipe:		60.0	inches	**Soil Classification:**		ML
Height of Pipe above Ground:		0.0	inches	**Presoak Date:**		6/27/2022
Depth of Test Hole:		60.0	inches	**Perc Test Date:**		6/28/2022
Check for Sandy Soil Criteria Tested by:			JJK	**Percolation Tested by:**		JJK

Water level measured from BOTTOM of hole

Sandy Soil Criteria Test

Trial No.	Time Interval (min)	Total Elapsed Time (min)	Initial Water Level (in)	Final Water Level (in)	Δ in Water Level (in)	Percolation Rate (min/inch)
1	25	25	24.0	7.8	16.2	1.5
2	25	50	24.0	8.0	16.0	1.6

Soil Criteria: Sandy

Percolation Test

Reading No.	Time Interval (min)	Total Elapsed Time (min)	Initial Water Head (in)	Final Water Head (in)	Δ in Water Level (in)	Percolation Rate (min/inch)
1	10	10	24.0	15.1	8.9	1.1
2	10	20	24.0	15.1	8.9	1.1
3	10	30	24.0	15.6	8.4	1.2
4	10	40	24.0	15.7	8.3	1.2
5	10	50	24.0	15.5	8.5	1.2
6	10	60	24.0	15.8	8.2	1.2

Infiltration Rate (in/hr):		4.5			
Radius of test hole (in):		4			
Average Head (in):		19.9			**Figure 11**

PERCOLATION TEST REPORT

Project Name:		Rancho Polo Equestrian Club		**Project No.:**		T2990-22-01
Test Hole No.:		P-4		**Date Excavated:**		6/27/2022
Length of Test Pipe:		60.0	inches	**Soil Classification:**		SP
Height of Pipe above Ground:		0.0	inches	**Presoak Date:**		6/27/2022
Depth of Test Hole:		60.0	inches	**Perc Test Date:**		6/28/2022
Check for Sandy Soil Criteria Tested by:			JJK	**Percolation Tested by:**		JJK

Water level measured from BOTTOM of hole

Sandy Soil Criteria Test

Trial No.	Time Interval (min)	Total Elapsed Time (min)	Initial Water Level (in)	Final Water Level (in)	Δ in Water Level (in)	Percolation Rate (min/inch)
1	25	25	24.0	4.2	19.8	1.3
2	25	50	24.0	4.6	19.4	1.3

Soil Criteria: Sandy

Percolation Test

Reading No.	Time Interval (min)	Total Elapsed Time (min)	Initial Water Head (in)	Final Water Head (in)	Δ in Water Level (in)	Percolation Rate (min/inch)
1	10	10	24.0	13.0	11.0	0.9
2	10	20	24.0	13.4	10.6	0.9
3	10	30	24.0	13.3	10.7	0.9
4	10	40	24.0	12.8	11.2	0.9
5	10	50	24.0	13.0	11.0	0.9
6	10	60	24.0	13.1	10.9	0.9

Infiltration Rate (in/hr):		6.4			
Radius of test hole (in):		4			
Average Head (in):		18.5			**Figure 12**

APPENDIX A

APPENDIX A

FIELD EXPLORATION

Our field investigation was conducted on June 26, 27, and 28, 2022 and included the excavation of five geotechnical borings, four percolation test borings and the advancement of four cone penetrometer tests.

The geotechnical and percolation test borings were performed utilizing a CME 75 hollow stem auger drilling machine. The geotechnical borings were excavated to depths of 16½ to 51½ feet below ground surface. The percolation test borings were excavated to depths of 5 feet below ground surface. The hollow stem auger borings were drilled to observe the subsurface geological conditions at the site, collect relatively undisturbed in-situ and disturbed bulk samples for laboratory testing, and evaluate the depth to groundwater. We collected bulk and relatively undisturbed samples from the borings by driving a 3-inch O. D., California Modified Sampler into the "undisturbed" soil mass with blows from a 140-pound hammer falling 30 inches. The California Modified Sampler was equipped with 1-inch high by 2⅜-inch inside diameter brass sampler rings to facilitate removal and testing. Sampling was alternated between California Ring and Standard Penetration Tests in boring HSA-3. Relatively undisturbed samples and bulk samples of disturbed soils were transported to our laboratory for testing. Geotechnical borings are presented as Figures A-1 through A-5. The logs of the percolation test borings are presented on Figures A-6 through A-9.

Cone penetration tests (CPTs) were performed to depths of approximately 50 feet below ground surface. CPT logs are presented on Figures A-10 through A-13.

The approximate locations of the borings, percolation tests, and CPTs are depicted on the *Geologic Map*, Figure 2.

PROJECT NO. T2990-22-01

BORING HSA-1

ELEV. (MSL.) **-75** DATE COMPLETED **6/27/2022**

EQUIPMENT **CME 75 HSA** BY: **A. SHOASHEKAN**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT*)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SP-SM	**UNDOCUMENTED FILL (afu)** Poorly-graded SAND with Silt, medium dense, moist, light olive brown; fine to medium sand; grass at surface; porous			
2	HSA-1@2.5				-Rootlests	23	85.5	
4								
6	HSA-1@5			SP	**YOUNG ALLUVIAL FAN DEPOSITS (Qal)** Poorly-graded SAND, loose, moist, light olive brown; fine to medium sand; trace pores; olive brown Silt lense	12	80.4	
8	HSA-1@7.5			CH	Sandy CLAY, firm, moist, olive brown; fine to medium sand; trace pores	11	93.6	17.0
10	HSA-1@10					7		
12	HSA-1@12.5				-Becomes soft, wet; small shells present; porous	6	80.4	34.3
14								
16	HSA-1@15				-Becomes moist; increase porosity	6	93.2	27.1
					Total Depth = 16.5' Groundwater not encountered Penetration resistance for 140-lb hammer falling 30 inches by auto hammer Backfilled with cuttings 6/27/2022			

T2990-22-01 BORING LOGS.GPJ

Figure A-1,
Log of Boring HSA-1, Page 1 of 1

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T2990-22-01

BORING HSA-2

ELEV. (MSL.) **-78** DATE COMPLETED **6/27/2022**

EQUIPMENT **CME 75 HSA** BY: **A. SHOASHEKAN**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT*)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**UNDOCUMENTED FILL (afu)** Silty SAND, medium dense, moist, light olive brown; fine to medium sand; grass at surface			
2								
4	HSA-2@2.5			SP	**YOUNG ALLUVIAL FAN DEPOSITS (Qal)** Poorly-graded SAND, medium dense, dry, light yellow brown; fine sand; micaceous; rootlets	30		
6	HSA-2@5				-Becomes slightly moist, light olive brown	18	89.6	6.3
8	HSA-2@7.5				-Becomes loose; olive brown Silty lense; shells; trace mica	16		
10	HSA-2@10			SP-SM	Poorly-graded SAND with Silt, loose, moist, olive brown; fine to medium sand	13	98.3	11.9
12	HSA-2@12.5				-Becomes medium dense, slightly moist, light olive gray; fine to medium sand	24		
14	HSA-2@15					20		
16					Total Depth = 16.5' Groundwater not encountered Penetration resistance for 140-lb hammer falling 30 inches by auto hammer Backfilled with cuttings 6/27/2022			

T2990-22-01 BORING LOGS.GPJ

Figure A-2,
Log of Boring HSA-2, Page 1 of 1

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

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PROJECT NO. T2990-22-01

BORING HSA-3

ELEV. (MSL.) **-76** DATE COMPLETED **6/27/2022**

EQUIPMENT **CME 75 HSA** BY: **A. SHOASHEKAN**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT*)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SP	**UNDOCUMENTED FILL (afu)** Poorly-graded SAND, medium dense, slightly moist, light olive to gray brown; fine to medium sand; grass at surface			
2	HSA-3@2.5				-Rootlets	18		
4								
6	HSA-3@5			SM	**YOUNG ALLUVIAL FAN DEPOSITS (Qal)** Poorly-graded SAND, loose, gray; porous; sandy Clay lense; rootlets	14		
8	HSA-3@7.5			ML	SILT, stiff, wet, olive gray; fine sand; porous; mottling	15		
10	HSA-3@10				-Becomes firm, moist; increase sand content; oxidation staining	8		
12	HSA-3@12.5				-Olive gray poorly-graded SAND lense	11		
14								
16	HSA-3@15			SM	Silty SAND, medium dense, moist, grayish brown; fine to medium sand; trace oxidized staining	27		
18								
20	HSA-3@20			SP	Poorly-graded SAND, medium dense, wet, olive gray -Becomes wet	34	98.6	23.3
22			▽		-Becomes saturated			
24				SM	Silty SAND, medium dense, moist, grayish brown; fine to medium sand; trace oxidized staining			
26	HSA-3@25				-Becomes loose	6		
28								
				SP-SM	Silty to Poorly-graded SAND, medium dense; olive gray sandy SILT lense;			

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Figure A-3,
Log of Boring HSA-3, Page 1 of 2

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

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PROJECT NO. T2990-22-01

BORING HSA-3

ELEV. (MSL.) **-76** DATE COMPLETED **6/27/2022**

EQUIPMENT **CME 75 HSA** BY: **A. SHOASHEKAN**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT*)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
30	HSA-3@30				fine to medium sand with little coarse sand	37		
32								
34								
36	HSA-3@35					20		
38								
40	HSA-3@40			SM	Silty SAND, medium dense, moist, olive gray; fine to medium sand; micaceous	22		
42								
44								
46	HSA-3@45				-Small shells	19		
48								
50	HSA-3@50					33		
					Total Depth = 51.5' Groundwater encountered at 21.8' Penetration resistance for 140-lb hammer falling 30 inches by auto hammer Backfilled with cuttings 6/27/2022			

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Figure A-3,
Log of Boring HSA-3, Page 2 of 2

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

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GEOCON

PROJECT NO. T2990-22-01

BORING HSA-4

ELEV. (MSL.) **-78** DATE COMPLETED **6/27/2022**

EQUIPMENT **CME 75 HSA** BY: **A. SHOASHEKAN**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT*)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SP-SM	**UNDOCUMENTED FILL (afu)** Poorly-graded SAND with Silt, medium dense, moist, light gray brown to olive brown; fine to medium sand; micaceous; grass at surface			
2	BHSA-HSA-4@2.5'			SM	**YOUNG ALLUVIAL FAN DEPOSITS (Qal)** Silty SAND, medium dense, slightly moist, light gray to olive brown; fine sand; trace pores; trace mica	22	92.7	
4	HSA-4@5			SP	Poorly-graded SAND, medium dense, slightly moist, light gray; fine to medium sand	27		
6	HSA-4@7.5			SM	Silty SAND, loose, moist, light olive gray; fine sand; shells; micaceous; trace clay	10	86.8	22.9
8	HSA-4@10					9	103.9	19.9
10				CH	Sandy CLAY, firm, moist, olive gray; fine sand; shells; porous; oxidized staining			
12	HSA-4@12.5			SP	Poorly-graded SAND, medium dense, moist, light gray; fine to medium sand	21	92.2	8.4
14	HSA-4@15				-Becomes slightly moist	36		
16					Total Depth = 16.5' Groundwater not encountered Penetration resistance for 140-lb hammer falling 30 inches by auto hammer Backfilled with cuttings 6/27/2022			

T2990-22-01 BORING LOGS.GPJ

Figure A-4,
Log of Boring HSA-4, Page 1 of 1

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T2990-22-01

BORING HSA-5

ELEV. (MSL.) **-80** DATE COMPLETED **6/27/2022**

EQUIPMENT **CME 75 HSA** BY: **A. SHOASHEKAN**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT*)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SP-SM	**UNDOCUMENTED FILL (afu)** Poorly-graded SAND with Silt, medium dense, moist, light olive brown; fine to medium sand; grass at surface			
2	HSA-5@2.5				-Becomes porous; rootlets	17		
4				SM	**YOUNG ALLUVIAL FAN DEPOSITS (Qal)** Silty SAND, loose, moist, olive brown; fine to medium sand; rootlets			
6	HSA-5@5			SP	Poorly-graded SAND, loose, moist, light olive brown; fine to medium sand; trace pores	15	96.3	5.3
8	HSA-5@7.5				-Snail shells; trace oxidation staining	12		
10	HSA-5@10			SM	Silty SAND, loose, moist, light olive gray; fine to medium sand; oxidized stainin; shells; trace pores	13		
12	HSA-5@12.5			SP	Poorly-graded SAND, medium dense, moist, light gray brown; fine sand	37		
14	HSA-5@15				-Trace shells	34		
16					Total Depth = 16.5' Groundwater not encountered Penetration resistance for 140-lb hammer falling 30 inches by auto hammer Backfilled with cuttings 6/27/2022			

T2990-22-01 BORING LOGS.GPJ

Figure A-5,
Log of Boring HSA-5, Page 1 of 1

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T2990-22-01

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	**BORING P-1** ELEV. (MSL.) **-76** DATE COMPLETED **6/27/2022** EQUIPMENT **CME 75 HSA** BY: **A. SHOASHEKAN**	PENETRATION RESISTANCE (BLOWS/FT*)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					MATERIAL DESCRIPTION			
0				SP	**UNDOCUMENTED FILL (afu)** Poorly-graded SAND with Silt, medium dense, moist, light olive brown; fine to medium sand; grass at surface; porous			
2								
4								
					Total Depth = 5' No Groundwater encountered Percolation Test Equipment set Presaturated with 5 gallons of water Backfilled with cuttings 6/28/2022			

T2990-22-01 BORING LOGS.GPJ

Figure A-6,
Log of Boring P-1, Page 1 of 1

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T2990-22-01

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	**BORING P-2** ELEV. (MSL.) **-80** DATE COMPLETED **6/27/2022** EQUIPMENT **CME 75 HSA** BY: **A. SHOASHEKAN**	PENETRATION RESISTANCE (BLOWS/FT*)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					MATERIAL DESCRIPTION			
0				SP	**UNDOCUMENTED FILL (afu)** Poorly-graded SAND, dense, moist, light gray to olive brown; fine to medium sand			
2					-Becomes loose			
4				SM	**YOUNG ALLUVIAL FAN DEPOSITS (Qal)** Silty SAND, loose, moist, light gray; fine to medium sand			
					Total Depth = 5' No Groundwater encountered Percolation Test Equipment set Presaturated with 5 gallons of water Backfilled with cuttings 6/28/2022			

T2990-22-01 BORING LOGS.GPJ

Figure A-7,
Log of Boring P-2, Page 1 of 1

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T2990-22-01

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	**BORING P-3** ELEV. (MSL.) **-78** DATE COMPLETED **6/27/2022** EQUIPMENT **CME 75 HSA** BY: **A. SHOASHEKAN**	PENETRATION RESISTANCE (BLOWS/FT*)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					MATERIAL DESCRIPTION			
0				SP-SM	**UNDOCUMENTED FILL (afu)** Poorly-graded SAND with Silt, medium dense, moist, light gray to olive brown; fine to medium sand			
2				ML	**YOUNG ALLUVIAL FAN DEPOSITS (Qal)** Sandy SILT, stiff, slightly moist, light gray to olive brown; fine to medium sand			
4					Total Depth = 5' No Groundwater encountered Percolation Test Equipment set Presaturated with 5 gallons of water Backfilled with cuttings 6/28/2022			

T2990-22-01 BORING LOGS.GPJ

Figure A-8,
Log of Boring P-3, Page 1 of 1

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T2990-22-01

BORING P-4

ELEV. (MSL.) **-78** DATE COMPLETED **6/27/2022**

EQUIPMENT **CME 75 HSA** BY: **A. SHOASHEKAN**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT*)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SP	**UNDOCUMENTED FILL (afu)** Poorly-graded SAND, medium dense, moist, light yellow brown; fine to medium sand			
2								
				SP	**YOUNG ALLUVIAL FAN DEPOSITS (Qal)** Poorly-graded SAND, medium dense, dry, light gray brown; fine to medium sand			
4								
					Total Depth = 5' No Groundwater encountered Percolation Test Equipment set Presaturated with 5 gallons of water Backfilled with cuttings 6/28/2022			

T2990-22-01 BORING LOGS.GPJ

Figure A-9,
Log of Boring P-4, Page 1 of 1

SAMPLE SYMBOLS

☐ ... SAMPLING UNSUCCESSFUL ◧ ... STANDARD PENETRATION TEST ■ ... DRIVE SAMPLE (UNDISTURBED)

⊠ ... DISTURBED OR BAG SAMPLE ◪ ... CHUNK SAMPLE ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

Kehoe Testing and Engineering
714-901-7270
steve@kehoetesting.com
www.kehoetesting.com

Project: Geocon West / Rancho Polo
Location: 82800 58th Ave, Thermal, CA

CPT-1
Total depth: 50.34 ft, Date: 6/22/2022

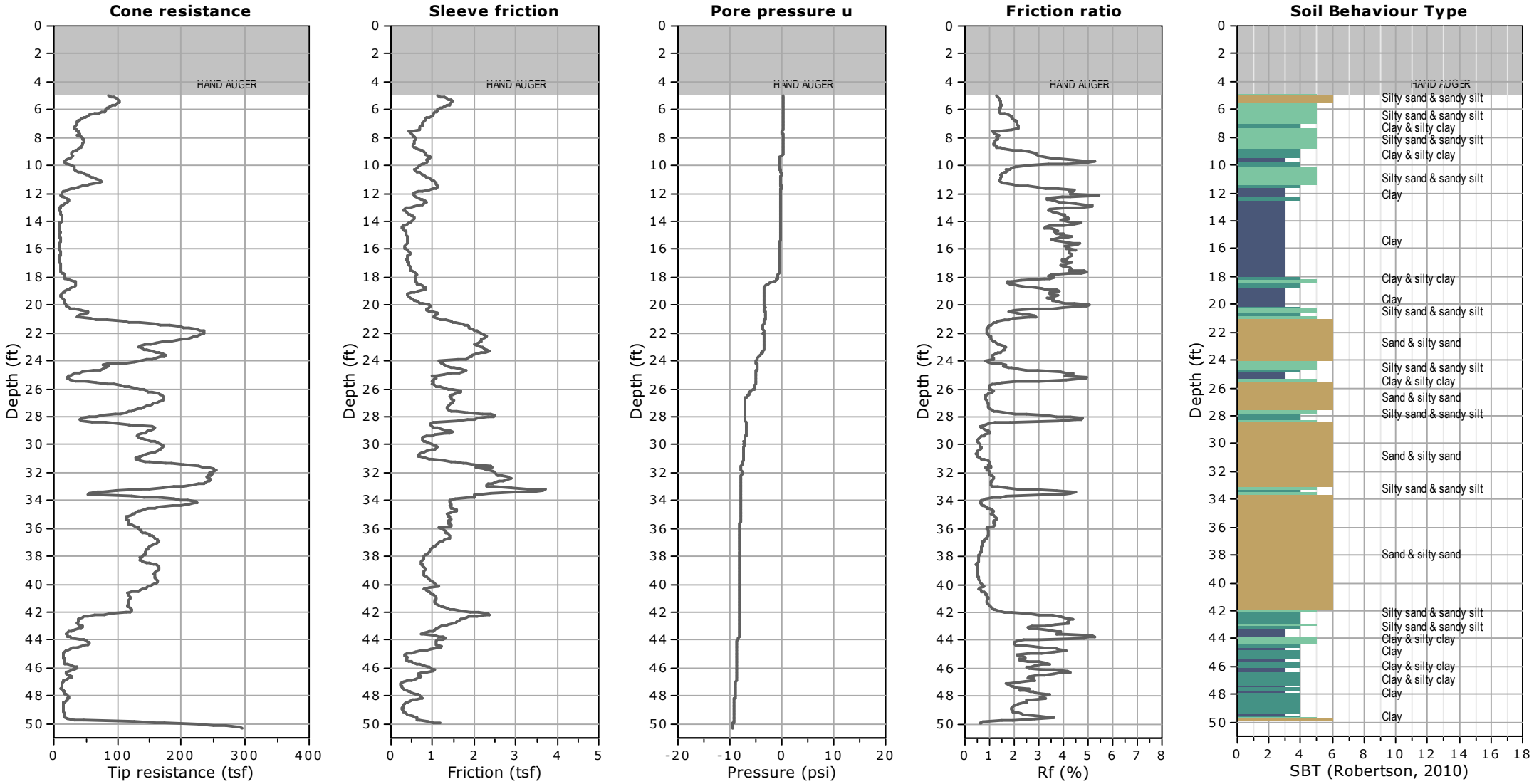


FIGURE A-10

Kehoe Testing and Engineering
714-901-7270
steve@kehoetesting.com
www.kehoetesting.com

Project: Geocon West / Rancho Polo
Location: 82800 58th Ave, Thermal, CA

CPT-2
Total depth: 50.14 ft, Date: 6/22/2022

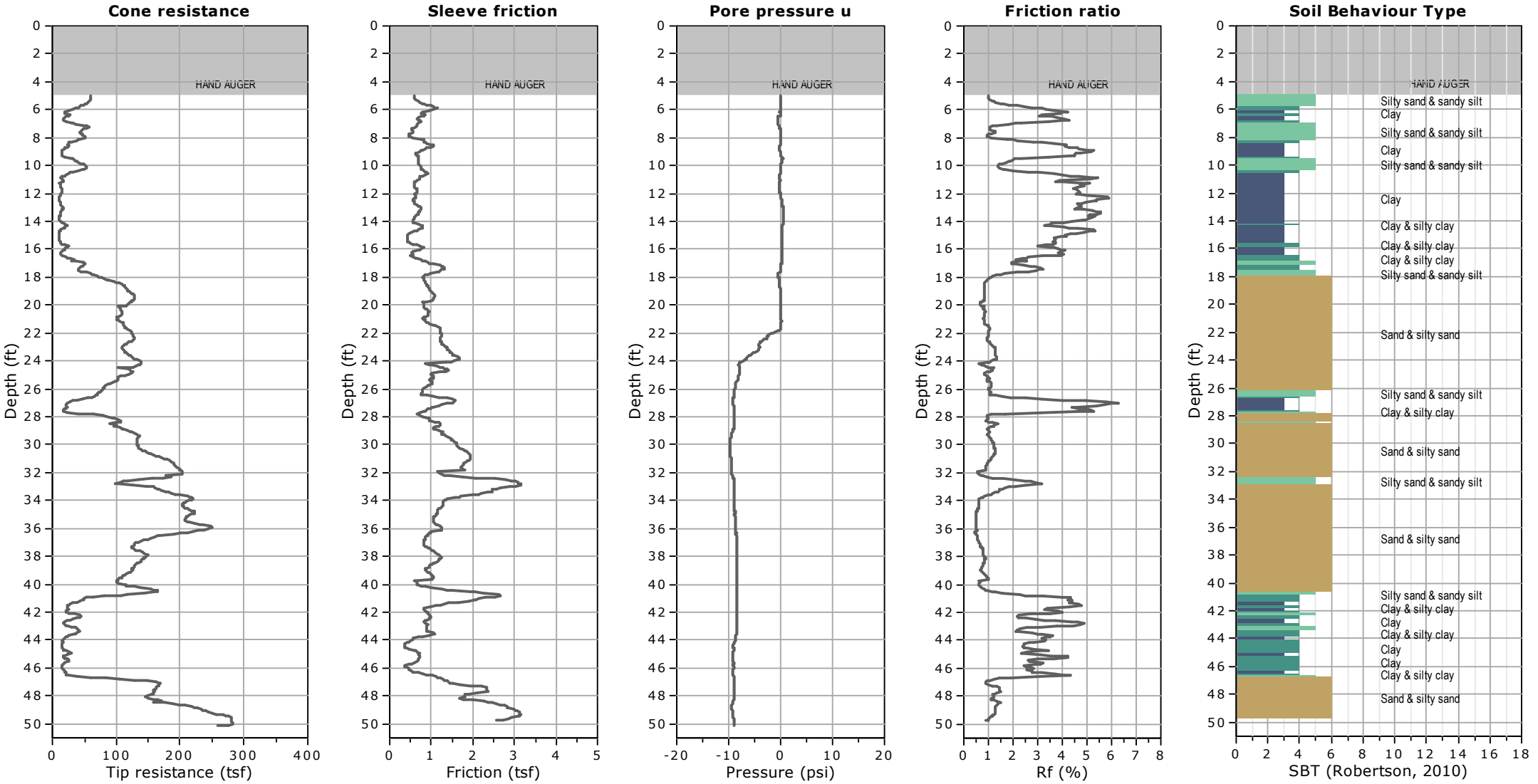


FIGURE A-11

Kehoe Testing and Engineering
714-901-7270
steve@kehoetesting.com
www.kehoetesting.com

Project: Geocon West / Rancho Polo
Location: 82800 58th Ave, Thermal, CA

CPT-3
Total depth: 50.24 ft, Date: 6/22/2022

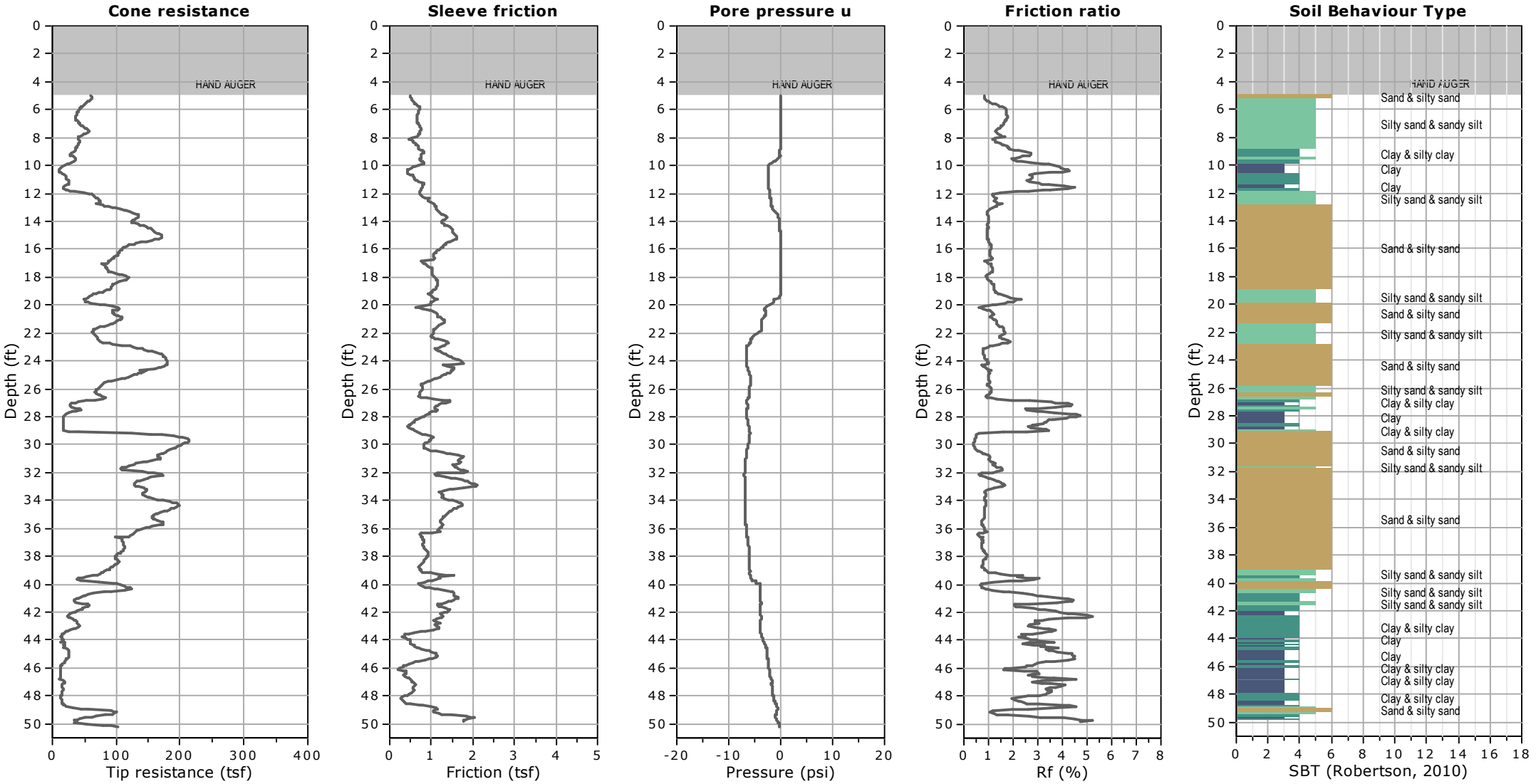


FIGURE A-12

Kehoe Testing and Engineering
714-901-7270
steve@kehoetesting.com
www.kehoetesting.com

Project: Geocon West / Rancho Polo
Location: 82800 58th Ave, Thermal, CA

CPT-4
Total depth: 50.29 ft, Date: 6/22/2022

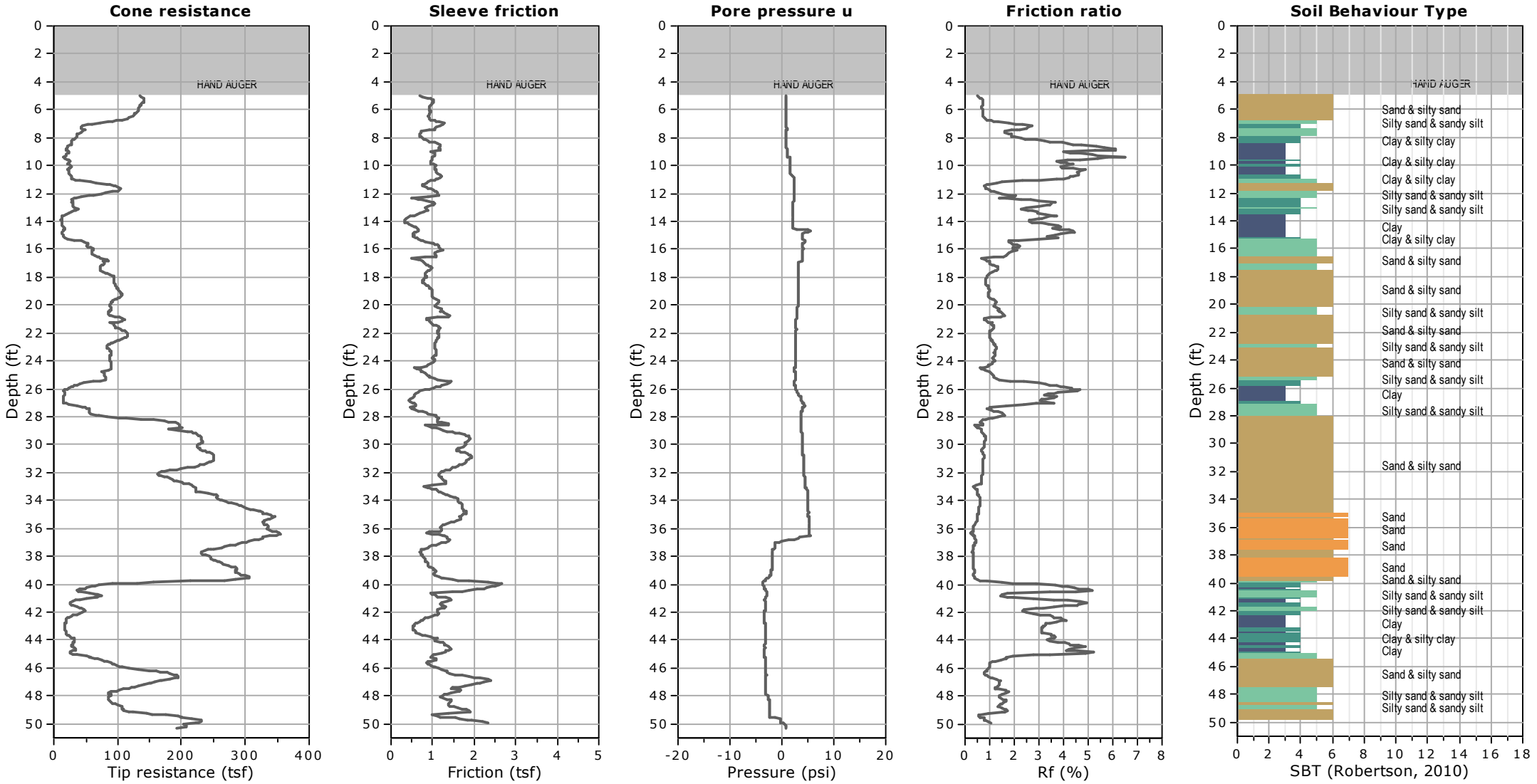


FIGURE A-13

APPENDIX B

APPENDIX B

LABORATORY TESTING

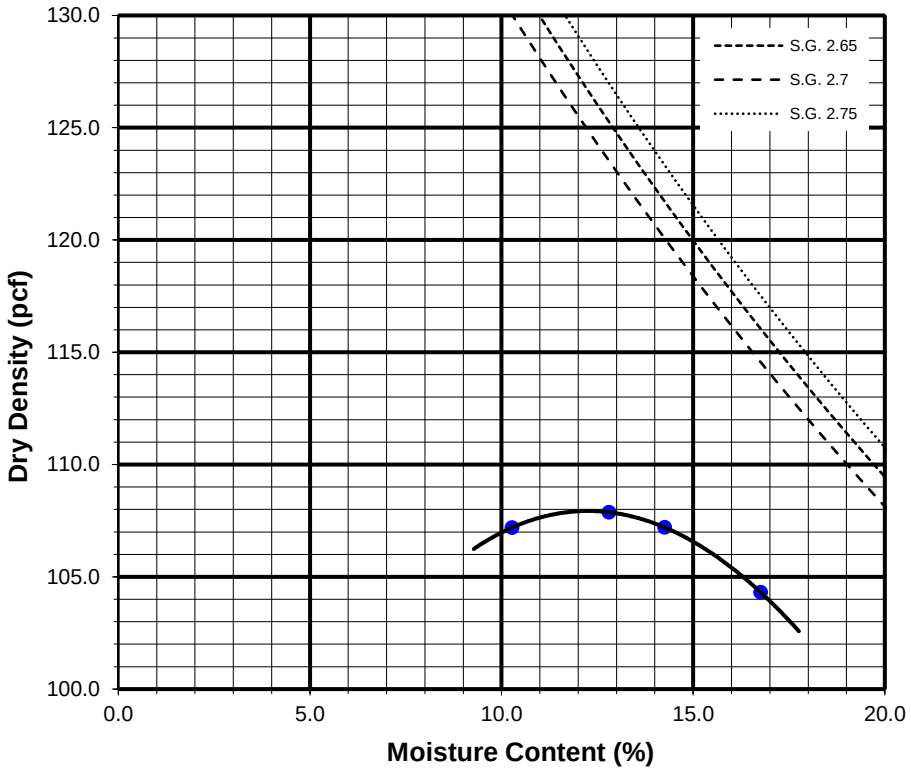
We performed laboratory tests in accordance with current, generally accepted test methods of ASTM International (ASTM) or other suggested procedures. We analyzed selected soil samples for maximum dry density and optimum moisture content, expansion potential, corrosion potential, consolidation characteristics, and direct shear strength. The results of the laboratory tests are presented on Figures B-1 through B-23.

Sample No:

HSA2@0-5	Poorly Graded SAND (SP), gray

TEST NO.		1	2	3	4	5	6
Wt. Compacted Soil + Mold	(g)	6050	6103	6115	6104		
Weight of Mold	(g)	4265	4265	4265	4265		
Net Weight of Soil	(g)	1786	1838	1850	1840		
Wet Weight of Soil + Cont.	(g)	579.9	565.1	622.7	600.6		1311.8
Dry Weight of Soil + Cont.	(g)	549.9	530.3	577.1	551.6		1284.9
Weight of Container	(g)	257.9	258.5	257.2	259.2		257.6
Moisture Content	(%)	10.3	12.8	14.3	16.8		2.6
Wet Density	(pcf)	118.2	121.7	122.5	121.8		
Dry Density	(pcf)	107.2	107.9	107.2	104.3		0.0

Maximum Dry Density (pcf)	**108.0**	**Optimum Moisture Content (%)**	**13.0**



Preparation Method: A

GEOCON

COMPACTION CHARACTERISTICS USING MODIFIED EFFORT TEST RESULTS

ASTM D-1557

Checked by:

Project No.: T2990-22-01

RANCHO POLO EQUESTRIAN CLUB
NEC AVENUE 58 & OASIS STREET
THERMAL, CALIFORNIA

Jul 22 Figure B-1

HSA-2@0-5

MOLDED SPECIMEN		BEFORE TEST	AFTER TEST
Specimen Diameter	(in.)	4.0	4.0
Specimen Height	(in.)	1.0	1.0
Wt. Comp. Soil + Mold	(gm)	560.8	587.8
Wt. of Mold	(gm)	196.0	196.0
Specific Gravity	(Assumed)	2.7	2.7
Wet Wt. of Soil + Cont.	(gm)	555.7	587.8
Dry Wt. of Soil + Cont.	(gm)	521.2	322.8
Wt. of Container	(gm)	255.7	196.0
Moisture Content	(%)	13.0	21.4
Wet Density	(pcf)	110.0	118.0
Dry Density	(pcf)	97.4	97.3
Void Ratio		0.7	0.7
Total Porosity		0.4	0.4
Pore Volume	(cc)	87.4	87.1
Degree of Saturation	(%) [S_{meas}]	48.4	79.2

Date	Time	Pressure (psi)	Elapsed Time (min)	Dial Readings (in.)
6/30/2022	10:00	1.0	0	0.3229
6/30/2022	10:10	1.0	10	0.3228
Add Distilled Water to the Specimen				
7/1/2022	10:00	1.0	1430	0.3213
7/1/2022	11:00	1.0	1490	0.3213

Expansion Index (EI meas) =	-1.5
Expansion Index (Report) =	**0**

Expansion Index, EI_{50}	CBC CLASSIFICATION *	UBC CLASSIFICATION **
0-20	Non-Expansive	Very Low
21-50	Expansive	Low
51-90	Expansive	Medium
91-130	Expansive	High
>130	Expansive	Very High

* Reference: 2019 California Building Code, Section 1803.5.3

** Reference: 1997 Uniform Building Code, Table 18-I-B.

GEOCON

EXPANSION INDEX TEST RESULTS

ASTM D-4829

Checked by:

Project No.: T2990-22-01

RANCHO POLO EQUESTRIAN CLUB
NEC AVENUE 58 & OASIS STREET
THERMAL, CALIFORNIA

Jul 22 Figure B-2

SUMMARY OF LABORATORY
POTENTIAL OF HYDROGEN (pH) AND RESISTIVITY TEST RESULTS
AASHTO T289 ASTM D4972 and AASHTO T288 ASTM G187

Sample No.	pH	Resistivity (ohm centimeters)
HSA-2@0-5	8.4	5300

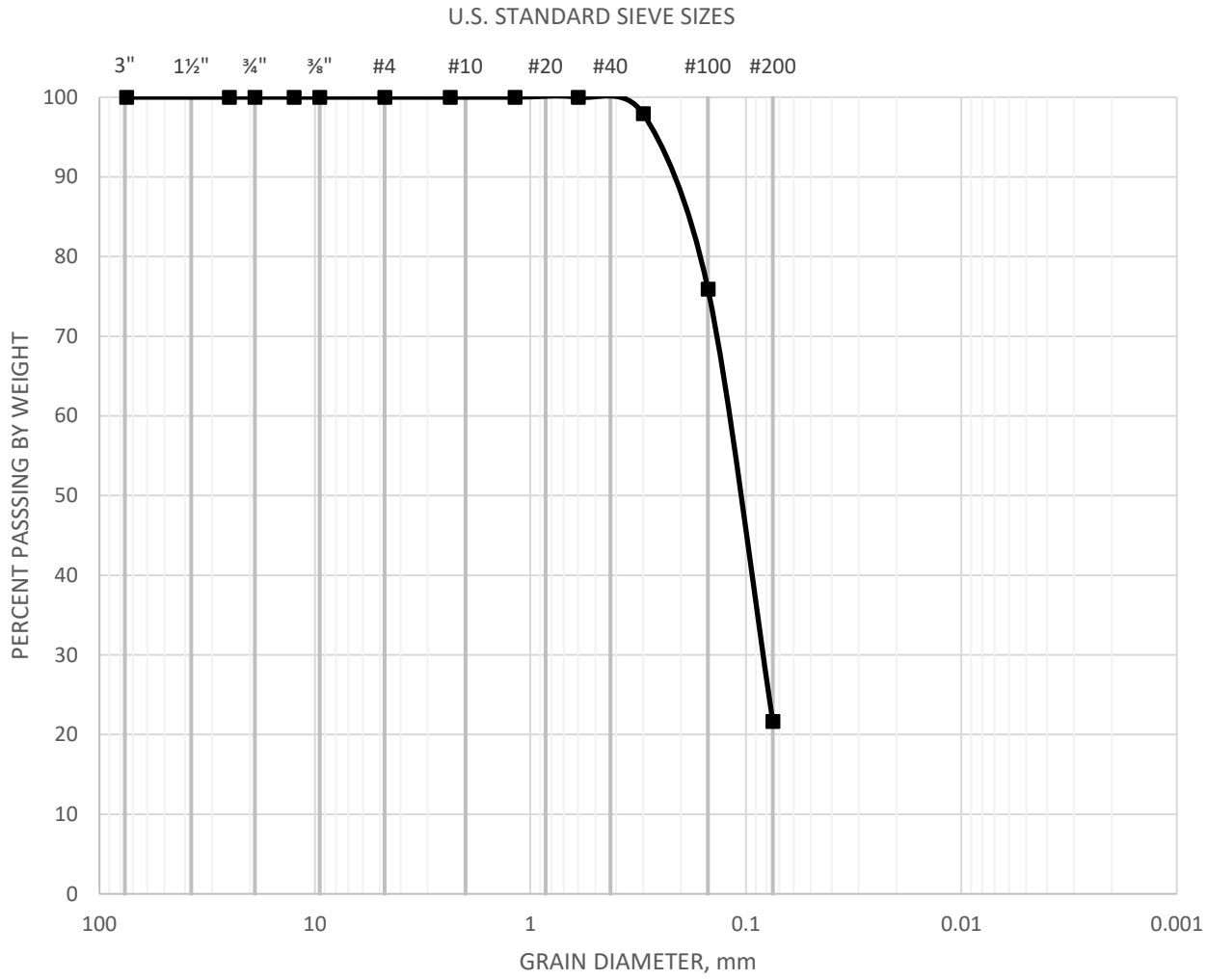
SUMMARY OF LABORATORY CHLORIDE CONTENT TEST RESULTS
AASHTO T291 ASTM C1218

Sample No.	Chloride Ion Content (%)
HSA-2@0-5	0.014

SUMMARY OF LABORATORY WATER SOLUBLE SULFATE TEST RESULTS
AASHTO T290 ASTM C1580

Sample No.	Water Soluble Sulfate (% SO_4)	Sulfate Exposure
HSA-2@0-5	0.000	S0

GRAVEL		SAND			SILT AND CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	



SAMPLE	CLASSIFICATION	D60	D30	D10
HSA-3@5	Silty SAND (SM), gray	0.11	0.081	0.073

GEOCON

GRAIN SIZE DISTRIBUTION

ASTM D 6913

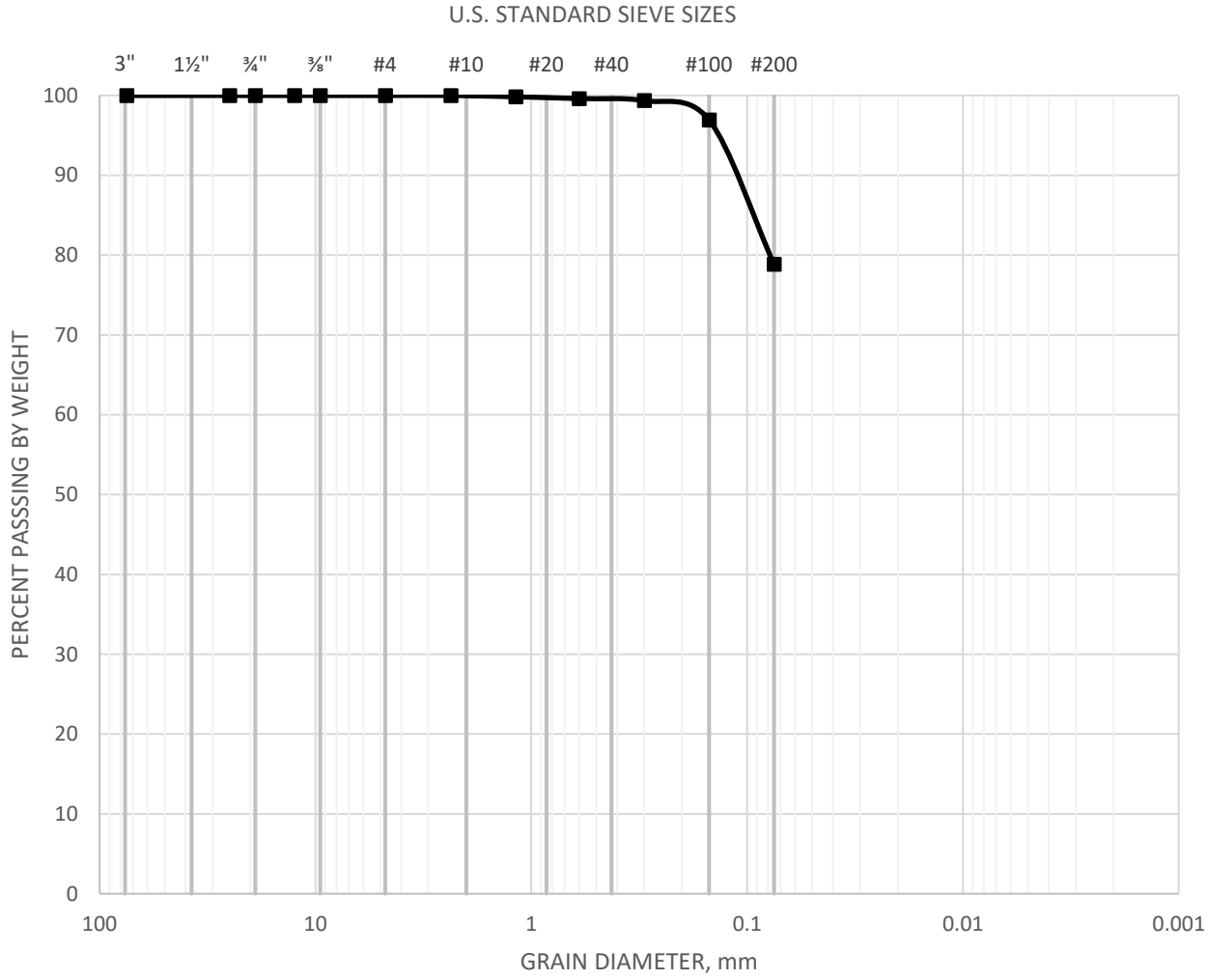
Checked by:

Project No.: T2990-22-01

RANCHO POLO EQUESTRIAN CLUB
NEC AVENUE 58 & OASIS STREET
THERMAL, CALIFORNIA

Jul 22 Figure B-4

GRAVEL		SAND			SILT AND CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	



SAMPLE	CLASSIFICATION	D60	D30	D10
HSA-3@7.5	SILT with Sand (ML)s, olive brown	0.073	0.073	0.073

GEOCON

GRAIN SIZE DISTRIBUTION

ASTM D 6913

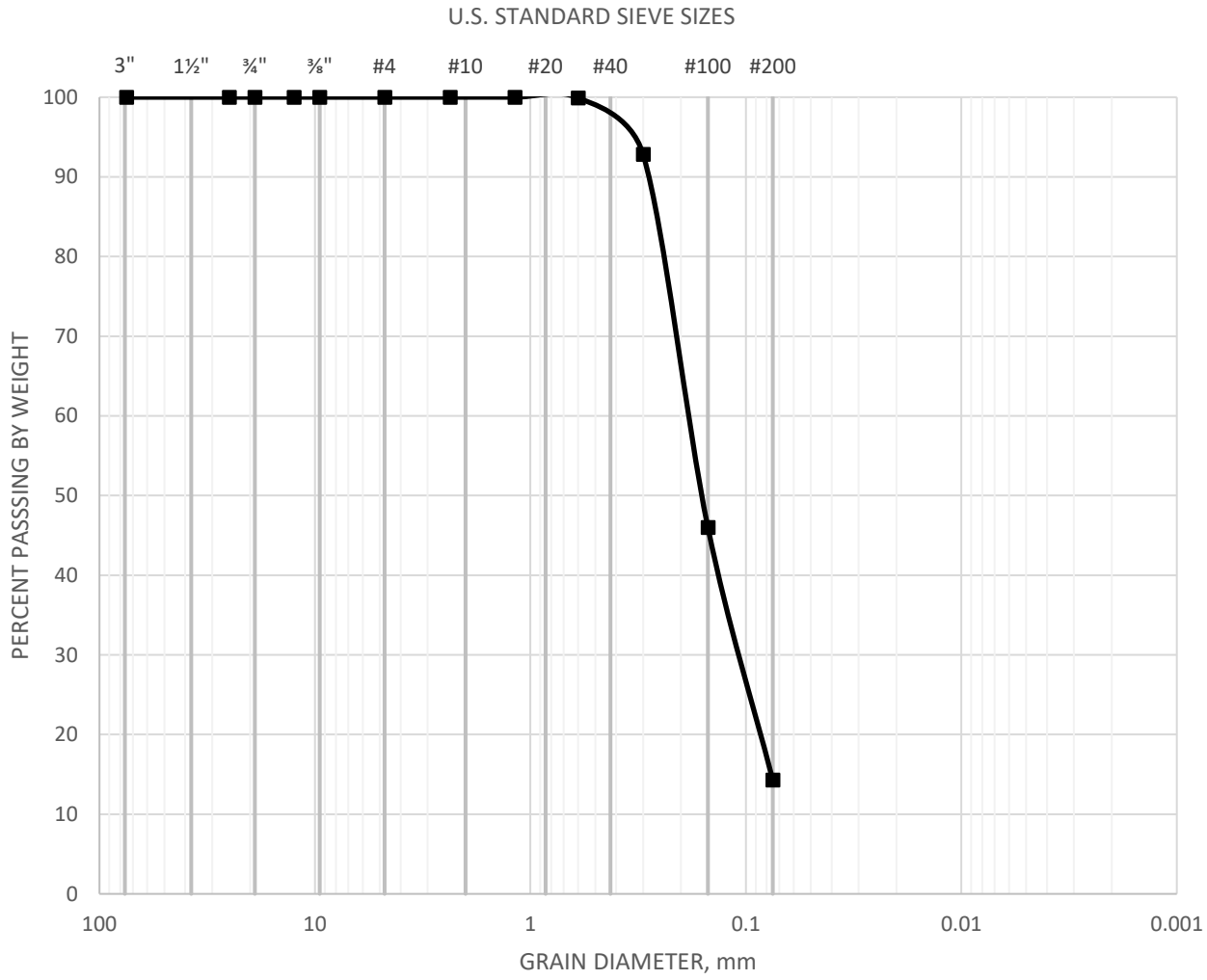
Checked by:

Project No.: T2990-22-01

RANCHO POLO EQUESTRIAN CLUB
NEC AVENUE 58 & OASIS STREET
THERMAL, CALIFORNIA

Jul 22 Figure B-5

GRAVEL		SAND			SILT AND CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	



SAMPLE	CLASSIFICATION	D60	D30	D10
HSA-3@15	Silty SAND (SM), grayish brown	0.19	0.11	0.073

GEOCON

GRAIN SIZE DISTRIBUTION

ASTM D 6913

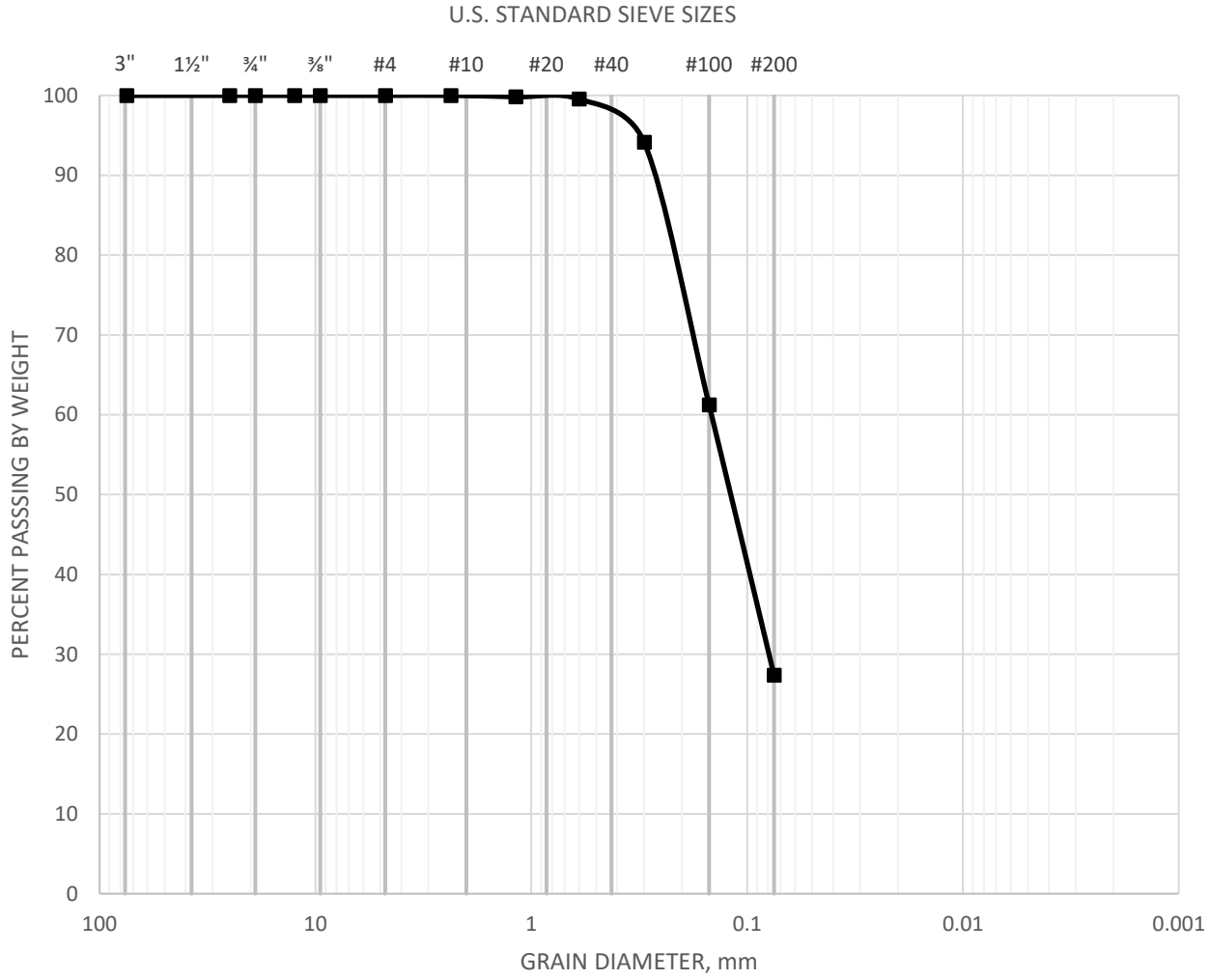
Checked by:

Project No.: T2990-22-01

RANCHO POLO EQUESTRIAN CLUB
NEC AVENUE 58 & OASIS STREET
THERMAL, CALIFORNIA

Jul 22 Figure B-6

GRAVEL		SAND			SILT AND CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	



SAMPLE	CLASSIFICATION	D60	D30	D10
HSA-3@25	Silty SAND (SM), grayish brown	0.14	0.08	0.073

GEOCON

GRAIN SIZE DISTRIBUTION

ASTM D 6913

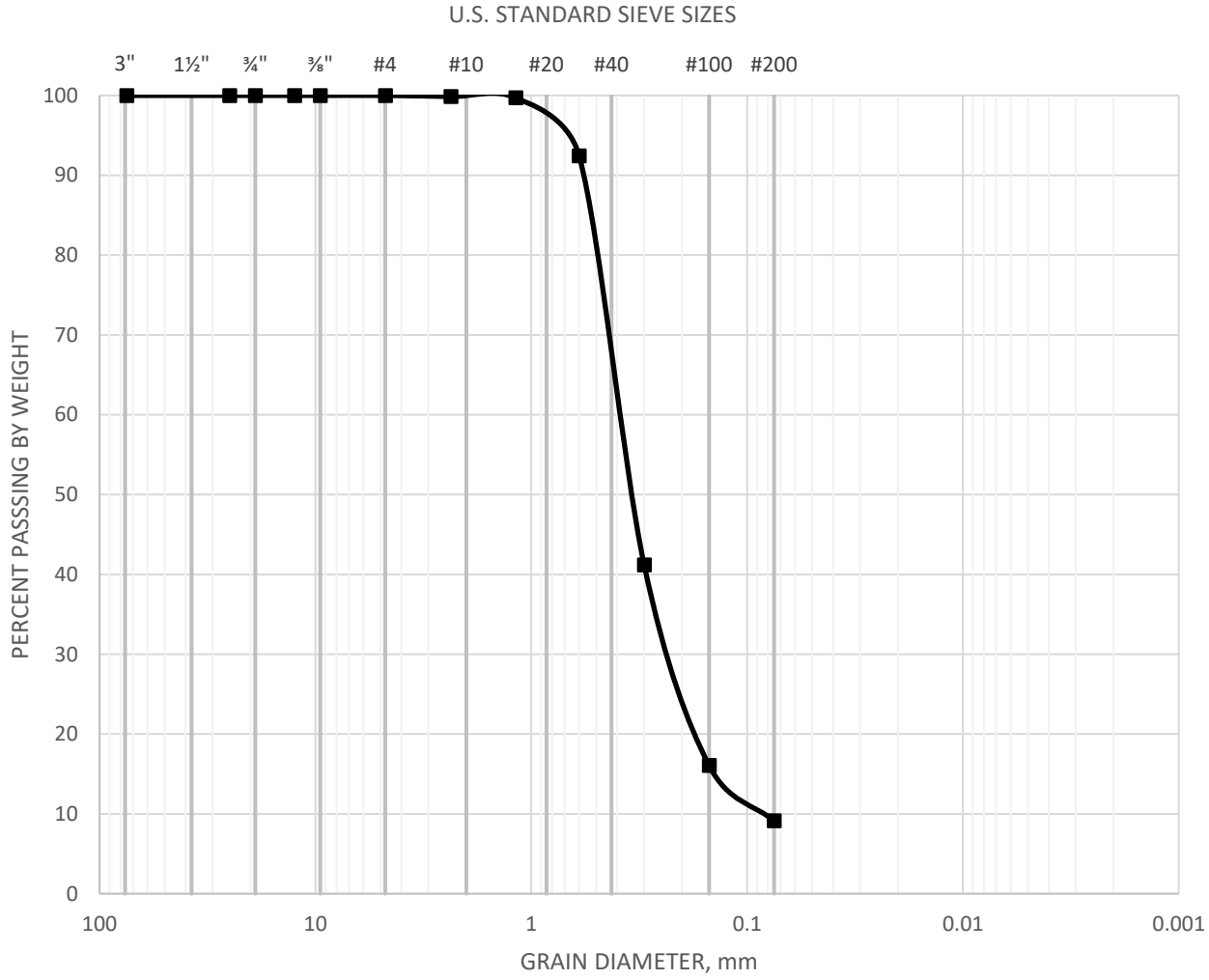
Checked by:

Project No.: T2990-22-01

RANCHO POLO EQUESTRIAN CLUB
NEC AVENUE 58 & OASIS STREET
THERMAL, CALIFORNIA

Jul 22 Figure B-7

GRAVEL		SAND			SILT AND CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	



SAMPLE	CLASSIFICATION	D60	D30	D10
HSA-3@35	Poorly Graded SAND with Silt (SP-SM), gray	0.39	0.22	0.083

GEOCON

GRAIN SIZE DISTRIBUTION

ASTM D 6913

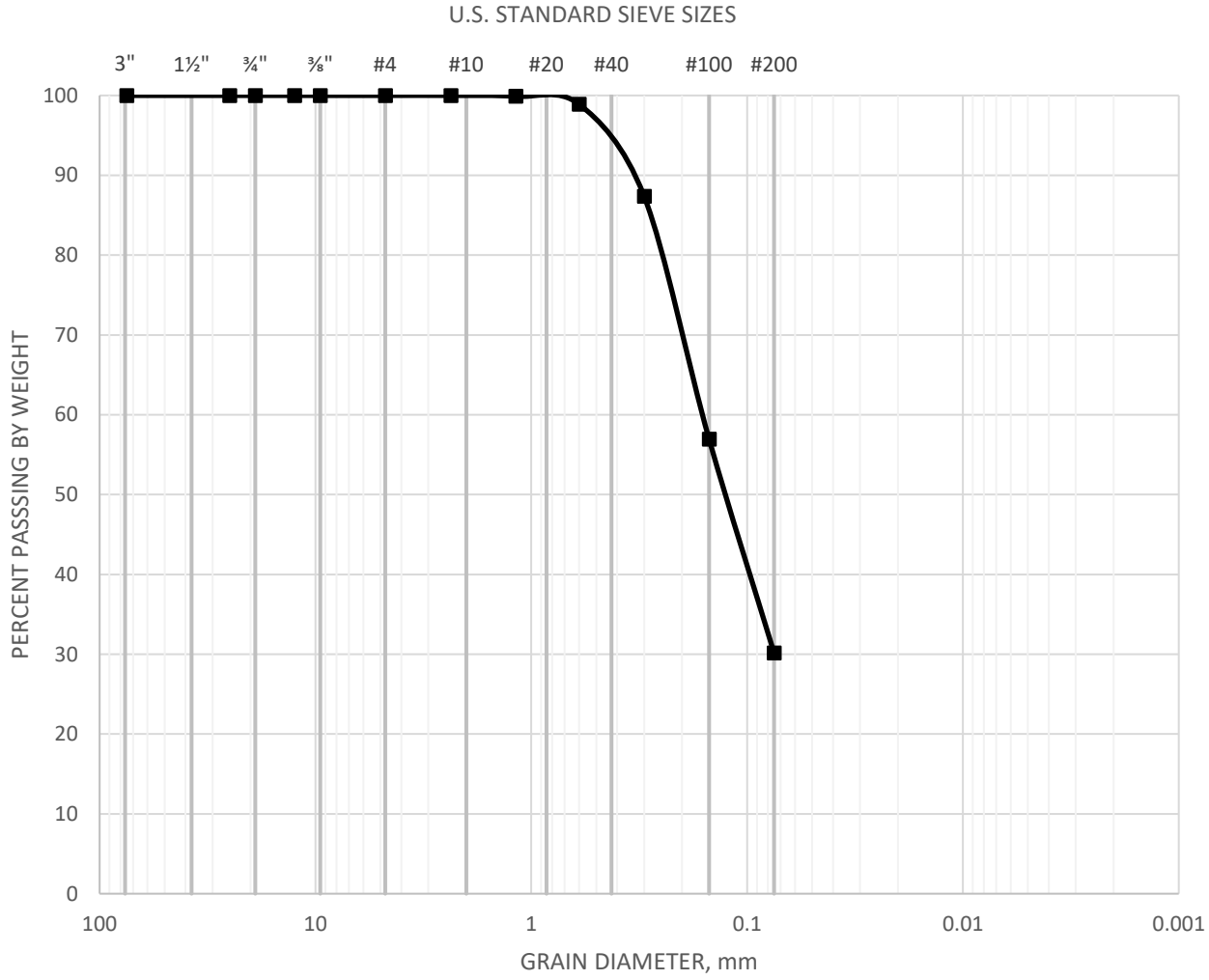
Checked by:

Project No.: T2990-22-01

RANCHO POLO EQUESTRIAN CLUB
NEC AVENUE 58 & OASIS STREET
THERMAL, CALIFORNIA

Jul 22 Figure B-8

GRAVEL		SAND			SILT AND CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	



SAMPLE	CLASSIFICATION	D60	D30	D10
HSA-3@45	Silty SAND (SM), olive gray	0.14	0.073	0.073

GEOCON

GRAIN SIZE DISTRIBUTION

ASTM D 6913

Project No.: T2990-22-01

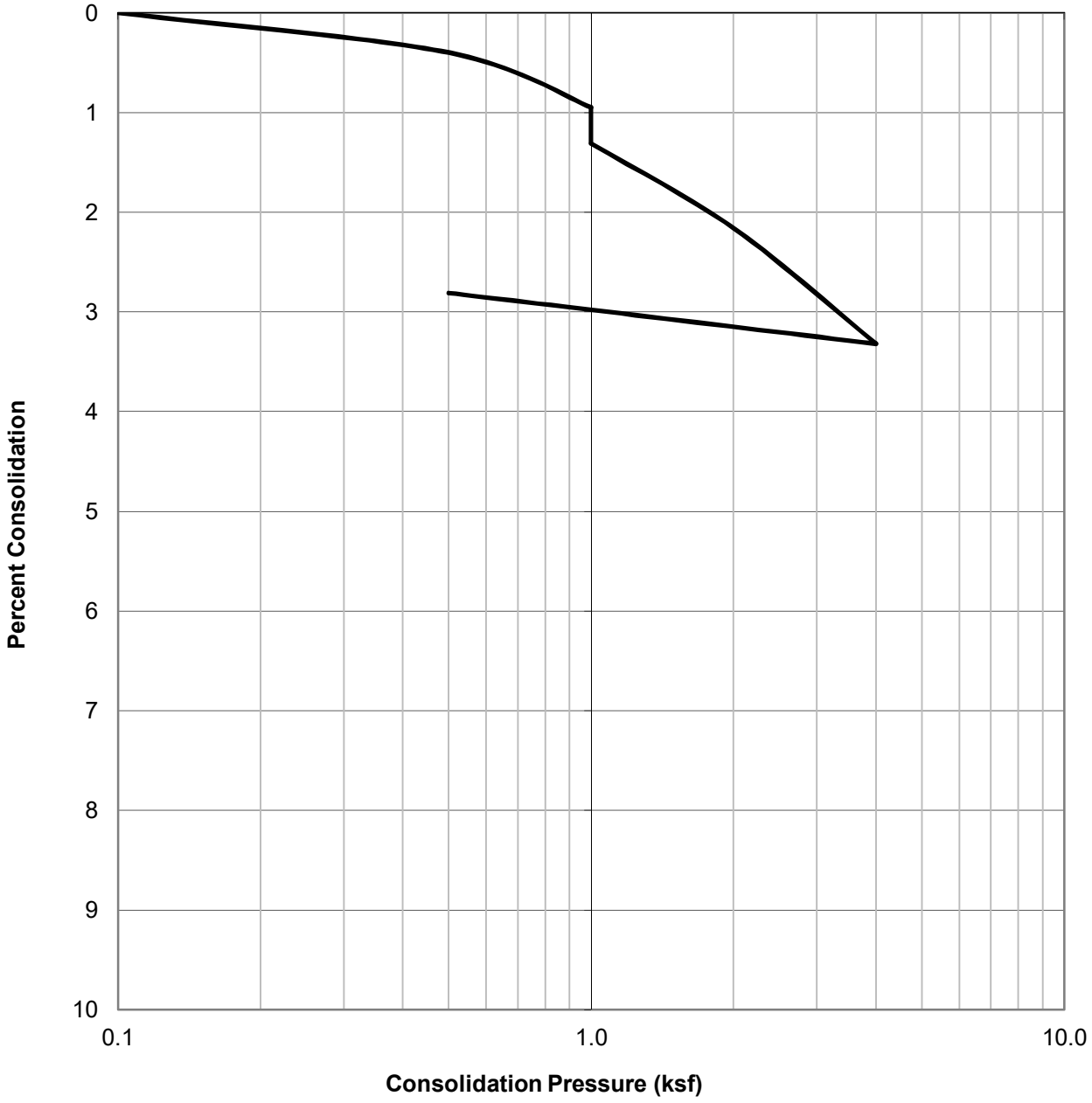
RANCHO POLO EQUESTRIAN CLUB
NEC AVENUE 58 & OASIS STREET
THERMAL, CALIFORNIA

Checked by:

Jul 22

Figure B-9

WATER ADDED AT 1.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
HSA-1@7.5	Poorly Graded SAND (SP)	93.6	17.0	25.8

GEOCON

CONSOLIDATION TEST RESULTS

ASTM D-2435

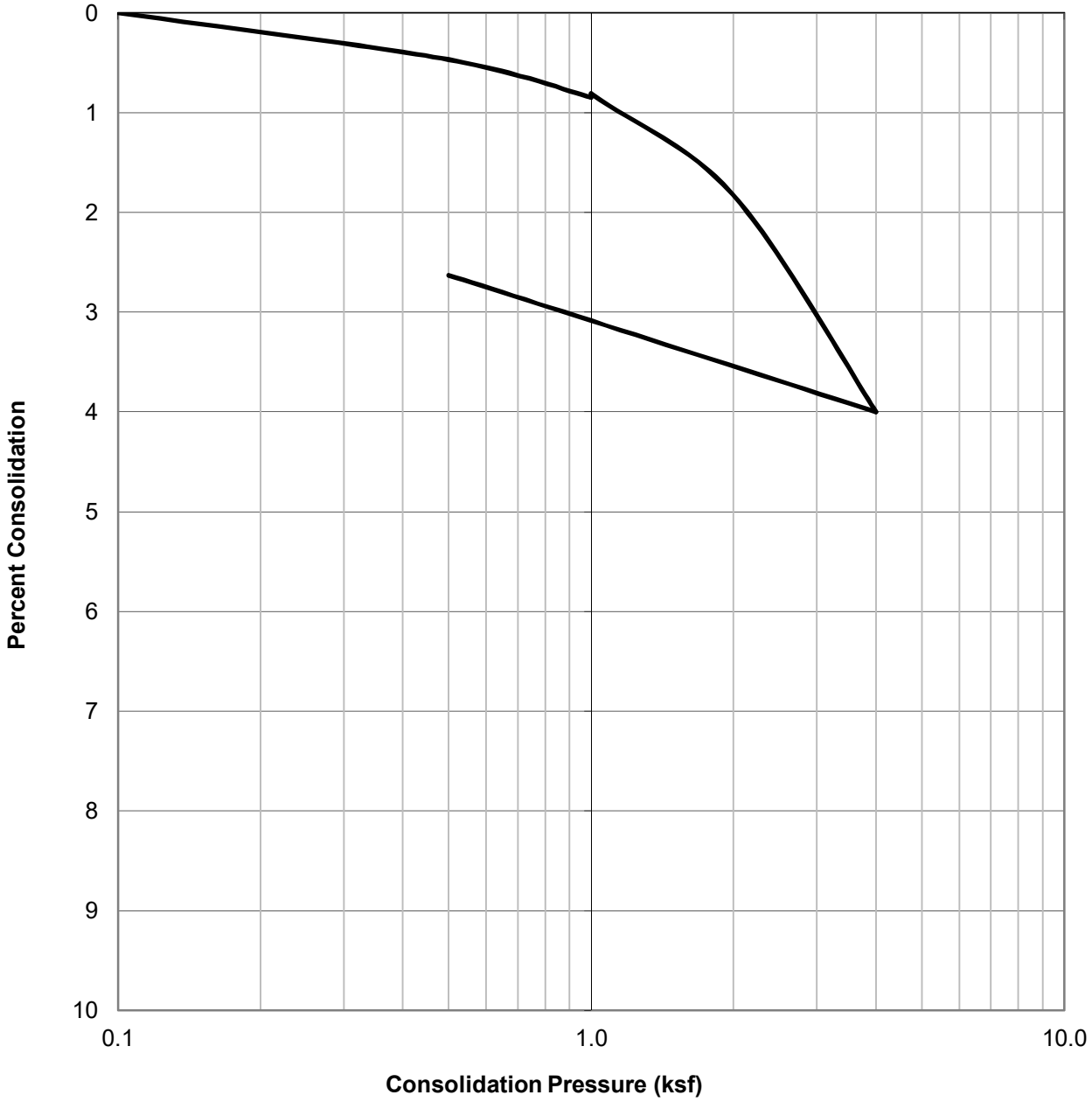
Checked by:

Project No.: T2990-22-01

RANCHO POLO EQUESTRIAN CLUB
NEC AVENUE 58 & OASIS STREET
THERMAL, CALIFORNIA

Jul 22 Figure B-10

WATER ADDED AT 1.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
HSA-1@12.5	Sandy CLAY (CL)	80.4	34.3	39.9

GEOCON

CONSOLIDATION TEST RESULTS

ASTM D-2435

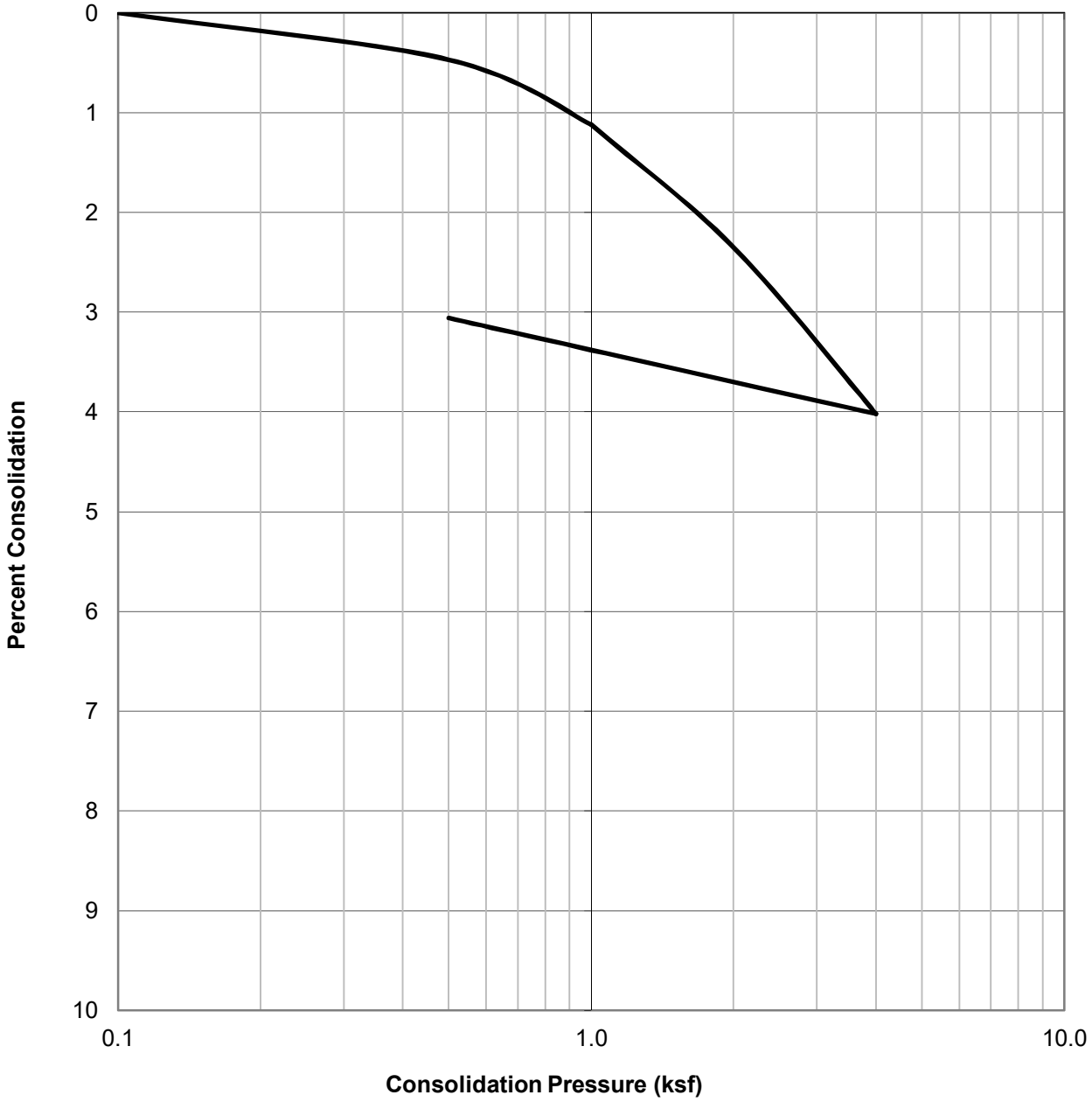
Checked by:

Project No.: T2990-22-01

RANCHO POLO EQUESTRIAN CLUB
NEC AVENUE 58 & OASIS STREET
THERMAL, CALIFORNIA

Jul 22 Figure B-11

WATER ADDED AT 1.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
HSA-1@15	Sandy CLAY (CL)	93.2	27.1	28.5

GEOCON

CONSOLIDATION TEST RESULTS

ASTM D-2435

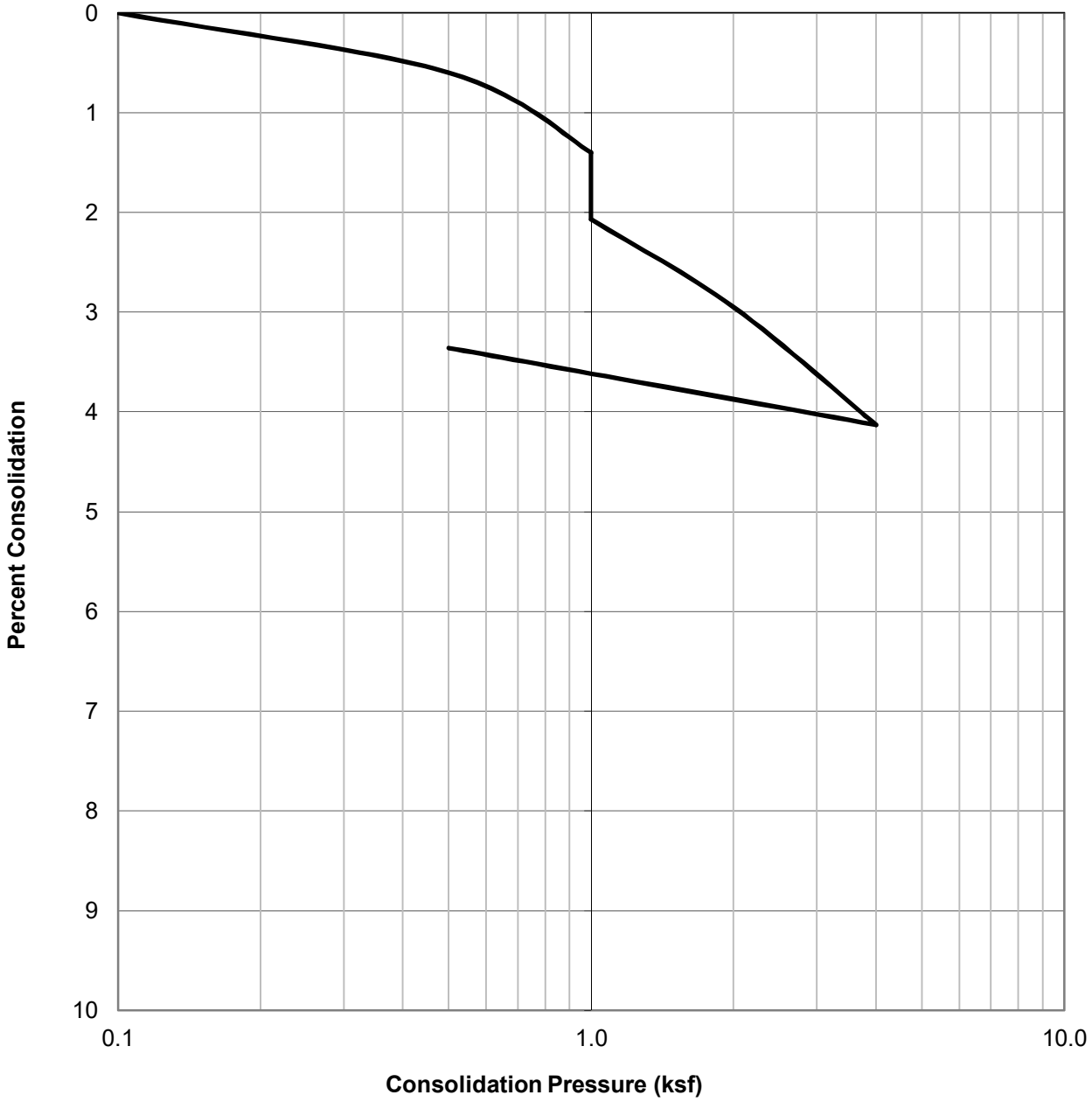
Checked by:

Project No.: T2990-22-01

RANCHO POLO EQUESTRIAN CLUB
NEC AVENUE 58 & OASIS STREET
THERMAL, CALIFORNIA

Jul 22 Figure B-12

WATER ADDED AT 1.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
HSA-2@5	Poorly Graded SAND (SP)	89.6	6.3	29.0

GEOCON

CONSOLIDATION TEST RESULTS

ASTM D-2435

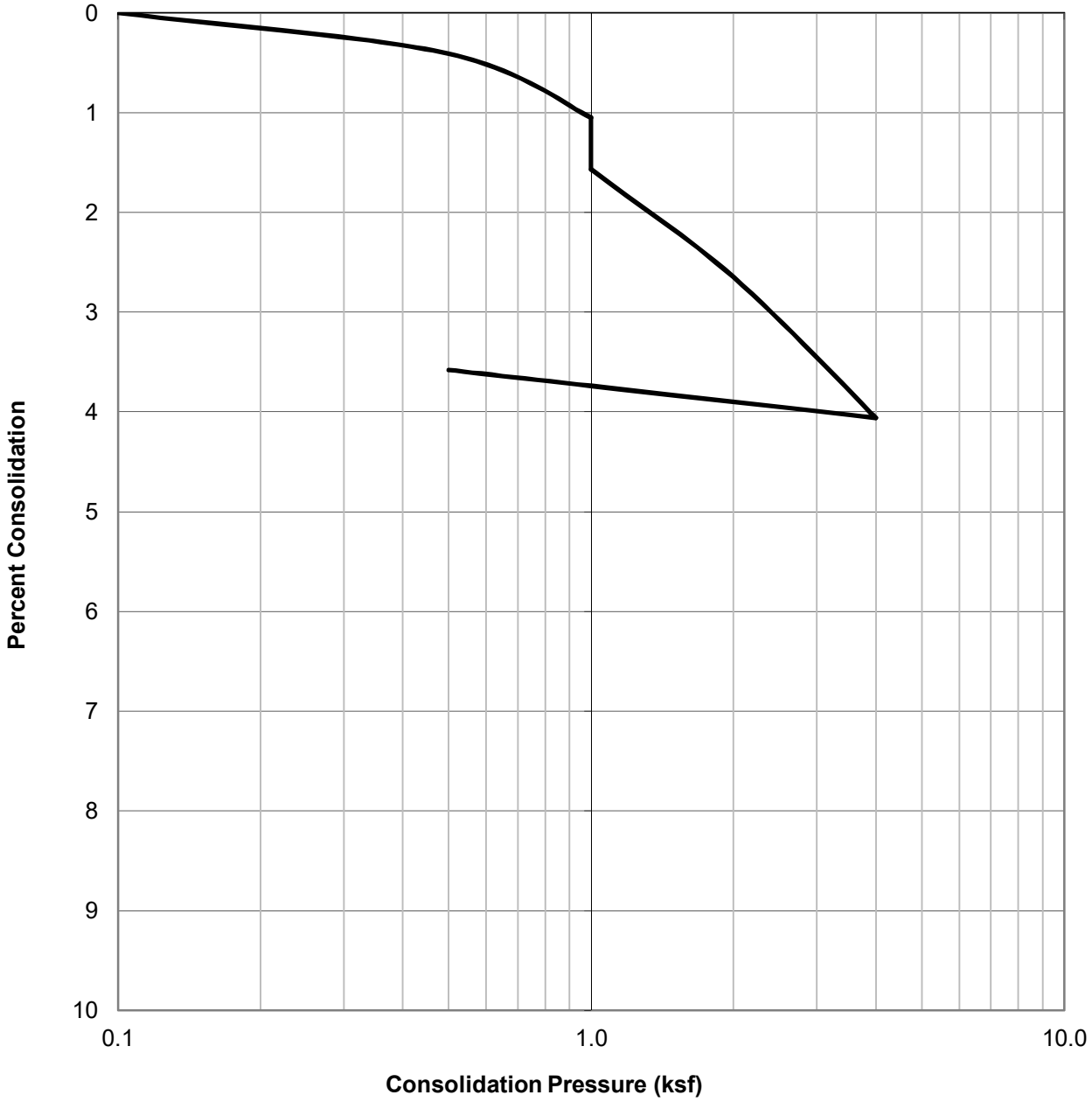
Checked by:

Project No.: T2990-22-01

RANCHO POLO EQUESTRIAN CLUB
NEC AVENUE 58 & OASIS STREET
THERMAL, CALIFORNIA

Jul 22 Figure B-13

WATER ADDED AT 1.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
HSA-2@10	Poorly Graded SAND with Silt (SP-SM)	98.3	11.9	22.6

GEOCON

CONSOLIDATION TEST RESULTS

ASTM D-2435

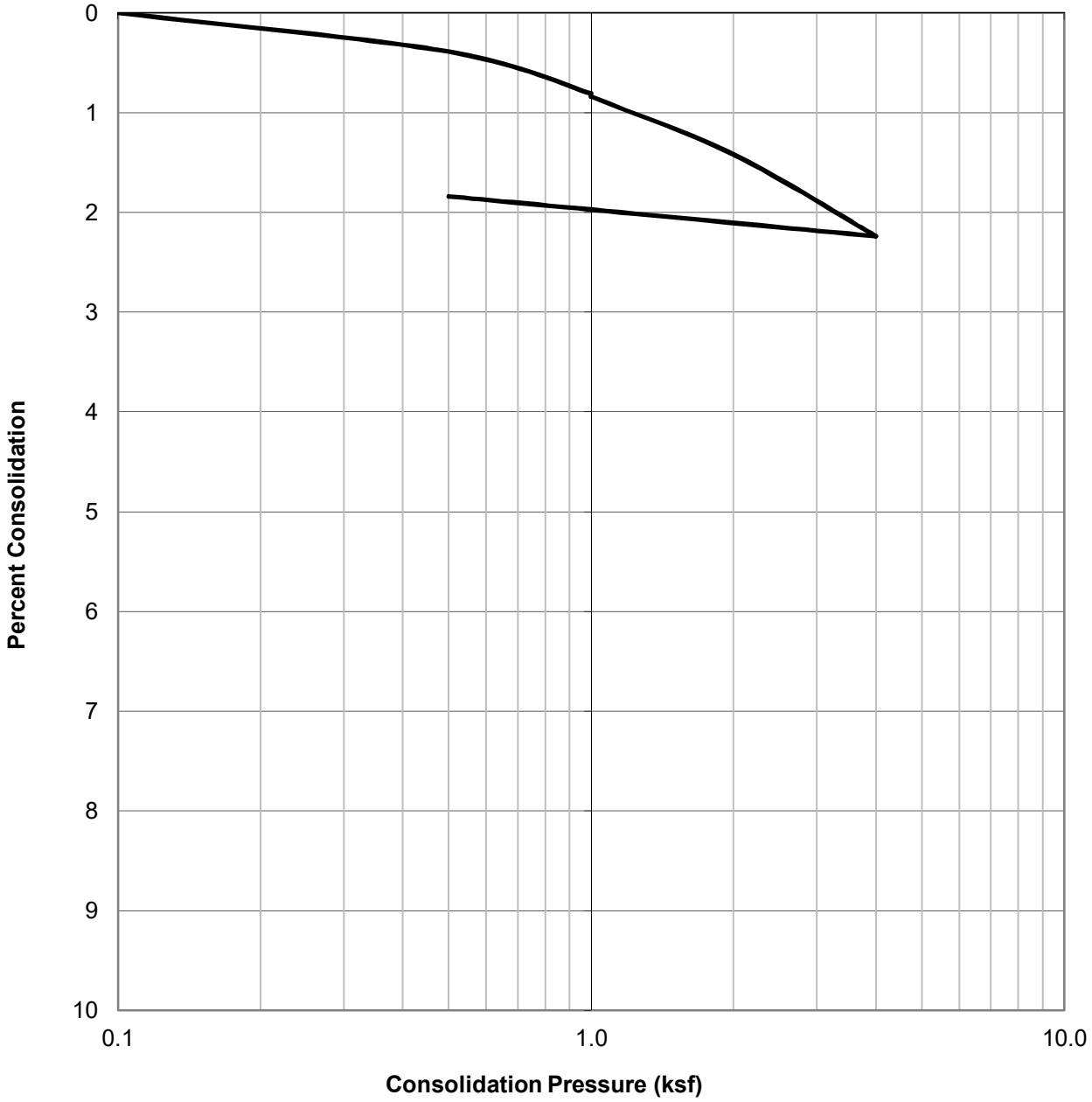
Checked by:

Project No.: T2990-22-01

RANCHO POLO EQUESTRIAN CLUB
NEC AVENUE 58 & OASIS STREET
THERMAL, CALIFORNIA

Jul 22 Figure B-14

WATER ADDED AT 1.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
HSA-3@20	Poorly Graded SAND (SP)	98.6	23.3	24.2

GEOCON

CONSOLIDATION TEST RESULTS

ASTM D-2435

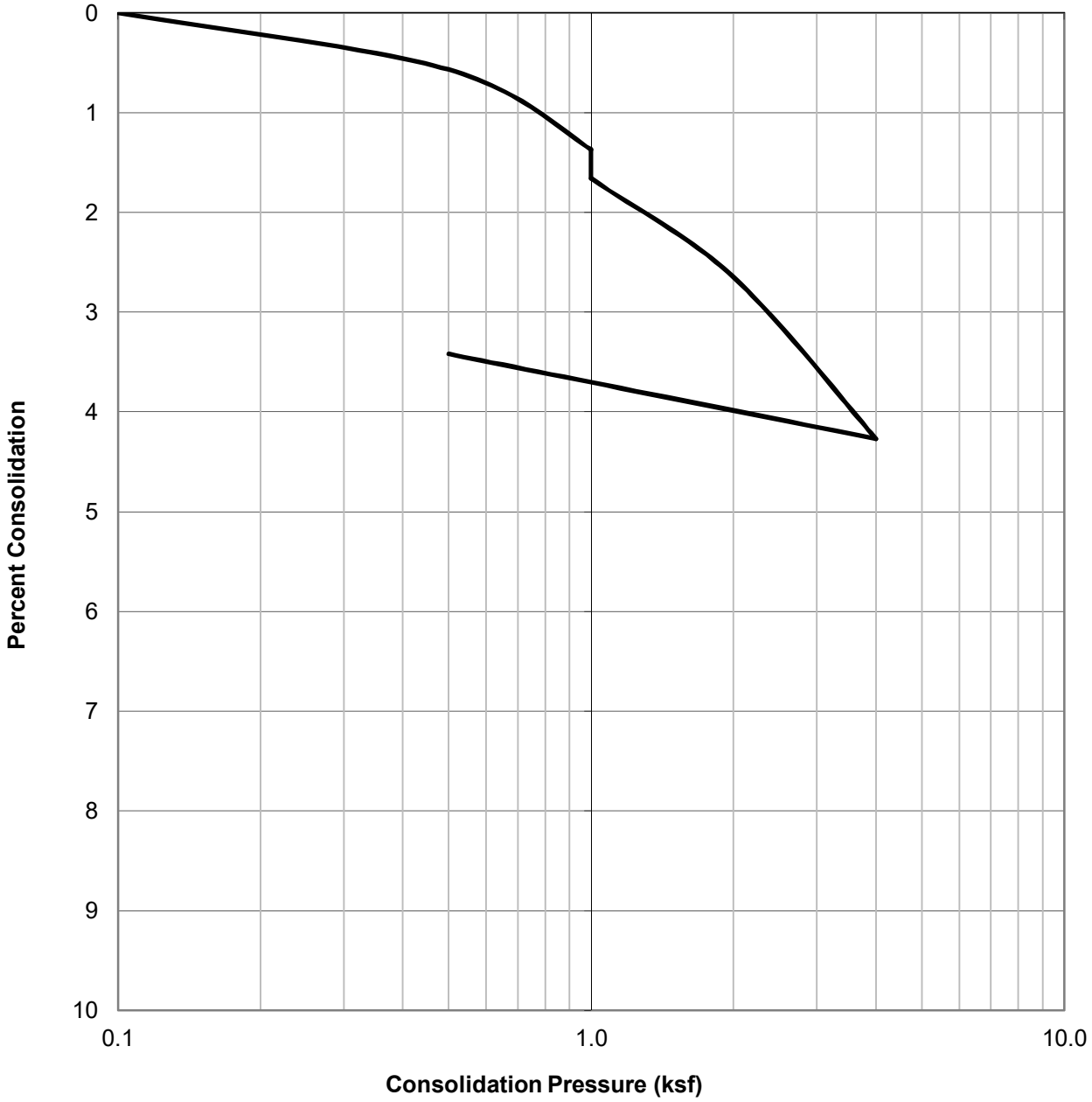
Checked by:

Project No.: T2990-22-01

RANCHO POLO EQUESTRIAN CLUB
NEC AVENUE 58 & OASIS STREET
THERMAL, CALIFORNIA

Jul 22 Figure B-15

WATER ADDED AT 1.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
HSA-4@7.5	Silty SAND (SM)	86.8	22.9	32.1

GEOCON

CONSOLIDATION TEST RESULTS

ASTM D-2435

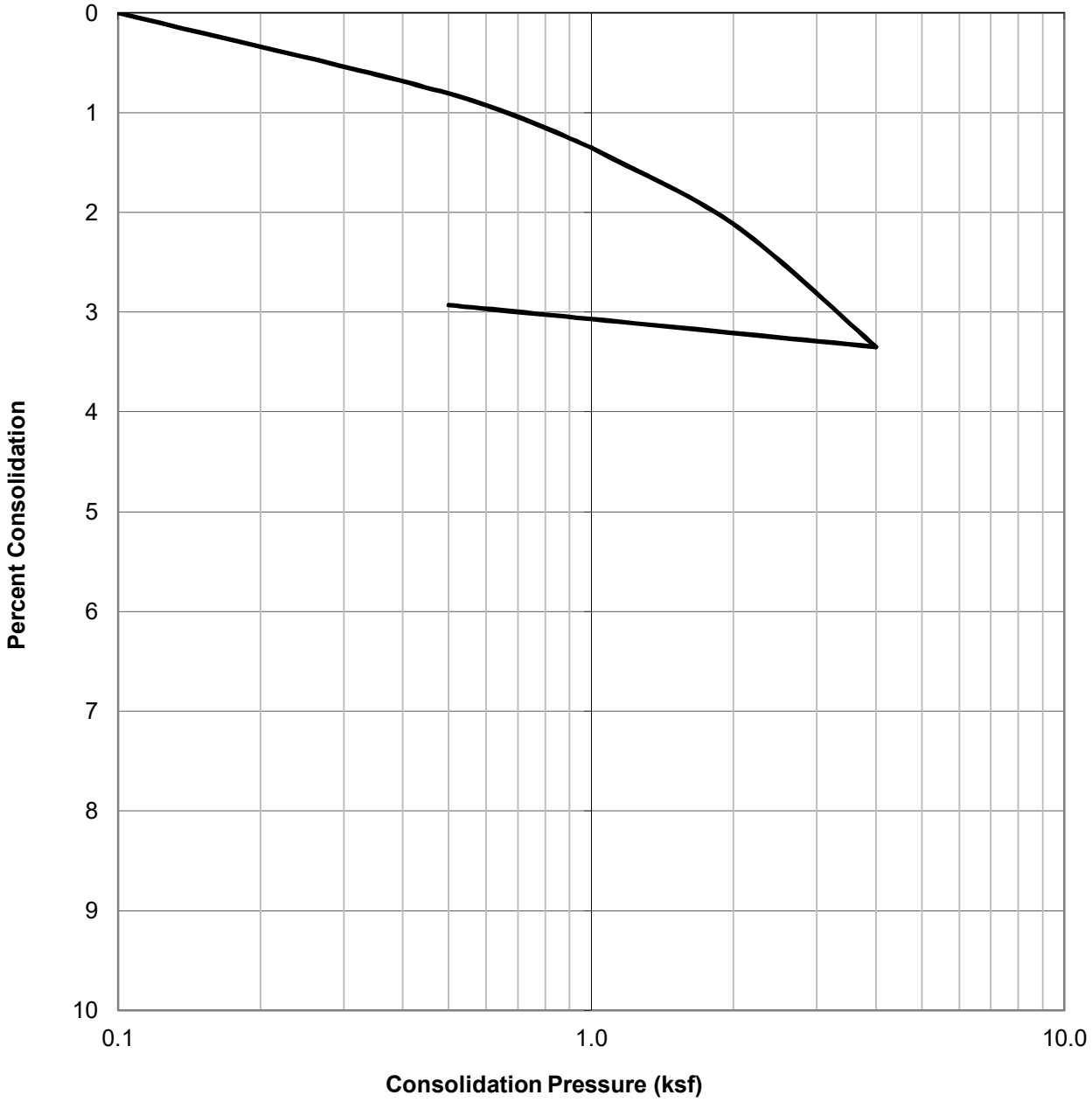
Checked by:

Project No.: T2990-22-01

RANCHO POLO EQUESTRIAN CLUB
NEC AVENUE 58 & OASIS STREET
THERMAL, CALIFORNIA

Jul 22 Figure B-16

WATER ADDED AT 1.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
HSA-4@10	Silty SAND (SM)	103.9	19.9	20.5

GEOCON

CONSOLIDATION TEST RESULTS

ASTM D-2435

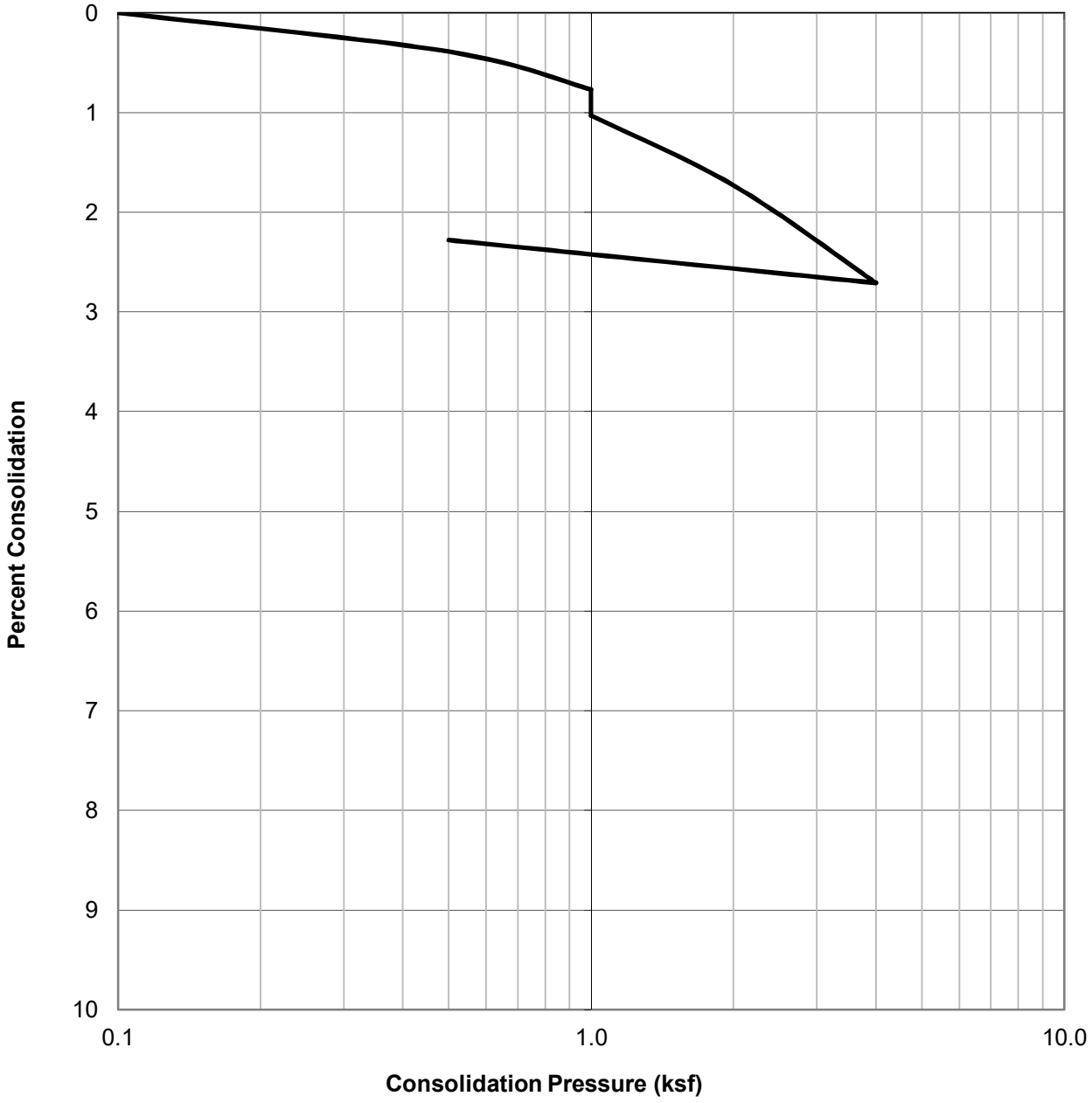
Checked by:

Project No.: T2990-22-01

RANCHO POLO EQUESTRIAN CLUB
NEC AVENUE 58 & OASIS STREET
THERMAL, CALIFORNIA

Jul 22 Figure B-17

WATER ADDED AT 1.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
HSA-4@12.5	Poorly Graded SAND (SP)	92.2	8.4	26.4

GEOCON

CONSOLIDATION TEST RESULTS

ASTM D-2435

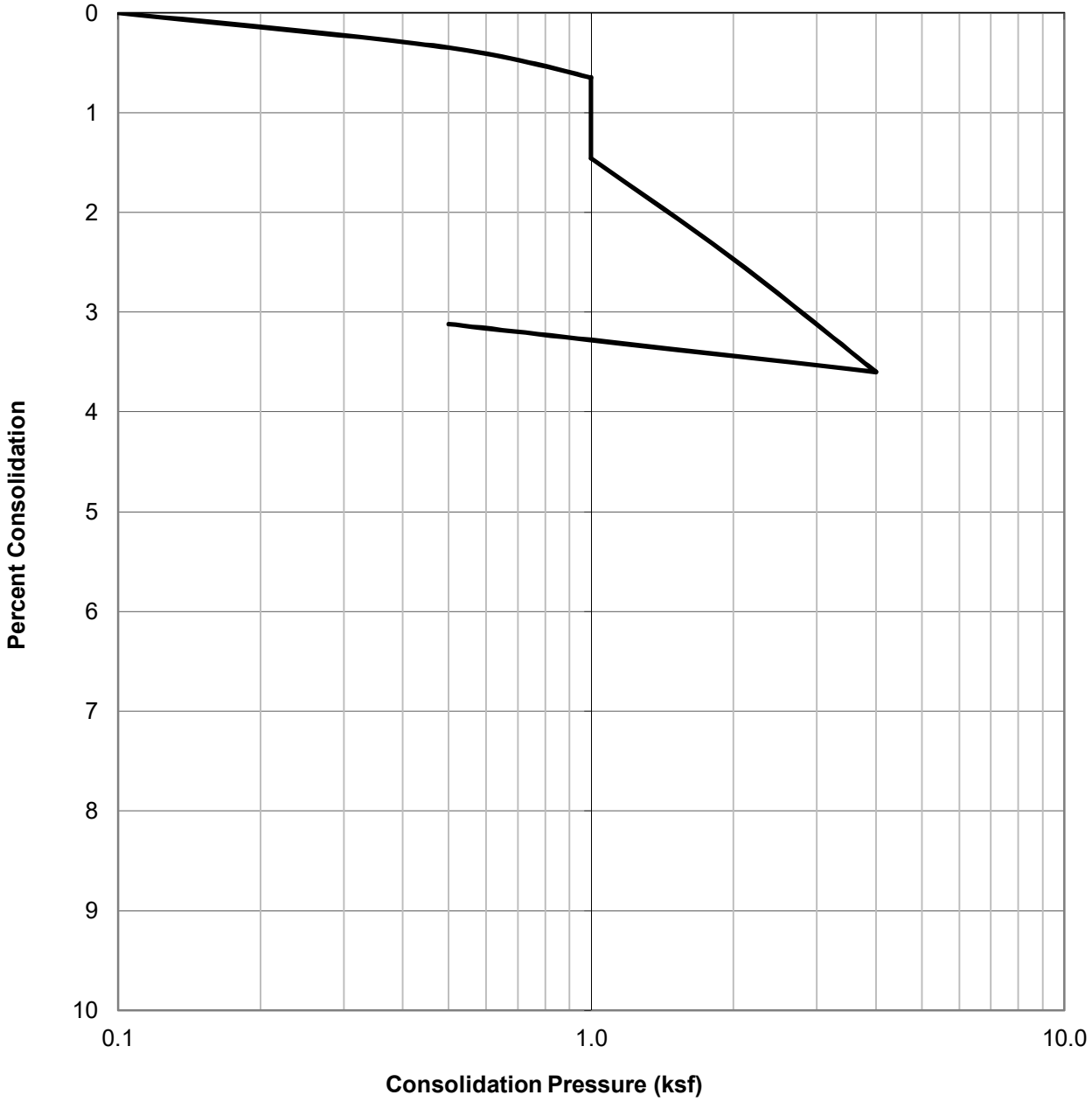
Checked by:

Project No.: T2990-22-01

RANCHO POLO EQUESTRIAN CLUB
NEC AVENUE 58 & OASIS STREET
THERMAL, CALIFORNIA

Jul 22 Figure B-18

WATER ADDED AT 1.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
HSA-5@5	Poorly Graded SAND (SP)	96.3	5.3	22.6

GEOCON

CONSOLIDATION TEST RESULTS

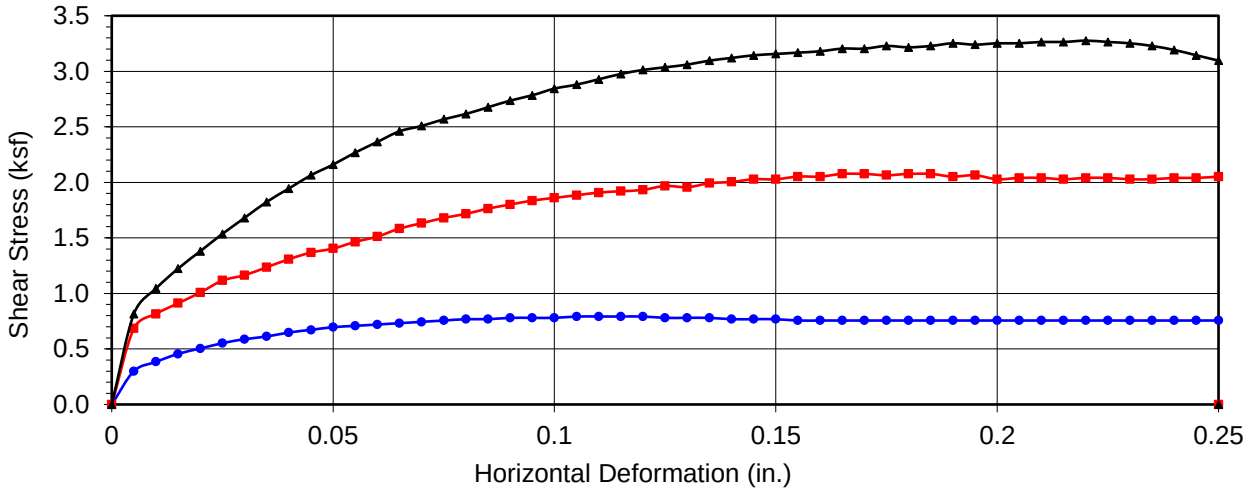
ASTM D-2435

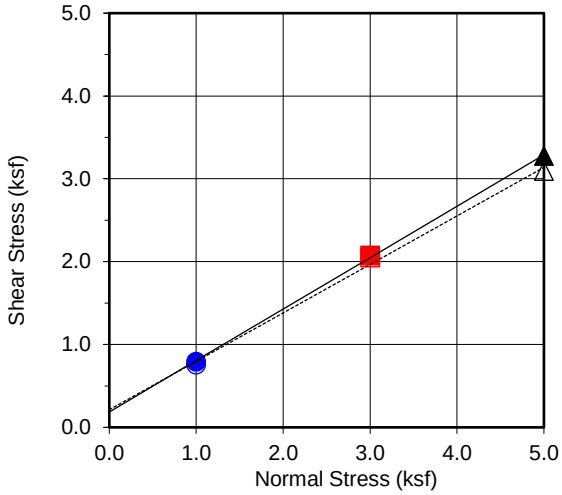
Checked by:

Project No.: T2990-22-01

RANCHO POLO EQUESTRIAN CLUB
NEC AVENUE 58 & OASIS STREET
THERMAL, CALIFORNIA

Jul 22 Figure B-19





Boring No.	**N/A**
Sample No.	**HSA-1@2.5**
Depth (ft)	**2.5**
Sample Type:	Ring

Soil Identification:		
Poorly graded SAND (SP), olive gray		
Strength Parameters		
	C (psf)	ϕ (^{o})
Peak	185	31.8
Ultimate	213	30.3

Normal Strest (kip/ft2)	1	3	5
Peak Shear Stress (kip/ft²)	● 0.79	■ 2.08	▲ 3.28
Shear Stress @ End of Test (ksf)	○ 0.76	□ 2.05	△ 3.10
Deformation Rate (in./min.)	0.05	0.05	0.05
Initial Sample Height (in.)	1.0	1.0	1.0
Ring Inside Diameter (in.)	2.375	2.375	2.375
Initial Moisture Content (%)	13.8	19.7	19.2
Initial Dry Density (pcf)	87.4	83.1	85.9
Initial Degree of Saturation (%)	40.0	51.8	53.8
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	31.9	32.7	29.8

GEOCON

DIRECT SHEAR TEST RESULTS

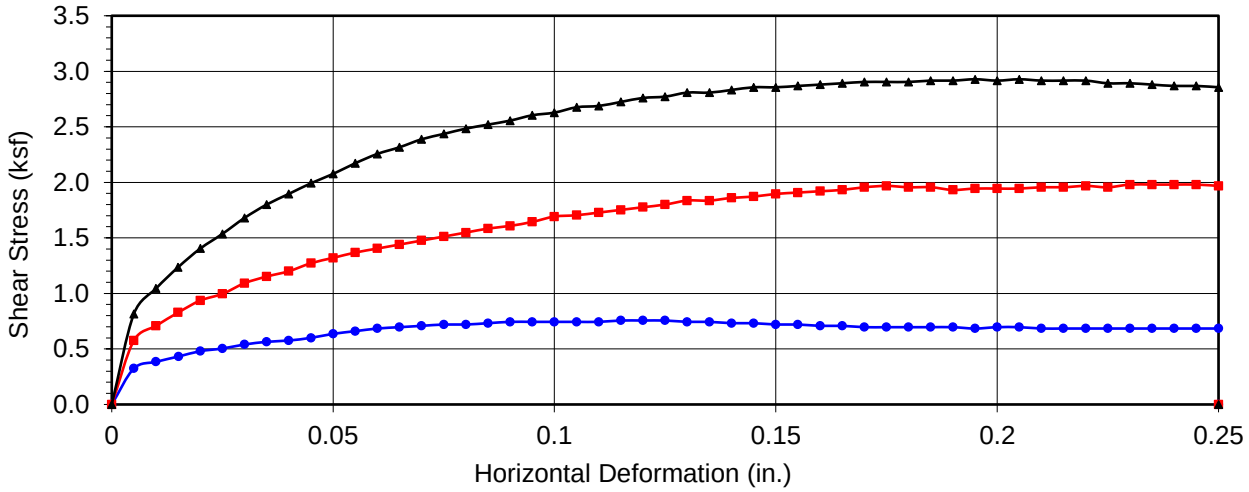
Consolidated Drained ASTM D-3080

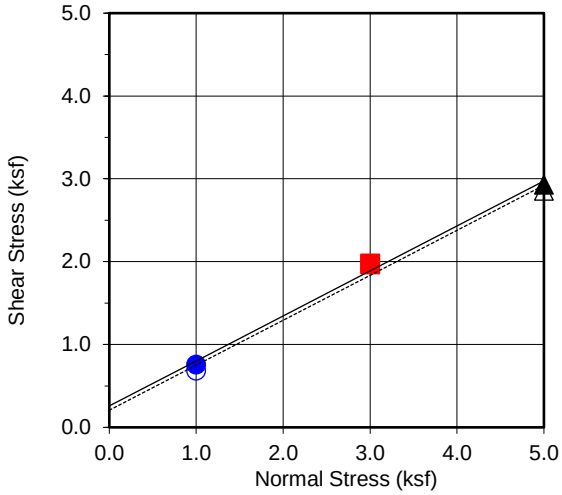
Checked by:

Project No.: T2990-22-01

RANCHO POLO EQUESTRIAN CLUB
NEC AVENUE 58 & OASIS STREET
THERMAL, CALIFORNIA

Jul 22 Figure B-20





Boring No.	**N/A**
Sample No.	**HSA-1@5**
Depth (ft)	**5**
Sample Type:	Ring

Soil Identification:		
Poorly Graded SAND (SP), olive gray		
Strength Parameters		
	C (psf)	ϕ (^{o})
Peak	259	28.5
Ultimate	207	28.5

Normal Strest (kip/ft2)	1	3	5
Peak Shear Stress (kip/ft²)	● 0.76	■ 1.98	▲ 2.93
Shear Stress @ End of Test (ksf)	○ 0.68	□ 1.97	△ 2.86
Deformation Rate (in./min.)	0.05	0.05	0.05
Initial Sample Height (in.)	1.0	1.0	1.0
Ring Inside Diameter (in.)	2.375	2.375	2.375
Initial Moisture Content (%)	17.4	27.4	22.5
Initial Dry Density (pcf)	79.9	83.4	77.9
Initial Degree of Saturation (%)	42.2	72.5	52.2
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	37.2	36.5	38.5

GEOCON

DIRECT SHEAR TEST RESULTS

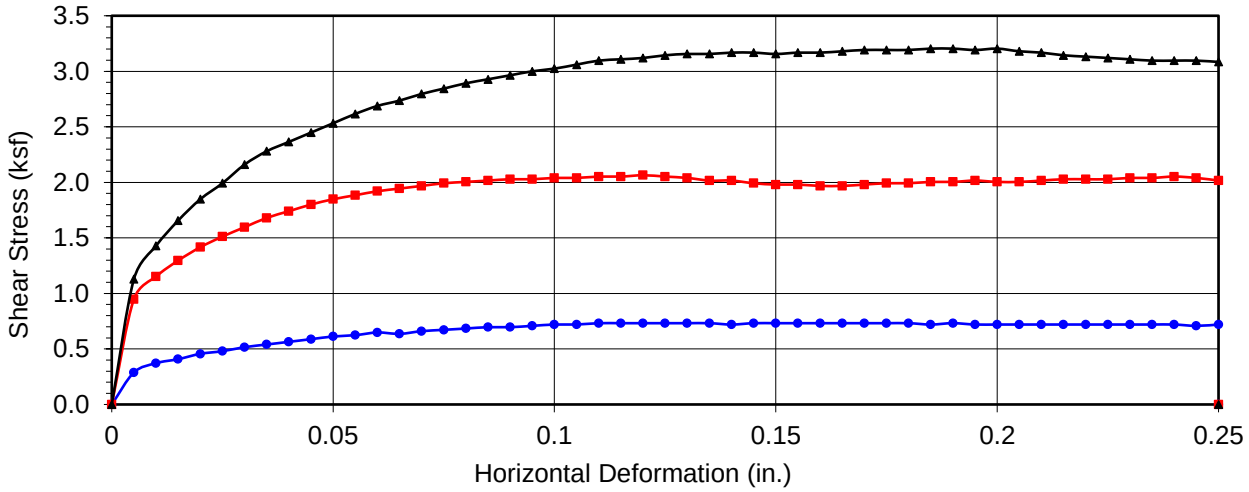
Consolidated Drained ASTM D-3080

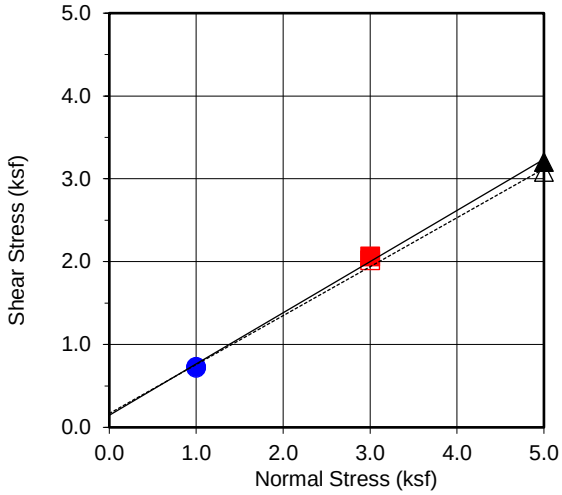
Checked by:

Project No.: T2990-22-01

RANCHO POLO EQUESTRIAN CLUB
NEC AVENUE 58 & OASIS STREET
THERMAL, CALIFORNIA

Jul 22 Figure B-21





Boring No.	**N/A**
Sample No.	**HSA-2@0-5**
Depth (ft)	**0-5**
Sample Type:	Bulk

Soil Identification:

Poorly graded SAND with Silt (SP-SM), gray

Strength Parameters

	C (psf)	ϕ (^{o})
Peak	146	31.7
Ultimate	167	30.6

Normal Strest (kip/ft2)	1	3	5
Peak Shear Stress (kip/ft²)	● 0.73	■ 2.06	▲ 3.20
Shear Stress @ End of Test (ksf)	○ 0.72	□ 2.02	△ 3.08
Deformation Rate (in./min.)	0.05	0.05	0.05
Initial Sample Height (in.)	1.0	1.0	1.0
Ring Inside Diameter (in.)	2.375	2.375	2.375
Initial Moisture Content (%)	12.9	13.1	13.1
Initial Dry Density (pcf)	97.0	96.9	97.1
Initial Degree of Saturation (%)	47.4	47.8	48.1
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	15.0	21.7	19.1

GEOCON

DIRECT SHEAR TEST RESULTS

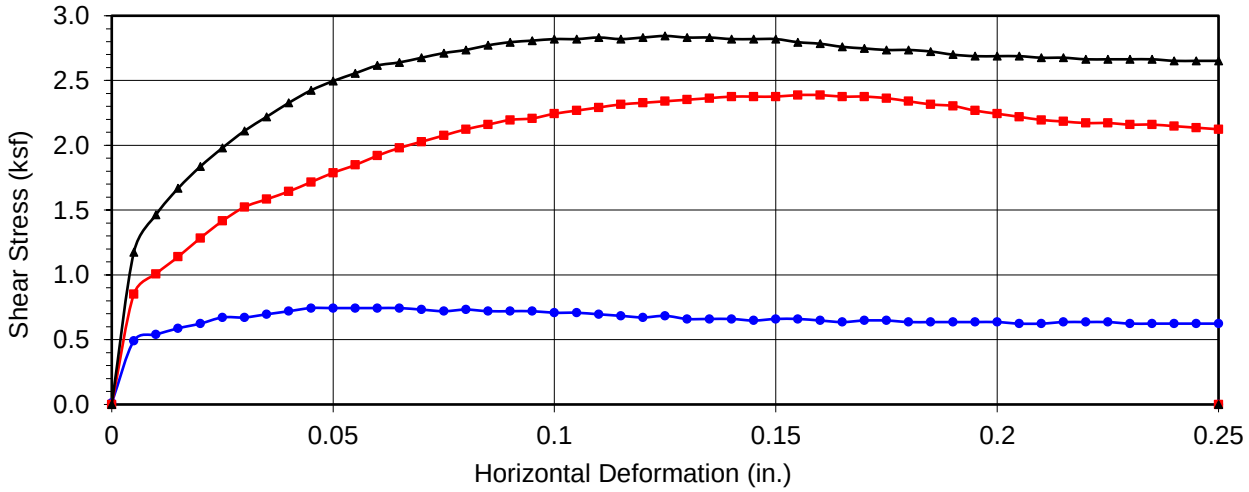
Consolidated Drained ASTM D-3080

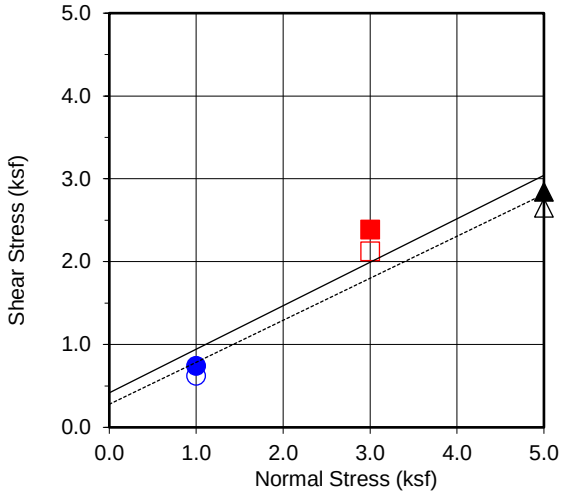
Checked by:

Project No.: T2990-22-01

RANCHO POLO EQUESTRIAN CLUB
NEC AVENUE 58 & OASIS STREET
THERMAL, CALIFORNIA

Jul 22 Figure B-22





Boring No.	**N/A**
Sample No.	**HSA-4@2.5**
Depth (ft)	**2.5**
Sample Type:	ring

Soil Identification:		
Silty SAND (SM), olive brown		
Strength Parameters		
	C (psf)	ϕ (°)
Peak	417	27.7
Ultimate	279	26.9

Normal Strest (kip/ft2)	1	3	5
Peak Shear Stress (kip/ft²)	● 0.74	■ 2.39	▲ 2.84
Shear Stress @ End of Test (ksf)	○ 0.62	□ 2.12	△ 2.65
Deformation Rate (in./min.)	0.05	0.05	0.05
Initial Sample Height (in.)	1.0	1.0	1.0
Ring Inside Diameter (in.)	2.375	2.375	2.375
Initial Moisture Content (%)	35.9	13.9	28.8
Initial Dry Density (pcf)	89.6	95.4	93.0
Initial Degree of Saturation (%)	110.2	49.1	95.8
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	37.0	24.1	28.5

GEOCON

DIRECT SHEAR TEST RESULTS

Consolidated Drained ASTM D-3080

Checked by:

Project No.: T2990-22-01

RANCHO POLO EQUESTRIAN CLUB
NEC AVENUE 58 & OASIS STREET
THERMAL, CALIFORNIA

Jul 22 Figure B-23

APPENDIX C

APPENDIX C

RESULTS OF LIQUEFACTION ANALYSIS

FOR

RANCHO POLO EQUESTRIAN CLUB
NEC AVENUE 58 & OASIS STREET
THERMAL, CALIFORNIA

PROJECT NO. T2990-22-01

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Geocon West, Inc.
3303 N. San Fernando Blvd., Suite 100
Burbank, CA 91504
(818) 841-8388

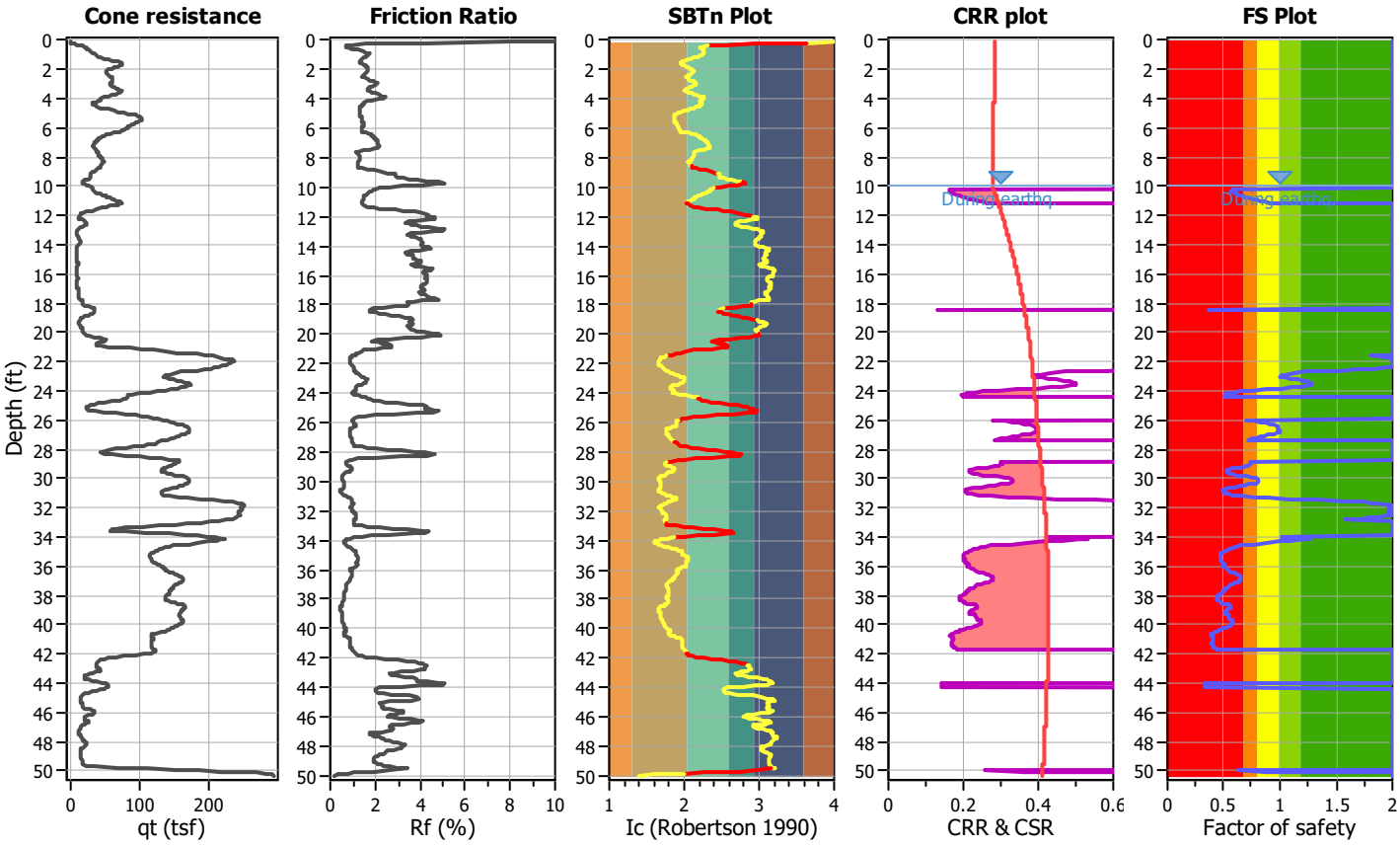
LIQUEFACTION ANALYSIS REPORT

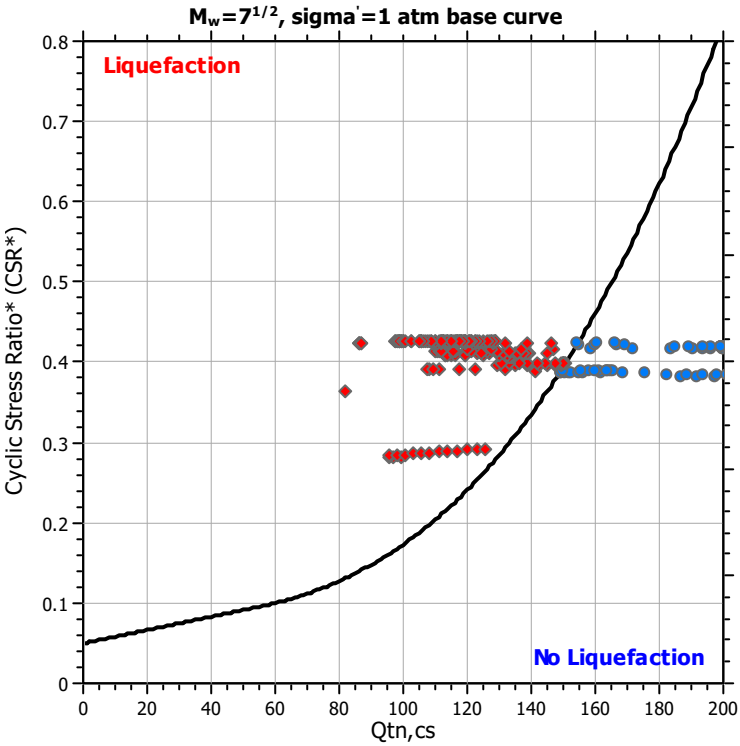
Project title : T2990-22-01 Continental Rancho Polo **Location : Northeast Corner of 58th Avenue & Oasis Street,**

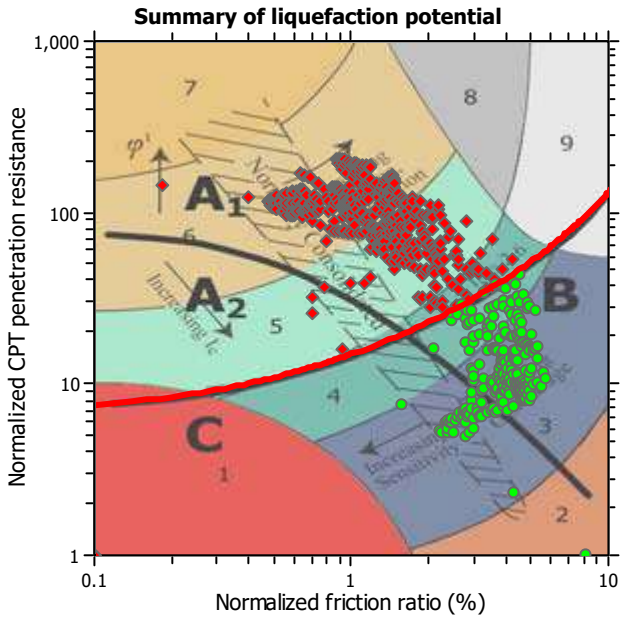
CPT file : CPT-1

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	20.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	10.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	7.08	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.46	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

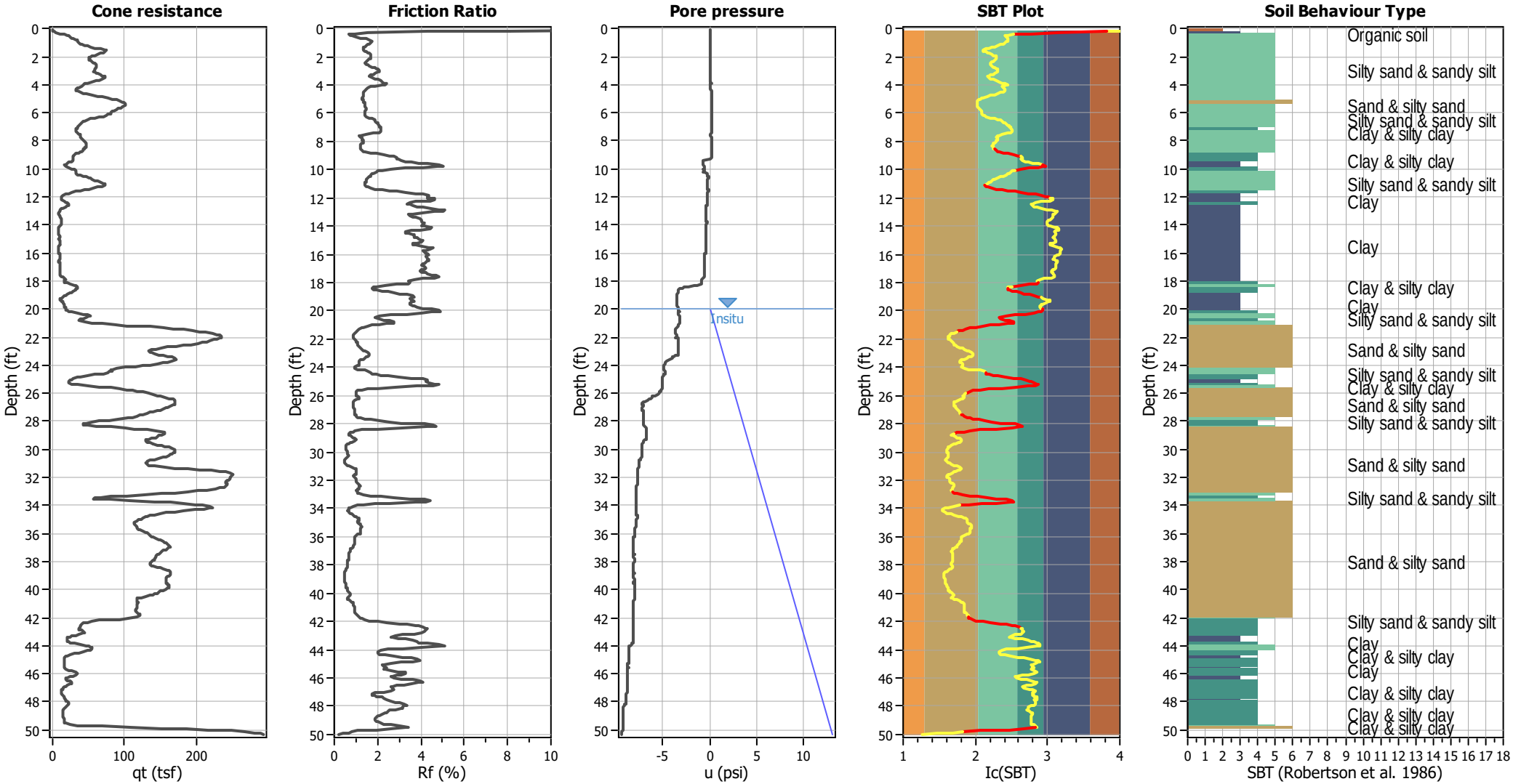






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



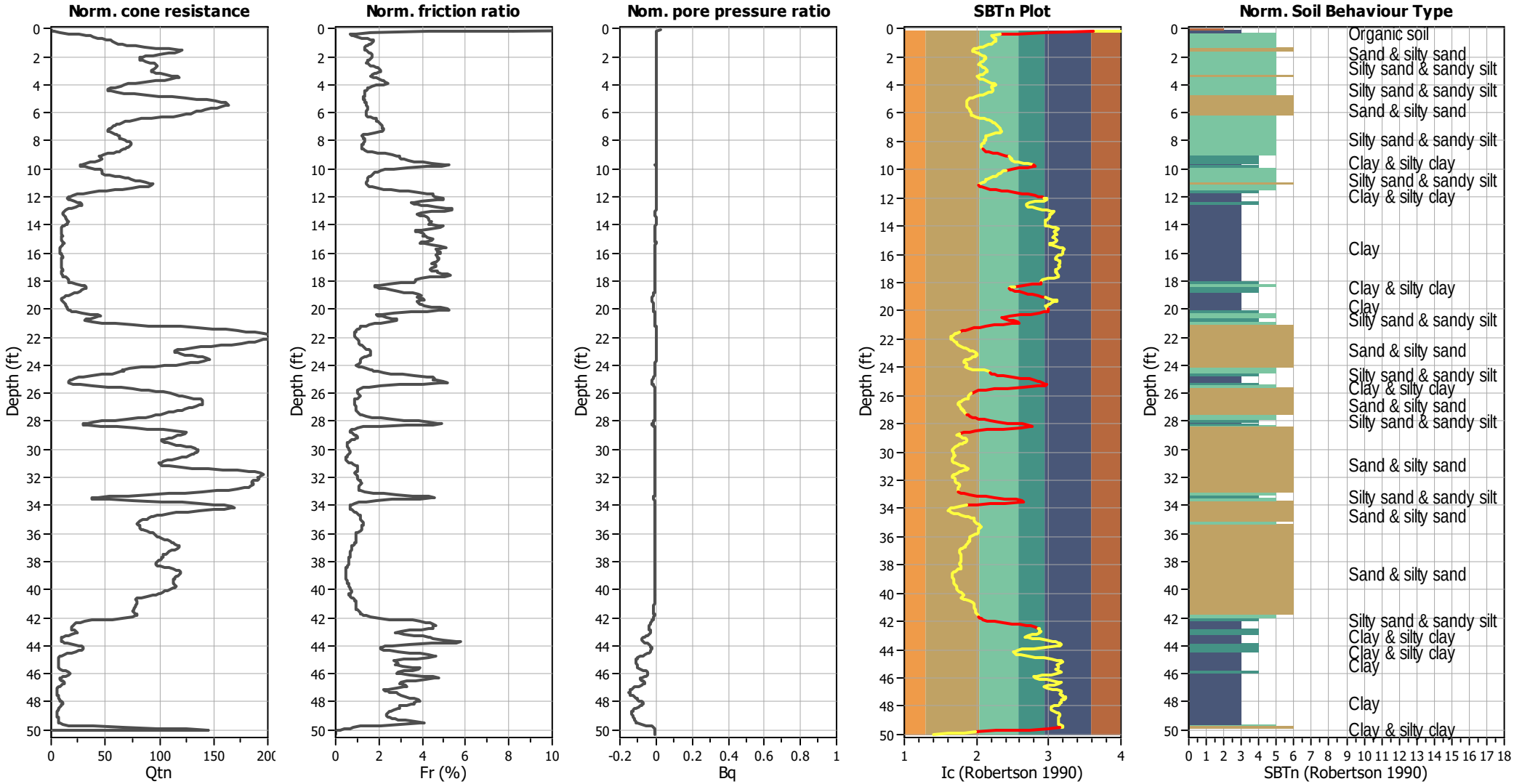
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.08	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.46	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



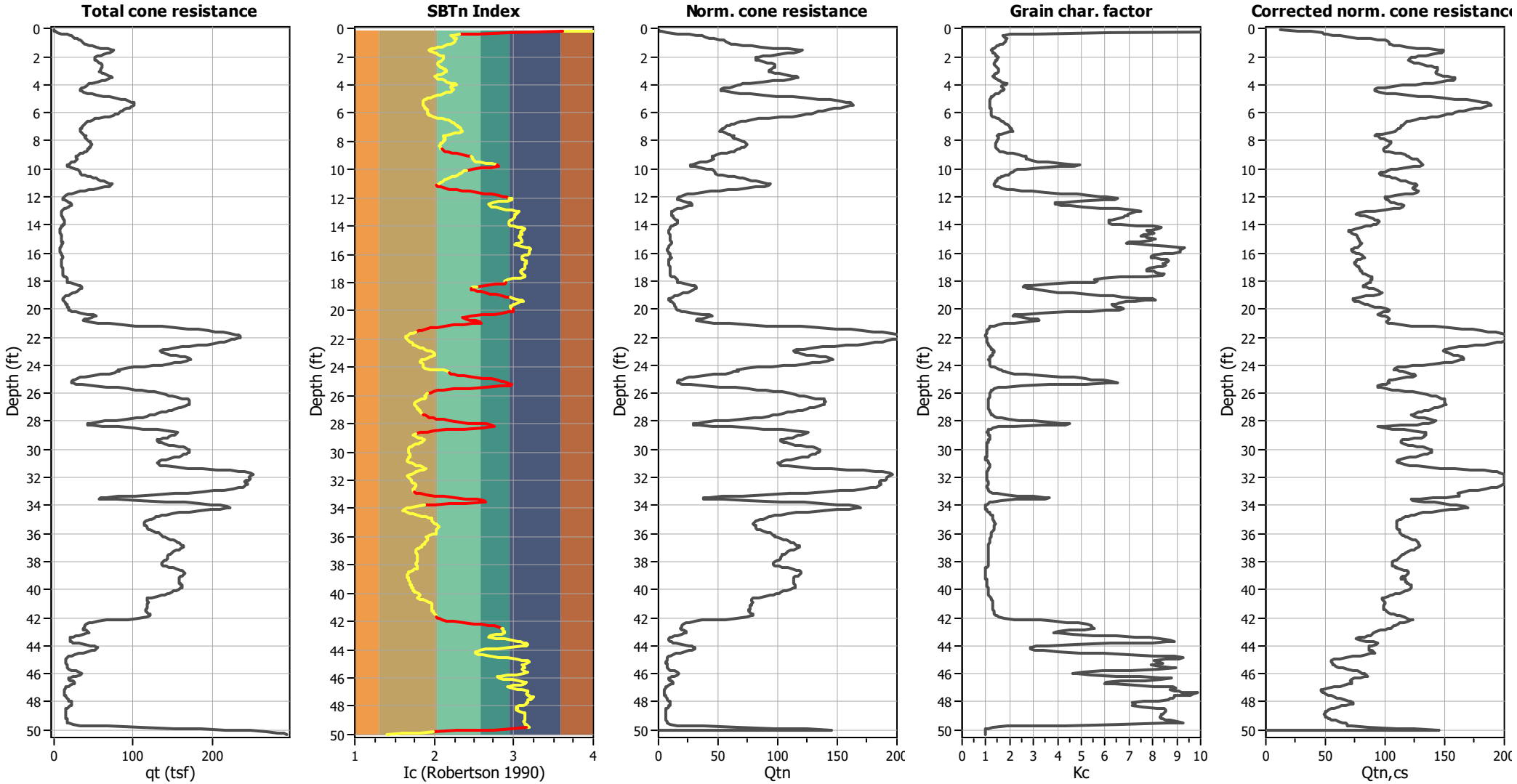
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.08	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.46	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

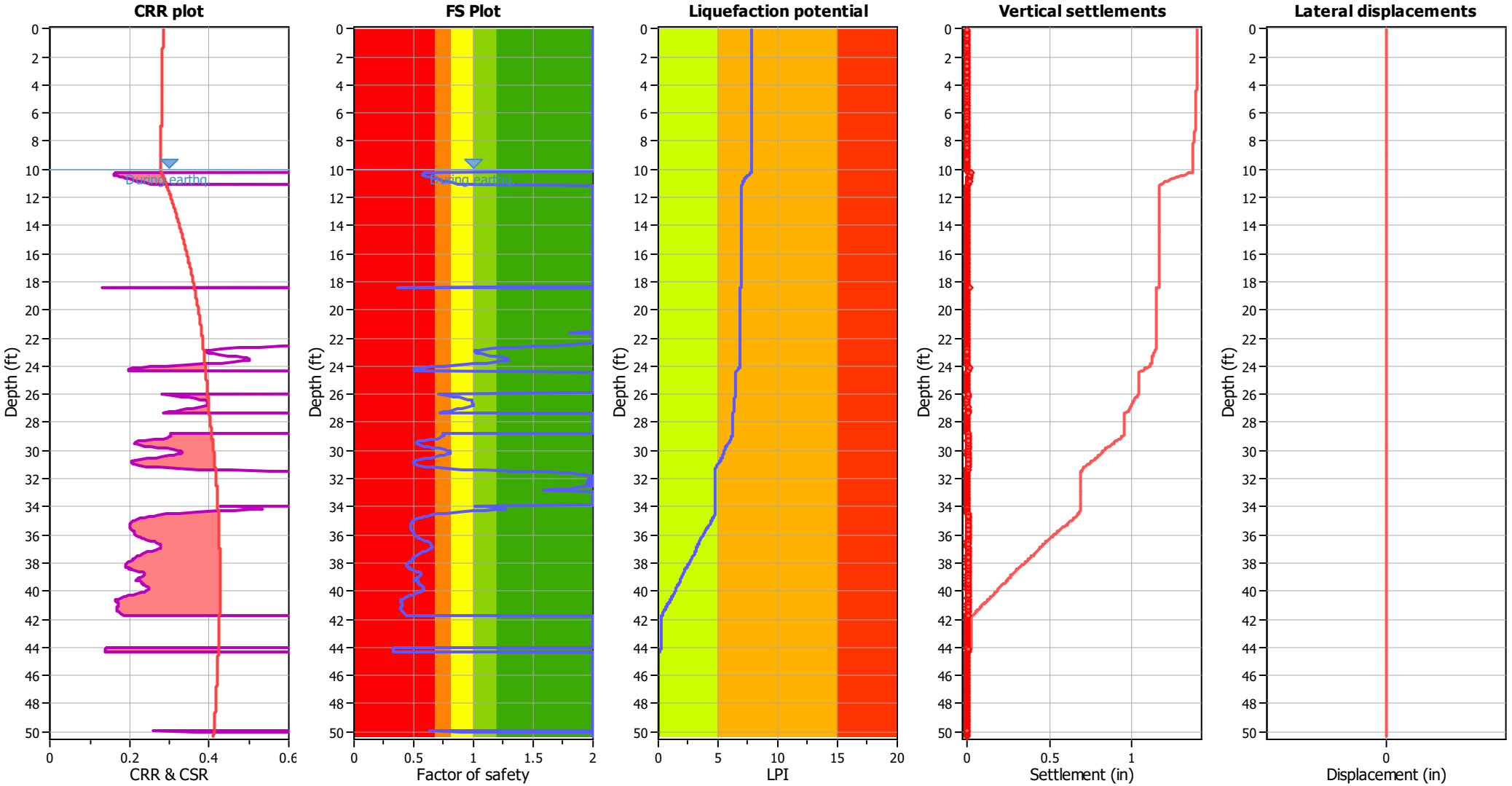
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.08	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.46	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.08	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.46	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

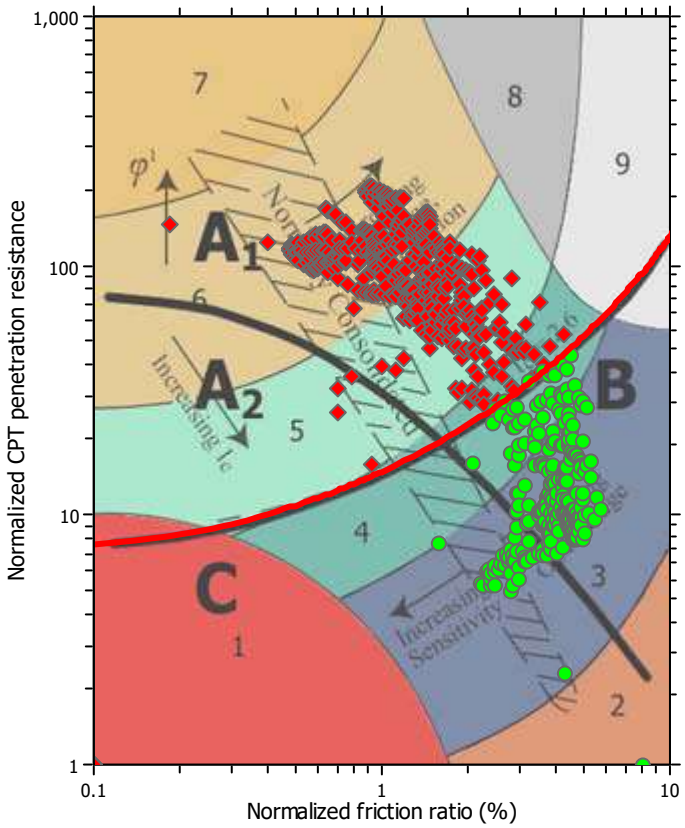
F.S. color scheme

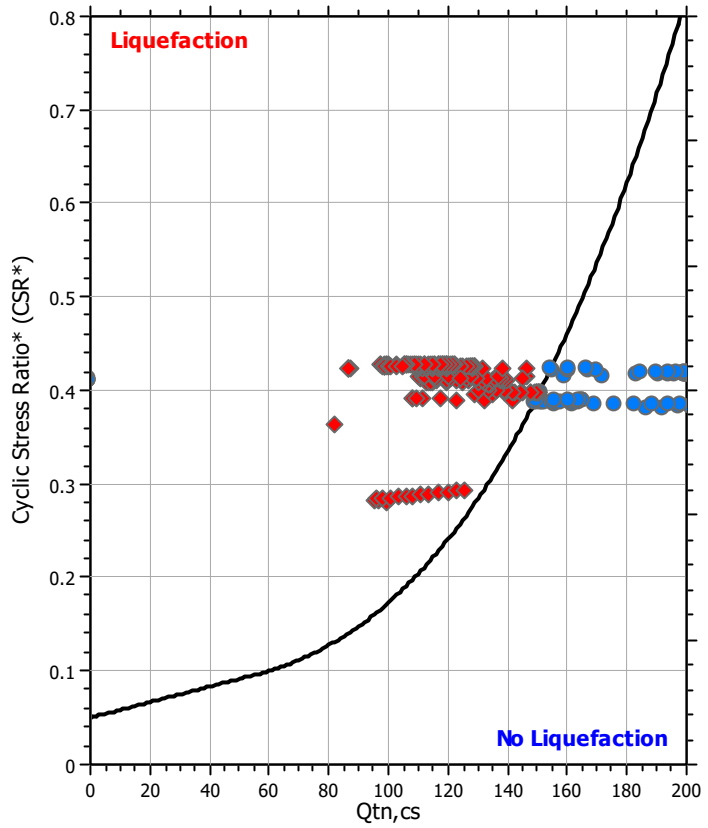
- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

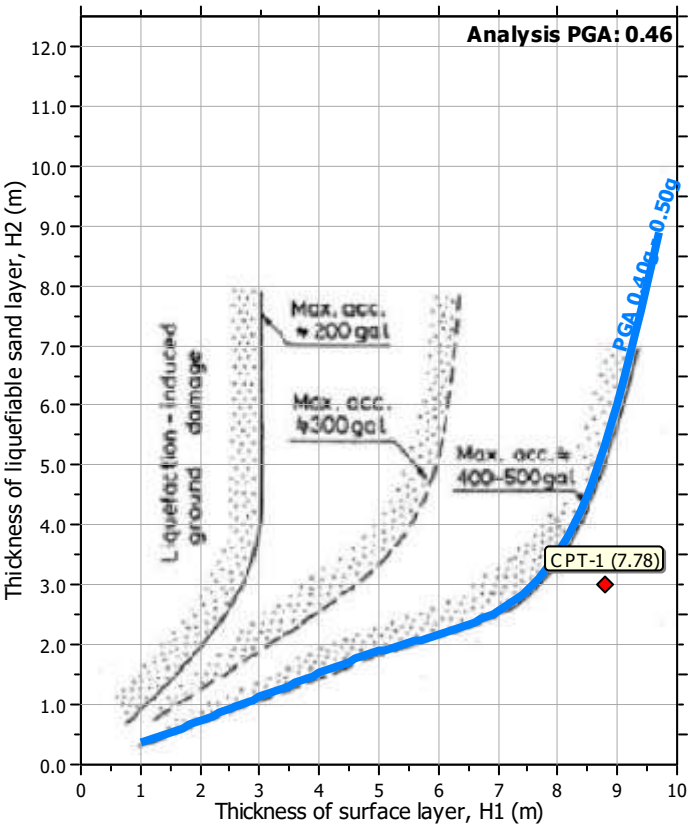
LPI color scheme

- Very high risk
- High risk
- Low risk

Liquefaction analysis summary plots



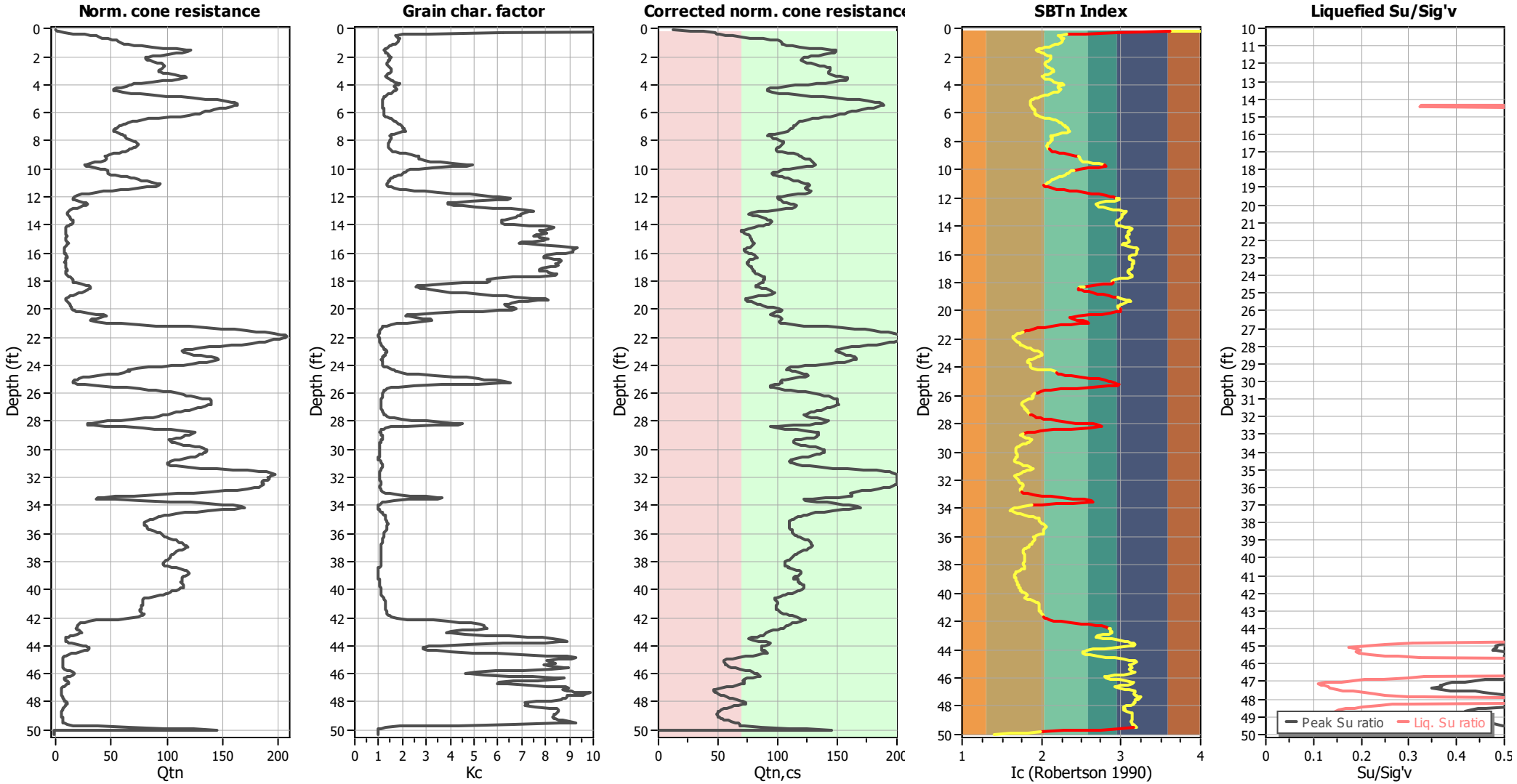




Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.08	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.46	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

Check for strength loss plots (Robertson (2010))



Input parameters and analysis data

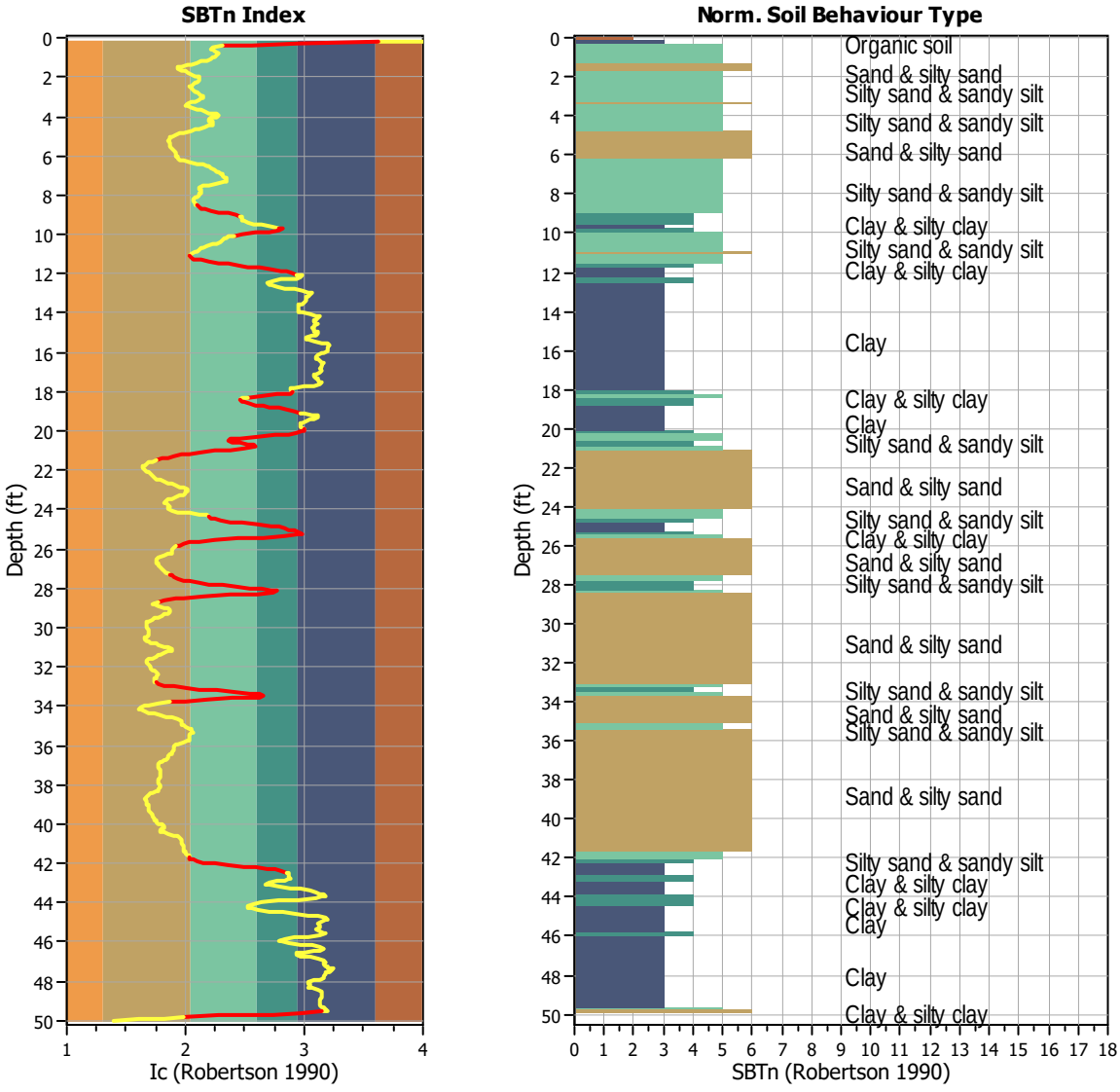
Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.08	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.46	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

TRANSITION LAYER DETECTION ALGORITHM REPORT
Summary Details & Plots

Short description

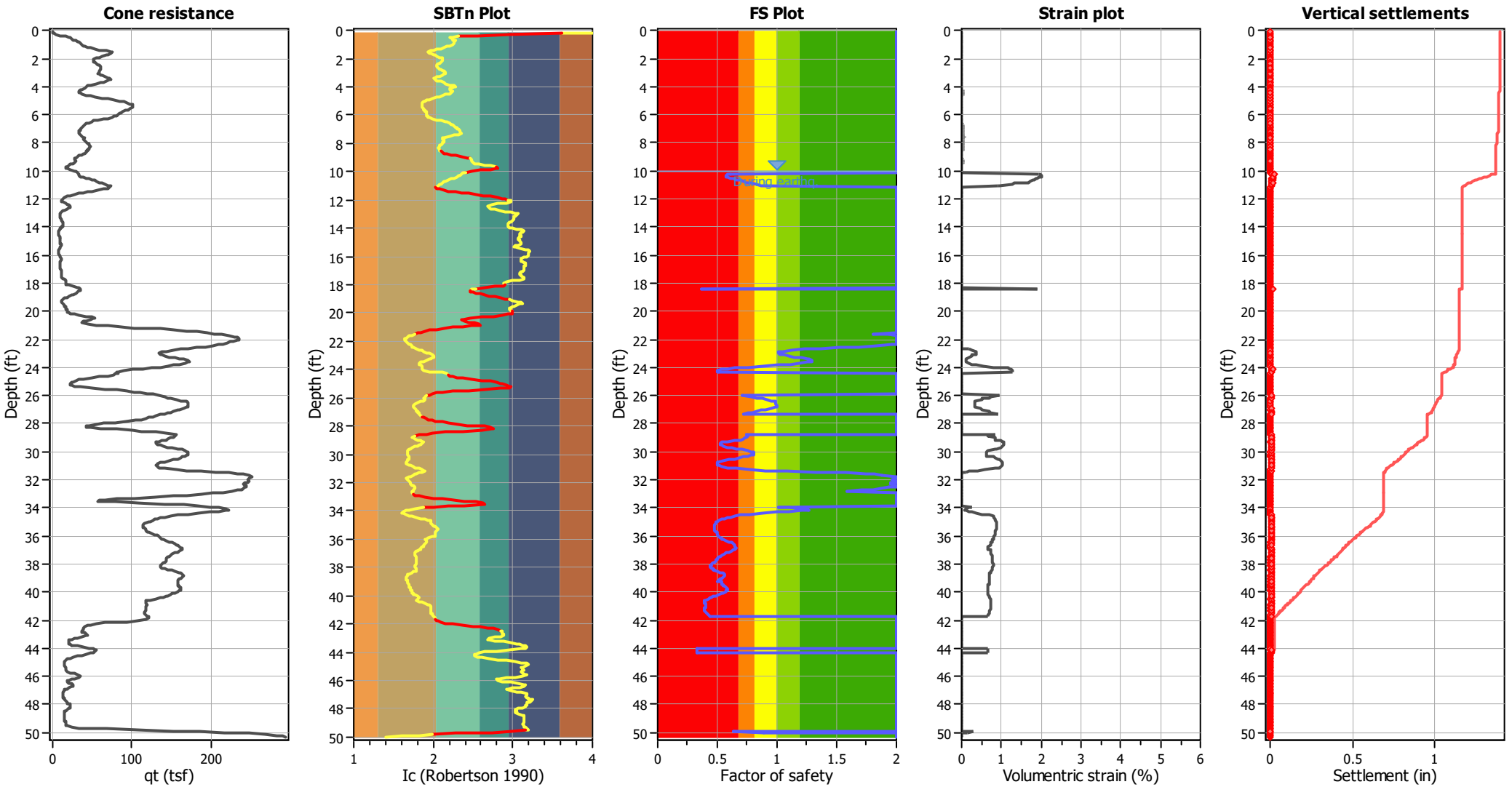
The software will delete data when the cone is in transition from either clay to sand or vise-versa. To do this the software requires a range of I_c values over which the transition will be defined (typically somewhere between $1.80 < I_c < 3.0$) and a rate of change of I_c. Transitions typically occur when the rate of change of I_c is fast (i.e. delta I_c is small).

The SBT_n plot below, displays in red the detected transition layers based on the parameters listed below the graphs.



Transition layer algorithm properties		General statistics	
I_c minimum check value:	1.70	Total points in CPT file:	767
I_c maximum check value:	3.00	Total points excluded:	158
I_c change ratio value:	0.0250	Exclusion percentage:	20.60%
Minimum number of points in layer:	4	Number of layers detected:	17

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

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(818) 841-8388

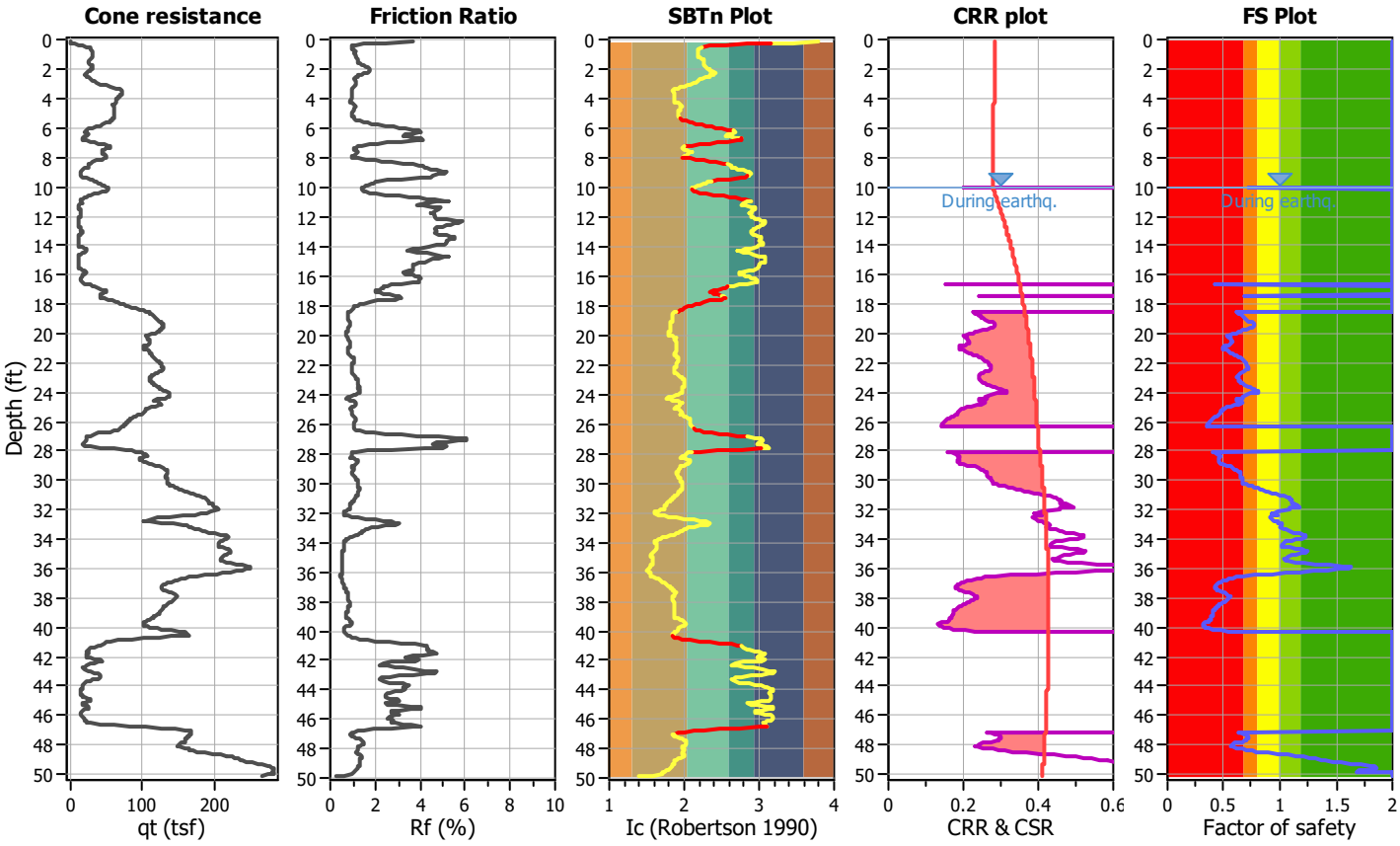
LIQUEFACTION ANALYSIS REPORT

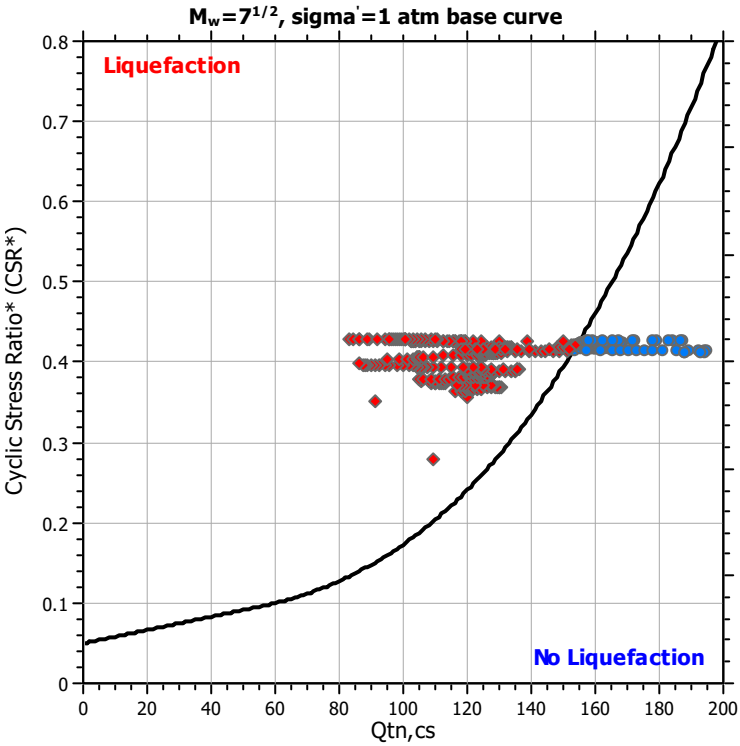
Project title : T2990-22-01 Continental Rancho Polo **Location : Northeast Corner of 58th Avenue & Oasis Street,**

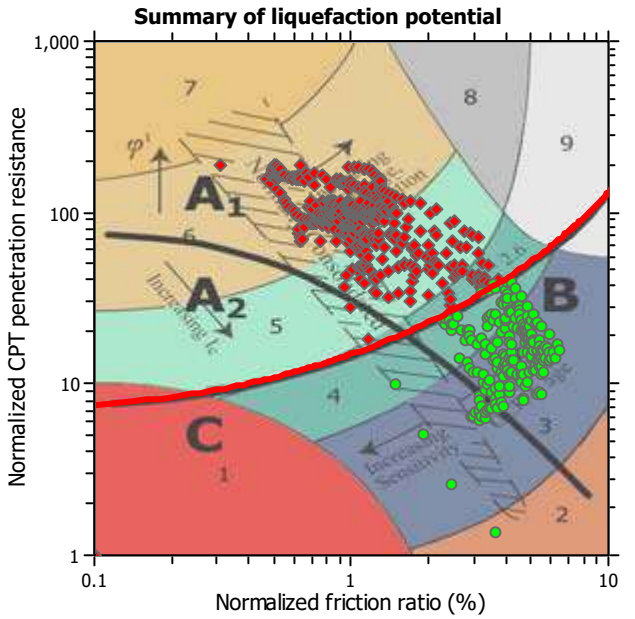
CPT file : CPT-2

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	20.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	10.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	7.08	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.46	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

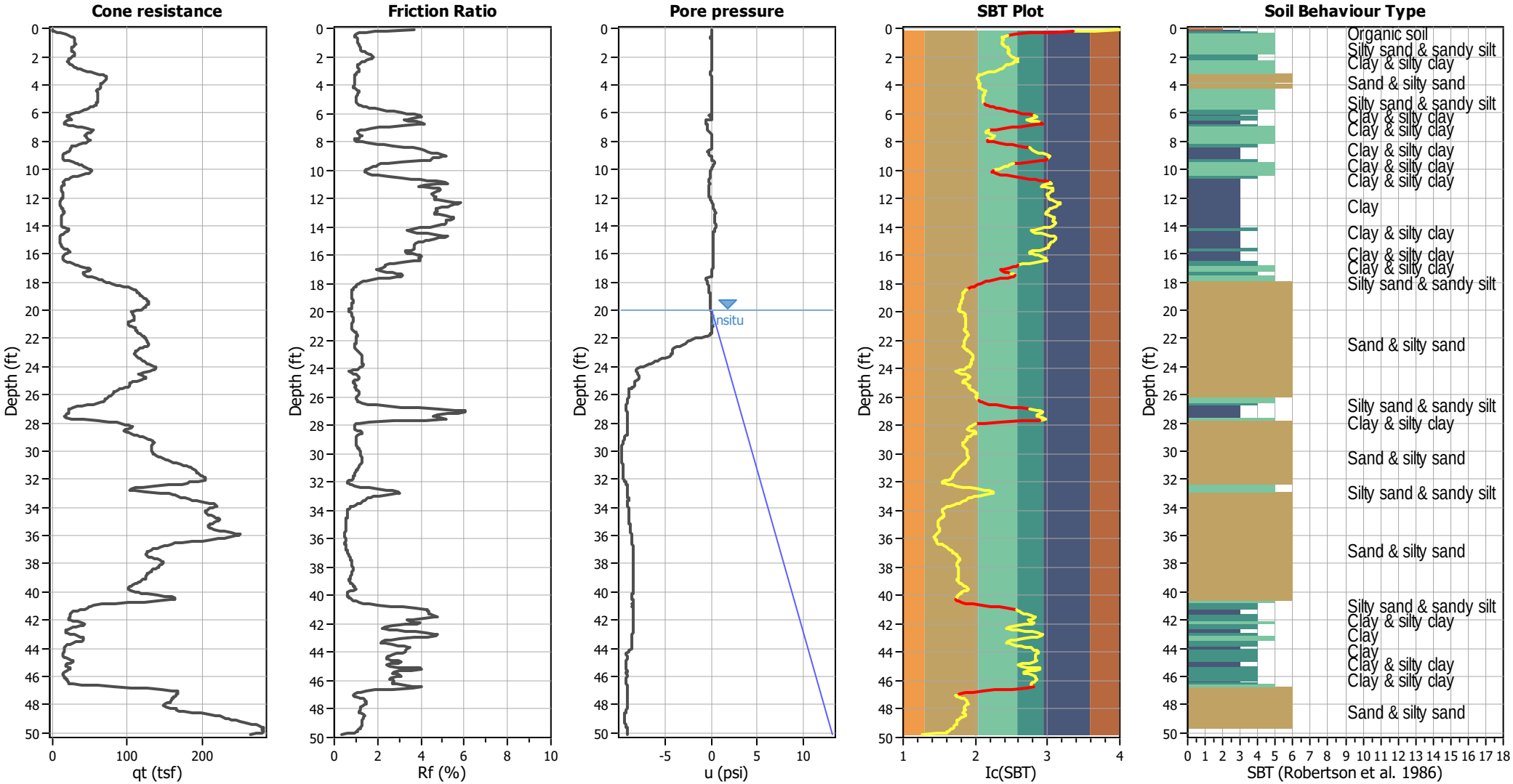






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



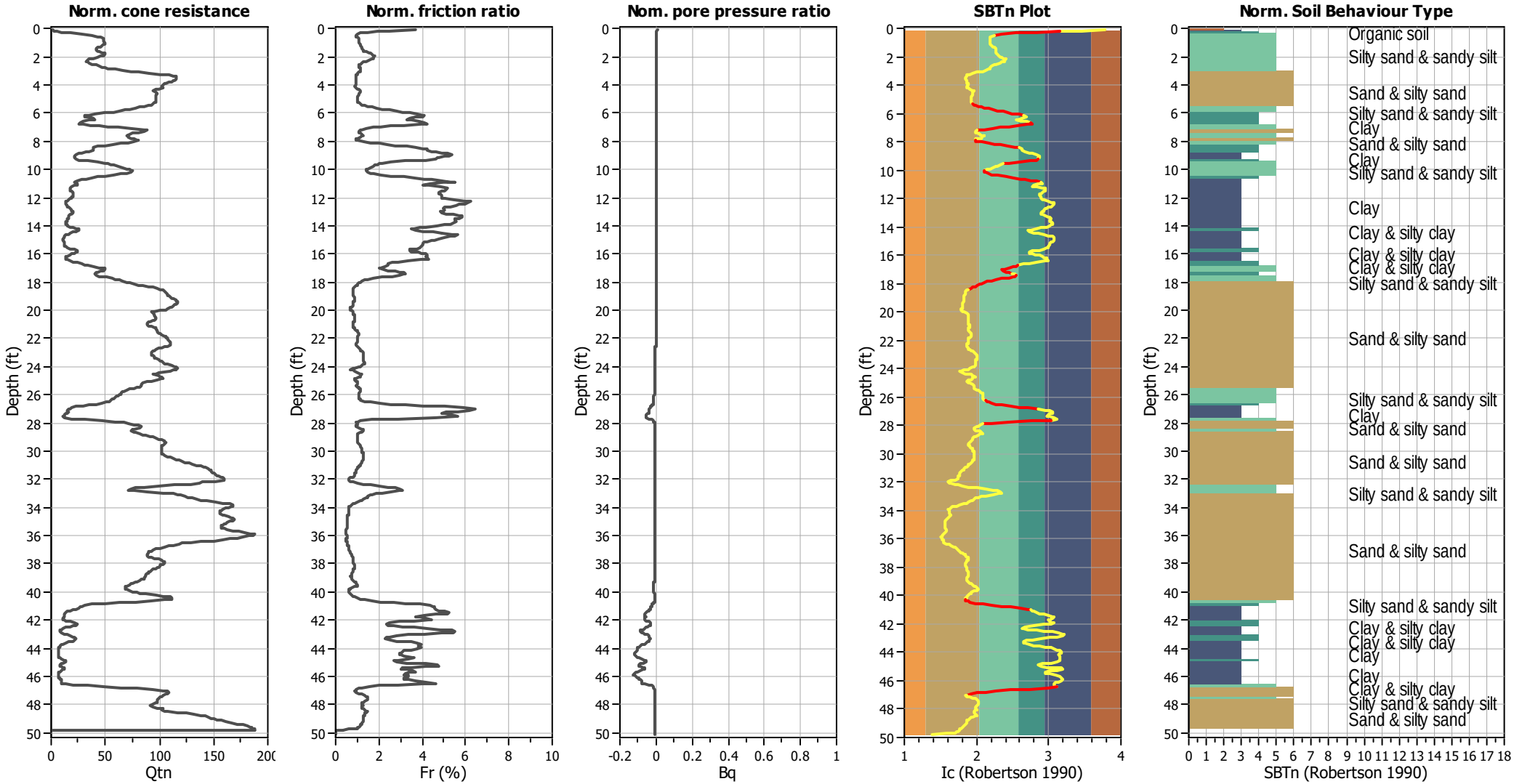
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.08	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.46	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



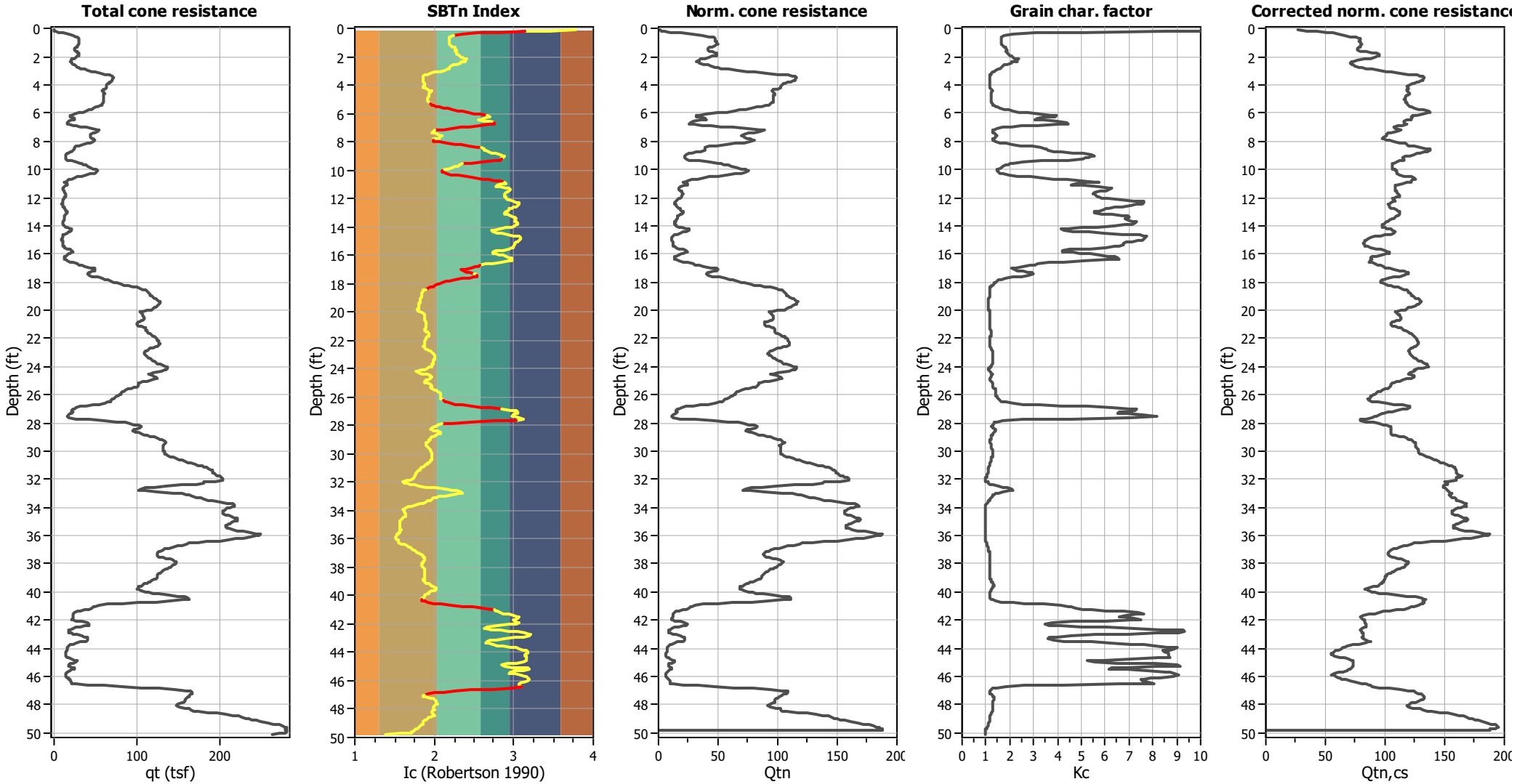
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.08	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.46	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

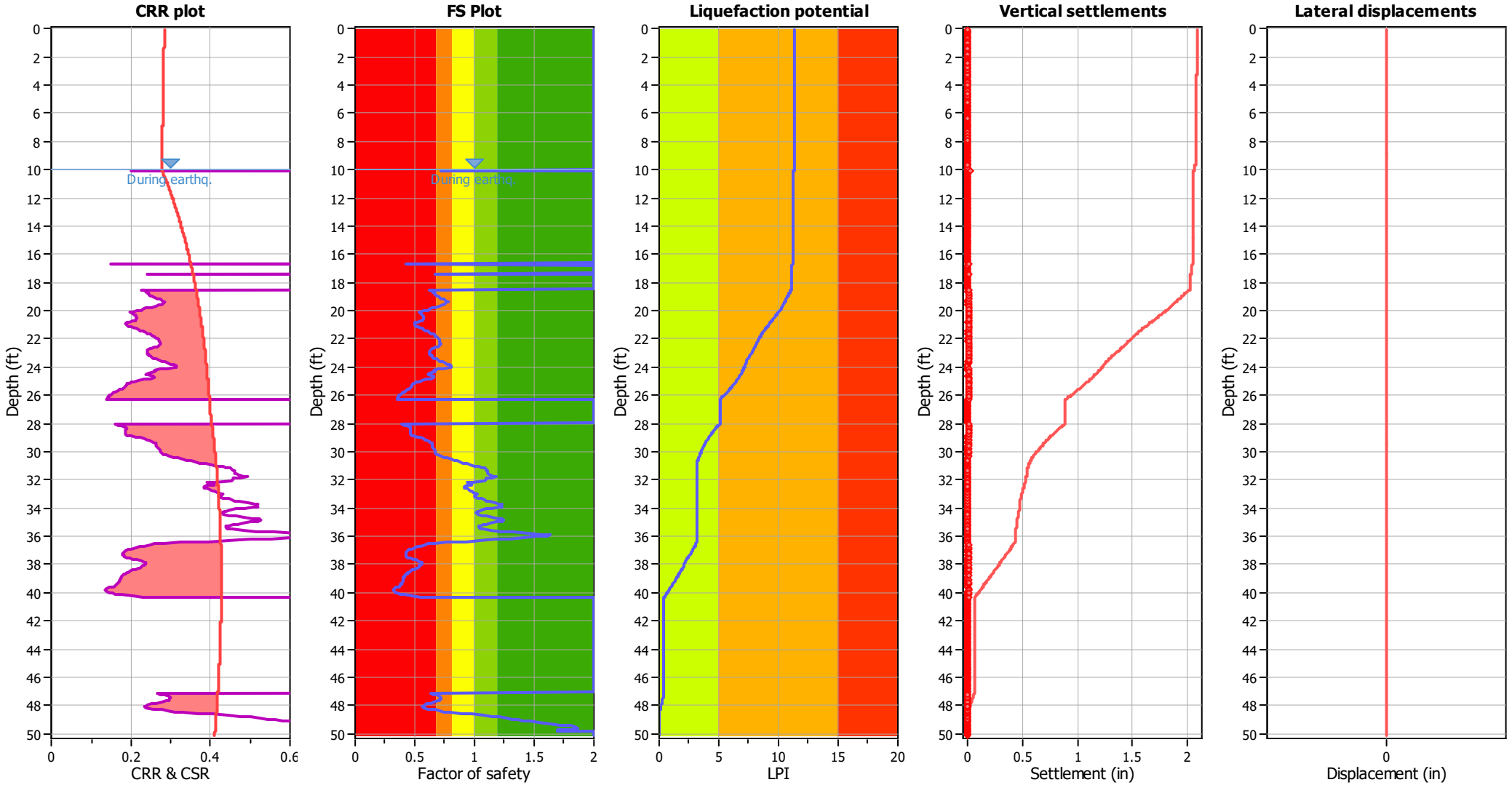
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.08	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.46	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.08	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.46	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

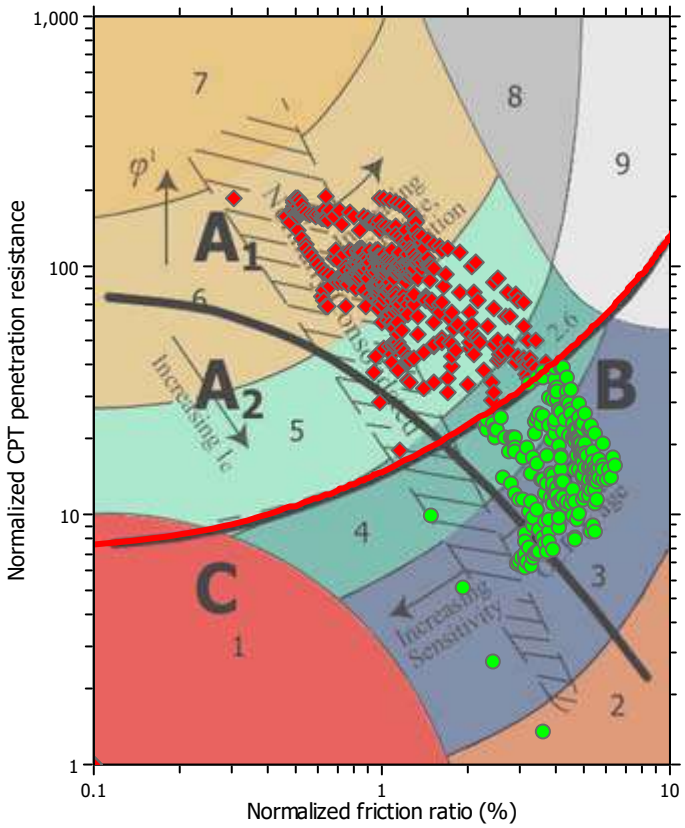
F.S. color scheme

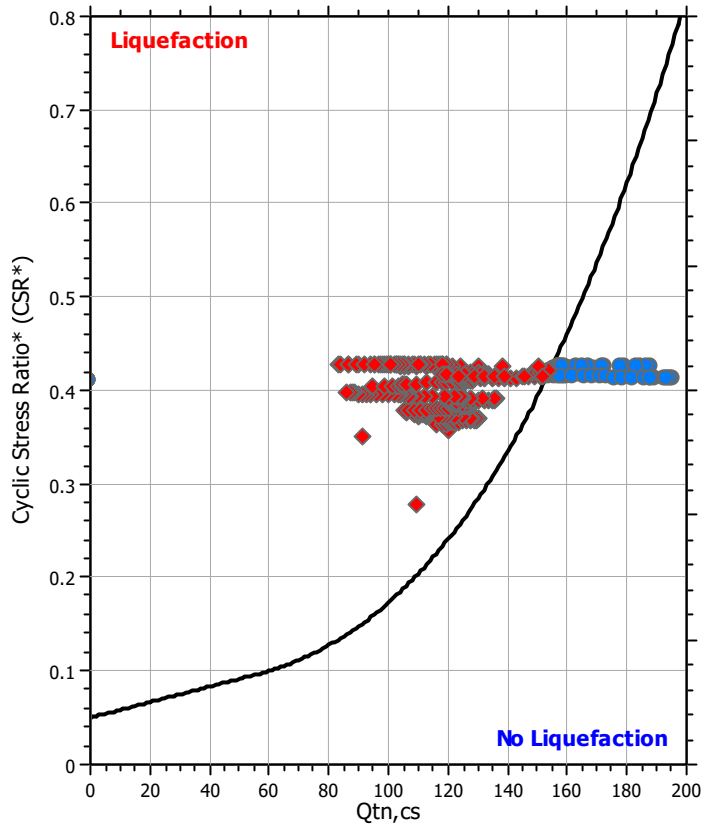
- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

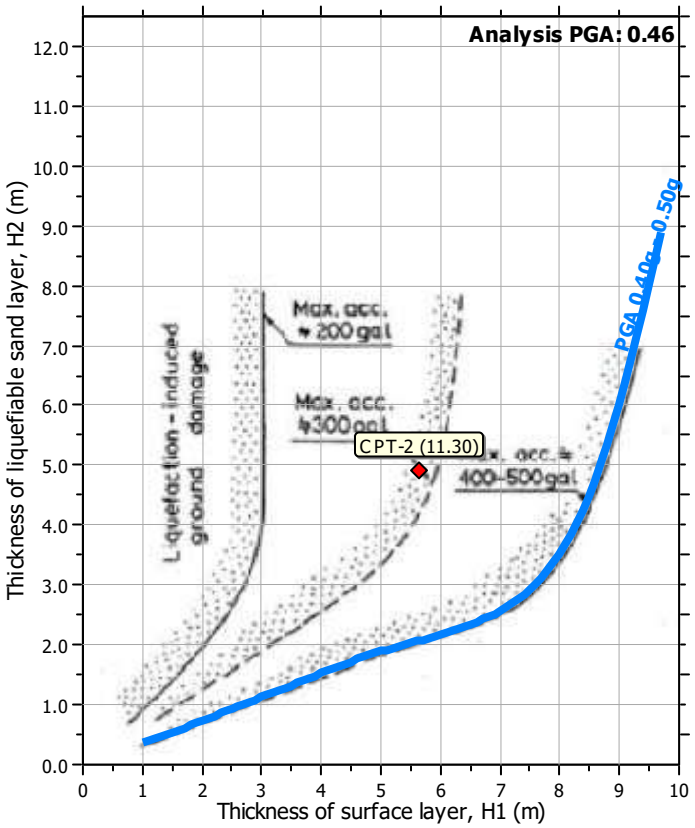
LPI color scheme

- Very high risk
- High risk
- Low risk

Liquefaction analysis summary plots



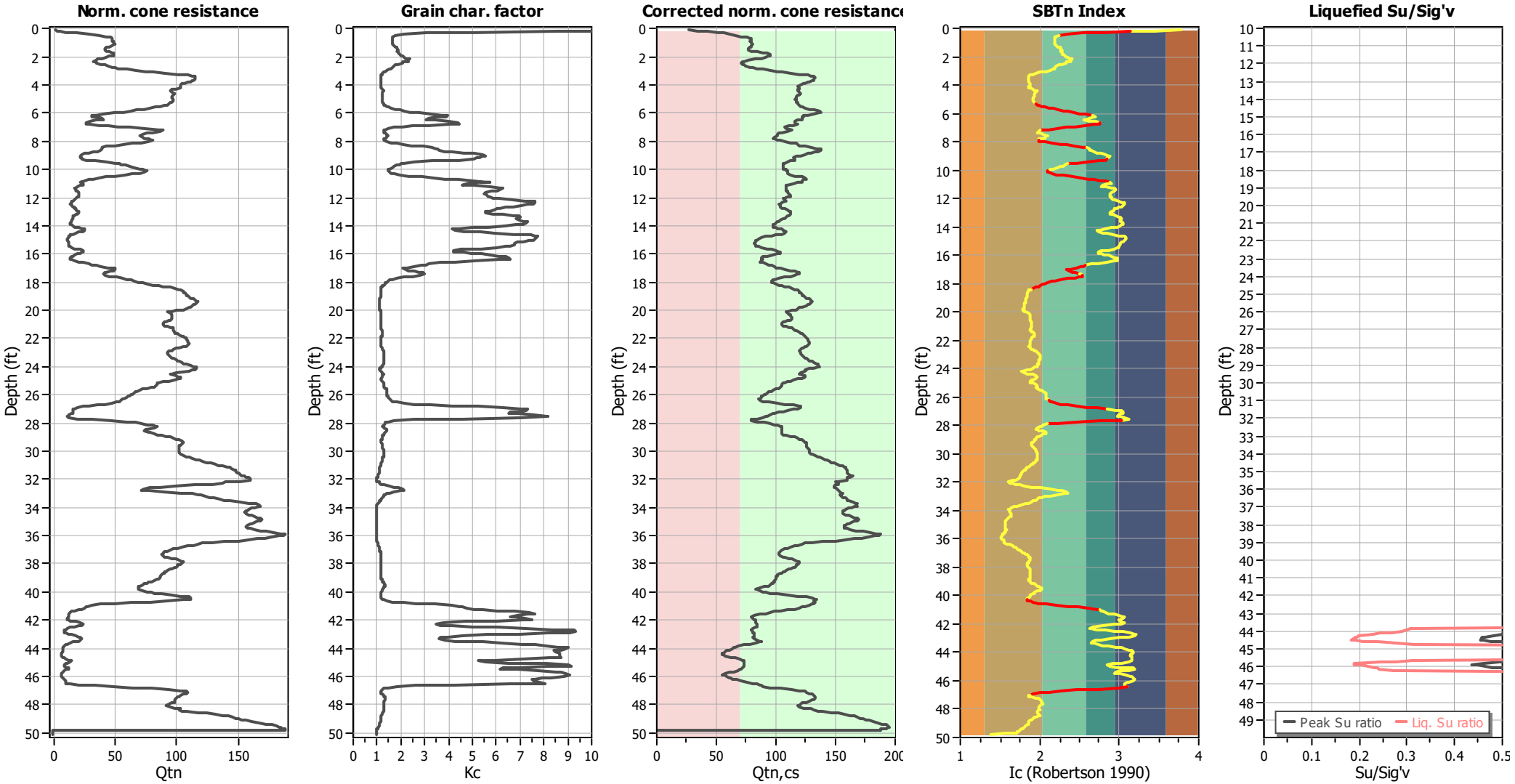




Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.08	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.46	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

Check for strength loss plots (Robertson (2010))



Input parameters and analysis data

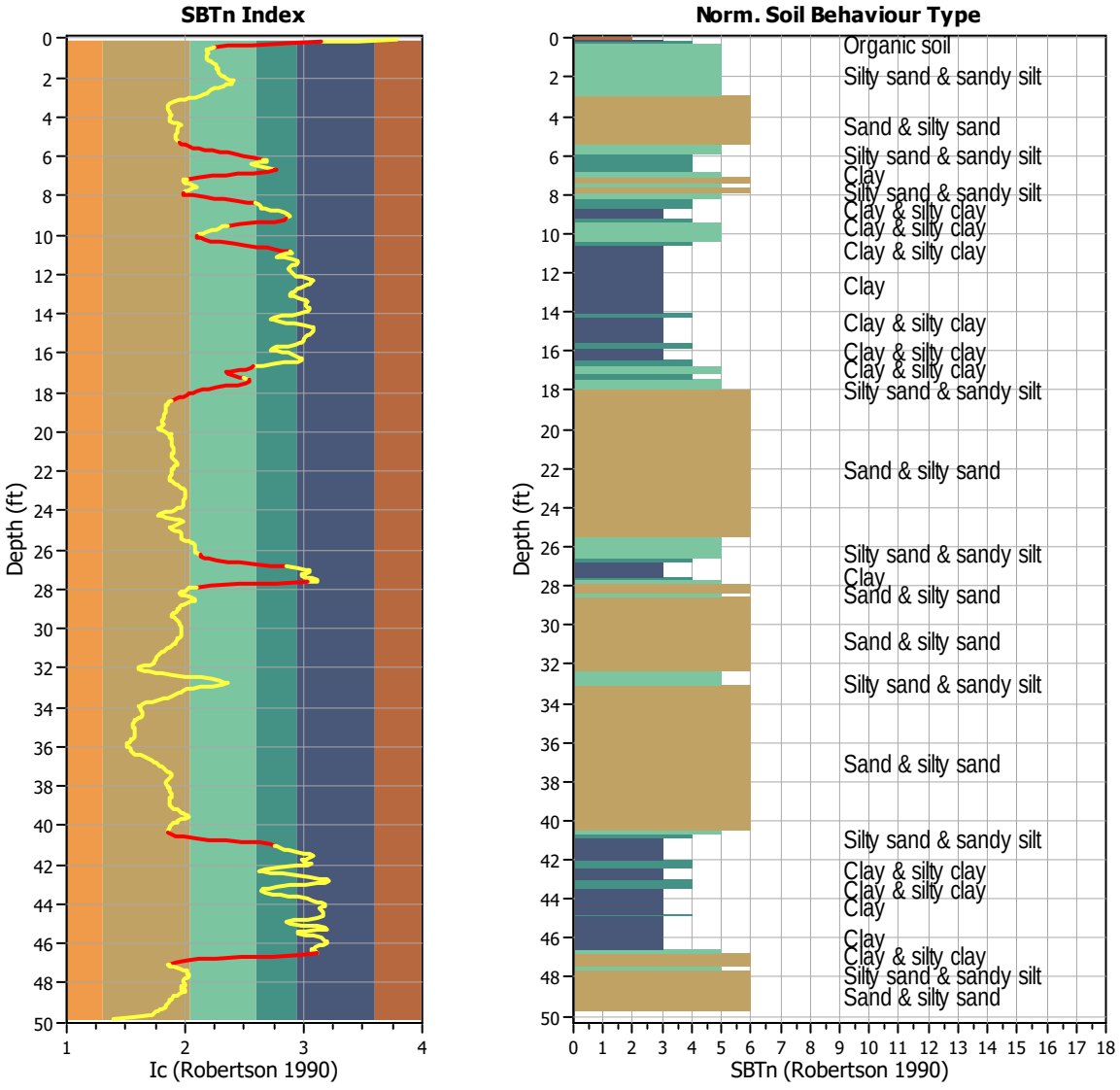
Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.08	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.46	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

TRANSITION LAYER DETECTION ALGORITHM REPORT
Summary Details & Plots

Short description

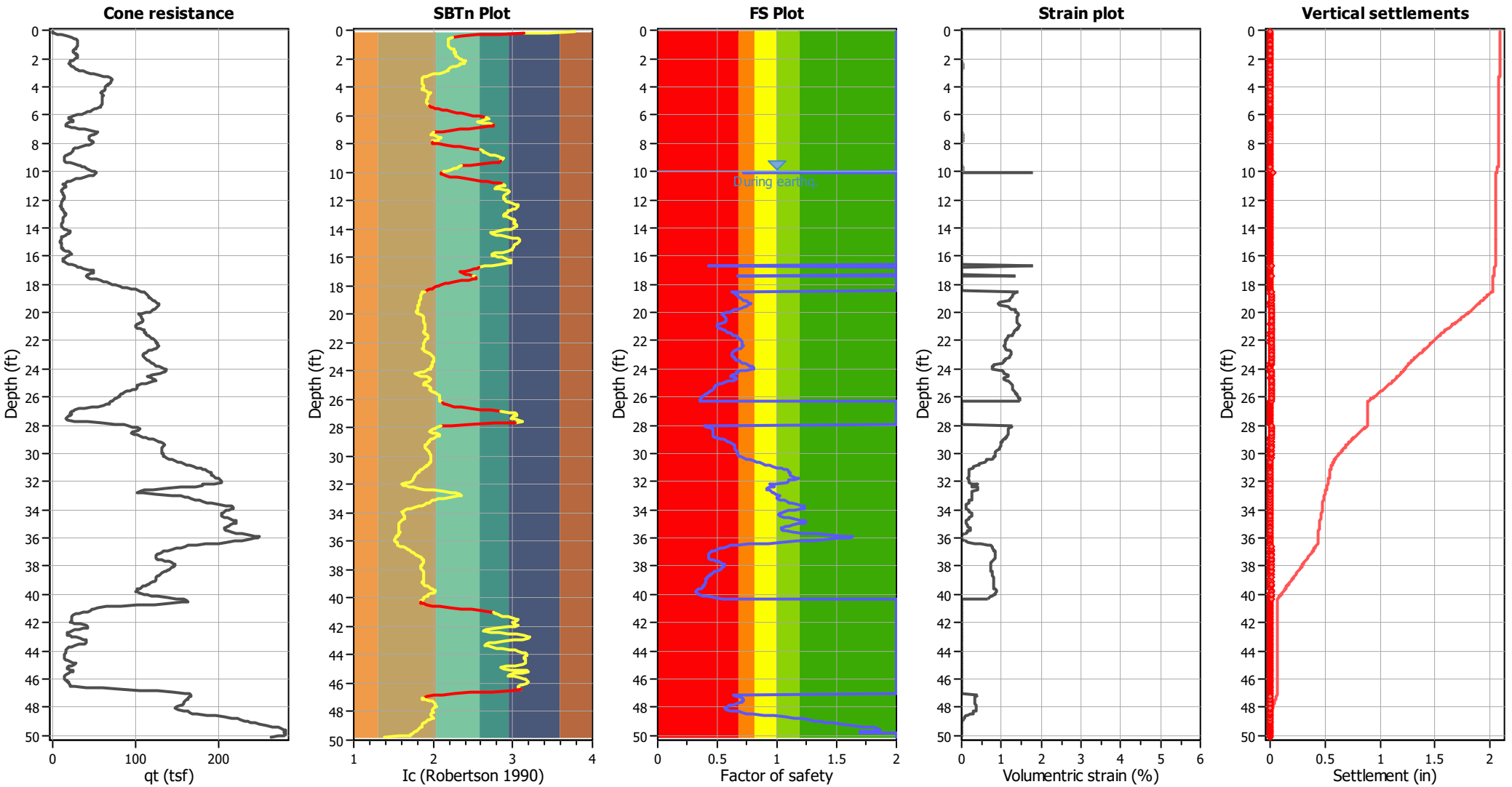
The software will delete data when the cone is in transition from either clay to sand or vise-versa. To do this the software requires a range of I_c values over which the transition will be defined (typically somewhere between $1.80 < I_c < 3.0$) and a rate of change of I_c. Transitions typically occur when the rate of change of I_c is fast (i.e. delta I_c is small).

The SBT_n plot below, displays in red the detected transition layers based on the parameters listed below the graphs.



Transition layer algorithm properties		General statistics	
I_c minimum check value:	1.70	Total points in CPT file:	764
I_c maximum check value:	3.00	Total points excluded:	119
I_c change ratio value:	0.0250	Exclusion percentage:	15.58%
Minimum number of points in layer:	4	Number of layers detected:	13

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

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Burbank, CA 91504
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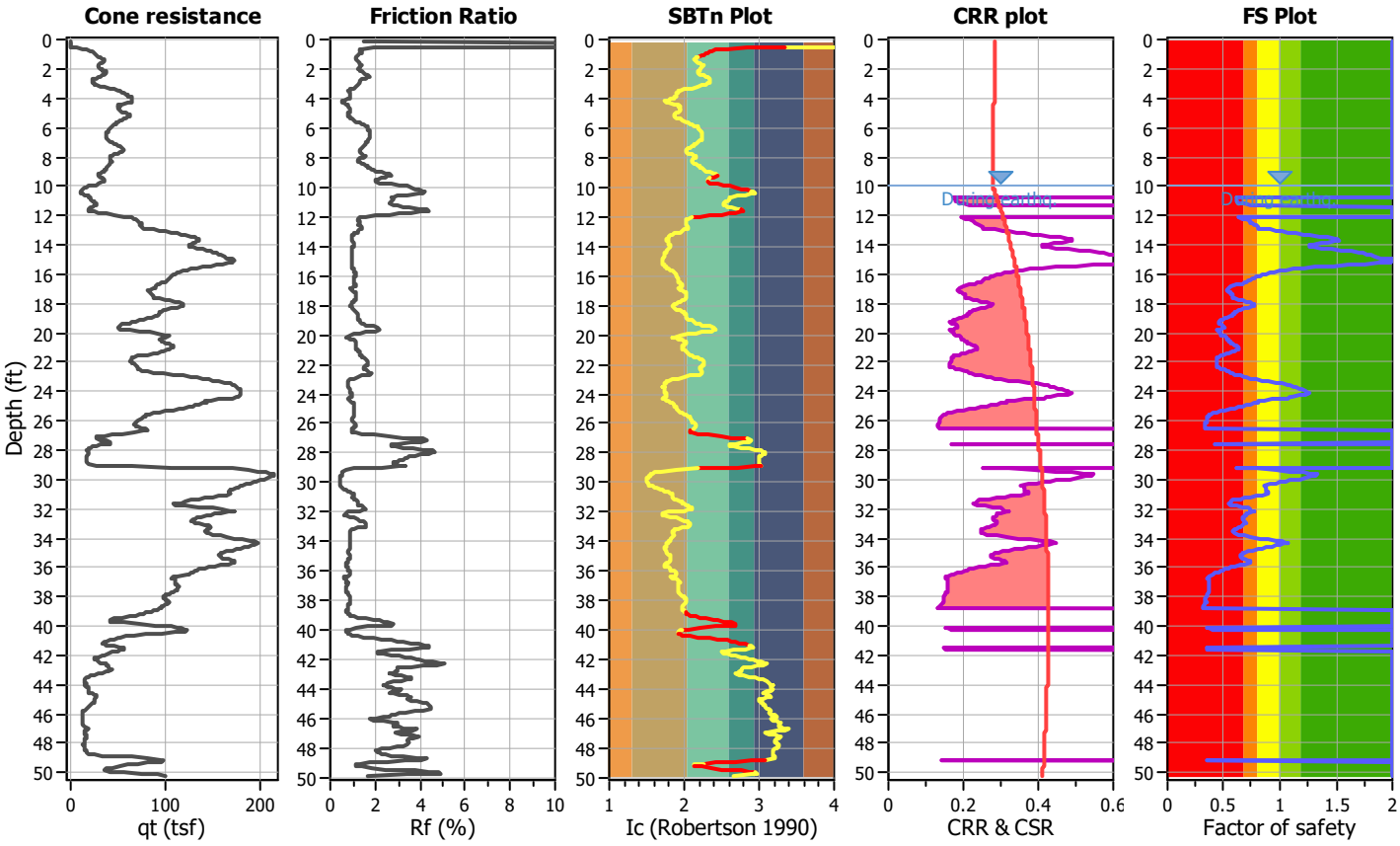
LIQUEFACTION ANALYSIS REPORT

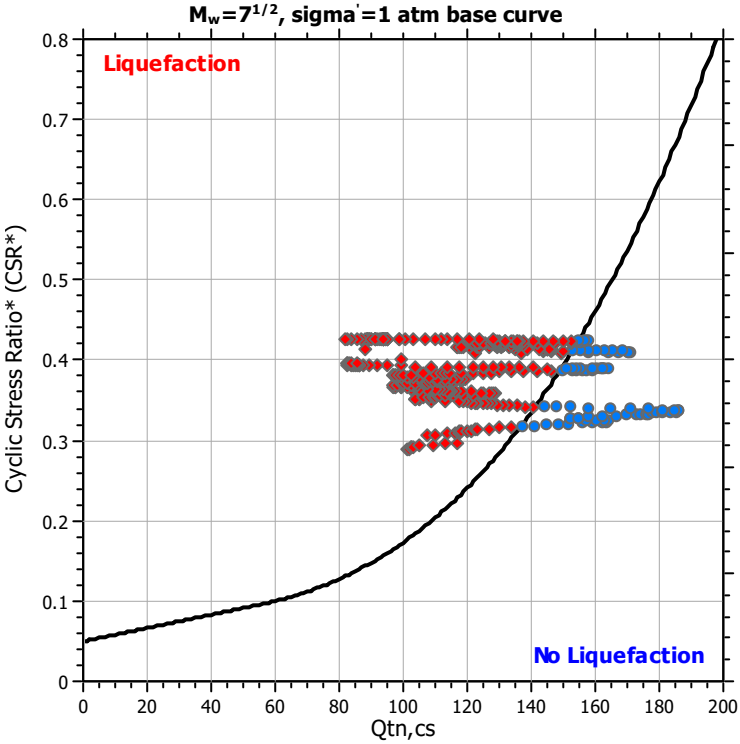
Project title : T2990-22-01 Continental Rancho Polo **Location : Northeast Corner of 58th Avenue & Oasis Street,**

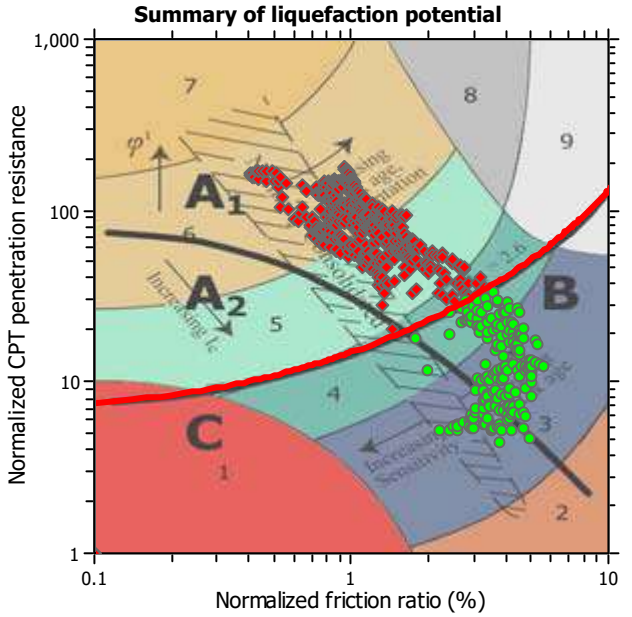
CPT file : CPT-3

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	20.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	10.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	7.08	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.46	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

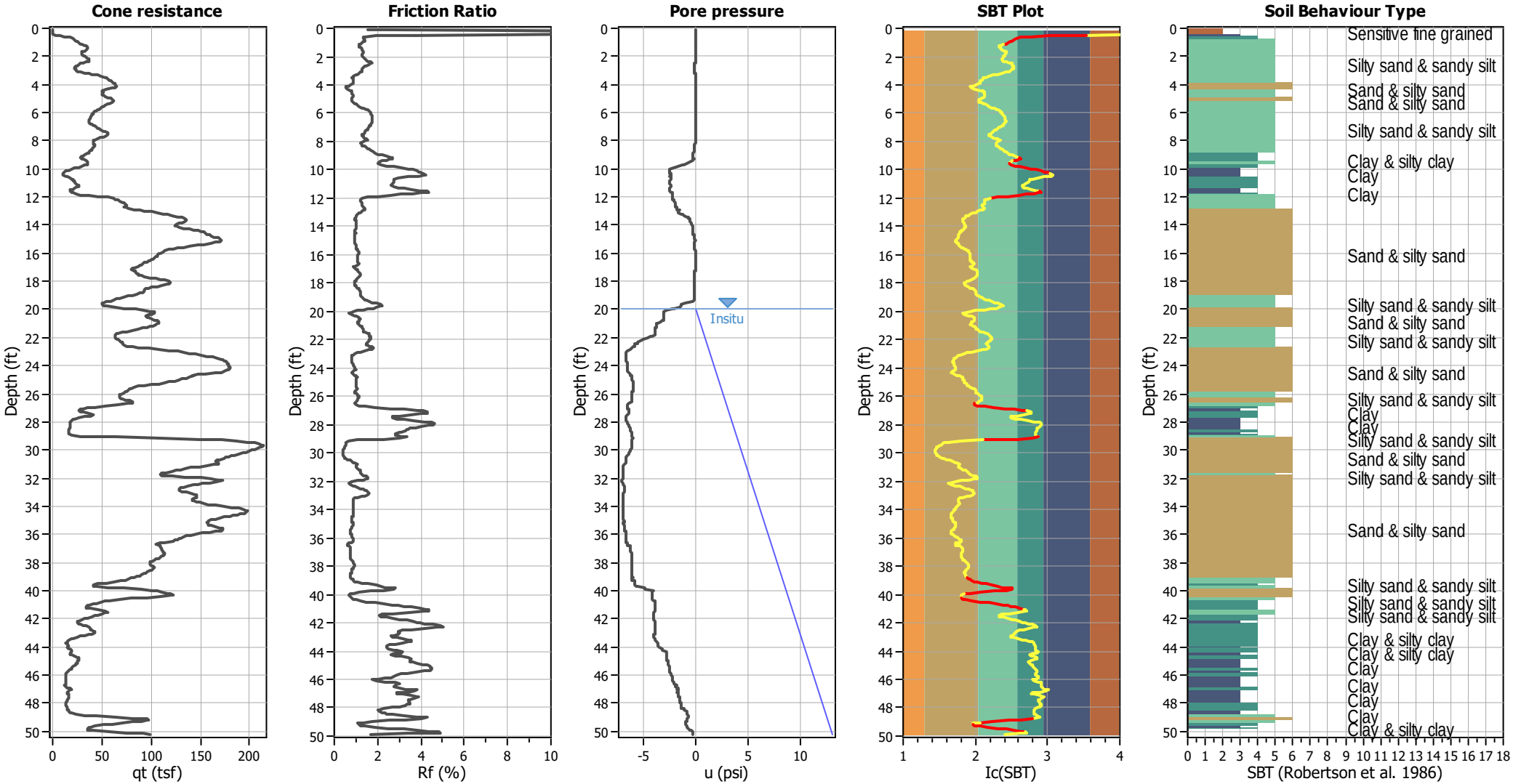






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



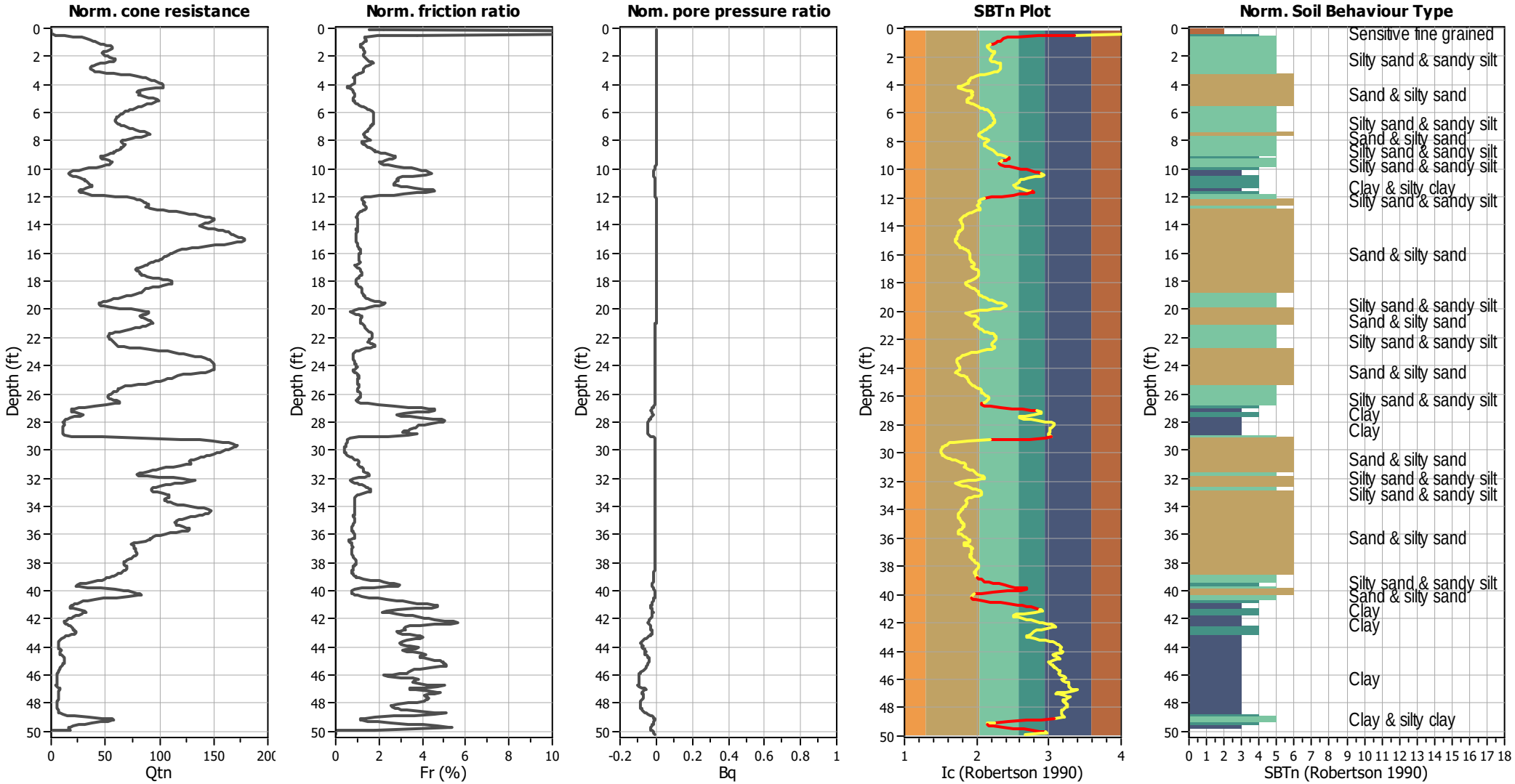
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.08	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.46	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.08	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.46	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
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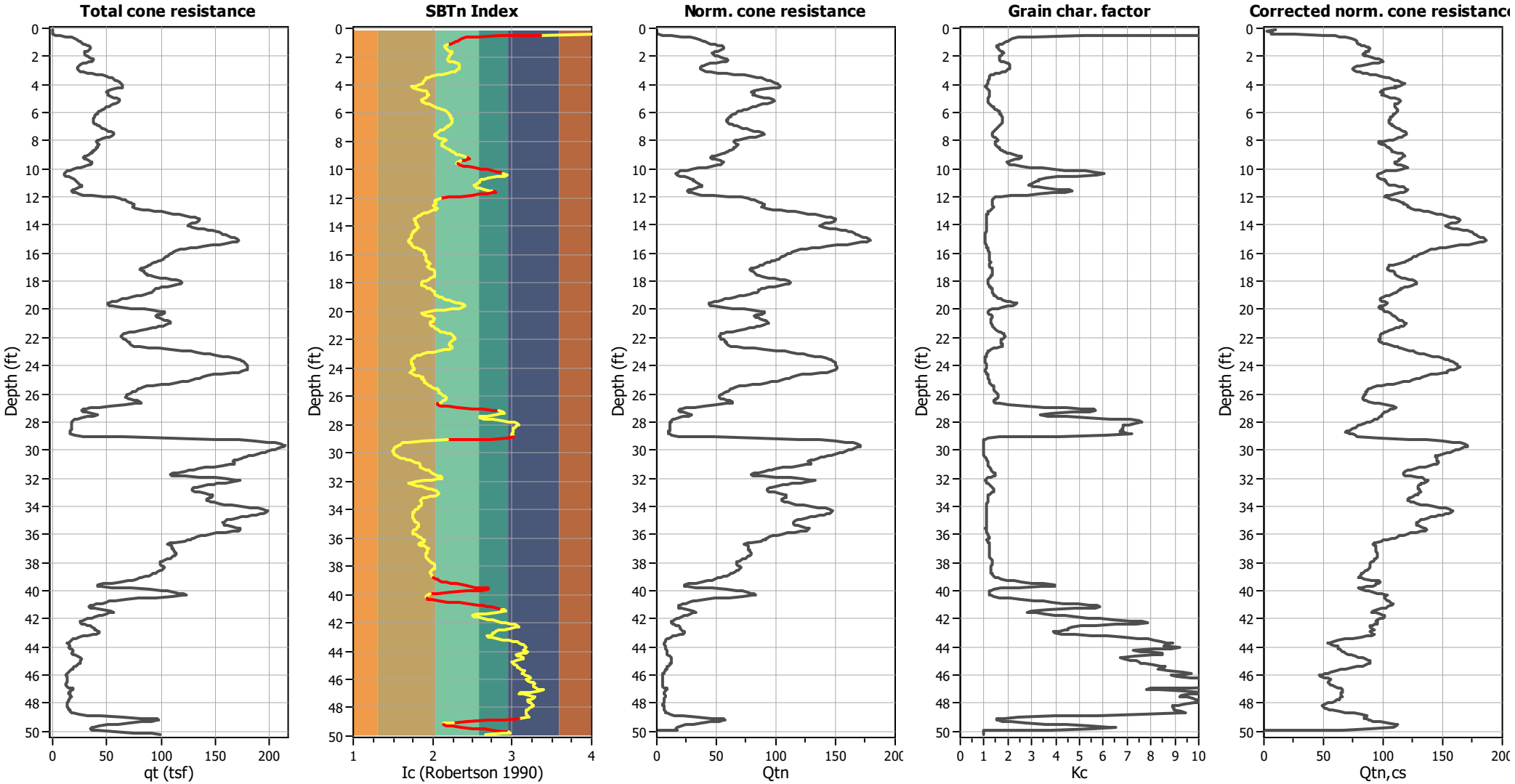
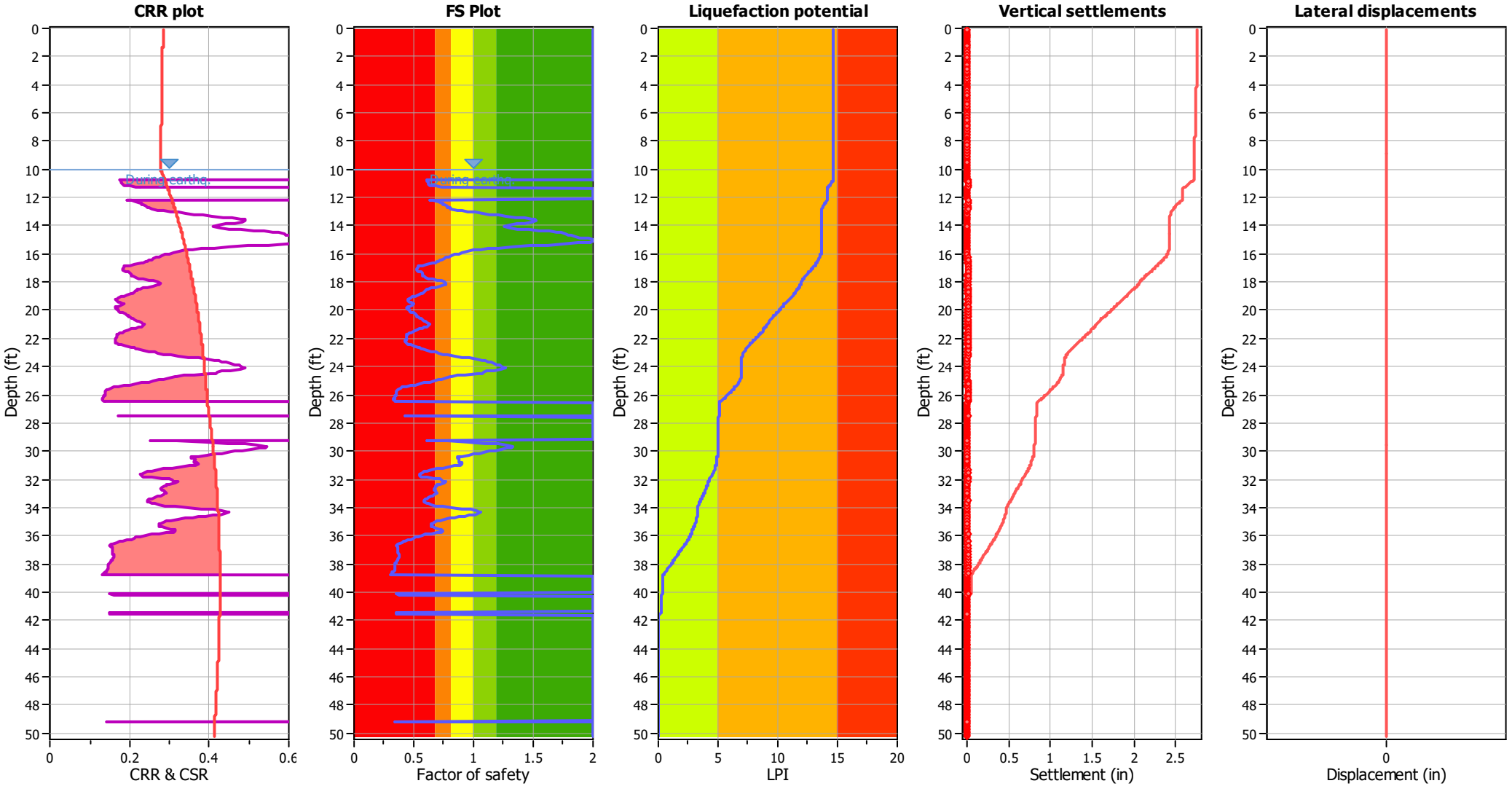
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.08	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.46	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.08	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.46	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

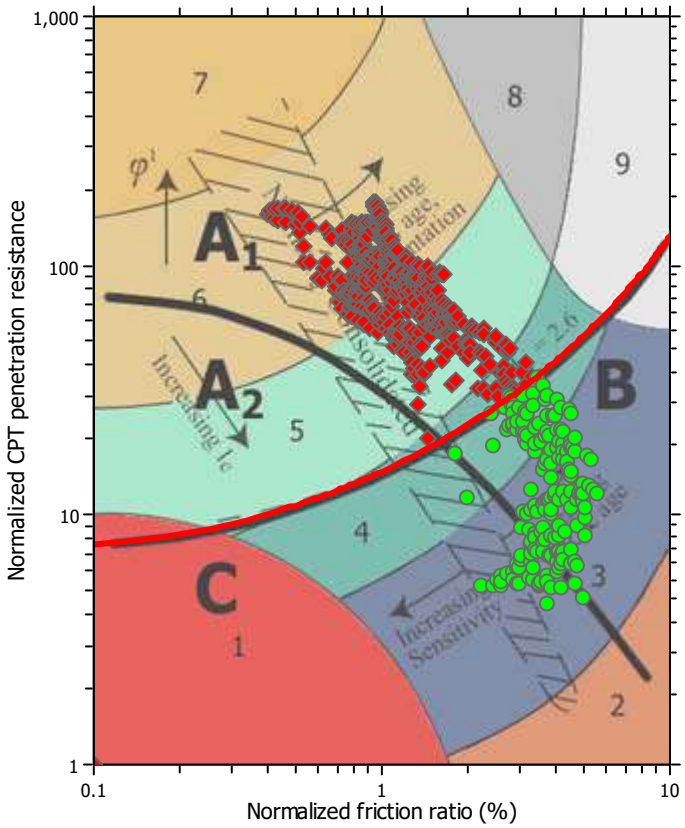
F.S. color scheme

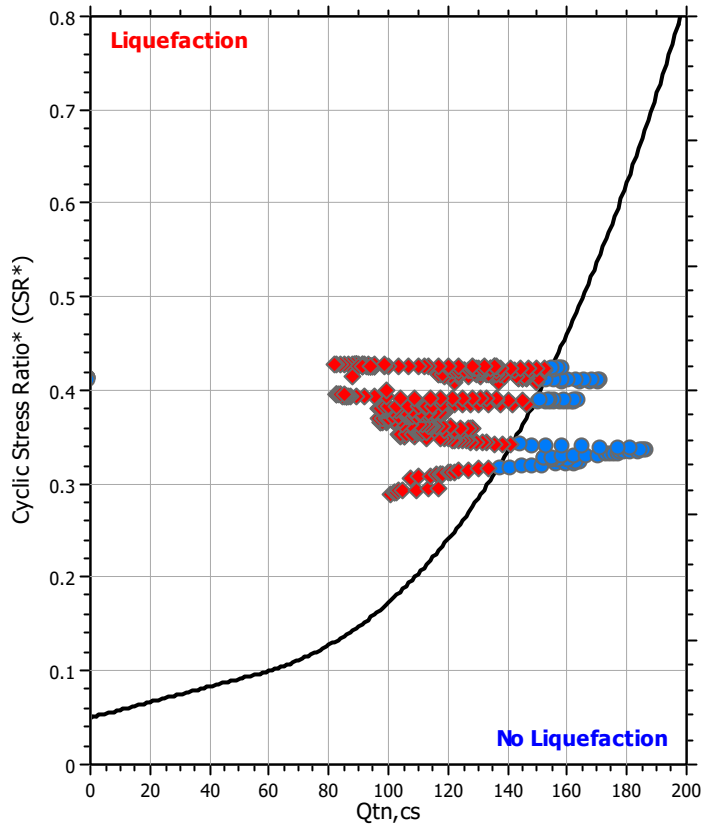
- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

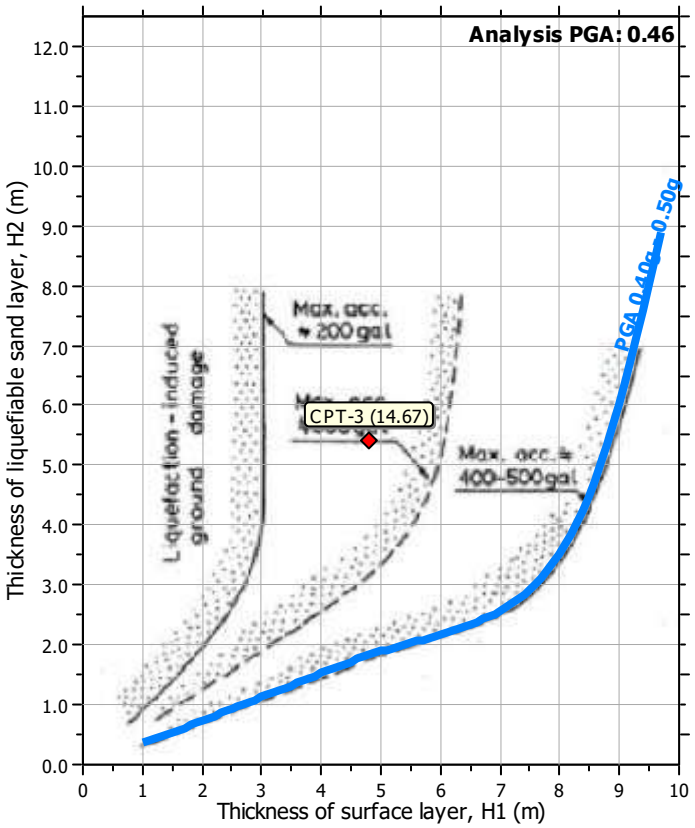
LPI color scheme

- Very high risk
- High risk
- Low risk

Liquefaction analysis summary plots



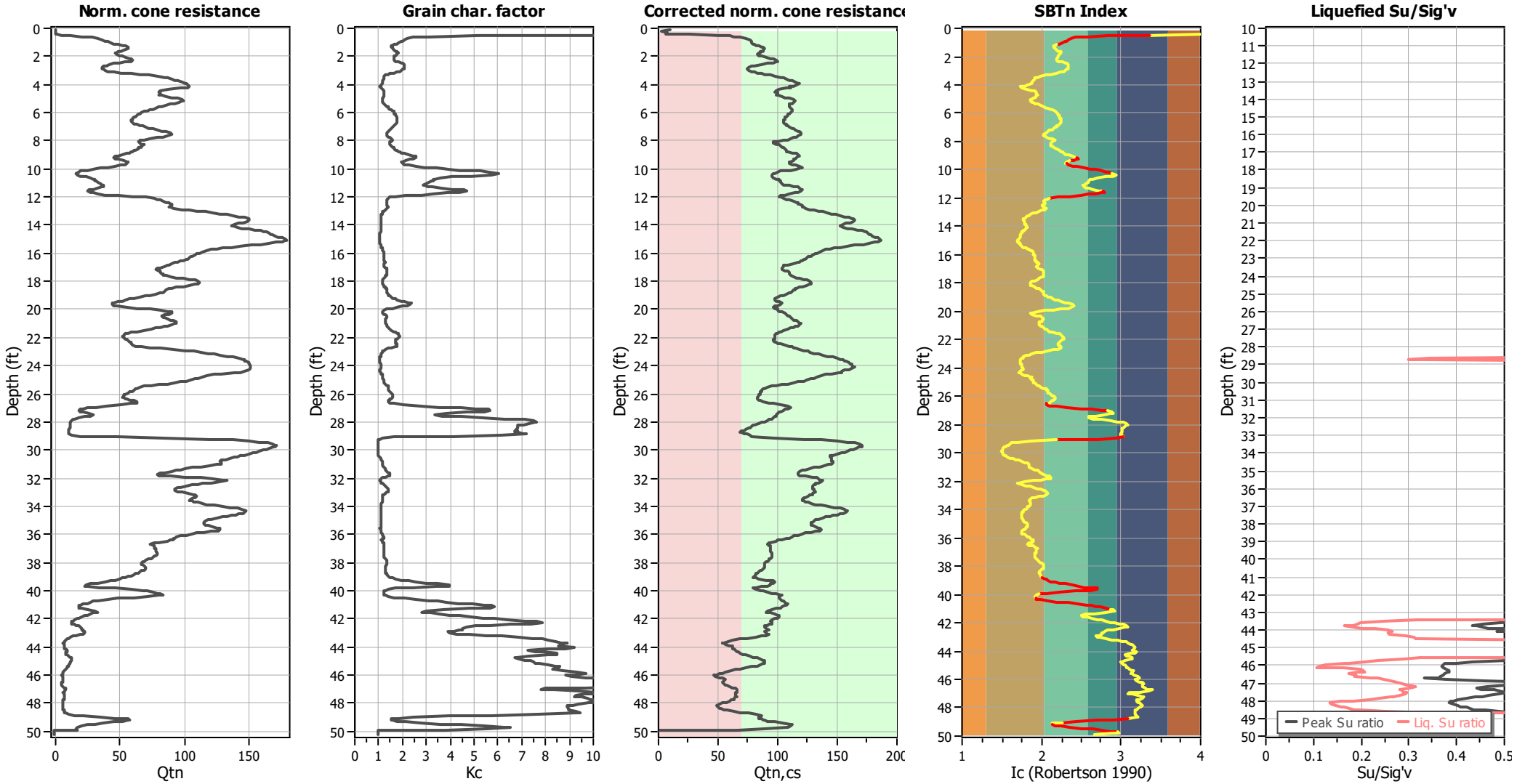




Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.08	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.46	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

Check for strength loss plots (Robertson (2010))



Input parameters and analysis data

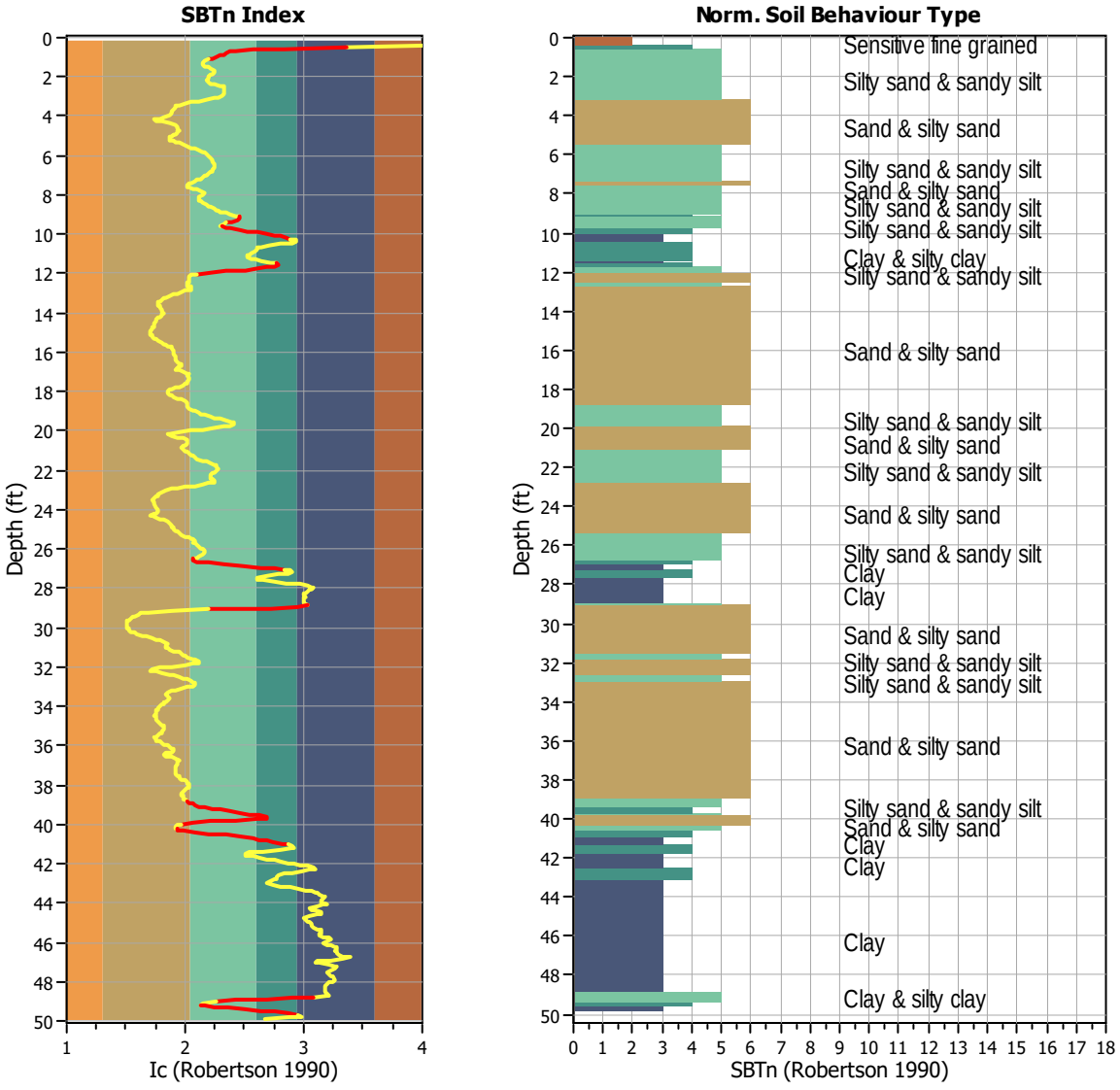
Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.08	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.46	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

TRANSITION LAYER DETECTION ALGORITHM REPORT
Summary Details & Plots

Short description

The software will delete data when the cone is in transition from either clay to sand or vise-versa. To do this the software requires a range of I_c values over which the transition will be defined (typically somewhere between 1.80 < I_c < 3.0) and a rate of change of I_c. Transitions typically occur when the rate of change of I_c is fast (i.e. delta I_c is small).

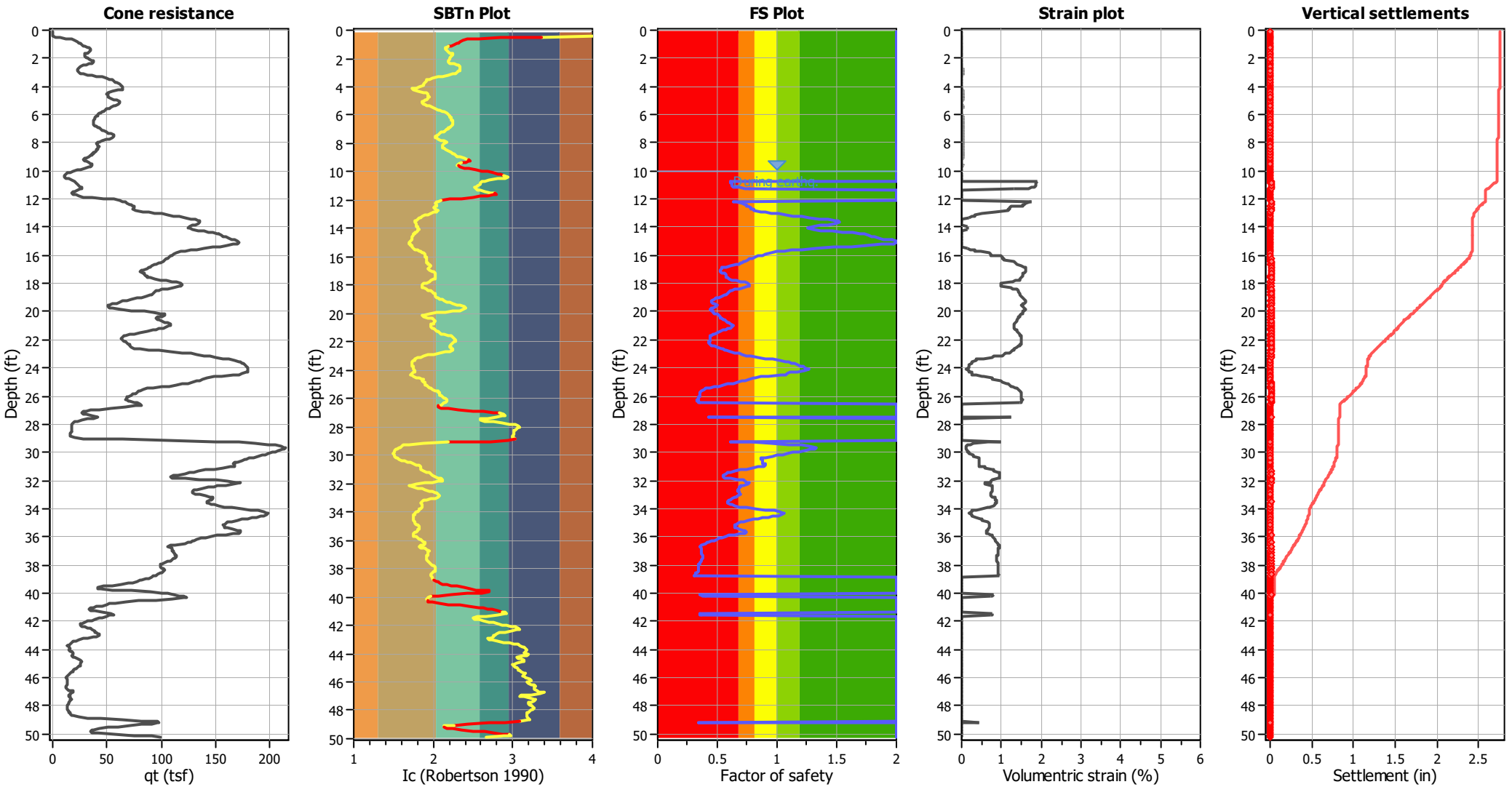
The SBT_n plot below, displays in red the detected transition layers based on the parameters listed below the graphs.



Transition layer algorithm properties	
I_c minimum check value:	1.70
I_c maximum check value:	3.00
I_c change ratio value:	0.0250
Minimum number of points in layer:	4

General statistics	
Total points in CPT file:	765
Total points excluded:	95
Exclusion percentage:	12.42%
Number of layers detected:	11

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

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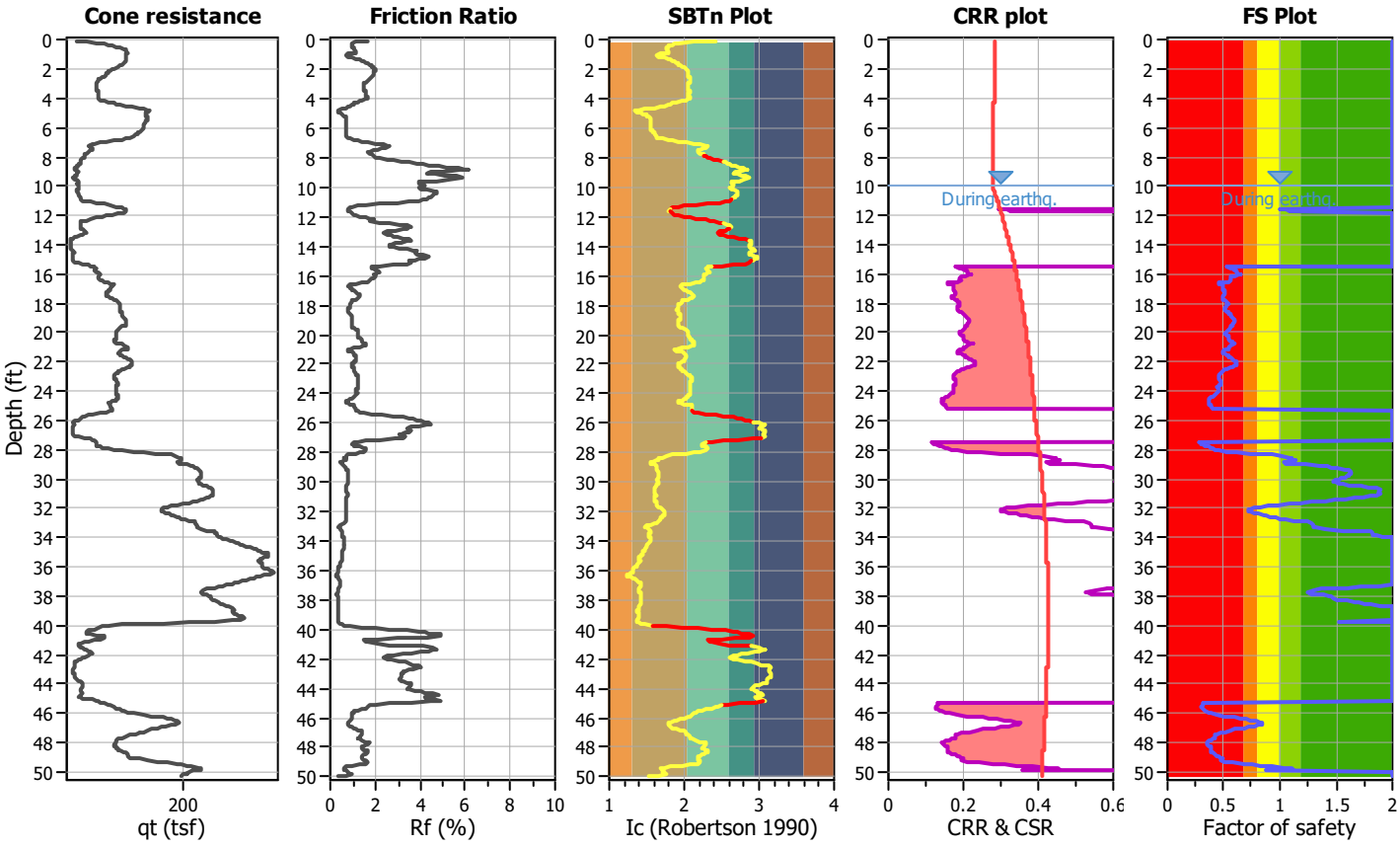
LIQUEFACTION ANALYSIS REPORT

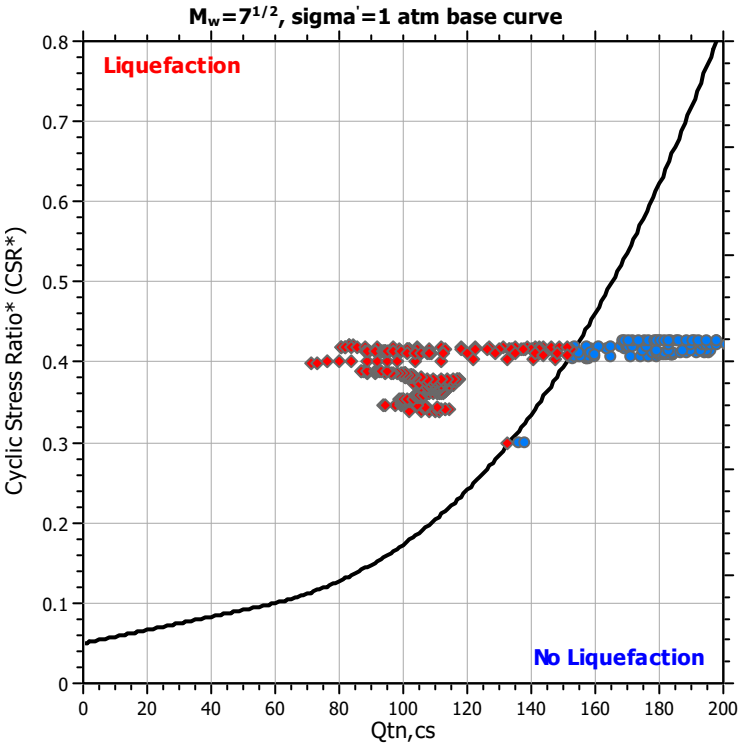
Project title : T2990-22-01 Continental Rancho Polo **Location : Northeast Corner of 58th Avenue & Oasis Street,**

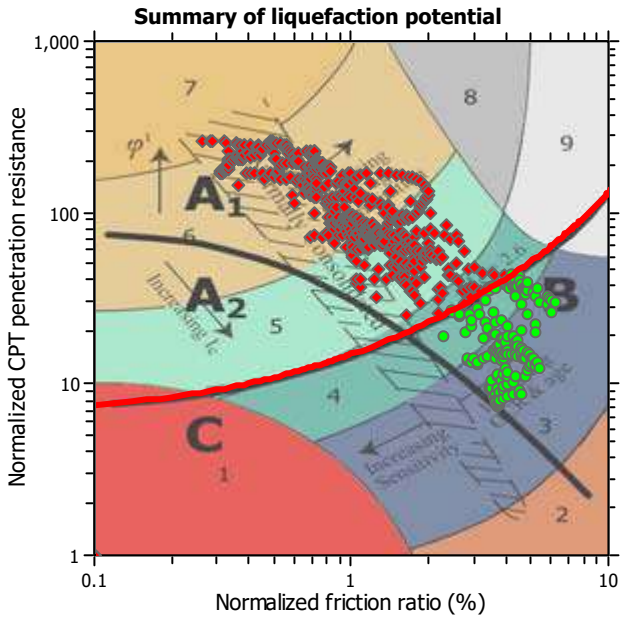
CPT file : CPT-4

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	20.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	10.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	7.08	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.46	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

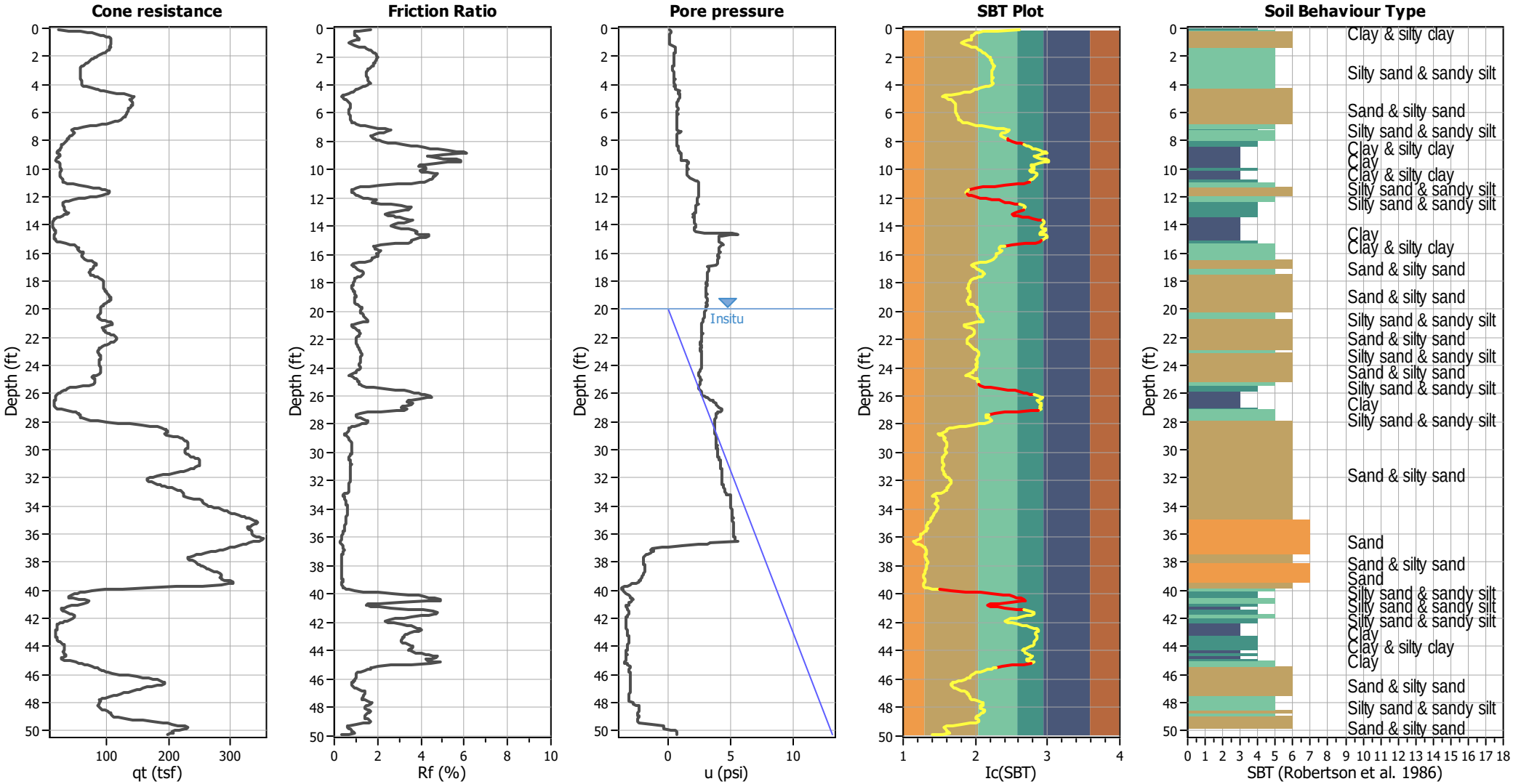






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



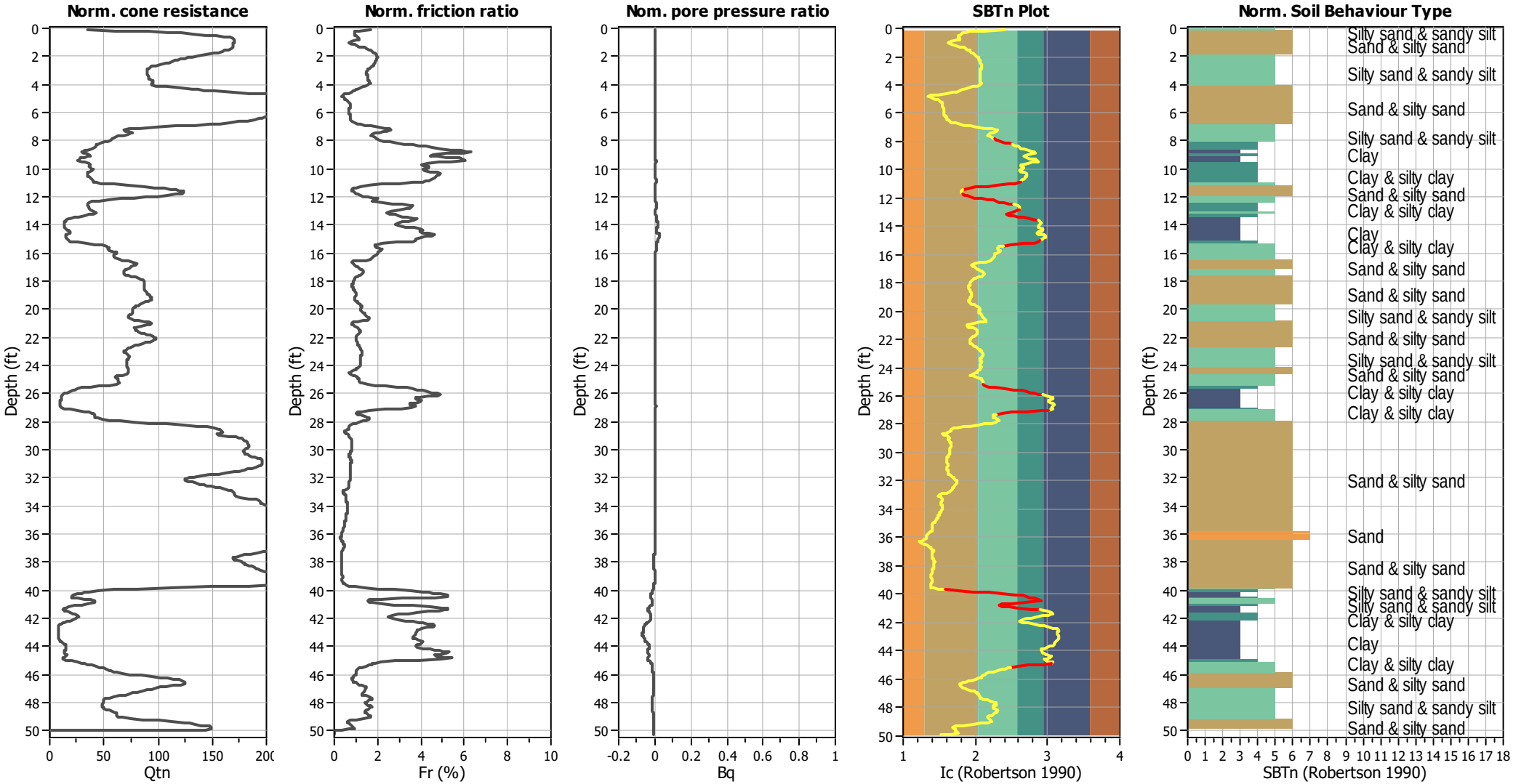
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.08	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.46	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.08	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.46	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
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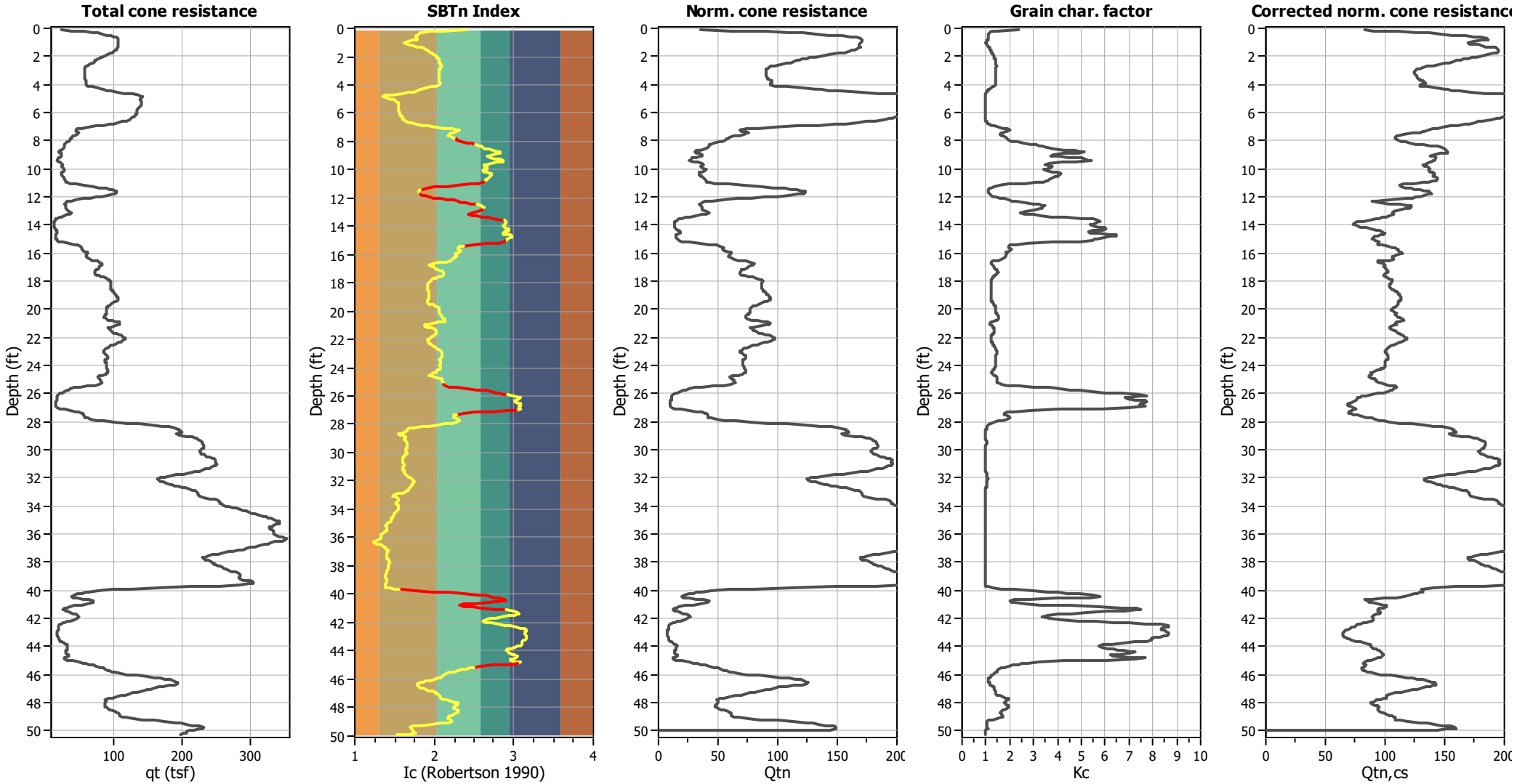
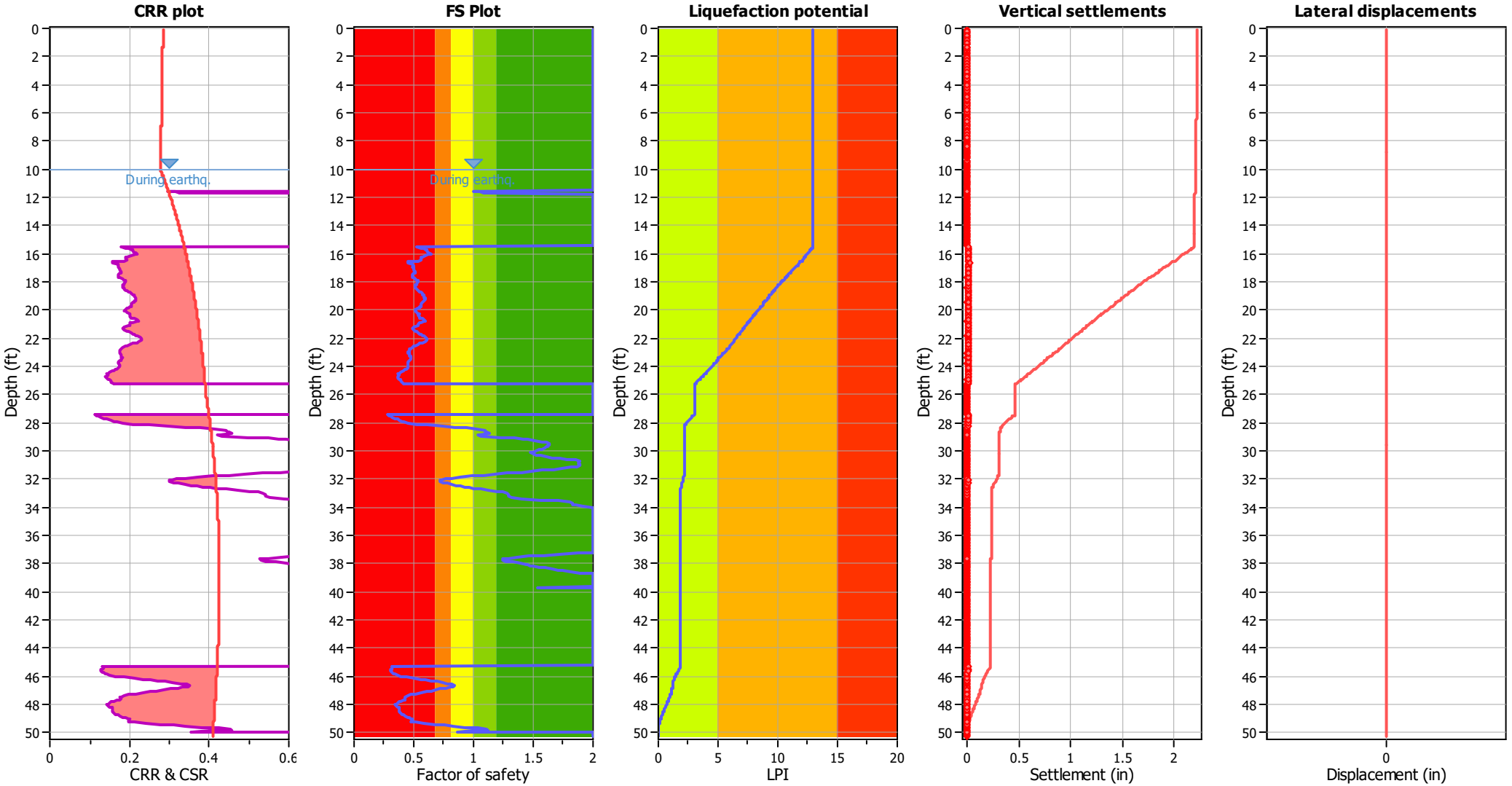
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.08	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.46	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.08	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.46	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

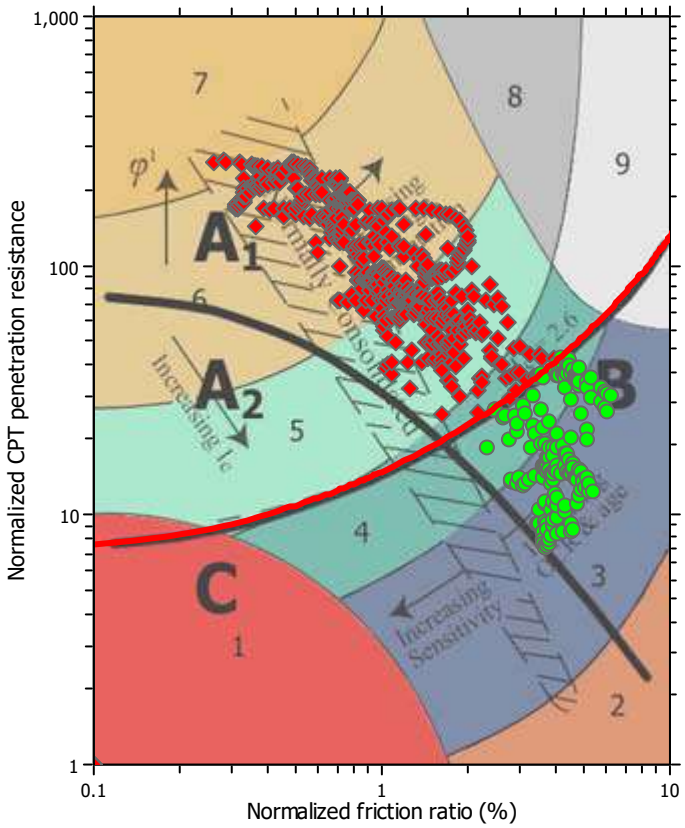
F.S. color scheme

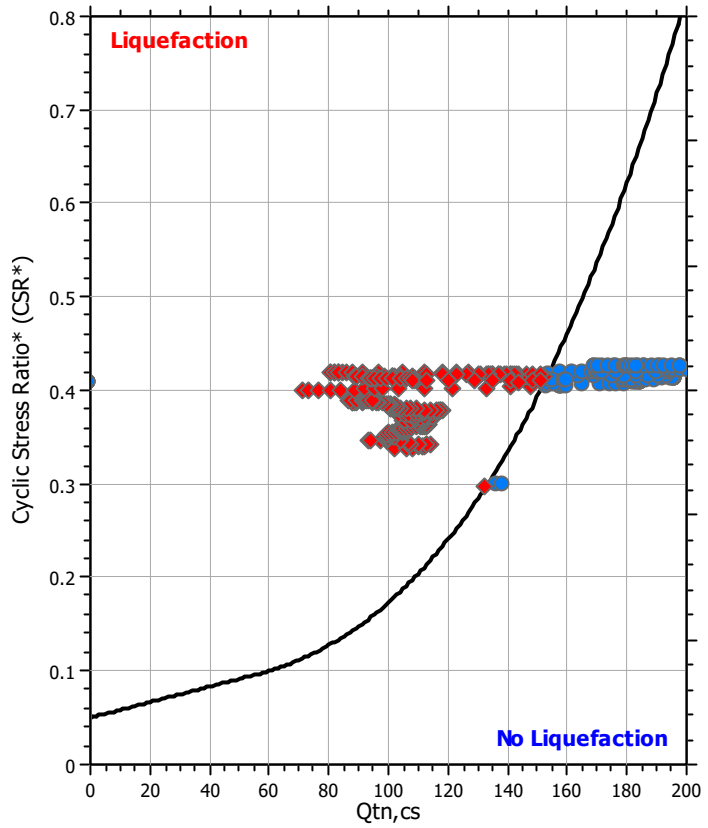
- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

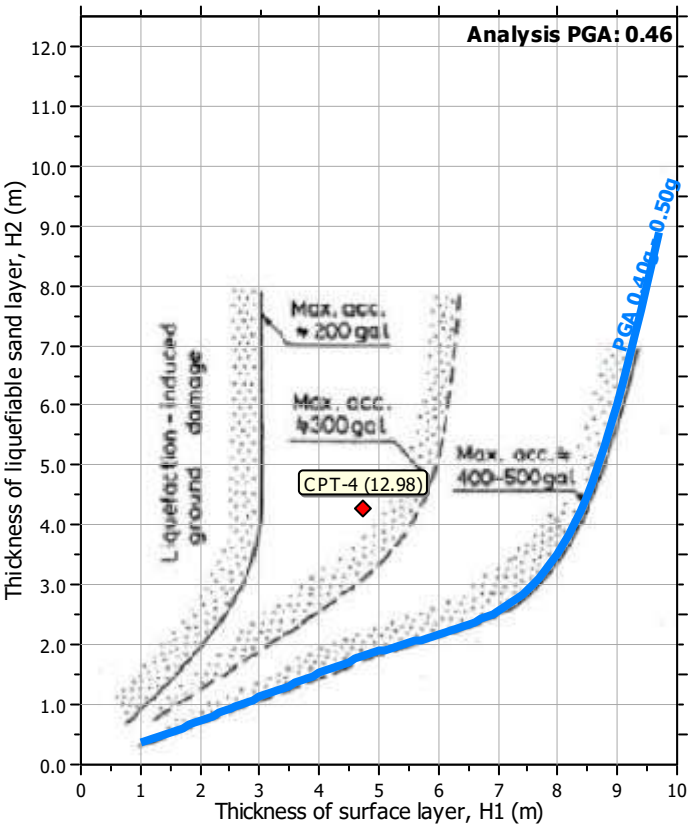
LPI color scheme

- Very high risk
- High risk
- Low risk

Liquefaction analysis summary plots



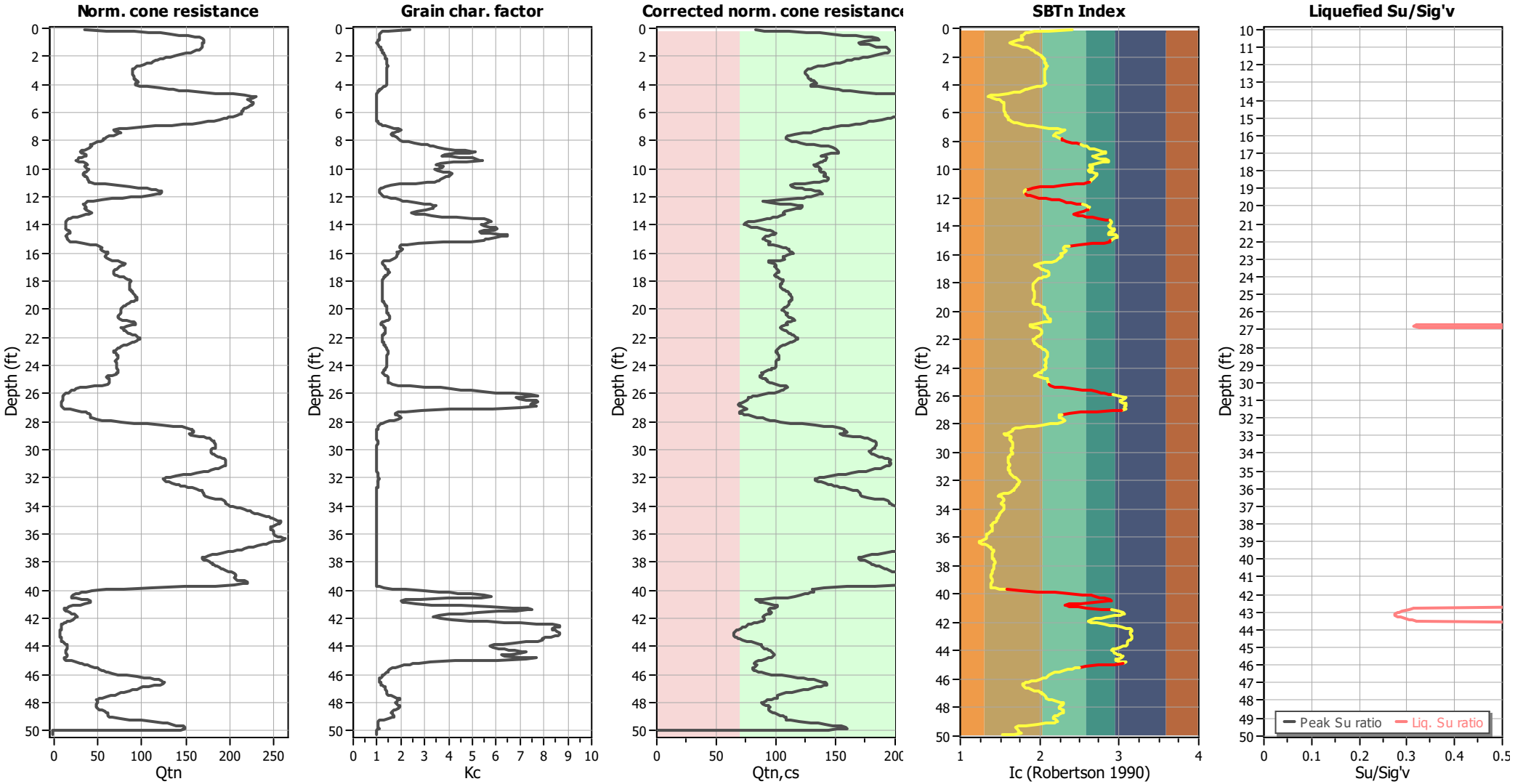




Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.08	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.46	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

Check for strength loss plots (Robertson (2010))



Input parameters and analysis data

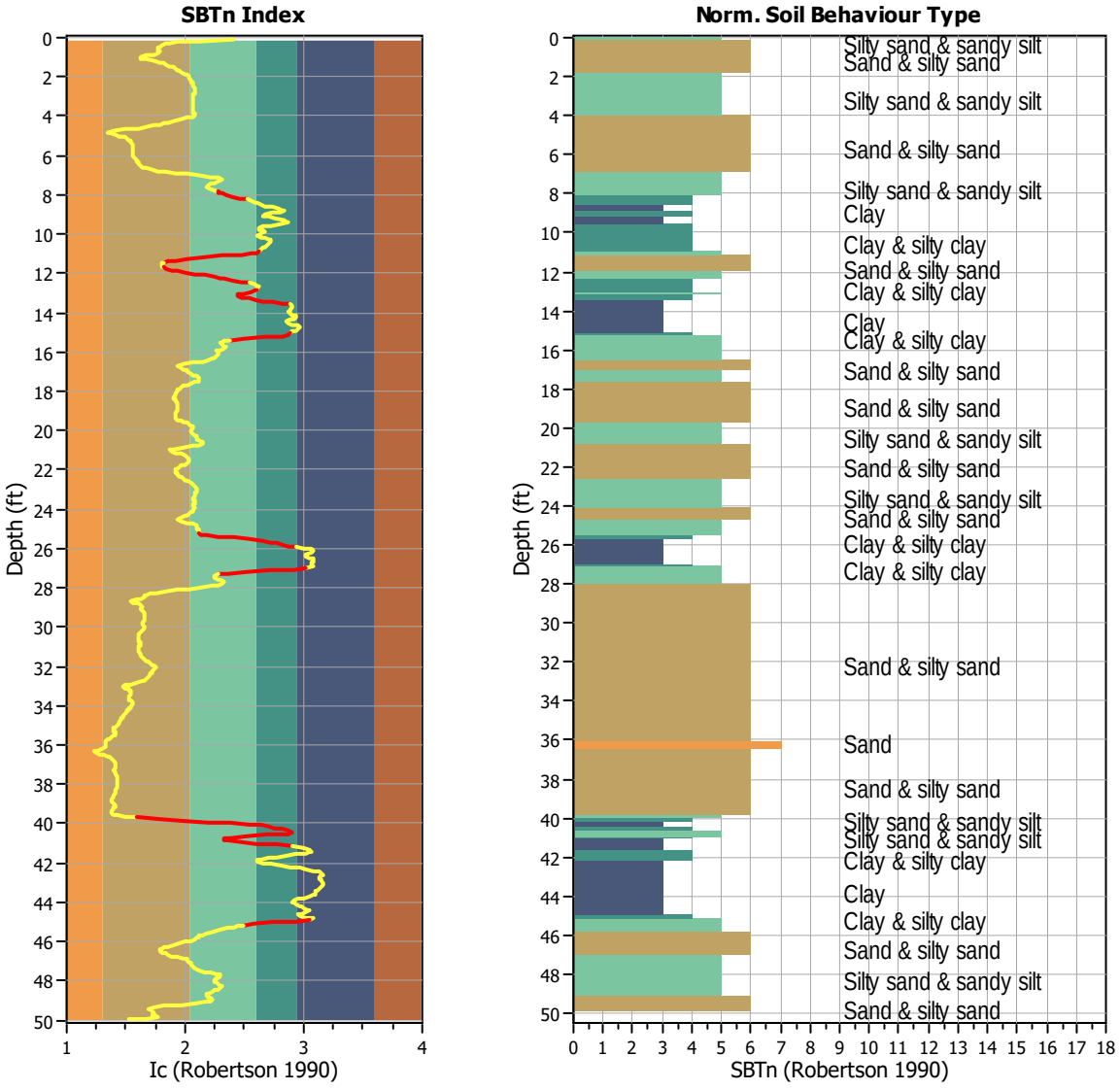
Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.08	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.46	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

TRANSITION LAYER DETECTION ALGORITHM REPORT
Summary Details & Plots

Short description

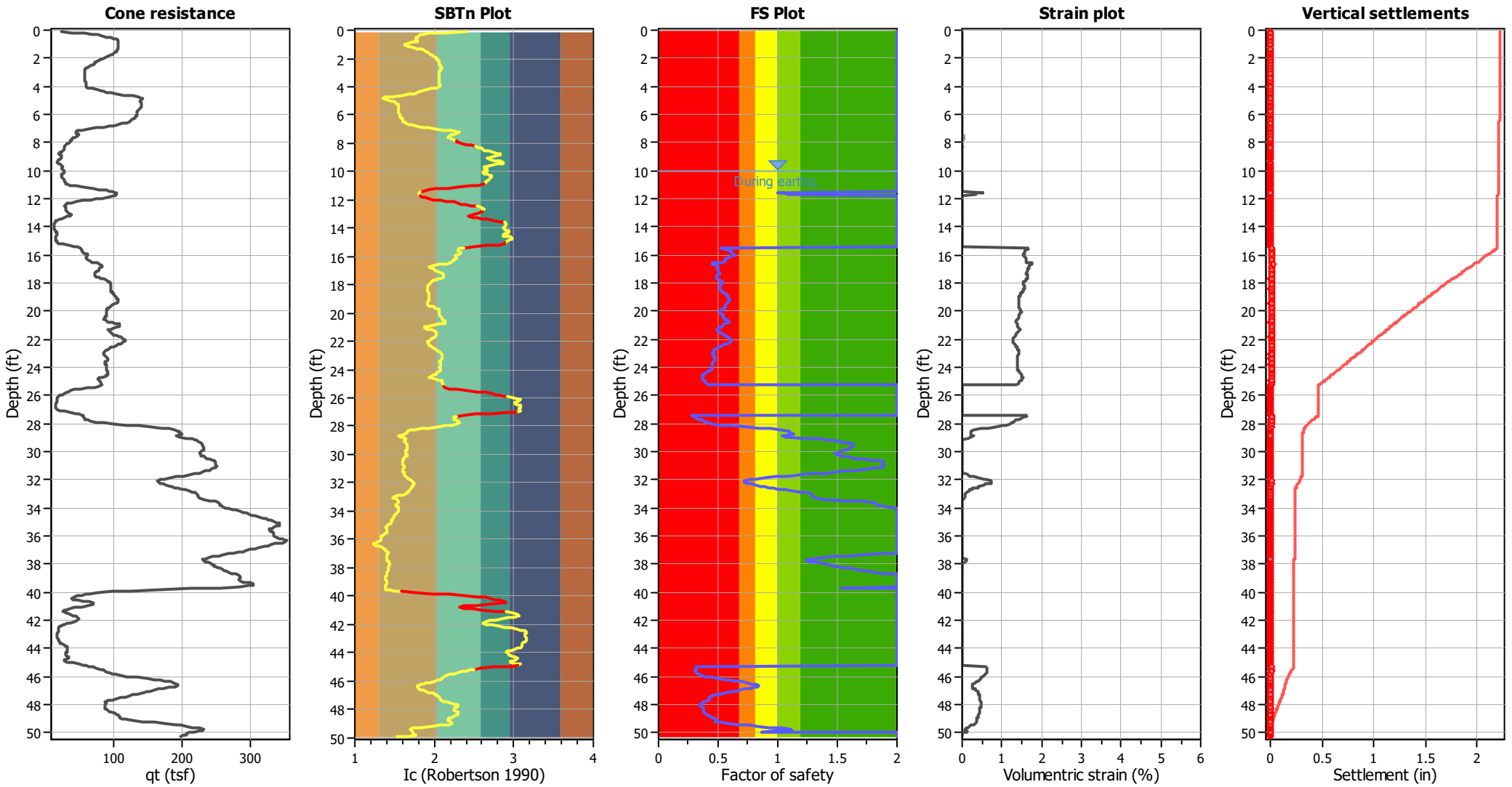
The software will delete data when the cone is in transition from either clay to sand or vise-versa. To do this the software requires a range of I_c values over which the transition will be defined (typically somewhere between 1.80 < I_c < 3.0) and a rate of change of I_c. Transitions typically occur when the rate of change of I_c is fast (i.e. delta I_c is small).

The SBT_n plot below, displays in red the detected transition layers based on the parameters listed below the graphs.



Transition layer algorithm properties		General statistics	
I_c minimum check value:	1.70	Total points in CPT file:	766
I_c maximum check value:	3.00	Total points excluded:	96
I_c change ratio value:	0.0250	Exclusion percentage:	12.53%
Minimum number of points in layer:	4	Number of layers detected:	12

Estimation of post-earthquake settlements

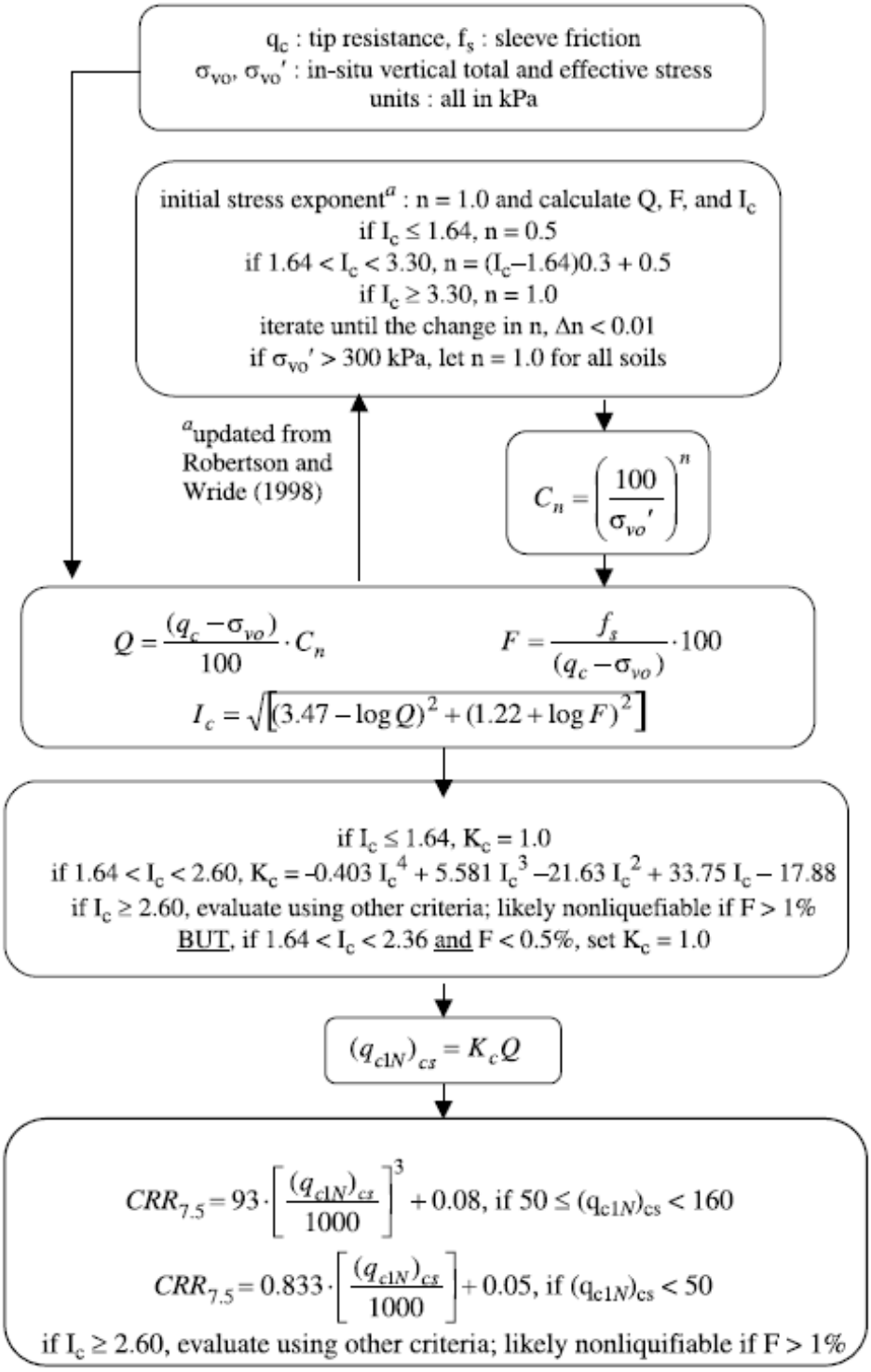


Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

Procedure for the evaluation of soil liquefaction resistance, NCEER (1998)

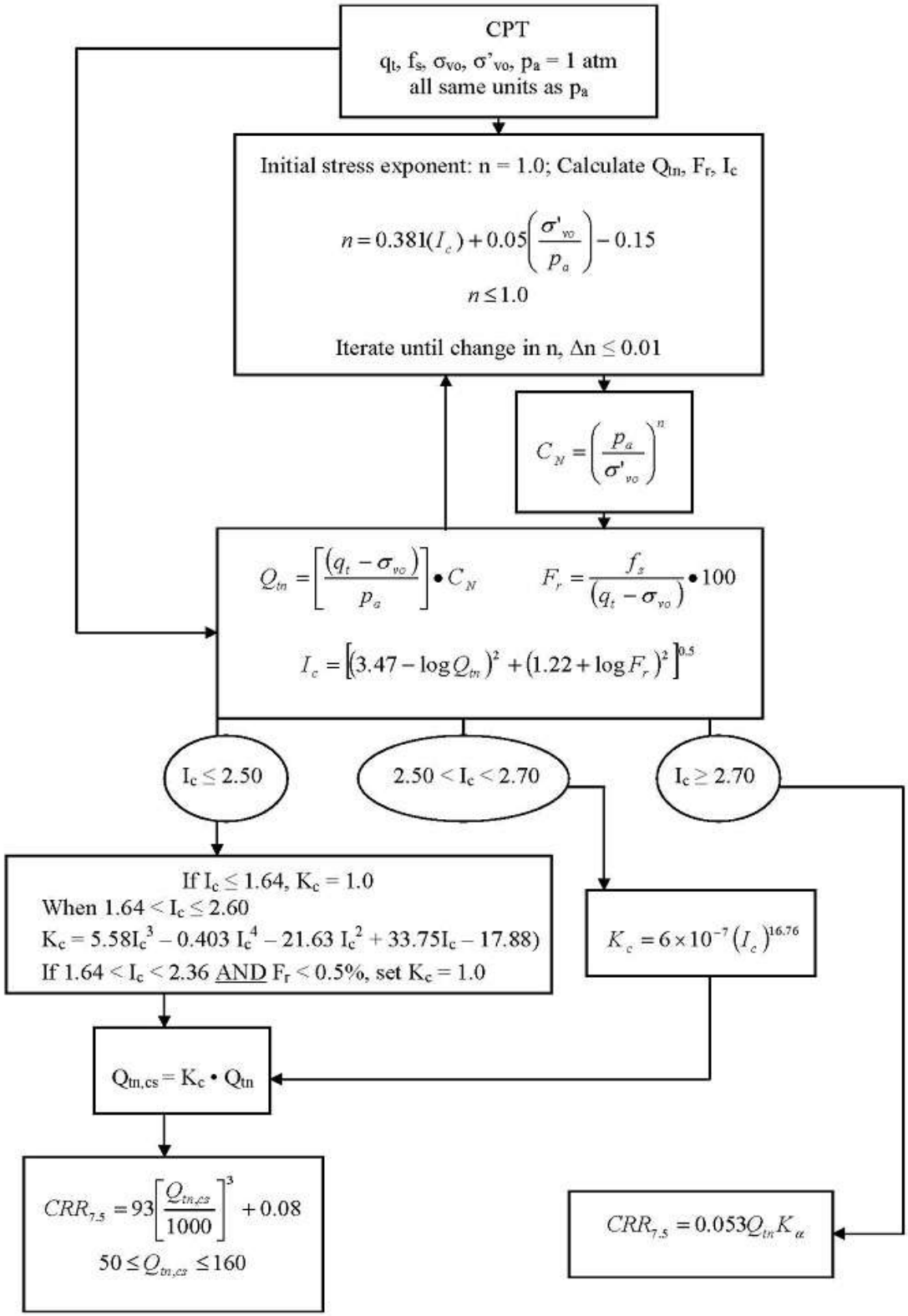
Calculation of soil resistance against liquefaction is performed according to the Robertson & Wride (1998) procedure. The procedure used in the software, slightly differs from the one originally published in NCEER-97-0022 (Proceedings of the NCEER Workshop on Evaluation of Liquefaction Resistance of Soils). The revised procedure is presented below in the form of a flowchart[1]:



[1] "Estimating liquefaction-induced ground settlements from CPT for level ground", G. Zhang, P.K. Robertson, and R.W.I. Brachman

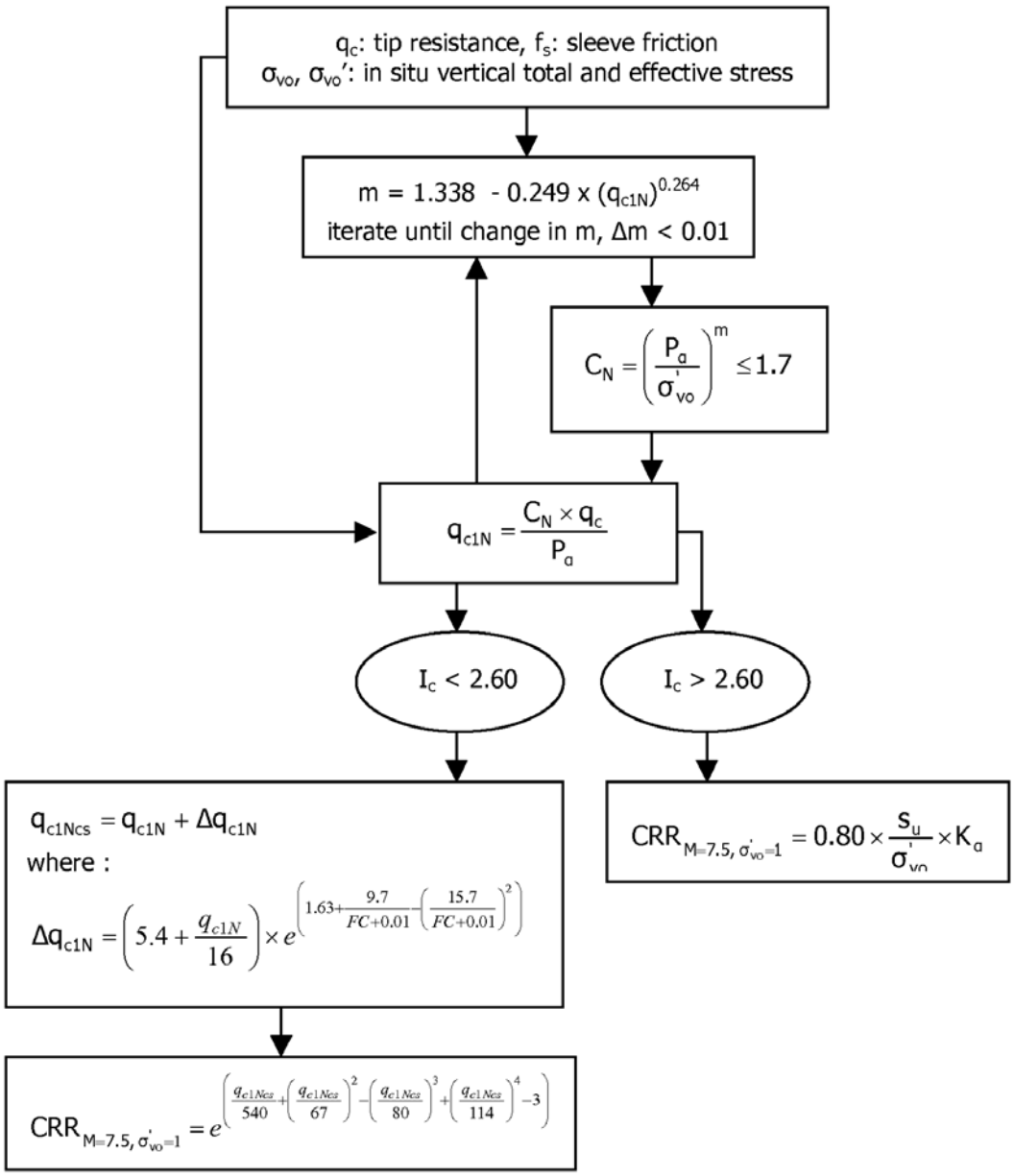
Procedure for the evaluation of soil liquefaction resistance (all soils), Robertson (2010)

Calculation of soil resistance against liquefaction is performed according to the Robertson & Wride (1998) procedure. This procedure used in the software, slightly differs from the one originally published in NCEER-97-0022 (Proceedings of the NCEER Workshop on Evaluation of Liquefaction Resistance of Soils). The revised procedure is presented below in the form of a flowchart[1]:

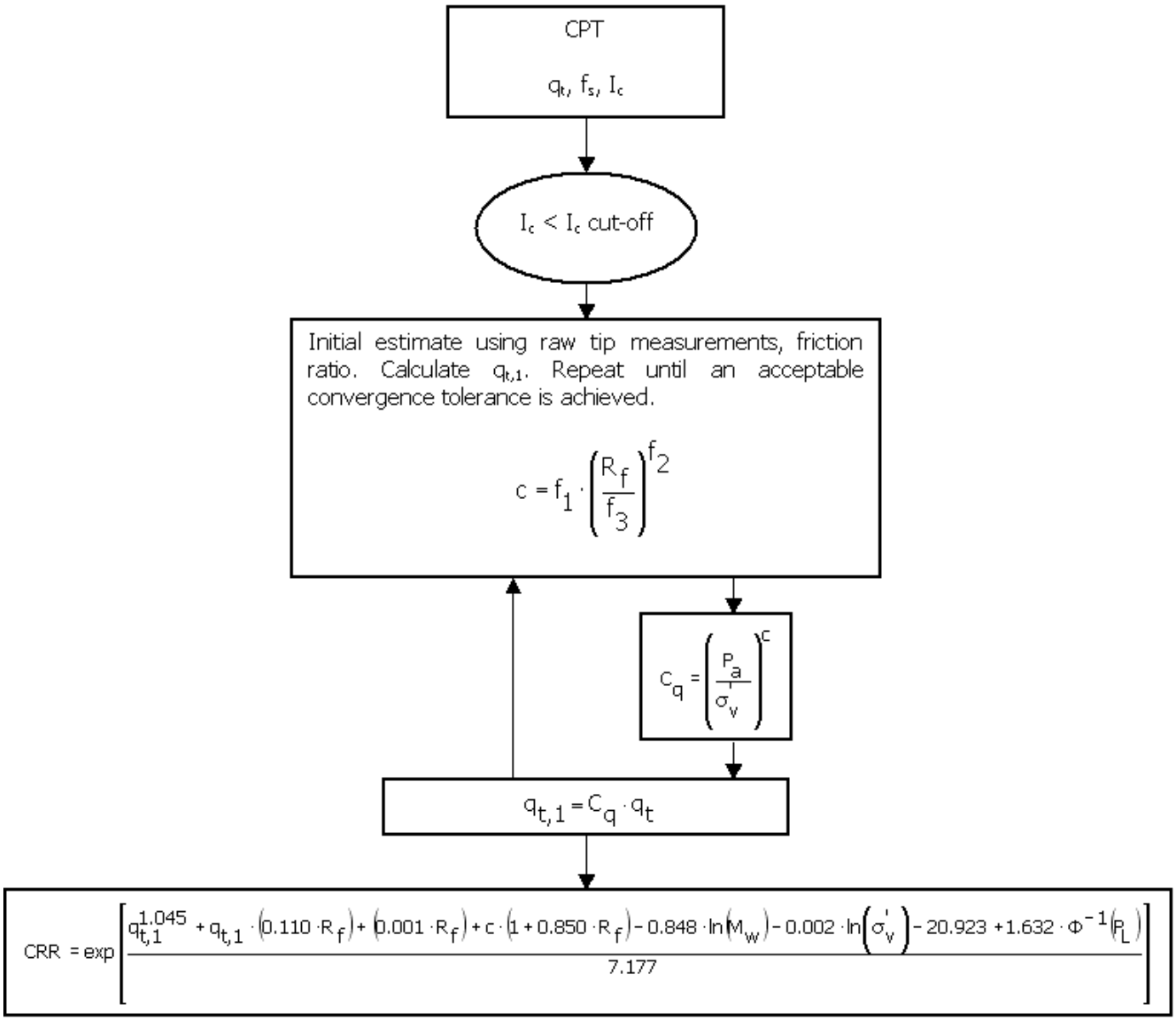


[1] P.K. Robertson, 2009. "Performance based earthquake design using the CPT", Keynote Lecture, International Conference on Performance-based Design in Earthquake Geotechnical Engineering – from case history to practice, IS-Tokyo, June 2009

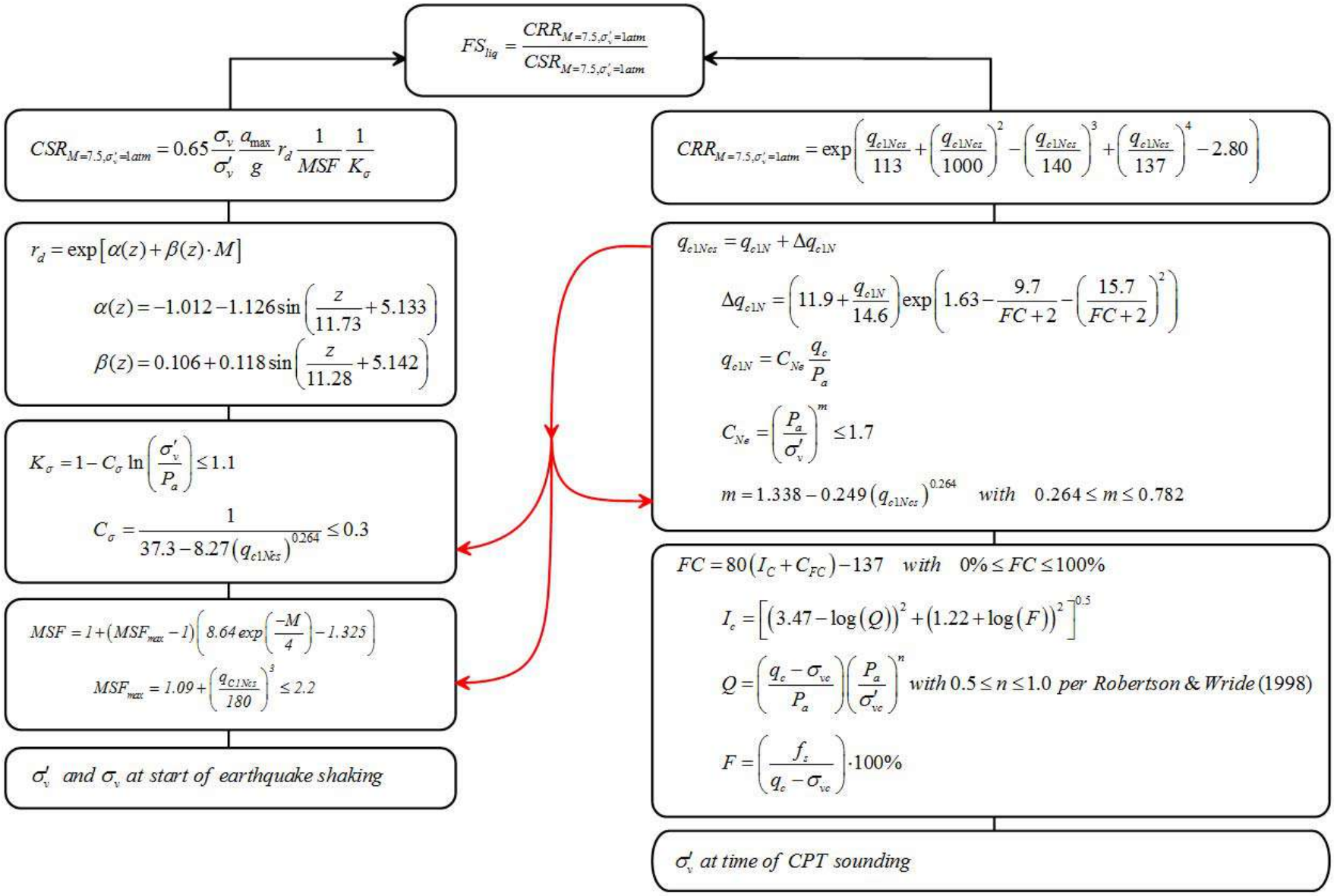
Procedure for the evaluation of soil liquefaction resistance, Idriss & Boulanger (2008)



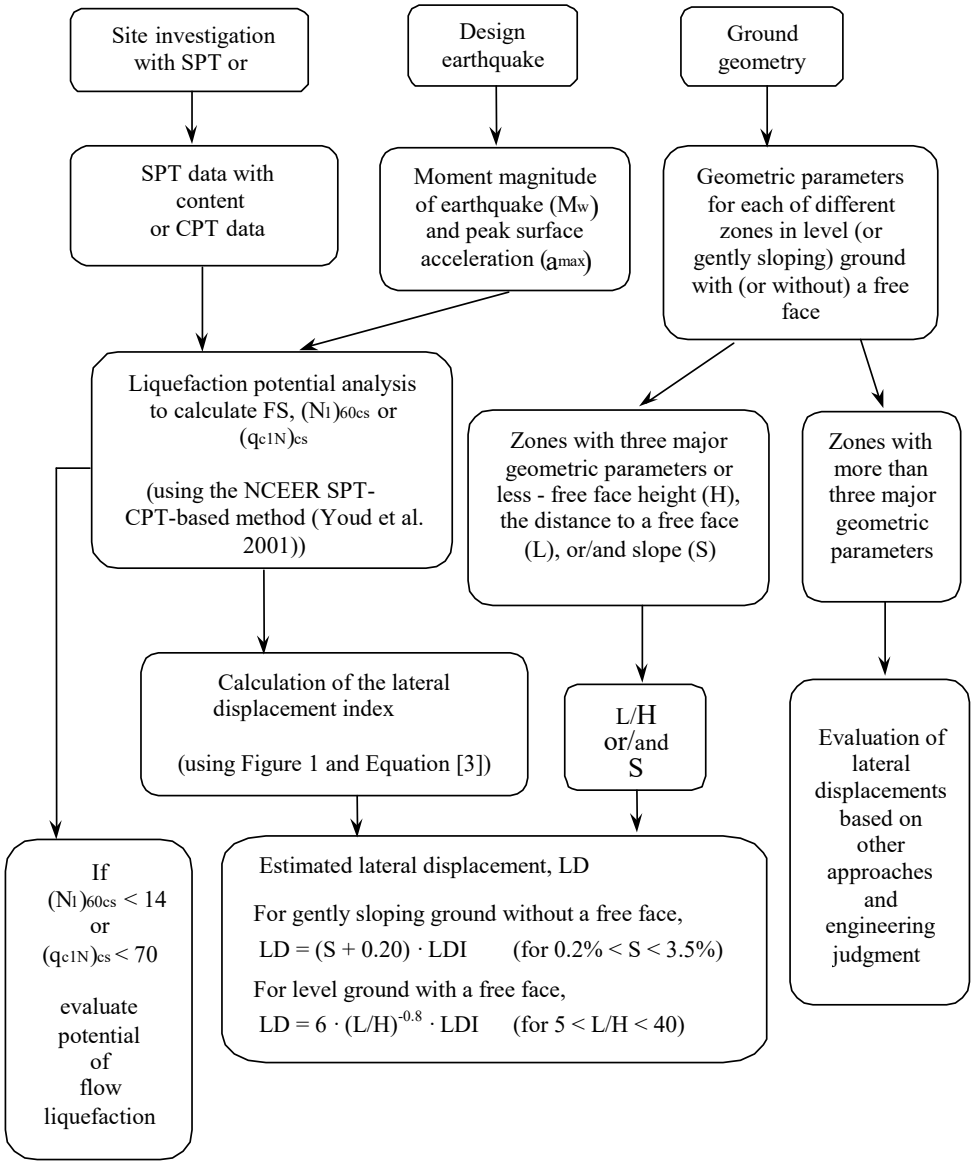
Procedure for the evaluation of soil liquefaction resistance (sandy soils), Moss et al. (2006)



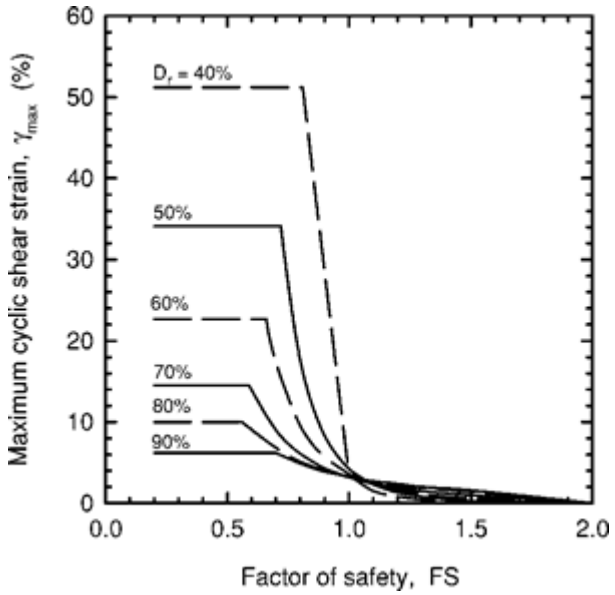
Procedure for the evaluation of soil liquefaction resistance, Boulanger & Idriss(2014)



Procedure for the evaluation of liquefaction-induced lateral spreading displacements



[1] Flow chart illustrating major steps in estimating liquefaction-induced lateral spreading displacements using the proposed approach



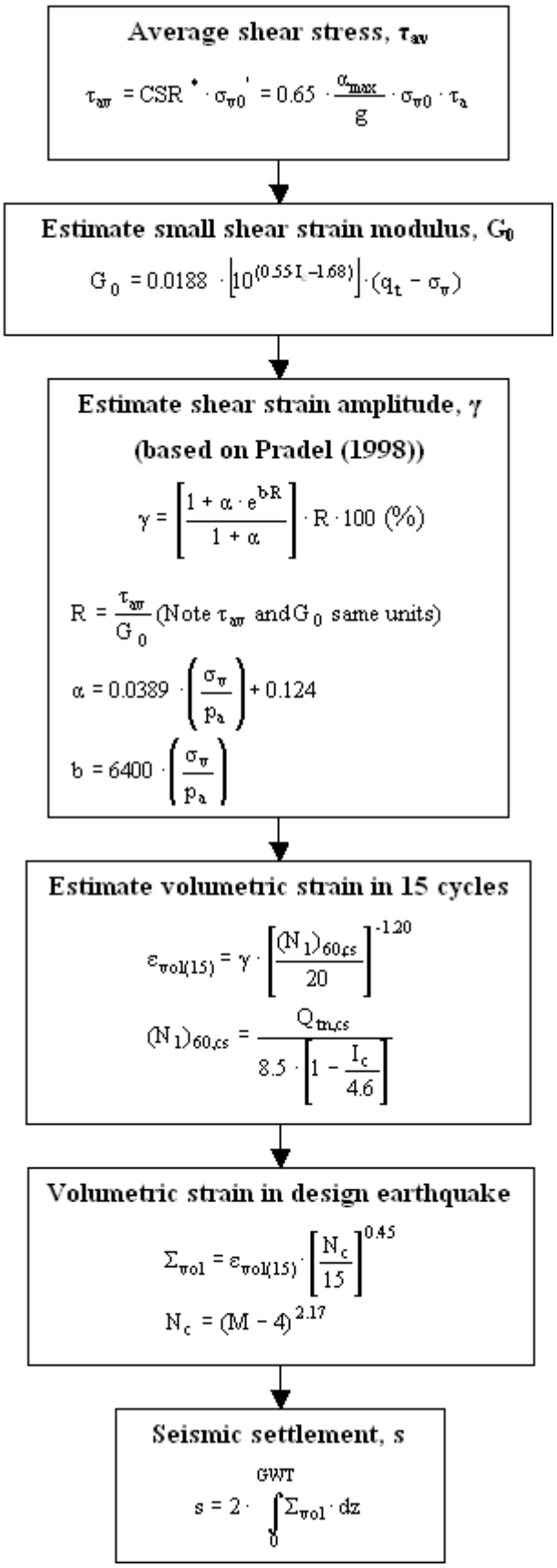
[1] Figure 1

$$LDI = \int_0^{z_{max}} \gamma_{max} dz$$

[1] Equation [3]

[1] "Estimating liquefaction-induced ground settlements from CPT for level ground", G. Zhang, P.K. Robertson, and R.W.I. Brachman

Procedure for the estimation of seismic induced settlements in dry sands



Robertson, P.K. and Lisheng, S., 2010, "Estimation of seismic compression in dry soils using the CPT" FIFTH INTERNATIONAL CONFERENCE ON RECENT ADVANCES IN GEOTECHNICAL EARTHQUAKE ENGINEERING AND SOIL DYNAMICS, Symposium in honor of professor I. M. Idriss, San Diego, CA

Liquefaction Potential Index (LPI) calculation procedure

Calculation of the Liquefaction Potential Index (LPI) is used to interpret the liquefaction assessment calculations in terms of severity over depth. The calculation procedure is based on the methology developed by Iwasaki (1982) and is adopted by AFPS.

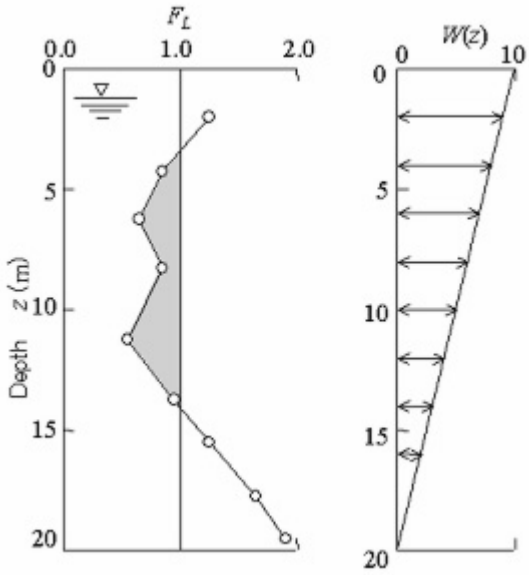
To estimate the severity of liquefaction extent at a given site, LPI is calculated based on the following equation:

$$\mathbf{LPI} = \int_0^{20} (10 - 0{,}5z) \times F_L \times dz$$

where:
F_L = 1 - F.S. when F.S. less than 1
F_L = 0 when F.S. greater than 1
z depth of measurment in meters

Values of LPI range between zero (0) when no test point is characterized as liquefiable and 100 when all points are characterized as susceptible to liquefaction. Iwasaki proposed four (4) discrete categories based on the numeric value of LPI:

- LPI = 0 : Liquefaction risk is very low
- 0 < LPI <= 5 : Liquefaction risk is low
- 5 < LPI <= 15 : Liquefaction risk is high
- LPI > 15 : Liquefaction risk is very high



Graphical presentation of the LPI calculation procedure

Shear-Induced Building Settlement (Ds) calculation procedure

The shear-induced building settlement (Ds) due to liquefaction below the building can be estimated using the relationship developed by Bray and Macedo (2017):

$$Ln(Ds) = c1 + c2 * LBS + 0.58 * Ln\left(Tanh\left(\frac{HL}{6}\right)\right) + 4.59 * Ln(Q) - 0.42 * Ln(Q)^2 - 0.02 * B + 0.84 * Ln(CAVdp) + 0.41 * Ln(Sa1) + \varepsilon$$

where Ds is in the units of mm, c1= -8.35 and c2= 0.072 for LBS ≤ 16, and c1= -7.48 and c2= 0.014 otherwise. Q is the building contact pressure in units of kPa, HL is the cumulative thickness of the liquefiable layers in the units of m, B is the building width in the units of m, CAVdp is a standardized version of the cumulative absolute velocity in the units of g-s, Sa1 is 5%-damped pseudo-acceleration response spectral value at a period of 1 s in the units of g, and ε is a normal random variable with zero mean and 0.50 standard deviation in Ln units. The liquefaction-induced building settlement index (LBS) is:

$$LBS = \sum W * \frac{\varepsilon_{shear}}{z} dz$$

where z (m) is the depth measured from the ground surface > 0, W is a foundation-weighting factor wherein W = 0.0 for z less than Df, which is the embedment depth of the foundation, and W = 1.0 otherwise. The shear strain parameter (ε_shear) is the liquefaction-induced free-field shear strain (in %) estimated using Zhang et al. (2004). It is calculated based on the estimated Dr of the liquefied soil layer and the calculated safety factor against liquefaction triggering (FSL).

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- R. E. S. Moss, R. B. Seed, R. E. Kayen, J. P. Stewart, A. Der Kiureghian, K. O. Cetin, CPT-Based Probabilistic and Deterministic Assessment of In Situ Seismic Soil Liquefaction Potential, Journal of Geotechnical and Geoenvironmental Engineering, Vol. 132, No. 8, August 1, 2006

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TABLE OF CONTENTS

Geocon West, Inc.
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Burbank, CA 91504
(818) 841-8388

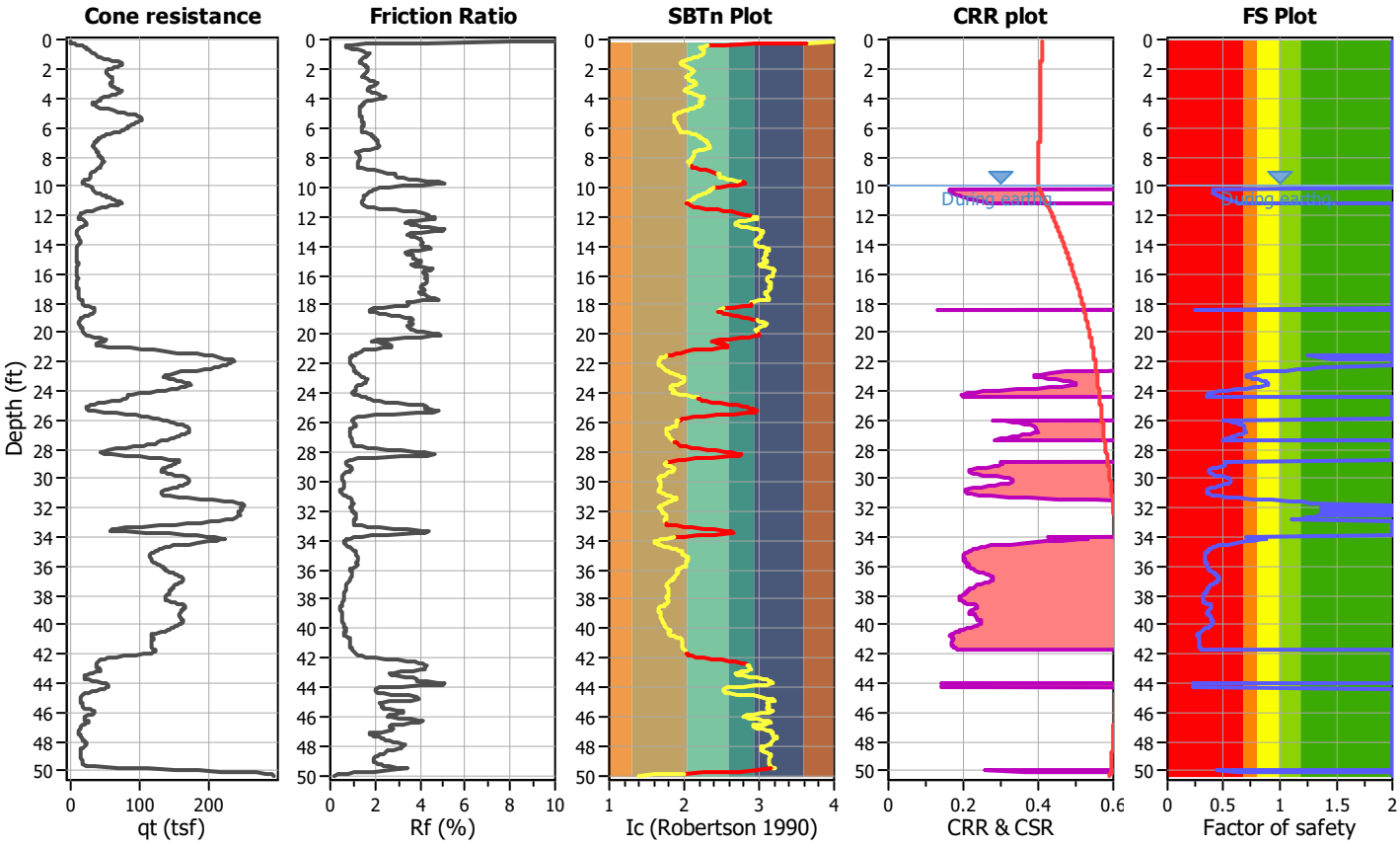
LIQUEFACTION ANALYSIS REPORT

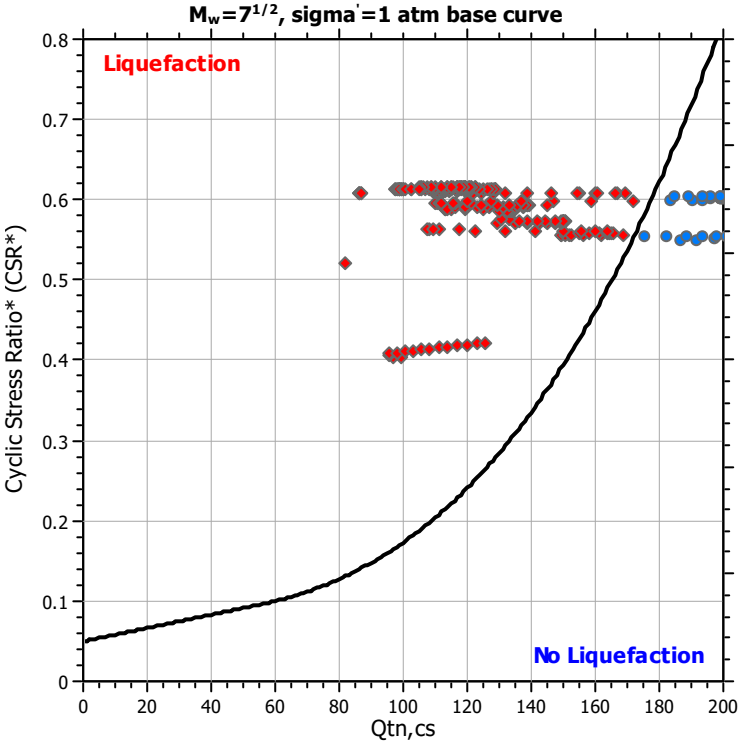
Project title : T2990-22-01 Continental Rancho Polo **Location : Northeast Corner of 58th Avenue & Oasis Street,**

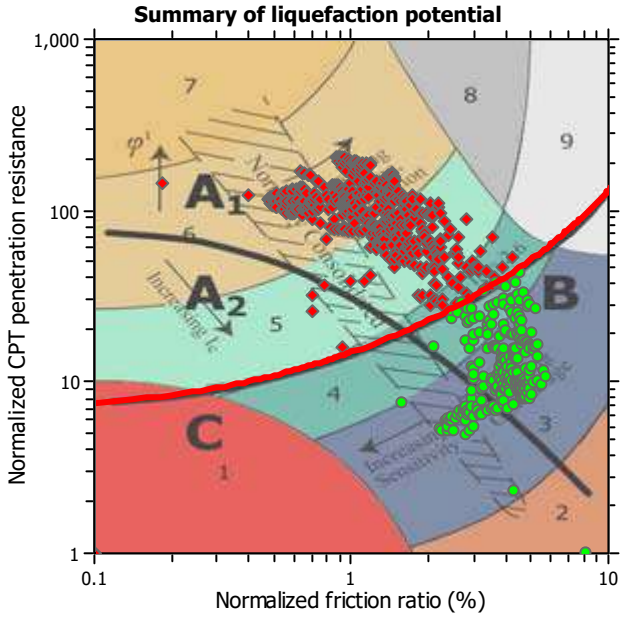
CPT file : CPT-1

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	20.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	10.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	7.23	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.69	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

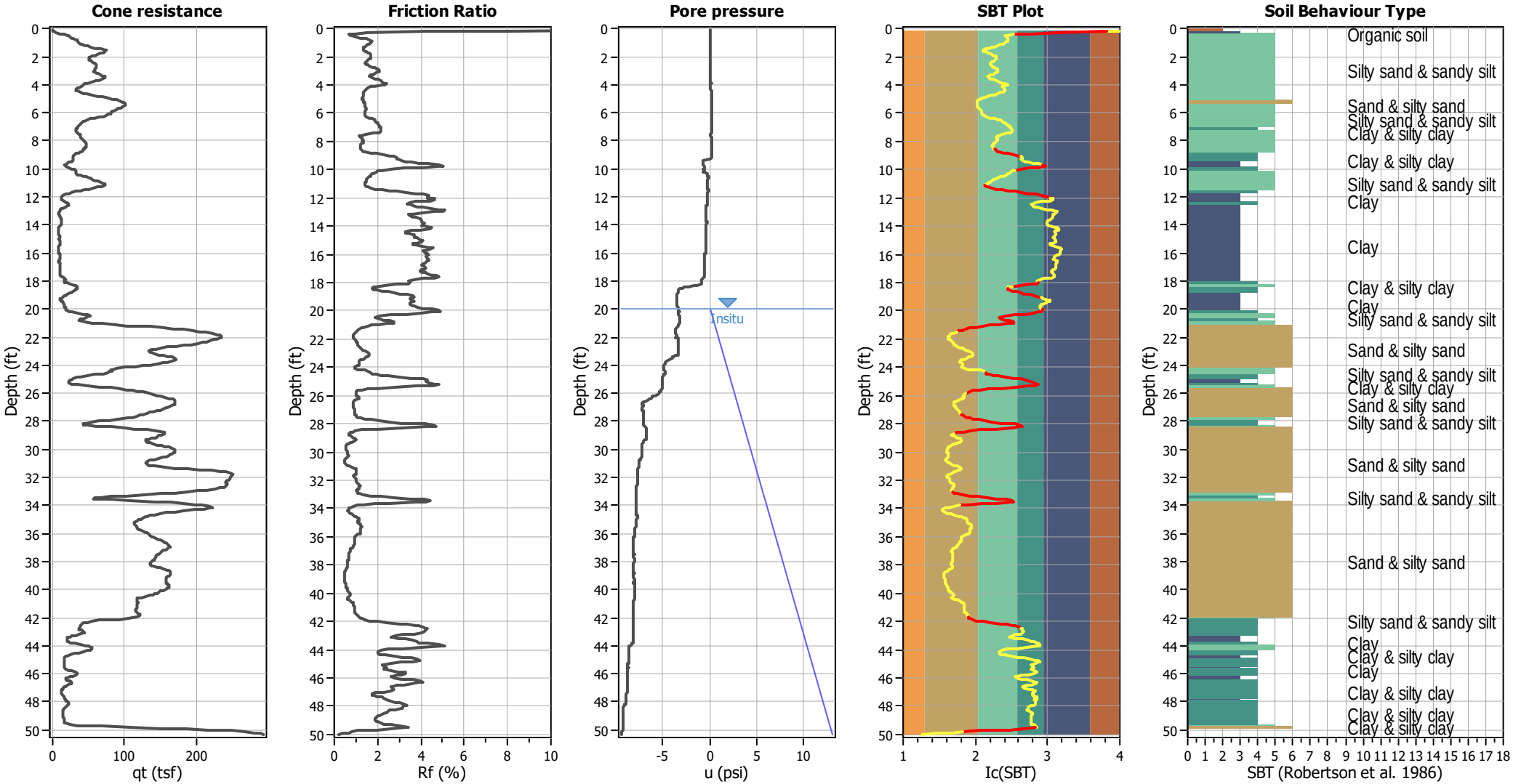






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



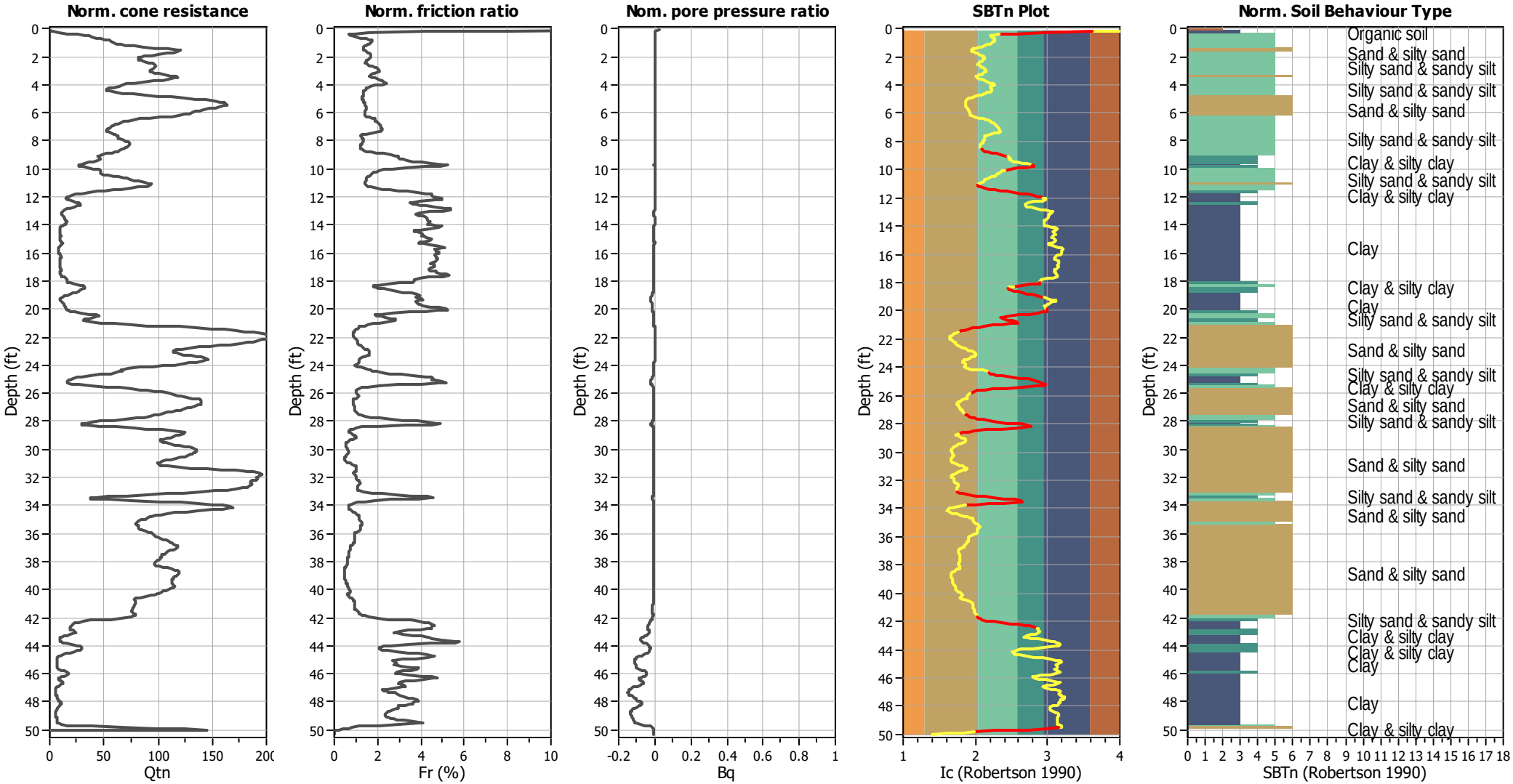
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.23	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.69	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



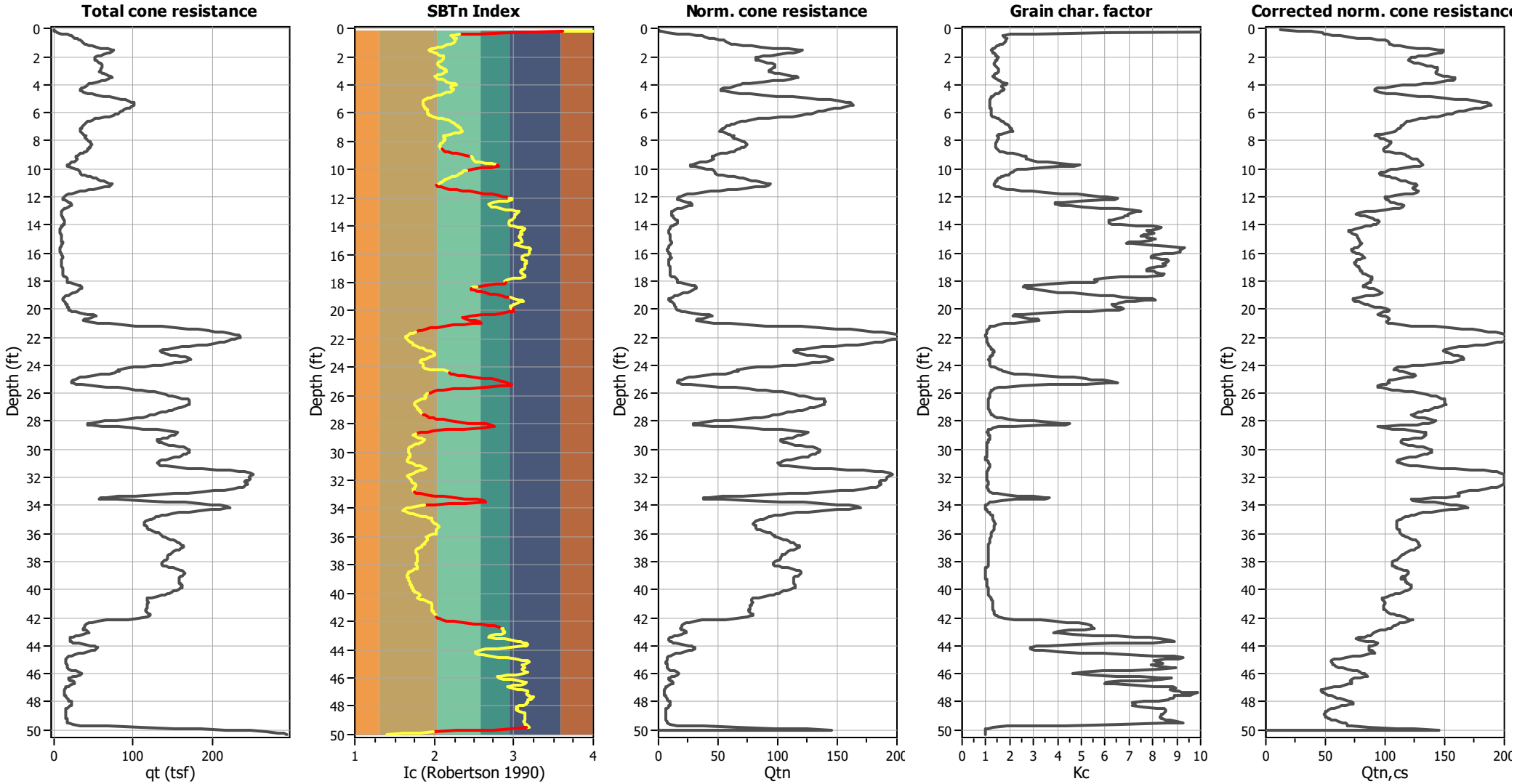
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.23	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.69	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

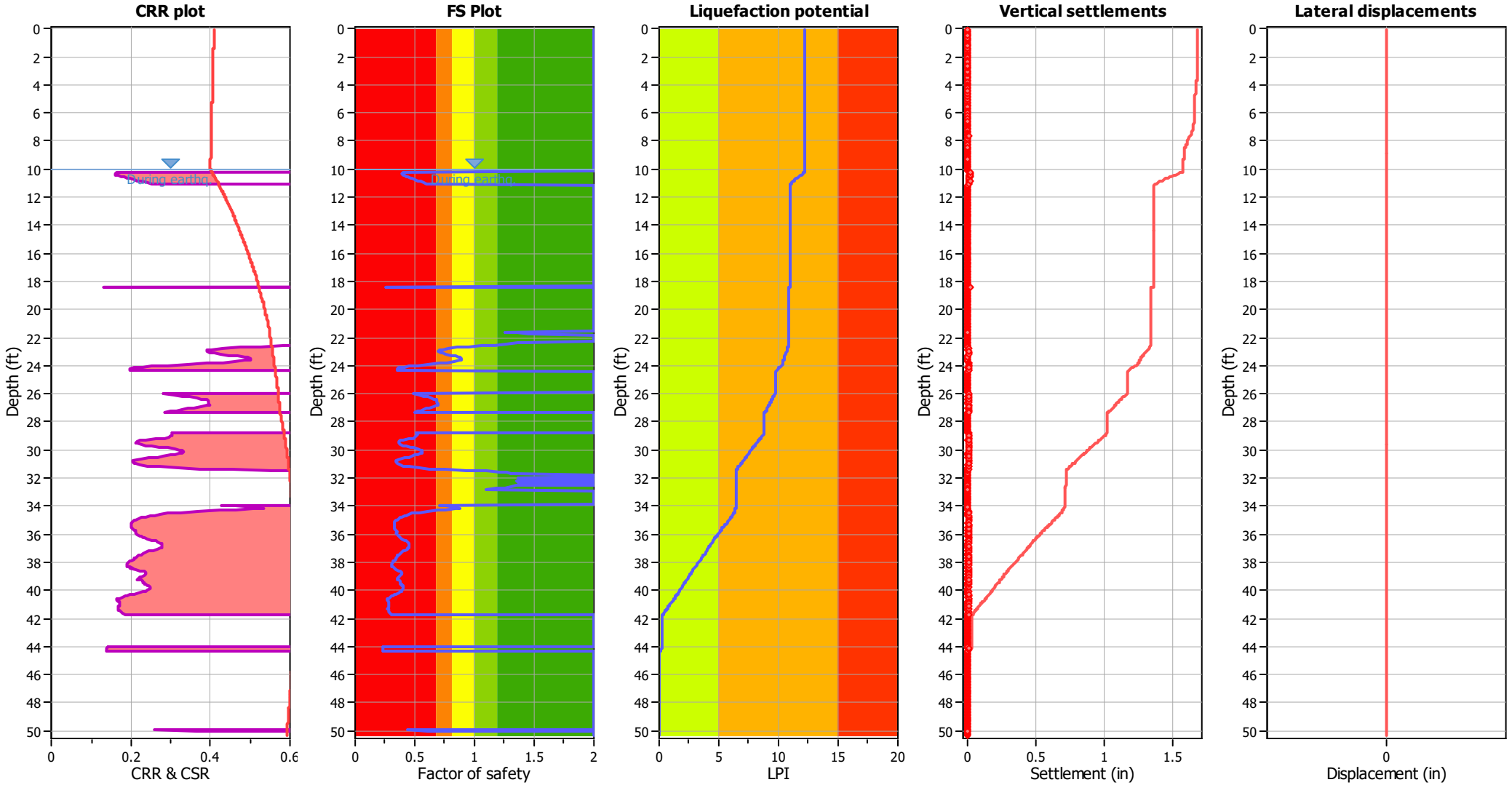
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.23	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.69	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.23	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.69	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

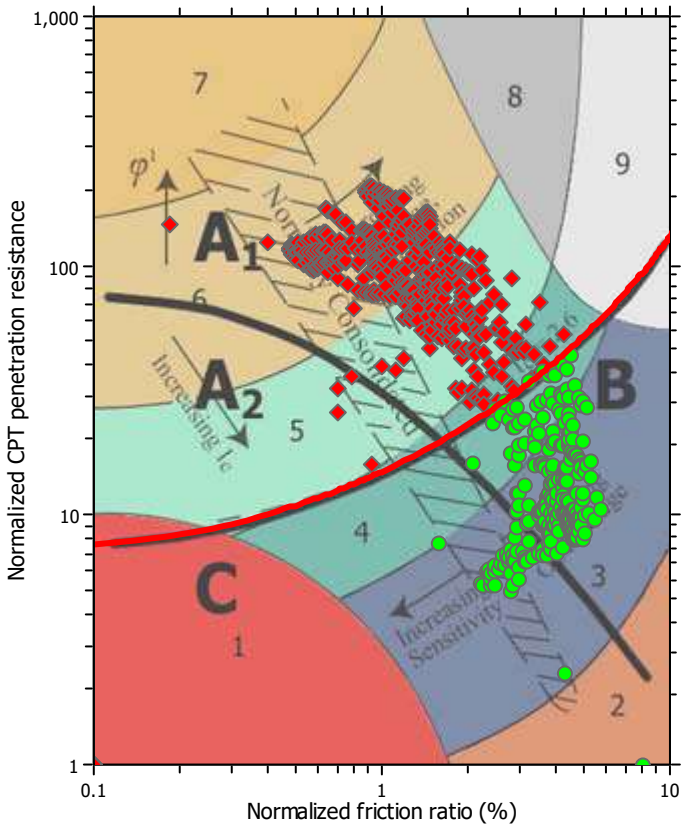
F.S. color scheme

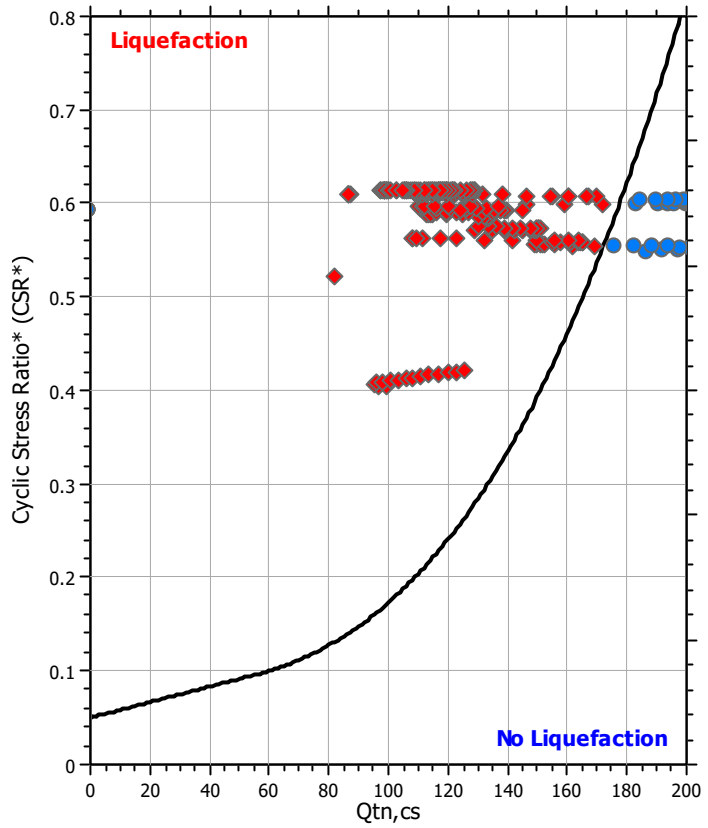
- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

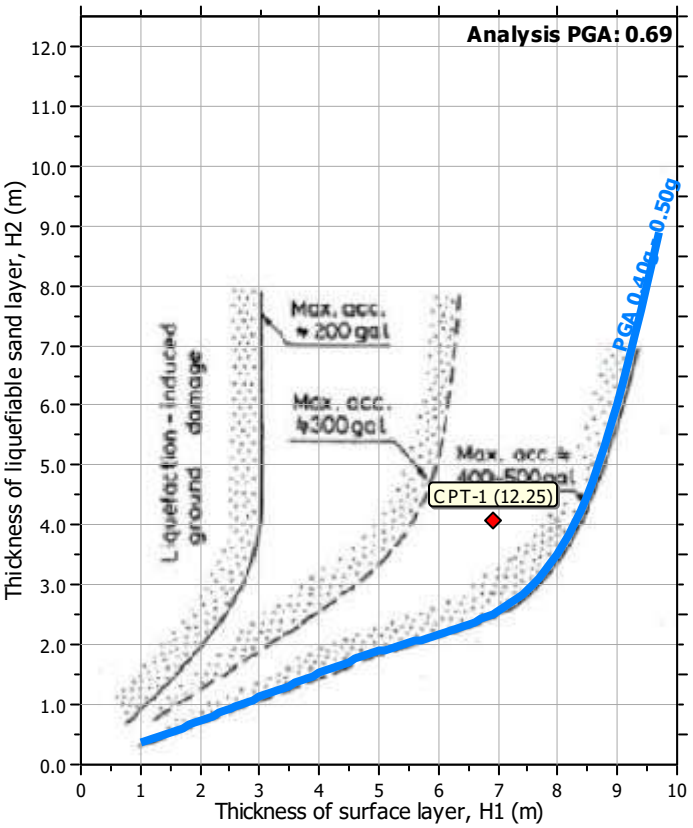
LPI color scheme

- Very high risk
- High risk
- Low risk

Liquefaction analysis summary plots



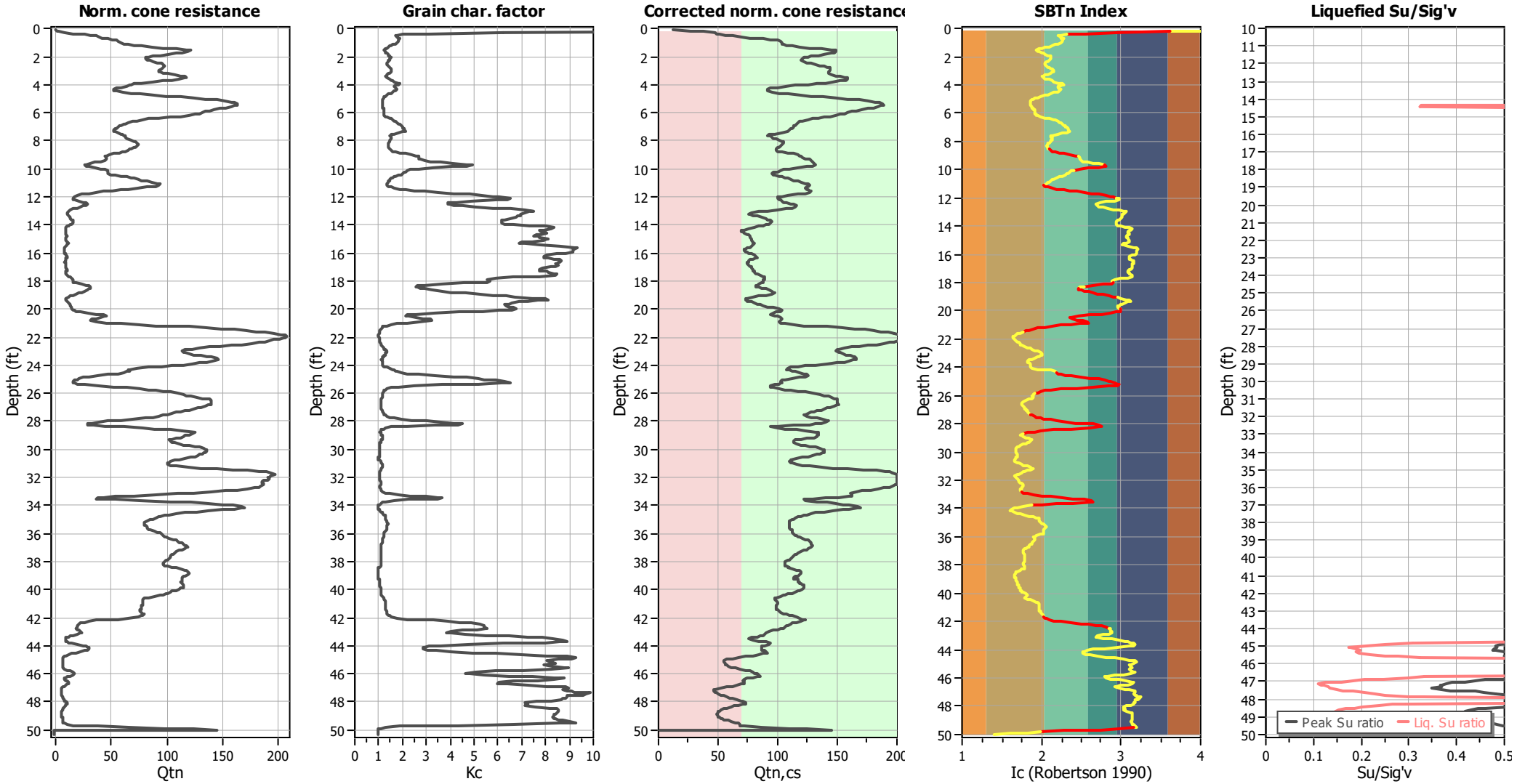




Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.23	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.69	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

Check for strength loss plots (Robertson (2010))



Input parameters and analysis data

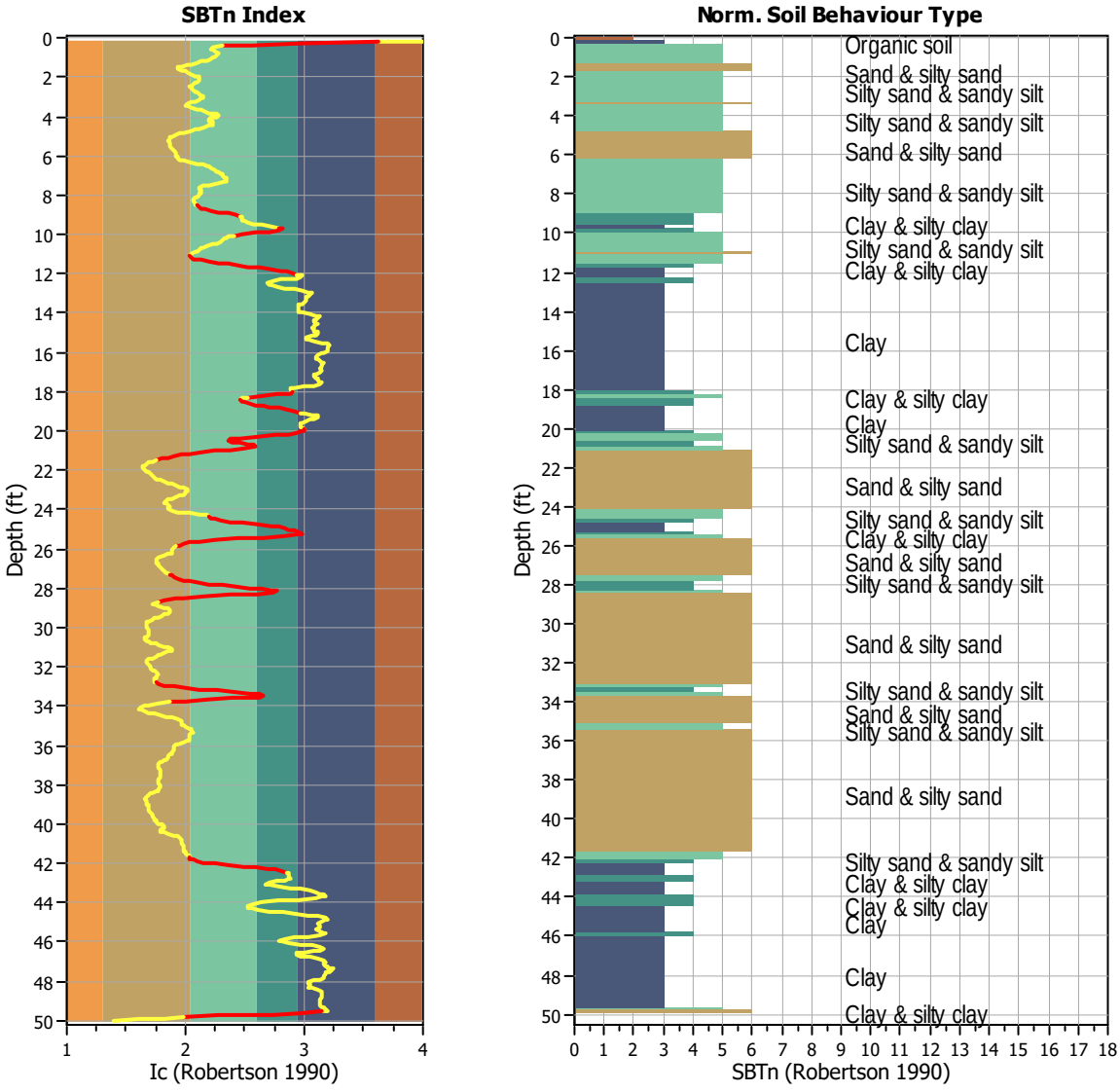
Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.23	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.69	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

TRANSITION LAYER DETECTION ALGORITHM REPORT
Summary Details & Plots

Short description

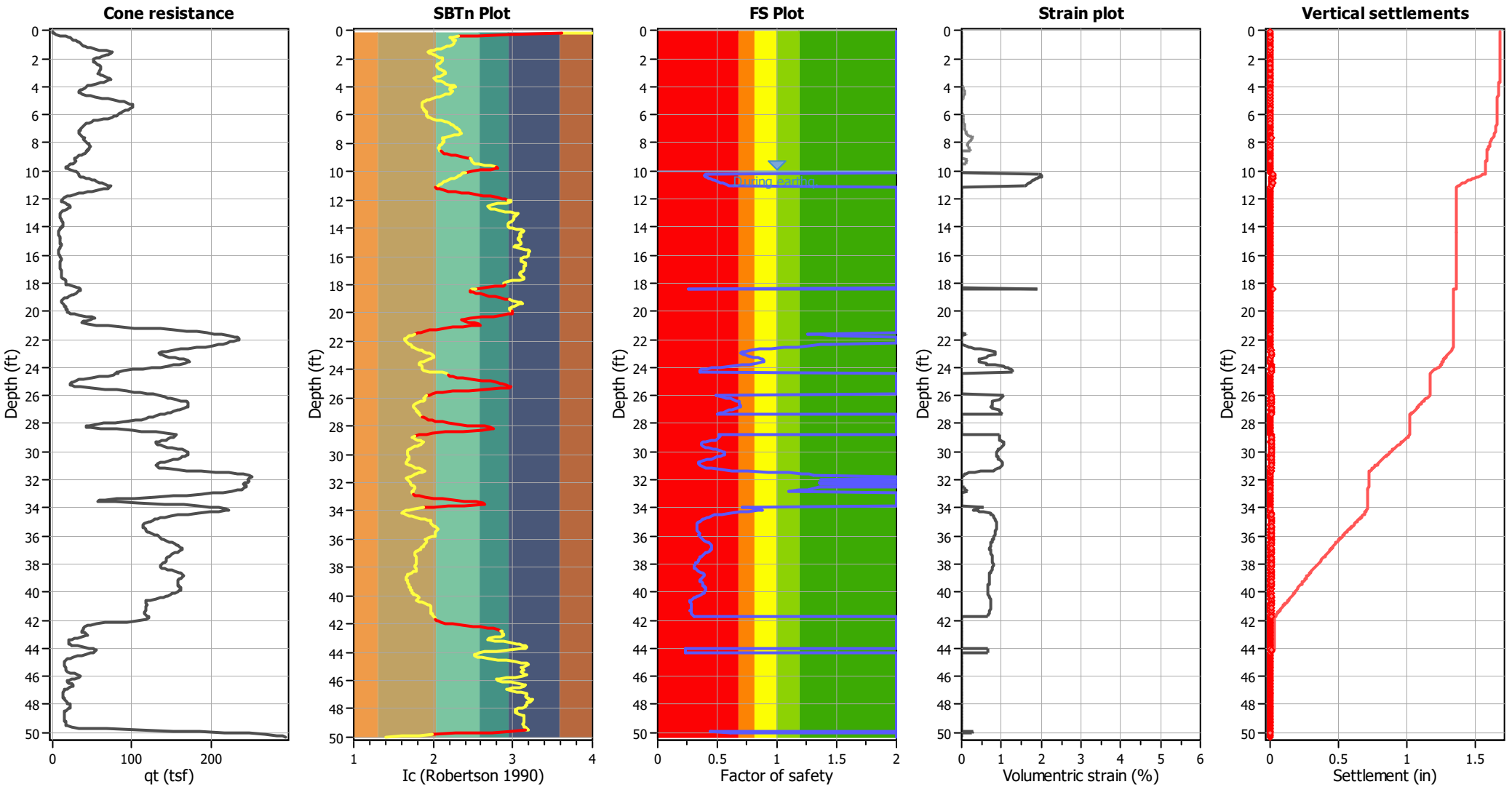
The software will delete data when the cone is in transition from either clay to sand or vise-versa. To do this the software requires a range of I_c values over which the transition will be defined (typically somewhere between $1.80 < I_c < 3.0$) and a rate of change of I_c. Transitions typically occur when the rate of change of I_c is fast (i.e. delta I_c is small).

The SBT_n plot below, displays in red the detected transition layers based on the parameters listed below the graphs.



Transition layer algorithm properties		General statistics	
I_c minimum check value:	1.70	Total points in CPT file:	767
I_c maximum check value:	3.00	Total points excluded:	158
I_c change ratio value:	0.0250	Exclusion percentage:	20.60%
Minimum number of points in layer:	4	Number of layers detected:	17

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

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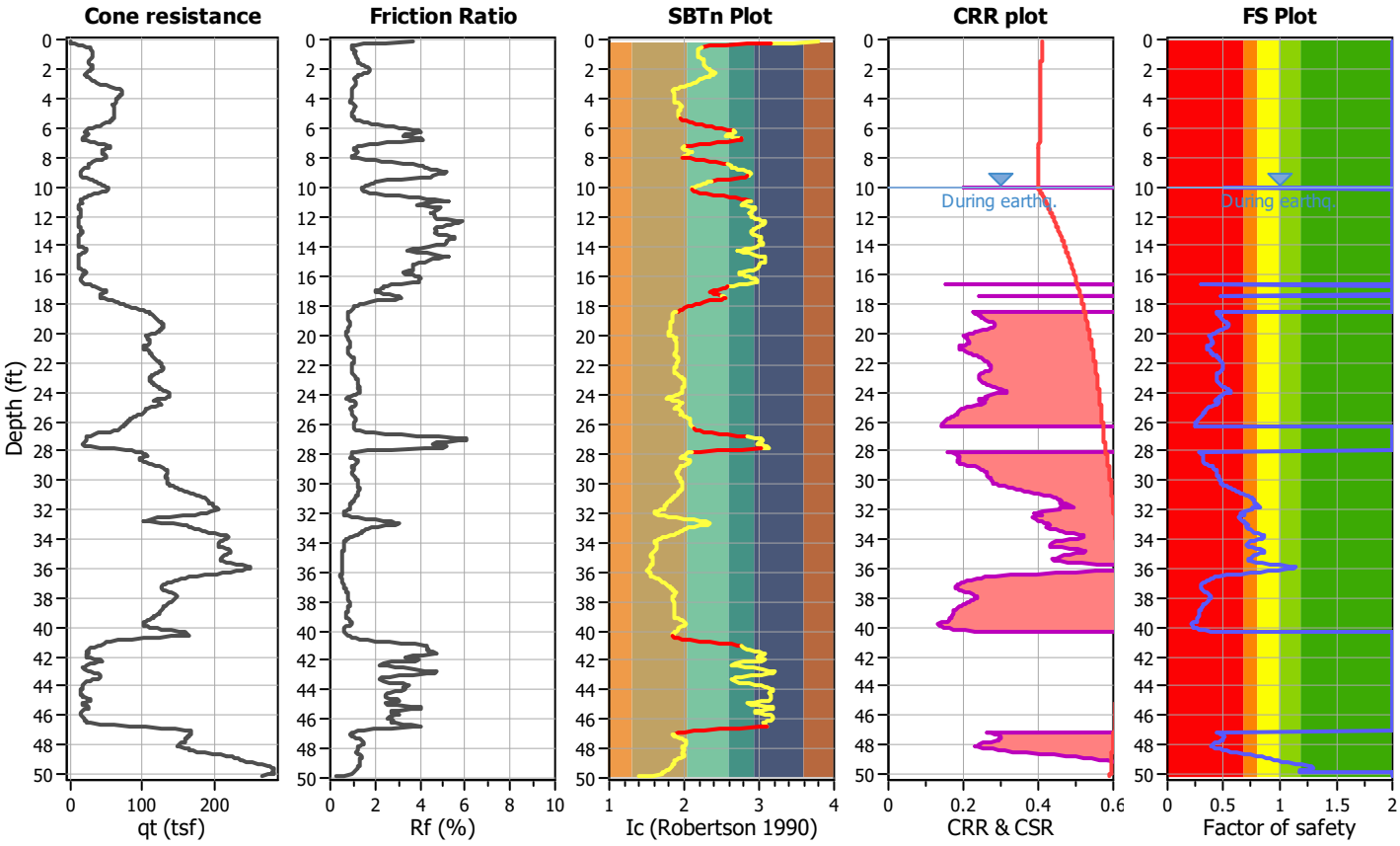
LIQUEFACTION ANALYSIS REPORT

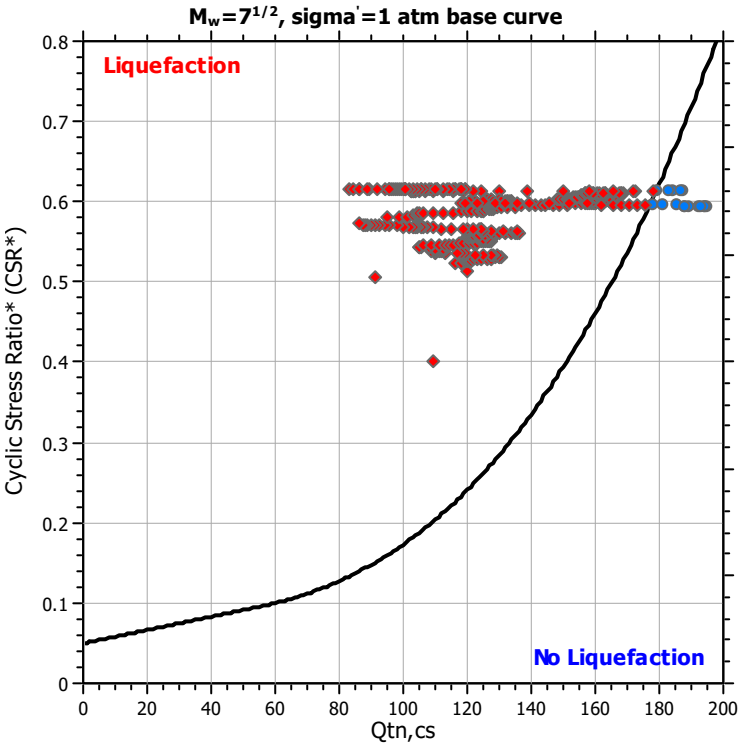
Project title : T2990-22-01 Continental Rancho Polo **Location : Northeast Corner of 58th Avenue & Oasis Street,**

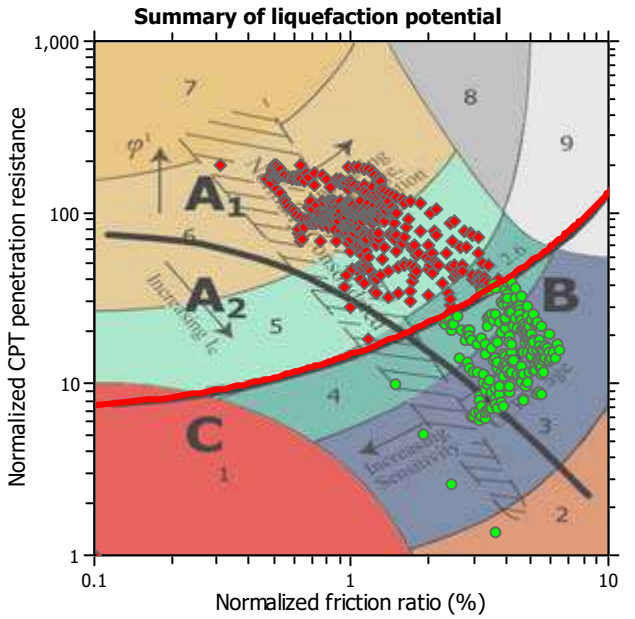
CPT file : CPT-2

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	20.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	10.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	7.23	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.69	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

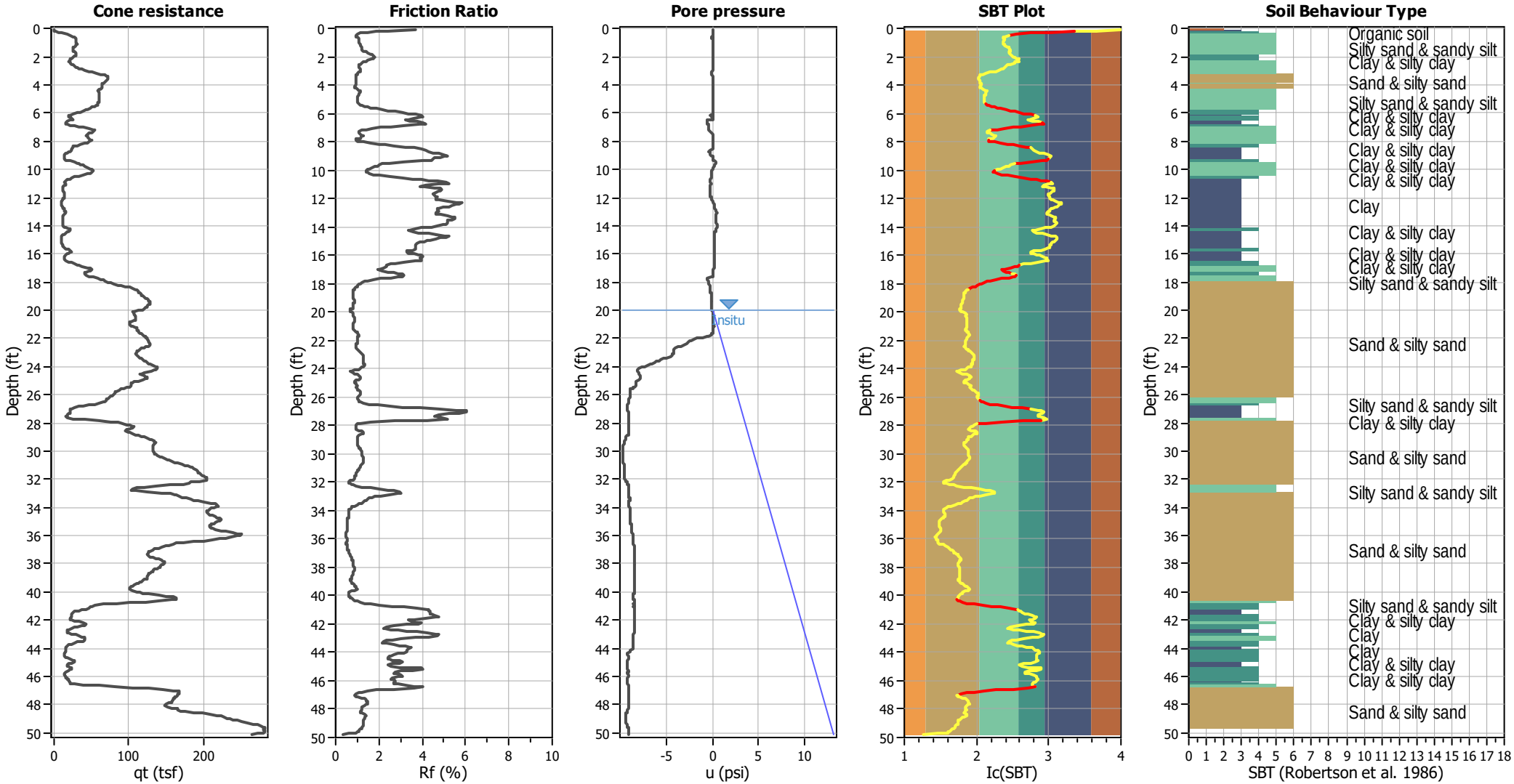






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



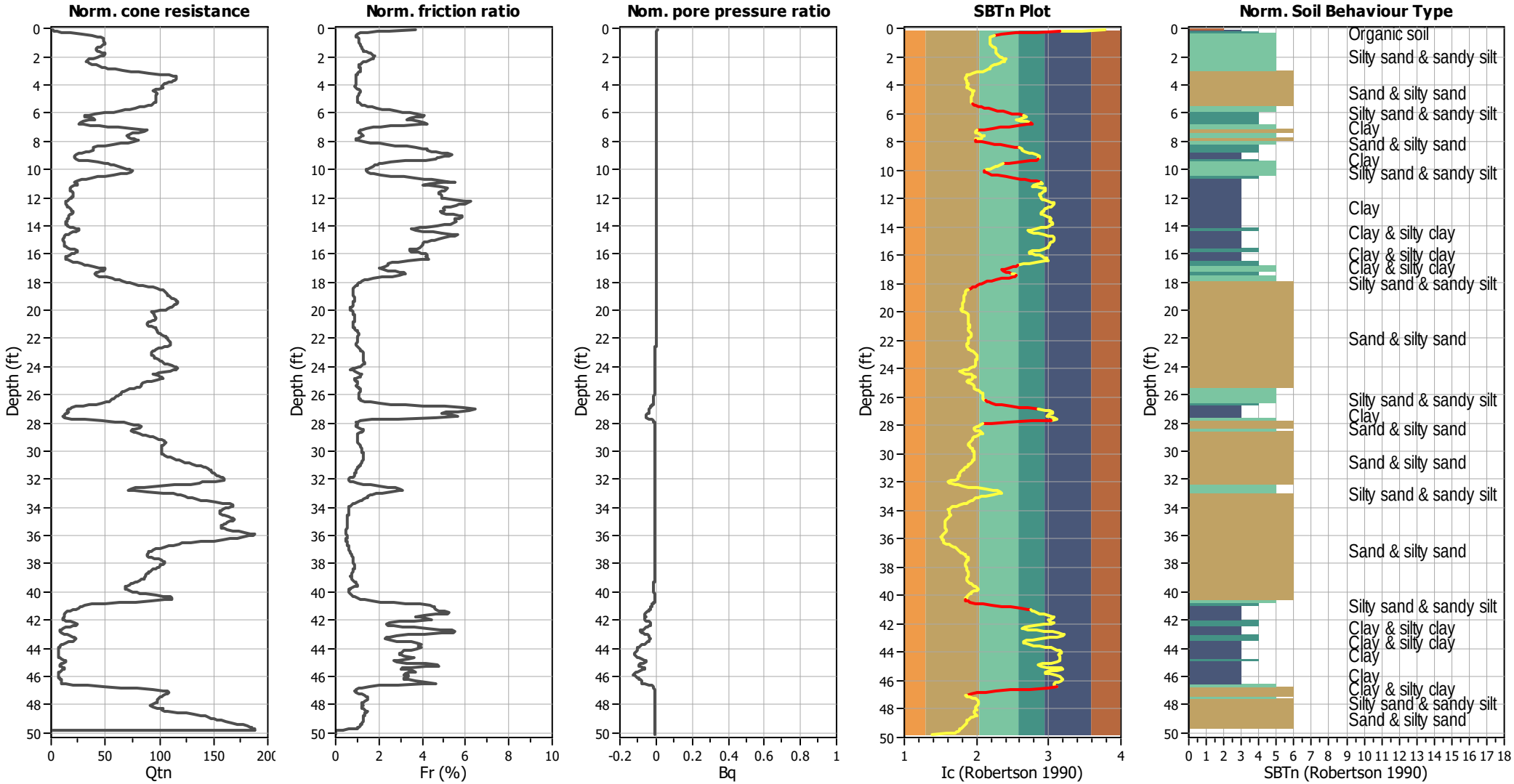
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.23	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.69	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



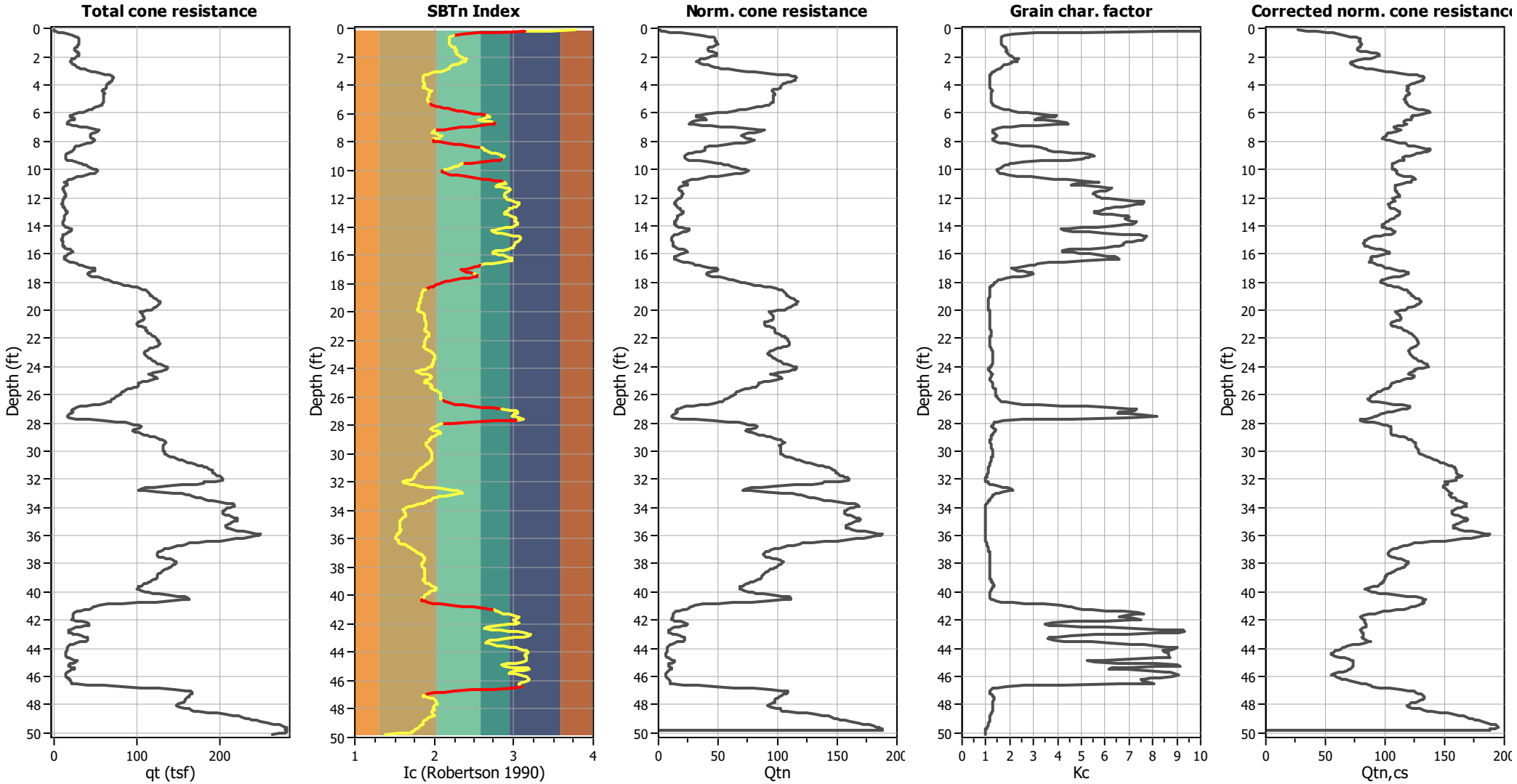
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.23	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.69	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

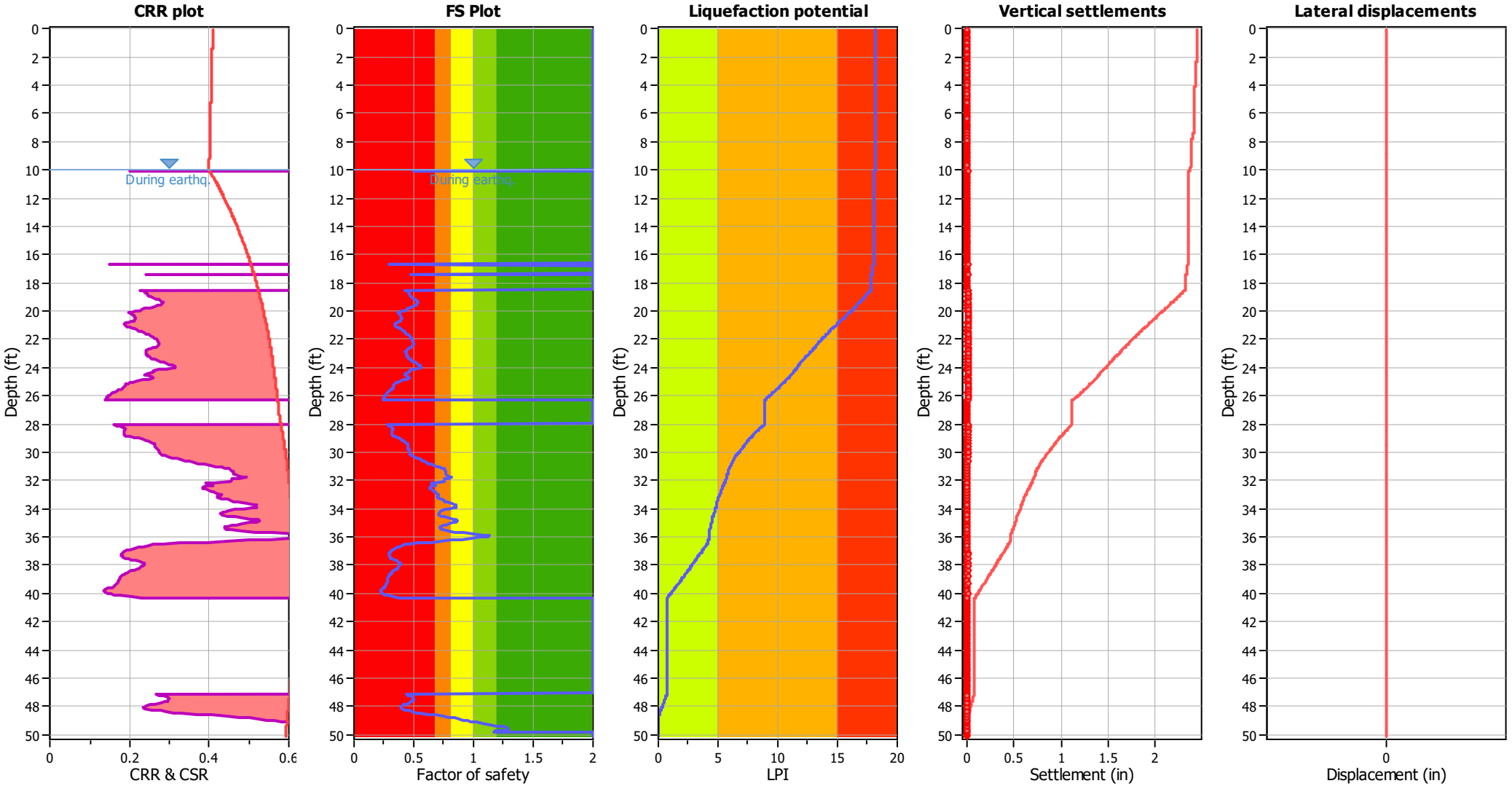
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.23	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.69	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.23	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.69	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

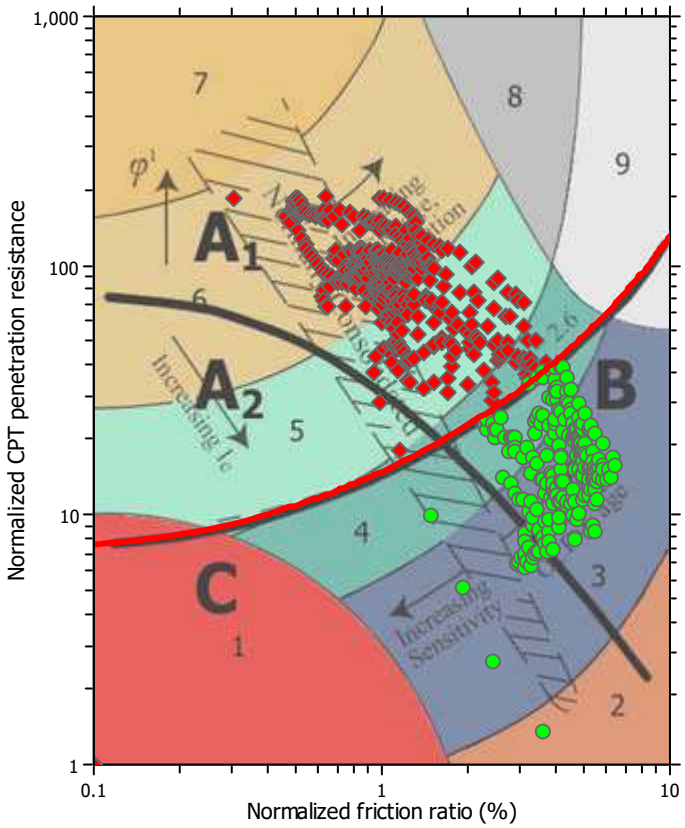
F.S. color scheme

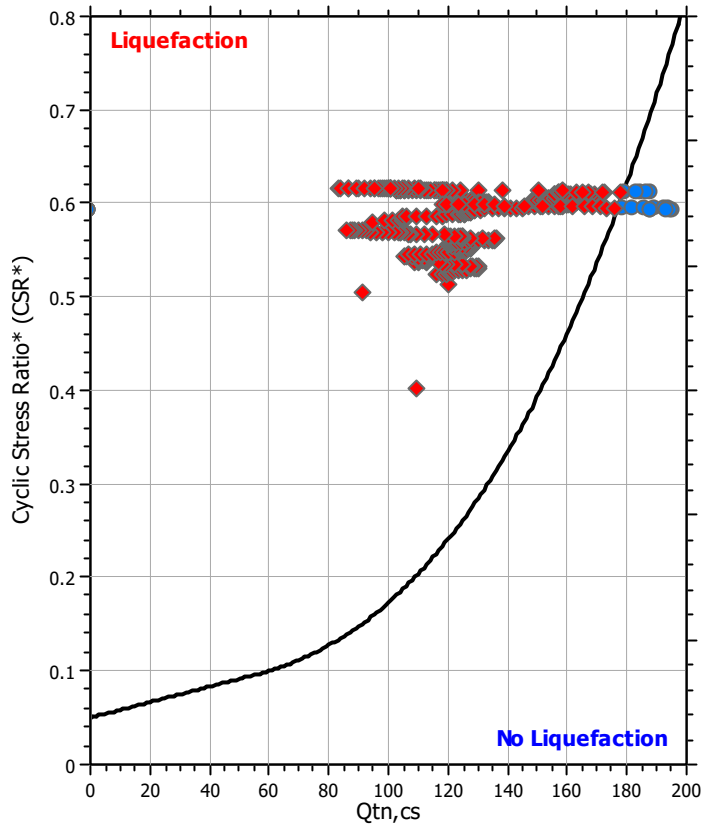
- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

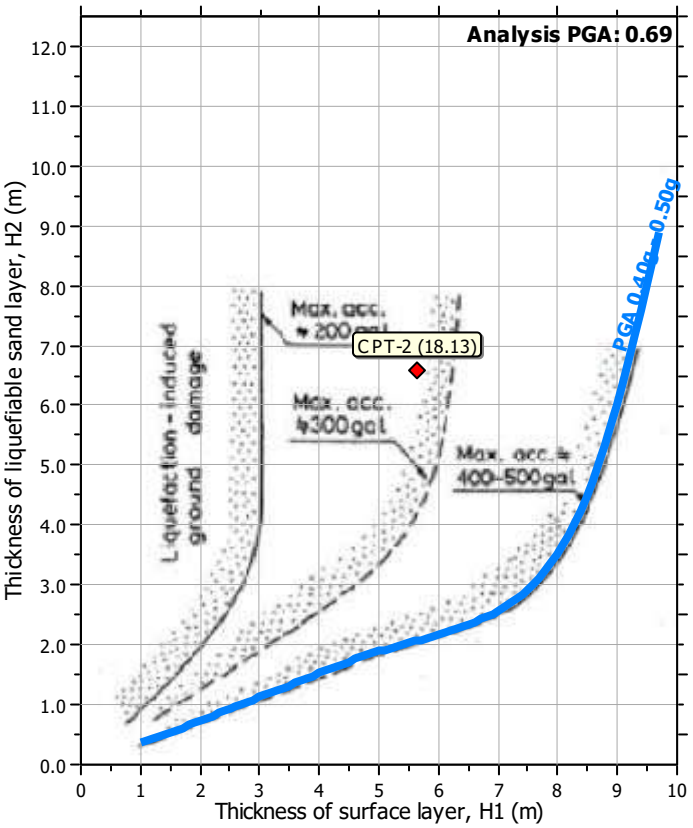
LPI color scheme

- Very high risk
- High risk
- Low risk

Liquefaction analysis summary plots



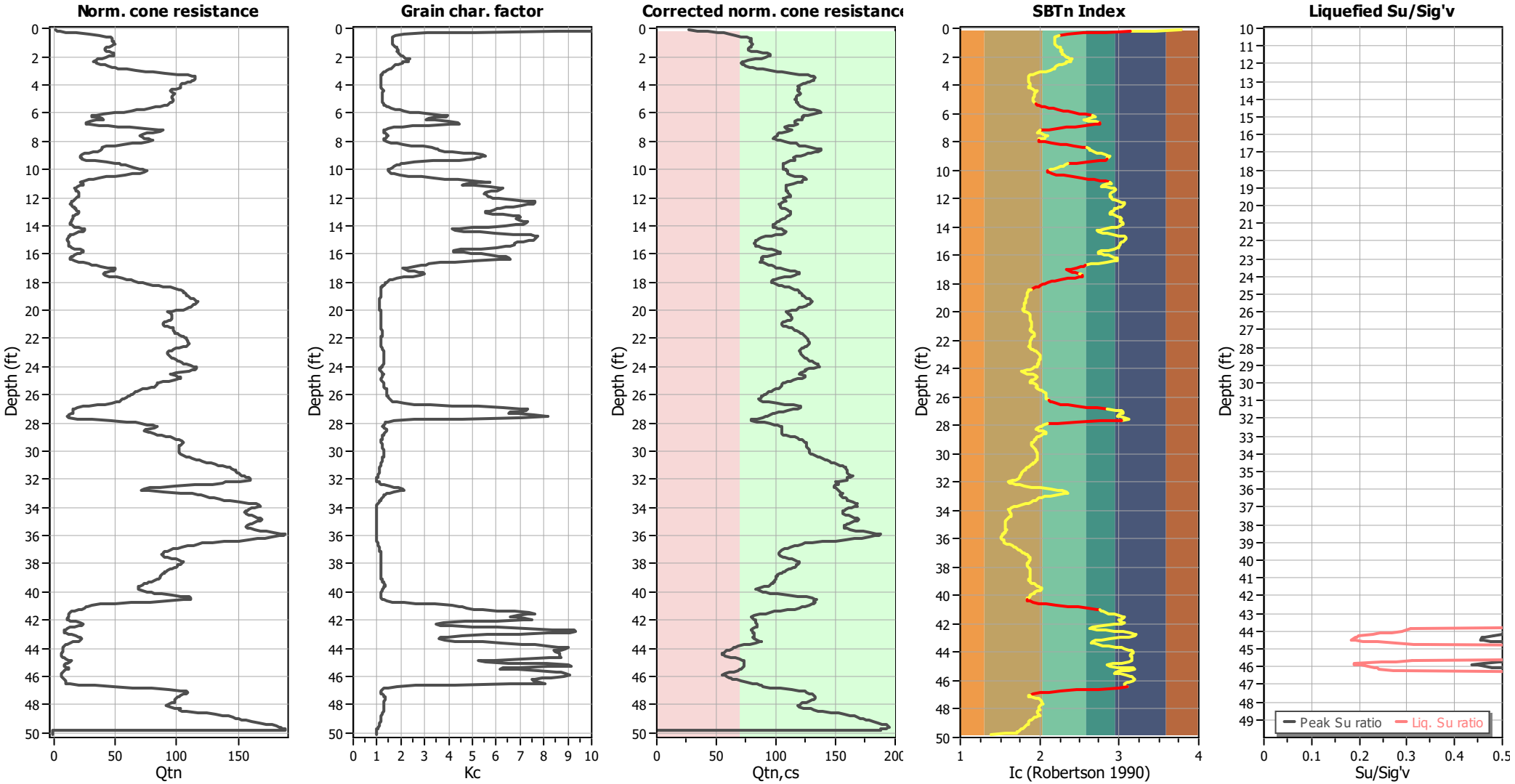




Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.23	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.69	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

Check for strength loss plots (Robertson (2010))



Input parameters and analysis data

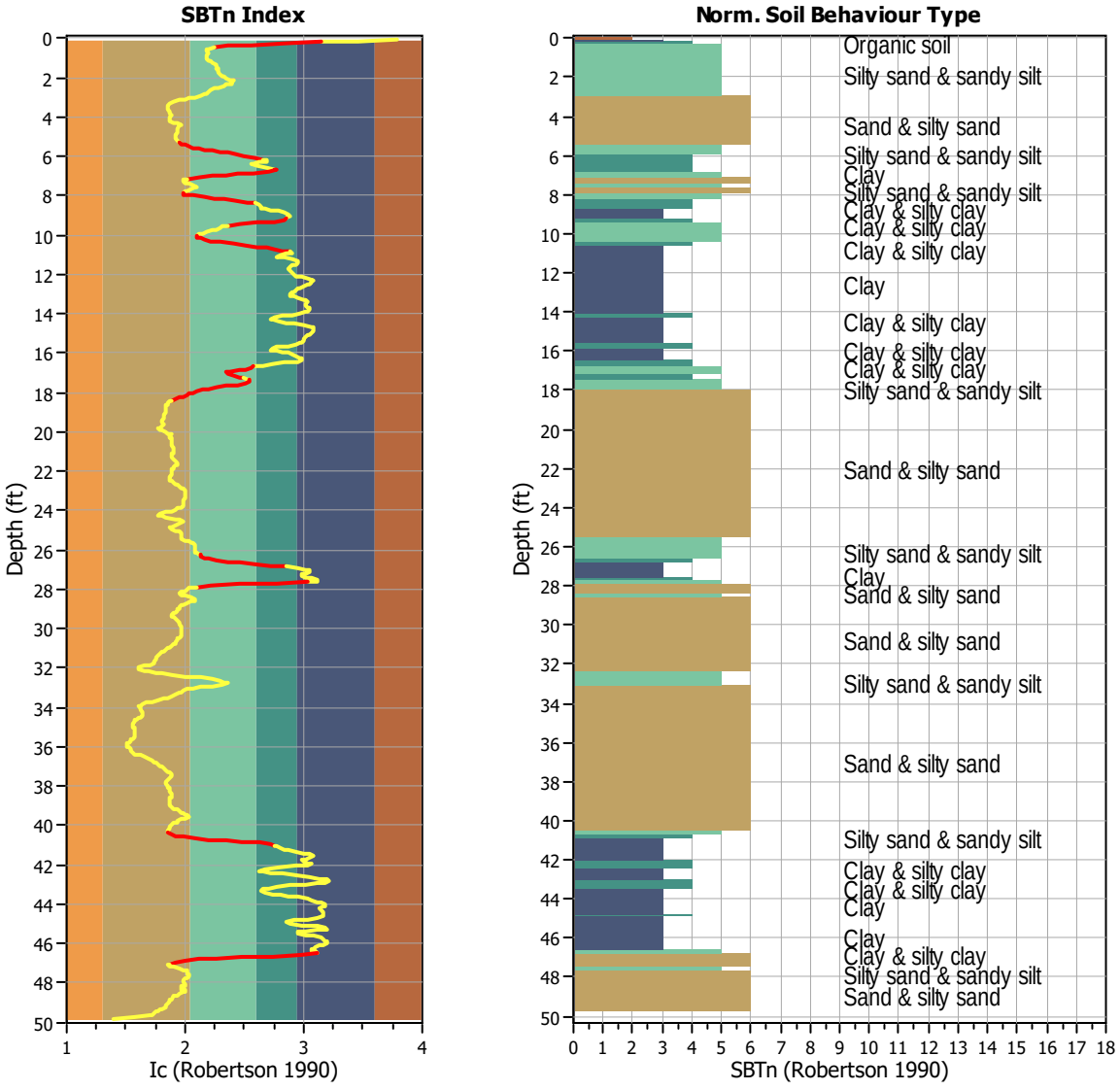
Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.23	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.69	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

TRANSITION LAYER DETECTION ALGORITHM REPORT
Summary Details & Plots

Short description

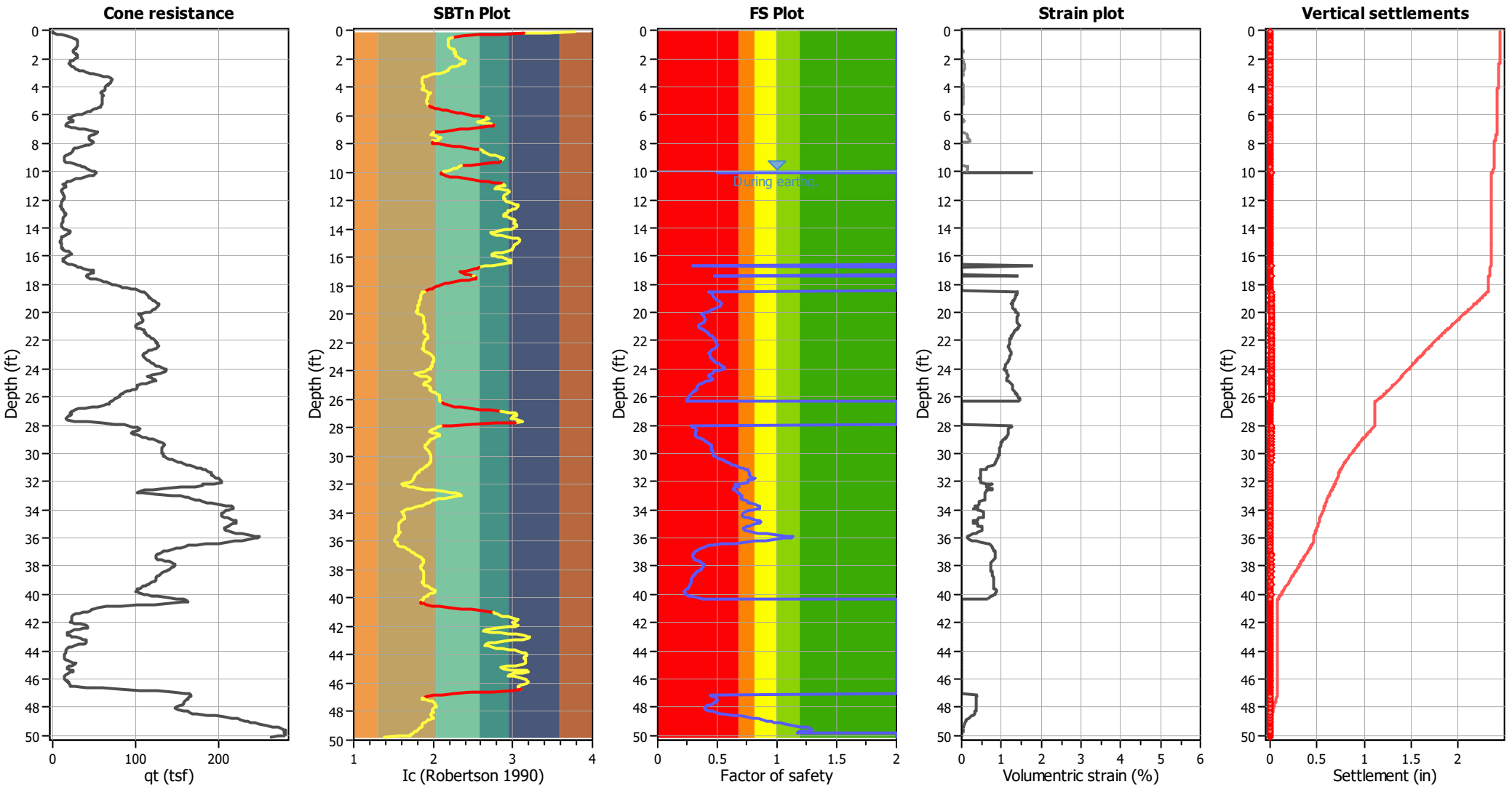
The software will delete data when the cone is in transition from either clay to sand or vise-versa. To do this the software requires a range of I_c values over which the transition will be defined (typically somewhere between $1.80 < I_c < 3.0$) and a rate of change of I_c. Transitions typically occur when the rate of change of I_c is fast (i.e. delta I_c is small).

The SBT_n plot below, displays in red the detected transition layers based on the parameters listed below the graphs.



Transition layer algorithm properties		General statistics	
I_c minimum check value:	1.70	Total points in CPT file:	764
I_c maximum check value:	3.00	Total points excluded:	119
I_c change ratio value:	0.0250	Exclusion percentage:	15.58%
Minimum number of points in layer:	4	Number of layers detected:	13

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

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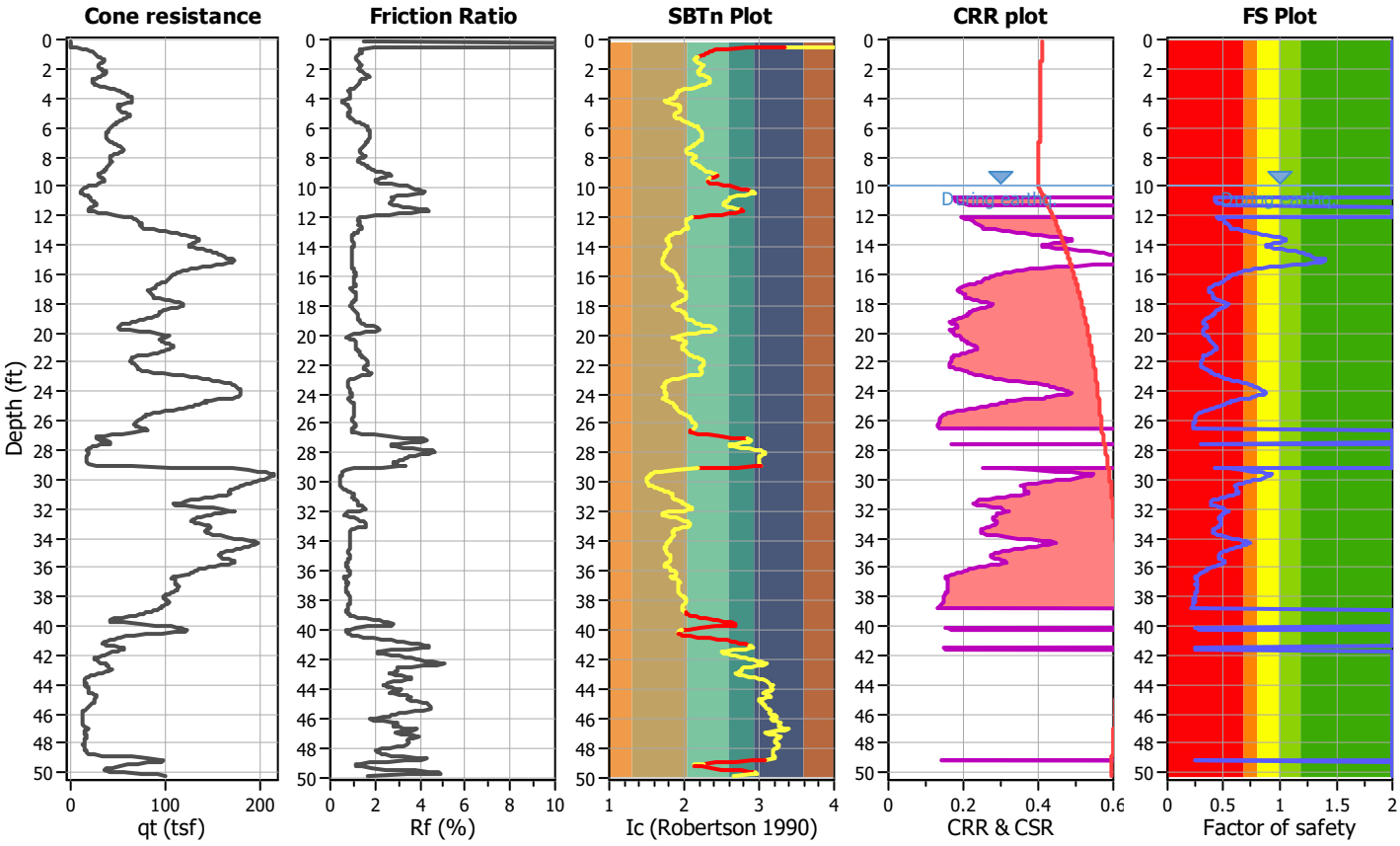
LIQUEFACTION ANALYSIS REPORT

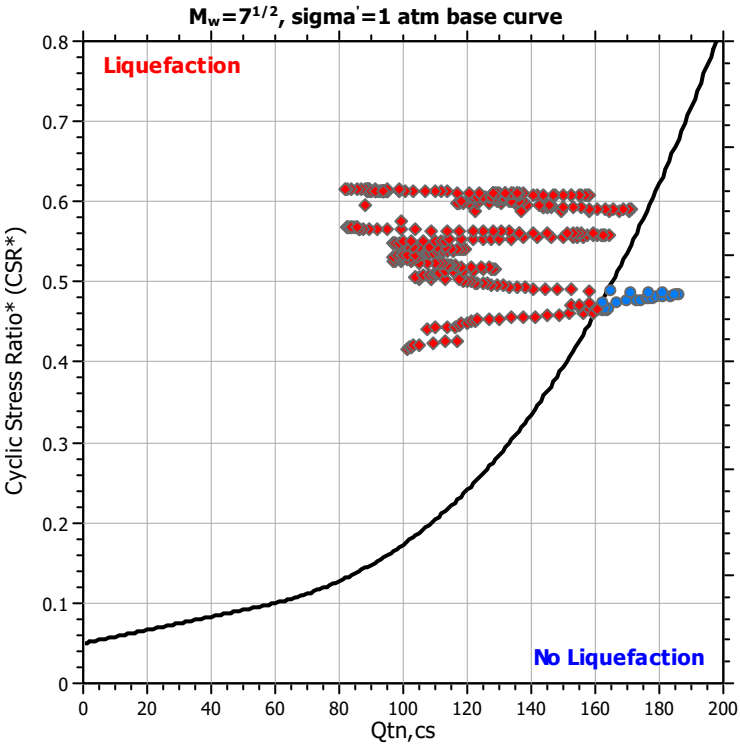
Project title : T2990-22-01 Continental Rancho Polo **Location : Northeast Corner of 58th Avenue & Oasis Street,**

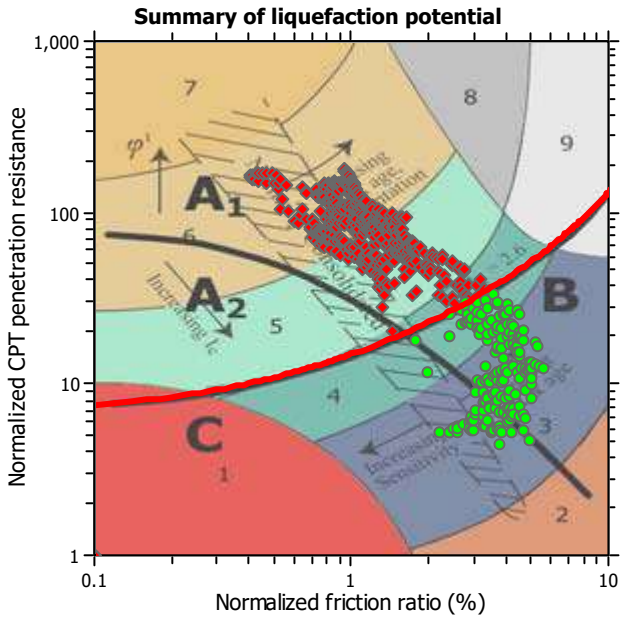
CPT file : CPT-3

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	20.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	10.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	7.23	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.69	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

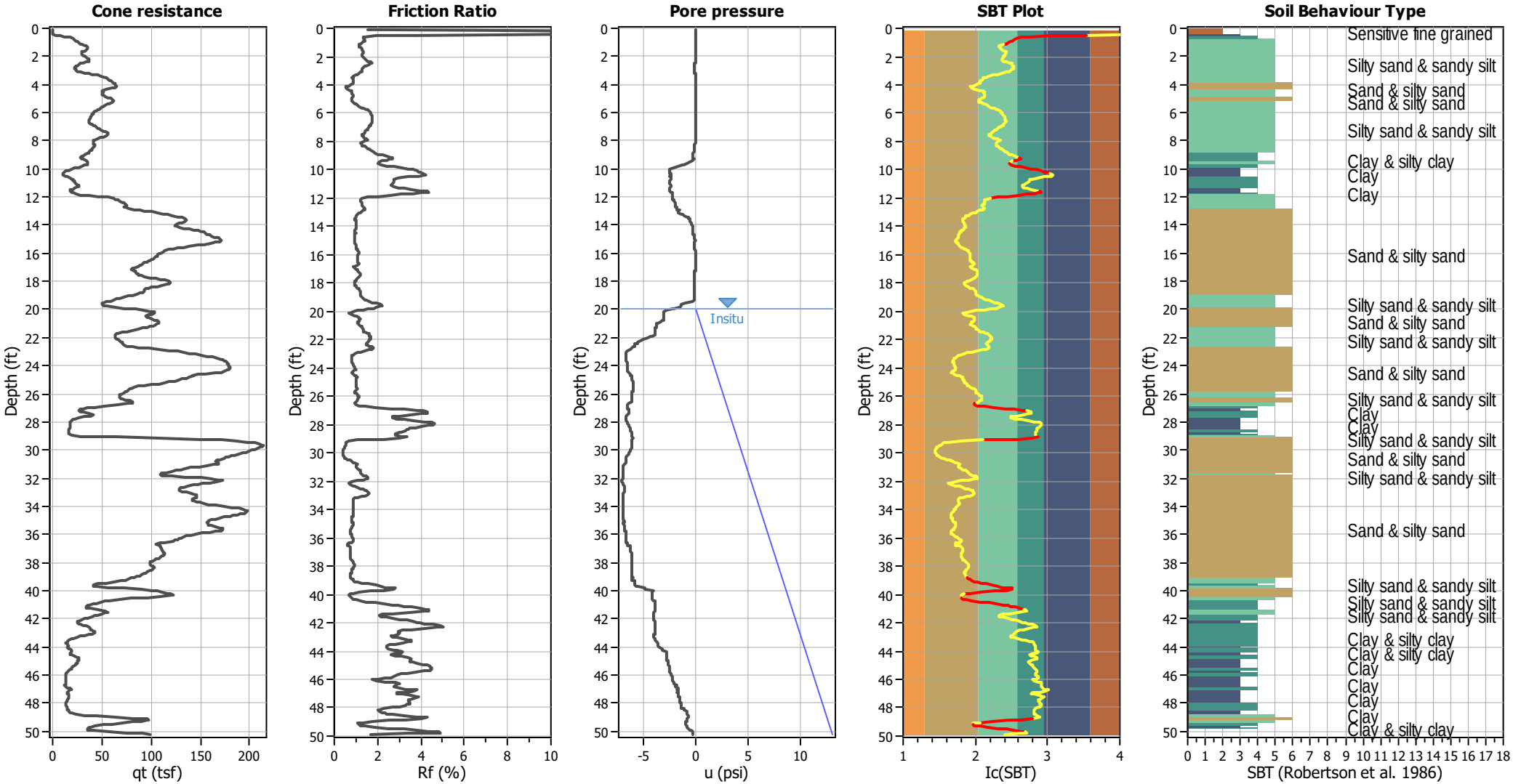






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



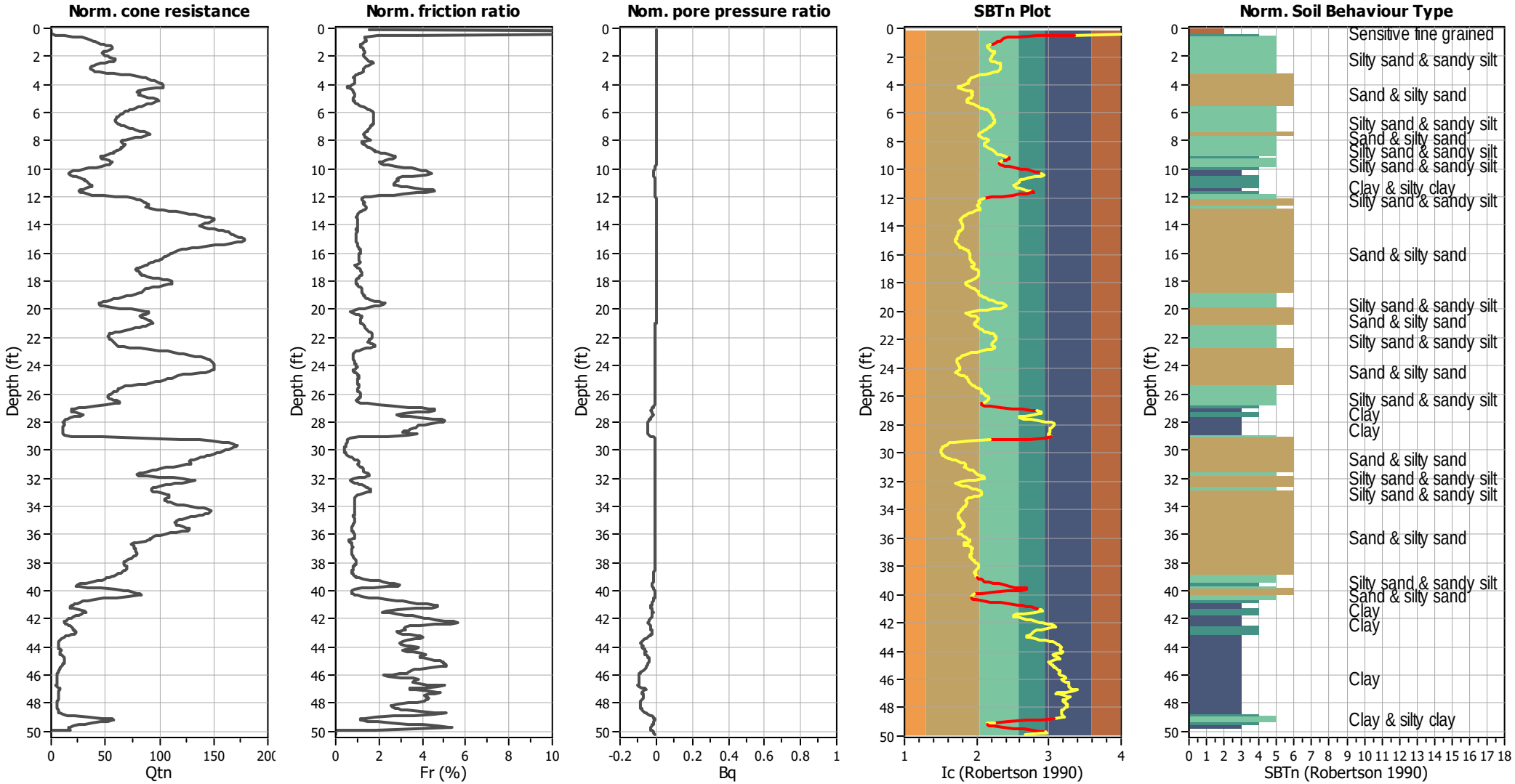
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.23	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.69	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



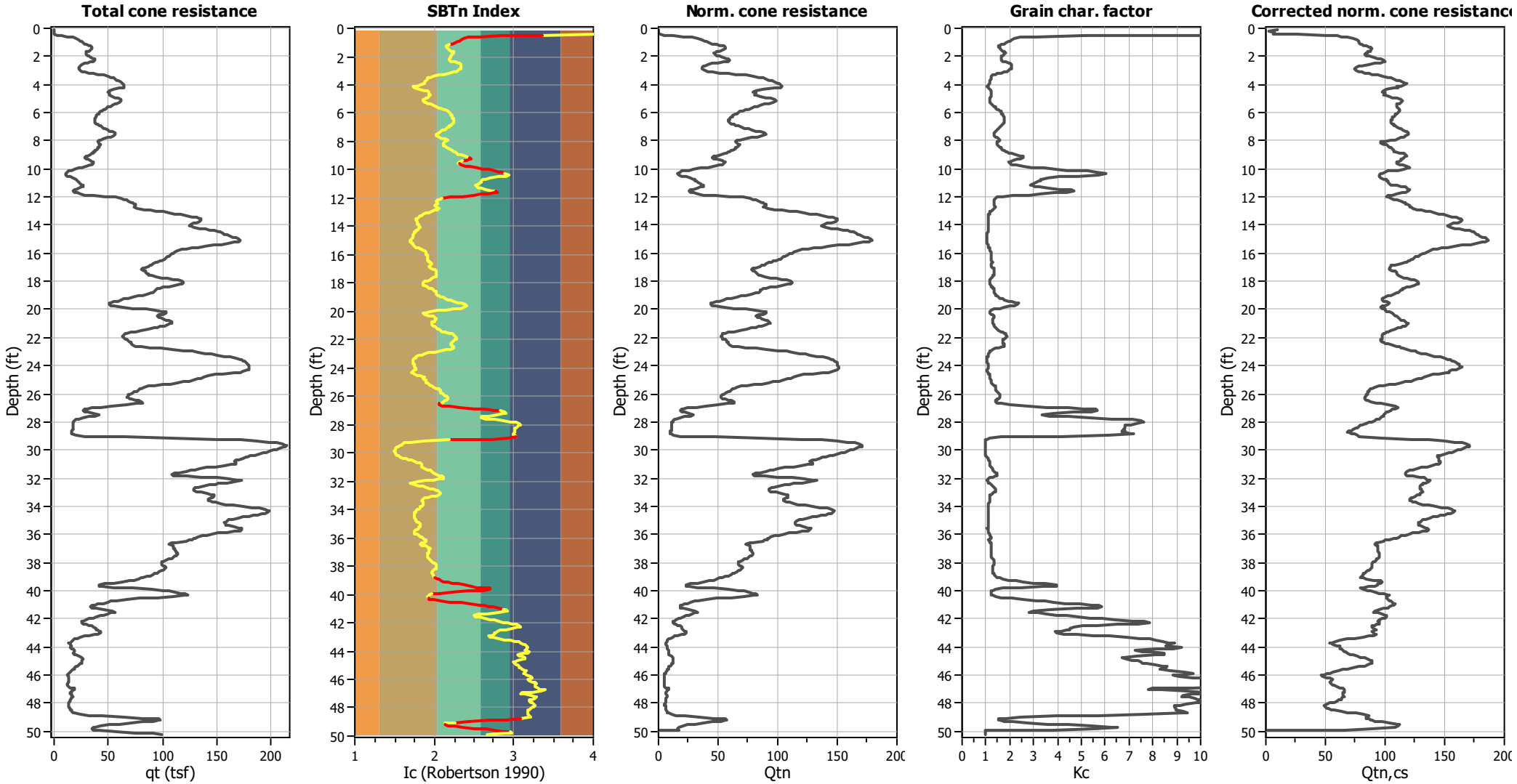
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.23	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.69	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

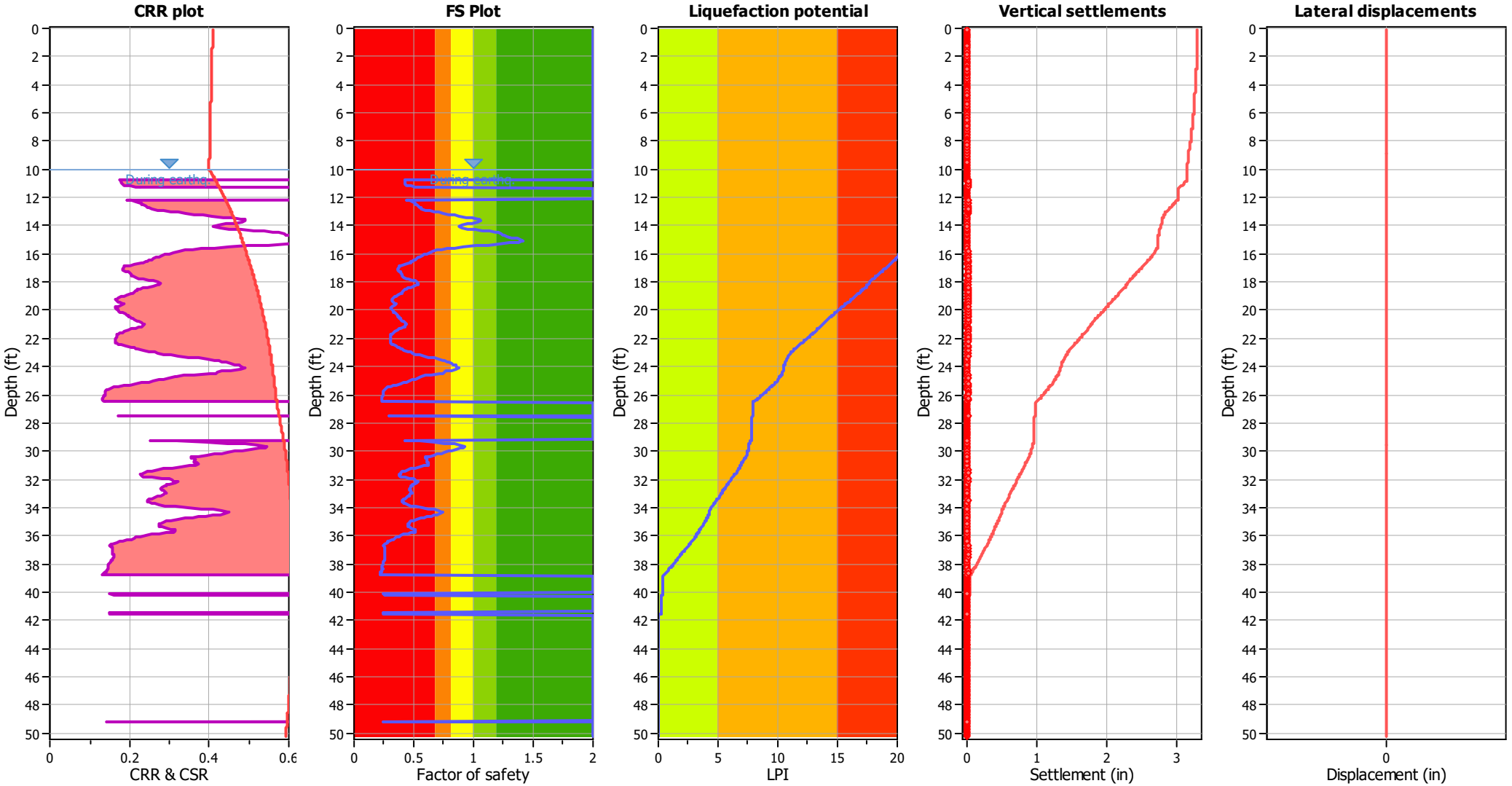
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.23	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.69	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.23	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.69	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

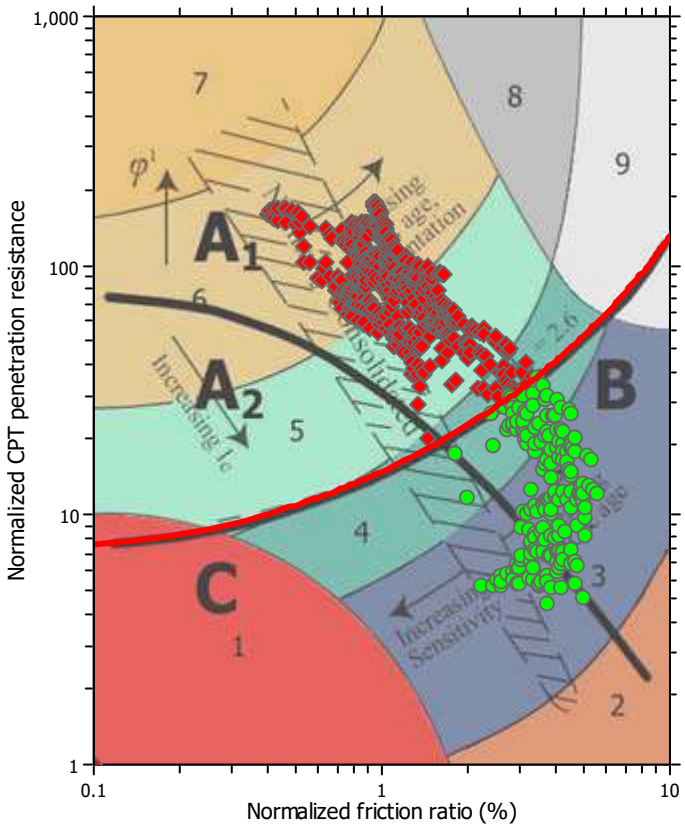
F.S. color scheme

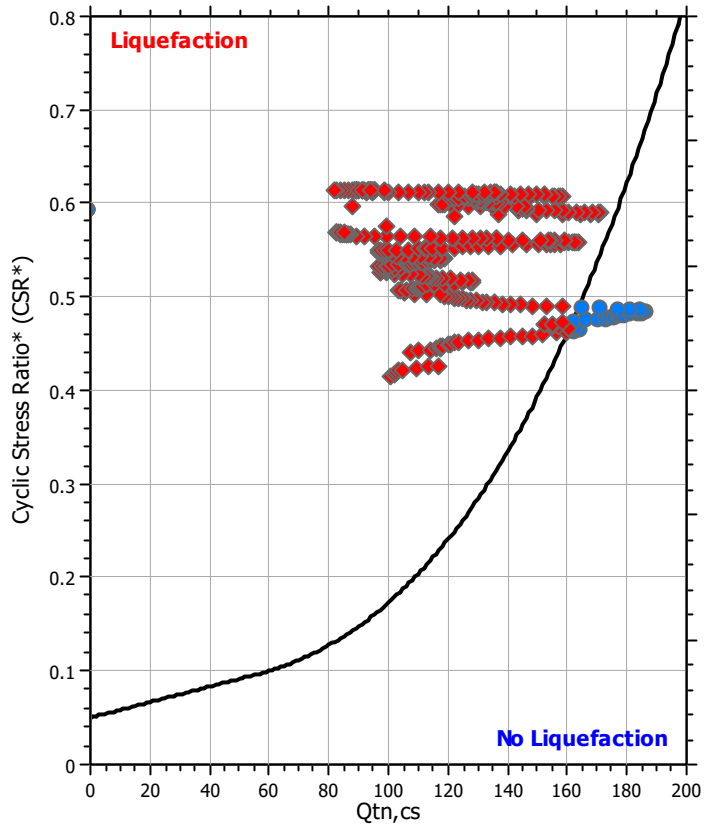
- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

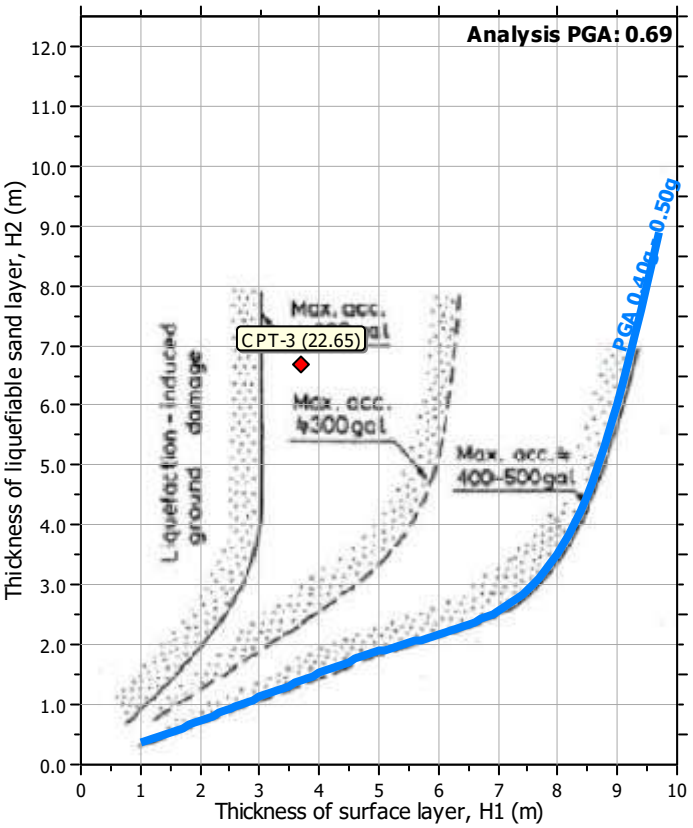
LPI color scheme

- Very high risk
- High risk
- Low risk

Liquefaction analysis summary plots



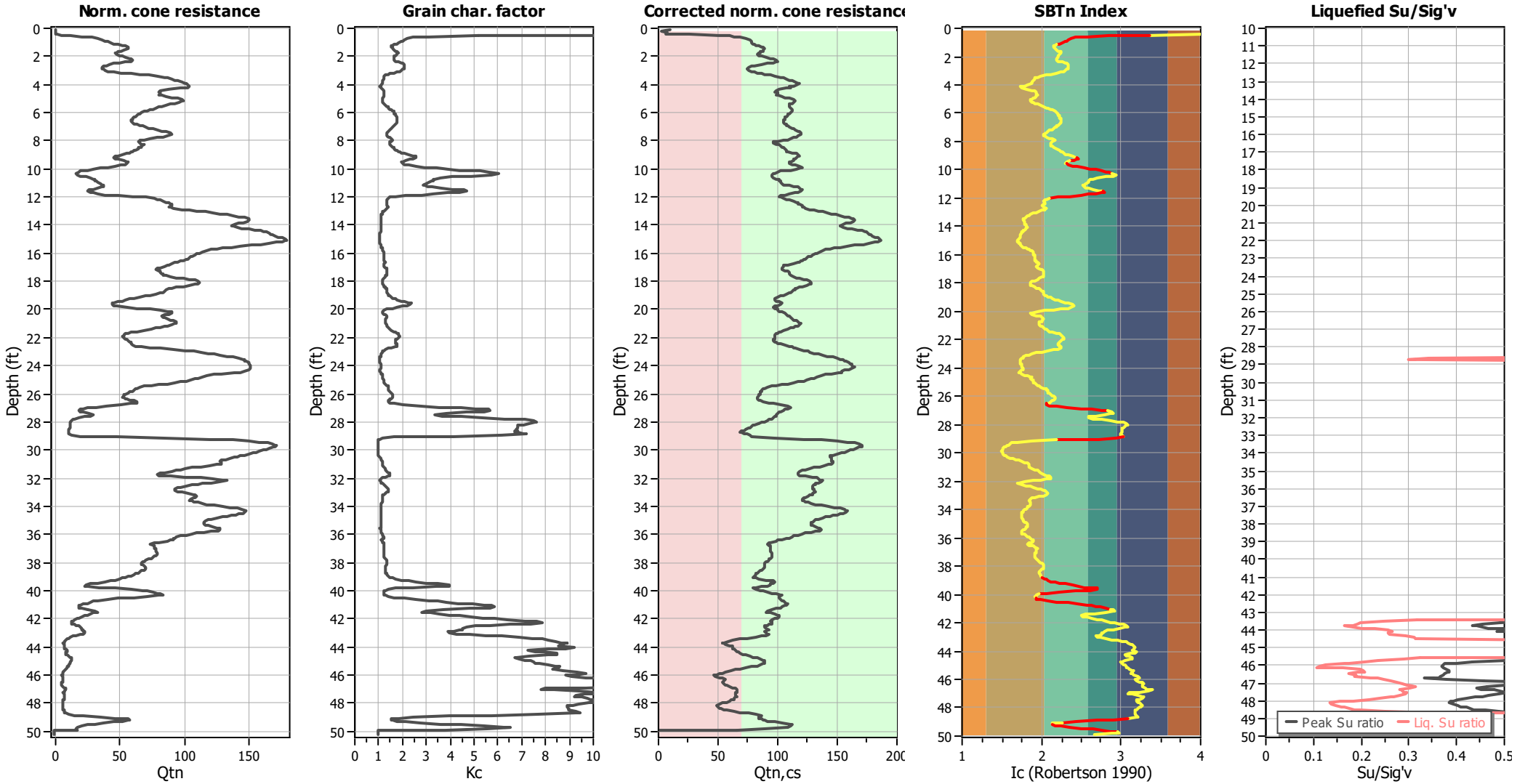




Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.23	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.69	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

Check for strength loss plots (Robertson (2010))



Input parameters and analysis data

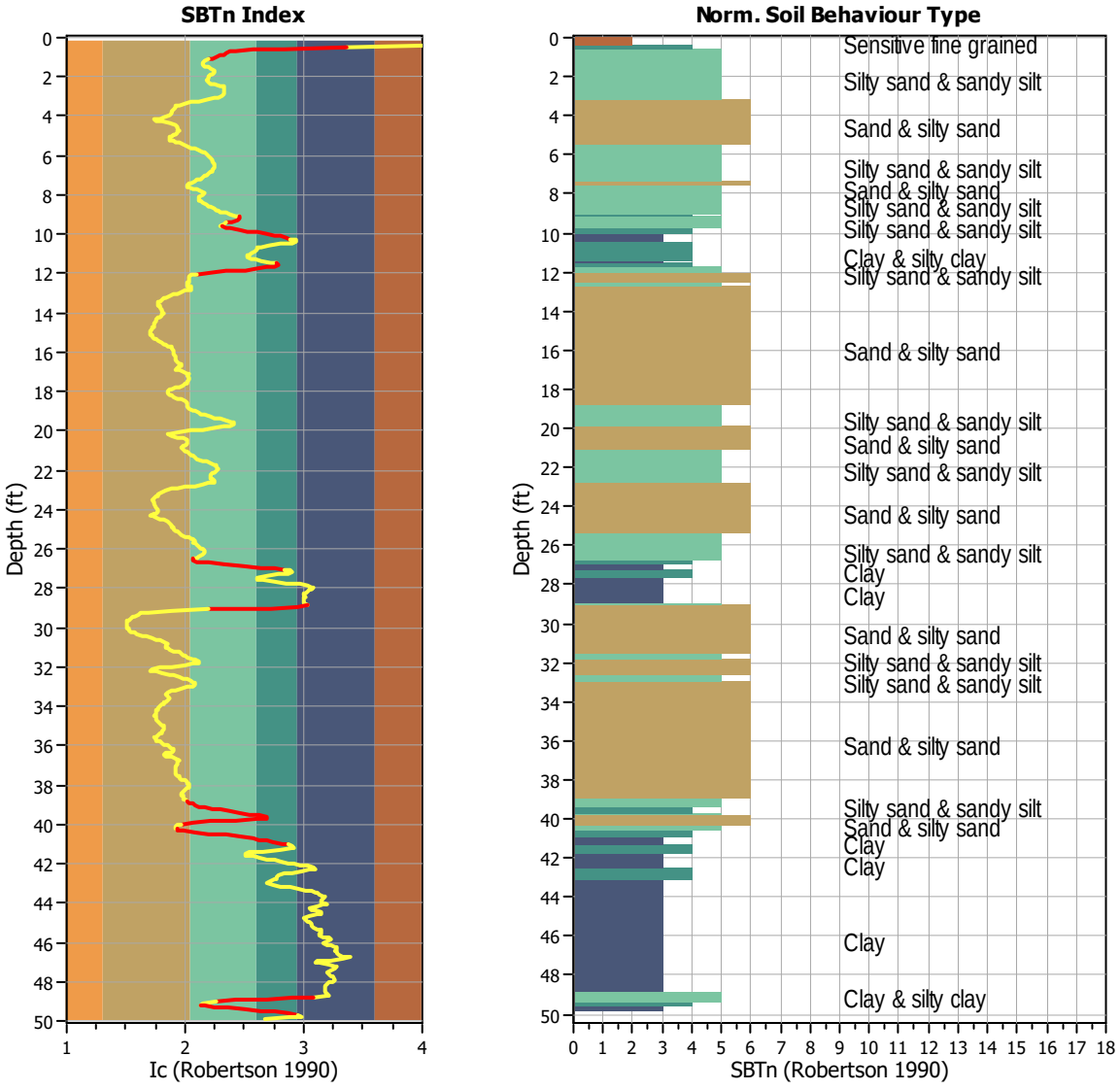
Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.23	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.69	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

TRANSITION LAYER DETECTION ALGORITHM REPORT
Summary Details & Plots

Short description

The software will delete data when the cone is in transition from either clay to sand or vise-versa. To do this the software requires a range of I_c values over which the transition will be defined (typically somewhere between $1.80 < I_c < 3.0$) and a rate of change of I_c. Transitions typically occur when the rate of change of I_c is fast (i.e. delta I_c is small).

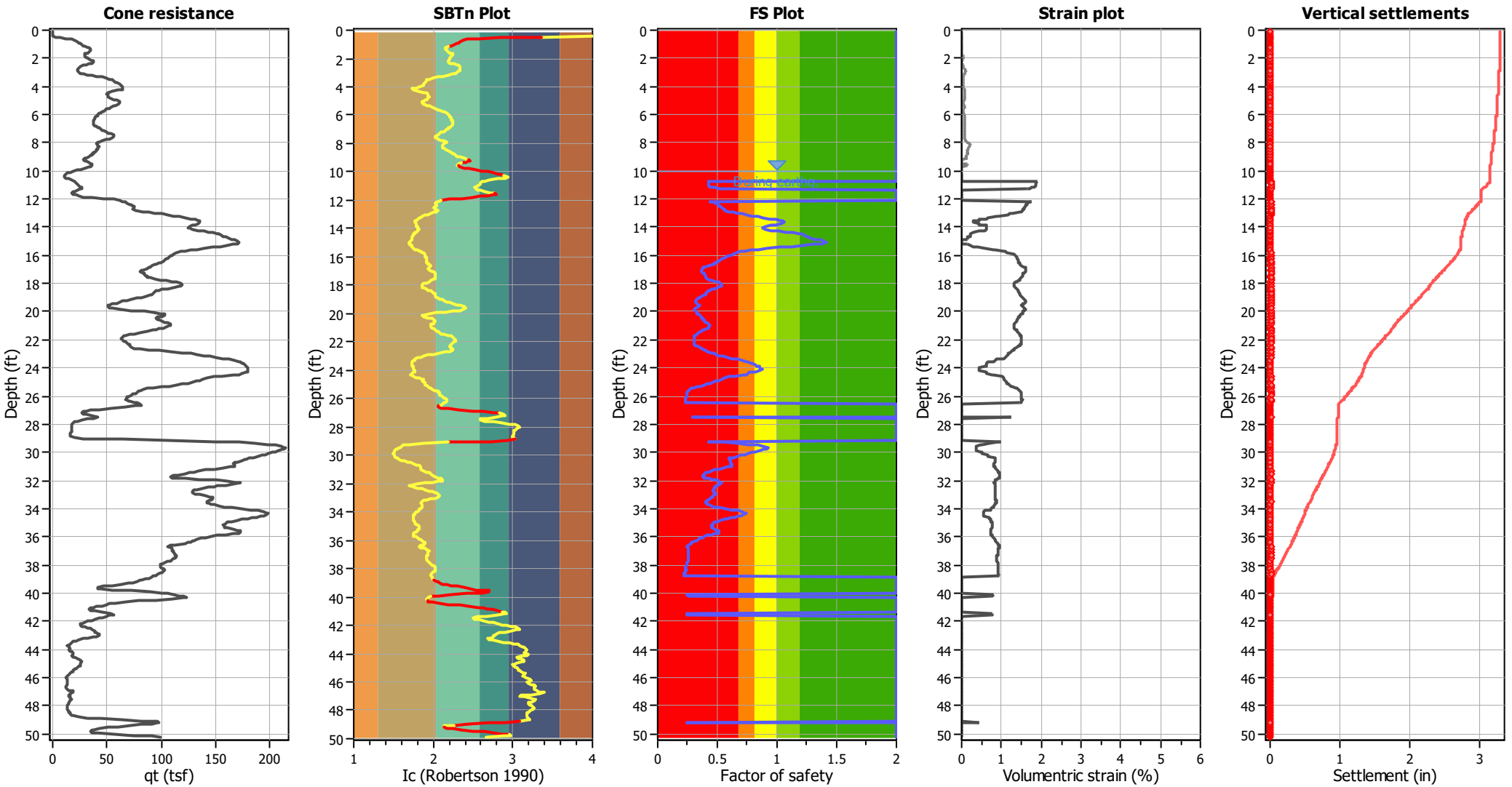
The SBT_n plot below, displays in red the detected transition layers based on the parameters listed below the graphs.



Transition layer algorithm properties	
I_c minimum check value:	1.70
I_c maximum check value:	3.00
I_c change ratio value:	0.0250
Minimum number of points in layer:	4

General statistics	
Total points in CPT file:	765
Total points excluded:	95
Exclusion percentage:	12.42%
Number of layers detected:	11

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

Geocon West, Inc.
3303 N. San Fernando Blvd., Suite 100
Burbank, CA 91504
(818) 841-8388

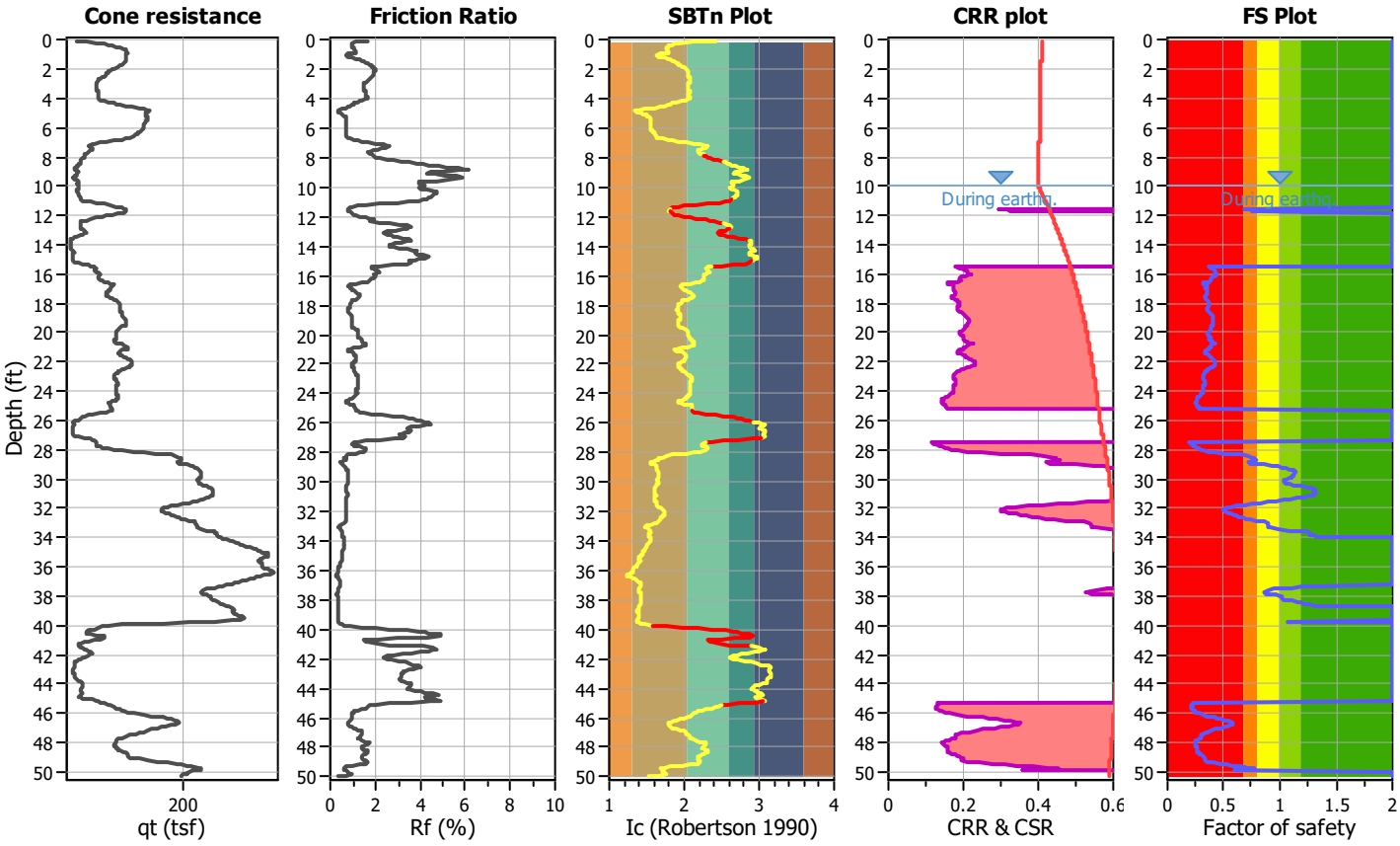
LIQUEFACTION ANALYSIS REPORT

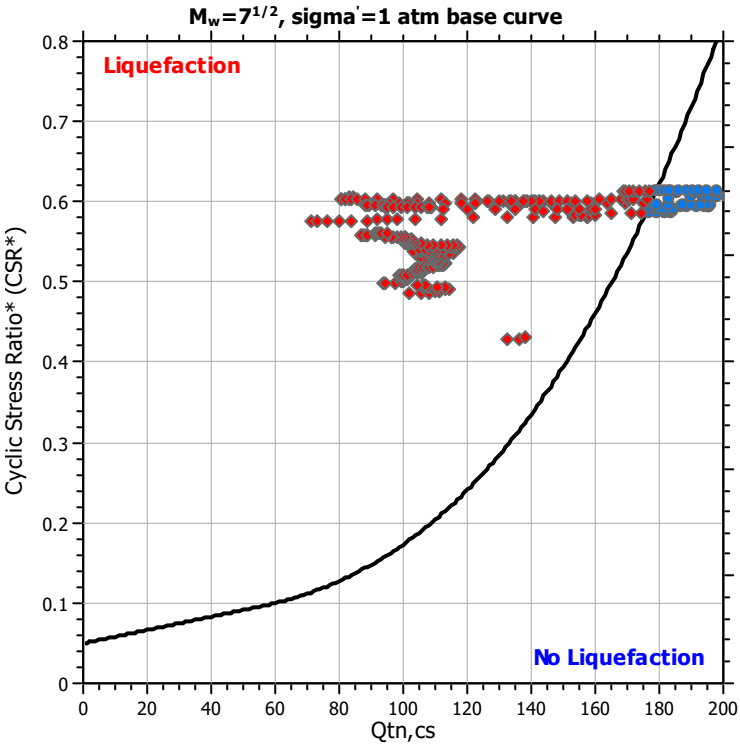
Project title : T2990-22-01 Continental Rancho Polo **Location : Northeast Corner of 58th Avenue & Oasis Street,**

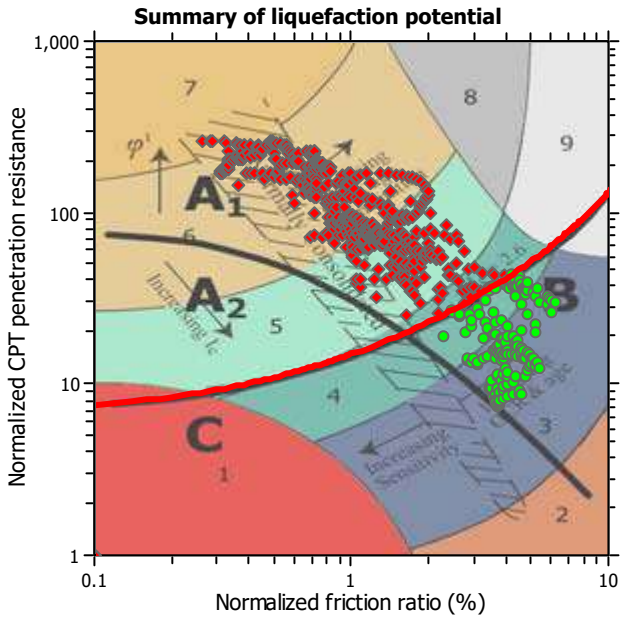
CPT file : CPT-4

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	20.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	10.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	7.23	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.69	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

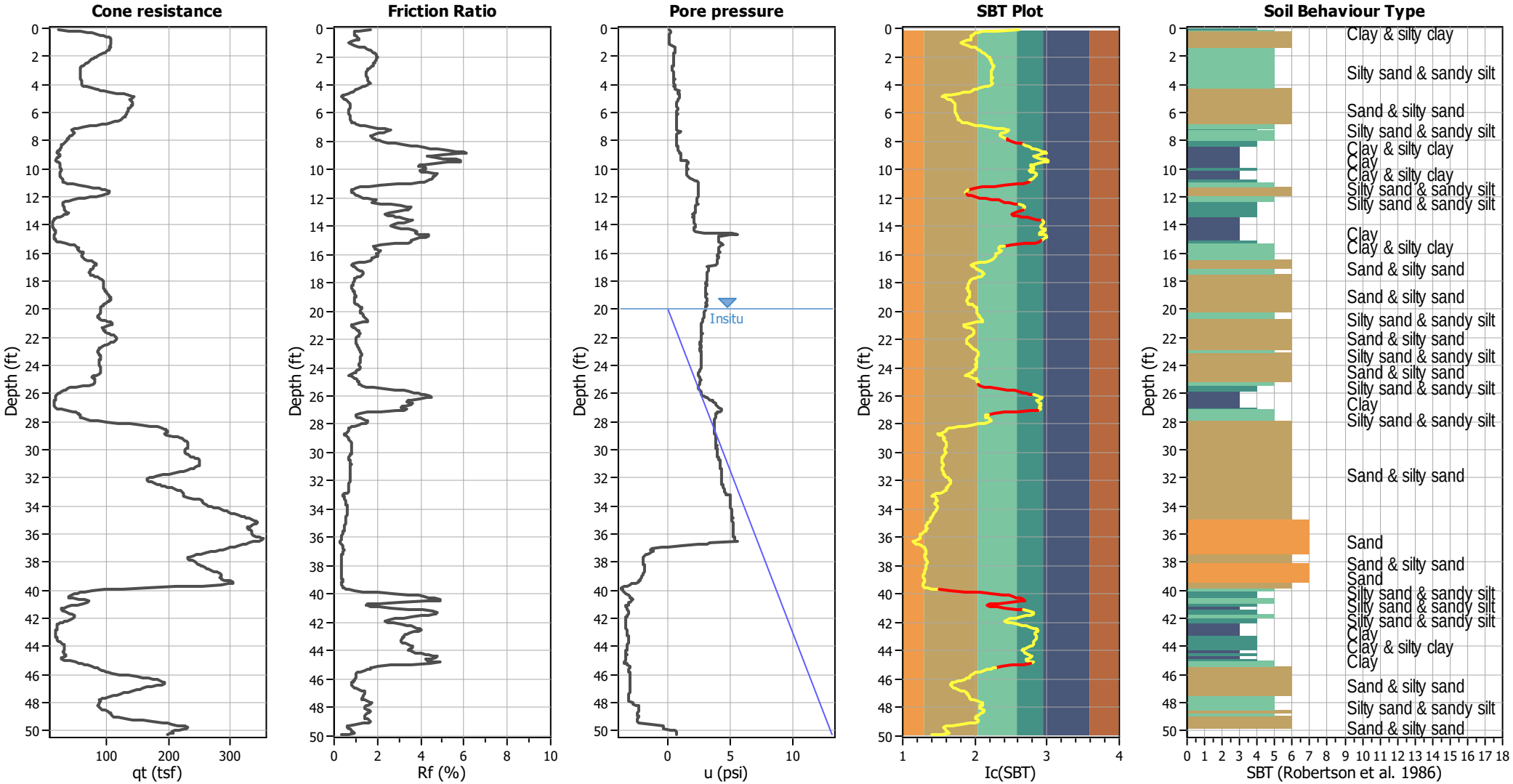






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



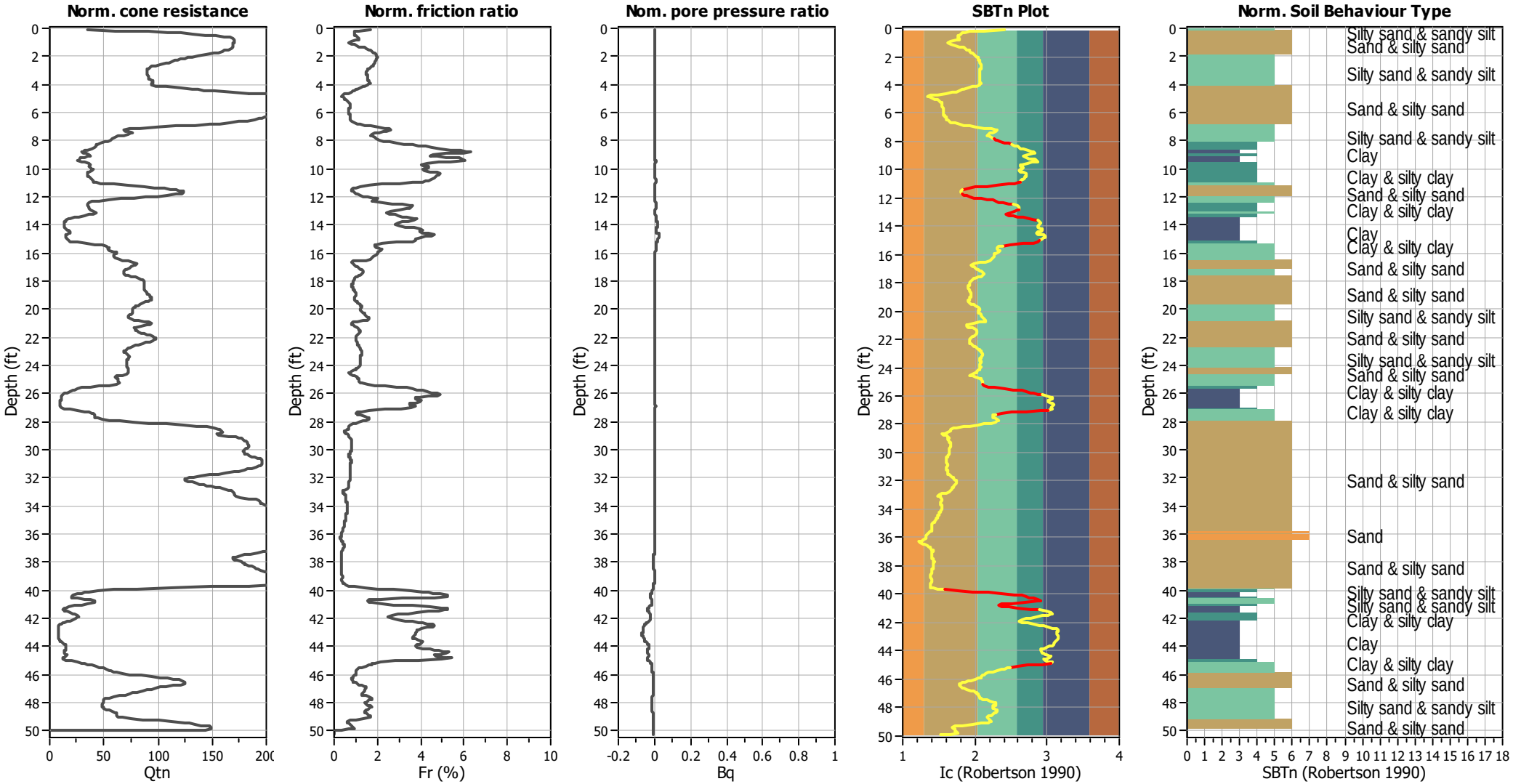
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.23	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.69	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



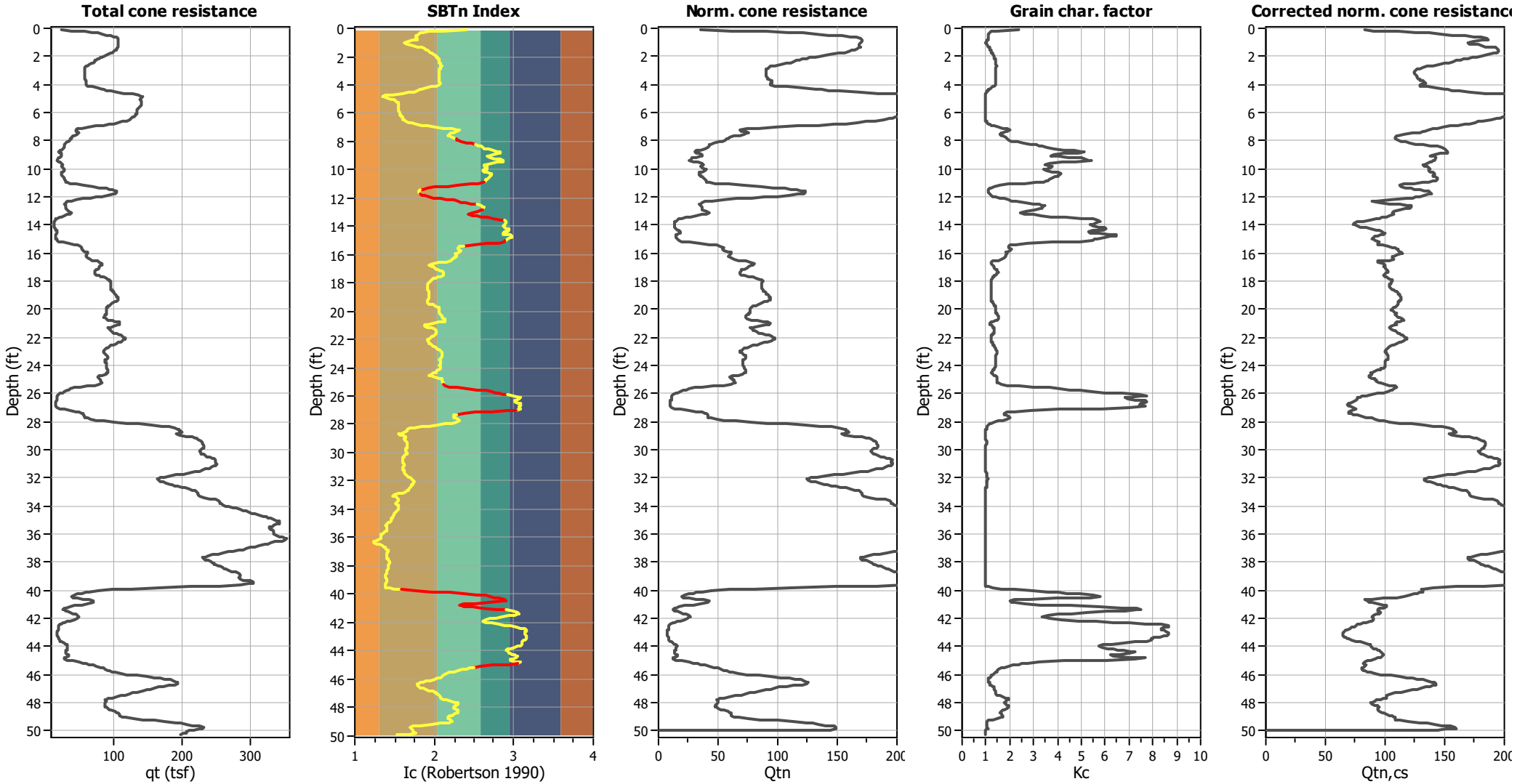
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.23	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.69	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

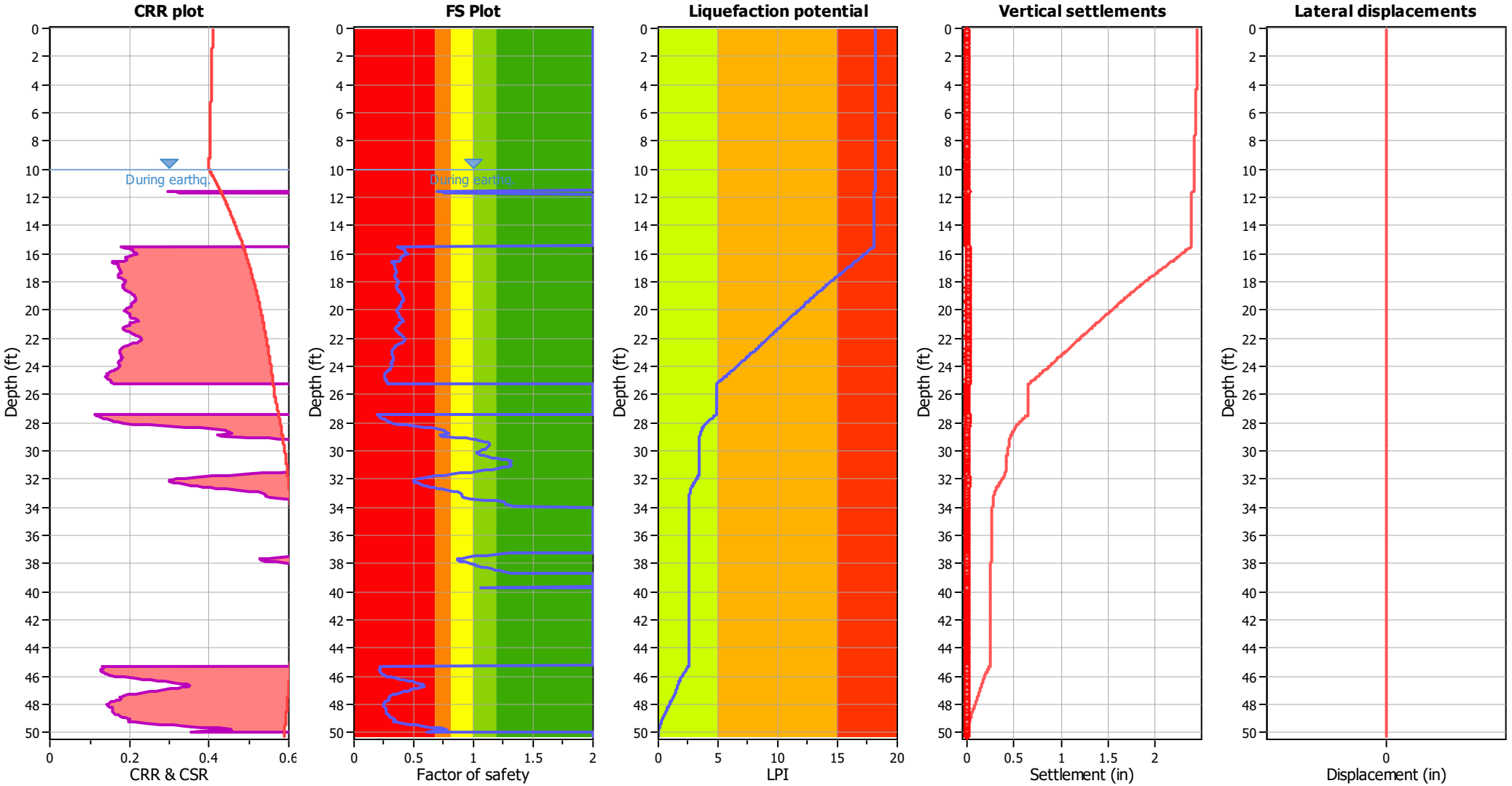
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.23	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.69	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.23	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.69	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

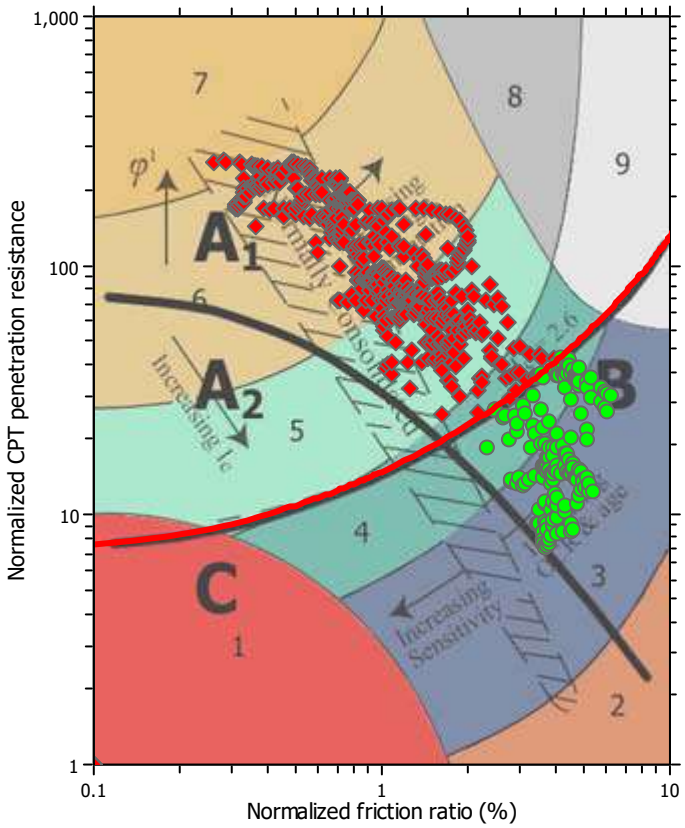
F.S. color scheme

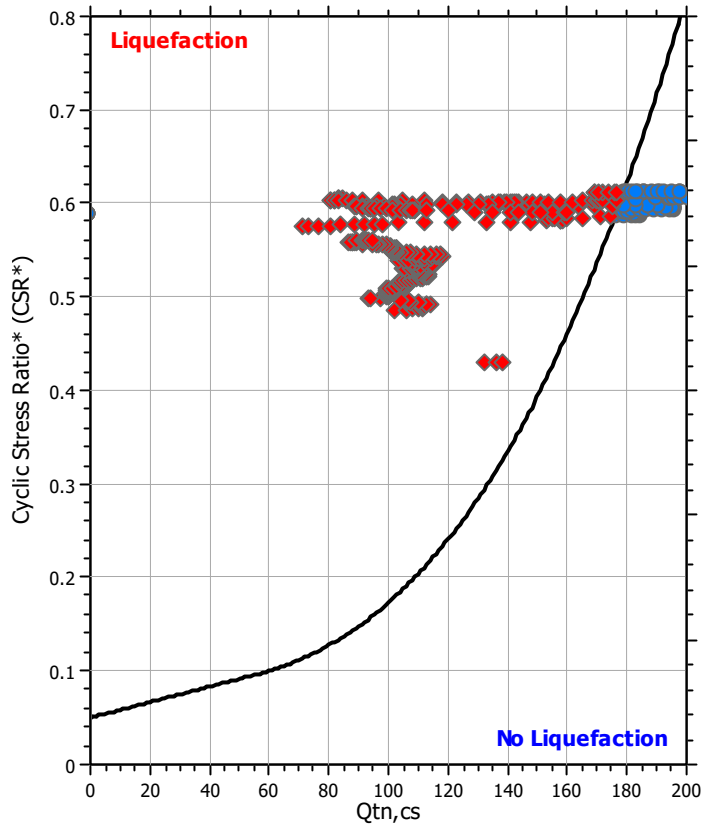
- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

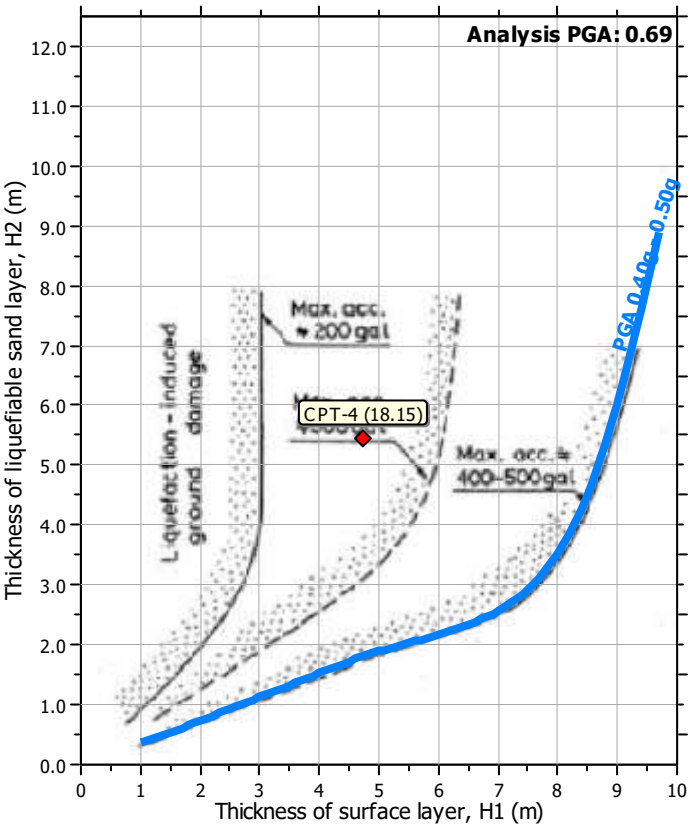
LPI color scheme

- Very high risk
- High risk
- Low risk

Liquefaction analysis summary plots







Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
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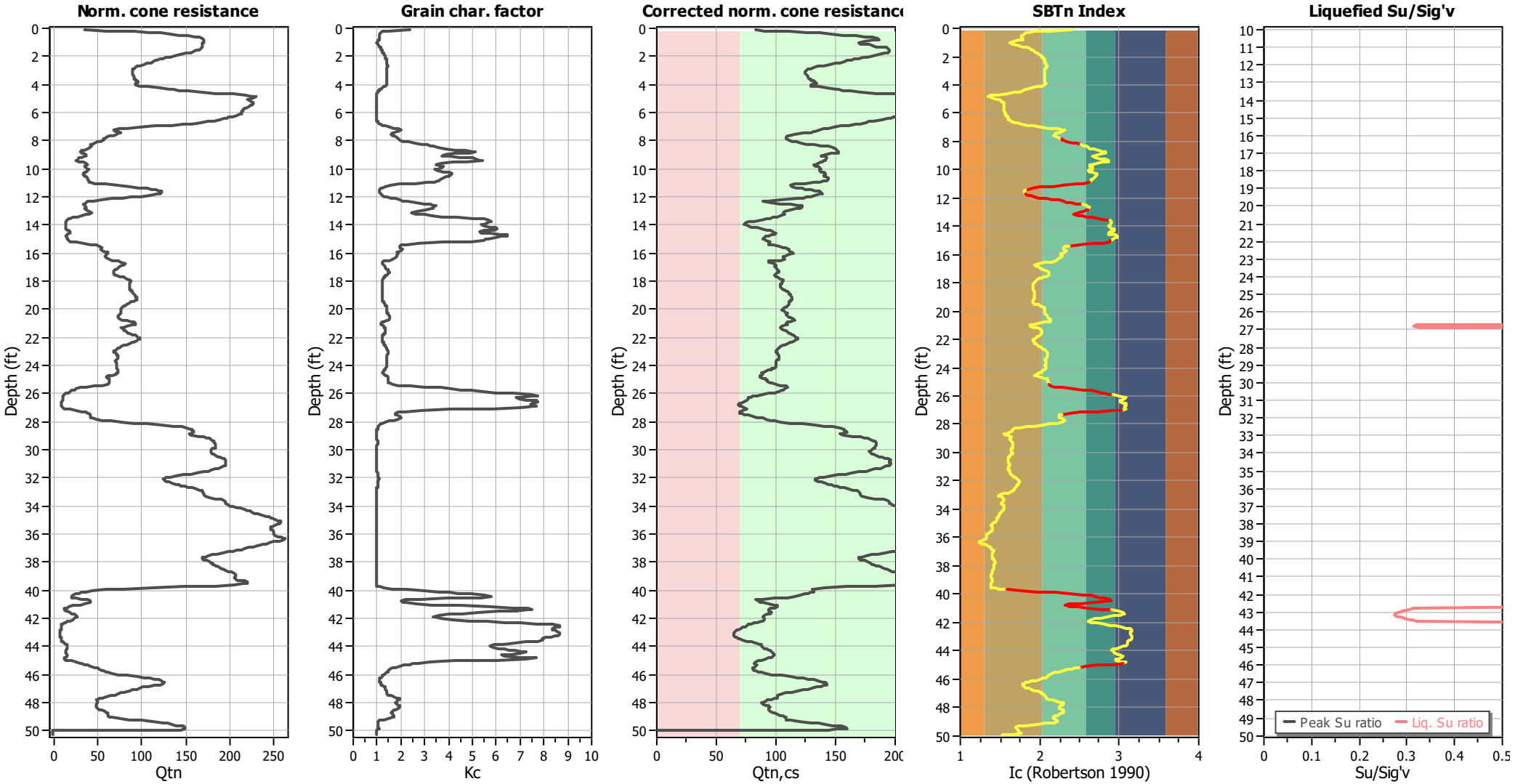
Peak ground acceleration:	0.69	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

Check for strength loss plots (Robertson (2010))



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.23	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.69	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

TRANSITION LAYER DETECTION ALGORITHM REPORT
Summary Details & Plots

Short description

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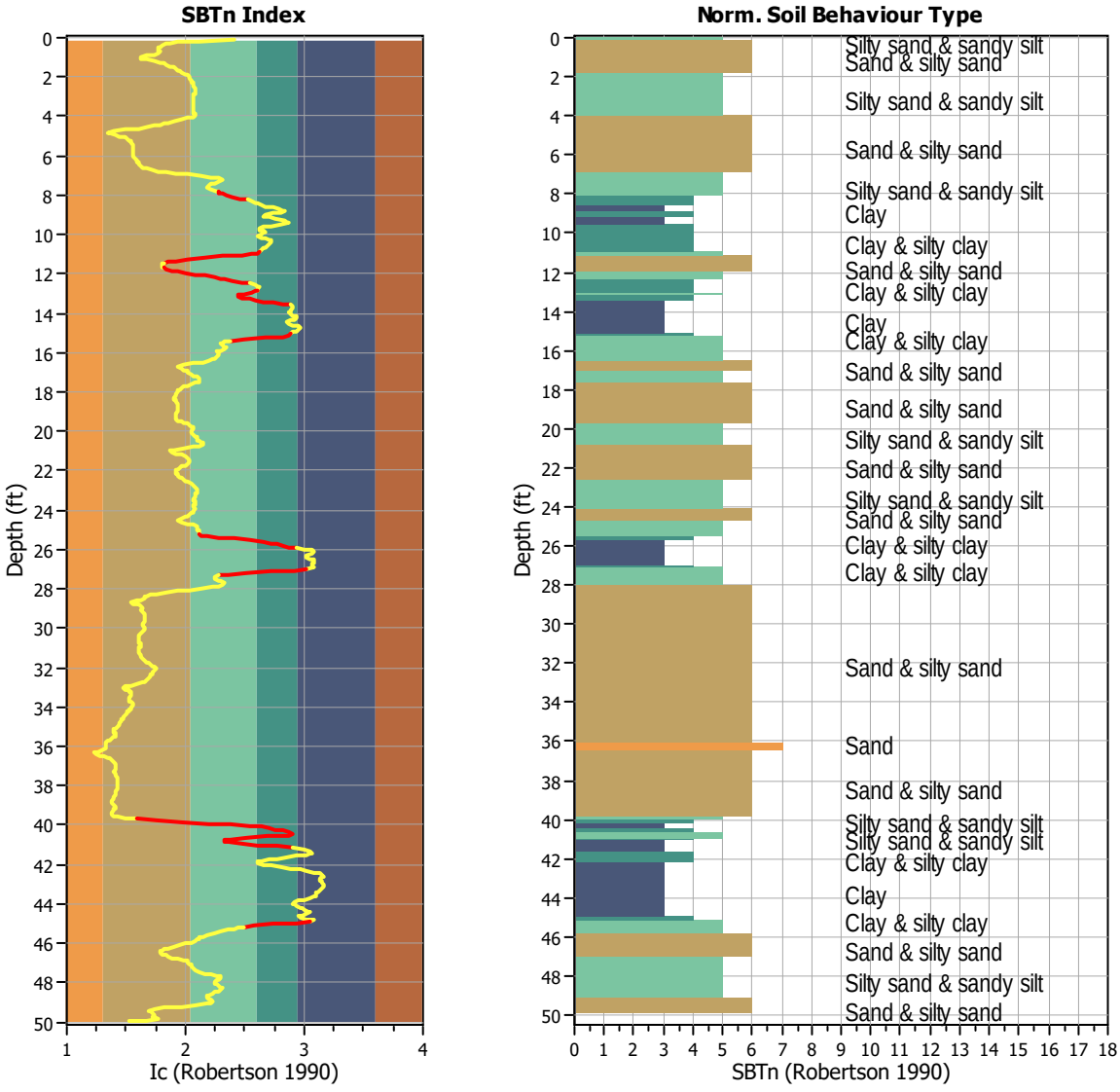
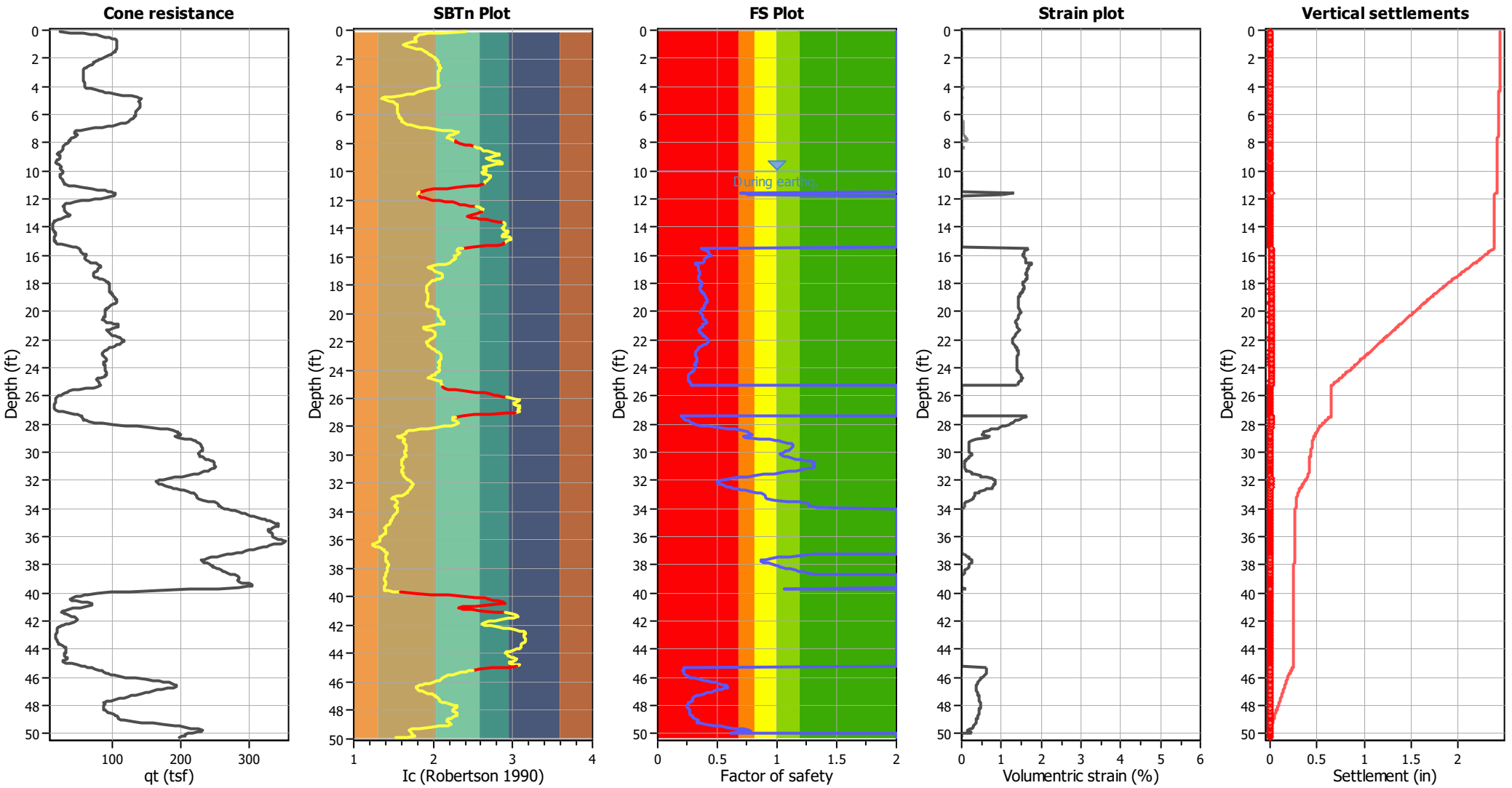
The SBT_n plot below, displays in red the detected transition layers based on the parameters listed below the graphs.



Transition layer algorithm properties		General statistics	
I_c minimum check value:	1.70	Total points in CPT file:	766
I_c maximum check value:	3.00	Total points excluded:	96
I_c change ratio value:	0.0250	Exclusion percentage:	12.53%
Minimum number of points in layer:	4	Number of layers detected:	12

Estimation of post-earthquake settlements

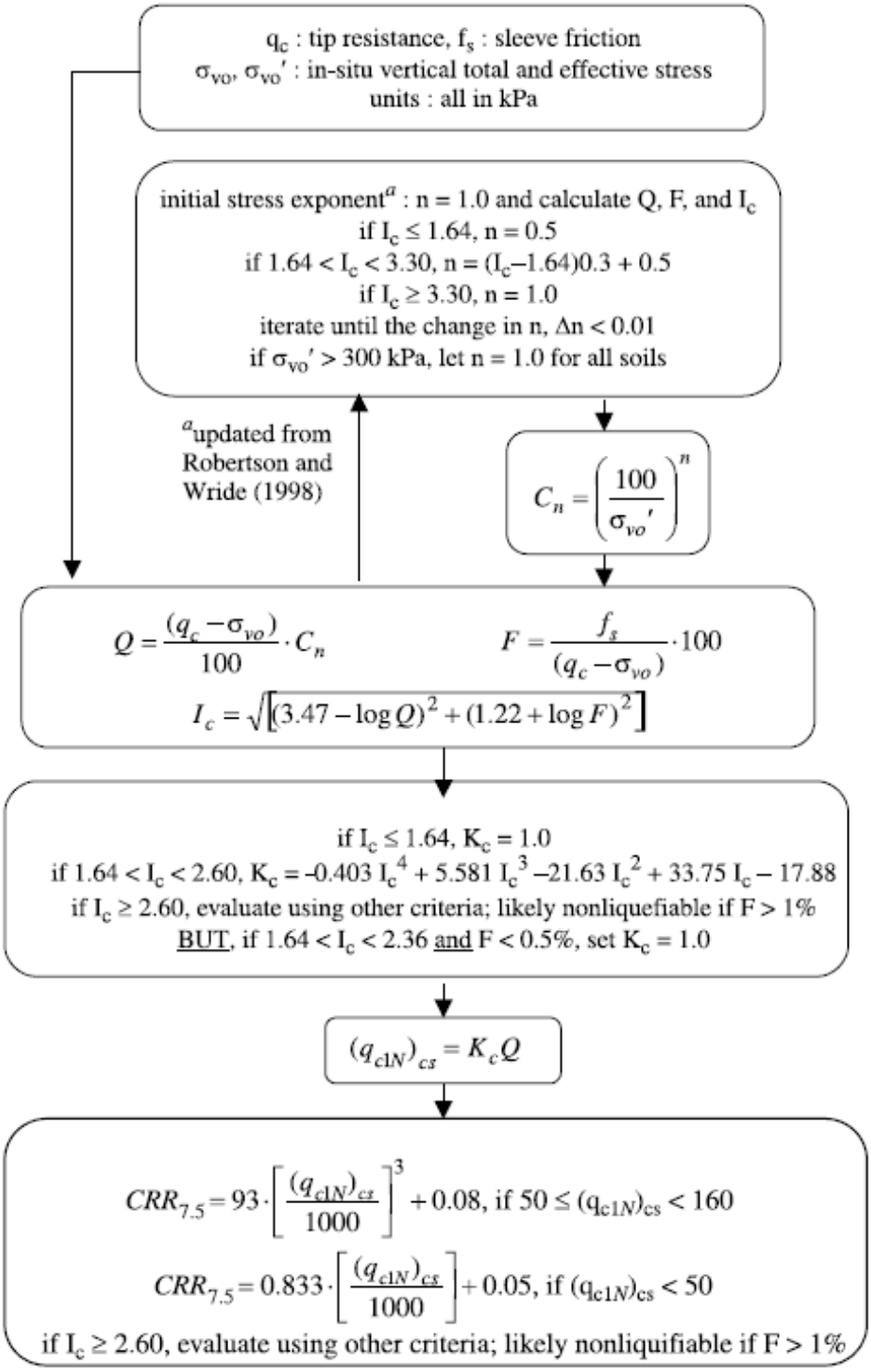


Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

Procedure for the evaluation of soil liquefaction resistance, NCEER (1998)

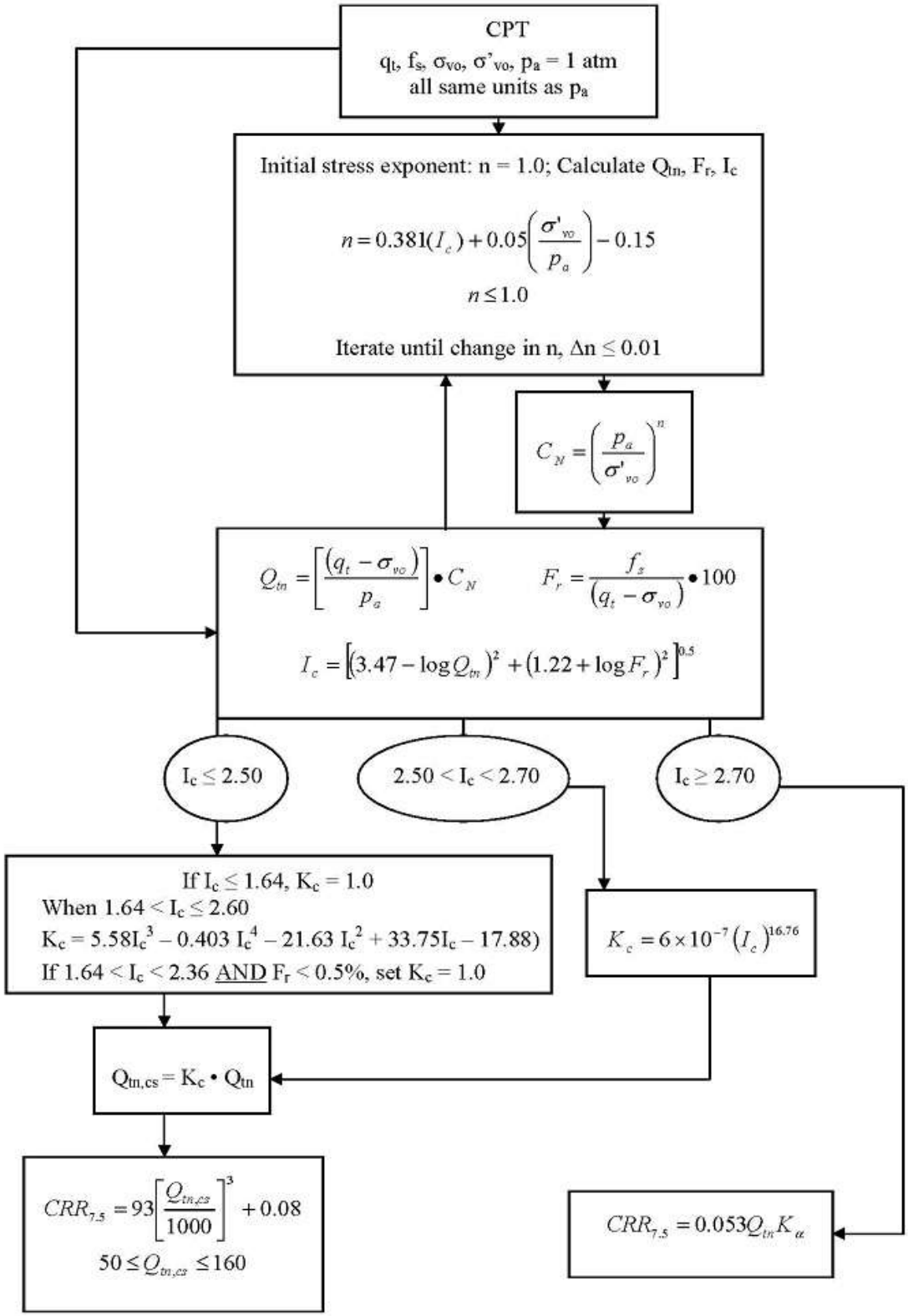
Calculation of soil resistance against liquefaction is performed according to the Robertson & Wride (1998) procedure. The procedure used in the software, slightly differs from the one originally published in NCEER-97-0022 (Proceedings of the NCEER Workshop on Evaluation of Liquefaction Resistance of Soils). The revised procedure is presented below in the form of a flowchart[1]:



[1] "Estimating liquefaction-induced ground settlements from CPT for level ground", G. Zhang, P.K. Robertson, and R.W.I. Brachman

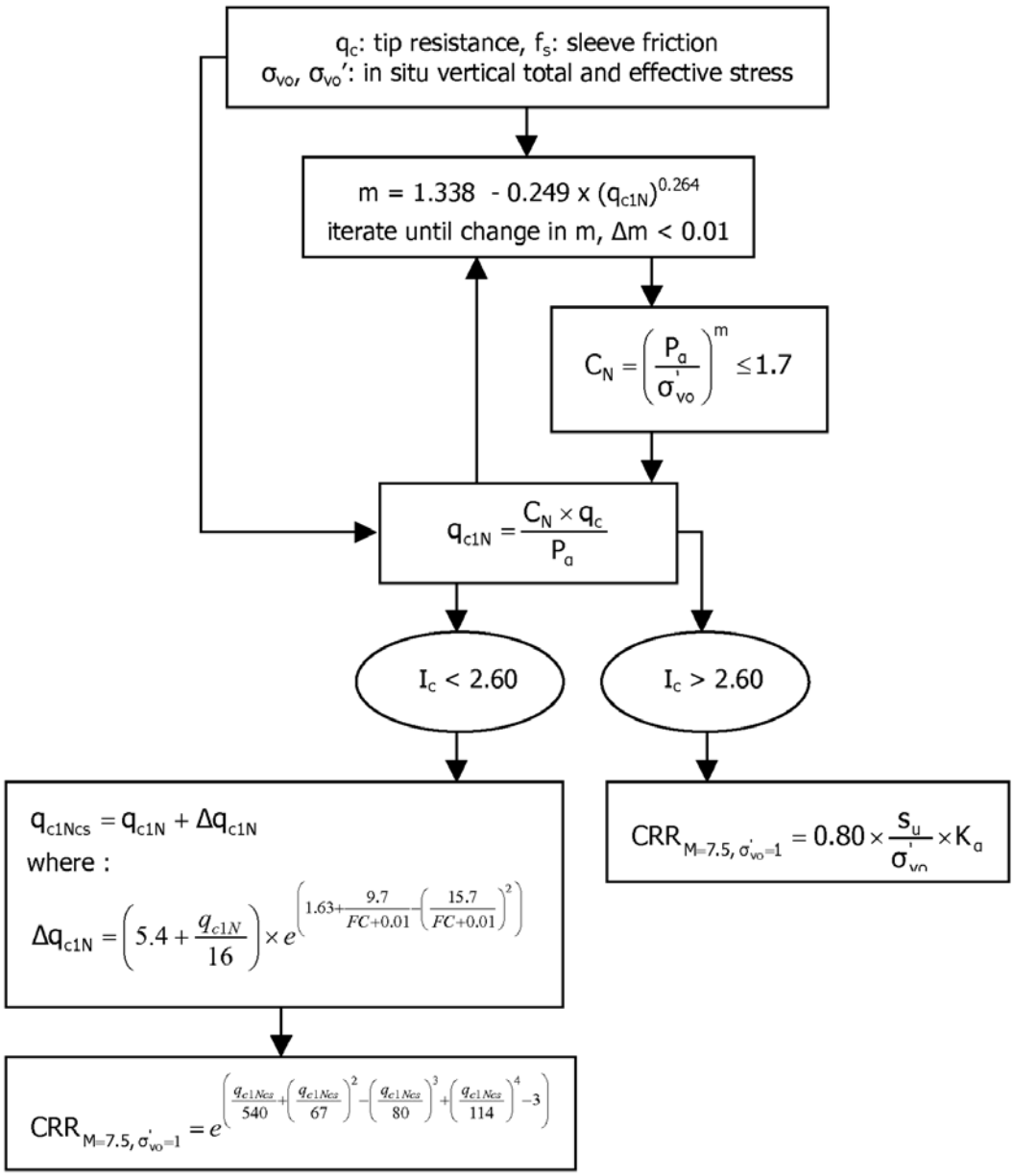
Procedure for the evaluation of soil liquefaction resistance (all soils), Robertson (2010)

Calculation of soil resistance against liquefaction is performed according to the Robertson & Wride (1998) procedure. This procedure used in the software, slightly differs from the one originally published in NCEER-97-0022 (Proceedings of the NCEER Workshop on Evaluation of Liquefaction Resistance of Soils). The revised procedure is presented below in the form of a flowchart[1]:

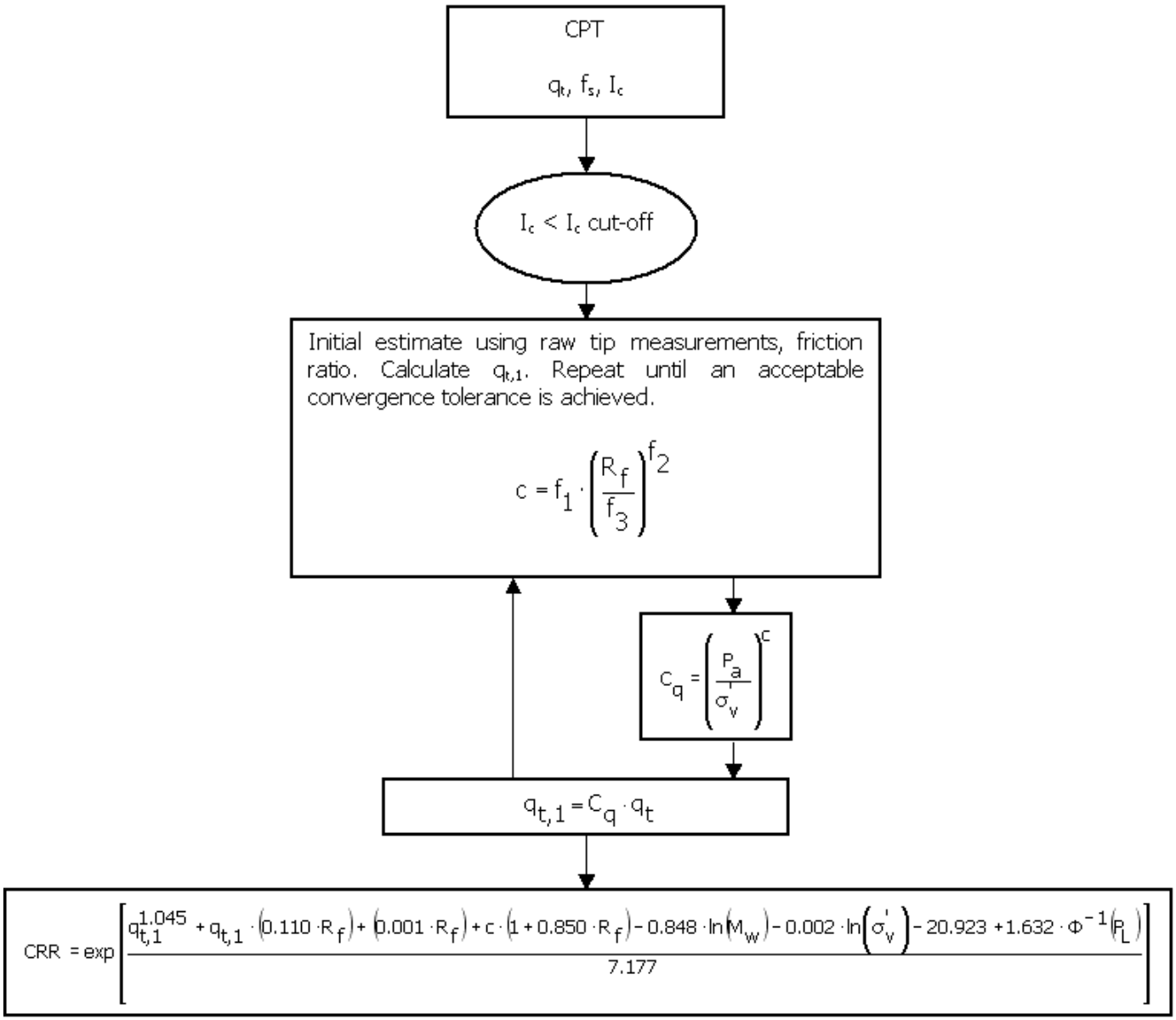


[1] P.K. Robertson, 2009. "Performance based earthquake design using the CPT", Keynote Lecture, International Conference on Performance-based Design in Earthquake Geotechnical Engineering – from case history to practice, IS-Tokyo, June 2009

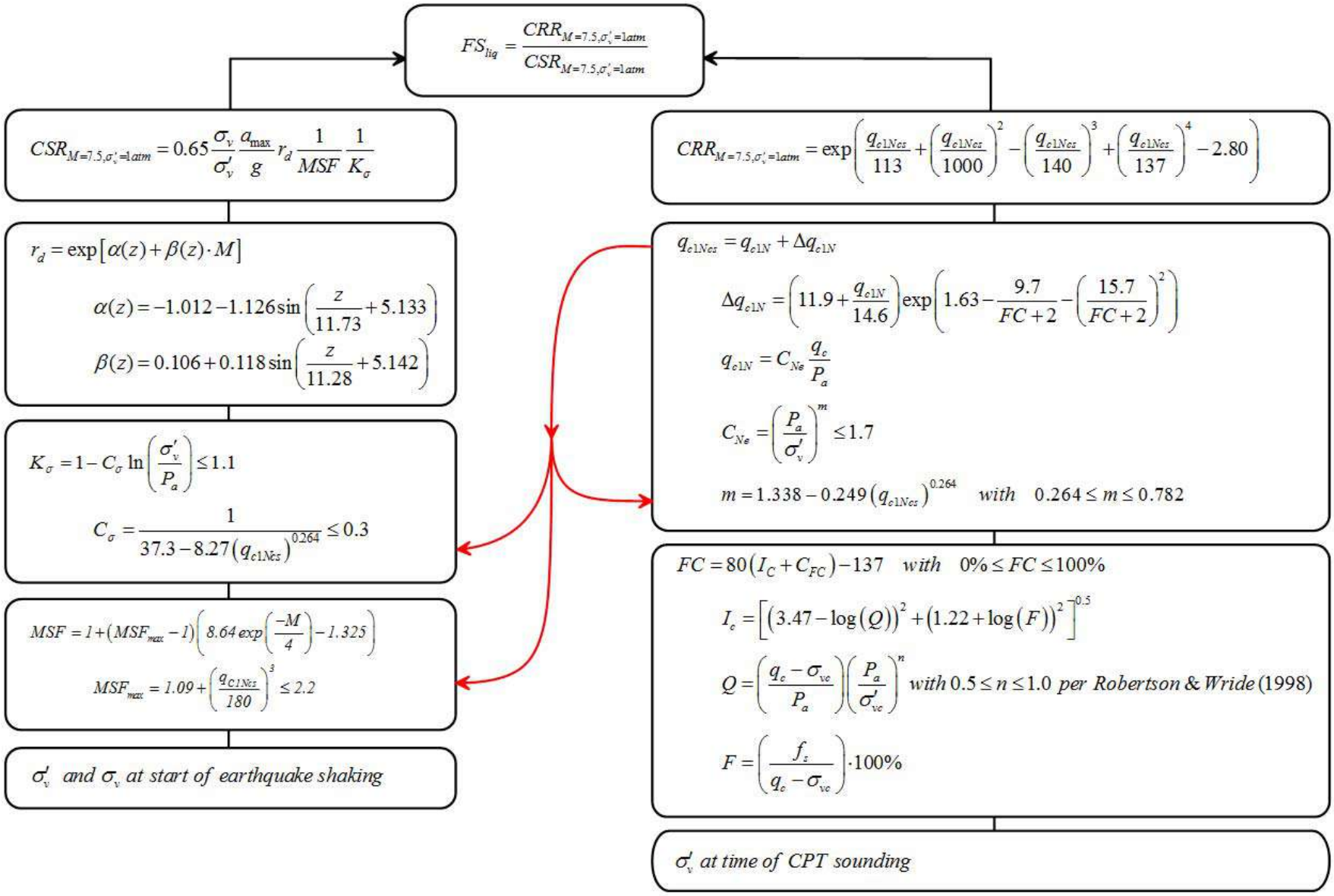
Procedure for the evaluation of soil liquefaction resistance, Idriss & Boulanger (2008)



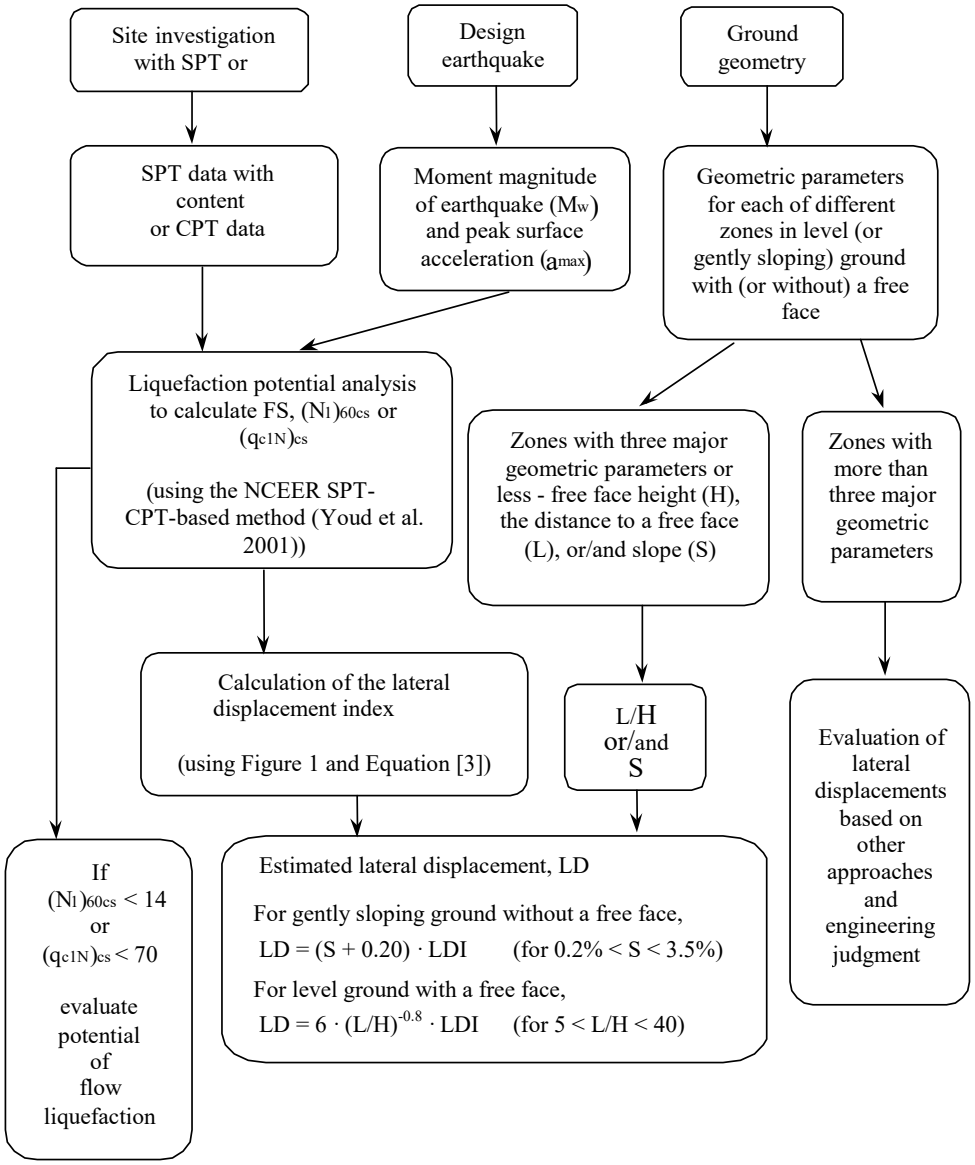
Procedure for the evaluation of soil liquefaction resistance (sandy soils), Moss et al. (2006)



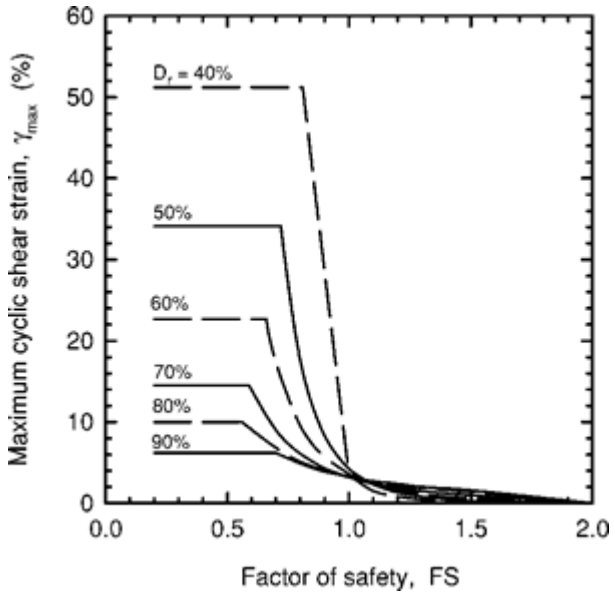
Procedure for the evaluation of soil liquefaction resistance, Boulanger & Idriss(2014)



Procedure for the evaluation of liquefaction-induced lateral spreading displacements



[1] Flow chart illustrating major steps in estimating liquefaction-induced lateral spreading displacements using the proposed approach



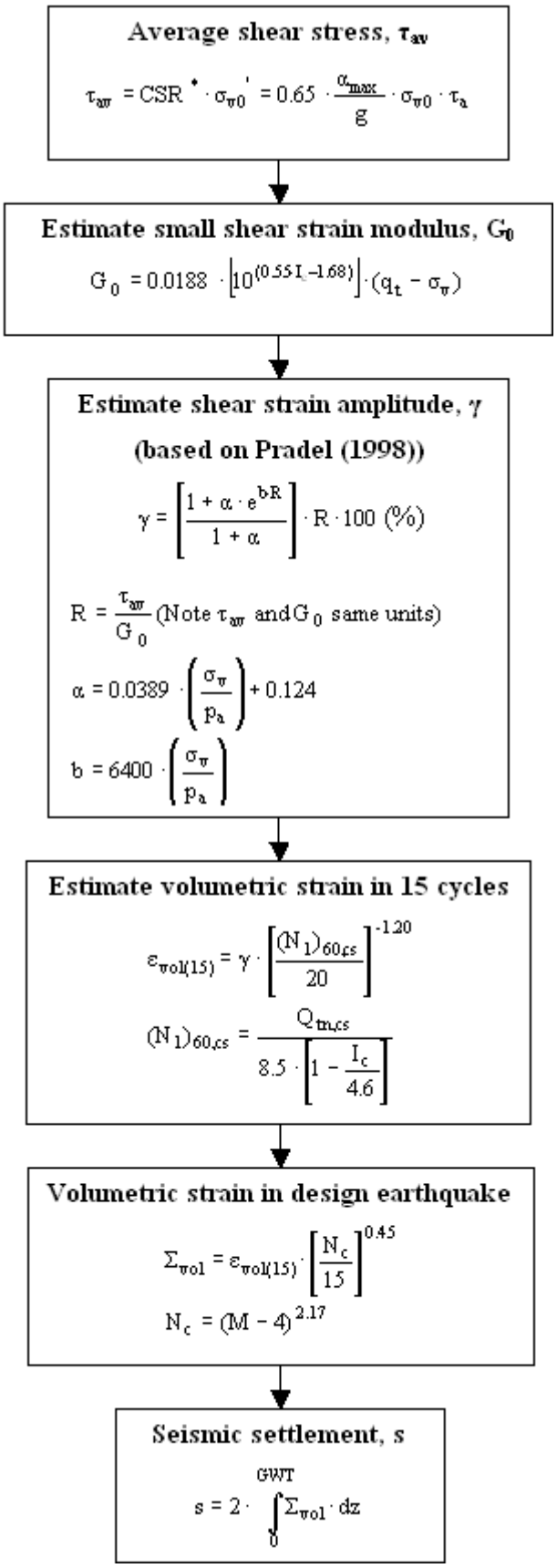
[1] Figure 1

$$LDI = \int_0^{z_{max}} \gamma_{max} dz$$

[1] Equation [3]

[1] "Estimating liquefaction-induced ground settlements from CPT for level ground", G. Zhang, P.K. Robertson, and R.W.I. Brachman

Procedure for the estimation of seismic induced settlements in dry sands



Robertson, P.K. and Lisheng, S., 2010, "Estimation of seismic compression in dry soils using the CPT" FIFTH INTERNATIONAL CONFERENCE ON RECENT ADVANCES IN GEOTECHNICAL EARTHQUAKE ENGINEERING AND SOIL DYNAMICS, Symposium in honor of professor I. M. Idriss, San Diego, CA

Liquefaction Potential Index (LPI) calculation procedure

Calculation of the Liquefaction Potential Index (LPI) is used to interpret the liquefaction assessment calculations in terms of severity over depth. The calculation procedure is based on the methology developed by Iwasaki (1982) and is adopted by AFPS.

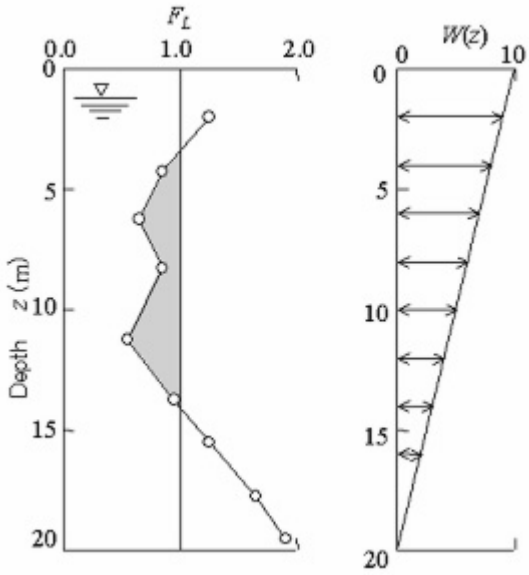
To estimate the severity of liquefaction extent at a given site, LPI is calculated based on the following equation:

$$\mathbf{LPI} = \int_0^{20} (10 - 0{,}5z) \times F_L \times dz$$

where:
F_L = 1 - F.S. when F.S. less than 1
F_L = 0 when F.S. greater than 1
z depth of measurment in meters

Values of LPI range between zero (0) when no test point is characterized as liquefiable and 100 when all points are characterized as susceptible to liquefaction. Iwasaki proposed four (4) discrete categories based on the numeric value of LPI:

- LPI = 0 : Liquefaction risk is very low
- 0 < LPI <= 5 : Liquefaction risk is low
- 5 < LPI <= 15 : Liquefaction risk is high
- LPI > 15 : Liquefaction risk is very high



Graphical presentation of the LPI calculation procedure

Shear-Induced Building Settlement (Ds) calculation procedure

The shear-induced building settlement (Ds) due to liquefaction below the building can be estimated using the relationship developed by Bray and Macedo (2017):

$$Ln(Ds) = c1 + c2 * LBS + 0.58 * Ln\left(Tanh\left(\frac{HL}{6}\right)\right) + 4.59 * Ln(Q) - 0.42 * Ln(Q)^2 - 0.02 * B + 0.84 * Ln(CAVdp) + 0.41 * Ln(Sa1) + \varepsilon$$

where Ds is in the units of mm, c1= -8.35 and c2= 0.072 for LBS ≤ 16, and c1= -7.48 and c2= 0.014 otherwise. Q is the building contact pressure in units of kPa, HL is the cumulative thickness of the liquefiable layers in the units of m, B is the building width in the units of m, CAVdp is a standardized version of the cumulative absolute velocity in the units of g-s, Sa1 is 5%-damped pseudo-acceleration response spectral value at a period of 1 s in the units of g, and ε is a normal random variable with zero mean and 0.50 standard deviation in Ln units. The liquefaction-induced building settlement index (LBS) is:

$$LBS = \sum W * \frac{\varepsilon_{shear}}{z} dz$$

where z (m) is the depth measured from the ground surface > 0, W is a foundation-weighting factor wherein W = 0.0 for z less than Df, which is the embedment depth of the foundation, and W = 1.0 otherwise. The shear strain parameter (ε_shear) is the liquefaction-induced free-field shear strain (in %) estimated using Zhang et al. (2004). It is calculated based on the estimated Dr of the liquefied soil layer and the calculated safety factor against liquefaction triggering (FSL).

References

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Appendix C-2
Custom Soil Resource Report, USDA NRCS, February 10, 2020

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Riverside County, Coachella Valley Area, California

Rancho Polo 58th & Jackson Indio, CA.

February 10, 2020

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

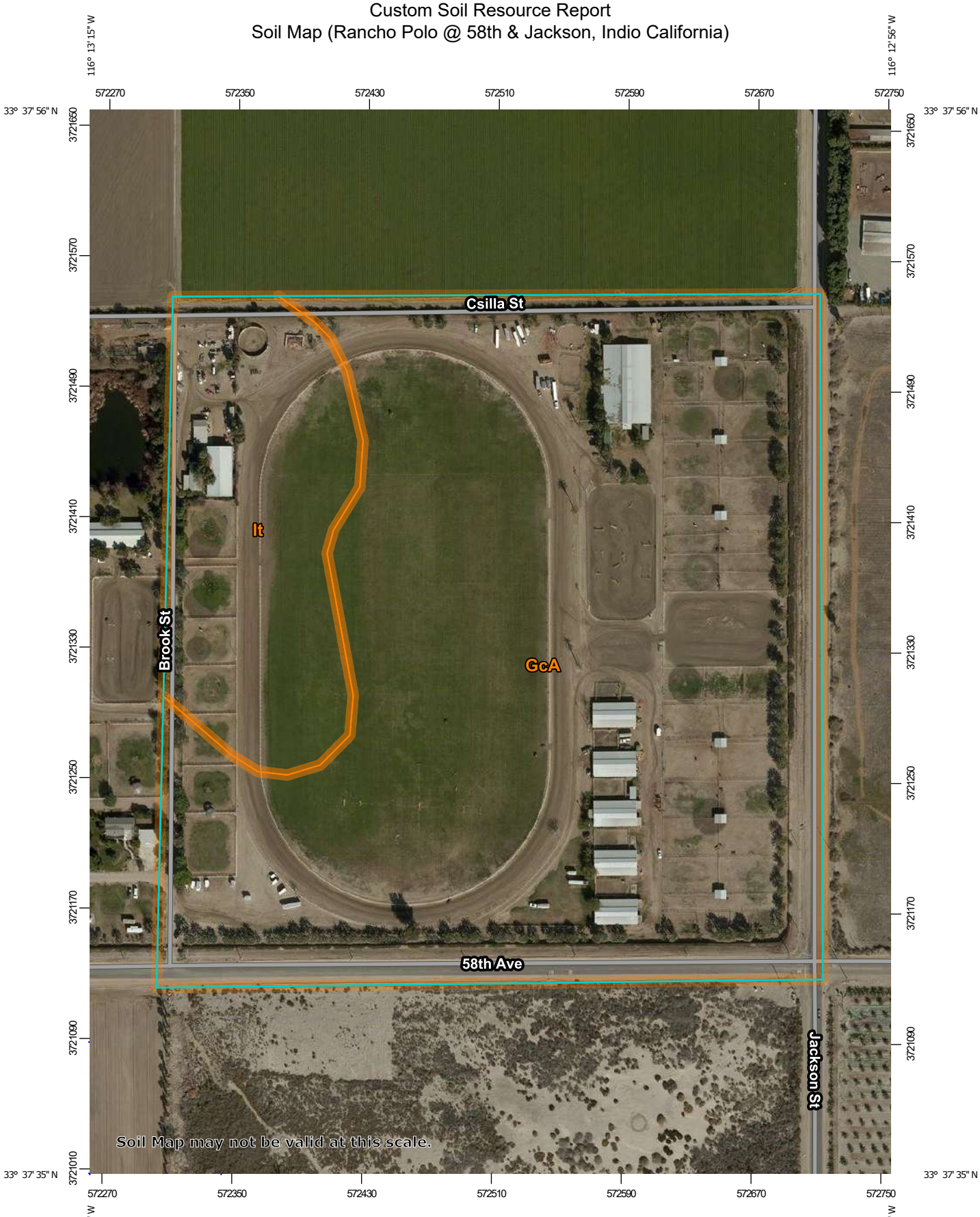
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map (Rancho Polo @ 58th & Jackson, Indio California)



Map Scale: 1:3,180 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 45 90 180 270

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Riverside County, Coachella Valley Area, California
Survey Area Data: Version 11, Sep 16, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 22, 2015—Feb 10, 2015

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend (Rancho Polo @ 58th & Jackson, Indio California)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
GcA	Gilman fine sandy loam, wet, 0 to 2 percent slopes	34.9	82.4%
It	Indio very fine sandy loam, wet	7.5	17.6%
Totals for Area of Interest		**42.4**	**100.0%**

Map Unit Descriptions (Rancho Polo @ 58th & Jackson, Indio California)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or

landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Riverside County, Coachella Valley Area, California

GcA—Gilman fine sandy loam, wet, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hkvn
Elevation: 400 feet
Mean annual precipitation: 4 inches
Mean annual air temperature: 72 degrees F
Frost-free period: 250 to 350 days
Farmland classification: Prime farmland if irrigated and drained

Map Unit Composition

Gilman and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gilman

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 8 inches: fine sandy loam
H2 - 8 to 60 inches: stratified loamy sand to silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 36 to 60 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 1 percent
Salinity, maximum in profile: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Available water storage in profile: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Unnamed, sandy surface

Percent of map unit: 5 percent
Hydric soil rating: No

Coachella
Percent of map unit: 5 percent
Hydric soil rating: No

Indio
Percent of map unit: 3 percent
Hydric soil rating: No

Salton
Percent of map unit: 2 percent
Hydric soil rating: No

It—Indio very fine sandy loam, wet

Map Unit Setting
National map unit symbol: hkw1
Elevation: 300 feet
Mean annual precipitation: 4 inches
Mean annual air temperature: 72 degrees F
Frost-free period: 270 to 320 days
Farmland classification: Prime farmland if irrigated and drained

Map Unit Composition
Indio and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Indio

Setting
Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile
H1 - 0 to 10 inches: very fine sandy loam
H2 - 10 to 60 inches: very fine sandy loam

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 36 to 60 inches
Frequency of flooding: None
Frequency of ponding: None

Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Available water storage in profile: High (about 10.4 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Salton

Percent of map unit: 5 percent
Hydric soil rating: No

Coachella

Percent of map unit: 5 percent
Hydric soil rating: No

Gilman

Percent of map unit: 5 percent
Hydric soil rating: No

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Appendix D
Greenhouse Gas Technical Report and Appendix, DKA Planning, March 2023

Greenhouse Gas Technical Report

Rancho Polo Equestrian Center

Plot Plan 220034

Lead Agency:
County of Riverside
4080 Lemon Street, 12th Floor
Riverside, CA 92502
Point of Contact: Scott Nespor, Urban and Regional Planner III
(760) 863-7050

Project Applicant:
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4114 Sepulveda Boulevard, Suite L, Second Floor
Culver City, CA 90230
(310) 253-9998

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March 2023

Table of Contents

Technical Appendix

Greenhouse Gas Technical Appendix, DKA Planning, November 2022

Greenhouse Gas Technical Report

1 Project Description

1.1 Project Information

Project Title: Rancho Polo Equestrian Center Project

Document Type: Initial Study / Negative Declaration (IS/ND) for new guest and worker overnight accommodations (the Project)

Plot Plan: 220034

Project Location: 82800 58th Avenue Suite 1, Thermal CA 92274 (Project Site or Site)

Lead Agency: County of Riverside
4080 Lemon Street, 12th Floor, Riverside, CA 92502
Point of Contact: Scott Nespor, Urban and Regional Planner III
(760) 863-7050

Applicant: Triple Sky Ranch
4114 Sepulveda Boulevard, Suite L, Second Floor, Culver City, CA 90230

1.2 Project Location

The Project Site is located on the north side of Avenue 58, between Oasis Street to the west and Jackson Street to the east, in the unincorporated community Thermal in the Eastern Coachella Valley Area Plan in the County of Riverside.[1] The Site is 0.5-mile (2,640 feet) east of the City of La Quinta (with boundary at Avenue 58 and Monroe Street). The Site is 1 mile southwest of the City of Coachella (with boundary at Airport Boulevard and Van Buren Street).

1.3 Surrounding Land Uses

North across Csilla Street (an unimproved dirt road) is an agricultural field with a land use designation as Agriculture and zoned A-1-20.

South across Avenue 58 is an agricultural field with a land use designation as Medium Density Residential and Agriculture and zoned R-5 and A-1-10.

West across Oasis Street (an unimproved dirt road) is an agricultural field with a land use designation as Local Importance Agriculture and zoned A-1-20.

[1] Riverside County, General Plan, Chapter 3: Land Use Element: https://planning.rctlma.org/General-Plan-Zoning/General-Plan

East across Jackson Street is an agricultural field with a land use designation as Local Importance Agriculture and zoned A-1-10.

1.4 Planning and Zoning

Table 1-1, Project Site, lists the Site's APNs, zoning, and General Plan land use designation:

W-2-10 (Zoning Controlled Development Areas – 10 Acre Minimum). Guest ranches are permitted upon the approval of a Plot Plan.[2]

The General Plan designates the Project Site for "Rural Residential" land uses. This land use designation allows for single-family residences with a minimum lot size of 5 acres, and allows limited animal keeping and agricultural uses, recreational uses, compatible resource development (not including the commercial extraction of mineral resources) and associated uses and governmental uses.[3]

Table 1-1
Project Site

Address	APN	Size (acre)	Zone	Land Use
82800 Avenue 58	764-130-027	38.42	W-2-10	Rural Residential
	764-130-030	37.63		
Riverside County, Map My County: https://gis1.countyofriverside.us/Html5Viewer/index.html?viewer=MMC_Public				

1.5 Existing Conditions

The gross land area is 78.01 acres.[4] The Project Site is primarily devoted to serving the equestrian needs of visitors from Riverside County and beyond. The Site is home to the Rancho Polo Equestrian Center, which provides commercial stables and features a diverse inventory of facilities for equestrian training, breeding, and equine boarding. In addition to the site's equestrian focus, Rancho Polo also features significant agricultural uses, including the cultivation and annual harvesting of approximately 300 date palm trees, 50 citrus trees, and 20 avocado trees. Hay fields are also farmed and harvested and provide feed and bedding for horses boarded at Rancho Polo. Rancho Polo has eight barns, which together accommodate 148 horse stalls. In addition, piped corals and fenced pastures accommodate another 50 horses. These boarding facilities are complemented with several agricultural and equestrian-serving structures and buildings, hay barns, ranch offices, equipment and tool sheds, and observation decks, along with various other improvements, equipment and tanks required to operate Rancho Polo's equestrian and agricultural activities. The Site's development area is currently improved with 8 prefabricated mobile homes that are used by workers, the property's managers and owner, and their

2 Riverside County Zoning Ordinance No. 348.4978, Article XV, Section 15.1.C.1: https://planning.rctlma.org/Portals/14/Ord348Update/348.4978/Ord.%20348%20Clean%20Version.pdf?ver=2022-03-02-162154-373

3 Riverside County, General Plan, Chapter 3: Land Use Element Table LU-4: https://planning.rctlma.org/Portals/14/Ch03_Land%20Use_FINAL%209-28-21.pdf

4 Plans, Continental Development Group, September 21, 2022.

respective family members.[5] One of these mobile homes shares its interior space with an administrative office area. The Site also contains an in-ground swimming pool.

1.6 Project Overview

The proposed development area is within the southwest portion of the Site and is approximately 358,000 square feet (8.22 acres). Rancho Polo has submitted a Plot Plan for the County's review that proposes new and modified land uses that will greatly enhance the quality of its guest services and agricultural operations. If approved, Plot Plan No. 220034 will enable Rancho Polo to provide a combination of guest and worker overnight accommodations, with stays ranging between one night to six months or more. Unlike the current Conditional Use Permit, which requires that 80% of the approved worker units be used by migrant agricultural workers for not more than 9 months in any 12 month period, Applicant is proposing that: (a) up to 100% of these units could be permanently affixed to the land on customary concrete foundations, (b) the units could be occupied by non-transient workers, as well as by the property managers, property owner, and their respective family members, and (c) the units could be kept in service year-round and would not have to be vacant for any period of time.[6]

The development includes 10 new worker/guest flex units and 3 new guest rooms/suites. The area of development is shown in the Plans (included as **Appendix A-1** to the ND). These units would be much better quality than what is allowed under the current Conditional Use Permit, as prefabricated mobile homes would be eschewed in favor of permanent structures that are firmly anchored to the ground with customary reinforced concrete foundations. These residential accommodations will be a vital improvement in the operation of Rancho Polo and will enable Applicant to avoid overbuilding to meet intermittent peaks in demand. During periods of heightened agricultural activity, additional housing is often needed for permanent and migrant workers, as well as for their dependents. During multi-day equestrian events, lodging is needed for event participants and spectators, while horse owners using Ranch Polo's boarding services want the convenience of guest rooms for overnight stays in lieu of having to make roundtrips to Palm Desert or other area townships. The availability of onsite rooms will not only benefit workers, guests, and ultimately the Applicant, but will also have benefits far beyond the boundaries of Rancho Polo, since each guest using an onsite room will mean one less car traveling on local roads.

1.7 Construction Assumptions

The estimated construction schedule is shown in **Table 1-2, Construction Schedule**. Note for a conservative purpose and to present a worst-case scenario for environmental impacts and emissions, it is assumed that the entire Project will be constructed in a single phase. The estimated operational year is 2024. The Project assumes no existing structures require demolition. Site preparation will clear

5 Six of these worker dwelling units are located on the southwest portion of the property within the proposed development area while the seventh worker unit is located on the north-central portion of the property adjacent to the Polo Field.

6 In contrast, under the terms of Conditional Use Permit No. 190066, Revision 1, Applicant is only allowed to establish and maintain a 20-space Migrant Agricultural Worker Mobilehome Park where: (a) at least 16 of the spaces are reserved for transient seasonal workers, (b) who can stay in each dwelling not more than 9 months out of any 12 month period, and (c) where each dwelling unit is prefabricated and mobile, and not permanently affixed to an in-ground foundation.

existing vegetation. Utilities are already installed and in place and need only be extended and connected to each proposed dwelling unit. Minimal grading on the Site is necessary to provide foundation work and the extension of the proposed utilities to each dwelling unit from the existing utility lines. It is assumed that approximately 40,000 square feet will be lightly graded to support the new construction. No fill will be imported to the Site. The amount of materials to be exported will be up to approximately 6,000 cubic yards (which includes a swell expansion potential). Architectural coatings will include painting and finishing for the interior and exterior of each of the new buildings. This work will be undertaken in the final stages of construction.

Table 1-2
Construction Schedule

Phase	Schedule	Duration (Working Days)
Site Preparation	June 1, 2023 – June 14, 2023	10 days
Grading	June 15, 2023 – August 5, 2023	37 days
Trenching	July 1, 2023 – September 30, 2023	65 days
Construction	July 1, 2023 – October 31, 2023	87 days
Paving	August 15, 2023 – September 30, 2023	34 days
Architectural Coatings	September 1, 2023 – November 15, 2023	54 days

Working Days include Monday through Friday, with no weekends.
Site Preparation involves clearing vegetation (grubbing and tree/stump removal) and removing stones and other unwanted material or debris prior to grading.
Grading involves the cut and fill of land to ensure that the proper base and slope is created for the foundation. Building Construction involves the construction of the foundation, structures, and buildings.)
Trenching is associated with underground utilities, including gas, water, electricity, telecommunications.
Paving involves the laying of concrete or asphalt such as in parking lots, roads, driveways, or sidewalks.
Architectural Coating involves the application of coatings to both the interior and exterior of buildings or structures, the painting of parking lot or parking garage striping, associated signage and curbs, and the painting of the walls or other components such as stair railings inside parking structures.
Construction schedule, including start, end, and duration dates are estimates only. Some overlap of phasing may occur. This analysis assumes that construction will start in 2023. In practice, construction could begin at a later time. However, using an earlier start date represents a worst-case scenario for the analysis of construction emissions, because equipment and vehicle emission factors for later years will be slightly less due to more stringent standards for in-use off-road equipment and heavy-duty trucks, as well as fleet turnover replacing older equipment and vehicles in later years.
Estimates provided by the Applicant in November 2022.

1.8 Related Projects

No reasonably foreseeable future project phases or related projects are assumed in the area. Given the Project Site's proposed development area's existing setbacks, fencing, and vegetation barriers, no cumulative impact is assumed.

1.9 Measures or Corrective Actions

As shown in the analysis below, impacts would be less than significant. No measures or corrective actions are required to avoid or minimize environmental impacts.

2 Analysis

2.1 Introduction

This technical report examines the direct and indirect impacts of the Proposed Rancho Polo Equestrian Center Project at 82800 Avenue 58 in the community of Thermal in unincorporated Riverside County related to greenhouse gas (GHG) emissions and global climate change by disclosing GHG emissions generation and by addressing the Project's consistency with applicable GHG emission reduction plans, policies, and regulations. Calculation worksheets and documentation are included in the Technical Appendix to this analysis.

2.2 Environmental Setting

Global climate change refers to changes in average climatic conditions on Earth as a whole, including changes in temperature, wind patterns, precipitation, and storms. Global warming, a related concept, is the observed increase in average temperature of Earth's surface and atmosphere. One identified cause of global warming is an increase of GHG emissions in the atmosphere. GHG emissions are those compounds in Earth's atmosphere that play a critical role in determining Earth's surface temperature.

Earth's natural warming process is known as the "greenhouse effect." It is called the greenhouse effect because Earth and the atmosphere surrounding it are like a greenhouse with glass panes in that the glass allows solar radiation (sunlight) into Earth's atmosphere but prevents radiative heat from escaping, thus warming Earth's atmosphere. Some levels of GHG emissions keep the average surface temperature of Earth close to a hospitable 60 degrees Fahrenheit. However, it is believed that excessive concentrations of anthropogenic GHG emissions in the atmosphere can result in increased global mean temperatures, with associated adverse climatic and ecological consequences.[7]

Scientists studying the particularly rapid rise in global temperatures have determined that human activity has resulted in increased emissions of GHG emissions, primarily from the burning of fossil fuels (from motor vehicle travel, electricity generation, consumption of natural gas, industrial activity, manufacturing), deforestation, agricultural activity, and the decomposition of solid waste. Scientists refer to the global warming context of the past century as the "enhanced greenhouse effect" to distinguish it from the natural greenhouse effect.[8]

Global GHG emissions due to human activities have grown since pre-industrial times. As reported by the United States Environmental Protection Agency (USEPA), global carbon emissions from fossil fuels increased by over 16 times between 1900 and 2008 and by about 1.5 times between 1990 and 2008. In addition, in the Global Carbon Budget 2014 report, published in September 2014, atmospheric carbon dioxide (CO_2) concentrations in 2013 were found to be 43 percent above the concentration at the start

7 Intergovernmental Panel on Climate Change, 2014: Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)].

8 Center for Climate and Energy Solutions, Climate Change 101: Understanding and Responding to Global Climate Change.

of the Industrial Revolution, and the present concentration is the highest during at least the last 800,000 years.[9] Global increases in CO_2 concentrations are due primarily to fossil fuel use, with land use change providing another significant but smaller contribution. Regarding emissions of non-CO_2 GHG, these have also increased significantly since 1990. In particular, studies have concluded that it is very likely that the observed increase in methane (CH_4) concentration is predominantly due to agriculture and fossil fuel use.[10]

In August 2007, international climate talks held under the auspices of the United Nations Framework Convention on Climate Change (UNFCCC) led to the official recognition by the participating nations that global emissions of GHG must be reduced. According to the "Ad Hoc Working Group on Further Commitments of Annex I Parties under the Kyoto Protocol," avoiding the most catastrophic events forecast by the United Nations Intergovernmental Panel on Climate Change (IPCC) would entail emissions reductions by industrialized countries in the range of 25 to 40 percent below 1990 levels. Because of the Kyoto Protocol's Clean Development Mechanism, which gives industrialized countries credit for financing emission-reducing projects in developing countries, such an emissions goal in industrialized countries could ultimately spur efforts to cut emissions in developing countries as well.[11]

With regard to the adverse effects of global warming, as reported by the Southern California Association of Governments (SCAG), "Global warming poses a serious threat to the economic well-being, public health, and natural environment in southern California and beyond. The potential adverse impacts of global warming include, among others, a reduction in the quantity and quality of water supply, a rise in sea level, damage to marine and other ecosystems, and an increase in the incidences of infectious diseases. Over the past few decades, energy intensity of the national and state economy has been declining due to the shift to a more service-oriented economy. California ranked fifth lowest among the states in CO_2 emissions from fossil fuel consumption per unit of Gross State Product. However, in terms of total CO_2 emissions, California is second only to Texas in the nation and is the 12th largest source of climate change emissions in the world, exceeding most nations. The SCAG region, with close to half of the state's population and economic activities, is also a major contributor to the global warming problem."

GHG Emissions Background. GHG emissions include CO_2, CH_4, nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3).[12] Carbon dioxide is the most abundant GHG. Other GHG emissions are less abundant but have higher global warming potential than CO_2. Thus, emissions of other GHG emissions are frequently expressed in the equivalent mass of CO_2, denoted as CO_2e. Forest fires, decomposition, industrial processes, landfills, and consumption of fossil fuels for power generation, transportation, heating, and cooking are the primary sources of GHG emissions. A general description of the GHG emissions is provided in **Table 2-1**.

9 C. Le Quéré, et al., Global Carbon Budget 2014, (Earth System Science Data, 2015, doi:10.5194/essd–7–47–2015).

10 USEPA, Atmospheric Concentrations of Greenhouse Gas, updated June 2015.

11 United Nations Framework Convention on Climate Change, Press Release—Vienna UN Conference Shows Consensus on Key Building Blocks for Effective International Response to Climate Change, August 31, 2007

12 As defined by California Assembly Bill (AB) 32 and Senate Bill (SB) 104.

Global Warming Potential (GWP) is one type of simplified index based upon radiative properties used to estimate the potential future impacts of emissions of different gases upon the climate system. The GWP is based on several factors, including the radiative efficiency (heat-absorbing ability) of each gas relative to that of CO_2, as well as the decay rate of each gas (the amount removed from the atmosphere over a given number of years) relative to that of CO_2. The higher the GWP, the more that a given gas warms the Earth compared to CO_2 over that period. A summary of the atmospheric lifetime and GWP of selected gases is presented in **Table 2-2**.[13] As indicated on the table, the GWP ranges from 1 to 22,800. CARB uses 2007 IPCC Fourth Assessment Report's GWPs.

Projected Impacts of Global Warming in California. The scientific community's understanding of the fundamental processes responsible for global climate change has improved over the past decade, and its predictive capabilities are advancing. However, there remain significant scientific uncertainties in, for example, predictions of local effects of climate change, occurrence, frequency, and magnitude of extreme weather events, effects of aerosols, changes in clouds, shifts in the intensity and distribution of precipitation, and changes in oceanic circulation. Due to the complexity of the Earth's climate system and inability to accurately model it, the uncertainty surrounding climate change may never be eliminated. Nonetheless, the IPCC's Fifth Assessment Report, Summary for Policy Makers states that, "it is extremely likely that more than half of the observed increase in global average surface temperature from 1951 to 2010 was caused by the anthropogenic increase in greenhouse gas concentrations and other anthropogenic forces together."[14] A report from the National Academy of Sciences concluded that 97 to 98 percent of the climate researchers most actively publishing in the field support the tenets of the IPCC in that climate change is very likely caused by human (i.e., anthropogenic) activity.[15]

According to the California Air Resources Board (CARB), the potential impacts in California due to global climate change may include: loss in snow pack; sea level rise; more extreme heat days per year; more high ozone days; more large forest fires; more drought years; increased erosion of California's coastlines and sea water intrusion into the Sacramento and San Joaquin Deltas and associated levee systems; and increased pest infestation. Below is a summary of some of the potential effects that could be experienced in California because of global warming and climate change.

Air Quality. Higher temperatures, conducive to air pollution formation, could worsen air quality in California. Climate change may increase the concentration of ground-level ozone, but the magnitude of the effect and, therefore, its indirect effects, are uncertain. If higher temperatures are accompanied by drier conditions, the potential for large wildfires could increase, which, in turn, would exacerbate air quality. Additionally, severe heat accompanied by drier conditions and poor air quality could increase

13 Atmospheric lifetime is defined as the time required to turn over the global Atmospheric burden. Source: Intergovernmental Panel on Climate Change, IPCC Third Assessment Report: Climate Change 2001 (TAR), Chapter 4: Atmospheric Chemistry and Greenhouse Gases, 2001, p. 247.

14 Intergovernmental Panel on Climate Change, Fifth Assessment Report, Summary for Policy Makers, page 5, 2013, http://ipcc.ch/report/ar5/syr/. Accessed April 2020.

15 Anderegg, William R. L., J.W. Prall, J. Harold, S.H., Schneider, Expert Credibility in Climate Change, Proceedings of the National Academy of Sciences of the United States of America. 2010;107:12107-12109.

the number of heat-related deaths, illnesses, and asthma attacks throughout the state.[16] However, if higher temperatures are accompanied by wetter, rather than drier conditions, the rains would temporarily clear the air of particulate pollution and reduce the incidence of large wildfires, thus ameliorating the pollution associated with wildfires.

In 2009, the California Natural Resources Agency (CNRA) published the *California Climate Adaptation Strategy* as a response to the Governor's Executive Order S-13-2008.[17] The CNRA report lists specific recommendations for state and local agencies to best adapt to the anticipated risks posed by a changing climate. In accordance with the *California Climate Adaptation Strategy*, the California Energy Commission (CEC) was directed to develop a website on climate change scenarios and impacts that would be beneficial for local decision makers.[18] The website, known as Cal-Adapt, became operational in 2011[19] and provides a projection of potential future climate scenarios. The data are comprised of the average values (i.e., temperature, sea-level rise, snowpack) from a variety of scenarios and models and are meant to illustrate how the climate may change based on a variety of different potential social and economic factors.

Water Supply. Uncertainty remains with respect to the overall impact of global climate change on future water supplies in California. Studies have found that, "[c]onsiderable uncertainty about precise impacts of climate change on California hydrology and water resources will remain until we have more precise and consistent information about how precipitation patterns, timing, and intensity will change."[20] For example, some studies identify little change in total annual precipitation in projections for California while others show significantly more precipitation.[21] Warmer, wetter winters would increase the amount of runoff available for groundwater recharge; however, this additional runoff would occur at a time when some basins are either being recharged at their maximum capacity or are already full. Conversely, reductions in spring runoff and higher evapotranspiration because of higher temperatures could reduce the amount of water available for recharge.[22]

The California Department of Water Resources report on climate change and effects on the State Water Project (SWP), the Central Valley Project, and the Sacramento-San Joaquin Delta, concludes that "climate change will likely have a significant effect on California's future water resources…[and] future

16 California Environmental Protection Agency, Preparing California for Extreme Heat: Guidance and Recommendations, October 2013, https://www.cdph.ca.gov/Programs/OHE/CDPH%20Document%20Library/CCHEP-General/CDPH-EPA-2013-Preparing-CA-for-Extreme-Heat_ADA.pdf. Accessed April 2020

17 California Natural Resources Agency, Climate Action Team, 2009 California Climate Adaptation Strategy: A Report to the Governor of the State of California in Response to Executive Order S-13-2008, 2009.

18 California Natural Resources Agency, Climate Action Team, 2009 California Climate Adaptation Strategy: A Report to the Governor of the State of California in Response to Executive Order S-13-2008, 2009.

19 The Cal-Adapt website address is: http://cal-adapt.org.

20 Pacific Institute for Studies in Development, Environment and Security, Climate Change and California Water Resources: A Survey and Summary of the Literature, July 2003, page 5, http://www.pacinst.org/reports/climate_change_and_california_water_resources.pdf. Accessed April 2020.

21 Pacific Institute for Studies in Development, Environment and Security, Climate Change and California Water Resources: A Survey and Summary of the Literature, July 2003, http://www.pacinst.org/reports/climate_change_and_california_water_resources.pdf. Accessed April 2020.

22 California Natural Resources Agency, Safeguarding California: Reducing Climate Risk, an Update to the 2009 California Climate Adaptation Strategy, 2014.

water demand." It also reports that "much uncertainty about future water demand [remains], especially [for] those aspects of future demand that will be directly affected by climate change and warming. While climate change is expected to continue through at least the end of this century, the magnitude and, in some cases, the nature of future changes is uncertain."[23] It also reports that the relationship between climate change and its potential effect on water demand is not well understood, but "[i]t is unlikely that this level of uncertainty will diminish significantly in the foreseeable future." Still, changes in water supply are expected to occur, and many regional studies have shown that large changes in the reliability of water yields from reservoirs could result from only small changes in inflows.[24] In its *Fifth Assessment Report*, the IPCC states "Changes in the global water cycle in response to the warming over the 21st century will not be uniform. The contrast in precipitation between wet and dry regions and between wet and dry seasons will increase, although there may be regional exceptions."[25]

Hydrology and Sea Level Rise. As discussed above, climate change could potentially affect: the amount of snowfall, rainfall, and snow pack; the intensity and frequency of storms; flood hydrographs (flash floods, rain or snow events, coincidental high tide, and high runoff events); sea level rise and coastal flooding; coastal erosion; and the potential for salt water intrusion. Sea level rise can be a product of global warming through two main processes: expansion of seawater as the oceans warm, and melting of ice over land. A rise in sea levels could result in coastal flooding and erosion and could jeopardize California's water supply. Increased storm intensity and frequency could affect the ability of flood-control facilities, including levees, to handle storm events.

Agriculture. California has a $30 billion agricultural industry that produces half the country's fruits and vegetables. Higher CO_2 levels can stimulate plant production and increase plant water-use efficiency. However, if temperatures rise and drier conditions prevail, water demand could increase; crop-yield could be threatened by a less reliable water supply; and greater ozone pollution could render plants more susceptible to pest and disease outbreaks. In addition, temperature increases could change the time of year certain crops, such as wine grapes, bloom or ripen, and thus affect their quality.[26]

Ecosystems and Wildlife. Increases in global temperatures and the potential resulting changes in weather patterns could have ecological effects on a global and local scale. Increasing concentrations of GHGs are likely to accelerate the rate of climate change. Scientists expect that the average global surface temperature could rise by 2-11.5°F (1.1-6.4°C) by 2100, with significant regional variation.[27] Soil moisture is likely to decline in many regions, and intense rainstorms are likely to become more frequent. Sea level could rise as much as 2 feet along most of the United States coastline. Rising temperatures

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23 California Department of Water Resources Climate Change Report, Progress on Incorporating Climate Change into Planning and Management of California's Water Resources, July 2006, page 2-54, https://water.ca.gov/LegacyFiles/climatechange/docs/CCprogress_nov06.pdf. Accessed April 2020

24 California Department of Water Resources Climate Change Report, Progress on Incorporating Climate Change into Planning and Management of California's Water Resources, July 2006, page 2-75, https://water.ca.gov/LegacyFiles/climatechange/docs/CCprogress_nov06.pdf. Accessed April 2020

25 Intergovernmental Panel on Climate Change, Fifth Assessment Report, Summary for Policy Makers, 2013, page 20.

26 California Climate Change Center, Our Changing Climate: Assessing the Risks to California, 2006, https://www.ucsusa.org/resources/our-changing-climate-assessing-risks-california. Accessed April 2020.

27 National Research Council, Advancing the Science of Climate Change, 2010, http://dels.nas.edu/resources/static-assets/materials-based-on-reports/reports-in-brief/Science-Report-Brief-final.pdf. Accessed April 2020.

could have four major impacts on plants and animals: (1) timing of ecological events; (2) geographic range; (3) species' composition within communities; and (4) ecosystem processes such as carbon cycling and storage.[28]

Table 2-1
Description of Identified GHG Emissions[a]

Greenhouse Gas	General Description
Carbon Dioxide (CO_2)	An odorless, colorless GHG, which has both natural and anthropocentric sources. Natural sources include the following: decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic (human caused) sources of CO_2 are burning coal, oil, natural gas, and wood.
Methane (CH_4)	A flammable gas and is the main component of natural gas. When one molecule of CH_4 is burned in the presence of oxygen, one molecule of CO_2 and two molecules of water are released. A natural source of CH_4 is the anaerobic decay of organic matter. Geological deposits, known as natural gas fields, also contain CH_4, which is extracted for fuel. Other sources are from landfills, fermentation of manure, and cattle.
Nitrous Oxide (N_2O)	A colorless GHG. High concentrations can cause dizziness, euphoria, and sometimes slight hallucinations. N_2O is produced by microbial processes in soil and water, including those reactions which occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions) also contribute to its atmospheric load. It is used in rocket engines, racecars, and as an aerosol spray propellant.
Hydrofluorocarbons (HFCs)	Chlorofluorocarbons (CFCs) are gases formed synthetically by replacing all hydrogen atoms in CH_4 or ethane (C_2H_6) with chlorine and/or fluorine atoms. CFCs are non-toxic, non-flammable, insoluble, and chemically unreactive in the troposphere (the level of air at Earth's surface). CFCs were first synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. Because they destroy stratospheric ozone, the production of CFCs was stopped as required by the Montreal Protocol in 1987. HFCs are synthetic man-made chemicals that are used as a substitute for CFCs as refrigerants. HFCs deplete stratospheric ozone, but to a much lesser extent than CFCs.
Perfluorocarbons (PFCs)	PFCs have stable molecular structures and do not break down through the chemical processes in the lower atmosphere. High-energy ultraviolet rays about 60 kilometers above Earth's surface destroy the compounds. PFCs have very long lifetimes, between 10,000 and 50,000 years. Two common PFCs are tetrafluoromethane and hexafluoroethane. The two main sources of PFCs are primary aluminum production and semi-conductor manufacturing.
Sulfur Hexafluoride (SF_6)	An inorganic, odorless, colorless, non-toxic, and non-flammable gas. SF_6 is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semi-conductor manufacturing, and as a tracer gas for leak detection.

28 Parmesan, C., and H. Galbraith, Observed Impacts of Global Climate Change in the U.S., Prepared for the Pew Center on Global Climate Change, November 2004, https://www.c2es.org/site/assets/uploads/2004/11/observed-impacts-climate-change-united-states.pdf. Accessed April 2020.

Table 2-1
Description of Identified GHG Emissions[a]

Greenhouse Gas	General Description
Nitrogen Trifluoride (NF_3)	An inorganic, non-toxic, odorless, non-flammable gas. NF_3 is used in the manufacture of semi-conductors, as an oxidizer of high-energy fuels, for the preparation of tetrafluorohydrazine, as an etchant gas in the electronic industry, and as a fluorine source in high power chemical lasers.
GHG emissions identified in this table are ones identified in the Kyoto Protocol and other synthetic gases recently added to the IPCC's Fifth Assessment Report. Source: Association of Environmental Professionals, Alternative Approaches to Analyze Greenhouse Gas Emissions and Global Climate Change in CEQA Documents, Final, June 29, 2007; Environmental Protection Agency, Acute Exposure Guideline Levels (AEGLs) for Nitrogen Trifluoride; January 2009.	

Table 2-2
Atmospheric Lifetimes and Global Warming Potential

Gas	Atmospheric Lifetime (years)	Global Warming Potential (100-year time horizon)
Carbon Dioxide (CO_2)	50–200	1
Methane (CH_4)	12 (+/-3)	25
Nitrous Oxide (N_2O)	114	298
HFC-23: Fluoroform (CHF_3)	270	14,800
HFC-134a: 1,1,1,2-Tetrafluoroethane (CH_2FCF_3)	14	1,430
HFC-152a: 1,1-Difluoroethane ($C_2H_4F_2$)	1.4	124
PFC-14: Tetrafluoromethane (CF_4)	50,000	7,390
PFC-116: Hexafluoroethane (C_2F_6)	10,000	12,200
Sulfur Hexafluoride (SF_6)	3,200	22,800
Nitrogen Trifluoride (NF_3)	740	17,200
Source: IPCC, Climate Change 2007: Working Group I: The Physical Science Basis, Direct Global Warming Potentials. CARB uses 2007 IPCC AR4 GWPs: https://ww2.arb.ca.gov/ghg-gwps Therefore, the analysis reflects GWPs values from the IPCC AR4. Although the IPPCC has released AR6 (2021) with updated GWPs, CARB reports statewide GHG inventory using AR4 GWPs. The atmospheric lifetime and GWPs numbers do not affect the analysis of compliance with GHG plans and policies at the local level for a Project-level analysis.		

2.3 Regulatory Framework

2.3.1 Federal

Federal Clean Air Act. The U.S. Supreme Court ruled in *Massachusetts v. Environmental Protection Agency*, 127 S.Ct. 1438 (2007), that CO_2 and other GHG emissions are pollutants under the federal Clean Air Act (CAA), which the USEPA must regulate if it determines they pose an endangerment to public health or welfare. The U.S. Supreme Court did not mandate that the USEPA enact regulations to reduce GHG emissions. Instead, the Court found that the USEPA could avoid acting if it found that GHG

emissions do not contribute to climate change or if it offered a "reasonable explanation" for not determining that GHG emissions contribute to climate change.

On April 17, 2009, the USEPA issued a proposed finding that GHG emissions contribute to air pollution that may endanger public health or welfare. On April 24, 2009, the proposed rule was published in the Federal Register under Docket ID No. EPA-HQ-OAR-2009-0171. The USEPA stated that high atmospheric levels of GHG emissions "are the unambiguous result of human emissions and are very likely the cause of the observed increase in average temperatures and other climatic changes." The USEPA further found that "atmospheric concentrations of greenhouse gases endanger public health and welfare within the meaning of Section 202 of the Clean Air Act." The findings were signed by the USEPA Administrator on December 7, 2009. The final findings were published in the Federal Register on December 15, 2009. The final rule was effective on January 14, 2010.[29] While these findings alone do not impose any requirements on industry or other entities, this action is a prerequisite to regulatory actions by the USEPA, including, but not limited to, GHG emissions standards for light-duty vehicles.

Corporate Average Fuel Economy (CAFE) Standards. On March 31, 2022, the National Highway Traffic Safety Administration (NHTSA) finalized CAFE Standards for model years 2024-2026. The final rule established standards that require an industry-wide fleet average of approximately 49 mpg for passenger cars and light trucks in model year 2026, by increasing fuel efficiency by 8% annually for model years 2024 and 2025, and 10% annually for model year 2026.

Energy Independence and Security Act. The Energy Independence and Security Act of 2007 (EISA) facilitates the reduction of national GHG emissions by requiring the following:

- Increasing the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard (RFS) that requires fuel producers to use at least 36 billion gallons of biofuel in 2022;
- Prescribing or revising standards affecting regional efficiency for heating and cooling products, procedures for new or amended standards, energy conservation, energy efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances;
- Requiring approximately 25 percent greater efficiency for light bulbs by phasing out incandescent light bulbs between 2012 and 2014; requiring approximately 200 percent greater efficiency for light bulbs, or similar energy savings, by 2020; and
- While superseded by the USEPA and the NHTSA actions described above, (i) establishing miles per gallon targets for cars and light trucks, and (ii) directing the NHTSA to establish a fuel economy program for medium- and heavy-duty trucks and create a separate fuel economy standard for trucks.

29 USEPA, Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, Final Rule.

Additional provisions of the EISA address energy savings in government and public institutions, promote research for alternative energy, additional research in carbon capture, international energy programs, and the creation of "green jobs."[30]

2.3.2 State

Executive Order S-3-05. This Executive Order, issued by Governor Schwarzenegger in June 2005, established GHG emissions targets for the state, as well as a process to ensure the targets are met. The order directed the Secretary for the California Environmental Protection Agency (CalEPA) to report every two years on the state's progress toward meeting the Governor's GHG emission reduction targets. The statewide GHG emissions reduction targets are as follows:

- By 2010, reduce to 2000 emission levels;[31]
- By 2020, reduce to 1990 emission levels;
- By 2030, reduce to 40 percent below 1990 levels; and
- By 2050, reduce to 80 percent below 1990 levels.

The State Legislature adopted equivalent 2020 and 2030 statewide targets in the California Global Warming Solutions Act of 2006 (also known as Assembly Bill [AB] 32) and Senate Bill 32, respectively, both of which are discussed below. However, the Legislature has not yet adopted a target for the 2050 horizon year.

As a result of Executive Order S-3-05, the California CAT, led by the Secretary of CalEPA, was formed. The CAT is made up of representatives from several state agencies and was formed to implement global warming emission reduction programs and to report on the progress made toward meeting statewide targets established under the Executive Order. The CAT reported several recommendations and strategies for reducing GHG emissions and reaching the targets established in the Executive Order.[32] The CAT stated that smart land use is an umbrella term for strategies that integrate transportation and land-use decisions. Such strategies generally encourage jobs/housing proximity, promote transit-oriented development (TOD), and encourage high-density residential/commercial development along transit corridors. These strategies develop more efficient land-use patterns within each jurisdiction or region to match population increases, workforce, and socioeconomic needs for the full spectrum of the population. "Intelligent transportation systems" is the application of advanced technology systems and management strategies to improve operational efficiency of transportation systems and the movement of people, goods, and service.[33]

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30 A green job, as defined by the United States Department of Labor, is a job in business that produces goods or provides services that benefit the environment or conserve natural resources.

31 The 2010 target to reduce GHG emissions to 2000 levels was not met. Source: Rubin, Thomas A.," Does California Really Need Major Land Use and Transportation Changes to Meet Greenhouse Gas Emissions Targets?," July 3, 2013.

32 CalEPA, Climate Action Team Report to Governor Schwarzenegger and the Legislature, March 2006.

33 CalEPA, Climate Action Team Report to Governor Schwarzenegger and the Legislature, March 2006, p. 58.

Executive Order B-30-15. Issued by Governor Brown in April 2015, established an additional statewide policy goal to reduce GHG emissions 40 percent below their 1990 levels by 2030. Reducing GHG emissions by 40 percent below 1990 levels in 2030 and by 80 percent below 1990 levels by 2050 (consistent with Executive Order S-3-05) aligns with scientifically established levels needed in the U.S. to limit global warming below 2 degrees Celsius.[34]

Executive Order B-55-18. Issued by Governor Jerry Brown in September 2018, this establishes a statewide goal to achieve carbon neutrality as soon as possible, but no later than 2045, and achieve and maintain net negative emissions thereafter. Based on this executive order, CARB would work with relevant state agencies to develop a framework for implementation and accounting that tracks progress towards this goal, as well as ensuring future scoping plans identify and recommend measures to achieve the carbon neutrality goal.

Executive Order S-1-07 (California Low Carbon Fuel Standard). Executive Order S-1-07, the LCFS (issued on January 18, 2007), requires a reduction of at least 10 percent in the carbon intensity of California's transportation fuels by 2020. Regulatory proceedings and implementation of the LCFS were directed to CARB. The LCFS has been identified by CARB as a discrete early action item in the adopted Climate Change Scoping Plan. The LCFS program was re-adopted in 2015 and will continue to complement other AB 32 measures, transform, and diversify the fuel pool, and is a key part of the State's petroleum reduction goals for 2030.

California Assembly Bill 32 (California Global Warming Solutions Act of 2006) and Senate Bill 32. The California Global Warming Solutions Act of 2006 (also known as AB 32) commits the state to achieving the following:

- By 2010, reduce to 2000 GHG emission levels;[35] and
- By 2020, reduce to 1990 levels.

To achieve these goals, which are consistent with the California CAT GHG emissions reduction targets for 2010 and 2020, AB 32 mandates that CARB establish a quantified emissions cap, institute a schedule to meet the cap, implement regulations to reduce statewide GHG emissions from stationary sources consistent with the CAT strategies, and develop tracking, reporting, and enforcement mechanisms to ensure that reductions are achieved. To achieve the reduction targets, AB 32 requires CARB to adopt rules and regulations in an open public process that achieve the maximum technologically feasible and cost-effective GHG emissions reductions.[36]

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34 California Air Resources Board, Frequently Asked Questions about Executive Order B-30-15, 2030 Carbon Target and Adaptation FAQs, April 29, 2015.

35 The 2010 target to reduce GHG emissions to 2000 levels was not met. Source: Rubin, Thomas A., "Does California Really Need Major Land Use and Transportation Changes to Meet Greenhouse Gas Emissions Targets?", July 3, 2013.

36 CARB's list of discrete early action measures that could be adopted and implemented before January 1, 2010, was approved on June 21, 2007. The three adopted discrete early action measures are: (1) a low- carbon fuel standard, which reduces carbon intensity in fuels statewide; (2) reduction of refrigerant losses from motor vehicle air conditioning system maintenance; and (3) increased methane capture from landfills, which includes requiring the use of state-of-the-art capture technologies.

Senate Bill (SB) 32, signed September 8, 2016, updates AB 32 (the Global Warming Solutions Act) to include an emissions reductions goal for 2030. Specifically, SB 32 requires the state board to ensure that statewide GHG emissions are reduced to 40 percent below the 1990 level by 2030. The new plan, outlined in SB 32, involves increasing renewable energy use, imposing tighter limits on the carbon content of gasoline and diesel fuel, putting more electric cars on the road, improving energy efficiency, and curbing emissions from key industries.

Assembly Bill 197. Assembly Bill (AB) 197, signed September 8, 2016, is a bill linked to SB 32 that prioritizes efforts to cut GHG emissions in low-income or minority communities. AB 197 requires CARB to make available, and update at least annually, on its Internet Web site the emissions of greenhouse gases, criteria pollutants, and toxic air contaminants for each facility that reports to CARB and air districts. In addition, AB 197 adds two Members of the Legislature to the CARB board as ex officio, non-voting members and creates the Joint Legislative Committee on Climate Change Policies to ascertain facts and make recommendations to the Legislature and the houses of the Legislature concerning the state's programs, policies, and investments related to climate change.

Senate Bill 350. Senate Bill (SB) 350, signed October 7, 2015, is the Clean Energy and Pollution Reduction Act of 2015. SB 350 is the implementation of some of the goals of Executive Order B-30-15. The objectives of SB 350 are: (1) to increase the procurement of electricity from renewable sources from 33 percent to 50 percent by December 31, 2030; and (2) to double the energy efficiency savings in electricity and natural gas final end uses of retail customers through energy efficiency and conservation.[37]

Senate Bill 1368. Senate Bill (SB) 1368, signed September 29, 2006, is a companion bill to AB 32 that requires the CPUC and the CEC to establish GHG emission performance standards for the generation of electricity. These standards also generally apply to power that is generated outside of California and imported into the state. SB 1368 provides a mechanism for reducing the emissions of electricity providers, thereby assisting CARB to meet its mandate under AB32. On January 25, 2007, the CPUC adopted an interim GHG Emissions Performance Standard, which is a facility-based emissions standard requiring that all new long-term commitments for baseload generation to serve California consumers be with power plants that have GHG emissions no greater than a combined cycle gas turbine plant. That level is established at 1,100 pounds of CO_2 per MWh. Furthermore, on May 23, 2007, the CEC adopted regulations that establish and implement an identical Emissions Performance Standard of 1,100 pounds of CO_2 per MWh (see CEC Order No. 07-523-7).

Assembly Bill 1493 (Pavley I). Assembly Bill (AB) 1493, passed in 2002, requires the development and adoption of regulations to achieve "the maximum feasible reduction of greenhouse gases" emitted by noncommercial passenger vehicles, light-duty trucks, and other vehicles used primarily for personal transportation in the state. CARB originally approved regulations to reduce GHG emissions from passenger vehicles in September 2004, with the regulations to take effect in 2009. On September 24, 2009, CARB adopted amendments to these "Pavley" regulations that reduce GHG emissions in new

37 Senate Bill 350 (2015–2016 Reg, Session) Stats 2015, ch. 547.

passenger vehicles from 2009 through 2016.[38] Although setting emission standards on automobiles is solely the responsibility of the USEPA, the federal CAA allows California to set state-specific emission standards on automobiles if the state first obtains a waiver from the USEPA. The USEPA granted California that waiver on July 1, 2009. A comparison between the AB 1493 standards and the Federal CAFE standards was completed by CARB and the analysis determined that California emission standards are 16 percent more stringent through the 2016 model year and 18 percent more stringent for 2020 model year.[39] California is also committed to further strengthening these standards beginning with 2020 model year vehicles to obtain a 45-percent GHG reduction in comparison to the 2009 model year.

Senate Bill 97. SB 97, passed in August 2007, is designed to work in conjunction with CEQA and AB 32. SB 97 requires the Office of Planning and Rules (OPR) to prepare and develop guidelines for the mitigation of GHG emissions or the effects thereof, including, but not limited to, the effects associated with transportation and energy consumption. The Draft Guidelines Amendments for Greenhouse Gas Emissions (Guidelines Amendments) were adopted on December 30, 2009 and address the specific obligations of public agencies when analyzing GHG emissions under CEQA to determine a project's effects on the environment.

However, neither a threshold of significance nor any specific mitigation measures are included or provided in the Guidelines Amendments.[40] The Guidelines Amendments require a lead agency to make a good-faith effort, based on the extent possible on scientific and factual data, to describe, calculate, or estimate the amount of GHG emissions resulting from a project. The Guidelines Amendments give discretion to the lead agency whether to: (1) use a model or methodology to quantify GHG emissions resulting from a project, and which model or methodology to use; or (2) rely on a qualitative analysis or performance- based standards. Furthermore, the Guidelines Amendments identify the following three factors that should be considered in the evaluation of the significance of GHG emissions:

1. The extent to which a project may increase or reduce GHG emissions as compared to the existing environmental setting;
2. Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; and
3. The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions.[41]

38 California Air Resources Board, Clean Car Standards—Pavley, Assembly Bill 1493, www.arb.ca.gov/cc/ccms/ccms.htm, accessed April 2020.

39 California Air Resources Board, "Comparison of Greenhouse Gas Reductions for all Fifty United States under CAFE Standards and ARB Regulations Adopted Pursuant to AB 1493", January 23, 2008.

40 See 14 Cal. Code Regs. §§ 15064.7 (generally giving discretion to lead agencies to develop and publish thresholds of significance for use in the determination of the significance of environmental effects), 15064.4 (giving discretion to lead agencies to determine the significance of impacts from GHG emissions).

41 14 Cal. Code Regs. § 15064.4(b).

The administrative record for the Guidelines Amendments also clarifies "that the effects of greenhouse gas emissions are cumulative and should be analyzed in the context of CEQA's requirements for cumulative impact analysis."[42]

In December 2018, the Governor's Office of Planning and Research (OPR) released a CEQA and Climate Change Advisory (Discussion Draft) updates the 2009 guidance for project-level analyses. It reaffirms the discretion that lead agencies have in establishing an appropriate methodology and determining significance.

Senate Bill 743. This 2013 legislation updates the way transportation impacts are measured in California, focusing on vehicle miles traveled (VMT) rather than level of service as the main measure of transportation impacts. It calls on decisionmakers throughout the State to focus on reducing overall VMT and the GHG emissions from such vehicle activity.

Senate Bill 375. Acknowledging the relationship between land use planning and transportation sector GHG emissions, Senate Bill (SB) 375 was passed by the State Assembly on August 25, 2008 and signed by the Governor on September 30, 2008. This legislation links regional planning for housing and transportation with the GHG reduction goals outlined in AB 32. Reductions in GHG emissions would be achieved by, for example, locating employment opportunities close to transit. Under SB 375, each Metropolitan Planning Organization (MPO) would be required to adopt a Sustainable Community Strategy (SCS) to encourage compact development that reduce passenger VMT and trips so that the region will meet a target, created by CARB, for reducing GHG emissions. If the SCS is unable to achieve the regional GHG emissions reduction targets, then the MPO is required to prepare an alternative planning strategy that shows how the GHG emissions reduction target could be achieved through alternative development patterns, infrastructure, and/or transportation measures.

Assembly Bill 1279. This 2022 legislation creates a legally binding goal that California achieve carbon neutrality by 2045. It would also require the State to reduce GHG emissions by 85 percent below 1990 levels by 2045.

Climate Change Scoping Plan. In 2008, CARB approved the original *Climate Change Scoping Plan* as required by AB 32.[43] Subsequently, CARB approved updates to the *Climate Change Scoping Plan* in 2014 *(First Update)* and 2017 *(2017 Update)*, with the *2017 Update* considering SB 32 (adopted in 2016) in addition to AB 32.

Forecasting the amount of emissions that would occur in 2020 if no actions are taken was necessary to assess the scope of the reductions California must make to return to the 1990 emissions level by 2020 as required by AB 32. CARB originally defined the "business-as-usual" or BAU scenario as emissions in the absence of any GHG emission reduction measures discussed in the original *Climate Change Scoping Plan*. For example, in further explaining CARB's BAU methodology, CARB assumed that all new electricity generation would be supplied by natural gas plants, no further regulatory action would impact vehicle fuel efficiency, and building energy efficiency codes would be held at 2005 standards. In

42 Letter from Cynthia Bryant, Director of the Governor's Office of Planning and Research to Mike Chrisman, California Secretary for Natural Resources, dated April 13, 2009.

43 Climate Change Proposed Scoping Plan was approved by CARB on December 11, 2008.

the original *Climate Change Scoping Plan*, CARB determined that achieving the 1990 emissions level in 2020 would require a reduction in GHG emissions of approximately 28.5 percent from the otherwise projected 2020 emissions level (i.e., those emissions that would occur in 2020, absent GHG-reducing laws and regulations).[44]

After adoption of the original *Climate Change Scoping Plan*, a lawsuit was filed challenging CARB's approval of the *Climate Change Scoping Plan Functional Equivalent Document* (*FED to the Climate Change Scoping Plan*). On May 20, 2011 (Case No. CPF-09-509562), the Court found that the environmental analysis of the alternatives in the *FED to the Climate Change Scoping Plan* was not sufficient under the California Environmental Quality Act (CEQA). CARB staff prepared a revised and expanded environmental analysis of the alternatives, and the *Supplemental FED to the Climate Change Scoping Plan* was approved on August 24, 2011 (*Supplemental FED*). The *Supplemental FED* indicated that there is the potential for adverse environmental impacts associated with implementation of the various GHG emission reduction measures recommended in the *Climate Change Scoping Plan*.

As part of the *Supplemental FED*, CARB updated the projected 2020 BAU emissions inventory based on then current economic forecasts (i.e., as influenced by the economic downturn) and emission reduction measures already in place, replacing its prior 2020 BAU emissions inventory. CARB staff derived the updated emissions estimates by projecting emissions growth, by sector, from the state's average emissions from 2006 through 2008. Specific emission reduction measures included were the million-solar-roofs program,[45] the AB 1493 (Pavley I) motor vehicle GHG emission standards, and the LCFS.[46] In addition, CARB also factored into the 2020 BAU inventory emissions reductions associated with a 33-percent RPS for electricity generation. Based on the new economic data, CARB determined that achieving the 1990 emissions level by 2020 would require a reduction in GHG emissions of 21.7 percent (down from 28.5 percent) from BAU conditions. When the 2020 emissions level projection also was updated to account for newly implemented regulatory measures discussed above, CARB determined that achieving the 1990 emissions level in 2020 would require a reduction in GHG emissions of 16 percent (down from 28.5 percent) from the BAU conditions.[47][48]

In 2014, CARB adopted the *First Update to the Climate Change Scoping Plan: Building on the Framework* (First Update).[49] The stated purpose of the First Update was to "highlight… California's success to date in reducing its GHG emissions and lay…the foundation for establishing a broad framework for continued emission reductions beyond 2020, on the path to 80 percent below 1990 levels

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44 California Air Resources Board, Climate Change Scoping Plan: A Framework for Change, p. 12, December 2008.

45 Effective January 2020, AB 178 requires all single-family residences and multi-family residences up to three stories to include solar panels to offset annual electricity consumption.

46 Pavley I is the first GHG standards in the nation for passenger vehicles and took effect for model years starting in 2009 to 2016. Pavley I could potentially result in 27.7 million metric tonnes CO_2e reduction in 2020. Pavley II covers model years 2017 to 2025 and potentially result in an additional reduction of 4.1 million metric tons CO_2e.

47 California Air Resources Board, Supplement to the AB 32 Scoping Plan FED, Table 1.2-2.

48 The emissions and reductions estimates found in the Supplemental FED to the Climate Change Scoping Plan fully replace the estimates published in the 2008 Climate Change Scoping Plan. See CARB, Resolution 11-27 (Aug. 24, 2011) (setting aside approval of 2008 Climate Change Scoping Plan and associated emissions forecasts and approving the Supplemental FED). The estimates in the 2008 document are 596 million metric tons CO_2e under 2020 BAU and a required reduction of 169 million metric tons CO_2e (28.4 percent).

49 Health & Safety Code §38561(h) requires CARB to update the Scoping Plan every five years.

by 2050.[50] The First Update found that California is on track to meet the 2020 emissions reduction mandate established by AB 32 and noted that California could reduce emissions further by 2030 to levels squarely in line with those needed to stay on track to reduce emissions to 80 percent below 1990 levels by 2050 if the state realizes the expected benefits of existing policy goals.[51]

In conjunction with the First Update, CARB identified "six key focus areas comprising major components of the state's economy to evaluate and describe the larger transformative actions that will be needed to meet the state's more expansive emission reduction needs by 2050.[52] Those six areas were: (1) energy; (2) transportation (vehicles/equipment, sustainable communities, housing, fuels, and infrastructure); (3) agriculture; (4) water; (5) waste management; and (6) natural and working lands. The First Update identified key recommended actions for each sector that would facilitate achievement of the 2050 reduction target.

Based on CARB's research efforts, it has a "strong sense of the mix of technologies needed to reduce emissions through 2050."[53] Those technologies include energy demand reduction through efficiency and activity changes; large-scale electrification of on-road vehicles, buildings, and industrial machinery; decarbonizing electricity and fuel supplies; and the rapid market penetration of efficient and clean energy technologies.

The First Update discussed new residential and commercial building energy efficiency improvements, specifically identifying progress towards zero net energy buildings as an element of meeting mid-term and long-term GHG emissions reduction goals. The First Update expressed CARB's commitment to working with the California Public Utilities Commission (CPUC) and California Energy Commission (CEC) to facilitate further achievements in building energy efficiency.

In December 2017, CARB adopted California's 2017 *Climate Change Scoping Plan Update: The Strategy for Achieving California's 2030 Greenhouse Gas Target (2017 Scoping Plan Update*). The *2017 Climate Change Scoping Plan* addresses the deeper cuts required by SB 32 by a 2030 horizon year and has a range of GHG reduction actions that include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, market-based mechanisms such as a cap-and-trade system, and an AB 32 implementation fee to fund the program. The 2017 Scoping Plan Update includes policies to require direct GHG emissions reductions at some of the state's largest stationary sources and mobile sources. These policies include the use of lower GHG fuels, efficiency regulations, and the Cap-and-Trade program, which constrains and reduces emissions at covered sources.[54]

Certain elements of these regulations must be complied with by all projects that develop urban land uses (e.g., commercial, residential, industrial). This category of regulations can be grouped in terms of the GHG sector that benefit from their implementation. Regarding the energy sector, implementation of the

50 California Air Resources Board, First Update, May 2014, p. 4.

51 California Air Resources Board, First Update, May 2014, p. 34.

52 California Air Resources Board, First Update, May 2014, p. 6.

53 California Air Resources Board, First Update, May 2014, p. 32

54 California Air Resources Board, 2017 Scoping Plan Update, November 2017, p. 7

California RPS program (SB 100), SB 350, and the Energy Independence and Security Act of 2007 (EISA) would reduce GHG emissions generated by energy consumption. Regarding the mobile sector, implementation of the Advanced Clean Cars Program, Advance Clean Truck Regulation, Low Carbon Fuel Standard (Executive Order S-01-07) and SB 375 would reduce GHG emissions generated by motor vehicle travel. In addition, ongoing implementation of the SB 1368/AB 398, CCR Title 20, and the Cap-and-Trade Program would reduce GHG emissions from both energy consumption and the fuels used for motor vehicle travel. Regarding the solid waste sector, implementation of the California Integrated Waste Management Act of 1989 and AB 341 would reduce GHG emissions generated by solid waste disposal in terms of reduced vehicle trips associated with the transport of solid waste materials as well as landfill emissions. Lastly, regarding the water sector, implementation of SB X7-7 would reduce GHG emissions associated with the energy used by the infrastructure required for the conveyance of water.

The 2022 Scoping Plan for Achieving Carbon Neutrality (2022 Scoping Plan) was finalized on November 16, 2022 and lays out a path to achieve targets for carbon neutrality and reduce anthropogenic greenhouse gas (GHG) emissions by 85 percent below 1990 levels no later than 2045, as directed by Assembly Bill 1279. The actions and outcomes in the plan will achieve: significant reductions in fossil fuel combustion by deploying clean technologies and fuels, further reductions in short-lived climate pollutants, support for sustainable development, increased action on natural and working lands to reduce emissions and sequester carbon, and the capture and storage of carbon.

The County has not provided an update to its 2019 Climate Action Plan which implements the 2022 Scoping Plan. Therefore the 2017 Scoping Plan is discussed below.

Cap-and-Trade Program. The original *Climate Change Scoping Plan* identified a cap-and-trade program as one of the strategies for California to reduce GHG emissions. Under cap-and-trade, an overall limit on GHG emissions from capped sectors is established, and facilities subject to the cap can trade permits to emit GHG emissions within the overall limit.

The Program is designed to reduce GHG emissions from major sources, such as refineries and power plants, (deemed “covered entities”). “Covered entities” subject to the Cap-and-Trade Program are sources that emit more than 25,000 metric tons CO_2e ($MTCO_2e$) per year. Triggering of the 25,000 $MTCO_2e$ per year “inclusion threshold” is measured against a subset of emissions reported and verified under the California Regulation for the Mandatory Reporting of Greenhouse Gas Emissions (Mandatory Reporting Rule or MRR).

Under the Cap-and-Trade Program, CARB issues allowances equal to the total amount of allowable emissions over a given compliance period and distributes these to regulated entities. Covered entities are allocated free allowances in whole or in part (if eligible) and may buy allowances at auction, purchase allowances from others, or purchase offset credits. Each covered entity with a compliance obligation is required to surrender an allowance for each metric ton CO_2e of GHG they emit.

The Cap-and-Trade Program provides a firm cap, ensuring that the 2030 statewide emission limit will not be exceeded. An inherent feature of the Cap-and-Trade program is that it does not guarantee GHG emissions reductions in any discrete location or by any source. Rather, GHG emissions reductions are only guaranteed on a cumulative basis. As summarized by CARB in the First Update:

> *The Cap-and-Trade Regulation gives companies the flexibility to trade allowances with others or take steps to cost-effectively reduce emissions at their own facilities. Companies that emit more have to turn in more allowances or other compliance instruments. Companies that can cut their GHG emissions have to turn in fewer allowances. But as the cap declines, aggregate emissions must be reduced.*

For example, a covered entity theoretically could increase its GHG emissions every year and still comply with the Cap-and-Trade Program if there is a commensurate reduction in GHG emissions from other covered entities. Such a focus on aggregate GHG emissions is considered appropriate because climate change is a global phenomenon, and the effects of GHG emissions are considered cumulative.

The Cap-and-Trade Program works with other direct regulatory measures and provides an economic incentive to reduce emissions. If California's direct regulatory measures reduce GHG emissions more than expected, then the Cap-and-Trade Program will be responsible for relatively fewer emissions reductions. If California's direct regulatory measures reduce GHG emissions less than expected, then the Cap-and-Trade Program will be responsible for relatively more emissions reductions. Thus, the Cap-and-Trade Program assures that California will meet its 2030 GHG emissions reduction mandate.

> *The Cap-and-Trade Program establishes an overall limit on GHG emissions from most of the California economy—the "capped sectors." Within the capped sectors, some of the reductions are being accomplished through direct regulations, such as improved building and appliance efficiency standards, the [Low Carbon Fuel Standard] LCFS, and the 33 percent [Renewables Portfolio Standard] RPS. Whatever additional reductions are needed to bring emissions within the cap is accomplished through price incentives posed by emissions allowance prices. Together, direct regulation and price incentives assure that emissions are brought down cost-effectively to the level of the overall cap. […]*[55]

Overall, the Cap-and-Trade Program will achieve aggregate, rather than site-specific or project-level, GHG emissions reductions. Also, due to the regulatory framework adopted by CARB in AB 32, the reductions attributed to the Cap-and-Trade Program can change over time depending on the state's emissions forecasts and the effectiveness of direct regulatory measures. The Cap-and-Trade Program covered approximately 450 businesses responsible for about 85 percent of California's GHG emissions.[56]

The Cap-and-Trade Program covers the GHG emissions associated with electricity consumed in California, whether generated in-state or imported. Accordingly, GHG emissions associated with CEQA projects' electricity usage are covered by the Cap-and- Trade Program. The Cap-and-Trade Program also covers fuel suppliers (natural gas and propane fuel providers and transportation fuel providers) to address emissions from such fuels and from combustion of other fossil fuels not directly covered at large sources in the Program's first compliance period.[57] Furthermore, the Cap-and-Trade Program also

55 California Air Resources Board, First Update, May 2014, p. 88.

56 Center for Climate and Energy Solutions, California Cap-and-Trade,https://www.c2es.org/content/california-cap-and-trade/, accessed April 2020.

57 While the Cap-and-Trade Program technically covered fuel suppliers as early as 2012, fuel suppliers did not have a compliance obligation (i.e., they were not fully regulated) until 2015.

covers the GHG emissions associated with the combustion of transportation fuels in California, whether refined in state or imported. The point of regulation for transportation fuels is when they are "supplied" (i.e., delivered into commerce). Accordingly, as with stationary source GHG emissions and GHG emissions attributable to electricity use, virtually all, if not all, of GHG emissions from CEQA projects associated with vehicle-miles traveled (VMT) are covered by the Cap-and-Trade Program.

Assembly Bill 398 was enacted in 2017 to extend the Cap-and-Trade Program from January 1, 2021, through December 31, 2030. As part of AB 398, refinements were made to the Cap-and-Trade program to establish updated protocols and allocation of proceeds to reduce GHG emissions.

California Renewables Portfolio Standard. The California RPS program (2002, SB 1078) required that 20 percent of the available energy supplies are from renewable energy sources by 2017. In 2006, SB 107 accelerated the 20 percent mandate to 2010. These mandates apply directly to investor-owned utilities. On April 12, 2011, California Governor Jerry Brown signed into law SB 2X, which modified California's RPS program to require that both public and investor-owned utilities in California receive at least 33 percent of their electricity from renewable sources by the year 2020. California SB 2X also requires regulated sellers of electricity to meet an interim milestone of procuring 25 percent of their energy supply from certified renewable resources by 2016. These levels of reduction are consistent with the Imperial Irrigation District's (IID) commitment to achieve 35 percent renewables by 2020.

Advanced Clean Cars Regulations. In 2012, CARB approved the Advanced Clean Cars (ACC) program, a new emissions-control program for model years 2015–2025.[58] The components of the Advance Clean Car program include the Low-Emission Vehicle (LEV) regulations that reduce criteria pollutants and GHG emissions from light- and medium-duty vehicles, and the Zero- Emission Vehicle (ZEV) regulation, which requires manufacturers to produce an increasing number of pure ZEVs (meaning battery electric and fuel cell electric vehicles), with provisions to also produce plug-in hybrid electric vehicles (PHEV) in the 2018 through 2025 model years.[59] In March 2017, CARB voted unanimously to continue with the vehicle greenhouse gas emission standards and the ZEV program for cars and light trucks sold in California through 2025.[60]

In addition, Governor Gavin Newsom signed an executive order (Executive Order No. N-79-20) on September 23, 2020, that would phase out sales of new gas-powered passenger cars by 2035 in California with an additional 10-year transition period for heavy vehicles. The state would not restrict used car sales, nor forbid residents from owning gas-powered vehicles. In accordance with the Executive Order, CARB is developing a 2020 Mobile Source Strategy, a comprehensive analysis that presents scenarios for possible strategies to reduce the carbon, toxic and unhealthy pollution from cars, trucks, equipment, and ships. The strategies will provide important information for numerous regulations and incentive programs going forward by conveying what is necessary to address the aggressive emission reduction requirements.

58 California Air Resources Board, California's Advanced Clean Cars Program, www.arb.ca.gov/msprog/acc/acc.htm, accessed April 2020.

59 Ibid.

60 California Air Resources Board, News Release: ZEV Regulation Fact Sheet https://ww2.arb.ca.gov/sites/default/files/2019-06/zev_regulation_factsheet_082418_0.pdf, accessed October 2020.

The upcoming ACC II regulations will focus on post-2025 model year light-duty vehicles, as requirements are already in place for new vehicles through the 2025 model year. A rulemaking package was approved by CARB in August 2022 and rule implementation is pending.

California Appliance Efficiency Regulations (Title 20, Sections 1601 through 1608). The 2014 Appliance Efficiency Regulations, adopted by the CEC, include standards for new appliances (e.g., refrigerators) and lighting, if they are sold or offered for sale in California. These standards include minimum levels of operating efficiency, and other cost- effective measures, to promote the use of energy- and water-efficient appliances.

California Building Energy Efficiency Standards (Title 24, Part 6). California's Energy Efficiency Standards for Residential and Nonresidential Buildings, located at Title 24, Part 6 of the California Code of Regulations and commonly referred to as "Title 24," were established in 1978 in response to a legislative mandate to reduce California's energy consumption. Title 24 requires the design of building shells and building components to conserve energy. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods.[61] The 2022 standards continue to improve upon previous standards for new construction of, and additions and alterations to, residential and non-residential buildings and became effective January 1, 2023. Compliance with Title 24 is enforced through the building permit process. Key changes included encouraging heat pump technology for space and water heating, setting electric-ready requirements for single-family homes, expanding solar photovoltaic system and battery storage standards, and strengthening ventilation standards to improve indoor air quality.

California Green Building Standards (CALGreen Code). The California Green Building Standards Code (California Code of Regulations, Title 24, Part 11) are mandatory green building standards for new structures. They focus on measures to reduce water consumption, GHG emissions, and materials and waste. These codes are updated every three years, with the 2022 CalGreen code updates effective January 1, 2023. New requirements address requirements for Level 2 electric vehicle chargers and use of solar photovoltaic shade structures instead of shade trees. Voluntary measures focus on higher EV charging requirements for parking facilities.

2.3.3 Regional

South Coast Air Quality Management District. The South Coast Air Quality Management District (SCAQMD) adopted a "Policy on Global Warming and Stratospheric Ozone Depletion" on April 6, 1990. The policy commits the SCAQMD to consider global impacts in rulemaking and in drafting revisions to the Air Quality Management Plan. In March 1992, the SCAQMD Governing Board reaffirmed this policy and adopted amendments to the policy to include the following directives:

- Phase out the use and corresponding emissions of chlorofluorocarbons, methyl chloroform (1,1,1-trichloroethane or TCA), carbon tetrachloride, and halons by December 1995;

61 California Energy Commission, 2019 Building Energy Efficiency Standards, https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/2019-building-energy-efficiency, accessed April 2020.

- Phase out the large quantity use and corresponding emissions of hydrochlorofluorocarbons by the year 2000;
- Develop recycling regulations for hydrochlorofluorocarbons (e.g., SCAQMD Rules 1411 and 1415);
- Develop an emissions inventory and control strategy for methyl bromide; and
- Support the adoption of a California GHG emission reduction goal.

Southern California Association of Governments. To implement SB 375 and reduce GHG emissions by correlating land use and transportation planning, SCAG adopted the 2020-2045 RTP/SCS on September 3, 2020, calling for $639 billion in transportation investments and reducing VMT by 19 percent per capita from 2005 to 2035. The updated plan accommodates 21.3 percent growth in population from 2016 (3,933,800) to 2045 (4,771,300) and a 15.6 percent growth in jobs from 2016 (1,848,300) to 2045 (2,135,900). The updated RTP/SCS calls for several land use-based strategies to accommodate growth, minimize criteria pollutant emissions, and achieve climate change objectives:

- Decreasing drive-along work commutes by three percent
- Reducing per capita VMT by five percent and vehicle hours traveled per capita by nine percent
- Increasing transit commuting by two percent
- Reducing travel delay per capita by 26 percent
- Creating 264,500 new jobs annually
- Reducing greenfield development by 29 percent by focusing on smart growth
- Locating six more percent household growth in High Quality Transit Areas (HQTAs), which concentrate roadway repair investments, leverage transit and active transportation investments, reduce regional life cycle infrastructure costs, improve accessibility, create local jobs, and have the potential to improve public health and housing affordability.
- Locating 15 percent more jobs in HQTAs

The 2020-2045 RTP/SCS calls for a 19 percent reduction in per capita GHG emissions by 2035 from 2005 levels. This is intended to be consistent with CARB's performance targets during this same period. The bulk of these reductions are to come from transportation investments, pricing strategies, TDM strategies, and land use programs. On October 30, 2020, CARB accepted the RTP/SCS quantification of GHG emissions on October 30, 2020 (Executive Order G-20-239, SCAG 2020 SCS ARB Acceptance of GHG Quantification Determination).

2.3.4 Local

Riverside County Climate Action Plan. The County of Riverside Climate Action Plan (CAP) was adopted in December 2015 and updated in December 2019. The 2019 CAP establishes programs and regulations that support state GHG emissions reduction goals and strategies, including reduction targets for 2030 and 2050. These targets require the County to reduce emissions by at least 525,511 $MTCO_2e/yr$ below the Adjusted Business As Usual (ABAU) scenario by 2030 and at least 2,982,948 $MTCO_2e/yr$ below the ABAU scenario by 2050. To evaluate consistency with the CAP Update, the County has

implemented CAP Update Screening Tables to aid in measuring the reduction of GHG emissions attributable to certain design and construction measures incorporated in development projects. To this end, the Screening Tables establish categories of GHG Implementation Measures. Under each Implementation Measure category, mitigation or project design features are assigned point values that correspond to the minimum GHG emissions reduction that would result from each feature. Projects that yield at least 100 points are considered to be consistent with the GHG emissions reduction quantities anticipated in the County's GHG Technical Report and support the GHG emissions reduction targets established under the CAP Update. The potential for such projects to generate direct or indirect GHG emissions that would result in a significant impact on the environment; or conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHG would be considered less than significant.

2.4 Existing Conditions

Existing Statewide GHG Emissions. GHG emissions are the result of both natural and human-influenced activities. Regarding human-influenced activities, motor vehicle travel, consumption of fossil fuels for power generation, industrial processes, heating and cooling, landfills, agriculture, and wildfires are the primary sources of GHG emissions. Without human intervention, Earth maintains an approximate balance between the emission of GHG emissions into the atmosphere and the storage of GHG emissions in oceans and terrestrial ecosystems. Events and activities, such as the industrial revolution and the increased combustion of fossil fuels (e.g., gasoline, diesel, coal), have contributed to the rapid increase in atmospheric levels of GHG emissions over the last 150 years.

As reported by the CEC, California contributes approximately one percent of global and 8.2 percent of national GHG emissions.[62] California represents approximately 12 percent of the national population. Approximately 80 percent of GHGs in California are CO_2 produced from fossil fuel combustion. The current California GHG inventory compiles statewide anthropogenic GHG emissions and carbon sinks/storage from years 2000 through 2019.[63] It includes estimates for CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6. The GHG inventory for California for years 2010 through 2019 is presented in **Table 2-3**. As shown therein, the GHG inventory for California in 2019 was 418.2 million $MTCO_2e$.

Table 2-3
California GHG Inventory
(metric tons of carbon dioxide equivalent [$MTCO_2e$])

	2013	2014	2015	2016	2017	2018	2019
Transportation	161.2	162.6	166.2	169.8	171.2	169.6	166.1
Electric Power	91.7	92.5	90.3	89.0	88.8	89.2	88.2
Industrial	16.8	17.7	18.6	19.2	20.0	20.4	20.6
Commercial & Residential	91.4	88.9	84.8	68.6	62.1	63.1	58.8
Agriculture	161.2	162.6	166.2	169.8	171.2	169.6	166.1

62 California Energy Commission, Tracking Progress, Greenhouse Gas Emission Reductions. https://www.energy.ca.gov/data-reports/tracking-progress. Accessed August 2022.

63 A carbon inventory identifies and quantifies sources and sinks of greenhouse gases. Sinks are defined as a natural or artificial reservoir that accumulates and stores some carbon-containing chemical compound for an indefinite period.

	2013	2014	2015	2016	2017	2018	2019
High GWP	91.4	88.9	84.8	68.6	62.1	63.1	58.8
Recycling & Waste	91.7	92.5	90.3	89.0	88.8	89.2	88.2
Total	447.5	443.0	440.7	429.1	424.6	425.1	418.2
Source: California Air Resources Board (2021). California Greenhouse Gas Emission Inventory - 2021 Edition. Data available at: https://ww3.arb.ca.gov/cc/inventory/data/data.htm							

Existing Project Site Emissions. The portion of the 8.22-acre development site that would accommodate new housing is vacant open space. While there are occasional temporary recreational vehicles that park in these spaces, this analysis assumes there are no anthropogenic emissions of GHG emissions that are generated at the Project Site.

2.5 Methodology

CEQA Guidelines Section 15064.4(a) assist lead agencies in determining the significance of the impacts of GHG emissions, giving them discretion to determine whether to assess impacts quantitatively or qualitatively. It calls for a good-faith effort to describe and calculate emissions. This emissions inventory also demonstrates the reduction in a project's incremental contribution of GHG emissions that results from regulations and requirements adopted as implementation efforts for these plans for the reduction or mitigation of GHG emissions. As such, it provides further justification that a project is consistent with plans adopted for the purpose of reducing and/or mitigating GHG emissions by a project and over time. The significance of a project's GHG emissions impacts is not based on the amount of GHG emissions resulting from that project.

The County, SCAQMD, Office of Planning and Research (OPR), CARB, California Air Pollution Control Officers Association (CAPCOA), and other applicable agencies have not adopted a numerical threshold of significance for assessing impacts related to GHG emissions. As a result, the methodology for evaluating a project's impacts related to GHG emissions focuses on its consistency with statewide, regional, and local plans adopted for the purpose of reducing and/or mitigating GHG emissions.[64] This evaluation is the sole basis pursuant to CEQA for determining the significance of a project's GHG-related impacts on the environment.

The analysis also calculates the amount of GHG emissions from the Project using recommended air quality models. The primary purpose of quantifying the Project's GHG emissions is to satisfy CEQA Guidelines Section 15064.4(a). The estimated emissions inventory is also used to determine if there would be a reduction in the Project's incremental contribution of GHG emissions because of compliance with regulations requirements adopted to implement plans for reducing or mitigating GHG emissions. However, the significance of the Project's GHG emissions is not based on the amount of emissions from the Project.

64 CEQA Guidelines, Section 14 CCR 15064.4.

2.5.1 Consistency with Applicable Plans and Policies

A consistency analysis has been provided that describes the Project's conflict with applicable plans and policies adopted for the purpose of reducing GHG emissions, included in the applicable portions of CARB's *Climate Change Scoping Plan* and the 2020-2045 RTP/SCS. In addition, this analysis assesses the Project's consistency with other plans (e.g., the County's CAP) for informational purposes.

OPR encourages lead agencies to make use of programmatic mitigation plans and programs from which to tier when they perform project analyses. Statewide, the Climate Change Scoping Plan provides measures to achieve AB 32 and SB 32 targets. On a regional level, SCAG's 2020-2045 RTP/SCS contains measures to achieve VMT reduction required by SB 375.

As noted in CEQA Guidelines Section 15064.4(b)(3), consistency with such plans and policies "must reduce or mitigate the project's incremental contribution of greenhouse gas emissions." To demonstrate such incremental reductions, this chapter estimates reductions of project-related GHG emissions resulting from consistency with plans. Consistent with evolving scientific knowledge, approaches to GHG quantification may continue to evolve in the future.

A consistency analysis is provided below that describes the Project's consistency with performance-based standards in the applicable parts of CARB's *Climate Change Scoping Plan,* SCAG's 2020-2045 RTP/SCS, and the CAP.

2.5.2 Quantification of Emissions

This analysis quantifies the Project's GHG emissions for information purposes, considering the GHG reduction features that would be incorporated into the Project's design. It relies on the California Emissions Estimator Model® (CalEEMod) is a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and GHG emissions associated with both construction and operations from a variety of land use projects. CalEEMod was developed in collaboration with the air districts of California, who provided data (e.g., emission factors, trip lengths, meteorology, source inventory) to account for local requirements and conditions. The model is considered by SCAQMD to be an accurate and comprehensive tool for quantifying air quality and GHG impacts from land use projects throughout California.[65]

This analysis quantifies the Project's emissions and compares them to a Project without Reduction Features scenario, as defined by CARB's most updated projections for AB 32 and SB 32. This comparison is included for informational purposes to disclose the relative carbon efficiency of the Project and to determine if there would be a reduction in the Project's incremental contribution of GHG emissions based on compliance with regulations and requirements adopted to implement plans for reducing GHG emissions. The Project Without Reduction Features scenario does not consider site-specific conditions, Project design features, or prescribed mitigation measures. This approach is consistent with the

[65] California Air Pollution Control Officers Association, California Emissions Estimator Model, CalEEMod™, www.caleemod.com, accessed May 25, 2016.

concepts used in the CARB's *Climate Change Scoping Plan* for the implementation of AB 32. This methodology is used to analyze consistency with applicable GHG reduction plans and policies and demonstrate the efficacy of the measures contained therein, but it is not a threshold of significance. The Project Without Reduction Features scenario is similar to the approach currently used by the County with respect to evaluating a proposed development project's consistency with CARB's Scoping Plans.

The Project without Reduction Features scenario also does not account for energy efficiency measures that would go beyond Title 24 building standards or trip reductions from the co-location of uses and availability of public transit. However, the Project without Reduction Features does consider regulatory measures included in CARB's *Climate Change Scoping Plan,* SCAG's 2020-2045 RTP/SCS, and the County's CAP Update in 2019. However, as predicted by the 2017 Scoping Plan and other studies, additional regulatory programs have been developed since the adoption of SB 32 and the 2017 Scoping Plan. These include reductions in GHG emissions attributable to energy sources due to compliance with 2019 and 2022 Title 24 Energy Conservation Measures and a reduction in GHG emissions attributable to water sources due to compliance with advanced IID water consumption standards.

2.5.3 Project GHG Emissions

The California Climate Action Registry (CCAR) General Reporting Protocol provides basic procedures and guidelines for calculating and reporting GHG emissions from a number of general and industry-specific activities.[66] Established in 2007, The Climate Registry (TCR) was formed to continue the work of the CCAR, which officially closed in 2010. CCAR was developed by the State of California in 2001, to promote and protect businesses' early actions to manage and reduce their greenhouse gas emissions. Recognizing that climate change is a global issue and success in emissions reporting must be based on consistent data in an integrated system that stretched beyond California's borders, TCR was established to expand CCAR's emissions reporting work to include all of North America.

The General Reporting Protocol (GRP) is based on the "Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard" developed by the World Business Council for Sustainable Development and the World Resources Institute through "a multi-stakeholder effort to develop a standardized approach to the voluntary reporting of GHG emissions."[67] Although no numerical thresholds of significance have been developed, and no specific protocols are available for land use projects, the GRP provides a basic framework for calculating and reporting GHG emissions from the project. The information provided in this section is consistent with the General Reporting Protocol's reporting requirements. The General Reporting Protocol recommends the separation of GHG emissions into three categories that reflect different aspects of ownership or control over emissions. They include the following:

- Scope 1: Direct anthropogenic GHG emissions (such as onsite combustion of fossil fuels (e.g., natural gas, propane, gasoline, and diesel)).

66 The Climate Registry, General Reporting Protocols, version 3,0, May 2019: https://theclimateregistry.org/registries-resources/protocols/

67 The Climate Registry, General Reporting Protocols, version 3,0, May 2019: https://theclimateregistry.org/registries-resources/protocols/

- Scope 2: Indirect anthropogenic GHG emissions with the consumption of purchased or acquired electricity, steam, heating, or cooling.
- Scope 3: All other indirect anthropogenic GHG emissions that occur in the value chain (such as third-party travel and waste disposal).

The General Reporting Protocol provides a range of basic calculations methods. However, the General Reporting Protocol calculations are typically designed for existing buildings or facilities. These retrospective calculation methods are not directly applicable to planning and development situations where buildings do not yet exist.

CARB recommends consideration of indirect emissions to provide a more complete picture of the GHG emissions footprint of a facility. Annually reported indirect energy usage aids the conservation awareness of a facility and provides information to CARB to be considered for future strategies.[68] For example, CARB has proposed requiring the calculation of direct and indirect GHG emissions as part of the AB 32 reporting requirements. Additionally, OPR has noted that lead agencies "should make a good-faith effort, based on available information, to calculate, model, or estimate… GHG emissions from a project, including the emissions associated with vehicular traffic, energy consumption, water usage and construction activities."[69] Therefore, direct and indirect emissions have been calculated for the Project.

A fundamental difficulty in the analysis of GHG emissions is the global nature of the existing and cumulative future conditions. Changes in GHG emissions can be difficult to attribute to a particular planning program or project because the planning effort or project may cause a shift in the locale for some type of GHG emissions, rather than causing "new" GHG emissions. As a result, there is an inability to conclude whether a project's GHG emissions represent a net global increase, reduction, or no change in GHG emissions that would exist if the project were not implemented. The analysis of the Project's GHG emissions is particularly conservative in that it assumes all the GHG emissions are new additions to the atmosphere.

Construction

The Project's construction emissions were calculated using CalEEMod Version 2022.1. Details of the modeling assumptions and emission factors are provided in the Technical Appendix. CalEEMod calculates emissions from off-road equipment usage and on-road vehicle travel associated with haul, delivery, and construction worker trips. GHG emissions during construction were forecasted based on the proposed construction schedule and included the mobile- source and fugitive dust emissions factors derived from CalEEMod.

The calculations of the emissions generated during Project construction activities reflect the types and quantities of construction equipment that would be used to remove existing pavement, grade, and

68 California Air Resources Board, Initial Statement of Reasons for Rulemaking, Proposed Regulation for Mandatory Reporting of Greenhouse Gas Emissions Pursuant to the California Global Warming Solutions Act of 2006 (AB 32), Planning and Technical Support Division Emission Inventory Branch, October 19, 2007.

69 OPR Technical Advisory, p. 5.

excavate the Project Site; construct the proposed building and related improvements; and plant new landscaping within the Project Site.

In accordance with SCAQMD's guidance, GHG emissions from construction were amortized (i.e., averaged annually) over the lifetime of the Project. Because emissions from construction activities occur over a relatively short-term period, they contribute a relatively small portion of the overall lifetime GHG emissions for the Project. In addition, GHG emissions reduction measures for construction equipment are relatively limited. Thus, SCAQMD recommends that construction emissions be amortized over a 30-year project lifetime, so that GHG emissions reduction measures will address construction GHG emissions as part of the operational GHG reduction strategies.[70] As a result, the Project's total construction GHG emissions were divided by 30 to determine an approximate annual construction emissions estimate comparable to operational emissions.

Operation

Similar to construction, CalEEMod is used to calculate potential GHG emissions generated by new land uses on the Project Site, including area sources, electricity, natural gas, mobile sources, stationary sources (i.e., emergency generators), solid waste generation and disposal, and water usage/wastewater generation.

Area source emissions include landscaping equipment that are based on the size of the land uses (e.g., square footage or dwelling unit), the GHG emission factors for fuel combustion, and the global warming potential (GWP) values for the GHG emissions emitted.

GHG emissions associated with electricity demand are based on the size of the land uses, the electrical demand factors for the land uses, the GHG emission factors for the electricity utility provider, and the GWP values for the GHG emissions emitted. As with electricity, the emissions of GHG emissions associated with natural gas combustion are based on the size of the land uses, the natural gas combustion factors for the land uses in units of million British thermal units (MMBtu), the GHG emission factors for natural gas combustion, and the GWP values for the GHG emissions emitted.

Mobile source GHG emissions are calculated based on an estimate of the Project's annual VMT, which is derived using CalEEMod based on the trip generation provided in the Transportation Study prepared for the Project. The CalEEMod-derived VMT values account for the daily and seasonal variations in trip frequency and length associated with new employee and visitor trips to and from the Project Site and other activities that generate a vehicle trip.

GHG emissions associated with solid waste disposal are based on the size of the Project's proposed land uses, the waste disposal rate for the land uses, the waste diversion rate, the GHG emission factors for solid waste decomposition, and the GWP values for the GHG emissions emitted.

GHG emissions related to water usage and wastewater generation are based on the size of the land uses, the water demand factors, the electrical intensity factors for water supply, treatment, and

[70] SCAQMD Governing Board Agenda Item 31, December 5, 2008.

distribution, electrical intensity factors for wastewater treatment, the GHG emission factors for the electricity utility provider, and the GWP values for the GHG emissions emitted.

The analysis of Project GHG emissions at buildout uses assumptions in CARB's EMFAC2021 model (1.0.1) and considers actions and mandates expected to be in force in 2024 (e.g., Pavley I Standards, full implementation of California's 33 percent RPS by 2030 and 50 percent by 2050 and the California LCFS). In addition, because mobile source GHG emissions are directly dependent on the number of vehicle trips, a decrease in the number of project-generated trips because of project features (e.g., proximity to transit) would provide a proportional reduction in mobile source GHG emissions compared to a generic project without such locational benefits. Calculation of Project GHG emissions conservatively did not include actions and mandates that are not already in place but are expected to be enforced in 2024 (e.g., Pavley II, which could further reduce GHG emissions from use of light-duty vehicles by 2.5 percent). Similarly, emissions reductions regarding Cap-and-Trade were not included in this analysis as they applied to other future reductions in non-transportation sectors. As for the Cap-and-Trade program's benefits for the transportation sector, the analysis utilizes CARB's assumptions in EMFAC2021 for any short-term reductions in GHG emissions. By not speculating on potential regulatory conditions, the analysis takes a conservative approach that likely overestimates the Project's GHG emissions at buildout, because the state is expected to implement several policies and programs aimed at reducing GHG emissions from the land use and transportation sectors to meet the state's long-term climate goals.

There are no GHG emissions thresholds adopted by the SCAQMD that are applicable to the Project. In 2008, SCAQMD released draft guidance regarding interim CEQA GHG significance thresholds.[71] Within its October 2008 document, the SCAQMD proposed the use of a percent emission reduction target to determine significance for commercial/residential projects that emit greater than 3,000 $MTCO_2e$ per year. Under this proposal, such commercial and residential projects would have been assumed to have a less than significant impact on climate change. However, this proposed screening threshold was not adopted by the SCAQMD.

Consistency with Applicable Plans and Policies

A consistency analysis has been provided that describes the Project's compliance with or exceedance of performance-based standards, and consistency with applicable plans and policies adopted for the purpose of reducing GHG emissions, included in the applicable portions of the *Climate Change Scoping Plan*, the 2020-2045 RTP/SCS, and the CAP.

As part of the *Climate Change Scoping Plan*, a statewide emissions inventory was developed as required by AB 32 which directs CARB to develop and track GHG emissions reductions to document progress towards the state GHG target. The emissions inventory also considers GHG emissions reduction measures developed by CARB to achieve state targets. Consistency with the *Climate Change Scoping Plan* is evaluated by comparing the Project's GHG reduction measures to those contained in the Scoping Plan.

As noted in CEQA Guidelines Section 15064.4(b)(3), consistency with such plans and policies "must reduce or mitigate the project's incremental contribution of greenhouse gas emissions." To demonstrate such incremental reductions, this chapter estimates reductions of project-related GHG emissions resulting from consistency with plans. Consistent with evolving scientific knowledge, approaches to GHG quantification may continue to evolve in the future.

While there are many ways to quantify the efficiency of the GHG reduction measures provided for in the plans and policies, this analysis compares the Project's GHG emissions to the emissions that would be generated by the Project in the absence of any GHG reduction measures (i.e., the Project Without Reduction Features scenario. This approach is consistent with the concepts used in CARB's 2017 Climate Change Scoping Plan. This methodology is used to analyze consistency with applicable GHG reduction plans and policies and demonstrate the efficacy of the measures contained therein, but it is not a threshold of significance.

The analysis in this section includes potential emissions under a Project Without Reduction Features scenarios and from the Project at build-out based on actions and mandates expected to be in force in 2024. Early-action measures identified in the Climate Change Scoping Plan that have not been approved were not credited in this analysis. By not speculating on potential regulatory conditions, the analysis takes a conservative approach that likely overestimates the Project's GHG emissions at build-out. The Project Without Reduction Features scenario is used to establish a comparison with project-generated GHG emissions. The Project Without Reduction Features scenario does not consider site-specific conditions, project design features, or prescribed mitigation measures. As an example, a Project Without Reduction Features scenario would apply a base ITE trip-generation rate for the project and would not consider site-specific benefits resulting from the proximity to public transportation.

2.6 Thresholds of Significance

2.6.1 State CEQA Guidelines Appendix G

In accordance with Appendix G of the State CEQA Guidelines (Appendix G), a project would have a significant impact related to GHG emissions if the project would do the following:

a) Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment;

b) Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHG emissions.

The Project would comply with all applicable state and local regulatory requirements, including the provisions set forth in the County's Building Codes. Furthermore, the Project would also include sustainability features related to water conservation and waste reduction.

2.7 Project Impacts

GREENHOUSE GAS EMISSIONS Would the project:				
1. Greenhouse Gas Emissions a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

2.7.1 a) Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Less than Significant Impact. Construction-related emissions were estimated using the SCAQMD's CalEEMod 2022.1 model and a projected construction schedule of approximately six months during 2023. While there are three proposed phases of development, this analysis assumes a conservative scenario where all improvements are built concurrently, ensuring this report's findings are most protective of public health. There would be some overlap between some phases, particularly given the proposed phasing of development. **Table 2-4** summarizes the estimated construction schedule that was modeled for air quality impacts.

Table 2-4
Construction Schedule Assumptions

Phase	Duration	Notes
Site Preparation	Month 1 (two weeks)	Grubbing and removal of trees, plants, landscaping, weeds
Grading	Months 1-3	Fine grading of 40,000 square feet of area and approximately 6,000 cubic yards of soil (including swell factors) hauled 40 miles to landfill in 10-cubic yard capacity trucks.
Trenching	Months 2-4	Trenching for utilities, including gas, water, electricity, and telecommunications.
Building Construction	Months 3-6	Foundation work, framing, welding; installing mechanical, electrical, and plumbing. Floor assembly, cabinetry and carpentry, low voltage systems, trash management.
Paving	Month 5	Flatwork, including paving of walkways and other living areas, and surface parking lot for worker parking.
Architectural Coatings	Months 4-6	Application of interior and exterior coatings and sealants.
Source: DKA Planning, 2022.		

In support of the consistency analysis that describes the Project's compliance with, or exceedance of performance-based standards included in the regulations and policies outlined in the applicable portions of the *Climate Change Scoping Plan*, the 2020-2045 RTP/SCS, and the County's CAP Update, quantitative calculations are provided below.

The Project would generate direct and indirect GHG emissions because of different types of emissions sources, including the following:

- Construction: emissions from construction-related equipment and vehicular activity;
- Area source: emissions associated with landscape equipment;
- Energy source (building operations): emissions associated with electricity and natural gas use for space heating and cooling, water heating, energy consumption, and lighting;
- Mobile source: emissions associated with vehicles accessing the Project Site;
- Solid Waste: emissions associated with the decomposition of the waste, which generates methane based on the total amount of degradable organic carbon; and
- Water/Wastewater: emissions associated with energy used to pump, convey, deliver, and treat water.
- Refrigerants: These are substances used in equipment for air conditioning and refrigeration. Most refrigerants are HFCs or blends of them, which can have high GWP values.

The Project would generate an incremental contribution to and a cumulative increase in GHG emissions. A specific discussion regarding potential GHG emissions associated with the construction and operational phases of the Project is provided below.

Construction

Project construction is anticipated to be completed in 2023 with occupancy the same year. A summary of construction details (e.g., schedule, equipment mix, and vehicular trips) and CalEEMod modeling output files are provided in the Technical Appendix. The GHG emissions associated with construction of the Project were calculated for each year of construction activity.

Construction of the Project is estimated to generate a total of 271 $MTCO_2e$ (**Table 2-5**). As recommended by the SCAQMD, the total GHG construction emissions were amortized over the 30-year lifetime of the Project (i.e., total construction GHG emissions were divided by 30 to determine an annual construction emissions estimate that can be added to the Project's operational emissions) to determine the Project's annual GHG emissions inventory.[72] This results in annual Project construction emissions

72 SCAQMD Governing Board Agenda Item 31, December 5, 2008.

of nine $MTCO_2e$. A complete listing of the construction equipment by on-site and off-site activities, duration, and emissions estimation model input assumptions used in this analysis is included within the emissions calculation worksheets that are provided in the Technical Appendix.

Table 2-5
Combined Construction-Related Emissions ($MTCO_2e$)

Year	$MTCO_2e$[a]
2023	271
Total	**271**
Amortized Over 30 Years	**9**

a CO_2e was calculated using CalEEMod version 2022.1. Detailed results are provided in the Technical Appendix.
Source: DKA Planning, 2022.

Operation

Area Source Emissions

Area source emissions were calculated using the CalEEMod emissions inventory model, which includes landscape maintenance equipment, use of consumer products, and other everyday sources. As shown in **Table 2-6**, the Project would result in 0.16 $MTCO_2e$ per year from area sources.

Table 2-6
Annual GHG Emissions Summary (Buildout)[a]
(metric tons of carbon dioxide equivalent [MTCO2e])

Year	$MTCO_2$[a]
Area[b]	<0.1
Energy[c] (electricity and natural gas)	33
Mobile	92
Solid Waste[d]	3
Water/Wastewater[e]	1
Refrigerants	<0.1
Construction	9
Total Emissions	**139**

[a] CO_2e was calculated using CalEEMod and the results are provided in the Technical Appendix.
[b] Area source emissions are from landscape equipment and other operational equipment only; hearths omitted.
[c] Energy source emissions are based on CalEEMod default electricity and natural gas usage rates.
[d] Solid waste emissions are calculated based on CalEEMod default solid waste generation rates.
[e] Water/Wastewater emissions are calculated based on CalEEMod default water consumption rates.
Source: DKA Planning, 2022.

Electricity and Natural Gas Generation Emissions

GHG emissions are emitted because of activities in buildings when electricity and natural gas are used as energy sources. Combustion of any type of fuel emits CO_2 and other GHG emissions directly into the atmosphere; when this occurs in a building, it is a direct emission source associated with that building. GHG emissions are also emitted during the generation of electricity from fossil fuels. When electricity is used in a building, the electricity generation typically takes place off-site at the power plant; electricity use in a building generally causes emissions in an indirect manner.

Electricity and natural gas emissions were calculated for the Project using the CalEEMod emissions inventory model, which multiplies an estimate of the energy usage by applicable emissions factors chosen by the utility company. GHG emissions from electricity use are directly dependent on the electricity utility provider. In this case, GHG emissions intensity factors for IID were selected in CalEEMod. The carbon intensity ((pounds per megawatt an hour (lbs/MWh)) for electricity generation was calculated for the Project buildout year based on IID projections. A straight-line interpolation was performed to estimate the IID carbon intensity factor for the Project buildout year. IID carbon intensity projections also consider SB 350 RPS requirements for renewable energy.

This approach is conservative, given the 2018 chaptering of SB 100 (De Leon), which requires electricity providers to provide renewable energy for at least 60 percent of their delivered power by 2030 and 100 percent use of renewable energy and zero-carbon resources by 2045. SB 100 also increases existing renewable energy targets, called Renewables Portfolio Standard (RPS), to 44 percent by 2024 and 52 percent by 2027.

The 2022 Title 24 standards contain more substantial energy efficiency requirements for new construction, emphasizing the importance of building design and construction flexibility to establish performance standards that substantially reduce energy consumption for water hating, lighting, and insulation for attics and walls.

Energy use in buildings is divided into energy consumed by the built environment and energy consumed by uses that are independent of the construction of the building, such as in plug-in appliances. CalEEMod calculates energy use from systems covered by Title 24 (e.g., HVAC system, water heating system, and lighting system); energy use from lighting; and other sources not covered by Title 24 or lighting. CalEEMod electricity and natural gas usage rates are based on the CEC-sponsored California Commercial End-Use Survey (CEUS) and the California Residential Appliance Saturation Survey (RASS) studies.[73]

As shown in **Table 2-6**, Project GHG emissions from electricity and natural gas usage would result in a total of 33 $MTCO_2e$ per year.

[73] California Energy Commission, Commercial End-Use Survey, March 2006, and California Residential Appliance Saturation Survey, October 2010.

Mobile Source Emissions

Mobile-source emissions were calculated using the SCAQMD-recommended CalEEMod emissions inventory model. CalEEMod calculates the emissions associated with on-road mobile sources associated with residents, employees, visitors, and delivery vehicles visiting the Project Site based on the number of daily trips generated and VMT. Mobile source operational GHG emissions were calculated using CalEEMod and are based on the Project trip-generation estimates. To calculate daily trips, the number of hotel rooms and amount of building area for the restaurant uses were multiplied by the applicable trip-generation rates based on the Institute of Transportation Engineers (ITE)'s *Trip Generation, 11th Edition*. CalEEMod calculates VMT based on the type of land use, trip purpose, and trip type percentages for each land use subtype in the project (primary, diverted, and pass-by). As shown in **Table 2-6**, the Project GHG emissions from mobile sources would result in a total of 92 $MTCO_2e$ per year. This estimate reflects reductions attributable to the Project's characteristics (e.g., elimination of work-related trips for several dozen workers and/or visitors), as described above.

Solid Waste Generation Emissions

Emissions related to solid waste were calculated using the CalEEMod emissions inventory model, which multiplies an estimate of the waste generated by applicable emissions factors provided in Section 2.4 of the USEPA's AP-42, Compilation of Air Pollutant Emission Factors. CalEEMod solid waste generation rates for each applicable land use were selected for this analysis. As shown in **Table 2-6**, the Project scenario is expected to result in a total of three $MTCO_2e$ per year from solid waste that accounts for a 50-percent recycling/diversion rate.[74]

Water Usage and Wastewater Generation Emissions

GHG emissions are related to the energy used to convey, treat, and distribute water, and treat wastewater. Thus, these emissions are generally indirect emissions from the production of electricity to power these systems. Three processes are necessary to supply potable water; these include (1) supply and conveyance of the water from the source; (2) treatment of the water to potable standards; and (3) distribution of the water to individual users. After use, energy is used as the wastewater is treated and reused as reclaimed water.

Emissions related to water usage and wastewater generation were calculated for the Project using the CalEEMod emissions inventory model, which multiplies an estimate of the water usage by the applicable energy intensity factor to determine the embodied energy necessary to supply potable water.[75] GHG emissions are then calculated based on the amount of electricity consumed multiplied by the GHG emissions intensity factors for the utility provider. In this case, embodied energy for Southern California supplied water and GHG emissions intensity factors for IID were selected in CalEEMod. Water usage rates were calculated consistent with the requirements under the 2022 California Plumbing Code (which is based on the 2021 Uniform Plumbing Code) and 2022 CALGreen, and reflect an approximately 20-percent reduction as compared to the base demand. As shown in **Table 2-6**, Project GHG emissions

74 AB 341 (2012) increased the Statewide waste diversion goal from 50 to 75 percent from baseline rates established by CalRecycle by 2020 and beyond. Further, SB 1383 (2016) requires jurisdictions to reduce 75 percent of organic waste disposal in landfills by 2030.

75 The intensity factor reflects the average pounds of CO_2e per megawatt generated by a utility company.

from water/wastewater usage would result in a total of one $MTCO_2e$ per year as compared to the Project without sustainability features related to water conservation.

Refrigerants

Emissions related to cooling structures and refrigeration needs were calculated using the CalEEMod emissions inventory model. As shown in **Table 2-6**, the Project scenario is expected to result in less than one $MTCO_2e$ per year from use of refrigerants that used HFCs and have high GWP values.

Combined Construction and Operational Emissions

As shown in **Table 2-6**, when taking into consideration implementation of project design features, including the requirements set forth in the County's Building Code and the full implementation of current state mandates, the GHG emissions for the Project would equal 139 $MTCO_2e$ annually (as amortized over 30 years) during construction.

Estimated Reduction of Project Related GHG Emissions Resulting from Consistency with Plans

As noted earlier, one approach to demonstrating a project's consistency with GHG plans is to show how a project will reduce its incremental contribution through a Project Without Reduction Features comparison. The analysis in this section includes potential emissions under a Project Without Reduction Features scenario and from the Project at build-out based on actions and mandates in force in 2023. As shown in **Table 2-7**, the emissions for the Project and its associated CARB 2023 Project Without Reduction Features scenario are estimated to be 139 and 202 $MTCO_2e$ per year, respectively, which shows the Project would reduce emissions by 32.1 percent from CARB's 2023 Project Without Reduction Features scenario.

The analysis in this section uses the 2017 Scoping Plan's statewide goals as one approach to evaluate the Project's incremental contribution to climate change. The methodology is to compare the Project's emissions as proposed to the Project's emissions as if the Project were built using a Project Without Reduction Features approach in terms of design, methodology, and technology. This means the Project's emissions were calculated as if the Project was constructed with project design features to reduce GHG emissions that are not required by state or local code and with several regulatory measures adopted in furtherance of AB 32.

While the AB 32 Scoping Plan's cumulative statewide objectives were not intended to serve as the basis for project-level assessments, this analysis finds that its Project Without Reduction Features comparison based on the Scoping Plan is appropriate, because the Project would contribute to statewide GHG emissions reduction goals. Specifically, the Project would eliminate work-related vehicle commuting for dozens of workers and/or visitors that would reduce GHG emissions from vehicle operations.

Table 2-7
Estimated Reduction of Project-Related GHG Emissions Resulting from Plan Consistency

Scenario and Source	Project Without Reduction Features Scenario*	As Proposed Scenario	Reduction from Project Without Reduction Features Scenario	Change from Project Without Reduction Features Scenario
Area Sources	<0.1	<0.1	-	0%
Energy Sources	57	33	-24	-42%
Mobile Sources	131	92	-39	-30%
Waste Sources	3	3	-	0%
Water Sources	1	1	-	0%
Refrigerants	<0.1	<0.1	-	0%
Construction	9	9	-	0%
Total Emissions	202	139	-63	-31.2%

Daily construction emissions amortized over 30-year period pursuant to SCAQMD guidance. Annual construction emissions derived by taking total emissions over duration of activities and dividing by construction period.

* Project Without Reduction Features scenario does not assume 30% reduction in in mobile source emissions from Pavley emission standards (19.8%), low carbon fuel standards (7.2%), vehicle efficiency measures 2.8%); does not assume 42% reduction in energy production emissions from the State's renewables portfolio standard (33%), natural gas extraction efficiency measures (1.6%), and natural gas transmission and distribution efficiency measures (7.4%).

Source: DKA Planning, 2022.

Post-2020 Analysis

Recent studies show that the state's existing and proposed regulatory framework will put the state on a pathway to reduce its GHG emissions level to 40 percent below 1990 levels by 2030, and to 80 percent below 1990 levels by 2050 if additional appropriate reduction measures are adopted.[76] Even though these studies did not provide an exact regulatory and technological roadmap to achieve the 2030 and 2050 goals, they demonstrated that various combinations of policies could allow the statewide emissions level to remain very low through 2050, suggesting that the combination of new technologies and other regulations not analyzed in the studies could allow the state to meet the 2050 target. After the findings of these studies, SB 32 was passed on September 8, 2016, and would require the state board to ensure that statewide GHG emissions are reduced to 40 percent below the 1990 level by 2030. As discussed above, the new plan, outlined in SB 32, involves increasing renewable energy use, imposing tighter

76 Energy and Environmental Economics (E3). "Summary of the California State Agencies' PATHWAYS Project: Long-term Greenhouse Gas Reduction Scenarios" (April 2015); Greenblatt, Jeffrey, Energy Policy, "Modeling California Impacts on Greenhouse Gas Emissions" (Vol. 78, pp. 158–172). The California Air Resources Board, California Energy Commission, California Public Utilities Commission, and the California Independent System Operator engaged E3 to evaluate the feasibility and cost of a range of potential 2030 targets along the way to the state's goal of reducing GHG emissions to 80 percent below 1990 levels by 2050. With input from the agencies, E3 developed scenarios that explore the potential pace at which emission reductions can be achieved, as well as the mix of technologies and practices deployed. E3 conducted the analysis using its California PATHWAYS model. Enhanced specifically for this study, the model encompasses the entire California economy with detailed representations of the buildings, industry, transportation, and electricity sectors.

limits on the carbon content of gasoline and diesel fuel, putting more electric cars on the road, improving energy efficiency, and curbing emissions from key industries.

SCAG's 2020-2045 RTP/SCS establishes a regulatory framework for achieving GHG reductions from the land use and transportation sectors pursuant to SB 375 and the state's long-term climate policies. The 2020-2045 RTP/SCS ensures VMT reductions and other measures that reduce regional emissions from the land use and transportation sectors.

The Project is the type of land use development that is encouraged by the RTP/SCS to reduce VMT by creating more on-site workforce housing that eliminates vehicle use for commute purposes by including housing on-site. In addition, the Project would be consistent with the Actions and Strategies set forth in the 2020-2045 RTP/SCS. Therefore, the Project would be consistent with the 2020-2045 RTP/SCS.

2.7.2 b) Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Less than Significant Impact. The discussion below describes the extent the Project complies with or exceeds the performance-based standards included in the regulations outlined in the Climate Change Scoping Plan and the 2020-2045 RTP/SCS, each of which identify GHG-reducing measures that directly and indirectly apply to the Proposed Project. This analysis also evaluates the Project's consistency with County plans and programs that generally address climate change. As shown herein, the Project would be consistent with the applicable GHG reduction plans and policies.

Statewide: Climate Change Scoping Plan

Table 2-8 evaluates the Project's consistency with applicable reduction actions/strategies by emissions source category outlined in the *2017 Climate Change Scoping Plan Update*.[77] When compared to SB 32, the Proposed Project would be consistent with its objectives and the GHG reduction-related actions and strategies of the 2017 Scoping Plan. Table 4 confirms that the Proposed Project is consistent with the Scoping Plan's focus on increasing renewable energy use, imposing tighter limits on the carbon content of gasoline and diesel fuel, putting more electric cars on the road, improving energy efficiency, and curbing emissions from key industries. Although a number of these strategies are currently promulgated, some have not yet been formally proposed or adopted. It is expected that these measures or similar actions to reduce GHG emissions will be adopted as required to achieve statewide GHG emissions targets. Based on the following analysis, the Project would be consistent with the State's Climate Change Scoping Plan's objective of reducing 2030 GHG emissions in accord with SB 32.

Based on the analysis in **Table 2-8**, the Project would be consistent with the State's Climate Change Scoping Plan and, thus, impacts related to consistency with the Scoping Plan would be less than significant impact.

77 An evaluation of stationary sources is not necessary as the stationary sources emissions will be created by emergency generators that would only be used in an emergency.

Table 2-8
Consistency Analysis—2017 Scoping Plan Update

Actions and Strategies	Responsible Party(ies)	Project Consistency Analysis
Senate Bill 350 (SB 350): The Clean Energy and Pollution Reduction Act of 2015 increases the standards of the California RPS program by requiring that the amount of electricity generated and sold to retail customers per year from eligible renewable energy resources be increased to 50 percent by 2030.[a] Required measures include: • Increase RPS to 50 percent of retail sales by 2030. • Establish annual targets for statewide energy efficiency that achieve a cumulative doubling of statewide energy efficiency savings in electricity and natural gas end uses by 2030. • Reduce GHG emissions in the electricity sector to meet reduction targets. Load-serving entities and publicly owned utilities meet GHG emissions reductions planning targets through measures as described in IRPs.	California Public Utilities Commission (CPUC), California Energy Commission (CEC), CARB	**No Conflict.** IID is required to generate electricity that would increase renewable energy resources to 33 percent by 2020 and 50 percent by 2030. As IID would provide electricity service to the Project Site, by 2030 the Project would use electricity consistent with the requirements of SB 350. As required under SB 350, doubling of the energy efficiency savings from retail customers by 2030 would primarily rely on the existing suite of building energy efficiency standards under CCR Title 24, Part 6 (consistency with this regulation is discussed below) and utility-sponsored programs such as rebates for high-efficiency appliances, HVAC systems, and insulation. The Project would comply with this this action/strategy being located within the IID service area and would comply with CalGreen and Title 24 energy efficiency standards.
Senate Bill 100 (SB 100): The California Renewables Portfolio Standard Program (2018) requires retail sellers to procure renewable energy that is at least 50 percent by December 31, 2026 and 60 percent by December 31, 2030. It requires local publicly owned electric utilities to procure a minimum quantity of electricity from renewable energy resources of 44 percent of retail sales by December 31, 2024 and 60 percent by December 31, 2030.	Imperial Irrigation District, CPUC	**No Conflict.** IID is required to generate electricity that would increase renewable energy resources to 33 percent by 2020 and 50 percent by 2030. As IID would provide electricity service to the Project, by 2030 the Project would use electricity consistent with SB 100. The Project would comply with this this action/strategy being located within the IID service area and would comply with CalGreen and Title 24 energy efficiency standards.
Implement Mobile Source Strategy (Cleaner Technology and Fuels)	CARB, California State Transportation Agency (CalSTA), California Department	**No Conflict.** CARB approved the Advanced Clean Cars Program in 2012 that establishes an emissions control program for model year 2017 through 2025. Standards apply to passenger and light duty trucks used by visitors, employees, and deliveries to the Project Site.

Table 2-8
Consistency Analysis—2017 Scoping Plan Update

Actions and Strategies	Responsible Party(ies)	Project Consistency Analysis
• At least 1.5 million zero emission and plug-in hybrid light-duty electric vehicles by 2025. • At least 4.2 million zero emission and plug-in hybrid light-duty electric vehicles by 2030. • Increase GHG stringency on light-duty vehicles beyond existing Advanced Clean Cars regulations. • Medium- and heavy-duty GHG Phase 2. • Transition to a suite of innovative clean transit options. Assumed zero-emission technology ramped up to 100 percent of new sales in 2030. Requires new transit buses meet the optional heavy-duty low-NO_x standard. • Requires low NO_x or cleaner engines and the deployment of zero-emission trucks primarily for class 3-7 last mile delivery trucks in California. Assumes ZEVs comprise 2.5 percent of new Class 3–7 truck sales in local fleets in 2020, increasing to 10 percent in 2025 and remaining flat through 2030. • Reduce VMT through SB 375 and regional Sustainable Communities Strategies; forthcoming statewide implementation of SB 743; and potential additional VMT reduction strategies not specified in the Mobile Source Strategy but included in the document "Potential VMT Reduction Strategies for Discussion."	of Transportation (Caltrans) CEC, Office of Planning and Research (OPR), Local agencies	The Program also requires auto manufacturers to produce an increasing number of zero emission vehicles in the 2018 through 2025 model years. Extension of the Program could increase emissions reductions stringency on light duty autos and continue adding zero emission and plug in vehicles through 2030. EPA issued a Notice of Decision on March 14, 2022 giving California the authority to implement its own standards. CARB adopted the Innovative Clean Transit measure in 2018 that requires all public transit agencies to transition to zero emission fleets. CARB is also considering new approaches and strategies to achieve zero emission trucks under the Advanced Clean Local Trucks (Last Mile Delivery) Program.[b,c] GHG emissions generated by Project-related vehicular travel would benefit from this regulation, and mobile source emissions generated by the Project would be reduced with implementation of standards under the Advanced Clean Cars Program, consistent with reduction of GHG emissions under AB 32. Mobile source GHG emissions estimates conservatively do not include this additional 34-percent reduction in mobile source emissions. SB 375 requires SCAG to direct the development of the SCS for the region. The Project would be consistent with SB 375 and the 2020-2045 RTP/SCS.
Increase Stringency of SB 375 Sustainable Communities Strategy (2035 Targets). Under SB 375, CARB sets regional targets for GHG emission reductions from passenger vehicle use. In 2010, the CARB established targets for 2020 and 2035 for each	CARB	**No Conflict.** The Project would be consistent with SB 375 by shortening commute trips for workers at the Project Site by providing workforce housing. Specific regulations that would help reduce transportation-related emissions include Assembly Bill 1493/Pavley Regulations, the Low Carbon Fuel Standard, and CARB's Advanced

Table 2-8
Consistency Analysis—2017 Scoping Plan Update

Actions and Strategies	Responsible Party(ies)	Project Consistency Analysis
region. As required under SB 375, CARB is required to update regional GHG emissions targets every 8 years. As part of the 2018 updates, the CARB proposed a passenger vehicle related GHG reduction of 19 percent for 2035 for the SCAG region, which is more stringent than the previous reduction target of 13 percent.		Clean Cars Regulation. The Project would not conflict with SB 375 and the 2020–2045 RTP/SCS.
By 2019, adjust performance measures used to select and design transportation facilities. This includes harmonizing project performance with emissions reductions, and increase competitiveness of transit and active transportation modes (e.g. via guideline documents, funding programs, project selection).	CalSTA, OPR, CARB, California Office of Business and Economic Development (GoBiz), IBank, California Department of Finance (DOF), California Transportation Commission (CTC)	**Not Applicable.** The Project would not involve construction of transportation facilities. State agencies have adjusted their performance measures to reflect climate change policy priorities.
By 2019, develop pricing policies to support low-GHG transportation (e.g. low-emission vehicle zones for heavy duty, road user, parking pricing, transit discounts).	CalSTA, Caltrans, CTC, OPR/Strategic Growth Council (SGC), CARB	**Not Applicable.** This strategy is to be implemented by Statewide entities with authority over pricing policies for transportation (e.g., road taxes and tolls).
Implement California Sustainable Freight Action Plan. This includes improving freight system efficiency and deploying over 100,000 freight vehicles and equipment capable of zero emission operation and maximizing zero and near-zero emission freight vehicles and equipment powered by renewable energy by 2030.	CARB	**Not Applicable.** The Project's land uses would not include freight transportation or warehousing that would be subject to the California Sustainable Freight Action Plan. Therefore, the Project would not interfere or impede the implementation of the Sustainable Freight Action Plan.
Adopt a Low Carbon Fuel Standard with a CI reduction of 18 percent.	CARB	**Not Applicable.** This regulatory program applies to fuel suppliers, not directly to land use development. GHG emissions related to vehicular travel associated with the Project would benefit from this regulation

Table 2-8
Consistency Analysis—2017 Scoping Plan Update

Actions and Strategies	Responsible Party(ies)	Project Consistency Analysis
		because fuel used by Project-related vehicles would be required to comply with the LCFS. Mobile source GHG emissions estimates were calculated using CalEEMod that includes implementation of the LCFS into mobile source emission factors. The current LCFS targets a 20 percent reduction in CI from a 2010 baseline by 2030.
Mobile		
Implement the Short-Lived Climate Pollutant Strategy by 2030. This includes a 40 percent reduction in methane and hydrofluorocarbon emissions below 2013 levels and a 50 percent reduction in black carbon emissions below 2013 levels.	CARB, CalRecycle, California Department of Food and Agriculture (CDFA), State Water Resources Control Board (SWRCB), Local air districts	**No Conflict.** SB 605 (2014) directed CARB to develop a comprehensive Short-Lived Climate Pollutant (SLCP) strategy. SB 1383 (2016) requires CARB to set 2030 emission reduction targets of 40 percent for methane and hydrofluorocarbons and 50 percent black carbon emissions below 2013 levels.[e] The Project would comply with the CARB SLCP Reduction Strategy by using HVAC equipment with lower GWP refrigerants.
Develop regulations and programs to support organic waste landfill reduction goals in the SLCP and SB 1383.	CARB, CalRecycle, CDFA, SWRCB, Local air districts	**Not Applicable.** This strategy called on regulators to reduce GHG emissions from landfills and is not applicable to a development project. Under SB 1383, CalRecycle has implemented regulations that will divert 75 percent of organic waste from landfills by 2025, focusing largely on food generators (e.g., restaurants, grocery stores), of which the Proposed Project would not include any.
Implement the post-2020 Cap-and-Trade Program with declining annual caps.	CARB	**Not Applicable.** This applies to State regulators and is not applicable to a development project. Assembly Bill 398 (AB 398) was enacted in 2017 to extend and clarify the role of the state's Cap-and-Trade Program from January 1, 2021, through December 31, 2030. As part of AB 398, refinements were made to the Cap-and-Trade program to establish updated protocols and allocation of proceeds to reduce GHG emissions.
Develop Integrated Natural and Working Lands Implementation Plan to secure California's land base as a net carbon sink. This includes protecting land from conversion through conservation easements,	California Natural Resources Agency (CNRA) and departments within,	**Not Applicable.** This applies to State regulators and is not applicable to a development project. This regulatory program applies to Natural and Working Lands, not directly related to development of the Project. However, the Project would not interfere or impede

Table 2-8
Consistency Analysis—2017 Scoping Plan Update

Actions and Strategies	Responsible Party(ies)	Project Consistency Analysis
increasing the long-term resilience of carbon storage in the land base and enhancing sequestration capacity, and utilizing wood and agricultural products to increase the amount of carbon stored in the natural and built environments.	CDFA, CalEPA, CARB	implementation of the Integrated Natural and Working Lands Implementation Plan.
Solid Waste		
Establish a carbon accounting framework for natural and working lands as described in SB 859 by 2018	CARB	**Not Applicable.** This applies to State regulators and is not applicable to a development project**.** This regulatory program applies to Natural and Working Lands, not directly related to development of the Project. However, the Project would not interfere or impede implementation of the Integrated Natural and Working Lands Implementation Plan.
Water (Three percent of project inventory)		
Implement Forest Carbon Plan	CNRA, CAL FIRE, CalEPA and departments within	**Not Applicable.** This applies to State regulators and is not applicable to a development project**.** This regulatory program applies to state and federal forest land, not directly related to development of the Project. However, the Project would not interfere or impede implementation of the Forest Carbon Plan.
Identify and expand funding and financing mechanisms to support GHG reductions across all sectors.	State Agencies & Local Agencies	**Not Applicable.** This applies to State regulators and is not applicable to a development project**.** Funding and financing mechanisms are the responsibility of state and local agencies. The Project would not conflict with funding and financing mechanisms to support GHG reductions.

[a] Senate Bill 350 (2015–2016 Regular Session) Stats 2015, Ch. 547.
[b] CARB, Advance Clean Cars, Midterm Review, www.arb.ca.gov/msprog/acc/acc-mtr.htm.
[c] CARB, Advanced Clean Local Trucks (Last mile delivery and local trucks), www.arb.ca.gov/msprog/actruck/actruck.htm.
[d] CARB, LCFS Rulemaking Documents, www.arb.ca.gov/fuels/lcfs/rulemakingdocs.htm.
[e] CARB, Reducing Short-Lived Climate Pollutants in California, www.arb.ca.gov/cc/shortlived/shortlived.htm.
[f] CARB, Short-Lived Climate Pollutants (SLCP): Organic Waste Methane Emissions Reductions, www.calrecycle.ca.gov/climate/slcp/.
Source: California Air Resources Board, California's 2017 Climate Change Scoping Plan, November 2017.

Regional: 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy

Table 2-9 provides a comparison of the Project against the GHG-related performance measures of the 2020-2045 RTP/SCS.

Table 2-9
Consistency with the 2020 RTP/SCS

Objectives	Consistency Analysis[a]
Increase percentage of region's total household growth occurring within HQTAs.	**Not Applicable.** The Project Site is not located within an HQTA. Nevertheless, it would increase the amount of workforce housing for this commercial facility.
Increase percent of the region's total employment growth occurring within HQTAs.	**Not Applicable.** The Project Site is not located within an HQTA.
Decrease total acreage of greenfield or otherwise rural land uses converted to urban use.	**No Conflict.** The Project would not convert any additional rural uses to urban use, but rather reduce the demand for workforce housing in the general community by providing on-site residences.
Decrease daily vehicle miles driven per person.	**No Conflict.** The Project would reduce VMT per person by providing on-site workforce housing that would all but eliminate commute-related VMT for dozens of workers and/or visitors.
Decrease average daily distance traveled for work and non-work trips (in miles)	**No Conflict.** The Project would eliminate average commute travel distance for dozens or workers and/or visitors by providing on-site workforce housing.
Increase percentage of work and non-work trips which are less than 3 miles in length.	**No Conflict.** The Project would eliminate average commute travel distance for dozens or workers and/or visitors by providing on-site workforce housing that would increase the rate of travel less than three miles in length.
Increase share of short trip lengths for commute purposes.	**No Conflict.** The Project would eliminate average commute travel distance for dozens or workers and/or visitors by providing on-site workforce housing. This would eliminate work-related driving distances for employees.
Decrease average minutes of delay experienced per capita due to traffic congestion.	**No Conflict.** The Project would eliminate average commute travel distance for dozens or workers and/or visitors by providing on-site workforce housing. This would eliminate work-related driving distances for employees that will reduce the rate of growth in auto traffic and congestion.
Decrease excess travel time resulting from the difference between a reference speed and actual speed.	**No Conflict.** The Project would eliminate average commute travel distance for dozens or workers and/or visitors by providing on-site workforce housing. This would eliminate work-related driving distances for employees. As such, the Project would help reduce recurrent traffic congestion delay for general vehicles.
Decrease excess travel time for heavy-duty trucks result from the difference between reference speed and actual speed.	**No Conflict.** The Project would eliminate average commute travel distance for dozens or workers and/or visitors by providing on-site workforce housing. This

Objectives	Consistency Analysis[a]
	would eliminate work-related driving distances for employees. As such, the Project would help reduce recurrent traffic congestion delay for heavy-duty trucks.
Increase percentage of PM peak period trips completed within 45 minutes by travel mode.	**No Conflict.** The Project would eliminate average commute travel distance for dozens or workers and/or visitors by providing on-site workforce housing. This would eliminate work-related driving distances for employees; as such, the share of P.M. peak period trips that are less than 45 minutes would increase.
Increase percentage of trips that use transit (work and all trips)	**No Conflict.** The Project would eliminate average commute travel distance for dozens or workers and/or visitors by providing on-site workforce housing. This would eliminate work-related driving distances for employees.
Decrease average travel time to work (all modes)	**No Conflict.** The Project would eliminate average commute travel time for dozens or workers and/or visitors by providing on-site workforce housing.
Increase percentage of trips using either walking or biking (by trip type)	**No Conflict.** The Project would eliminate average commute travel time for dozens or workers and/or visitors by providing on-site workforce housing. These commuters would walk to their jobs on the Project Site.
Reduce per capita GHG emissions (from 2005 levels)	**No Conflict.** The Project would eliminate average commute travel time for dozens or workers and/or visitors by providing on-site workforce housing. As such, it is consistent with AB 32, SB 32, SB 375, and other initiatives designed to reduce per capita GHG emissions from 2005 levels.
Increase percentage of trips using a travel mode other than single occupancy vehicle (SOV)	**No Conflict.** The Project would eliminate average commute travel time for dozens or workers and/or visitors by providing on-site workforce housing that will reduce the rate of growth in SOV use and congestion.

Local: Riverside County Climate Action Plan

The County's 2019 CAP Update proposes new targets that are consistent with the State policies in order to meet the requirements of SB 32. The State recommended a 15 percent reduction below 2005–2008 baseline levels by 2020, a 49 percent reduction below 2008 levels by 2030, and an 80 percent reduction below 2008 levels by 2050. To align with the State's long-term emissions reduction goals, the County would need to reduce emissions in 2030 by 525,511 $MTCO_2e$ from an ABAU forecast and by 2,982,947 $MTCO_2e$ from an ABAU forecast by 2050. The County of Riverside's target is consistent with the SB 32 target and ensures that the County of Riverside will be providing GHG reductions locally that will complement State efforts to reduce GHG emissions. Because the County of Riverside's CAP addresses GHG emissions reductions and is consistent with the requirements of SB 32 and international efforts to reduce GHG

emissions, compliance with the CAP fulfills the description of mitigation found in the State CEQA Guidelines.

As discussed under Threshold a), the Project would be approximately 31.2 percent more efficient than a 2023 Project Without Reduction Features scenario. Based on the project-level analysis guidance included with the CAP, the Project would achieve the required reduction in emissions to be consistent with the County of Riverside CAP reductions which are consistent with the State goals contained in the 2017 Scoping Plan and enumerated by SB 32. Therefore, the Project would have a less-than-significant impact on GHG reduction plans at the local and State levels.

2.8 Conclusion

In summary, the plan consistency analysis provided above demonstrates that the Project complies with the applicable plans, policies, regulations and GHG emissions reduction actions/strategies outlined in the *Climate Change Scoping Plan and Update*, the 2020-2045 RTP/SCS, the County's CAP Update. Consistency with the above plans, policies, regulations, and GHG emissions reduction actions/strategies would reduce the Project's incremental contribution of GHG emissions. Thus, the Project would not conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing emissions of GHG emissions. Furthermore, because the Project is consistent and does not conflict with these plans, policies, and regulations, the Project's incremental increase in GHG emissions as described above would not result in a significant impact on the environment. Therefore, Project-specific impacts regarding climate change would be less than significant.

Given the Project's consistency with state, SCAG, and County GHG emissions reduction goals and objectives, the Project is consistent with applicable plans, policies, and regulations adopted for the purpose of reducing the emissions of GHGs. In the absence of adopted standards and established significance thresholds, and given this consistency, it is concluded that the Project's incremental contribution to greenhouse gas emissions and their effects on climate change would not be cumulatively considerable.

2.9 Cumulative Impacts

As explained above, the analysis of a project's GHG emissions is inherently a cumulative impacts analysis, because climate change is a global problem, and the emissions from any single project alone would be negligible. Accordingly, the analysis above considered the potential for the Project to contribute to the cumulative impact of global climate change.

The analysis shows that the Project is consistent with CARB's *Climate Change Scoping Plan*, particularly its emphasis on the identification of emission reduction opportunities that promote economic growth while achieving greater energy efficiency and accelerating the transition to a low-carbon economy. The analysis also shows that the Project would be consistent with the 2020-2045 RTP/SCS, which would serve to reduce regional GHG emissions from the land use and transportation sectors by 2020 and 2035. In addition, the Project would comply with the County's

CAP Update in 2019, which emphasizes improving energy conservation and energy efficiency, increasing renewable energy generation, and changing transportation and land use patterns to reduce auto dependence. Given the Project's consistency with statewide, regional, and local plans adopted for the reduction of GHG emissions, it is concluded that the Project's incremental contribution to greenhouse gas emissions and their effects on climate change would not be cumulatively considerable. For these reasons, the Project's cumulative contribution to global climate change is less than significant.

TECHNICAL APPENDIX

DouglasKim+Associates,LLC

GREENHOUSE GAS EMISSIONS OVERVIEW

Rancho Polo Club Project

GHG Emissions Impact Compared to "Project Without Reduction Features" Scenario

Source	Project Without Reduction Features (2023)	As Proposed (2023)	Reduction from Project Without Reduction Features	Change from Project Without Reduction Features Scenario
Area	0	0	-	0%
Energy	57	33	(24)	-42%
Mobile	131	92	(39)	-30%
Waste	3	3	-	0%
Water	1	1	-	0%
Refrigerants	0	0	-	0%
Construction	9	9	-	0%
Total Emissions	202	139	(63)	-31.2%

Land Use	Project Without Reduction Features	As Proposed	Difference
Land Use	13 multi-family residential buildings	13 multi-family residential buildings	None
Traffic	95 daily trips, 614 daily VMT	95 daily trips, 614 daily VMT	None
Area	Same as proposed	Project assumptions	None
Energy	No State measures	See below	State measures
Mobile	No State measures	See below	State measures
Waste	Reduce construction w	Reduce construction wa	None
Water	Project assumptions	Project assumptions	None

Mobile Source Emissions	Pavley emission standards (19.8% reduction)
	Low carbon fuel standard (7.2% reduction)
	Vehicle efficiency measures (2.8% reduction)
Energy Production Assumptions	Natural gas transmission and distribution efficiency measures (7.4% reduction)
	Natural gas extraction efficiency measures (1.6% reduction)
	Renewables (electricity) portfolio standard (33% reduction)

DouglasKim+Associates,LLC

GREENHOUSE GAS EMISSIONS

Rancho Polo Club Detailed Report

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Rancho Polo Club
Lead Agency	County of Riverside
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.00
Precipitation (days)	8.80
Location	82800 Avenue 58, Thermal, CA 92274, USA
County	Riverside-Salton Sea
City	Unincorporated
Air District	South Coast AQMD
Air Basin	Salton Sea
TAZ	5662
EDFZ	19
Electric Utility	Imperial Irrigation District
Gas Utility	Southern California Gas

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Apartments Low Rise	13.0	Dwelling Unit	7.70	36,000	3,600	—	42.0	—
Parking Lot	42.0	Space	0.38	0.00	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Unmit.	—	8,950	8,950	0.27	0.52	7.99	9,120
Daily, Winter (Max)	—	—	—	—	—	—	—
Unmit.	—	2,725	2,725	0.11	0.03	0.02	2,738
Average Daily (Max)	—	—	—	—	—	—	—
Unmit.	—	1,618	1,618	0.06	0.06	0.46	1,638
Annual (Max)	—	—	—	—	—	—	—
Unmit.	—	268	268	0.01	0.01	0.08	271

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—
2023	—	8,950	8,950	0.27	0.52	7.99	9,120
Daily - Winter (Max)	—	—	—	—	—	—	—
2023	—	2,725	2,725	0.11	0.03	0.02	2,738
Average Daily	—	—	—	—	—	—	—
2023	—	1,618	1,618	0.06	0.06	0.46	1,638
Annual	—	—	—	—	—	—	—

2023	—	268	268	0.01	0.01	0.08	271

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Unmit.	6.20	859	865	0.67	0.04	2.74	895
Daily, Winter (Max)	—	—	—	—	—	—	—
Unmit.	6.20	783	790	0.67	0.04	0.32	818
Average Daily (Max)	—	—	—	—	—	—	—
Unmit.	6.20	750	756	0.67	0.03	1.22	783
Annual (Max)	—	—	—	—	—	—	—
Unmit.	1.03	124	125	0.11	0.01	0.20	130

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Mobile	—	653	653	0.03	0.03	2.48	666
Area	0.00	1.97	1.97	< 0.005	< 0.005	—	1.98
Energy	—	200	200	0.02	< 0.005	—	201
Water	1.01	3.47	4.48	0.10	< 0.005	—	7.83
Waste	5.18	0.00	5.18	0.52	0.00	—	18.1
Refrig.	—	—	—	—	—	0.26	0.26
Total	6.20	859	865	0.67	0.04	2.74	895
Daily, Winter (Max)	—	—	—	—	—	—	—
Mobile	—	580	580	0.03	0.03	0.06	591

Area	0.00	0.00	0.00	0.00	0.00	—	0.00
Energy	—	200	200	0.02	< 0.005	—	201
Water	1.01	3.47	4.48	0.10	< 0.005	—	7.83
Waste	5.18	0.00	5.18	0.52	0.00	—	18.1
Refrig.	—	—	—	—	—	0.26	0.26
Total	6.20	783	790	0.67	0.04	0.32	818
Average Daily	—	—	—	—	—	—	—
Mobile	—	545	545	0.03	0.03	0.96	555
Area	0.00	0.97	0.97	< 0.005	< 0.005	—	0.98
Energy	—	200	200	0.02	< 0.005	—	201
Water	1.01	3.47	4.48	0.10	< 0.005	—	7.83
Waste	5.18	0.00	5.18	0.52	0.00	—	18.1
Refrig.	—	—	—	—	—	0.26	0.26
Total	6.20	750	756	0.67	0.03	1.22	783
Annual	—	—	—	—	—	—	—
Mobile	—	90.2	90.2	< 0.005	< 0.005	0.16	91.9
Area	0.00	0.16	0.16	< 0.005	< 0.005	—	0.16
Energy	—	33.1	33.1	< 0.005	< 0.005	—	33.3
Water	0.17	0.57	0.74	0.02	< 0.005	—	1.30
Waste	0.86	0.00	0.86	0.09	0.00	—	3.00
Refrig.	—	—	—	—	—	0.04	0.04
Total	1.03	124	125	0.11	0.01	0.20	130

3. Construction Emissions Details

3.1. Site Preparation (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Off-Road Equipment	—	5,295	5,295	0.21	0.04	—	5,314
Dust From Material Movement	—	—	—	—	—	—	—
Onsite truck	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—
Off-Road Equipment	—	145	145	0.01	< 0.005	—	146
Dust From Material Movement	—	—	—	—	—	—	—
Onsite truck	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Off-Road Equipment	—	24.0	24.0	< 0.005	< 0.005	—	24.1
Dust From Material Movement	—	—	—	—	—	—	—
Onsite truck	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Worker	—	273	273	0.01	0.01	1.09	277
Vendor	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—
Worker	—	6.80	6.80	< 0.005	< 0.005	0.01	6.89
Vendor	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	—	0.00	0.00	0.00	0.00	0.00	0.00

Annual	—	—	—	—	—	—	—
Worker	—	1.13	1.13	< 0.005	< 0.005	< 0.005	1.14
Vendor	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	—	0.00	0.00	0.00	0.00	0.00	0.00

3.3. Grading (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Off-Road Equipment	—	2,958	2,958	0.12	0.02	—	2,968
Dust From Material Movement	—	—	—	—	—	—	—
Onsite truck	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—
Off-Road Equipment	—	300	300	0.01	< 0.005	—	301
Dust From Material Movement	—	—	—	—	—	—	—
Onsite truck	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Off-Road Equipment	—	49.6	49.6	< 0.005	< 0.005	—	49.8
Dust From Material Movement	—	—	—	—	—	—	—
Onsite truck	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Worker	—	234	234	0.01	0.01	0.94	237

Vendor	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	—	2,822	2,822	0.02	0.45	6.03	2,964
Daily, Winter (Max)	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—
Worker	—	21.6	21.6	< 0.005	< 0.005	0.04	21.8
Vendor	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	—	286	286	< 0.005	0.05	0.26	300
Annual	—	—	—	—	—	—	—
Worker	—	3.57	3.57	< 0.005	< 0.005	0.01	3.62
Vendor	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	—	47.4	47.4	< 0.005	0.01	0.04	49.7

3.5. Building Construction (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Off-Road Equipment	—	2,397	2,397	0.10	0.02	—	2,406
Onsite truck	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—
Off-Road Equipment	—	2,397	2,397	0.10	0.02	—	2,406
Onsite truck	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—
Off-Road Equipment	—	571	571	0.02	< 0.005	—	573
Onsite truck	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Off-Road Equipment	—	94.6	94.6	< 0.005	< 0.005	—	94.9

Onsite truck	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Worker	—	146	146	0.01	< 0.005	0.58	148
Vendor	—	45.4	45.4	< 0.005	0.01	0.12	47.3
Hauling	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—
Worker	—	124	124	0.01	< 0.005	0.02	126
Vendor	—	45.4	45.4	< 0.005	0.01	< 0.005	47.3
Hauling	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—
Worker	—	31.6	31.6	< 0.005	< 0.005	0.06	32.1
Vendor	—	10.8	10.8	< 0.005	< 0.005	0.01	11.3
Hauling	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Worker	—	5.24	5.24	< 0.005	< 0.005	0.01	5.31
Vendor	—	1.79	1.79	< 0.005	< 0.005	< 0.005	1.87
Hauling	—	0.00	0.00	0.00	0.00	0.00	0.00

3.7. Paving (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Off-Road Equipment	—	1,512	1,512	0.06	0.01	—	1,517
Paving	—	—	—	—	—	—	—
Onsite truck	—	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—
Off-Road Equipment	—	141	141	0.01	< 0.005	—	141
Paving	—	—	—	—	—	—	—
Onsite truck	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Off-Road Equipment	—	23.3	23.3	< 0.005	< 0.005	—	23.4
Paving	—	—	—	—	—	—	—
Onsite truck	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Worker	—	234	234	0.01	0.01	0.94	237
Vendor	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—
Worker	—	19.8	19.8	< 0.005	< 0.005	0.04	20.1
Vendor	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Worker	—	3.28	3.28	< 0.005	< 0.005	0.01	3.32
Vendor	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	—	0.00	0.00	0.00	0.00	0.00	0.00

3.9. Architectural Coating (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Onsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Off-Road Equipment	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	—	—	—	—	—	—	—
Onsite truck	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—
Off-Road Equipment	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	—	—	—	—	—	—	—
Onsite truck	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—
Off-Road Equipment	—	19.8	19.8	< 0.005	< 0.005	—	19.8
Architectural Coatings	—	—	—	—	—	—	—
Onsite truck	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Off-Road Equipment	—	3.27	3.27	< 0.005	< 0.005	—	3.28
Architectural Coatings	—	—	—	—	—	—	—
Onsite truck	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Worker	—	29.2	29.2	< 0.005	< 0.005	0.12	29.6
Vendor	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—
Worker	—	24.8	24.8	< 0.005	< 0.005	< 0.005	25.1
Vendor	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—

Worker	—	3.93	3.93	< 0.005	< 0.005	0.01	3.98
Vendor	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Worker	—	0.65	0.65	< 0.005	< 0.005	< 0.005	0.66
Vendor	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	—	0.00	0.00	0.00	0.00	0.00	0.00

3.11. Trenching (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Off-Road Equipment	—	269	269	0.01	< 0.005	—	270
Onsite truck	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—
Off-Road Equipment	—	47.9	47.9	< 0.005	< 0.005	—	48.0
Onsite truck	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Off-Road Equipment	—	7.93	7.93	< 0.005	< 0.005	—	7.95
Onsite truck	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Worker	—	78.0	78.0	< 0.005	< 0.005	0.31	79.1
Vendor	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	—	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—
Worker	—	12.6	12.6	< 0.005	< 0.005	0.02	12.8
Vendor	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Worker	—	2.09	2.09	< 0.005	< 0.005	< 0.005	2.12
Vendor	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	—	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Apartments Low Rise	—	653	653	0.03	0.03	2.48	666
Parking Lot	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	—	653	653	0.03	0.03	2.48	666
Daily, Winter (Max)	—	—	—	—	—	—	—
Apartments Low Rise	—	580	580	0.03	0.03	0.06	591
Parking Lot	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	—	580	580	0.03	0.03	0.06	591
Annual	—	—	—	—	—	—	—
Apartments Low Rise	—	90.2	90.2	< 0.005	< 0.005	0.16	91.9

Parking Lot	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	—	90.2	90.2	< 0.005	< 0.005	0.16	91.9

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Apartments Low Rise	—	111	111	0.01	< 0.005	—	112
Parking Lot	—	18.0	18.0	< 0.005	< 0.005	—	18.1
Total	—	129	129	0.01	< 0.005	—	130
Daily, Winter (Max)	—	—	—	—	—	—	—
Apartments Low Rise	—	111	111	0.01	< 0.005	—	112
Parking Lot	—	18.0	18.0	< 0.005	< 0.005	—	18.1
Total	—	129	129	0.01	< 0.005	—	130
Annual	—	—	—	—	—	—	—
Apartments Low Rise	—	18.4	18.4	< 0.005	< 0.005	—	18.5
Parking Lot	—	2.99	2.99	< 0.005	< 0.005	—	3.00
Total	—	21.4	21.4	< 0.005	< 0.005	—	21.5

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Apartments Low Rise	—	70.7	70.7	0.01	< 0.005	—	70.9
Parking Lot	—	0.00	0.00	0.00	0.00	—	0.00

Total	—	70.7	70.7	0.01	< 0.005	—	70.9
Daily, Winter (Max)	—	—	—	—	—	—	—
Apartments Low Rise	—	70.7	70.7	0.01	< 0.005	—	70.9
Parking Lot	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	70.7	70.7	0.01	< 0.005	—	70.9
Annual	—	—	—	—	—	—	—
Apartments Low Rise	—	11.7	11.7	< 0.005	< 0.005	—	11.7
Parking Lot	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	11.7	11.7	< 0.005	< 0.005	—	11.7

4.3. Area Emissions by Source

4.3.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Hearths	0.00	0.00	0.00	0.00	0.00	—	0.00
Consumer Products	—	—	—	—	—	—	—
Architectural Coatings	—	—	—	—	—	—	—
Landscape Equipment	—	1.97	1.97	< 0.005	< 0.005	—	1.98
Total	0.00	1.97	1.97	< 0.005	< 0.005	—	1.98
Daily, Winter (Max)	—	—	—	—	—	—	—
Hearths	0.00	0.00	0.00	0.00	0.00	—	0.00
Consumer Products	—	—	—	—	—	—	—
Architectural Coatings	—	—	—	—	—	—	—
Total	0.00	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—

Hearths	0.00	0.00	0.00	0.00	0.00	—	0.00
Consumer Products	—	—	—	—	—	—	—
Architectural Coatings	—	—	—	—	—	—	—
Landscape Equipment	—	0.16	0.16	< 0.005	< 0.005	—	0.16
Total	0.00	0.16	0.16	< 0.005	< 0.005	—	0.16

4.4. Water Emissions by Land Use

4.4.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Apartments Low Rise	1.01	3.47	4.48	0.10	< 0.005	—	7.83
Parking Lot	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	1.01	3.47	4.48	0.10	< 0.005	—	7.83
Daily, Winter (Max)	—	—	—	—	—	—	—
Apartments Low Rise	1.01	3.47	4.48	0.10	< 0.005	—	7.83
Parking Lot	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	1.01	3.47	4.48	0.10	< 0.005	—	7.83
Annual	—	—	—	—	—	—	—
Apartments Low Rise	0.17	0.57	0.74	0.02	< 0.005	—	1.30
Parking Lot	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	0.17	0.57	0.74	0.02	< 0.005	—	1.30

4.5. Waste Emissions by Land Use

4.5.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Apartments Low Rise	5.18	0.00	5.18	0.52	0.00	—	18.1
Parking Lot	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	5.18	0.00	5.18	0.52	0.00	—	18.1
Daily, Winter (Max)	—	—	—	—	—	—	—
Apartments Low Rise	5.18	0.00	5.18	0.52	0.00	—	18.1
Parking Lot	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	5.18	0.00	5.18	0.52	0.00	—	18.1
Annual	—	—	—	—	—	—	—
Apartments Low Rise	0.86	0.00	0.86	0.09	0.00	—	3.00
Parking Lot	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	0.86	0.00	0.86	0.09	0.00	—	3.00

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	0.26	0.26
Total	—	—	—	—	—	0.26	0.26
Daily, Winter (Max)	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	0.26	0.26
Total	—	—	—	—	—	0.26	0.26
Annual	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	0.04	0.04

Total	—	—	—	—	—	0.04	0.04

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—

Sequestered	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Site Preparation	Site Preparation	6/1/2023	6/14/2023	5.00	10.0	—
Grading	Grading	6/15/2023	8/5/2023	5.00	37.0	—
Building Construction	Building Construction	7/1/2023	10/31/2023	5.00	87.0	—
Paving	Paving	8/15/2023	9/30/2023	5.00	34.0	—
Architectural Coating	Architectural Coating	9/1/2023	11/15/2023	5.00	54.0	—
Trenching	Trenching	7/1/2023	9/30/2023	5.00	65.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Rubber Tired Dozers	Diesel	Average	3.00	8.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	4.00	8.00	84.0	0.37
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Excavators	Diesel	Average	1.00	8.00	36.0	0.38

Grading	Tractors/Loaders/Backhoes	Diesel	Average	3.00	8.00	84.0	0.37
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Building Construction	Forklifts	Diesel	Average	3.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Cranes	Diesel	Average	1.00	7.00	367	0.29
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
Paving	Pavers	Diesel	Average	2.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48
Trenching	Dumpers/Tenders	Diesel	Average	1.00	8.00	16.0	0.38
Trenching	Trenchers	Diesel	Average	1.00	8.00	40.0	0.50

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	17.5	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	—	10.2	HHDT,MHDT
Site Preparation	Hauling	0.00	40.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	15.0	18.5	LDA,LDT1,LDT2
Grading	Vendor	—	10.2	HHDT,MHDT

Grading	Hauling	20.3	40.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	9.36	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	1.39	10.2	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	15.0	18.5	LDA,LDT1,LDT2
Paving	Vendor	—	10.2	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	1.87	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	10.2	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT
Trenching	—	—	—	—
Trenching	Worker	5.00	18.5	LDA,LDT1,LDT2
Trenching	Vendor	—	10.2	HHDT,MHDT
Trenching	Hauling	0.00	20.0	HHDT
Trenching	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	72,900	24,300	0.00	0.00	988

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Site Preparation	—	—	15.0	0.00	—
Grading	—	6,000	8.20	0.00	—
Paving	0.00	0.00	0.00	0.00	0.38

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	2	61%	61%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Apartments Low Rise	—	0%
Parking Lot	0.38	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2023	0.00	457	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Apartments Low Rise	95.2	106	81.6	34,584	614	682	526	222,981
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

Hearth Type	Unmitigated (number)
Apartments Low Rise	—
Wood Fireplaces	0
Gas Fireplaces	0
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	13
Conventional Wood Stoves	0
Catalytic Wood Stoves	0
Non-Catalytic Wood Stoves	0
Pellet Wood Stoves	0

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)

72900	24,300	0.00	0.00	988

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Apartments Low Rise	89,008	457	0.0330	0.0040	220,613
Parking Lot	14,424	457	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Apartments Low Rise	528,759	82,569
Parking Lot	0.00	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Apartments Low Rise	2.98	0.00

Parking Lot	0.00	0.00

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Apartments Low Rise	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Apartments Low Rise	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type

–	–

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	23.5	annual days of extreme heat
Extreme Precipitation	0.05	annual days with precipitation above 20 mm
Sea Level Rise	0.00	meters of inundation depth

Wildfire	0.14	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider different increments of sea level rise coupled with extreme storm events. Users may select from four model simulations to view the range in potential inundation depth for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 50 meters (m) by 50 m, or about 164 feet (ft) by 164 ft.
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	0	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	0	0	0	N/A
Snowpack	N/A	N/A	N/A	N/A
Air Quality	N/A	N/A	N/A	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	1	1	2

Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	1	1	1	2
Snowpack	N/A	N/A	N/A	N/A
Air Quality	N/A	N/A	N/A	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	84.6
AQ-PM	8.56
AQ-DPM	17.9
Drinking Water	75.4
Lead Risk Housing	48.1
Pesticides	93.9
Toxic Releases	4.26
Traffic	10.2

Effect Indicators	—
CleanUp Sites	50.3
Groundwater	67.5
Haz Waste Facilities/Generators	62.5
Impaired Water Bodies	77.3
Solid Waste	94.1
Sensitive Population	—
Asthma	18.0
Cardio-vascular	37.2
Low Birth Weights	21.6
Socioeconomic Factor Indicators	—
Education	95.8
Housing	63.6
Linguistic	99.3
Poverty	89.2
Unemployment	96.7

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	11.35634544
Employed	12.60105223
Median HI	4.18324137
Education	—
Bachelor's or higher	4.157577313
High school enrollment	100

Preschool enrollment	1.873476197
Transportation	—
Auto Access	26.42114718
Active commuting	45.28422944
Social	—
2-parent households	62.53047607
Voting	20.37726165
Neighborhood	—
Alcohol availability	85.40998332
Park access	10.65058386
Retail density	11.22802515
Supermarket access	2.399589375
Tree canopy	7.224432183
Housing	—
Homeownership	45.0019248
Housing habitability	7.622225074
Low-inc homeowner severe housing cost burden	57.84678558
Low-inc renter severe housing cost burden	18.27280893
Uncrowded housing	16.28384448
Health Outcomes	—
Insured adults	15.33427435
Arthritis	0.0
Asthma ER Admissions	67.6
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0

Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	11.6
Cognitively Disabled	6.9
Physically Disabled	18.0
Heart Attack ER Admissions	59.0
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	63.8
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	19.0
Elderly	57.3
English Speaking	2.7
Foreign-born	72.5
Outdoor Workers	3.0
Climate Change Adaptive Capacity	—
Impervious Surface Cover	92.8
Traffic Density	6.5

Traffic Access	23.0
Other Indices	—
Hardship	93.0
Other Decision Support	—
2016 Voting	23.5

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	72.0
Healthy Places Index Score for Project Location (b)	8.00
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	EasternCoachellaValley

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	Project plans
Construction: Construction Phases	Developer information

Construction: Off-Road Equipment	Defaults except trenching (consultant assumptions)
Construction: Dust From Material Movement	Developer information
Construction: Trips and VMT	Defaults except 40-mile distance to landfills and 600 one-way haul trips x 2 = 1,200 haul trips over grading phase
Operations: Hearths	Project plans

Appendix E
Noise and Vibration Technical Report and Appendix, DKA Planning, March 2023

Noise and Vibration Technical Report

Rancho Polo Equestrian Center

Plot Plan 220034

Lead Agency:
County of Riverside
4080 Lemon Street, 12th Floor
Riverside, CA 92502
Point of Contact: Scott Nespor, Urban and Regional Planner III
(760) 863-7050

Project Applicant:
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March 2023

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NOISE AND VIBRATION TECHNICAL REPORT

1 Project Description

1.1 Project Information

Project Title: Rancho Polo Equestrian Center Project

Document Type: Initial Study / Negative Declaration (IS/ND) for new guest and worker overnight accommodations (the Project)

Plot Plan: 220034

Project Location: 82800 58th Avenue Suite 1, Thermal CA 92274 (Project Site or Site)

Lead Agency: County of Riverside
4080 Lemon Street, 12th Floor, Riverside, CA 92502
Point of Contact: Scott Nespor, Urban and Regional Planner III
(760) 863-7050

Applicant: Triple Sky Ranch
4114 Sepulveda Boulevard, Suite L, Second Floor, Culver City, CA 90230

1.2 Project Location

The Project Site is located on the north side of Avenue 58, between Oasis Street to the west and Jackson Street to the east, in the unincorporated community Thermal in the Eastern Coachella Valley Area Plan in the County of Riverside.[1] The Site is 0.5-mile (2,640 feet) east of the City of La Quinta (with boundary at Avenue 58 and Monroe Street). The Site is 1 mile southwest of the City of Coachella (with boundary at Airport Boulevard and Van Buren Street).

1.3 Surrounding Land Uses

North across Csilla Street (an unimproved dirt road) is an agricultural field with a land use designation as Agriculture and zoned A-1-20.

South across Avenue 58 is an agricultural field with a land use designation as Medium Density Residential and Agriculture and zoned R-5 and A-1-10.

West across Oasis Street (an unimproved dirt road) is an agricultural field with a land use designation as Local Importance Agriculture and zoned A-1-20.

East across Jackson Street is an agricultural field with a land use designation as Local Importance

[1] Riverside County, General Plan, Chapter 3: Land Use Element: https://planning.rctlma.org/General-Plan-Zoning/General-Plan

Agriculture and zoned A-1-10.

1.4 Planning and Zoning

Table 1-1, Project Site, lists the Site's APNs, zoning, and General Plan land use designation:

W-2-10 (Zoning Controlled Development Areas – 10 Acre Minimum). Guest ranches are permitted upon the approval of a Plot Plan.[2]

The General Plan designates the Project Site for "Rural Residential" land uses. This land use designation allows for single-family residences with a minimum lot size of 5 acres, and allows limited animal keeping and agricultural uses, recreational uses, compatible resource development (not including the commercial extraction of mineral resources) and associated uses and governmental uses.[3]

Table 1-1
Project Site

Address	APN	Size (acre)	Zone	Land Use
82800 Avenue 58	764-130-027	38.42	W-2-10	Rural Residential
	764-130-030	37.63		
Riverside County, Map My County: https://gis1.countyofriverside.us/Html5Viewer/index.html?viewer=MMC_Public				

1.5 Existing Conditions

The gross land area is 78.01 acres.[4] The Project Site is primarily devoted to serving the equestrian needs of visitors from Riverside County and beyond. The Site is home to the Rancho Polo Equestrian Center, which provides commercial stables and features a diverse inventory of facilities for equestrian training, breeding, and equine boarding. In addition to the site's equestrian focus, Rancho Polo also features significant agricultural uses, including the cultivation and annual harvesting of approximately 300 date palm trees, 50 citrus trees, and 20 avocado trees. Hay fields are also farmed and harvested and provide feed and bedding for horses boarded at Rancho Polo. Rancho Polo has eight barns, which together accommodate 148 horse stalls. In addition, piped corals and fenced pastures accommodate another 50 horses. These boarding facilities are complemented with several agricultural and equestrian-serving structures and buildings, hay barns, ranch offices, equipment and tool sheds, and observation decks, along with various other improvements, equipment and tanks required to operate Rancho Polo's equestrian and agricultural activities. The Site's development area is currently improved with 8 prefabricated mobile homes that are used by workers, the property's managers and owner, and their respective

2 Riverside County Zoning Ordinance No. 348.4978, Article XV, Section 15.1.C.1: https://planning.rctlma.org/Portals/14/Ord348Update/348.4978/Ord.%20348%20Clean%20Version.pdf?ver=2022-03-02-162154-373

3 Riverside County, General Plan, Chapter 3: Land Use Element Table LU-4: https://planning.rctlma.org/Portals/14/Ch03_Land%20Use_FINAL%209-28-21.pdf

4 Plans, Continental Development Group, September 21, 2022.

family members.[5] One of these mobile homes shares its interior space with an administrative office area. The Site also contains an in-ground swimming pool.

1.6 Project Overview

The proposed development area is within the southwest portion of the Site and is approximately 358,000 square feet (8.22 acres). Rancho Polo has submitted a Plot Plan for the County's review that proposes new and modified land uses that will greatly enhance the quality of its guest services and agricultural operations. If approved, Plot Plan No. 220034 will enable Rancho Polo to provide a combination of guest and worker overnight accommodations, with stays ranging between one night to six months or more. Unlike the current Conditional Use Permit, which requires that 80% of the approved worker units be used by migrant agricultural workers for not more than 9 months in any 12 month period, Applicant is proposing that: (a) up to 100% of these units could be permanently affixed to the land on customary concrete foundations, (b) the units could be occupied by non-transient workers, as well as by the property managers, property owner, and their respective family members, and (c) the units could be kept in service year-round and would not have to be vacant for any period of time.[6]

The development includes 10 new worker/guest flex units and 3 new guest rooms/suites. The area of development is shown in the Plans (included as Appendix A-1 to the ND). These units would be much better quality than what is allowed under the current Conditional Use Permit, as prefabricated mobile homes would be eschewed in favor of permanent structures that are firmly anchored to the ground with customary reinforced concrete foundations. These residential accommodations will be a vital improvement in the operation of Rancho Polo and will enable Applicant to avoid overbuilding to meet intermittent peaks in demand. During periods of heightened agricultural activity, additional housing is often needed for permanent and migrant workers, as well as for their dependents. During multi-day equestrian events, lodging is needed for event participants and spectators, while horse owners using Ranch Polo's boarding services want the convenience of guest rooms for overnight stays in lieu of having to make roundtrips to Palm Desert or other area townships. The availability of onsite rooms will not only benefit workers, guests, and ultimately the Applicant, but will also have benefits far beyond the boundaries of Rancho Polo, since each guest using an onsite room will mean one less car traveling on local roads.

1.7 Construction Assumptions

The estimated construction schedule is shown in **Table 1-2, Construction Schedule**. Note for a conservative purpose and to present a worst-case scenario for environmental impacts and emissions, it is assumed that the entire Project will be constructed in a single phase. The estimated operational year is 2024. The Project assumes no existing structures require demolition. Site preparation will clear existing vegetation. Utilities are already installed and in

5 Six of these worker dwelling units are located on the southwest portion of the property within the proposed development area while the seventh worker unit is located on the north-central portion of the property adjacent to the Polo Field.

6 In contrast, under the terms of Conditional Use Permit No. 190066, Revision 1, Applicant is only allowed to establish and maintain a 20-space Migrant Agricultural Worker Mobilehome Park where: (a) at least 16 of the spaces are reserved for transient seasonal workers, (b) who can stay in each dwelling not more than 9 months out of any 12 month period, and (c) where each dwelling unit is prefabricated and mobile, and not permanently affixed to an in-ground foundation.

place and need only be extended and connected to each proposed dwelling unit. Minimal grading on the Site is necessary to provide foundation work and the extension of the proposed utilities to each dwelling unit from the existing utility lines. It is assumed that approximately 40,000 square feet will be lightly graded to support the new construction. No fill will be imported to the Site. The amount of materials to be exported will be up to approximately 6,000 cubic yards (which includes a swell expansion potential). Architectural coatings will include painting and finishing for the interior and exterior of each of the new buildings. This work will be undertaken in the final stages of construction.

Table 1-2
Construction Schedule

Phase	Schedule	Duration (Working Days)
Site Preparation	June 1, 2023 – June 14, 2023	10 days
Grading	June 15, 2023 – August 5, 2023	37 days
Trenching	July 1, 2023 – September 30, 2023	65 days
Construction	July 1, 2023 – October 31, 2023	87 days
Paving	August 15, 2023 – September 30, 2023	34 days
Architectural Coatings	September 1, 2023 – November 15, 2023	54 days

Working Days include Monday through Friday, with no weekends.
Site Preparation involves clearing vegetation (grubbing and tree/stump removal) and removing stones and other unwanted material or debris prior to grading.
Grading involves the cut and fill of land to ensure that the proper base and slope is created for the foundation.
Building Construction involves the construction of the foundation, structures, and buildings.)
Trenching is associated with underground utilities, including gas, water, electricity, telecommunications.
Paving involves the laying of concrete or asphalt such as in parking lots, roads, driveways, or sidewalks.
Architectural Coating involves the application of coatings to both the interior and exterior of buildings or structures, the painting of parking lot or parking garage striping, associated signage and curbs, and the painting of the walls or other components such as stair railings inside parking structures.
Construction schedule, including start, end, and duration dates are estimates only. Some overlap of phasing may occur. This analysis assumes that construction will start in 2023. In practice, construction could begin at a later time. However, using an earlier start date represents a worst-case scenario for the analysis of construction emissions, because equipment and vehicle emission factors for later years will be slightly less due to more stringent standards for in-use off-road equipment and heavy-duty trucks, as well as fleet turnover replacing older equipment and vehicles in later years.
Estimates provided by the Applicant in November 2022.

1.8 Related Projects

No reasonably foreseeable future project phases or related projects are assumed in the area. Given the Project Site's proposed development area's existing setbacks, fencing, and vegetation barriers, no cumulative impact is assumed.

1.9 Measures or Corrective Actions

As shown in the analysis below, impacts would be less than significant. No measures or corrective actions are required to avoid or minimize environmental impacts.

2 Analysis

2.1 Introduction

This technical report evaluates noise and vibration impacts from construction and operation of Rancho Polo Equestrian Center Project at 82800 Avenue 58 in the community of Thermal in unincorporated Riverside County. The analysis discusses applicable regulations and compares impacts to appropriate thresholds of significance. Noise measurements, calculation worksheets, and a map of noise receptors and measurement locations are included in the Technical Appendix to this analysis.

2.2 Fundamentals of Noise

2.2.1 Characteristics of Sound

Sound can be described in terms of its loudness (amplitude) and frequency (pitch). The standard unit of measurement for sound is the decibel (dB). Because the human ear is not equally sensitive to sound at all frequencies, the A-weighted scale (dBA) is used to reflect the normal hearing sensitivity range. On this scale, the range of human hearing extends from 3 to 140 dBA. **Table 2-1** provides examples of A-weighted noise levels from common sources.

Table 2-1
A-Weighted Decibel Scale

Typical A-Weighted Sound Levels	Sound Level (dBA L_{eq})
Near Jet Engine	130
Rock and Roll Band	110
Jet flyover at 1,000 feet	100
Power Motor	90
Food Blender	80
Living Room Music	70
Human Voice at 3 feet	60
Residential Air Conditioner at 50 feet	50
Bird Calls	40
Quiet Living Room	30
Average Whisper	20
Rustling Leaves	10
Source: Cowan, James P., Handbook of Environmental Acoustics, 1993. These noise levels are approximations intended for general reference and informational use.	

Noise Definitions. This noise analysis discusses sound levels in terms of equivalent noise level (L_{eq}), maximum noise level (L_{max}) and the Community Noise Equivalent Level (CNEL).

- Equivalent Noise Level (L_{eq}): L_{eq} represents the average noise level on an energy basis for a specific time period. Average noise level is based on the energy content (acoustic energy) of sound. For example, the L_{eq} for one hour is the energy average noise level during that hour. L_{eq} can be thought of as a continuous noise level of a certain period

equivalent in energy content to a fluctuating noise level of that same period.

- Maximum Noise Level (L_{max}): L_{max} represents the maximum instantaneous noise level measured during a given time period.

- Community Noise Equivalent Level (CNEL): CNEL is an adjusted noise measurement scale of average sound level during a 24-hour period. Due to increased noise sensitivities during evening and night hours, human reaction to sound between 7:00 P.M. and 10:00 P.M. is as if it were actually 5 dBA higher than had it occurred between 7:00 A.M. and 7:00 P.M. From 10:00 P.M. to 7:00 A.M., humans perceive sound as if it were 10 dBA higher. To account for these sensitivities, CNEL figures are obtained by adding an additional 5 dBA to evening noise levels between 7:00 P.M. and 10:00 P.M. and 10 dBA to nighttime noise levels between 10:00 P.M. and 7:00 A.M. As such, 24-hour CNEL figures are always higher than their corresponding actual 24-hour averages.

Effects of Noise. The degree to which noise can impact an environment ranges from levels that interfere with speech and sleep to levels that can cause adverse health effects. Most human response to noise is subjective. Factors that influence individual responses include the intensity, frequency, and pattern of noise; the amount of background noise present; and the nature of work or human activity exposed to intruding noise. According to the National Institute of Health (NIH), extended or repeated exposure to sounds at or above 85 dB can cause hearing loss. Sounds of 70 dBA or less, even after continuous exposure, are unlikely to cause hearing loss.[7] The World Health Organization (WHO) reports that adults should not be exposed to sudden "impulse" noise events of 140 dB or greater. For children, this limit is 120 dB.[8]

Exposure to elevated nighttime noise levels can disrupt sleep, leading to increased levels of fatigue and decreased work or school performance. For the preservation of healthy sleeping environments, the WHO recommends that continuous interior noise levels not exceed 30 dBA and that individual noise events of 45 dBA or higher be avoided.[9] Assuming a conservative exterior to interior sound reduction of 15 dBA, continuous exterior noise levels should therefore not exceed 45 dBA. Individual exterior events of 60 dBA or higher should also be limited. Some epidemiological studies have shown a weak association between long-term exposure to noise levels of 65 to 70 dBA and cardiovascular effects, including ischemic heart disease and hypertension. However, at this time, the relationship is largely inconclusive.

People with normal hearing sensitivity can recognize small changes in sound levels of approximately 3 dBA. Changes of at least 5 dBA can be readily noticeable while sound level increases of 10 dBA or greater are perceived as a doubling in loudness.[10] However, during daytime, few people are highly annoyed by noise levels below 55 dBA L_{eq}.[11]

7 National Institute of Health, National Institute on Deafness and Other Communication, www.nidcd.nih.gov/health/noise-induced-hearing-loss.

8 World Health Organization, Guidelines for Community Noise, 1999.

9 Ibid.

10 Federal Transit Administration, Transit Noise and Vibration Impact Assessment, 2018.

11 World Health Organization, Guidelines for Community Noise, 1999.

Noise Attenuation. Noise levels decrease as the distance from noise sources to receivers increases. For each doubling of distance, noise from stationary sources can decrease by about 6 dBA over hard surfaces (e.g., reflective surfaces such as parking lots) and 7.5 dBA over soft surfaces (e.g., absorptive surfaces such as soft dirt and grass). For example, if a point source produces a noise level of 89 dBA at a reference distance of 50 feet over an asphalt surface, its noise level would be approximately 83 dBA at a distance of 100 feet, 77 dBA at 200 feet, etc. Noises generated by mobile sources such as roadways decrease by about 3 dBA over hard surfaces and 4.5 dBA over soft surfaces for each doubling of distance. It should be noted that because decibels are logarithmic units, they cannot be added or subtracted. For example, two cars each producing 60 dBA of noise would not produce a combined 120 dBA.

Noise is most audible when traveling by direct line of sight, an unobstructed visual path between noise source and receptor. Barriers that break line of sight between sources and receivers, such as walls and buildings, can greatly reduce source noise levels by allowing noise to reach receivers by diffraction only. As a result, sound barriers can generally reduce noise levels by up to 15 dBA.[12] The effectiveness of barriers can be greatly reduced when they are not high or long enough to completely break line of sight from sources to receivers.

2.3 Fundamentals of Vibration

2.3.1 Characteristics of Vibration

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, and acceleration. Unlike noise, vibration is not a common environmental problem, as it is unusual for vibration from vehicle sources to be perceptible. Common sources of vibration include trains, construction activities, and certain industrial operations.

Vibration Definitions. This analysis discusses vibration in terms of Peak Particle Velocity (PPV). PPV is commonly used to describe and quantify vibration impacts to buildings and other structures. PPV levels represent the maximum instantaneous peak of a vibration signal and are usually measured in inches per second.[13]

Effects of Vibration. High levels of vibration may cause physical personal injury or damage to buildings. However, groundborne vibration levels rarely affect human health. Instead, most people consider groundborne vibration to be an annoyance that can disrupt concentration or disturb sleep. Groundborne vibration can also interfere with certain types of highly sensitive equipment and machines, especially imaging devices used in medical laboratories.

Perceptible Vibration Changes. Unlike noise, groundborne vibration is not an environmental issue that most people experience every day. Background vibration levels in residential areas are usually well below the threshold of perception for humans, approximately 0.01 inches per

12 California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, September 2013.

13 California Department of Transportation, Transportation and Construction Vibration Guidance Manual, September 2013.

second.[14] Perceptible indoor vibrations are most often caused by sources within buildings themselves, such as slamming doors or heavy footsteps. Common outdoor sources of groundborne vibration include construction equipment, trains, and traffic on rough or unpaved roads. Traffic vibration from smooth and well-maintained roads is typically not perceptible.

2.4 Regulatory Framework

2.4.1 Noise

Federal

No federal noise standards regulate environmental noise associated with short-term construction activities or long-term operations of development projects. As such, temporary and long-term noise impacts produced by the Project would be largely regulated or evaluated by State and County of Riverside standards designed to protect public well-being and health.

State

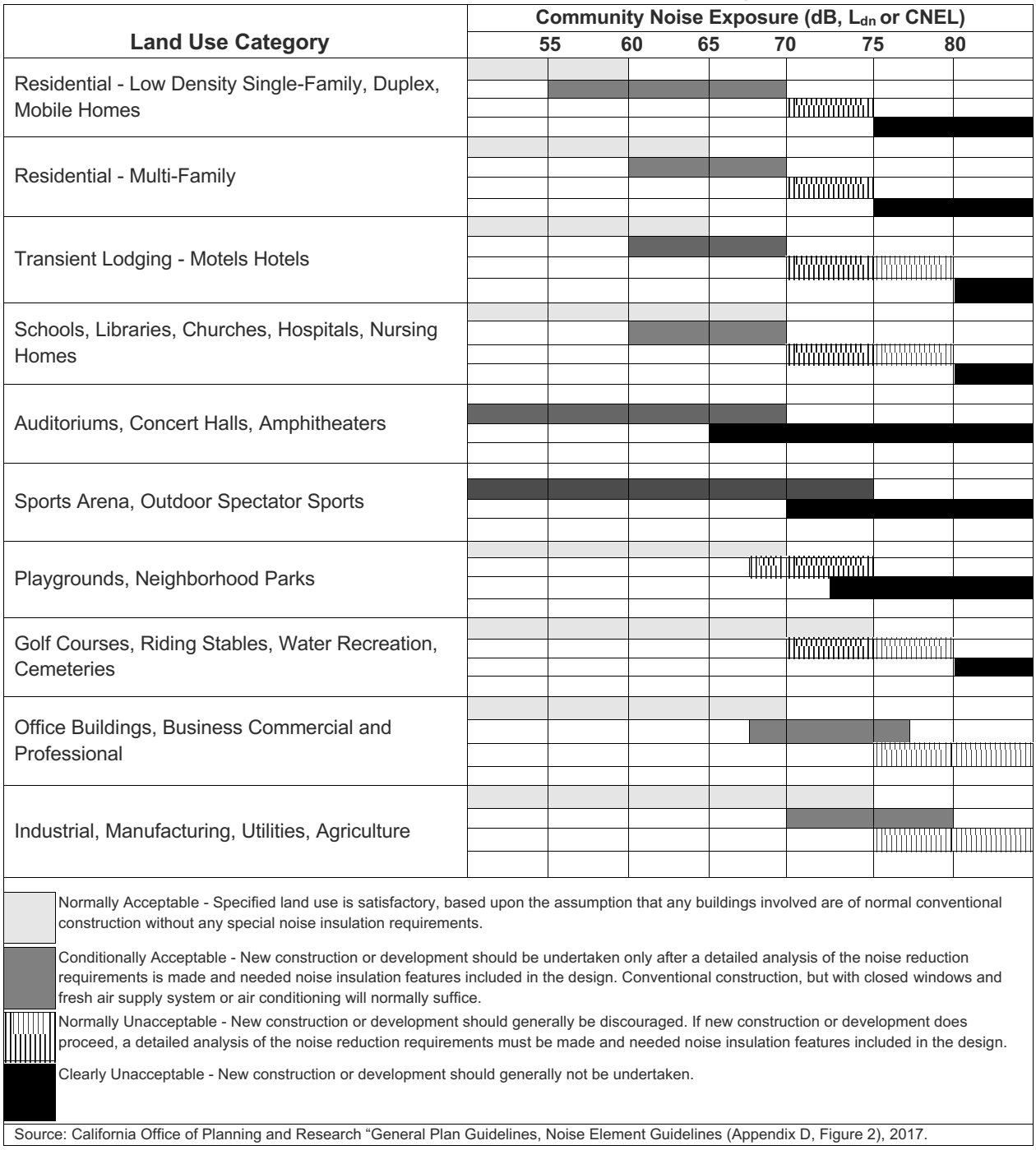
The State's 2017 General Plan Guidelines establish county and city standards for acceptable exterior noise levels based on land use. These standards are incorporated into land use planning processes to prevent or reduce noise and land use incompatibilities. **Table 2-2** illustrates State compatibility considerations between land uses and exterior noise levels.

California Government Code Section 65302 also requires each county and city to prepare and adopt a comprehensive long-range general plan for its physical development. Section 65302(f) requires a noise element to be included in the general plan. This noise element must identify and appraise noise problems in the community, recognize Office of Noise Control guidelines, and analyze and quantify current and projected noise levels.

The State has also established noise insulation standards for new multi-family residential units, hotels, and motels that are subject to relatively high levels of noise from transportation. The noise insulation standards, collectively referred to as the California Noise Insulation Standards (Title 24, California Code of Regulations) set forth an interior standard of 45 dBA CNEL for habitable rooms. The standards require an acoustical analysis which indicates that dwelling units meet this interior standard where such units are proposed in areas subject to exterior noise levels greater than 60 dBA CNEL. Local jurisdictions typically enforce the California Noise Insulation Standards through the building permit application process.

[14] Ibid.

Table 2-2
State of California Noise/Land Use Compatibility Matrix



Source: California Office of Planning and Research "General Plan Guidelines, Noise Element Guidelines (Appendix D, Figure 2), 2017.

Regional

County of Riverside General Plan Noise Element. The County's 2015 Noise Element of the General Plan sets policy to control and abate environmental noise and to minimize excessive exposure to noise. The Noise Element specifies the allowable exterior noise levels for new development impacted by transportation noise sources such as arterial roads, freeways, airports, and railroads. In addition, the Noise Element identifies polices to minimize the impacts of

excessive noise levels and establishes noise level requirements for all land uses. The Noise Element contains the following policies relevant to the Proposed Project:

N 1.1 Protect noise-sensitive land uses from high levels of noise by restricting noise-producing land uses from these areas. If the noise-producing land use cannot be relocated, then noise buffers such as setbacks, landscaping, or block walls shall be used.

N 1.3 Consider the following uses noise-sensitive and discourage these uses in areas in excess of 65 CNEL:

- Schools
- Hospitals
- Rest Homes
- Long Term Care Facilities or Mental Care Facilities
- Residential Uses
- Libraries
- Passive Recreation Uses
- Places of Worship

N 1.4 Determine if existing land uses will present noise compatibility issues with proposed projects by undertaking site surveys.

N 1.5 Prevent and mitigate the adverse impacts of excessive noise exposure on the residents, employees, visitors, and noise-sensitive uses of Riverside County.

N 1.7 Require proposed land uses, affected by unacceptably high noise levels, to have an acoustical specialist prepare a study of the noise problems and recommend structural and site design features that will adequately mitigate the noise problem.

N 4.1 Prohibit facility-related noise, received by any sensitive use, from exceeding the following worst-case noise levels: a. 45 dBA 10-minute Leq between 10:00 p.m. and 7:00 a.m.; b. 65 dBA 10-minute Leq between 7:00 a.m. and 10:00 p.m.

N 12.1 Utilize natural barrier such as hills, berms, boulders, and dense vegetation to assist in noise reduction.

N 13.1 Minimize the impacts of construction noise on adjacent uses within acceptable standards.

N 13.2 Ensure that construction activities are regulated to establish hours of operation in order to prevent and/or mitigate the generation of excessive or adverse impacts on surrounding areas.

N 13.4 Require that all construction equipment utilizes noise reduction features (e.g. mufflers and engine shrouds) that are no less effective than those originally installed by the manufacturer.

N 14.1 Enforce the California Building Standards that sets standards for building construction to mitigate interior noise levels to the tolerable 45 CNEL limit. These

standards are utilized in conjunction with the Uniform Building Code by the County's Building Department to ensure that noise protection is provided to the public. Some design features may include extra-dense insulation, double-paned windows, and dense construction materials.

N 14.3 Incorporate acoustic site planning into the design of new development, particularly large scale, mixed-use, or master planned development, through measures which may include:

- Separation of noise sensitive building from noise generating sources.
- Use of natural topography and intervening structures to shield noise sensitive land uses.
- Adequate sound proofing within the receiving structure.

N 14.4 Consider and, when necessary, to lower noise to acceptable limits, require noise barriers and landscaped berms.

N 14.8 Review all development applications for consistency with the standards and policies of the Noise Element of the General Plan.

N 16.2 Consider the following land uses sensitive to vibration:

- Hospitals
- Residential areas
- Concert halls
- Libraries
- Sensitive research operations
- Schools
- Offices

N 16.3 Prohibit exposure of residential dwellings to perceptible ground vibration from passing trains as perceived at the ground or second floor. Perceptible motion shall be presumed to be a motion velocity of 0.01 inches/second over a range of 1 to 100 Hz.

To ensure noise-sensitive land uses are protected from high levels of noise (N 1.1), Table N-1 of the Noise Element identifies guidelines to evaluate proposed developments based on exterior and interior noise level limits for land uses and requires a noise analysis to determine needed mitigation measures if necessary. The Noise Element identifies residential use as a noise-sensitive land use (N 1.3) and discourages new development in areas with transportation related levels of 65 dBA CNEL or greater existing ambient noise levels. To prevent and mitigate noise impacts for its residents (N 1.5), County of Riverside requires noise attenuation measures for sensitive land use exposed to transportation related noise levels higher than 65 dBA CNEL. In addition, the County of Riverside had adopted an interior noise level limit of 45 dBA CNEL (N 14.1).

Policy N 4.1 of the Noise Element sets a stationary-source exterior noise limit to not to be exceeded for a cumulative period of more than ten minutes in any hour of 65 dBA Leq for daytime hours of 7:00 a.m. to 10:00 p.m., and 45 dBA Leq during the noise-sensitive nighttime hours of

10:00 p.m. to 7:00 a.m. To prevent high levels of construction noise from impacting noise-sensitive land uses, policies N 13.1 through 13.3 identify construction noise mitigation requirements for new development located near existing noise-sensitive land uses. Policy N 16.3 establishes the vibration perception threshold for rail-related vibration levels, used in this analysis as a threshold for determining potential vibration impacts due to Project construction.

The noise criteria identified in the Noise Element are guidelines to evaluate land use compatibility, shown on Table 2 above. This provides the County with a tool to gauge the compatibility of land uses relative to existing and future exterior noise levels. The matrix describes categories of compatibility and not specific noise standards.

County of Riverside Noise Ordinance. The County's municipal code exempts construction within one-quarter mile of an inhabited dwelling between 6:00 A.M and 6:00 P.M. June through September and from 7:00 A.M. and 6:00 P.M. from October through May. For operations of development, the noise ordinance exempts property maintenance (e.g., lawnmowers, leaf blowers), vehicle use, and heating and air conditioning equipment from the noise ordinance.

2.4.2 Vibration

Federal

Federal Transit Administration (FTA). In 2018, the FTA published the Transit Noise and Vibration Impact Assessment Manual to aid in the estimation and analysis of vibration impacts. Typically, potential building and structural damages are the foremost concern when evaluating the impacts of construction-related vibrations. **Table 2-3** summarizes FTA's vibration guidelines for building and structural damage. While these are reference values for vibration levels at 25 feet of distance, this analysis uses logarithmic equations to determine whether building damage would occur regardless of actual distance between construction activity and nearby buildings.

Table 2-3
FTA Vibration Damage Potential Threshold Criteria

Structure and Condition	Threshold Criteria (in/sec PPV) at 25 Feet
I. Reinforced-concrete, steel or timber (no plaster)	0.5
II. Engineered concrete and masonry (no plaster)	0.3
III. Non-engineered timber and masonry buildings	0.2
IV. Buildings extremely susceptible to vibration damage	0.12
Source: Federal Transit Administration "Transit Noise and Vibration Impact Assessment Manual", September 2018.	

The FTA Assessment Manual also cites criteria for cases where more detailed analysis may be required. For buildings consisting of concrete wall and floor foundations, masonry or concrete walls, or stone masonry retaining walls, continuous vibrations of 0.3 inches per second PPV can be damaging. For buildings consisting of steel or reinforced concrete, such as factories, retaining walls, bridges, steel towers, open channels, underground chambers and tunnels with and without concrete alignment, continuous vibrations of 0.5 inches per second PPV can be damaging.

The effects of ground-borne vibration can include perceptible movement of floors in buildings, rattling of windows, shaking of items on shelves or hanging on walls. Although the perceptibility threshold is approximately 65 VdB, human response to vibration is not usually substantial unless the vibration exceeds 70 VdB. Ground-borne vibration is almost never a problem outdoors. Although the motion of the ground may be perceived, without the effects associated with the shaking of a building, the motion does not provoke the same adverse human reaction.[15] **Table 2-4** summarizes FTA's vibration guidelines for human annoyance.

Table 2-4
FTA Vibration Impact Criteria for General Vibration Assessment

Land Use Category	GBV Impact Levels (VdB re 1 micro-inch /sec)		
	Frequent Events	Occasional Events	Infrequent Events
Category 1: Buildings where vibration would interfere with interior operations.	65 VdB *	65 VdB *	65 VdB *
Category 2: Residences and buildings where people normally sleep.	72 VdB	75 VdB	80 VdB
Category 3: Institutional land uses with primarily daytime use.	75 VdB	78 VdB	83 VdB
* This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. For equipment that is more sensitive, a Detailed Vibration Analysis must be performed. Frequent Events: More than 70 events per day: Most rapid transit Occasional Events: 30–70 events per day: Most commuter trunk lines Infrequent Events: Fewer than 30 events per day: Most commuter rail branch lines Source: Federal Transit Administration "Transit Noise and Vibration Impact Assessment Manual", September 2018.			

State

California's Civil Code Section 832 protects adjacent properties when excavation of a site occurs.

> *Each coterminous owner is entitled to the lateral and subjacent support which his land receives from the adjoining land, subject to the right of the owner of the adjoining land to make proper and usual excavations on the same for purposes of construction or improvement, under the following conditions:*
>
> *1. Any owner of land or his lessee intending to make or to permit an excavation shall give reasonable notice to the owner or owners of adjoining lands and of buildings or other structures, stating the depth to which such excavation is intended to be made, and when the excavating will begin.*
>
> *2. In making any excavation, ordinary care and skill shall be used, and reasonable precautions taken to sustain the adjoining land as such, without regard to any building or other structure which may be thereon, and there shall be no liability for*

15 FTA, Transit Noise And Vibration Impact Assessment Manual, September 2018.

damage done to any such building or other structure by reason of the excavation, except as otherwise provided or allowed by law.

3. If at any time it appears that the excavation is to be of a greater depth than are the walls or foundations of any adjoining building or other structure, and is to be so close as to endanger the building or other structure in any way, then the owner of the building or other structure must be allowed at least 30 days, if he so desires, in which to take measures to protect the same from any damage, or in which to extend the foundations thereof, and he must be given for the same purposes reasonable license to enter on the land on which the excavation is to be or is being made.

4. If the excavation is intended to be or is deeper than the standard depth of foundations, which depth is defined to be a depth of nine feet below the adjacent curb level, at the point where the joint property line intersects the curb and if on the land of the coterminous owner there is any building or other structure the wall or foundation of which goes to standard depth or deeper than the owner of the land on which the excavation is being made shall, if given the necessary license to enter on the adjoining land, protect the said adjoining land and any such building or other structure thereon without cost to the owner thereof, from any damage by reason of the excavation, and shall be liable to the owner of such property for any such damage, excepting only for minor settlement cracks in buildings or other structures.

Regional

County of Riverside. While the County of Riverside does not have vibration standards for construction activities, the General Plan Noise Element does address the human reaction to typical vibration levels. Vibration levels with peak particle velocity of 0.0787 inches per second are considered readily perceptible and above 0.1968 in/sec are considered annoying to people in buildings.

2.5 Existing Conditions

2.5.1 Noise Sensitive Receptors

Sensitive receptors within one mile of the Project Site include, but are not limited to, the following representative sampling (distances are from the closest corner of the overall Rancho Polo Equestrian Club, not necessarily from the portion that would be developed under the Proposed Project):

- Single-family home (mobile home) located at 82400 Avenue 58, 320 feet west of the Site's southwest corner boundary.
- Single-family home (mobile home) located at 57310 Jackson Street, 550 feet northeast of the Site's northeast corner boundary.
- Single-family homes located at the Avenue 58 subdivision, 680 feet west of the Project

Site.

- Single-family home (mobile home) located at 82360 Avenue 58, 880 feet west of the Site's west boundary.

- Single-family home (mobile home) located at 83254 Avenue 58, 1,250 feet east of the Site's southeast corner boundary.

- Westside Elementary School located at 82225 Airport Boulevard, 3,700 feet northwest of the Site's northwest corner boundary.

- Coachella Valley High School located at 83800 Airport Boulevard, one mile northeast of the Site's northeast corner boundary.

2.5.2 Existing Ambient Noise Levels

The Project Site includes 8.22 acres at the southwest portion of the Site that contain several structures:

- Seven prefabricated mobile homes that function as worker units (six on the development area and one adjacent to the Polo Field) and one mobile home that is used as an office/reception building. These would be retained in their current capacity.

- Three agricultural huts, an agricultural office, maintenance workshop, and tool shed totaling 4,425 square feet. These would be retained in their current capacity.

The balance of the 8.22-acre development site is generally vacant open space. While there are occasional temporary recreational vehicles that park in these spaces, this analysis assumes there is no recurrent noise from the portion of the development that would involve new structures.

The primary source of noise near the Project Site is vehicle traffic, as transportation noise is the main source of noise in urban environments, largely from the operation of vehicles with internal combustion engines and frictional contact with the ground and air.[16] The major source of vehicle noise in the area is traffic on local streets like Avenue 58.

In November 2022, DKA Planning took short-term noise measurements near the Project site to identify ambient noise conditions near local sensitive receptors.[17] As shown in **Table 2-5**, noise levels along roadways near the Project Site ranged from 53.6 to 67.5 dBA L_{eq}, which was generally consistent with the traffic volumes on applicable street(s), which range from local roads like Wilton Place to major arterials like Western Avenue. **Figure 2-1** illustrates where ambient noise levels were measured near to establish the noise environment and their relationship to the applicable

16 World Health Organization, https://www.who.int/docstore/peh/noise/Comnoise-2.pdf accessed August 18, 2022.

17 Noise measurements were taken using a Quest Technologies Sound Examiner SE-400 Meter. The Sound Examiner meter complies with the American National Standards Institute (ANSI) and International Electrotechnical Commission (IEC) for general environmental measurement instrumentation. The meter was equipped with an omni-directional microphone, calibrated before the day's measurements, and set at approximately five feet above the ground. As noted in the Technical Appendix, the noise levels were taken at 3 locations on November 10, 2022 in the morning, for 15 minutes each, starting at 7:32 AM and ending at 8:23 AM. The County's General Plan Noise Element recommends noise level measurements be at least 10 minutes in duration.

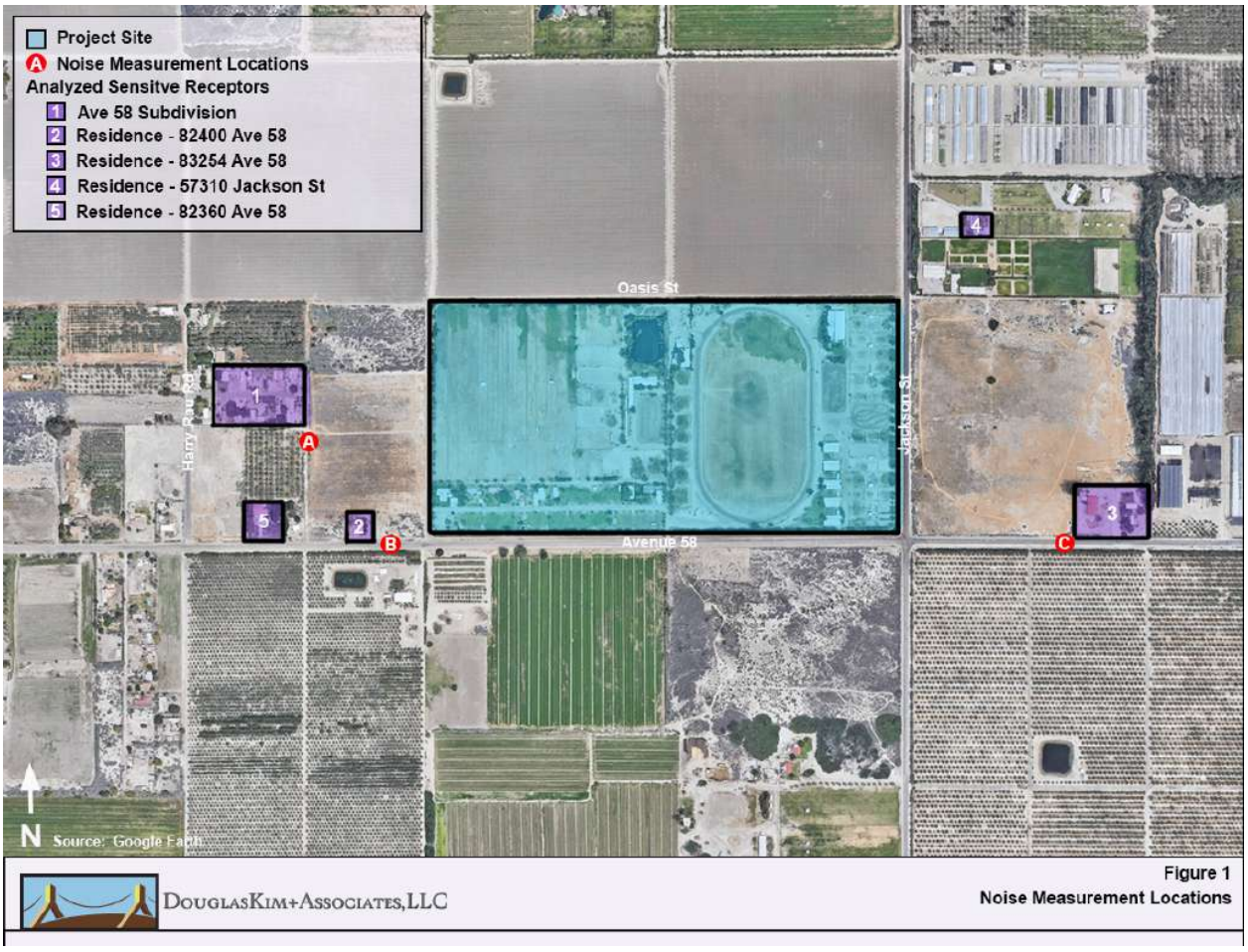
sensitive receptor(s). 24-hour CNEL noise levels are generally considered “Normally Acceptable” and “Conditionally Acceptable” for the types of land uses near the Project Site.

Table 2-5
Existing Noise Levels

Noise Measurement Locations	Primary Noise Source	Sound Levels		Nearest Sensitive Receptor(s)	Noise/Land Use Compatibility[b]
		dBA (L_{eq})	dBA (CNEL)[a]		
A. Avenue 58 Subdivision	Traffic on Avenue 58	59.0	57.0	Residences – Avenue 58 Subdivision	Normally Acceptable
B. 82400 Avenue 58	Traffic on Avenue 58	63.5	61.5	Residences – 82400 and 82360 Avenue 58	Conditionally Acceptable
C. 83150 Avenue 58	Traffic on Avenue 58	63.6	61.6	Residence - 83254 Avenue 58, 57310 Jackson St.	Conditionally Acceptable

[a] Estimated based on short-term (15-minute) noise measurement using Federal Transit Administration procedures from 2018 Transit Noise and Vibration Impact Assessment Manual, Appendix E, Option 4.
[b] Pursuant to California Office of Planning and Research “General Plan Guidelines, Noise Element Guidelines, 2017. When noise measurements apply to two or more land use categories, the more noise-sensitive land use category is used. See Table 2 above for definition of compatibility designations.
Source: DKA Planning, 2022

Figure 2-1
Noise Measurement Locations



2.5.3 Existing Ambient Vibration Levels

The portion of the Project Site to be developed is currently vacant. As such, there are no on-site sources of groundborne vibration.

The primary source of groundborne vibration near the Project Site is vehicle travel, including Avenue 58 south of the Project Site. The blend of passenger vehicles, trucks, delivery trucks, transit buses, and other light-, medium-, and heavy-duty vehicles generate minimal levels of vibration from this roadway. As noted by federal guidance, "[i]t is unusual for vibration from sources such as buses and trucks to be perceptible…"[18] As such, vehicle movement generates imperceptible ground vibration, with the occasional exception of heavy-duty vehicles that travel over speed bumps, potholes, and other street irregularities.

As noted earlier, the Project Site is in a largely rural area, with no buildings or structures any closer than 320 feet from the Project Site. The closest structures are:

- Single-family home (mobile home) located at 82400 Avenue 58, 320 feet west of the Site's southwest corner boundary. The only source of vibration affecting this structure is vehicle and truck traffic on Avenue 58.

- Commercial building located at 82379 Avenue 58, 340 feet southwest of the Site's southwest corner boundary. The only source of vibration affecting this structure is vehicle and truck traffic on Avenue 58.

2.6 Methodology

2.6.1 Noise

On-Site Construction Activities. Construction noise levels at off-site sensitive receptors were modeled employing the ISO 9613-2 sound attenuation methodologies using the SoundPLAN Essential model (version 5.1). This software package considers reference equipment noise levels, noise management techniques, distance to receptors, and any attenuating features to predict noise levels from sources like construction equipment. Construction noise sources were modeled as area sources to reflect the mobile nature of construction equipment. These vehicles would not operate directly where the Project's property line abuts adjacent structures, as they would retain some setback to preserve maneuverability. This equipment would also occasionally operate at reduced power and intensity to maintain precision at these locations.

Off-Site Construction Noise Activities. The Project's off-site construction noise impact from haul trucks, vendor deliveries, and other vehicles accessing the Project Site was analyzed by considering the Project's anticipated vehicle trip generation with existing traffic and roadway noise levels along local roadways, particularly those likely to be part of any haul route. Because it takes a doubling of traffic volumes on a roadway to generate the increased sound energy it takes to elevate ambient noise levels by 3 dBA,[19] the analysis focused on whether truck and auto traffic

18 Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, September 2018.

19 Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, September 2018.

would double traffic volumes on key roadways to be used for hauling soils to and/or from the Project Site during construction activities. Because haul trucks generate more noise than traditional passenger vehicles, a 19.1 passenger car equivalency (PCE) was used to convert haul truck trips to a reference level conversion to an equivalent number of passenger vehicles.[20] It should be noted that because an official haul route has not been approved as of the preparation of this analysis, assumptions were made about logical routes that would minimize haul truck traffic on local streets in favor of major arterials that can access regional-serving freeways.

On-Site Operational Noise Activities. The Project's potential to result in significant noise impacts from on-site operational noise sources was evaluated by identifying sources of on-site noise sources and considering the impact that they could produce given the nature of the source (i.e., loudness and whether noise would be produced during daytime or more-sensitive nighttime hours), distances to nearby sensitive receptors, ambient noise levels near the Project Site, the presence of similar noise sources in the vicinity, and maximum noise levels permitted by the LAMC.

Off-Site Operational Noise Activities. The Project's off-site noise impact from Project-related traffic was evaluated based its potential to increase traffic volumes on local roadways that serve the Project site. Because it takes a doubling of traffic volumes on a roadway to generate the increased sound energy it takes to elevate ambient noise levels by 3 dBA, the analysis focused on whether auto trips generated by the Proposed Project would double traffic volumes on key roadways that access the Project site.

2.6.2 Vibration

Construction Vibration. Ground-borne vibration impacts during construction activities were evaluated for both on-site and off-site construction activities by identifying potential vibration sources (e.g., construction equipment), estimating the vibration levels at off-site structures, and comparing the proposed impacts against applicable vibration significance thresholds.

Operational Vibration. As with many non-industrial projects, the Proposed Project does not include land uses that would generate high levels of ground-borne vibration. Instead, any vibration related to operation of the Proposed Project would involve vehicle activity traveling to and from the Project Site. However, vibration from vehicle activities using rubber-tired wheels is unlikely to be perceptible by people. As such, operational impacts on ground-borne vibration are not analyzed further.

2.7 Thresholds of Significance

2.7.1 Noise

Construction Noise Thresholds. For purposes of this analysis, the on-site construction noise impact would be considered significant if:

20 Caltrans, Technical Noise Supplement Table 3-3, 2013.

- Construction activities lasting more than one day would exceed existing ambient exterior sound levels by 10 dBA (hourly L_{eq}) or more at a noise-sensitive use;

- Construction activities lasting more than 10 days in a three-month period would exceed existing ambient exterior noise levels by 5 dBA (hourly L_{eq}) or more at a noise-sensitive use; or

- Construction activities of any duration would exceed the ambient noise level by 5 dBA (hourly L_{eq}) at a noise-sensitive use between the hours of 9:00 P.M. and 7:00 A.M. Monday through Friday, before 8:00 A.M. or after 6:00 P.M. on Saturday, or at any time on Sunday.

Operational Noise Thresholds. In addition to applicable County standards and guidelines that would regulate or otherwise moderate the Project's operational noise impacts, the following criteria are adopted to assess the impact of the Project's operational noise sources:

- Project operations would cause ambient noise levels at off-site locations to increase by 3 dBA CNEL or more to or within "normally unacceptable" or "clearly unacceptable" noise/land use compatibility categories, as defined by the State's 2017 General Plan Guidelines.

- Project operations would cause any 5 dBA CNEL or greater noise increase.[21]

2.7.2 Vibration

Groundborne Vibration Thresholds. In assessing impacts related to noise and vibration in this section, the County uses Appendix G as the thresholds of significance. The FTA's criteria in its 2018 Transit Noise and Vibration Impact Assessment manual will be used where applicable and relevant to assist in analyzing the Appendix G thresholds.

With regard to human annoyance, any vibration levels with peak particle velocity above 0.1968 in/sec would be considered annoying to people in buildings and would be considered significant.

2.8 Analysis of Project Impacts

NOISE Would the project result in:				
1. Airport Noise	☐	☐	☐	☒
a) For a project located within an airport land use plan or, where such a plan has not been adopted, within two (2) miles of a public airport or public use airport would the project expose people residing or working in the project area to excessive noise levels?				

[21] As a 3 dBA increase represents a slightly noticeable change in noise level, this threshold considers any increase in ambient noise levels to or within a land use's "normally unacceptable" or "clearly unacceptable" noise/land use compatibility categories to be significant so long as the noise level increase can be considered barely perceptible. In instances where the noise level increase would not necessarily result in "normally unacceptable" or "clearly unacceptable" noise/land use compatibility, a 5 dBA increase is still considered to be significant. Increases less than 3 dBA are unlikely to result in noticeably louder ambient noise conditions and would therefore be considered less than significant.

b) For a project located within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

2. Noise Effects by the Project	☐	☐	☒	☐
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan, noise ordinance, or applicable standards of other agencies?				
b) Generation of excessive ground-borne vibration or ground-borne noise levels?	☐	☐	☒	☐

2.8.1 Airport Noise

2.8.1.1 a) For a project located within an airport land use plan, or, where such a plan has not been adopted, within two (2) miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

2.8.1.2 b) For a project located within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

No Impact. The closest airport is Jacqueline Cochran Airport approximately 2.5 miles east of the Project Site.[22] A small portion of the eastern Project Site is located within Airport Influence Area, Compatibility Zone E. However, the western ¾ of the Site, including the development area is outside the Compatibility Zone.[23] Thus, the new units would be outside the Airport Influence Area. Review and approval of the County of Riverside Airport Land Use Commission (ALUC) is not required. The Project Site is not located within 2 miles of a privately owned, public use airport. Development of the Project would not create a hazard to flight or otherwise create a safety concern for employees, vendors or customers. There will be no impacts.

2.8.2 Noise Effects by the Project

22 Riverside County General Plan Figure S-20 "Airport Locations," County of Riverside Airport Facilities Map

23 Eastern Coachella Valley Area Plan, Figure 5, Jacqueline Cochran Airport: https://planning.rctlma.org/Portals/14/genplan/GPA%202022/Compiled%20ECVAP_4-2022%20rev.pdf?ver=2022-06-27-145207-383

2.8.2.1 a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Less Than Significant Impact.

Construction

On-Site Construction Activities

Construction would generate noise during the construction process that would span six months of site preparation, grading, utilities trenching, building construction, paving, and application of architectural coatings, as shown in **Table 2-6**. During all construction phases, noise-generating activities could occur at the Project Site during daytime hours.

Table 2-6
Construction Schedule Assumptions

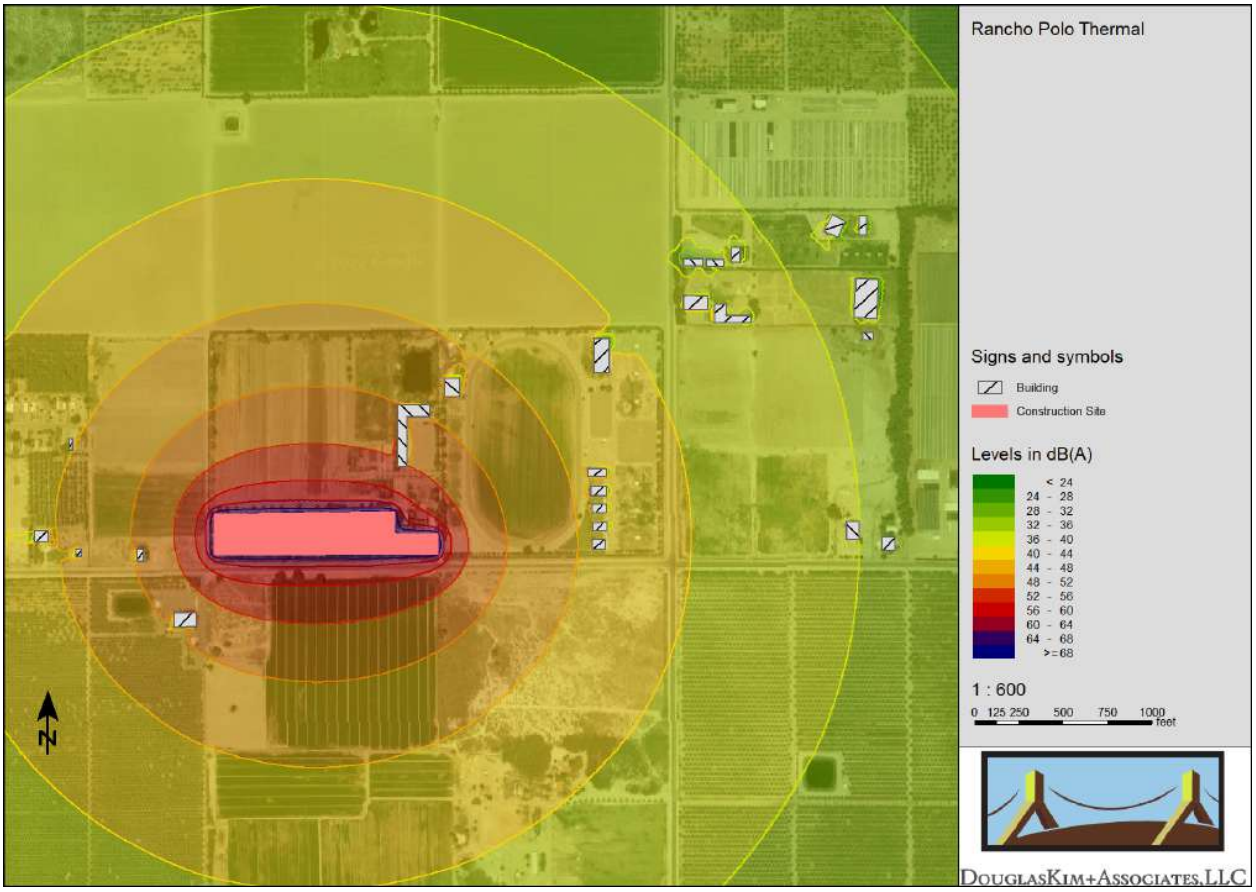
Phase	Duration	Notes
Site Preparation	Month 1 (two weeks)	Grubbing and removal of trees, plants, landscaping, weeds
Grading	Months 1-3	Fine grading of 40,000 square feet of area and approximately 6,000 cubic yards of soil (including swell factors) hauled 40 miles to landfill in 10-cubic yard capacity trucks.
Trenching	Months 2-4	Trenching for utilities, including gas, water, electricity, and telecommunications.
Building Construction	Months 3-6	Foundation work, framing, welding; installing mechanical, electrical, and plumbing. Floor assembly, cabinetry and carpentry, low voltage systems, trash management.
Paving	Month 5	Flatwork, including paving of walkways and other living areas, and surface parking lot for worker parking.
Architectural Coatings	Months 4-6	Application of interior and exterior coatings and sealants.
Source: DKA Planning, 2022.		

Noise levels would generally peak during the grading phase, when diesel-fueled heavy-duty equipment like excavators and dozers are used to move large amounts of dirt. This equipment is mobile in nature and does not always operate at in a steady-state mode full load, but rather powers up and down depending on the duty cycle needed to conduct work. As such, equipment is occasionally idle during which time no noise is generated.

During other phases of construction (e.g., trenching, building construction, paving, architectural coatings), noise impacts are generally lesser than during grading because they are less reliant on using heavy equipment with internal combustion engines. Smaller equipment such as forklifts, generators, and various powered hand tools and pneumatic equipment would generally be utilized. Off-site secondary noises would be generated by construction worker vehicles, vendor deliveries, and haul trucks. **Figure 2-2** illustrates how noise would propagate from the construction site during the demolition and grading phase.

The SoundPLAN acoustical modeling software was utilized to model future worst-case stationary noise impacts to the adjacent land uses. software is capable of evaluating multiple stationary noise source impacts at various receiver locations. The software utilizes algorithms (based on the inverse square law and reference equipment noise level data) to calculate noise level projections. The software allows the user to input specific noise sources, spectral content, sound barriers, building placement, topography, and sensitive receptor locations. Using SoundPLAN software, the sound sources (roads, railways, parking lots and point, line and area sound sources) and the objects that influence the sound propagation path (e.g. buildings, noise barriers or ground properties) are entered in the site map and equipped with acoustical properties. The data model is completed with receivers for a single point calculation or the calculation area for two-dimensional contour maps.

Figure 2-2
Construction Noise Sound Contours



Because the Project's construction phase would occur for more than three months, the applicable County threshold of significance for the Project's construction noise impacts is an increase of 5 dBA over existing ambient noise levels. As shown in **Table 2-7**, when considering ambient noise levels, the use of multiple pieces of powered equipment simultaneously would increase ambient noise negligibly. These construction noise levels would not exceed the County's significance threshold of 5 dBA. Therefore, the Project's on-site construction noise impact would be less than significant.

Table 2-7
Construction Noise Impacts at Off-Site Sensitive Receptors

Receptor	Maximum Construction Noise Level (dBA L_{eq})	Existing Ambient Noise Level (dBA L_{eq})	New Ambient Noise Level (dBA L_{eq})	Increase (dBA L_{eq})	Potentially Significant ?
1. Residences – Ave 58 Subdivision	44.0	59.0	59.1	0.1	No
2. Residence – 82400 Ave 58	39.2	63.5	63.5	0.0	No
3. Residence – 83254 Ave 58	35.4	63.6	63.6	0.0	No
4. Residence – 57310 Jackson St.	36.8	63.6	63.6	0.0	No
5. Residence – 82360 Ave 58	39.4	63.5	63.5	0.0	No
Source: DKA Planning, 2022.					

Off-Site Construction Activities

The Project would also generate noise at off-site locations from haul trucks moving soil from the Project Site during grading activities; vendor and contractor trips; and worker commute trips. These activities would generate up to an estimated 103 peak hourly PCE vehicle trips, as summarized in **Table 2-8**, during the grading phase, assuming all workers travel to the worksite at the same time. This includes converting noise from heavy-duty truck trips to an equivalent number of passenger vehicle trips.

Airport Boulevard would likely serve as part of the haul route for any construction vehicle activity given its direct to the 86 Freeway to the east. Based on Caltrans traffic volume data, Airport Avenue carries about 2,522 peak hourly vehicles.[24] The 103 peak hourly PCE vehicle trips would represent about 4.1 percent of traffic on this arterial, assuming all construction traffic uses this one roadway. Even under this worst-case scenario, the Project's construction-related trips would not cause a doubling in traffic volumes (i.e., 100 percent increase) on Airport Boulevard. As such, the Project's construction-related traffic would not increase existing noise levels by 3 dBA or more. Therefore, the Project's noise impacts from construction-related traffic would be less than significant.

Table 2-8
Construction Vehicle Trips (Maximum Hourly)

Construction Phase	Worker Trips [a]	Vendor Trips	Haul Trips	Total Trips	Percent of Peak Hour Trips on Airport Blvd.[d]
Site Preparation	18	0	0	18	0.7
Grading	15	0	89[b]	103	4.1
Trenching	5	0	0	5	0.2
Building Construction	9	4[c]	0	13	0.5
Paving	15	0	0	15	0.6

24 Caltrans 2017 Traffic Volumes; https://dot.ca.gov/programs/traffic-operations/census/traffic-volumes/2017/route-82-86. 2017 traffic counts adjusted to 2022 existing conditions assuming one percent annual ambient growth in traffic volumes.

Architectural Coating	2	0	0	2	0.1

[a] Assumes all worker trips occur in the peak hour of construction activity.
[b] The project would generate 1,200 haul trips over a 54-day period with seven-hour work days. Because haul trucks emit more noise than passenger vehicles, a 19.1 passenger car equivalency (PCE) was used to convert haul truck trips to a passenger car equivalent.
[c] This phase would generate about 1.4 vendor truck trips daily over a seven-hour work day. Assumes a 19.1 PCE.
[d] Percent of existing traffic volumes on Airport Boulevard.
Source: DKA Planning, 2022

Operation

On-Site Operational Noise

During long-term operations, the Project would produce noise from both on- and off-site sources. As discussed below, the Project would not result in an exposure of persons to or a generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. The Project would also not increase surrounding noise levels by more than 5 dBA CNEL, the minimum threshold of significance based on the noise/land use category of sensitive receptors near the Project Site. As a result, the Project's on-site operational noise impacts would be considered less than significant.

Mechanical Equipment

The Project would operate HVAC equipment on the roof that would generate negligible impacts at off-site receptors that are over 320 feet away from the Project Site. As a result, noise from HVAC units would negligibly elevate ambient noise levels, far less than the 5 dBA CNEL threshold of significance for operational impacts.

Auto-Related Activities

The majority of vehicle-related noise impacts at the Project Site would come from 95 vehicles entering and exiting the development from the main driveway off Avenue 58. The Proposed Project would generate negligible noise impacts from the incremental vehicle trips made to the worker and visitor homes. As off-site receptors would be over 320 feet away from the Project Site, these impacts would be negligible at sensitive receptors.

Outdoor Uses

While most operations would be conducted inside the new residential buildings, outdoor activities could generate noise that could impact local sensitive receptors. This would include human conversation, trash collection, and landscape maintenance. These are discussed below:

- Human conversation. Noise associated with everyday residential activities would largely be contained internally within the Project. Noise could include passive activities such as human conversation and socializing in outdoor spaces. This includes:

  All these areas would be used for passive socializing and recreation. There would be intermittent activities that would produce negligible impacts from human speech,

based on the Lombard effect. This phenomenon recognizes that voice noise levels in face-to-face conversations generally increase proportionally to background ambient noise levels, but only up to approximately 67 dBA at a reference distance of one meter. Specifically, vocal intensity increases about 0.38 dB for every 1.0 dB increase in noise levels above 55 dB, meaning people talk slightly above ambient noise levels in order to communicate.[25]

- Trash collection. On-site trash and recyclable materials for the workers and/or visitors would be managed from haul trucks that currently serve the Equestrian Center.

- Landscape maintenance. Noise from gas-powered leaf flowers, lawnmowers, and other landscape equipment can generated substantial bursts of noise during regular maintenance. Any intermittent landscape equipment would operate during the day and would represent a negligible impact that would not increase 24-hour noise levels at off-site locations by 5 dBA CNEL or more.[26]

As off-site receptors would be over 320 feet away from the Project Site, these impacts would be negligible at sensitive receptors. As such, the impact of on-site operational noise sources would be considered less than significant.

Off-Site Operational Noise

The majority of the Project's operational noise impacts would be off-site from vehicles traveling to and from the development. The Project could add 95 vehicle trips to the local roadway network on a peak weekday at the start of operations in 2023.[27]

This level of vehicle activity would not double traffic volumes on Avenue 58 or any other local roadways. Because it takes a doubling of traffic to elevate ambient noise levels by 3 dBA L_{eq}, the Project's traffic would neither increase ambient noise levels 3 dBA or more into "normally unacceptable" or "clearly unacceptable" noise/land use compatibility categories, nor increase ambient noise levels 5 dBA or more. Twenty-four hour CNEL impacts would similarly be minimal, far below criterion for significant operational noise impacts, which begin at 3 dBA. As such, this impact would be considered less than significant.

Consistency with General Plan

As shown in **Table 2-9**, the Project's construction and operation of the worker and/or visitor housing would be consistent with the County's Noise Element.

25 Acoustical Society of America, Volume 134; Evidence that the Lombard effect is frequency-specific in humans, Stowe and Golob, July 2013.

26 While AB 1346 (Berman, 2021) bans the sale of new gas-powered leaf blowers by 2024, existing equipment can continue to operate indefinitely.

27 DKA Planning 2022, using CalEEMod model, version 2022.1.

Table 2-9
Project Consistency with County of Riverside General Plan Noise Element

Policy	Project Consistency
Policy N 1.1. Protect noise-sensitive land uses from high levels of noise by restricting noise-producing land uses from these areas. If the noise-producing land use cannot be relocated, then noise buffers such as setbacks, landscaping, or block walls shall be used.	**No Conflict.** The Project would set back noise-sensitive housing units at least 60 feet from Avenue 58.
Policy N 1.3. Consider the following uses noise-sensitive and discourage these uses in areas in excess of 65 CNEL: Schools Hospitals Rest Homes Long Term Care Facilities or Mental Care Facilities Residential Uses Libraries Passive Recreation Uses Places of Worship	**No Conflict.** The Project locate workforce housing in an area with ambient noise levels below 65 dBA CNEL in areas considered "Normally Acceptable" or "Conditionally Acceptable" under the State's General Plan guidance on land use compatibility.
Policy N 1.4. Determine if existing land uses will present noise compatibility issues with proposed projects by undertaking site surveys.	**No Conflict.** The workforce housing would be located in areas considered "Normally Acceptable" or "Conditionally Acceptable" under the State's General Plan guidance on land use compatibility.
Policy N 1.5. Prevent and mitigate the adverse impacts of excessive noise exposure on the residents, employees, visitors, and noise-sensitive uses of Riverside County.	**No Conflict.** The workforce housing would be located in areas considered "Normally Acceptable" or "Conditionally Acceptable" under the State's General Plan guidance on land use compatibility.
Policy N 1.7. Require proposed land uses, affected by unacceptably high noise levels, to have an acoustical specialist prepare a study of the noise problems and recommend structural and site design features that will adequately mitigate the noise problem.	**No Conflict.** The workforce housing would be located in an area with acceptable ambient noise levels of less than 65 dBA CNEL.
Policy N 4.1. Prohibit facility-related noise, received by any sensitive use, from exceeding the following worst-case noise levels: a. 45 dBA 10-minute Leq between 10:00 p.m. and 7:00 a.m.; b. 65 dBA 10-minute Leq between 7:00 a.m. and 10:00 p.m.	**No Conflict.** The residential project would not generate substantial operational noise that could elevate ambient noise levels at sensitive receptors that are over 320 feet away from the Project Site.
Policy N 12.1. Utilize natural barrier such as hills, berms, boulders, and dense vegetation to assist in noise reduction.	**No Conflict.** The residential project would incorporate vegetation and permeable surfaces to attenuate operational noise.
Policy N 13.1. Minimize the impacts of construction noise on adjacent uses within acceptable standards.	**No Conflict.** Construction activities would not elevate ambient noise levels at nearby sensitive receptors by more than 0.1 dBA L_{eq}.
Policy N 13.2. Ensure that construction activities are regulated to establish hours of operation in	**No Conflict.** Construction activities would comply with County noise ordinance restrictions

Table 2-9
Project Consistency with County of Riverside General Plan Noise Element

Policy	Project Consistency
order to prevent and/or mitigate the generation of excessive or adverse impacts on surrounding areas.	governing hours of operation and would not elevate ambient noise levels at nearby sensitive receptors by more than 0.1 dBA L_{eq}.
Policy N 13.4. Require that all construction equipment utilizes noise reduction features (e.g. mufflers and engine shrouds) that are no less effective than those originally installed by the manufacturer.	**No Conflict.** Construction activities would use noise reduction features that are consistent with manufacturer's specifications.
Policy N 14.1. Enforce the California Building Standards that sets standards for building construction to mitigate interior noise levels to the tolerable 45 CNEL limit. These standards are utilized in conjunction with the Uniform Building Code by the County's Building Department to ensure that noise protection is provided to the public. Some design features may include extra-dense insulation, double-paned windows, and dense construction materials.	**No Conflict.** The worker and/or visitor housing will comply with Title 24 acoustic requirements for windows and other openings, as well as the Uniform Building Code overall.
Policy N 14.3. Incorporate acoustic site planning into the design of new development, particularly large scale, mixed-use, or master planned development, through measures which may include: Separation of noise sensitive building from noise generating sources. Use of natural topography and intervening structures to shield noise sensitive land uses. Adequate sound proofing within the receiving structure.	**No Conflict.** The Project would set back noise-sensitive housing units at least 60 feet from Avenue 58.
Policy N 14.4. Consider and, when necessary, to lower noise to acceptable limits, require noise barriers and landscaped berms.	**No Conflict.** The Project's construction and operations will not require noise barriers or other features to attenuate or mitigate noise impacts.
Policy N 14.8. Review all development applications for consistency with the standards and policies of the Noise Element of the General Plan.	**No Conflict.** The Project is being reviewed through the CEQA process for consistency with the Noise Element of the General Plan.
Policy N 16.2. Consider the following land uses sensitive to vibration: Hospitals Residential areas Concert halls Libraries Sensitive research operations Schools Offices N 16.3 Prohibit exposure of residential dwellings to perceptible ground vibration from passing trains as perceived at the ground or second floor. Perceptible motion shall be presumed to be a	**No Conflict.** The Project's exposure to vibration will be address by setting back noise-sensitive housing units at least 60 feet from Avenue 58.

Table 2-9
Project Consistency with County of Riverside General Plan Noise Element

Policy	Project Consistency
motion velocity of 0.01 inches/second over a range of 1 to 100 Hz.	
Source: DKA Planning, 2022.	

2.8.2.2 b) Generation of excessive groundborne vibration or groundborne noise levels?

Less Than Significant Impact.

Construction

Building Damage Vibration Impact – On-Site Sources

Construction equipment can produce groundborne vibration based on equipment and methods employed. While this spreads through the ground and diminishes in strength with distance, buildings on nearby soil can be affected. This ranges from no perceptible effects at the lowest levels, low rumbling sounds and perceptible vibration at moderate levels, and slight damage at the highest levels. **Table 2-10** summarizes vibratory levels for common construction equipment.

Table 2-10
Vibration Source Levels for Construction Equipment

Equipment	Approximate PPV at 25 feet (in/sec)
Pile Driver (impact)	0.644
Pile Drive (sonic)	0.170
Clam shovel drop (slurry wall)	0.202
Hydromill (slurry wall)	0.008
Vibratory Roller	0.210
Hoe Ram	0.089
Large Bulldozer	0.089
Caisson Drilling	0.089
Loaded Truck	0.076
Jackhammer	0.035
Small Bulldozer	0.003
Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, 2018.	

Minor groundborne vibration would be generated by construction activities at the Project site. As a result of equipment that could include on-site bulldozer operations or the vibrational equivalent, vibration velocities of up to 0.007 inches per second PPV could occur at the construction site (**Table 2-11**). This impact is below the 0.2 inches per second PPV threshold from FTA that is considered potentially harmful to non-engineered timber and masonry buildings. Construction of the Project would protect adjacent properties during the excavation process by complying with California Civil Code Section 832. Other potential construction activities would produce less vibration and have lesser potential impacts on nearby sensitive receptors. As a result, construction-related structural vibration impacts would be considered less than significant.

Table 2-11
Building Damage Vibration Levels – On-Site Sources

Off-Site Receptor Location	Distance to Project Site (feet)	Vibration Velocity Levels at Off-Site Sensitive Receptors from Construction Equipment (in/sec PPV)					Significance Criterion (PPV)	Potentially Significant Impact?
		Large Bulldozer	Caisson Drilling	Loaded Trucks	Jack-hammer	Small Bulldozer		
FTA Reference Vibration Level (25 Feet)	N/A	0.089	0.089	0.076	0.035	0.003	--	--
Residence, 82400 Ave 58	320	0.007	0.007	0.006	0.003	0.000	0.2[a]	No
Building, 82379 Ave 58	320	0.007	0.007	0.006	0.003	0.000	0.2[a]	No

[a] FTA criterion for Category III (non-engineered timber and masonry buildings)
Source: DKA Planning, 2022.

Building Damage Vibration Impact – Off-Site Sources

Construction of the Project would generate trips from large trucks including haul trucks, concrete mixing trucks, concrete pumping trucks, and vendor delivery trucks. Regarding building damage, based on FTA data, the vibration generated by a typical heavy-duty truck would be approximately 63 VdB (0.006 PPV) at a distance of 50 feet from the truck.[28] According to the FTA "[i]t is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads." Nonetheless, there are buildings along the Project's anticipated haul route(s) on Avenue 58 and other local roads that are generally situated away from the right-of-way and would be exposed to groundborne vibration levels of no more than 0.006 PPV. This estimated vibration generated by construction trucks traveling along the anticipated haul route(s) would be well below the most stringent building damage criteria of 0.2 PPV for non-engineered timber and masonry buildings. The Project's potential to damage roadside buildings and structures as the result of groundborne vibration generated by its truck trips would therefore be considered less than significant.

Human Annoyance Impact

With the nearest vibration-sensitive receptors located 320 feet away from the Project Site (i.e., 82400 Avenue 58), the peak particle velocity for any sensitive receptors would be negligible, far below the 0.1968 in/sec threshold would be considered annoying to people in buildings. As such, human annoyance impacts would be negligible and would be considered less than significant.

Operation

During operation of the housing development, there would be no significant stationary sources of groundborne vibration, such as heavy equipment or industrial operations. Operational groundborne vibration in the Project Site's vicinity would be generated by its related vehicle travel on local roadways. However as previously discussed, road vehicles rarely create vibration levels

28 Federal Transit Administration, "Transit Noise and Vibration Impact Assessment," May 2006, Figure 7-3.

perceptible to humans unless road surfaces are poorly maintained and have potholes or bumps. As a result, the Project's long-term vibration impacts would be less than significant.

2.9 Cumulative Impacts

2.9.1 Construction

On-Site Construction Noise

During construction of the proposed Project, there could be other construction activity in the area that contributes to cumulative noise impacts at sensitive receptors. Noise from construction of development projects is localized and can affect noise-sensitive uses within 500 feet. As such, noise from two construction sites within 1,000 feet of each other can contribute to cumulative noise impacts for receptors located between.

While there are no identified related projects near the Project Site, construction-related noise levels from any related project would be intermittent and temporary. As with the Project, any related projects would comply with the County's restrictions, including restrictions on construction hours and noise from powered equipment. Noise associated with cumulative construction activities would be reduced to the degree reasonably and technically feasible through proposed mitigation measures for each individual related project and compliance with the noise ordinance.

As illustrated earlier, construction of the Proposed Project would elevate ambient noise levels at nearby sensitive receptors by no more than 0.1 dBA L_{eq}. The scarcity of sensitive receptors in the area and great distance between development sites would substantially minimize any cumulative impacts from construction noise on nearby receptors. Based on this, there would not be cumulative noise impacts at any nearby sensitive uses located near the Project Site and related projects in the event of concurrent construction activities.

Off-Site Construction Noise

Other concurrent construction activities from related projects can contribute to cumulative off-site impacts if haul trucks, vendor trucks, or worker trips for any related project(s) were to utilize the same roadways. Distributing trips to and from each related project construction site substantially reduces the potential that cumulative development could more than double traffic volumes on existing streets, which would be necessary to increase ambient noise levels by 3 dBA.

The Proposed Project would add about 103 peak hourly PCE vehicle trips during the building construction phase, assuming all workers travel to the worksite at the same time. This conservative estimate would represent about 4.1 percent of traffic volumes on Airport Boulevard, which carries 2,522 vehicles in the peak hour. Any would have to add 2,419 peak hour vehicles to double volumes on Airport Boulevard. As such, cumulative noise due to construction truck traffic from the Project and related projects do not have the potential to exceed the ambient noise levels along the haul route by 5 dBA. As such, cumulative noise impacts from off-site construction would be less than significant.

2.9.2 Operation

The Project Site and Thermal community has been developed with agricultural, residential, and other low-density land uses that have previously generated, and will continue to generate, noise from a number of operational noise sources, including mechanical equipment (e.g., HVAC systems), outdoor activity areas, and vehicle travel. As there are no related projects identified in the area, there would be no cumulative impacts beyond those of the Proposed Project. As such, cumulative noise impacts from off-site operation would be less than significant.

TECHNICAL APPENDIX

DouglasKim+Associates,LLC

AMBIENT NOISE MEASUREMENTS

DouglasKim+Associates,LLC

Figure 1
Noise Measurement Locations

Session Report

11/16/2022

Information Panel

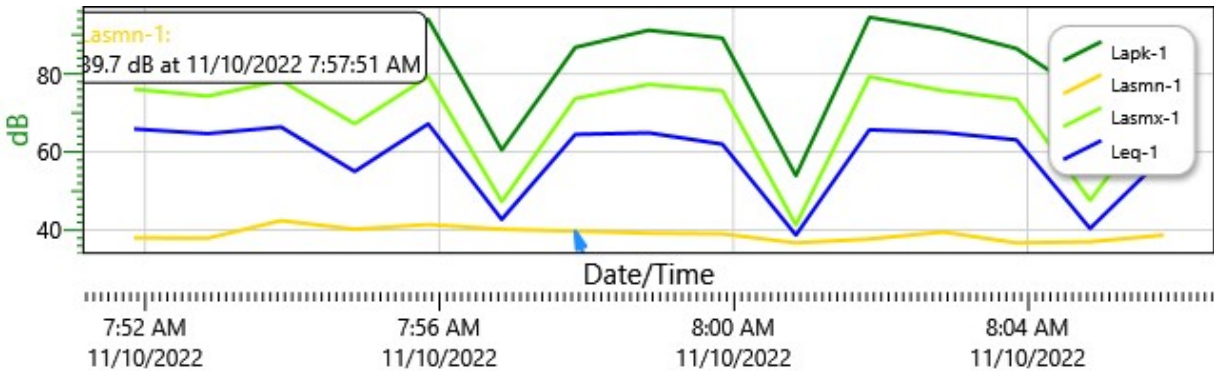
Name	82350 Ave 58
Comments	
Start Time	11/10/2022 7:50:51 AM
Stop Time	11/10/2022 8:05:53 AM
Run Time	00:15:02
Serial Number	SE40213991
Device Name	SE40213991
Model Type	Sound Examiner
Device Firmware Rev	R.11C
Company Name	
Description	
Location	
User Name	

Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	63.5 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Bandwidth	1	OFF

Logged Data Chart

82350 Ave 58: Logged Data Chart



Logged Data Table

Date/Time	Lapk-1	Lasmn-1	Lasmx-1	Leq-1

Date/Time	Lapk-1	Lasmn-1	Lasmx-1	Leq-1
11/10/2022 7:51:51 AM	91	38	76.1	65.9
7:52:51 AM	88.5	37.9	74.3	64.7
7:53:51 AM	93.3	42.4	78.3	66.4
7:54:51 AM	81.2	40.2	67.2	55
7:55:51 AM	94	41.4	79.3	67.2
7:56:51 AM	60.5	40.2	47.3	42.7
7:57:51 AM	86.8	39.7	73.7	64.5
7:58:51 AM	91.2	39.2	77.3	64.9
7:59:51 AM	89.2	39	75.7	62
8:00:51 AM	53.9	36.7	41.3	38.7
8:01:51 AM	94.5	37.7	79.3	65.7
8:02:51 AM	91.4	39.5	75.7	65
8:03:51 AM	86.5	36.7	73.5	63.1
8:04:51 AM	73.8	37	47.6	40.4
8:05:51 AM	87.5	38.7	72.5	58.8

Session Report

11/16/2022

Information Panel

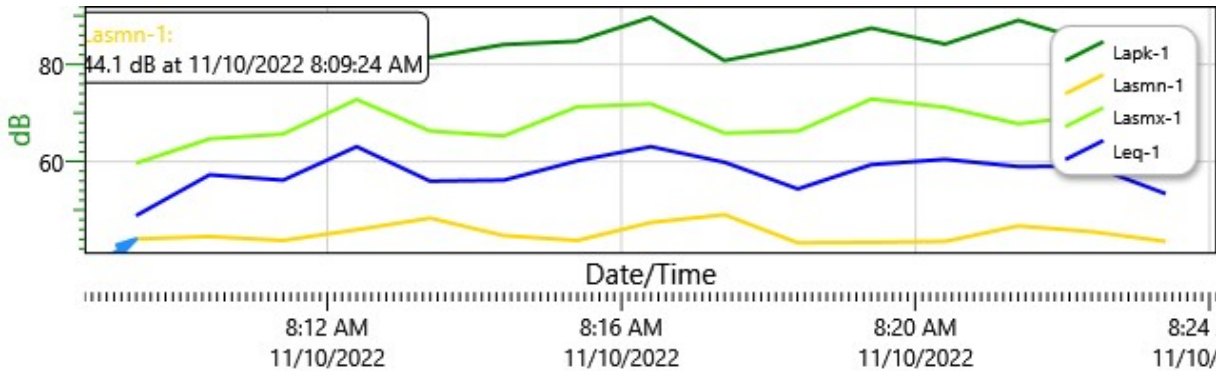
Name	82360 Ave 58
Comments	
Start Time	11/10/2022 8:08:24 AM
Stop Time	11/10/2022 8:23:30 AM
Run Time	00:15:06
Serial Number	SE40213991
Device Name	SE40213991
Model Type	Sound Examiner
Device Firmware Rev	R.11C
Company Name	
Description	
Location	
User Name	

Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	59 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Bandwidth	1	OFF

Logged Data Chart

82360 Ave 58: Logged Data Chart



Logged Data Table

Date/Time	Lapk-1	Lasmn-1	Lasmx-1	Leq-1

Date/Time	Lapk-1	Lasmn-1	Lasmx-1	Leq-1
11/10/2022 8:09:24 AM	89	44.1	59.7	48.9
8:10:24 AM	82.3	44.6	64.7	57.3
8:11:24 AM	82.8	43.8	65.7	56.2
8:12:24 AM	86.8	46	72.8	63.1
8:13:24 AM	81.5	48.4	66.3	56
8:14:24 AM	84.1	44.8	65.3	56.2
8:15:24 AM	84.8	43.8	71.3	60.2
8:16:24 AM	89.7	47.5	71.9	63.1
8:17:24 AM	80.8	49.1	65.9	59.9
8:18:24 AM	83.7	43.3	66.3	54.4
8:19:24 AM	87.5	43.4	72.9	59.4
8:20:24 AM	84.2	43.6	71.2	60.5
8:21:24 AM	89.1	46.8	67.8	59
8:22:24 AM	84.6	45.6	69.6	59.1
8:23:24 AM	80.3	43.6	62.3	53.4

Session Report

11/11/2022

Information Panel

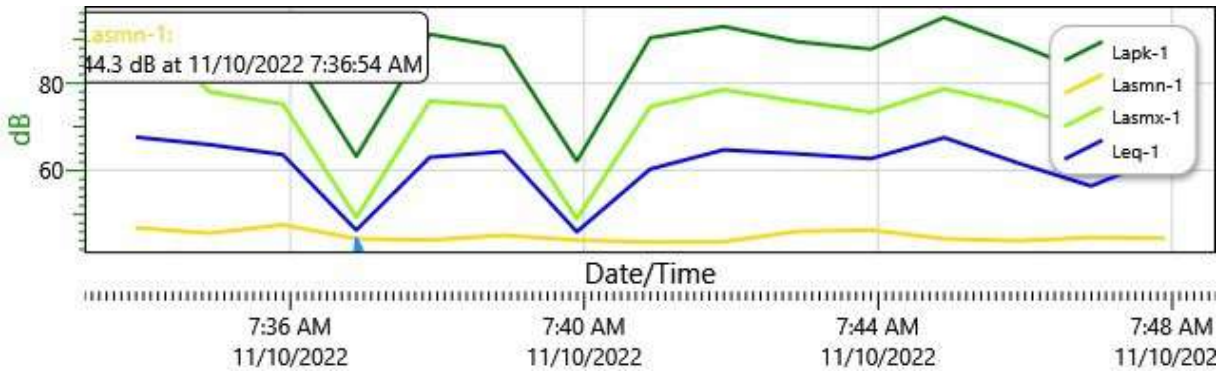
Name	83150 Avenue 58
Comments	
Start Time	11/10/2022 7:32:54 AM
Stop Time	11/10/2022 7:47:57 AM
Run Time	00:15:03
Serial Number	SE40213991
Device Name	SE40213991
Model Type	Sound Examiner
Device Firmware Rev	R.11C
Company Name	
Description	
Location	
User Name	

Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	63.6 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Bandwidth	1	OFF

Logged Data Chart

83150 Avenue 58: Logged Data Chart



Logged Data Table

Date/Time	Lapk-1	Lasmn-1	Lasmx-1	Leq-1

Date/Time	Lapk-1	Lasmn-1	Lasmx-1	Leq-1
11/10/2022 7:33:54 AM	92.8	46.8	95.6	67.6
7:34:54 AM	92.8	45.6	78	65.9
7:35:54 AM	89.8	47.5	75.2	63.6
7:36:54 AM	63.2	44.3	49.2	46.3
7:37:54 AM	91.2	44	75.9	63
7:38:54 AM	88.3	45.1	74.6	64.3
7:39:54 AM	62.1	44	48.9	45.9
7:40:54 AM	90.4	43.5	74.6	60.3
7:41:54 AM	93	43.6	78.5	64.7
7:42:54 AM	89.5	46	75.8	63.8
7:43:54 AM	87.8	46.3	73.3	62.7
7:44:54 AM	95.1	44.3	78.7	67.5
7:45:54 AM	88.9	43.8	74.9	61.7
7:46:54 AM	82.1	44.6	68.4	56.4
7:47:54 AM	90.8	44.4	75.8	63.2

DouglasKim+Associates,LLC

CONSTRUCTION NOISE CALCULATIONS

Noise emissions of industry sources

Source name	Size m/m²	Reference	Level Day dB(A)	Level Evening dB(A)	Level Night dB(A)	Corrections Cwall dB	Corrections CI dB	Corrections CT dB
Construction Site	25456 m²	Lw/unit	109.7	-	-	-	-	-

Receiver list

No.	Receiver name	Coordinates X Y in meter	Building side	Floor	Height abv.grd. m	Limit Day dB(A)	Level Day dB(A)	Conflict Day dB
1	Residence, 57310 Jackson Street	11572810.90 3721660.92	West	GF	-19.38	-	36.8	-
2	Residence, 82360 Avenue 58	11571628.32 3721174.25	South	GF	-14.94	-	39.4	-
3	Residence, 82400 Avenue 58	11571799.95 3721141.84	South	GF	-17.82	-	39.2	-
4	Residence, 83254 Avenue 58	11573017.35 3721179.06	South	GF	-20.71	-	35.4	-
5	Residences, Avenue 58 Subdivision	11571683.48 3721334.38	East	GF	-15.45	-	44.0	-

Contribution levels of the receivers

Source name		Traffic lane	Level Day dB(A)
Residence, 57310 Jackson Street	GF		36.8
Construction Site		-	36.8
Residence, 82360 Avenue 58	GF		39.4
Construction Site		-	39.4
Residence, 82400 Avenue 58	GF		39.2
Construction Site		-	39.2
Residence, 83254 Avenue 58	GF		35.4
Construction Site		-	35.4
Residences, Avenue 58 Subdivision	GF		44.0
Construction Site		-	44.0

Rancho Polo Thermal

Signs and symbols

Building

Analyzed Sensitive Receptor

Construction Site

1 : 600

0 125 250 500 750 1000 feet

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Rancho Polo Thermal

Signs and symbols

Building

Construction Site

Levels in dB(A)

< 24
24 - 28
28 - 32
32 - 36
36 - 40
40 - 44
44 - 48
48 - 52
52 - 56
56 - 60
60 - 64
64 - 68
>= 68

1 : 600

0 125 250 500 750 1000 feet

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Construction Noise Impacts

Reference	15.24	meter
Sound Pressure Level (Lp)	75.0	dBA
Sound Power Level (Lw)	109.7	dB

Receptor	Existing Leq	Noise	New Leq	Difference Leq	Significant?
Residences - Ave 58 Subdivision	59.0	44.0	59.1	0.1	**No**
Residence - 82400 Ave 58	63.5	39.2	63.5	0.0	**No**
Residence - 83254 Ave 58	63.6	35.4	63.6	0.0	**No**
Residence - 57310 Jackson St.	63.6	36.8	63.6	0.0	**No**
Residence - 82360 Ave 58	63.5	39.4	63.5	0.0	**No**

OFF-SITE CONSTRUCTION-RELATED TRAVEL VOLUMES

Construction Phase	Worker Trips	Vendor Trips	Haul Trips	Total	% of Traffic Volumes
Site Preparation	17.5	0		18	0.7%
Grading	15	0	88.5	103	4.1%
Trenching	5	0		5	0.2%
Building Construction	9.36	3.8		13	0.5%
Paving	15	0		15	0.6%
Architectural Coatings	1.87	0		1.87	0.1%
Haul trips represent heavy-duty truck trips with a 19.1 Passenger Car Equivalent applied; Vendor trips are a blend of vehicle types with a 9.5					

2522 Peak hourly vehicles on Airport Boulevard

DouglasKim+Associates,LLC

CONSTRUCTION VIBRATION CALCULATIONS

DouglasKim+Associates,LLC

Rancho Polo Equestrian Center Project

Construction Vibration

Receptor: Residence, 82400 Avenue 58
Equipment: Large Bulldozer, Auger Drill Rig

Source PPV (in/sec)	0.089
Reference Distance (ft)	25
Ground Factor (N)	1
Distance (ft)	320
Vibration Level (in/sec)	**0.007**

Receptor: Residence, 82400 Avenue 58
Equipment: Loaded Trucks

Source PPV (in/sec)	0.076
Reference Distance (ft)	25
Ground Factor (N)	1
Distance (ft)	320
Vibration Level (in/sec)	**0.006**

Receptor: Commerical Structure, 82379 Avenue 58
Equipment: Large Bulldozer, Auger Drill Rig

Source PPV (in/sec)	0.089
Reference Distance (ft)	25
Ground Factor (N)	1
Distance (ft)	340
Vibration Level (in/sec)	**0.007**

Receptor: Commerical Structure, 82379 Avenue 58
Equipment: Loaded Trucks

Source PPV (in/sec)	0.076
Reference Distance (ft)	25
Ground Factor (N)	1
Distance (ft)	340
Vibration Level (in/sec)	**0.006**

Rancho Polo Equestrian Center Project

Receptor: Residence, 82400 Avenue 58
Equipment: Small Dozer-Type Equipment

Source PPV (in/sec)	0.003
Reference Distance (ft)	25
Ground Factor (N)	1
Distance (ft)	320
Vibration Level (in/sec)	**0.000**

Receptor: Residence, 82400 Avenue 58
Equipment: Jackhammer

Source PPV (in/sec)	0.035
Reference Distance (ft)	25
Ground Factor (N)	1
Distance (ft)	320
Vibration Level (in/sec)	**0.003**

Receptor: Commerical Structure, 82379 Avenue 58
Equipment: Small Dozer-Type Equipment

Source PPV (in/sec)	0.003
Reference Distance (ft)	25
Ground Factor (N)	1
Distance (ft)	340
Vibration Level (in/sec)	**0.000**

Receptor: Commerical Structure, 82379 Avenue 58
Equipment: Jackhammer

Source PPV (in/sec)	0.035
Reference Distance (ft)	25
Ground Factor (N)	1
Distance (ft)	340
Vibration Level (in/sec)	**0.003**

Sources

California Department of Transportation (Caltrans), *Transportation and Construction Vibration Guidance Manual*,
Federal Transit Administration (FTA), *Transit Noise and Vibration Impact Assessment*, May 2006

DouglasKim+Associates,LLC

TRAFFIC NOISE CALCULATIONS

TRAFFIC VOLUME ADJUSTMENTS

North/South	
East/West	Airport Boulevard
Year	2017
Hour	Peak
Source	https://dot.ca.gov/programs/traffic-operations/census/traffic-volumes/2017/route-82-86

	NB Approach	SB Approach	EB Approach	WB Approach		
LT						
TH						
RT						
Total			2400			1.07%

2017	-	-	2,400	-	-	
2018	-	-	2,424	-	-	
2019	-	-	2,448	-	-	
2020	-	-	2,473	-	-	
2021	-	-	2,497	-	-	
2022	**-**	**-**	**2,522**	**-**	**-**	

	NB Approach	SB Approach	EB Approach	WB Approach		
Auto	-	-	2,080	-	6,048,810	82.5%
MDT	-	-	323	-	940,092	12.8%
HDT	-	-	9	-	25,348	0.3%
Buses	-	-	3	-	9,386	0.1%
MCY	-	-	58	-	167,287	2.3%
Aux	-	-	49	-	142,856	1.9%
Total	-	-	2,522	-	7,333,779	100.0%