PERRY STREET SPECIFIC PLAN
21611 SOUTH PERRY STREET, CARSON, CA 90745

DRAFT AMENDMENT

Prepared for

City of Carson

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RAND|PASTER|NELSON

ATTACHMENT NO. 5

1. INTRODUCTION

1.1 WHAT IS A SPECIFIC PLAN?

A Specific Plan is a regulatory tool that local governments use to guide development in a focused area of the community. While the General Plan is the primary guide for growth and development citywide, a Specific Plan can focus on the unique characteristics of a special area by customizing the planning process and land use regulations to that area.

California Government Code, Title 7, Division 1, Chapter 3, Article 8, Sections 65450 through 65457, allows cities and counties to prepare Specific Plans to develop policies, programs, regulations, and guidelines to implement the jurisdiction's adopted General Plan.

As prescribed by law, a Specific Plan includes text and diagrams that generally describe the following:

- The distribution, location, and extent of all land uses.
- The standards and criteria by which new development will proceed.
- The proposed distribution, location, extent, and intensity of major components of public infrastructure, such as transportation and utility systems.
- A program of implementation measures, such as financing measures, policies, regulations, and public works projects.

The Perry Street Specific Plan ("PSSP") was originally adopted by ordinance to establish the necessary plans, development standards, regulations, infrastructure requirements, and implementation programs on which subsequent project-related development activities within the Plan area are to be founded. This amendment to the PSSP incorporates changes to accommodate two different development scenarios: a self-storage facility with management office, retail, and café uses ("Project A") and a residential townhome development with 62 units, parking and open space for residents ("Project B").

1.2 PURPOSE AND AUTHORITY OF THE SPECIFIC PLAN

The PSSP provides applicants, City staff, the public, and City decision makers with the information on the project and how the PSSP area is consistent with the City of Carson General Municipal Code. The PSSP is a regulatory document prepared pursuant to the provisions of California Government Code sections 65450 through 65457. It is intended that local public works projects, design review plans, site plans, permits, or any other action requiring ministerial or discretionary approval applicable to this area be consistent with the PSSP.

The PSSP amendment is being processed in accordance with California Government Code section 65453(a), which permits amendments to existing adopted specific plans as necessary by the City's legislative body.

1.3 RELATIONSHIP TO OTHER LAND USE REGULATIONS

The City of Carson General Plan establishes the overall vision for growth and development in the

community. The General Plan Land Use Element establishes clear and logical patterns of land use and standards for new development. A key feature of the Land Use Element is the Land Use Policy Map, which shows the location, density, and intensity of development for all land uses citywide. The Land Use Map and the General Plan goals and policies guide future growth and development in Carson.

State law requires that any Specific Plan be consistent with the City's General Plan. In October 2022, the City Council adopted a General Plan Amendment (GPA) No. 111-21 (from Light Industrial to Heavy Industrial) concurrent with the adoption of the original PSSP. A corresponding amendment to the City Zoning Map (ZCC) No. 185-21 was processed to change the Site's zoning to "Perry Street Specific Plan." In April 2023, the comprehensive Carson 2040 General Plan update took effect and updated the Land Use Element. The updated Land Use Element included a change to the Site's land use designation from Heavy Industrial to Corridor Mixed Use.

The PSSP is being amended in order to accommodate an alternative development scenario. In order to maintain consistency between the City's zoning and General Plan, as well as to align with the Development Agreement (DA) No. 27-21 which was adopted with the original PSSP and is being updated with this amendment, a clarifying amendment to the General Plan Land Use and Revitalization Element (GP Land Use Element) will be processed alongside the PSSP amendment. With these updates, the General Plan Land Use Element, Zoning Map, and PSSP will be consistent.

1.3.1 ENVIRONMENTAL REVIEW

In May 2022, a mitigated negative declaration (MND) was prepared and circulated for public review in accordance with the provisions of the California Environmental Quality Act to address the potential environmental effects of the Project A scenario of the original PSSP. The MND imposed mitigation measures to reduce potential impacts resulting from implementation of Project A. Mitigations identified in the MND were identified in the Mitigation Monitoring and Reporting Program (MMRP) adopted with the MND and are incorporated into this PSSP by reference for Project A.

With the PSSP amendment, an addendum to the City's Carson 2040 General Plan Environmental Impact Report (EIR) will be prepared to assess the consistency of the PSSP amendment and Project B with the EIR in accordance with CEQA Guidelines Section 15168(c).

1.4 SPECIFIC PLAN ORGANIZATION

Chapter 2, The Plan, articulates the overall vision for the PSSP area, including land uses, architecture, landscape, and community benefits. Chapter 3, Development Standards, lists the permitted land uses as well as development standards for building form, layout, open space, parking, and other development requirements for both Project A and Project B. Chapter 4, Infrastructure, highlights utility services and improvements required by the Plan for both Project A and Project B. Finally, Chapter 5, Implementation, establishes the administrative responsibilities and review authorities for managing the Plan over time.

1.5 PERRY STREET SPECIFIC PLAN CONTEXT AND EXISTING CONDITIONS

The Perry Street Specific Plan ("PSSP") area encompasses approximately 2.80 acres and includes

APNs 7327-010-014 and 7327-010-015 located at 21611 South Perry Street, Carson, California 90745 (the "Project Site") The Project Site is bounded by East Carson Street to the south, the Dominguez Flood Control Channel to the west, Perry Street to the east, and existing single-family residences to the north.

The PSSP will permit two different development scenarios. Project A describes a mixed-use project consisting of a self-storage facility with management office, retail, and café uses. The self-storage facility comprises approximately 121,775 square feet in a mix of two one- and two-story buildings and one three-story building, with a maximum height of approximately 36 feet. Building A features a management office, retail and café uses total approximately 4,675 square feet. Buildings B and C would contain interior climate-controlled storage units and external non-climate storage units. Access to Project A would be provided from a single driveway on Perry Street

Project B is a three-story residential townhome development with 62 units, parking and open space for residents. Project B would include 10 distinct buildings designed as four building types: Building Type A would contain four units, Building Type B would contain six units, Building Types C and D would both contain eight units per structure. Access to the residential Project B would be provided from a single driveway on Perry Street leading to private Drives and Courts that provide access to the ground floor garages connected to each unit. An Emergency Vehicle Access (EVA) and Pedestrian-only access would be provided from Carson Street. Open space areas for residents would be provided at the west edge of the site and open parking spaces for residents and guests are designed in multiple locations throughout. An additional Emergency Vehicle Only and Pedestrian Emergency-Use access point would also be provided along Carson Street.

1.5.1 SITE CONDITIONS

The Project Site is currently a vacant and undeveloped lot. There are currently 17 groundwater monitoring wells present at the Project Site used as part of a groundwater monitoring program.

1.5.2 SURROUNDING LAND USES

The Project Site is located in a region characterized by a mix of residential and commercial uses. The Project Site is located on the northwest corner of East Carson Street and South Perry Street, with the Dominguez Flood Control Channel to the west and northwest, in between the Project Site and Interstate 405 further west. Auto repair facilities and truck dealers are located to the east and south across Perry and Carson Streets. Two- and three-story multi-family housing is located across Perry Street to the east, with Perry Street Mini-Park and single-family neighborhoods to the north and northeast.

1.5.3 EXISTING GENERAL PLAN DESIGNATIONS AND POLICIES

The City of Carson's General Plan (General Plan) designates the Project Site for "Corridor Mixed Use" land uses. A clarifying amendment to the General Plan Land Use Element and Land Use Map will be processed alongside the PSSP amendment to align the original PSSP, the current zoning map, and the

DA, and to acknowledge both Project A and Project B.

General Plan

The existing "Corridor Mixed Use" General Plan land use designation, in conjunction with the PSSP, allows for the mixed use, self-storage use of Project A and the residential townhome use of Project B. The PSSP is consistent with the following General Plan goals and policies:

Land Use Element

GOAL LUR-G-1 *Maintain a balanced land use program that promotes a diversified economic base and capitalizes on Carson's location and assets – strong industrial economy, access to major freeways, rail corridors, airports, and the ports of Long Beach and Los Angeles, and the presence of California State University, Dominguez Hills.*

CONSISTENCY: The PSSP would maximize the City's market potential by facilitating development of a vacant and undeveloped lot with either a mixed-use project consisting of a state-of-the-art self-storage facility with lobby/self-storage management office, retail, and café uses or with a new 62-unit residential townhome development. Consistent with Goal LU-5, the PSSP would provide population-serving opportunities such as a self-storage service and neighborhood-serving café/retail uses, which would increase revenues to the City and provide new employment opportunities. Alternatively, the PSSP would permit the construction of necessary new housing that will attract new residents to the City. Consistent with Policy LU-5.2, the PSSP would implement a strategy to develop the site as a neighborhood-serving commercial resource or a new residential development that will attract new investment and promote economic development.

GOAL LUR-G-4 *Promote a diversity of complementary uses in different parts of the city, including mixed flexible office space, retail, dining, residential, hotels, and other compatible uses, to foster vibrant, safe, and walkable environments, with flexibility to accommodate emerging uses and building typologies.*

CONSISTENCY: The PSSP would allow for the development of Project A, a mixed-use project consisting of a state-of-the-art self-storage facility with lobby/self-storage management office, retail, and café uses on a currently vacant and undeveloped lot. Project A would be generally consistent with the mixed-use, commercial corridor along Carson Street, and the PSSP includes development standards to ensure compatibility with adjacent residential land uses. Project A would create an appropriate transition between the residential and commercial areas along Carson Street by providing neighborhood-serving uses in an attractively designed facility. Similarly, Project B would provide new residential uses which provide a moderate density transition compatible with both the single family uses to the north and the commercial uses of the nearby Downtown area to the west. Therefore, the PSSP is consistent with Goal LU-7.

GOAL LUR-G-5 *Provide opportunities for new residential development in a variety of settings, including in high-resource/higher-income areas and through infill and redevelopment, without impacting existing neighborhoods or creating conflicts with industrial operations, while conserving mobile homes as much as possible, which provide more affordable housing.*

CONSISTENCY: Through Project B, the PSSP would facilitate the development of a new residential development that will increase home ownership opportunities at a scale that is compatible with the existing residential uses in the surrounding vicinity. Project B will be attractively designed, landscaped, and oriented to the pedestrian experience for both residents and neighbors. The addition of new residential units within close proximity to the City's Downtown district will create a stronger connection with surrounding residential areas to the City's economic base and promote local businesses. Therefore, consistent with Goal LUR-G-5 and the corresponding policies, the PSSP will promote a project which reflects "Livable Communities" concepts.

GOAL LUR-G-10 *Provide lands to accommodate a wide range of light industrial uses including research and development, manufacturing, agricultural processing, and logistics near transportation corridors in areas where low- to moderate intensity operations would be sufficiently buffered.*

CONSISTENCY: The PSSP would allow for the development of Project A, a mixed-use project consisting of a state-of-the-art self-storage facility with lobby/self-storage management office, retail, and café uses on a currently vacant and undeveloped lot. Project A would be generally consistent with the mixed-use, commercial corridor along Carson Street, which was formerly industrially zoned. The addition of a self-storage use provides an appropriate buffer between higher-intensity areas such as the freeway and the lower density residential neighborhoods adjacent to the site. The PSSP includes additional development standards to ensure compatibility with adjacent land uses. Therefore, the PSSP is consistent with Goal LUR-G-10.

GOAL LUR-G-12 *Promote adaptive reuse and environmental remediation of brownfield sites, sites with abandoned buildings and facilities, or underutilized properties with productive uses.*

CONSISTENCY: The PSSP allows for the flexible development of Project A, a mixed use, self-storage project, or Project B, a residential townhome development. By providing alternative development scenarios that are appropriately regulated to be compatible with surrounding uses, the PSSP ensures that a currently vacant, underutilized site may be developed into one of two uses that serve the overall

goals of the City. The PSSP allows for the site to be utilized for housing production or for a mixed use project that will create a small community amenity and serve the nearby residential uses, meeting the Goal of LUR-G-12.

GOAL LUR-G-13 *Ensure adequate buffers and transitions between industrial and residential land uses as sites are developed or redeveloped.*

CONSISTENCY: The PSSP includes regulations and development standards to ensure that there are appropriate buffers between Project A or Project B and the nearby residential land uses. Project A is required to provide an enlarged, landscaped setback along the northern property line which adjoins and existing residential neighborhood, providing screening of the proposed commercial and self-storage uses. Project B similarly provides a landscaped buffer adjacent to the adjoining residential uses and will be inherently compatible with existing residential as it replicates the land use pattern on the Project Site. The PSSP provides two development scenarios which will be adequately buffered from existing residential uses, meeting Goal LUR-G-13.

GOAL LUR-P-2 *Promote development of a range of housing types, including single-family homes on small lots, accessory dwelling units, townhomes, lofts, live-work spaces in transitioning industrial districts, and senior and student housing to meet the needs of future demographics and changing family sizes.*

CONSISTENCY: Through Project B, the PSSP would facilitate the development of a new residential development that will increase home ownership opportunities at a scale that is compatible with the existing residential uses in the surrounding vicinity. Project B will provide a variety of unit sizes and types, which will create opportunity for a variety of household types to purchase as first-time buyers or upgrade their home to a larger, amenitized development. As the residential units will be subdivided as condominiums, Project B will allow for a more flexible site plan than may be achieved in a fee simple lot arrangement. The PSSP provides development standards and regulations that promote this range of housing typology, meeting the goal of LUR-P-2.

Economic Development Element

GOAL ED-G-7 *Establish land use priorities based on economic criteria and sound fiscal planning; reserve sites for designated uses rather than accepting any development.*

CONSISTENCY: The PSSP would maximize the City's market potential by permitting a flexible development scenario, either through the development of Project A, a mixed use self-storage facility, or through Project B, a new residential townhome development. By facilitating development of a vacant and undeveloped lot with

permission to develop two in-demand project types, the PSSP furthers the goal of sound land use planning inspired by economic development.

1.5.4 EXISTING ZONING DESIGNATIONS AND STANDARDS

Zoning Ordinance

Article 9 of the Carson Municipal Code is the Zoning Ordinance, which is the regulatory tool to implement the land use goals, policies, and actions established by the General Plan. The Zoning Ordinance identifies specific zoning districts in the city and provides development standards and regulations that apply to each district.

The Carson Zoning Code and Map was amended by ordinance concurrent with adoption of the PSSP to ensure complete consistency with the General Plan. The Perry Street Specific Plan (PSSP) zoning designation replaced the Site's previous designation as Manufacturing, Light—Design Overlay (ML-D) zoning. The PSSP amendment will provide development standards and regulations for Project A and Project B.

Where the City's Zoning Ordinance's regulations, development standards, and/or design guidelines are inconsistent with the PSSP, the PSSP standards, regulations, and guidelines shall supersede. However, any issue not specifically addressed in the PSSP shall be subject to the existing standards and regulations of the Zoning Ordinance.

2. THE PLAN

2.1 THE PLAN OBJECTIVES

The Perry Street Specific Plan ("PSSP") is intended to achieve the following objectives:

PROJECT A

- Provide a self-storage facility to support multi-family housing development in the vicinity of the Project Site by accommodating an anticipated increase in demand for storage space, helping the City achieve its Housing Element goals and Regional Housing Needs Assessment obligations.
- Provide neighborhood-serving amenities, such as a self-storage service and café/retail uses, in an attractively designed facility to revitalize a vacant and underutilized lot, increase revenues to the City, provide new employment opportunities, and create an appropriate transition between residential and commercial areas along Carson Street.
- Limit transportation and other environmental impacts compared to traditional warehouse, storage, and manufacturing uses and other commercial, retail, office or industrial projects.

PROJECT B

- Provide a residential housing development with ownership opportunities to support the City's Housing Element goals and Regional Housing Needs Assessment obligations.
- Revitalize a vacant, underutilized lot with housing, landscaping, and residential amenities that complement the existing residential neighborhoods in the surrounding area.
- Provide new housing options within close proximity to the City's Downtown district, thereby reducing vehicle trips typically associated suburban housing sprawl.

2.2 THE PLAN

The PSSP authorizes two project scenarios. Project A is a one- to three-story self-storage facility with management office, retail, and café uses. Project B is a three-story residential townhome development with 62 units.

2.2.1 PROJECT A

Project A describes a mixed-use project consisting of a self-storage facility with management office, retail, and café uses. The self-storage facility comprises approximately 121,775 square feet in a mix of two one- and two-story buildings and one three-story building, with a maximum height of approximately 36 feet. The management office, retail and café uses total approximately 4,675 square feet. Project A will develop a vacant and undeveloped lot adjacent to the Perry Street mini-park into a neighborhood-serving resource.

The buildings house interior climate-controlled units and external non-climate units with ramp access to the second floors of the internal buildings. Storage units range in size with a 5 foot by 10 foot unit as the smallest unit for rent and a 10 foot by 38 foot unit as the largest unit for rent. Project A consists of neutral-toned building materials in Spanish styled architecture, which include Spanish

accents, Spanish tile roof, spandrel glazing, and landscaping. The proposed design largely resembles a multi-family residential building in its aesthetics and massing. The exceptional design and mix of uses will revitalize the vacant lot and the surrounding area by creating an accommodating transition between the residential and commercial areas along Carson Street and providing neighborhood-serving uses potentially including a café and mail service store such as UPS or FedEx.

Access to the proposed self-storage facility is controlled via computerized access gates. 22 public parking spaces are provided outside the gates with an additional 19 spaces provided inside the gates for a total of 41 parking spaces. The premises will be under digital surveillance 24 hours a day, 7 days a week. Office hours are planned from 8am to 6pm, Monday through Sunday with access hours of 6am to 10pm, 7 days a week.

2.2.2 LANDSCAPING – PROJECT A

Project A includes approximately 12,134 square feet of landscaping around the perimeter of the site. A variety of drought tolerant ornamental shrubs and medium size trees, which vary in height, are included as a part of the proposed landscaping. Landscaping and plantings to be provided along the site's northern edge offer a verdant privacy screen for adjacent residential uses.

2.2.3 SECURITY – PROJECT A

Project A will feature a contemporary 24-hour security system including keypad entry security gates, individually monitored and alarmed storage units, video surveillance monitoring, burglar alarms, an automatic fire sprinkler system, as well as an intercom system. Pedestrian areas including entryways into the proposed project are well-lit for security. An on-site manager or other office personnel will monitor these security systems on a control panel during hours of operation. Should there be a violation of any of the security systems when the management office is closed, an independent security firm will respond. Hence, the need for and impact upon municipal services such as police and fire are minimized.

Fire suppression within the proposed buildings will consist of a National Fire Protection Association (NFPA)-13 sprinkler system (deferred submittal) as well as surrounding fire hydrants. Construction type is Type-II non-combustible.

2.2.4 TRAFFIC & CIRCULATION – PROJECT A

To accommodate the entry to the new storage facility in Project A, the existing driveway will be demolished and a new driveway constructed, to be located near the center of the eastern frontage along Perry Street. Curb, gutter, sidewalks and driveway will be designed and constructed with City Engineer review and approval.

No access points or curb cuts are proposed along the Carson Street arterial.

Typical daily operational traffic is low in frequency and significantly less than a traditional warehouse, storage, and other manufacturing or commercial uses. Operational traffic consists of inbound and outbound UPS-type delivery trucks and self-storage patrons arriving and departing the project site. Peak traffic trips to the project site are offset from the peak morning and afternoon commute periods.

2.2.5 SIGNAGE CONCEPT – PROJECT A

Proposed signage includes building identification signage, street address, and identification/wayfinding signage for the vehicular and pedestrian entries to the buildings.

2.3.1 PROJECT B

Project B is a three-story residential townhome development with 62 units and maximum density of 22.14 dwelling units per acre, parking and open space for residents. Project B would include 10 distinct buildings designed as four building types: Building Type A would contain four units, Building Type B would contain six units, Building Types C and D would both contain eight units. Across all buildings, Project B would provide eight (8) two-bedrooms ranging from 1,210 to 1,168 square feet each, 27 three-bedrooms approximately 1,525 square feet each, and 27 four-bedrooms approximately 1,783 square feet each, with an overall average unit size of approximately 1,594 square feet.

Project B would be designed with a modern agrarian/farmhouse architectural vocabulary, designed in various color and material schemes a pitched roof accent. The façade designs would vary between the various buildings types, including brick veneer, corrugated metal panels, smooth stucco, vertical sidings, asphalt shingle roofs, vinyl windows, and metal railing and garage door accents.

Access to Project B would be provided from a single driveway on Perry Street leading to private driveways that provide access to the ground floor garages connected to each unit. An Emergency Vehicle Access (EVA) and Pedestrian-only access would be provided from Carson Street. Two parking spaces would be provided within a private garage for each of the 62 units and an additional 26 spaces would be dispersed throughout the site to provide for guest parking, resulting in a total of 150 vehicle parking spaces.

Common open space areas for residents totaling 29,071 square feet would be focused along the west end and the substantial setback along the northern edge of the site. The common open space areas are planned with different characteristics to provide different passive and active recreation options for the residents. These areas include the “contemplative garden” area at the northwest corner of the site, the “neighborhood park” areas with seating at the southwest corner, and a trail that runs along the north property line made of lush landscaping and decomposed granite. Private balconies would be provided at each unit, comprising 72 square feet per unit or 4,722 square feet total. Such balconies shall have no dimension less than 5 feet.

2.3.2 LANDSCAPING – PROJECT B

Project B includes approximately 29,071 square feet of landscaped common open space, featuring internal passageways between the residential buildings. A variety of drought tolerant ornamental shrubs and medium size trees, which vary in height, are included as a part of the proposed landscaping. Landscaping and plantings to be provided along the site’s northern edge offer a passive area for residents while still providing privacy to and from the existing residential uses to the north.

2.3.3 SECURITY – PROJECT B

Ground-floor access to the individual residential buildings will be secured for Project B and residents will have private access and control of the entry points for their individual units. Pedestrian area lighting and landscape lighting in the proposed project are well-lit for security. All vehicular access is centralized into one location and enforced through a perimeter fence, limiting the risk of non-resident entry into the property. All residents will be provided with a list of emergency contacts for local law enforcement resources when moving into the project.

2.3.4 TRAFFIC & CIRCULATION – PROJECT B

To accommodate the entry to all residential units in Project B, the existing driveway will be demolished and a new driveway constructed, to be located near the center of the eastern frontage along Perry Street. Curb, gutter, sidewalks and driveway will be designed and constructed with City Engineer review and approval.

No access points or curb cuts are proposed along the Carson Street arterial, with the exception of a gated entry/exit restricted exclusively to Emergency Vehicle Access (EVA) and Pedestrian Emergency-Use only.

Typical operational traffic from Project A is low in frequency and consistent with the existing patterns of the surrounding residential neighborhoods. Daily trips are generated by residential occupants, guests, and other limited or temporary visitors consistent with the operation of a low density project.

Public Transportation access includes the bus stop on Carson Street (westbound) that is immediately proximate to the subject property and provides for easy access to the public transportation network to both residents and visitors.

2.3.5 SIGNAGE CONCEPT – PROJECT B

Proposed signage includes building identification signage, street addresses for each unit, and identification/wayfinding signage for the vehicular and pedestrian entries to the buildings.

3. DEVELOPMENT STANDARDS

3.0 PURPOSE AND APPLICABILITY

This chapter establishes the land use program, allowable land uses, and the development standards that apply within the PSSP for either Project A or Project B. Structures, land uses, and physical improvements—such as signs, landscaping, and lighting—within the boundaries of PSSP shall comply with all applicable requirements of this chapter. These standards are critical to the performance of each use and regulate the scale of development in the PSSP area. Furthermore, the development standards are intended to implement the vision and guiding principles as stated in Chapter 1 of the Specific Plan.

This chapter is structure to provide development standards for either Project A or Project B. The standards for each project are intended to be specific to that project and they are not interchangeable across the different project scenarios.

All references to the municipal code for Project A and Project B refer to Article IX of the Carson Municipal Code in place at the time that the original PSSP was adopted in October 2022. Nothing other than Project A or Project B may be developed on the site.

3.0.1 PERMITTED USES – PROJECT A

This section of the Specific Plan establishes the permitted land uses within the PSSP Area for Project A and the corresponding permit requirements in the event Project A is constructed.

Allowable land uses within the PSSP for Project A are detailed in Table 3.2. The general location of each proposed use will follow the site plan included in the PSSP. Definitions of allowed land uses are provided in this Specific Plan document, and, when not provided in this Specific Plan document, in Chapter 9 of the Carson Municipal Code in effect as of October 2022. The Director of Community Development shall have the authority to interpret the use provisions in this Specific Plan pursuant to Section 5 of this Specific Plan document governing interpretation and approve or deny any additional uses in the future.

Permit Descriptions

Permit	Description
X	Automatically permitted use.
L	Automatically permitted use provided special limitations and requirements are satisfied as noted in Table 3.2.
D	Use permitted subject to the approval of the Director of Community Development.
C	Use permitted upon approval of a conditional use permit.

Permitted Uses for Project A

Use	Permit	Notes
Storage Uses		

Storage, self-storage, mini-warehouse, commercial storage, personal storage, storage building for household goods (in each case, including truck rentals)	X	
Personal Services Uses		
Barber shop, beauty shop, reducing salon, manicure parlor	X	
Clothing services – laundry or dry cleaning agency, self-service laundry or dry cleaning, hand laundry, sponging and pressing, tailor, dressmaker, seamstress, shoe repair.	X	
Fix-it shop.	X	
Parcel delivery service.	X	
Copying, addressographing, mimeographing, photostating, instant printing, blueprinting, silk screening, photography, picture framing.	X	
Retail Sales		
Convenience stores	X	
Department stores, variety stores, and specialized stores for apparel, items for personal use, household items, plants and flowers, and supplies and small equipment for businesses, including antiques	L	No other secondhand items. Swap meets and flea markets, as defined in CMC 9191.670, are prohibited.
Offices		
Business, professional, financial, insurance, real estate, messenger service, advertising, newspaper, or publishing (no printing), ticket agency, travel agency, collection agency, detective agency, security service	X	
Food Sales and Services		
Restaurant (including refreshment stands, soda foundation).	X	
Restaurant, coffee shop, snack shop with outdoor dining space within the limits of the restaurant frontage, provided there is a 7-foot minimum clear path of travel on the sidewalk without obstruction.	X	
Food store	X	
Health Services		
Medical or dental office or clinic, public health center	X	
Optical services (for fitting, grinding, or mounting eyeglasses)	X	

Medical or dental laboratory.	L	Only permitted as an incidental use in a medical/dental office building or clinic.
Pharmacy	X	
Communications and Utilities		
Minor communications facilities	L	See CMC 9138.16.
Post office (including private parcel services)	X	
Temporary Uses		
Office or other permitted commercial use in a trailer or other mobile unit	L	Permitted for a period not exceeding six months during construction of a building on the same lot while a building permit is in effect. The Director of Community Development may approve reasonable time extensions.
Storage of construction materials and equipment at a construction site without the screening which would be required for permanent outdoor storage	L	Only during the period a building permit is in effect.

Maximum Building Height

No building in the PSSP shall exceed a height at any point of 36 feet when developed as Project A.

Floor Area Ratio

Floor area ratio (FAR) is defined as the ratio of floor area to total (gross) lot area (inclusive of any required dedications, public or private easement areas, or setback areas).

FAR shall not exceed a maximum of 1.0 as calculated over the entire Project Site when developed as Project A.

3.0.2 PROPERTY SETBACKS – PROJECT A

Building setback is measured from the property line to the closest building façade. Minimum building setbacks above the ground floor are required. Projections, such as balconies, may encroach into the setback as allowed in Table 3.3, Building Setback Requirements. Buildings shall adhere to minimum setbacks as required below.

Building Setback Requirements for Project A

Setback	Minimum
Front (Perry St)	25 ft.
Street Side (Carson St)	10 ft.

Rear (abutting residential)	40 ft.

Permitted Encroachments Within Setbacks

Walkway connections to building entrances
Vehicular and bike access ways
Public art displays, fountains, planters, outdoor seating areas, public plazas, or other similar amenities
Cornices, eaves, belt courses, sills, buttresses, fireplaces, windows, fully screened mechanical equipment, or other similar features may extend or project into a required front or side yard setback no more than 30 inches
Awnings, canopies where overhang may encroach 36 inches into required setback
Outdoor dining may encroach into street-adjacent setback if a clear and unobstructed sidewalk is provided that is a minimum of 5 feet wide

3.0.3 PERMITTED USES – PROJECT B

This section of the Specific Plan establishes the permitted land uses within the PSSP area for Project B and the corresponding permit requirements in the event Project B is constructed.

Allowable land uses within the PSSP for Project B are detailed in Table 3.2. The general location of proposed uses will follow the site plan included in the PSSP. Definitions of allowed land uses are provided in this Specific Plan document, and, when not provided in this Specific Plan document, in Article IX of the Carson Municipal Code in effect as of October 2022. The Director of Community Development shall have the authority to interpret the use provisions in this Specific Plan pursuant to Section 5 of this Specific Plan document governing interpretation and approve or deny any additional uses in the future. All other uses are prohibited, except as otherwise required by state and federal law.

Permit Descriptions

Permit	Description
X	Automatically permitted use.
L	Automatically permitted use provided special limitations and requirements are satisfied as noted in Table 3.2.
D	Use permitted subject to the approval of the Director of Community Development.
C	Use permitted upon approval of a conditional use permit.

Permitted Uses for Project B

Use	Permit	Notes

Residential Uses		
Residential Condominium; residential stock cooperative	X	Residential Condominium uses in Project B are exempt from the requirements of CMC sections 9302 – 9306 and 9128.14 - 9128.16.
Temporary Uses		
Office or other permitted commercial use in a trailer or other mobile unit	L	Permitted for a period not exceeding six months during construction of a building on the same lot while a building permit is in effect. The Director of Community Development may approve reasonable time extensions.
Storage of construction materials and equipment at a construction site without the screening which would be required for permanent outdoor storage	L	Only during the period a building permit is in effect.

Maximum Building Height

No building in the PSSP shall exceed a height at any point of 39 feet when developed as Project B.

Floor Area Ratio

Floor area ratio (FAR) is defined as the ratio of floor area to total (gross) lot area (inclusive of any required dedications, public or private easement areas, or setback areas).
FAR shall not exceed a maximum of 1.0 as calculated over the entire Project Site when developed as Project B, unless through a Development Agreement, a 15% increase is authorized by providing Community Benefits.

3.0.4 BUILDING SETBACKS – PROJECT B

Building setback is measured from the property line to the closest building façade. Minimum building setbacks above the ground floor are required. Projections, such as balconies, may encroach into the setback as allowed in Table 3.3, Building Setback Requirements. Buildings shall adhere to minimum setbacks as required below.

Building Setback Requirements for Project B

Setback	Minimum
Front (Perry St)	10 ft.
Street Side (Carson St)	5 ft.
North Side (abutting residential)	23 ft.
West Side (abutting channel)	10 ft.

Permitted Encroachments Within Setbacks

Walkway connections to building entrances
Vehicular and bike access ways
Public art displays, fountains, planters, outdoor seating areas, public plazas, or other similar amenities
Cornices, eaves, belt courses, sills, buttresses, fireplaces, windows, fully screened mechanical equipment, or other similar features may extend or project into a required front or side yard setback no more than 30 inches
Awnings, canopies where overhang may encroach 36 inches into required setback
Outdoor dining may encroach into street-adjacent setback if a clear and unobstructed sidewalk is provided that is a minimum of 5 feet wide

3.1 PARKING AND LOADING

3.1.1 MINIMUM PARKING REQUIREMENTS – PROJECT A

Project A shall provide a total of 41 parking spaces, including 39 standard spaces and 2 accessible spaces.

3.1.2 DESIGN OF PARKING – PROJECT A

Expansion of Leasable Floor Area

Upon any future request for change or enlargement of a building or structure that increases the amount of leasable floor area, additional parking and loading spaces shall be provided for the new leasable floor area without diminishing the existing parking provided for the existing use, buildings, and/or structures, unless the Director of Community Development determines that such additional parking is not required to maintain compliance with Section 3.1 of this Specific Plan.

Parking Areas

Project A shall provide 22 public parking spaces outside the computerized access gates for the self-storage facility, and 19 parking spaces inside the access gates.

Project A shall include a new driveway, located near the center of the eastern frontage along Perry Street. The driveway entrance shall be 28 feet wide, and all drive aisles shall be in conformance with local fire department requirements specific to the site.

Parking Design and Standards

Parking spaces shall adhere to the following dimensions:

- Standard spaces: 8.5’ x 18’
- Parallel spaces: 8’ x 24’

Electric Vehicle (EV) Charging Stations

EV charging stations shall be provided in compliance with state building code.

3.1.3 MINIMUM PARKING REQUIREMENTS – PROJECT B

Parking for Project B shall be required at the ratios of 2.0 spaces per 2-, 3- or 4-bedroom unit, with Guest parking provided at a ratio of 0.2 spaces per unit. The site plan included with the PSSP provides

additional parking with a total of 150 parking spaces.

Use	Quantity	Ratio	Spaces Required
2-bedroom Unit	8	2.0 spaces per unit	16
3-bedroom Unit	27	2.0 spaces per unit	54
4-bedroom Unit	27	2.0 spaces per unit	54
Guests	62	0.2 spaces per unit	13
		Total Parking	**137**

3.1.4 DESIGN OF PARKING – PROJECT B

Parking Areas

Project B shall provide private parking spaces for each unit within the garages attached to each unit which are accessible via the eight separate private Drives or Courts. Such Drives or Courts shall provide for maneuvering clearance of at least 2 ft past garage doors.

Any voluntary common or guest parking provided may be dispersed throughout the site as surface parking.

Access to Project B would be provided from a single 26-foot wide driveway on Perry Street leading to private Drives or Courts that provide access to the ground floor garages connected to each unit. An Emergency Vehicle Access (EVA) and Pedestrian-only access would be provided from Carson Street. Two parking spaces would be provided within a private garage for each of the 62 units and an additional 26 spaces would be dispersed throughout the site to provide for guest parking, resulting in a total of 150 vehicle parking spaces.

Parking Design and Standards

Parking Spaces shall adhere to the following dimensions:

- Standard spaces: 9’ x 18’

Private spaces within an attached garage may be designed in a standard (side-by-side) or tandem formation. Such tandem formation shall meet a minimum garage inside dimension of 10.5 ft width by 40 ft length.

Storage Areas

Storage for each unit shall be provided in garages and may be provided as above parking overhead storage, provided the minimum area is at least 100 cf per unit.

Bicycle Parking

Bicycle Parking would shall be provided in compliance with the California Building Code (CBC).

Electric Vehicle (EV) Charging Stations

EV charging stations shall be provided in compliance with CBC.

Laundry Facilities

Laundry facilities shall be provided within each unit.

3.2 LANDSCAPE STANDARDS

3.2.1 LANDSCAPING – PROJECT A

Project A would include approximately 12,134 square feet of landscaping around the perimeter of the Project Site. A variety of drought tolerant ornamental shrubs and medium size trees, which would be varying in height, would be included as a part of the proposed landscaping. Landscaping and plantings to be provided along the site's northern edge will offer a verdant privacy screen for adjacent residential uses.

3.2.2 LANDSCAPING – PROJECT B

Project B would include approximately 29,071 square feet of landscaping around the perimeter of the site, within the internal passageways between the residential buildings, and within the common open space. A variety of drought tolerant ornamental shrubs and medium size trees, which vary in height, are included as a part of the proposed landscaping. Landscaping and plantings to be provided along the site's northern edge offer a passive area for residents while still providing privacy to the existing residential uses to the north. Landscaping will comply with the California Department of Water Resources Model Efficient Landscape Ordinance set forth in CMC and Chapter 2.7 of Division 2 of the California code of Regulations and Chapter 10.09 of Title 20 (Utilities Code) of the Los Angeles County Code.

A landscape and irrigation plan shall be submitted with the permit application for all projects for which landscaping is required.

No hedge, tree, or landscape planting shall be planted to obscure or block the visibility of vehicles entering or exiting an alley, driveway, parking lot, street intersection or other vehicle right-of-way or to constitute an unreasonable and unnecessary hazard to persons lawfully using an adjacent pedestrian or vehicle right-of-way.

Project B would include 4,722 square feet of private open space and 29,071 square feet of common open space, for a combined total of 33,793 square feet of total open space.

3.3 LIGHTING

3.3.1 LIGHTING – PROJECT A

New lighting for Project A would include building identification wayfinding, and security lighting. Low emittance lighting would be provided on the walls of the buildings facing the internal drive aisles and mounted at a height of approximately 12 to 14 feet. Pedestrian areas including entryways into the proposed Project would be well-lit for security and ground-mounted light fixtures would be shielded and directed towards the areas to be lit and away from adjacent light-sensitive residential land uses. A detailed safety, lighting, and signage lighting plan shall be submitted and approved by the Director of Community Development, prior to issuance of a building permit, where the plan will

discuss strategies for avoiding spillover lighting and to ensure pedestrian safety. Lighting for uncovered parking areas, vehicular access ways, and walkways shall not exceed a height of 25 feet. In addition, the following lighting standards apply:

1. Lighting within the Specific Plan Area shall be directed to driveways, walkways, and parking, and away from adjacent properties and public rights-of-way.
2. Outside of "public" areas of the Plan Area, lighting temperatures shall not exceed 3000 Kelvin.
3. The pedestrian lights should have a relatively low wattage light source in the warm (yellow) color range (close to 3000 Kelvin).
4. Pedestrian-scaled pole lighting shall provide a minimum of one (1) foot-candle in all public areas.
5. Storefront entries shall be illuminated.
6. Outdoor lighting shall be shielded to prevent glare on adjacent properties.
7. Energy-efficient light bulbs shall be used to minimize environmental impacts.
8. Pedestrian-scale decorative street lighting in sidewalks shall have a maximum spacing of 80 feet on-center. Light sources should be 12 to 14 feet above finished grade.
9. Site lighting requirements shall be one (1) foot-candle per square foot to lower the amount of light that spills across the site.
10. Lighting fixtures shall be integrated into the landscape to facilitate safe pedestrian circulation.
11. Dark-sky lighting is encouraged to minimize light-pollution. Lights should be shielded on top and sides, avoiding all up-lighting.
12. Full-cutoff fixtures shall be used in landscape lighting. Excessive lighting shall be avoided.

3.3.2 LIGHTING – PROJECT B

New lighting for Project B would include building identification wayfinding, landscape lighting, and security lighting. Low emittance lighting would be provided at the primary entrance of each residential unit and at each residential garage. Pedestrian areas including entryways into the proposed Project B would be well-lit for security and ground-mounted light fixtures would be shielded and directed towards the areas to be lit and away from adjacent light-sensitive residential land uses. A detailed safety, lighting, and signage lighting plan shall be submitted and approved by the Director of Community Development, prior to issuance of a building permit, where the plan will discuss strategies for avoiding spillover lighting and to ensure pedestrian safety.

Lighting for uncovered parking areas, vehicular access ways, and walkways shall not exceed a height of 25 feet. In addition to Lighting Requirements of CMC Section 9127.1, the following lighting standards apply:

1. Lighting within the Specific Plan Area shall be directed to driveways, walkways, and parking, and away from adjacent properties and public rights-of-way.
2. Outside of "public" areas of the Plan Area, lighting temperatures shall not exceed 3,000 Kelvin.
3. The pedestrian lights should have a relatively low wattage light source in the warm (yellow) color range (close to 3,000 Kelvin).
4. Pedestrian-scaled pole lighting shall provide a minimum of one (1) foot-candle in all public areas.
5. Outdoor lighting shall be shielded to prevent glare on adjacent properties.
6. Energy-efficient light bulbs shall be used to minimize environmental impacts.
7. Pedestrian-scale decorative street lighting in sidewalks shall have a maximum spacing of 80 feet on-center. Light sources should be 12 to 14 feet above finished grade.
8. Site lighting requirements shall be one (1) foot-candle per square foot to lower the amount of light that spills across the site.
9. Lighting fixtures shall be integrated into the landscape to facilitate safe pedestrian circulation.
10. Lighting design shall be coordinated with the landscape plan to ensure that vegetation growth will not substantially impair the intended illumination.
11. Dark-sky lighting is encouraged to minimize light-pollution. Lights should be shielded on top and sides, avoiding all up-lighting.
12. Full-cutoff fixtures shall be used in landscape lighting. Excessive lighting shall be avoided.

3.4 SIGNAGE

3.4.1 SIGNAGE – PROJECT A

Proposed signage would include building identification signage, street address, and identification/wayfinding signage for the vehicular and pedestrian entries to the buildings.

All signs proposed for Project A will be governed by a comprehensive sign program that will provide internal consistency in design style and direction for placement and size of signs, including a standardized wayfinding program. The comprehensive sign program shall also include provisions that ensure that lighting from signs shall not significantly intrude upon or impact adjacent residential uses. The comprehensive sign program will be submitted after approval of the Specific Plan for review and approval by Director of Community Development pursuant to Chapter 6, *Administration,* as a part of the ministerial review and approval process.

3.4.2 SIGNAGE – PROJECT B

Proposed signage would include community monument signage, building identification signage, street addresses, and identification/wayfinding signage for the vehicular and pedestrian entries to the buildings.

All signs proposed for Project B will be governed by a comprehensive sign program that will provide internal consistency in design style and direction for placement and size of signs, including a standardized wayfinding program. The comprehensive sign program shall also include provisions that ensure that lighting from signs shall not significantly intrude upon or impact adjacent residential uses. The comprehensive sign program will be submitted after approval of the Specific Plan for

review and approval by Director of Community Development pursuant to Chapter 6, *Administration,* as a part of the ministerial review and approval process.

3.5 FIRE STANDARDS

3.5.1 FIRE STANDARDS – PROJECT A

1. Fire suppression within buildings shall consist of a National Fire Protection Association (NFPA)-13 sprinkler system as well as surrounding fire hydrants.
2. Construction type is to be Type-II non-combustible.
3. All-weather fire department access shall be provided.
4. Vehicular access to all required fire hydrants must be provided and maintained as serviceable throughout construction.
5. Provide fire-department- or City-approved street signs and building access numbers prior to occupancy.
6. All buildings over 5,000 square feet shall have sprinkler systems.
7. A Knox box or other access provisions shall be provided through all gates.
8. Approval from the fire department is required prior to issuance of building permits.

3.5.2 FIRE STANDARDS – PROJECT B

1. All-weather fire department access shall be provided.
2. Vehicular access to all required fire hydrants must be provided and maintained as serviceable throughout construction.
3. Provide fire-department- or City-approved street signs and building access numbers prior to occupancy.
4. All residential and mixed-use buildings over 5,000 square feet shall have sprinkler systems.
5. A Knox box or other access provisions shall be provided through all gates.
6. Approval from the fire department is required prior to issuance of building permits.

3.6 NOISE ATTENUATION

3.6.1 NOISE ATTENTUATION – PROJECT A

The City's General Plan Noise Element identifies the maximum exterior noise level for commercial and industrial uses as 75 dBA CNEL (maximum interior exposure is 55 dBA CNEL for commercial uses and 65 dBA CNEL for industrial uses).

3.6.2 NOISE ATTENTUATION – PROJECT B

Applicants for new noise-sensitive development (e.g., residential) must demonstrate to the Director of Community Development that all habitable rooms would meet the interior noise standard required by the California Building Code before the City issues building permits. This can be accomplished with enhanced construction design or materials, such as double- or triple-paned windows, interior insulation, or exterior insulating panels/materials.

3.7 TRASH AND RECYCLING, AND ORGANICS

3.7.1 TRASH – PROJECT A AND PROJECT B

- Any planned trash and recycling areas for the proposed Project will be finalized by the waste management provider during the site development review and approved by the Director of Community Development prior to issuance of the first building permit.
- Trash and recycling areas serving the Project shall either be enclosed within a building or constructed of solid masonry material with a decorative exterior surface finish compatible with the main structure. The walls shall be a minimum of six feet in height.
- All centralized trash and recycling areas shall include a four-inch concrete pad.
- Any provisions not listed herein or approved in the site development review are subject to CMC Section 9164.1 et seq. Trash and Recycling Areas.

3.7.2 COLLECTION AND LOADING OF RECYCLABLE MATERIALS – PROJECT A AND PROJECT B

- Any recycling area(s) shall be located so they are at least as convenient as the location(s) where solid waste is collected and loaded. Whenever feasible, recyclable and organics materials should be adjacent to or incorporated within the trash collection areas.

4. INFRASTRUCTURE

Both project scenarios permitted by the PSSP will have minimal effects upon the City's infrastructure. The attached Figures (and further detailed text below) are excerpted from *Carson Self-Storage Preliminary Utilities Technical Memorandum*, Omega Engineering Consultants, March 2022 [Appendix A] and additional analysis provided by a licensed civil engineer. Excerpts display and discuss existing and proposed storm drains, sanitary sewer lines, water lines, natural gas, electrical lines, and communication lines.

4.1 UTILITIES

4.1.1 WATER

Existing Conditions

Water utilization will be minimal with the largest amount being devoted to landscape irrigation. California Water Service owns and operates a 12" water main in the east side of S Perry Street and a 12" branch off the main even further in the east side of S Perry Street, adjacent to the project. There is one fire hydrant on the east side of S Perry Street, adjacent to the project site.

Proposed Conditions – Project A

Estimated Project Water Demand – Project A

Proposed Use	Average Generation Factor [(a)]	Square Footage	Average Daily Water Demand (GPD)	Estimated Water Use (AFY) 2045 – Ultimate Condition
Café / Commercial	0.28 GPD/SQFT	4,675 SQFT	1,309	1.5
Landscaping / Open Space	-	12,134 SQFT	254	0.29
System Water Losses (3.4%)	-	-	53	0.06
Existing Site Use	0	0	0	0
Proposed Total Demand	-	-	1,616	1.85

a) All flows were calculated using historical data for the Dominguez District, as provided in the Cal Water WSA Water Factor Tool.
b) Estimates of landscape irrigation are based on MWELO ETWU calculations provided by Cal Water. Landscape irrigation estimates include all irrigated areas including public open space and private yards.

Water service to commercial spaces is expected to be the main contributor of water consumption for Project A. The total water demand for Project A is conservatively estimated at 1.85 AFY at buildout. Project A will require the construction of new onsite water service infrastructure to serve the new buildings.

Fire water demands place the greatest immediate demand on the water network. Due to size and area of Project A, LACFD will require onsite fire hydrants. A regional Fire Hydrant Flow Test has been received from California Water to confirm the pressure from the existing fire hydrant. The hydrant tested is on the west side of S Perry Street, within immediate vicinity of the Project site. The flow test demonstrated that the hydrant is capable of 4,144 gallons per minute.

According to the 2019 California Fire Code Section 501.3, construction documents for proposed fire apparatus access, location of fire lanes, security gates across fire apparatus roads and construction documents and hydraulic calculations for fire hydrant systems shall be submitted to the fire department for review and approval prior to construction. Referencing the California Fire Code [Appendix B (Table B105.1) and Appendix C (Table C105.1)].

- The water system must deliver 2,500 GPM at 20 psi for 2 hours.
- The spacing between fire hydrants does not exceed 450 feet via vehicular access.
- The distance of proposed buildings must be within 225 feet of a vehicular access roadway that is a minimum of 20 feet wide, paved with concrete or asphalt and does not exceed 15% grade.

California Water Service Company has confirmed that the Fire Hydrant Flow Test form results indicate that available pressure and capacity meet the proposed demands. All buildings will be sprinklered.

Proposed Conditions – Project B

Estimated Project Water Demand – Project B

Proposed Use	Average Generation Factor [(a)]	Dwelling Units or Square Footage	Average Daily Water Demand (GPD)	Estimated Water Use (AFY) 2045 – Ultimate Condition
Residential Townhomes	7,800 GPD/DU	60 DU	468,000	524
Landscaping / Open Space	-	29,071 SQFT	254	0.29
System Water Losses (3.4%)	-	-	15,921	17.8
Existing Site Use	0	0	0	0
Proposed Total Demand	-	-	452,333	507

c) All demands were calculated using estimated average private water supply fixture units (WSFU) for similar residential townhome projects. Water demands will be provided during final engineering and will be based on actual WSFU for this project.

d) Estimates of landscape irrigation are based on MWELO ETWU calculations provided by Cal Water. Landscape irrigation estimates include all irrigated areas including public open space and private yards.

The total water demand for Project B is conservatively estimated at 507 AFY at buildout. Project B will require the construction of new onsite water service infrastructure to serve the new buildings.

Fire water demands place the greatest immediate demand on the water network. LACFD will require

onsite fire hydrants. A regional Fire Hydrant Flow Test has been received from California Water to confirm the pressure from the existing fire hydrant. The hydrant tested is on the west side of S Perry Street, within immediate vicinity of the Project site. The flow test demonstrated that the hydrant is capable of 6,231 gallons per minute.

According to the 2022 California Fire Code Section 501.3, construction documents for proposed fire apparatus access, location of fire lanes, security gates across fire apparatus roads and construction documents and hydraulic calculations for fire hydrant systems shall be submitted to the fire department for review and approval prior to construction. Referencing the California Fire Code [Appendix B (Table B105.1) and Appendix C (Table C105.1)]

- The water system must deliver 1,875 GPM at 20 psi for 2 hours.
- The spacing between fire hydrants does not exceed 300 feet via vehicular access.
- The distance of proposed buildings must be within 225 feet of a vehicular access roadway that is a minimum of 20 feet wide, paved with concrete or asphalt and does not exceed 15% grade.

California Water Service Company has confirmed that the Fire Hydrant Flow Test form results indicate that available pressure and capacity meet the proposed demands. All buildings will be sprinklered.

4.1.2 SEWER

Existing Condition

The PSSP site is located within the Consolidated Sewer Maintenance District run by LACDPW. There is an existing 10" clay sewer main in the center of S Perry Street adjacent to the Project Site that is owned by LACDPW.

Proposed Condition – Project A

LACDPW's average wastewater generation factors were used to calculate the estimated demand of the proposed Project as follows:

Proposed Use	Average Generation Factor [(a)]	Proposed Number of Units	Average Daily Water Demand (GPD)
Office	**200/1,000 GPD/SF**	**3,125 SF**	**625**
Café/Restaurants	**1,000/1,000 GPD/SF**	**1,550 SF**	**1,550**
Storage	**25/1,000 GPD/SF**	**117,100 SF**	**2,928**
Proposed Total Demand	-	-	**5,103**
Proposed Total Demand with 2.5 Peaking Factor	-	-	**12,758**
Existing Condition	-	-	**0**

a) All flows were calculated using the County of Los Angeles sewer generation values. See appendix for entire sewer generation.

Project A will contribute 12,250 GPD or .02 cubic feet per second (cfs), when a peaking factor of 2.5 is factored in. This totals a net increase of 12,758 GPD when compared to current vacant condition. It is anticipated that Project A will flow 100% into the existing 10" diameter sewer through two separate sewer laterals.

A will serve letter request was submitted to the LACSD for a 100% discharge of the project sewer that enters their system.

Project A will require construction of new wastewater infrastructure to serve the new buildings. Installation of wastewater infrastructure will be limited to on-site wastewater distribution, and minor off-site work associated with connections to the public main.

Proposed Condition – Project B

LACDPW's peaked wastewater generation factor was used to calculate the estimated peaked sewer flow of the proposed Project as follows:

Proposed Use	Average Generation Factor [(a)]	Proposed Number of Units	Daily Peaked Sewer Flow (cfs)
Residential Townhomes	200/1,000 GPD/SF	60 DU	0.06

Project B will contribute 38,779 GPD or 0.06 cubic feet per second (cfs) of peaked flows. This totals a net increase of 38,779 GPD when compared to current vacant condition. It is anticipated that Project B will flow 100% into the existing 10" diameter sewer through a proposed 6" and 8" on-site sewer lateral design that extends to each of Project B's Private Drives and Courts.

A will serve letter request was submitted to the LACSD for a 100% discharge of the project sewer that enters their system.

Project B will require construction of new wastewater infrastructure to serve the new buildings. Installation of wastewater infrastructure will be limited to on-site wastewater distribution, and minor off-site work associated with connections to the public main.

4.1.3 ELECTRICITY

The existing power service in the vicinity of the PSSP site is supplied by Southern California Edison. Figures 7 and 8 display the Existing and Proposed electrical service for the site.

Proposed Condition – Project A

Temporary Power: There is overhead power available from the pole at the south-east corner of the property which can be a potential source, given that the temporary power is no more than 200A-600A Single Phase.

Permanent Power: Project A would have Southern California Edison run a primary cable from the existing Edison manhole on South Perry Street to a proposed onsite 10' x 12' transformer pad approximately 175' away. Based on historical data provided to SCE, to service buildings of this size & expected usage in this climate zone, a single transformer on a single 10'x12' transformer pad will be sufficient to feed the entire site. Developer shall underground all existing overhead utility lines 12 kilovolts and less both onsite and along project frontage on the west side of Perry Street to the satisfaction of the City Engineer.

All estimated kVA's per building can be found on the proposed utility exhibit in the *Carson Self-Storage Preliminary Utilities Technical Memorandum*, Omega Engineering Consultants, March 2022 [Appendix A].

There are no service upgrades expected at this time.

Proposed Condition – Project B

Temporary Power: There is overhead power available from the pole at the south-east corner of the property which can be a potential source, given that the temporary power is no more than 200A-600A Single Phase.

Permanent Power: There is an existing Southern California Edison manhole on South Perry Street that could potentially extend a primary cable to three (3) proposed onsite 8' x 10' transformer pads dispersed across the site for Project B. Any service upgrades would depend on future engineering design provided by Southern California Edison but is not currently expected.

4.1.4 NATURAL GAS

The existing natural gas service in the vicinity of the PSSP site is supplied by Southern California Gas Company (SoCal Gas).

Existing Condition

The project gas service provider will be Southern California Gas Company. There are no apparent gas facilities on the existing site.

Proposed Condition – Project A

Project A would connect to the existing gas mainline located in South Perry Street east of the property.

Southern California Gas will need to obtain permits to conduct work in the public right of way. Additionally, note that gas meters must be 3' away from any doors and windows, if under an opening window must be minimum 10' above. Gas meters must be easily accessible for emergencies & maintenance.

A will-serve letter was received from Southern California Gas Company on 2/7/2022 (*Carson Self-Storage Preliminary Utilities Technical Memorandum*, Omega Engineering Consultants, March 2022, Appendix A, page 182). Based on similar projects of this size, there are no service upgrades expected at this time.

Proposed Condition – Project B

Project B would be designed as fully electric and no gas service would be provided.

4.1.5 TELECOMMUNICATIONS FACILITIES

Proposed Condition – Project A

The existing telecommunications services in the vicinity of the PSSP site are supplied by various utilities providers such as AT&T Distribution South. From a records request through the utility providers, it has been determined that aerial and underground facilities exist. Will-serve letters have been received from Charter (dated 2/22/22) & AT&T Distribution South (dated 1/31/22) (*Carson Self-Storage Preliminary Utilities Technical Memorandum*, Omega Engineering Consultants, March 2022, Appendix A, pages 184 and 186 respectively). Based on similar projects of this size, there are no service upgrades expected at this time.

Proposed Condition – Project B

The existing telecommunications services in the vicinity of the PSSP site are supplied by various utilities providers such as AT&T Distribution South. From a records request through the utility providers, it has been determined that aerial and underground facilities exist. Will-serve letters have previously been received from Charter & AT&T Distribution South. Any service upgrades would be coordinated based on utility provider design but are not expected at this time.

4.2 GRADING

During the site preparation for Project A, approximately 150 cubic yards (cy) of concrete/asphalt debris would be generated. Construction of Project A would include the removal of the existing driveways, the excavation of approximately 906 cubic yards of soil and import approximately 257 cubic yards of soil. In addition, the upper 6 feet of existing earth materials within the proposed building footprint areas would be excavated and properly compacted for foundation and slab support.

During the site preparation for Project B, approximately 150 cubic yards (cy) of concrete/asphalt debris would be generated. Construction of Project B would include the removal of the existing driveways, the excavation of approximately 380 cubic yards of soil and import approximately 4,590 cubic yards of soil. In addition, the upper 5 feet of existing earth materials within the proposed building footprint areas would be excavated and properly compacted for foundation and slab support.

Soil conditions and further site preparation processes are provided in the Geotechnical Investigations of the site by Geocon West, Inc. as included as [Appendix E for Project A] and [Appendix F for Project B].

4.2.1 STORMWATER COLLECTION

Existing Condition

The PSSP site as it currently exists is the bare pad where a previous development stood. The surface cover consists of compacted fills, and base materials left by the previous development. The existing

site is approximately 3.5% impervious and underlain by soil type #3. Details are provided in the Geotechnical Investigation of the site by Geocon West, Inc. as included in *Carson Self-Storage Preliminary Utilities Technical Memorandum*, Omega Engineering Consultants, March 2022 [Appendix A].

The PSSP Site is not located within a FEMA FIRM area with reduced flood risk due to levee, also known as Zone "X." Stormwater runoff currently flows into existing offsite improvements which will also be utilized in the proposed conditions as described below.

Proposed Condition – Project A

Project A will re-grade the entire site but will keep the same discharge point as the existing and previous developed conditions. The proposed Project A site will be 89.7% impervious. Project A will construct gutters that wrap around the self-storage facilities and direct the runoff generated from the site towards the westerly portion of the site. Runoff will then drain into a 10'x20' Modular Wetland System for treatment. Following treatment, the stormwater will drain out via pipe flow to a storm drain clean out structure thence to the existing 5' storm drain inlet and ultimately the Dominguez Channel. This point is referred to as Discharge Point # 1 in this report. The discharge point will have a 50-year peak discharge that increases from the existing condition.

Hydrology Results

Table 1 summarizes the hydrology results demonstrating peak flows for the 25-,50- and 100-year storm events under previously developed, existing and proposed project descriptions

Table 1. Previously Developed, Existing, and Proposed Peak Runoff Flows

	Previously Developed	Existing	Proposed		
Storm Event	Q_{Total} [cfs]	Q_{Total} [cfs]	Q_{Total} [cfs]	% Change from Existing	% Change from Prior Development
25-Yr	6.26	1.96	5.57	+64.8%	-11.0%
50-Yr	7.61	3.12	6.74	+53.7%	-11.4%
100-Yr	8.55	4.08	7.79	+47.6%	-8.8%

The review demonstrates that Project A will exceed the existing stormwater flows. However, Project A will treat and convey stormwater runoff to the existing drainage infrastructure that previous site development also drained to. The existing infrastructure includes a concrete brow ditch running parallel to the southwest property line of the site. This brow ditch flows into a 60" RCP levee drain that discharges to Dominguez Channel, a tidally influenced water body. This offsite drainage infrastructure appears to be unchanged since previous site development.

Project A will include the installation of private roof downspouts, planter drains throughout the project site to collect roof and site runoff, and direct stormwater to the LID system through a series of gutters. This onsite stormwater conveyance system would serve to prevent onsite flooding and nuisance water build-up on the Project Site.

For additional information and detailing see the full Hydrology report in the *Carson Self-Storage Preliminary Utilities Technical Memorandum*, Omega Engineering Consultants, March 2022 [Appendix A].

The LID requirements, approved by the Regional Water Quality Control Board, call for the treatment of the peak mitigation flow rate or volume of runoff produced either by a 0.75" 24-hr rainfall event or the 85th percentile rainfall event, whichever is greater. Under section 3.1.2 of the LID Manual, this post-construction stormwater runoff from Project A shall be infiltrated, evapotranspirated, captured and used, and/or treated through high efficiency BMP's onsite. The rainfall intensity of the 85th percentile rainfall event governs.

Table 1 Summary LID Mitigation BMPs

Description	Area [ac]	Impervious Area [ac]	Required Flowrate (CFS)	BMP Type	Provided Flowrate (CFS)	% Treated	Impervious Area Untreated [ac]
DMA-1	2.77	2.49	0.702	20x10 Modular Wetland System	0.710	100	0
Total Percent Treatment						100 %	

For Further information and detailing, see LID Plan in *Carson Self-Storage Preliminary Utilities Technical Memorandum*, Omega Engineering Consultants, March 2022 [Appendix A].

Proposed Condition – Project B

Project B will re-grade the entire site but will keep the same discharge point as the existing and previous developed conditions. The proposed Project B site will be 86% impervious. Project B will construct curbs and gutters that wrap around each of the Private Drives and Courts and direct the runoff generated from the site towards inlets and catch basins placed throughout the site. Runoff will then drain into two Modular Wetland Systems for treatment. Following treatment, the stormwater will drain out via pipe flow to the existing 5' storm drain inlet and ultimately the Dominguez Channel. This point is referred to as Discharge Point # 1 in this report. The discharge point will have 25-year and 50-year peak discharges that decrease from the existing condition with original industrial land uses.

Hydrology Results

Table 1 summarizes the hydrology results demonstrating peak flows for the 25- and 50-year storm events under existing and proposed project conditions.

Table 1. Existing and Proposed Runoff Flows

Storm Event	Existing Condition	Proposed Condition	% Change from Existing Condition
	Q	Q	(%)
	(cfs)	(cfs)	(cfs)
25-year	6.73	5.96	-11%
50-year	8.26	7.30	-12%

The review demonstrates that Project B will decrease compared with the existing stormwater flows. In addition, Project B will treat and convey stormwater runoffs to the existing drainage infrastructure that

previous site development also drained to. The existing infrastructure includes a concrete brow ditch running parallel to the southwest property line of the site. This brow ditch flows into a 60" RCP levee drain which discharges to Dominguez Channel. This offsite drainage infrastructure appears to be unchanged since the previous site development.

Project B will include the installation of private roof downspouts, planter drains throughout the project site to collect roof and site runoff, and direct stormwater to the LID system through a series of gutters and area drains. This onsite stormwater conveyance system would serve for flood protection to prevent onsite flooding and nuisance water build-up on the Project Site.

The LID design storm, from which the SWQDv is calculated, is defined as the greater of:
The 0.75-inch, 24-hour rain event; or
The 85th percentile, 24-hour rain event as determined from the Los Angeles County 85th percentile precipitation isoheytal map.

The rainfall intensity of the 85th percentile rainfall event with 0.85-inch governs.

A summary of the SWQDv values and Modular Wetland Systems is provided in the following Table 2.

Table 2. LID Modular Wetland Systems Summary

Drainage Management Area (DMA)	Acres	% Imp.	C_D	D_{85} (in)	Q_{BMP} (cfs)	Q_{BMP} 2.0x (as required) (cfs)	BMP	BMP Capacity (cfs)
DMA A1	1.54	86	0.788	0.85	0.28	0.56	8x20 MWS	0.577
DMA A2	1.02	86	0.788	0.85	0.21	0.42	8x16 MWS	0.462

4.3 CONSTRUCTION

For Project A, construction is anticipated to start on [8/1/2025] and would take approximately 14 months to complete, ending in [9/30/2026]. It is estimated that Project A would be occupied and in operation by [10/1/2026].

For Project B, construction is anticipated to start on [8/1/2025] and would take approximately 16 months, ending [11/31/2026]. It is estimated that Project B would be occupied and in operation by [12/1/2026].

Prior to the start of construction for both Project A and Project B, the PSSP Site would be clearly defined with fencing and staking. Construction staging would take place within construction

boundaries and would occur over the course of three phases: grading/site preparation, building construction, and exterior finishes/sitework.

Construction of Project A would include the removal of the existing driveways, the excavation of approximately 906 cubic yards of soil and import approximately 257 cubic yards of soil. In addition, the upper 6 feet of existing earth materials within the proposed building footprint areas would be excavated and properly compacted for foundation and slab support.

Construction of Project B would include the removal of the existing driveways, the excavation of approximately 380 cubic yards of soil and import approximately 4,590 cubic yards of soil. In addition, the upper 5 feet of existing earth materials within the proposed building footprint areas would be excavated and properly compacted for foundation and slab support.

Soil conditions and further site preparation processes are provided in the Geotechnical Investigations of the site by Geocon West, Inc. as included as [Appendix X] and [Appendix X].

4.3.1 ESTIMATED CONSTRUCTION TIMING

Construction staging would take place within construction boundaries and would occur over the course of three phases:

- Phase I – Grading/Site Preparation
- Phase II – Building Construction
- Phase III – Exterior Finishes/Sitework

Table 4.1 Construction Timing – Project A

Construction Period	[Start Date]	[End Date]
Grading/Site Preparation	8/2025	10/2025
Building Construction	1/2026	9/2026
Exterior Finishes/Sitework	6/2026	9/2026

Table 4.1 Construction Timing – Project B

Construction Period	[Start Date]	[End Date]
Grading/Site Preparation/Utilities	8/2025	2/2026
Building Construction	3/2026	11/2026
Exterior Finishes/Sitework	3/2026	11/2026

During all stages of construction, there will be no full-time closures to any parking or travel lanes near the PSSP site. There will also be no sidewalk closures for the duration of construction. The sidewalks along Perry Street and Carson Street fronting the construction site will be open during construction.

4.4 TRANSPORTATION AND CIRCULATION

4.4.1 TRANSPORTATION AND CIRCULATION – PROJECT A

Access to the self-storage facility will be controlled via computerized access gates. 22 public parking spaces will be provided outside the gates with an additional 19 spaces provided inside the gates for a total of 41 parking spaces.

To accommodate the entry to the new storage facility, the existing driveway will be demolished and a new driveway constructed, to be located near the center of the eastern frontage along Perry Street. Curb, gutter, sidewalks and driveway will be designed and constructed with City Engineer review and approval.

No access points or curb cuts are proposed along the Carson Street arterial.

Typical daily operational traffic is low in frequency and significantly less than a traditional warehouse, storage, or other manufacturing uses. Operational traffic consists of inbound and outbound UPS-type delivery trucks and self-storage patrons arriving and departing the project site. Peak traffic trips to the project site are offset from the peak morning and afternoon commute periods.

The *21611 South Perry Street Local Transportation Assessment* by Fehr and Peers, dated January 18, 2022 [Appendix B] was conducted in order to evaluate local traffic conditions before and after completion of Project A, in addition to assessing the project's peak parking demand.

A subsequent *21611 South Perry Street Self-Storage/Mixed-Use Project Revised Project Description Traffic and Parking Study* by Fehr & Peers, dated September 7, 2022 [Appendix C] was conducted to analyze the final program and is summarized below.

Trip Generation – Project A will generate an estimated net increase of 631 daily trips, including 96 trips (50 inbound/46 outbound) during the AM peak hour and 50 trips (25 inbound/25 outbound during the PM peak hour.

Intersection Traffic Analysis evaluates the project Levels of Service at each study intersection under the Existing plus Ambient Growth plus Project and Future Year (Year 2023) plus Project condition to estimate the incremental increase in seconds of delay per vehicle expected to be caused by the proposed Project A. Table 1 below updates the two intersections nearest the Project Site, one of which was slightly affected by the final development program.

Table 6: Future Base and Future Plus Project Levels of Service

Study Intersection	Period	Future Base		Future + Project	
		Delay (s)	LOS	Delay (s)	LOS
1. Avalon Boulevard & Carson Street	AM	**59.1**	**E**	**59.8**	**E**
	PM	**79.0**	**E**	**79.4**	**E**
2. I-405 SB Ramps & Carson Street	AM	9.5	A	9.9	A
	PM	11.3	B	11.4	B
3. I-405 NB Ramps & Carson Street	AM	7.7	A	7.9	A
	PM	8.1	A	8.2	A
4. Perry Street & Project Driveway	AM	Project Only Scenario		9.5	A
	PM			9.4	A
5. Perry Street & Carson Street	AM	21.8	C	31.6	D
	PM	27.2	D	31.3	D
6. Wilmington Avenue & Carson Street	AM	29.8	C	30.2	C
	PM	29.4	C	29.5	C

Source: Fehr & Peers.

(see Appendix B)

Table 1: Future Base and Future Plus Revised Project Levels of Service

Study Intersection	Period	Future Base		Future + Revised Project	
		Delay (s)	LOS	Delay (s)	LOS
4. Perry Street & Project Driveway	AM	Project Only Scenario		9.5	A
	PM			9.4	A
5. Perry Street & Carson Street	AM	21.8	C	31.5	D
	PM	27.2	D	31.9	D

Source: Fehr & Peers.

(see Appendix C)

The addition of Project A trips does not cause average vehicle delay at any study intersection to worsen from LOS D or better LOS E or F.

The addition of Project A trips does not cause spill over queuing at any study intersection.

Project A will not trigger any need for street improvements nor need any capacity upgrades.

Using the ITE (*Institution of Transportation Engineers*) method for estimating parking demand, the proposed on-site parking supply of 41 spaces is more than adequate to accommodate the estimated peak parking demand of 30 spaces.

Table 2: Peak Parking Demand Estimate – ITE Method

ITE Land Use Code	Equation [2]	Project Size	Project Demand
151 – Mini-Warehouse [1]	P = 0.1x	119,525 SF	12
936 – Coffee/Donut Shop without Drive-Through Window	P = 10.49x	1,550 SF	16
920 – Copy, Print, and Express Ship Store	P = 3.01x	700 SF	2
		Total	**30**

[1] The ITE report specifies Mini-Warehouse to be "typically referred to as 'self-storage' facilities."

[2] P = Parked Vehicles, x = 1,000 square feet increments of gross floor area.

Source: Fehr & Peers.

(see Appendix C)

4.4.2 TRANSPORTATION AND CIRCULATION – PROJECT B

To accommodate the entry to all residential units in Project B, the existing driveways will be demolished and a new driveway constructed, to be located near the center of the eastern frontage along Perry Street. Curb, gutter, sidewalks and driveway will be designed and constructed with City Engineer review and approval.

No access points or curb cuts are proposed along the Carson Street arterial, except for Emergency Vehicle Access and Pedestrian access.

Typical operational traffic from Project A is low in frequency and consistent with the existing patterns of the surrounding residential neighborhoods. Daily trips are generated by residential occupants, guests, and other limited or temporary visitors consistent with the operation of a low density project.

The *21611 Perry Street Residential Project Non-CEQA Trip Generation Comparison* by Fehr and Peers, dated January 20, 2025[Appendix D] was conducted in order to evaluate local traffic conditions before and after completion of Project B.

Trip Generation – Project B will generate an estimated net increase of 446 daily trips, including 30 trips (8 inbound/22 outbound) during the AM peak hour and 35 trips (21 inbound/14 outbound during the PM peak hour.

Intersection Traffic Analysis - The proposed trip generation estimates for Project B are lower due to changes in proposed land uses relative to what was analyzed for Project A. The trip generation comparison indicates that the Local Transportation Assessment for Project A analyzed 30% to 60% more trip generation and therefore adequately accounts for the potential traffic effects of Project B. Because the assessment compares Project B to Project A, the trip generation envelope for Project B is covered by the intersection level of service (LOS) analysis that was previously prepared, there are no changes to the conclusions of previous study, and no additional analysis is required. For the purposes of providing a conservative analysis, no trip generation credits were applied in either analysis.

5. IMPLEMENTATION

5.1 ADMINISTRATIVE PROCEDURES AND REVIEW

Approval of the PSSP indicates acceptance by the Carson City Council of the PSSP's framework for the development of the plan area. PSSP approval will be coordinated alongside an updated Development Agreement (DA) between the developer and the City of Carson. The PSSP and the DA establish the standards and regulations that constitute the zoning for the plan area and regulate development within the area. The DA provisions shall take precedence over any development regulated by the PSSP. The PSSP provisions shall take precedence over the requirements of the zoning code of the Carson Municipal Code (CMC). If not specifically addressed in the PSSP, the architectural plans included in the approved PSSP shall apply. If not specifically addressed in the PSSP or the architectural plans, the applicable provisions of the CMC in place as of October 2022 shall apply.

Although every effort has been made to include provisions in this Specific Plan that are clear, there may be a need to interpret provisions in light of specific and unusual conditions. When such interpretations are necessary, the Director of Community Development shall be responsible for the interpretation of the provisions of the PSSP, with the right of appeal to the Planning Commission and City Council. The provisions of the PSSP shall be enforced as follows:

1. The Director of Community Development shall be the City administrator responsible for enforcing the regulations, site development standards, and procedures set forth in the PSSP.
2. The Director of Community Development shall have the administrative authority for interpretation related to the enforcement of the PSSP. The Director of Community Development may submit his/her interpretations for review by the Planning Commission. Decisions of the Planning Commission shall be subject to appeal to the City Council.
3. In the event of any ambiguities or silence on a particular topic that cannot be resolved through the provisions of this Specific Plan, other sections of the City of Carson General Plan and Article IX of the Carson Municipal Code shall guide interpretations of this Specific Plan.

5.2 TYPE OF REVIEW PROCEDURES

Approval of development within the PSSP shall be subject to the review authority and review processes set forth in this Section. All review procedures specified herein shall be reviewed by the Community Development Director, unless otherwise specified in this section or the DA. Chapter 1 of Article IX of the CMC shall apply to matters not covered in this Specific Plan or in the DA. If there is any conflict between the provisions of this Specific Plan or the DA and Chapter 1 of Article IX of the CMC, the provisions of this Specific Plan or the DA shall control.

5.3 INTERPRETATION

The Director of Community Development has the authority to interpret any provision of this PSSP, consistent with the requirements of CMC Section 9172.24 Interpretation Procedures. Whenever the Director of Community Development determines that the meaning or applicability of any requirement is subject to interpretation, the Director of Community Development may issue an

official interpretation. When used in this PSSP, the words "shall" and "must" are always mandatory. The word "should," as used in the design standards section of this plan, is not mandatory but is strongly recommended.

It is not intended that this PSSP interfere with, abrogate, or annul any easement, covenant, or other agreement to which the City is a party. In accordance with state law, the provisions of this PSSP shall control over duplicative and conflicting provisions of the CMC. In the event this PSSP is silent as to a development standard or procedure, the architectural plans included in the PSSP shall govern. In the event a development standard or procedure is not specifically addressed in the PSSP or the architectural plans, the applicable provisions of Article IX of the CMC in place as of October 2022 shall apply.

5.4 MINOR MODIFICATIONS

The Minor Modifications procedure is established to grant minor relief from development standards, under limited circumstances, when the granting of such relief will provide for better design and function of the structure, or addition to a structure, proposed. The Director of Community Development or his/her designee may approve a Minor Modification in accordance with the provisions of Section 12.4 of the DA. Those provisions of Section 12.4 of the DA shall be applicable to the PSSP beyond the initial term of the DA.

Deviations to PSSP development standards in excess of those cited in the DA shall require a Specific Plan Amendment.

5.5 SPECIFIC PLAN AMENDMENTS

Amendments to the PSSP shall be processed in accordance with the application provisions of state law provided in California Government Code sections 65450 et seq. The procedure in Section 9172.11 of the CMC shall be followed for hearing, notice, and decision of a Specific Plan Amendment by the Planning Commission and City Council. Each request for amendment shall specify the sections or portions of the PSSP that are affected by the amendment.

5.6 CONDITIONAL USE PERMITS

Conditional Use Permits shall be filed and processed per Chapter 9172.21 of the City of Carson Municipal Code.

5.7 SITE PLAN REVIEW

A Site Plan Review application is being processed concurrently with the adoption of this Specific Plan in accordance with Chapter 9172.23 of the City of Carson Municipal Code. Subsequent modifications to the approved Site Plan shall be processed administratively by the Director of Community Development provided the changes substantially conform to the approved Site Plan ("Substantially Conforming Changes"). Substantially Conforming Changes are modifications and alterations to the type, location, placement, and design of the proposed structures and overall development within the PSSP that (i) do not result in an increase in project square footage and/or overall development intensity and (ii) do not trigger a Minor Modification or Specific Plan Amendment, as defined above. Substantially Conforming Changes to the approved Site Plan shall be considered ministerial and are not appealable. Substantially conforming changes should be construed liberally in the interest of

providing maximum flexibility within the approved PSSP development envelope and associated environmental impacts studied and disclosed in the MND. Changes specified in Section 12.4 of the DA shall be processed in accordance with the Minor Modification procedure.

5.8 SPECIAL EVENT PERMITS

A Special Event or Use Permit may be granted to allow the occurrence of an event, activity, or use for a period of 4 or more days, but not exceeding 30 consecutive days, and no more than 60 days in any calendar year. Special Event Permits shall be filed and processed per Chapter Division 8. Special Requirements for Certain Uses of the City of Carson Municipal Code.

5.9 TEMPORARY USE PERMITS

Temporary Use Permits shall be filed and processed per Chapter Division 8. Special Requirements for Certain Uses of the City of Carson Municipal Code.

5.10 IMPLEMENTATION

The ownership, construction, management, conditions of approval, and operation of the PSSP Area will be described in a separate agreement with the City of Carson. Project specific infrastructure improvements are governed by the DA.

FEHR PEERS

Draft Memorandum

Date: January 20, 2025

To: 21611 Perry St, LLC

From: Miguel Núñez and Dylan Di, Fehr & Peers

Subject: 21611 Perry Street Residential Project Traffic Memo: Non-CEQA Trip Generation Comparison

LB24-0125

This memorandum provides an evaluation of the trip generation estimates for the proposed 21611 Perry Street Residential Project (the "Project") in compliance with the City of Carson's transportation analysis requirements outside of the California Environmental Quality Act (CEQA), which will be addressed in a separate document. The previous project proposed at 21611 South Perry Street was a self-storage/mixed-use project (the "2022 Project") studied in the *21611 South Perry Street Local Transportation Assessment (LTA)* prepared by Fehr & Peers in January 2022.

This memorandum includes an assessment of the trip generation estimates of the Project, evaluates trip generation estimates relative to the City's threshold for analysis, and compares the Project's estimated trip generation envelope against the 2022 Project's LTA in order to determine whether any additional intersection analysis would be required.

Project Description

The proposed Project analyzed in this study involves the construction of 62 townhome dwelling units at the northwest corner of Carson Street & South Perry Street. In addition to the 62 dwelling units, the project will provide 150 parking spaces (124 spaces in private garages and 26 open guest parking spaces) and an internal roadway system providing access to the individual units. Project access will be provided via a single full access driveway on Perry Street, roughly midway between Carson Street and 216th Street. The site plan is shown in **Figure 1**.

The 2022 Project involved 117,110 square feet (1,006 storage units) of self-storage warehouse, 2,425 square feet of self-storage office, 700 square feet of retail space, and 1,550 square feet of restaurant space. The LTA for the 2022 Project analyzed the trip generation, intersection level of service, and site access for the previous proposal.

City of Carson Transportation Analysis Guidelines

The City of Carson applies Transportation Analysis Guidelines (TAG) that inform the approach for analyzing and evaluating potential transportation impacts associated with development projects both within the City in a CEQA context and for operational deficiencies in a non-CEQA context. This memo focuses on the non-CEQA considerations from the TAG. The threshold for requiring a local transportation assessment with intersection LOS analysis is 110 peak hour trips.

Trip Generation Comparison

Trip generation rates from Trip Generation, 11th Edition (Institute of Transportation Engineers [ITE], 2021) were used to estimate the number of trips associated with the proposed 62-unit development at 21611 Perry Street and are presented in **Table 1**.

As shown in **Table 1,** the trip generation estimates for the proposed Project are 446 daily vehicle trips, 30 AM peak hour vehicle trips, and 35 PM peak hour vehicle trips. The site is currently vacant. A bus stop serving westbound Long Beach Transit Line 4 is located at the northwest corner of Carson Street & Perry Street, adjacent to the Project site. The nearest eastbound bus stop is located at Carson Street & Acarus Avenue, one block to the east. No trip generation credits were applied to the trip generation estimates.

The 2022 Project provided an LTA analyzing six intersections based on estimated trip generation totals of 631 daily, 96 AM peak hour, and 50 PM peak hour net new trips and provided LOS analysis at six intersections to help assess operational conditions near the site, with and without the project. The LTA indicates that the greater trip generation estimates corresponding to the 2022 Project would not cause average vehicle delay at any study intersection to worsen from LOS D or better to LOS E or F, or cause spill over queuing at any study intersection.

As shown in **Table 1,** the Project would generate fewer trips than the previously analyzed 2022 Project. The daily and PM peak hour vehicle trip generation estimates are roughly 30% less, and the AM peak hour vehicle trip generation estimates are roughly 60% lower than what was previously analyzed for this site. Since the Project is estimated to generate less traffic, the prior analysis accounts for the development of the proposed Project and its lower trip generation, which would generate fewer trips and would not have effects on the roadway system beyond what has already been analyzed.

Conclusion

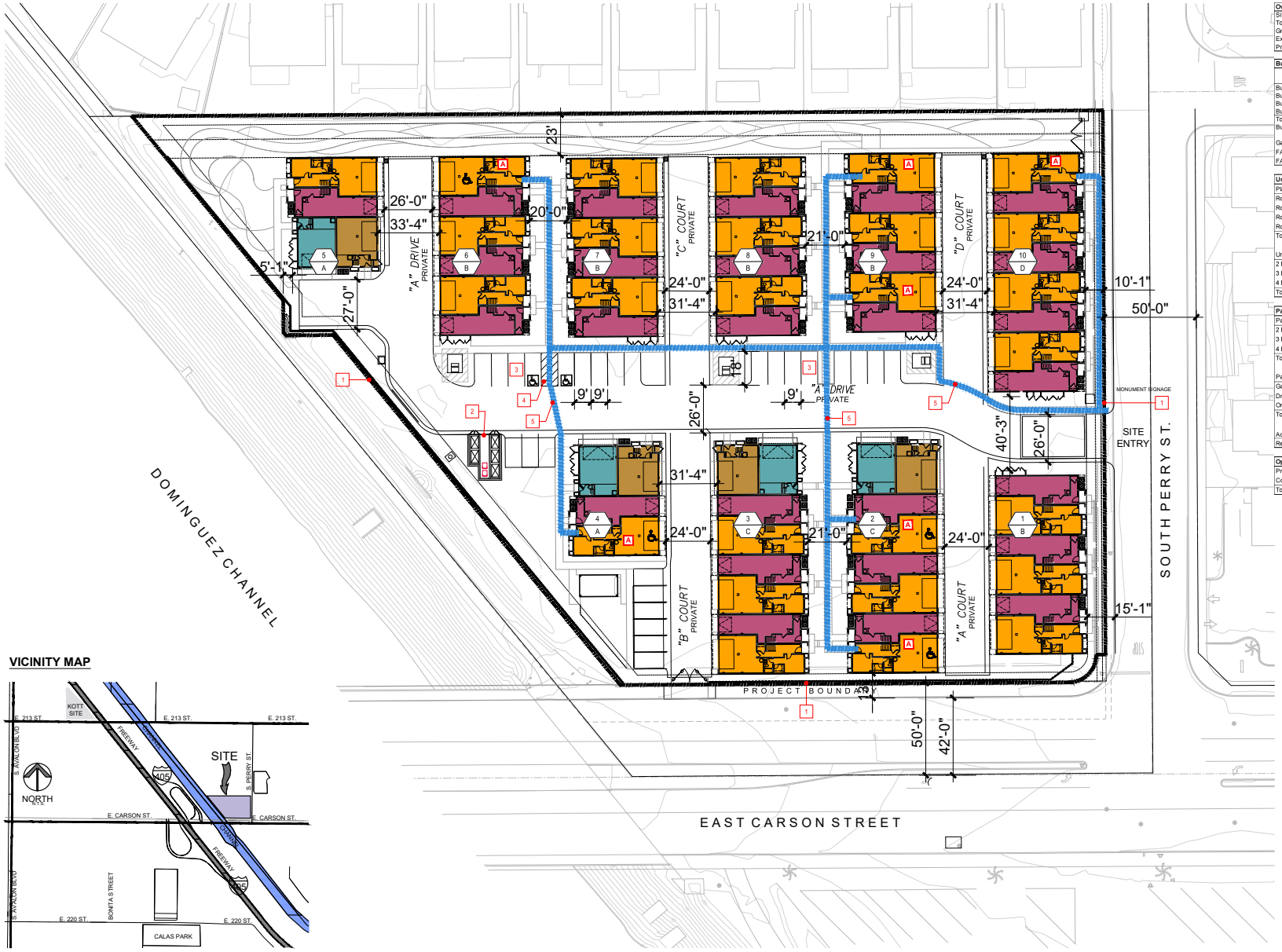
Trip generation rates from Trip Generation, 11th Edition (ITE, 2021) were used to estimate the number of trips associated with the Project and are presented in **Table 1**. The proposed Project trip generation estimates are lower due to changes in proposed land uses relative to what was analyzed for the 2022 Project. The trip generation comparison indicates that the 2022 Project's

LTA analyzed 30% to 60% more trip generation and adequately accounts for the potential traffic effects of the Project. Because this assessment compares the Project to the 2022 Project, the trip generation envelope for the Project is covered by the intersection level of service (LOS) analysis that was previously prepared, there are no changes to the conclusions of previous study, and no additional analysis is required. For the purposes of providing a conservative analysis, no trip generation credits were applied in either analysis.

Table 1: 21611 Perry Street 62-Unit Development Trip Generation Estimate

21611 PERRY STREET, CITY OF CARSON DAILY & PEAK HOUR VEHICLE TRIP GENERATION ESTIMATES																	
Land Use	*ITE Land Use Code*	*Size*	*Trip Generation Rates [a]*							*Estimated Trip Generation*							
			Daily	*AM Peak Hour*			*PM Peak Hour*			*Daily*	*AM Peak Hour Trips*			*PM Peak Hour Trips*		
				Rate	*In%*	*Out%*	*Rate*	*In%*	*Out%*		*In*	*Out*	*Total*	*In*	*Out*	*Total*
PROPOSED PROJECT																
Attached Housing	215	62 du	7.20	0.48	25%	75%	0.57	59%	41%	446	8	22	30	21	14	35
TOTAL PROJECT EXTERNAL TRIPS										446	8	22	30	21	14	35
NET NEW TRIPS [b]										**446**	**8**	**22**	**30**	**21**	**14**	**35**

Notes:
[a] Source: Institute of Transportation Engineers (ITE), Trip Generation, 11th Edition, 2021, unless otherwise noted
[b] The site is currently vacant and no trip credits were applied for existing uses or proximity to bus stops.



Overall Site Summary

Site Area	2.80 Acres
Total Dwelling Units	62 du
Gross Density	22.1 Du/Ac
Existing Zoning / Land Use	Specific Plan | Storage
Proposed Zoning / Land Use	Specific Plan | Residential

Building Summary

Building Type	Quantity	Building Footprint Area: Area per Bldg	Building Footprint Area: Total Area	Gross Building Area: Area per Bldg	Gross Building Area: Total Area
Building A - 4 Plex	2	2,635 sf	5,270 sf	8,004 sf	16,008 sf
Building B - 6 Plex	5	4,377 sf	21,885 sf	13,321 sf	66,605 sf
Building C - 8 Plex	2	5,526 sf	11,052 sf	16,898 sf	33,796 sf
Building D - 8 Plex	1	5,842 sf	5,842 sf	17,787 sf	17,787 sf
Total			44,049 sf		134,196 sf
Building Lot Coverage			36.1%		
Garage Area					27,911 sf
FAR (Using Total Building Area)					1.10
FAR (Excluding Garage Area)					0.87

Unit Plan Summary

Plan	Beds	Net Unit Area	Quantity	%	Total Net Area	Avg. Unit Size
Rowtowns - P1	2	1,210 sf	4	6.5%		
Rowtowns - P2	2	1,168 sf	4	6.5%		
Rowtowns - P3	3	1,525 sf	27	43.5%		
Rowtowns - P4	4	1,783 sf	27	43.5%		
Total			62	100%	98,828 sf	1,594 sf

Unit Mix	Quantity	%
2 Bedroom Total	8	12.9%
3 Bedroom Total	27	43.5%
4 Bedroom Total	27	43.5%
Total	62	100.0%

Parking Summary - State Density Bonus Standard

Parking Required	Quantity	Ratio Req'd	Spaces Req'd
2 Bed	8	*1.50 Spaces/Unit*	12
3 Bed	27	*1.50 Spaces/Unit*	41
4 Bed	27	*2.50 Spaces/Unit*	68
Total Residential Parking Req'd		1.95 Spaces/Unit	121
Parking Provided		**Ratio Provided**	**Spaces Provided**
Garage Spaces		2.00	124
Driveway Spaces		0.00	0
On Site Spaces		0.42	26
Total Residential Parking Provided		2.42	150
Accessible Parking Required		Ratio Req'd	Spaces Req'd
Resident Open Spaces	26	5%	2

Open Space Summary

Private Open Space (Decks)	4,722 sf	76 sf/Unit Average
Common Open Space	29,071 sf	469 sf/Unit
Total Open Space	33,793 sf	545 sf/Unit

SITE PLAN KEYNOTES

1. PROPERTY LINE
2. TRASH ENCLOSURE
3. PERPENDICULAR PARKING SPACE (9'X18')
4. ACCESSIBLE PARKING SPACE (9'X18')
5. ACCESSIBLE PATH OF TRAVEL

NOTE: ALL NON-ADA COMPLIANT SIDEWALK RAMPS ABUTTING THE PROJECT SITE WILL BE UPGRADED TO CURRENT CODE

LEGEND

- PLAN 1
- PLAN 2
- PLAN 3
- PLAN 4
- PROPERTY LINE
- ACCESSIBLE PATH OF TRAVEL
- TYPICAL PERPENDICULAR & ACCESSIBLE PARKING SPACE (18'-0", 9'-0")
- A — ACCESSIBLE UNIT
- UNIT ENTRY
- 1 / A — Building Number / Building Type

VICINITY MAP

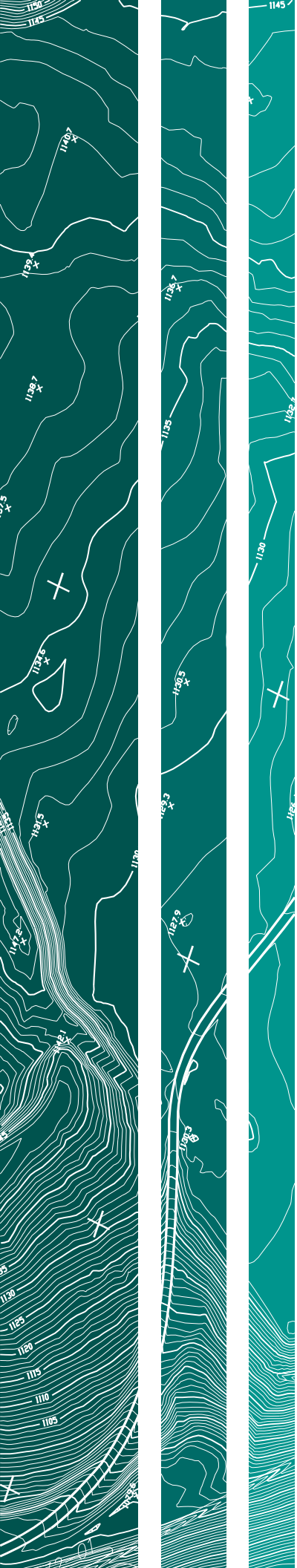
PERRY STREET
CARSON, CA #2024-0578

SCHEMATIC DESIGN
JANUARY 15, 2025

SITE KEY MAP & INFORMATION

A1.0

Figure 1
Site Plan



GEOCON

GEOTECHNICAL INVESTIGATION

PROPOSED MULTI-FAMILY
RESIDENTIAL DEVELOPMENT
21611 SOUTH PERRY STREET
CARSON, CALIFORNIA
APN: 7327-010-014

AUGUST 8, 2024 - Revised
PROJECT NO. W1301-06-01

PREPARED FOR:
21611 Perry Street, LLC
West Hollywood, California

Project No. W1301-06-01
August 8, 2024 - Revised

21611 Perry Street, LLC
659 North Robertson Boulevard,
West Hollywood, California 90069

Attention: Mr. Darren Embry

Subject: GEOTECHNICAL INVESTIGATION
PROPOSED MULTI-FAMILY RESIDENTIAL DEVELOPMENT
21611 SOUTH PERRY STREET
CARSON, CALIFORNIA
APN: 7327-010-014

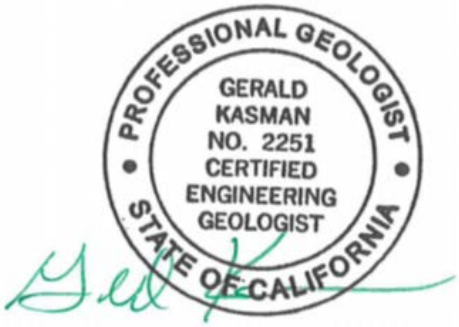
Dear Mr. Embry:

In accordance with your authorization of our proposal dated June 12, 2024, we have performed a geotechnical investigation for the proposed multi-family residential development located at 21611 South Perry Street in the City of Carson, California. The accompanying report presents the findings of our study and our conclusions and recommendations pertaining to the geotechnical aspects of proposed design and construction. Based on the results of our investigation, it is our opinion that the site can be developed as proposed, provided the recommendations of this report are followed and implemented during design and construction.

If you have any questions regarding this report, or if we may be of further service, please contact the undersigned.

Very truly yours,

GEOCON WEST, INC.



Andrew Sover
PE 92879

Jelisa Thomas Adams
GE 3092

Gerald A. Kasman
CEG 2251

(email) Addressee

TABLE OF CONTENTS

TABLE OF CONTENTS (CONTINUED)

GEOTECHNICAL INVESTIGATION

1. PURPOSE AND SCOPE

This report presents the results of a geotechnical investigation for the proposed multi-family residential development located at 21611 South Perry Street in the City of Carson, California (see 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 proposed design and construction.

The scope of this investigation included a review of prior environmental reports for the site provided by the client, a site reconnaissance, field exploration, laboratory testing, engineering analysis, and the preparation of this report. The site was explored on February 9, 2021, by drilling five 8-inch diameter borings using a truck-mounted hollow-stem auger drilling machine and advancing five cone penetrometer tests (CPTs). The borings were excavated to depths between approximately 20½ and 51 feet beneath the existing ground surface. The CPTs were advanced to depths of approximately 60 feet below existing ground surface. The approximate locations of the exploratory borings and CPTs are depicted on the Site Plan (see Figure 2). A detailed discussion of the field investigation, including the boring and CPT logs, is presented in Appendix A.

Laboratory tests were performed on selected soil samples obtained during the investigation to determine pertinent physical and chemical soil properties. Appendix B presents a summary of the laboratory test results.

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 subject site is an approximately 2.8-acre irregularly shaped parcel located at 21611 South Perry Street in the City of Carson, California. The site is currently vacant. The site is bounded by South Perry Street on the east, by the Dominguez Channel to the west, by one- to two-story single-family homes to the north, and by East Carson Street to the south. The site is relatively level, with no pronounced highs or lows. Surface water drainage at the site appears to be by sheet flow along the existing ground contours to the city streets.

Based on the information provided by the Client, it is our understanding that the proposed development will consist of 62-units of town-home structures to be constructed at or near present grade. Plans depicting the proposed improvements are provided on the Site Plan (see Figure 2).

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. BACKGROUND

Prior environmental reports were prepared for the site and provided for our review and include the following:

Phase 1 Environmental Site Assessment, 21611 S. Perry Street, Carson, CA. 90745-1613, Prepared by Weis Environmental, dated January 25, 2021.

2020 First Semi-Annual Groundwater Monitoring Report, January Through June 2020, Dominguez Channel Release, Carson, California, Prepared by AECOM, dated July 14, 2020.

Our review of these reports was limited to noting any onsite conditions that are relative to the geotechnical aspects of site development.

Based on the prior reports, petroleum hydrocarbon impacted soil and groundwater were previously identified at the site that originated from on-site underground storage tanks (USTs) and migration of contaminants from off-site sources. AECOM (formerly URS) developed a workplan that developed cleanup goals and excavation limits to remove impacted soils that was approved by the LARWQCB. In 2014, approximately 4,800 cubic yards of impacted soils were excavated from four areas and removed from the site. The excavations were approximately 5 to 8 feet deep and were backfilled with clean import soils (Weis Environmental, 2021). The approximate locations and depths of these areas are indicated on the Site Plan (see Figure 2). The backfill was reportedly placed, compacted, and tested as a certified backfill material; however, a copy of the compaction report was not included as an exhibit. Therefore, for the purposes of this report, the backfill is considered to be uncertified fill.

The reports indicate that as part of the prior site remediation, groundwater monitoring wells were installed at the site and the immediately surrounding area. The monitoring wells present at the site are limited to the eastern, western, and southern property boundaries. The Phase I report indicate that groundwater monitoring is ongoing in compliance with a semi-annual groundwater monitoring program required by the LARWQCB; however, monitoring data for the time period of 2021 to present was not available for our review.

The referenced environmental reports conclude that the known soil and groundwater impacts are within acceptable levels for commercial use and further assessment or remediation is not required. However, a soil management plan (SMP) is anticipated for further development of the site. Development of a soil management plan is beyond the scope of the Geotechnical Investigation.

4. GEOLOGIC SETTING

The site is located in the southern portion of the Los Angeles Basin, a coastal plain bounded by the Santa Monica Mountains on the north, the Elysian Hills and Repetto Hills on the northeast, the Puente Hills and the Whittier Fault on the east, the Palos Verdes Peninsula and Pacific Ocean on the west and south, and the Santa Ana Mountains and San Joaquin Hills on the southeast. The basin is underlain by a deep structural depression which has been filled by both marine and continental sedimentary deposits underlain by a basement complex of igneous and metamorphic composition. Regionally, the site is located within the northern portion of the Peninsular Ranges geomorphic province. This geomorphic province is characterized by northwest-trending physiographic and geologic features such as the nearby Newport-Inglewood Fault Zone located approximately 2.7 miles to the east-northeast.

5. SOIL AND GEOLOGIC CONDITIONS

Based on our field investigation and published geologic maps of the area, the site is underlain by artificial fill and Holocene age alluvium consisting of sand, silt, and clay (California Geological Survey, 2010). Detailed stratigraphic profiles of the materials encountered at the site are provided on the boring logs in Appendix A.

5.1 Artificial Fill

Artificial fill was encountered in our explorations to depths ranging from 3 to 9 feet below existing ground surface. The deep fill, observed in boring B3, is associated with an area of a former UST removal. The artificial generally consists of light brown to brown or grayish brown sand and silty sand. The artificial fill is characterized as fine-grained with some medium-grained, moist, and loose to dense. The fill is likely the result of past grading, UST removal and environmental remediation, and past construction activities at the site. Deeper fill may exist between excavations and in other portions of the site that were not directly explored.

5.2 Alluvium

Holocene age alluvium was encountered beneath the fill to the maximum depth explored (51 feet below the ground surface). The alluvium generally consists of light brown to brown, olive brown, or gray to dark gray interbedded clay, sandy clay, silt, sandy silt, silty sand and clayey sand. The alluvial soils are characterized as primarily fine-grained, moist to wet, and loose to dense or soft to stiff.

6. GROUNDWATER

A review of the Seismic Hazard Zone Report for the Torrance Quadrangle (California Division of Mines and Geology [CDMG], 1998) indicates the historically highest groundwater level in the area is approximately 9 feet beneath the ground surface. Groundwater information presented in this document is generated from data collected in the early 1900's to the late 1990s. Based on current groundwater basin management practices, it is unlikely that groundwater levels will ever exceed the historic high levels.

Groundwater was encountered in borings B1 and B3 at depths of 12.5 feet and 17.6 feet beneath the existing ground surface, respectively. Additionally, readings from groundwater monitoring wells established on the site were taken on February 23, 2021. The locations of the accessible monitoring wells are indicated on the site plan (see Figure 2) and a summary of groundwater levels at the time of the investigation is provided in the table below.

MONITORING WELL READINGS

Well ID	MW-3	MW-4	MW-5	MW-7A	MW-8A	MW-9B
Depth to GW (Below Ground Surface)	12.0’	13.17’	12.25’	12.33’	12.67’	14.67’

Based on the depth to groundwater and the on-grade nature of the development, groundwater is not expected to have a detrimental effect on the project. Groundwater may be encountered during construction in deep drilled excavations, such as for ground improvement or elevator pistons. It is not uncommon for groundwater levels to vary seasonally or for groundwater seepage conditions to develop where none previously existed, especially in impermeable fine-grained soils which are heavily irrigated or after seasonal rainfall. In addition, recent requirements for stormwater infiltration could result in shallower seepage conditions in the immediate site vicinity. Proper surface drainage of irrigation and precipitation will be critical for future performance of the project. Recommendations for drainage are provided in the S*urface Drainage* section of this report (see Section 8.13).

7. GEOLOGIC HAZARDS

7.1 Surface Fault Rupture

The numerous faults in Southern California include Holocene-active, pre-Holocene, 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 (CGS, 2018). By definition, a Holocene-active fault is one that has had surface displacement within Holocene time (about the last 11,700 years). A pre-Holocene 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 site is not within a state-designated Alquist-Priolo Earthquake Fault Zone for surface fault rupture hazards (CGS, 2021a; CGS, 2021b; CDMG 1986). No Holocene-active or pre-Holocene active faults with the potential for surface fault rupture are known to pass directly beneath the site. Therefore, the potential for surface rupture due to faulting occurring beneath the site during the design life of the proposed development is considered low. However, the site is located in the seismically active Southern California region and could be subjected to moderate to strong ground shaking in the event of an earthquake on one of the many active Southern California faults. The faults in the vicinity of the site are shown in Figure 3, Regional Fault Map.

The closest surface trace of an active fault to the site is the Newport-Inglewood Fault Zone located approximately 2.7 miles to the east-northeast (USGS, 2006; CDMG, 1986). Other nearby active faults are the Palos Verdes Fault, the Cabrillo Fault, and the Whittier Fault located approximately 4.2 miles south-southwest, 8.2 miles south, and 16 miles northeast of the site, respectively. The active San Andreas Fault Zone is located approximately 48 miles northeast of the site.

Several buried thrust faults, commonly referred to as blind thrusts, underlie the Los Angeles Basin at depth. These faults are not exposed at the ground surface and are typically identified at depths greater than 3.0 kilometers. The October 1, 1987, M_w 5.9 Whittier Narrows earthquake and the January 17, 1994, M_w 6.7 Northridge earthquake were a result of movement on the Puente Hills Blind Thrust and the Northridge Thrust, respectively. These thrust faults and others in the Los Angeles area are not exposed at the surface and do not present a potential surface fault rupture hazard at the site; however, these deep thrust faults are considered active features capable of generating future earthquakes that could result in moderate to significant ground shaking at the site.

7.2 Seismicity

As with all of Southern California, the site has experienced historic earthquakes from various regional faults. The seismicity of the region surrounding the site was formulated based on research of an electronic database of earthquake data. The epicenters of recorded earthquakes with magnitudes equal to or greater than 5.0 in the site vicinity are depicted on Figure 4, Regional Seismicity Map. A partial list of moderate to major magnitude earthquakes that have occurred in the Southern California area within the last 100 years is included in the following table.

LIST OF HISTORIC EARTHQUAKES

Earthquake (Oldest to Youngest)	Date of Earthquake	Magnitude	Distance to Epicenter (Miles)	Direction to Epicenter
Near Redlands	July 23, 1923	6.3	59	E
Long Beach	March 10, 1933	6.4	22	SE
Tehachapi	July 21, 1952	7.5	91	NW
San Fernando	February 9, 1971	6.6	41	NNW
Whittier Narrows	October 1, 1987	5.9	19	NE
Sierra Madre	June 28, 1991	5.8	33	NE
Landers	June 28, 1992	7.3	107	ENE
Big Bear	June 28, 1992	6.4	85	ENE
Northridge	January 17, 1994	6.7	31	NW
Hector Mine	October 16, 1999	7.1	125	ENE

The site could be subjected to strong ground shaking in the event of an earthquake. However, this hazard is common in Southern California and the effects of ground shaking can be minimized if the proposed structures are designed and constructed in conformance with current building codes and engineering practices.

7.3 Seismic Design Criteria

The following table summarizes the site-specific design criteria obtained from the 2022 California Building Code (CBC; Based on the 2021 International Building Code [IBC] and ASCE 7-16), Chapter 16 Structural Design, Section 1613 Earthquake Loads. The data was calculated using the online application U.S. Seismic Design Maps, provided by the Structural Engineers Association of California (SEAOC). 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 2022 CBC and Table 20.3-1 of ASCE 7-16. The values presented below are for the risk-targeted maximum considered earthquake (MCER).

It should be noted that there are liquefiable soils underlying the site. Should it be determined that the building possesses a fundamental period of more than 0.5 seconds, a site response analysis is in accordance with ASCE 7-16, Section 20.3.1 may be required.

2022 CBC SEISMIC DESIGN PARAMETERS

Parameter	Value	2022 CBC Reference
Site Class	D	Section 1613.2.2
MCE_R Ground Motion Spectral Response Acceleration – Class B (short), S_S	1.711g	Figure 1613.2.1(1)
MCE_R Ground Motion Spectral Response Acceleration – Class B (1 sec), S_1	0.618g	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}	1.711g	Section 1613.2.3 (Eqn 16-20)
Site Class Modified MCE_R Spectral Response Acceleration – (1 sec), S_{M1}	1.05g*	Section 1613.2.3 (Eqn 16-21)
5% Damped Design Spectral Response Acceleration (short), S_{DS}	1.141g	Section 1613.2.4 (Eqn 16-22)
5% Damped Design Spectral Response Acceleration (1 sec), S_{D1}	0.7*	Section 1613.2.4 (Eqn 16-23)

*Per Supplement 3 of ASCE 7-16, a ground motion hazard analysis (GMHA) shall be performed for projects on Site Class "D" sites with 1-second spectral acceleration (S1) greater than or equal to 0.2g, which is true for this site. However, Supplement 3 of ASCE 7-16 provides an exception stating that that the GMHA may be waived provided that the parameter SM1 is increased by 50% for all applications of SM1. The values for parameters SM1 and SD1 presented above have not been increased in accordance with Supplement 3 of ASCE 7-16.

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	0.748g	Figure 22-9
Site Coefficient, F_{PGA}	1.1	Table 11.8-1
Site Class Modified MCE_G Peak Ground Acceleration, PGA_M	0.823g	Section 11.8.3 (Eqn 11.8-1)

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 predominant earthquake contributing to the MCE peak ground acceleration is characterized as a 6.87 magnitude event occurring at a hypocentral distance of 8.35 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 predominant earthquake contributing to the DE peak ground acceleration is characterized as a 6.68 magnitude occurring at a hypocentral distance of 13.48 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.

7.4 Liquefaction Potential

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 State of California Seismic Hazard Zone Map for the Torrance Quadrangle (CDMG, 1999) indicates that the site is located in an area designated as having a potential for liquefaction. Also, the City of Carson (2002) indicates the site is located within an area that has a potential for liquefaction.

The Standard Penetration Test (SPT) blow counts obtained from boring B3 were compared with the blow counts estimated from the CPT soundings. SPTs were performed in boring B3 at intervals of approximately 5 feet. In order to supplement the SPT blow count data, 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 CpetIT (Version 3.2.1.7). The comparison of CPT-3 and boring B3 are shown as Figure 5. It is our opinion that the boring and CPT N60 values show a very reasonable correlation and that analysis of the liquefaction potential may be based on the CPT data.

Liquefaction analyses of the CPT soundings were performed using the program CLiq (Version 3.5.2.22). This program utilizes the 2001 NCEER method of analysis. This semi-empirical method is based on correlations with the data collected from the CPT soundings and includes consideration of dry-dynamic settlement above the water table.

The liquefaction analysis performed for the Maximum Considered Earthquake level by using a historic groundwater level of 9 feet below the ground surface, a magnitude 6.87 earthquake, and a peak horizontal acceleration of 0.823g (PGAM). The results of the enclosed liquefaction analyses included herein for CPTs 1 through 5 indicate that the alluvial soils could be susceptible to the liquefaction induced settlements summarized in the table below during Maximum Considered Earthquake ground motion. A summary of the anticipated liquefaction induced settlements is provided as Figure 6.

Liquefaction Induced Settlements (Maximum Considered Earthquake)

CPT Number	CPT-1	CPT-2	CPT-3	CPT-4	CPT-4
Liquefaction Settlement (in)	0.49	0.17	0.33	0.06	0.46

7.5 Lateral Spreading

Due to the presence of the Dominguez Channel located to the west of the site, the potential for lateral spread was evaluated. Lateral spread occurs as a result of liquefaction induced lateral ground movement and typically occurs due to the presence of a slope comprised of and/or underlain by liquefiable soils.

Analysis of the potential for lateral spread was performed using the program CLiq (Version 3.5.2.22). The program utilizes the method proposed by Zhang et. al. (2004) to evaluate the potential for lateral spread and the resulting lateral displacements.

This method of analysis recommends evaluating the potential for lateral displacements to a distance of 50H from the slope, where H is the height of the slope. Beyond a horizontal distance of 50H lateral displacements due to the presence of a slope are not anticipated to occur. This method of analysis considers soils to a depth of twice the total slope height as potentially subject to lateral spread, up to a distance of 50H away from the toe of the slope.

The drainage channel is trapezoidal in shape and consists of two slopes approximately 12 feet in height inclined at a gradient of approximately 2:1 (estimated via satellite images). The proposed structures have a minimum setback of 80 feet from the toe of the drainage channel. Therefore, lateral displacements using a horizontal setback of 80 feet was utilized.

Based on the results of the analyses, it is anticipated that approximately 15 inches of lateral displacements towards the drainage channel could occur at a distance of 80 feet from the toe of the drainage channel during Maximum Considered Earthquake ground motion. The magnitude of lateral spread is anticipated to decrease at further distances from the drainage channel. The lateral displacements are anticipated to occur between depths of 10 and 24 feet below the ground surface. A summary of lateral displacement is provided as Figure 7. Calculations and output from CLiq are provided as Appendix C.

The grading and foundation design recommendations presented in this report are intended to minimize the effects of lateral spread on the proposed improvements.

7.6 Slope Stability

The topography at the site is relatively level and the topography in the immediate site vicinity slopes gently to the west-southwest. The County of Los Angeles Safety Element (Leighton, 1990) indicates the site is not located within an area identified as a “hillside area” or having a potential for slope instability. Additionally, the site is not within an area identified as having a potential for seismic slope instability (CDMG, 1999). There are no known landslides near the site, nor is the site in the path of any known or potential landslides. Therefore, the potential for slope stability hazards to adversely affect the proposed development is considered low.

7.7 Earthquake-Induced Flooding

Earthquake-induced flooding is inundation caused by failure of dams or other water-retaining structures due to earthquakes. Based on a review of the Los Angeles County Safety Element (Leighton, 1990), the site is not located within a potential inundation area for an earthquake-induced dam failure. Therefore, the probability of earthquake-induced flooding is considered very low.

7.8 Tsunamis, Seiches, and Flooding

The site is not located within a coastal area. Therefore, tsunamis are not considered a significant hazard at the site.

Seiches are large waves generated in enclosed bodies of water in response to ground shaking. No major water-retaining structures are located immediately up gradient from the project site. Therefore, flooding resulting from a seismic-induced seiche is considered unlikely.

The site is within an area of minimal flooding (Zone X) as defined by the Federal Emergency Management Agency (FEMA, 2021; LACDPW, 2021).

7.9 Oil Fields & Methane Potential

Based on a review of the California Geologic Energy Management Division (CalGEM) Well Finder Website, the site is not located within an oil field and oil or gas wells are not documented in the immediate site vicinity (CalGEM, 2021). However, due to the voluntary nature of record reporting by the oil well drilling companies, wells may be improperly located or not shown on the location map and undocumented wells could be encountered during construction. Any wells encountered during construction will need to be properly abandoned in accordance with the current requirements of the CalGEM.

Since the site is not located within an oil field, the potential for methane or other volatile gases associated with oil and gas fields to be present at the site is considered low. However, as discussed in the Background section of this report (see Section 3), due to the site history there is a potential for low levels of volatile gases to be present, particularly during site grading. Should it be determined that a methane study or further environmental studies are required for the proposed development, it is recommended that a qualified methane or environmental consultant be retained to perform the study and provide mitigation measures as necessary.

7.10 Subsidence

Subsidence occurs when a large portion of land is displaced vertically, usually due to the withdrawal of groundwater, oil, or natural gas. Soils that are particularly subject to subsidence include those with high silt or clay content. The site is not located within an area of known ground subsidence. No large-scale extraction of groundwater, gas, oil, or geothermal energy is occurring or planned at the site or in the general site vicinity. There appears to be little or no potential for ground subsidence due to withdrawal of fluids or gases at the site.

8. CONCLUSIONS AND RECOMMENDATIONS

8.1 General

8.1.1 It is our opinion that neither soil nor geologic conditions were encountered during the investigation that would preclude the construction of the proposed development provided the recommendations presented herein are followed and implemented during design and construction.

8.1.2 This statement is made in accordance with the County of Los Angeles, Section 111. It is the opinion of this office that, provided our recommendations are followed and properly maintained, (1) the proposed grading and proposed structures will be safe for its intended use against hazard from landslide, settlement or slippage and (2) the proposed grading and proposed structures will have no adverse effect on the stability of the site or adjoining properties.

8.1.3 Up to 5 feet of existing artificial fill was encountered during the site investigation with localized areas of deeper fill to 9 feet in depth. The existing fill encountered is believed to be the result of past grading and construction activities at the site. 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. If needed, 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 8.4).

8.1.4 The enclosed liquefaction and seismically-induced settlement analyses indicate that the site soils could be susceptible to approximately ½ inch 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 ¼ inch over a distance of 20 feet. Additionally, the seismic settlement analyses indicate that lateral spreading of up to 15 inches could occur at a distance of 80 feet from the toe of the existing channel.

8.1.5 The results of the field data and laboratory testing indicate that the upper alluvial soils are relatively soft and compressible in their current condition (see Figure B5 thru B17) and could yield excessive static and differential settlements upon application of foundation loads.

8.1.6 Based on these considerations, it is recommended that the upper 5 feet of existing site soils within the building footprint areas be excavated and properly compacted for foundation and slab support. At a minimum, proposed foundations should be underlain by at least 3 feet of newly placed engineered fill. 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 contractor should be aware that up to 9 feet of artificial fill was encountered in Boring B3. The excavation should extend laterally a minimum distance of three feet beyond the building footprint areas, including building appurtenances, or a distance equal to the depth of fill below the foundation, whichever is greater. 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 8.4).

8.1.7 Subsequent to the recommended grading, the proposed structures may be supported on a reinforced concrete grade beam system deriving support in newly placed engineered fill. Recommendations for the design of a grade beam foundation system are provided in Section 8.6.

8.1.8 It is anticipated that 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 in order to maintain lateral support of existing adjacent improvements will be required. Excavation recommendations are provided in the *Temporary Excavations* section of this report (Section 8.11).

8.1.9 Based on the relatively shallow groundwater table, the upper alluvial soils have the potential to be very moist and the grading contractor should be aware that the soils may be above optimum moisture content. If the soils are more than 3 percent above the optimum moisture content at the time of construction the soils will likely require some spreading and drying activities in order to achieve proper compaction. Bottom stabilization may also be necessary. Recommendations for bottom stabilization and earthwork are provided in the *Grading* section of this report (see Section 8.4).

8.1.10 Foundations for small outlying structures, such as block walls up to 6 feet high, planter walls or trash enclosures, which will not be tied-in 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 at or below a depth of 2 feet and should be deepened as necessary to maintain a minimum of 12-inch embedment into recommended bearing materials. If the soils exposed in the excavation bottom are soft or loose, compaction of the soft 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.

8.1.11 Where new paving is to be placed, it is recommended that all existing fill soils 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 in the area of new paving is not required; however, paving constructed over existing uncertified fill or unsuitable soils 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 soil should be scarified and properly compacted for paving support. Paving recommendations are provided in the *Preliminary Pavement Recommendations* section of this report (see Section 8.10).

8.1.12 Based on the shallow groundwater and impermeable nature of the fine grained soils which underly the site, infiltration of stormwater at this site is not considered feasible. Infiltration of stormwater at this site would be considered detrimental to the project. It is recommended that stormwater be retained, filtered, and discharged in accordance with the requirements of the local governing agency.

8.1.13 It is recommended that flexible utility connections be utilized for all rigid utilities to minimize or prevent damage to utilities from minor differential movements.

8.1.14 It should be noted that implementation of the recommendations presented herein is not intended to completely prevent damage to the structure during the occurrence of strong ground shaking as a result of nearby earthquakes. It is intended that the structure be designed in such a way that the amount of damage incurred as a result of strong ground shaking be minimized.

8.1.15 Once the design and foundation loading configuration for the proposed structure 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.

8.1.16 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.

8.1.17 The most recent ASTM standards apply to this project and must be utilized, even if older ASTM standards are indicated in this report.

8.2 Soil and Excavation Characteristics

8.2.1 The in-situ soils can be excavated with moderate effort using conventional excavation equipment. Some caving should be anticipated in unshored excavations, especially where granular soils are encountered.

8.2.2 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.

8.2.3 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 8.11).

8.2.4 The upper 5 feet of existing site soils encountered during the investigation are considered to have a “medium” expansive potential (EI = 63) and are classified as “expansive” in accordance with the 2022 California Building Code (CBC) Section 1803.5.3. The recommendations presented herein assume that foundations and slabs will derive support in these materials.

8.3 Minimum Resistivity, pH, and Water-Soluble Sulfate

8.3.1 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" to "severely corrosive" with respect to corrosion of buried ferrous metals on site. The results are presented in Appendix B (Figure B23) and should be considered for design of underground structures. Due to the corrosive potential of the soils, it is recommended that PVC, ABS or other approved plastic piping be utilized in lieu of cast-iron when in direct contact with the site soils.

8.3.2 Laboratory tests were performed on representative samples of the on-site soil to measure the percentage of water-soluble sulfate content. Results from the laboratory water-soluble sulfate tests are presented in Appendix B (Figure B23) and indicate that the on-site soil possess a sulfate exposure class of "S0" to concrete structures as defined by 2022 CBC Section 1904 and ACI 318-19 Chapter 19.

8.3.3 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.

8.4 Grading

8.4.1 Grading is anticipated to include preparation of building pads and paving subgrade, excavation of site soils for proposed foundations and utility trenches, as well as placement of backfill for utility trenches.

8.4.2 A preconstruction conference should be held at the site prior to the beginning of excavation operations with the owner, contractor, civil engineer, geotechnical engineer, and building official in attendance. Special soil handling requirements can be discussed at that time.

8.4.3 Earthwork should be observed, and compacted fill tested by representatives of Geocon West, Inc. The existing fill and alluvial soil encountered during exploration are suitable for re-use as an engineered fill, provided any encountered oversize material (greater than 6 inches) and any encountered deleterious debris are removed.

8.4.4 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.).

8.4.5 As a minimum, it is recommended that the upper 5 feet of existing site soils within the building footprint areas be excavated and properly compacted for foundation and slab support. At a minimum, proposed foundations should be underlain by at least 3 feet of newly placed engineered fill. It is recommended that the grading contractor verify the depth of all building foundations prior to commencement of site grading activities in order to correctly determine the required grading overexcavations for foundations. 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 three feet beyond the building footprint areas, including building appurtenances, or a distance equal to the depth of fill below the foundation, whichever is greater. The limits of existing fill and/or soft soil removal will be verified by the Geocon representative during site grading activities.

8.4.6 The contractor should be aware that up to 9 feet of artificial fill was encountered in Boring B3. Existing artificial fill associated with previous removal of USTs is anticipated to be present onsite and is not considered suitable in its present condition for support of proposed structures. All previously placed fill must be excavated and recompacted. Additional recommendations may be provided in the field regarding transitioning the excavation depth to control differential fill thicknesses below foundations.

8.4.7 Subsequent to the recommended grading, the proposed structures may be supported on a reinforced concrete grade beam system deriving support in newly placed engineered fill.

8.4.8 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.).

8.4.9 Prior to placing fill or constructing proposed improvements, a stable excavation bottom must be established. In areas where the subgrade is saturated or soft, proper compaction will likely not be possible or achieved in a timely manner without introducing stabilization measures. If subgrade stabilization is required at the excavation bottom, rubber tire equipment should not be allowed in the excavation bottom until it is stabilized or extensive soil disturbance could result. It is suggested that excavation and grading be performed during the summer season to promote moisture control of the soils. In addition, the use of track equipment should be used to minimize disturbance to the soils at the excavation bottom.

8.4.10 Bottom stabilization, if necessary, may be achieved placing a thin lift of 3- to 6-inch-diameter crushed angular rock into the soft excavation bottom. The use of crushed concrete will also be acceptable. The crushed rock should be spread thinly across the excavation bottom and pressed into the soils by track rolling or wheel rolling with heavy equipment. It is very important that voids between the rock fragments are not created so the rock must be thoroughly pressed or blended into the soils. All subgrade soils must be properly compacted and proof-rolled in the presence of the Geotechnical Engineer (a representative of Geocon West, Inc.).

8.4.11 An additional method of subgrade stabilization would be to place a minimum 12-inch thick layer of aggregate base over Tensar InterAx NX850 geogrid or equivalent extruded (nonwoven) geotextile. The Tensar geogrids should be installed taught and should overlap in accordance with the manufacturer's recommendations. Prior to placing the geogrid, excessively soft or wet materials should be removed and the resulting excavation bottom should be free of loose material. Non-vibratory compaction methods should be used for compaction of the base material. The aggregate base should be compacted to a dry density of at least 95 percent of the laboratory maximum density near the optimum moisture. If pumping of the subgrade continues, a thicker layer of aggregate base may be placed. It is very important that subgrade stabilization be performed uniformly across the entire excavation bottom.

8.4.12 The upper soils encountered during site exploration were moist to wet and the grading contractor should be aware that the existing soils are currently above optimum moisture content. Conditions could change seasonally. If the soils are more than 3 percent above the optimum moisture content at the time of construction the soils will likely require spreading, processing, and drying activities in order to achieve proper compaction.

8.4.13 All fill and backfill soils should be placed in horizontal loose layers approximately 6 to 8 inches thick, moisture conditioned to near to slightly above optimum moisture content, and properly compacted to a minimum 90 percent of the maximum dry density in accordance with ASTM D 1557 (latest edition).

8.4.14 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 offsite improvements. Excavation recommendations are provided in the *Temporary Excavations* section of this report (see Section 8.11).

8.4.15 Although not anticipated for this project, all imported fill shall be observed, tested, and approved by Geocon West, Inc. prior to bringing soil to the site. Import fill should consist of the characteristics presented in the table below.

SUMMARY OF IMPORT FILL RECOMMENDATIONS

Soil Characteristic	Values
Expansion Potential	"Medium" (Expansion Index of 50 or less)
Particle Size	Maximum Dimension Less Than 6 Inches
	Free of Debris
Corrosivity	Less Detrimental Than Existing Onsite Soils

8.4.16. 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 to slightly above optimum moisture content, and compacted to at least 92 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 8.10).

8.4.17 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 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 proper compaction cannot be performed, foundations may derive support directly in the undisturbed alluvial soils 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 by a Geocon representative.

8.4.18 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 requirements. 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 excavation bottom must be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon).

8.4.19 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 materials, fill, steel, gravel, or concrete.

8.5 Shrinkage

8.5.1 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.

8.5.2 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.

8.6 Foundation Design

8.7.1 Based on the potential for seismically induced lateral spread, it is recommended that the proposed structures be supported on a reinforced concrete grade beam system deriving support in newly placed engineered fill. The use of a reinforced concrete grade beam system is intended to reduce the impact on seismically induced ground movement on the proposed structures.

8.7.2 The grade beam foundation system consists of a continuous perimeter reinforced concrete grade beam foundation, which is interconnected with interior grade beams and a concrete slab. The system of grade beams, in conjunction with the slab, provides a stiff foundation system capable of distributing building loads and resisting differential settlements. The grade beams and slab should be poured monolithically where possible.

8.6.1 As a minimum, proposed foundations should be underlain by at least 3 feet of newly placed engineered fill. All foundation excavations must be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon), prior to placing steel or concrete.

8.6.2 A grade beam foundation system for the proposed structures may be designed using the parameters in the table on the following page.

SUMMARY OF FOUNDATION RECOMMENDATIONS

Parameter	Value
Minimum Continuous Foundation Width	12 Inches
Minimum Isolated Foundation Width	24 Inches
Minimum Foundation Depth	24 Inches Below Lowest Adjacent Grade & 12 Inches into Recommended Bearing Material
Minimum Steel Reinforcement	4 No. 4 Bars, 2 Top and 2 Bottom
Allowable Bearing Capacity – Continuous Foundation	2,000 psf
Allowable Bearing Capacity – Isolated Foundation	2,500 psf
Bearing Capacity Increase	250 psf per Foot of Width
	500 psf per Foot of Depth
Maximum Allowable Bearing Capacity	3,500 psf
Estimated Static Settlement	½ Inch
Estimated Seismic Settlement	½ Inch
Estimated Combined Static and Seismic Differential Settlement	½ Inch over 30 Feet
Estimated Seismic Induced Lateral Spread	15 inches

8.6.3 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.

8.6.4 The allowable bearing pressures may be increased by one-third for transient loads due to wind or seismic forces.

8.6.5 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.

8.6.6 No special subgrade presaturation is required prior to placement of concrete. However, the moisture in the foundation subgrade should be sprinkled as necessary to maintain a moist condition at the time of concrete placement.

8.6.7 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.

8.6.8 This office should be provided with a copy of the final construction plans so that the excavation recommendations presented herein could be properly reviewed and revised if necessary.

8.7 Miscellaneous Foundations

8.7.1 Foundations for small outlying structures, such as block walls up to 6 feet in height, planter walls or trash enclosures, which will not be tied to the proposed structure, 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, foundations may derive support directly in the competent undisturbed alluvial soils and should be deepened as necessary to maintain a minimum 12-inch embedment into the recommended bearing materials.

8.7.2 If the soils exposed in the excavation bottom are soft, compaction of the soft 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, 24 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.

8.7.3 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.

8.8 Lateral Design

8.8.1 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 newly placed engineered fill or undisturbed older alluvial soils.

8.8.2 Passive earth pressure for the sides of foundations and slabs poured against newly placed engineered fill or undisturbed older alluvial soils may be computed as an equivalent fluid having a density of 230 pounds per cubic foot (pcf) with a maximum earth pressure of 2,300 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.

8.9 Concrete Slabs-on-Grade

8.9.1 Exterior 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 8.10).

8.9.2 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.

8.9.3 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.

8.9.4 Exterior slabs for walkways and flatwork, 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 to slightly above optimum moisture content and properly compacted to at least 92 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. Construction joints should be designed by the project structural engineer.

8.9.5 Due to the expansive potential of the anticipated subgrade soils, 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. Furthermore, consideration should be given to doweling slabs into adjacent curbs and foundations to minimize movements and offsets which could lead to a potential tripping hazard.

8.9.6 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.

8.10 Preliminary Pavement Recommendations

8.10.1 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 to slightly above optimum moisture content, and properly compacted to at least 92 percent relative compaction, as determined by ASTM Test Method D 1557 (latest edition).

8.10.2 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.

8.10.3 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

8.10.4 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).

8.10.5 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 92 and 95 percent relative compaction, respectfully, as determined by ASTM Test Method D 1557 (latest edition).

8.10.6 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.

8.11 Temporary Excavations

8.11.1 Excavations on the order of 6 feet in height are generally anticipated during grading activities, and isolated excavations up to 9 feet in height may also be required. The excavations are expected to expose artificial fill and alluvial soils, which may be subject to caving where granular soils are exposed. Temporary vertical excavations up to 5 feet in height may be attempted where loose soils or caving sands are not present, and where excavations are not surcharged by adjacent traffic or structures.

8.11.2 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 a maximum of 9 feet in height. A uniform slope does not have a vertical portion. Where space is limited, shoring measures will be required. *Shoring* recommendations can be provided under separate cover if necessary.

8.11.3 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 slot-cutting and shoring can be provided under separate cover.

8.11.4 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. The soils exposed in the cut slopes should be inspected during excavation by our personnel 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.

8.12 Surcharge from Adjacent Structures and Improvements

8.12.1 Additional 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.

8.12.2 It is recommended that line-load surcharges from adjacent wall footings, use horizontal pressures generated from NAV-FAC DM 7.2. The governing equations are:

$$For\ {}^{x}/_{H} \leq 0.4$$

$$\sigma_H(z) = \frac{0.20 \times \left(\frac{z}{H}\right)}{\left[0.16 + \left(\frac{z}{H}\right)^2\right]^2} \times \frac{Q_L}{H}$$

and

$$For\ {}^{x}/_{H} > 0.4$$

$$\sigma_H(z) = \frac{1.28 \times \left(\frac{x}{H}\right)^2 \times \left(\frac{z}{H}\right)}{\left[\left(\frac{x}{H}\right)^2 + \left(\frac{z}{H}\right)^2\right]^2} \times \frac{Q_L}{H}$$

where *x* is the distance from the face of the excavation or wall to the vertical line-load, *H* is the distance from the bottom of the footing to the bottom of excavation or wall, *z* is the depth at which the horizontal pressure is desired, Q_L is the vertical line-load and $\sigma_H(z)$ is the horizontal pressure at depth *z*.

8.12.3 It is recommended that vertical point-loads, from construction equipment outriggers or adjacent building columns use horizontal pressures generated from NAV-FAC DM 7.2. The governing equations are:

$$For\ {}^{x}/_{H} \leq 0.4$$

$$\sigma_H(z) = \frac{0.28 \times \left(\frac{z}{H}\right)^2}{\left[0.16 + \left(\frac{z}{H}\right)^2\right]^3} \times \frac{Q_P}{H^2}$$

and

$$For\ {}^{x}/_{H} > 0.4$$

$$\sigma_H(z) = \frac{1.77 \times \left(\frac{x}{H}\right)^2 \times \left(\frac{z}{H}\right)^2}{\left[\left(\frac{x}{H}\right)^2 + \left(\frac{z}{H}\right)^2\right]^3} \times \frac{Q_P}{H^2}$$

then

$$\sigma'_H(z) = \sigma_H(z) cos^2(1.1\theta)$$

where *x* is the distance from the face of the excavation/wall to the vertical point-load, *H* is distance from the outrigger/bottom of column footing to the bottom of excavation, *z* is the depth at which the horizontal pressure is desired, *Qp* is the vertical point-load, $\sigma_H(z)$ is the horizontal pressure at depth *z*, *Θ* is the angle between a line perpendicular to the excavation/wall and a line from the point-load to location on the excavation/wall where the surcharge is being evaluated, and $\sigma_H(z)$ is the horizontal pressure at depth *z*.

8.13 Surface Drainage

8.13.1 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.

8.13.2 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 2022 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.

8.13.3 Positive site drainage should be provided away from structures, pavement, and the tops of slopes to swales or other controlled drainage structures.

8.13.4 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.

8.14 Plan Review

8.14.1 Grading, foundation, and 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

1. 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.

2. 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 Incorporated should be notified so that supplemental recommendations can be given. The evaluation or identification of the potential presence of hazardous or corrosive materials was not part of the scope of services provided by Geocon Incorporated.

3. This report is issued with the understanding that it is the responsibility of the owner or his 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.

4. The findings of this report are valid as of the present date. However, changes in the conditions of a property can occur with the passage of time, whether they be 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.

LIST OF REFERENCES

1. California Division of Mines and Geology, 1998, *Seismic Hazard Evaluation of the Torrance 7.5-Minute Quadrangle, Los Angeles County, California,* Open-File Report 98-26.

2. California Division of Mines and Geology, 1999; *State of California Seismic Hazard Zones, Torrance Quadrangle,* Official Map, Released: March 25, 1999.

3. California Division of Mines and Geology, 1986, *State of California, Special Studies Zones, Torrance Quadrangle, Revised Official Map,* Effective: July 1, 1986.

4. California Geologic Energy Management Division, 2021, Geologic Energy Management Division Well Finder, http://maps.conservation.ca.gov.doggr/index.html#close.

5. California Geological Survey, 2021a, CGS Information Warehouse, Regulatory Map Portal, http://maps.conservation.ca.gov/cgs/informationwarehouse/index.html?map=regulatorymaps.

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7. California Geological Survey, 2018, *Earthquake Fault Zones, A Guide for Government Agencies, Property Owners/Developers, and Geoscience Practitioners for Assessing Fault Rupture Hazards in California,* Special Publication 42, Revised 2018.

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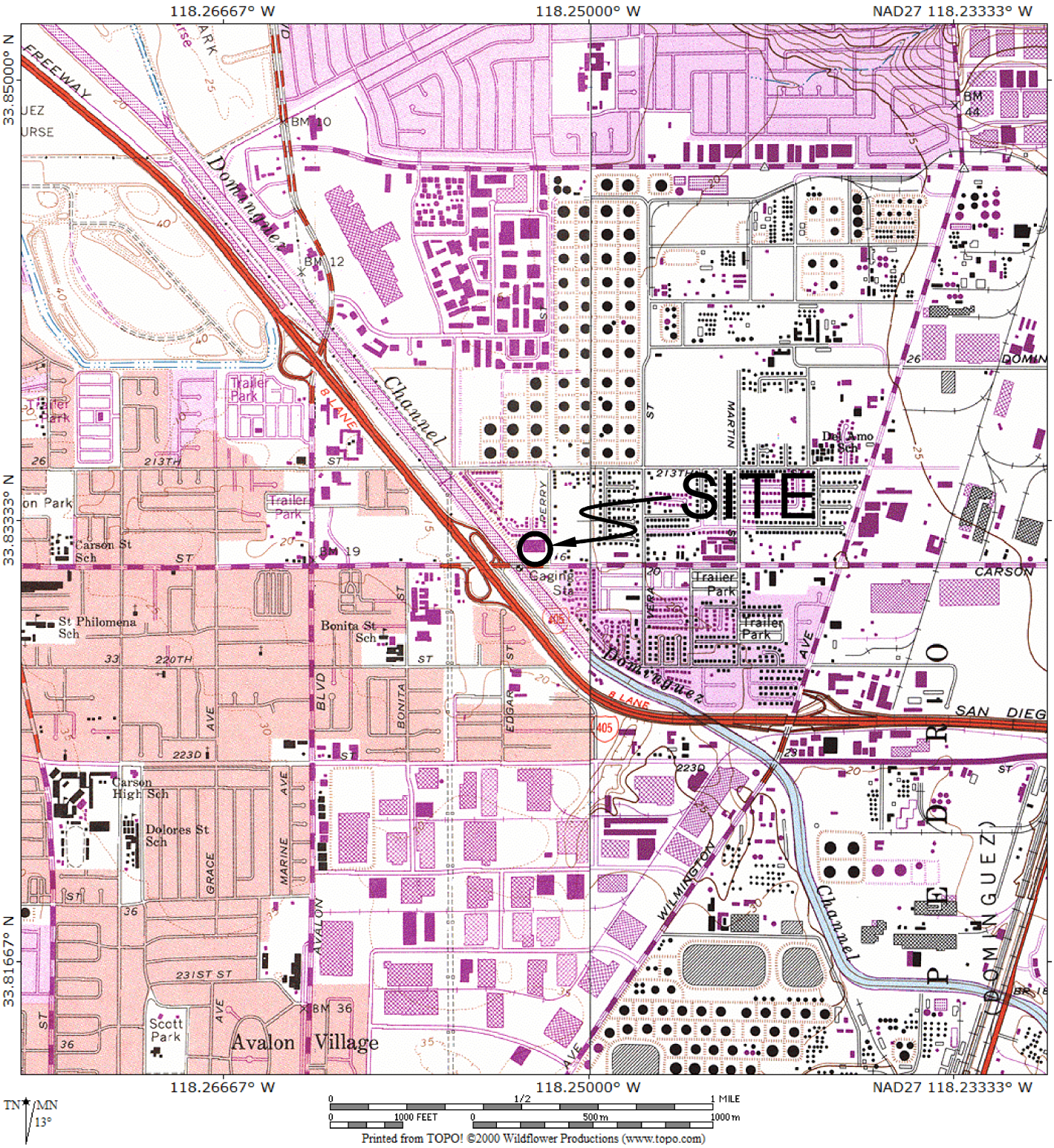

U.S.G.S. TOPOGRAPHIC MAPS, 7.5 MINUTE SERIES, TORRANCE, CA QUADRANGLE

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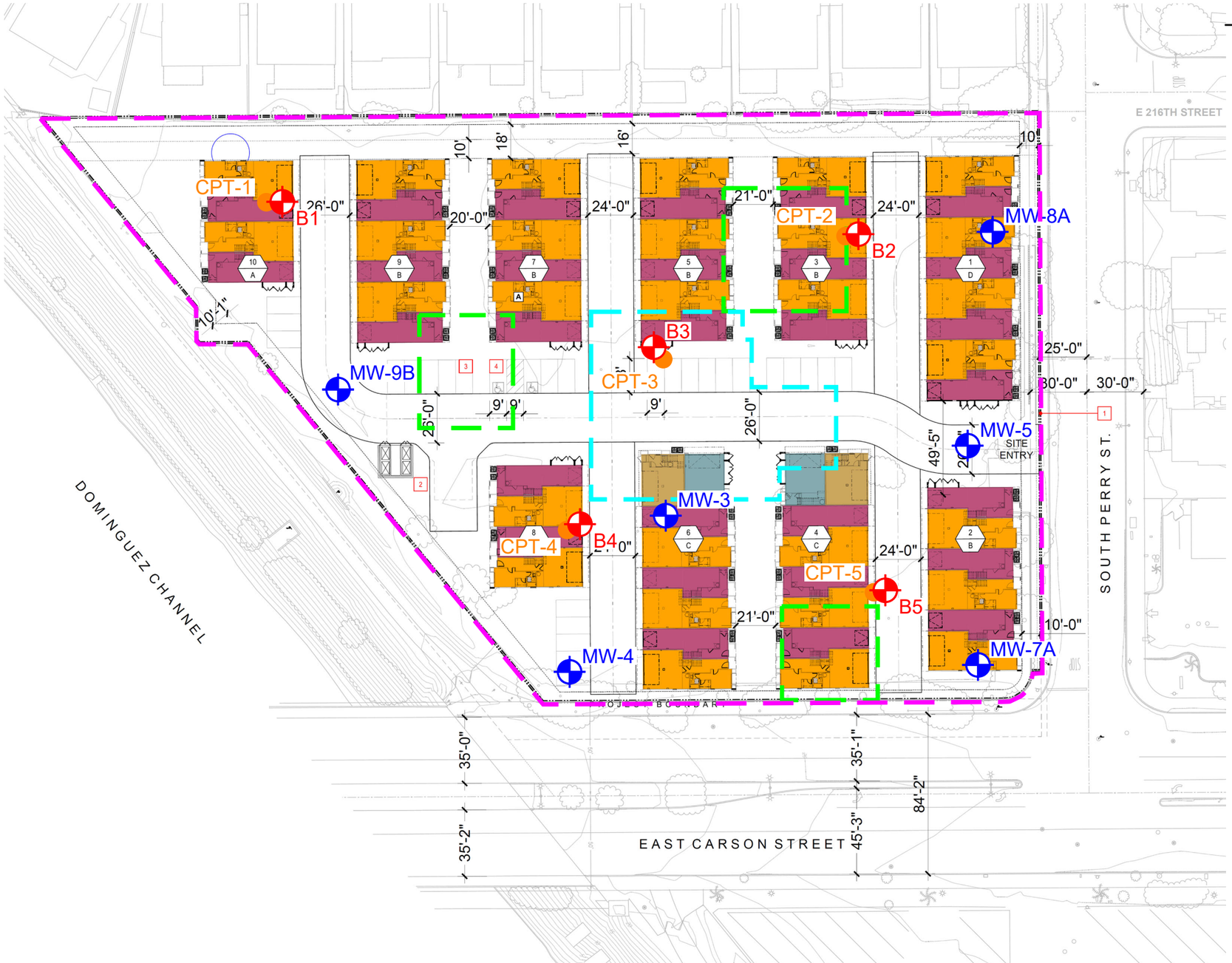
VICINITY MAP

21611 SOUTH PERRY STREET
CARSON, CALIFORNIA

DRAFTED BY: CB	CHECKED BY: SFK	AUG. 2024	PROJECT NO. W1301-06-01	FIG. 1



LEGEND

- B5 — Approximate Location of Boring
- CPT-5 — Approximate Location of CPT
- MW-9B — Approximate Location of Monitoring Well
- Property Limits
- Approx. Extent of URS Removal and Recompaction (5 FT BGS)
- Approx. Extent of URS Removal and Recompaction (8 FT BGS)

North

0 60' 120'

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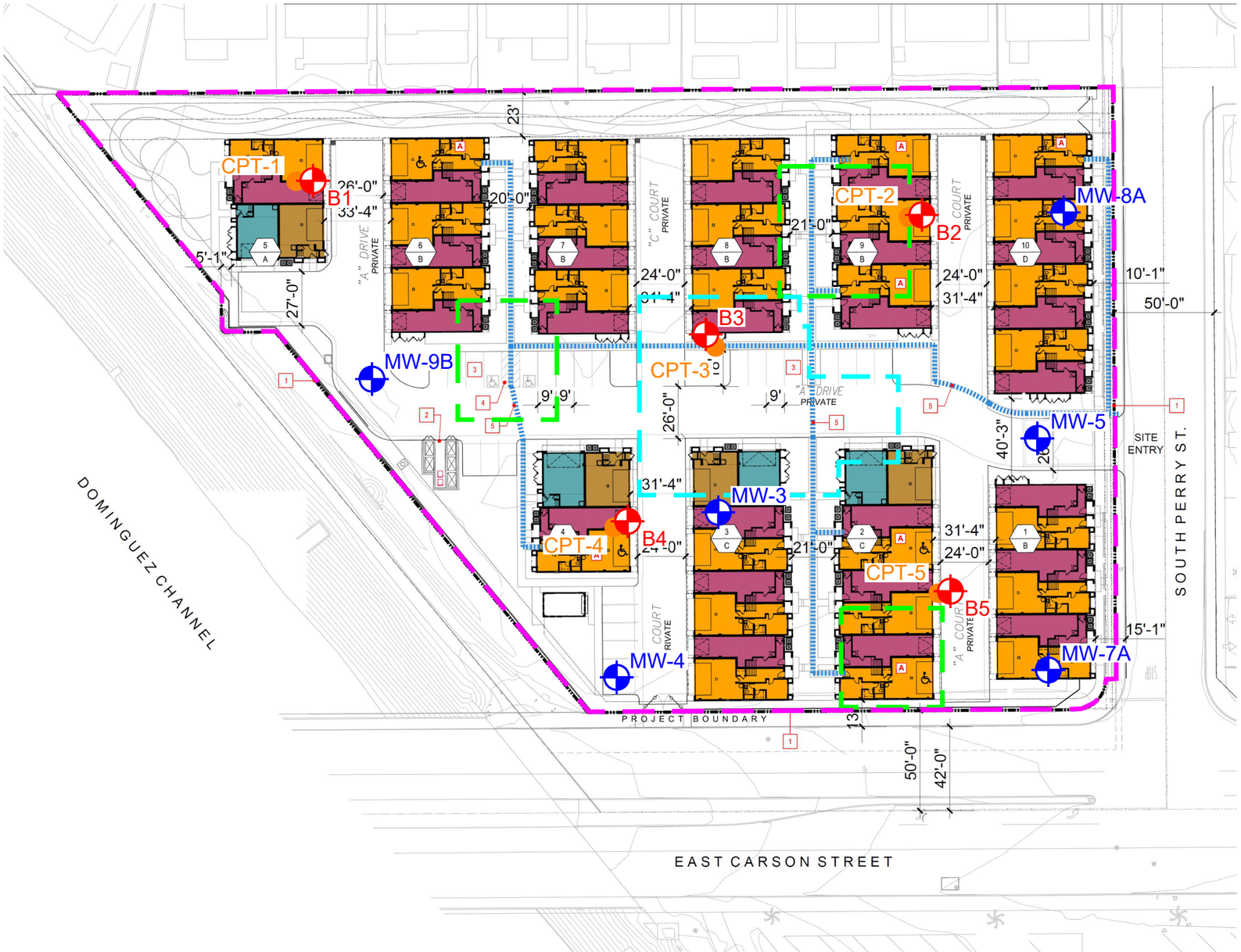
DRAFTED BY: ACS	CHECKED BY: JTA

SITE PLAN

21611 S PERRY STREET
CARSON, CALIFORNIA

AUG. 2024	PROJECT NO. W1301-06-01	FIG. 2



LEGEND

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- Approx. Extent of URS Removal and Recompaction (8 FT BGS)

North

0 60' 120'

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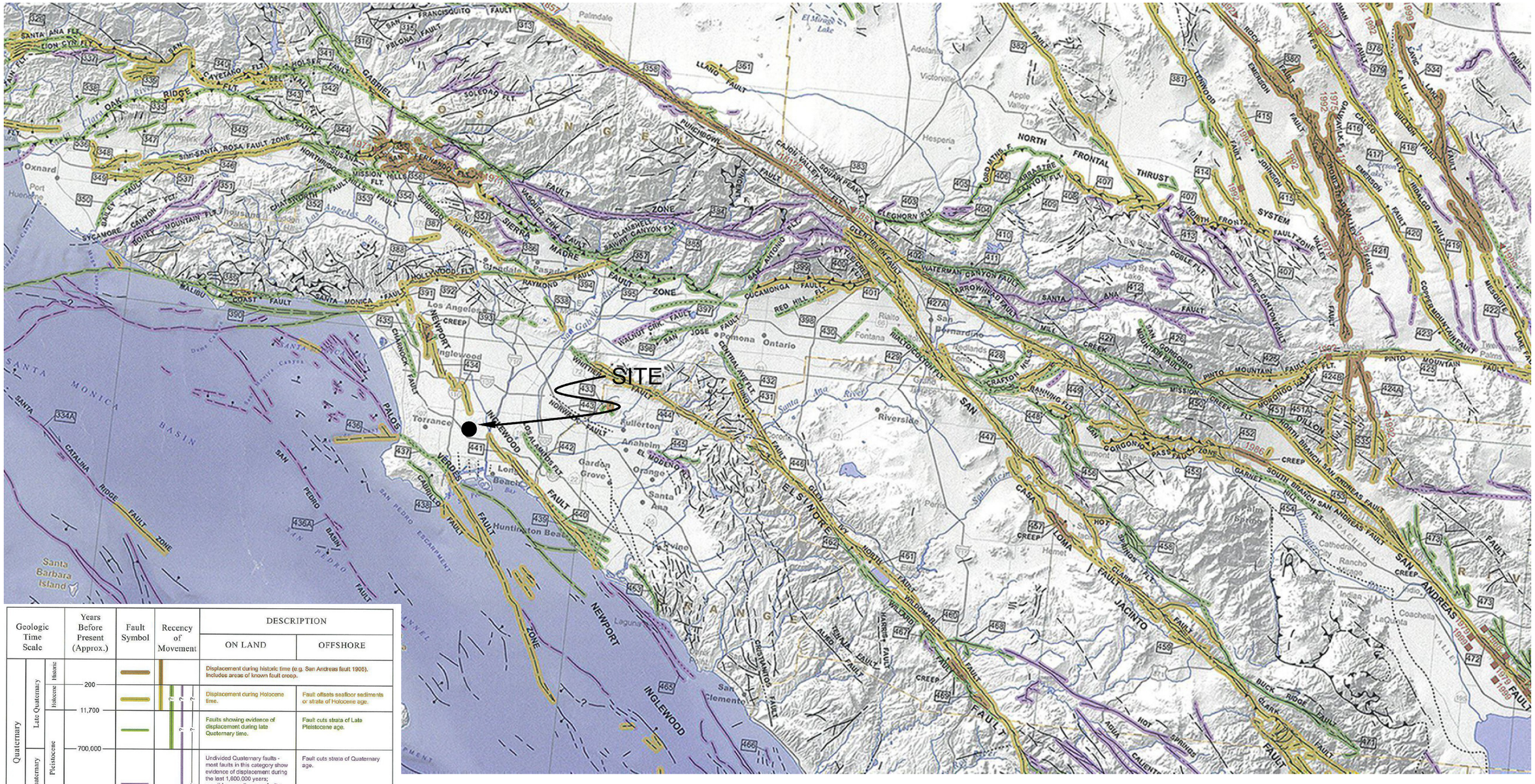
DRAFTED BY: ACS | CHECKED BY: JTA

SITE PLAN

21611 S PERRY STREET
CARSON, CALIFORNIA

AUG. 2024 | PROJECT NO. W1301-06-01 | FIG. 2

Reference: Jennings, C.W. and Bryant, W. A., 2010, Fault Activity Map of California, California Geological Survey Geologic Data Map No. 6.



Geologic Time Scale			Years Before Present (Approx.)	Fault Symbol	Recency of Movement	DESCRIPTION: ON LAND	DESCRIPTION: OFFSHORE
Quaternary	Late Quaternary	Historic				Displacement during historic time (e.g. San Andreas fault 1906). Includes areas of known fault creep.	
		Holocene	200			Displacement during Holocene time.	Fault offsets seafloor sediments or strata of Holocene age.
			11,700			Faults showing evidence of displacement during late Quaternary time.	Fault cuts strata of Late Pleistocene age.
	Early Quaternary	Pleistocene	700,000			Undivided Quaternary faults - most faults in this category show evidence of displacement during the last 1,600,000 years; possible exceptions are faults which displace rocks of undifferentiated Plio-Pleistocene age.	Fault cuts strata of Quaternary age.
Pre-Quaternary			1,600,000*			Faults without recognized Quaternary displacement or showing evidence of no displacement during Quaternary time. Not necessarily inactive.	Fault cuts strata of Pliocene or older age.
			4.5 billion (Age of Earth)				

* Quaternary now recognized as extending to 2.6 Ma (Walker and Geissman, 2009). Quaternary faults in this map were established using the previous 1.8 Ma criterion.

N

0 12 24 Miles

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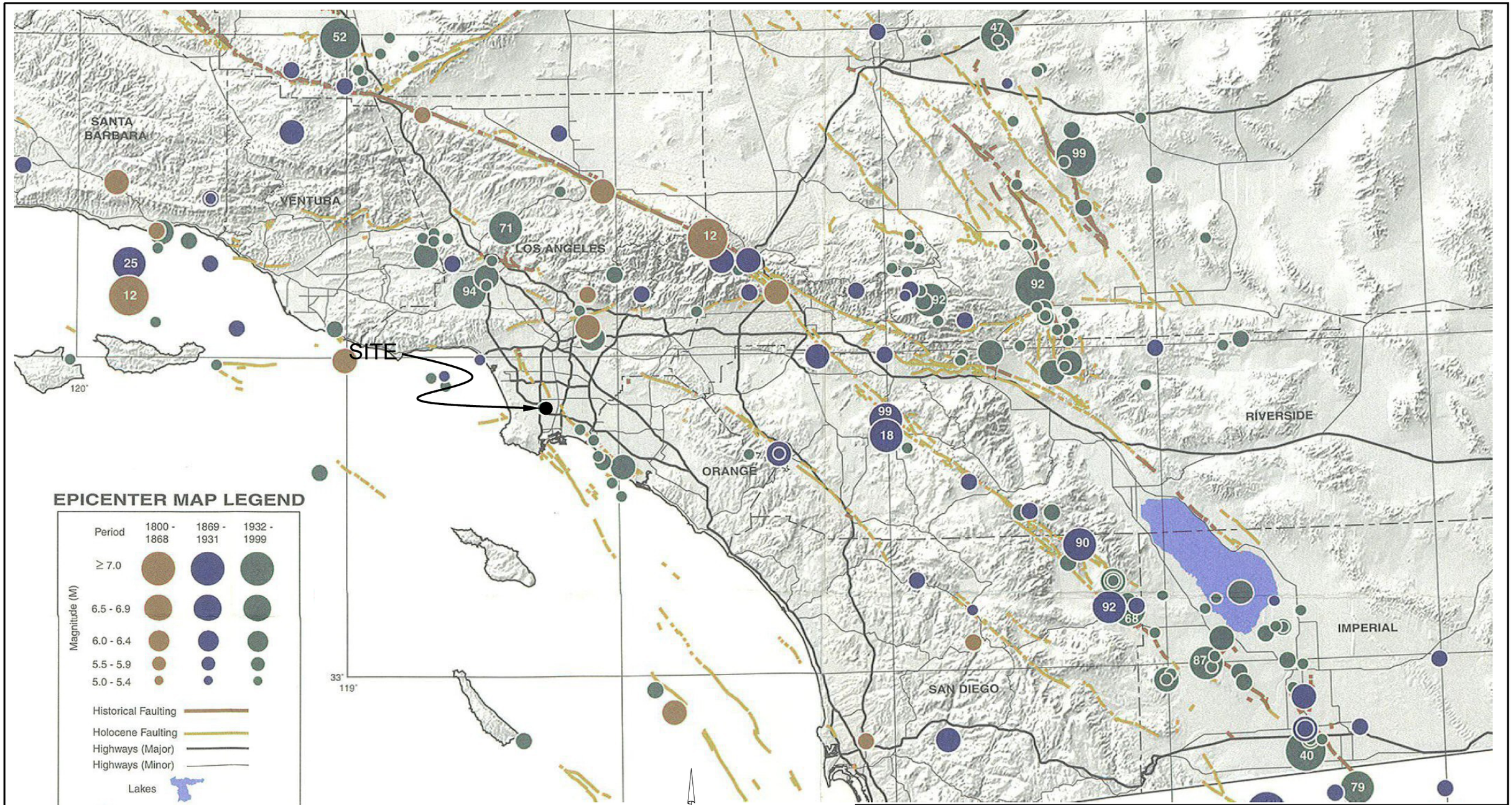
REGIONAL FAULT MAP

21611 SOUTH PERRY STREET
CARSON, CALIFORNIA

AUG. 2024 | PROJECT NO. W1301-06-01 | FIG. 3



EPICENTER MAP LEGEND

Period	1800 - 1868	1869 - 1931	1932 - 1999
Magnitude (M) ≥ 7.0			
6.5 - 6.9			
6.0 - 6.4			
5.5 - 5.9			
5.0 - 5.4			

Historical Faulting
Holocene Faulting
Highways (Major)
Highways (Minor)
Lakes
65 Last two digits of M ≥ 6.5 earthquake year

Reference: Toppozada, T., Branum, D., Petersen, M., Hallstrom, C., Cramer, C., and Reichle, M., 2000, Epicenters and Areas Damaged by M≥5 California Earthquakes, 1800 - 1999, California Geological Survey, Map Sheet 49.

0 20 40 Miles

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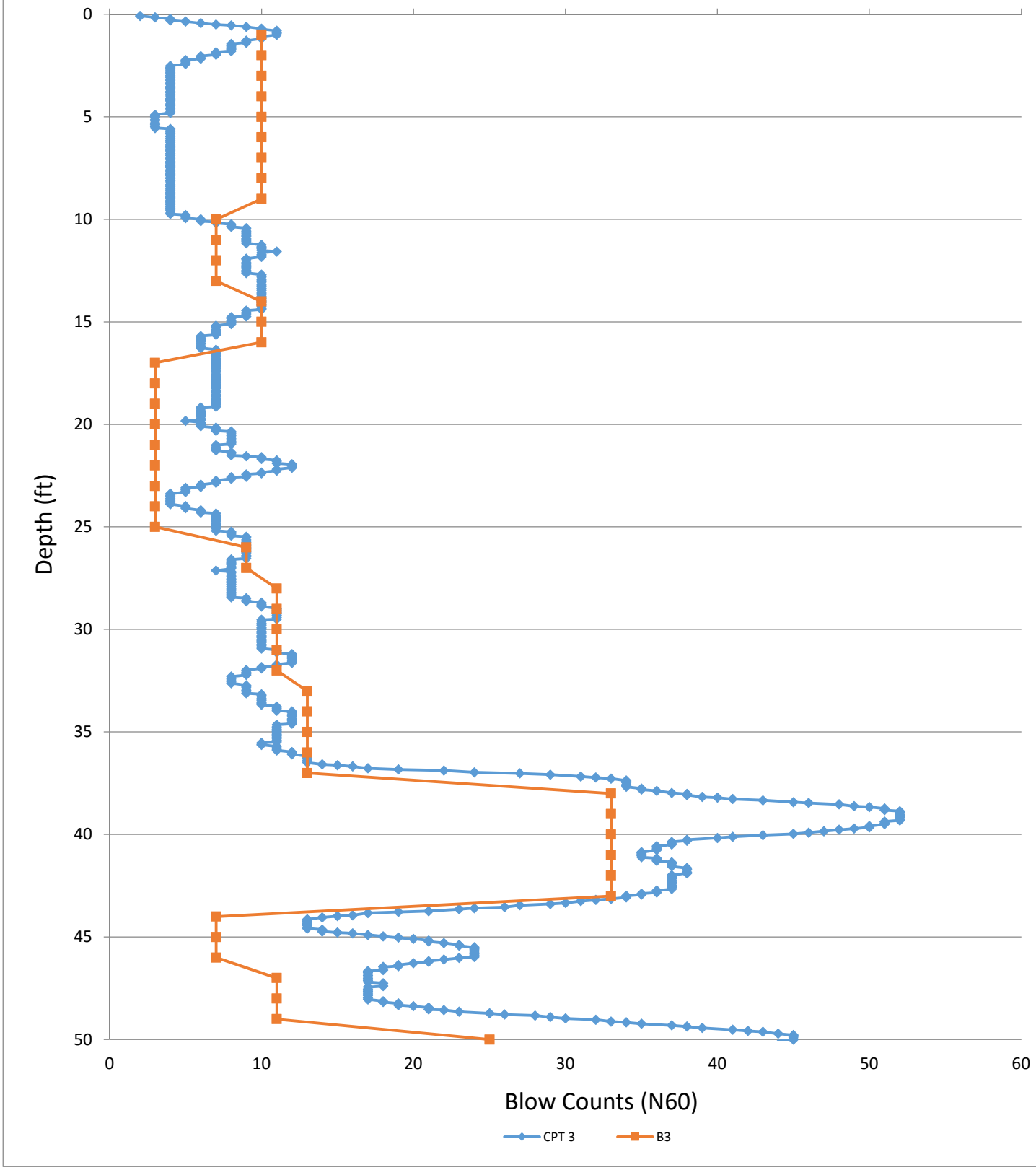
REGIONAL SEISMICITY MAP

21611 SOUTH PERRY STREET
CARSON, CALIFORNIA

AUG. 2024 | PROJECT NO. W1301-06-01 | FIG.4



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CORRELATION OF BORING & CPT N60

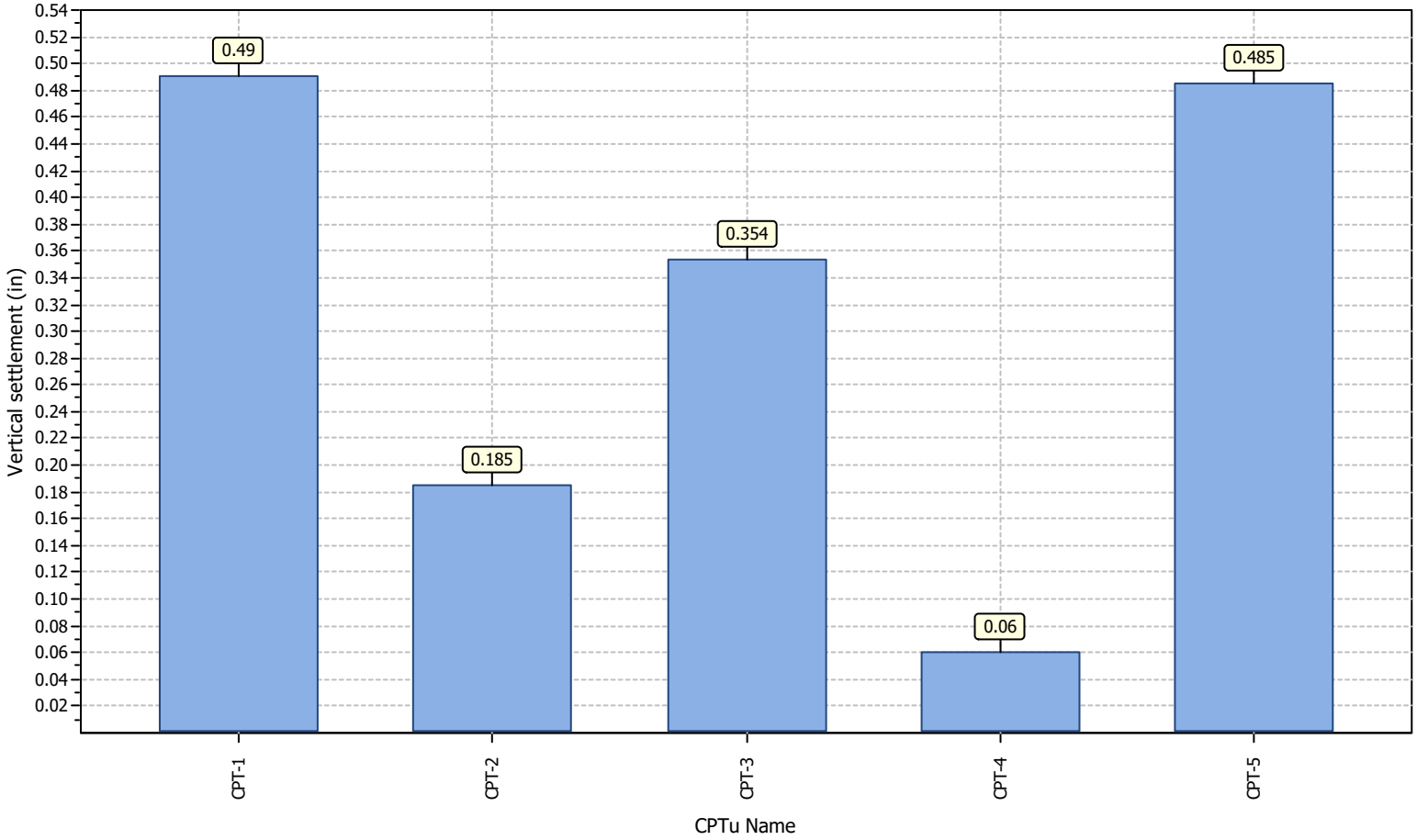
21611 SOUTH PERRY STREET
CARSON, CA

DRAFTED BY: ACS	CHECKED BY: JTA	AUG. 2024	PROJECT NO. W1301-06-01	FIG.5

Project title : Geocon West / 21611 Perry Street

Location : Carson, CA

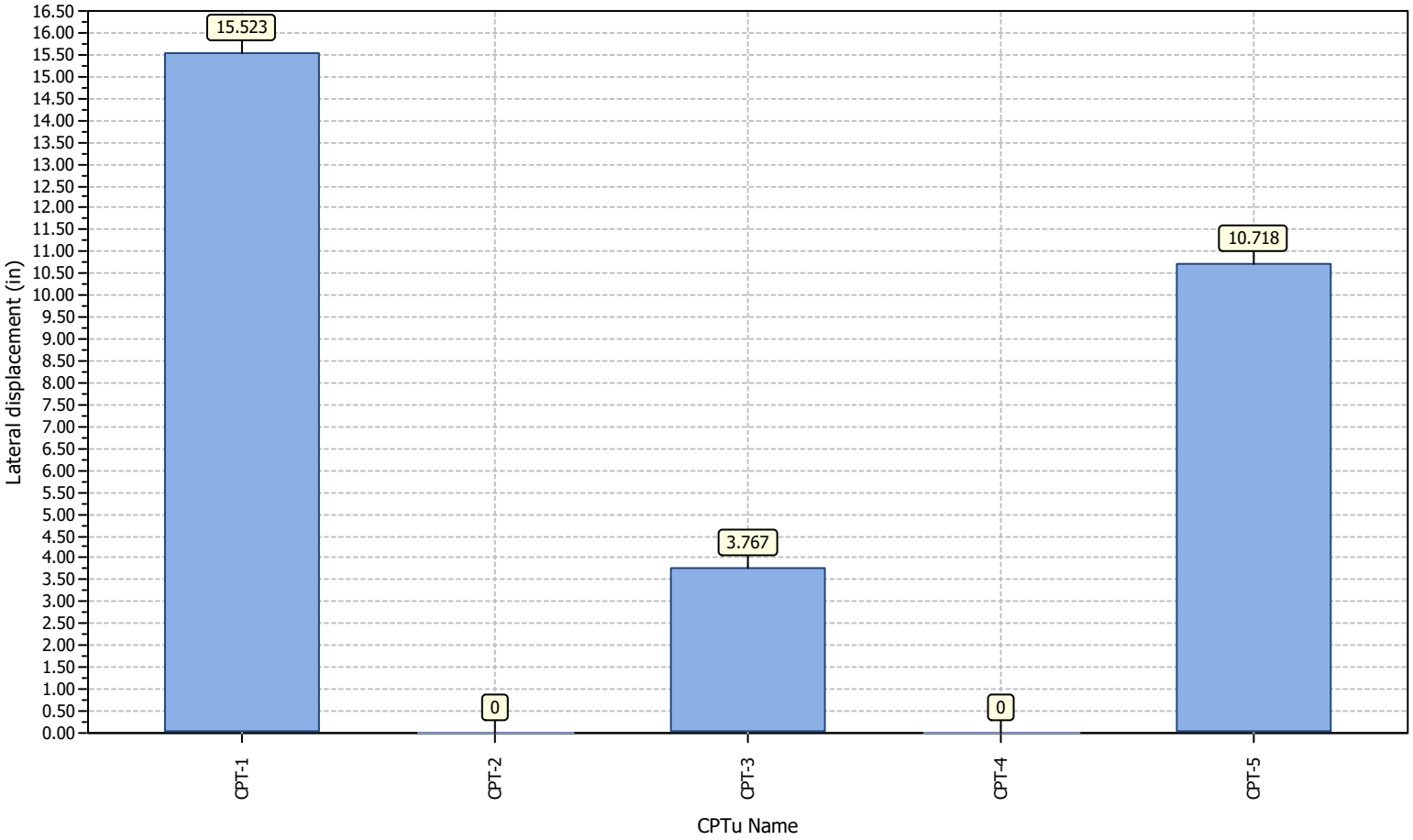
Overall vertical settlements report



Project title : Geocon West / 21611 Perry Street

Location : Carson, CA

Overall lateral displacements report



APPENDIX A

APPENDIX A
FIELD INVESTIGATION

The site was explored on February 9, 2021, by drilling five 8-inch diameter borings using a truck-mounted hollow-stem auger drilling machine and advancing five cone penetrometer tests (CPTs). The borings were excavated to depths between approximately 20½ and 51 feet beneath the existing ground surface. The CPTs were advanced to depths of approximately 60 feet below existing ground surface. Representative and relatively undisturbed samples were obtained by driving a 4 inch, O. D., California Modified Sampler into the "undisturbed" soil mass with blows from a 140 pound hammer falling 30 inches. Bulk samples were also obtained. Standard Penetration Tests were performed in boring B3.

The soil conditions encountered in the borings were visually examined, classified and logged in general accordance with the Unified Soil Classification System (USCS). Logs of the borings are presented on Figures A1 through A5. The CPT data is presented as Figures A6 through A10. The logs depict the soil and geologic conditions encountered and the depth at which samples were obtained. The logs also include our interpretation of the conditions between sampling intervals. Therefore, the logs contain both observed and interpreted data. We determined the lines designating the interface between soil materials on the logs using visual observations, penetration rates, excavation characteristics and other factors. The transition between materials may be abrupt or gradual. Where applicable, the boring logs were revised based on subsequent laboratory testing. The approximate locations of the borings and CPTs are depicted on the Site Plan (see Figure 2)

PROJECT NO. W1301-06-01

BORING 1

ELEV. (MSL.) -- DATE COMPLETED **2/9/2021**

EQUIPMENT **HOLLOW STEM AUGER** BY: **JMH**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT*)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	BULK 0-5'				**ARTIFICIAL FILL** Silty Sand, poorly graded, dense, moist, light brown, fine-grained, some medium-grained, some gravel.			
2								
4								
6	B1@5'			CH	**ALLUVIUM** Clay, firm, moist, dark gray, high plasticity.	19	105.0	24.0
8	B1@7.5'				- some sand	13	106.1	19.7
10	B1@10'				- olive brown mottles	21	103.7	22.0
12			▼					
14					Clayey Sand, poorly graded, loose, saturated, brown, fine-grained.			
16	B1@15'			SC		10	111.6	19.8
18					Silty Sand, poorly graded, medium dense, saturated, brown, fine-grained.			
20	B1@20'			SM		22	114.5	19.2

Total depth of boring: 20.5 feet
Fill to 4.5 feet.
Groundwater encountered at 12.5 feet.
Backfilled with grout.

*Penetration resistance for 140-pound hammer falling 30 inches by auto-hammer.
NOTE: The stratification lines presented herein represent the approximate boundary between earth types; the transitions may be gradual.

W1301-06-01 BORING LOGS.GPJ

Figure A1,
Log of Boring 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.

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PROJECT NO. W1301-06-01

BORING 2

ELEV. (MSL.) -- DATE COMPLETED **2/9/2021**

EQUIPMENT **HOLLOW STEM AUGER** BY: **JMH**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT*)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	BULK 0-5'				**ARTIFICIAL FILL** Silty Sand, poorly graded, loose, moist, brown, fine-grained.			
2								
4	B2@3'			ML	**ALLUVIUM** Sandy Silt, firm, moist, dark gray.	14	73.4	29.6
6	B2@6'				Clay, soft, wet, gray, high plasticity.	10	29.3	32.0
8								
10	B2@9'			CH	- firm, dark gray	15	73.9	49.8
12	B2@12'					15	87.2	35.9
14								
16	B2@15'				- soft	8	75.1	45.2
18								
20	B2@20'				- firm	17	101.7	27.4

Total depth of boring: 20.5 feet
Fill to 3 feet.
No groundwater encountered.
Backfilled with grout.

*Penetration resistance for 140-pound hammer falling 30 inches by auto-hammer.
NOTE: The stratification lines presented herein represent the approximate boundary between earth types; the transitions may be gradual.

W1301-06-01 BORING LOGS.GPJ

Figure A2,
Log of Boring 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.

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PROJECT NO. W1301-06-01

BORING 3

ELEV. (MSL.) -- DATE COMPLETED **2/9/2021**

EQUIPMENT **HOLLOW STEM AUGER** BY: **JMH**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT*)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	BULK 0-5'				**ARTIFICIAL FILL** Sand, poorly graded, dense, moist, light brown, fine-grained, some medium-grained.			
2	B3@1.5'					50 (6")	107.1	4.0
4								
6	B3@5'					50 (6")		
8	B3@7'				- grayish brown, some fine gravel	50 (3")	103.4	8.7
10	B3@10'			MH	**ALLUVIUM** Silt, soft, moist, dark gray, high plasticity, some sand.	7		
12	B3@12.5'			CH	Clay, firm, moist, dark gray, high plasticity.	21	91.7	31.6
14								
16	B3@15'					10		
18	B3@17.5'		▼		Clay, firm, moist, dark gray.	14	103.7	26.1
20	B3@20'			CL	- soft, wet	3		
22	B3@22.5'				- firm, light brown	11	105.7	27.3
24								
26	B3@25'			CH	Clay, firm, moist, olive brown, some sand, trace gravel, high plasticity.	9		
28	B3@27.5'				- mottled calcium deposits, increase in sand	21	89.9	32.6

W1301-06-01 BORING LOGS.GPJ

Figure A3,
Log of Boring 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.

GEOCON

PROJECT NO. W1301-06-01

BORING 3

ELEV. (MSL.) -- DATE COMPLETED **2/9/2021**

EQUIPMENT **HOLLOW STEM AUGER** BY: **JMH**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT*)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
30	B3@30'				- decrease in sand	11		
32	B3@32.5'			CH	- stiff	22	98.4	27.3
34	B3@35'				- firm, increase in sand	13		
36								
38	B3@37.5'				Silty Sand, poorly graded, dense, wet, olive brown, fine-grained.	67	117.6	16.4
40	B3@40'			SM		33		
42	B3@42.5'				- medium dense, trace shells	36	101.9	25.0
44				CL	Sandy Clay, soft, wet, olive brown.			
46	B3@45'					7		
48	B3@47.5'			SC	Clayey Sand, poorly graded, medium dense, saturated, olive brown with oxidation mottles, fine-grained.	20	100.0	25.4
50	B3@50'			SM	Silty Sand, poorly graded, medium dense, saturated, olive brown.	25		
					Total depth of boring: 51 feet Fill to 9 feet. Groundwater encountered at 17.6 feet. Backfilled with grout. *Penetration resistance for 140-pound hammer falling 30 inches by auto-hammer. NOTE: The stratification lines presented herein represent the approximate boundary between earth types; the transitions may be gradual.			

W1301-06-01 BORING LOGS.GPJ

Figure A3,
Log of Boring 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

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.

PROJECT NO. W1301-06-01

BORING 4

ELEV. (MSL.) -- DATE COMPLETED **2/9/2021**

EQUIPMENT **HOLLOW STEM AUGER** BY: **JMH**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT*)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	BULK 0-5'				**ARTIFICIAL FILL** Silty Sand, poorly graded, dense, moist, brown, fine-grained, some medium-grained, some gravel.			
2								
4	B4@3'					50 (6")		
6	B4@5'			ML	**ALLUVIUM** Sandy Silt, soft, moist, dark gray.	10	78.1	31.1
8	B4@7.5'				Clay, soft, wet, dark gray, high plasticity.	10	80.7	38.9
10	B4@10'					8	77.8	42.4
12				CH				
14								
16	B4@15'					10	85.0	38.5
18								
20	B4@20'					4	80.0	42.3

Total depth of boring: 20.5 feet
Fill to 5 feet.
No groundwater encountered.
Backfilled with grout.

*Penetration resistance for 140-pound hammer falling 30 inches by auto-hammer.
NOTE: The stratification lines presented herein represent the approximate boundary between earth types; the transitions may be gradual.

W1301-06-01 BORING LOGS.GPJ

Figure A4,
Log of Boring 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.

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PROJECT NO. W1301-06-01

BORING 5

ELEV. (MSL.) -- DATE COMPLETED **2/9/2021**

EQUIPMENT **HOLLOW STEM AUGER** BY: **JMH**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT*)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0					**ARTIFICIAL FILL** Silty Sand, poorly graded, loose, moist, brown, fine-grained, some medium-grained.			
2								
4								
6	B5@5'				**ALLUVIUM** Clay, soft, moist, dark gray, high plasticity.	11	79.5	42.3
8	B5@7.5'				- wet	10	82.2	38.4
10	B5@10'			CH		7	74.1	37.5
12								
14								
16	B5@15'				- saturated	11	97.9	47.5
18								
20	B5@20'				- firm, no recovery	17		

Total depth of boring: 20.5 feet
Fill to 5 feet.
No groundwater encountered.
Backfilled with grout.

*Penetration resistance for 140-pound hammer falling 30 inches by auto-hammer.
NOTE: The stratification lines presented herein represent the approx

W1301-06-01 BORING LOGS.GPJ

Figure A5,
Log of Boring 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.

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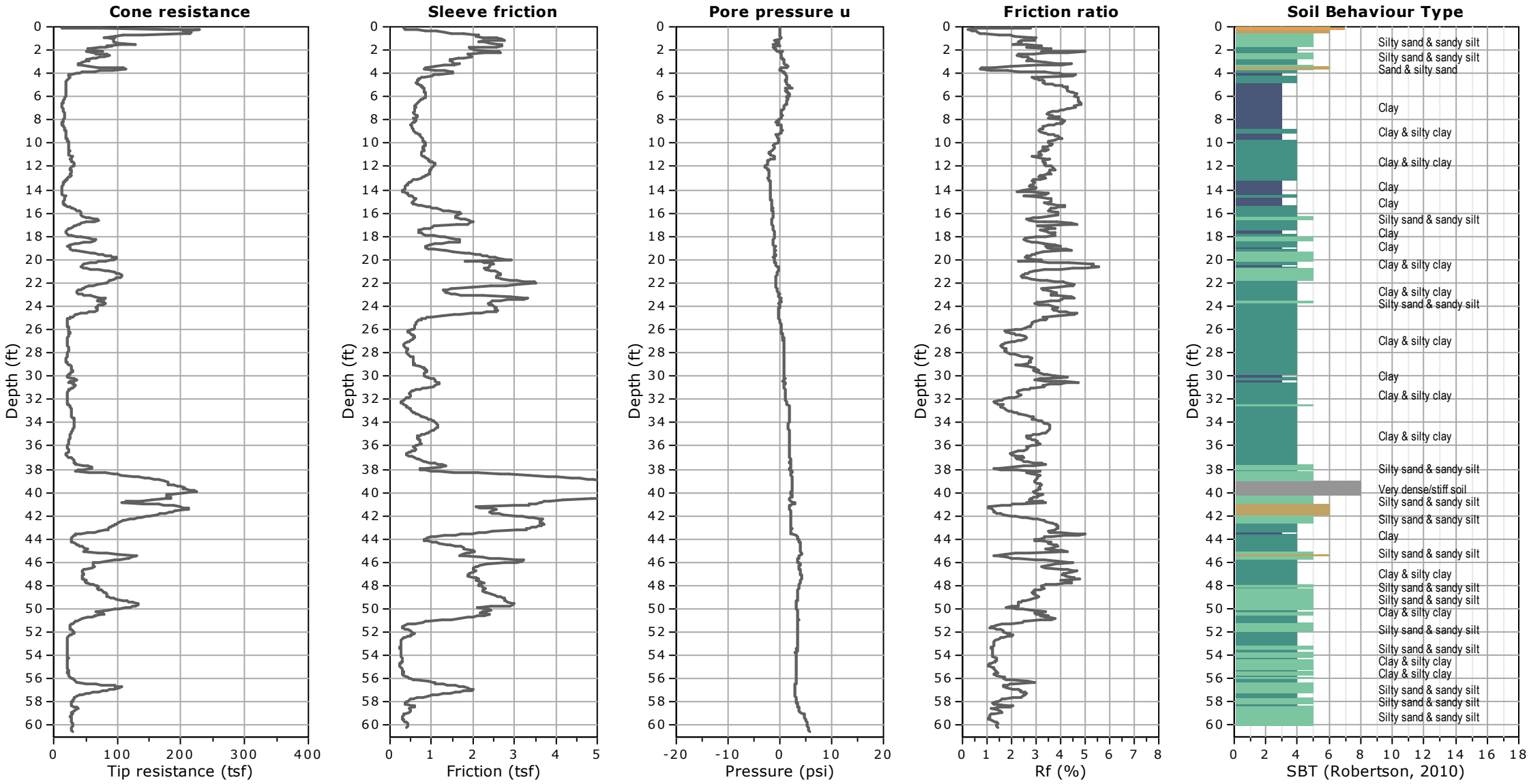
Kehoe Testing and Engineering
714-901-7270
steve@kehoetesting.com
www.kehoetesting.com

Project: **Geocon West / 21611 Perry Street**
Location: **Carson, CA**

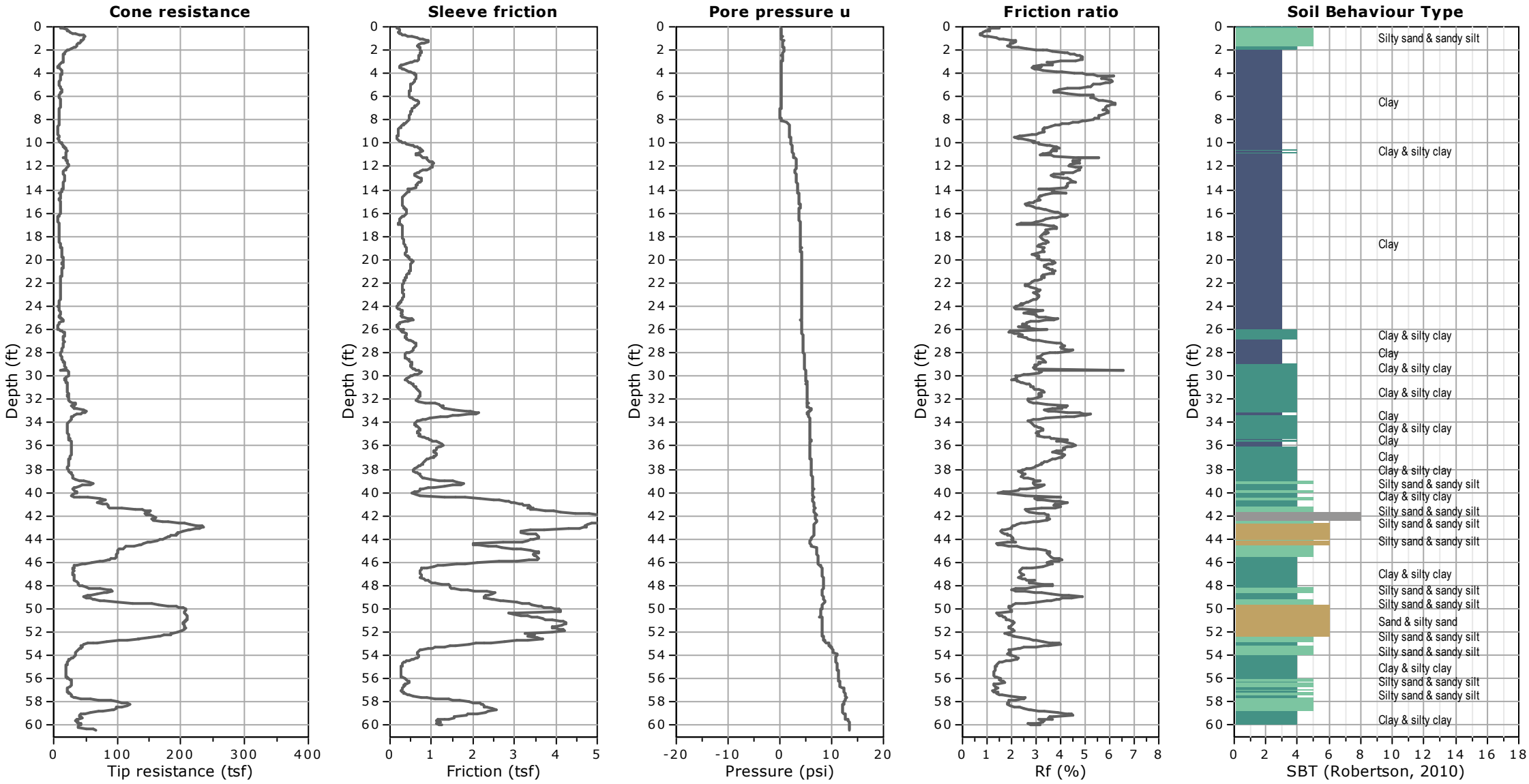
CPT-1
Total depth: 60.51 ft, Date: 2/9/2021



Kehoe Testing and Engineering
714-901-7270
steve@kehoetesting.com
www.kehoetesting.com

Project: Geocon West / 21611 Perry Street
Location: Carson, CA

CPT-2
Total depth: 60.38 ft, Date: 2/9/2021



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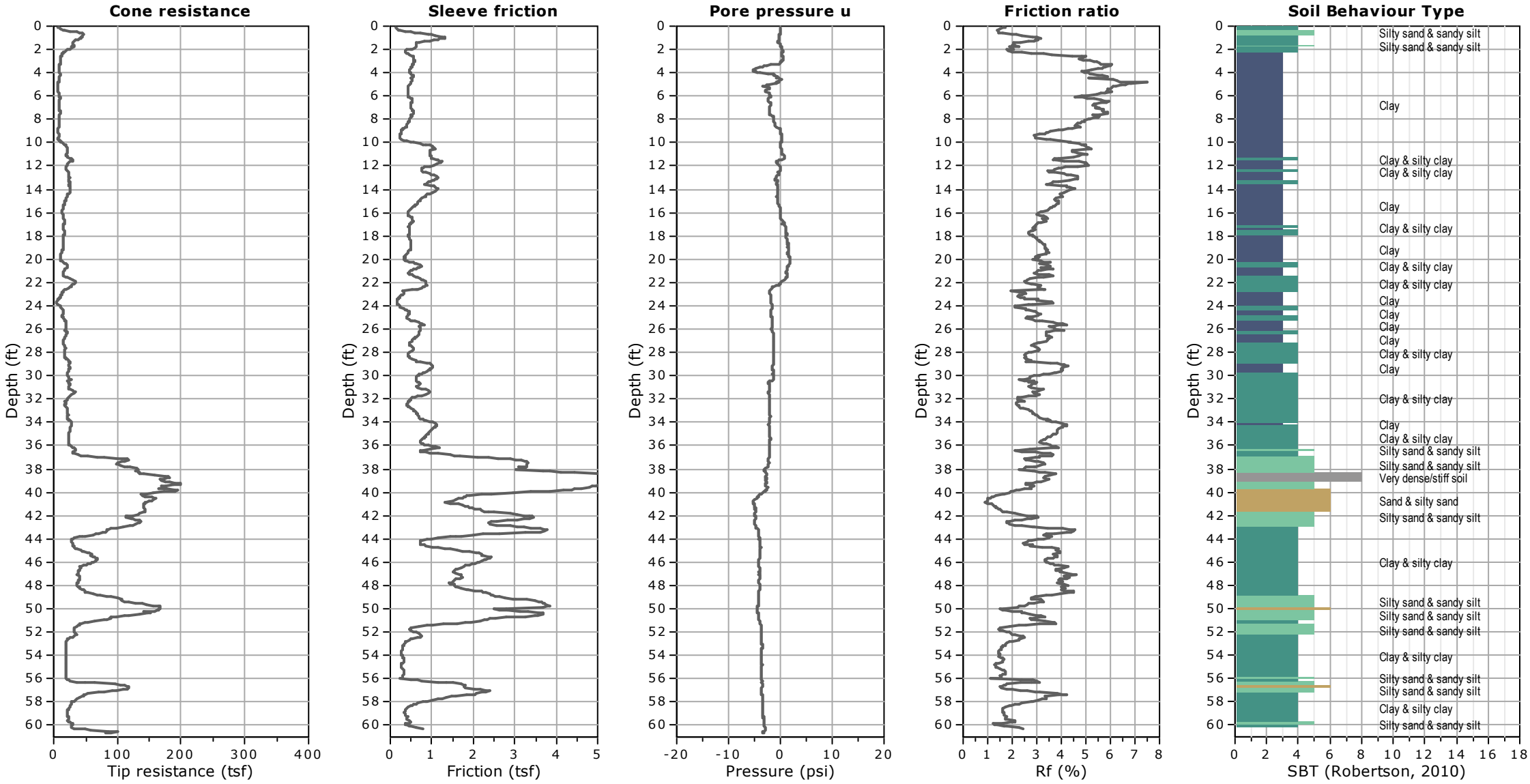
steve@kehoetesting.com
www.kehoetesting.com

Project: Geocon West / 21611 Perry Street
Location: Carson, CA

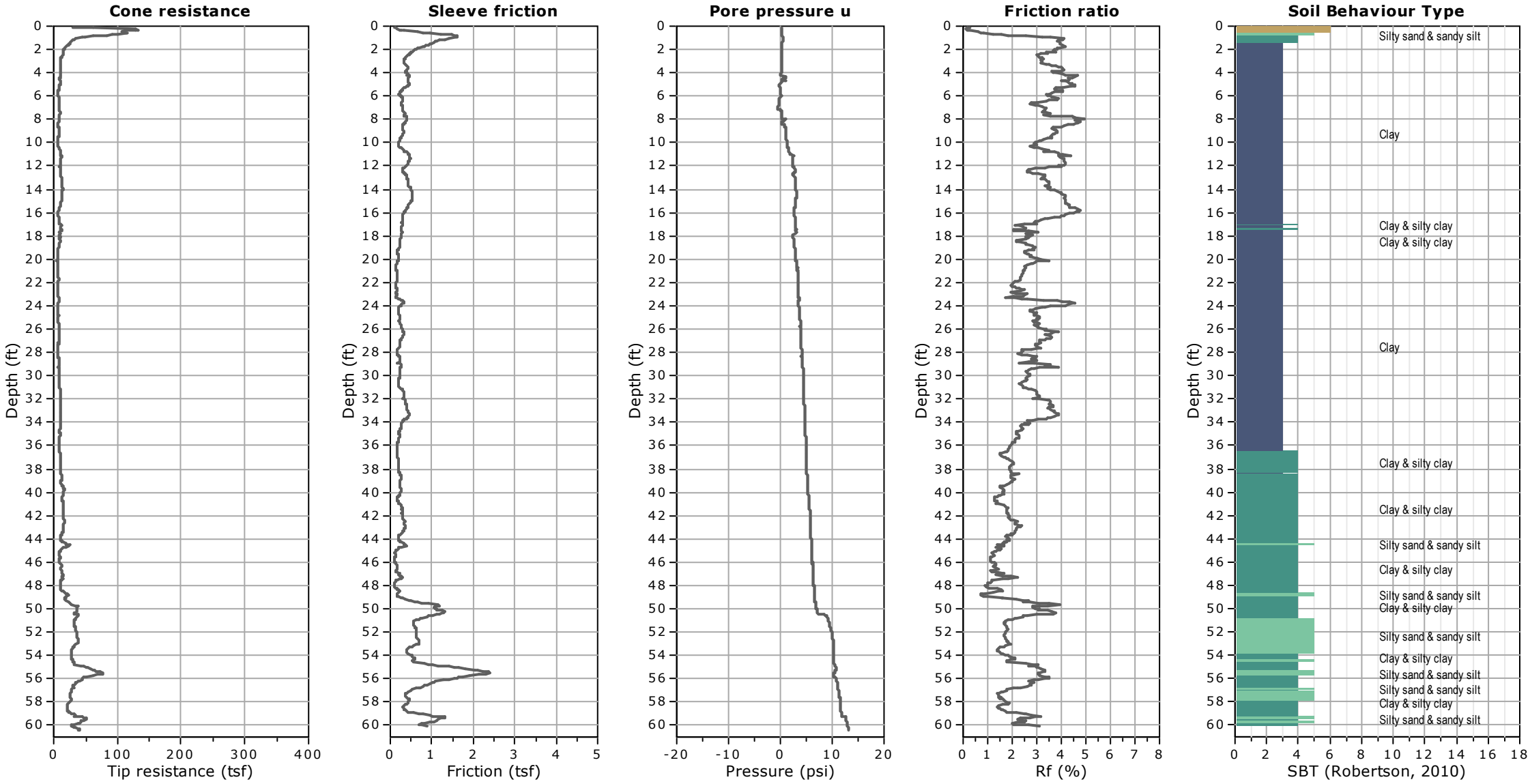
CPT-3
Total depth: 60.63 ft, Date: 2/9/2021



Kehoe Testing and Engineering
714-901-7270
steve@kehoetesting.com
www.kehoetesting.com

Project: Geocon West / 21611 Perry Street
Location: Carson, CA

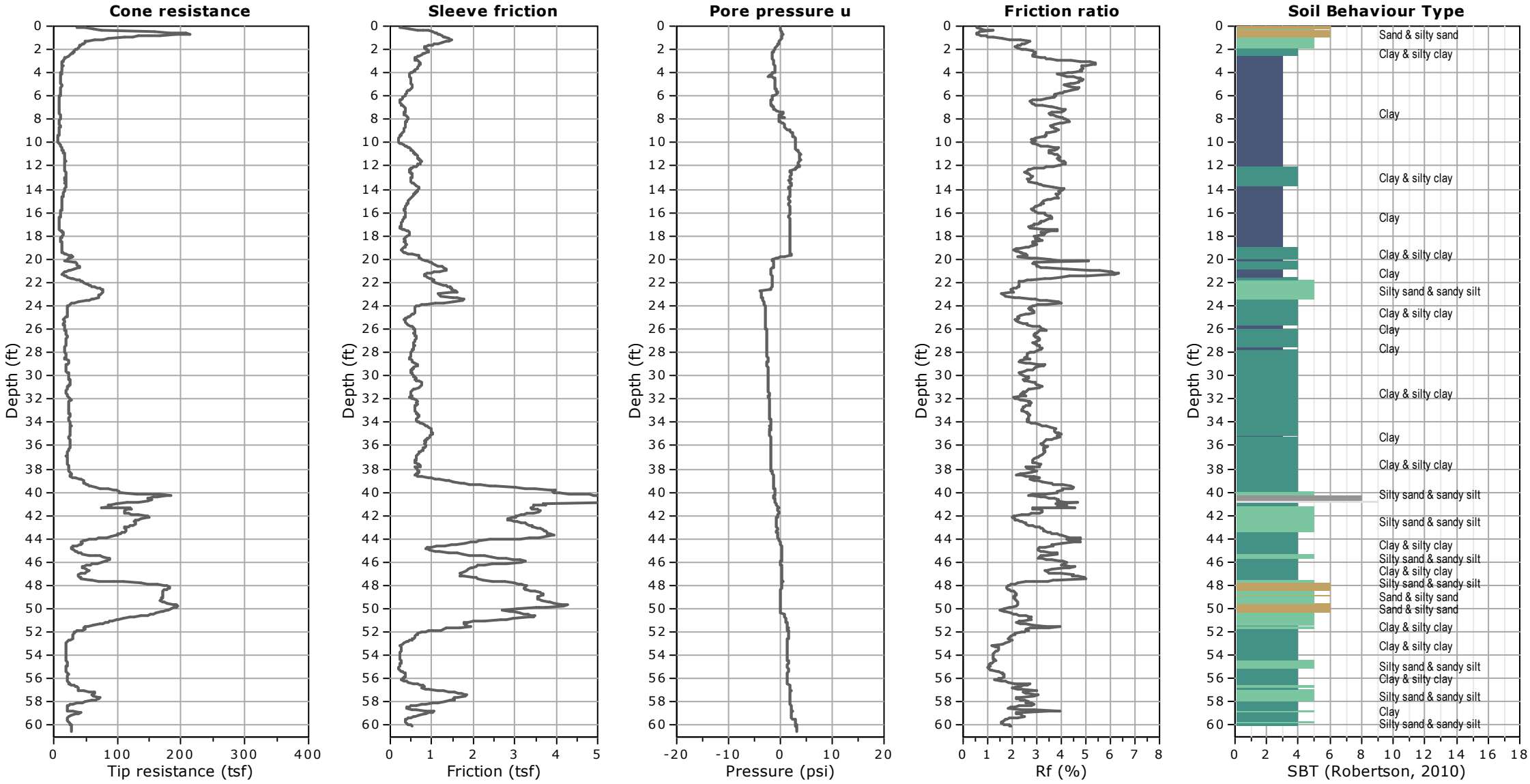
CPT-4
Total depth: 60.47 ft, Date: 2/9/2021



Kehoe Testing and Engineering
714-901-7270
steve@kehoetesting.com
www.kehoetesting.com

Project: Geocon West / 21611 Perry Street
Location: Carson, CA

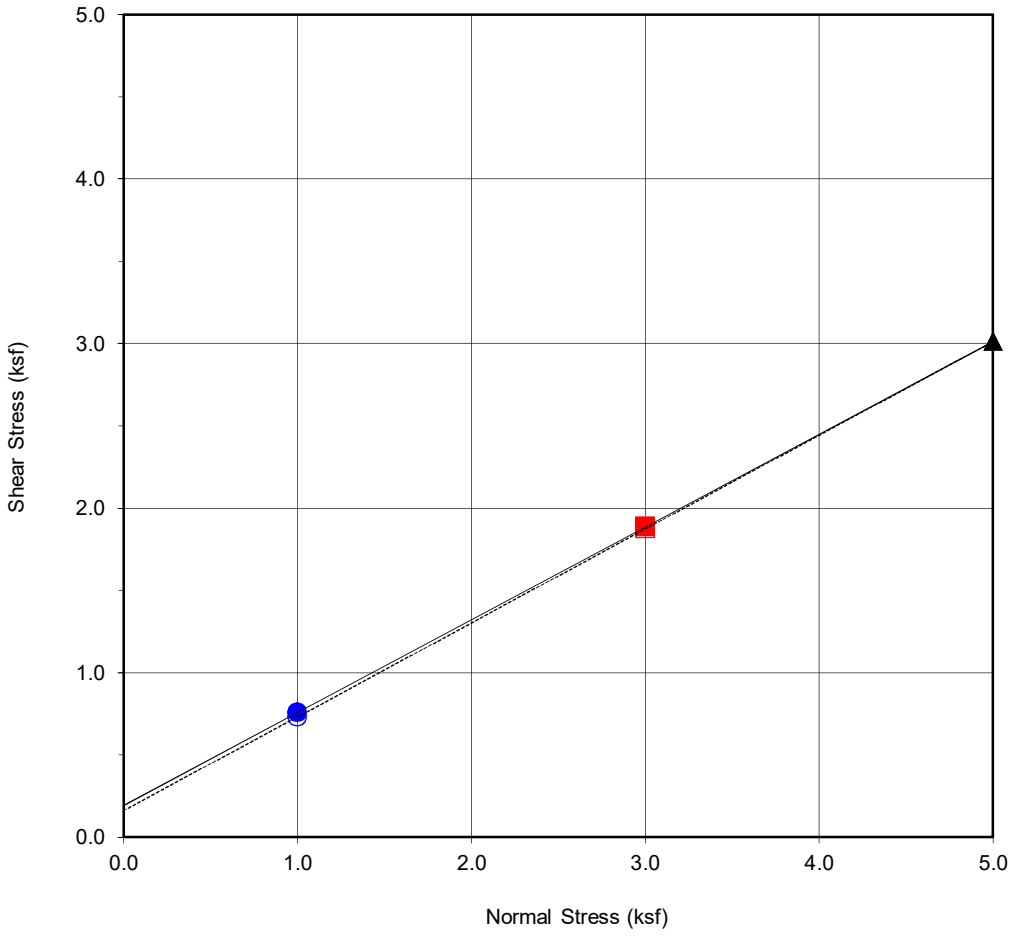
CPT-5
Total depth: 60.51 ft, Date: 2/9/2021



APPENDIX B

APPENDIX B
LABORATORY TESTING

Laboratory tests were performed in accordance with “American Society for Testing and Materials (ASTM)”, or other suggested procedures Selected samples were tested for direct shear strength, consolidation and expansion characteristics, Atterberg limits, grain size analysis, maximum dry density and optimum moisture content relationship, in-situ dry density and moisture content. The results of the laboratory tests are summarized in Figures B1 through B23. The in-place dry density and moisture content of the samples tested are presented on the boring logs, Appendix A.



Boring No.	**B1 + B2**
Sample No.	**B1B2@0-5'**
Depth (ft)	**0-5'**
Sample Type:	Ring

Soil Identification:		
Brown Silty Sand (SM)		
Strength Parameters		
	C (psf)	ϕ (^{o})
Peak	192	29.4
Ultimate	162	29.7

Normal Strest (kip/ft2)	1	3	5
Peak Shear Stress (kip/ft²)	● 0.76	■ 1.88	▲ 3.01
Shear Stress @ End of Test (ksf)	○ 0.73	□ 1.87	△ 3.01
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 (%)	13.6	14.5	14.1
Initial Dry Density (pcf)	101.0	101.0	101.0
Initial Degree of Saturation (%)	54.7	58.3	56.7
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	24.4	22.1	23.4

GEOCON

DIRECT SHEAR TEST RESULTS

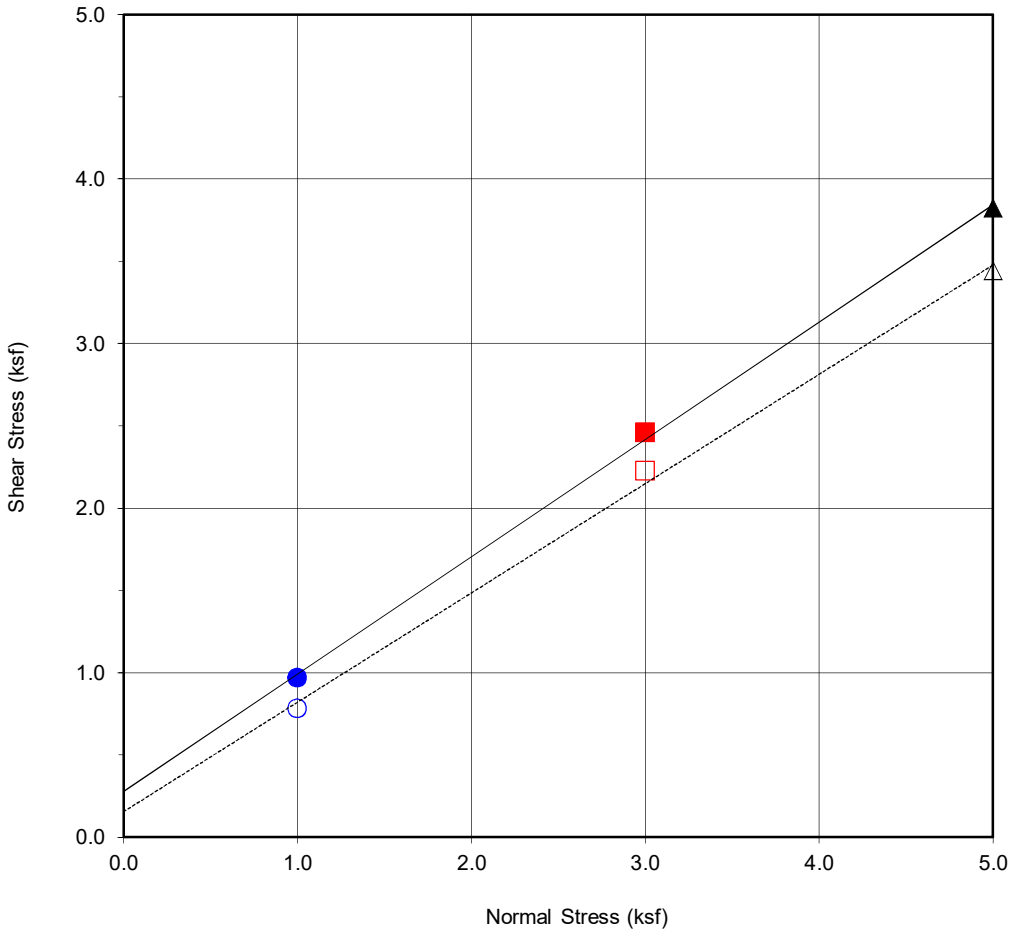
Consolidated Drained ASTM D-3080

Checked by: JMH

Project No.: W1301-06-01

21611 SOUTH PERRY STREET
CARSON, CALIFORNIA

AUG. 2024 Figure B1



Boring No.	**B3 + B4**
Sample No.	**B3B4@0-5'**
Depth (ft)	**0-5'**
Sample Type:	Ring

Soil Identification:		
Light Brown Silty Sand (SM)		
Strength Parameters		
	C (psf)	ϕ (^{o})
Peak	276	35.5
Ultimate	155	33.6

Normal Strest (kip/ft2)	1	3	5
Peak Shear Stress (kip/ft²)	● 0.97	■ 2.46	▲ 3.82
Shear Stress @ End of Test (ksf)	○ 0.78	□ 2.22	△ 3.44
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 (%)	8.2	8.0	7.6
Initial Dry Density (pcf)	114.0	114.0	114.0
Initial Degree of Saturation (%)	46.3	44.9	42.7
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	14.2	14.9	14.1

GEOCON

DIRECT SHEAR TEST RESULTS

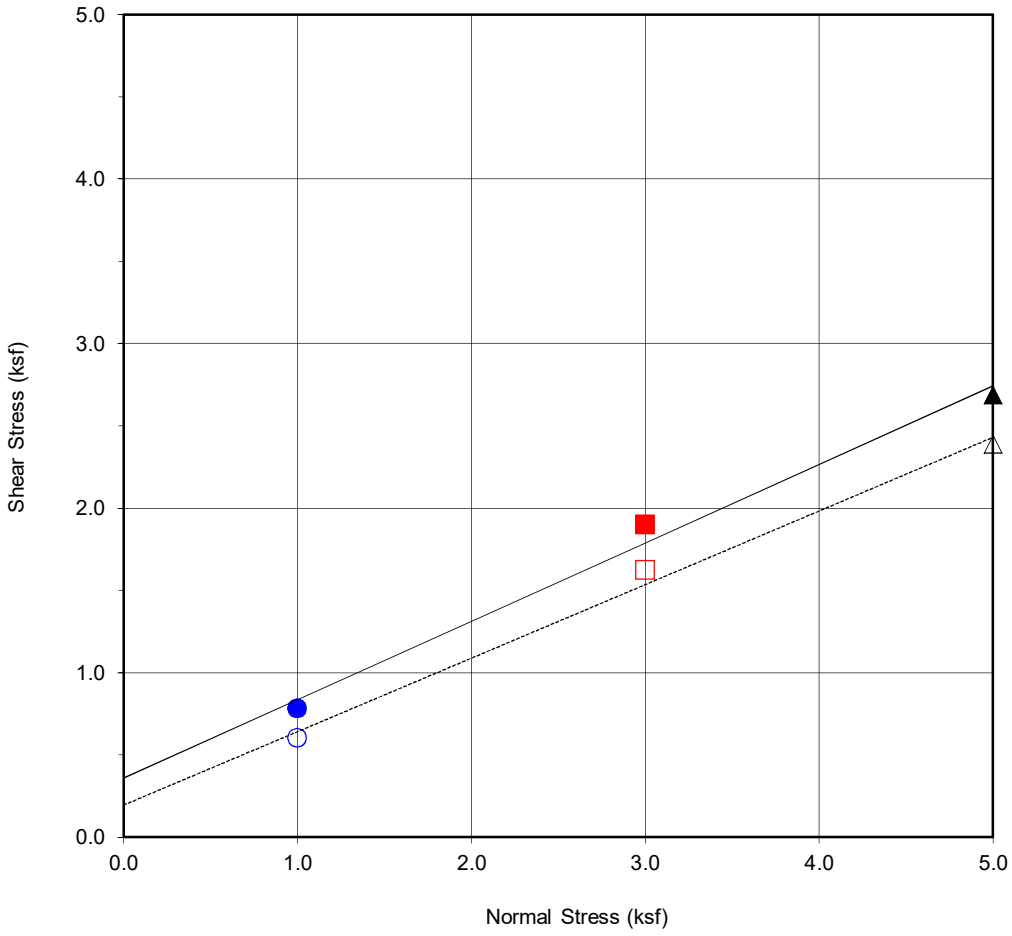
Consolidated Drained ASTM D-3080

Checked by: JMH

Project No.: W1301-06-01

21611 SOUTH PERRY STREET
CARSON, CALIFORNIA

AUG. 2024 Figure B2



Boring No.	**B2**
Sample No.	**B2@3'**
Depth (ft)	**3**
Sample Type:	Ring

Soil Identification:		
Dark Gray Sandy Silt (ML)		
Strength Parameters		
	C (psf)	ϕ (^{o})
Peak	357	25.5
Ultimate	195	24.1

Normal Strest (kip/ft2)	1	3	5
Peak Shear Stress (kip/ft²)	● 0.78	■ 1.90	▲ 2.69
Shear Stress @ End of Test (ksf)	○ 0.60	□ 1.62	△ 2.39
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 (%)	34.1	36.8	37.9
Initial Dry Density (pcf)	80.3	83.9	82.9
Initial Degree of Saturation (%)	83.8	98.3	98.9
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	40.3	37.8	36.6

GEOCON

DIRECT SHEAR TEST RESULTS

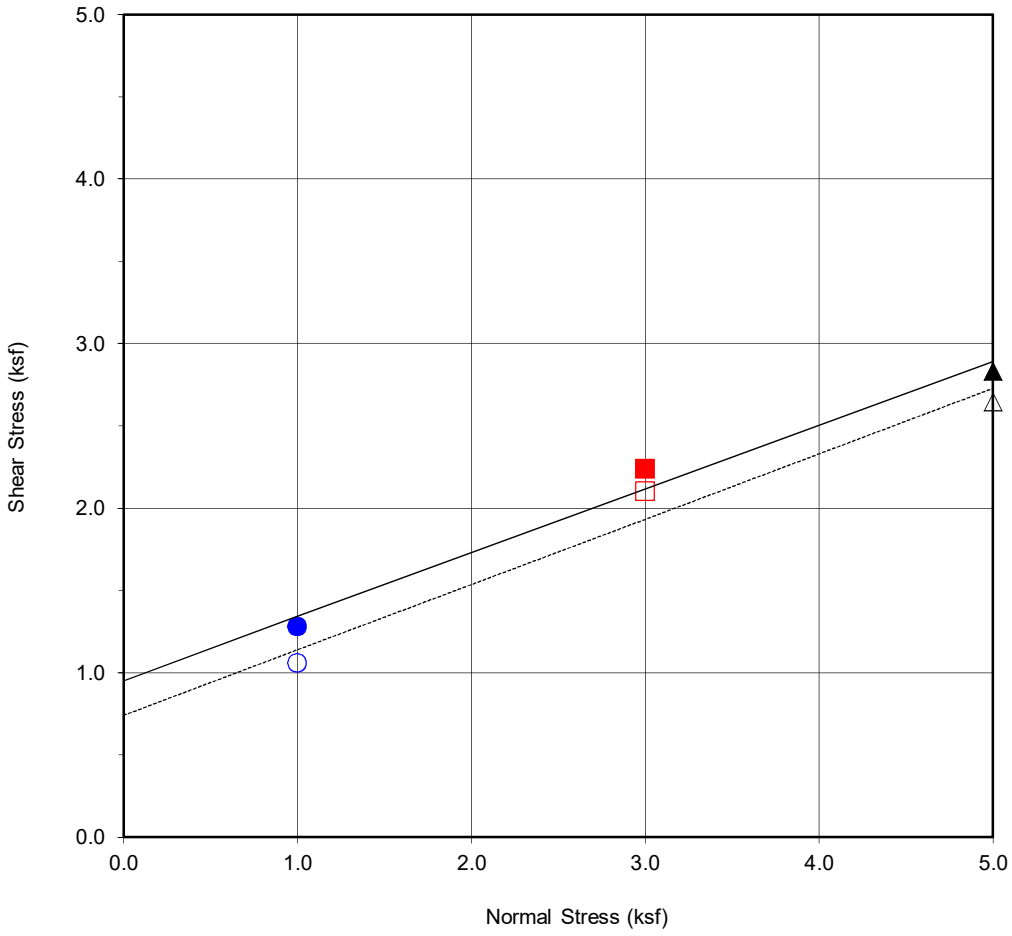
Consolidated Drained ASTM D-3080

Checked by: JMH

Project No.: W1301-06-01

21611 SOUTH PERRY STREET
CARSON, CALIFORNIA

AUG. 2024 Figure B3



Boring No.	**B1**
Sample No.	**B1@5'**
Depth (ft)	**5**
Sample Type:	Ring

Soil Identification:		
Dark Gray Clay (CH)		
Strength Parameters		
	C (psf)	ϕ (^{o})
Peak	951	21.2
Ultimate	740	21.7

Normal Strest (kip/ft2)	1	3	5
Peak Shear Stress (kip/ft²)	● 1.28	■ 2.24	▲ 2.83
Shear Stress @ End of Test (ksf)	○ 1.06	□ 2.10	△ 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 (%)	22.9	22.4	22.6
Initial Dry Density (pcf)	103.1	102.5	102.3
Initial Degree of Saturation (%)	97.2	93.9	94.3
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	26.0	24.1	23.0

GEOCON

DIRECT SHEAR TEST RESULTS

Consolidated Drained ASTM D-3080

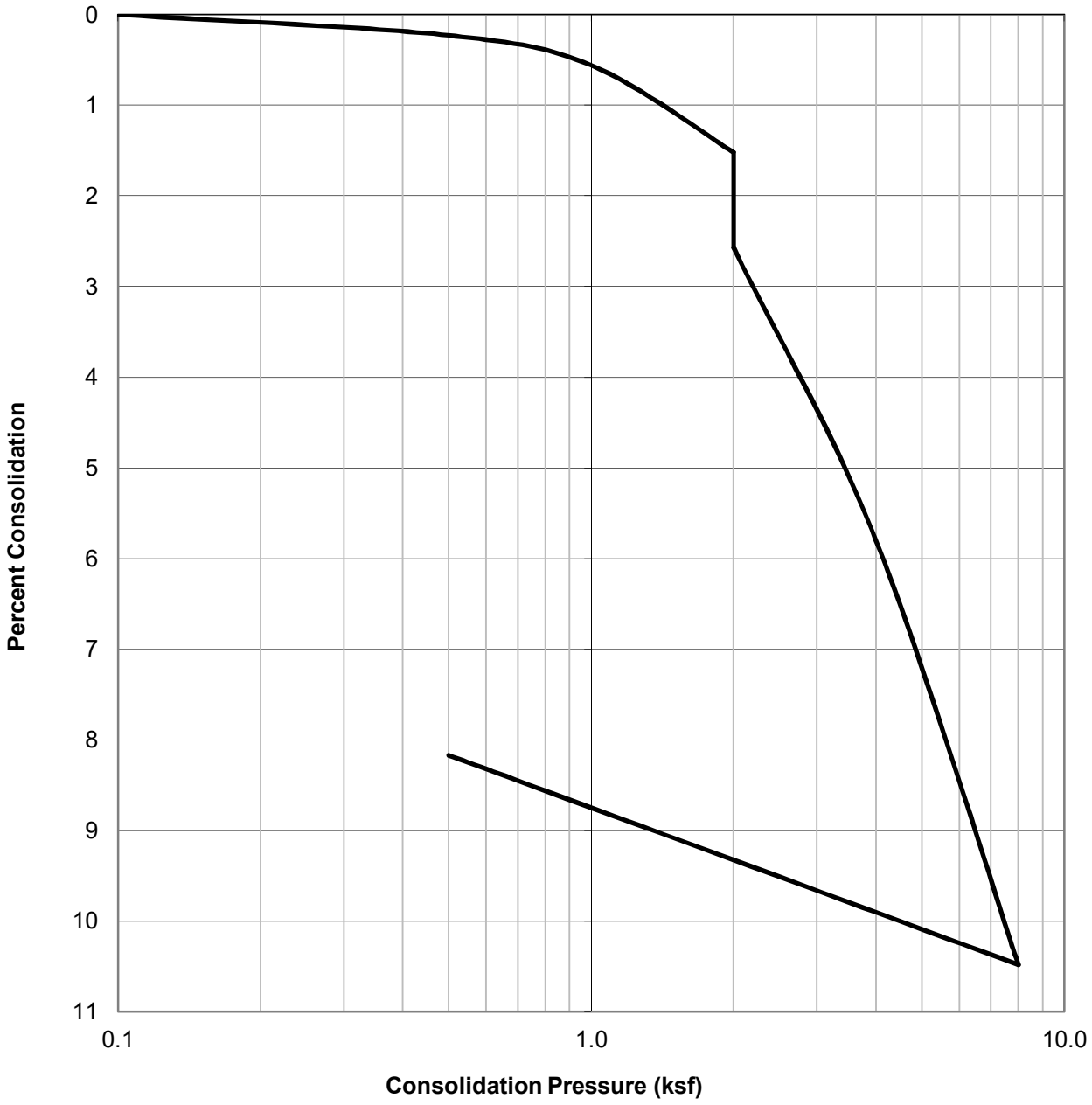
Checked by: JMH

Project No.: W1301-06-01

21611 SOUTH PERRY STREET
CARSON, CALIFORNIA

AUG. 2024 Figure B4

WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B2@3	Dark Gray Sandy Silt (ML)	76.2	32.7	37.3

GEOCON

CONSOLIDATION TEST RESULTS

ASTM D-2435

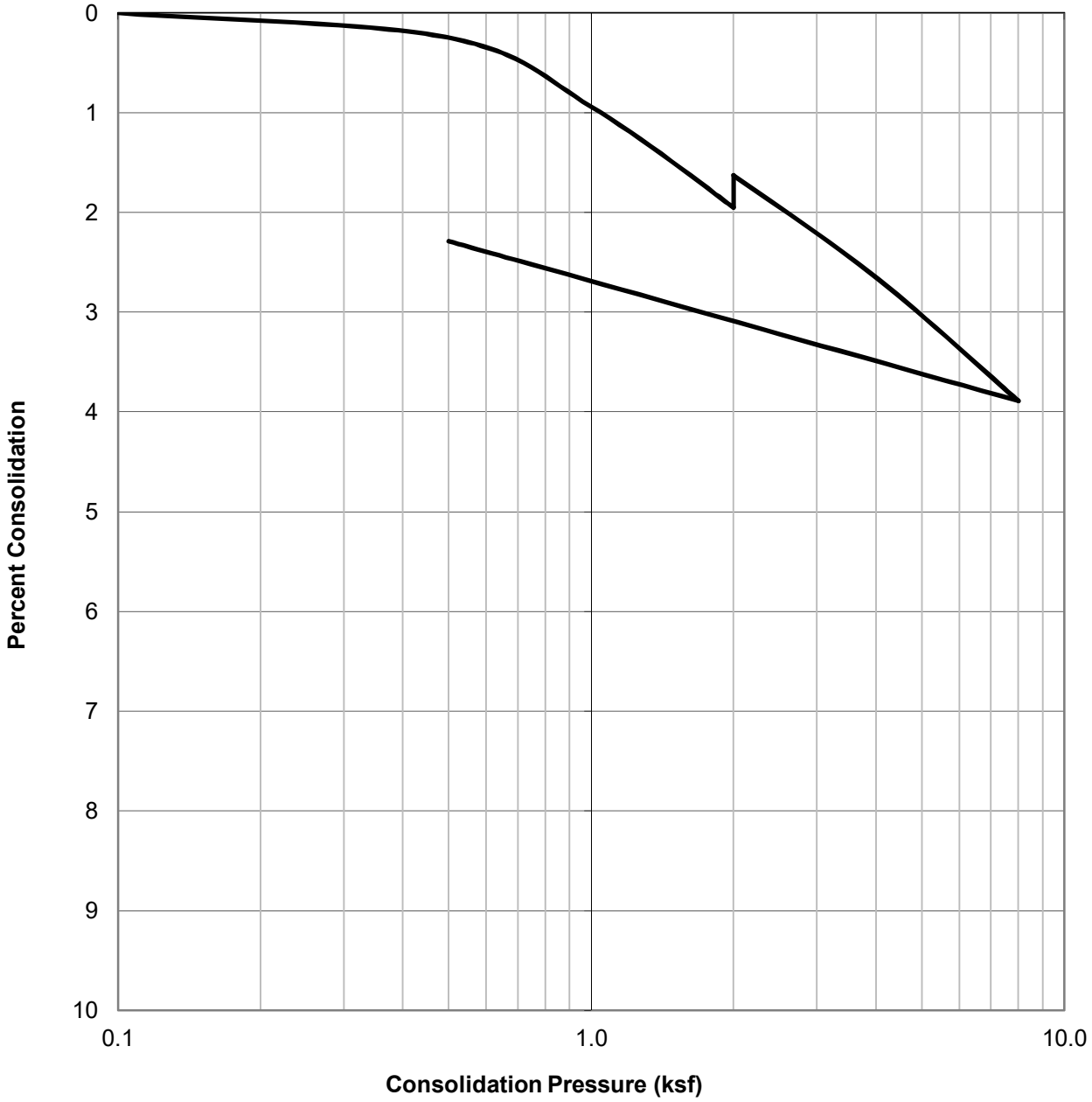
Checked by: JMH

Project No.: W1301-06-01

21611 SOUTH PERRY STREET
CARSON, CALIFORNIA

AUG. 2024 Figure B5

WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B1@5	Dark Gray Clay (CH)	101.8	24.0	24.3

GEOCON

CONSOLIDATION TEST RESULTS

ASTM D-2435

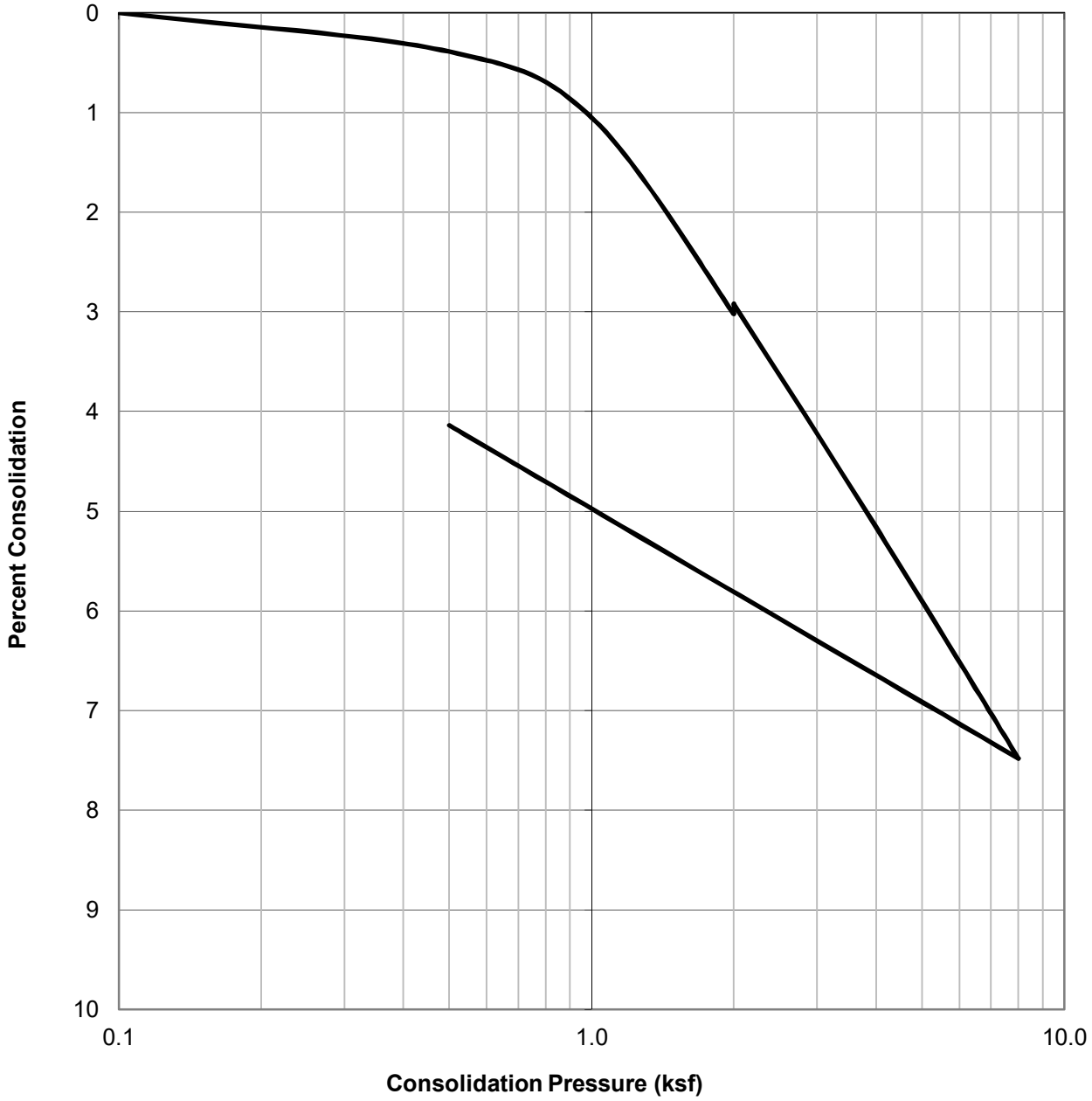
Checked by: JMH

Project No.: W1301-06-01

21611 SOUTH PERRY STREET
CARSON, CALIFORNIA

AUG. 2024 Figure B6

WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B5@5	Dark Gray Clay (CH)	81.9	38.4	39.2

GEOCON

CONSOLIDATION TEST RESULTS

ASTM D-2435

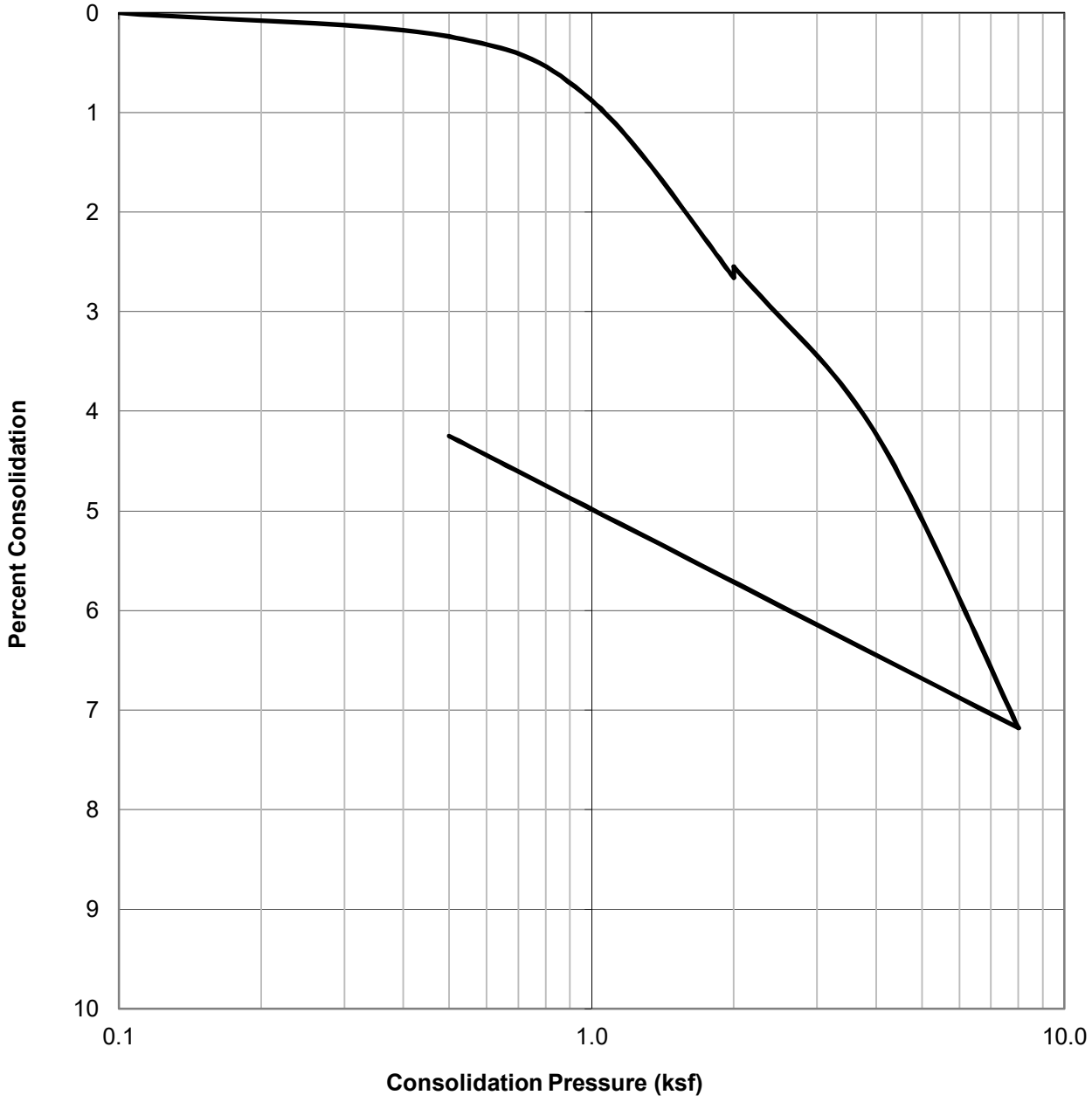
Checked by: JMH

Project No.: W1301-06-01

21611 SOUTH PERRY STREET
CARSON, CALIFORNIA

AUG. 2024 Figure B7

WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B4@7.5	Dark Gray Clay (CH)	80.9	38.9	38.0

GEOCON

CONSOLIDATION TEST RESULTS

ASTM D-2435

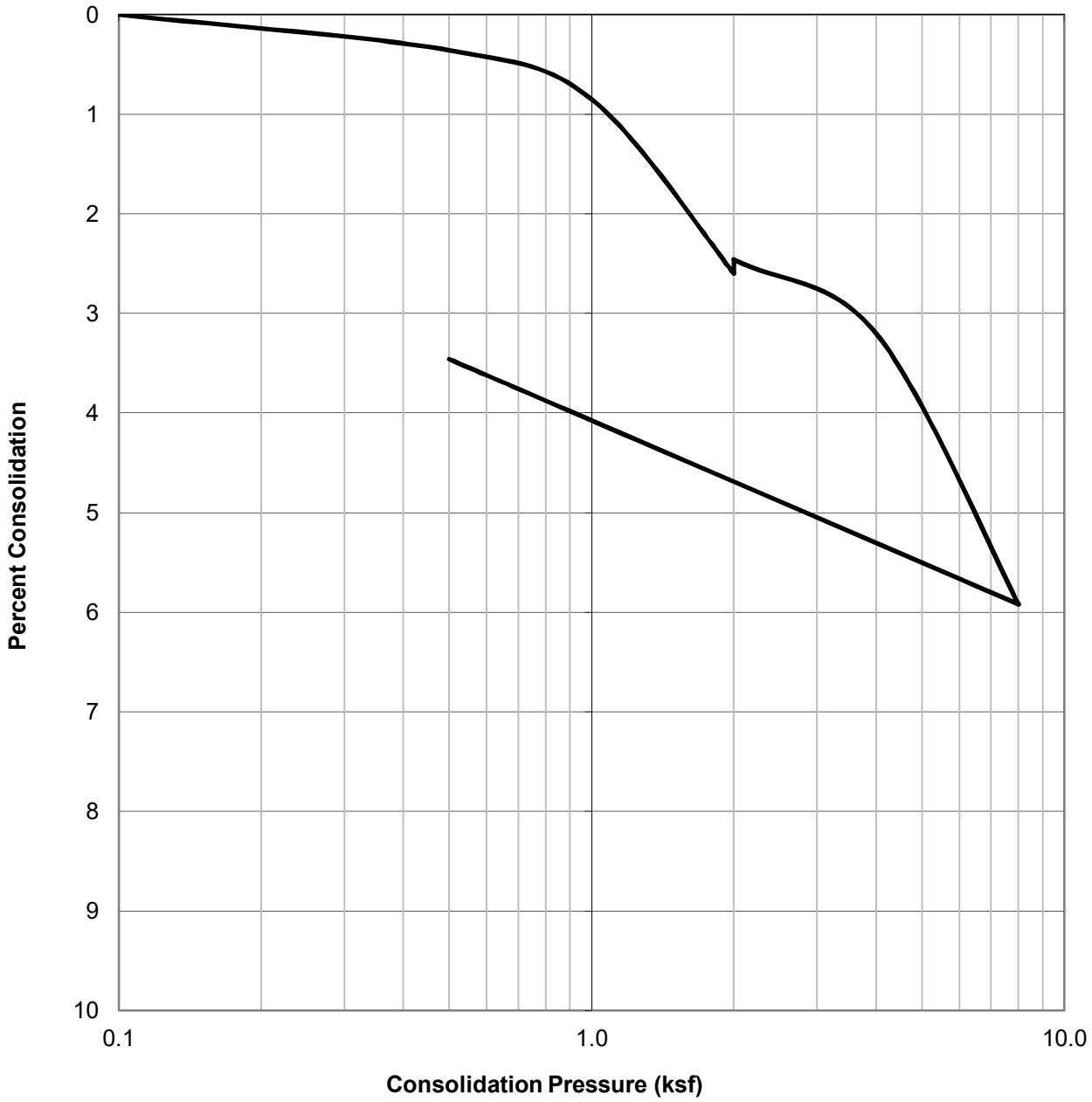
Checked by: JMH

Project No.: W1301-06-01

21611 SOUTH PERRY STREET
CARSON, CALIFORNIA

AUG. 2024 Figure B8

WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B2@9	Dark Gray Clay (CH)	70.9	49.8	48.8

GEOCON

CONSOLIDATION TEST RESULTS

ASTM D-2435

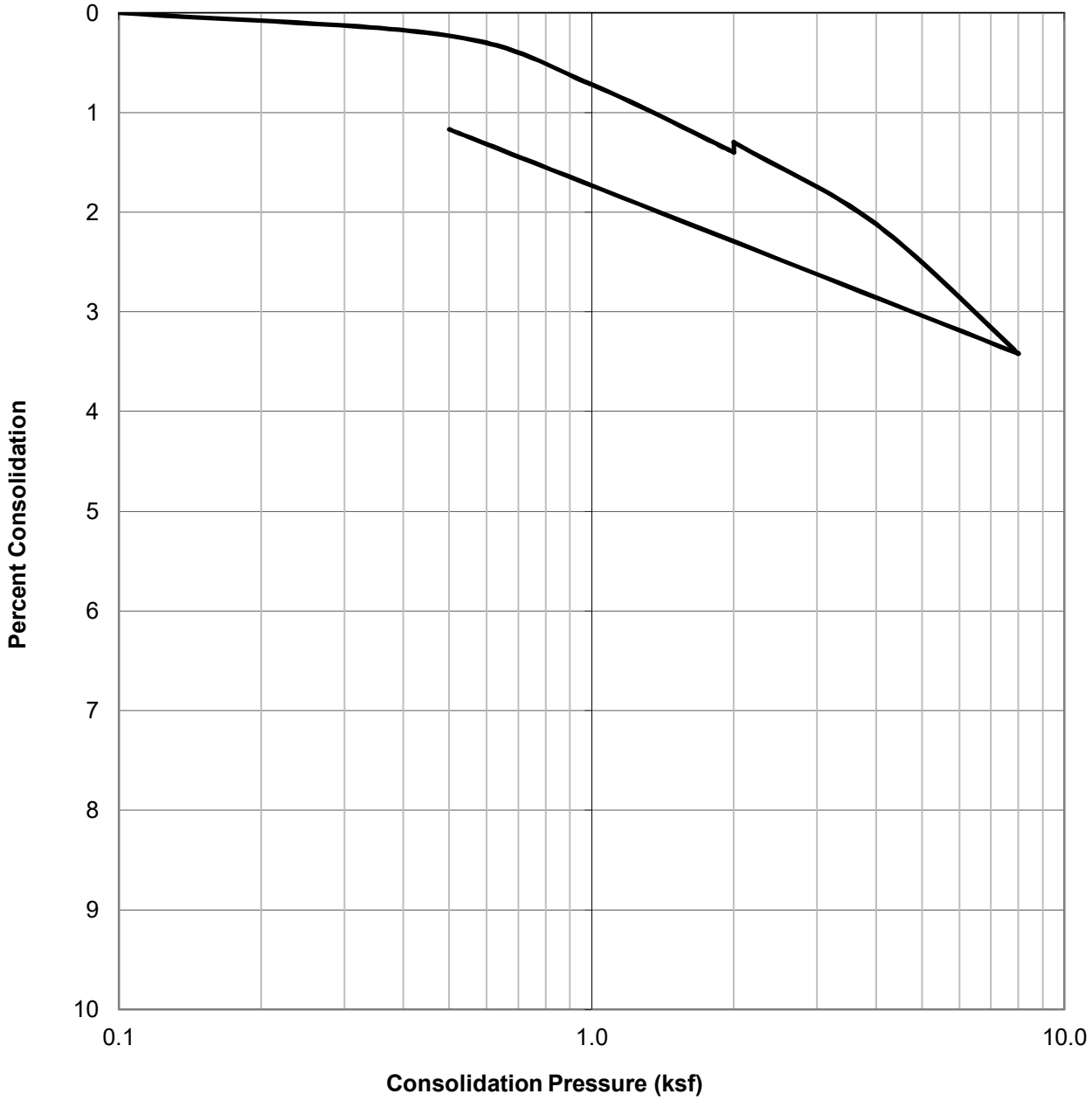
Checked by: JMH

Project No.: W1301-06-01

21611 SOUTH PERRY STREET
CARSON, CALIFORNIA

AUG. 2024 Figure B9

WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B1@10	Olive Brown Clay (CH)	105.4	22.0	22.8

GEOCON

CONSOLIDATION TEST RESULTS

ASTM D-2435

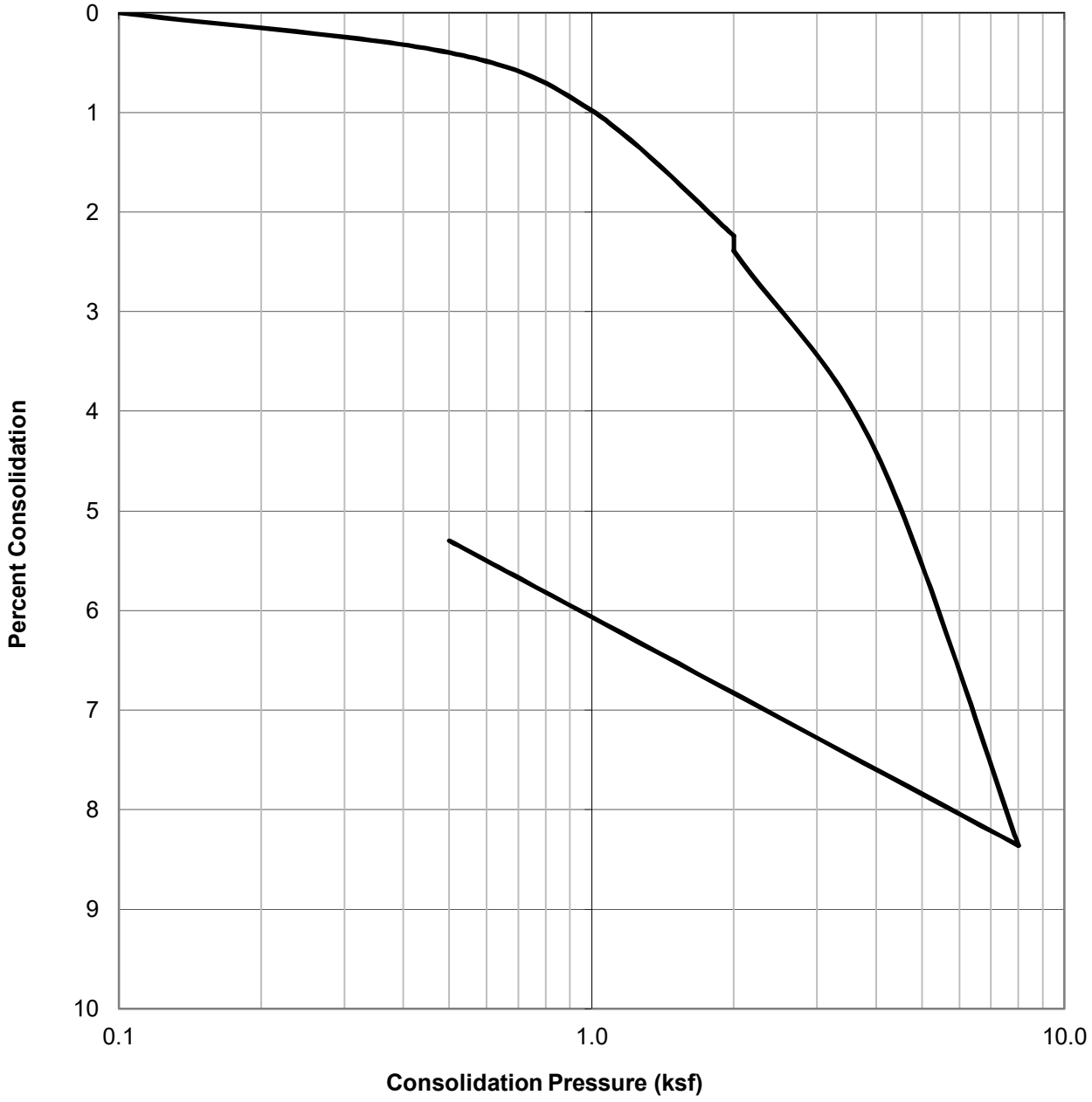
Checked by: JMH

Project No.: W1301-06-01

21611 SOUTH PERRY STREET
CARSON, CALIFORNIA

AUG. 2024 Figure B10

WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B5@10	Dark Gray Clay (CH)	71.6	47.5	46.1

GEOCON

CONSOLIDATION TEST RESULTS

ASTM D-2435

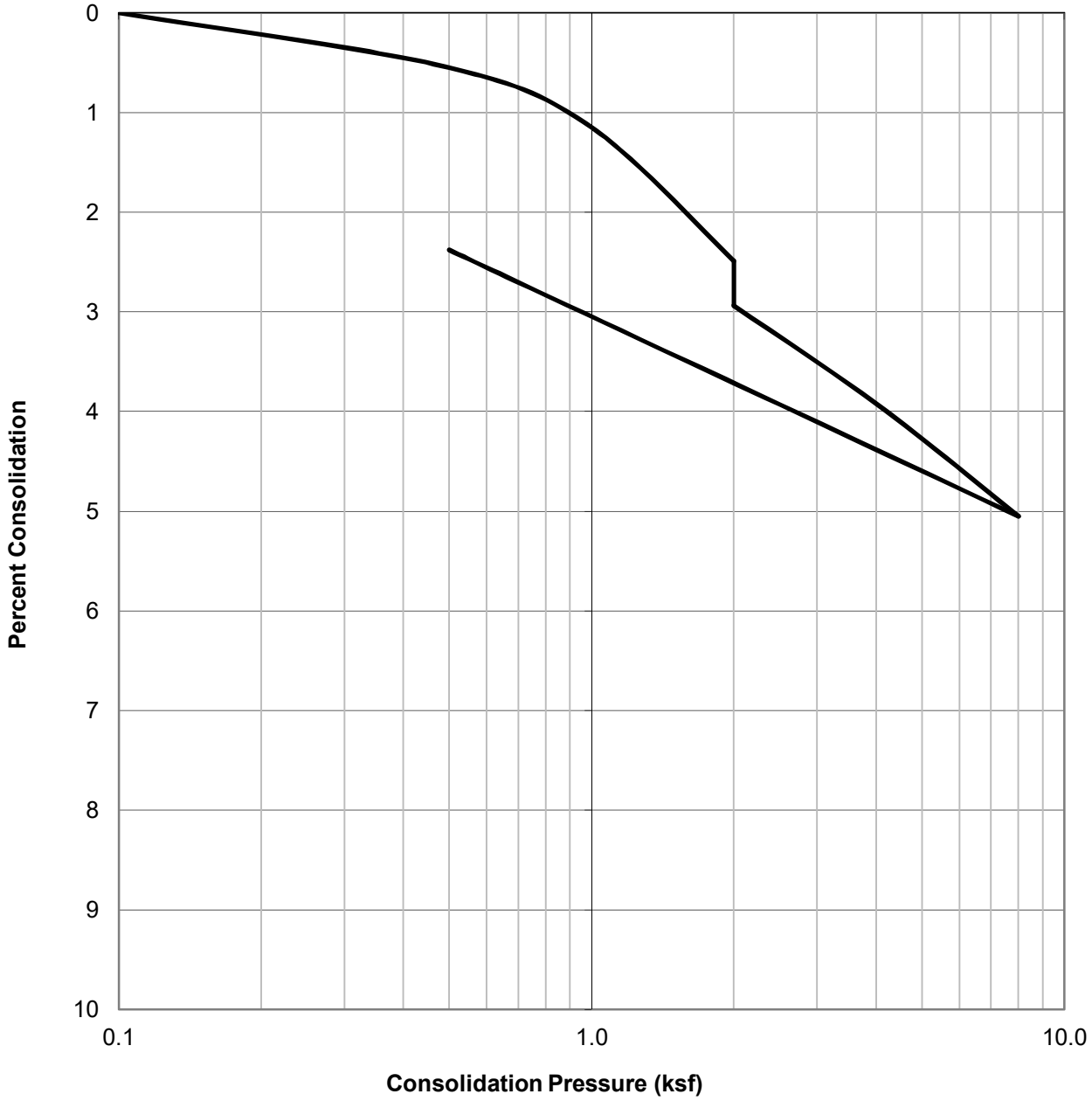
Checked by: JMH

Project No.: W1301-06-01

21611 SOUTH PERRY STREET
CARSON, CALIFORNIA

AUG. 2024 Figure B11

WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B3@12.5	Dark Gray Clay (CL)	90.9	31.6	31.3

GEOCON

CONSOLIDATION TEST RESULTS

ASTM D-2435

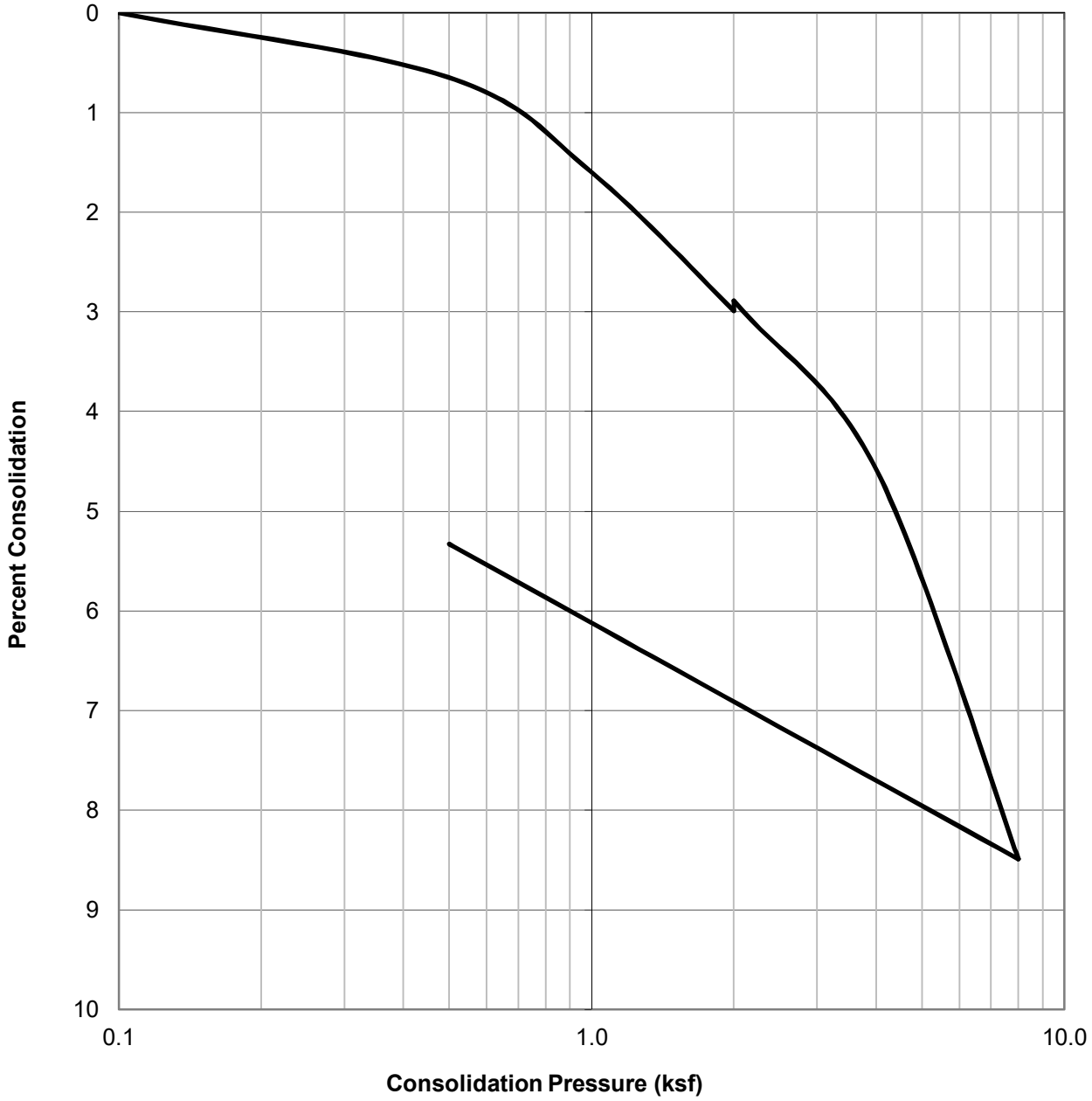
Checked by: JMH

Project No.: W1301-06-01

21611 SOUTH PERRY STREET
CARSON, CALIFORNIA

AUG. 2024 Figure B12

WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B2@15	Gray Clay (CH)	75.8	45.2	41.7

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CONSOLIDATION TEST RESULTS

ASTM D-2435

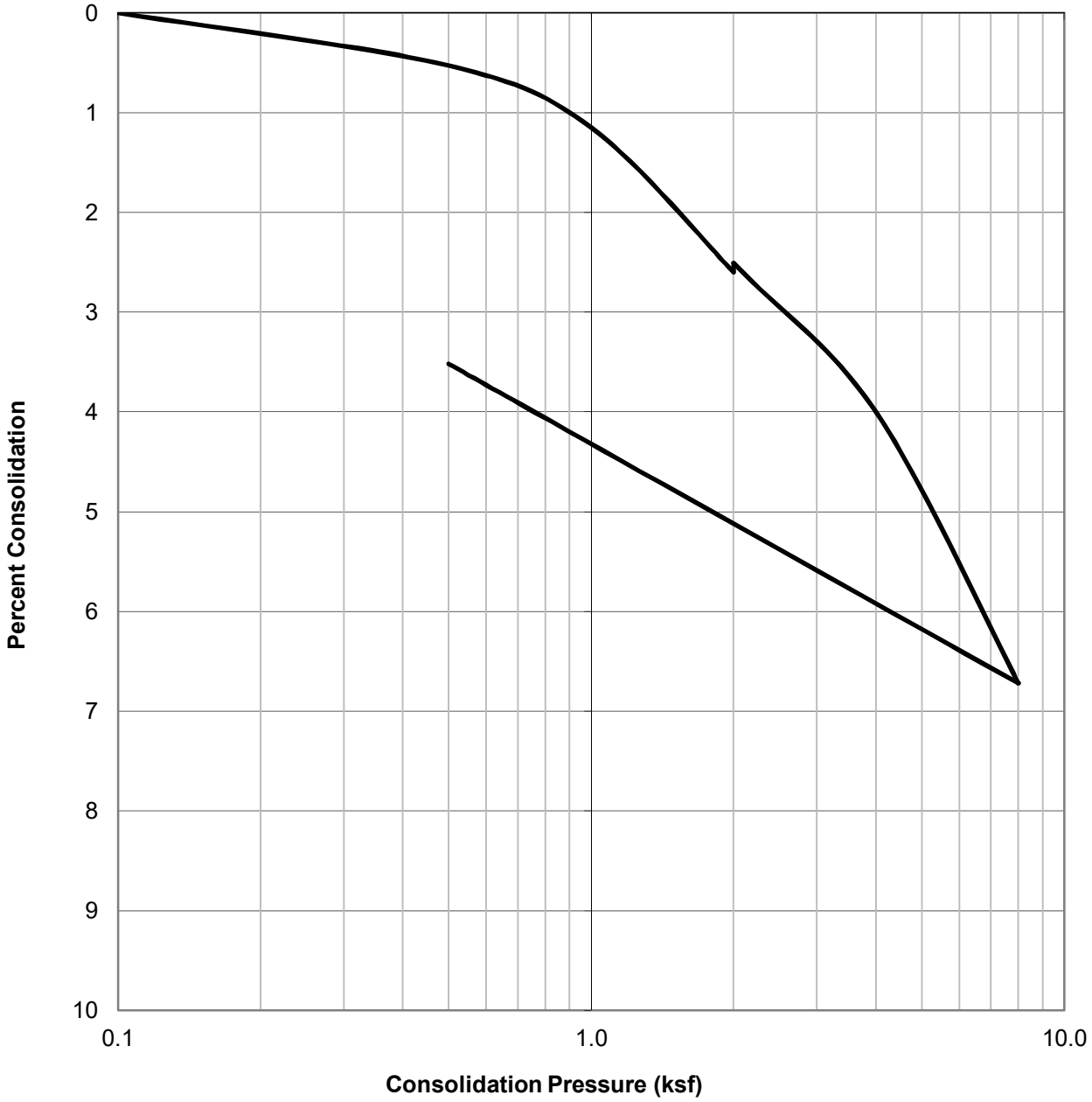
Checked by: JMH

Project No.: W1301-06-01

21611 SOUTH PERRY STREET
CARSON, CALIFORNIA

AUG. 2024 Figure B13

WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B4@15	Dark Gray Clay (CH)	83.1	38.5	37.0

GEOCON

CONSOLIDATION TEST RESULTS

ASTM D-2435

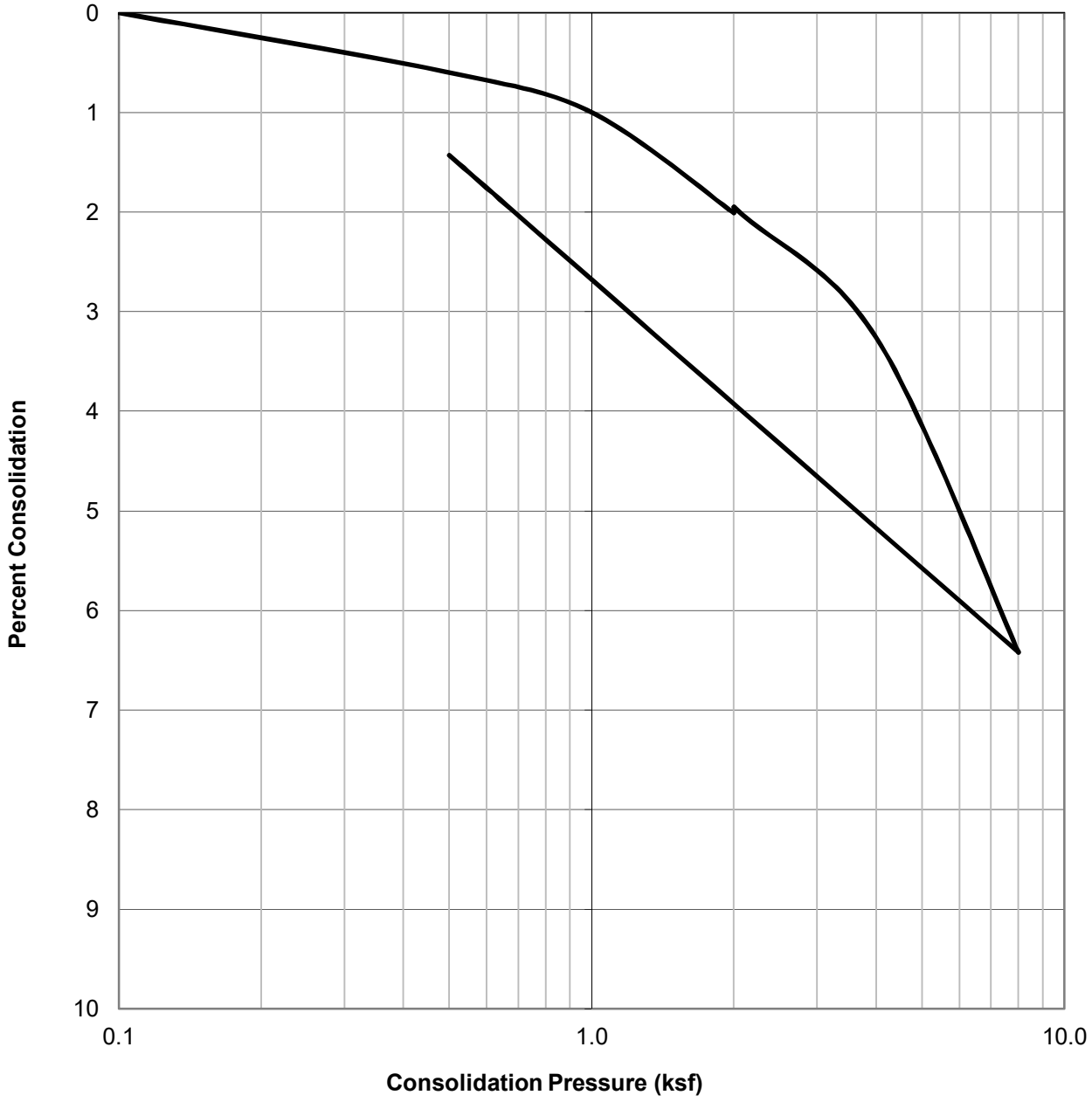
Checked by: JMH

Project No.: W1301-06-01

21611 SOUTH PERRY STREET
CARSON, CALIFORNIA

AUG. 2024 Figure B14

WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B5@15	Dark Gray Clay (CH)	96.3	29.6	29.7

GEOCON

CONSOLIDATION TEST RESULTS

ASTM D-2435

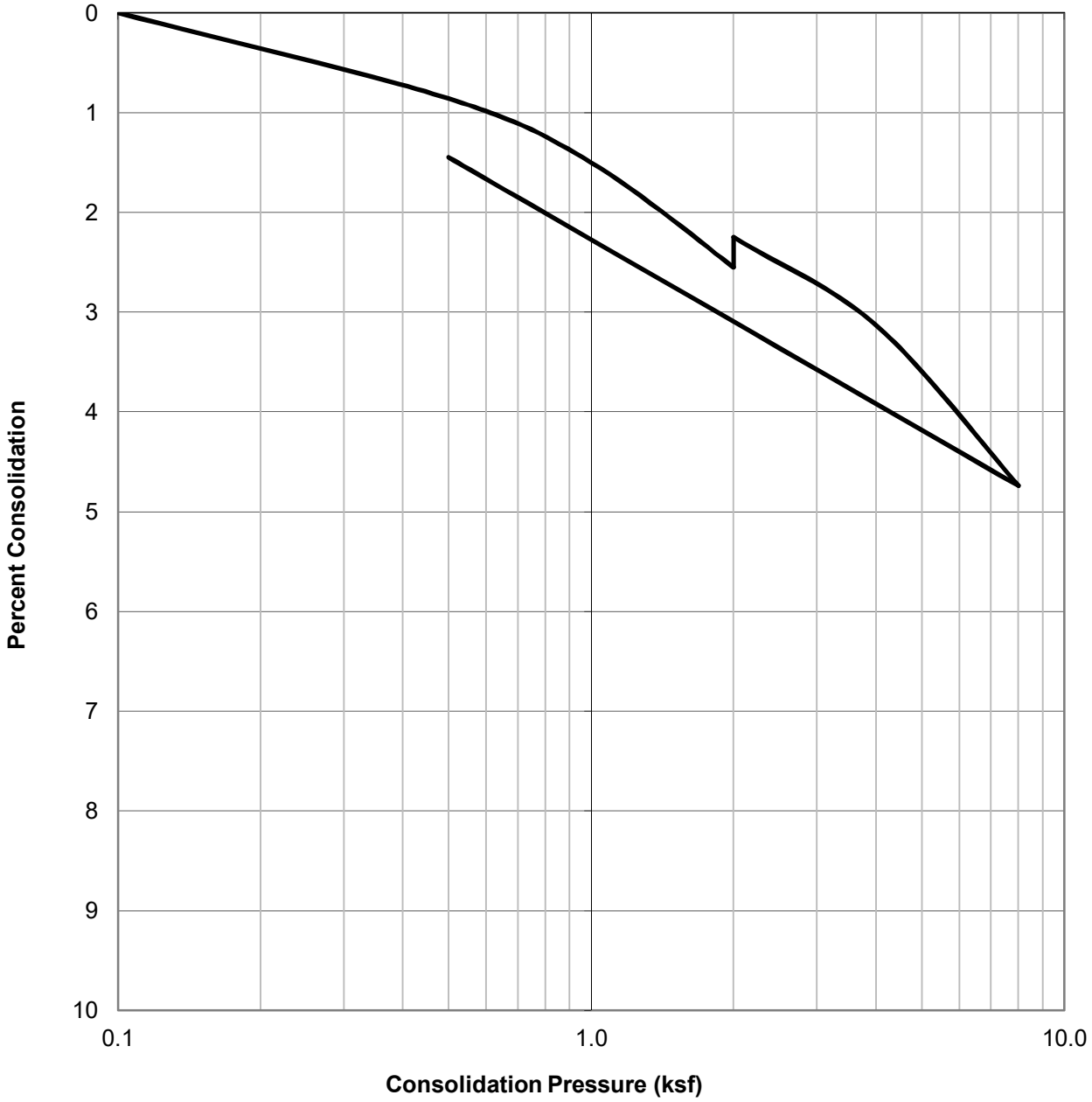
Checked by: JMH

Project No.: W1301-06-01

21611 SOUTH PERRY STREET
CARSON, CALIFORNIA

AUG. 2024 Figure B15

WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B3@17.5	Dark Gray Clay (CL)	100.2	26.1	25.9

GEOCON

CONSOLIDATION TEST RESULTS

ASTM D-2435

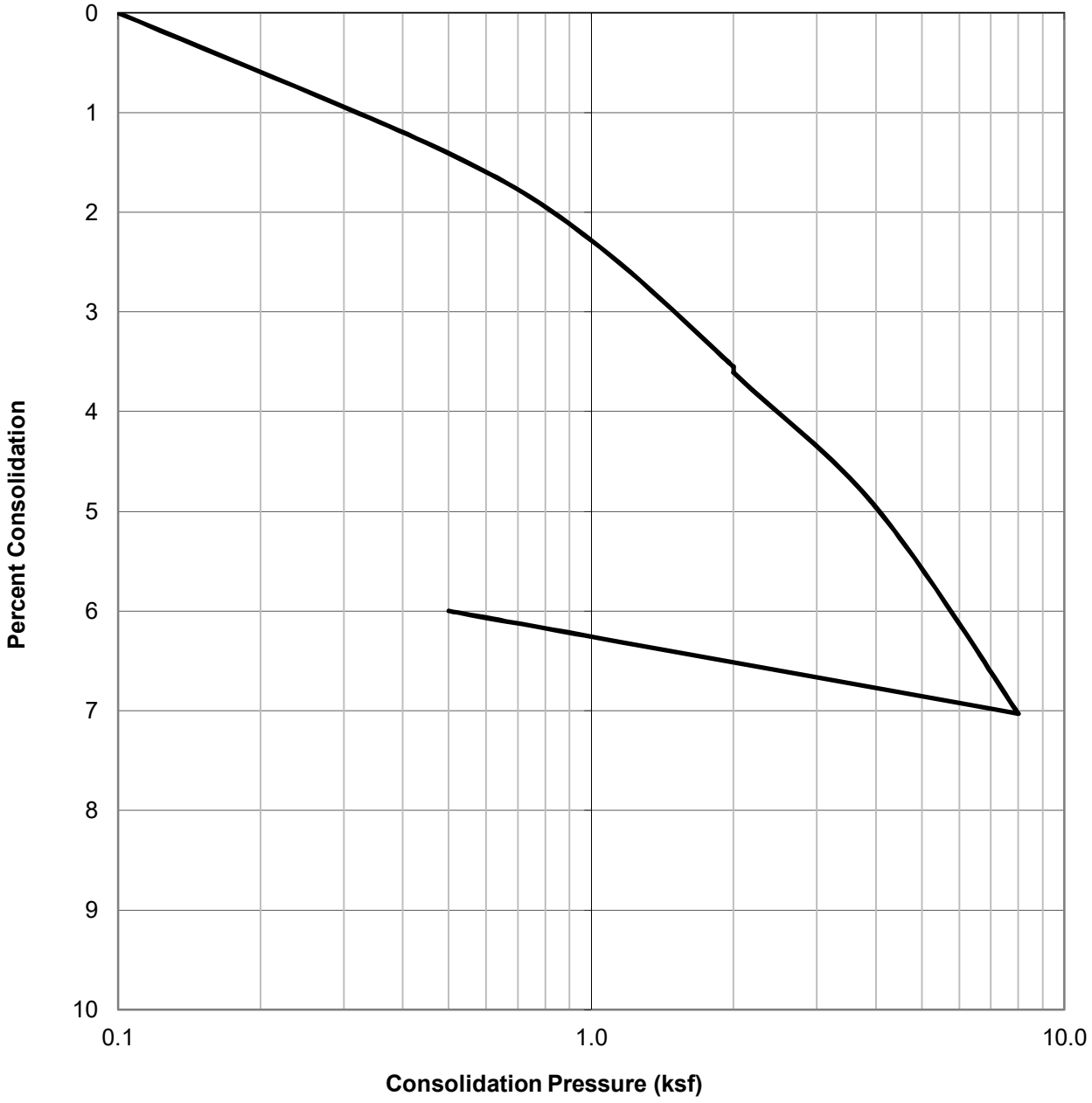
Checked by: JMH

Project No.: W1301-06-01

21611 SOUTH PERRY STREET
CARSON, CALIFORNIA

AUG. 2024 Figure B16

WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B3@22.5	Light Brown Clay (CL)	98.3	27.2	23.0

GEOCON

CONSOLIDATION TEST RESULTS

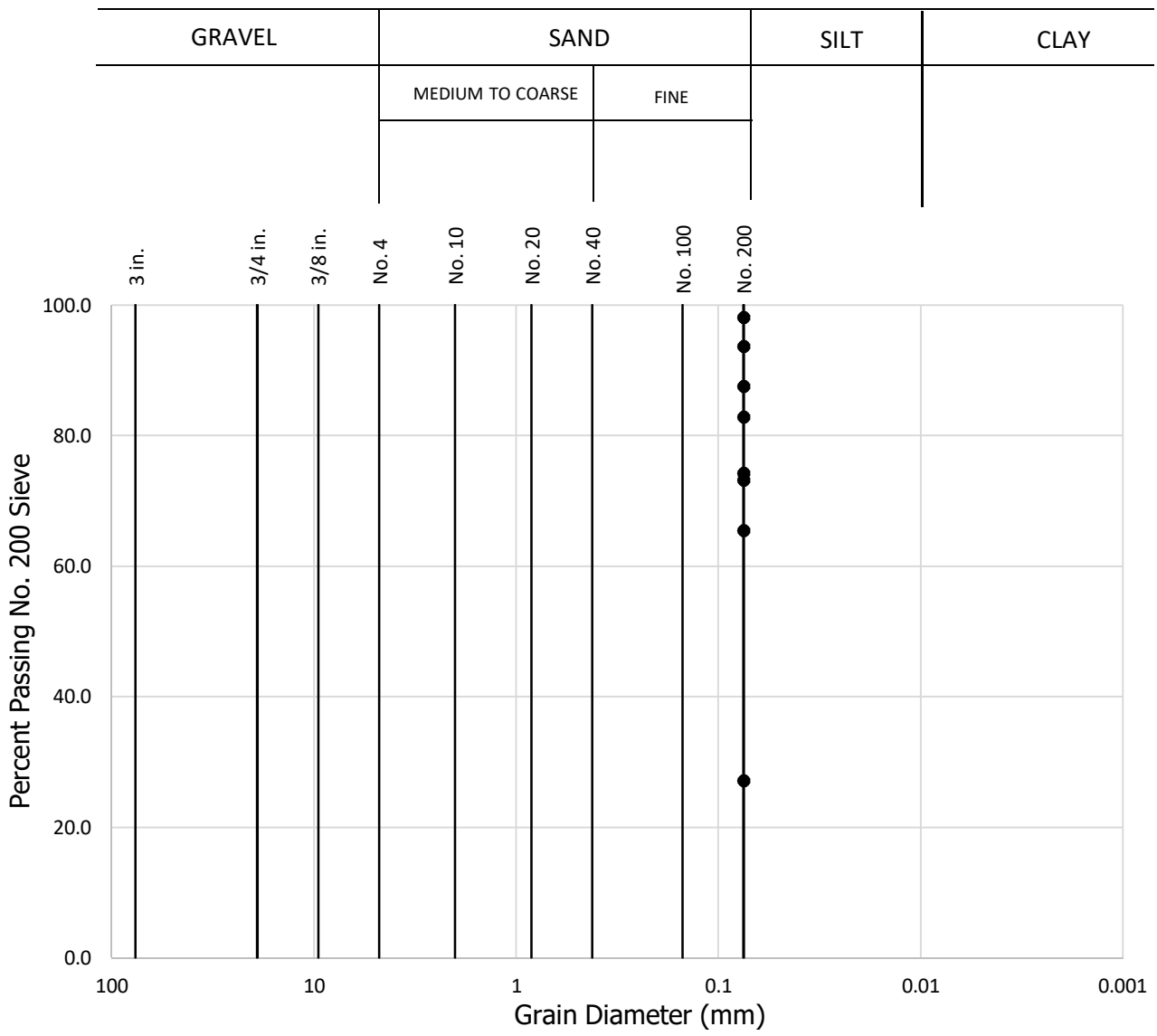
ASTM D-2435

Checked by: JMH

Project No.: W1301-06-01

21611 SOUTH PERRY STREET
CARSON, CALIFORNIA

AUG. 2024 Figure B17



Sample No.	Percent Passing No. 200 Sieve
B3 @ 10'	82.8
B3 @ 15'	87.6
B3 @ 20'	73.2
B3 @ 25'	98.1
B3 @ 30'	93.7
B3 @ 35'	74.2
B3 @ 40'	65.4
B3 @ 50'	27.1

GEOCON

GRAIN SIZE ANALYSIS

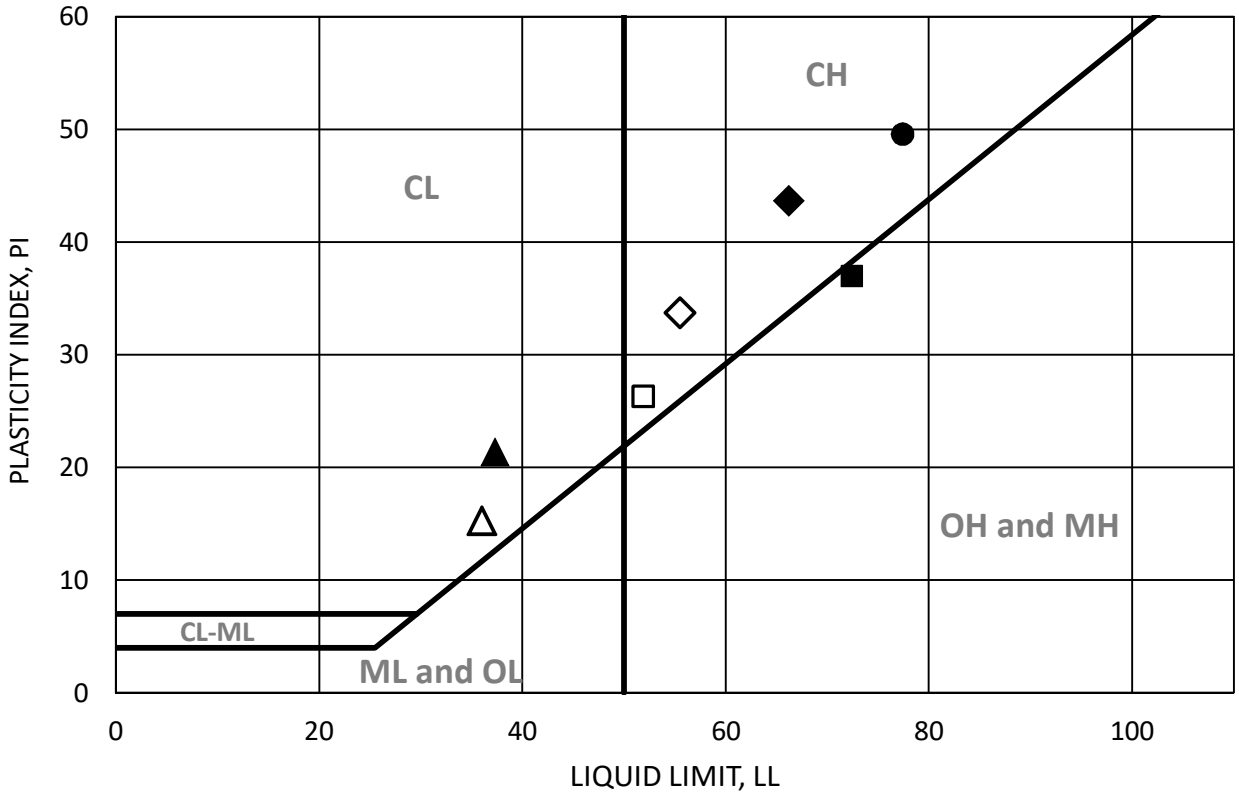
ASTM D-1140

Checked by: JMH

Project No.: W1301-06-01

21611 SOUTH PERRY STREET
CARSON, CALIFORNIA

AUG. 2024 Figure B18



SYMBOL	BORING	DEPTH (ft)	LL	PL	PI	MOISTURE CONTENT AT SATURATION	SOIL BEHAVIOR
■	B3	10'	72.5	36	37		MH
◆	B3	15'	66	23	44		CH
▲	B3	20'	37	16	21		CL
●	B3	25'	78	28	50		CH
□	B3	30'	52	26	26		CH
◇	B3	35'	56	22	34		CH
△	B3	45'	36	21	15		CL
○	B3	50'	N/P	N/P	N/P		SM

N/P = Non-Plastic

GEOCON

ATTERBERG LIMITS

ASTM D-4318

Checked by: JMH

Project No.: W1301-06-01

21611 SOUTH PERRY STREET
CARSON, CALIFORNIA

AUG. 2024 Figure B19

B1B2@0-5'

MOLDED SPECIMEN		BEFORE TEST	AFTER TEST
Specimen Diameter	(in.)	4.0	4.0
Specimen Height	(in.)	1.0	1.1
Wt. Comp. Soil + Mold	(gm)	740.3	787.1
Wt. of Mold	(gm)	367.6	367.6
Specific Gravity	(Assumed)	2.7	2.7
Wet Wt. of Soil + Cont.	(gm)	484.4	787.1
Dry Wt. of Soil + Cont.	(gm)	451.5	331.9
Wt. of Container	(gm)	184.4	367.6
Moisture Content	(%)	12.3	26.4
Wet Density	(pcf)	112.4	126.4
Dry Density	(pcf)	100.1	100.0
Void Ratio		0.7	0.8
Total Porosity		0.4	0.4
Pore Volume	(cc)	84.1	97.0
Degree of Saturation	(%) [S_{meas}]	49.0	90.3

Date	Time	Pressure (psi)	Elapsed Time (min)	Dial Readings (in.)
3/8/2021	10:00	1.0	0	0.3035
3/8/2021	10:10	1.0	10	0.302
Add Distilled Water to the Specimen				
3/9/2021	10:00	1.0	1430	0.3645
3/9/2021	11:00	1.0	1490	0.3645

Expansion Index (EI meas) =	62.5
Expansion Index (Report) =	**63**

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: JMH

Project No.: W1301-06-01

21611 SOUTH PERRY STREET
CARSON, CALIFORNIA

AUG. 2024 Figure B20

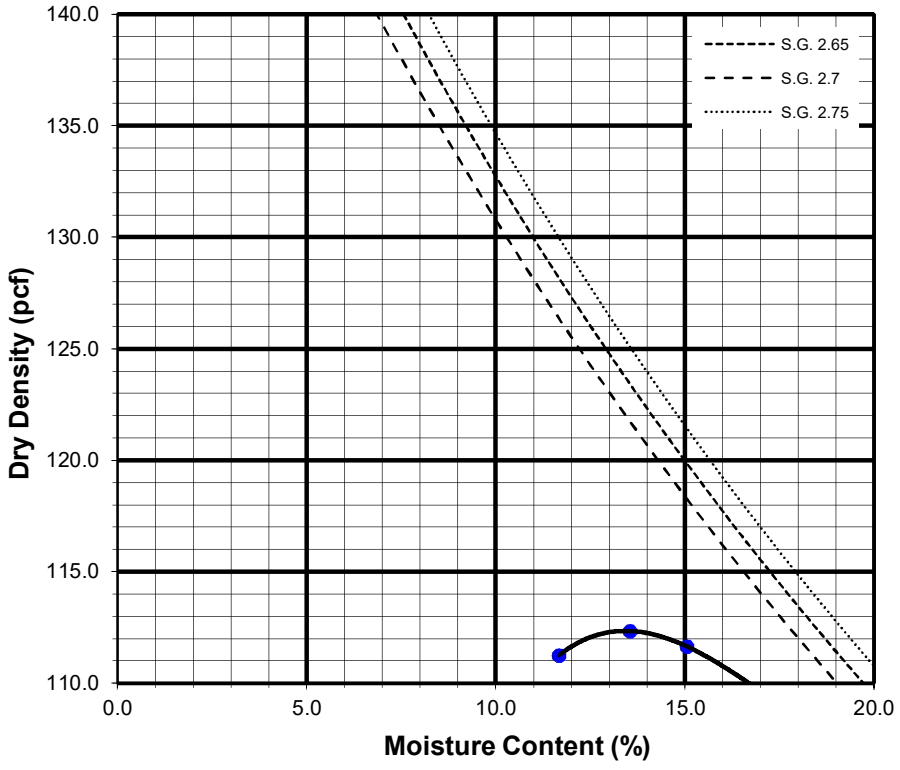
Sample No:

B1B2@0-5'	Brown Silty Sand (SM)

TEST NO.		1	2	3	4	5	6
Wt. Compacted Soil + Mold	(g)	6008	6058	6072	6069		
Weight of Mold	(g)	4132	4132	4132	4132		
Net Weight of Soil	(g)	1876	1927	1940	1937		
Wet Weight of Soil + Cont.	(g)	630.8	626.4	653.1	674.5		
Dry Weight of Soil + Cont.	(g)	580.0	569.3	585.6	594.2		
Weight of Container	(g)	144.4	147.6	137.1	125.4		
Moisture Content	(%)	11.7	13.5	15.1	17.1		
Wet Density	(pcf)	124.2	127.6	128.5	128.2		
Dry Density	(pcf)	111.2	112.3	111.7	109.5		

Maximum Dry Density (pcf)	**112.5**

Optimum Moisture Content (%)	**14.0**



Preparation Method: A

GEOCON

COMPACTION CHARACTERISTICS USING MODIFIED EFFORT TEST RESULTS

ASTM D-1557

Checked by: JMH

Project No.: W1301-06-01

21611 SOUTH PERRY STREET
CARSON, CALIFORNIA

AUG. 2024 Figure B21

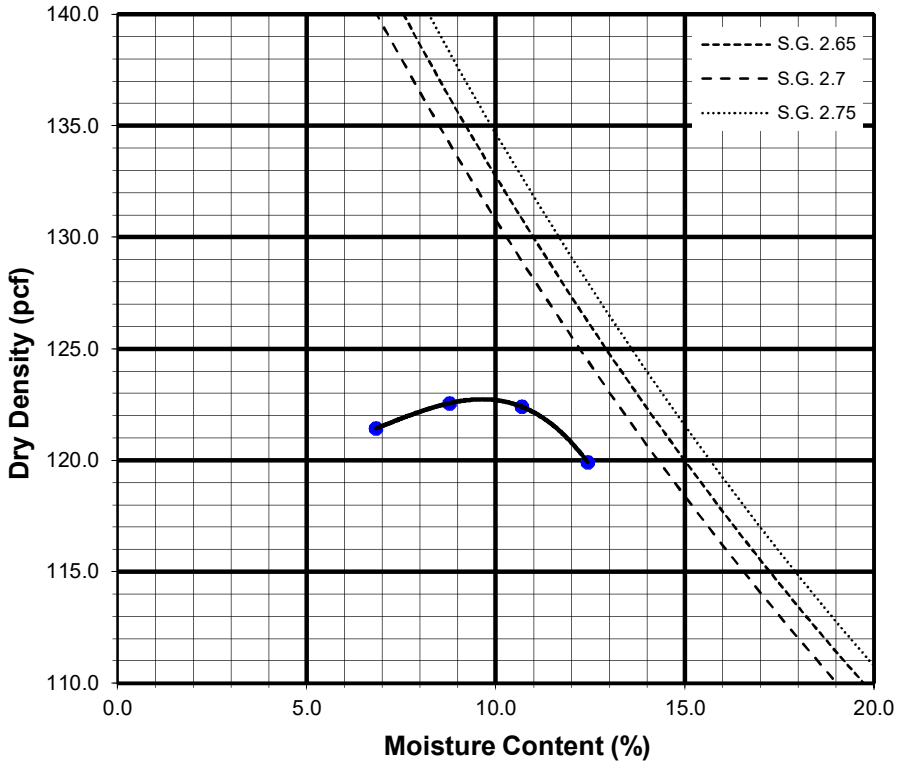
Sample No:

B3B4@0-5'	Light Brown Silty Sand (SM)

TEST NO.		1	2	3	4	5	6
Wt. Compacted Soil + Mold	(g)	6085	6139	6172	6162		
Weight of Mold	(g)	4132	4132	4132	4132		
Net Weight of Soil	(g)	1954	2008	2040	2030		
Wet Weight of Soil + Cont.	(g)	659.1	662.9	668.4	663.2		
Dry Weight of Soil + Cont.	(g)	626.4	619.6	618.1	606.0		
Weight of Container	(g)	148.0	126.1	147.5	145.6		
Moisture Content	(%)	6.8	8.8	10.7	12.4		
Wet Density	(pcf)	129.7	133.3	135.5	134.8		
Dry Density	(pcf)	121.4	122.6	122.4	119.9		

Maximum Dry Density (pcf)	**123.0**
Bulk Specific Gravity (dry)	**2.36**
Corrected Maximum Dry Density (pcf)	**127.0**

Optimum Moisture Content (%)	**10.0**
Oversized Fraction (%)	**18.0**
Corrected Moisture Content (%)	**8.0**



Preparation Method: A

GEOCON

COMPACTION CHARACTERISTICS USING MODIFIED EFFORT TEST RESULTS

ASTM D-1557

Checked by: JMH

Project No.: W1301-06-01

21611 SOUTH PERRY STREET
CARSON, CALIFORNIA

AUG. 2024 Figure B22

SUMMARY OF LABORATORY POTENTIAL
OF HYDROGEN (pH) AND RESISTIVITY TEST RESULTS
CALIFORNIA TEST NO. 643

Sample No.	pH	Resistivity (ohm centimeters)
B1 + B2 @ 0-5'	8.1	910 (Severely Corrosive)
B3 + B4 @ 0-5'	10.5	3900 (Moderately Corrosive)

SUMMARY OF LABORATORY CHLORIDE CONTENT TEST RESULTS
EPA NO. 325.3

Sample No.	Chloride Ion Content (%)
B1 + B2@0-5'	0.006
B3 + B4@0-5'	0.003

SUMMARY OF LABORATORY WATER SOLUBLE SULFATE TEST RESULTS
CALIFORNIA TEST NO. 417

Sample No.	Water Soluble Sulfate (% SO_4)	Sulfate Exposure*
B1 + B2@0-5'	0.070	S0
B3 + B4@0-5'	0.013	S0

GEOCON

CORROSIVITY TEST RESULTS

Checked by: JMH

Project No.: W1301-06-01

21611 SOUTH PERRY STREET
CARSON, CALIFORNIA

AUG. 2024 Figure B23

APPENDIX C

APPENDIX C
CPT LIQUEFACTION ANALYSIS

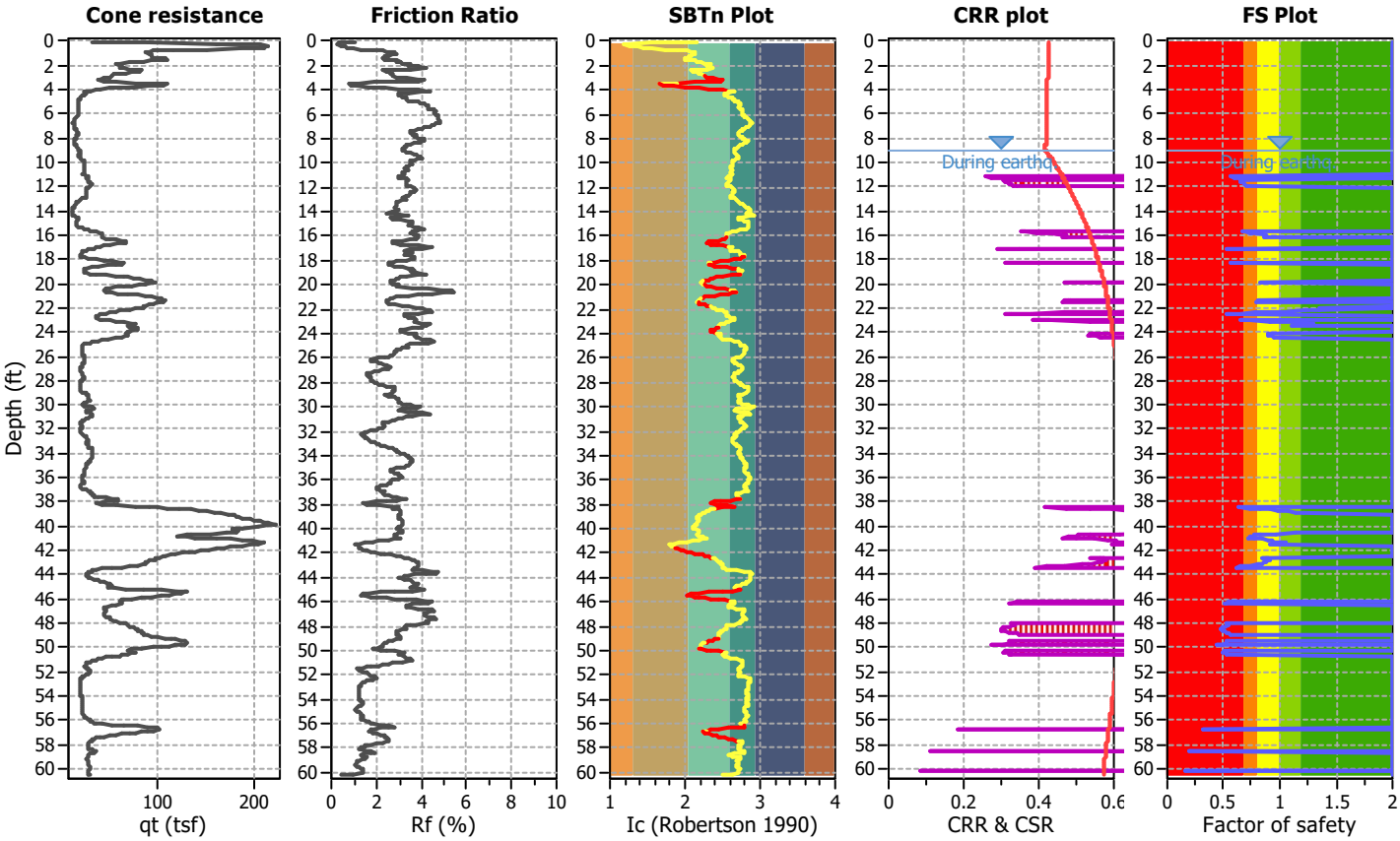
LIQUEFACTION ANALYSIS REPORT

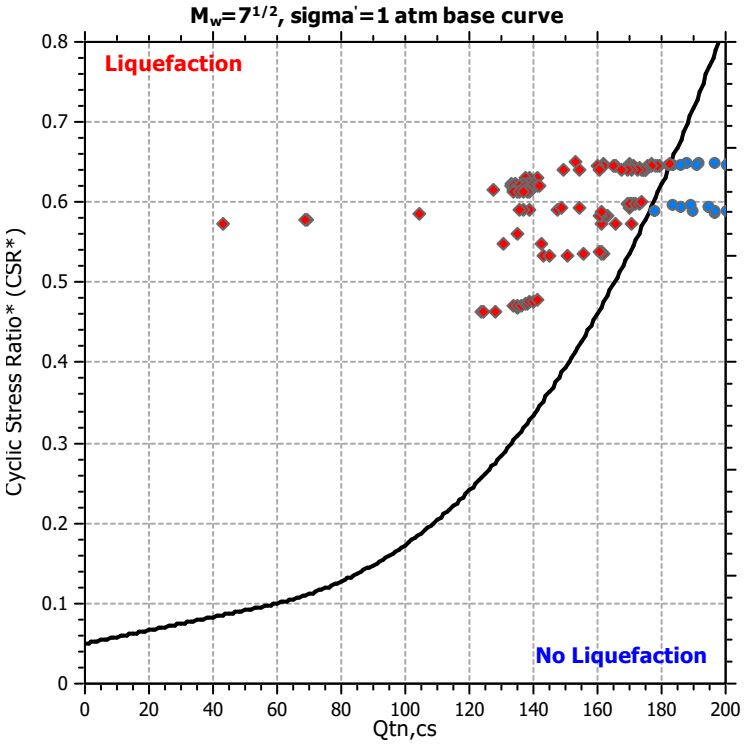
Project title : Geocon West / 21611 Perry Street **Location : Carson, CA**

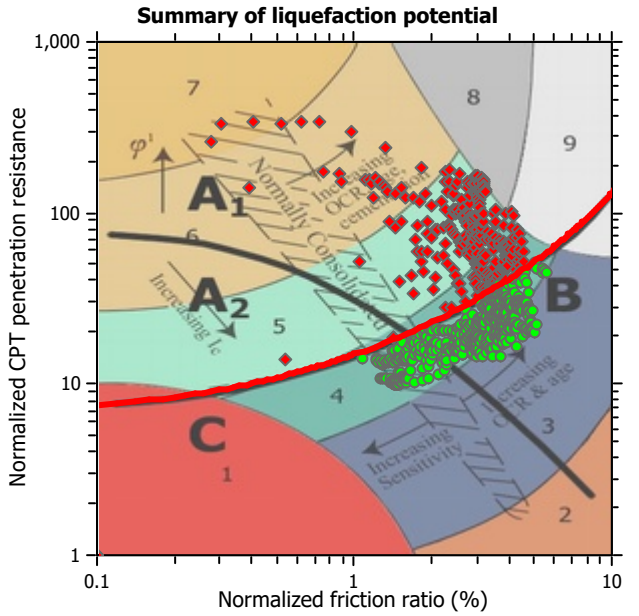
CPT file : CPT-1

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	12.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	9.00 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:	6.87	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.82	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

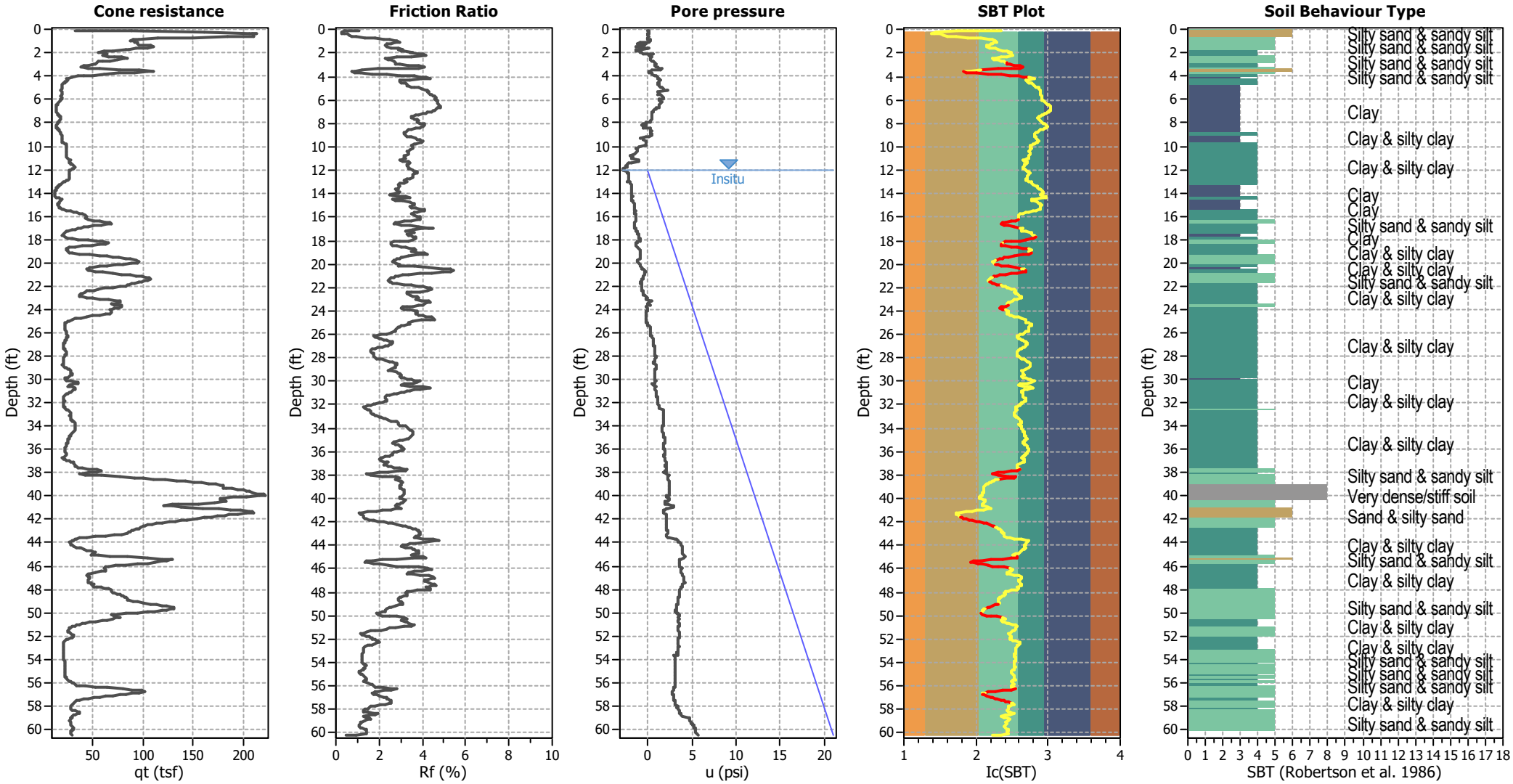






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



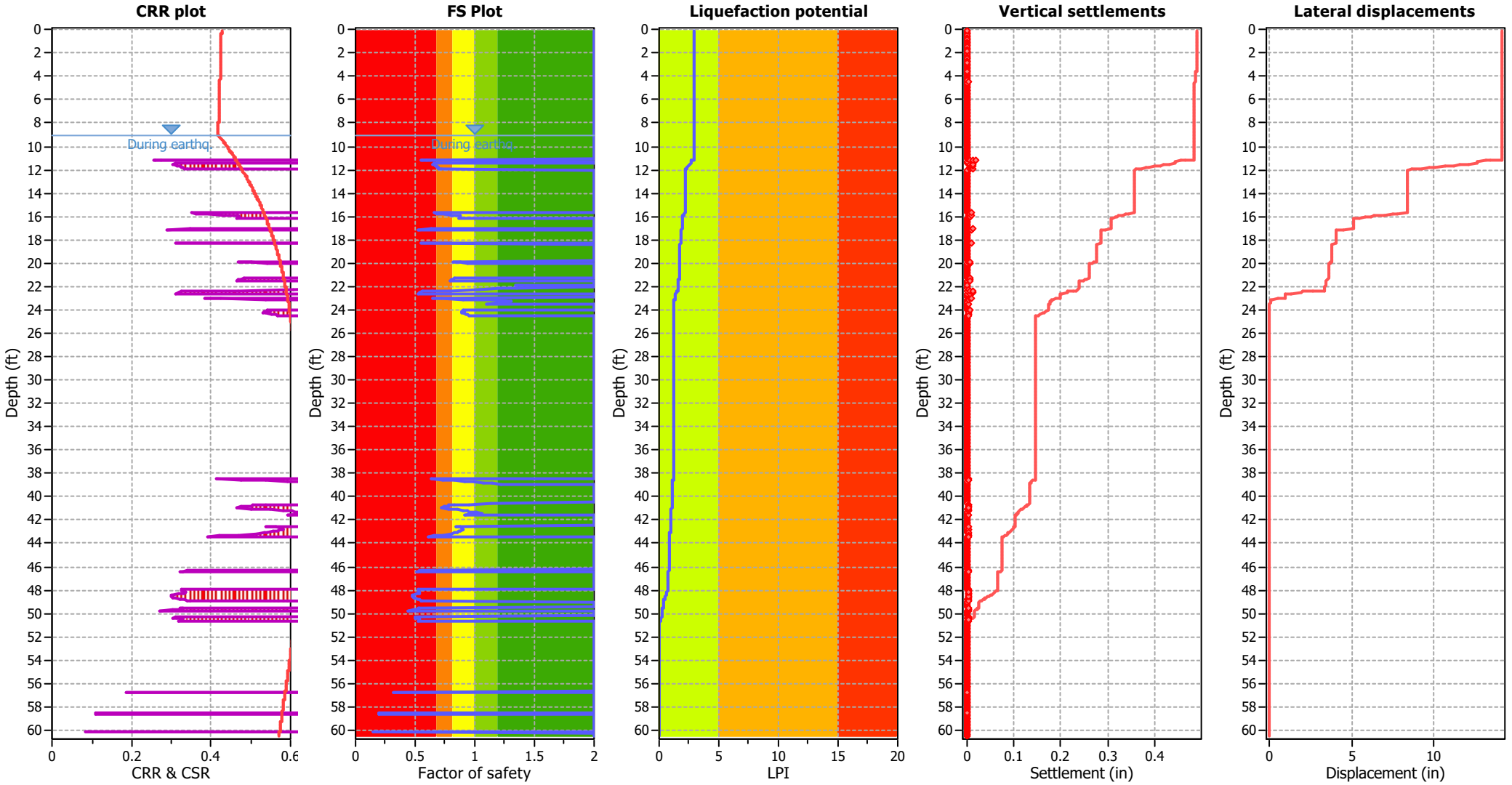
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	9.00 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:	6.87	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.82	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	12.00 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

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	9.00 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:	6.87	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.82	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	12.00 ft	Fill height:	N/A	Limit depth:	N/A

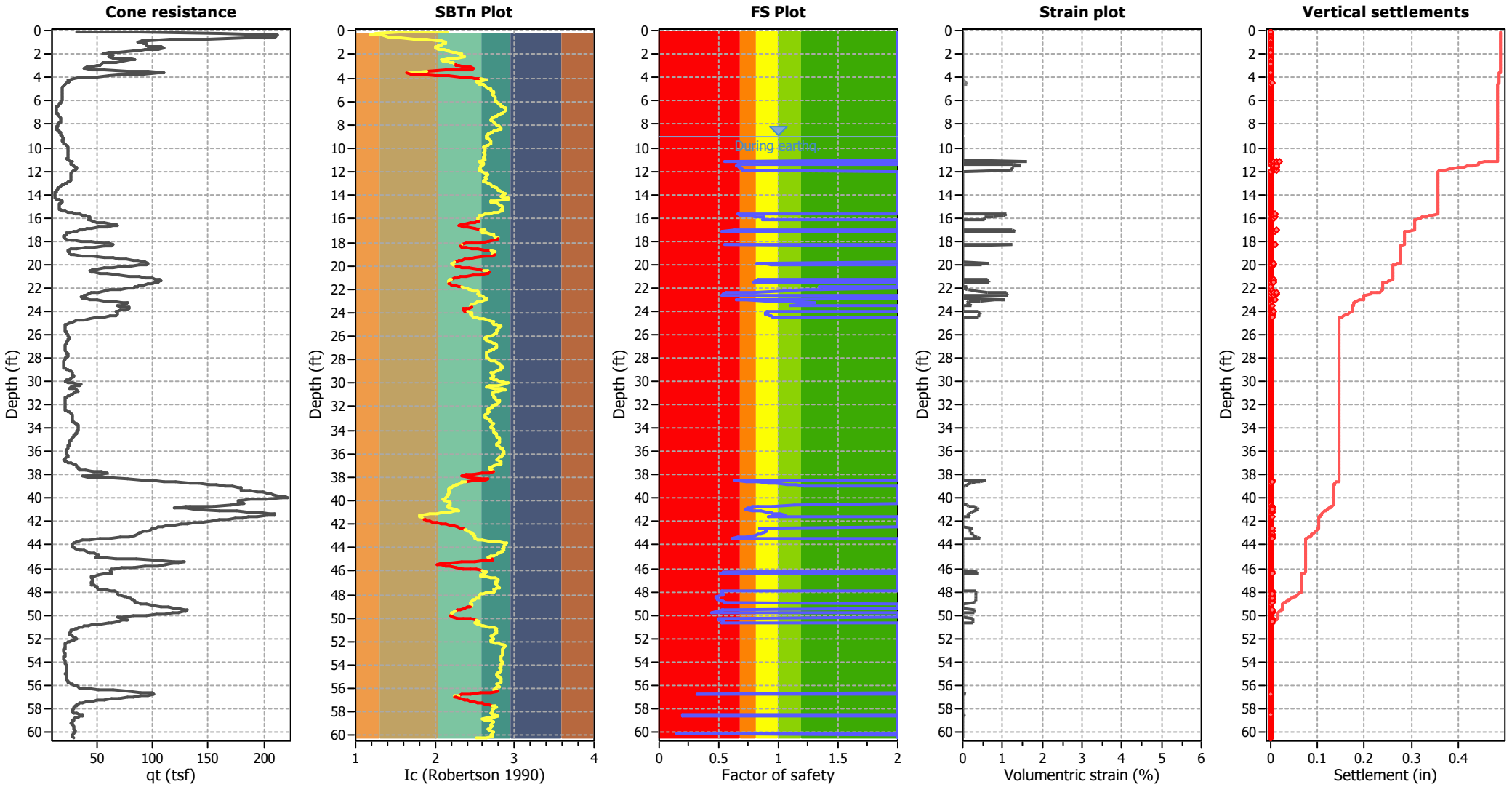
F.S. color scheme

- 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

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

:: Post-earthquake settlement of dry sands ::

Depth (ft)	Ic	Q_{tn}	Kc	$Q_{tn,cs}$	$N_{1,60}$ (blows)	G_{max} (tsf)	CSR	Shear, γ (%)	$e_{vol(15)}$ (%)	N_c	e_v (%)	Settle. (in)
0.09	2.15	51.61	1.50	77.67	17	440	0.43	0.001	0.00	9.85	0.00	0.000
0.15	1.55	142.10	1.00	142.10	25	565	0.43	0.001	0.00	9.85	0.00	0.000
0.21	1.25	258.70	1.00	258.70	42	705	0.43	0.001	0.00	9.85	0.00	0.000
0.29	1.18	329.79	1.00	329.79	52	824	0.43	0.001	0.00	9.85	0.00	0.000
0.34	1.25	341.53	1.00	341.53	55	933	0.43	0.001	0.00	9.85	0.00	0.000
0.40	1.33	334.12	1.00	334.12	55	1013	0.43	0.001	0.00	9.85	0.00	0.000
0.49	1.38	338.31	1.00	338.31	57	1089	0.43	0.002	0.00	9.85	0.00	0.000
0.55	1.43	336.88	1.00	336.88	58	1161	0.43	0.002	0.00	9.85	0.00	0.000
0.59	1.57	295.90	1.00	295.90	53	1204	0.43	0.002	0.00	9.85	0.00	0.000
0.69	1.73	240.60	1.05	252.40	48	1205	0.43	0.002	0.00	9.85	0.00	0.000
0.74	1.91	185.25	1.24	229.81	46	1159	0.43	0.002	0.00	9.85	0.00	0.000
0.81	2.03	153.10	1.33	204.32	43	1122	0.43	0.003	0.00	9.85	0.00	0.000
0.89	2.08	145.48	1.39	201.56	43	1129	0.43	0.003	0.00	9.85	0.00	0.000
0.94	2.13	139.51	1.46	203.82	45	1155	0.43	0.003	0.00	9.85	0.00	0.000
0.99	2.11	147.29	1.44	212.11	46	1200	0.43	0.003	0.00	9.85	0.00	0.000
1.08	2.13	146.67	1.47	215.69	47	1222	0.43	0.003	0.00	9.85	0.00	0.000
1.14	2.10	151.24	1.42	214.48	46	1210	0.43	0.004	0.00	9.85	0.00	0.000
1.19	2.07	151.42	1.38	209.45	45	1173	0.43	0.004	0.00	9.85	0.00	0.000
1.26	2.05	151.41	1.35	205.02	43	1136	0.43	0.005	0.00	9.85	0.00	0.000
1.34	2.04	154.23	1.35	208.12	44	1151	0.43	0.005	0.00	9.85	0.00	0.000
1.38	2.00	172.36	1.31	225.45	47	1217	0.43	0.005	0.00	9.85	0.00	0.000
1.50	2.00	177.56	1.31	232.53	48	1257	0.43	0.005	0.00	9.85	0.00	0.000
1.53	2.05	168.87	1.35	228.10	48	1262	0.43	0.005	0.00	9.85	0.00	0.000
1.59	2.12	150.01	1.45	217.61	47	1232	0.43	0.005	0.00	9.85	0.00	0.000
1.68	2.17	138.20	1.53	212.05	47	1201	0.43	0.006	0.00	9.85	0.00	0.000
1.72	2.16	132.17	1.52	200.55	44	1137	0.43	0.006	0.00	9.85	0.00	0.000
1.78	2.22	112.68	1.66	186.80	42	1046	0.43	0.008	0.00	9.85	0.00	0.000
1.87	2.27	97.87	1.82	178.07	41	972	0.42	0.009	0.00	9.85	0.00	0.000
1.93	2.33	89.70	2.05	183.71	44	962	0.42	0.010	0.00	9.85	0.00	0.000
1.98	2.29	100.39	1.89	189.81	44	1023	0.42	0.009	0.00	9.85	0.00	0.000
2.06	2.33	99.25	2.04	202.74	48	1062	0.42	0.009	0.00	9.85	0.00	0.000
2.13	2.34	102.50	2.08	213.64	51	1111	0.42	0.009	0.00	9.85	0.00	0.000
2.17	2.36	96.82	2.20	212.74	52	1083	0.42	0.009	0.00	9.85	0.00	0.000
2.28	2.29	104.39	1.87	195.54	46	1057	0.42	0.010	0.00	9.85	0.00	0.000
2.32	2.19	114.85	1.58	181.45	41	1025	0.42	0.011	0.00	9.85	0.00	0.000
2.39	2.11	126.97	1.43	181.48	39	1025	0.42	0.011	0.01	9.85	0.00	0.000
2.43	2.07	134.32	1.38	185.89	40	1041	0.42	0.011	0.00	9.85	0.00	0.000
2.52	2.10	129.59	1.42	184.32	40	1040	0.42	0.012	0.01	9.85	0.00	0.000
2.57	2.15	118.07	1.50	177.48	39	1006	0.42	0.013	0.01	9.85	0.00	0.000
2.66	2.19	108.04	1.58	170.64	38	964	0.42	0.014	0.01	9.85	0.01	0.000
2.69	2.22	96.62	1.67	161.68	37	903	0.42	0.017	0.01	9.85	0.01	0.000
2.77	2.25	88.98	1.75	156.13	36	862	0.42	0.019	0.01	9.85	0.01	0.000
2.86	2.26	85.87	1.78	152.98	35	840	0.42	0.021	0.01	9.85	0.01	0.000
2.92	2.26	85.29	1.79	153.07	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.96	2.30	80.90	1.93	155.91	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.06	2.37	72.43	2.24	162.10	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.11	2.45	65.17	2.67	173.89	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.15	2.49	61.49	2.91	178.62	0	0	0.42	0.000	0.00	0.00	0.00	0.000

:: Post-earthquake settlement of dry sands :: (continued)

Depth (ft)	Ic	Q_{tn}	Kc	$Q_{tn,cs}$	$N_{1,60}$ (blows)	G_{max} (tsf)	CSR	Shear, γ (%)	$e_{vol(15)}$ (%)	N_c	e_v (%)	Settle. (in)
3.26	2.46	62.87	2.72	171.06	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.30	2.33	72.47	2.03	147.41	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.37	2.14	89.94	1.48	132.75	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.46	1.89	124.45	1.23	153.02	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.51	1.73	153.51	1.06	162.28	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.56	1.65	176.56	1.00	176.56	32	796	0.42	0.032	0.02	9.85	0.01	0.000
3.64	1.70	168.25	1.00	168.25	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.71	1.83	147.89	1.18	175.02	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.76	2.01	121.82	1.31	159.93	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.81	2.18	97.18	1.56	152.04	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.90	2.31	80.32	1.96	157.24	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.94	2.43	65.61	2.55	167.42	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.00	2.50	56.73	2.96	168.01	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.09	2.57	47.18	3.54	167.11	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.15	2.65	39.34	4.16	163.69	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.20	2.63	38.14	3.99	152.23	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.30	2.56	39.99	3.46	138.29	37	576	0.42	0.125	0.06	9.85	0.05	0.001
4.35	2.51	40.85	3.08	125.75	33	552	0.42	0.152	0.08	9.85	0.06	0.001
4.41	2.53	38.65	3.21	124.18	33	535	0.42	0.179	0.10	9.85	0.08	0.001
4.50	2.56	36.30	3.44	124.85	33	522	0.42	0.210	0.11	9.85	0.09	0.002
4.55	2.59	34.29	3.68	126.08	34	511	0.42	0.236	0.13	9.85	0.10	0.001
4.60	2.61	32.85	3.86	126.92	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.68	2.63	31.60	4.03	127.38	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.75	2.64	30.93	4.11	127.02	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.79	2.65	30.45	4.18	127.35	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.88	2.66	30.01	4.33	129.96	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.95	2.68	29.62	4.51	133.68	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.99	2.70	29.47	4.70	138.41	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.06	2.71	29.47	4.81	141.85	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.14	2.72	29.23	4.97	145.27	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.21	2.73	29.20	5.03	146.90	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.25	2.73	29.39	5.04	148.05	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.33	2.73	29.85	4.98	148.66	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.40	2.72	30.15	4.95	149.27	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.45	2.72	30.19	4.96	149.67	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.51	2.73	29.90	5.04	150.60	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.60	2.74	29.57	5.14	151.98	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.66	2.75	29.28	5.26	153.93	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.71	2.75	29.32	5.30	155.33	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.78	2.75	29.45	5.31	156.32	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.86	2.75	29.73	5.26	156.27	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.93	2.75	29.68	5.26	156.02	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.01	2.76	29.24	5.33	155.90	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.05	2.77	28.33	5.50	155.71	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.11	2.79	27.27	5.68	154.76	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.21	2.80	26.36	5.81	153.18	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.25	2.81	25.44	5.95	151.41	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.31	2.82	24.48	6.12	149.72	0	0	0.42	0.000	0.00	0.00	0.00	0.000

:: Post-earthquake settlement of dry sands :: (continued)

Depth (ft)	Ic	Q_{tn}	Kc	$Q_{tn,cs}$	$N_{1,60}$ (blows)	G_{max} (tsf)	CSR	Shear, γ (%)	$e_{vol(15)}$ (%)	N_c	e_v (%)	Settle. (in)
6.39	2.84	23.38	6.33	147.98	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.45	2.85	22.42	6.54	146.57	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.51	2.87	21.65	6.73	145.57	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.58	2.88	21.02	6.88	144.65	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.66	2.89	20.53	7.00	143.74	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.70	2.88	20.43	6.95	141.97	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.78	2.88	20.47	6.87	140.73	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.85	2.87	20.65	6.78	139.95	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.89	2.86	21.03	6.62	139.11	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.00	2.85	21.40	6.45	138.06	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.03	2.83	21.92	6.21	136.15	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.09	2.82	22.24	6.05	134.58	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.19	2.80	22.75	5.84	132.81	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.25	2.78	23.51	5.56	130.73	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.30	2.75	24.37	5.28	128.69	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.37	2.73	25.46	4.99	126.94	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.44	2.71	26.22	4.83	126.61	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.49	2.70	27.03	4.73	127.84	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.56	2.70	27.59	4.71	130.08	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.64	2.70	27.97	4.74	132.48	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.68	2.72	27.58	4.90	135.14	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.79	2.73	26.85	5.02	134.91	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.83	2.74	25.85	5.10	131.84	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.89	2.75	24.93	5.26	131.20	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.98	2.77	23.97	5.54	132.72	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.02	2.80	23.19	5.86	135.96	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.09	2.81	22.52	6.00	135.12	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.15	2.82	21.89	6.07	132.95	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.23	2.83	21.07	6.23	131.19	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.29	2.83	20.78	6.21	128.99	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.34	2.82	20.73	6.13	127.14	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.40	2.80	21.49	5.80	124.62	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.48	2.77	22.53	5.44	122.57	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.55	2.74	23.72	5.11	121.22	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.60	2.72	24.73	4.90	121.15	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.66	2.70	25.58	4.75	121.52	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.74	2.69	26.53	4.59	121.77	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.83	2.67	27.43	4.43	121.41	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.89	2.66	28.09	4.31	121.09	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.94	2.65	28.66	4.25	121.68	0	0	0.42	0.000	0.00	0.00	0.00	0.000

:: Post-earthquake settlement of dry sands :: (continued)

Depth (ft)	Ic	Q_{tn}	Kc	$Q_{tn,cs}$	$N_{1,60}$ (blows)	G_{max} (tsf)	CSR	Shear, γ (%)	$e_{vol(15)}$ (%)	N_c	e_v (%)	Settle. (in)

Total estimated settlement: 0.01

Abbreviations

Q_{tn}: Equivalent clean sand normalized cone resistance
K_c: Fines correction factor
$Q_{tn,cs}$: Post-liquefaction volumentric strain
G_{max}: Small strain shear modulus
CSR: Soil cyclic stress ratio
γ: Cyclic shear strain
$e_{vol(15)}$: Volumetric strain after 15 cycles
N_c: Equivalent number of cycles
e_v: Volumetric strain
Settle.: Calculated settlement

:: Post-earthquake settlement due to soil liquefaction ::

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
9.01	123.94	2.00	0.00	0.85	0.00	9.09	126.83	2.00	0.00	0.85	0.00
9.15	129.84	2.00	0.00	0.84	0.00	9.20	133.09	2.00	0.00	0.84	0.00
9.29	136.19	2.00	0.00	0.84	0.00	9.35	138.95	2.00	0.00	0.84	0.00
9.39	140.80	2.00	0.00	0.84	0.00	9.45	142.66	2.00	0.00	0.84	0.00
9.54	143.79	2.00	0.00	0.84	0.00	9.63	143.77	2.00	0.00	0.84	0.00
9.65	142.45	2.00	0.00	0.84	0.00	9.73	139.48	2.00	0.00	0.84	0.00
9.79	137.51	2.00	0.00	0.83	0.00	9.84	136.44	2.00	0.00	0.83	0.00
9.91	136.98	2.00	0.00	0.83	0.00	9.99	138.26	2.00	0.00	0.83	0.00
10.08	138.90	2.00	0.00	0.83	0.00	10.14	138.89	2.00	0.00	0.83	0.00
10.19	137.13	2.00	0.00	0.83	0.00	10.25	134.50	2.00	0.00	0.83	0.00
10.34	132.13	2.00	0.00	0.82	0.00	10.38	130.80	2.00	0.00	0.82	0.00
10.44	130.44	2.00	0.00	0.82	0.00	10.52	131.85	2.00	0.00	0.82	0.00
10.59	132.48	2.00	0.00	0.82	0.00	10.63	132.21	2.00	0.00	0.82	0.00
10.70	129.09	2.00	0.00	0.82	0.00	10.78	126.34	2.00	0.00	0.82	0.00
10.87	125.31	2.00	0.00	0.82	0.00	10.93	125.83	2.00	0.00	0.81	0.00
10.97	126.44	2.00	0.00	0.81	0.00	11.03	125.71	2.00	0.00	0.81	0.00
11.12	123.80	0.55	1.59	0.81	0.02	11.16	124.57	0.56	1.58	0.81	0.01
11.23	128.01	0.59	1.54	0.81	0.01	11.31	133.86	2.00	0.00	0.81	0.00
11.37	135.35	2.00	0.00	0.81	0.00	11.44	135.10	0.66	1.29	0.81	0.01
11.51	134.04	0.65	1.48	0.80	0.01	11.56	134.87	0.65	1.29	0.80	0.01
11.63	136.26	0.67	1.27	0.80	0.01	11.71	137.37	0.68	1.26	0.80	0.01
11.76	138.38	0.69	1.24	0.80	0.01	11.83	138.69	0.69	1.24	0.80	0.01
11.91	139.81	0.70	1.22	0.80	0.01	11.94	141.18	0.72	1.20	0.80	0.01
12.05	142.00	2.00	0.00	0.80	0.00	12.10	141.76	2.00	0.00	0.79	0.00
12.14	141.66	2.00	0.00	0.79	0.00	12.25	141.15	2.00	0.00	0.79	0.00
12.29	139.55	2.00	0.00	0.79	0.00	12.35	137.89	2.00	0.00	0.79	0.00
12.44	136.61	2.00	0.00	0.79	0.00	12.49	136.63	2.00	0.00	0.79	0.00
12.55	137.02	2.00	0.00	0.79	0.00	12.61	136.20	2.00	0.00	0.79	0.00
12.70	133.86	2.00	0.00	0.78	0.00	12.74	130.24	2.00	0.00	0.78	0.00
12.81	126.89	2.00	0.00	0.78	0.00	12.89	125.86	2.00	0.00	0.78	0.00
12.94	125.62	2.00	0.00	0.78	0.00	12.99	124.04	2.00	0.00	0.78	0.00
13.07	118.75	2.00	0.00	0.78	0.00	13.15	112.54	2.00	0.00	0.78	0.00
13.20	109.17	2.00	0.00	0.78	0.00	13.27	108.09	2.00	0.00	0.78	0.00
13.32	107.80	2.00	0.00	0.77	0.00	13.39	106.47	2.00	0.00	0.77	0.00
13.48	104.94	2.00	0.00	0.77	0.00	13.54	102.95	2.00	0.00	0.77	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
13.59	100.94	2.00	0.00	0.77	0.00	13.65	99.34	2.00	0.00	0.77	0.00
13.74	99.15	2.00	0.00	0.77	0.00	13.80	99.68	2.00	0.00	0.77	0.00
13.88	100.10	2.00	0.00	0.76	0.00	13.93	99.13	2.00	0.00	0.76	0.00
13.99	96.05	2.00	0.00	0.76	0.00	14.07	91.73	2.00	0.00	0.76	0.00
14.12	91.42	2.00	0.00	0.76	0.00	14.18	97.15	2.00	0.00	0.76	0.00
14.26	104.59	2.00	0.00	0.76	0.00	14.34	108.39	2.00	0.00	0.76	0.00
14.38	107.10	2.00	0.00	0.76	0.00	14.47	104.07	2.00	0.00	0.75	0.00
14.53	102.53	2.00	0.00	0.75	0.00	14.57	106.16	2.00	0.00	0.75	0.00
14.64	112.58	2.00	0.00	0.75	0.00	14.72	118.51	2.00	0.00	0.75	0.00
14.80	120.68	2.00	0.00	0.75	0.00	14.83	120.79	2.00	0.00	0.75	0.00
14.92	120.03	2.00	0.00	0.75	0.00	14.97	118.08	2.00	0.00	0.75	0.00
15.06	115.85	2.00	0.00	0.74	0.00	15.10	114.88	2.00	0.00	0.74	0.00
15.17	116.61	2.00	0.00	0.74	0.00	15.25	121.37	2.00	0.00	0.74	0.00
15.31	127.56	2.00	0.00	0.74	0.00	15.37	134.20	2.00	0.00	0.74	0.00
15.44	138.46	2.00	0.00	0.74	0.00	15.51	140.25	2.00	0.00	0.74	0.00
15.56	140.44	2.00	0.00	0.74	0.00	15.63	141.37	2.00	0.00	0.74	0.00
15.71	142.91	0.66	1.09	0.73	0.01	15.76	145.04	0.68	1.06	0.73	0.01
15.82	150.37	0.74	1.01	0.73	0.01	15.90	155.79	0.81	0.78	0.73	0.01
15.95	160.94	0.87	0.57	0.73	0.00	16.01	161.62	0.88	0.56	0.73	0.00
16.10	161.51	0.88	0.56	0.73	0.01	16.16	160.60	0.86	0.56	0.73	0.00
16.21	157.64	2.00	0.00	0.73	0.00	16.29	151.56	2.00	0.00	0.72	0.00
16.36	145.37	2.00	0.00	0.72	0.00	16.41	141.64	2.00	0.00	0.72	0.00
16.48	141.36	2.00	0.00	0.72	0.00	16.55	143.41	2.00	0.00	0.72	0.00
16.60	147.61	2.00	0.00	0.72	0.00	16.70	152.54	2.00	0.00	0.72	0.00
16.74	159.56	2.00	0.00	0.72	0.00	16.80	167.01	2.00	0.00	0.72	0.00
16.89	174.59	2.00	0.00	0.71	0.00	16.93	174.81	2.00	0.00	0.71	0.00
17.00	159.18	2.00	0.00	0.71	0.00	17.09	142.28	0.63	1.24	0.71	0.01
17.14	130.61	0.52	1.33	0.71	0.01	17.20	133.43	2.00	0.00	0.71	0.00
17.28	133.22	2.00	0.00	0.71	0.00	17.34	128.68	2.00	0.00	0.71	0.00
17.41	122.37	2.00	0.00	0.70	0.00	17.48	119.38	2.00	0.00	0.70	0.00
17.56	119.36	2.00	0.00	0.70	0.00	17.62	120.89	2.00	0.00	0.70	0.00
17.67	123.19	2.00	0.00	0.70	0.00	17.72	126.06	2.00	0.00	0.70	0.00
17.78	128.84	2.00	0.00	0.70	0.00	17.87	133.26	2.00	0.00	0.70	0.00
17.94	136.11	2.00	0.00	0.70	0.00	18.01	136.64	2.00	0.00	0.69	0.00
18.06	132.30	2.00	0.00	0.69	0.00	18.12	131.10	2.00	0.00	0.69	0.00
18.21	132.04	2.00	0.00	0.69	0.00	18.25	134.00	2.00	0.00	0.69	0.00
18.31	135.19	0.55	1.26	0.69	0.01	18.40	136.74	2.00	0.00	0.69	0.00
18.44	136.99	2.00	0.00	0.69	0.00	18.51	137.16	2.00	0.00	0.69	0.00
18.58	135.12	2.00	0.00	0.69	0.00	18.64	134.97	2.00	0.00	0.68	0.00
18.71	133.70	2.00	0.00	0.68	0.00	18.80	131.61	2.00	0.00	0.68	0.00
18.86	130.14	2.00	0.00	0.68	0.00	18.91	127.90	2.00	0.00	0.68	0.00
18.98	130.07	2.00	0.00	0.68	0.00	19.05	134.74	2.00	0.00	0.68	0.00
19.10	144.69	2.00	0.00	0.68	0.00	19.20	151.02	2.00	0.00	0.67	0.00
19.23	149.44	2.00	0.00	0.67	0.00	19.30	145.65	2.00	0.00	0.67	0.00
19.39	145.10	2.00	0.00	0.67	0.00	19.43	148.17	2.00	0.00	0.67	0.00
19.50	149.77	2.00	0.00	0.67	0.00	19.57	151.50	2.00	0.00	0.67	0.00
19.63	152.80	2.00	0.00	0.67	0.00	19.70	154.99	2.00	0.00	0.67	0.00
19.77	157.82	2.00	0.00	0.66	0.00	19.84	161.05	0.82	0.67	0.66	0.01

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
19.90	165.57	0.88	0.49	0.66	0.00	19.99	170.43	0.94	0.47	0.66	0.01
20.02	161.66	2.00	0.00	0.66	0.00	20.09	155.60	2.00	0.00	0.66	0.00
20.19	149.93	2.00	0.00	0.66	0.00	20.21	167.07	2.00	0.00	0.66	0.00
20.29	181.99	2.00	0.00	0.66	0.00	20.38	194.98	2.00	0.00	0.65	0.00
20.42	200.12	2.00	0.00	0.65	0.00	20.52	199.86	2.00	0.00	0.65	0.00
20.55	200.70	2.00	0.00	0.65	0.00	20.62	198.53	2.00	0.00	0.65	0.00
20.68	191.93	2.00	0.00	0.65	0.00	20.75	182.50	2.00	0.00	0.65	0.00
20.81	171.52	2.00	0.00	0.65	0.00	20.89	163.49	2.00	0.00	0.65	0.00
20.96	159.56	2.00	0.00	0.64	0.00	21.01	159.83	2.00	0.00	0.64	0.00
21.09	161.15	2.00	0.00	0.64	0.00	21.15	162.37	2.00	0.00	0.64	0.00
21.21	163.12	2.00	0.00	0.64	0.00	21.30	163.04	0.83	0.64	0.64	0.01
21.36	162.23	0.82	0.64	0.64	0.00	21.40	161.25	0.81	0.64	0.64	0.00
21.49	160.42	0.79	0.65	0.64	0.01	21.56	160.10	2.00	0.00	0.63	0.00
21.60	161.03	2.00	0.00	0.63	0.00	21.66	164.62	2.00	0.00	0.63	0.00
21.75	170.92	2.00	0.00	0.63	0.00	21.80	179.52	2.00	0.00	0.63	0.00
21.85	188.95	2.00	0.00	0.63	0.00	21.95	196.83	1.34	0.11	0.63	0.00
21.99	201.78	2.00	0.00	0.63	0.00	22.05	200.83	2.00	0.00	0.63	0.00
22.14	197.19	1.35	0.11	0.62	0.00	22.19	190.19	1.22	0.16	0.62	0.00
22.26	178.44	1.03	0.32	0.62	0.00	22.35	161.20	0.80	0.63	0.62	0.01
22.44	147.37	0.64	1.07	0.62	0.01	22.45	138.52	0.55	1.11	0.62	0.00
22.54	137.03	0.54	1.12	0.62	0.01	22.58	135.56	0.53	1.12	0.62	0.01
22.65	136.96	2.00	0.00	0.62	0.00	22.73	140.03	2.00	0.00	0.61	0.00
22.79	143.15	2.00	0.00	0.61	0.00	22.84	146.10	2.00	0.00	0.61	0.00
22.93	146.96	2.00	0.00	0.61	0.00	22.99	148.47	0.65	1.04	0.61	0.01
23.04	154.63	0.71	0.81	0.61	0.00	23.12	170.00	0.90	0.43	0.61	0.00
23.19	186.48	1.15	0.16	0.61	0.00	23.27	195.05	1.30	0.11	0.61	0.00
23.30	195.26	1.30	0.11	0.61	0.00	23.38	189.18	1.19	0.16	0.60	0.00
23.47	183.49	1.10	0.22	0.60	0.00	23.50	175.16	2.00	0.00	0.60	0.00
23.57	167.17	2.00	0.00	0.60	0.00	23.66	160.24	2.00	0.00	0.60	0.00
23.69	156.12	2.00	0.00	0.60	0.00	23.77	155.21	2.00	0.00	0.60	0.00
23.84	157.18	2.00	0.00	0.60	0.00	23.92	162.11	2.00	0.00	0.59	0.00
23.97	168.18	2.00	0.00	0.59	0.00	24.06	170.75	0.91	0.42	0.59	0.00
24.11	171.51	0.92	0.42	0.59	0.00	24.16	169.75	0.89	0.42	0.59	0.00
24.23	169.29	0.89	0.42	0.59	0.00	24.31	170.12	0.90	0.42	0.59	0.00
24.36	172.07	0.92	0.41	0.59	0.00	24.42	173.21	0.94	0.41	0.59	0.00
24.51	173.63	0.95	0.41	0.58	0.00	24.54	173.17	2.00	0.00	0.58	0.00
24.62	169.82	2.00	0.00	0.58	0.00	24.71	164.43	2.00	0.00	0.58	0.00
24.74	154.24	2.00	0.00	0.58	0.00	24.81	142.09	2.00	0.00	0.58	0.00
24.89	129.49	2.00	0.00	0.58	0.00	24.96	122.02	2.00	0.00	0.58	0.00
25.01	119.50	2.00	0.00	0.58	0.00	25.10	118.18	2.00	0.00	0.57	0.00
25.14	115.24	2.00	0.00	0.57	0.00	25.21	112.02	2.00	0.00	0.57	0.00
25.30	109.06	2.00	0.00	0.57	0.00	25.34	106.90	2.00	0.00	0.57	0.00
25.41	105.58	2.00	0.00	0.57	0.00	25.50	104.38	2.00	0.00	0.57	0.00
25.55	103.92	2.00	0.00	0.57	0.00	25.60	103.66	2.00	0.00	0.57	0.00
25.70	103.42	2.00	0.00	0.56	0.00	25.75	103.01	2.00	0.00	0.56	0.00
25.80	101.70	2.00	0.00	0.56	0.00	25.89	99.33	2.00	0.00	0.56	0.00
25.95	95.76	2.00	0.00	0.56	0.00	25.99	89.28	2.00	0.00	0.56	0.00
26.06	83.95	2.00	0.00	0.56	0.00	26.15	80.96	2.00	0.00	0.56	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
26.19	82.39	2.00	0.00	0.56	0.00	26.25	85.01	2.00	0.00	0.56	0.00
26.34	87.44	2.00	0.00	0.55	0.00	26.38	89.74	2.00	0.00	0.55	0.00
26.45	92.10	2.00	0.00	0.55	0.00	26.52	95.26	2.00	0.00	0.55	0.00
26.61	98.27	2.00	0.00	0.55	0.00	26.67	99.65	2.00	0.00	0.55	0.00
26.71	99.42	2.00	0.00	0.55	0.00	26.82	98.64	2.00	0.00	0.55	0.00
26.86	96.88	2.00	0.00	0.54	0.00	26.94	94.69	2.00	0.00	0.54	0.00
26.98	91.32	2.00	0.00	0.54	0.00	27.06	88.21	2.00	0.00	0.54	0.00
27.10	83.86	2.00	0.00	0.54	0.00	27.17	80.10	2.00	0.00	0.54	0.00
27.25	77.03	2.00	0.00	0.54	0.00	27.31	75.77	2.00	0.00	0.54	0.00
27.39	75.24	2.00	0.00	0.54	0.00	27.44	75.48	2.00	0.00	0.53	0.00
27.51	76.95	2.00	0.00	0.53	0.00	27.58	78.99	2.00	0.00	0.53	0.00
27.63	80.62	2.00	0.00	0.53	0.00	27.71	80.99	2.00	0.00	0.53	0.00
27.79	80.79	2.00	0.00	0.53	0.00	27.86	80.37	2.00	0.00	0.53	0.00
27.89	80.78	2.00	0.00	0.53	0.00	27.96	81.90	2.00	0.00	0.53	0.00
28.05	83.33	2.00	0.00	0.52	0.00	28.09	85.26	2.00	0.00	0.52	0.00
28.16	87.42	2.00	0.00	0.52	0.00	28.23	90.54	2.00	0.00	0.52	0.00
28.29	94.43	2.00	0.00	0.52	0.00	28.35	98.07	2.00	0.00	0.52	0.00
28.44	100.43	2.00	0.00	0.52	0.00	28.50	101.01	2.00	0.00	0.52	0.00
28.55	100.76	2.00	0.00	0.52	0.00	28.64	100.20	2.00	0.00	0.51	0.00
28.69	100.01	2.00	0.00	0.51	0.00	28.75	99.74	2.00	0.00	0.51	0.00
28.82	99.44	2.00	0.00	0.51	0.00	28.89	99.58	2.00	0.00	0.51	0.00
28.98	98.31	2.00	0.00	0.51	0.00	29.04	96.19	2.00	0.00	0.51	0.00
29.08	97.85	2.00	0.00	0.51	0.00	29.14	102.84	2.00	0.00	0.51	0.00
29.24	108.93	2.00	0.00	0.50	0.00	29.29	111.09	2.00	0.00	0.50	0.00
29.34	112.16	2.00	0.00	0.50	0.00	29.43	113.57	2.00	0.00	0.50	0.00
29.47	114.22	2.00	0.00	0.50	0.00	29.53	114.41	2.00	0.00	0.50	0.00
29.62	113.94	2.00	0.00	0.50	0.00	29.66	114.58	2.00	0.00	0.50	0.00
29.77	115.51	2.00	0.00	0.50	0.00	29.81	116.56	2.00	0.00	0.49	0.00
29.86	118.31	2.00	0.00	0.49	0.00	29.92	119.45	2.00	0.00	0.49	0.00
30.01	122.79	2.00	0.00	0.49	0.00	30.09	123.96	2.00	0.00	0.49	0.00
30.16	124.30	2.00	0.00	0.49	0.00	30.20	121.29	2.00	0.00	0.49	0.00
30.27	119.84	2.00	0.00	0.49	0.00	30.32	121.12	2.00	0.00	0.49	0.00
30.39	126.12	2.00	0.00	0.48	0.00	30.47	133.50	2.00	0.00	0.48	0.00
30.55	137.59	2.00	0.00	0.48	0.00	30.61	138.20	2.00	0.00	0.48	0.00
30.66	134.41	2.00	0.00	0.48	0.00	30.72	130.07	2.00	0.00	0.48	0.00
30.81	126.28	2.00	0.00	0.48	0.00	30.85	124.44	2.00	0.00	0.48	0.00
30.91	120.14	2.00	0.00	0.48	0.00	31.00	114.63	2.00	0.00	0.47	0.00
31.05	107.99	2.00	0.00	0.47	0.00	31.11	103.64	2.00	0.00	0.47	0.00
31.20	98.67	2.00	0.00	0.47	0.00	31.26	94.36	2.00	0.00	0.47	0.00
31.31	91.52	2.00	0.00	0.47	0.00	31.38	90.46	2.00	0.00	0.47	0.00
31.46	89.70	2.00	0.00	0.47	0.00	31.50	90.13	2.00	0.00	0.47	0.00
31.60	90.97	2.00	0.00	0.46	0.00	31.65	91.15	2.00	0.00	0.46	0.00
31.74	89.81	2.00	0.00	0.46	0.00	31.80	87.20	2.00	0.00	0.46	0.00
31.85	84.17	2.00	0.00	0.46	0.00	31.89	80.60	2.00	0.00	0.46	0.00
32.00	77.51	2.00	0.00	0.46	0.00	32.04	74.54	2.00	0.00	0.46	0.00
32.09	71.25	2.00	0.00	0.46	0.00	32.19	68.40	2.00	0.00	0.45	0.00
32.23	66.66	2.00	0.00	0.45	0.00	32.29	67.69	2.00	0.00	0.45	0.00
32.37	69.19	2.00	0.00	0.45	0.00	32.44	71.97	2.00	0.00	0.45	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
32.49	73.87	2.00	0.00	0.45	0.00	32.58	75.53	2.00	0.00	0.45	0.00
32.62	76.21	2.00	0.00	0.45	0.00	32.69	78.15	2.00	0.00	0.45	0.00
32.78	79.77	2.00	0.00	0.44	0.00	32.82	81.47	2.00	0.00	0.44	0.00
32.89	83.18	2.00	0.00	0.44	0.00	32.97	85.28	2.00	0.00	0.44	0.00
33.02	87.78	2.00	0.00	0.44	0.00	33.09	90.20	2.00	0.00	0.44	0.00
33.15	92.48	2.00	0.00	0.44	0.00	33.20	94.57	2.00	0.00	0.44	0.00
33.27	97.84	2.00	0.00	0.44	0.00	33.38	101.85	2.00	0.00	0.43	0.00
33.43	105.85	2.00	0.00	0.43	0.00	33.47	108.68	2.00	0.00	0.43	0.00
33.57	110.40	2.00	0.00	0.43	0.00	33.63	111.60	2.00	0.00	0.43	0.00
33.70	112.77	2.00	0.00	0.43	0.00	33.74	115.20	2.00	0.00	0.43	0.00
33.82	117.88	2.00	0.00	0.43	0.00	33.86	120.59	2.00	0.00	0.43	0.00
33.93	122.38	2.00	0.00	0.42	0.00	34.02	123.75	2.00	0.00	0.42	0.00
34.06	124.74	2.00	0.00	0.42	0.00	34.13	125.90	2.00	0.00	0.42	0.00
34.21	127.03	2.00	0.00	0.42	0.00	34.28	127.69	2.00	0.00	0.42	0.00
34.32	127.67	2.00	0.00	0.42	0.00	34.41	127.25	2.00	0.00	0.42	0.00
34.46	126.63	2.00	0.00	0.42	0.00	34.52	125.34	2.00	0.00	0.41	0.00
34.61	124.19	2.00	0.00	0.41	0.00	34.65	122.92	2.00	0.00	0.41	0.00
34.71	121.81	2.00	0.00	0.41	0.00	34.79	120.05	2.00	0.00	0.41	0.00
34.86	117.73	2.00	0.00	0.41	0.00	34.93	114.96	2.00	0.00	0.41	0.00
35.01	111.20	2.00	0.00	0.41	0.00	35.06	107.37	2.00	0.00	0.41	0.00
35.10	103.32	2.00	0.00	0.41	0.00	35.18	101.01	2.00	0.00	0.40	0.00
35.26	100.19	2.00	0.00	0.40	0.00	35.34	101.20	2.00	0.00	0.40	0.00
35.40	102.56	2.00	0.00	0.40	0.00	35.44	104.20	2.00	0.00	0.40	0.00
35.51	105.63	2.00	0.00	0.40	0.00	35.58	106.40	2.00	0.00	0.40	0.00
35.66	106.77	2.00	0.00	0.40	0.00	35.71	107.23	2.00	0.00	0.39	0.00
35.77	107.70	2.00	0.00	0.39	0.00	35.84	106.62	2.00	0.00	0.39	0.00
35.92	104.11	2.00	0.00	0.39	0.00	35.97	100.65	2.00	0.00	0.39	0.00
36.03	98.07	2.00	0.00	0.39	0.00	36.11	96.74	2.00	0.00	0.39	0.00
36.16	96.93	2.00	0.00	0.39	0.00	36.26	97.50	2.00	0.00	0.39	0.00
36.31	97.03	2.00	0.00	0.38	0.00	36.36	94.78	2.00	0.00	0.38	0.00
36.43	91.25	2.00	0.00	0.38	0.00	36.51	88.05	2.00	0.00	0.38	0.00
36.55	84.88	2.00	0.00	0.38	0.00	36.65	82.97	2.00	0.00	0.38	0.00
36.71	81.37	2.00	0.00	0.38	0.00	36.76	83.59	2.00	0.00	0.38	0.00
36.85	87.05	2.00	0.00	0.38	0.00	36.89	91.67	2.00	0.00	0.37	0.00
36.96	92.84	2.00	0.00	0.37	0.00	37.02	93.51	2.00	0.00	0.37	0.00
37.11	93.53	2.00	0.00	0.37	0.00	37.15	96.38	2.00	0.00	0.37	0.00
37.24	99.37	2.00	0.00	0.37	0.00	37.30	102.77	2.00	0.00	0.37	0.00
37.35	106.79	2.00	0.00	0.37	0.00	37.42	112.56	2.00	0.00	0.37	0.00
37.51	118.46	2.00	0.00	0.36	0.00	37.55	123.39	2.00	0.00	0.36	0.00
37.60	123.83	2.00	0.00	0.36	0.00	37.67	120.29	2.00	0.00	0.36	0.00
37.74	112.00	2.00	0.00	0.36	0.00	37.81	100.13	2.00	0.00	0.36	0.00
37.88	88.88	2.00	0.00	0.36	0.00	37.93	81.56	2.00	0.00	0.36	0.00
38.00	84.64	2.00	0.00	0.36	0.00	38.08	96.56	2.00	0.00	0.35	0.00
38.14	110.63	2.00	0.00	0.35	0.00	38.20	119.42	2.00	0.00	0.35	0.00
38.26	124.28	2.00	0.00	0.35	0.00	38.34	132.94	2.00	0.00	0.35	0.00
38.43	142.05	2.00	0.00	0.35	0.00	38.45	153.19	0.64	0.57	0.35	0.00
38.53	161.80	0.73	0.43	0.35	0.00	38.62	169.98	0.83	0.32	0.35	0.00
38.65	176.86	0.92	0.23	0.34	0.00	38.72	182.27	0.99	0.17	0.34	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
38.80	187.97	1.07	0.13	0.34	0.00	38.88	192.18	1.14	0.12	0.34	0.00
38.92	196.90	1.22	0.09	0.34	0.00	39.01	201.12	2.00	0.00	0.34	0.00
39.07	204.73	2.00	0.00	0.34	0.00	39.12	207.30	2.00	0.00	0.34	0.00
39.20	209.62	2.00	0.00	0.34	0.00	39.27	211.91	2.00	0.00	0.33	0.00
39.31	214.72	2.00	0.00	0.33	0.00	39.38	218.25	2.00	0.00	0.33	0.00
39.45	222.40	2.00	0.00	0.33	0.00	39.51	226.05	2.00	0.00	0.33	0.00
39.57	228.27	2.00	0.00	0.33	0.00	39.64	229.82	2.00	0.00	0.33	0.00
39.72	231.56	2.00	0.00	0.33	0.00	39.79	233.91	2.00	0.00	0.33	0.00
39.84	236.60	2.00	0.00	0.32	0.00	39.90	236.51	2.00	0.00	0.32	0.00
39.96	231.71	2.00	0.00	0.32	0.00	40.05	223.09	2.00	0.00	0.32	0.00
40.13	215.81	2.00	0.00	0.32	0.00	40.17	210.98	2.00	0.00	0.32	0.00
40.26	207.51	2.00	0.00	0.32	0.00	40.31	204.93	2.00	0.00	0.32	0.00
40.36	204.59	2.00	0.00	0.32	0.00	40.43	204.01	2.00	0.00	0.31	0.00
40.51	200.93	2.00	0.00	0.31	0.00	40.56	191.34	1.13	0.11	0.31	0.00
40.64	179.50	0.96	0.16	0.31	0.00	40.70	170.03	0.83	0.29	0.31	0.00
40.75	165.82	0.78	0.30	0.31	0.00	40.83	165.38	0.78	0.30	0.31	0.00
40.88	162.18	0.74	0.38	0.31	0.00	40.95	160.30	0.72	0.38	0.31	0.00
41.03	165.29	0.77	0.30	0.30	0.00	41.08	171.37	0.85	0.28	0.30	0.00
41.15	175.41	0.90	0.21	0.30	0.00	41.24	178.09	0.94	0.20	0.30	0.00
41.27	178.59	0.95	0.20	0.30	0.00	41.35	183.50	1.02	0.15	0.30	0.00
41.41	186.21	1.06	0.11	0.30	0.00	41.48	182.79	1.01	0.15	0.30	0.00
41.55	176.61	0.92	0.20	0.30	0.00	41.63	170.40	2.00	0.00	0.29	0.00
41.68	166.57	2.00	0.00	0.29	0.00	41.74	162.90	2.00	0.00	0.29	0.00
41.83	159.38	2.00	0.00	0.29	0.00	41.87	156.12	2.00	0.00	0.29	0.00
41.98	154.37	2.00	0.00	0.29	0.00	42.02	154.06	2.00	0.00	0.29	0.00
42.09	155.11	2.00	0.00	0.29	0.00	42.14	157.79	2.00	0.00	0.29	0.00
42.22	160.78	2.00	0.00	0.28	0.00	42.29	163.79	2.00	0.00	0.28	0.00
42.38	165.50	2.00	0.00	0.28	0.00	42.41	166.67	2.00	0.00	0.28	0.00
42.46	168.19	2.00	0.00	0.28	0.00	42.57	170.31	0.84	0.26	0.28	0.00
42.61	173.01	0.88	0.19	0.28	0.00	42.68	174.53	0.90	0.19	0.28	0.00
42.76	175.26	0.91	0.19	0.28	0.00	42.80	175.07	0.90	0.19	0.27	0.00
42.87	174.62	0.90	0.19	0.27	0.00	42.92	173.57	0.88	0.19	0.27	0.00
42.98	172.25	0.87	0.19	0.27	0.00	43.06	170.76	0.85	0.25	0.27	0.00
43.11	169.45	0.83	0.25	0.27	0.00	43.18	167.26	0.80	0.26	0.27	0.00
43.26	160.87	0.73	0.33	0.27	0.00	43.32	154.10	0.66	0.35	0.27	0.00
43.39	149.54	0.61	0.45	0.26	0.00	43.45	151.17	2.00	0.00	0.26	0.00
43.52	152.70	2.00	0.00	0.26	0.00	43.61	150.30	2.00	0.00	0.26	0.00
43.64	143.06	2.00	0.00	0.26	0.00	43.70	132.98	2.00	0.00	0.26	0.00
43.79	122.86	2.00	0.00	0.26	0.00	43.84	115.59	2.00	0.00	0.26	0.00
43.90	111.12	2.00	0.00	0.26	0.00	43.97	107.79	2.00	0.00	0.25	0.00
44.05	105.49	2.00	0.00	0.25	0.00	44.10	106.74	2.00	0.00	0.25	0.00
44.18	110.95	2.00	0.00	0.25	0.00	44.24	116.47	2.00	0.00	0.25	0.00
44.30	120.24	2.00	0.00	0.25	0.00	44.38	124.39	2.00	0.00	0.25	0.00
44.45	128.23	2.00	0.00	0.25	0.00	44.49	132.93	2.00	0.00	0.25	0.00
44.56	136.25	2.00	0.00	0.24	0.00	44.64	138.36	2.00	0.00	0.24	0.00
44.72	137.96	2.00	0.00	0.24	0.00	44.79	136.45	2.00	0.00	0.24	0.00
44.84	138.48	2.00	0.00	0.24	0.00	44.92	142.85	2.00	0.00	0.24	0.00
44.96	148.41	2.00	0.00	0.24	0.00	45.03	149.82	2.00	0.00	0.24	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
45.09	141.26	2.00	0.00	0.24	0.00	45.19	127.48	2.00	0.00	0.23	0.00
45.23	114.20	2.00	0.00	0.23	0.00	45.28	110.71	2.00	0.00	0.23	0.00
45.38	114.77	2.00	0.00	0.23	0.00	45.43	120.01	2.00	0.00	0.23	0.00
45.48	121.55	2.00	0.00	0.23	0.00	45.58	123.87	2.00	0.00	0.23	0.00
45.62	128.66	2.00	0.00	0.23	0.00	45.67	135.83	2.00	0.00	0.23	0.00
45.78	145.58	2.00	0.00	0.22	0.00	45.82	157.07	2.00	0.00	0.22	0.00
45.88	164.64	2.00	0.00	0.22	0.00	45.98	170.46	2.00	0.00	0.22	0.00
46.02	171.42	2.00	0.00	0.22	0.00	46.07	164.27	2.00	0.00	0.22	0.00
46.17	154.53	2.00	0.00	0.22	0.00	46.21	145.68	2.00	0.00	0.22	0.00
46.27	141.12	0.54	0.38	0.22	0.00	46.37	138.65	0.52	0.38	0.21	0.00
46.39	137.22	0.51	0.39	0.21	0.00	46.47	140.58	2.00	0.00	0.21	0.00
46.57	145.36	2.00	0.00	0.21	0.00	46.62	150.35	2.00	0.00	0.21	0.00
46.67	152.98	2.00	0.00	0.21	0.00	46.77	153.26	2.00	0.00	0.21	0.00
46.81	151.15	2.00	0.00	0.21	0.00	46.90	147.88	2.00	0.00	0.21	0.00
46.92	145.69	2.00	0.00	0.20	0.00	47.01	145.48	2.00	0.00	0.20	0.00
47.05	145.37	2.00	0.00	0.20	0.00	47.12	145.75	2.00	0.00	0.20	0.00
47.21	147.74	2.00	0.00	0.20	0.00	47.28	150.65	2.00	0.00	0.20	0.00
47.32	153.73	2.00	0.00	0.20	0.00	47.40	155.22	2.00	0.00	0.20	0.00
47.45	153.26	2.00	0.00	0.20	0.00	47.55	151.16	2.00	0.00	0.19	0.00
47.58	150.72	2.00	0.00	0.19	0.00	47.66	153.64	2.00	0.00	0.19	0.00
47.74	154.74	2.00	0.00	0.19	0.00	47.80	151.94	2.00	0.00	0.19	0.00
47.85	146.09	2.00	0.00	0.19	0.00	47.93	141.11	2.00	0.00	0.19	0.00
47.98	138.25	0.52	0.33	0.19	0.00	48.04	138.01	0.52	0.33	0.19	0.00
48.11	138.96	0.53	0.33	0.18	0.00	48.20	140.05	0.54	0.32	0.18	0.00
48.24	139.70	0.54	0.32	0.18	0.00	48.30	137.11	0.51	0.33	0.18	0.00
48.39	134.22	0.49	0.33	0.18	0.00	48.44	133.12	0.48	0.33	0.18	0.00
48.53	133.10	0.48	0.33	0.18	0.00	48.59	133.23	0.48	0.33	0.18	0.00
48.63	133.75	0.49	0.32	0.18	0.00	48.70	135.51	0.50	0.32	0.17	0.00
48.78	137.62	0.52	0.31	0.17	0.00	48.82	139.54	0.54	0.31	0.17	0.00
48.89	141.09	0.55	0.30	0.17	0.00	48.98	141.92	0.56	0.30	0.17	0.00
49.05	142.01	2.00	0.00	0.17	0.00	49.09	140.67	2.00	0.00	0.17	0.00
49.16	138.35	2.00	0.00	0.17	0.00	49.23	136.14	2.00	0.00	0.17	0.00
49.31	135.25	2.00	0.00	0.16	0.00	49.38	135.29	2.00	0.00	0.16	0.00
49.43	136.59	2.00	0.00	0.16	0.00	49.52	137.85	0.52	0.29	0.16	0.00
49.58	138.95	0.53	0.28	0.16	0.00	49.63	138.19	0.53	0.28	0.16	0.00
49.71	133.96	0.49	0.29	0.16	0.00	49.77	127.27	0.44	0.30	0.16	0.00
49.82	120.79	2.00	0.00	0.16	0.00	49.88	118.88	2.00	0.00	0.15	0.00
49.97	121.37	2.00	0.00	0.15	0.00	50.01	126.84	2.00	0.00	0.15	0.00
50.07	132.51	2.00	0.00	0.15	0.00	50.17	137.52	2.00	0.00	0.15	0.00
50.22	138.02	2.00	0.00	0.15	0.00	50.29	135.28	0.51	0.27	0.15	0.00
50.37	133.84	0.49	0.27	0.15	0.00	50.42	135.81	0.51	0.26	0.15	0.00
50.47	138.65	0.54	0.26	0.14	0.00	50.57	138.22	0.53	0.26	0.14	0.00
50.63	137.18	0.52	0.26	0.14	0.00	50.68	134.52	2.00	0.00	0.14	0.00
50.73	134.89	2.00	0.00	0.14	0.00	50.79	132.34	2.00	0.00	0.14	0.00
50.88	126.49	2.00	0.00	0.14	0.00	50.93	115.71	2.00	0.00	0.14	0.00
51.03	105.98	2.00	0.00	0.14	0.00	51.07	98.64	2.00	0.00	0.13	0.00
51.13	93.09	2.00	0.00	0.13	0.00	51.23	86.54	2.00	0.00	0.13	0.00
51.27	79.39	2.00	0.00	0.13	0.00	51.33	74.31	2.00	0.00	0.13	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
51.42	69.27	2.00	0.00	0.13	0.00	51.48	65.19	2.00	0.00	0.13	0.00
51.52	63.19	2.00	0.00	0.13	0.00	51.59	63.92	2.00	0.00	0.13	0.00
51.68	65.67	2.00	0.00	0.12	0.00	51.72	69.61	2.00	0.00	0.12	0.00
51.81	73.12	2.00	0.00	0.12	0.00	51.87	75.87	2.00	0.00	0.12	0.00
51.91	76.95	2.00	0.00	0.12	0.00	51.98	78.43	2.00	0.00	0.12	0.00
52.07	80.51	2.00	0.00	0.12	0.00	52.10	82.16	2.00	0.00	0.12	0.00
52.17	82.52	2.00	0.00	0.12	0.00	52.24	81.84	2.00	0.00	0.11	0.00
52.30	79.87	2.00	0.00	0.11	0.00	52.37	76.53	2.00	0.00	0.11	0.00
52.46	72.79	2.00	0.00	0.11	0.00	52.51	70.03	2.00	0.00	0.11	0.00
52.56	67.62	2.00	0.00	0.11	0.00	52.66	65.60	2.00	0.00	0.11	0.00
52.71	64.17	2.00	0.00	0.11	0.00	52.78	63.72	2.00	0.00	0.11	0.00
52.86	63.35	2.00	0.00	0.10	0.00	52.91	63.09	2.00	0.00	0.10	0.00
52.99	62.95	2.00	0.00	0.10	0.00	53.06	62.88	2.00	0.00	0.10	0.00
53.09	62.88	2.00	0.00	0.10	0.00	53.16	62.61	2.00	0.00	0.10	0.00
53.25	62.13	2.00	0.00	0.10	0.00	53.29	61.52	2.00	0.00	0.10	0.00
53.36	61.45	2.00	0.00	0.10	0.00	53.45	61.62	2.00	0.00	0.09	0.00
53.50	61.97	2.00	0.00	0.09	0.00	53.55	62.11	2.00	0.00	0.09	0.00
53.64	62.15	2.00	0.00	0.09	0.00	53.69	62.24	2.00	0.00	0.09	0.00
53.76	62.31	2.00	0.00	0.09	0.00	53.84	62.40	2.00	0.00	0.09	0.00
53.88	62.21	2.00	0.00	0.09	0.00	53.96	61.99	2.00	0.00	0.09	0.00
54.03	62.25	2.00	0.00	0.08	0.00	54.08	63.82	2.00	0.00	0.08	0.00
54.17	65.33	2.00	0.00	0.08	0.00	54.23	66.43	2.00	0.00	0.08	0.00
54.27	66.33	2.00	0.00	0.08	0.00	54.38	66.21	2.00	0.00	0.08	0.00
54.42	65.89	2.00	0.00	0.08	0.00	54.47	65.40	2.00	0.00	0.08	0.00
54.53	64.53	2.00	0.00	0.08	0.00	54.60	63.26	2.00	0.00	0.07	0.00
54.68	61.69	2.00	0.00	0.07	0.00	54.73	60.40	2.00	0.00	0.07	0.00
54.80	59.66	2.00	0.00	0.07	0.00	54.88	59.81	2.00	0.00	0.07	0.00
54.95	60.73	2.00	0.00	0.07	0.00	55.02	62.11	2.00	0.00	0.07	0.00
55.07	63.43	2.00	0.00	0.07	0.00	55.15	64.48	2.00	0.00	0.07	0.00
55.21	65.27	2.00	0.00	0.06	0.00	55.27	65.98	2.00	0.00	0.06	0.00
55.34	66.54	2.00	0.00	0.06	0.00	55.42	66.95	2.00	0.00	0.06	0.00
55.47	66.55	2.00	0.00	0.06	0.00	55.54	65.73	2.00	0.00	0.06	0.00
55.62	64.92	2.00	0.00	0.06	0.00	55.65	65.55	2.00	0.00	0.06	0.00
55.72	68.90	2.00	0.00	0.06	0.00	55.81	72.51	2.00	0.00	0.05	0.00
55.84	75.34	2.00	0.00	0.05	0.00	55.91	76.24	2.00	0.00	0.05	0.00
55.98	77.76	2.00	0.00	0.05	0.00	56.05	80.81	2.00	0.00	0.05	0.00
56.11	89.31	2.00	0.00	0.05	0.00	56.21	98.48	2.00	0.00	0.05	0.00
56.26	105.76	2.00	0.00	0.05	0.00	56.31	103.91	2.00	0.00	0.05	0.00
56.39	99.45	2.00	0.00	0.04	0.00	56.45	95.72	2.00	0.00	0.04	0.00
56.50	96.32	2.00	0.00	0.04	0.00	56.60	98.89	2.00	0.00	0.04	0.00
56.65	102.15	2.00	0.00	0.04	0.00	56.72	104.69	0.32	0.09	0.04	0.00
56.78	107.26	2.00	0.00	0.04	0.00	56.87	110.30	2.00	0.00	0.04	0.00
56.93	113.42	2.00	0.00	0.04	0.00	56.97	114.07	2.00	0.00	0.03	0.00
57.05	112.87	2.00	0.00	0.03	0.00	57.11	111.57	2.00	0.00	0.03	0.00
57.17	111.10	2.00	0.00	0.03	0.00	57.25	109.92	2.00	0.00	0.03	0.00
57.31	107.37	2.00	0.00	0.03	0.00	57.37	104.53	2.00	0.00	0.03	0.00
57.42	101.73	2.00	0.00	0.03	0.00	57.48	98.36	2.00	0.00	0.03	0.00
57.56	93.14	2.00	0.00	0.02	0.00	57.64	86.57	2.00	0.00	0.02	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
57.70	80.19	2.00	0.00	0.02	0.00	57.74	75.91	2.00	0.00	0.02	0.00
57.81	73.24	2.00	0.00	0.02	0.00	57.90	71.07	2.00	0.00	0.02	0.00
57.95	68.25	2.00	0.00	0.02	0.00	58.06	66.68	2.00	0.00	0.02	0.00
58.09	65.68	2.00	0.00	0.02	0.00	58.15	66.66	2.00	0.00	0.01	0.00
58.20	71.54	2.00	0.00	0.01	0.00	58.29	77.45	2.00	0.00	0.01	0.00
58.33	82.03	2.00	0.00	0.01	0.00	58.40	79.94	2.00	0.00	0.01	0.00
58.48	74.75	2.00	0.00	0.01	0.00	58.55	69.08	0.19	0.02	0.01	0.00
58.60	68.92	0.19	0.02	0.01	0.00	58.66	71.14	2.00	0.00	0.01	0.00
58.75	74.07	2.00	0.00	0.00	0.00	58.80	74.52	2.00	0.00	0.00	0.00
58.88	71.80	2.00	0.00	0.00	0.00	58.97	68.47	2.00	0.00	0.00	0.00
59.02	64.84	2.00	0.00	0.00	0.00	59.06	63.37	2.00	0.00	0.00	0.00
59.12	62.53	2.00	0.00	0.00	0.00	59.20	61.90	2.00	0.00	0.00	0.00
59.26	61.81	2.00	0.00	0.00	0.00	59.35	61.33	2.00	0.00	0.00	0.00
59.41	61.04	2.00	0.00	0.00	0.00	59.46	61.02	2.00	0.00	0.00	0.00
59.52	62.29	2.00	0.00	0.00	0.00	59.61	64.51	2.00	0.00	0.00	0.00
59.68	67.09	2.00	0.00	0.00	0.00	59.72	69.11	2.00	0.00	0.00	0.00
59.78	70.18	2.00	0.00	0.00	0.00	59.86	70.38	2.00	0.00	0.00	0.00
59.91	70.19	2.00	0.00	0.00	0.00	60.01	69.95	2.00	0.00	0.00	0.00
60.06	69.78	2.00	0.00	0.00	0.00	60.15	57.66	2.00	0.00	0.00	0.00
60.19	42.91	0.15	0.00	0.00	0.00	60.26	-1.00	2.00	0.00	0.00	0.00
60.35	-1.00	2.00	0.00	0.00	0.00	60.40	-1.00	2.00	0.00	0.00	0.00
60.45	-1.00	2.00	0.00	0.00	0.00	60.51	-1.00	2.00	0.00	0.00	0.00

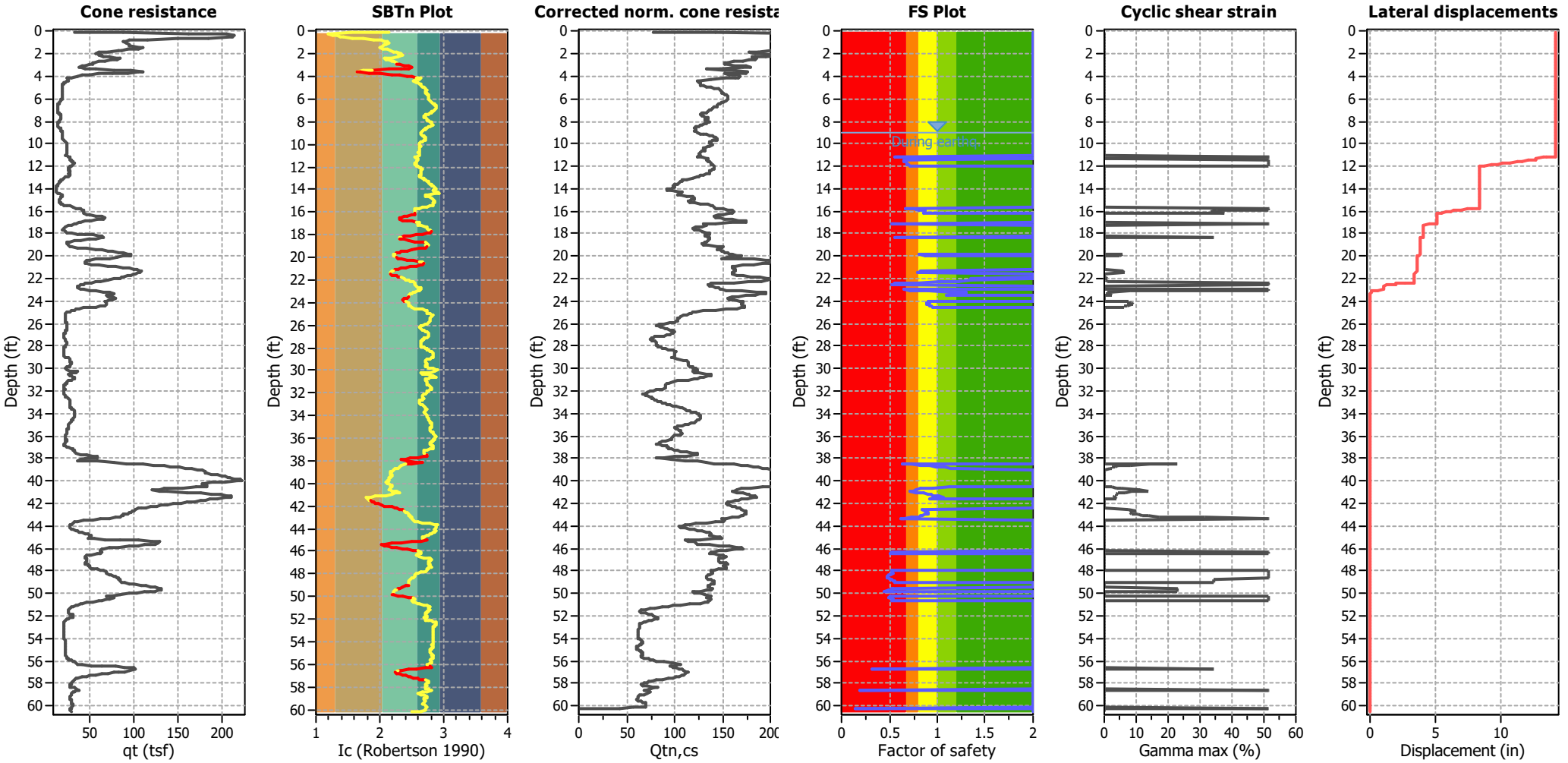
Total estimated settlement: 0.48

Abbreviations

$Q_{tn,cs}$:	Equivalent clean sand normalized cone resistance
FS:	Factor of safety against liquefaction
e_v (%):	Post-liquefaction volumentric strain
DF:	e_v depth weighting factor
Settlement:	Calculated settlement

Estimation of post-earthquake lateral Displacements

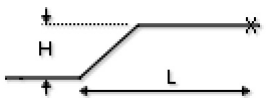
Geometric parameters: Level ground (or gently sloping) with free face (L: 90.00 ft - H: 12.00 ft)



Abbreviations

q_t: Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c: Soil Behaviour Type Index
$Q_{tn,cs}$: Equivalent clean sand normalized CPT total cone resistance
F.S.: Factor of safety
γ_{max}: Maximum cyclic shear strain
LDI: Lateral displacement index

Surface condition



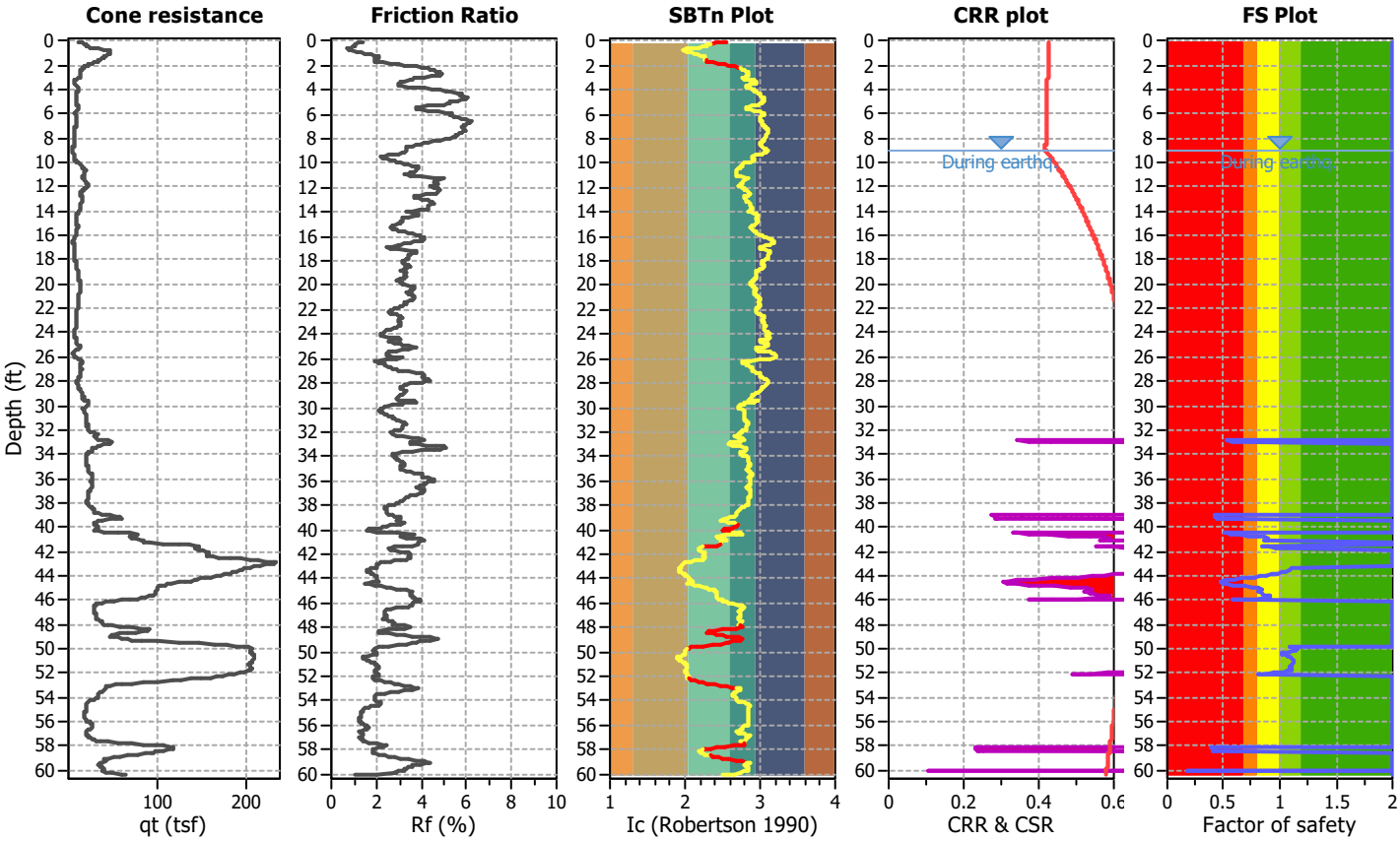
LIQUEFACTION ANALYSIS REPORT

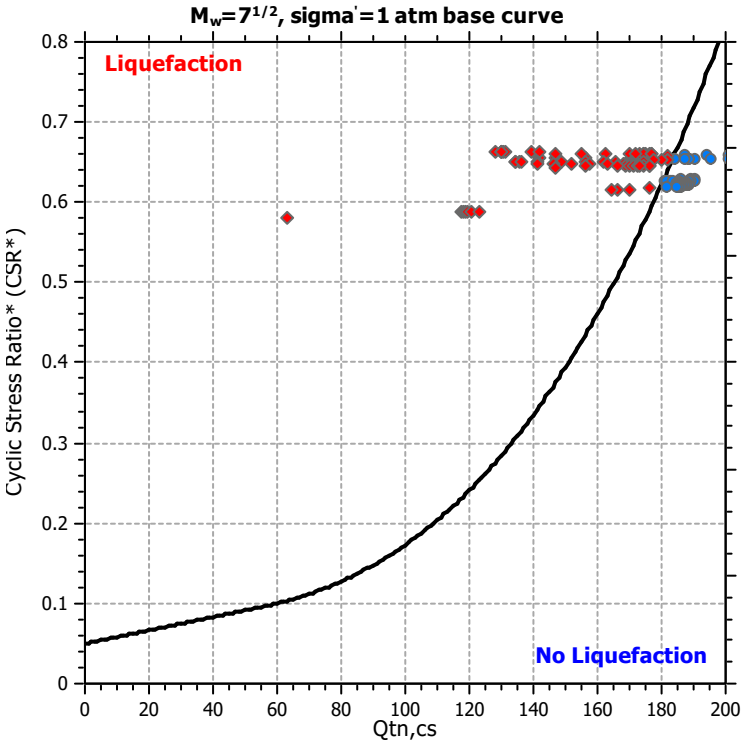
Project title : Geocon West / 21611 Perry Street **Location : Carson, CA**

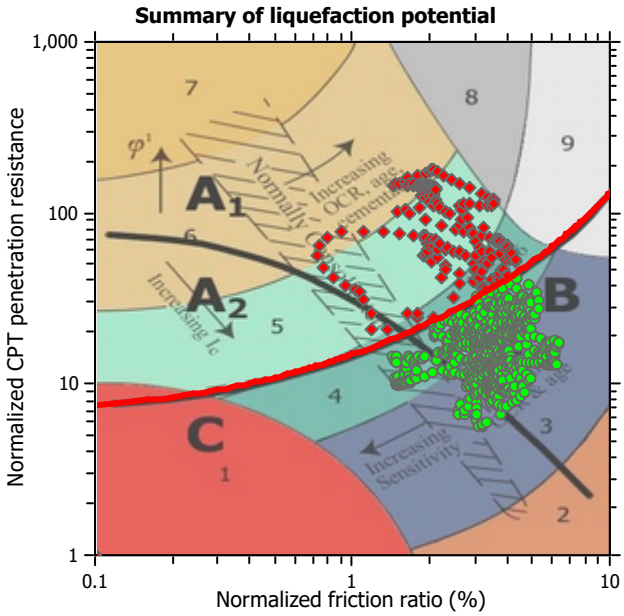
CPT file : CPT-2

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	12.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	9.00 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:	6.87	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.82	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

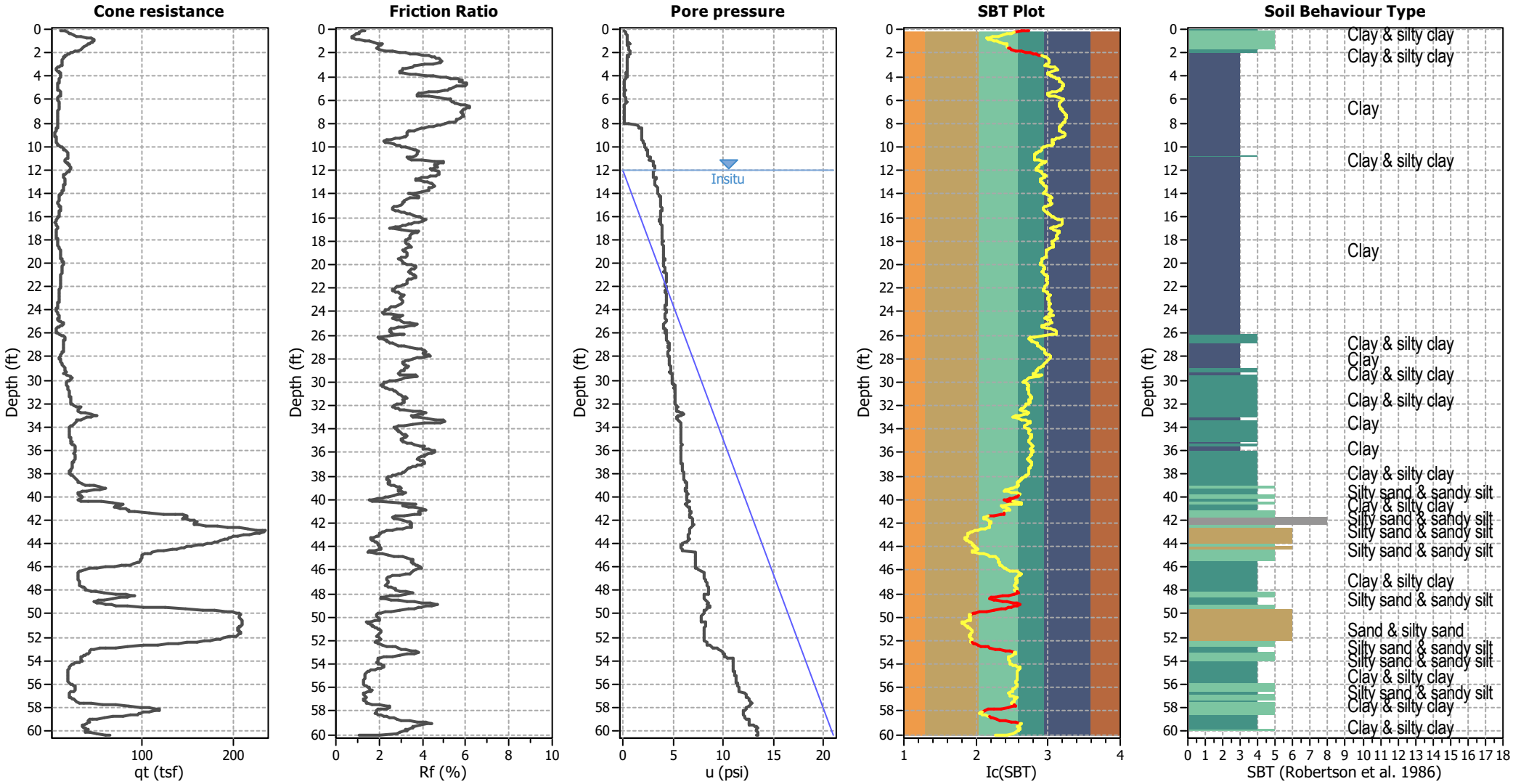






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



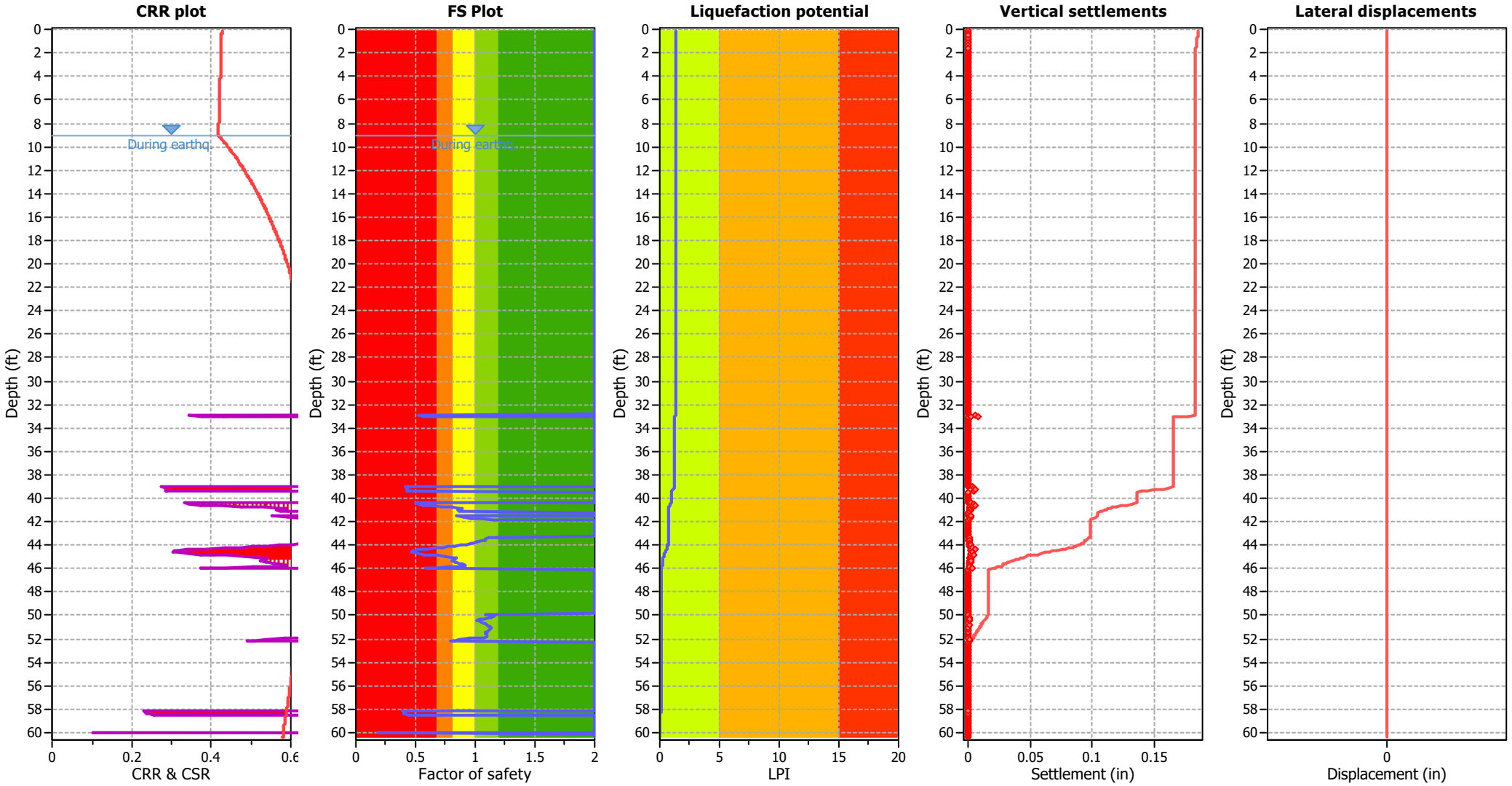
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	9.00 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:	6.87	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.82	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	12.00 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

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	9.00 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:	6.87	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.82	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	12.00 ft	Fill height:	N/A	Limit depth:	N/A

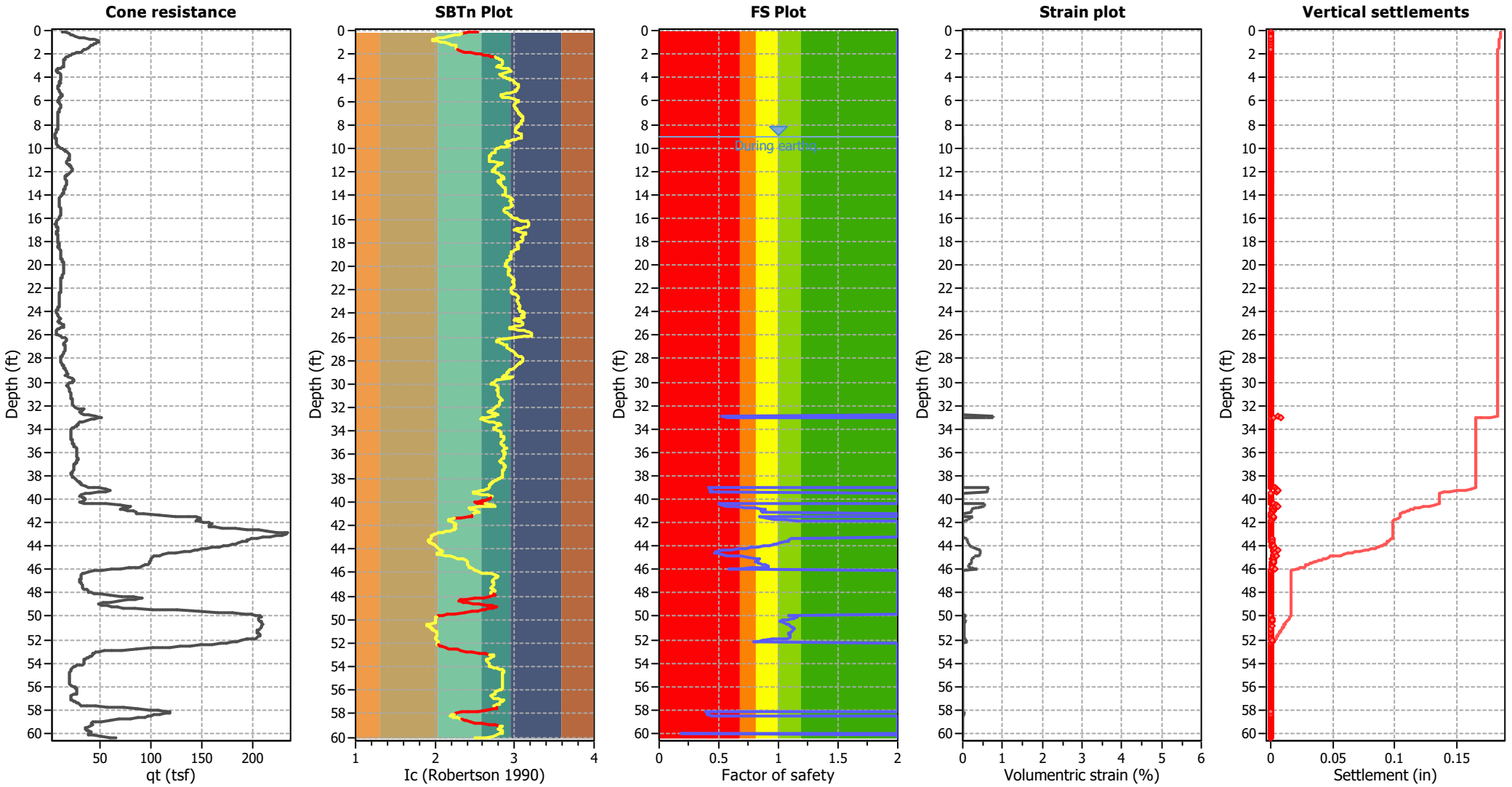
F.S. color scheme

- 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

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

:: Post-earthquake settlement of dry sands ::

Depth (ft)	Ic	Q_{tn}	Kc	$Q_{tn,cs}$	$N_{1,60}$ (blows)	G_{max} (tsf)	CSR	Shear, γ (%)	$e_{vol(15)}$ (%)	N_c	e_v (%)	Settle. (in)
0.10	2.54	20.81	3.29	68.55	0	0	0.43	0.000	0.00	0.00	0.00	0.000
0.16	2.43	26.08	2.53	66.02	0	0	0.43	0.000	0.00	0.00	0.00	0.000
0.21	2.34	31.59	2.08	65.69	0	0	0.43	0.000	0.00	0.00	0.00	0.000
0.29	2.30	34.80	1.91	66.50	0	0	0.43	0.000	0.00	0.00	0.00	0.000
0.36	2.28	35.89	1.85	66.32	15	360	0.43	0.005	0.01	9.85	0.01	0.000
0.40	2.24	37.52	1.73	64.73	15	359	0.43	0.006	0.01	9.85	0.01	0.000
0.51	2.17	41.87	1.55	65.07	15	368	0.43	0.008	0.01	9.85	0.01	0.000
0.57	2.11	47.81	1.43	68.19	15	385	0.43	0.008	0.01	9.85	0.01	0.000
0.61	2.04	56.15	1.34	75.23	16	414	0.43	0.008	0.01	9.85	0.01	0.000
0.69	1.99	64.82	1.30	84.03	17	449	0.43	0.008	0.01	9.85	0.01	0.000
0.76	1.96	72.20	1.28	92.36	19	486	0.43	0.008	0.01	9.85	0.01	0.000
0.81	1.97	77.09	1.29	99.17	20	526	0.43	0.007	0.01	9.85	0.01	0.000
0.87	2.02	77.75	1.33	103.15	22	564	0.43	0.007	0.01	9.85	0.01	0.000
0.96	2.07	77.31	1.38	106.79	23	597	0.43	0.007	0.01	9.85	0.01	0.000
1.00	2.12	75.92	1.45	110.13	24	623	0.43	0.007	0.01	9.85	0.00	0.000
1.05	2.16	74.19	1.53	113.67	25	644	0.43	0.007	0.01	9.85	0.00	0.000
1.16	2.21	71.93	1.63	117.43	27	659	0.43	0.008	0.01	9.85	0.00	0.000
1.20	2.25	69.15	1.74	120.42	28	666	0.43	0.008	0.01	9.85	0.00	0.000
1.26	2.26	67.03	1.78	119.18	28	655	0.43	0.009	0.01	9.85	0.01	0.000
1.35	2.26	65.34	1.78	116.19	27	639	0.43	0.011	0.01	9.85	0.01	0.000
1.40	2.25	63.75	1.77	112.64	26	620	0.43	0.012	0.01	9.85	0.01	0.000
1.45	2.26	61.07	1.79	109.57	25	601	0.43	0.013	0.01	9.85	0.01	0.000
1.55	2.27	58.52	1.83	106.91	25	583	0.43	0.016	0.01	9.85	0.01	0.000
1.60	2.28	56.74	1.84	104.63	24	569	0.43	0.018	0.01	9.85	0.01	0.000
1.64	2.28	56.16	1.87	104.84	0	0	0.43	0.000	0.00	0.00	0.00	0.000
1.71	2.32	53.95	1.98	106.97	0	0	0.43	0.000	0.00	0.00	0.00	0.000
1.79	2.37	49.72	2.24	111.53	0	0	0.42	0.000	0.00	0.00	0.00	0.000
1.87	2.45	44.20	2.67	117.82	0	0	0.42	0.000	0.00	0.00	0.00	0.000
1.95	2.52	39.45	3.15	124.10	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.00	2.58	36.18	3.57	129.07	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.04	2.62	34.20	3.89	133.18	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.11	2.66	31.85	4.32	137.73	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.19	2.71	29.59	4.79	141.66	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.24	2.75	27.48	5.25	144.22	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.30	2.77	26.18	5.54	145.06	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.38	2.80	25.06	5.82	145.82	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.44	2.82	24.14	6.07	146.57	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.50	2.83	23.42	6.28	147.16	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.58	2.85	22.84	6.46	147.43	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.64	2.85	22.50	6.54	147.11	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.69	2.85	22.40	6.57	147.11	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.79	2.86	22.34	6.57	146.82	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.85	2.85	22.44	6.50	145.79	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.90	2.83	22.67	6.20	140.49	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.98	2.80	22.75	5.86	133.23	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.04	2.78	22.55	5.55	125.22	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.09	2.80	20.45	5.85	119.61	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.17	2.85	17.37	6.56	113.95	0	0	0.42	0.000	0.00	0.00	0.00	0.000

:: Post-earthquake settlement of dry sands :: (continued)

Depth (ft)	Ic	Q_{tn}	Kc	$Q_{tn,cs}$	$N_{1,60}$ (blows)	G_{max} (tsf)	CSR	Shear, γ (%)	$e_{vol(15)}$ (%)	N_c	e_v (%)	Settle. (in)
3.24	2.92	14.30	7.47	106.82	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.29	2.93	12.95	7.68	99.44	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.36	2.94	12.22	7.81	95.40	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.44	2.95	11.78	7.99	94.15	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.48	2.94	12.25	7.75	94.89	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.56	2.88	13.97	6.93	96.86	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.64	2.83	15.88	6.30	100.03	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.69	2.82	17.42	6.04	105.25	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.76	2.82	18.27	6.14	112.26	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.84	2.84	18.84	6.34	119.40	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.88	2.87	18.94	6.72	127.20	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.98	2.89	18.88	7.06	133.29	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.03	2.91	18.83	7.38	138.86	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.08	2.93	18.63	7.65	142.59	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.14	2.95	18.33	7.91	144.96	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.23	2.98	17.37	8.49	147.46	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.27	3.00	17.02	8.72	148.39	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.36	3.00	16.87	8.82	148.82	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.41	2.99	17.20	8.61	148.11	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.46	3.00	16.72	8.85	147.96	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.55	3.02	16.04	9.20	147.61	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.61	3.04	15.36	9.55	146.73	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.66	3.05	14.93	9.73	145.20	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.75	3.06	14.63	9.80	143.36	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.79	3.05	14.53	9.71	141.05	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.86	3.04	14.48	9.53	138.02	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.96	3.03	14.51	9.34	135.54	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.01	3.02	14.56	9.22	134.16	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.06	3.02	14.80	9.08	134.34	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.16	3.01	15.03	8.94	134.36	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.21	2.99	15.60	8.56	133.53	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.26	2.95	16.60	7.92	131.47	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.32	2.90	17.99	7.14	128.44	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.41	2.85	19.22	6.52	125.42	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.46	2.83	19.89	6.20	123.28	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.52	2.82	19.88	6.13	121.95	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.60	2.84	19.16	6.36	121.79	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.66	2.87	17.91	6.84	122.48	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.71	2.93	16.32	7.65	124.79	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.80	2.99	14.78	8.62	127.45	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.89	3.04	13.77	9.42	129.66	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.91	3.06	13.38	9.79	131.07	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.00	3.05	13.75	9.60	132.09	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.06	3.03	14.27	9.38	133.90	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.11	3.02	14.99	9.12	136.80	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.20	3.01	15.61	8.95	139.73	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.24	3.00	16.37	8.73	143.03	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.30	2.99	16.99	8.61	146.32	0	0	0.42	0.000	0.00	0.00	0.00	0.000

:: Post-earthquake settlement of dry sands :: (continued)

Depth (ft)	Ic	Q_{tn}	Kc	$Q_{tn,cs}$	$N_{1,60}$ (blows)	G_{max} (tsf)	CSR	Shear, γ (%)	$e_{vol(15)}$ (%)	N_c	e_v (%)	Settle. (in)
6.38	2.99	17.46	8.64	150.85	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.46	3.00	17.64	8.77	154.65	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.50	3.01	17.49	8.94	156.44	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.60	3.02	17.20	9.08	156.13	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.63	3.02	16.81	9.18	154.25	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.71	3.03	16.47	9.22	151.86	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.80	3.03	16.08	9.28	149.18	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.84	3.03	15.65	9.38	146.79	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.90	3.05	15.06	9.58	144.33	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.00	3.06	14.52	9.79	142.24	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.04	3.06	14.13	9.93	140.40	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.09	3.07	13.79	10.12	139.55	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.20	3.08	13.54	10.26	138.91	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.24	3.09	13.21	10.49	138.58	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.30	3.10	13.01	10.60	137.90	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.39	3.10	12.82	10.70	137.18	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.43	3.10	12.72	10.71	136.15	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.50	3.10	12.71	10.61	134.92	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.59	3.10	12.70	10.52	133.65	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.63	3.09	12.70	10.44	132.63	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.70	3.09	12.69	10.43	132.34	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.79	3.09	12.69	10.42	132.22	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.83	3.08	12.78	10.32	131.91	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.90	3.08	12.87	10.20	131.32	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.94	3.06	13.05	9.93	129.63	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.03	3.06	13.05	9.76	127.41	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.11	3.04	13.05	9.57	124.87	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.17	3.03	13.10	9.37	122.80	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.21	3.02	13.10	9.19	120.40	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.28	3.01	12.95	9.03	116.96	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.37	3.01	12.62	8.98	113.34	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.41	3.01	12.28	8.95	109.84	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.48	3.01	11.84	8.99	106.42	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.57	3.02	11.35	9.05	102.77	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.61	3.02	10.77	9.19	98.97	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.67	3.04	10.14	9.46	95.91	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.77	3.06	9.46	9.88	93.50	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.81	3.08	9.03	10.19	92.05	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.87	3.09	8.79	10.40	91.40	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.96	3.09	8.73	10.42	91.00	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.99	3.09	8.68	10.49	91.09	0	0	0.42	0.000	0.00	0.00	0.00	0.000

:: Post-earthquake settlement of dry sands :: (continued)

Depth (ft)	Ic	Q_{tn}	Kc	$Q_{tn,cs}$	$N_{1,60}$ (blows)	G_{max} (tsf)	CSR	Shear, γ (%)	$e_{vol(15)}$ (%)	N_c	e_v (%)	Settle. (in)

Total estimated settlement: 0.00

Abbreviations

Q_{tn}: Equivalent clean sand normalized cone resistance
K_c: Fines correction factor
$Q_{tn,cs}$: Post-liquefaction volumentric strain
G_{max}: Small strain shear modulus
CSR: Soil cyclic stress ratio
γ: Cyclic shear strain
$e_{vol(15)}$: Volumetric strain after 15 cycles
N_c: Equivalent number of cycles
e_v: Volumetric strain
Settle.: Calculated settlement

:: Post-earthquake settlement due to soil liquefaction ::

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
9.07	90.92	2.00	0.00	0.85	0.00	9.16	90.74	2.00	0.00	0.84	0.00
9.21	90.22	2.00	0.00	0.84	0.00	9.27	88.51	2.00	0.00	0.84	0.00
9.36	86.28	2.00	0.00	0.84	0.00	9.40	83.12	2.00	0.00	0.84	0.00
9.48	81.30	2.00	0.00	0.84	0.00	9.52	80.76	2.00	0.00	0.84	0.00
9.61	81.79	2.00	0.00	0.84	0.00	9.65	84.63	2.00	0.00	0.84	0.00
9.72	89.35	2.00	0.00	0.84	0.00	9.81	94.10	2.00	0.00	0.83	0.00
9.86	98.09	2.00	0.00	0.83	0.00	9.91	102.65	2.00	0.00	0.83	0.00
10.00	107.24	2.00	0.00	0.83	0.00	10.05	114.83	2.00	0.00	0.83	0.00
10.16	120.39	2.00	0.00	0.83	0.00	10.20	126.23	2.00	0.00	0.83	0.00
10.25	130.39	2.00	0.00	0.83	0.00	10.31	134.74	2.00	0.00	0.83	0.00
10.40	136.69	2.00	0.00	0.82	0.00	10.44	137.05	2.00	0.00	0.82	0.00
10.51	137.43	2.00	0.00	0.82	0.00	10.59	138.77	2.00	0.00	0.82	0.00
10.65	139.23	2.00	0.00	0.82	0.00	10.71	137.16	2.00	0.00	0.82	0.00
10.79	132.74	2.00	0.00	0.82	0.00	10.85	128.41	2.00	0.00	0.82	0.00
10.90	124.65	2.00	0.00	0.82	0.00	10.96	126.65	2.00	0.00	0.81	0.00
11.04	130.40	2.00	0.00	0.81	0.00	11.10	139.29	2.00	0.00	0.81	0.00
11.18	148.31	2.00	0.00	0.81	0.00	11.24	154.68	2.00	0.00	0.81	0.00
11.30	157.18	2.00	0.00	0.81	0.00	11.35	156.10	2.00	0.00	0.81	0.00
11.42	155.72	2.00	0.00	0.81	0.00	11.51	154.90	2.00	0.00	0.80	0.00
11.55	155.90	2.00	0.00	0.80	0.00	11.62	158.76	2.00	0.00	0.80	0.00
11.71	160.80	2.00	0.00	0.80	0.00	11.75	159.64	2.00	0.00	0.80	0.00
11.85	156.75	2.00	0.00	0.80	0.00	11.90	154.56	2.00	0.00	0.80	0.00
11.94	155.07	2.00	0.00	0.80	0.00	12.02	156.61	2.00	0.00	0.80	0.00
12.10	157.56	2.00	0.00	0.79	0.00	12.15	156.24	2.00	0.00	0.79	0.00
12.24	153.54	2.00	0.00	0.79	0.00	12.30	150.31	2.00	0.00	0.79	0.00
12.35	146.77	2.00	0.00	0.79	0.00	12.44	142.69	2.00	0.00	0.79	0.00
12.50	137.70	2.00	0.00	0.79	0.00	12.55	133.40	2.00	0.00	0.79	0.00
12.63	128.93	2.00	0.00	0.79	0.00	12.70	126.18	2.00	0.00	0.78	0.00
12.74	125.60	2.00	0.00	0.78	0.00	12.84	126.95	2.00	0.00	0.78	0.00
12.86	130.85	2.00	0.00	0.78	0.00	12.94	134.96	2.00	0.00	0.78	0.00
13.01	138.89	2.00	0.00	0.78	0.00	13.09	140.67	2.00	0.00	0.78	0.00
13.14	141.11	2.00	0.00	0.78	0.00	13.20	141.13	2.00	0.00	0.78	0.00
13.29	141.08	2.00	0.00	0.77	0.00	13.33	139.49	2.00	0.00	0.77	0.00
13.39	136.94	2.00	0.00	0.77	0.00	13.49	134.11	2.00	0.00	0.77	0.00
13.53	132.84	2.00	0.00	0.77	0.00	13.59	132.30	2.00	0.00	0.77	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
13.69	131.76	2.00	0.00	0.77	0.00	13.72	131.16	2.00	0.00	0.77	0.00
13.79	125.53	2.00	0.00	0.77	0.00	13.89	117.72	2.00	0.00	0.76	0.00
13.94	111.55	2.00	0.00	0.76	0.00	13.99	111.88	2.00	0.00	0.76	0.00
14.08	114.22	2.00	0.00	0.76	0.00	14.13	114.22	2.00	0.00	0.76	0.00
14.18	115.16	2.00	0.00	0.76	0.00	14.27	113.07	2.00	0.00	0.76	0.00
14.32	110.68	2.00	0.00	0.76	0.00	14.37	105.23	2.00	0.00	0.76	0.00
14.48	102.53	2.00	0.00	0.75	0.00	14.52	100.31	2.00	0.00	0.75	0.00
14.57	99.02	2.00	0.00	0.75	0.00	14.68	99.19	2.00	0.00	0.75	0.00
14.72	98.42	2.00	0.00	0.75	0.00	14.77	97.72	2.00	0.00	0.75	0.00
14.83	97.66	2.00	0.00	0.75	0.00	14.92	97.14	2.00	0.00	0.75	0.00
14.98	96.05	2.00	0.00	0.75	0.00	15.07	94.90	2.00	0.00	0.74	0.00
15.11	93.79	2.00	0.00	0.74	0.00	15.17	92.70	2.00	0.00	0.74	0.00
15.27	92.22	2.00	0.00	0.74	0.00	15.31	93.00	2.00	0.00	0.74	0.00
15.38	94.83	2.00	0.00	0.74	0.00	15.47	97.01	2.00	0.00	0.74	0.00
15.52	99.20	2.00	0.00	0.74	0.00	15.56	101.67	2.00	0.00	0.74	0.00
15.64	103.94	2.00	0.00	0.73	0.00	15.71	106.24	2.00	0.00	0.73	0.00
15.75	109.08	2.00	0.00	0.73	0.00	15.87	110.12	2.00	0.00	0.73	0.00
15.91	110.61	2.00	0.00	0.73	0.00	15.96	110.44	2.00	0.00	0.73	0.00
16.01	109.69	2.00	0.00	0.73	0.00	16.11	108.68	2.00	0.00	0.73	0.00
16.15	106.59	2.00	0.00	0.73	0.00	16.22	103.67	2.00	0.00	0.73	0.00
16.31	100.00	2.00	0.00	0.72	0.00	16.36	96.55	2.00	0.00	0.72	0.00
16.41	93.22	2.00	0.00	0.72	0.00	16.51	90.50	2.00	0.00	0.72	0.00
16.54	88.62	2.00	0.00	0.72	0.00	16.61	87.90	2.00	0.00	0.72	0.00
16.70	87.49	2.00	0.00	0.72	0.00	16.75	87.67	2.00	0.00	0.72	0.00
16.81	85.89	2.00	0.00	0.72	0.00	16.91	83.09	2.00	0.00	0.71	0.00
16.95	85.05	2.00	0.00	0.71	0.00	17.01	90.47	2.00	0.00	0.71	0.00
17.11	96.82	2.00	0.00	0.71	0.00	17.13	98.88	2.00	0.00	0.71	0.00
17.21	99.51	2.00	0.00	0.71	0.00	17.29	99.01	2.00	0.00	0.71	0.00
17.34	97.60	2.00	0.00	0.71	0.00	17.43	96.35	2.00	0.00	0.70	0.00
17.48	95.70	2.00	0.00	0.70	0.00	17.54	95.55	2.00	0.00	0.70	0.00
17.63	95.36	2.00	0.00	0.70	0.00	17.68	95.27	2.00	0.00	0.70	0.00
17.73	95.28	2.00	0.00	0.70	0.00	17.83	95.01	2.00	0.00	0.70	0.00
17.85	94.69	2.00	0.00	0.70	0.00	17.93	94.51	2.00	0.00	0.70	0.00
17.98	94.81	2.00	0.00	0.70	0.00	18.07	95.29	2.00	0.00	0.69	0.00
18.12	95.97	2.00	0.00	0.69	0.00	18.18	96.68	2.00	0.00	0.69	0.00
18.24	97.65	2.00	0.00	0.69	0.00	18.33	98.63	2.00	0.00	0.69	0.00
18.38	99.49	2.00	0.00	0.69	0.00	18.47	99.91	2.00	0.00	0.69	0.00
18.53	100.01	2.00	0.00	0.69	0.00	18.57	99.93	2.00	0.00	0.69	0.00
18.67	99.72	2.00	0.00	0.68	0.00	18.72	99.73	2.00	0.00	0.68	0.00
18.78	99.74	2.00	0.00	0.68	0.00	18.85	101.21	2.00	0.00	0.68	0.00
18.93	102.88	2.00	0.00	0.68	0.00	18.97	103.50	2.00	0.00	0.68	0.00
19.08	103.58	2.00	0.00	0.68	0.00	19.12	103.41	2.00	0.00	0.68	0.00
19.22	103.39	2.00	0.00	0.67	0.00	19.27	103.32	2.00	0.00	0.67	0.00
19.32	103.64	2.00	0.00	0.67	0.00	19.37	101.55	2.00	0.00	0.67	0.00
19.43	99.45	2.00	0.00	0.67	0.00	19.52	97.95	2.00	0.00	0.67	0.00
19.57	98.34	2.00	0.00	0.67	0.00	19.67	100.27	2.00	0.00	0.67	0.00
19.72	102.47	2.00	0.00	0.67	0.00	19.77	104.05	2.00	0.00	0.66	0.00
19.82	104.77	2.00	0.00	0.66	0.00	19.91	105.93	2.00	0.00	0.66	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
19.97	108.74	2.00	0.00	0.66	0.00	20.04	112.25	2.00	0.00	0.66	0.00
20.08	115.22	2.00	0.00	0.66	0.00	20.16	115.47	2.00	0.00	0.66	0.00
20.24	115.22	2.00	0.00	0.66	0.00	20.28	113.94	2.00	0.00	0.66	0.00
20.37	112.78	2.00	0.00	0.65	0.00	20.41	110.75	2.00	0.00	0.65	0.00
20.50	109.32	2.00	0.00	0.65	0.00	20.57	108.60	2.00	0.00	0.65	0.00
20.61	109.02	2.00	0.00	0.65	0.00	20.70	109.41	2.00	0.00	0.65	0.00
20.75	109.77	2.00	0.00	0.65	0.00	20.81	110.03	2.00	0.00	0.65	0.00
20.89	111.03	2.00	0.00	0.65	0.00	20.95	111.35	2.00	0.00	0.64	0.00
21.00	110.89	2.00	0.00	0.64	0.00	21.10	110.15	2.00	0.00	0.64	0.00
21.14	108.50	2.00	0.00	0.64	0.00	21.21	106.19	2.00	0.00	0.64	0.00
21.30	103.83	2.00	0.00	0.64	0.00	21.34	101.90	2.00	0.00	0.64	0.00
21.40	101.58	2.00	0.00	0.64	0.00	21.48	101.37	2.00	0.00	0.64	0.00
21.54	101.27	2.00	0.00	0.63	0.00	21.60	100.43	2.00	0.00	0.63	0.00
21.68	99.05	2.00	0.00	0.63	0.00	21.75	97.45	2.00	0.00	0.63	0.00
21.80	95.70	2.00	0.00	0.63	0.00	21.88	94.29	2.00	0.00	0.63	0.00
21.92	93.03	2.00	0.00	0.63	0.00	21.99	91.71	2.00	0.00	0.63	0.00
22.08	90.08	2.00	0.00	0.63	0.00	22.14	88.54	2.00	0.00	0.62	0.00
22.19	88.72	2.00	0.00	0.62	0.00	22.28	89.57	2.00	0.00	0.62	0.00
22.34	90.38	2.00	0.00	0.62	0.00	22.39	91.36	2.00	0.00	0.62	0.00
22.47	92.17	2.00	0.00	0.62	0.00	22.54	93.17	2.00	0.00	0.62	0.00
22.58	93.43	2.00	0.00	0.62	0.00	22.68	92.90	2.00	0.00	0.62	0.00
22.74	92.30	2.00	0.00	0.61	0.00	22.79	91.97	2.00	0.00	0.61	0.00
22.84	92.26	2.00	0.00	0.61	0.00	22.94	92.67	2.00	0.00	0.61	0.00
22.99	93.15	2.00	0.00	0.61	0.00	23.04	93.48	2.00	0.00	0.61	0.00
23.11	93.60	2.00	0.00	0.61	0.00	23.18	93.48	2.00	0.00	0.61	0.00
23.23	92.74	2.00	0.00	0.61	0.00	23.34	91.53	2.00	0.00	0.60	0.00
23.37	90.23	2.00	0.00	0.60	0.00	23.44	88.64	2.00	0.00	0.60	0.00
23.54	86.68	2.00	0.00	0.60	0.00	23.60	84.70	2.00	0.00	0.60	0.00
23.64	82.94	2.00	0.00	0.60	0.00	23.71	80.98	2.00	0.00	0.60	0.00
23.79	78.92	2.00	0.00	0.60	0.00	23.84	77.19	2.00	0.00	0.60	0.00
23.89	75.13	2.00	0.00	0.60	0.00	23.98	73.55	2.00	0.00	0.59	0.00
24.03	72.08	2.00	0.00	0.59	0.00	24.09	72.92	2.00	0.00	0.59	0.00
24.18	75.32	2.00	0.00	0.59	0.00	24.23	80.81	2.00	0.00	0.59	0.00
24.31	85.94	2.00	0.00	0.59	0.00	24.36	89.48	2.00	0.00	0.59	0.00
24.45	89.86	2.00	0.00	0.59	0.00	24.49	88.28	2.00	0.00	0.58	0.00
24.57	86.79	2.00	0.00	0.58	0.00	24.61	86.69	2.00	0.00	0.58	0.00
24.69	88.11	2.00	0.00	0.58	0.00	24.74	88.79	2.00	0.00	0.58	0.00
24.82	89.26	2.00	0.00	0.58	0.00	24.89	91.21	2.00	0.00	0.58	0.00
24.94	96.87	2.00	0.00	0.58	0.00	25.01	104.70	2.00	0.00	0.58	0.00
25.09	110.61	2.00	0.00	0.57	0.00	25.13	112.23	2.00	0.00	0.57	0.00
25.22	108.23	2.00	0.00	0.57	0.00	25.28	101.64	2.00	0.00	0.57	0.00
25.34	93.26	2.00	0.00	0.57	0.00	25.44	85.74	2.00	0.00	0.57	0.00
25.48	79.31	2.00	0.00	0.57	0.00	25.53	76.72	2.00	0.00	0.57	0.00
25.59	74.46	2.00	0.00	0.57	0.00	25.68	74.59	2.00	0.00	0.56	0.00
25.73	73.34	2.00	0.00	0.56	0.00	25.79	75.13	2.00	0.00	0.56	0.00
25.88	77.36	2.00	0.00	0.56	0.00	25.93	84.82	2.00	0.00	0.56	0.00
25.99	86.06	2.00	0.00	0.56	0.00	26.08	84.76	2.00	0.00	0.56	0.00
26.14	79.87	2.00	0.00	0.56	0.00	26.19	80.50	2.00	0.00	0.56	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
26.28	83.35	2.00	0.00	0.55	0.00	26.34	87.13	2.00	0.00	0.55	0.00
26.39	90.01	2.00	0.00	0.55	0.00	26.45	90.61	2.00	0.00	0.55	0.00
26.53	90.34	2.00	0.00	0.55	0.00	26.58	90.17	2.00	0.00	0.55	0.00
26.68	91.53	2.00	0.00	0.55	0.00	26.73	92.80	2.00	0.00	0.55	0.00
26.78	95.24	2.00	0.00	0.55	0.00	26.88	98.20	2.00	0.00	0.54	0.00
26.93	101.67	2.00	0.00	0.54	0.00	26.98	105.01	2.00	0.00	0.54	0.00
27.04	109.65	2.00	0.00	0.54	0.00	27.13	114.16	2.00	0.00	0.54	0.00
27.22	117.03	2.00	0.00	0.54	0.00	27.24	118.05	2.00	0.00	0.54	0.00
27.33	118.49	2.00	0.00	0.54	0.00	27.37	118.83	2.00	0.00	0.54	0.00
27.43	118.15	2.00	0.00	0.54	0.00	27.52	116.74	2.00	0.00	0.53	0.00
27.57	115.29	2.00	0.00	0.53	0.00	27.63	114.67	2.00	0.00	0.53	0.00
27.72	114.91	2.00	0.00	0.53	0.00	27.76	114.13	2.00	0.00	0.53	0.00
27.84	111.04	2.00	0.00	0.53	0.00	27.93	106.57	2.00	0.00	0.53	0.00
27.97	102.28	2.00	0.00	0.53	0.00	28.02	99.20	2.00	0.00	0.53	0.00
28.12	96.87	2.00	0.00	0.52	0.00	28.17	95.48	2.00	0.00	0.52	0.00
28.23	94.94	2.00	0.00	0.52	0.00	28.32	94.52	2.00	0.00	0.52	0.00
28.37	94.51	2.00	0.00	0.52	0.00	28.42	95.55	2.00	0.00	0.52	0.00
28.48	97.71	2.00	0.00	0.52	0.00	28.57	99.81	2.00	0.00	0.52	0.00
28.61	101.73	2.00	0.00	0.52	0.00	28.69	103.19	2.00	0.00	0.51	0.00
28.77	104.00	2.00	0.00	0.51	0.00	28.82	104.48	2.00	0.00	0.51	0.00
28.88	104.19	2.00	0.00	0.51	0.00	28.97	103.99	2.00	0.00	0.51	0.00
29.02	102.82	2.00	0.00	0.51	0.00	29.08	101.89	2.00	0.00	0.51	0.00
29.17	101.13	2.00	0.00	0.51	0.00	29.21	101.57	2.00	0.00	0.50	0.00
29.28	102.62	2.00	0.00	0.50	0.00	29.36	104.26	2.00	0.00	0.50	0.00
29.41	112.38	2.00	0.00	0.50	0.00	29.47	115.05	2.00	0.00	0.50	0.00
29.55	117.93	2.00	0.00	0.50	0.00	29.62	114.13	2.00	0.00	0.50	0.00
29.68	114.62	2.00	0.00	0.50	0.00	29.76	111.17	2.00	0.00	0.50	0.00
29.83	105.97	2.00	0.00	0.49	0.00	29.87	99.93	2.00	0.00	0.49	0.00
29.96	95.72	2.00	0.00	0.49	0.00	30.01	92.55	2.00	0.00	0.49	0.00
30.07	90.02	2.00	0.00	0.49	0.00	30.16	88.31	2.00	0.00	0.49	0.00
30.20	85.95	2.00	0.00	0.49	0.00	30.27	85.87	2.00	0.00	0.49	0.00
30.34	86.72	2.00	0.00	0.49	0.00	30.42	88.90	2.00	0.00	0.48	0.00
30.46	90.97	2.00	0.00	0.48	0.00	30.52	93.16	2.00	0.00	0.48	0.00
30.58	95.94	2.00	0.00	0.48	0.00	30.66	98.28	2.00	0.00	0.48	0.00
30.71	100.49	2.00	0.00	0.48	0.00	30.81	102.04	2.00	0.00	0.48	0.00
30.86	103.51	2.00	0.00	0.48	0.00	30.91	104.77	2.00	0.00	0.48	0.00
31.01	105.86	2.00	0.00	0.47	0.00	31.06	106.68	2.00	0.00	0.47	0.00
31.11	108.17	2.00	0.00	0.47	0.00	31.19	110.41	2.00	0.00	0.47	0.00
31.26	112.66	2.00	0.00	0.47	0.00	31.35	113.85	2.00	0.00	0.47	0.00
31.37	113.49	2.00	0.00	0.47	0.00	31.46	112.68	2.00	0.00	0.47	0.00
31.55	111.88	2.00	0.00	0.47	0.00	31.59	112.15	2.00	0.00	0.46	0.00
31.66	112.04	2.00	0.00	0.46	0.00	31.70	112.28	2.00	0.00	0.46	0.00
31.79	111.29	2.00	0.00	0.46	0.00	31.86	109.44	2.00	0.00	0.46	0.00
31.91	106.32	2.00	0.00	0.46	0.00	31.98	103.90	2.00	0.00	0.46	0.00
32.06	102.74	2.00	0.00	0.46	0.00	32.10	103.94	2.00	0.00	0.46	0.00
32.20	107.59	2.00	0.00	0.45	0.00	32.26	112.81	2.00	0.00	0.45	0.00
32.30	117.96	2.00	0.00	0.45	0.00	32.35	124.09	2.00	0.00	0.45	0.00
32.46	132.31	2.00	0.00	0.45	0.00	32.49	138.67	2.00	0.00	0.45	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
32.58	142.60	2.00	0.00	0.45	0.00	32.62	141.01	2.00	0.00	0.45	0.00
32.69	141.50	2.00	0.00	0.45	0.00	32.78	139.91	2.00	0.00	0.44	0.00
32.82	139.76	2.00	0.00	0.44	0.00	32.89	141.65	0.53	0.78	0.44	0.01
32.98	147.03	0.57	0.77	0.44	0.01	33.02	156.04	0.66	0.58	0.44	0.00
33.08	164.95	2.00	0.00	0.44	0.00	33.18	171.87	2.00	0.00	0.44	0.00
33.21	174.55	2.00	0.00	0.44	0.00	33.29	170.95	2.00	0.00	0.44	0.00
33.37	164.95	2.00	0.00	0.43	0.00	33.42	156.80	2.00	0.00	0.43	0.00
33.47	149.30	2.00	0.00	0.43	0.00	33.53	138.17	2.00	0.00	0.43	0.00
33.62	127.00	2.00	0.00	0.43	0.00	33.67	116.66	2.00	0.00	0.43	0.00
33.73	110.43	2.00	0.00	0.43	0.00	33.82	105.94	2.00	0.00	0.43	0.00
33.87	103.53	2.00	0.00	0.43	0.00	33.93	102.82	2.00	0.00	0.42	0.00
34.02	102.48	2.00	0.00	0.42	0.00	34.06	102.41	2.00	0.00	0.42	0.00
34.13	102.99	2.00	0.00	0.42	0.00	34.22	104.10	2.00	0.00	0.42	0.00
34.26	105.54	2.00	0.00	0.42	0.00	34.32	107.20	2.00	0.00	0.42	0.00
34.42	108.75	2.00	0.00	0.42	0.00	34.45	110.32	2.00	0.00	0.42	0.00
34.52	111.25	2.00	0.00	0.41	0.00	34.61	111.33	2.00	0.00	0.41	0.00
34.70	110.23	2.00	0.00	0.41	0.00	34.76	108.70	2.00	0.00	0.41	0.00
34.82	107.56	2.00	0.00	0.41	0.00	34.86	107.31	2.00	0.00	0.41	0.00
34.91	108.16	2.00	0.00	0.41	0.00	35.02	109.19	2.00	0.00	0.41	0.00
35.06	109.39	2.00	0.00	0.41	0.00	35.11	111.02	2.00	0.00	0.40	0.00
35.19	114.20	2.00	0.00	0.40	0.00	35.25	118.56	2.00	0.00	0.40	0.00
35.31	121.84	2.00	0.00	0.40	0.00	35.40	125.36	2.00	0.00	0.40	0.00
35.45	128.26	2.00	0.00	0.40	0.00	35.50	129.73	2.00	0.00	0.40	0.00
35.56	130.98	2.00	0.00	0.40	0.00	35.64	133.67	2.00	0.00	0.40	0.00
35.72	138.17	2.00	0.00	0.39	0.00	35.81	141.28	2.00	0.00	0.39	0.00
35.85	143.34	2.00	0.00	0.39	0.00	35.90	144.03	2.00	0.00	0.39	0.00
35.96	143.50	2.00	0.00	0.39	0.00	36.04	141.44	2.00	0.00	0.39	0.00
36.11	138.27	2.00	0.00	0.39	0.00	36.16	135.91	2.00	0.00	0.39	0.00
36.25	134.33	2.00	0.00	0.39	0.00	36.31	133.51	2.00	0.00	0.38	0.00
36.36	131.76	2.00	0.00	0.38	0.00	36.44	129.64	2.00	0.00	0.38	0.00
36.50	128.21	2.00	0.00	0.38	0.00	36.56	129.26	2.00	0.00	0.38	0.00
36.65	131.31	2.00	0.00	0.38	0.00	36.68	133.43	2.00	0.00	0.38	0.00
36.76	133.78	2.00	0.00	0.38	0.00	36.84	133.03	2.00	0.00	0.38	0.00
36.91	131.69	2.00	0.00	0.37	0.00	36.96	129.63	2.00	0.00	0.37	0.00
37.04	127.08	2.00	0.00	0.37	0.00	37.10	123.75	2.00	0.00	0.37	0.00
37.15	121.02	2.00	0.00	0.37	0.00	37.23	118.62	2.00	0.00	0.37	0.00
37.30	116.82	2.00	0.00	0.37	0.00	37.35	115.05	2.00	0.00	0.37	0.00
37.45	113.69	2.00	0.00	0.37	0.00	37.51	112.67	2.00	0.00	0.36	0.00
37.55	111.66	2.00	0.00	0.36	0.00	37.62	110.16	2.00	0.00	0.36	0.00
37.70	108.15	2.00	0.00	0.36	0.00	37.75	105.95	2.00	0.00	0.36	0.00
37.80	103.33	2.00	0.00	0.36	0.00	37.90	100.67	2.00	0.00	0.36	0.00
37.95	98.10	2.00	0.00	0.36	0.00	38.05	96.46	2.00	0.00	0.36	0.00
38.06	94.69	2.00	0.00	0.35	0.00	38.15	93.41	2.00	0.00	0.35	0.00
38.19	93.89	2.00	0.00	0.35	0.00	38.27	95.71	2.00	0.00	0.35	0.00
38.34	98.12	2.00	0.00	0.35	0.00	38.39	99.71	2.00	0.00	0.35	0.00
38.46	100.64	2.00	0.00	0.35	0.00	38.55	100.79	2.00	0.00	0.35	0.00
38.59	100.44	2.00	0.00	0.35	0.00	38.68	101.05	2.00	0.00	0.34	0.00
38.75	103.19	2.00	0.00	0.34	0.00	38.80	107.92	2.00	0.00	0.34	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
38.87	113.90	2.00	0.00	0.34	0.00	38.95	119.82	2.00	0.00	0.34	0.00
38.99	125.23	2.00	0.00	0.34	0.00	39.04	127.93	0.41	0.65	0.34	0.00
39.11	129.86	0.43	0.64	0.34	0.01	39.19	130.14	0.43	0.63	0.34	0.01
39.27	130.58	0.43	0.63	0.33	0.01	39.33	131.34	0.44	0.62	0.33	0.00
39.39	130.16	0.43	0.63	0.33	0.00	39.45	126.68	2.00	0.00	0.33	0.00
39.53	119.78	2.00	0.00	0.33	0.00	39.57	112.35	2.00	0.00	0.33	0.00
39.64	105.66	2.00	0.00	0.33	0.00	39.72	100.06	2.00	0.00	0.33	0.00
39.79	97.32	2.00	0.00	0.33	0.00	39.84	94.38	2.00	0.00	0.32	0.00
39.93	89.35	2.00	0.00	0.32	0.00	39.98	82.69	2.00	0.00	0.32	0.00
40.05	78.83	2.00	0.00	0.32	0.00	40.09	81.78	2.00	0.00	0.32	0.00
40.19	90.22	2.00	0.00	0.32	0.00	40.23	111.23	2.00	0.00	0.32	0.00
40.34	128.18	2.00	0.00	0.32	0.00	40.38	139.46	2.00	0.00	0.32	0.00
40.43	139.62	0.50	0.56	0.31	0.00	40.50	141.68	0.52	0.55	0.31	0.00
40.58	146.75	0.57	0.53	0.31	0.01	40.63	154.84	0.64	0.50	0.31	0.00
40.70	162.22	0.72	0.38	0.31	0.00	40.75	169.81	0.81	0.29	0.31	0.00
40.84	174.40	0.87	0.21	0.31	0.00	40.88	176.21	0.89	0.21	0.31	0.00
40.95	175.11	0.88	0.21	0.31	0.00	41.03	173.31	0.85	0.21	0.30	0.00
41.08	174.49	0.87	0.21	0.30	0.00	41.15	176.58	0.90	0.20	0.30	0.00
41.23	177.09	2.00	0.00	0.30	0.00	41.28	172.88	2.00	0.00	0.30	0.00
41.35	165.20	2.00	0.00	0.30	0.00	41.43	163.76	2.00	0.00	0.30	0.00
41.48	166.84	2.00	0.00	0.30	0.00	41.54	172.03	0.84	0.27	0.30	0.00
41.62	176.73	0.90	0.20	0.29	0.00	41.68	181.73	0.97	0.15	0.29	0.00
41.77	187.61	1.05	0.11	0.29	0.00	41.82	194.68	1.16	0.07	0.29	0.00
41.88	201.28	2.00	0.00	0.29	0.00	41.97	205.74	2.00	0.00	0.29	0.00
42.01	208.96	2.00	0.00	0.29	0.00	42.10	209.62	2.00	0.00	0.29	0.00
42.17	209.74	2.00	0.00	0.29	0.00	42.22	209.31	2.00	0.00	0.28	0.00
42.28	208.71	2.00	0.00	0.28	0.00	42.33	207.54	2.00	0.00	0.28	0.00
42.41	205.68	2.00	0.00	0.28	0.00	42.48	204.51	2.00	0.00	0.28	0.00
42.52	205.72	2.00	0.00	0.28	0.00	42.60	208.13	2.00	0.00	0.28	0.00
42.66	212.43	2.00	0.00	0.28	0.00	42.72	216.99	2.00	0.00	0.28	0.00
42.80	222.84	2.00	0.00	0.27	0.00	42.87	227.69	2.00	0.00	0.27	0.00
42.92	229.54	2.00	0.00	0.27	0.00	43.00	228.01	2.00	0.00	0.27	0.00
43.06	223.55	2.00	0.00	0.27	0.00	43.11	216.59	2.00	0.00	0.27	0.00
43.18	208.96	2.00	0.00	0.27	0.00	43.25	201.35	2.00	0.00	0.27	0.00
43.31	195.45	1.18	0.07	0.27	0.00	43.39	190.74	1.11	0.10	0.26	0.00
43.45	188.79	1.08	0.10	0.26	0.00	43.51	188.75	1.08	0.10	0.26	0.00
43.61	189.01	1.08	0.10	0.26	0.00	43.65	187.22	1.06	0.10	0.26	0.00
43.72	184.48	1.02	0.13	0.26	0.00	43.81	181.94	0.98	0.13	0.26	0.00
43.85	180.30	0.96	0.13	0.26	0.00	43.92	177.74	0.92	0.17	0.26	0.00
44.01	174.21	0.88	0.18	0.25	0.00	44.05	170.39	0.83	0.24	0.25	0.00
44.10	165.70	0.77	0.25	0.25	0.00	44.20	161.80	0.73	0.31	0.25	0.00
44.25	156.48	0.67	0.33	0.25	0.00	44.30	148.86	0.59	0.42	0.25	0.00
44.40	141.18	0.53	0.44	0.25	0.01	44.45	135.91	0.48	0.45	0.25	0.00
44.50	134.52	0.47	0.45	0.25	0.00	44.57	134.14	0.47	0.45	0.24	0.00
44.63	136.37	0.49	0.44	0.24	0.00	44.69	141.27	0.53	0.43	0.24	0.00
44.79	146.34	0.57	0.41	0.24	0.01	44.84	151.73	0.62	0.40	0.24	0.00
44.89	157.25	0.68	0.31	0.24	0.00	44.96	163.18	0.75	0.29	0.24	0.00
45.04	168.57	0.81	0.22	0.24	0.00	45.09	170.75	0.84	0.22	0.24	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
45.17	170.13	0.83	0.22	0.23	0.00	45.24	168.79	0.81	0.22	0.23	0.00
45.28	168.16	0.81	0.22	0.23	0.00	45.38	168.90	0.82	0.22	0.23	0.00
45.42	170.31	0.83	0.21	0.23	0.00	45.49	171.14	0.85	0.21	0.23	0.00
45.57	172.26	0.86	0.16	0.23	0.00	45.63	174.24	0.89	0.16	0.23	0.00
45.69	176.36	0.91	0.15	0.23	0.00	45.78	176.35	0.91	0.15	0.22	0.00
45.84	173.34	0.88	0.15	0.22	0.00	45.89	165.95	0.78	0.22	0.22	0.00
45.93	156.35	0.68	0.29	0.22	0.00	46.02	146.88	0.58	0.37	0.22	0.00
46.08	140.17	2.00	0.00	0.22	0.00	46.13	134.42	2.00	0.00	0.22	0.00
46.22	128.14	2.00	0.00	0.22	0.00	46.28	121.74	2.00	0.00	0.22	0.00
46.33	115.67	2.00	0.00	0.21	0.00	46.43	109.01	2.00	0.00	0.21	0.00
46.47	102.65	2.00	0.00	0.21	0.00	46.53	99.29	2.00	0.00	0.21	0.00
46.63	97.28	2.00	0.00	0.21	0.00	46.67	96.45	2.00	0.00	0.21	0.00
46.73	95.71	2.00	0.00	0.21	0.00	46.83	95.50	2.00	0.00	0.21	0.00
46.87	95.75	2.00	0.00	0.21	0.00	46.93	96.93	2.00	0.00	0.20	0.00
47.02	97.76	2.00	0.00	0.20	0.00	47.08	98.14	2.00	0.00	0.20	0.00
47.12	97.80	2.00	0.00	0.20	0.00	47.18	96.95	2.00	0.00	0.20	0.00
47.27	95.92	2.00	0.00	0.20	0.00	47.31	96.61	2.00	0.00	0.20	0.00
47.39	98.55	2.00	0.00	0.20	0.00	47.48	101.10	2.00	0.00	0.20	0.00
47.52	104.33	2.00	0.00	0.19	0.00	47.59	106.24	2.00	0.00	0.19	0.00
47.66	108.33	2.00	0.00	0.19	0.00	47.74	109.23	2.00	0.00	0.19	0.00
47.79	114.23	2.00	0.00	0.19	0.00	47.86	121.87	2.00	0.00	0.19	0.00
47.94	128.42	2.00	0.00	0.19	0.00	47.99	129.96	2.00	0.00	0.19	0.00
48.05	126.15	2.00	0.00	0.19	0.00	48.13	120.82	2.00	0.00	0.18	0.00
48.19	114.33	2.00	0.00	0.18	0.00	48.26	110.83	2.00	0.00	0.18	0.00
48.34	111.39	2.00	0.00	0.18	0.00	48.39	115.27	2.00	0.00	0.18	0.00
48.43	121.62	2.00	0.00	0.18	0.00	48.51	129.59	2.00	0.00	0.18	0.00
48.58	138.09	2.00	0.00	0.18	0.00	48.63	145.36	2.00	0.00	0.18	0.00
48.72	150.60	2.00	0.00	0.17	0.00	48.78	155.30	2.00	0.00	0.17	0.00
48.83	160.07	2.00	0.00	0.17	0.00	48.90	162.58	2.00	0.00	0.17	0.00
48.98	162.95	2.00	0.00	0.17	0.00	49.03	159.47	2.00	0.00	0.17	0.00
49.08	157.19	2.00	0.00	0.17	0.00	49.17	155.73	2.00	0.00	0.17	0.00
49.23	155.34	2.00	0.00	0.17	0.00	49.32	153.56	2.00	0.00	0.16	0.00
49.35	151.36	2.00	0.00	0.16	0.00	49.43	147.91	2.00	0.00	0.16	0.00
49.50	148.14	2.00	0.00	0.16	0.00	49.58	153.24	2.00	0.00	0.16	0.00
49.63	161.85	2.00	0.00	0.16	0.00	49.72	169.66	2.00	0.00	0.16	0.00
49.78	176.91	2.00	0.00	0.16	0.00	49.83	182.48	2.00	0.00	0.16	0.00
49.90	186.16	1.08	0.06	0.15	0.00	49.98	189.12	1.13	0.06	0.15	0.00
50.02	190.49	1.15	0.04	0.15	0.00	50.08	190.40	1.15	0.04	0.15	0.00
50.18	189.49	1.14	0.05	0.15	0.00	50.23	188.53	1.12	0.05	0.15	0.00
50.27	185.58	1.08	0.05	0.15	0.00	50.36	182.94	1.04	0.07	0.15	0.00
50.40	181.01	1.01	0.07	0.15	0.00	50.47	181.99	1.03	0.07	0.14	0.00
50.55	183.68	1.05	0.05	0.14	0.00	50.63	184.84	1.07	0.05	0.14	0.00
50.67	185.63	1.08	0.05	0.14	0.00	50.72	186.18	1.09	0.05	0.14	0.00
50.83	186.75	1.10	0.05	0.14	0.00	50.88	187.38	1.11	0.05	0.14	0.00
50.93	188.05	1.12	0.05	0.14	0.00	51.02	188.39	1.13	0.05	0.14	0.00
51.08	188.49	1.13	0.05	0.13	0.00	51.12	188.10	1.12	0.05	0.13	0.00
51.21	187.59	1.12	0.05	0.13	0.00	51.27	187.19	1.11	0.05	0.13	0.00
51.32	186.86	1.11	0.05	0.13	0.00	51.39	186.25	1.10	0.05	0.13	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
51.47	185.76	1.09	0.05	0.13	0.00	51.55	185.55	1.09	0.05	0.13	0.00
51.60	185.78	1.09	0.05	0.13	0.00	51.67	185.99	1.10	0.05	0.12	0.00
51.72	186.12	1.10	0.05	0.12	0.00	51.79	185.62	1.09	0.05	0.12	0.00
51.87	184.70	1.08	0.04	0.12	0.00	51.91	181.96	1.04	0.06	0.12	0.00
51.98	175.97	0.95	0.06	0.12	0.00	52.06	169.94	0.87	0.08	0.12	0.00
52.12	166.30	0.82	0.11	0.12	0.00	52.17	164.23	0.80	0.11	0.12	0.00
52.26	161.46	2.00	0.00	0.11	0.00	52.31	157.74	2.00	0.00	0.11	0.00
52.38	155.33	2.00	0.00	0.11	0.00	52.47	153.29	2.00	0.00	0.11	0.00
52.51	154.76	2.00	0.00	0.11	0.00	52.56	153.84	2.00	0.00	0.11	0.00
52.66	150.84	2.00	0.00	0.11	0.00	52.70	147.79	2.00	0.00	0.11	0.00
52.77	146.59	2.00	0.00	0.11	0.00	52.87	146.55	2.00	0.00	0.10	0.00
52.91	146.23	2.00	0.00	0.10	0.00	52.97	145.13	2.00	0.00	0.10	0.00
53.02	140.06	2.00	0.00	0.10	0.00	53.10	132.61	2.00	0.00	0.10	0.00
53.16	123.96	2.00	0.00	0.10	0.00	53.22	115.57	2.00	0.00	0.10	0.00
53.31	107.65	2.00	0.00	0.10	0.00	53.36	100.83	2.00	0.00	0.10	0.00
53.42	95.52	2.00	0.00	0.09	0.00	53.51	90.96	2.00	0.00	0.09	0.00
53.56	87.45	2.00	0.00	0.09	0.00	53.62	86.87	2.00	0.00	0.09	0.00
53.71	86.21	2.00	0.00	0.09	0.00	53.75	85.79	2.00	0.00	0.09	0.00
53.83	85.30	2.00	0.00	0.09	0.00	53.91	86.00	2.00	0.00	0.09	0.00
53.98	86.70	2.00	0.00	0.09	0.00	54.01	88.77	2.00	0.00	0.08	0.00
54.11	89.74	2.00	0.00	0.08	0.00	54.15	90.10	2.00	0.00	0.08	0.00
54.21	88.80	2.00	0.00	0.08	0.00	54.27	86.89	2.00	0.00	0.08	0.00
54.35	83.84	2.00	0.00	0.08	0.00	54.41	80.19	2.00	0.00	0.08	0.00
54.46	75.96	2.00	0.00	0.08	0.00	54.55	72.32	2.00	0.00	0.08	0.00
54.60	69.42	2.00	0.00	0.07	0.00	54.66	67.72	2.00	0.00	0.07	0.00
54.74	66.63	2.00	0.00	0.07	0.00	54.79	66.09	2.00	0.00	0.07	0.00
54.86	65.68	2.00	0.00	0.07	0.00	54.96	65.16	2.00	0.00	0.07	0.00
55.03	64.73	2.00	0.00	0.07	0.00	55.06	64.56	2.00	0.00	0.07	0.00
55.14	64.53	2.00	0.00	0.07	0.00	55.21	64.57	2.00	0.00	0.06	0.00
55.25	64.47	2.00	0.00	0.06	0.00	55.32	64.14	2.00	0.00	0.06	0.00
55.41	63.73	2.00	0.00	0.06	0.00	55.45	63.33	2.00	0.00	0.06	0.00
55.52	63.11	2.00	0.00	0.06	0.00	55.61	63.00	2.00	0.00	0.06	0.00
55.65	63.10	2.00	0.00	0.06	0.00	55.71	63.73	2.00	0.00	0.06	0.00
55.80	64.63	2.00	0.00	0.05	0.00	55.86	67.19	2.00	0.00	0.05	0.00
55.95	69.38	2.00	0.00	0.05	0.00	56.00	71.47	2.00	0.00	0.05	0.00
56.05	71.90	2.00	0.00	0.05	0.00	56.10	72.99	2.00	0.00	0.05	0.00
56.20	74.10	2.00	0.00	0.05	0.00	56.24	75.89	2.00	0.00	0.05	0.00
56.31	74.72	2.00	0.00	0.05	0.00	56.39	71.63	2.00	0.00	0.04	0.00
56.43	67.74	2.00	0.00	0.04	0.00	56.50	66.23	2.00	0.00	0.04	0.00
56.60	66.68	2.00	0.00	0.04	0.00	56.66	66.97	2.00	0.00	0.04	0.00
56.70	67.46	2.00	0.00	0.04	0.00	56.79	67.43	2.00	0.00	0.04	0.00
56.84	66.96	2.00	0.00	0.04	0.00	56.92	65.55	2.00	0.00	0.04	0.00
56.99	63.95	2.00	0.00	0.03	0.00	57.03	63.61	2.00	0.00	0.03	0.00
57.09	65.08	2.00	0.00	0.03	0.00	57.18	67.14	2.00	0.00	0.03	0.00
57.23	68.60	2.00	0.00	0.03	0.00	57.31	69.88	2.00	0.00	0.03	0.00
57.38	71.91	2.00	0.00	0.03	0.00	57.43	76.80	2.00	0.00	0.03	0.00
57.50	84.78	2.00	0.00	0.03	0.00	57.58	92.92	2.00	0.00	0.02	0.00
57.62	99.70	2.00	0.00	0.02	0.00	57.68	104.00	2.00	0.00	0.02	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
57.78	105.20	2.00	0.00	0.02	0.00	57.82	104.31	2.00	0.00	0.02	0.00
57.88	105.41	2.00	0.00	0.02	0.00	57.97	108.60	2.00	0.00	0.02	0.00
58.02	112.82	2.00	0.00	0.02	0.00	58.09	115.49	2.00	0.00	0.02	0.00
58.17	117.52	0.39	0.03	0.01	0.00	58.23	118.23	0.40	0.03	0.01	0.00
58.28	118.61	0.40	0.02	0.01	0.00	58.37	119.32	0.40	0.02	0.01	0.00
58.42	120.74	0.41	0.02	0.01	0.00	58.48	123.35	0.43	0.02	0.01	0.00
58.57	126.86	2.00	0.00	0.01	0.00	58.62	130.34	2.00	0.00	0.01	0.00
58.67	132.83	2.00	0.00	0.01	0.00	58.77	135.43	2.00	0.00	0.00	0.00
58.81	140.51	2.00	0.00	0.00	0.00	58.88	144.69	2.00	0.00	0.00	0.00
58.97	146.91	2.00	0.00	0.00	0.00	59.01	145.81	2.00	0.00	0.00	0.00
59.07	144.47	2.00	0.00	0.00	0.00	59.12	139.01	2.00	0.00	0.00	0.00
59.19	133.42	2.00	0.00	0.00	0.00	59.27	127.75	2.00	0.00	0.00	0.00
59.32	126.38	2.00	0.00	0.00	0.00	59.42	124.56	2.00	0.00	0.00	0.00
59.47	119.87	2.00	0.00	0.00	0.00	59.52	116.19	2.00	0.00	0.00	0.00
59.58	114.09	2.00	0.00	0.00	0.00	59.68	114.99	2.00	0.00	0.00	0.00
59.74	114.29	2.00	0.00	0.00	0.00	59.78	111.20	2.00	0.00	0.00	0.00
59.88	109.00	2.00	0.00	0.00	0.00	59.93	110.20	2.00	0.00	0.00	0.00
60.00	89.47	2.00	0.00	0.00	0.00	60.05	63.42	0.18	0.00	0.00	0.00
60.13	-1.00	2.00	0.00	0.00	0.00	60.18	-1.00	2.00	0.00	0.00	0.00
60.25	-1.00	2.00	0.00	0.00	0.00	60.33	-1.00	2.00	0.00	0.00	0.00
60.38	-1.00	2.00	0.00	0.00	0.00						

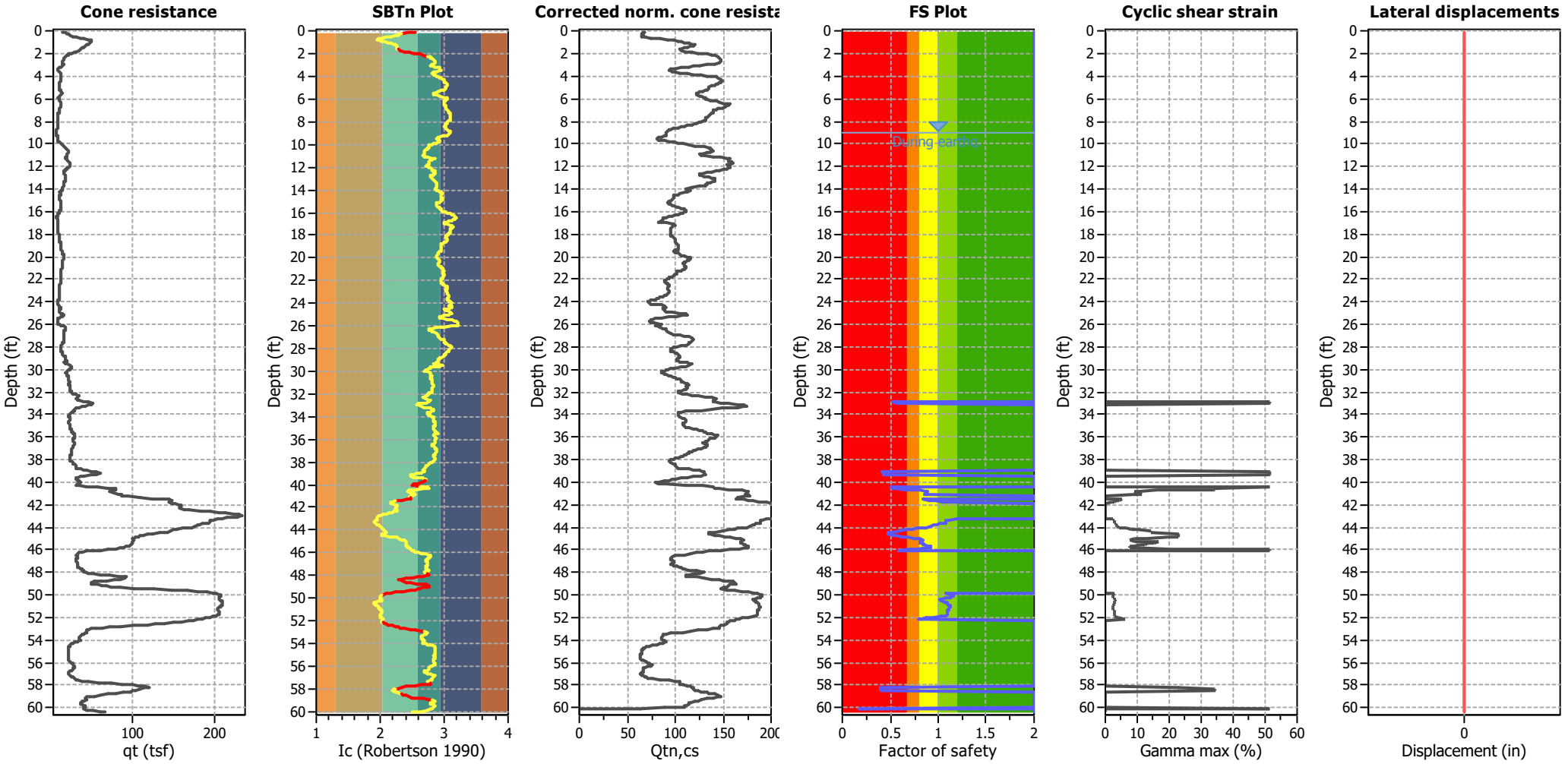
Total estimated settlement: 0.18

Abbreviations

$Q_{tn,cs}$: Equivalent clean sand normalized cone resistance
FS: Factor of safety against liquefaction
e_v (%): Post-liquefaction volumentric strain
DF: e_v depth weighting factor
Settlement: Calculated settlement

Estimation of post-earthquake lateral Displacements

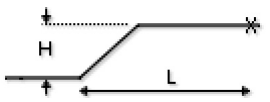
Geometric parameters: Level ground (or gently sloping) with free face (L: 90.00 ft - H: 12.00 ft)



Abbreviations

q_t: Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c: Soil Behaviour Type Index
$Q_{tn,cs}$: Equivalent clean sand normalized CPT total cone resistance
F.S.: Factor of safety
γ_{max}: Maximum cyclic shear strain
LDI: Lateral displacement index

Surface condition



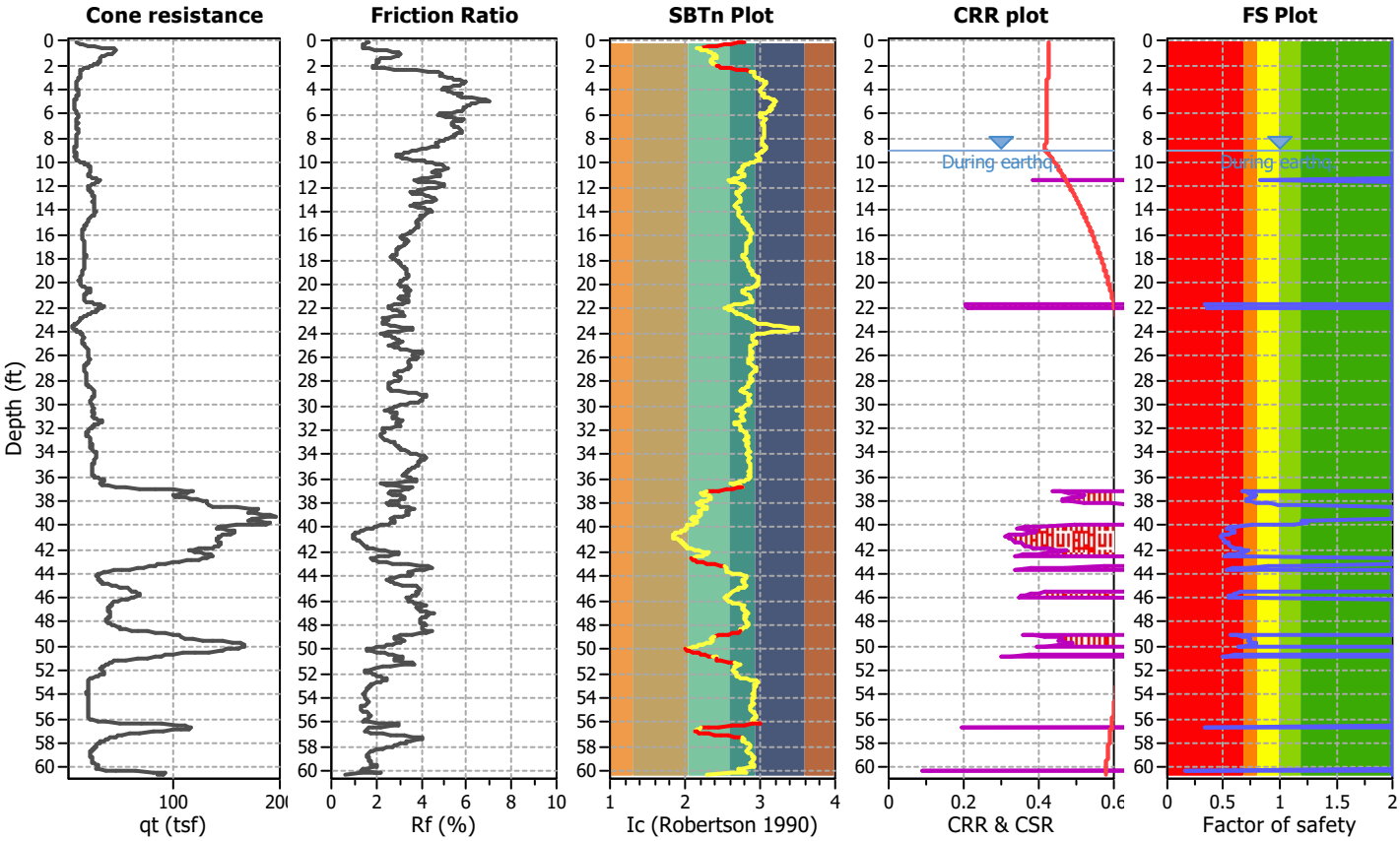
LIQUEFACTION ANALYSIS REPORT

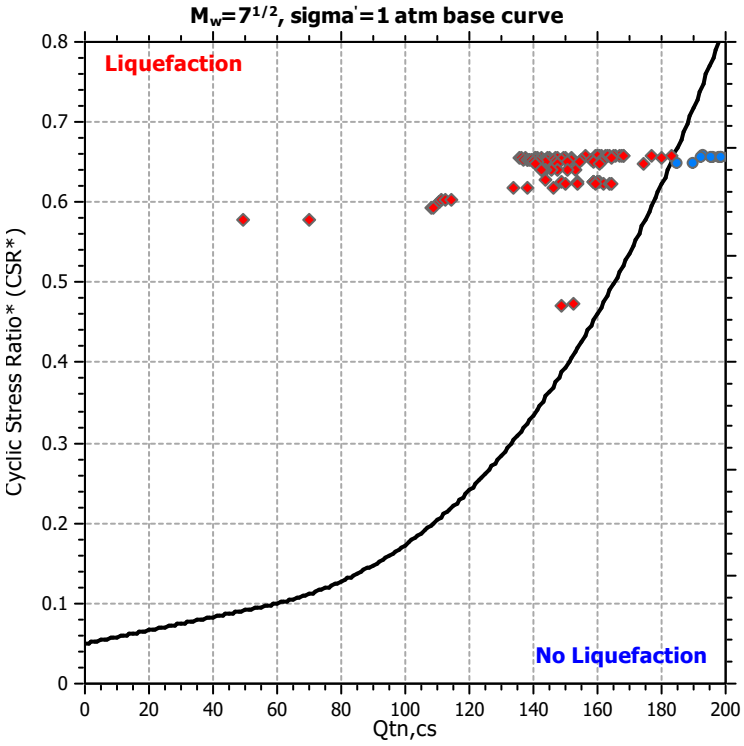
Project title : Geocon West / 21611 Perry Street **Location : Carson, CA**

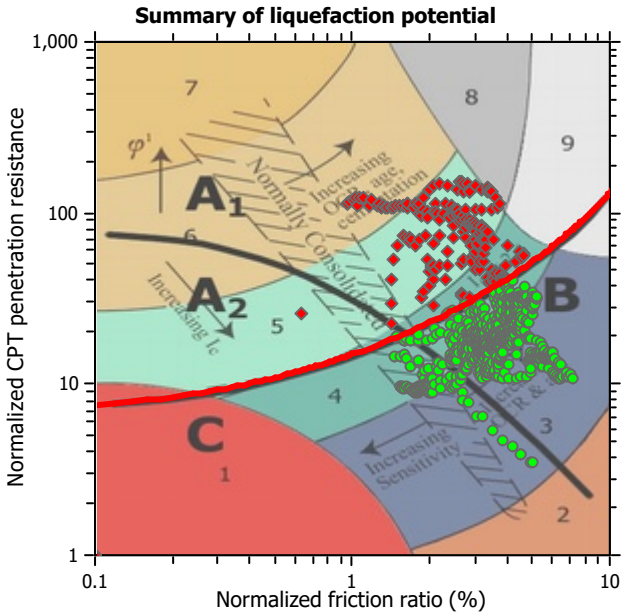
CPT file : CPT-3

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	12.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	9.00 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:	6.87	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.82	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

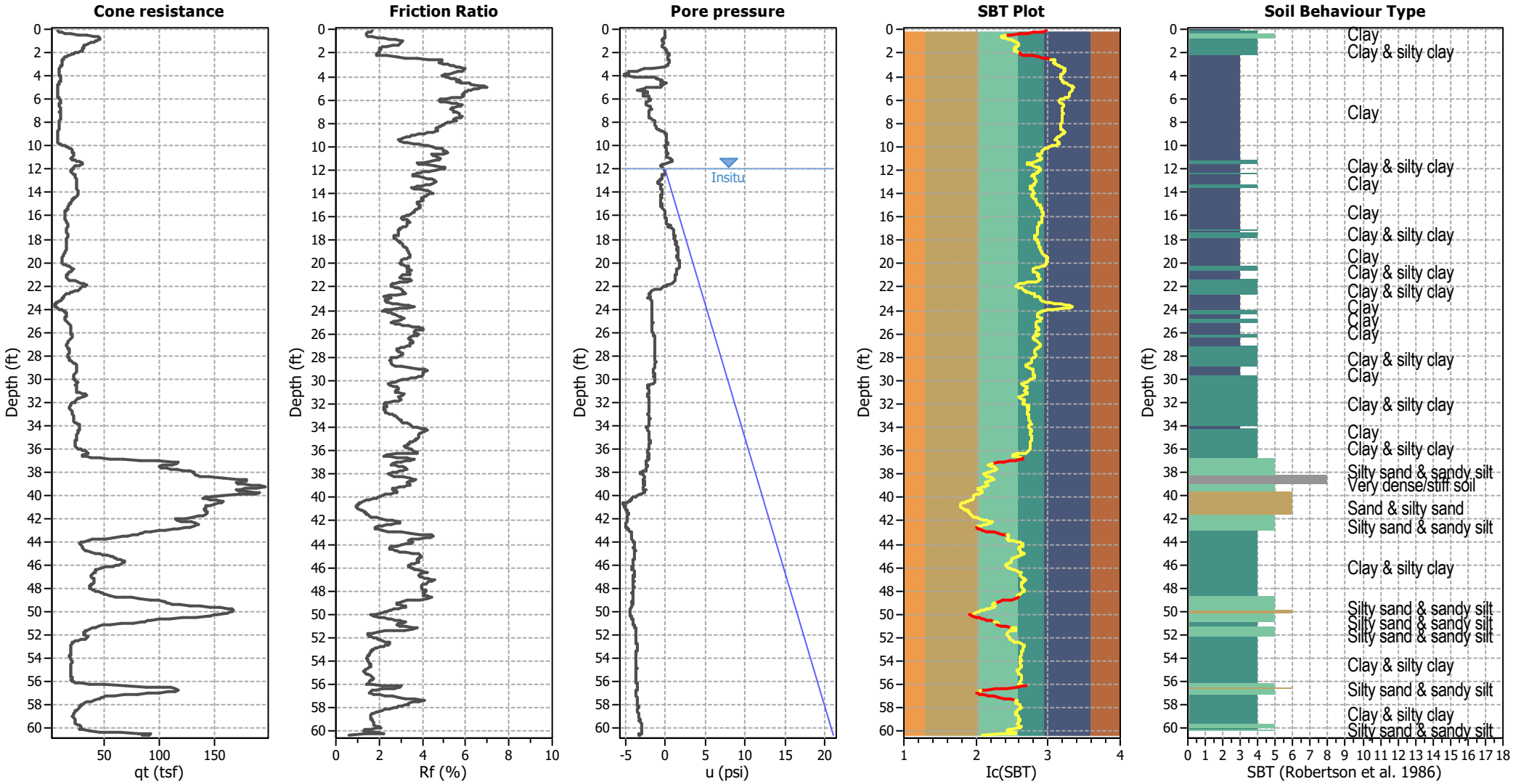






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



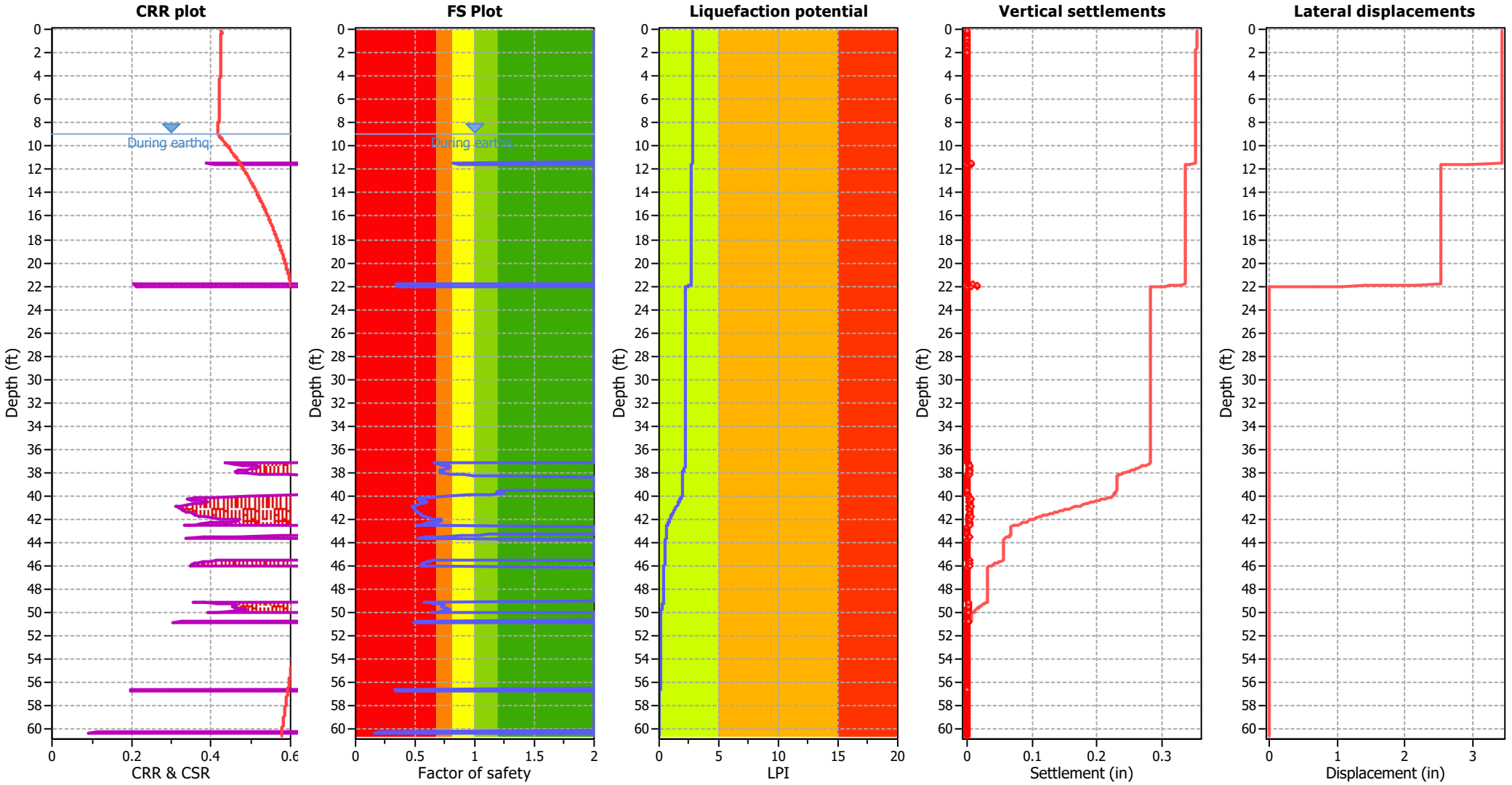
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	9.00 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:	6.87	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.82	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	12.00 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

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	9.00 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:	6.87	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.82	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	12.00 ft	Fill height:	N/A	Limit depth:	N/A

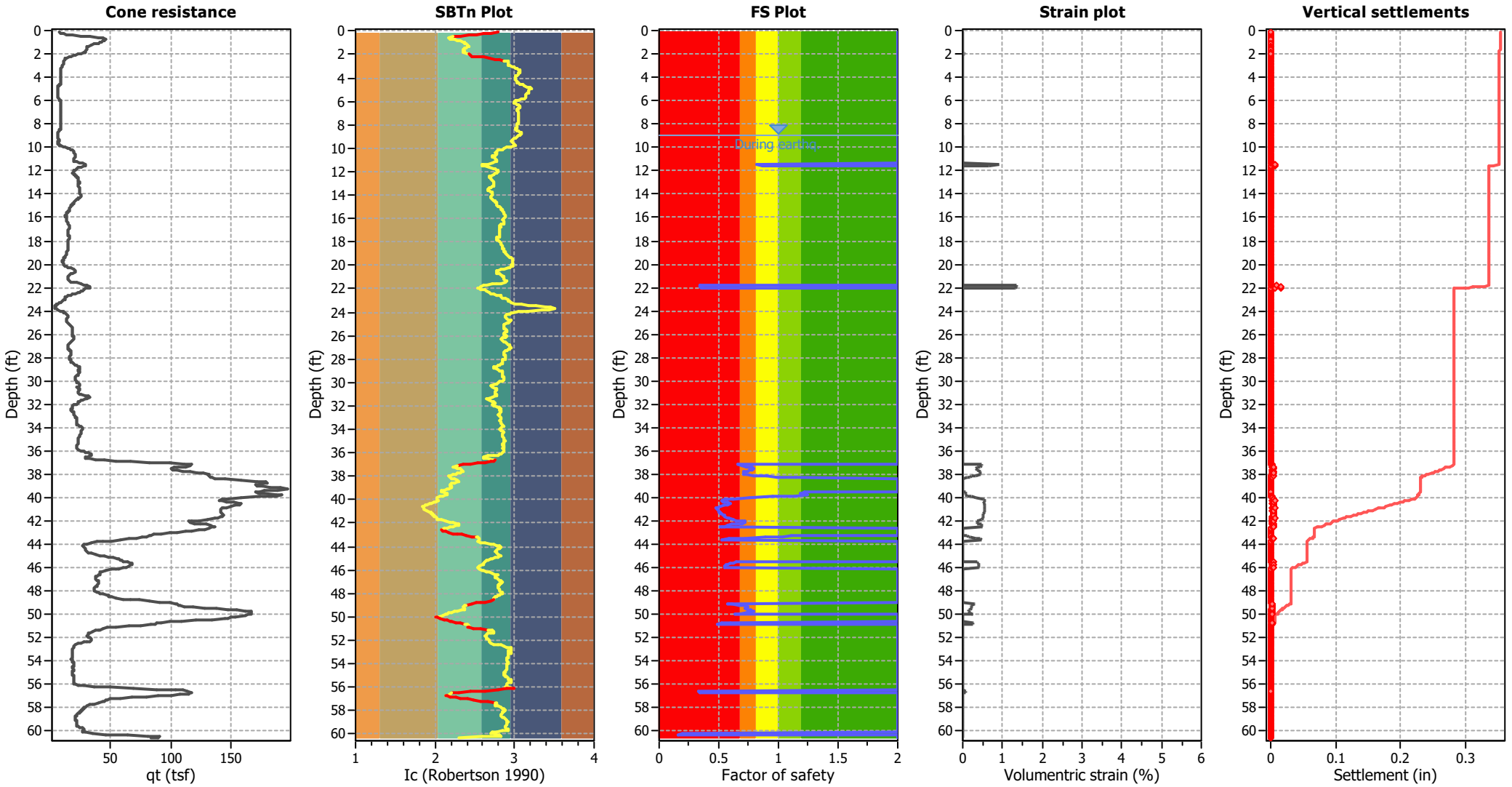
F.S. color scheme

- 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

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

:: Post-earthquake settlement of dry sands ::

Depth (ft)	Ic	Q_{tn}	Kc	$Q_{tn,cs}$	$N_{1,60}$ (blows)	G_{max} (tsf)	CSR	Shear, γ (%)	$e_{vol(15)}$ (%)	N_c	e_v (%)	Settle. (in)
0.08	2.78	12.35	5.66	69.90	0	0	0.43	0.000	0.00	0.00	0.00	0.000
0.15	2.71	14.74	4.77	70.31	0	0	0.43	0.000	0.00	0.00	0.00	0.000
0.23	2.60	18.66	3.78	70.62	0	0	0.43	0.000	0.00	0.00	0.00	0.000
0.30	2.52	22.68	3.13	71.08	0	0	0.43	0.000	0.00	0.00	0.00	0.000
0.35	2.42	29.85	2.49	74.48	0	0	0.43	0.000	0.00	0.00	0.00	0.000
0.42	2.31	41.10	1.96	80.55	0	0	0.43	0.000	0.00	0.00	0.00	0.000
0.50	2.22	53.73	1.66	89.43	0	0	0.43	0.000	0.00	0.00	0.00	0.000
0.55	2.17	64.89	1.54	99.96	0	0	0.43	0.000	0.00	0.00	0.00	0.000
0.61	2.17	70.73	1.55	109.97	25	622	0.43	0.004	0.00	9.85	0.00	0.000
0.70	2.20	73.83	1.61	118.69	27	668	0.43	0.004	0.00	9.85	0.00	0.000
0.73	2.24	73.78	1.71	126.20	29	701	0.43	0.004	0.00	9.85	0.00	0.000
0.80	2.28	72.62	1.84	133.66	31	727	0.43	0.004	0.00	9.85	0.00	0.000
0.89	2.32	71.18	1.99	141.77	34	750	0.43	0.005	0.00	9.85	0.00	0.000
0.93	2.35	69.21	2.15	148.48	36	763	0.43	0.005	0.00	9.85	0.00	0.000
1.01	2.37	66.86	2.22	148.67	36	753	0.43	0.006	0.00	9.85	0.00	0.000
1.09	2.38	64.21	2.27	146.02	36	733	0.43	0.006	0.00	9.85	0.00	0.000
1.13	2.40	60.24	2.36	141.99	35	702	0.43	0.007	0.00	9.85	0.00	0.000
1.19	2.41	56.35	2.45	138.00	34	671	0.43	0.008	0.00	9.85	0.00	0.000
1.29	2.43	52.36	2.52	132.05	33	634	0.43	0.010	0.01	9.85	0.00	0.000
1.34	2.41	50.01	2.45	122.65	30	596	0.43	0.012	0.01	9.85	0.01	0.000
1.39	2.39	49.14	2.31	113.50	28	566	0.43	0.015	0.01	9.85	0.01	0.000
1.45	2.36	48.85	2.20	107.27	26	546	0.43	0.017	0.01	9.85	0.01	0.000
1.54	2.35	48.70	2.15	104.70	25	538	0.43	0.020	0.01	9.85	0.01	0.000
1.59	2.35	48.99	2.12	103.88	25	537	0.43	0.021	0.02	9.85	0.01	0.000
1.67	2.37	47.31	2.21	104.70	25	531	0.43	0.023	0.02	9.85	0.01	0.000
1.72	2.35	48.59	2.13	103.38	25	533	0.43	0.024	0.02	9.85	0.01	0.000
1.79	2.36	47.11	2.18	102.82	25	525	0.42	0.027	0.02	9.85	0.02	0.000
1.85	2.36	45.86	2.19	100.31	24	512	0.42	0.030	0.02	9.85	0.02	0.000
1.94	2.40	41.30	2.40	99.07	24	486	0.42	0.038	0.03	9.85	0.02	0.000
1.98	2.42	37.95	2.50	95.05	24	458	0.42	0.049	0.04	9.85	0.03	0.000
2.04	2.44	35.12	2.59	90.82	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.13	2.47	31.99	2.76	88.29	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.17	2.53	28.45	3.21	91.30	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.24	2.61	25.62	3.81	97.62	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.32	2.69	23.17	4.57	105.77	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.39	2.75	21.58	5.24	113.09	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.43	2.82	20.18	6.04	122.01	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.52	2.87	19.13	6.79	129.79	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.58	2.91	18.40	7.40	136.11	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.63	2.93	18.17	7.60	138.03	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.72	2.92	18.30	7.53	137.83	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.78	2.92	18.43	7.43	136.93	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.83	2.91	18.47	7.41	136.94	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.89	2.93	18.18	7.62	138.52	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.98	2.95	17.70	7.93	140.37	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.03	2.97	17.06	8.30	141.55	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.09	2.99	16.34	8.65	141.35	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.18	3.01	15.71	8.96	140.69	0	0	0.42	0.000	0.00	0.00	0.00	0.000

:: Post-earthquake settlement of dry sands :: (continued)

Depth (ft)	Ic	Q_{tn}	Kc	$Q_{tn,cs}$	$N_{1,60}$ (blows)	G_{max} (tsf)	CSR	Shear, γ (%)	$e_{vol(15)}$ (%)	N_c	e_v (%)	Settle. (in)
3.22	3.04	14.97	9.40	140.74	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.32	3.05	14.47	9.74	140.93	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.37	3.07	14.06	10.03	140.96	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.42	3.07	13.99	9.98	139.66	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.52	3.06	13.97	9.91	138.42	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.57	3.06	13.96	9.83	137.19	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.61	3.05	13.95	9.75	136.05	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.68	3.05	13.98	9.58	133.99	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.77	3.03	14.07	9.33	131.24	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.83	3.01	14.25	9.04	128.88	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.91	3.01	14.40	8.90	128.18	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.95	3.01	14.59	8.88	129.49	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.02	3.01	14.79	8.89	131.59	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.12	3.01	15.00	8.90	133.47	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.14	3.01	15.11	8.97	135.55	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.22	3.02	15.11	9.13	138.01	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.26	3.03	15.02	9.36	140.63	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.37	3.04	14.87	9.52	141.49	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.42	3.04	14.73	9.41	138.50	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.46	3.05	14.39	9.60	138.14	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.57	3.06	13.96	9.90	138.10	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.61	3.10	13.28	10.58	140.54	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.67	3.12	12.75	10.95	139.59	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.76	3.16	11.68	11.95	139.55	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.81	3.19	11.14	12.48	139.07	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.90	3.21	10.75	12.89	138.50	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.96	3.19	10.96	12.46	136.67	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.00	3.18	10.90	12.39	135.05	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.05	3.18	10.84	12.28	133.04	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.14	3.18	10.73	12.20	130.87	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.20	3.17	10.64	12.15	129.26	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.30	3.17	10.68	12.06	128.82	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.35	3.16	10.97	11.80	129.46	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.39	3.15	11.24	11.56	129.92	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.48	3.14	11.33	11.46	129.78	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.55	3.14	11.27	11.48	129.35	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.59	3.15	11.22	11.57	129.76	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.64	3.14	11.36	11.45	130.11	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.74	3.13	11.65	11.18	130.29	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.79	3.11	12.03	10.77	129.66	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.84	3.08	12.60	10.21	128.74	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.94	3.05	13.22	9.66	127.74	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.97	3.01	14.03	9.00	126.25	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.05	3.00	14.60	8.71	127.24	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.14	2.99	15.03	8.63	129.64	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.19	3.00	15.07	8.86	133.50	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.24	3.02	14.82	9.19	136.20	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.33	3.04	14.47	9.55	138.23	0	0	0.42	0.000	0.00	0.00	0.00	0.000

:: Post-earthquake settlement of dry sands :: (continued)

Depth (ft)	Ic	Q_{tn}	Kc	$Q_{tn,cs}$	$N_{1,60}$ (blows)	G_{max} (tsf)	CSR	Shear, γ (%)	$e_{vol(15)}$ (%)	N_c	e_v (%)	Settle. (in)
6.38	3.06	14.18	9.87	139.87	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.44	3.07	14.08	9.98	140.53	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.52	3.07	14.03	9.96	139.66	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.59	3.06	14.02	9.80	137.45	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.64	3.05	14.12	9.60	135.48	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.70	3.04	14.31	9.42	134.74	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.78	3.03	14.44	9.35	135.07	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.83	3.03	14.49	9.35	135.45	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.89	3.04	14.29	9.52	135.98	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.98	3.04	14.28	9.53	136.01	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.03	3.05	14.13	9.69	136.92	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.09	3.05	14.27	9.68	138.08	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.18	3.06	14.26	9.79	139.57	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.23	3.05	14.59	9.63	140.49	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.29	3.04	14.83	9.55	141.57	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.38	3.04	15.01	9.52	142.92	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.42	3.05	15.01	9.60	144.04	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.48	3.05	14.81	9.63	142.56	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.58	3.04	14.61	9.53	139.29	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.62	3.04	14.32	9.54	136.66	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.68	3.05	14.22	9.60	136.47	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.78	3.05	14.12	9.73	137.32	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.81	3.05	14.12	9.66	136.35	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.88	3.04	14.06	9.55	134.35	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.97	3.04	14.06	9.42	132.39	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.01	3.03	14.05	9.30	130.74	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.11	3.03	14.04	9.24	129.77	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.14	3.02	13.99	9.17	128.37	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.22	3.02	13.89	9.16	127.28	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.30	3.02	13.79	9.11	125.65	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.35	3.02	13.64	9.12	124.38	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.41	3.02	13.49	9.12	122.99	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.50	3.03	13.15	9.29	122.13	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.56	3.04	12.72	9.54	121.42	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.61	3.06	12.05	9.94	119.81	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.68	3.08	11.47	10.19	116.87	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.75	3.08	10.99	10.30	113.20	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.80	3.08	10.79	10.18	109.84	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.89	3.07	10.69	10.02	107.10	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.94	3.05	10.69	9.71	103.78	0	0	0.42	0.000	0.00	0.00	0.00	0.000

:: Post-earthquake settlement of dry sands :: (continued)

Depth (ft)	Ic	Q_{tn}	Kc	$Q_{tn,cs}$	$N_{1,60}$ (blows)	G_{max} (tsf)	CSR	Shear, γ (%)	$e_{vol(15)}$ (%)	N_c	e_v (%)	Settle. (in)

Total estimated settlement: 0.00

Abbreviations

Q_{tn}: Equivalent clean sand normalized cone resistance
K_c: Fines correction factor
$Q_{tn,cs}$: Post-liquefaction volumentric strain
G_{max}: Small strain shear modulus
CSR: Soil cyclic stress ratio
γ: Cyclic shear strain
$e_{vol(15)}$: Volumetric strain after 15 cycles
N_c: Equivalent number of cycles
e_v: Volumetric strain
Settle.: Calculated settlement

:: Post-earthquake settlement due to soil liquefaction ::

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
9.00	101.33	2.00	0.00	0.85	0.00	9.08	99.42	2.00	0.00	0.85	0.00
9.15	98.91	2.00	0.00	0.84	0.00	9.20	97.89	2.00	0.00	0.84	0.00
9.28	96.10	2.00	0.00	0.84	0.00	9.35	94.37	2.00	0.00	0.84	0.00
9.40	93.35	2.00	0.00	0.84	0.00	9.45	93.03	2.00	0.00	0.84	0.00
9.55	92.88	2.00	0.00	0.84	0.00	9.59	94.89	2.00	0.00	0.84	0.00
9.69	98.37	2.00	0.00	0.84	0.00	9.74	104.29	2.00	0.00	0.83	0.00
9.79	110.06	2.00	0.00	0.83	0.00	9.84	119.23	2.00	0.00	0.83	0.00
9.94	127.23	2.00	0.00	0.83	0.00	10.00	138.46	2.00	0.00	0.83	0.00
10.09	146.64	2.00	0.00	0.83	0.00	10.13	155.07	2.00	0.00	0.83	0.00
10.18	160.01	2.00	0.00	0.83	0.00	10.24	164.76	2.00	0.00	0.83	0.00
10.33	167.61	2.00	0.00	0.82	0.00	10.37	170.08	2.00	0.00	0.82	0.00
10.43	171.87	2.00	0.00	0.82	0.00	10.52	172.65	2.00	0.00	0.82	0.00
10.59	168.22	2.00	0.00	0.82	0.00	10.64	162.62	2.00	0.00	0.82	0.00
10.70	157.34	2.00	0.00	0.82	0.00	10.78	157.32	2.00	0.00	0.82	0.00
10.83	158.09	2.00	0.00	0.82	0.00	10.94	160.18	2.00	0.00	0.81	0.00
10.98	161.14	2.00	0.00	0.81	0.00	11.03	161.38	2.00	0.00	0.81	0.00
11.09	160.07	2.00	0.00	0.81	0.00	11.17	158.76	2.00	0.00	0.81	0.00
11.24	154.72	2.00	0.00	0.81	0.00	11.33	150.11	2.00	0.00	0.81	0.00
11.37	147.45	2.00	0.00	0.81	0.00	11.44	148.76	0.82	0.92	0.81	0.01
11.52	152.64	0.87	0.67	0.80	0.01	11.57	159.75	2.00	0.00	0.80	0.00
11.63	166.32	2.00	0.00	0.80	0.00	11.72	170.55	2.00	0.00	0.80	0.00
11.76	170.15	2.00	0.00	0.80	0.00	11.83	167.43	2.00	0.00	0.80	0.00
11.92	165.17	2.00	0.00	0.80	0.00	11.94	160.98	2.00	0.00	0.80	0.00
12.02	153.99	2.00	0.00	0.80	0.00	12.11	145.17	2.00	0.00	0.79	0.00
12.16	138.77	2.00	0.00	0.79	0.00	12.22	135.92	2.00	0.00	0.79	0.00
12.31	134.11	2.00	0.00	0.79	0.00	12.36	131.70	2.00	0.00	0.79	0.00
12.42	131.06	2.00	0.00	0.79	0.00	12.50	132.75	2.00	0.00	0.79	0.00
12.56	138.76	2.00	0.00	0.79	0.00	12.62	145.14	2.00	0.00	0.79	0.00
12.70	150.29	2.00	0.00	0.78	0.00	12.77	153.20	2.00	0.00	0.78	0.00
12.81	156.74	2.00	0.00	0.78	0.00	12.90	159.58	2.00	0.00	0.78	0.00
12.96	161.77	2.00	0.00	0.78	0.00	13.01	161.79	2.00	0.00	0.78	0.00
13.06	160.39	2.00	0.00	0.78	0.00	13.16	157.63	2.00	0.00	0.78	0.00
13.21	154.61	2.00	0.00	0.78	0.00	13.26	149.61	2.00	0.00	0.78	0.00
13.36	144.46	2.00	0.00	0.77	0.00	13.40	139.31	2.00	0.00	0.77	0.00
13.46	136.00	2.00	0.00	0.77	0.00	13.55	133.17	2.00	0.00	0.77	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
13.60	136.22	2.00	0.00	0.77	0.00	13.67	142.35	2.00	0.00	0.77	0.00
13.75	149.51	2.00	0.00	0.77	0.00	13.80	152.39	2.00	0.00	0.77	0.00
13.86	154.79	2.00	0.00	0.77	0.00	13.95	157.06	2.00	0.00	0.76	0.00
13.99	157.62	2.00	0.00	0.76	0.00	14.06	155.79	2.00	0.00	0.76	0.00
14.15	153.33	2.00	0.00	0.76	0.00	14.19	150.89	2.00	0.00	0.76	0.00
14.26	147.88	2.00	0.00	0.76	0.00	14.35	144.55	2.00	0.00	0.76	0.00
14.39	141.84	2.00	0.00	0.76	0.00	14.45	140.52	2.00	0.00	0.76	0.00
14.55	139.88	2.00	0.00	0.75	0.00	14.58	138.75	2.00	0.00	0.75	0.00
14.65	136.40	2.00	0.00	0.75	0.00	14.73	133.48	2.00	0.00	0.75	0.00
14.77	130.91	2.00	0.00	0.75	0.00	14.84	130.08	2.00	0.00	0.75	0.00
14.94	129.68	2.00	0.00	0.75	0.00	15.00	129.99	2.00	0.00	0.75	0.00
15.03	129.38	2.00	0.00	0.75	0.00	15.11	128.38	2.00	0.00	0.74	0.00
15.19	127.31	2.00	0.00	0.74	0.00	15.24	126.29	2.00	0.00	0.74	0.00
15.29	124.72	2.00	0.00	0.74	0.00	15.39	122.97	2.00	0.00	0.74	0.00
15.42	121.34	2.00	0.00	0.74	0.00	15.49	119.55	2.00	0.00	0.74	0.00
15.59	117.56	2.00	0.00	0.74	0.00	15.63	115.59	2.00	0.00	0.74	0.00
15.69	113.94	2.00	0.00	0.73	0.00	15.78	112.34	2.00	0.00	0.73	0.00
15.84	110.36	2.00	0.00	0.73	0.00	15.89	108.32	2.00	0.00	0.73	0.00
15.95	106.13	2.00	0.00	0.73	0.00	16.04	104.85	2.00	0.00	0.73	0.00
16.08	104.19	2.00	0.00	0.73	0.00	16.18	105.05	2.00	0.00	0.73	0.00
16.24	106.76	2.00	0.00	0.72	0.00	16.28	109.29	2.00	0.00	0.72	0.00
16.36	111.43	2.00	0.00	0.72	0.00	16.43	112.96	2.00	0.00	0.72	0.00
16.47	113.13	2.00	0.00	0.72	0.00	16.54	112.95	2.00	0.00	0.72	0.00
16.63	112.85	2.00	0.00	0.72	0.00	16.68	113.79	2.00	0.00	0.72	0.00
16.78	113.39	2.00	0.00	0.72	0.00	16.82	111.83	2.00	0.00	0.71	0.00
16.87	109.28	2.00	0.00	0.71	0.00	16.93	107.22	2.00	0.00	0.71	0.00
17.01	105.71	2.00	0.00	0.71	0.00	17.09	104.65	2.00	0.00	0.71	0.00
17.15	103.83	2.00	0.00	0.71	0.00	17.20	103.41	2.00	0.00	0.71	0.00
17.27	103.10	2.00	0.00	0.71	0.00	17.35	103.42	2.00	0.00	0.71	0.00
17.40	103.99	2.00	0.00	0.71	0.00	17.45	104.14	2.00	0.00	0.70	0.00
17.55	103.60	2.00	0.00	0.70	0.00	17.59	102.20	2.00	0.00	0.70	0.00
17.65	101.34	2.00	0.00	0.70	0.00	17.75	100.78	2.00	0.00	0.70	0.00
17.79	101.09	2.00	0.00	0.70	0.00	17.87	101.47	2.00	0.00	0.70	0.00
17.94	101.91	2.00	0.00	0.70	0.00	17.98	102.31	2.00	0.00	0.70	0.00
18.05	102.97	2.00	0.00	0.69	0.00	18.14	103.88	2.00	0.00	0.69	0.00
18.18	104.81	2.00	0.00	0.69	0.00	18.24	105.70	2.00	0.00	0.69	0.00
18.34	106.38	2.00	0.00	0.69	0.00	18.39	106.90	2.00	0.00	0.69	0.00
18.44	107.34	2.00	0.00	0.69	0.00	18.54	108.01	2.00	0.00	0.69	0.00
18.59	108.81	2.00	0.00	0.68	0.00	18.64	109.22	2.00	0.00	0.68	0.00
18.74	109.44	2.00	0.00	0.68	0.00	18.79	109.64	2.00	0.00	0.68	0.00
18.84	109.76	2.00	0.00	0.68	0.00	18.92	109.71	2.00	0.00	0.68	0.00
18.97	109.61	2.00	0.00	0.68	0.00	19.04	109.47	2.00	0.00	0.68	0.00
19.14	109.27	2.00	0.00	0.68	0.00	19.17	109.02	2.00	0.00	0.68	0.00
19.24	108.15	2.00	0.00	0.67	0.00	19.34	107.25	2.00	0.00	0.67	0.00
19.39	106.59	2.00	0.00	0.67	0.00	19.43	105.35	2.00	0.00	0.67	0.00
19.52	103.77	2.00	0.00	0.67	0.00	19.56	101.21	2.00	0.00	0.67	0.00
19.63	98.45	2.00	0.00	0.67	0.00	19.73	96.65	2.00	0.00	0.67	0.00
19.78	96.72	2.00	0.00	0.66	0.00	19.82	96.82	2.00	0.00	0.66	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
19.90	96.84	2.00	0.00	0.66	0.00	19.96	95.72	2.00	0.00	0.66	0.00
20.03	97.07	2.00	0.00	0.66	0.00	20.09	98.92	2.00	0.00	0.66	0.00
20.16	102.96	2.00	0.00	0.66	0.00	20.23	108.30	2.00	0.00	0.66	0.00
20.31	112.01	2.00	0.00	0.66	0.00	20.35	113.84	2.00	0.00	0.66	0.00
20.42	116.37	2.00	0.00	0.65	0.00	20.50	119.89	2.00	0.00	0.65	0.00
20.55	122.97	2.00	0.00	0.65	0.00	20.62	121.60	2.00	0.00	0.65	0.00
20.70	118.37	2.00	0.00	0.65	0.00	20.75	117.36	2.00	0.00	0.65	0.00
20.82	116.27	2.00	0.00	0.65	0.00	20.90	114.40	2.00	0.00	0.65	0.00
20.96	109.62	2.00	0.00	0.64	0.00	21.01	105.89	2.00	0.00	0.64	0.00
21.11	103.41	2.00	0.00	0.64	0.00	21.15	102.00	2.00	0.00	0.64	0.00
21.21	102.13	2.00	0.00	0.64	0.00	21.27	105.51	2.00	0.00	0.64	0.00
21.36	109.83	2.00	0.00	0.64	0.00	21.40	113.48	2.00	0.00	0.64	0.00
21.51	114.13	2.00	0.00	0.64	0.00	21.55	113.81	2.00	0.00	0.63	0.00
21.60	112.51	2.00	0.00	0.63	0.00	21.69	111.06	2.00	0.00	0.63	0.00
21.75	110.32	2.00	0.00	0.63	0.00	21.80	110.42	0.34	1.36	0.63	0.01
21.90	110.90	0.34	1.35	0.63	0.02	21.95	111.21	0.35	1.35	0.63	0.01
22.00	112.62	0.35	1.33	0.63	0.01	22.09	114.60	0.36	1.31	0.63	0.02
22.11	118.16	2.00	0.00	0.63	0.00	22.19	120.23	2.00	0.00	0.62	0.00
22.26	120.71	2.00	0.00	0.62	0.00	22.35	119.30	2.00	0.00	0.62	0.00
22.39	117.61	2.00	0.00	0.62	0.00	22.44	116.79	2.00	0.00	0.62	0.00
22.55	115.70	2.00	0.00	0.62	0.00	22.58	112.74	2.00	0.00	0.62	0.00
22.65	102.26	2.00	0.00	0.62	0.00	22.74	92.86	2.00	0.00	0.61	0.00
22.83	86.33	2.00	0.00	0.61	0.00	22.85	89.18	2.00	0.00	0.61	0.00
22.94	89.35	2.00	0.00	0.61	0.00	23.00	88.17	2.00	0.00	0.61	0.00
23.05	85.79	2.00	0.00	0.61	0.00	23.10	83.06	2.00	0.00	0.61	0.00
23.18	81.06	2.00	0.00	0.61	0.00	23.25	79.84	2.00	0.00	0.61	0.00
23.30	78.61	2.00	0.00	0.61	0.00	23.38	77.45	2.00	0.00	0.60	0.00
23.45	75.87	2.00	0.00	0.60	0.00	23.50	75.02	2.00	0.00	0.60	0.00
23.60	74.51	2.00	0.00	0.60	0.00	23.65	74.37	2.00	0.00	0.60	0.00
23.70	74.25	2.00	0.00	0.60	0.00	23.76	74.15	2.00	0.00	0.60	0.00
23.84	74.75	2.00	0.00	0.60	0.00	23.89	76.18	2.00	0.00	0.60	0.00
23.99	77.29	2.00	0.00	0.59	0.00	24.03	78.03	2.00	0.00	0.59	0.00
24.09	81.68	2.00	0.00	0.59	0.00	24.19	85.62	2.00	0.00	0.59	0.00
24.24	89.96	2.00	0.00	0.59	0.00	24.30	92.24	2.00	0.00	0.59	0.00
24.34	95.18	2.00	0.00	0.59	0.00	24.44	97.92	2.00	0.00	0.59	0.00
24.50	100.04	2.00	0.00	0.58	0.00	24.58	101.17	2.00	0.00	0.58	0.00
24.65	101.74	2.00	0.00	0.58	0.00	24.69	101.62	2.00	0.00	0.58	0.00
24.74	100.76	2.00	0.00	0.58	0.00	24.84	98.50	2.00	0.00	0.58	0.00
24.89	95.84	2.00	0.00	0.58	0.00	24.95	93.46	2.00	0.00	0.58	0.00
25.04	92.60	2.00	0.00	0.58	0.00	25.08	94.79	2.00	0.00	0.57	0.00
25.19	98.29	2.00	0.00	0.57	0.00	25.24	102.73	2.00	0.00	0.57	0.00
25.28	106.34	2.00	0.00	0.57	0.00	25.35	112.13	2.00	0.00	0.57	0.00
25.43	117.73	2.00	0.00	0.57	0.00	25.48	123.05	2.00	0.00	0.57	0.00
25.53	126.40	2.00	0.00	0.57	0.00	25.63	126.45	2.00	0.00	0.57	0.00
25.68	124.05	2.00	0.00	0.56	0.00	25.73	119.66	2.00	0.00	0.56	0.00
25.79	118.85	2.00	0.00	0.56	0.00	25.88	119.72	2.00	0.00	0.56	0.00
25.92	121.16	2.00	0.00	0.56	0.00	25.98	122.23	2.00	0.00	0.56	0.00
26.05	121.91	2.00	0.00	0.56	0.00	26.13	120.76	2.00	0.00	0.56	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
26.20	118.30	2.00	0.00	0.56	0.00	26.26	116.96	2.00	0.00	0.55	0.00
26.31	116.33	2.00	0.00	0.55	0.00	26.40	115.74	2.00	0.00	0.55	0.00
26.45	115.07	2.00	0.00	0.55	0.00	26.54	114.90	2.00	0.00	0.55	0.00
26.59	114.86	2.00	0.00	0.55	0.00	26.65	114.28	2.00	0.00	0.55	0.00
26.74	112.86	2.00	0.00	0.55	0.00	26.78	111.17	2.00	0.00	0.55	0.00
26.84	109.68	2.00	0.00	0.55	0.00	26.94	108.40	2.00	0.00	0.54	0.00
26.99	107.33	2.00	0.00	0.54	0.00	27.04	105.11	2.00	0.00	0.54	0.00
27.13	102.82	2.00	0.00	0.54	0.00	27.18	100.34	2.00	0.00	0.54	0.00
27.24	99.34	2.00	0.00	0.54	0.00	27.34	98.79	2.00	0.00	0.54	0.00
27.40	99.03	2.00	0.00	0.54	0.00	27.44	100.46	2.00	0.00	0.53	0.00
27.53	101.90	2.00	0.00	0.53	0.00	27.57	103.62	2.00	0.00	0.53	0.00
27.64	104.73	2.00	0.00	0.53	0.00	27.72	105.37	2.00	0.00	0.53	0.00
27.79	105.16	2.00	0.00	0.53	0.00	27.83	104.08	2.00	0.00	0.53	0.00
27.89	101.81	2.00	0.00	0.53	0.00	27.98	98.91	2.00	0.00	0.53	0.00
28.03	95.98	2.00	0.00	0.52	0.00	28.09	94.13	2.00	0.00	0.52	0.00
28.18	93.33	2.00	0.00	0.52	0.00	28.22	93.24	2.00	0.00	0.52	0.00
28.28	93.85	2.00	0.00	0.52	0.00	28.38	94.24	2.00	0.00	0.52	0.00
28.43	94.75	2.00	0.00	0.52	0.00	28.48	96.11	2.00	0.00	0.52	0.00
28.58	97.37	2.00	0.00	0.52	0.00	28.62	100.66	2.00	0.00	0.51	0.00
28.69	101.64	2.00	0.00	0.51	0.00	28.77	105.36	2.00	0.00	0.51	0.00
28.82	111.97	2.00	0.00	0.51	0.00	28.88	121.51	2.00	0.00	0.51	0.00
28.97	128.92	2.00	0.00	0.51	0.00	29.01	132.42	2.00	0.00	0.51	0.00
29.07	134.53	2.00	0.00	0.51	0.00	29.15	136.01	2.00	0.00	0.51	0.00
29.21	135.86	2.00	0.00	0.50	0.00	29.30	134.69	2.00	0.00	0.50	0.00
29.33	132.90	2.00	0.00	0.50	0.00	29.41	131.79	2.00	0.00	0.50	0.00
29.50	130.90	2.00	0.00	0.50	0.00	29.53	129.98	2.00	0.00	0.50	0.00
29.61	127.53	2.00	0.00	0.50	0.00	29.70	124.49	2.00	0.00	0.50	0.00
29.74	120.72	2.00	0.00	0.50	0.00	29.80	117.49	2.00	0.00	0.49	0.00
29.90	114.00	2.00	0.00	0.49	0.00	29.93	110.44	2.00	0.00	0.49	0.00
30.00	106.88	2.00	0.00	0.49	0.00	30.09	104.13	2.00	0.00	0.49	0.00
30.15	103.16	2.00	0.00	0.49	0.00	30.19	102.23	2.00	0.00	0.49	0.00
30.30	99.81	2.00	0.00	0.49	0.00	30.33	98.56	2.00	0.00	0.49	0.00
30.40	100.24	2.00	0.00	0.48	0.00	30.49	102.77	2.00	0.00	0.48	0.00
30.54	105.81	2.00	0.00	0.48	0.00	30.59	107.09	2.00	0.00	0.48	0.00
30.64	108.58	2.00	0.00	0.48	0.00	30.72	107.92	2.00	0.00	0.48	0.00
30.80	106.36	2.00	0.00	0.48	0.00	30.88	104.67	2.00	0.00	0.48	0.00
30.93	104.33	2.00	0.00	0.48	0.00	31.00	104.54	2.00	0.00	0.47	0.00
31.04	107.78	2.00	0.00	0.47	0.00	31.13	111.93	2.00	0.00	0.47	0.00
31.20	116.47	2.00	0.00	0.47	0.00	31.29	118.06	2.00	0.00	0.47	0.00
31.34	117.19	2.00	0.00	0.47	0.00	31.38	116.00	2.00	0.00	0.47	0.00
31.43	115.19	2.00	0.00	0.47	0.00	31.51	115.35	2.00	0.00	0.47	0.00
31.58	115.42	2.00	0.00	0.46	0.00	31.63	114.04	2.00	0.00	0.46	0.00
31.71	109.78	2.00	0.00	0.46	0.00	31.78	103.57	2.00	0.00	0.46	0.00
31.83	97.47	2.00	0.00	0.46	0.00	31.90	93.66	2.00	0.00	0.46	0.00
31.98	91.77	2.00	0.00	0.46	0.00	32.03	91.43	2.00	0.00	0.46	0.00
32.09	91.88	2.00	0.00	0.46	0.00	32.16	91.38	2.00	0.00	0.45	0.00
32.22	89.96	2.00	0.00	0.45	0.00	32.30	87.65	2.00	0.00	0.45	0.00
32.38	86.55	2.00	0.00	0.45	0.00	32.42	86.38	2.00	0.00	0.45	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
32.50	87.13	2.00	0.00	0.45	0.00	32.56	87.72	2.00	0.00	0.45	0.00
32.62	88.85	2.00	0.00	0.45	0.00	32.72	90.01	2.00	0.00	0.45	0.00
32.77	91.93	2.00	0.00	0.44	0.00	32.82	94.63	2.00	0.00	0.44	0.00
32.91	97.28	2.00	0.00	0.44	0.00	32.97	99.56	2.00	0.00	0.44	0.00
33.02	101.24	2.00	0.00	0.44	0.00	33.11	102.44	2.00	0.00	0.44	0.00
33.16	103.42	2.00	0.00	0.44	0.00	33.22	104.12	2.00	0.00	0.44	0.00
33.29	105.12	2.00	0.00	0.44	0.00	33.37	106.32	2.00	0.00	0.43	0.00
33.41	107.11	2.00	0.00	0.43	0.00	33.47	107.85	2.00	0.00	0.43	0.00
33.57	108.35	2.00	0.00	0.43	0.00	33.60	109.78	2.00	0.00	0.43	0.00
33.67	112.26	2.00	0.00	0.43	0.00	33.76	115.45	2.00	0.00	0.43	0.00
33.80	117.65	2.00	0.00	0.43	0.00	33.86	120.58	2.00	0.00	0.43	0.00
33.96	123.86	2.00	0.00	0.42	0.00	34.00	128.59	2.00	0.00	0.42	0.00
34.06	132.35	2.00	0.00	0.42	0.00	34.16	134.94	2.00	0.00	0.42	0.00
34.20	136.06	2.00	0.00	0.42	0.00	34.26	135.32	2.00	0.00	0.42	0.00
34.36	134.08	2.00	0.00	0.42	0.00	34.39	132.47	2.00	0.00	0.42	0.00
34.46	130.79	2.00	0.00	0.42	0.00	34.55	128.83	2.00	0.00	0.41	0.00
34.60	127.43	2.00	0.00	0.41	0.00	34.65	126.49	2.00	0.00	0.41	0.00
34.75	126.03	2.00	0.00	0.41	0.00	34.80	125.40	2.00	0.00	0.41	0.00
34.85	124.56	2.00	0.00	0.41	0.00	34.95	123.49	2.00	0.00	0.41	0.00
34.99	122.16	2.00	0.00	0.41	0.00	35.06	121.12	2.00	0.00	0.41	0.00
35.11	119.79	2.00	0.00	0.40	0.00	35.19	118.28	2.00	0.00	0.40	0.00
35.25	116.78	2.00	0.00	0.40	0.00	35.31	115.73	2.00	0.00	0.40	0.00
35.39	114.75	2.00	0.00	0.40	0.00	35.49	113.76	2.00	0.00	0.40	0.00
35.53	112.06	2.00	0.00	0.40	0.00	35.60	110.68	2.00	0.00	0.40	0.00
35.63	109.44	2.00	0.00	0.40	0.00	35.70	110.02	2.00	0.00	0.39	0.00
35.78	111.61	2.00	0.00	0.39	0.00	35.84	114.65	2.00	0.00	0.39	0.00
35.90	117.72	2.00	0.00	0.39	0.00	35.98	121.30	2.00	0.00	0.39	0.00
36.06	124.91	2.00	0.00	0.39	0.00	36.09	128.97	2.00	0.00	0.39	0.00
36.18	130.36	2.00	0.00	0.39	0.00	36.23	124.49	2.00	0.00	0.39	0.00
36.29	112.80	2.00	0.00	0.38	0.00	36.38	101.16	2.00	0.00	0.38	0.00
36.42	97.09	2.00	0.00	0.38	0.00	36.49	101.98	2.00	0.00	0.38	0.00
36.58	110.03	2.00	0.00	0.38	0.00	36.62	119.88	2.00	0.00	0.38	0.00
36.68	128.67	2.00	0.00	0.38	0.00	36.77	135.53	2.00	0.00	0.38	0.00
36.83	136.87	2.00	0.00	0.38	0.00	36.88	138.03	2.00	0.00	0.37	0.00
36.97	139.80	2.00	0.00	0.37	0.00	37.02	142.36	2.00	0.00	0.37	0.00
37.08	146.14	2.00	0.00	0.37	0.00	37.17	151.35	2.00	0.00	0.37	0.00
37.22	156.40	0.66	0.48	0.37	0.00	37.27	159.68	0.70	0.47	0.37	0.00
37.37	162.51	0.73	0.45	0.37	0.01	37.41	165.61	0.76	0.36	0.37	0.00
37.47	167.30	0.78	0.35	0.36	0.00	37.57	167.99	0.79	0.35	0.36	0.00
37.61	167.08	0.78	0.35	0.36	0.00	37.67	165.23	0.76	0.35	0.36	0.00
37.76	163.98	0.74	0.44	0.36	0.00	37.81	160.97	0.71	0.45	0.36	0.00
37.87	160.53	0.71	0.45	0.36	0.00	37.97	160.18	0.70	0.45	0.36	0.01
38.02	160.31	0.70	0.45	0.36	0.00	38.07	163.31	0.74	0.43	0.35	0.00
38.17	168.09	0.79	0.34	0.35	0.00	38.20	176.91	0.90	0.24	0.35	0.00
38.27	182.99	0.99	0.18	0.35	0.00	38.33	193.29	1.14	0.13	0.35	0.00
38.42	203.16	2.00	0.00	0.35	0.00	38.46	211.87	2.00	0.00	0.35	0.00
38.53	216.47	2.00	0.00	0.35	0.00	38.62	220.95	2.00	0.00	0.35	0.00
38.66	223.47	2.00	0.00	0.34	0.00	38.73	223.71	2.00	0.00	0.34	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
38.81	222.89	2.00	0.00	0.34	0.00	38.86	221.48	2.00	0.00	0.34	0.00
38.93	218.94	2.00	0.00	0.34	0.00	39.02	216.51	2.00	0.00	0.34	0.00
39.05	214.69	2.00	0.00	0.34	0.00	39.12	214.55	2.00	0.00	0.34	0.00
39.17	215.11	2.00	0.00	0.34	0.00	39.27	215.63	2.00	0.00	0.33	0.00
39.31	213.93	2.00	0.00	0.33	0.00	39.37	209.26	2.00	0.00	0.33	0.00
39.44	204.33	2.00	0.00	0.33	0.00	39.50	201.51	2.00	0.00	0.33	0.00
39.59	198.11	1.22	0.08	0.33	0.00	39.65	196.40	1.20	0.08	0.33	0.00
39.71	195.79	1.19	0.08	0.33	0.00	39.77	198.67	1.23	0.08	0.33	0.00
39.84	199.00	1.24	0.08	0.32	0.00	39.91	192.21	1.13	0.12	0.32	0.00
39.97	179.76	0.95	0.21	0.32	0.00	40.03	164.60	0.75	0.32	0.32	0.00
40.10	151.90	0.62	0.53	0.32	0.00	40.17	144.83	0.55	0.55	0.32	0.00
40.26	140.91	0.52	0.56	0.32	0.01	40.30	141.00	0.52	0.56	0.32	0.00
40.36	142.79	0.54	0.55	0.32	0.00	40.45	146.85	0.57	0.54	0.31	0.01
40.49	149.74	0.60	0.53	0.31	0.00	40.56	149.25	0.59	0.53	0.31	0.00
40.62	147.22	0.58	0.54	0.31	0.00	40.70	144.28	0.55	0.54	0.31	0.01
40.76	140.59	0.52	0.55	0.31	0.00	40.86	137.25	0.49	0.55	0.31	0.01
40.89	135.59	0.48	0.56	0.31	0.00	40.95	135.98	0.48	0.56	0.31	0.00
41.03	137.07	0.49	0.55	0.30	0.01	41.11	138.01	0.50	0.54	0.30	0.01
41.16	138.42	0.50	0.54	0.30	0.00	41.23	138.91	0.50	0.54	0.30	0.00
41.29	139.30	0.51	0.53	0.30	0.00	41.35	140.54	0.52	0.53	0.30	0.00
41.41	142.01	0.53	0.52	0.30	0.00	41.49	143.26	0.54	0.52	0.30	0.01
41.56	143.83	0.55	0.51	0.30	0.00	41.64	143.97	0.55	0.51	0.29	0.00
41.69	144.53	0.55	0.51	0.29	0.00	41.73	146.32	0.57	0.50	0.29	0.00
41.84	148.53	0.59	0.50	0.29	0.01	41.89	151.73	0.62	0.48	0.29	0.00
41.98	154.70	0.65	0.38	0.29	0.00	42.04	158.42	0.69	0.37	0.29	0.00
42.09	161.42	0.72	0.36	0.29	0.00	42.16	160.97	0.72	0.36	0.29	0.00
42.24	158.49	0.69	0.36	0.28	0.00	42.28	154.63	0.65	0.38	0.28	0.00
42.33	150.58	0.61	0.47	0.28	0.00	42.39	146.79	0.57	0.48	0.28	0.00
42.47	143.88	0.55	0.49	0.28	0.00	42.53	141.53	0.53	0.49	0.28	0.00
42.59	139.84	0.51	0.49	0.28	0.00	42.66	138.25	2.00	0.00	0.28	0.00
42.73	137.82	2.00	0.00	0.28	0.00	42.83	139.88	2.00	0.00	0.27	0.00
42.88	144.35	2.00	0.00	0.27	0.00	42.93	150.38	2.00	0.00	0.27	0.00
42.99	157.31	2.00	0.00	0.27	0.00	43.07	166.18	2.00	0.00	0.27	0.00
43.14	177.34	2.00	0.00	0.27	0.00	43.19	186.54	2.00	0.00	0.27	0.00
43.25	189.94	2.00	0.00	0.27	0.00	43.34	189.77	1.10	0.10	0.27	0.00
43.39	184.91	1.03	0.13	0.26	0.00	43.45	174.49	0.89	0.18	0.26	0.00
43.54	160.92	0.72	0.33	0.26	0.00	43.59	147.66	0.59	0.45	0.26	0.00
43.64	140.41	0.52	0.46	0.26	0.00	43.73	137.17	2.00	0.00	0.26	0.00
43.78	134.97	2.00	0.00	0.26	0.00	43.83	130.60	2.00	0.00	0.26	0.00
43.94	123.92	2.00	0.00	0.26	0.00	43.98	116.31	2.00	0.00	0.25	0.00
44.04	109.34	2.00	0.00	0.25	0.00	44.14	103.95	2.00	0.00	0.25	0.00
44.17	100.39	2.00	0.00	0.25	0.00	44.23	98.96	2.00	0.00	0.25	0.00
44.33	98.24	2.00	0.00	0.25	0.00	44.37	98.01	2.00	0.00	0.25	0.00
44.44	100.53	2.00	0.00	0.25	0.00	44.53	103.40	2.00	0.00	0.25	0.00
44.58	105.36	2.00	0.00	0.24	0.00	44.64	109.10	2.00	0.00	0.24	0.00
44.73	115.07	2.00	0.00	0.24	0.00	44.77	123.80	2.00	0.00	0.24	0.00
44.82	130.20	2.00	0.00	0.24	0.00	44.90	134.97	2.00	0.00	0.24	0.00
44.97	138.80	2.00	0.00	0.24	0.00	45.03	142.61	2.00	0.00	0.24	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
45.09	146.40	2.00	0.00	0.24	0.00	45.17	149.00	2.00	0.00	0.23	0.00
45.22	149.60	2.00	0.00	0.23	0.00	45.29	149.78	2.00	0.00	0.23	0.00
45.38	150.28	2.00	0.00	0.23	0.00	45.42	152.18	2.00	0.00	0.23	0.00
45.50	153.20	2.00	0.00	0.23	0.00	45.57	153.10	0.65	0.37	0.23	0.00
45.62	150.76	0.62	0.38	0.23	0.00	45.69	147.76	0.59	0.39	0.23	0.00
45.77	145.37	0.57	0.39	0.22	0.00	45.82	143.97	0.56	0.39	0.22	0.00
45.88	143.19	0.55	0.39	0.22	0.00	45.97	142.46	0.55	0.39	0.22	0.00
46.02	142.50	0.55	0.38	0.22	0.00	46.10	142.99	2.00	0.00	0.22	0.00
46.17	143.20	2.00	0.00	0.22	0.00	46.21	143.22	2.00	0.00	0.22	0.00
46.27	144.40	2.00	0.00	0.22	0.00	46.36	145.56	2.00	0.00	0.21	0.00
46.41	145.68	2.00	0.00	0.21	0.00	46.46	142.56	2.00	0.00	0.21	0.00
46.56	138.89	2.00	0.00	0.21	0.00	46.61	136.14	2.00	0.00	0.21	0.00
46.66	136.05	2.00	0.00	0.21	0.00	46.74	136.33	2.00	0.00	0.21	0.00
46.81	136.93	2.00	0.00	0.21	0.00	46.87	138.17	2.00	0.00	0.21	0.00
46.94	141.36	2.00	0.00	0.20	0.00	47.01	144.83	2.00	0.00	0.20	0.00
47.06	147.17	2.00	0.00	0.20	0.00	47.12	146.19	2.00	0.00	0.20	0.00
47.19	144.86	2.00	0.00	0.20	0.00	47.25	144.06	2.00	0.00	0.20	0.00
47.34	144.09	2.00	0.00	0.20	0.00	47.39	142.18	2.00	0.00	0.20	0.00
47.44	139.14	2.00	0.00	0.20	0.00	47.54	136.97	2.00	0.00	0.19	0.00
47.59	136.75	2.00	0.00	0.19	0.00	47.65	136.17	2.00	0.00	0.19	0.00
47.74	134.55	2.00	0.00	0.19	0.00	47.81	133.83	2.00	0.00	0.19	0.00
47.85	134.90	2.00	0.00	0.19	0.00	47.94	137.42	2.00	0.00	0.19	0.00
47.98	138.47	2.00	0.00	0.19	0.00	48.04	138.53	2.00	0.00	0.19	0.00
48.13	138.02	2.00	0.00	0.18	0.00	48.17	139.73	2.00	0.00	0.18	0.00
48.24	141.88	2.00	0.00	0.18	0.00	48.32	144.07	2.00	0.00	0.18	0.00
48.37	146.21	2.00	0.00	0.18	0.00	48.44	150.67	2.00	0.00	0.18	0.00
48.53	155.41	2.00	0.00	0.18	0.00	48.56	158.25	2.00	0.00	0.18	0.00
48.64	157.05	2.00	0.00	0.18	0.00	48.72	153.53	2.00	0.00	0.17	0.00
48.78	149.69	2.00	0.00	0.17	0.00	48.83	144.78	2.00	0.00	0.17	0.00
48.90	142.00	2.00	0.00	0.17	0.00	48.97	140.23	2.00	0.00	0.17	0.00
49.03	141.63	2.00	0.00	0.17	0.00	49.12	143.64	0.57	0.29	0.17	0.00
49.16	148.47	0.61	0.29	0.17	0.00	49.23	153.56	0.67	0.22	0.17	0.00
49.31	158.66	0.72	0.21	0.16	0.00	49.35	160.58	0.74	0.21	0.16	0.00
49.43	160.13	0.74	0.20	0.16	0.00	49.52	158.95	0.73	0.20	0.16	0.00
49.58	158.76	0.72	0.20	0.16	0.00	49.62	160.13	0.74	0.20	0.16	0.00
49.71	162.07	0.76	0.16	0.16	0.00	49.77	163.87	0.78	0.15	0.16	0.00
49.81	164.19	0.79	0.15	0.16	0.00	49.88	159.36	0.73	0.20	0.15	0.00
49.97	153.77	0.67	0.20	0.15	0.00	50.00	149.75	0.63	0.26	0.15	0.00
50.07	149.00	2.00	0.00	0.15	0.00	50.14	149.54	2.00	0.00	0.15	0.00
50.22	148.64	2.00	0.00	0.15	0.00	50.27	151.51	2.00	0.00	0.15	0.00
50.35	154.20	2.00	0.00	0.15	0.00	50.40	156.28	2.00	0.00	0.15	0.00
50.47	155.99	2.00	0.00	0.14	0.00	50.55	156.36	2.00	0.00	0.14	0.00
50.59	156.56	2.00	0.00	0.14	0.00	50.66	153.04	2.00	0.00	0.14	0.00
50.74	146.46	0.60	0.24	0.14	0.00	50.79	138.13	0.53	0.25	0.14	0.00
50.86	133.63	0.49	0.25	0.14	0.00	50.94	132.11	2.00	0.00	0.14	0.00
50.99	134.17	2.00	0.00	0.14	0.00	51.05	136.77	2.00	0.00	0.13	0.00
51.14	139.15	2.00	0.00	0.13	0.00	51.18	137.69	2.00	0.00	0.13	0.00
51.25	130.60	2.00	0.00	0.13	0.00	51.34	119.24	2.00	0.00	0.13	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
51.41	106.80	2.00	0.00	0.13	0.00	51.44	96.27	2.00	0.00	0.13	0.00
51.52	87.03	2.00	0.00	0.13	0.00	51.67	78.91	2.00	0.00	0.12	0.00
51.70	74.17	2.00	0.00	0.12	0.00	51.75	73.20	2.00	0.00	0.12	0.00
51.78	73.20	2.00	0.00	0.12	0.00	51.88	74.59	2.00	0.00	0.12	0.00
51.92	77.58	2.00	0.00	0.12	0.00	51.99	80.94	2.00	0.00	0.12	0.00
52.04	84.29	2.00	0.00	0.12	0.00	52.14	86.69	2.00	0.00	0.12	0.00
52.19	88.79	2.00	0.00	0.12	0.00	52.26	91.35	2.00	0.00	0.11	0.00
52.33	93.65	2.00	0.00	0.11	0.00	52.38	95.32	2.00	0.00	0.11	0.00
52.43	94.73	2.00	0.00	0.11	0.00	52.51	92.01	2.00	0.00	0.11	0.00
52.58	88.39	2.00	0.00	0.11	0.00	52.63	83.60	2.00	0.00	0.11	0.00
52.69	80.84	2.00	0.00	0.11	0.00	52.77	77.69	2.00	0.00	0.11	0.00
52.83	74.38	2.00	0.00	0.10	0.00	52.90	73.51	2.00	0.00	0.10	0.00
52.99	72.21	2.00	0.00	0.10	0.00	53.05	70.46	2.00	0.00	0.10	0.00
53.10	69.77	2.00	0.00	0.10	0.00	53.16	70.07	2.00	0.00	0.10	0.00
53.25	69.20	2.00	0.00	0.10	0.00	53.29	68.88	2.00	0.00	0.10	0.00
53.38	68.54	2.00	0.00	0.10	0.00	53.44	68.27	2.00	0.00	0.09	0.00
53.50	67.95	2.00	0.00	0.09	0.00	53.55	67.38	2.00	0.00	0.09	0.00
53.64	66.68	2.00	0.00	0.09	0.00	53.72	66.00	2.00	0.00	0.09	0.00
53.74	65.87	2.00	0.00	0.09	0.00	53.82	66.22	2.00	0.00	0.09	0.00
53.90	66.58	2.00	0.00	0.09	0.00	53.94	66.96	2.00	0.00	0.09	0.00
54.01	67.05	2.00	0.00	0.08	0.00	54.09	67.86	2.00	0.00	0.08	0.00
54.19	68.91	2.00	0.00	0.08	0.00	54.24	70.20	2.00	0.00	0.08	0.00
54.29	70.76	2.00	0.00	0.08	0.00	54.35	70.73	2.00	0.00	0.08	0.00
54.44	70.29	2.00	0.00	0.08	0.00	54.49	69.82	2.00	0.00	0.08	0.00
54.53	68.57	2.00	0.00	0.08	0.00	54.63	66.88	2.00	0.00	0.07	0.00
54.68	64.96	2.00	0.00	0.07	0.00	54.74	64.11	2.00	0.00	0.07	0.00
54.83	63.80	2.00	0.00	0.07	0.00	54.88	63.72	2.00	0.00	0.07	0.00
54.94	64.01	2.00	0.00	0.07	0.00	55.03	64.53	2.00	0.00	0.07	0.00
55.07	65.71	2.00	0.00	0.07	0.00	55.13	67.48	2.00	0.00	0.07	0.00
55.23	69.15	2.00	0.00	0.06	0.00	55.28	70.37	2.00	0.00	0.06	0.00
55.32	71.08	2.00	0.00	0.06	0.00	55.42	70.36	2.00	0.00	0.06	0.00
55.50	70.66	2.00	0.00	0.06	0.00	55.53	70.58	2.00	0.00	0.06	0.00
55.58	70.05	2.00	0.00	0.06	0.00	55.66	70.15	2.00	0.00	0.06	0.00
55.73	68.88	2.00	0.00	0.06	0.00	55.78	68.34	2.00	0.00	0.05	0.00
55.86	68.14	2.00	0.00	0.05	0.00	55.92	65.34	2.00	0.00	0.05	0.00
55.97	71.60	2.00	0.00	0.05	0.00	56.08	79.51	2.00	0.00	0.05	0.00
56.12	91.66	2.00	0.00	0.05	0.00	56.17	103.40	2.00	0.00	0.05	0.00
56.27	109.94	2.00	0.00	0.05	0.00	56.32	111.54	2.00	0.00	0.05	0.00
56.37	105.71	2.00	0.00	0.04	0.00	56.47	103.87	2.00	0.00	0.04	0.00
56.52	105.94	2.00	0.00	0.04	0.00	56.56	107.11	2.00	0.00	0.04	0.00
56.67	108.00	0.33	0.09	0.04	0.00	56.72	108.67	0.34	0.08	0.04	0.00
56.78	110.36	2.00	0.00	0.04	0.00	56.87	112.76	2.00	0.00	0.04	0.00
56.91	116.71	2.00	0.00	0.04	0.00	56.97	121.24	2.00	0.00	0.03	0.00
57.03	126.61	2.00	0.00	0.03	0.00	57.11	130.61	2.00	0.00	0.03	0.00
57.17	135.46	2.00	0.00	0.03	0.00	57.26	139.68	2.00	0.00	0.03	0.00
57.32	143.78	2.00	0.00	0.03	0.00	57.35	142.51	2.00	0.00	0.03	0.00
57.42	136.68	2.00	0.00	0.03	0.00	57.51	129.18	2.00	0.00	0.03	0.00
57.55	123.53	2.00	0.00	0.02	0.00	57.62	120.84	2.00	0.00	0.02	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
57.71	117.54	2.00	0.00	0.02	0.00	57.78	113.46	2.00	0.00	0.02	0.00
57.82	108.24	2.00	0.00	0.02	0.00	57.90	104.04	2.00	0.00	0.02	0.00
57.95	100.66	2.00	0.00	0.02	0.00	58.01	97.04	2.00	0.00	0.02	0.00
58.11	92.93	2.00	0.00	0.02	0.00	58.15	88.14	2.00	0.00	0.01	0.00
58.21	84.82	2.00	0.00	0.01	0.00	58.31	81.63	2.00	0.00	0.01	0.00
58.35	78.61	2.00	0.00	0.01	0.00	58.42	75.87	2.00	0.00	0.01	0.00
58.50	73.65	2.00	0.00	0.01	0.00	58.55	72.34	2.00	0.00	0.01	0.00
58.60	71.83	2.00	0.00	0.01	0.00	58.70	71.23	2.00	0.00	0.01	0.00
58.75	70.82	2.00	0.00	0.00	0.00	58.81	70.55	2.00	0.00	0.00	0.00
58.89	70.56	2.00	0.00	0.00	0.00	58.95	70.67	2.00	0.00	0.00	0.00
59.00	71.07	2.00	0.00	0.00	0.00	59.10	71.50	2.00	0.00	0.00	0.00
59.15	72.46	2.00	0.00	0.00	0.00	59.20	73.62	2.00	0.00	0.00	0.00
59.28	74.24	2.00	0.00	0.00	0.00	59.35	74.22	2.00	0.00	0.00	0.00
59.38	73.81	2.00	0.00	0.00	0.00	59.45	74.00	2.00	0.00	0.00	0.00
59.52	76.20	2.00	0.00	0.00	0.00	59.59	78.85	2.00	0.00	0.00	0.00
59.67	80.48	2.00	0.00	0.00	0.00	59.73	78.56	2.00	0.00	0.00	0.00
59.79	73.38	2.00	0.00	0.00	0.00	59.89	69.13	2.00	0.00	0.00	0.00
59.94	67.39	2.00	0.00	0.00	0.00	59.98	70.28	2.00	0.00	0.00	0.00
60.06	74.09	2.00	0.00	0.00	0.00	60.12	80.43	2.00	0.00	0.00	0.00
60.19	87.61	2.00	0.00	0.00	0.00	60.25	69.86	0.19	0.00	0.00	0.00
60.33	49.33	0.16	0.00	0.00	0.00	60.38	-1.00	2.00	0.00	0.00	0.00
60.48	-1.00	2.00	0.00	0.00	0.00	60.53	-1.00	2.00	0.00	0.00	0.00
60.61	-1.00	2.00	0.00	0.00	0.00	60.63	-1.00	2.00	0.00	0.00	0.00

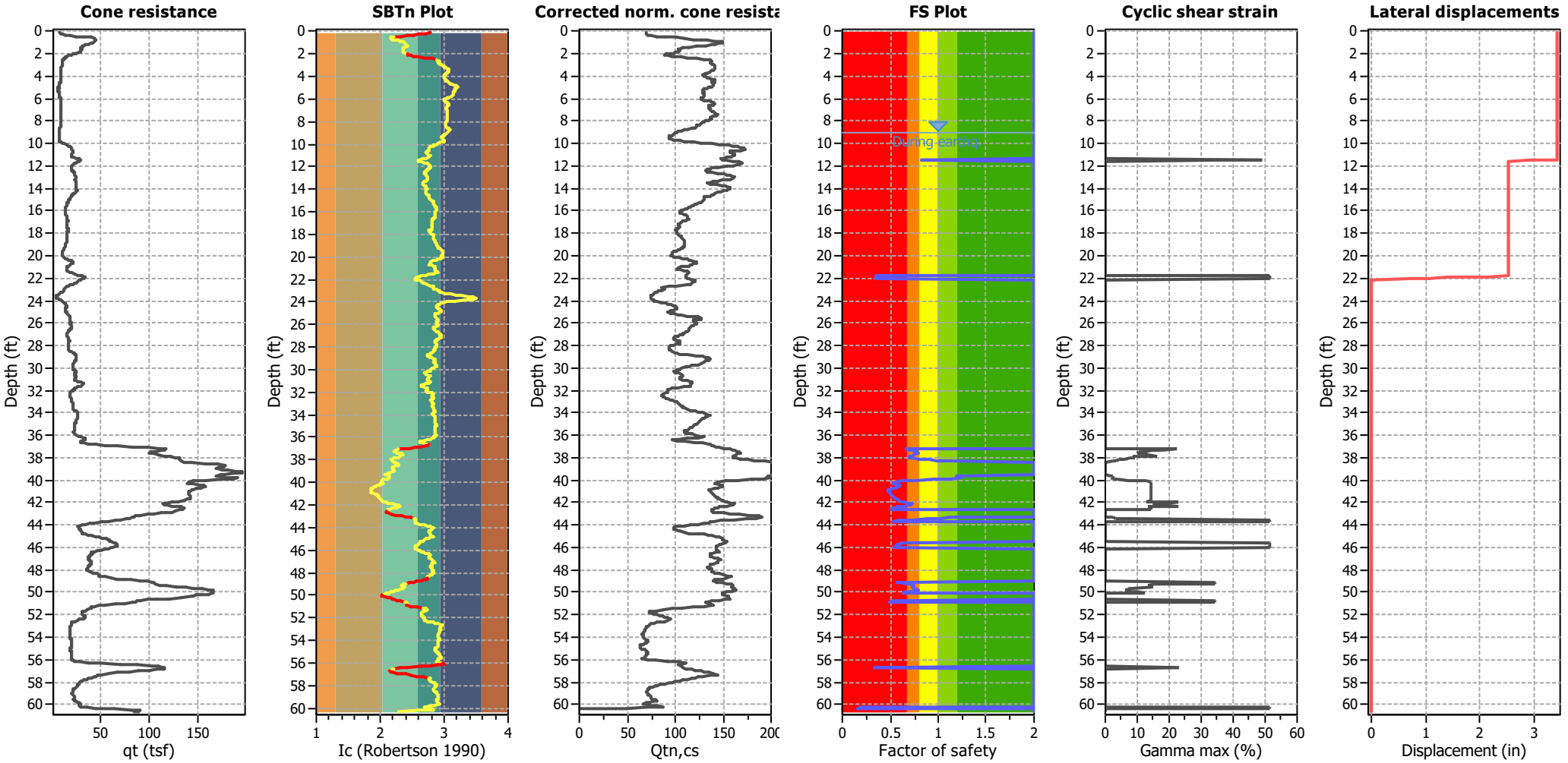
Total estimated settlement: 0.35

Abbreviations

$Q_{tn,cs}$: Equivalent clean sand normalized cone resistance
FS: Factor of safety against liquefaction
e_v (%): Post-liquefaction volumentric strain
DF: e_v depth weighting factor
Settlement: Calculated settlement

Estimation of post-earthquake lateral Displacements

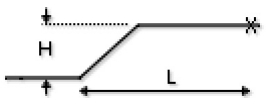
Geometric parameters: Level ground (or gently sloping) with free face (L: 90.00 ft - H: 12.00 ft)



Abbreviations

q_t: Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c: Soil Behaviour Type Index
$Q_{tn,cs}$: Equivalent clean sand normalized CPT total cone resistance
F.S.: Factor of safety
γ_{max}: Maximum cyclic shear strain
LDI: Lateral displacement index

Surface condition



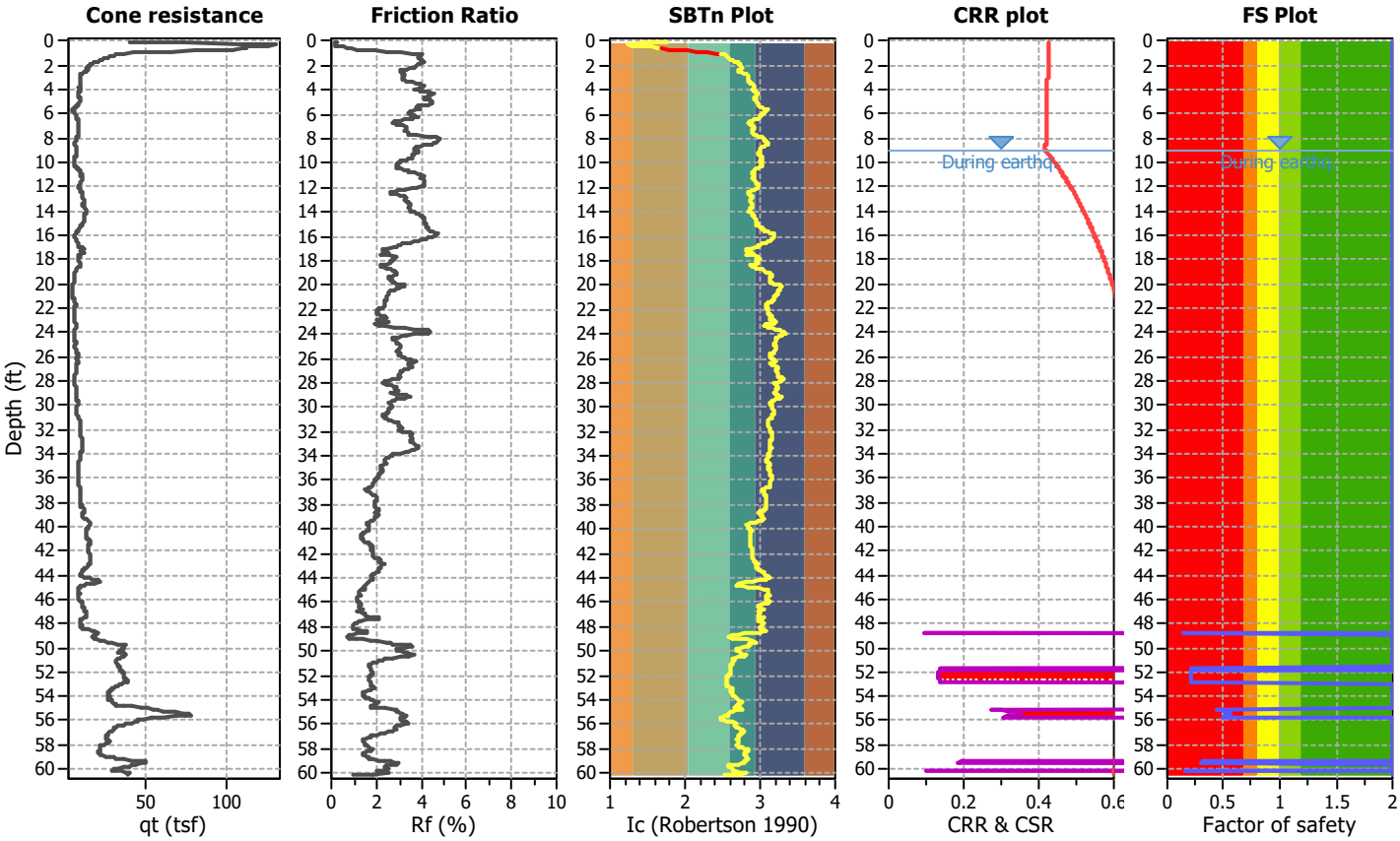
LIQUEFACTION ANALYSIS REPORT

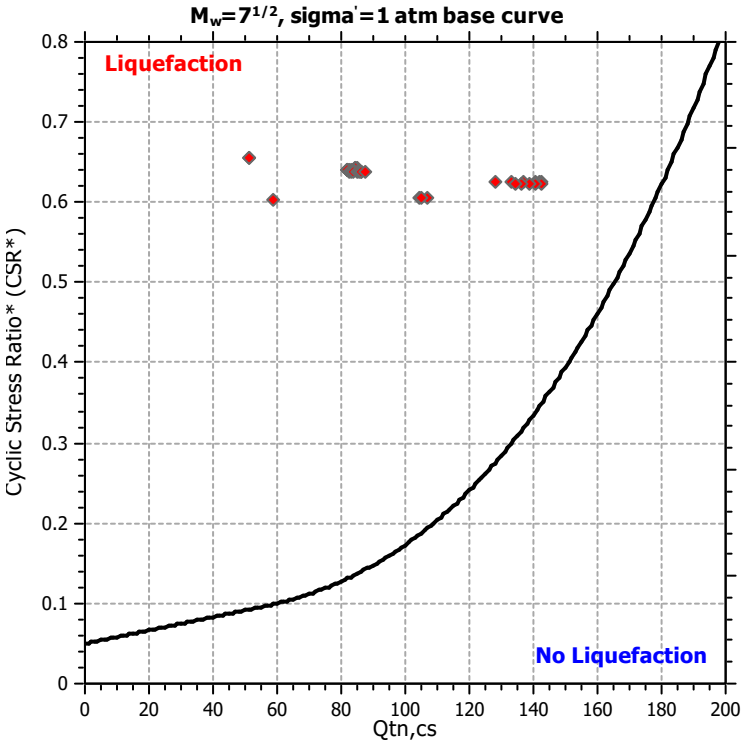
Project title : Geocon West / 21611 Perry Street **Location : Carson, CA**

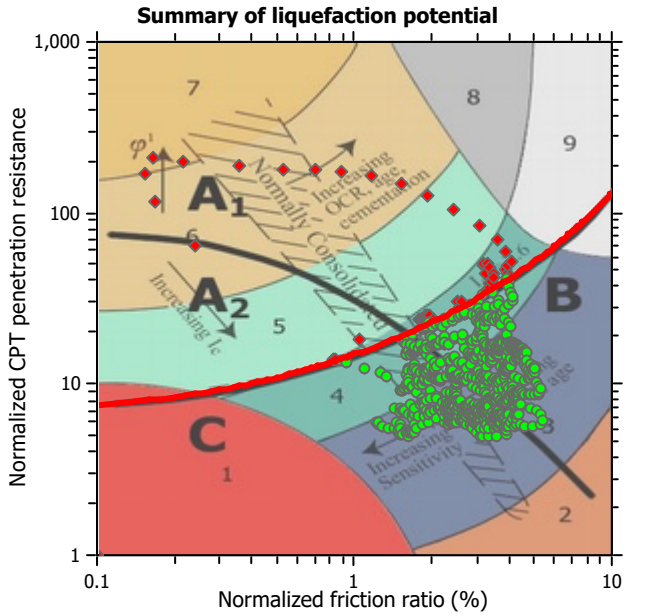
CPT file : CPT-4

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	12.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	9.00 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:	6.87	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.82	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

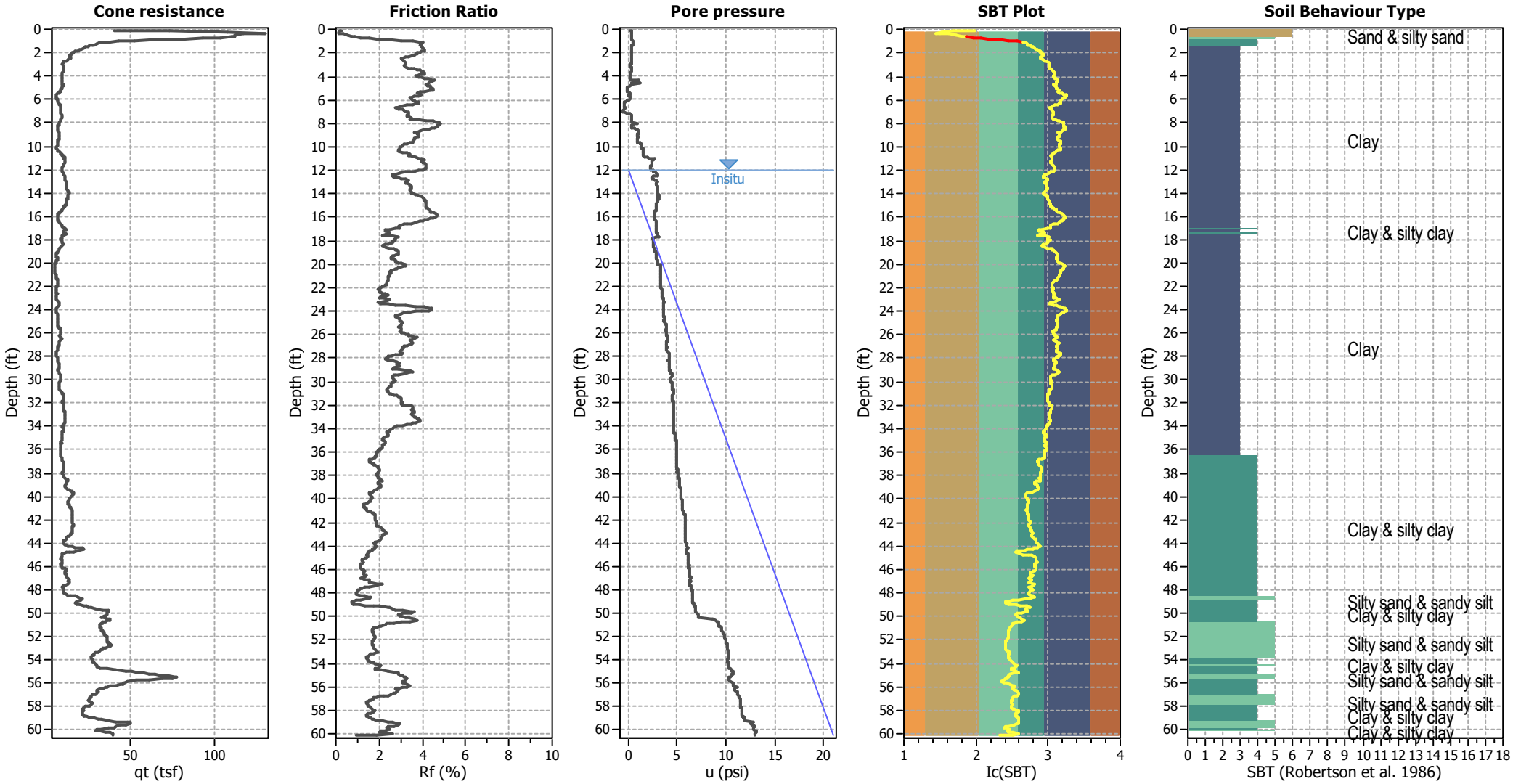






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



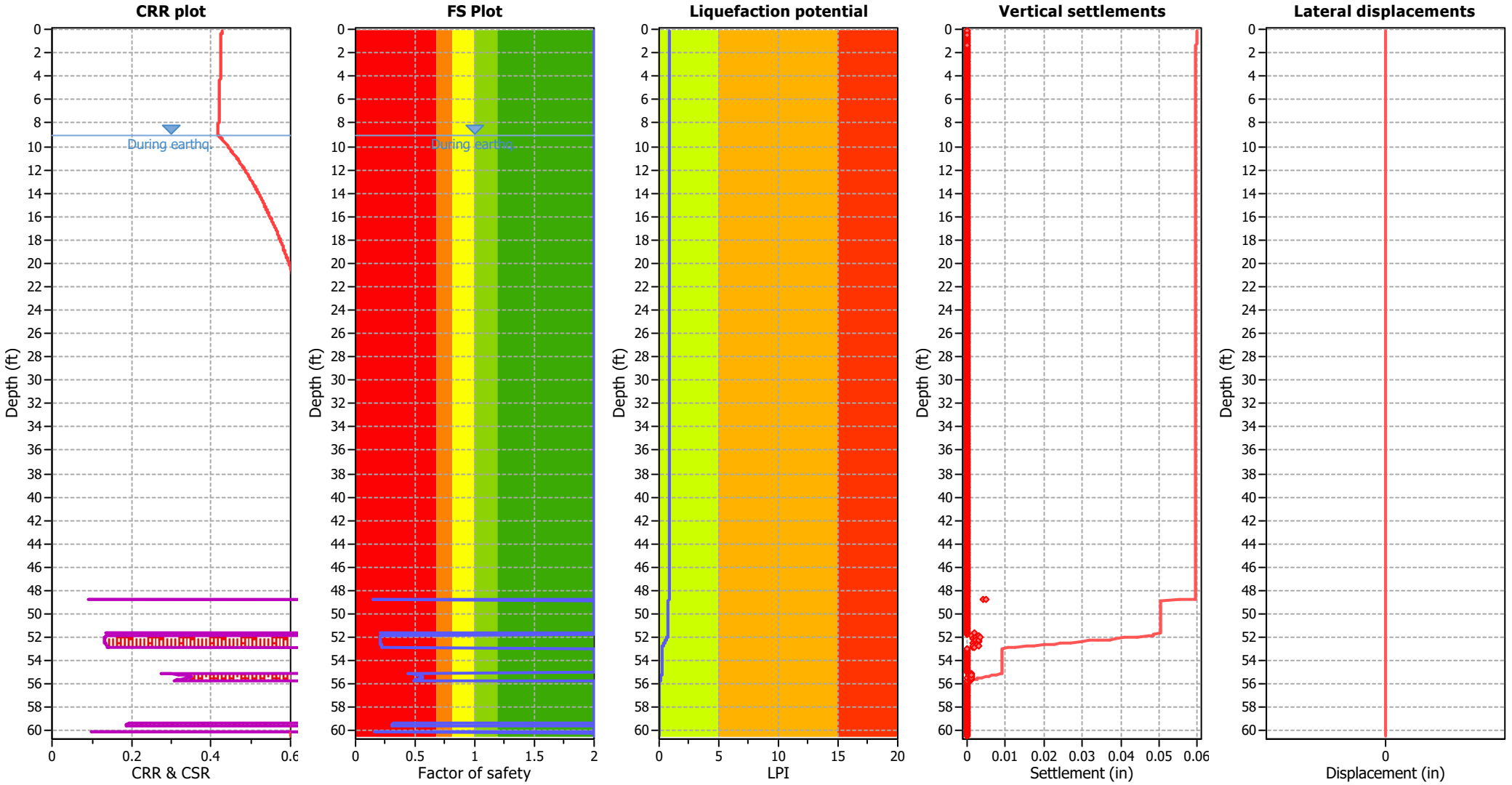
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	9.00 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:	6.87	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.82	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	12.00 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

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	9.00 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:	6.87	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.82	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	12.00 ft	Fill height:	N/A	Limit depth:	N/A

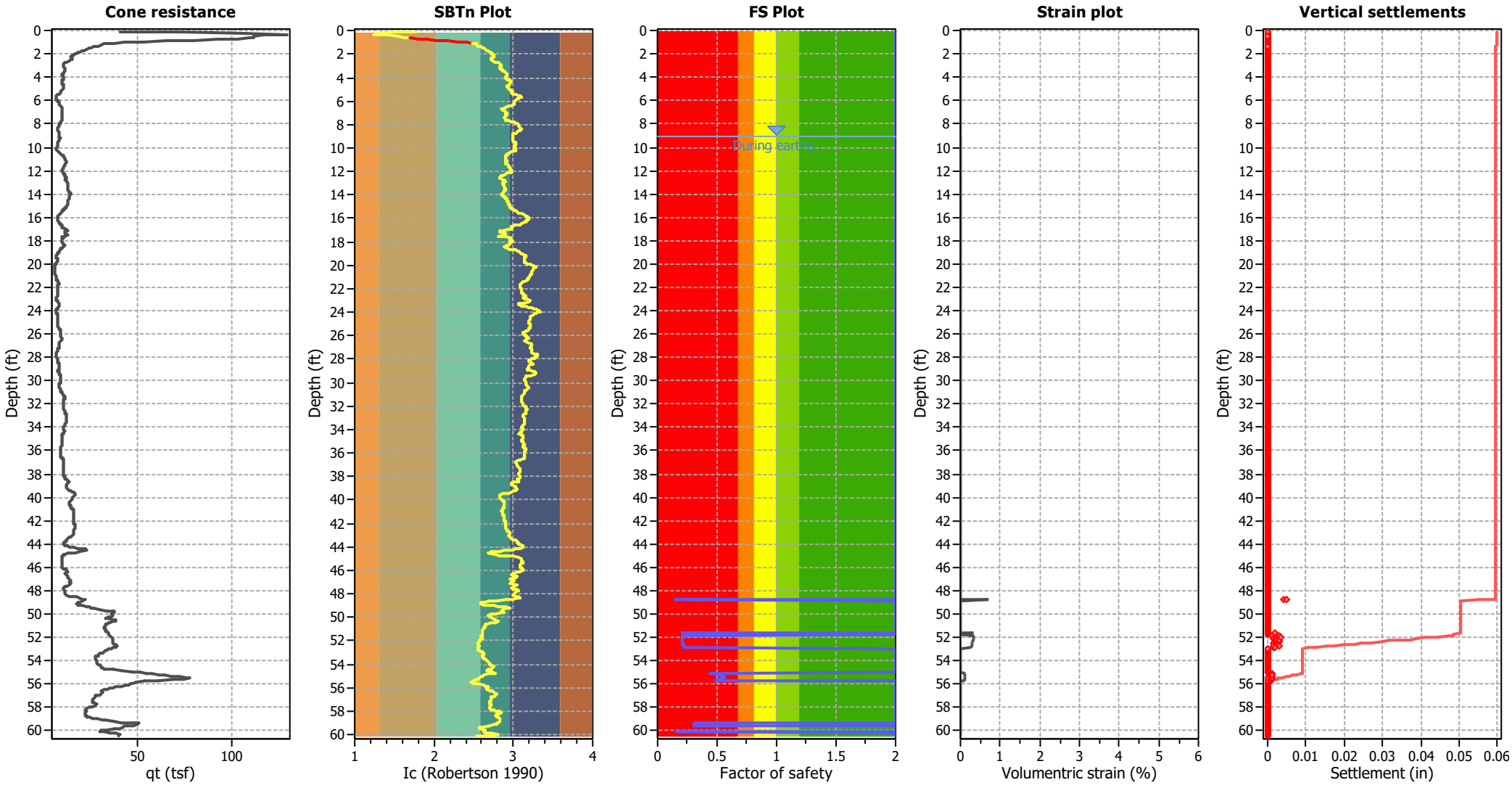
F.S. color scheme

- 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

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

:: Post-earthquake settlement of dry sands ::

Depth (ft)	Ic	Q_{tn}	Kc	$Q_{tn,cs}$	$N_{1,60}$ (blows)	G_{max} (tsf)	CSR	Shear, γ (%)	$e_{vol(15)}$ (%)	N_c	e_v (%)	Settle. (in)
0.10	1.76	64.66	1.00	64.66	12	338	0.43	0.001	0.00	9.85	0.00	0.000
0.15	1.47	116.95	1.00	116.95	20	422	0.43	0.001	0.00	9.85	0.00	0.000
0.23	1.30	171.88	1.00	171.88	28	500	0.43	0.002	0.00	9.85	0.00	0.000
0.30	1.23	208.04	1.00	208.04	33	554	0.43	0.002	0.00	9.85	0.00	0.000
0.34	1.29	200.93	1.00	200.93	33	579	0.43	0.002	0.00	9.85	0.00	0.000
0.40	1.42	187.83	1.00	187.83	32	638	0.43	0.002	0.00	9.85	0.00	0.000
0.50	1.54	179.00	1.00	179.00	32	705	0.43	0.003	0.00	9.85	0.00	0.000
0.54	1.62	179.76	1.00	179.76	33	782	0.43	0.002	0.00	9.85	0.00	0.000
0.60	1.70	176.06	1.00	176.06	33	844	0.43	0.003	0.00	9.85	0.00	0.000
0.68	1.80	165.55	1.15	190.25	0	0	0.43	0.000	0.00	0.00	0.00	0.000
0.73	1.91	148.37	1.25	184.78	0	0	0.43	0.000	0.00	0.00	0.00	0.000
0.80	2.03	127.88	1.34	170.81	0	0	0.43	0.000	0.00	0.00	0.00	0.000
0.86	2.16	105.03	1.53	160.59	0	0	0.43	0.000	0.00	0.00	0.00	0.000
0.94	2.30	84.40	1.92	162.20	0	0	0.43	0.000	0.00	0.00	0.00	0.000
0.99	2.41	69.00	2.42	167.25	0	0	0.43	0.000	0.00	0.00	0.00	0.000
1.09	2.48	59.40	2.84	168.76	0	0	0.43	0.000	0.00	0.00	0.00	0.000
1.14	2.54	51.62	3.23	166.72	0	0	0.43	0.000	0.00	0.00	0.00	0.000
1.22	2.54	48.92	3.30	161.34	42	687	0.43	0.009	0.00	9.85	0.00	0.000
1.29	2.55	46.52	3.38	157.25	42	662	0.43	0.010	0.00	9.85	0.00	0.000
1.33	2.57	44.31	3.51	155.51	41	644	0.43	0.011	0.00	9.85	0.00	0.000
1.39	2.59	42.24	3.65	154.24	41	627	0.43	0.012	0.01	9.85	0.00	0.000
1.48	2.60	40.31	3.79	152.96	0	0	0.43	0.000	0.00	0.00	0.00	0.000
1.52	2.62	38.38	3.94	151.41	0	0	0.43	0.000	0.00	0.00	0.00	0.000
1.59	2.64	36.41	4.12	149.91	0	0	0.43	0.000	0.00	0.00	0.00	0.000
1.66	2.67	34.01	4.37	148.74	0	0	0.43	0.000	0.00	0.00	0.00	0.000
1.73	2.69	32.08	4.59	147.27	0	0	0.43	0.000	0.00	0.00	0.00	0.000
1.78	2.71	30.16	4.79	144.34	0	0	0.43	0.000	0.00	0.00	0.00	0.000
1.84	2.72	28.62	4.88	139.54	0	0	0.42	0.000	0.00	0.00	0.00	0.000
1.93	2.73	27.07	4.98	134.78	0	0	0.42	0.000	0.00	0.00	0.00	0.000
1.98	2.73	25.97	5.06	131.43	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.04	2.74	24.95	5.16	128.86	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.13	2.76	23.79	5.34	126.94	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.18	2.75	23.40	5.30	124.06	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.25	2.75	23.06	5.29	122.07	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.30	2.73	23.49	5.03	118.24	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.38	2.72	23.34	4.96	115.66	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.44	2.71	23.28	4.83	112.46	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.50	2.72	22.37	4.95	110.77	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.57	2.75	20.97	5.22	109.36	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.66	2.78	19.33	5.62	108.56	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.72	2.80	18.18	5.90	107.31	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.76	2.83	17.21	6.20	106.68	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.84	2.84	16.68	6.34	105.70	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.92	2.85	16.28	6.47	105.28	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.95	2.85	16.28	6.45	104.98	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.07	2.84	16.41	6.40	105.01	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.11	2.84	16.60	6.34	105.32	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.16	2.84	16.84	6.34	106.83	0	0	0.42	0.000	0.00	0.00	0.00	0.000

:: Post-earthquake settlement of dry sands :: (continued)

Depth (ft)	Ic	Q_{tn}	Kc	$Q_{tn,cs}$	$N_{1,60}$ (blows)	G_{max} (tsf)	CSR	Shear, γ (%)	$e_{vol(15)}$ (%)	N_c	e_v (%)	Settle. (in)
3.26	2.85	16.93	6.44	109.06	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.30	2.86	17.02	6.57	111.87	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.36	2.86	17.07	6.70	114.31	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.44	2.87	17.11	6.82	116.64	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.50	2.88	17.00	6.97	118.52	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.56	2.90	16.71	7.15	119.54	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.62	2.91	16.27	7.36	119.71	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.71	2.92	15.78	7.56	119.37	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.76	2.93	15.49	7.64	118.31	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.82	2.92	15.43	7.50	115.82	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.90	2.91	15.52	7.32	113.65	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.95	2.90	15.76	7.16	112.85	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.00	2.90	15.90	7.27	115.55	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.09	2.92	15.89	7.43	118.10	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.16	2.93	15.64	7.65	119.61	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.20	2.95	15.35	7.95	122.03	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.27	2.96	15.25	8.13	124.03	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.33	2.97	15.16	8.26	125.26	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.44	2.96	15.21	8.12	123.42	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.48	2.96	15.11	8.07	121.87	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.58	2.95	15.14	8.00	121.20	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.63	2.94	15.52	7.78	120.82	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.68	2.92	15.99	7.57	121.13	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.73	2.92	16.37	7.46	122.05	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.80	2.93	16.26	7.60	123.52	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.86	2.94	16.06	7.75	124.54	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.92	2.94	15.91	7.85	124.94	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.00	2.96	15.52	8.07	125.20	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.07	2.97	15.08	8.26	124.60	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.12	2.98	14.41	8.51	122.69	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.20	2.99	13.92	8.54	118.96	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.27	2.98	13.53	8.44	114.17	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.33	2.98	13.05	8.41	109.78	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.41	2.99	12.41	8.60	106.77	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.45	3.02	11.40	9.21	105.06	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.52	3.07	10.39	9.95	103.36	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.60	3.09	9.62	10.47	100.68	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.67	3.10	9.28	10.54	97.78	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.71	3.08	9.27	10.29	95.38	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.80	3.07	9.41	10.03	94.38	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.85	3.05	9.70	9.75	94.55	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.91	3.04	10.32	9.40	96.96	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.01	3.02	10.98	9.09	99.80	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.06	3.01	11.55	8.88	102.49	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.11	3.01	11.77	8.87	104.47	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.18	3.01	11.86	8.93	105.87	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.26	3.01	11.90	8.96	106.60	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.30	2.99	12.19	8.68	105.72	0	0	0.42	0.000	0.00	0.00	0.00	0.000

:: Post-earthquake settlement of dry sands :: (continued)

Depth (ft)	Ic	Q_{tn}	Kc	$Q_{tn,cs}$	$N_{1,60}$ (blows)	G_{max} (tsf)	CSR	Shear, γ (%)	$e_{vol(15)}$ (%)	N_c	e_v (%)	Settle. (in)
6.37	2.97	12.52	8.33	104.30	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.45	2.93	13.23	7.68	101.69	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.50	2.89	13.86	7.13	98.73	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.60	2.86	14.38	6.68	96.08	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.64	2.85	14.52	6.53	94.89	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.70	2.86	14.47	6.63	95.89	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.80	2.87	14.36	6.79	97.55	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.83	2.89	14.21	7.03	99.92	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.90	2.90	14.11	7.22	101.91	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.98	2.91	14.05	7.38	103.65	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.04	2.91	14.10	7.42	104.59	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.09	2.91	14.14	7.41	104.86	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.16	2.91	14.24	7.37	104.93	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.24	2.91	14.38	7.30	104.91	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.29	2.90	14.71	7.14	105.01	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.39	2.89	14.99	7.04	105.53	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.43	2.89	15.12	7.10	107.31	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.50	2.90	14.98	7.24	108.50	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.59	2.91	14.78	7.31	107.99	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.63	2.91	14.54	7.40	107.56	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.70	2.94	14.25	7.86	111.95	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.78	2.98	13.90	8.45	117.47	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.83	3.01	13.61	8.92	121.46	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.89	3.03	12.98	9.38	121.77	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.95	3.06	12.45	9.78	121.78	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.02	3.06	12.20	9.94	121.31	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.11	3.06	12.20	9.88	120.46	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.16	3.06	12.09	9.89	119.64	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.21	3.08	11.61	10.19	118.34	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.30	3.09	11.17	10.40	116.18	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.36	3.10	10.79	10.53	113.61	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.41	3.10	10.54	10.55	111.24	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.47	3.09	10.49	10.40	109.13	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.56	3.08	10.58	10.14	107.35	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.61	3.05	10.96	9.67	105.96	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.70	3.02	11.43	9.18	104.99	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.75	3.00	11.91	8.79	104.68	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.81	2.99	12.14	8.70	105.63	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.89	3.00	12.28	8.71	106.99	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.94	3.00	12.32	8.78	108.21	0	0	0.42	0.000	0.00	0.00	0.00	0.000

:: Post-earthquake settlement of dry sands :: (continued)

Depth (ft)	Ic	Q_{tn}	Kc	$Q_{tn,cs}$	$N_{1,60}$ (blows)	G_{max} (tsf)	CSR	Shear, γ (%)	$e_{vol(15)}$ (%)	N_c	e_v (%)	Settle. (in)

Total estimated settlement: 0.00

Abbreviations

Q_{tn}: Equivalent clean sand normalized cone resistance
K_c: Fines correction factor
$Q_{tn,cs}$: Post-liquefaction volumentric strain
G_{max}: Small strain shear modulus
CSR: Soil cyclic stress ratio
γ: Cyclic shear strain
$e_{vol(15)}$: Volumetric strain after 15 cycles
N_c: Equivalent number of cycles
e_v: Volumetric strain
Settle.: Calculated settlement

:: Post-earthquake settlement due to soil liquefaction ::

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
9.01	108.77	2.00	0.00	0.85	0.00	9.09	108.89	2.00	0.00	0.85	0.00
9.13	108.38	2.00	0.00	0.85	0.00	9.20	107.59	2.00	0.00	0.84	0.00
9.27	106.62	2.00	0.00	0.84	0.00	9.35	105.70	2.00	0.00	0.84	0.00
9.39	104.41	2.00	0.00	0.84	0.00	9.45	103.20	2.00	0.00	0.84	0.00
9.54	101.99	2.00	0.00	0.84	0.00	9.59	100.49	2.00	0.00	0.84	0.00
9.65	98.50	2.00	0.00	0.84	0.00	9.73	96.09	2.00	0.00	0.84	0.00
9.81	94.50	2.00	0.00	0.83	0.00	9.85	93.19	2.00	0.00	0.83	0.00
9.94	91.95	2.00	0.00	0.83	0.00	10.00	90.24	2.00	0.00	0.83	0.00
10.04	89.13	2.00	0.00	0.83	0.00	10.12	88.89	2.00	0.00	0.83	0.00
10.19	89.07	2.00	0.00	0.83	0.00	10.24	88.72	2.00	0.00	0.83	0.00
10.31	89.70	2.00	0.00	0.83	0.00	10.39	92.82	2.00	0.00	0.82	0.00
10.48	97.76	2.00	0.00	0.82	0.00	10.53	103.47	2.00	0.00	0.82	0.00
10.63	107.29	2.00	0.00	0.82	0.00	10.67	108.57	2.00	0.00	0.82	0.00
10.71	108.25	2.00	0.00	0.82	0.00	10.79	110.20	2.00	0.00	0.82	0.00
10.83	114.73	2.00	0.00	0.82	0.00	10.93	118.48	2.00	0.00	0.81	0.00
10.98	121.02	2.00	0.00	0.81	0.00	11.06	122.82	2.00	0.00	0.81	0.00
11.11	123.35	2.00	0.00	0.81	0.00	11.16	123.21	2.00	0.00	0.81	0.00
11.23	122.70	2.00	0.00	0.81	0.00	11.31	123.39	2.00	0.00	0.81	0.00
11.36	123.70	2.00	0.00	0.81	0.00	11.42	123.17	2.00	0.00	0.81	0.00
11.51	122.29	2.00	0.00	0.80	0.00	11.56	121.30	2.00	0.00	0.80	0.00
11.64	120.25	2.00	0.00	0.80	0.00	11.71	121.77	2.00	0.00	0.80	0.00
11.75	121.00	2.00	0.00	0.80	0.00	11.84	119.61	2.00	0.00	0.80	0.00
11.89	117.61	2.00	0.00	0.80	0.00	11.96	115.86	2.00	0.00	0.80	0.00
12.03	112.89	2.00	0.00	0.80	0.00	12.11	107.82	2.00	0.00	0.79	0.00
12.16	103.05	2.00	0.00	0.79	0.00	12.21	98.89	2.00	0.00	0.79	0.00
12.30	95.62	2.00	0.00	0.79	0.00	12.35	94.03	2.00	0.00	0.79	0.00
12.41	94.06	2.00	0.00	0.79	0.00	12.49	94.92	2.00	0.00	0.79	0.00
12.56	96.59	2.00	0.00	0.79	0.00	12.60	99.33	2.00	0.00	0.79	0.00
12.67	102.72	2.00	0.00	0.79	0.00	12.75	105.89	2.00	0.00	0.78	0.00
12.80	107.66	2.00	0.00	0.78	0.00	12.90	108.00	2.00	0.00	0.78	0.00
12.95	107.76	2.00	0.00	0.78	0.00	13.02	107.50	2.00	0.00	0.78	0.00
13.06	108.23	2.00	0.00	0.78	0.00	13.14	109.37	2.00	0.00	0.78	0.00
13.19	110.81	2.00	0.00	0.78	0.00	13.29	111.39	2.00	0.00	0.77	0.00
13.33	111.87	2.00	0.00	0.77	0.00	13.39	112.07	2.00	0.00	0.77	0.00
13.48	112.18	2.00	0.00	0.77	0.00	13.54	112.10	2.00	0.00	0.77	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
13.59	111.35	2.00	0.00	0.77	0.00	13.67	110.42	2.00	0.00	0.77	0.00
13.71	111.28	2.00	0.00	0.77	0.00	13.78	113.30	2.00	0.00	0.77	0.00
13.86	115.20	2.00	0.00	0.77	0.00	13.93	116.13	2.00	0.00	0.76	0.00
14.01	117.09	2.00	0.00	0.76	0.00	14.05	118.90	2.00	0.00	0.76	0.00
14.14	120.35	2.00	0.00	0.76	0.00	14.21	121.51	2.00	0.00	0.76	0.00
14.24	122.25	2.00	0.00	0.76	0.00	14.31	122.64	2.00	0.00	0.76	0.00
14.39	122.74	2.00	0.00	0.76	0.00	14.44	123.19	2.00	0.00	0.76	0.00
14.54	123.65	2.00	0.00	0.75	0.00	14.59	123.93	2.00	0.00	0.75	0.00
14.64	123.53	2.00	0.00	0.75	0.00	14.70	122.97	2.00	0.00	0.75	0.00
14.79	122.59	2.00	0.00	0.75	0.00	14.83	122.35	2.00	0.00	0.75	0.00
14.93	122.12	2.00	0.00	0.75	0.00	14.98	121.78	2.00	0.00	0.75	0.00
15.03	122.70	2.00	0.00	0.75	0.00	15.10	121.37	2.00	0.00	0.74	0.00
15.18	120.09	2.00	0.00	0.74	0.00	15.23	119.16	2.00	0.00	0.74	0.00
15.33	118.49	2.00	0.00	0.74	0.00	15.37	117.78	2.00	0.00	0.74	0.00
15.44	116.86	2.00	0.00	0.74	0.00	15.52	115.96	2.00	0.00	0.74	0.00
15.56	115.50	2.00	0.00	0.74	0.00	15.63	115.08	2.00	0.00	0.74	0.00
15.71	114.38	2.00	0.00	0.73	0.00	15.77	112.98	2.00	0.00	0.73	0.00
15.82	111.52	2.00	0.00	0.73	0.00	15.88	109.70	2.00	0.00	0.73	0.00
15.97	108.06	2.00	0.00	0.73	0.00	16.02	106.21	2.00	0.00	0.73	0.00
16.10	104.65	2.00	0.00	0.73	0.00	16.17	103.25	2.00	0.00	0.73	0.00
16.22	102.20	2.00	0.00	0.73	0.00	16.27	101.46	2.00	0.00	0.72	0.00
16.37	100.44	2.00	0.00	0.72	0.00	16.42	99.11	2.00	0.00	0.72	0.00
16.52	97.58	2.00	0.00	0.72	0.00	16.55	96.53	2.00	0.00	0.72	0.00
16.62	95.95	2.00	0.00	0.72	0.00	16.70	95.27	2.00	0.00	0.72	0.00
16.74	94.43	2.00	0.00	0.72	0.00	16.82	93.99	2.00	0.00	0.71	0.00
16.91	94.09	2.00	0.00	0.71	0.00	16.94	92.37	2.00	0.00	0.71	0.00
17.01	89.67	2.00	0.00	0.71	0.00	17.10	87.49	2.00	0.00	0.71	0.00
17.15	86.72	2.00	0.00	0.71	0.00	17.21	87.87	2.00	0.00	0.71	0.00
17.30	88.42	2.00	0.00	0.71	0.00	17.34	88.73	2.00	0.00	0.71	0.00
17.41	86.85	2.00	0.00	0.70	0.00	17.49	84.86	2.00	0.00	0.70	0.00
17.53	85.38	2.00	0.00	0.70	0.00	17.59	88.84	2.00	0.00	0.70	0.00
17.67	92.69	2.00	0.00	0.70	0.00	17.73	92.45	2.00	0.00	0.70	0.00
17.79	90.23	2.00	0.00	0.70	0.00	17.87	90.20	2.00	0.00	0.70	0.00
17.92	89.90	2.00	0.00	0.70	0.00	17.99	89.25	2.00	0.00	0.70	0.00
18.07	88.30	2.00	0.00	0.69	0.00	18.14	88.06	2.00	0.00	0.69	0.00
18.19	87.63	2.00	0.00	0.69	0.00	18.26	85.31	2.00	0.00	0.69	0.00
18.34	83.64	2.00	0.00	0.69	0.00	18.38	82.38	2.00	0.00	0.69	0.00
18.45	82.79	2.00	0.00	0.69	0.00	18.53	83.45	2.00	0.00	0.69	0.00
18.60	84.80	2.00	0.00	0.68	0.00	18.68	85.10	2.00	0.00	0.68	0.00
18.72	85.66	2.00	0.00	0.68	0.00	18.79	86.46	2.00	0.00	0.68	0.00
18.84	87.12	2.00	0.00	0.68	0.00	18.92	86.96	2.00	0.00	0.68	0.00
18.98	86.02	2.00	0.00	0.68	0.00	19.06	84.56	2.00	0.00	0.68	0.00
19.11	83.08	2.00	0.00	0.68	0.00	19.18	81.40	2.00	0.00	0.67	0.00
19.25	79.77	2.00	0.00	0.67	0.00	19.33	78.21	2.00	0.00	0.67	0.00
19.37	77.58	2.00	0.00	0.67	0.00	19.47	77.75	2.00	0.00	0.67	0.00
19.52	78.52	2.00	0.00	0.67	0.00	19.57	79.80	2.00	0.00	0.67	0.00
19.62	80.74	2.00	0.00	0.67	0.00	19.71	81.05	2.00	0.00	0.67	0.00
19.77	80.97	2.00	0.00	0.67	0.00	19.82	81.03	2.00	0.00	0.66	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
19.91	81.44	2.00	0.00	0.66	0.00	19.96	82.04	2.00	0.00	0.66	0.00
20.02	82.03	2.00	0.00	0.66	0.00	20.11	81.00	2.00	0.00	0.66	0.00
20.18	79.51	2.00	0.00	0.66	0.00	20.23	78.32	2.00	0.00	0.66	0.00
20.28	77.58	2.00	0.00	0.66	0.00	20.37	76.64	2.00	0.00	0.65	0.00
20.42	75.20	2.00	0.00	0.65	0.00	20.48	73.77	2.00	0.00	0.65	0.00
20.56	72.83	2.00	0.00	0.65	0.00	20.63	72.58	2.00	0.00	0.65	0.00
20.67	72.78	2.00	0.00	0.65	0.00	20.74	72.87	2.00	0.00	0.65	0.00
20.82	73.00	2.00	0.00	0.65	0.00	20.90	73.09	2.00	0.00	0.65	0.00
20.97	73.30	2.00	0.00	0.64	0.00	21.02	73.43	2.00	0.00	0.64	0.00
21.10	73.47	2.00	0.00	0.64	0.00	21.17	73.44	2.00	0.00	0.64	0.00
21.22	73.37	2.00	0.00	0.64	0.00	21.27	73.82	2.00	0.00	0.64	0.00
21.37	74.53	2.00	0.00	0.64	0.00	21.43	75.39	2.00	0.00	0.64	0.00
21.46	75.93	2.00	0.00	0.64	0.00	21.55	76.26	2.00	0.00	0.63	0.00
21.62	76.50	2.00	0.00	0.63	0.00	21.66	76.60	2.00	0.00	0.63	0.00
21.74	76.38	2.00	0.00	0.63	0.00	21.81	75.62	2.00	0.00	0.63	0.00
21.85	74.17	2.00	0.00	0.63	0.00	21.93	72.45	2.00	0.00	0.63	0.00
22.00	70.92	2.00	0.00	0.63	0.00	22.07	69.84	2.00	0.00	0.63	0.00
22.16	69.16	2.00	0.00	0.62	0.00	22.19	68.84	2.00	0.00	0.62	0.00
22.26	69.11	2.00	0.00	0.62	0.00	22.33	69.78	2.00	0.00	0.62	0.00
22.40	70.66	2.00	0.00	0.62	0.00	22.45	71.70	2.00	0.00	0.62	0.00
22.53	73.04	2.00	0.00	0.62	0.00	22.60	74.53	2.00	0.00	0.62	0.00
22.64	74.92	2.00	0.00	0.62	0.00	22.70	72.69	2.00	0.00	0.62	0.00
22.80	70.03	2.00	0.00	0.61	0.00	22.84	68.44	2.00	0.00	0.61	0.00
22.90	70.73	2.00	0.00	0.61	0.00	23.00	72.88	2.00	0.00	0.61	0.00
23.05	73.62	2.00	0.00	0.61	0.00	23.14	71.83	2.00	0.00	0.61	0.00
23.18	69.34	2.00	0.00	0.61	0.00	23.24	69.83	2.00	0.00	0.61	0.00
23.32	73.10	2.00	0.00	0.60	0.00	23.39	77.87	2.00	0.00	0.60	0.00
23.44	83.58	2.00	0.00	0.60	0.00	23.53	89.30	2.00	0.00	0.60	0.00
23.59	94.49	2.00	0.00	0.60	0.00	23.63	97.40	2.00	0.00	0.60	0.00
23.69	98.66	2.00	0.00	0.60	0.00	23.77	98.49	2.00	0.00	0.60	0.00
23.82	96.26	2.00	0.00	0.60	0.00	23.93	93.28	2.00	0.00	0.59	0.00
23.95	89.23	2.00	0.00	0.59	0.00	24.03	86.15	2.00	0.00	0.59	0.00
24.12	83.09	2.00	0.00	0.59	0.00	24.16	81.40	2.00	0.00	0.59	0.00
24.22	80.14	2.00	0.00	0.59	0.00	24.30	78.94	2.00	0.00	0.59	0.00
24.37	78.38	2.00	0.00	0.59	0.00	24.43	78.34	2.00	0.00	0.59	0.00
24.50	79.02	2.00	0.00	0.58	0.00	24.57	79.97	2.00	0.00	0.58	0.00
24.62	80.77	2.00	0.00	0.58	0.00	24.69	81.29	2.00	0.00	0.58	0.00
24.77	81.95	2.00	0.00	0.58	0.00	24.83	82.63	2.00	0.00	0.58	0.00
24.88	83.52	2.00	0.00	0.58	0.00	24.97	83.83	2.00	0.00	0.58	0.00
25.02	83.63	2.00	0.00	0.58	0.00	25.11	83.10	2.00	0.00	0.57	0.00
25.17	82.64	2.00	0.00	0.57	0.00	25.21	82.11	2.00	0.00	0.57	0.00
25.29	81.58	2.00	0.00	0.57	0.00	25.36	81.18	2.00	0.00	0.57	0.00
25.40	81.80	2.00	0.00	0.57	0.00	25.46	83.18	2.00	0.00	0.57	0.00
25.54	84.74	2.00	0.00	0.57	0.00	25.61	85.56	2.00	0.00	0.57	0.00
25.66	86.27	2.00	0.00	0.57	0.00	25.75	86.87	2.00	0.00	0.56	0.00
25.80	87.79	2.00	0.00	0.56	0.00	25.85	89.00	2.00	0.00	0.56	0.00
25.96	90.30	2.00	0.00	0.56	0.00	26.01	91.59	2.00	0.00	0.56	0.00
26.05	92.01	2.00	0.00	0.56	0.00	26.12	92.67	2.00	0.00	0.56	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
26.19	93.68	2.00	0.00	0.56	0.00	26.25	95.03	2.00	0.00	0.56	0.00
26.33	95.43	2.00	0.00	0.55	0.00	26.42	95.21	2.00	0.00	0.55	0.00
26.46	94.14	2.00	0.00	0.55	0.00	26.52	93.08	2.00	0.00	0.55	0.00
26.61	91.90	2.00	0.00	0.55	0.00	26.67	90.94	2.00	0.00	0.55	0.00
26.71	90.13	2.00	0.00	0.55	0.00	26.79	89.23	2.00	0.00	0.55	0.00
26.87	88.27	2.00	0.00	0.54	0.00	26.91	86.60	2.00	0.00	0.54	0.00
26.98	85.30	2.00	0.00	0.54	0.00	27.06	84.21	2.00	0.00	0.54	0.00
27.11	83.95	2.00	0.00	0.54	0.00	27.21	83.42	2.00	0.00	0.54	0.00
27.26	82.50	2.00	0.00	0.54	0.00	27.32	81.58	2.00	0.00	0.54	0.00
27.40	80.98	2.00	0.00	0.54	0.00	27.45	80.64	2.00	0.00	0.53	0.00
27.52	80.06	2.00	0.00	0.53	0.00	27.60	79.08	2.00	0.00	0.53	0.00
27.65	77.14	2.00	0.00	0.53	0.00	27.71	74.28	2.00	0.00	0.53	0.00
27.80	71.63	2.00	0.00	0.53	0.00	27.84	70.11	2.00	0.00	0.53	0.00
27.90	70.15	2.00	0.00	0.53	0.00	27.99	70.37	2.00	0.00	0.53	0.00
28.05	70.68	2.00	0.00	0.52	0.00	28.09	71.52	2.00	0.00	0.52	0.00
28.17	73.33	2.00	0.00	0.52	0.00	28.25	75.88	2.00	0.00	0.52	0.00
28.30	78.37	2.00	0.00	0.52	0.00	28.39	79.73	2.00	0.00	0.52	0.00
28.44	80.17	2.00	0.00	0.52	0.00	28.49	79.97	2.00	0.00	0.52	0.00
28.54	80.56	2.00	0.00	0.52	0.00	28.62	81.23	2.00	0.00	0.51	0.00
28.68	82.36	2.00	0.00	0.51	0.00	28.74	81.37	2.00	0.00	0.51	0.00
28.83	78.59	2.00	0.00	0.51	0.00	28.89	77.72	2.00	0.00	0.51	0.00
28.98	80.89	2.00	0.00	0.51	0.00	29.03	85.46	2.00	0.00	0.51	0.00
29.09	87.01	2.00	0.00	0.51	0.00	29.14	86.44	2.00	0.00	0.51	0.00
29.22	85.06	2.00	0.00	0.50	0.00	29.27	83.64	2.00	0.00	0.50	0.00
29.38	81.71	2.00	0.00	0.50	0.00	29.43	80.51	2.00	0.00	0.50	0.00
29.48	79.94	2.00	0.00	0.50	0.00	29.57	79.55	2.00	0.00	0.50	0.00
29.62	79.45	2.00	0.00	0.50	0.00	29.68	79.61	2.00	0.00	0.50	0.00
29.73	79.88	2.00	0.00	0.50	0.00	29.82	80.28	2.00	0.00	0.49	0.00
29.87	80.63	2.00	0.00	0.49	0.00	29.94	80.77	2.00	0.00	0.49	0.00
30.02	80.38	2.00	0.00	0.49	0.00	30.07	79.42	2.00	0.00	0.49	0.00
30.16	78.43	2.00	0.00	0.49	0.00	30.19	77.60	2.00	0.00	0.49	0.00
30.26	77.26	2.00	0.00	0.49	0.00	30.36	76.86	2.00	0.00	0.49	0.00
30.41	76.56	2.00	0.00	0.48	0.00	30.46	75.65	2.00	0.00	0.48	0.00
30.53	74.96	2.00	0.00	0.48	0.00	30.61	74.40	2.00	0.00	0.48	0.00
30.65	74.16	2.00	0.00	0.48	0.00	30.71	74.42	2.00	0.00	0.48	0.00
30.81	74.84	2.00	0.00	0.48	0.00	30.84	75.89	2.00	0.00	0.48	0.00
30.91	76.95	2.00	0.00	0.48	0.00	30.99	78.41	2.00	0.00	0.47	0.00
31.04	80.46	2.00	0.00	0.47	0.00	31.11	82.70	2.00	0.00	0.47	0.00
31.18	85.50	2.00	0.00	0.47	0.00	31.25	87.33	2.00	0.00	0.47	0.00
31.30	88.88	2.00	0.00	0.47	0.00	31.39	89.49	2.00	0.00	0.47	0.00
31.45	90.04	2.00	0.00	0.47	0.00	31.50	89.86	2.00	0.00	0.47	0.00
31.60	89.50	2.00	0.00	0.46	0.00	31.64	89.47	2.00	0.00	0.46	0.00
31.73	89.66	2.00	0.00	0.46	0.00	31.80	89.75	2.00	0.00	0.46	0.00
31.84	88.32	2.00	0.00	0.46	0.00	31.91	88.03	2.00	0.00	0.46	0.00
31.99	89.60	2.00	0.00	0.46	0.00	32.03	92.67	2.00	0.00	0.46	0.00
32.09	94.81	2.00	0.00	0.46	0.00	32.19	95.17	2.00	0.00	0.45	0.00
32.25	95.29	2.00	0.00	0.45	0.00	32.29	95.06	2.00	0.00	0.45	0.00
32.38	94.99	2.00	0.00	0.45	0.00	32.43	95.32	2.00	0.00	0.45	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
32.48	96.21	2.00	0.00	0.45	0.00	32.58	96.96	2.00	0.00	0.45	0.00
32.63	97.21	2.00	0.00	0.45	0.00	32.69	96.97	2.00	0.00	0.45	0.00
32.74	96.84	2.00	0.00	0.45	0.00	32.83	97.18	2.00	0.00	0.44	0.00
32.88	98.21	2.00	0.00	0.44	0.00	32.97	99.19	2.00	0.00	0.44	0.00
33.01	99.93	2.00	0.00	0.44	0.00	33.07	100.25	2.00	0.00	0.44	0.00
33.16	100.88	2.00	0.00	0.44	0.00	33.20	101.96	2.00	0.00	0.44	0.00
33.27	102.61	2.00	0.00	0.44	0.00	33.36	102.55	2.00	0.00	0.43	0.00
33.41	101.56	2.00	0.00	0.43	0.00	33.51	100.01	2.00	0.00	0.43	0.00
33.56	98.16	2.00	0.00	0.43	0.00	33.61	96.33	2.00	0.00	0.43	0.00
33.67	93.73	2.00	0.00	0.43	0.00	33.76	90.54	2.00	0.00	0.43	0.00
33.81	86.77	2.00	0.00	0.43	0.00	33.86	84.42	2.00	0.00	0.43	0.00
33.94	82.88	2.00	0.00	0.42	0.00	34.02	81.90	2.00	0.00	0.42	0.00
34.06	81.31	2.00	0.00	0.42	0.00	34.14	80.18	2.00	0.00	0.42	0.00
34.21	79.55	2.00	0.00	0.42	0.00	34.25	78.60	2.00	0.00	0.42	0.00
34.33	78.67	2.00	0.00	0.42	0.00	34.41	78.62	2.00	0.00	0.42	0.00
34.49	78.44	2.00	0.00	0.42	0.00	34.56	77.99	2.00	0.00	0.41	0.00
34.59	77.32	2.00	0.00	0.41	0.00	34.67	76.25	2.00	0.00	0.41	0.00
34.76	74.98	2.00	0.00	0.41	0.00	34.80	73.98	2.00	0.00	0.41	0.00
34.85	73.61	2.00	0.00	0.41	0.00	34.93	73.55	2.00	0.00	0.41	0.00
34.98	73.75	2.00	0.00	0.41	0.00	35.05	74.33	2.00	0.00	0.41	0.00
35.13	74.82	2.00	0.00	0.40	0.00	35.18	74.95	2.00	0.00	0.40	0.00
35.24	74.57	2.00	0.00	0.40	0.00	35.31	73.78	2.00	0.00	0.40	0.00
35.41	72.99	2.00	0.00	0.40	0.00	35.46	72.22	2.00	0.00	0.40	0.00
35.51	71.90	2.00	0.00	0.40	0.00	35.58	71.61	2.00	0.00	0.40	0.00
35.66	71.23	2.00	0.00	0.40	0.00	35.71	70.46	2.00	0.00	0.39	0.00
35.76	69.60	2.00	0.00	0.39	0.00	35.86	68.80	2.00	0.00	0.39	0.00
35.91	68.18	2.00	0.00	0.39	0.00	36.01	67.77	2.00	0.00	0.39	0.00
36.05	67.47	2.00	0.00	0.39	0.00	36.12	67.34	2.00	0.00	0.39	0.00
36.20	67.21	2.00	0.00	0.39	0.00	36.23	66.95	2.00	0.00	0.39	0.00
36.31	66.60	2.00	0.00	0.38	0.00	36.35	66.14	2.00	0.00	0.38	0.00
36.45	65.88	2.00	0.00	0.38	0.00	36.51	65.57	2.00	0.00	0.38	0.00
36.58	64.85	2.00	0.00	0.38	0.00	36.66	63.88	2.00	0.00	0.38	0.00
36.70	63.34	2.00	0.00	0.38	0.00	36.80	63.51	2.00	0.00	0.38	0.00
36.84	64.14	2.00	0.00	0.38	0.00	36.89	65.13	2.00	0.00	0.37	0.00
36.96	66.24	2.00	0.00	0.37	0.00	37.03	67.43	2.00	0.00	0.37	0.00
37.09	68.35	2.00	0.00	0.37	0.00	37.15	69.18	2.00	0.00	0.37	0.00
37.23	69.82	2.00	0.00	0.37	0.00	37.27	70.63	2.00	0.00	0.37	0.00
37.34	71.39	2.00	0.00	0.37	0.00	37.43	72.06	2.00	0.00	0.37	0.00
37.49	72.24	2.00	0.00	0.36	0.00	37.54	72.17	2.00	0.00	0.36	0.00
37.62	71.81	2.00	0.00	0.36	0.00	37.69	71.50	2.00	0.00	0.36	0.00
37.74	71.01	2.00	0.00	0.36	0.00	37.82	70.57	2.00	0.00	0.36	0.00
37.88	70.00	2.00	0.00	0.36	0.00	37.93	69.77	2.00	0.00	0.36	0.00
38.02	69.74	2.00	0.00	0.36	0.00	38.08	69.96	2.00	0.00	0.35	0.00
38.13	70.58	2.00	0.00	0.35	0.00	38.23	71.42	2.00	0.00	0.35	0.00
38.28	72.59	2.00	0.00	0.35	0.00	38.34	73.98	2.00	0.00	0.35	0.00
38.41	74.84	2.00	0.00	0.35	0.00	38.47	75.23	2.00	0.00	0.35	0.00
38.52	74.88	2.00	0.00	0.35	0.00	38.61	74.78	2.00	0.00	0.35	0.00
38.66	74.76	2.00	0.00	0.34	0.00	38.72	75.39	2.00	0.00	0.34	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
38.82	76.09	2.00	0.00	0.34	0.00	38.86	76.02	2.00	0.00	0.34	0.00
38.96	75.07	2.00	0.00	0.34	0.00	39.01	73.85	2.00	0.00	0.34	0.00
39.05	72.93	2.00	0.00	0.34	0.00	39.13	72.03	2.00	0.00	0.34	0.00
39.21	71.27	2.00	0.00	0.34	0.00	39.24	70.76	2.00	0.00	0.33	0.00
39.31	70.31	2.00	0.00	0.33	0.00	39.40	70.04	2.00	0.00	0.33	0.00
39.44	69.55	2.00	0.00	0.33	0.00	39.51	69.48	2.00	0.00	0.33	0.00
39.59	70.19	2.00	0.00	0.33	0.00	39.66	71.42	2.00	0.00	0.33	0.00
39.70	72.68	2.00	0.00	0.33	0.00	39.80	73.40	2.00	0.00	0.33	0.00
39.85	73.56	2.00	0.00	0.32	0.00	39.90	72.80	2.00	0.00	0.32	0.00
39.98	71.87	2.00	0.00	0.32	0.00	40.05	71.21	2.00	0.00	0.32	0.00
40.10	70.72	2.00	0.00	0.32	0.00	40.20	69.84	2.00	0.00	0.32	0.00
40.25	68.24	2.00	0.00	0.32	0.00	40.30	66.44	2.00	0.00	0.32	0.00
40.40	64.63	2.00	0.00	0.32	0.00	40.45	63.40	2.00	0.00	0.31	0.00
40.49	62.87	2.00	0.00	0.31	0.00	40.59	62.77	2.00	0.00	0.31	0.00
40.64	62.88	2.00	0.00	0.31	0.00	40.69	63.65	2.00	0.00	0.31	0.00
40.79	64.67	2.00	0.00	0.31	0.00	40.83	65.52	2.00	0.00	0.31	0.00
40.92	65.36	2.00	0.00	0.31	0.00	40.98	65.96	2.00	0.00	0.31	0.00
41.03	68.30	2.00	0.00	0.30	0.00	41.08	71.31	2.00	0.00	0.30	0.00
41.18	73.34	2.00	0.00	0.30	0.00	41.22	74.28	2.00	0.00	0.30	0.00
41.31	74.96	2.00	0.00	0.30	0.00	41.36	75.37	2.00	0.00	0.30	0.00
41.41	75.17	2.00	0.00	0.30	0.00	41.50	74.86	2.00	0.00	0.30	0.00
41.54	74.80	2.00	0.00	0.30	0.00	41.61	74.84	2.00	0.00	0.29	0.00
41.70	74.76	2.00	0.00	0.29	0.00	41.75	74.97	2.00	0.00	0.29	0.00
41.80	75.16	2.00	0.00	0.29	0.00	41.87	75.51	2.00	0.00	0.29	0.00
41.95	75.80	2.00	0.00	0.29	0.00	42.01	75.99	2.00	0.00	0.29	0.00
42.10	76.02	2.00	0.00	0.29	0.00	42.14	75.66	2.00	0.00	0.29	0.00
42.20	75.95	2.00	0.00	0.28	0.00	42.27	76.74	2.00	0.00	0.28	0.00
42.34	78.60	2.00	0.00	0.28	0.00	42.39	80.82	2.00	0.00	0.28	0.00
42.49	82.25	2.00	0.00	0.28	0.00	42.54	82.32	2.00	0.00	0.28	0.00
42.59	81.52	2.00	0.00	0.28	0.00	42.69	81.18	2.00	0.00	0.28	0.00
42.74	82.20	2.00	0.00	0.28	0.00	42.80	83.06	2.00	0.00	0.27	0.00
42.89	84.26	2.00	0.00	0.27	0.00	42.93	83.71	2.00	0.00	0.27	0.00
42.99	83.10	2.00	0.00	0.27	0.00	43.08	81.83	2.00	0.00	0.27	0.00
43.11	80.66	2.00	0.00	0.27	0.00	43.18	79.87	2.00	0.00	0.27	0.00
43.28	78.86	2.00	0.00	0.27	0.00	43.35	78.03	2.00	0.00	0.27	0.00
43.38	77.33	2.00	0.00	0.26	0.00	43.45	76.17	2.00	0.00	0.26	0.00
43.53	74.65	2.00	0.00	0.26	0.00	43.58	73.14	2.00	0.00	0.26	0.00
43.64	71.25	2.00	0.00	0.26	0.00	43.73	69.46	2.00	0.00	0.26	0.00
43.78	67.76	2.00	0.00	0.26	0.00	43.84	67.36	2.00	0.00	0.26	0.00
43.92	67.24	2.00	0.00	0.26	0.00	43.98	67.24	2.00	0.00	0.25	0.00
44.07	67.93	2.00	0.00	0.25	0.00	44.12	68.79	2.00	0.00	0.25	0.00
44.17	69.37	2.00	0.00	0.25	0.00	44.23	70.06	2.00	0.00	0.25	0.00
44.29	71.87	2.00	0.00	0.25	0.00	44.39	73.68	2.00	0.00	0.25	0.00
44.43	73.33	2.00	0.00	0.25	0.00	44.49	74.36	2.00	0.00	0.25	0.00
44.57	71.85	2.00	0.00	0.24	0.00	44.67	70.80	2.00	0.00	0.24	0.00
44.73	66.63	2.00	0.00	0.24	0.00	44.77	66.38	2.00	0.00	0.24	0.00
44.82	64.10	2.00	0.00	0.24	0.00	44.93	62.33	2.00	0.00	0.24	0.00
44.97	59.85	2.00	0.00	0.24	0.00	45.02	58.28	2.00	0.00	0.24	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
45.09	56.68	2.00	0.00	0.24	0.00	45.17	55.59	2.00	0.00	0.23	0.00
45.22	55.27	2.00	0.00	0.23	0.00	45.30	55.78	2.00	0.00	0.23	0.00
45.37	56.40	2.00	0.00	0.23	0.00	45.42	56.35	2.00	0.00	0.23	0.00
45.50	55.69	2.00	0.00	0.23	0.00	45.57	54.84	2.00	0.00	0.23	0.00
45.61	54.23	2.00	0.00	0.23	0.00	45.72	53.81	2.00	0.00	0.23	0.00
45.77	53.57	2.00	0.00	0.22	0.00	45.80	53.58	2.00	0.00	0.22	0.00
45.88	53.99	2.00	0.00	0.22	0.00	45.96	54.76	2.00	0.00	0.22	0.00
46.01	56.55	2.00	0.00	0.22	0.00	46.11	58.12	2.00	0.00	0.22	0.00
46.14	59.48	2.00	0.00	0.22	0.00	46.21	59.78	2.00	0.00	0.22	0.00
46.26	59.67	2.00	0.00	0.22	0.00	46.35	59.26	2.00	0.00	0.21	0.00
46.41	59.17	2.00	0.00	0.21	0.00	46.49	59.98	2.00	0.00	0.21	0.00
46.55	60.98	2.00	0.00	0.21	0.00	46.59	60.62	2.00	0.00	0.21	0.00
46.68	59.13	2.00	0.00	0.21	0.00	46.74	57.76	2.00	0.00	0.21	0.00
46.80	58.63	2.00	0.00	0.21	0.00	46.85	61.74	2.00	0.00	0.21	0.00
46.93	65.10	2.00	0.00	0.20	0.00	47.00	65.51	2.00	0.00	0.20	0.00
47.10	66.22	2.00	0.00	0.20	0.00	47.15	68.22	2.00	0.00	0.20	0.00
47.20	73.25	2.00	0.00	0.20	0.00	47.25	76.10	2.00	0.00	0.20	0.00
47.31	75.69	2.00	0.00	0.20	0.00	47.40	72.54	2.00	0.00	0.20	0.00
47.44	67.02	2.00	0.00	0.20	0.00	47.52	61.96	2.00	0.00	0.19	0.00
47.58	57.84	2.00	0.00	0.19	0.00	47.67	55.68	2.00	0.00	0.19	0.00
47.73	54.03	2.00	0.00	0.19	0.00	47.78	52.68	2.00	0.00	0.19	0.00
47.86	52.11	2.00	0.00	0.19	0.00	47.92	52.02	2.00	0.00	0.19	0.00
47.98	51.86	2.00	0.00	0.19	0.00	48.05	51.68	2.00	0.00	0.19	0.00
48.12	52.36	2.00	0.00	0.18	0.00	48.19	55.24	2.00	0.00	0.18	0.00
48.27	58.76	2.00	0.00	0.18	0.00	48.32	62.00	2.00	0.00	0.18	0.00
48.38	64.84	2.00	0.00	0.18	0.00	48.47	65.90	2.00	0.00	0.18	0.00
48.52	65.86	2.00	0.00	0.18	0.00	48.56	61.36	2.00	0.00	0.18	0.00
48.66	56.82	2.00	0.00	0.18	0.00	48.71	52.62	2.00	0.00	0.17	0.00
48.76	51.26	0.14	0.70	0.17	0.00	48.82	51.48	0.14	0.69	0.17	0.00
48.93	53.85	2.00	0.00	0.17	0.00	48.97	60.71	2.00	0.00	0.17	0.00
49.05	66.77	2.00	0.00	0.17	0.00	49.08	74.71	2.00	0.00	0.17	0.00
49.16	80.83	2.00	0.00	0.17	0.00	49.25	86.82	2.00	0.00	0.17	0.00
49.29	91.88	2.00	0.00	0.16	0.00	49.36	95.92	2.00	0.00	0.16	0.00
49.43	100.81	2.00	0.00	0.16	0.00	49.48	108.45	2.00	0.00	0.16	0.00
49.55	118.04	2.00	0.00	0.16	0.00	49.64	123.78	2.00	0.00	0.16	0.00
49.70	124.69	2.00	0.00	0.16	0.00	49.75	119.83	2.00	0.00	0.16	0.00
49.81	115.91	2.00	0.00	0.16	0.00	49.90	114.35	2.00	0.00	0.15	0.00
49.94	116.03	2.00	0.00	0.15	0.00	50.01	117.53	2.00	0.00	0.15	0.00
50.08	121.19	2.00	0.00	0.15	0.00	50.15	125.06	2.00	0.00	0.15	0.00
50.24	129.50	2.00	0.00	0.15	0.00	50.30	130.62	2.00	0.00	0.15	0.00
50.34	129.24	2.00	0.00	0.15	0.00	50.41	124.60	2.00	0.00	0.15	0.00
50.47	117.41	2.00	0.00	0.14	0.00	50.54	110.05	2.00	0.00	0.14	0.00
50.62	105.13	2.00	0.00	0.14	0.00	50.66	100.85	2.00	0.00	0.14	0.00
50.77	97.17	2.00	0.00	0.14	0.00	50.81	92.98	2.00	0.00	0.14	0.00
50.87	89.74	2.00	0.00	0.14	0.00	50.92	86.21	2.00	0.00	0.14	0.00
51.01	83.42	2.00	0.00	0.14	0.00	51.07	81.79	2.00	0.00	0.13	0.00
51.15	81.32	2.00	0.00	0.13	0.00	51.21	80.93	2.00	0.00	0.13	0.00
51.26	80.94	2.00	0.00	0.13	0.00	51.32	81.19	2.00	0.00	0.13	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
51.39	82.02	2.00	0.00	0.13	0.00	51.46	82.86	2.00	0.00	0.13	0.00
51.53	83.39	2.00	0.00	0.13	0.00	51.61	83.64	2.00	0.00	0.13	0.00
51.65	84.22	0.21	0.34	0.12	0.00	51.72	84.86	2.00	0.00	0.12	0.00
51.81	85.17	2.00	0.00	0.12	0.00	51.84	84.93	0.21	0.32	0.12	0.00
51.92	84.23	0.21	0.32	0.12	0.00	52.01	83.53	0.21	0.32	0.12	0.00
52.06	83.04	0.21	0.32	0.12	0.00	52.11	82.53	0.21	0.32	0.12	0.00
52.19	82.07	0.21	0.32	0.12	0.00	52.25	81.67	0.20	0.32	0.11	0.00
52.30	81.70	0.20	0.31	0.11	0.00	52.38	82.14	0.21	0.31	0.11	0.00
52.45	82.60	0.21	0.30	0.11	0.00	52.49	83.26	0.21	0.30	0.11	0.00
52.57	83.98	0.21	0.29	0.11	0.00	52.65	84.83	0.21	0.29	0.11	0.00
52.70	85.50	0.22	0.28	0.11	0.00	52.79	86.02	0.22	0.28	0.11	0.00
52.85	86.54	0.22	0.27	0.10	0.00	52.89	87.45	0.22	0.27	0.10	0.00
52.99	87.92	2.00	0.00	0.10	0.00	53.04	87.65	2.00	0.00	0.10	0.00
53.08	85.53	2.00	0.00	0.10	0.00	53.17	82.64	2.00	0.00	0.10	0.00
53.24	78.83	2.00	0.00	0.10	0.00	53.33	76.03	2.00	0.00	0.10	0.00
53.39	73.86	2.00	0.00	0.10	0.00	53.42	72.72	2.00	0.00	0.09	0.00
53.49	71.87	2.00	0.00	0.09	0.00	53.58	71.34	2.00	0.00	0.09	0.00
53.63	71.78	2.00	0.00	0.09	0.00	53.68	72.58	2.00	0.00	0.09	0.00
53.77	73.76	2.00	0.00	0.09	0.00	53.83	75.15	2.00	0.00	0.09	0.00
53.88	77.25	2.00	0.00	0.09	0.00	53.97	79.53	2.00	0.00	0.09	0.00
54.03	81.79	2.00	0.00	0.08	0.00	54.08	84.13	2.00	0.00	0.08	0.00
54.18	86.31	2.00	0.00	0.08	0.00	54.22	88.09	2.00	0.00	0.08	0.00
54.27	87.53	2.00	0.00	0.08	0.00	54.38	85.74	2.00	0.00	0.08	0.00
54.42	83.36	2.00	0.00	0.08	0.00	54.47	82.37	2.00	0.00	0.08	0.00
54.57	82.50	2.00	0.00	0.08	0.00	54.61	89.32	2.00	0.00	0.07	0.00
54.68	98.07	2.00	0.00	0.07	0.00	54.75	107.68	2.00	0.00	0.07	0.00
54.79	110.93	2.00	0.00	0.07	0.00	54.86	115.41	2.00	0.00	0.07	0.00
54.95	119.16	2.00	0.00	0.07	0.00	55.01	124.44	2.00	0.00	0.07	0.00
55.06	127.99	0.44	0.13	0.07	0.00	55.12	133.02	0.48	0.12	0.07	0.00
55.21	137.02	0.51	0.12	0.06	0.00	55.25	140.52	0.54	0.11	0.06	0.00
55.32	142.18	0.56	0.11	0.06	0.00	55.40	142.70	0.56	0.11	0.06	0.00
55.50	142.19	0.56	0.10	0.06	0.00	55.52	140.35	0.54	0.10	0.06	0.00
55.60	138.56	0.53	0.10	0.06	0.00	55.66	136.06	0.50	0.10	0.06	0.00
55.72	134.50	0.49	0.10	0.06	0.00	55.79	133.81	2.00	0.00	0.05	0.00
55.86	133.74	2.00	0.00	0.05	0.00	55.95	132.12	2.00	0.00	0.05	0.00
56.00	128.26	2.00	0.00	0.05	0.00	56.05	122.94	2.00	0.00	0.05	0.00
56.10	116.38	2.00	0.00	0.05	0.00	56.19	112.55	2.00	0.00	0.05	0.00
56.24	110.69	2.00	0.00	0.05	0.00	56.34	111.05	2.00	0.00	0.05	0.00
56.37	109.63	2.00	0.00	0.04	0.00	56.43	107.45	2.00	0.00	0.04	0.00
56.54	105.07	2.00	0.00	0.04	0.00	56.59	102.95	2.00	0.00	0.04	0.00
56.64	99.69	2.00	0.00	0.04	0.00	56.73	96.28	2.00	0.00	0.04	0.00
56.79	92.21	2.00	0.00	0.04	0.00	56.84	87.54	2.00	0.00	0.04	0.00
56.93	83.36	2.00	0.00	0.04	0.00	56.96	80.38	2.00	0.00	0.03	0.00
57.03	78.85	2.00	0.00	0.03	0.00	57.13	76.81	2.00	0.00	0.03	0.00
57.16	73.97	2.00	0.00	0.03	0.00	57.23	71.83	2.00	0.00	0.03	0.00
57.29	70.54	2.00	0.00	0.03	0.00	57.38	70.36	2.00	0.00	0.03	0.00
57.42	70.64	2.00	0.00	0.03	0.00	57.49	71.65	2.00	0.00	0.03	0.00
57.57	72.15	2.00	0.00	0.02	0.00	57.62	72.95	2.00	0.00	0.02	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
57.68	74.15	2.00	0.00	0.02	0.00	57.77	75.92	2.00	0.00	0.02	0.00
57.85	77.35	2.00	0.00	0.02	0.00	57.92	77.38	2.00	0.00	0.02	0.00
57.97	77.72	2.00	0.00	0.02	0.00	58.02	78.32	2.00	0.00	0.02	0.00
58.07	78.39	2.00	0.00	0.02	0.00	58.16	76.74	2.00	0.00	0.01	0.00
58.23	73.38	2.00	0.00	0.01	0.00	58.31	70.21	2.00	0.00	0.01	0.00
58.37	68.30	2.00	0.00	0.01	0.00	58.42	68.33	2.00	0.00	0.01	0.00
58.50	69.13	2.00	0.00	0.01	0.00	58.57	70.24	2.00	0.00	0.01	0.00
58.61	71.64	2.00	0.00	0.01	0.00	58.68	73.20	2.00	0.00	0.01	0.00
58.76	74.66	2.00	0.00	0.00	0.00	58.80	75.92	2.00	0.00	0.00	0.00
58.87	80.07	2.00	0.00	0.00	0.00	58.95	86.88	2.00	0.00	0.00	0.00
59.01	94.25	2.00	0.00	0.00	0.00	59.06	100.88	2.00	0.00	0.00	0.00
59.16	106.78	2.00	0.00	0.00	0.00	59.19	112.75	2.00	0.00	0.00	0.00
59.29	114.94	2.00	0.00	0.00	0.00	59.33	112.14	2.00	0.00	0.00	0.00
59.39	106.98	0.32	0.00	0.00	0.00	59.47	104.21	0.31	0.00	0.00	0.00
59.54	104.81	0.31	0.00	0.00	0.00	59.58	106.04	2.00	0.00	0.00	0.00
59.65	103.54	2.00	0.00	0.00	0.00	59.73	98.28	2.00	0.00	0.00	0.00
59.81	93.48	2.00	0.00	0.00	0.00	59.85	90.67	2.00	0.00	0.00	0.00
59.92	93.15	2.00	0.00	0.00	0.00	59.99	99.18	2.00	0.00	0.00	0.00
60.08	82.68	2.00	0.00	0.00	0.00	60.13	58.90	0.16	0.00	0.00	0.00
60.18	-1.00	2.00	0.00	0.00	0.00	60.27	-1.00	2.00	0.00	0.00	0.00
60.33	-1.00	2.00	0.00	0.00	0.00	60.38	-1.00	2.00	0.00	0.00	0.00
60.47	-1.00	2.00	0.00	0.00	0.00						

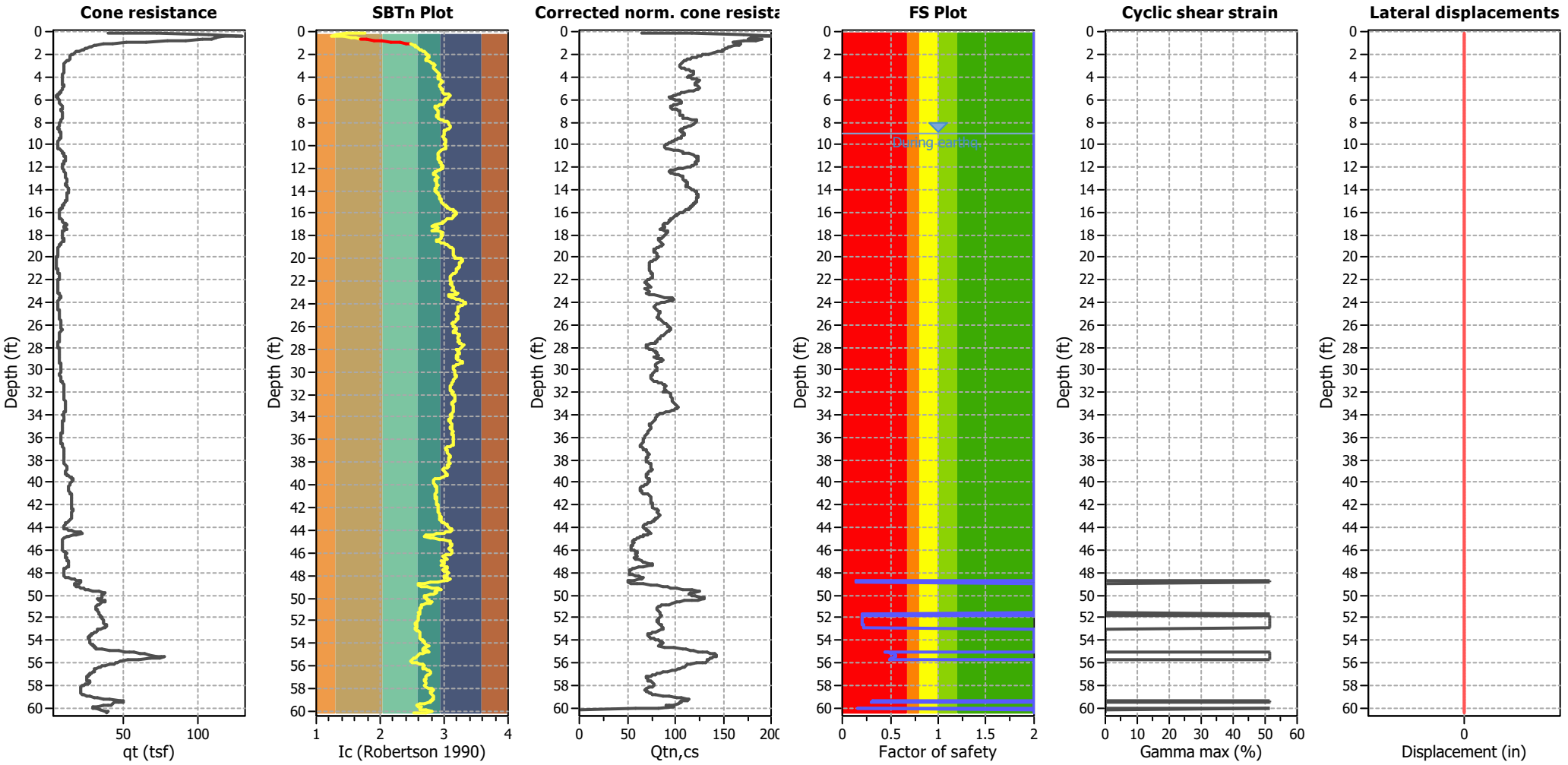
Total estimated settlement: 0.06

Abbreviations

$Q_{tn,cs}$:	Equivalent clean sand normalized cone resistance
FS:	Factor of safety against liquefaction
e_v (%):	Post-liquefaction volumentric strain
DF:	e_v depth weighting factor
Settlement:	Calculated settlement

Estimation of post-earthquake lateral Displacements

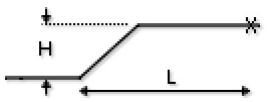
Geometric parameters: Level ground (or gently sloping) with free face (L: 90.00 ft - H: 12.00 ft)



Abbreviations

q_t: Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c: Soil Behaviour Type Index
$Q_{tn,cs}$: Equivalent clean sand normalized CPT total cone resistance
F.S.: Factor of safety
γ_{max}: Maximum cyclic shear strain
LDI: Lateral displacement index

Surface condition



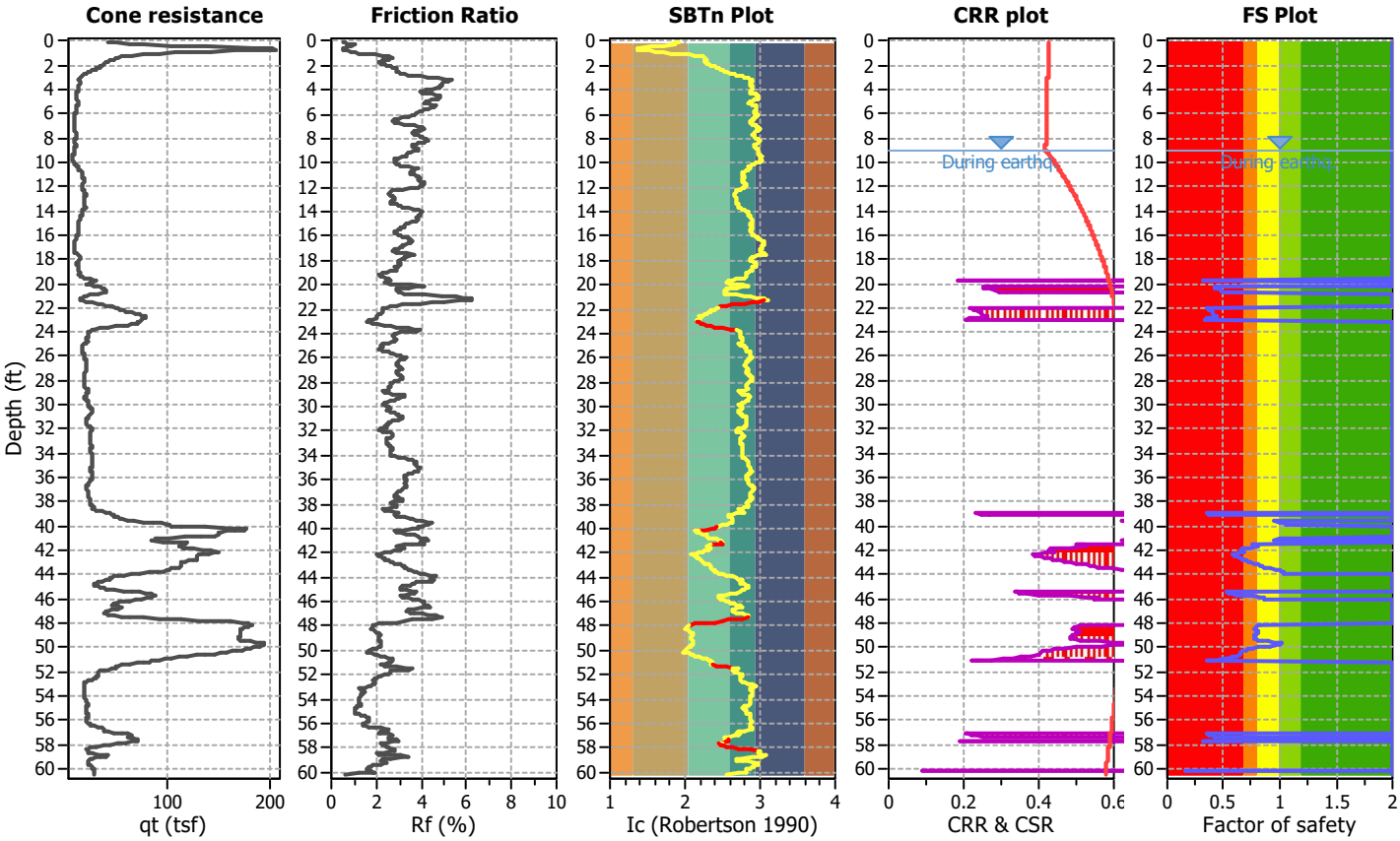
LIQUEFACTION ANALYSIS REPORT

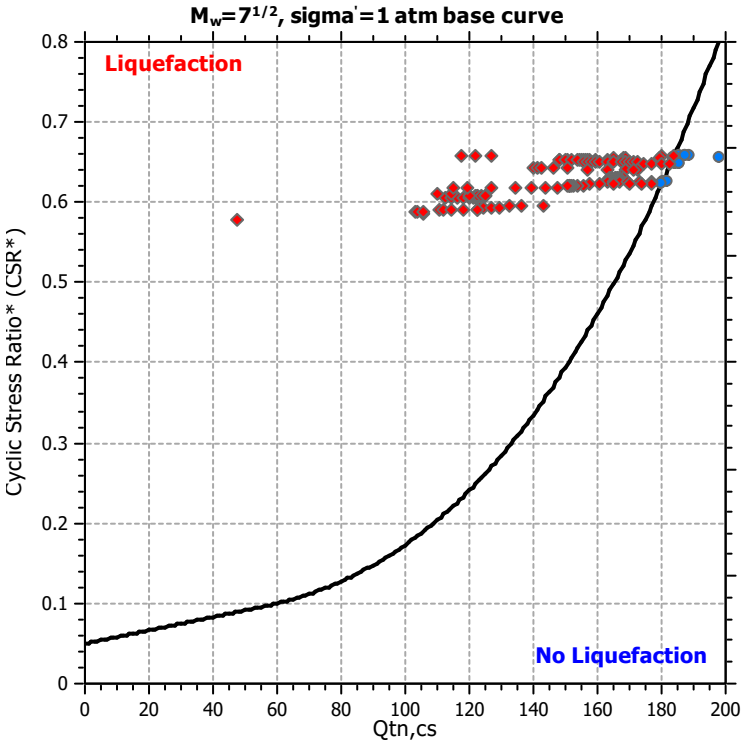
Project title : Geocon West / 21611 Perry Street **Location : Carson, CA**

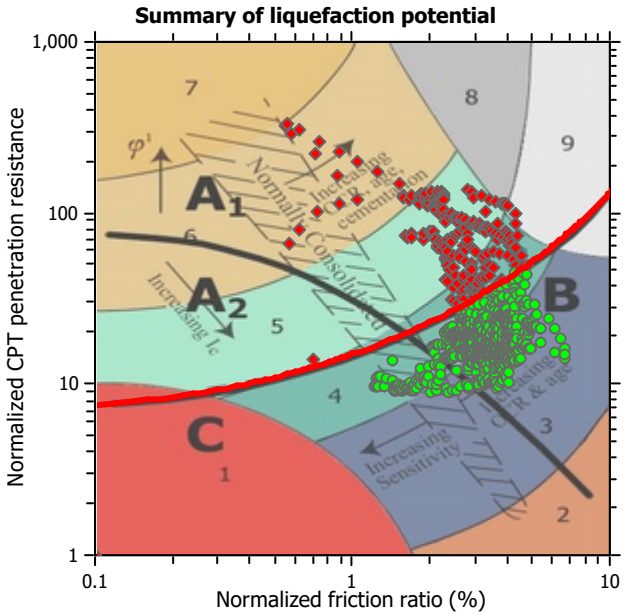
CPT file : CPT-5

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	12.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	9.00 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:	6.87	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.82	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

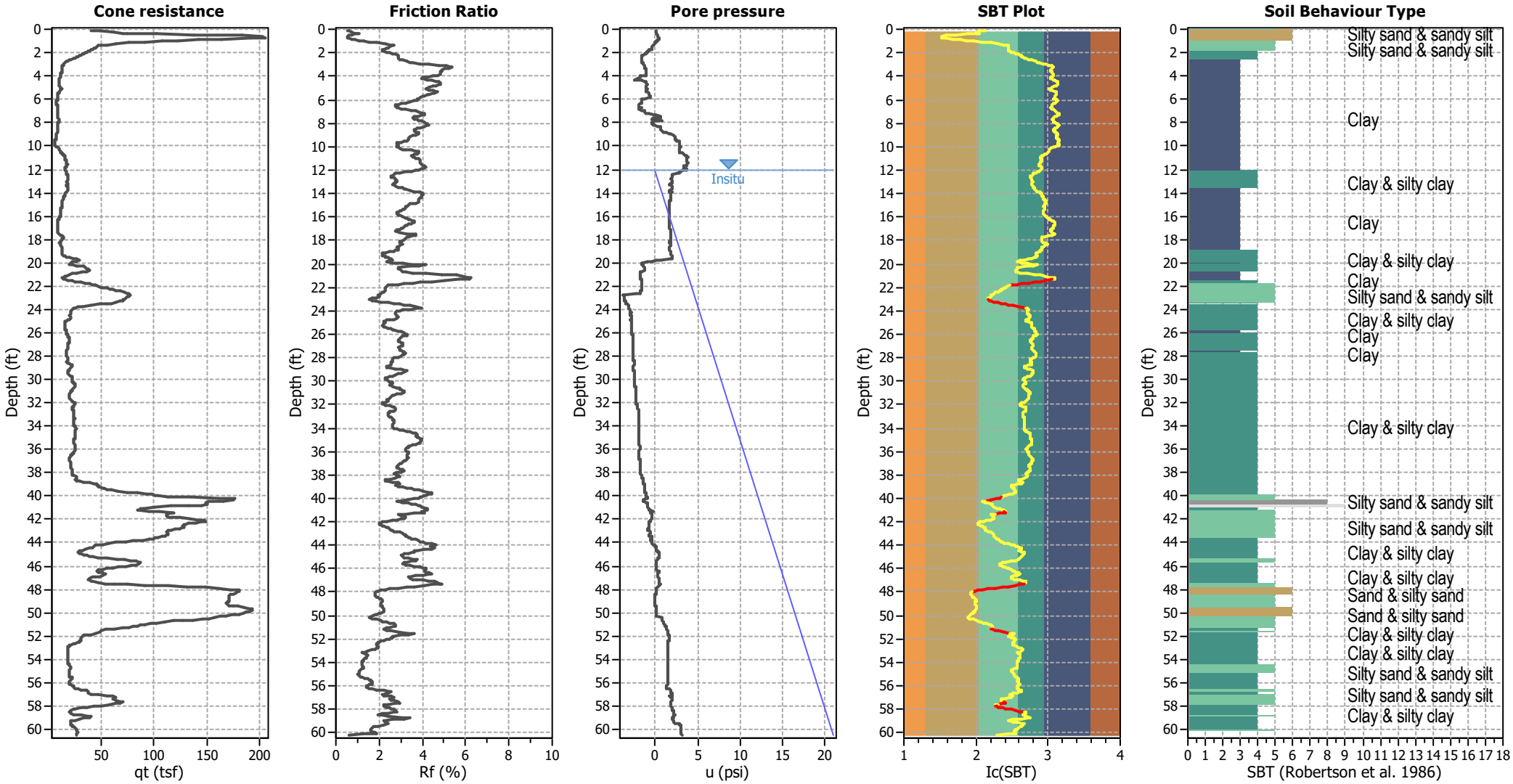






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



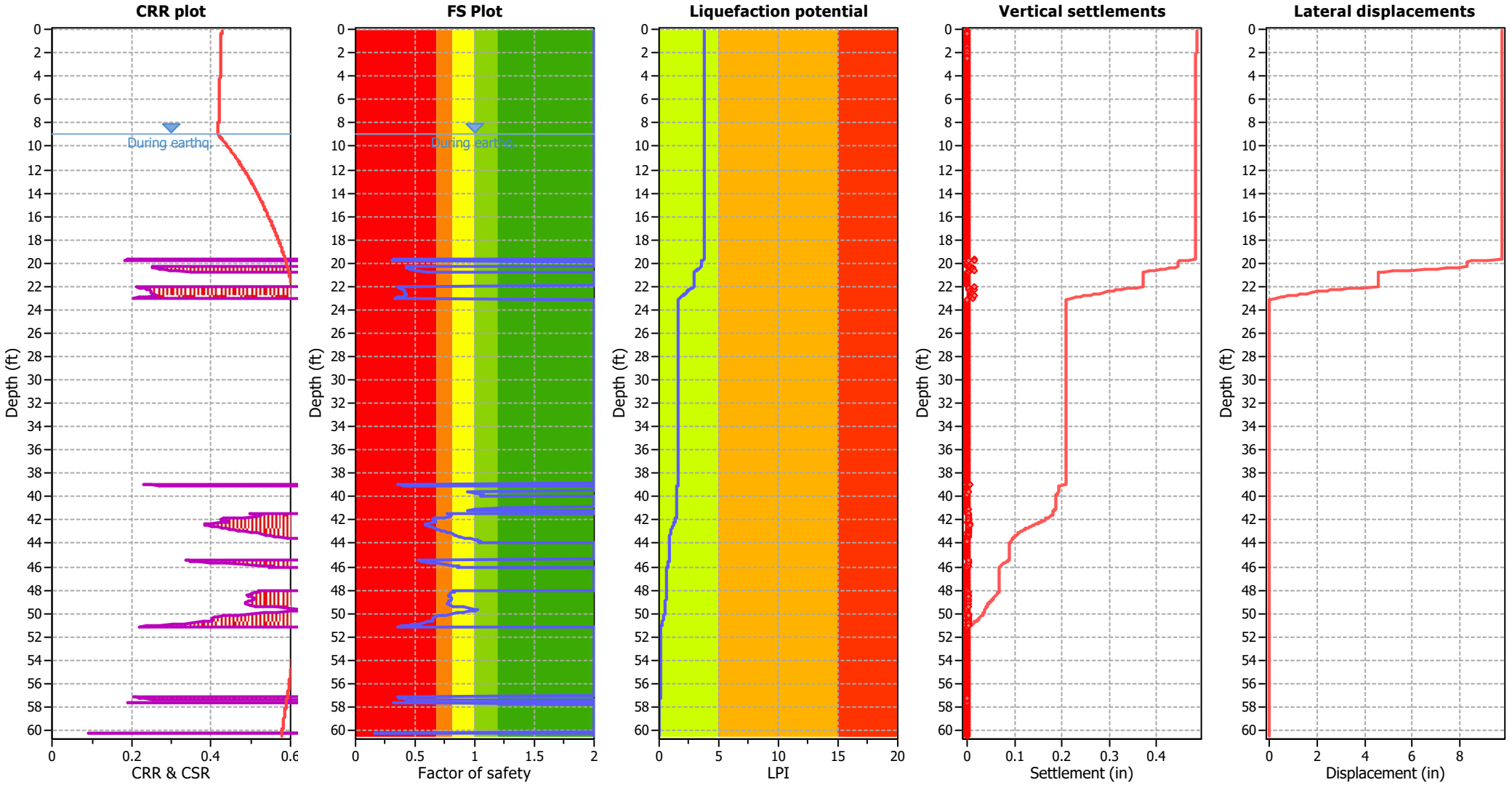
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	9.00 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:	6.87	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.82	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	12.00 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

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	9.00 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:	6.87	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.82	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	12.00 ft	Fill height:	N/A	Limit depth:	N/A

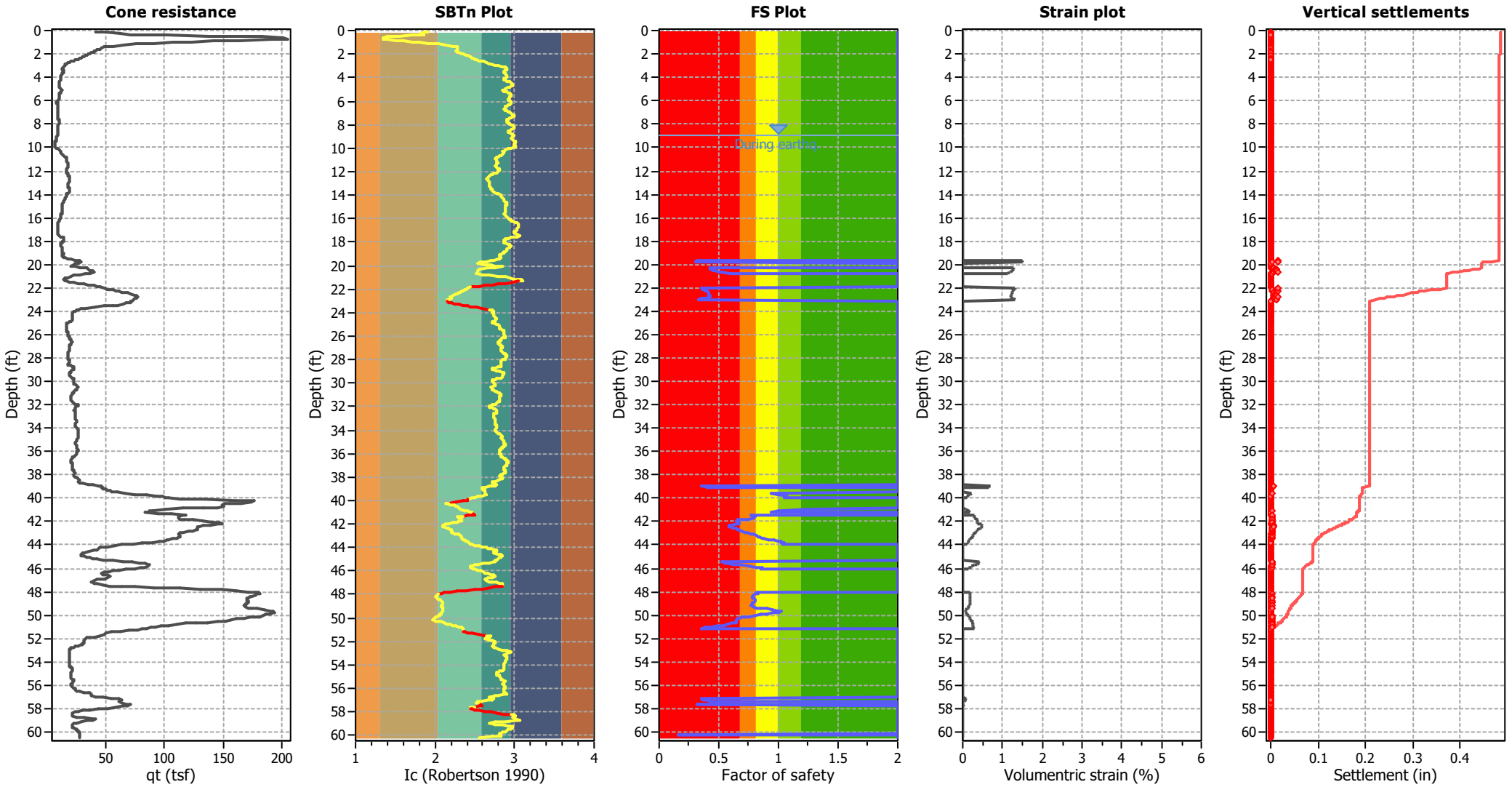
F.S. color scheme

- 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

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

:: Post-earthquake settlement of dry sands ::

Depth (ft)	Ic	Q_{tn}	Kc	$Q_{tn,cs}$	$N_{1,60}$ (blows)	G_{max} (tsf)	CSR	Shear, γ (%)	$e_{vol(15)}$ (%)	N_c	e_v (%)	Settle. (in)
0.10	1.92	65.55	1.25	81.92	17	417	0.43	0.001	0.00	9.85	0.00	0.000
0.15	1.87	79.78	1.21	96.85	19	475	0.43	0.001	0.00	9.85	0.00	0.000
0.23	1.82	100.87	1.18	118.84	23	569	0.43	0.001	0.00	9.85	0.00	0.000
0.30	1.83	114.61	1.18	135.77	27	653	0.43	0.002	0.00	9.85	0.00	0.000
0.34	1.86	120.84	1.21	146.09	29	714	0.43	0.002	0.00	9.85	0.00	0.000
0.39	1.71	164.88	1.01	166.01	31	805	0.43	0.002	0.00	9.85	0.00	0.000
0.50	1.56	222.48	1.00	222.48	40	894	0.43	0.002	0.00	9.85	0.00	0.000
0.53	1.40	293.84	1.00	293.84	50	975	0.43	0.002	0.00	9.85	0.00	0.000
0.60	1.36	324.18	1.00	324.18	54	1012	0.43	0.002	0.00	9.85	0.00	0.000
0.69	1.36	329.49	1.00	329.49	55	1028	0.43	0.002	0.00	9.85	0.00	0.000
0.72	1.41	307.68	1.00	307.68	52	1027	0.43	0.003	0.00	9.85	0.00	0.000
0.80	1.51	264.05	1.00	264.05	46	1005	0.43	0.003	0.00	9.85	0.00	0.000
0.87	1.61	227.48	1.00	227.48	41	982	0.43	0.003	0.00	9.85	0.00	0.000
0.92	1.71	197.32	1.00	197.82	37	961	0.43	0.004	0.00	9.85	0.00	0.000
0.99	1.80	172.20	1.16	199.18	39	946	0.43	0.004	0.00	9.85	0.00	0.000
1.08	1.91	146.84	1.25	183.04	37	929	0.43	0.005	0.00	9.85	0.00	0.000
1.12	2.04	121.81	1.35	163.92	35	905	0.43	0.005	0.00	9.85	0.00	0.000
1.20	2.14	103.59	1.49	154.31	34	875	0.43	0.006	0.00	9.85	0.00	0.000
1.30	2.23	89.25	1.69	150.67	34	840	0.43	0.007	0.00	9.85	0.00	0.000
1.34	2.27	80.72	1.82	147.30	34	803	0.43	0.008	0.00	9.85	0.00	0.000
1.40	2.28	77.26	1.84	141.94	33	772	0.43	0.009	0.00	9.85	0.00	0.000
1.49	2.28	74.04	1.84	136.31	32	741	0.43	0.010	0.01	9.85	0.00	0.000
1.54	2.28	71.35	1.84	131.22	31	714	0.43	0.011	0.01	9.85	0.01	0.000
1.59	2.28	69.04	1.84	126.76	30	690	0.43	0.013	0.01	9.85	0.01	0.000
1.68	2.27	67.02	1.83	122.52	28	668	0.43	0.015	0.01	9.85	0.01	0.000
1.74	2.27	65.09	1.82	118.60	28	647	0.43	0.017	0.01	9.85	0.01	0.000
1.79	2.28	63.21	1.85	116.95	27	635	0.42	0.018	0.01	9.85	0.01	0.000
1.87	2.30	61.10	1.92	117.51	28	630	0.42	0.020	0.01	9.85	0.01	0.000
1.94	2.33	58.89	2.03	119.78	29	629	0.42	0.021	0.01	9.85	0.01	0.000
1.98	2.35	56.92	2.15	122.40	29	629	0.42	0.021	0.01	9.85	0.01	0.000
2.04	2.39	54.56	2.30	125.36	31	627	0.42	0.023	0.01	9.85	0.01	0.000
2.13	2.41	52.34	2.45	128.34	32	624	0.42	0.025	0.01	9.85	0.01	0.000
2.17	2.44	50.23	2.60	130.47	33	618	0.42	0.026	0.01	9.85	0.01	0.000
2.24	2.45	48.50	2.68	129.89	33	607	0.42	0.028	0.02	9.85	0.01	0.000
2.33	2.47	46.38	2.77	128.59	33	592	0.42	0.032	0.02	9.85	0.01	0.000
2.36	2.48	44.27	2.84	125.93	32	573	0.42	0.036	0.02	9.85	0.02	0.000
2.43	2.50	41.24	3.01	124.09	32	551	0.42	0.043	0.02	9.85	0.02	0.000
2.52	2.52	38.93	3.12	121.36	32	530	0.42	0.052	0.03	9.85	0.02	0.000
2.56	2.56	35.34	3.44	121.52	32	508	0.42	0.062	0.04	9.85	0.03	0.000
2.64	2.60	32.45	3.76	121.98	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.74	2.65	29.42	4.22	124.30	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.78	2.68	27.88	4.52	126.10	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.83	2.71	26.73	4.80	128.40	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.90	2.75	25.19	5.29	133.26	0	0	0.42	0.000	0.00	0.00	0.00	0.000
2.98	2.80	23.70	5.87	139.09	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.03	2.85	22.55	6.46	145.76	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.10	2.88	21.68	6.92	149.94	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.18	2.90	21.05	7.23	152.19	0	0	0.42	0.000	0.00	0.00	0.00	0.000

:: Post-earthquake settlement of dry sands :: (continued)

Depth (ft)	Ic	Q_{tn}	Kc	$Q_{tn,cs}$	$N_{1,60}$ (blows)	G_{max} (tsf)	CSR	Shear, γ (%)	$e_{vol(15)}$ (%)	N_c	e_v (%)	Settle. (in)
3.23	2.91	20.85	7.30	152.19	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.29	2.89	21.13	7.12	150.57	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.38	2.88	21.55	6.89	148.45	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.42	2.87	21.84	6.72	146.74	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.51	2.87	21.69	6.73	145.93	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.58	2.87	21.30	6.82	145.21	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.62	2.88	20.72	6.93	143.58	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.69	2.89	20.14	7.05	142.00	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.77	2.90	19.56	7.18	140.51	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.82	2.91	19.07	7.31	139.40	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.89	2.91	18.73	7.29	136.50	0	0	0.42	0.000	0.00	0.00	0.00	0.000
3.97	2.90	18.38	7.20	132.39	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.03	2.88	18.28	6.97	127.45	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.10	2.87	18.36	6.75	123.92	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.15	2.87	18.17	6.73	122.27	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.24	2.88	17.73	6.92	122.71	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.29	2.91	16.91	7.37	124.67	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.35	2.93	16.48	7.72	127.18	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.44	2.95	16.19	8.01	129.68	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.48	2.96	16.14	8.14	131.34	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.54	2.97	16.04	8.24	132.12	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.61	2.97	15.98	8.26	132.06	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.69	2.97	15.93	8.25	131.45	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.74	2.96	16.07	8.14	130.88	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.82	2.95	16.40	7.93	130.13	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.86	2.93	17.07	7.61	129.78	0	0	0.42	0.000	0.00	0.00	0.00	0.000
4.94	2.89	18.26	7.07	129.10	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.02	2.86	19.35	6.68	129.38	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.09	2.85	19.98	6.51	130.12	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.13	2.87	19.44	6.77	131.65	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.23	2.90	18.42	7.20	132.72	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.28	2.93	17.41	7.63	132.80	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.33	2.95	16.69	7.89	131.67	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.39	2.95	16.21	7.96	128.99	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.48	2.95	15.77	8.01	126.35	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.52	2.95	15.48	7.95	123.10	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.58	2.95	15.33	7.91	121.21	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.67	2.94	15.27	7.82	119.35	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.73	2.94	15.27	7.75	118.26	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.78	2.93	15.36	7.58	116.41	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.88	2.92	15.25	7.51	114.50	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.92	2.92	14.91	7.56	112.73	0	0	0.42	0.000	0.00	0.00	0.00	0.000
5.97	2.94	14.08	7.85	110.58	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.08	2.96	13.31	8.16	108.63	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.11	2.96	12.89	8.19	105.63	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.18	2.95	12.84	8.01	102.88	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.26	2.93	12.98	7.67	99.55	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.33	2.92	12.99	7.43	96.54	0	0	0.42	0.000	0.00	0.00	0.00	0.000

:: Post-earthquake settlement of dry sands :: (continued)

Depth (ft)	Ic	Q_{tn}	Kc	$Q_{tn,cs}$	$N_{1,60}$ (blows)	G_{max} (tsf)	CSR	Shear, γ (%)	$e_{vol(15)}$ (%)	N_c	e_v (%)	Settle. (in)
6.38	2.90	13.13	7.18	94.34	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.44	2.89	13.22	7.04	93.06	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.50	2.88	13.41	6.95	93.17	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.57	2.88	13.59	6.93	94.25	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.67	2.88	13.88	6.87	95.39	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.72	2.87	14.11	6.84	96.59	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.76	2.88	14.21	6.97	99.02	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.83	2.90	14.15	7.26	102.74	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.92	2.93	14.05	7.58	106.54	0	0	0.42	0.000	0.00	0.00	0.00	0.000
6.97	2.94	13.96	7.86	109.66	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.04	2.96	13.81	8.11	111.99	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.12	2.98	13.56	8.41	114.01	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.16	2.99	13.32	8.62	114.83	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.25	2.99	13.27	8.62	114.36	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.32	2.98	13.42	8.44	113.20	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.37	2.96	13.81	8.08	111.60	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.43	2.94	14.24	7.73	110.14	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.52	2.92	14.62	7.50	109.55	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.56	2.91	14.99	7.37	110.50	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.63	2.91	15.35	7.34	112.71	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.71	2.91	15.73	7.30	114.85	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.75	2.91	15.95	7.36	117.34	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.83	2.92	16.04	7.44	119.31	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.88	2.93	15.89	7.60	120.80	0	0	0.42	0.000	0.00	0.00	0.00	0.000
7.97	2.94	15.61	7.75	121.01	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.01	2.95	15.03	8.02	120.63	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.08	2.97	14.41	8.33	120.01	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.18	2.99	13.78	8.64	119.03	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.22	3.00	13.44	8.72	117.20	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.28	2.99	13.49	8.55	115.34	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.35	2.97	13.78	8.22	113.27	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.43	2.95	14.11	7.95	112.23	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.48	2.93	14.49	7.67	111.15	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.55	2.92	14.67	7.55	110.79	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.63	2.92	14.71	7.52	110.66	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.68	2.93	14.38	7.71	110.83	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.76	2.95	13.94	7.96	111.00	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.80	2.97	13.46	8.26	111.17	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.88	2.98	13.12	8.45	110.94	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.94	2.99	12.88	8.56	110.25	0	0	0.42	0.000	0.00	0.00	0.00	0.000
8.99	2.98	12.79	8.44	107.90	0	0	0.42	0.000	0.00	0.00	0.00	0.000

:: Post-earthquake settlement of dry sands :: (continued)

Depth (ft)	Ic	Q_{tn}	Kc	$Q_{tn,cs}$	$N_{1,60}$ (blows)	G_{max} (tsf)	CSR	Shear, γ (%)	$e_{vol(15)}$ (%)	N_c	e_v (%)	Settle. (in)

Total estimated settlement: 0.00

Abbreviations

Q_{tn}: Equivalent clean sand normalized cone resistance
K_c: Fines correction factor
$Q_{tn,cs}$: Post-liquefaction volumentric strain
G_{max}: Small strain shear modulus
CSR: Soil cyclic stress ratio
γ: Cyclic shear strain
$e_{vol(15)}$: Volumetric strain after 15 cycles
N_c: Equivalent number of cycles
e_v: Volumetric strain
Settle.: Calculated settlement

:: Post-earthquake settlement due to soil liquefaction ::

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
9.07	105.49	2.00	0.00	0.85	0.00	9.14	103.04	2.00	0.00	0.85	0.00
9.22	101.97	2.00	0.00	0.84	0.00	9.27	100.73	2.00	0.00	0.84	0.00
9.37	99.63	2.00	0.00	0.84	0.00	9.42	98.24	2.00	0.00	0.84	0.00
9.47	96.96	2.00	0.00	0.84	0.00	9.52	94.72	2.00	0.00	0.84	0.00
9.62	92.20	2.00	0.00	0.84	0.00	9.67	89.68	2.00	0.00	0.84	0.00
9.73	88.54	2.00	0.00	0.84	0.00	9.82	88.41	2.00	0.00	0.83	0.00
9.86	88.11	2.00	0.00	0.83	0.00	9.92	89.69	2.00	0.00	0.83	0.00
10.02	92.05	2.00	0.00	0.83	0.00	10.06	95.40	2.00	0.00	0.83	0.00
10.12	99.27	2.00	0.00	0.83	0.00	10.21	103.17	2.00	0.00	0.83	0.00
10.25	108.28	2.00	0.00	0.83	0.00	10.31	113.67	2.00	0.00	0.83	0.00
10.41	118.44	2.00	0.00	0.82	0.00	10.45	122.03	2.00	0.00	0.82	0.00
10.52	123.00	2.00	0.00	0.82	0.00	10.61	122.86	2.00	0.00	0.82	0.00
10.64	122.08	2.00	0.00	0.82	0.00	10.71	122.19	2.00	0.00	0.82	0.00
10.81	122.75	2.00	0.00	0.82	0.00	10.85	124.58	2.00	0.00	0.82	0.00
10.91	126.48	2.00	0.00	0.82	0.00	10.96	128.91	2.00	0.00	0.81	0.00
11.03	130.97	2.00	0.00	0.81	0.00	11.10	132.61	2.00	0.00	0.81	0.00
11.20	133.18	2.00	0.00	0.81	0.00	11.24	133.33	2.00	0.00	0.81	0.00
11.30	133.53	2.00	0.00	0.81	0.00	11.36	134.23	2.00	0.00	0.81	0.00
11.43	135.02	2.00	0.00	0.81	0.00	11.50	135.99	2.00	0.00	0.81	0.00
11.58	137.24	2.00	0.00	0.80	0.00	11.63	138.56	2.00	0.00	0.80	0.00
11.70	138.82	2.00	0.00	0.80	0.00	11.79	137.16	2.00	0.00	0.80	0.00
11.84	134.71	2.00	0.00	0.80	0.00	11.90	132.31	2.00	0.00	0.80	0.00
11.98	129.74	2.00	0.00	0.80	0.00	12.02	126.01	2.00	0.00	0.80	0.00
12.09	121.52	2.00	0.00	0.80	0.00	12.14	115.95	2.00	0.00	0.79	0.00
12.21	111.27	2.00	0.00	0.79	0.00	12.29	107.00	2.00	0.00	0.79	0.00
12.34	104.91	2.00	0.00	0.79	0.00	12.44	103.74	2.00	0.00	0.79	0.00
12.49	102.92	2.00	0.00	0.79	0.00	12.57	103.44	2.00	0.00	0.79	0.00
12.64	104.70	2.00	0.00	0.79	0.00	12.68	106.44	2.00	0.00	0.79	0.00
12.73	107.69	2.00	0.00	0.78	0.00	12.84	108.75	2.00	0.00	0.78	0.00
12.88	108.99	2.00	0.00	0.78	0.00	12.98	108.62	2.00	0.00	0.78	0.00
13.00	107.38	2.00	0.00	0.78	0.00	13.08	106.22	2.00	0.00	0.78	0.00
13.14	105.00	2.00	0.00	0.78	0.00	13.23	104.59	2.00	0.00	0.78	0.00
13.27	104.88	2.00	0.00	0.78	0.00	13.34	107.22	2.00	0.00	0.77	0.00
13.43	109.92	2.00	0.00	0.77	0.00	13.46	113.31	2.00	0.00	0.77	0.00
13.54	115.49	2.00	0.00	0.77	0.00	13.63	117.68	2.00	0.00	0.77	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
13.67	119.63	2.00	0.00	0.77	0.00	13.71	122.93	2.00	0.00	0.77	0.00
13.83	127.00	2.00	0.00	0.77	0.00	13.88	130.91	2.00	0.00	0.76	0.00
13.94	132.86	2.00	0.00	0.76	0.00	13.98	132.62	2.00	0.00	0.76	0.00
14.06	131.22	2.00	0.00	0.76	0.00	14.14	129.24	2.00	0.00	0.76	0.00
14.18	128.01	2.00	0.00	0.76	0.00	14.26	127.23	2.00	0.00	0.76	0.00
14.33	126.32	2.00	0.00	0.76	0.00	14.37	124.49	2.00	0.00	0.76	0.00
14.45	122.94	2.00	0.00	0.76	0.00	14.54	121.40	2.00	0.00	0.75	0.00
14.61	120.61	2.00	0.00	0.75	0.00	14.65	119.75	2.00	0.00	0.75	0.00
14.74	118.40	2.00	0.00	0.75	0.00	14.80	116.40	2.00	0.00	0.75	0.00
14.85	113.76	2.00	0.00	0.75	0.00	14.90	111.27	2.00	0.00	0.75	0.00
15.00	109.29	2.00	0.00	0.75	0.00	15.05	108.02	2.00	0.00	0.74	0.00
15.10	107.52	2.00	0.00	0.74	0.00	15.17	106.81	2.00	0.00	0.74	0.00
15.25	106.05	2.00	0.00	0.74	0.00	15.30	104.91	2.00	0.00	0.74	0.00
15.36	103.58	2.00	0.00	0.74	0.00	15.45	101.95	2.00	0.00	0.74	0.00
15.49	100.36	2.00	0.00	0.74	0.00	15.56	99.09	2.00	0.00	0.74	0.00
15.64	97.83	2.00	0.00	0.73	0.00	15.69	97.14	2.00	0.00	0.73	0.00
15.77	97.08	2.00	0.00	0.73	0.00	15.85	97.89	2.00	0.00	0.73	0.00
15.89	99.04	2.00	0.00	0.73	0.00	15.99	100.37	2.00	0.00	0.73	0.00
16.05	101.86	2.00	0.00	0.73	0.00	16.09	102.61	2.00	0.00	0.73	0.00
16.16	104.20	2.00	0.00	0.73	0.00	16.23	104.27	2.00	0.00	0.72	0.00
16.30	104.52	2.00	0.00	0.72	0.00	16.34	104.14	2.00	0.00	0.72	0.00
16.44	103.21	2.00	0.00	0.72	0.00	16.48	101.81	2.00	0.00	0.72	0.00
16.54	100.01	2.00	0.00	0.72	0.00	16.63	97.93	2.00	0.00	0.72	0.00
16.68	96.09	2.00	0.00	0.72	0.00	16.74	94.88	2.00	0.00	0.72	0.00
16.82	94.37	2.00	0.00	0.71	0.00	16.89	93.93	2.00	0.00	0.71	0.00
16.94	93.04	2.00	0.00	0.71	0.00	17.03	91.80	2.00	0.00	0.71	0.00
17.07	90.46	2.00	0.00	0.71	0.00	17.13	89.37	2.00	0.00	0.71	0.00
17.21	88.88	2.00	0.00	0.71	0.00	17.26	88.41	2.00	0.00	0.71	0.00
17.33	90.95	2.00	0.00	0.71	0.00	17.41	95.53	2.00	0.00	0.70	0.00
17.48	102.07	2.00	0.00	0.70	0.00	17.53	106.65	2.00	0.00	0.70	0.00
17.61	108.80	2.00	0.00	0.70	0.00	17.67	108.02	2.00	0.00	0.70	0.00
17.72	108.39	2.00	0.00	0.70	0.00	17.82	108.33	2.00	0.00	0.70	0.00
17.88	108.12	2.00	0.00	0.70	0.00	17.92	105.50	2.00	0.00	0.70	0.00
18.02	102.65	2.00	0.00	0.69	0.00	18.07	100.11	2.00	0.00	0.69	0.00
18.14	99.16	2.00	0.00	0.69	0.00	18.20	98.68	2.00	0.00	0.69	0.00
18.27	97.86	2.00	0.00	0.69	0.00	18.32	98.95	2.00	0.00	0.69	0.00
18.38	97.55	2.00	0.00	0.69	0.00	18.47	97.34	2.00	0.00	0.69	0.00
18.51	96.56	2.00	0.00	0.69	0.00	18.57	97.38	2.00	0.00	0.69	0.00
18.67	98.61	2.00	0.00	0.68	0.00	18.71	98.96	2.00	0.00	0.68	0.00
18.81	98.26	2.00	0.00	0.68	0.00	18.86	96.48	2.00	0.00	0.68	0.00
18.91	94.56	2.00	0.00	0.68	0.00	18.97	91.39	2.00	0.00	0.68	0.00
19.06	88.18	2.00	0.00	0.68	0.00	19.11	85.07	2.00	0.00	0.68	0.00
19.21	84.21	2.00	0.00	0.67	0.00	19.27	84.54	2.00	0.00	0.67	0.00
19.31	86.93	2.00	0.00	0.67	0.00	19.41	88.98	2.00	0.00	0.67	0.00
19.46	93.00	2.00	0.00	0.67	0.00	19.51	97.16	2.00	0.00	0.67	0.00
19.56	102.57	2.00	0.00	0.67	0.00	19.63	106.00	2.00	0.00	0.67	0.00
19.71	105.39	0.32	1.49	0.67	0.02	19.80	103.36	0.31	1.51	0.66	0.02
19.82	103.78	0.31	1.51	0.66	0.00	19.91	108.71	2.00	0.00	0.66	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
19.95	117.22	2.00	0.00	0.66	0.00	20.02	125.24	2.00	0.00	0.66	0.00
20.11	135.25	2.00	0.00	0.66	0.00	20.15	133.93	2.00	0.00	0.66	0.00
20.24	129.76	2.00	0.00	0.66	0.00	20.29	122.56	0.42	1.30	0.66	0.01
20.36	122.88	0.43	1.29	0.65	0.01	20.41	124.45	0.44	1.28	0.65	0.01
20.48	126.74	0.45	1.26	0.65	0.01	20.56	129.59	0.48	1.23	0.65	0.01
20.66	132.43	0.50	1.21	0.65	0.01	20.71	136.04	0.53	1.18	0.65	0.01
20.74	143.17	0.59	1.13	0.65	0.00	20.82	153.36	2.00	0.00	0.65	0.00
20.91	163.25	2.00	0.00	0.65	0.00	20.95	167.43	2.00	0.00	0.64	0.00
21.03	164.92	2.00	0.00	0.64	0.00	21.11	161.43	2.00	0.00	0.64	0.00
21.15	155.73	2.00	0.00	0.64	0.00	21.22	151.53	2.00	0.00	0.64	0.00
21.26	148.19	2.00	0.00	0.64	0.00	21.34	145.23	2.00	0.00	0.64	0.00
21.41	142.03	2.00	0.00	0.64	0.00	21.48	137.36	2.00	0.00	0.64	0.00
21.52	133.91	2.00	0.00	0.64	0.00	21.61	131.31	2.00	0.00	0.63	0.00
21.66	126.69	2.00	0.00	0.63	0.00	21.76	121.94	2.00	0.00	0.63	0.00
21.81	117.22	2.00	0.00	0.63	0.00	21.85	113.70	2.00	0.00	0.63	0.00
21.92	112.34	2.00	0.00	0.63	0.00	22.01	112.78	0.35	1.33	0.63	0.01
22.09	114.24	0.36	1.31	0.63	0.01	22.12	115.95	0.37	1.29	0.63	0.00
22.20	117.91	0.38	1.27	0.62	0.01	22.29	119.72	0.40	1.25	0.62	0.01
22.31	121.36	0.41	1.24	0.62	0.00	22.40	121.92	0.41	1.23	0.62	0.01
22.45	122.24	0.41	1.23	0.62	0.01	22.51	122.11	0.41	1.23	0.62	0.01
22.60	122.44	0.41	1.22	0.62	0.01	22.64	123.77	0.42	1.21	0.62	0.01
22.75	125.30	0.43	1.19	0.61	0.02	22.80	125.15	0.43	1.19	0.61	0.01
22.85	119.88	0.39	1.23	0.61	0.01	22.91	114.07	0.36	1.28	0.61	0.01
22.99	109.78	0.33	1.32	0.61	0.01	23.08	109.70	2.00	0.00	0.61	0.00
23.10	110.41	2.00	0.00	0.61	0.00	23.18	114.71	2.00	0.00	0.61	0.00
23.26	120.54	2.00	0.00	0.61	0.00	23.30	128.94	2.00	0.00	0.61	0.00
23.37	134.92	2.00	0.00	0.60	0.00	23.46	140.61	2.00	0.00	0.60	0.00
23.51	144.23	2.00	0.00	0.60	0.00	23.56	147.76	2.00	0.00	0.60	0.00
23.63	149.13	2.00	0.00	0.60	0.00	23.71	146.50	2.00	0.00	0.60	0.00
23.79	136.95	2.00	0.00	0.60	0.00	23.87	126.62	2.00	0.00	0.60	0.00
23.91	116.58	2.00	0.00	0.59	0.00	23.96	111.35	2.00	0.00	0.59	0.00
24.02	107.59	2.00	0.00	0.59	0.00	24.11	105.44	2.00	0.00	0.59	0.00
24.20	104.79	2.00	0.00	0.59	0.00	24.22	104.73	2.00	0.00	0.59	0.00
24.31	105.41	2.00	0.00	0.59	0.00	24.39	105.65	2.00	0.00	0.59	0.00
24.42	106.31	2.00	0.00	0.59	0.00	24.51	106.31	2.00	0.00	0.58	0.00
24.55	106.48	2.00	0.00	0.58	0.00	24.63	105.28	2.00	0.00	0.58	0.00
24.71	103.23	2.00	0.00	0.58	0.00	24.75	99.21	2.00	0.00	0.58	0.00
24.81	95.35	2.00	0.00	0.58	0.00	24.90	92.34	2.00	0.00	0.58	0.00
24.94	90.33	2.00	0.00	0.58	0.00	25.00	89.64	2.00	0.00	0.58	0.00
25.07	88.38	2.00	0.00	0.58	0.00	25.15	87.14	2.00	0.00	0.57	0.00
25.20	86.01	2.00	0.00	0.57	0.00	25.28	85.50	2.00	0.00	0.57	0.00
25.35	86.50	2.00	0.00	0.57	0.00	25.40	88.25	2.00	0.00	0.57	0.00
25.48	91.11	2.00	0.00	0.57	0.00	25.55	93.38	2.00	0.00	0.57	0.00
25.60	94.75	2.00	0.00	0.57	0.00	25.67	96.90	2.00	0.00	0.56	0.00
25.75	100.52	2.00	0.00	0.56	0.00	25.79	104.61	2.00	0.00	0.56	0.00
25.90	107.18	2.00	0.00	0.56	0.00	25.95	108.53	2.00	0.00	0.56	0.00
26.01	109.55	2.00	0.00	0.56	0.00	26.09	109.42	2.00	0.00	0.56	0.00
26.13	108.57	2.00	0.00	0.56	0.00	26.19	107.31	2.00	0.00	0.56	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
26.27	106.73	2.00	0.00	0.55	0.00	26.34	106.13	2.00	0.00	0.55	0.00
26.39	105.70	2.00	0.00	0.55	0.00	26.47	105.55	2.00	0.00	0.55	0.00
26.54	106.11	2.00	0.00	0.55	0.00	26.58	106.72	2.00	0.00	0.55	0.00
26.66	107.66	2.00	0.00	0.55	0.00	26.73	108.39	2.00	0.00	0.55	0.00
26.78	109.11	2.00	0.00	0.55	0.00	26.85	109.18	2.00	0.00	0.54	0.00
26.93	108.76	2.00	0.00	0.54	0.00	26.98	107.66	2.00	0.00	0.54	0.00
27.03	106.07	2.00	0.00	0.54	0.00	27.13	104.52	2.00	0.00	0.54	0.00
27.17	104.10	2.00	0.00	0.54	0.00	27.24	104.50	2.00	0.00	0.54	0.00
27.33	105.18	2.00	0.00	0.54	0.00	27.36	105.80	2.00	0.00	0.54	0.00
27.43	106.12	2.00	0.00	0.54	0.00	27.52	106.48	2.00	0.00	0.53	0.00
27.60	106.49	2.00	0.00	0.53	0.00	27.63	106.26	2.00	0.00	0.53	0.00
27.72	105.65	2.00	0.00	0.53	0.00	27.77	104.32	2.00	0.00	0.53	0.00
27.84	102.53	2.00	0.00	0.53	0.00	27.93	100.42	2.00	0.00	0.53	0.00
27.97	98.84	2.00	0.00	0.53	0.00	28.02	97.74	2.00	0.00	0.53	0.00
28.12	97.09	2.00	0.00	0.52	0.00	28.17	96.67	2.00	0.00	0.52	0.00
28.22	96.64	2.00	0.00	0.52	0.00	28.32	96.64	2.00	0.00	0.52	0.00
28.36	95.80	2.00	0.00	0.52	0.00	28.42	94.87	2.00	0.00	0.52	0.00
28.48	94.99	2.00	0.00	0.52	0.00	28.57	95.60	2.00	0.00	0.52	0.00
28.62	96.11	2.00	0.00	0.51	0.00	28.72	95.03	2.00	0.00	0.51	0.00
28.75	94.35	2.00	0.00	0.51	0.00	28.82	95.94	2.00	0.00	0.51	0.00
28.87	99.01	2.00	0.00	0.51	0.00	28.95	103.82	2.00	0.00	0.51	0.00
29.02	107.78	2.00	0.00	0.51	0.00	29.07	110.42	2.00	0.00	0.51	0.00
29.16	110.54	2.00	0.00	0.51	0.00	29.21	108.01	2.00	0.00	0.50	0.00
29.29	105.06	2.00	0.00	0.50	0.00	29.36	102.71	2.00	0.00	0.50	0.00
29.40	101.59	2.00	0.00	0.50	0.00	29.47	100.03	2.00	0.00	0.50	0.00
29.55	98.00	2.00	0.00	0.50	0.00	29.60	95.31	2.00	0.00	0.50	0.00
29.71	93.88	2.00	0.00	0.50	0.00	29.75	93.16	2.00	0.00	0.50	0.00
29.79	93.68	2.00	0.00	0.50	0.00	29.86	94.98	2.00	0.00	0.49	0.00
29.95	96.77	2.00	0.00	0.49	0.00	30.04	98.45	2.00	0.00	0.49	0.00
30.06	99.94	2.00	0.00	0.49	0.00	30.15	100.92	2.00	0.00	0.49	0.00
30.20	101.06	2.00	0.00	0.49	0.00	30.28	100.42	2.00	0.00	0.49	0.00
30.34	100.04	2.00	0.00	0.49	0.00	30.39	101.24	2.00	0.00	0.48	0.00
30.45	104.51	2.00	0.00	0.48	0.00	30.54	108.00	2.00	0.00	0.48	0.00
30.59	110.42	2.00	0.00	0.48	0.00	30.67	111.10	2.00	0.00	0.48	0.00
30.74	111.26	2.00	0.00	0.48	0.00	30.79	112.21	2.00	0.00	0.48	0.00
30.86	112.43	2.00	0.00	0.48	0.00	30.95	111.90	2.00	0.00	0.48	0.00
30.99	110.66	2.00	0.00	0.47	0.00	31.05	107.16	2.00	0.00	0.47	0.00
31.14	103.56	2.00	0.00	0.47	0.00	31.19	99.53	2.00	0.00	0.47	0.00
31.26	97.93	2.00	0.00	0.47	0.00	31.34	96.22	2.00	0.00	0.47	0.00
31.39	95.26	2.00	0.00	0.47	0.00	31.45	94.21	2.00	0.00	0.47	0.00
31.54	93.56	2.00	0.00	0.47	0.00	31.57	92.77	2.00	0.00	0.46	0.00
31.63	93.91	2.00	0.00	0.46	0.00	31.73	94.19	2.00	0.00	0.46	0.00
31.77	92.42	2.00	0.00	0.46	0.00	31.84	90.46	2.00	0.00	0.46	0.00
31.93	90.68	2.00	0.00	0.46	0.00	31.98	93.75	2.00	0.00	0.46	0.00
32.05	96.26	2.00	0.00	0.46	0.00	32.09	99.63	2.00	0.00	0.46	0.00
32.17	102.07	2.00	0.00	0.45	0.00	32.22	103.52	2.00	0.00	0.45	0.00
32.32	103.27	2.00	0.00	0.45	0.00	32.35	103.02	2.00	0.00	0.45	0.00
32.43	102.87	2.00	0.00	0.45	0.00	32.52	101.64	2.00	0.00	0.45	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
32.57	100.07	2.00	0.00	0.45	0.00	32.62	98.38	2.00	0.00	0.45	0.00
32.71	97.57	2.00	0.00	0.45	0.00	32.76	97.12	2.00	0.00	0.44	0.00
32.81	96.88	2.00	0.00	0.44	0.00	32.90	96.57	2.00	0.00	0.44	0.00
32.96	96.55	2.00	0.00	0.44	0.00	33.02	97.60	2.00	0.00	0.44	0.00
33.11	98.88	2.00	0.00	0.44	0.00	33.17	100.27	2.00	0.00	0.44	0.00
33.22	101.21	2.00	0.00	0.44	0.00	33.31	102.13	2.00	0.00	0.44	0.00
33.34	103.07	2.00	0.00	0.43	0.00	33.41	103.42	2.00	0.00	0.43	0.00
33.49	103.30	2.00	0.00	0.43	0.00	33.57	102.58	2.00	0.00	0.43	0.00
33.61	101.67	2.00	0.00	0.43	0.00	33.68	101.32	2.00	0.00	0.43	0.00
33.76	101.27	2.00	0.00	0.43	0.00	33.81	101.26	2.00	0.00	0.43	0.00
33.88	101.12	2.00	0.00	0.43	0.00	33.95	101.56	2.00	0.00	0.42	0.00
34.01	103.38	2.00	0.00	0.42	0.00	34.06	106.24	2.00	0.00	0.42	0.00
34.13	110.04	2.00	0.00	0.42	0.00	34.21	113.58	2.00	0.00	0.42	0.00
34.25	116.87	2.00	0.00	0.42	0.00	34.35	119.37	2.00	0.00	0.42	0.00
34.40	122.57	2.00	0.00	0.42	0.00	34.49	124.73	2.00	0.00	0.42	0.00
34.53	126.12	2.00	0.00	0.41	0.00	34.60	125.90	2.00	0.00	0.41	0.00
34.65	125.61	2.00	0.00	0.41	0.00	34.74	125.47	2.00	0.00	0.41	0.00
34.80	125.56	2.00	0.00	0.41	0.00	34.85	126.58	2.00	0.00	0.41	0.00
34.93	128.04	2.00	0.00	0.41	0.00	34.98	128.88	2.00	0.00	0.41	0.00
35.05	127.80	2.00	0.00	0.41	0.00	35.15	126.17	2.00	0.00	0.40	0.00
35.20	125.37	2.00	0.00	0.40	0.00	35.25	124.93	2.00	0.00	0.40	0.00
35.33	123.91	2.00	0.00	0.40	0.00	35.40	122.11	2.00	0.00	0.40	0.00
35.44	119.99	2.00	0.00	0.40	0.00	35.50	117.88	2.00	0.00	0.40	0.00
35.59	116.45	2.00	0.00	0.40	0.00	35.63	116.01	2.00	0.00	0.40	0.00
35.70	115.62	2.00	0.00	0.39	0.00	35.79	114.77	2.00	0.00	0.39	0.00
35.83	114.39	2.00	0.00	0.39	0.00	35.94	114.71	2.00	0.00	0.39	0.00
35.98	115.69	2.00	0.00	0.39	0.00	36.03	116.70	2.00	0.00	0.39	0.00
36.09	116.58	2.00	0.00	0.39	0.00	36.17	115.49	2.00	0.00	0.39	0.00
36.23	114.00	2.00	0.00	0.39	0.00	36.29	113.09	2.00	0.00	0.38	0.00
36.38	112.63	2.00	0.00	0.38	0.00	36.44	112.05	2.00	0.00	0.38	0.00
36.49	111.15	2.00	0.00	0.38	0.00	36.59	109.97	2.00	0.00	0.38	0.00
36.63	108.85	2.00	0.00	0.38	0.00	36.69	107.75	2.00	0.00	0.38	0.00
36.78	106.46	2.00	0.00	0.38	0.00	36.82	105.29	2.00	0.00	0.38	0.00
36.88	104.46	2.00	0.00	0.37	0.00	36.98	103.87	2.00	0.00	0.37	0.00
37.02	102.96	2.00	0.00	0.37	0.00	37.10	102.04	2.00	0.00	0.37	0.00
37.18	101.36	2.00	0.00	0.37	0.00	37.22	101.05	2.00	0.00	0.37	0.00
37.28	100.81	2.00	0.00	0.37	0.00	37.38	100.58	2.00	0.00	0.37	0.00
37.42	101.02	2.00	0.00	0.37	0.00	37.48	102.97	2.00	0.00	0.36	0.00
37.57	105.41	2.00	0.00	0.36	0.00	37.62	107.42	2.00	0.00	0.36	0.00
37.68	107.95	2.00	0.00	0.36	0.00	37.77	106.20	2.00	0.00	0.36	0.00
37.82	102.49	2.00	0.00	0.36	0.00	37.88	99.35	2.00	0.00	0.36	0.00
37.96	99.43	2.00	0.00	0.36	0.00	38.00	101.66	2.00	0.00	0.36	0.00
38.08	103.26	2.00	0.00	0.35	0.00	38.12	104.09	2.00	0.00	0.35	0.00
38.20	103.97	2.00	0.00	0.35	0.00	38.27	102.06	2.00	0.00	0.35	0.00
38.36	98.71	2.00	0.00	0.35	0.00	38.40	94.91	2.00	0.00	0.35	0.00
38.46	94.28	2.00	0.00	0.35	0.00	38.56	95.66	2.00	0.00	0.35	0.00
38.59	100.70	2.00	0.00	0.35	0.00	38.66	107.26	2.00	0.00	0.34	0.00
38.76	111.79	2.00	0.00	0.34	0.00	38.79	113.89	2.00	0.00	0.34	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
38.87	114.34	2.00	0.00	0.34	0.00	38.91	117.43	0.35	0.70	0.34	0.00
39.00	121.63	0.38	0.67	0.34	0.01	39.04	126.71	0.41	0.65	0.34	0.00
39.11	133.05	2.00	0.00	0.34	0.00	39.20	138.70	2.00	0.00	0.34	0.00
39.24	143.92	2.00	0.00	0.33	0.00	39.31	150.02	2.00	0.00	0.33	0.00
39.38	158.39	2.00	0.00	0.33	0.00	39.46	166.23	2.00	0.00	0.33	0.00
39.51	174.07	2.00	0.00	0.33	0.00	39.60	179.88	0.94	0.22	0.33	0.00
39.66	183.49	0.99	0.16	0.33	0.00	39.71	185.76	1.03	0.16	0.33	0.00
39.79	187.56	1.05	0.12	0.33	0.00	39.85	188.48	1.07	0.12	0.32	0.00
39.91	187.38	1.05	0.12	0.32	0.00	39.99	186.65	2.00	0.00	0.32	0.00
40.05	185.70	2.00	0.00	0.32	0.00	40.11	187.17	2.00	0.00	0.32	0.00
40.20	193.96	2.00	0.00	0.32	0.00	40.24	202.25	2.00	0.00	0.32	0.00
40.30	203.67	2.00	0.00	0.32	0.00	40.40	203.35	2.00	0.00	0.32	0.00
40.43	204.57	2.00	0.00	0.31	0.00	40.49	207.32	2.00	0.00	0.31	0.00
40.55	212.50	2.00	0.00	0.31	0.00	40.64	217.54	2.00	0.00	0.31	0.00
40.69	219.21	2.00	0.00	0.31	0.00	40.80	218.36	2.00	0.00	0.31	0.00
40.84	218.47	2.00	0.00	0.31	0.00	40.89	207.82	2.00	0.00	0.31	0.00
40.95	198.23	1.23	0.08	0.31	0.00	41.04	184.28	1.01	0.15	0.30	0.00
41.10	183.92	1.00	0.15	0.30	0.00	41.15	179.67	0.95	0.20	0.30	0.00
41.24	180.70	2.00	0.00	0.30	0.00	41.27	171.62	2.00	0.00	0.30	0.00
41.38	165.78	2.00	0.00	0.30	0.00	41.41	162.91	2.00	0.00	0.30	0.00
41.49	165.20	0.76	0.29	0.30	0.00	41.54	167.91	0.79	0.28	0.30	0.00
41.61	168.54	0.80	0.28	0.29	0.00	41.69	167.22	0.79	0.28	0.29	0.00
41.77	163.27	0.74	0.36	0.29	0.00	41.84	159.26	0.70	0.37	0.29	0.00
41.88	156.07	0.66	0.38	0.29	0.00	41.94	154.97	0.65	0.38	0.29	0.00
42.04	155.83	0.66	0.38	0.29	0.00	42.08	157.17	0.68	0.37	0.29	0.00
42.17	157.20	0.68	0.37	0.29	0.00	42.19	154.48	0.65	0.46	0.28	0.00
42.28	150.86	0.61	0.47	0.28	0.01	42.33	148.18	0.59	0.48	0.28	0.00
42.39	148.41	0.59	0.48	0.28	0.00	42.48	149.69	0.60	0.47	0.28	0.01
42.53	151.63	0.62	0.46	0.28	0.00	42.59	153.74	0.64	0.45	0.28	0.00
42.67	155.46	0.66	0.36	0.28	0.00	42.73	156.86	0.67	0.36	0.28	0.00
42.81	157.92	0.69	0.35	0.27	0.00	42.88	159.24	0.70	0.35	0.27	0.00
42.92	160.90	0.72	0.34	0.27	0.00	43.00	162.97	0.74	0.33	0.27	0.00
43.08	165.24	0.77	0.26	0.27	0.00	43.12	167.44	0.79	0.26	0.27	0.00
43.21	168.89	0.81	0.25	0.27	0.00	43.27	170.17	0.83	0.25	0.27	0.00
43.32	171.28	0.84	0.25	0.27	0.00	43.39	172.62	0.86	0.18	0.26	0.00
43.47	174.23	0.88	0.18	0.26	0.00	43.52	176.84	0.92	0.18	0.26	0.00
43.59	179.94	0.96	0.13	0.26	0.00	43.67	182.79	1.00	0.13	0.26	0.00
43.72	184.14	1.02	0.13	0.26	0.00	43.80	184.43	1.02	0.13	0.26	0.00
43.85	185.75	1.04	0.13	0.26	0.00	43.91	185.41	1.04	0.13	0.26	0.00
43.97	178.40	2.00	0.00	0.25	0.00	44.04	168.39	2.00	0.00	0.25	0.00
44.13	159.98	2.00	0.00	0.25	0.00	44.16	159.84	2.00	0.00	0.25	0.00
44.24	158.69	2.00	0.00	0.25	0.00	44.31	154.26	2.00	0.00	0.25	0.00
44.37	145.63	2.00	0.00	0.25	0.00	44.45	138.31	2.00	0.00	0.25	0.00
44.50	132.54	2.00	0.00	0.25	0.00	44.56	128.28	2.00	0.00	0.24	0.00
44.65	122.69	2.00	0.00	0.24	0.00	44.71	116.42	2.00	0.00	0.24	0.00
44.76	111.67	2.00	0.00	0.24	0.00	44.85	109.31	2.00	0.00	0.24	0.00
44.88	109.76	2.00	0.00	0.24	0.00	44.95	112.70	2.00	0.00	0.24	0.00
45.05	116.66	2.00	0.00	0.24	0.00	45.10	122.85	2.00	0.00	0.24	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
45.17	129.99	2.00	0.00	0.23	0.00	45.25	136.97	2.00	0.00	0.23	0.00
45.30	139.53	2.00	0.00	0.23	0.00	45.37	140.64	2.00	0.00	0.23	0.00
45.45	140.08	0.52	0.41	0.23	0.00	45.49	141.40	0.53	0.40	0.23	0.00
45.54	142.55	0.54	0.40	0.23	0.00	45.60	146.20	0.58	0.39	0.23	0.00
45.68	150.85	0.62	0.38	0.23	0.00	45.75	156.96	0.69	0.29	0.22	0.00
45.80	163.32	0.76	0.22	0.22	0.00	45.89	168.82	0.82	0.21	0.22	0.00
45.93	172.37	0.87	0.16	0.22	0.00	46.01	171.02	0.85	0.16	0.22	0.00
46.08	166.94	2.00	0.00	0.22	0.00	46.15	160.45	2.00	0.00	0.22	0.00
46.20	155.97	2.00	0.00	0.22	0.00	46.29	154.19	2.00	0.00	0.22	0.00
46.34	154.81	2.00	0.00	0.21	0.00	46.41	154.77	2.00	0.00	0.21	0.00
46.49	152.78	2.00	0.00	0.21	0.00	46.53	147.33	2.00	0.00	0.21	0.00
46.60	141.66	2.00	0.00	0.21	0.00	46.69	137.09	2.00	0.00	0.21	0.00
46.73	135.64	2.00	0.00	0.21	0.00	46.79	135.37	2.00	0.00	0.21	0.00
46.89	136.25	2.00	0.00	0.21	0.00	46.94	138.10	2.00	0.00	0.20	0.00
46.99	141.99	2.00	0.00	0.20	0.00	47.09	144.63	2.00	0.00	0.20	0.00
47.13	147.52	2.00	0.00	0.20	0.00	47.19	151.58	2.00	0.00	0.20	0.00
47.28	156.22	2.00	0.00	0.20	0.00	47.34	160.06	2.00	0.00	0.20	0.00
47.38	157.24	2.00	0.00	0.20	0.00	47.50	153.15	2.00	0.00	0.19	0.00
47.51	148.50	2.00	0.00	0.19	0.00	47.60	144.73	2.00	0.00	0.19	0.00
47.69	140.86	2.00	0.00	0.19	0.00	47.70	139.69	2.00	0.00	0.19	0.00
47.80	142.94	2.00	0.00	0.19	0.00	47.84	150.17	2.00	0.00	0.19	0.00
47.91	156.78	2.00	0.00	0.19	0.00	48.00	162.81	2.00	0.00	0.19	0.00
48.04	166.60	2.00	0.00	0.19	0.00	48.11	167.78	0.82	0.18	0.18	0.00
48.19	167.89	0.82	0.17	0.18	0.00	48.23	166.85	0.81	0.18	0.18	0.00
48.30	165.57	0.80	0.18	0.18	0.00	48.40	164.34	0.78	0.18	0.18	0.00
48.45	164.01	0.78	0.18	0.18	0.00	48.50	164.51	0.78	0.17	0.18	0.00
48.59	165.37	0.79	0.17	0.18	0.00	48.66	166.06	0.80	0.17	0.18	0.00
48.69	166.34	0.81	0.17	0.17	0.00	48.78	166.23	0.81	0.17	0.17	0.00
48.85	165.89	0.80	0.17	0.17	0.00	48.89	165.27	0.80	0.17	0.17	0.00
48.98	164.42	0.79	0.17	0.17	0.00	49.03	163.96	0.78	0.17	0.17	0.00
49.09	163.63	0.78	0.17	0.17	0.00	49.19	163.35	0.77	0.17	0.17	0.00
49.23	163.32	0.77	0.16	0.17	0.00	49.28	164.80	0.79	0.16	0.16	0.00
49.39	166.67	0.82	0.16	0.16	0.00	49.42	169.33	0.85	0.15	0.16	0.00
49.48	173.02	0.90	0.11	0.16	0.00	49.59	176.79	0.95	0.08	0.16	0.00
49.62	180.52	1.00	0.08	0.16	0.00	49.69	181.66	1.02	0.08	0.16	0.00
49.74	180.26	1.00	0.08	0.16	0.00	49.83	177.11	0.96	0.08	0.16	0.00
49.88	173.53	0.91	0.11	0.15	0.00	49.93	169.72	0.86	0.11	0.15	0.00
50.03	165.22	0.80	0.15	0.15	0.00	50.13	160.80	0.75	0.15	0.15	0.00
50.14	157.68	0.71	0.19	0.15	0.00	50.23	155.80	0.69	0.19	0.15	0.00
50.27	153.88	0.67	0.20	0.15	0.00	50.34	152.42	0.66	0.20	0.15	0.00
50.43	151.59	0.65	0.20	0.15	0.00	50.49	151.43	0.65	0.24	0.14	0.00
50.53	151.29	0.65	0.24	0.14	0.00	50.62	151.13	0.65	0.24	0.14	0.00
50.68	150.93	0.65	0.24	0.14	0.00	50.73	147.78	0.61	0.24	0.14	0.00
50.82	143.57	0.57	0.24	0.14	0.00	50.88	139.31	0.54	0.24	0.14	0.00
50.93	134.19	0.49	0.25	0.14	0.00	51.02	127.18	0.44	0.26	0.14	0.00
51.09	119.48	0.39	0.27	0.13	0.00	51.12	114.89	0.36	0.28	0.13	0.00
51.19	113.65	2.00	0.00	0.13	0.00	51.27	115.33	2.00	0.00	0.13	0.00
51.32	119.29	2.00	0.00	0.13	0.00	51.39	125.47	2.00	0.00	0.13	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
51.48	133.65	2.00	0.00	0.13	0.00	51.53	136.49	2.00	0.00	0.13	0.00
51.62	130.07	2.00	0.00	0.13	0.00	51.68	118.63	2.00	0.00	0.12	0.00
51.73	111.36	2.00	0.00	0.12	0.00	51.82	108.36	2.00	0.00	0.12	0.00
51.87	105.77	2.00	0.00	0.12	0.00	51.92	101.93	2.00	0.00	0.12	0.00
51.97	98.61	2.00	0.00	0.12	0.00	52.04	94.25	2.00	0.00	0.12	0.00
52.12	90.77	2.00	0.00	0.12	0.00	52.17	88.15	2.00	0.00	0.12	0.00
52.23	86.84	2.00	0.00	0.11	0.00	52.31	85.30	2.00	0.00	0.11	0.00
52.37	84.25	2.00	0.00	0.11	0.00	52.44	83.17	2.00	0.00	0.11	0.00
52.53	82.25	2.00	0.00	0.11	0.00	52.57	81.88	2.00	0.00	0.11	0.00
52.64	81.27	2.00	0.00	0.11	0.00	52.72	79.91	2.00	0.00	0.11	0.00
52.78	77.99	2.00	0.00	0.11	0.00	52.83	75.66	2.00	0.00	0.10	0.00
52.92	72.48	2.00	0.00	0.10	0.00	52.96	70.16	2.00	0.00	0.10	0.00
53.04	67.23	2.00	0.00	0.10	0.00	53.12	63.60	2.00	0.00	0.10	0.00
53.17	61.59	2.00	0.00	0.10	0.00	53.22	63.65	2.00	0.00	0.10	0.00
53.29	65.48	2.00	0.00	0.10	0.00	53.37	66.33	2.00	0.00	0.10	0.00
53.42	66.44	2.00	0.00	0.09	0.00	53.49	65.92	2.00	0.00	0.09	0.00
53.58	65.23	2.00	0.00	0.09	0.00	53.63	64.52	2.00	0.00	0.09	0.00
53.68	63.77	2.00	0.00	0.09	0.00	53.78	62.89	2.00	0.00	0.09	0.00
53.84	62.03	2.00	0.00	0.09	0.00	53.88	61.68	2.00	0.00	0.09	0.00
53.94	61.54	2.00	0.00	0.09	0.00	54.03	61.41	2.00	0.00	0.08	0.00
54.08	61.42	2.00	0.00	0.08	0.00	54.16	61.52	2.00	0.00	0.08	0.00
54.20	61.71	2.00	0.00	0.08	0.00	54.28	62.04	2.00	0.00	0.08	0.00
54.35	62.73	2.00	0.00	0.08	0.00	54.43	63.41	2.00	0.00	0.08	0.00
54.48	63.42	2.00	0.00	0.08	0.00	54.55	62.63	2.00	0.00	0.08	0.00
54.63	61.54	2.00	0.00	0.07	0.00	54.67	60.54	2.00	0.00	0.07	0.00
54.74	59.69	2.00	0.00	0.07	0.00	54.82	58.97	2.00	0.00	0.07	0.00
54.87	58.80	2.00	0.00	0.07	0.00	54.92	58.37	2.00	0.00	0.07	0.00
55.02	57.95	2.00	0.00	0.07	0.00	55.06	57.48	2.00	0.00	0.07	0.00
55.14	58.25	2.00	0.00	0.07	0.00	55.22	59.57	2.00	0.00	0.06	0.00
55.27	62.13	2.00	0.00	0.06	0.00	55.37	64.60	2.00	0.00	0.06	0.00
55.42	67.22	2.00	0.00	0.06	0.00	55.47	69.35	2.00	0.00	0.06	0.00
55.53	71.10	2.00	0.00	0.06	0.00	55.58	72.38	2.00	0.00	0.06	0.00
55.66	72.79	2.00	0.00	0.06	0.00	55.72	72.69	2.00	0.00	0.06	0.00
55.81	72.12	2.00	0.00	0.05	0.00	55.85	71.03	2.00	0.00	0.05	0.00
55.92	69.42	2.00	0.00	0.05	0.00	56.01	67.83	2.00	0.00	0.05	0.00
56.05	66.01	2.00	0.00	0.05	0.00	56.11	66.77	2.00	0.00	0.05	0.00
56.21	69.20	2.00	0.00	0.05	0.00	56.26	73.46	2.00	0.00	0.05	0.00
56.32	78.60	2.00	0.00	0.05	0.00	56.41	85.09	2.00	0.00	0.04	0.00
56.46	90.89	2.00	0.00	0.04	0.00	56.50	94.70	2.00	0.00	0.04	0.00
56.59	95.31	2.00	0.00	0.04	0.00	56.65	94.75	2.00	0.00	0.04	0.00
56.70	92.50	2.00	0.00	0.04	0.00	56.78	92.10	2.00	0.00	0.04	0.00
56.85	93.82	2.00	0.00	0.04	0.00	56.89	101.45	2.00	0.00	0.04	0.00
56.98	107.06	2.00	0.00	0.03	0.00	57.04	110.92	2.00	0.00	0.03	0.00
57.09	110.81	0.35	0.07	0.03	0.00	57.16	111.98	0.36	0.07	0.03	0.00
57.24	114.31	0.37	0.06	0.03	0.00	57.29	118.36	0.40	0.06	0.03	0.00
57.37	122.59	0.43	0.05	0.03	0.00	57.42	124.48	2.00	0.00	0.03	0.00
57.49	119.74	2.00	0.00	0.03	0.00	57.59	112.69	2.00	0.00	0.02	0.00
57.64	106.83	2.00	0.00	0.02	0.00	57.69	105.87	0.32	0.05	0.02	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
57.77	106.92	2.00	0.00	0.02	0.00	57.82	108.59	2.00	0.00	0.02	0.00
57.89	109.56	2.00	0.00	0.02	0.00	57.97	108.58	2.00	0.00	0.02	0.00
58.03	107.12	2.00	0.00	0.02	0.00	58.09	104.19	2.00	0.00	0.02	0.00
58.17	101.86	2.00	0.00	0.01	0.00	58.21	95.50	2.00	0.00	0.01	0.00
58.28	89.89	2.00	0.00	0.01	0.00	58.37	83.77	2.00	0.00	0.01	0.00
58.40	78.43	2.00	0.00	0.01	0.00	58.48	75.49	2.00	0.00	0.01	0.00
58.53	77.16	2.00	0.00	0.01	0.00	58.63	82.84	2.00	0.00	0.01	0.00
58.67	93.89	2.00	0.00	0.01	0.00	58.73	103.10	2.00	0.00	0.00	0.00
58.82	107.59	2.00	0.00	0.00	0.00	58.89	102.91	2.00	0.00	0.00	0.00
58.93	96.38	2.00	0.00	0.00	0.00	59.00	94.14	2.00	0.00	0.00	0.00
59.06	93.07	2.00	0.00	0.00	0.00	59.13	91.37	2.00	0.00	0.00	0.00
59.22	89.13	2.00	0.00	0.00	0.00	59.28	84.58	2.00	0.00	0.00	0.00
59.33	80.82	2.00	0.00	0.00	0.00	59.41	76.24	2.00	0.00	0.00	0.00
59.47	74.37	2.00	0.00	0.00	0.00	59.52	72.86	2.00	0.00	0.00	0.00
59.61	71.78	2.00	0.00	0.00	0.00	59.67	71.20	2.00	0.00	0.00	0.00
59.72	71.23	2.00	0.00	0.00	0.00	59.78	71.91	2.00	0.00	0.00	0.00
59.87	73.11	2.00	0.00	0.00	0.00	59.92	75.63	2.00	0.00	0.00	0.00
60.00	78.56	2.00	0.00	0.00	0.00	60.05	80.28	2.00	0.00	0.00	0.00
60.11	66.10	2.00	0.00	0.00	0.00	60.21	47.80	0.16	0.00	0.00	0.00
60.25	-1.00	2.00	0.00	0.00	0.00	60.31	-1.00	2.00	0.00	0.00	0.00
60.40	-1.00	2.00	0.00	0.00	0.00	60.43	-1.00	2.00	0.00	0.00	0.00
60.51	-1.00	2.00	0.00	0.00	0.00						

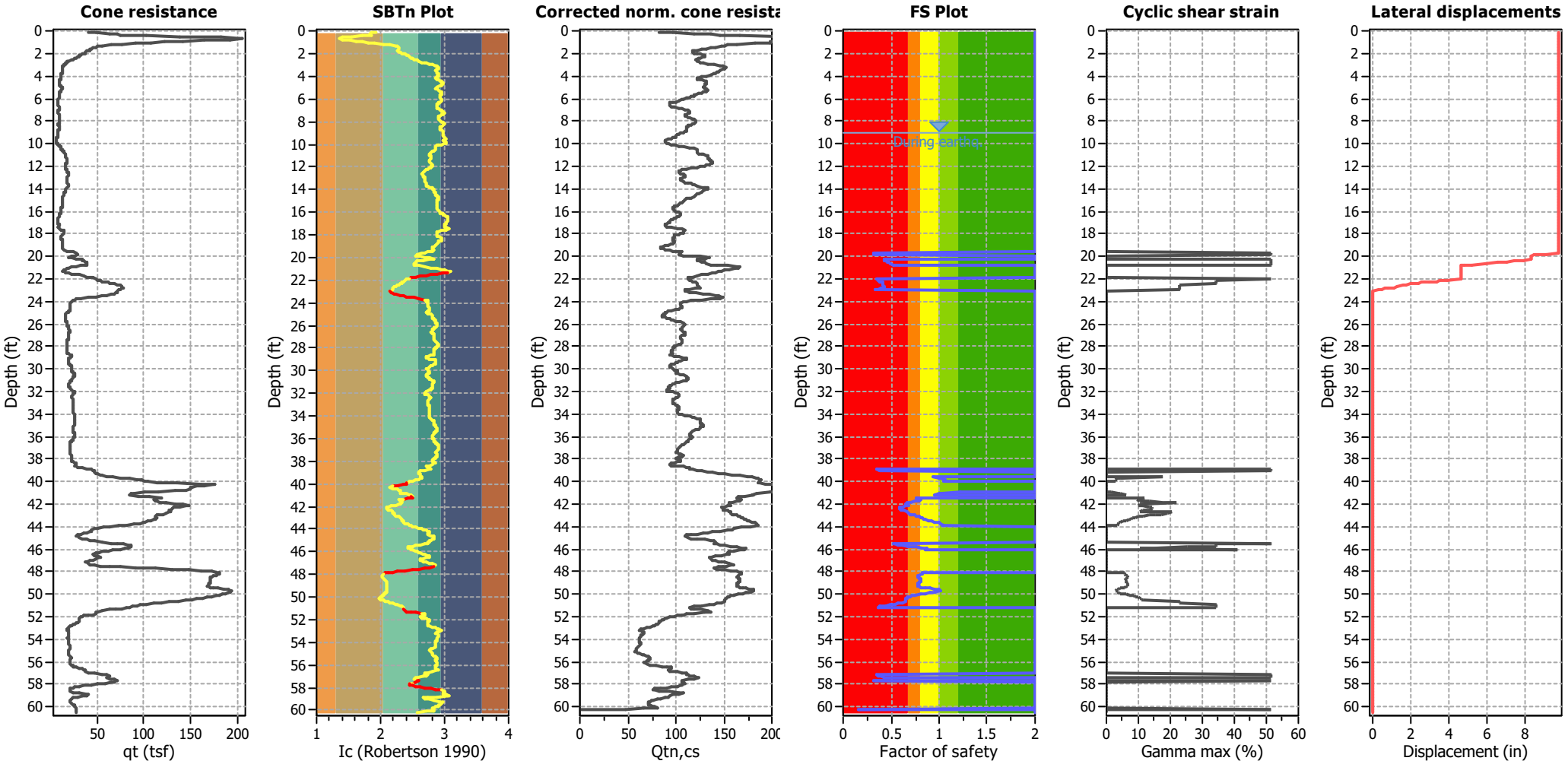
Total estimated settlement: 0.48

Abbreviations

$Q_{tn,cs}$:	Equivalent clean sand normalized cone resistance
FS:	Factor of safety against liquefaction
e_v (%):	Post-liquefaction volumentric strain
DF:	e_v depth weighting factor
Settlement:	Calculated settlement

Estimation of post-earthquake lateral Displacements

Geometric parameters: Level ground (or gently sloping) with free face (L: 90.00 ft - H: 12.00 ft)



Abbreviations

q_t: Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c: Soil Behaviour Type Index
$Q_{tn,cs}$: Equivalent clean sand normalized CPT total cone resistance
F.S.: Factor of safety
γ_{max}: Maximum cyclic shear strain
LDI: Lateral displacement index

Surface condition